HAC T-Coil Test Report

Report No.	:	**HFBFLF-WTW-P21010278-1**
Applicant	:	**ASUSTeK COMPUTER INC.**
Address	:	**1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan**
Product	:	**EXP21 Smartphone**
FCC ID	:	**MSQI007D**
Brand	:	**ASUS**
Model No.	:	**ASUS_I007D**
Standards	:	**FCC 47 CFR Part 20.19, ANSI C63.19-2011** **KDB 285076 D01 v05, KDB 285076 D02 v03, KDB 285076 D03 v01**
Sample Received Date	:	**Jan. 01, 2021**
Date of Testing	:	**Jan. 01, 2021 ~ Mar. 30, 2021**
T-Rating Summary	:	**T3**
Lab Address	:	**No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan**
Test Location	:	**No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City, Taiwan**

CERTIFICATION: The above equipment have been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch – Lin Kou Laboratories**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's HAC characteristics under the conditions specified in this report. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product certification, approval, or endorsement by TAF or any government agencies.

Prepared By : Gina Liu / Specialist

Approved By : Gordon Lin / Manager

FCC Accredited No.: TW0003

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Release Control Record

Report No.	Reason for Change	Date Issued
HFBFLF-WTW-P21010278-1	Initial release	Apr. 28, 2021

1. Summary of Maximum T-Rating

Mode	Band	CMRS Voice T-Rating	VoLTE T-Rating	VoWiFi T-Rating	OTT Voice Calling T-Rating
GSM	GSM850	T3	N/A	N/A	T3
	GSM1900	T4			T4
WCDMA	Band II	T4	N/A	N/A	T4
	Band IV	T4			T4
	Band V	T4			T4
CDMA	BC0	T4	N/A	N/A	T4
	BC1	T4			T4
	BC10	T4			T4
FDD-LTE	Band 2	N/A	T4	N/A	T4
	Band 4		T4		
	Band 5		T4		
	Band 7		T4		
	Band 12		T4		
	Band 13		T4		
	Band 14		T4		
	Band 17		T4		
	Band 25		T4		
	Band 26		T4		
	Band 30		T4		
	Band 66		T4		
	Band 71		T4		
TDD-LTE	Band 38	N/A	T4	N/A	T4
	Band 40		T4		
	Band 41		T4		
	Band 42		T4		
	Band 43		T3		
	Band 48		T4		
FDD-5G NR	n2	N/A	N/A	N/A	T4
	n5				
	n7				
	n12				
	n13				
	n14				
	n25				
	n26				
	n28				
	n30				
	n66				
	n70				
	n71				
TDD-5G NR	n38	N/A	N/A	N/A	T4
	n41				
	n77				
	n78				
	n79				
WLAN	2.4G	N/A	N/A	T4	T4
	5.2G			T4	T4
	5.3G			T4	
	5.6G			T4	
	5.8G			T4	
WIFI 6E	U-NII 5	N/A	N/A	N/A	N/A
	U-NII 6			N/A	N/A
	U-NII 7			N/A	N/A
	U-NII 8			N/A	N/A
T-Rating Summary		T3			

Note:

1. The HAC T-Coil limit **(T-Rating Category T3)** is specified in FCC 47 CFR part 20.19 and ANSI C63.19.
2. The device T-Coil rating is determined by the minimum rating.

2. Description of Equipment Under Test

EUT Type	EXP21 Smartphone
FCC ID	MSQI007D
Brand Name	ASUS
Model Name	ASUS_I007D
Tx Frequency Bands (Unit: MHz)	GSM850 : 824.2 ~ 848.8 GSM1900 : 1850.2 ~ 1909.8 WCDMA Band II : 1852.4 ~ 1907.6 WCDMA Band IV : 1712.4 ~ 1752.6 WCDMA Band V : 826.4 ~ 846.6 CDMA BC0 : 824.7 ~ 848.31 CDMA BC1 : 1851.25 ~ 1908.75 CDMA BC10 : 817.9 ~ 823.1 LTE Band 2 : 1850.7 ~ 1909.3 LTE Band 4 : 1710.7 ~ 1754.3 LTE Band 5 : 824.7 ~ 848.3 LTE Band 7 : 2502.5 ~ 2567.5 LTE Band 12 : 699.7 ~ 715.3 LTE Band 13 : 779.5 ~ 784.5 LTE Band 14 : 790.5 ~ 795.5 LTE Band 17 : 706.5 ~ 713.5 LTE Band 25 : 1850.7 ~ 1914.3 LTE Band 26 : 814.7 ~ 848.3 LTE Band 30 : 2307.5 ~ 2312.5 LTE Band 38 : 2572.5 ~ 2617.5 LTE Band 40 : 2302.5 ~ 2397.5 LTE Band 41 : 2498.5 ~ 2687.5 LTE Band 42 : 3552.5 ~ 3597.5 LTE Band 43 : 3652.5 ~ 3672.5 LTE Band 48 : 3552.5 ~ 3697.5 LTE Band 66 : 1710.7 ~ 1779.3 LTE Band 71 : 665.5 ~ 695.5 5G NR n2 : 1852.5 ~ 1907.5 5G NR n5 : 826.5 ~ 846.5 5G NR n7 : 2502.5 ~ 2567.5 5G NR n12 : 701.5 ~ 713.5 5G NR n13 : 777 ~ 787 5G NR n14 : 790.5 ~ 795.5 5G NR n25 : 1852.5 ~ 1912.5 5G NR n26 : 816.5 ~ 846.5 5G NR n30 : 2307.5 ~ 2312.5 5G NR n38 : 2572.5 ~ 2617.5 5G NR n41 : 2506.02 ~ 2679.99 5G NR n66 : 1712.5 ~ 1777.5 5G NR n71 : 665.5 ~ 695.5 5G NR n77 : 3710.01 ~ 3969.99 5G NR n78 : 3305 ~ 3795 WLAN : 2412 ~ 2462, 5180 ~ 5240, 5260 ~ 5320, 5500 ~ 5700, 5745 ~ 5825 WIFI6E : 5925 ~ 6425, 6425 ~ 6525, 6525 ~ 6875, 6875 ~ 7125 **Bluetooth :** 2402 ~ 2480
Modulations Supported in Uplink	GSM & GPRS : GMSK EDGE : 8PSK WCDMA : QPSK CDMA : QPSK LTE : QPSK, 16QAM, 64QAM 5G NR_FR1 : DFT-s- / CP-OFDM_PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM 802.11b : DSSS 802.11a/g/n/ac : OFDM Bluetooth : GFSK, π/4-DQPSK, 8-DPSK
Antenna Type	PIFA Antenna
EUT Stage	Engineering Sample

Note:

1. The above EUT information is declared by manufacturer and for more detailed features description please refers to the manufacturer's specifications or User's Manual.

List of Accessory:

Battery	**Brand Name**	SCUD
	Model Name	C21P2002
	Power Rating	7.74Vdc, 15.2Wh
	Type	Li-ion
Bluetooth Earphone	**Brand Name**	Bang & Olufsen
	Model Name	EQ Earbud R EQ Earbud L

Air Interface and Operational Mode:

Air Interface	Bands	Transport Type	ANSI C63.19 Tested	Simultaneous But Not Tested	Name of Voice Service	Power Reduction
GSM	850	VO	YES	WLAN or BT	CMRS Voice(1)	No
	1900					No
	EGPRS	VD	YES	WLAN or BT	Google Duo(2)	No
WCDMA	II	VO	YES	WLAN or BT	CMRS Voice(1)	No
	IV					No
	V					No
	HSPA	VD	YES	WLAN or BT	Google Duo(2)	No
CDMA	BC0	VO	YES	WLAN or BT	CMRS Voice(1)	No
	BC1					No
	BC10					No
	EVDO	VD	YES	WLAN or BT	Google Duo(2)	No
FDD-LTE	2	VD	YES	WLAN or BT	VoLTE(2) Google Duo(2)	No
	4					No
	5					No
	7					No
	12					No
	13					No
	14					No
	17					No
	25					No
	26					No
	30					No
	66					No
	71					No
TDD-LTE	38	VD	YES	WLAN or BT	VoLTE(2) Google Duo(2)	No
	40					No
	41					No
	42					No
	43					No
	48					No

FDD-5G NR	n2	VD	YES	WLAN or BT	Google Duo(2)	No
	n5					No
	n7					No
	n12					No
	n13					No
	n14					No
	n25					No
	n26					No
	n28					No
	n30					No
	n66					No
	n70					No
	n71					No
TDD-5G NR	n38	VD	YES	WLAN or BT	Google Duo(2)	No
	n41					No
	n77					No
	n78					No
	n79					No
WLAN	2.4G	VD	YES	WWAN	VoWiFi(2) Google Duo(2)	No
	5.2G	VD	YES		VoWiFi(2) Google Duo(2)	No
	5.3G					No
	5.6G					No
	5.8G					No
WIFI6E	U-NII 5	VD	No(5)	WWAN	VoWiFi(2) Google Duo(2)	No
	U-NII 6					No
	U-NII 7					No
	U-NII 8					No
Bluetooth	2.4G	DT	No	WWAN	N/A	No

Transport Type

VO = Legacy Cellular Voice Service

DT = Digital Transport Only (No Voice)

VD = IP Voice Service over Digital Transport

Note

1. Reference level in accordance with 7.4.2.1 of ANSI C63.19-2011 and the July 2012 VoLTE interpretation.
2. Reference level is −20 dBm0 in accordance with FCC KDB 285076
3. The device supported a pre-installed application, Google Duo and Hangouts, whose features allow the option of voice-only communications.
4. Because features of Google Duo and hangouts allow the option of voice-only communications, Duo has been tested for HAC/T-Coil compatibility to ensure the best user experience.
5. WIFI U-NII bands 5 through 8 were not evaluated due to equipment limitations and being outside the scope of ANSI C63.19 and FCC HAC regulations.

3. HAC T-Coil Measurement System

3.1 SPEAG DASY6 System

The SPEAG DASY6 system consists of high precision robot, probe alignment sensor, phantom, robot controller, controlled measurement server and near-field probe. The robot includes six axes that can move to the precision position of the DASY6 software defined. The DASY6 software can define the area that is detected by the probe. The robot is connected to controlled box. Controlled measurement server is connected to the controlled robot box. The DAE includes amplifier, signal multiplexing, AD converter, offset measurement and surface detection. It is connected to the Electro-optical coupler (ECO). The ECO performs the conversion form the optical into digital electric signal of the DAE and transfers data to the PC.

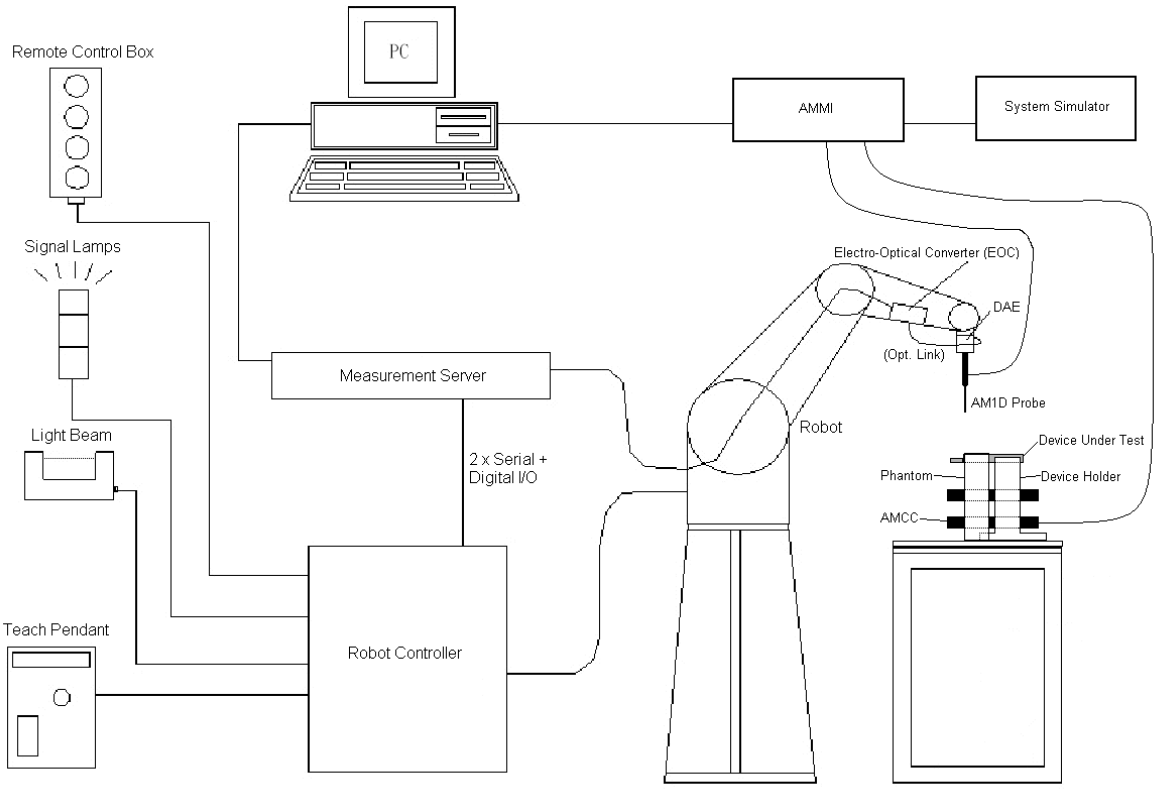


Fig-3.1 DASY6 System Setup

3.1.1 Robot

The DASY6 system uses the high precision robots from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY6: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability ±0.035 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)

Fig-3.3 DASY6 Measurement System

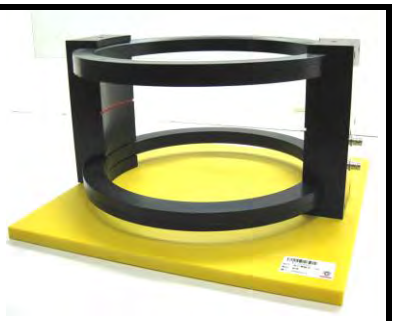
3.1.2 AM1D Probe

The AM1D probe is an active probe with a single sensor. It is fully RF-shielded and has a rounded tip 6 mm in diameter incorporating a pickup coil with its center offset 3 mm from the tip and the sides. The symmetric signal preamplifier in the probe is fed via the shielded symmetric output cable from the AMMI with a 48V “phantom” voltage supply. The 7-pin connector on the back in the axis of the probe does not carry any signals. It is mounted to the DAE for the correct orientation of the sensor. If the probe axis is tilted 54.7 degrees from the vertical, the sensor is approximately vertical when the signal connector is at the underside of the probe (cable hanging downwards).

Model	AM1DV3
Sampling Rate	0.1 kHz to 20 kHz RF sensitivity < -100 dB
Preamplifier	Symmetric, 40 dB
Dynamic Range	-60 to 40 dB A/m
Calibration	at 1kHz
Dimensions	Tip diameter : 6 mm Length : 290 mm

3.1.3 Audio Magnetic Calibration Coil (AMCC)

The AMCC is a Helmholtz Coil designed for calibration of the AM1D probe. The two horizontal coils generate a homogeneous magnetic field in the z direction. The DC input resistance is adjusted by a series resistor to approximately 50 Ohm, and a shunt resistor of 10 Ohm permits monitoring the current with a scale of 1:10.

Signal	Connector	Resistance	
Coil In	BNC	Typically 50 Ohm	
Coil Monitor	BNO	10 Ohm ±1% (100mV corresponding to 1 A/m)	
Dimensions	370 x 370 x 196 mm		

3.1.4 Audio Magnetic Measuring Instrument (AMMI)

The AMMI is a desktop 19-inch unit containing a sampling unit, a waveform generator for test and calibration signals, and a USB interface.

Sampling Rate	48 kHz / 24 bit	
Dynamic Range	100 dB (with AM1DV3 probe)	
Test Signal Generation	User selectable and predefined (via PC)	
Calibration	Auto-calibration / full system calibration using AMCC with monitor output	
Dimensions	482 x 65 x 270 mm	

3.1.5 Data Acquisition Electronics (DAE)

Model	DAE3, DAE4	
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop.	
Measurement Range	-100 to +300 mV (16 bit resolution and two range settings: 4mV, 400mV)	
Input Offset Voltage	< 5µV (with auto zero)	
Input Bias Current	< 50 fA	
Dimensions	60 x 60 x 68 mm	

3.1.6 Phantoms

Model	Test Arch	
Construction	Enables easy and well defined positioning of the phone and validation dipoles as well as simple teaching of the robot.	
Dimensions	Length : 370 mm Width : 370 mm Height : 370 mm	

3.1.7 Device Holder

Model	Mounting Device	
Construction	The Mounting Device enables the rotation of the mounted transmitter device in spherical coordinates. Rotation point is the ear opening point. Transmitter devices can be easily and accurately positioned according to ANSI C63.19.	
Material	POM	

3.2 System Calibration

For correct and calibrated measurement of the voltages and ABM field, DASY6 will perform a calibration job as below.
In phase 1, the audio output is switched off, and a 200 mV_{pp} symmetric rectangular signal of 1 kHz is generated and internally connected directly to both channels of the sampling unit (Coil in, Probe in).

In phase 2, the audio output is off, and a 20 mV_{pp} symmetric 100 Hz signal is internally connected. The signals during phases 1 and 2 are available at the output on the rear panel of the AMMI. However, the output must not be loaded, in order to avoid influencing the calibration. An RMS voltmeter would indicate 100 mV_{RMS} during the first phase and 10 mV_{RMS} during the second phase. After the first two phases, the two input channels are both calibrated for absolute measurements of voltages. The resulting factors are displayed above the multi-meter window.

After phases 1 and 2, the input channels are calibrated to measure exact voltages. This is required to use the inputs for measuring voltages with their peak and RMS value.

In phase 3, a multi-sine signal covering each third-octave band from 50 Hz to 10 kHz is generated and applied to both audio outputs. The probe should be positioned in the center of the AMCC and aligned in the z-direction, the field orientation of the AMCC. The “Coil In” channel is measuring the voltage over the AMCC internal shunt, which is proportional to the magnetic field in the AMCC. At the same time, the “Probe In" channel samples the amplified signal picked up by the probe coil and provides it to a numerical integrator. The ratio of the two voltages in each third-octave filter leads to the spectral representation over the frequency band of interest. The Coil signal is scaled in dBV, and the Probe signal is first integrated and normalized to show dB A/m. The ratio probe-to-coil at the frequency of 1 kHz is the sensitivity which will be used in the consecutive T-Coil jobs.

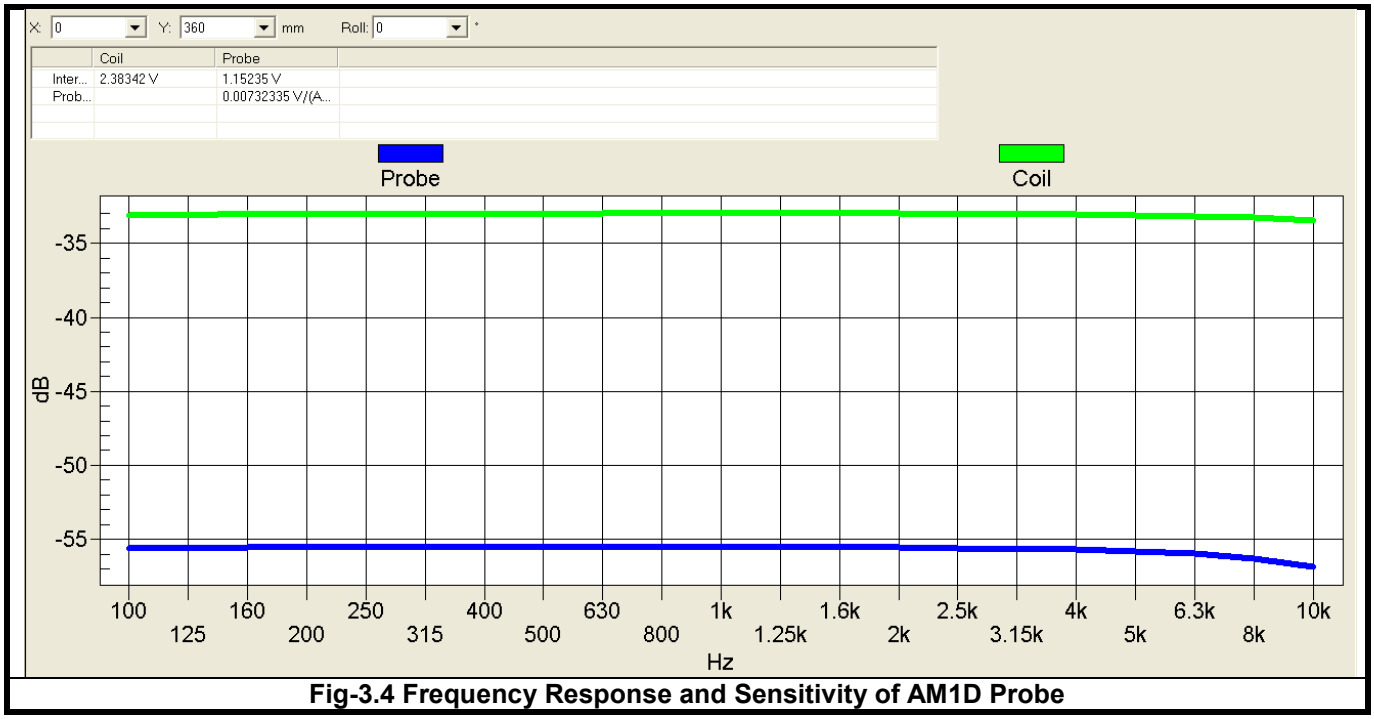


Fig-3.4 Frequency Response and Sensitivity of AM1D Probe

3.3 EUT Measurements Reference and Plane

The EUT is mounted in the device holder. The acoustic output of the EUT will coincide with the center point of the area formed by the dielectric wire and the middle bar of the arch's top frame. Then EUT will be moved vertically upwards until it touches the frame.

Figure 3.5 illustrates the three standard probe orientations. Position 1 is the perpendicular (axial) orientation of the probe coil. Orientation 2 is the transverse (radial) orientation. The space between the measurement positions is not fixed. It is recommended that a scan of the EUT be done for each probe coil orientation and that the maximum level recorded be used as the reading for that orientation of the probe coil.

(1) The reference plane is the planar area that contains the highest point in the area of the phone that normally rests against the user's ear. It is parallel to the centerline of the receiver area of the phone and is defined by the points of the receiver-end of the EUT handset that, in normal handset use, rest against the ear.

(2) The measurement plane is parallel to, and 10 mm in front of the reference plane.

(3) The reference axis is normal to the reference plane and passes through the center of the receiver speaker section or it may be centered on a secondary inductive source.

(4) The measurement points may be located where the perpendicular (axial) and transverse (radial) field intensity measurements are optimum with regard to the requirements. However, the measurement points should be near the acoustic output of the EUT and shall be located in the same half of the phone as the EUT receiver. In a EUT handset with a centered receiver and a circularly symmetrical magnetic field, the measurement axis and the reference axis would coincide.

(5) The relative spacing of each measurement orientations is not fixed. The perpendicular (axial) and transverse (radial) orientations should be chosen to select the optimal position.

(6) The measurement point for the axial position is located 10 mm from the reference plane on the measurement axis.

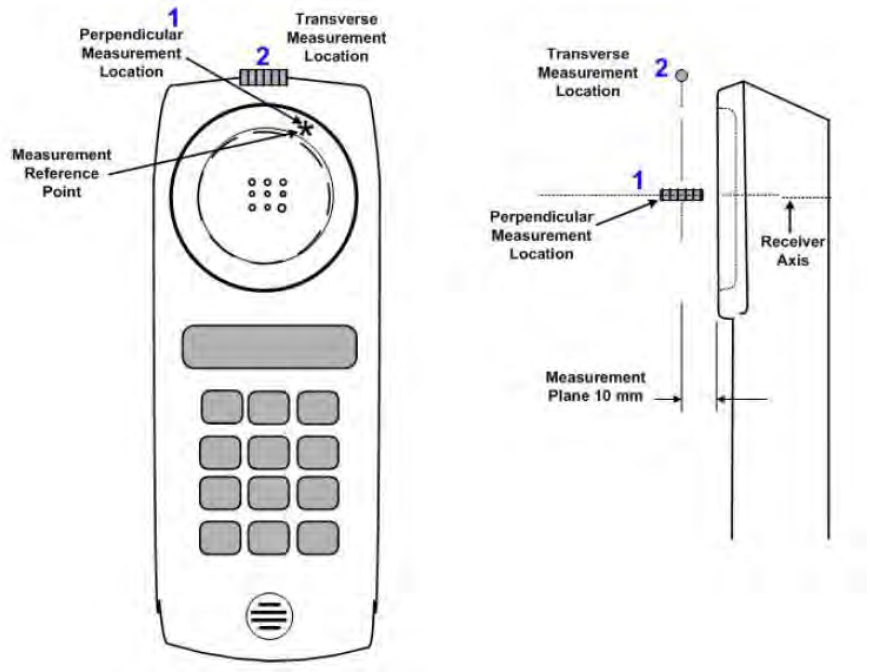


Fig-3.5 Axis and Planes

3.4 HAC T-Coil Measurement Procedure

According to ANSI C63.19-2011, the T-Coil test procedure for wireless communications device is as below.

1. Position the EUT in the test setup and connect the EUT RF connector to a base station simulator.
2. The drive level to the EUT is set such that the reference input level specified in Table 7.1 is input to the base station simulator in the 1 kHz, 1/3 octave band. This drive level shall be used for the T-Coil signal test (ABM1) at f = 1 kHz. Either a sine wave at 1025 Hz or a voice-like signal, band-limited to the 1 kHz 1/3 octave, as defined in 7.4.2, shall be used for the reference audio signal. If interference is found at 1025 Hz, an alternate nearby reference audio signal frequency may be used. The same drive level will be used for the ABM1 frequency response measurements at each 1/3 octave band center frequency. The EUT volume control may be set at any level up to maximum, provided that a signal at any frequency at maximum modulation would not result in clipping or signal overload.
3. Determine the magnetic measurement locations for the EUT, if not already specified by the manufacturer, as described in 7.4.4.1.1 and 7.4.4.2.
4. At each measurement location, measure and record the desired T-Coil magnetic signals (ABM1 at f_i) as described in 7.4.4.2 in each individual ISO 266-1975 R10 standard 1/3 octave band. The desired audio band input frequency (f_i) shall be centered in each 1/3 octave band maintaining the same drive level as determined in Step 2 and the reading taken for that band. Equivalent methods of determining the frequency response may also be employed, such as fast Fourier transform (FFT) analysis using noise excitation or input–output comparison using simulated speech. The full-band integrated or half-band integrated probe output, as described in D.9, may be used, as long as the appropriate calibration curve is applied to the measured result, so as to yield an accurate measurement of the field magnitude. (The resulting measurement shall be an accurate measurement in dB A/m.) All measurements of the desired signal shall be shown to be of the desired signal and not of an undesired signal. This may be shown by turning the desired signal on and off with the probe measuring the same location. If the scanning method is used, the scans shall show that all measurement points selected for the ABM1 measurement meet the ambient and test system noise criterion in 7.3.1.
5. At the measurement location for each orientation, measure and record the undesired broadband audio magnetic signal (ABM2) as described in 7.4.4.4 with no audio signal applied (or digital zero applied, if appropriate) using A-weighting, and the half-band integrator. Calculate the ratio of the desired to undesired signal strength (i.e., signal quality).
6. Determine the category that properly classifies the signal quality based on Table 8.5.

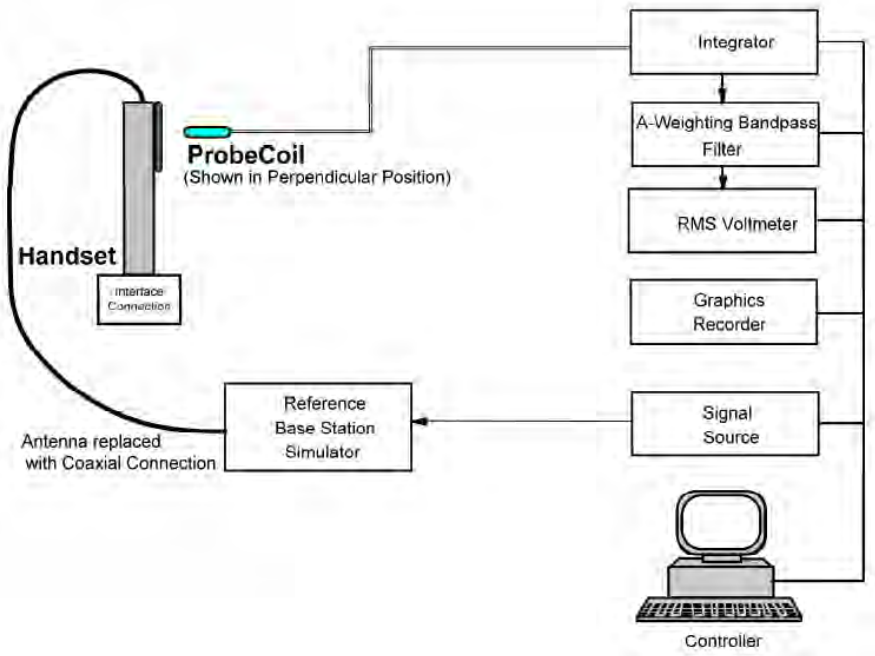


Fig-3.6 T-Coil Measurement Test Setup

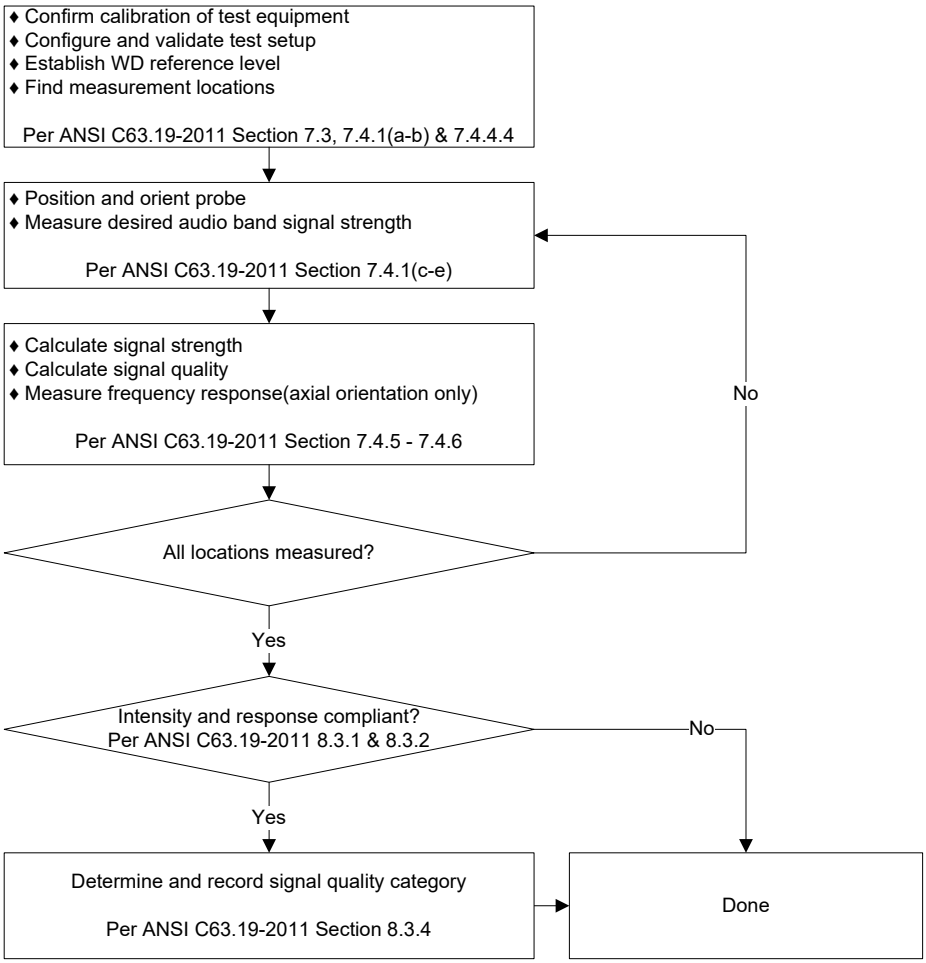


Fig-3.7 T-Coil Signal Test Flowchart

3.5 Test System Setup and Audio Input Level

The test setup shown in below is to extend DASY6 system with the capability of Audio Band Magnetic (ABM) measurements according to standard ANSI C63.19-2011. Together with the HAC RF extension, it permits complete characterization of the emissions of a wireless device (WD). The signals measured during these tests represent the field picked up by the T-Coil of a hearing aid. Using DASY52 software, these orthogonal axes can be scanned with a probe incorporating a single sensor coil. The WD is mounted on the Test Arch Phantom. The acoustic center of the WD is mounted in such a way that it is centered, and this represents the reference for the combination of ABM and RF field evaluation. The ABM fields of the WD (frequency range <20 kHz) are scanned with a fully RF-shielded active 1-D probe. The probe axis is oriented in the space diagonal to the three orthogonal axes, and its single sensor can be oriented to the axes by 120 degree rotation. The probe signal is evaluated by an Audio Magnetic Measurement Instrument (AMMI) which is interfaced to the DASY52 computer via USB. The AMMI also provides test and calibration signals and interfaces to the Helmholtz Audio Magnetic Calibration Coil (AMCC). Through the connector at the AMMI, predefined or user-definable audio signals are available for injection into the WD during the test.

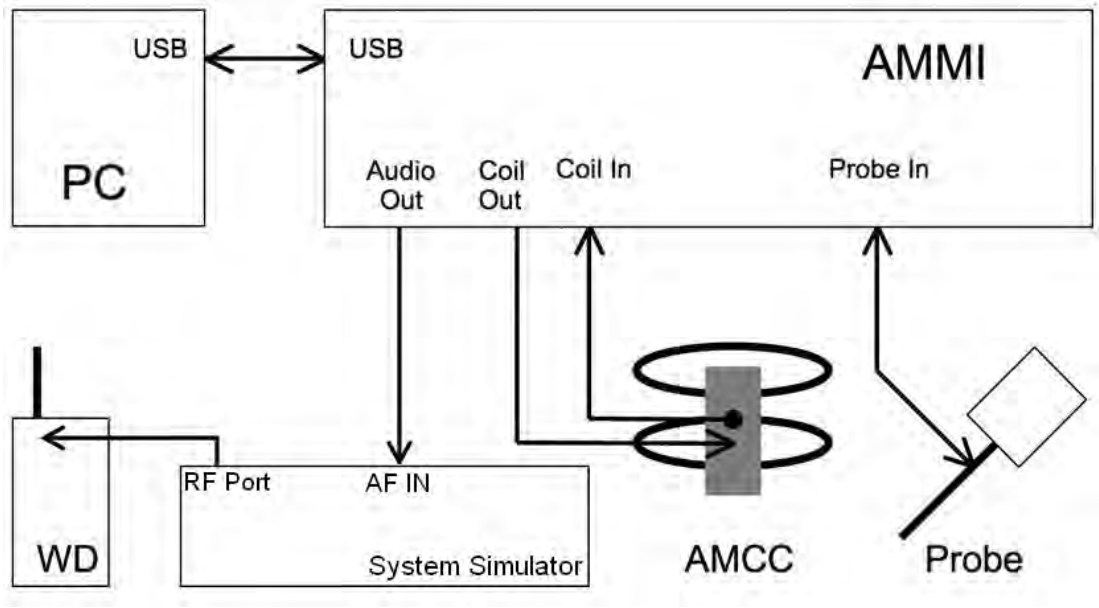


Fig-3.8 System Setup for T-Coil Testing

According to KDB 285076 D02, T-Coil testing for VoLTE and VoWiFi requires test instrumentation that can (1) for the system to be able to establish an IP call from/to the handset under test, (2) through an IMS (IP Multimedia Subsystem) and SIP/IP server, (3) to an analog audio adapter containing the permissible set of codecs used by the device under test, and (4) inject the necessary C63.19 test tones at the average speech level for the measurement. The test setup is illustrated in Figure 3.9. The R&S CMW500 was used as system simulator for VoLTE and VoWiFi T-Coil testing. The DAU (Data Application Unit) in CMW500 integrates IMS and SIP/IP server that can establish VoLTE and Wi-Fi calling, and transport the test tones from AMMI (Audio Magnetic Measuring Instrument) to EUT.

Wi-Fi Calling: This device supports Wi-Fi calling which is an extended feature of the carriers CMRS service to offload VoLTE calls onto local area networks over Wi-Fi via the internet and is subject to HAC assessment for phones with a HAC rating. The evaluation of HAC for Wi-Fi calling follows the same test procedures and methods described in the previous section for VoLTE and the CMW 500 is also used to originate the Wi-Fi calling. The only difference is that the audio reference level is set at -20 dBm0 for Wi-Fi calling per KDB 285076 D02 requirement.

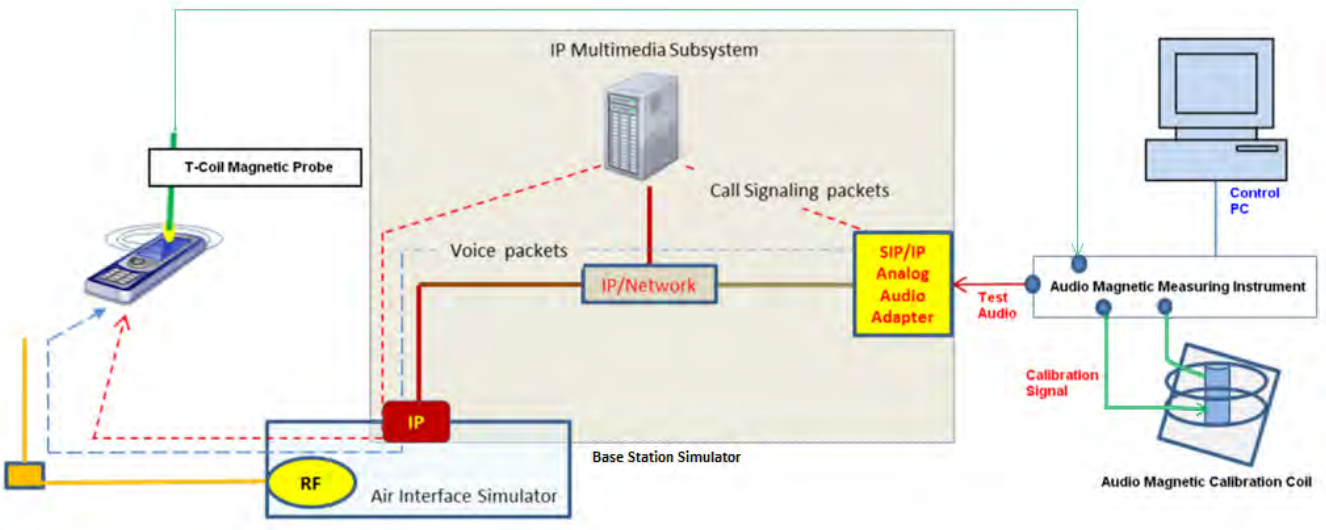


Fig-3.9 Testing Setup for VoLTE, and VoWiFi Calling

According to KDB 285076 D02 and ANSI C63.19-2011, the applied reference input level applied at the calibrated reference point for legacy protocols fixed to specific air-interfaces are defined in 7.4.2.1 Table 7.1 of ANSI C63.19-2011 or the ANSI C63.19-2011 VoLTE interpretation of July 2012 with −16 dBm0. The normal speech input level for HAC T-coil tests shall be set to -16 dBm0 for GSM, WCDMA and VoLTE, and -18 dBm0 for CDMA. The technical description below shows a possibility to evaluate and set the correct level with the HAC T-Coil setup with an R&S communication tester with codec.

For protocols not listed in Table 7.1 of ANSI C63.19-2011 or the ANSI C63.19-2011 VoLTE interpretation, the average speech level of −20 dBm0 should be used. For VoWiFi and OTT Calling, the average speech level of -20 dBm0 was used for testing.

Reference Audio Input Level:
-16 dBm0 is used for GSM, WCDMA, and VoLTE
-18 dBm0 is used for CDMA
-20 dBm0 is used for VoWiFi, and OTT Calling

The speech levels with the settings at the AF connector of R&S CMW500 have been calibrated, and it can be set manually to ensure the specific full-scale speech level during T-Coil testing. For an example, the gain setting for -16 dBm0 has been calculated through below formula.

3.14 dBm0 = ***X*** dBV = -3.01 dBV
-16 dBm0 = $\boldsymbol{L_{-16dBm0}}$ dBV = -22.00 dBV
Gain 100 = ***G*** dBV = 3.13 dBV
Difference for -16 dBm0 = $\boldsymbol{D_{-16dBm0}}$ = $\boldsymbol{L_{-16dBm0}}$ – ***G*** = -22 – 3.13 = -25.13 dBV
Resulting Gain for -16 dBm0 = 10 ^ ($\boldsymbol{D_{-16dBm0}}$ / 20) x 100 = 5.54
Gain Setting = Resulting Gain x Required Gain Factor
Gain setting for voice 1kHz = 5.54 x 4.33 = 23.99
Gain setting for voice 300-3kHz = 5.54 x 8.48 = 46.98

The gain setting for other signal types need to be adjusted to achieve the same average level. Those signal types have the following differences/factors compared to the 1 kHz sine signal:

Signal Type	Duration (s)	BWC (dB)	Required Gain Factor
1 kHz sine	-	0.0	1.00
48k_voice_1kHz	1	0.16	4.33
48k_voice_300-3000	2	10.8	8.48

3.6 PAG Reuse Section: Test System Setup for OTT VoIP

OTT Calling: This device supports Over-the-Top VoIP calling via the pre-installed application, Google Duo and associated OPUS codec**.** VoIP capabilities require HAC assessment when voice calls are supported over the cellular or Wi-Fi data connection via pre-installed applications. This assessment is subject to Pre-Approval Guidance.

The test setup for OTT calling uses the R&S CMW500 as a base station simulator to establish a wireless data call through cellular or Wi-Fi air interface to the device under test. The CMW500's data application unit is connected via internet (Ethernet connection to router) to the OTT service such as Google Duo. An auxiliary device is also connected to the OTT service via a wireless router. A VoIP call is then established between the DUT and the auxiliary device via the VoIP service. The auxiliary device includes special version software that allows it to configure and monitor the OPUS codec bit rate during the OTT call. An investigation is made across all supported codec bit rates and across the various air interfaces (e.g. EGPRS, HSPA, EV-DO, FDD-LTE, TDD-LTE, Wi-Fi etc.) between DUT and CMW500 to determine the worst case T-Coil rating.

According to KDB 285076 D02v03, the average speech level of -20 dBm0 should be used when the protocol is not listed in ANSI C63.19-2011 or ANSI C63.19-2011 VoLTE interpretation. Hence, the testing audio signal from AMMI Audio Out has been calibrated for all test signal types (1 kHz sine, 1 kHz voice and 300 to 3 kHz voice) to determine the gain settings required to inject the audio signal at a level of **-20 dBm0** into the auxiliary device during HAC T-Coil tests for OTT calling.

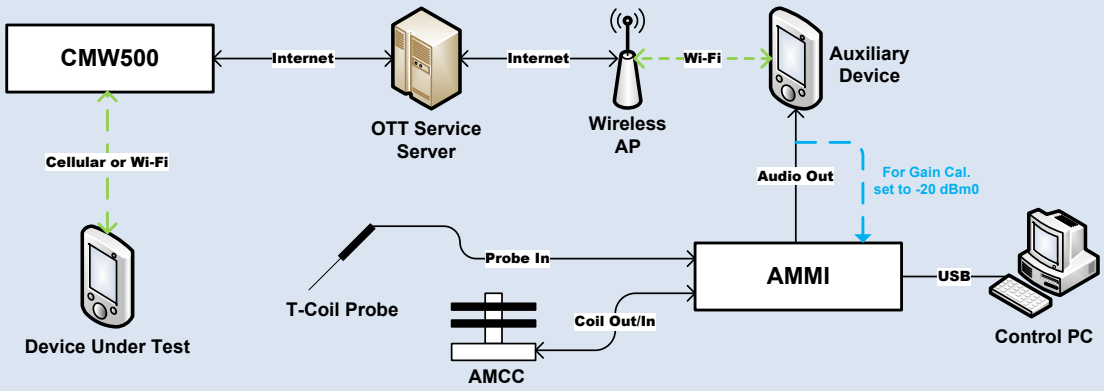


Fig-3.10 Testing Setup for OTT Calling

The calibration to set the AMMI gain level at the input to the auxiliary device is performed as follows:

1. A real time audio analyzer application on the auxiliary device[1] is used to measure the audio level into the device. The AMMI gain values are adjusted to obtain a signal level of 0 dBFS at the auxiliary audio input for the 1 kHz sine wave signal.
2. The gain value recorded in step (1) above is then reduced by 23.14 dB to obtain a signal level of -23.14 dBFS, (equivalent to -20 dBm0), at the auxiliary device's audio input. The gain values are confirmed using the real time audio analyzer to verify the signal level.
3. The gain values calculated in step 2 are adjusted for the 1 kHz voice and 300 to 3 kHz voice signals using the correction values noted in section 3.5.

Note 1: The gain and algorithmic processing in the acoustic path of the auxiliary device are disabled to ensure that the measured signal level is the signal level at the input to the codec.

4. HAC Measurement Evaluation

4.1 Measurement Criteria

The HAC Standard ANSI C63.19-2011 represents performance requirements for acceptable interoperability of hearing aids with wireless communications devices. When these parameters are met, a hearing aid operates acceptably in close proximity to a wireless communications device.

4.1.1 Field Intensity

When measured as specified in this standard, the T-Coil signal shall be ≥ –18 dB (A/m) at 1 kHz, in a 1/3 octave band filter for all orientations.

4.1.2 Frequency Response

The frequency response of the axial component of the magnetic field, measured in 1/3 octave bands, shall follow the below response curve, over the frequency range 300 Hz to 3000 Hz. Figure 4.1 and Figure 4.2 provide the boundaries for the specified frequency. These response curves are for true field strength measurements of the T-Coil signal. Thus the 6 dB/octave probe response has been corrected from the raw readings.

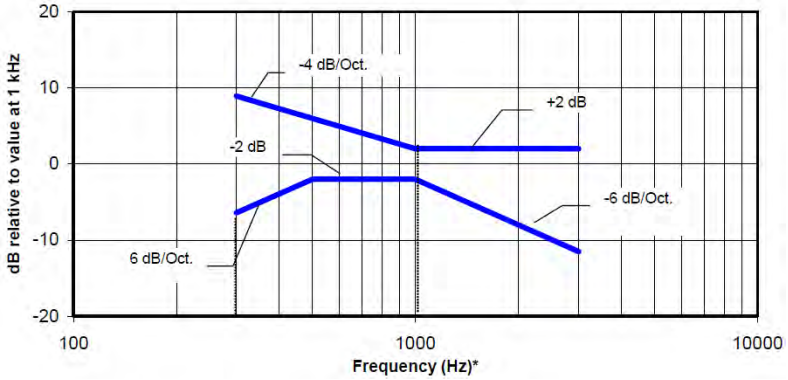


Fig-4.1 Boundaries for EUT with a field ≤ -15 dB (A/m) at 1 kHz

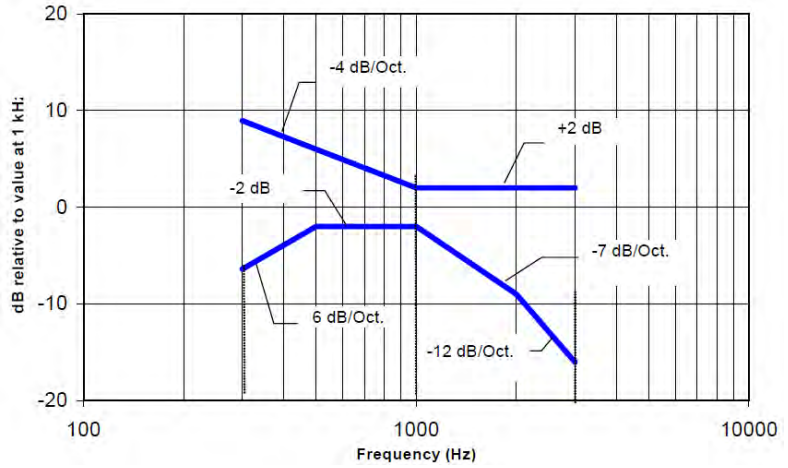


Fig-4.2 Boundaries for EUT with a field > -15 dB (A/m) at 1 kHz

4.1.3 Signal Quality

The worst signal quality of the three T-Coil signal measurements shall be used to determine the T-Coil mode category per below table.

Category	Telephone Parameters WD Signal Quality (Signal to Noise Ratio, in dB)
Category T1	0 – 10
Category T2	10 – 20
Category T3	20 – 30
Category T4	> 30

4.2 EUT Configuration and Setting

For HAC T-Coil testing, the EUT was linked and controlled by base station emulator. Communication between the EUT and the emulator was established by coaxial connection. The EUT was set from the emulator to radiate maximum output power during HAC testing. Also EUT was set to mute on, maximum volume, and backlight off during T-Coil testing.

4.3 HAC T-Coil Testing Results

4.3.1 GSM CMRS Voice Testing Results

Codec Investigation

Band	Channel	Codec Setting	Probe Orientation	ABM1 (dB A/m)	ABM2 (dB A/m)	Frequency Response Margin (dB)	Frequency Response	SNR (dB)
GSM850	189	FR V1	Axial (Z)	-2.36	-30.13	0.4	Pass	27.77
GSM850	189	HR V1	Axial (Z)	-1.92	-32.99	0.68	Pass	31.07

Test Summary

Plot No.	Band	Channel	Codec Setting	Probe Orientation	ABM1 (dB A/m)	ABM2 (dB A/m)	Ambient Noise (dB A/m)	Frequency Response Margin (dB)	Frequency Response	SNR (dB)	FCC Limit (dB)	FCC Margin (dB)	T-Rating
03	GSM850	189	FR V1	Axial (Z)	-2.36	-30.13	-43.73	1.1	Pass	27.77	20	-7.77	T3
03	GSM850	189	FR V1	Radial (Y)	-13.3	-48.96	-51.45	N/A	N/A	35.66	20	-15.66	T4
04	GSM1900	661	FR V1	Axial (Z)	-2.02	-37.63	-43.73	1.2	Pass	35.61	20	-15.61	T4
04	GSM1900	661	FR V1	Radial (Y)	-12.06	-49.5	-51.45	N/A	N/A	37.44	20	-17.44	T4

4.3.2 WCDMA CMRS Voice Testing Results

Codec Investigation

Band	Channel	Codec Setting	Probe Orientation	ABM1 (dB A/m)	ABM2 (dB A/m)	Frequency Response Margin (dB)	Frequency Response	SNR (dB)
WCDMA V	4182	AMR 4.75kbps	Axial (Z)	-3.41	-39.68	1.86	Pass	36.27
WCDMA V	4182	AMR 7.95kbps	Axial (Z)	-2.78	-44.8	1.37	Pass	42.02
WCDMA V	4182	AMR 12.2kbps	Axial (Z)	-2.99	-45.26	1.48	Pass	42.27

Test Summary

Plot No.	Band	Channel	Codec Setting	Probe Orientation	ABM1 (dB A/m)	ABM2 (dB A/m)	Ambient Noise (dB A/m)	Frequency Response Margin (dB)	Frequency Response	SNR (dB)	FCC Limit (dB)	FCC Margin (dB)	T-Rating
08	WCDMA II	9400	AMR 4.75kbps	Axial (Z)	-3.38	-45.2	-44.3	1.9	Pass	41.82	20	-21.82	T4
08	WCDMA II	9400	AMR 4.75kbps	Radial (Y)	-11.9	-51.3	-51.45	N/A	N/A	39.40	20	-19.4	T4
09	WCDMA IV	1413	AMR 4.75kbps	Axial (Z)	-3.24	-43.78	-44.3	1.04	Pass	40.54	20	-20.54	T4
09	WCDMA IV	1413	AMR 4.75kbps	Radial (Y)	-11.23	-50.94	-51.45	N/A	N/A	39.71	20	-19.71	T4
10	WCDMA V	4182	AMR 4.75kbps	Axial (Z)	-3.41	-39.68	-44.3	1.86	Pass	36.27	20	-16.27	T4
10	WCDMA V	4182	AMR 4.75kbps	Radial (Y)	-11.85	-51.53	-51.45	N/A	N/A	39.68	20	-19.68	T4

4.3.3 CDMA CMRS Voice Testing Results

Codec Investigation

Band	Channel	Codec Setting	Probe Orientation	ABM1 (dB A/m)	ABM2 (dB A/m)	Frequency Response Margin (dB)	Frequency Response	SNR (dB)
CDMA BC0	384	RC1+SO68	Axial (Z)	-2.04	-44.23	1.24	Pass	42.19
CDMA BC0	384	RC3+SO68	Axial (Z)	-5.28	-44.43	1.24	Pass	39.15
CDMA BC0	384	RC4+SO68	Axial (Z)	-4.35	-45.63	1.1	Pass	41.28

Test Summary

Plot No.	Band	Channel	Codec Setting	Probe Orientation	ABM1 (dB A/m)	ABM2 (dB A/m)	Ambient Noise (dB A/m)	Frequency Response Margin (dB)	Frequency Response	SNR (dB)	FCC Limit (dB)	FCC Margin (dB)	T-Rating
15	CDMA BC0	384	RC3+SO3	Axial (Z)	-5.28	-44.43	-44.3	1.24	Pass	39.15	20	-19.15	T4
15	CDMA BC0	384	RC3+SO3	Radial (Y)	-13.92	-51.48	-51.45	N/A	N/A	37.56	20	-17.56	T4
18	CDMA BC1	600	RC3+SO3	Axial (Z)	-6.36	-44.39	-44.3	1.37	Pass	38.03	20	-18.03	T4
18	CDMA BC1	600	RC3+SO3	Radial (Y)	-12.98	-51.34	-51.45	N/A	N/A	38.36	20	-18.36	T4
19	CDMA BC10	580	RC3+SO3	Axial (Z)	-4.34	-44.77	-44.3	1.17	Pass	40.43	20	-20.43	T4
19	CDMA BC10	580	RC3+SO3	Radial (Y)	-13.8	-50.93	-51.45	N/A	N/A	37.13	20	-17.13	T4

4.3.4 VoLTE Testing Results

Radio Configuration Investigation

Air Interface	Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Channel	UL-DL Configuration	Probe Orientation	ABM1 (dB A/m)	ABM2 (dB A/m)	SNR (dB)
FDD-LTE	LTE B2	20	QPSK	1	0	18900	N/A	Axial (Z)	-4.95	-44.48	39.53
FDD-LTE	LTE B2	20	QPSK	1	50	18900	N/A	Axial (Z)	-4.76	-44.25	39.49
FDD-LTE	LTE B2	20	QPSK	1	99	18900	N/A	Axial (Z)	-4.79	-44.63	39.84
FDD-LTE	LTE B2	20	QPSK	50	0	18900	N/A	Axial (Z)	-4.69	-44.31	39.62
FDD-LTE	LTE B2	20	QPSK	50	25	18900	N/A	Axial (Z)	-4.43	-44.63	40.2
FDD-LTE	LTE B2	20	QPSK	50	50	18900	N/A	Axial (Z)	-4.99	-44.33	39.34
FDD-LTE	LTE B2	20	QPSK	100	0	18900	N/A	Axial (Z)	-4.71	-43.87	39.16
FDD-LTE	LTE B2	20	16QAM	100	0	18900	N/A	Axial (Z)	-4.36	-43.83	39.47
FDD-LTE	LTE B2	20	64QAM	100	0	18900	N/A	Axial (Z)	-4.92	-44.47	39.55
FDD-LTE	LTE B2	15	QPSK	100	0	18900	N/A	Axial (Z)	-4.47	-44.01	39.54
FDD-LTE	LTE B2	10	QPSK	100	0	18900	N/A	Axial (Z)	-5.27	-44.48	39.21
FDD-LTE	LTE B2	5	QPSK	100	0	18900	N/A	Axial (Z)	-5.01	-44.51	39.5
FDD-LTE	LTE B2	3	QPSK	100	0	18900	N/A	Axial (Z)	-4.92	-44.28	39.36
FDD-LTE	LTE B2	1.4	QPSK	100	0	18900	N/A	Axial (Z)	-4.09	-44.3	40.21
TDD-LTE	LTE B41	20	QPSK	100	0	40620	0	Axial (Z)	-4.72	-43.73	39.01
TDD-LTE	LTE B41	20	QPSK	100	0	40620	1	Axial (Z)	-4.07	-43.59	39.52
TDD-LTE	LTE B41	20	QPSK	100	0	40620	2	Axial (Z)	-3.49	-44.01	40.52
TDD-LTE	LTE B41	20	QPSK	100	0	40620	3	Axial (Z)	-4.12	-43.99	39.87
TDD-LTE	LTE B41	20	QPSK	100	0	40620	4	Axial (Z)	-4.93	-44.04	39.11
TDD-LTE	LTE B41	20	QPSK	100	0	40620	5	Axial (Z)	-4.2	-43.89	39.69
TDD-LTE	LTE B41	20	QPSK	100	0	40620	6	Axial (Z)	-4.19	-43.61	39.42

Codec Investigation

Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Channel	Codec Setting	Probe Orientation	ABM1 (dB A/m)	ABM2 (dB A/m)	Frequency Response Margin (dB)	Frequency Response	SNR (dB)
LTE B2	20	QPSK	100	0	18900	AMR NB 4.75kbps	Axial (Z)	-3.14	-44.5	1.55	Pass	41.36
LTE B2	20	QPSK	100	0	18900	AMR NB 12.2kbps	Axial (Z)	-2.47	-44.26	1.48	Pass	41.79
LTE B2	20	QPSK	100	0	18900	AMR WB 6.6kbps	Axial (Z)	-4.71	-43.87	0.93	Pass	39.16
LTE B2	20	QPSK	100	0	18900	AMR WB 23.85kbps	Axial (Z)	-3.61	-43.93	1.44	Pass	40.32
LTE B2	20	QPSK	100	0	18900	EVS NB 5.9kbps	Axial (Z)	-4.68	-44.79	1.85	Pass	40.11
LTE B2	20	QPSK	100	0	18900	EVS NB 24.4kbps	Axial (Z)	-5.77	-46.08	1.54	Pass	40.31
LTE B2	20	QPSK	100	0	18900	EVS WB 5.9kbps	Axial (Z)	-5.68	-46.5	1.41	Pass	40.82
LTE B2	20	QPSK	100	0	18900	EVS WB 24.4kbps	Axial (Z)	-4.85	-46.13	1.66	Pass	41.28
LTE B2	20	QPSK	100	0	18900	EVS SWB 9.6kbps	Axial (Z)	-3.39	-44.58	1.46	Pass	41.19
LTE B2	20	QPSK	100	0	18900	EVS SWB 24.4kbps	Axial (Z)	-5.69	-45.01	1.06	Pass	39.32
LTE B41	20	QPSK	100	0	40620	AMR NB 4.75kbps	Axial (Z)	-3.22	-43.64	1.72	Pass	40.42
LTE B41	20	QPSK	100	0	40620	AMR NB 12.2kbps	Axial (Z)	-2.95	-43.67	1.44	Pass	40.72
LTE B41	20	QPSK	100	0	40620	AMR WB 6.6kbps	Axial (Z)	-4.72	-43.73	0.62	Pass	39.01
LTE B41	20	QPSK	100	0	40620	AMR WB 23.85kbps	Axial (Z)	-3.66	-43.99	1.39	Pass	40.33
LTE B41	20	QPSK	100	0	40620	EVS NB 5.9kbps	Axial (Z)	-4.45	-45.57	1.85	Pass	41.12
LTE B41	20	QPSK	100	0	40620	EVS NB 24.4kbps	Axial (Z)	-2.94	-43	1.61	Pass	40.06
LTE B41	20	QPSK	100	0	40620	EVS WB 5.9kbps	Axial (Z)	-2.37	-42.4	1.79	Pass	40.03
LTE B41	20	QPSK	100	0	40620	EVS WB 24.4kbps	Axial (Z)	-4.96	-46.22	1.2	Pass	41.26
LTE B41	20	QPSK	100	0	40620	EVS SWB 9.6kbps	Axial (Z)	-3.86	-43.91	1.85	Pass	40.05
LTE B41	20	QPSK	100	0	40620	EVS SWB 24.4kbps	Axial (Z)	-3.7	-44.65	1.68	Pass	40.95

Test Summary

Plot No.	Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Channel	UL-DL Configuration	Codec Setting	Probe Orientation	ABM1 (dB A/m)	ABM2 (dB A/m)	Ambient Noise (dB A/m)	Frequency Response Margin (dB)	Frequency Response	SNR (dB)	FCC Limit (dB)	FCC Margin (dB)	T-Rating
62	LTE B2	20	QPSK	100	0	18900	N/A	AMR WB 6.6kbps	Axial (Z)	-4.71	-43.87	-44.3	0.93	Pass	39.16	20	-19.16	T4
62	LTE B2	20	QPSK	100	0	18900	N/A	AMR WB 6.6kbps	Radial (Y)	-13.14	-51.09	-51.45	N/A	N/A	37.95	20	-17.95	T4
63	LTE B4	20	QPSK	100	0	20175	N/A	AMR WB 6.6kbps	Axial (Z)	-2.9	-44.54	-43.83	0.55	Pass	41.64	20	-21.64	T4
63	LTE B4	20	QPSK	100	0	20175	N/A	AMR WB 6.6kbps	Radial (Y)	-13.66	-51.08	-51.55	N/A	N/A	37.42	20	-17.42	T4
64	LTE B5	10	QPSK	50	0	20525	N/A	AMR WB 6.6kbps	Axial (Z)	-4.87	-45	-43.83	0.72	Pass	40.13	20	-20.13	T4
64	LTE B5	10	QPSK	50	0	20525	N/A	AMR WB 6.6kbps	Radial (Y)	-14.26	-51.13	-51.55	N/A	N/A	36.87	20	-16.87	T4
65	LTE B7	20	QPSK	100	0	21100	N/A	AMR WB 6.6kbps	Axial (Z)	-5.47	-44.08	-43.83	0.75	Pass	38.61	20	-18.61	T4
65	LTE B7	20	QPSK	100	0	21100	N/A	AMR WB 6.6kbps	Radial (Y)	-13.2	-51.14	-51.55	N/A	N/A	37.94	20	-17.94	T4
66	LTE B12	10	QPSK	50	0	23095	N/A	AMR WB 6.6kbps	Axial (Z)	-4.47	-45.72	-44.75	2	Pass	41.25	20	-21.25	T4
66	LTE B12	10	QPSK	50	0	23095	N/A	AMR WB 6.6kbps	Radial (Y)	-11.32	-51.34	-51.38	N/A	N/A	40.02	20	-20.02	T4
67	LTE B13	10	QPSK	50	0	23230	N/A	AMR WB 6.6kbps	Axial (Z)	-3.78	-44.98	-43.83	1.66	Pass	41.20	20	-21.2	T4
67	LTE B13	10	QPSK	50	0	23230	N/A	AMR WB 6.6kbps	Radial (Y)	-12.74	-51.43	-51.55	N/A	N/A	38.69	20	-18.69	T4
68	LTE B14	10	QPSK	50	0	23330	N/A	AMR WB 6.6kbps	Axial (Z)	-4.13	-45.03	-43.83	1.23	Pass	40.90	20	-20.9	T4
68	LTE B14	10	QPSK	50	0	23330	N/A	AMR WB 6.6kbps	Radial (Y)	-12.62	-51.36	-51.55	N/A	N/A	38.74	20	-18.74	T4
69	LTE B17	10	QPSK	50	0	23790	N/A	AMR WB 6.6kbps	Axial (Z)	-5.19	-45.48	-44.75	0.45	Pass	40.29	20	-20.29	T4
69	LTE B17	10	QPSK	50	0	23790	N/A	AMR WB 6.6kbps	Radial (Y)	-14.13	-55.12	-51.38	N/A	N/A	40.99	20	-20.99	T4
70	LTE B25	20	QPSK	100	0	26365	N/A	AMR WB 6.6kbps	Axial (Z)	-4.82	-43.81	-44.89	0.7	Pass	38.99	20	-18.99	T4
70	LTE B25	20	QPSK	100	0	26365	N/A	AMR WB 6.6kbps	Radial (Y)	-13.16	-50.79	-51.39	N/A	N/A	37.63	20	-17.63	T4
71	LTE B26	15	QPSK	75	0	26865	N/A	AMR WB 6.6kbps	Axial (Z)	-4.95	-45.42	-43.83	0.86	Pass	40.47	20	-20.47	T4
71	LTE B26	15	QPSK	75	0	26865	N/A	AMR WB 6.6kbps	Radial (Y)	-12.66	-51.93	-51.55	N/A	N/A	39.27	20	-19.27	T4
72	LTE B30	10	QPSK	50	0	27710	N/A	AMR WB 6.6kbps	Axial (Z)	-4.16	-43.83	-43.83	1.1	Pass	39.67	20	-19.67	T4
72	LTE B30	10	QPSK	50	0	27710	N/A	AMR WB 6.6kbps	Radial (Y)	-13.68	-51.33	-51.55	N/A	N/A	37.65	20	-17.65	T4
74	LTE B66	20	QPSK	100	0	132322	N/A	AMR WB 6.6kbps	Axial (Z)	-4.92	-44.91	-44.75	1.01	Pass	39.99	20	-19.99	T4
74	LTE B66	20	QPSK	100	0	132322	N/A	AMR WB 6.6kbps	Radial (Y)	-13.53	-51.89	-51.38	N/A	N/A	38.36	20	-18.36	T4
75	LTE B71	20	QPSK	100	0	133297	N/A	AMR WB 6.6kbps	Axial (Z)	-5.24	-46.95	-44.75	0.74	Pass	41.71	20	-21.71	T4
75	LTE B71	20	QPSK	100	0	133297	N/A	AMR WB 6.6kbps	Radial (Y)	-13.42	-52.17	-51.38	N/A	N/A	38.75	20	-18.75	T4
76	LTE B38	20	QPSK	100	0	38000	N/A	AMR WB 6.6kbps	Axial (Z)	-4.18	-44.44	-43.83	0.74	Pass	40.26	20	-20.26	T4
76	LTE B38	20	QPSK	100	0	38000	N/A	AMR WB 6.6kbps	Radial (Y)	-13.84	-49.12	-51.55	N/A	N/A	35.28	20	-15.28	T4
80	LTE B40	20	QPSK	100	0	39150	N/A	AMR WB 6.6kbps	Axial (Z)	-4.69	-44.03	-43.83	1.4	Pass	39.34	20	-19.34	T4
80	LTE B40	20	QPSK	100	0	39150	N/A	AMR WB 6.6kbps	Radial (Y)	-13.37	-49.88	-51.55	N/A	N/A	36.51	20	-16.51	T4
77	LTE B41	20	QPSK	100	0	40620	N/A	AMR WB 6.6kbps	Axial (Z)	-4.72	-43.73	-44.89	0.62	Pass	39.01	20	-19.01	T4
77	LTE B41	20	QPSK	100	0	40620	N/A	AMR WB 6.6kbps	Radial (Y)	-12.97	-48.31	-51.39	N/A	N/A	35.34	20	-15.34	T4
78	LTE B42	20	QPSK	100	0	42590	N/A	AMR WB 6.6kbps	Axial (Z)	-5.18	-37.76	-44.99	1.13	Pass	32.58	20	-12.58	T4
78	LTE B42	20	QPSK	100	0	42590	N/A	AMR WB 6.6kbps	Radial (Y)	-14.99	-50.99	-51.66	N/A	N/A	36	20	-16	T4
79	LTE B43	20	QPSK	100	0	44215	N/A	AMR WB 6.6kbps	Axial (Z)	-7.36	-36.59	-44.99	0.87	Pass	29.23	20	-9.23	T3
79	LTE B43	20	QPSK	100	0	44215	N/A	AMR WB 6.6kbps	Radial (Y)	-14.43	-47.48	-51.66	N/A	N/A	33.05	20	-13.05	T4
73	LTE B48	20	QPSK	100	0	56210	N/A	AMR WB 6.6kbps	Axial (Z)	-5.82	-36.63	-44.99	1.51	Pass	30.81	20	-10.81	T4
73	LTE B48	20	QPSK	100	0	56210	N/A	AMR WB 6.6kbps	Radial (Y)	-14.96	-49.78	-51.66	N/A	N/A	34.82	20	-14.82	T4

4.3.5 VoWiFi Testing Results

Radio Configuration Investigation

Band	Mode	Data Rate	Channel	Probe Orientation	ABM1 (dB A/m)	ABM2 (dB A/m)	SNR (dB)
WLAN 2.4G	802.11b	1Mbps	6	Axial (Z)	-7.93	-44.22	36.29
WLAN 2.4G	802.11b	11Mbps	6	Axial (Z)	-9.94	-46.31	36.37
WLAN 2.4G	802.11g	6Mbps	6	Axial (Z)	-7.65	-44.08	36.43
WLAN 2.4G	802.11g	54Mbps	6	Axial (Z)	-9.06	-45.53	36.47
WLAN 2.4G	802.11n HT20	MCS0	6	Axial (Z)	-10.05	-46.36	36.31
WLAN 2.4G	802.11n HT20	MCS7	6	Axial (Z)	-9.68	-46.07	36.39
WLAN 2.4G	802.11n HT40	MCS0	6	Axial (Z)	-8.28	-46.18	37.9
WLAN 2.4G	802.11n HT40	MCS7	6	Axial (Z)	-9.31	-45.95	36.64
WLAN 2.4G	802.11ac VHT20	MCS0	6	Axial (Z)	-10.42	-46.78	36.36
WLAN 2.4G	802.11ac VHT20	MCS8	6	Axial (Z)	-10.86	-47.18	36.32
WLAN 2.4G	802.11ac VHT40	MCS0	6	Axial (Z)	-9.27	-46.89	37.62
WLAN 2.4G	802.11ac VHT40	MCS8	6	Axial (Z)	-7.05	-43.45	36.4
WLAN 5.2G	802.11a	6Mbps	40	Axial (Z)	-8.74	-44.03	35.29
WLAN 5.2G	802.11a	54Mbps	40	Axial (Z)	-9.28	-45.24	35.96
WLAN 5.2G	802.11n HT20	MCS0	40	Axial (Z)	-9.74	-45.42	35.68
WLAN 5.2G	802.11n HT20	MCS7	40	Axial (Z)	-9.31	-44.73	35.42
WLAN 5.2G	802.11n HT40	MCS0	38	Axial (Z)	-9.11	-45.8	36.69
WLAN 5.2G	802.11n HT40	MCS7	38	Axial (Z)	-8.76	-45.62	36.86
WLAN 5.2G	802.11ac VHT20	MCS0	40	Axial (Z)	-9.19	-45.83	36.64
WLAN 5.2G	802.11ac VHT20	MCS8	40	Axial (Z)	-8.78	-45.24	36.46
WLAN 5.2G	802.11ac VHT40	MCS0	38	Axial (Z)	-8.58	-45.7	37.12
WLAN 5.2G	802.11ac VHT40	MCS9	38	Axial (Z)	-8.3	-45.7	37.4

Codec Investigation

Band	Mode	Data Rate	Channel	Codec Setting	Probe Orientation	ABM1 (dB A/m)	ABM2 (dB A/m)	Frequency Response Margin (dB)	Frequency Response	SNR (dB)
WLAN 5.2G	802.11a	6Mbps	40	AMR NB 4.75kbps	Axial (Z)	6.74	-30.24	1.28	Pass	36.98
WLAN 5.2G	802.11a	6Mbps	40	AMR NB 12.2kbps	Axial (Z)	-6.47	-43.79	0.75	Pass	37.32
WLAN 5.2G	802.11a	6Mbps	40	AMR WB 6.6kbps	Axial (Z)	-8.74	-44.03	0.75	Pass	35.29
WLAN 5.2G	802.11a	6Mbps	40	AMR WB 23.85kbps	Axial (Z)	-8.09	-43.64	1.05	Pass	35.55
WLAN 5.2G	802.11a	6Mbps	40	EVS NB 5.9kbps	Axial (Z)	-8.6	-45.5	1.19	Pass	36.9
WLAN 5.2G	802.11a	6Mbps	40	EVS NB 24.4kbps	Axial (Z)	-8.56	-44.02	0.91	Pass	35.46
WLAN 5.2G	802.11a	6Mbps	40	EVS WB 5.9kbps	Axial (Z)	-9	-45.02	1.34	Pass	36.02
WLAN 5.2G	802.11a	6Mbps	40	EVS WB 24.4kbps	Axial (Z)	-6.88	-42.76	0.98	Pass	35.88
WLAN 5.2G	802.11a	6Mbps	40	EVS SWB 9.6kbps	Axial (Z)	-6.9	-44.48	1	Pass	37.58
WLAN 5.2G	802.11a	6Mbps	40	EVS SWB 24.4kbps	Axial (Z)	-7.92	-45.12	1.05	Pass	37.2

Test Summary

Plot No.	Band	Mode	Data Rate	Channel	Codec Setting	Probe Orientation	ABM1 (dB A/m)	ABM2 (dB A/m)	Ambient Noise (dB A/m)	Frequency Response Margin (dB)	Frequency Response	SNR (dB)	FCC Limit (dB)	FCC Margin (dB)	T-Rating
74	WLAN 2.4G	802.11b	1Mbps	6	AMR WB 6.6kbps	Axial (Z)	-7.93	-44.22	-44.04	0.8	Pass	36.29	20	-16.29	T4
74	WLAN 2.4G	802.11b	1Mbps	6	AMR WB 6.6kbps	Radial (Y)	-16.79	-48.85	-51.49	N/A	N/A	32.06	20	-12.06	T4
86	WLAN 5.2G	802.11a	6Mbps	40	AMR WB 6.6kbps	Axial (Z)	-8.74	-44.03	-44.04	0.75	Pass	35.29	20	-15.29	T4
86	WLAN 5.2G	802.11a	6Mbps	40	AMR WB 6.6kbps	Radial (Y)	-17.02	-50.17	-51.49	N/A	N/A	33.15	20	-13.15	T4
105	WLAN 5.3G	802.11a	6Mbps	56	AMR WB 6.6kbps	Axial (Z)	-8.89	-43.75	-44.04	0.79	Pass	34.86	20	-14.86	T4
105	WLAN 5.3G	802.11a	6Mbps	56	AMR WB 6.6kbps	Radial (Y)	-16.48	-50.21	-51.49	N/A	N/A	33.73	20	-13.73	T4
106	WLAN 5.6G	802.11a	6Mbps	116	AMR WB 6.6kbps	Axial (Z)	-9.33	-39.66	-44.04	1.16	Pass	30.33	20	-10.33	T4
106	WLAN 5.6G	802.11a	6Mbps	116	AMR WB 6.6kbps	Radial (Y)	-17.46	-48.51	-51.49	N/A	N/A	31.05	20	-11.05	T4
107	WLAN 5.8G	802.11a	6Mbps	157	AMR WB 6.6kbps	Axial (Z)	-7.87	-42.91	-44.04	0.93	Pass	35.04	20	-15.04	T4
107	WLAN 5.8G	802.11a	6Mbps	157	AMR WB 6.6kbps	Radial (Y)	-17.19	-50.57	-51.49	N/A	N/A	33.38	20	-13.38	T4

4.3.6 OTT Voice Calling Testing Results

The device supported a pre-installed application, Google Duo, whose features allow the option of voice-only communications. According to KDB 285076 D02, all air interfaces via a data connection with an application providing voice functionality need to be considered for HAC testing. The Google Duo uses the audio codec as Opus and supports codec bit rate from 6 kbps to 75 kbps. All air interfaces capable of a data connection were evaluated.

The device supported a pre-installed application, Google Duo and Hangouts, whose features allow the option of voice-only communications. According to KDB 285076 D02, all air interfaces via a data connection with an application providing voice functionality need to be considered for HAC testing. The Google Duo and Hangouts use the audio codec as Opus and supports codec bit rate from 6 kbps to 75 kbps. All air interfaces capable of a data connection were evaluated.

The Android system in this device supports SIP (Session Initiation Protocol) calling stack that could be used to configure the native Android SIP client in the dialer for an internet call. The Android SIP calling stack supports audio codec as PCMU, PCMA, GSM-FR, GSM-EFR, and AMR-NB. All air interfaces capable of a data connection were evaluated.

Codec Investigation

Band	Mode	Channel	Application	Codec Setting	Probe Orientation	ABM1 (dB A/m)	ABM2 (dB A/m)	Frequency Response Margin (dB)	Frequency Response	SNR (dB)
GSM850	EDGE	189	Duo	Opus 6kbps	Axial (Z)	11.55	-22.15	1.25	Pass	33.7
GSM850	EDGE	189	Duo	Opus 75kbps	Axial (Z)	10.25	-21.91	1.24	Pass	32.16
GSM850	EDGE	189	Hangouts	Opus 75kbps	Axial (Z)	9.4	-27.06	1.27	Pass	36.46
GSM850	EDGE	189	Hangouts	Opus 75kbps	Axial (Z)	-5.57	-43.52	0.51	Pass	37.95
WCDMA V	HSPA	4182	Duo	Opus 6kbps	Axial (Z)	6.05	-25.6	0.76	Pass	31.65
WCDMA V	HSPA	4182	Duo	Opus 75kbps	Axial (Z)	7.3	-23.91	0.55	Pass	31.21
WCDMA V	HSPA	4182	Hangouts	Opus 6kbps	Axial (Z)	-5.79	-37.18	1.39	Pass	31.39
WCDMA V	HSPA	4182	Hangouts	Opus 75kbps	Axial (Z)	-6.84	-38.13	1.17	Pass	31.29

Test Summary

Plot No.	Band	Mode	Channel	Codec Setting	Probe Orientation	ABM1 (dB A/m)	ABM2 (dB A/m)	Ambient Noise (dB A/m)	Frequency Response Margin (dB)	Frequency Response	SNR (dB)	FCC Limit (dB)	FCC Margin (dB)	T-Rating
201	GSM850	EDGE	189	Duo Opus 75kbps	Axial (Z)	10.25	-21.91	-44.66	1.24	Pass	32.16	20	-12.16	T4
201	GSM850	EDGE	189	Duo Opus 75kbps	Radial (Y)	4.41	-29.63	-51.27	N/A	N/A	34.04	20	-14.04	T4
218	GSM1900	EDGE	661	Duo Opus 75kbps	Axial (Z)	2.69	-31.23	-44.66	1.12	Pass	33.92	20	-13.92	T4
218	GSM1900	EDGE	661	Duo Opus 75kbps	Radial (Y)	1.62	-33.01	-51.27	N/A	N/A	34.63	20	-14.63	T4
219	WCDMA II	HSPA	9400	Duo Opus 75kbps	Axial (Z)	6.6	-24.54	-44.65	1.52	Pass	31.14	20	-11.14	T4
219	WCDMA II	HSPA	9400	Duo Opus 75kbps	Radial (Y)	3.87	-27.63	-51.5	N/A	N/A	31.5	20	-11.5	T4
220	WCDMA IV	HSPA	1413	Duo Opus 75kbps	Axial (Z)	11.48	-20.21	-44.65	1.08	Pass	31.69	20	-11.69	T4
220	WCDMA IV	HSPA	1413	Duo Opus 75kbps	Radial (Y)	4.21	-27.6	-51.5	N/A	N/A	31.81	20	-11.81	T4
221	WCDMA V	HSPA	4182	Duo Opus 75kbps	Axial (Z)	7.3	-23.91	-44.65	0.55	Pass	31.21	20	-11.21	T4
221	WCDMA V	HSPA	4182	Duo Opus 75kbps	Radial (Y)	0.58	-31.67	-51.5	N/A	N/A	32.25	20	-12.25	T4
222	CDMA BC0	RTAP 153.6kbps	384	Duo Opus 75kbps	Axial (Z)	5.72	-26.11	-44.62	1.6	Pass	31.83	20	-11.83	T4
222	CDMA BC0	RTAP 153.6kbps	384	Duo Opus 75kbps	Radial (Y)	-7.76	-39.68	-51.39	N/A	N/A	31.92	20	-11.92	T4
223	CDMA BC1	RTAP 153.6kbps	600	Duo Opus 75kbps	Axial (Z)	6.14	-25.74	-44.62	1.41	Pass	31.88	20	-11.88	T4
223	CDMA BC1	RTAP 153.6kbps	600	Duo Opus 75kbps	Radial (Y)	1.16	-30.54	-51.39	N/A	N/A	31.7	20	-11.7	T4
224	CDMA BC10	RTAP 153.6kbps	580	Duo Opus 75kbps	Axial (Z)	2.64	-28.71	-44.62	1.54	Pass	31.35	20	-11.35	T4
224	CDMA BC10	RTAP 153.6kbps	580	Duo Opus 75kbps	Radial (Y)	0.45	-31.42	-51.39	N/A	N/A	31.87	20	-11.87	T4
225	LTE B5	QPSK10M	20525	Duo Opus 75kbps	Axial (Z)	11.94	-39.94	-44.97	1.36	Pass	51.88	20	-31.88	T4
225	LTE B5	QPSK10M	20525	Duo Opus 75kbps	Radial (Y)	3.38	-49.56	-52.46	N/A	N/A	52.94	20	-32.94	T4
230	LTE B43	QPSK20M	44215	Duo Opus 75kbps	Axial (Z)	11.83	-37.15	-44.97	1.47	Pass	48.98	20	-28.98	T4
230	LTE B43	QPSK20M	44215	Duo Opus 75kbps	Radial (Y)	3.28	-48.5	-52.46	N/A	N/A	51.78	20	-31.78	T4
231	WLAN 2.4G	802.11b	6	Duo Opus 75kbps	Axial (Z)	11.34	-40.15	-46.7	1.58	Pass	51.49	20	-31.49	T4
231	WLAN 2.4G	802.11b	6	Duo Opus 75kbps	Radial (Y)	2.4	-50.1	-52.97	N/A	N/A	52.5	20	-32.5	T4
234	WLAN 5.6G	802.11a	116	Duo Opus 75kbps	Axial (Z)	11.14	-41.04	-46.7	1.8	Pass	52.18	20	-32.18	T4
234	WLAN 5.6G	802.11a	116	Duo Opus 75kbps	Radial (Y)	2.60	-50.42	-52.97	N/A	N/A	53.02	20	-33.02	T4

Interim Procedure for OTT VoIP over 5G NR

The following procedure listed in KDB 285076 D03 is used to evaluate OTT VoIP over 5G NR.

1. This procedure is applicable for 5G FR1 calls that use the same protocol, codec(s), and reference level as OTT calls.
2. Establish the $ABM1_{5G\ FR1}$ value by using the $ABM1_{LTE}$ magnetic intensity for an LTE call in the same band as the 5G FR1 band under test.
3. Also note the actual $ABM2_{LTE}$ OTT value.
4. Establish an $ABM2_{5G\ FR1}$ value, using a 5G manufacture test mode over 5G FR1 channels for the same band under test.
5. Calculate the rating by following steps:
   a. Record both $ABM2_{LTE}$ and $ABM2_{5G\ FR1}$ for comparison.
   b. $ABM1 = ABM1_{LTE}$
   c. $AMB2 = ABM2_{5G\ FR1}$
   d. $SNNR = (ABM1_{LTE} – ABM2_{5G\ FR1}) – 3$ dB; A 3dB margin is built in to ensure conservative results with this interim procedure.

The above is only applicable for OTT VoIP scenarios, this device does not support VoNR over IMS.

The manufacturer has confirmed the handset as designed is expected to exhibit similar audio intensity levels between an OTT VoIP call placed over LTE and 5G FR1 data connection.

Codec Investigation-NR OTT VoIP SNNR by Radio Configuration (CP-OFDM)

Air Interface	WaveForm	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Channel	Codec Setting	Probe Orientation	ABM1 (dB A/m)	ABM2 (dB A/m)	SNR (dB)
5G NR n5	CP-OFDM	20	QPSK	1	1	167300	Duo Opus 75kbps	Axial (Z)	11.94	-41.39	53.33
5G NR n5	CP-OFDM	20	QPSK	1	53	167300	Duo Opus 75kbps	Axial (Z)	12.77	-41.17	53.94
5G NR n5	CP-OFDM	20	QPSK	1	104	167300	Duo Opus 75kbps	Axial (Z)	12.94	-41.09	54.03
5G NR n5	CP-OFDM	20	QPSK	53	0	167300	Duo Opus 75kbps	Axial (Z)	12.62	-40.97	53.59
5G NR n5	CP-OFDM	20	QPSK	53	26	167300	Duo Opus 75kbps	Axial (Z)	12.03	-41.39	53.42
5G NR n5	CP-OFDM	20	QPSK	53	53	167300	Duo Opus 75kbps	Axial (Z)	12.38	-40.97	53.35
5G NR n5	CP-OFDM	20	QPSK	106	0	167300	Duo Opus 75kbps	Axial (Z)	12.25	-41.34	53.59
5G NR n5	CP-OFDM	20	16QAM	1	1	167300	Duo Opus 75kbps	Axial (Z)	12.37	-41.24	53.61
5G NR n5	CP-OFDM	20	64QAM	1	1	167300	Duo Opus 75kbps	Axial (Z)	12.21	-41.23	53.44
5G NR n5	CP-OFDM	20	256QAM	1	1	167300	Duo Opus 75kbps	Axial (Z)	12.04	-41.4	53.44
5G NR n5	CP-OFDM	15	QPSK	1	1	167300	Duo Opus 75kbps	Axial (Z)	12.33	-41.21	53.54
5G NR n5	CP-OFDM	10	QPSK	1	1	167300	Duo Opus 75kbps	Axial (Z)	12.64	-41.09	53.73
5G NR n5	CP-OFDM	5	QPSK	1	1	167300	Duo Opus 75kbps	Axial (Z)	12.21	-41.73	53.94

Codec Investigation -NR OTT VoIP SNNR by Radio Configuration (DFT-s-OFDM)

Air Interface	WaveForm	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Channel	Codec Setting	Probe Orientation	ABM1 (dB A/m)	ABM2 (dB A/m)	SNR (dB)
5G NR n5	DFTS-OFDM	20	QPSK	1	1	167300	Duo Opus 75kbps	Axial (Z)	11.94	-41.16	53.1
5G NR n5	DFTS-OFDM	20	QPSK	1	53	167300	Duo Opus 75kbps	Axial (Z)	12.06	-41.1	53.16
5G NR n5	DFTS-OFDM	20	QPSK	1	104	167300	Duo Opus 75kbps	Axial (Z)	11.58	-41.8	53.38
5G NR n5	DFTS-OFDM	20	QPSK	53	0	167300	Duo Opus 75kbps	Axial (Z)	11.98	-41.65	53.63
5G NR n5	DFTS-OFDM	20	QPSK	53	26	167300	Duo Opus 75kbps	Axial (Z)	12.27	-41.05	53.32
5G NR n5	DFTS-OFDM	20	QPSK	53	53	167300	Duo Opus 75kbps	Axial (Z)	12.05	-41.34	53.39
5G NR n5	DFTS-OFDM	20	QPSK	106	0	167300	Duo Opus 75kbps	Axial (Z)	12.3	-41.69	53.99
5G NR n5	DFTS-OFDM	20	16QAM	1	1	167300	Duo Opus 75kbps	Axial (Z)	12.65	-41.07	53.72
5G NR n5	DFTS-OFDM	20	64QAM	1	1	167300	Duo Opus 75kbps	Axial (Z)	12.08	-41.9	53.98
5G NR n5	DFTS-OFDM	20	256QAM	1	1	167300	Duo Opus 75kbps	Axial (Z)	12.24	-41.42	53.66
5G NR n5	DFTS-OFDM	15	QPSK	1	1	167300	Duo Opus 75kbps	Axial (Z)	12.64	-41.21	53.85
5G NR n5	DFTS-OFDM	10	QPSK	1	1	167300	Duo Opus 75kbps	Axial (Z)	12.54	-41.11	53.65
5G NR n5	DFTS-OFDM	5	QPSK	1	1	167300	Duo Opus 75kbps	Axial (Z)	12.41	-41.54	53.95
5G NR n41	DFTS-OFDM	100	QPSK	1	1	518598	Duo Opus 75kbps	Axial (Z)	13.73	-41.66	55.39
5G NR n41	DFTS-OFDM	100	QPSK	1	1	518598	Duo Opus 75kbps	Axial (Z)	12.86	-41.51	54.37
5G NR n41	DFTS-OFDM	100	QPSK	1	1	518598	Duo Opus 75kbps	Axial (Z)	13.93	-41.13	55.06
5G NR n41	DFTS-OFDM	100	QPSK	1	1	518598	Duo Opus 75kbps	Axial (Z)	13.21	-41.82	55.03
5G NR n41	DFTS-OFDM	100	QPSK	1	1	518598	Duo Opus 75kbps	Axial (Z)	13.12	-41.35	54.47
5G NR n41	DFTS-OFDM	100	QPSK	1	1	518598	Duo Opus 75kbps	Axial (Z)	12.96	-41.72	54.68
5G NR n41	DFTS-OFDM	100	QPSK	1	1	518598	Duo Opus 75kbps	Axial (Z)	13.34	-41.82	55.16

Test Summary

Plot No.	Band	Mode	Channel	Codec Setting	Probe Orientation	ABM1$_{LTE}$ (dB A/m)	ABM2$_{NR}$ (dB A/m)	ABM2$_{LTE}$ (dB A/m)	Ambient Noise (dB A/m)	Frequency Response Margin (dB)	Frequency Response	SNR (dB)	SNR-3 (dB)	FCC Limit (dB)	FCC Margin (dB)	T-Rating
236	5G NR n2	DFT-S QPSK20M	376000	Duo Opus 75kbps	Axial (Z)	10.82	-41.39	-39.7	-44.68	na	Pass	52.21	49.21	20	-29.21	T4
236	5G NR n2	DFT-S QPSK20M	376000	Duo Opus 75kbps	Radial (Y)	2.11	-46.14	-49.35	-51.5	N/A	N/A	48.25	45.25	20	-28.25	T4
237	5G NR n5	DFT-S QPSK20M	167300	Duo Opus 75kbps	Axial (Z)	11.94	-41.16	-39.94	-44.97	na	Pass	53.1	50.1	20	-30.1	T4
237	5G NR n5	DFT-S QPSK20M	167300	Duo Opus 75kbps	Radial (Y)	3.38	-47.17	-49.56	-52.46	N/A	N/A	50.55	47.55	20	-30.55	T4
238	5G NR n7	DFT-S QPSK20M	507000	Duo Opus 75kbps	Axial (Z)	10.62	-40.84	-40.09	-44.68	na	Pass	51.46	48.46	20	-28.46	T4
238	5G NR n7	DFT-S QPSK20M	507000	Duo Opus 75kbps	Radial (Y)	2.06	-47.72	-49.88	-51.5	N/A	N/A	49.78	46.78	20	-29.78	T4
239	5G NR n12	DFT-S QPSK15M	141500	Duo Opus 75kbps	Axial (Z)	10.96	-41.39	-40.67	-45.18	na	Pass	52.35	49.35	20	-29.35	T4
239	5G NR n12	DFT-S QPSK15M	141500	Duo Opus 75kbps	Radial (Y)	2.8	-47	-49.9	-51.88	N/A	N/A	49.8	46.8	20	-29.8	T4
240	5G NR n14	DFT-S QPSK10M	158600	Duo Opus 75kbps	Axial (Z)	10.72	-40.67	-41.25	-45.18	na	Pass	51.39	48.39	20	-28.39	T4
240	5G NR n14	DFT-S QPSK10M	158600	Duo Opus 75kbps	Radial (Y)	2.6	-49.74	-50.1	-51.88	N/A	N/A	52.34	49.34	20	-32.34	T4
241	5G NR n25	DFT-S QPSK20M	376500	Duo Opus 75kbps	Axial (Z)	10.77	-41.67	-40	-44.68	na	Pass	52.44	49.44	20	-29.44	T4
241	5G NR n25	DFT-S QPSK20M	376500	Duo Opus 75kbps	Radial (Y)	1.95	-46.88	-49.75	-51.5	N/A	N/A	48.83	45.83	20	-28.83	T4
242	5G NR n26	DFT-S QPSK20M	166300	Duo Opus 75kbps	Axial (Z)	11.56	-40.97	-39.85	-46.7	na	Pass	52.53	49.53	20	-29.53	T4
242	5G NR n26	DFT-S QPSK20M	166300	Duo Opus 75kbps	Radial (Y)	3.16	-47.54	-49.33	-52.97	N/A	N/A	50.7	47.7	20	-30.7	T4
243	5G NR n30	DFT-S QPSK10M	462000	Duo Opus 75kbps	Axial (Z)	10.24	-41.73	-31.42	-44.68	na	Pass	51.97	48.97	20	-28.97	T4
243	5G NR n30	DFT-S QPSK10M	462000	Duo Opus 75kbps	Radial (Y)	2.28	-46.75	-41.69	-51.5	N/A	N/A	49.03	46.03	20	-29.03	T4
244	5G NR n38	DFT-S QPSK40M	519000	Duo Opus 75kbps	Axial (Z)	10.5	-41.88	-39.44	-44.68	na	Pass	52.38	49.38	20	-29.38	T4
244	5G NR n38	DFT-S QPSK40M	519000	Duo Opus 75kbps	Radial (Y)	1.89	-46.65	-46.74	-51.5	N/A	N/A	48.54	45.54	20	-28.54	T4
246	5G NR n41	DFT-S QPSK100M	518598	Duo Opus 75kbps	Axial (Z)	10.75	-41.36	-40.34	-44.19	na	Pass	52.11	49.11	20	-29.11	T4
246	5G NR n41	DFT-S QPSK100M	518598	Duo Opus 75kbps	Radial (Y)	2.04	-46.83	-49.32	-51.31	N/A	N/A	48.87	45.87	20	-28.87	T4
248	5G NR n66	DFT-S QPSK40M	349000	Duo Opus 75kbps	Axial (Z)	11.11	-42.00	-39.79	-44.19	na	Pass	53.11	50.11	20	-30.11	T4
248	5G NR n66	DFT-S QPSK40M	349000	Duo Opus 75kbps	Radial (Y)	2.38	-45.70	-48.49	-51.31	N/A	N/A	48.08	45.08	20	-28.08	T4
249	5G NR n71	DFT-S QPSK20M	136100	Duo Opus 75kbps	Axial (Z)	11.61	-42.07	-40.12	-46.7	na	Pass	53.68	50.68	20	-30.68	T4
249	5G NR n71	DFT-S QPSK20M	136100	Duo Opus 75kbps	Radial (Y)	3.02	-46.69	-49.43	-52.97	N/A	N/A	49.71	46.71	20	-29.71	T4
250	5G NR n77	DFT-S QPSK100M	656000	Duo Opus 75kbps	Axial (Z)	11.46	-42.53	-40.36	-44.54	na	Pass	53.99	50.99	20	-30.99	T4
250	5G NR n77	DFT-S QPSK100M	656000	Duo Opus 75kbps	Radial (Y)	2.28	-47.47	-50.56	-51.84	N/A	N/A	49.75	46.75	20	-29.75	T4
251	5G NR n78	DFT-S QPSK100M	650000	Duo Opus 75kbps	Axial (Z)	11.55	-41.07	-40.38	-44.54	na	Pass	52.62	49.62	20	-29.62	T4
251	5G NR n78	DFT-S QPSK100M	650000	Duo Opus 75kbps	Radial (Y)	3	-46.79	-49.57	-51.84	N/A	N/A	49.79	46.79	20	-29.79	T4

Note: Due to test equipment limitations, ABM1 measurements were not possible. Therefore, the interim procedure for OTT VoIP over 5G NR was followed to obtain SNR values. Additionally, frequency response measurements were not possible due to test equipment limitations.

Test Engineer： Mars Chang, and Eric Wu

5. Calibration of Test Equipment

Equipment	Manufacturer	Model	SN	Cal. Date	Cal. Interval
Audio Band Magnetic Probe	SPEAG	AM1DV3	3067	Dec. 15, 2020	1 Year
Audio Band Magnetic Probe	SPEAG	AM1DV3	3139	Sep. 21, 2020	1 Year
Audio Band Magnetic Probe	SPEAG	AM1DV3	3060	Jan. 20, 2021	1 Year
Data Acquisition Electronics	SPEAG	DAE4	1277	Jan. 19, 2021	1 Year
Data Acquisition Electronics	SPEAG	DAE4	1590	Sep. 15, 2020	1 Year
Universal Radio Communication Tester	R&S	CMW500	164864	Apr. 16, 2020	1 Year
Universal Radio Communication Tester	R&S	CMW500	152443	Oct. 30, 2019	1 Year

6. Measurement Uncertainty

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (ABM1)	Ci (ABM2)	Standard Uncertainty (ABM1)	Standard Uncertainty (ABM2)
Probe Sensitivity							
Reference Level	3.0	Normal	1	1	1	± 3.0 %	± 3.0 %
AMCC Geometry	0.4	Rectangular	√3	1	1	± 0.2 %	± 0.2 %
AMCC Current	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Probe Positioning During Calibration	0.07	Rectangular	√3	1	1	± 0.04 %	± 0.04 %
Noise Contribution	0.02	Rectangular	√3	0.0143	1	± 0.0 %	± 0.01 %
Frequency Slope	5.9	Rectangular	√3	0.1	1	± 0.3 %	± 3.4 %
Probe System							
Repeatability / Drift	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Linearity / Dynamic Range	0.6	Rectangular	√3	1	1	± 0.3 %	± 0.3 %
Acoustic Noise	1.0	Rectangular	√3	0.1	1	± 0.1 %	± 0.6 %
Probe Angle	2.3	Rectangular	√3	1	1	± 1.3 %	± 1.3 %
Spectral Processing	0.9	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Integration Time	0.6	Normal	1	1	5	± 0.6 %	± 3.0 %
Field Distribution	0.2	Rectangular	√3	1	1	± 0.1 %	± 0.1 %
Test Signal							
Ref. Signal Spectral Response	0.6	Rectangular	√3	0	1	± 0.0 %	± 0.3 %
Positioning							
Probe Positioning	1.9	Rectangular	√3	1	1	± 1.1 %	± 1.1 %
Phantom Thickness	0.9	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
EUT Positioning	1.9	Rectangular	√3	1	1	± 1.1 %	± 1.1 %
External Contributions							
RF Interference	0.0	Rectangular	√3	1	0.3	± 0.0 %	± 0.0 %
Test Signal Variation	2.0	Rectangular	√3	1	1	± 1.2 %	± 1.2 %
Combined Standard Uncertainty						± 4.0 %	± 6.1 %
Coverage Factor for 95 %						K = 2	
Expanded Uncertainty						**± 8.0 %**	**± 12.2 %**

Uncertainty Budget for HAC T-Coil

7. Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Web Site: https://ee.bureauveritas.com.tw/BVInternet/Default

The road map of all our labs can be found in our web site also.

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Appendix A. Plots of HAC T-Coil Measurement

The HAC plots for worst-case in each wireless mode and frequency band combination are shown as follows.

Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/26

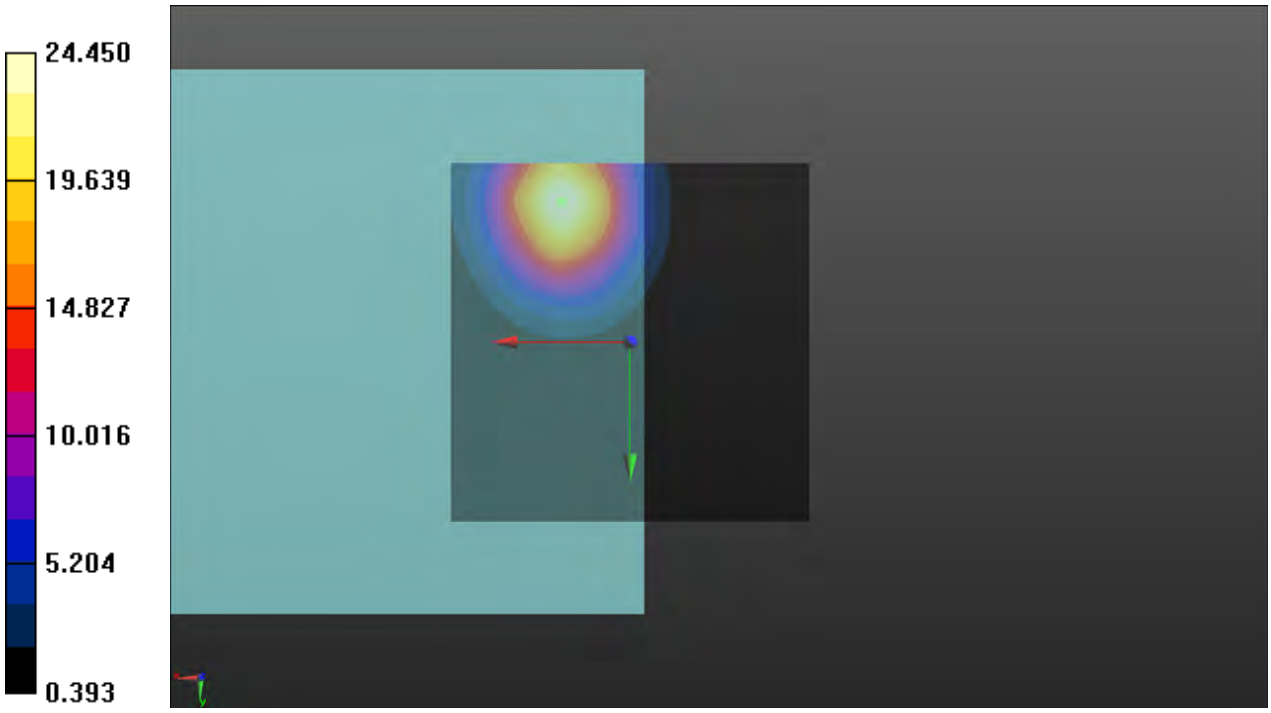
P03 T-Coil_GSM850_Ch189_FR V1_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10021 - DAC, GSM-FDD (TDMA, GMSK); Frequency: 836.4 MHz;Duty Cycle: 1:8.70
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 27.77 dB
ABM1 comp = -2.36 dBA/m
Location: 9.5, -19.5, 3.7 mm



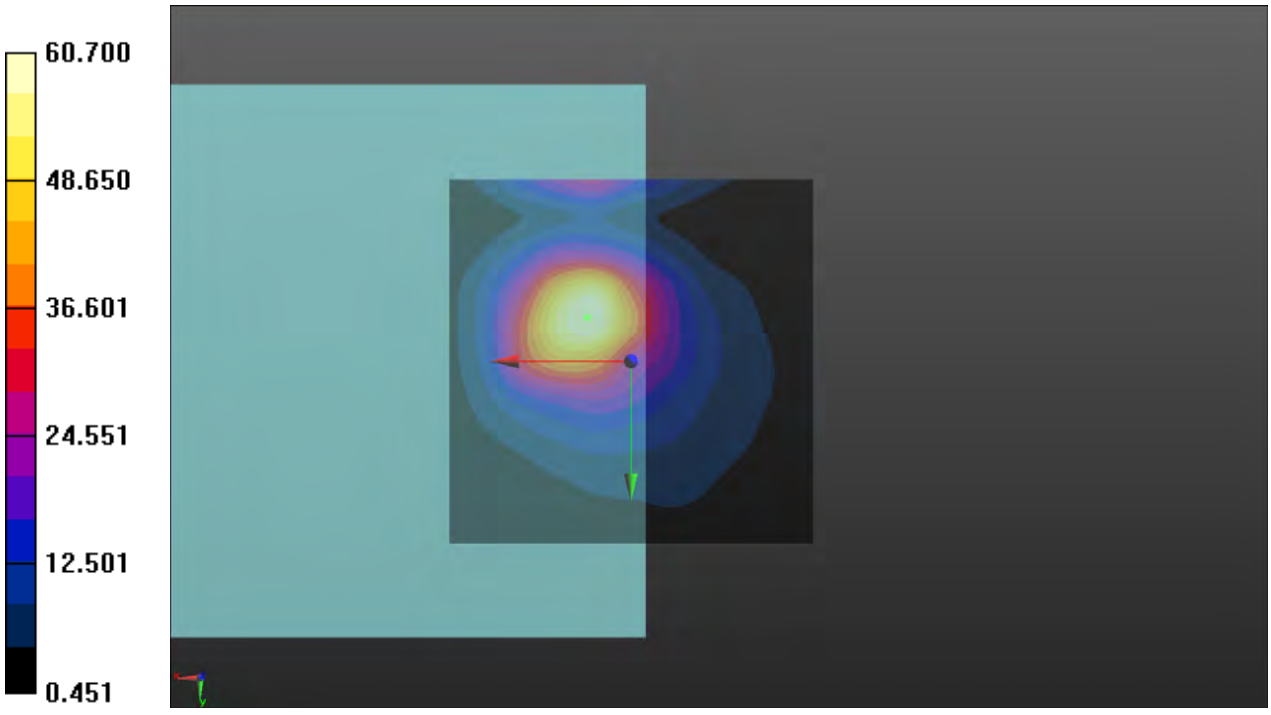
P03 T-Coil_GSM850_Ch189_FR V1_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10021 - DAC, GSM-FDD (TDMA, GMSK); Frequency: 836.4 MHz;Duty Cycle: 1:8.70
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 35.66 dB
ABM1 comp = -13.30 dBA/m
Location: 6, -6, 3.7 mm



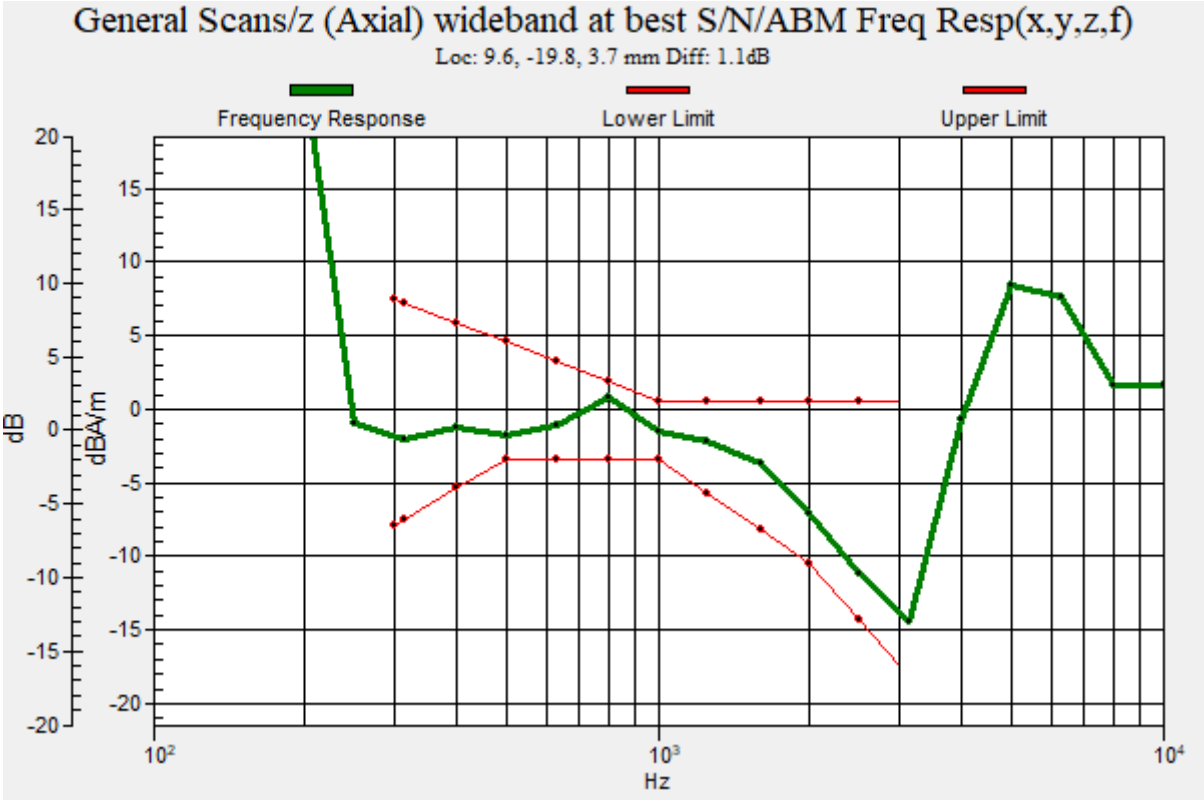
P03 T-Coil_GSM850_Ch189_FR V1_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10021 - DAC, GSM-FDD (TDMA, GMSK); Frequency: 836.4 MHz;Duty Cycle: 1:8.70
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/26

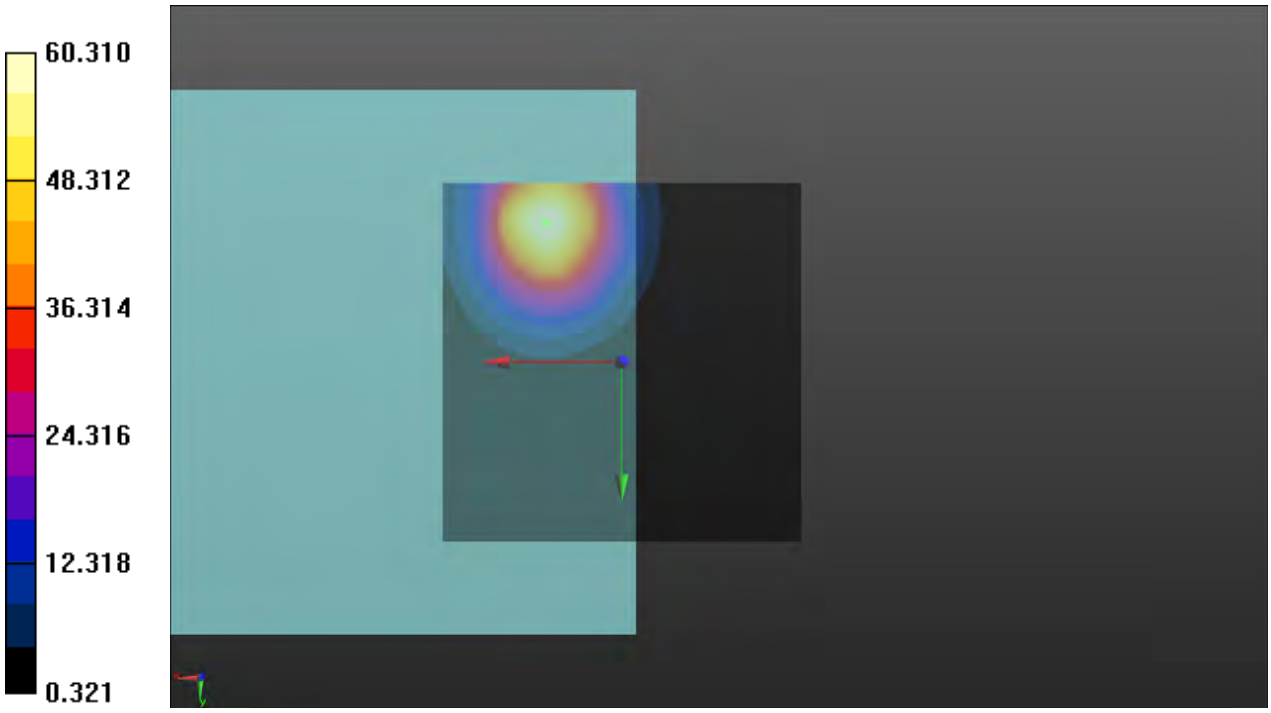
P04 T-Coil_GSM1900_Ch661_FR V1_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10021 - DAC, GSM-FDD (TDMA, GMSK); Frequency: 1880 MHz;Duty Cycle: 1:8.70
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 35.61 dB
ABM1 comp = -2.02 dBA/m
Location: 10.5, -19.5, 3.7 mm



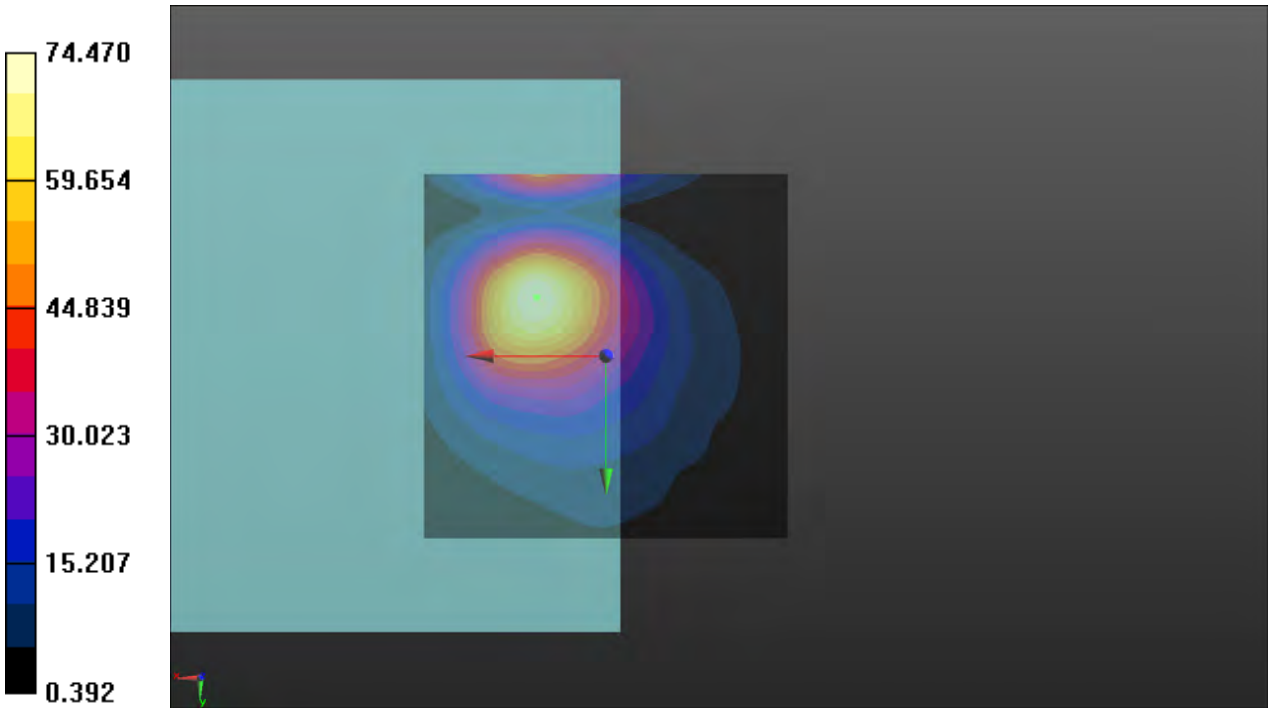
P04 T-Coil_GSM1900_Ch661_FR V1_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10021 - DAC, GSM-FDD (TDMA, GMSK); Frequency: 1880 MHz;Duty Cycle: 1:8.70
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 37.44 dB
ABM1 comp = -12.06 dBA/m
Location: 9.5, -8, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/26

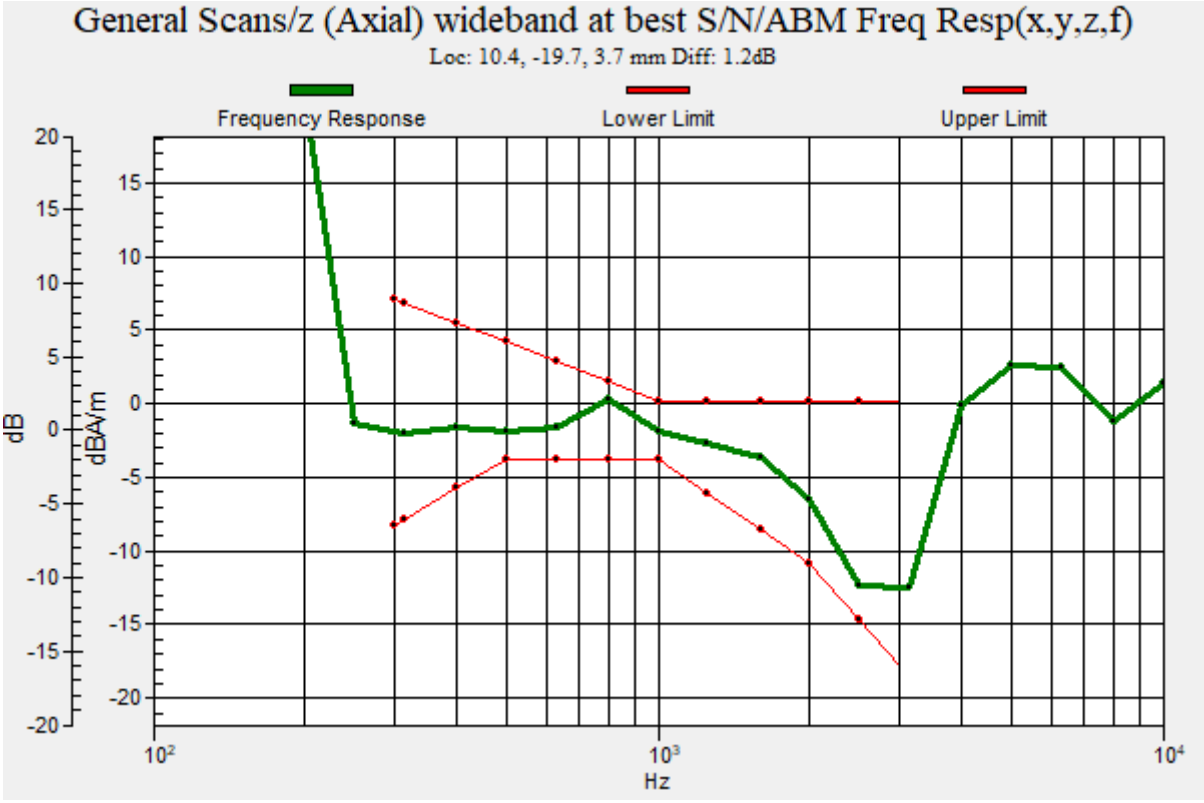
P04 T-Coil_GSM1900_Ch661_FR V1_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10021 - DAC, GSM-FDD (TDMA, GMSK); Frequency: 1880 MHz;Duty Cycle: 1:8.70
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



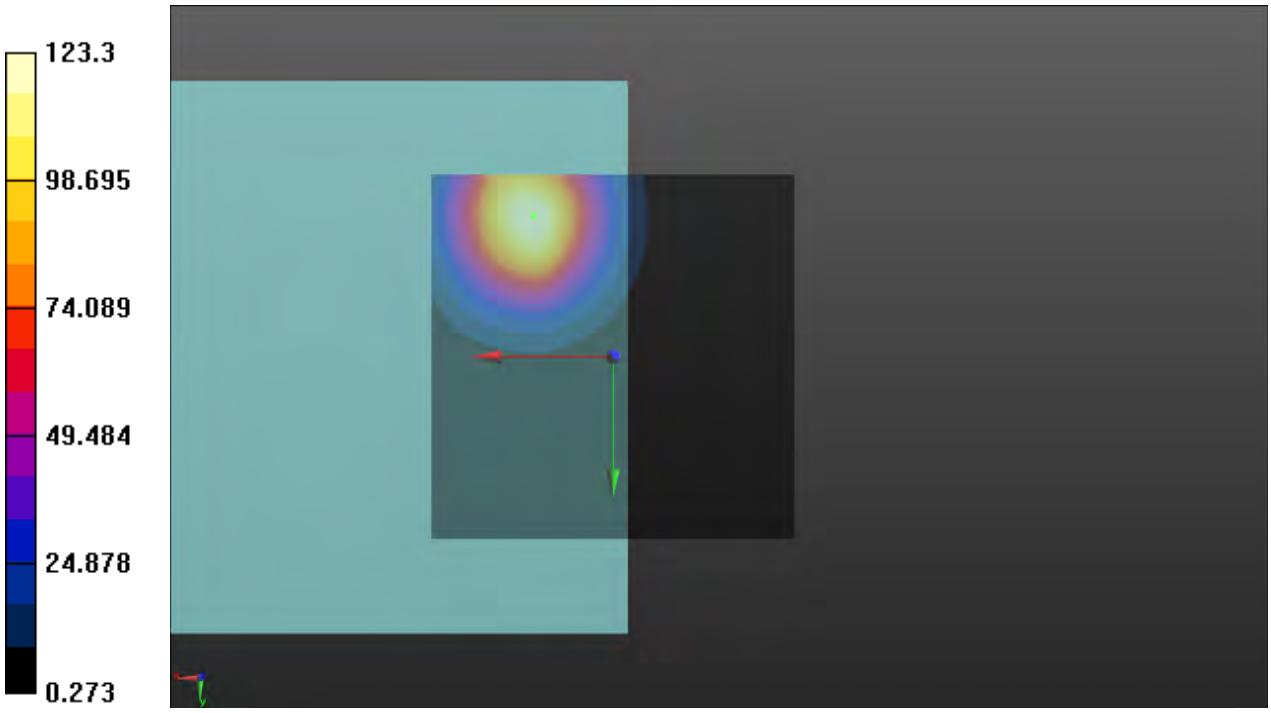
P08 T-Coil_WCDMA II_Ch9400_AMR 4.75kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10460 - AAA, UMTS-FDD (WCDMA, AMR); Frequency: 1880 MHz;Duty Cycle: 1:1.73
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 41.82 dB
ABM1 comp = -3.38 dBA/m
Location: 11, -19.5, 3.7 mm



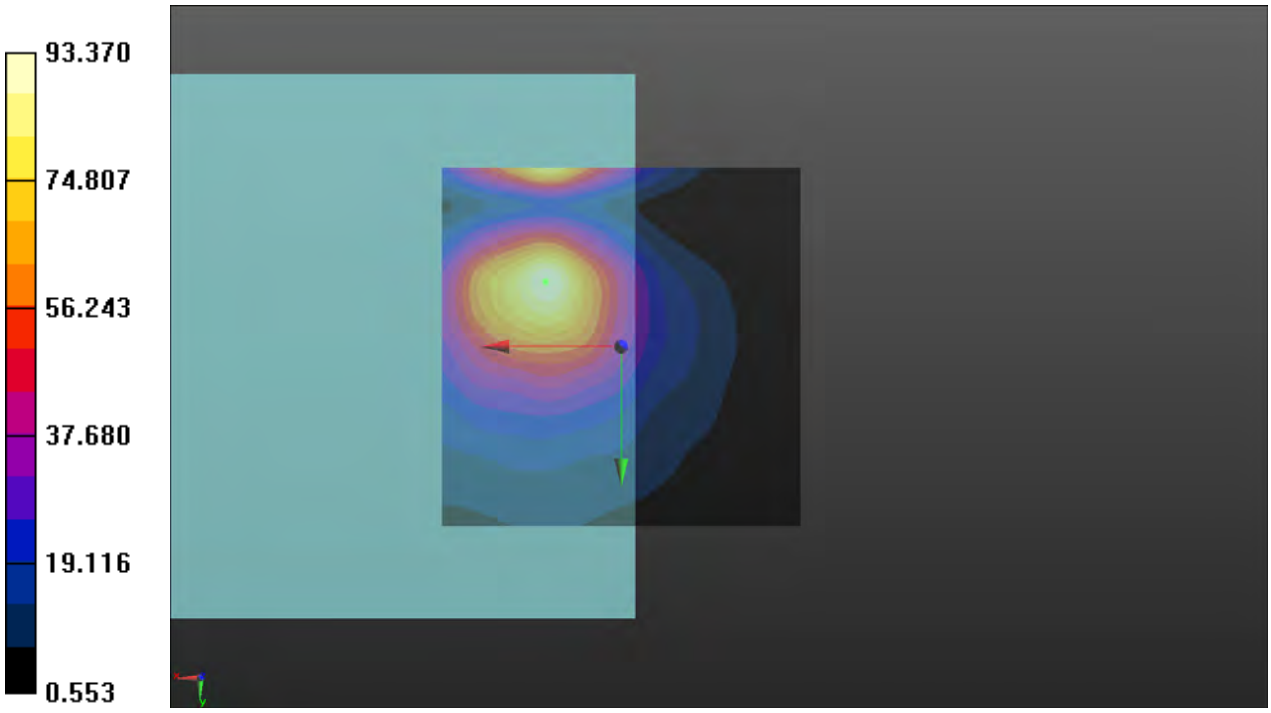
P08 T-Coil_WCDMA II_Ch9400_AMR 4.75kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10460 - AAA, UMTS-FDD (WCDMA, AMR); Frequency: 1880 MHz;Duty Cycle: 1:1.73
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 39.40 dB
ABM1 comp = -11.90 dBA/m
Location: 10.5, -9, 3.7 mm



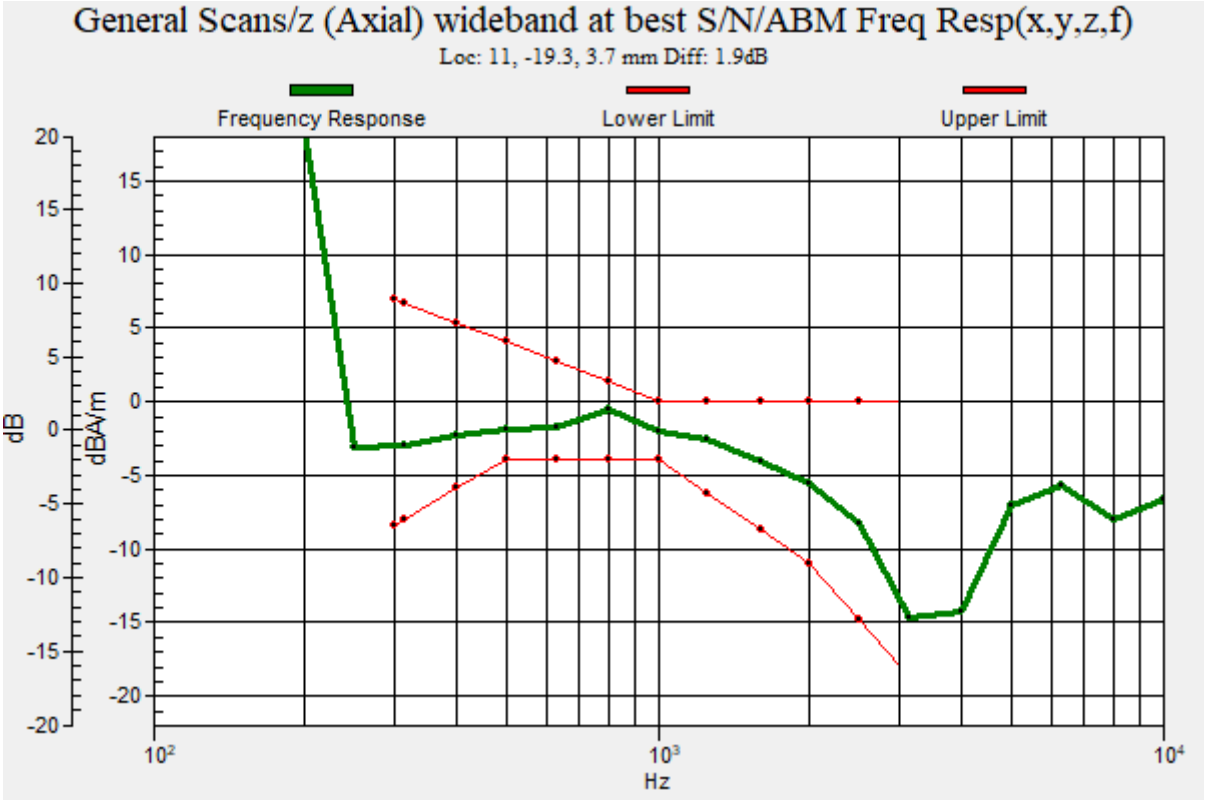
P08 T-Coil_WCDMA II_Ch9400_AMR 4.75kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10460 - AAA, UMTS-FDD (WCDMA, AMR); Frequency: 1880 MHz;Duty Cycle: 1:1.73
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



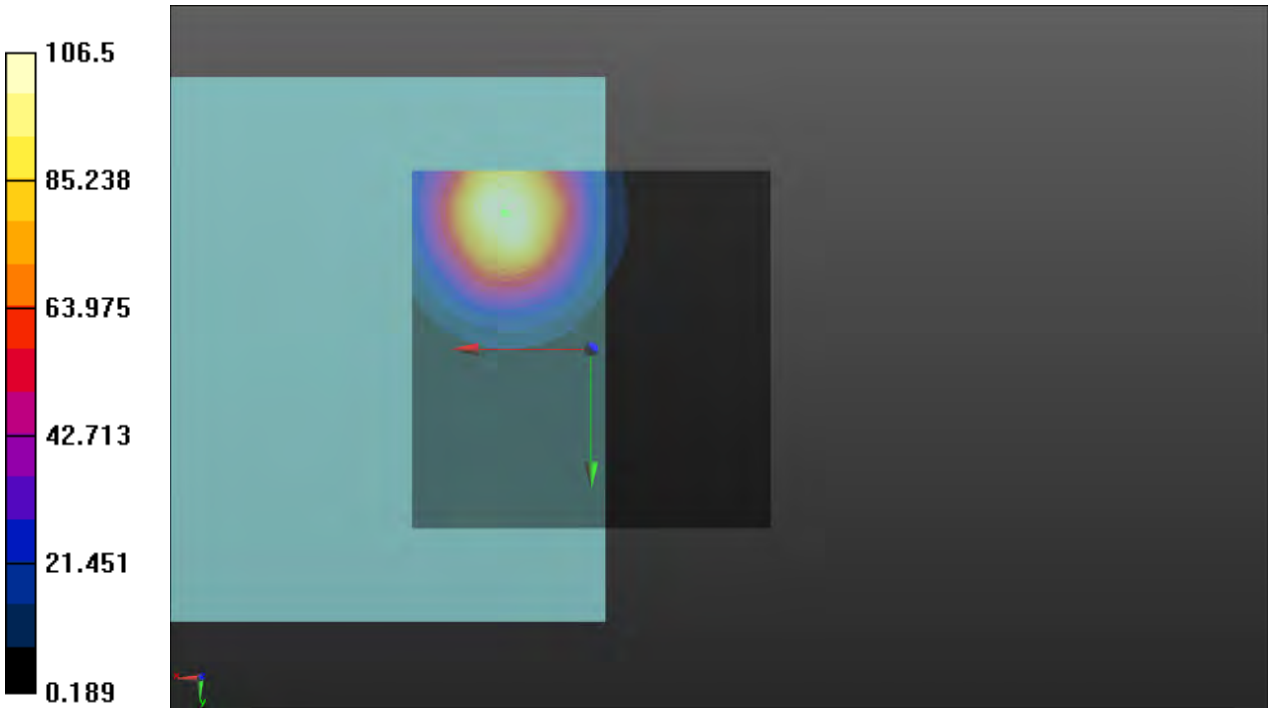
P09 T-Coil_WCDMA IV_Ch1413_AMR 4.75kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10460 - AAA, UMTS-FDD (WCDMA, AMR); Frequency: 1732.6 MHz;Duty Cycle: 1:1.73
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 40.54 dB
ABM1 comp = -3.24 dBA/m
Location: 12, -19, 3.7 mm



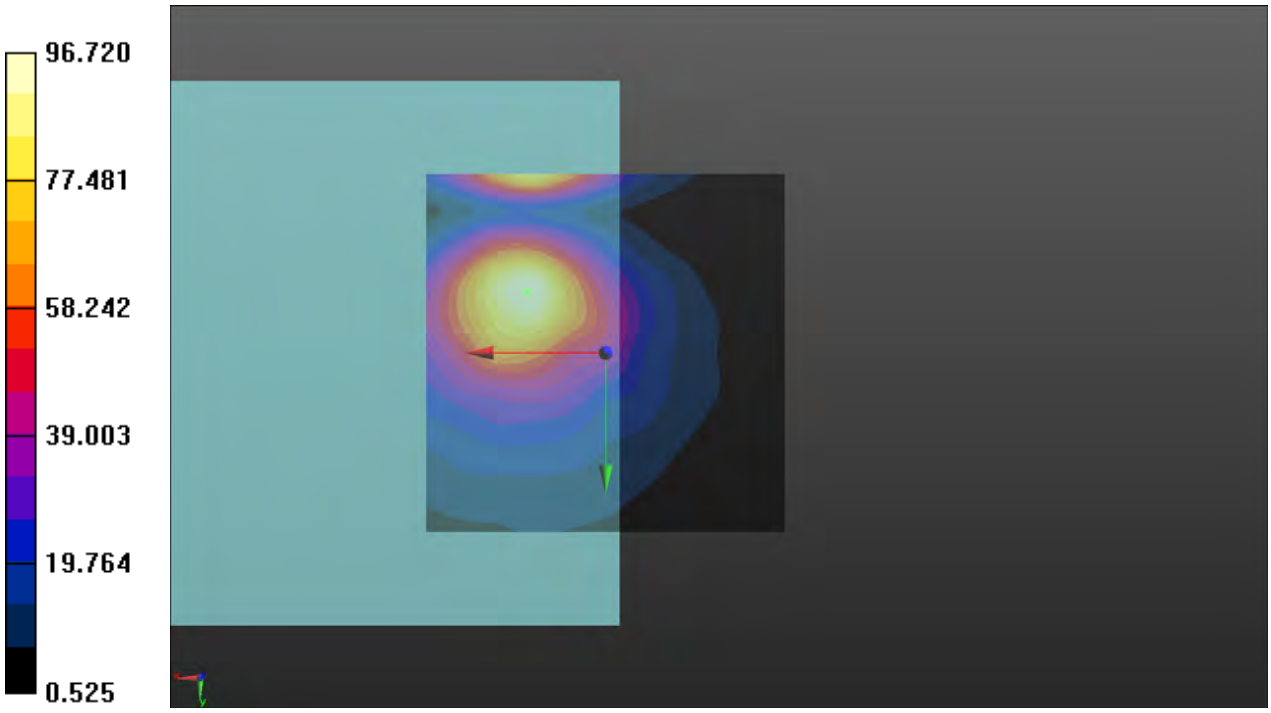
P09 T-Coil_WCDMA IV_Ch1413_AMR 4.75kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10460 - AAA, UMTS-FDD (WCDMA, AMR); Frequency: 1732.6 MHz;Duty Cycle: 1:1.73
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 39.71 dB
ABM1 comp = -11.23 dBA/m
Location: 11, -8.5, 3.7 mm



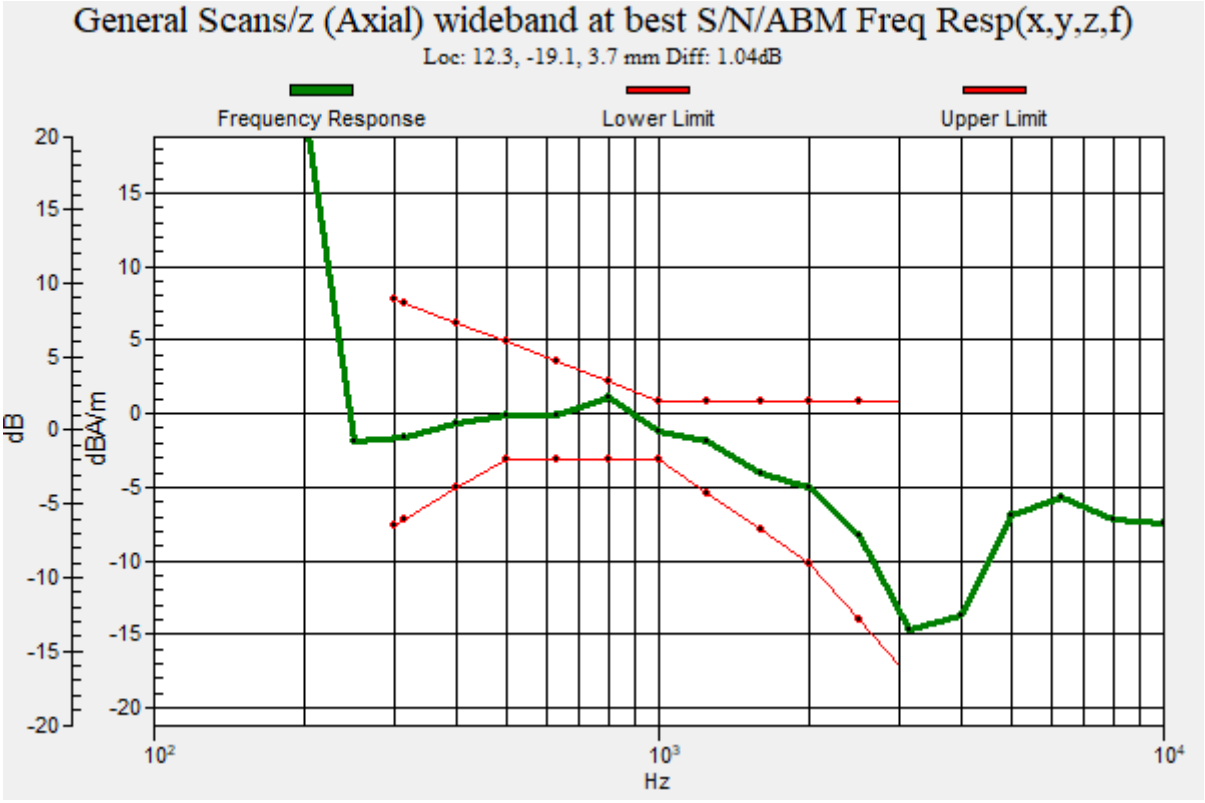
P09 T-Coil_WCDMA IV_Ch1413_AMR 4.75kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10460 - AAA, UMTS-FDD (WCDMA, AMR); Frequency: 1732.6 MHz;Duty Cycle: 1:1.73
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/26

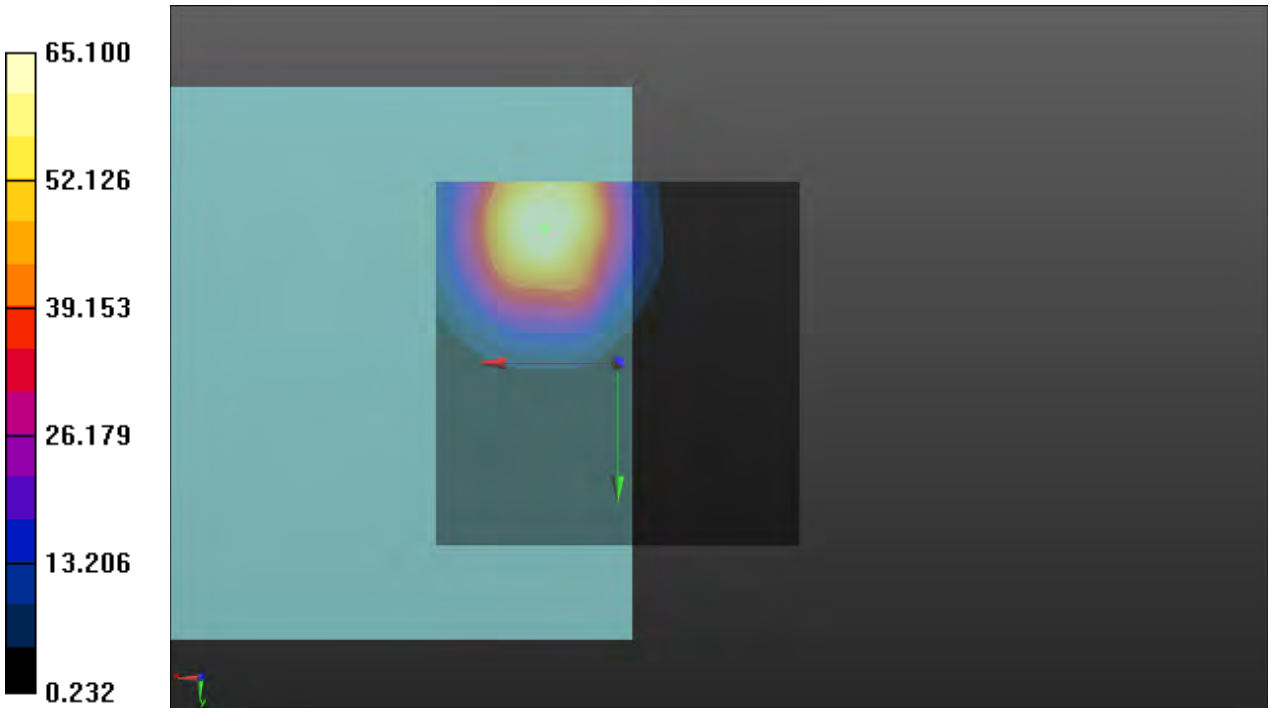
P10 T-Coil_WCDMA V_Ch4182_AMR 4.75kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10460 - AAA, UMTS-FDD (WCDMA, AMR); Frequency: 836.4 MHz;Duty Cycle: 1:1.73
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 36.27 dB
ABM1 comp = -3.41 dBA/m
Location: 10, -18.5, 3.7 mm



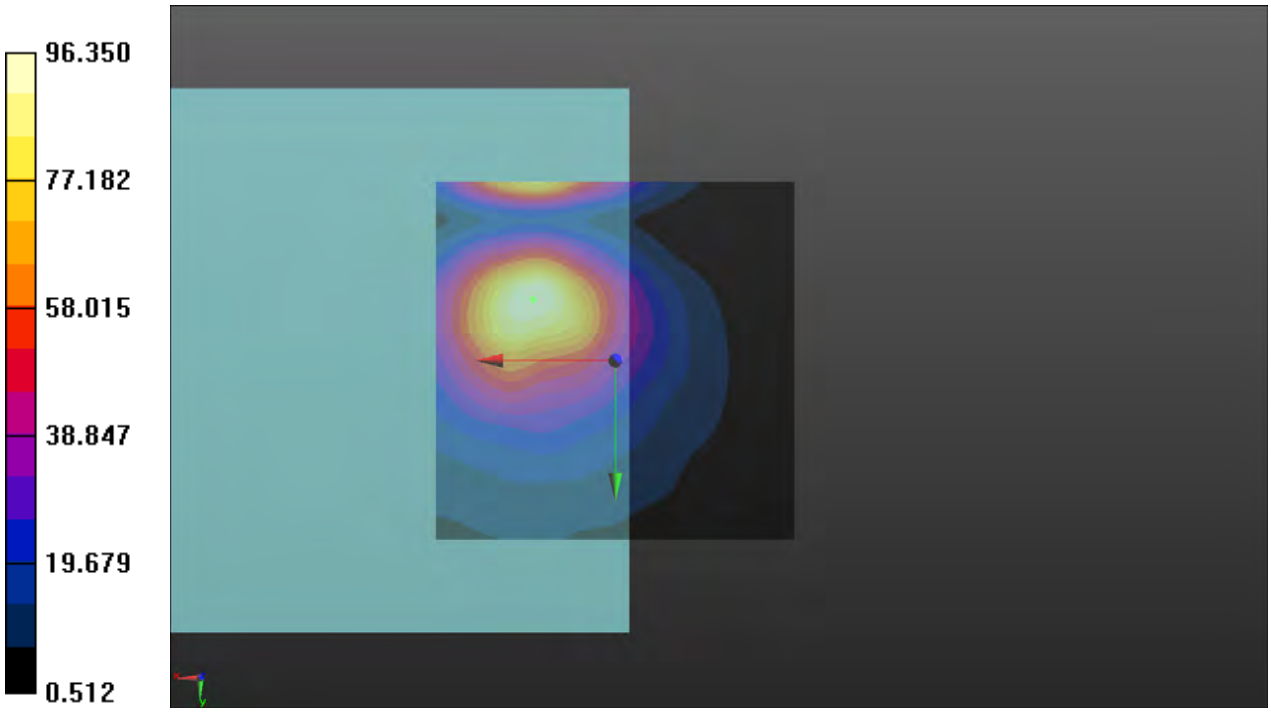
P10 T-Coil_WCDMA V_Ch4182_AMR 4.75kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10460 - AAA, UMTS-FDD (WCDMA, AMR); Frequency: 836.4 MHz;Duty Cycle: 1:1.73
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 39.68 dB
ABM1 comp = -11.85 dBA/m
Location: 11.5, -8.5, 3.7 mm



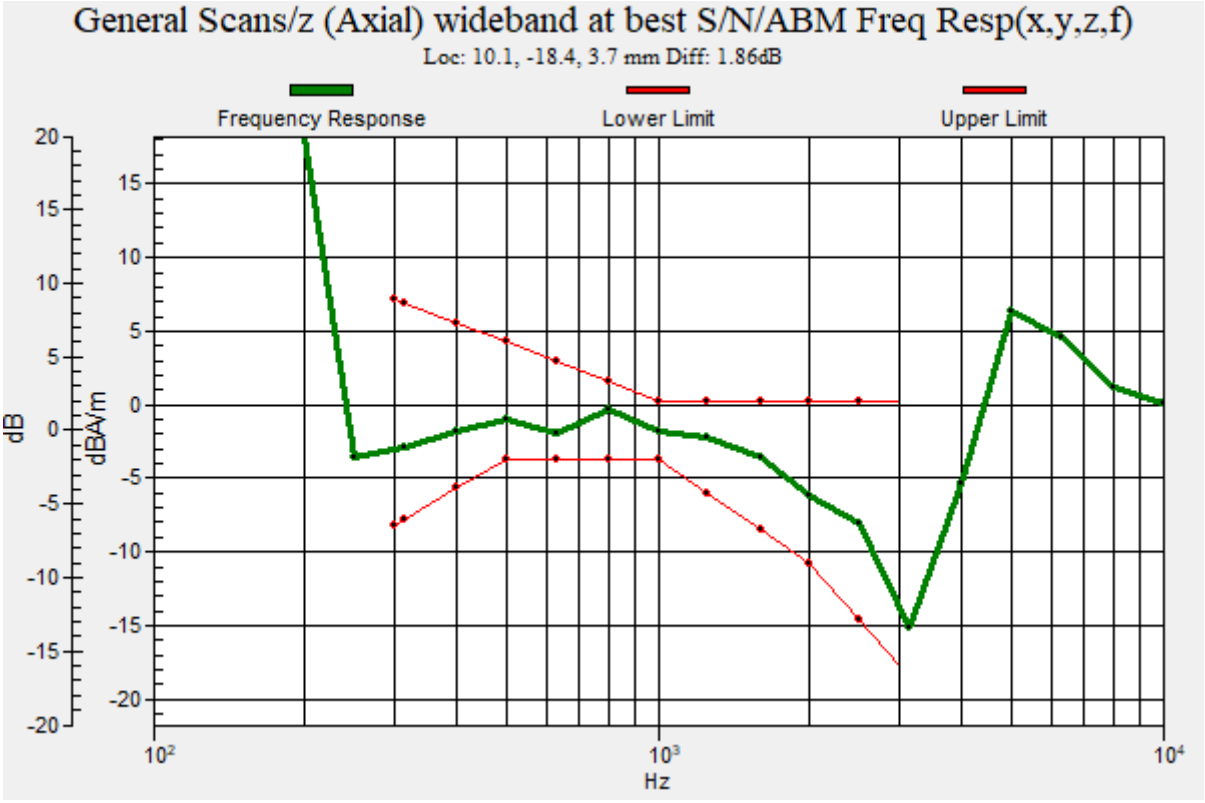
P10 T-Coil_WCDMA V_Ch4182_AMR 4.75kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10460 - AAA, UMTS-FDD (WCDMA, AMR); Frequency: 836.4 MHz;Duty Cycle: 1:1.73
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/26

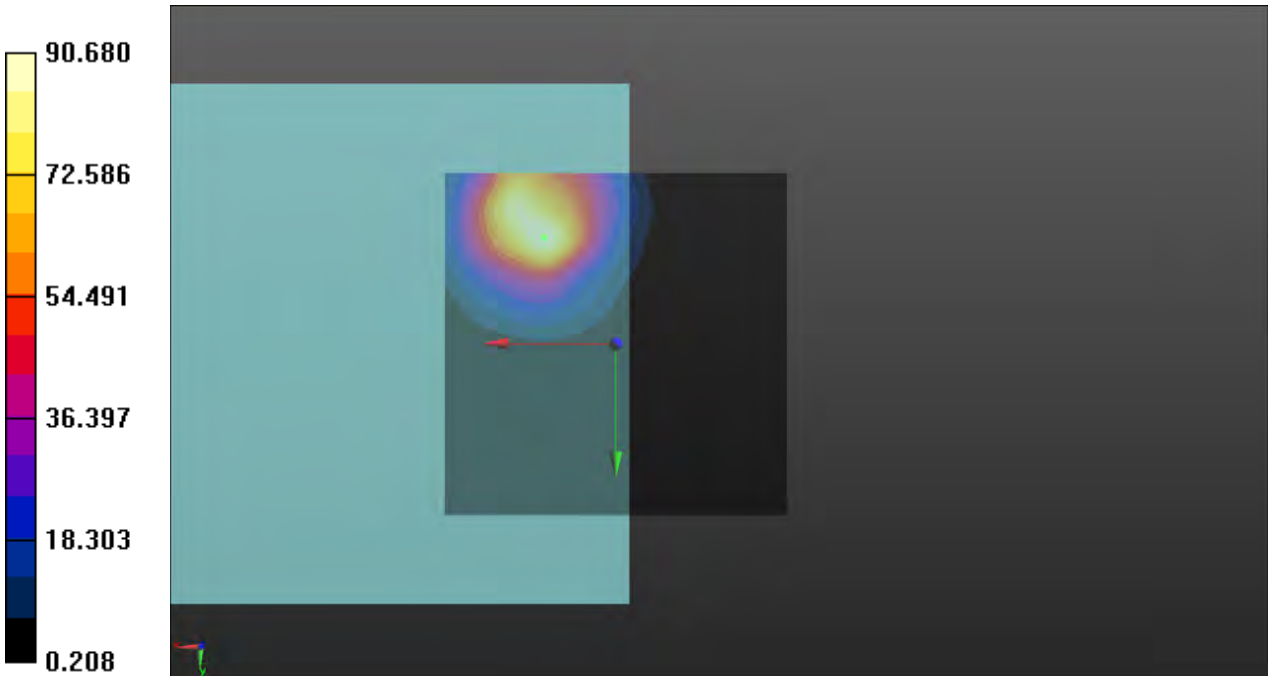
P15 T-Coil_CDMA BC0_Ch384_RC3+SO3_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10293 - AAB, CDMA2000, RC3, SO3, Full Rate; Frequency: 836.52 MHz;Duty Cycle: 1:2.24
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 39.15 dB
ABM1 comp = -5.28 dBA/m
Location: 10.5, -15.5, 3.7 mm



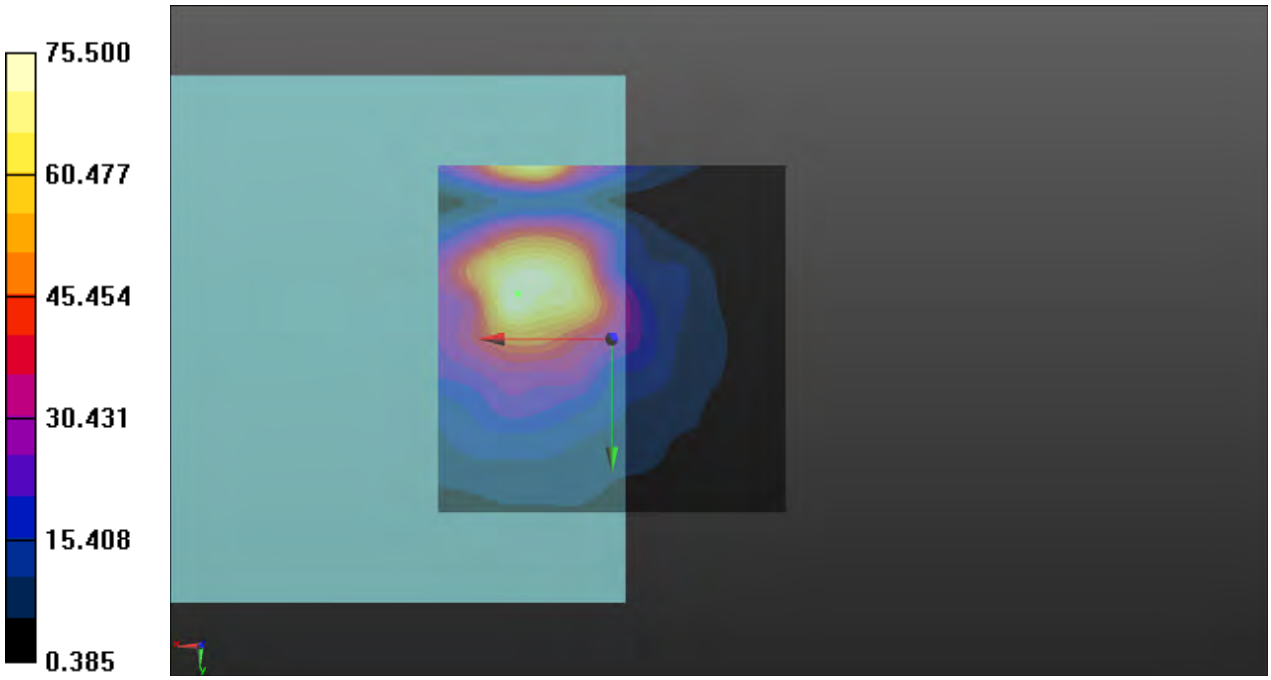
P15 T-Coil_CDMA BC0_Ch384_RC3+SO3_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10293 - AAB, CDMA2000, RC3, SO3, Full Rate; Frequency: 836.52 MHz;Duty Cycle: 1:2.24
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃ ； Liquid Temperature：23.1 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 37.56 dB
ABM1 comp = -13.92 dBA/m
Location: 13.5, -6.5, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/26

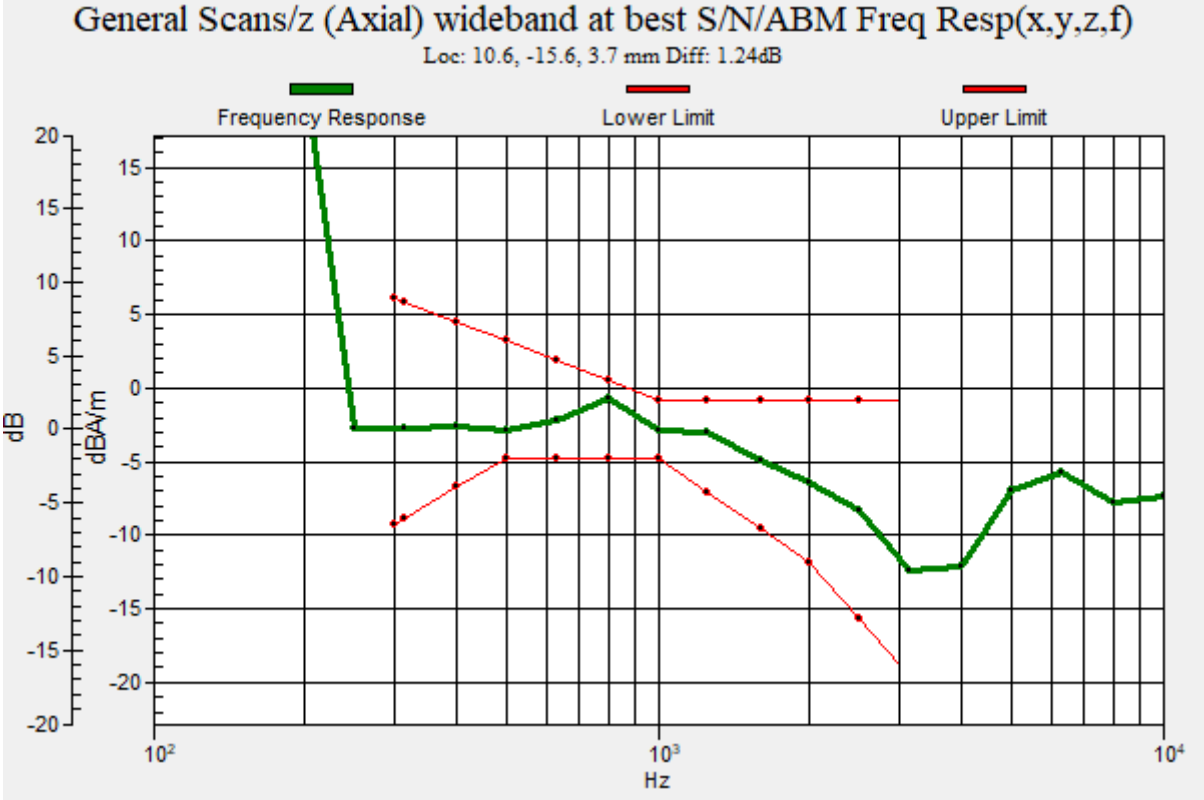
P15 T-Coil_CDMA BC0_Ch384_RC3+SO3_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10293 - AAB, CDMA2000, RC3, SO3, Full Rate; Frequency: 836.52 MHz;Duty Cycle: 1:2.24
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/26

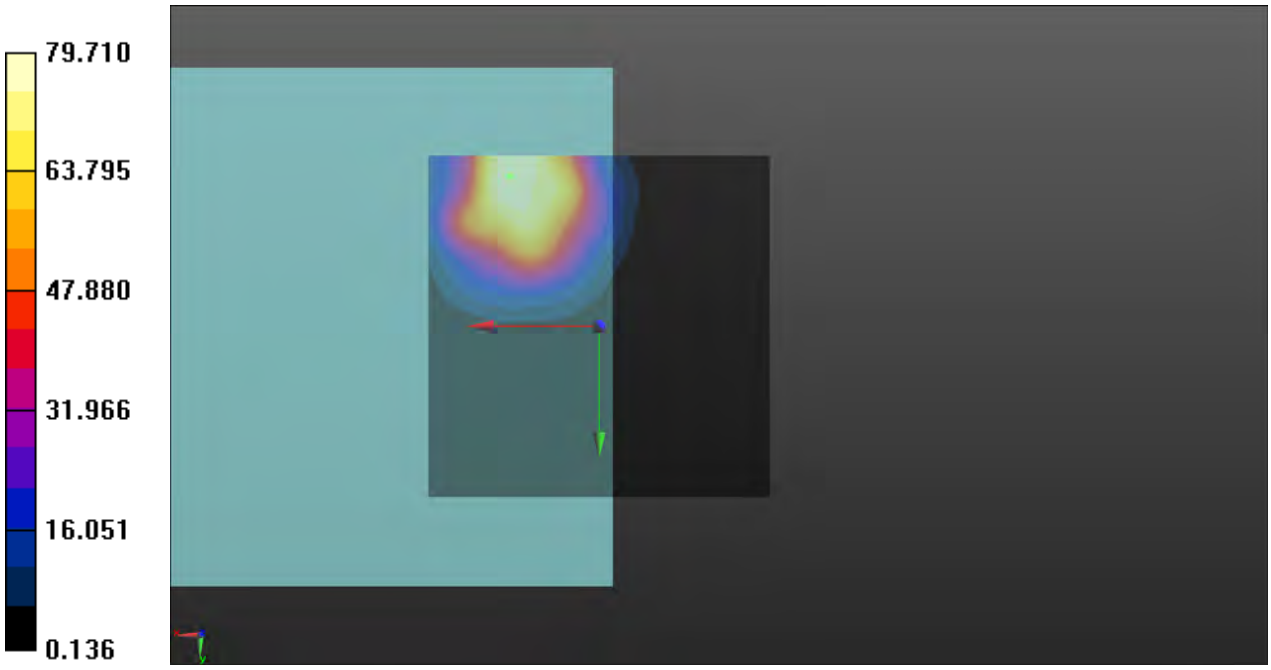
P18 T-Coil_CDMA BC1_Ch600_RC3+SO3_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10293 - AAB, CDMA2000, RC3, SO3, Full Rate; Frequency: 1880 MHz;Duty Cycle: 1:2.24
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 38.03 dB
ABM1 comp = -6.36 dBA/m
Location: 13, -22, 3.7 mm



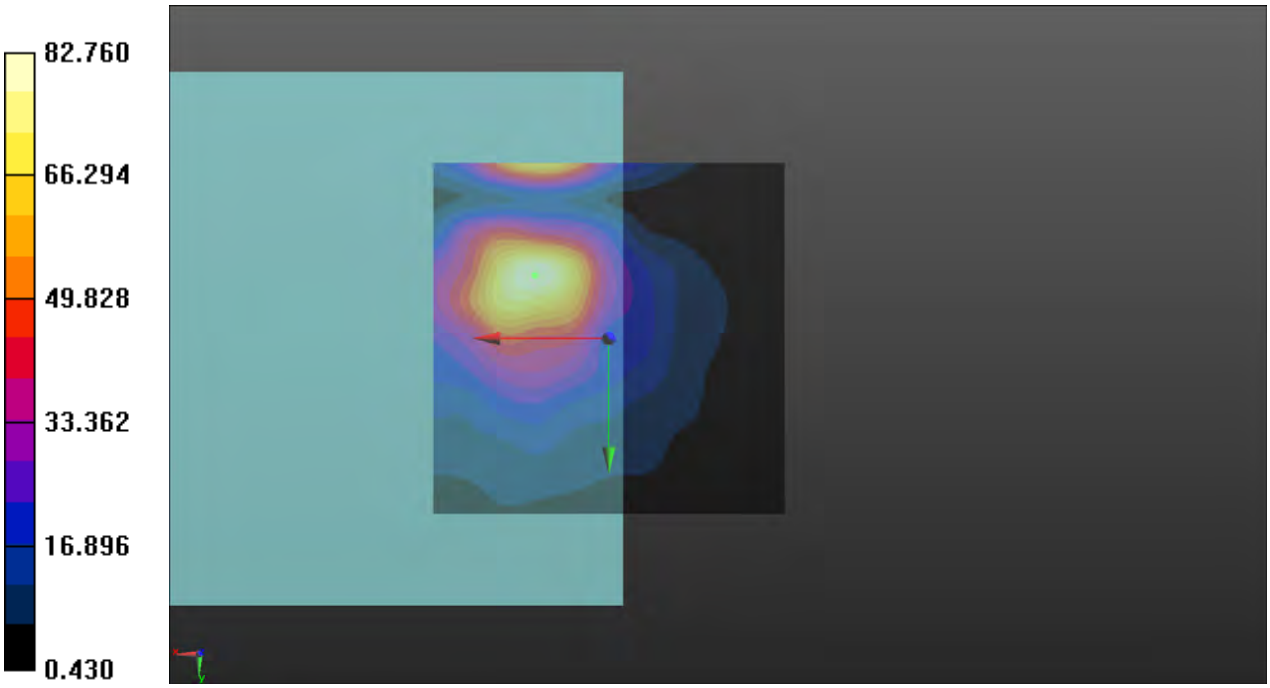
P18 T-Coil_CDMA BC1_Ch600_RC3+SO3_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10293 - AAB, CDMA2000, RC3, SO3, Full Rate; Frequency: 1880 MHz;Duty Cycle: 1:2.24
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 38.36 dB
ABM1 comp = -12.98 dBA/m
Location: 10.5, -9, 3.7 mm



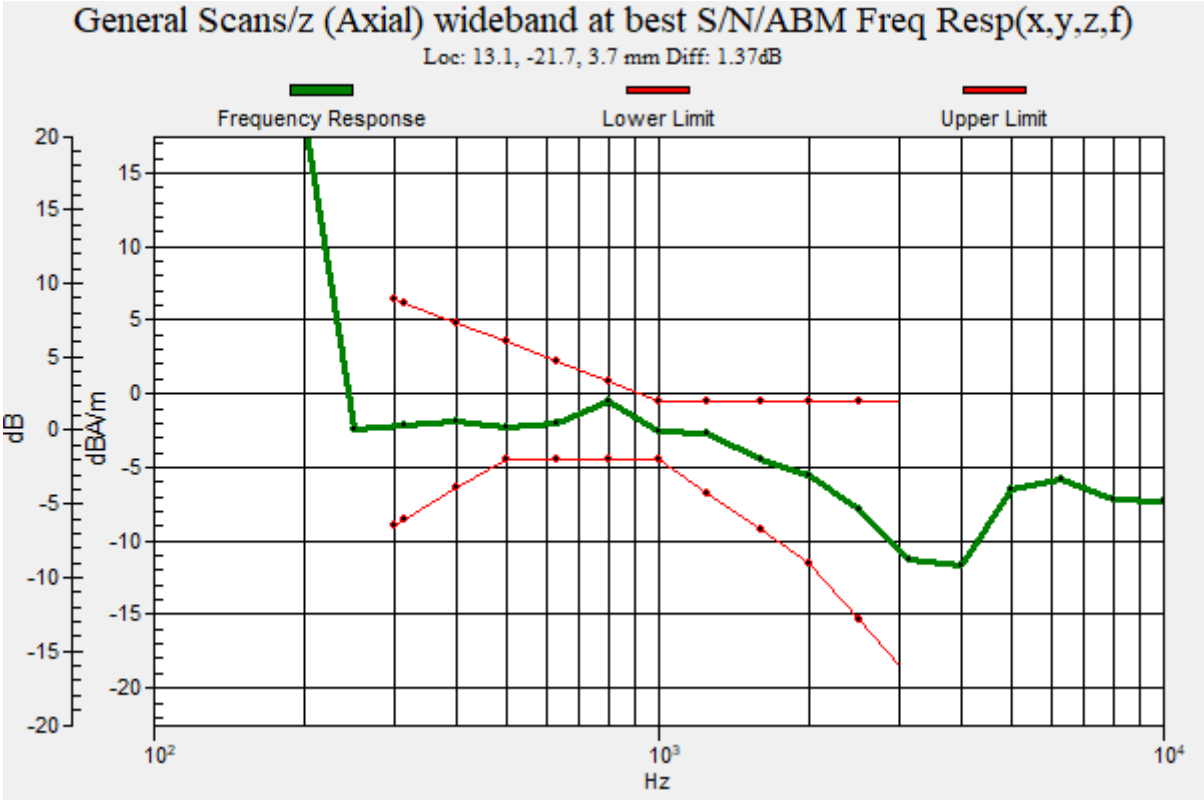
P18 T-Coil_CDMA BC1_Ch600_RC3+SO3_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10293 - AAB, CDMA2000, RC3, SO3, Full Rate; Frequency: 1880 MHz;Duty Cycle: 1:2.24
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



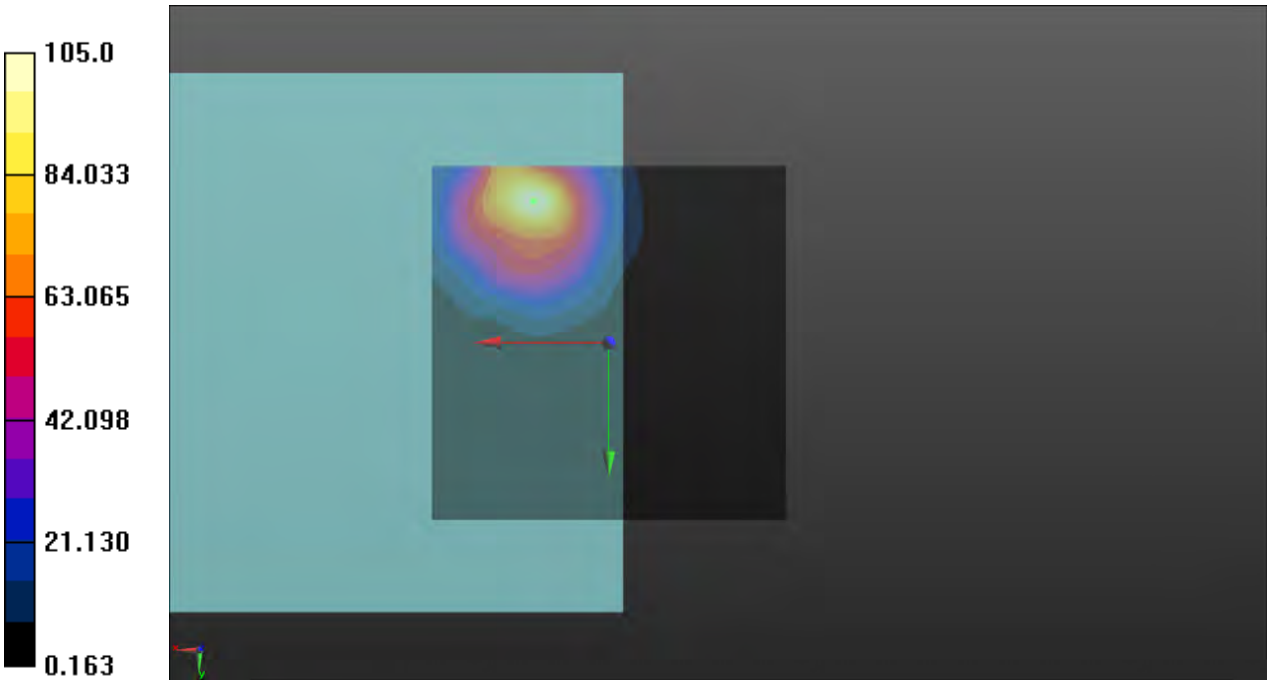
P19 T-Coil_CDMA BC10_Ch580_RC3+SO3_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10293 - AAB, CDMA2000, RC3, SO3, Full Rate; Frequency: 820.5 MHz;Duty Cycle: 1:2.24
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 40.43 dB
ABM1 comp = -4.34 dBA/m
Location: 10.5, -20, 3.7 mm



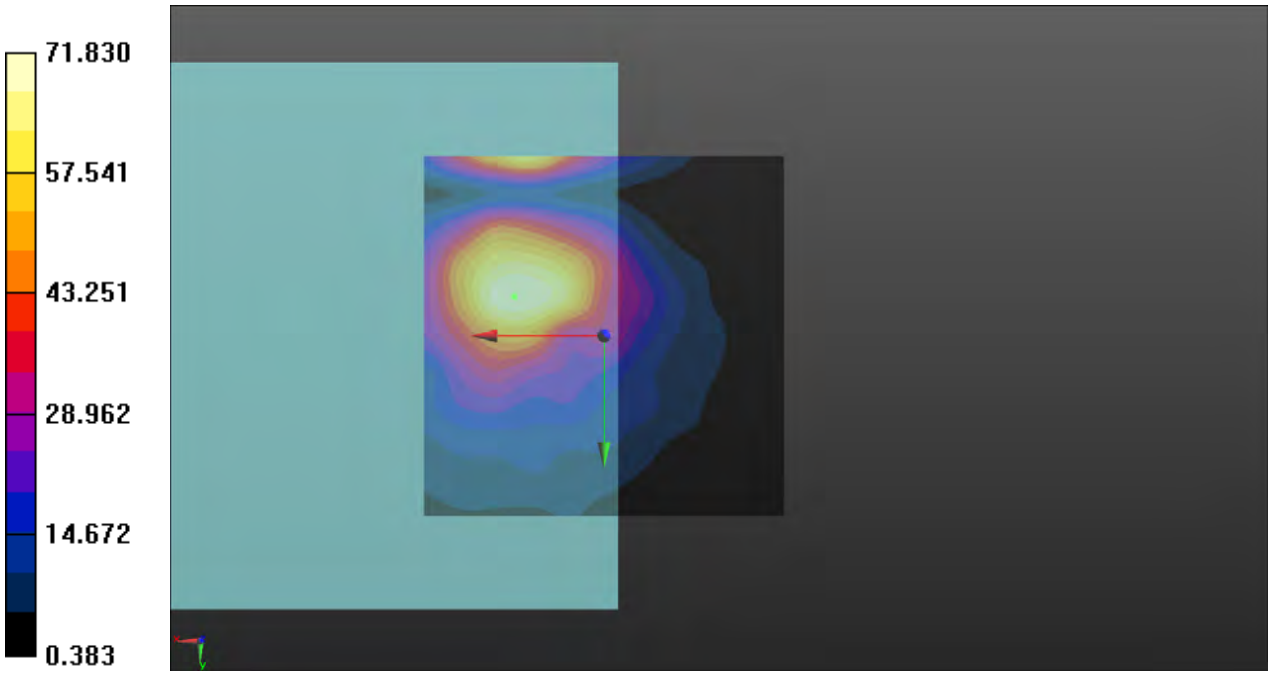
P19 T-Coil_CDMA BC10_Ch580_RC3+SO3_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10293 - AAB, CDMA2000, RC3, SO3, Full Rate; Frequency: 820.5 MHz;Duty Cycle: 1:2.24
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 37.13 dB
ABM1 comp = -13.80 dBA/m
Location: 12.5, -5.5, 3.7 mm



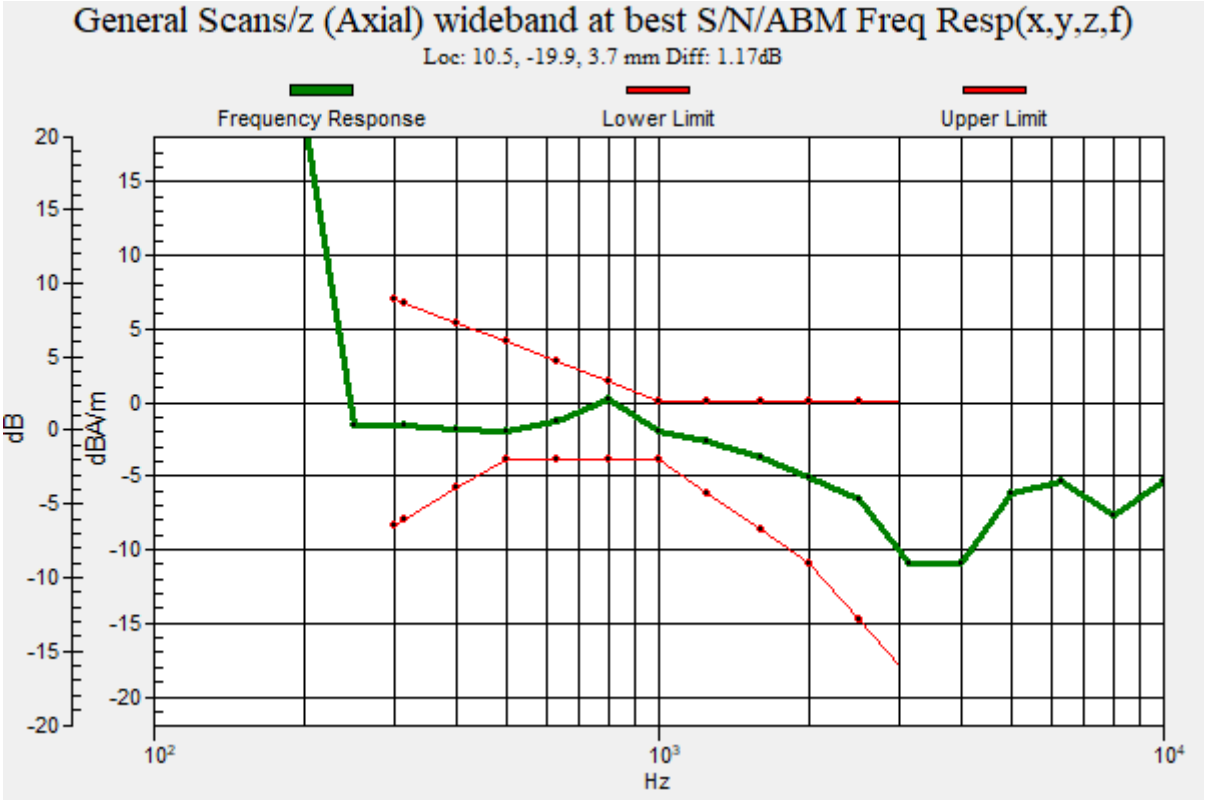
P19 T-Coil_CDMA BC10_Ch580_RC3+SO3_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10293 - AAB, CDMA2000, RC3, SO3, Full Rate; Frequency: 820.5 MHz;Duty Cycle: 1:2.24
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



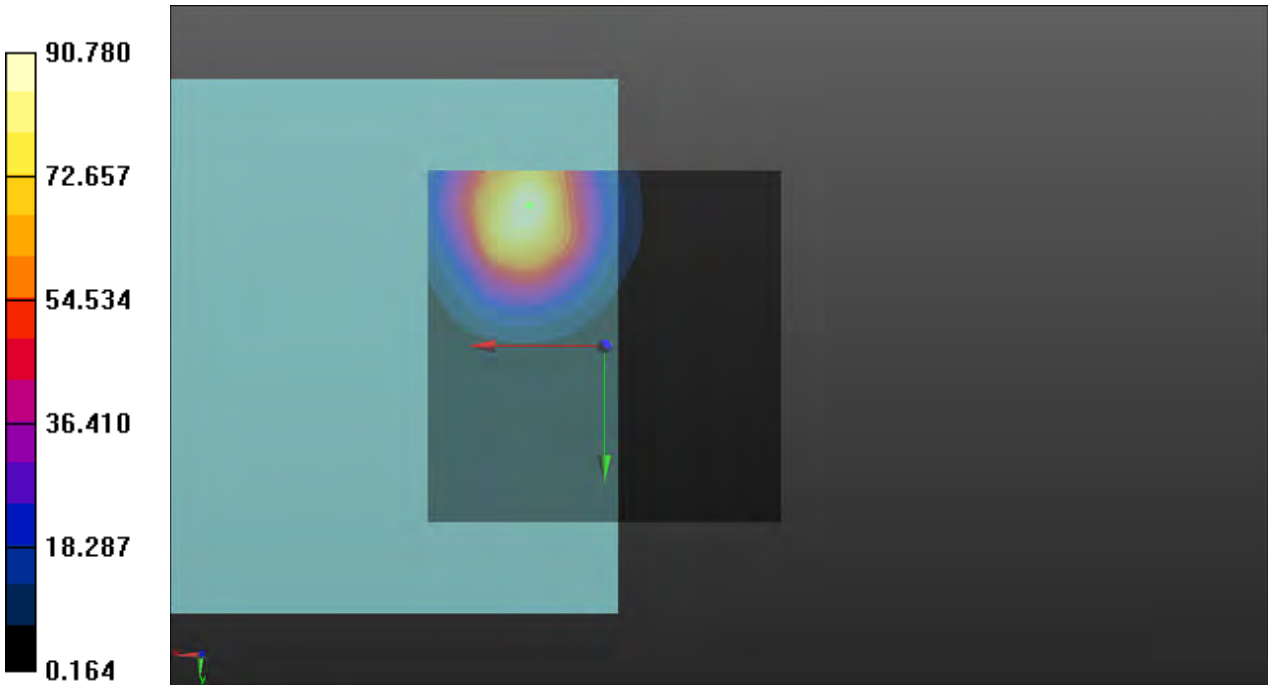
P62 T-Coil_LTE 2_QPSK20M_Ch18900_100RB_OS0_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10100 - CAE, LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK);
Frequency: 1880 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 39.16 dB
ABM1 comp = -4.71 dBA/m
Location: 10.5, -20, 3.7 mm



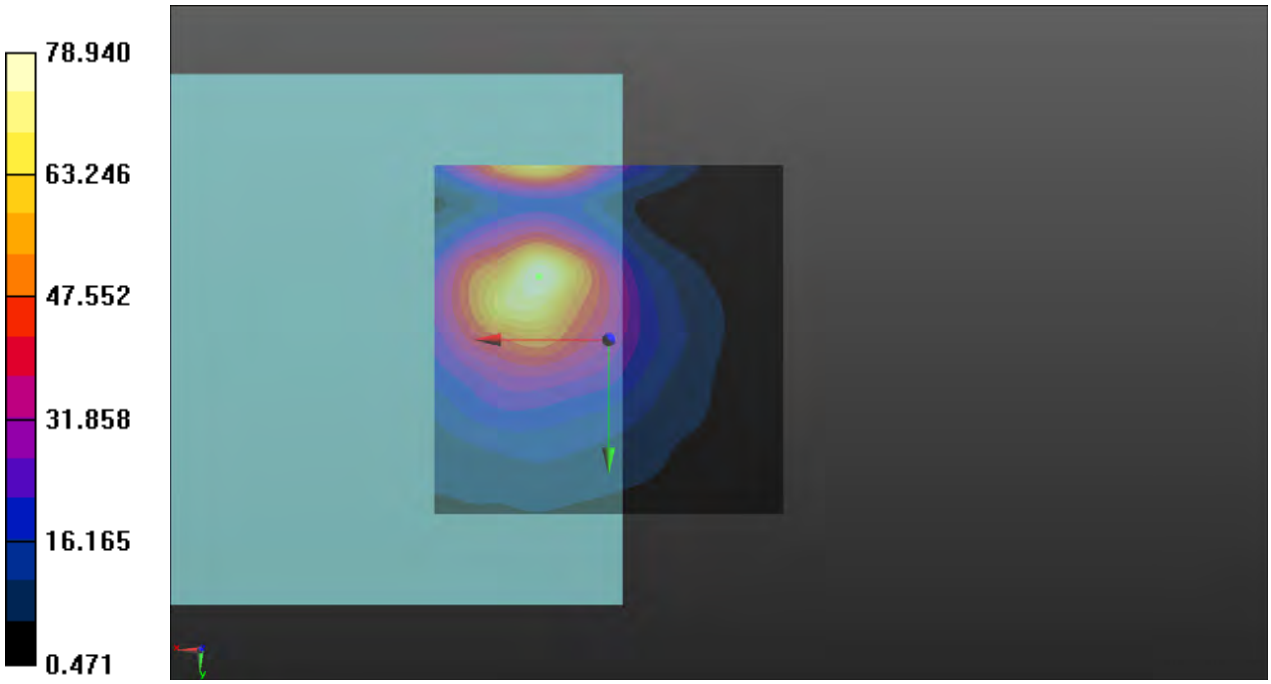
P62 T-Coil_LTE 2_QPSK20M_Ch18900_100RB_OS0_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10100 - CAE, LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 1880 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 37.95 dB
ABM1 comp = -13.14 dBA/m
Location: 10, -9, 3.7 mm



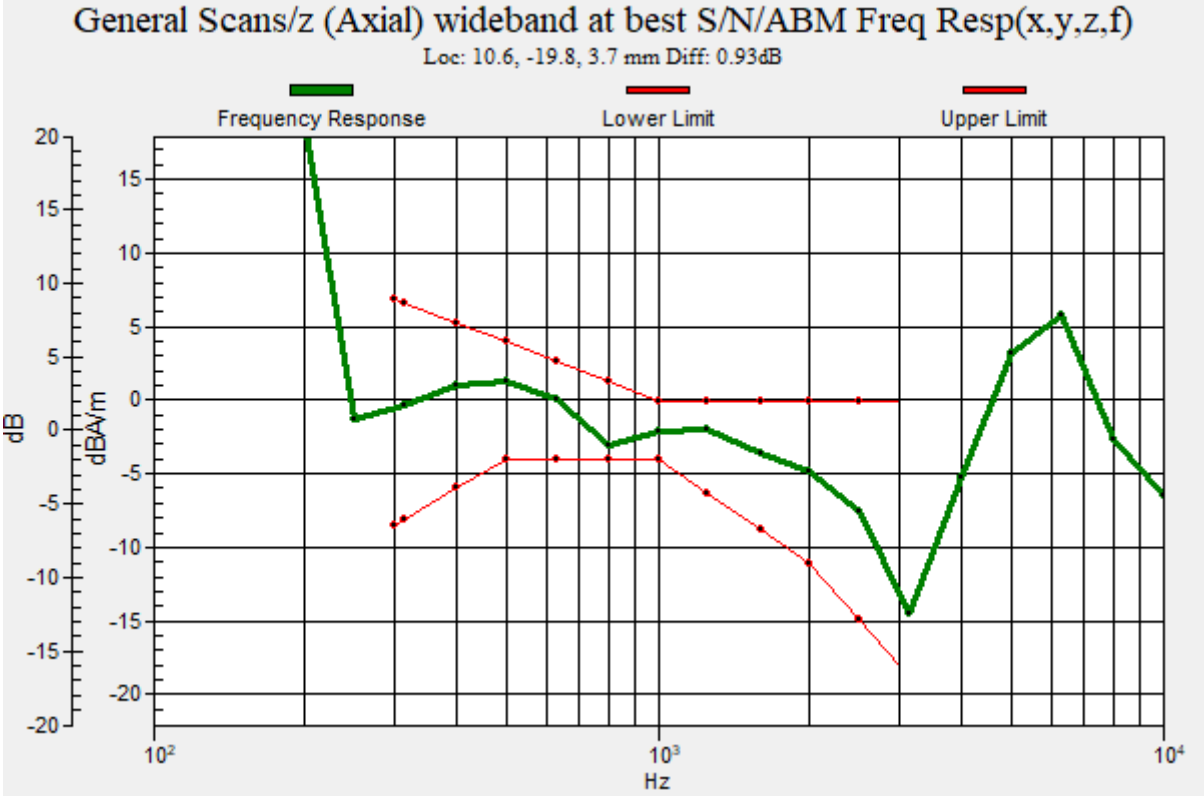
P62 T-Coil_LTE 2_QPSK20M_Ch18900_100RB_OS0_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10100 - CAE, LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 1880 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



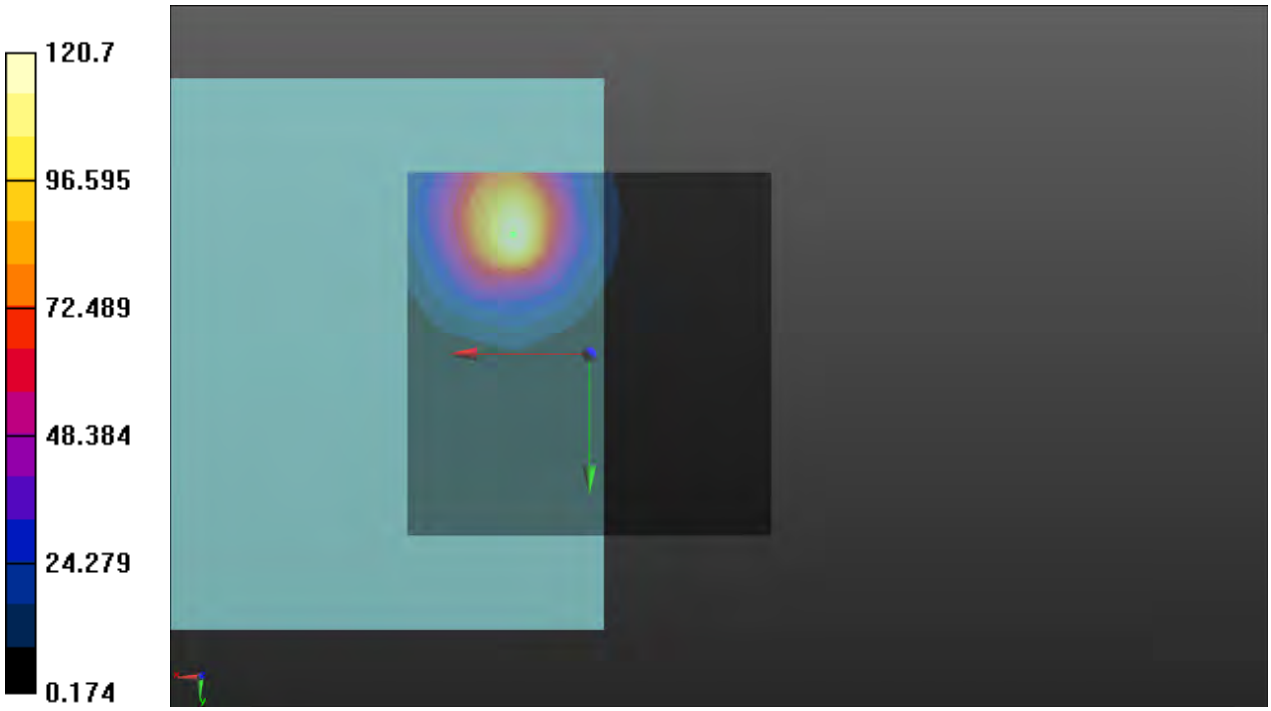
P63 T-Coil_LTE 4_QPSK20M_Ch20175_100RB_OS0_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10100 - CAE, LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 1882.5 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 41.64 dB
ABM1 comp = -2.90 dBA/m
Location: 10.5, -16.5, 3.7 mm



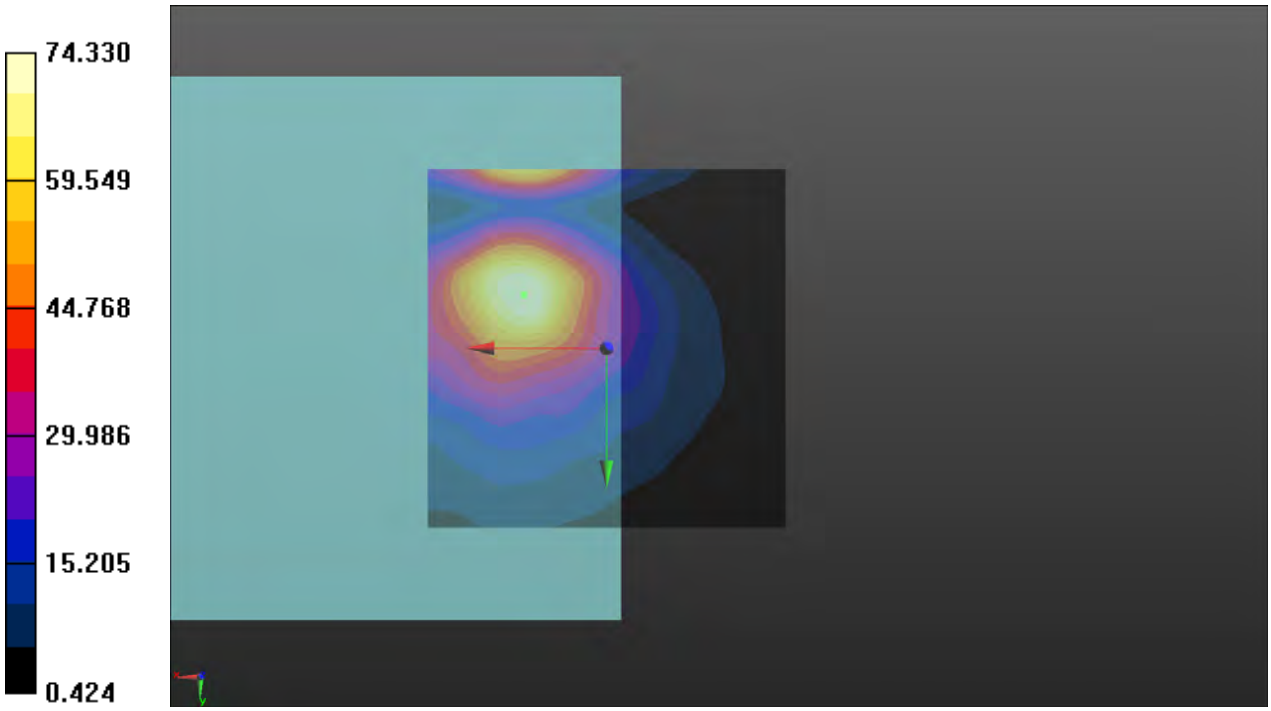
P63 T-Coil_LTE 4_QPSK20M_Ch20175_100RB_OS0_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10100 - CAE, LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 1882.5 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 37.42 dB
ABM1 comp = -13.66 dBA/m
Location: 11.5, -7.5, 3.7 mm



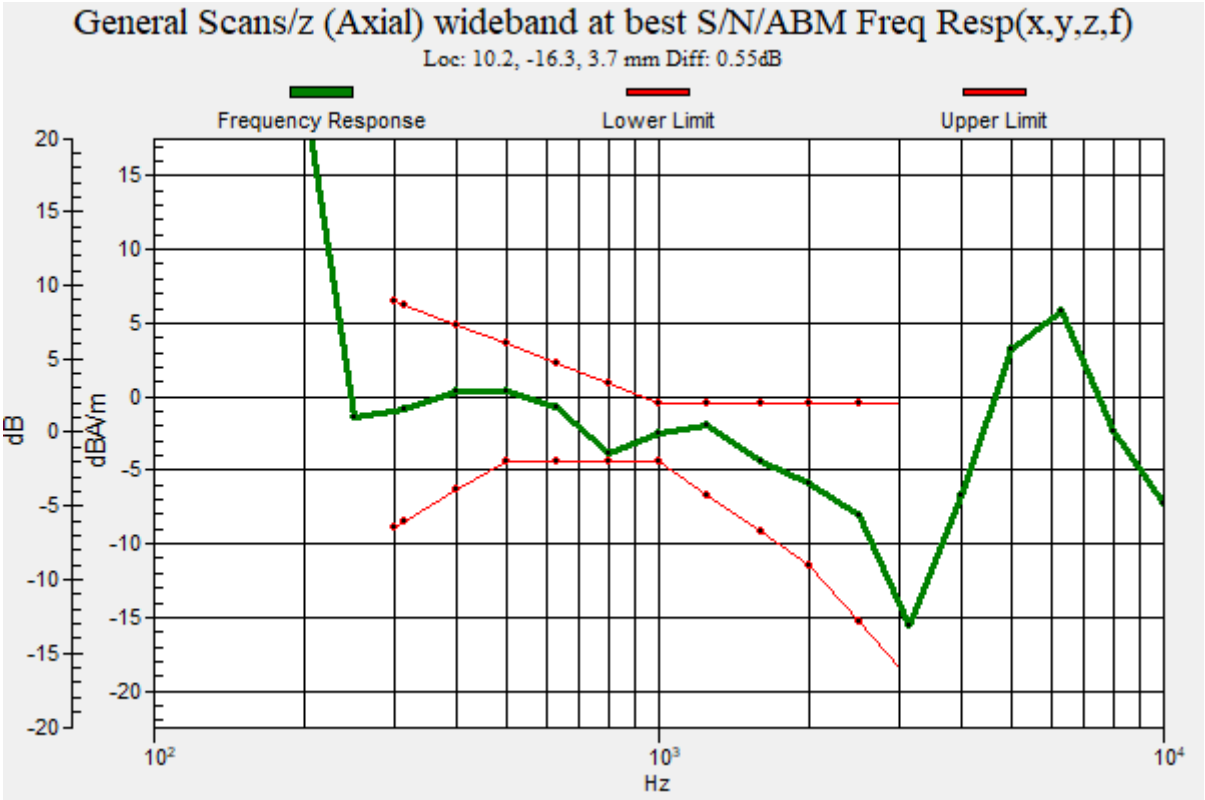
P63 T-Coil_LTE 4_QPSK20M_Ch20175_100RB_OS0_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10100 - CAE, LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 1882.5 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



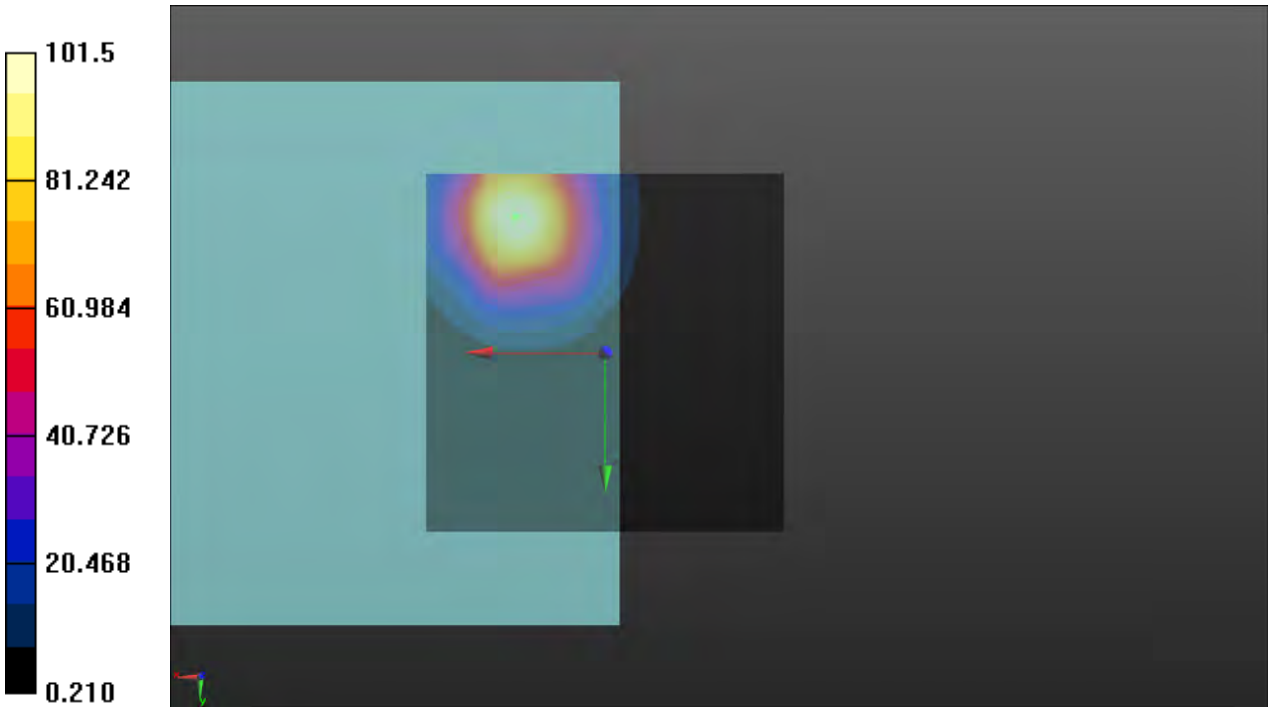
P64 T-Coil_LTE 5_QPSK10M_Ch20525_50RB_OS0_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10108 - CAG, LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK); Frequency: 836.5 MHz;Duty Cycle: 1:3.8
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 40.13 dB
ABM1 comp = -4.87 dBA/m
Location: 12.5, -19, 3.7 mm



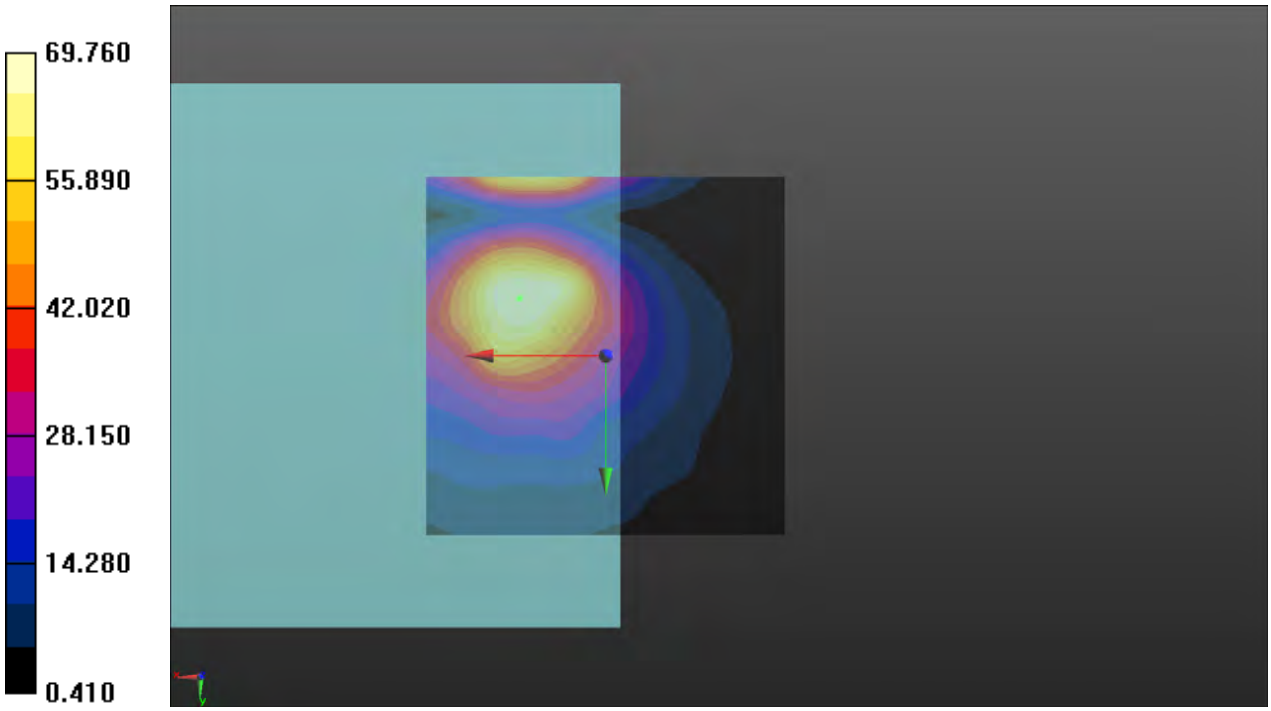
P64 T-Coil_LTE 5_QPSK10M_Ch20525_50RB_OS0_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10108 - CAG, LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK); Frequency: 836.5 MHz;Duty Cycle: 1:3.8
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 36.87 dB
ABM1 comp = -14.26 dBA/m
Location: 12, -8, 3.7 mm



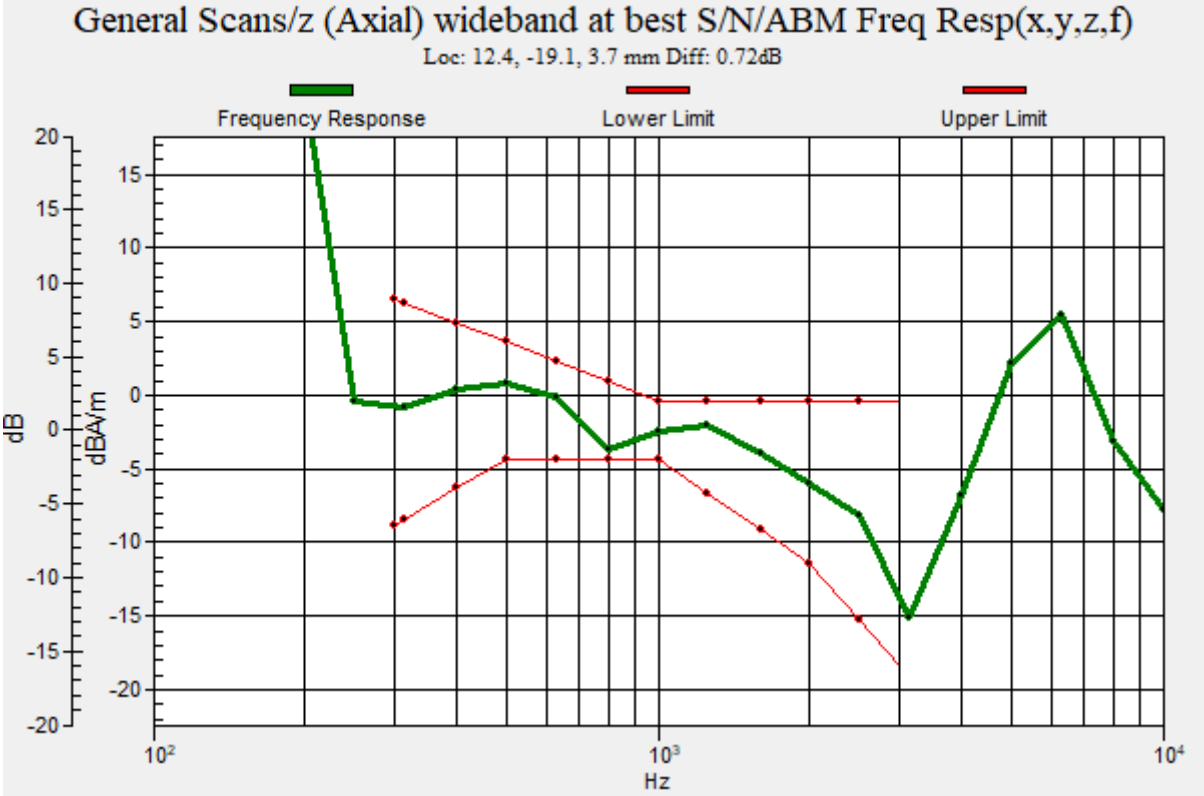
P64 T-Coil_LTE 5_QPSK10M_Ch20525_50RB_OS0_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10108 - CAG, LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK); Frequency: 836.5 MHz;Duty Cycle: 1:3.8
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



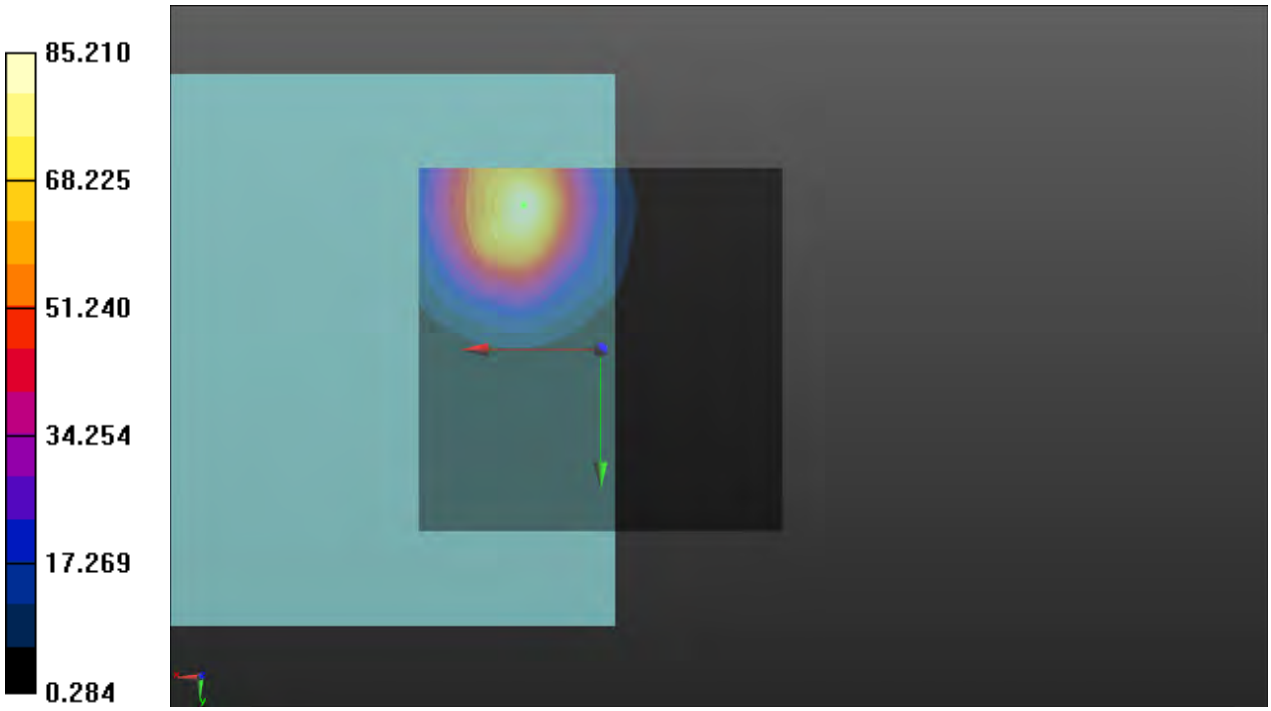
P65 T-Coil_LTE 7_QPSK20M_Ch21100_100RB_OS0_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10100 - CAE, LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 2535 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 38.61 dB
ABM1 comp = -5.47 dBA/m
Location: 10.5, -20, 3.7 mm



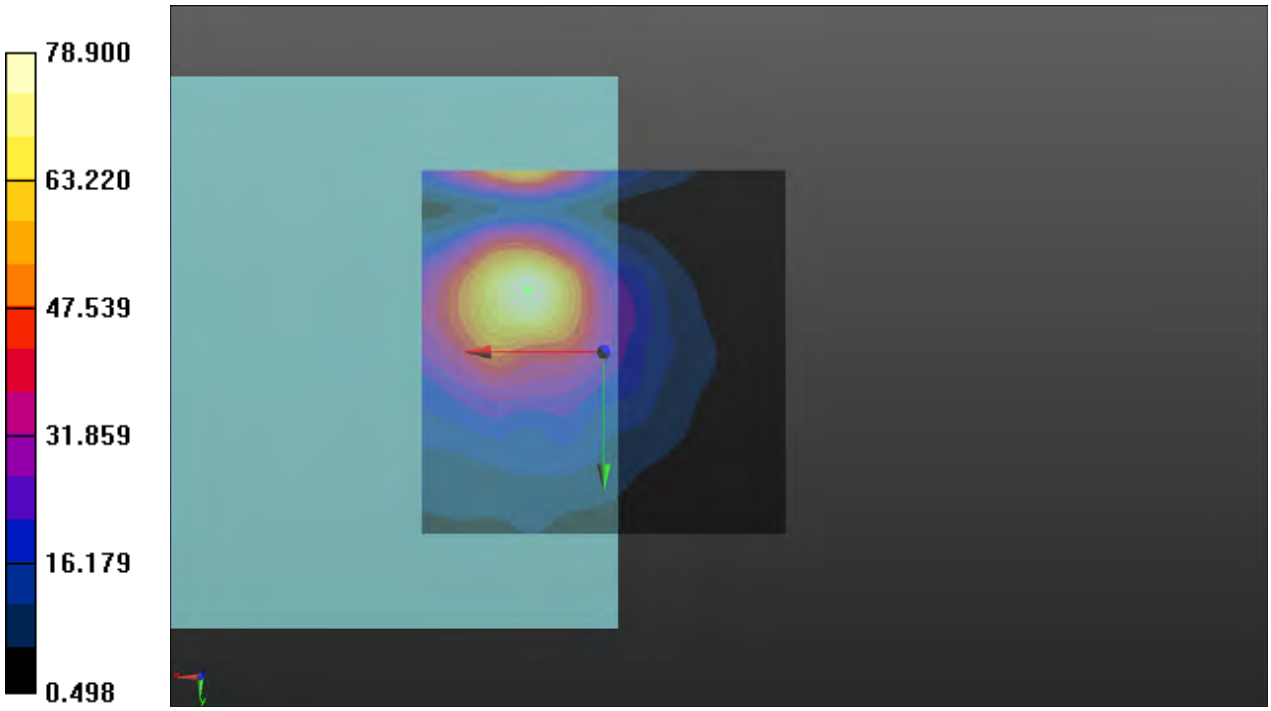
P65 T-Coil_LTE 7_QPSK20M_Ch21100_100RB_OS0_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10100 - CAE, LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 2535 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 37.94 dB
ABM1 comp = -13.20 dBA/m
Location: 10.5, -8.5, 3.7 mm



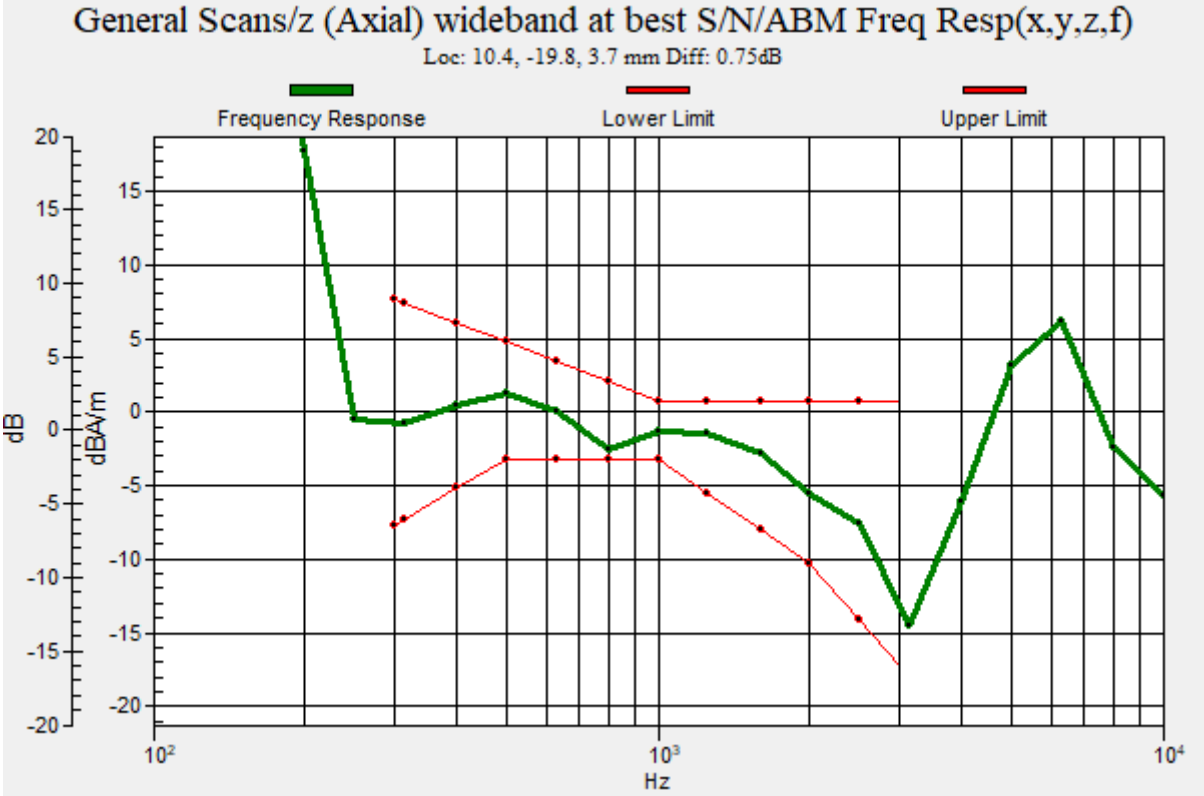
P65 T-Coil_LTE 7_QPSK20M_Ch21100_100RB_OS0_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10100 - CAE, LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 2535 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



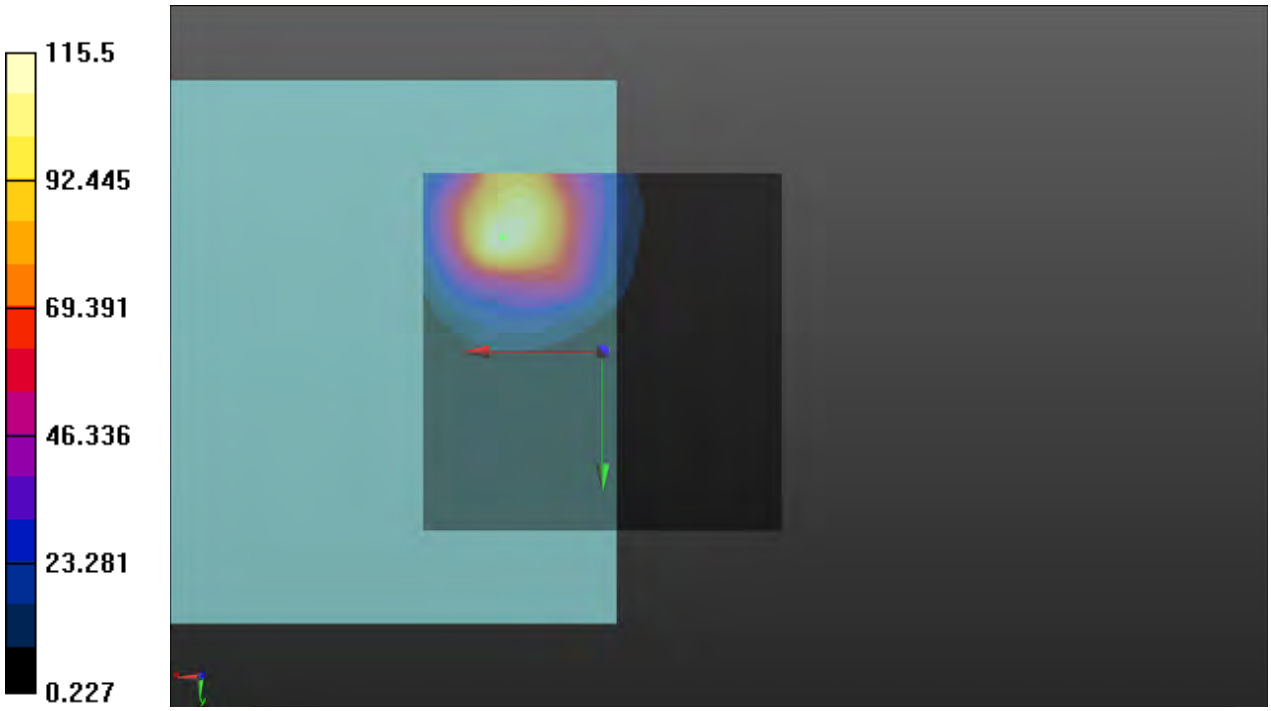
P66 T-Coil_LTE 12_QPSK10M_Ch23095_50RB_OS0_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10108 - CAG, LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK);
Frequency: 707.5 MHz;Duty Cycle: 1:3.8
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 41.25 dB
ABM1 comp = -4.47 dBA/m
Location: 14, -16, 3.7 mm



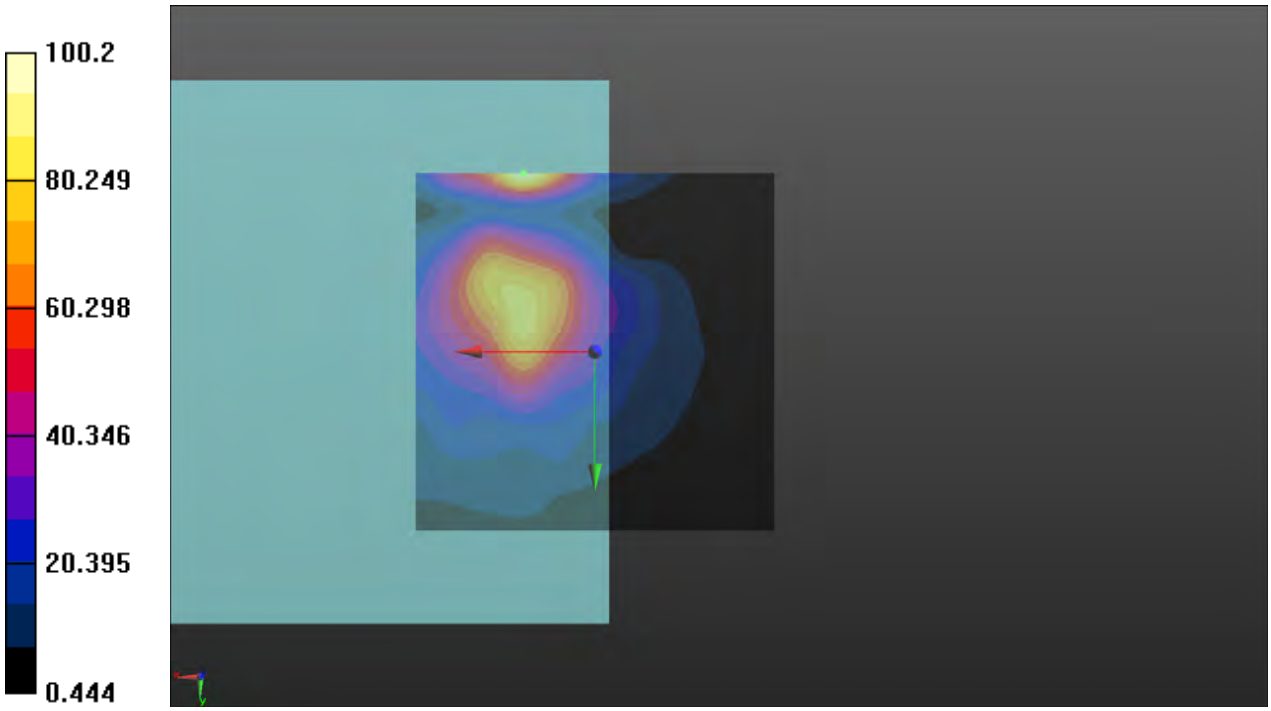
P66 T-Coil_LTE 12_QPSK10M_Ch23095_50RB_OS0_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10108 - CAG, LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK); Frequency: 707.5 MHz;Duty Cycle: 1:3.8
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 40.02 dB
ABM1 comp = -11.32 dBA/m
Location: 10, -25, 3.7 mm



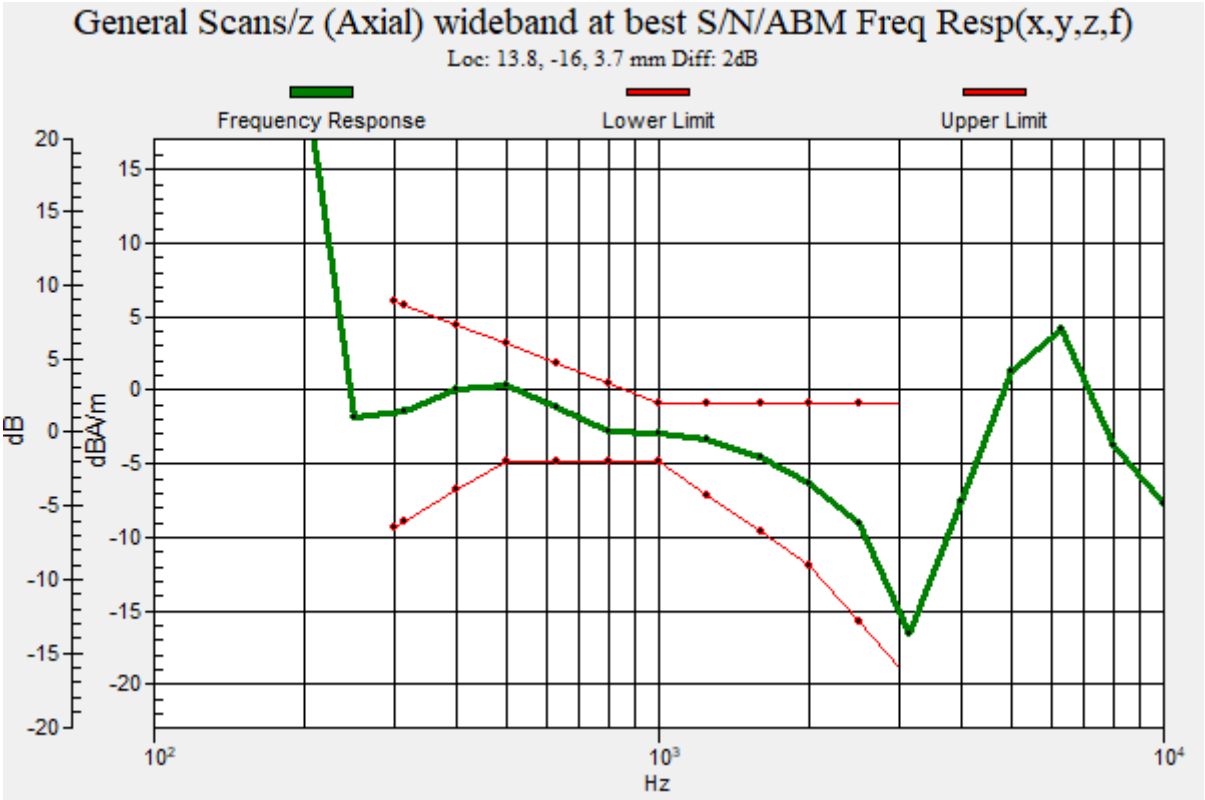
P66 T-Coil_LTE 12_QPSK10M_Ch23095_50RB_OS0_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10108 - CAG, LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK); Frequency: 707.5 MHz;Duty Cycle: 1:3.8
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



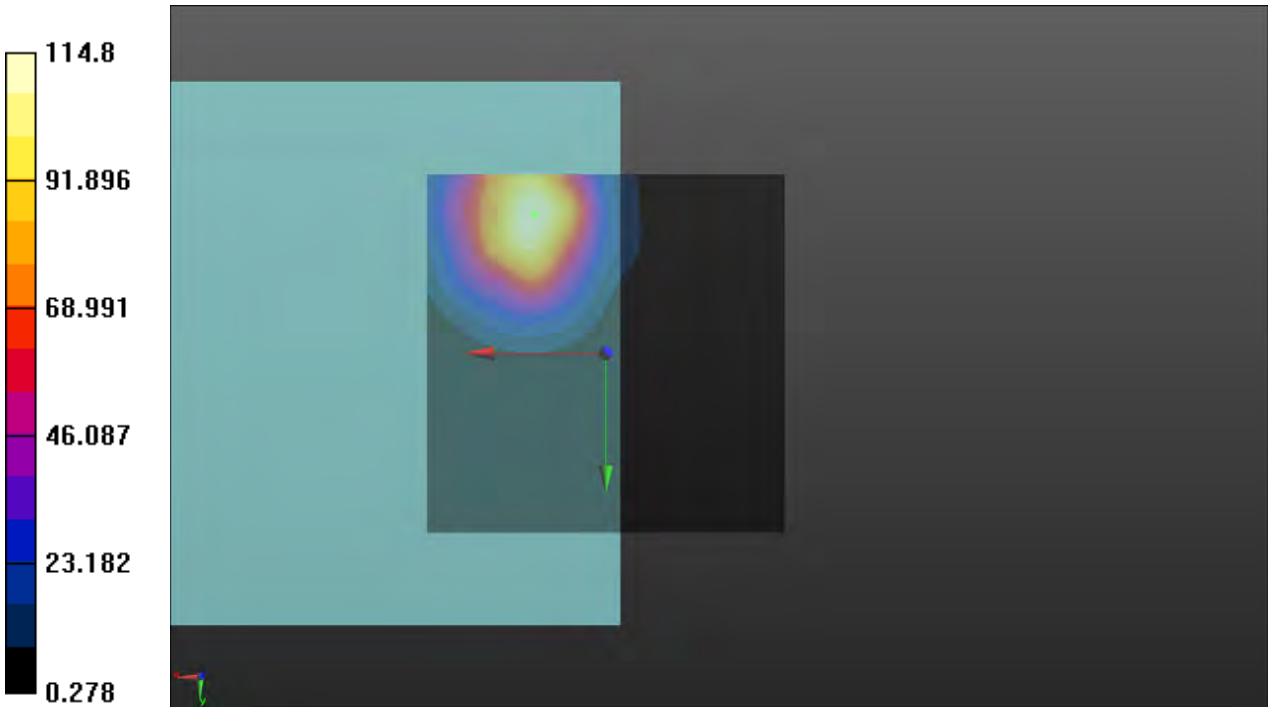
P67 T-Coil_LTE 13_QPSK10M_Ch23230_50RB_OS0_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10108 - CAG, LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK); Frequency: 782 MHz;Duty Cycle: 1:3.8
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 41.20 dB
ABM1 comp = -3.78 dBA/m
Location: 10, -19.5, 3.7 mm



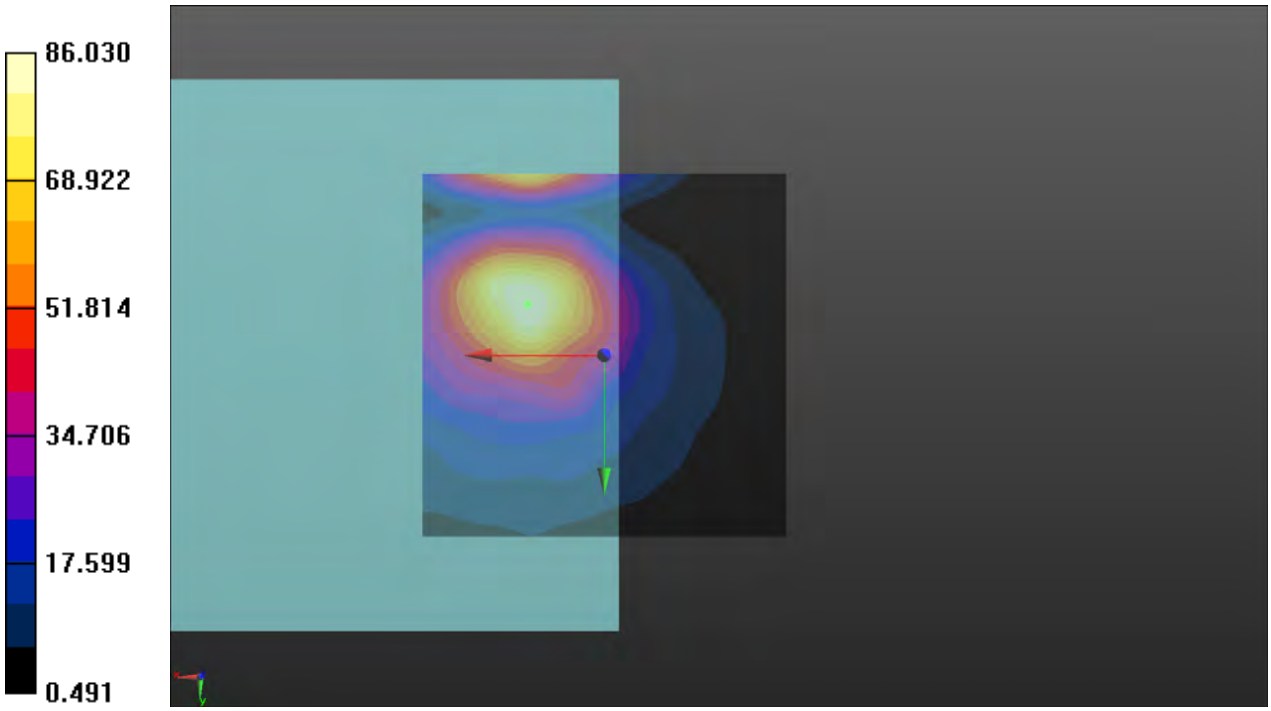
P67 T-Coil_LTE 13_QPSK10M_Ch23230_50RB_OS0_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10108 - CAG, LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK); Frequency: 782 MHz;Duty Cycle: 1:3.8
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 38.69 dB
ABM1 comp = -12.74 dBA/m
Location: 10.5, -7, 3.7 mm



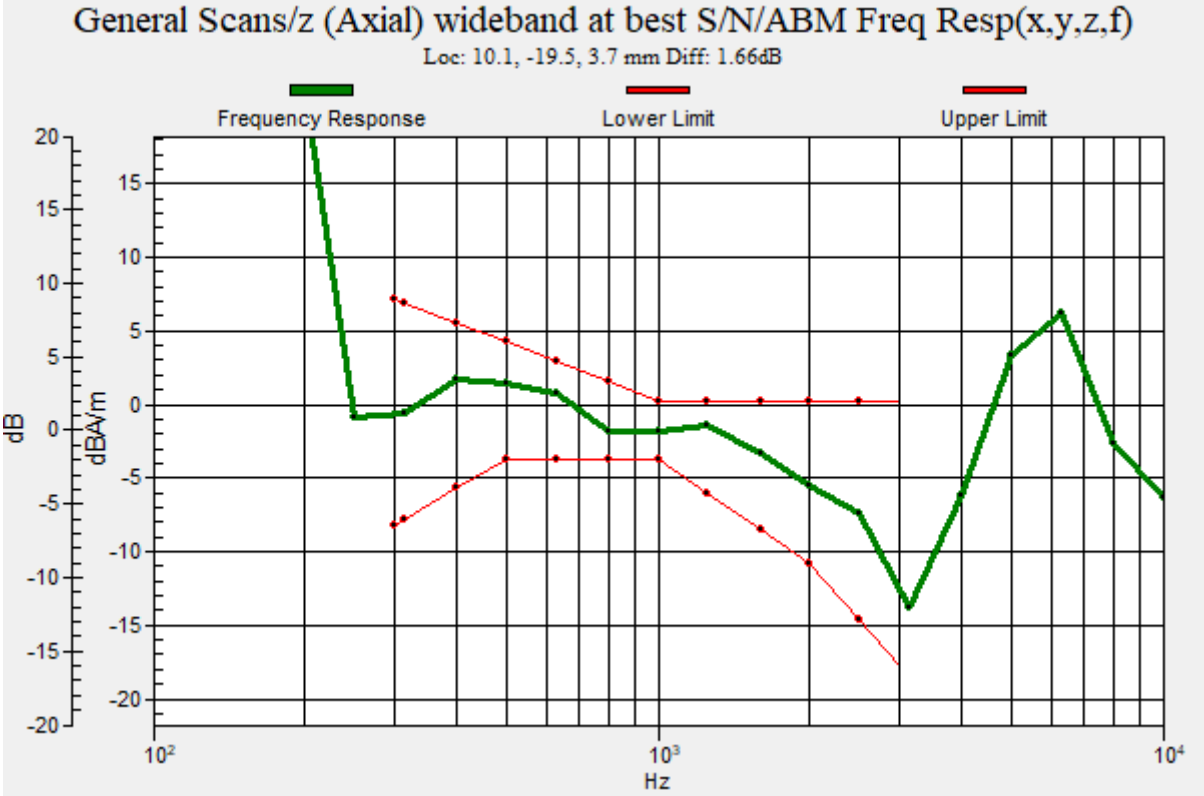
P67 T-Coil_LTE 13_QPSK10M_Ch23230_50RB_OS0_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10108 - CAG, LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK); Frequency: 782 MHz;Duty Cycle: 1:3.8
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



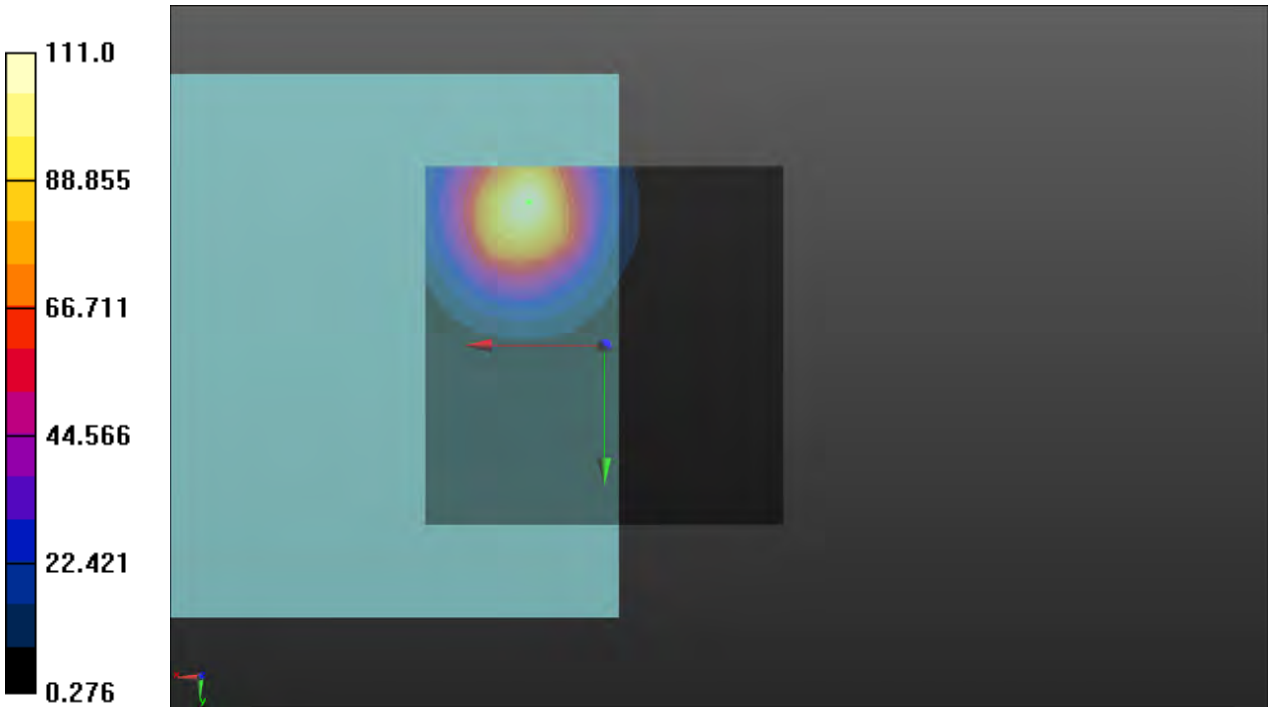
P68 T-Coil_LTE 14_QPSK10M_Ch23330_50RB_OS0_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10108 - CAG, LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK); Frequency: 793 MHz;Duty Cycle: 1:3.8
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 40.90 dB
ABM1 comp = -4.13 dBA/m
Location: 10.5, -20, 3.7 mm



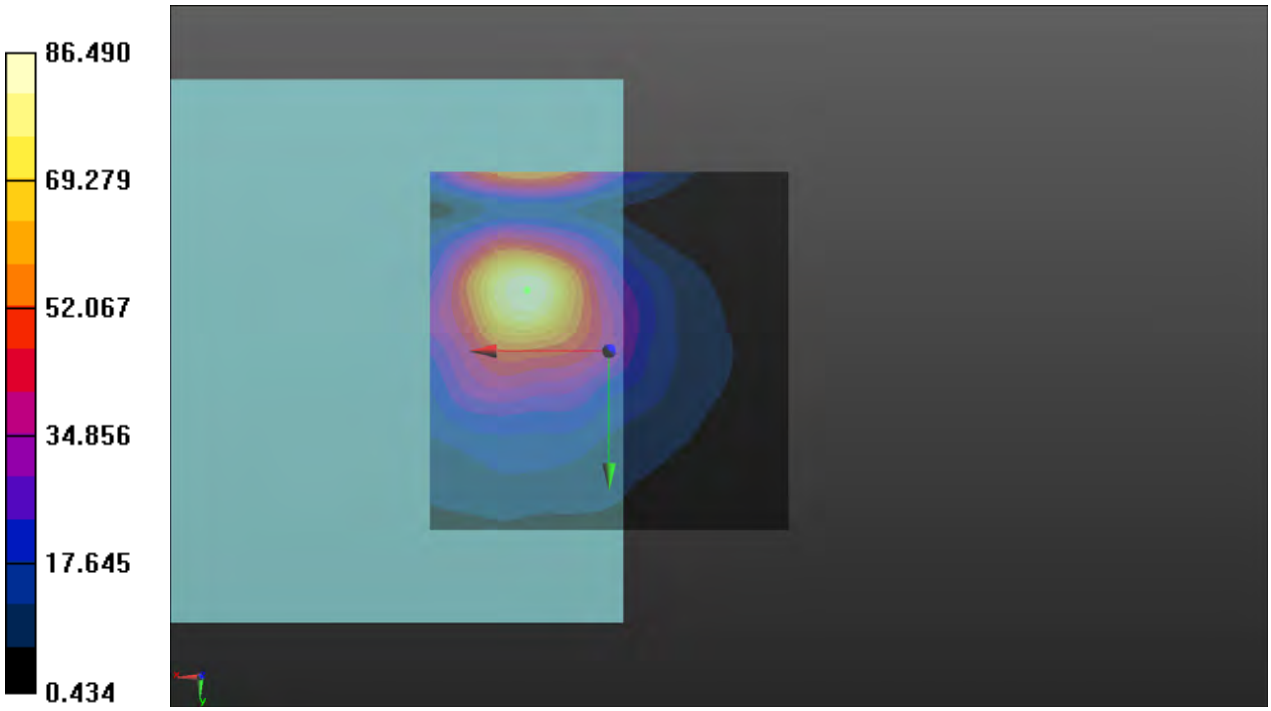
P68 T-Coil_LTE 14_QPSK10M_Ch23330_50RB_OS0_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10108 - CAG, LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK); Frequency: 793 MHz;Duty Cycle: 1:3.8
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 38.74 dB
ABM1 comp = -12.62 dBA/m
Location: 11.5, -8.5, 3.7 mm



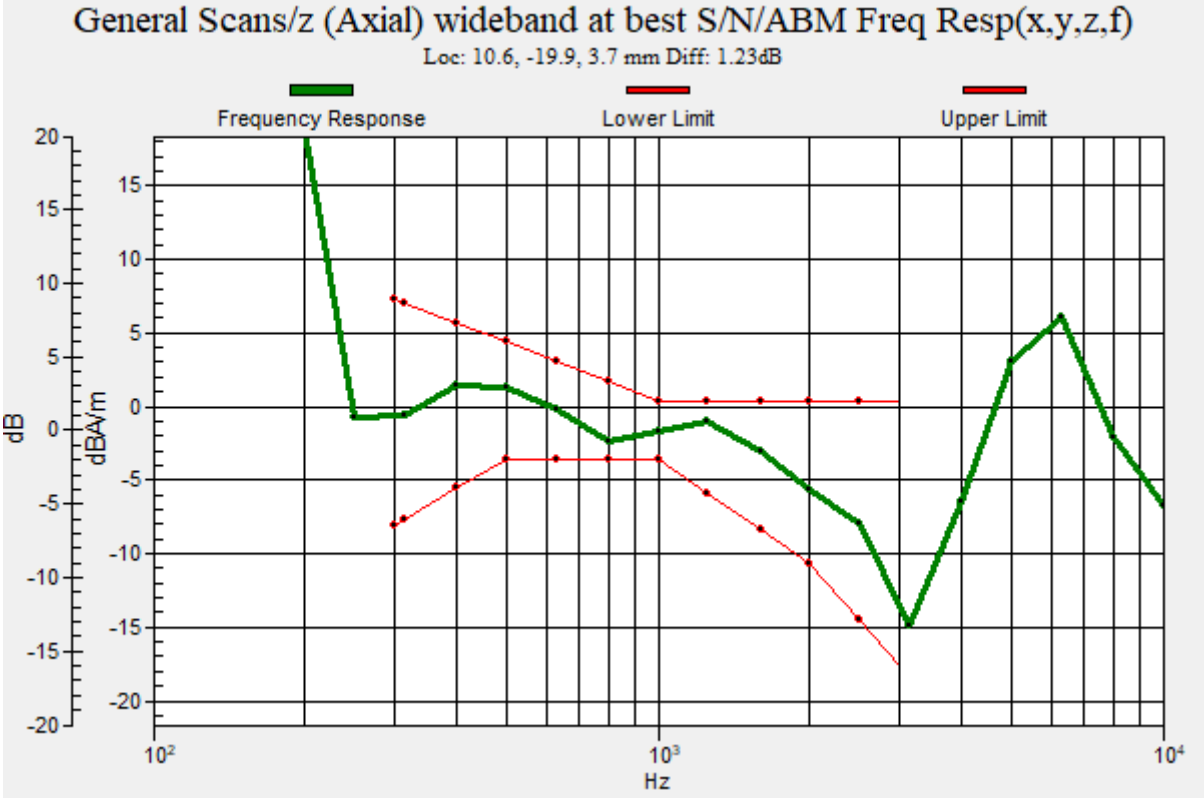
P68 T-Coil_LTE 14_QPSK10M_Ch23330_50RB_OS0_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10108 - CAG, LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK); Frequency: 793 MHz;Duty Cycle: 1:3.8
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



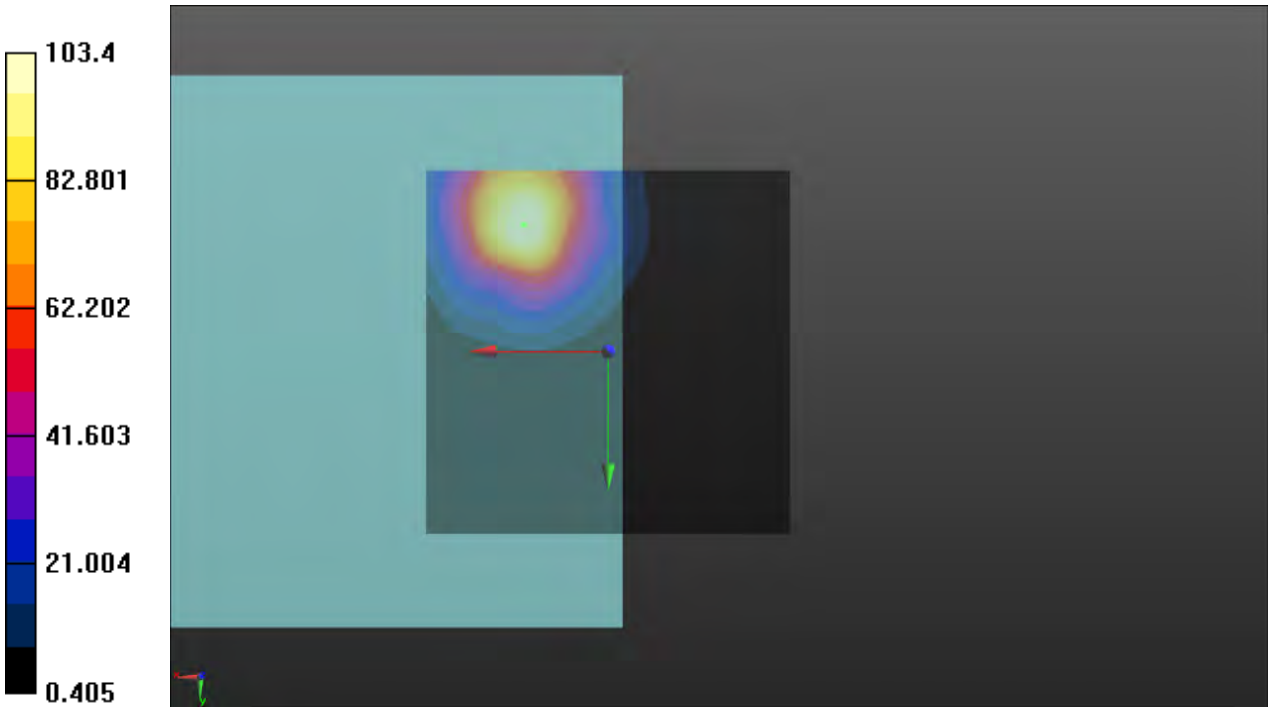
P69 T-Coil_LTE 17_QPSK10M_Ch23790_50RB_OS0_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10108 - CAG, LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK); Frequency: 710 MHz;Duty Cycle: 1:3.8
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 40.29 dB
ABM1 comp = -5.19 dBA/m
Location: 11.5, -17.5, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/29

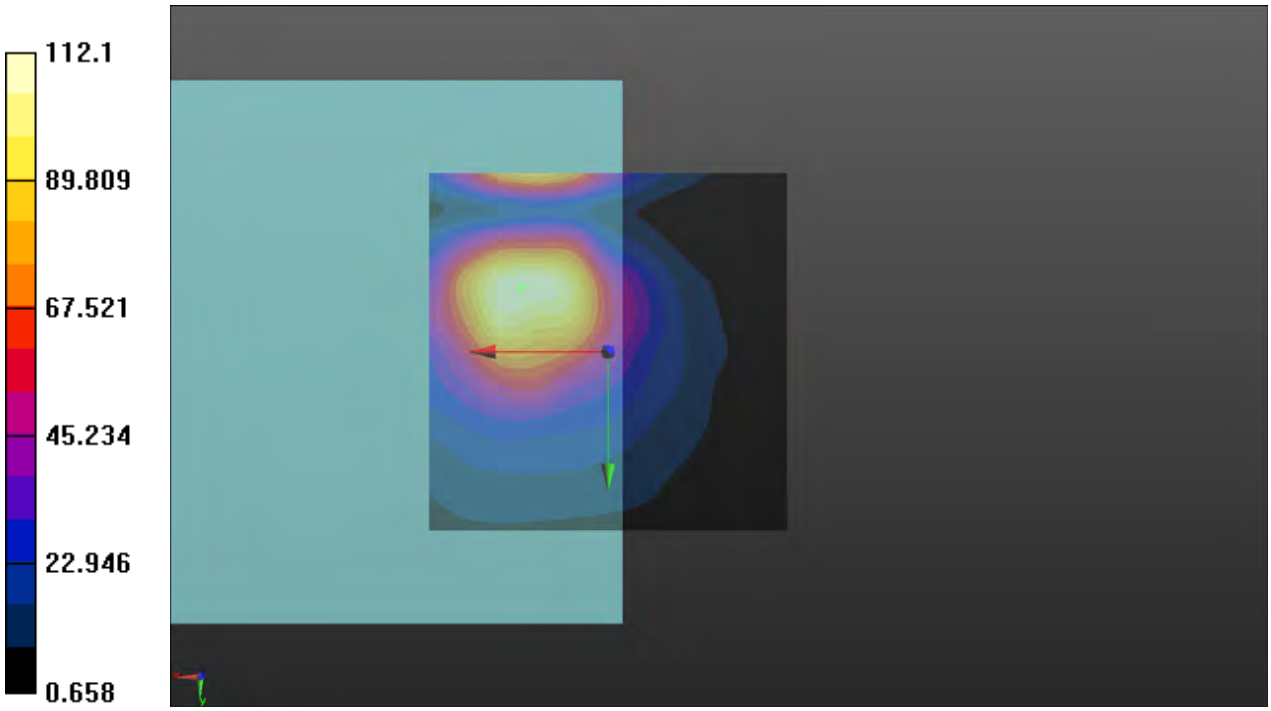
P69 T-Coil_LTE 17_QPSK10M_Ch23790_50RB_OS0_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10108 - CAG, LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK); Frequency: 710 MHz;Duty Cycle: 1:3.8
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 40.99 dB
ABM1 comp = -14.13 dBA/m
Location: 12, -9, 3.7 mm



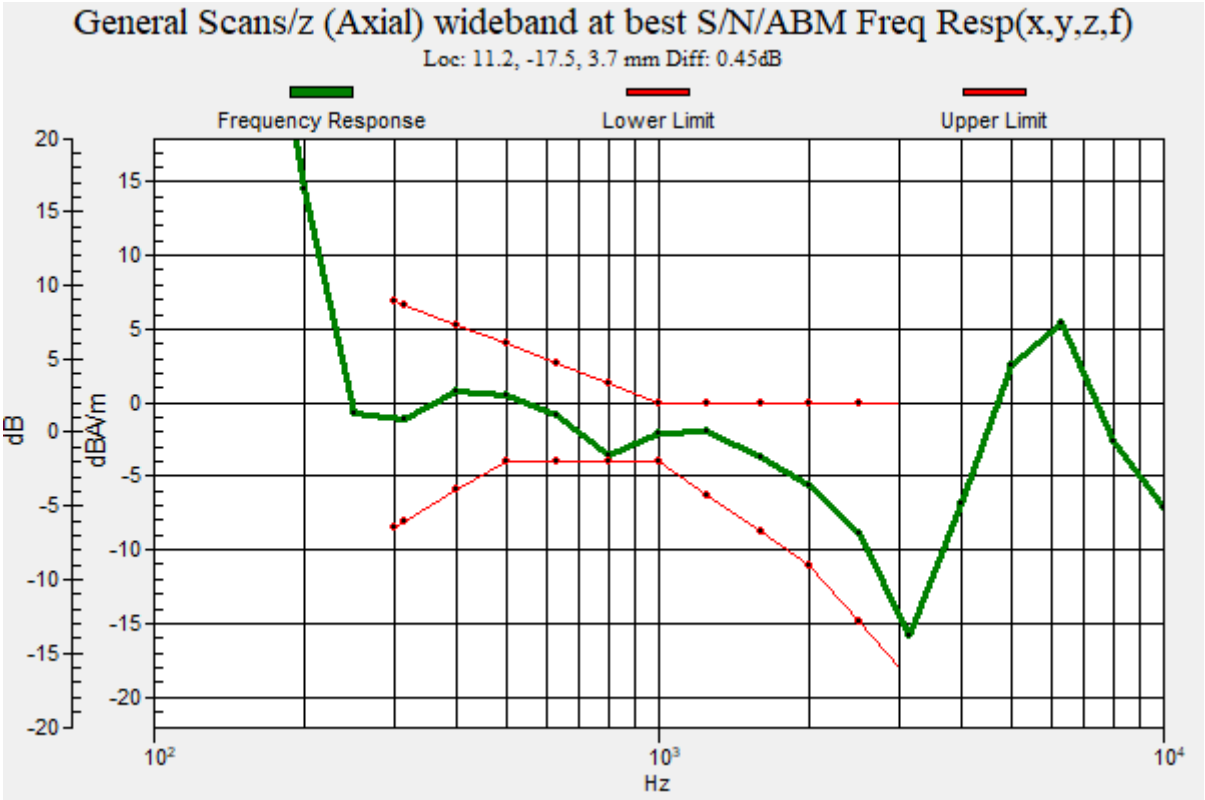
P69 T-Coil_LTE 17_QPSK10M_Ch23790_50RB_OS0_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10108 - CAG, LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK); Frequency: 710 MHz;Duty Cycle: 1:3.8
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



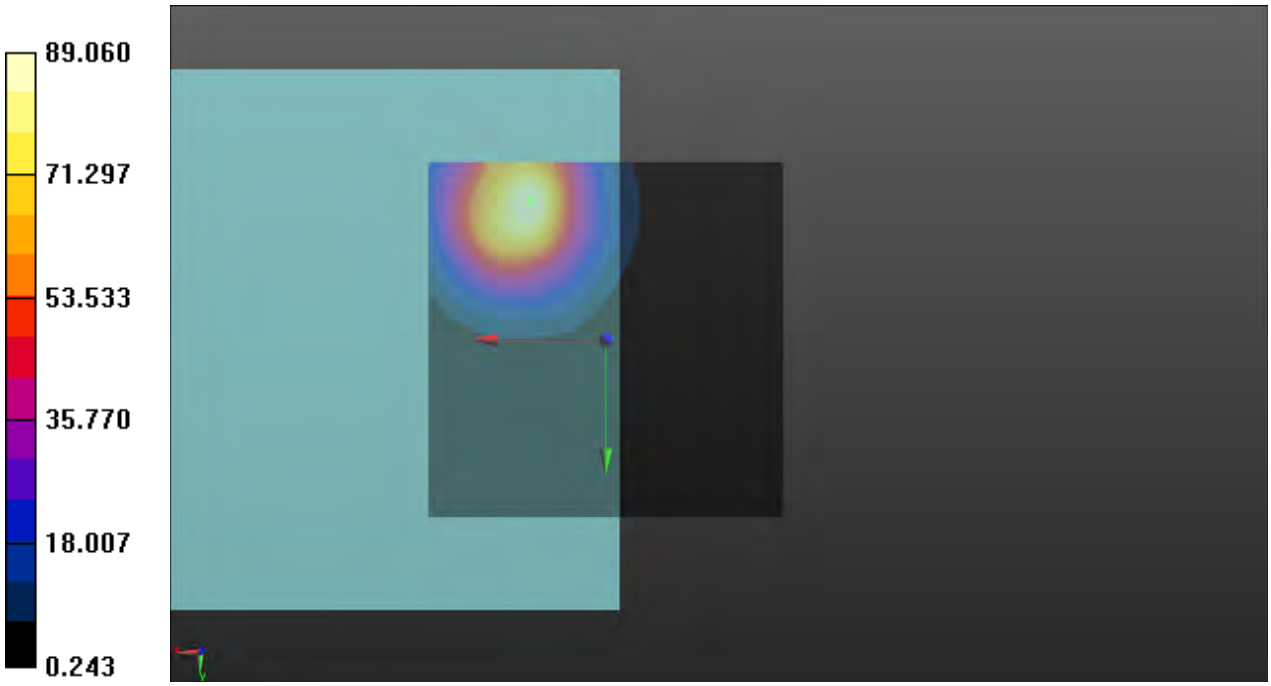
P70 T-Coil_LTE 25_QPSK20M_Ch26365_100RB_OS0_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10100 - CAE, LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK);
Frequency: 1882.5 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.9 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 38.99 dB
ABM1 comp = -4.82 dBA/m
Location: 10.5, -19.5, 3.7 mm



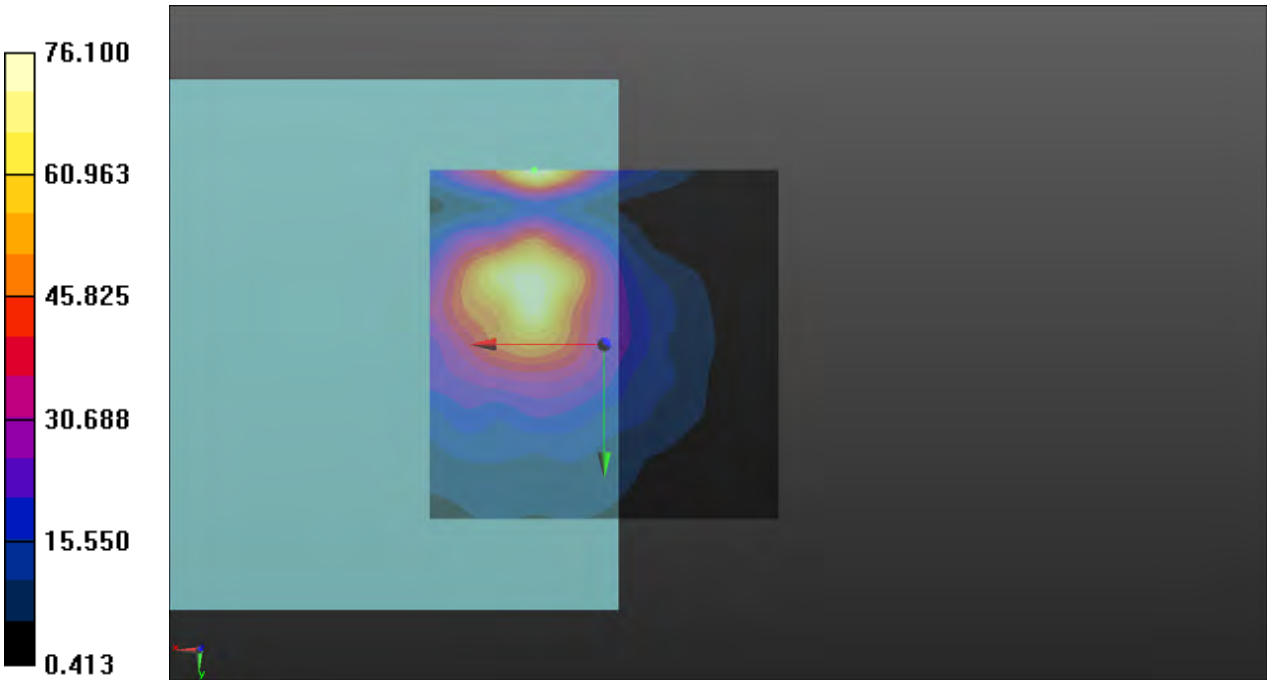
P70 T-Coil_LTE 25_QPSK20M_Ch26365_100RB_OS0_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10100 - CAE, LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK);
Frequency: 1882.5 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.9 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 37.63 dB
ABM1 comp = -13.16 dBA/m
Location: 10, -25, 3.7 mm



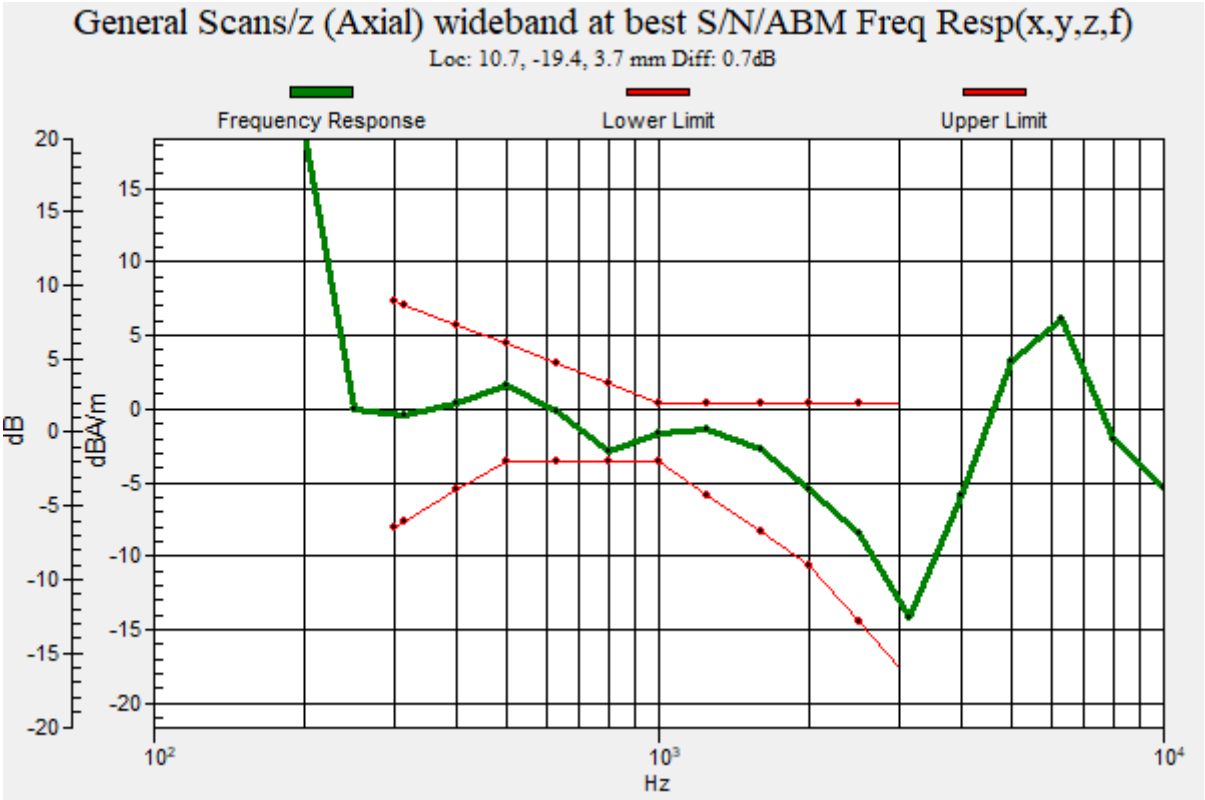
P70 T-Coil_LTE 25_QPSK20M_Ch26365_100RB_OS0_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10100 - CAE, LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 1882.5 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.9 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



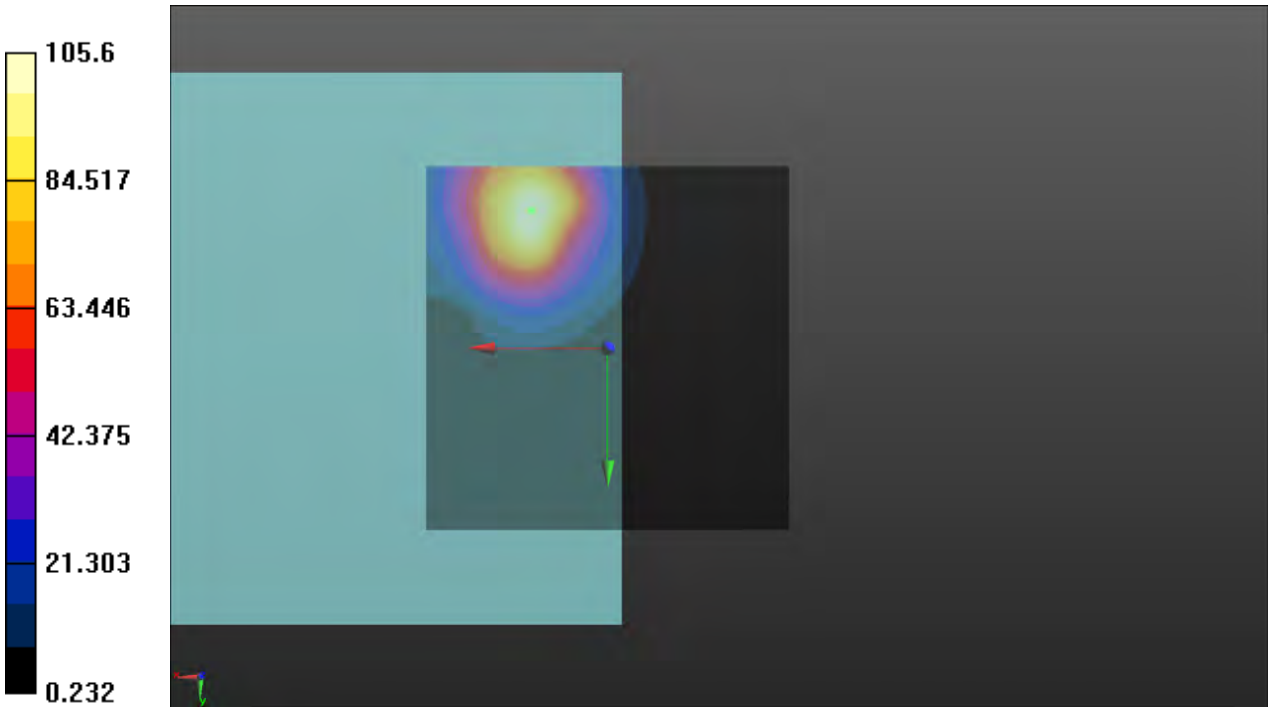
P71 T-Coil_LTE 26_QPSK15M_Ch26865_75RB_OS0_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10311 - AAD, LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK); Frequency: 831.5 MHz;Duty Cycle: 1:4.04
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 40.47 dB
ABM1 comp = -4.95 dBA/m
Location: 10.5, -19, 3.7 mm



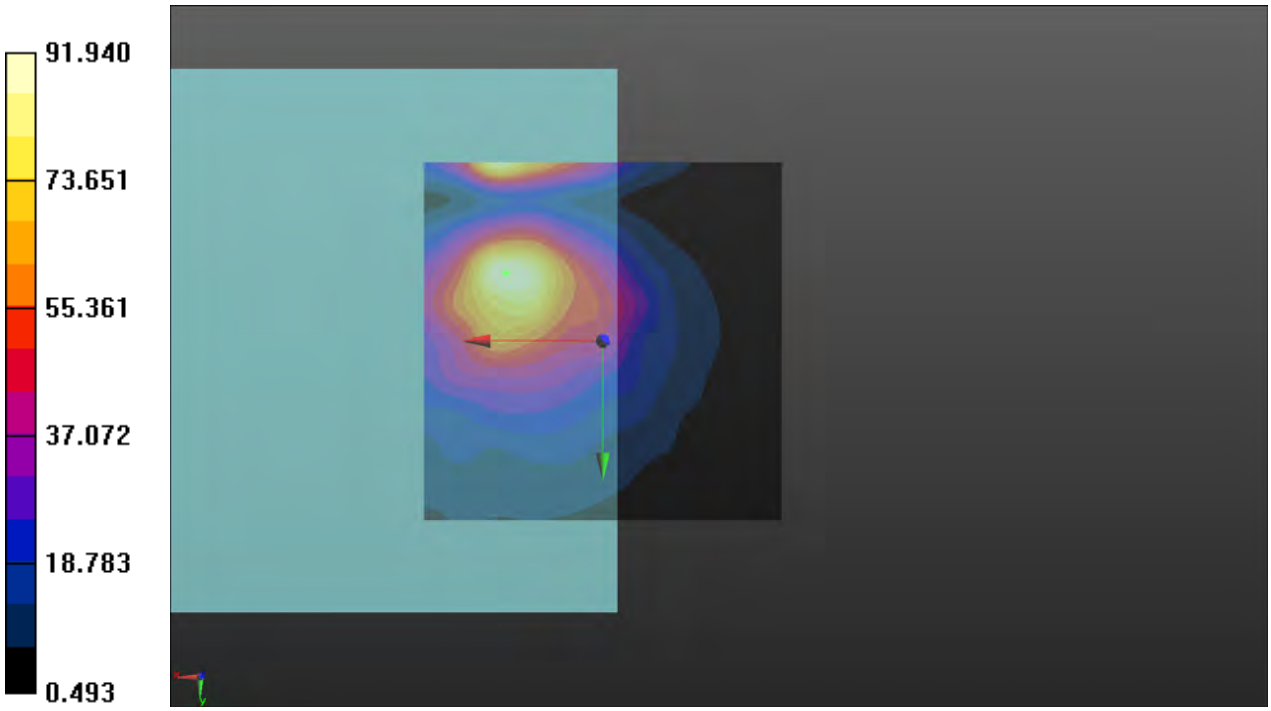
P71 T-Coil_LTE 26_QPSK15M_Ch26865_75RB_OS0_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10311 - AAD, LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK); Frequency: 831.5 MHz;Duty Cycle: 1:4.04
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 39.27 dB
ABM1 comp = -12.66 dBA/m
Location: 13.5, -9.5, 3.7 mm



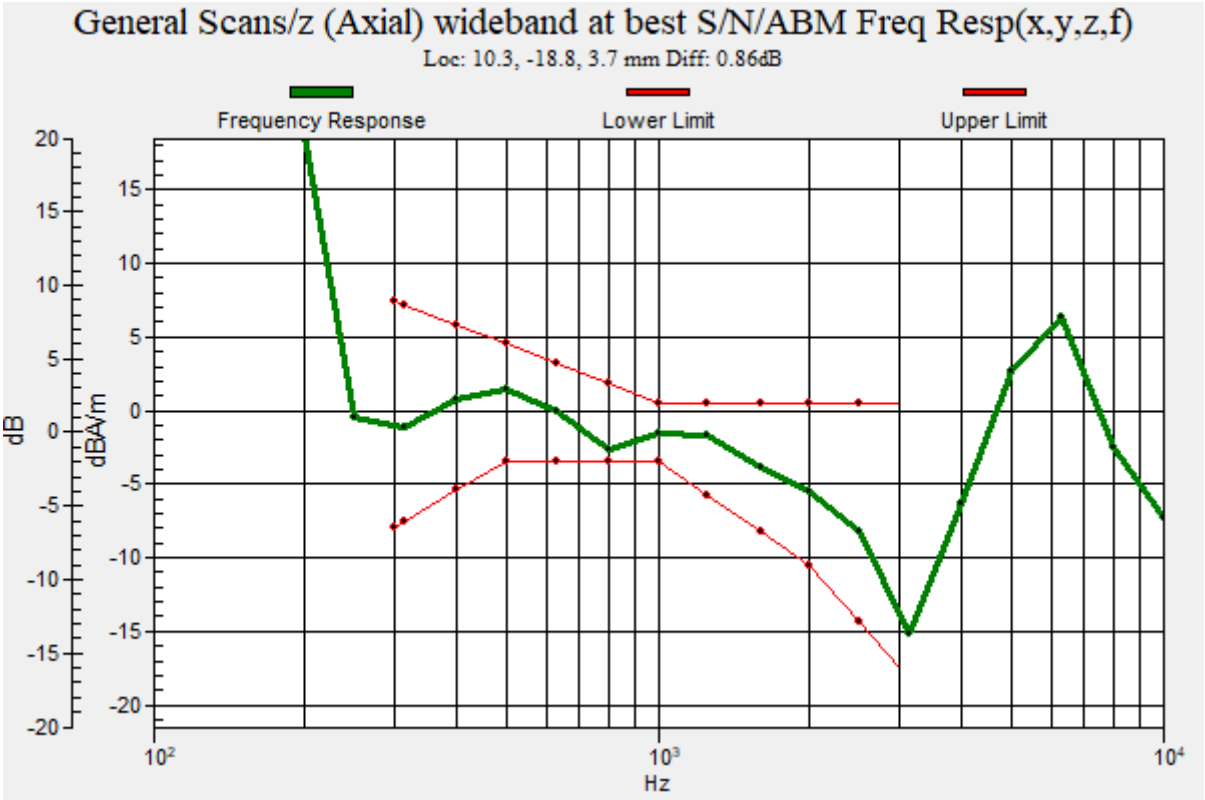
P71 T-Coil_LTE 26_QPSK15M_Ch26865_75RB_OS0_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10311 - AAD, LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK); Frequency: 831.5 MHz;Duty Cycle: 1:4.04
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



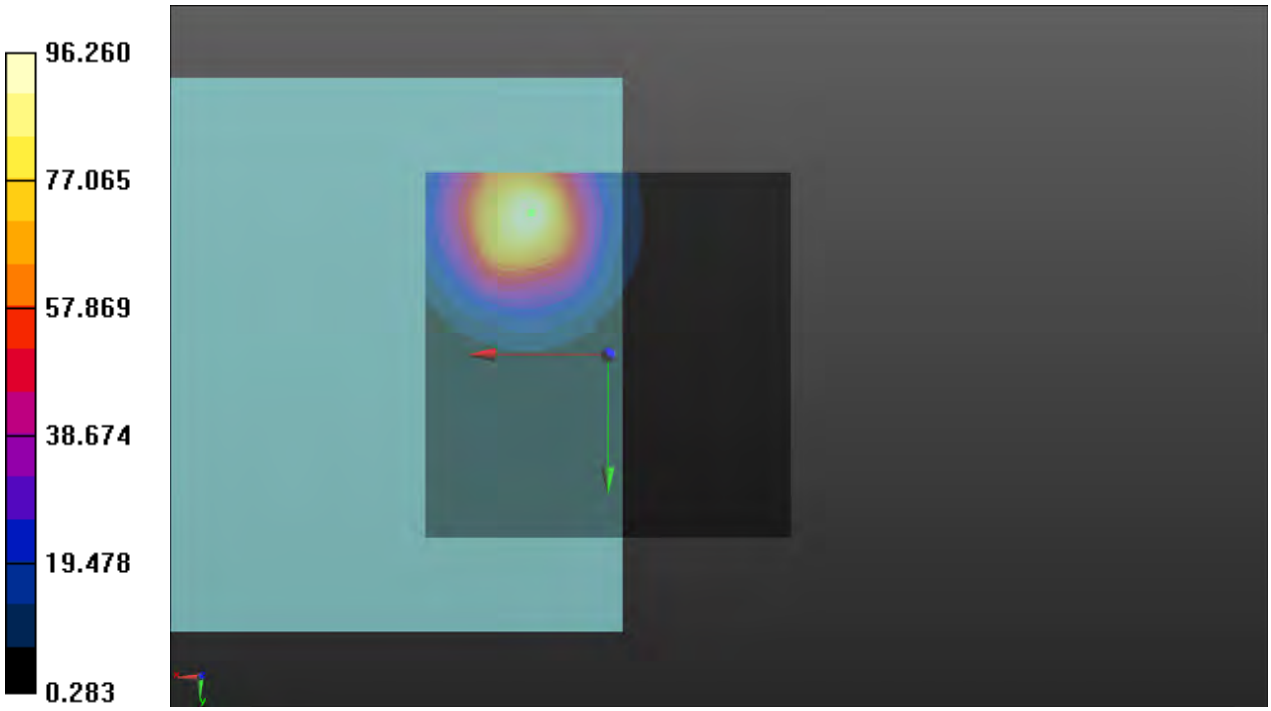
P72 T-Coil_LTE 30_QPSK10M_Ch27710_50RB_OS0_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10108 - CAG, LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK); Frequency: 2310 MHz;Duty Cycle: 1:3.8
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 39.67 dB
ABM1 comp = -4.16 dBA/m
Location: 10.5, -19.5, 3.7 mm



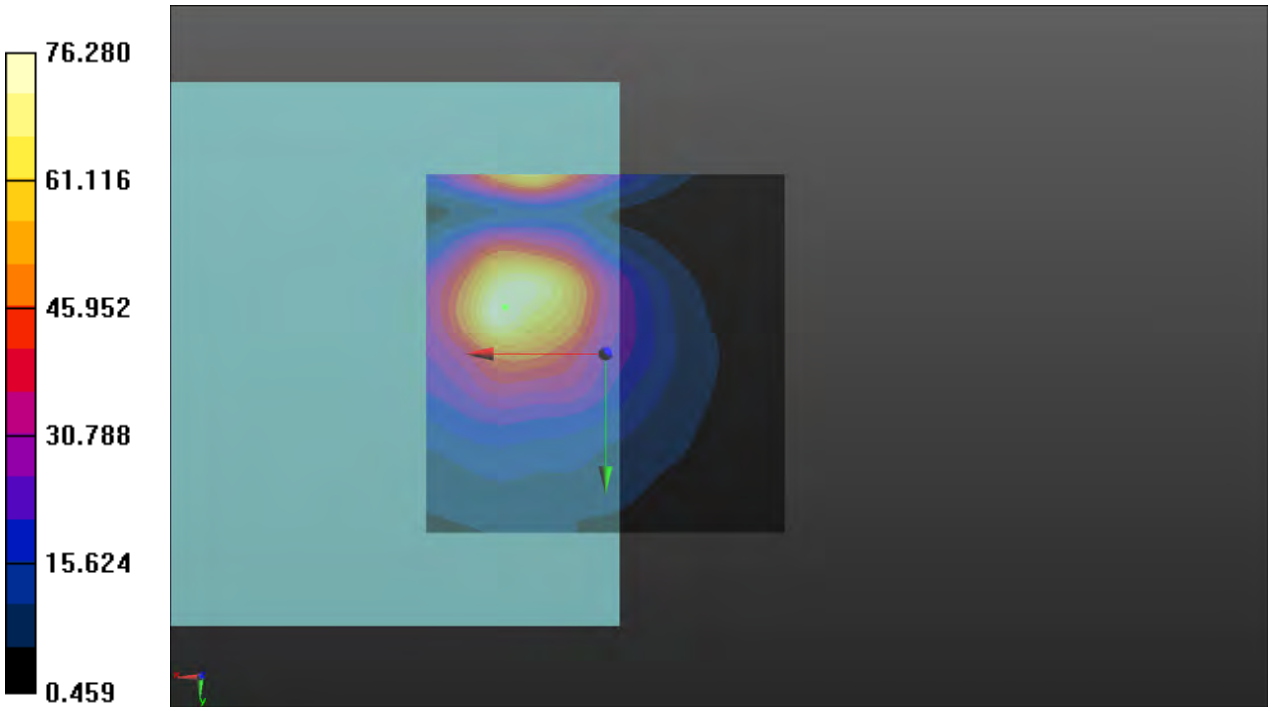
P72 T-Coil_LTE 30_QPSK10M_Ch27710_50RB_OS0_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10108 - CAG, LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK); Frequency: 2310 MHz;Duty Cycle: 1:3.8
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 37.65 dB
ABM1 comp = -13.68 dBA/m
Location: 14, -6.5, 3.7 mm



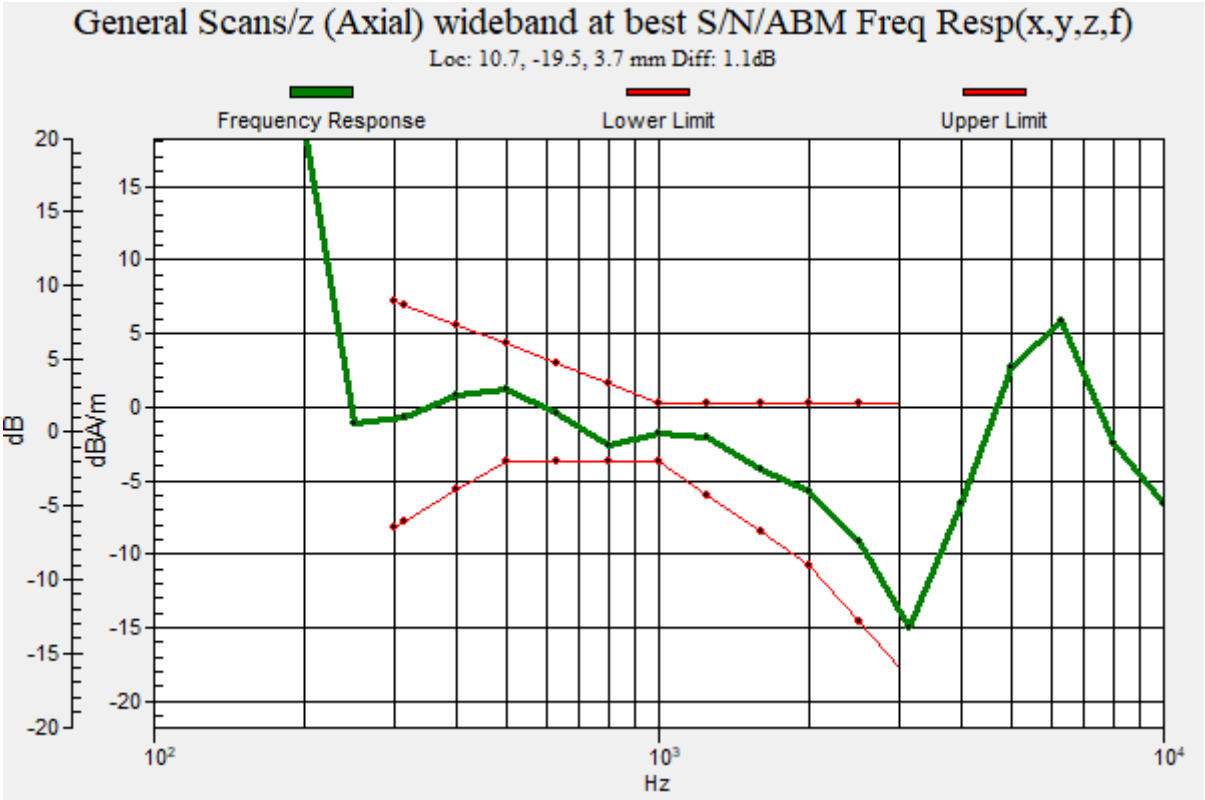
P72 T-Coil_LTE 30_QPSK10M_Ch27710_50RB_OS0_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10108 - CAG, LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK); Frequency: 2310 MHz;Duty Cycle: 1:3.8
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



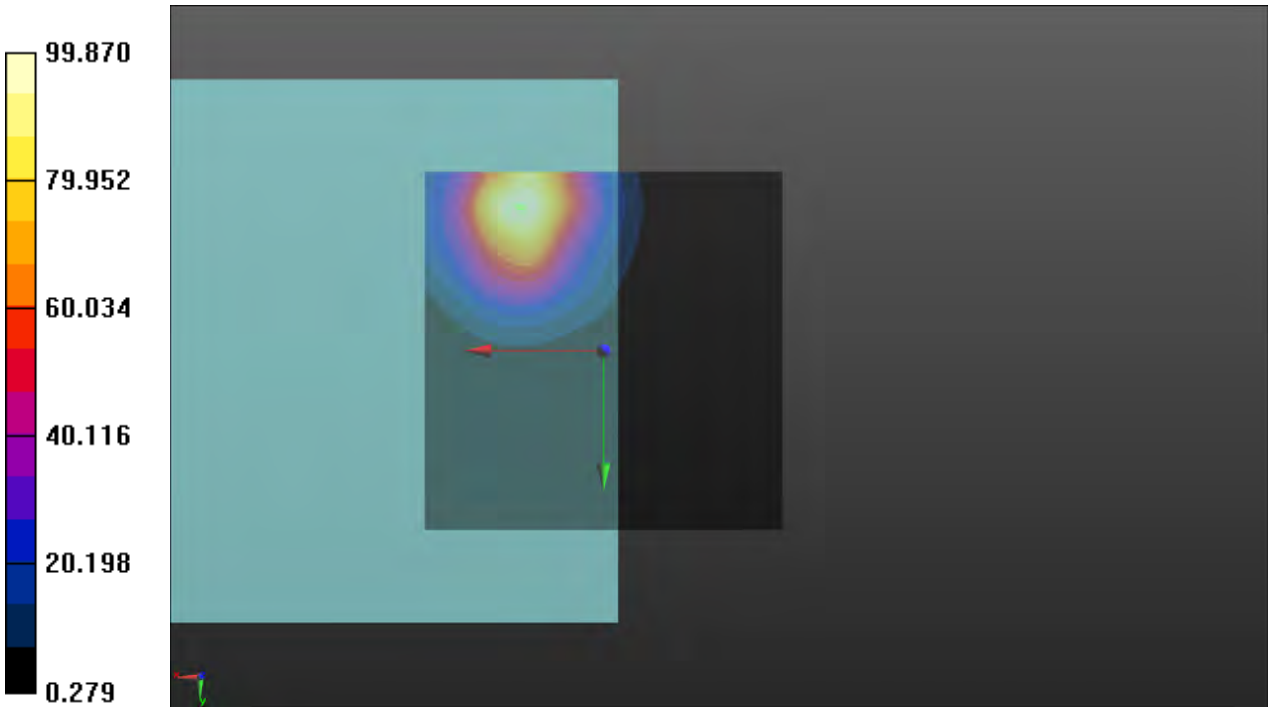
P74 T-Coil_LTE 66_QPSK20M_Ch132322_100RB_OS0_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10100 - CAE, LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 1745 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 39.99 dB
ABM1 comp = -4.92 dBA/m
Location: 11.5, -20, 3.7 mm



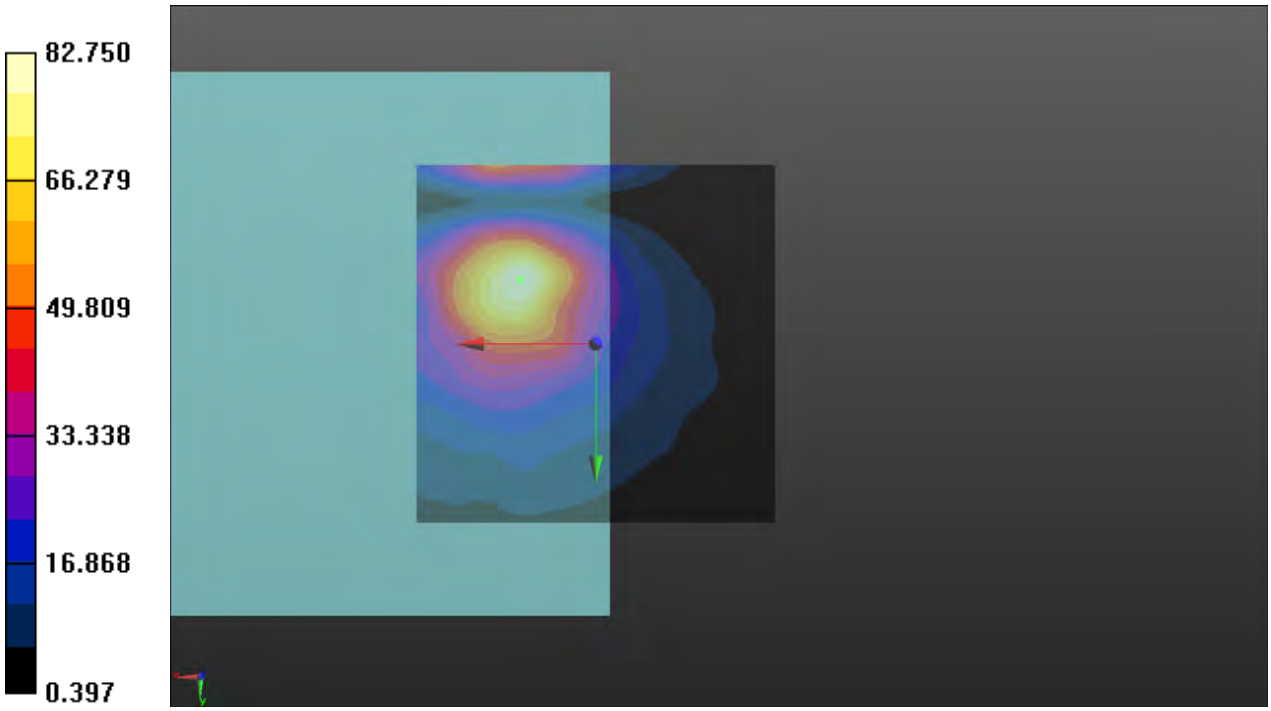
P74 T-Coil_LTE 66_QPSK20M_Ch132322_100RB_OS0_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10100 - CAE, LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 1745 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 38.36 dB
ABM1 comp = -13.53 dBA/m
Location: 10.5, -9, 3.7 mm



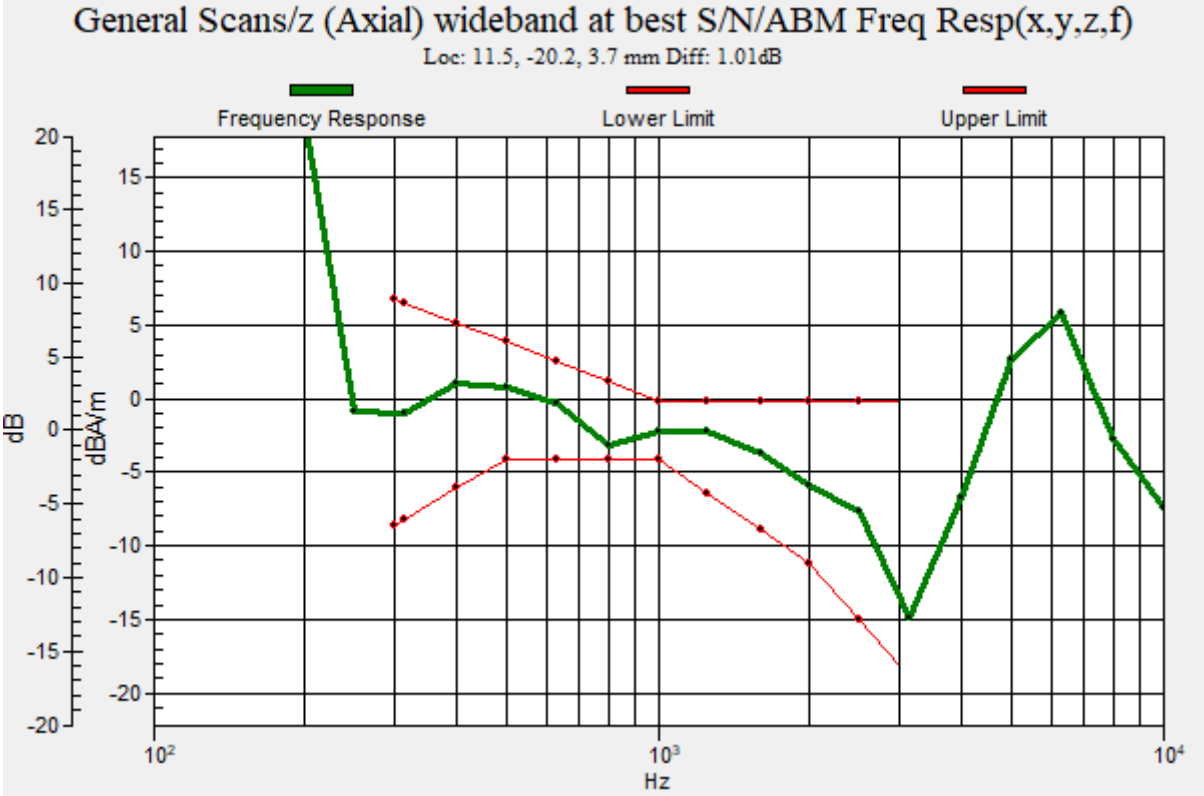
P74 T-Coil_LTE 66_QPSK20M_Ch132322_100RB_OS0_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10100 - CAE, LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 1745 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



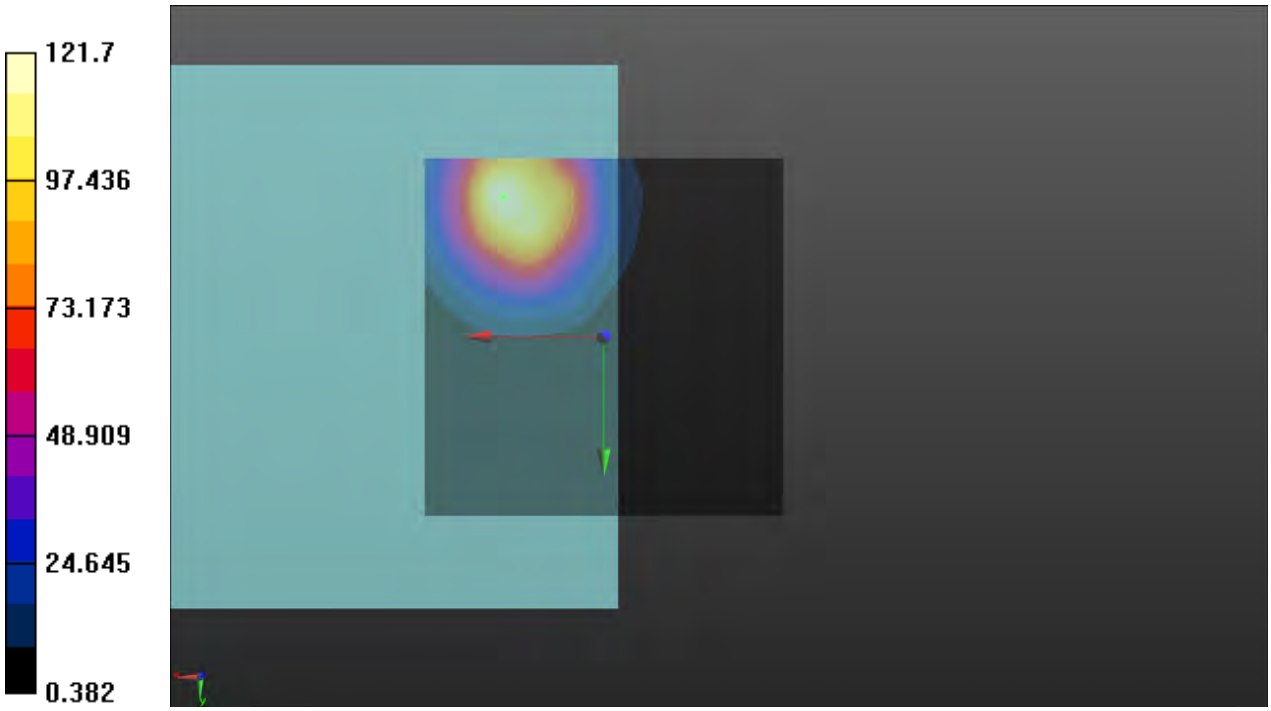
P75 T-Coil_LTE 71_QPSK20M_Ch133297_100RB_OS0_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10100 - CAE, LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 680.5 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 41.71 dB
ABM1 comp = -5.24 dBA/m
Location: 14, -19.5, 3.7 mm



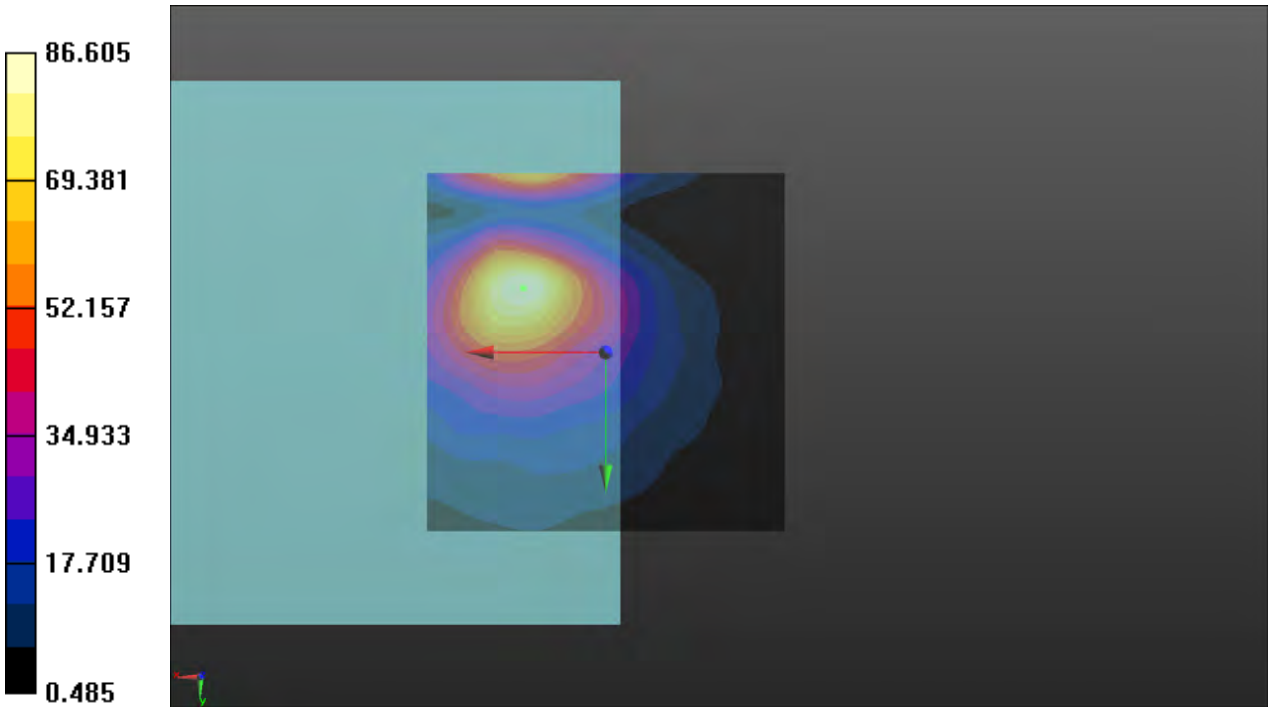
P75 T-Coil_LTE 71_QPSK20M_Ch133297_100RB_OS0_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10100 - CAE, LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 680.5 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 38.75 dB
ABM1 comp = -13.42 dBA/m
Location: 11.5, -9, 3.7 mm



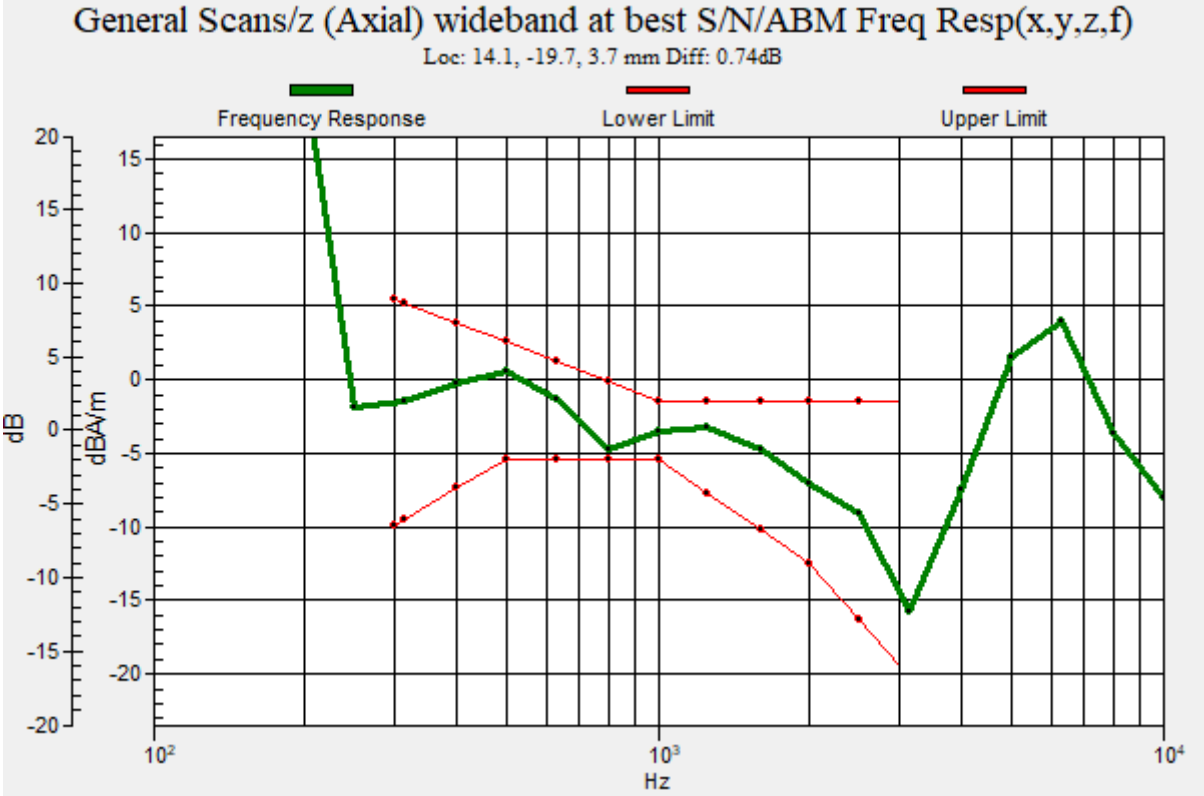
P75 T-Coil_LTE 71_QPSK20M_Ch133297_100RB_OS0_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10100 - CAE, LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 680.5 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



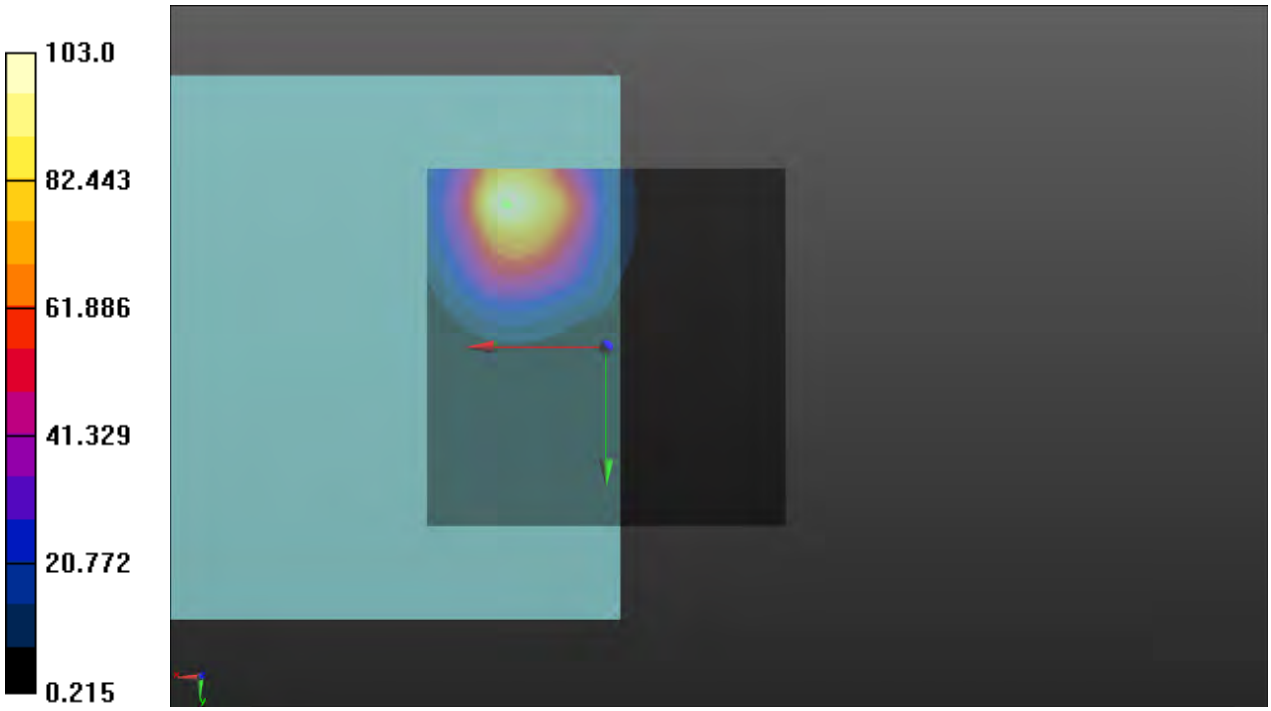
P76 T-Coil_LTE 38_QPSK20M_Ch38000_100RB_OS0_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10103 - CAG, LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 2595 MHz;Duty Cycle: 1:8.49
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 40.26 dB
ABM1 comp = -4.18 dBA/m
Location: 14, -20, 3.7 mm



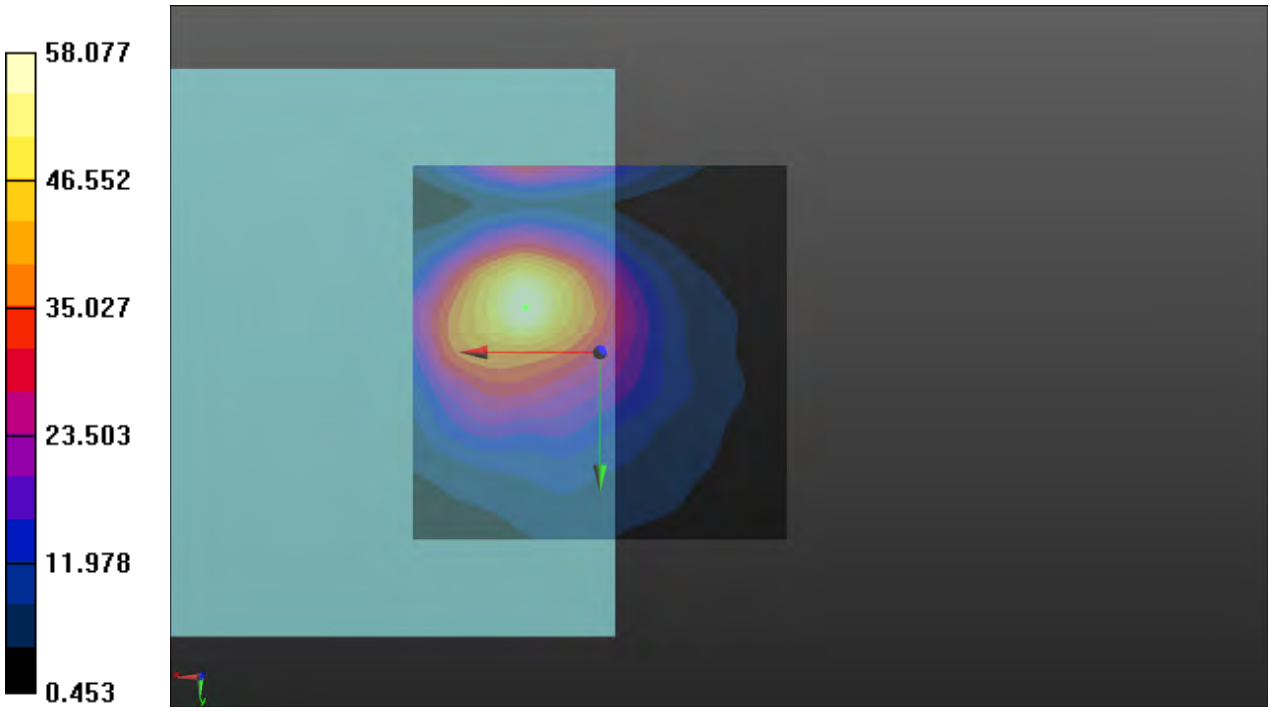
P76 T-Coil_LTE 38_QPSK20M_Ch38000_100RB_OS0_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10103 - CAG, LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 2595 MHz;Duty Cycle: 1:8.49
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 35.28 dB
ABM1 comp = -13.84 dBA/m
Location: 10, -6, 3.7 mm



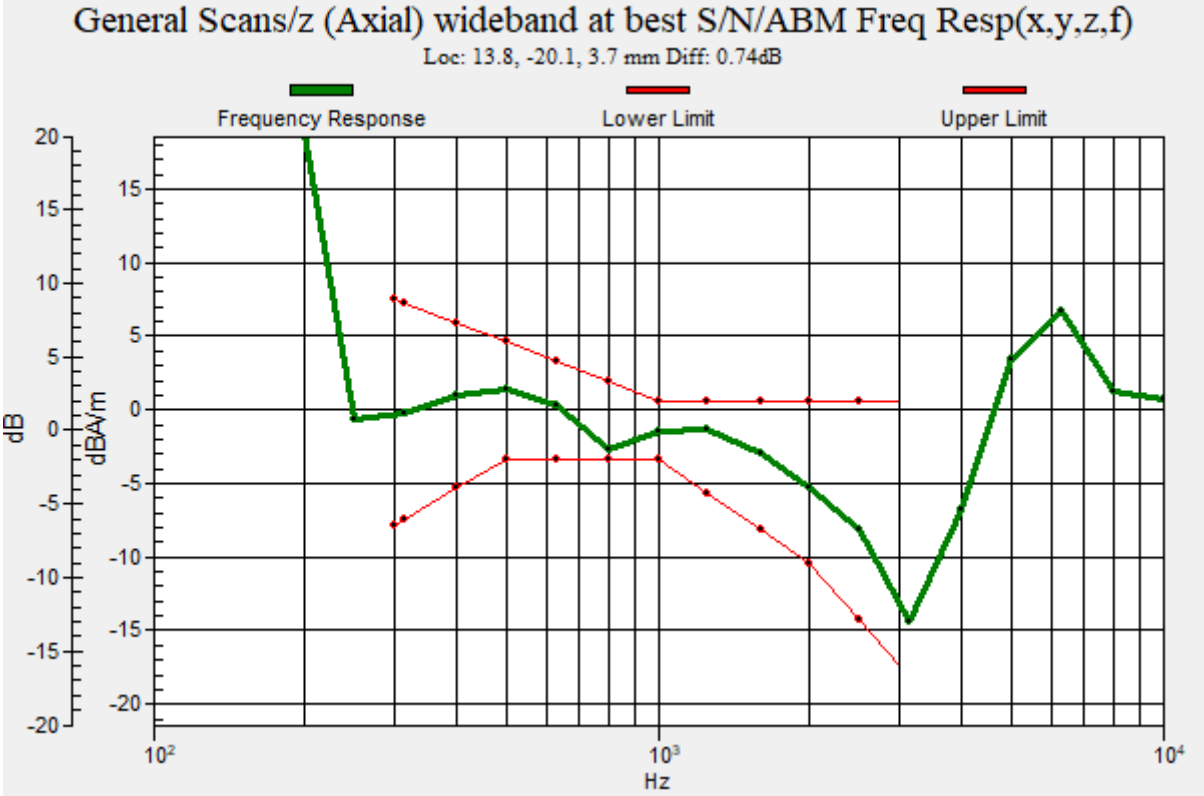
P76 T-Coil_LTE 38_QPSK20M_Ch38000_100RB_OS0_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10103 - CAG, LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 2595 MHz;Duty Cycle: 1:8.49
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



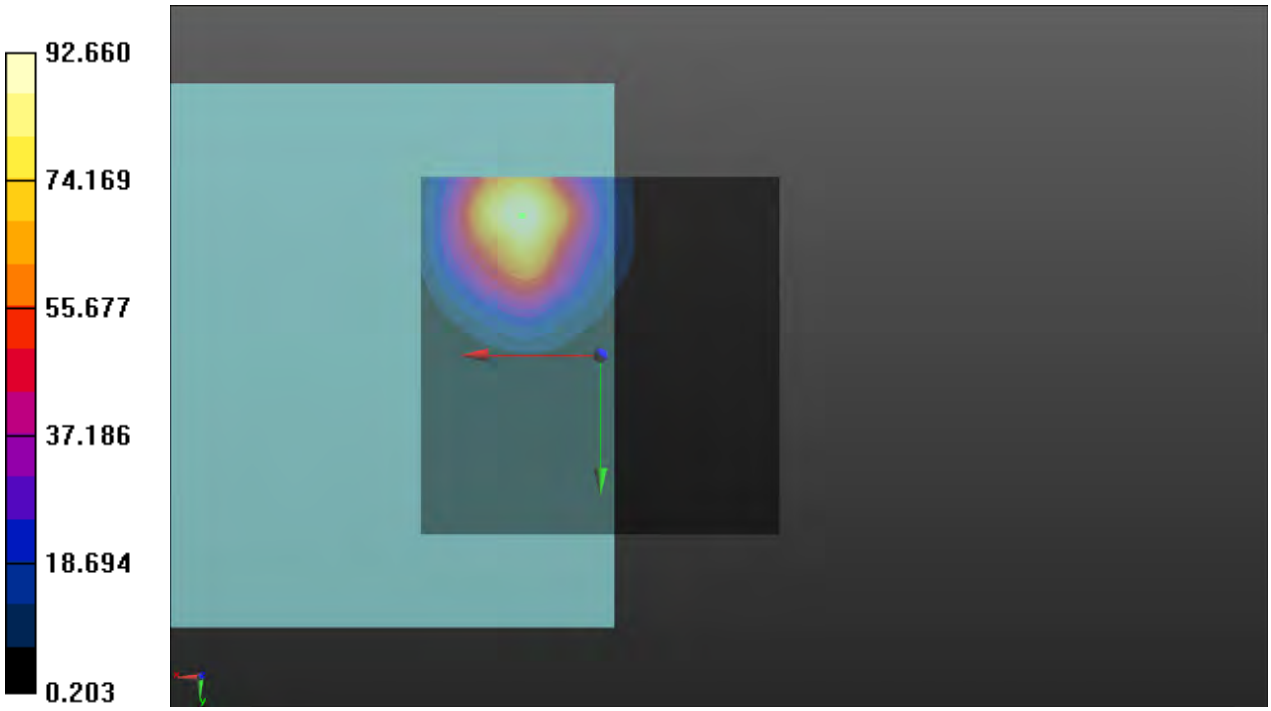
P80 T-Coil_LTE 40_QPSK20M_Ch39150_100RB_OS0_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10103 - CAG, LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 2350 MHz;Duty Cycle: 1:8.49
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 39.34 dB
ABM1 comp = -4.69 dBA/m
Location: 11, -19.5, 3.7 mm



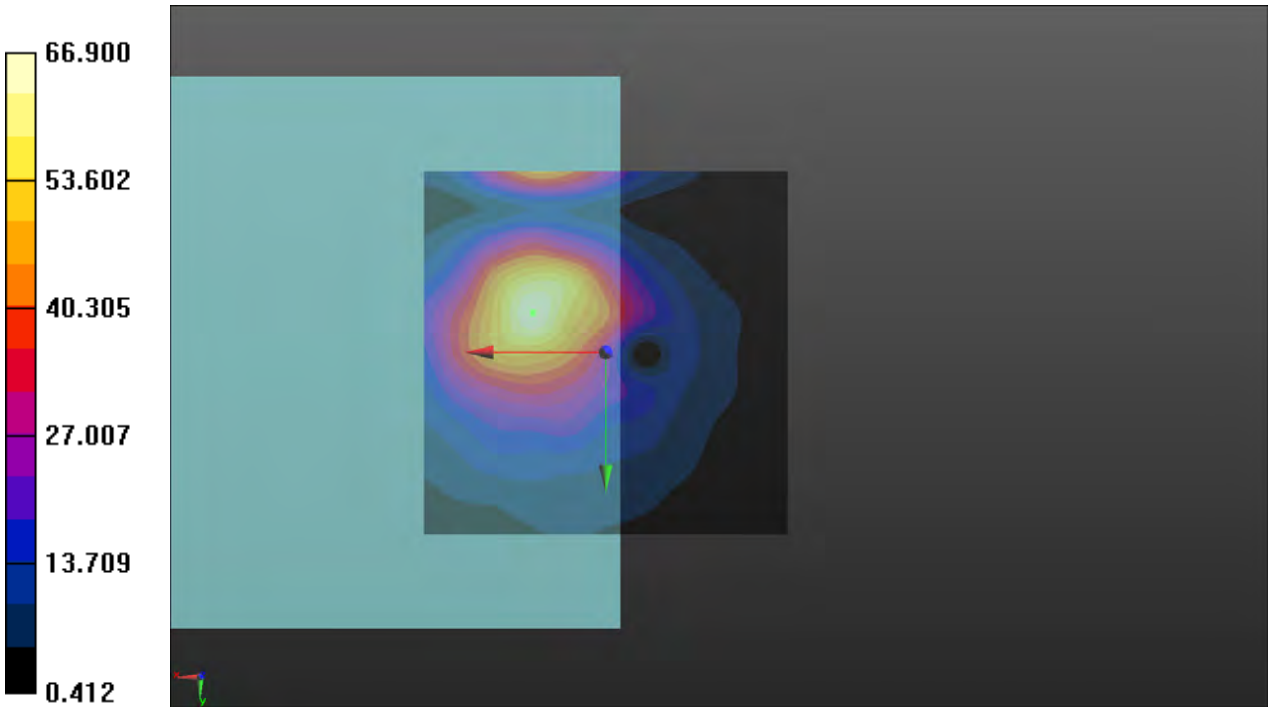
P80 T-Coil_LTE 40_QPSK20M_Ch39150_100RB_OS0_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10103 - CAG, LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 2350 MHz;Duty Cycle: 1:8.49
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 36.51 dB
ABM1 comp = -13.37 dBA/m
Location: 10, -5.5, 3.7 mm



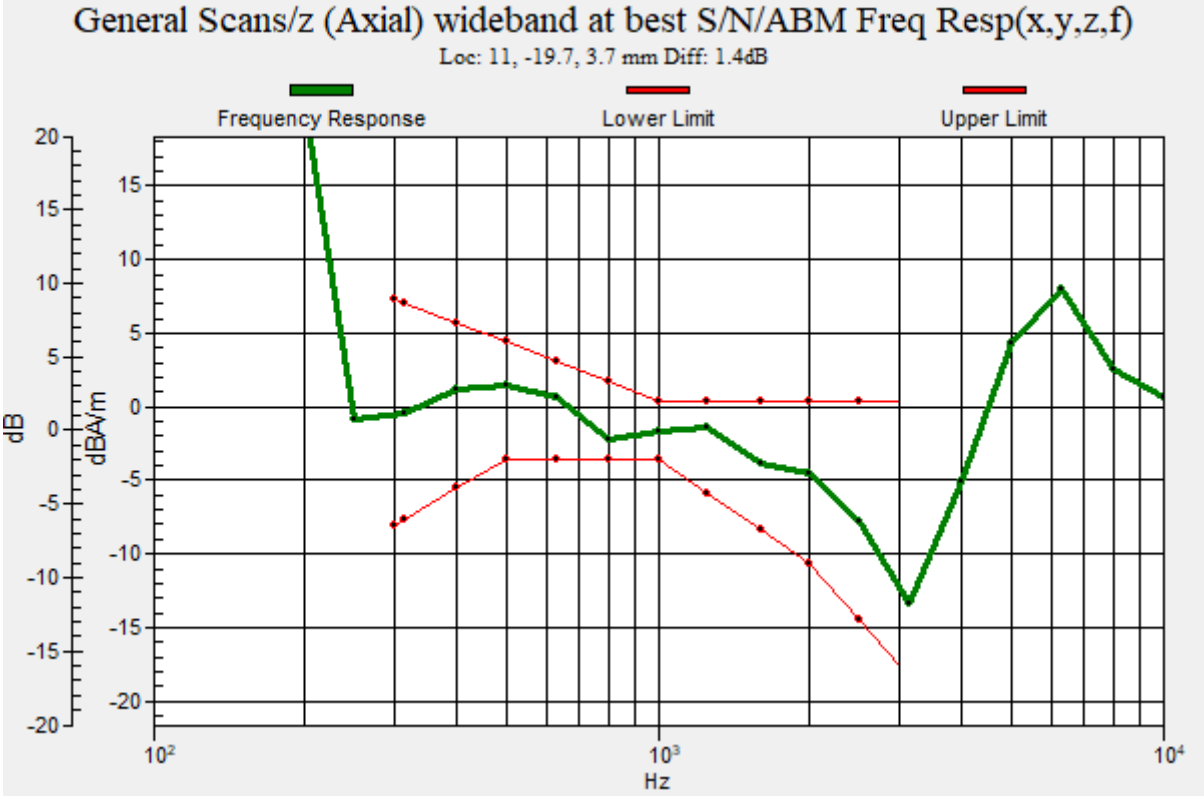
P80 T-Coil_LTE 40_QPSK20M_Ch39150_100RB_OS0_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10103 - CAG, LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 2350 MHz;Duty Cycle: 1:8.50
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



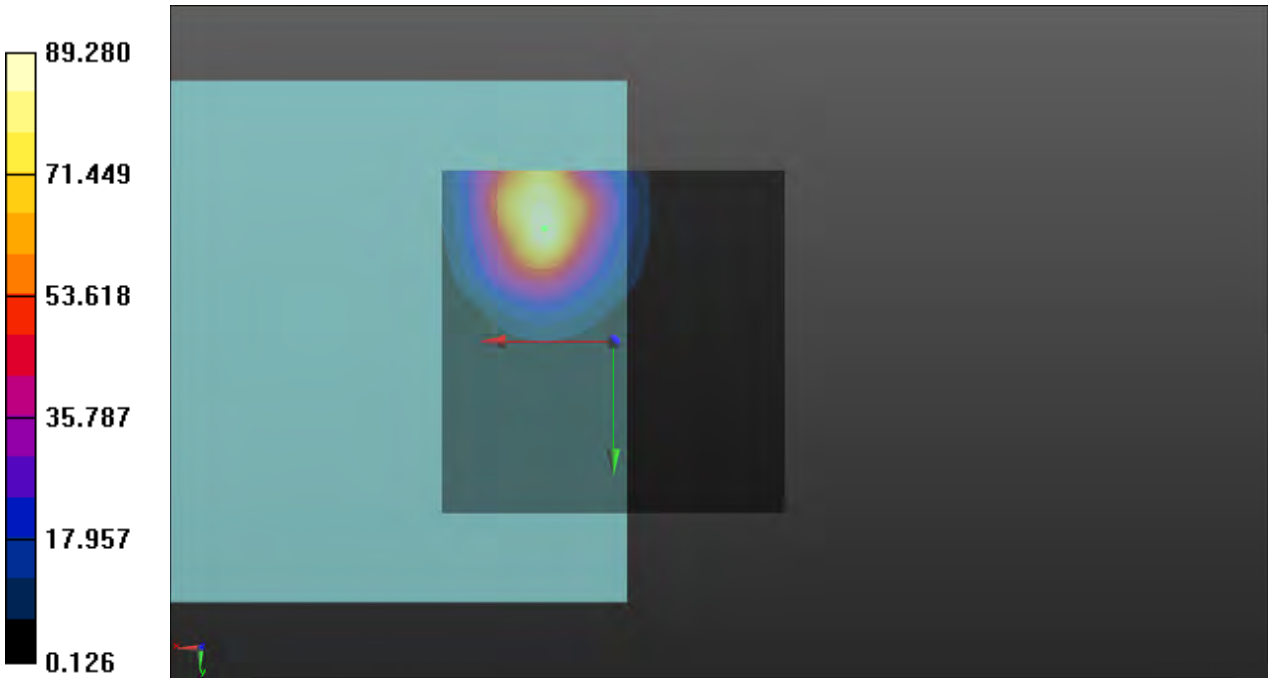
P77 T-Coil_LTE 41_QPSK20M_Ch40620_100RB_OS0_UL0_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10103 - CAG, LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 2593 MHz;Duty Cycle: 1:8.50
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.9 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 39.01 dB
ABM1 comp = -4.72 dBA/m
Location: 10, -16.5, 3.7 mm



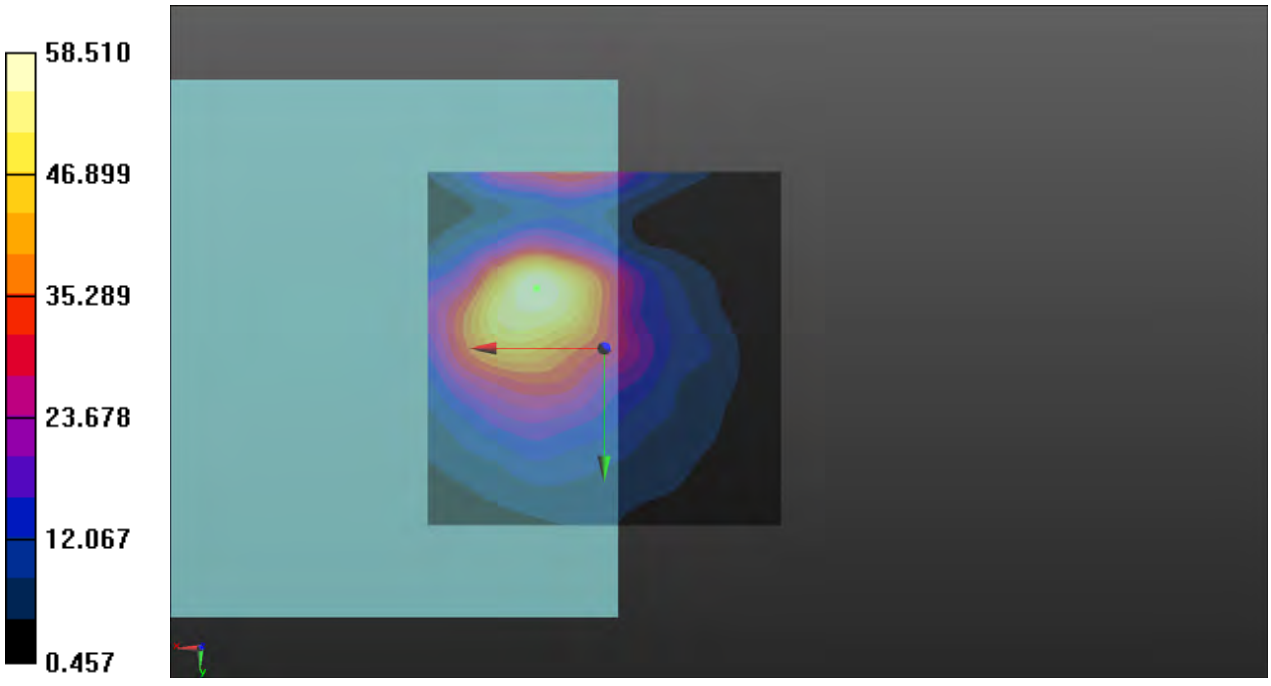
P77 T-Coil_LTE 41_QPSK20M_Ch40620_100RB_OS0_UL0_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10103 - CAG, LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 2593 MHz;Duty Cycle: 1:8.50
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.9 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 35.34 dB
ABM1 comp = -12.97 dBA/m
Location: 9.5, -8.5, 3.7 mm



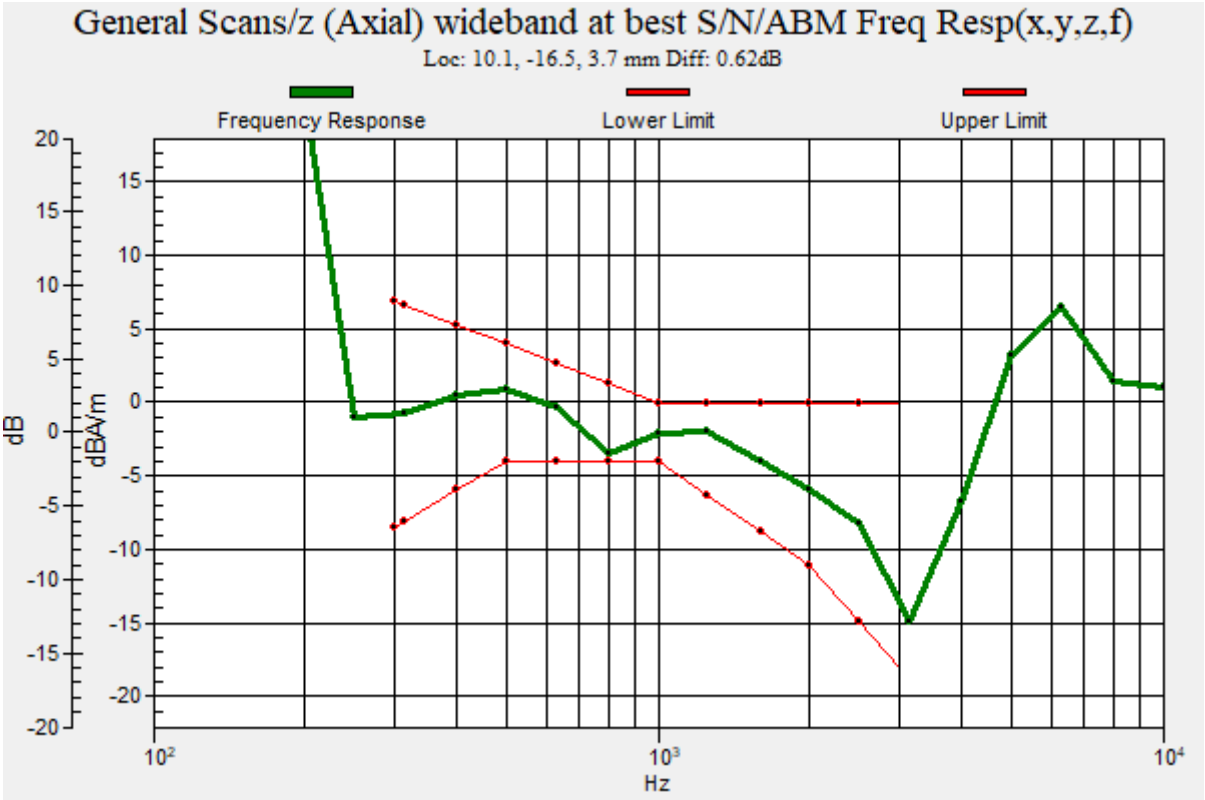
P77 T-Coil_LTE 41_QPSK20M_Ch40620_100RB_OS0_UL0_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10103 - CAG, LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 2593 MHz;Duty Cycle: 1:8.50
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.9 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



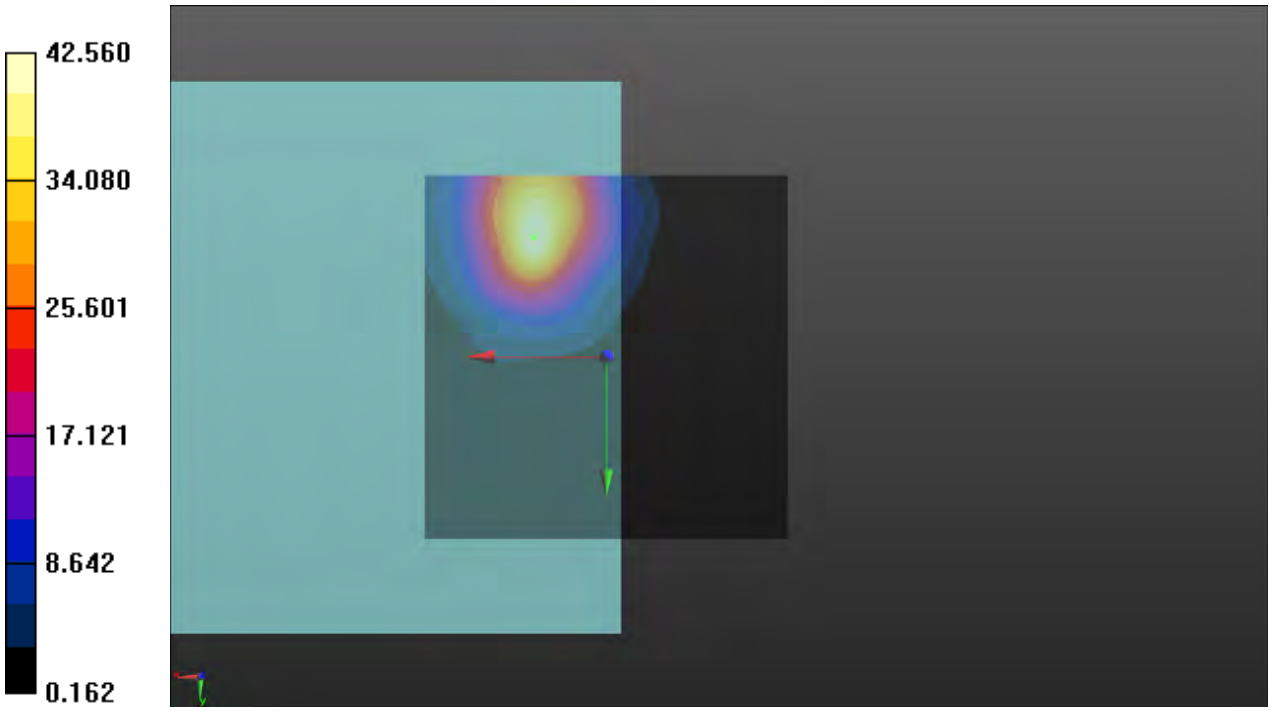
P78 T-Coil_LTE 42_QPSK20M_Ch42590_100RB_OS0_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10103 - CAG, LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 3500 MHz;Duty Cycle: 1:8.49
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 32.58 dB
ABM1 comp = -5.18 dBA/m
Location: 10, -16.5, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/05

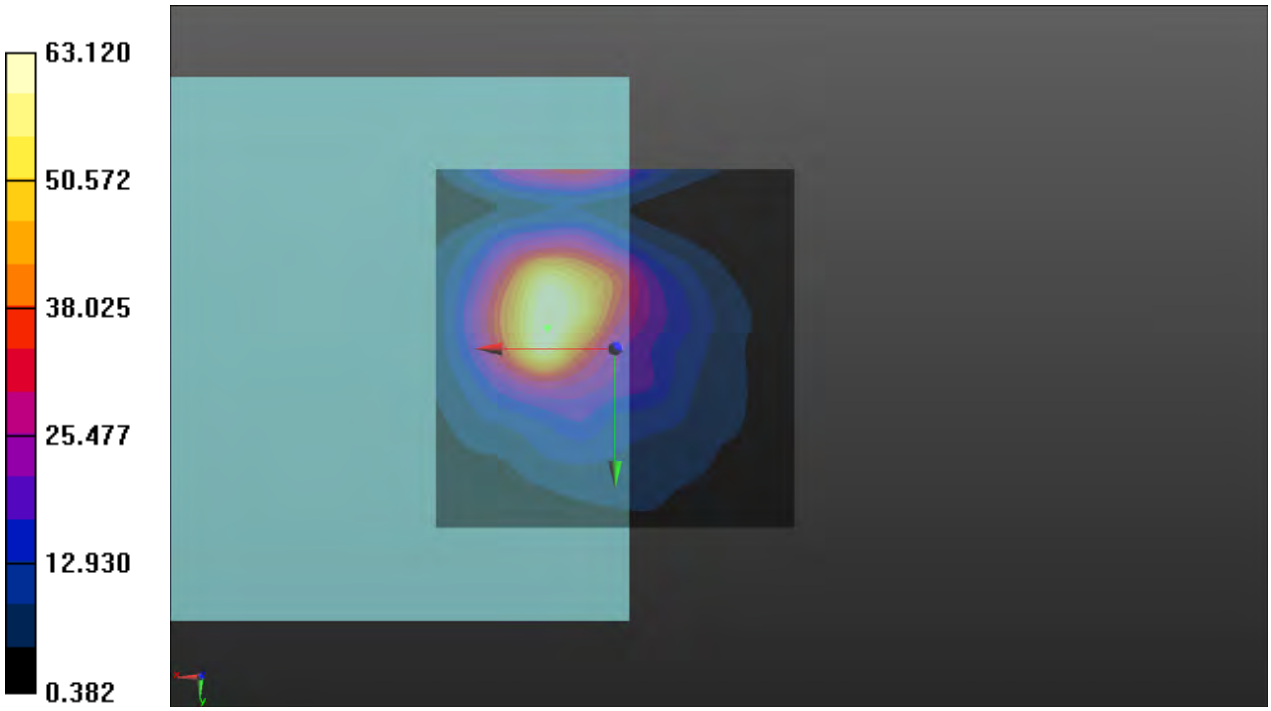
P78 T-Coil_LTE 42_QPSK20M_Ch42590_100RB_OS0_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10103 - CAG, LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK);
Frequency: 3500 MHz;Duty Cycle: 1:8.49
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 36.00 dB
ABM1 comp = -14.99 dBA/m
Location: 9.5, -3, 3.7 mm



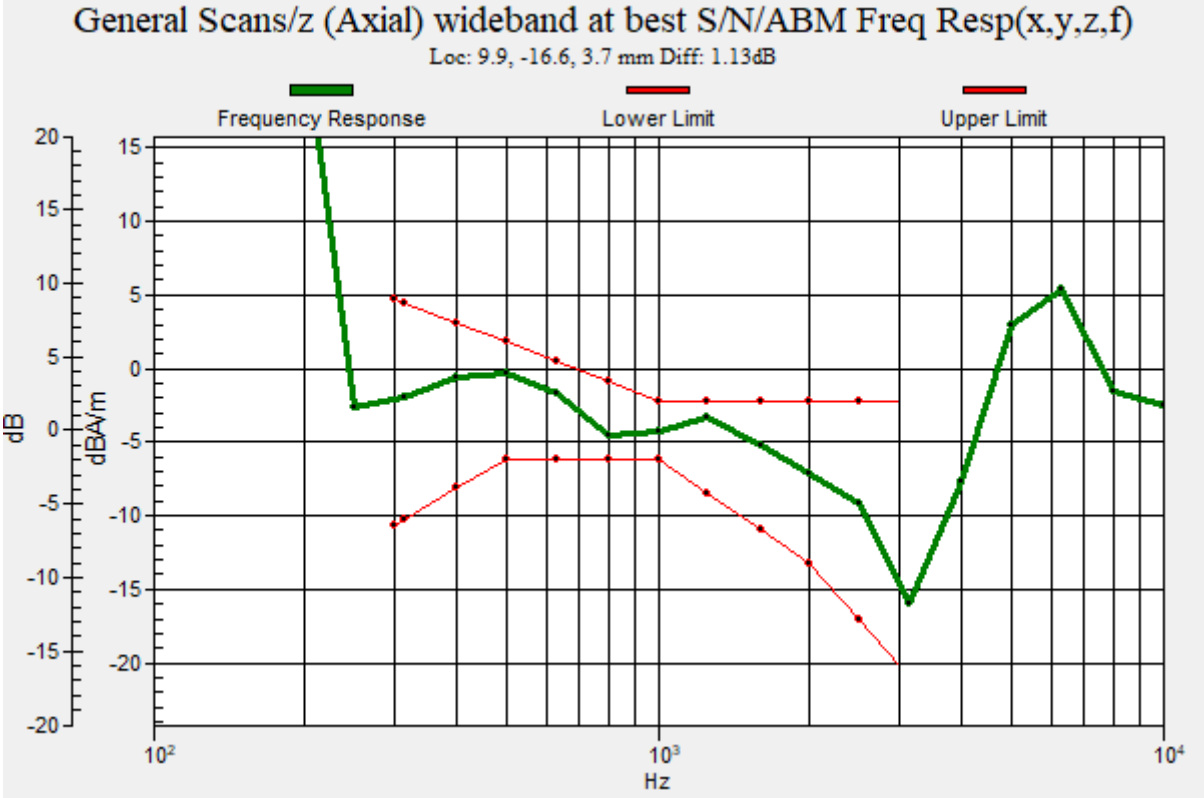
P78 T-Coil_LTE 42_QPSK20M_Ch42590_100RB_OS0_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10103 - CAG, LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 3500 MHz;Duty Cycle: 1:8.49
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/05

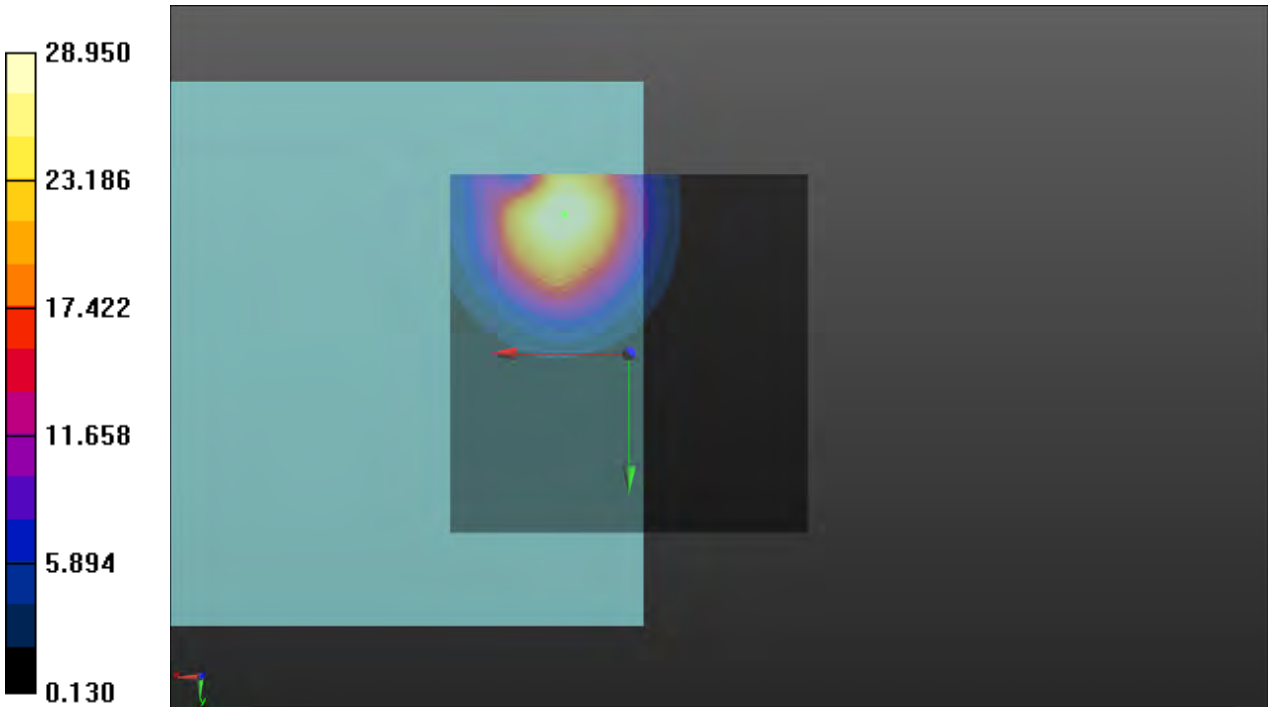
P79 T-Coil_LTE 43_QPSK20M_Ch44215_100RB_OS0_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10103 - CAG, LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK);
Frequency: 3662.5 MHz;Duty Cycle: 1:8.49
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 29.23 dB
ABM1 comp = -7.36 dBA/m
Location: 9, -19.5, 3.7 mm



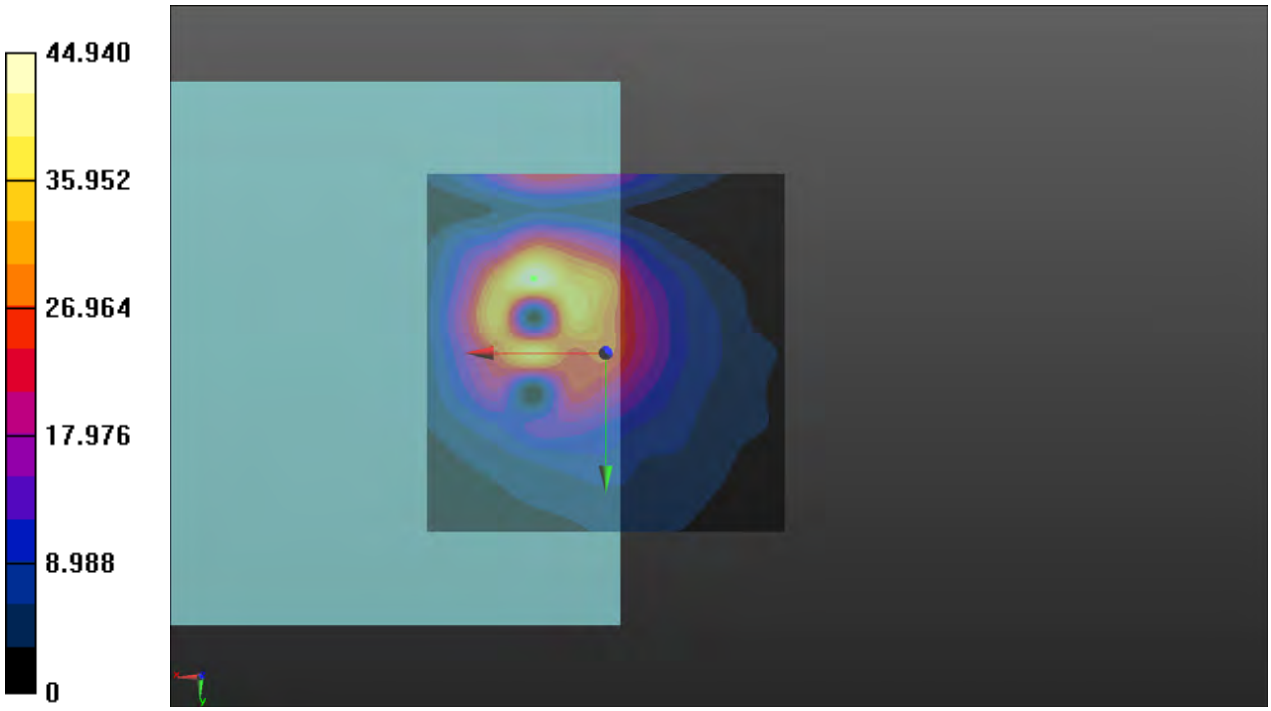
P79 T-Coil_LTE 43_QPSK20M_Ch44215_100RB_OS0_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10103 - CAG, LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 3662.5 MHz;Duty Cycle: 1:8.49
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 33.05 dB
ABM1 comp = -14.43 dBA/m
Location: 10, -10.5, 3.7 mm



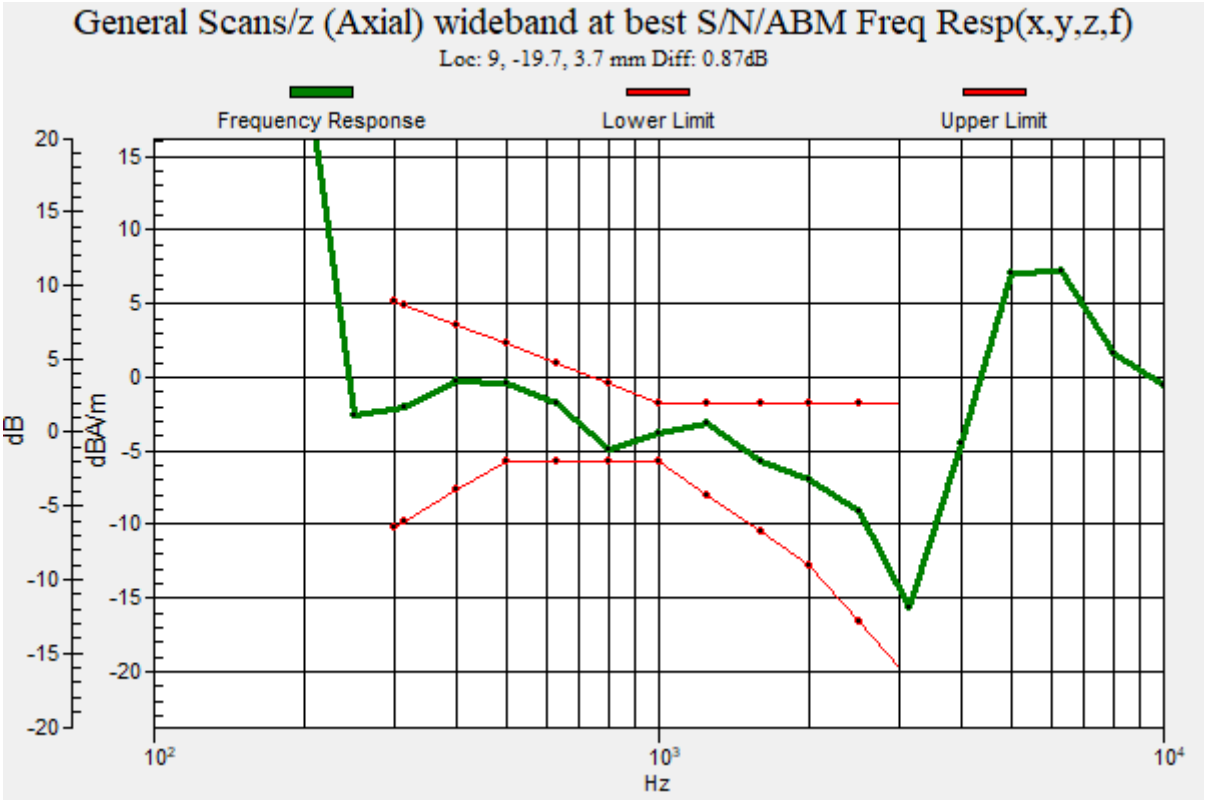
P79 T-Coil_LTE 43_QPSK20M_Ch44215_100RB_OS0_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10103 - CAG, LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 3662.5 MHz;Duty Cycle: 1:8.49
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



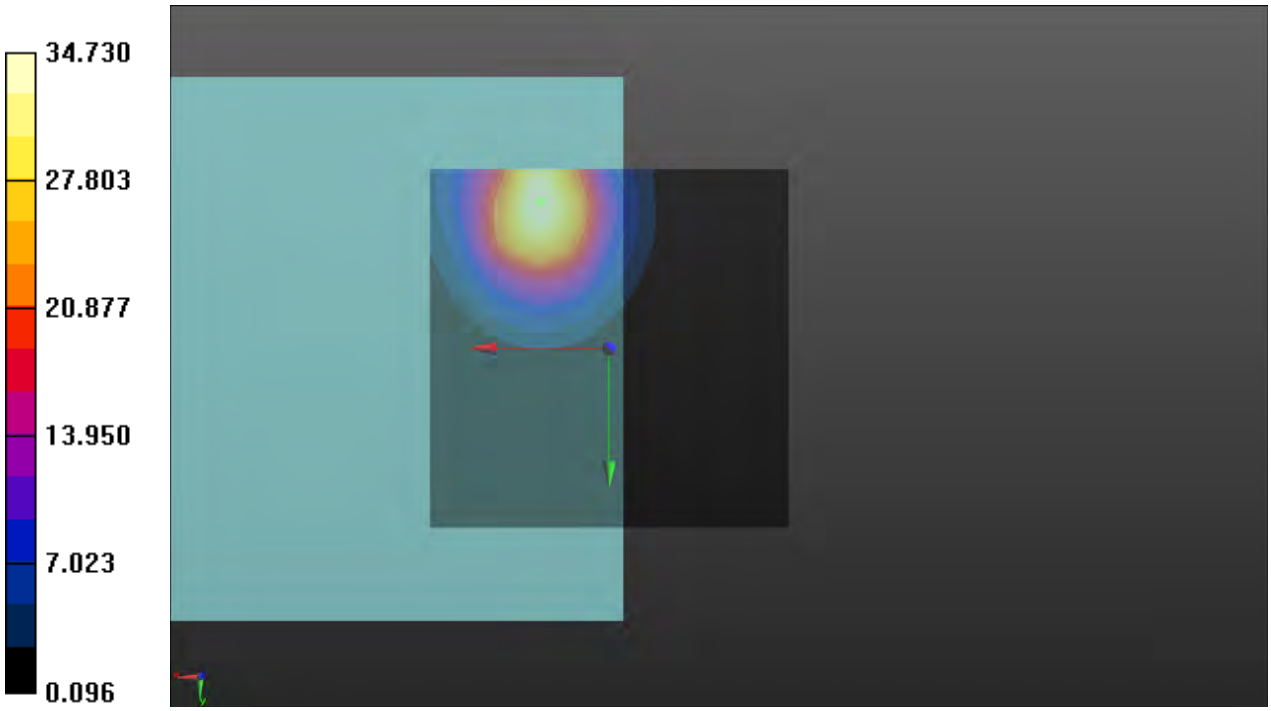
P73 T-Coil_LTE 48_QPSK20M_Ch56210_100RB_OS0_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10103 - CAG, LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 3647 MHz;Duty Cycle: 1:8.49
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 30.81 dB
ABM1 comp = -5.82 dBA/m
Location: 9.5, -20.5, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/05

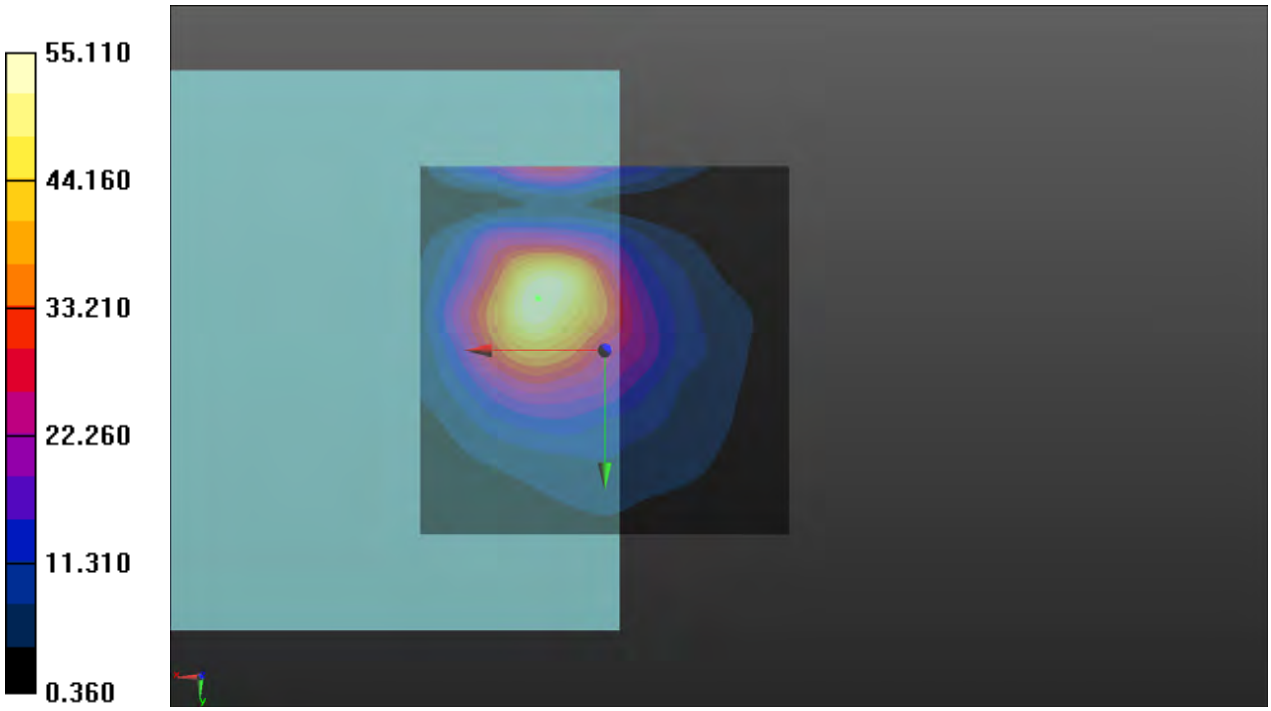
P73 T-Coil_LTE 48_QPSK20M_Ch56210_100RB_OS0_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10103 - CAG, LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK);
Frequency: 3647 MHz;Duty Cycle: 1:8.49
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 34.82 dB
ABM1 comp = -14.96 dBA/m
Location: 9, -7, 3.7 mm



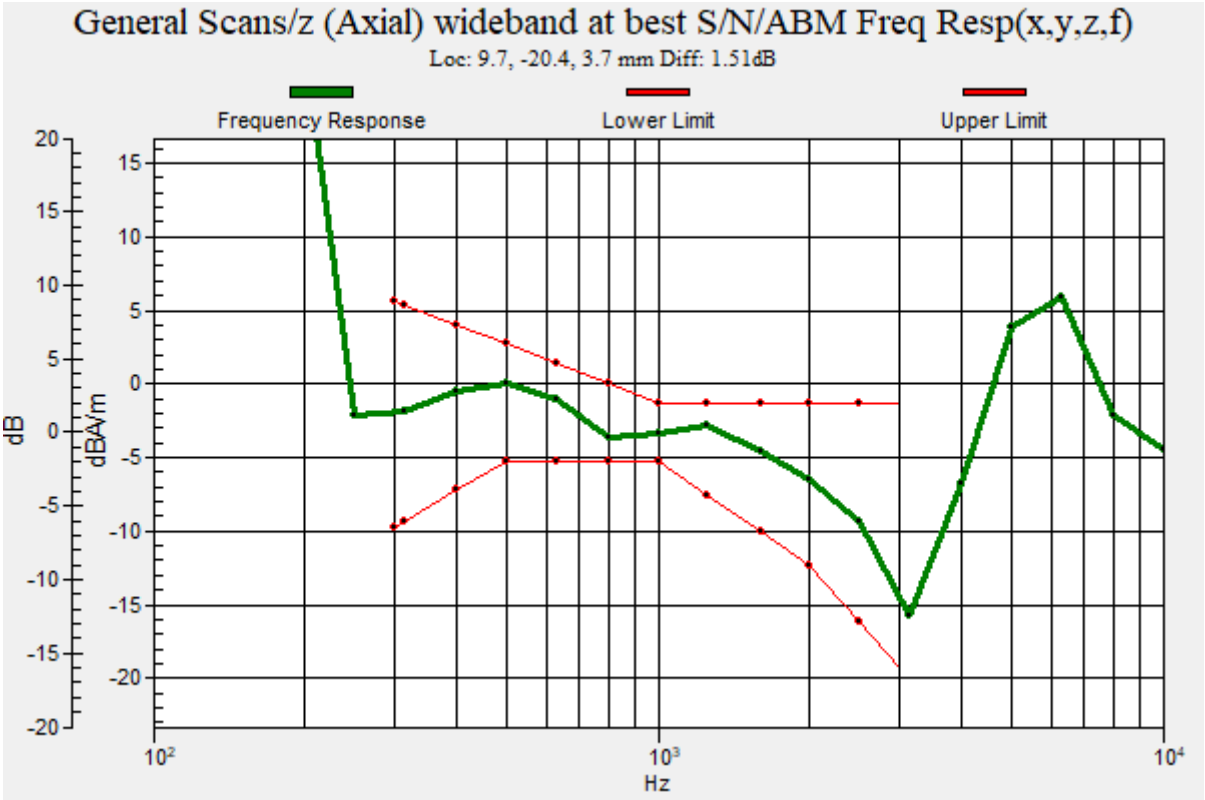
P73 T-Coil_LTE 48_QPSK20M_Ch56210_100RB_OS0_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10103 - CAG, LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 3647 MHz;Duty Cycle: 1:8.49
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



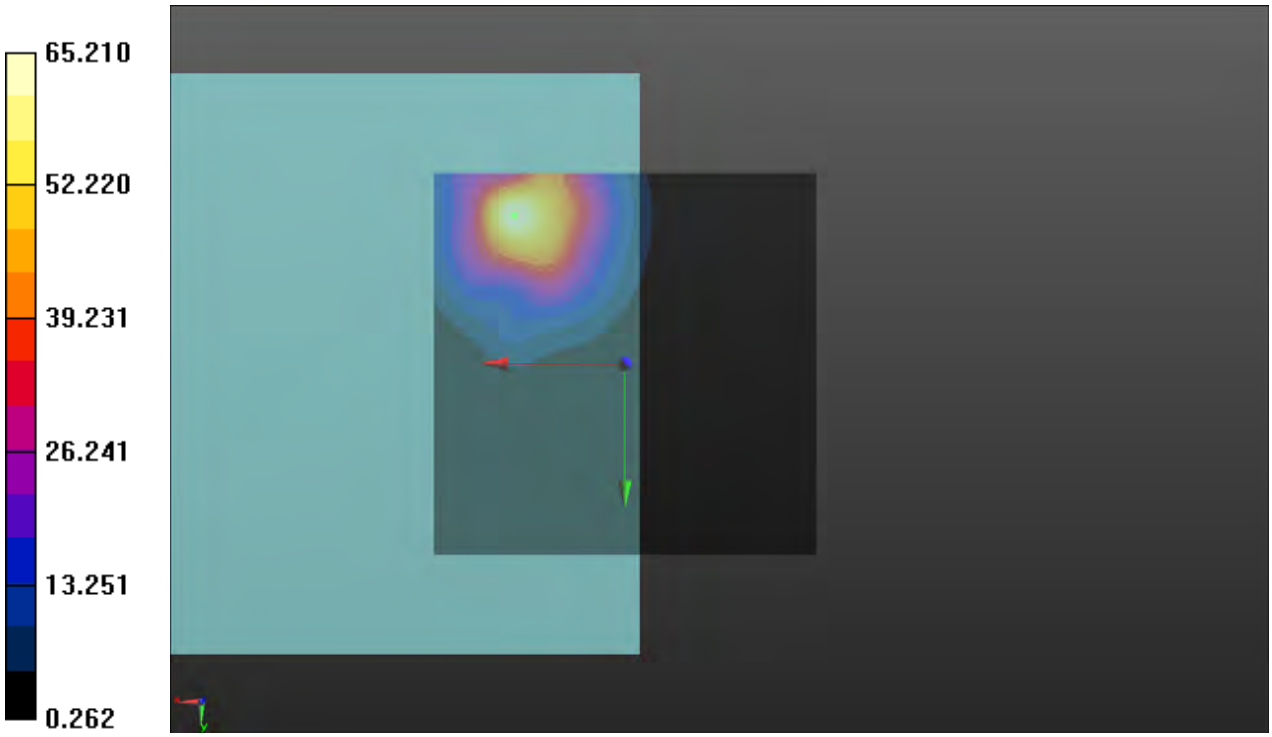
P74 T-Coil_WLAN2.4G_802.11b_1Mbps_Ch6_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 0, WLAN_2.4G; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 36.29 dB
ABM1 comp = -7.93 dBA/m
Location: 14.5, -19.5, 3.7 mm



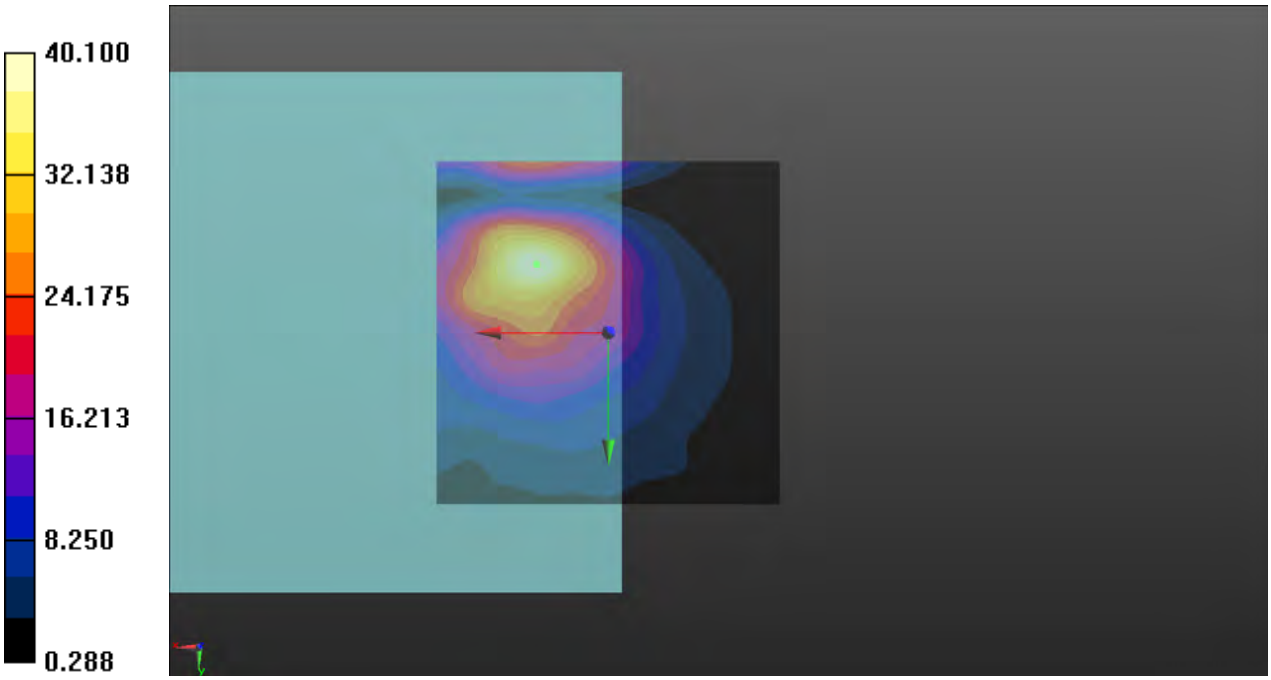
P74 T-Coil_WLAN2.4G_802.11b_1Mbps_Ch6_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 0, WLAN_2.4G; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 32.06 dB
ABM1 comp = -16.79 dBA/m
Location: 10.5, -10, 3.7 mm



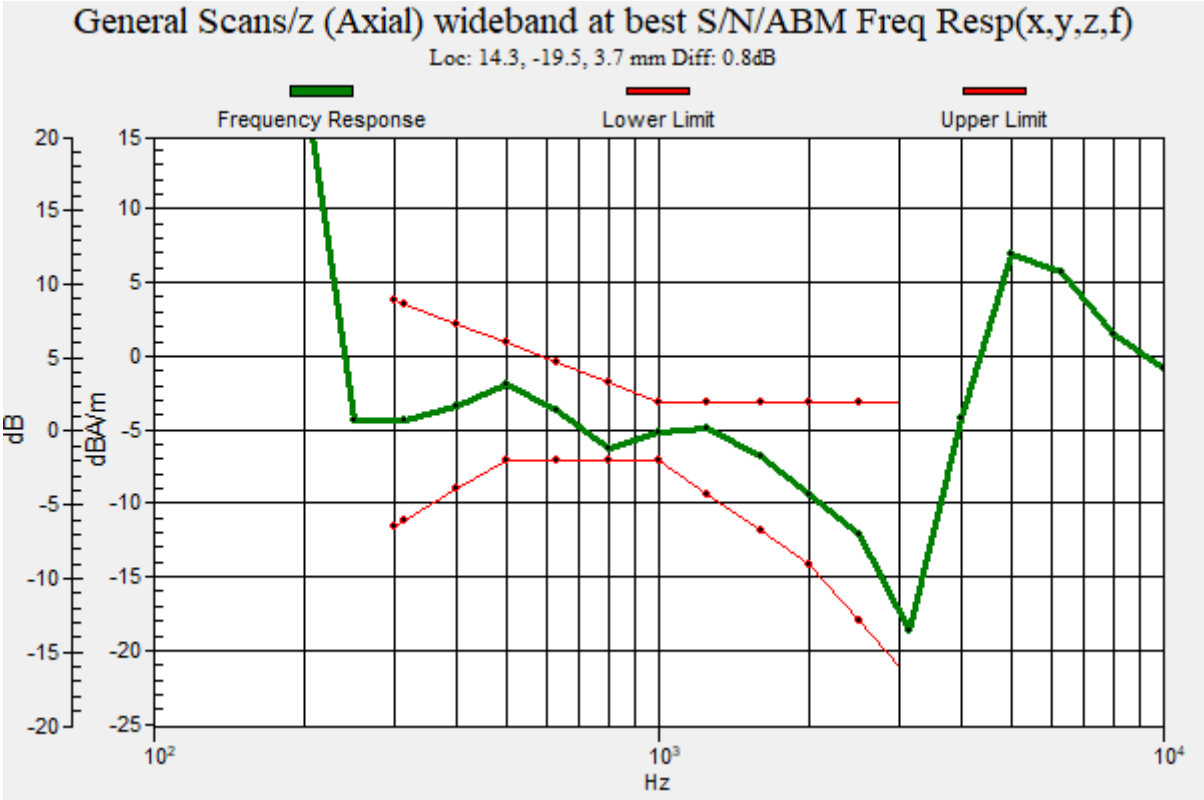
P74 T-Coil_WLAN2.4G_802.11b_1Mbps_Ch6_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 0, WLAN_2.4G; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/17

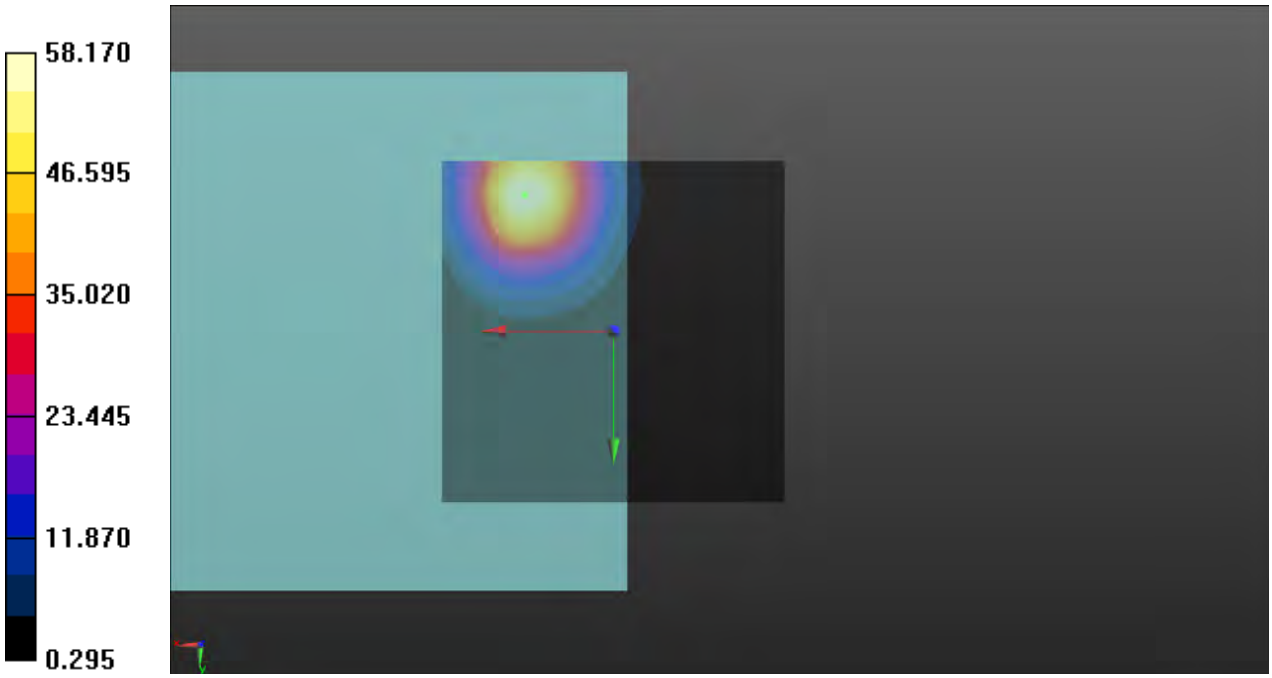
P86 T-Coil_WLAN5.2G_802.11a_6Mbps_Ch40_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10062 - CAD, IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps);
Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 35.29 dB
ABM1 comp = -8.74 dBA/m
Location: 13, -20, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/17

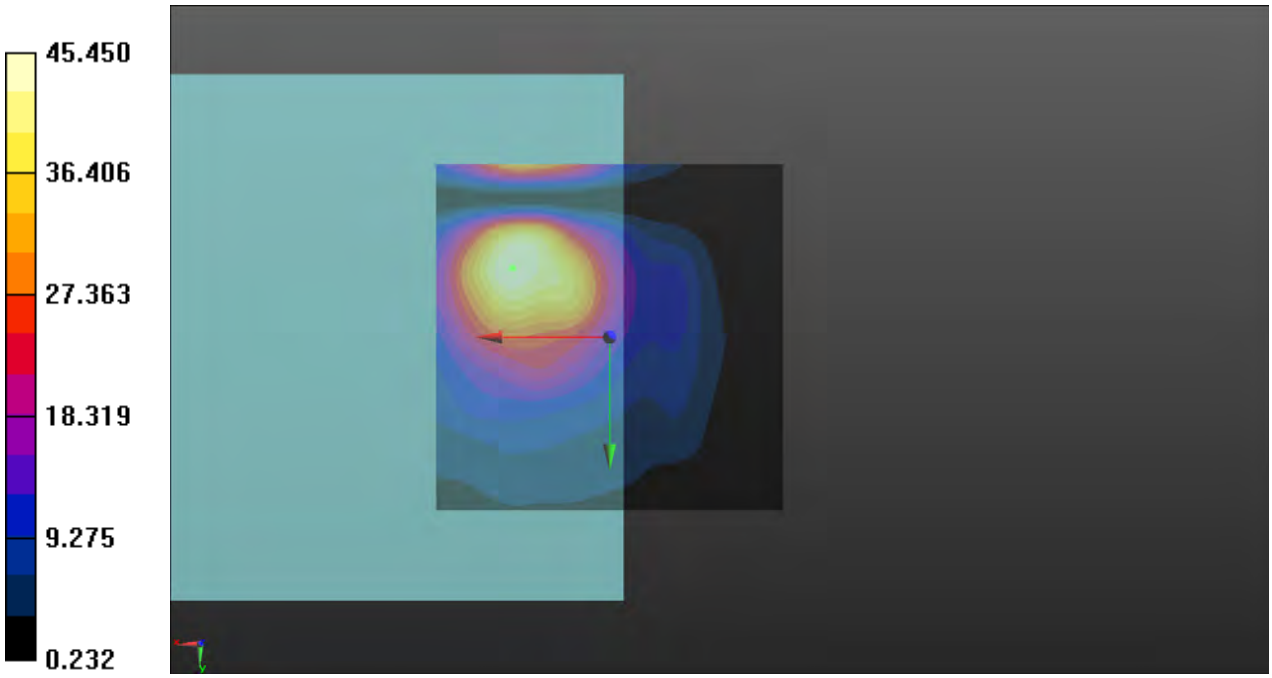
P86 T-Coil_WLAN5.2G_802.11a_6Mbps_Ch40_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10062 - CAD, IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps);
Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 33.15 dB
ABM1 comp = -17.02 dBA/m
Location: 14, -10, 3.7 mm



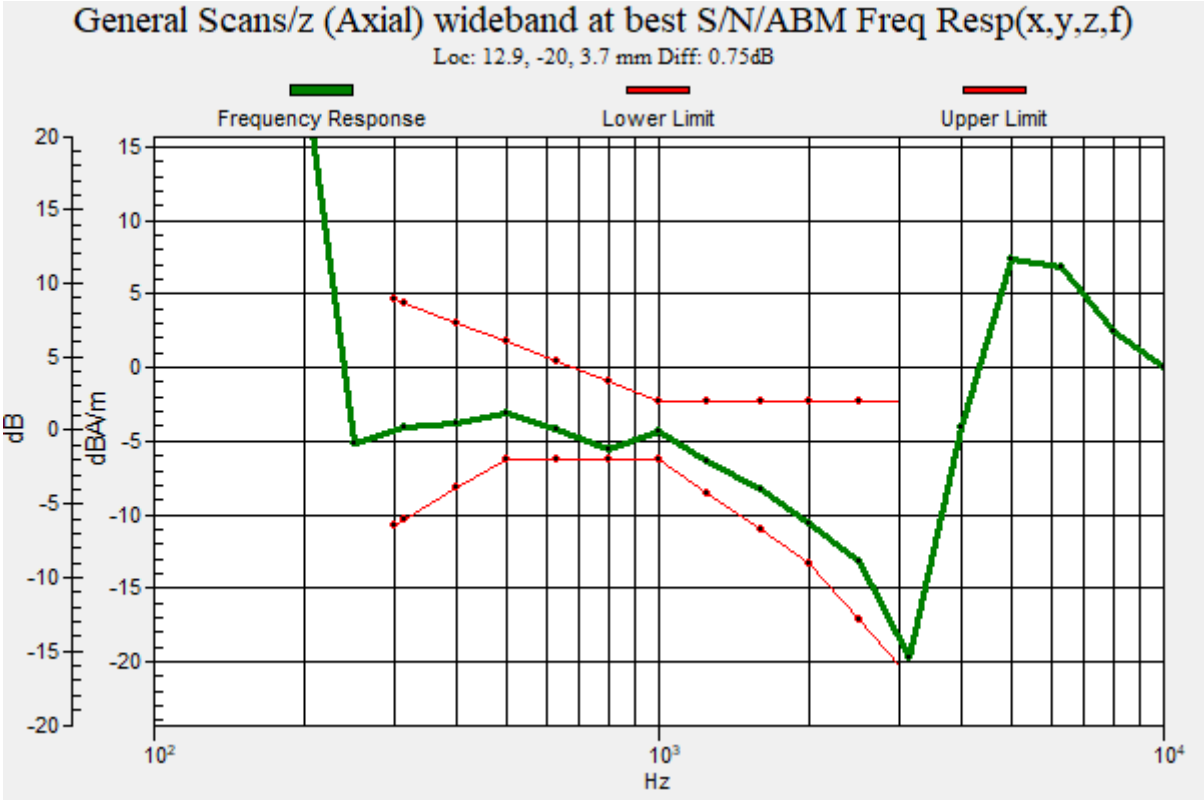
P86 T-Coil_WLAN5.2G_802.11a_6Mbps_Ch40_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10062 - CAD, IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps);
Frequency: 5200 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/17

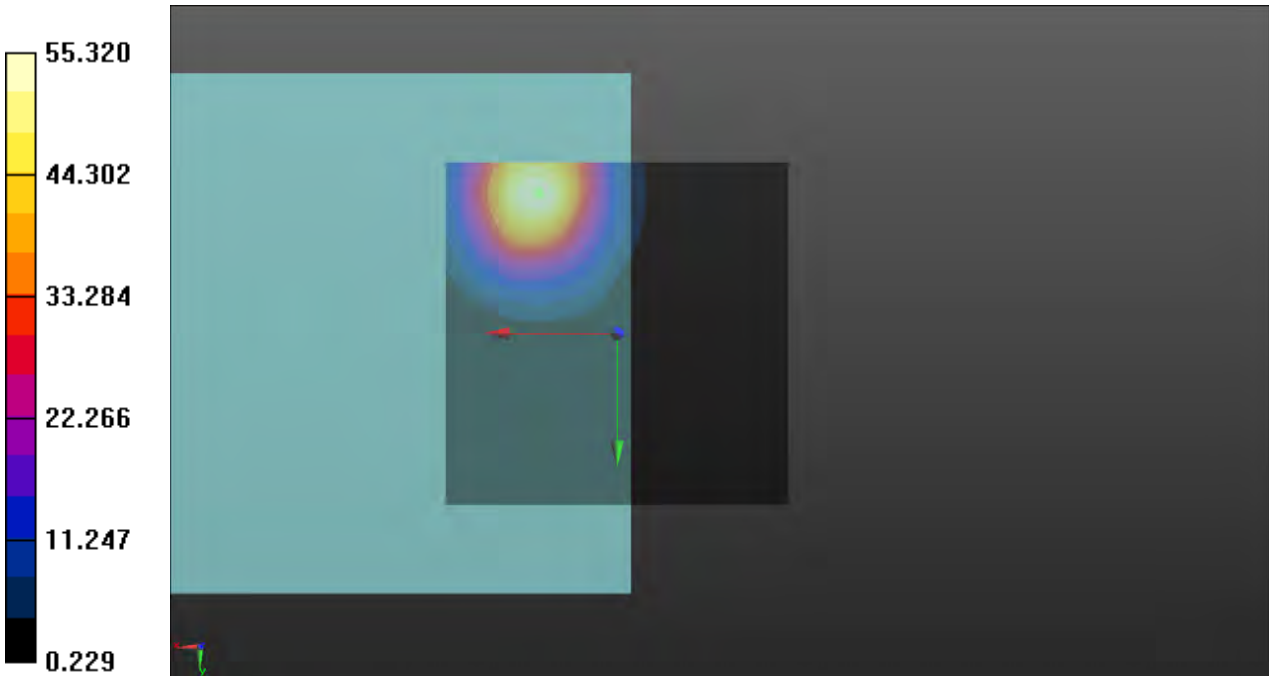
P105 T-Coil_WLAN5.3G_802.11a_6Mbps_Ch56_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10062 - CAD, IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps);
Frequency: 5280 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 34.86 dB
ABM1 comp = -8.89 dBA/m
Location: 11.5, -20.5, 3.7 mm



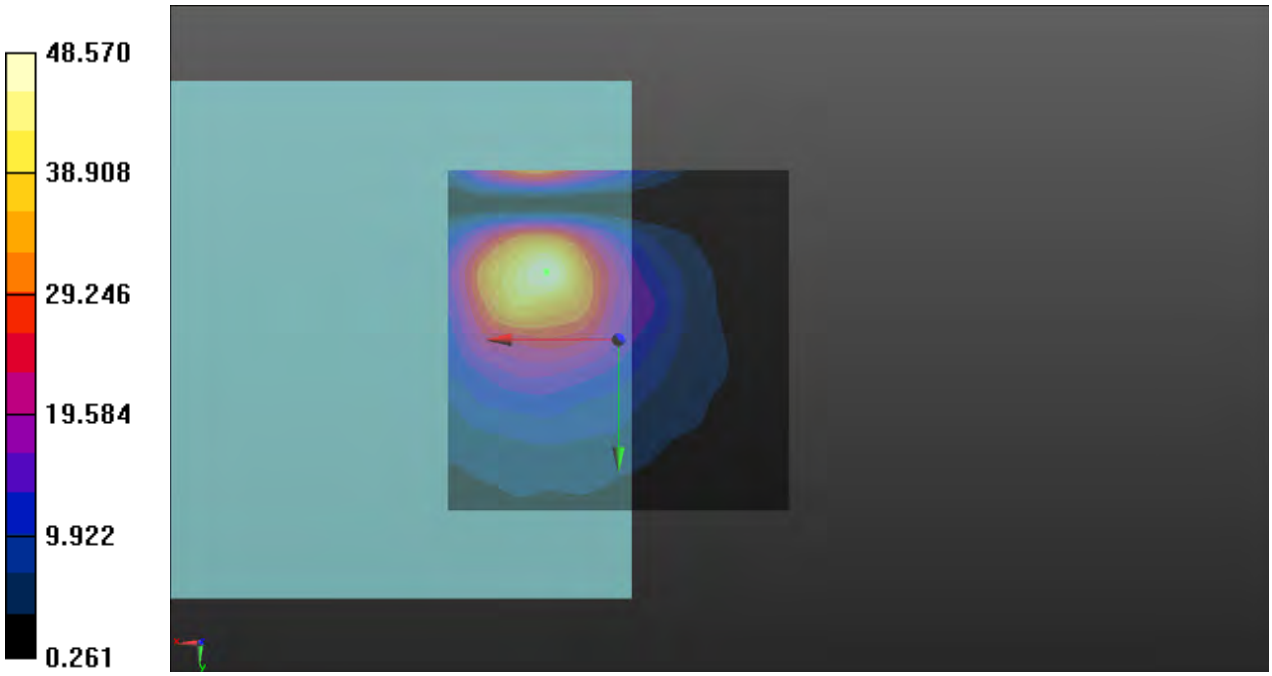
P105 T-Coil_WLAN5.3G_802.11a_6Mbps_Ch56_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10062 - CAD, IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps);
Frequency: 5280 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 33.73 dB
ABM1 comp = -16.48 dBA/m
Location: 10.5, -10, 3.7 mm



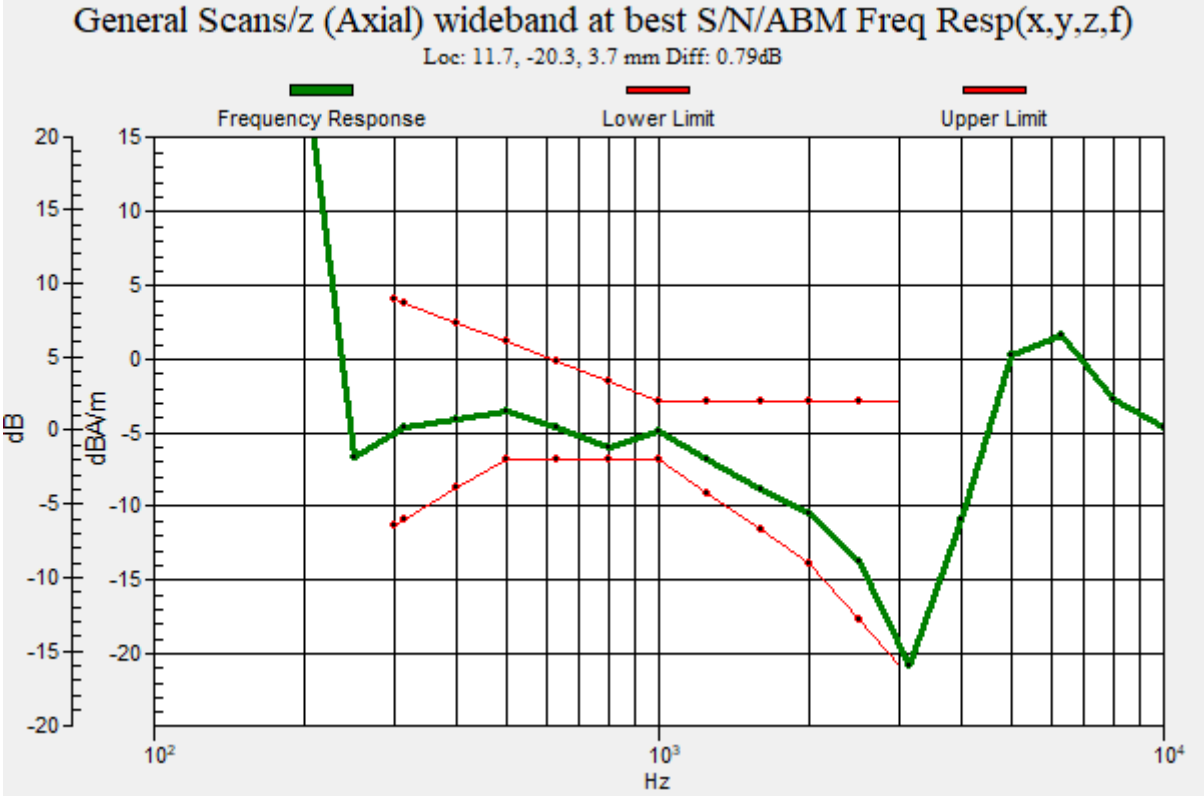
P105 T-Coil_WLAN5.3G_802.11a_6Mbps_Ch56_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10062 - CAD, IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps); Frequency: 5280 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/17

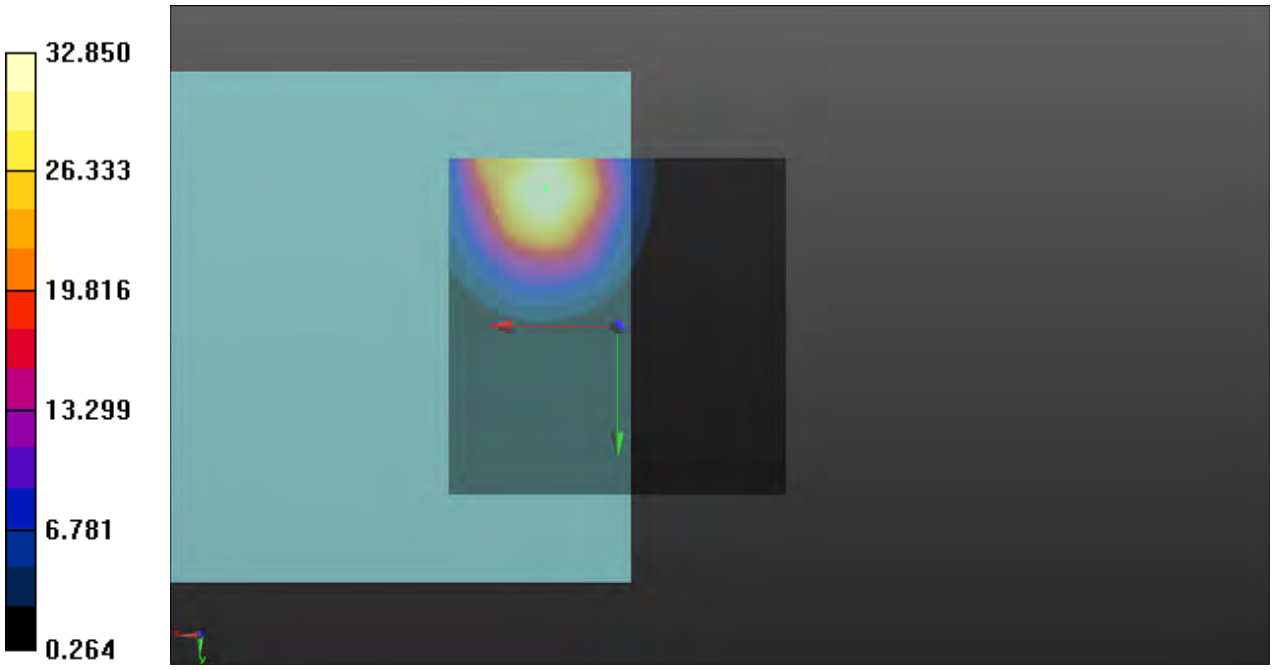
P106 T-Coil_WLAN5.6G_802.11a_6Mbps_Ch116_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10062 - CAD, IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps);
Frequency: 5580 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 30.33 dB
ABM1 comp = -9.33 dBA/m
Location: 10.5, -20.5, 3.7 mm



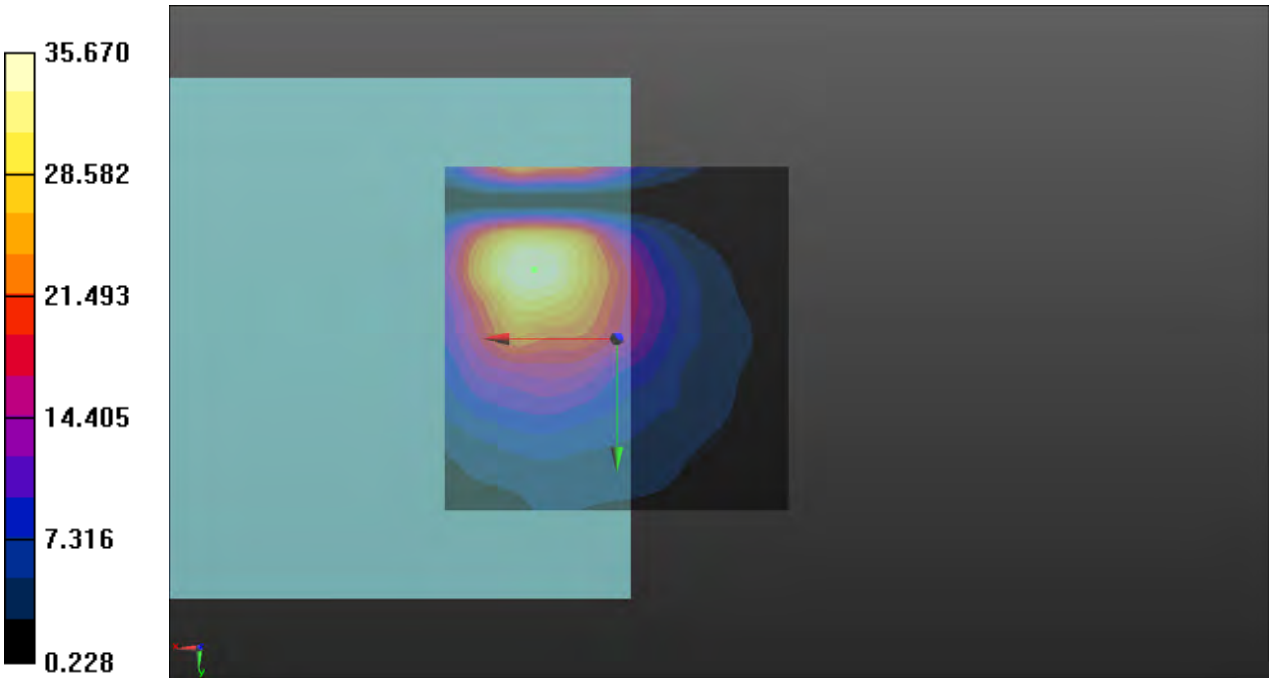
P106 T-Coil_WLAN5.6G_802.11a_6Mbps_Ch116_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10062 - CAD, IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps);
Frequency: 5580 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 31.05 dB
ABM1 comp = -17.46 dBA/m
Location: 12, -10, 3.7 mm



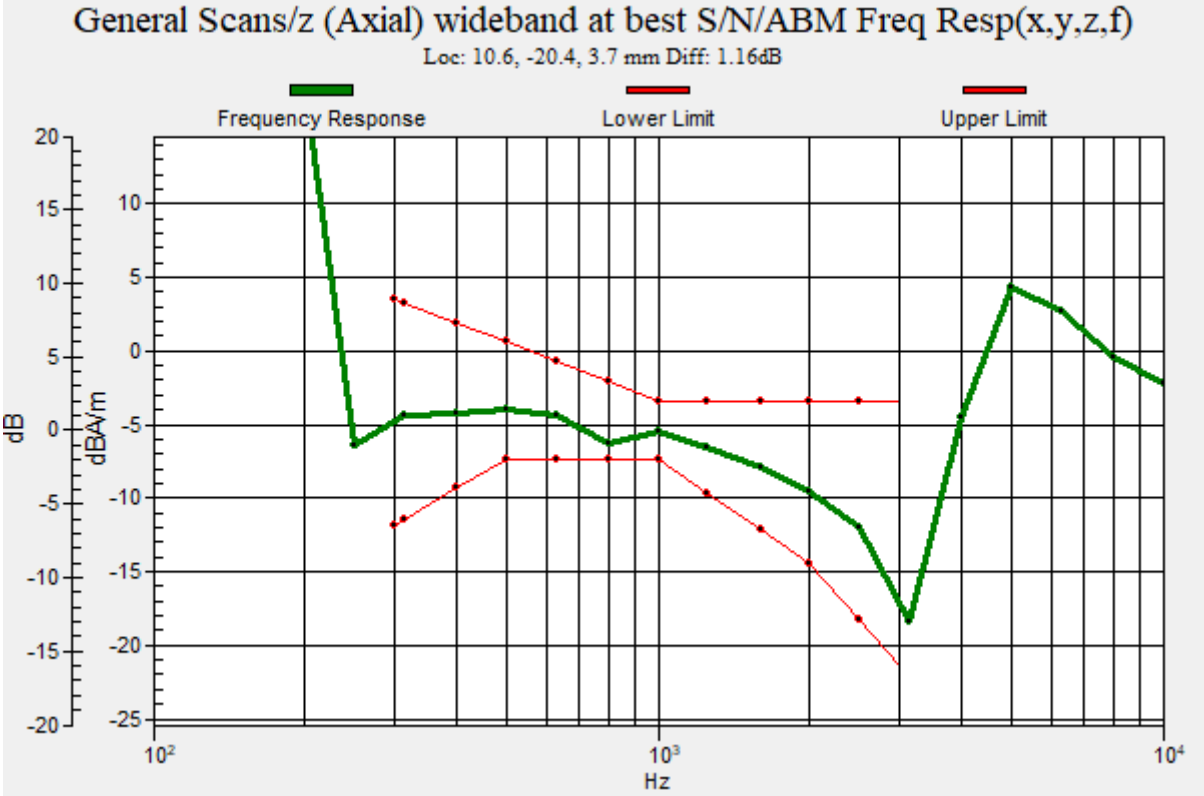
P106 T-Coil_WLAN5.6G_802.11a_6Mbps_Ch116_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10062 - CAD, IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps); Frequency: 5580 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/17

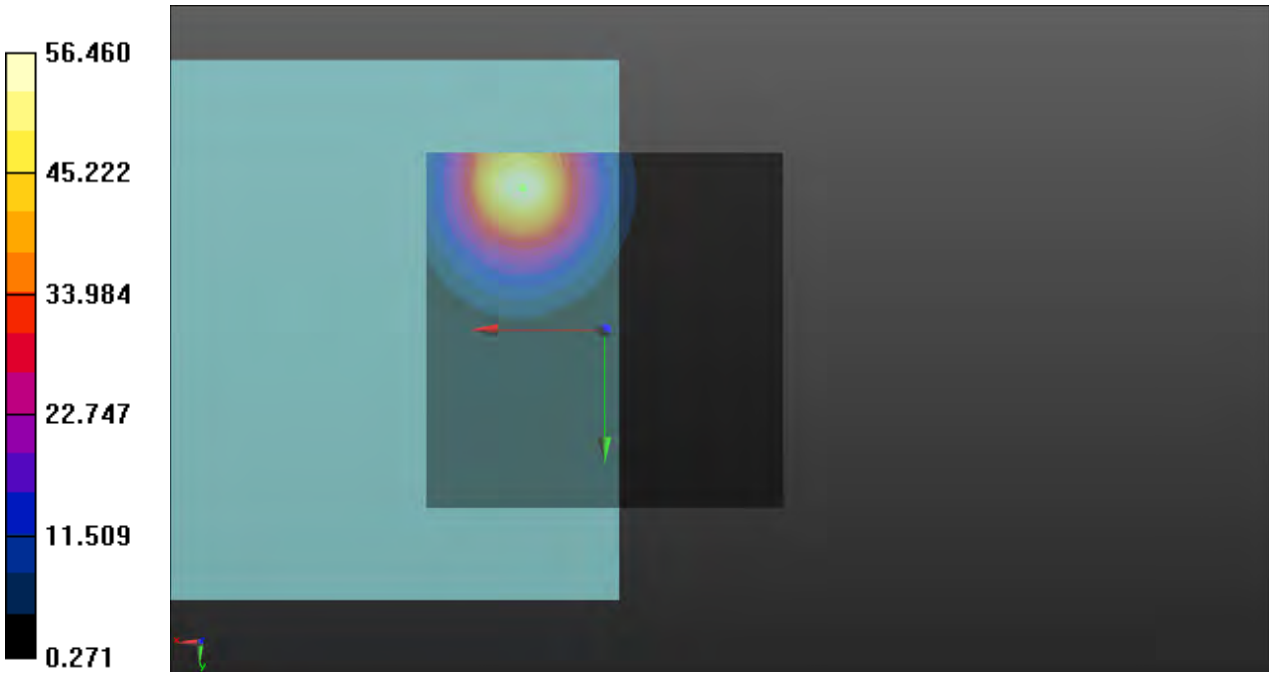
P107 T-Coil_WLAN5.8G_802.11a_6Mbps_Ch157_AMR WB 6.6kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10062 - CAD, IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps);
Frequency: 5785 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 35.04 dB
ABM1 comp = -7.87 dBA/m
Location: 11.5, -20, 3.7 mm



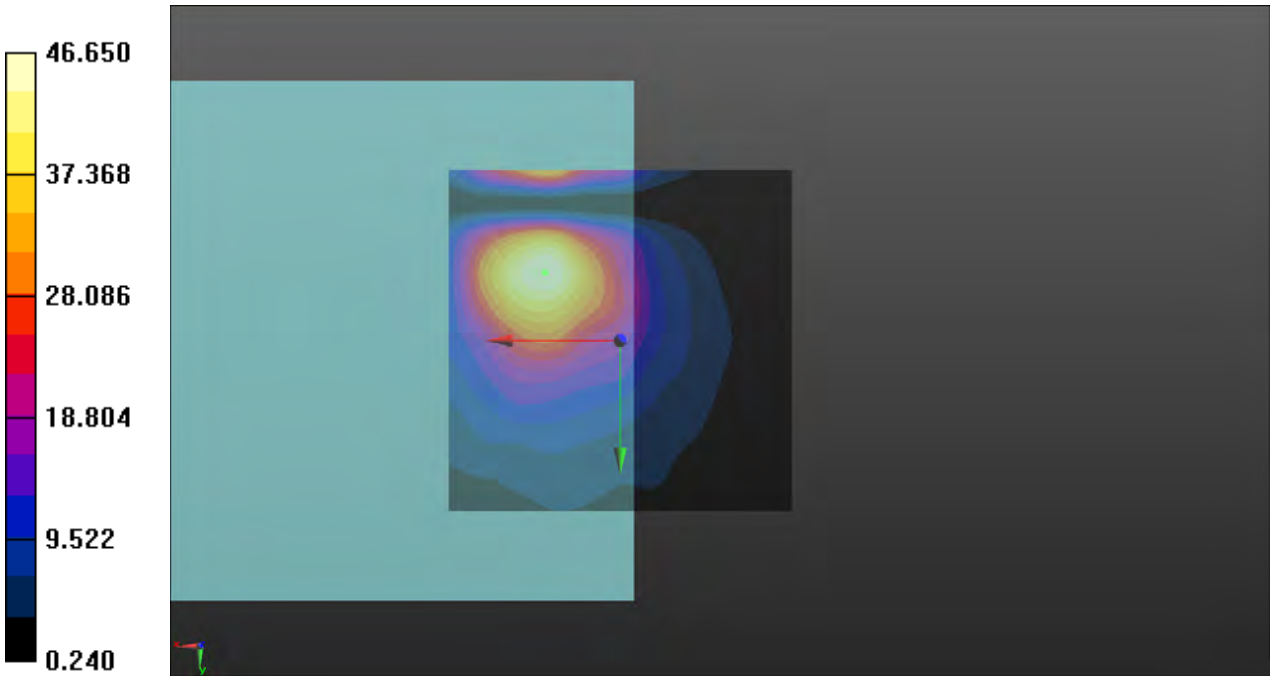
P107 T-Coil_WLAN5.8G_802.11a_6Mbps_Ch157_AMR WB 6.6kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10062 - CAD, IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps);
Frequency: 5785 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 33.38 dB
ABM1 comp = -17.19 dBA/m
Location: 11, -10, 3.7 mm



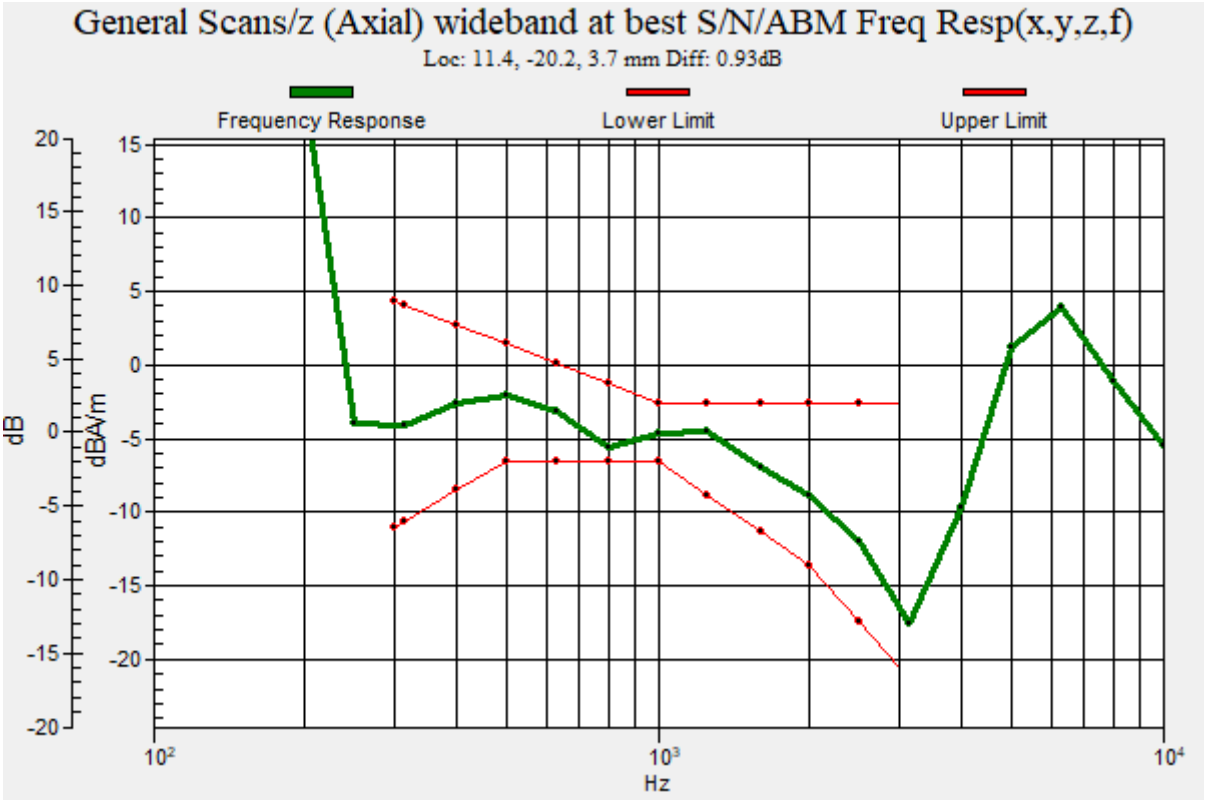
P107 T-Coil_WLAN5.8G_802.11a_6Mbps_Ch157_AMR WB 6.6kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10062 - CAD, IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps); Frequency: 5785 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/21

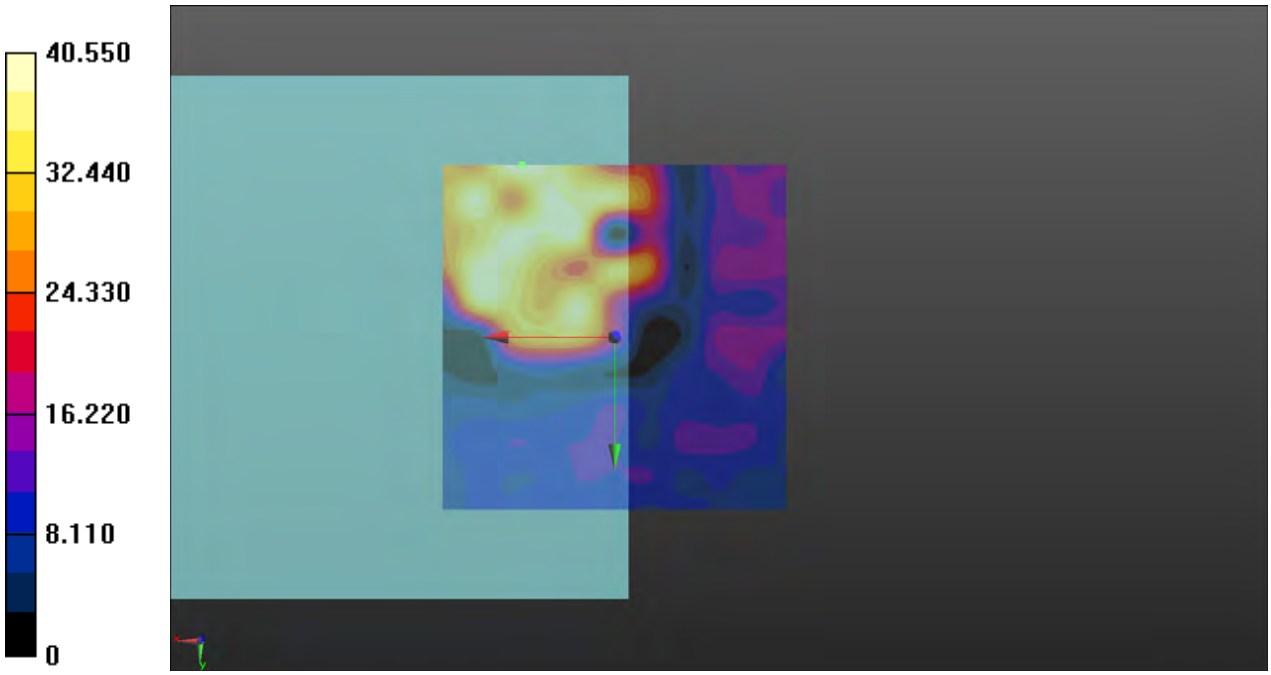
P201 OTT_GSM850_EDGE_Ch189_Duo Opus 75kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10029 - DAC, EDGE-FDD (TDMA, 8PSK, TN 0-1-2); Frequency: 836.4 MHz;Duty Cycle: 1:5.99
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 32.16 dB
ABM1 comp = 10.25 dBA/m
Location: 13.5, -25, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/21

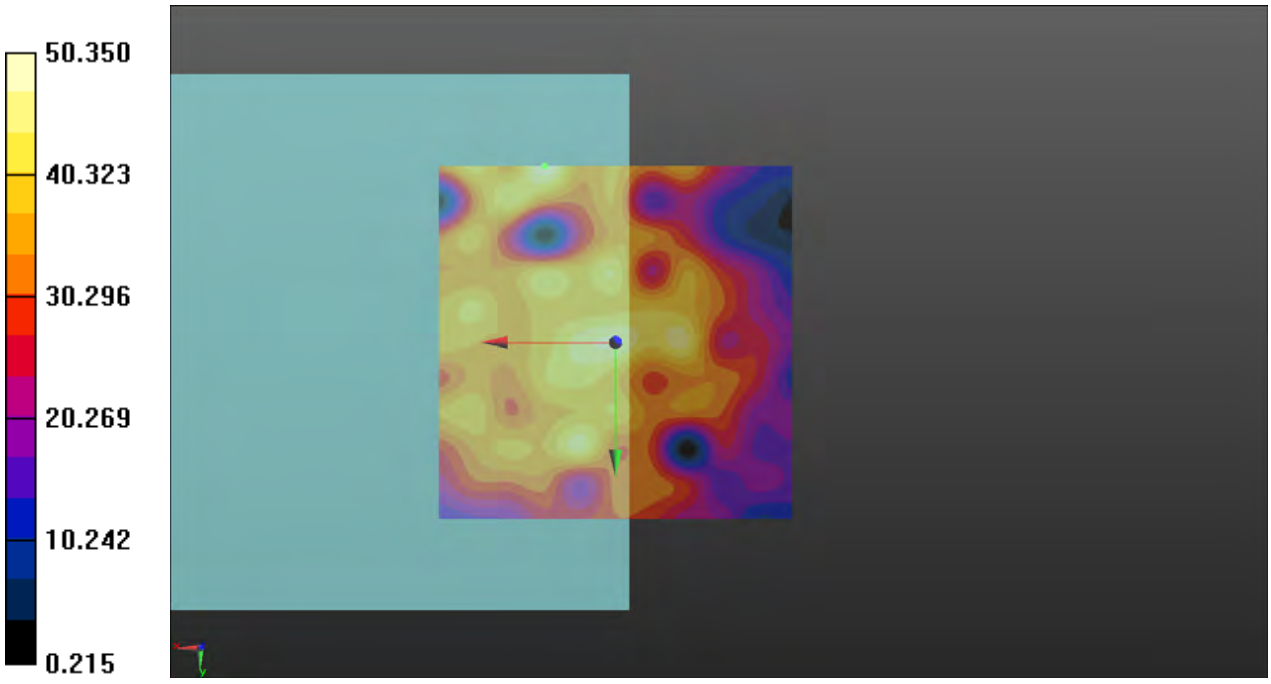
P201 OTT_GSM850_EDGE_Ch189_Duo Opus 75kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10029 - DAC, EDGE-FDD (TDMA, 8PSK, TN 0-1-2); Frequency: 836.4 MHz;Duty Cycle: 1:5.99
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 34.04 dB
ABM1 comp = 4.41 dBA/m
Location: 10, -25, 3.7 mm



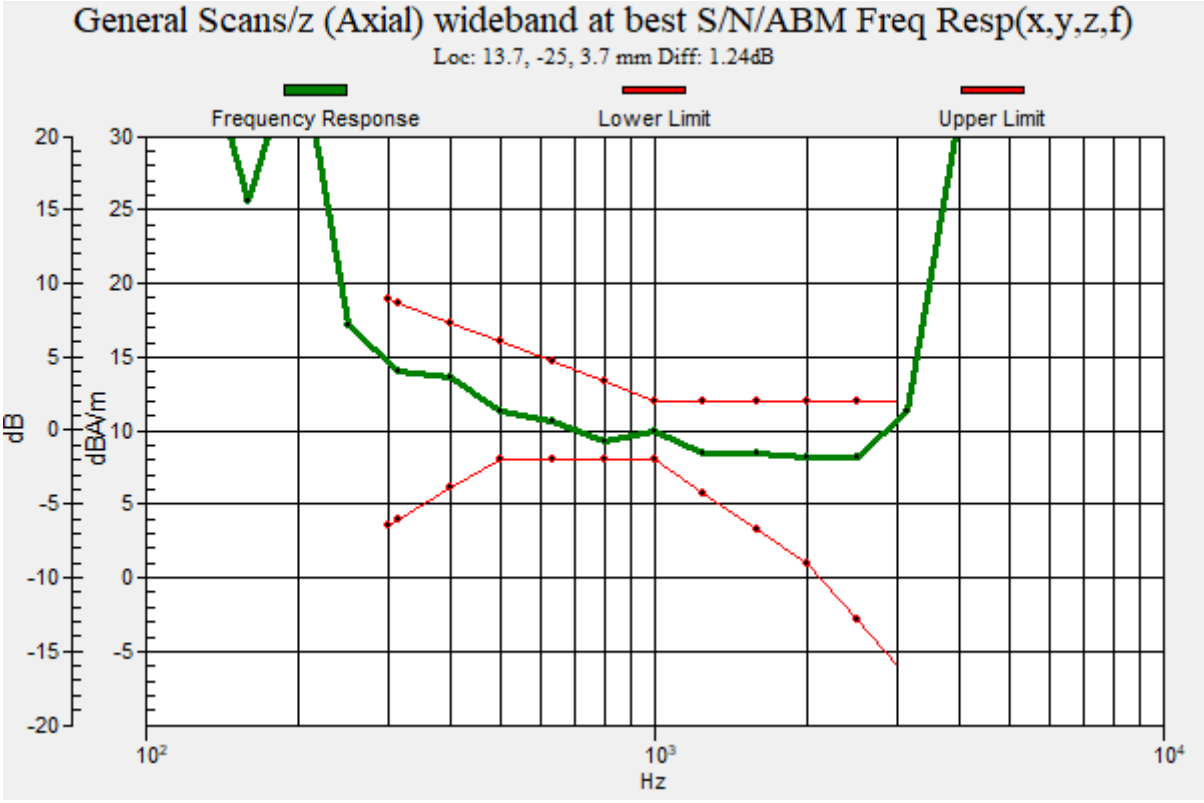
P201 OTT_GSM850_EDGE_Ch189_Duo Opus 75kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10029 - DAC, EDGE-FDD (TDMA, 8PSK, TN 0-1-2); Frequency: 836.4 MHz;Duty Cycle: 1:5.99
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



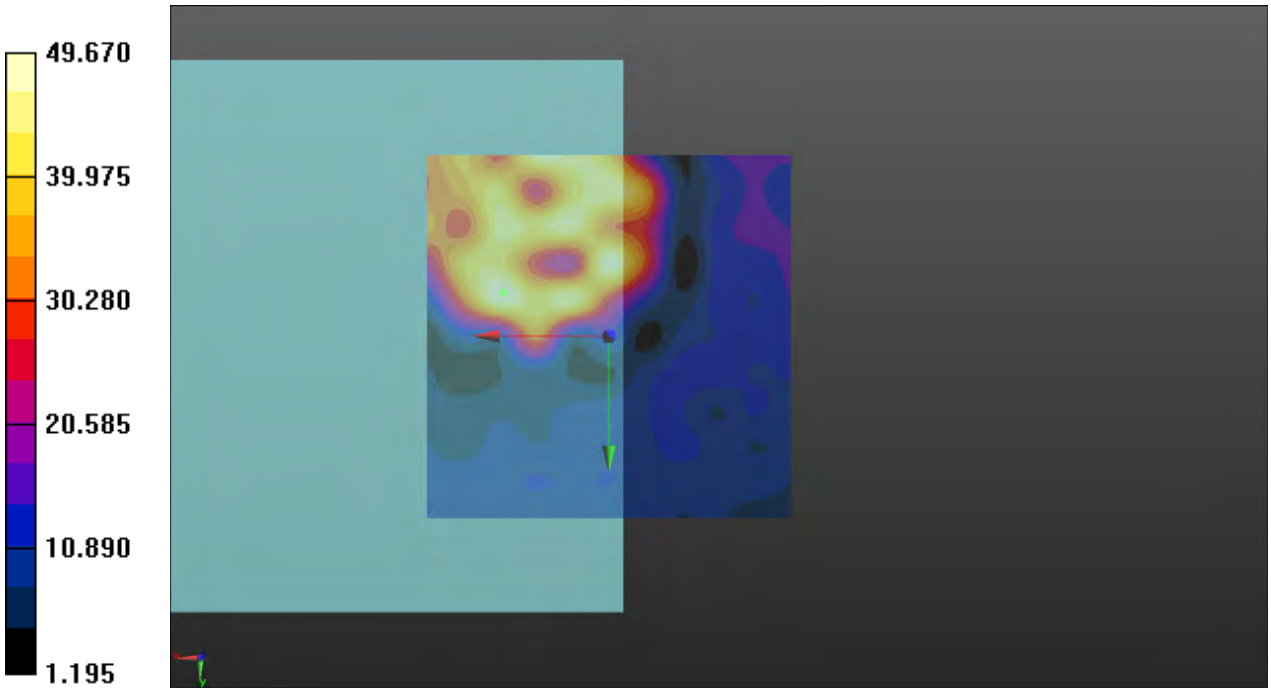
P218 OTT_GSM1900_EDGE_Ch661_Duo Opus 75kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10029 - DAC, EDGE-FDD (TDMA, 8PSK, TN 0-1-2); Frequency: 1880 MHz;Duty Cycle: 1:5.99
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 33.92 dB
ABM1 comp = 2.69 dBA/m
Location: 14.5, -6, 3.7 mm



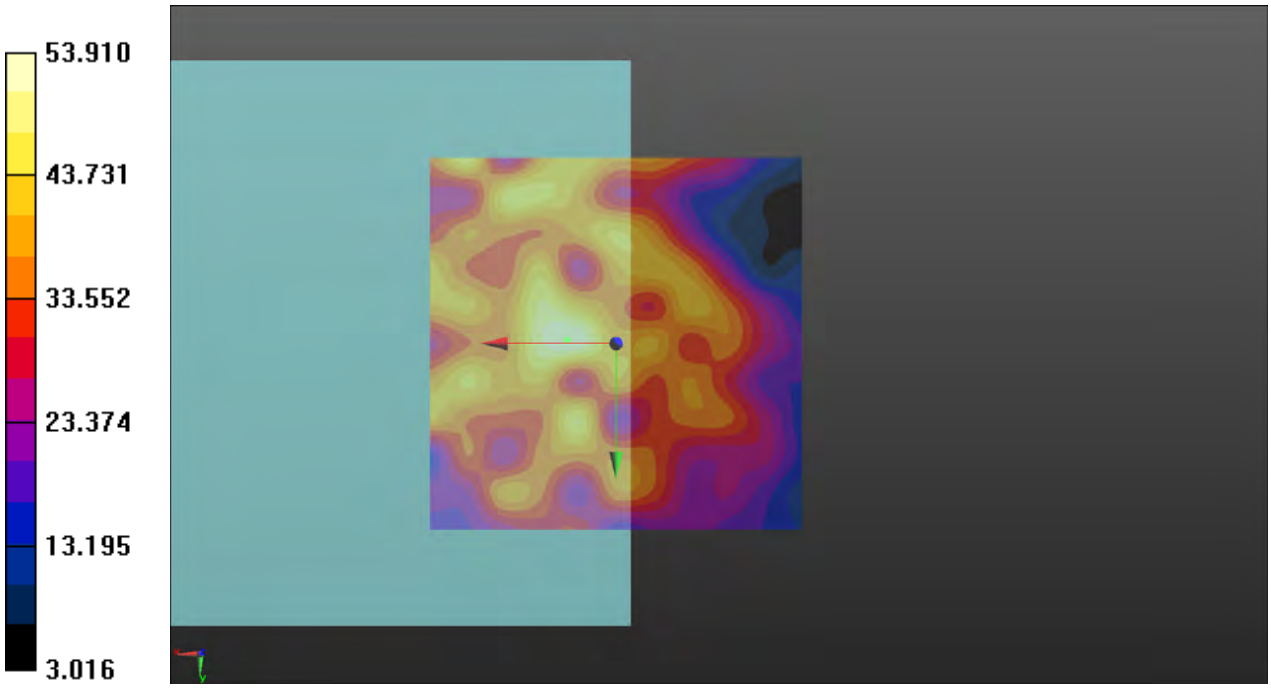
P218 OTT_GSM1900_EDGE_Ch661_Duo Opus 75kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10029 - DAC, EDGE-FDD (TDMA, 8PSK, TN 0-1-2); Frequency: 1880 MHz;Duty Cycle: 1:5.99
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 34.63 dB
ABM1 comp = 1.62 dBA/m
Location: 6.5, -0.5, 3.7 mm



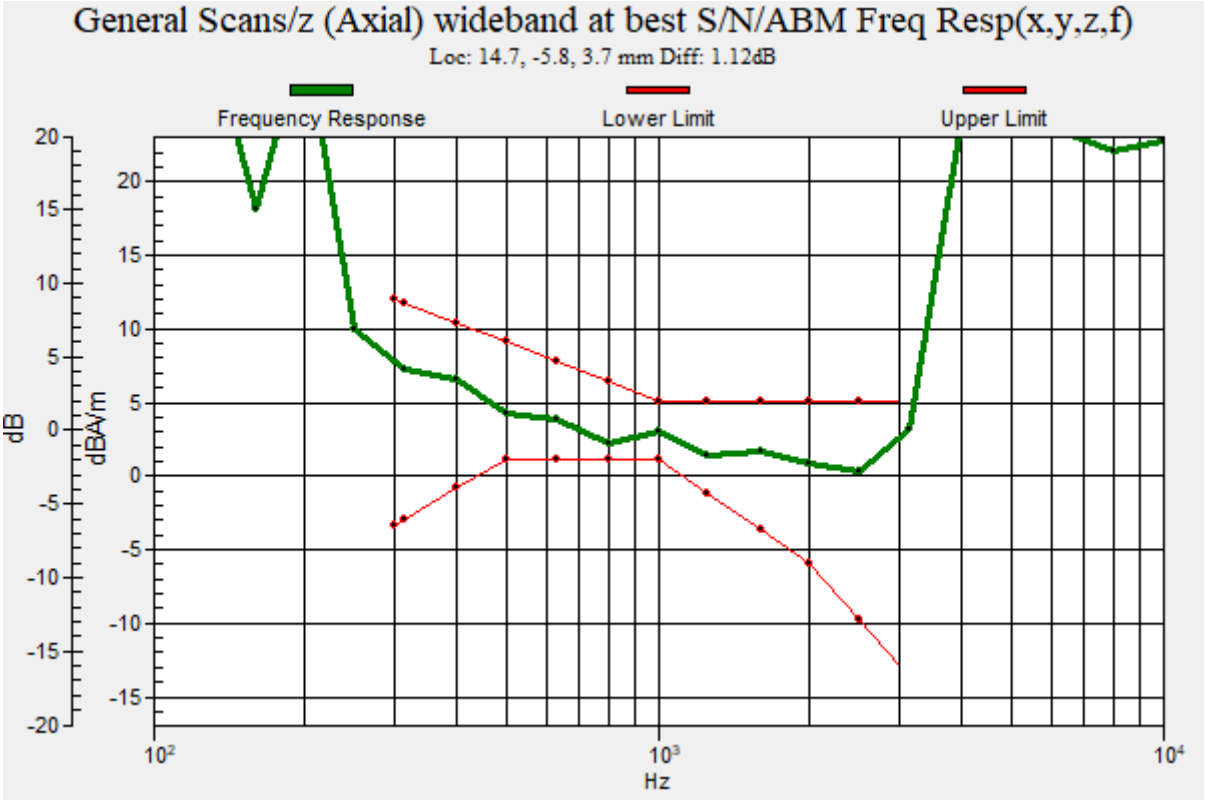
P218 OTT_GSM1900_EDGE_Ch661_Duo Opus 75kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10029 - DAC, EDGE-FDD (TDMA, 8PSK, TN 0-1-2); Frequency: 1880 MHz;Duty Cycle: 1:5.99
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



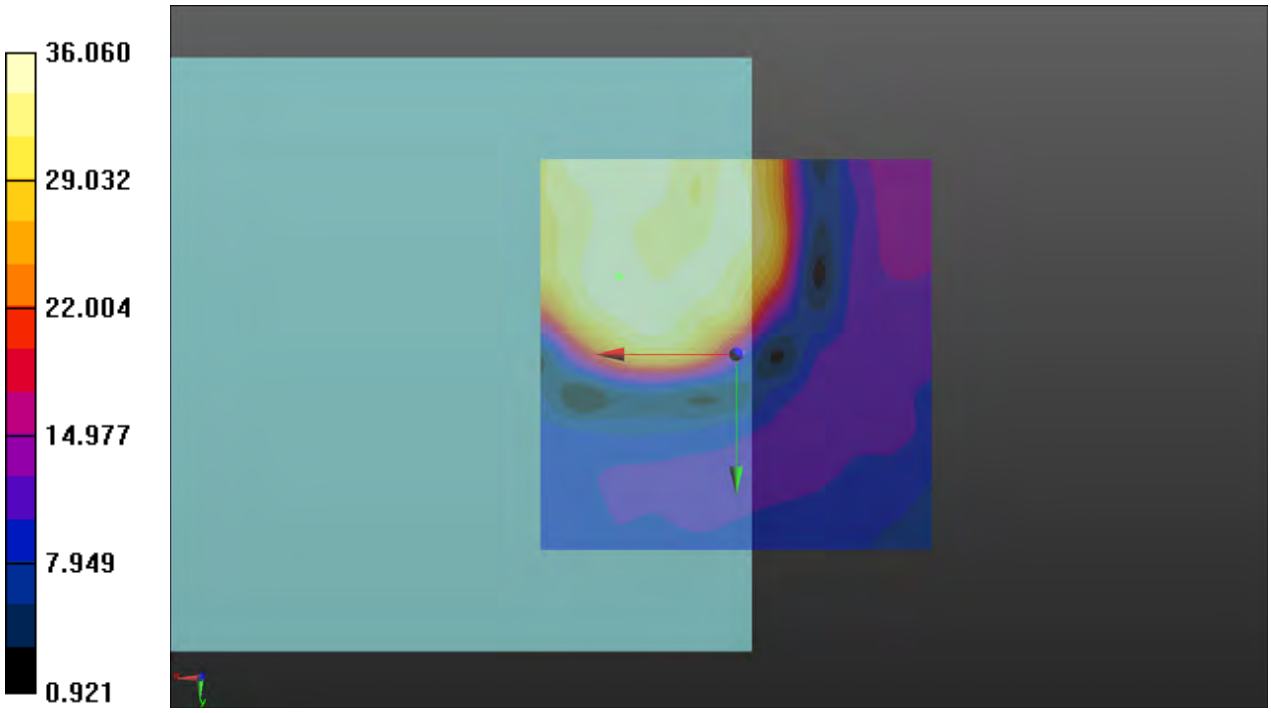
P219 OTT_WCDMA II_HSPA_Ch9400_Duo Opus 75kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10225 - CAB, UMTS-FDD (HSPA+); Frequency: 1880 MHz;Duty Cycle: 1:3.95
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 31.14 dB
ABM1 comp = 6.60 dBA/m
Location: 15, -10, 3.7 mm



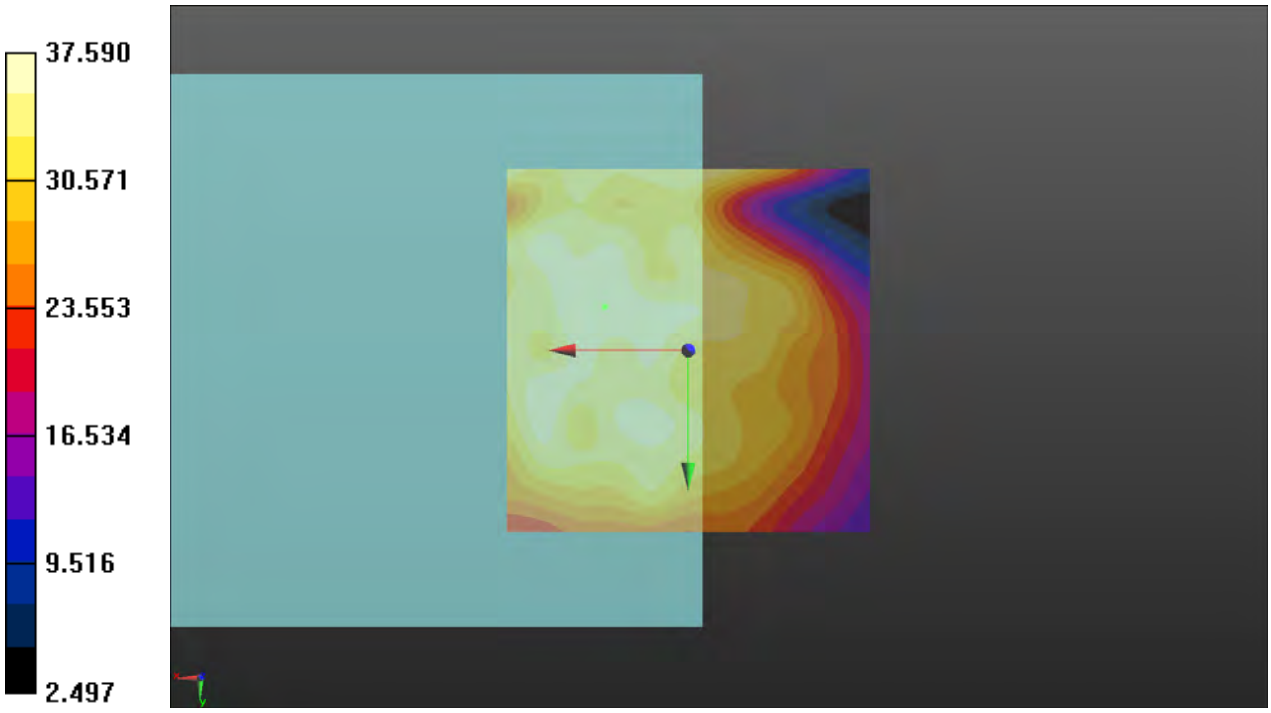
P219 OTT_WCDMA II_HSPA_Ch9400_Duo Opus 75kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10225 - CAB, UMTS-FDD (HSPA+); Frequency: 1880 MHz;Duty Cycle: 1:3.95
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 31.50 dB
ABM1 comp = 3.87 dBA/m
Location: 11.5, -6, 3.7 mm



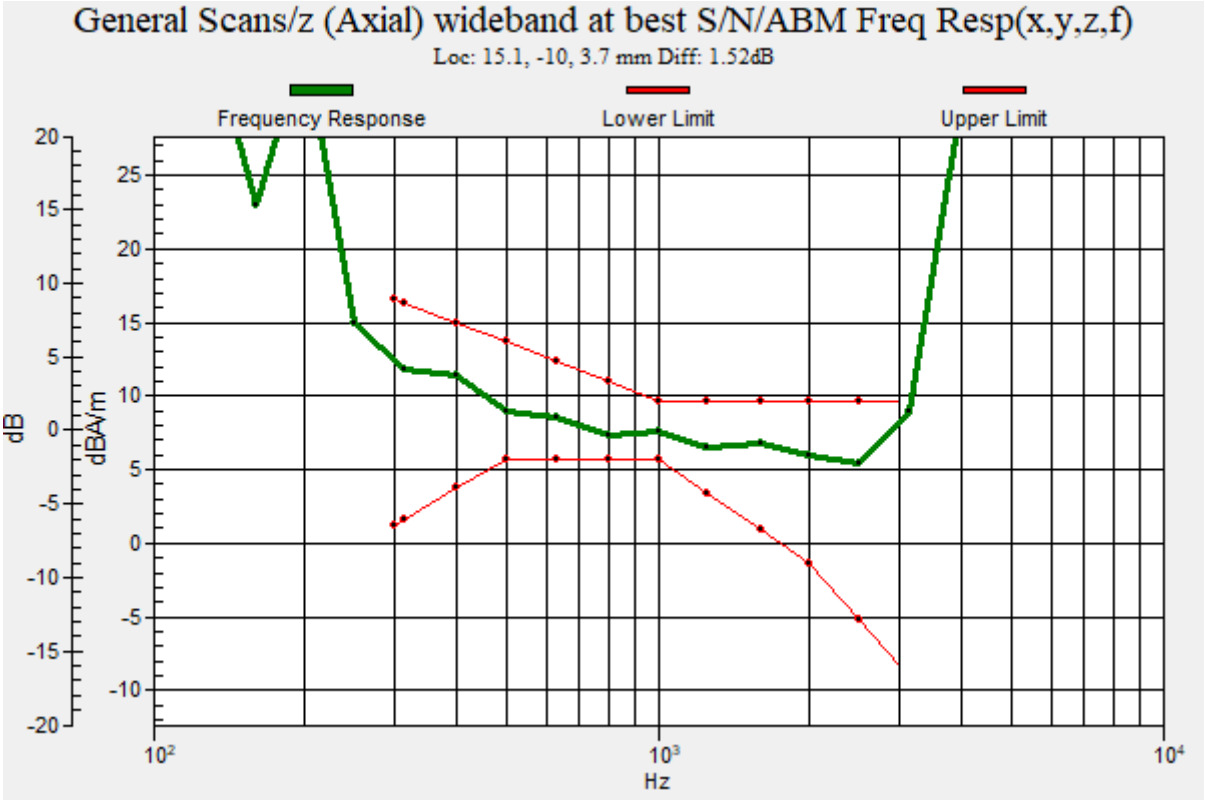
P219 OTT_WCDMA II_HSPA_Ch9400_Duo Opus 75kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10225 - CAB, UMTS-FDD (HSPA+); Frequency: 1880 MHz;Duty Cycle: 1:3.95
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/22

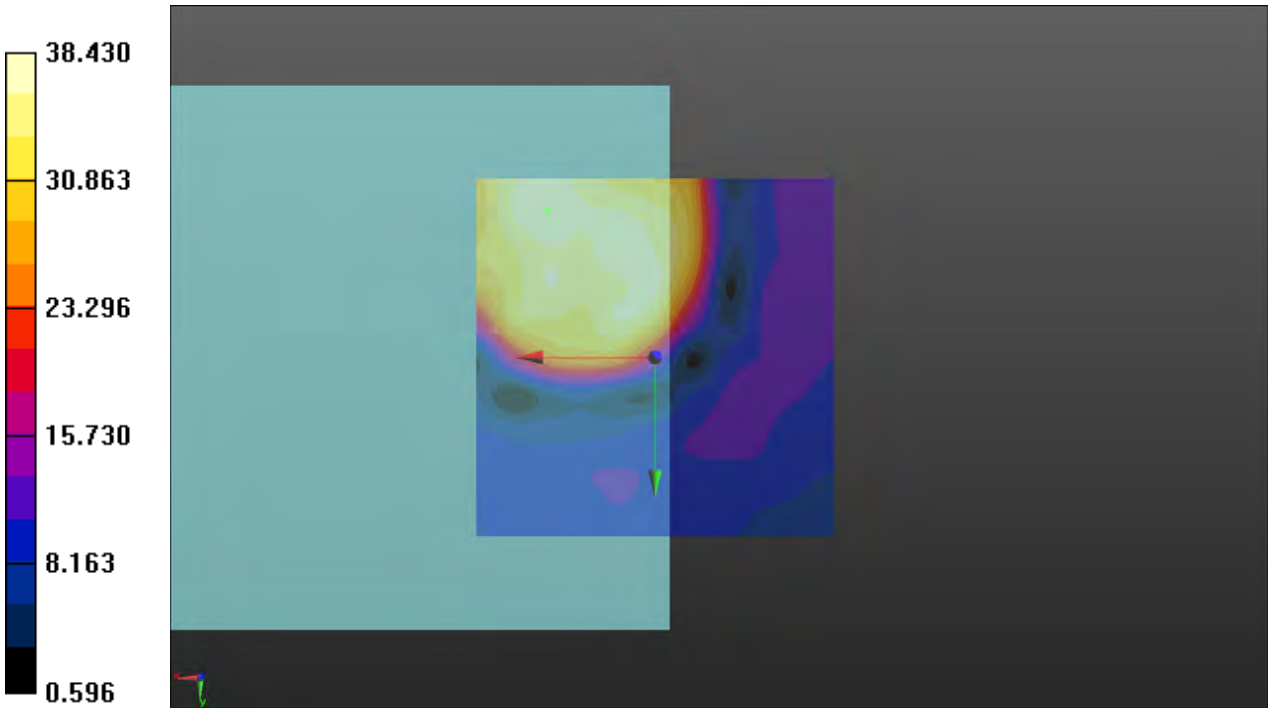
P220 OTT_WCDMA IV_HSPA_Ch1413_Duo Opus 75kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10225 - CAB, UMTS-FDD (HSPA+); Frequency: 1732.6 MHz;Duty Cycle: 1:3.95
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 31.69 dB
ABM1 comp = 11.48 dBA/m
Location: 15, -20.5, 3.7 mm



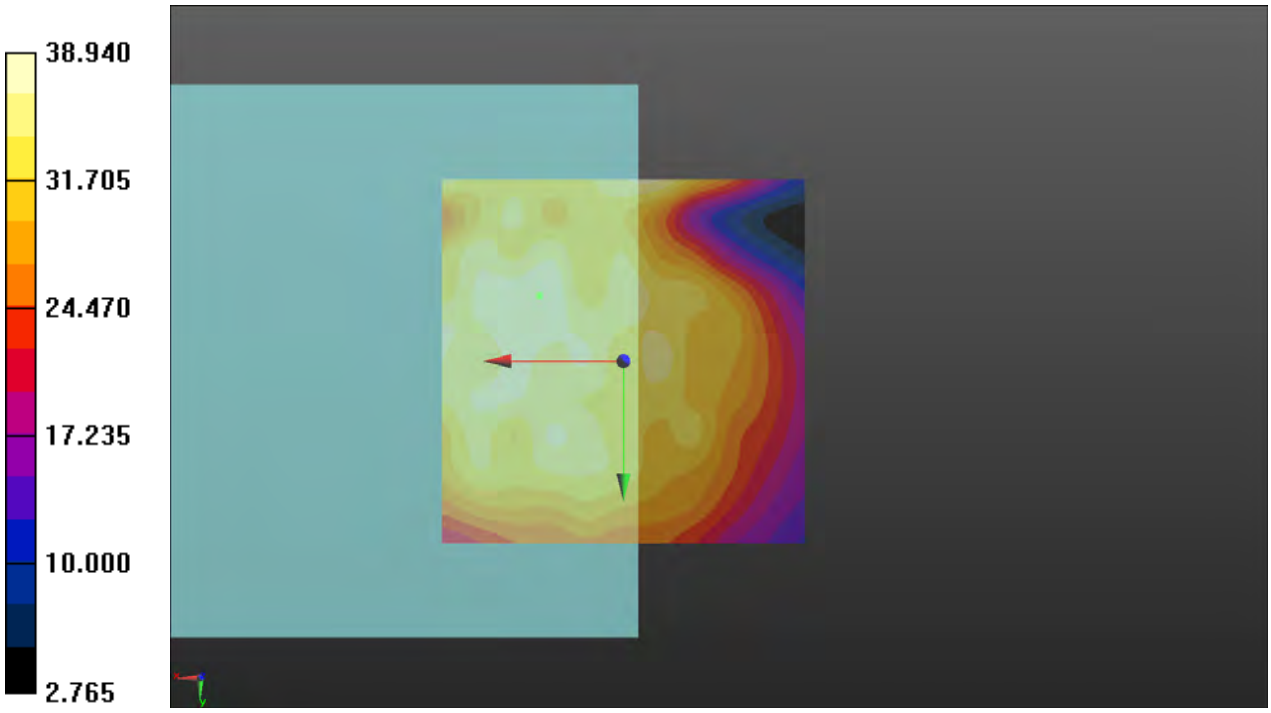
P220 OTT_WCDMA IV_HSPA_Ch1413_Duo Opus 75kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10225 - CAB, UMTS-FDD (HSPA+); Frequency: 1732.6 MHz;Duty Cycle: 1:3.95
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 31.81 dB
ABM1 comp = 4.21 dBA/m
Location: 11.5, -9, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/22

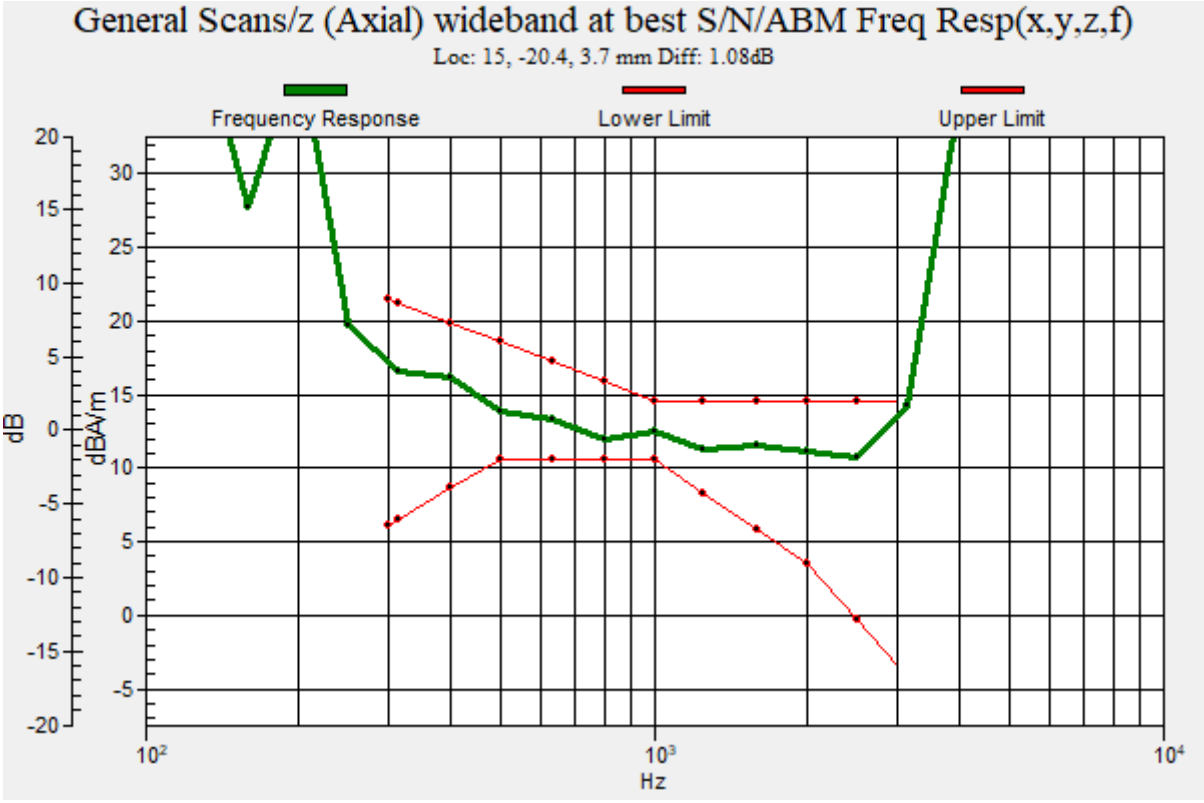
P220 OTT_WCDMA IV_HSPA_Ch1413_Duo Opus 75kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10225 - CAB, UMTS-FDD (HSPA+); Frequency: 1732.6 MHz;Duty Cycle: 1:3.95
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



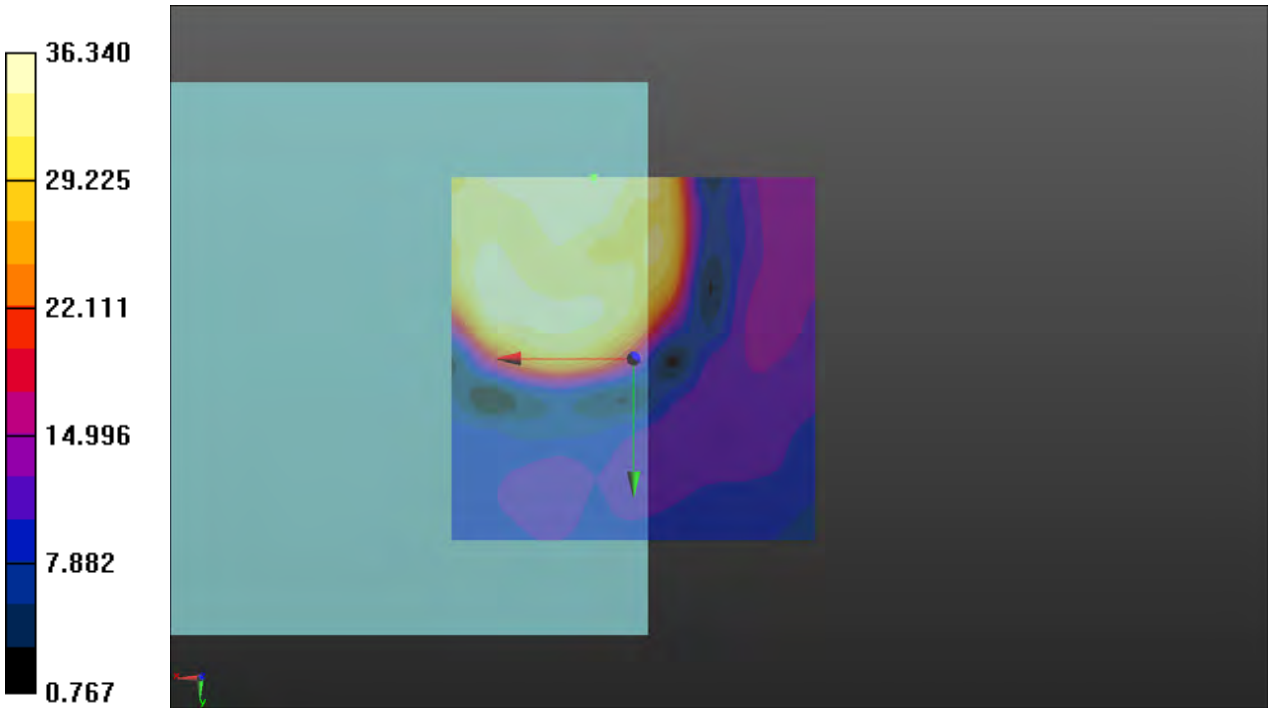
P221 OTT_WCDMA V_HSPA_Ch4182_Duo Opus 75kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10225 - CAB, UMTS-FDD (HSPA+); Frequency: 836.4 MHz;Duty Cycle: 1:3.95
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 31.21 dB
ABM1 comp = 7.30 dBA/m
Location: 5.5, -25, 3.7 mm



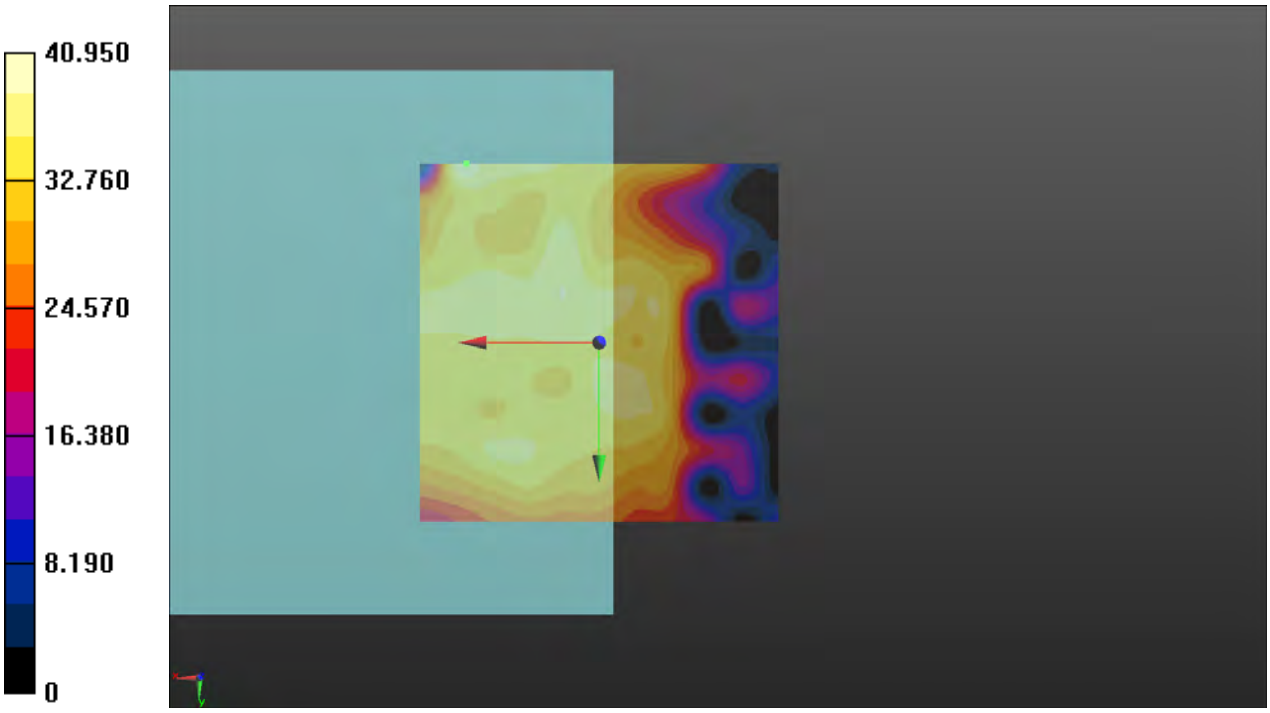
P221 OTT_WCDMA V_HSPA_Ch4182_Duo Opus 75kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10225 - CAB, UMTS-FDD (HSPA+); Frequency: 836.4 MHz;Duty Cycle: 1:3.95
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 32.25 dB
ABM1 comp = 0.58 dBA/m
Location: 18.5, -25, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/22

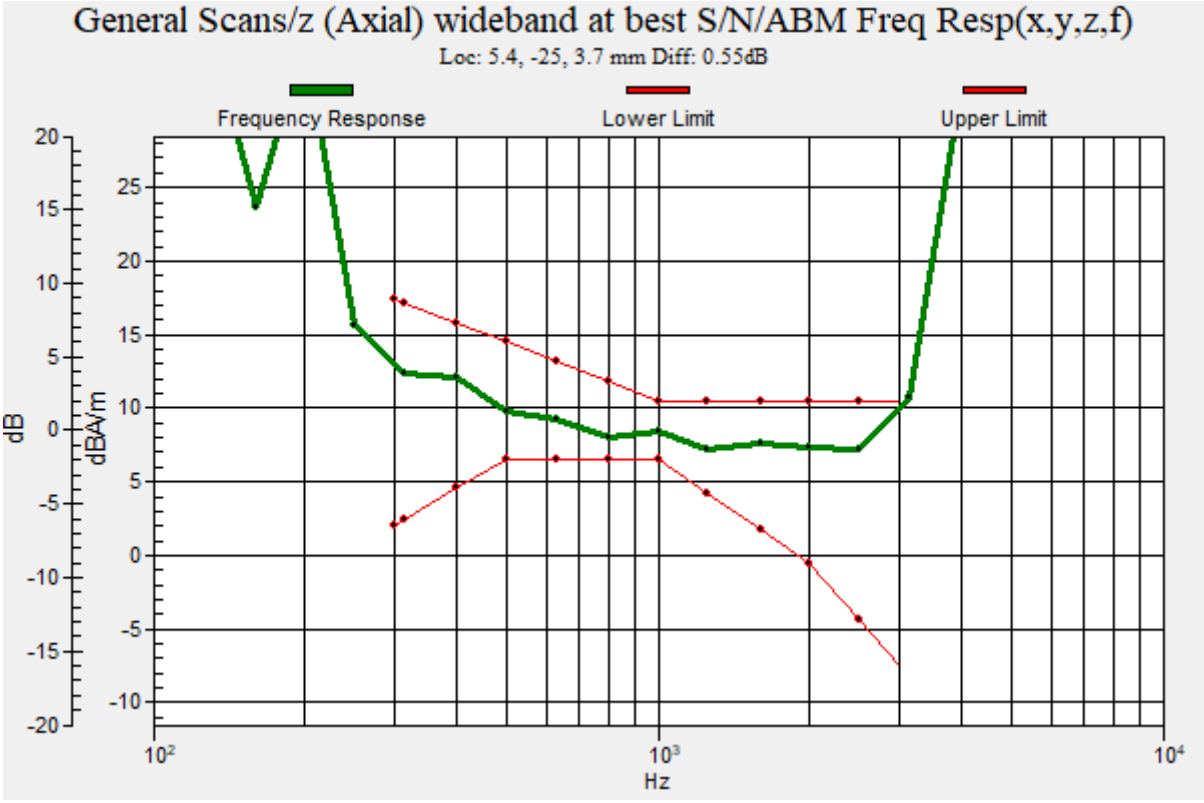
P221 OTT_WCDMA V_HSPA_Ch4182_Duo Opus 75kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10225 - CAB, UMTS-FDD (HSPA+); Frequency: 836.4 MHz;Duty Cycle: 1:3.95
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



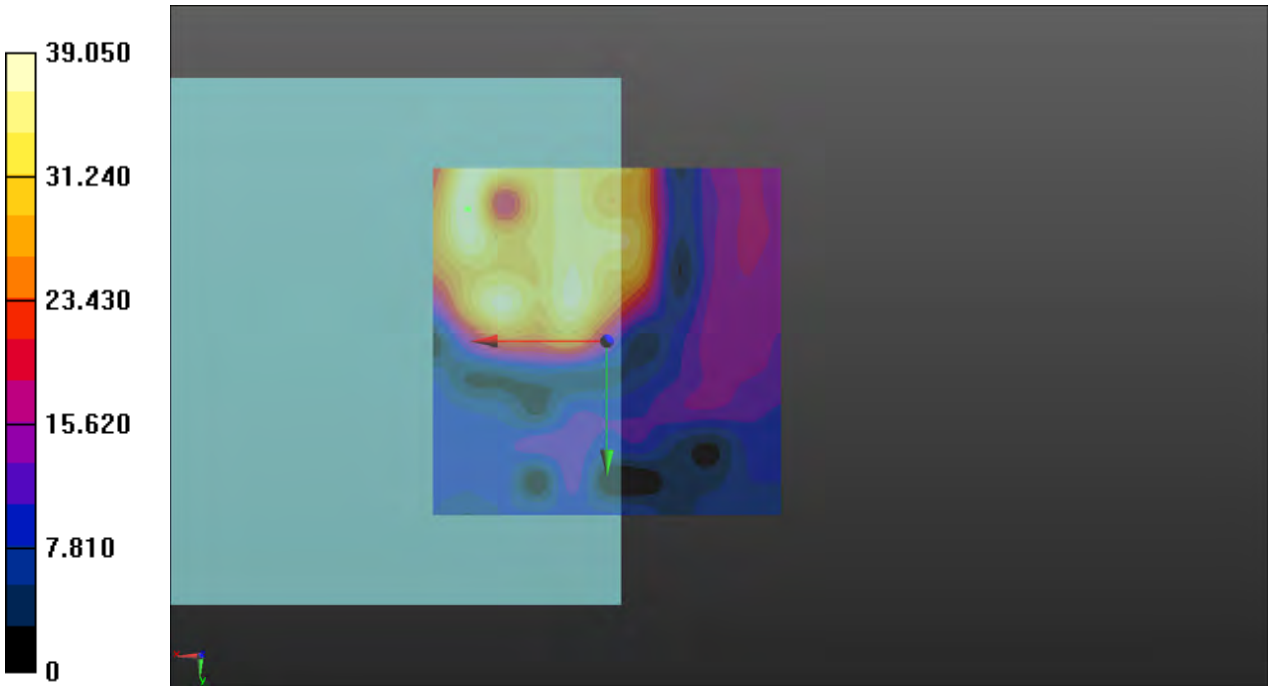
P222 OTT_CDMA BC0_RTAP 153.6kbps_Ch384_Duo Opus 75kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10403 - AAB, CDMA2000 (1xEV-DO, Rev. 0); Frequency: 836.52 MHz;Duty Cycle: 1:2.38
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 31.83 dB
ABM1 comp = 5.72 dBA/m
Location: 20, -19, 3.7 mm



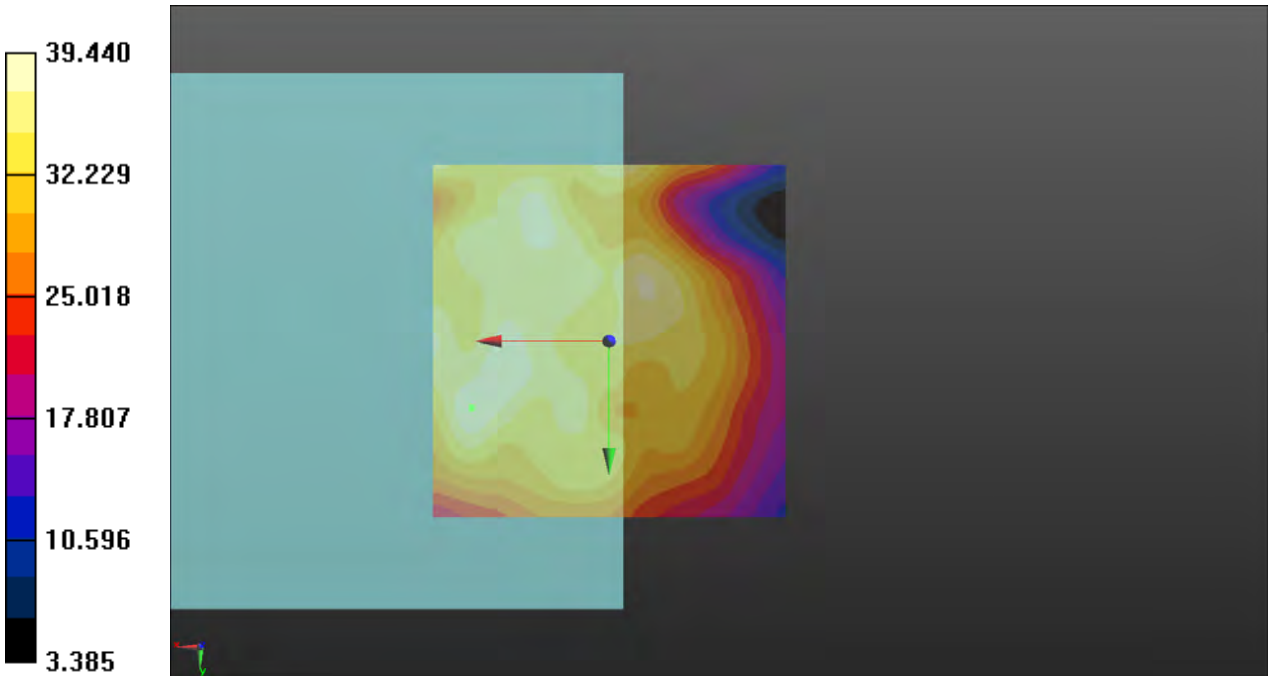
P222 OTT_CDMA BC0_RTAP 153.6kbps_Ch384_Duo Opus 75kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10403 - AAB, CDMA2000 (1xEV-DO, Rev. 0); Frequency: 836.52 MHz;Duty Cycle: 1:2.38
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 31.92 dB
ABM1 comp = -7.76 dBA/m
Location: 19.5, 9.5, 3.7 mm



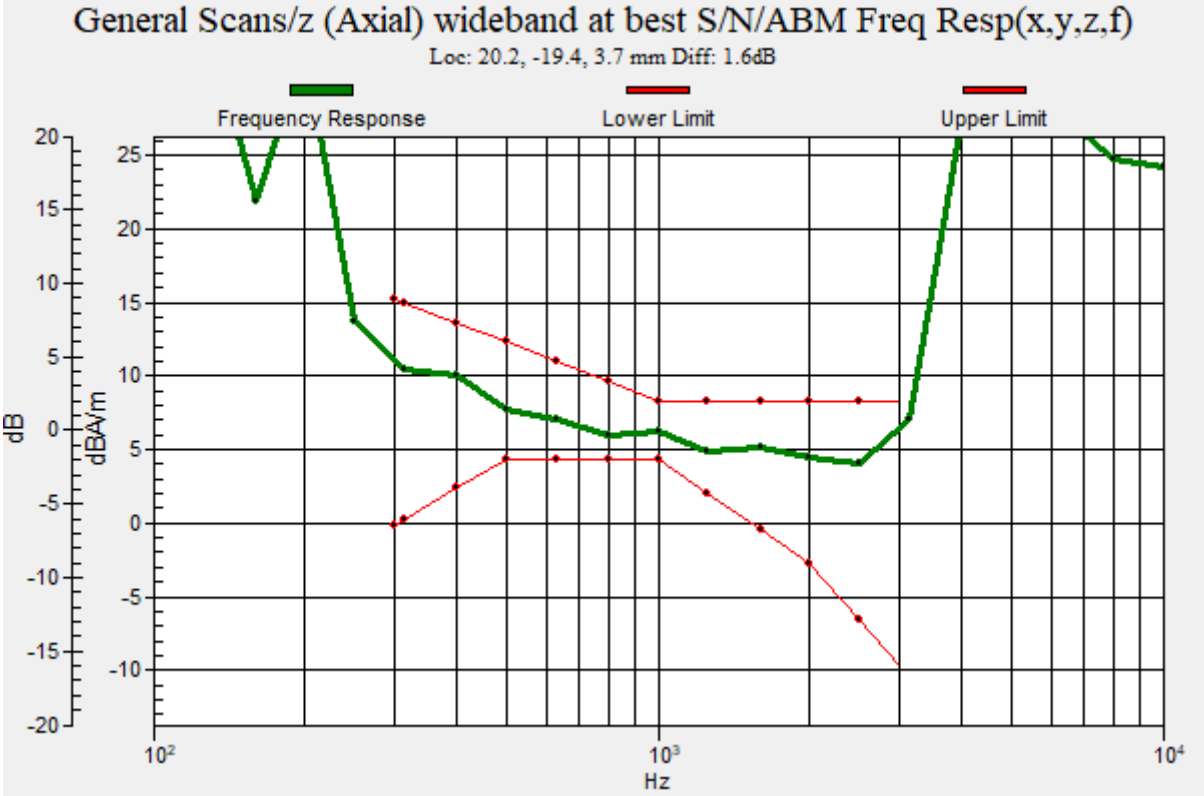
P222 OTT_CDMA BC0_RTAP 153.6kbps_Ch384_Duo Opus 75kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10403 - AAB, CDMA2000 (1xEV-DO, Rev. 0); Frequency: 836.52 MHz;Duty Cycle: 1:2.38
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



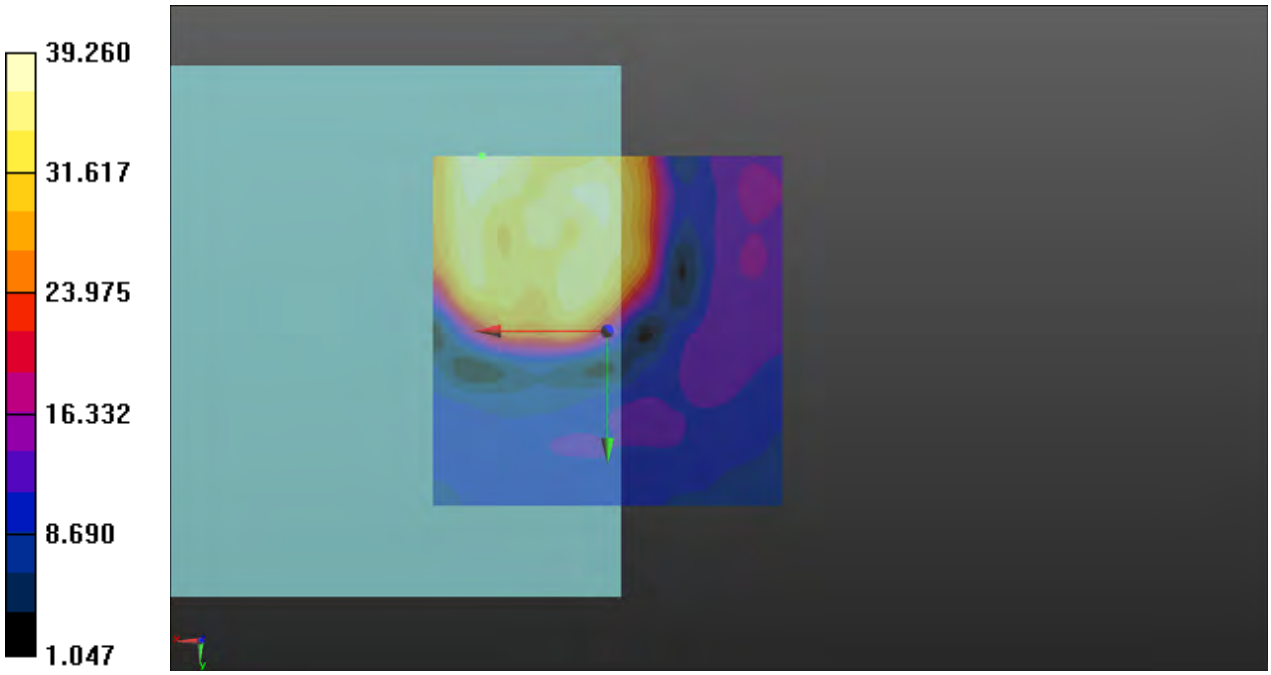
P223 OTT_CDMA BC1_RTAP 153.6kbps_Ch600_Duo Opus 75kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10403 - AAB, CDMA2000 (1xEV-DO, Rev. 0); Frequency: 1880 MHz;Duty Cycle: 1:2.38
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 31.88 dB
ABM1 comp = 6.14 dBA/m
Location: 18, -25, 3.7 mm



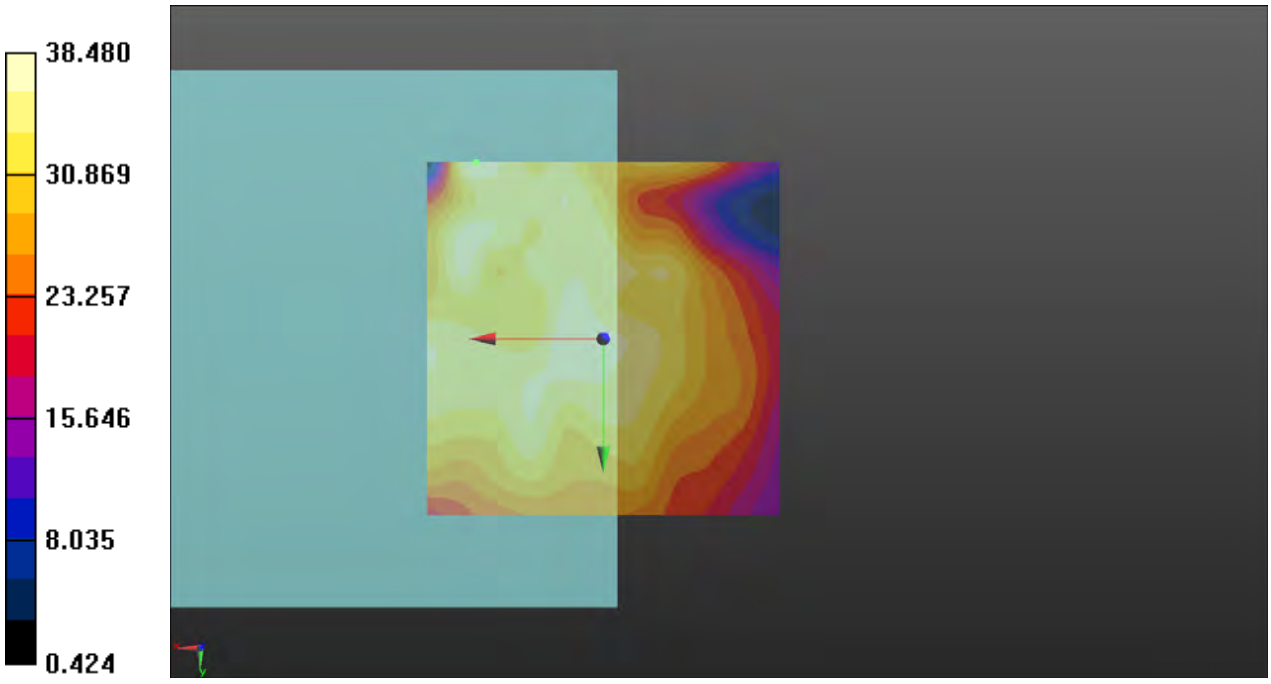
P223 OTT_CDMA BC1_RTAP 153.6kbps_Ch600_Duo Opus 75kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10403 - AAB, CDMA2000 (1xEV-DO, Rev. 0); Frequency: 1880 MHz;Duty Cycle: 1:2.38
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 31.70 dB
ABM1 comp = 1.16 dBA/m
Location: 18, -25, 3.7 mm



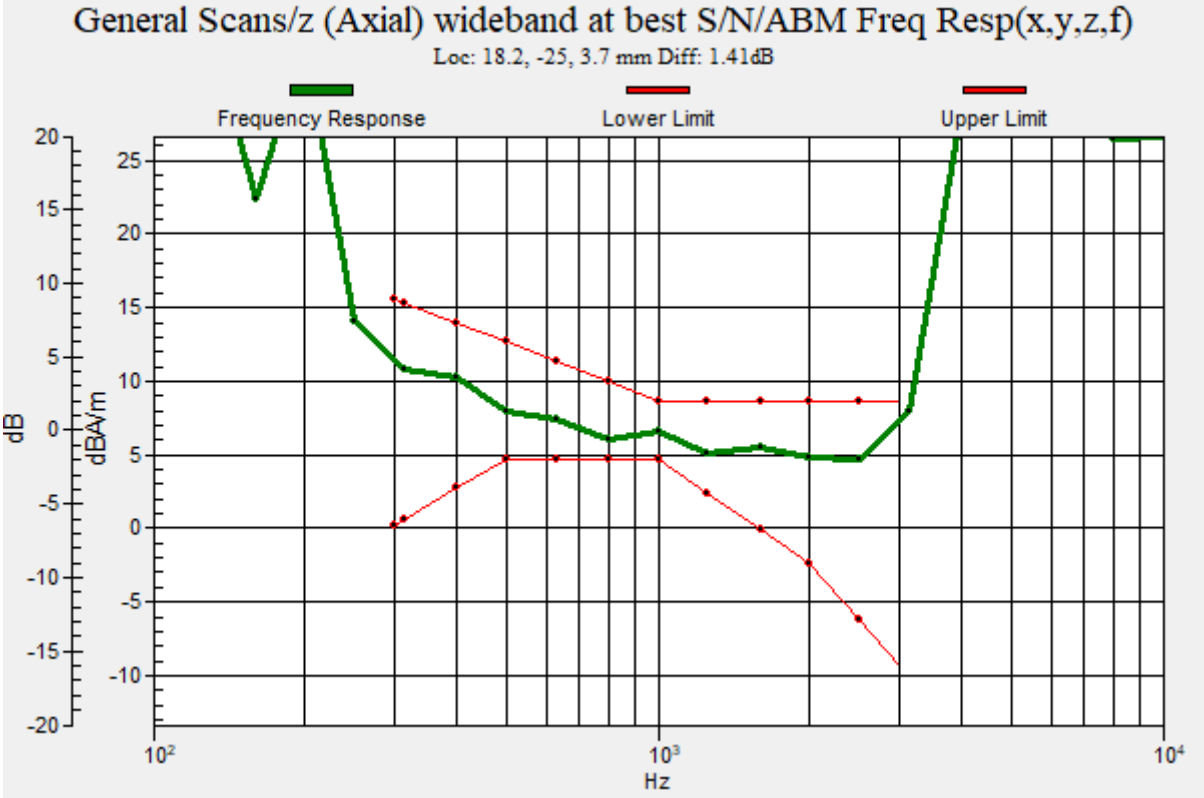
P223 OTT_CDMA BC1_RTAP 153.6kbps_Ch600_Duo Opus 75kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10403 - AAB, CDMA2000 (1xEV-DO, Rev. 0); Frequency: 1880 MHz;Duty Cycle: 1:2.38
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/23

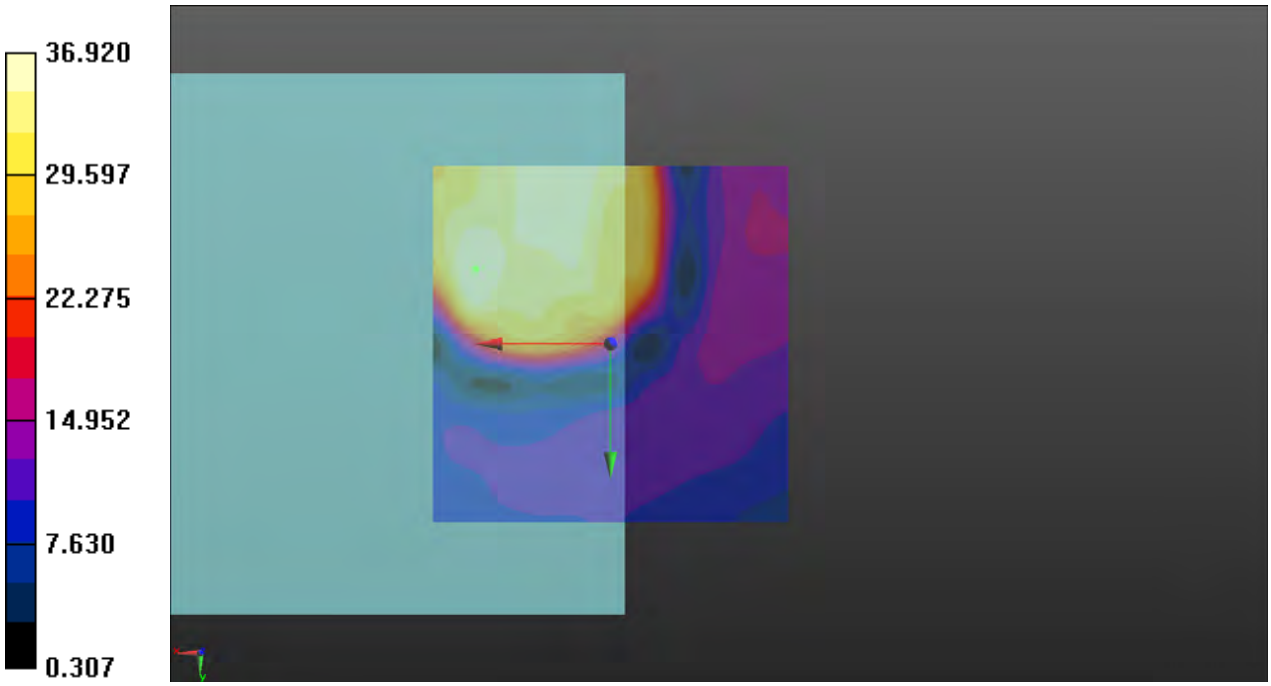
P224 OTT_CDMA BC10_RTAP 153.6kbps_Ch580_Duo Opus 75kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10403 - AAB, CDMA2000 (1xEV-DO, Rev. 0); Frequency: 820.5 MHz;Duty Cycle: 1:2.38
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 31.35 dB
ABM1 comp = 2.64 dBA/m
Location: 19, -10.5, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/01/23

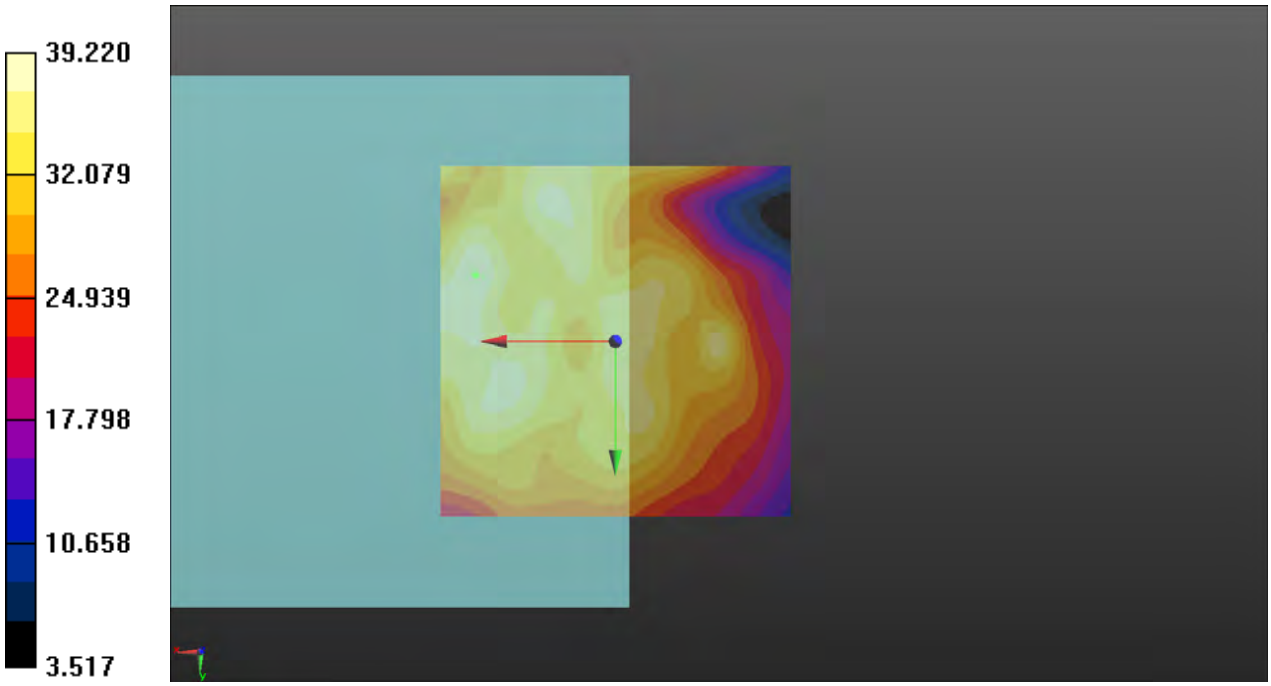
P224 OTT_CDMA BC10_RTAP 153.6kbps_Ch580_Duo Opus 75kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10403 - AAB, CDMA2000 (1xEV-DO, Rev. 0); Frequency: 820.5 MHz;Duty Cycle: 1:2.38
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 31.87 dB
ABM1 comp = 0.45 dBA/m
Location: 20, -9.5, 3.7 mm



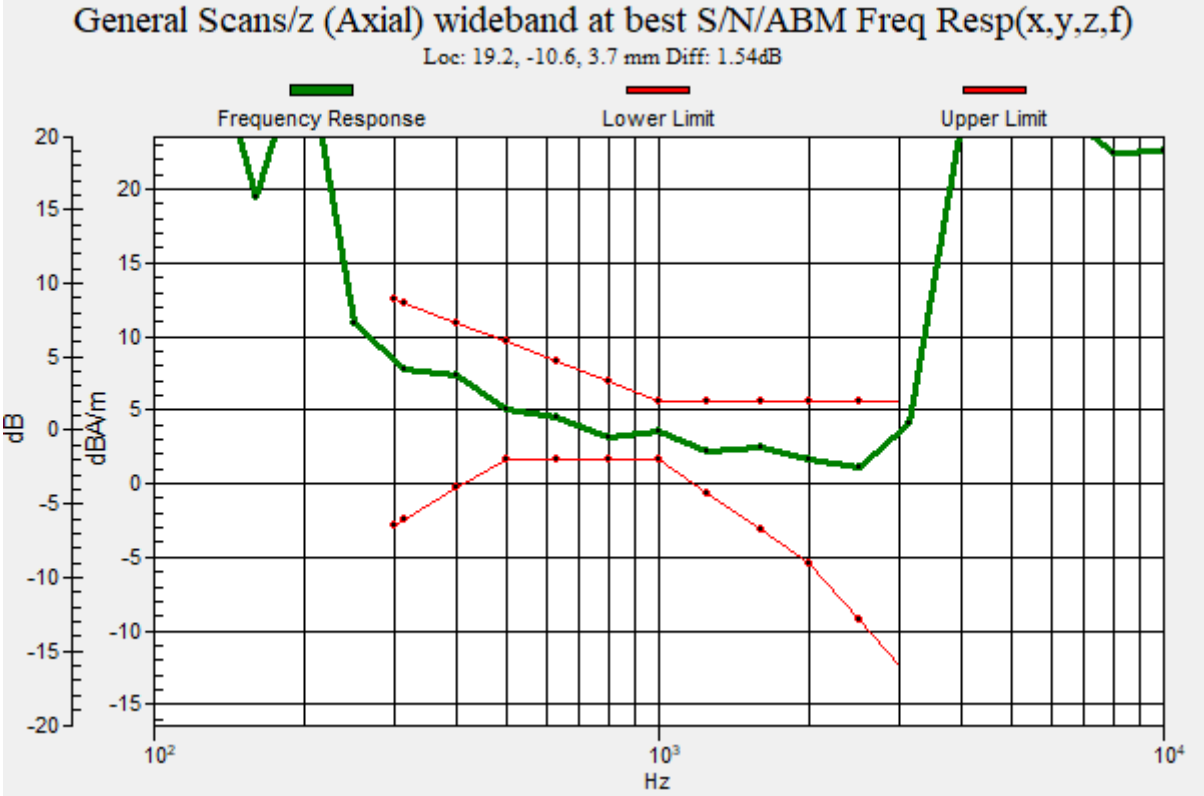
P224 OTT_CDMA BC10_RTAP 153.6kbps_Ch580_Duo Opus 75kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10403 - AAB, CDMA2000 (1xEV-DO, Rev. 0); Frequency: 820.5 MHz;Duty Cycle: 1:2.38
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.7 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



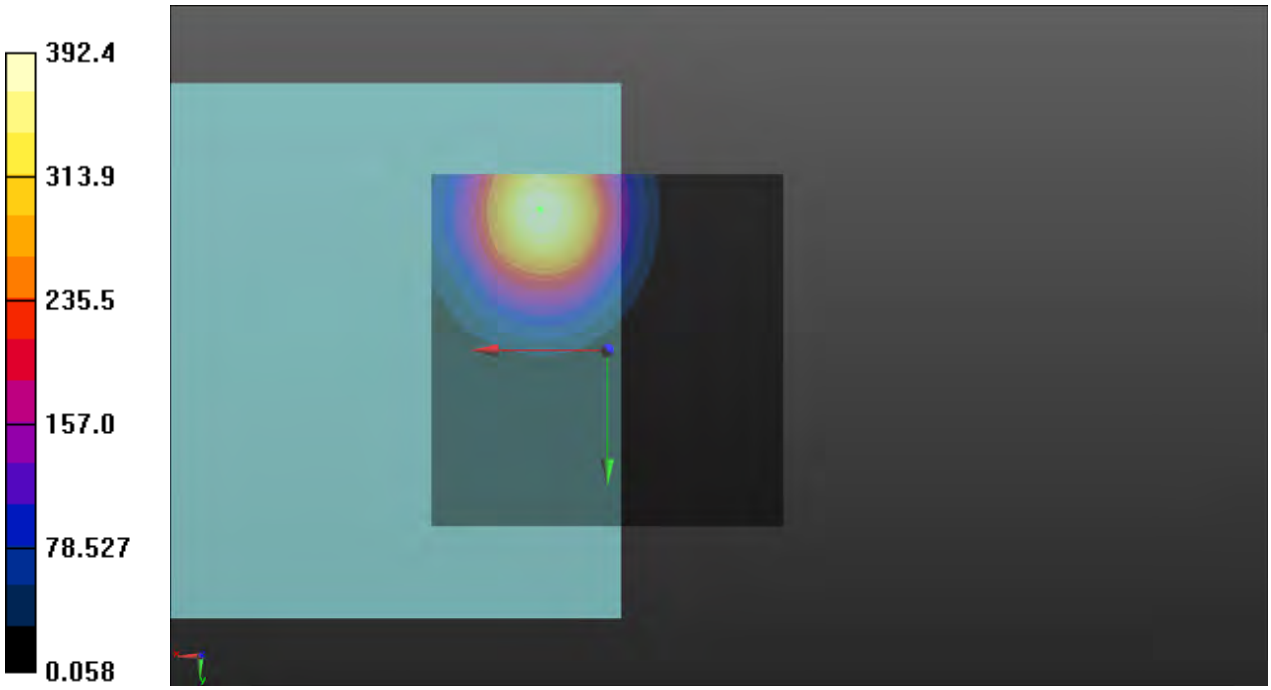
P225 OTT_LTE 5_QPSK10M_Ch20525_Duo Opus 75kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10154 - CAG, LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK);
Frequency: 836.5 MHz;Duty Cycle: 1:3.76
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 51.88 dB
ABM1 comp = 11.94 dBA/m
Location: 9.5, -20, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/05

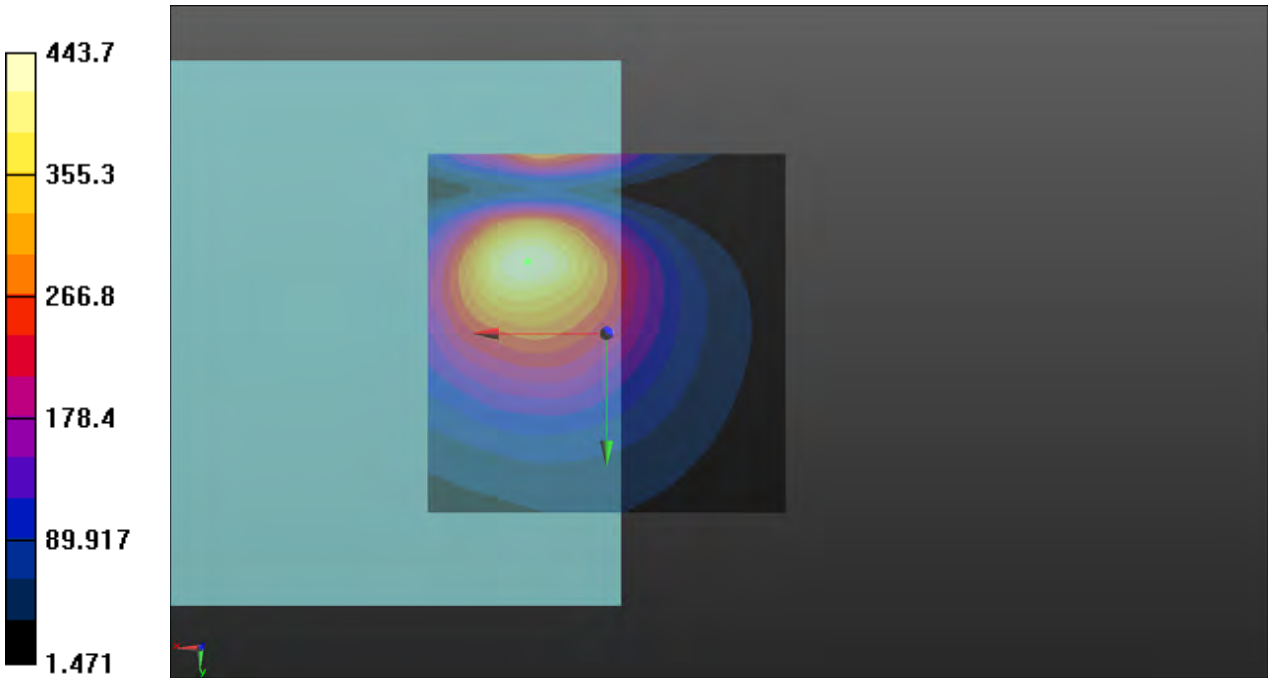
P225 OTT_LTE 5_QPSK10M_Ch20525_Duo Opus 75kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10154 - CAG, LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK);
Frequency: 836.5 MHz;Duty Cycle: 1:3.76
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 52.94 dB
ABM1 comp = 3.38 dBA/m
Location: 11, -10, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/05

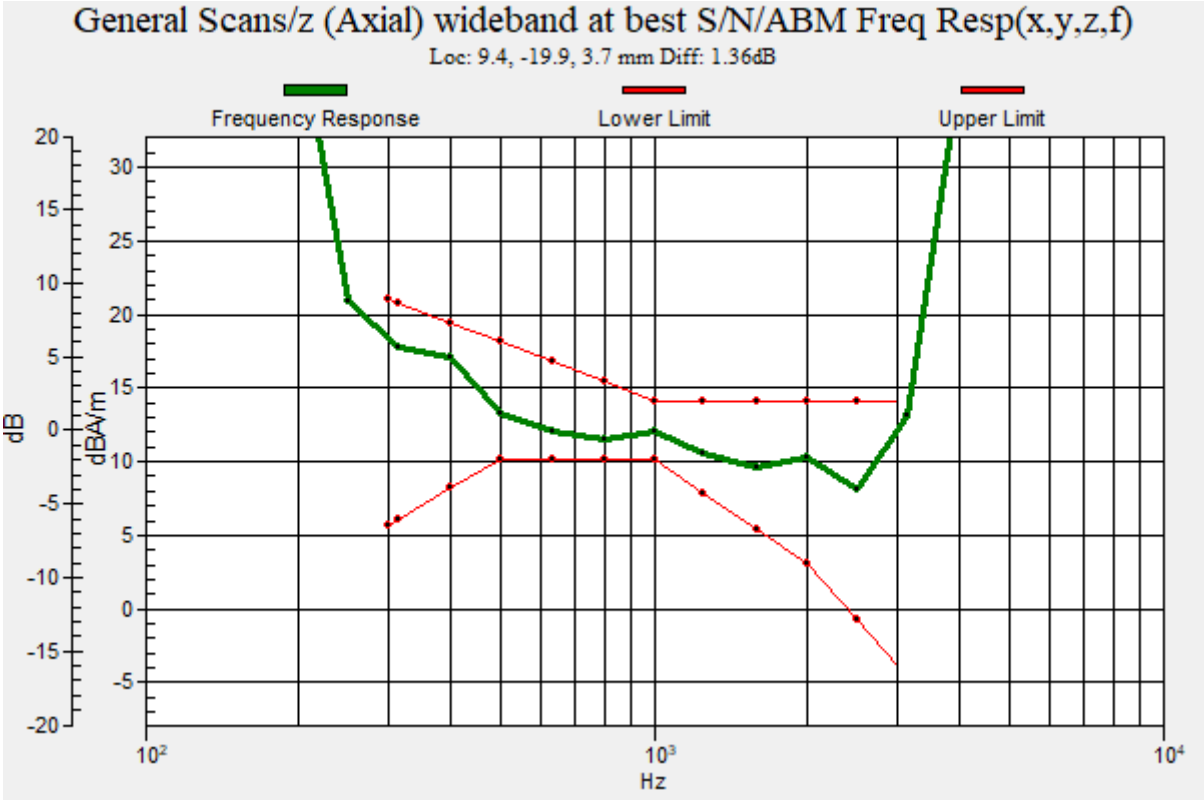
P225 OTT_LTE 5_QPSK10M_Ch20525_Duo Opus 75kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10154 - CAG, LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK);
Frequency: 836.5 MHz;Duty Cycle: 1:3.76
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/05

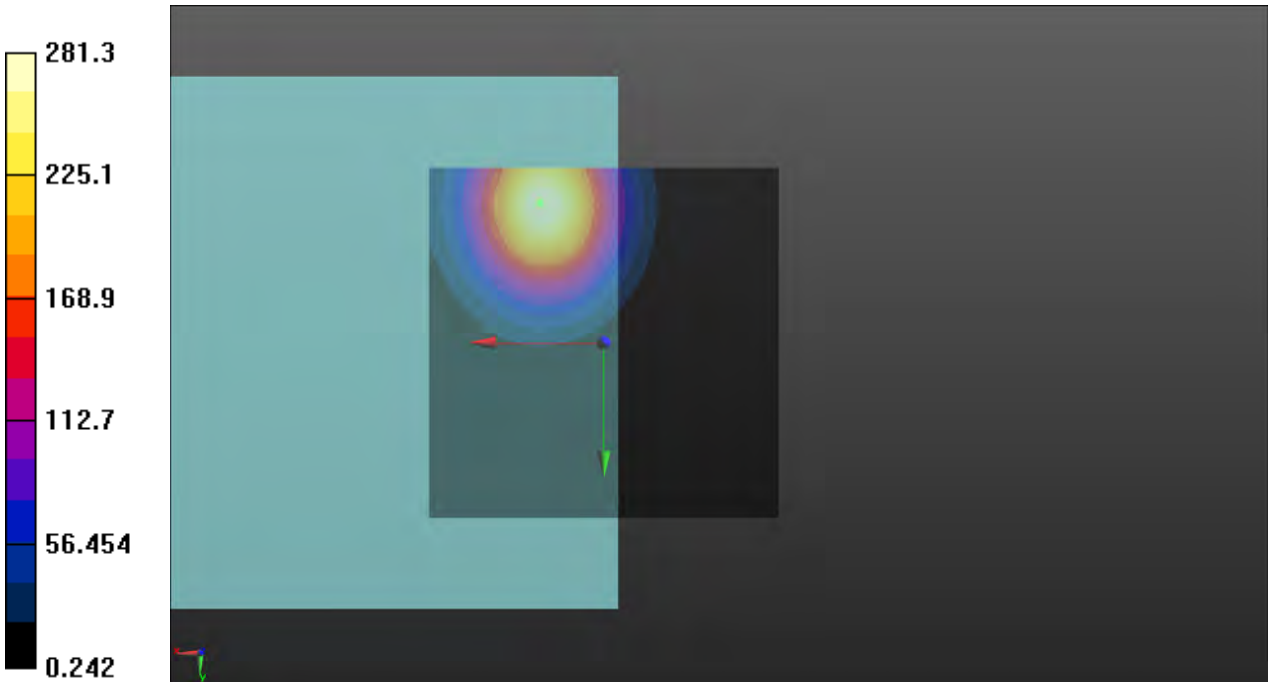
P230 OTT_LTE 43_QPSK20M_Ch44215_Duo Opus 75kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10103 - CAG, LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK);
Frequency: 3662.5 MHz;Duty Cycle: 1:8.49
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 48.98 dB
ABM1 comp = 11.83 dBA/m
Location: 9, -20, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/05

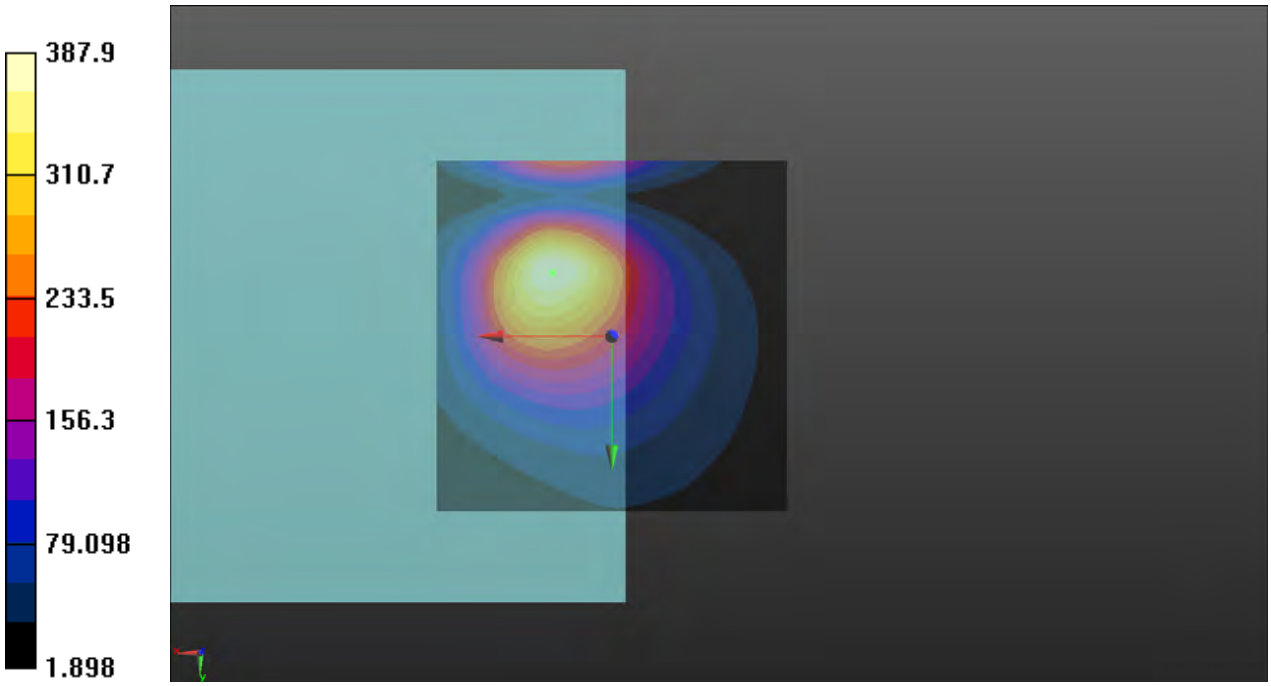
P230 OTT_LTE 43_QPSK20M_Ch44215_Duo Opus 75kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10103 - CAG, LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK);
Frequency: 3662.5 MHz;Duty Cycle: 1:8.49
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 51.78 dB
ABM1 comp = 3.28 dBA/m
Location: 8.5, -9, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/05

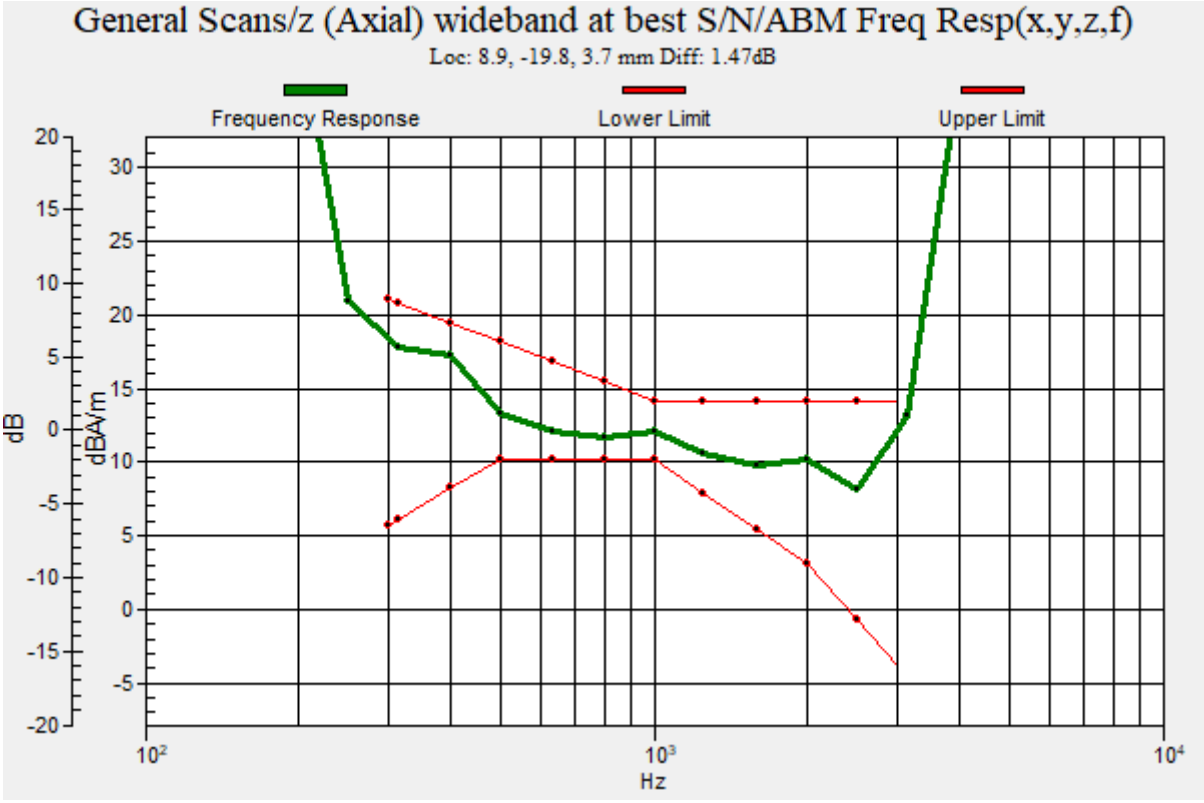
P230 OTT_LTE 43_QPSK20M_Ch44215_Duo Opus 75kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10103 - CAG, LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK); Frequency: 3662.5 MHz;Duty Cycle: 1:8.49
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



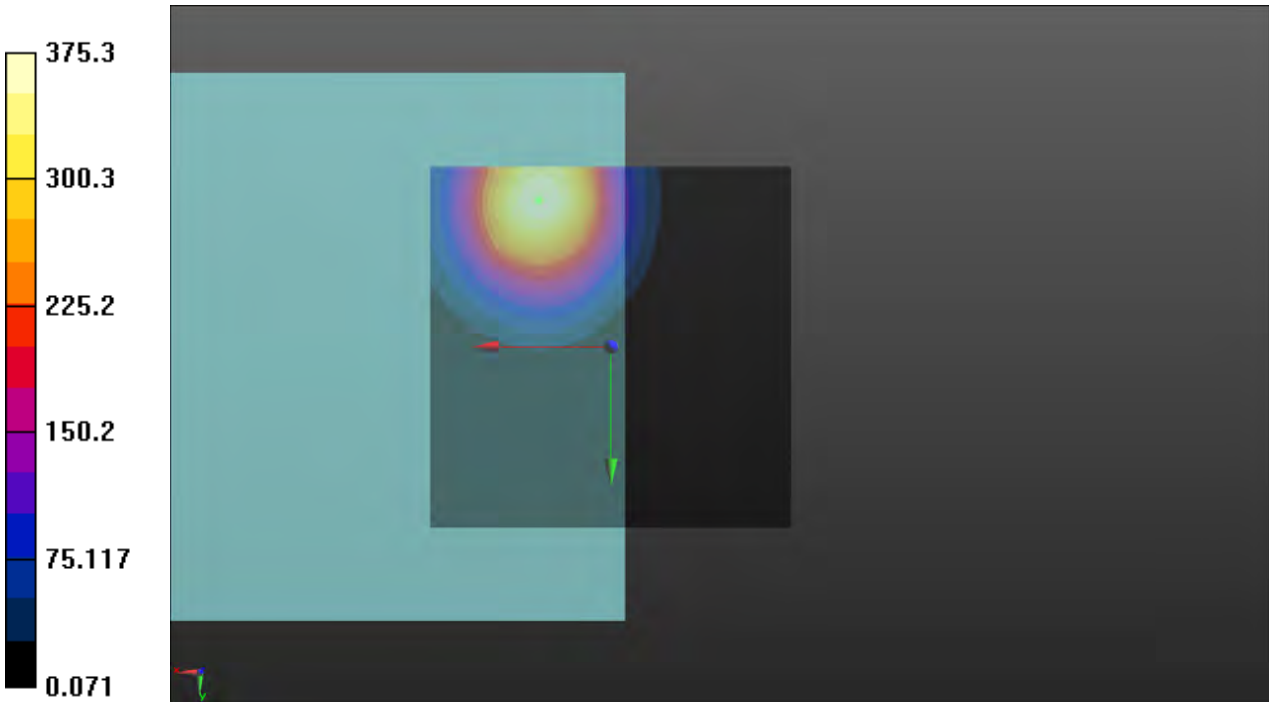
P231 OTT_WLAN2.4G_802.11b_1Mbps_Ch6_Duo Opus 75kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10012 - CAB, IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps);
Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 51.49 dB
ABM1 comp = 11.34 dBA/m
Location: 10, -20.5, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/19

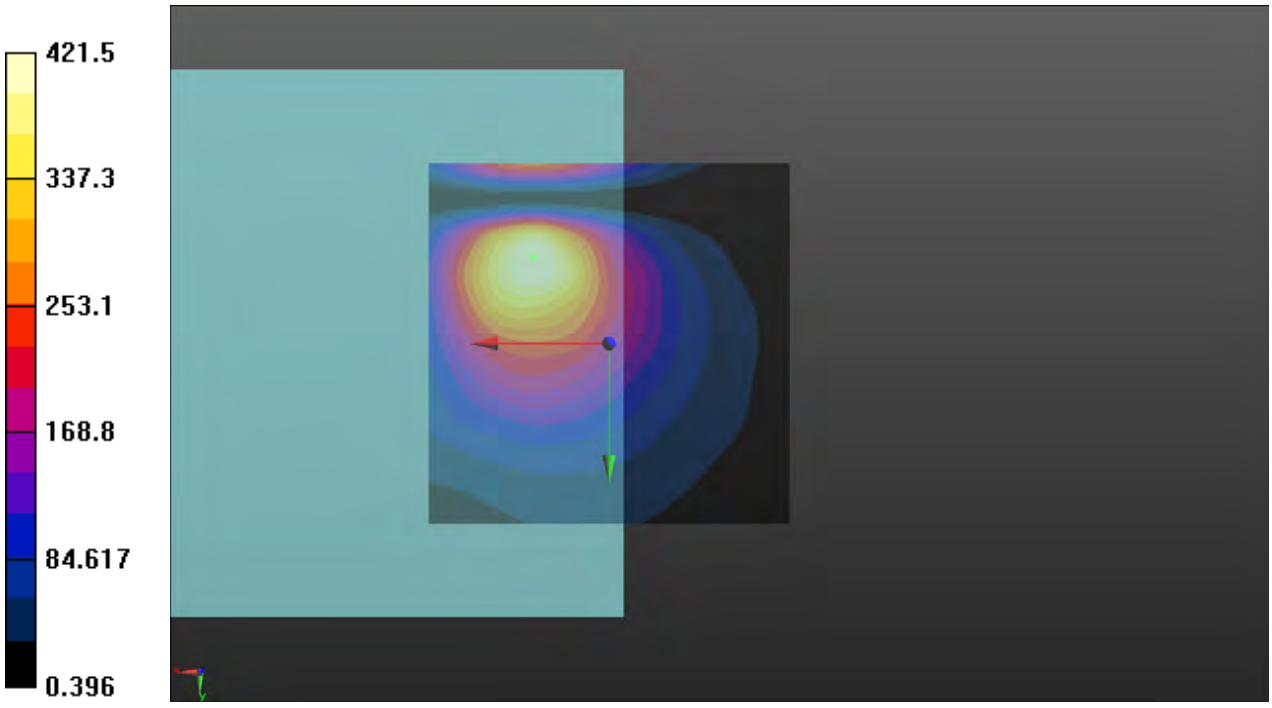
P231 OTT_WLAN2.4G_802.11b_1Mbps_Ch6_Duo Opus 75kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10012 - CAB, IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps);
Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 52.50 dB
ABM1 comp = 2.40 dBA/m
Location: 10.5, -12, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/19

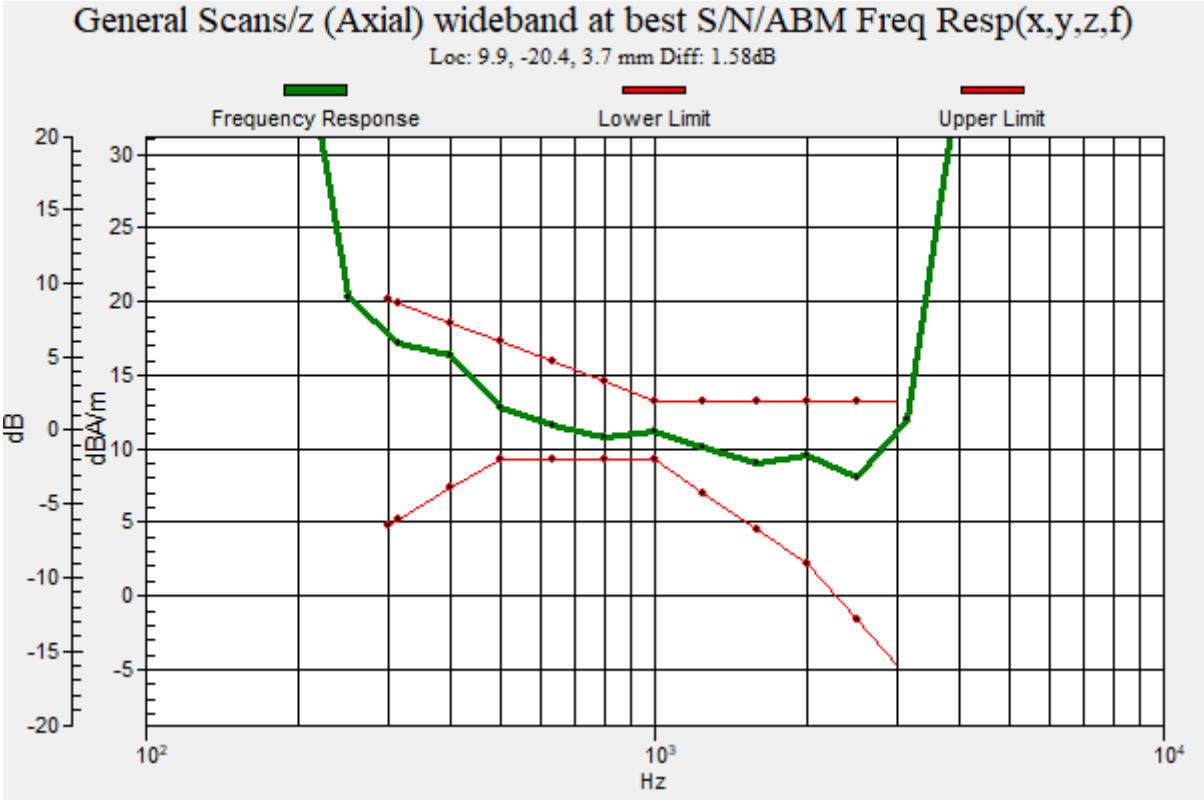
P231 OTT_WLAN2.4G_802.11b_1Mbps_Ch6_Duo Opus 75kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10012 - CAB, IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps);
Frequency: 2437 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/19

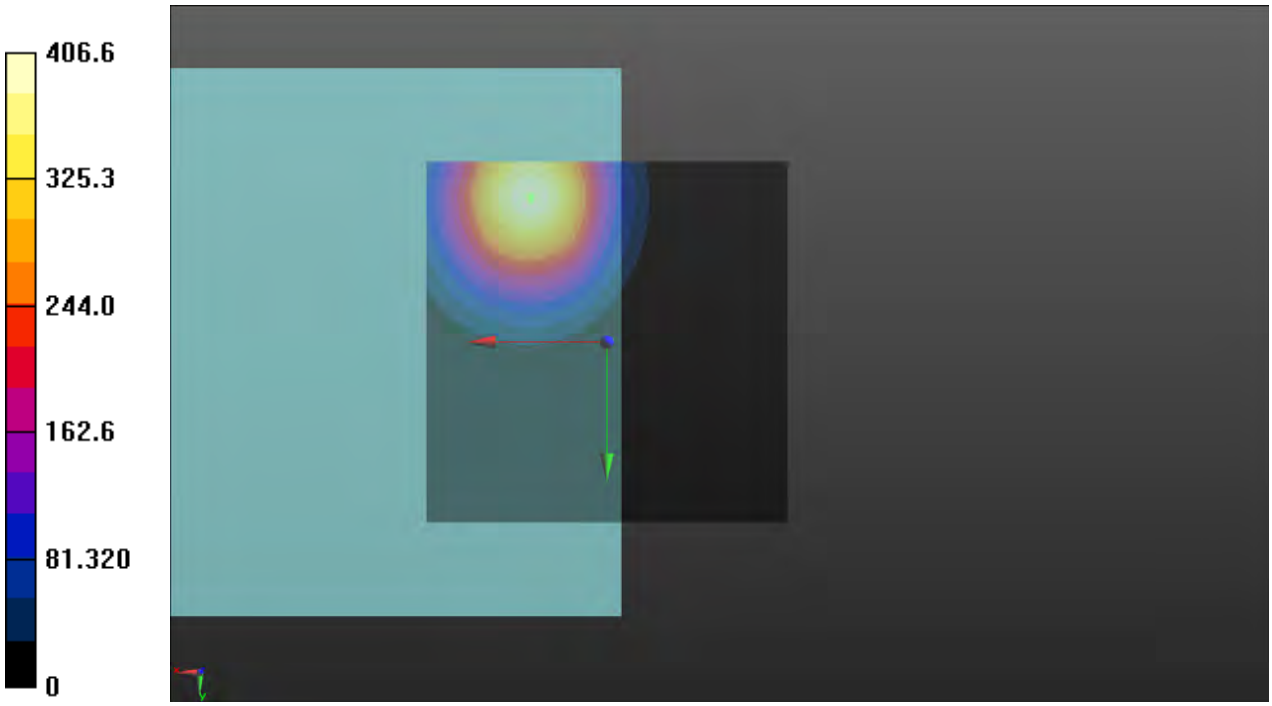
P234 OTT_WLAN5.6G_802.11a_6Mbps_Ch116_Duo Opus 75kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10062 - CAD, IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps);
Frequency: 5580 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 52.18 dB
ABM1 comp = 11.14 dBA/m
Location: 10.5, -20, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/19

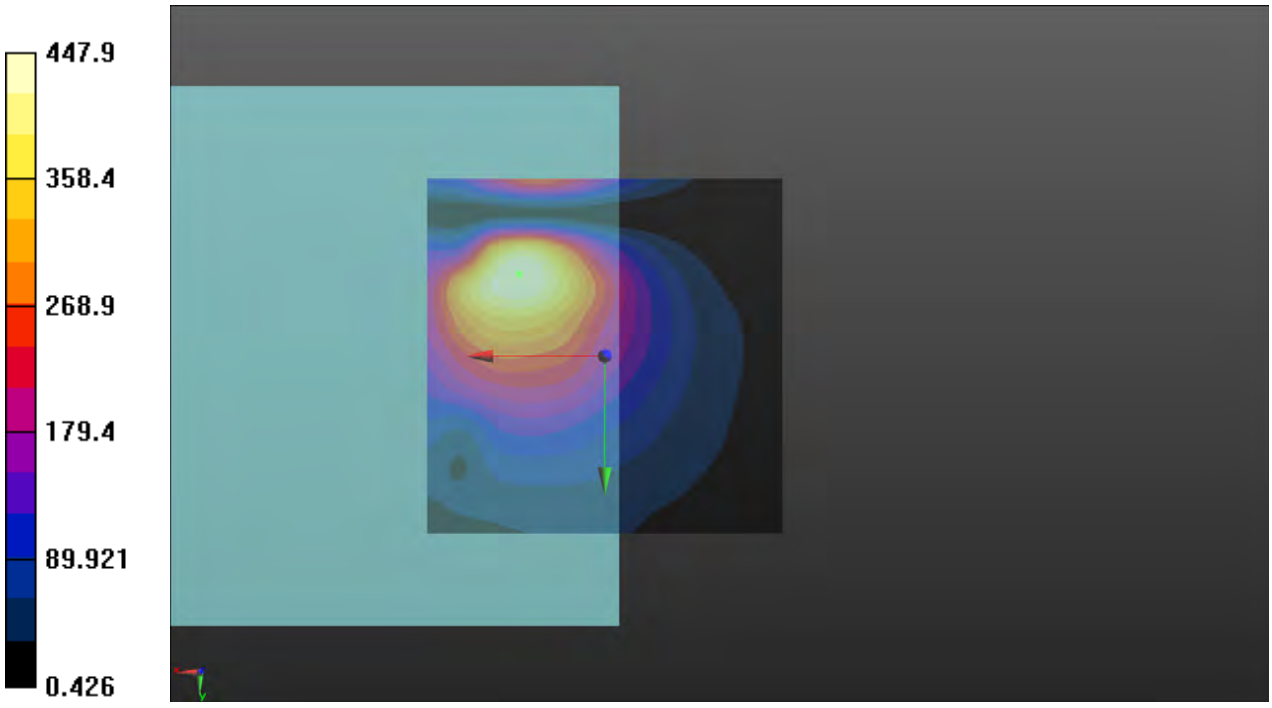
P234 OTT_WLAN5.6G_802.11a_6Mbps_Ch116_Duo Opus 75kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10062 - CAD, IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps);
Frequency: 5580 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 53.02 dB
ABM1 comp = 2.60 dBA/m
Location: 12, -11.5, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/19

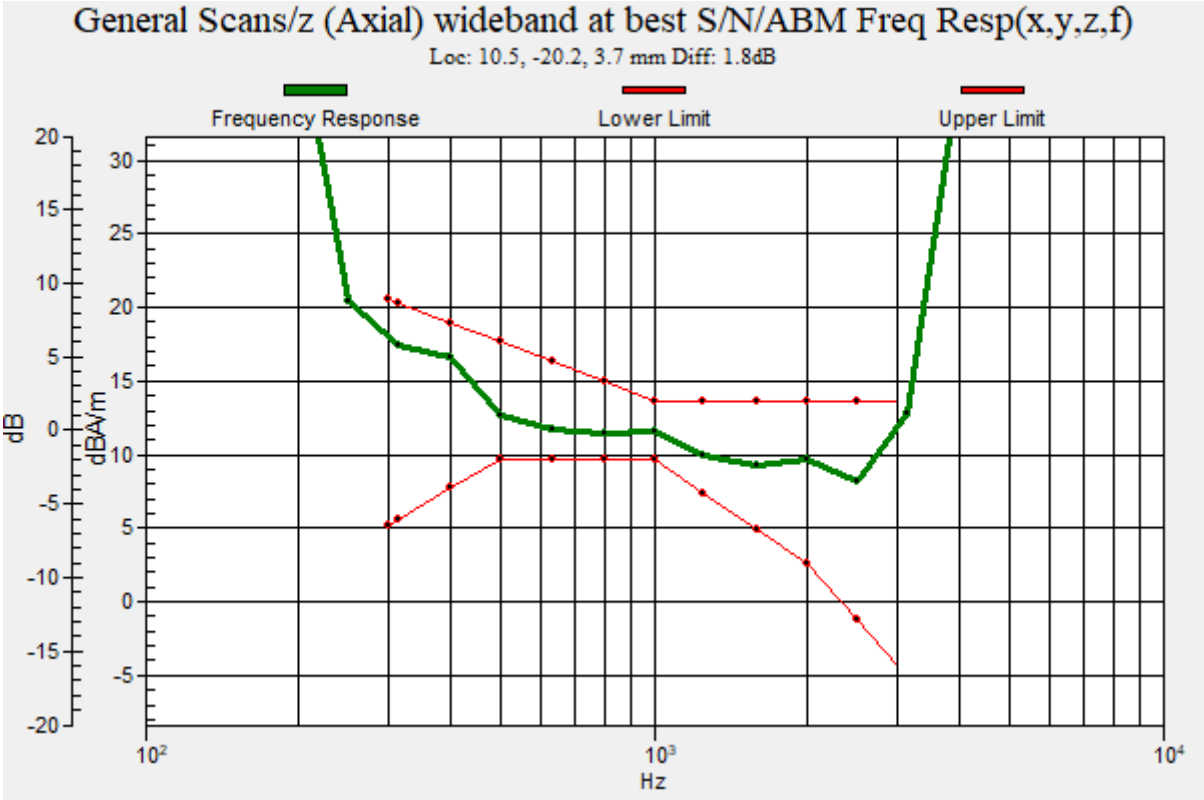
P234 OTT_WLAN5.6G_802.11a_6Mbps_Ch116_Duo Opus 75kbps_Freq Resp

DUT: BFLF-WTW-P20120540

Communication System: UID 10062 - CAD, IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps);
Frequency: 5580 MHz;Duty Cycle: 1:1
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/03

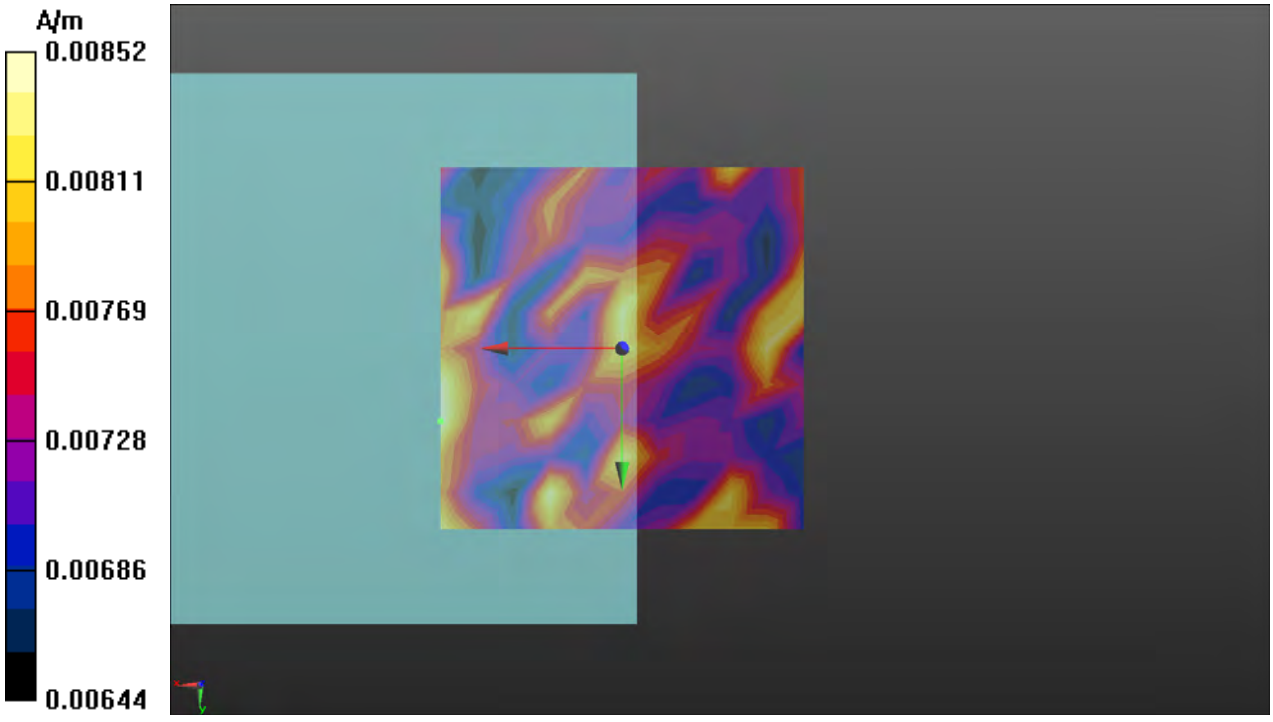
P236 OTT_5G NR n2_DFT-S QPSK20M_Ch376000_Duo Opus 75kbp_Axial (Z) _ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10939 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz); Frequency: 1880 MHz;Duty Cycle: 1:3.82
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -41.39 dBA/m
Location: 25, 10, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/03

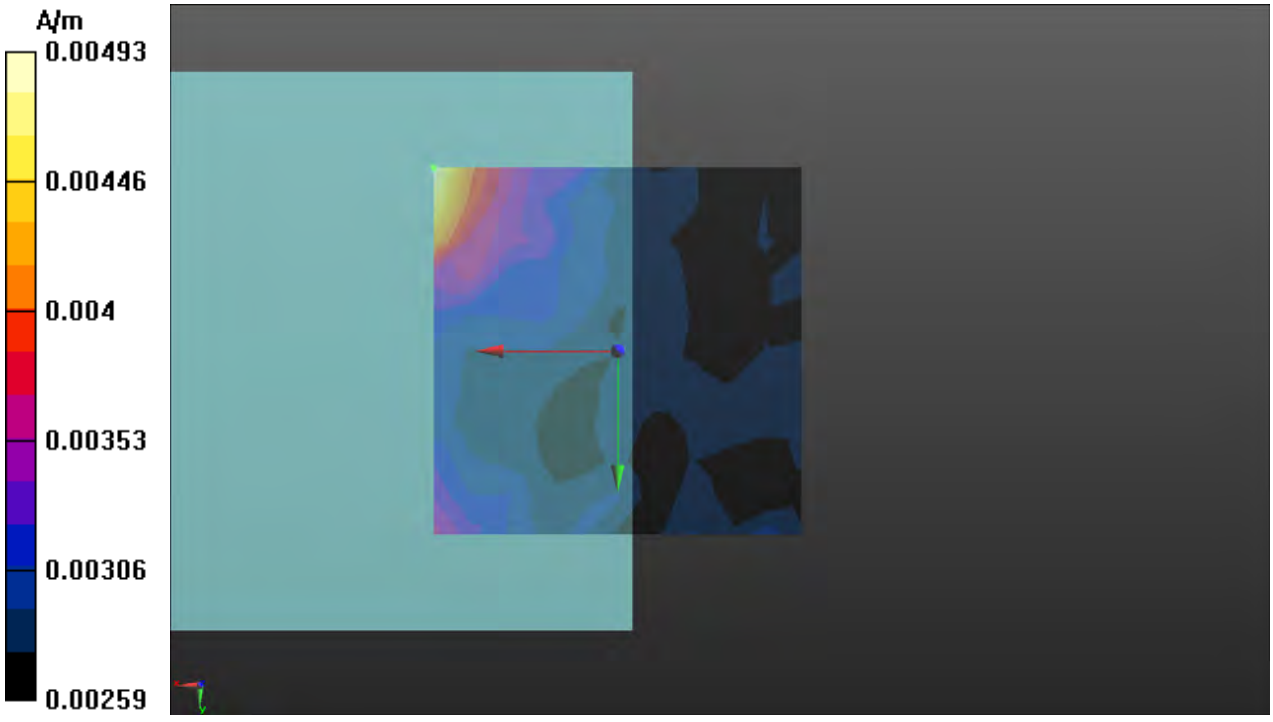
P236 OTT_5G NR n2_DFT-S QPSK20M_Ch376000_Duo Opus 75kbp_Radial (Y)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10939 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz); Frequency: 1880 MHz;Duty Cycle: 1:3.82
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -46.14 dBA/m
Location: 25, -25, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/03

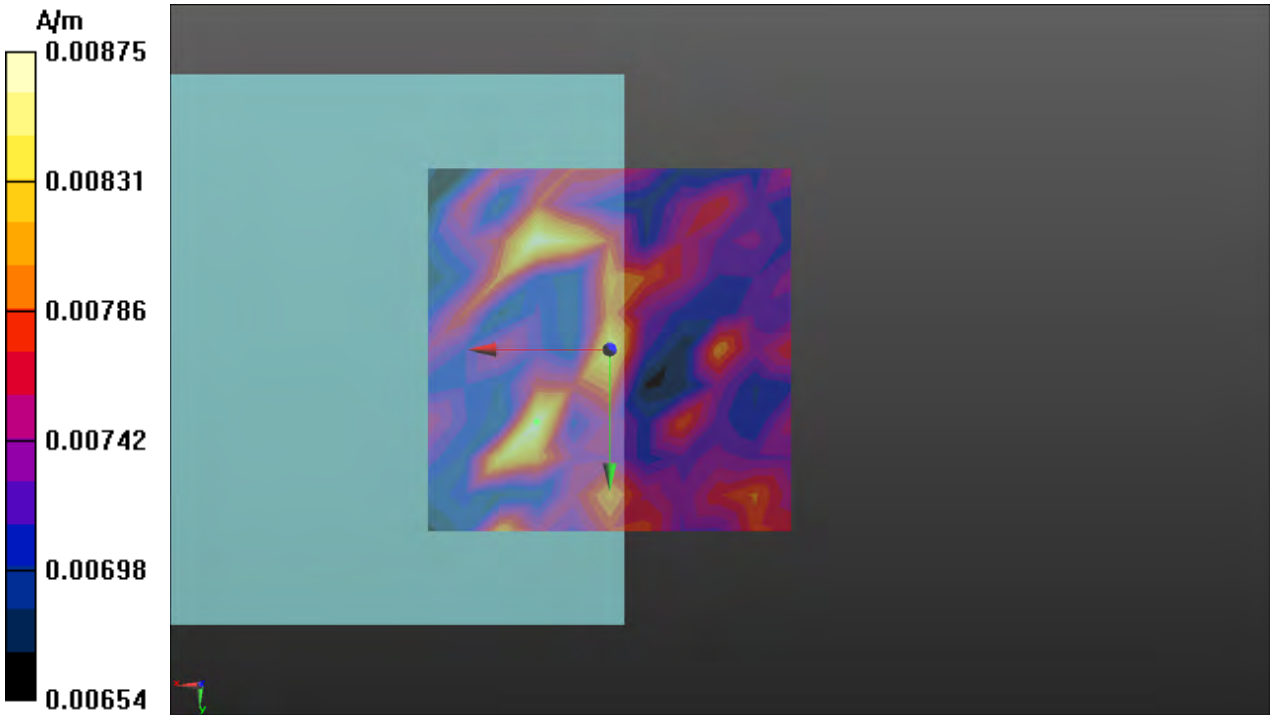
P237 OTT_5G NR n5_DFT-S QPSK20M_Ch167300_Duo Opus 75kbp_Axial (Z) _ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10939 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz); Frequency: 836.5 MHz;Duty Cycle: 1:3.82
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -41.16 dBA/m
Location: 10, 10, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/03

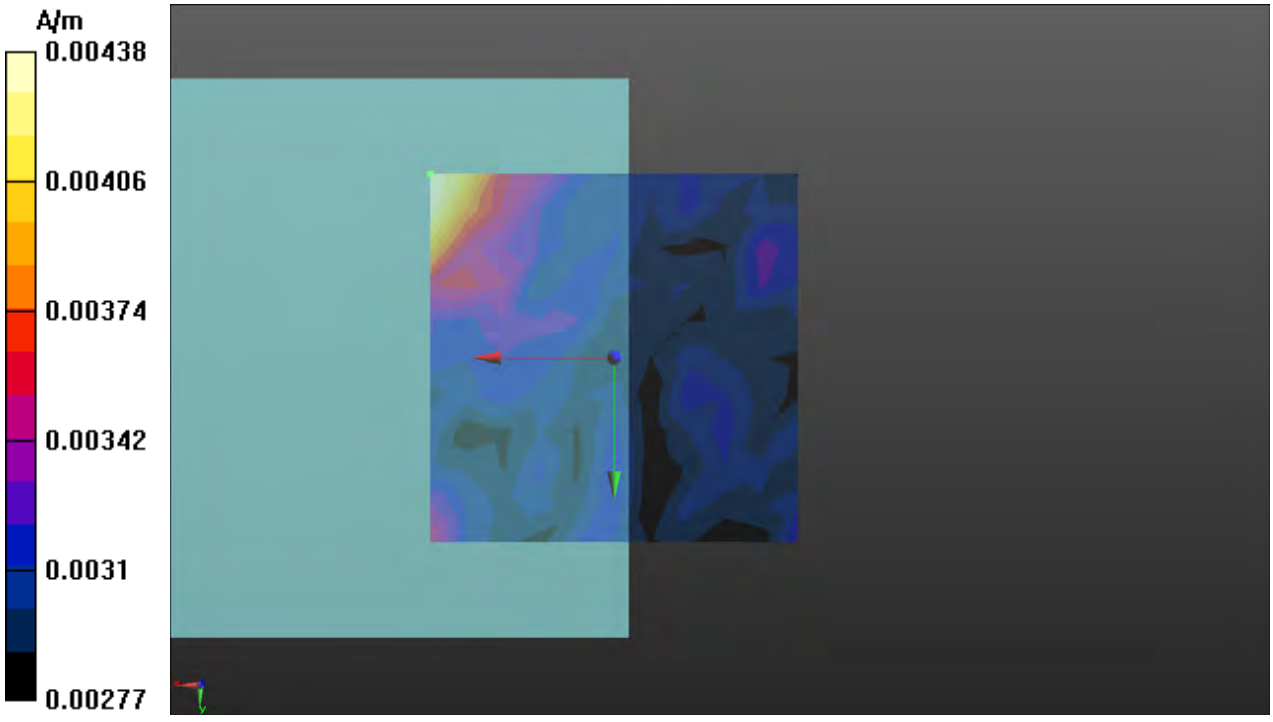
P237 OTT_5G NR n5_DFT-S QPSK20M_Ch167300_Duo Opus 75kbp_Radial (Y)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10939 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz); Frequency: 836.5 MHz;Duty Cycle: 1:3.82
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -47.17 dBA/m
Location: 25, -25, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/03

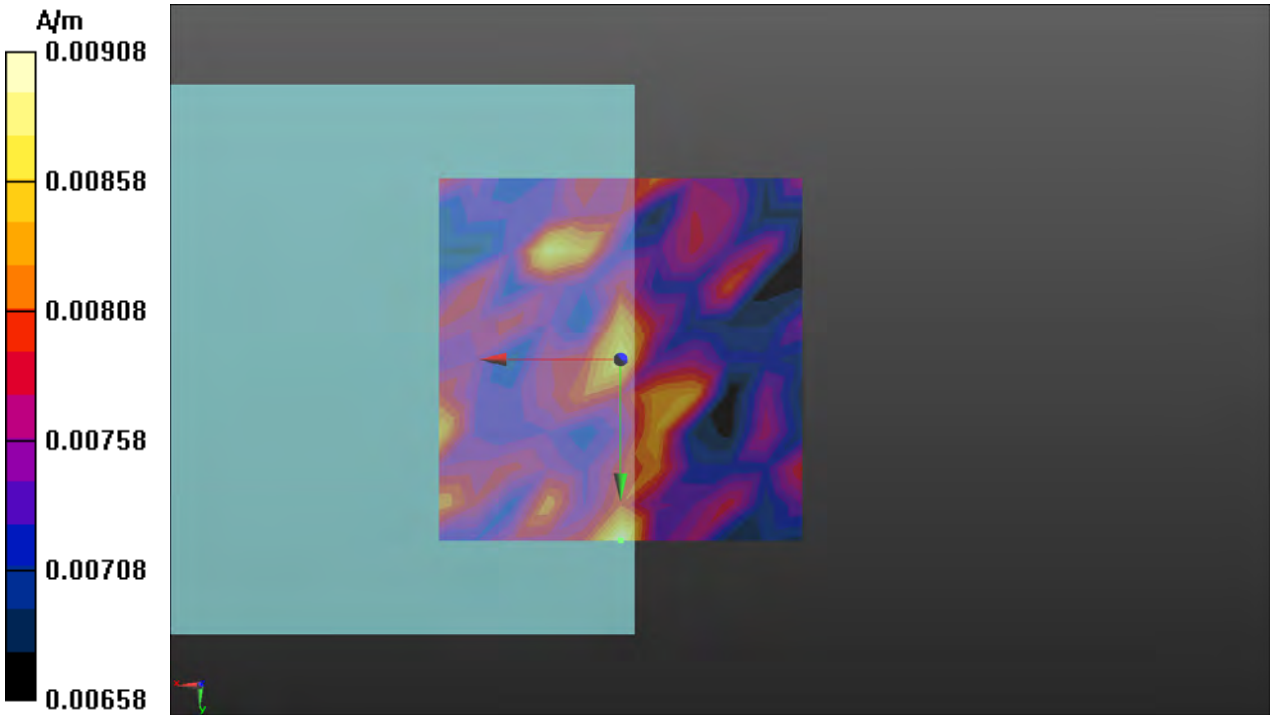
P238 OTT_5G NR n7_DFT-S QPSK20M_Ch50700_Duo Opus 75kbp_Axial (Z) _ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10939 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz); Frequency: 2535 MHz;Duty Cycle: 1:3.82
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -40.84 dBA/m
Location: 0, 25, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/03

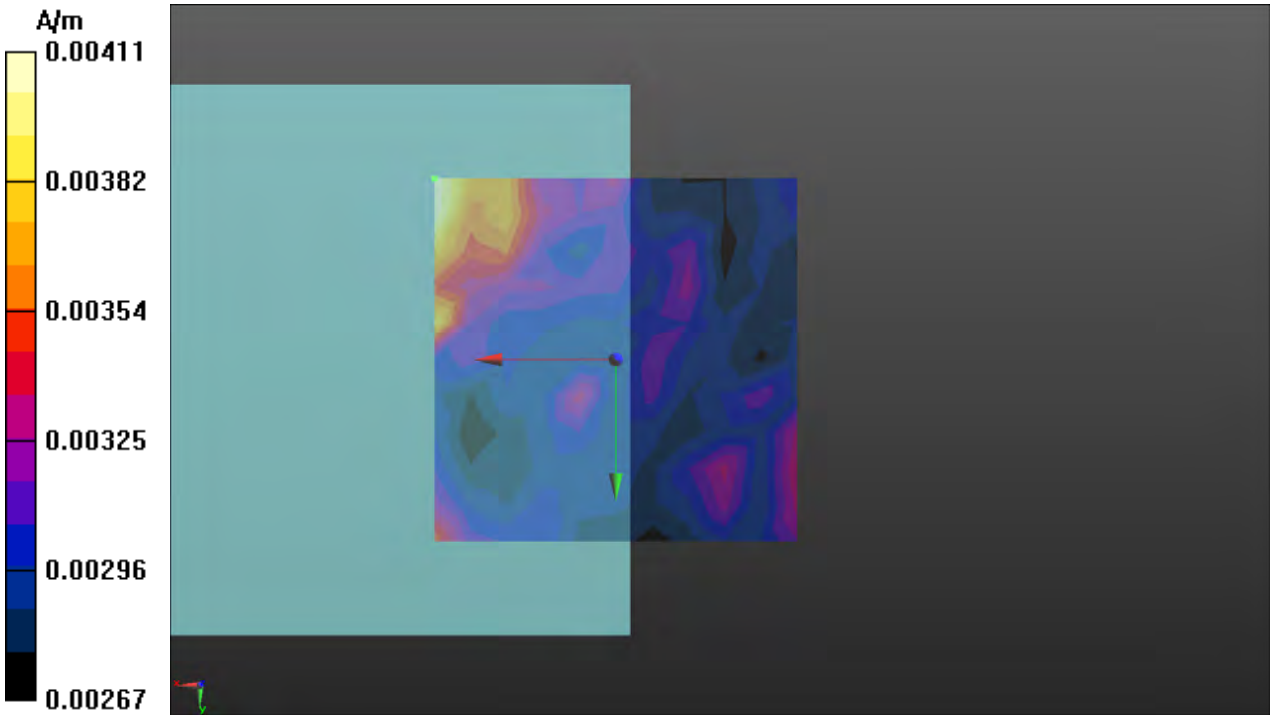
P238 OTT_5G NR n7_DFT-S QPSK20M_Ch50700_Duo Opus 75kbp_Radial (Y)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10939 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz); Frequency: 2535 MHz;Duty Cycle: 1:3.82
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -47.72 dBA/m
Location: 25, -25, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/04

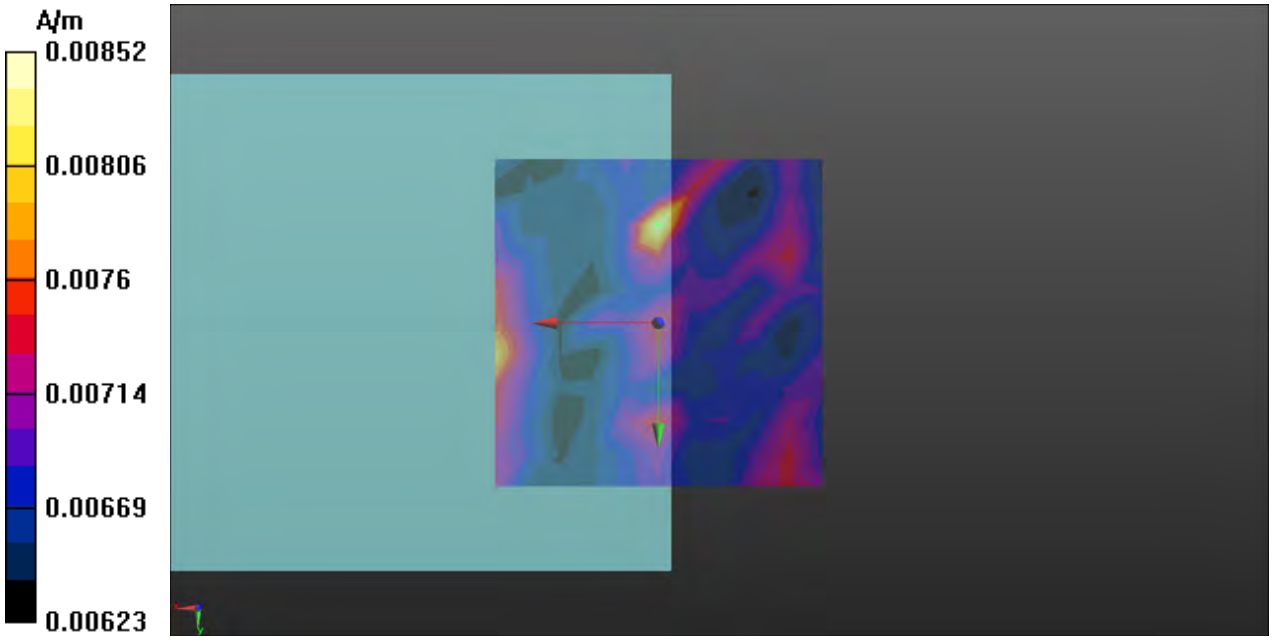
P239 OTT_5G NR n12_DFT-S QPSK15M_Ch141500_Duo Opus 75kbp_Axial (Z)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10938 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 15 MHz, QPSK, 15 kHz); Frequency: 707.5 MHz;Duty Cycle: 1:3.89
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -41.39 dBA/m
Location: 0, -15, 3.7 mm



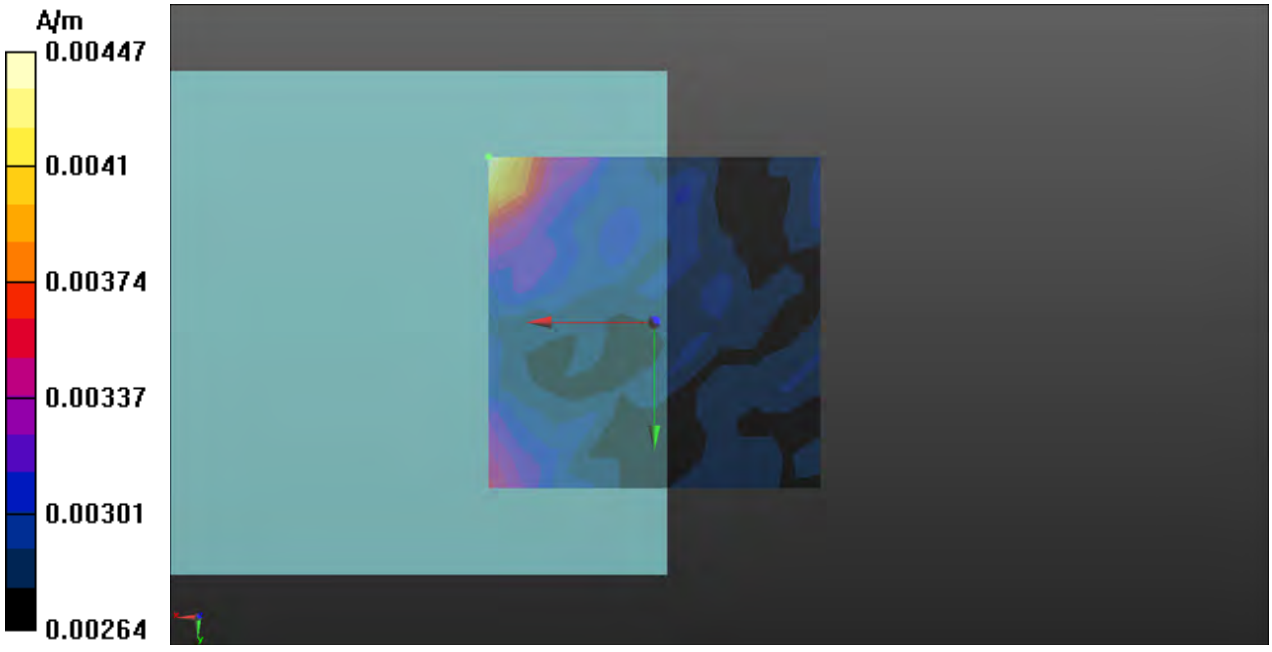
P239 OTT_5G NR n12_DFT-S QPSK15M_Ch141500_Duo Opus 75kbp_Radial (Y)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10938 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 15 MHz, QPSK, 15 kHz); Frequency: 707.5 MHz;Duty Cycle: 1:3.89
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -47.00 dBA/m
Location: 25, -25, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/04

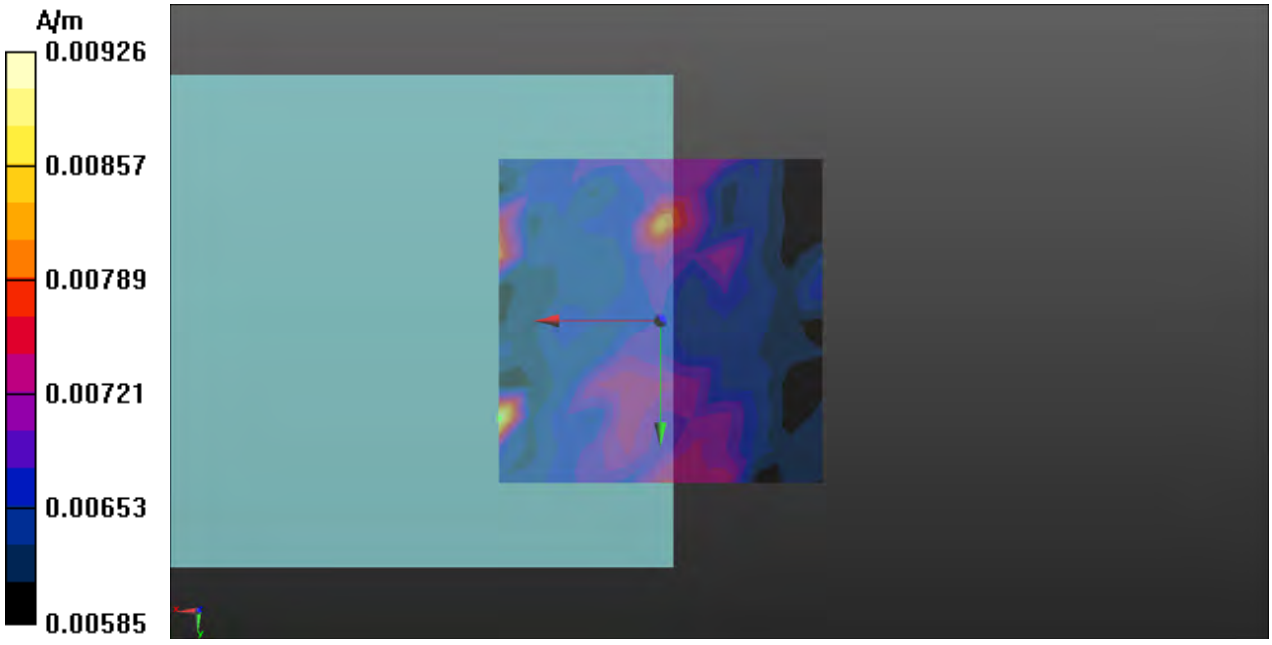
P240 OTT_5G NR n14_DFT-S QPSK10M_Ch158600_Duo Opus 75kbp_Axial (Z)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10937 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 10 MHz, QPSK, 15 kHz); Frequency: 793 MHz;Duty Cycle: 1:3.78
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -40.67 dBA/m
Location: 25, 15, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/04

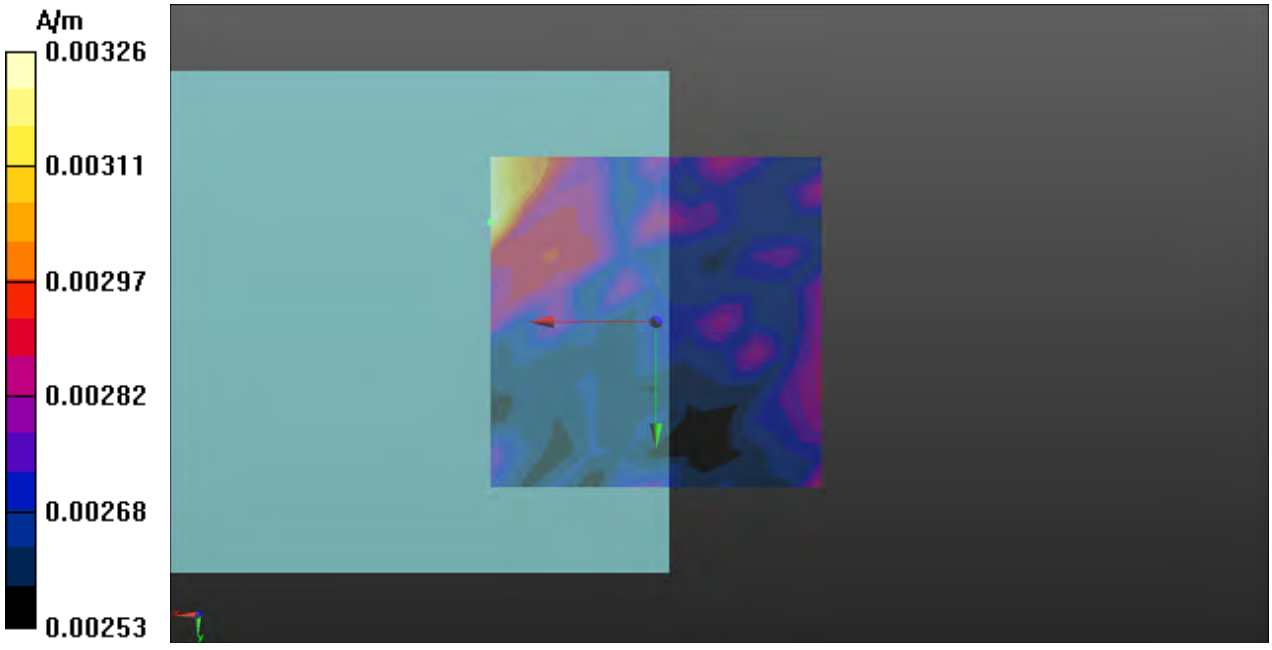
P240 OTT_5G NR n14_DFT-S QPSK10M_Ch158600_Duo Opus 75kbp_Radial (Y)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10937 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 10 MHz, QPSK, 15 kHz); Frequency: 793 MHz;Duty Cycle: 1:3.78
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -49.74 dBA/m
Location: 25, -15, 3.7 mm



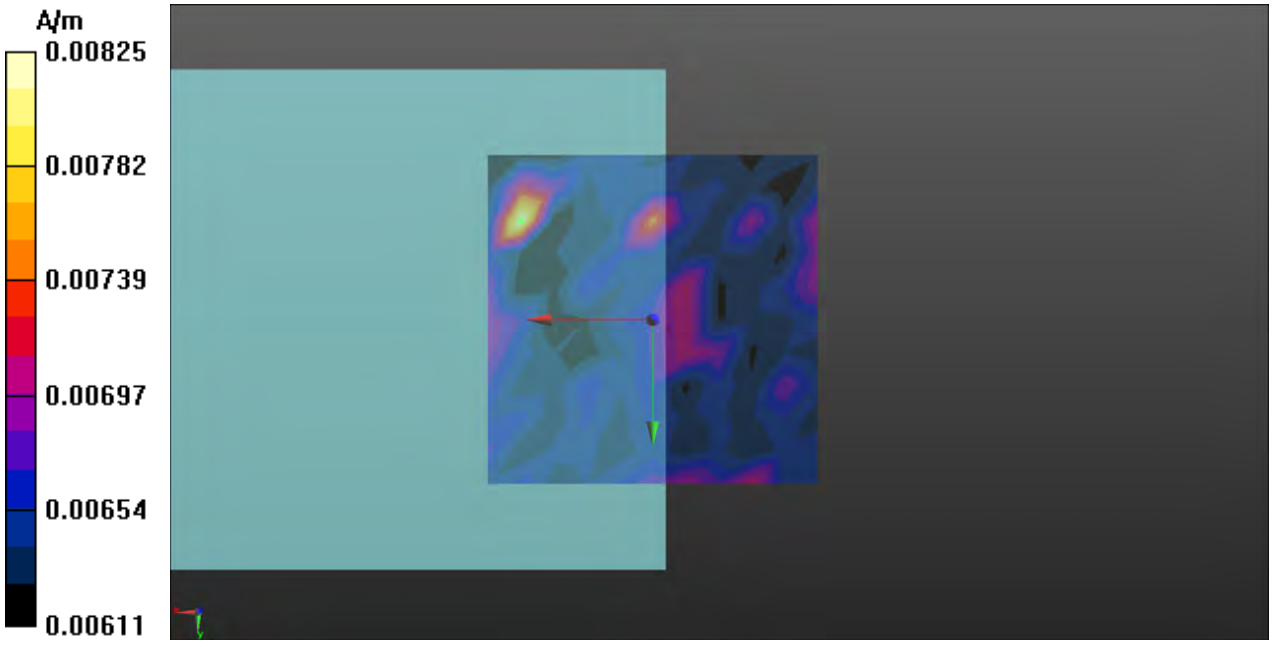
P241 OTT_5G NR n25_DFT-S QPSK20M_Ch376500_Duo Opus 75kbp_Axial (Z)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10939 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz); Frequency: 1882.5 MHz;Duty Cycle: 1:3.82
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -41.67 dBA/m
Location: 20, -15, 3.7 mm



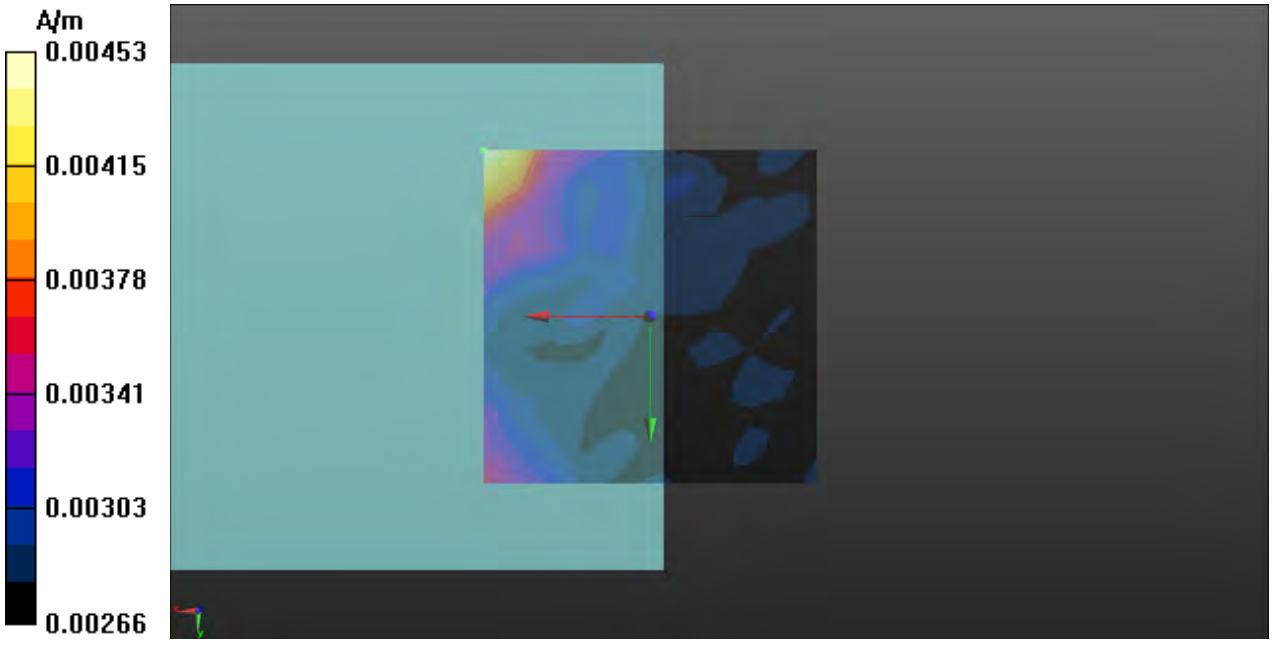
P241 OTT_5G NR n25_DFT-S QPSK20M_Ch376500_Duo Opus 75kbp_Radial (Y)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10939 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz); Frequency: 1882.5 MHz;Duty Cycle: 1:3.82
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -46.88 dBA/m
Location: 25, -25, 3.7 mm



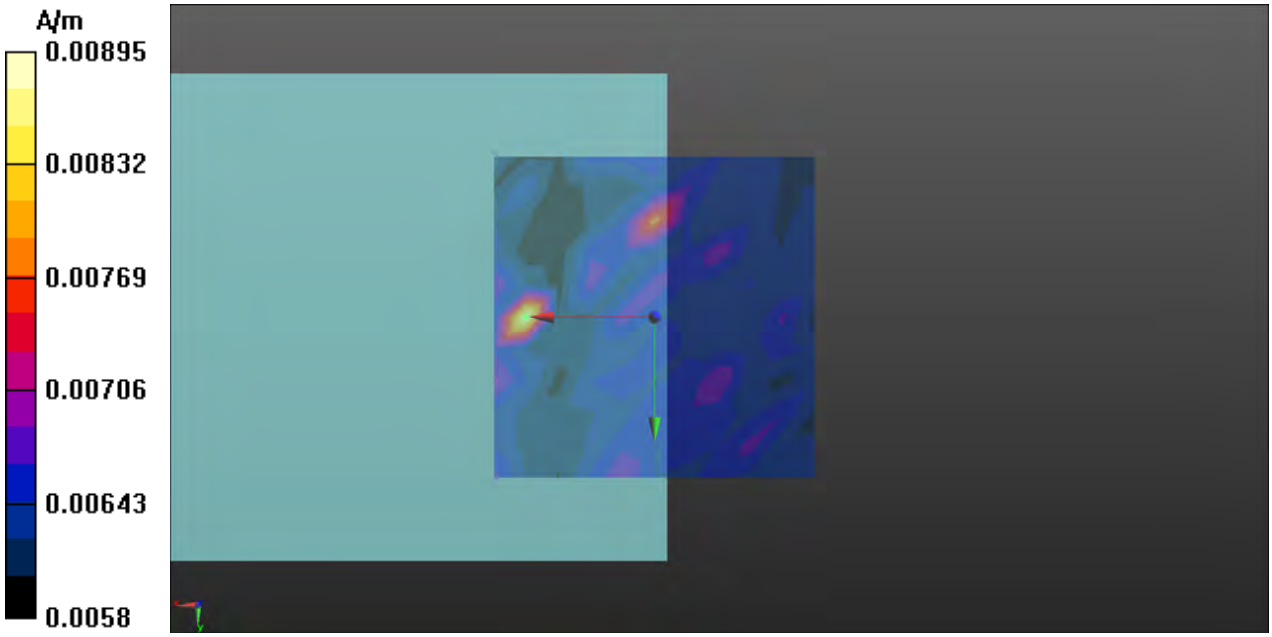
P242 OTT_5G NR n26_DFT-S QPSK20M_Ch166300_Duo Opus 75kbp_Axial (Z)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10939 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz); Frequency: 831.5 MHz;Duty Cycle: 1:3.82
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -40.97 dBA/m
Location: 20, 0, 3.7 mm



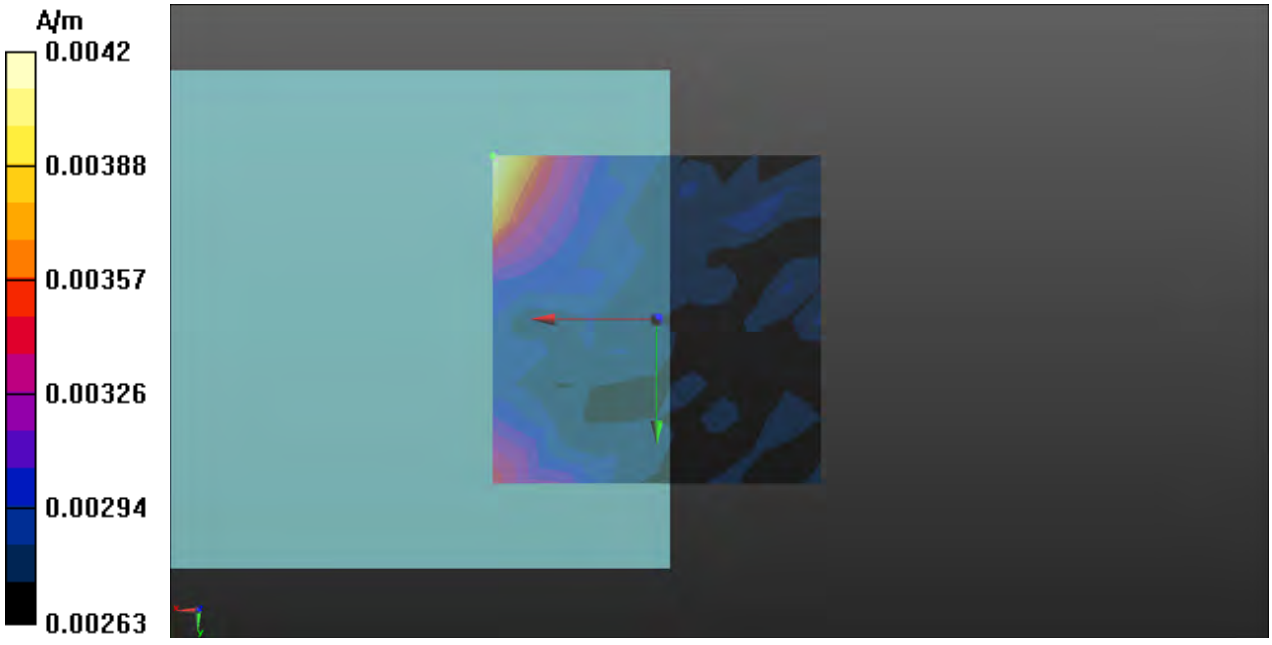
P242 OTT_5G NR n26_DFT-S QPSK20M_Ch166300_Duo Opus 75kbp_Radial (Y)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10939 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz); Frequency: 831.5 MHz;Duty Cycle: 1:3.82
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -47.54 dBA/m
Location: 25, -25, 3.7 mm



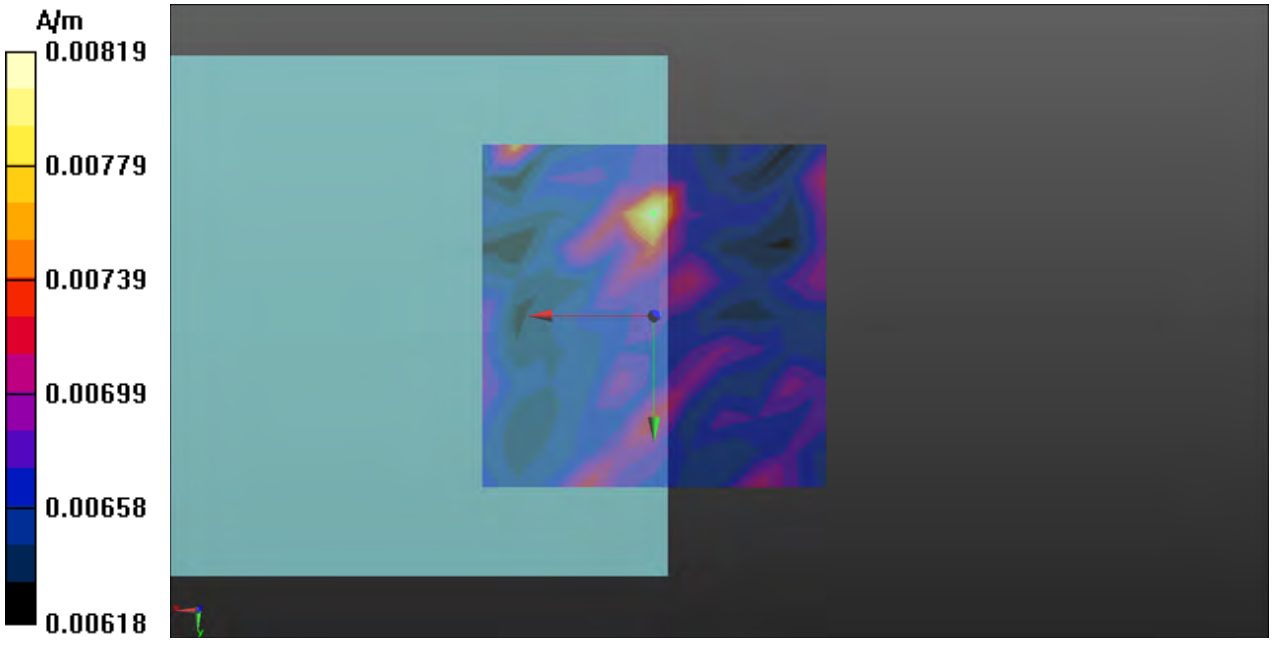
P243 OTT_5G NR n30_DFT-S QPSK10M_Ch462000_Duo Opus 75kbp_Axial (Z)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10937 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 10 MHz, QPSK, 15 kHz); Frequency: 2310 MHz;Duty Cycle: 1:3.78
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -41.73 dBA/m
Location: 0, -15, 3.7 mm



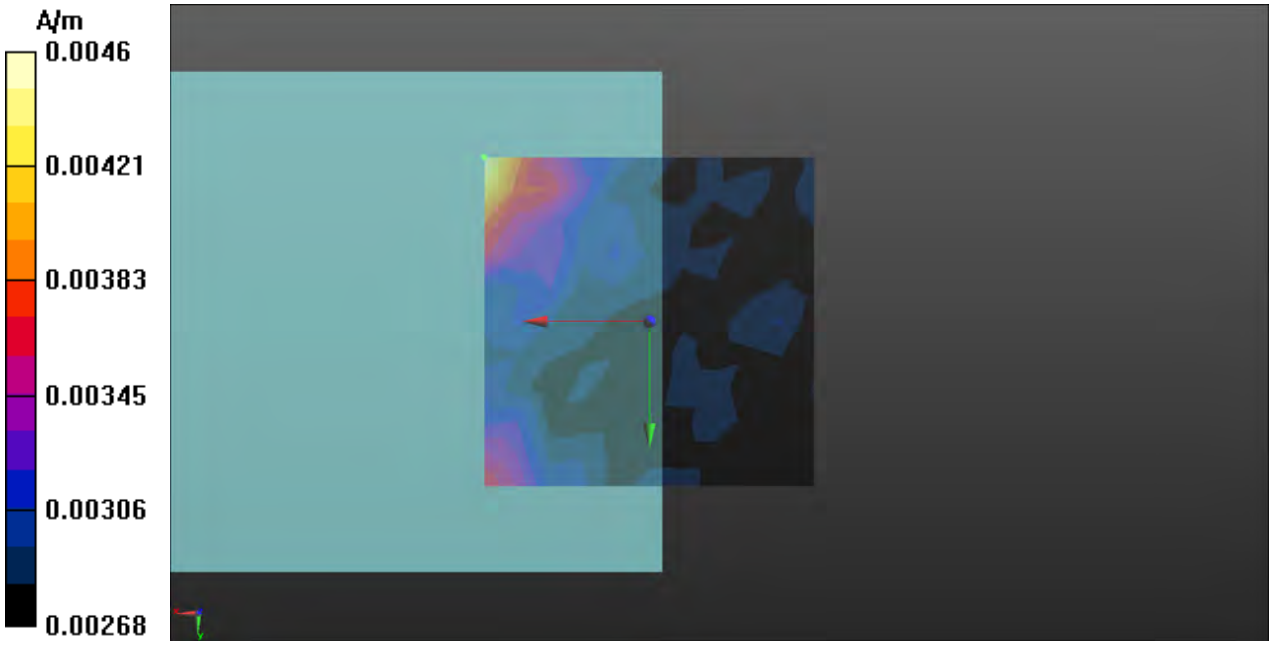
P243 OTT_5G NR n30_DFT-S QPSK10M_Ch462000_Duo Opus 75kbp_Radial (Y)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10937 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 10 MHz, QPSK, 15 kHz); Frequency: 2310 MHz;Duty Cycle: 1:3.78
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -46.75 dBA/m
Location: 25, -25, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/04

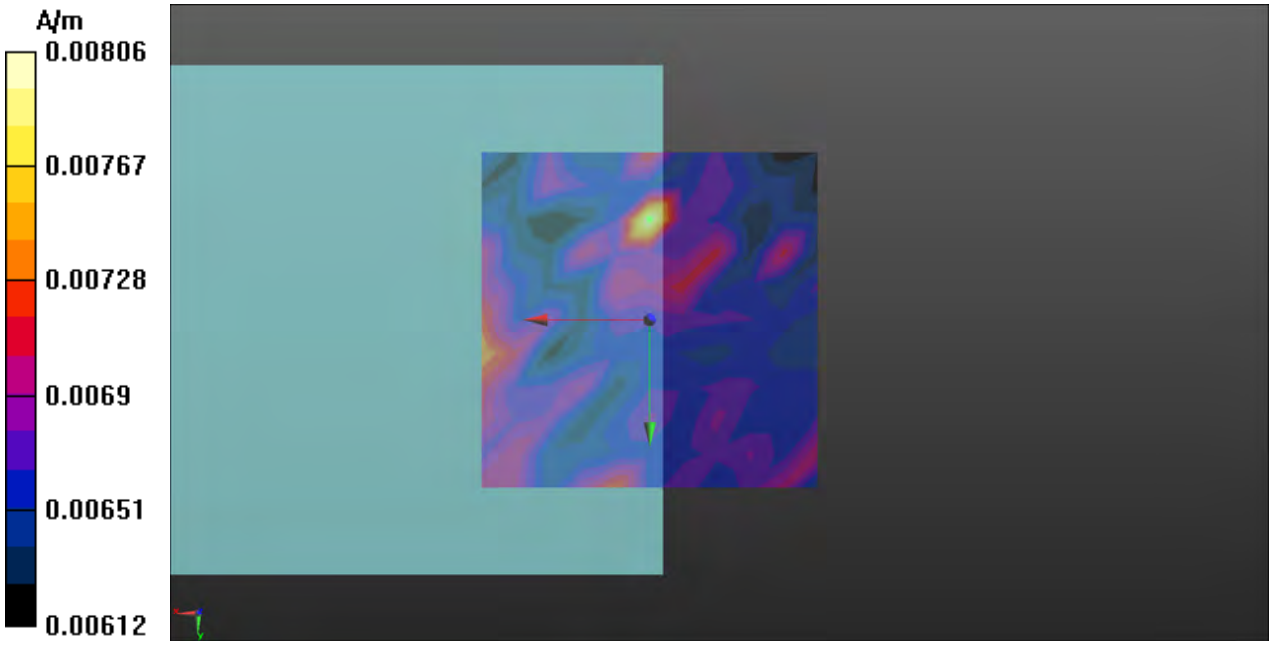
P244 OTT_5G NR n38_DFT-S QPSK40M_Ch519000_Duo Opus 75kbp_Axial (Z)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10913 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 40 MHz, QPSK, 30 kHz); Frequency: 2595 MHz;Duty Cycle: 1:3.84
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -41.88 dBA/m
Location: 0, -15, 3.7 mm



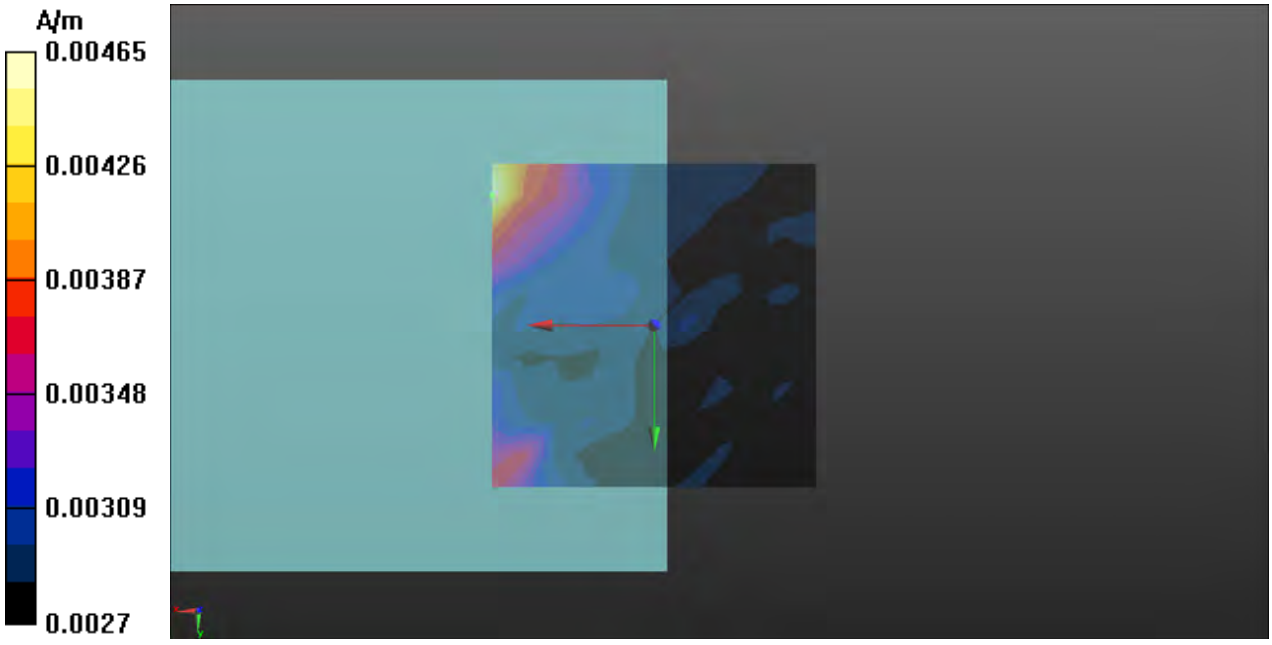
P244 OTT_5G NR n38_DFT-S QPSK40M_Ch519000_Duo Opus 75kbp_Radial (Y)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10913 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 40 MHz, QPSK, 30 kHz); Frequency: 2595 MHz;Duty Cycle: 1:3.84
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -46.65 dBA/m
Location: 25, -20, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/30

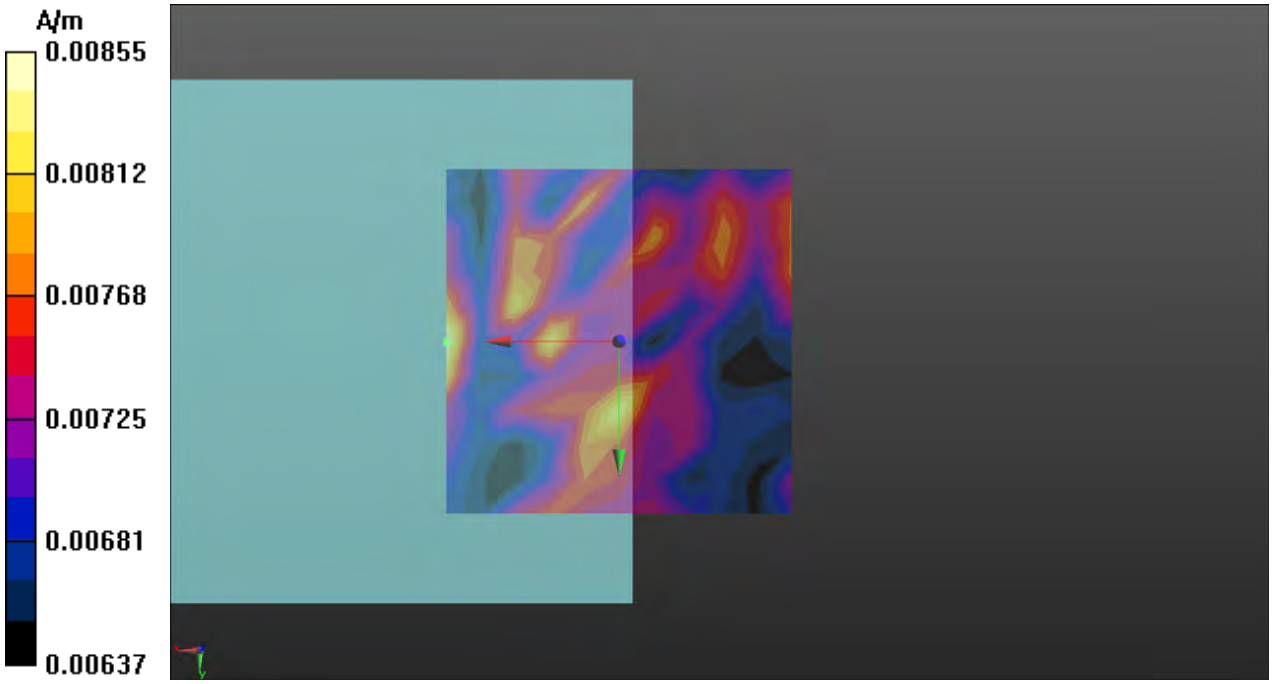
P246 OTT_5G NR n41_DFT-S QPSK100M_Ch518598_Duo Opus 75kbp_Axial (Z)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10866 - AAD, 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz); Frequency: 2592.99 MHz;Duty Cycle: 1:3.70
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -41.36 dBA/m
Location: 25, 0, 3.7 mm



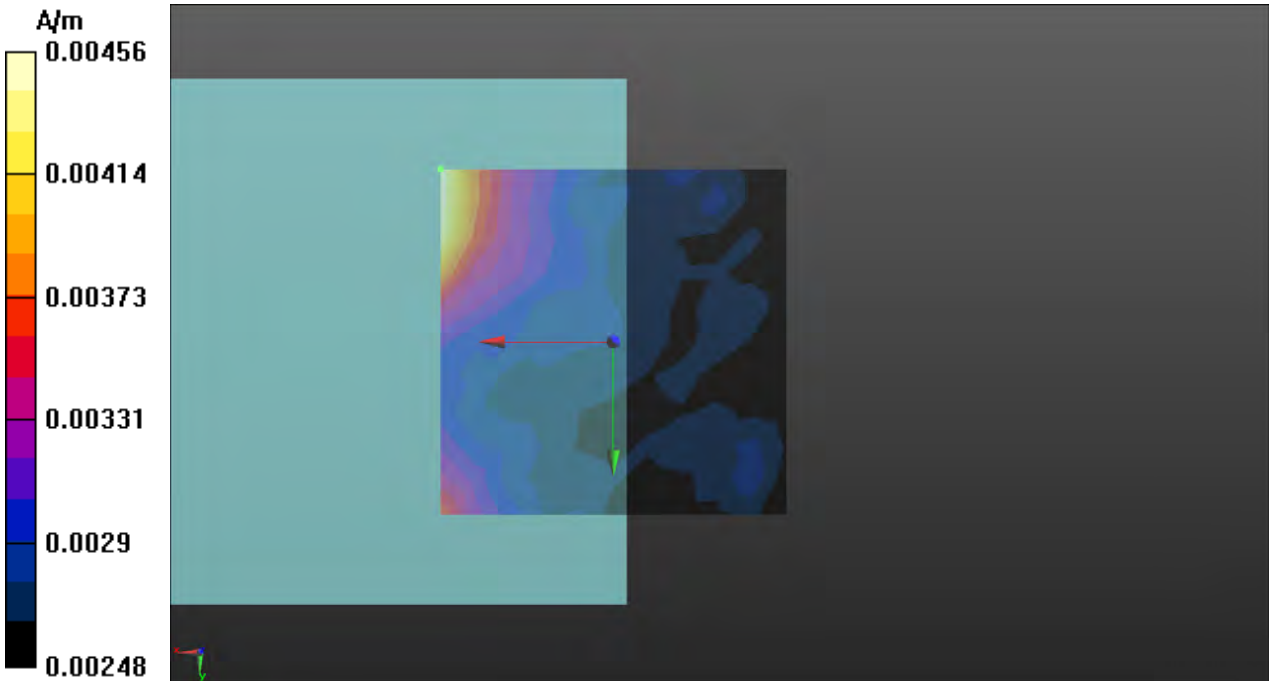
P246 OTT_5G NR n41_DFT-S QPSK100M_Ch518598_Duo Opus 75kbp_Radial (Y)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10866 - AAD, 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz); Frequency: 2592.99 MHz;Duty Cycle: 1:3.70
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -46.83 dBA/m
Location: 25, -25, 3.7 mm



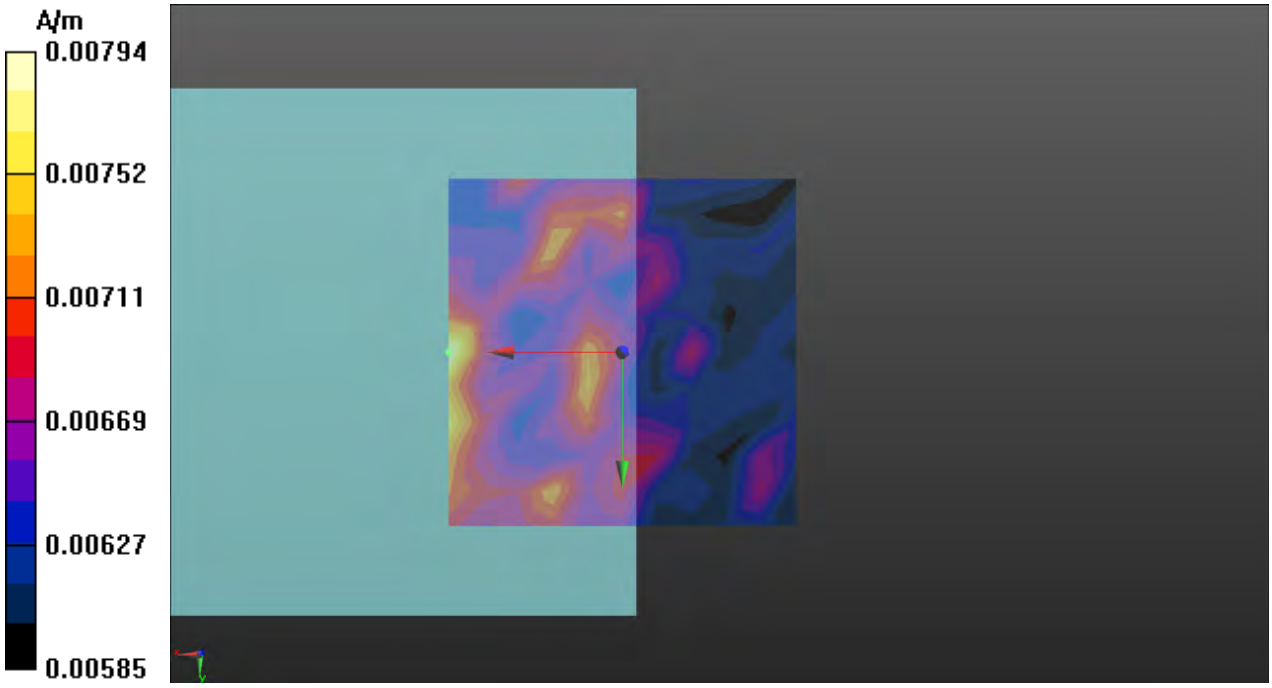
P248 OTT_5G NR n66_DFT-S QPSK40M_Ch349000_Duo Opus 75kbp_Axial (Z)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10950 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 40 MHz, QPSK, 15 kHz); Frequency: 1745 MHz;Duty Cycle: 1:3.93
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -42.00 dBA/m
Location: 25, 0, 3.7 mm



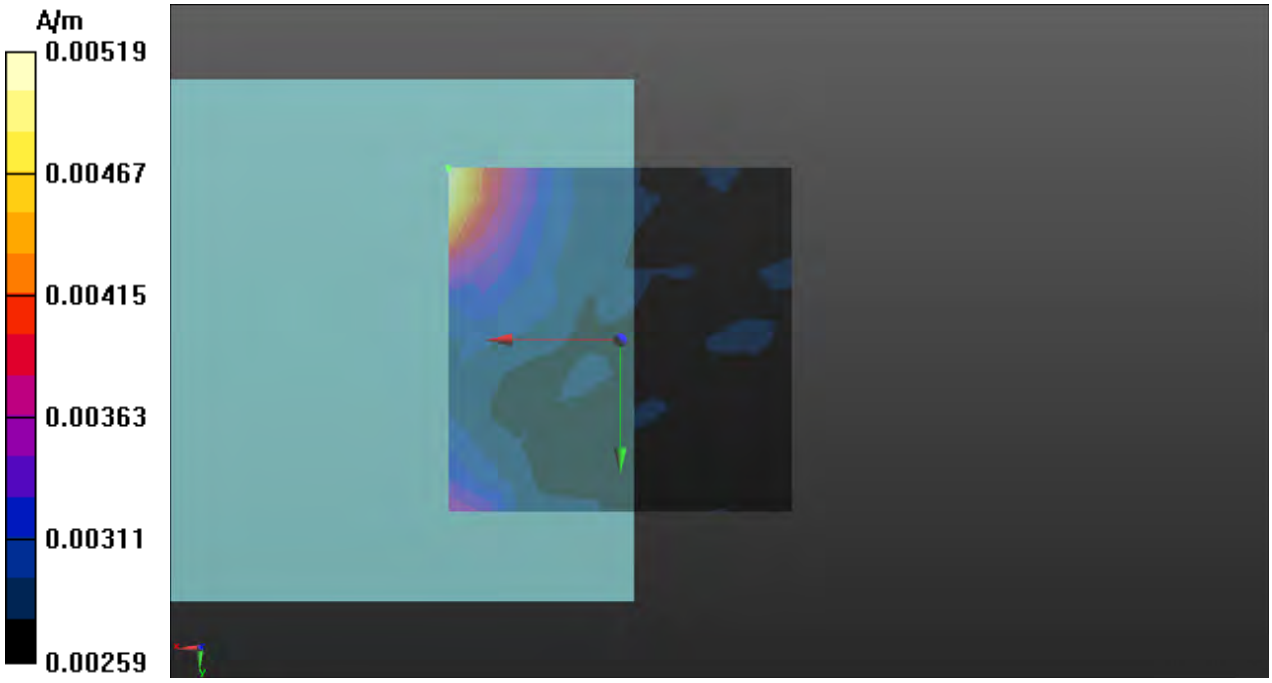
P248 OTT_5G NR n66_DFT-S QPSK40M_Ch349000_Duo Opus 75kbp_Radial (Y)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10950 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 40 MHz, QPSK, 15 kHz); Frequency: 1745 MHz;Duty Cycle: 1:3.93
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -45.70 dBA/m
Location: 25, -25, 3.7 mm



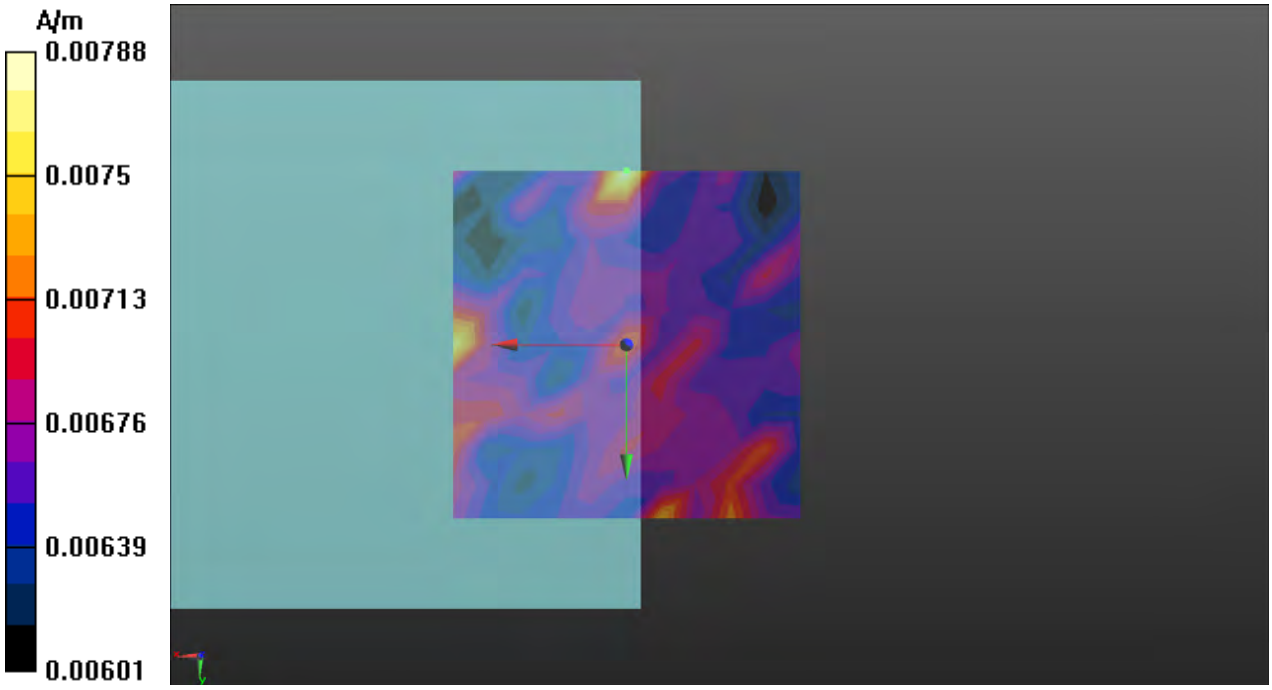
P249 OTT_5G NR n71_DFT-S QPSK20M_Ch136100_Duo Opus 75kbp_Axial (Z)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10947 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz); Frequency: 680.5 MHz;Duty Cycle: 1:3.86
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -42.07 dBA/m
Location: 0, -25, 3.7 mm



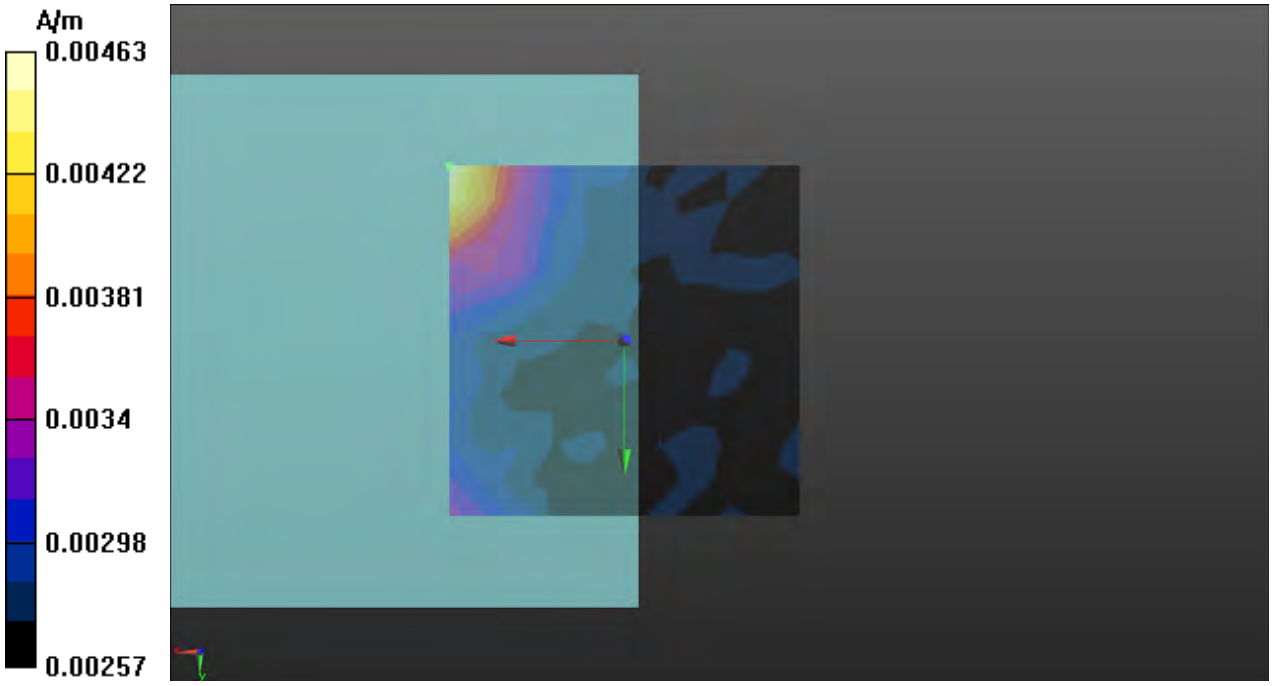
P249 OTT_5G NR n71_DFT-S QPSK20M_Ch136100_Duo Opus 75kbp_Radial (Y)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10947 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz); Frequency: 680.5 MHz;Duty Cycle: 1:3.86
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -46.69 dBA/m
Location: 25, -25, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/23

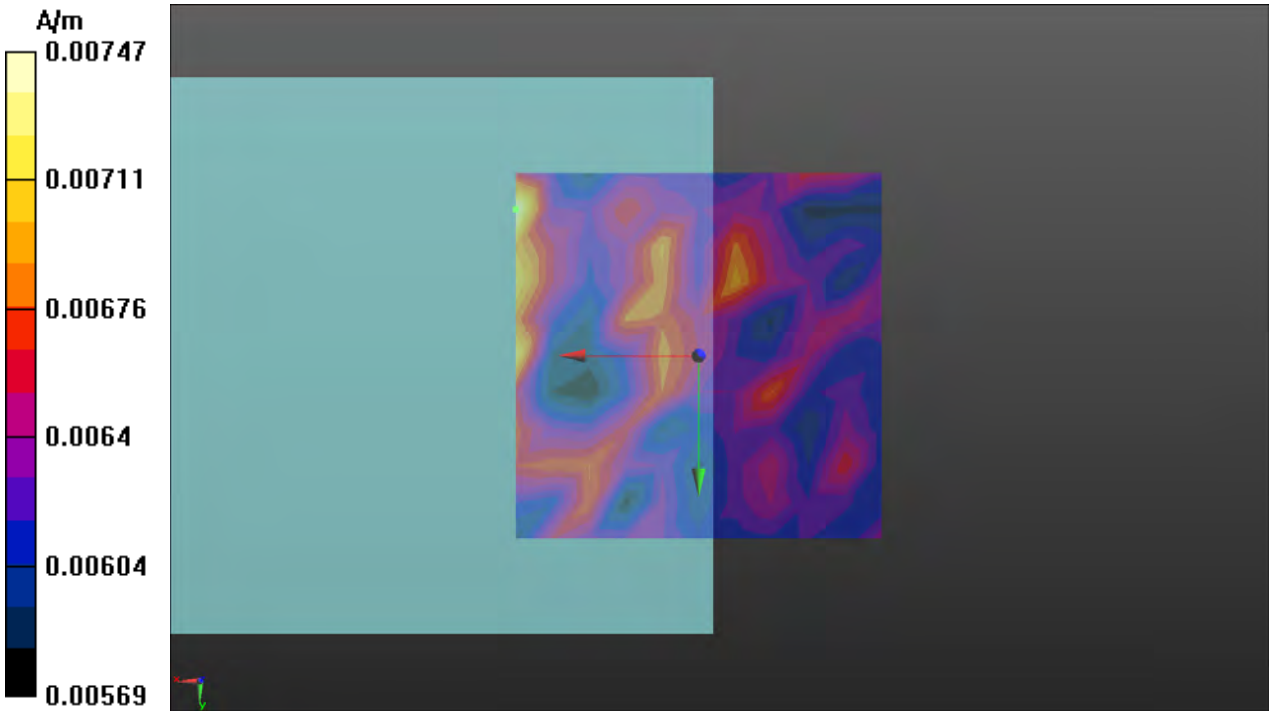
P250 OTT_5G NR n77_DFT-S QPSK100M_Ch656000_Duo Opus 75kbp_Axial (Z)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10866 - AAD, 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz); Frequency: 3840 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.8 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -42.53 dBA/m
Location: 25, -20, 3.7 mm



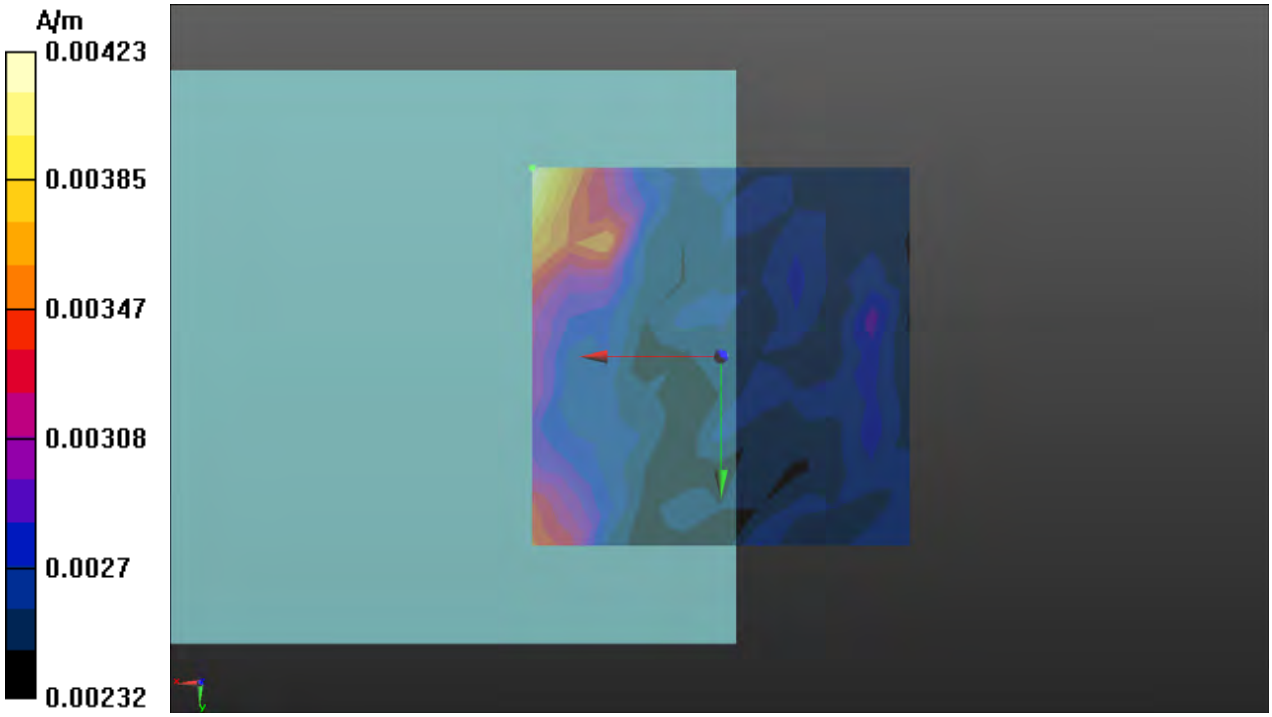
P250 OTT_5G NR n77_DFT-S QPSK100M_Ch656000_Duo Opus 75kbp_Radial (Y)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10866 - AAD, 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz); Frequency: 3840 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.8 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -47.47 dBA/m
Location: 25, -25, 3.7 mm



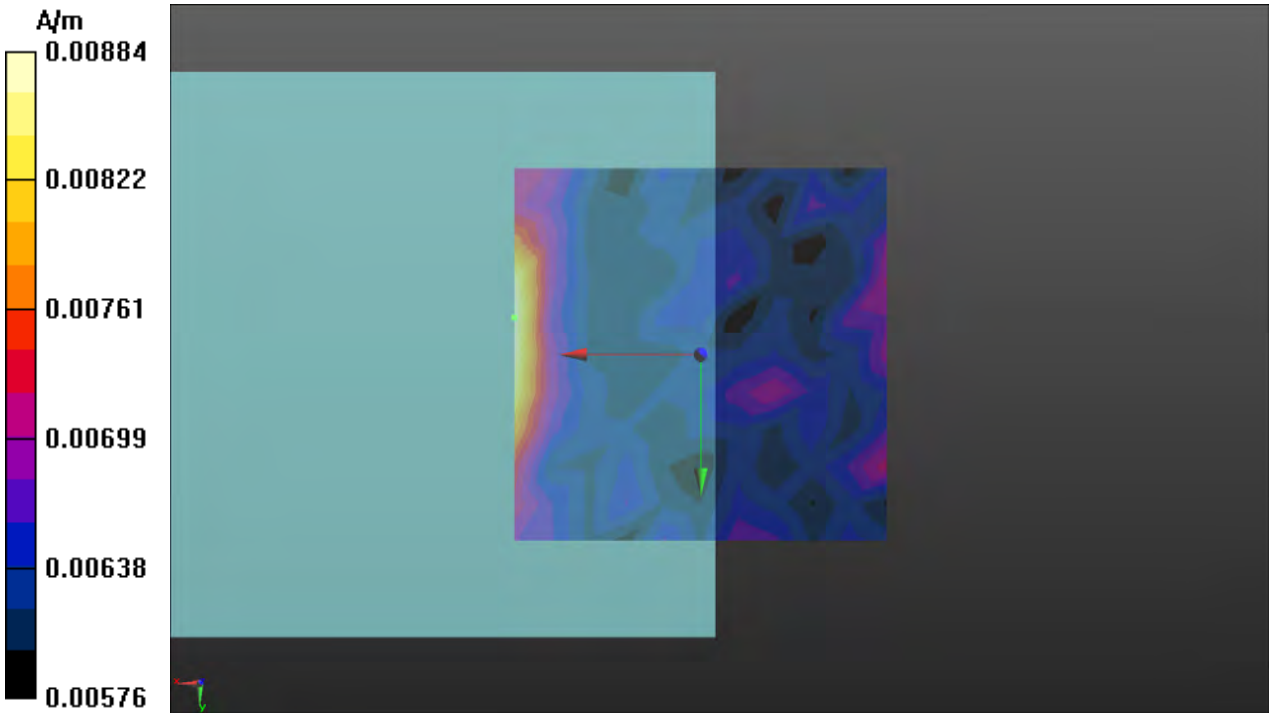
P251 OTT_5G NR n78_DFT-S QPSK100M_Ch650000_Duo Opus 75kbp_Axial (Z)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10866 - AAD, 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz); Frequency: 3750 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.8 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -41.07 dBA/m
Location: 25, -5, 3.7 mm



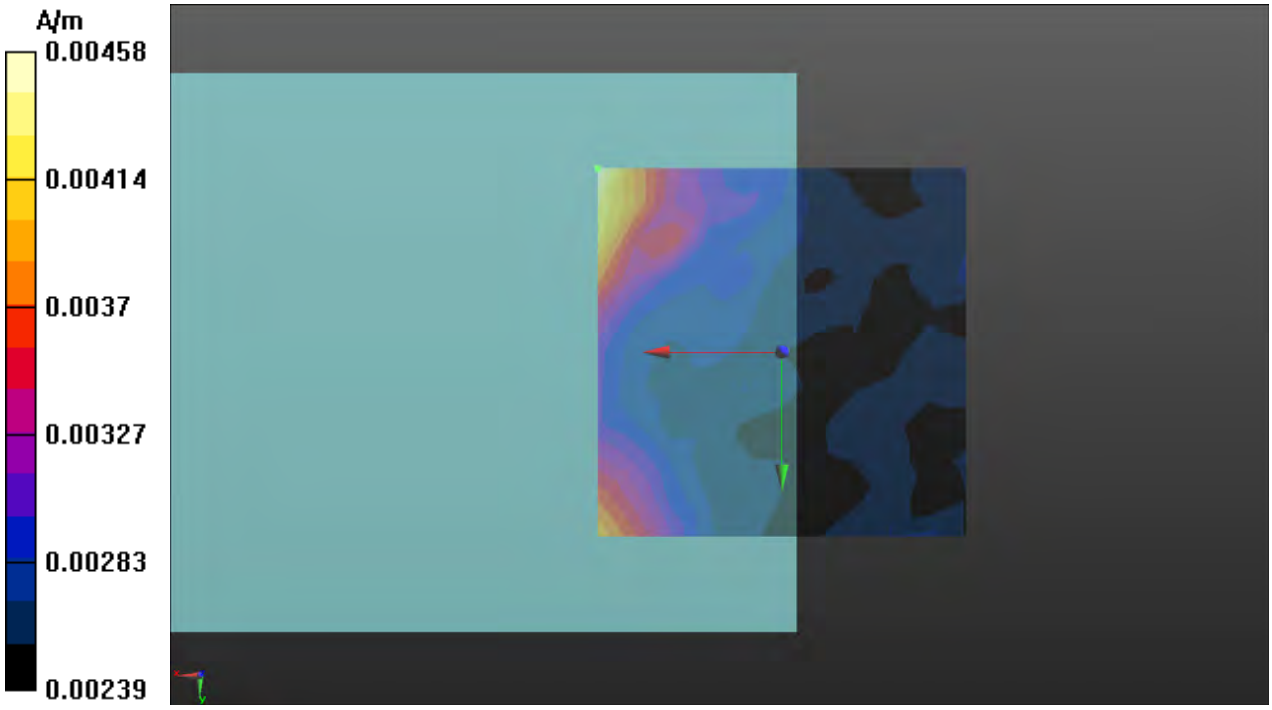
P251 OTT_5G NR n78_DFT-S QPSK100M_Ch650000_Duo Opus 75kbp_Radial (Y)_ABM2

DUT: BFLF-WTW-P20120540

Communication System: UID 10866 - AAD, 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz); Frequency: 3750 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.8 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Measurement grid: dx=10mm, dy=10mm
ABM2 = -46.79 dBA/m
Location: 25, -25, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/02

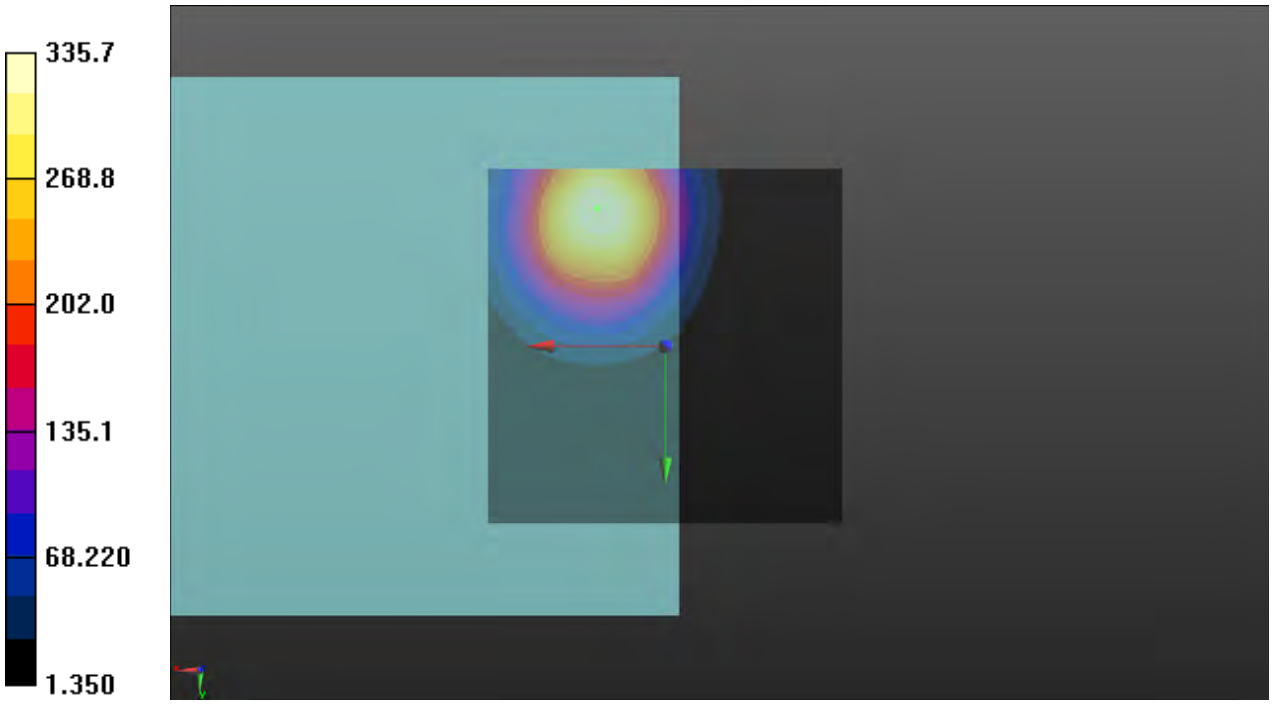
P236 OTT_5G NR n2_DFT-S QPSK20M_Ch376000_Duo Opus 75kbp_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10947 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz); Frequency: 1880 MHz;Duty Cycle: 1:3.86
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 50.52 dB
ABM1 comp = 10.82 dBA/m
Location: 9.5, -19.5, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/02

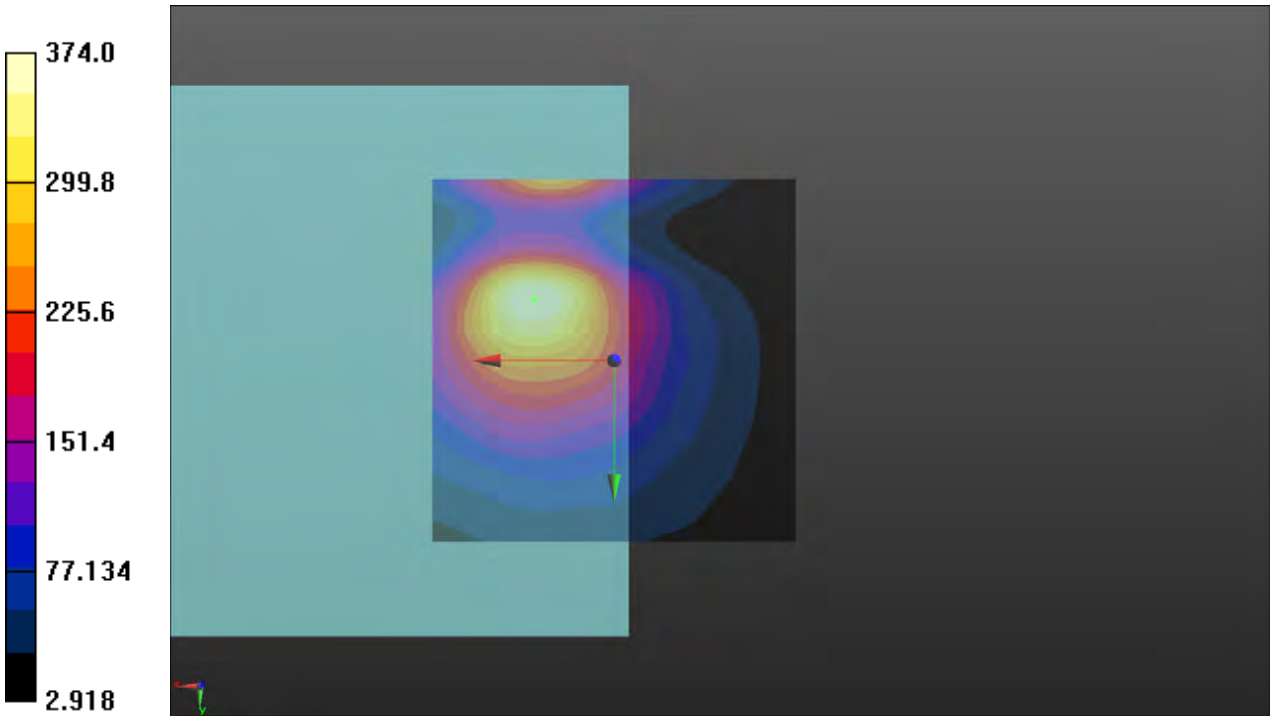
P236 OTT_5G NR n2_DFT-S QPSK20M_Ch376000_Duo Opus 75kbp_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10947 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz); Frequency: 1880 MHz;Duty Cycle: 1:3.86
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 51.46 dB
ABM1 comp = 2.11 dBA/m
Location: 11, -8.5, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/05

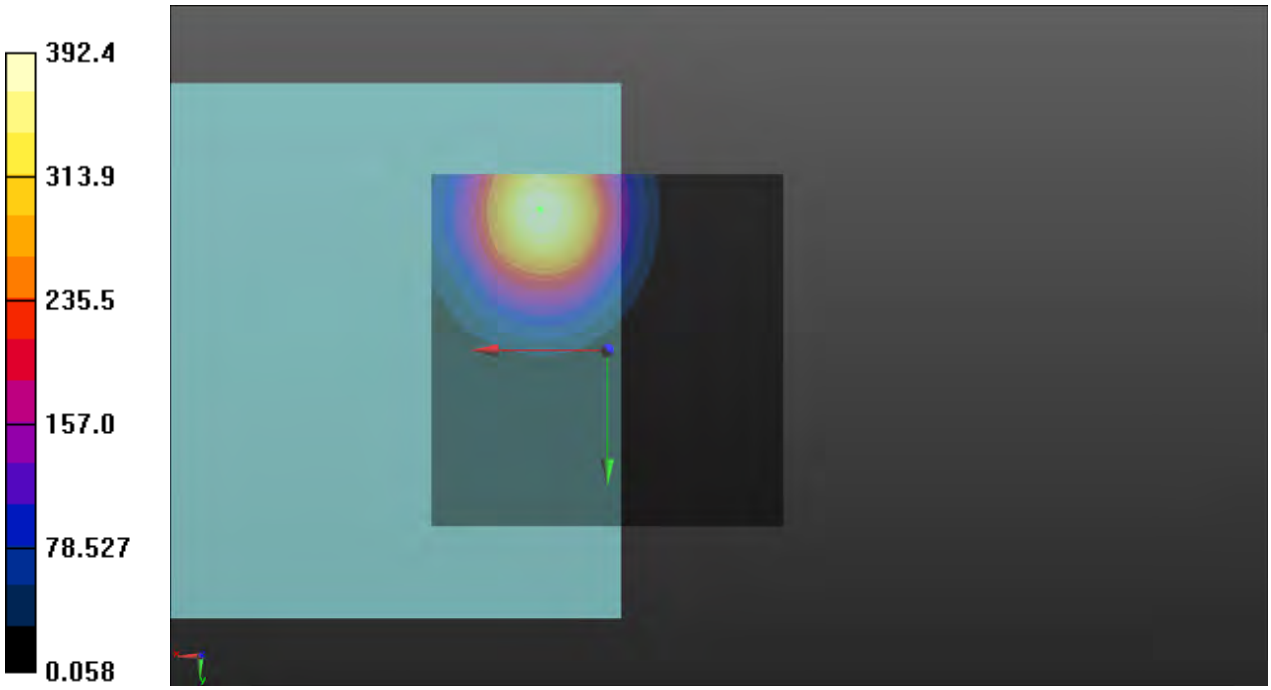
P237 OTT_5G NR n5_DFT-S QPSK20M_Ch167300_Duo Opus 75kbps_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10947 - CAG, LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK 15 kHz);
Frequency: 836.5 MHz;Duty Cycle: 1:3.86
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 51.88 dB
ABM1 comp = 11.94 dBA/m
Location: 9.5, -20, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/05

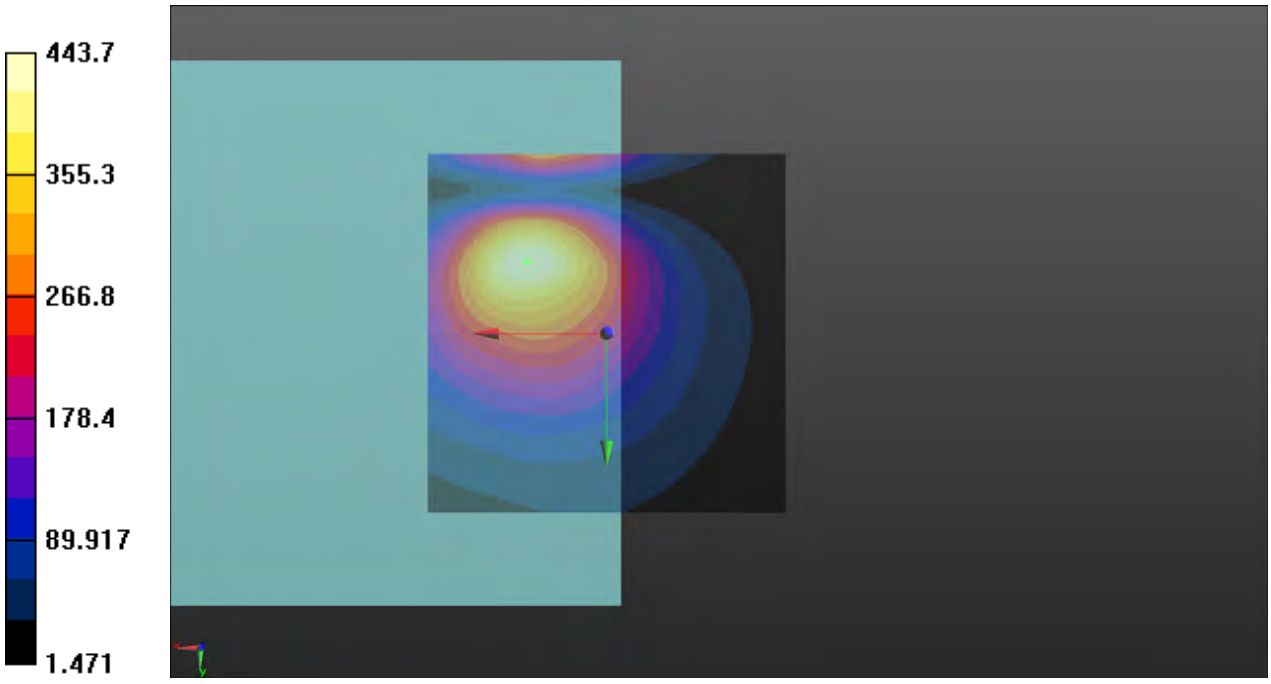
P237 OTT_5G NR n5_DFT-S QPSK20M_Ch20525_Duo Opus 75kbps_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10947 - CAG, LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK 15kHz);
Frequency: 836.5 MHz;Duty Cycle: 1:3.86
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.6 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3067; ; Calibrated: 2020/12/15
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 52.94 dB
ABM1 comp = 3.38 dBA/m
Location: 11, -10, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/02

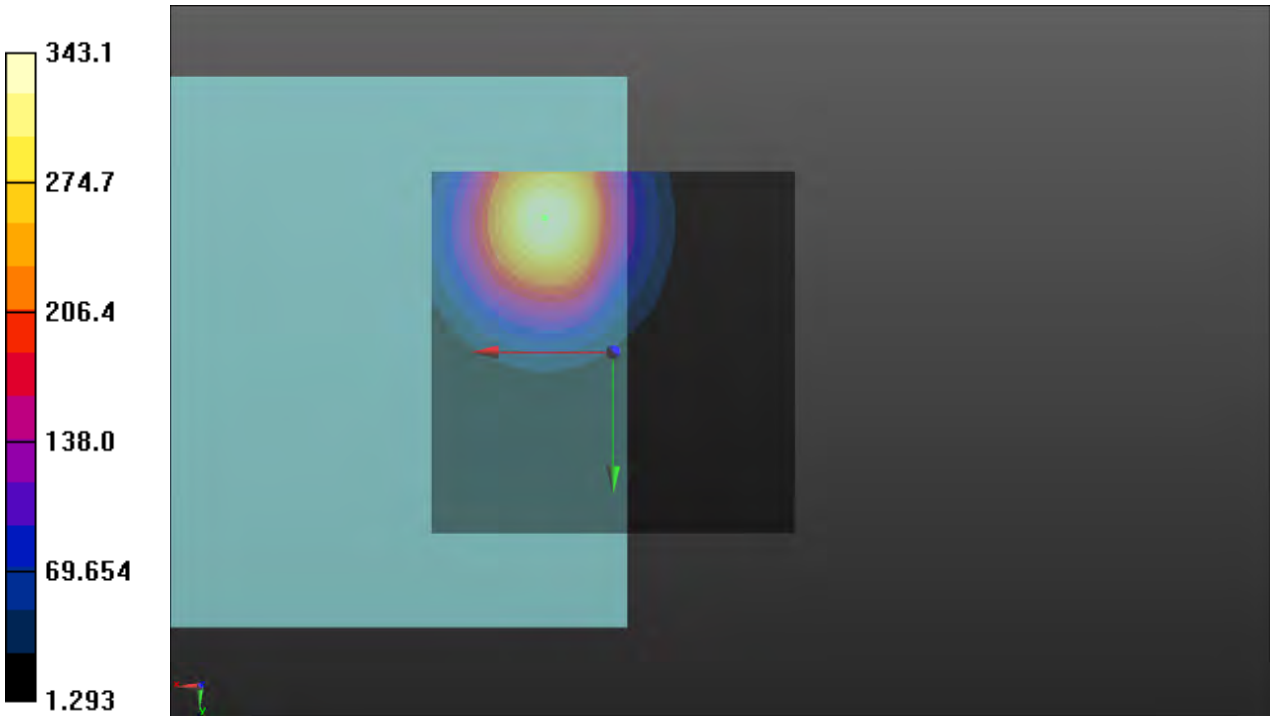
P238 OTT_5G NR n7_DFT-S QPSK20M_Ch507000_Duo Opus 75kbp_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10947 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz); Frequency: 2535 MHz;Duty Cycle: 1:3.86
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 50.71 dB
ABM1 comp = 10.62 dBA/m
Location: 9.5, -18.5, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/02

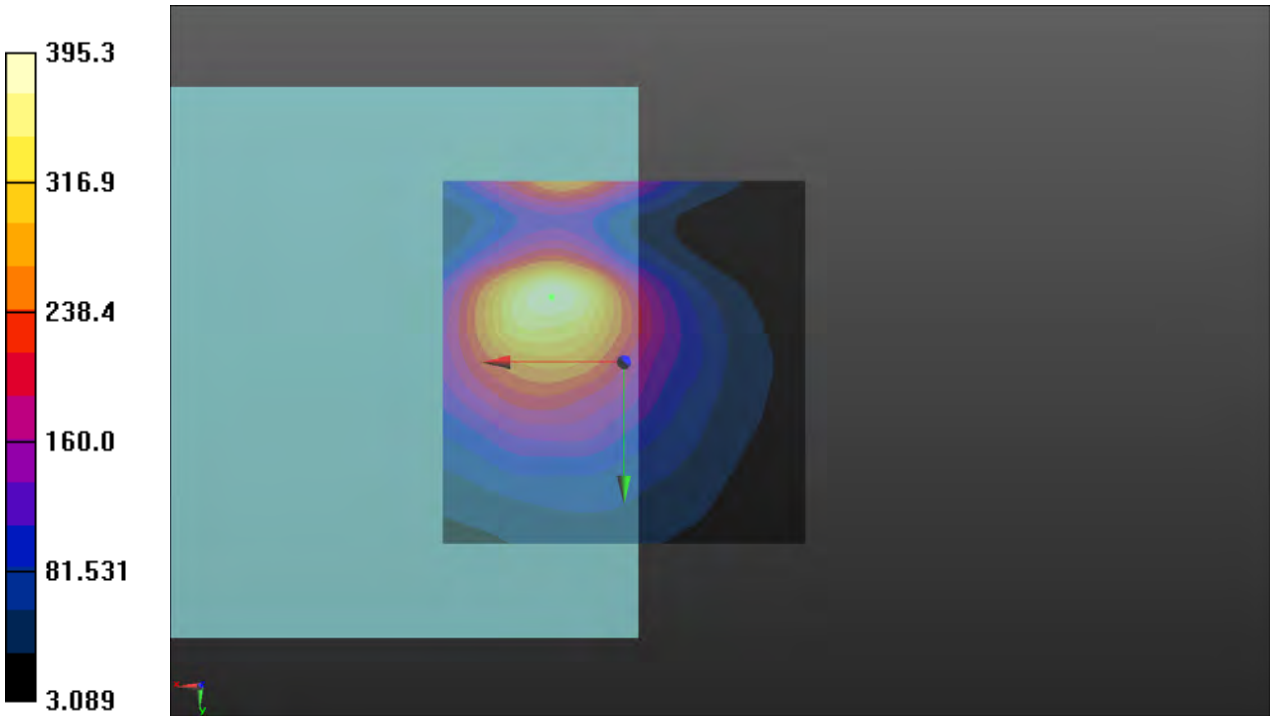
P238 OTT_5G NR n7_DFT-S QPSK20M_Ch507000_Duo Opus 75kbp_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10947 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz); Frequency: 2535 MHz;Duty Cycle: 1:3.86
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 51.94 dB
ABM1 comp = 2.06 dBA/m
Location: 10, -9, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/18

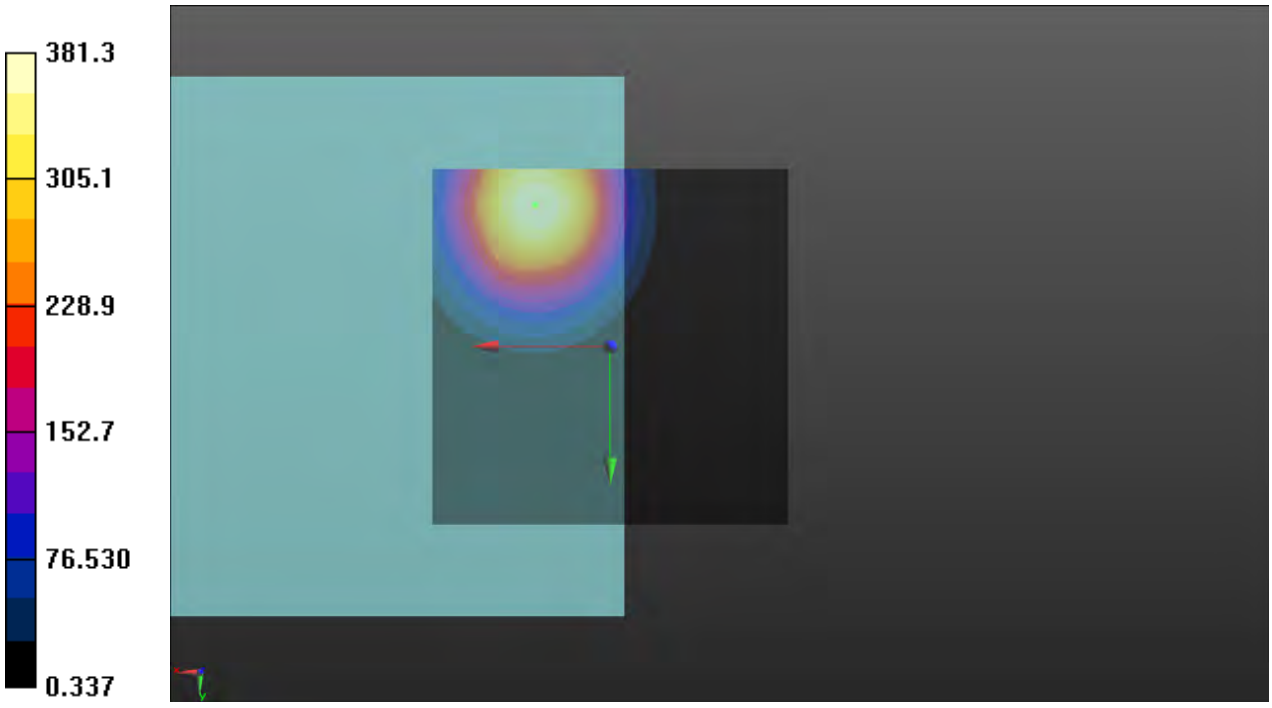
P239 OTT_5G NR n12_DFT-S QPSK15M_Ch141500_Duo Opus 75kbp_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10946 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 15 MHz, QPSK, 15 kHz); Frequency: 707.5 MHz;Duty Cycle: 1:3.83
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.8 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 51.63 dB
ABM1 comp = 10.96 dBA/m
Location: 10.5, -20, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/18

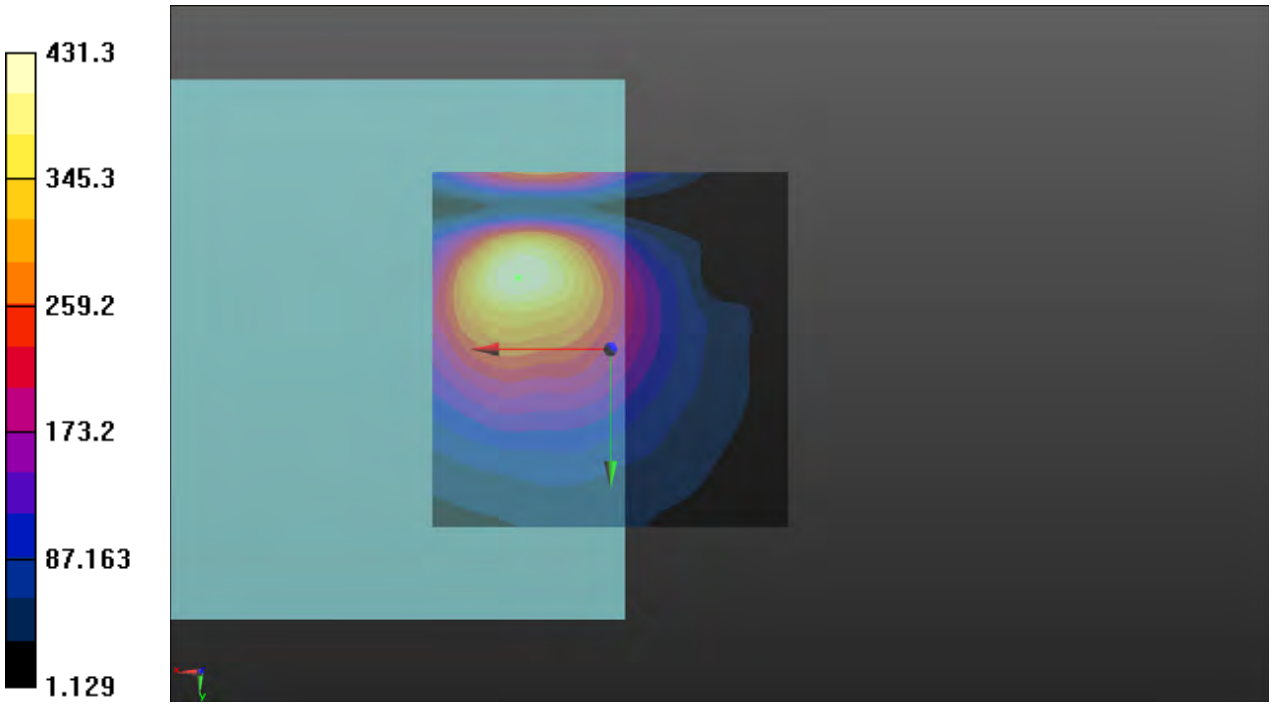
P239 OTT_5G NR n12_DFT-S QPSK15M_Ch141500_Duo Opus 75kbp_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10946 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 15 MHz, QPSK, 15 kHz); Frequency: 707.5 MHz;Duty Cycle: 1:3.83
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.8 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 52.70 dB
ABM1 comp = 2.80 dBA/m
Location: 13, -10, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/18

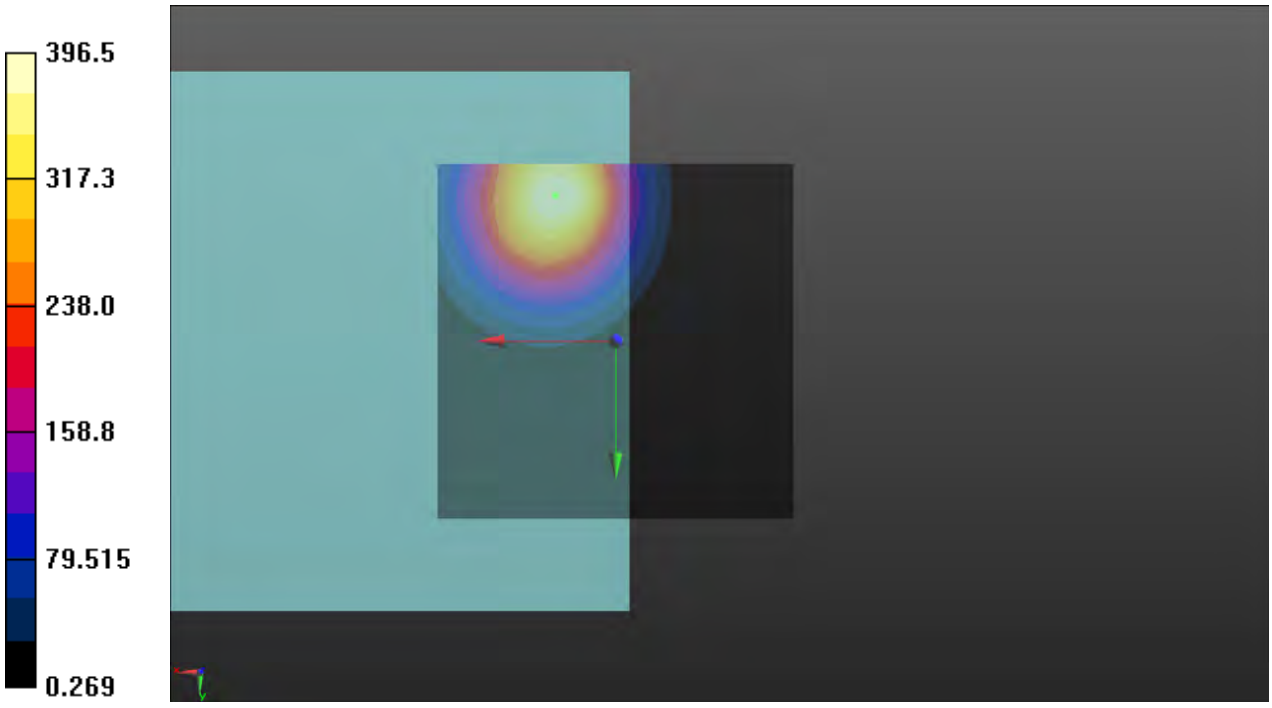
P240 OTT_5G NR n14_DFT-S QPSK10M_Ch158600_Duo Opus 75kbp_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10945 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 10 MHz, QPSK, 15 kHz); Frequency: 793 MHz;Duty Cycle: 1:3.84
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.8 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 51.97 dB
ABM1 comp = 10.72 dBA/m
Location: 8.5, -20.5, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/18

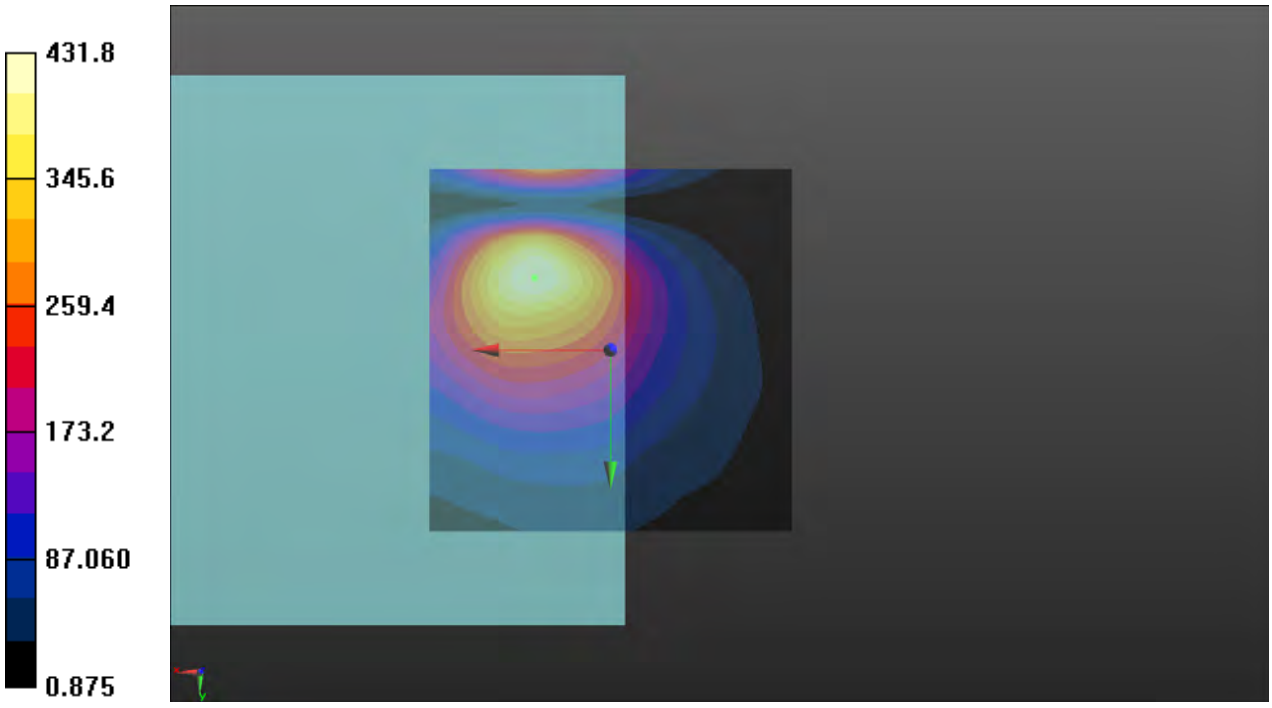
P240 OTT_5G NR n14_DFT-S QPSK10M_Ch158600_Duo Opus 75kbp_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10945 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 10 MHz, QPSK, 15 kHz); Frequency: 793 MHz;Duty Cycle: 1:3.84
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.8 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 52.70 dB
ABM1 comp = 2.60 dBA/m
Location: 10.5, -10, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/02

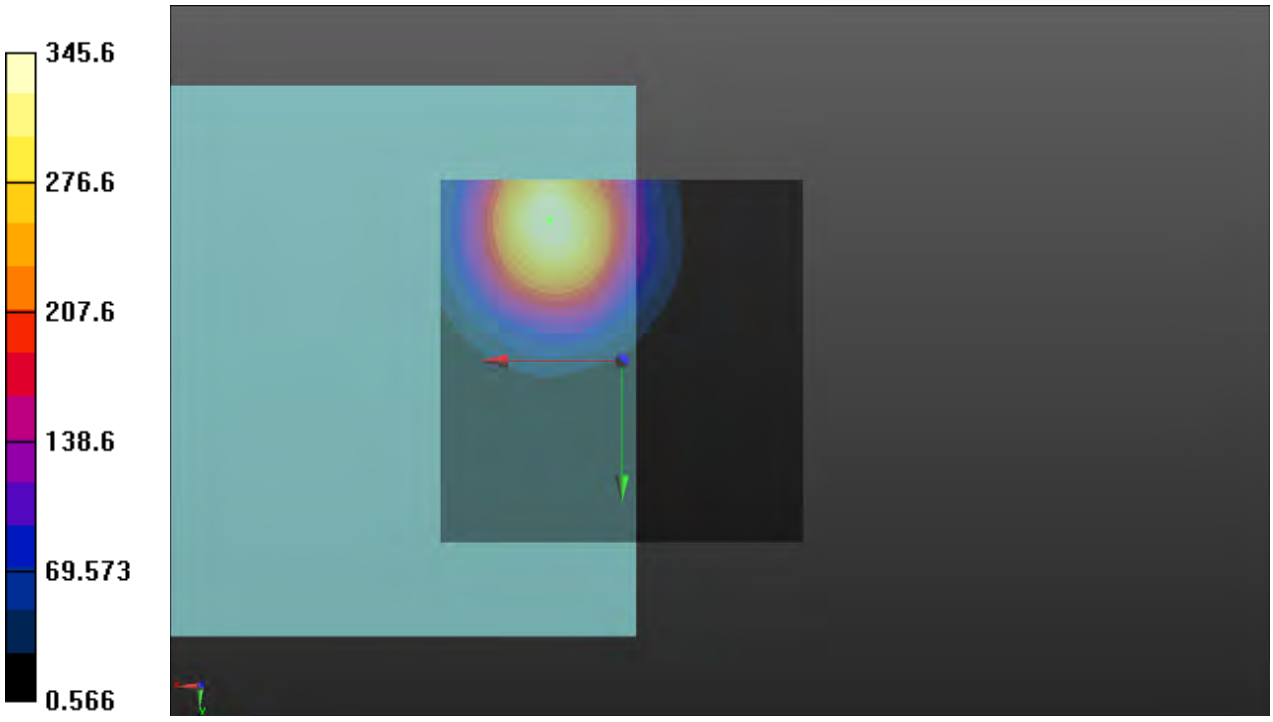
P241 OTT_5G NR n25_DFT-S QPSK20M_Ch376500_Duo Opus 75kbp_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10947 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz); Frequency: 1882.5 MHz;Duty Cycle: 1:3.86
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 50.77 dB
ABM1 comp = 10.77 dBA/m
Location: 10, -19.5, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/02

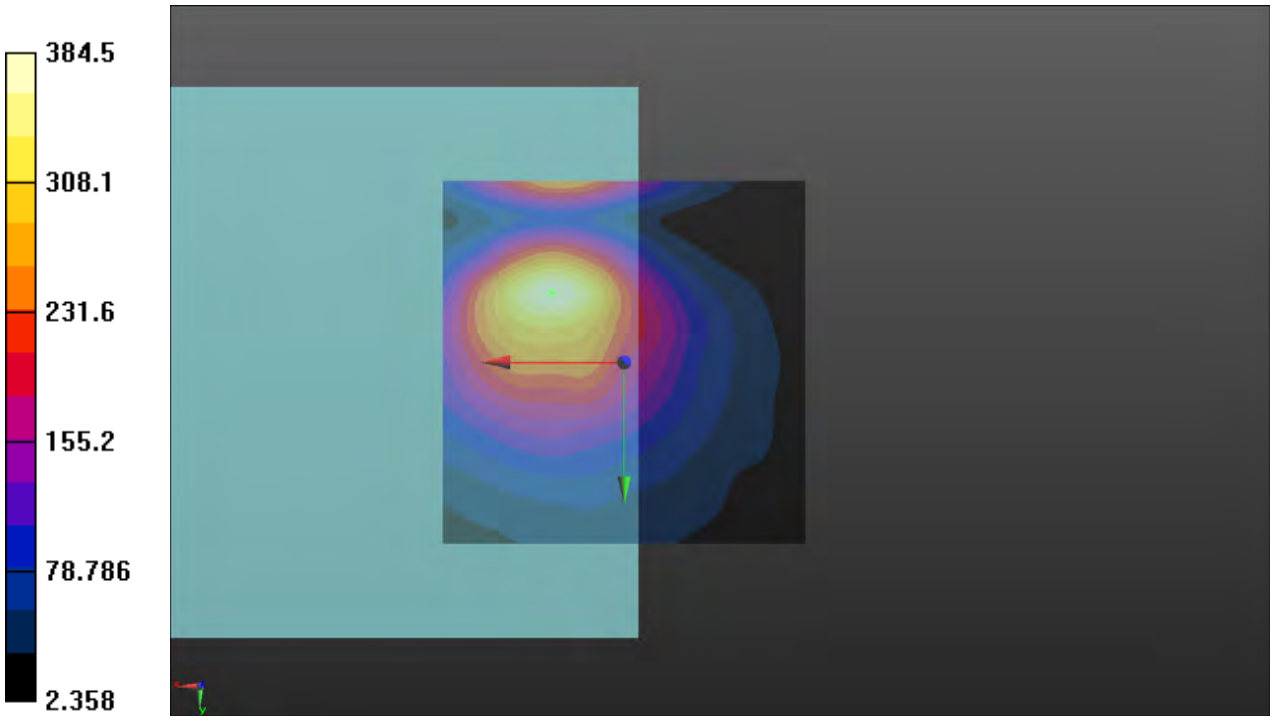
P241 OTT_5G NR n25_DFT-S QPSK20M_Ch376500_Duo Opus 75kbp_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10947 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz); Frequency: 1882.5 MHz;Duty Cycle: 1:3.86
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 51.70 dB
ABM1 comp = 1.95 dBA/m
Location: 10, -9.5, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/19

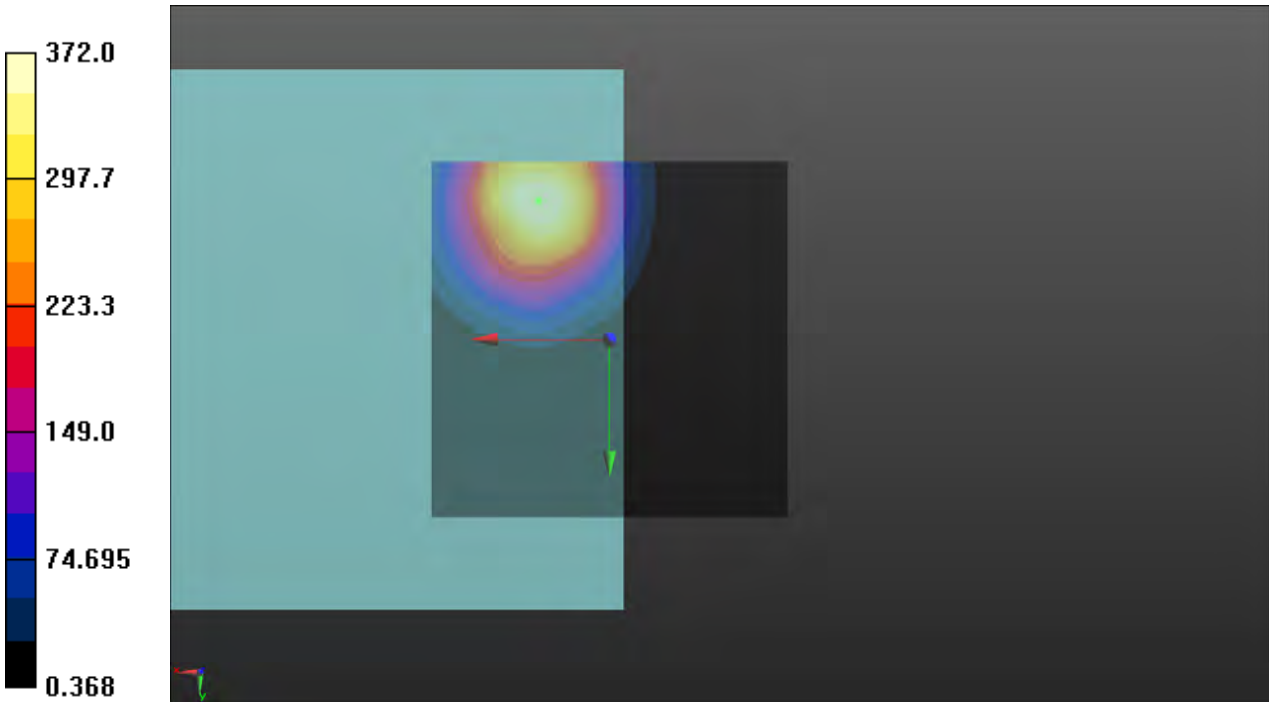
P242 OTT_5G NR n26_DFT-S QPSK20M_Ch166300_Duo Opus 75kbp_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10947 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz); Frequency: 831.5 MHz;Duty Cycle: 1:3.86
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 51.41 dB
ABM1 comp = 11.56 dBA/m
Location: 10, -19.5, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/02/19

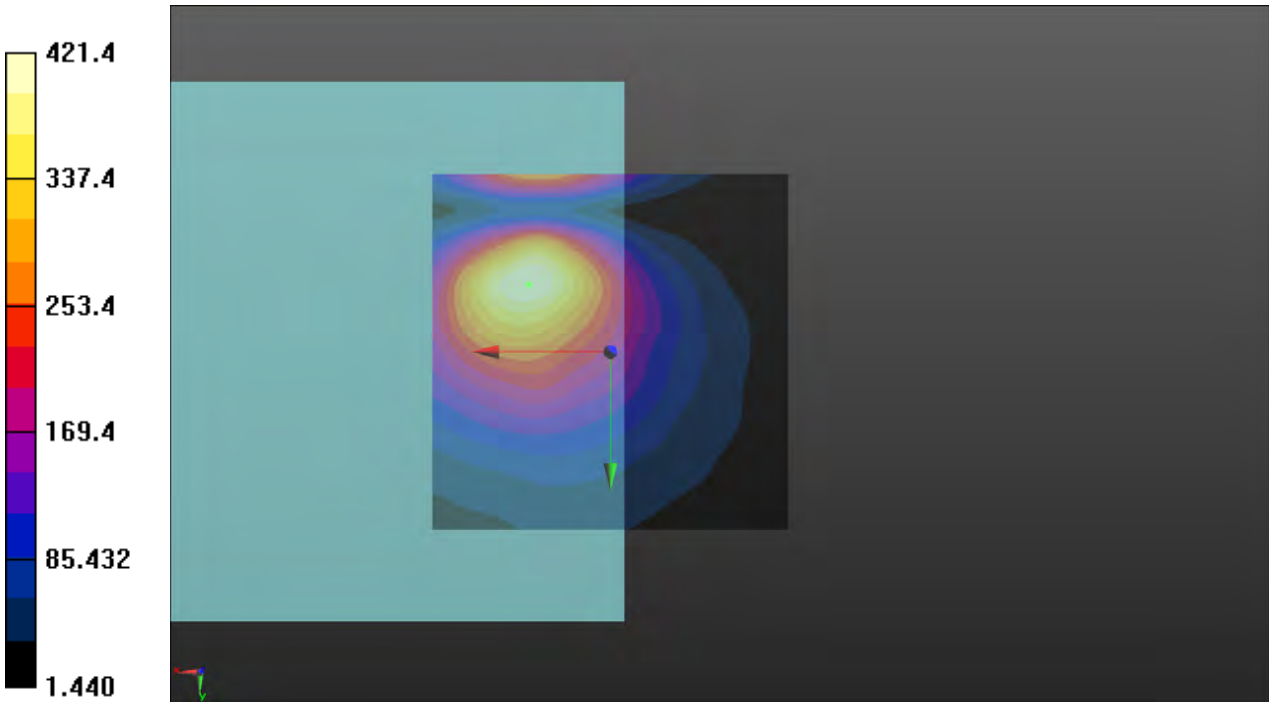
P242 OTT_5G NR n26_DFT-S QPSK20M_Ch166300_Duo Opus 75kbp_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10947 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz); Frequency: 831.5 MHz;Duty Cycle: 1:3.86
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 52.49 dB
ABM1 comp = 3.16 dBA/m
Location: 11.5, -9.5, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/02

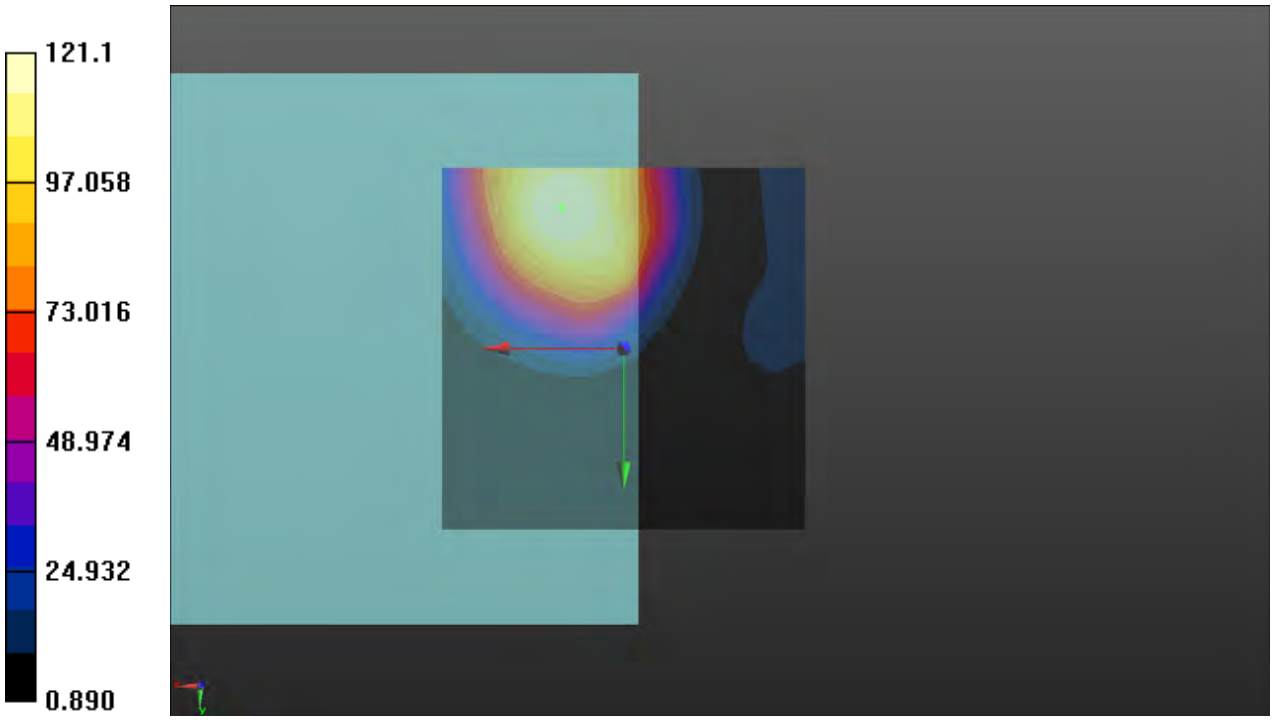
P243 OTT_5G NR n30_DFT-S QPSK10M_Ch462000_Duo Opus 75kbp_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10945 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 10 MHz, QPSK, 15 kHz); Frequency: 2310 MHz;Duty Cycle: 1:3.84
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 41.66 dB
ABM1 comp = 10.24 dBA/m
Location: 8.5, -19.5, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/02

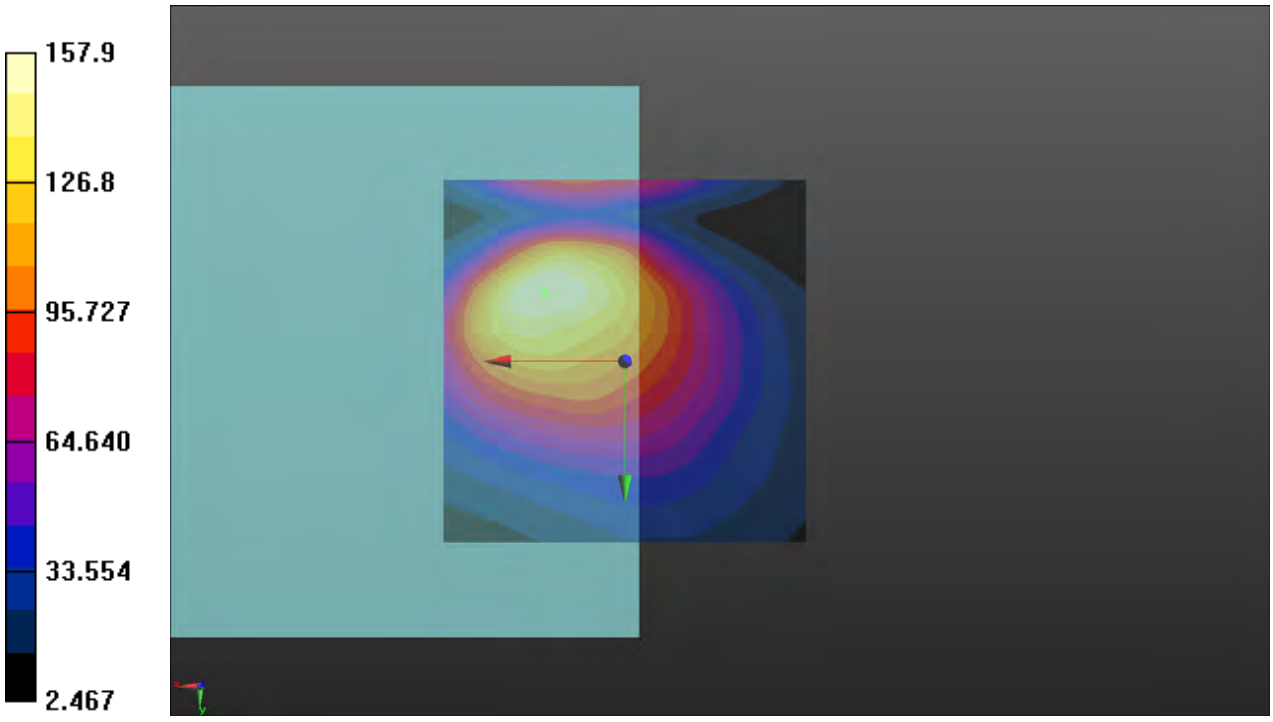
P243 OTT_5G NR n30_DFT-S QPSK10M_Ch462000_Duo Opus 75kbp_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10945 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 10 MHz, QPSK, 15 kHz); Frequency: 2310 MHz;Duty Cycle: 1:3.84
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid:
dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 43.97 dB
ABM1 comp = 2.28 dBA/m
Location: 11, -9.5, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/02

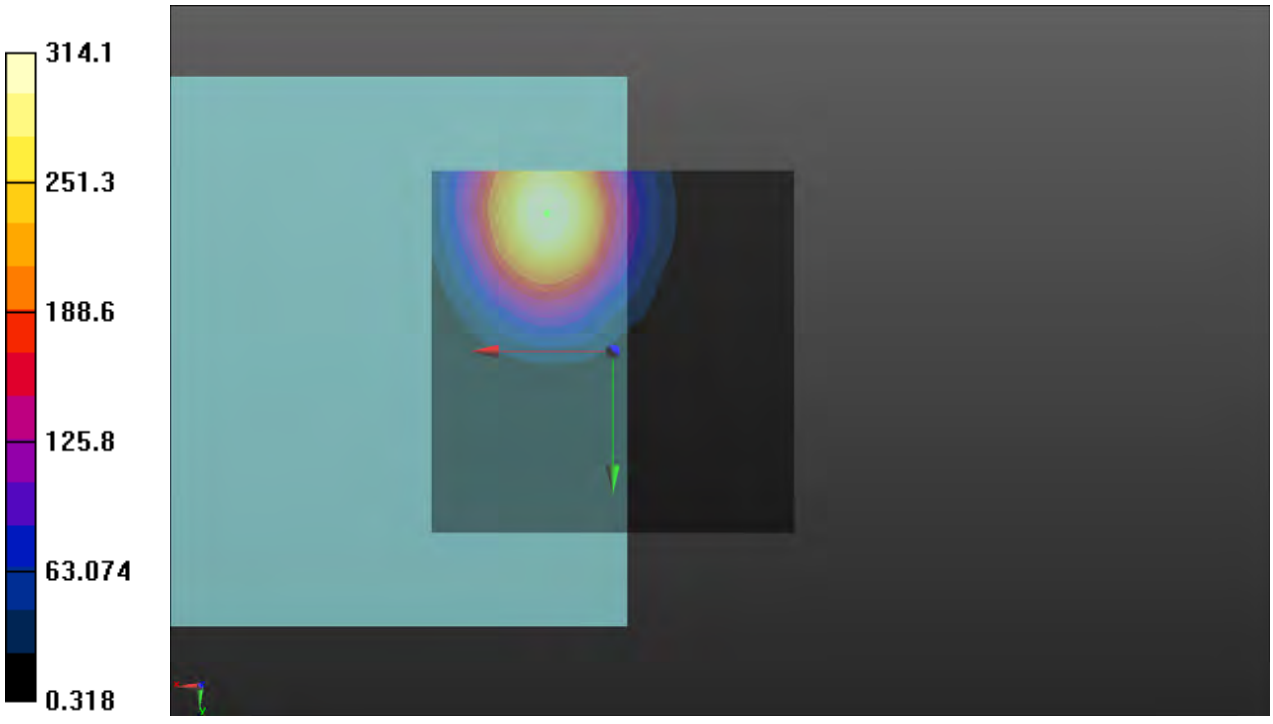
P244 OTT_5G NR n38_DFT-S QPSK40M_Ch519000_Duo Opus 75kbp_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10924 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 40 MHz, QPSK, 30 kHz); Frequency: 2595 MHz;Duty Cycle: 1:3.84
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 49.94 dB
ABM1 comp = 10.50 dBA/m
Location: 9, -19, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/02

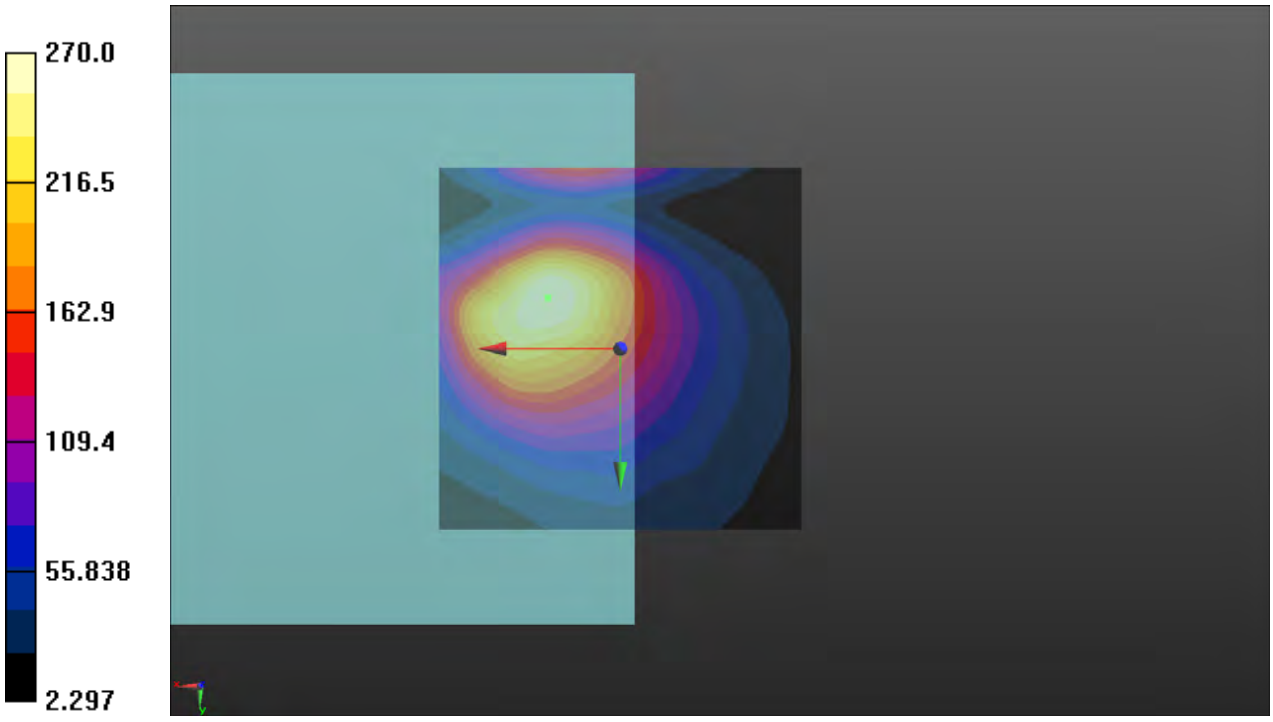
P244 OTT_5G NR n38_DFT-S QPSK40M_Ch519000_Duo Opus 75kbp_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10924 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 40 MHz, QPSK, 30 kHz); Frequency: 2595 MHz;Duty Cycle: 1:3.84
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 48.63 dB
ABM1 comp = 1.89 dBA/m
Location: 10, -7, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/03

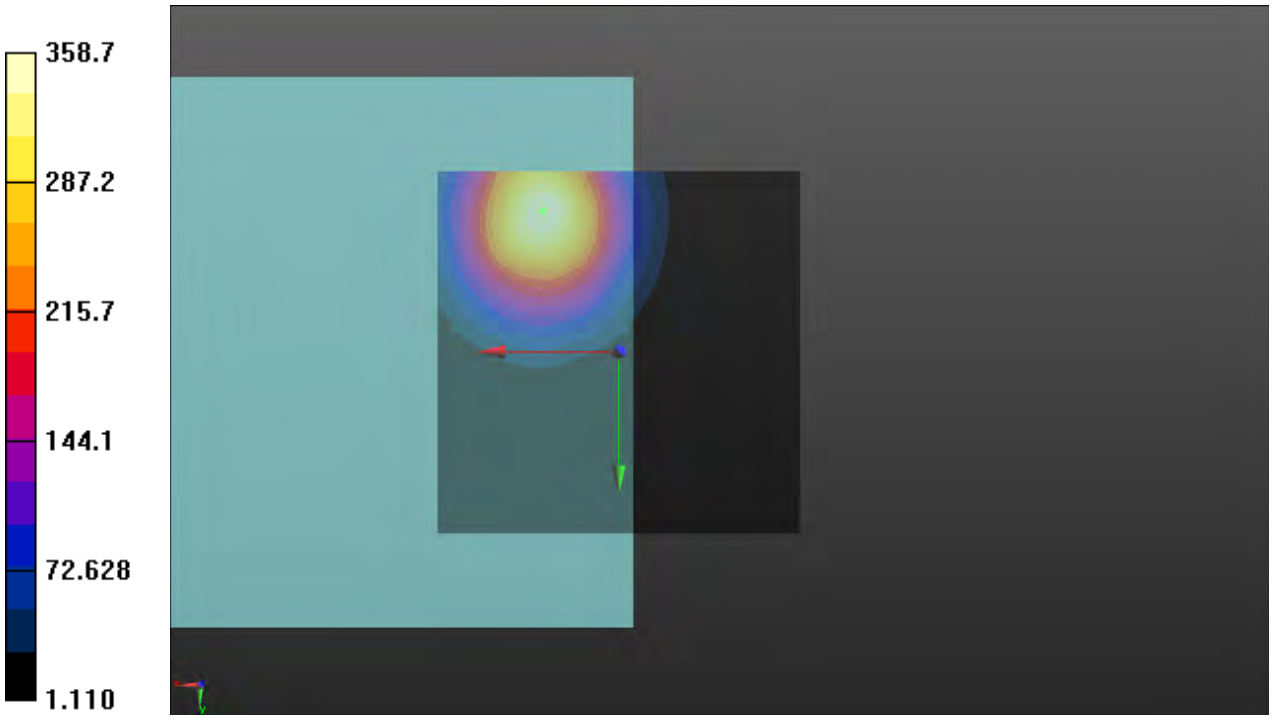
P246 OTT_5G NR n41_DFT-S QPSK100M_Ch518598_Duo Opus 75kbp_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10917 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 100 MHz, QPSK, 30 kHz); Frequency: 2592.99 MHz;Duty Cycle: 1:3.93
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 51.09 dB
ABM1 comp = 10.75 dBA/m
Location: 10.5, -19.5, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/03

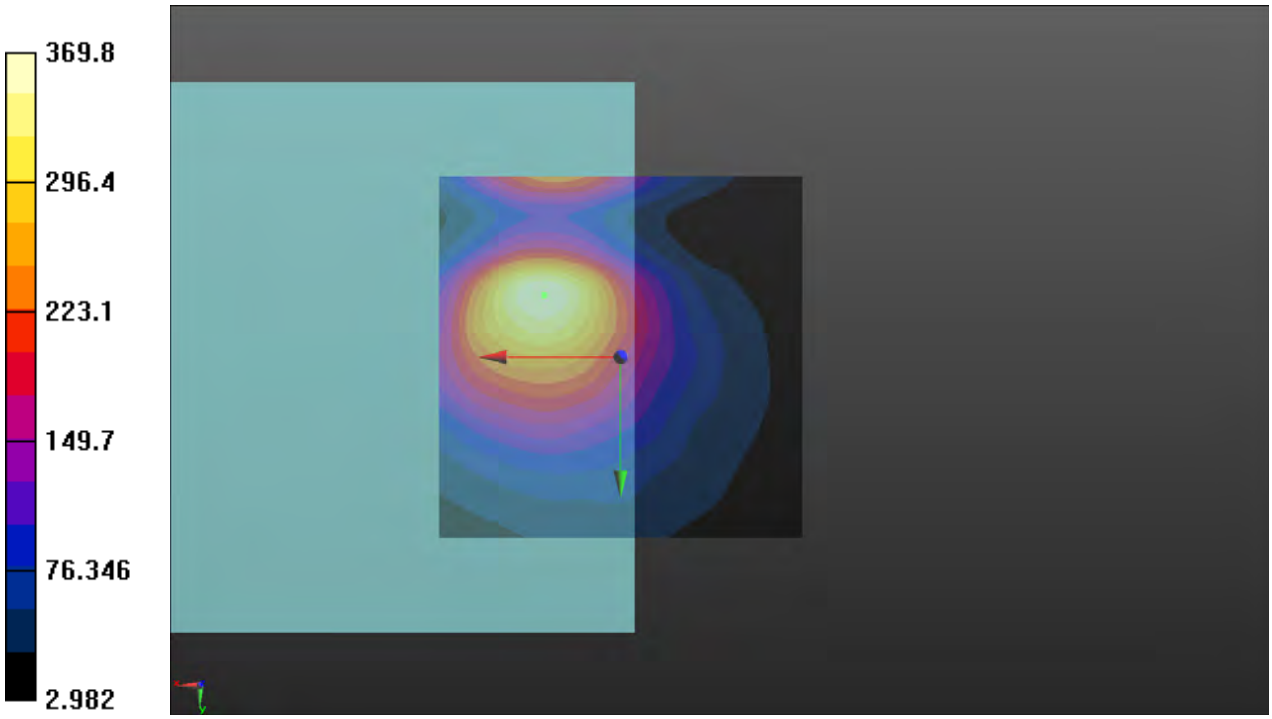
P246 OTT_5G NR n41_DFT-S QPSK100M_Ch518598_Duo Opus 75kbp_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10917 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 100 MHz, QPSK, 30 kHz); Frequency: 2592.99 MHz;Duty Cycle: 1:3.93
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 51.36 dB
ABM1 comp = 2.04 dBA/m
Location: 10.5, -8.5, 3.7 mm



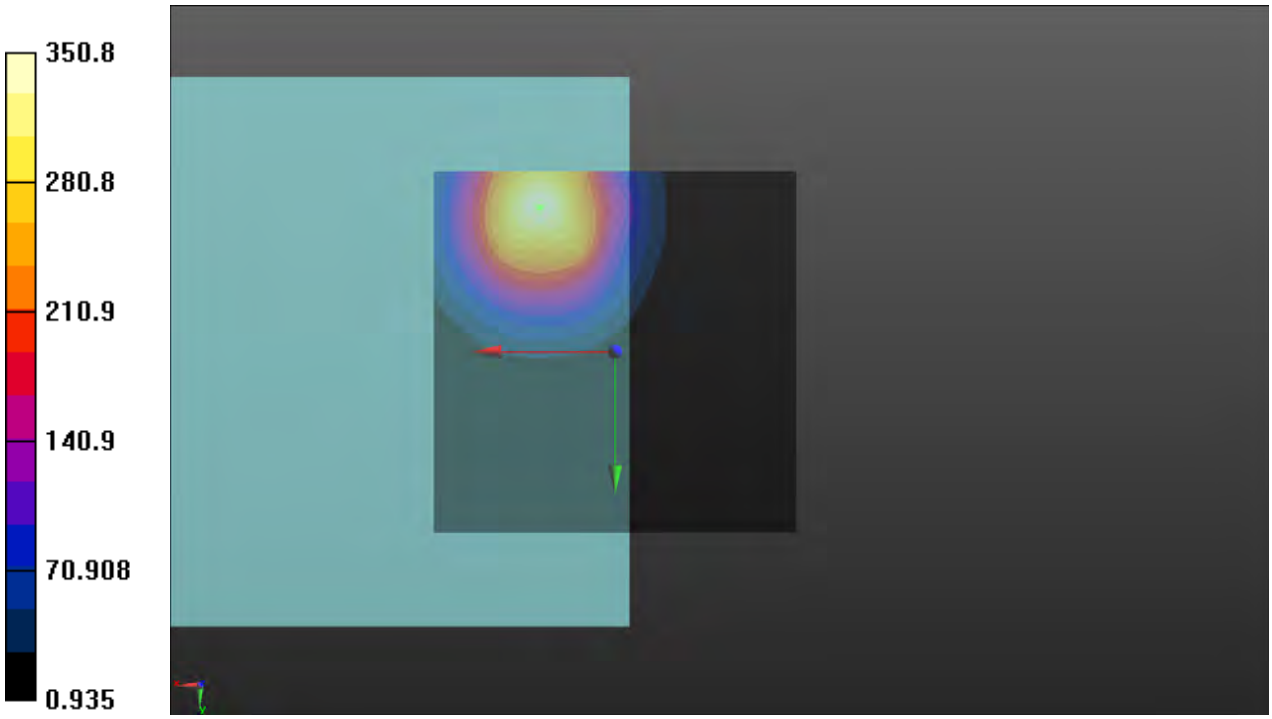
P248 OTT_5G NR n66_DFT-S QPSK30M_Ch349000_Duo Opus 75kbp_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10941 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 30 MHz, QPSK, 15 kHz); Frequency: 1745 MHz;Duty Cycle: 1:3.82
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 50.90 dB
ABM1 comp = 11.11 dBA/m
Location: 10.5, -20, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/03

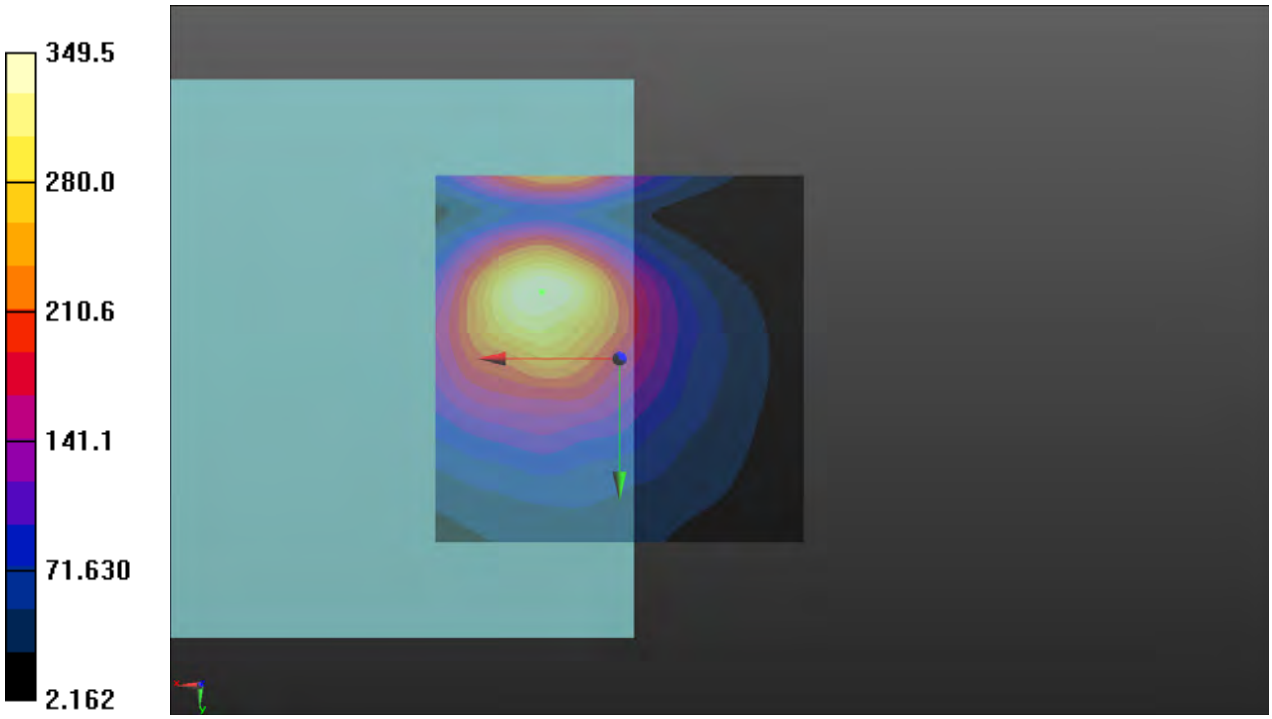
P248 OTT_5G NR n66_DFT-S QPSK30M_Ch349000_Duo Opus 75kbp_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10941 - AAB, 5G NR (DFT-s-OFDM, 50% RB, 30 MHz, QPSK, 15 kHz); Frequency: 1745 MHz;Duty Cycle: 1:3.82
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 50.87 dB
ABM1 comp = 2.38 dBA/m
Location: 10.5, -9, 3.7 mm



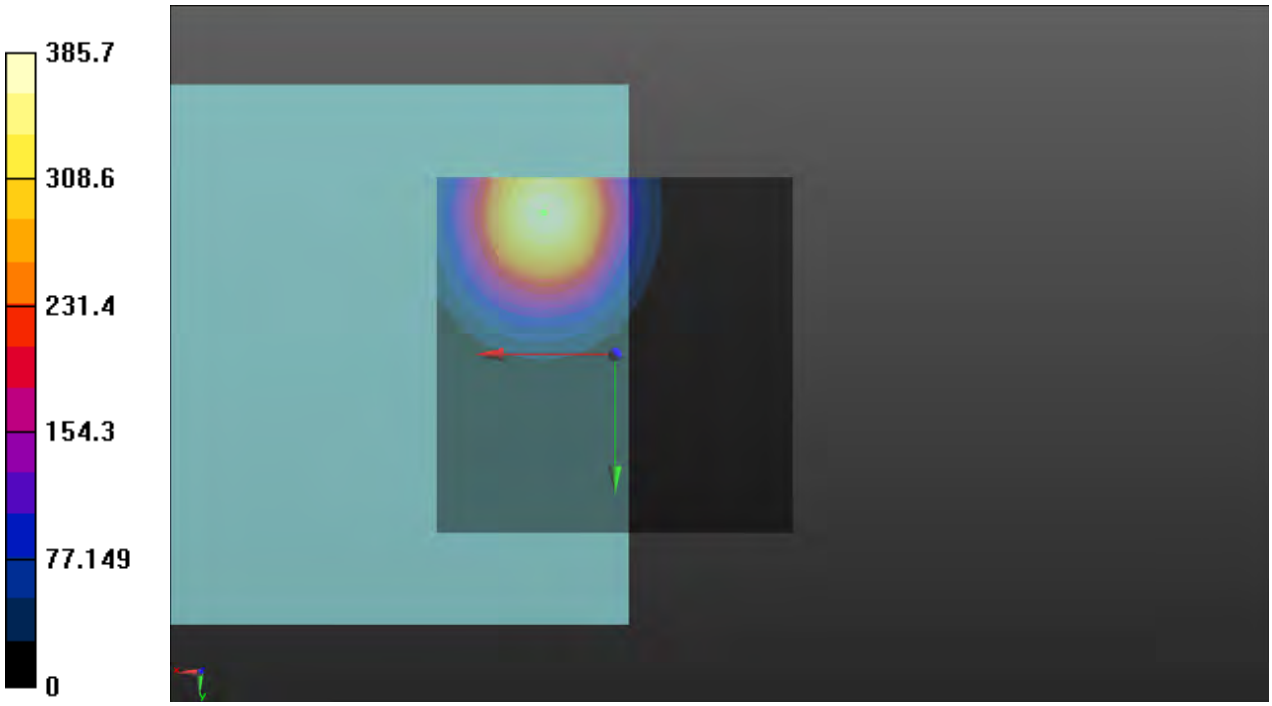
P249 OTT_5G NR n71_QPSK20M_Ch136100_Duo Opus 75kbp_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10947 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz); Frequency: 680.5 MHz;Duty Cycle: 1:3.86
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 51.73 dB
ABM1 comp = 11.61 dBA/m
Location: 10, -20, 3.7 mm



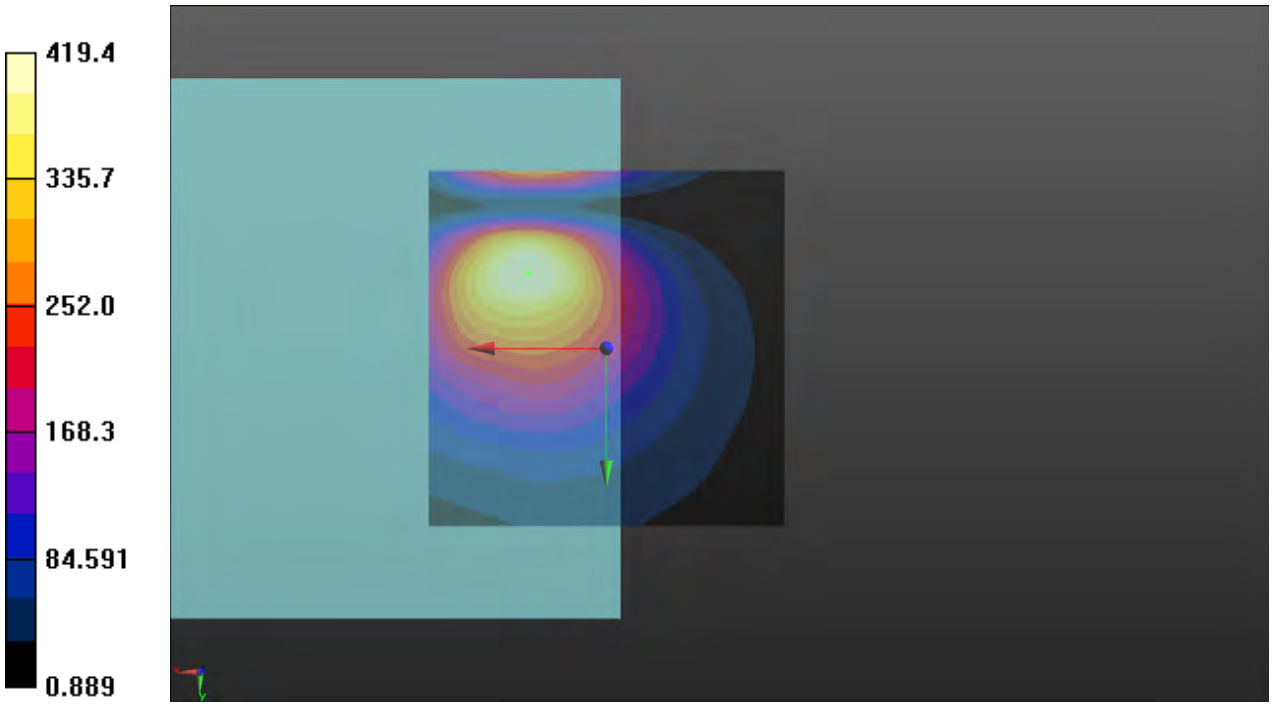
P249 OTT_5G NR n71_QPSK20M_Ch136100_Duo Opus 75kbp_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10947 - AAB, 5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz); Frequency: 680.5 MHz;Duty Cycle: 1:3.86
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.5 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3139; ; Calibrated: 2020/09/21
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1590; Calibrated: 2020/09/15
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 52.45 dB
ABM1 comp = 3.02 dBA/m
Location: 11, -10.5, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/23

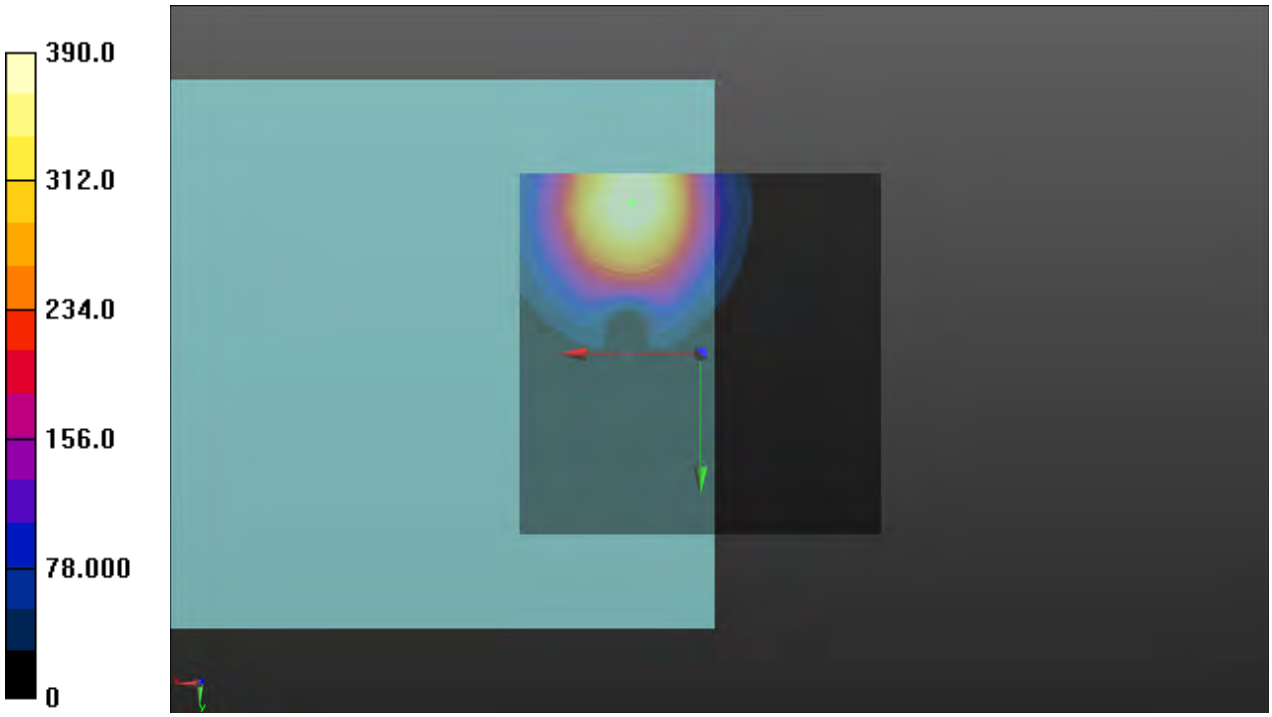
P250 OTT_5G NR n77_DFT-S QPSK100M_Ch656000_Duo Opus 75kbp_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10866 - AAD, 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz); Frequency: 3840 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.8 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 51.82 dB
ABM1 comp = 11.46 dBA/m
Location: 9.5, -21, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/23

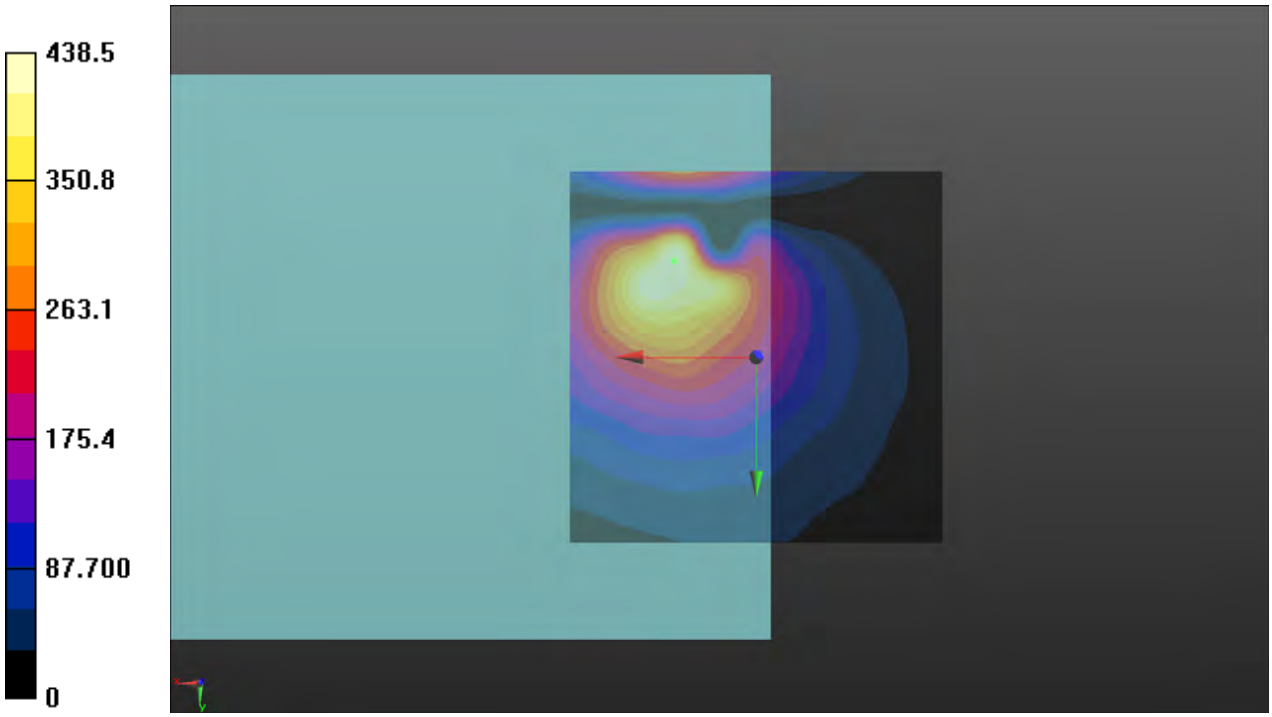
P250 OTT_5G NR n77_DFT-S QPSK100M_Ch656000_Duo Opus 75kbp_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10866 - AAD, 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz); Frequency: 3840 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.8 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 52.84 dB
ABM1 comp = 2.28 dBA/m
Location: 11, -13, 3.7 mm



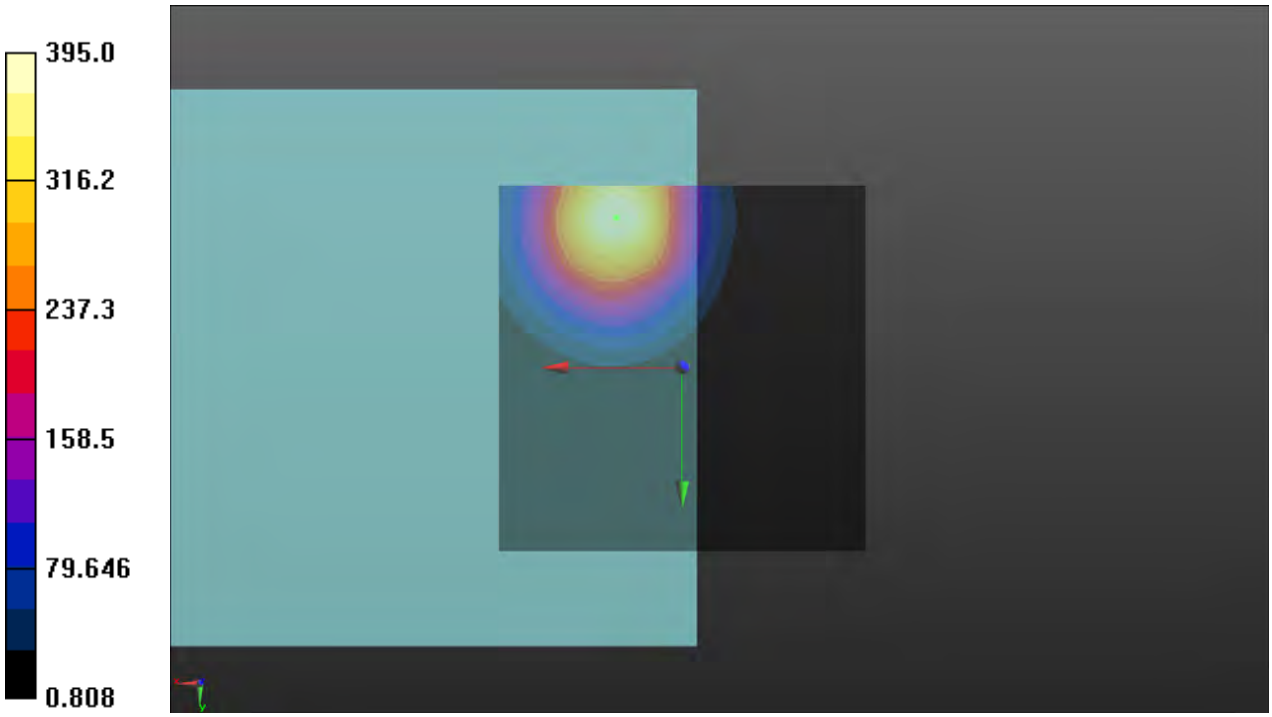
P251 OTT_5G NR n78_DFT-S QPSK100M_Ch650000_Duo Opus 75kbp_Axial (Z)

DUT: BFLF-WTW-P20120540

Communication System: UID 10866 - AAD, 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz); Frequency: 3750 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.8 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 51.93 dB
ABM1 comp = 11.55 dBA/m
Location: 9, -20.5, 3.7 mm



Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab Date: 2021/03/23

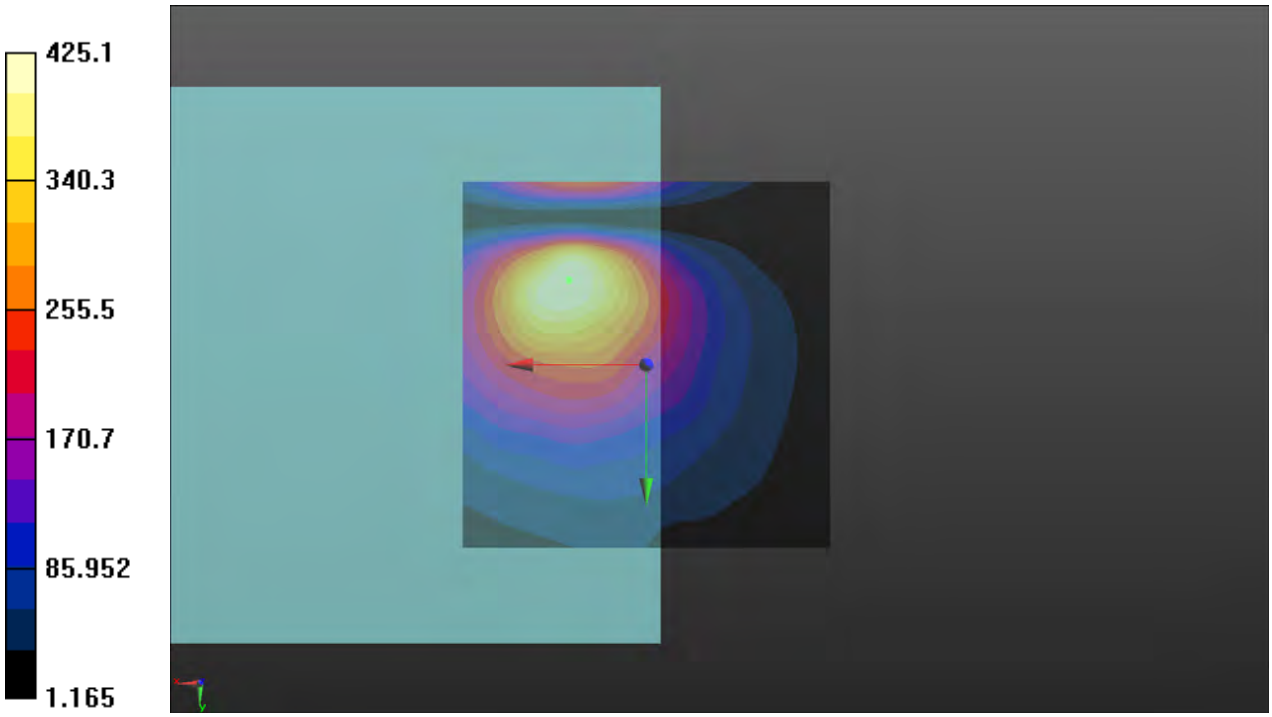
P251 OTT_5G NR n78_DFT-S QPSK100M_Ch650000_Duo Opus 75kbp_Radial (Y)

DUT: BFLF-WTW-P20120540

Communication System: UID 10866 - AAD, 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz); Frequency: 3750 MHz;Duty Cycle: 1:3.69
Medium: Air Medium parameters used: $\sigma = 0$ S/m, $\varepsilon_r = 1$; $\rho = 1$ kg/m^3
Ambient Temperature：23.8 ℃

DASY5 Configuration:
- Probe: AM1DV3 - 3060; ; Calibrated: 2021/01/20
- Sensor-Surface: 0mm (Fix Surface)
- Electronics: DAE4 Sn1277; Calibrated: 2021/01/19
- Phantom: HAC Test Arch with AMCC; Type: SD HAC P01 BA;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

T-Coil scan (scan for ANSI C63.19 compliance)/General Scans: Interpolated grid: dx=1.000 mm, dy=1.000 mm
ABM1/ABM2 = 52.57 dB
ABM1 comp = 3.00 dBA/m
Location: 10.5, -11.5, 3.7 mm



Appendix B. Calibration Certificate for Probe

The SPEAG calibration certificates are shown as follows.

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client **Auden**

Certificate No: AM1DV3-3067_Dec20

CALIBRATION CERTIFICATE

Object	AM1DV3 - SN: 3067
Calibration procedure(s)	QA CAL-24.v4 Calibration procedure for AM1D magnetic field probes and TMFS in the audio range
Calibration date:	December 15, 2020

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	07-Sep-20 (No. 28647)	Sep-21
Reference Probe AM1DV3	SN: 3000	13-Aug-20 (No. AM1DV3-3000_Aug20)	Aug-21
DAE4	SN: 781	27-Dec-19 (No. DAE4-781_Dec19)	Dec-20

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
AMCC	SN: 1050	01-Oct-13 (in house check Oct-20)	Oct-23
AMMI Audio Measuring Instrument	SN: 1062	26-Sep-12 (in house check Oct-20)	Oct-23

	Name	Function	Signature
Calibrated by:	Leif Klysner	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: December 15, 2020

References

[1] ANSI-C63.19-2007
American National Standard for Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids.

[2] ANSI-C63.19-2011
American National Standard, Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids.

[3] DASY5 manual, Chapter: Hearing Aid Compatibility (HAC) T-Coil Extension

Description of the AM1D probe

The AM1D Audio Magnetic Field Probe is a fully shielded magnetic field probe for the frequency range from 100 Hz to 20 kHz. The pickup coil is compliant with the dimensional requirements of [1+2]. The probe includes a symmetric low noise amplifier for the signal available at the shielded 3 pin connector at the side. Power is supplied via the same connector (phantom power supply) and monitored via the LED near the connector. The 7 pin connector at the end of the probe does not carry any signals, but determines the angle of the sensor when mounted on the DAE. The probe supports mechanical detection of the surface.
The single sensor in the probe is arranged in a tilt angle allowing measurement of 3 orthogonal field components when rotating the probe by 120° around its axis. It is aligned with the perpendicular component of the field, if the probe axis is tilted nominally 35.3° above the measurement plane, using the connector rotation and sensor angle stated below.
The probe is fully RF shielded when operated with the matching signal cable (shielded) and allows measurement of audio magnetic fields in the close vicinity of RF emitting wireless devices according to [1+2] without additional shielding.

Handling of the item

The probe is manufactured from stainless steel. In order to maintain the performance and calibration of the probe, it must not be opened. The probe is designed for operation in air and shall not be exposed to humidity or liquids. For proper operation of the surface detection and emergency stop functions in a DASY system, the probe must be operated with the special probe cup provided (larger diameter).

Methods Applied and Interpretation of Parameters

- *Coordinate System:* The AM1D probe is mounted in the DASY system for operation with a HAC Test Arch phantom with AMCC Helmholtz calibration coil according to [3], with the tip pointing to "southwest" orientation.
- *Functional Test:* The functional test preceding calibration includes test of Noise level RF immunity (1kHz AM modulated signal). The shield of the probe cable must be well connected. Frequency response verification from 100 Hz to 10 kHz.
- *Connector Rotation:* The connector at the end of the probe does not carry any signals and is used for fixation to the DAE only. The probe is operated in the center of the AMCC Helmholtz coil using a 1 kHz magnetic field signal. Its angle is determined from the two minima at nominally +120° and –120° rotation, so the sensor in the tip of the probe is aligned to the vertical plane in z-direction, corresponding to the field maximum in the AMCC Helmholtz calibration coil.
- *Sensor Angle:* The sensor tilting in the vertical plane from the ideal vertical direction is determined from the two minima at nominally +120° and –120°. DASY system uses this angle to align the sensor for radial measurements to the x and y axis in the horizontal plane.
- *Sensitivity:* With the probe sensor aligned to the z-field in the AMCC, the output of the probe is compared to the magnetic field in the AMCC at 1 kHz. The field in the AMCC Helmholtz coil is given by the geometry and the current through the coil, which is monitored on the precision shunt resistor of the coil.

AM1D probe identification and configuration data

Item	**AM1DV3** Audio Magnetic 1D Field Probe
Type No	SP AM1 001 BA
Serial No	**3067**

Overall length	296 mm
Tip diameter	6.0 mm (at the tip)
Sensor offset	3.0 mm (centre of sensor from tip)
Internal Amplifier	20 dB

Manufacturer / Origin	Schmid & Partner Engineering AG, Zurich, Switzerland

Calibration data

Connector rotation angle	(in DASY system)	**265.5 °**	+/- 3.6 ° (k=2)
Sensor angle	(in DASY system)	**0.62 °**	+/- 0.5 ° (k=2)
Sensitivity at 1 kHz	(in DASY system)	**0.00738 V/(A/m)**	+/- 2.2 % (k=2)

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client B.V.ADT (Auden)

Certificate No: **AM1DV3-3139_Sep20**

CALIBRATION CERTIFICATE

Object: AM1DV3 - SN: 3139

Calibration procedure(s): QA CAL-24.v4
Calibration procedure for AM1D magnetic field probes and TMFS in the audio range

Calibration date: September 21, 2020

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	07-Sep-20 (No. 28647)	Sep-21
Reference Probe AM1DV2	SN: 1008	10-Dec-19 (No. AM1DV2-1008_Dec19)	Dec-20
DAE4	SN: 781	27-Dec-19 (No. DAE4-781_Dec19)	Dec-20

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
AMCC	SN: 1050	01-Oct-13 (in house check Oct-17)	Oct-20
AMMI Audio Measuring Instrument	SN: 1062	26-Sep-12 (in house check Oct-17)	Oct-20

	Name	Function	Signature
Calibrated by:	Leif Klysner	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: September 21, 2020

References

[1] ANSI-C63.19-2007
American National Standard for Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids.

[2] ANSI-C63.19-2011
American National Standard, Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids.

[3] DASY5 manual, Chapter: Hearing Aid Compatibility (HAC) T-Coil Extension

Description of the AM1D probe

The AM1D Audio Magnetic Field Probe is a fully shielded magnetic field probe for the frequency range from 100 Hz to 20 kHz. The pickup coil is compliant with the dimensional requirements of [1+2]. The probe includes a symmetric low noise amplifier for the signal available at the shielded 3 pin connector at the side. Power is supplied via the same connector (phantom power supply) and monitored via the LED near the connector. The 7 pin connector at the end of the probe does not carry any signals, but determines the angle of the sensor when mounted on the DAE. The probe supports mechanical detection of the surface.
The single sensor in the probe is arranged in a tilt angle allowing measurement of 3 orthogonal field components when rotating the probe by 120° around its axis. It is aligned with the perpendicular component of the field, if the probe axis is tilted nominally 35.3° above the measurement plane, using the connector rotation and sensor angle stated below.
The probe is fully RF shielded when operated with the matching signal cable (shielded) and allows measurement of audio magnetic fields in the close vicinity of RF emitting wireless devices according to [1+2] without additional shielding.

Handling of the item

The probe is manufactured from stainless steel. In order to maintain the performance and calibration of the probe, it must not be opened. The probe is designed for operation in air and shall not be exposed to humidity or liquids. For proper operation of the surface detection and emergency stop functions in a DASY system, the probe must be operated with the special probe cup provided (larger diameter).

Methods Applied and Interpretation of Parameters

- *Coordinate System:* The AM1D probe is mounted in the DASY system for operation with a HAC Test Arch phantom with AMCC Helmholtz calibration coil according to [3], with the tip pointing to "southwest" orientation.
- *Functional Test:* The functional test preceding calibration includes test of Noise level RF immunity (1kHz AM modulated signal). The shield of the probe cable must be well connected. Frequency response verification from 100 Hz to 10 kHz.
- *Connector Rotation:* The connector at the end of the probe does not carry any signals and is used for fixation to the DAE only. The probe is operated in the center of the AMCC Helmholtz coil using a 1 kHz magnetic field signal. Its angle is determined from the two minima at nominally +120° and –120° rotation, so the sensor in the tip of the probe is aligned to the vertical plane in z-direction, corresponding to the field maximum in the AMCC Helmholtz calibration coil.
- *Sensor Angle:* The sensor tilting in the vertical plane from the ideal vertical direction is determined from the two minima at nominally +120° and –120°. DASY system uses this angle to align the sensor for radial measurements to the x and y axis in the horizontal plane.
- *Sensitivity:* With the probe sensor aligned to the z-field in the AMCC, the output of the probe is compared to the magnetic field in the AMCC at 1 kHz. The field in the AMCC Helmholtz coil is given by the geometry and the current through the coil, which is monitored on the precision shunt resistor of the coil.

AM1D probe identification and configuration data

Item	**AM1DV3** Audio Magnetic 1D Field Probe
Type No	SP AM1 001 BA
Serial No	**3139**

Overall length	296 mm
Tip diameter	6.0 mm (at the tip)
Sensor offset	3.0 mm (centre of sensor from tip)
Internal Amplifier	20 dB

Manufacturer / Origin	Schmid & Partner Engineering AG, Zurich, Switzerland

Calibration data

Connector rotation angle	(in DASY system)	**8.8 °**	+/- 3.6 ° (k=2)
Sensor angle	(in DASY system)	**0.33 °**	+/- 0.5 ° (k=2)
Sensitivity at 1 kHz	(in DASY system)	**0.00735 V/(A/m)**	+/- 2.2 % (k=2)

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

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Accreditation No.: SCS 0108

Client **B.V. ADT (Auden)** **Certificate No: AM1DV3-3060_Jan21**

CALIBRATION CERTIFICATE

Object: AM1DV3 - SN: 3060

Calibration procedure(s): QA CAL-24.v4
Calibration procedure for AM1D magnetic field probes and TMFS in the audio range

Calibration date: January 20, 2021

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Keithley Multimeter Type 2001	SN: 0810278	07-Sep-20 (No. 28647)	Sep-21
Reference Probe AM1DV2	SN: 1008	15-Dec-20 (No. AM1DV2-1008_Dec20)	Dec-21
DAE4	SN: 781	23-Dec-20 (No. DAE4-781_Dec20)	Dec-21

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
AMCC	SN: 1050	01-Oct-13 (in house check Oct-20)	Oct-23
AMMI Audio Measuring Instrument	SN: 1062	26-Sep-12 (in house check Oct-20)	Oct-23

	Name	Function	Signature
Calibrated by:	Leif Klysner	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 25, 2021

References

[1] ANSI-C63.19-2007
American National Standard for Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids.

[2] ANSI-C63.19-2011
American National Standard, Methods of Measurement of Compatibility between Wireless Communications Devices and Hearing Aids.

[3] DASY5 manual, Chapter: Hearing Aid Compatibility (HAC) T-Coil Extension

Description of the AM1D probe

The AM1D Audio Magnetic Field Probe is a fully shielded magnetic field probe for the frequency range from 100 Hz to 20 kHz. The pickup coil is compliant with the dimensional requirements of [1+2]. The probe includes a symmetric low noise amplifier for the signal available at the shielded 3 pin connector at the side. Power is supplied via the same connector (phantom power supply) and monitored via the LED near the connector. The 7 pin connector at the end of the probe does not carry any signals, but determines the angle of the sensor when mounted on the DAE. The probe supports mechanical detection of the surface.
The single sensor in the probe is arranged in a tilt angle allowing measurement of 3 orthogonal field components when rotating the probe by 120° around its axis. It is aligned with the perpendicular component of the field, if the probe axis is tilted nominally 35.3° above the measurement plane, using the connector rotation and sensor angle stated below.
The probe is fully RF shielded when operated with the matching signal cable (shielded) and allows measurement of audio magnetic fields in the close vicinity of RF emitting wireless devices according to [1+2] without additional shielding.

Handling of the item

The probe is manufactured from stainless steel. In order to maintain the performance and calibration of the probe, it must not be opened. The probe is designed for operation in air and shall not be exposed to humidity or liquids. For proper operation of the surface detection and emergency stop functions in a DASY system, the probe must be operated with the special probe cup provided (larger diameter).

Methods Applied and Interpretation of Parameters

- *Coordinate System:* The AM1D probe is mounted in the DASY system for operation with a HAC Test Arch phantom with AMCC Helmholtz calibration coil according to [3], with the tip pointing to "southwest" orientation.
- *Functional Test:* The functional test preceding calibration includes test of Noise level RF immunity (1kHz AM modulated signal). The shield of the probe cable must be well connected. Frequency response verification from 100 Hz to 10 kHz.
- *Connector Rotation:* The connector at the end of the probe does not carry any signals and is used for fixation to the DAE only. The probe is operated in the center of the AMCC Helmholtz coil using a 1 kHz magnetic field signal. Its angle is determined from the two minima at nominally +120° and –120° rotation, so the sensor in the tip of the probe is aligned to the vertical plane in z-direction, corresponding to the field maximum in the AMCC Helmholtz calibration coil.
- *Sensor Angle:* The sensor tilting in the vertical plane from the ideal vertical direction is determined from the two minima at nominally +120° and –120°. DASY system uses this angle to align the sensor for radial measurements to the x and y axis in the horizontal plane.
- *Sensitivity:* With the probe sensor aligned to the z-field in the AMCC, the output of the probe is compared to the magnetic field in the AMCC at 1 kHz. The field in the AMCC Helmholtz coil is given by the geometry and the current through the coil, which is monitored on the precision shunt resistor of the coil.

AM1D probe identification and configuration data

Item	**AM1DV3** Audio Magnetic 1D Field Probe
Type No	SP AM1 001 BA
Serial No	**3060**

Overall length	296 mm
Tip diameter	6.0 mm (at the tip)
Sensor offset	3.0 mm (centre of sensor from tip)
Internal Amplifier	20 dB

Manufacturer / Origin	Schmid & Partner Engineering AG, Zurich, Switzerland

Calibration data

Connector rotation angle	(in DASY system)	**52.3 °**	+/- 3.6 ° (k=2)
Sensor angle	(in DASY system)	**0.30 °**	+/- 0.5 ° (k=2)
Sensitivity at 1 kHz	(in DASY system)	**0.00732 V/(A/m)**	+/- 2.2 % (k=2)

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Appendix C. Photographs of EUT and Setup

The photographs of EUT and setup for HAC measurement are shown as follows.