

CERTIFICATION TEST REPORT

Report Number. : 4790748041-E9V2

Applicant : SAMSUNG ELECTRONICS CO., LTD.
129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI,
GYEONGGI-DO, 16677, KOREA

Model : SM-F946U, SM-F946U1

FCC ID : A3LSMF946U

EUT Description : GSM/WCDMA/LTE 5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax,
NFC, WPT and UWB

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C

Date Of Issue:

2023-05-22

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Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2023-05-12	Initial issue	Dexter(Hyunsik) Yun
V2	2023-05-22	Updated to address TCB's question	Dexter(Hyunsik) Yun

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS	5
2. TEST METHODOLOGY	6
3. FACILITIES AND ACCREDITATION	6
4. DECISION RULES AND MEASUREMENT UNCERTAINTY	7
4.1. METROLOGICAL TRACEABILITY.....	7
4.2. SAMPLE CALCULATION.....	7
4.3. MEASUREMENT UNCERTAINTY	7
4.4. DECISION RULES.....	7
5. EQUIPMENT UNDER TEST	8
5.1. EUT DESCRIPTION.....	8
5.2. MAXIMUM OUTPUT POWER.....	8
5.3. DESCRIPTION OF AVAILABLE ANTENNAS	8
5.4. WORST-CASE CONFIGURATION AND MODE	9
5.5. DESCRIPTION OF TEST SETUP	11
6. MEASUREMENT METHOD.....	13
7. TEST AND MEASUREMENT EQUIPMENT	14
8. TEST RESULTS SUMMARY	15
9. ANTENNA PORT TEST RESULTS	16
9.1. ON TIME AND DUTY CYCLE	16
9.2. 6 dB BANDWIDTH	17
9.2.1. Test data.....	17
9.2.2. 6 dB BANDWIDTH PLOTS	18
9.3. OUTPUT POWER.....	20
9.3.1. Test data.....	20
9.3.2. PEAK POWER PLOTS	21
9.4. AVERAGE POWER	23
9.4.1. Test data.....	23
9.5. POWER SPECTRAL DENSITY	24
9.5.1. Test data.....	24
9.5.2. PSD TEST PLOTS	25
9.6. CONDUCTED SPURIOUS EMISSIONS	27
9.6.1. Test plot.....	28

10. RADIATED TEST RESULTS	32
10.1. LIMITS AND PROCEDURE	32
10.2. TRANSMITTER ABOVE 1 GHz	34
10.2.1. 1 Mbps ANT1	34
10.2.2. 1 Mbps ANT2	41
10.2.3. 2 Mbps ANT1	48
10.2.4. 2 Mbps ANT2	55
10.3. WORST CASE BELOW 1 GHz	62
11. AC POWER LINE CONDUCTED EMISSIONS	63
11.1. AC Power Line	64

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.

EUT DESCRIPTION: GSM/WCDMA/LTE 5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, NFC, WPT and UWB

MODEL NUMBER: SM-F946U, SM-F946U1

SERIAL NUMBER: 6c4c5d98ba4c7eee, 723c6c5d0f4d7ece (CONDUCTED);
R3CW30K682H (RADIATED);

DATE TESTED: 2023-03-22 ~ 2023-05-12;

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
47 CFR Part 15 Subpart C	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:



Dexter(Hyunsik) Yun
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.

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>.

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, 18 GHz to 40 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 a GSM/WCDMA/LTE 5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, NFC, WPT and UWB. This test report addresses the DTS (BLE) operational mode.

Representative model	Difference	Derivative model
		SM-F946U1
SM-F946U	Hardware	Same as SM-F946U
	Software	Different UI

Thus, SM-F946U was set for final test.

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 (37pkt)	Peak	18.250	66.834
		Average	17.568	57.122
	2Mbps (37 pkt)	Peak	18.060	63.973
		Average	17.354	54.375

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 ANT1's maximum gain of -2.76 dBi and ANT2's maximum gain of -1.53 dBi.

"Q5_NA Wi-Fi1" and "Q5_NA Wi-Fi2" as indicated in antenna specification are written as ANT1 and ANT2 in this report.

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.

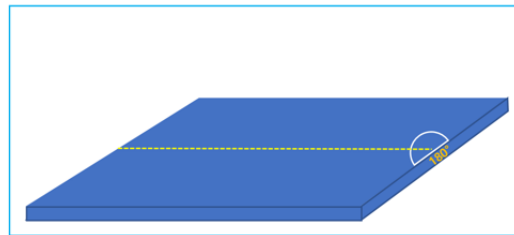
Radiated emission above 1GHz was performed with the EUT set to transmit low/mid/high channels.

- i. Worst case of antenna axis:

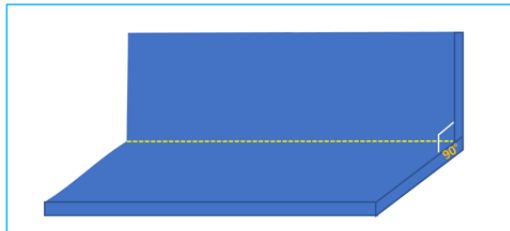
ANT1	ANT2
Y	Y

- ii. Foldable condition

ANT1	ANT2
Open	Full-folded



Open



Half-folded



Full-folded

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(37 pkt) and 2 Mbps(37 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	16.555	2	2 Mbps 37 pkt ANT1	2 402	16.269
		2 440	17.568			2 440	17.354
		2 480	15.761			2 480	15.769
	1 Mbps 37 pkt ANT2	2 402	14.942		2 Mbps 37 pkt ANT2	2 402	14.852
		2 440	15.126			2 440	15.087
		2 480	14.154			2 480	13.983
	1 Mbps 255 pkt ANT1	2 402	16.308		2 Mbps 255 pkt ANT1	2 402	16.114
		2 440	17.425			2 440	16.897
		2 480	15.287			2 480	15.186
	1 Mbps 255 pkt ANT2	2 402	14.640		2 Mbps 255 pkt ANT2	2 402	14.581
		2 440	15.007			2 440	14.346
		2 480	13.847			2 480	13.304
1 Coded S=8	125 kbps 37 pkt ANT1	2 402	7.162	1 Coded S=2	500 kbps 37 pkt ANT1	2 402	7.188
		2 440	8.479			2 440	8.464
		2 480	7.202			2 480	7.215
	125 kbps 37 pkt ANT2	2 402	5.861		500 kbps 37 pkt ANT2	2 402	5.872
		2 440	6.024			2 440	6.056
		2 480	4.943			2 480	4.975
	125 kbps 255 pkt ANT1	2 402	7.165		500 kbps 255 pkt ANT1	2 402	7.126
		2 440	8.442			2 440	8.434
		2 480	7.133			2 480	7.169
	125 kbps 255 pkt ANT2	2 402	5.831		500 kbps 255 pkt ANT2	2 402	5.865
		2 440	6.004			2 440	6.042
		2 480	4.914			2 480	4.943

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Charger	SAMSUNG	EP-TA800	R37N9QP4SL9DK3	N/A
Data Cable	SAMSUNG	WBR0062M	GH39-02112A	N/A

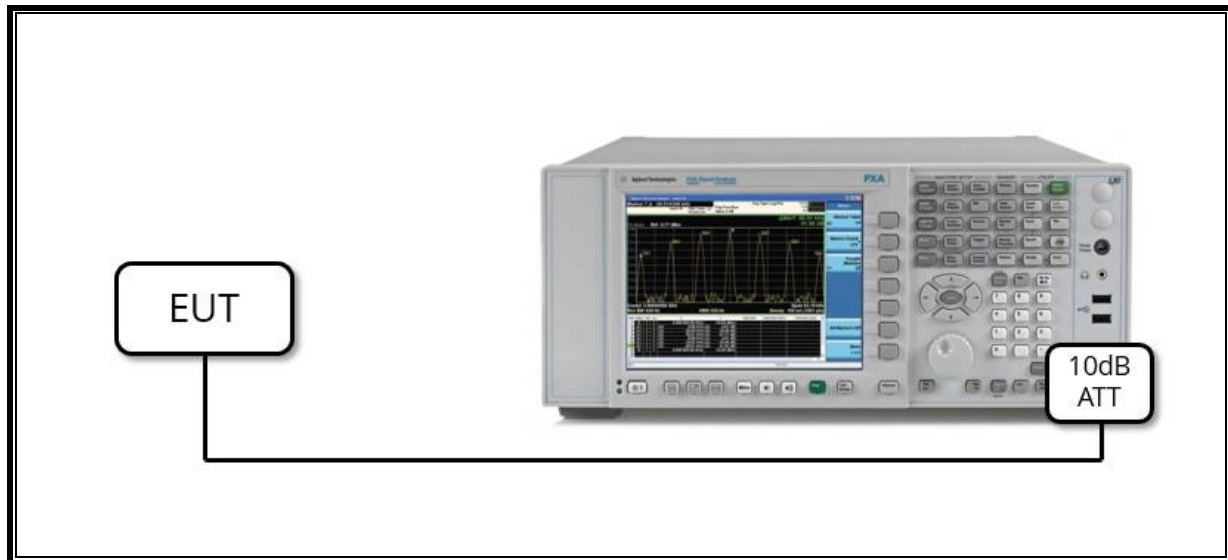
I/O CABLE

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	1.0 m	N/A

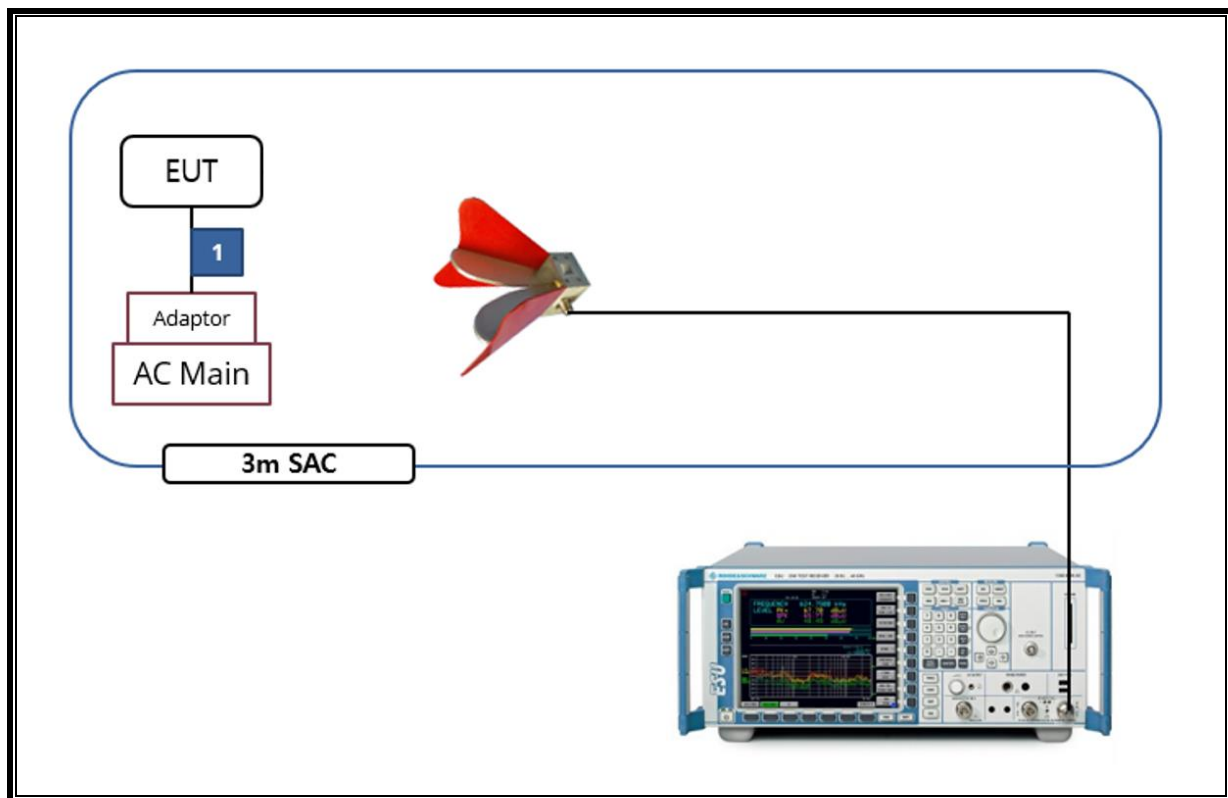
TEST SETUP

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. MEASUREMENT METHOD

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

OUTPUT POWER : ANSI C63.10-2013, Section 11.9.1.1 RBW $\geq$ 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

7. 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	PASTERNAK	PE7087-10	A001	2023-08-03
Attenuator	PASTERNAK	PE7087-10	A008	2023-08-03
Attenuator	PASTERNAK	PE7004-10	2	2023-08-01
Attenuator	PASTERNAK	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	

8. TEST RESULTS SUMMARY

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result
15.247 (a)(2)	Occupied Bandwidth(6dB)	> 500kHz	Conducted	Complies
2.1051, 15.247(d)	Band Edge / Conducted Spurious Emission	-20 dBc		Complies
15.247 (b)(3)	TX conducted output power	< 30 dBm		Complies
15.247(e)	PSD	< 8 dBm/3kHz		Complies
15.207(a)	AC Power Line conducted emissions	Section 11	Power Line conducted	Complies
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m(Av)	Radiated	Complies

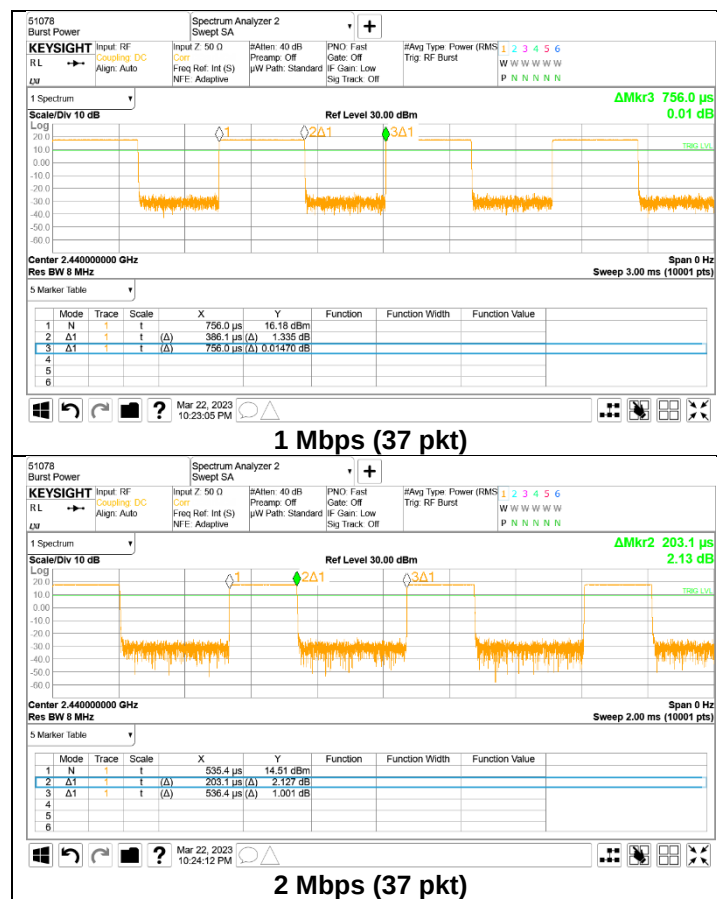
9. ANTENNA PORT TEST RESULTS

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 [37pkt]	0.386	0.756	0.511	51.071	2.92	2.59
2 Mbps [37pkt]	0.203	0.536	0.379	37.864	4.22	4.92



9.2. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

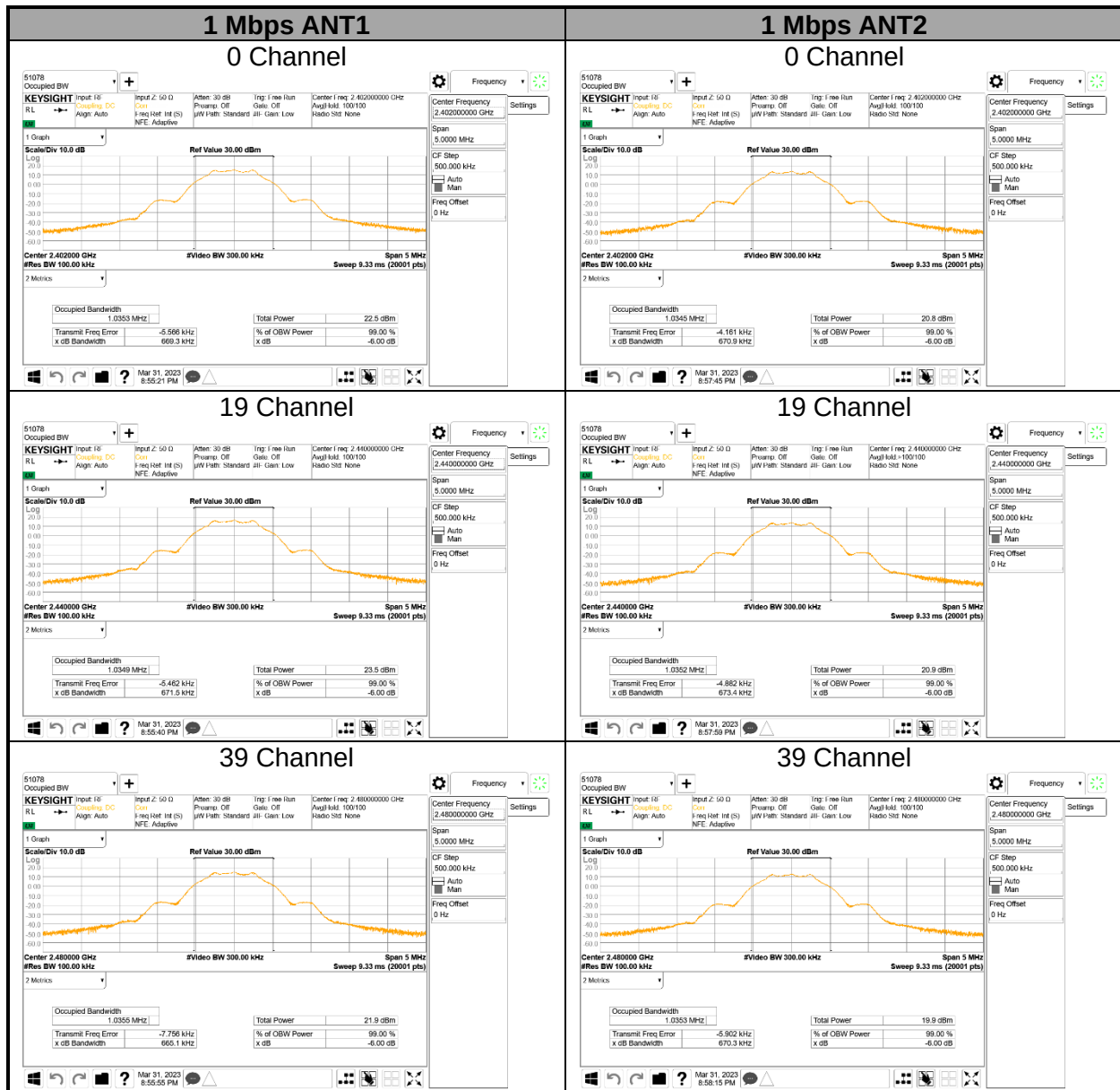
The minimum 6 dB bandwidth shall be at least 500 kHz.

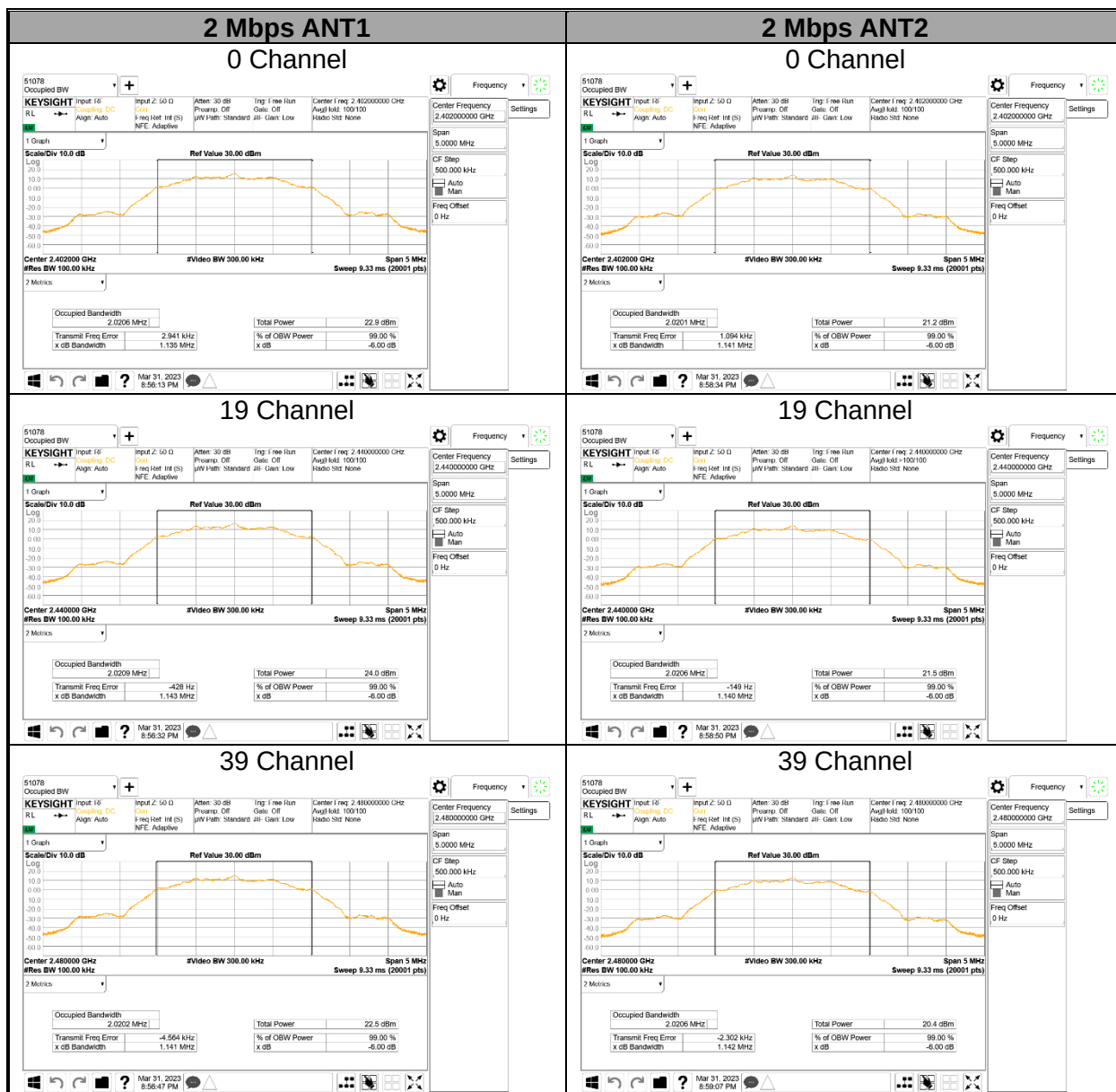
RESULTS

9.2.1. Test data

Mode	Antenna	Channel	Frequency [MHz]	6 dB Bandwidth [kHz]	Minimum Limit [kHz]
1 Mbps (37pkt)	ANT1	0	2 402	669.3	500.0
		19	2 440	671.5	500.0
		39	2 480	665.1	500.0
	ANT2	0	2 402	670.9	500.0
		19	2 440	673.4	500.0
		39	2 480	670.3	500.0
2 Mbps (37pkt)	ANT1	0	2 402	1 135.0	500.0
		19	2 440	1 143.0	500.0
		39	2 480	1 141.0	500.0
	ANT2	0	2 402	1 141.0	500.0
		19	2 440	1 140.0	500.0
		39	2 480	1 142.0	500.0
Worst				665.1	500.0

9.2.2. 6 dB BANDWIDTH PLOTS





9.3. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

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

TEST PROCEDURE

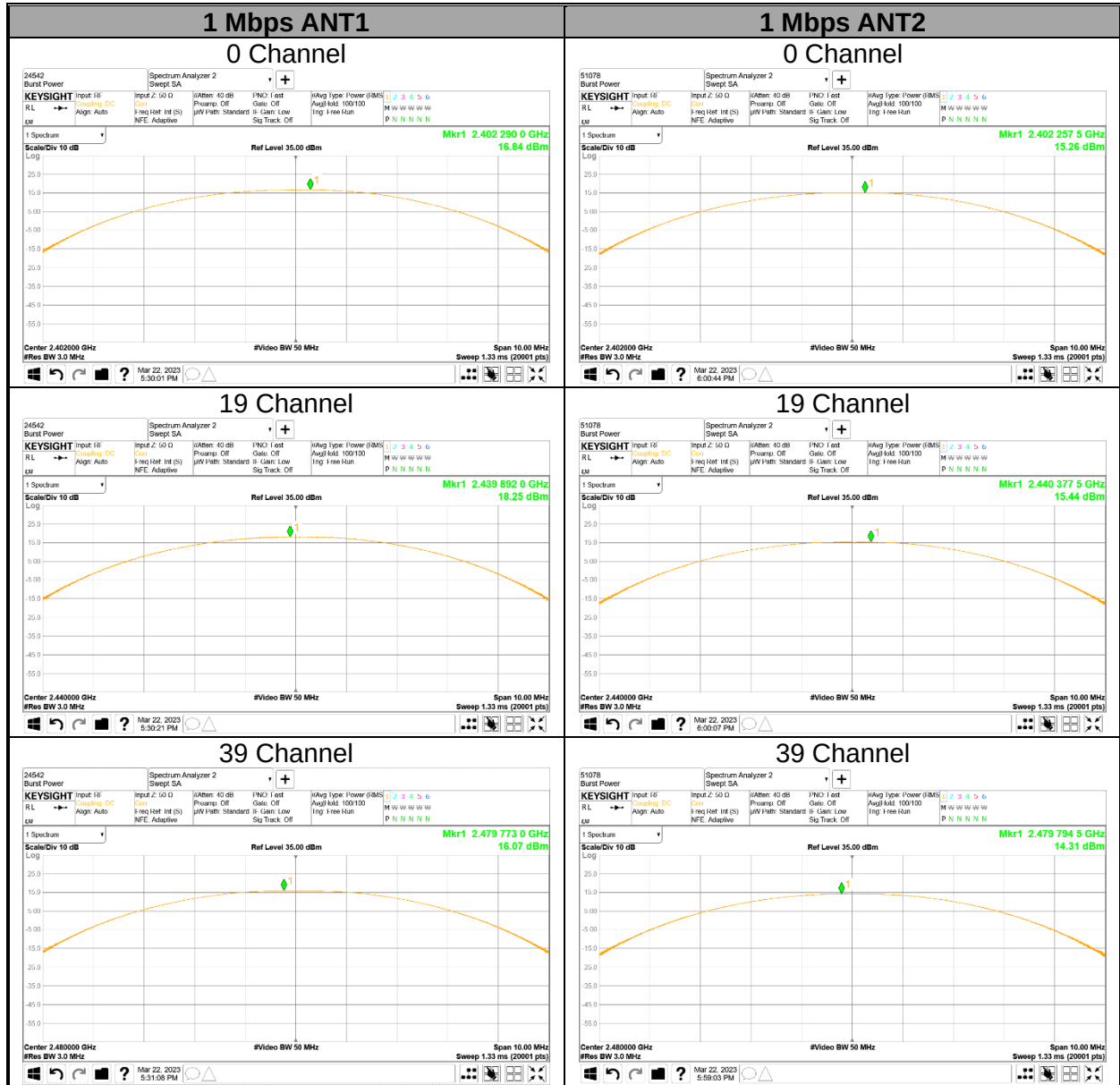
Peak power is measured using ANSI C63.10(2013) under section 11.9.1.1 utilizing spectrum analyzer(RBW $\geq$ DTS bandwidth).

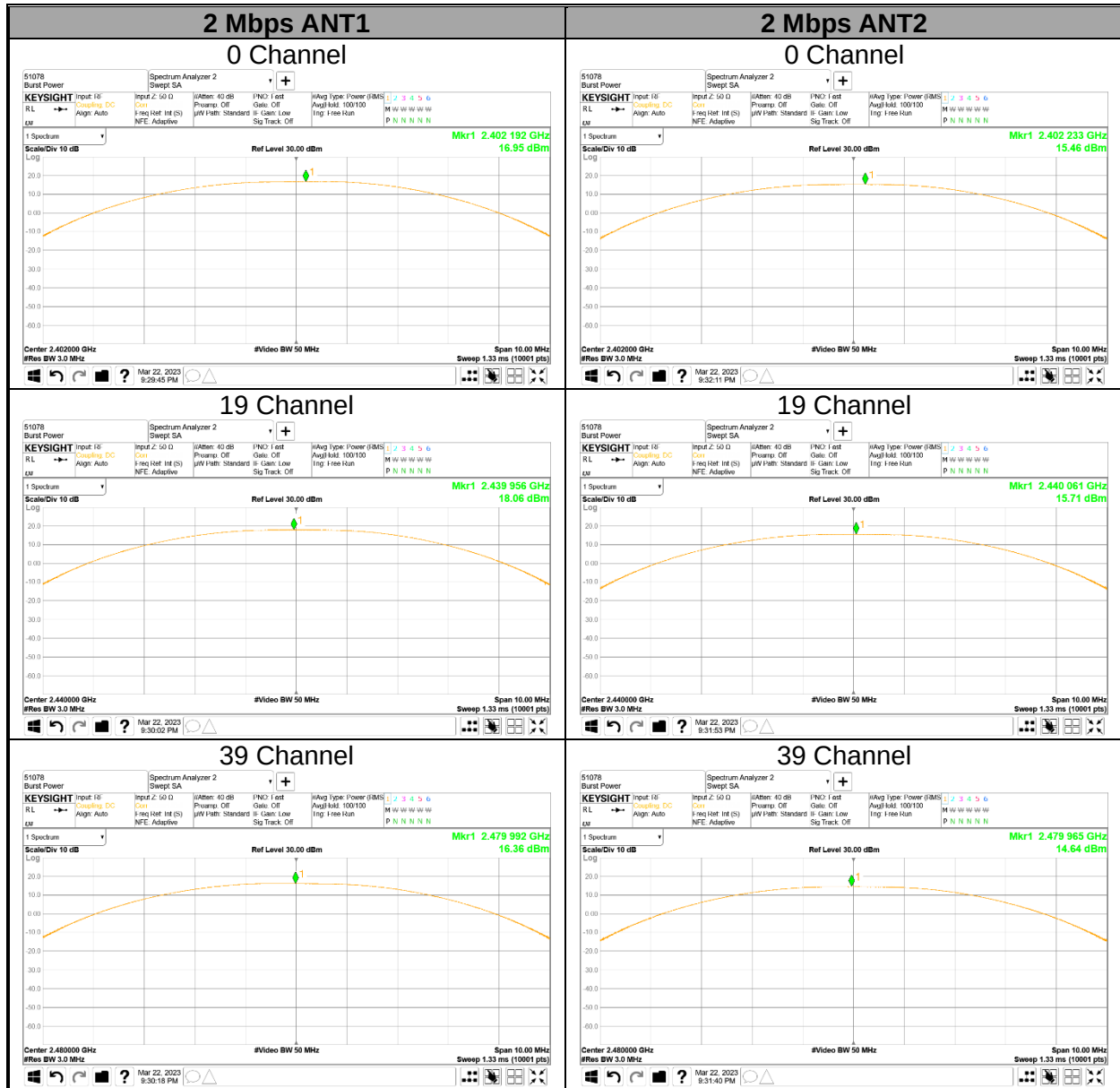
RESULTS

9.3.1. Test data

Mode	Antenna	Channel	Frequency [MHz]	Peak Output Power [dBm]	Limit [dBm]	Margin [dB]
1 Mbps (37 pkt)	ANT1	0	2 402	16.84	30.000	-13.16
		19	2 440	18.25		-11.75
		39	2 480	16.07		-13.93
	ANT2	0	2 402	15.26		-14.74
		19	2 440	15.44		-14.56
		39	2 480	14.31		-15.69
2 Mbps (37 pkt)	ANT1	0	2 402	16.95		-13.05
		19	2 440	18.06		-11.94
		39	2 480	16.36		-13.64
	ANT2	0	2 402	15.46		-14.54
		19	2 440	15.71		-14.29
		39	2 480	14.64		-15.36
Worst				18.25	-11.75	

9.3.2. PEAK POWER PLOTS





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 (37pkt)	ANT1	0	2 402	16.555	45.238
		19	2 440	17.568	57.122
		39	2 480	15.761	37.679
	ANT2	0	2 402	14.942	31.203
		19	2 440	15.126	32.554
		39	2 480	14.154	26.026
2 Mbps (37 pkt)	ANT1	0	2 402	16.269	42.355
		19	2 440	17.354	54.375
		39	2 480	15.769	37.749
	ANT2	0	2 402	14.852	30.563
		19	2 440	15.087	32.263
		39	2 480	13.983	25.021

9.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

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

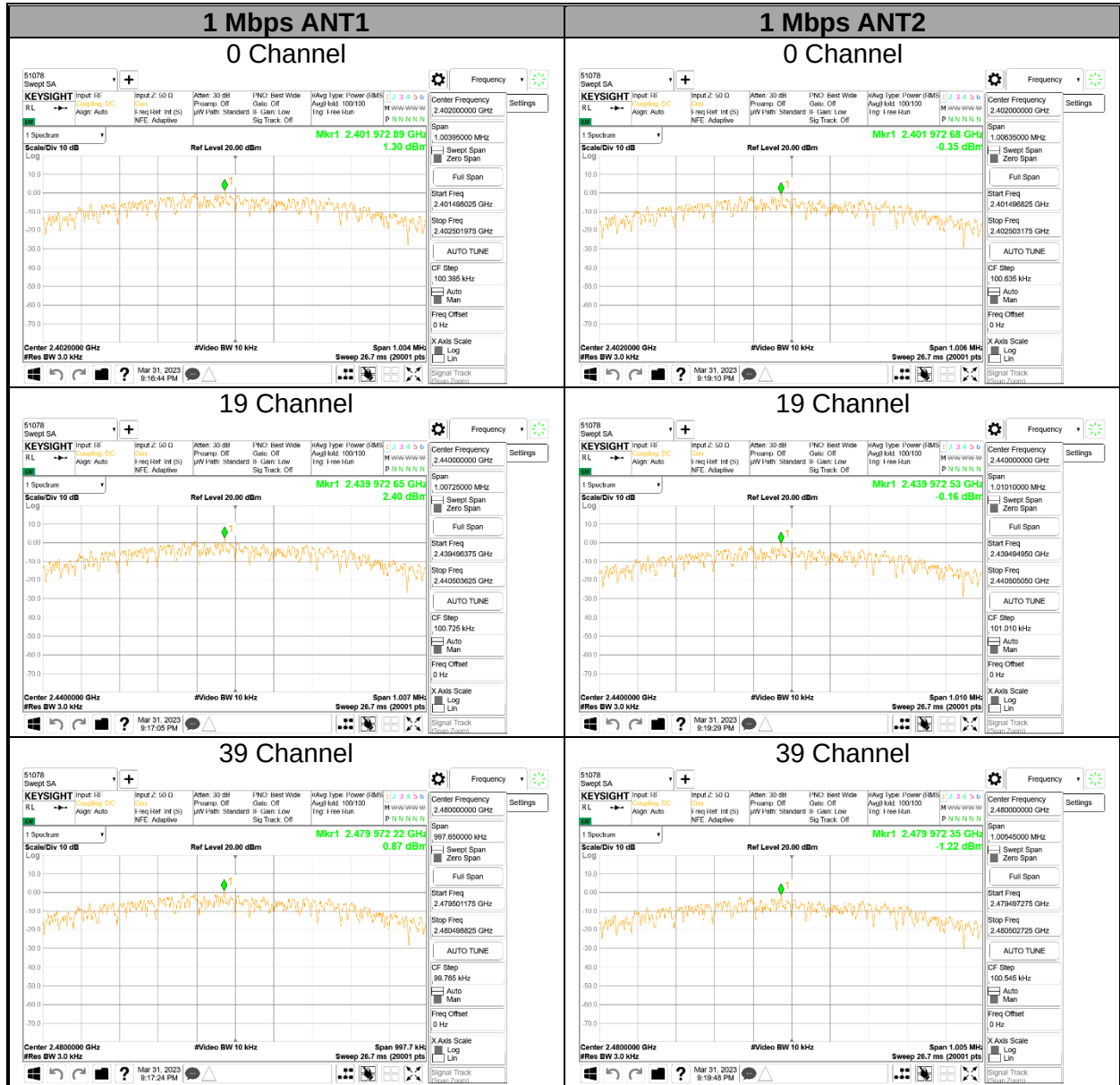
ANSI C63.10-2013, Section 11.10.2 Method PKPSD (peak PSD)

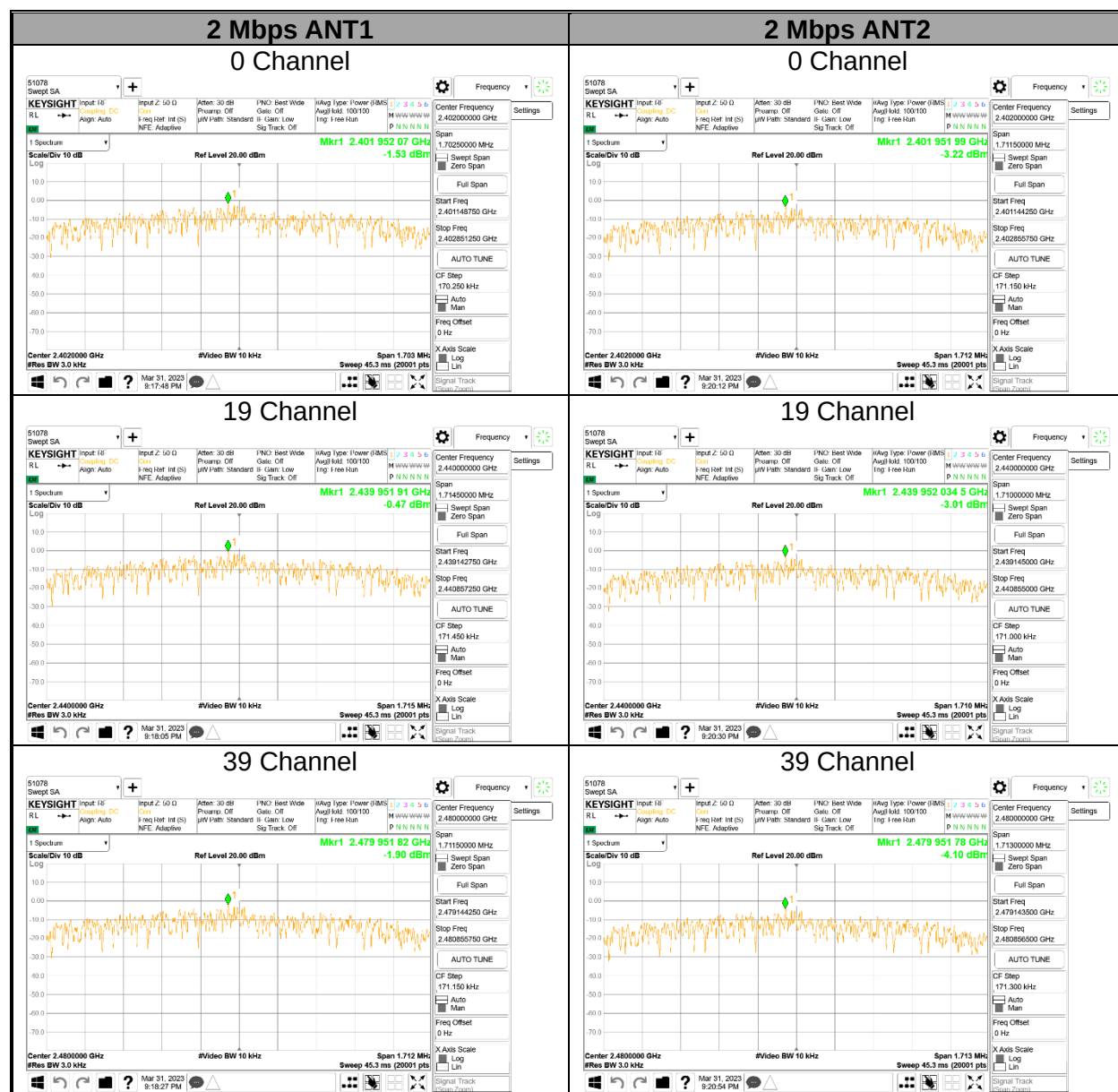
RESULTS

9.5.1. Test data

Mode	Antenna	Channel	Frequency [MHz]	PSD [dBm/3kHz]	Limit [dBm/3kHz]	Margin [dB]
1 Mbps (37pkt)	ANT1	0	2 402	1.30	8.00	-6.70
		19	2 440	2.40		-5.60
		39	2 480	0.87		-7.13
	ANT2	0	2 402	-0.35		-8.35
		19	2 440	-0.16		-8.16
		39	2 480	-1.22		-9.22
2 Mbps (37 pkt)	ANT1	0	2 402	-1.53		-9.53
		19	2 440	-0.47		-8.47
		39	2 480	-1.90		-9.90
	ANT2	0	2 402	-3.22		-11.22
		19	2 440	-3.01		-11.01
		39	2 480	-4.10		-12.10
Worst				2.40	-5.60	

9.5.2. PSD TEST PLOTS





9.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

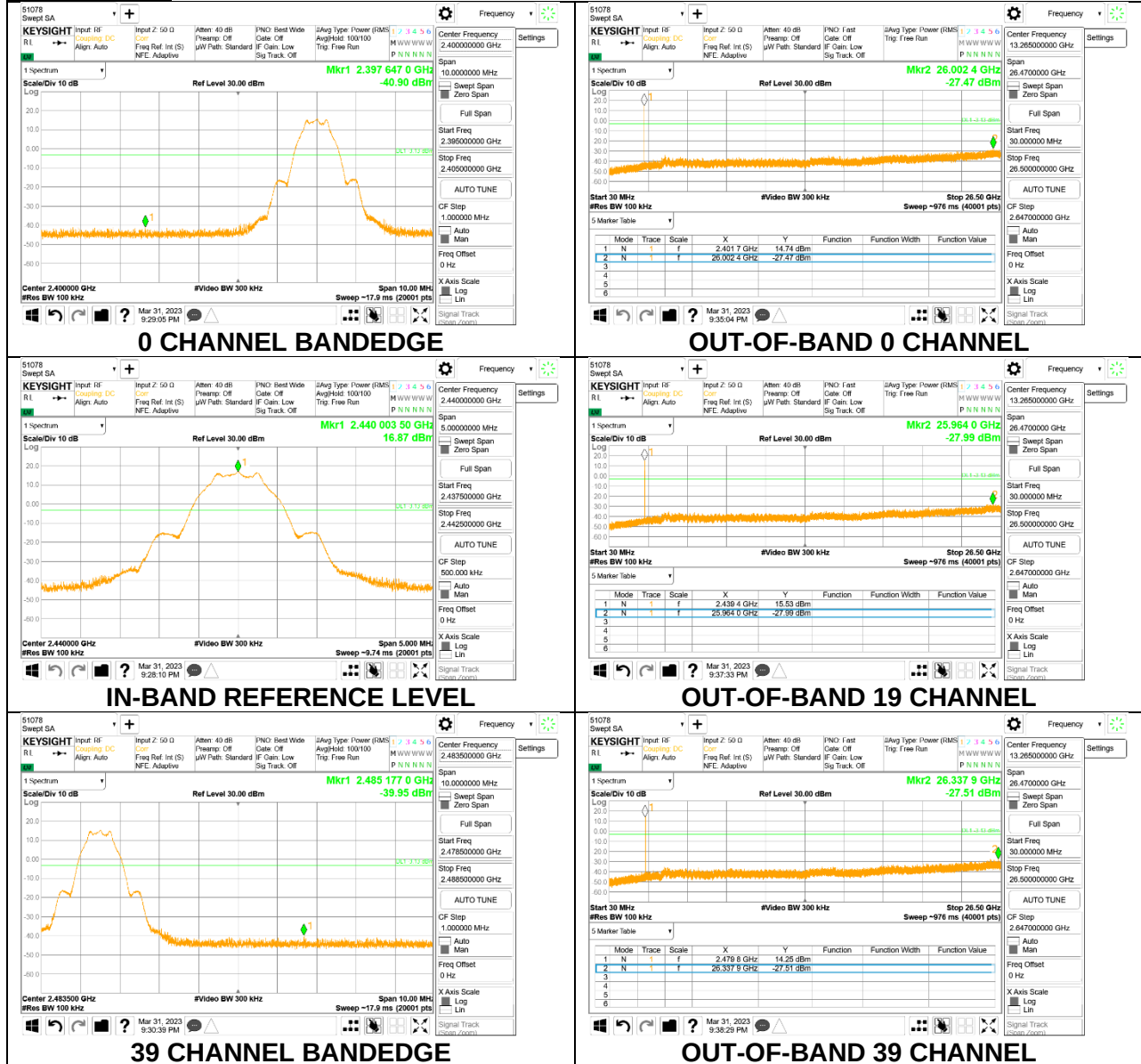
FCC §15.247 (d)

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

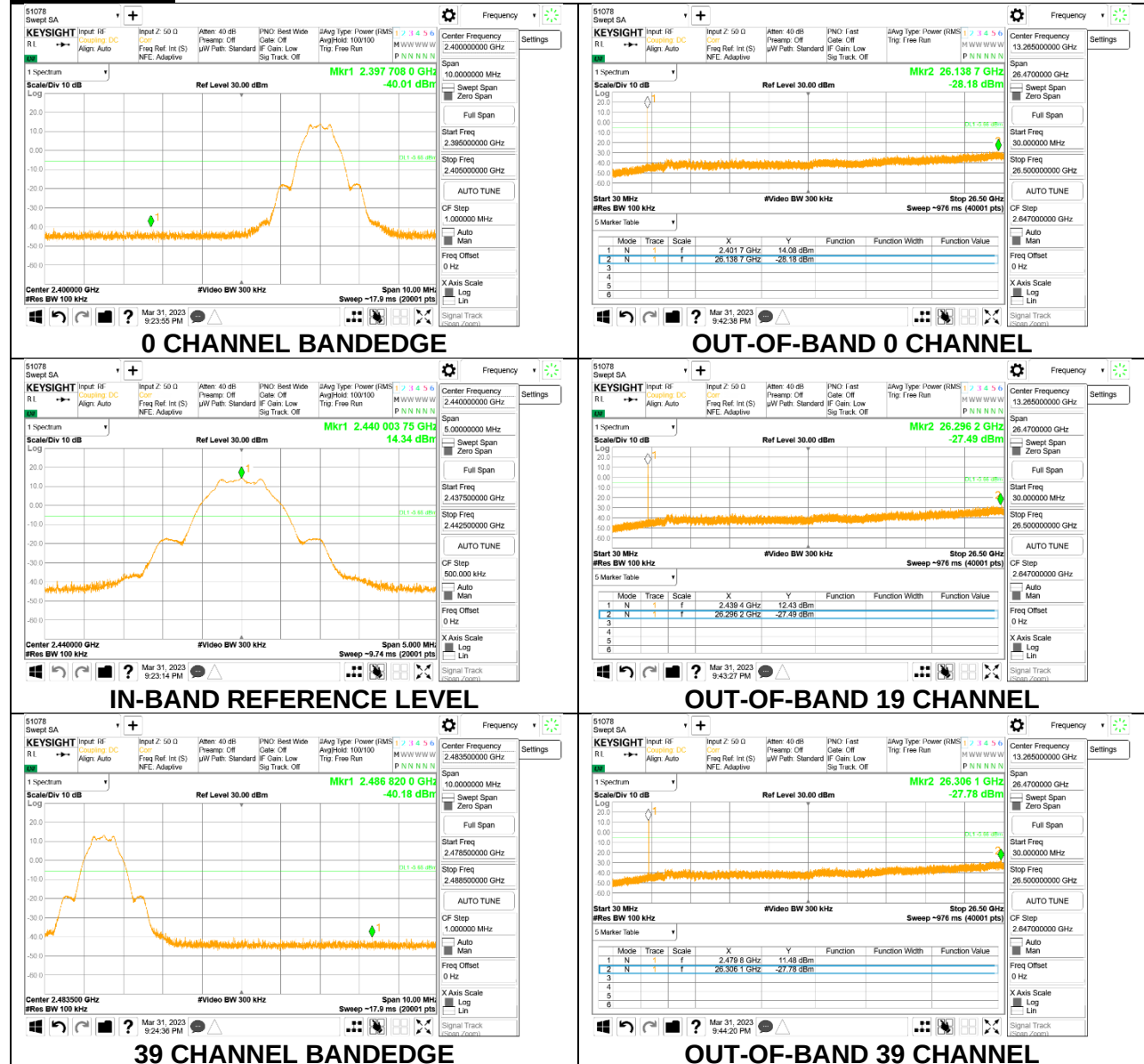
RESULTS

9.6.1. Test plot

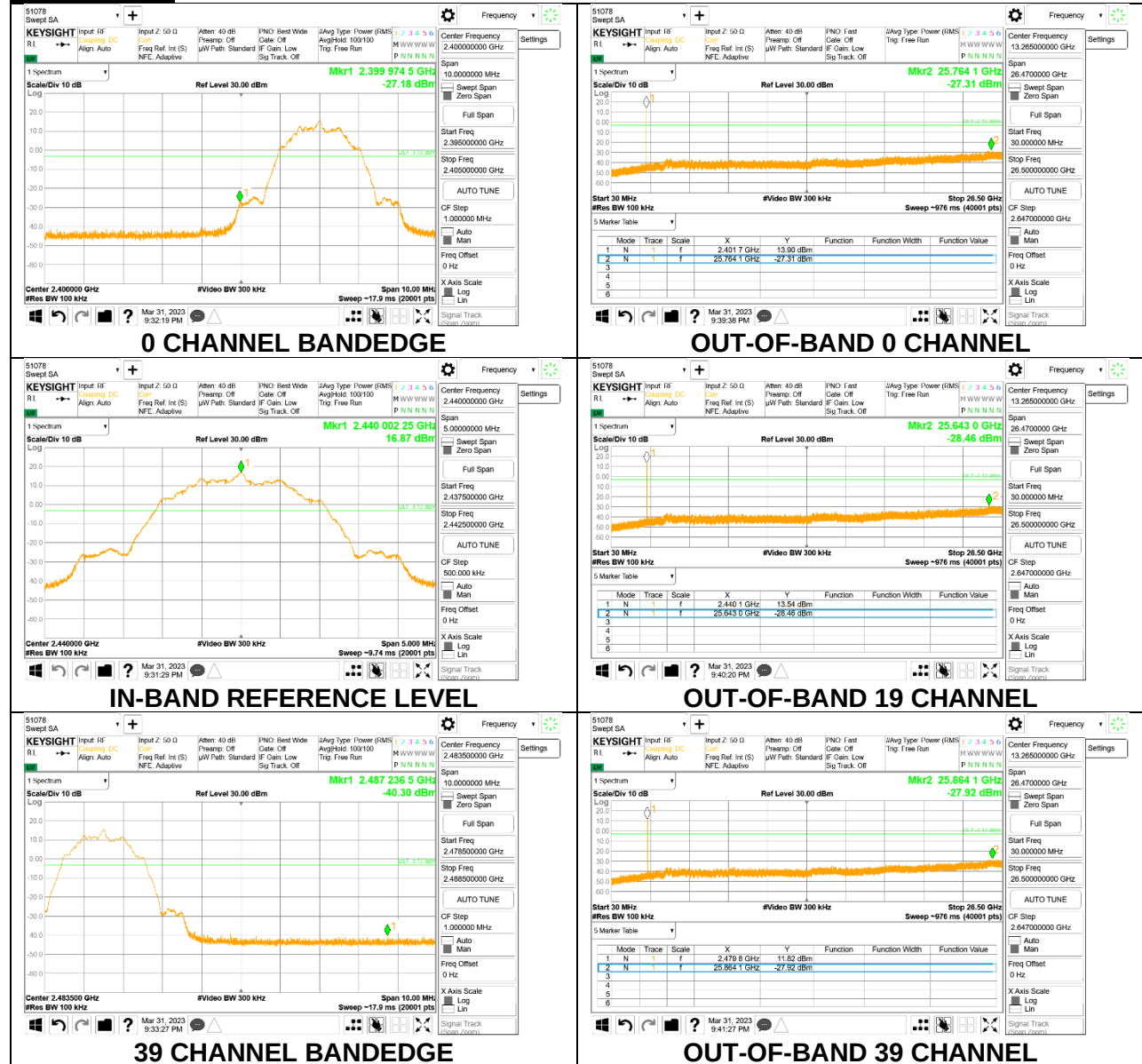
1 Mbps ANT1



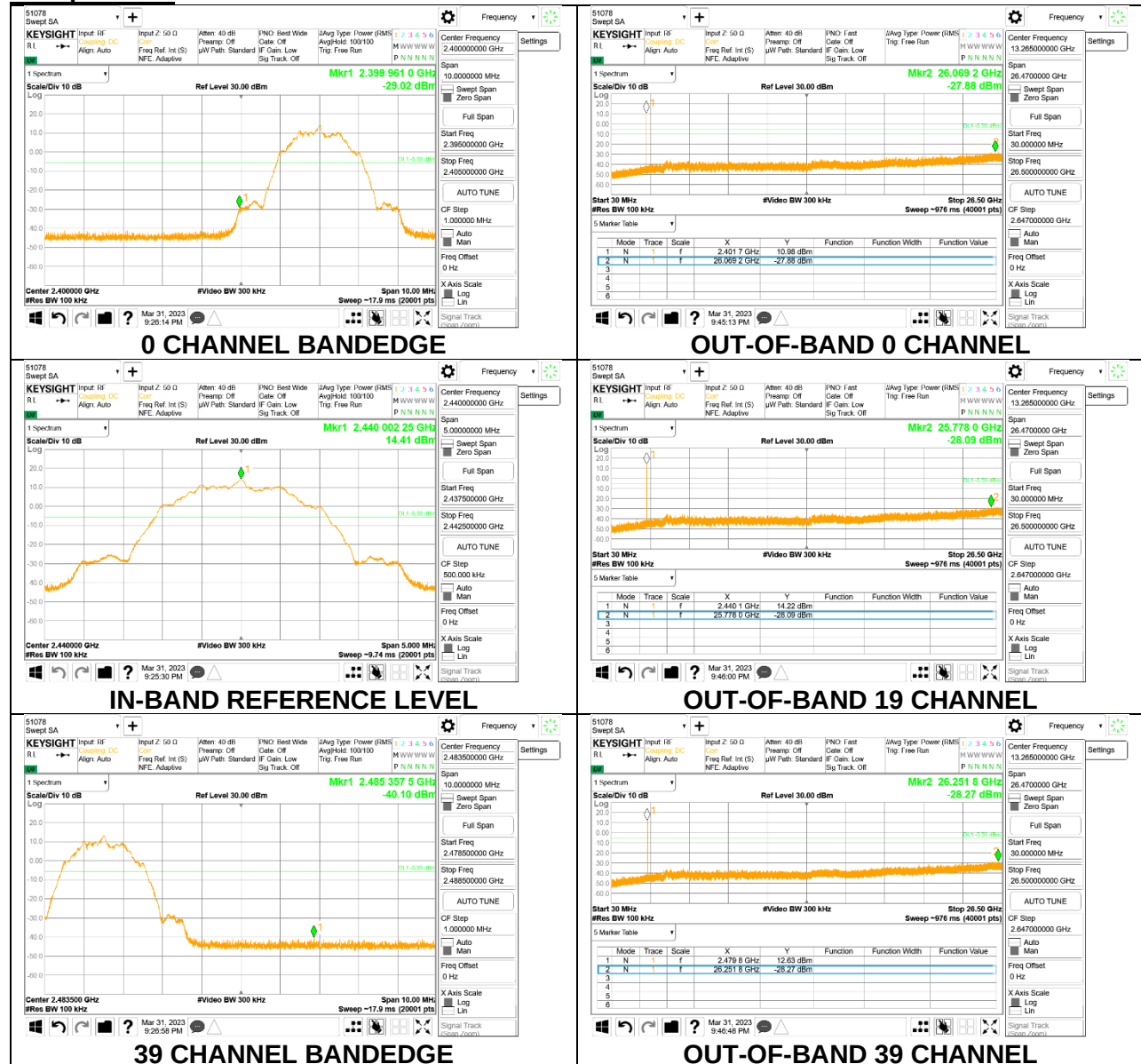
1 Mbps ANT2



2 Mbps ANT1



2 Mbps ANT2



10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

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 = $10\log(1/0.511)=2.918$ dB (Spectrum Analyzer round it up to 2.92 dB) and for 2 Mbps, DCF = $10\log(1/0.379)=4.218$ dB (Spectrum Analyzer round it up to 4.22 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.

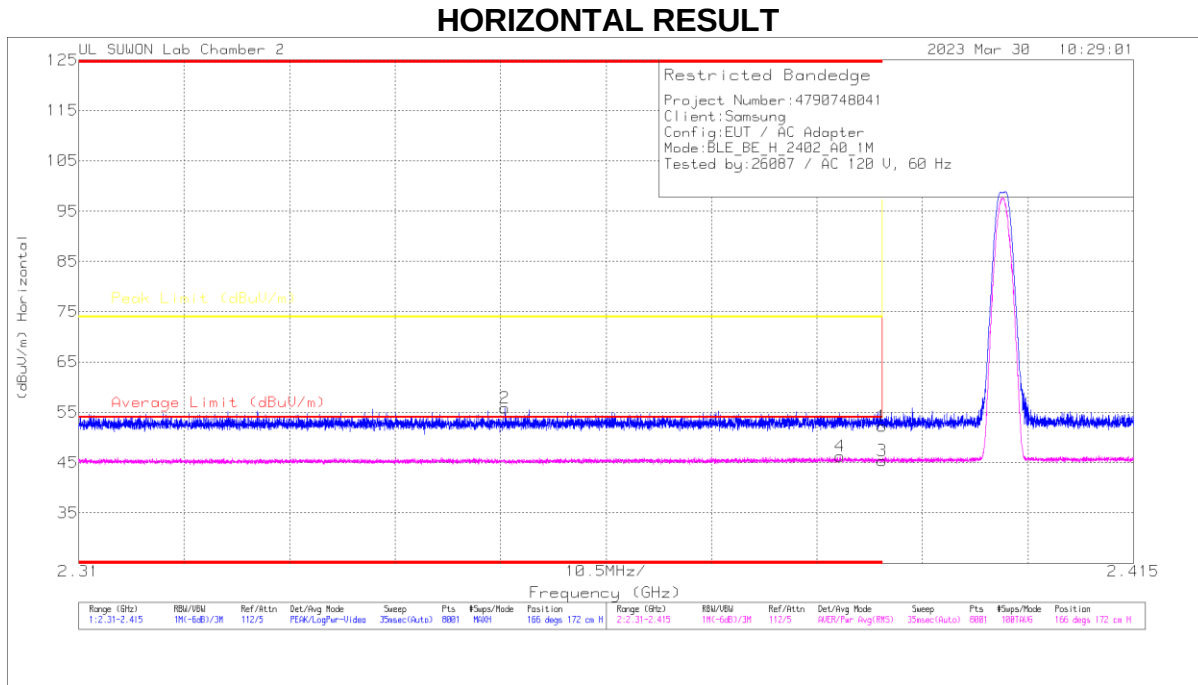
Note : Emission was pre-scanned from 9kHz to 30MHz; No emissions were detected which was at least 20dB below the specification limit (consider distance correction factor).
Per FCC part 15.31(o), test results were not reported.

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.

10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. 1 Mbps ANT1

BANDEDGE (0 CHANNEL)



Trace Markers

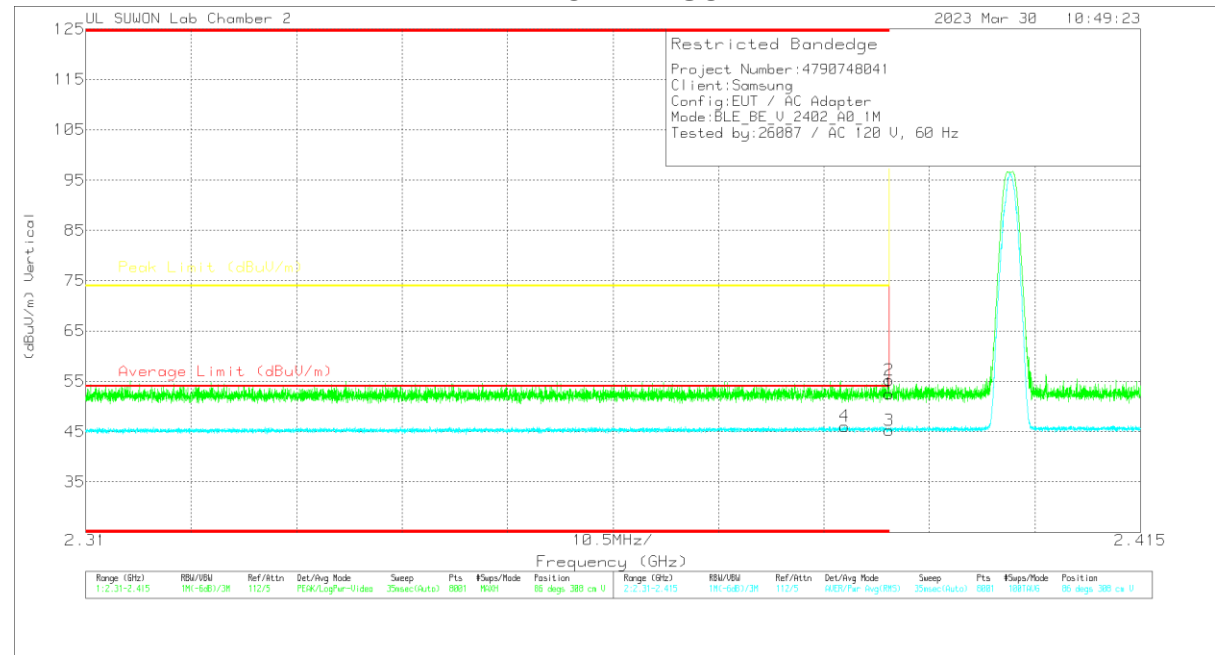
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Altitude (m)	Height (cm)	Polarity
1	* 2.39	40.31	Pk	31.7	-19.8	0	52.21	-	-	74	-21.79	166	172	H
2	* 2.35243	44.12	Pk	31.6	-19.9	0	56.82	-	-	74	-18.18	166	172	H
3	* 2.39	30.61	RMS	31.7	-19.8	2.92	45.43	54	-8.57	-	-	166	172	H
4	* 2.38582	31.46	RMS	31.7	-19.8	2.92	46.28	54	-7.72	-	-	166	172	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



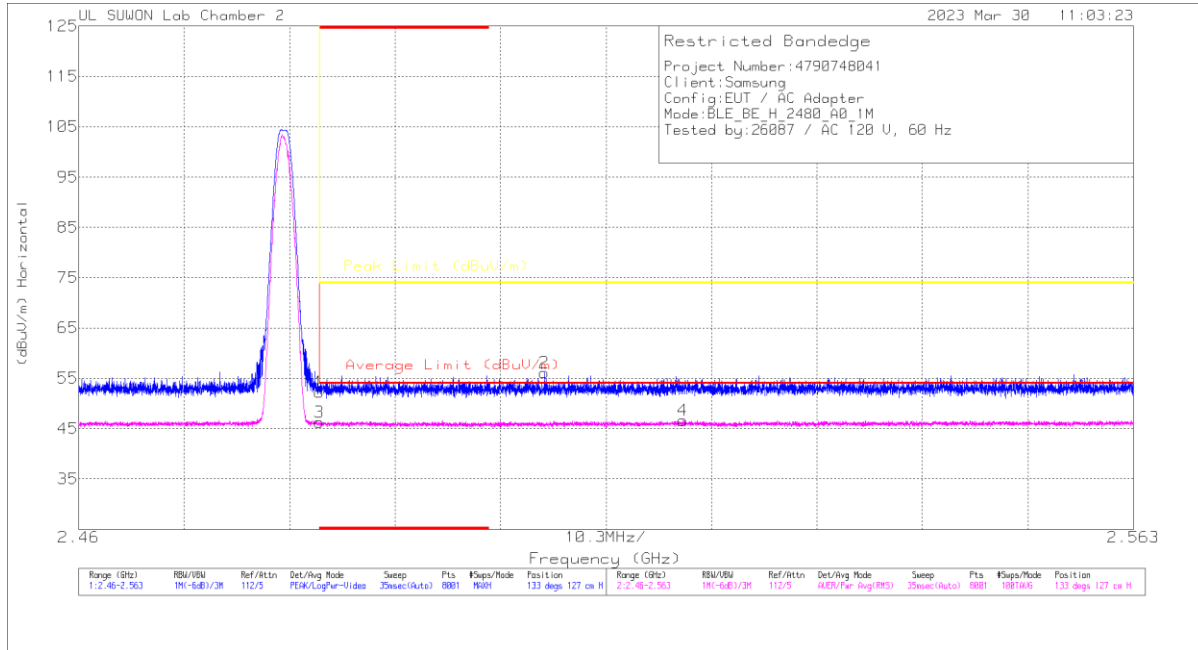
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Altitude (deg)	Height (cm)	Polarity
1	* 2.39	40.58	PK	31.7	-19.8	0	52.48	-	-	74	-21.52	86	308	V
2	* 2.38996	43.33	PK	31.7	-19.8	0	55.23	-	-	74	-18.77	86	308	V
3	* 2.39	30.49	RMS	31.7	-19.8	2.92	45.31	54	-8.69	-	-	86	308	V
4	* 2.38552	31.26	RMS	31.7	-19.8	2.92	46.08	54	-7.92	-	-	86	308	V

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

BANDEDGE (39 CHANNEL)

HORIZONTAL RESULT



Trace Markers

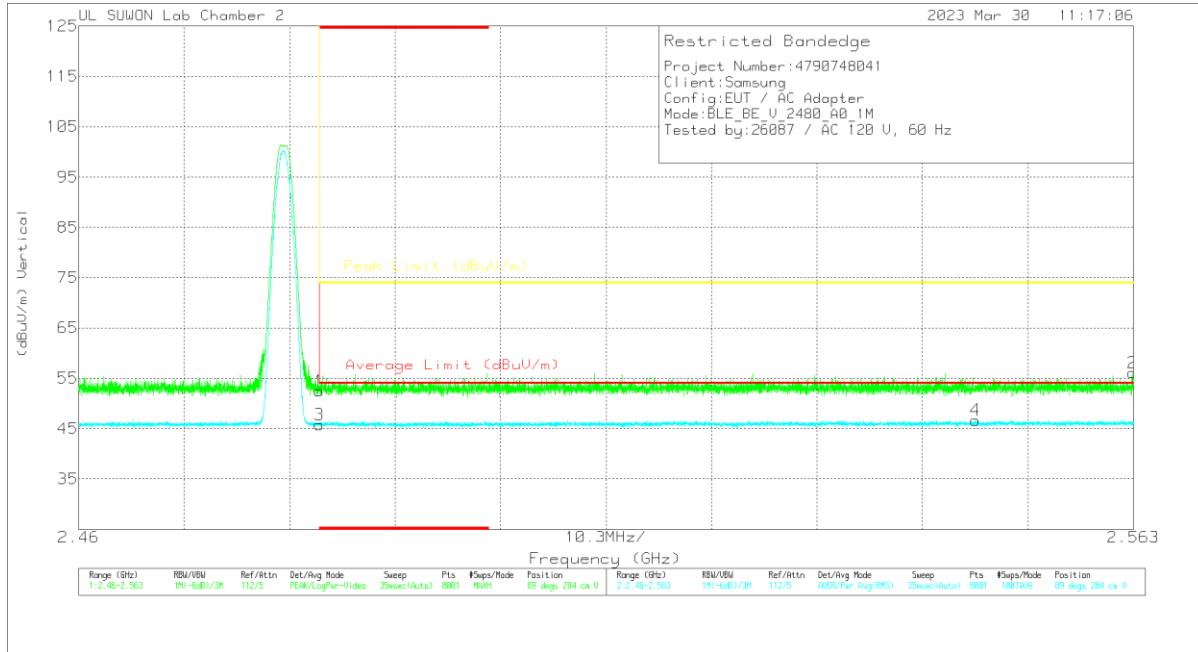
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Pk Margin (dB)	Acimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	39.95	Pk	31.9	-19.6	0	62.25	-	-	74	-21.75	133	127	H
2	2.50549	43.76	Pk	31.9	-19.6	0	66.06	-	-	74	-17.94	133	127	H
3	* 2.48351	31.09	RMS	31.9	-19.6	2.92	46.31	54	-7.69	-	-	133	127	H
4	2.51898	31.26	RMS	31.9	-19.4	2.92	46.68	54	-7.32	-	-	133	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_50168724	10dB_ATT(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Altitude (deg)	Height (m)	Polarity
1	* 2.48351	40.19	PK	31.9	-19.6	0	52.49	-	-	74	-21.51	89	284	V
2	2.56291	43.53	PK	32	-19.4	0	56.13	-	-	74	-17.87	89	284	V
3	* 2.48351	30.59	RMS	31.9	-19.6	2.92	45.81	54	-8.19	-	-	89	284	V
4	2.5476	31.28	RMS	32	-19.5	2.92	46.7	54	-7.3	-	-	89	284	V

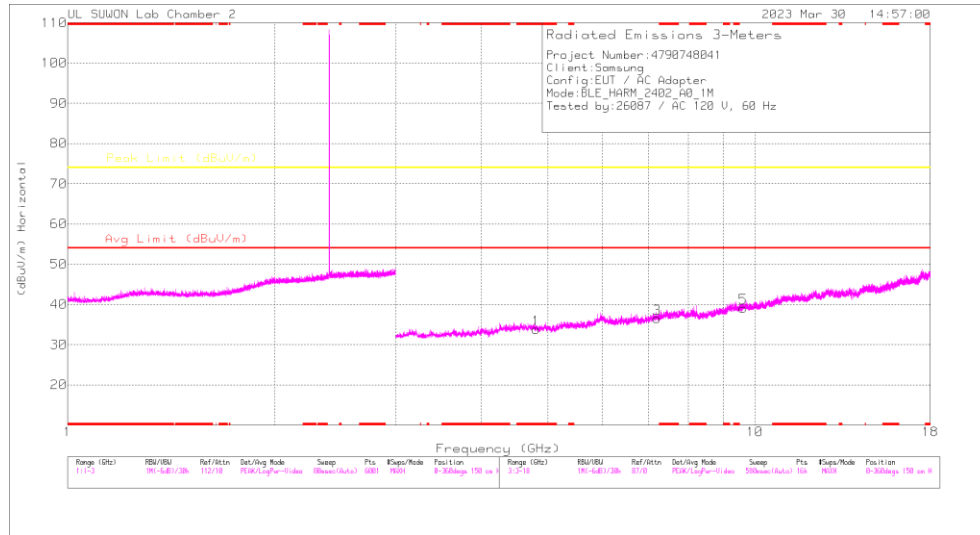
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK - Peak detector

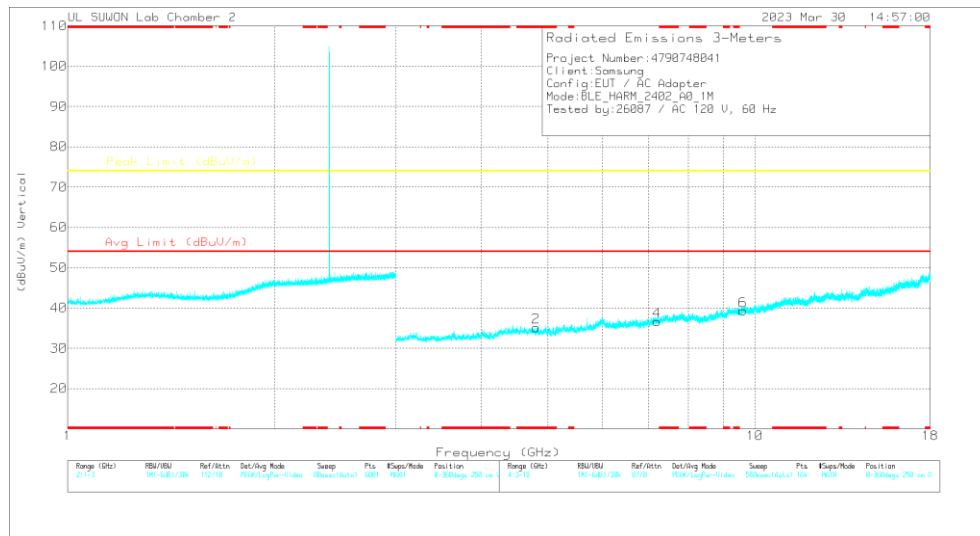
RMS - RMS detection

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.

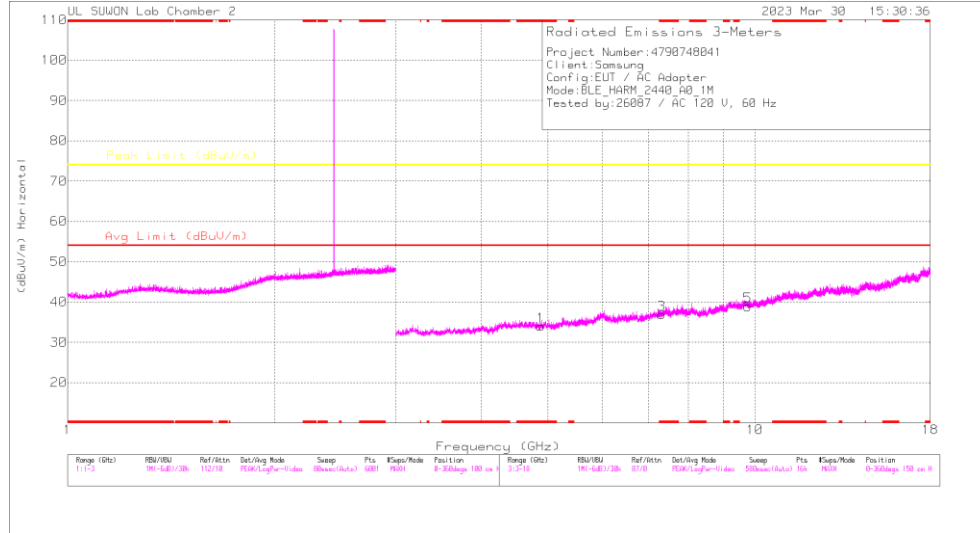
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	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
* 4.81331	30.77	PK2	34	-27	0	37.77	-	-	74	-36.23	0	100	H
* 4.80296	28.3	PK2	34	-27	0	35.3	-	-	74	-38.7	0	100	V
7.20702	28.05	PK2	35.7	-24.5	0	39.25	-	-	74	-34.75	0	100	H
7.20353	25.52	PK2	35.7	-24.4	0	36.82	-	-	74	-37.18	0	100	V
9.61689	21.78	PK2	36.9	-21.3	0	37.38	-	-	74	-36.62	0	100	H
9.60513	24.34	PK2	36.9	-21.3	0	39.94	-	-	74	-34.06	0	100	V

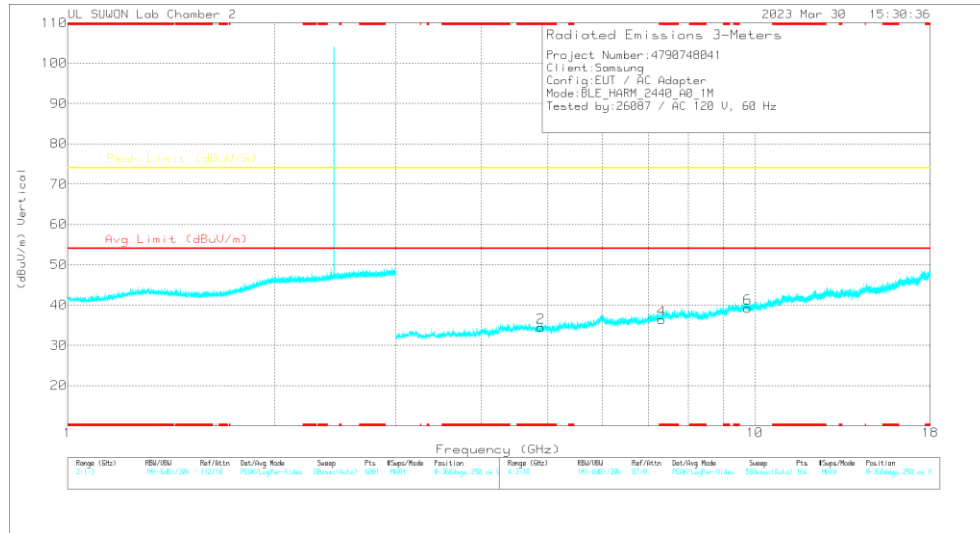
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

19 CHANNEL RESULTS



HORIZONTAL



VERTICAL

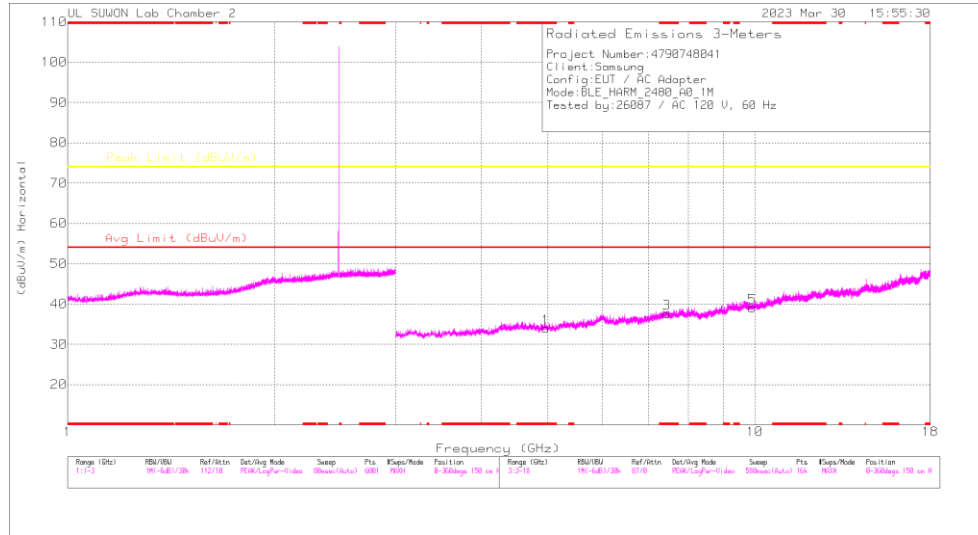
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

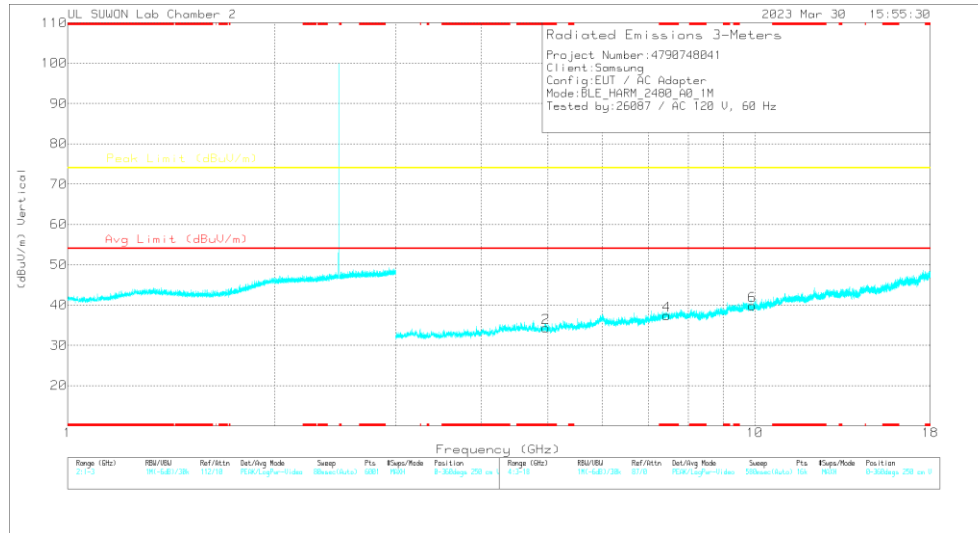
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	3GHz_HP(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.88021	28.99	PK2	34	-26.9	0	36.09	-	-	74	-37.91	0	100	H
* 4.88162	28.9	PK2	34	-26.9	0	36	-	-	74	-38	0	100	V
* 7.32661	23.04	PK2	35.7	-24	0	34.74	-	-	74	-39.26	0	100	H
* 7.3208	26.59	PK2	35.7	-24	0	38.29	-	-	74	-35.71	0	100	V
9.76901	24.09	PK2	37.1	-21.2	0	39.99	-	-	74	-34.01	0	100	H
9.76121	24.53	PK2	37.1	-21.1	0	40.53	-	-	74	-33.47	0	100	V

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

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.

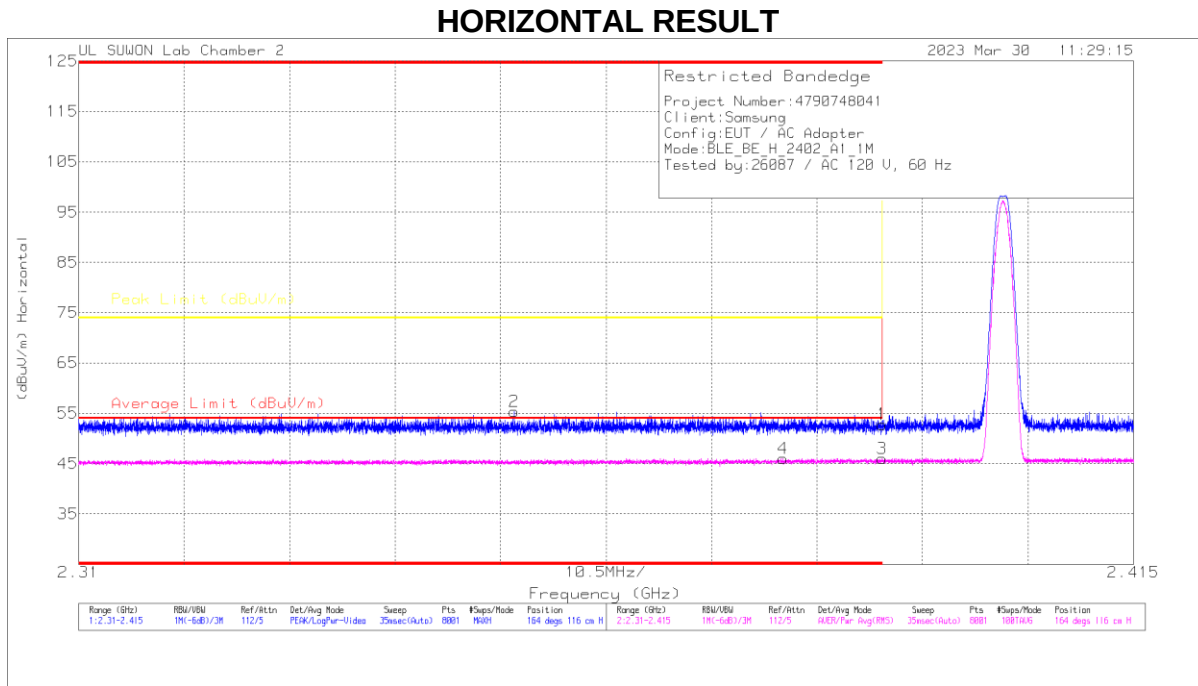
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	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
* 4.96786	29.26	PK2	34	-26.3	0	36.96	-	-	74	-37.04	0	100	H
* 4.96445	28.76	PK2	34	-26.3	0	36.46	-	-	74	-37.54	0	100	V
* 7.44594	28.11	PK2	35.7	-23.1	0	40.71	-	-	74	-33.29	0	100	H
* 7.44254	25.57	PK2	35.7	-23.1	0	38.17	-	-	74	-35.83	0	100	V
9.92218	22.38	PK2	37.3	-20.9	0	38.78	-	-	74	-35.22	0	100	H
9.91657	24.75	PK2	37.3	-20.9	0	41.15	-	-	74	-32.85	0	100	V

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

10.2.2. 1 Mbps ANT2

BANDEDGE (0 CHANNEL)



Trace Markers

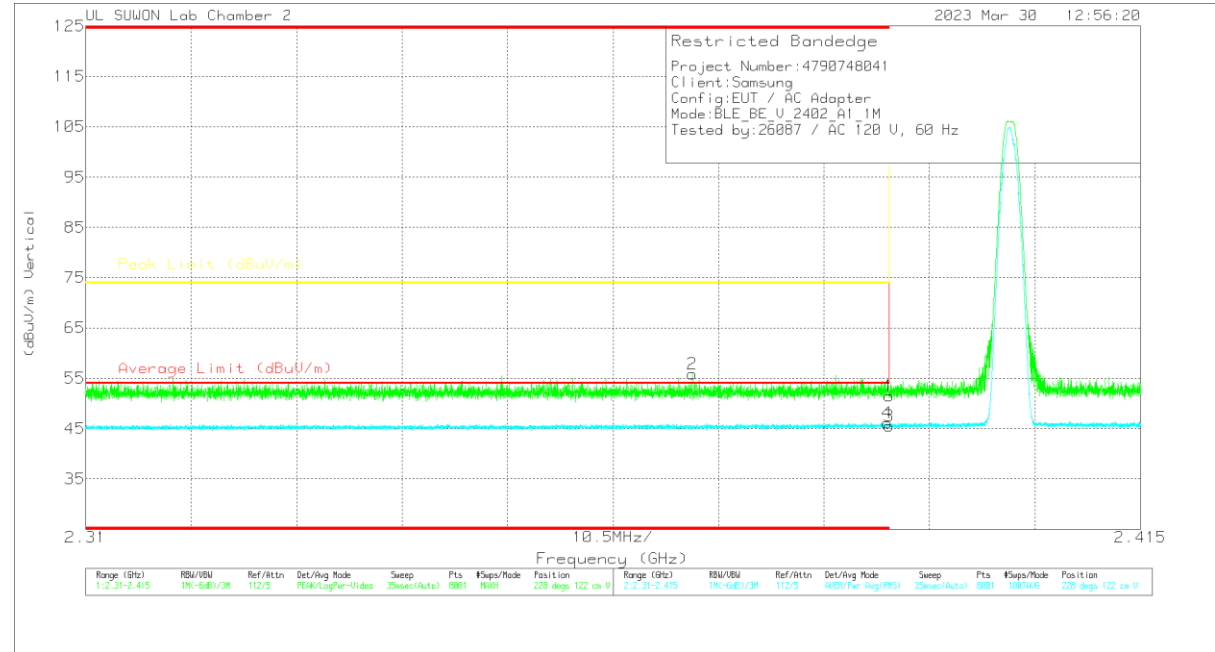
Marker	Frequency (GHz)	Marker Reading (dBuV)	Det	3117_00168724	10dB_ATT(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	40.91	PK	31.7	-19.8	0	52.81	-	-	74	-21.19	164	116	H
2	* 2.35338	43.69	PK	31.6	-19.9	0	55.39	-	-	74	-18.61	164	116	H
3	* 2.39	31.15	RMS	31.7	-19.8	2.92	45.97	54	-8.03	-	-	164	116	H
4	* 2.38011	31.25	RMS	31.7	-19.8	2.92	46.07	54	-7.93	-	-	164	116	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK - Peak detector

RMS - RMS detection

VERTICAL RESULT



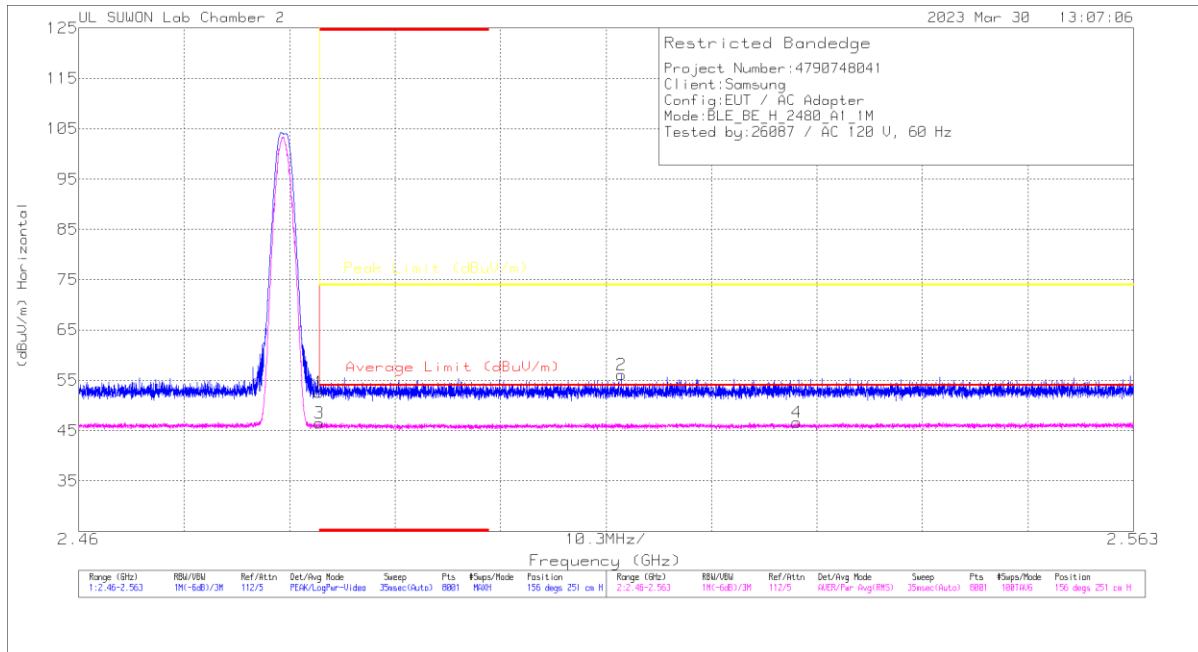
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBu/m)	Det	3117_00168724	10dB_ATT(dB)	DC Corr (dB)	Corrected Reading (dBu/m)	Average Limit (dBu/m)	Margin (dB)	Peak Limit (dBu/m)	PK Margin (dB)	Altitude (dB)	Height (dB)	Polarity
1	* 2.39	39.64	PK	31.7	-19.8	0	51.54	-	-	74	-22.46	228	122	V
2	* 2.3704	44.11	PK	31.7	-19.9	0	55.91	-	-	74	-18.09	228	122	V
3	* 2.39	30.68	RMS	31.7	-19.8	2.92	45.5	54	-8.5	-	-	228	122	V
4	* 2.3898	31.3	RMS	31.7	-19.8	2.92	46.12	54	-7.88	-	-	228	122	V

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

BANDEDGE (39 CHANNEL)

HORIZONTAL RESULT



Trace Markers

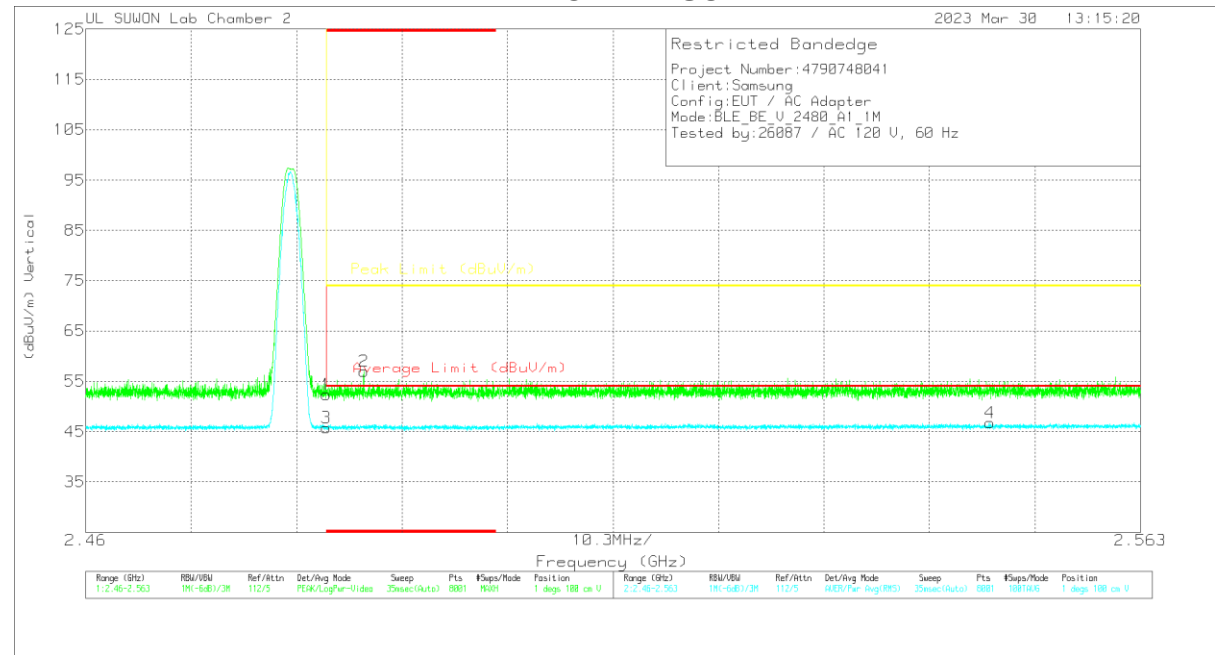
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Pk Margin (dB)	Acimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	40.33	Pk	31.9	-19.6	0	62.63	-	-	74	-21.37	156	251	H
2	2.51301	43.77	Pk	31.9	-19.6	0	66.07	-	-	74	-17.93	156	251	H
3	* 2.48351	31.25	RMS	31.9	-19.6	2.92	46.47	54	-7.53	-	-	156	251	H
4	2.53013	31.37	RMS	31.9	-19.5	2.92	46.69	54	-7.31	-	-	156	251	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

RMS - RMS detection

VERTICAL RESULT



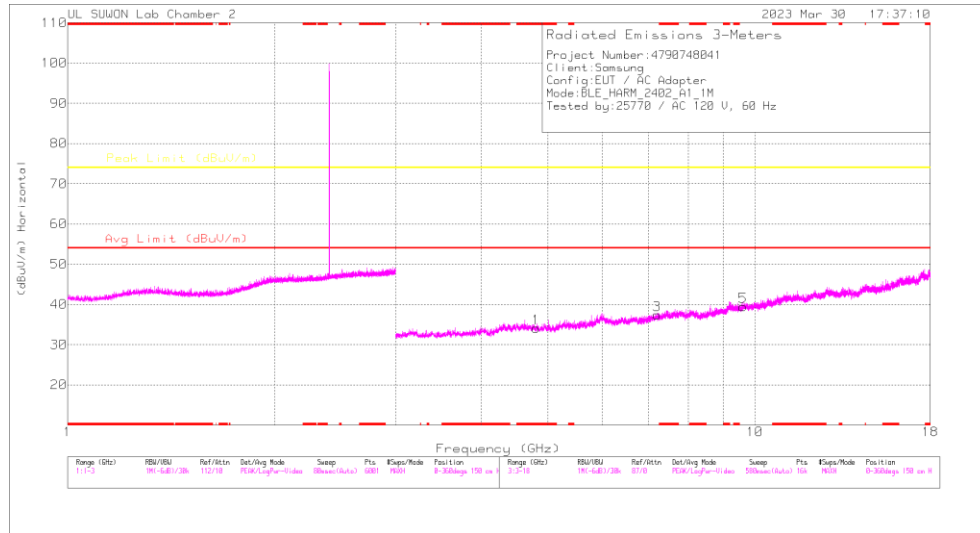
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Altitude (deg)	Height (cm)	Polarity
1	* 2.48351	40.11	PK	31.9	-19.6	0	52.41	-	-	74	-21.59	1	100	V
2	* 2.48714	44.63	PK	31.9	-19.6	0	56.93	-	-	74	-17.07	1	100	V
3	* 2.48351	30.59	RMS	31.9	-19.6	2.92	45.81	54	-8.19	-	-	1	100	V
4	2.54834	31.31	RMS	32	-19.5	2.92	46.73	54	-7.27	-	-	1	100	V

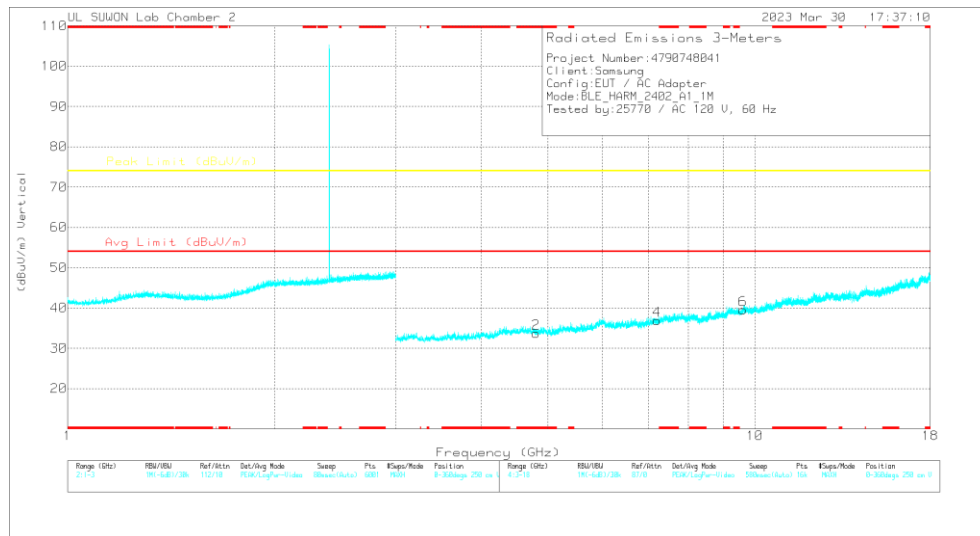
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK - Peak detector
RMS - RMS detection

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.

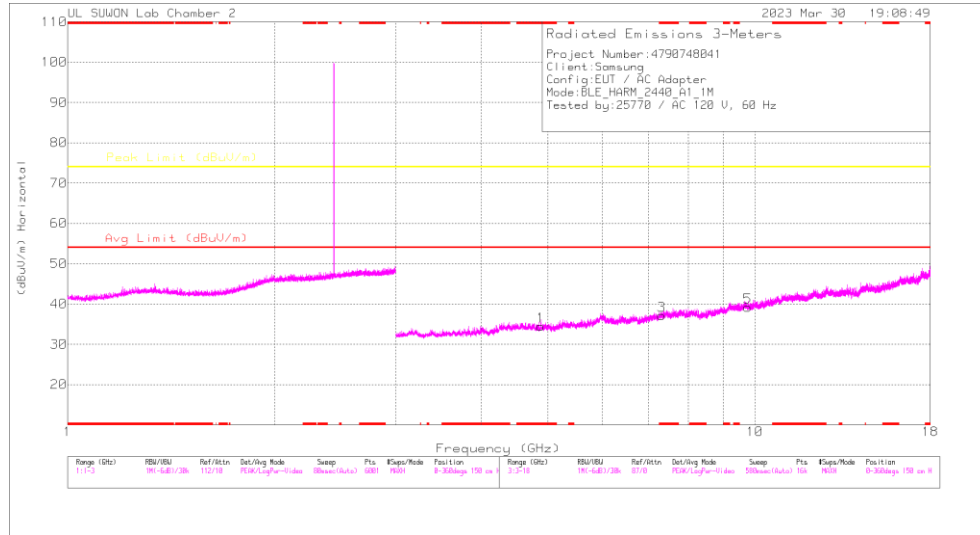
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	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
* 4.80164	23.44	PK2	34	-27	0	30.44	-	-	74	-43.56	0	100	H
* 4.81208	25.82	PK2	34	-27	0	32.82	-	-	74	-41.18	0	100	V
7.20228	24.55	PK2	35.7	-24.4	0	35.85	-	-	74	-38.15	0	100	H
7.2005	23.77	PK2	35.7	-24.4	0	35.07	-	-	74	-38.93	0	100	V
9.61496	24.96	PK2	36.9	-21.3	0	40.56	-	-	74	-33.44	0	100	H
9.60533	23.89	PK2	36.9	-21.3	0	39.49	-	-	74	-34.51	0	100	V

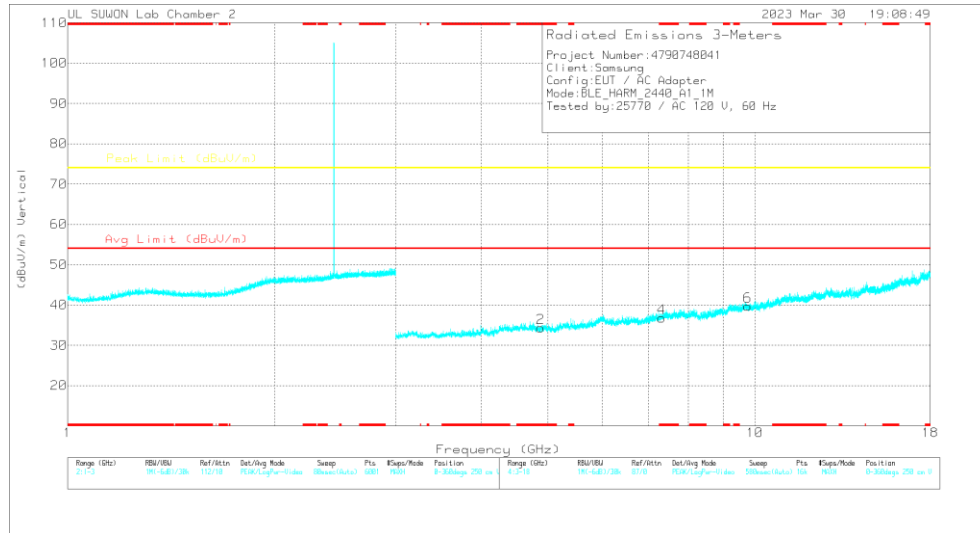
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

19 CHANNEL RESULTS



HORIZONTAL



VERTICAL

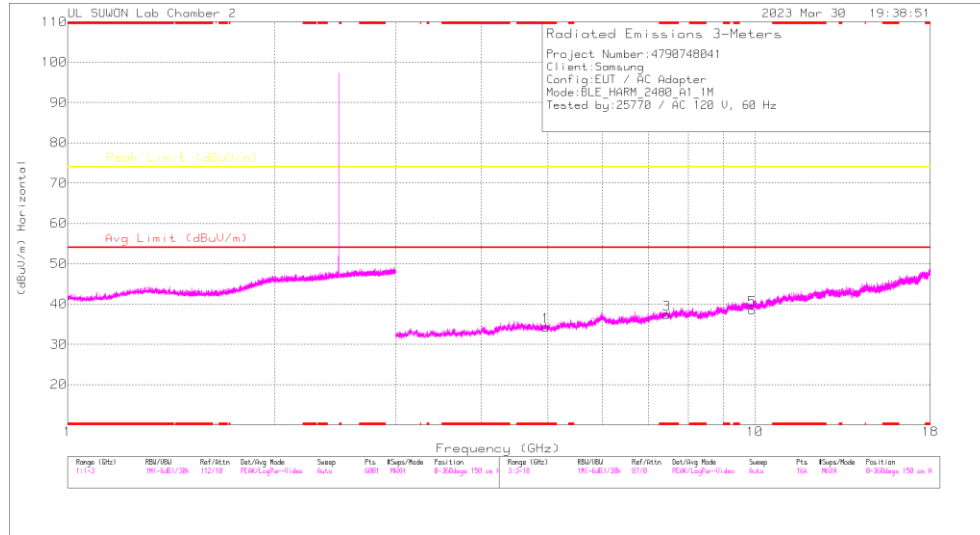
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

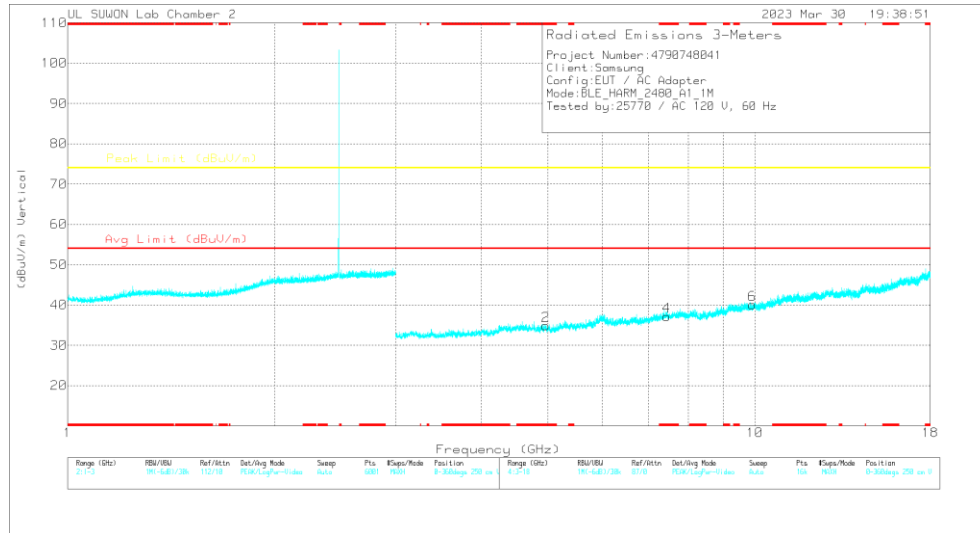
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	3GHz_HP(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.8771	36.27	PK2	34	-26.9	0	43.37	-	-	74	-30.63	0	100	H
* 4.88778	36.42	PK2	34	-26.8	0	43.62	-	-	74	-30.38	0	100	V
* 7.3185	34.52	PK2	35.7	-24	0	46.22	-	-	74	-27.78	0	100	H
* 7.31263	35.84	PK2	35.7	-24.1	0	47.44	-	-	74	-26.56	0	100	V
9.7571	32.24	PK2	37.1	-21.1	0	48.24	-	-	74	-25.76	0	100	H
9.75974	32.59	PK2	37.1	-21.1	0	48.59	-	-	74	-25.41	0	100	V

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

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

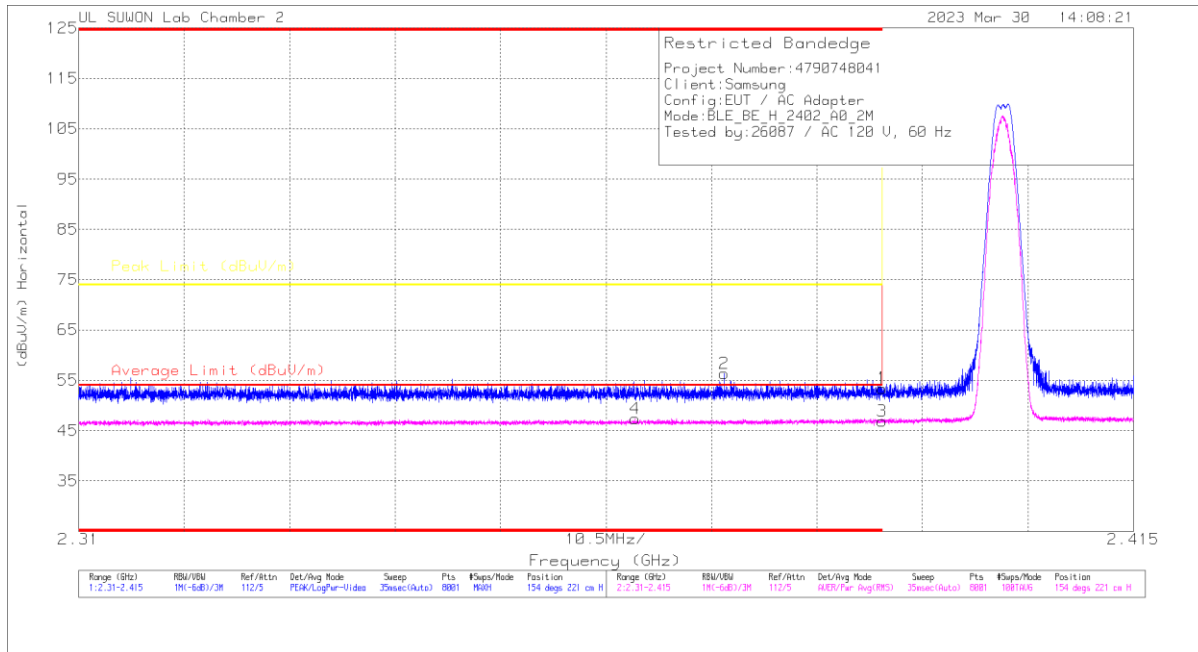
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	3GHz_HP(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.95031	35.58	PK2	34	-26.2	0	43.38	-	-	74	-30.62	0	100	H
* 4.95331	35.34	PK2	34	-26.2	0	43.14	-	-	74	-30.86	0	100	V
* 7.44065	33.98	PK2	35.7	-23	0	46.68	-	-	74	-27.32	0	100	H
* 7.44294	33.92	PK2	35.7	-23.1	0	46.52	-	-	74	-27.48	0	100	V
9.91142	32.39	PK2	37.3	-21	0	48.69	-	-	74	-25.31	0	100	H
9.92886	32.19	PK2	37.3	-20.8	0	48.69	-	-	74	-25.31	0	100	V

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

10.2.3. 2 Mbps ANT1

BANDEDGE (0 CHANNEL)

HORIZONTAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (deg)	Height (cm)	Polarity
1	* 2.29	41.53	PK	31.7	-19.8	0	53.43	-	-	74	-20.57	154	221	H
2	* 2.37426	44.48	PK	31.7	-19.8	0	56.38	-	-	74	-17.62	154	221	H
3	* 2.39	30.72	RMS	31.7	-19.8	4.22	46.84	54	-7.16	-	-	154	221	H
4	* 2.36541	31.29	RMS	31.7	-19.8	4.22	47.41	54	-6.59	-	-	154	221	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK - Peak detector

RMS - RMS detection