



CERTIFICATION TEST REPORT

Report Number. : 4790430333-E4V1

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

Model : SM-T638U

FCC ID : A3LSMT638U

IC : 649E-SMT638U

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

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C
FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS-247 Issue 2
INDUSTRY CANADA RSS-GEN Issue 5

Date Of Issue:

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Revision History

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.

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

MODEL NUMBER: SM-T638U

SERIAL NUMBER: R32T5003C8X, R32T50052FD (CONDUCTED, Original);
R32T5003G0W, R32T5004ZEX, R32T5004ZHZ (RADIATED, Original);
R32T6001FZK (RADIATED, Spot-check);

DATE TESTED: 2022-06-20 ~ 2022-07-26 (Original);
2022-07-06 ~ 2022-08-05 (Spot-check);

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

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

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

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1.1. INTRODUCTION OF TEST DATA DEVIATION

This report referenced from the FCC ID: A3LSMT636B DTS BLE(FCC CFR 47 Part 15C). And the applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID.

1.2. DIFFERENCE

The SM-T638U (IC: 649E-SMT638U) model shares the same enclosure and circuit board as SM-T636B. The BLE antennas and surrounding circuitry and layout are identical between these two units.

After confirming through preliminary radiated emissions that the performance of the SM-T638U (IC: 649E-SMT638U) remains representative of SM-T636B. The test data of SM-T636B being submitted for this application to cover BLE features.

1.3. SPOT CHECK VERIFICATION DATA

(Worst case of the radiated band-edge and radiated spurious emissions)

Band	Test Item	Mode	Frequency	Test Limit	Original model	Spot check model	Deviation	Remark
					SM-T636B Results	SM-T638U Results		
					FCC ID : A3LSMT636B	FCC ID : A3LSMT638U		
DTS BLE 500k	BANDEDGE	500 kbps	2480 MHz	54 dBuV/m	46.61 dBuV/m	46.59 dBuV/m	-0.02 dB	
	RSE	500 kbps	9760 MHz	54 dBuV/m	49.30 dBuV/m	48.43 dBuV/m	-0.87 dB	Noise floor
DTS BLE 2M	BANDEDGE	2 Mbps	2480 MHz	54 dBuV/m	49.18 dBuV/m	49.28 dBuV/m	0.10 dB	
	RSE	2 Mbps	9920 MHz	54 dBuV/m	49.49 dBuV/m	48.89 dBuV/m	-0.60 dB	Noise floor

Comparison of two models, upper deviation is within 3 dB range and all test results are under FCC Technical Limits.

1.4. REFERENCE DETAIL

Reference application that contains the reused reference data in the individual test reports:

Equipment Class	Reference FCC ID (Parent)	Application Type	Reference Test report number	Exhibit Type	Spot-Check Test Report Number
DTS	A3LSMT636B	Original Grant	4790406759-E3 (802.11b/g/n/ax)	Test Report	4790430333-E3 (802.11b/g/n/ax)
DTS	A3LSMT636B	Original Grant	4790406759-E4 (BLE)	Test Report	4790430333-E4 (BLE)
DSS	A3LSMT636B	Original Grant	4790406759-E5 (Bluetooth)	Test Report	4790430333-E5 (Bluetooth)
NII	A3LSMT636B	Original Grant	4790406759-E6 (802.11a/n/ac/ax)	Test Report	4790430333-E6 (802.11a/n/ac/ax)
DXX	A3LSMT636B	Original Grant	4790406759-E7 (NFC)	Test Report	4790430333-E7 (NFC)

2. TEST METHODOLOGY

1. FCC CFR 47 Part 2.
2. FCC CFR 47 Part 15.
3. KDB 558074 D01 DTS Meas Guidance v05r02.
4. KDB 662911 D01 Multiple Transmitter Output v02r01
5. ANSI C63.10-2013.
6. IC RSS-GEN Issue 5.
7. IC RSS-247 Issue 2.
8. KDB 484596 D01 Referencing Test Data v01

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(3m semi-anechoic chamber)
<input checked="" type="checkbox"/>	Chamber 2(3m semi-anechoic chamber)
<input checked="" type="checkbox"/>	Chamber 3(3m semi-anechoic chamber)
<input type="checkbox"/>	Chamber 4(3m Full-anechoic chamber)
<input type="checkbox"/>	Chamber 5(3m Full-anechoic chamber)

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

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

4. DECISION RULES AND MEASUREMENT UNCERTAINTY

4.1. METROLOGICAL TRACEABILITY

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

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

4.3. 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 115:2021.

5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION

The EUT is a WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax and NFC. 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	500 kbps	Peak	9.468	8.847
		Average	9.312	8.535
	2 Mbps	Peak	9.462	8.835
		Average	9.120	8.167

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 -2.5 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.

- Worst axis: Y

-

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

Symbol Rate [Ms/s]	ANT.	Mode	Freq. [MHz]	Conducted Burst Avg [dBm]	Symbol Rate [Ms/s]	ANT.	Mode	Freq. [MHz]	Conducted Burst Avg [dBm]
1	ANT1	1Mbps 37pkt	2402	8.722	2	ANT1	2Mbps 37pkt	2402	8.575
			2440	9.235				2440	9.120
			2480	8.875				2480	8.723
	ANT1	1Mbps 255pkt	2402	8.759		ANT1	2Mbps 255pkt	2402	8.604
			2440	9.259				2440	9.108
			2480	8.908				2480	8.746
1 Coded S=8	ANT1	125kbps 37pkt	2402	8.772	1 Coded S=2	ANT1	500kbps 37pkt	2402	8.819
			2440	9.270				2440	9.312
			2480	8.913				2480	8.960
	ANT1	125kbps 255pkt	2402	8.760		ANT1	500kbps 255pkt	2402	8.770
			2440	9.256				2440	9.272
			2480	8.892				2480	8.912

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Charger	SAMSUNG	EP-TA200	R37N6K421B2SE3	N/A
Data Cable	SAMSUNG	EP-DT725BWE	GH39-02020A	N/A
Charger	SAMSUNG	EP-TA800	R37N3MAH988DK3	N/A
Data Cable	SAMSUNG	EP-DN980	GH39-02115A	N/A
Earphone	SAMSUNG	GH59-15055A	EHS64AVFWE	N/A

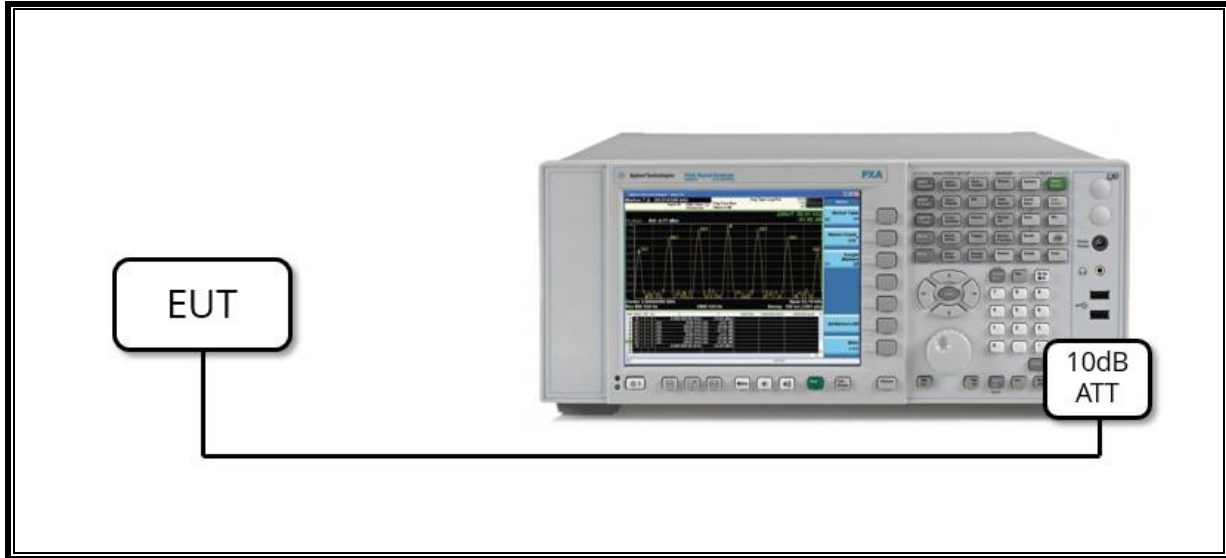
I/O CABLE

I/O Cable List						
Cable No.	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	A to C Type	Shielded	1.0 m	N/A
2	DC Power	1	C to C Type	Shielded	1.0 m	N/A
3	Audio	2	Mini-Jack	Unshielded	0.7 m	N/A

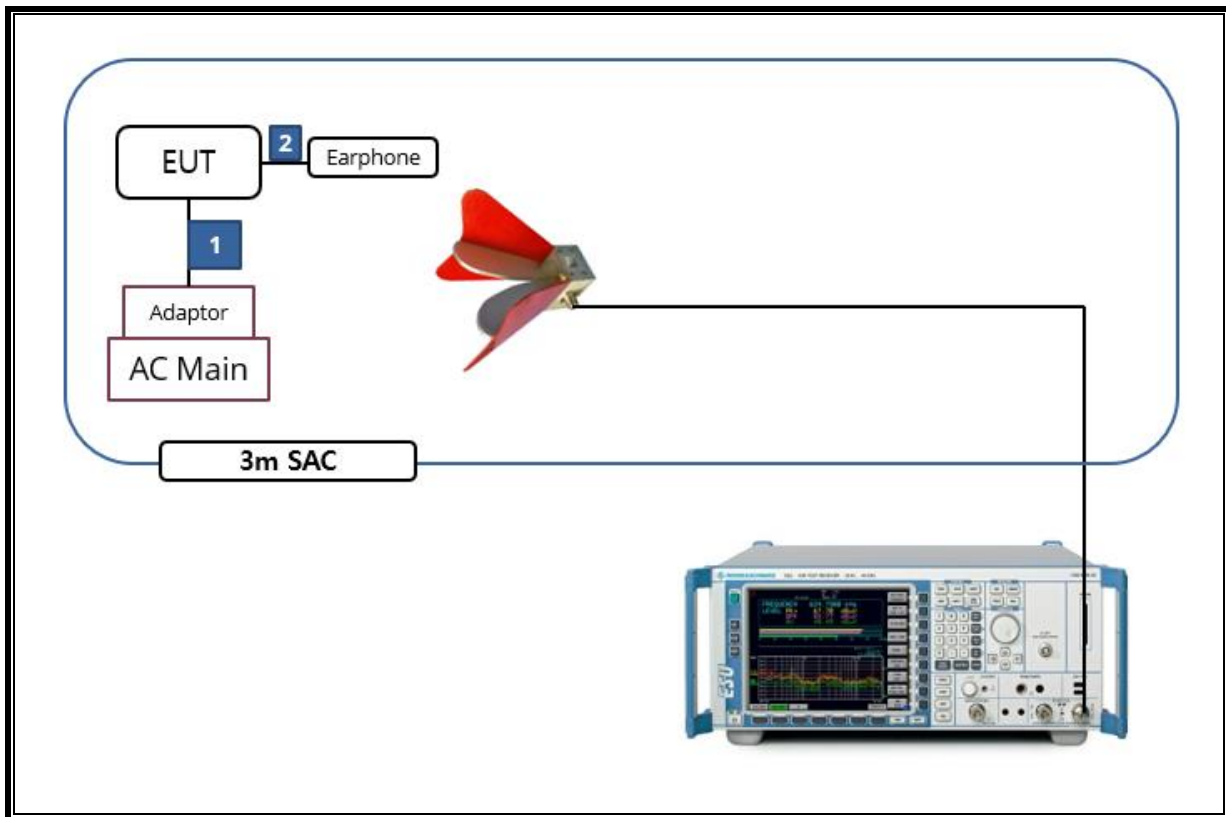
TEST SETUP

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

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List				
Description	Manufacturer	Model	S/N	Cal Due
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	750	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	2023-01-18
Spectrum Analyzer, 44 GHz	KEYSIGHT	N9040B	MY60080268	2023-01-19
Average Power Sensor	Agilent / HP	U2000	MY54270007	2022-08-04
Average Power Sensor	Agilent / HP	U2000	MY54260010	2022-08-04
Attenuator	PASTERNAK	PE7087-10	A001	2022-08-03
Attenuator	PASTERNAK	PE7087-10	A008	2022-08-03
Attenuator	PASTERNAK	PE7004-10	2	2022-08-02
Attenuator	PASTERNAK	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
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	2023-10-06
UL Software				
Description	Manufacturer	Model	Version	
Radiated software	UL	UL EMC	Ver 9.5	
AC Line Conducted software	UL	UL EMC	Ver 9.5	

7. TEST RESULTS SUMMARY

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

For ISED, updated 99% Bandwidth data.

8. MEASUREMENT METHOD

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

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

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

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

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

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

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

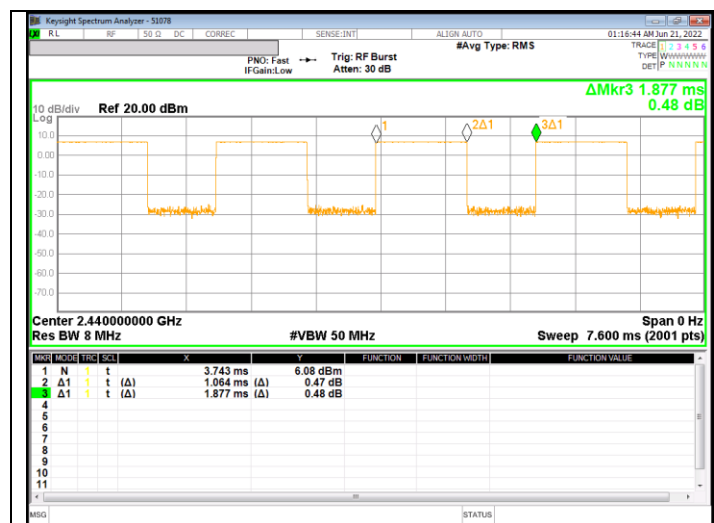
9. ANTENNA PORT TEST RESULTS

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						
500 kbps [37pkt]	1.064	1.877	0.567	56.686	2.47	0.94
2 Mbps [37pkt]	0.198	0.624	0.317	31.731	4.99	5.05



500 kbps(37 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

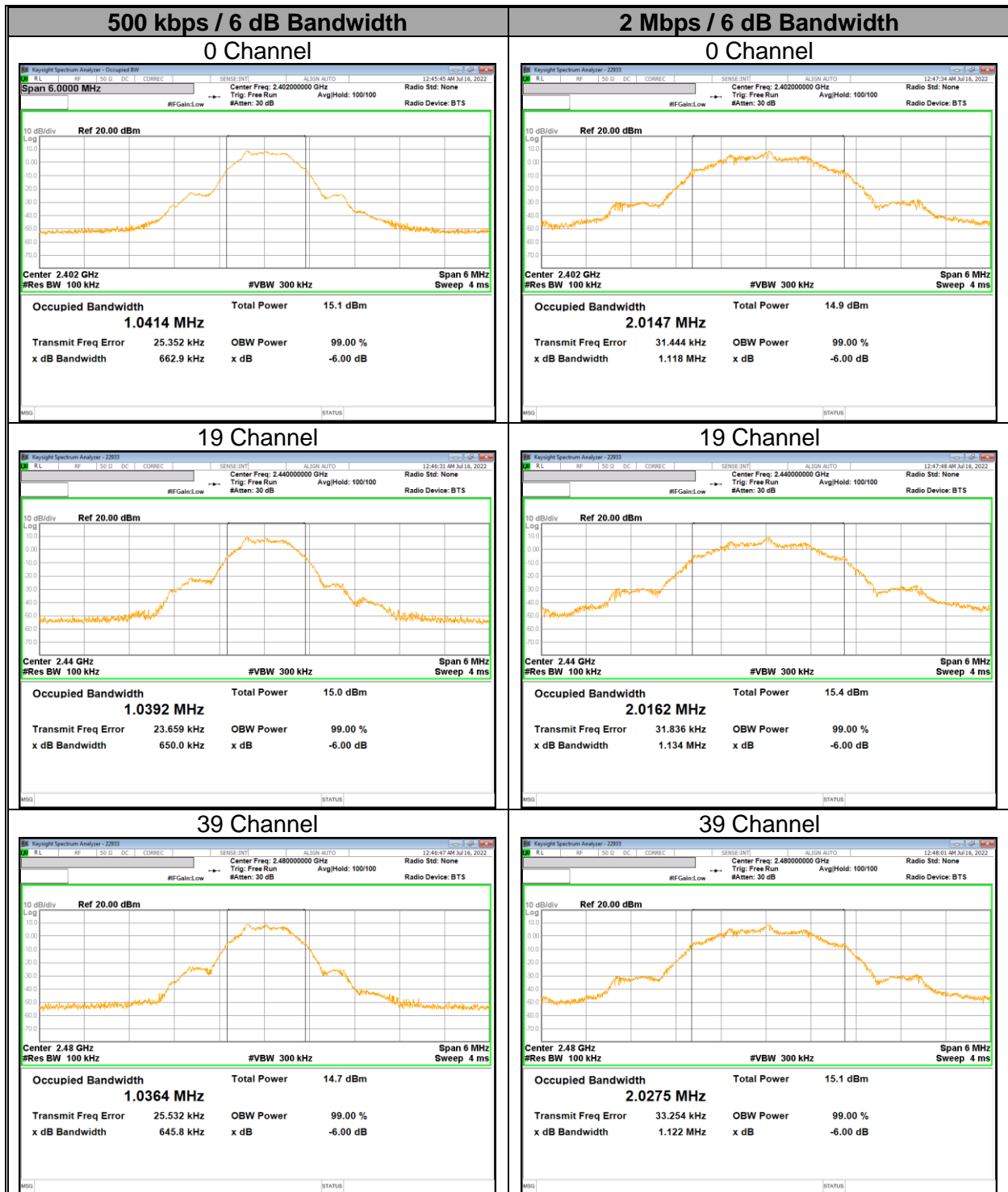
9.2.1. 500 kbps

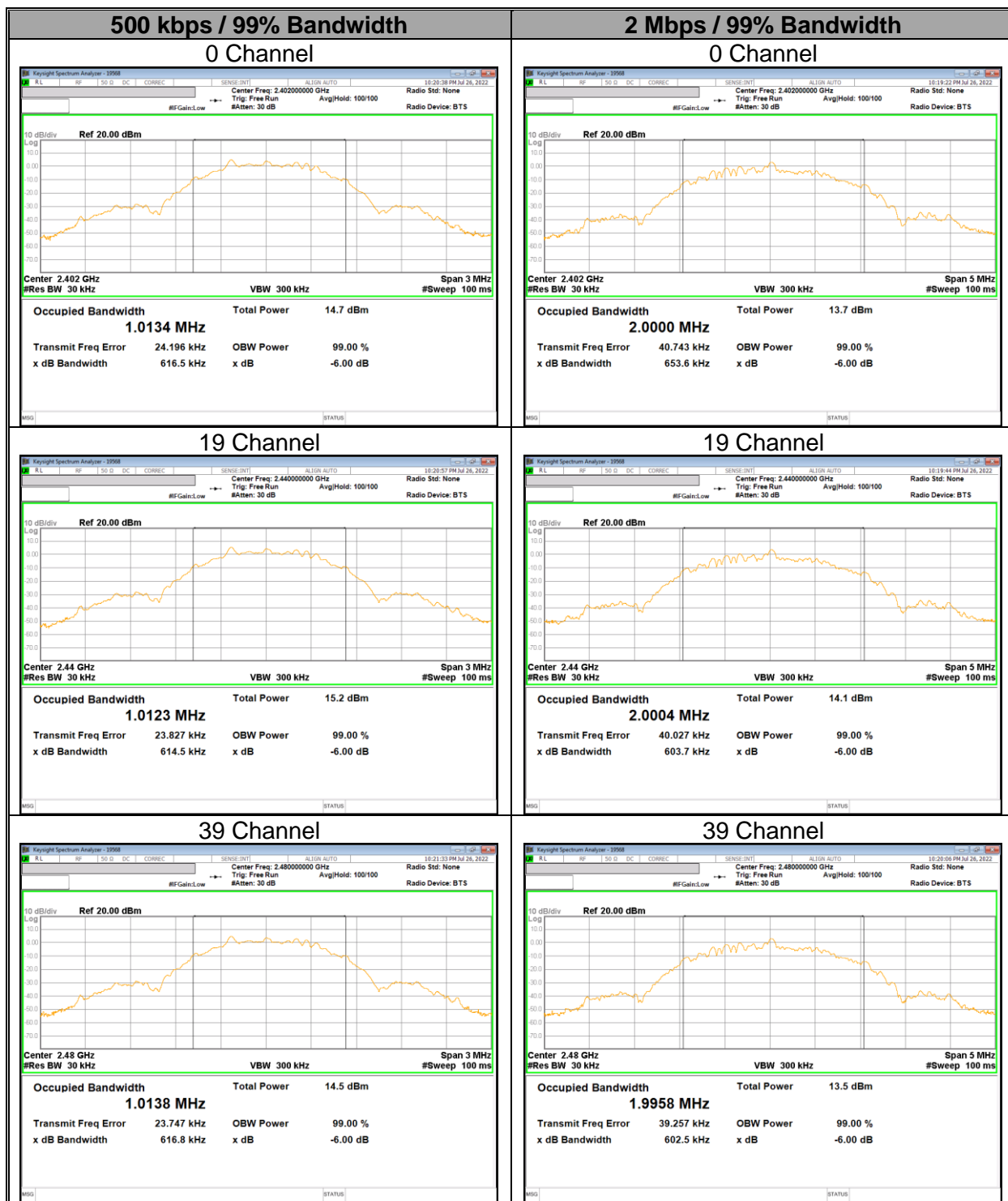
Channel	Frequency [MHz]	6 dB Bandwidth [kHz]	Minimum Limit [kHz]
0	2 402	662.9	500.0
19	2 440	650.0	500.0
39	2 480	645.8	500.0
Worst		645.8	500.0
Channel	Frequency [MHz]	99 % Bandwidth [MHz]	Minimum Limit [MHz]
0	2 402	1.013	-
19	2 440	1.012	-
39	2 480	1.014	-
Worst		1.014	-

9.2.2. 2 Mbps

Channel	Frequency [MHz]	6 dB Bandwidth [kHz]	Minimum Limit [kHz]
0	2 402	1 118.0	500.0
19	2 440	1 134.0	500.0
39	2 480	1 122.0	500.0
Worst		1 118.0	500.0
Channel	Frequency [MHz]	99 % Bandwidth [MHz]	Minimum Limit [MHz]
0	2 402	2.000	-
19	2 440	2.000	-
39	2 480	1.996	-
Worst		2.000	-

9.2.3. 6 dB BANDWIDTH PLOTS & 99% BANDWIDTH





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

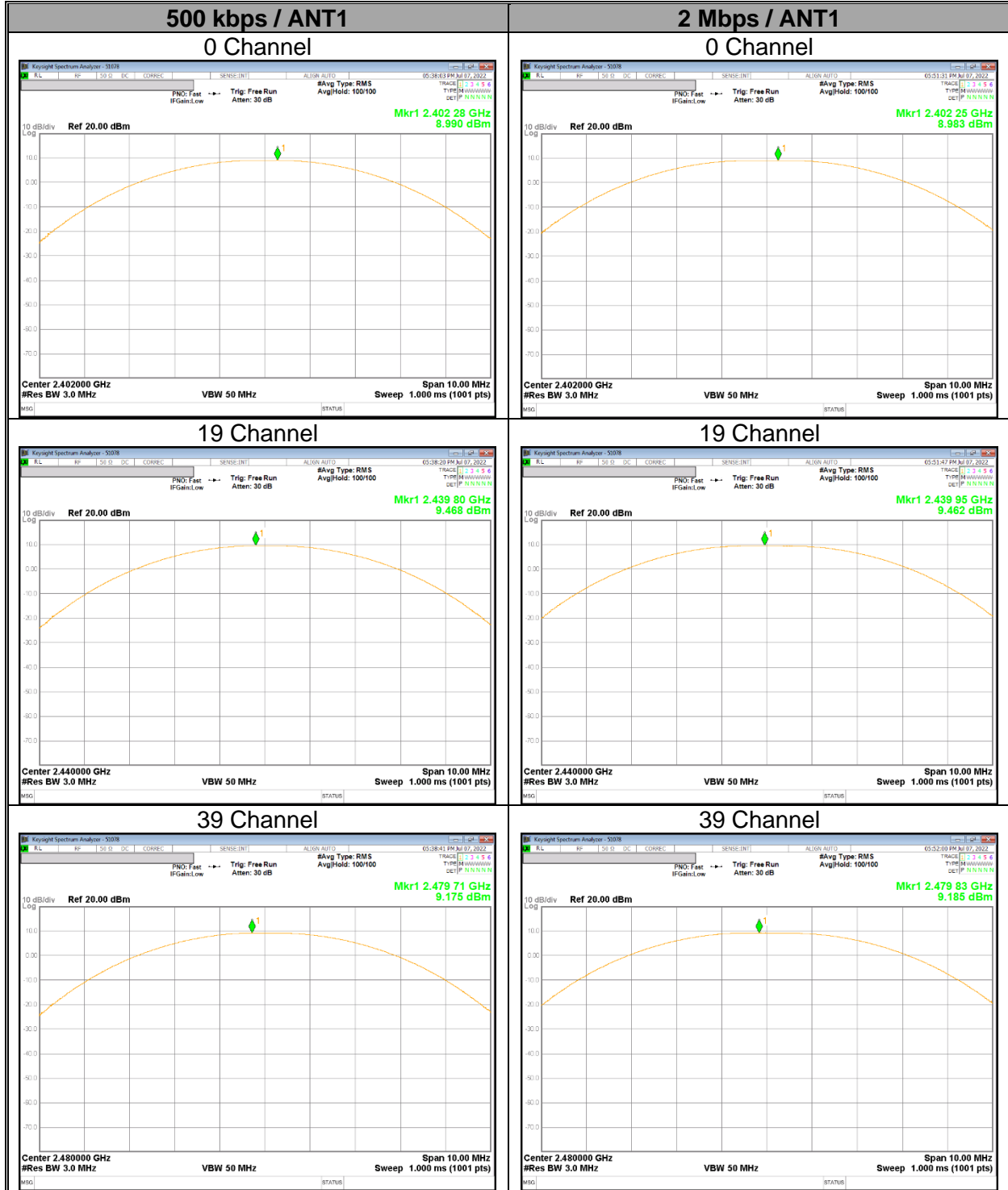
9.3.1. 500 kbps

Power Mode	Channel	Frequency [MHz]	Peak Output Power [dBm]	Limit [dBm]	Margin [dB]
High	0	2 402	8.990	30.000	-21.010
	19	2 440	9.468		-20.532
	39	2 480	9.175		-20.825
Worst			9.468		-20.532

9.3.2. 2 Mbps

PA.	Channel	Frequency [MHz]	Peak Output Power [dBm]	Limit [dBm]	Margin [dB]
High	0	2 402	8.983	30.000	-21.017
	19	2 440	9.462		-20.538
	39	2 480	9.185		-20.815
Worst			9.462		-20.538

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. 500 kbps

Power Mode	Channel	Frequency [MHz]	Average Output Power [dBm]	Average Output Power [mW]
High	0	2 402	8.819	7.620
	19	2 440	9.312	8.535
	39	2 480	8.960	7.870

9.4.2. 2 Mbps

Power Mode	Channel	Frequency [MHz]	Average Output Power [dBm]	Average Output Power [mW]
High	0	2 402	8.575	7.203
	19	2 440	9.120	8.167
	39	2 480	8.723	7.452

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

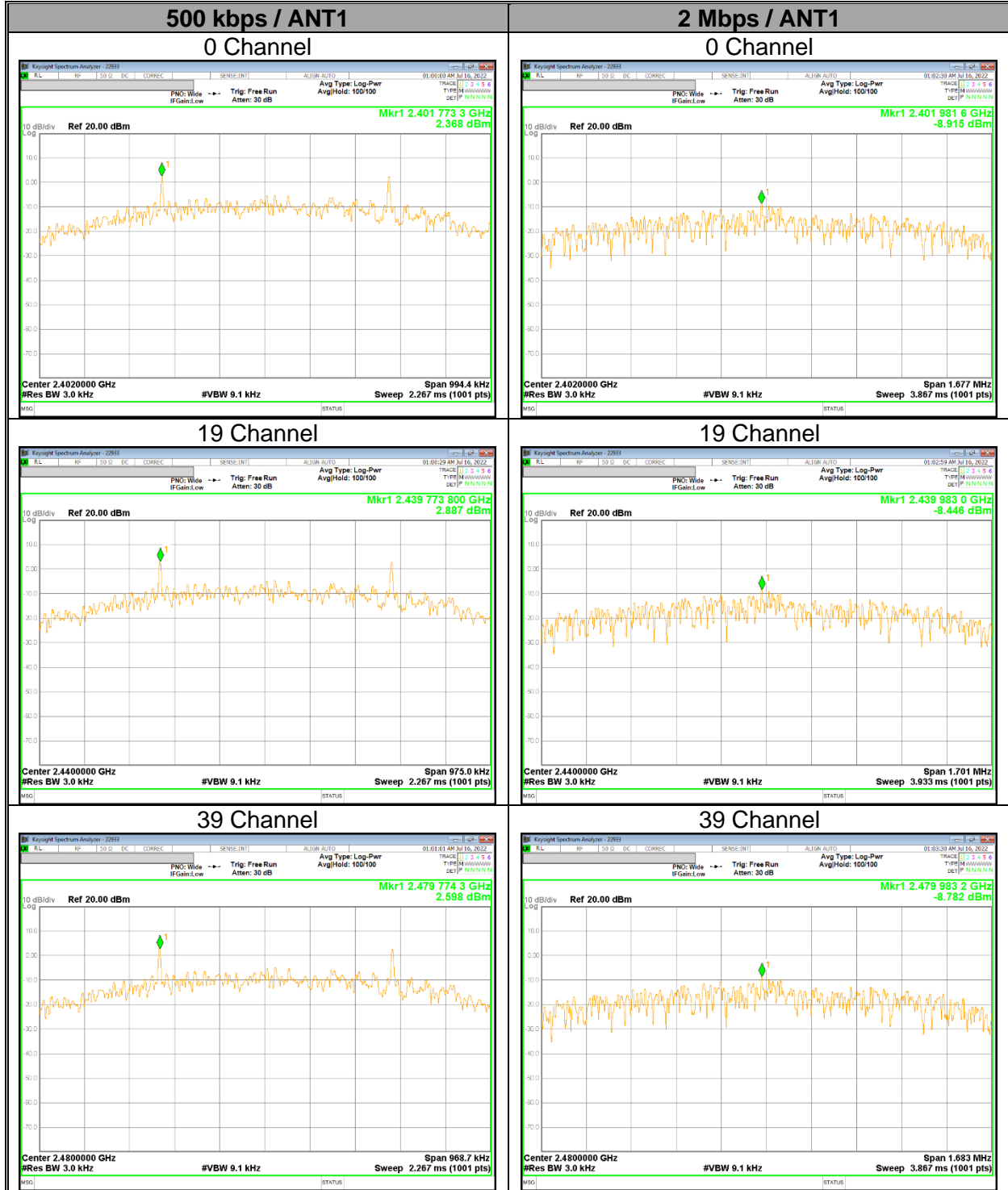
9.5.1. 500 kbps

Power Mode	Channel	Frequency [MHz]	PSD [dBm/3kHz]	Limit [dBm/3kHz]	Margin [dB]
High	0	2 402	2.368	8.00	-5.632
	19	2 440	2.887		-5.113
	39	2 480	2.598		-5.402
Worst			2.887		-5.113

9.5.2. 2 Mbps

Power Mode	Channel	Frequency [MHz]	PSD [dBm/3kHz]	Limit [dBm/3kHz]	Margin [dB]
High	0	2 402	-8.915	8.00	-16.915
	19	2 440	-8.446		-16.446
	39	2 480	-8.782		-16.782
Worst			-8.446		-16.446

9.5.3. PSD TEST PLOTS



9.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

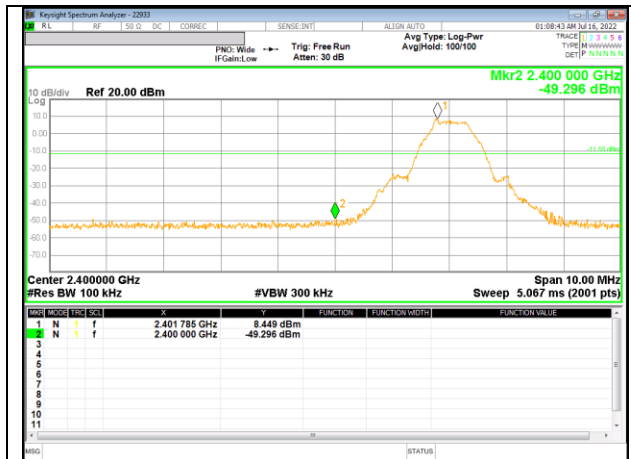
FCC §15.247 (d)

RSS-247 5.5

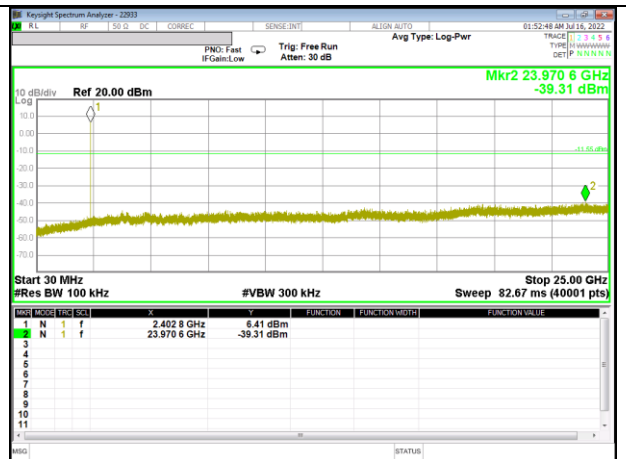
Output power was measured based on the use of a peak measurement.
Therefore, spurious emissions are required to be 20 dBc.

RESULTS

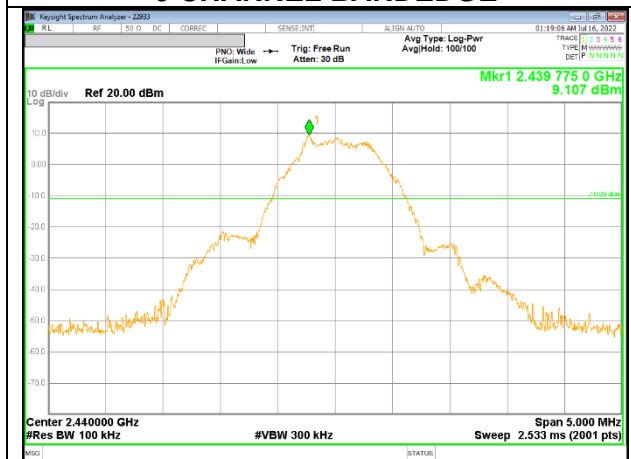
9.6.1. 500 kbps



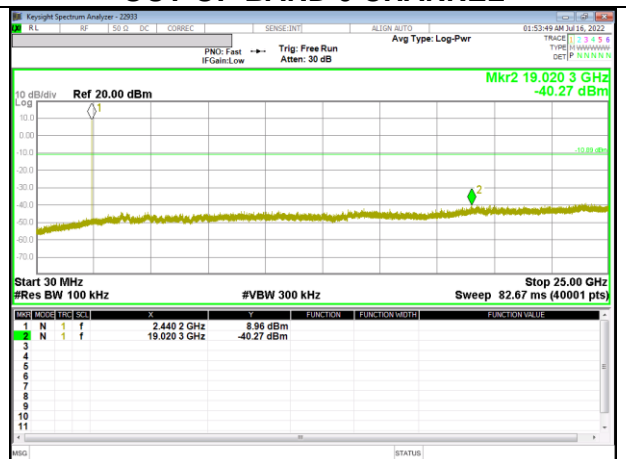
0 CHANNEL BANDEDGE



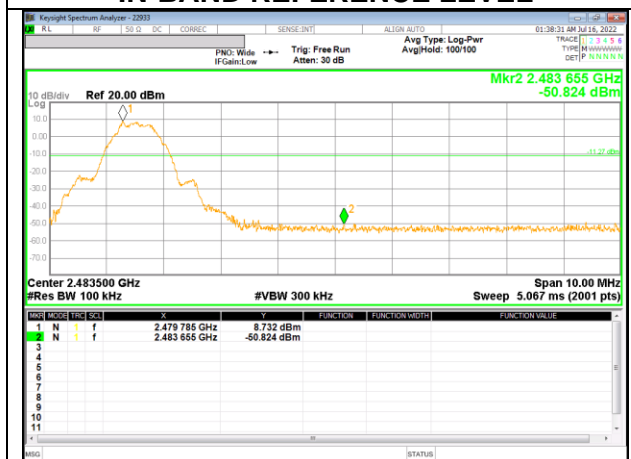
OUT-OF-BAND 0 CHANNEL



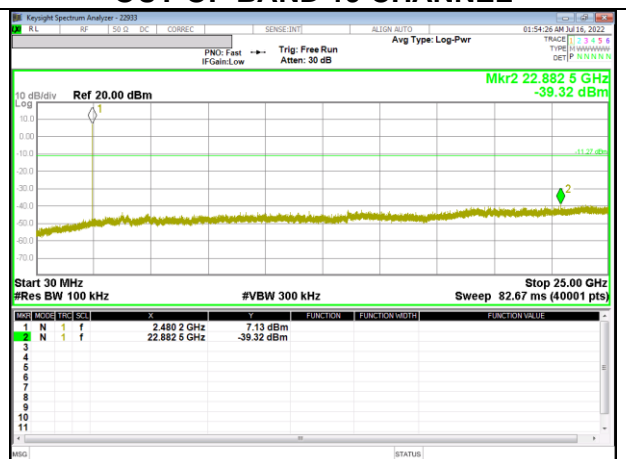
IN-BAND REFERENCE LEVEL



OUT-OF-BAND 19 CHANNEL

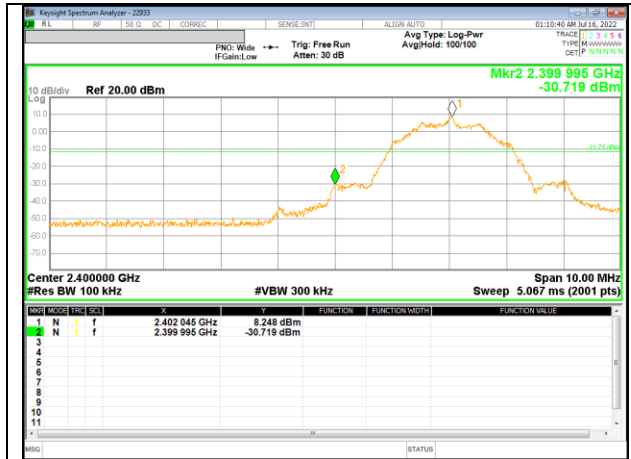


39 CHANNEL BANDEDGE

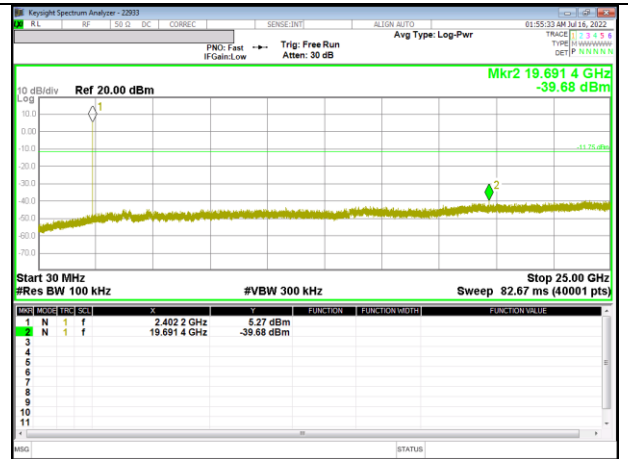


OUT-OF-BAND 39 CHANNEL

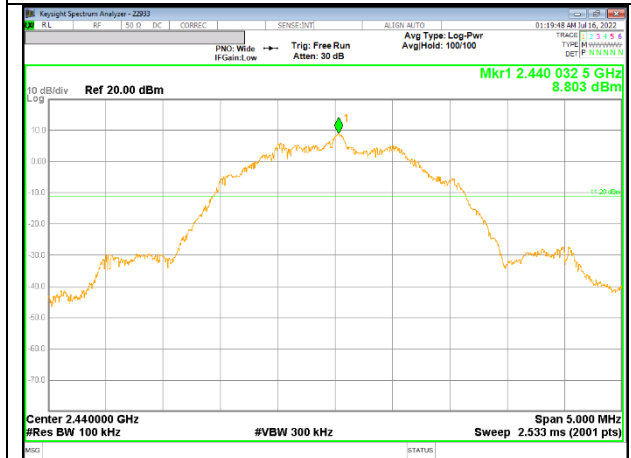
9.6.2. 2 Mbps



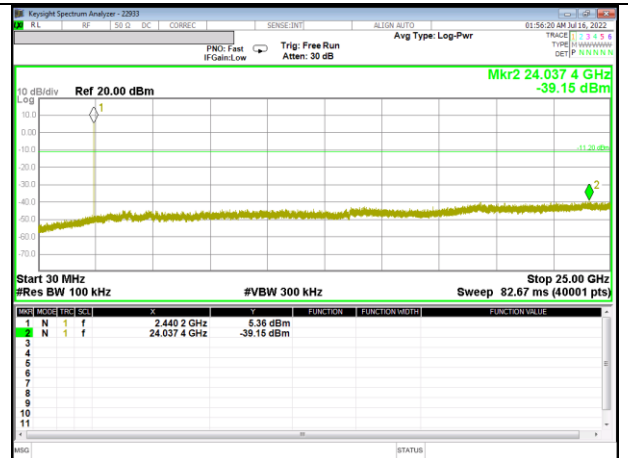
0 CHANNEL BANDEGE



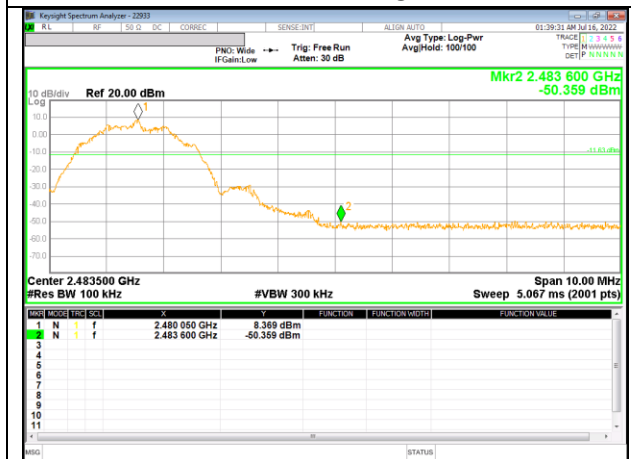
OUT-OF-BAND 0 CHANNEL



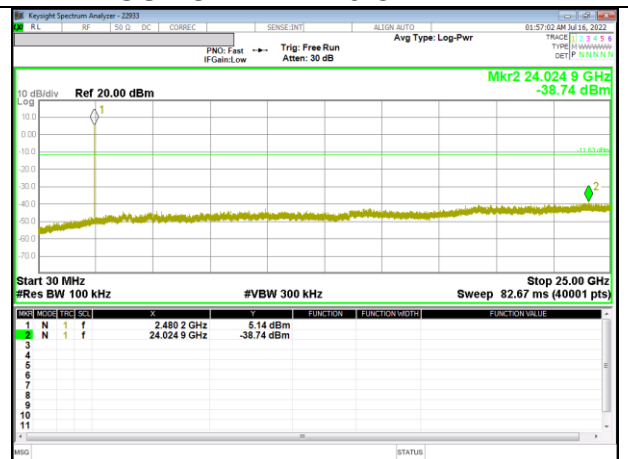
IN-BAND REFERENCE LEVEL



OUT-OF-BAND 19 CHANNEL



39 CHANNEL BANDEGE



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 ($\mu\text{V}/\text{m}$)	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 500 kbps, DCF = $10 \log(1/0.5669)=2.465$ dB (Spectrum Analyzer round it up to 2.47 dB) and for 2 Mbps, DCF = $10 \log(1/0.3173)=4.985$ dB (Spectrum Analyzer round it up to 4.99 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.

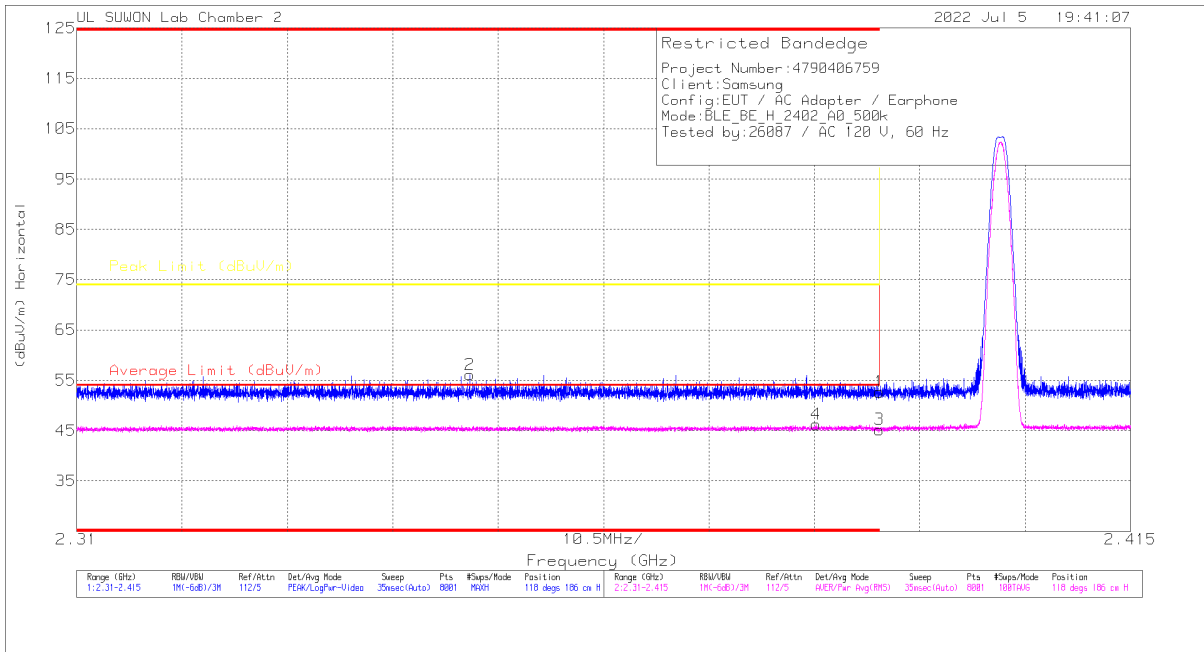
Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 30 m open are test site.
Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field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

10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. 500 kbps

BANDEDGE (0 CHANNEL)

HORIZONTAL RESULT

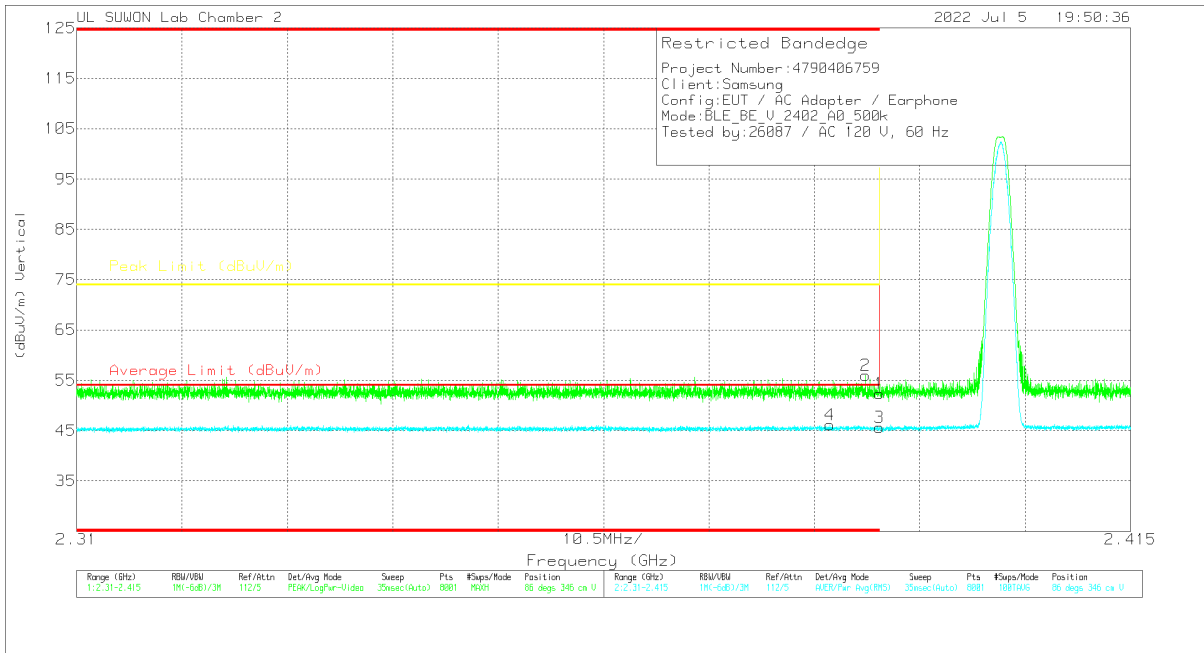


Trace Markers

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	40.49	Pk	31.9	-19.7	0	52.69	-	-	74	-21.31	118	186	H
2	* 2.34919	43.94	Pk	31.8	-19.6	0	56.14	-	-	74	-17.86	118	186	H
3	* 2.39	30.54	RMS	31.9	-19.7	2.47	45.21	54	-8.79	-	-	118	186	H
4	* 2.3837	31.44	RMS	31.9	-19.6	2.47	46.21	54	-7.79	-	-	118	186	H

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

VERTICAL RESULT



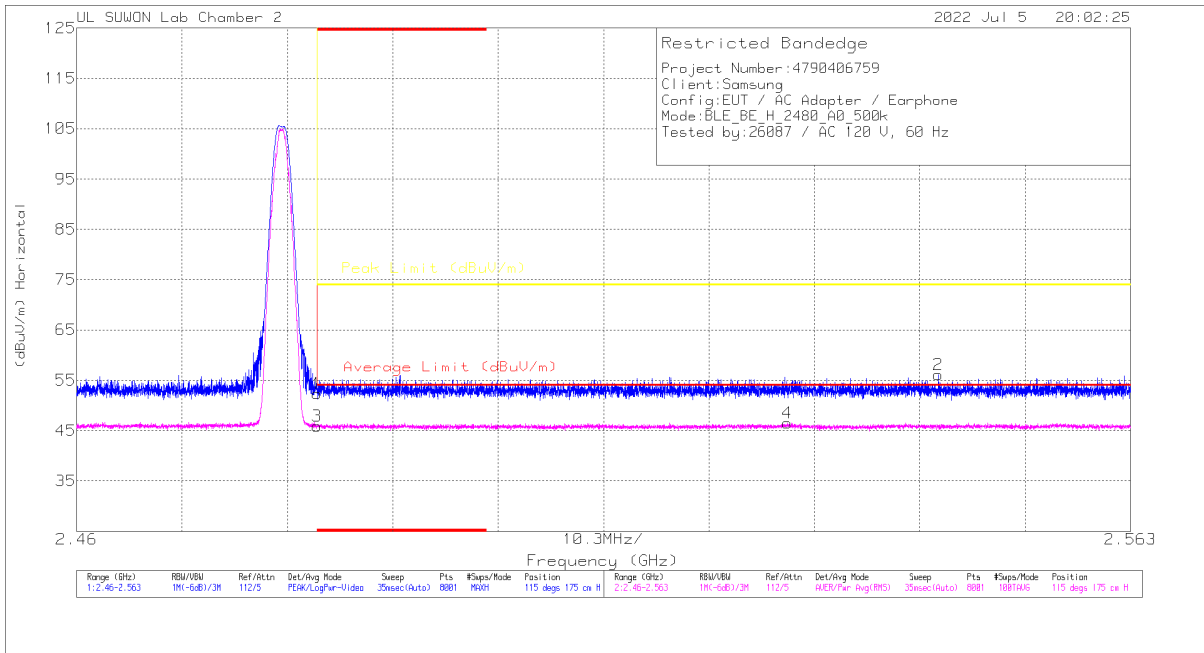
Trace Markers

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	40.18	Pk	31.9	-19.7	0	52.38	-	-	74	-21.62	86	346	V
2	* 2.38861	43.69	Pk	31.9	-19.6	0	55.99	-	-	74	-18.01	86	346	V
3	* 2.39	31.01	RMS	31.9	-19.7	2.47	45.68	54	-8.32	-	-	86	346	V
4	* 2.38508	31.34	RMS	31.9	-19.6	2.47	46.11	54	-7.89	-	-	86	346	V

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

BANDEDGE (39 CHANNEL)

HORIZONTAL RESULT

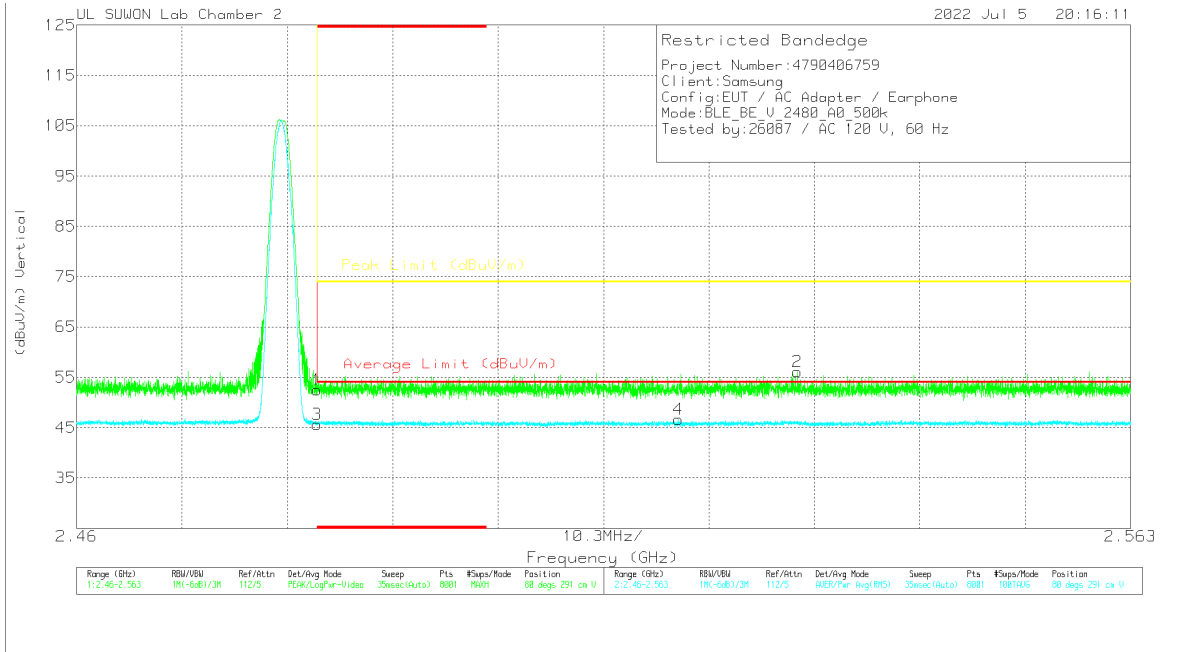


Trace Markers

Marker	Frequency (GHz)	Meas 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	* 2.48351	39.99	Pk	-32	-19.6	0	52.39	-	-	74	-21.61	115	175	H
2	2.54423	43.47	Pk	-32.1	-19.5	0	56.07	-	-	74	-17.93	115	175	H
3	* 2.48351	31	RMS	-32	-19.6	2.47	45.87	54	-8.13	-	-	115	175	H
4	2.52947	31.38	RMS	-32.1	-19.4	2.47	46.55	54	-7.45	-	-	115	175	H

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

VERTICAL RESULT



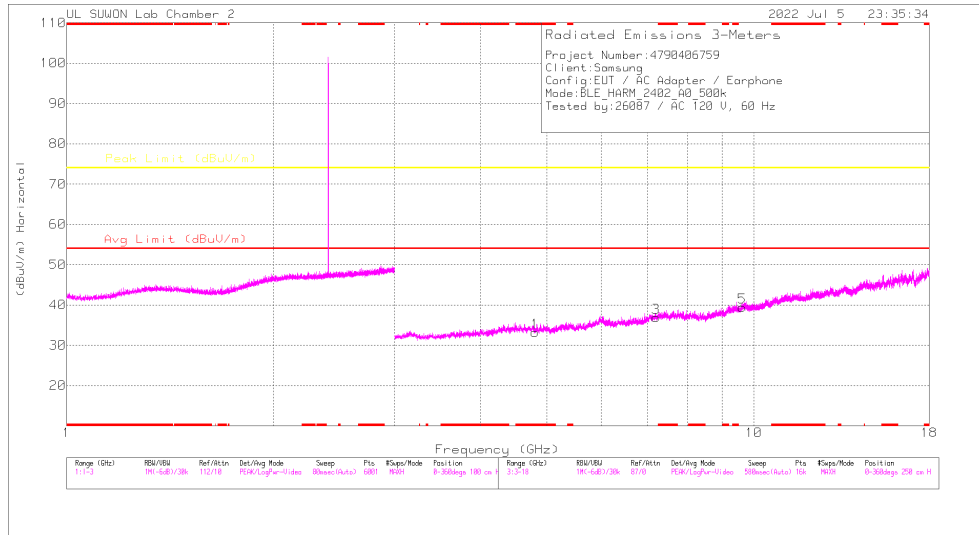
Trace Markers

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	40.11	Pk	32	-19.6	0	52.51	-	-	74	-21.49	80	291	V
2	2.53043	43.42	Pk	32.1	-19.4	0	56.12	-	-	74	-17.88	80	291	V
3	* 2.48351	30.78	RMS	32	-19.6	2.47	45.65	54	-8.35	-	-	80	291	V
4	2.51879	31.54	RMS	32.1	-19.5	2.47	46.61	54	-7.39	-	-	80	291	V

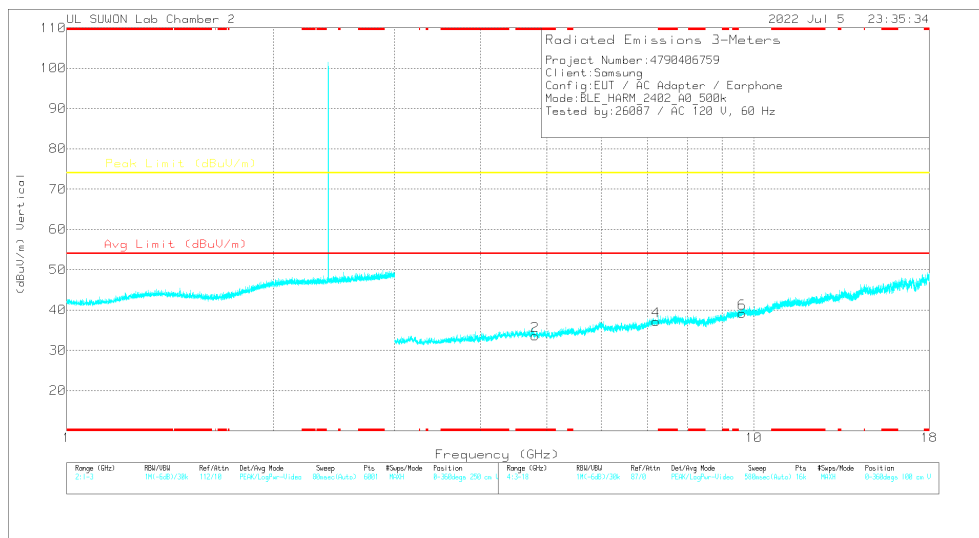
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK - Peak detector
 RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

0 CHANNEL RESULTS



HORIZONTAL



VERTICAL

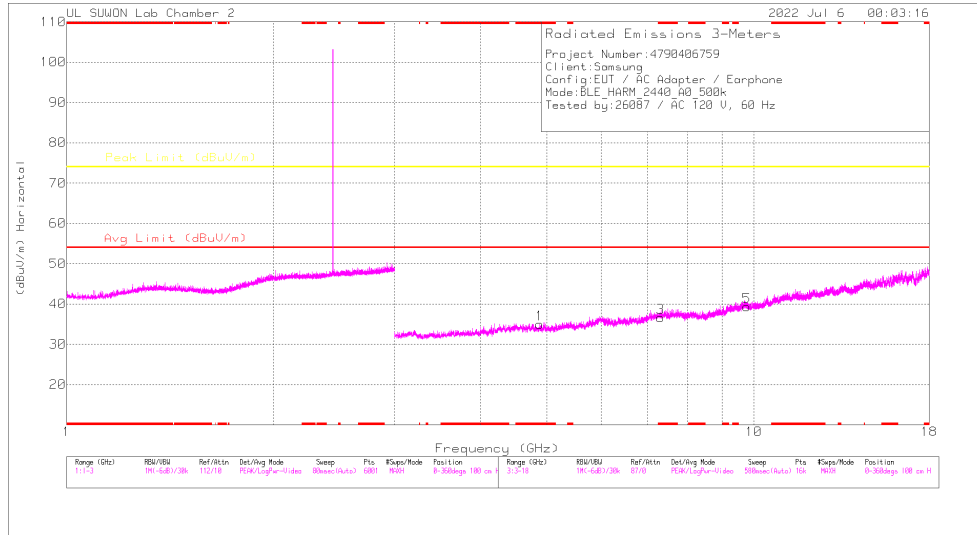
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

RADIATED EMISSIONS

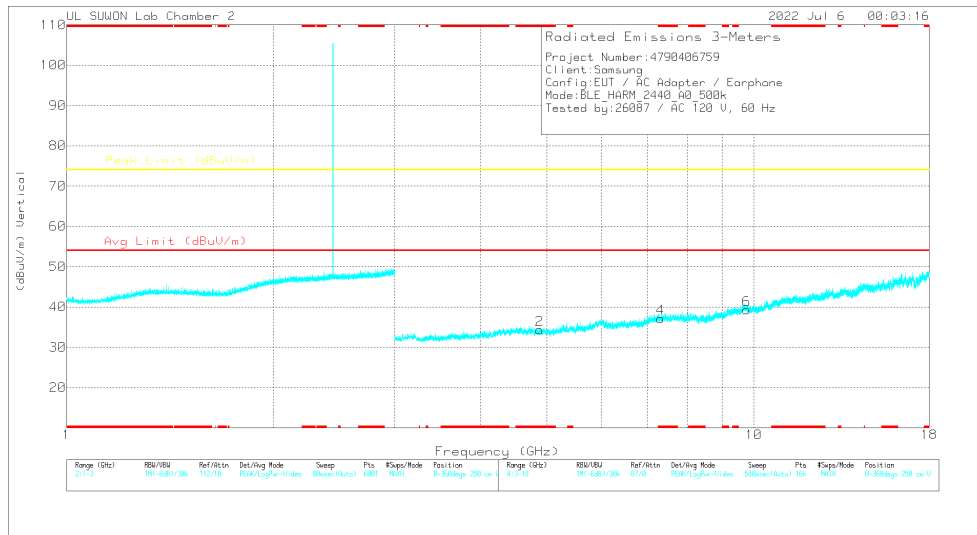
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.80554	36.75	PK2	34.1	-27.7	0	43.15	-	-	74	-30.85	360	100	H
* 4.80328	37.35	PK2	34.1	-27.7	0	43.75	-	-	74	-30.25	360	100	V
7.20644	34.77	PK2	36.2	-25	0	45.97	-	-	74	-28.03	360	100	H
7.20519	35.24	PK2	36.2	-25	0	46.44	-	-	74	-27.56	360	100	V
9.60712	32.73	PK2	37	-21.3	0	48.43	-	-	74	-25.57	360	100	H
9.607	32.43	PK2	37	-21.3	0	48.13	-	-	74	-25.87	360	100	V

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

19 CHANNEL RESULTS



HORIZONTAL



VERTICAL

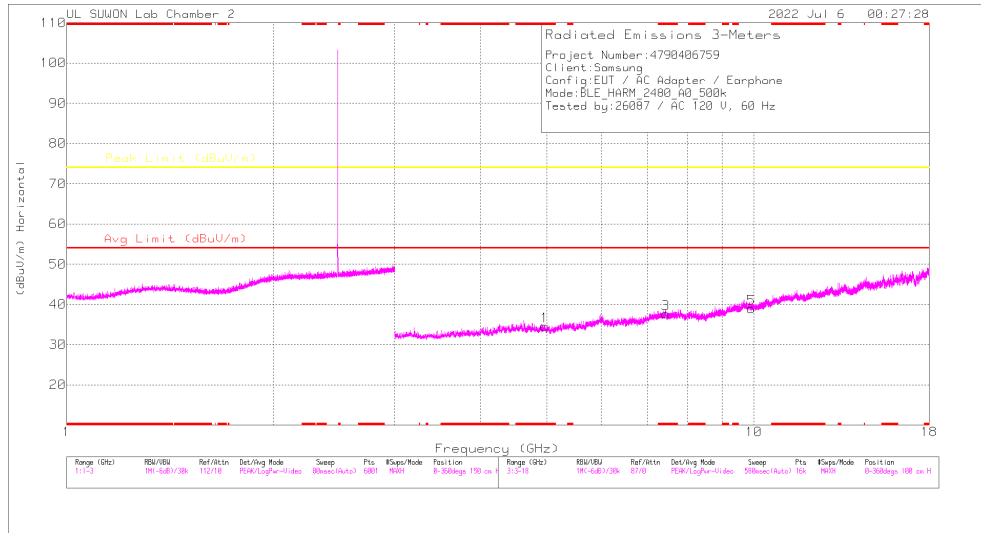
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

RADIATED EMISSIONS

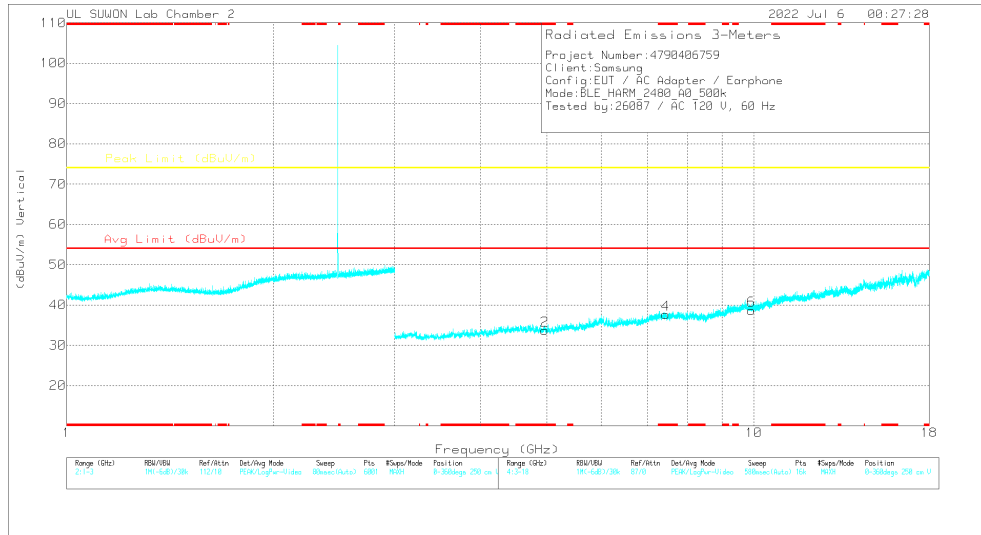
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	3GHz_HPI(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.88165	36.87	PK2	34.1	-27.6	0	43.37	-	-	74	-30.63	360	100	H
* 4.8809	37.2	PK2	34.1	-27.6	0	43.7	-	-	74	-30.3	360	100	V
* 7.32109	35.22	PK2	36.1	-24.5	0	46.82	-	-	74	-27.18	360	100	H
* 7.32004	35.25	PK2	36.1	-24.6	0	46.75	-	-	74	-27.25	360	100	V
9.76102	33.1	PK2	37.2	-21	0	49.3	-	-	74	-24.7	360	100	H
9.75891	32.48	PK2	37.2	-20.9	0	48.78	-	-	74	-25.22	360	100	V

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

39 CHANNEL RESULTS



HORIZONTAL



VERTICAL

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

RADIATED EMISSIONS

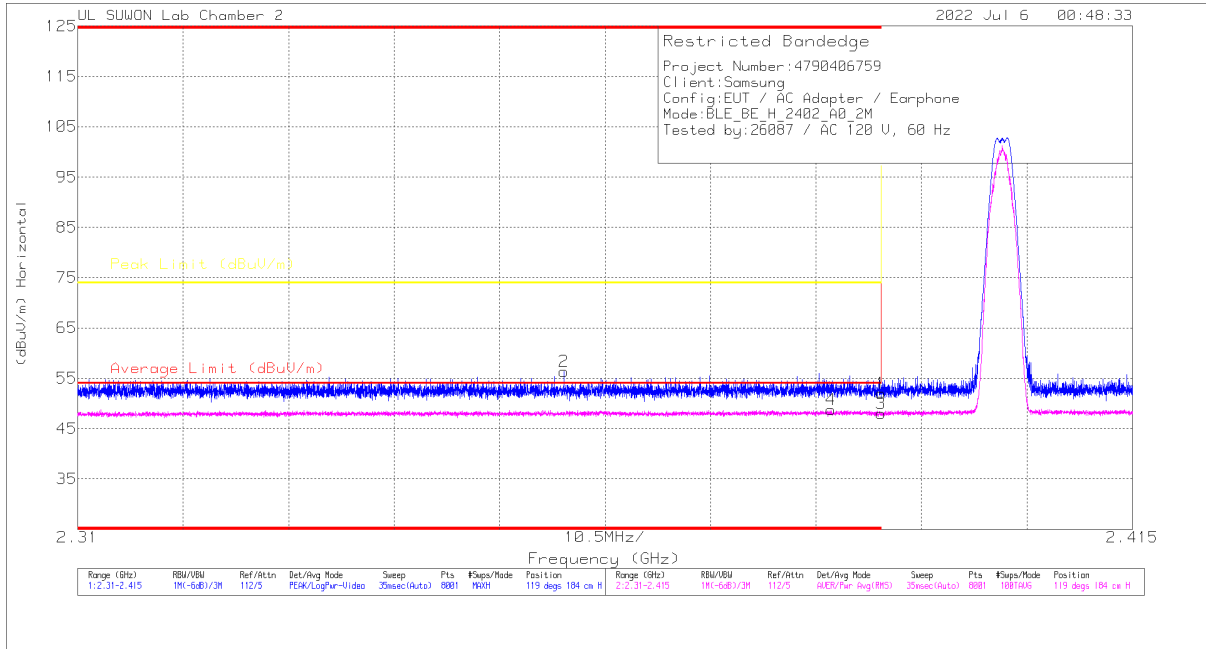
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	3GHz_HPI(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.96093	36.09	PK2	34.1	-27	0	43.19	-	-	74	-30.81	360	100	H
* 4.95971	35.72	PK2	34.1	-27	0	42.82	-	-	74	-31.18	360	100	V
* 7.43969	34.55	PK2	36	-23.7	0	46.85	-	-	74	-27.15	360	100	H
* 7.44045	34.4	PK2	36	-23.7	0	46.7	-	-	74	-27.3	360	100	V
9.91874	32.22	PK2	37.4	-21.1	0	48.52	-	-	74	-25.48	360	100	H
9.91953	32.37	PK2	37.4	-21.1	0	48.67	-	-	74	-25.33	360	100	V

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

10.2.2. 2 Mbps

BANDEDGE (0 CHANNEL)

HORIZONTAL RESULT

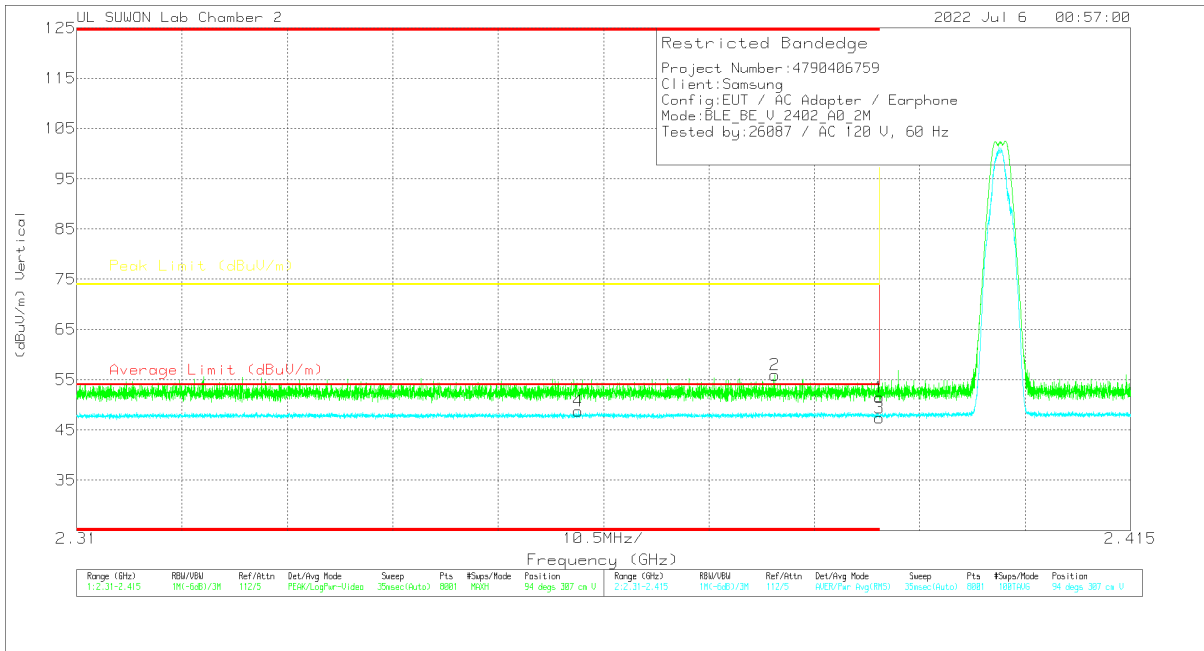


Trace Markers

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)	Acimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.76	Pk	31.9	-19.7	0	51.96	-	-	74	-22.04	119	184	H
2	* 2.35841	44.17	Pk	31.8	-19.6	0	56.37	-	-	74	-17.63	119	184	H
3	* 2.39	30.78	RMS	31.9	-19.7	4.99	47.97	54	-6.03	-	-	119	184	H
4	* 2.38501	31.5	RMS	31.9	-19.6	4.99	48.79	54	-5.21	-	-	119	184	H

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

VERTICAL RESULT



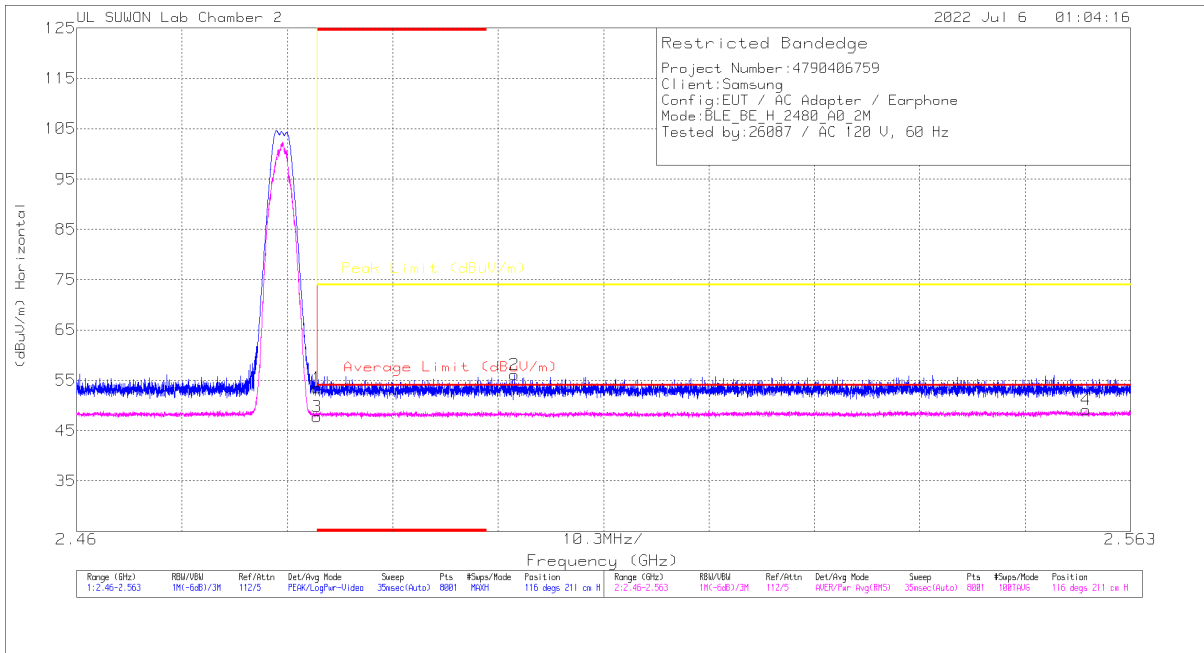
Trace Markers

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)	Acimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.34	Pk	31.9	-19.7	0	51.54	-	-	74	-22.46	94	307	V
2	* 2.37956	43.63	Pk	31.9	-19.6	0	55.93	-	-	74	-18.07	94	307	V
3	* 2.39	30.16	RMS	31.9	-19.7	4.99	47.35	54	-6.65	-	-	94	307	V
4	* 2.35997	31.59	RMS	31.8	-19.6	4.99	48.78	54	-5.22	-	-	94	307	V

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

BANDEDGE (39 CHANNEL)

HORIZONTAL RESULT

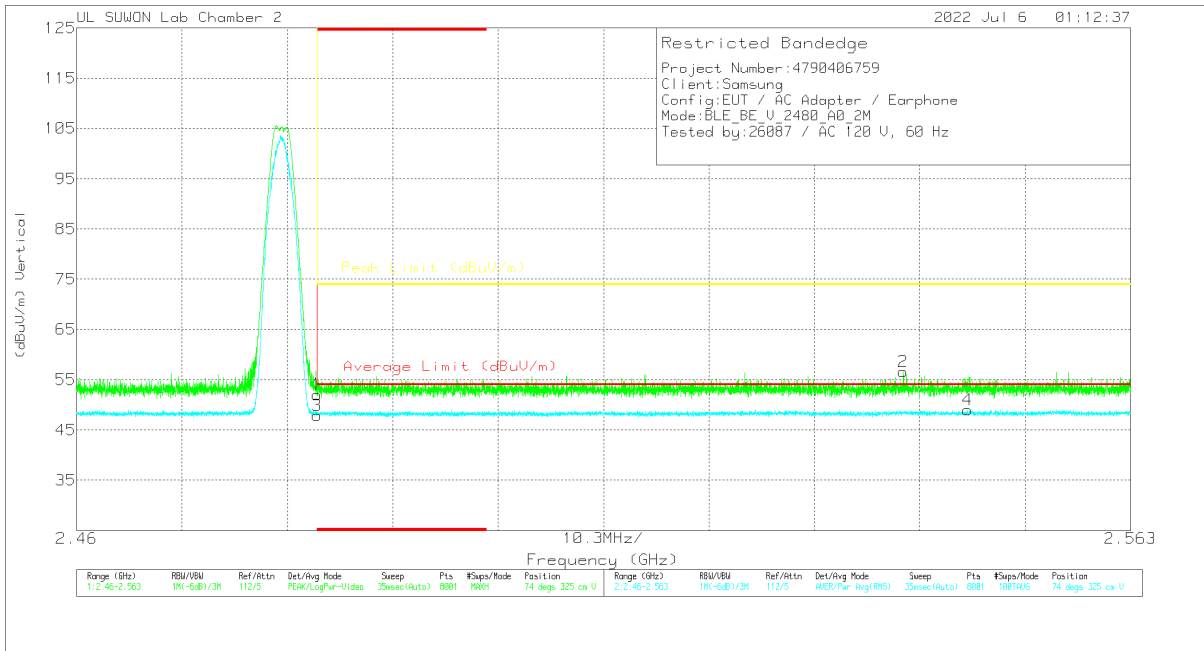


Trace Markers

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	41.05	Pk	32	-19.6	0	53.45	-	-	74	-20.55	116	211	H
2	2.50275	43.5	Pk	32.1	-19.5	0	56.1	-	-	74	-17.9	116	211	H
3	* 2.48351	30.36	RMS	32	-19.6	4.99	47.75	54	-6.25	-	-	116	211	H
4	2.55864	31.41	RMS	32.2	-19.5	4.99	49.1	54	-4.9	-	-	116	211	H

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

VERTICAL RESULT



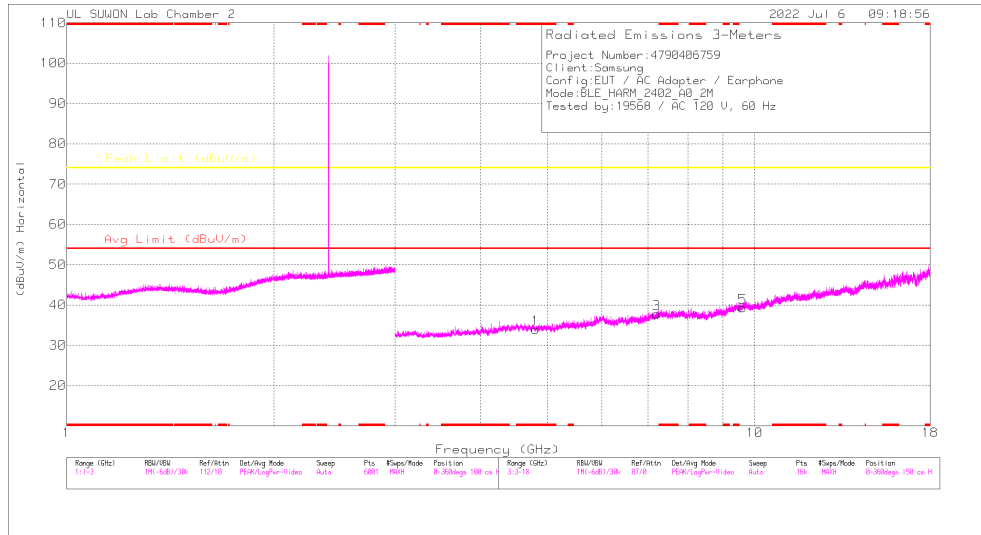
Trace Markers

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	39.66	Pk	32	-19.6	0	52.06	-	-	74	-21.94	74	325	V
2	2.5408	43.88	Pk	32.1	-19.4	0	56.58	-	-	74	-17.42	74	325	V
3	* 2.48351	30.52	RMS	32	-19.6	4.99	47.81	54	-6.09	-	-	74	325	V
4	2.54706	31.45	RMS	32.1	-19.5	4.99	49.04	54	-4.96	-	-	74	325	V

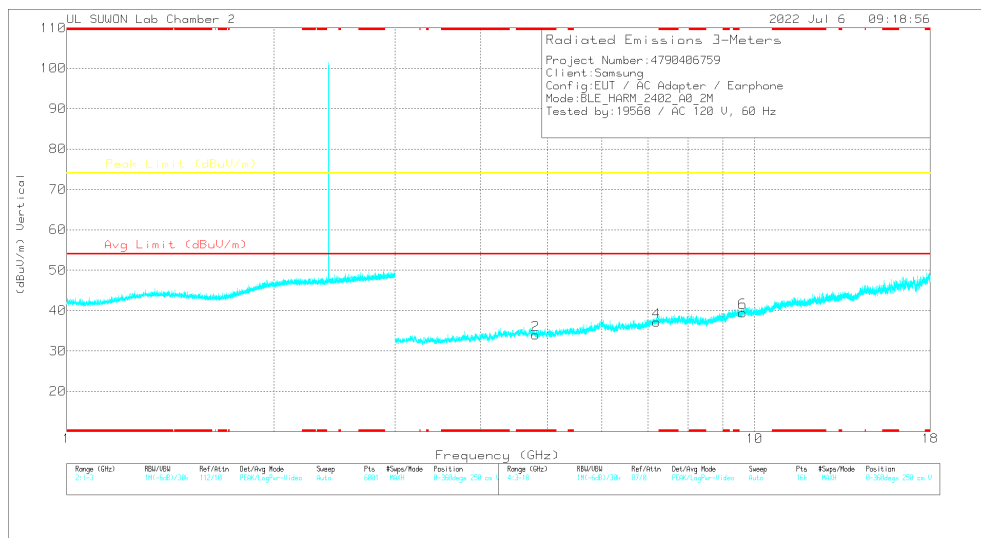
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK - Peak detector
 RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

0 CHANNEL RESULTS



HORIZONTAL



VERTICAL

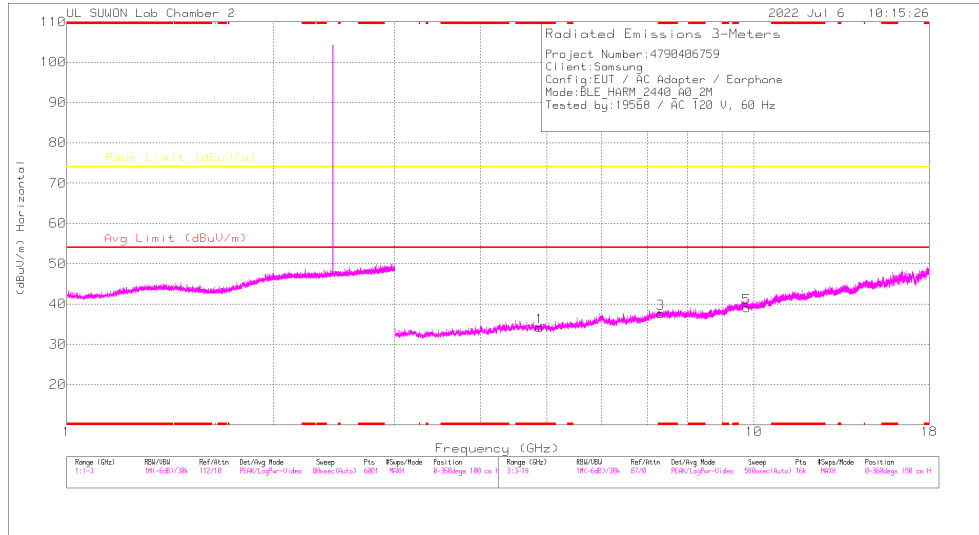
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

RADIATED EMISSIONS

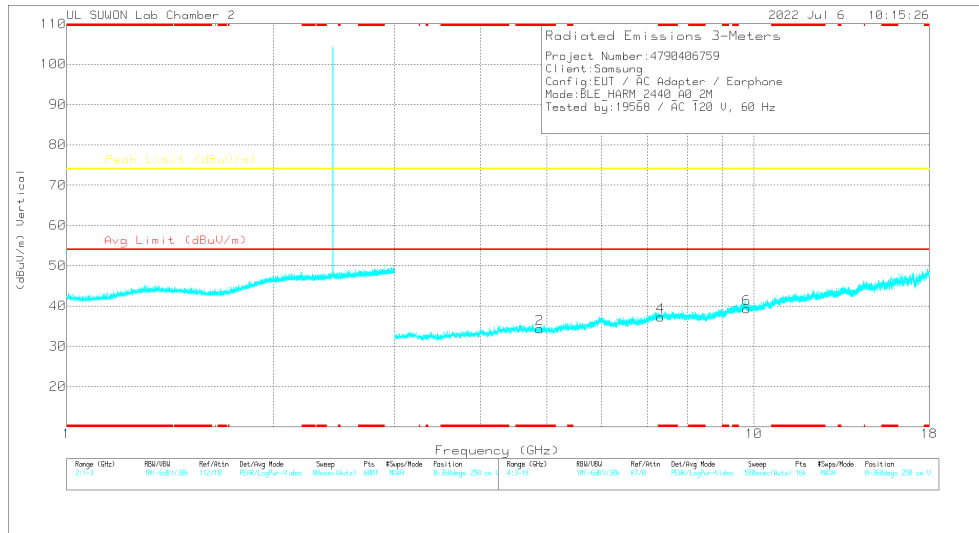
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.80576	37.17	PK2	34.1	-27.7	0	43.57	-	-	74	-30.43	0	100	H
* 4.8058	36.54	PK2	34.1	-27.7	0	42.94	-	-	74	-31.06	0	100	V
7.20205	35.05	PK2	36.2	-25	0	46.25	-	-	74	-27.75	0	100	H
7.19702	36.04	PK2	36.2	-25	0	47.24	-	-	74	-26.76	0	100	V
9.60292	33.23	PK2	37	-21.3	0	48.93	-	-	74	-25.07	0	100	H
9.61325	32.55	PK2	37	-21.2	0	48.35	-	-	74	-25.65	0	100	V

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

19 CHANNEL RESULTS



HORIZONTAL



VERTICAL

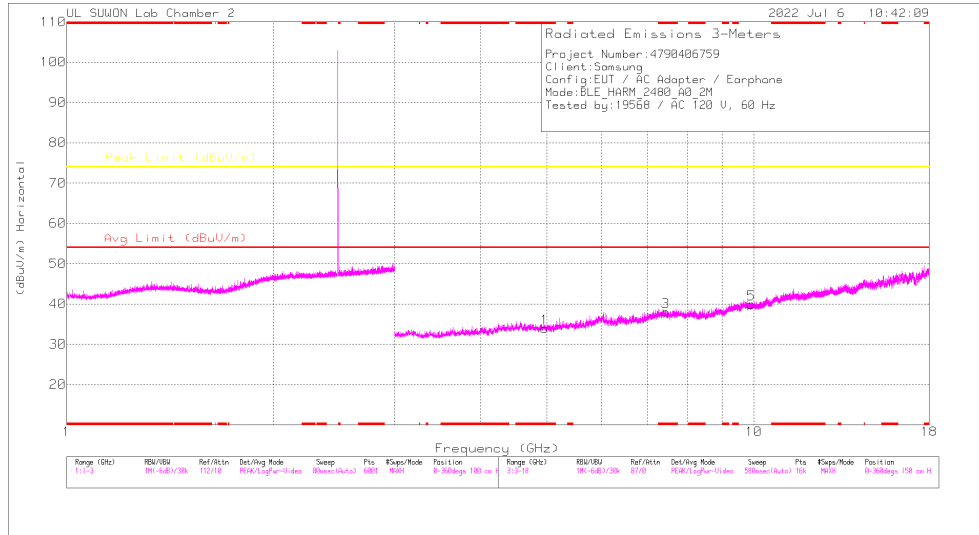
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

RADIATED EMISSIONS

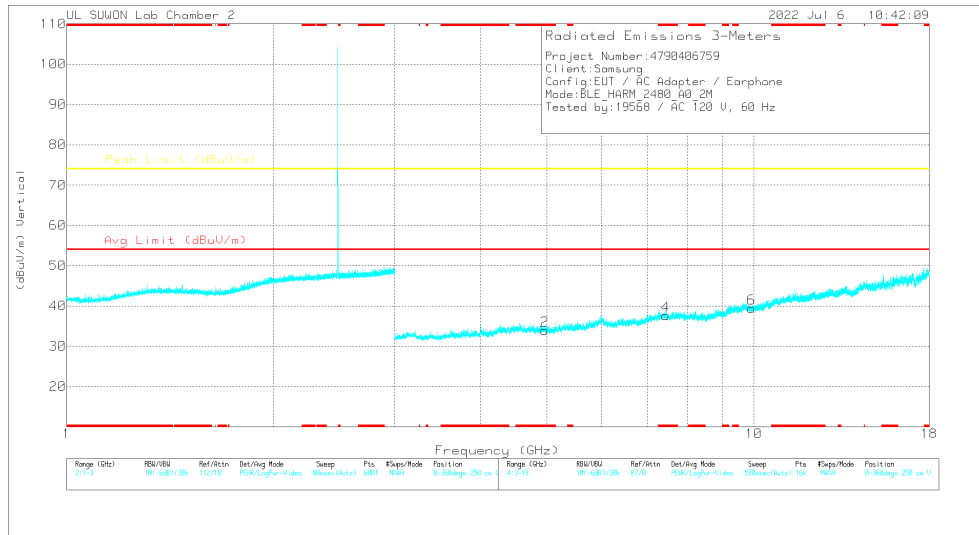
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	3GHz_HP(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.88538	37.18	PK2	34.1	-27.6	0	43.68	-	-	74	-30.32	0	100	H
* 4.87965	37.29	PK2	34.1	-27.7	0	43.69	-	-	74	-30.31	0	100	V
* 7.31865	35.4	PK2	36.1	-24.6	0	46.9	-	-	74	-27.1	0	100	H
* 7.32243	35.38	PK2	36.1	-24.5	0	46.98	-	-	74	-27.02	0	100	V
9.75955	32.73	PK2	37.2	-20.9	0	49.03	-	-	74	-24.97	0	100	H
9.75356	32.34	PK2	37.2	-20.9	0	48.64	-	-	74	-25.36	0	100	V

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

39 CHANNEL RESULTS



HORIZONTAL



VERTICAL

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

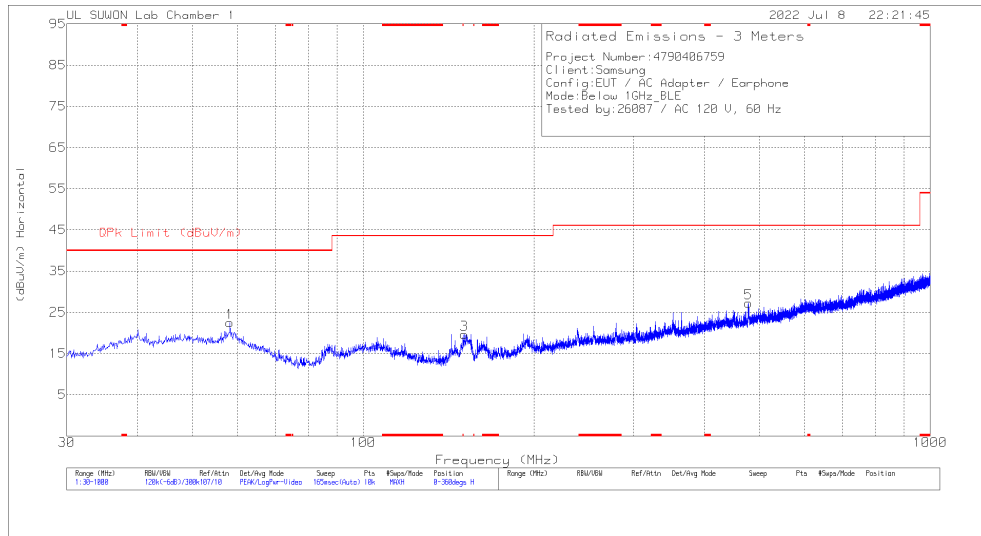
RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	3GHz_HPI(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
* 4.95368	36.87	PK2	34.1	-27	0	43.97	-	-	74	-30.03	0	100	H
* 4.95894	36.07	PK2	34.1	-27	0	43.17	-	-	74	-30.83	0	100	V
* 7.44956	34.17	PK2	36	-23.8	0	46.37	-	-	74	-27.63	0	100	H
* 7.44623	35.03	PK2	36	-23.8	0	47.23	-	-	74	-26.77	0	100	V
9.91556	31.98	PK2	37.4	-21.1	0	48.28	-	-	74	-25.72	0	100	H
9.92082	32.13	PK2	37.4	-21.1	0	48.43	-	-	74	-25.57	0	100	V

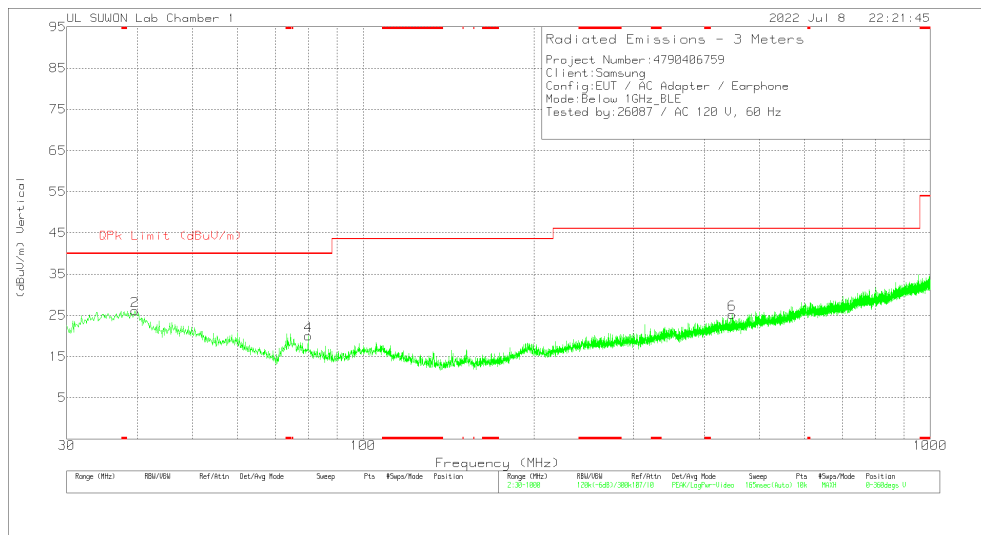
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 PK2 - KDB558074 Method: Maximum Peak

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_750	Below_1G[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	OPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	58.227	34.25	Pk	19	-30.8	0	22.45	40	-17.55	0-360	300	H
3	150.862	35.33	Pk	14	-29.7	0	19.63	43.52	-23.89	0-360	100	H
5	478.528	32.32	Pk	22.6	-27.7	0	27.22	46.02	-18.8	0-360	100	H
2	39.603	38.57	Pk	18.6	-31.1	0	26.07	40	-13.93	0-360	200	V
4	79.955	37.87	Pk	12.6	-30.5	0	19.97	40	-20.03	0-360	200	V
6	447.779	30.79	Pk	22.2	-27.8	0	25.19	46.02	-20.83	0-360	200	V

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.

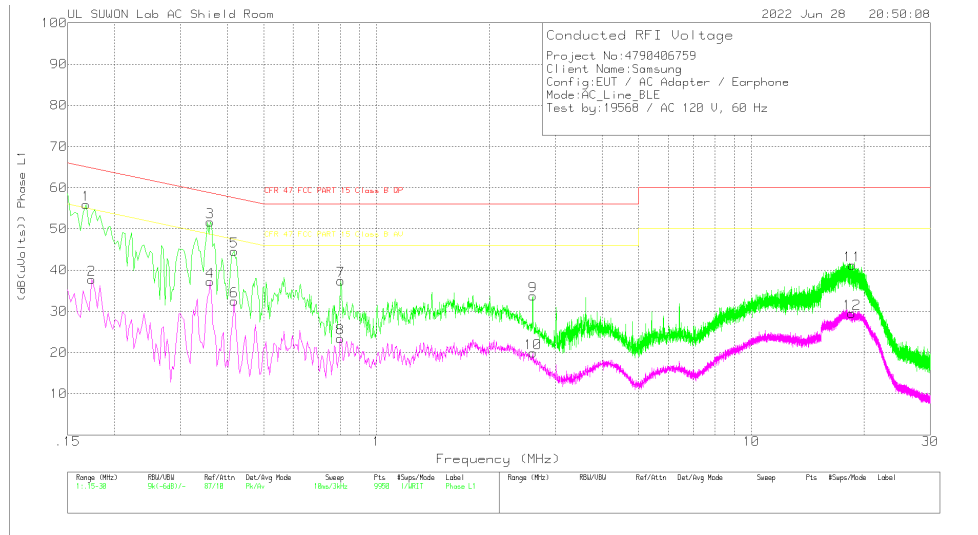
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

11.1.1. AC Power Line(C to C)

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	.168	45.84	Pk	10	.1	55.94	65.06	-9.12	-	-
2	.174	27.56	Av	10	.2	37.76	-	-	54.77	-17.01
3	.36	41.72	Pk	9.8	.2	51.72	58.73	-7.01	-	-
4	.36	27.24	Av	9.8	.2	37.24	-	-	48.73	-11.49
5	.417	34.59	Pk	9.8	.2	44.59	57.51	-12.92	-	-
6	.417	22.43	Av	9.8	.2	32.43	-	-	47.51	-15.08
7	.804	27.41	Pk	9.8	.2	37.41	56	-18.59	-	-
8	.801	13.45	Av	9.8	.2	23.45	-	-	46	-22.55
9	2.613	23.75	Pk	9.7	.3	33.75	56	-22.25	-	-
10	2.613	9.91	Av	9.7	.3	19.91	-	-	46	-26.09
11	18.588	30.66	Pk	10.1	.4	41.16	60	-18.84	-	-
12	18.558	19.05	Av	10.1	.4	29.55	-	-	50	-20.45

Pk - Peak detector

Av - Average detection

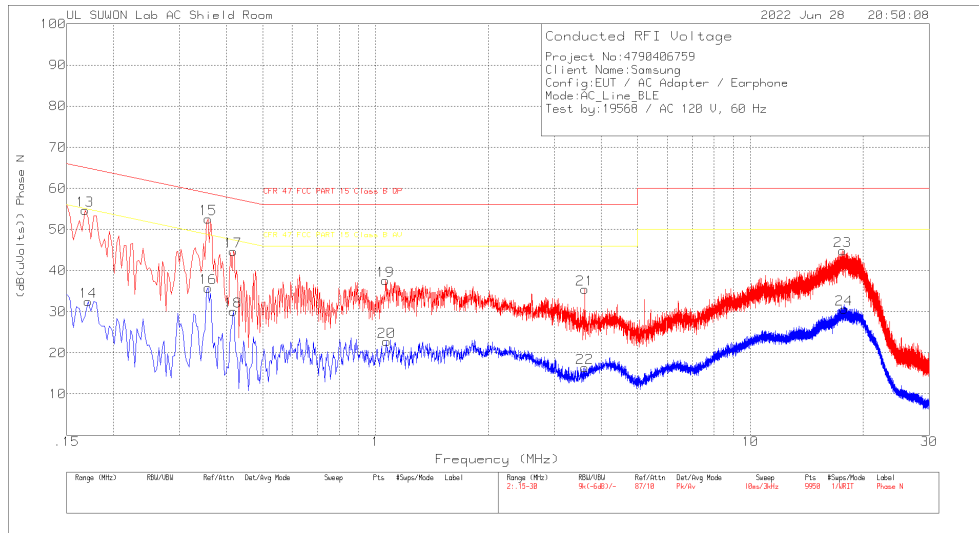
Quasi-Peak Emissions

Range 1: Phase L1 .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With 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)
.16875	39.49	Qp	10	.1	49.59	65.02	-15.43	-	-
.35925	32.83	Qp	9.8	.2	42.83	58.75	-15.92	-	-

Qp - Quasi-Peak detector

LINE 2 RESULTS



Trace Markers

Range 2: Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With 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	44.6	Pk	10	.1	54.7	65.06	-10.36	-	-
14	.171	22.27	Av	10	.2	32.47	-	-	54.91	-22.44
15	.357	42.61	Pk	9.8	.2	52.61	58.8	-6.19	-	-
16	.357	25.79	Av	9.8	.2	35.79	-	-	48.8	-13.01
17	.417	34.71	Pk	9.8	.2	44.71	57.51	-12.8	-	-
18	.417	20.13	Av	9.8	.2	30.13	-	-	47.51	-17.38
19	1.062	27.61	Pk	9.7	.3	37.61	56	-18.39	-	-
20	1.071	12.76	Av	9.7	.3	22.76	-	-	46	-23.24
21	3.615	25.46	Pk	9.7	.3	35.46	56	-20.54	-	-
22	3.615	6.39	Av	9.7	.3	16.39	-	-	46	-29.61
23	17.61	34.21	Pk	10.2	.4	44.81	60	-15.19	-	-
24	17.802	20.02	Av	10.2	.4	30.62	-	-	50	-19.38

Pk - Peak detector
 Av - Average detection

Quasi-Peak Emissions

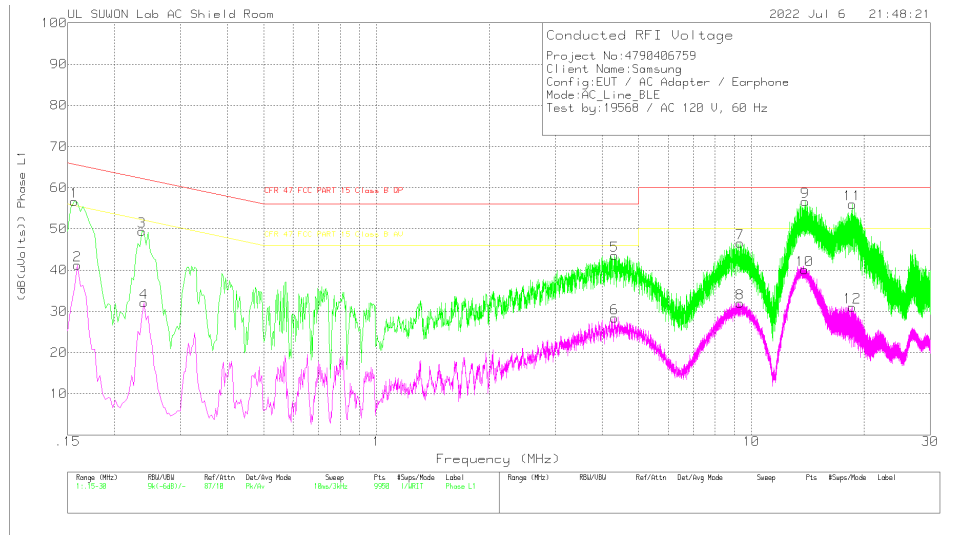
Range 2: Phase N .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With 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)
.35625	34.24	Qp	9.8	.2	44.24	58.82	-14.58	-	-

Qp - Quasi-Peak detector

11.1.1. AC Power Line(A to C)

LINE 1 RESULTS



Trace Markers

Range 1: Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With 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	.156	46.81	Pk	9.8	.1	56.71	65.67	-8.96	-	-
2	.159	31.32	Av	9.8	.1	41.22	-	-	55.52	-14.3
3	.237	39.5	Pk	9.7	.2	49.4	62.2	-12.8	-	-
4	.24	22.21	Av	9.7	.2	32.11	-	-	52.1	-19.99
5	4.314	33.54	Pk	9.7	.3	43.54	56	-12.46	-	-
6	4.314	18.41	Av	9.7	.3	28.41	-	-	46	-17.59
7	9.318	36.4	Pk	9.8	.4	46.6	60	-13.4	-	-
8	9.342	21.84	Av	9.8	.4	32.04	-	-	50	-17.96
9	13.896	46.22	Pk	10	.4	56.62	60	-3.38	-	-
10	13.872	29.65	Av	10	.4	40.05	-	-	50	-9.95
11	18.564	45.48	Pk	10.1	.4	55.98	60	-4.02	-	-
12	18.564	20.55	Av	10.1	.4	31.05	-	-	50	-18.95

Pk - Peak detector

Av - Average detection

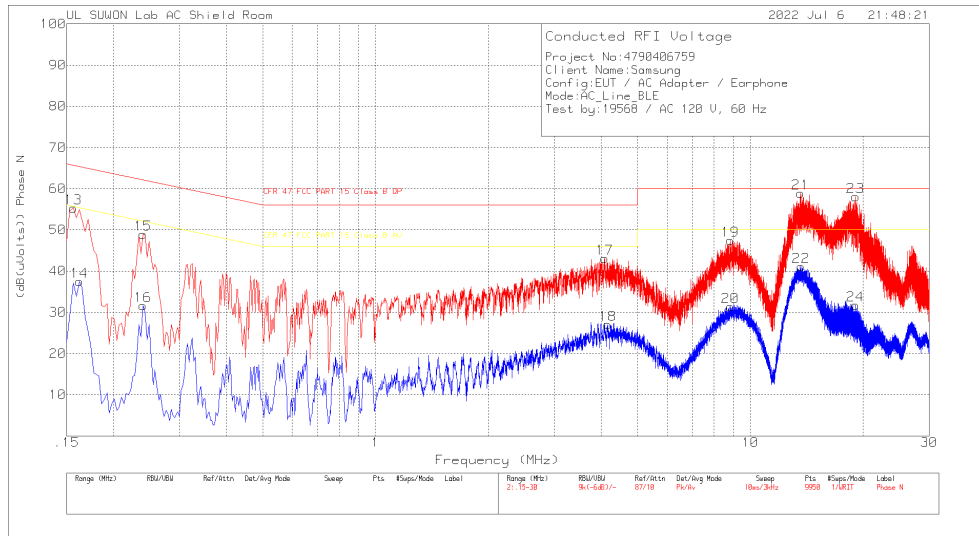
Quasi-Peak Emissions

Range 1: Phase L1 .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With 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)
.15615	50.69	Qp	9.8	.1	60.59	65.67	-5.08	-	-
13.8962	38	Qp	10	.4	48.4	60	-11.6	-	-
18.5648	35.71	Qp	10.1	.4	46.21	60	-13.79	-	-

Qp - Quasi-Peak detector

LINE 2 RESULTS



Trace Markers

Range 2: Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With 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	.156	45.34	Pk	9.8	.1	55.24	65.67	-10.43	-	-
14	.162	27.5	Av	9.9	.1	37.5	-	-	55.36	-17.86
15	.24	39.01	Pk	9.7	.2	48.91	62.1	-13.19	-	-
16	.24	21.76	Av	9.7	.2	31.66	-	-	52.1	-20.44
17	4.083	33.13	Pk	9.7	.3	43.13	56	-12.87	-	-
18	4.167	16.99	Av	9.7	.3	26.99	-	-	46	-19.01
19	8.835	37.2	Pk	9.8	.4	47.4	60	-12.6	-	-
20	8.835	21.17	Av	9.8	.4	31.37	-	-	50	-18.63
21	13.605	48.51	Pk	10	.4	58.91	60	-1.09	-	-
22	13.638	30.66	Av	10	.4	41.06	-	-	50	-8.94
23	19.092	47.48	Pk	10.2	.4	58.08	60	-1.92	-	-
24	19.041	21.12	Av	10.2	.4	31.72	-	-	50	-18.28

Pk - Peak detector

Av - Average detection

Quasi-Peak Emissions

Range 2: Phase N .15 - 30MHz

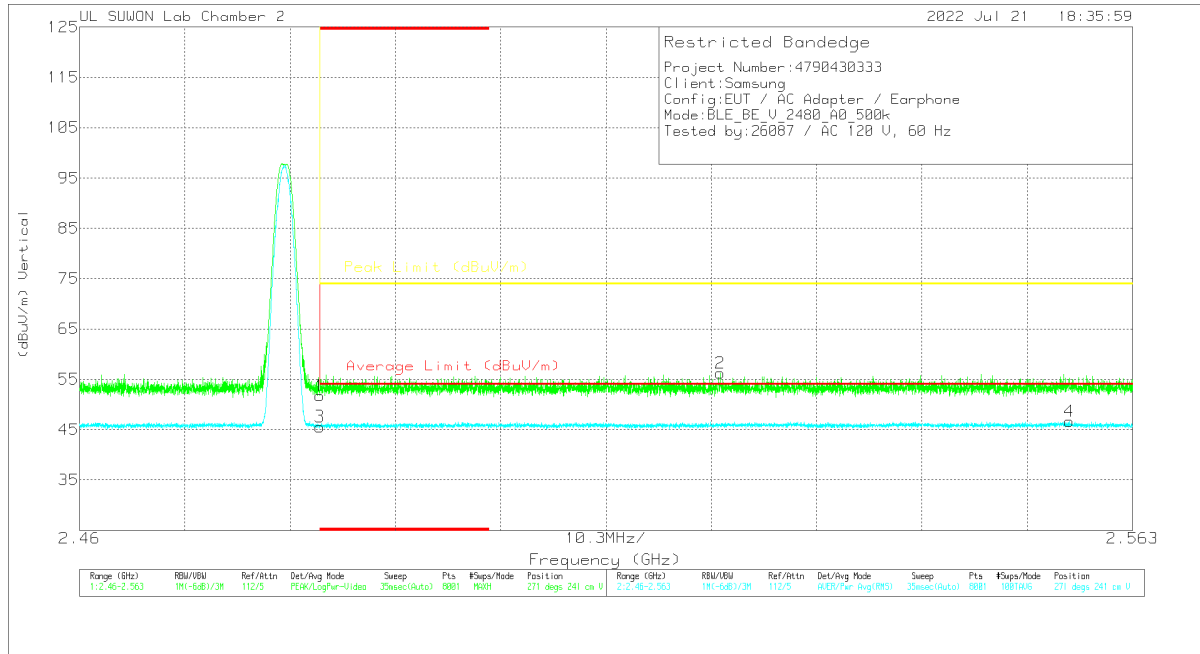
Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With EX_N[dB]	CABLELOS S(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
13.6058	39.22	Qp	10	.4	49.62	60	-10.38	-	-
19.0928	37.5	Qp	10.2	.4	48.1	60	-11.9	-	-

Qp - Quasi-Peak detector

12. SPOT-CHECK TEST RESULT

BANDEDGE (WORST CASE: 500 kbps / 2480 MHz)

VERTICAL PEAK AND AVERAGE DATA

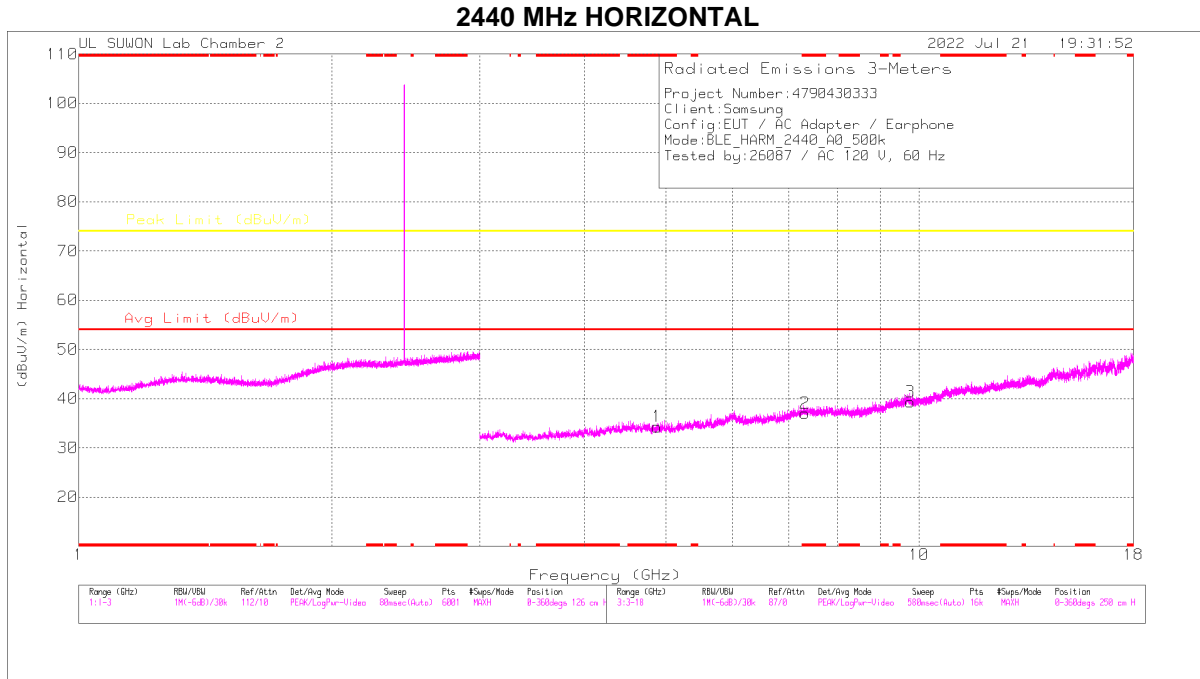


Trace Markers

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	* 2.48351	39.32	Pk	-32	-19.6	0	51.72	-	-	74	-22.28	271	241	V
2	2.52268	43.6	Pk	32.1	-19.5	0	56.2	-	-	74	-17.8	271	241	V
3	* 2.48351	30.71	RMS	-32	-19.6	2.47	45.58	54	-8.42	-	-	271	241	V
4	2.55681	31.32	RMS	32.2	-19.4	2.47	46.59	54	-7.41	-	-	271	241	V

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

HARMONICS AND SPURIOUS EMISSIONS(WORST CASE: 500 kbps / 2440 MHz)



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

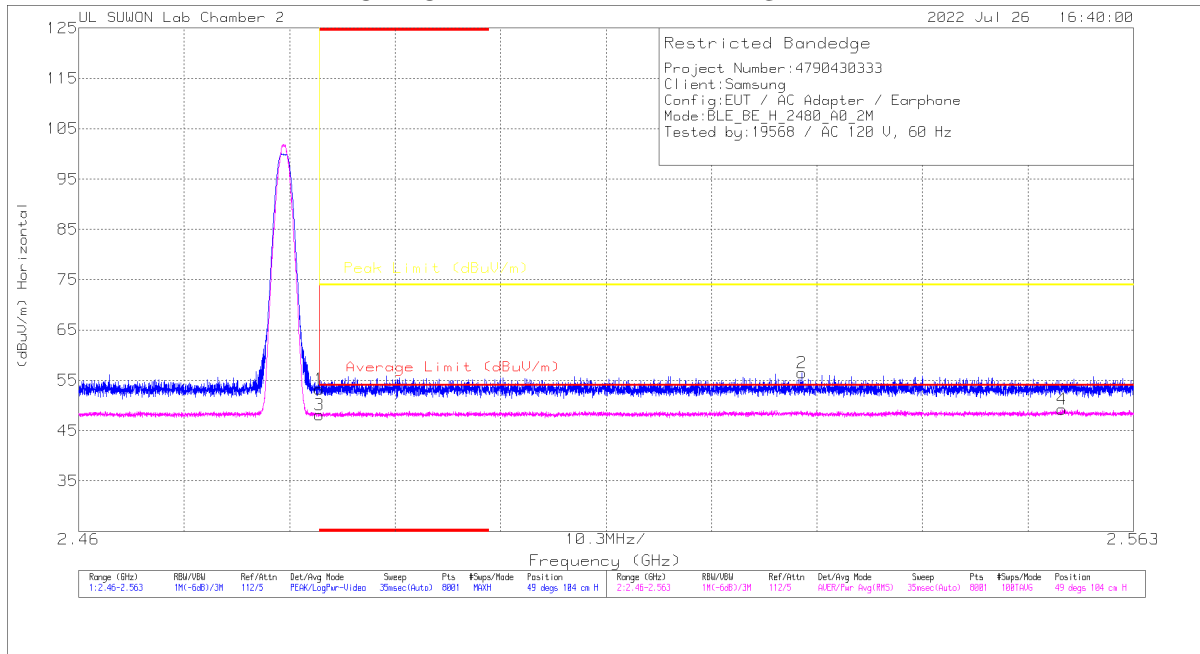
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
9.75555	32.13	PK2		-20.9	0	48.43	-	-	74	-25.57	0	100	H

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

BANDEDGE (WORST CASE: 2 Mbps / 2480MHz)

HORIZONTAL PEAK AND AVERAGE DATA

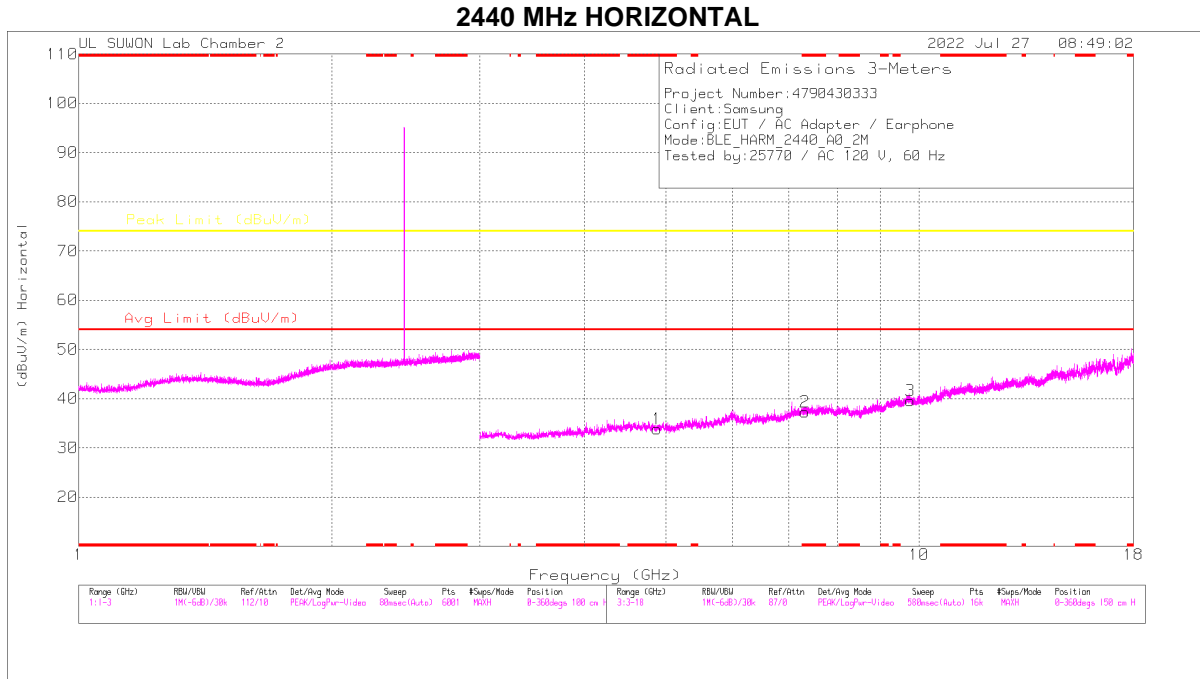


Trace Markers

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	* 2.48351	40.87	PK	32	-19.6	0	53.27	-	-	74	-20.73	49	104	H
2	2.53063	43.81	PK	32.1	-19.4	0	56.51	-	-	74	-17.49	49	104	H
3	* 2.48351	30.75	RMS	32	-19.6	4.99	48.14	54	-5.86	-	-	49	104	H
4	2.55605	31.39	RMS	32.2	-19.3	4.99	49.28	54	-4.72	-	-	49	104	H

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

HARMONICS AND SPURIOUS EMISSIONS(WORST CASE: 2 Mbps / 2440MHz)



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
9.76175	32.69	PK2	37.2	-21	0	48.89	-	-	74	-25.11	0	100	H

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

END OF TEST REPORT