

TEST REPORT

Report Number: 15496278-E9V2

Applicant : APPLE INC.
1 APPLE PARK WAY
CUPERTINO, CA 95014, U.S.A.

Model : A3519, A3520, A3521

Brand : APPLE

FCC ID : BCG-E8951A
BCG-E8952A, BCG-E8953A

IC : 579C-E8951A
579C-E8952A, 579C-E8953A

EUT Description : SMARTPHONE

Test Standard(s) : FCC 47 CFR PART 15 SUBPART E
ISED RSS-248 Issue 3
ISED RSS-GEN Issue 5 + A1 + A2

Date Of Issue:
2025-08-22

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REPORT REVISION HISTORY

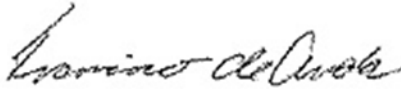
Rev.	Issue Date	Revisions	Revised By
V1	2025-08-07	Initial Review	---
V2	2025-08-22	Address TCB questions	Jordan Bailey

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1. ATTESTATION OF TEST RESULTS

Applicant Name and Address	APPLE INC. 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A.
Model	A3519, A3520, A3521
Brand	APPLE
FCC ID	BCG-E8951A BCG-E8952A, BCG-E8953A
IC	579C-E8951A 579C-E8952A, 579C-E8953A
EUT Description	SMARTPHONE
Serial Number	J6HHH8001910000YAAQ (Conducted) FG212CMC6M (Radiated) J6HHH5000210000WEZ (Conducted) J3XKVHG144 (Radiated)
Sample Receipt Date	2025/02/28
Date Tested	2025/04/01 to 2025/08/22
Applicable Standards	CFR 47 Part 15 Subpart E ISED RSS-248 Issue 3 ISED RSS-GEN Issue 5 + A1 + A2
Test Results	COMPLIES
UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested can demonstrate compliance with the requirements as documented in this report. The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not considered unless noted otherwise. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document	
Approved & Released By:	Prepared & Reviewed By:
	
Francisco de Anda Staff Engineer UL Verification Services, Inc.	Jordan Bailey & Glenn Escano Laboratory Engineer & Senior Test Engineer UL Verification Services, Inc.

2. TEST RESULT SUMMARY

This report contains data provided by the customer which can impact the validity of results. UL Verification Services Inc. is only responsible for correctly integrating customer-provided data with measurements performed by UL Verification Services Inc.

Below is a list of the data provided by the customer:

1. Antenna gain and type (see section 6.3)
2. Cable loss (see section 6.3)

Requirement Description	Requirement Clause Number (FCC)	Requirement Clause Number (ISED)	Result	Comment
Duty Cycle	See Comment		Reporting purposes only	ANSI C63.10 Section 12.2
99% BW	§15.407 (a) (11) KDB 987594	RSS-248 4.4 D03 v02 Q18	Compliant	ANSI C63.10 Section 6.9.3
26dB BW				
Output Power EIRP	§15.407 (a) (7), (8), (9)	RSS-248 4.5.3, 4.5.5, 4.5.6	Compliant	Dual Client
PSD EIRP	§15.407 (a) (7), (8), (9)	RSS-248 4.5.3, 4.5.5, 4.5.6	Compliant	Dual Client
Emissions outside 5.925-7.125 GHz band	§15.407 (b) (6) (7)	RSS-248 4.6.2(a)	Compliant	None
Emissions within 5.925-7.125 GHz Band (Emissions Mask)	§15.407 (b) (7)	RSS-248 4.6.2(b)	Compliant	None
Unwanted emissions in restricted bands	§15.205	RSS-GEN 8.10	Compliant	None
Radiated Spurious Emissions	§15.209	RSS-GEN 8.9	Compliant	None
AC Mains Conducted Emissions	§15.207	RSS-GEN 8.8	Compliant	None
Transmit Power Control Mechanism	§15.407 (d) (10)	RSS-248 4.5.6	Compliant	Very Low Power Device

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with:

- *ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024
- FCC 47 CFR Part 2
- FCC 47CFR Part 15
- FCC KDB 414788 D01 Radiated Test Site
- FCC KDB 662911 D01 Multiple Transmitter Output
- FCC KDB 789033 D02 General UNII Test Procedures New Rules
- FCC KDB 987594 D01 General Requirements
- FCC KDB 987594 D02 EMC Measurement
- RSS-248 Issue 3
- RSS-GEN Issue 5 + A1 +A2

*Note: The use of ANSI C63.10-2020 + Cor. 1-2023 + C63.10a-2024 does not deviate from the testing procedures of ANSI C63.10-2020

4. FACILITIES AND ACCREDITATION

UL Verification Services Inc. is accredited by A2LA, certification #0751.05, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
☒	Building 1: 47173 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	550739
☒	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA			
☒	Building 3: 843 Auburn Court, Fremont, CA 94538, USA			
☒	Building 4: 47658 Kato Rd, Fremont, CA 94538, USA			
☒	Building 5: 47670 Kato Rd, Fremont, CA 94538, USA			

5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	U _{Lab}
Conducted Antenna Port Emission Measurement	1.940 dB
Power Spectral Density	2.466 dB
Time Domain Measurements Using SA	3.39 %
RF Power Measurement Direct Method Using Power Meter	0.450 dB (Ave) 1.300 dB (Peak)
Radio Frequency (Spectrum Analyzer)	141.16 Hz
Occupied Bandwidth	1.22%
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.78 db
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.40 db
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.87 db
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 db
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 db
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 db
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.29 db

Uncertainty figures are valid to a confidence level of 95%.

5.4. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
 $36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.
 $36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} = 46.6 \text{ dBuV}$

6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The Apple iPhone is a smartphone with cellular GSM, GPRS, EGPRS, WCDMA, LTE, 5G NR1, IEEE 802.11a/b/g/n/ac/ax/be, Bluetooth (BT), Ultra-Wideband (UWB), Global Positioning System (GPS), Near-Field Communication (NFC), Narrow-Band (NB) UNII, 802.15.4, 802.15.4ab-Narrow Band (NB), Wireless Power Transfer (WPT) and Mobile Satellite Service (MSS) technologies. The rechargeable battery is not user accessible. This device is not user-serviceable and requires special tools to disassemble.

This report covers the UNII-5 NB, which operates in the frequency range of 6106-6420MHz, equipped with VLP client device.

6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum EIRP output power as follows:

UNII-5 Frequency Range (MHz)	Mode	Antenna	Configuration	Output Power EIRP (dBm)	Output Power EIRP (mW)
6106 -6420	BDR	Ant 6	High Power	-6.01	0.25
			Low Power	-6.02	0.25
		Ant 5	High Power	-6.17	0.24
			Low Power	-6.15	0.24
		BF, Ant 6 + Ant 5	High Power	-6.25	0.24
			Low Power	-6.24	0.24
6106 -6420	LE1M	Ant 6	High Power	-5.79	0.26
			Low Power	-5.78	0.26
		Ant 5	High Power	-5.91	0.26
			Low Power	-5.91	0.26
		BF, Ant 6 + Ant 5	High Power	-5.71	0.27
			Low Power	-5.75	0.27
6106 -6420	LE2M	Ant 6	High Power	-5.06	0.31
			Low Power	-5.00	0.32
		Ant 5	High Power	-4.92	0.32
			Low Power	-4.9	0.32
		BF, Ant 6 + Ant 5	High Power	-4.96	0.32
			Low Power	-4.96	0.32
6106 -6420	HDT4	Ant 6	High Power	-3.53	0.44
			Low Power	-3.60	0.44
		Ant 5	High Power	-3.4	0.46
			Low Power	-3.41	0.46
		BF, Ant 6 + Ant 5	High Power	-3.48	0.45
			Low Power	-3.46	0.45
6106 -6420	HDR4	Ant 6	High Power	-3.75	0.42
			Low Power	-3.75	0.42
		Ant 5	High Power	-3.91	0.41
			Low Power	-3.91	0.41
		BF, Ant 6 + Ant 5	High Power	-3.71	0.43
			Low Power	-3.76	0.42
6107 -6420	XHDRPM8	Ant 6	High Power	-1.03	0.79
			Low Power	-1.00	0.79
		Ant 5	High Power	-0.93	0.81
			Low Power	-3.4	0.46
		BF, Ant 6 + Ant 5	High Power	-1.01	0.79
			Low Power	-0.99	0.80
6107 -6420	HDRPM12	Ant 6	High Power	-1	0.79
			Low Power	-1.01	0.79
		Ant 5	High Power	-0.92	0.81
			Low Power	-6.42	0.23
		BF, Ant 6 + Ant 5	High Power	-0.96	0.80
			Low Power	-0.96	0.80
6109 -6417	HDRPL8	Ant 6	High Power	2	1.58
			Low Power	1.99	1.58
		Ant 5	High Power	2.03	1.60
			Low Power	-3.41	0.46
		BF, Ant 6 + Ant 5	High Power	2.01	1.59
			Low Power	2.02	1.59

6.3. DESCRIPTION OF AVAILABLE ANTENNAS AND CABLE LOSS

The antenna(s) gain and type, cable loss as provided by the manufacturers are as follows:

Antenna Type is PIFA.

Frequency Range (MHz)	Sub-band (MHz)	Antenna 6 (dBi)	Antenna 5 (dBi)	Uncorrelated Chains (dBi)	Correlated Chains (dBi)
6105 - 6425 UNII-5	Sub-band 2 (6115 - 6255)	1.50	-2.40	-0.03	2.78
	Sub-band 3 (6275 - 6415)	1.20	-2.40	-0.24	2.60

Note: antenna C0 and antenna C1 indicated in power tune-up document pertain to Ant 6 and ANT 5 of this report respectively.

Cable: SMA

Cable Loss		
Frequency Range (MHz)	Antenna 6 (dBi)	Antenna 5 (dBi)
5925-6105	2.37	2.53
6105-6265	2.52	2.55
6265-6425	2.60	2.93

Cable loss used for RF antenna port tests was included in offset of the test equipment during testing.

6.4. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was 23A258.

6.5. WORST-CASE CONFIGURATION AND MODE

This report is to document the very low power client mode only.

The fundamental of the EUT was investigated in three orthogonal orientations X, Y, and Z. It was determined that Z (Portrait) orientation was worst-case orientation for ANT6 and ANT5 and Z (Portrait) was the worst-case orientation for 2TX.

For the radiated bandedge testing, we investigated and found that there were no emissions at both lower and upper bandedges.

For the radiation spurious harmonics testing, investigated both SISO and MIMO modes under low power and high power, and only report the high power mode, as this represents the worst case.

For radiated harmonics spurious below 1GHz, 1-18GHz L/M/H channels, 18-26GHz, 26-40GHz and power line conducted emissions were performed with the EUT set at the 2TX BF at high power mode with power setting equal or higher than SISO modes as worst-case scenario.

Below 1GHz tests were performed with EUT connected to AC power adapter as the worst case; and for above 1GHz tests, the worst-case configuration reported was with EUT only. There were no emissions found below 30MHz within 20dB of the limit. For AC line conducted emission, test was investigated with AC power adapter and with laptop.

After the investigation, the worst case of power and PSD modes selecting for test are as table shown below.

UNII-5					
Mode	BW (MHz)	Modulation	Frequency Range (MHz)	Worst Case Tone	
				Power	PSD
BT5G	1MHz	BDR	6106-6420	X	X
	1.5MHz	EDR	6106-6420		
LE	1MHz	LE Adv	6106-6420		
		LE1M		X	X
		LELR125k			
		LELR500k			
	2MHz	LE2M	6106-6420	X	X
	2.5MHz	HDT2	6106-6420		
		HDT3			
		HDT4		X	X
		HDT6			
		HDT8			
HDR	2.5MHz	HDR4	6106-6420	X	X
		HDRPS2			
		XHDRPS2			
	5MHz	HDR8	6107-6420		
		HDRPM4			
		HDRPM6			
		HDRPM8			
		XHDRPM4			
		XHDRPM6			
		XHDRPM8		X	
		HDRPM12			X
		HDRPM16			
		XHDRPM12			
		XHDRPM16			
	9MHz	HDRPL8	6109-6417	X	X
		HDRPL12			
		HDRPL16			
		XHDRPL8			
		XHDRPL12			
		XHDRPL16			
		HDRPL24			
		HDRPL32			
		XHDRPL24			
		XHDRPL32			

6.5.1. REUSE STATEMENT AND COMPARISON TABLE

Compared with the reference model A3258 (FCC ID: BCG-E8947A and IC: 579C-E8947A), the variants A3519/A3520/A3521 tune up levels are decreased on ANT6 SISO mode /TxBF modes as shown in the table below.

MAXIMUM OUTPUT POWER DIFFERENCE			
Modes	SISO		TxBF
	ANT6	ANT5	
BDR	Different	*SAME	Different
BLE	Different	*SAME	Different
HDR	Different	*SAME	Different
*	Data re-use from A3258 has been applied to A3519/A3520/A3521 due to identical power.		

Due to the maximum output power differences, the following RF conducted tests (26dB and 99% Bandwidth, Output Power, PSD, and Emission Mask) were retested:

- BDR, BLE, HDR ANT6 SISO Low Power Mode
- BDR, BLE, HDR ANT6 SISO High Power Mode
- BDR, BLE, HDR TxBF Low Power Mode
- BDR, BLE, HDR TxBF High Power Mode

Bands	ANT6	ANT5
UNII-5B	HIGHER	*SAME
UNII-5C	HIGHER	*SAME

Radiated measurements are also reusing the reference model data for the antenna 5 SISO modes supported by spotchecks in Appendix A. Radiated measurements are repeated in full on the variant model for the band edge and spurious emissions in the 1 – 18GHz frequency range for the antenna 6 SISO modes and for the MIMO modes. After investigation, it was confirmed that the emissions remained the same as those for the reference model and were either below the noise floor (above 18GHz) or were limited to non-transmitter-related emissions (below 1GHz).

VLP TPC test data references the power measurements from FCC ID BCG-E8947A and IC ID 579C-E8947A at low and high RSSI levels and applies the delta to the variant models' EIRP PSD values to show that the output power is capable of dropping below -11dBm/MHz.

Spotchecks to verify output power is the same for the variant model compared reference model is included in Appendix A.

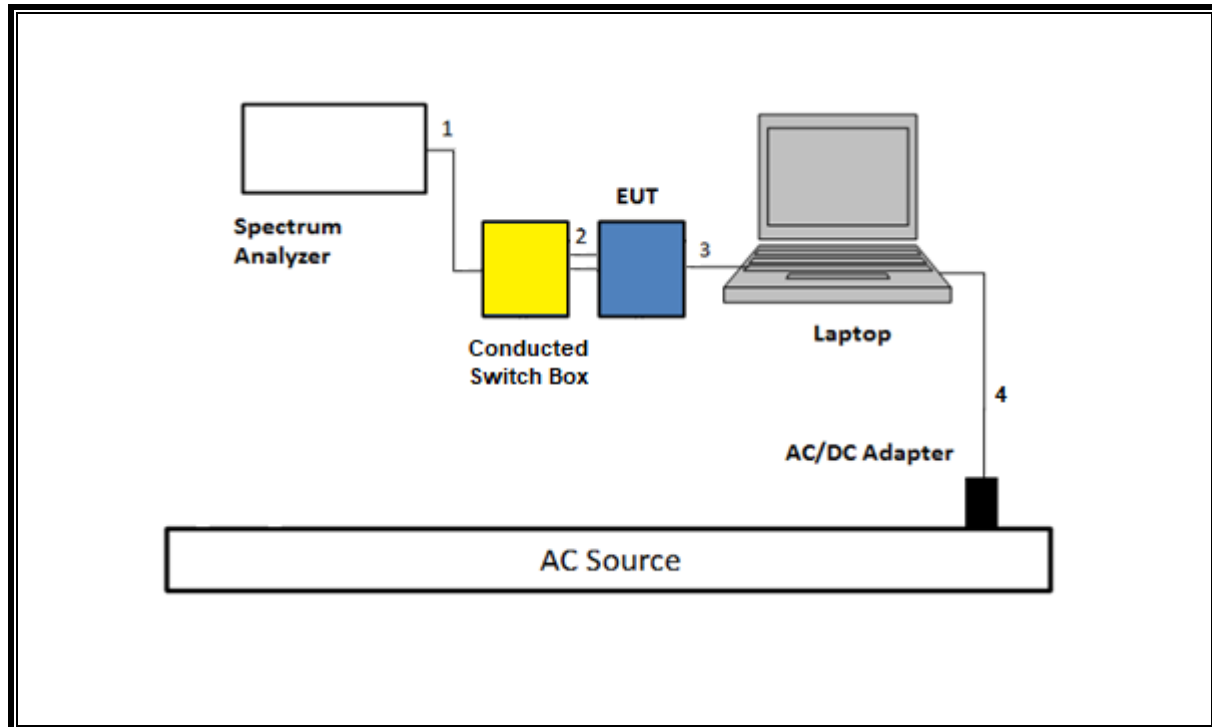
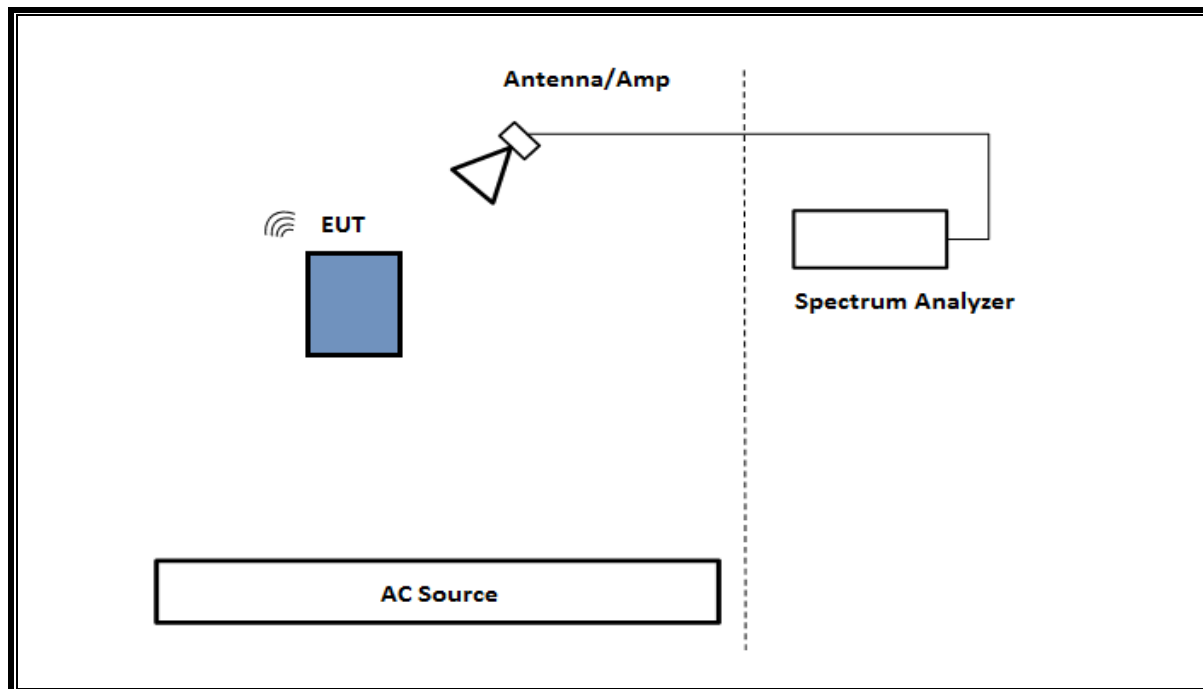
6.6. DESCRIPTION OF TEST SETUP

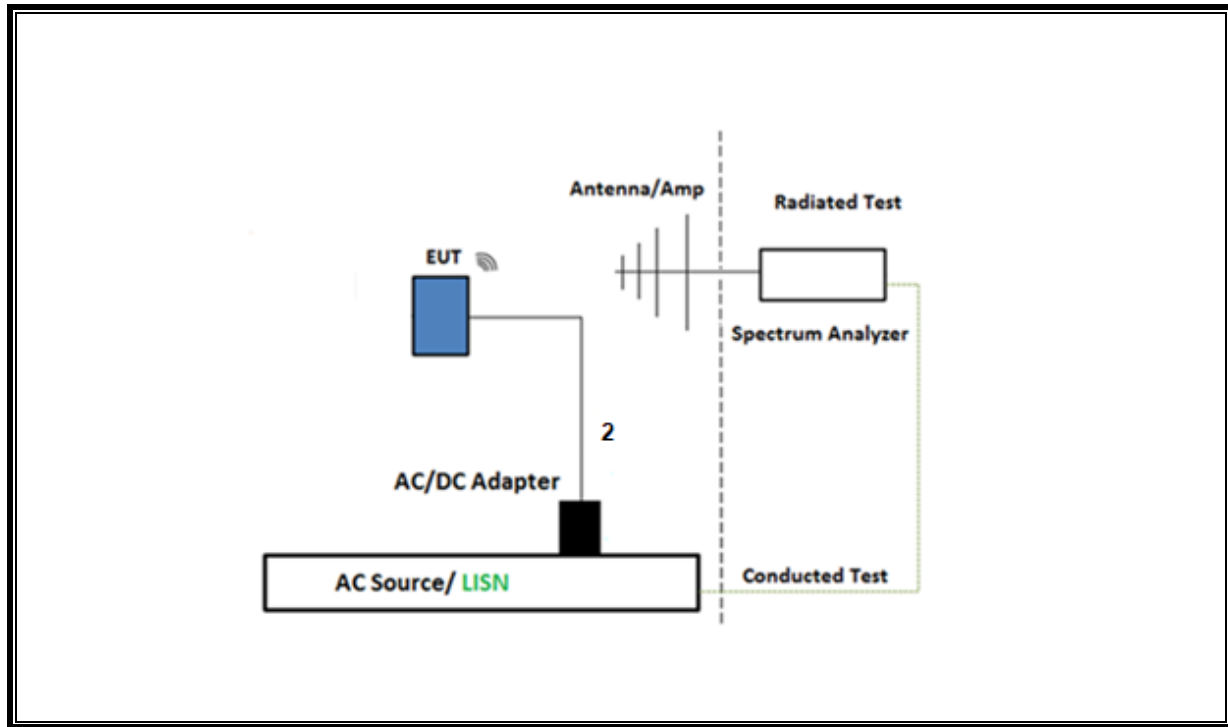
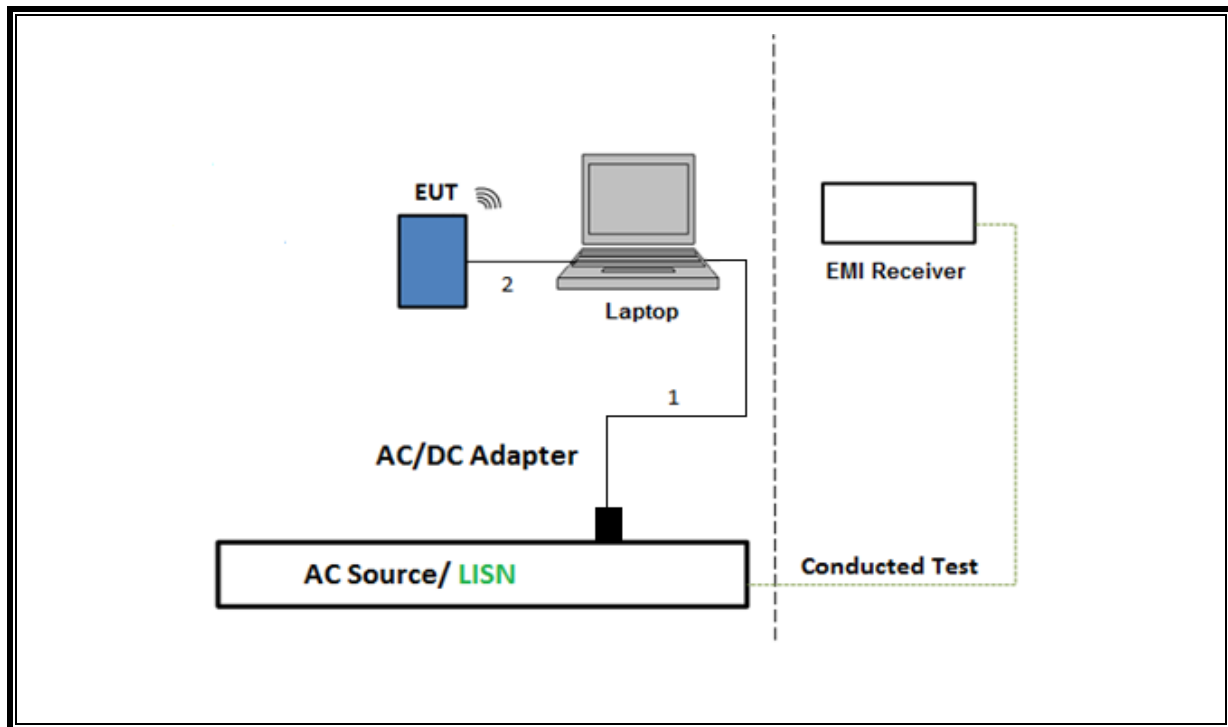
SUPPORT TEST EQUIPMENT						
Description		Manufacturer	Model	Serial Number		FCC ID/ DoC
Laptop		Apple	Macbook	G2YKJ9LWH5		N/A
Laptop AC/DC adapter		Apple	N/A	C4H238408AEPM0WAS		DoC
EUT AC/DC adapter		Apple	N/A	C4H238505ARPM0WAP		DoC
Conducted Switch Box		UL	N/A	245782		N/A
I/O CABLES (RF CONDUCTED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	SMA	1	SMA	Shielded	0.2	To spectrum Analyzer
2	Antenna	2	SMA	Shielded	0.2	EUT to Switchbox
3	USB	1	USB-C	Shielded	1.0	N/A
4	DC	1	DC	Shielded	2	N/A
I/O CABLES (RF RADIATED AND AC LINE CONDUCTED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC	1	DC	Shielded	2	N/A
2	USB	1	USB-C	Shielded	1	N/A
I/O CABLES (TPC CONDUCTED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	1	2-Prong	Un-shielded	1	DC to AC Mains
2	DC	1	DC	Shielded	1.5	N/A
3	USB-C	1	USB-C	Shielded	1.0	N/A
4	SMA	4	SMA	Shielded	0.75	To PXA, coupler, step attenuator and companion device

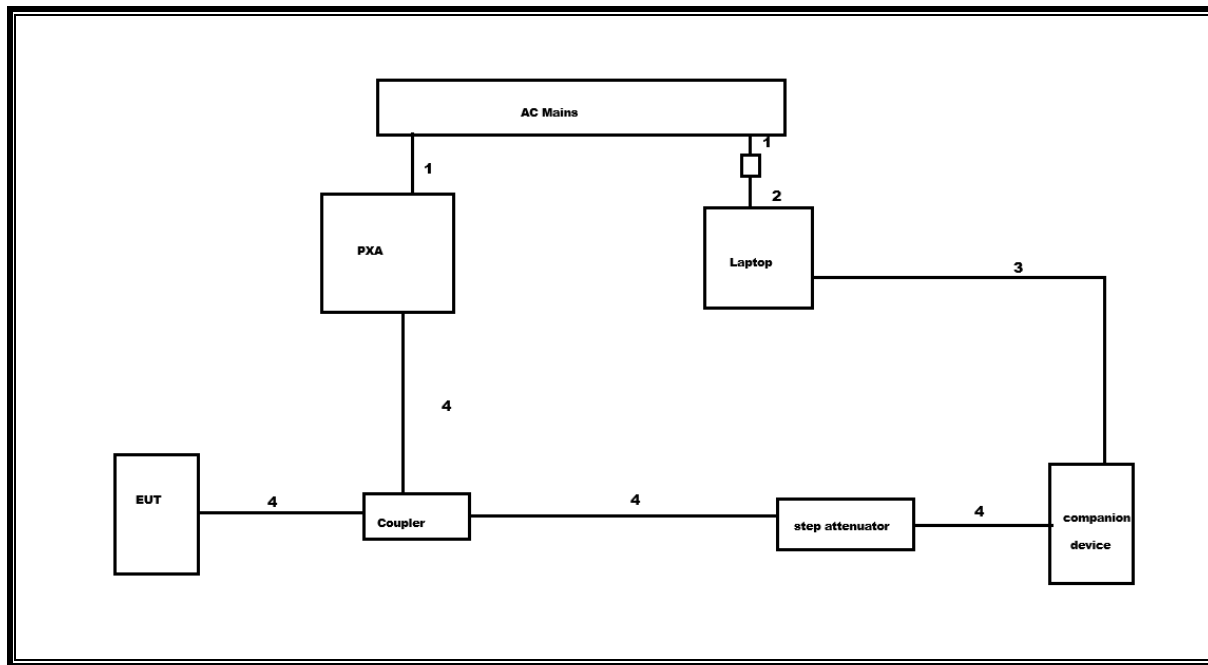
TEST SETUP

The EUT setup is shown as below. Test software exercised the radio card.

Note, For TPC test, companion device is same device type and model as the EUT and is used to establish a peer-to-peer link.

SETUP DIAGRAM FOR CONDUCTED TESTS**SETUP DIAGRAM FOR RADIATED TESTS Above 1 GHz**

SETUP DIAGRAM FOR Below 1GHz and AC LINE CONDUCTED TEST**TEST SETUP- AC LINE CONDUCTED: LAPTOP CONFIGURATION**

SETUP DIAGRAM FOR TPC TEST

7. MEASUREMENT METHOD

On Time and Duty Cycle: KDB 789033 D02, Section II-B.

26 dB Emission BW: KDB 789033 D02, Section II-C.

99% Occupied Bandwidth: KDB 789033 D02, Section II-D

Conducted Output Power: KDB 789033 D02, Section II E.3.b (Method PM-G).

Power Spectral Density (PSD): KDB 789033 D02, Section II- F

Spurious emissions within 5.925-7.125 GHz Band (Emissions Mask): KDB 987594 D02 EMC Measurement Section II-J

Unwanted emissions in restricted bands: KDB 789033 D02, Section II-G.3, G.4, G.5, and G.6.

Unwanted emissions in non-restricted bands: KDB 789033 D02, Section II- G.3, G.4, and G.5.

AC Power Line Conducted Emissions: ANSI C63.10-2020, Section 6.2.

Radiated Spurious Emissions Below 30MHz: ANSI C63.10-2020 Section 6.4

8. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	ID Num	Cal Due
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	80707	2026/6/30
RF Filter Box, 1-18GHz, 12 Port	UL-FR1	N/A	171875	2026/3/31
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	245268	2026/2/28
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	222740	2025/8/31
RF Filter Box, 1-18GHz, 12 Port	UL-FR1	Frankenstein	171389	2026/3/30
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	201497	2026/2/28
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	226672	2026/2/28
RF Filter Box, 1-18GHz, 12 Port.	UL-FR1	Frankenstein	231876	2026/4/30
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	223459	2026/2/27
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	226673	2026/2/28
Filter Box	UL-FR1	Frankenstein, 1 Amp, 12 Port	231874	2026/6/29
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	235670	2026/2/28
Antenna, Passive Loop, 30Hz - 1MHz	Electro-Metrics	EM-6871	170014	2025/08/31
Antenna, Passive Loop, 100kHz to 30MHz	Electro-Metrics	EM-6872	170016	2025/08/31
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	230310	2026/05/31
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	191428	2026/2/28
Amplifier 9 KHz - 1 GHz	SONOMA INSTRUMENT	310N	230311	2026/5/31
Antenna, Broadband Hybrid, 30MHz to 3GHz	Sunol Sciences Corp.	JB3	80813	2025/9/29
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	235670	2026/2/28
Antenna, Horn 18-26.5GHz	A.R.A.	MWH-1826/B	172353	2026/07/31
Link File, RF Amplifier Assembly, 18-26.5GHz, 60dB Gain	Amplical	AMP18G26.5-60	220194	2026/04/29
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	226078	2026/2/28
Spectrum Analyzer, PXA, 3Hz to 44GHz	N9030A	Keysight Technologies Inc	80398	2026/01/31
Spectrum Analyzer, PXA, 3Hz to 44GHz	N9030A	Keysight Technologies Inc	87738	2026/01/31
Conducted Switch Box	UL-FR1	CSB	262287	2026/04/30
Conducted Switch Box	UL-FR1	CSB	235783	2026/06/30
Power Meter, P-series single channel	Keysight Technologies Inc	N1911A	90715	2026/01/31
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Keysight Technologies Inc	N1921A	81319	2026/01/31
Antenna, Horn 26.5 to 40GHz	A.R.A.	MWH-2640/B	81105	2025-08-31
Link File, RF Amplifier Assembly, 26-40GHz, 65dB Gain	AMPLICAL	AMP26G40-65	172345	2026-05-31

AC Line Conducted				
Description	Manufacturer	Model	ID Num	Cal Due
EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESR	171646	2026-02-28
LISN for Conducted Emissions CISPR-16	Fischer Custom Communications	FCC-LISN-50/250-25-2-01-480V	175765	2026-01-31
Transient Limiter	TE	TBFL1	207996	2025-09-30
UL AUTOMATION SOFTWARE				
Conducted Software	UL	Antenna Port	Ver 2022.8.16, 2024.2.23	
Conducted Software	UL	Station Tool	Ver 5.3, 6.0, 6.1	
Radiated Software	UL	UL EMC	Ver 9.5, May 1 , 2023	
AC Line Conducted Software	UL	UL EMC	Ver 9.5, Mar 3, 2023	

TPC CONDUCTED TEST				
Description	Manufacturer	Model	ID Num	Cal Due
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight Technologies Inc	N9030A	80400	2026-01-31
Step Attenuator 70dB	HP	8495B	2406A01354	N/A
Directional Coupler	Pasternack Enterprises	PE2204-6	246270	2026-05-31

*Testing is completed before equipment expiration date.

9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

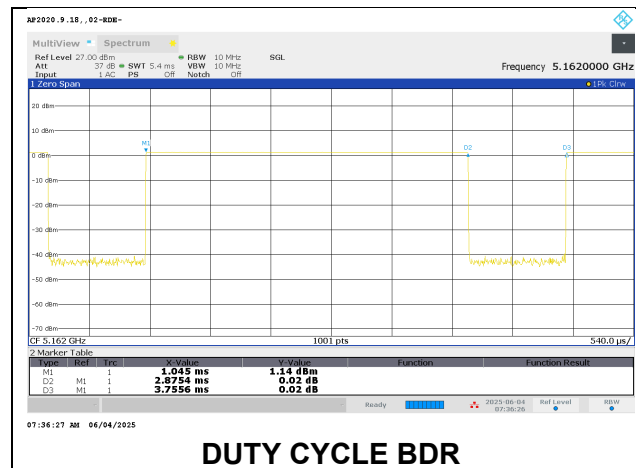
KDB 789033 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time T (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
BDR	2.88	3.76	0.765	76.5	1.16	0.348
LE1M	2.12	2.50	0.847	84.7	0.72	0.471
LE2M	1.05	1.87	0.560	56.0	2.52	0.954
HDT4	1.10	1.18	0.932	93.2	0.30	0.907
HDR4	2.92	3.75	0.778	77.8	1.09	0.343
XHDRPM8	8.08	8.75	0.924	92.4	0.34	0.124
HDRPL8	2.12	2.20	0.964	96.4	0.16	0.473
HDRPM12	2.34	2.50	0.934	93.4%	0.29	0.428

Note: The same DCCF is used for both 1TX and 2TX

DUTY CYCLE PLOTS



9.2. 26 dB AND 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

PROCEDURE

ANSI C63.10: 2020, Section 6.9.3

Worst-Case Mode	RBW (kHz)	VBW (kHz)
BDR	30	91
LE1M	30	91
LE2M	43	150
HDT4	43	150
HDR4	30	91
XHDRPM8	100	300
HDRPM12	100	300
HDRPL8	200	620

RESULTS

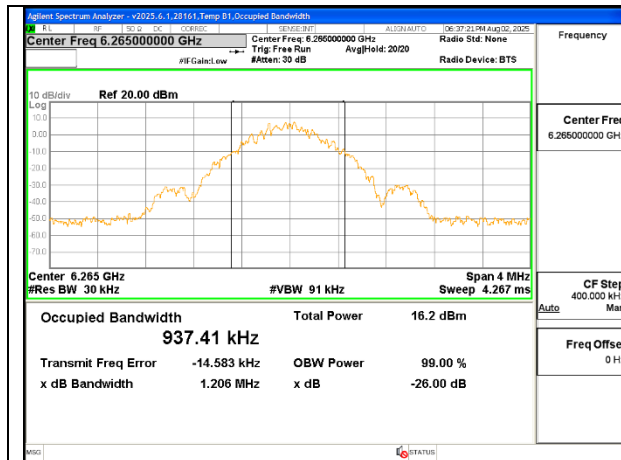
ID:	32181	Date:	2025-07-11 to 2025-08-02
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The plots in these sections are for reference settings only for different bandwidths and different antennas.

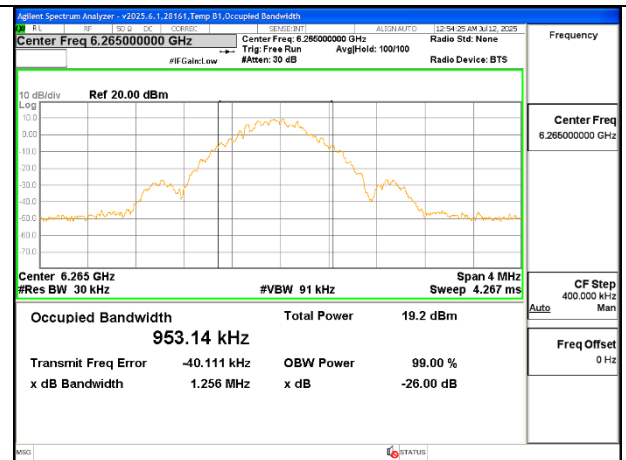
The tests performed on this device show that both 99% and 26dB bandwidths are less than 320 MHz. for all supported channel bandwidths.

9.2.1. UNII-5 BAND SISO MODE

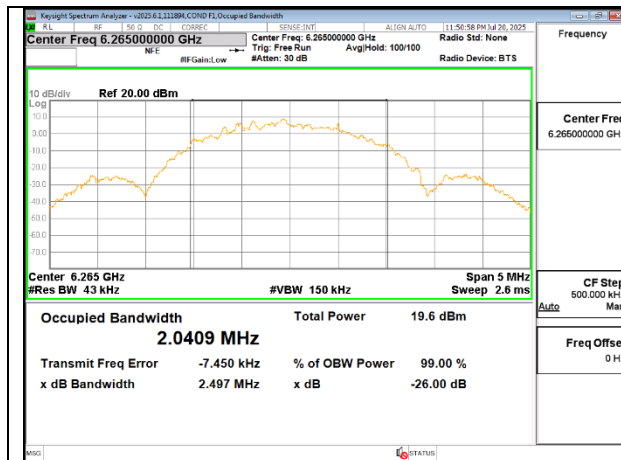
Worst-Case Mode (SISO)	Frequency (MHz)	Channel Number	26 dB Bandwidth (MHz)		99% Bandwidth (MHz)	
			Ant 6	Ant 5	Ant 6	Ant 5
BDR	6106	Low	1.255	1.249	0.95093	0.94499
	6265	Mid	1.206	1.199	0.93741	0.93467
	6420	High	1.260	1.228	0.95924	0.94584
LE1M	6106	Low	1.272	1.261	1.01580	0.94613
	6265	Mid	1.268	1.256	1.01380	0.95314
	6420	High	1.260	1.256	1.02160	0.94911
LE2M	6106	Low	2.510	2.499	2.0453	1.9079
	6265	Mid	2.497	2.413	2.0409	1.9239
	6420	High	2.495	2.412	2.0420	1.9186
HDT4	6106	Low	2.780	2.715	2.3668	2.3723
	6265	Mid	2.800	2.771	2.3699	2.3694
	6420	High	2.780	2.790	2.3681	2.3687
HDR4	6106	Low	2.704	2.672	2.3579	2.3352
	6265	Mid	2.676	2.725	2.3442	2.3508
	6420	High	2.776	2.724	2.3477	2.3440
XHDRPM8	6107	Low	5.630	5.620	4.7430	4.7456
	6265	Mid	5.630	5.337	4.7176	4.7228
	6420	High	5.680	5.590	4.7353	4.7451
HDRPM12	6107	Low	5.560	5.540	4.7121	4.7131
	6265	Mid	5.620	5.627	4.7226	4.7515
	6420	High	5.260	5.360	4.7109	4.7457
HDRPL8	6109	Low	11.19	10.56	9.4028	9.4242
	6265	Mid	10.70	10.71	9.4582	9.4154
	6417	High	11.10	11.10	9.4191	9.4940



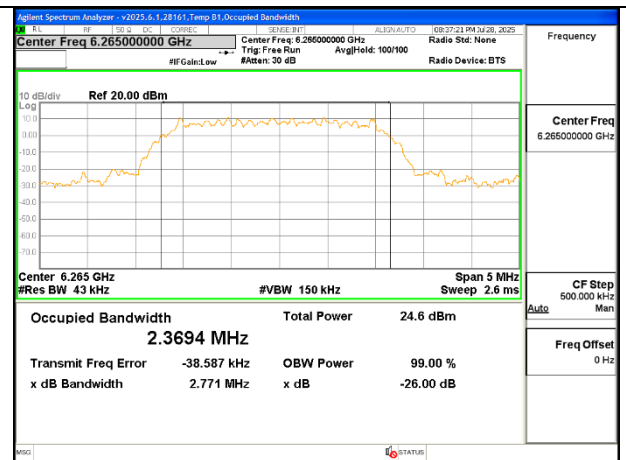
Mid Channel (UNII-5 BDR) – Ant 6



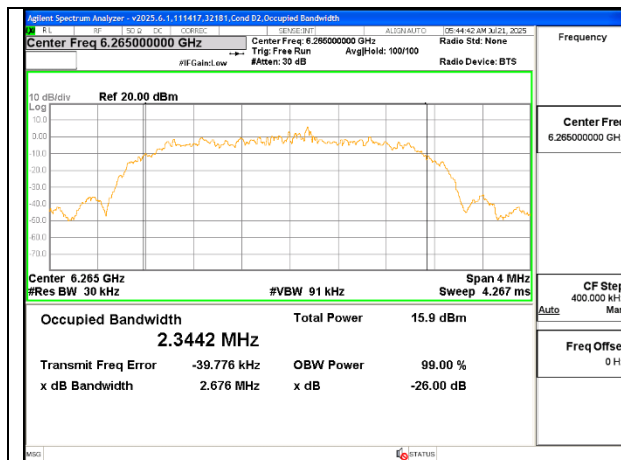
Mid Channel (UNII-5 LE1M) – Ant 5



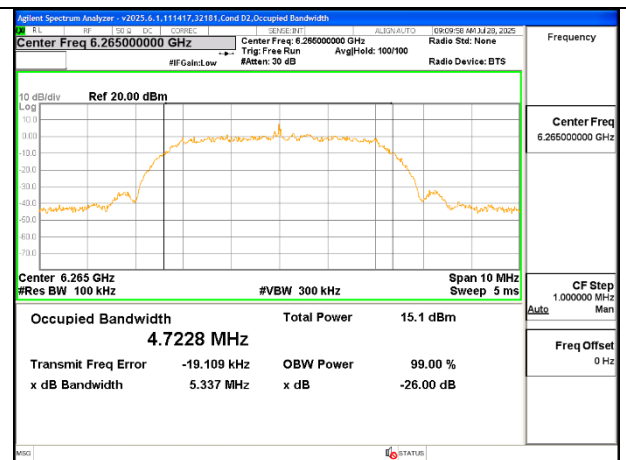
Mid Channel (UNII-5 LE2M) – Ant 6



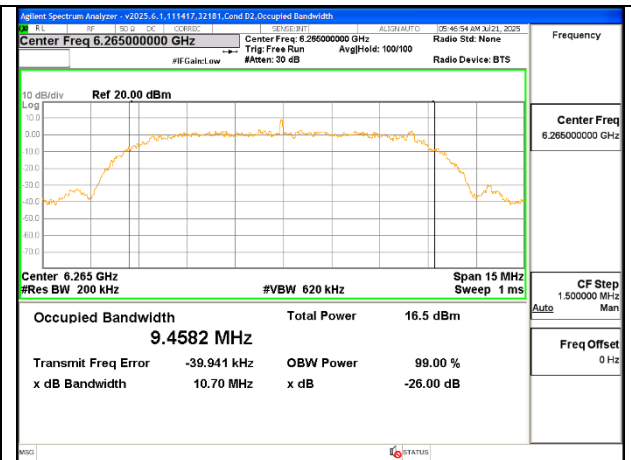
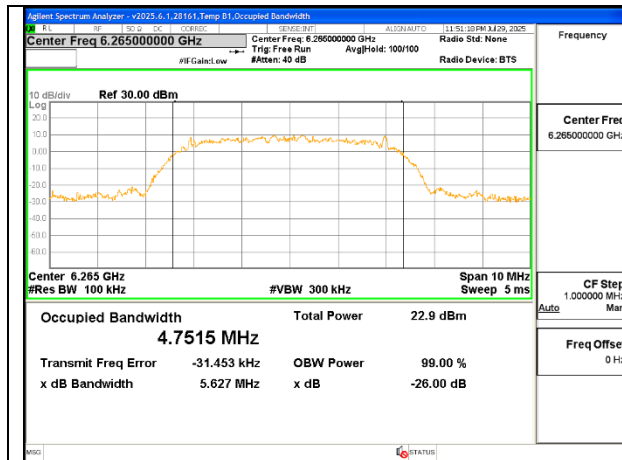
Mid Channel (UNII-5 HDT4) – Ant 5



Mid Channel (UNII-5 HDR4) – Ant 6

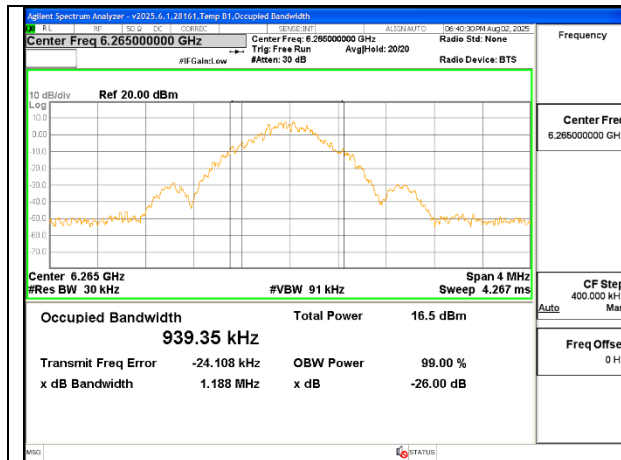


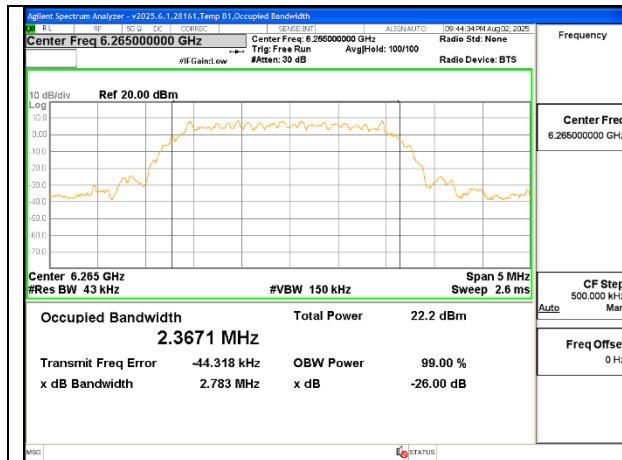
Mid Channel (UNII-5 XHDRPM8) – Ant 5



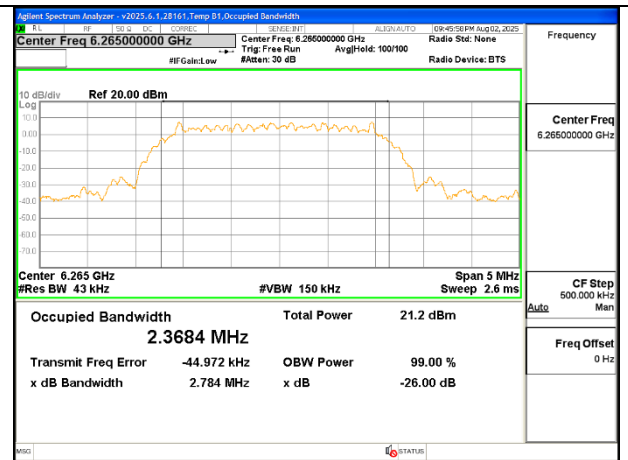
9.2.2. UNII-5 BAND MIMO TXBF MODE

Worst-Case Mode (TxBF)	Frequency (MHz)	Channel Number	26 dB Bandwidth (MHz)		99% Bandwidth (MHz)	
			Ant 6	Ant 5	Ant 6	Ant 5
BDR	6106	Low	1.245	1.265	0.93454	0.94258
	6265	Mid	1.188	1.251	0.93935	0.95390
	6420	High	1.195	1.255	0.94863	0.94364
LE1M	6106	Low	1.264	1.264	1.01760	1.02120
	6265	Mid	1.264	1.259	1.02490	1.01920
	6420	High	1.264	1.272	1.01530	1.01350
LE2M	6106	Low	2.490	2.495	2.0215	2.0300
	6265	Mid	2.506	2.498	2.0451	2.0473
	6420	High	2.485	2.515	2.0488	2.0420
HDT4	6106	Low	2.780	2.780	2.3707	2.3632
	6265	Mid	2.783	2.784	2.3671	2.3684
	6420	High	2.755	2.795	2.3672	2.3708
HDR4	6106	Low	2.688	2.788	2.3526	2.3398
	6265	Mid	2.713	2.679	2.3392	2.3420
	6420	High	2.748	2.776	2.3536	2.3478
XHDRPM8	6107	Low	5.630	5.590	4.7415	4.7285
	6265	Mid	5.557	5.358	4.7362	4.7299
	6420	High	5.690	5.580	4.7473	4.7388
HDRPM12	6107	Low	5.540	5.450	4.7101	4.7044
	6265	Mid	5.356	5.547	4.7262	4.7310
	6420	High	5.350	5.490	4.7037	4.7046
HDRPL8	6109	Low	11.21	11.18	9.4380	9.4223
	6265	Mid	11.16	11.12	9.4536	9.4424
	6417	High	11.10	11.09	9.4428	9.3830

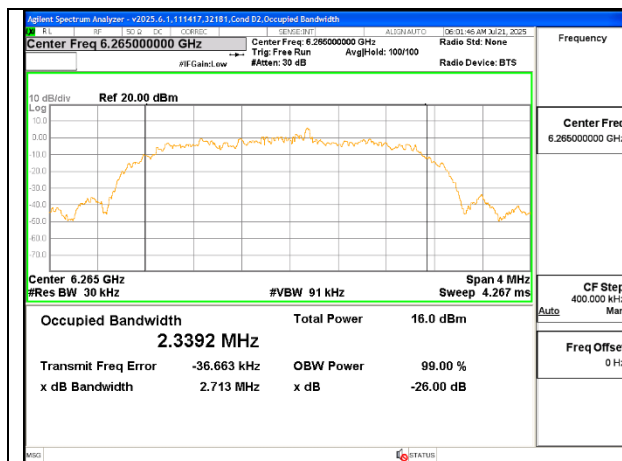




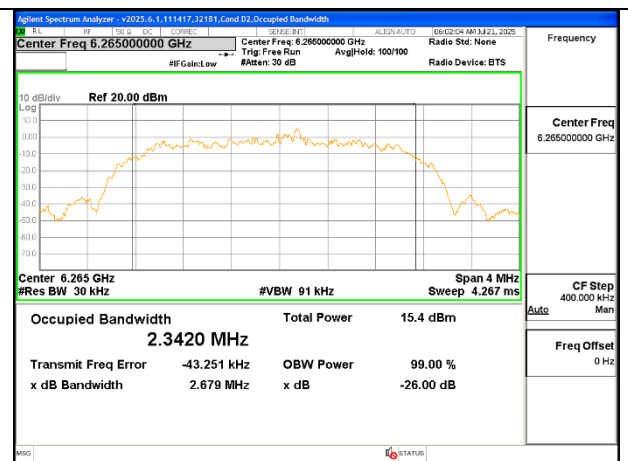
Mid Channel (UNII-5 HDT4) – Ant 6



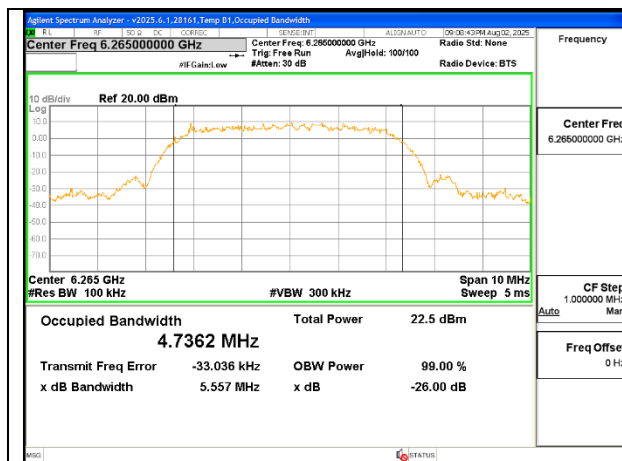
Mid Channel (UNII-5 HDT4) – Ant 5



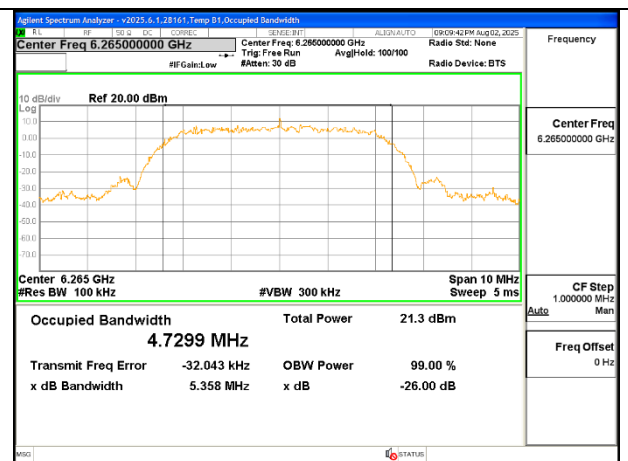
Mid Channel (UNII-5 HDR4) – Ant 6



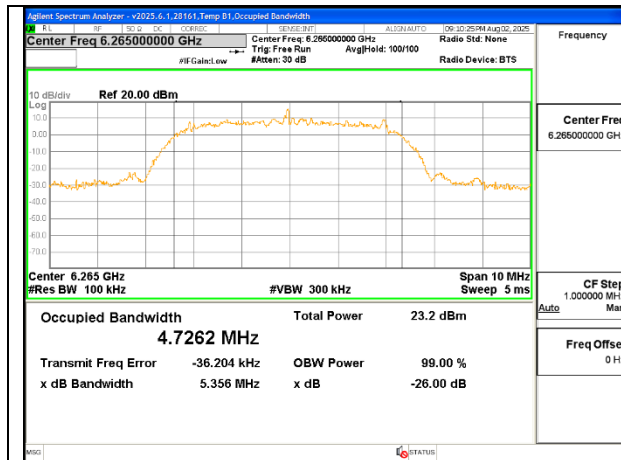
Mid Channel (UNII-5 HDR4) – Ant 5



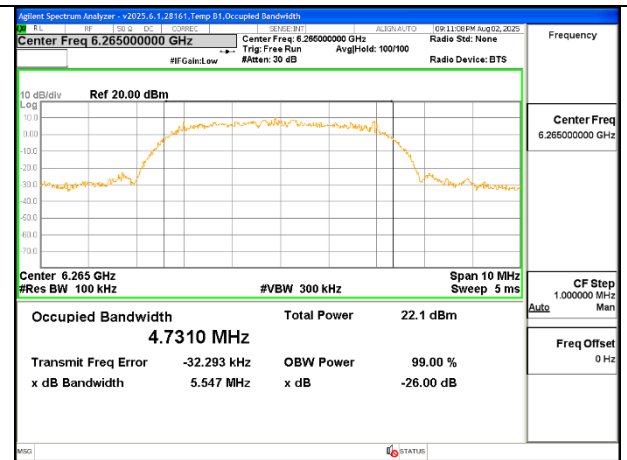
Mid Channel (UNII-5 XHDRPM8) – Ant 6



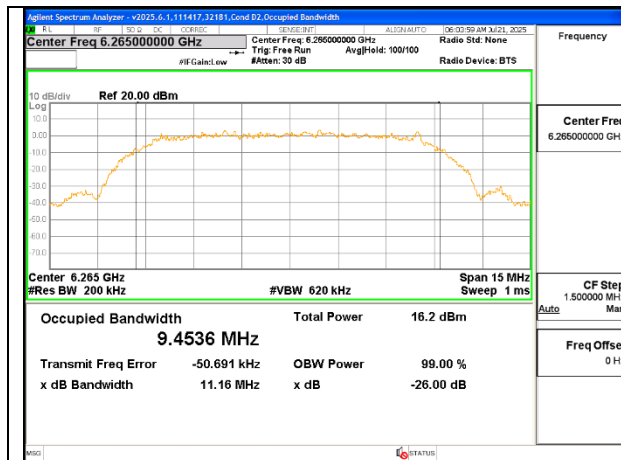
Mid Channel (UNII-5 XHDRPM8) – Ant 5



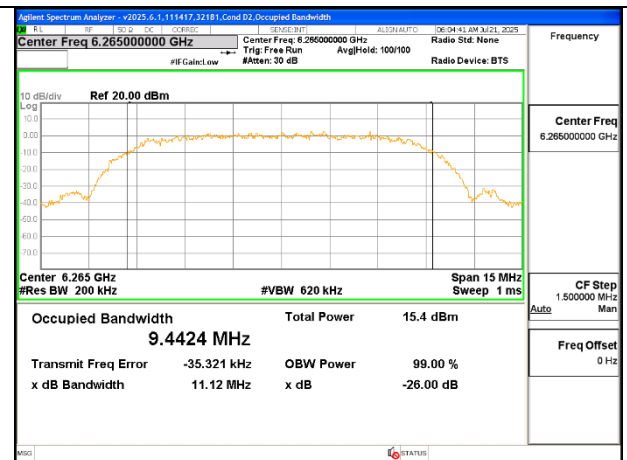
Mid Channel (UNII-5 HDRPM12) – Ant 6



Mid Channel (UNII-5 HDRPM12) – Ant 5



Mid Channel (UNII-5 HDRPL8) – Ant 6



Mid Channel (UNII-5 HDRPL8) – Ant 5

9.3. VLP OUTPUT POWER AND PSD

LIMITS

FCC §15.407

Bands: 5.925–6.425 GHz and 6.525–6.875 GHz

(9) For very low power devices operating in the 5.925-6.425 GHz and 6.525-6.875 GHz bands, the maximum power spectral density must not exceed –5 dBm e.i.r.p in any 1-megahertz band and the maximum e.i.r.p must not exceed 14 dBm.

RSS 248 4.5.6

Power limits for very low-power devices

Both of the following limits shall apply to very low-power devices:

- a. the maximum e.i.r.p. spectral density shall not exceed –5 dBm/MHz
- b. the maximum e.i.r.p. shall not exceed 14 dBm

TEST PROCEDURE

Conducted Output Power: KDB 789033 D02, Section II E.3.b (Method PM-G). Gated power measurement is used to calculate EIRP. Power does not include any corrections for duty factor.

The measurement method used for power spectral density is KDB 789033 D02, Section F

RESULTS

The plots in these sections are for reference settings only for different bandwidths and different antenna ports.

DIRECTIONAL ANTENNA GAIN

For 1 TX:

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

For 2 TX:

BF MIMO Tx chains used correlated gain for power EIRP calculation and correlated gain for PSD EIRP calculation; For the straddle channels, the higher antenna gains were chosen between two bands where straddle channels are located. The directional gains are as follows:

Frequency Range (MHz)	Sub-band (MHz)	Antenna 6 (dBi)	Antenna 5 (dBi)	Uncorrelated Chains (dBi)	Correlated Chains (dBi)
6105 - 6425 UNII-5	Sub-band 2 (6115 - 6255)	1.50	-2.40	-0.03	2.78
	Sub-band 3 (6275 - 6415)	1.20	-2.40	-0.24	2.60

DIRECTIONAL GAIN CALCULATION:

ANSI C63.10 section 14.4.3

Uncorrelated directional gain= $10 \cdot \log((10^{(\text{Ant6}/10)} + 10^{(\text{Ant5}/10)})/2)$

Correlated directional Gain= $10 \cdot \log(((10^{(\text{Ant6}/20)} + 10^{(\text{Ant5}/20)})^2)/2)$

Sample Calculation at UNII-5 Band:

Ant6=1.5, Ant5= -2.4

Uncorrelated Antenna gain= $10 \log[(10^{(1.5/10)} + 10^{(-2.4/10)})/2] = -0.03 \text{ dBi}$

Correlated Antenna gain= $10 \log[(10^{(1.5/20)} + 10^{(-2.4/20)})^2/2] = 2.78 \text{ dBi}$

EIRP Calculation:**1Tx**

EIRP corr'd power = Ant6 + Antenna Gain

Sample Calculation at UNII-5 Band:

Ant 6 Power= -7.58 dBm

EIRP corr'd power = -7.58 + (1.5) = -6.08 dBm

2Tx

EIRP corr'd power = $10 \cdot \text{LOG}(10^{(\text{Ant6}/10)} + 10^{(\text{Ant5}/10)}) + \text{correlated directional gain}$

Sample Calculation at UNII-5 Band:

Ant 6 Power= -12.02 dBm, Ant 5 Power= -12.12 dBm

EIRP corr'd power = $10 \cdot \text{LOG}(10^{(-12.02/10)} + 10^{(-12.12/10)}) + (2.78) = -6.28 \text{ dBm}$

EIRP PSD Calculation:**1Tx**

EIRP corr'd PSD = DCCF + Ant6 + Antenna Gain

Sample Calculation at UNII-5 Band:

Ant 6 PSD= -8.812 dBm/1MHz

EIRP corr'd PSD = 1.16 + (-8.812) + (1.5) = -6.152 dBm/1MHz

2Tx (OFDMA)

EIRP corr'd PSD = $(10 \cdot \text{LOG}(10^{((\text{DCCF} + \text{Ant6})/10)} + 10^{((\text{DCCF} + \text{Ant5})/10)})) + \text{correlated directional gain}$

Sample Calculation at UNII-5 Band:

Ant 6 PSD= -12.931 dBm/1MHz, Ant 5 PSD= -13.479 dBm/1MHz

EIRP corr'd PSD = $(10 \cdot \text{LOG}(10^{((1.16 + (-12.931))/10)} + 10^{((1.16 + (-13.479))/10)})) + (2.78) = -6.246 \text{ dBm/1MHz}$

9.3.1. UNII-5 BAND SISO MODE

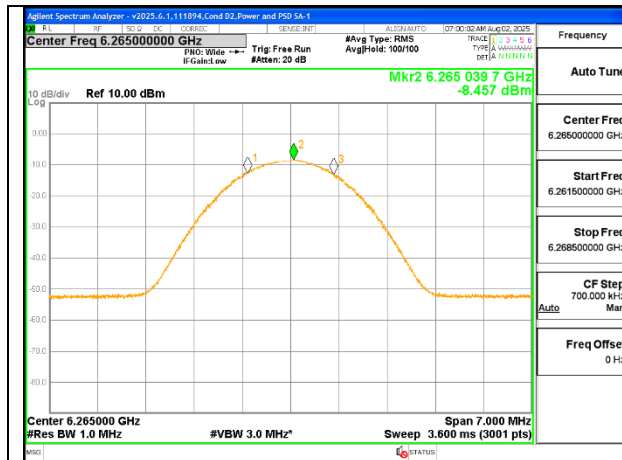
UNII-5 (SISO) (6105 - 6425MHz)	Low	Mid	High
Ant 6 (dBi)	1.50	1.50	1.20
Ant 5 (dBi)	-2.40	-2.40	-2.40

UNII-5 (SISO)	Power Config.	Freq (MHz)	Ch. #	Duty Cycle (dB)	Conducted Power (Gated) (dBm)		EIRP Power (Limit = 14dBm EIRP)		Conducted PSD (dBm/MHz)		EIRP PSD (Limit = -5dBm/MHz EIRP)	
					Ant 6	Ant 5	Ant 6	Ant 5	Ant 6	Ant 5	Ant 6	Ant 5
BDR	High	6106	Low	1.16	-7.58	-3.77	-6.08	-6.17	-8.812	-5.269	-6.152	-6.509
		6265	Mid		-7.51	-3.78	-6.01	-6.18	-8.457	-5.254	-5.797	-6.494
		6420	High		-7.50	-3.78	-6.30	-6.18	-8.219	-5.005	-5.859	-6.245
	Low	6106	Low		-7.52	-3.76	-6.02	-6.16	-8.864	-5.073	-6.204	-6.313
		6265	Mid		-7.53	-3.76	-6.03	-6.16	-8.604	-5.493	-5.944	-6.733
		6420	High		-7.56	-3.75	-6.36	-6.15	-8.323	-5.588	-5.963	-6.828
LE1M	High	6106	Low	0.72	-7.29	-3.55	-5.79	-5.95	-9.404	-3.619	-7.184	-5.299
		6265	Mid		-7.31	-3.51	-5.81	-5.91	-10.112	-3.548	-7.892	-5.228
		6420	High		-7.25	-3.57	-6.05	-5.97	-10.107	-3.769	-8.187	-5.449
	Low	6106	Low		-7.29	-3.51	-5.79	-5.91	-9.364	-3.805	-7.144	-5.485
		6265	Mid		-7.28	-3.52	-5.78	-5.92	-9.407	-3.668	-7.187	-5.348
		6420	High		-7.26	-3.56	-6.06	-5.96	-9.862	-3.879	-7.942	-5.559
LE2M	High	6106	Low	2.52	-6.62	-2.52	-5.12	-4.92	-11.631	-5.560	-7.611	-5.440
		6265	Mid		-6.56	-2.55	-5.06	-4.95	-11.813	-5.325	-7.793	-5.205
		6420	High		-6.50	-2.59	-5.30	-4.99	-11.943	-5.309	-8.223	-5.189
	Low	6106	Low		-6.50	-2.50	-5.00	-4.90	-11.289	-5.143	-7.269	-5.023
		6265	Mid		-6.50	-2.53	-5.00	-4.93	-11.589	-5.382	-7.569	-5.262
		6420	High		-6.62	-2.51	-5.42	-4.91	-11.858	-5.369	-8.138	-5.249
HDT4	High	6106	Low	0.30	-5.03	-1.05	-3.53	-3.45	-8.440	-5.283	-6.640	-7.383
		6265	Mid		-5.17	-1.00	-3.67	-3.40	-8.024	-5.649	-6.224	-7.749
		6420	High		-5.00	-1.00	-3.80	-3.40	-8.156	-5.152	-6.656	-7.252
	Low	6106	Low		-5.10	-1.06	-3.60	-3.46	-7.906	-4.486	-6.106	-6.586
		6265	Mid		-5.15	-1.05	-3.65	-3.45	-8.183	-4.233	-6.383	-6.333
		6420	High		-5.06	-1.01	-3.86	-3.41	-8.349	-4.126	-6.849	-6.226
HDR4	High	6106	Low	1.09	-5.26	-1.51	-3.76	-3.91	-9.765	-4.689	-7.175	-5.999
		6265	Mid		-5.25	-1.54	-3.75	-3.94	-9.719	-4.696	-7.129	-6.006
		6420	High		-5.25	-1.51	-4.05	-3.91	-9.520	-4.529	-7.230	-5.839
	Low	6106	Low		-5.30	-1.51	-3.80	-3.91	-9.359	-5.055	-6.769	-6.365
		6265	Mid		-5.25	-1.52	-3.75	-3.92	-9.403	-4.567	-6.813	-5.877
		6420	High		-5.31	-1.54	-4.11	-3.94	-9.453	-4.971	-7.163	-6.281
XHDRPM8	High	6107	Low	0.34	-2.53	1.46	-1.03	-0.94	-8.627	-5.388	-6.787	-7.448
		6265	Mid		-2.56	1.42	-1.06	-0.98	-8.290	-5.172	-6.450	-7.232
		6420	High		-2.50	1.47	-1.30	-0.93	-8.067	-5.011	-6.527	-7.071
	Low	6107	Low		-2.51	-1.03	-1.01	-3.43	-8.386	-7.000	-6.546	-9.060
		6265	Mid		-2.50	-1.03	-1.00	-3.43	-8.180	-6.590	-6.340	-8.650
		6420	High		-2.53	-1.00	-1.33	-3.40	-8.732	-7.004	-7.192	-9.064
HDRPM12	High	6107	Low	0.29	-2.59	1.48	-1.09	-0.92	-8.644	-5.113	-6.804	-7.223
		6265	Mid		-2.50	1.42	-1.00	-0.98	-8.152	-4.769	-6.312	-6.879
		6420	High		-2.56	1.48	-1.36	-0.92	-7.798	-4.797	-6.258	-6.907
	Low	6107	Low		-2.53	-4.02	-1.03	-6.42	-8.054	-9.276	-6.214	-11.386
		6265	Mid		-2.51	-4.02	-1.01	-6.42	-8.140	-9.515	-6.300	-11.625
		6420	High		-2.50	-4.03	-1.30	-6.43	-8.551	-8.795	-7.011	-10.905
HDRPL8	High	6109	Low	0.16	0.50	4.41	2.00	2.01	-8.071	-3.225	-6.411	-5.465
		6265	Mid		0.49	4.42	1.99	2.02	-8.317	-3.336	-6.657	-5.576
		6417	High		0.49	4.43	1.69	2.03	-7.994	-3.103	-6.634	-5.343
	Low	6109	Low		0.45	-1.01	1.95	-3.41	-8.447	-8.913	-6.787	-11.153
		6265	Mid		0.49	-1.04	1.99	-3.44	-7.813	-8.846	-6.153	-11.086
		6417	High		0.50	-1.01	1.70	-3.41	-7.831	-9.040	-6.471	-11.280

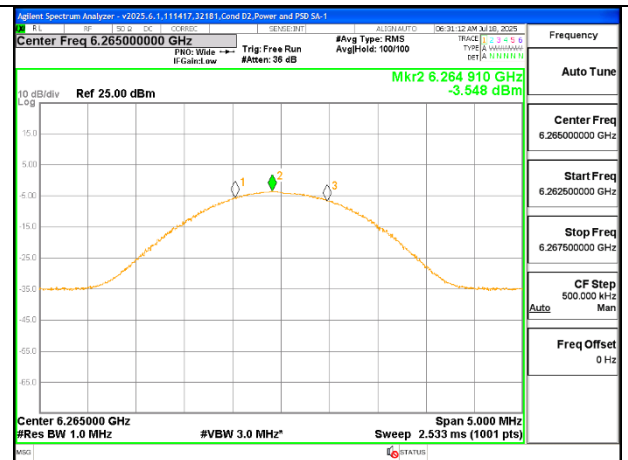
Note:

EIRP Output Power (dBm) = Measured Conducted Power (dBm)+ Peak Antenna Gain (dBi)

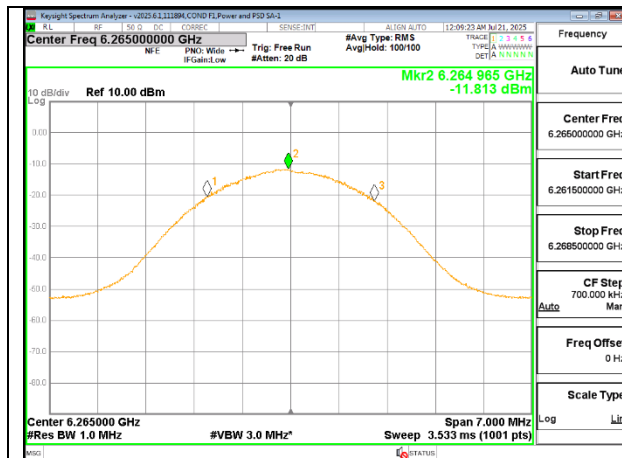
EIRP PSD (dBm/MHz) = Measured Conducted PSD (dBm/MHz) + Duty Factor (dB) + Peak Antenna Gain (dBi)



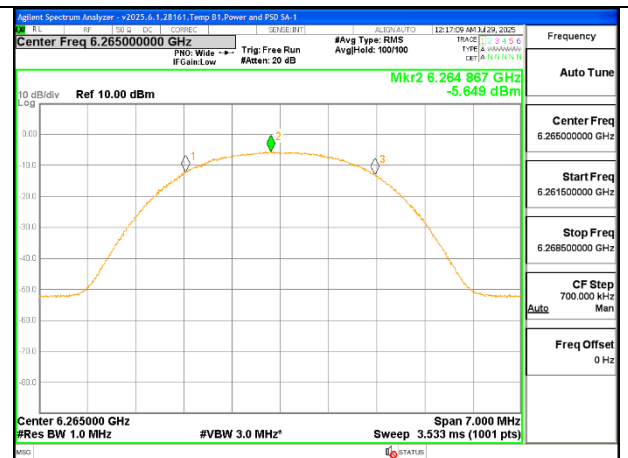
Mid Channel (UNII-5 BDR) – Ant 6



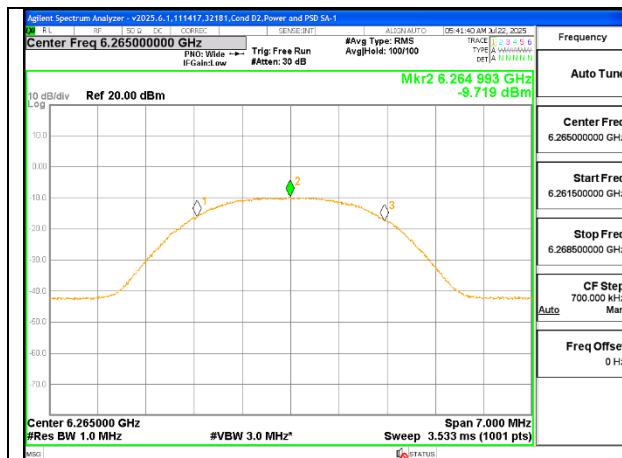
Mid Channel (UNII-5 LE1M) – Ant 5



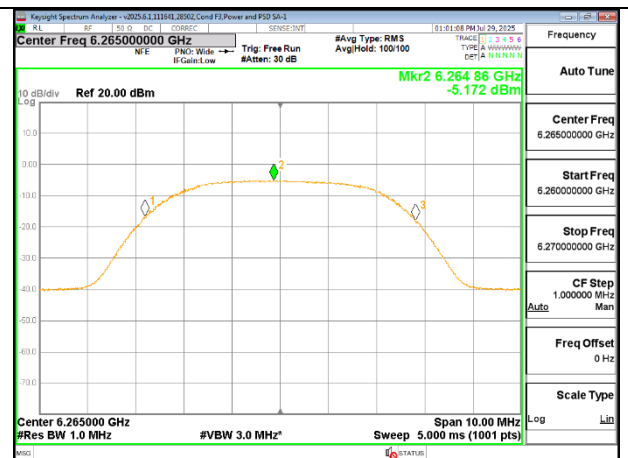
Mid Channel (UNII-5 LE2M) – Ant 6



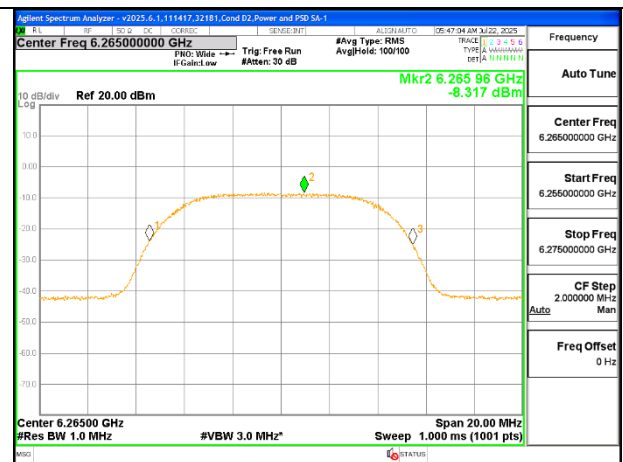
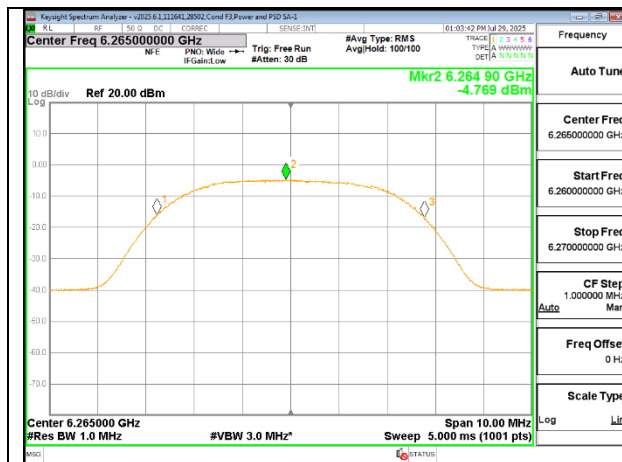
Mid Channel (UNII-5 HDT4) – Ant 5



Mid Channel (UNII-5 HDR4) – Ant 6



Mid Channel (UNII-5 XHDRPM8) – Ant 5



9.3.2. UNII-5 BAND MIMO TXBF MODE

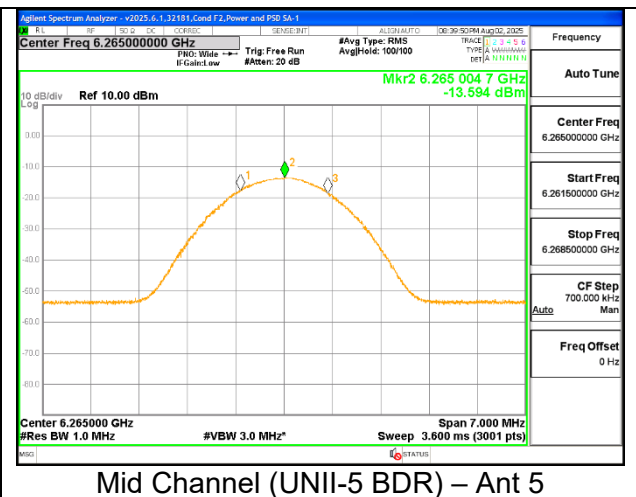
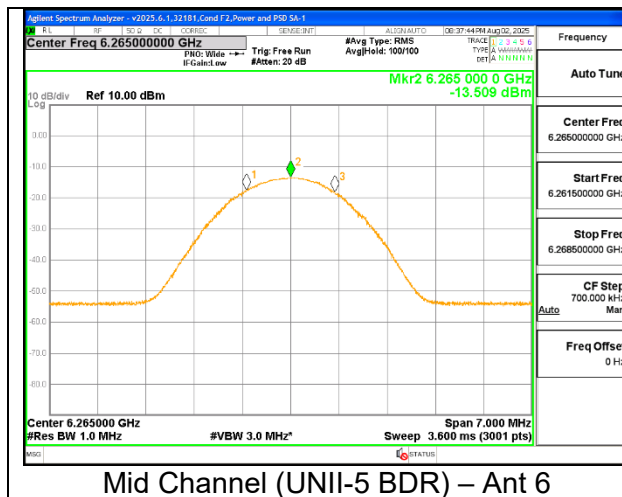
UNII-5 (MIMO BF) (6105 - 6425MHz)	Low CH	Mid CH	High CH
Un-Correlated Gain (dBi)	-0.03	-0.03	-0.24
Correlated Gain (dBi)	2.78	2.78	2.60

UNII-5 (MIMO BF)	Power Config.	Freq (MHz)	Ch. #	Duty Cycle (dB)	Conducted Power (Gated) (dBm)		EIRP Power (Limit = 14dBm EIRP)	Conducted PSD (dBm/MHz)		EIRP PSD (Limit = -5dBm/MHz EIRP)
					Ant 6	Ant 5		Ant 6	Ant 5	
BDR	High	6106	Low	1.16	-12.02	-12.12	-6.28	-12.931	-13.479	-6.246
		6265	Mid		-12.00	-12.08	-6.25	-13.509	-13.594	-6.601
		6420	High		-12.10	-12.06	-6.47	-12.785	-12.785	-6.015
	Low	6106	Low		-12.00	-12.06	-6.24	-13.101	-13.768	-6.471
		6265	Mid		-12.02	-12.04	-6.24	-13.289	-13.644	-6.513
		6420	High		-12.04	-12.08	-6.45	-13.497	-13.408	-6.682
LE1M	High	6106	Low	0.72	-11.50	-11.50	-5.71	-12.904	-14.414	-7.083
		6265	Mid		-11.61	-11.62	-5.82	-13.369	-14.796	-7.514
		6420	High		-11.64	-11.60	-6.01	-13.620	-15.223	-8.018
	Low	6106	Low		-11.50	-11.58	-5.75	-13.560	-14.166	-7.342
		6265	Mid		-11.61	-11.50	-5.76	-13.953	-14.278	-7.602
		6420	High		-11.59	-11.51	-5.94	-13.791	-14.227	-7.673
LE2M	High	6106	Low	2.52	-10.75	-10.75	-4.96	-15.643	-15.483	-7.252
		6265	Mid		-10.87	-10.82	-5.05	-15.879	-15.924	-7.591
		6420	High		-10.84	-10.85	-5.23	-16.182	-15.976	-7.947
	Low	6106	Low		-10.84	-10.79	-5.02	-15.737	-15.468	-7.290
		6265	Mid		-10.75	-10.75	-4.96	-15.546	-15.630	-7.277
		6420	High		-10.77	-10.88	-5.21	-16.241	-15.292	-7.610
HDT4	High	6106	Low	0.30	-9.27	-9.32	-3.50	-12.776	-12.568	-6.580
		6265	Mid		-9.30	-9.25	-3.48	-12.604	-12.168	-6.290
		6420	High		-9.30	-9.32	-3.70	-12.523	-12.267	-6.483
	Low	6106	Low		-9.25	-9.43	-3.55	-12.704	-13.352	-6.926
		6265	Mid		-9.26	-9.25	-3.46	-12.676	-12.179	-6.330
		6420	High		-9.27	-9.35	-3.70	-12.384	-12.496	-6.529
HDR4	High	6106	Low	1.09	-9.61	-9.65	-3.84	-13.131	-13.248	-6.309
		6265	Mid		-9.50	-9.50	-3.71	-13.316	-13.258	-6.407
		6420	High		-9.64	-9.55	-3.98	-13.571	-13.294	-6.730
	Low	6106	Low		-9.54	-9.58	-3.77	-13.409	-13.448	-6.548
		6265	Mid		-9.60	-9.51	-3.76	-13.325	-13.152	-6.357
		6420	High		-9.50	-9.50	-3.89	-13.360	-13.694	-6.823
XHDP8	High	6107	Low	0.34	-6.75	-6.85	-1.01	-12.738	-12.421	-6.446
		6265	Mid		-6.92	-6.77	-1.05	-12.356	-12.531	-6.312
		6420	High		-6.86	-6.78	-1.21	-11.763	-11.892	-5.877
	Low	6107	Low		-6.76	-6.84	-1.01	-13.040	-12.129	-6.430
		6265	Mid		-6.77	-6.80	-0.99	-11.865	-12.362	-5.976
		6420	High		-6.75	-6.75	-1.14	-11.796	-11.327	-5.605
HRPM12	High	6107	Low	0.29	-6.75	-6.75	-0.96	-12.297	-12.337	-6.237
		6265	Mid		-6.89	-6.84	-1.07	-12.201	-12.282	-6.161
		6420	High		-6.90	-6.83	-1.25	-11.769	-11.420	-5.691
	Low	6107	Low		-6.75	-6.75	-0.96	-12.521	-11.889	-6.113
		6265	Mid		-6.80	-6.86	-1.04	-11.952	-11.524	-5.652
		6420	High		-6.83	-6.85	-1.23	-11.515	-10.473	-5.063
HDRPL8	High	6109	Low	0.16	-3.80	-3.86	1.96	-12.493	-12.243	-6.416
		6265	Mid		-3.77	-3.80	2.01	-12.460	-12.382	-6.471
		6417	High		-3.85	-3.75	1.81	-12.552	-12.169	-6.586
	Low	6109	Low		-3.80	-3.75	2.02	-12.283	-12.398	-6.390
		6265	Mid		-3.75	-3.83	2.00	-12.081	-12.053	-6.117
		6417	High		-3.79	-3.76	1.83	-12.304	-12.306	-6.535

Note:

EIRP MIMO Output Power (dBm) = Measured Conducted Power (dBm) (Ant 1 + Ant 2) + Un-Correlated Antenna Gain (dBi)

EIRP MIMO PSD (dBm/MHz) = Measured Conducted PSD (dBm/MHz) (Ant 1 + Ant 2) + Duty Factor (dB) + Correlated Antenna Gain (dBi)



9.4. VLP SPURIOUS EMISSIONS IN-BAND– EMISSION MASK LIMITS

FCC §15.407

(b)(7) For transmitters operating within the 5.925-7.125 GHz bands: power spectral density must be suppressed by 20 dB at 1 MHz outside of channel edge, by 28 dB at one channel bandwidth from the channel center, and by 40 dB at one- and one-half times the channel bandwidth away from channel center. At frequencies between one megahertz outside an unlicensed device's channel edge and one channel bandwidth from the center of the channel, the limits must be linearly interpolated between 20 dB and 28 dB suppression, and at frequencies between one and one- and one-half times an unlicensed device's channel bandwidth, the limits must be linearly interpolated between 28 dB and 40 dB suppression. Emissions removed from the channel center by more than one- and one-half times the channel bandwidth must be suppressed by at least 40 dB.

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b. the e.i.r.p. spectral density of unwanted emissions falling into the 5925-7125 MHz frequency band shall be attenuated below the reference power spectral density by:

- i. 20 dB at 1 MHz away from the channel edges
- ii. a value, linearly interpolated in a dB scale, between 20 dB and 28 dB at frequencies between 1 MHz outside of channel edges and 1 channel bandwidth away from the operating channel centre, respectively
- iii. 28 dB at 1 channel bandwidth away from the operating channel centre
- iv. a value, linearly interpolated in a dB scale, between 28 dB and 40 dB at frequencies between 1 channel bandwidth away from the operating channel centre and 1.5 times the channel bandwidth away from the operating channel centre, respectively
- v. 40 dB at one- and one-half (1.5) times the channel bandwidth away from the channel centre; and
- vi. a minimum of 40 dB at frequencies that are further away than one and one-half (1.5) times the channel bandwidth from the channel centre.

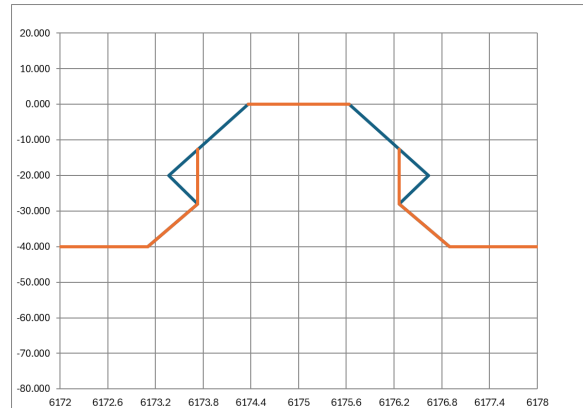
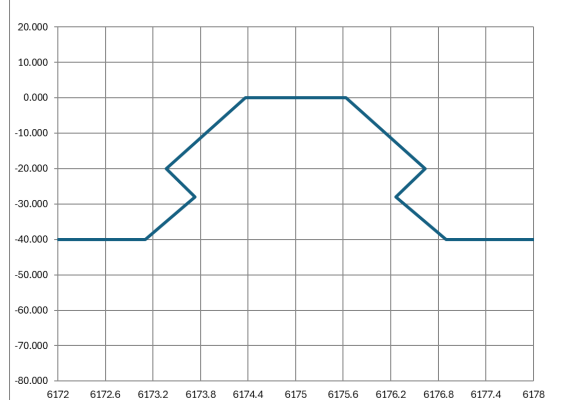
TEST PROCEDURE

Follow KDB 987594 D02 v01r01, Section II-J, RBW & VBW settings were based on 26dB bandwidth test settings.

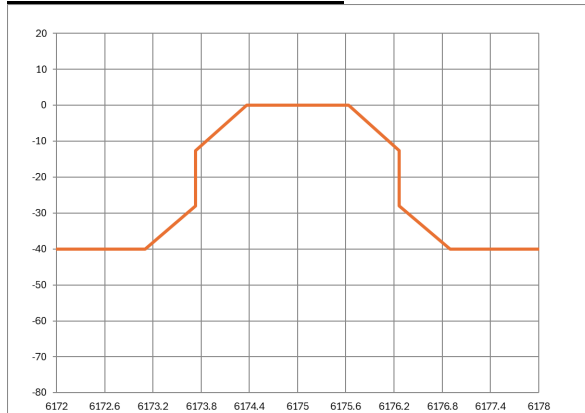
Worst-Case Mode	RBW (kHz)	VBW (kHz)
BDR	30	91
LE1M	30	91
LE2M	43	150
HDT4	43	150
HDR4	30	91
XHDRPM8	100	300
HDRPM12	100	300
HDRPL8	200	620

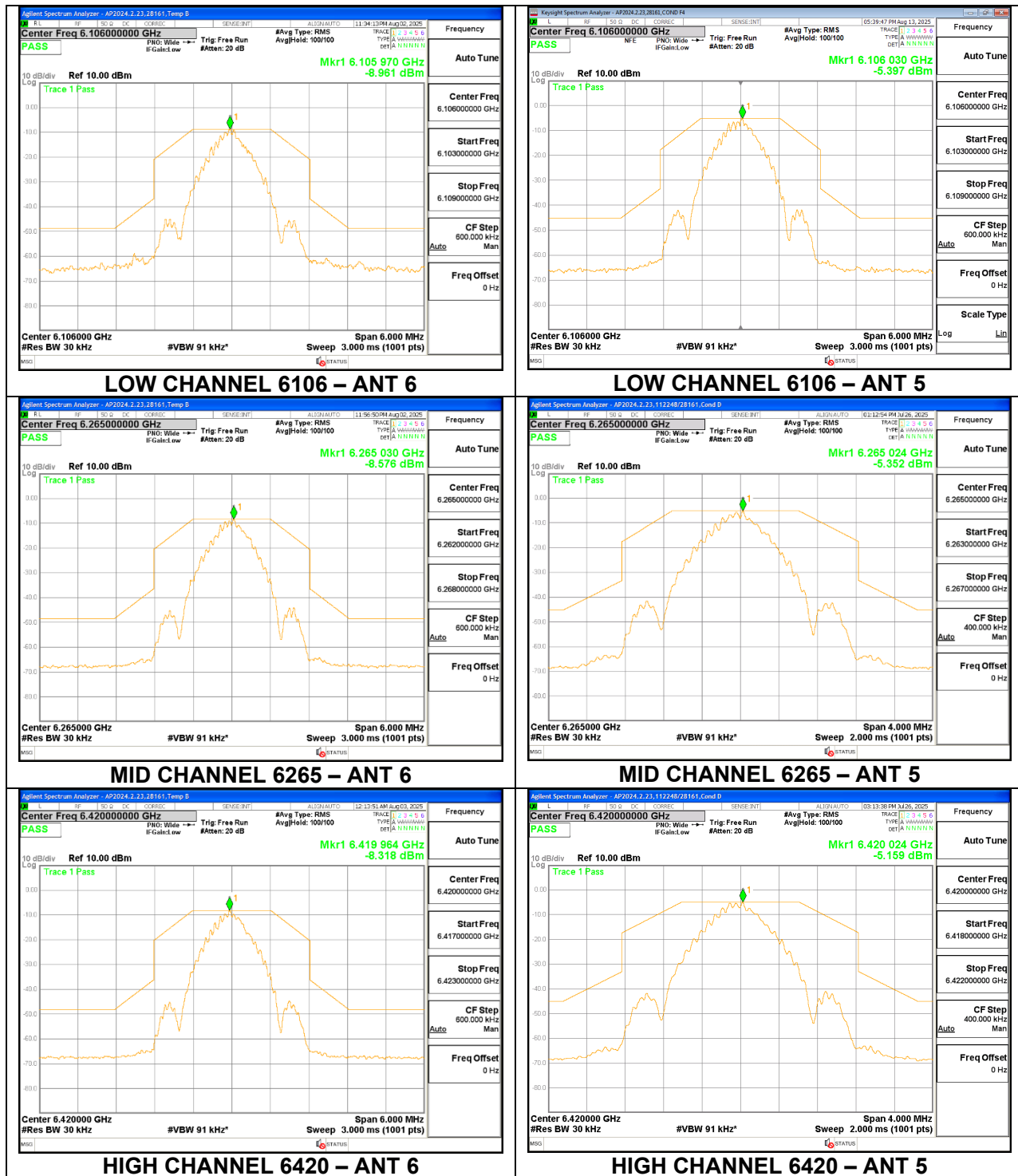
For the emission mask of $EBW < 2\text{MHz}$, we have created and used real limits (using the FCC formula) and removed the 'bulge', as shown in the images below.

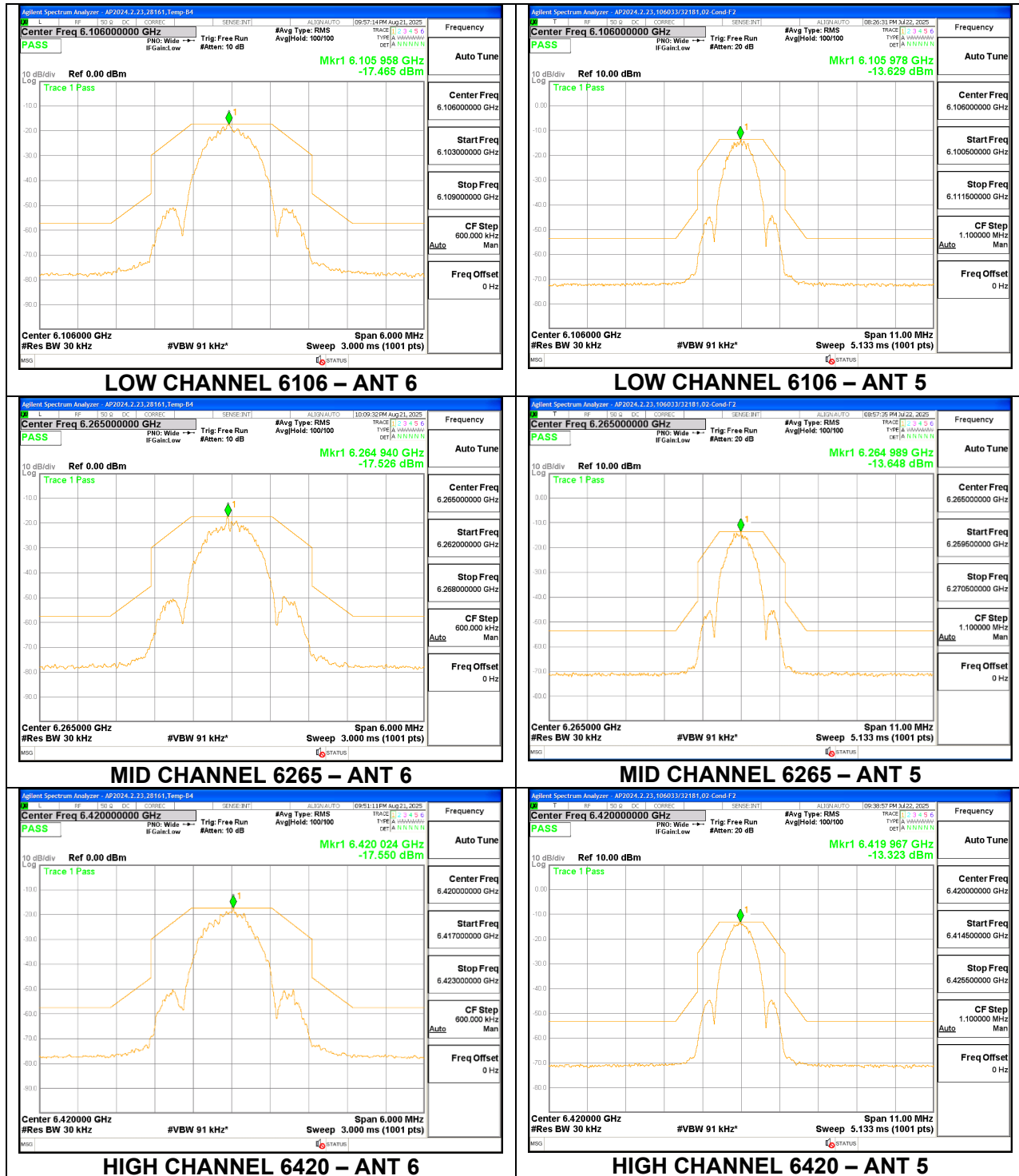
Original Mask:

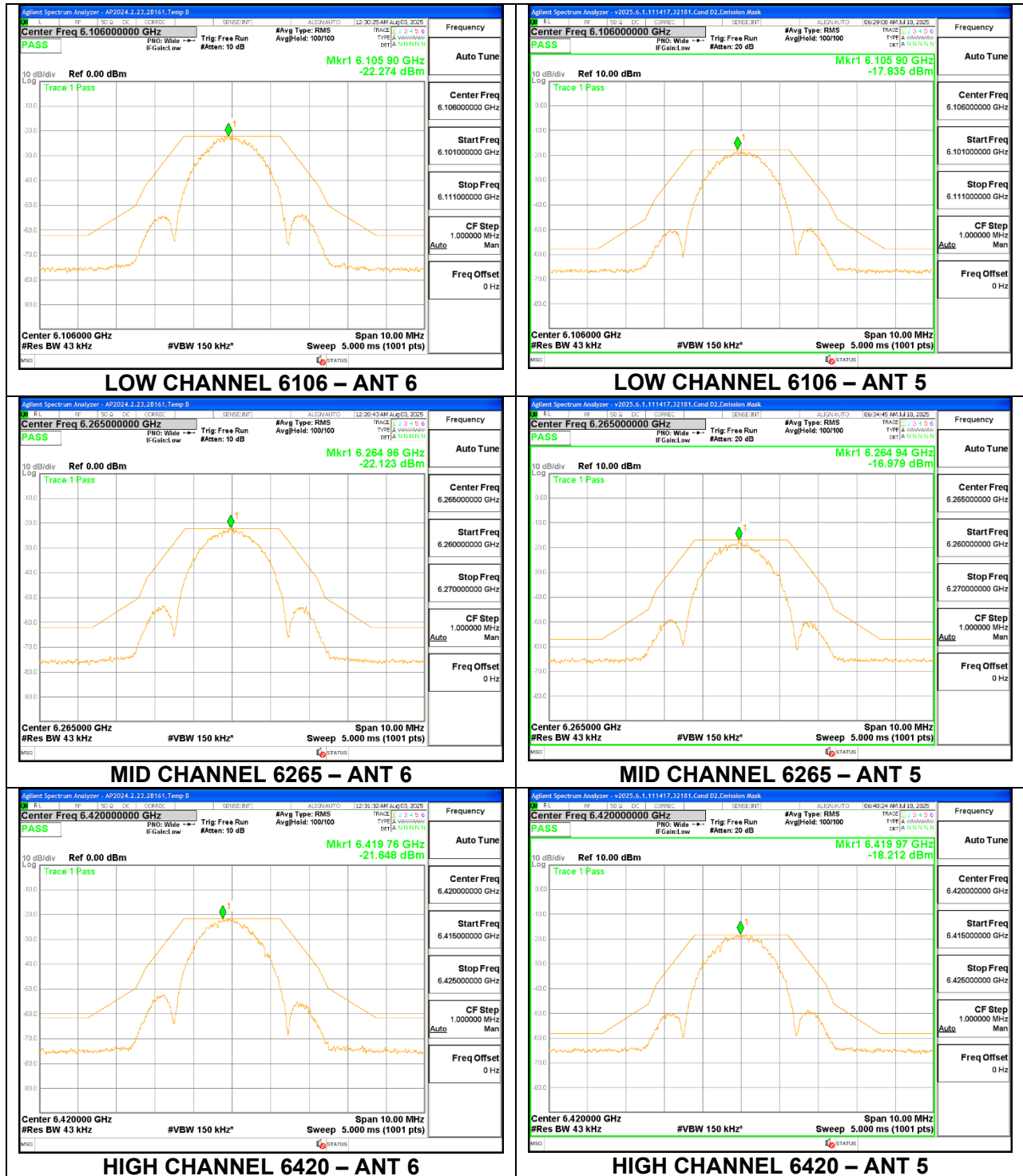


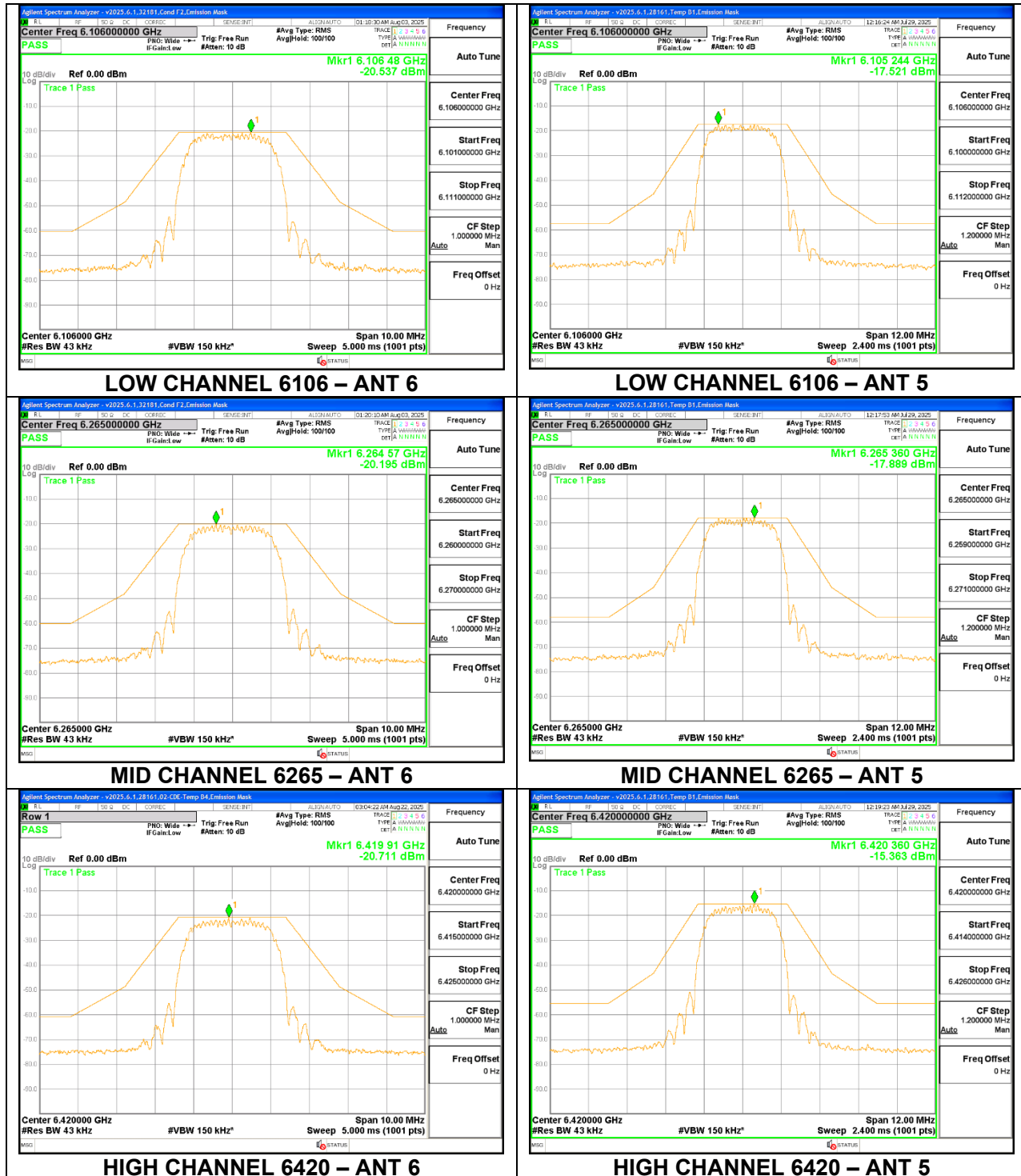
Final Mask for submission:

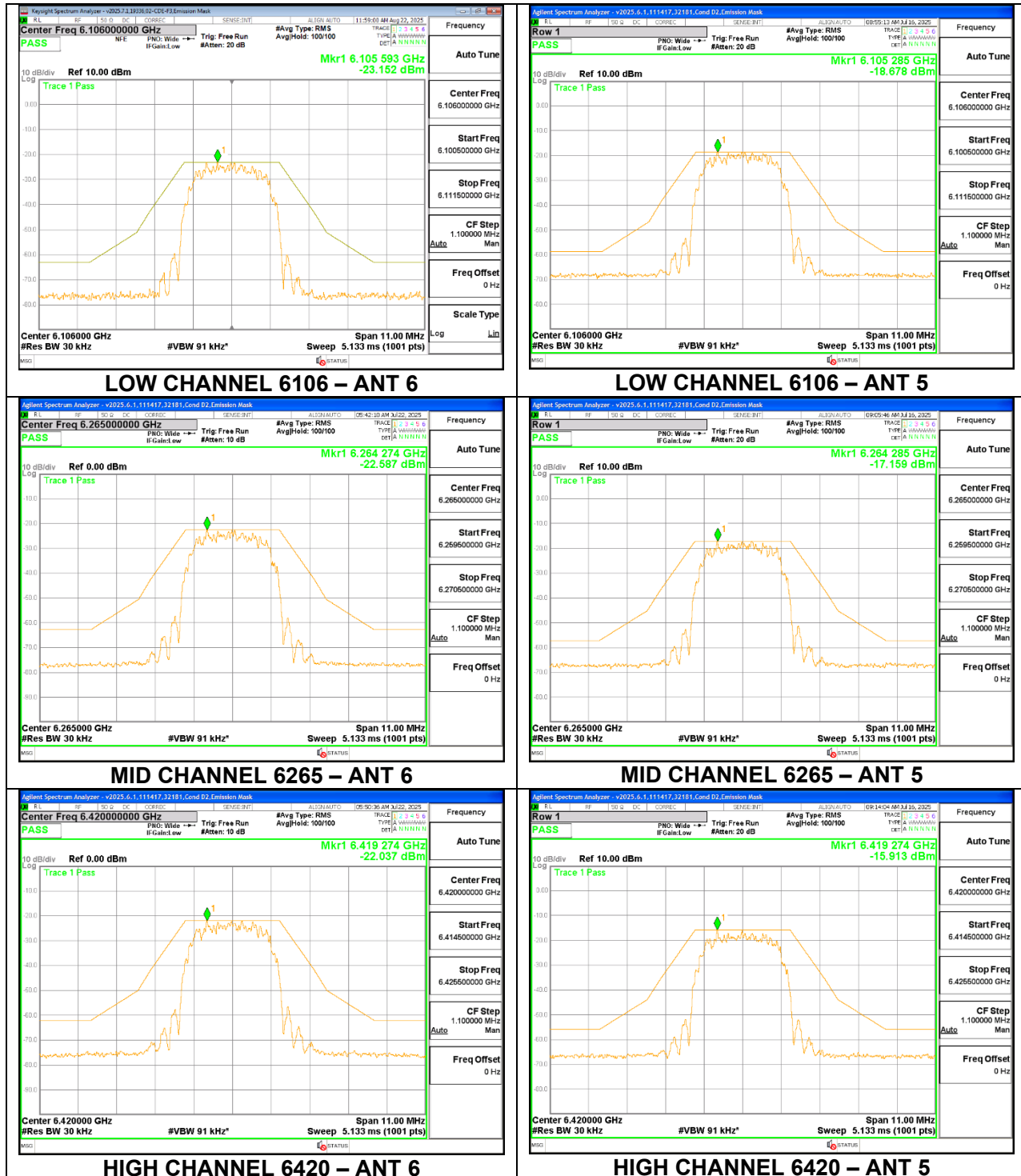


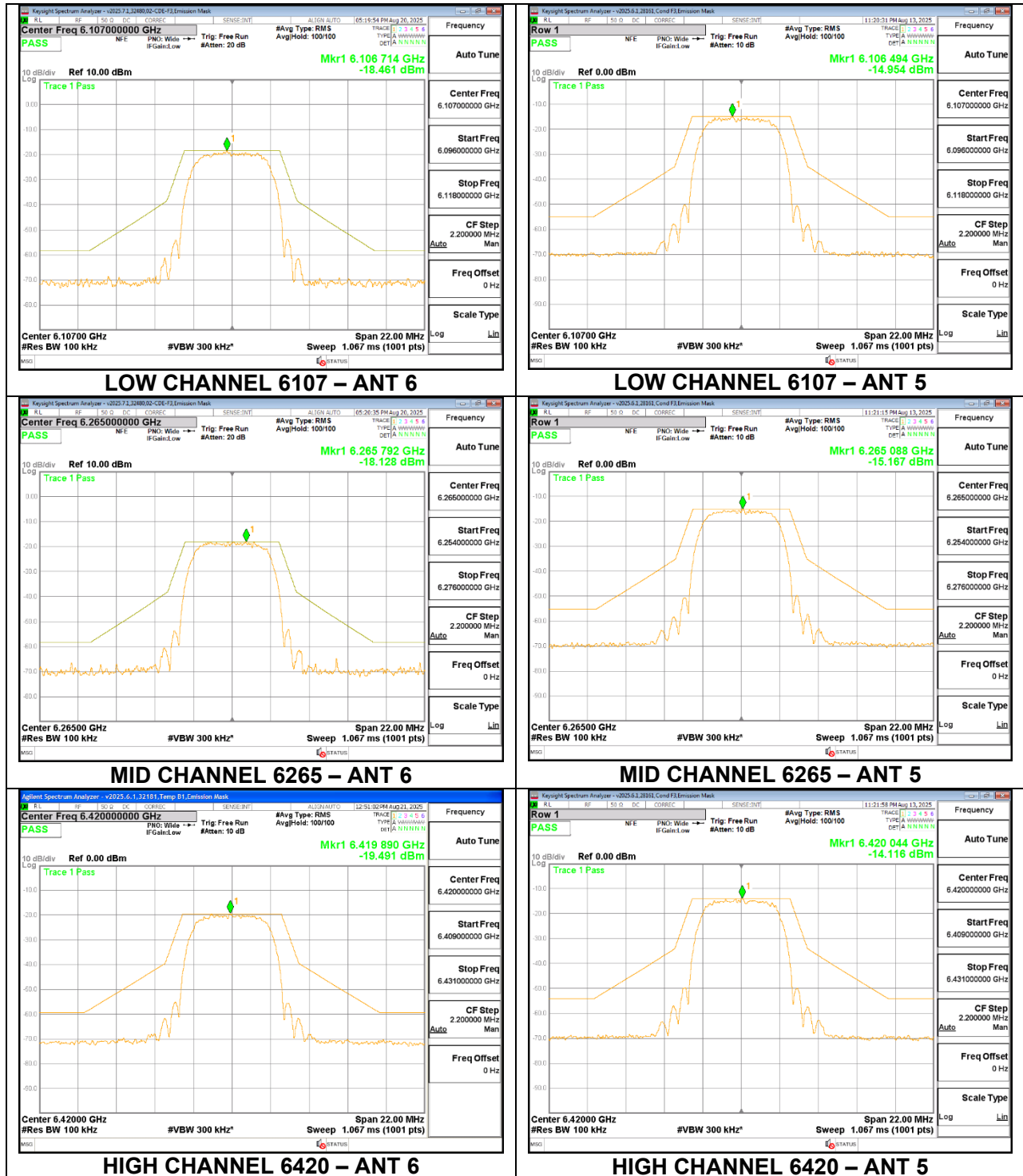
RESULTS**9.4.1. HIGH POWER UNII-5 BAND SISO MODE****BDR**

LE1M

LE2M

HDT4

HDR4

XHDRPM8

HDRPM12