



CERTIFICATION TEST REPORT

Report Number. : 4789830844-E1V1

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

Model : SM-M127G/DS

FCC ID : A3LSMM127G

EUT Description : GSM/WCDMA/LTE Phablet with BT/BLE and DTS b/g/n

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

Date Of Issue:

March 09, 2021

Prepared by:

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Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	03/09/21	Initial issue	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. DECISION RULES.....	7
4.4. MEASUREMENT UNCERTAINTY.....	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.....	10
6. MEASUREMENT METHOD.....	12
7. TEST AND MEASUREMENT EQUIPMENT	13
8. TEST RESULTS SUMMARY	14
9. ANTENNA PORT TEST RESULTS.....	15
9.1. ON TIME AND DUTY CYCLE	15
9.2. 6 dB BANDWIDTH.....	16
9.2.1. 125 kbps.....	16
9.2.2. 2 Mbps.....	16
9.2.3. 6 dB BANDWIDTH PLOTS	17
9.3. OUTPUT POWER.....	18
9.3.1. 125 kbps.....	18
9.3.2. 2 Mbps.....	18
9.3.3. PEAK POWER PLOTS.....	19
9.4. AVERAGE POWER	20
9.4.1. 125 kbps.....	20
9.4.2. 2 Mbps.....	20
9.5. POWER SPECTRAL DENSITY	21
9.5.1. 125 kbps.....	21
9.5.2. 2Mbps.....	21
9.5.3. PSD TEST PLOTS	22

9.6. CONDUCTED SPURIOUS EMISSIONS	23
9.6.1. 125 kbps.....	24
9.6.2. 2Mbps.....	25
10. RADIATED TEST RESULTS	26
10.1. LIMITS AND PROCEDURE	26
10.2. TRANSMITTER ABOVE 1 GHz	28
10.2.1. 125 kbps.....	28
10.2.2. 2Mbps	34
10.3. WORST CASE BELOW 1 GHZ.....	42
11. AC POWER LINE CONDUCTED EMISSIONS	43
11.1.1. AC Power Line.....	44

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION: GSM/WCDMA/LTE Phablet with BT/BLE and DTS b/g/n
MODEL: SM-M127G/DS
SERIAL NUMBER: R38NB0189WJ (CONDUCTED);
R38NB0188SJ (RADIATED);
DATE TESTED: MAR 08, 2021 – MAR 09, 2021;

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.

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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	
<input checked="" type="checkbox"/>	Chamber 1
<input checked="" type="checkbox"/>	Chamber 2
<input type="checkbox"/>	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:

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

4.3. DECISION RULES

Decision rule for statement(s) of conformity is based on Procedure 1, Clause 4.4.2 in IEC Guide 115:2007.

4.4. 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	3.01 dB
Radiated Disturbance, 30 MHz to 1 GHz	4.26 dB
Radiated Disturbance, 1 GHz to 18 GHz	5.90 dB
Radiated Disturbance, 18 GHz to 40 GHz	5.49 dB

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

5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION

The EUT is a GSM/WCDMA/LTE Phablet with BT/BLE and DTS b/g/n.
 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	125kbps	Peak	6.144	4.115
		Average	5.498	3.546
	2Mbps	Peak	9.268	8.449
		Average	8.522	7.116

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 maximum gain of -0.8 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.

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

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 125 kbps(37 pkt) and 2 Mbps(255 pkt) power is the worst case for symbol rate. All tests were performed in these two modes.

Symbol Rate [Ms/s]	Mode	Frequency [MHz]	Conducted Burst Avg [dBm]	Symbol Rate [Ms/s]	Mode	Frequency [MHz]	Conducted Burst Avg [dBm]
1	1Mbps (37 pkt)	2402	4.535	2	2Mbps (37 pkt)	2402	7.784
		2440	5.476			2440	8.508
		2480	4.999			2480	7.935
	1Mbps (255 pkt)	2402	4.550		2Mbps (255 pkt)	2402	7.830
		2440	5.423			2440	8.522
		2480	4.928			2480	7.892
1	125 kbps (37 pkt)	2402	4.572				
		2440	5.498				
		2480	5.058				
	125 kbps (255 pkt)	2402	4.465				
		2440	5.347				
		2480	4.835				
	500 kbps (37 pkt)	2402	4.597				
		2440	5.371				
		2480	5.017				
	500 kbps (255 pkt)	2402	4.474				
		2440	5.465				
		2480	4.997				

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Charger	SAMSUNG	EP-TA200	R37M3FL1XN1DK3	N/A
Data Cable	SAMSUNG	N/A	N/A	N/A
Earphone	SAMSUNG	N/A	N/A	N/A

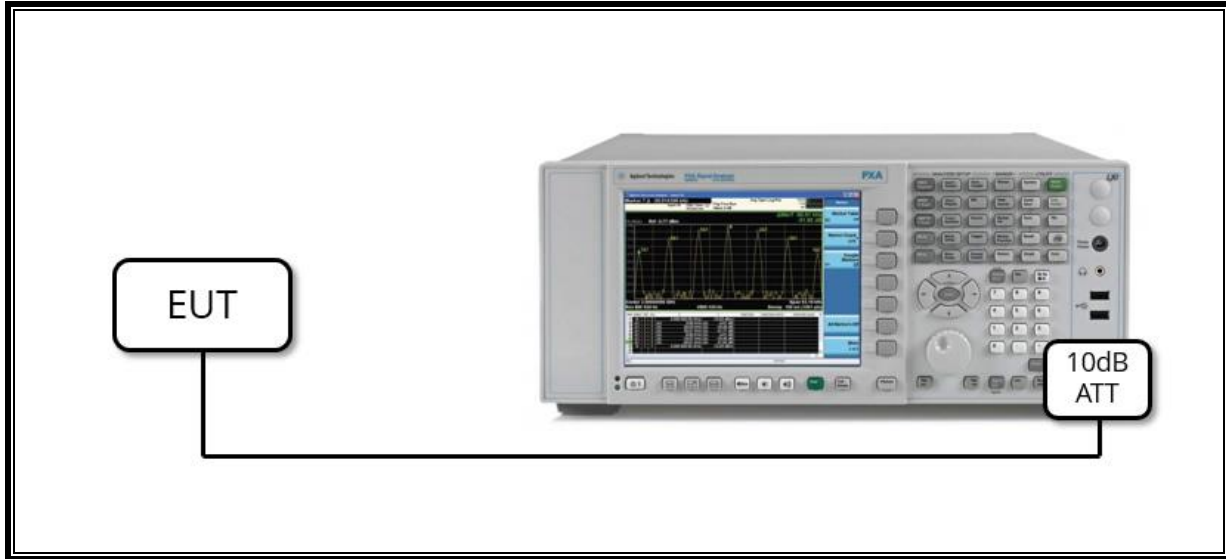
I/O CABLE

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
2	Audio	2	3.5mm	Unshielded	1.0 m	N/A

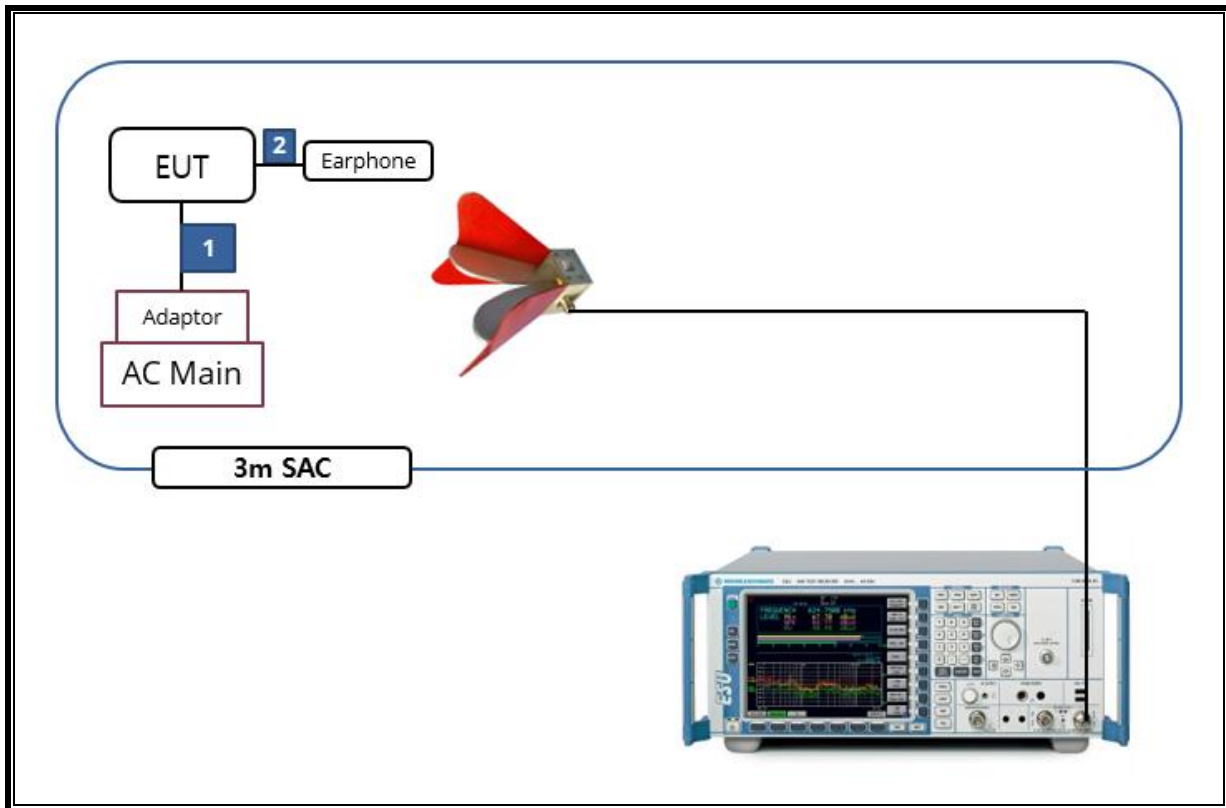
TEST SETUP

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	08-19-22
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	749	08-13-22
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	845	08-13-22
Antenna, Horn, 18 GHz	ETS	3115	00167211	07-27-22
Antenna, Horn, 18 GHz	ETS	3115	00161451	08-15-22
Antenna, Horn, 18 GHz	ETS	3117	00168724	07-27-22
Antenna, Horn, 18 GHz	ETS	3117	00168717	08-15-22
Antenna, Horn, 40 GHz	ETS	3116C	00166155	08-04-22
Antenna, Horn, 40 GHz	ETS	3116C	00168645	10-02-21
Preamplifier	ETS	3116C-PA	00168841	08-06-21
Preamplifier, 1000 MHz	Sonoma	310N	341282	08-03-21
Preamplifier, 1000 MHz	Sonoma	310N	351741	08-03-21
Preamplifier, 1000 MHz	Sonoma	310N	370599	08-06-21
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1876511	08-03-21
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	1896138	08-03-21
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	2029169	08-04-21
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	08-05-21
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54490312	08-05-21
Spectrum Analyzer, 43.5 GHz	R&S	FSW43	104089	08-06-21
Average Power Sensor	Agilent / HP	U2000	MY54270007	08-05-21
Attenuator	PASTERNAK	PE7087-10	A001	08-03-21
Attenuator	PASTERNAK	PE7087-10	A008	08-03-21
Attenuator	PASTERNAK	PE7004-10	2	08-04-21
Attenuator	PASTERNAK	PE7087-10	A009	08-03-21
EMI Test Receive, 40 GHz	R&S	ESU40	100439	08-03-21
EMI Test Receive, 40 GHz	R&S	ESU40	100457	08-03-21
EMI Test Receive, 3 GHz	R&S	ESR3	101832	08-03-21
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	009	08-03-21
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	015	08-03-21
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	020	08-04-21
High Pass Filter 3GHz	Micro-Tronics	HPM17543	010	08-03-21
High Pass Filter 3GHz	Micro-Tronics	HPM17543	015	08-03-21
High Pass Filter 3GHz	Micro-Tronics	HPM17543	020	08-04-21
High Pass Filter 6GHz	Micro-Tronics	HPS17542	009	08-03-21
High Pass Filter 6GHz	Micro-Tronics	HPS17542	016	08-03-21
High Pass Filter 6GHz	Micro-Tronics	HPS17542	021	08-04-21
LISN	R&S	ENV-216	101837	08-06-21
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	10-02-21
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

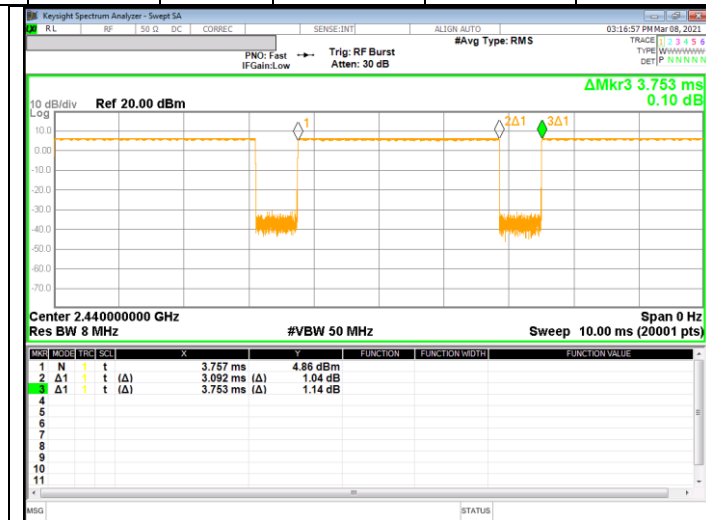
9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

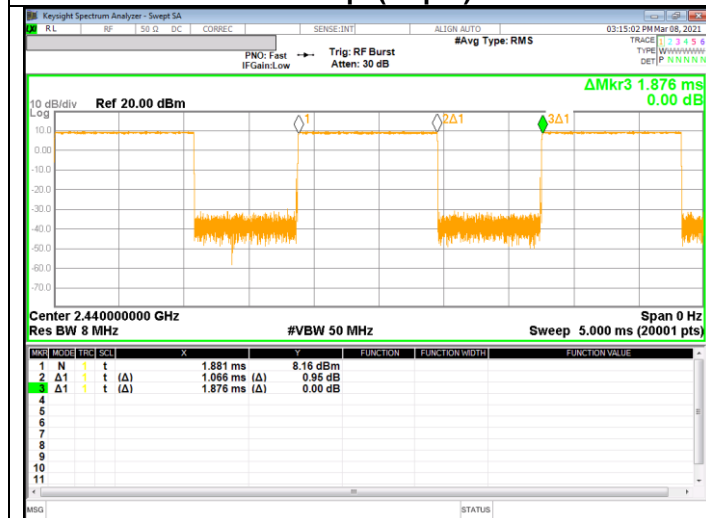
LIMITS

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 CBW [kHz]
2 400 ~ 2 483.5 MHz Bands						
125 kbps [37pkt]	3.092	3.753	0.824	82.387	0.84	0.323
2 Mbps [255pkt]	1.066	1.876	0.568	56.823	2.45	0.938



125 kbps(37 pkt)



2 Mbps(255 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. 125 kbps

Channel	Frequency [MHz]	6 dB Bandwidth [kHz]	Minimum Limit [kHz]
Low	2 402	633.0	500.0
Mid	2 440	652.5	500.0
High	2 480	673.1	500.0

9.2.2. 2 Mbps

Channel	Frequency [MHz]	6 dB Bandwidth [kHz]	Minimum Limit [kHz]
Low	2 402	1288.0	500.0
Mid	2 440	1249.0	500.0
High	2 480	1280.0	500.0

9.2.3. 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.

RESULTS

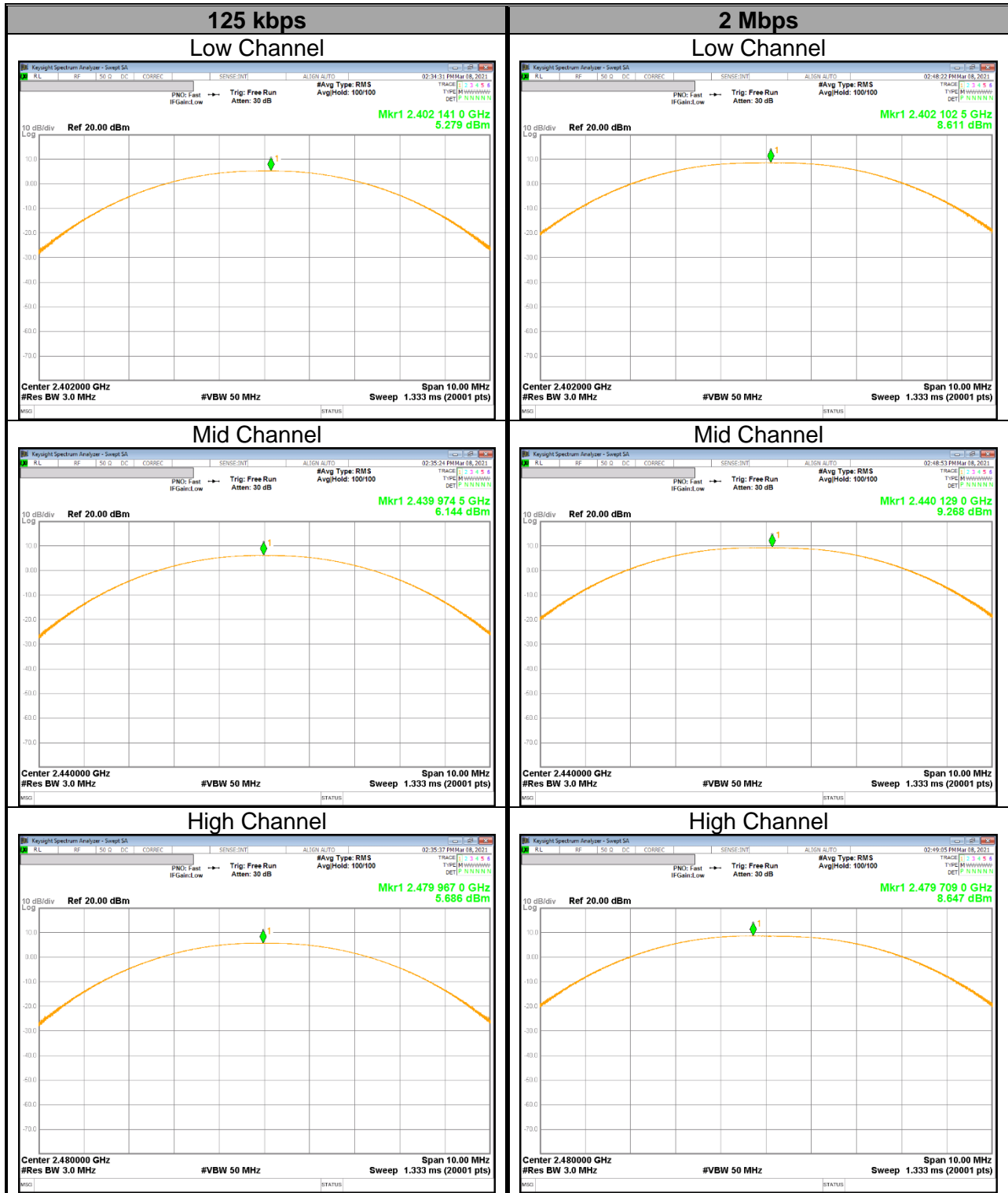
9.3.1. 125 kbps

Channel	Frequency [MHz]	Peak Power [dBm]	Limit [dBm]	Margin [dB]
Low	2402	5.279	30.000	-25.428
Mid	2440	6.144	30.000	-24.502
High	2480	5.686	30.000	-24.943
Worst		6.144	30.000	-24.502

9.3.2. 2 Mbps

Channel	Frequency [MHz]	Peak Power [dBm]	Limit [dBm]	Margin [dB]
Low	2402	8.611	30.000	-22.170
Mid	2440	9.268	30.000	-21.478
High	2480	8.647	30.000	-22.108
Worst		9.268	30.000	-21.478

9.3.3. 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. 125 kbps

Channel	Frequency [MHz]	AV Power [dBm]	AV Power [mW]
Low	2402	4.572	2.865
Mid	2440	5.498	3.546
High	2480	5.058	3.204

9.4.2. 2 Mbps

Channel	Frequency [MHz]	AV Power [dBm]	AV Power [mW]
Low	2402	7.830	6.068
Mid	2440	8.522	7.116
High	2480	7.892	6.154

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

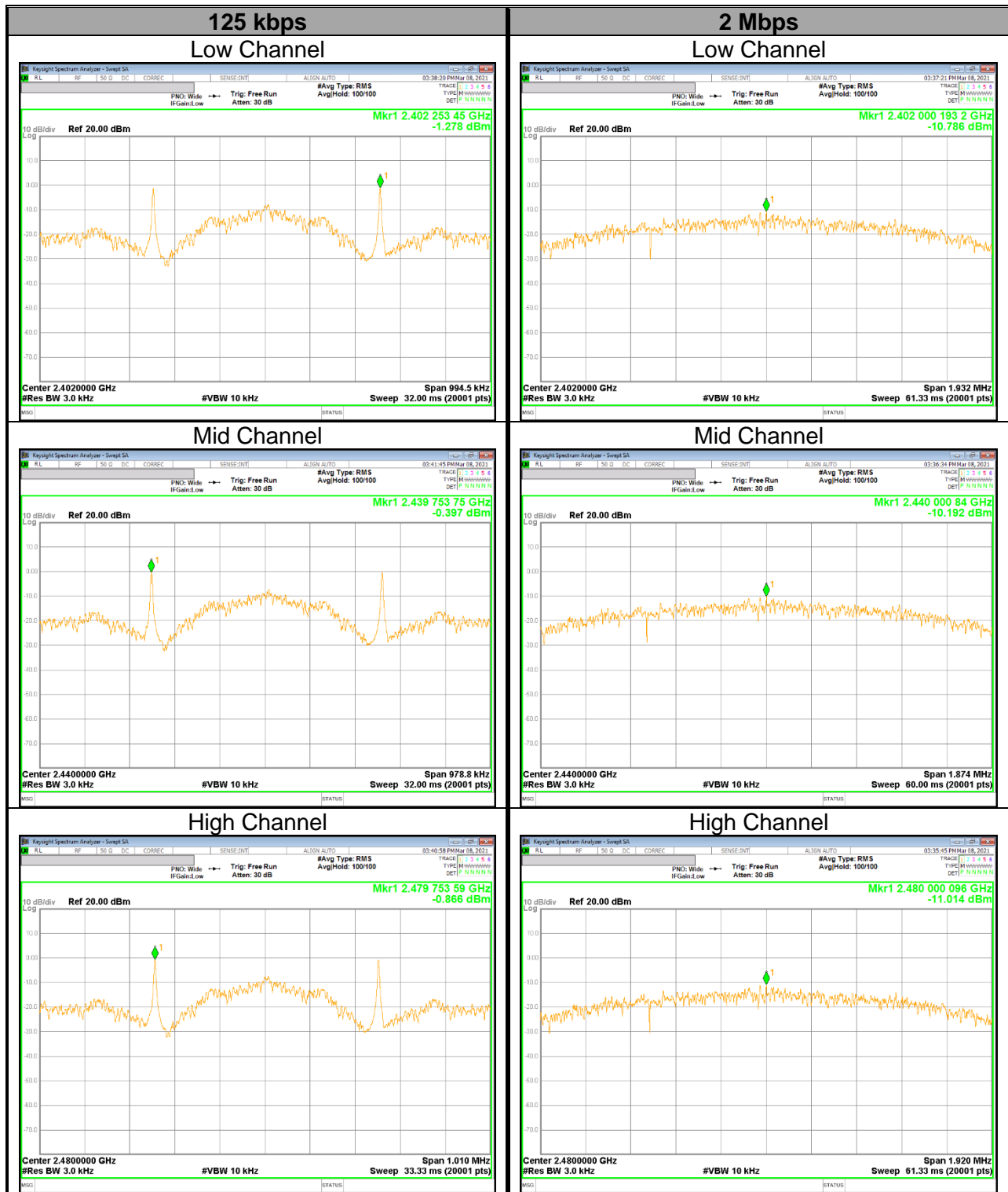
9.5.1. 125 kbps

Channel	Frequency [MHz]	PSD [dBm/3kHz]	Limit [dBm/3kHz]	Margin [dB]
Low	2402	-1.278	8.000	-9.278
Mid	2440	-0.397	8.000	-8.397
High	2480	-0.866	8.000	-8.866

9.5.2. 2Mbps

Channel	Frequency [MHz]	PSD [dBm/3kHz]	Limit [dBm/3kHz]	Margin [dB]
Low	2402	-10.786	8.000	-18.786
Mid	2440	-10.192	8.000	-18.192
High	2480	-11.014	8.000	-19.014

9.5.3. PSD TEST PLOTS



9.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

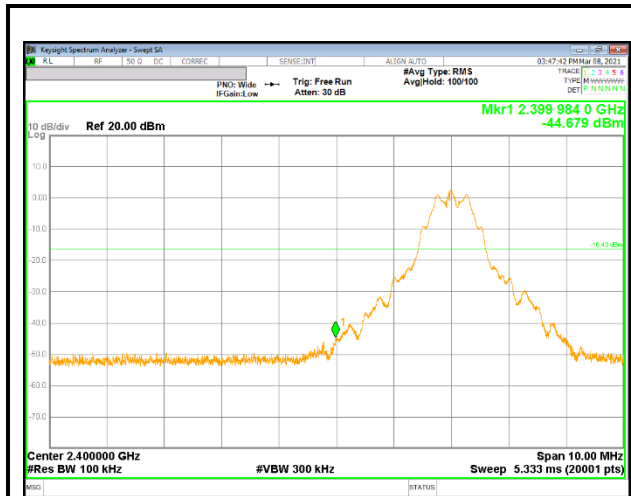
FCC §15.247 (d)

RSS-247 5.5

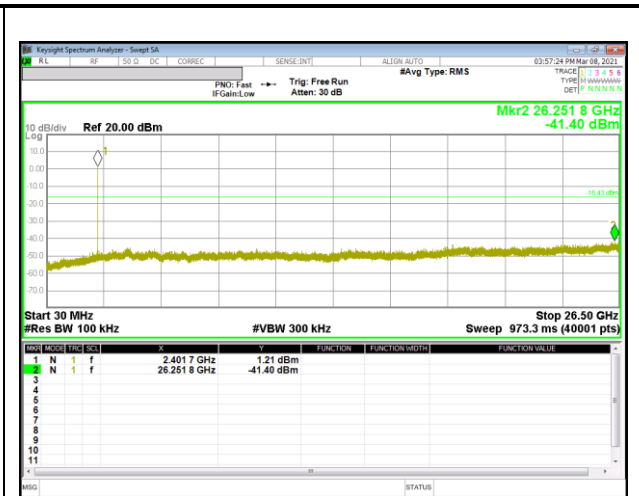
Output power was measured based on the use of a peak measurement.
Therefore, spurious emissions are required to be 20 dBc.

RESULTS

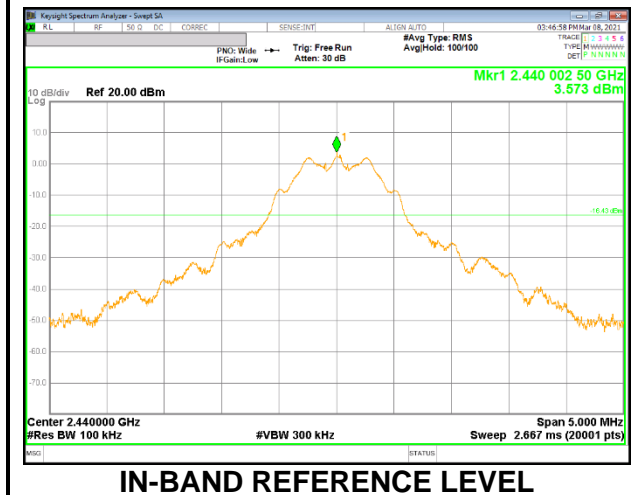
9.6.1. 125 kbps



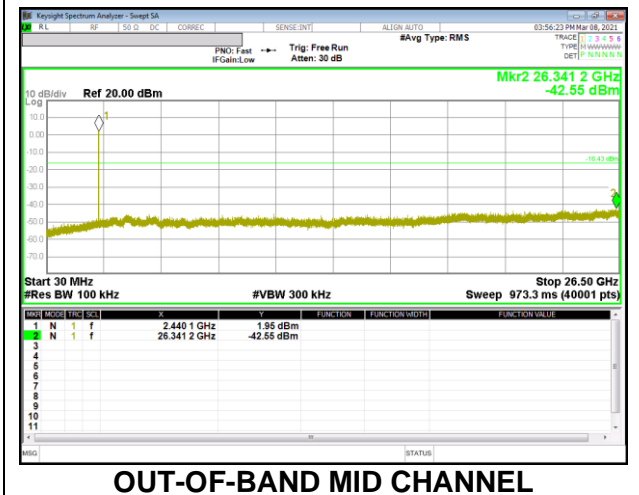
LOW CHANNEL BANDEDGE



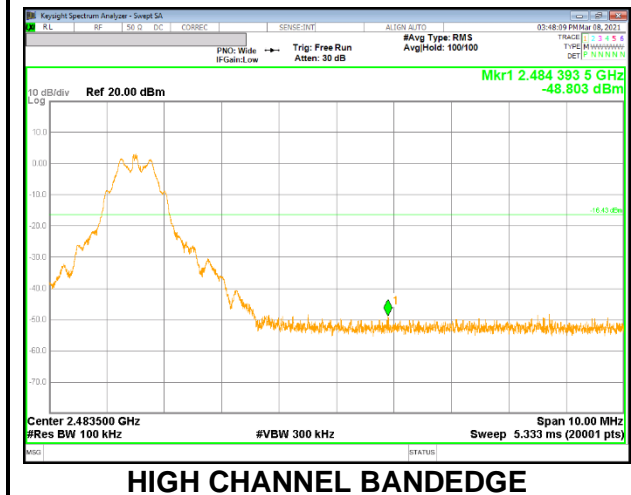
OUT-OF-BAND LOW CHANNEL



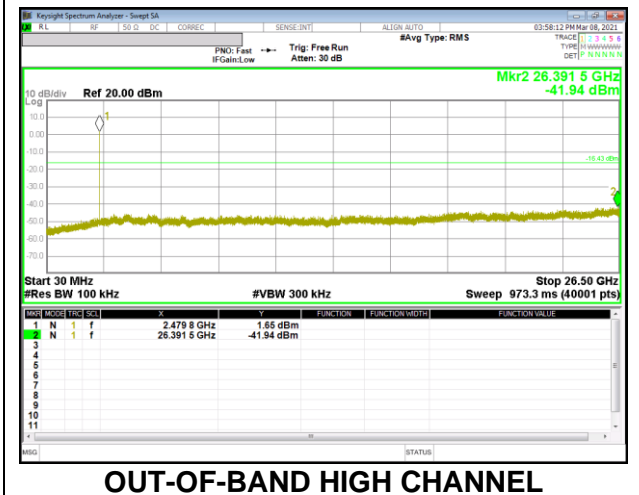
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

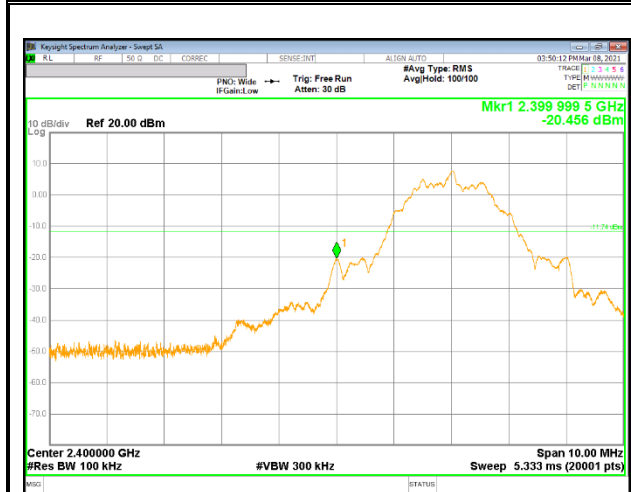


HIGH CHANNEL BANDEDGE

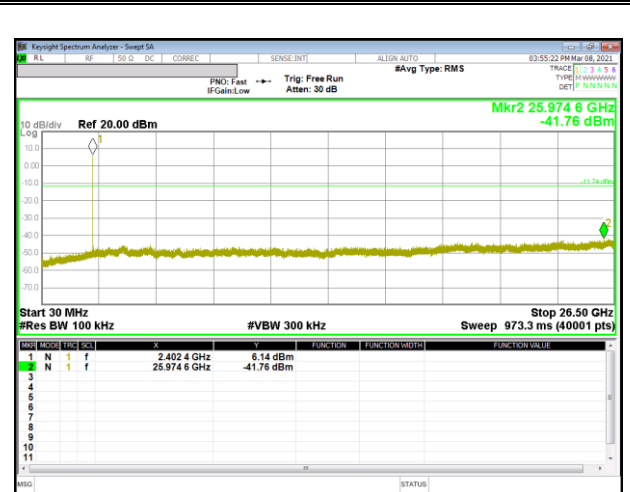


OUT-OF-BAND HIGH CHANNEL

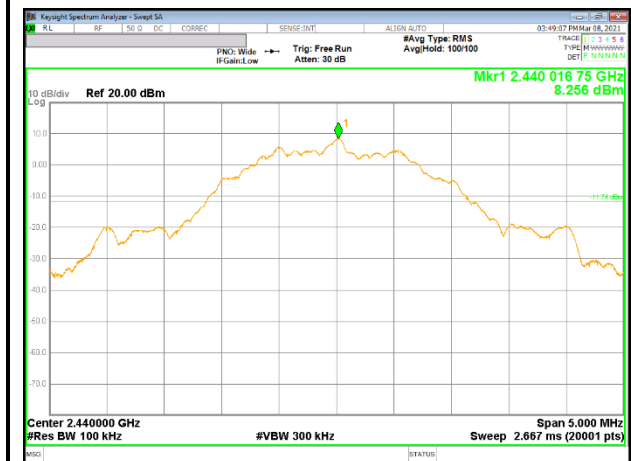
9.6.2. 2Mbps



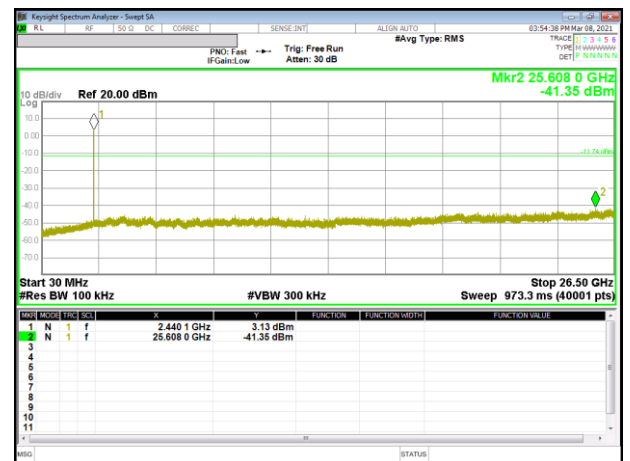
LOW CHANNEL BANDEDGE



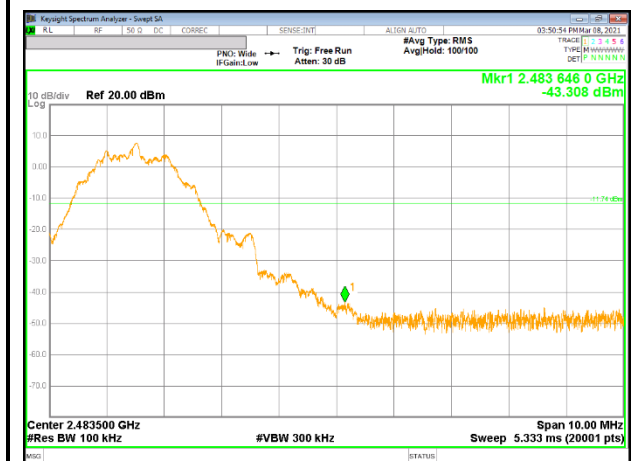
OUT-OF-BAND LOW CHANNEL



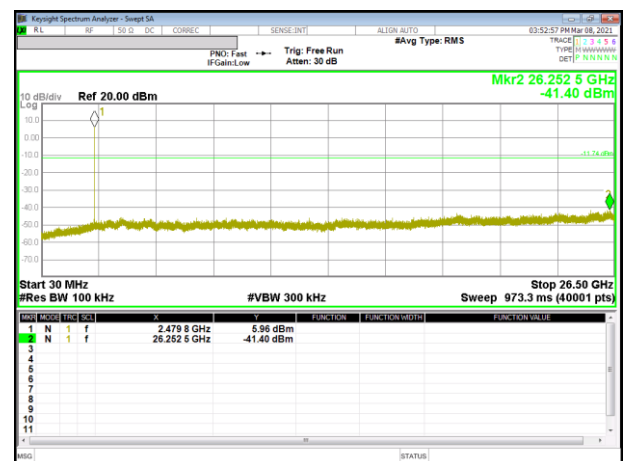
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH 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 ($\mu\text{V}/\text{m}$)	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 125 kbps, DCF = $10 \log(1/0.824) = 0.841$ dB (Spectrum Analyzer round it up to 0.84 dB) and for 2 Mbps, DCF = $10 \log(1/0.568) = 2.455$ dB (Spectrum Analyzer round it up to 2.45 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.

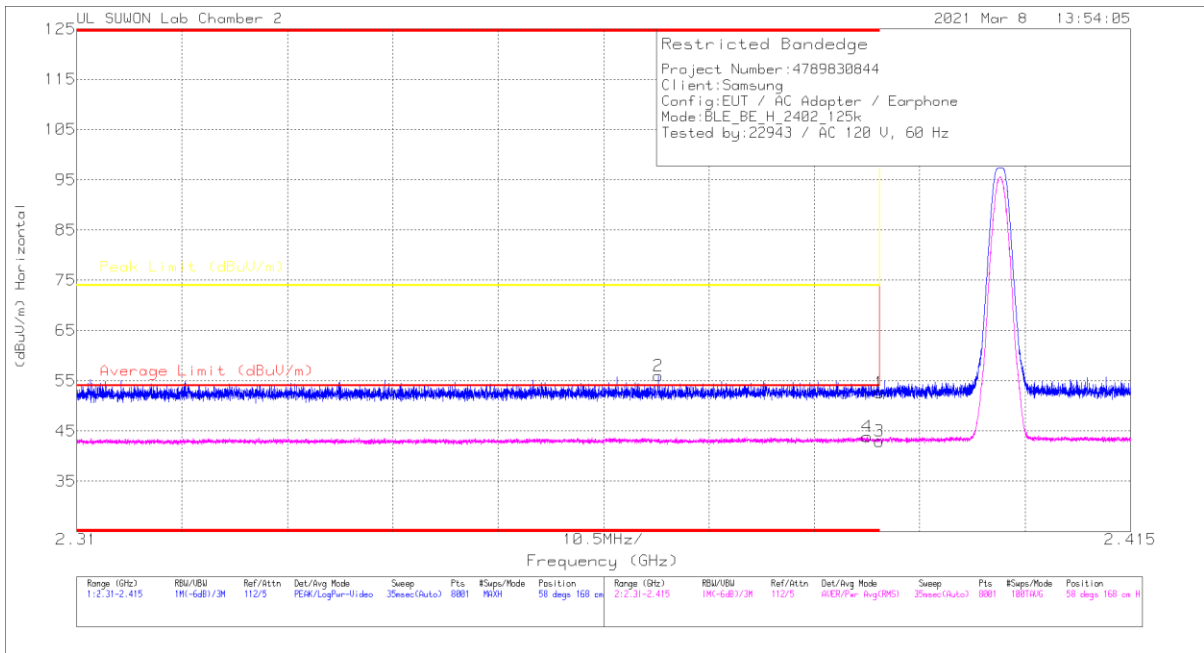
Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 30 m open are test site.
Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field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

10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. 125 kbps

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

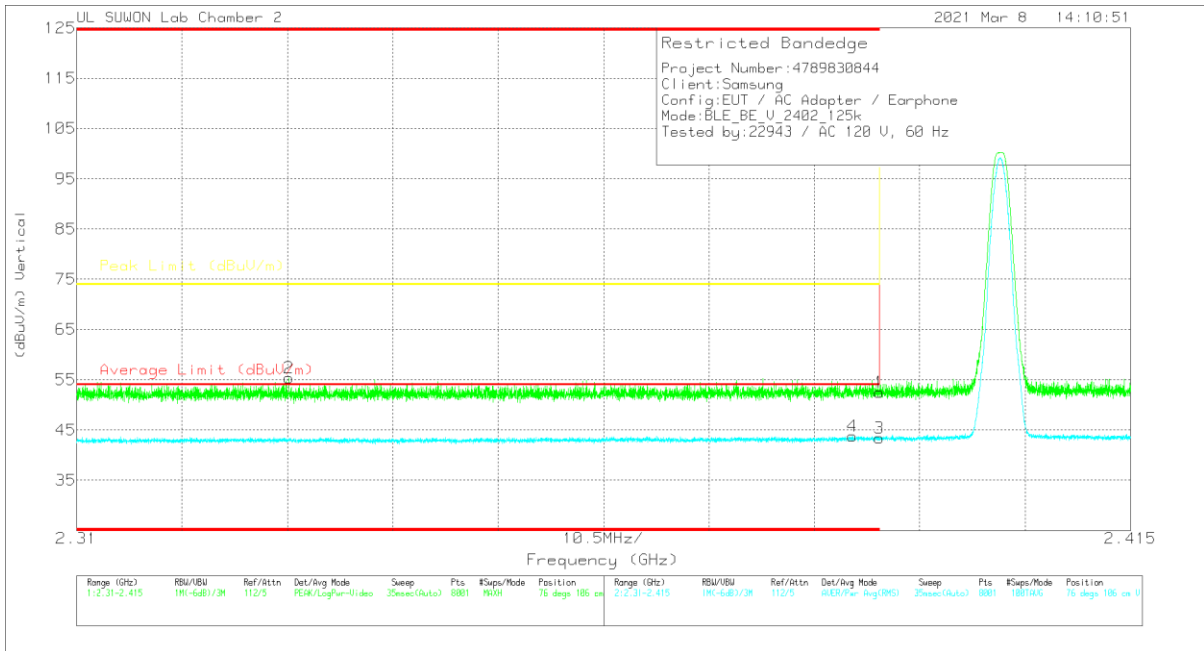


Trace Markers

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	40.99	Pk		-20.3	0	52.59	-	-	74	-21.41	58	168	H
2	* 2.36796	44.68	Pk		-20.5	0	55.98	-	-	74	-18.02	58	168	H
3	* 2.39	30.53	RMS		-20.3	.84	42.97	54	-11.03	-	-	58	168	H
4	* 2.38876	31.46	RMS		-20.3	.84	43.9	54	-10.1	-	-	58	168	H

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

VERTICAL RESULT



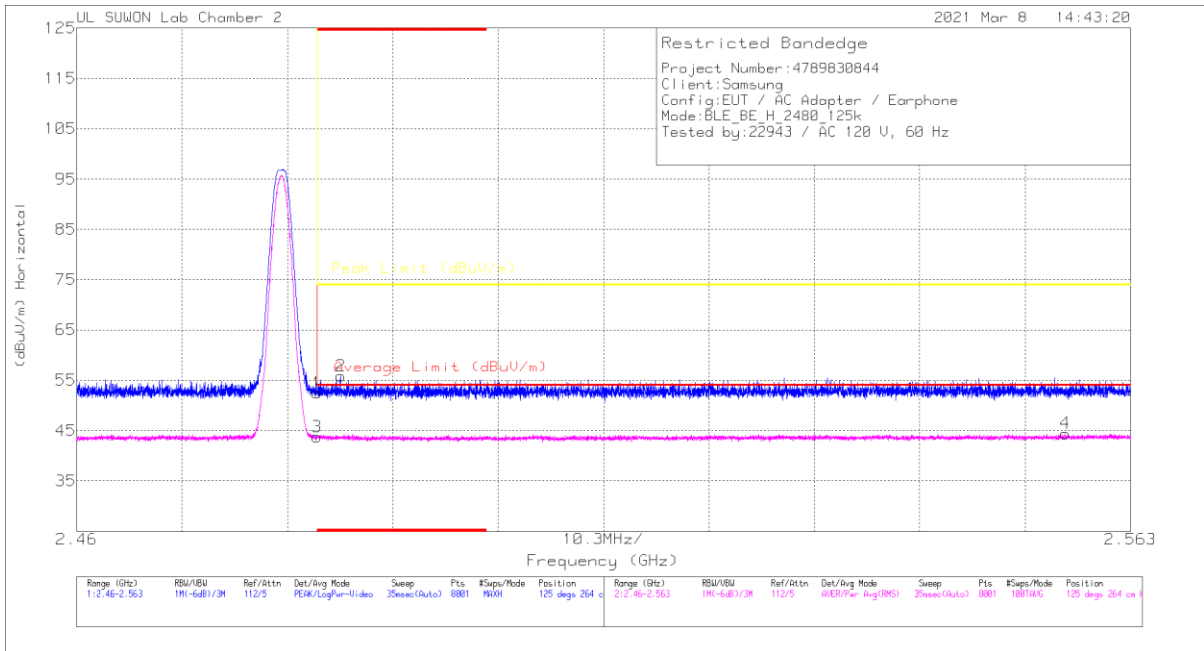
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT[dB]	DC Cor (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	-20.3	0	52.51	-	-	74	-21.49	76	106	V
2	* 2.33114	43.93	Pk	31.8	-20.4	0	55.33	-	-	74	-18.67	76	106	V
3	* 2.39	30.95	RMS	31.9	-20.3	.84	43.39	54	-10.61	-	-	76	106	V
4	* 2.38731	31.24	RMS	31.9	-20.2	.84	43.78	54	-10.22	-	-	76	106	V

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

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT

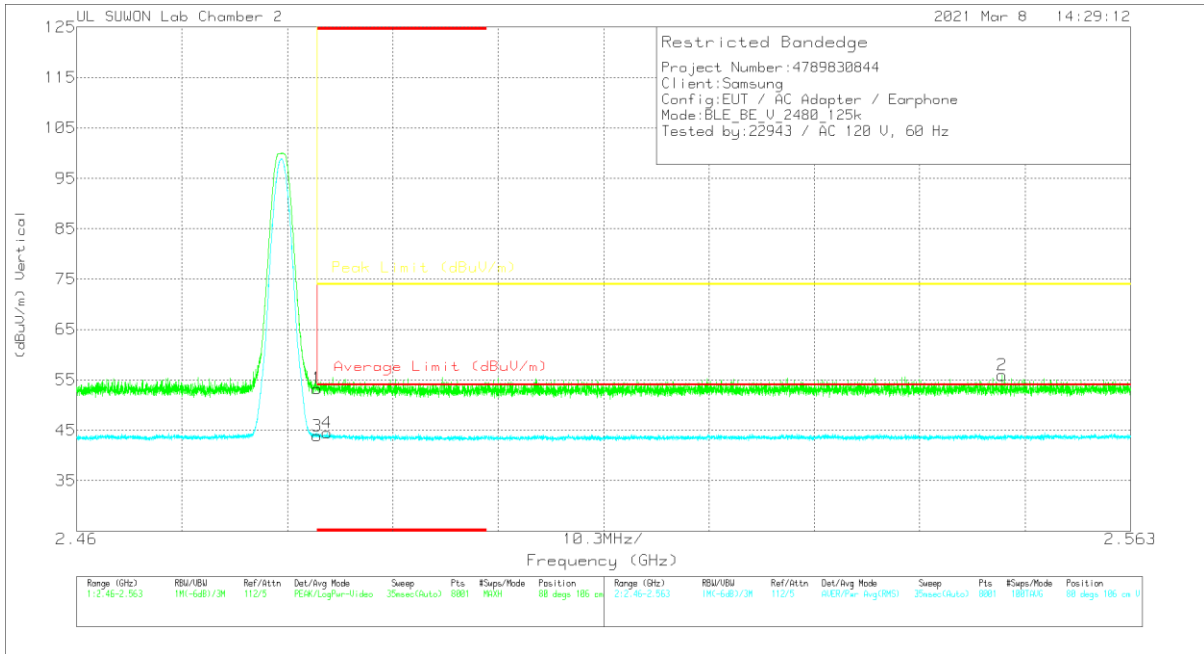


Trace Markers

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	40.75	Pk	32	-20.2	0	52.55	-	-	74	-21.45	125	264	H
2	* 2.48583	44.06	Pk	32	-20.2	0	55.86	-	-	74	-18.14	125	264	H
3	* 2.48351	31.17	RMS	32	-20.2	.84	43.81	54	-10.19	-	-	125	264	H
4	2.55664	31.52	RMS	32.2	-20.1	.84	44.46	54	-9.54	-	-	125	264	H

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

VERTICAL RESULT



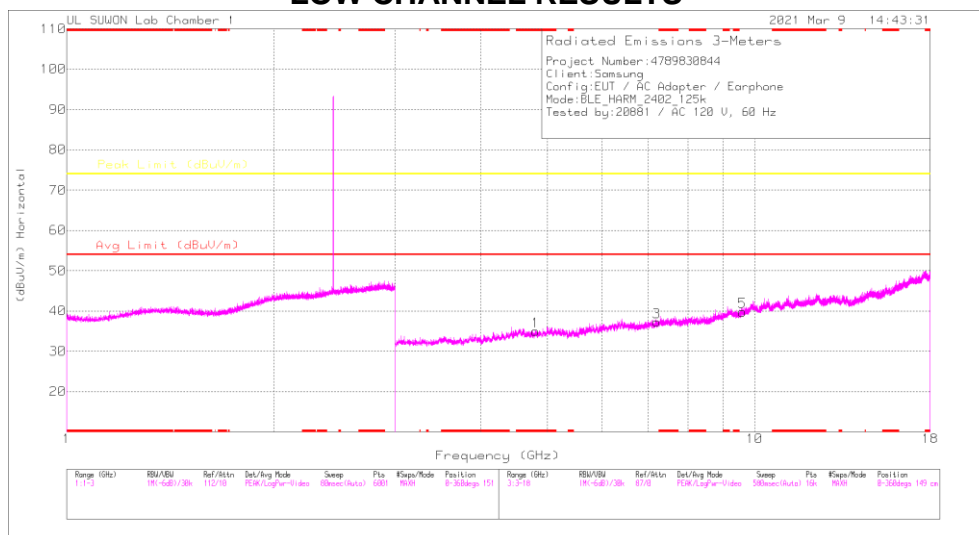
Trace Markers

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	41.51	PK	32	-20.2	0	53.31	-	-	74	-20.69	90	106	V
2	2.55047	43.83	PK	32.2	-20.1	0	55.93	-	-	74	-18.07	90	106	V
3	* 2.48351	31.3	RMS	32	-20.2	.84	43.94	54	-10.06	-	-	90	106	V
4	* 2.48446	31.91	RMS	32	-20.2	.84	44.55	54	-9.45	-	-	90	106	V

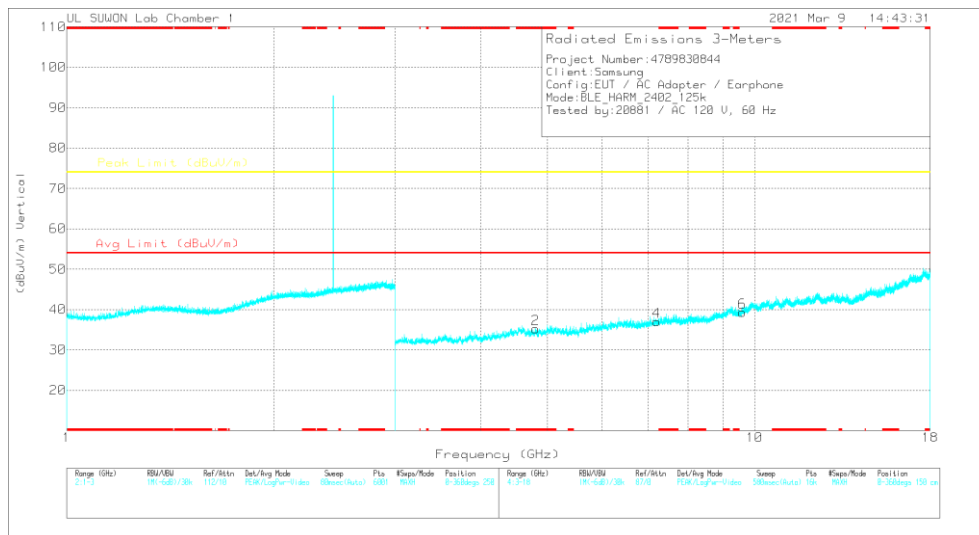
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK - Peak detector
 RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

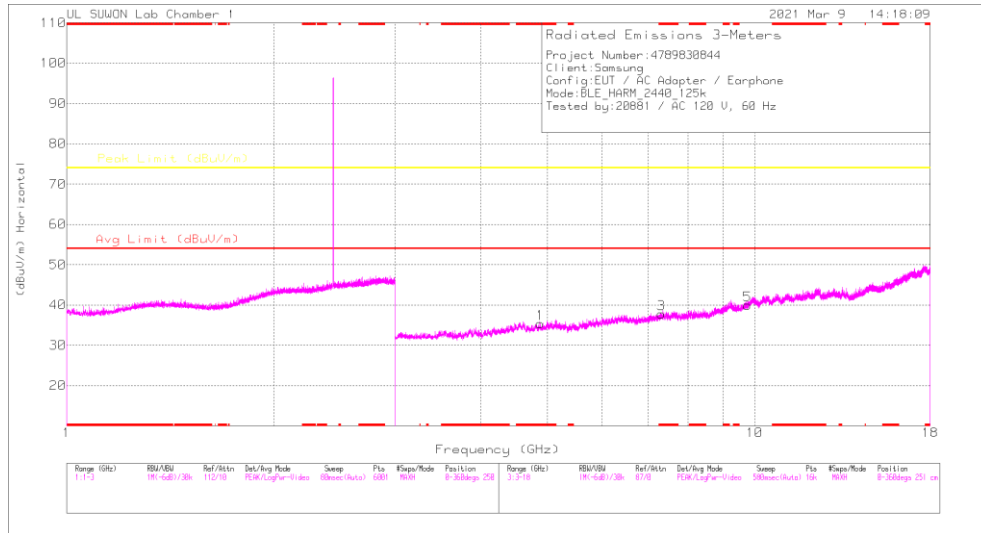
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

RADIATED EMISSIONS

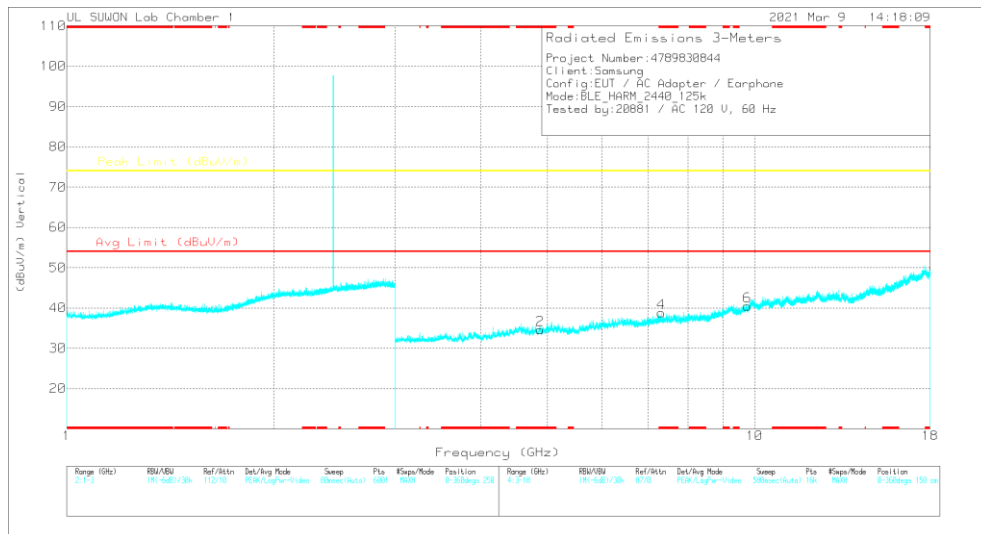
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.80231	41.85	PK2	34.1	-31.4	0	44.55	-	-	74	-29.45	0	100	H
* 4.80276	41.54	PK2	34.1	-31.4	0	44.24	-	-	74	-29.76	0	100	V
7.20438	37.43	PK2	35.9	-27.6	0	45.73	-	-	74	-28.27	0	100	H
7.20598	37.39	PK2	35.9	-27.6	0	45.69	-	-	74	-28.31	0	100	V
9.60861	34.29	PK2	37.1	-23	0	48.39	-	-	74	-25.61	0	100	H
9.60768	34.6	PK2	37.1	-23	0	48.7	-	-	74	-25.3	0	100	V

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

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

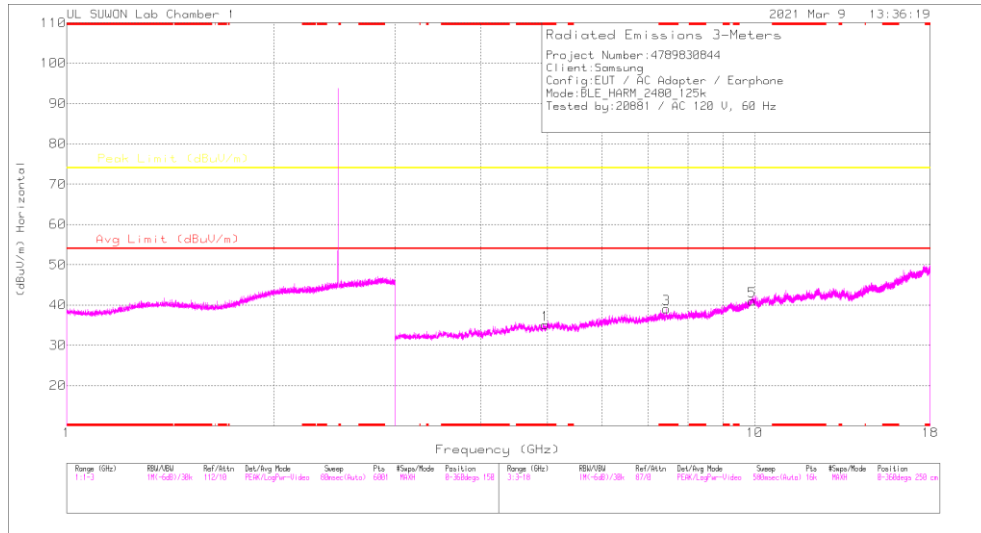
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

RADIATED EMISSIONS

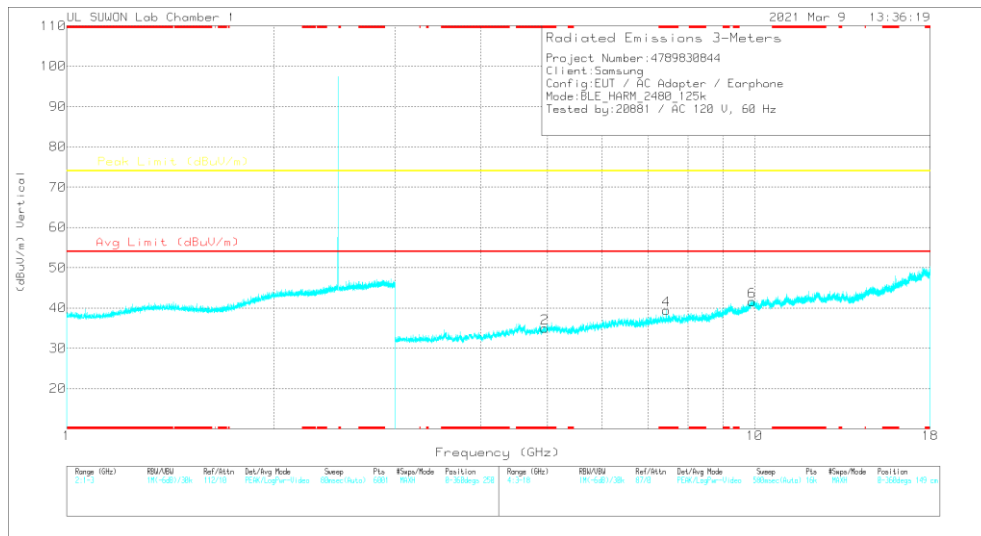
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Dege)	Height (cm)	Polarity
* 4.87857	42.12	PK2	34.1	-31.4	0	44.82	-	-	74	-29.18	0	100	H
* 4.87812	41.6	PK2	34.1	-31.4	0	44.3	-	-	74	-29.7	0	100	V
* 7.31946	38.4	PK2	35.8	-27.2	0	47	-	-	74	-27	0	100	H
* 7.31844	39.3	PK2	35.8	-27.4	0	47.7	-	-	74	-26.3	0	100	V
9.75997	34.87	PK2	37.4	-23.7	0	48.57	-	-	74	-25.43	0	100	H
9.76143	34.71	PK2	37.4	-23.7	0	48.41	-	-	74	-25.59	0	100	V

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

HIGH 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

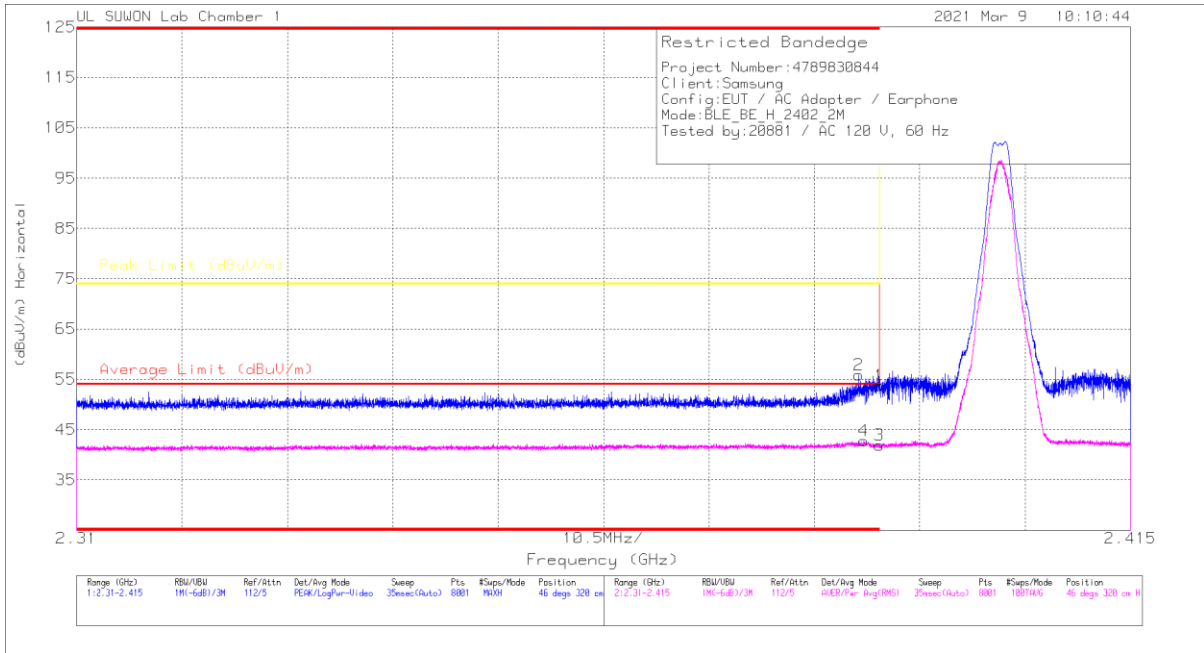
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_0016871 7	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.96039	41.03	PK2	34.1	-31.5	0	43.63	-	-	74	-30.37	0	100	H
* 4.96085	40.86	PK2	34.1	-31.5	0	43.46	-	-	74	-30.54	0	100	V
* 7.44068	39.99	PK2	35.8	-26.8	0	48.99	-	-	74	-25.01	161	106	H
* 7.44056	29.3	MAv1	35.8	-26.8	.84	39.14	54	-14.86	-	-	161	106	H
* 7.43966	39.47	PK2	35.8	-26.8	0	48.47	-	-	74	-25.53	188	121	V
* 7.43936	28.93	MAv1	35.8	-26.8	.84	38.77	54	-15.23	-	-	188	121	V
9.91931	34.36	PK2	37.7	-21.6	0	50.46	-	-	74	-23.54	0	100	H
9.91875	34.6	PK2	37.7	-21.6	0	50.7	-	-	74	-23.3	0	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK2 - KDB558074 Method: Maximum Peak
 MAv1 - KDB558074 Option 1 Maximum RMS Average

10.2.2. 2Mbps

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

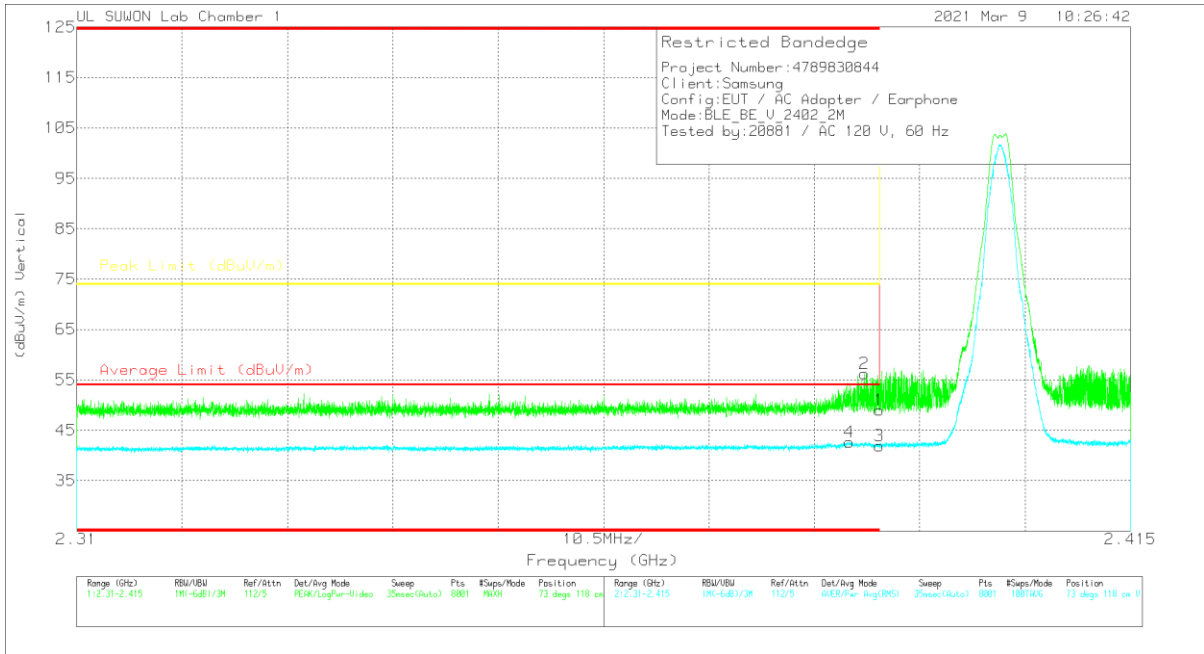


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	10dB_ATT[dB]	DC Cor (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	47.54	Pk	31.8	-25.6	0	53.74	-	-	74	-20.26	46	320	H
2	* 2.38792	49.55	Pk	31.8	-25.5	0	55.85	-	-	74	-18.15	46	320	H
3	* 2.39	33.21	RMS	31.8	-25.6	2.45	41.86	54	-12.14	-	-	46	320	H
4	* 2.38842	33.98	RMS	31.8	-25.5	2.45	42.73	54	-11.27	-	-	46	320	H

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

VERTICAL RESULT



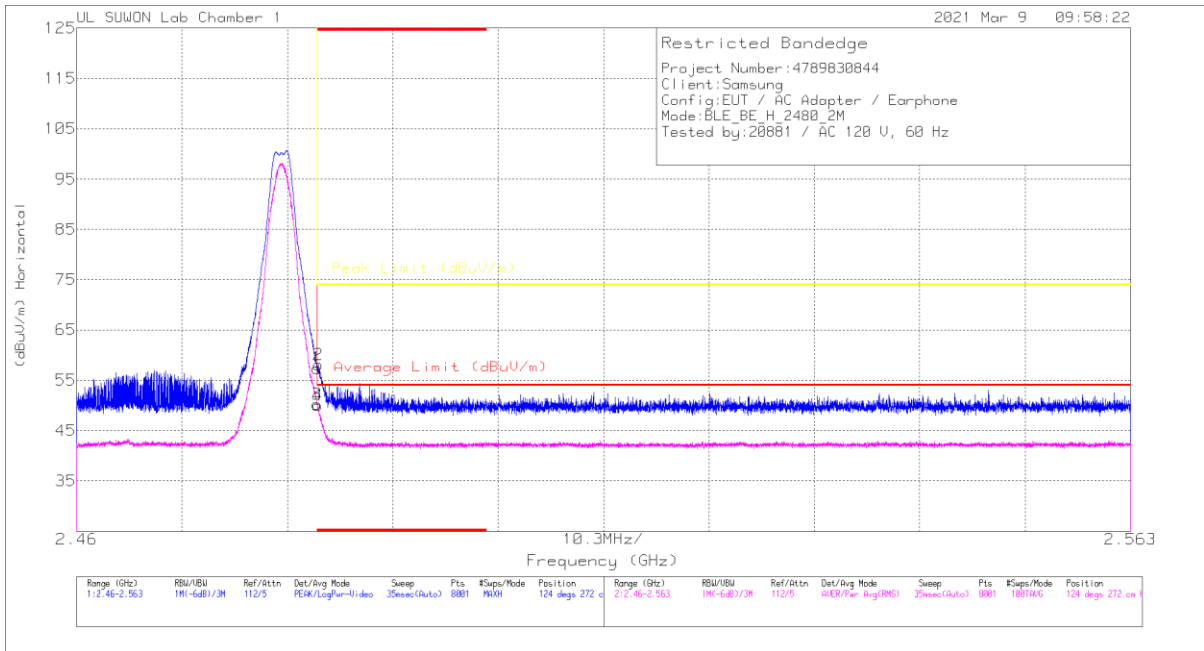
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	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	42.77	PK	31.8	-25.6	0	48.97	-	-	74	-25.03	73	118	V
2	* 2.38847	49.96	PK	31.8	-25.5	0	56.26	-	-	74	-17.74	73	118	V
3	* 2.39	33.21	RMS	31.8	-25.6	2.45	41.86	54	-12.14	-	-	73	118	V
4	* 2.38698	34.03	RMS	31.8	-25.6	2.45	42.68	54	-11.32	-	-	73	118	V

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

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT

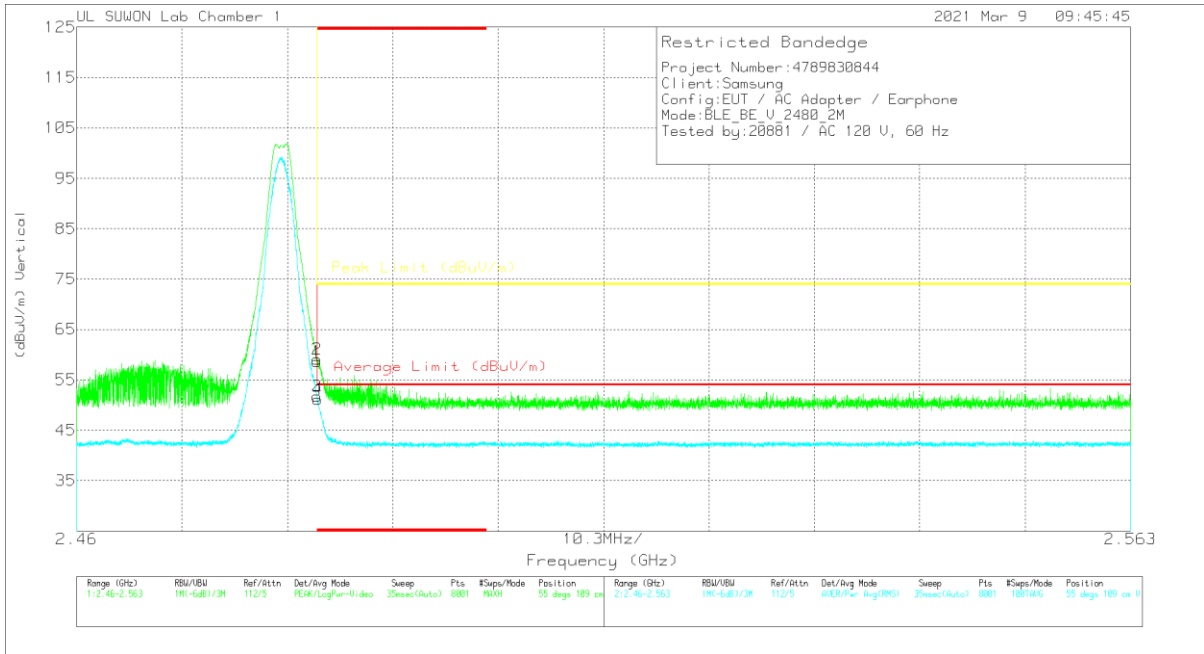


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	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	50.72	Pk	32	-25.3	0	57.42	-	-	74	-16.58	124	272	H
2	* 2.4836	51.36	Pk	32	-25.3	0	58.06	-	-	74	-15.94	124	272	H
3	* 2.48351	41.12	RMS	32	-25.3	2.45	50.27	54	-3.73	-	-	124	272	H
4	* 2.48357	40.89	RMS	32	-25.3	2.45	50.04	54	-3.96	-	-	124	272	H

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

VERTICAL RESULT



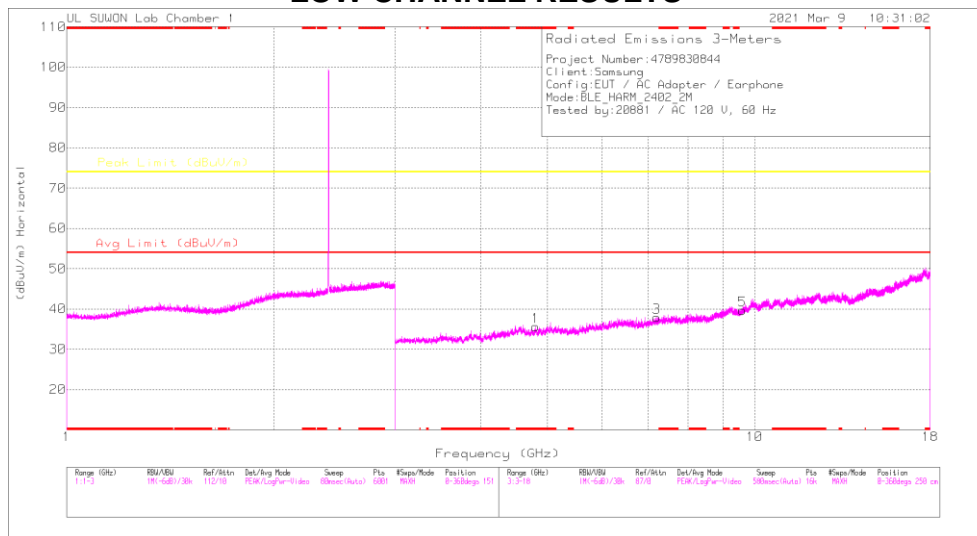
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	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	51.95	PK	32	-25.3	0	58.65	-	-	74	-15.35	55	109	V
2	* 2.48352	52.44	PK	32	-25.3	0	59.14	-	-	74	-14.86	55	109	V
3	* 2.48351	42.83	RMS	32	-25.3	2.45	51.78	54	-2.22	-	-	55	109	V
4	* 2.48354	42	RMS	32	-25.3	2.45	51.15	54	-2.85	-	-	55	109	V

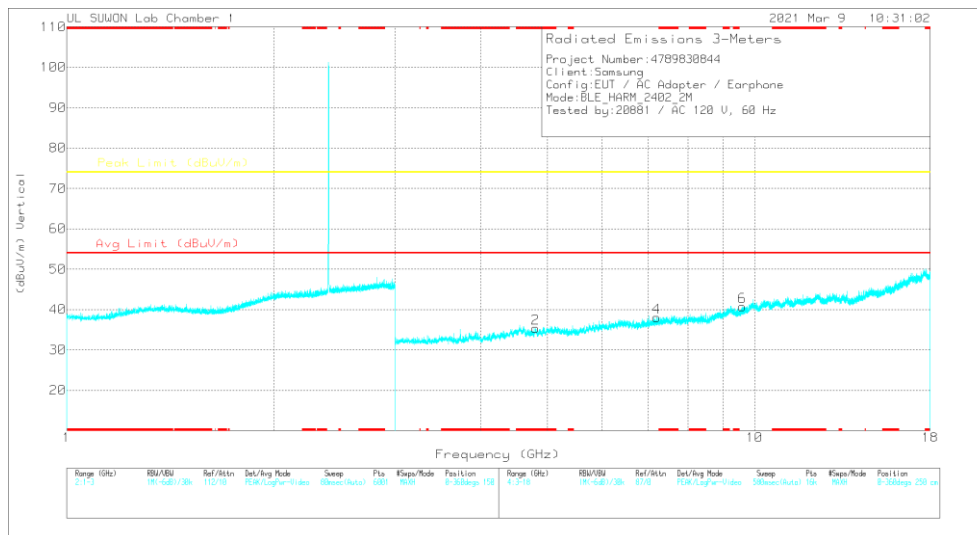
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK - Peak detector
 RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

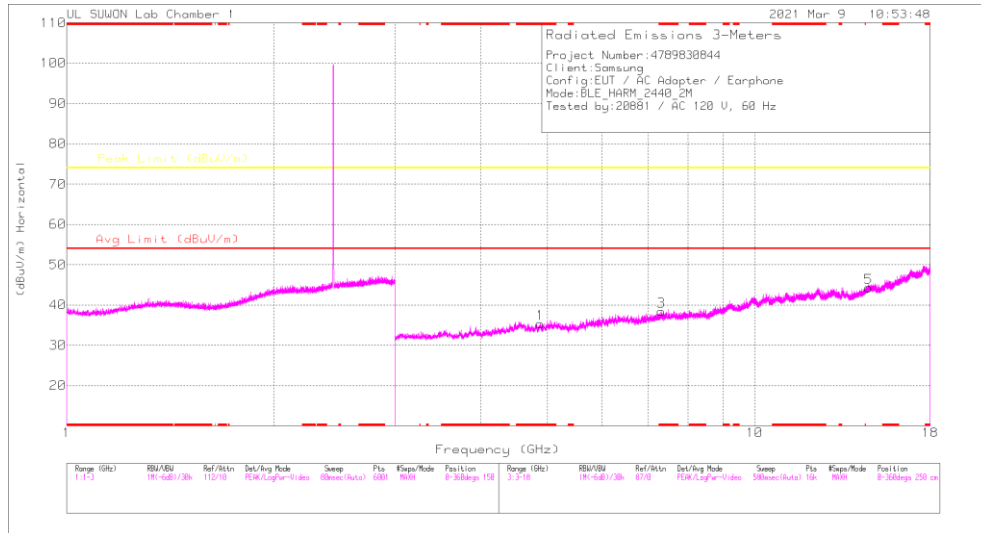
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

RADIATED EMISSIONS

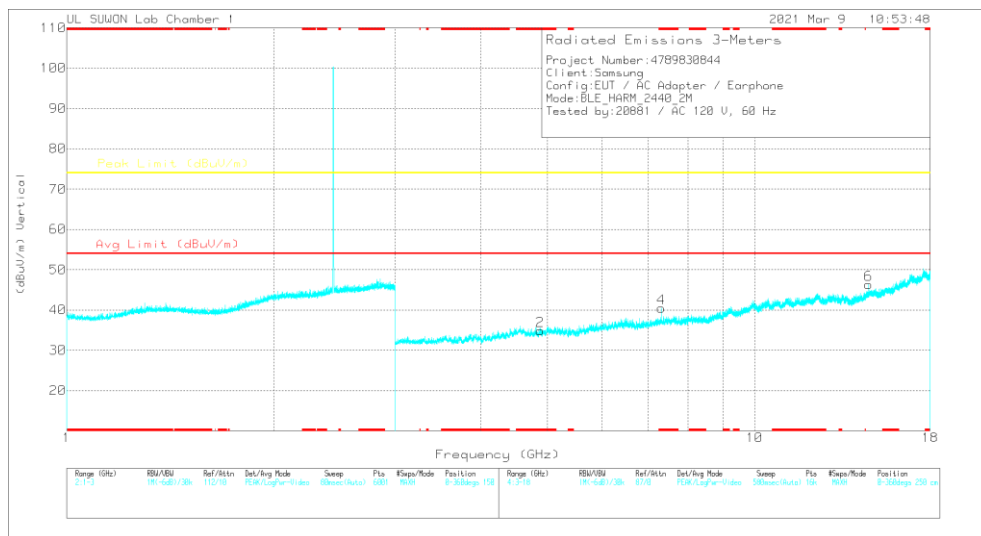
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.80283	41.55	PK2	34.1	-31.4	0	44.25	-	-	74	-29.75	0	100	H
* 4.80486	41.55	PK2	34.1	-31.4	0	44.25	-	-	74	-29.75	0	100	V
7.20783	37.66	PK2	35.9	-27.7	0	45.86	-	-	74	-28.14	0	100	H
7.20774	38.23	PK2	35.9	-27.7	0	46.43	-	-	74	-27.57	0	100	V
9.60829	34.64	PK2	37.1	-23	0	48.74	-	-	74	-25.26	0	100	H
9.60647	34.71	PK2	37.1	-23	0	48.81	-	-	74	-25.19	0	100	V

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

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

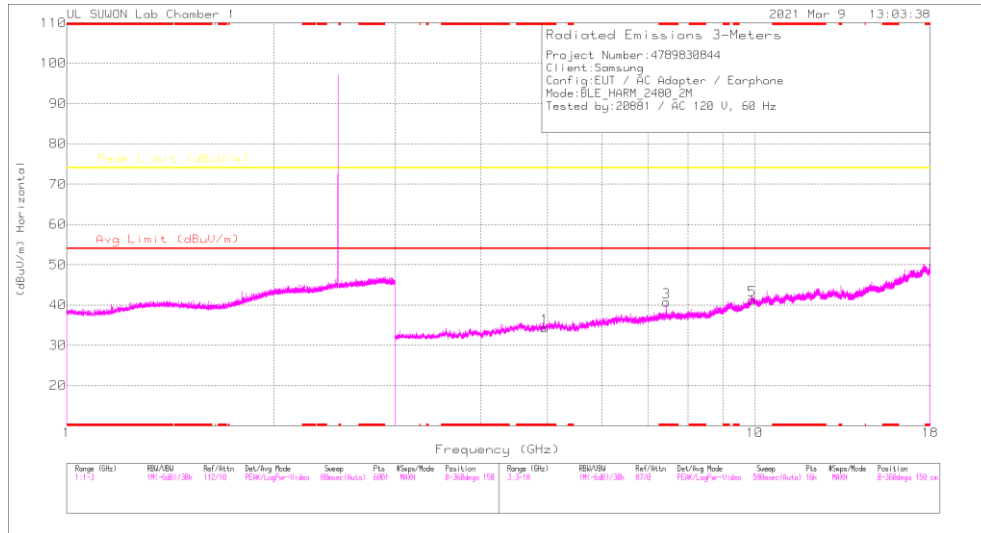
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

RADIATED EMISSIONS

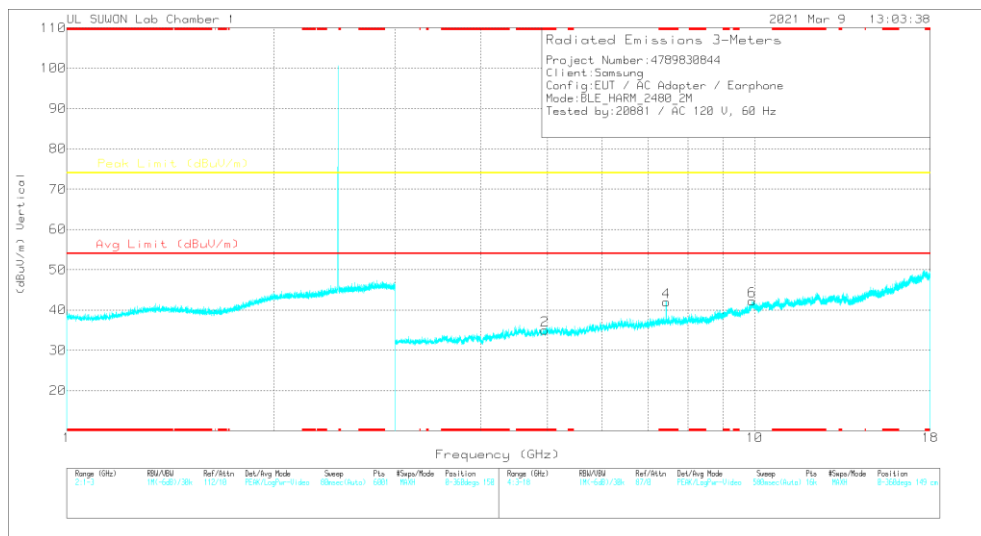
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_0016871 7	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.88163	42.01	PK2	34.1	-31.3	0	44.81	-	-	74	-29.19	0	100	H
* 4.87973	41.2	PK2	34.1	-31.4	0	43.9	-	-	74	-30.1	0	100	V
* 7.31862	40.9	PK2	35.8	-27.3	0	49.4	-	-	74	-24.6	163	101	H
* 7.3185	29.09	MAV1	35.8	-27.4	2.45	39.94	54	-14.06	-	-	163	101	H
* 7.32136	40.15	PK2	35.8	-27.4	0	48.55	-	-	74	-25.45	172	100	V
* 7.31868	28.59	MAV1	35.8	-27.3	2.45	39.54	54	-14.46	-	-	172	100	V
14.64108	36.36	PK2	40	-22	0	54.36	-	-	74	-19.64	126	291	H
14.63706	37.09	PK2	39.9	-22	0	54.99	-	-	74	-19.01	268	130	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK2 - KDB558074 Method: Maximum Peak
 MAV1 - KDB558074 Option 1 Maximum RMS Average

HIGH 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.

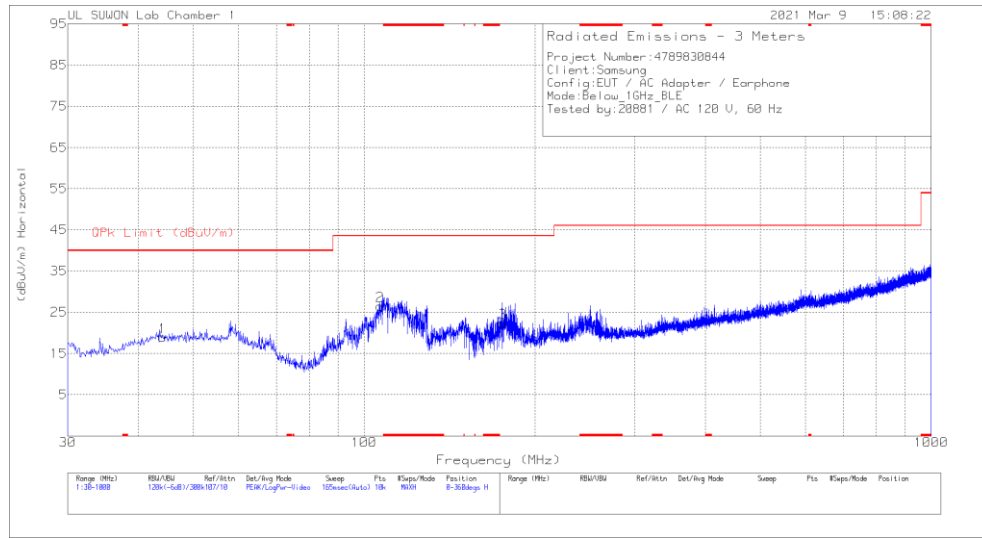
RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_0016871 7	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
* 4.96053	41.44	PK2	34.1	-31.5	0	44.04	-	-	74	-29.96	360	100	H
* 4.96032	41	PK2	34.1	-31.5	0	43.6	-	-	74	-30.4	0	100	V
* 7.44158	41.51	PK2	35.8	-26.9	0	50.41	-	-	74	-23.59	162	103	H
* 7.44152	29.67	MAv1	35.8	-26.9	2.45	41.02	54	-12.98	-	-	162	103	H
* 7.4414	40.91	PK2	35.8	-26.9	0	49.81	-	-	74	-24.19	189	102	V
* 7.44142	29.51	MAv1	35.8	-26.9	2.45	40.86	54	-13.14	-	-	189	102	V
9.92138	34.58	PK2	37.7	-21.5	0	50.78	-	-	74	-23.22	0	100	H
9.92001	34.25	PK2	37.7	-21.6	0	50.35	-	-	74	-23.65	0	100	V

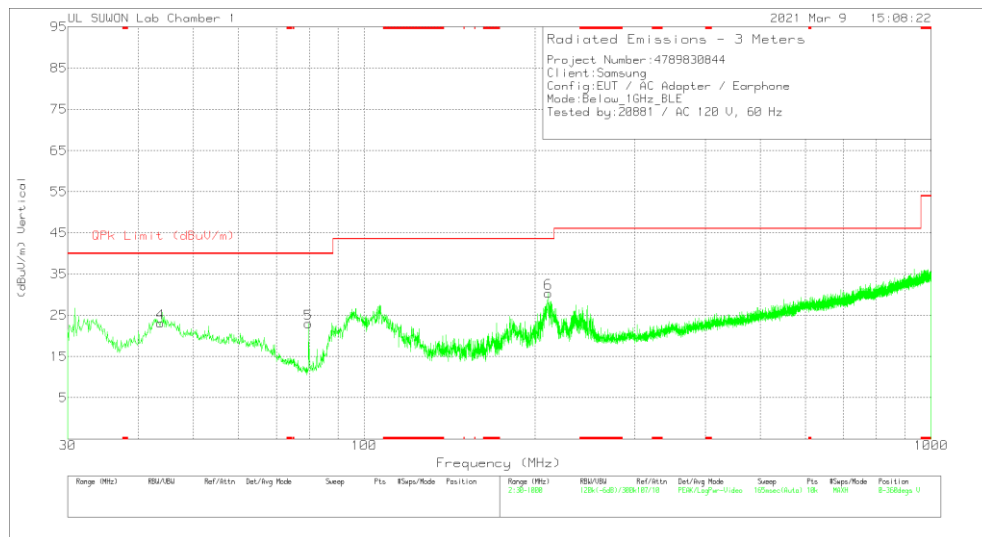
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK2 - KDB558074 Method: Maximum Peak
 MAv1 - KDB558074 Option 1 Maximum RMS Average

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_750	Below_1G[dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	44.065	30.26	Pk	19.5	-30.8	18.96	40	-21.04	0-360	200	H
2	106.727	38.55	Pk	17.6	-29.6	26.55	43.52	-16.97	0-360	400	H
3	175.5	36.14	Pk	14.9	-28.6	22.44	43.52	-21.08	0-360	100	H
4	43.774	34.29	Pk	19.5	-30.7	23.09	40	-16.91	0-360	200	V
5	79.761	40.37	Pk	12.6	-30	22.97	40	-17.03	0-360	300	V
6	211.196	42.21	Pk	16.6	-28.4	30.41	43.52	-13.11	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.

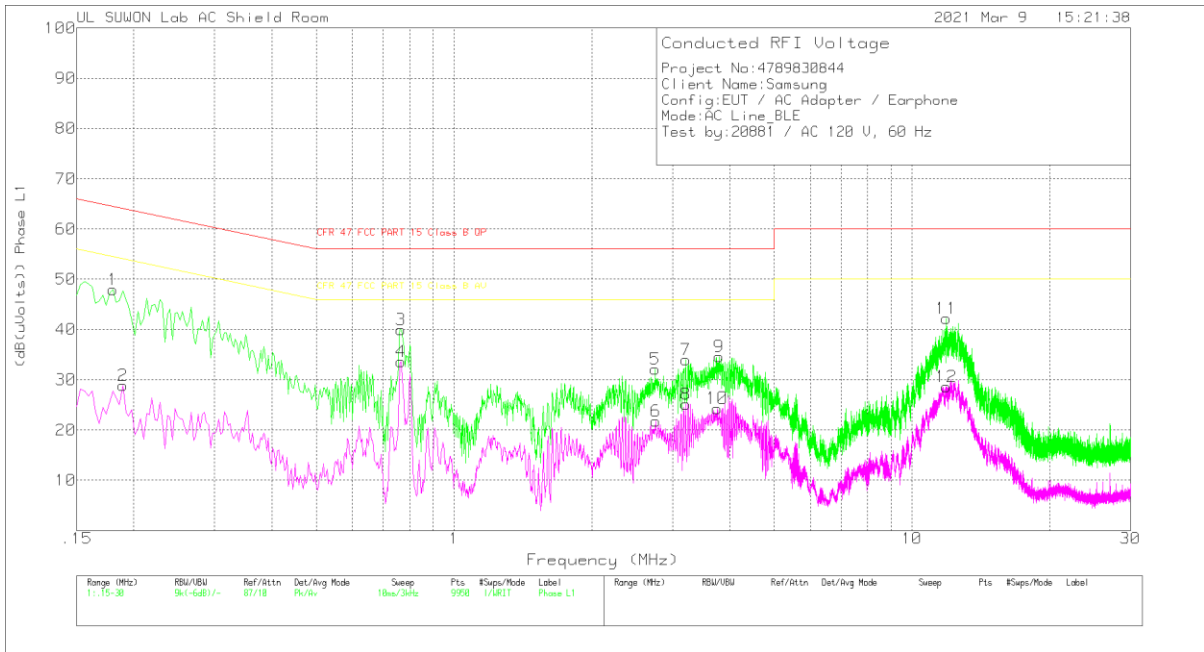
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

11.1.1. AC Power Line

LINE 1 RESULTS



Trace Markers

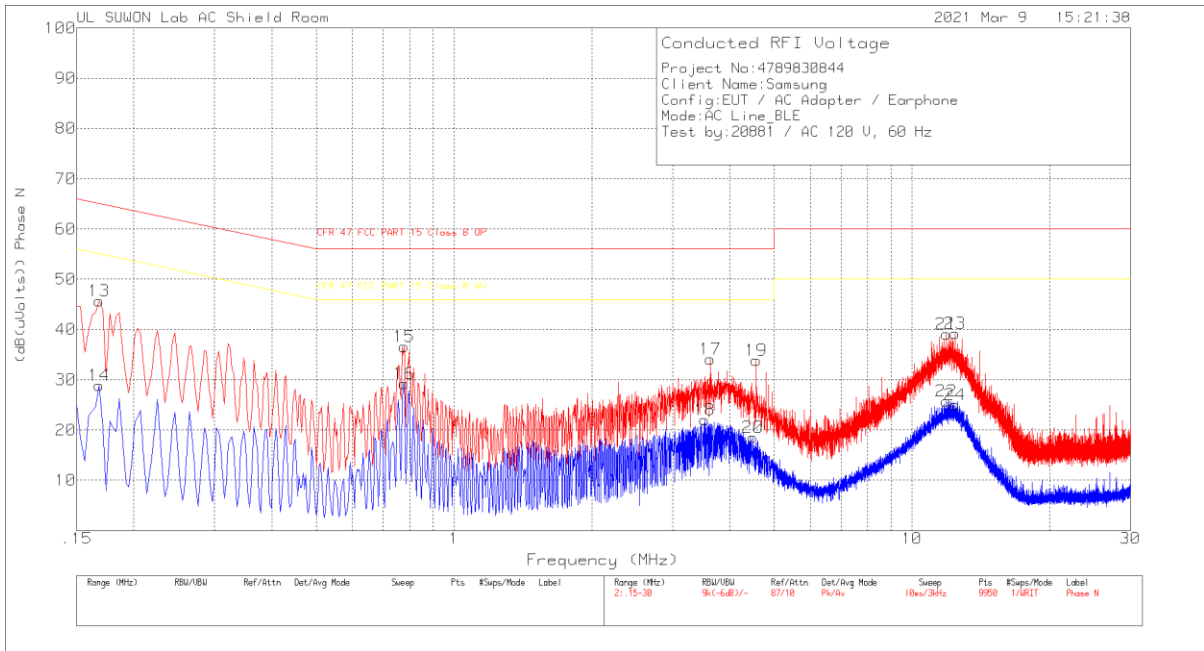
Range 1: Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_L1[dB]	CABLELOS S(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	.18	37.71	Pk	10	.2	47.91	64.49	-16.58	-	-
2	.189	18.71	Av	10	.2	28.91	-	-	54.08	-25.17
3	.765	29.9	Pk	9.9	.2	40	56	-16	-	-
4	.765	23.55	Av	9.9	.2	33.65	-	-	46	-12.35
5	2.751	22.07	Pk	9.7	.3	32.07	56	-23.93	-	-
6	2.757	11.76	Av	9.7	.3	21.76	-	-	46	-24.24
7	3.21	23.84	Pk	9.8	.3	33.94	56	-22.06	-	-
8	3.204	15.02	Av	9.8	.3	25.12	-	-	46	-20.88
9	3.792	24.51	Pk	9.8	.3	34.61	56	-21.39	-	-
10	3.759	14.22	Av	9.8	.3	24.32	-	-	46	-21.68
11	11.892	31.92	Pk	10	.3	42.22	60	-17.78	-	-
12	11.874	18.37	Av	10	.3	28.67	-	-	50	-21.33

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_Wit h EX_N[dB]	CABLELOS S(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	.168	35.45	Pk	10.1	.1	45.65	65.06	-19.41	-	-
14	.168	18.67	Av	10.1	.1	28.87	-	-	55.06	-26.19
15	.777	26.45	Pk	9.9	.2	36.55	56	-19.45	-	-
16	.777	19.1	Av	9.9	.2	29.2	-	-	46	-16.8
17	3.633	24.06	Pk	9.8	.3	34.16	56	-21.84	-	-
18	3.531	11.94	Av	9.8	.3	22.04	-	-	46	-23.96
19	4.572	23.74	Pk	9.8	.3	33.84	56	-22.16	-	-
20	4.491	8.38	Av	9.8	.3	18.48	-	-	46	-27.52
21	11.886	28.75	Pk	10	.3	39.05	60	-20.95	-	-
22	11.898	15.42	Av	10	.3	25.72	-	-	50	-24.28
23	12.429	28.87	Pk	10	.3	39.17	60	-20.83	-	-
24	12.432	14.68	Av	10	.3	24.98	-	-	50	-25.02

Pk - Peak detector

Av - Average detection

END OF TEST REPORT