

Sound Land Corporation

TEST REPORT

SCOPE OF WORK:

47 CFR FCC Part 15.247 – Radio Spectrum report

Model:

JUST COMBO

REPORT NUMBER

201100139TWN-001

ISSUE DATE

Mar. 12, 2021

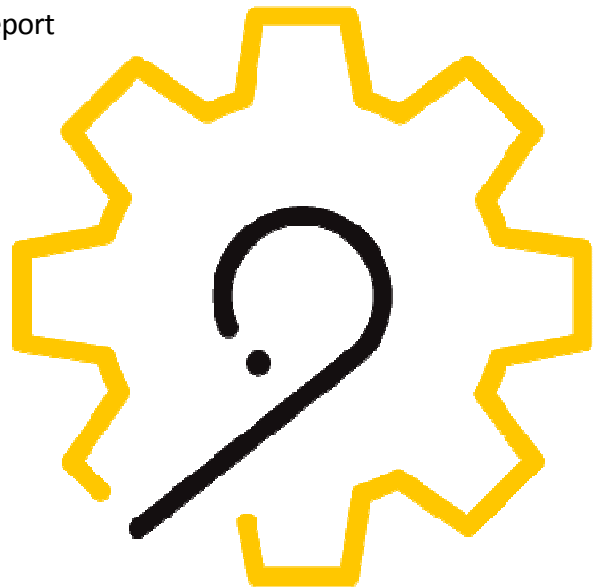
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DOCUMENT CONTROL NUMBER

GFT-OP-10h (28-Nov-2018)

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Radio Spectrum TEST REPORT

Applicant:	Sound Land Corporation No.32, Keji 1st Rd., Gueishan Dist., Taoyuan City 33383, Taiwan
Product:	JUST COMBO
Model No.:	JUST COMBO
FCC ID:	2AYQYJUSTCOMBO
Test Method/ Standard:	47 CFR FCC Part 15.247 & ANSI C63.10 2013 KDB 558074 D01 v05r02
Test By:	Intertek Testing Services Taiwan Ltd., Hsinchu Laboratory No. 11, Lane 275, Ko-Nan 1 Street, Chia-Tung Li, Shiang-Shan District, Hsinchu City, Taiwan



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Revision History

Report No.	Issue Date	Revision Summary
201100139TWN-001	Mar. 12, 2021	Original report

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Summary of Test Data

Test Requirement	Applicable Rule (Section 15.247)	Result
20dB Bandwidth Test	15.247(a)(1)	Pass
Carrier Frequency Separation Test	15.247(a)(1)	Pass
Number of Hopping Frequencies Test	15.247(a)(1)	Pass
Time of Occupancy (Dwell Time) Test	15.247(a)(1)(iii)	Pass
Maximum Output Power Test	15.247(b)	Pass
RF Antenna Conducted Spurious Test	15.247(d)	Pass
Radiated Spurious Emission Test	15.205, 15.209	Pass
Emission on the Band Edge Test	15.247(d)	Pass
AC Power Line Conducted Emission Test	15.207	Pass
Antenna Requirement	15.203	Pass

Note: Please note that the test results with statement of conformity, the decision rules which are based on: Safety Testing: the specification, standard or IEC Guide 115.

Other Testing: the specification, standard and not taking into account the measurement uncertainty.

1. General Information

1.1 Identification of the EUT

Product:	JUST COMBO
Model No.:	JUST COMBO
Module 1:	KB30ABC
Module 2:	KB87D
Operating Frequency:	2402 MHz ~ 2480 MHz
Channel Number:	79 channels
Frequency of Each Channel:	2402+1 k, k=0 ~ 78
Modulation Type:	GFSK, $\pi/4$ -DQPSK, 8-DPSK
Rated Power:	DC 5V from adapter
Power Cord:	N/A
Sample receiving date:	2020/11/11
Sample condition:	Workable
Test Date(s):	2020/11/23 ~ 2021/02/09

1.2 Adapter information

The EUT will be supplied with a power supply from below list:

No.	Model no.	Specification
Adapter	AMS57-0501000FU	I/P: 100-240Vac, 50/60Hz 0.2A O/P: 5Vdc, 1.0A

1.3 Antenna description

For Module1\Module 2

Antenna Gain	: 5.3 dBi
Antenna Type	: Printed antenna
Connector Type	: Fixed

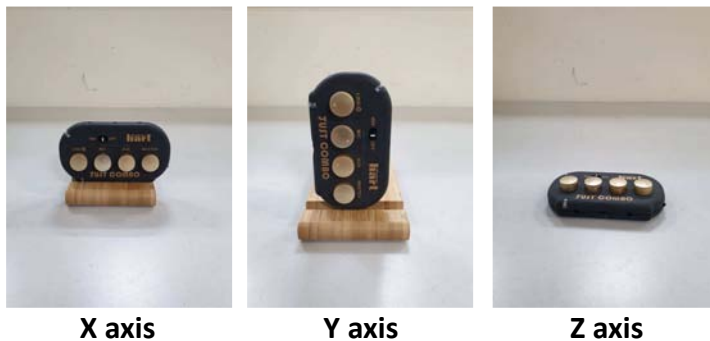
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1.4 Operation mode

The EUT was supplied with DC 5V from adapter (Test voltage: 120Vac, 60Hz).

Connected to Notebook PC via USB to TTL Serial Cable, open “Blue test 3” and select different frequency and modulation.

The signal is maximized through rotation and placement in the three orthogonal axes.



After verifying three axes, we found the maximum electromagnetic field was occurred at Y axis. The final test data was executed under this configuration.

1.5 Peripherals equipment

Peripherals	Brand	Model No.	Serial No.	Data cable
Notebook PC	HP	HP ProBook 440 G3	5CD8021S9H	1. Micro USB Cable 0.2 meter × 1 2. USB to TTL Serial Cable 0.5 meter × 1
Fixture	CSR	N/A	N/A	N/A
Mobile phone	Samsung	GALAXY SII	20643257F6B2	Non-shielded 3.5 mm TRS Cable 1.5 meter
iPod	Apple	A1236	6U8089CYYOP	N/A
MP3 Player	Lozer	OFM01	080854233902254	Non-shielded 3.5 mm TRS Cable 1.5 meter
Headset	I Cooby	M-80	N/A	Non-shielded 3.5 mm TRS Cable 3 meter
Air pods pro	Apple	N/A	N/A	N/A
Condenser microphone	Audio-technica	AT2020	N/A	Non-shielded 3.5 mm TRS cable 0.4 meter
Dynamic Microphone	Audio-technica	PRO 31	N/A	Non-shielded 3.5 mm TRS cable 0.4 meter

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2. 20dB Bandwidth Test

2.1 Test Setup & Procedure

The test procedure was according to FCC measurement guidelines DA 00-705.

The 20dB bandwidth per FCC §15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set $\geq$ 1% of 20dB Bandwidth, the video bandwidth $\geq$ RBW, and the SPAN may equal to approximately 2 to 3 times the 20dB bandwidth. The test was performed at 3 channels (lowest, middle and highest channel). The maximum 20dB modulation bandwidth is in the following Table.

2.2 Operating Environment Condition

Temperature (°C) :	24~25
Relative Humidity (%) :	56~59
Test date :	2021/02/04 ~ 2021/02/05

2.3 Test Results

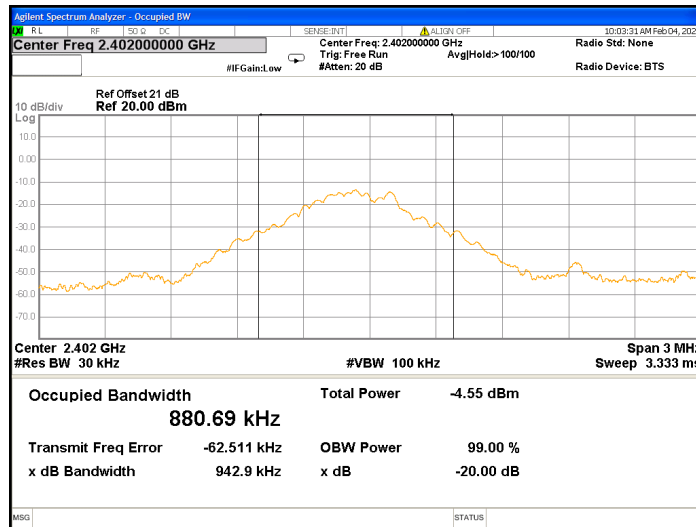
For Module 1

Mode	Channel	Frequency (MHz)	20dB Bandwidth (MHz)
DH5	0	2402	0.943
	39	2441	0.876
	78	2480	0.881
2DH5	0	2402	1.233
	39	2441	1.231
	78	2480	1.230
3DH5	0	2402	1.264
	39	2441	1.259
	78	2480	1.265

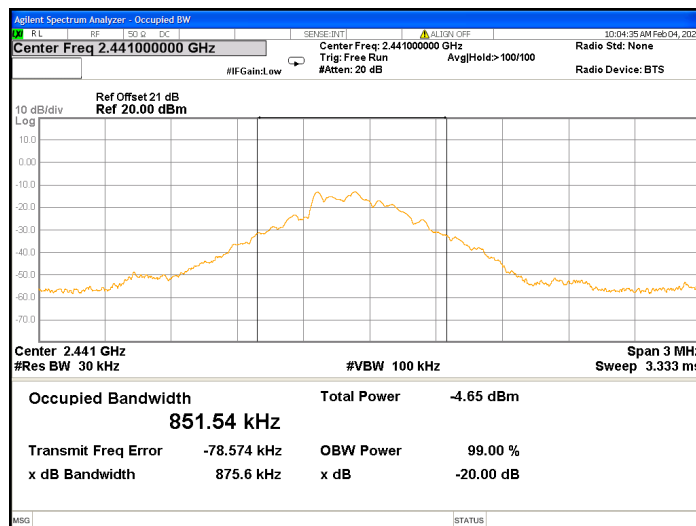
For Module 2

Mode	Channel	Frequency (MHz)	20dB Bandwidth (MHz)
DH5	0	2402	0.958
	39	2441	1.175
	78	2480	0.951
2DH5	0	2402	1.233
	39	2441	1.227
	78	2480	1.224
3DH5	0	2402	1.263
	39	2441	1.265
	78	2480	1.263

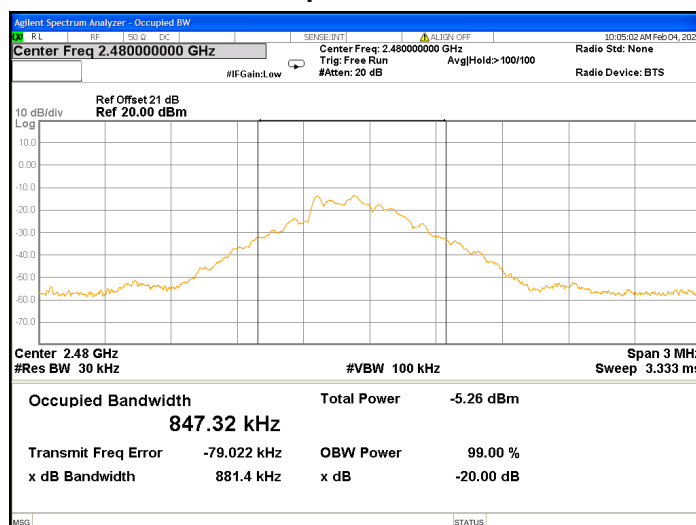
Module 1: 20dB Occupied Bandwidth @ DH5 Ch 0



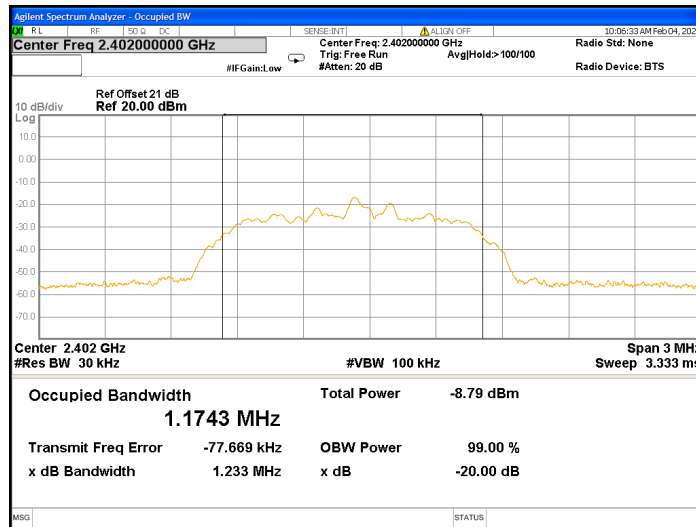
Module 1: 20dB Occupied Bandwidth @ DH5 Ch 39



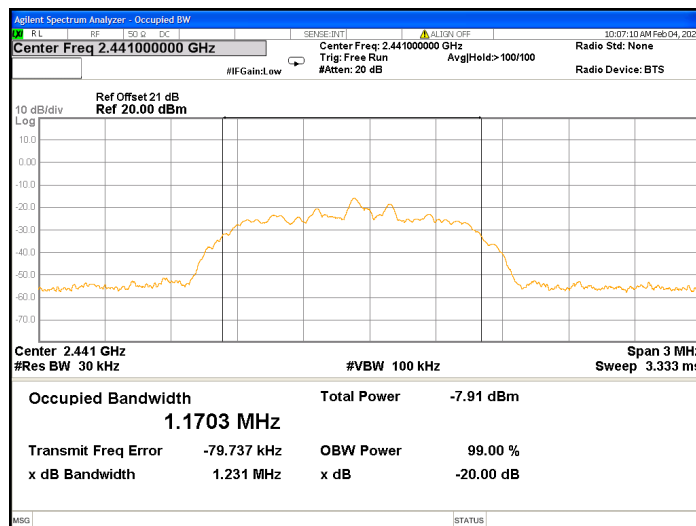
Module 1: 20dB Occupied Bandwidth @ DH5 Ch 78



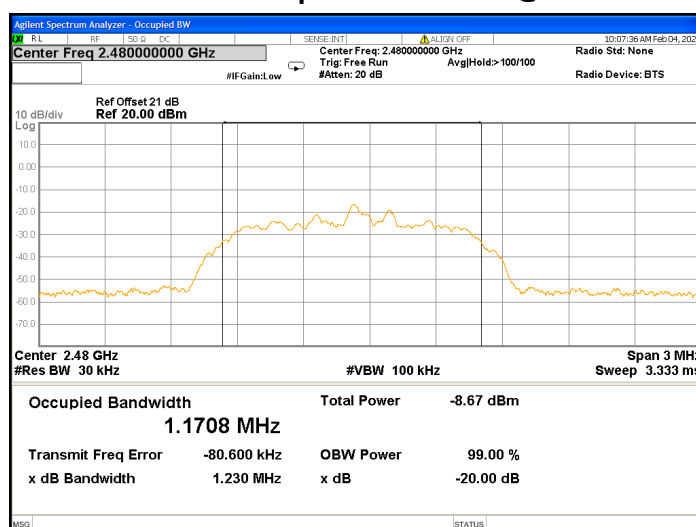
Module 1: 20dB Occupied Bandwidth @ 2DH5 Ch 0



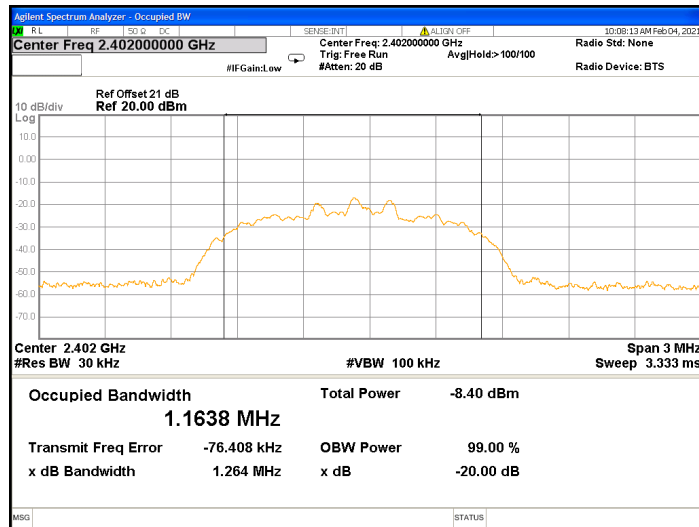
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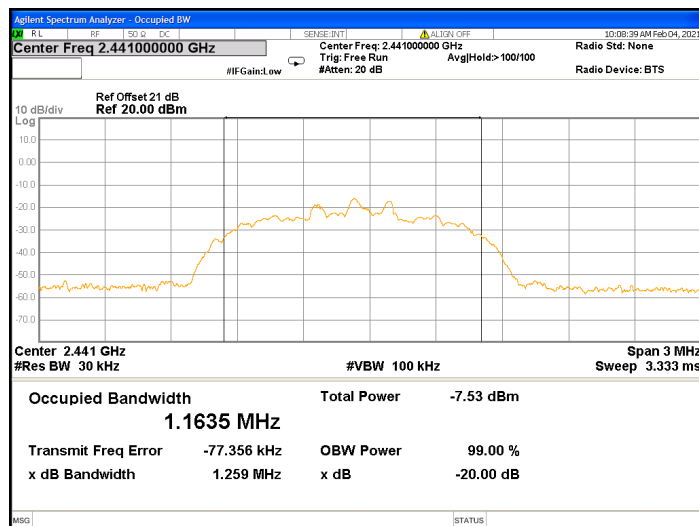
Module 1: 20dB Occupied Bandwidth @ 2DH5 Ch 78



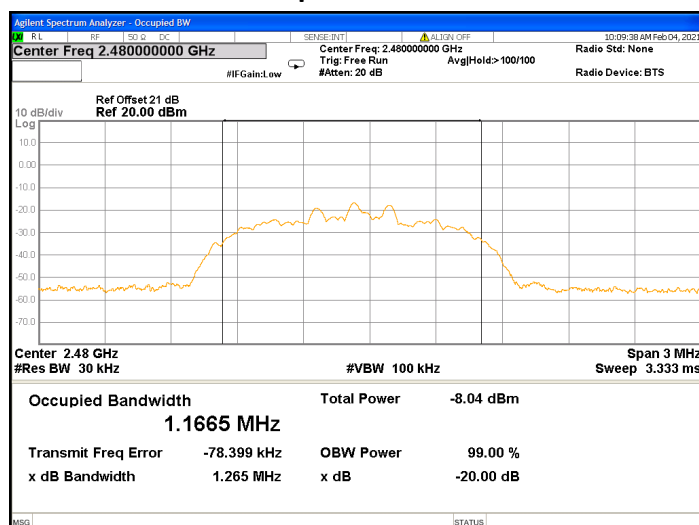
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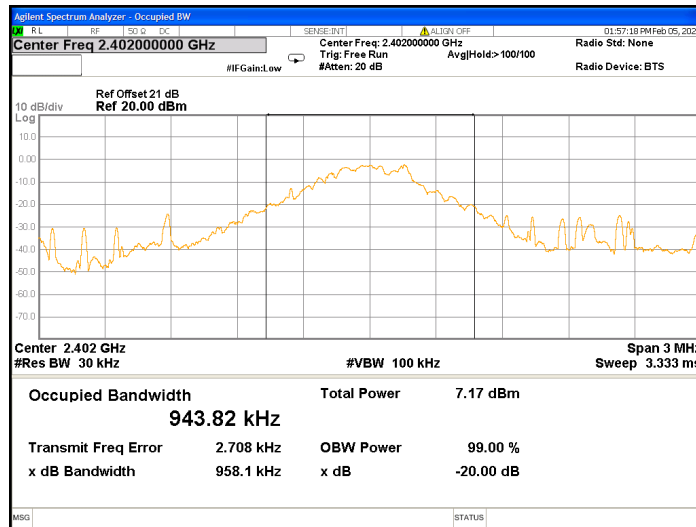
Module 1: 20dB Occupied Bandwidth @ 3DH5 Ch 39



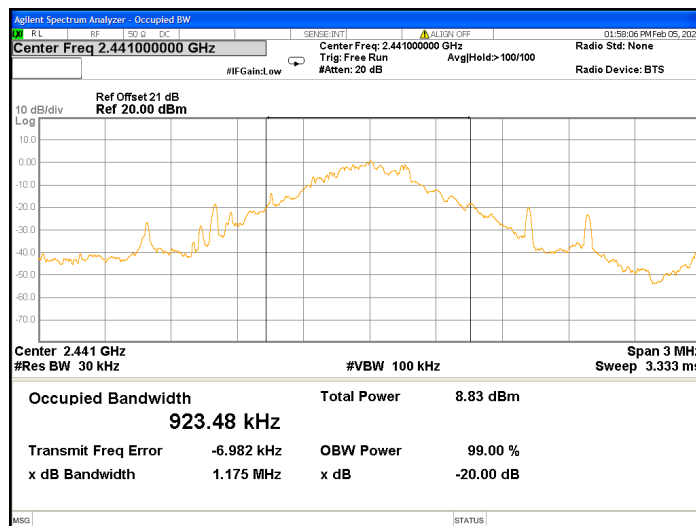
Module 1: 20dB Occupied Bandwidth @ 3DH5 Ch 78



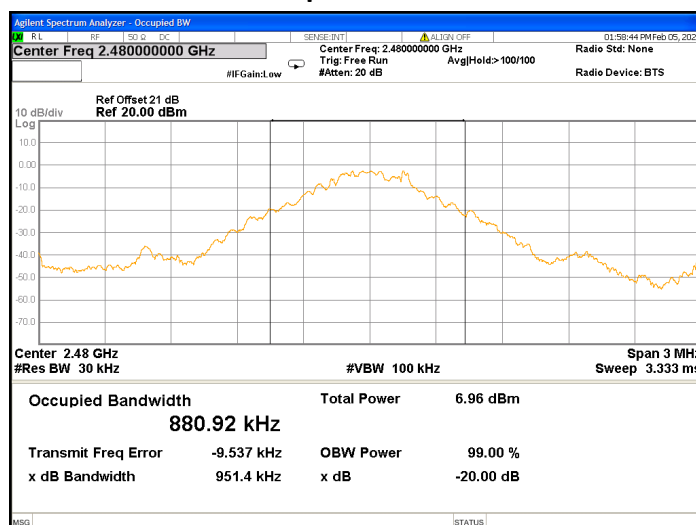
Module 2: 20dB Occupied Bandwidth @ DH5 Ch 0



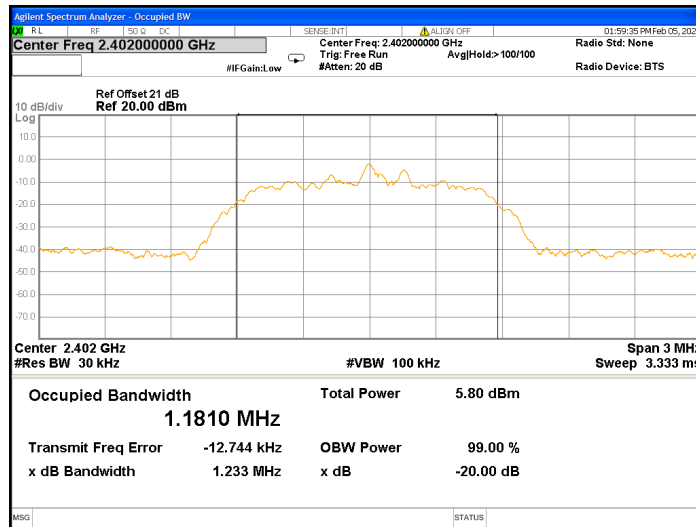
Module 2: 20dB Occupied Bandwidth @ DH5 Ch 39



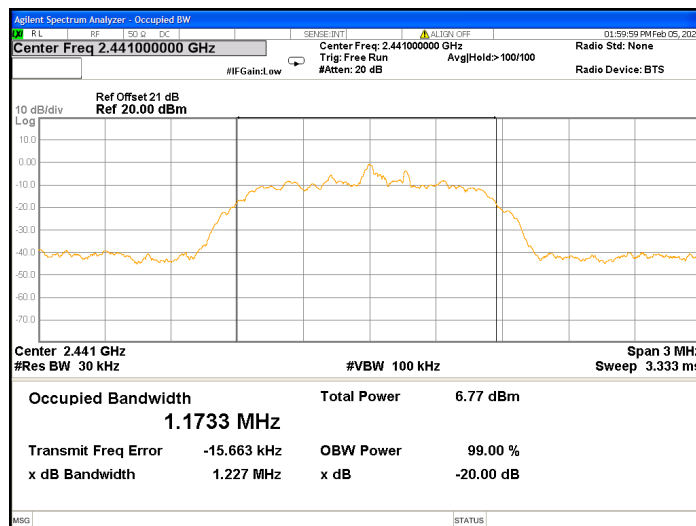
Module 2: 20dB Occupied Bandwidth @ DH5 Ch 78



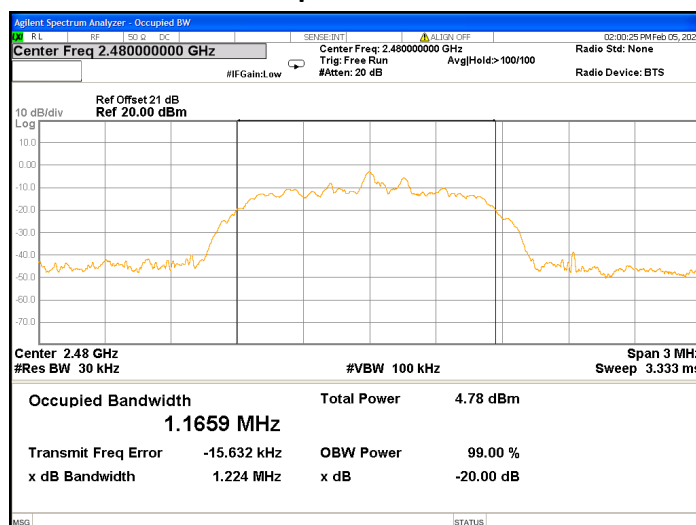
Module 2: 20dB Occupied Bandwidth @ 2DH5 Ch 0



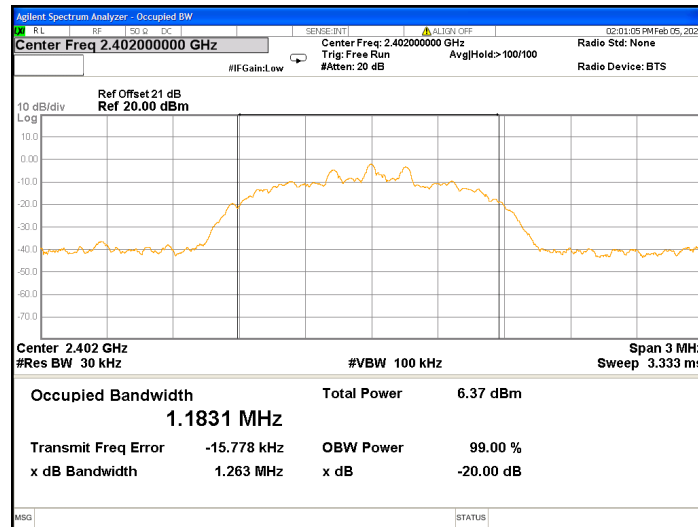
Module 2: 20dB Occupied Bandwidth @ 2DH5 Ch 39



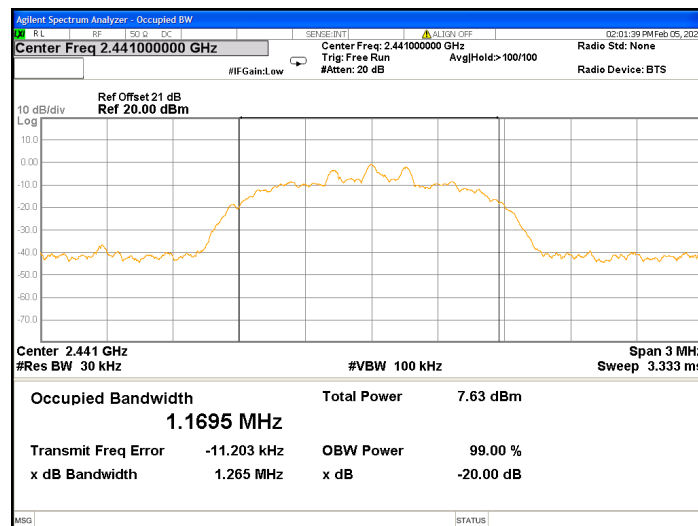
Module 2: 20dB Occupied Bandwidth @ 2DH5 Ch 78



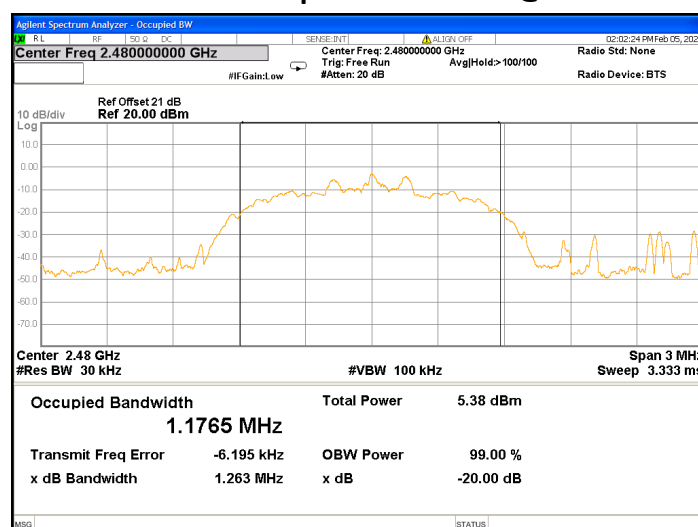
Module 2: 20dB Occupied Bandwidth @ 3DH5 Ch 0



Module 2: 20dB Occupied Bandwidth @ 3DH5 Ch 39



Module 2: 20dB Occupied Bandwidth @ 3DH5 Ch 78



3. Carrier Frequency Separation Test

3.1 Test Setup & Procedure

The test procedure was according to FCC measurement guidelines DA 00-705.

The carrier frequency separation per FCC §15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at $\geq 1\%$ of the span, the video bandwidth $\geq$ RBW, and the SPAN was wide enough to capture the peaks of two adjacent channels. The carrier frequency separation result is in the following Table.

3.2 Operating Environment Condition

Temperature (°C) :	24~25
Relative Humidity (%) :	56~59
Test date :	2021/02/04 ~ 2021/02/05

3.3 Test Results

For Module 1

Mode	Channel	Frequency (MHz)	Adjacent channel separation (MHz)	Limit (MHz)
DH5	0	2402	0.867	0.629
	39	2441	1.151	0.584
	78	2480	1.191	0.588
2DH5	0	2402	1.168	0.822
	39	2441	0.975	0.821
	78	2480	1.137	0.820
3DH5	0	2402	1.005	0.843
	39	2441	1.158	0.839
	78	2480	0.972	0.843

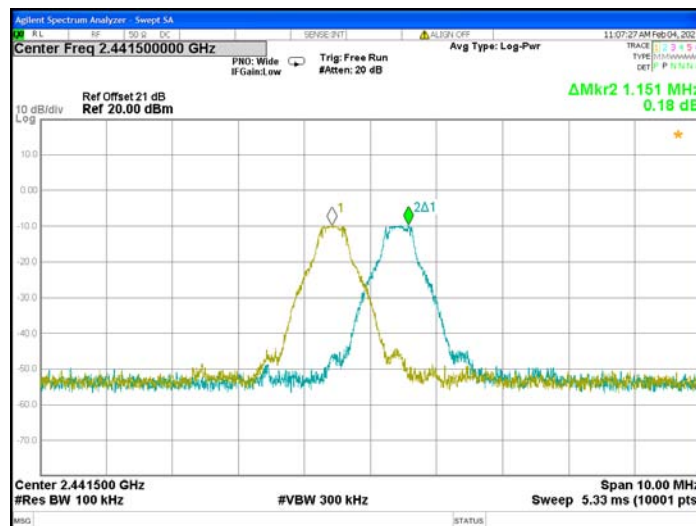
For Module 2

Mode	Channel	Frequency (MHz)	Adjacent channel separation (MHz)	Limit (MHz)
DH5	0	2402	1.160	0.639
	39	2441	1.154	0.783
	78	2480	0.839	0.634
2DH5	0	2402	1.137	0.822
	39	2441	0.976	0.818
	78	2480	0.991	0.816
3DH5	0	2402	1.032	0.842
	39	2441	1.189	0.843
	78	2480	1.160	0.842

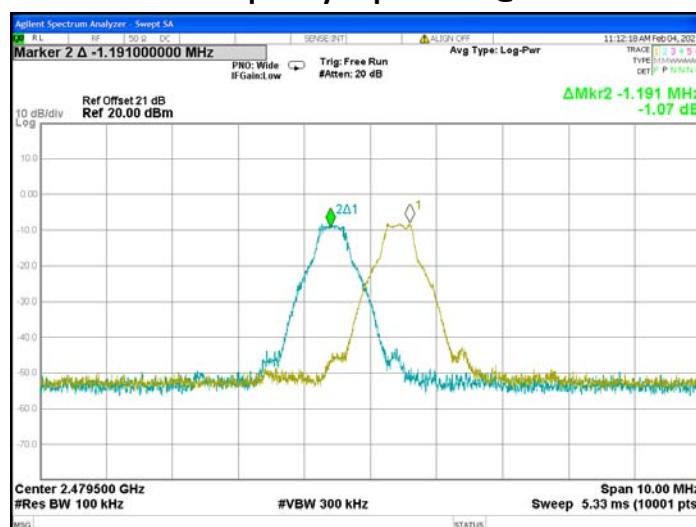
Module 1: Frequency Separation @ DH5 Ch 0



Module 1: Frequency Separation @ DH5 Ch 39



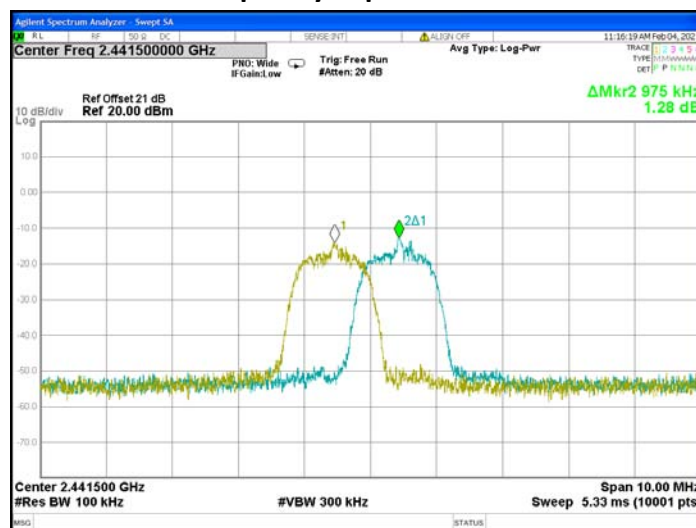
Module 1: Frequency Separation @ DH5 Ch 78



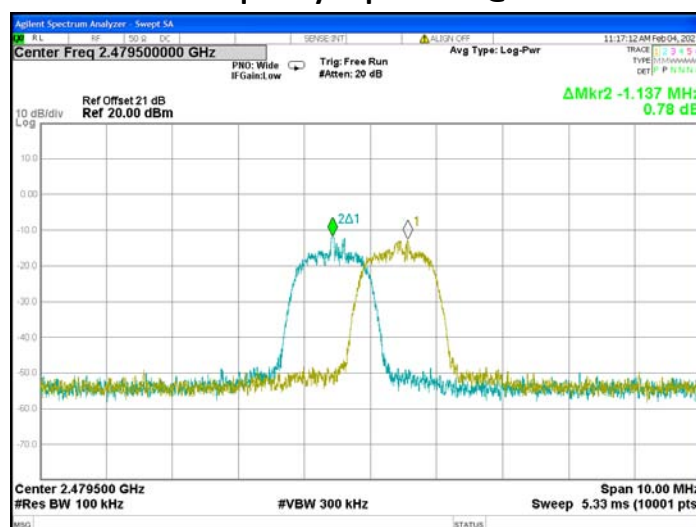
Module 1: Frequency Separation @ 2DH5 Ch 0



Module 1: Frequency Separation @ 2DH5 Ch 39



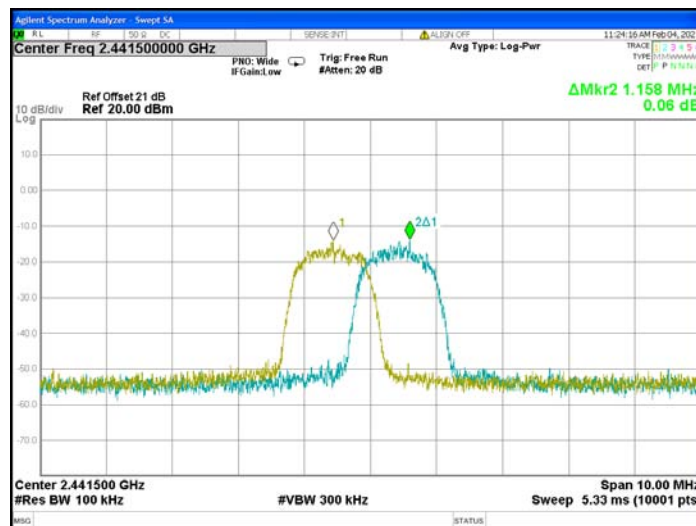
Module 1: Frequency Separation @ 2DH5 Ch 78



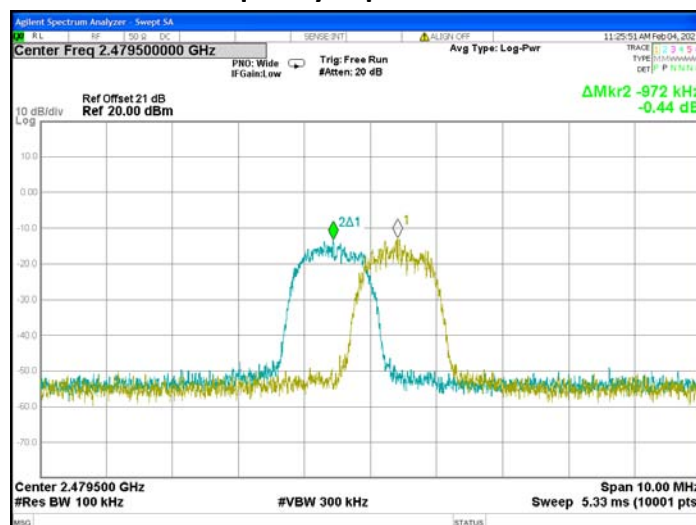
Module 1: Frequency Separation @ 3DH5 Ch 0



Module 1: Frequency Separation @ 3DH5 Ch 39



Module 1: Frequency Separation @ 3DH5 Ch 78



Module 2: Frequency Separation @ DH5 Ch 0



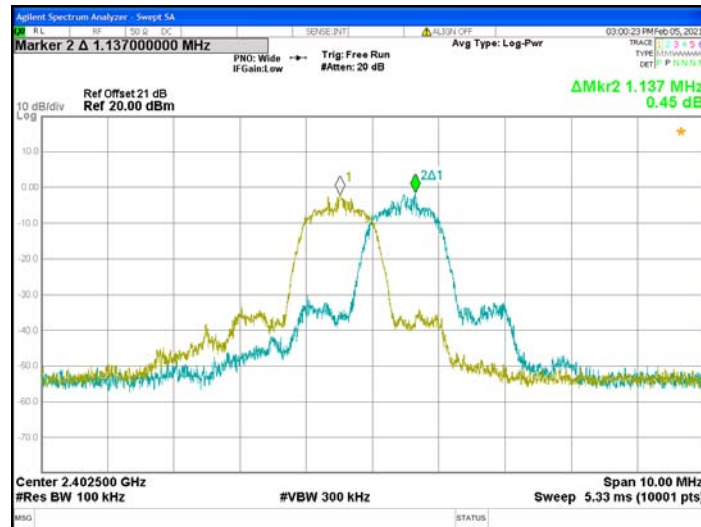
Module 2: Frequency Separation @ DH5 Ch 39



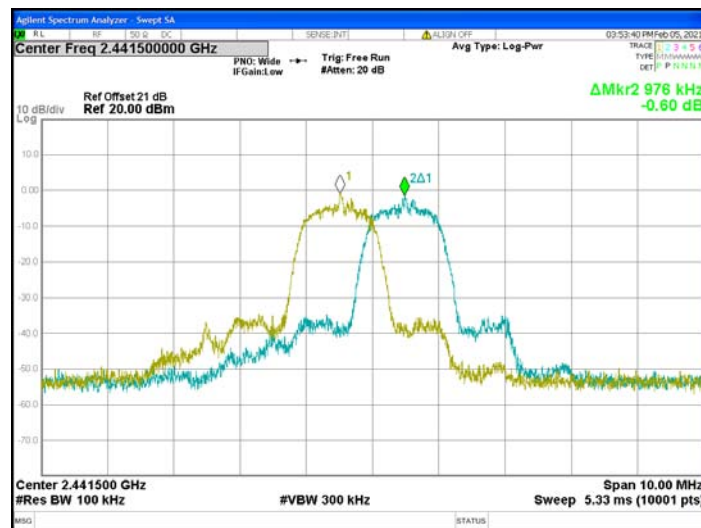
Module 2: Frequency Separation @ DH5 Ch 78



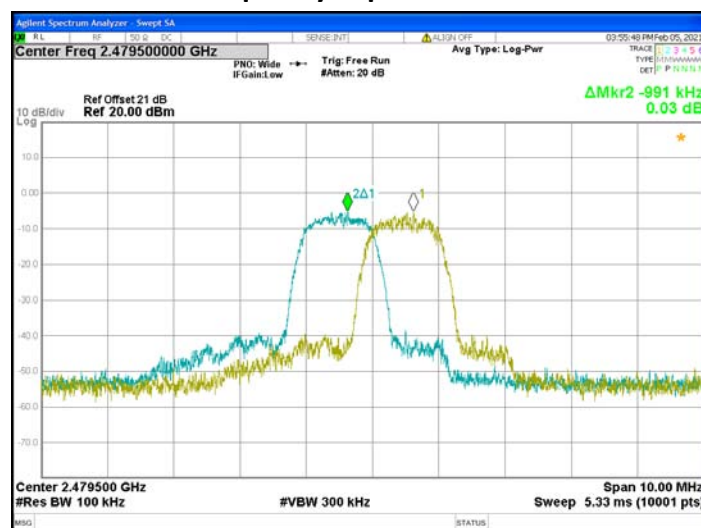
Module 2: Frequency Separation @ 2DH5 Ch 0



Module 2: Frequency Separation @ 2DH5 Ch 39



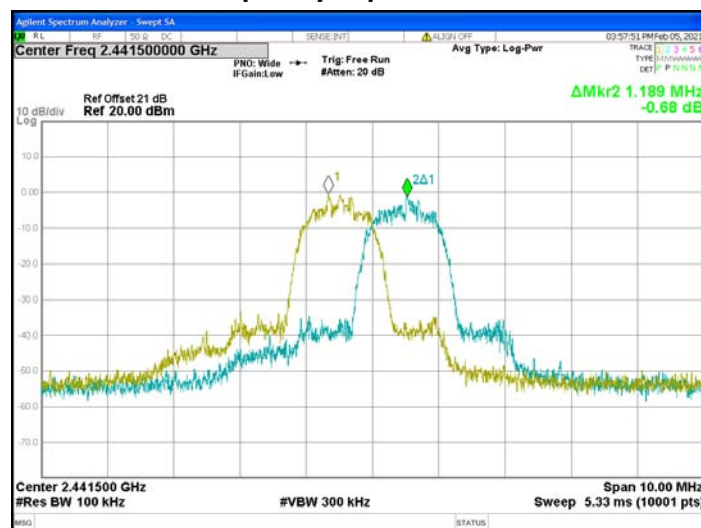
Module 2: Frequency Separation @ 2DH5 Ch 78



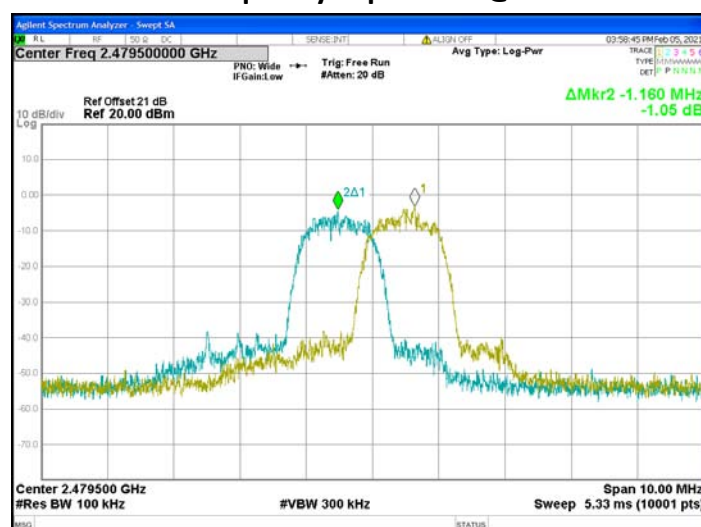
Module 2: Frequency Separation @ 3DH5 Ch 0



Module 2: Frequency Separation @ 3DH5 Ch 39



Module 2: Frequency Separation @ 3DH5 Ch 78



4. Number of Hopping Frequencies Test

4.1 Test Setup & Procedure

The test procedure was according to FCC measurement guidelines DA 00-705.

The number of hopping frequencies per FCC §15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at $\geq 1\%$ of the span, the video bandwidth $\geq$ RBW, and the SPAN was the frequency band of operation. The carrier frequency separation result is in the following Table.

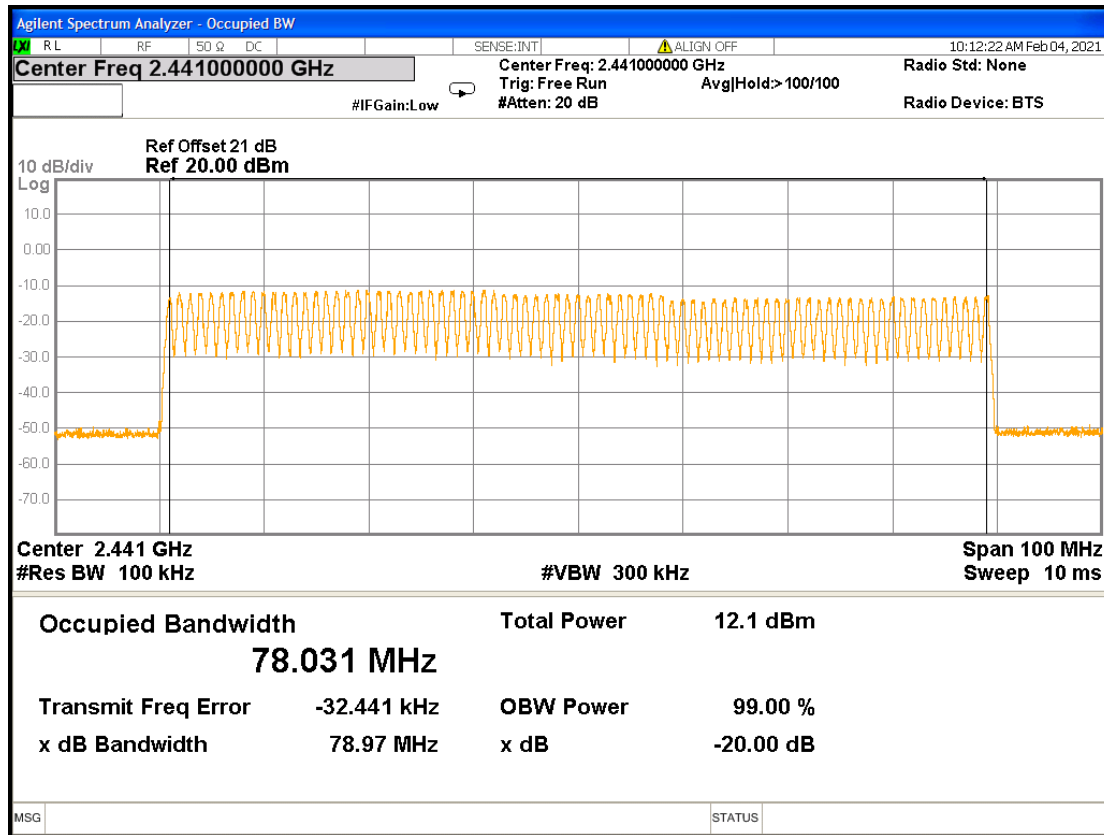
4.2 Operating Environment Condition

Temperature (°C) :	24~25
Relative Humidity (%) :	56~59
Test date :	2021/02/04 ~ 2021/02/05

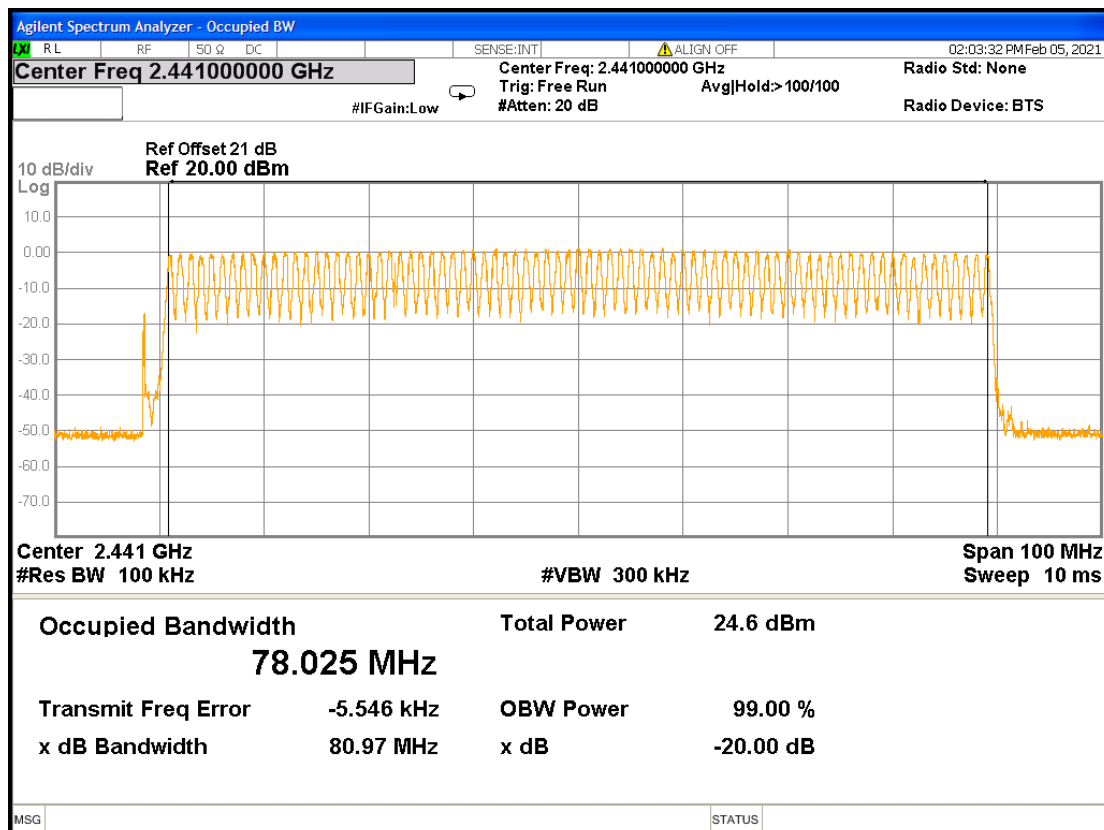
4.3 Test Results

Frequency Range (MHz)	Hopping Channels
2402~2480	79

Module 1: Number of Hopping Frequencies @ DH5 Hopping Mode



Module 2: Number of Hopping Frequencies @ DH5 Hopping Mode



5. Time of Occupancy (Dwell Time)

5.1 Test Setup & Procedure

The test procedure was according to FCC measurement guidelines DA 00-705.

The time of occupancy (dwell time) per FCC §15.247(a)(1) was measured using a 50 ohm spectrum analyzer with the resolutions bandwidth set at 1MHz, the video bandwidth $\geq$ RBW, and the zero span function of spectrum analyzer was enable. The EUT has its hopping function enable.

5.2 Operating Environment Condition

Temperature (°C) :	24~25
Relative Humidity (%) :	56~59
Test date :	2021/02/04 ~ 2021/02/05

5.3 Test Results

The total sweep time is $0.4 \times 79 \text{ Channels} = 31.6 \text{ seconds}$

Due to the number of hops in the 31.6s sweep, we determined to reduce the sweep time to 5s, count the number of hops and multiply by 6.32. The total number of hops will be multiplied by the measured time of one pulse.

For Module 1

Mode	Packet type	Pulse duration (ms)	Measure time (s)	Dwell time (s)	Limit (s)	Test Results
GFSK	DH1	0.382	31.6	0.122	0.4	Pass
	DH3	1.632	31.6	0.261	0.4	Pass
	DH5	2.883	31.6	0.308	0.4	Pass
$\pi/4$ -DPSK	2DH1	0.397	31.6	0.127	0.4	Pass
	2DH3	1.643	31.6	0.263	0.4	Pass
	2DH5	2.890	31.6	0.308	0.4	Pass
8-DPSK	3DH1	0.397	31.6	0.127	0.4	Pass
	3DH3	1.650	31.6	0.264	0.4	Pass
	3DH5	2.897	31.6	0.309	0.4	Pass

Note: (1) Dwell time = $1600 \div (79 \times N) \times \text{Pulse duration} \times \text{Measure time}$

(2) DH1, N=2

DH3, N=4

DH5, N=6

For Module 2

Mode	Packet type	Pulse duration (ms)	Measure time (s)	Dwell time (s)	Limit (s)	Test Results
GFSK	DH1	0.386	31.6	0.123	0.4	Pass
	DH3	1.638	31.6	0.262	0.4	Pass
	DH5	2.884	31.6	0.308	0.4	Pass
$\pi/4$ -DPSK	2DH1	0.401	31.6	0.128	0.4	Pass
	2DH3	1.645	31.6	0.263	0.4	Pass
	2DH5	2.894	31.6	0.309	0.4	Pass
8-DPSK	3DH1	0.400	31.6	0.128	0.4	Pass
	3DH3	1.650	31.6	0.264	0.4	Pass
	3DH5	2.893	31.6	0.309	0.4	Pass

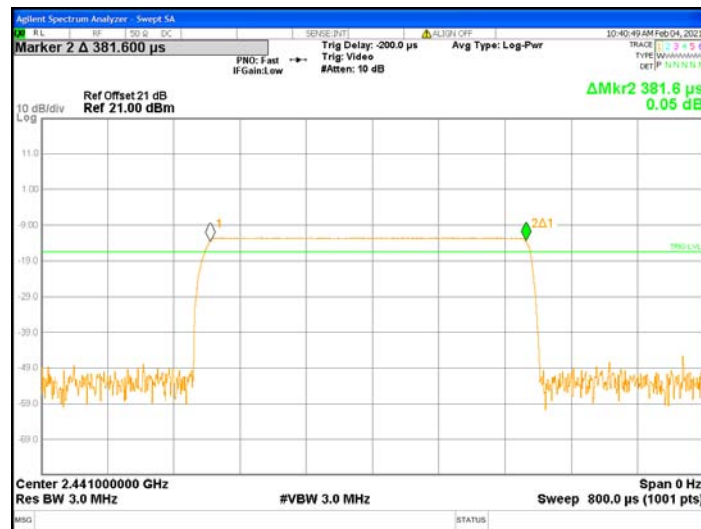
Note: (1) Dwell time = $1600 \div (79 \times N) \times \text{Pulse duration} \times \text{Measure time}$

(2) DH1, N=2

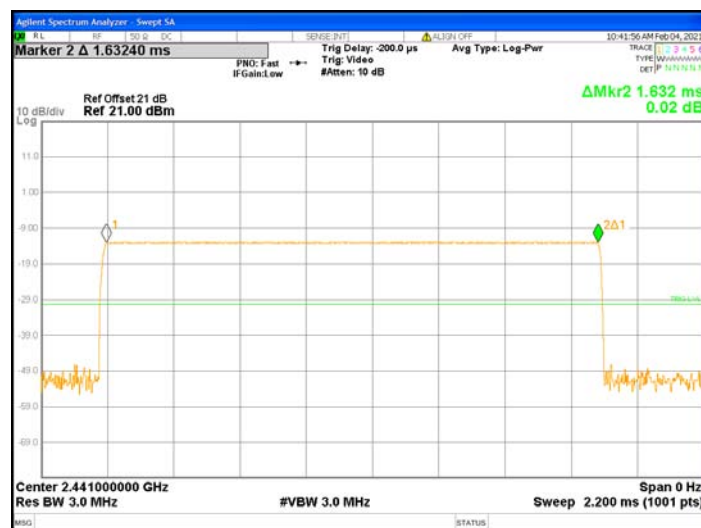
DH3, N=4

DH5, N=6

Module 1: Dwell Time @ DH1 Ch 39



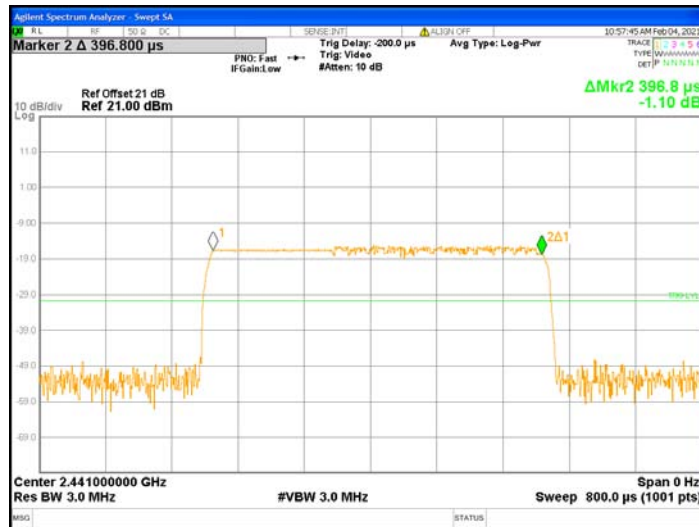
Module 1: Dwell Time @ DH3 Ch 39



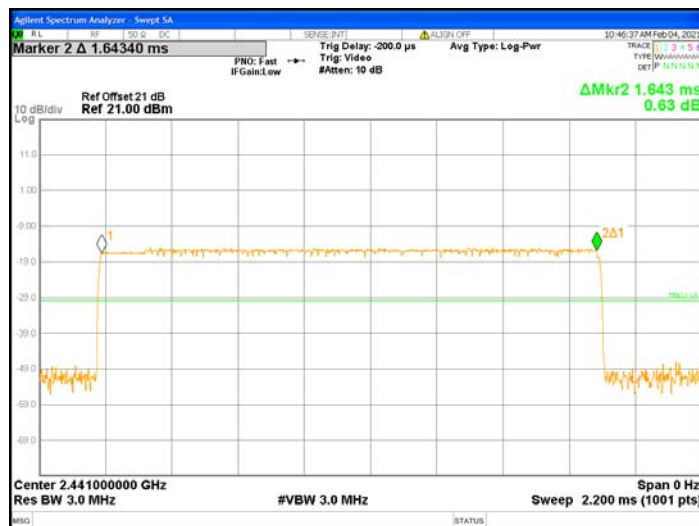
Module 1: Dwell Time @ DH5 Ch 39



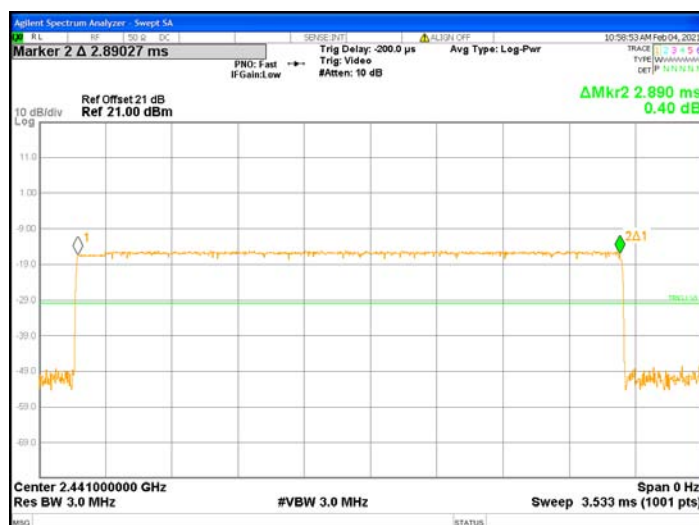
Module 1: Dwell Time @ 2DH1 Ch 39



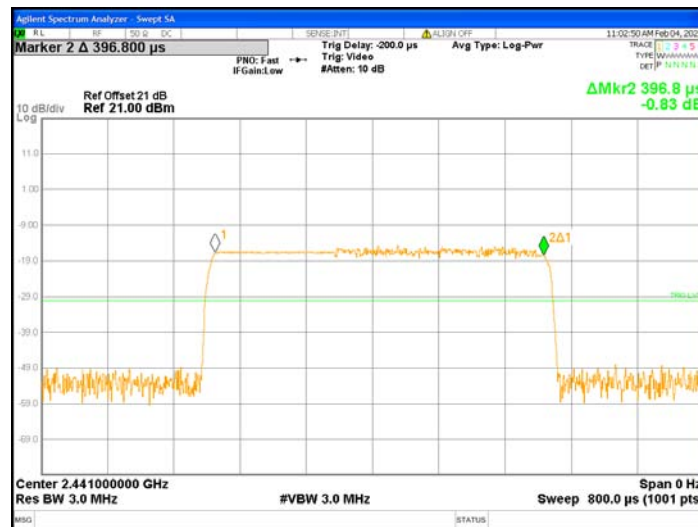
Module 1: Dwell Time @ 2DH3 Ch 39



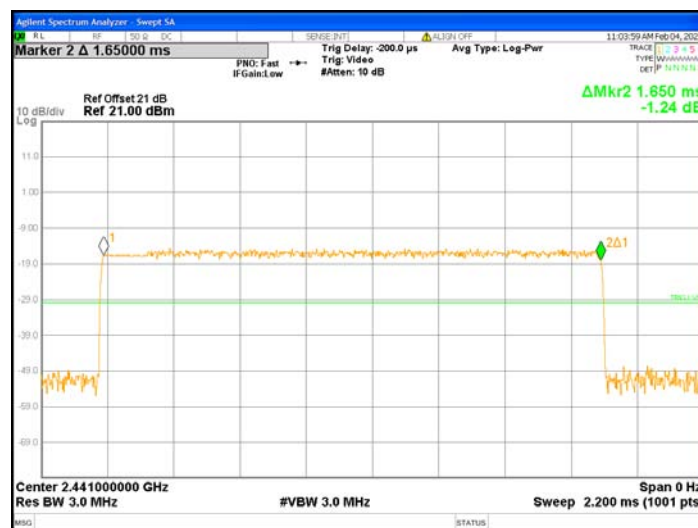
Module 1: Dwell Time @ 2DH5 Ch 39



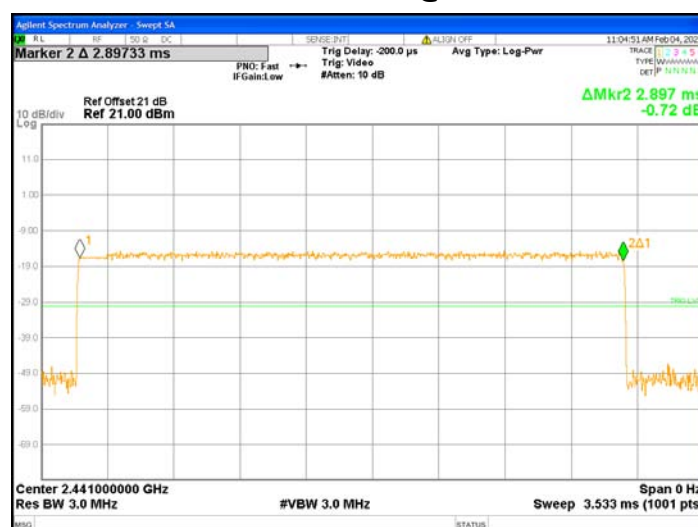
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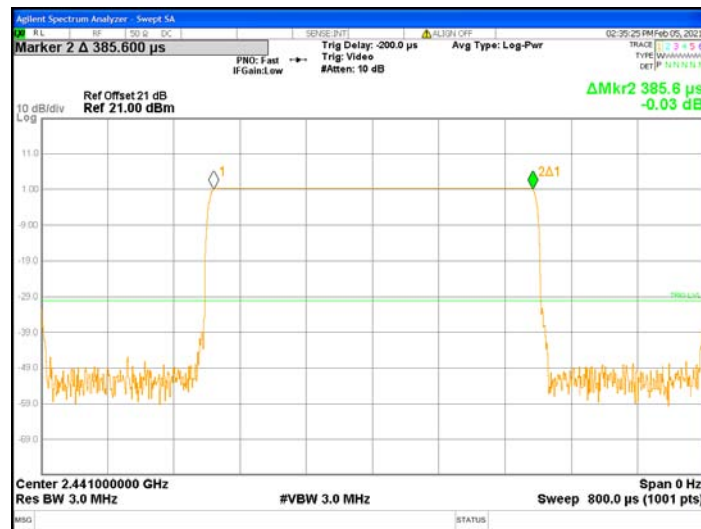
Module 1: Dwell Time @ 3DH3 Ch 39



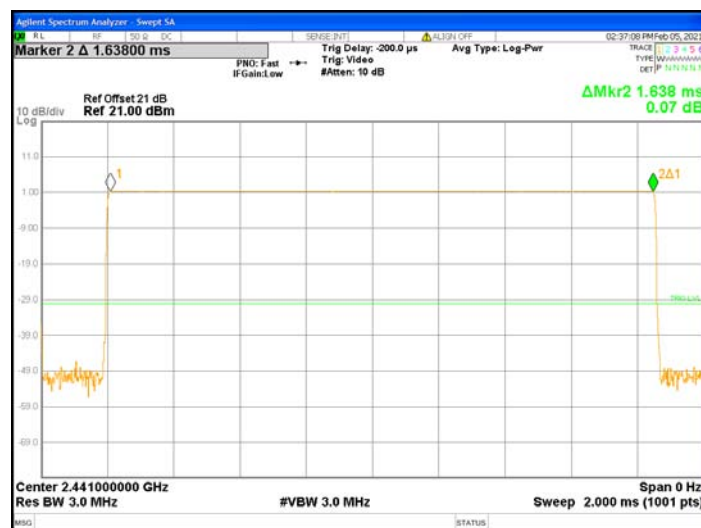
Module 1: Dwell Time @ 3DH5 Ch 39



Module 2: Dwell Time @ DH1 Ch 39



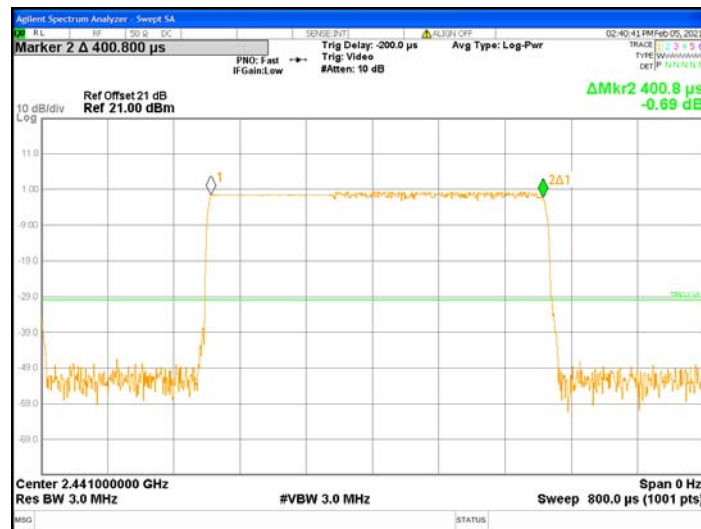
Module 2: Dwell Time @ DH3 Ch 39



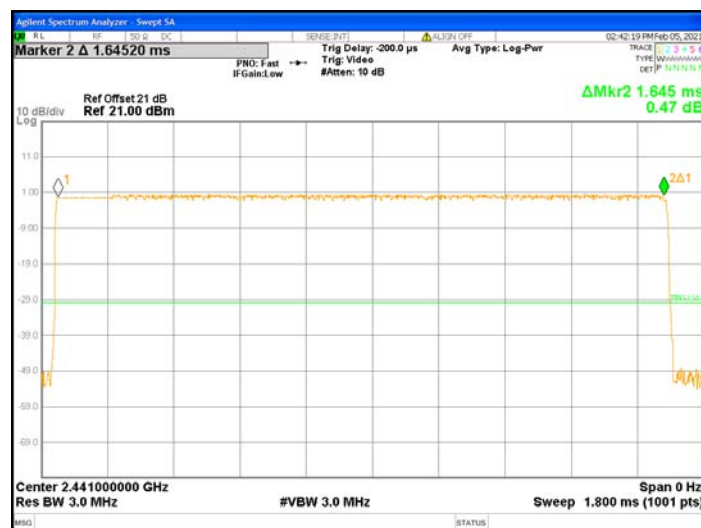
Module 2: Dwell Time @ DH5 Ch 39



Module 2: Dwell Time @ 2DH1 Ch 39



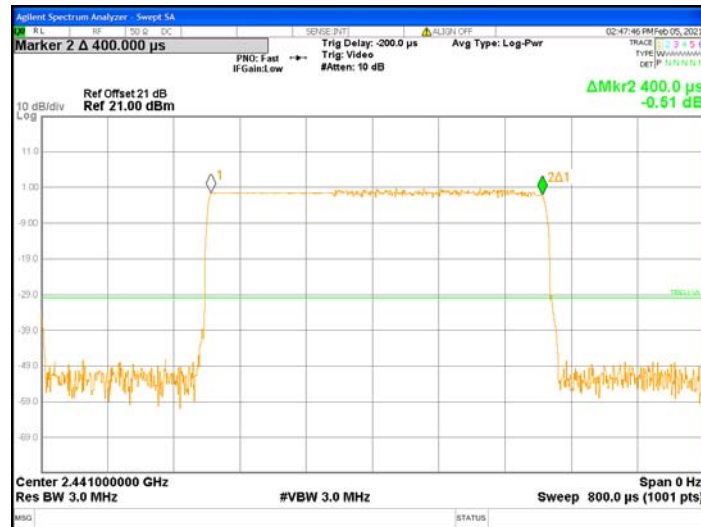
Module 2: Dwell Time @ 2DH3 Ch 39



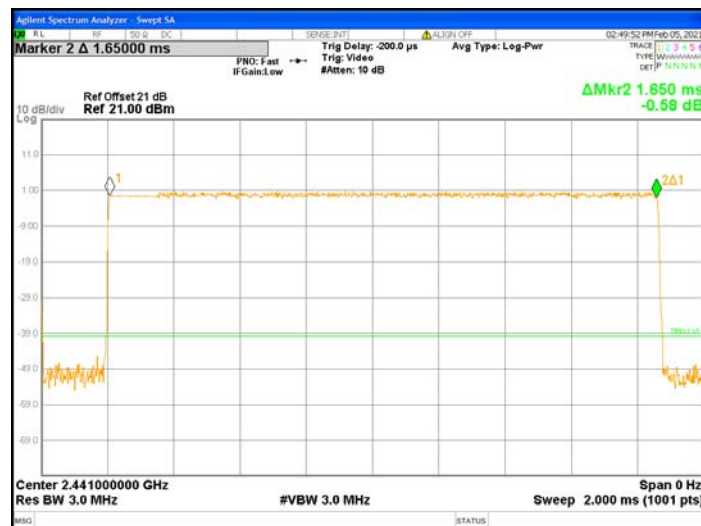
Module 2: Dwell Time @ 2DH5 Ch 39



Module 2: Dwell Time @ 3DH1 Ch 39



Module 2: Dwell Time @ 3DH3 Ch 39



Module 2: Dwell Time @ 3DH5 Ch 39



5. Maximum Output Power Test

5.1 Test Setup & Procedure

The test procedure was according to FCC measurement guidelines DA 00-705.

The power output per FCC §15.247(b) was measured on the EUT using a 50 ohm SMA cable connected to peak power meter via power sensor. Power was read directly and cable loss correction (2 dB) was added to the reading to obtain power at the EUT antenna terminals. The test was performed at 3 channels (lowest, middle and highest channel).

5.2 Operating Environment Condition

Temperature (°C) :	24~25
Relative Humidity (%) :	56~59
Test date :	2021/02/04 ~ 2021/02/05

5.3 Test Results

For Module 1

Mode	Channel	Frequency (MHz)	Output Power (AV) (dBm)	Total Power (AV) (mW)	Maximum power (PK) (dBm)	Maximum power (PK) (mW)	Limit (dBm)	Margin (dB)
DH5	0	2402	-4.91	0.32	-0.50	0.89	30	-30.50
	39	2441	-3.97	0.40	-0.91	0.81	30	-30.91
	78	2480	-3.47	0.45	0.09	1.02	30	-29.91
2DH5	0	2402	-6.95	0.20	-1.49	0.71	30	-31.49
	39	2441	-6.58	0.22	-0.66	0.86	30	-30.66
	78	2480	-6.34	0.23	-0.99	0.80	30	-30.99
3DH5	0	2402	-7.08	0.20	-1.17	0.76	30	-31.17
	39	2441	-6.56	0.22	-1.30	0.74	30	-31.30
	78	2480	-6.25	0.24	-0.05	0.99	30	-30.05

TEST REPORT
For Module 2

Mode	Channel	Frequency (MHz)	Output Power (AV) (dBm)	Total Power (AV) (mW)	Maximum power (PK) (dBm)	Maximum power (PK) (mW)	Limit (dBm)	Margin (dB)
DH5	0	2402	-2.94	0.51	0.32	1.08	30	-29.68
	39	2441	-2.84	0.52	0.65	1.16	30	-29.35
	78	2480	-3.11	0.49	0.57	1.14	30	-29.43
2DH5	0	2402	-4.68	0.34	0.34	1.08	30	-29.66
	39	2441	-4.71	0.34	-0.32	0.93	30	-30.32
	78	2480	-5.28	0.30	-0.70	0.85	30	-30.70
3DH5	0	2402	-4.66	0.34	-0.38	0.92	30	-30.38
	39	2441	-4.83	0.33	-0.38	0.92	30	-30.38
	78	2480	-5.40	0.29	-0.50	0.89	30	-30.50

5. RF Antenna Conducted Spurious Test

5.1 Test Setup & Procedure

The test procedure was according to FCC measurement guidelines DA 00-705.

The measurements were performed from 30MHz to 25GHz RF antenna conducted per FCC 15.247 (c) was measured from the EUT antenna port using a 50ohm spectrum analyzer with the resolution bandwidth set at 100 kHz, and the video bandwidth set at 100 kHz.

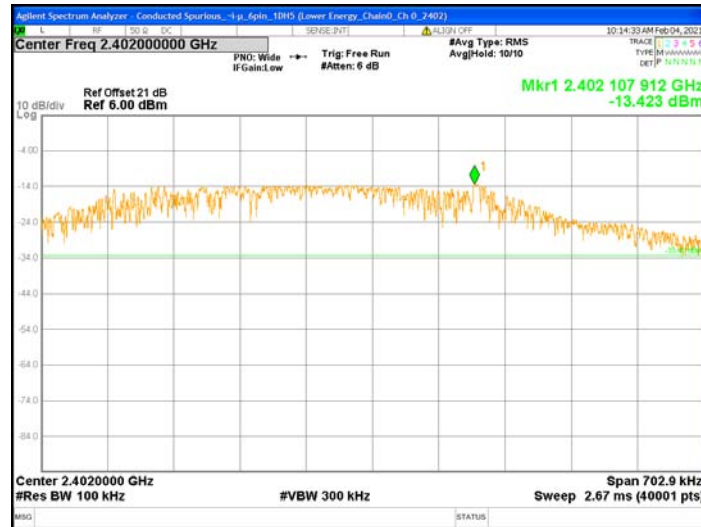
Harmonics and spurious noise must be at least 20dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

5.2 Operating Environment Condition

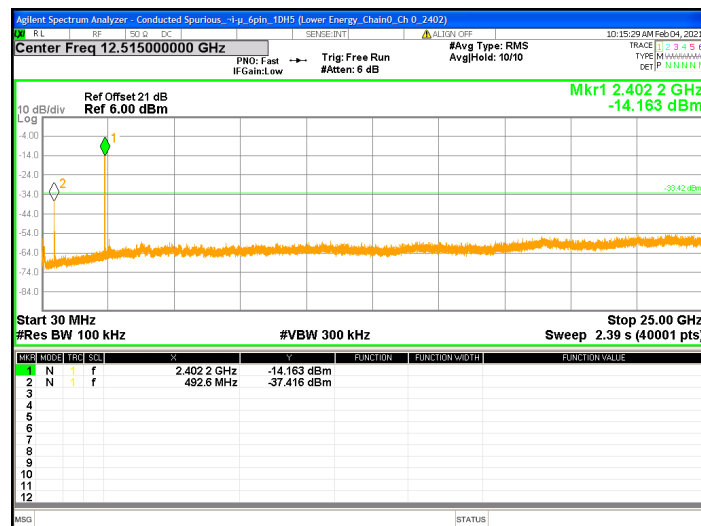
Temperature (°C) :	24~25
Relative Humidity (%) :	56~59
Test date :	2021/02/04 ~ 2021/02/05

5.3 Test Results

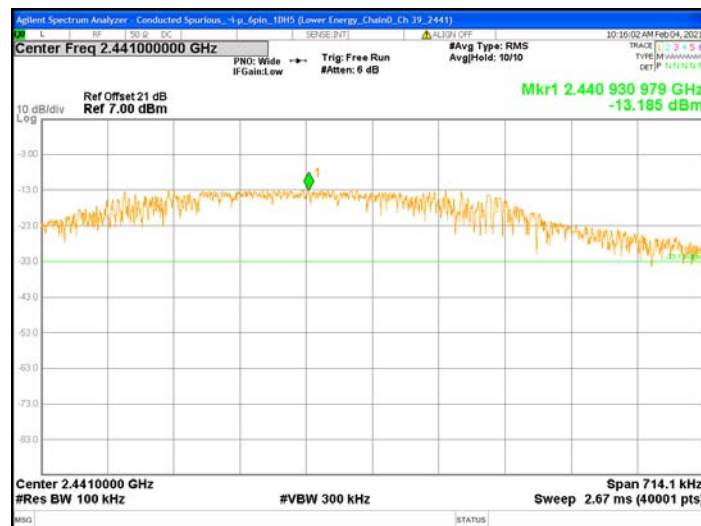
Module 1: Conducted Spurious @ DH5 Ch 0



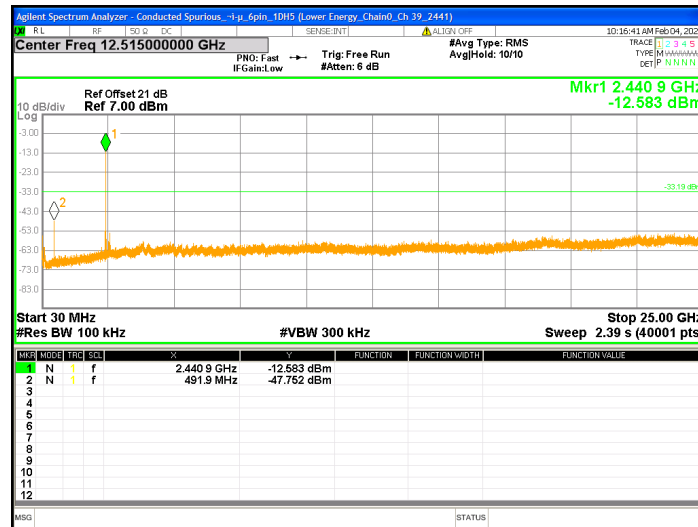
Module 1: Conducted Spurious @ DH5 Ch 0



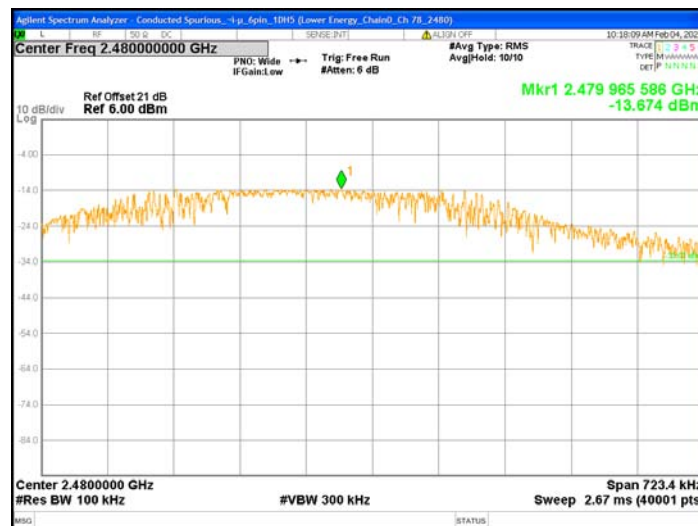
Module 1: Conducted Spurious @ DH5 Ch 39



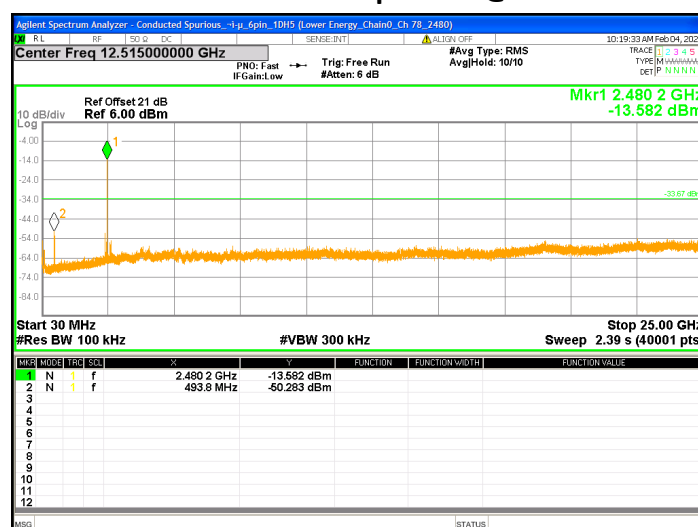
Module 1: Conducted Spurious @ DH5 Ch 39



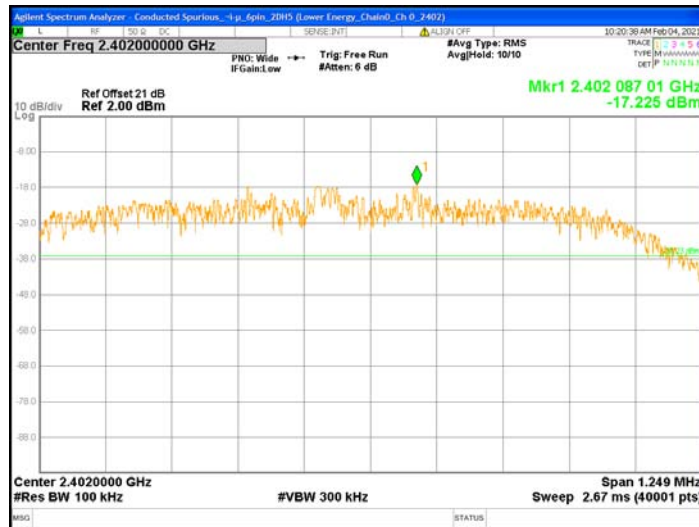
Module 1: Conducted Spurious @ DH5 Ch 78



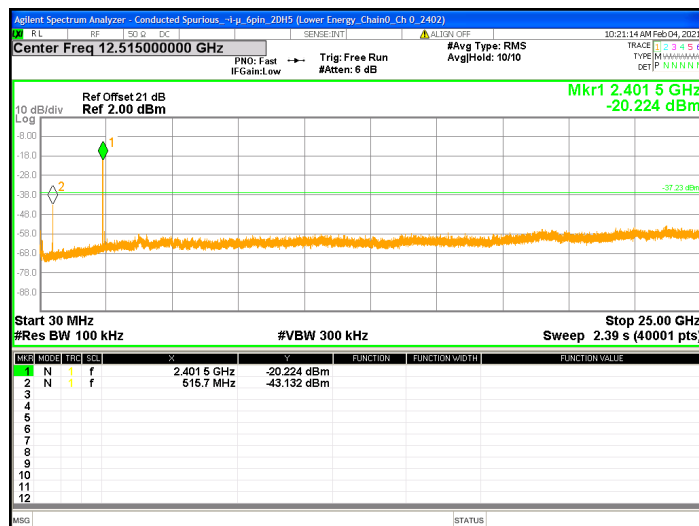
Module 1: Conducted Spurious @ DH5 Ch 78



Module 1: Conducted Spurious @ 2DH5 Ch 0



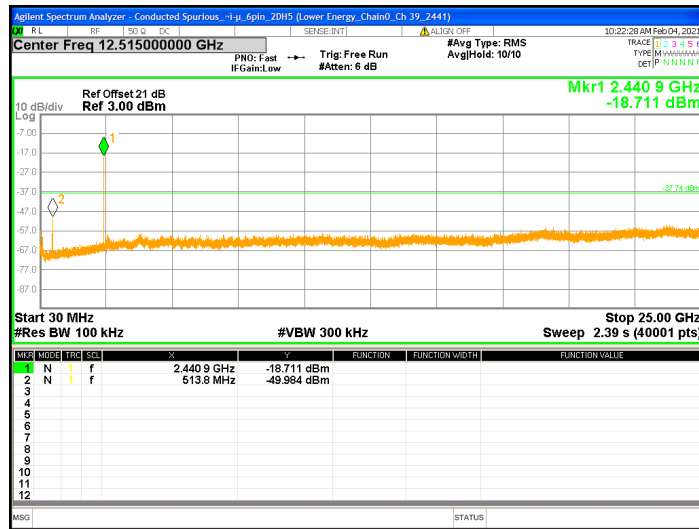
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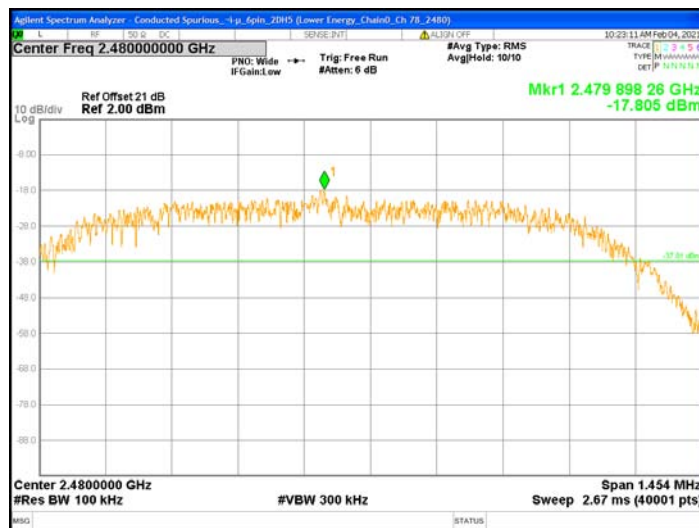
Module 1: Conducted Spurious @ 2DH5 Ch 39



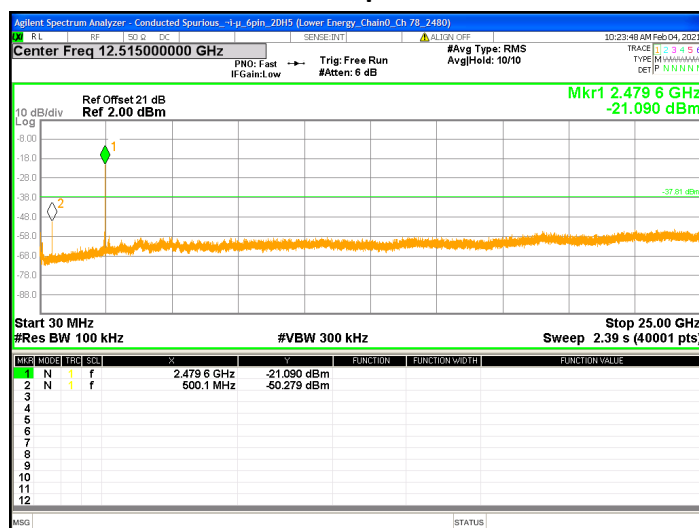
Module 1: Conducted Spurious @ 2DH5 Ch 39



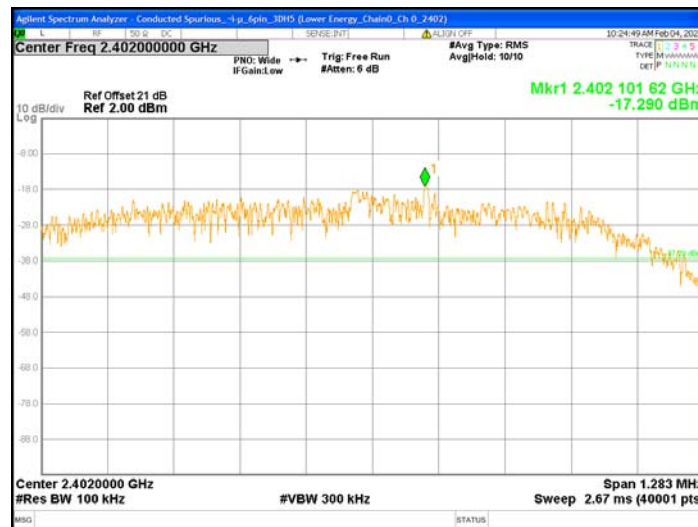
Module 1: Conducted Spurious @ 2DH5 Ch 78



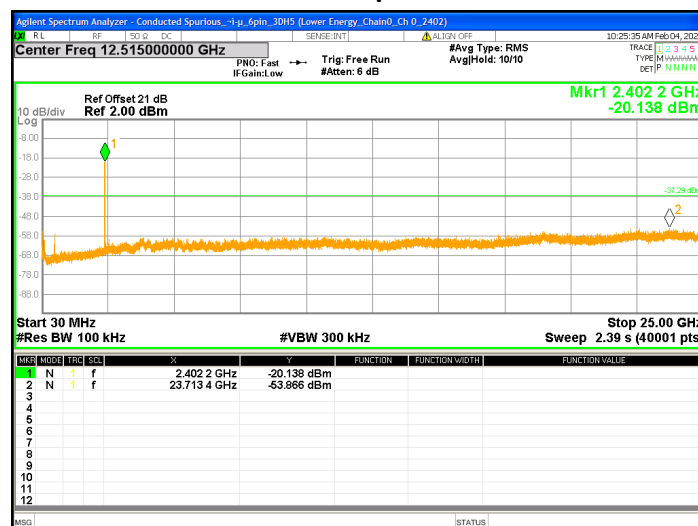
Module 1: Conducted Spurious @ 2DH5 Ch 78



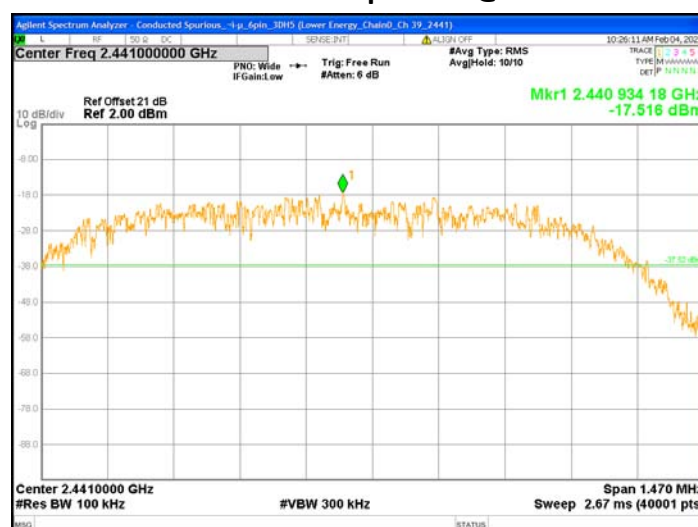
Module 1: Conducted Spurious @ 3DH5 Ch 0



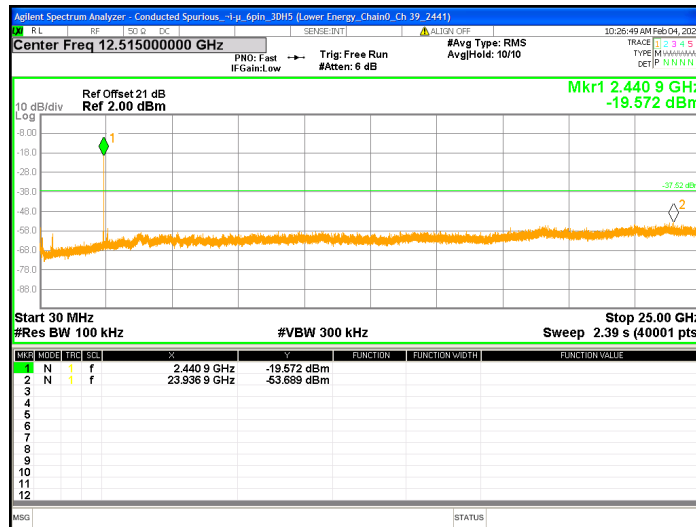
Module 1: Conducted Spurious @ 3DH5 Ch 0



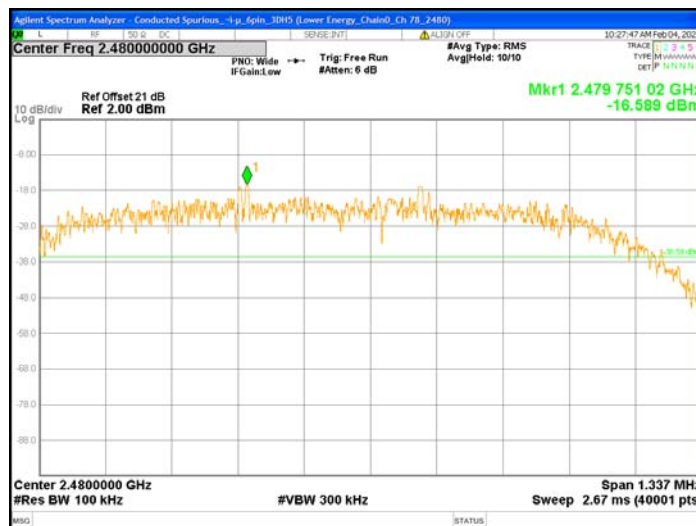
Module 1: Conducted Spurious @ 3DH5 Ch 39



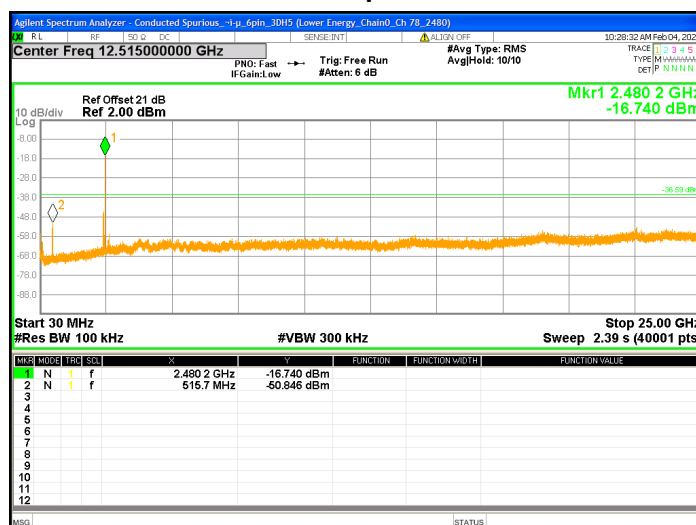
Module 1: Conducted Spurious @ 3DH5 Ch 39



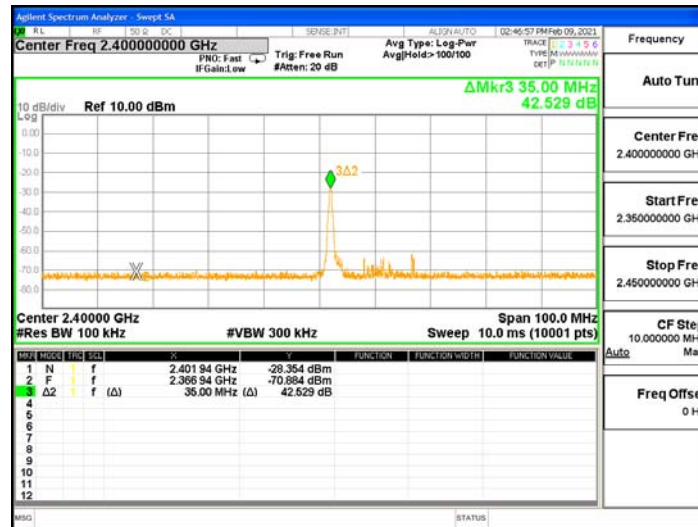
Module 1: Conducted Spurious @ 3DH5 Ch 78



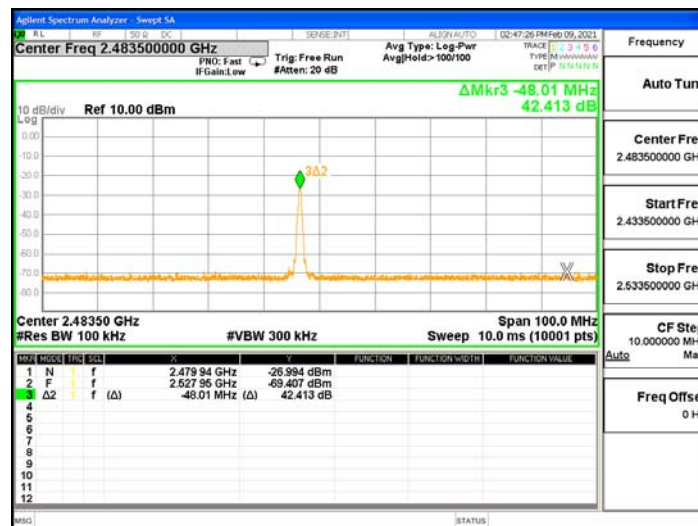
Module 1: Conducted Spurious @ 3DH5 Ch 78



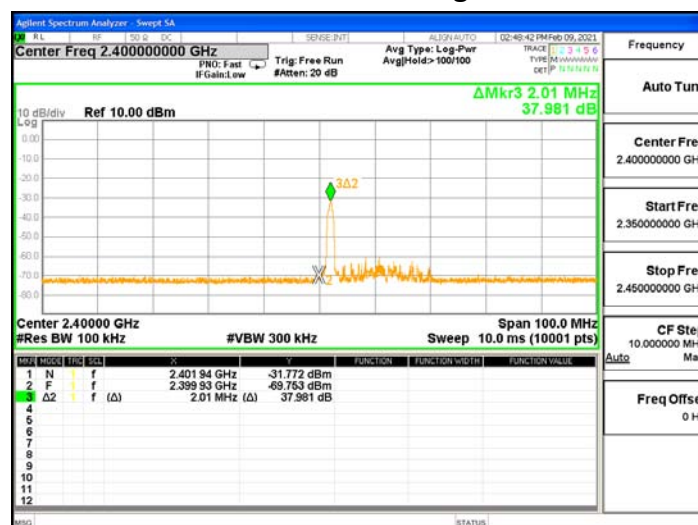
Module 1: Authorized Band Bandedge @ DH5 Mode Ch0



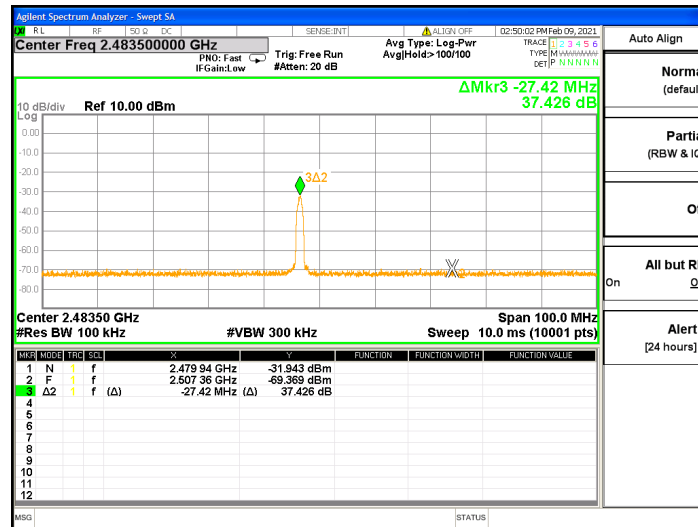
Module 1: Authorized Band Bandedge @ DH5 Mode Ch78



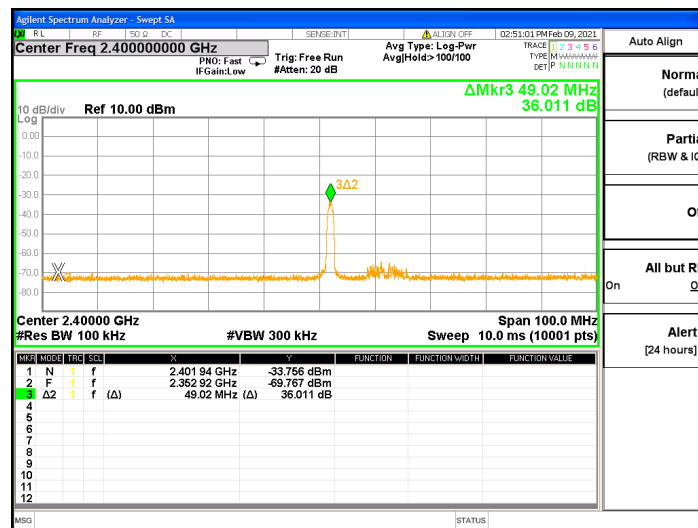
Module 1: Authorized Band Bandedge @ 2DH5 Mode Ch0



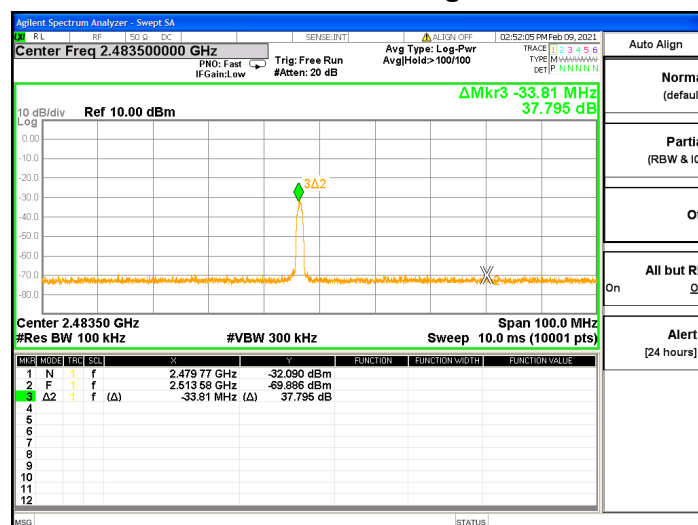
Module 1: Authorized Band Bandedge @ 2DH5 Mode Ch78



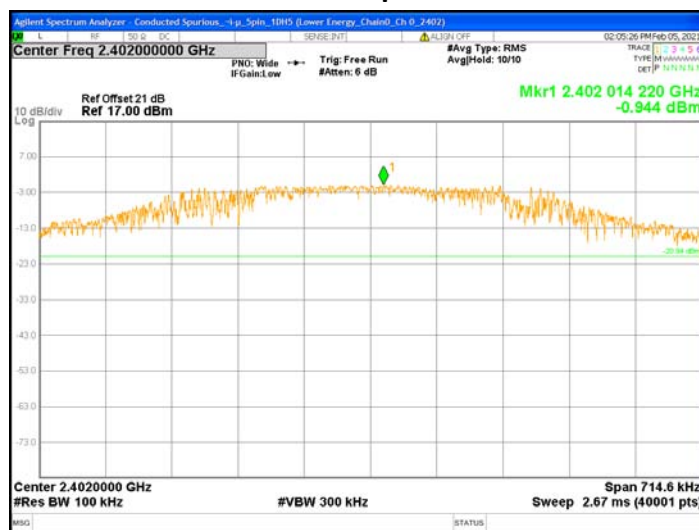
Module 1: Authorized Band Bandedge @ 3DH5 Mode Ch0



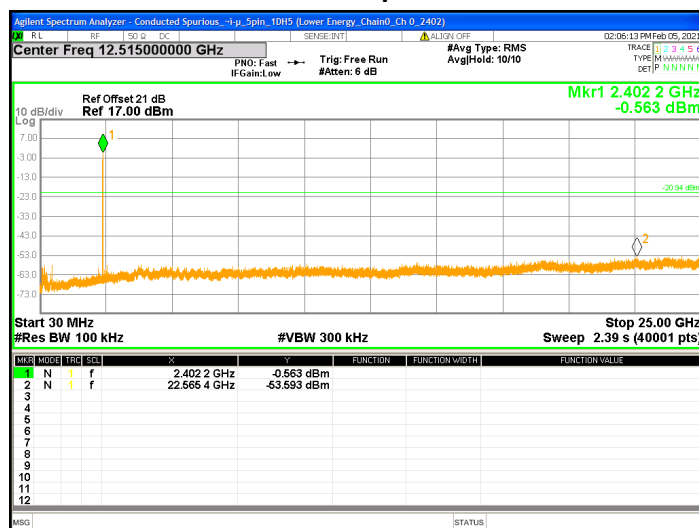
Module 1: Authorized Band Bandedge @ 3DH5 Mode Ch78



Module 2: Conducted Spurious @ DH5 Ch 0



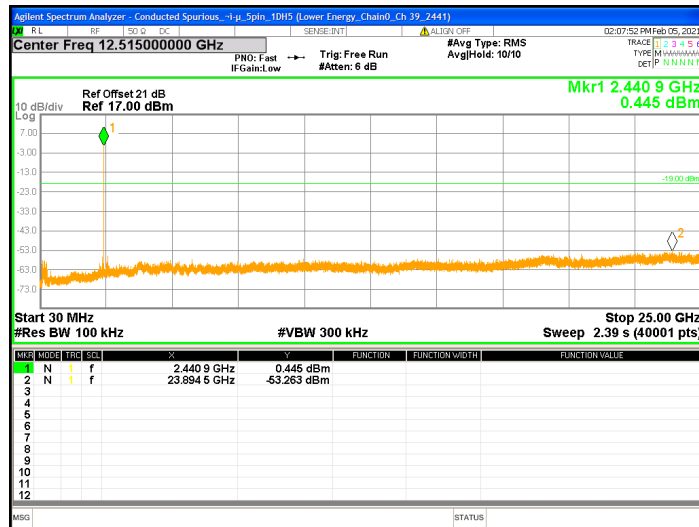
Module 2: Conducted Spurious @ DH5 Ch 0



Module 2: Conducted Spurious @ DH5 Ch 39



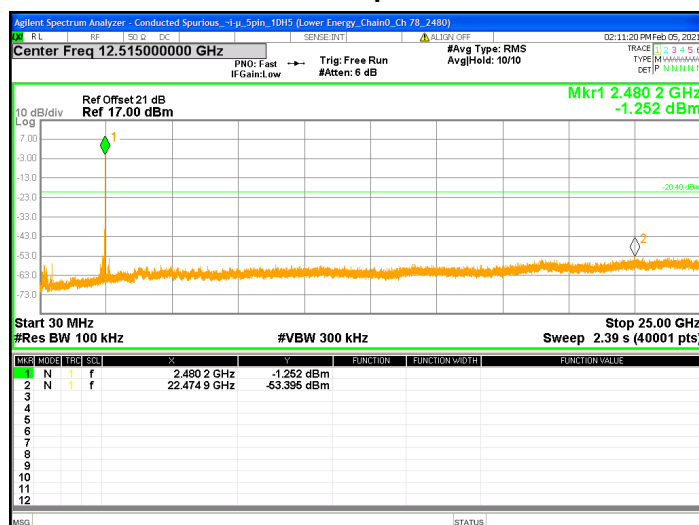
Module 2: Conducted Spurious @ DH5 Ch 39



Module 2: Conducted Spurious @ DH5 Ch 78



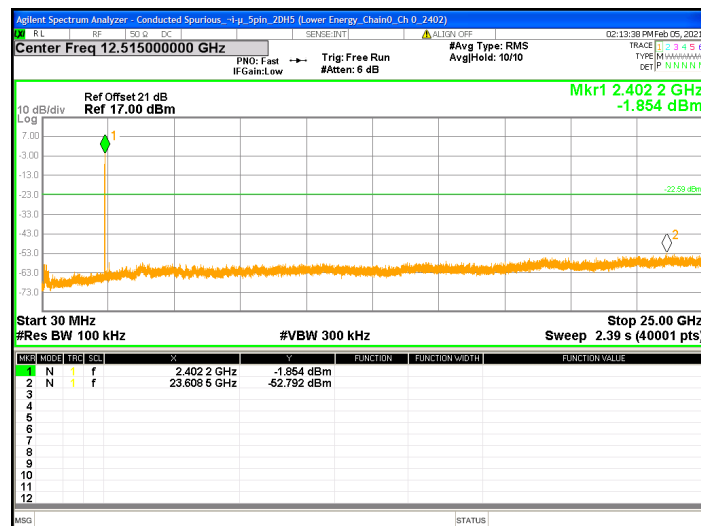
Module 2: Conducted Spurious @ DH5 Ch 78



Module 2: Conducted Spurious @ 2DH5 Ch 0



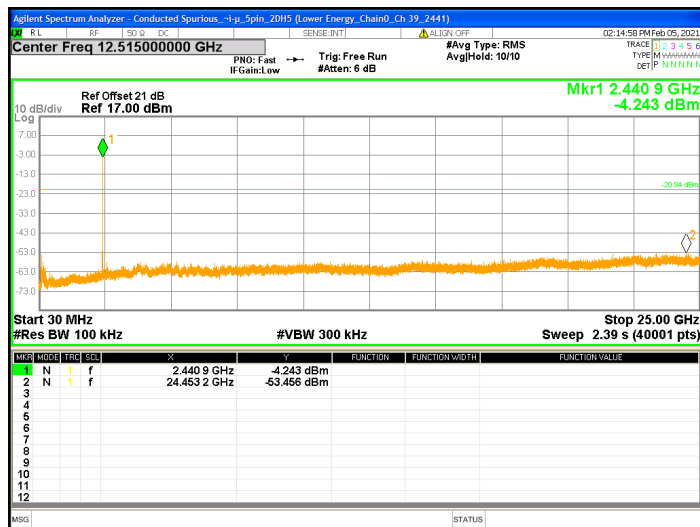
Module 2: Conducted Spurious @ 2DH5 Ch 0



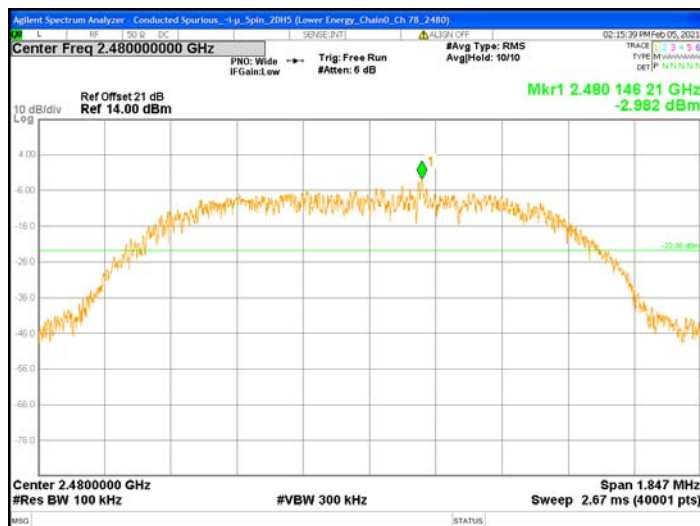
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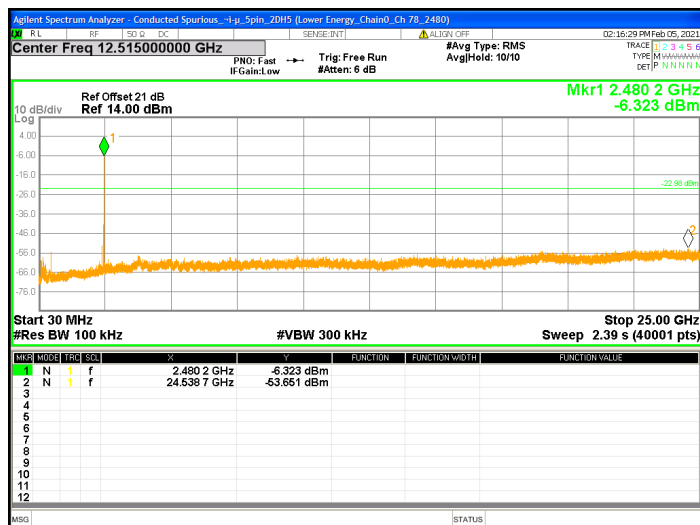
Module 2: Conducted Spurious @ 2DH5 Ch 39



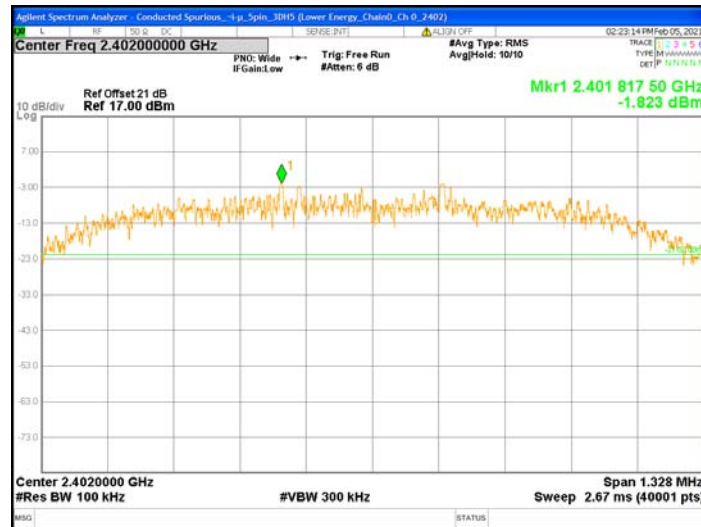
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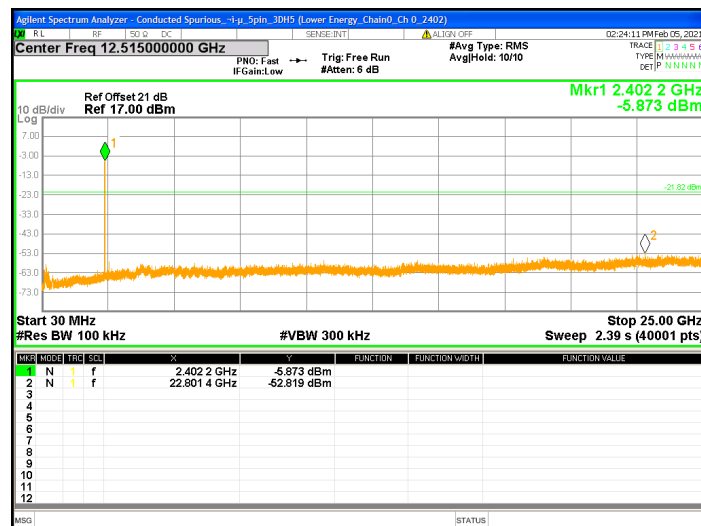
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Module 2: Conducted Spurious @ 3DH5 Ch 0



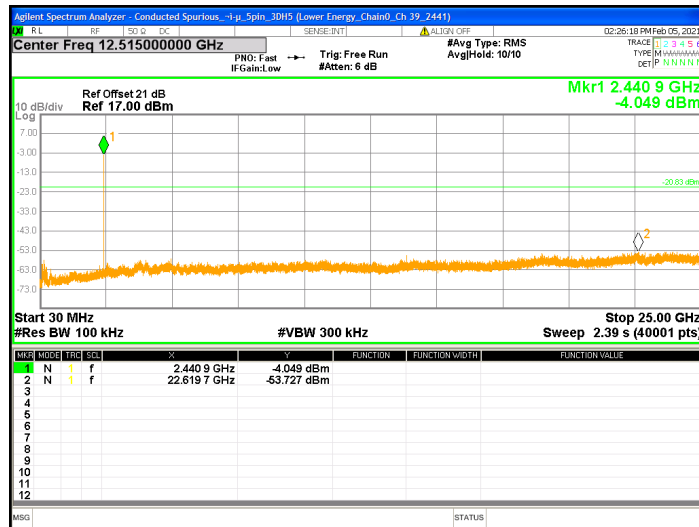
Module 2: Conducted Spurious @ 3DH5 Ch 0



Module 2: Conducted Spurious @ 3DH5 Ch 39



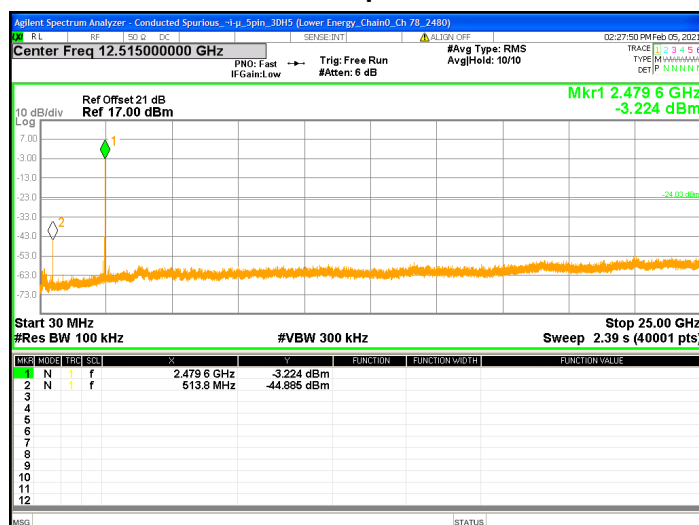
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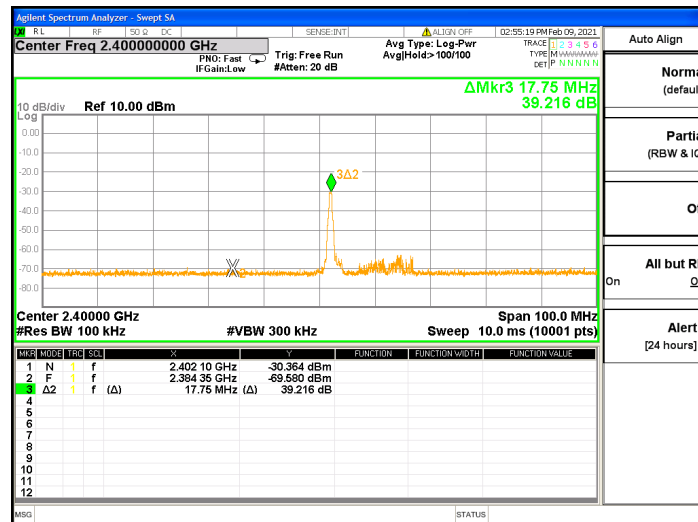
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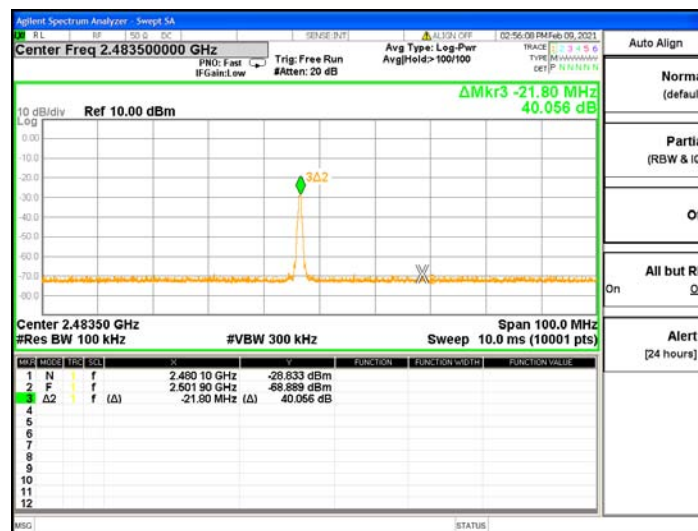
Module 2: Conducted Spurious @ 3DH5 Ch 78



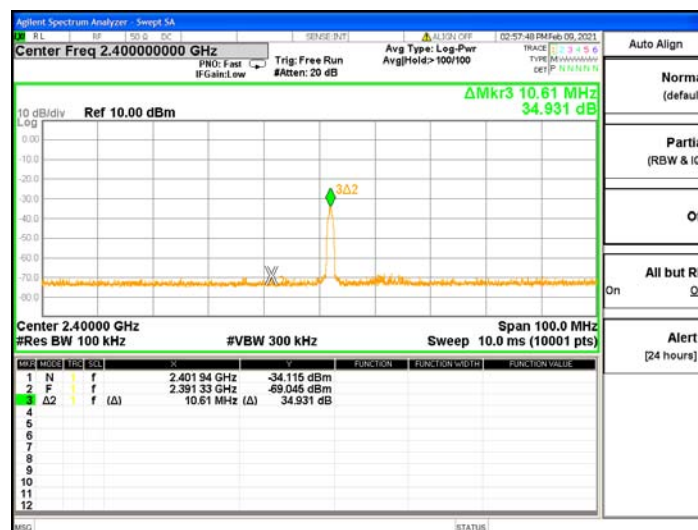
Module 2: Authorized Band Bandedge @ DH5 Mode Ch0



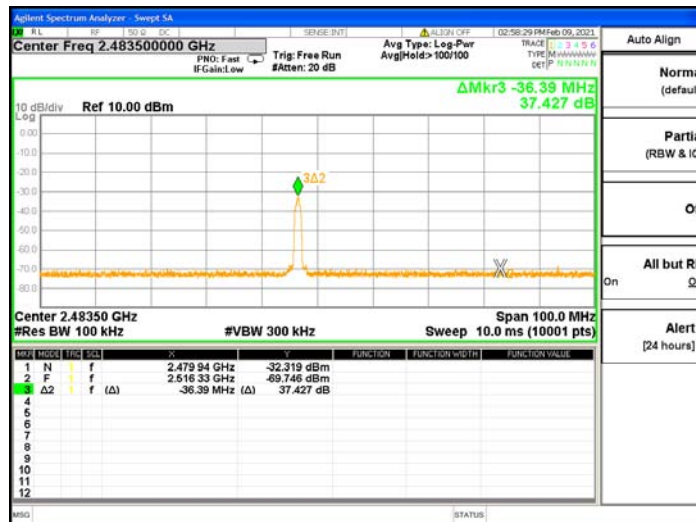
Module 2: Authorized Band Bandedge @ DH5 Mode Ch78



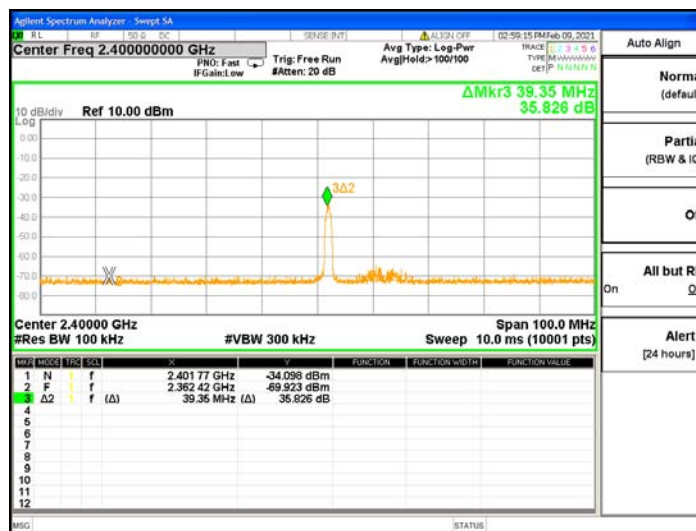
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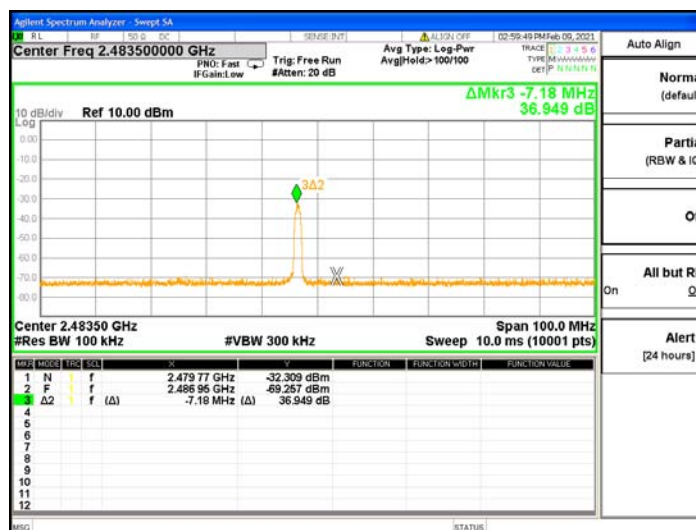
Module 2: Authorized Band Bandedge @ 2DH5 Mode Ch78



Module 2: Authorized Band Bandedge @ 3DH5 Mode Ch0



Module 2: Authorized Band Bandedge @ 3DH5 Mode Ch78



TEST REPORT

6. Emissions in Restricted Frequency Bands (Radiated emission measurements)

6.1 Instrument Setting

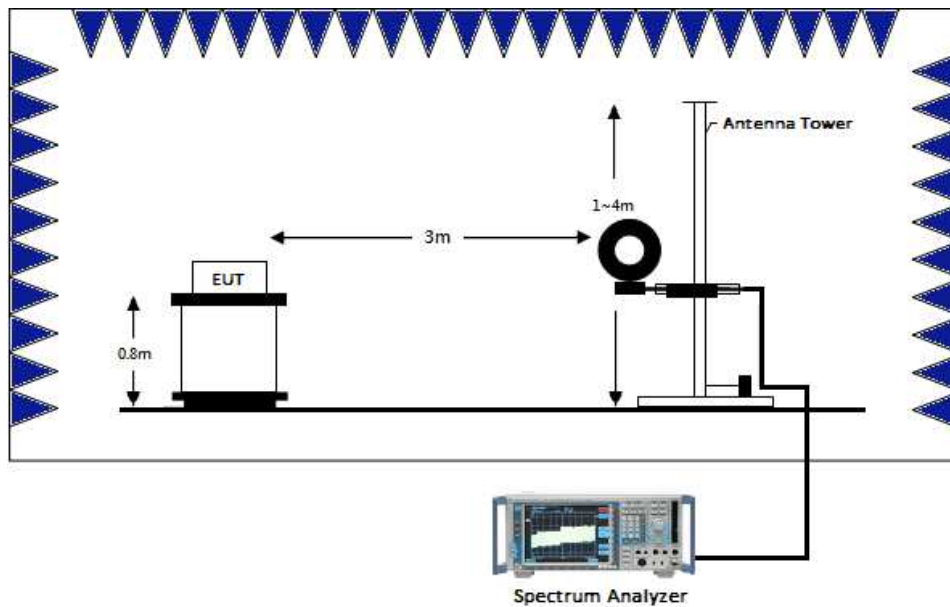
Receiver Function	Setting (Below 1GHz)	Setting (Above 1GHz)
Detector	QP	Peak and Average
RBW	9-150 kHz ; 200-300 Hz 0.15-30 MHz; 9-10 kHz 30-1000 MHz; 100-120 kHz	1MHz
VBW	$\geq 3 \times \text{RBW}$	3MHz & 1/T Minimum VBW
Sweep	Auto couple	Auto couple
Start Frequency	9 kHz	1GHz
Stop Frequency	1 GHz	Tenth harmonic
Attenuation	Auto	Auto

6.2 Test Procedure

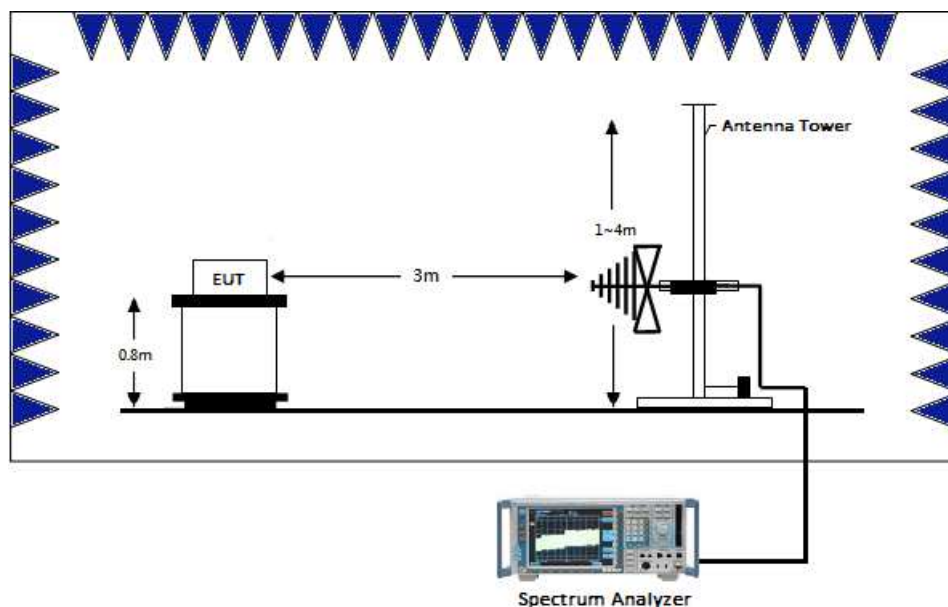
Step 1	Configure the EUT according to ANSI C63.10:2013. The EUT was placed on the top of the turntable 0.8 meter (below 1GHz) and 1.5 meter (above 1GHz) above ground. The center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
Step 2	Power on the EUT and all the companion devices. The turntable was rotated by 360 degree to find the position of the maximum emission level.
Step 3	The height of the receiving antenna was varied between one meter and four meters above ground to find the maximum emission field strength of the both horizontal and vertical polarization.
Step 4	If find the frequencies above the limit or below within 3dB, the antenna tower was scan (from 1m to 4m) and then the turntable was rotated to find the maximum reading.
Step 5	Set the test-receiver system to peak or CISPR quasi-peak detector with specified bandwidth under maximum hold mode.
Step 6	For emissions above 1GHz, use 1MHz VBW and 3MHz RBW for reading in spectrum analyzer. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.
Step 7	If the emissions level of the EUT in peak mode was 3dB lower than the average limit specified then testing will be stopped and peak values of the EUT will be reported. Otherwise, the emissions which do not have 3dB margin will be measured using the quasi-peak method for below 1GHz.
Step 8	For testing above 1GHz, The emissions level of the EUT in peak mode was lower than average limit, then testing will be stopped and peak values of the EUT will be reported, otherwise, the emission will be measured in average mode again and reported.
Step 9	In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be quasi-peak measured by receiver.

6.3 Test Diagram

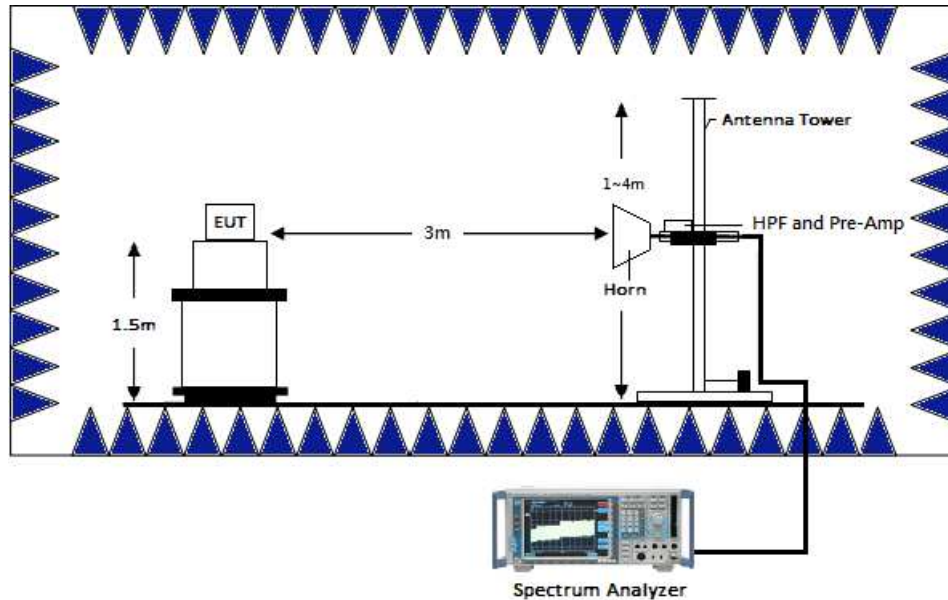
6.3.1 Radiated emission from 9kHz to 30MHz uses Loop Antenna:



6.3.2 Radiated emission below 1GHz using Bilog Antenna



6.3.3 Radiated emission above 1GHz using Horn Antenna



6.4 Limit

Frequency(MHz)	Field Strength(uV/m)	Measurement distance(m)
0.009~0.490	$2400/F(\text{kHz})$	300
0.490~1.705	$24000/F(\text{kHz})$	30
1.705~30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark:

1. In the above table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

6.5 Test Result

6.5.1 Measurement results: frequencies 9kHz to 30MHz

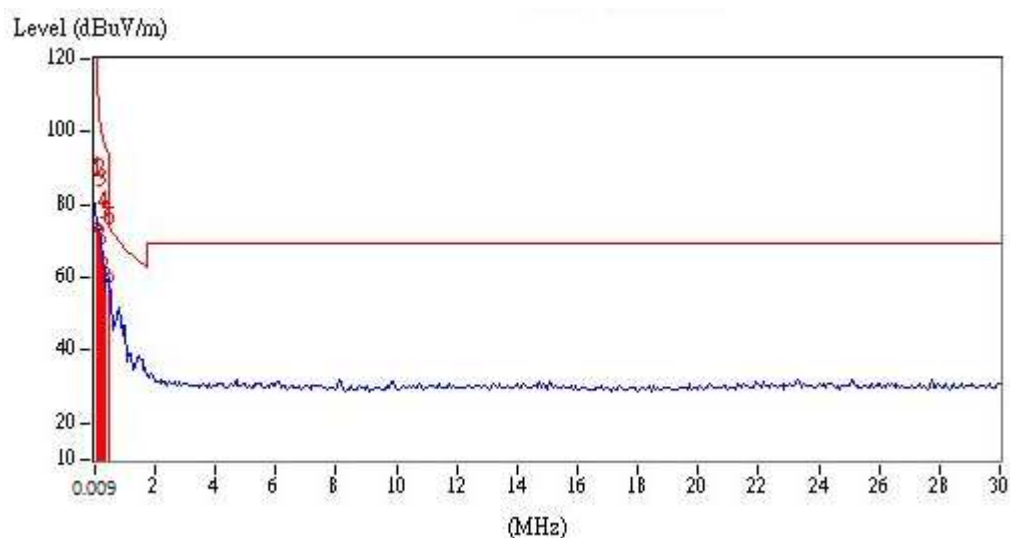
Temperature (°C) :	25
Relative Humidity (%) :	68
Test date :	2021/02/05

The test was performed on EUT under continuously transmitting mode. The worst case occurred at 1DH5 Ch 78.

For Module 1

Antenna Polarity	Frequency (MHz)	Detector	Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3m (dBμV/m)	Margin (dB)
Perpendicular	0.07	AV	18.37	55.63	74.00	110.70	-36.70
Perpendicular	0.13	AV	17.92	55.54	73.46	105.33	-31.87
Perpendicular	0.19	AV	18.13	52.25	70.38	102.03	-31.65
Perpendicular	0.25	AV	18.35	46.21	64.56	99.65	-35.09
Perpendicular	0.31	AV	18.53	43.00	61.53	97.78	-36.25
Perpendicular	0.49	AV	18.44	41.47	59.91	93.80	-33.89

Remark: Corr. Factor = Antenna Factor + Cable Loss

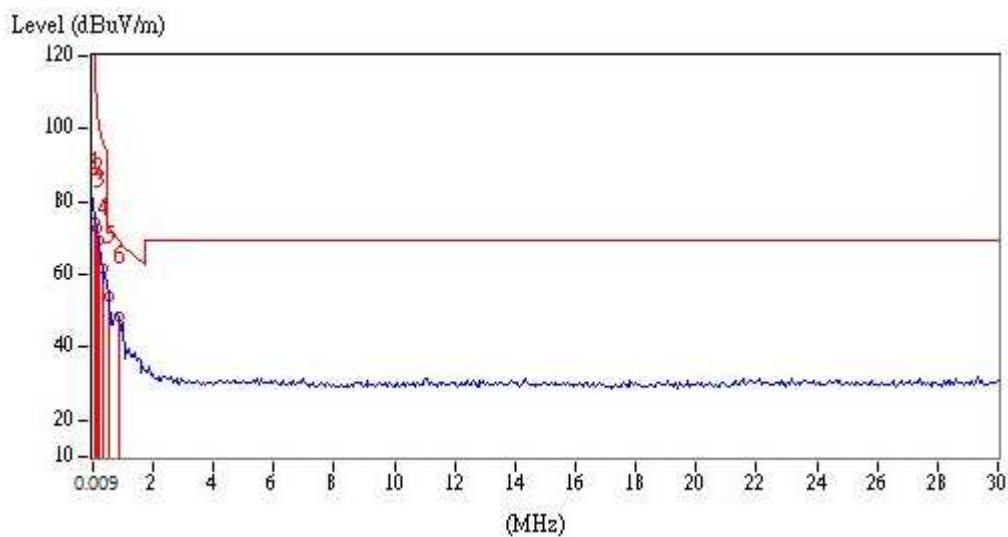


TEST REPORT

For Module 1

Antenna Polarity	Frequency (MHz)	Detector	Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3m (dBμV/m)	Margin (dB)
Parallel	0.07	AV	18.37	55.75	74.12	110.70	-36.58
Parallel	0.13	AV	17.92	54.74	72.66	105.33	-32.67
Parallel	0.19	AV	18.13	51.02	69.15	102.03	-32.88
Parallel	0.31	AV	18.53	43.19	61.72	97.78	-36.06
Parallel	0.55	QP	18.44	35.65	54.09	72.80	-18.71
Parallel	0.85	QP	18.46	30.13	48.59	69.02	-20.43

Remark: Corr. Factor = Antenna Factor + Cable Loss

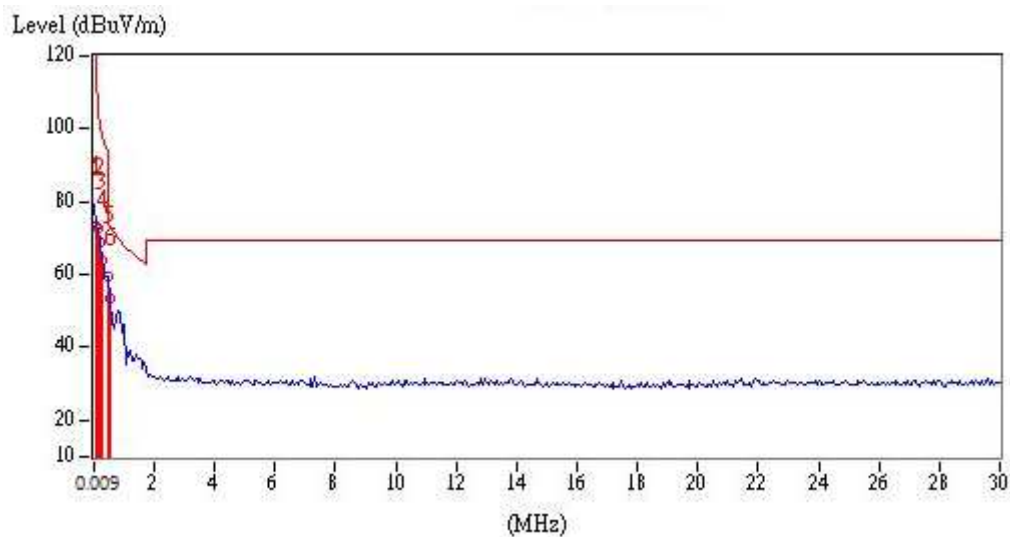


TEST REPORT

For Module 1

Antenna Polarity	Frequency (MHz)	Detector	Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3m (dBμV/m)	Margin (dB)
Ground-parallel	0.07	AV	18.37	55.10	73.47	110.70	-37.23
Ground-parallel	0.13	AV	17.92	54.96	72.88	105.33	-32.45
Ground-parallel	0.19	AV	18.13	50.92	69.05	102.03	-32.98
Ground-parallel	0.25	AV	18.35	45.67	64.02	99.65	-35.63
Ground-parallel	0.49	AV	18.44	40.92	59.36	93.80	-34.44
Ground-parallel	0.55	QP	18.44	35.18	53.62	72.80	-19.18

Remark: Corr. Factor = Antenna Factor + Cable Loss



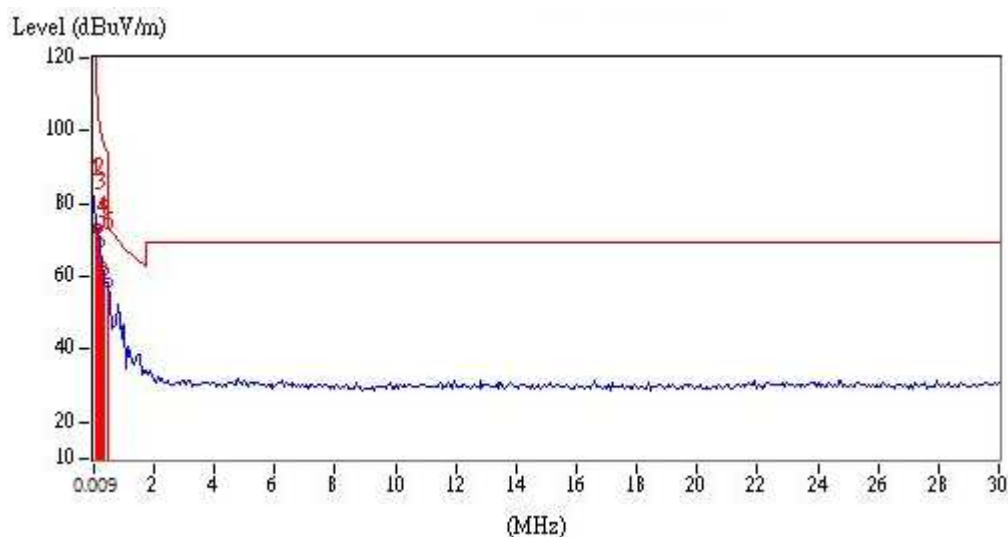
Temperature (°C) :	25
Relative Humidity (%) :	68
Test date :	2021/02/05

The test was performed on EUT under continuously transmitting mode. The worst case occurred at 1DH5 Ch 39.

For Module 2

Antenna Polarity	Frequency (MHz)	Detector	Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3m (dBμV/m)	Margin (dB)
Perpendicular	0.07	AV	18.37	54.69	73.06	110.70	-37.64
Perpendicular	0.13	AV	17.92	55.33	73.25	105.33	-32.08
Perpendicular	0.19	AV	18.13	51.37	69.50	102.03	-32.53
Perpendicular	0.25	AV	18.35	44.20	62.55	99.65	-37.10
Perpendicular	0.31	AV	18.53	43.29	61.82	97.78	-35.96
Perpendicular	0.49	AV	18.44	39.93	58.37	93.80	-35.43

Remark: Corr. Factor = Antenna Factor + Cable Loss

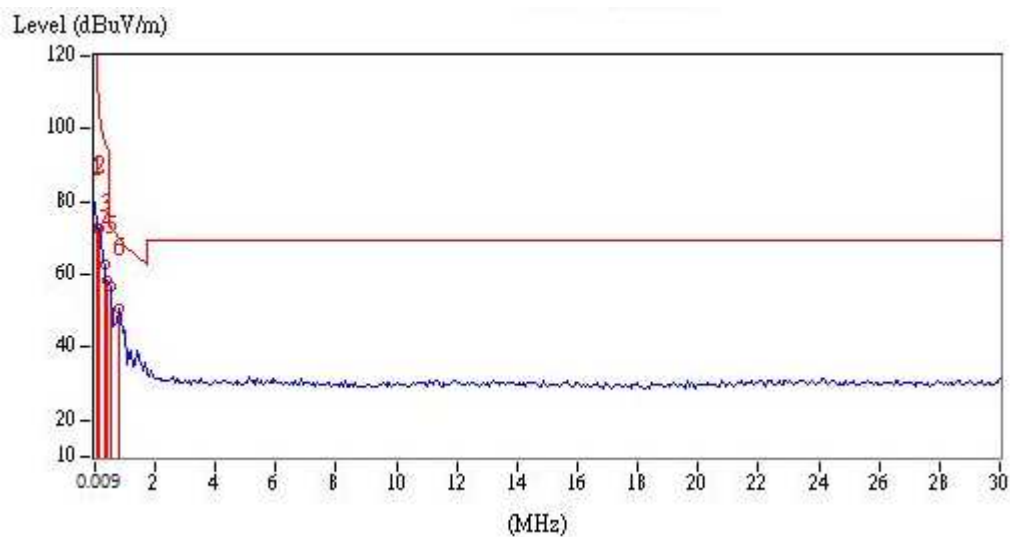


TEST REPORT

For Module 2

Antenna Polarity	Frequency (MHz)	Detector	Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3m (dBμV/m)	Margin (dB)
Parallel	0.07	AV	18.37	54.39	72.76	110.70	-37.94
Parallel	0.13	AV	17.92	55.02	72.94	105.33	-32.39
Parallel	0.31	AV	18.53	44.09	62.62	97.78	-35.16
Parallel	0.43	AV	18.47	39.76	58.23	94.93	-36.70
Parallel	0.55	QP	18.44	38.09	56.53	72.80	-16.27
Parallel	0.79	QP	18.46	32.34	50.80	69.65	-18.85

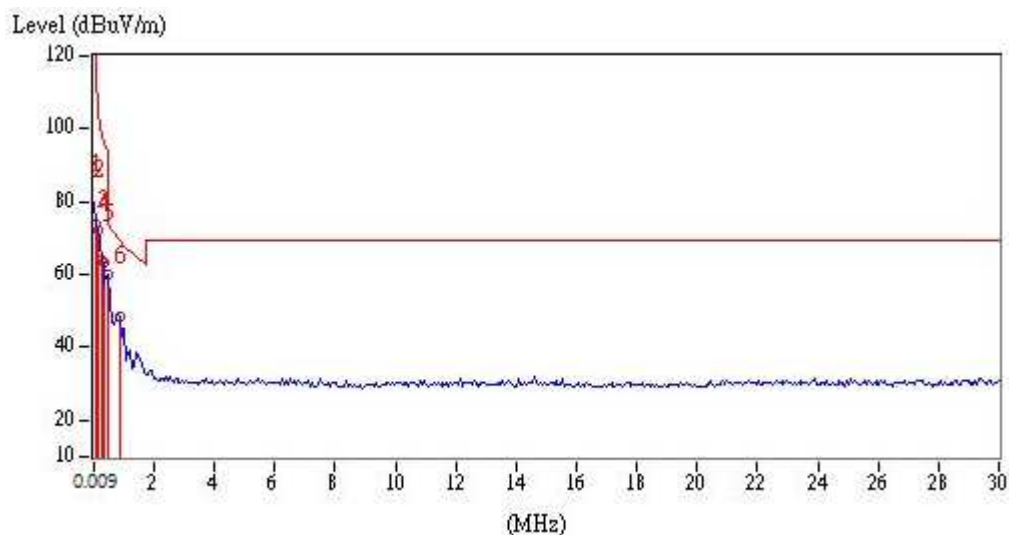
Remark: Corr. Factor = Antenna Factor + Cable Loss



For Module 2

Antenna Polarity	Frequency (MHz)	Detector	Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3m (dBμV/m)	Margin (dB)
Ground-parallel	0.07	AV	18.37	55.63	74.00	110.70	-36.70
Ground-parallel	0.13	AV	17.92	54.36	72.28	105.33	-33.05
Ground-parallel	0.25	AV	18.35	45.43	63.78	99.65	-35.87
Ground-parallel	0.31	AV	18.53	44.56	63.09	97.78	-34.69
Ground-parallel	0.49	AV	18.44	41.44	59.88	93.80	-33.92
Ground-parallel	0.85	QP	18.46	30.11	48.57	69.02	-20.45

Remark: Corr. Factor = Antenna Factor + Cable Loss



TEST REPORT

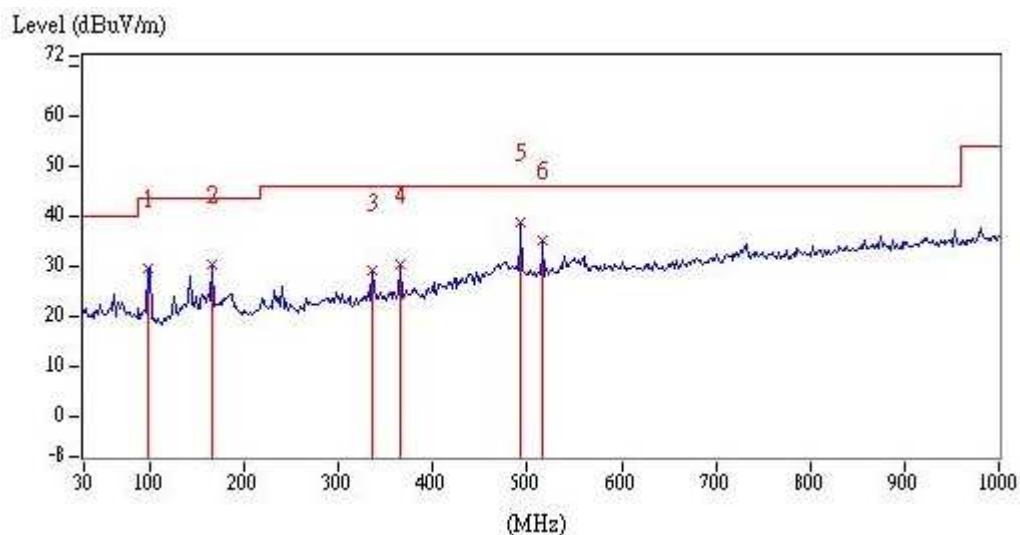
6.5.2 Measurement results: frequencies below 1 GHz

Temperature (°C) :	23
Relative Humidity (%) :	54
Test date :	2020/11/23

The test was performed on EUT under continuously transmitting mode. The worst case occurred at 1DH5 Ch 78.

For module 1

Ant Polarity	Frequency (MHz)	Detector	Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3m (dBμV/m)	Margin (dB)
Vertical	97.90	QP	16.54	13.24	29.78	43.50	-13.72
Vertical	165.80	QP	21.71	8.71	30.42	43.50	-13.08
Vertical	336.52	QP	23.61	5.47	29.08	46.00	-16.92
Vertical	365.62	QP	24.38	6.21	30.59	46.00	-15.41
Vertical	493.66	QP	27.38	11.44	38.82	46.00	-7.18
Vertical	516.94	QP	27.82	7.50	35.32	46.00	-10.68

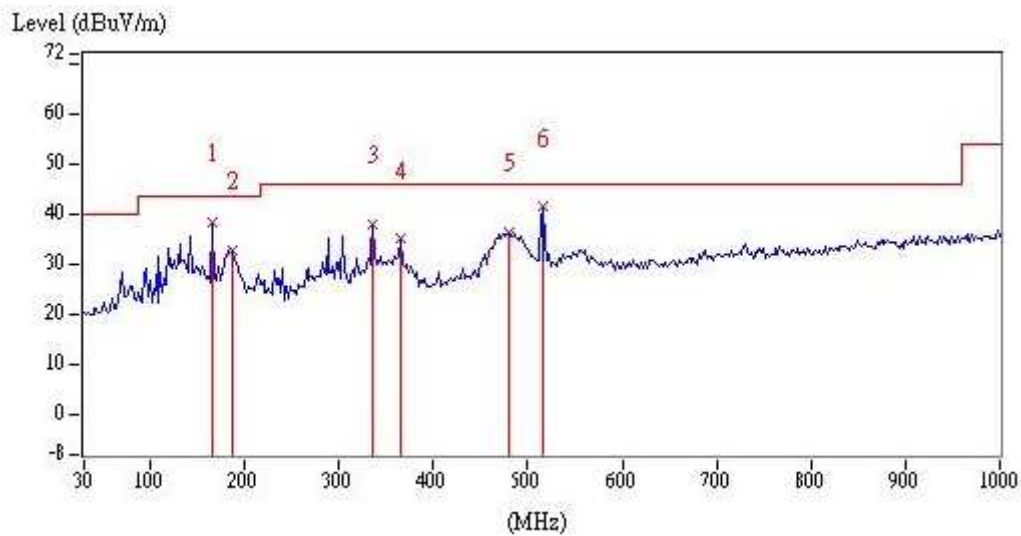


TEST REPORT

For module 1

Ant Polarity	Frequency (MHz)	Detector	Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3m (dBμV/m)	Margin (dB)
Horizontal	165.80	QP	21.71	16.71	38.42	43.50	-5.08
Horizontal	187.14	QP	19.54	13.31	32.85	43.50	-10.65
Horizontal	336.52	QP	23.61	14.40	38.01	46.00	-7.99
Horizontal	365.62	QP	24.38	10.63	35.01	46.00	-10.99
Horizontal	480.08	QP	27.13	9.32	36.45	46.00	-9.55
Horizontal	516.94	QP	27.82	13.77	41.59	46.00	-4.41

Remark: Corr. Factor = Antenna Factor + Cable Loss



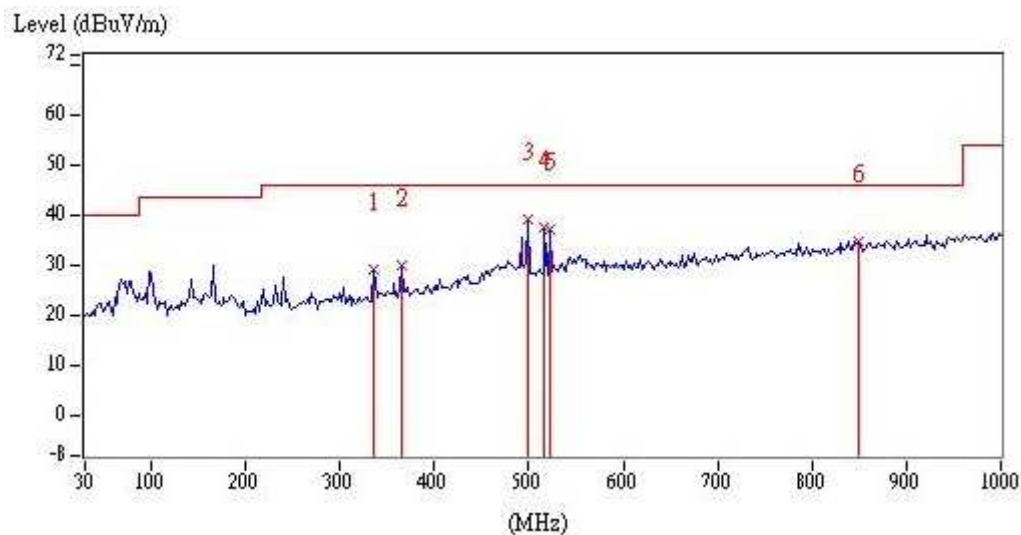
TEST REPORT

Temperature (°C) :	23
Relative Humidity (%) :	54
Test date :	2020/11/23

The test was performed on EUT under continuously transmitting mode. The worst case occurred at 1DH5 Ch 39.

For module 2

Ant Polarity	Frequency (MHz)	Detector	Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3m (dBμV/m)	Margin (dB)
Vertical	336.52	QP	23.61	5.43	29.04	46.00	-16.96
Vertical	365.62	QP	24.38	5.57	29.95	46.00	-16.05
Vertical	499.48	QP	27.49	11.68	39.17	46.00	-6.83
Vertical	516.94	QP	27.82	9.66	37.48	46.00	-8.52
Vertical	522.76	QP	27.93	9.18	37.11	46.00	-8.89
Vertical	848.68	QP	33.48	1.19	34.67	46.00	-11.33

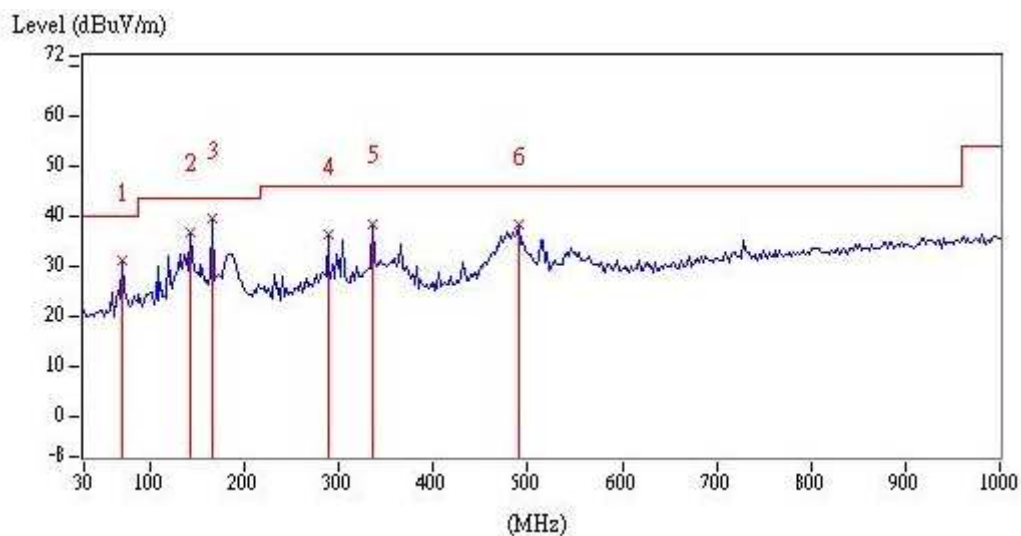


TEST REPORT

For module 2

Ant Polarity	Frequency (MHz)	Detector	Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3m (dBμV/m)	Margin (dB)
Horizontal	70.74	QP	19.46	11.72	31.18	40.00	-8.82
Horizontal	142.52	QP	21.55	15.27	36.82	43.50	-6.68
Horizontal	165.80	QP	21.71	17.80	39.51	43.50	-3.99
Horizontal	288.02	QP	22.45	13.86	36.31	46.00	-9.69
Horizontal	336.52	QP	23.61	14.99	38.60	46.00	-7.40
Horizontal	489.78	QP	27.31	11.01	38.32	46.00	-7.68

Remark: Corr. Factor = Antenna Factor + Cable Loss



TEST REPORT

6.5.3 Measurement results: frequency above 1GHz to 25GHz

Temperature (°C) :	25
Relative Humidity (%) :	63
Test date :	2020/12/28

For Module 1

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
DH5_Ch0	4804	PK	V	7.50	47.01	54.51	74.00	-19.49
	4804	AV	V	7.50	45.13	52.63	54.00	-1.37
	4804	PK	H	7.50	46.14	53.64	74.00	-20.36
	4804	AV	H	7.50	45.17	52.67	54.00	-1.33
DH5_Ch39	4882	PK	V	7.60	46.48	54.08	74.00	-19.92
	4882	AV	V	7.60	45.07	52.67	54.00	-1.33
	4882	PK	H	7.60	46.84	54.44	74.00	-19.56
	4882	AV	H	7.60	45.50	53.10	54.00	-0.90
DH5_Ch78	4960	PK	V	7.70	46.14	53.84	74.00	-20.16
	4960	AV	V	7.70	43.96	51.66	54.00	-2.34
	4960	PK	H	7.70	40.39	48.09	74.00	-25.91
2DH5_Ch0	4804	PK	V	7.50	39.23	46.73	74.00	-27.27
	4804	PK	H	7.50	41.27	48.77	74.00	-25.23
2DH5_Ch39	4882	PK	V	7.60	42.79	50.39	74.00	-23.61
	4882	PK	H	7.60	43.60	51.20	74.00	-22.80
2DH5_Ch78	4960	PK	V	7.70	40.57	48.27	74.00	-25.73
	4960	PK	H	7.70	38.82	46.52	74.00	-27.48
3DH5_Ch0	4804	PK	V	7.50	42.04	49.54	74.00	-24.46
	4804	PK	H	7.50	42.92	50.42	74.00	-23.58
3DH5_Ch39	4882	PK	V	7.60	43.54	51.14	74.00	-22.86
	4882	PK	H	7.60	42.43	50.03	74.00	-23.97
3DH5_Ch78	4960	PK	V	7.70	41.06	48.76	74.00	-25.24
	4960	PK	H	7.70	38.56	46.26	74.00	-27.74

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

TEST REPORT

Temperature (°C) :	25
Relative Humidity (%) :	63
Test date :	2020/12/28

For Module 2

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
DH5_Ch0	4804	PK	V	7.50	37.66	45.16	74.00	-28.84
	4804	PK	H	7.50	42.10	49.60	74.00	-24.40
DH5_Ch39	4882	PK	V	7.60	40.50	48.10	74.00	-25.90
	4875	PK	H	7.59	48.20	55.79	74.00	-18.21
	4875	AV	H	7.59	45.53	53.12	54.00	-0.88
DH5_Ch78	4960	PK	V	7.70	39.89	47.59	74.00	-26.41
	4965	PK	H	7.70	48.54	56.24	74.00	-17.76
	4965	AV	H	7.70	45.33	53.03	54.00	-0.97
2DH5_Ch0	4804	PK	V	7.50	39.22	46.72	74.00	-27.28
	4804	PK	H	7.50	41.87	49.37	74.00	-24.63
2DH5_Ch39	4882	PK	V	7.60	40.37	47.97	74.00	-26.03
	4875	PK	H	7.59	48.38	55.97	74.00	-18.03
	4875	AV	H	7.59	43.43	51.02	54.00	-2.98
2DH5_Ch78	4965	PK	V	7.70	43.10	50.80	74.00	-23.20
	4965	PK	H	7.70	46.81	54.51	74.00	-19.49
	4965	AV	H	7.70	41.66	49.36	54.00	-4.64
3DH5_Ch0	4804	PK	V	7.50	38.81	46.31	74.00	-27.69
	4804	PK	H	7.50	43.59	51.09	74.00	-22.91
3DH5_Ch39	4882	PK	V	7.60	41.88	49.48	74.00	-24.52
	4875	PK	H	7.59	47.04	54.63	74.00	-19.37
	4875	AV	H	7.59	44.28	51.87	54.00	-2.13
3DH5_Ch78	4960	PK	V	7.70	42.44	50.14	74.00	-23.86
	4960	PK	H	7.70	47.85	55.55	74.00	-18.45
	4960	AV	H	7.70	43.24	50.94	54.00	-3.06

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

7. Emission on Band Edge

7.1 Instrument Setting

Spectrum Function	Setting
Detector	Peak and Average
RBW	1MHz
VBW	3MHz & 1/T Minimum VBW
Sweep	Auto couple
Restrict bands	2310 MHz ~ 2390 MHz 2483.5 MHz ~ 2500 MHz
Attenuation	Auto

7.2 Test Procedure

The test procedure is the same as Emissions in Restricted Frequency Bands (Radiated emission measurements).

7.3 Operating Environment Condition

Temperature (°C) :	25
Relative Humidity (%) :	56
Test date :	2020/11/23

7.4 Test Results

For Module 1

Mode	Frequency (MHz)	Spectrum Analyzer Detector		Ant. Pol. (H/V)		Correction Factor (dB/m)	Reading (dBμV)		Corrected Reading (dBμV/m)
DH5	2341.36	PK	V	34.64	19.59	54.23	74	-19.77	2310~2390
	2381.12	AV	V	34.82	8.33	43.16	54	-10.84	
	2483.56	PK	V	35.30	19.18	54.48	74	-19.52	2483.5~2500
	2496.76	AV	V	35.36	8.54	43.90	54	-10.10	
2DH5	2350.04	PK	V	34.68	18.98	53.66	74	-20.34	2310~2390
	2381.12	AV	V	34.82	8.40	43.23	54	-10.77	
	2492.20	PK	V	35.34	19.82	55.16	74	-18.84	2483.5~2500
	2494.24	AV	V	35.35	8.54	43.89	54	-10.11	
3DH5	2382.24	PK	V	34.83	18.02	52.85	74	-21.15	2310~2390
	2387.56	AV	V	34.85	8.54	43.39	54	-10.61	
	2496.88	PK	V	35.36	20.01	55.37	74	-18.63	2483.5~2500
	2496.28	AV	V	35.36	8.63	43.99	54	-10.01	

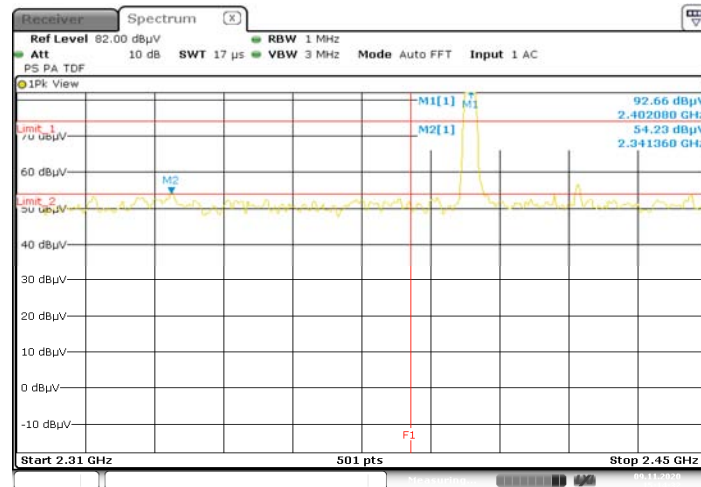
Remark: Correction Factor = Antenna Factor + Cable Loss

For Module 2

Mode	Frequency (MHz)	Spectrum Analyzer Detector		Ant. Pol. (H/V)		Correction Factor (dB/m)	Reading (dBμV)		Corrected Reading (dBμV/m)
DH5	2388.96	PK	H	34.86	20.65	55.52	74	-18.48	2310~2390
	2357.32	AV	H	34.71	8.33	43.05	54	-10.95	
	2490.52	PK	H	35.33	18.90	54.24	74	-19.76	2483.5~2500
	2500.00	AV	H	35.38	8.40	43.77	54	-10.23	
2DH5	2360.12	PK	H	34.73	19.90	54.63	74	-19.37	2310~2390
	2381.96	AV	H	34.83	8.27	43.10	54	-10.90	
	2492.68	PK	H	35.34	19.35	54.69	74	-19.31	2483.5~2500
	2494.36	AV	H	35.35	8.40	43.75	54	-10.25	
3DH5	2339.96	PK	H	34.63	19.20	53.83	74	-20.17	2310~2390
	2366.28	AV	H	34.76	8.48	43.23	54	-10.77	
	2489.20	PK	H	35.33	19.77	55.09	74	-18.91	2483.5~2500
	2494.84	AV	H	35.35	8.38	43.73	54	-10.27	

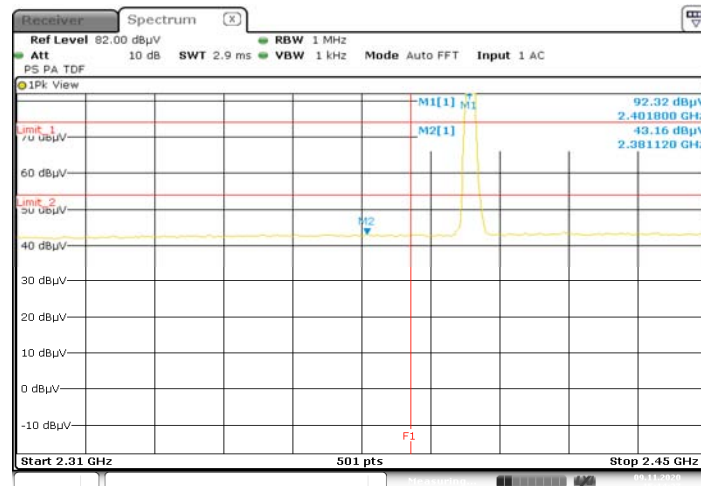
Remark: Correction Factor = Antenna Factor + Cable Loss

Module 1: Restricted Band Bandedge @ DH5 Mode Ch0 PK



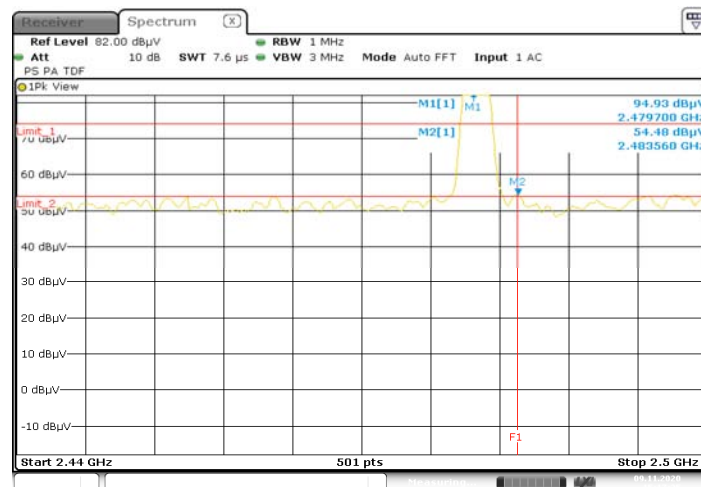
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Module 1: Restricted Band Bandedge @ DH5 Mode Ch0 AV



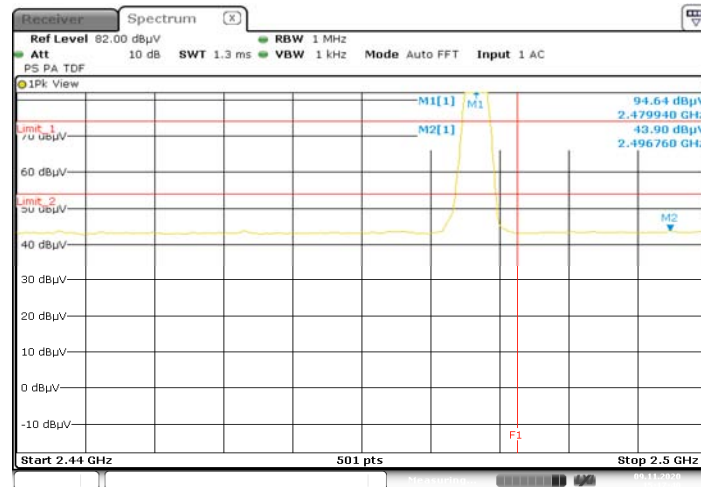
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Module 1: Restricted Band Bandedge @ DH5 Mode Ch78 PK



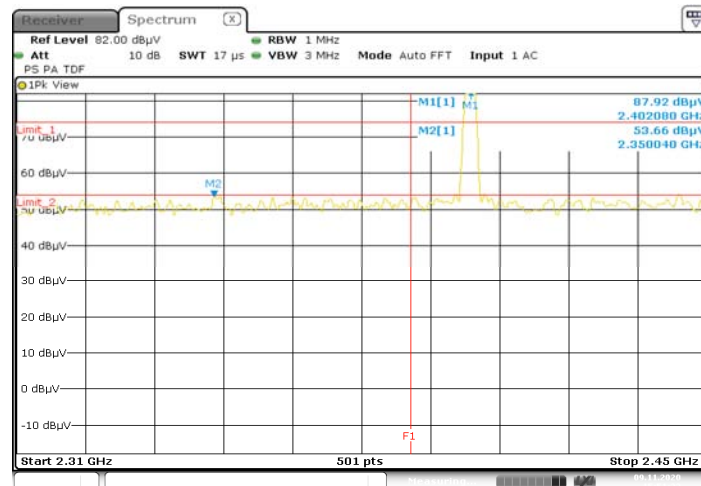
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Module 1: Restricted Band Bandedge @ DH5 Mode Ch78 AV



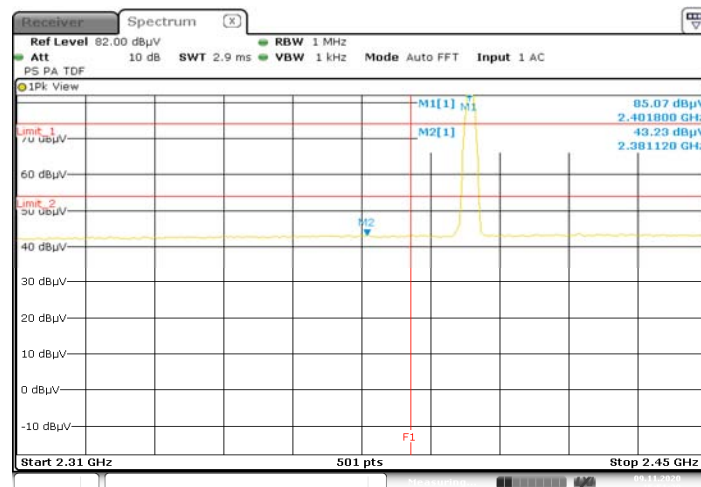
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Module 1: Restricted Band Bandedge @ 2DH5 Mode Ch0 PK



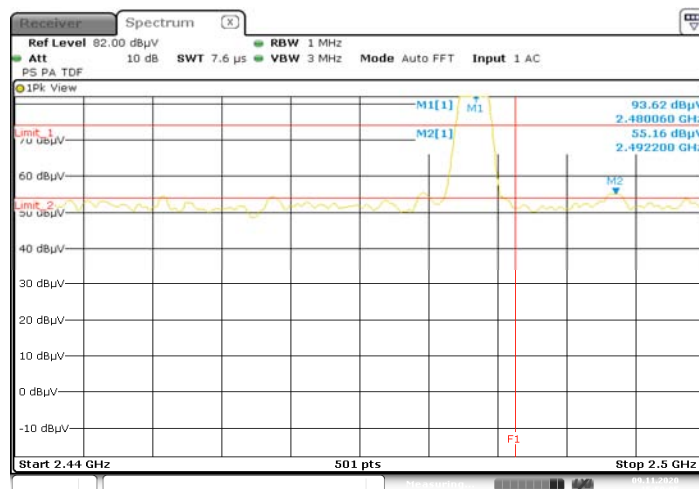
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Module 1: Restricted Band Bandedge @ 2DH5 Mode Ch0 AV



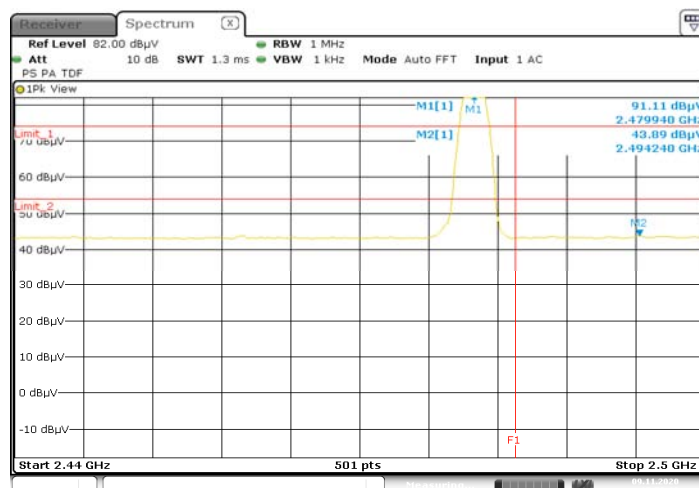
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Module 1: Restricted Band Bandedge @ 2DH5 Mode Ch78 PK



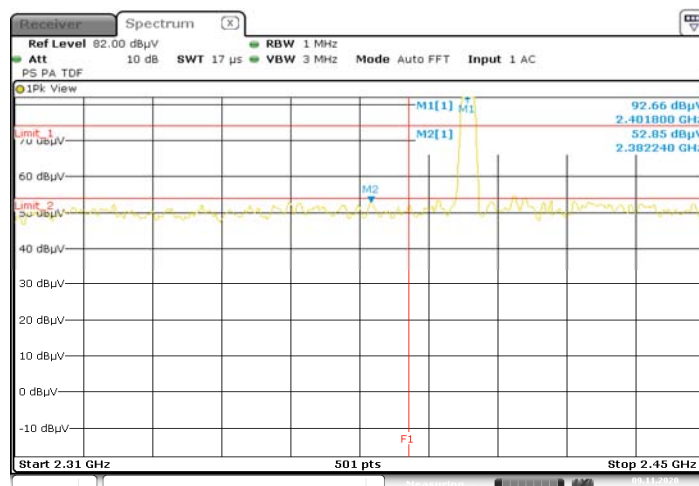
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Module 1: Restricted Band Bandedge @ 2DH5 Mode Ch78 AV



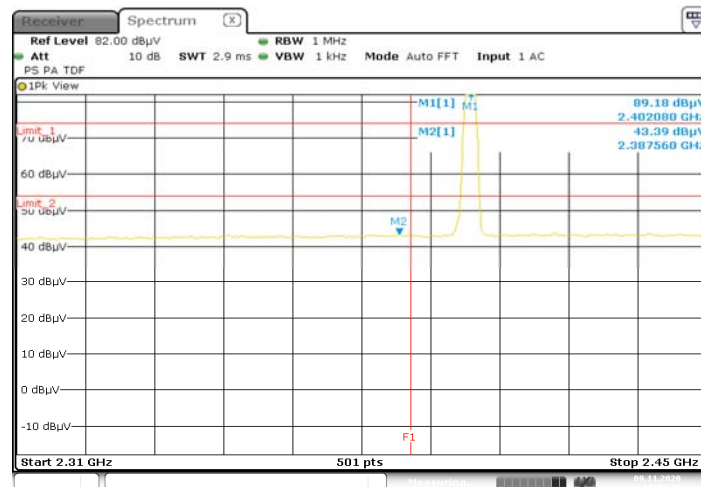
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Module 1: Restricted Band Bandedge @ 3DH5 Mode Ch0 PK



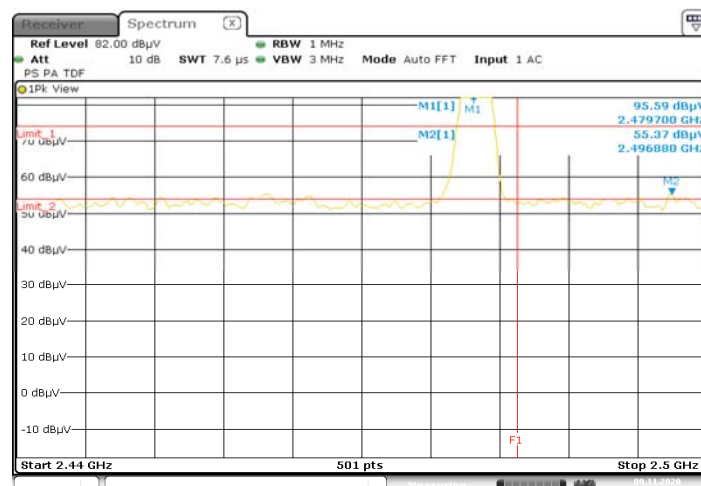
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Module 1: Restricted Band Bandedge @ 3DH5 Mode Ch0 AV



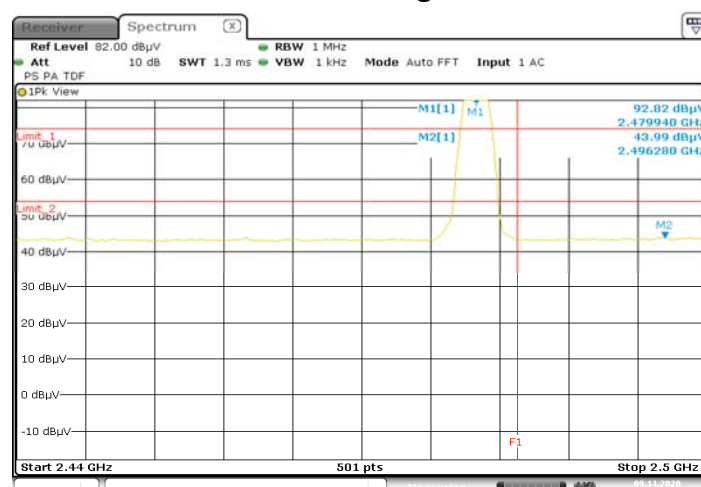
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Module 1: Restricted Band Bandedge @ 3DH5 Mode Ch78 PK



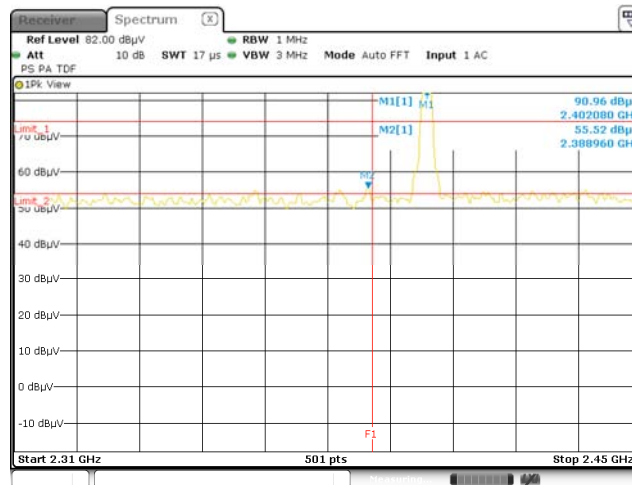
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Module 1: Restricted Band Bandedge @ 3DH5 Mode Ch78 AV

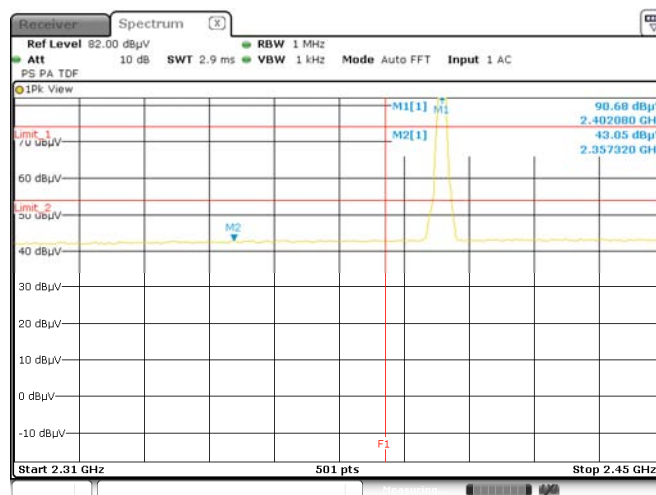


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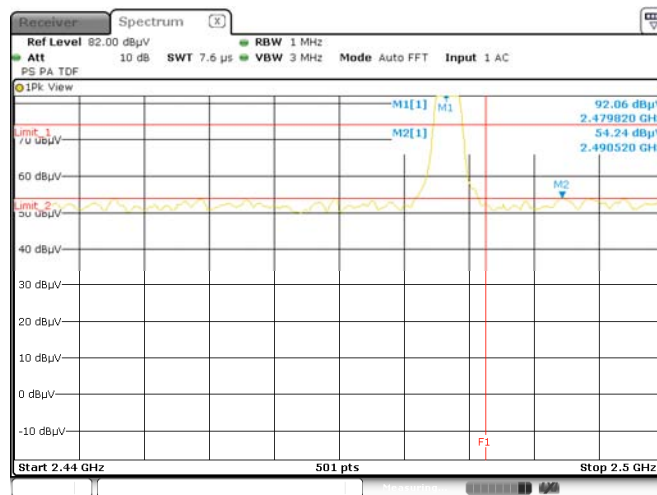
Module 2: Restricted Band Bandedge @ DH5 Mode Ch0 PK



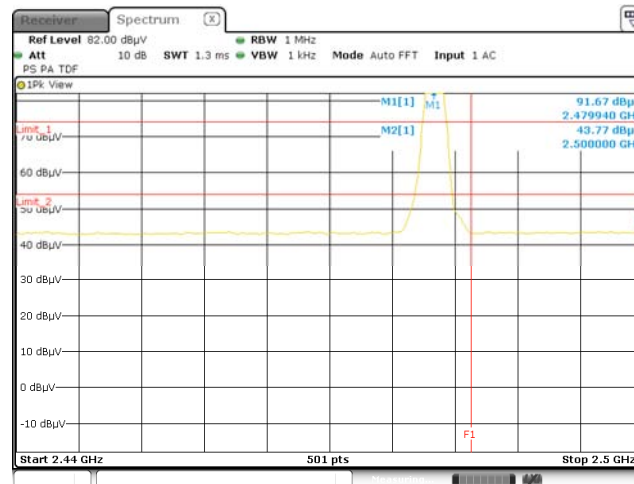
Module 2: Restricted Band Bandedge @ DH5 Mode Ch0 AV



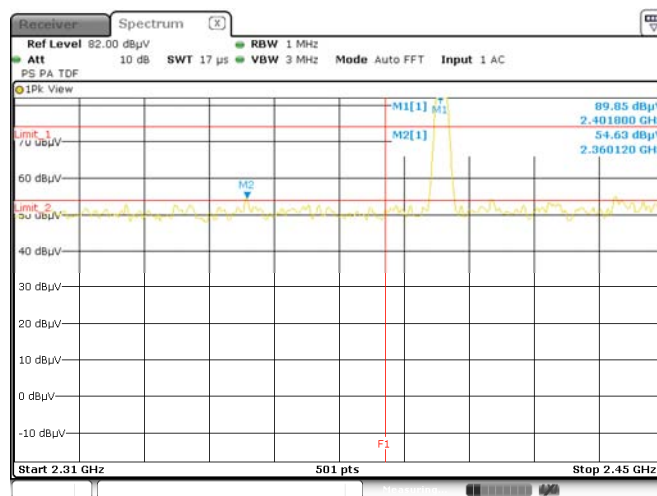
Module 2: Restricted Band Bandedge @ DH5 Mode Ch78 PK



Module 2: Restricted Band Bandedge @ DH5 Mode Ch78 AV



Module 2: Restricted Band Bandedge @ 2DH5 Mode Ch0 PK

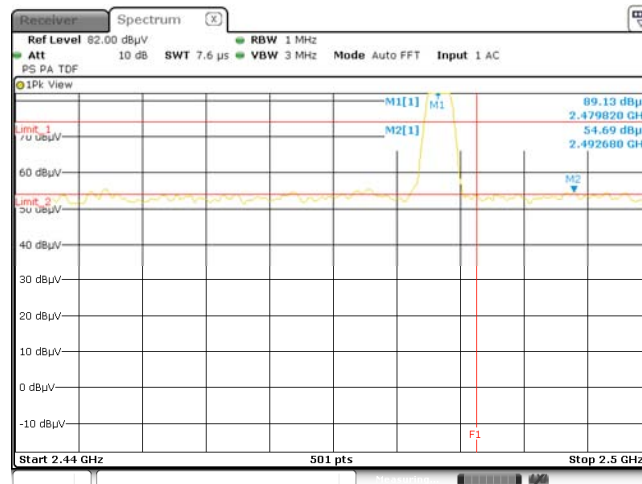


Module 2: Restricted Band Bandedge @ 2DH5 Mode Ch0 AV



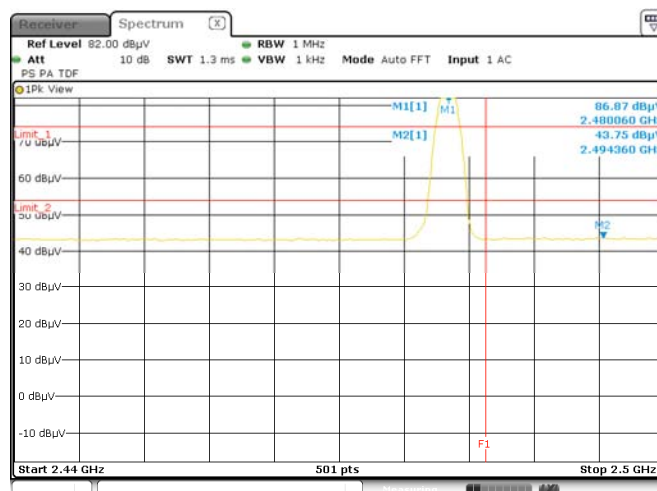
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Module 2: Restricted Band Bandedge @ 2DH5 Mode Ch78 PK



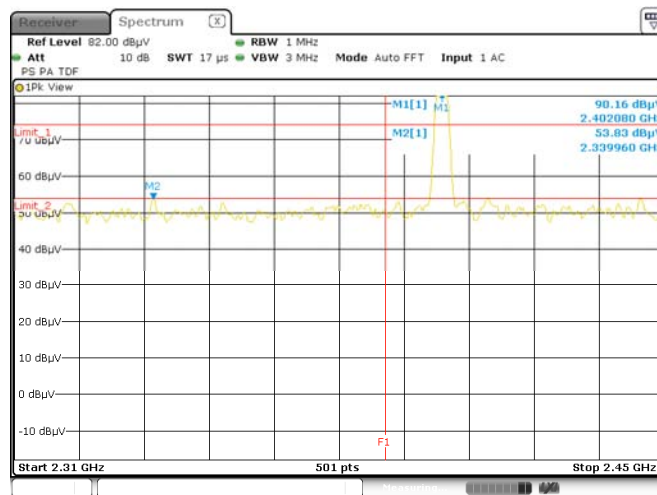
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Module 2: Restricted Band Bandedge @ 2DH5 Mode Ch78 AV

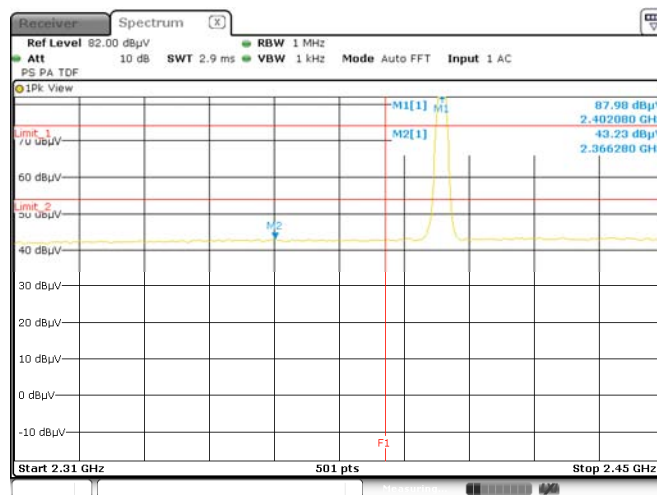


Date 23 NOV. 2020 13:47:29

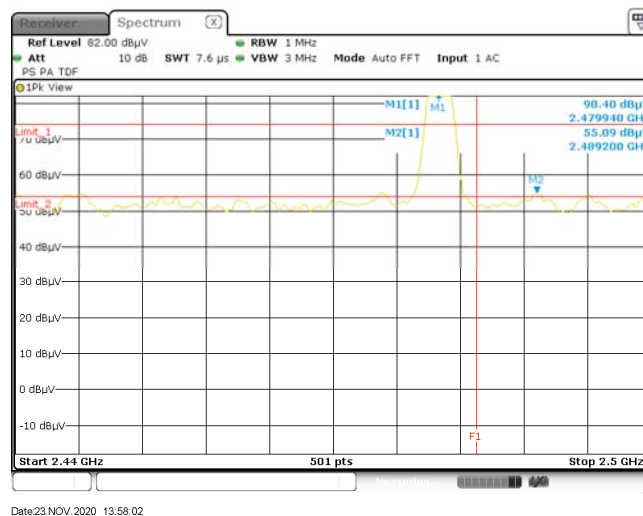
Module 2: Restricted Band Bandedge @ 3DH5 Mode Ch0 PK



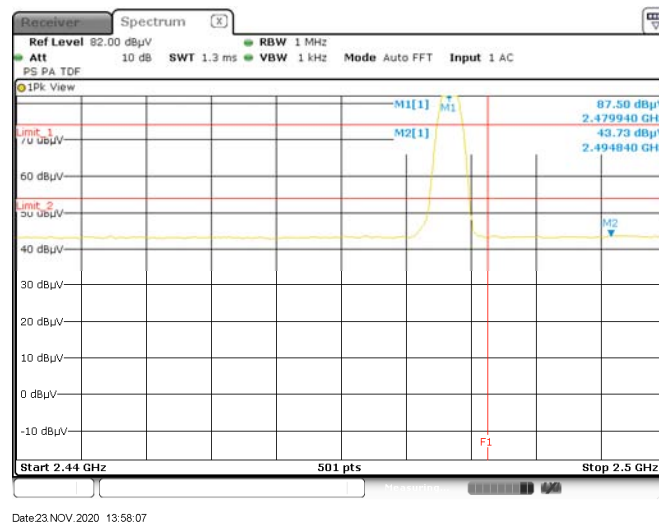
Module 2: Restricted Band Bandedge @ 3DH5 Mode Ch0 AV



Module 2: Restricted Band Bandedge @ 3DH5 Mode Ch78 PK



Module 2: Restricted Band Bandedge @ 3DH5 Mode Ch78 AV



8. Duty Cycle

8.1 Operating environment

Temperature (°C) :	24~25
Relative Humidity (%) :	56~59
Test date :	2021/02/04 ~ 2021/02/05

8.2 Definition

This test is calculation above 1GHz average spectrum VBW setting .

8.3 Limits

N/A

TEST REPORT

8.4 Test results of Duty Cycle

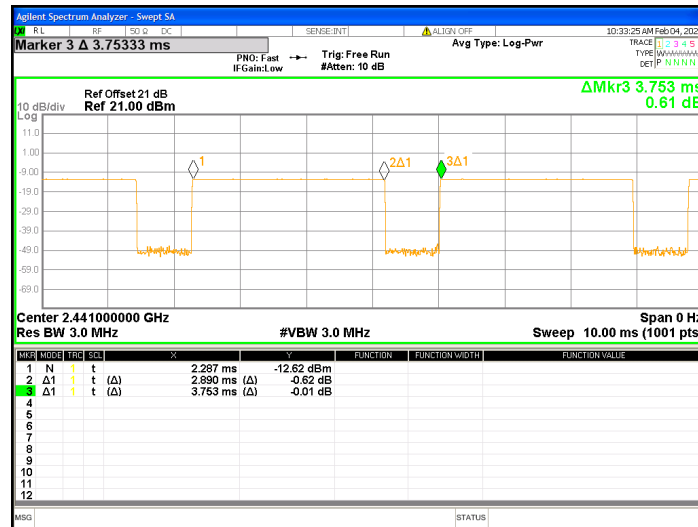
For Module 1

Mode	Channel	Frequency (MHz)	Signal on time (ms)	Signal transmit on+off time (ms)	Duty cycle	Duty Cycle factor	1/T Minimum VBW (kHz)
DH5	39	2441	2.890	3.753	77.01%	1.135	0.35
2DH5	39	2441	2.890	3.753	77.01%	1.135	0.35
3DH5	39	2441	2.890	3.753	77.01%	1.135	0.35

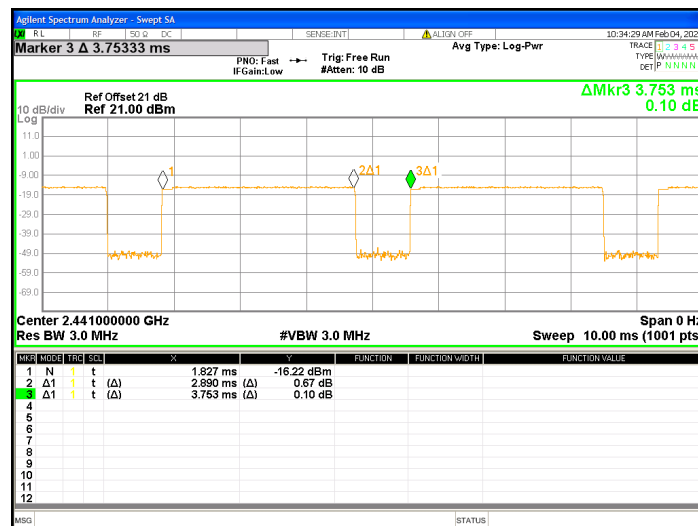
For Module 2

Mode	Channel	Frequency (MHz)	Signal on time (ms)	Signal transmit on+off time (ms)	Duty cycle	Duty Cycle factor	1/T Minimum VBW (kHz)
DH5	39	2441	2.900	3.113	93.16%	0.308	0.34
2DH5	39	2441	2.890	3.113	92.84%	0.323	0.35
3DH5	39	2441	2.900	3.123	92.86%	0.322	0.34

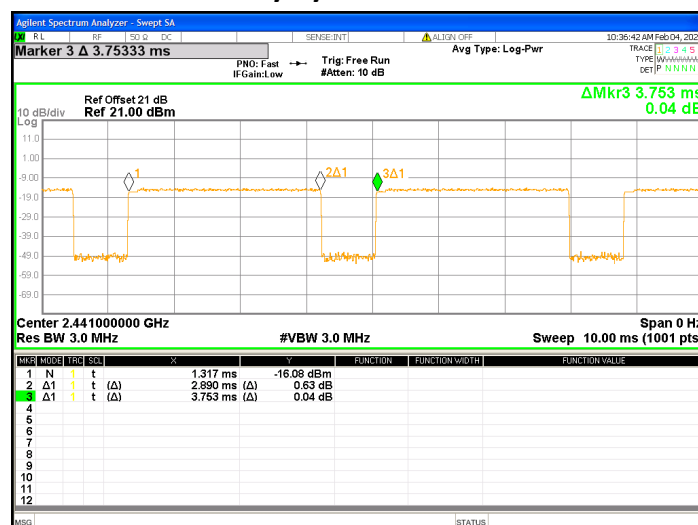
Module 1: Duty Cycle @ DH5 Mode Ch 39



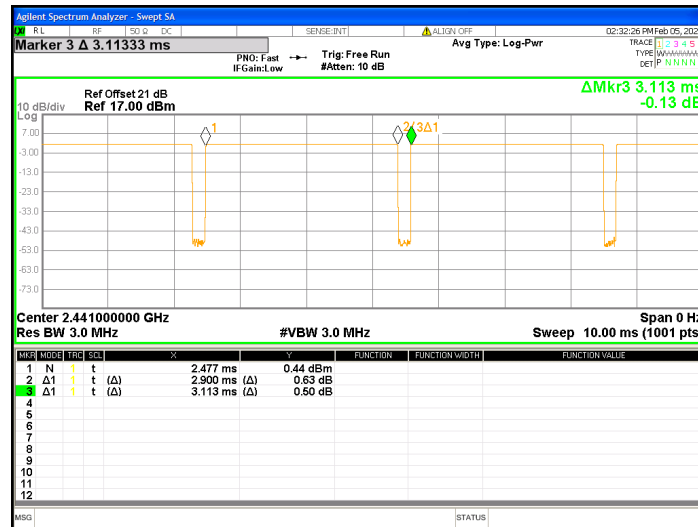
Module 1: Duty Cycle @ 2DH5 Mode Ch 39



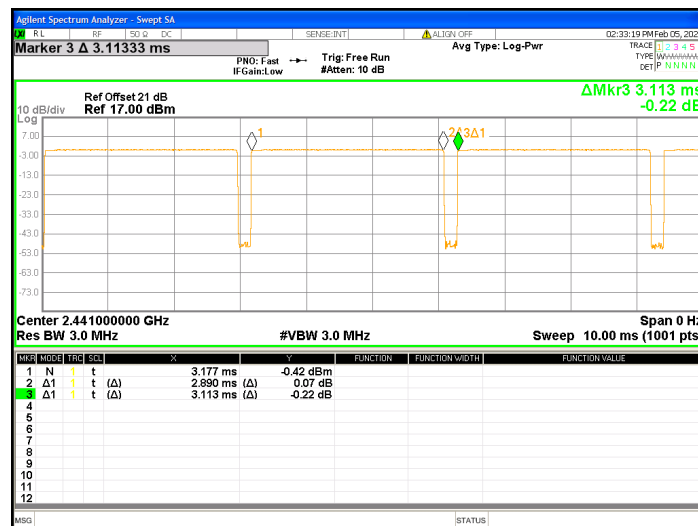
Module 1: Duty Cycle @ 3DH5 Mode Ch 39



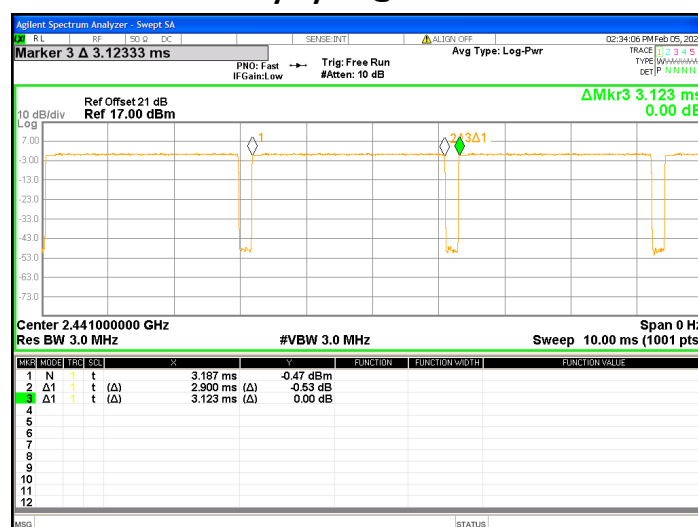
Module 2: Duty Cycle @ DH5 Mode Ch 39



Module 2: Duty Cycle @ 2DH5 Mode Ch 39



Module 2: Duty Cycle @ 3DH5 Mode Ch 39



9. AC Power Line Conducted Emission

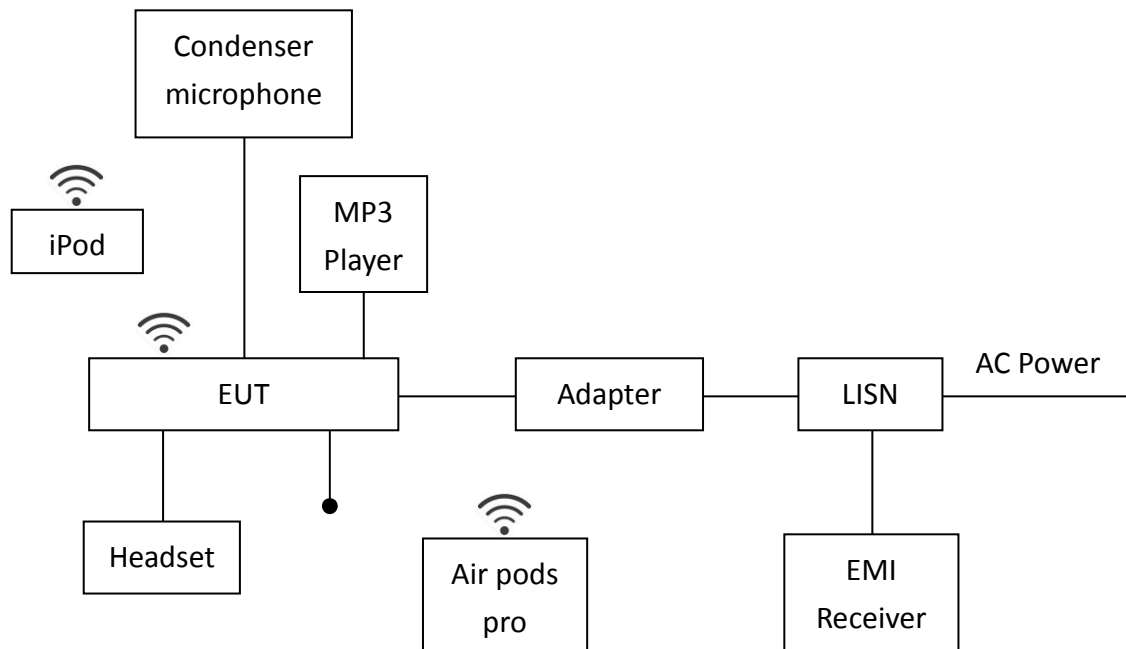
9.1 Measuring instrument setting

Receiver Function	Setting
Detector	QP
Start frequency	0.15MHz
Stop frequency	30MHz
IF bandwidth	9 kHz
Attenuation	10dB

9.2 Test Procedure

Step 1	Configure the EUT according to ANSI C63.10:2013. The EUT or host of EHT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
Step 2	Connect EUT or host of EUT to the power mains through a line impedance stabilization network.
Step 3	All the companion devices are connected to the other LISN. The LISN should provide 50Uh/50ohms coupling impedance.
Step 4	The frequency range from 150 kHz to 30MHz was searched.
Step 5	Set the test-receiver system to peak detector and specified bandwidth with maximum hold mode.
Step 6	The measurement has to be done between each power line and ground at the power terminal.

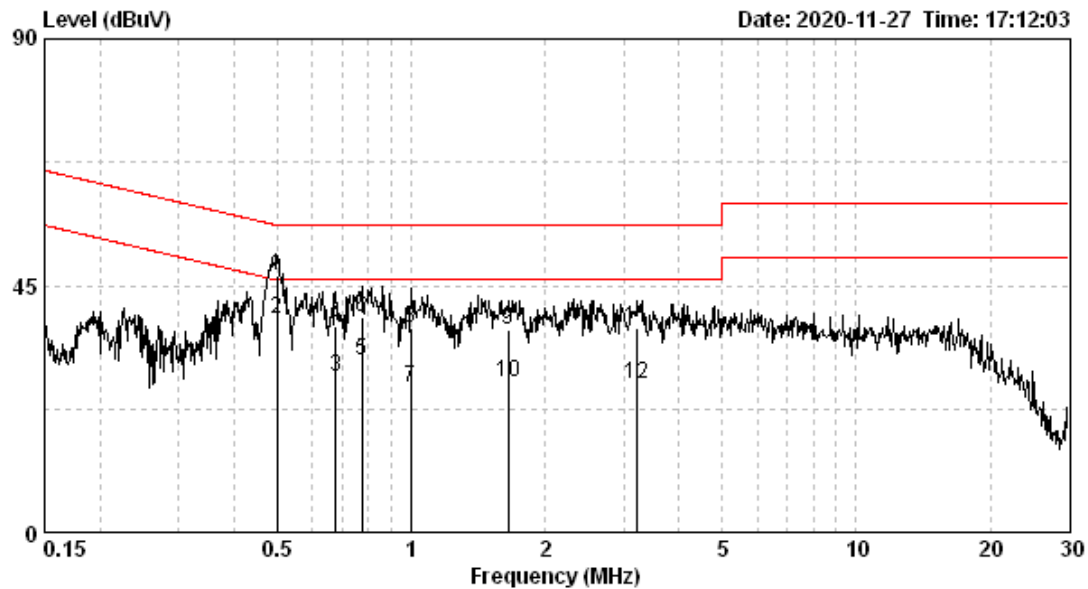
9.3 Test Diagram



9.4 Limit

Frequency (MHz)	Conducted Limit (dBuV)	
	Q.P.	Ave.
0.15~0.50	66 – 56	56 – 46
0.50~5.00	56	46
5.00~30.0	60	50

9.5 Test Results



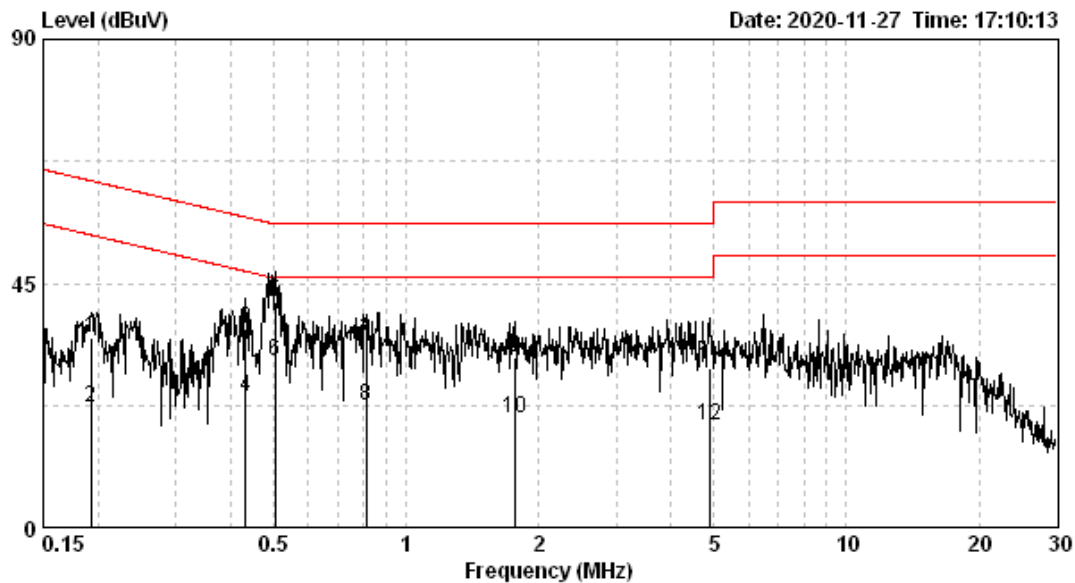
Test voltage :AC 120V/60Hz
Temp. / R.H. :24 / 52
Atmospheric pressure :1005

Phase	Frequency (MHz)	Corr. Factor (dB)	Reading QP (dBuV)	Level QP (dBuV)	Limit QP (dBuV)	Reading AV (dBuV)	Level AV (dBuV)	Limit AV (dBuV)	Margin (dB)	
									QP	AV
LINE	0.499	9.79	37.03	46.82	56.01	29.08	38.88	46.01	-9.19	-7.13
LINE	0.675	9.80	27.71	37.51	56.00	18.43	28.23	46.00	-18.49	-17.77
LINE	0.775	9.80	29.39	39.19	56.00	21.61	31.42	46.00	-16.81	-14.58
LINE	1.000	9.81	27.52	37.33	56.00	16.58	26.39	46.00	-18.67	-19.61
LINE	1.654	9.82	27.07	36.90	56.00	17.38	27.20	46.00	-19.10	-18.80
LINE	3.224	9.86	27.29	37.15	56.00	17.32	27.17	46.00	-18.85	-18.83

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Level (dBuV) = Corr. Factor (dB) + Reading (dBuV)
3. Margin (dB) = Level (dBuV) – Limit (dBuV)

TEST REPORT



Test voltage : AC 120V/60Hz
Temp. / R.H. : 24 / 52
Atmospheric pressure : 1005

Phase	Frequency (MHz)	Corr. Factor (dB)	Reading QP (dBuV)	Level QP (dBuV)	Limit QP (dBuV)	Reading AV (dBuV)	Level AV (dBuV)	Limit AV (dBuV)	Margin (dB)	
									QP	AV
NEUTRAL	0.192	9.68	25.22	34.90	63.93	12.47	22.15	53.93	-29.03	-31.78
NEUTRAL	0.433	9.77	26.98	36.76	57.20	14.44	24.21	47.20	-20.44	-22.99
NEUTRAL	0.505	9.79	31.80	41.59	56.00	20.94	30.73	46.00	-14.41	-15.27
NEUTRAL	0.813	9.80	24.42	34.22	56.00	12.47	22.27	46.00	-21.78	-23.73
NEUTRAL	1.772	9.81	21.51	31.31	56.00	10.37	20.17	46.00	-24.69	-25.83
NEUTRAL	4.900	9.88	19.62	29.50	56.00	9.00	18.88	46.00	-26.50	-27.12

Remark:

1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Level (dBuV) = Corr. Factor (dB) + Reading (dBuV)
3. Margin (dB) = Level (dBuV) – Limit (dBuV)

Appendix A: Test equipment list

Test Equipment	Brand	Model No.	Serial No.	Calibration Date	Next Calibration Date
EMI Test Receiver	Rohde & Schwarz	ESR7	101822	2020/08/18	2021/08/17
Spectrum Analyzer	Rohde & Schwarz	FSP30	100137	2020/08/25	2021/08/24
Signal Analyzer	Agilent	N9030A	MY51380492	2020/08/17	2021/08/16
Active Loop Antenna	SCHWARZBECK MESS-ELEKTRONIC	FMZB1519	1519-067	2020/04/13	2021/04/12
Broadband Antenna	SHWARZBECK	VULB 9168	9168-172	2020/06/02	2021/06/01
Horn Antenna (1-18G)	SHWARZBECK	BBHA 9120 D	9120D-456	2020/01/20	2021/01/18
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170159	2020/08/20	2023/08/19
Pre-Amplifier	SCHWARZBECK	BBV9718	9718-004	2020/10/15	2021/10/14
Pre-Amplifier	AML	AML0120L3401	0419-114	2020/12/16	2021/12/15
Pre-amplifier	SGH	SGH184	20201124-1	2020/12/16	2021/12/15
Power Meter	Anritsu	ML2495A	0844001	2020/10/28	2021/10/27
Power Sensor	Anritsu	MA2411B	0738452	2020/10/28	2021/10/27
966-2(A) Cable	SUHNER	SMA / EX 100	N/A	2020/08/17	2021/08/16
966-2(B) Cable	SUHNER	SUCOFLEX 104P	CB0005	2020/08/17	2021/08/16
RF Cable	SUHNER	SUCOFLEX 102	CB0006	2020/04/30	2021/04/29
Hight Pass Filter	Reactel	7HS-3G/18G-S11	N/A	2020/05/27	2021/05/26
20dB Attenuator	Mini-Circuits	BW-S20W5+	N/A	2020/05/27	2021/05/26
966-2_3m Semi-Anechoic Chamber	966_2	CEM-966_2	N/A	2020/02/23	2021/02/22
Test software	ADT	Radiated test system	V7.5.14	NCR	NCR

Note: No Calibration Required (NCR).

Test Equipment	Brand	Model No.	Serial No.	Calibration Date	Next Calibration Date
EMI Test Receiver	R&S	ESCI	100059	2020/11/17	2021/11/16
LISN	R&S	ENV216	101160	2020/07/17	2021/07/16
CON-2 Cable	SUHNER	EMCCFD300-B M-NM-6000	170502	2020/04/30	2021/04/29
Test software	Audix	e3	V4.20040112L	NCR	NCR

Note: No Calibration Required (NCR).

TEST REPORT

Appendix B: Measurement Uncertainty

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.

Item	Uncertainty
Vertically polarized radiated disturbances from 30MHz~1GHz in a semi-anechoic chamber at a distance of 3m	5.10 dB
Horizontally polarized radiated disturbances from 30MHz~1GHz in a semi-anechoic chamber at a distance of 3m	5.19 dB
Vertically polarized Radiated disturbances from 1GHz~18GHz in a semi-anechoic chamber at a distance of 3m	4.29 dB
Horizontally polarized Radiated disturbances from 1GHz~18GHz in a semi-anechoic chamber at a distance of 3m	4.29 dB
Vertically polarized Radiated disturbances from 18GHz~26.5GHz in a semi-anechoic chamber at a distance of 1m	2.45 dB
Horizontally polarized Radiated disturbances from 18GHz~26.5GHz in a semi-anechoic chamber at a distance of 1m	2.45 dB
Radiated disturbances from 9kHz~30MHz in a semi-anechoic chamber at a distance of 3m	3.32 dB
Emission on the Band Edge Test	4.29 dB
RF Antenna Conducted Spurious Test	1.15 dB
Maximum Output Power Test	0.37 dB
20dB Bandwidth Test	7.69 %
Carrier Frequency Separation Test	1.15 dB
Number of Hopping Frequencies Test	1.15 dB
Time of Occupancy (Dwell Time) Test	1.15 dB
AC Power Line Conducted Emission	2.58 dB