CERTIFICATION TEST REPORT

Report Number. : 4790776099-E1V2

Applicant	:	SAMSUNG ELECTRONICS CO., LTD. 129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI, GYEONGGI-DO, 16677, KOREA
Model	:	SM-X710
FCC ID	:	A3LSMX710
IC	:	649E-SMX710
EUT Description	:	BT/BLE Tablet + DTS/UNII a/b/g/n/ac/ax and WPT.
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C INDUSTRY CANADA RSS-247 Issue 2 INDUSTRY CANADA RSS-GEN Issue 5

Date Of Issue:
2023-05-31

Prepared by:
UL KOREA LTD.
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Suwon Test Site: UL KOREA LTD. Suwon Laboratory
218 Maeyeong-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16675, Korea
TEL: (031) 337-9902
FAX: (031) 213-5433

IAS ACCREDITED Testing Laboratory TL-637

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2023-05-12	Initial issue	Minju Cha
V2	2023-05-31	Updated to address TCB's question	Minju Cha

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UL KOREA LTD. Suwon Laboratory FORM ID: FCC_15C(05)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.

EUT DESCRIPTION: BT/BLE Tablet + DTS/UNII a/b/g/n/ac/ax and WPT.

MODEL NUMBER: SM-X710

SERIAL NUMBER: R32W300FP4W (CONDUCTED);
R32W300H3JA, R32W300FT2F (RADIATED);

DATE TESTED: 2023-04-03 ~ 2023-05-12

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
47 CFR Part 15 Subpart C	Complies
INDUSTRY CANADA RSS-247 Issue 2	Complies
INDUSTRY CANADA RSS-GEN Issue 5	Complies

UL KOREA LTD. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL KOREA LTD. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL KOREA LTD. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL KOREA LTD. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL KOREA LTD. By:

Seokhwan Hong
Suwon Lab Engineer
UL KOREA LTD.

Tested By:

Minju Cha
Suwon Lab Engineer
UL KOREA LTD.

2. TEST METHODOLOGY

1. FCC 47 CFR Part 2.
2. FCC 47 CFR Part 15.
3. KDB 558074 D01 15.247 Meas Guidance v05r02.
4. ANSI C63.10-2013.
5. IC RSS-GEN Issue 5.
6. IC RSS-247 Issue 2.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea. Line conducted emissions are measured only at the 218 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

218 Maeyeong-ro
☒ Chamber 1(3m semi-anechoic chamber)
☒ Chamber 2(3m semi-anechoic chamber)
☒ Chamber 3(3m semi-anechoic chamber)
☐ Chamber 4(3m Full-anechoic chamber)
☐ Chamber 5(3m Full-anechoic chamber)

UL KOREA LTD. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at https://www.iasonline.org/wp-content/uploads/2017/05/TL-637-cert-New.pdf.

Used ISED Test Site Reg.(company number) : 2324L
CAB Identifier: KR0161

4. DECISION RULES AND MEASUREMENT UNCERTAINTY

4.1. METROLOGICAL TRACEABILITY

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

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)
28.9 dBuV/m = 36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB

AC Corrected Reading (dBuV) = Measured Voltage (dBuV) + Extension Cord Loss (dB) + Cable Loss (dB)
44.72 dBuV = 34.72 dBuV + 9.9 dB + 0.1 dB

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	2.80 dB
Radiated Disturbance, 30 MHz to 1 GHz	3.92 dB
Radiated Disturbance, 1 GHz to 18 GHz	5.06 dB
Radiated Disturbance, Above 18 GHz	6.02 dB

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

4.4. DECISION RULES

Decision rule for statement(s) of conformity is based on Procedure 2, Clause 4.4.3 in IEC Guide 115:2021.

5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION

The EUT is BT/BLE Tablet + DTS/UNII a/b/g/n/ac/ax and WPT.
This test report addresses the DTS (BLE) operational mode.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range [MHz]	Mode	Power Mode	Output Power [dBm]	Output Power [mW]
2 402 ~ 2 480	1 Mbps	Peak	9.385	8.680
		Average	9.083	8.096
	2 Mbps	Peak	9.412	8.734
		Average	8.859	7.690

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

The internal antenna was Permanently attached.
Therefore this E.U.T Complies with the requirement of §15.203.

The radio utilizes an internal antennas with “BT/WIFI 1” maximum gain of 0.43 dBi and “BT/WIFI 2” maximum gain of 0.64 dBi.
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5.4. WORST-CASE CONFIGURATION AND MODE

Radiated emission below 1GHz and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Radiated emission above 1GHz was performed with the EUT set to transmit low/mid/high channels.

- Worst axis: X

Note : All radiated and power line conducted tests were performed attached with travel adapter for the worst case condition mode.

Power verification

The Output Power of all data rate are all investigated, the 1 Mbps (255 pkt) and 2 Mbps(255 pkt) power is the worst case for symbol rate. All tests were performed in these two modes.

Symbol Rate [Ms/s]	Mode	Freq. [MHz]	Conducted Burst Avg [dBm]	Symbol Rate [Ms/s]	Mode	Freq. [MHz]	Conducted Burst Avg [dBm]
1	1 Mbps 37 pkt ANT1	2 402	8.432	2	2 Mbps 37 pkt ANT1	2 402	8.247
		2 440	8.797			2 440	8.587
		2 480	6.971			2 480	6.751
	1 Mbps 37 pkt ANT2	2 402	7.362		2 Mbps 37 pkt ANT2	2 402	7.131
		2 440	7.720			2 440	7.513
		2 480	6.063			2 480	5.859
	1 Mbps 255 pkt ANT1	2 402	8.732		2 Mbps 255 pkt ANT1	2 402	8.521
		2 440	**9.083**			**2 440**	**8.859**
		2 480	7.194			2 480	6.981
	1 Mbps 255 pkt ANT2	2 402	7.285		2 Mbps 255 pkt ANT2	2 402	7.092
		2 440	7.655			2 440	7.467
		2 480	5.994			2 480	5.806
1 Coded S=8	125 kbps 37 pkt ANT1	2 402	8.464	1 Coded S=2	500 kbps 37 pkt ANT1	2 402	8.484
		2 440	8.783			2 440	8.821
		2 480	6.932			2 480	6.961
	125 kbps 37 pkt ANT2	2 402	7.333		500 kbps 37 pkt ANT2	2 402	7.354
		2 440	7.712			2 440	7.733
		2 480	6.051			2 480	6.079
	125 kbps 255 pkt ANT1	2 402	8.717		500 kbps 255 pkt ANT1	2 402	8.445
		2 440	9.067			2 440	8.782
		2 480	7.177			2 480	6.901
	125 kbps 255 pkt ANT2	2 402	7.282		500 kbps 255 pkt ANT2	2 402	7.302
		2 440	7.645			2 440	7.672
		2 480	5.998			2 480	6.011

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacture**	**Model**	**Serial Number**	**FCC ID**
Charger	SAMSUNG	EP-TA800	R37TCCV0K9ASEA	N/A
Data Cable	SAMSUNG	EP-DW767	GH39-02132A	N/A

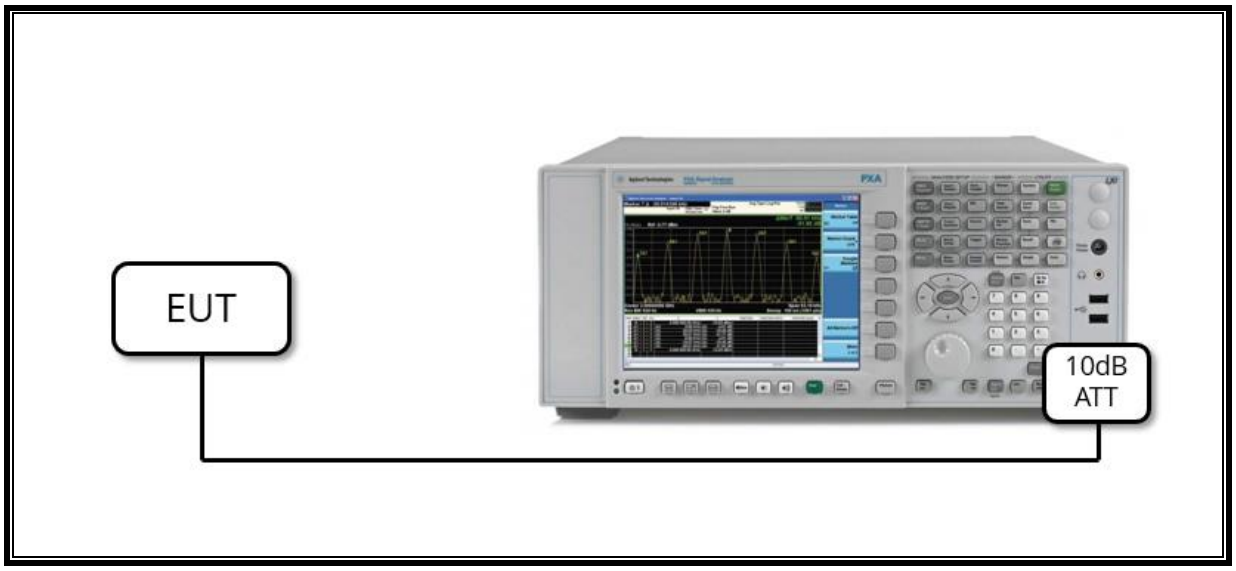
I/O CABLE

I/O Cable List						
Cable No.	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	DC Power	1	C Type	Shielded	1.8 m	N/A

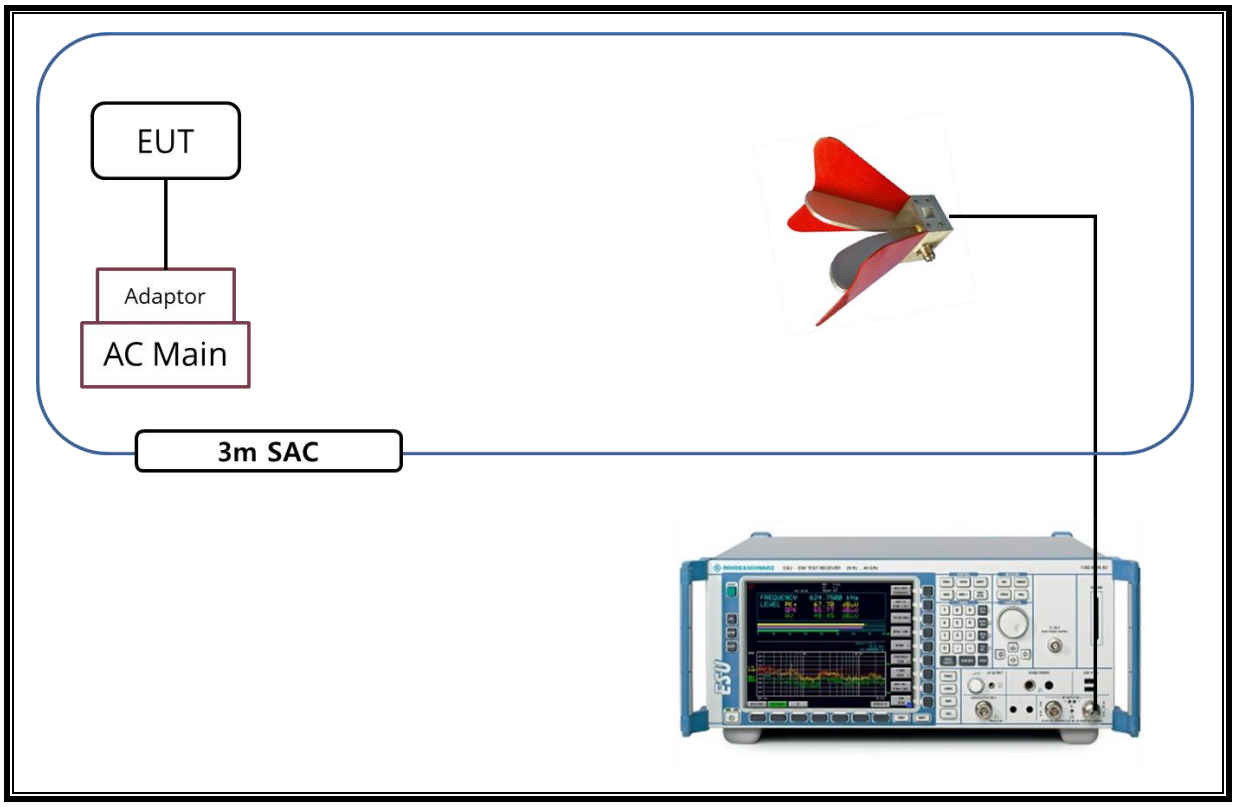
TEST SETUP

The EUT is a stand-alone unit during the tests.
Test software in hidden menu exercised the EUT to enable BLE mode.

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



6. 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**	**S/N**	**Cal Due**
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	750	2024-08-15
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	2024-08-15
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	845	2024-08-15
Antenna, Horn, 18 GHz	ETS	3115	00167211	2024-08-04
Antenna, Horn, 18 GHz	ETS	3115	00161451	2024-08-21
Antenna, Horn, 18 GHz	ETS	3117	00168724	2024-08-04
Antenna, Horn, 18 GHz	ETS	3117	00168717	2024-08-21
Antenna, Horn, 40 GHz	ETS	3116C	00166155	2024-08-02
Preamplifier	ETS	3115-PA	00167475	2023-08-04
Preamplifier	ETS	3116C-PA	00168841	2023-08-04
Preamplifier, 1000 MHz	Sonoma	310N	341282	2023-08-02
Preamplifier, 1000 MHz	Sonoma	310N	351741	2023-08-02
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	2023-08-01
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	2029169	2023-08-01
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	2023-08-03
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54490312	2023-08-01
Spectrum Analyzer, 44 GHz	KEYSIGHT	N9030B	MY60070693	2024-01-09
Spectrum Analyzer, 44 GHz	KEYSIGHT	N9040B	MY60080268	2024-01-09
Average Power Sensor	Agilent / HP	U2000A	MY54270007	2023-08-03
Average Power Sensor	Agilent / HP	U2000A	MY54260010	2023-08-03
Attenuator	PASTERNACK	PE7087-10	A001	2023-08-03
Attenuator	PASTERNACK	PE7087-10	A008	2023-08-03
Attenuator	PASTERNACK	PE7004-10	2	2023-08-01
Attenuator	PASTERNACK	PE7087-10	A009	2023-08-03
EMI Test Receive, 40 GHz	R&S	ESU40	100439	2023-08-02
EMI Test Receive, 40 GHz	R&S	ESU40	100457	2023-07-29
EMI Test Receive, 3 GHz	R&S	ESR3	101832	2023-08-01
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	009	2023-08-02
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	015	2023-08-01
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	020	2023-08-01
High Pass Filter 3GHz	Micro-Tronics	HPM17543	010	2023-08-02
High Pass Filter 3GHz	Micro-Tronics	HPM17543	020	2023-08-01
High Pass Filter 6GHz	Micro-Tronics	HPS17542	009	2023-08-02
High Pass Filter 6GHz	Micro-Tronics	HPS17542	021	2023-08-01
LISN	R&S	ENV-216	101837	2023-08-04
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	2023-10-06
UL Software				
Description	**Manufacturer**	**Model**	**Version**	
Radiated software	UL	UL EMC	Ver 9.5	
AC Line Conducted software	UL	UL EMC	Ver 9.5	

7. TEST RESULTS SUMMARY

FCC Part Section	IC Section	Test Description	Test Limit	Test Condition	Test Result
15.247 (a)(2)	RSS-247 5.2(a)	Occupied Bandwidth(6dB)	> 500kHz	Conducted	Complies
2.1051, 15.247(d)	RSS-247 5.5	Band Edge / Conducted Spurious Emission	-30 dBc		Complies
15.247 (b)(3)	RSS-247 5.4(d)	TX conducted output power	< 30 dBm		Complies
15.247(e)	RSS-247 5.4(b)	PSD	< 8 dBm/3kHz		Complies
15.207(a)	RSS-GEN Clause 7&8.9	AC Power Line conducted emissions	Section 11	Power Line conducted	Complies
15.205, 15.209	RSS-GEN Clause 8.8	Radiated Spurious Emission	< 54dBuV/m(Av)	Radiated	Complies

For ISED, updated 99% Bandwidth data.

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8. MEASUREMENT METHOD

6 dB BW : ANSI C63.10-2013, Section 11.8.2 Option 2

Occupied Bandwidth (99%) : ANSI C63.10-2013, Section 6.9.3

OUTPUT POWER : ANSI C63.10-2013, Section 11.9.1.1 RBW ≥ DTS bandwidth

POWER SPECTRAL DENSITY : ANSI C63.10-2013, Section 11.10.2 Method PKPSD (peak PSD)

Out-of-band Emissions (Conducted) : ANSI C63.10-2013, Section 11.11 Emissions in nonrestricted frequency bands

Out-of-band Emissions in Non-restricted Bands: ANSI C63.10-2013, Section 11.11 Emissions in nonrestricted frequency bands

Out-of-band Emissions in Restricted Bands : ANSI C63.10-2013, Section 11.12 Emissions in restricted frequency bands

AC Power Line Conducted Emission : ANSI C63.10-2013, Section 6.2

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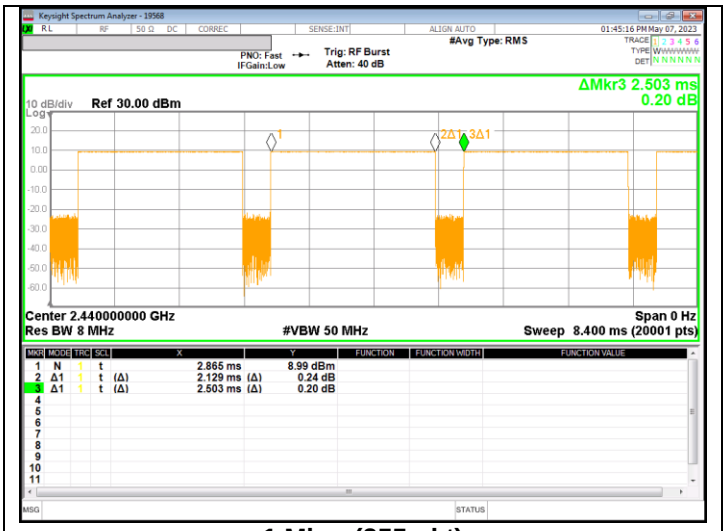
9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

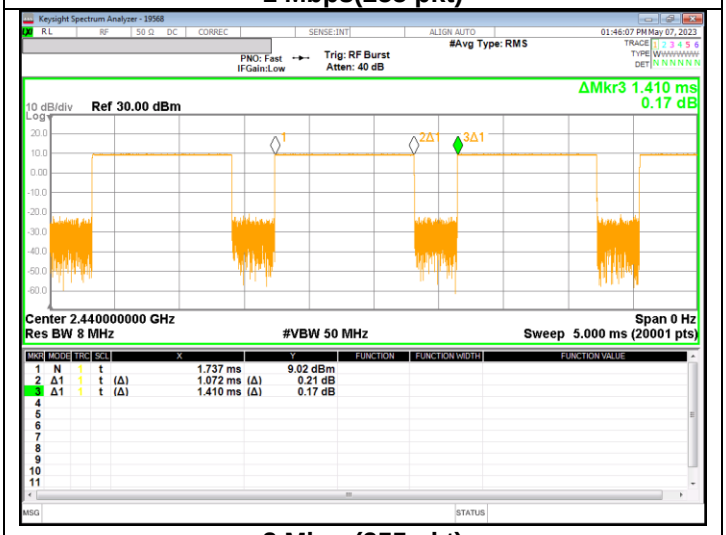
LIMITS

None; for reporting purposes only.

Mode	On time [msec]	Period [msec]	Duty cycle x [Linear]	Duty Cycle [%]	Duty Cycle Correction Factor [dB]	1/T Minimum VBW [kHz]
2 400 ~ 2 483.5 MHz Bands						
1 Mbps [255pkt]	2.129	2.503	0.851	85.058	0.703	0.470
2 Mbps [255pkt]	1.072	1.410	0.760	76.028	1.190	0.933



1 Mbps(255 pkt)



2 Mbps(255 pkt)

9.2. 6 dB BANDWIDTH & 99% BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

RSS-247 5.2 (a)

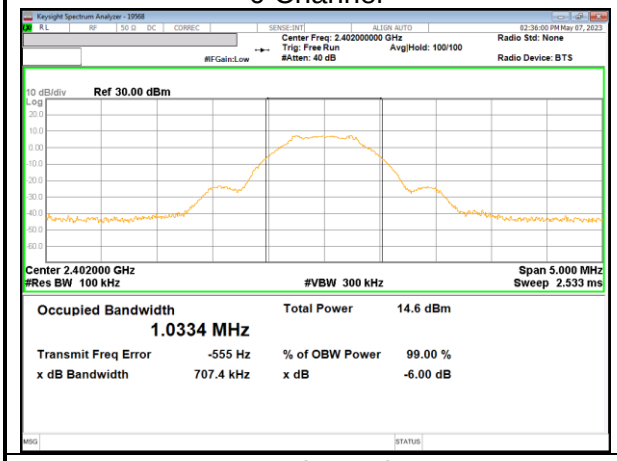
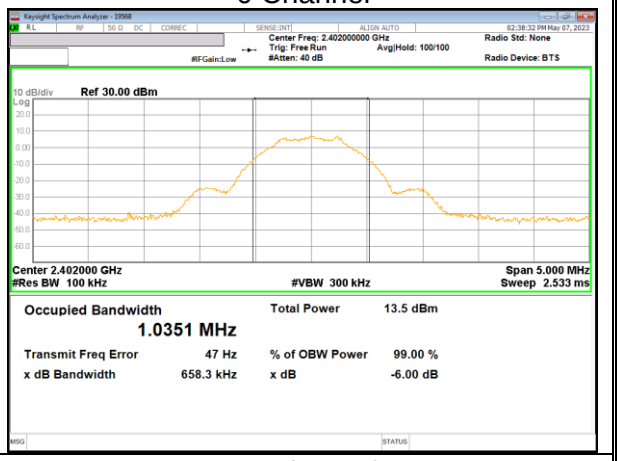
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

9.2.1. Test data

Mode	Antenna	Channel	Frequency [MHz]	6 dB Bandwidth [kHz]	Minimum Limit [kHz]	99% Bandwidth [kHz]
1 Mbps (255 pkt)	ANT1	0	2 402	707.4	500.0	1020.0
		19	2 440	**649.3**	500.0	1019.2
		39	2 480	662.5	500.0	1025.5
	ANT2	0	2 402	658.3	500.0	1021.6
		19	2 440	652.9	500.0	1020.7
		39	2 480	689.2	500.0	**1018.5**
2 Mbps (255 pkt)	ANT1	0	2 402	1140.0	500.0	1996.4
		19	2 440	1147.0	500.0	1988.8
		39	2 480	1140.0	500.0	1992.1
	ANT2	0	2 402	1122.0	500.0	1987.7
		19	2 440	1127.0	500.0	1990.4
		39	2 480	1133.0	500.0	1994.0
Worst				**649.3**	**500.0**	**1018.5**

9.2.2. 6 dB BANDWIDTH PLOTS

1 Mbps ANT1	1 Mbps ANT2
0 Channel	0 Channel
	
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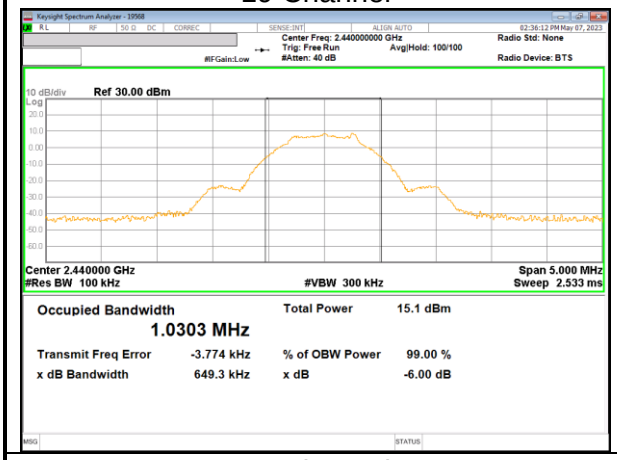	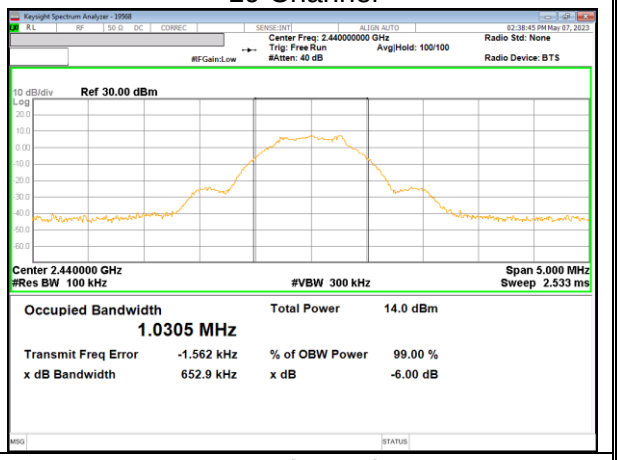
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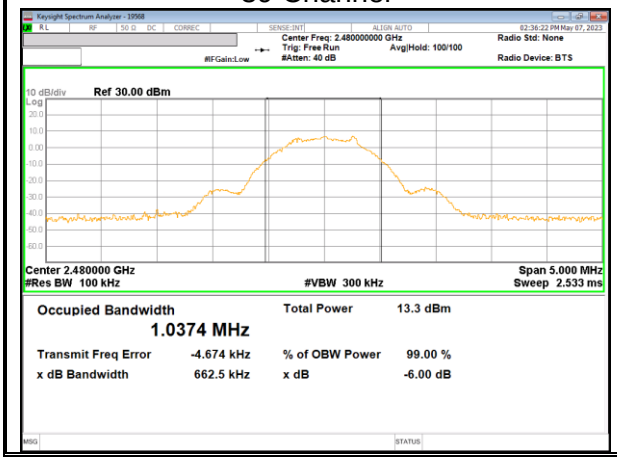
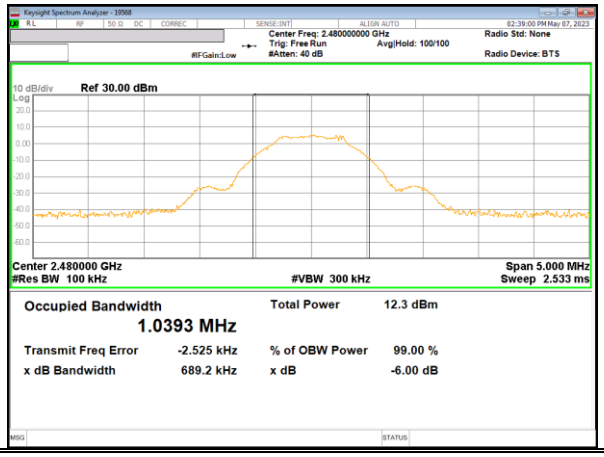
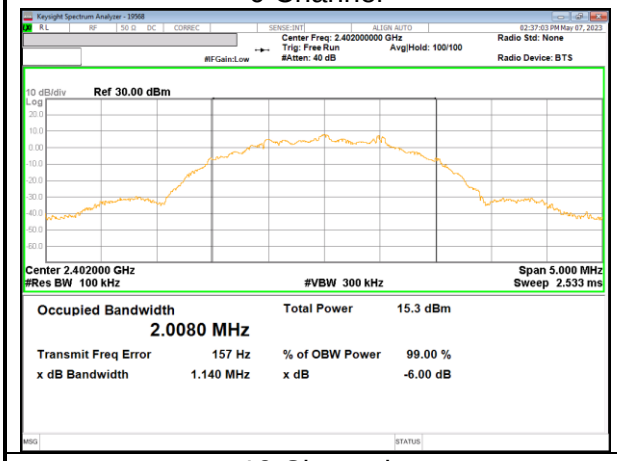
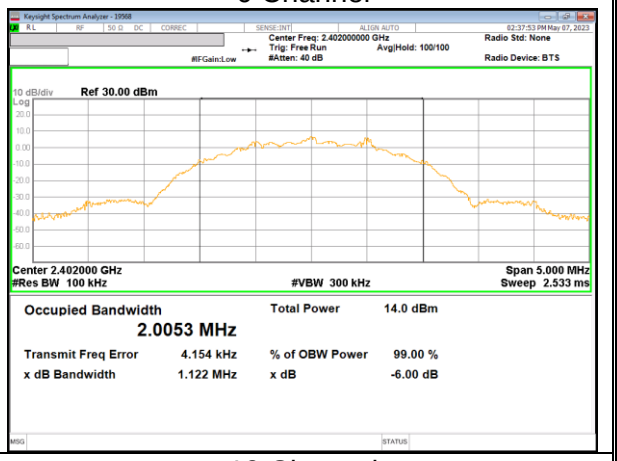
	

2 Mbps ANT1	2 Mbps ANT2
0 Channel	0 Channel
	
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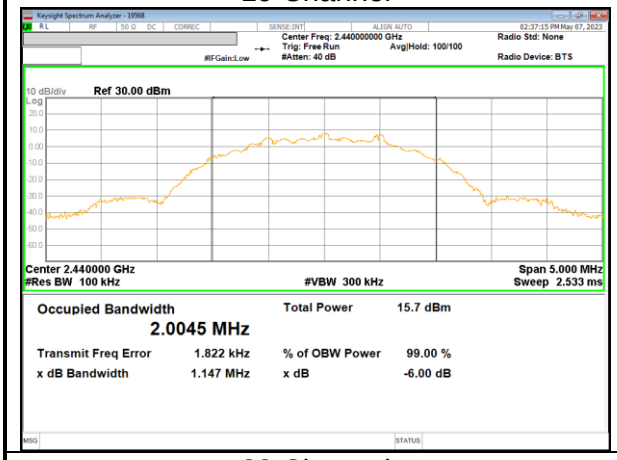	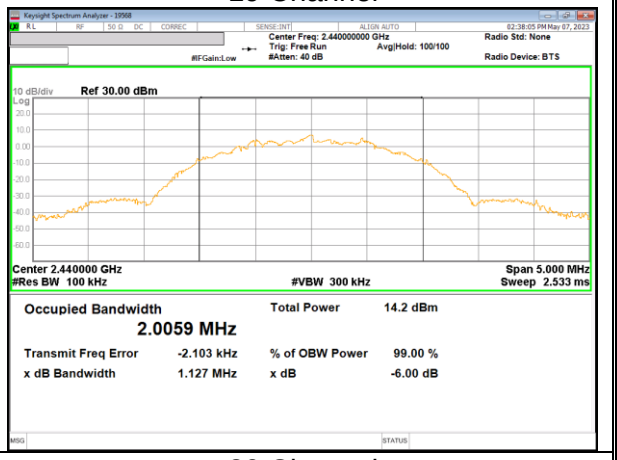
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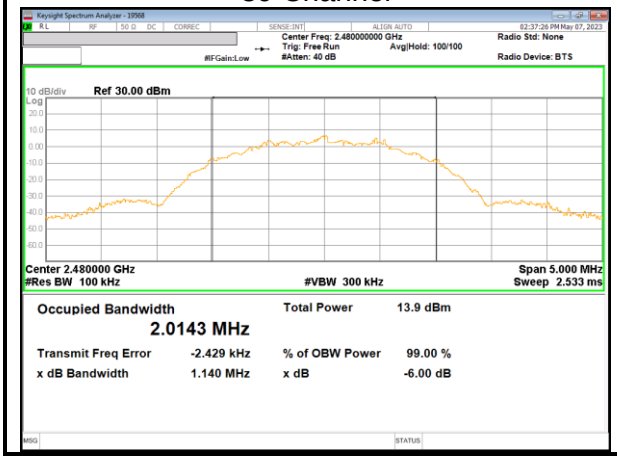
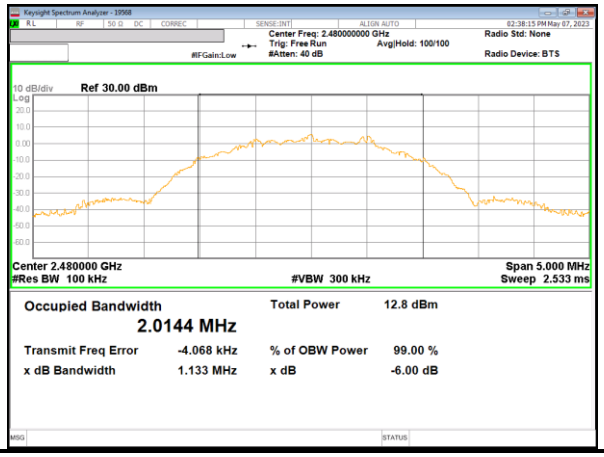
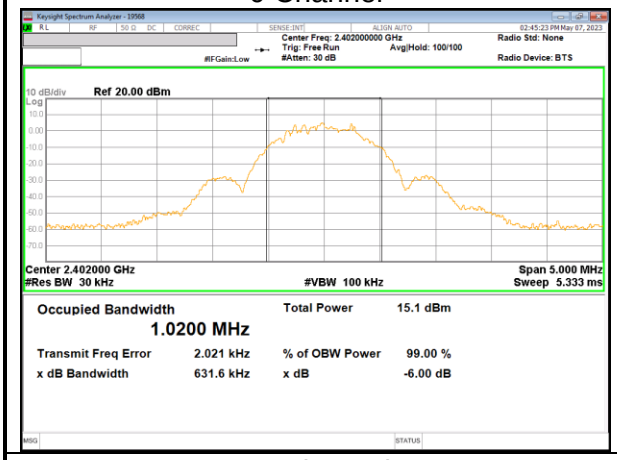
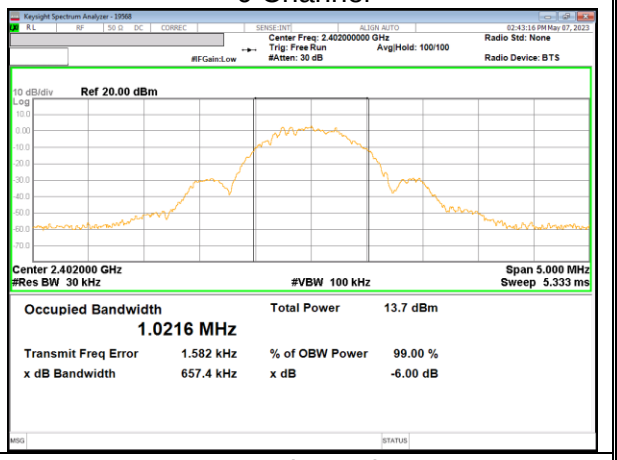
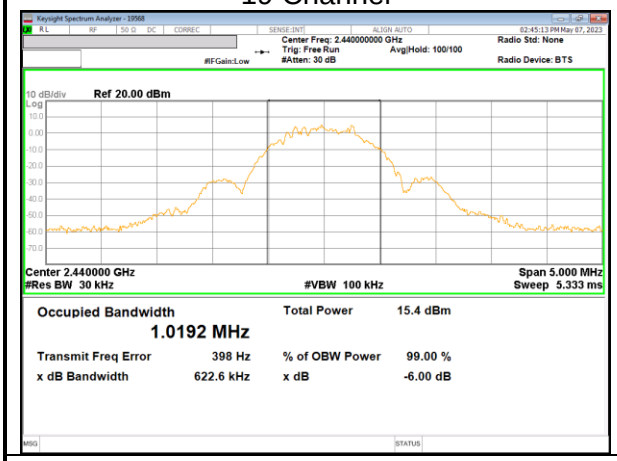
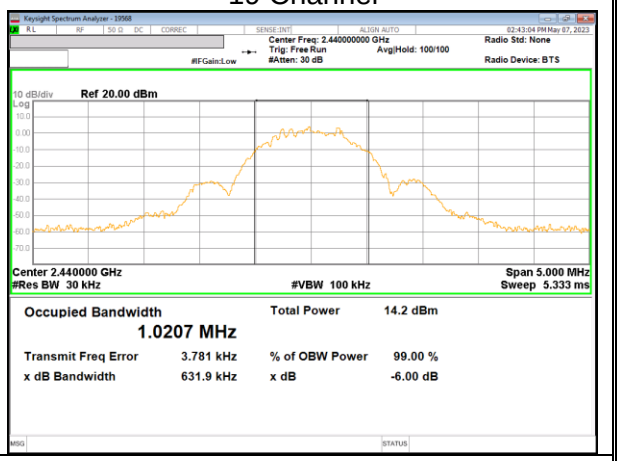
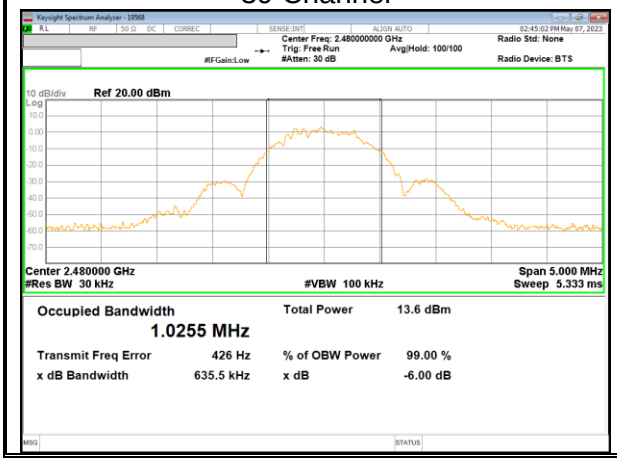
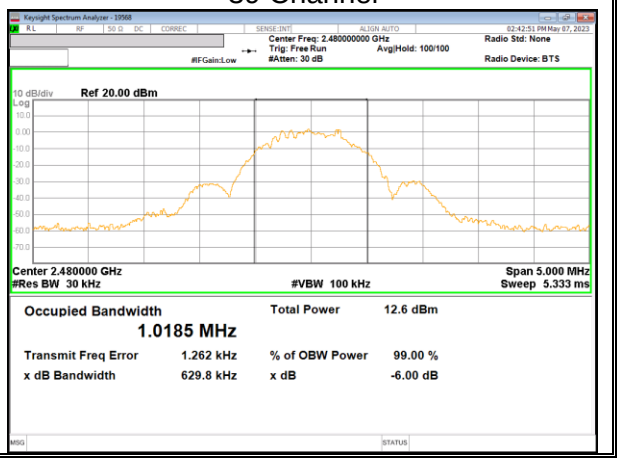
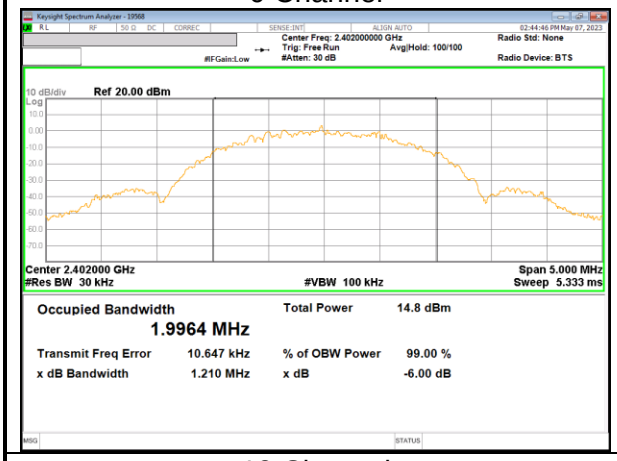
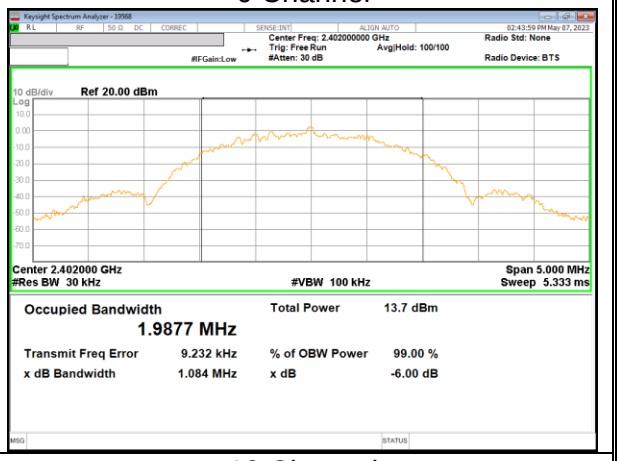
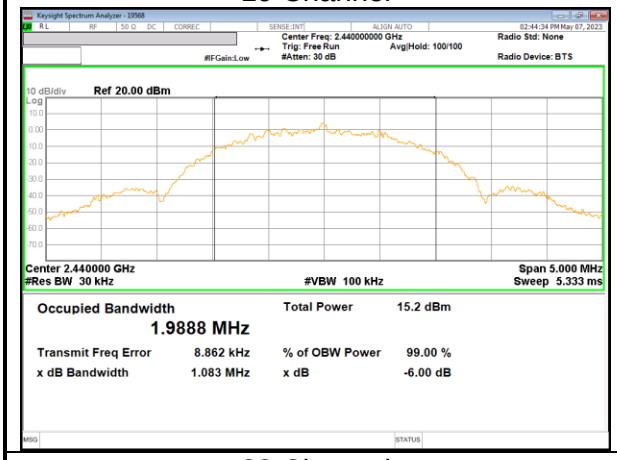
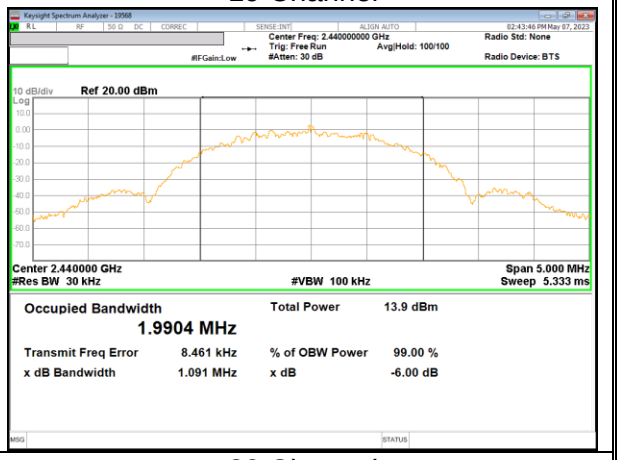
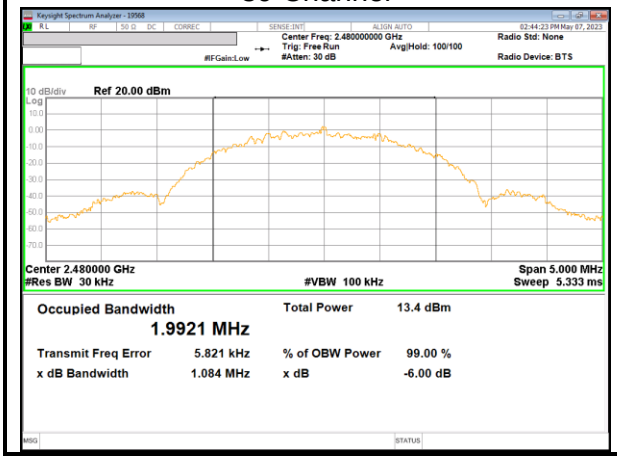
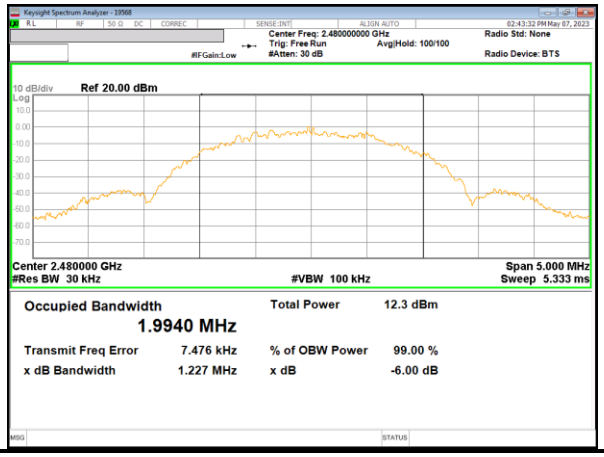
	

9.2.3. 99% BANDWIDTH PLOTS

1 Mbps ANT1	1 Mbps ANT2
0 Channel	0 Channel
	
19 Channel	19 Channel
	
39 Channel	39 Channel
	

2 Mbps ANT1	2 Mbps ANT2
0 Channel	0 Channel
	
19 Channel	19 Channel
	
39 Channel	39 Channel
	

9.3. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

RSS-247 (5.4) (d)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

TEST PROCEDURE

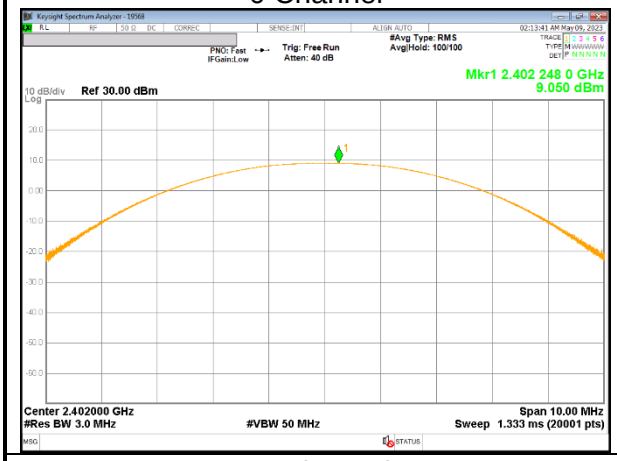
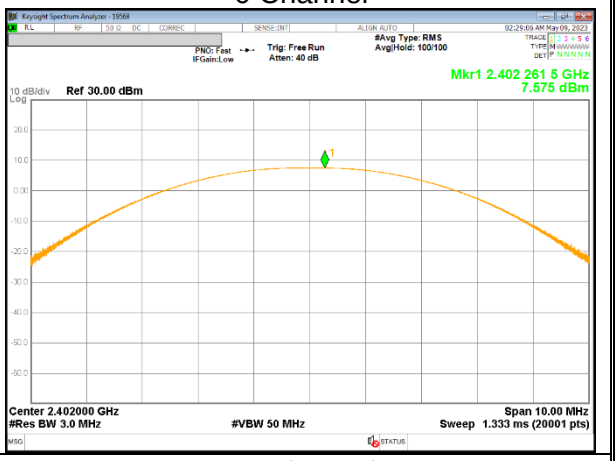
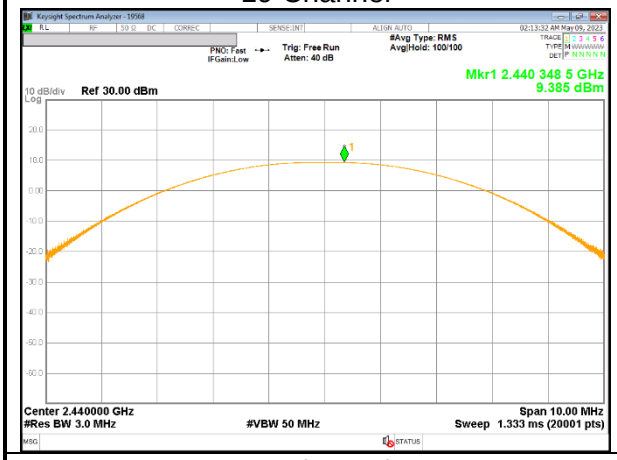
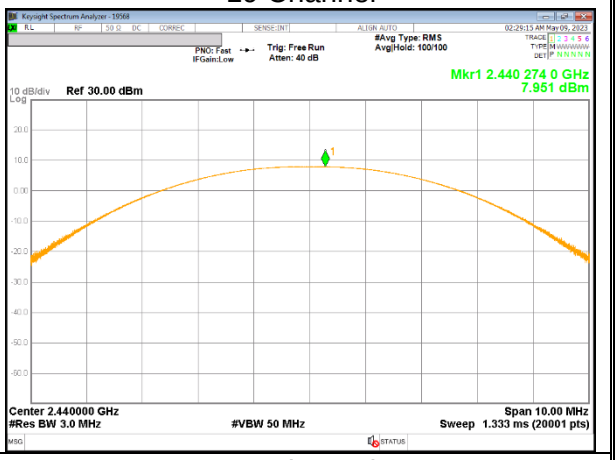
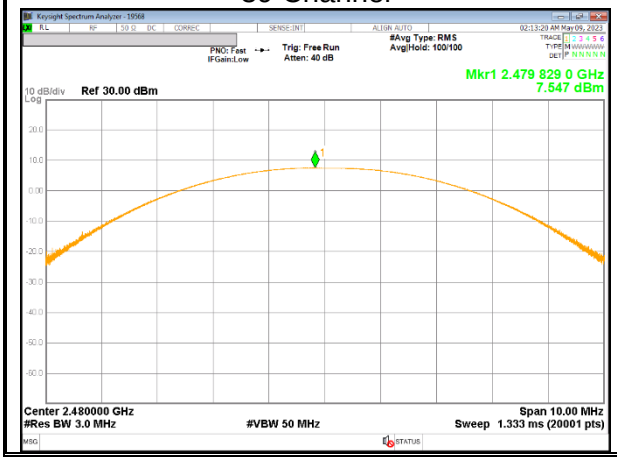
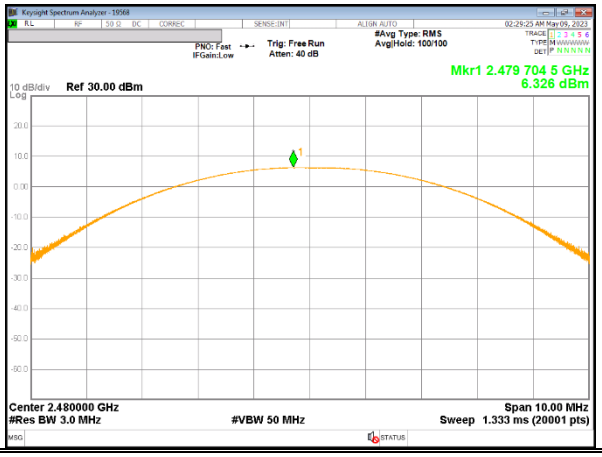
Peak power is measured using ANSI C63.10(2013) under section 11.9.1.1 utilizing spectrum analyzer.

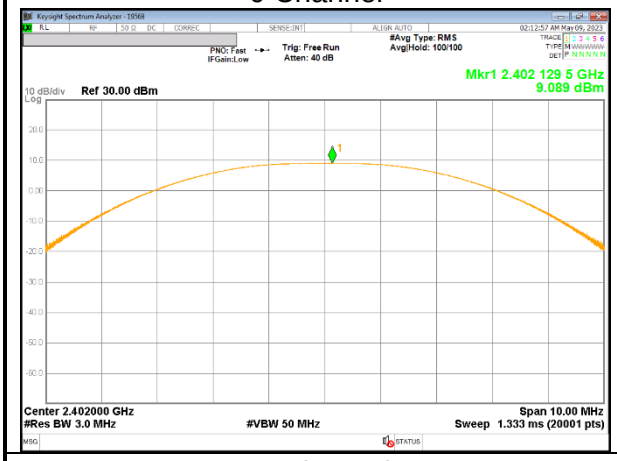
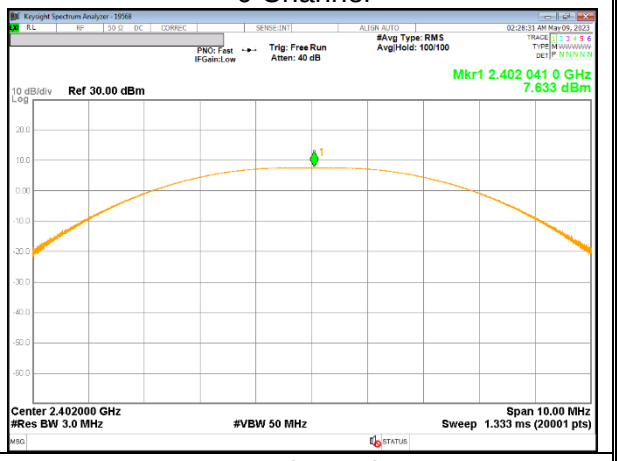
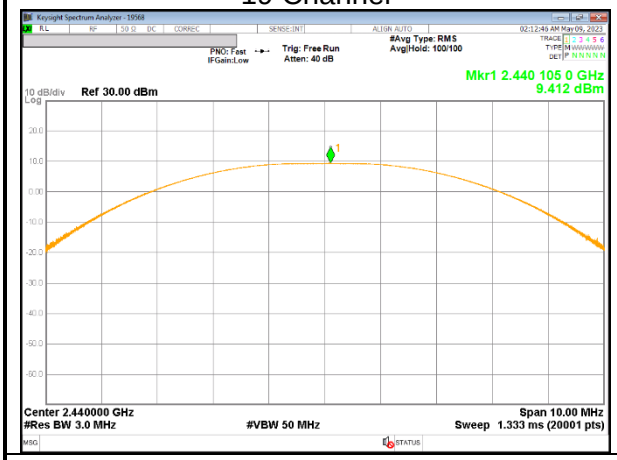
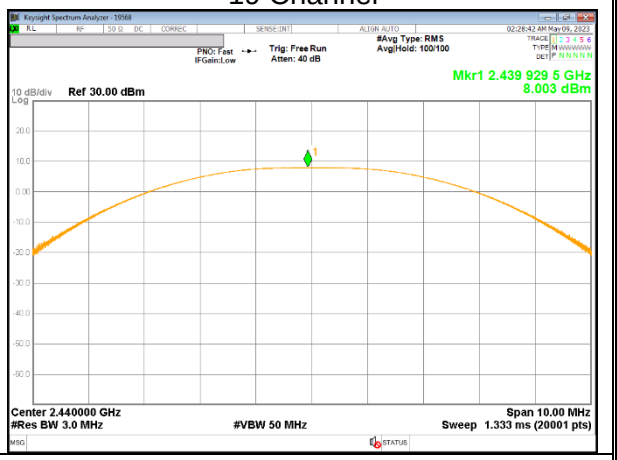
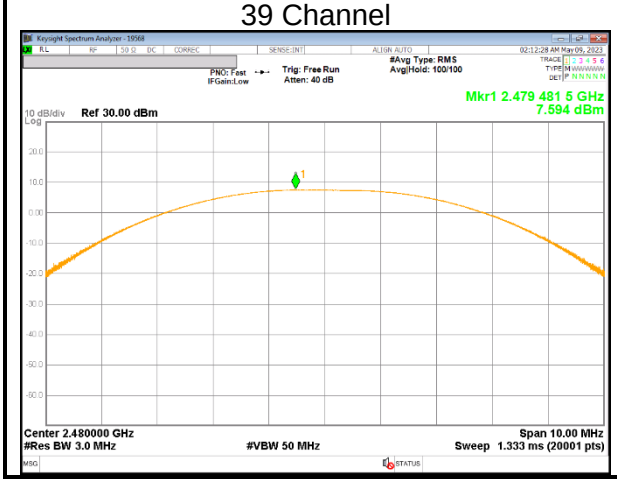
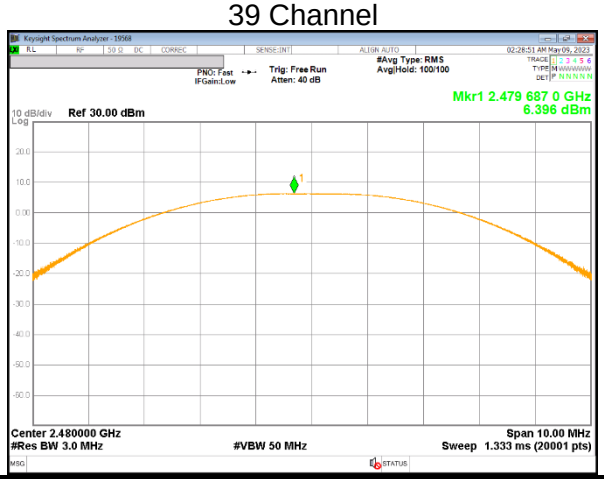
RESULTS

9.3.1. Test data

Mode	Antenna	Channel	Frequency [MHz]	Peak Output Power [dBm]	Limit [dBm]	Margin [dB]
1 Mbps (255 pkt)	ANT1	0	2 402	9.050	30.000	-20.977
		19	2 440	9.385		-20.657
		39	2 480	7.547		-22.491
	ANT2	0	2 402	7.575		-22.429
		19	2 440	7.951		-22.044
		39	2 480	6.326		-23.685
2 Mbps (255 pkt)	ANT1	0	2 402	9.089		-20.911
		19	**2 440**	**9.412**		**-20.588**
		39	2 480	7.594		-22.406
	ANT2	0	2 402	7.633		-22.367
		19	2 440	8.003		-21.997
		39	2 480	6.396		-23.604
Worst				**9.412**		**-20.588**

9.3.2. PEAK POWER PLOTS

1 Mbps ANT1	1 Mbps ANT2
0 Channel	0 Channel
	
19 Channel	19 Channel
	
39 Channel	39 Channel
	

2 Mbps ANT1	2 Mbps ANT2
0 Channel	0 Channel
	
19 Channel	19 Channel
	
39 Channel	39 Channel
	

9.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband RF frame average power sensor.
The cable assembly insertion loss and duty cycle correction factor were entered as an offset in the power meter to allow for direct reading of power.

RESULTS

9.4.1. Test data

Mode	Antenna	Channel	Frequency [MHz]	Average Output Power [dBm]	Average Output Power [mW]
1 Mbps (255 pkt)	ANT1	0	2 402	8.732	7.468
		19	**2 440**	**9.083**	**8.096**
		39	2 480	7.194	5.241
	ANT2	0	2 402	7.285	5.352
		19	2 440	7.655	5.828
		39	2 480	5.994	3.975
2 Mbps (255 pkt)	ANT1	0	2 402	8.521	7.114
		19	**2 440**	**8.859**	**7.690**
		39	2 480	6.981	4.990
	ANT2	0	2 402	7.092	5.119
		19	2 440	7.467	5.581
		39	2 480	5.806	3.808

9.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

RSS-247 (5.2) (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST PROCEDURE

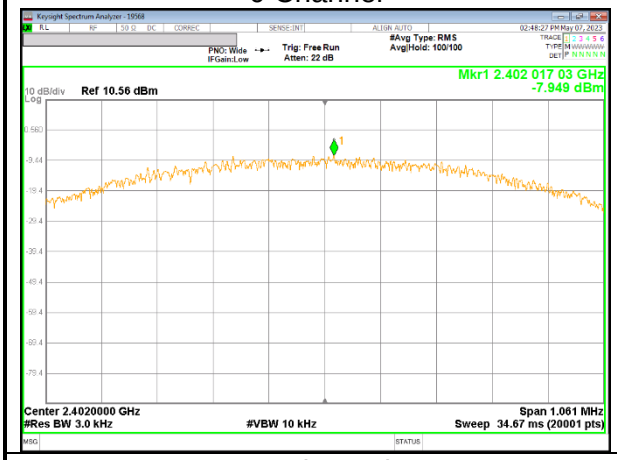
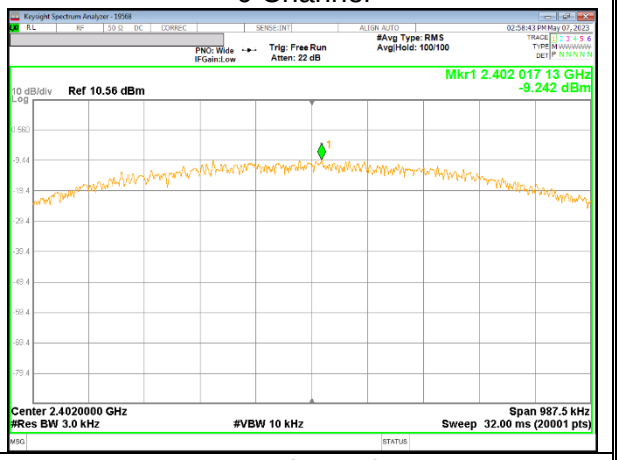
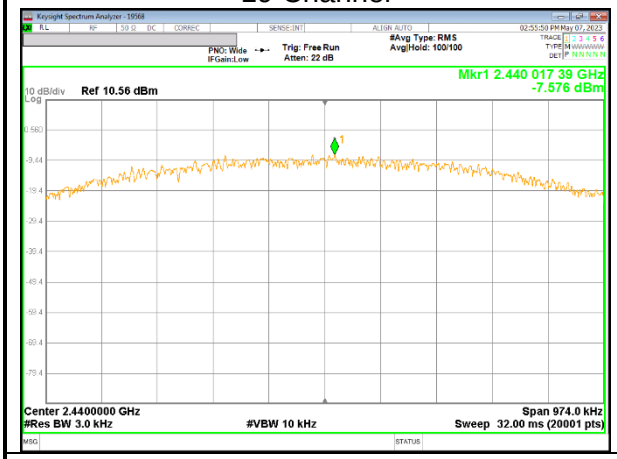
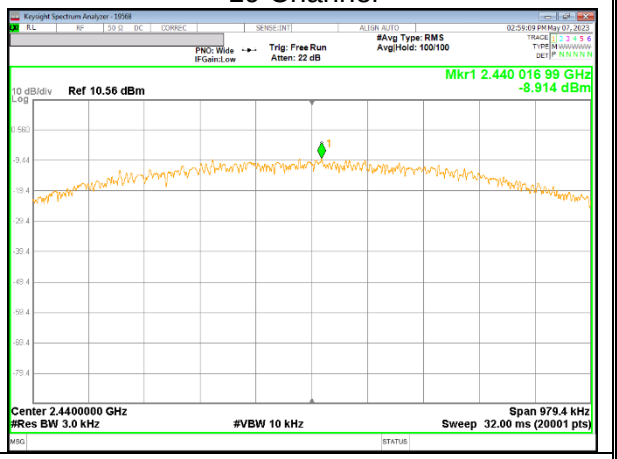
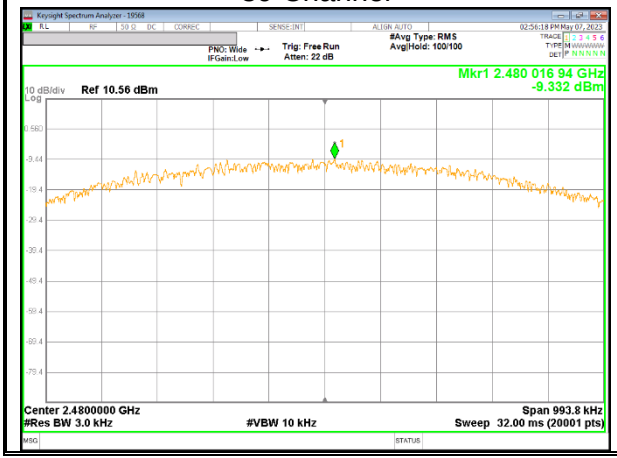
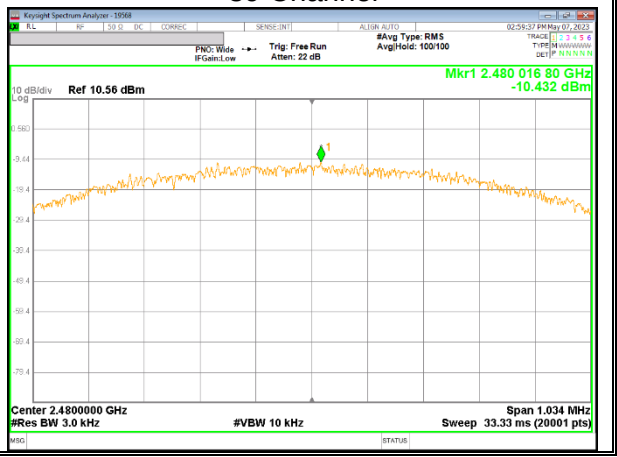
ANSI C63.10-2013, Section 11.10.2 Method PKPSD (peak PSD)

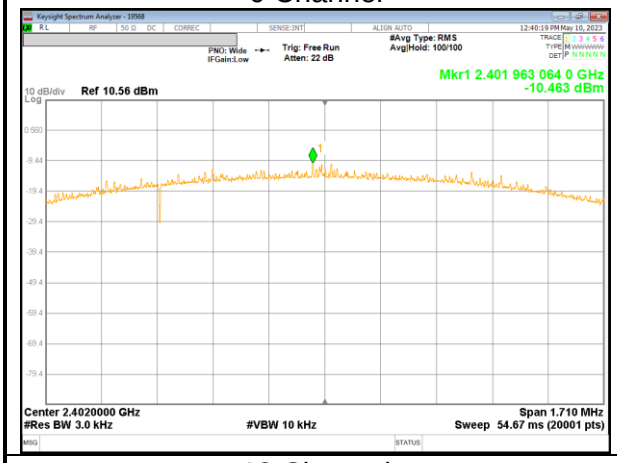
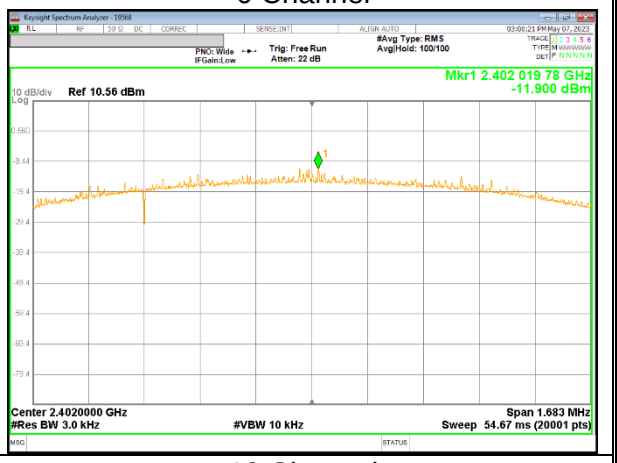
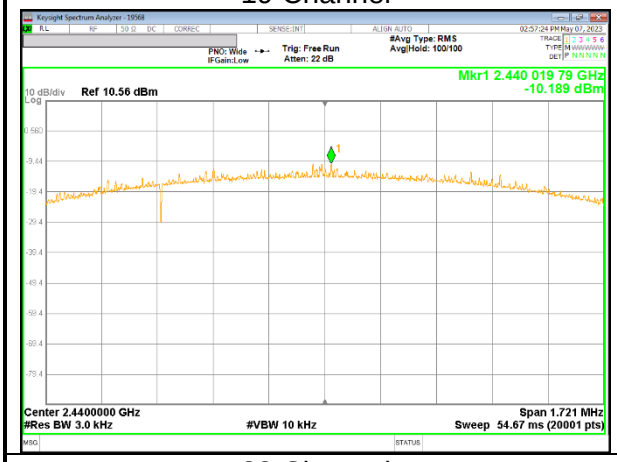
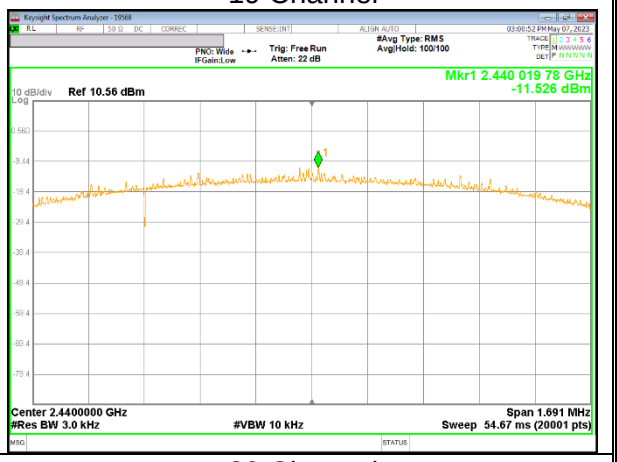
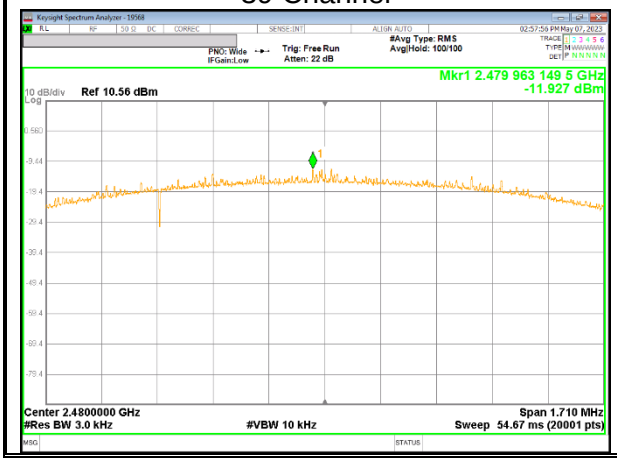
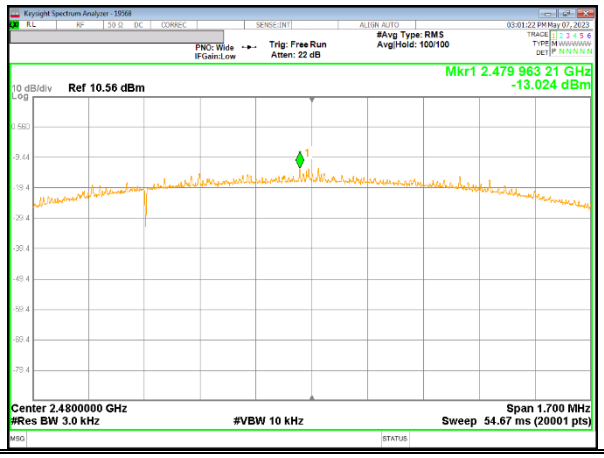
RESULTS

9.5.1. Test data

Mode	Antenna	Channel	Frequency [MHz]	PSD [dBm/3kHz]	Limit [dBm/3kHz]	Margin [dB]
1 Mbps (255 pkt)	ANT1	0	2 402	-7.949	8.00	-15.949
		19	**2 440**	**-7.576**		**-15.576**
		39	2 480	-9.332		-17.332
	ANT2	0	2 402	-9.242		-17.242
		19	2 440	-8.914		-16.914
		39	2 480	-10.432		-18.432
2 Mbps (255 pkt)	ANT1	0	2 402	-10.463		-18.463
		19	2 440	-10.189		-18.189
		39	2 480	-11.927		-19.927
	ANT2	0	2 402	-11.900		-19.900
		19	2 440	-11.526		-19.526
		39	2 480	-13.024		-21.024
Worst				**-7.576**		**-15.576**

9.5.2. PSD TEST PLOTS

1 Mbps ANT1	1 Mbps ANT2
0 Channel	0 Channel
	
19 Channel	19 Channel
	
39 Channel	39 Channel
	

2 Mbps ANT1	2 Mbps ANT2
0 Channel	0 Channel
	
19 Channel	19 Channel
	
39 Channel	39 Channel
	

9.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

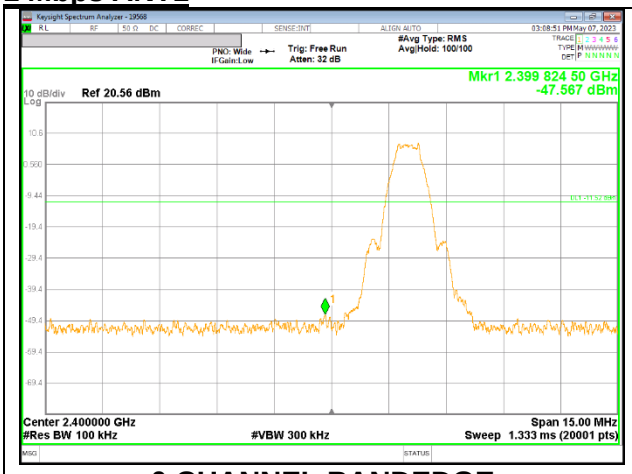
RSS-247 (5.5)

Output power was measured based on the use of a peak measurement.
Therefore, spurious emissions are required to be 20 dBc.

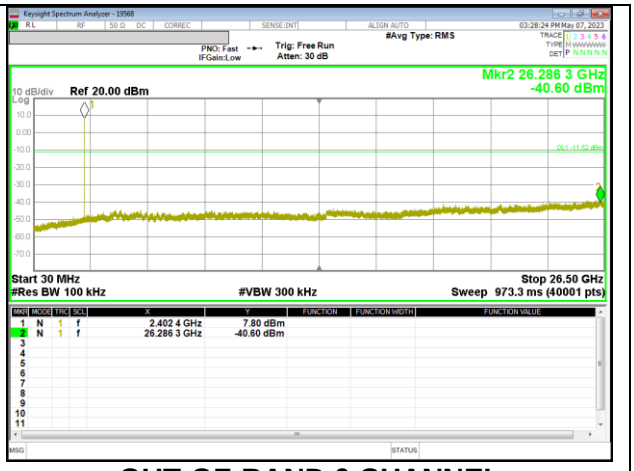
RESULTS

9.6.1. CONDUCTED SUPRIOUS EMISSIONS TEST PLOTS

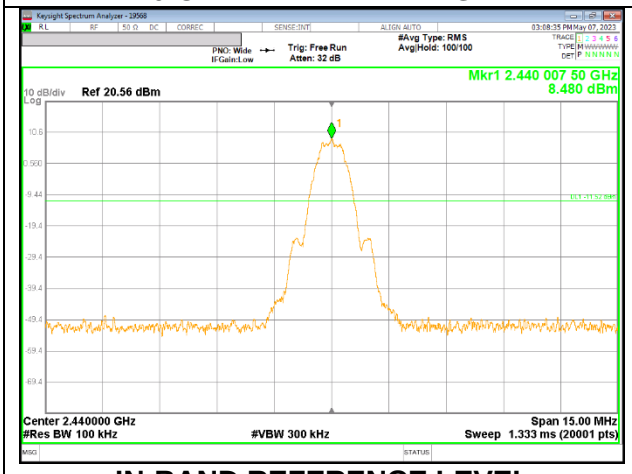
1 Mbps ANT1



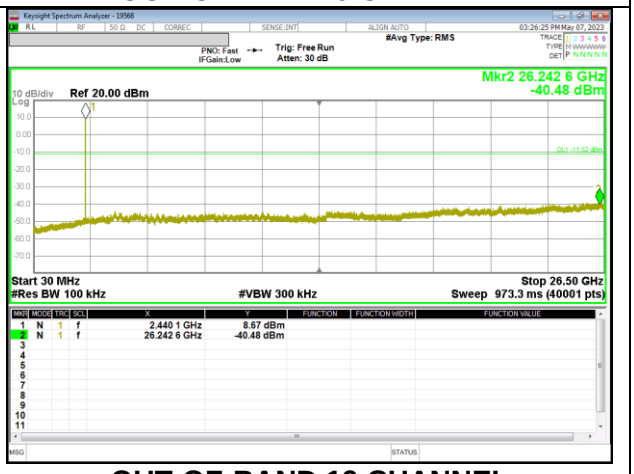
0 CHANNEL BANDEDGE



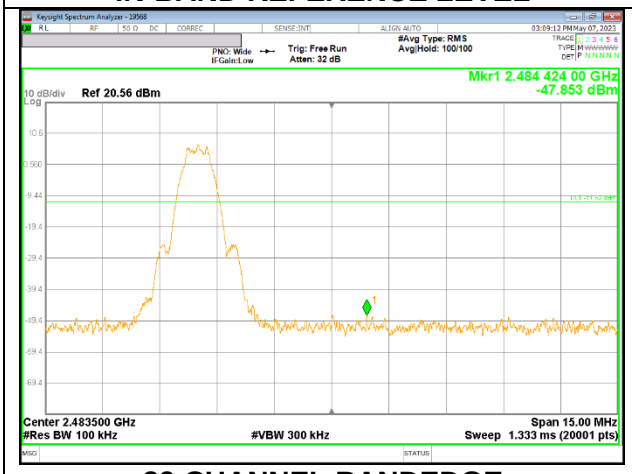
OUT-OF-BAND 0 CHANNEL



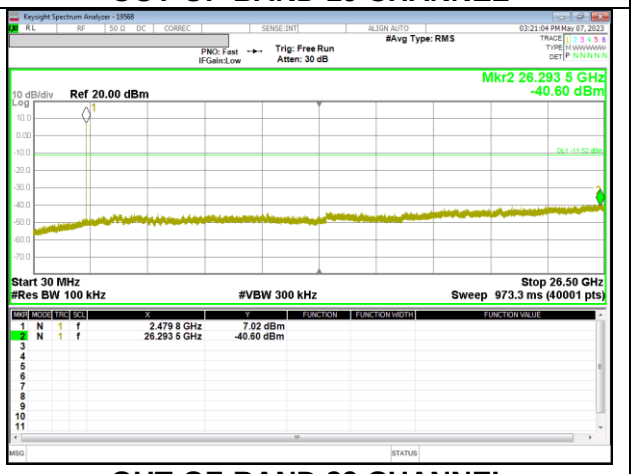
IN-BAND REFERENCE LEVEL



OUT-OF-BAND 19 CHANNEL

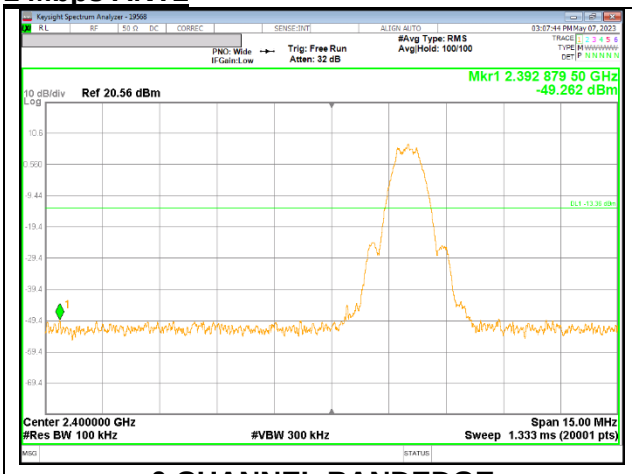


39 CHANNEL BANDEDGE

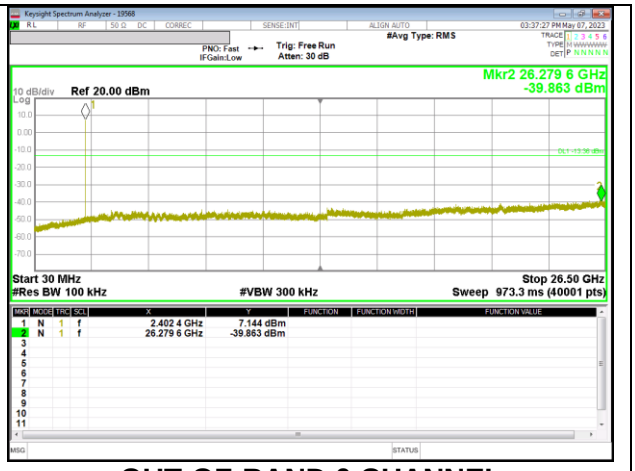


OUT-OF-BAND 39 CHANNEL

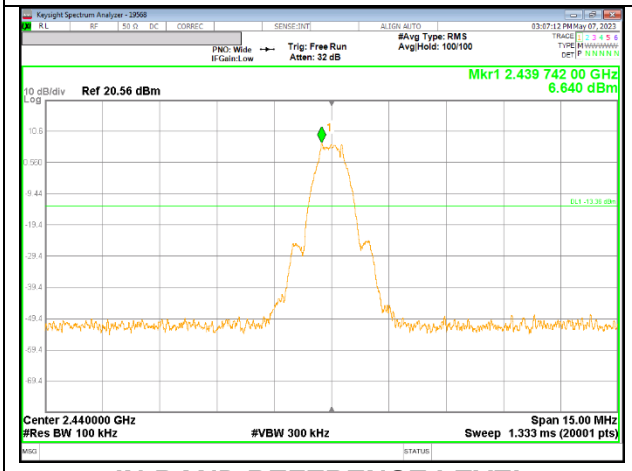
1 Mbps ANT2



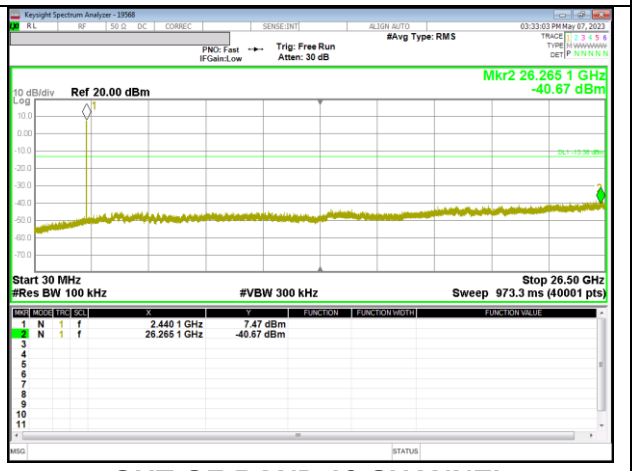
0 CHANNEL BANDEDGE



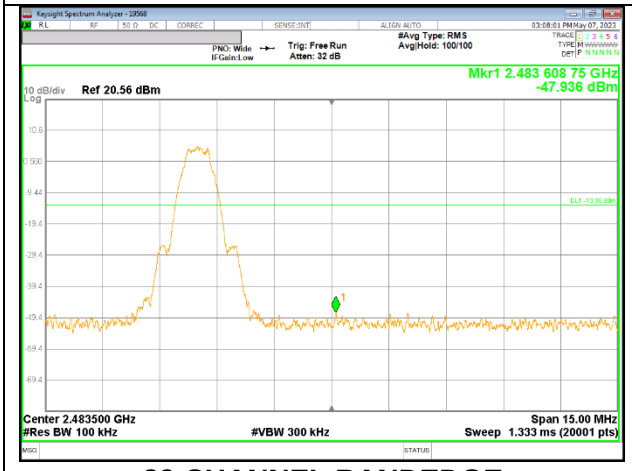
OUT-OF-BAND 0 CHANNEL



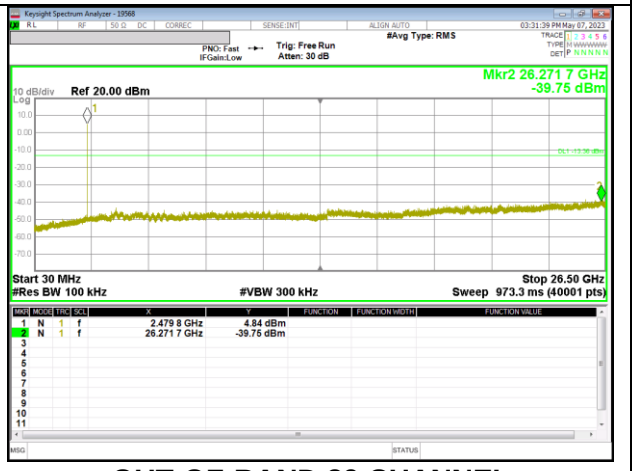
IN-BAND REFERENCE LEVEL



OUT-OF-BAND 19 CHANNEL

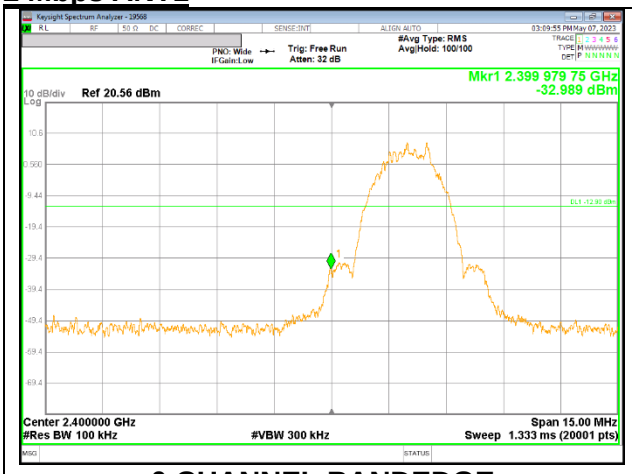


39 CHANNEL BANDEDGE

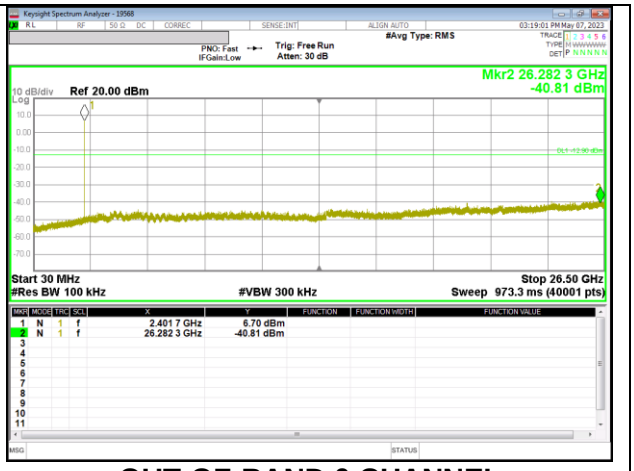


OUT-OF-BAND 39 CHANNEL

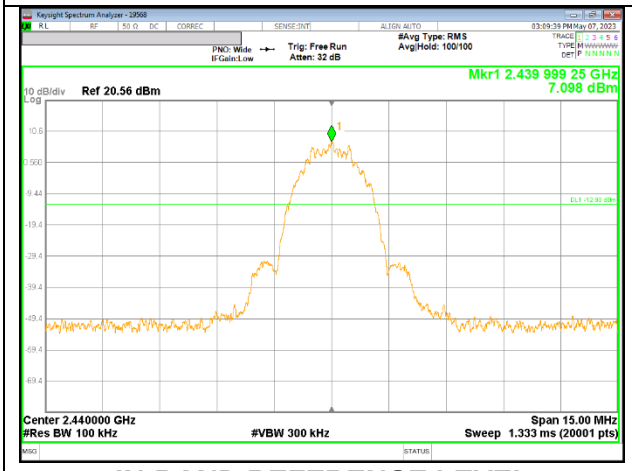
2 Mbps ANT1



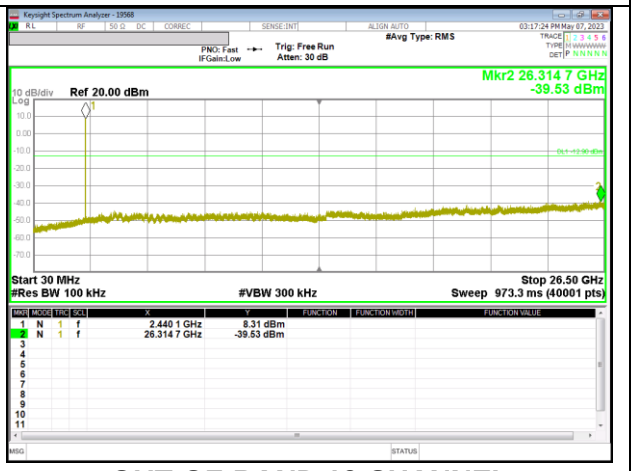
0 CHANNEL BANDEDGE



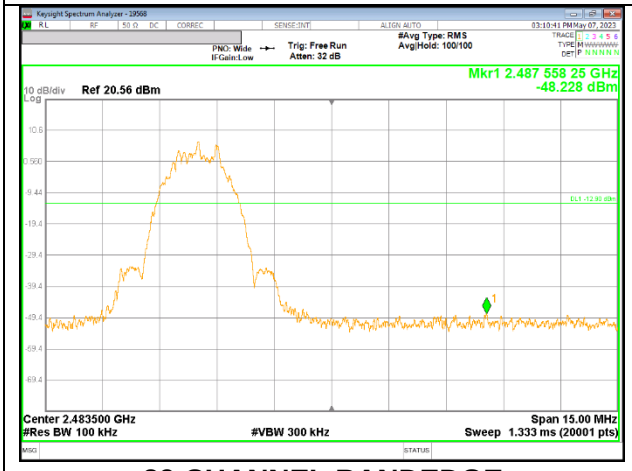
OUT-OF-BAND 0 CHANNEL



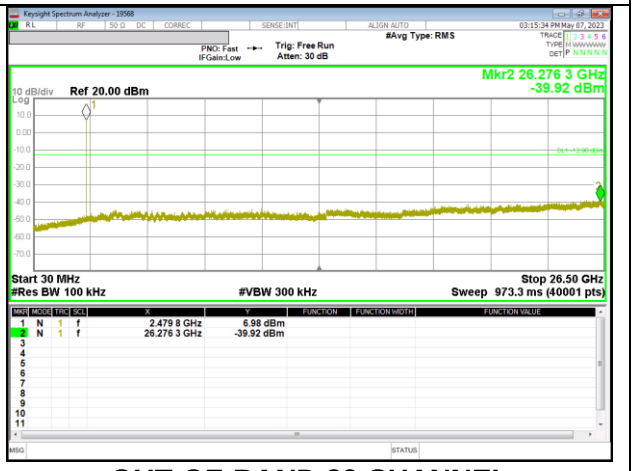
IN-BAND REFERENCE LEVEL



OUT-OF-BAND 19 CHANNEL

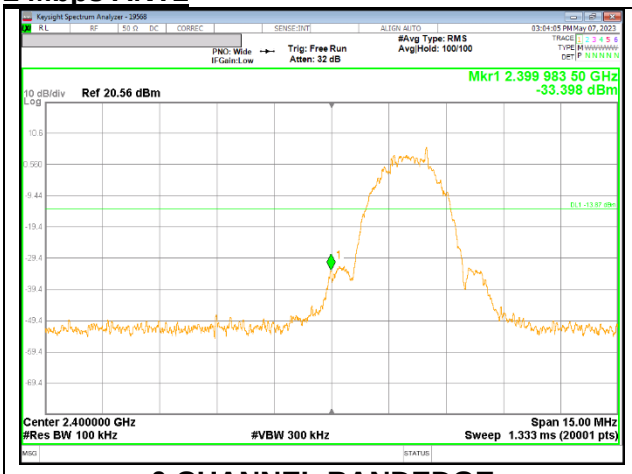


39 CHANNEL BANDEDGE



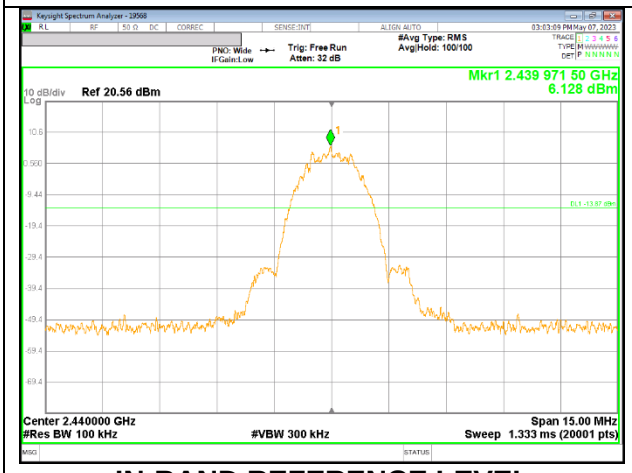
OUT-OF-BAND 39 CHANNEL

2 Mbps ANT2

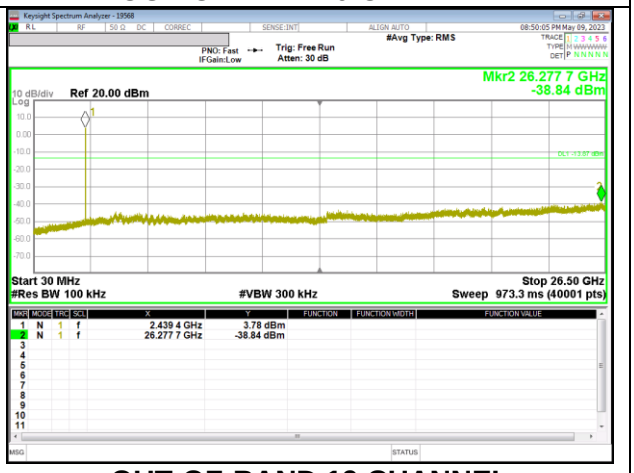


0 CHANNEL BANDEDGE

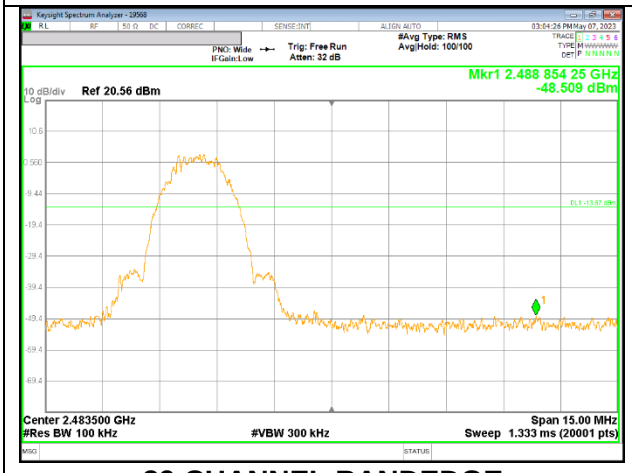
OUT-OF-BAND 0 CHANNEL



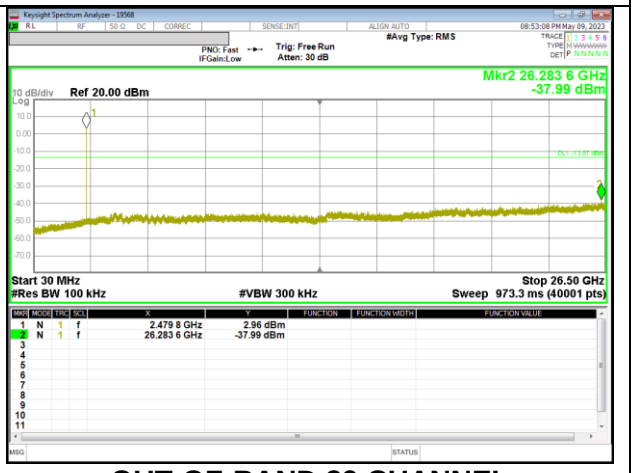
IN-BAND REFERENCE LEVEL



OUT-OF-BAND 19 CHANNEL



39 CHANNEL BANDEDGE



OUT-OF-BAND 39 CHANNEL

10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-Gen (8.9) & (8.10)

Limits for radiated disturbance of an intentional radiator		
Frequency range (MHz)	Limits (μV/m)	Measurement Distance (m)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30	30
30 – 88	100**	3
88 - 216	150**	3
216 – 960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g. §§ 15.231 and 15.241.

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1GHz and 150 cm for above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor for average measurements. (Restricted band-edge, Final detection of spurious harmonic emissions)
Duty cycle factor = 10 log (1/x). For this sample: For 1 Mbps, DCF = 10log(1/0.851)=0.703 dB (Spectrum Analyzer round it up to 0.71 dB) and for 2 Mbps, DCF = 10log(1/0.760)=1.190 dB (Spectrum Analyzer round it up to 1.19 dB).

Pre-scans to detect harmonic and spurious emissions, the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 kHz for peak measurements.

The spectrum from 1 GHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.
(From 30MHz to 1GHz, test was performed with the EUT set to transmit at the channel with highest output power)

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

Note : Emission was pre-scanned from 9kHz to 30MHz; No emissions were detected which was at least 20dB below the specification limit (consider distance correction factor).
Per FCC part 15.31(o), test results were not reported.

Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 30 m open are test site.
Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field based on KDB 414788.

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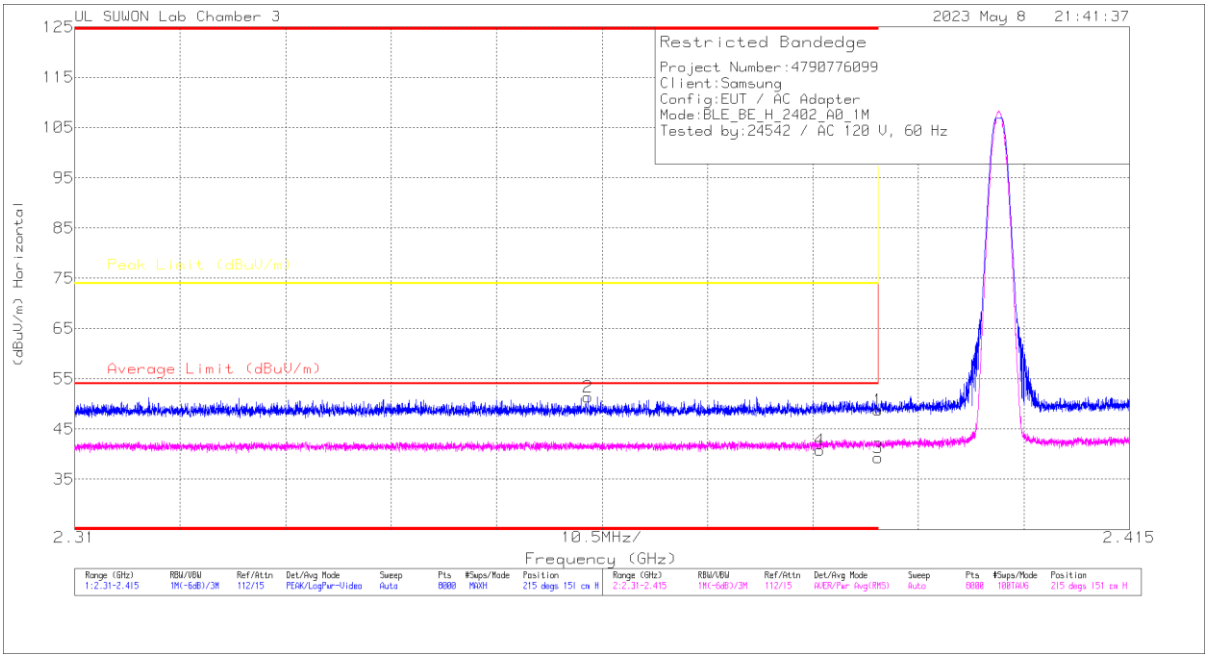
10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. 1 Mbps ANT1

BANDEDGE (0 CHANNEL)

HORIZONTAL RESULT

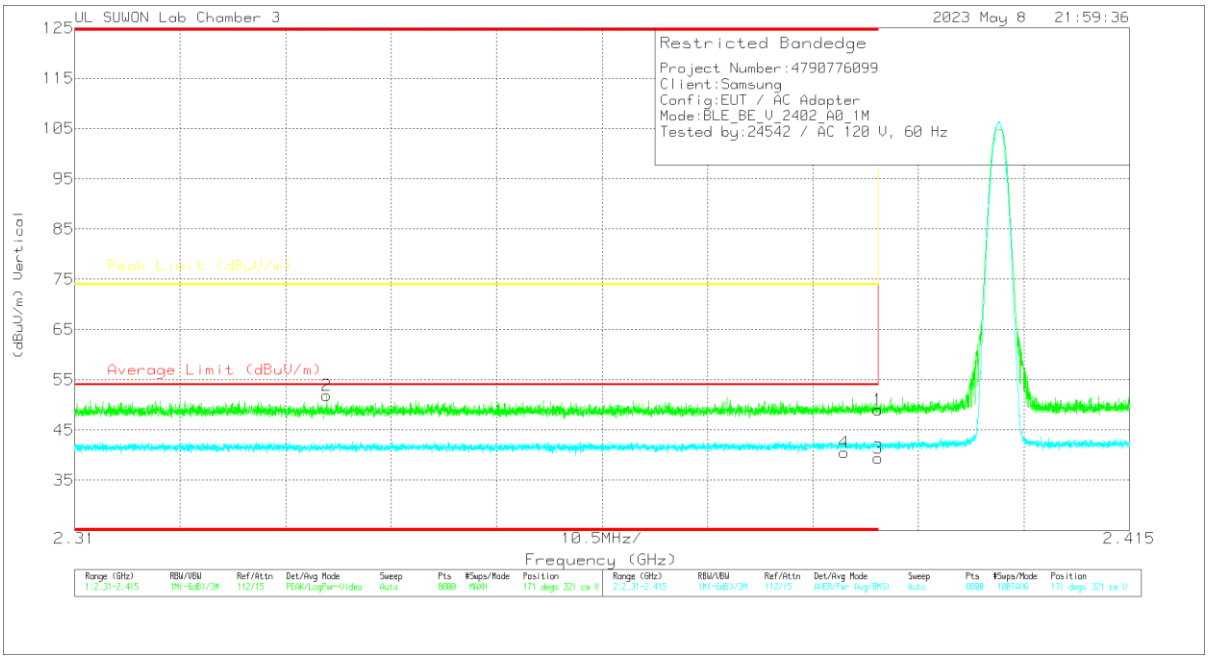


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	10dB_ATT(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	41.71	Pk	32.1	-25.1	0	48.71	-	-	74	-25.29	215	151	H
2	* 2.36109	44.46	Pk	32	-25.1	0	51.36	-	-	74	-22.64	215	151	H
3	* 2.39	31.56	RMS	32.1	-25.1	.7	39.26	54	-14.74	-	-	215	151	H
4	* 2.38419	33.13	RMS	32.1	-25.1	.7	40.83	54	-13.17	-	-	215	151	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



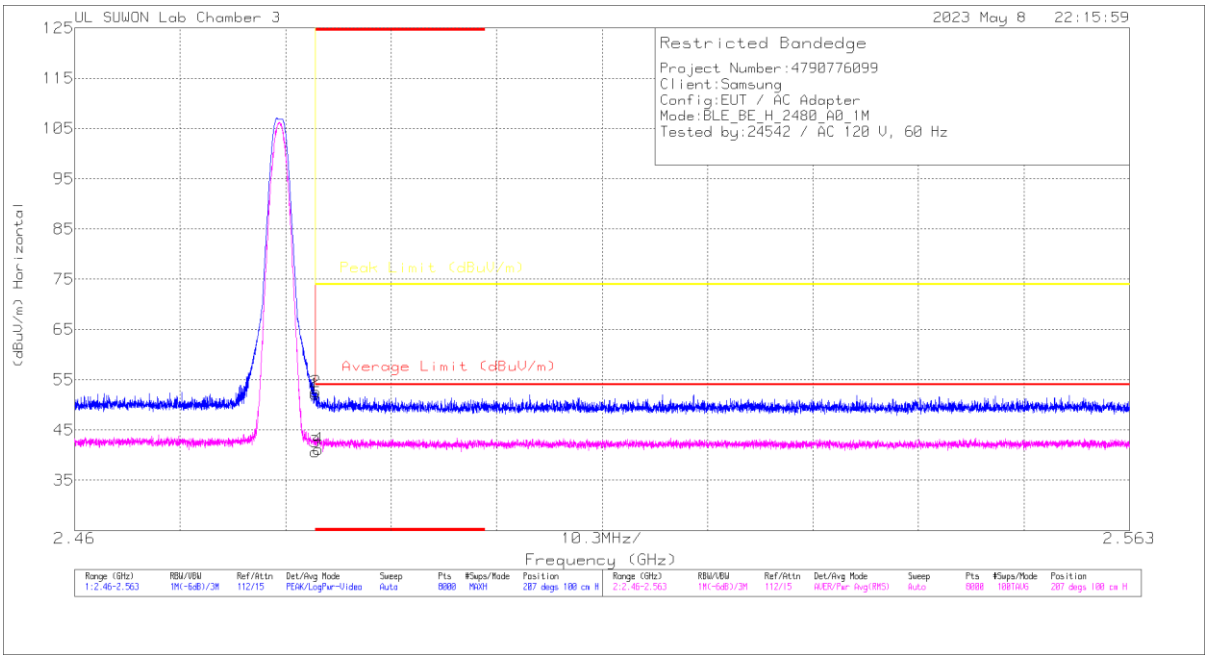
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	10dB_ATT(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	42.03	Pk	32.1	-25.1	0	49.03	-	-	74	-24.97	171	321	V
2	* 2.3351	45.02	Pk	31.9	-25.1	0	51.82	-	-	74	-22.18	171	321	V
3	* 2.39	31.74	RMS	32.1	-25.1	.7	39.44	54	-14.56	-	-	171	321	V
4	* 2.38658	32.89	RMS	32.1	-25.1	.7	40.59	54	-13.41	-	-	171	321	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

BANDEDGE (39 CHANNEL)

HORIZONTAL RESULT

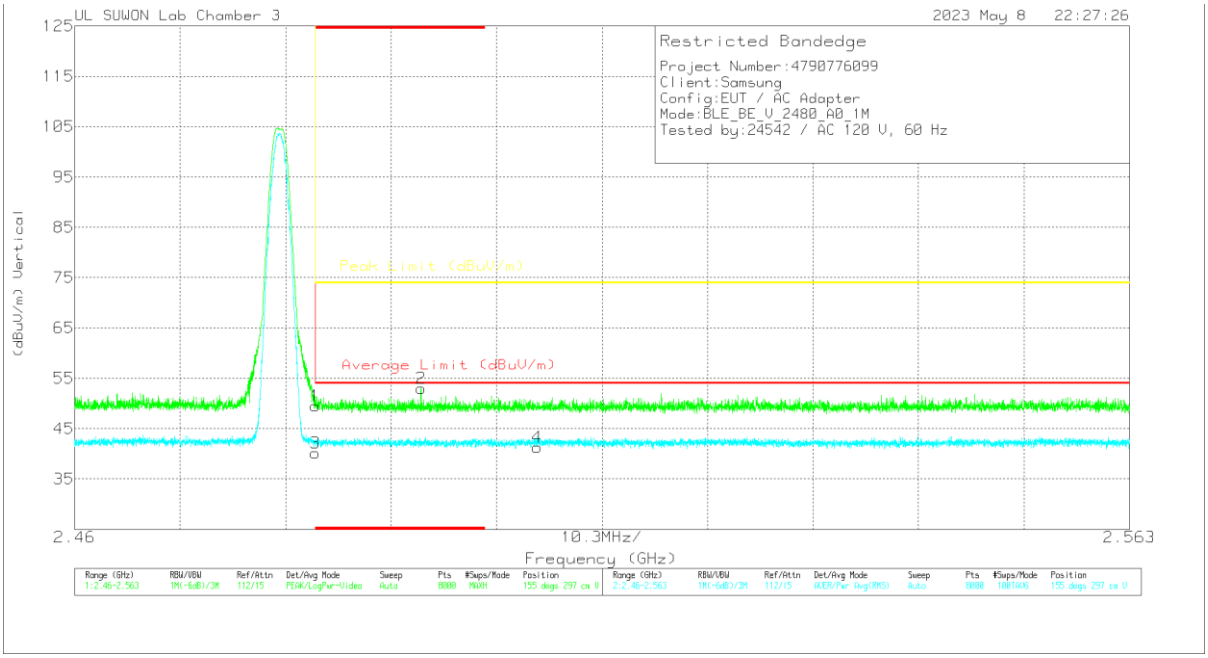


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	10dB_ATT(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	44.71	Pk	32.4	-25	0	52.11	-	-	74	-21.89	207	100	H
2	* 2.48353	45.22	Pk	32.4	-25	0	52.62	-	-	74	-21.38	207	100	H
3	* 2.4835	32.54	RMS	32.4	-25	.7	40.64	54	-13.36	-	-	207	100	H
4	* 2.4838	33.12	RMS	32.4	-25	.7	41.22	54	-12.78	-	-	207	100	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



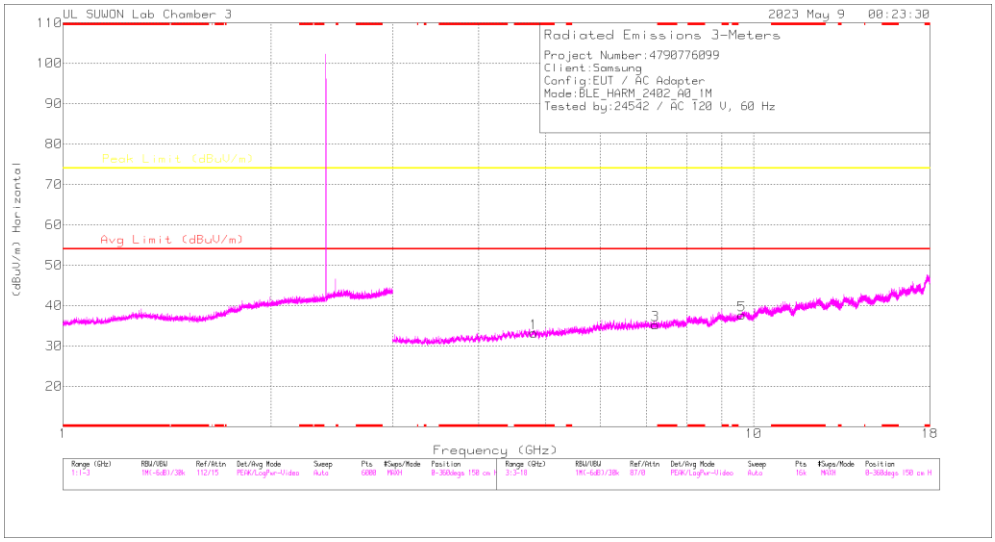
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	10dB_ATT(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	42.15	Pk	32.4	-25	0	49.55	-	-	74	-24.45	155	297	V
2	* 2.49382	45.49	Pk	32.4	-24.9	0	52.99	-	-	74	-21.01	155	297	V
3	* 2.4835	32.1	RMS	32.4	-25	.7	40.2	54	-13.8	-	-	155	297	V
4	2.50519	33.1	RMS	32.4	-24.9	.7	41.3	54	-12.7	-	-	155	297	V

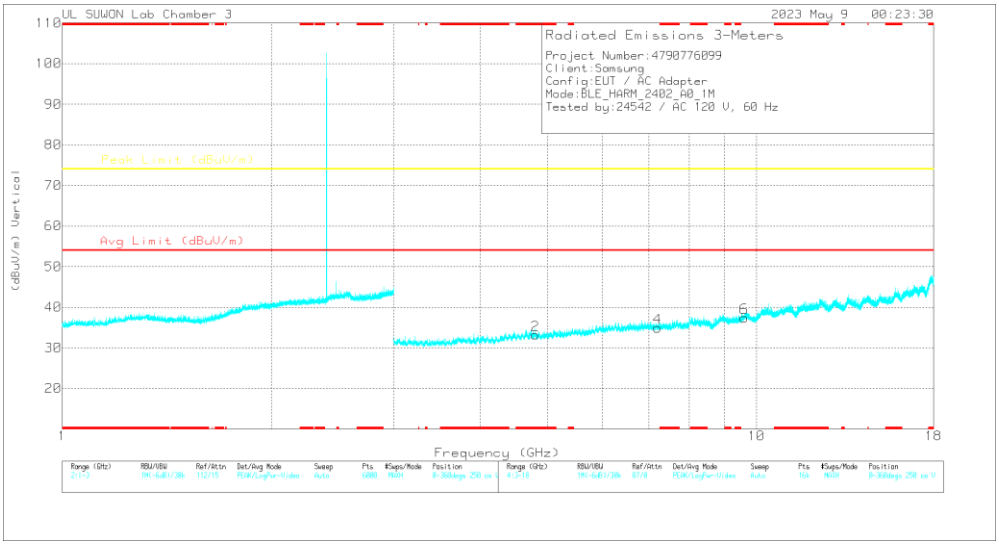
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

0 CHANNEL RESULTS



HORIZONTAL



VERTICAL

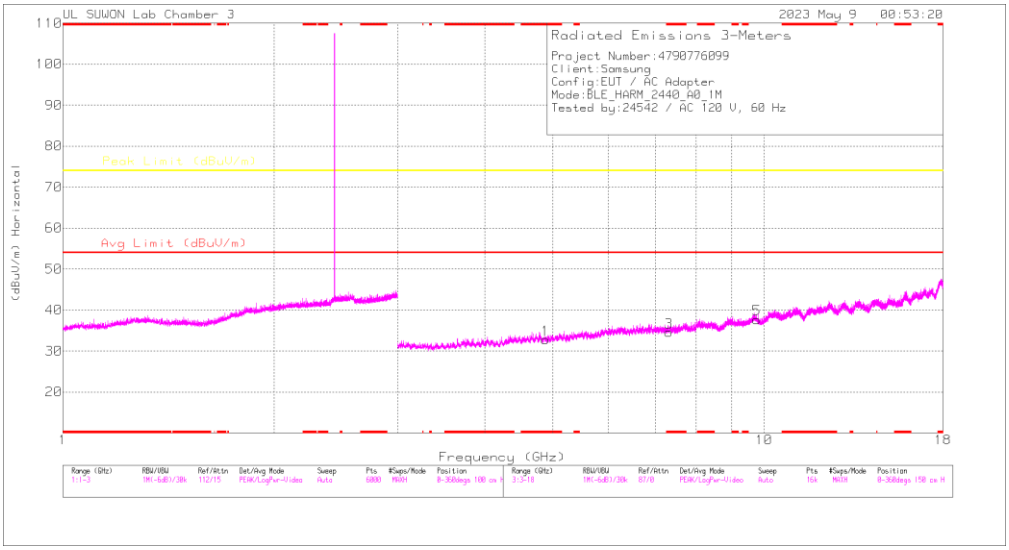
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

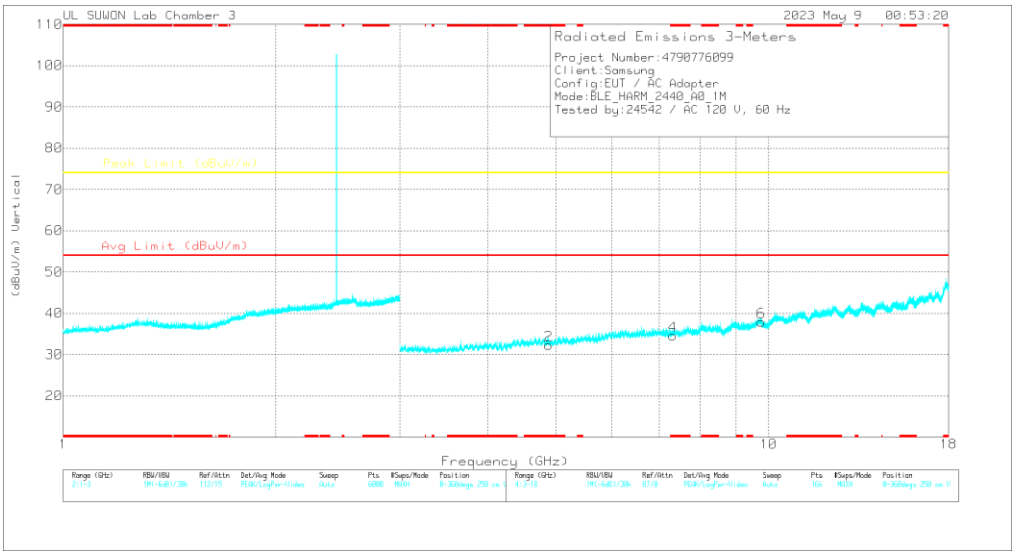
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	3GHz_HP(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.80472	39.71	PK2	34.3	-30.1	0	43.91	-	-	74	-30.09	0	100	H
* 4.80467	39.4	PK2	34.3	-30.1	0	43.6	-	-	74	-30.4	0	100	V
7.20355	35.14	PK2	35.8	-25.8	0	45.14	-	-	74	-28.86	0	100	H
7.20628	35.57	PK2	35.8	-25.7	0	45.67	-	-	74	-28.33	0	100	V
9.6082	32.28	PK2	36.7	-21.7	0	47.28	-	-	74	-26.72	0	100	H
9.60962	32.55	PK2	36.7	-21.7	0	47.55	-	-	74	-26.45	0	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak

19 CHANNEL RESULTS



HORIZONTAL



VERTICAL

Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	3GHz_HP(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.88052	40.3	PK2	34.2	-30.9	0	43.6	-	-	74	-30.4	0	100	H
* 4.87825	40.18	PK2	34.2	-30.8	0	43.58	-	-	74	-30.42	0	100	V
* 7.32005	34.89	PK2	35.8	-25.3	0	45.39	-	-	74	-28.61	0	100	H
* 7.31859	34.63	PK2	35.8	-25.4	0	45.03	-	-	74	-28.97	0	100	V
9.76036	32.39	PK2	36.9	-21.2	0	48.09	-	-	74	-25.91	0	100	H
9.7593	32.27	PK2	36.9	-21.2	0	47.97	-	-	74	-26.03	0	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak

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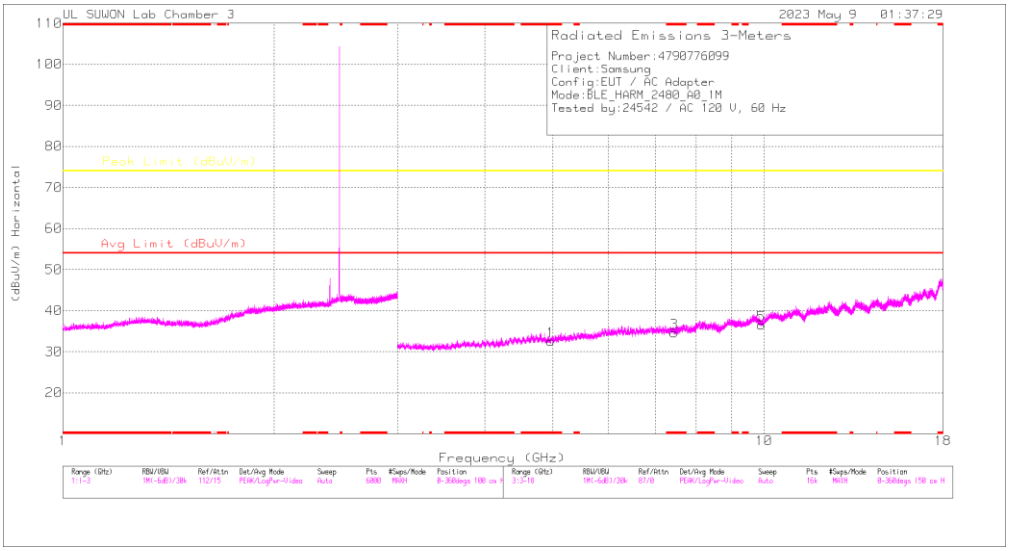
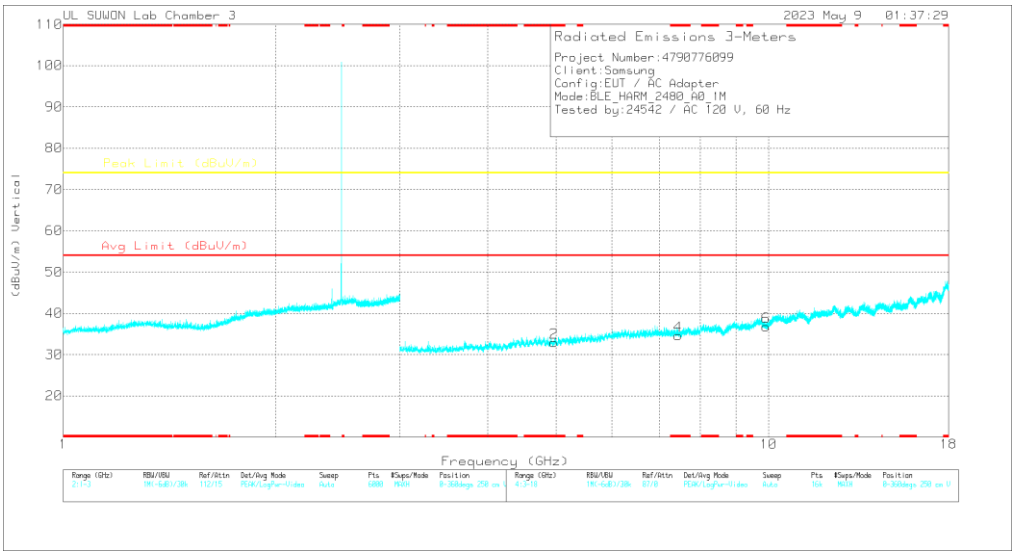
39 CHANNEL RESULTS



HORIZONTAL



VERTICAL

Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	3GHz_HP(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.96103	39.11	PK2	34.3	-30.5	0	42.91	-	-	74	-31.09	0	100	H
* 4.95861	39.22	PK2	34.3	-30.6	0	42.92	-	-	74	-31.08	0	100	V
* 7.4412	34.68	PK2	35.7	-25.1	0	45.28	-	-	74	-28.72	0	100	H
* 7.44103	35.09	PK2	35.7	-25.1	0	45.69	-	-	74	-28.31	0	100	V
9.91921	31.26	PK2	37.1	-21.3	0	47.06	-	-	74	-26.94	0	100	H
9.92167	31.78	PK2	37.1	-21.3	0	47.58	-	-	74	-26.42	0	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak

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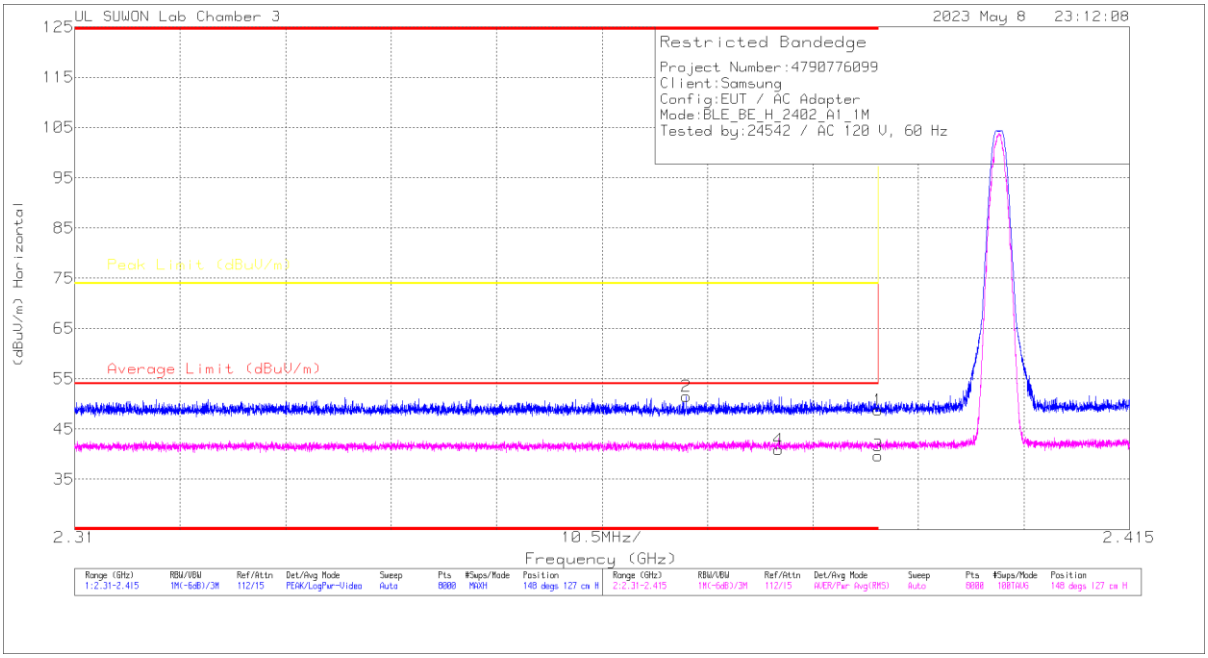
10.2.2. 1 Mbps ANT2

BANDEDGE (0 CHANNEL)

HORIZONTAL RESULT

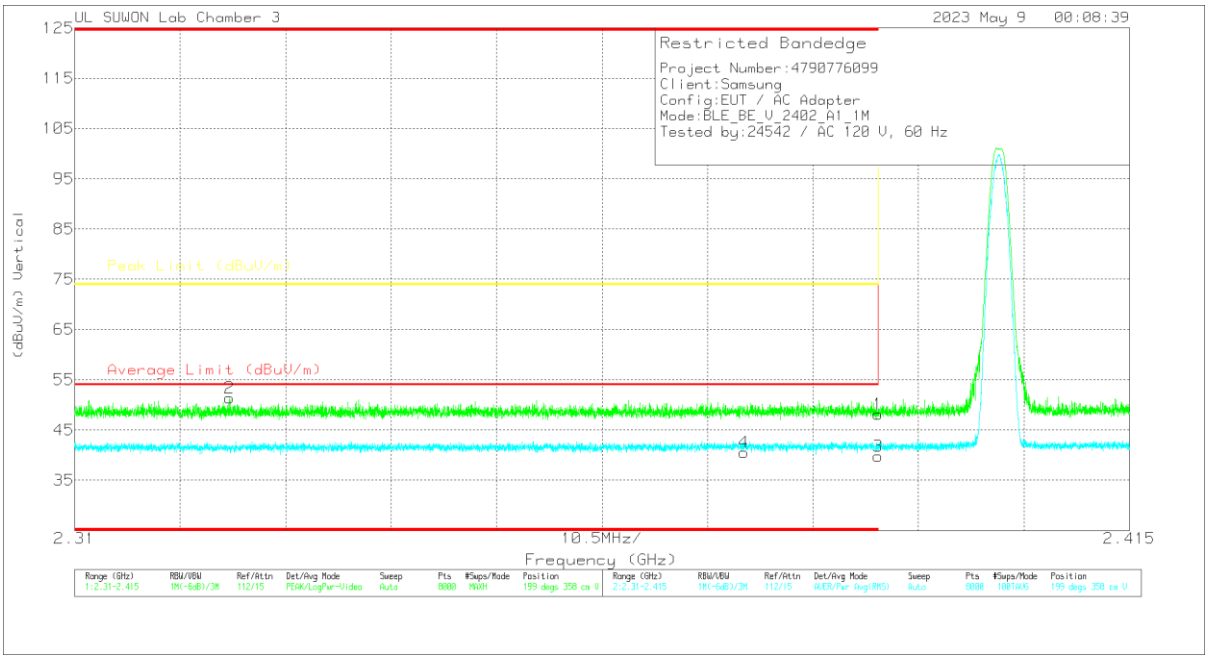


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	10dB_ATT(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	41.77	Pk	32.1	-25.1	0	48.77	-	-	74	-25.23	148	127	H
2	* 2.37087	44.65	Pk	32	-25.2	0	51.45	-	-	74	-22.55	148	127	H
3	* 2.39	32.02	RMS	32.1	-25.1	.7	39.72	54	-14.28	-	-	148	127	H
4	* 2.38009	33.18	RMS	32.1	-25.1	.7	40.88	54	-13.12	-	-	148	127	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



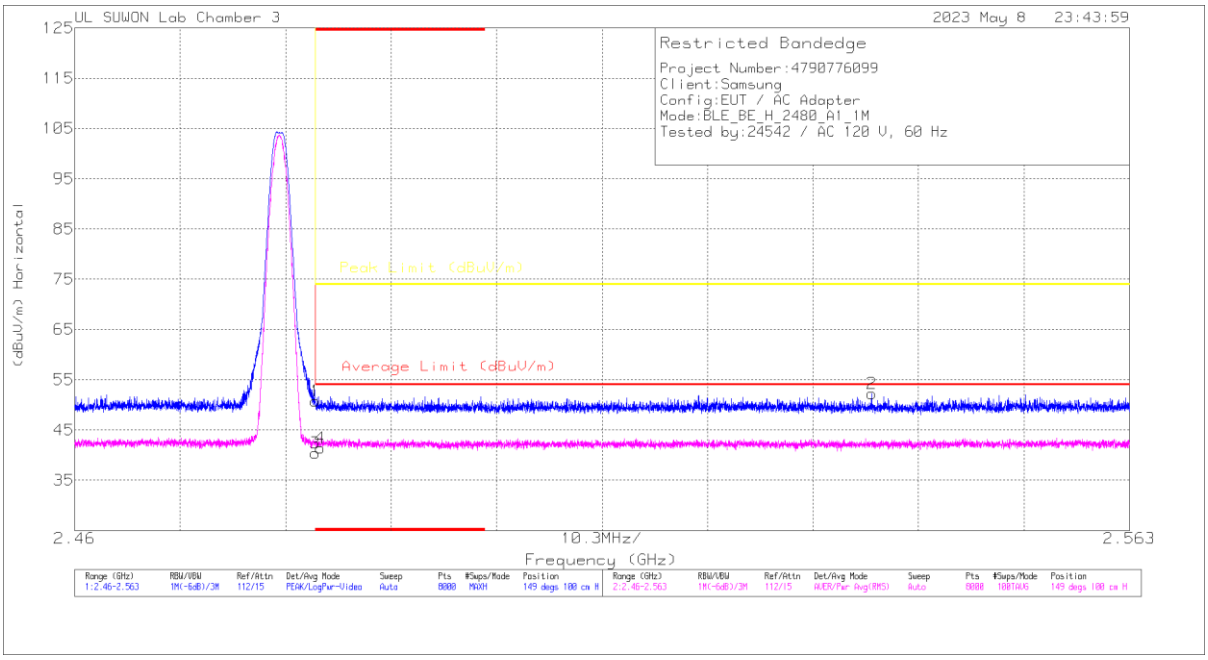
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	10dB_ATT(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	41.13	Pk	32.1	-25.1	0	48.13	-	-	74	-25.87	199	358	V
2	* 2.32542	44.62	Pk	31.9	-25.1	0	51.42	-	-	74	-22.58	199	358	V
3	* 2.39	32.14	RMS	32.1	-25.1	.7	39.84	54	-14.16	-	-	199	358	V
4	* 2.37663	32.84	RMS	32.1	-25.1	.7	40.54	54	-13.46	-	-	199	358	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

BANDEDGE (39 CHANNEL)

HORIZONTAL RESULT

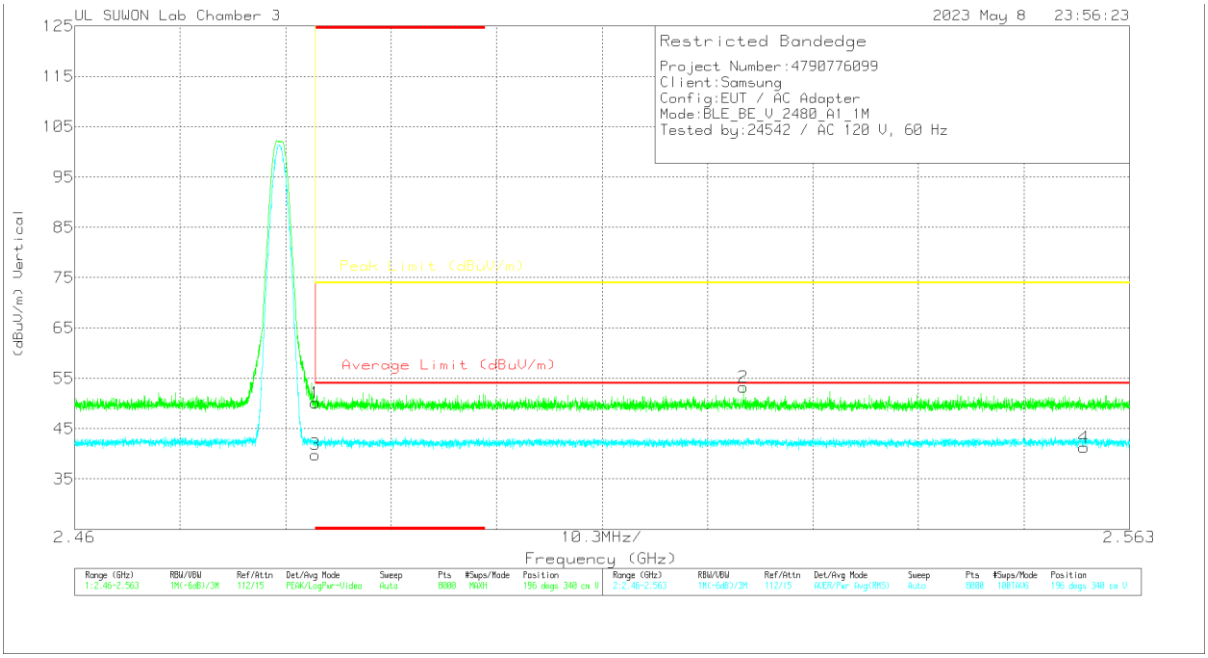


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	10dB_ATT(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	43.34	Pk	32.4	-25	0	50.74	-	-	74	-23.26	149	100	H
2	2.53785	44.74	Pk	32.4	-24.9	0	52.24	-	-	74	-21.76	149	100	H
3	* 2.4835	32.29	RMS	32.4	-25	.7	40.39	54	-13.61	-	-	149	100	H
4	* 2.48399	33.26	RMS	32.4	-25	.7	41.36	54	-12.64	-	-	149	100	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	10dB_ATT(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	42.68	Pk	32.4	-25	0	50.08	-	-	74	-23.92	196	340	V
2	2.52531	45.76	Pk	32.4	-24.9	0	53.26	-	-	74	-20.74	196	340	V
3	* 2.4835	31.75	RMS	32.4	-25	.7	39.85	54	-14.15	-	-	196	340	V
4	2.55856	33.03	RMS	32.4	-24.9	.7	41.23	54	-12.77	-	-	196	340	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection