CERTIFICATION TEST REPORT

Report Number. : 4790089631-E4V1

Applicant	:	SAMSUNG ELECTRONICS CO., LTD. 129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI, GYEONGGI-DO, 16677, KOREA
Model	:	SM-S908B/DS
FCC ID	:	A3LSMS908B
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:
2021-10-29

Prepared by:
UL Korea, Ltd.
26th floor, 152, Teheran-ro, Gangnam-gu Seoul, 06236, Korea

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
TL-637

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2021-10-29	Initial issue	Hyunsik Yun

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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-S908B/DS
SERIAL NUMBER:	R3CR80AAZER (CONDUCTED); R3CR80AB8VP, R3CR706LYYK (RADIATED);
DATE TESTED:	2021-09-27 ~ 2021-10-29

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 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:

Junwhan Lee
Suwon Lab Engineer
UL Korea, Ltd.

Tested By:

Dexter(Hyunsik) Yun
Suwon Lab Engineer
UL Korea, Ltd.

2. TEST METHODOLOGY

1. FCC CFR 47 Part 2.
2. FCC CFR 47 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
☒ Chamber 2
☒ Chamber 3

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

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	3.02 dB
Radiated Disturbance, 30 MHz to 1 GHz	4.05 dB
Radiated Disturbance, 1 GHz to 18 GHz	5.78 dB
Radiated Disturbance, 18 GHz to 40 GHz	5.58 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 115:2007.

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.

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	1Mbps	Peak	17.940	62.230
		Average	17.225	52.784
	2Mbps	Peak	18.280	67.298
		Average	17.810	60.395

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 ANT 1's maximum gain of -7.85 dBi and ANT 2's maximum gain of -4.04 dBi.

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.

For Antenna 1, the fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z it was determined that Z orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Z orientation.

For Antenna 2, the fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

- Supported PA modes:

ANT. / Pre-Amp.	ANT1	ANT2	BLE-Dual
ePA	O	O	
iPA	O	O	O

Since the summed target power of BLE-Dual mode is lower than the target power of ePA SISO, the test was performed in ePA SISO mode.

Note : All radiated and power line conducted tests were performed attached with travel adapter and earphone 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(37 pkt) power is the worst case for symbol rate. All tests were performed in these two modes.

Symbol Rate [Ms/s]	ANT.	Mode	Freq. [MHz]	Conducted Burst Avg [dBm]	Symbol Rate [Ms/s]	ANT.	Mode	Freq. [MHz]	Conducted Burst Avg [dBm]
1	ANT1	1Mbps 37pkt (ePA)	2402	16.583	2	ANT1	**2Mbps 37pkt (ePA)**	2402	16.414
			2440	17.067				***2440***	***17.810***
			2480	16.258				2480	16.553
	ANT2		2402	15.727		ANT2		2402	16.220
			2440	16.257				2440	16.276
			2480	15.487				2480	15.581
	ANT1	**1Mbps 255pkt (ePA)**	2402	16.391		ANT1	2Mbps 255pkt (ePA)	2402	16.385
			2440	***17.225***				2440	17.533
			2480	15.970				2480	16.190
	ANT2		2402	15.817		ANT2		2402	15.799
			2440	15.859				2440	16.020
			2480	15.092				2480	15.524
	DUAL 1	1Mbps 37pkt (iPA)	2402	9.738		DUAL 1	2Mbps 37pkt (iPA)	2402	9.628
			2440	9.688				2440	9.565
			2480	8.657				2480	8.560
	DUAL 2		2402	9.683		DUAL 2		2402	9.318
			2440	9.519				2440	9.523
			2480	8.957				2480	8.916
	Aggregate DUAL1&2		2402	12.721		Aggregate DUAL1&2		2402	12.486
			2440	12.615				2440	12.554
			2480	11.820				2480	11.752
	DUAL 1	1Mbps 37pkt (iPA)	2402	9.576		DUAL 1	2Mbps 37pkt (iPA)	2402	9.486
			2440	9.696				2440	9.556
			2480	8.626				2480	8.395
	DUAL 2		2402	9.416		DUAL 2		2402	9.269
			2440	9.510				2440	9.539
			2480	8.867				2480	8.849
	Aggregate DUAL1&2		2402	12.507		Aggregate DUAL1&2		2402	12.389
			2440	12.614				2440	12.558
			2480	11.758				2480	11.638
1 Coded S=8	ANT1	125kbps 37pkt (iPA)	2402	9.324	**1 Coded S=2**	ANT1	500kbps 37pkt (iPA)	2402	9.721
			2440	9.603				2440	9.630
			2480	8.592				2480	8.625
	ANT2		2402	9.029		ANT2		2402	9.415
			2440	9.495				2440	9.426
			2480	8.842				2480	8.868
	ANT1	125kbps 255pkt (iPA)	2402	9.588		ANT1	500kbps 255pkt (iPA)	2402	9.465
			2440	9.688				2440	9.682
			2480	8.662				2480	8.647
	ANT2		2402	9.200		ANT2		2402	9.195
			2440	9.419				2440	9.474
			2480	8.746				2480	8.827

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Charger	SAMSUNG	EP-TA800	R37N9BV0382HM3	N/A
Data Cable	SAMSUNG	EP-DN980BBE	N/A	N/A

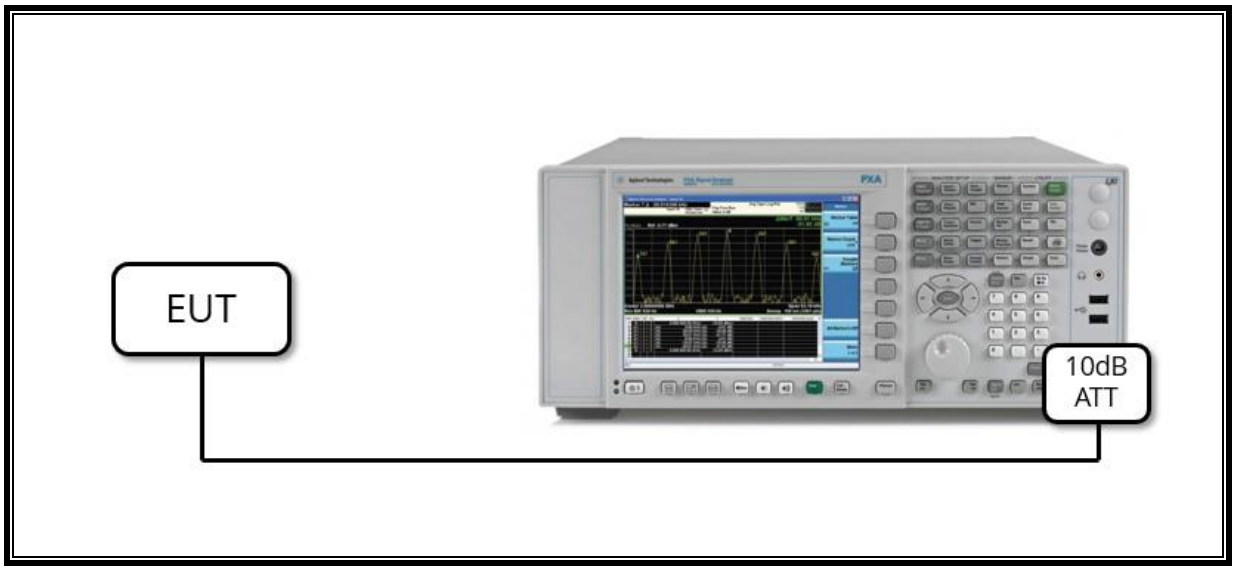
I/O CABLE

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

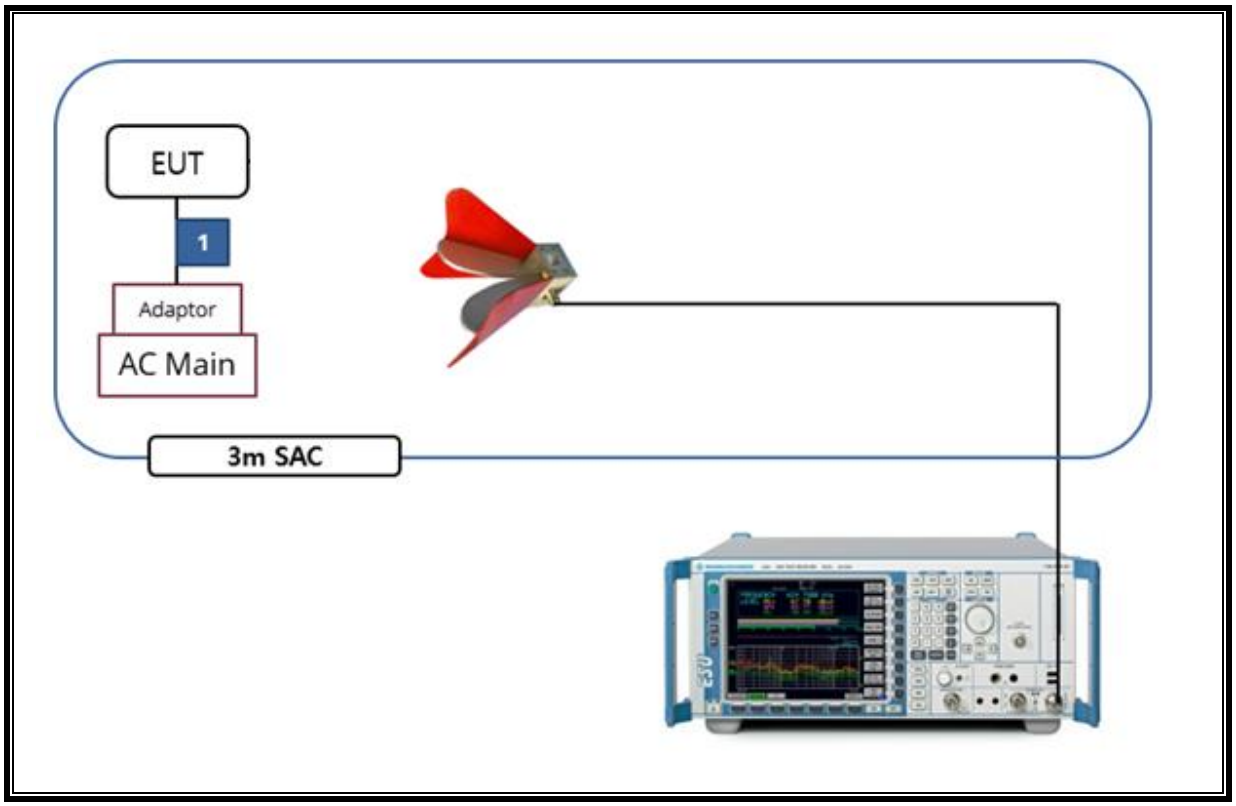
TEST SETUP

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 : KDB 558074 D01 v05r02, Section 8.2.

OUTPUT POWER : KDB 558074 D01 v05r02, Section 8.3.1.1

POWER SPECTRAL DENSITY : KDB 558074 D01 v05r02, Section 8.4.

Out-of-band Emissions (Conducted) : KDB 558074 D01 v05r02, Section 8.5.

Out-of-band Emissions in Non-restricted Bands: KDB 558074 D01 v05r02, Section 8.5.

Out-of-band Emissions in Restricted Bands : KDB 558074 D01 v05r02, Section 8.6.

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	2022-08-19
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	2022-08-13
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	845	2022-08-13
Antenna, Horn, 18 GHz	ETS	3115	00167211	2022-07-27
Antenna, Horn, 18 GHz	ETS	3115	00161451	2022-08-15
Antenna, Horn, 18 GHz	ETS	3117	00168724	2022-07-27
Antenna, Horn, 18 GHz	ETS	3117	00168717	2022-08-15
Antenna, Horn, 40 GHz	ETS	3116C	00166155	2022-08-04
Preamplifier	ETS	3116C-PA	00168841	2022-08-04
Preamplifier, 1000 MHz	Sonoma	310N	341282	2022-08-02
Preamplifier, 1000 MHz	Sonoma	310N	351741	2022-08-02
Preamplifier, 1000 MHz	Sonoma	310N	370599	2022-08-02
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1876511	2022-08-02
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	2022-08-02
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	2029168	2022-08-02
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	2022-08-04
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54490312	2022-08-04
Spectrum Analyzer, 44 GHz	KEYSIGHT	N9030B	MY60070693	2022-01-03
Average Power Sensor	Agilent / HP	U2000	MY54270007	2022-08-04
Average Power Sensor	Agilent / HP	U2000	MY54260010	2022-08-04
Attenuator	PASTERNACK	PE7087-10	A001	2022-08-03
Attenuator	PASTERNACK	PE7087-10	A008	2022-08-03
Attenuator	PASTERNACK	PE7004-10	2	2022-08-02
Attenuator	PASTERNACK	PE7087-10	A009	2022-08-03
EMI Test Receive, 40 GHz	R&S	ESU40	100439	2022-08-02
EMI Test Receive, 40 GHz	R&S	ESU40	100457	2022-08-02
EMI Test Receive, 3 GHz	R&S	ESR3	101832	2022-08-02
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	009	2022-08-02
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	015	2022-08-02
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	019	2022-08-02
High Pass Filter 3GHz	Micro-Tronics	HPM17543	010	2022-08-02
High Pass Filter 3GHz	Micro-Tronics	HPM17543	015	2022-08-02
High Pass Filter 3GHz	Micro-Tronics	HPM17543	020	2022-08-02
High Pass Filter 6GHz	Micro-Tronics	HPS17542	009	2022-08-02
High Pass Filter 6GHz	Micro-Tronics	HPS17542	016	2022-08-02
High Pass Filter 6GHz	Micro-Tronics	HPS17542	020	2022-08-02
LISN	R&S	ENV-216	101837	2022-08-05

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	PASS
2.1051, 15.247(d)	Band Edge / Conducted Spurious Emission	-20 dBc		PASS
15.247 (b)(3)	TX conducted output power	< 30 dBm		PASS
15.247(e)	PSD	< 8 dBm/3kHz		PASS
15.207(a)	AC Power Line conducted emissions	Section 11	Power Line conducted	PASS
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m(Av)	Radiated	PASS

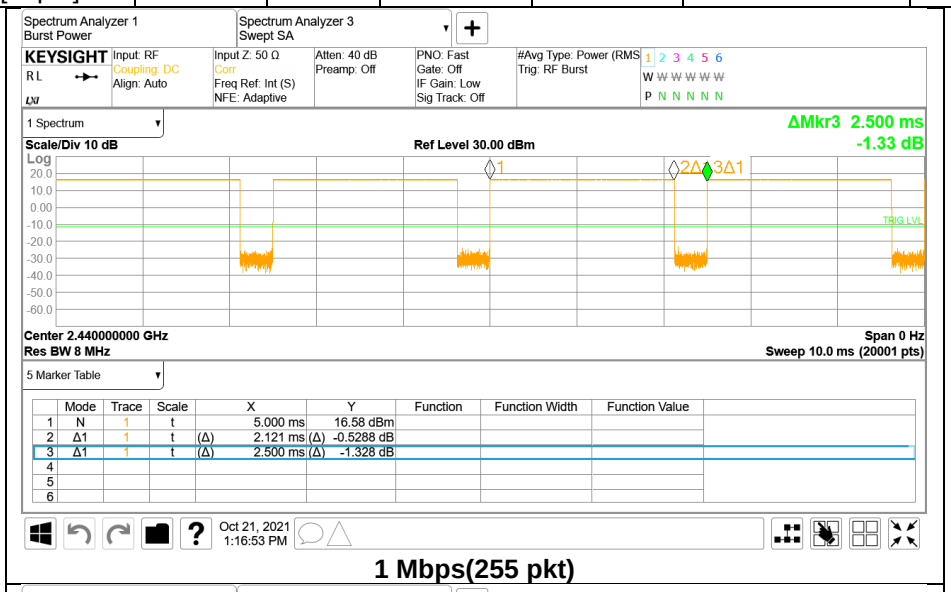
9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

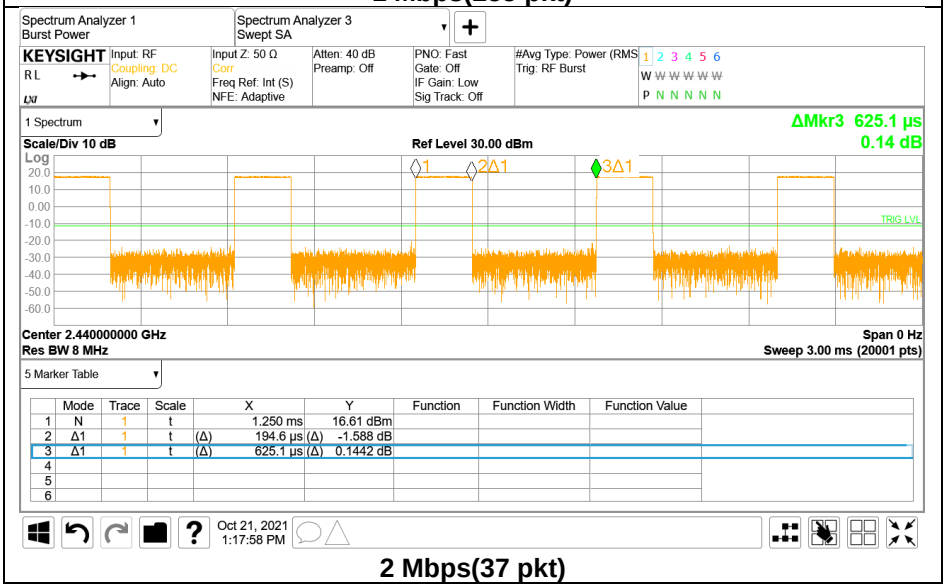
LIMITS

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]	2.121	2.500	0.848	84.840	0.71	0.471
2 Mbps [37pkt]	0.195	0.625	0.312	31.195	5.06	5.139



1 Mbps(255 pkt)



2 Mbps(37 pkt)

9.2. 6 dB 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. 1 Mbps

Ant.	Channel	Frequency [MHz]	6 dB Bandwidth [kHz]	Minimum Limit [kHz]
ANT1	0	2 402	666.7	500.0
	19	2 440	664.5	500.0
	39	2 480	**663.5**	500.0
ANT2	0	2 402	663.7	500.0
	19	2 440	667.9	500.0
	39	2 480	669.1	500.0
Worst			**663.5**	500.0

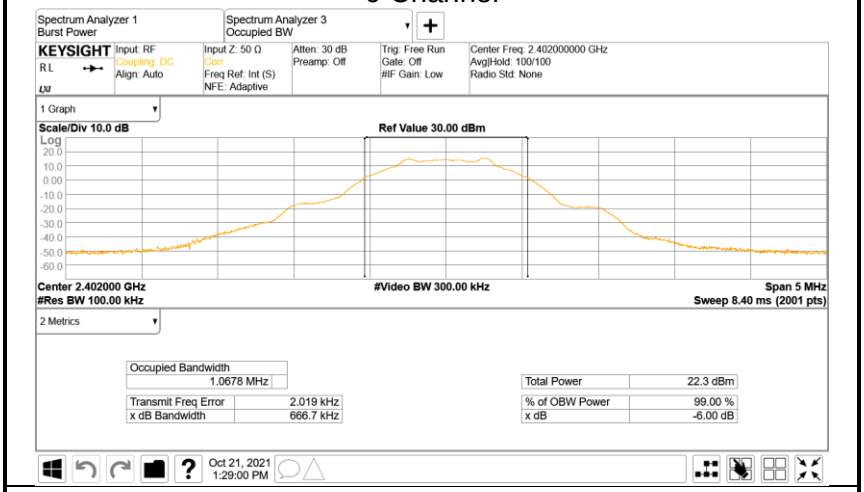
9.2.2. 2 Mbps

Ant.	Channel	Frequency [MHz]	6 dB Bandwidth [kHz]	Minimum Limit [kHz]
ANT1	0	2 402	**1 174.0**	500.0
	19	2 440	1 232.0	500.0
	39	2 480	1 235.0	500.0
ANT2	0	2 402	1 226.0	500.0
	19	2 440	1 231.0	500.0
	39	2 480	1 233.0	500.0
Worst			**1 174.0**	500.0

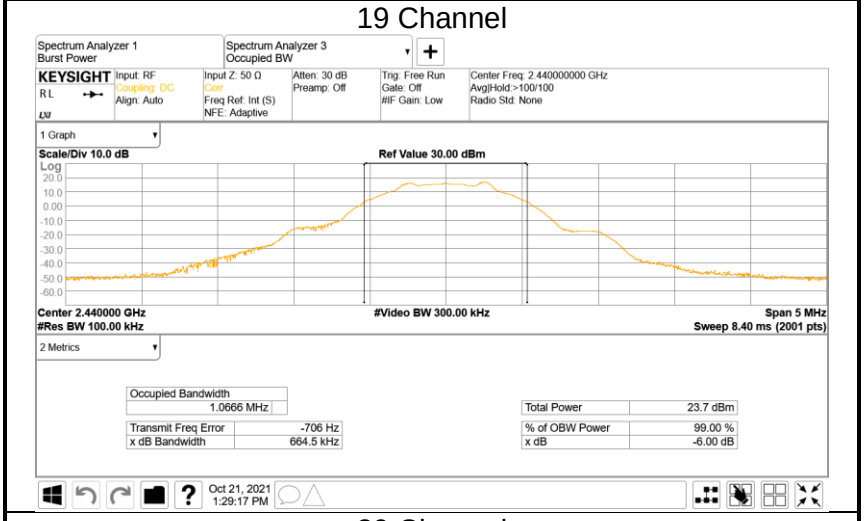
9.2.3. 6 dB BANDWIDTH PLOTS

1 Mbps / 6 dB Bandwidth / ANT1

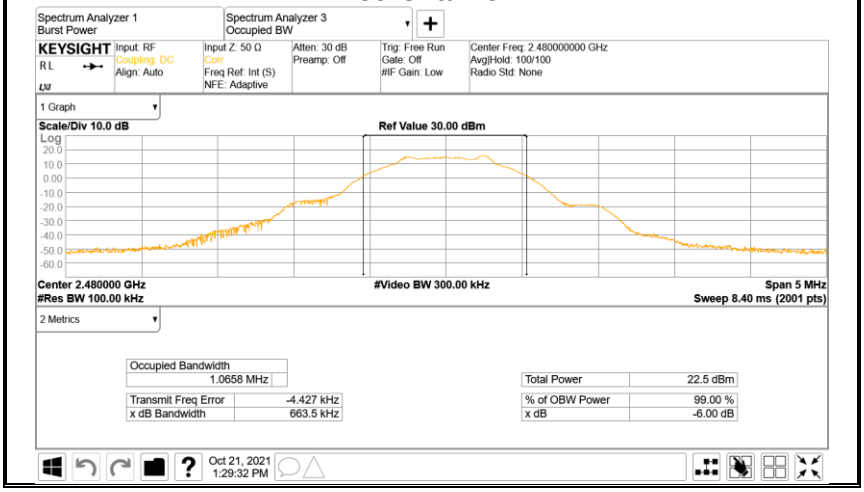
0 Channel



19 Channel

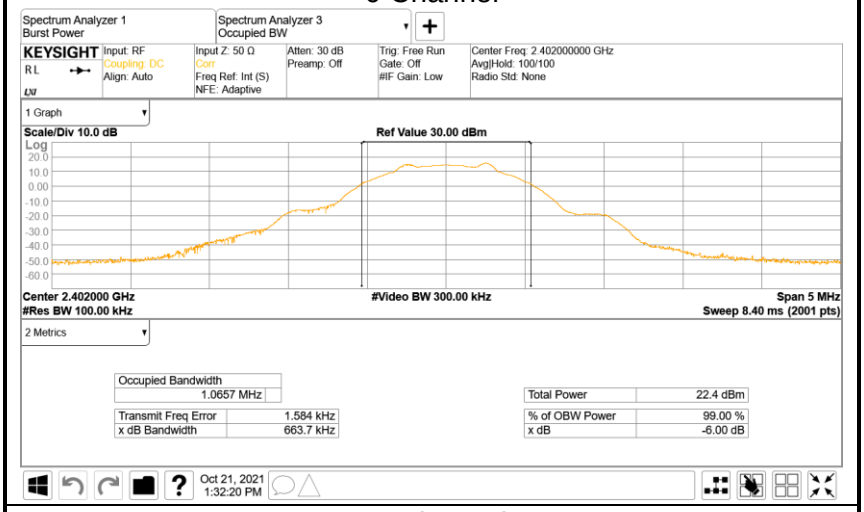


39 Channel



1 Mbps / 6 dB Bandwidth / ANT2

0 Channel



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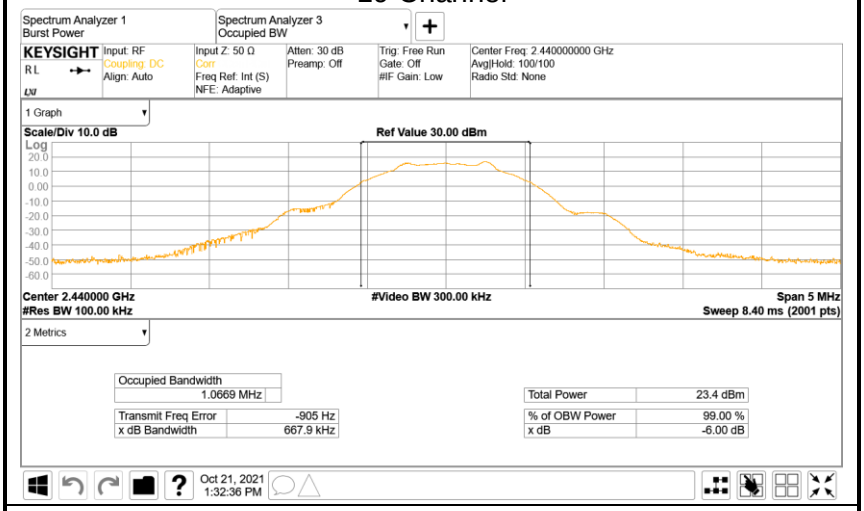

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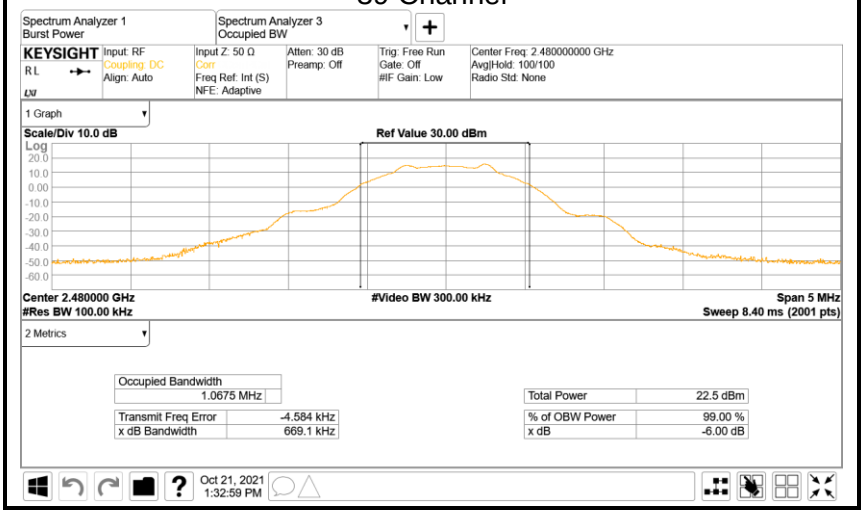
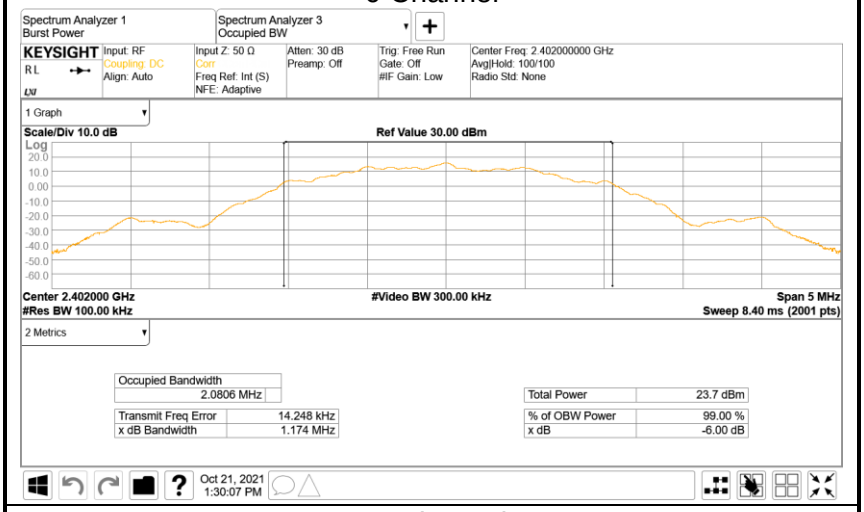


2 Mbps / 6 dB Bandwidth / ANT1

0 Channel



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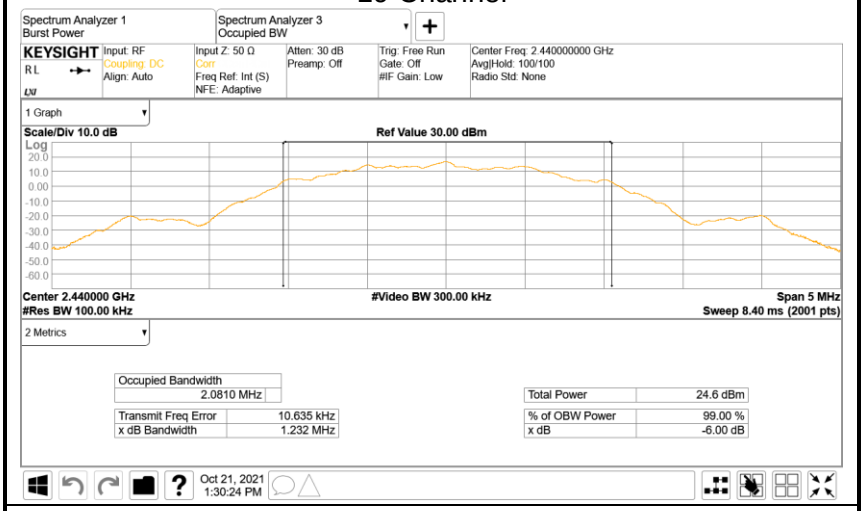

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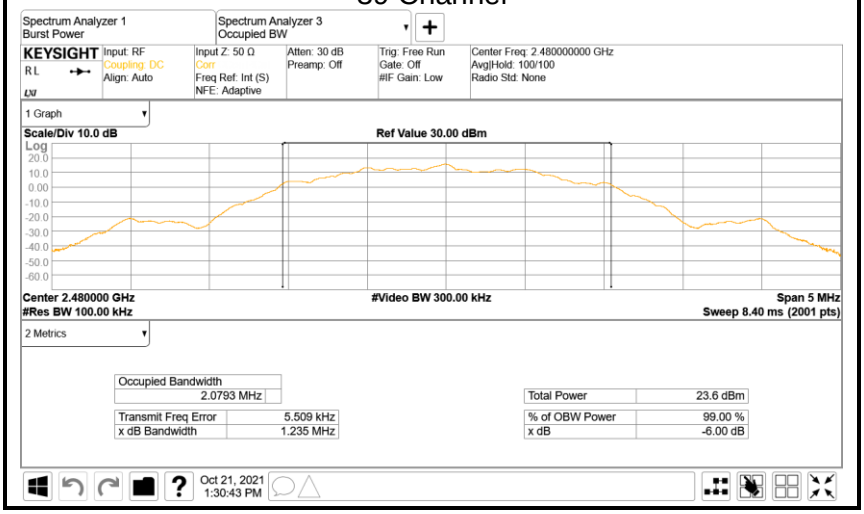

2 Mbps / 6 dB Bandwidth / ANT2

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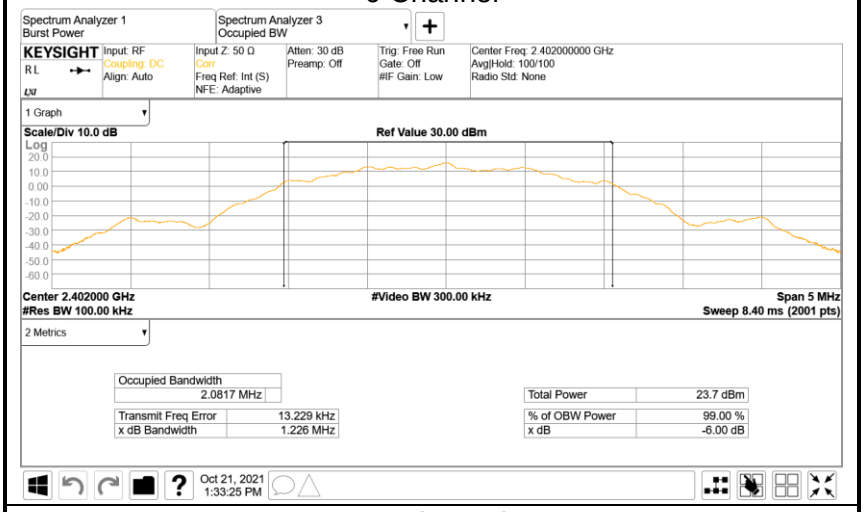
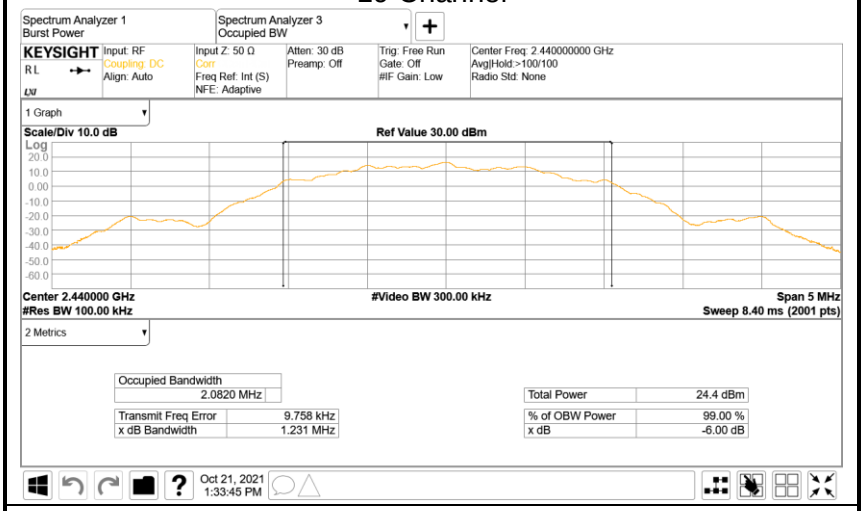
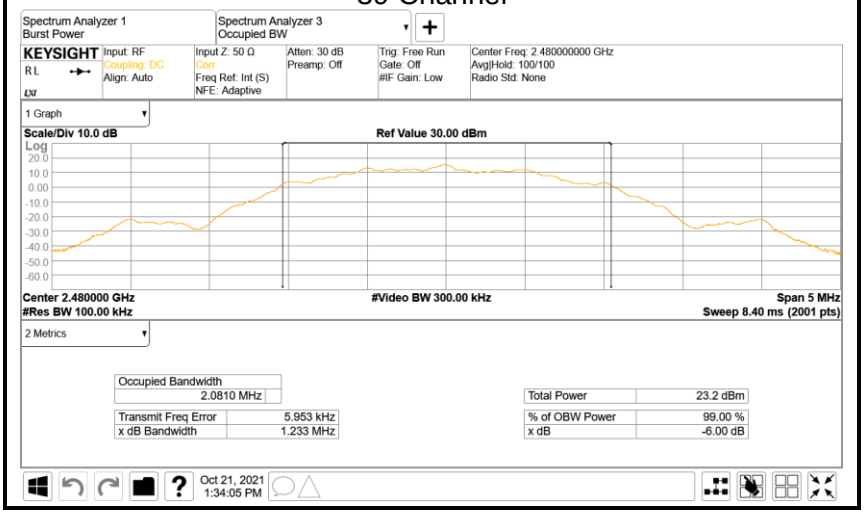


19 Channel



39 Channel



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.

RESULTS

9.3.1. 1 Mbps

Antenna	PA.	Channel	Frequency [MHz]	Peak Output Power [dBm]	Limit [dBm]	Margin [dB]
ANT1	ePA	0	2 402	16.73	30.000	-13.27
		19	2 440	**17.43**		**-12.57**
		39	2 480	16.35		-13.65
ANT2		0	2 402	16.18		-13.82
		19	2 440	16.21		-13.79
		39	2 480	15.47		-14.53
Worst				**17.43**		**-12.57**

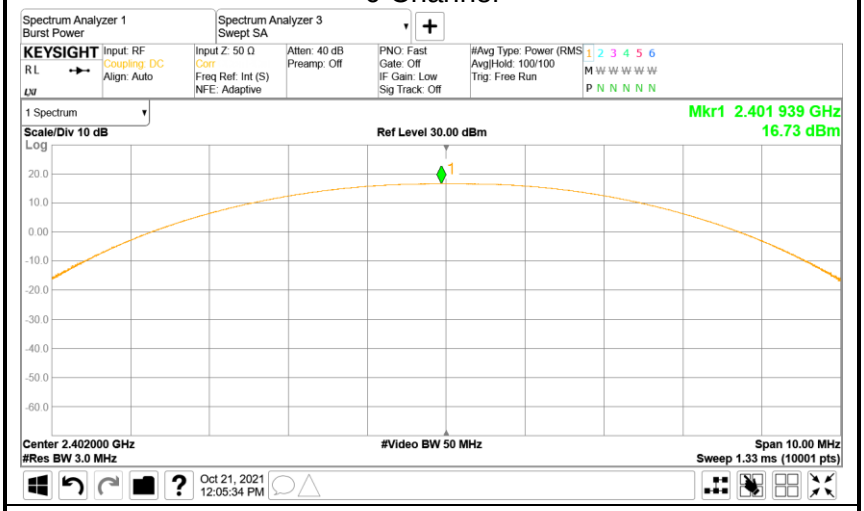
9.3.2. 2 Mbps

Antenna	PA.	Channel	Frequency [MHz]	Peak Output Power [dBm]	Limit [dBm]	Margin [dB]
ANT1	ePA	0	2 402	16.90	30.000	-13.10
		19	2 440	**18.28**		**-11.72**
		39	2 480	17.01		-12.99
ANT2		0	2 402	16.77		-13.23
		19	2 440	16.82		-13.18
		39	2 480	16.12		-13.88
Worst				**18.28**		**-11.72**

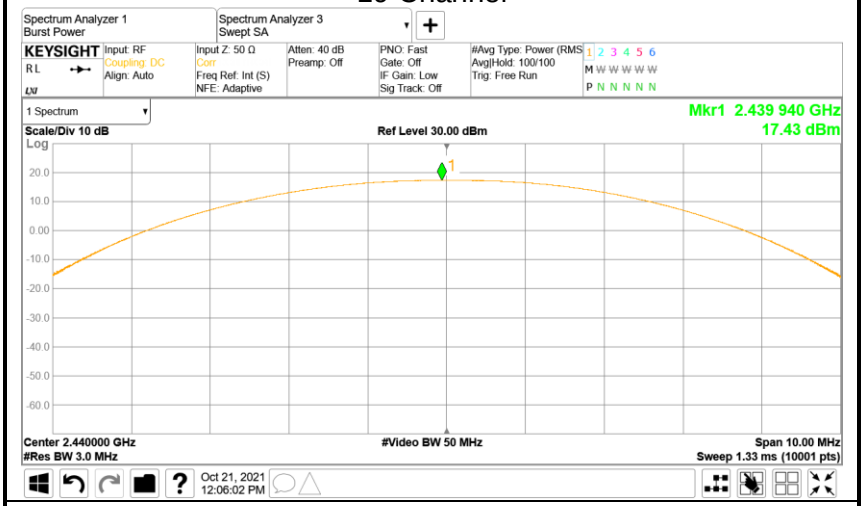
9.3.3. PEAK POWER PLOTS

1 Mbps / ANT1

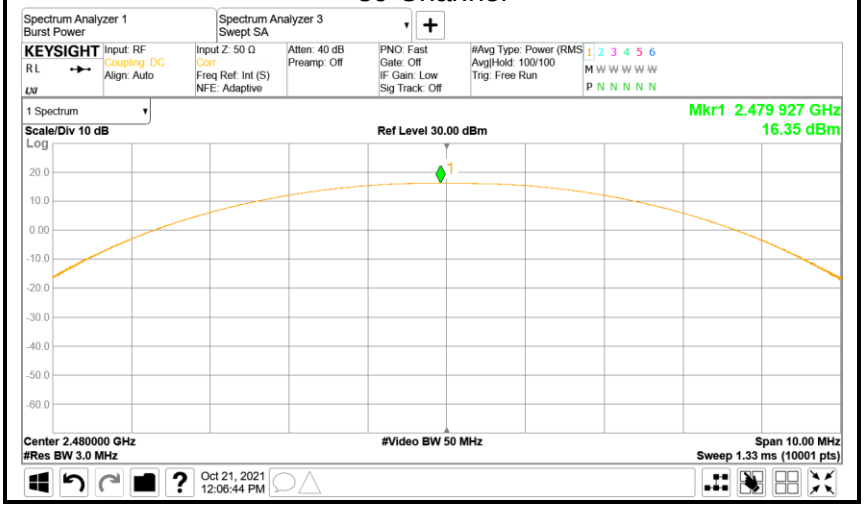
0 Channel



19 Channel

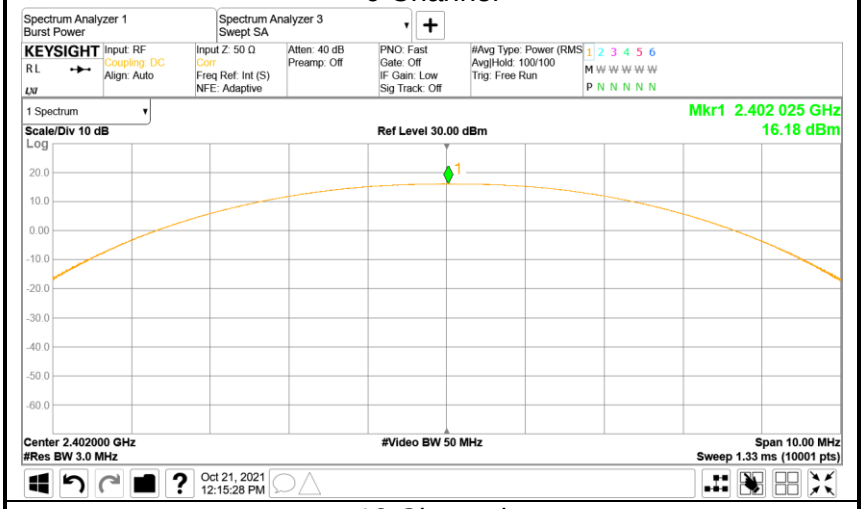


39 Channel

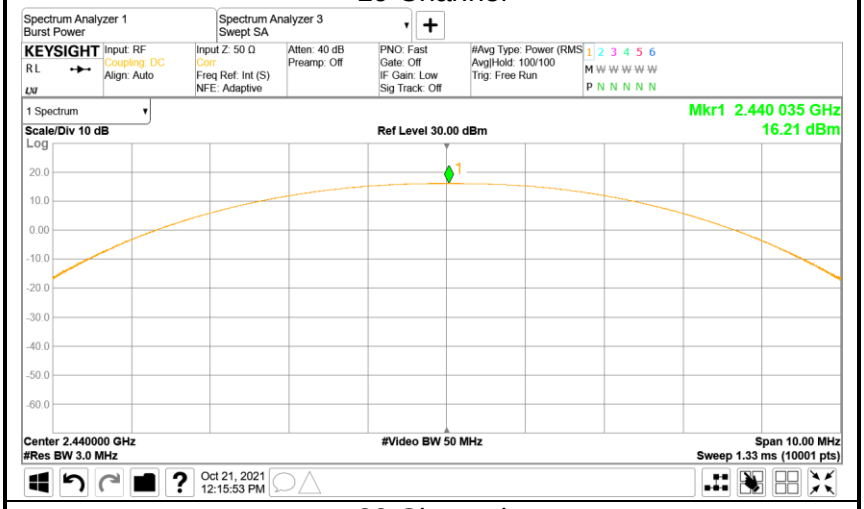


1 Mbps / ANT2

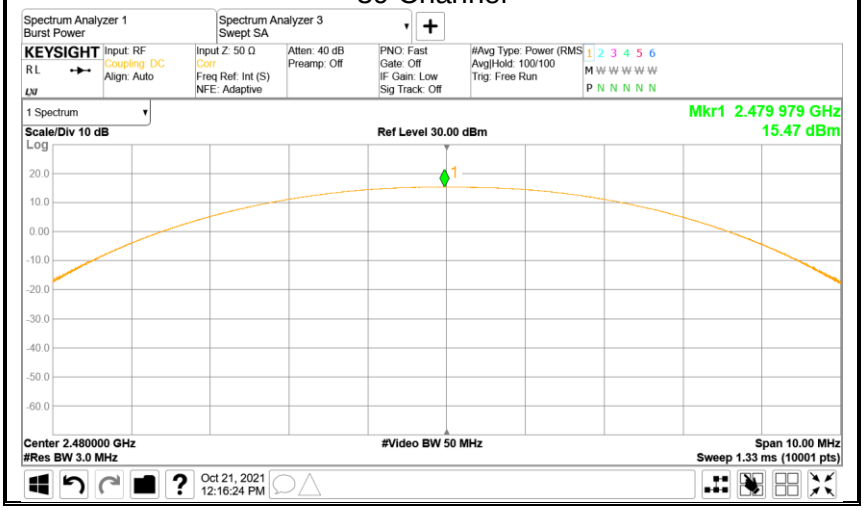
0 Channel



19 Channel

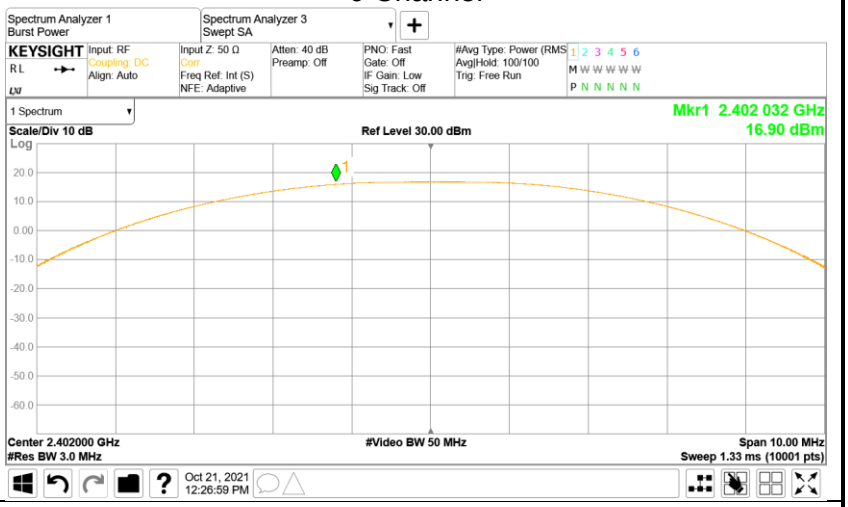


39 Channel

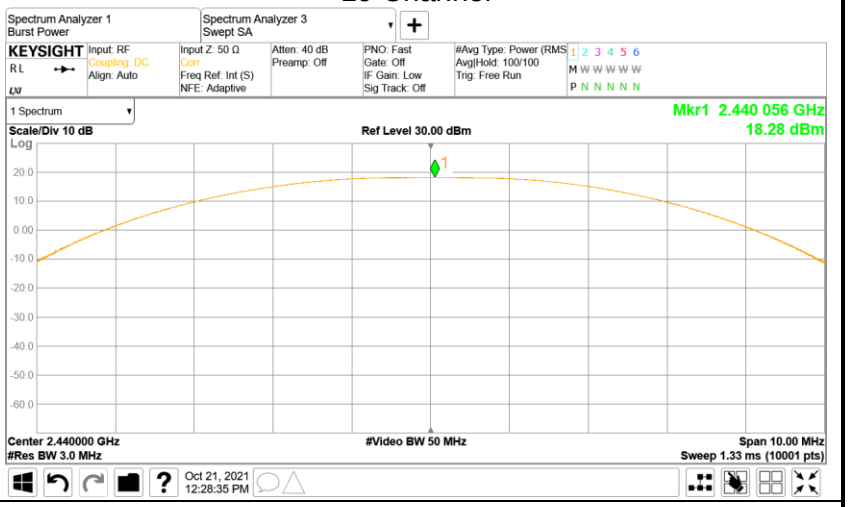


2 Mbps / ANT1

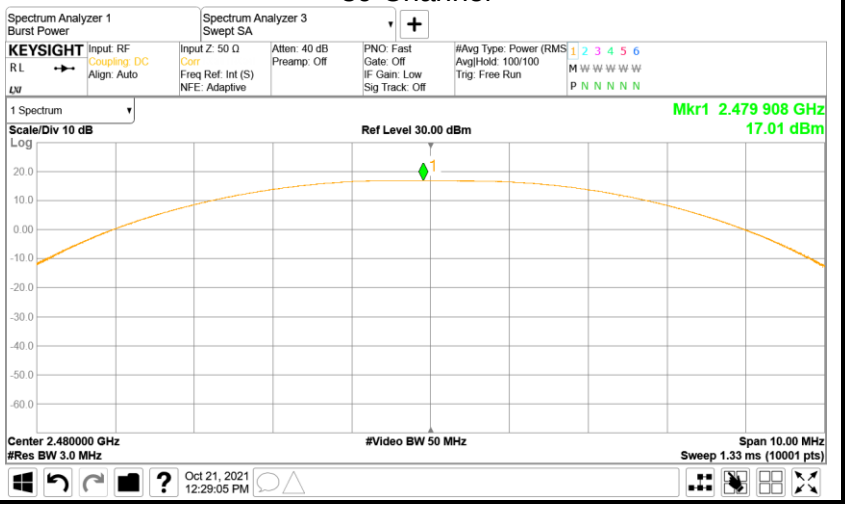
0 Channel



19 Channel

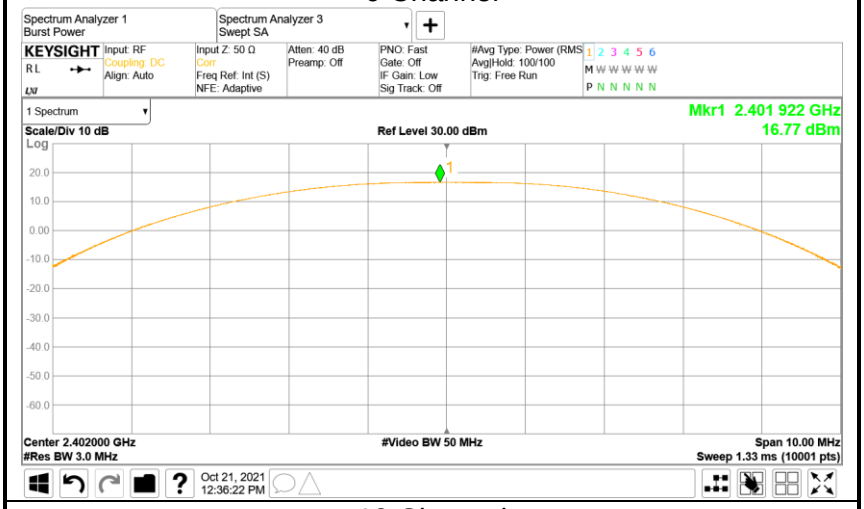


39 Channel

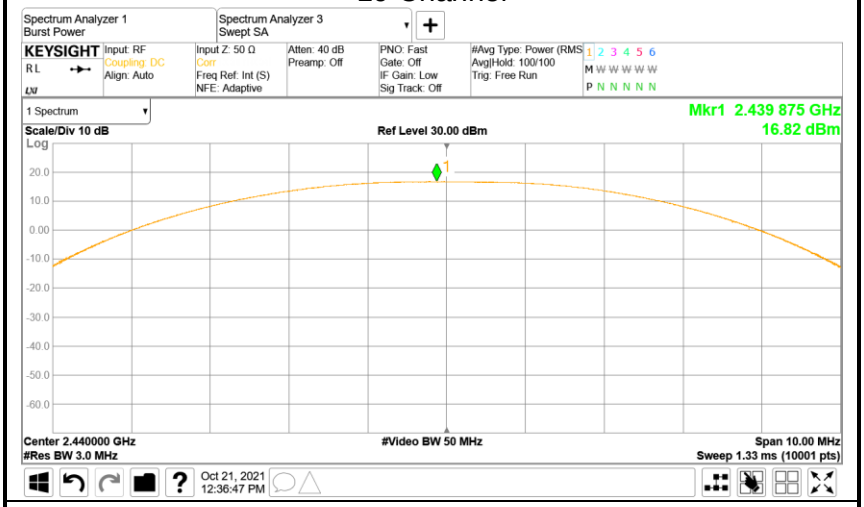


2 Mbps / ANT2

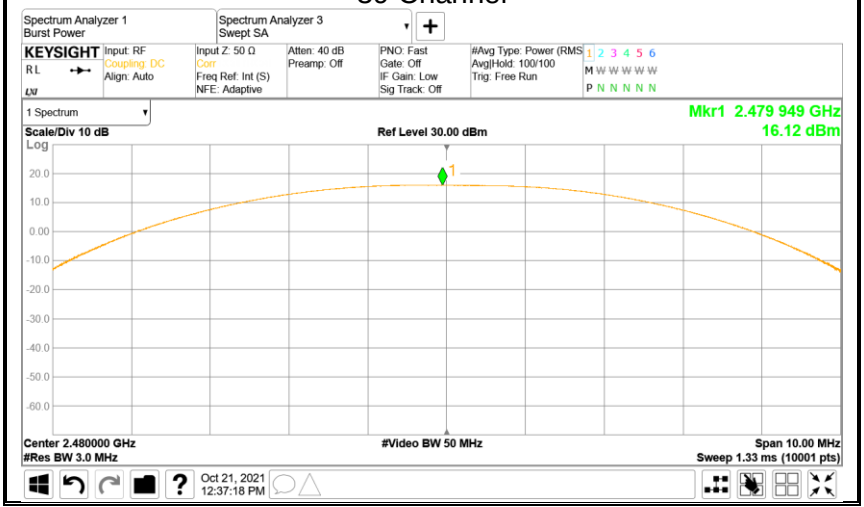
0 Channel



19 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. 1 Mbps

Antenna	PA.	Channel	Frequency [MHz]	Average Output Power [dBm]	Average Output Power [mW]
ANT1	ePA	0	2 402	16.391	43.561
		19	2 440	17.225	52.784
		39	2 480	15.970	39.537
ANT2		0	2 402	15.817	38.168
		19	2 440	15.859	38.539
		39	2 480	15.092	32.300

9.4.2. 2 Mbps

Antenna	PA.	Channel	Frequency [MHz]	Average Output Power [dBm]	Average Output Power [mW]
ANT1	ePA	0	2 402	16.414	43.793
		19	2 440	17.810	60.395
		39	2 480	16.553	45.217
ANT2		0	2 402	16.220	41.879
		19	2 440	16.276	42.423
		39	2 480	15.581	36.149

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.

RESULTS

9.5.1. 1 Mbps

Antenna	PA.	Channel	Frequency [MHz]	PSD [dBm/3kHz]	Limit [dBm/3kHz]	Margin [dB]
ANT1	ePA	0	2 402	-1.10	8.00	-9.10
		19	2 440	**0.57**		**-7.43**
		39	2 480	-0.55		-8.55
ANT2		0	2 402	-1.06		-9.06
		19	2 440	0.01		-7.99
		39	2 480	-0.86		-8.86
Worst				**0.57**		**-7.43**

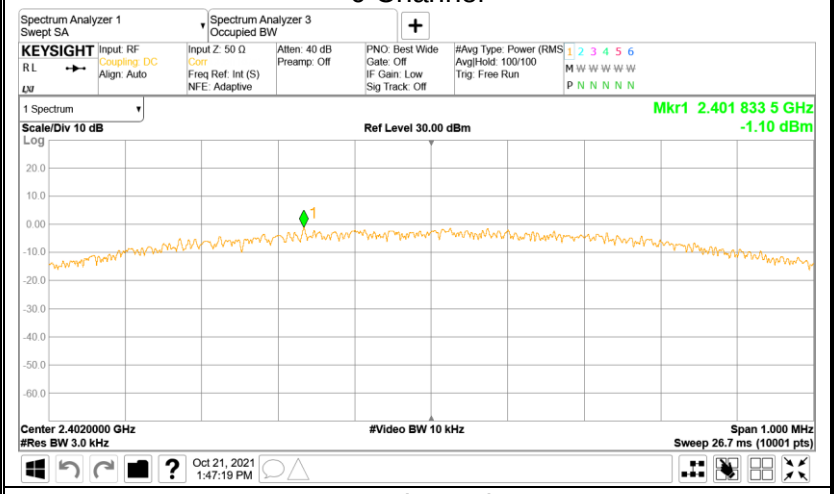
9.5.2. 2 Mbps

Antenna	PA.	Channel	Frequency [MHz]	PSD [dBm/3kHz]	Limit [dBm/3kHz]	Margin [dB]
ANT1	ePA	0	2 402	-1.23	8.00	-9.23
		19	2 440	**-0.15**		**-8.15**
		39	2 480	-1.01		-9.01
ANT2		0	2 402	-1.07		-9.07
		19	2 440	-0.46		-8.46
		39	2 480	-1.35		-9.35
Worst				**-0.15**		**-8.15**

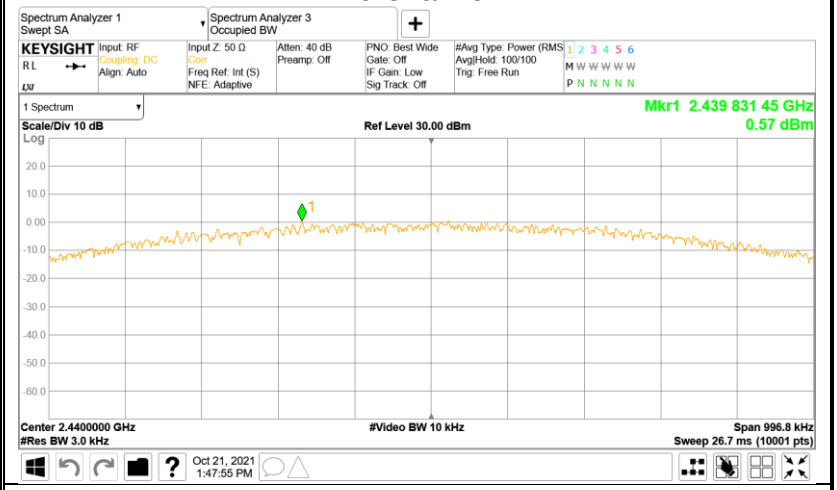
9.5.3. PSD TEST PLOTS

1 Mbps / ANT1

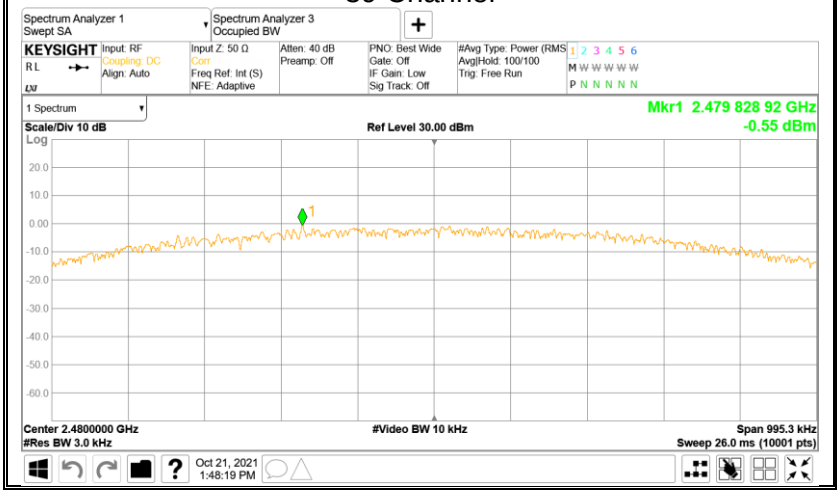
0 Channel



19 Channel

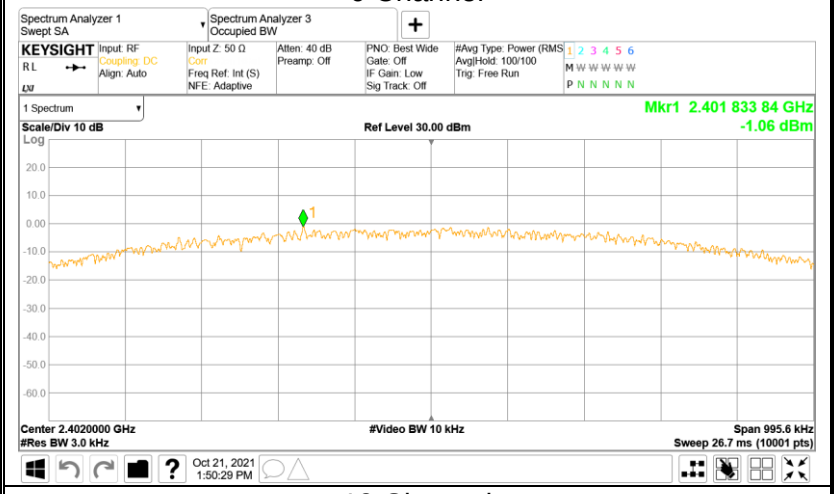


39 Channel

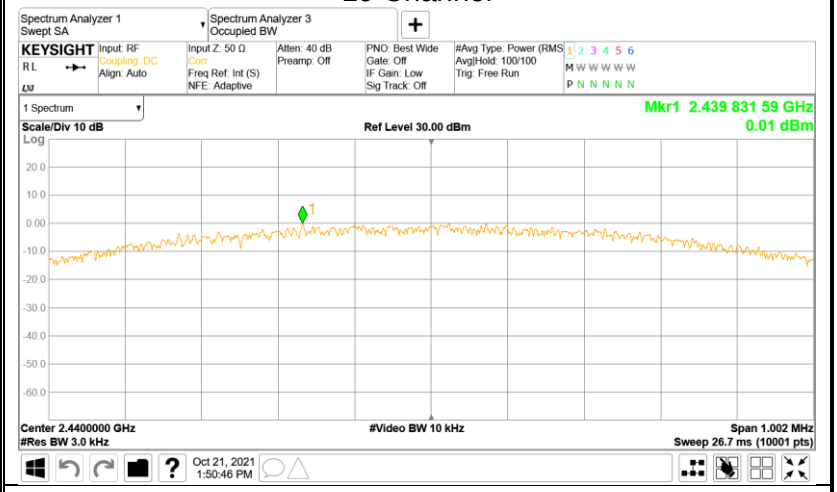


1 Mbps / ANT2

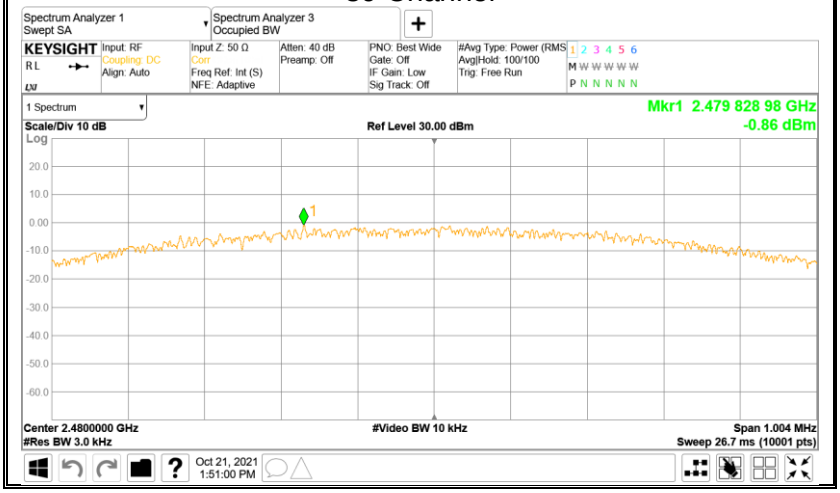
0 Channel



19 Channel

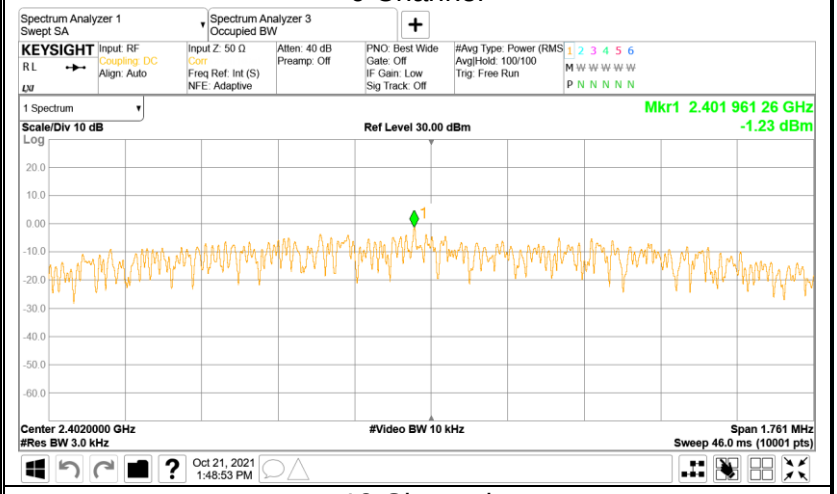


39 Channel

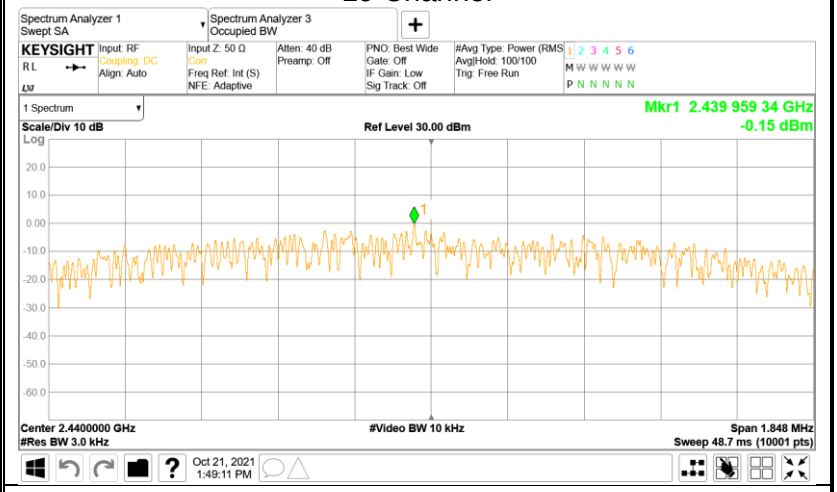


2 Mbps / ANT1

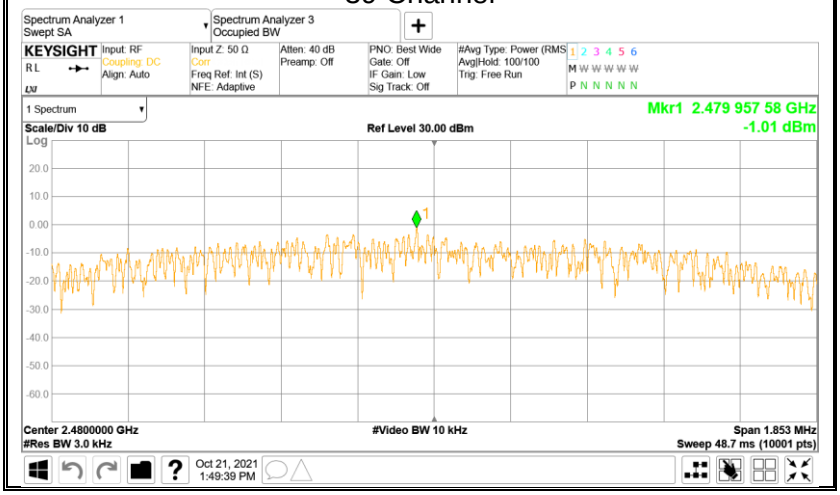
0 Channel



19 Channel

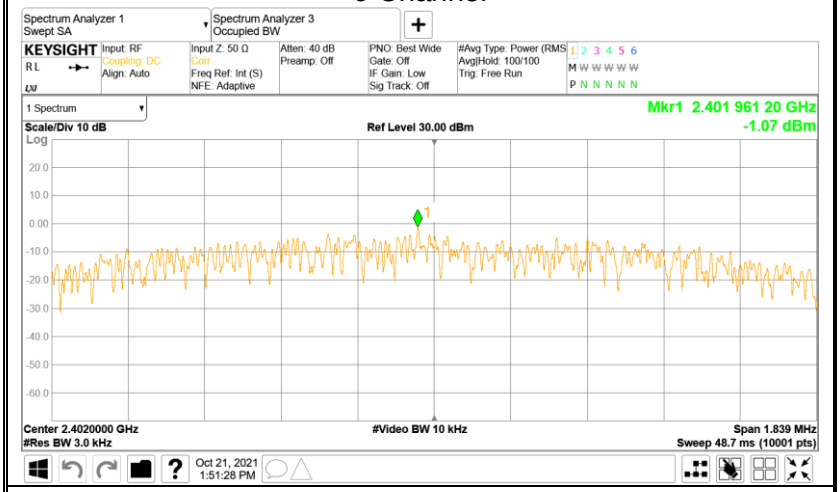


39 Channel

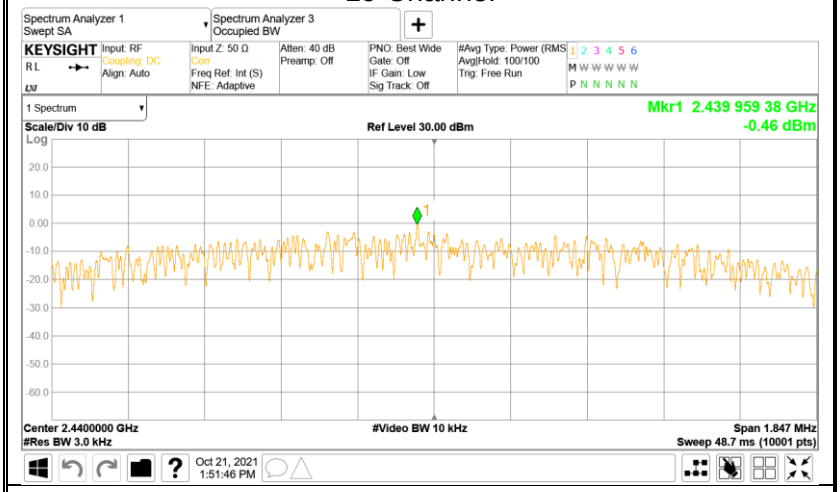


2 Mbps / ANT2

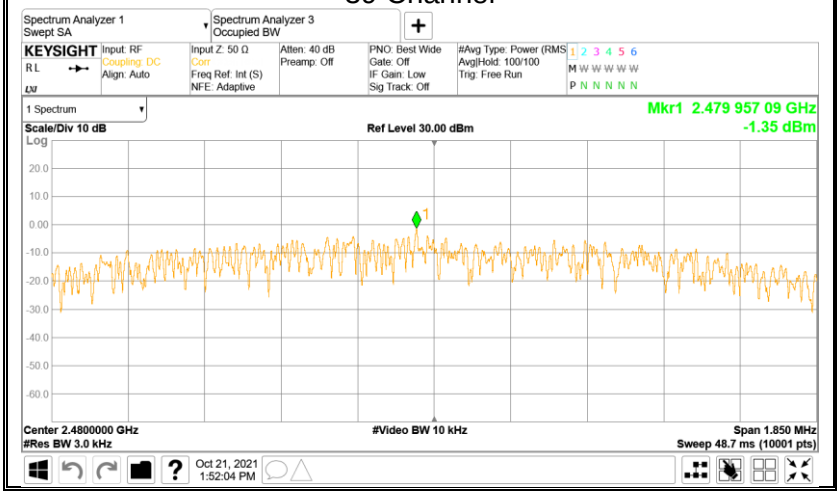
0 Channel



19 Channel



39 Channel



9.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

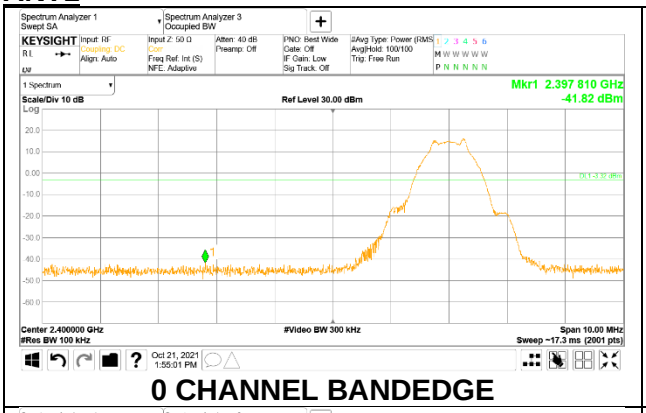
RSS-247 5.5

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

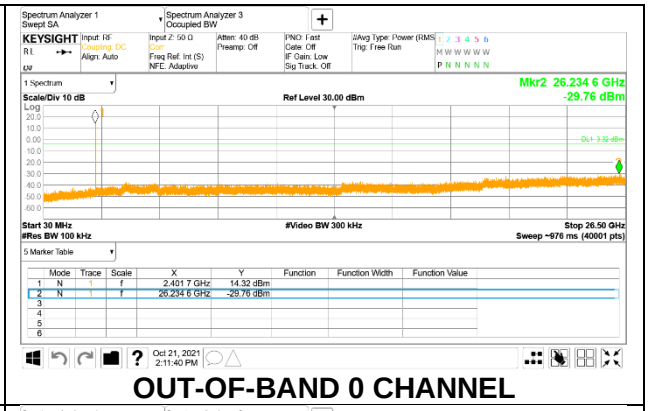
RESULTS

9.6.1. 1 Mbps

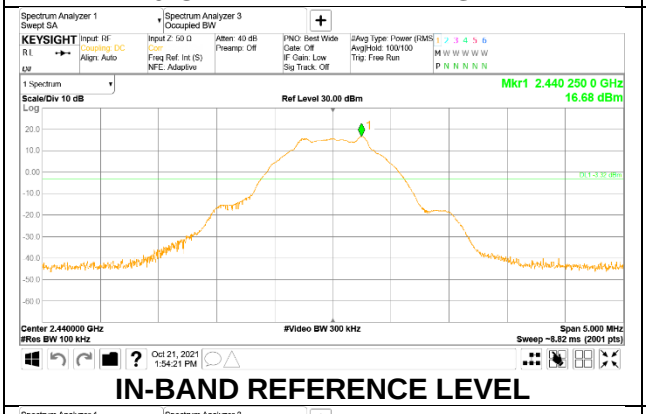
ANT1



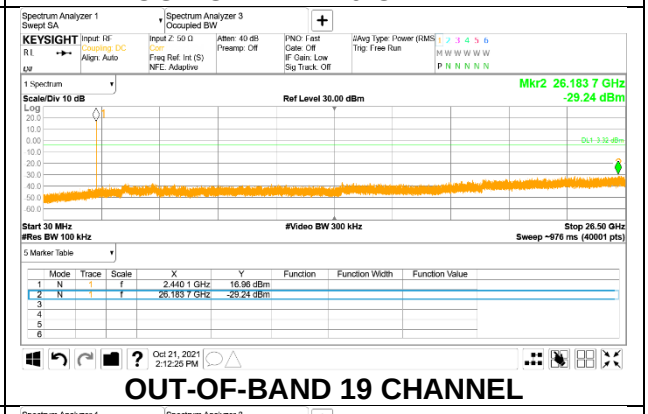
0 CHANNEL BANDEDGE



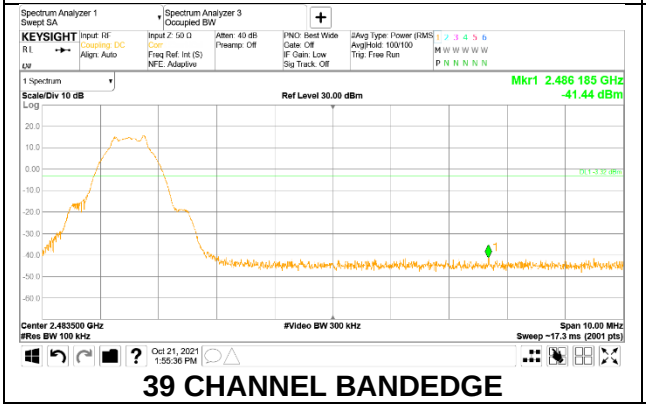
OUT-OF-BAND 0 CHANNEL



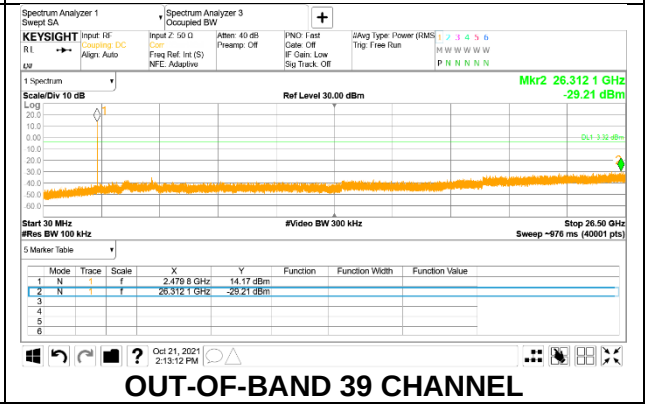
IN-BAND REFERENCE LEVEL



OUT-OF-BAND 19 CHANNEL

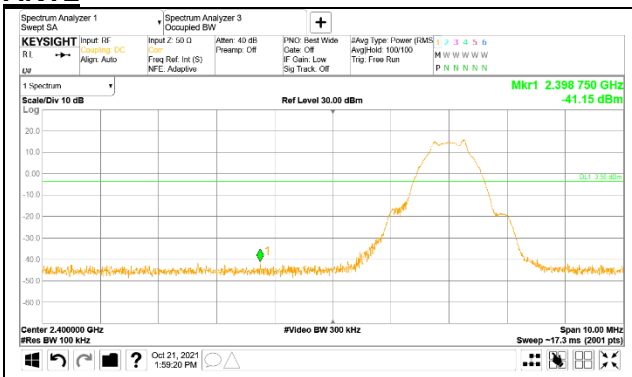


39 CHANNEL BANDEDGE

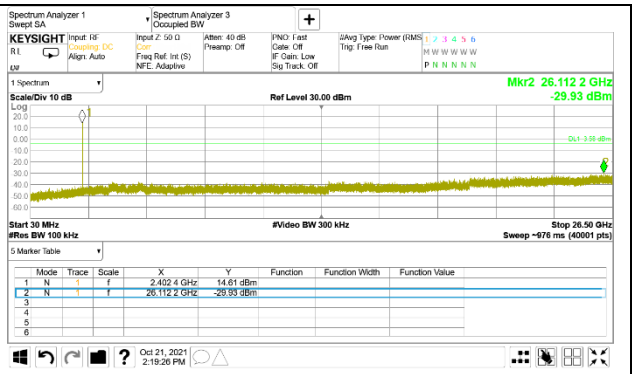


OUT-OF-BAND 39 CHANNEL

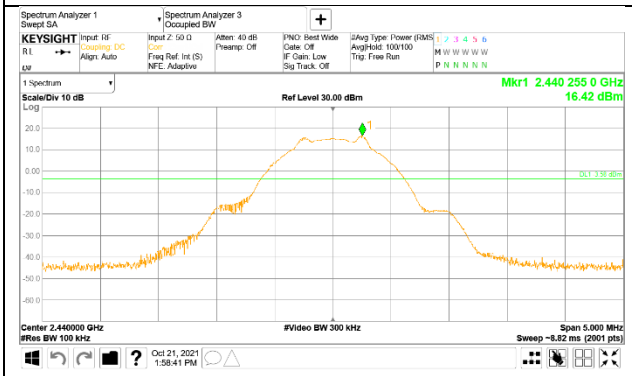
ANT2



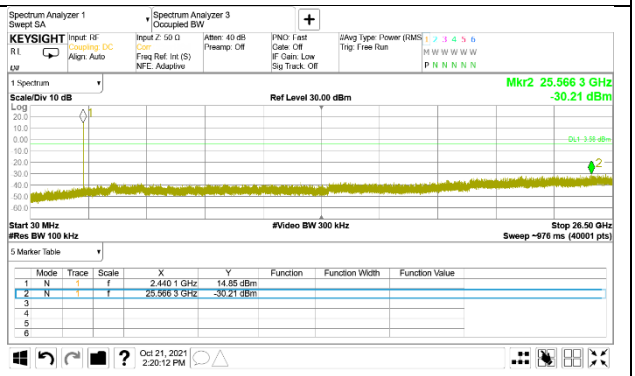
0 CHANNEL BANDEDGE



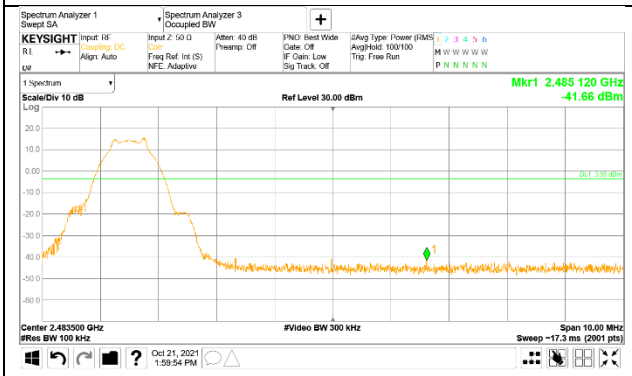
OUT-OF-BAND 0 CHANNEL



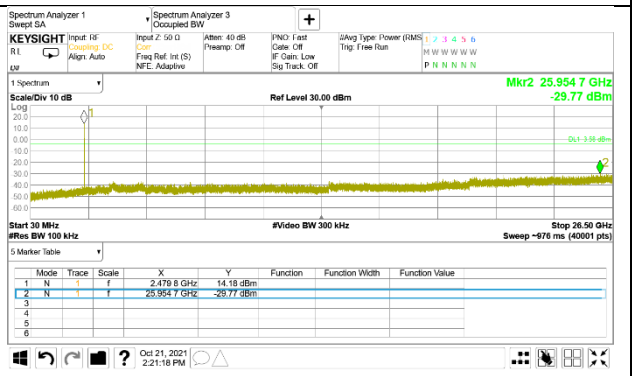
IN-BAND REFERENCE LEVEL



OUT-OF-BAND 19 CHANNEL



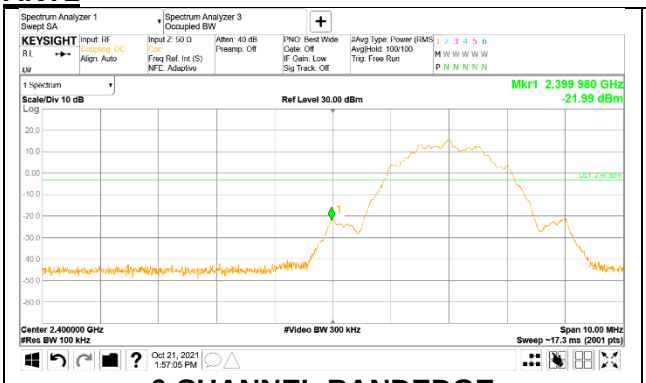
39 CHANNEL BANDEDGE



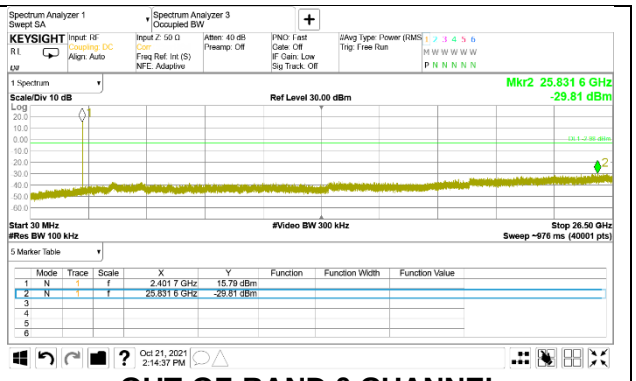
OUT-OF-BAND 39 CHANNEL

9.6.2. 2Mbps

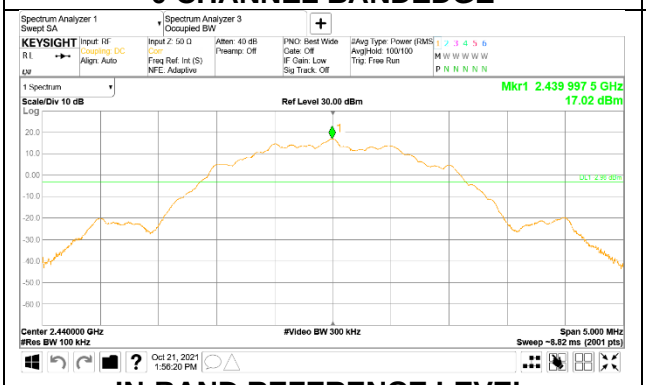
ANT1



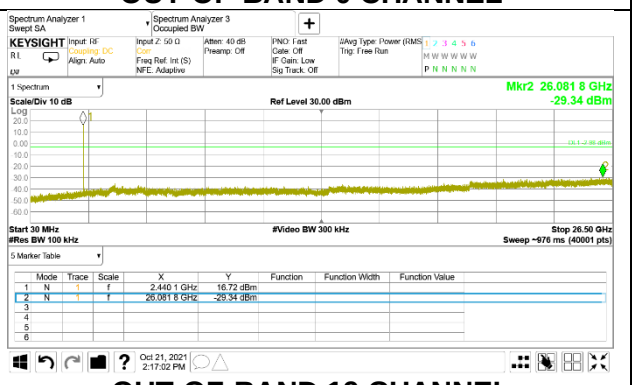
0 CHANNEL BANDEDGE



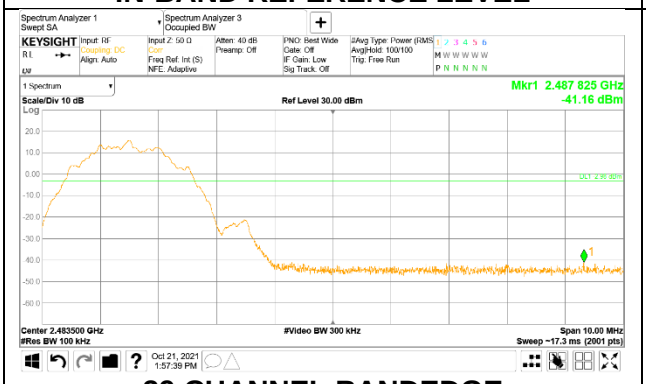
OUT-OF-BAND 0 CHANNEL



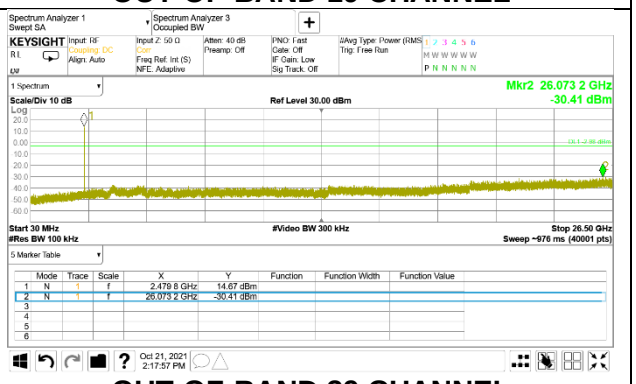
IN-BAND REFERENCE LEVEL



OUT-OF-BAND 19 CHANNEL

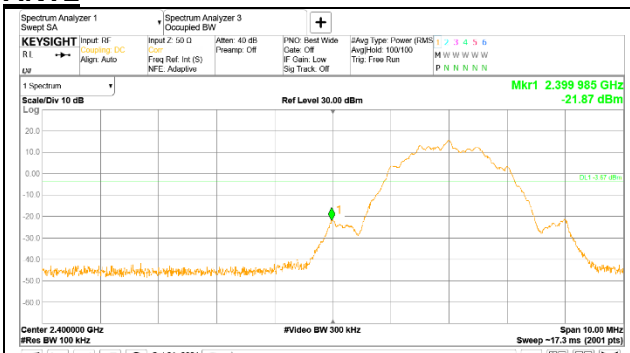


39 CHANNEL BANDEDGE

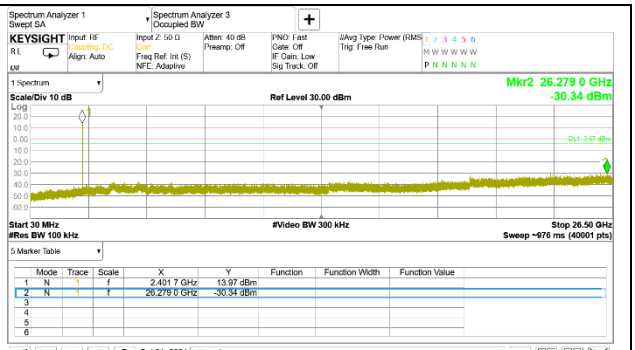


OUT-OF-BAND 39 CHANNEL

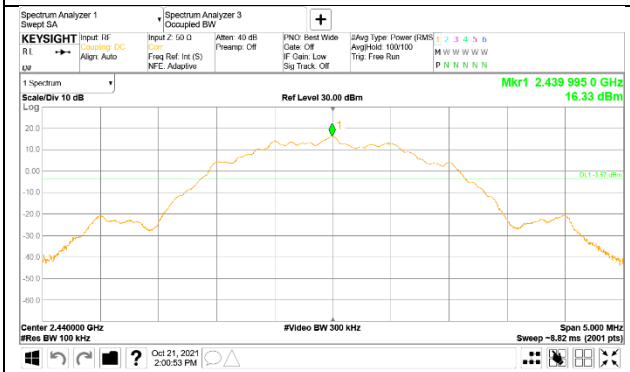
ANT2



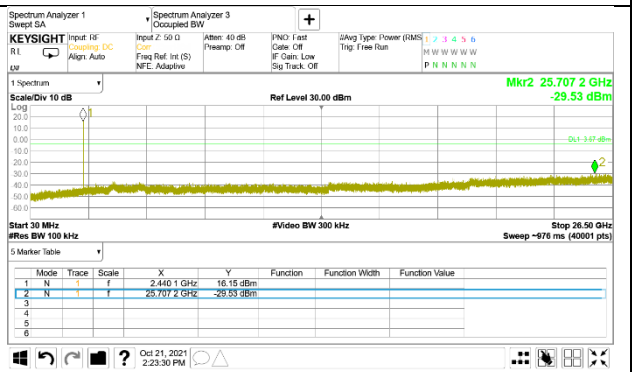
0 CHANNEL BANDEDGE



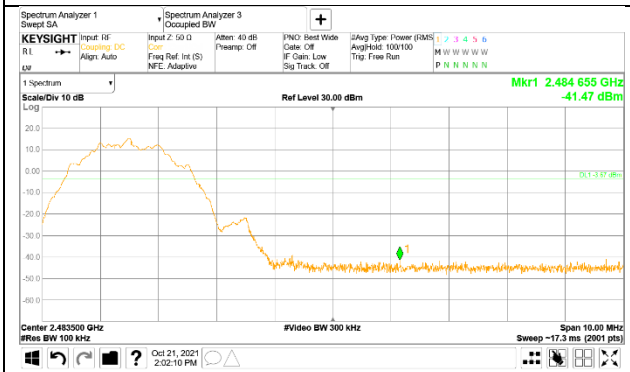
OUT-OF-BAND 0 CHANNEL



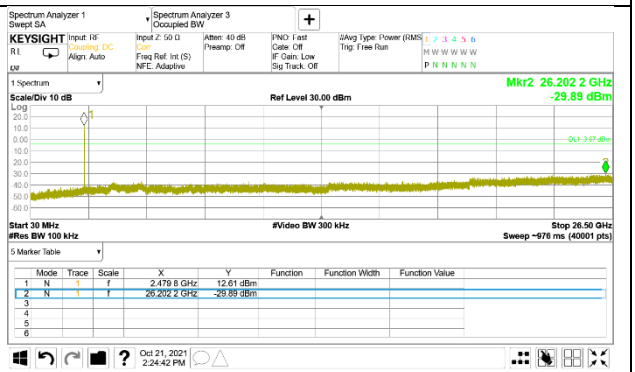
IN-BAND REFERENCE LEVEL



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

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(1/0.8484)=0.714 dB (Spectrum Analyzer round it up to 0.71 dB) and for 2 Mbps, DCF = 10log(1/0.3112)=5.059 dB (Spectrum Analyzer round it up to 5.06 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.

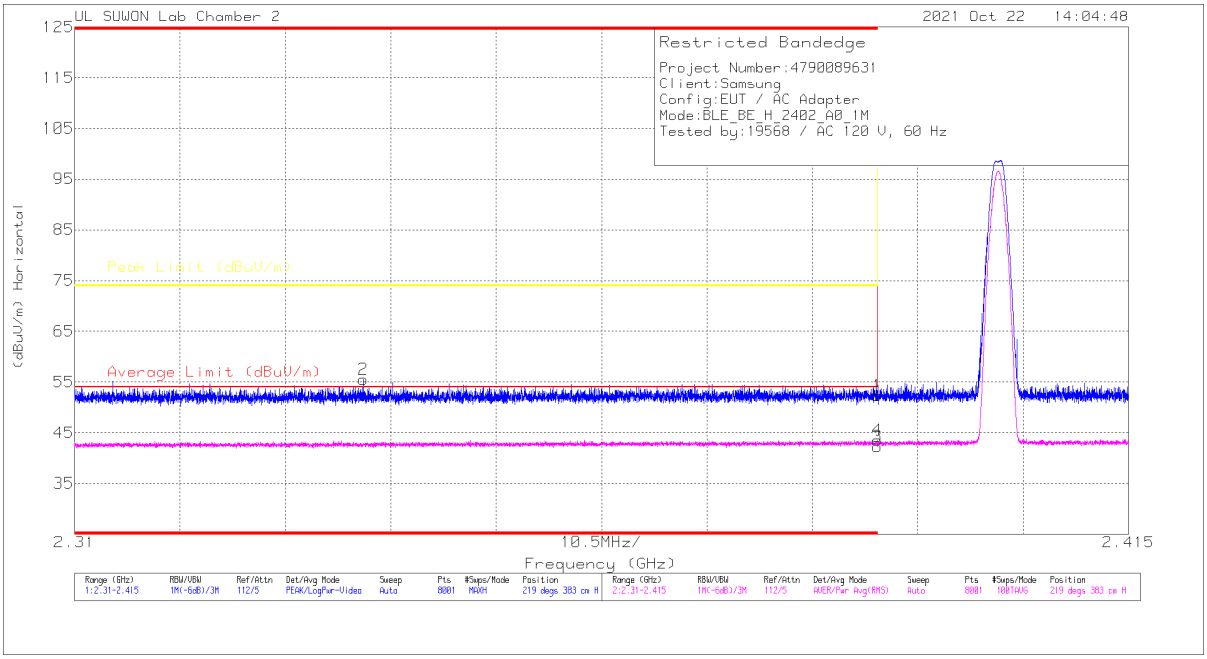
10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. 1 Mbps

ANT1

BANDEDGE (0 CHANNEL)

HORIZONTAL RESULT

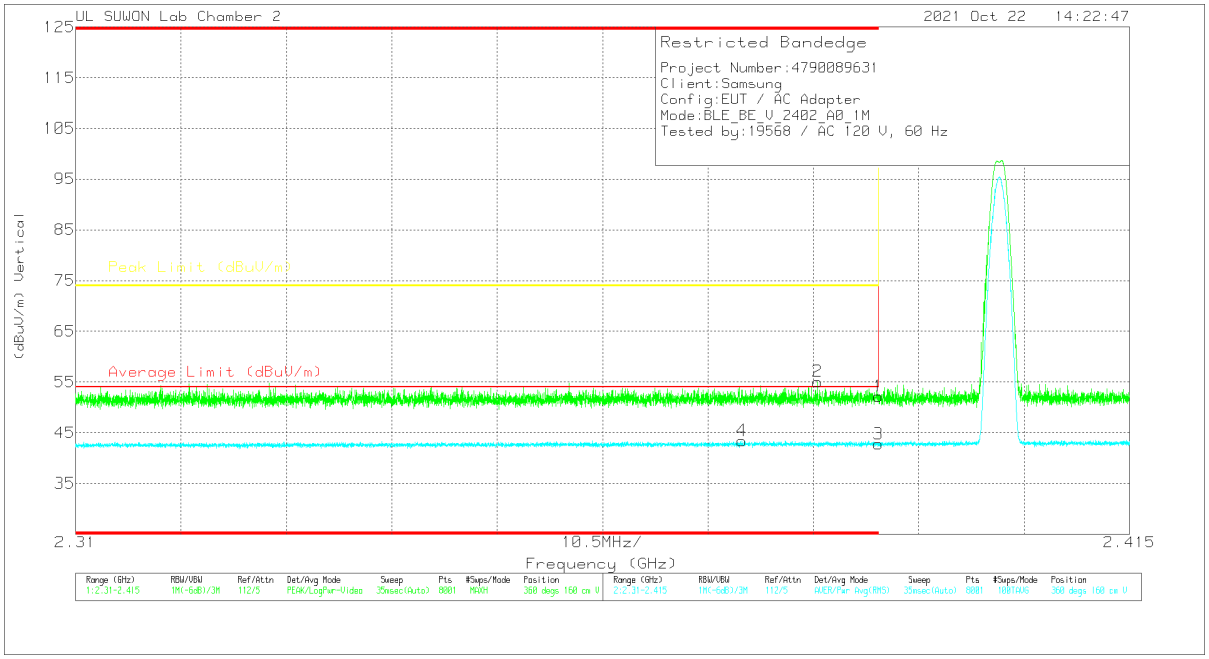


Trace Markers

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 (Degs)	Height (cm)	Polarity
1	* 2.39	41.04	Pk	31.9	-20.6	0	52.34	-	-	74	-21.66	219	383	H
2	* 2.33877	44.38	Pk	31.8	-20.7	0	55.48	-	-	74	-18.52	219	383	H
3	* 2.39	30.33	RMS	31.9	-20.6	.71	42.34	54	-11.66	-	-	219	383	H
4	* 2.38996	31.56	RMS	31.9	-20.6	.71	43.57	54	-10.43	-	-	219	383	H

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

VERTICAL RESULT



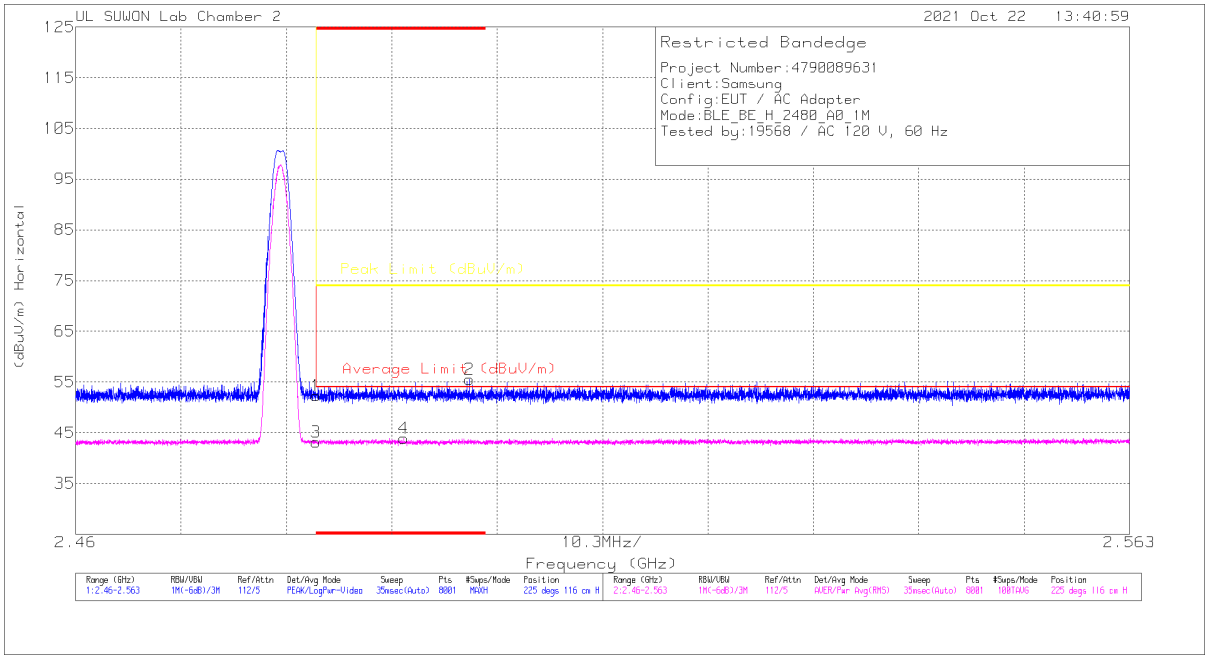
Trace Markers

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)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	40.91	Pk	31.9	-20.6	0	52.21	-	-	74	-21.79	360	160	V
2	* 2.38392	43.79	Pk	31.9	-20.6	0	55.09	-	-	74	-18.91	360	160	V
3	* 2.39	30.72	RMS	31.9	-20.6	.71	42.73	54	-11.27	-	-	360	160	V
4	* 2.37637	31.45	RMS	31.9	-20.6	.71	43.46	54	-10.54	-	-	360	160	V

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

BANDEDGE (39 CHANNEL)

HORIZONTAL RESULT

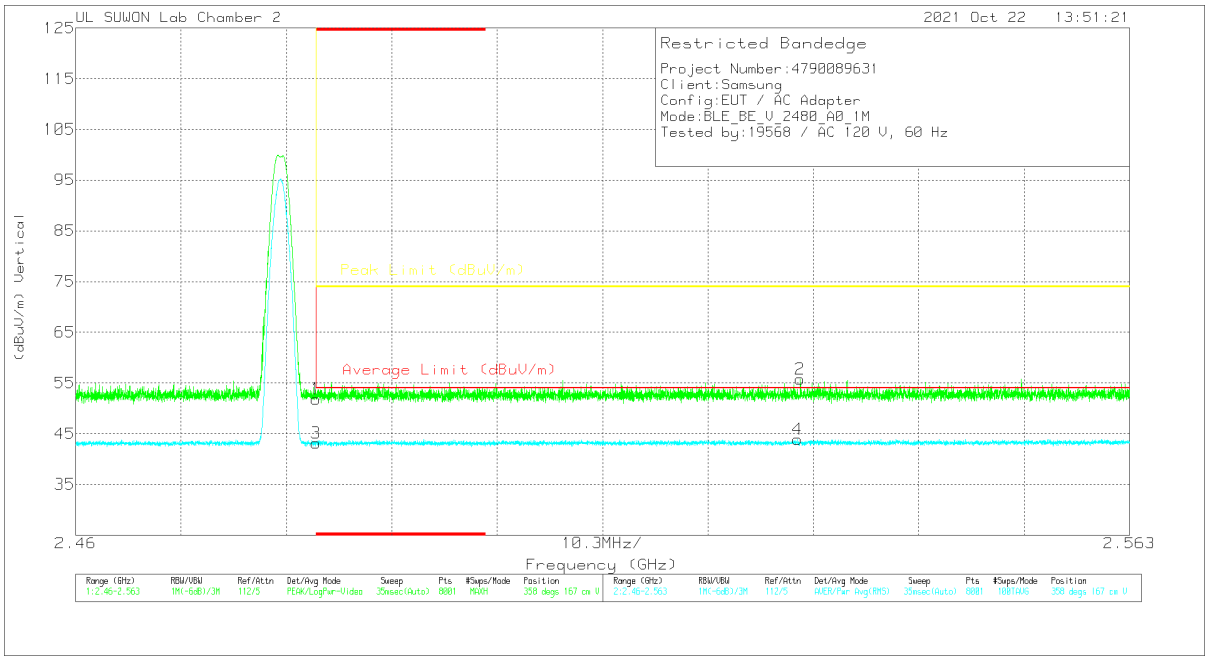


Trace Markers

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)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	40.7	Pk	32	-20.4	0	52.3	-	-	74	-21.7	225	116	H
2	* 2.49848	43.8	Pk	32.1	-20.4	0	55.5	-	-	74	-18.5	225	116	H
3	* 2.48351	30.89	RMS	32	-20.4	.71	43.2	54	-10.8	-	-	225	116	H
4	* 2.49207	31.49	RMS	32.1	-20.4	.71	43.9	54	-10.1	-	-	225	116	H

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

VERTICAL RESULT



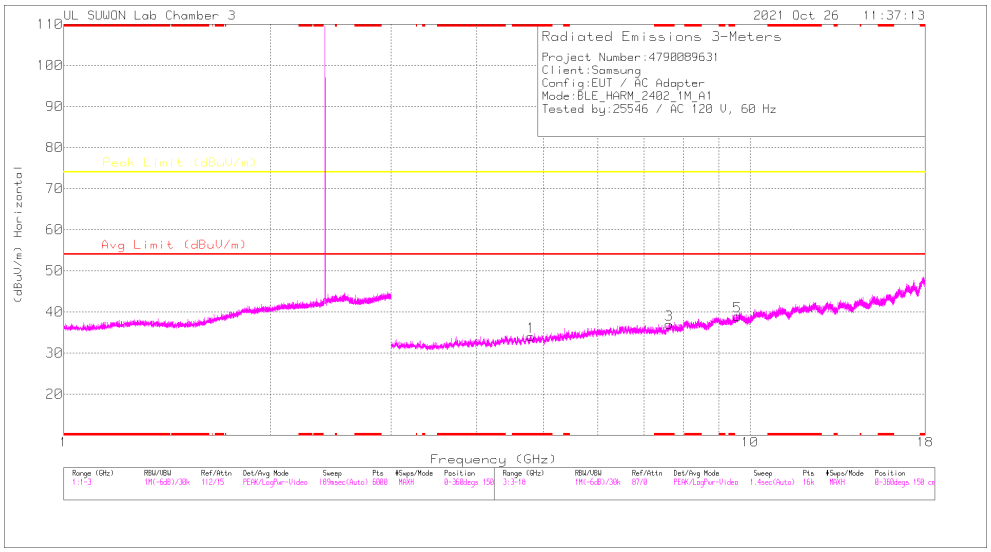
Trace Markers

Marker	Frequency (GHz)	Meter Reading (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	* 2.48351	40.27	Pk	32	-20.4	0	51.87	-	-	74	-22.13	358	167	V
2	2.53083	44.07	Pk	32.1	-20.4	0	55.77	-	-	74	-18.23	358	167	V
3	* 2.48351	30.83	RMS	32	-20.4	.71	43.14	54	-10.86	-	-	358	167	V
4	2.53054	31.41	RMS	32.1	-20.3	.71	43.92	54	-10.08	-	-	358	167	V

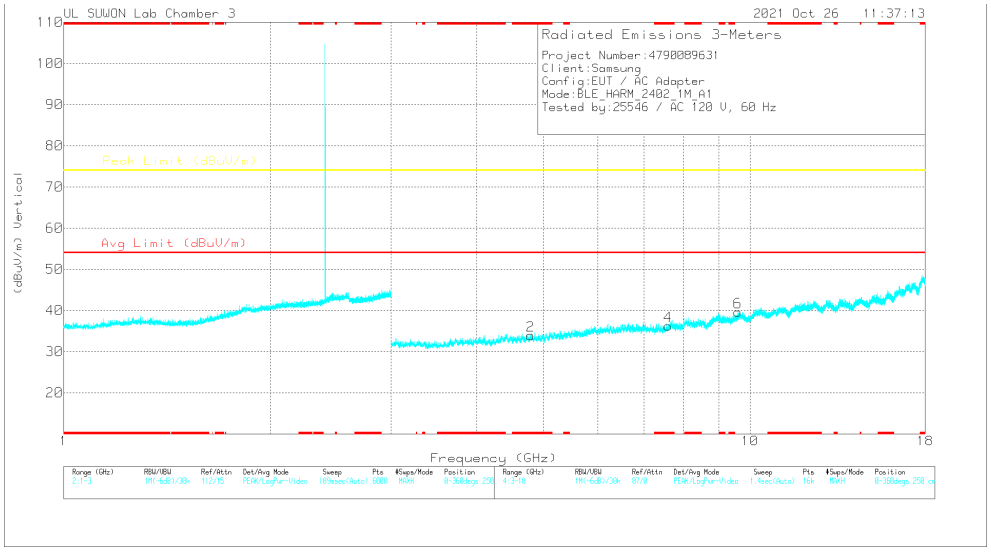
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

0 CHANNEL RESULTS



HORIZONTAL



VERTICAL

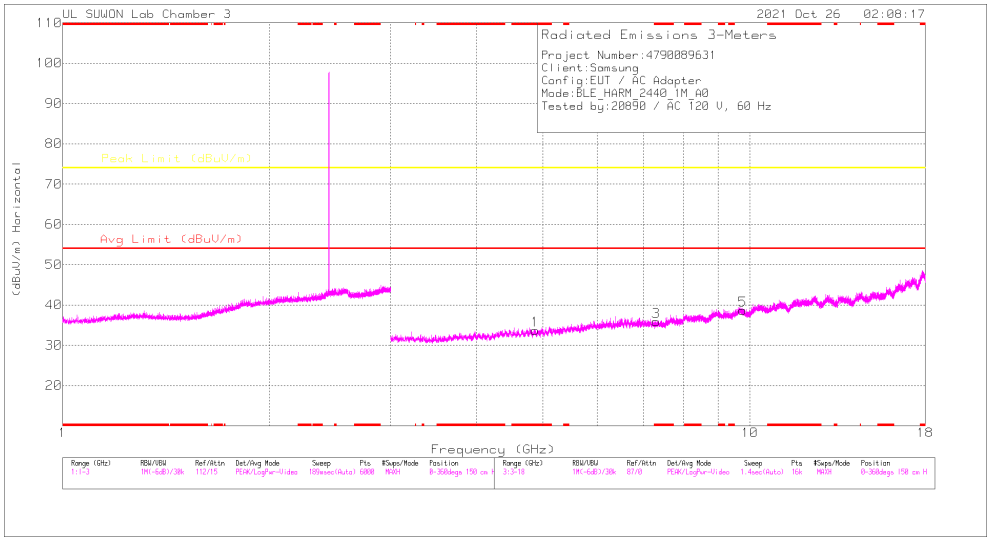
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

RADIATED EMISSIONS

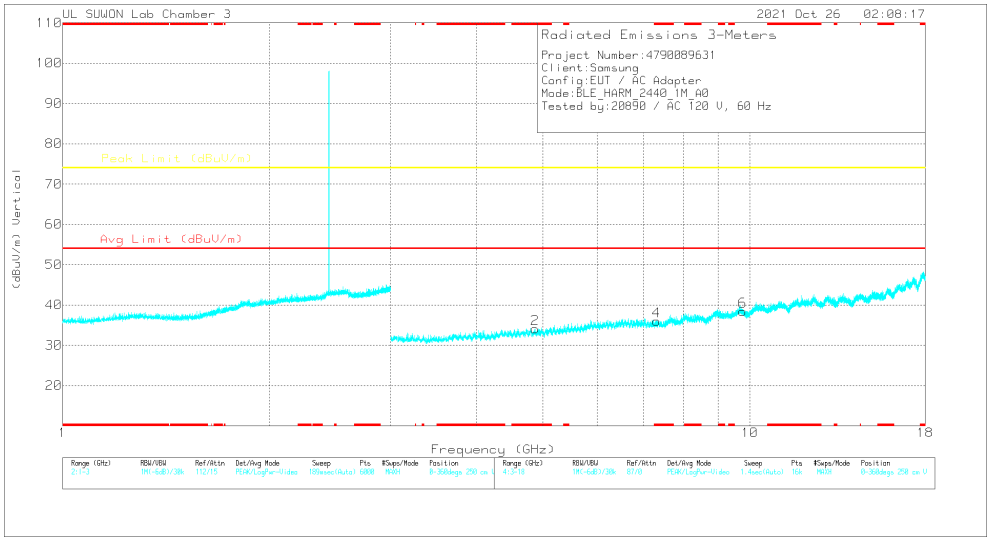
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.79127	39.35	PK2	34.6	-30.3	0	43.65	-	-	74	-30.35	0	100	H
* 4.79897	39.99	PK2	34.6	-30.4	0	44.19	-	-	74	-29.81	0	100	V
7.21089	35.49	PK2	36.1	-26.1	0	45.49	-	-	74	-28.51	0	100	H
7.21809	35.42	PK2	36.1	-26.1	0	45.42	-	-	74	-28.58	0	100	V
9.62112	33.17	PK2	37.3	-22	0	48.47	-	-	74	-25.53	0	100	H
9.6128	32.97	PK2	37.3	-22.1	0	48.17	-	-	74	-25.83	0	100	V

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

19 CHANNEL RESULTS



HORIZONTAL



VERTICAL

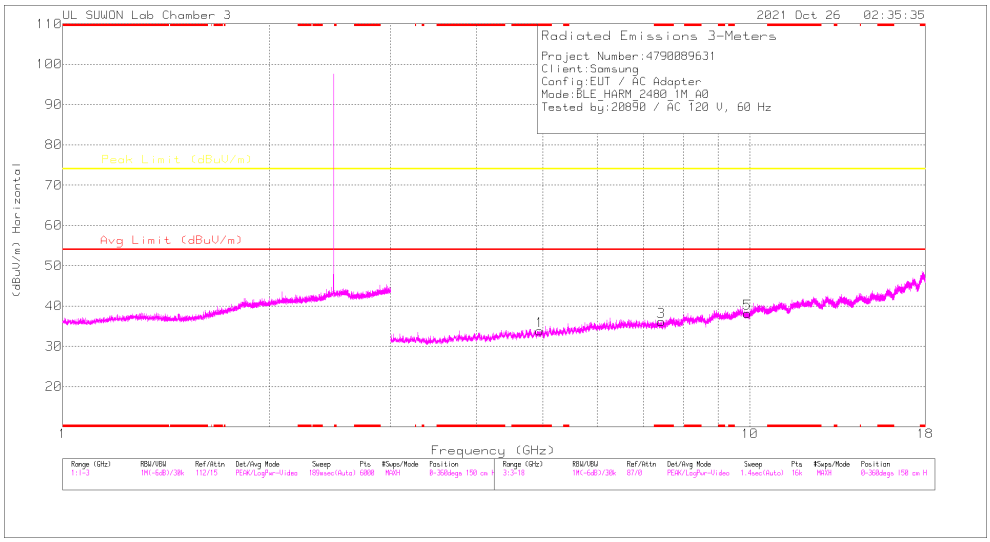
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

RADIATED EMISSIONS

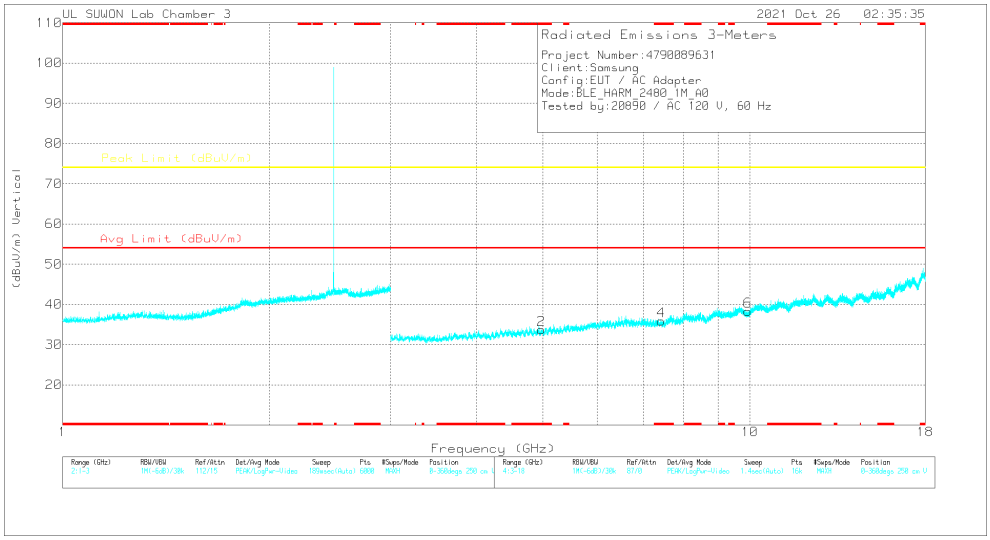
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.86362	40.28	PK2	34.6	-31	0	43.88	-	-	74	-30.12	0	100	H
* 4.87088	39.85	PK2	34.6	-31.1	0	43.35	-	-	74	-30.65	0	100	V
* 7.2997	34.95	PK2	36	-25.8	0	45.15	-	-	74	-28.85	0	100	H
* 7.31314	35.48	PK2	36	-25.6	0	45.88	-	-	74	-28.12	0	100	V
9.76354	32.27	PK2	37.5	-21.7	0	48.07	-	-	74	-25.93	0	100	H
9.75827	32.31	PK2	37.5	-21.7	0	48.11	-	-	74	-25.89	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

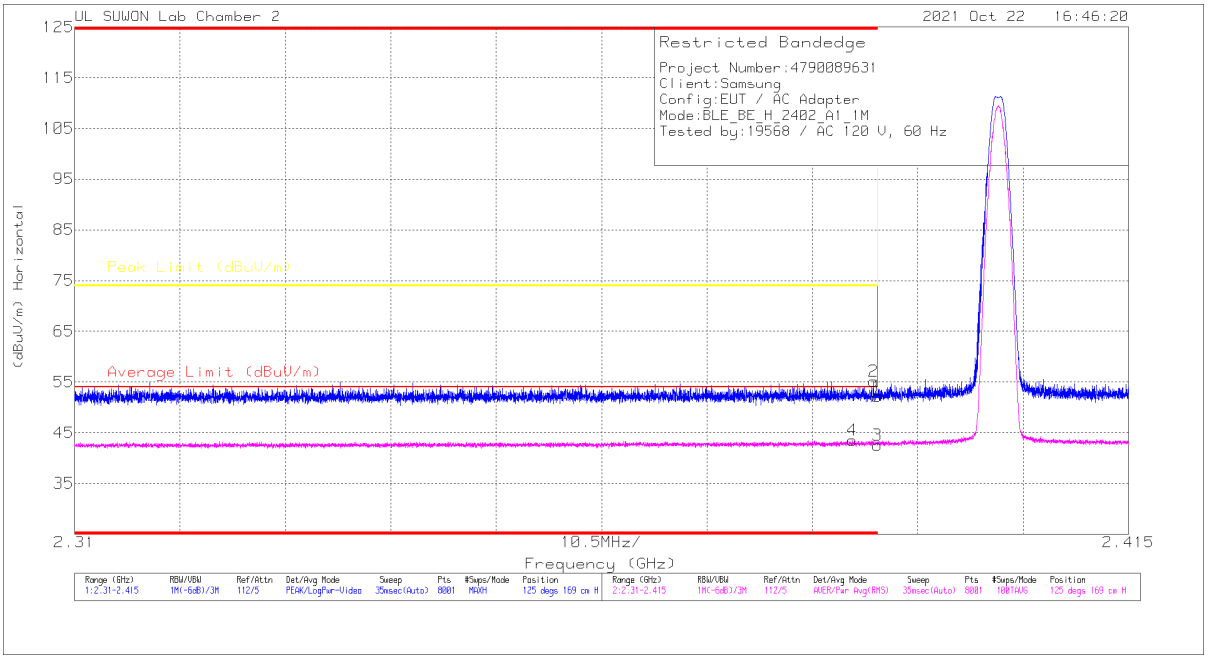
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.94013	40.34	PK2	34.7	-31.1	0	43.94	-	-	74	-30.06	0	100	H
* 4.956	39.21	PK2	34.7	-31	0	42.91	-	-	74	-31.09	0	100	V
* 7.43592	34.87	PK2	36	-25.3	0	45.57	-	-	74	-28.43	0	100	H
* 7.43572	34.55	PK2	36	-25.3	0	45.25	-	-	74	-28.75	0	100	V
9.9064	31.7	PK2	37.7	-21.9	0	47.5	-	-	74	-26.5	0	100	H
9.9142	32.61	PK2	37.7	-21.9	0	48.41	-	-	74	-25.59	0	100	V

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

ANT2

BANDEDGE (0 CHANNEL)

HORIZONTAL RESULT

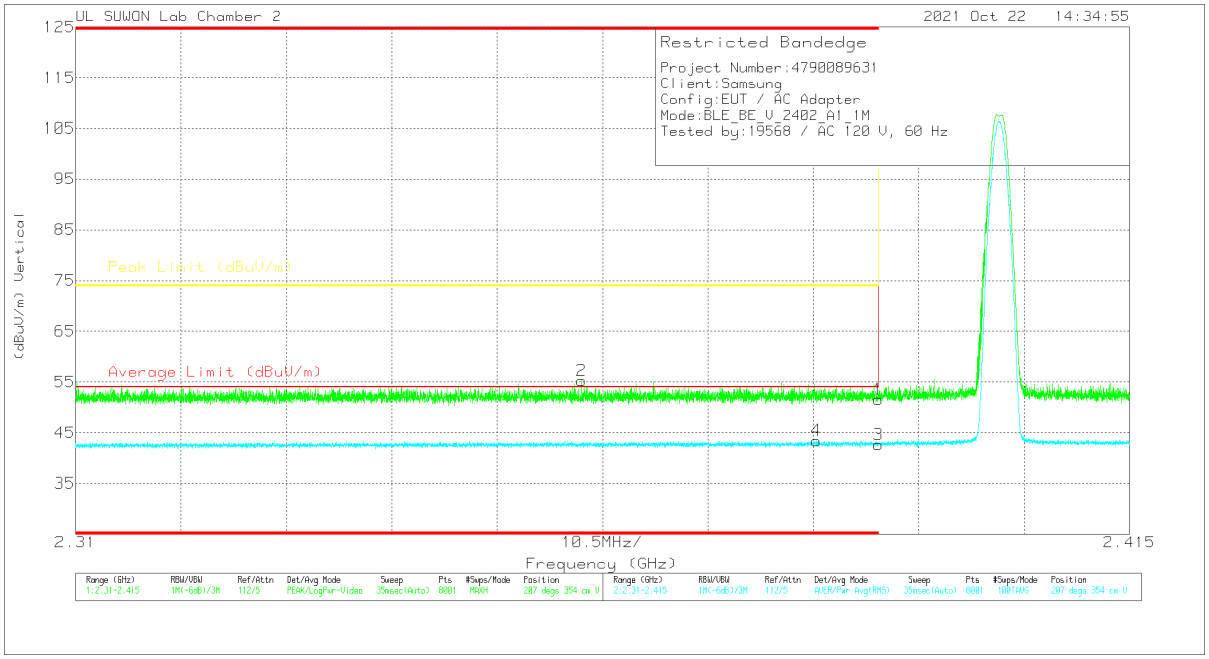


Trace Markers

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 (Degs)	Height (cm)	Polarity
1	* 2.39	40.83	Pk	31.9	-20.6	0	52.13	-	-	74	-21.87	125	169	H
2	* 2.38958	43.8	Pk	31.9	-20.6	0	55.1	-	-	74	-18.9	125	169	H
3	* 2.39	30.57	RMS	31.9	-20.6	.71	42.58	54	-11.42	-	-	125	169	H
4	* 2.3875	31.52	RMS	31.9	-20.6	.71	43.53	54	-10.47	-	-	125	169	H

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

VERTICAL RESULT



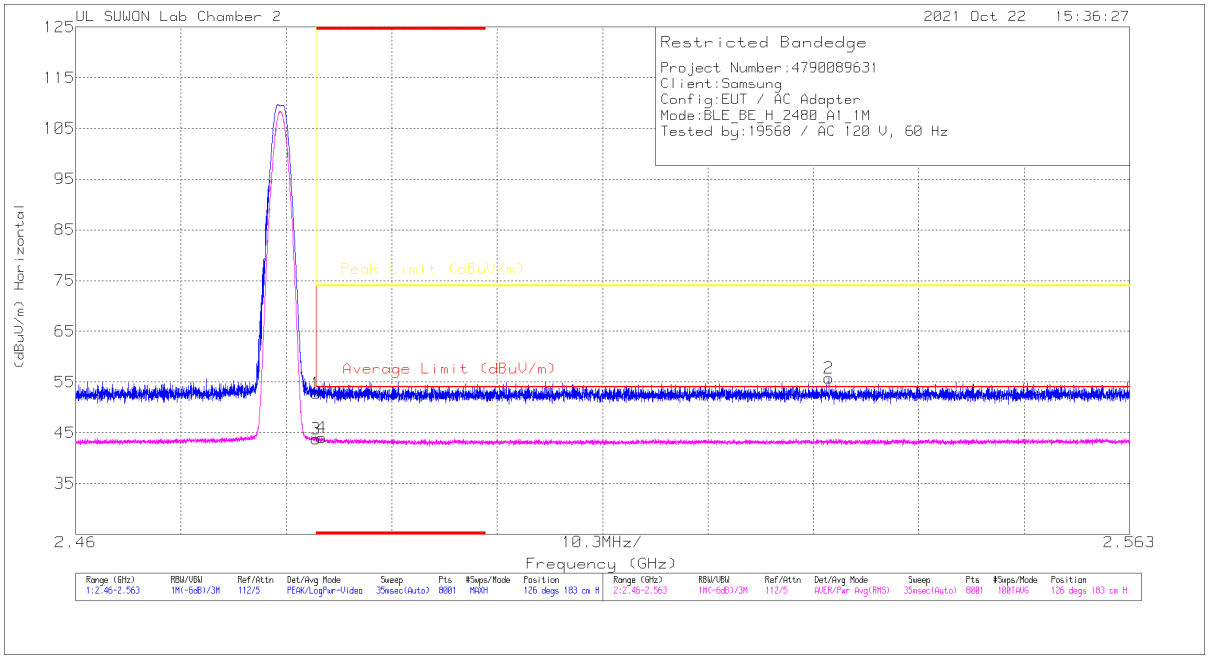
Trace Markers

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)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	40.21	Pk	31.9	-20.6	0	51.51	-	-	74	-22.49	207	354	V
2	* 2.36041	44.03	Pk	31.8	-20.6	0	55.23	-	-	74	-18.77	207	354	V
3	* 2.39	30.6	RMS	31.9	-20.6	.71	42.61	54	-11.39	-	-	207	354	V
4	* 2.38379	31.45	RMS	31.9	-20.6	.71	43.46	54	-10.54	-	-	207	354	V

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

BANDEDGE (39 CHANNEL)

HORIZONTAL RESULT

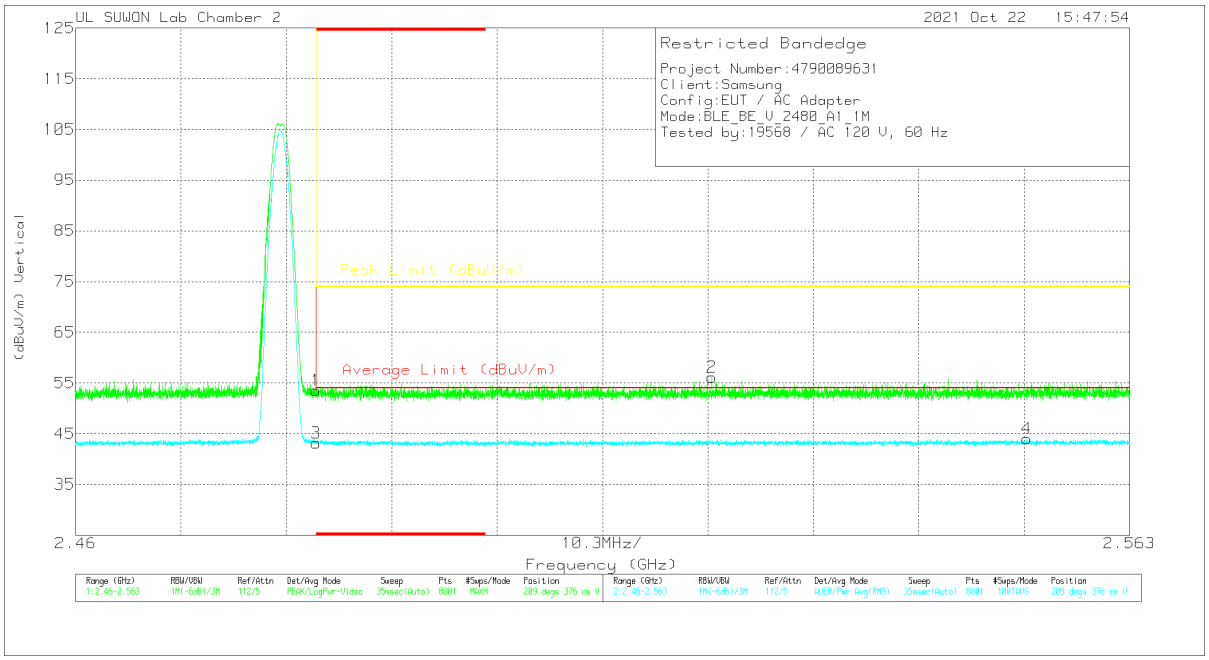


Trace Markers

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)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	41.16	Pk	32	-20.4	0	52.76	-	-	74	-21.24	126	183	H
2	2.53361	43.96	Pk	32.1	-20.3	0	55.76	-	-	74	-18.24	126	183	H
3	* 2.48351	31.43	RMS	32	-20.4	.71	43.74	54	-10.26	-	-	126	183	H
4	* 2.48404	31.76	RMS	32	-20.4	.71	44.07	54	-9.93	-	-	126	183	H

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

VERTICAL RESULT



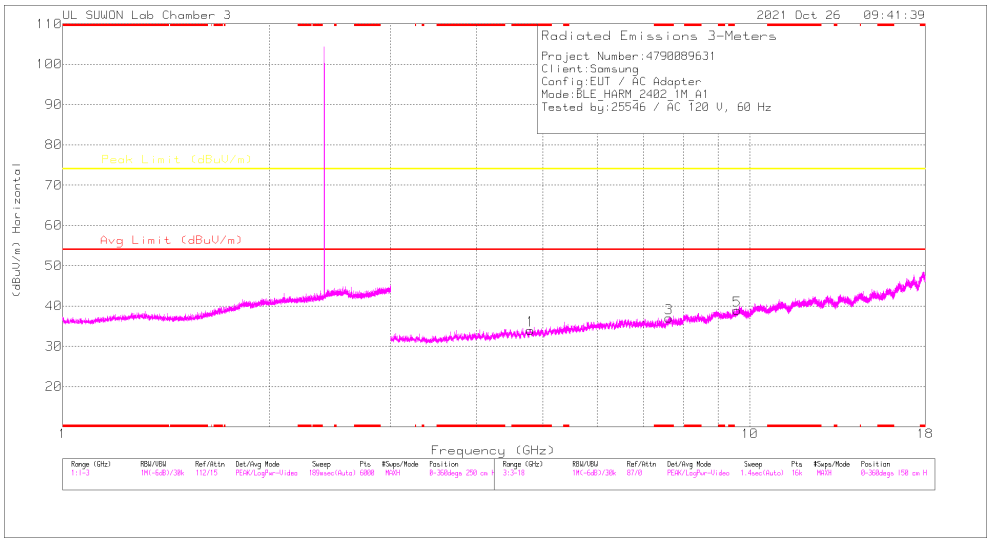
Trace Markers

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)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	41.96	Pk	32	-20.4	0	53.56	-	-	74	-20.44	209	376	V
2	2.52216	44.35	Pk	32.1	-20.3	0	56.15	-	-	74	-17.85	209	376	V
3	* 2.48351	30.86	RMS	32	-20.4	.71	43.17	54	-10.83	-	-	209	376	V
4	2.55298	31.38	RMS	32.2	-20.3	.71	43.99	54	-10.01	-	-	209	376	V

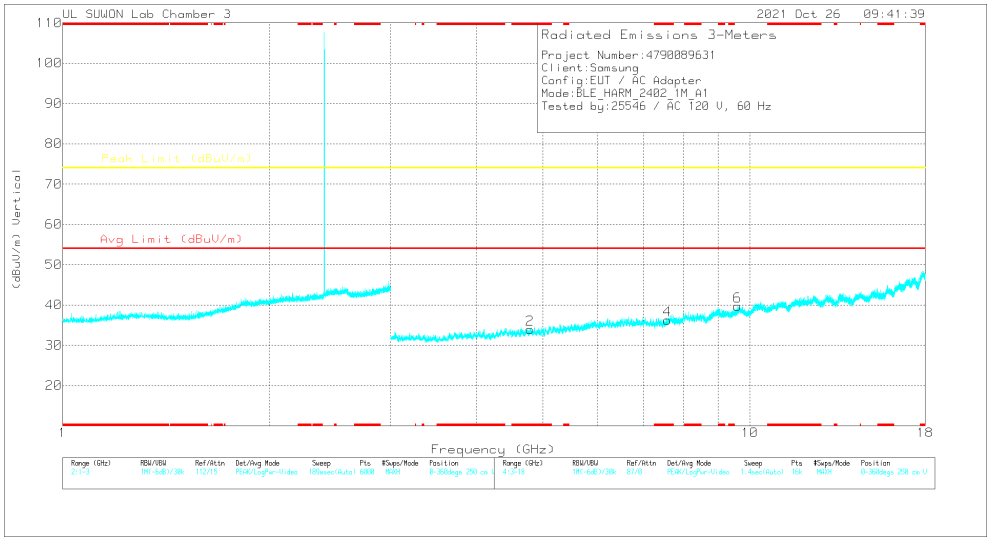
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

0 CHANNEL RESULTS



HORIZONTAL



VERTICAL

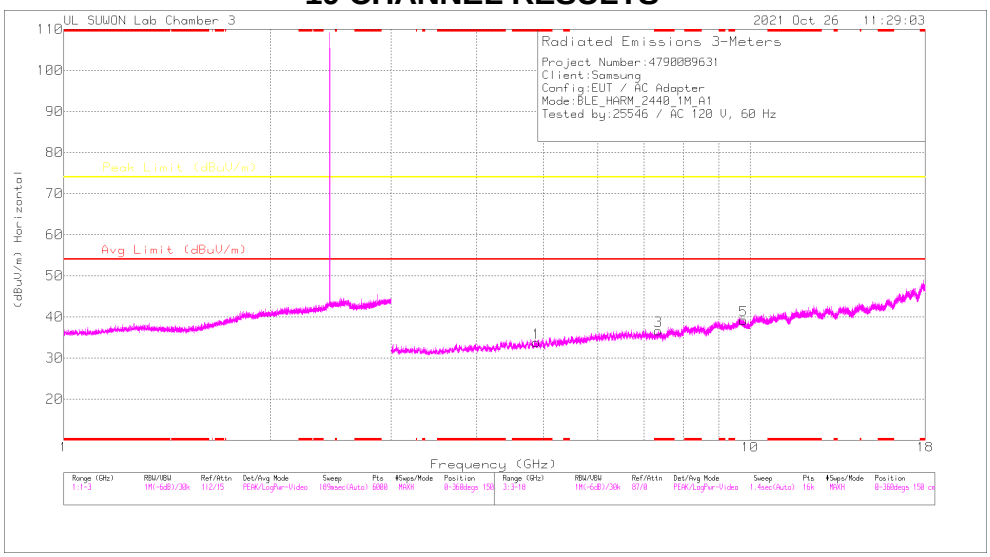
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

RADIATED EMISSIONS

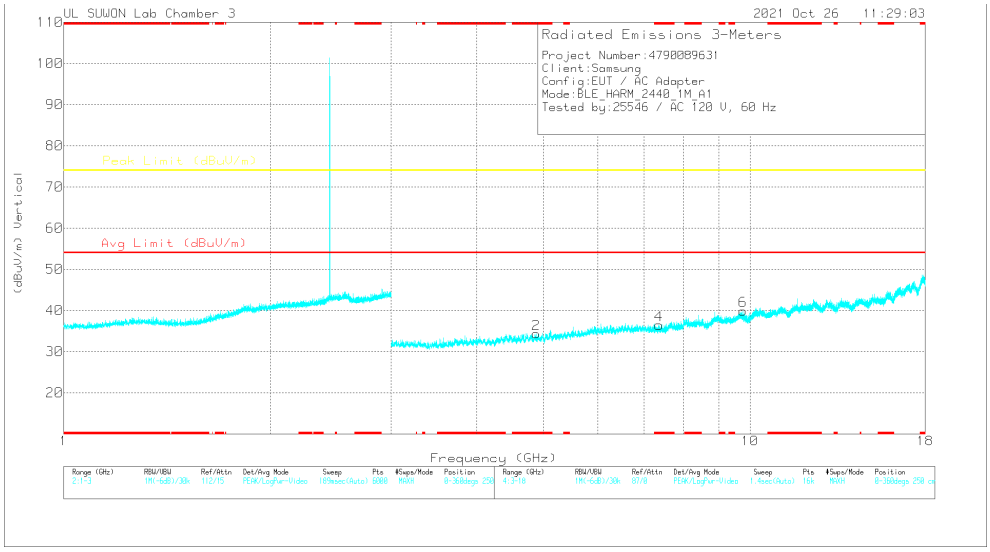
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.80402	40.04	PK2	34.6	-30.4	0	44.24	-	-	74	-29.76	0	100	H
* 4.80844	39.46	PK2	34.6	-30.5	0	43.56	-	-	74	-30.44	0	100	V
7.21523	35.93	PK2	36.1	-26.2	0	45.83	-	-	74	-28.17	0	100	H
7.21186	35.2	PK2	36.1	-26.1	0	45.2	-	-	74	-28.8	0	100	V
9.60664	33.55	PK2	37.3	-22.1	0	48.75	-	-	74	-25.25	0	100	H
9.60798	33.63	PK2	37.3	-22.1	0	48.83	-	-	74	-25.17	0	100	V

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

19 CHANNEL RESULTS



HORIZONTAL



VERTICAL

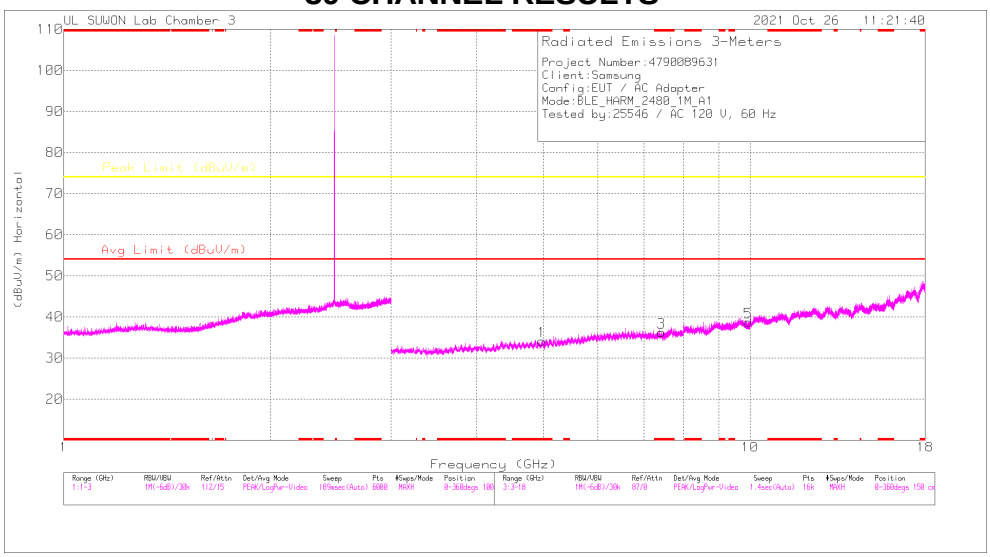
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

RADIATED EMISSIONS

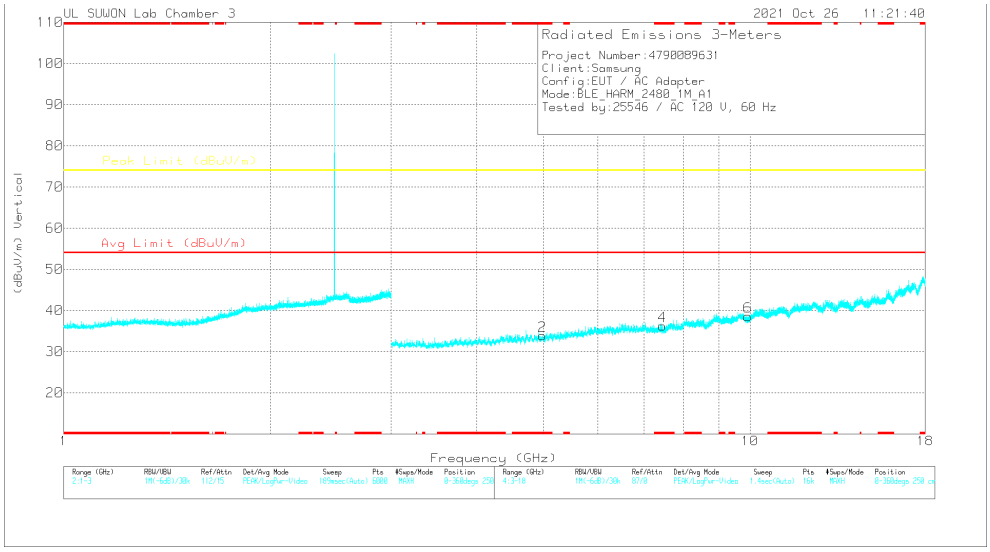
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.87392	39.93	PK2	34.6	-31.1	0	43.43	-	-	74	-30.57	0	100	H
* 4.88952	39.63	PK2	34.7	-31.3	0	43.03	-	-	74	-30.97	0	100	V
* 7.32489	34.98	PK2	36	-25.5	0	45.48	-	-	74	-28.52	0	100	H
* 7.31858	35.07	PK2	36	-25.5	0	45.57	-	-	74	-28.43	0	100	V
9.75699	32.19	PK2	37.5	-21.7	0	47.99	-	-	74	-26.01	0	100	H
9.75347	32.79	PK2	37.5	-21.7	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_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
* 4.96881	39.98	PK2	34.7	-30.8	0	43.88	-	-	74	-30.12	360	100	H
* 4.96977	39.32	PK2	34.7	-30.8	0	43.22	-	-	74	-30.78	360	100	V
* 7.44852	34.69	PK2	36	-25.4	0	45.29	-	-	74	-28.71	360	100	H
* 7.44472	35.05	PK2	36	-25.4	0	45.65	-	-	74	-28.35	360	100	V
9.91225	32.49	PK2	37.7	-21.9	0	48.29	-	-	74	-25.71	360	100	H
9.92537	32	PK2	37.8	-21.9	0	47.9	-	-	74	-26.1	360	100	V

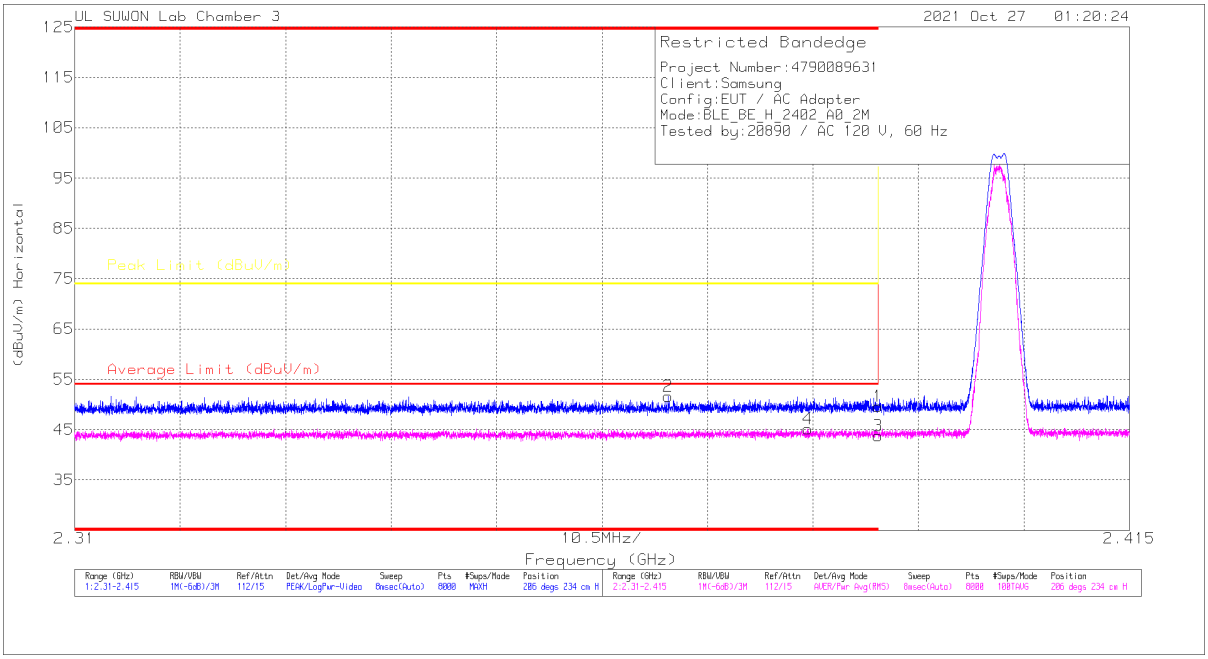
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak

10.2.2. 2 Mbps

ANT1

BANDEDGE (0 CHANNEL)

HORIZONTAL RESULT

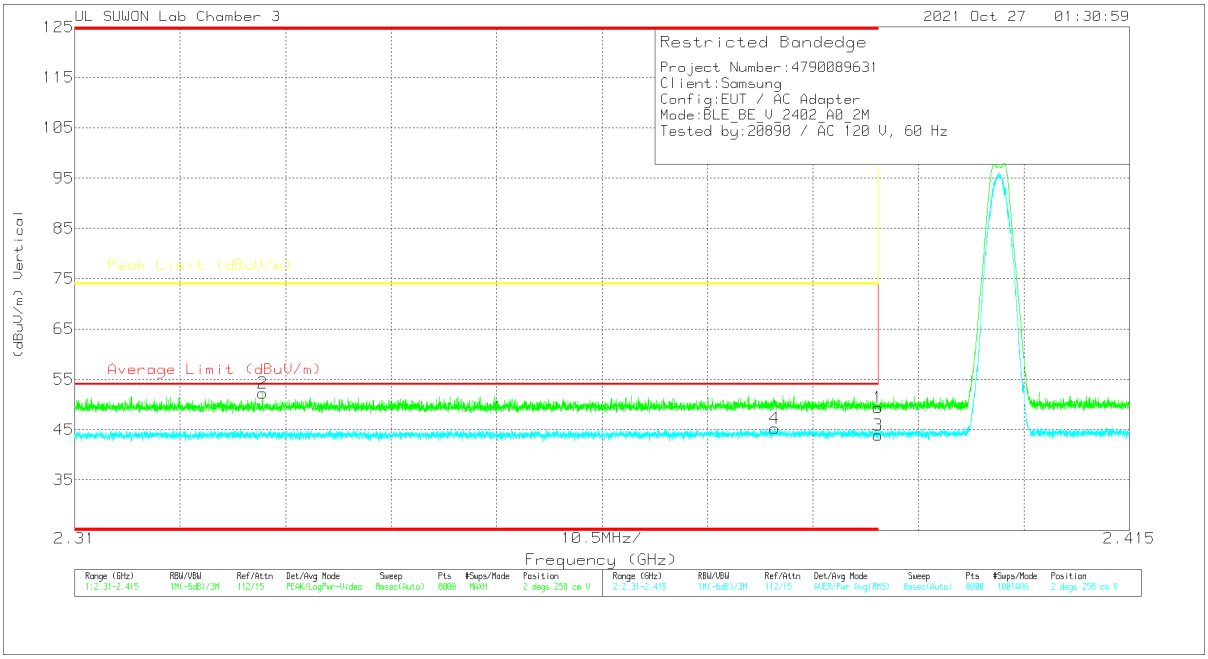


Trace Markers

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	42.21	Pk	32.8	-25.4	0	49.61	-	-	74	-24.39	206	234	H
2	* 2.36908	44.32	Pk	32.7	-25.4	0	51.62	-	-	74	-22.38	206	234	H
3	* 2.39	31.28	RMS	32.8	-25.4	5.06	43.74	54	-10.26	-	-	206	234	H
4	* 2.38301	32.82	RMS	32.7	-25.4	5.06	45.18	54	-8.82	-	-	206	234	H

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

VERTICAL RESULT



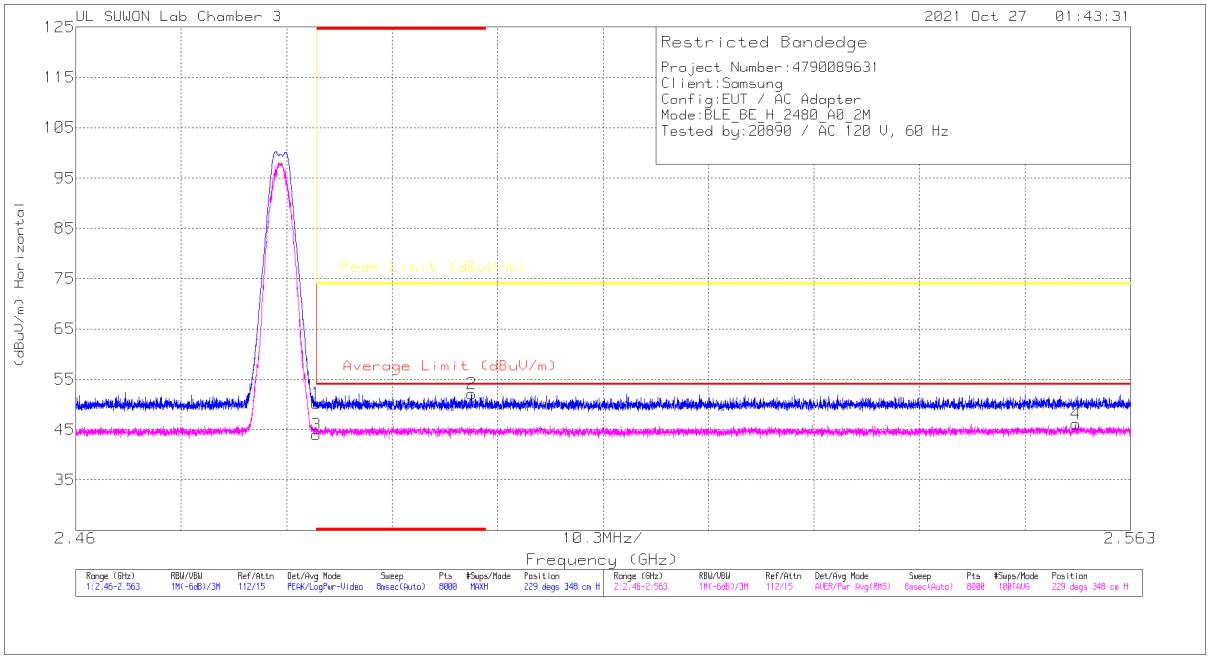
Trace Markers

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	42.04	Pk	32.8	-25.4	0	49.44	-	-	74	-24.56	2	258	V
2	* 2.32869	45.15	Pk	32.5	-25.4	0	52.25	-	-	74	-21.75	2	258	V
3	* 2.39	31.45	RMS	32.8	-25.4	5.06	43.91	54	-10.09	-	-	2	258	V
4	* 2.37967	32.87	RMS	32.7	-25.4	5.06	45.23	54	-8.77	-	-	2	258	V

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

BANDEDGE (39 CHANNEL)

HORIZONTAL RESULT

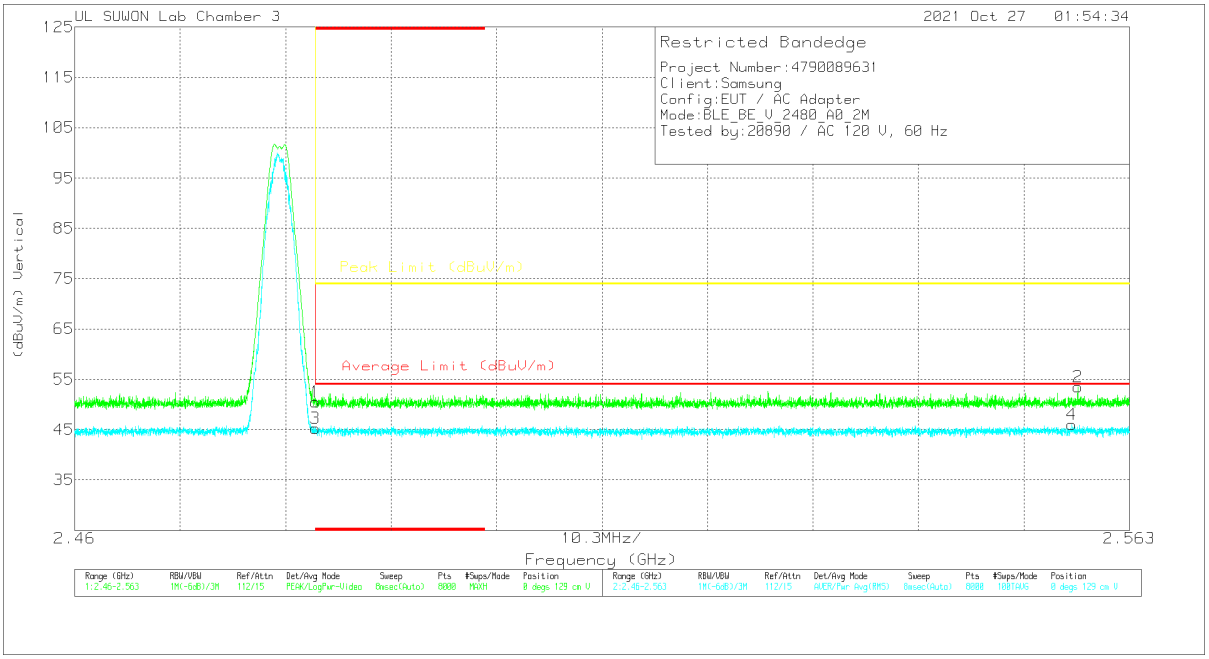


Trace Markers

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	42.68	Pk	32.9	-25.3	0	50.28	-	-	74	-23.72	229	348	H
2	* 2.49864	44.48	Pk	32.9	-25.2	0	52.18	-	-	74	-21.82	229	348	H
3	* 2.4835	31.4	RMS	32.9	-25.3	5.06	44.06	54	-9.94	-	-	229	348	H
4	2.55765	33.34	RMS	32.9	-25.1	5.06	46.2	54	-7.8	-	-	229	348	H

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

VERTICAL RESULT



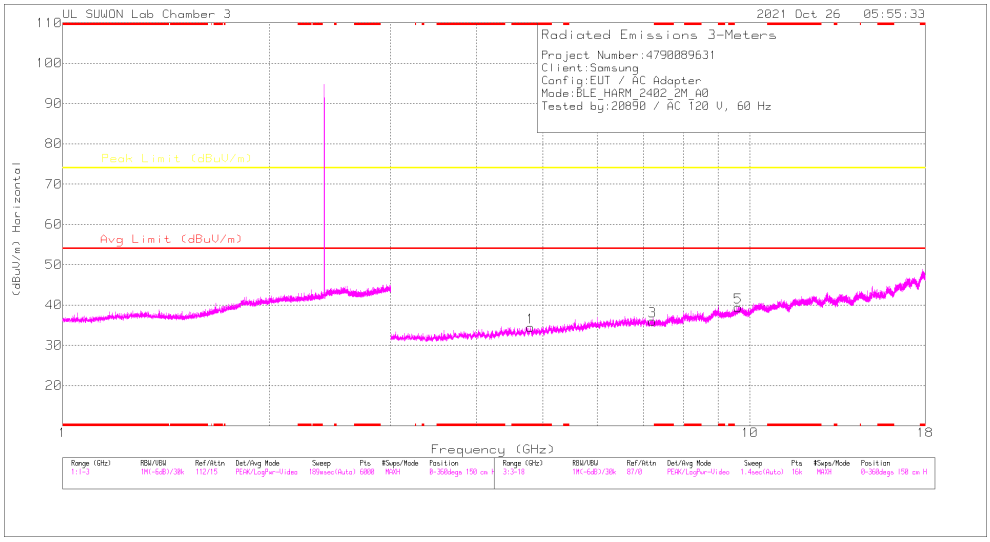
Trace Markers

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	42.93	Pk	32.9	-25.3	0	50.53	-	-	74	-23.47	0	129	V
2	2.55796	45.68	Pk	32.9	-25.1	0	53.48	-	-	74	-20.52	0	129	V
3	* 2.4835	32.62	RMS	32.9	-25.3	5.06	45.28	54	-8.72	-	-	0	129	V
4	2.55735	33.21	RMS	32.9	-25.2	5.06	45.97	54	-8.03	-	-	0	129	V

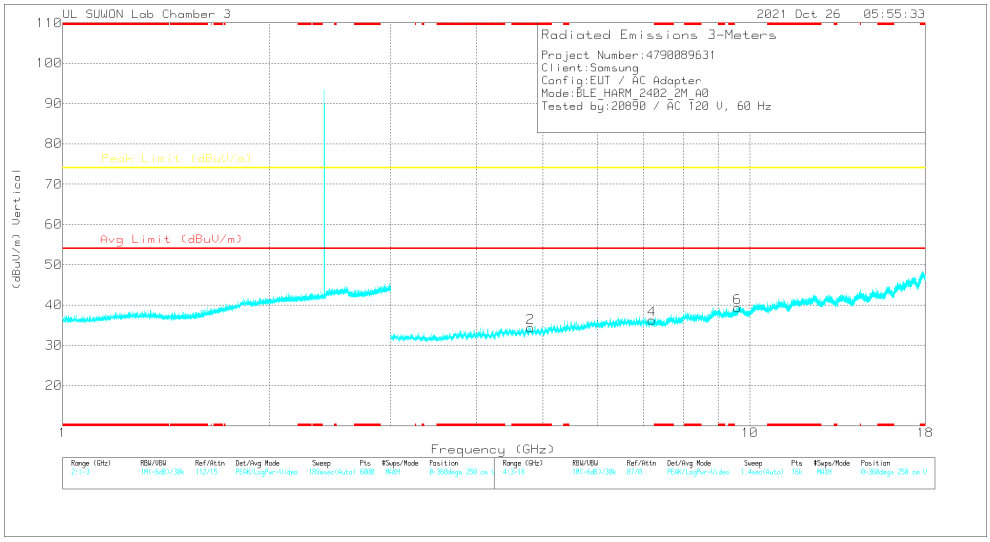
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

0 CHANNEL RESULTS



HORIZONTAL



VERTICAL

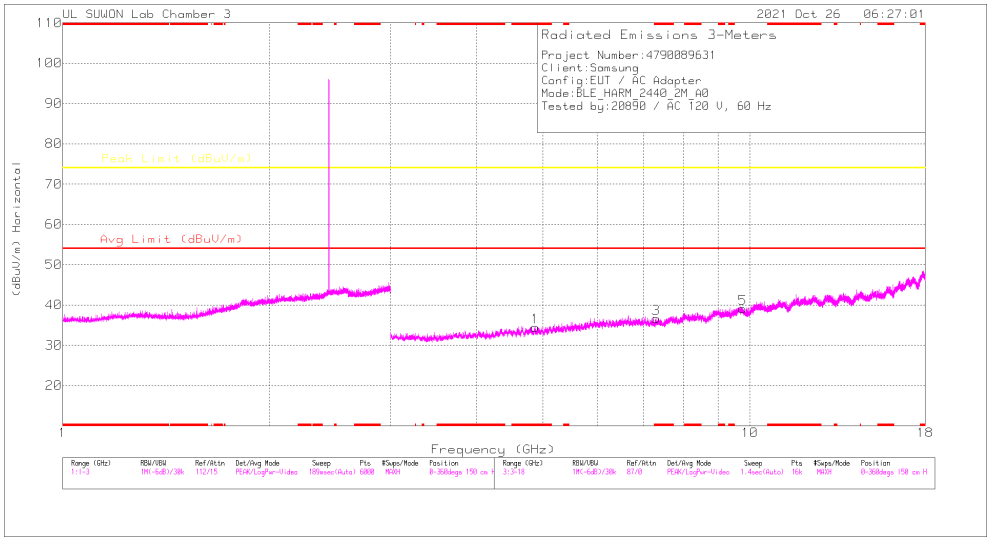
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

RADIATED EMISSIONS

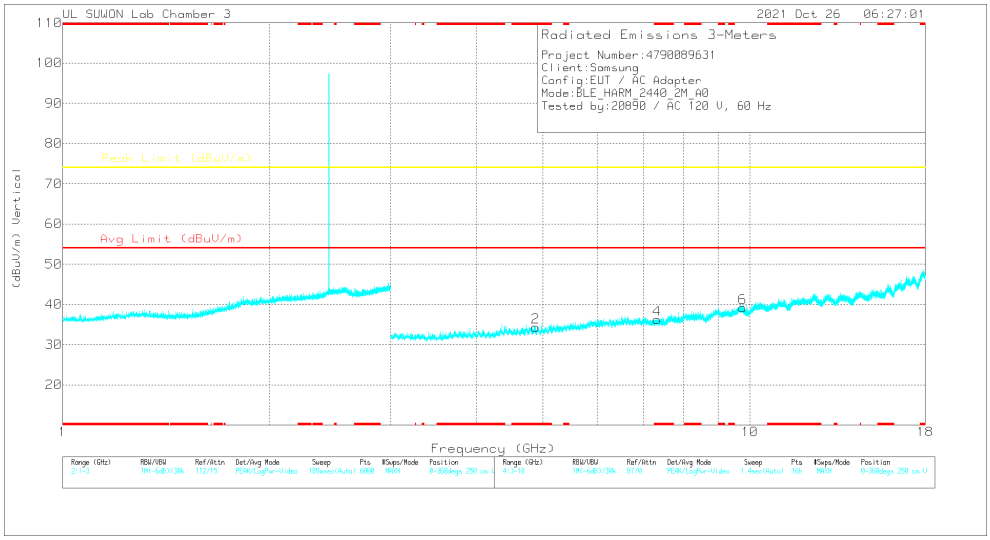
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.795	39.52	PK2	34.6	-30.3	0	43.82	-	-	74	-30.18	0	100	H
* 4.80641	39.88	PK2	34.6	-30.5	0	43.98	-	-	74	-30.02	0	100	V
7.21845	35.98	PK2	36.1	-26.1	0	45.98	-	-	74	-28.02	0	100	H
7.20533	36.68	PK2	36.1	-26.1	0	46.68	-	-	74	-27.32	0	100	V
9.61549	33.27	PK2	37.3	-22.1	0	48.47	-	-	74	-25.53	0	100	H
9.62215	33.21	PK2	37.3	-22	0	48.51	-	-	74	-25.49	0	100	V

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

19 CHANNEL RESULTS



HORIZONTAL



VERTICAL

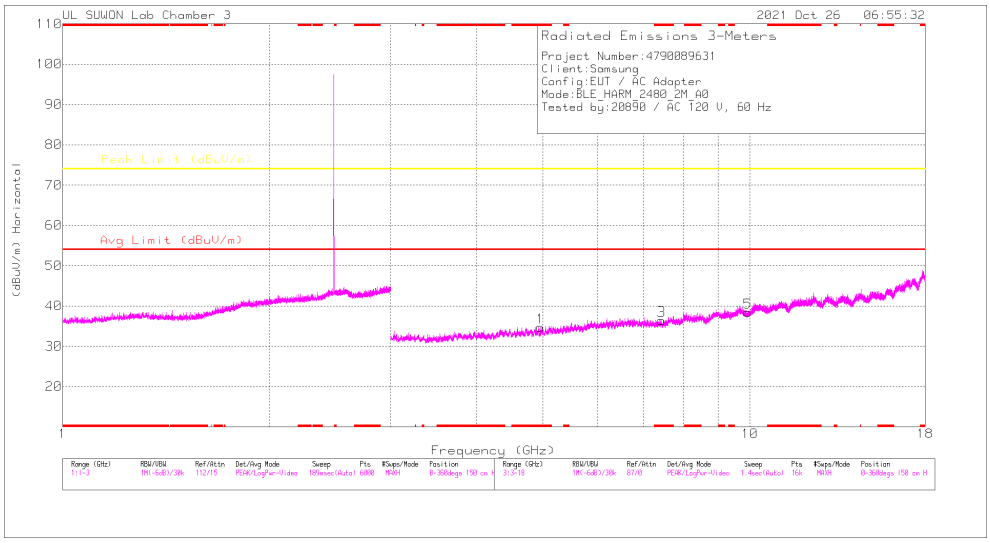
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

RADIATED EMISSIONS

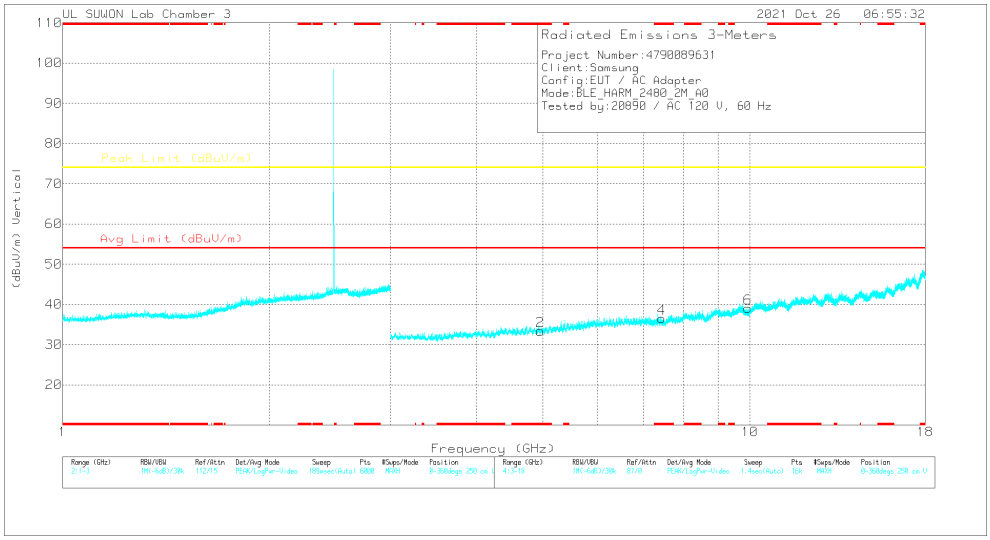
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.87749	40.38	PK2	34.7	-31.1	0	43.98	-	-	74	-30.02	0	100	H
* 4.87245	40.03	PK2	34.6	-31.1	0	43.53	-	-	74	-30.47	0	100	V
* 7.30912	35.39	PK2	36	-25.7	0	45.69	-	-	74	-28.31	0	100	H
* 7.31024	35.51	PK2	36	-25.7	0	45.81	-	-	74	-28.19	0	100	V
9.76281	33.27	PK2	37.5	-21.7	0	49.07	-	-	74	-24.93	0	100	H
9.7623	33.08	PK2	37.5	-21.7	0	48.88	-	-	74	-25.12	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

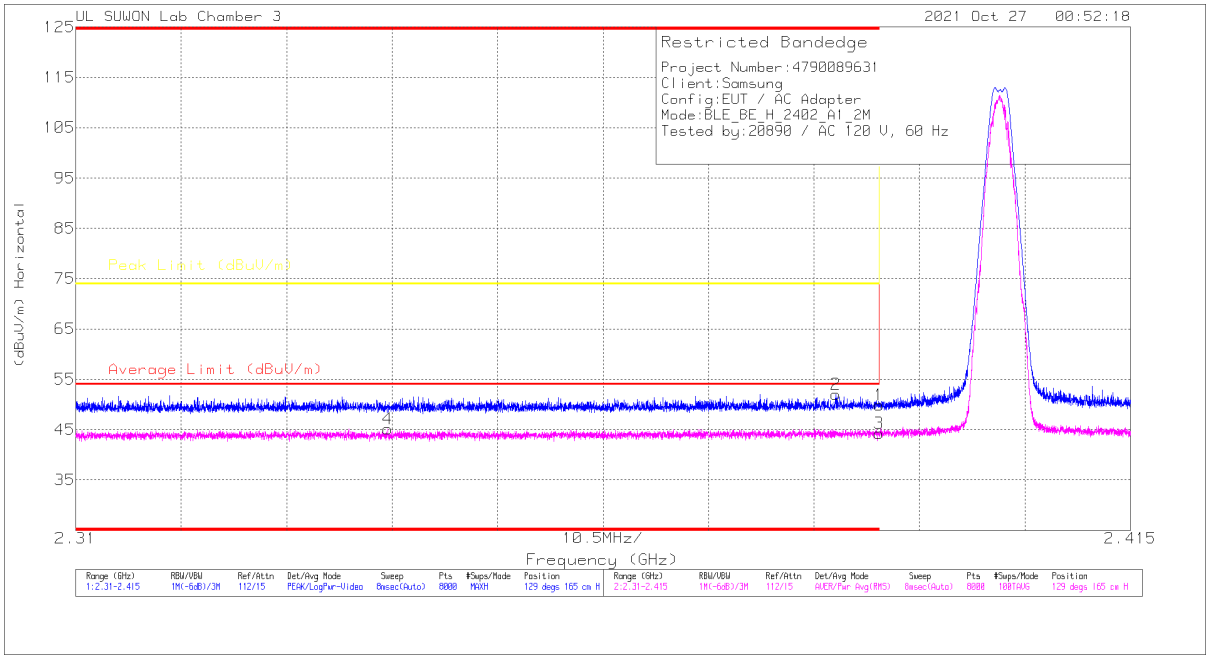
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.95127	39.61	PK2	34.7	-31.1	0	43.21	-	-	74	-30.79	0	100	H
* 4.95451	39.74	PK2	34.7	-31	0	43.44	-	-	74	-30.56	0	100	V
* 7.4388	34.86	PK2	36	-25.3	0	45.56	-	-	74	-28.44	0	100	H
* 7.43736	35.35	PK2	36	-25.3	0	46.05	-	-	74	-27.95	0	100	V
9.92974	32.23	PK2	37.8	-21.8	0	48.23	-	-	74	-25.77	0	100	H
9.92875	32.03	PK2	37.8	-21.8	0	48.03	-	-	74	-25.97	0	100	V

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

ANT2

BANDEDGE (0 CHANNEL)

HORIZONTAL RESULT

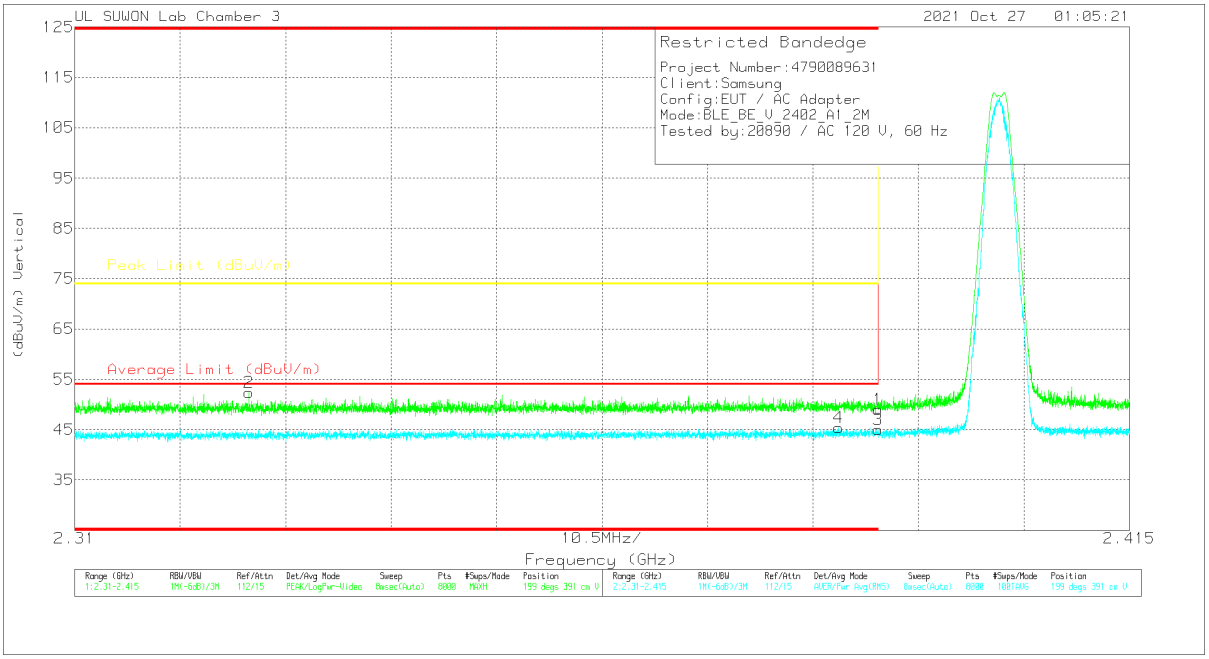


Trace Markers

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	42.49	Pk	32.8	-25.4	0	49.89	-	-	74	-24.11	129	165	H
2	* 2.38565	44.75	Pk	32.7	-25.4	0	52.05	-	-	74	-21.95	129	165	H
3	* 2.39	31.82	RMS	32.8	-25.4	5.06	44.28	54	-9.72	-	-	129	165	H
4	* 2.34107	33	RMS	32.6	-25.5	5.06	45.16	54	-8.84	-	-	129	165	H

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

VERTICAL RESULT



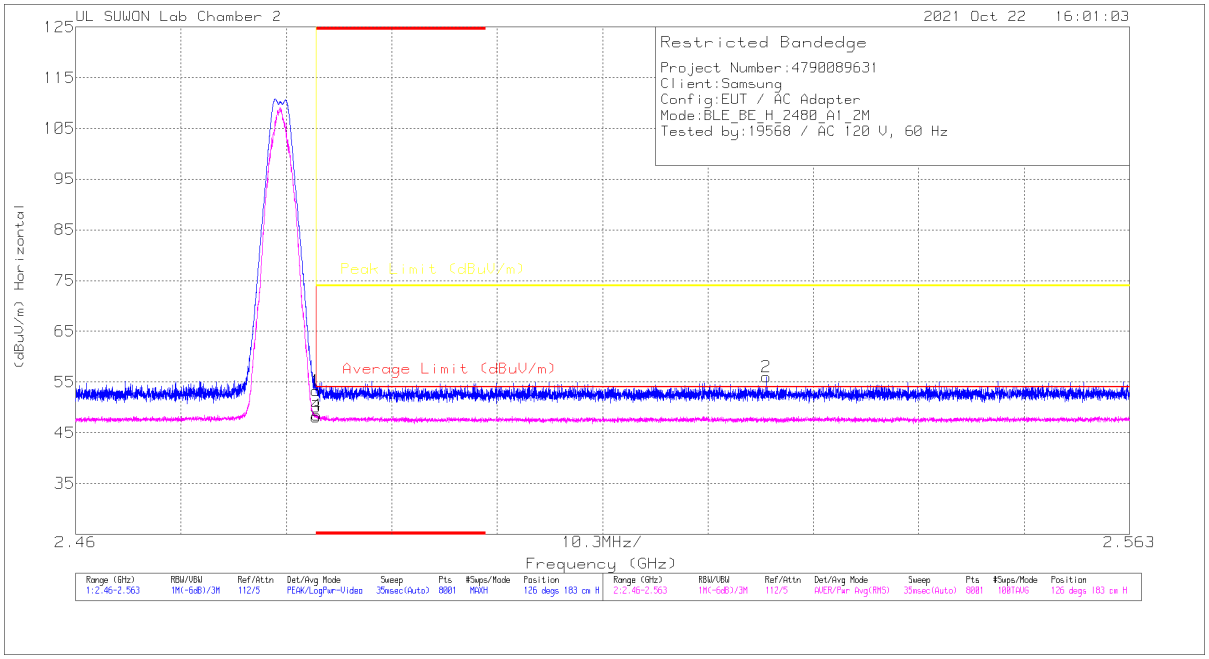
Trace Markers

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	41.56	Pk	32.8	-25.4	0	48.96	-	-	74	-25.04	199	391	V
2	* 2.32734	45.22	Pk	32.5	-25.4	0	52.32	-	-	74	-21.68	199	391	V
3	* 2.39	32.56	RMS	32.8	-25.4	5.06	45.02	54	-8.98	-	-	199	391	V
4	* 2.38607	33.04	RMS	32.7	-25.4	5.06	45.4	54	-8.6	-	-	199	391	V

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

BANDEDGE (39 CHANNEL)

HORIZONTAL RESULT

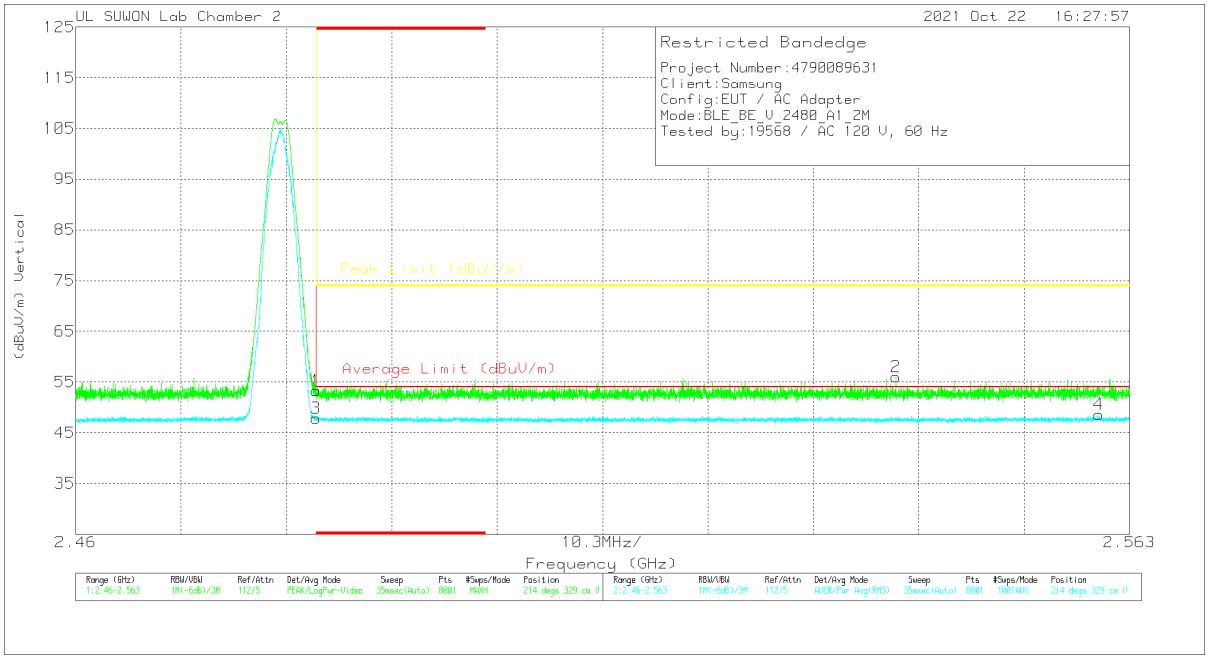


Trace Markers

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)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	41.64	Pk	32	-20.4	0	53.24	-	-	74	-20.76	126	183	H
2	2.5275	44.3	Pk	32.1	-20.4	0	56	-	-	74	-18	126	183	H
3	* 2.48351	31.48	RMS	32	-20.4	5.06	48.14	54	-5.86	-	-	126	183	H
4	* 2.48357	31.82	RMS	32	-20.4	5.06	48.48	54	-5.52	-	-	126	183	H

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

VERTICAL RESULT



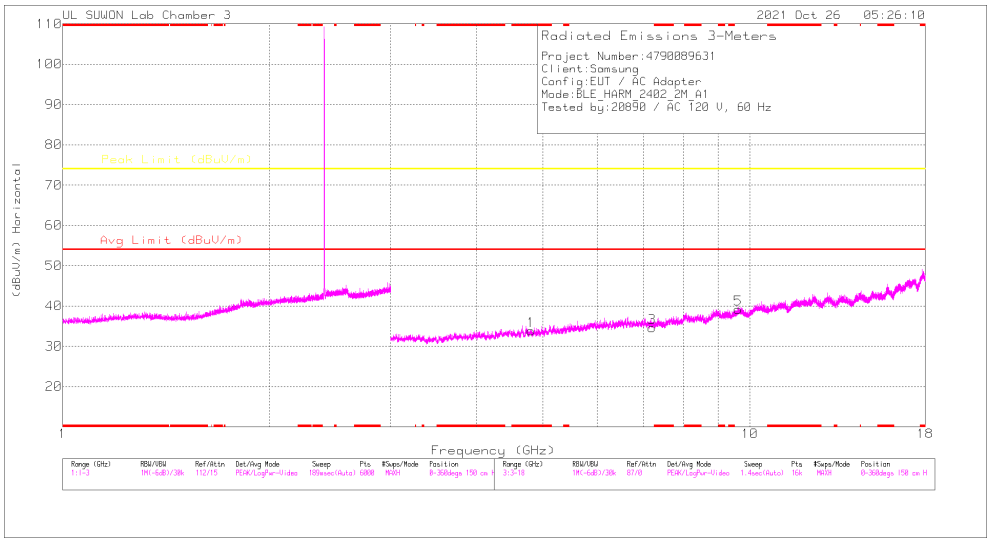
Trace Markers

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)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	41.75	Pk	32	-20.4	0	53.35	-	-	74	-20.65	214	329	V
2	2.54016	44.2	Pk	32.1	-20.3	0	56	-	-	74	-18	214	329	V
3	* 2.48351	31.21	RMS	32	-20.4	5.06	47.87	54	-6.13	-	-	214	329	V
4	2.55999	31.49	RMS	32.2	-20.2	5.06	48.55	54	-5.45	-	-	214	329	V

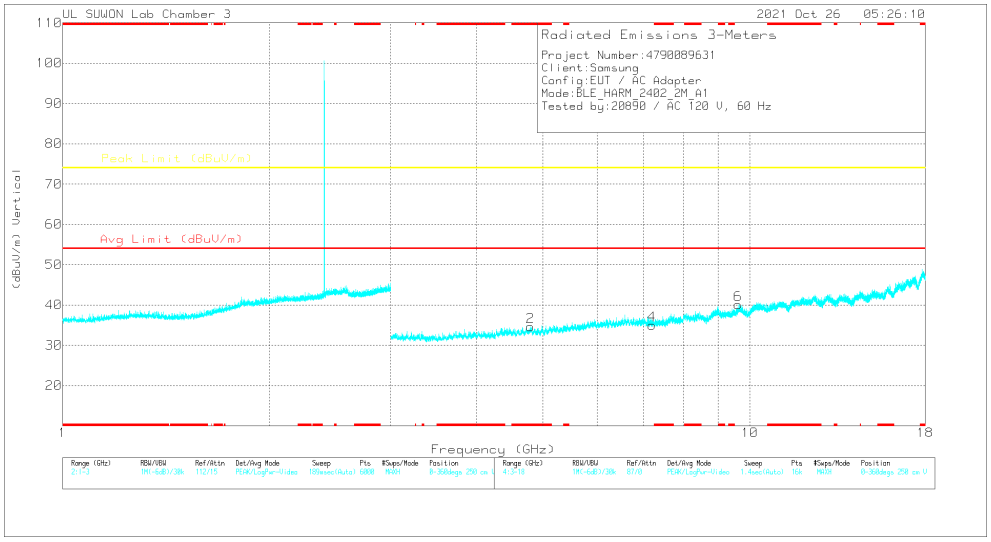
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

0 CHANNEL RESULTS



HORIZONTAL



VERTICAL

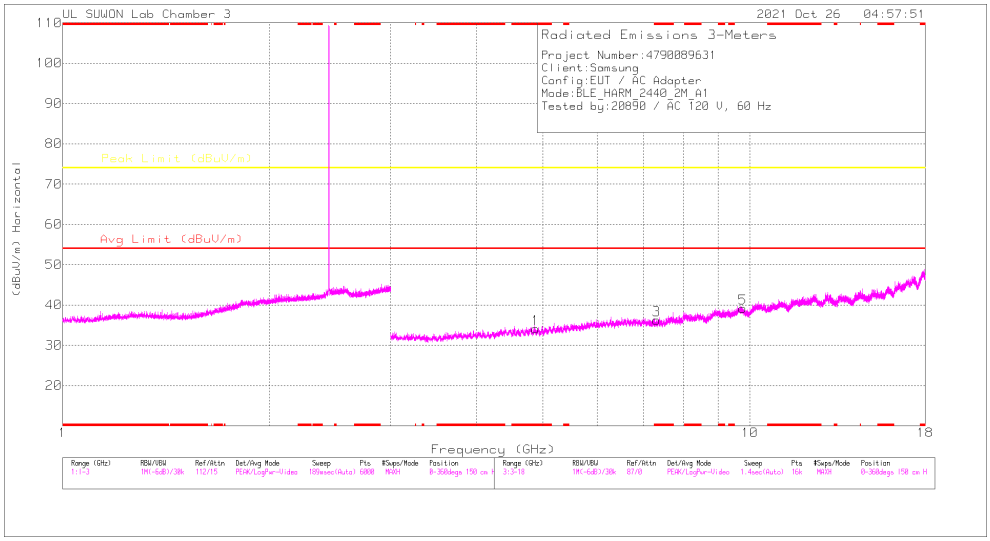
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

RADIATED EMISSIONS

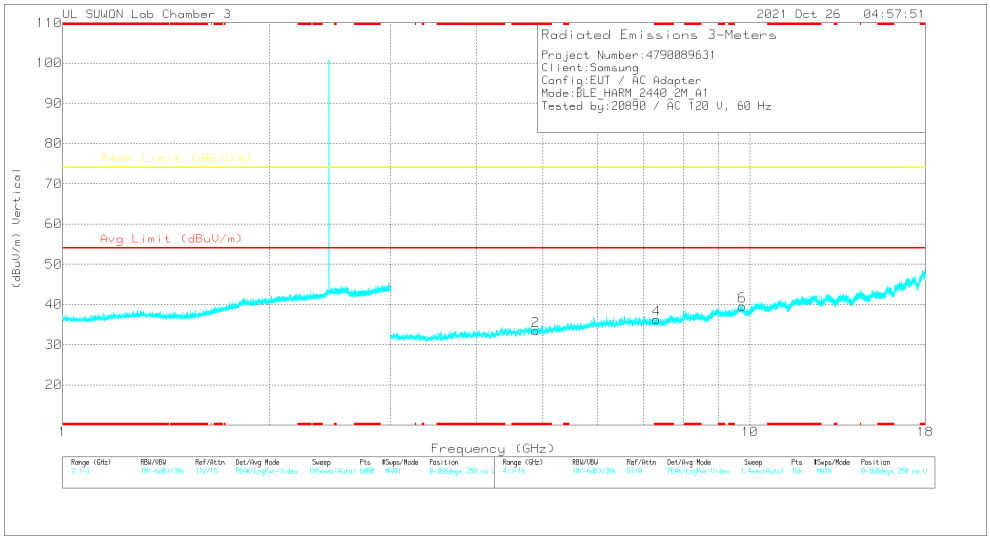
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.79943	39.61	PK2	34.6	-30.4	0	43.81	-	-	74	-30.19	0	100	H
* 4.8054	39.58	PK2	34.6	-30.5	0	43.68	-	-	74	-30.32	0	100	V
7.20849	35.33	PK2	36.1	-26.1	0	45.33	-	-	74	-28.67	0	100	H
7.20461	35.57	PK2	36.1	-26.1	0	45.57	-	-	74	-28.43	0	100	V
9.61629	33.34	PK2	37.3	-22.1	0	48.54	-	-	74	-25.46	0	100	H
9.62045	33.43	PK2	37.3	-22.1	0	48.63	-	-	74	-25.37	0	100	V

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

19 CHANNEL RESULTS



HORIZONTAL



VERTICAL

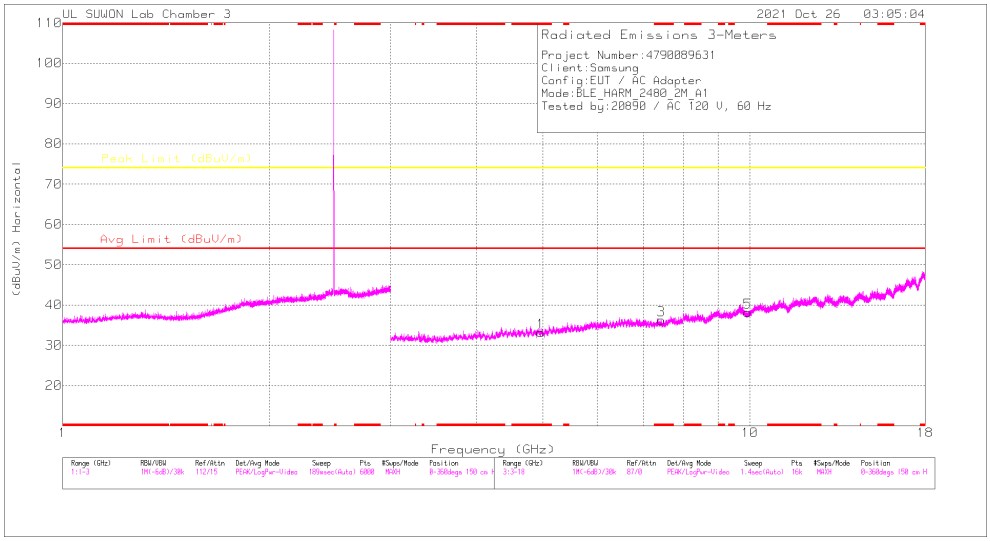
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

RADIATED EMISSIONS

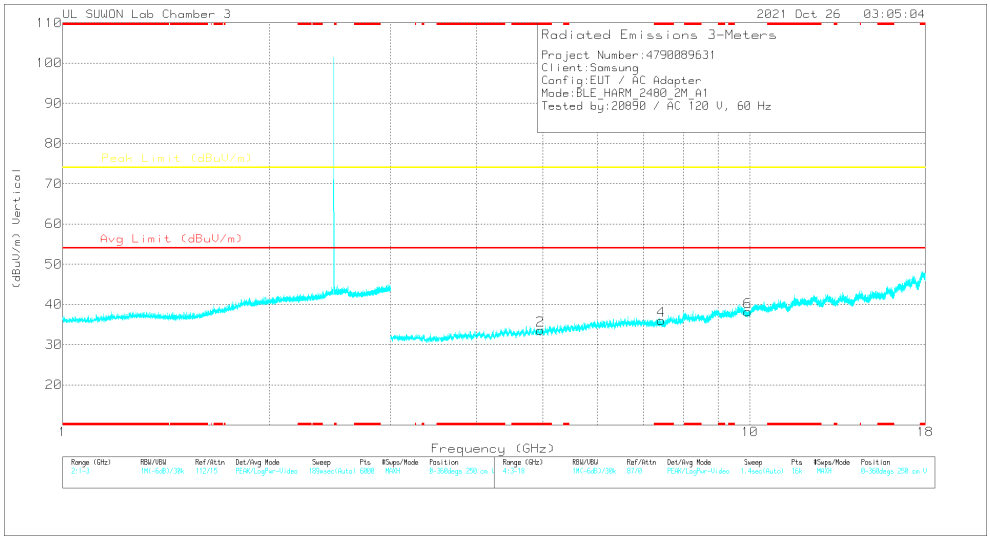
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00218957	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.8753	40.05	PK2	34.7	-31.2	0	43.55	-	-	74	-30.45	0	100	H
* 4.87086	40.44	PK2	34.6	-31.1	0	43.94	-	-	74	-30.06	0	100	V
* 7.30582	35.04	PK2	36	-25.7	0	45.34	-	-	74	-28.66	0	100	H
* 7.3039	35.14	PK2	36	-25.7	0	45.44	-	-	74	-28.56	0	100	V
9.75625	33.01	PK2	37.5	-21.7	0	48.81	-	-	74	-25.19	0	100	H
9.77089	32.63	PK2	37.5	-21.8	0	48.33	-	-	74	-25.67	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.

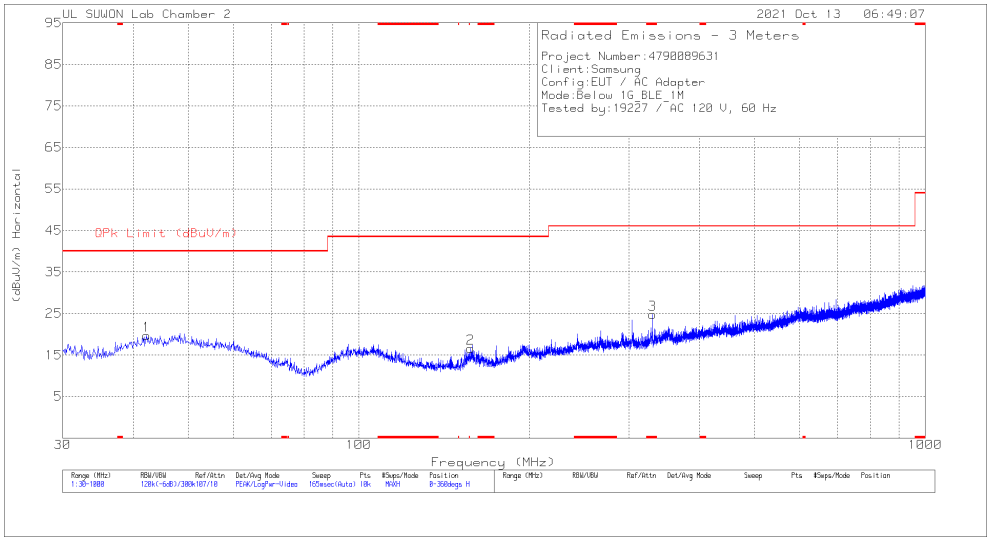
RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_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
* 4.96589	39.85	PK2	34.7	-30.8	0	43.75	-	-	74	-30.25	0	100	H
* 4.96754	40.58	PK2	34.7	-30.8	0	44.48	-	-	74	-29.52	0	100	V
* 7.44198	34.91	PK2	36	-25.4	0	45.51	-	-	74	-28.49	0	100	H
* 7.44673	34.98	PK2	36	-25.4	0	45.58	-	-	74	-28.42	0	100	V
9.93403	31.91	PK2	37.8	-21.8	0	47.91	-	-	74	-26.09	0	100	H
9.93258	31.84	PK2	37.8	-21.8	0	47.84	-	-	74	-26.16	0	100	V

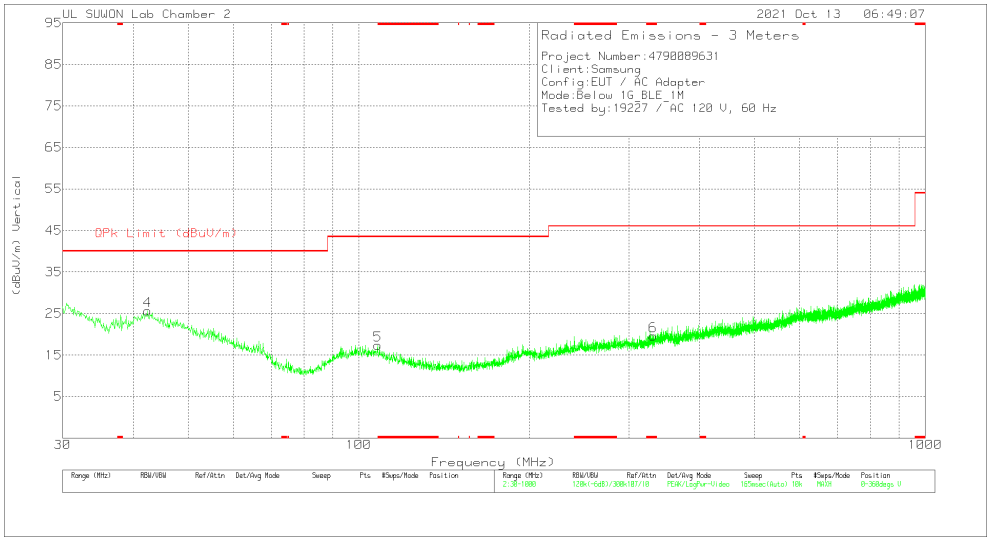
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak

10.3. WORST CASE BELOW 1 GHZ

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)



HORIZONTAL



VERTICAL

Below 1GHz Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below 1G[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	42.222	32.44	Pk	19.1	-31.8	0	19.74	40	-20.26	0-360	200	H
2	157.555	33.49	Pk	14.1	-31	0	16.59	43.52	-26.93	0-360	100	H
3	* 329.827	35.1	Pk	19.9	-30.2	0	24.8	46.02	-21.22	0-360	100	H
4	42.416	38.23	Pk	19.2	-31.8	0	25.63	40	-14.37	0-360	100	V
5	107.988	31.31	Pk	17.3	-31.3	0	17.31	43.52	-26.21	0-360	100	V
6	* 330.409	29.9	Pk	19.9	-30.2	0	19.6	46.02	-26.42	0-360	100	V

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

11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

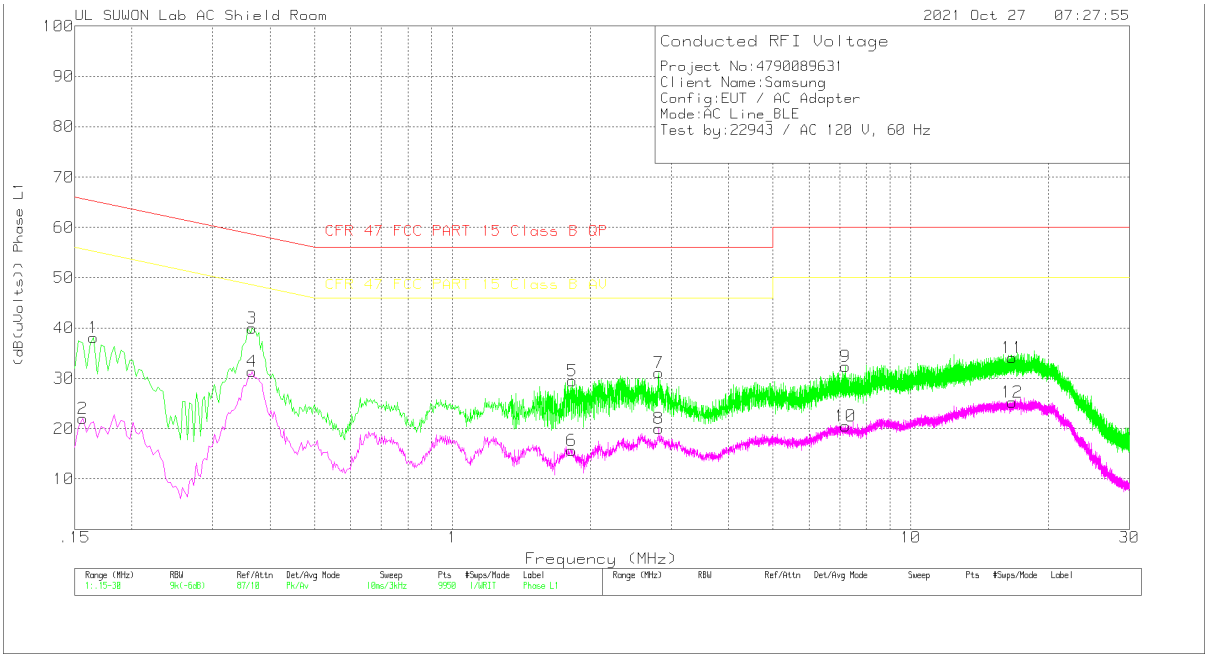
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

11.1.1. AC Power Line

LINE 1 RESULTS



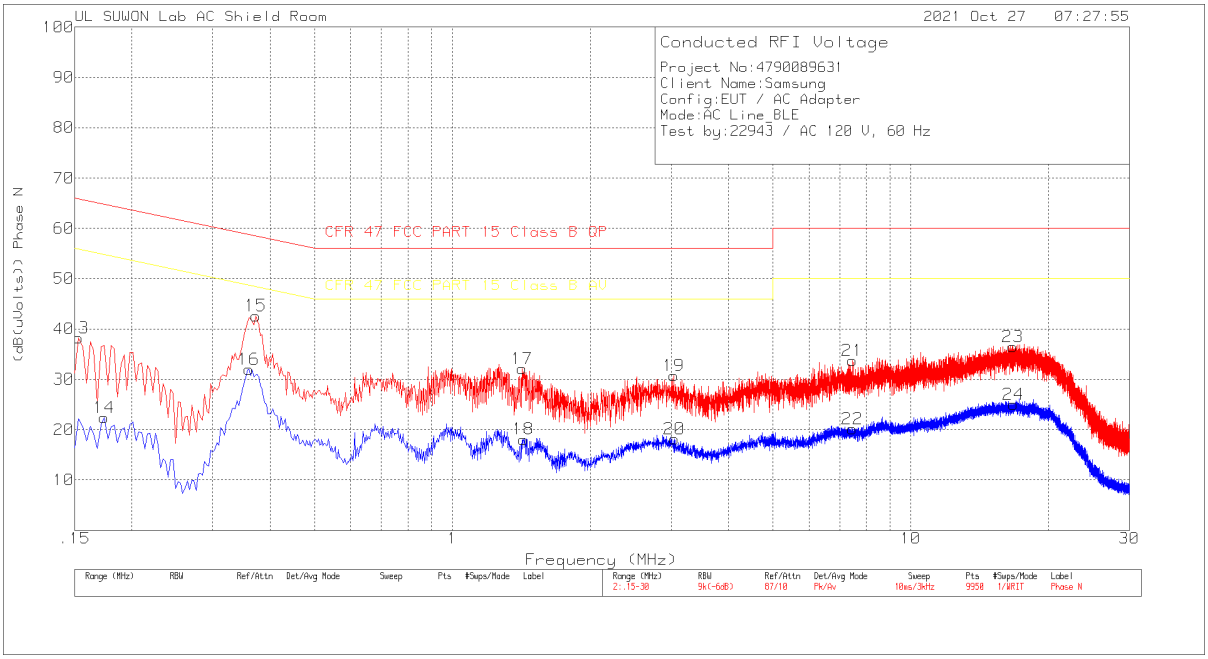
Trace Markers

Range 1: Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With EX_L1[dB]	CABLELOSS(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
1	.165	28.05	Pk	9.9	.1	38.05	65.21	-27.16	-	-
2	.156	12.1	Av	9.8	.1	22	-	-	55.67	-33.67
3	.366	29.95	Pk	9.8	.2	39.95	58.59	-18.64	-	-
4	.366	21.37	Av	9.8	.2	31.37	-	-	48.59	-17.22
5	1.824	19.54	Pk	9.7	.3	29.54	56	-26.46	-	-
6	1.818	5.71	Av	9.7	.3	15.71	-	-	46	-30.29
7	2.82	21.17	Pk	9.7	.3	31.17	56	-24.83	-	-
8	2.82	10.04	Av	9.7	.3	20.04	-	-	46	-25.96
9	7.2	22.22	Pk	9.8	.3	32.32	60	-27.68	-	-
10	7.2	10.41	Av	9.8	.3	20.51	-	-	50	-29.49
11	16.662	23.64	Pk	10.1	.4	34.14	60	-25.86	-	-
12	16.641	14.78	Av	10.1	.4	25.28	-	-	50	-24.72

Pk - Peak detector
Av - Average detection

LINE 2 RESULTS



Trace Markers

Range 2: Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With EX_N[dB]	CABLELOSS(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
13	.153	28.32	Pk	9.8	.1	38.22	65.84	-27.62	-	-
14	.174	12.23	Av	10	.2	22.43	-	-	54.77	-32.34
15	.372	32.64	Pk	9.8	.2	42.64	58.46	-15.82	-	-
16	.36	21.96	Av	9.8	.2	31.96	-	-	48.73	-16.77
17	1.419	22.16	Pk	9.7	.3	32.16	56	-23.84	-	-
18	1.428	8.09	Av	9.7	.3	18.09	-	-	46	-27.91
19	3.039	20.74	Pk	9.7	.3	30.74	56	-25.26	-	-
20	3.051	8.15	Av	9.7	.3	18.15	-	-	46	-27.85
21	7.461	23.59	Pk	9.8	.3	33.69	60	-26.31	-	-
22	7.455	10.09	Av	9.8	.3	20.19	-	-	50	-29.81
23	16.701	25.99	Pk	10.1	.4	36.49	60	-23.51	-	-
24	16.734	14.53	Av	10.1	.4	25.03	-	-	50	-24.97

Pk - Peak detector
Av - Average detection

END OF TEST REPORT