

CERTIFICATION TEST REPORT

Report Number. : S-4791706372-E6V2

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

Model : SM-L335U, SM-L335F

FCC ID : A3LSML335

EUT Description : WCDMA/LTE Smart Wearable + BT/BLE, DTS/UNII a/b/g/n

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

Date Of Issue:
2025-04-22

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Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2025-04-17	Initial issue	Jaejin Lee
V2	2025-04-22	Updated BLE 2Mbps measurement and section 5.4	Jaejin Lee

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.

EUT DESCRIPTION: WCDMA/LTE Smart Wearable + BT/BLE, DTS/UNII a/b/g/n

MODEL NUMBER: SM-L335U, SM-L335F

SERIAL NUMBER: R3AY1007LZR, R3AY1007ZRB (CONDUCTED);
R3AY3006XFX, R3AY3006X7W (RADIATED)

DATE TESTED: 2025-03-18 - 2025-04-22;

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

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

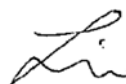
Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL KOREA LTD. and all revisions are duly noted in the revisions section. Any alteration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

Approved & Released For
UL KOREA LTD. By:



Seokhwan Hong
Suwon Lab Engineer
UL KOREA LTD.

Tested By:



Jaejin Lee
Suwon Lab Engineer
UL KOREA LTD.

2. TEST METHODOLOGY

1. FCC 47 CFR Part 2.
2. FCC 47 CFR Part 15.
3. KDB 558074 D01 15.247 Meas Guidance v05r02.
4. ANSI C63.10-2020.

3. FACILITIES AND ACCREDITATION

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

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

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

4. DECISION RULES AND MEASUREMENT UNCERTAINTY

4.1. METROLOGICAL TRACEABILITY

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) +
Cable Loss (dB) – Preamp Gain (dB)

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

AC Corrected Reading (dBuV) = Measured Voltage (dBuV) + Extension Cord
Loss (dB) + Cable Loss (dB)

44.72 dBuV = 34.72 dBuV + 9.9 dB + 0.1 dB

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
RF Output Power	0.69 dB
Power Spectral Density	1.4 dB
Occupied Bandwidth	0.04 %
Conducted Spurious Emissions	1.4 dB
Conducted Disturbance, 0.15 to 30 MHz	1.84 dB
Radiated Disturbance, 9 kHz to 30 MHz	2.41 dB
Radiated Disturbance, 30 MHz to 1 GHz	3.69 dB
Radiated Disturbance, 1 GHz to 18 GHz	5.18 dB
Radiated Disturbance, Above 18 GHz	5.07 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 Clause 4.4.3 in IEC Guide 115:2023.

5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION

The EUT is a WCDMA/LTE Smart Wearable + BT/BLE, DTS/UNII a/b/g/n.
This test report addresses the DTS (BLE) operational mode.

Representative model	Difference	Derivative model
		SM-L335F
SM-L335U	Hardware	Same
	Software	The UI has changed according to Service Provider

The model SM-L335U used for final testing and is representative of the test results in this report.

5.2. MAXIMUM OUTPUT POWER

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

Frequency Range[MHz]	Mode	Power Mode	Output Power [dBm]	Output Power [mW]
2 402 ~ 2 480	1Mbps (37 pkt)	Peak	8.910	7.780
		Average	8.700	7.414
2 404 ~ 2 478	2Mbps (37 pkt)	Peak	8.930	7.816
		Average	8.638	7.308

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 a internal antenna, with a maximum gain of: -9.2 dBi

5.4. WORST-CASE CONFIGURATION AND MODE

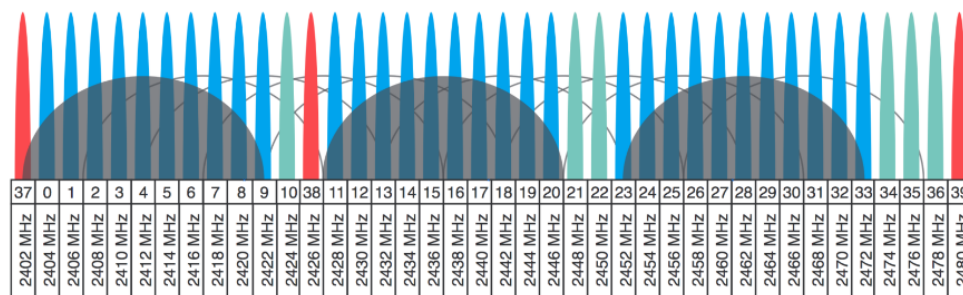
The fundamentals of the EUT were investigated in three orthogonal orientations X, Y and Z. It was determined that below table's orientation was the worst-case orientation.

Worst case of antenna axis: Y

Radiated and power line conducted tests were performed with EUT connected to AC power adapter and strap as the worst-case configuration. Radiated harmonics spurious 1~18 GHz Low/Mid/High channels, 18-26GHz were performed with the EUT set at the worst 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. Due to modulation characteristics, BLE coded data was worse than 1Mbps in the RBW 3kHz PSD results. However, based on the RBW (1MHz) when measuring radiated spurious, the PSD of 1Mbps is higher, so 1Mbps was selected as the worst case to suit the radiation test environment.

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

The EUT does not supported Primary PHY channels (2402[37] / 2426[38] / 2480[39] MHz) at the BLE 2Mbps data-rate. BLE Channels that used for testing are follows in below.



Power verification

The Output Power of all data rate are all investigated, the 1 Mbps(37 pkt) and 2 Mbps(37 pkt) power is the worst case for symbol rate. All tests were performed in these two modes.

Symbol Rate [Ms/s]	Mode	Freq. [MHz]	Conducted Burst Average Power[dBm]	Symbol Rate [Ms/s]	Mode	Freq. [MHz]	Conducted Burst Average Power[dBm]
1	1 Mbps 37 pkt ANT1	2 402	7.161	2	2 Mbps 37 pkt ANT1	2 404	7.026
		2 440	8.393			2 440	8.318
		2 480	8.700			2 478	8.638
	1 Mbps 255 pkt ANT1	2 402	7.104		2 Mbps 255 pkt ANT1	2 404	6.924
		2 440	8.355			2 440	8.225
		2 480	8.664			2 478	8.620
1 Coded S=8	125 kbps 37 pkt ANT1	2 402	6.801	1 Coded S=2	500 kbps 37 pkt ANT1	2 402	6.863
		2 440	8.089			2 440	8.147
		2 480	8.341			2 480	8.602
	125 kbps 255 pkt ANT1	2 402	6.793		500 kbps 255 pkt ANT1	2 402	6.994
		2 440	8.066			2 440	8.236
		2 480	8.398			2 480	8.557

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Charger	SAMSUNG	EP-TA800	R37XBMJF8FBDKA	N/A
Wireless Charger	SAMSUNG	EP-OL300	-	-

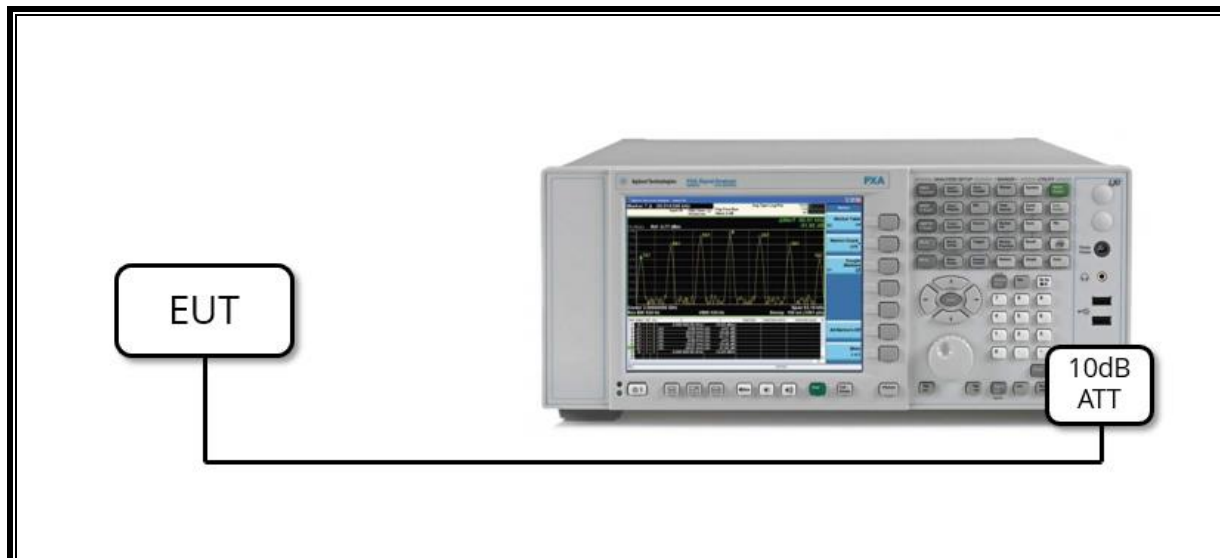
I/O CABLE

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	0.8 m	N/A

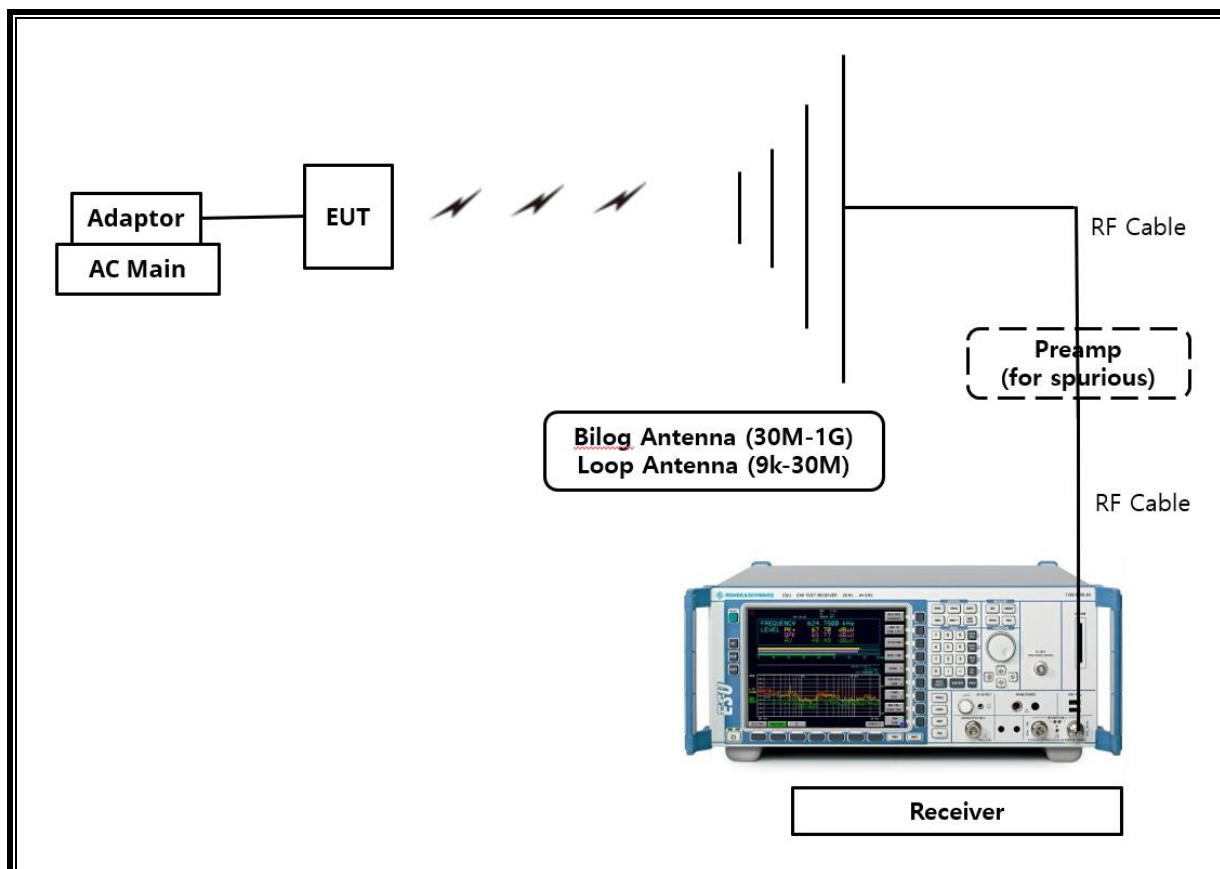
TEST SETUP

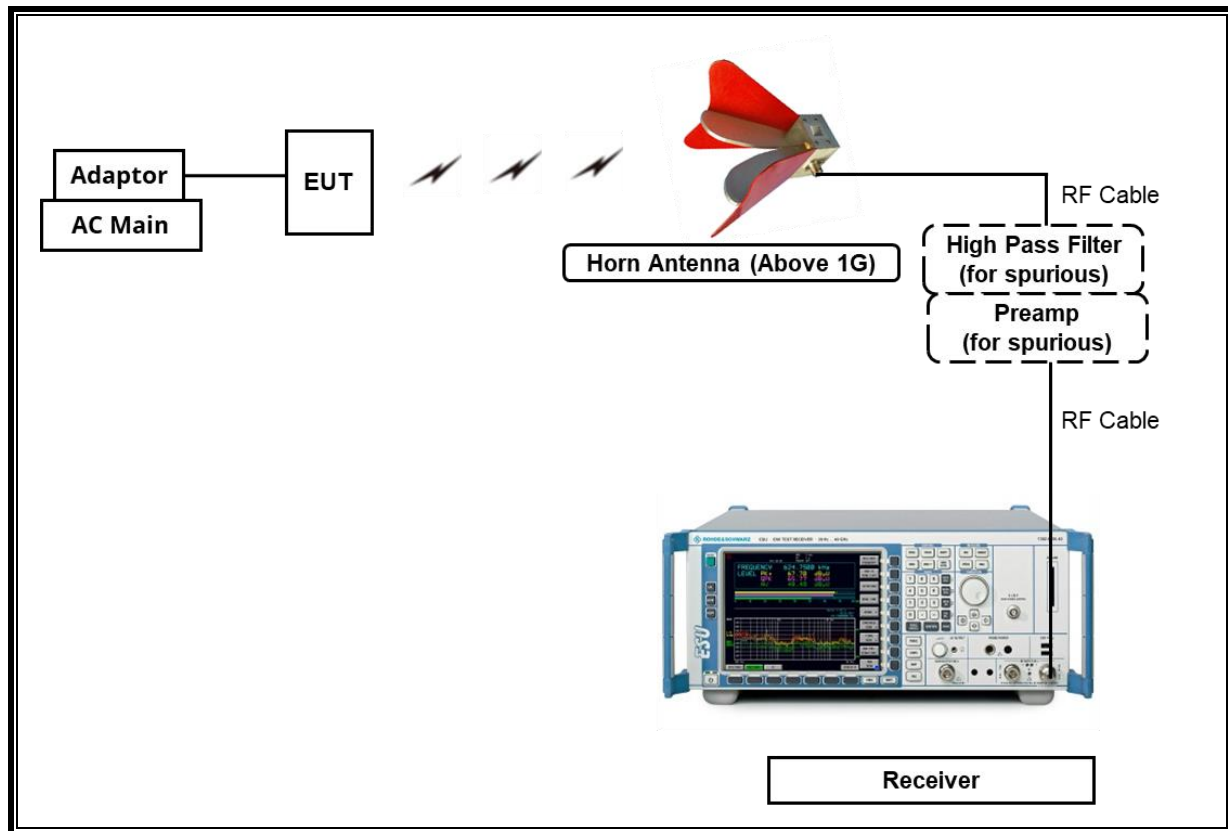
The EUT is a stand-alone unit during the tests.
Test software in hidden menu exercised the EUT to enable BLE mode.

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)





6. MEASUREMENT METHOD

6 dB BW : ANSI C63.10-2020, Section 11.8.2 Option 2

OUTPUT POWER : ANSI C63.10-2020, Section 11.9.1.1 RBW $\geq$ DTS bandwidth

POWER SPECTRAL DENSITY : ANSI C63.10-2020, Section 11.10.2 Method PKPSD (peak PSD)

Out-of-band Emissions (Conducted) : ANSI C63.10-2020, Section 11.11 Emissions in nonrestricted frequency bands

Out-of-band Emissions in Non-restricted Bands: ANSI C63.10-2020, Section 11.11 Emissions in nonrestricted frequency bands

Out-of-band Emissions in Restricted Bands : ANSI C63.10-2020, Section 11.12 Emissions in restricted frequency bands

AC Power Line Conducted Emission : ANSI C63.10-2020, 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	VULB 9163	750	2026-07-30
Antenna, Horn, 18 GHz	ETS	3117	00168717	2026-07-17
Antenna, Horn, 40 GHz	ETS	3116C	00166155	2026-07-23
Preamplifier	ETS	3116C-PA	00168841	2025-07-25
Preamplifier, 1000 MHz	Sonoma	310N	341282	2025-07-22
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	2029169	2025-07-23
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	2025-07-24
Spectrum Analyzer, 44 GHz	KEYSIGHT	N9040B	MY60080268	2025-12-24
Average Power Sensor	Agilent / HP	U2000A	MY54270007	2025-07-23
Average Power Sensor	Agilent / HP	U2000A	MY54260010	2025-07-23
Attenuator	PASTERNAK	PE7087-10	A001	2025-07-23
Attenuator	PASTERNAK	PE7087-10	A008	2025-07-23
EMI Test Receive, 40 GHz	R&S	ESU40	100439	2025-07-23
EMI Test Receive, 40 GHz	R&S	ESU40	100457	2025-07-22
EMI Test Receive, 3 GHz	R&S	ESR 3	101832	2025-07-22
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	009	2025-07-22
High Pass Filter 3GHz	Micro-Tronics	HPM17543	010	2025-07-22
High Pass Filter 6GHz	Micro-Tronics	HPS17542	21	2025-07-23
LISN	R&S	ENV216	101837	2025-07-22
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	2025-09-07
UL Software				
Description	Manufacturer	Model	Version	
Radiated software	UL	UL EMC	Ver 9.5	
AC Line Conducted software	UL	UL EMC	Ver 9.5	

8. TEST RESULTS SUMMARY

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

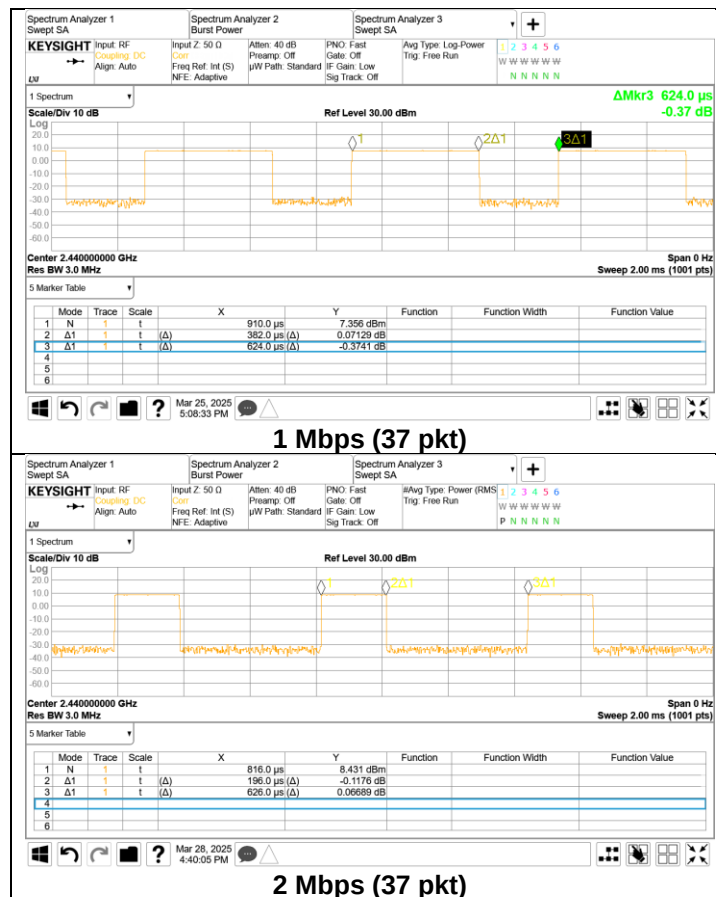
9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

Mode	On time [msec]	Period [msec]	Duty cycle x [Linear]	Duty Cycle [%]	Duty Cycle Correction Factor [dB]	1/T Minimum VBW [kHz]
2 400 ~ 2 483.5 MHz Bands						
1 Mbps [37 pkt]	0.382	0.624	0.6122	61.22	2.13	2.62
2 Mbps [37 pkt]	0.196	0.626	0.3131	31.31	5.04	5.10



9.2. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

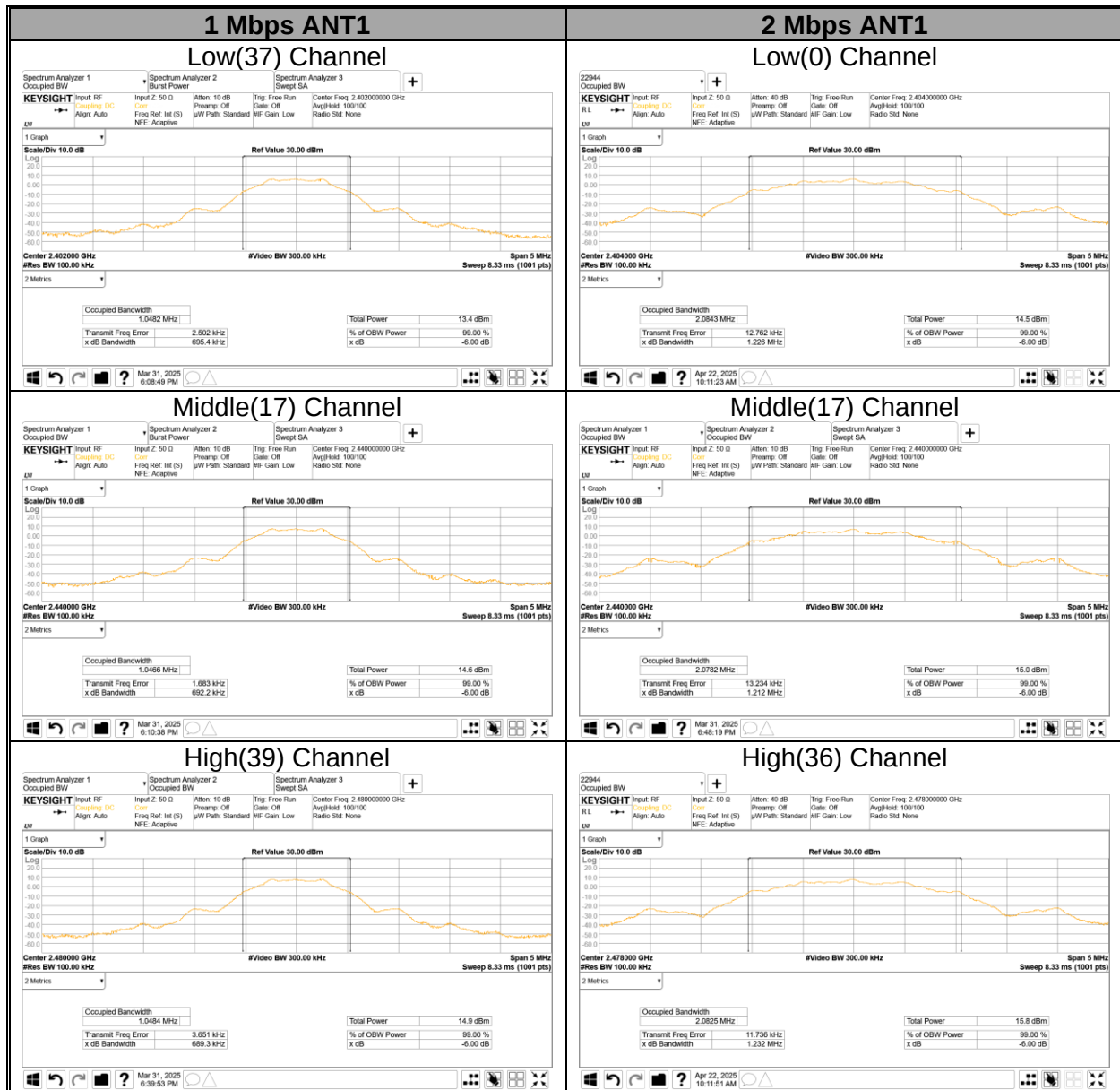
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

9.2.1. Test data

Mode	Antenna	Channel	Frequency [MHz]	6 dB Bandwidth [kHz]	Minimum Limit [kHz]
1 Mbps (37pkt)	ANT1	37	2 402	695.4	500.0
		17	2 440	692.2	
		39	2 480	689.3	
2 Mbps (37pkt)	ANT1	0	2 404	1226.0	
		17	2 440	1212.0	
		36	2 478	1232.0	
Worst				689.3	500.0

9.2.2. 6 dB BANDWIDTH PLOTS



9.3. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

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

TEST PROCEDURE

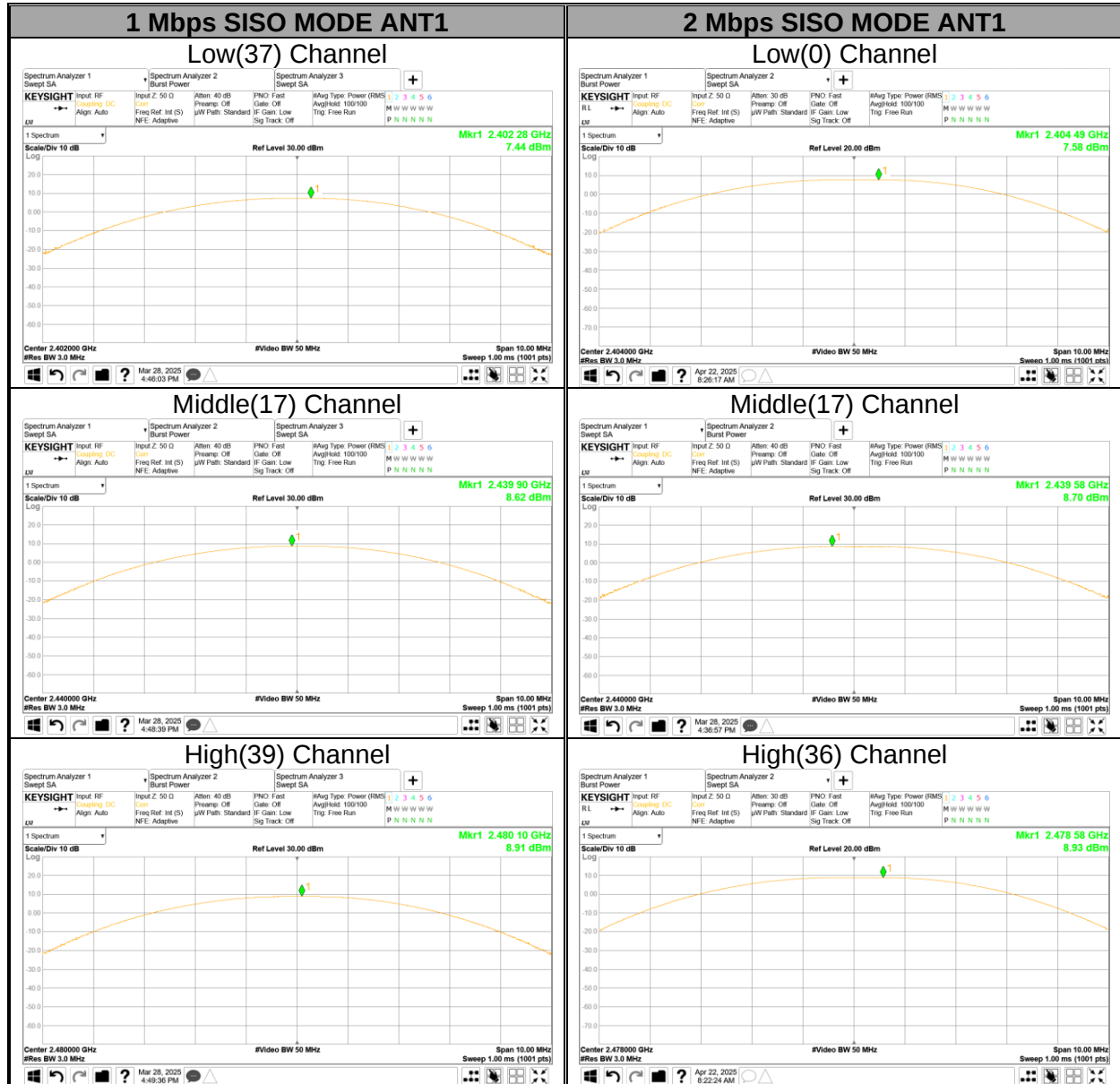
Peak power is measured using ANSI C63.10(2020) under section 11.9.1.1 utilizing spectrum analyzer(RBW $\geq$ DTS bandwidth).

RESULTS

9.3.1. SISO MODE TEST DATA

Mode	Antenna	Channel	Frequency [MHz]	Peak Output Power [dBm]	Limit [dBm]	Margin [dB]
1 Mbps (37 pkt)	ANT1	37	2 402	7.44	30.000	-22.56
		17	2 440	8.62		-21.38
		39	2 480	8.91		-21.09
2 Mbps (37 pkt)	ANT1	0	2 404	7.58		-22.42
		17	2 440	8.70		-21.30
		36	2 478	8.93		-21.07
Worst				8.93		-21.07

9.3.2. PEAK POWER PLOTS



9.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

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

RESULTS

9.4.1. SISO MODE TEST DATA

Mode	Antenna	Channel	Frequency [MHz]	Average Output Power [dBm]	Average Output Power [mW]
1 Mbps (37 pkt)	ANT1	37	2 402	7.161	5.201
		17	2 440	8.393	6.907
		39	2 480	8.700	7.414
2 Mbps (37 pkt)	ANT1	0	2 404	7.026	5.042
		17	2 440	8.318	6.789
		36	2 478	8.638	7.308

9.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

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

TEST PROCEDURE

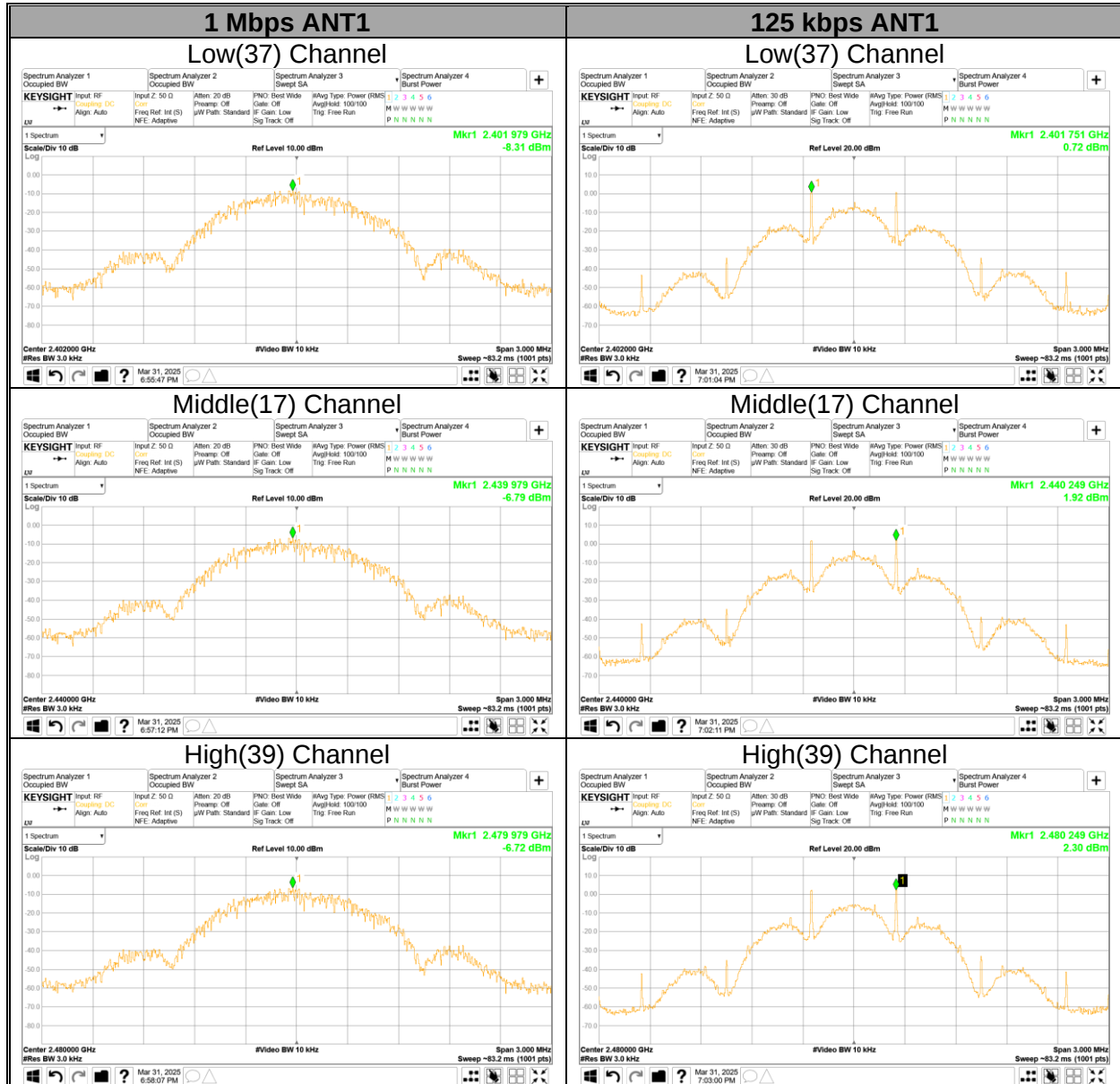
ANSI C63.10-2020, Section 11.10.2 Method PKPSD (peak PSD)

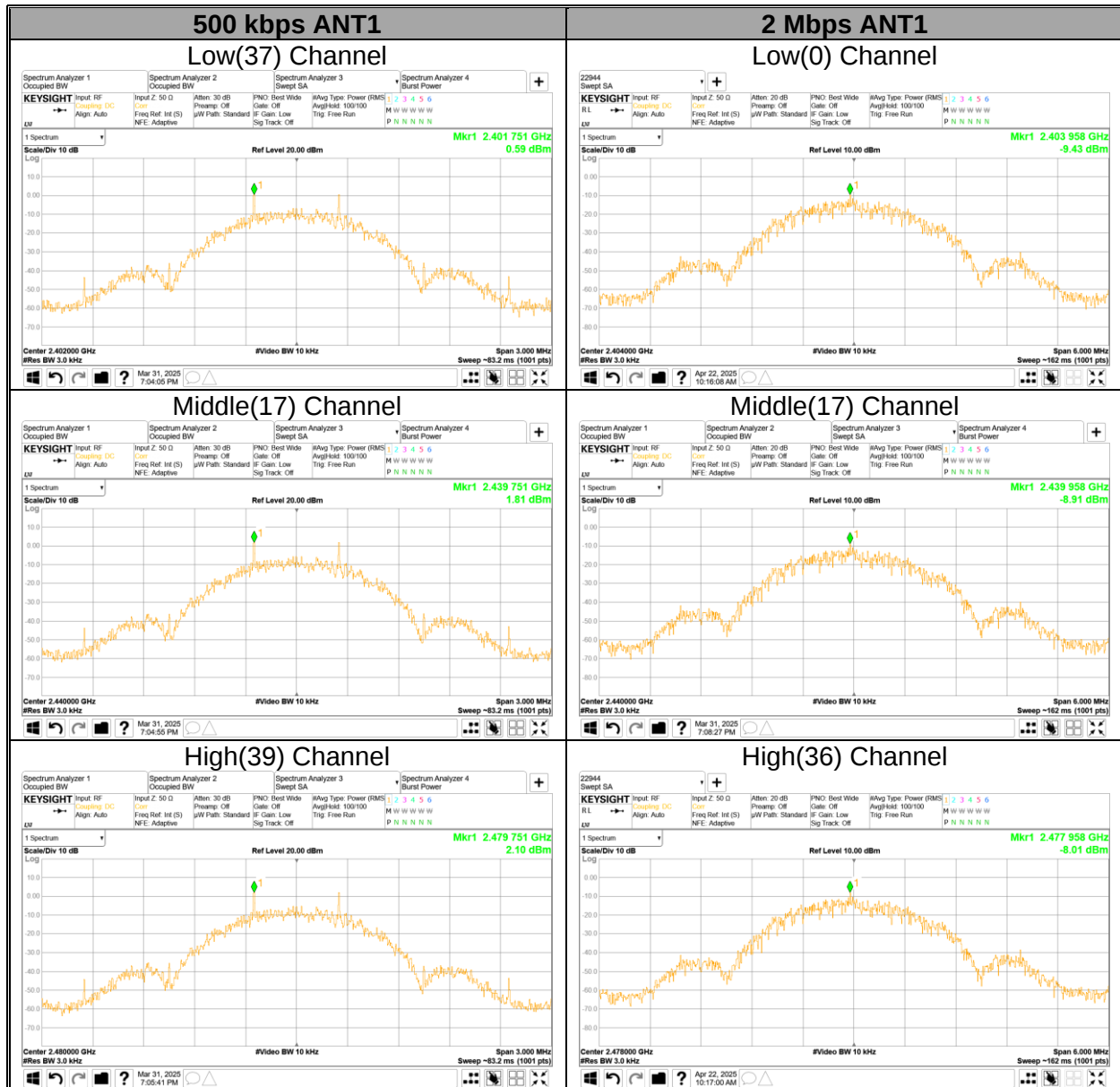
RESULTS

9.5.1. Test data

Mode	Antenna	Channel	Frequency [MHz]	PSD [dBm/3kHz]	Limit [dBm/3kHz]	Margin [dB]
1 Mbps (37 pkt)	ANT1	37	2 402	-8.31	8.00	-16.31
		17	2 440	-6.79		-14.79
		39	2 480	-6.72		-14.72
37		2 402	0.72	-7.28		
17		2 440	1.92	-6.08		
39		2 480	2.30	-5.70		
500 kbps (37 pkt)		37	2 402	0.59		-7.41
		17	2 440	1.81		-6.19
		39	2 480	2.10		-5.90
2 Mbps (37 pkt)		0	2 404	-9.43		-17.43
		17	2 440	-8.91		-16.91
		36	2 478	-8.01		-16.01
Worst				2.30		-5.70

9.5.2. PSD TEST PLOTS





9.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

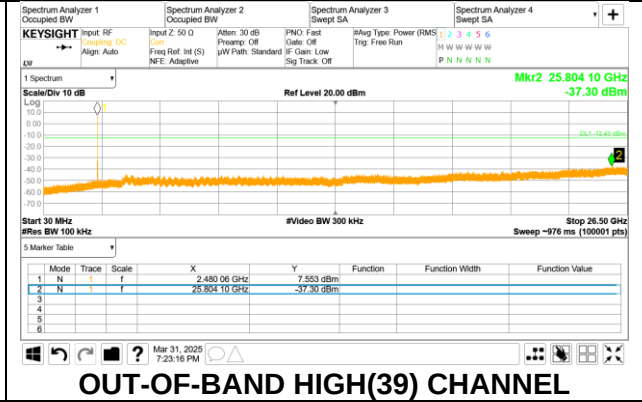
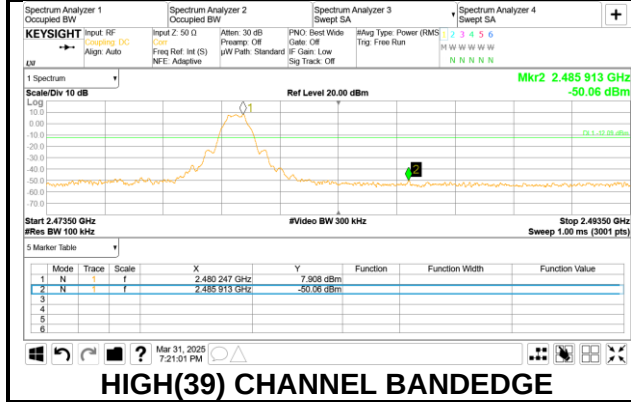
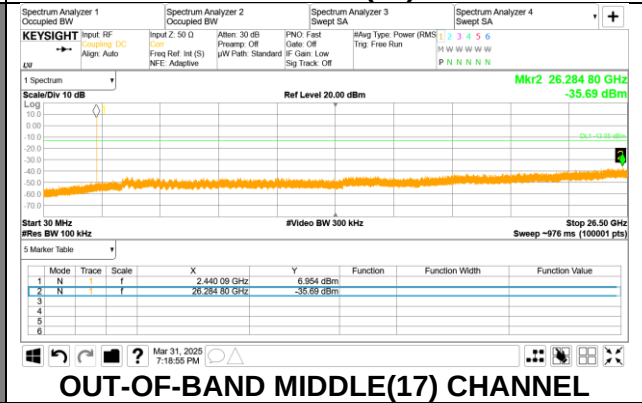
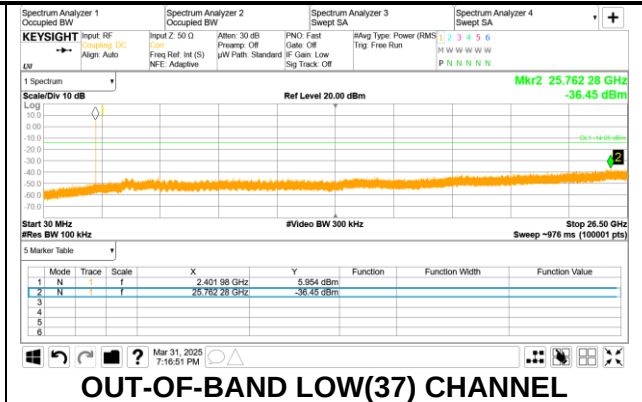
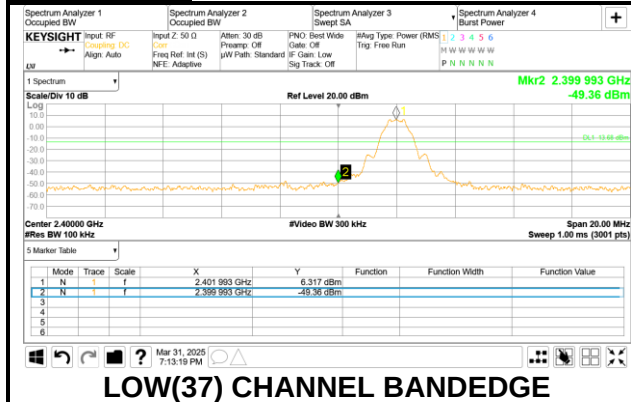
FCC §15.247 (d)

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

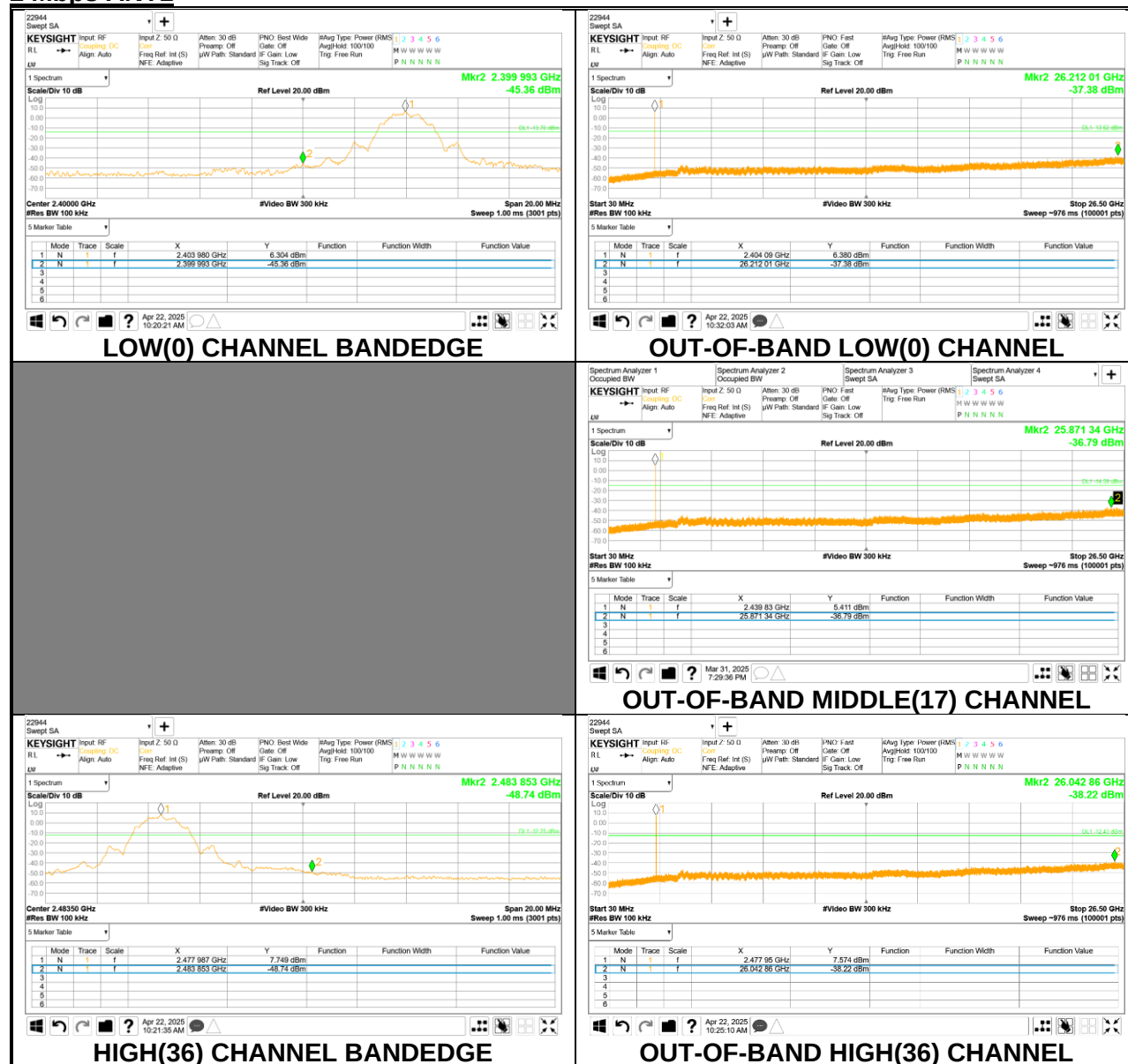
RESULTS

9.6.1. Test plot

1 Mbps ANT1



2 Mbps ANT1



10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

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

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

TEST PROCEDURE

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

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

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor for average measurements. (Restricted band-edge, Final detection of spurious harmonic emissions)

Duty cycle factor = $10 \log(1/x)$. For this sample: For 1 Mbps, DCF = $10 \log(1/0.6122) = 2.13 \text{ dB}$
and for 2 Mbps, DCF = $10 \log(1/0.313) = 5.04 \text{ dB}$.

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.

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 area test site.

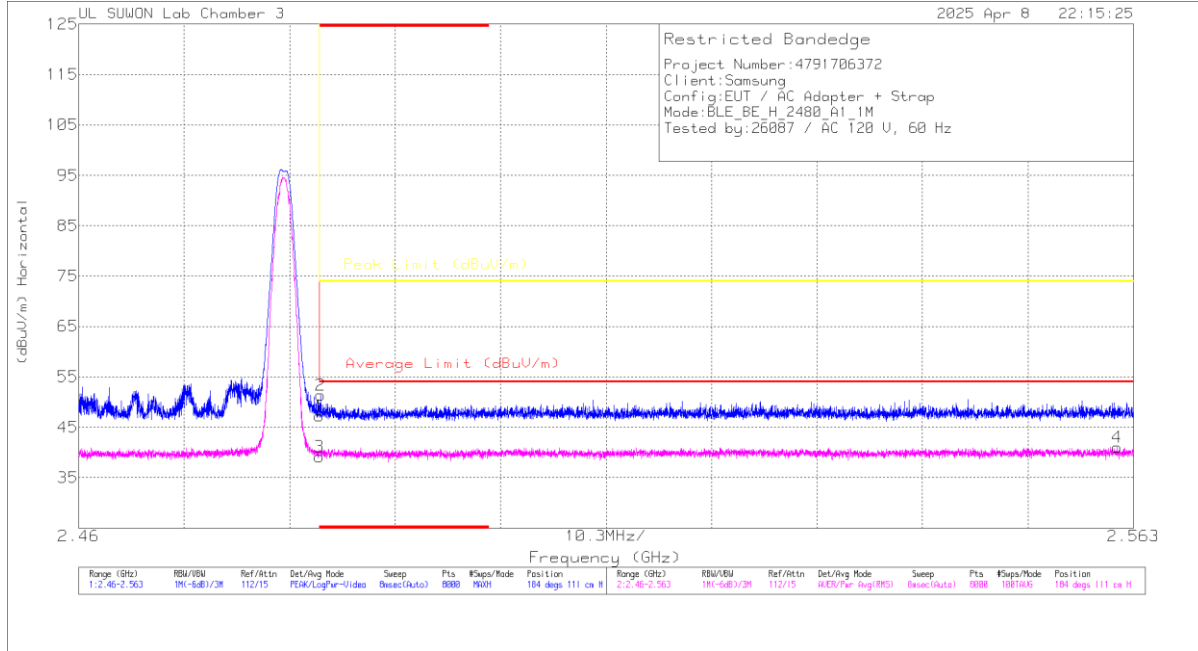
Therefore, sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field based on KDB 414788.

10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. TX ABOVE 1GHz BLUETOOTH LE 1 Mbps

BANDEDGE (WORST CASE : 2480 MHz, ANT1)

HORIZONTAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_Factor (dBm)	10dB_Path Loss (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.4835	39.81	Pk	32.4	-24.9	0	47.31	-	-	74	-26.69	184	111	H
2	* 2.48359	43.89	Pk	32.4	-24.9	0	51.39	-	-	74	-22.61	184	111	H
3	* 2.4835	29.52	RMS	32.4	-24.9	2.13	39.15	54	-14.85	184	111	H		
4	2.56139	31.24	RMS	32.4	-24.7	2.13	41.07	54	-12.93	-	-	184	111	H

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

Pk - Peak detector

RMS - RMS detection

BANDEDGE TEST DATA

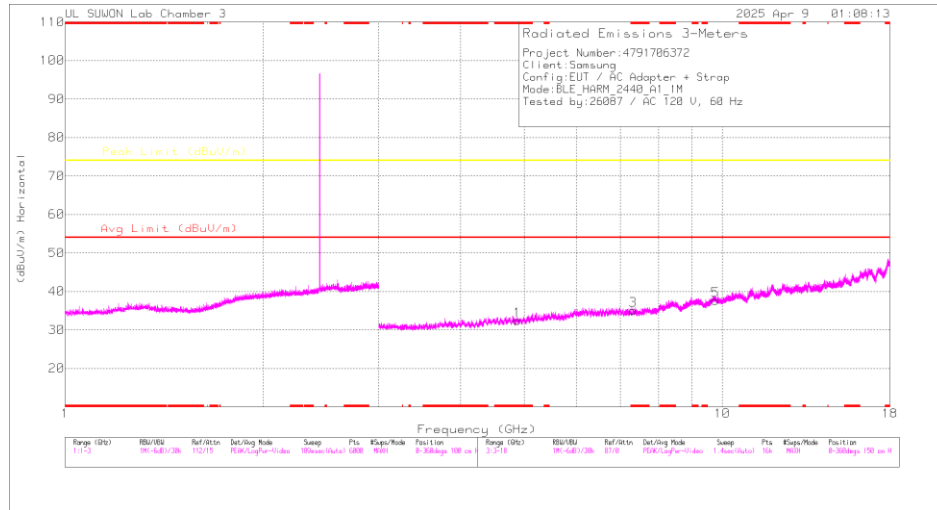
Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2402	ANT1	* 2.39	40.33	Pk	32.10	-24.90	0.00	47.53	-	-	74.00	-26.47	182	114	H
		* 2.38824	43.67	Pk	32.10	-25.10	0.00	50.67	-	-	74.00	-23.33	182	114	H
		* 2.39	30.01	RMS	32.10	-24.90	2.13	39.34	54.00	-14.66	-	-	182	114	H
		* 2.38081	31.18	RMS	32.10	-25.00	2.13	40.41	54.00	-13.59	-	-	182	114	H
		* 2.39	39.88	Pk	32.10	-24.90	0.00	47.08	-	-	74.00	-26.92	207	110	V
		* 2.38815	43.47	Pk	32.10	-25.10	0.00	50.47	-	-	74.00	-23.53	207	110	V
		* 2.39	29.50	RMS	32.10	-24.90	2.13	38.83	54.00	-15.17	-	-	207	110	V
		* 2.38969	31.04	RMS	32.10	-24.90	2.13	40.37	54.00	-13.63	-	-	207	110	V
		* 2.4835	39.81	Pk	32.40	-24.90	0.00	47.31	-	-	74.00	-26.69	184	111	H
		* 2.48359	43.89	Pk	32.40	-24.90	0.00	51.39	-	-	74.00	-22.61	184	111	H
2480	ANT1	* 2.4835	29.52	RMS	32.40	-24.90	2.13	39.15	54.00	-14.85	-	-	184	111	H
		2.561	31.24	RMS	32.40	-24.70	2.13	41.07	54.00	-12.93	-	-	184	111	H
		* 2.4835	40.59	Pk	32.40	-24.90	0.00	48.09	-	-	74.00	-25.91	207	104	V
		2.503	42.59	Pk	32.40	-24.70	0.00	50.29	-	-	74.00	-23.71	207	104	V
		* 2.4835	30.35	RMS	32.40	-24.90	2.13	39.98	54.00	-14.02	-	-	207	104	V
		2.555	31.63	RMS	32.40	-24.70	2.13	41.46	54.00	-12.54	-	-	207	104	V

Note1. Pk - Peak detector, RMS - RMS detector

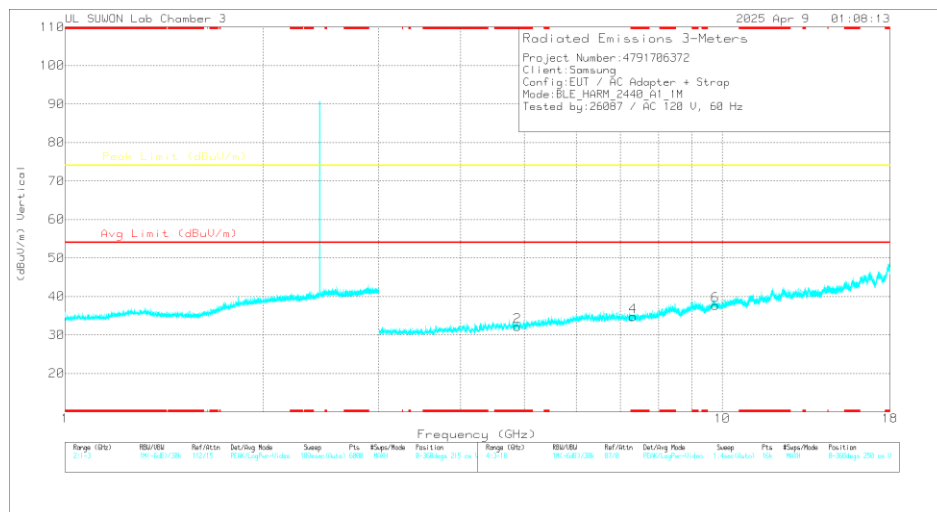
Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

HARMONICS AND SPURIOUS EMISSIONS (WORST CASE : 2440 MHz, ANT1)

2440 MHz 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	Antenna_Factor (dB/m)	3GHz_HP_Path Loss(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
* 4.87841	38.87	PK2	34.2	-30.6	0	42.47	-	-	74	-31.53	0	100	H
* 4.88076	39.64	PK2	34.2	-30.6	0	43.24	-	-	74	-30.76	0	100	V
* 7.32396	34.7	PK2	35.8	-25	0	45.5	-	-	74	-28.5	0	100	H
* 7.32223	34.28	PK2	35.8	-25	0	45.08	-	-	74	-28.92	0	100	V
9.75871	32.27	PK2	36.9	-21.3	0	47.87	-	-	74	-26.13	0	100	H
9.75876	32.95	PK2	36.9	-21.3	0	48.55	-	-	74	-25.45	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

HARMONICS AND SPURIOUS EMISSIONS TEST DATA

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	DC Corr [dB]	Result dBuV/m	AV Limit dBuV/m	AV Margin [dB]	PK Limit dBuV/m	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2402	ANT1	* 4.80324	38.95	PK2	34.30	-29.80	0.00	43.45	-	-	74.00	-30.55	0	100	H
		* 4.80615	38.47	PK2	34.30	-29.80	0.00	42.97	-	-	74.00	-31.03	0	100	V
		7.207	34.64	PK2	35.80	-25.70	0.00	44.74	-	-	74.00	-29.26	0	100	H
		7.201	34.23	PK2	35.80	-25.70	0.00	44.33	-	-	74.00	-29.67	0	100	V
		9.604	32.20	PK2	36.70	-21.70	0.00	47.20	-	-	74.00	-26.80	0	100	H
		9.603	32.47	PK2	36.70	-21.70	0.00	47.47	-	-	74.00	-26.53	0	100	V
2440	ANT1	* 4.87841	38.87	PK2	34.20	-30.60	0.00	42.47	-	-	74.00	-31.53	0	100	H
		* 4.88076	39.64	PK2	34.20	-30.60	0.00	43.24	-	-	74.00	-30.76	0	100	V
		* 7.32396	34.70	PK2	35.80	-25.00	0.00	45.50	-	-	74.00	-28.50	0	100	H
		* 7.32223	34.28	PK2	35.80	-25.00	0.00	45.08	-	-	74.00	-28.92	0	100	V
		9.759	32.27	PK2	36.90	-21.30	0.00	47.87	-	-	74.00	-26.13	0	100	H
		9.759	32.95	PK2	36.90	-21.30	0.00	48.55	-	-	74.00	-25.45	0	100	V
2480	ANT1	* 4.96141	38.18	PK2	34.30	-30.30	0.00	42.18	-	-	74.00	-31.82	0	100	H
		* 4.95777	38.21	PK2	34.30	-30.30	0.00	42.21	-	-	74.00	-31.79	0	100	V
		* 7.43855	34.07	PK2	35.70	-25.00	0.00	44.77	-	-	74.00	-29.23	0	100	H
		* 7.43593	33.96	PK2	35.70	-25.00	0.00	44.66	-	-	74.00	-29.34	0	100	V
		9.921	31.95	PK2	37.10	-21.30	0.00	47.75	-	-	74.00	-26.25	0	100	H
		9.918	32.26	PK2	37.10	-21.30	0.00	48.06	-	-	74.00	-25.94	0	100	V

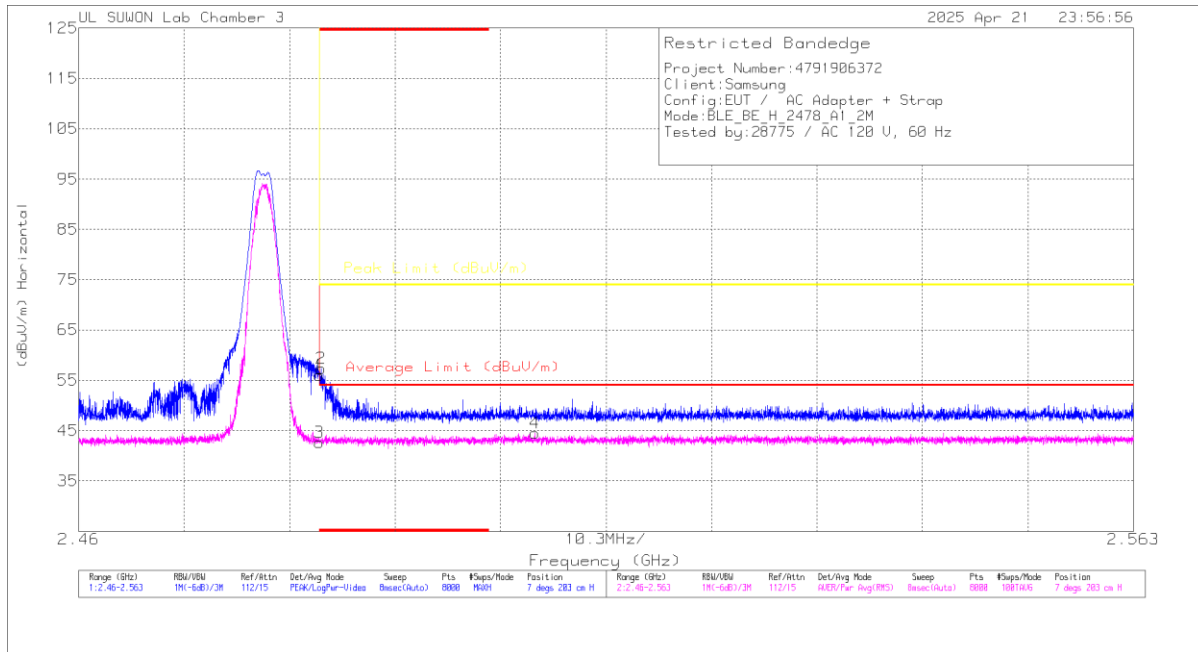
Note1. PK2 - KDB558074 Method: Maximum Peak / MAV1 - KDB558074 Option 1 Maximum RMS Average

Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

10.2.2. TX ABOVE 1GHz BLUETOOTH LE 2 Mbps

BANDEDGE (WORST CASE : 2478 MHz, ANT1)

HORIZONTAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_Factor (dBm)	10dB_Path Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Altitude (Degs)	Height (cm)	Polarity
1	* 2.4835	48.51	PK	32.4	-24.9	0	56.01	-	-	74	-17.99	7	203	H
2	* 2.48366	49.86	PK	32.4	-24.9	0	57.36	-	-	74	-16.64	7	203	H
3	* 2.4835	30.09	RMS	32.4	-24.9	5.04	42.63	54	-11.37	-	-	7	203	H
4	2.50453	31.86	RMS	32.4	-24.8	5.04	44.5	54	-9.5	-	-	7	203	H

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

BANDEDGE TEST DATA

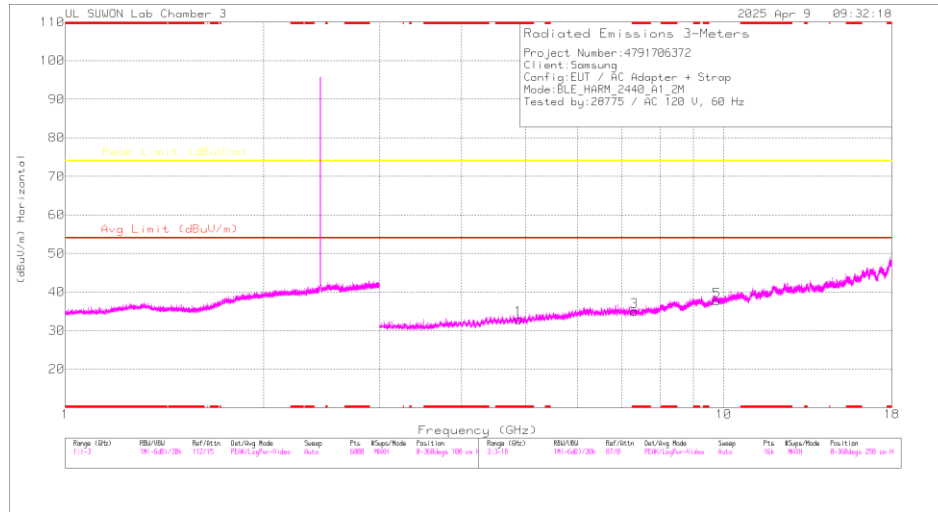
Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2404	ANT1	* 2.39	41.70	Pk	32.10	-24.90	0.00	48.90	-	-	74.00	-25.10	176	229	H
		* 2.38984	43.94	Pk	32.10	-24.90	0.00	51.14	-	-	74.00	-22.86	176	229	H
		* 2.39	30.17	RMS	32.10	-24.90	5.04	42.41	54.00	-11.59	-	-	176	229	H
		* 2.32632	31.75	RMS	31.90	-25.00	5.04	43.69	54.00	-10.31	-	-	176	229	H
		* 2.39	39.97	Pk	32.10	-24.90	0.00	47.17	-	-	74.00	-26.83	189	106	V
		* 2.36491	42.81	Pk	32.00	-25.10	0.00	49.71	-	-	74.00	-24.29	189	106	V
		* 2.39	30.57	RMS	32.10	-24.90	5.04	42.81	54.00	-11.19	-	-	189	106	V
		* 2.38044	31.93	RMS	32.10	-25.00	5.04	44.07	54.00	-9.93	-	-	189	106	V
2478	ANT1	* 2.4835	48.51	Pk	32.40	-24.90	0.00	56.01	-	-	74.00	-17.99	7	203	H
		* 2.48366	49.86	Pk	32.40	-24.90	0.00	57.36	-	-	74.00	-16.64	7	203	H
		* 2.4835	30.09	RMS	32.40	-24.90	5.04	42.63	54.00	-11.37	-	-	7	203	H
		2.505	31.86	RMS	32.40	-24.80	5.04	44.50	54.00	-9.50	-	-	7	203	H
		* 2.4835	43.79	Pk	32.40	-24.90	0.00	51.29	-	-	74.00	-22.71	215	202	V
		* 2.48368	44.23	Pk	32.40	-24.90	0.00	51.73	-	-	74.00	-22.27	215	202	V
		* 2.4835	30.48	RMS	32.40	-24.90	5.04	43.02	54.00	-10.98	-	-	215	202	V
		2.509	31.80	RMS	32.40	-24.80	5.04	44.44	54.00	-9.56	-	-	215	202	V

Note1. Pk - Peak detector, RMS - RMS detector

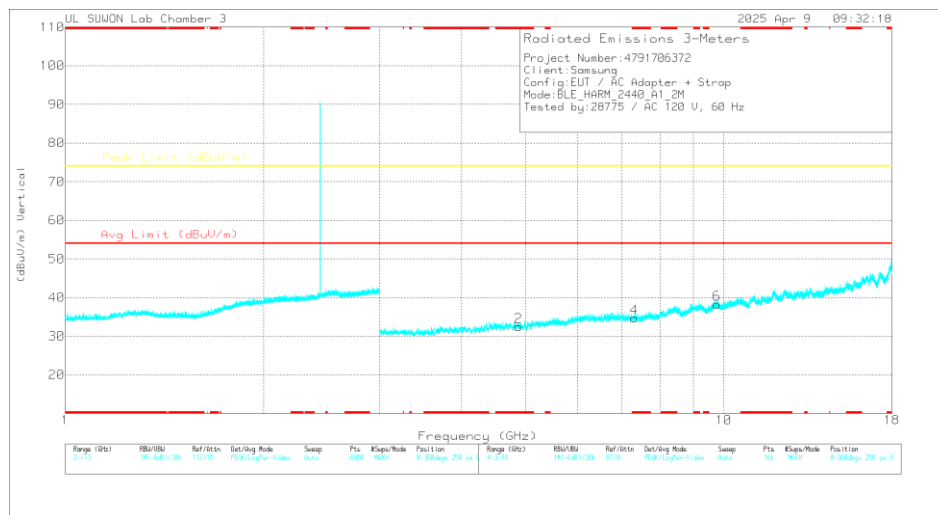
Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

HARMONICS AND SPURIOUS EMISSIONS (WORST CASE : 2440 MHz, ANT1)

2440 MHz 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	Antenna Factor (dB/m)	3GHz_HP_Path Loss(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
* 4.87839	39.16	PK2	34.2	-30.6	0	42.76	-	-	74	-31.24	0	100	H
* 4.88023	38.81	PK	34.2	-30.5	0	42.51	-	-	74	-31.49	0	100	V
* 7.31931	34.38	PK2	35.8	-25.2	0	44.98	-	-	74	-29.02	0	100	H
* 7.31575	34.5	PK2	35.8	-25.1	0	45.2	-	-	74	-28.8	0	100	V
9.76281	32.41	PK2	36.9	-21.2	0	48.11	-	-	74	-25.89	0	100	H
9.76093	32.78	PK2	36.9	-21.2	0	48.48	-	-	74	-25.52	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

HARMONICS AND SPURIOUS EMISSIONS TEST DATA

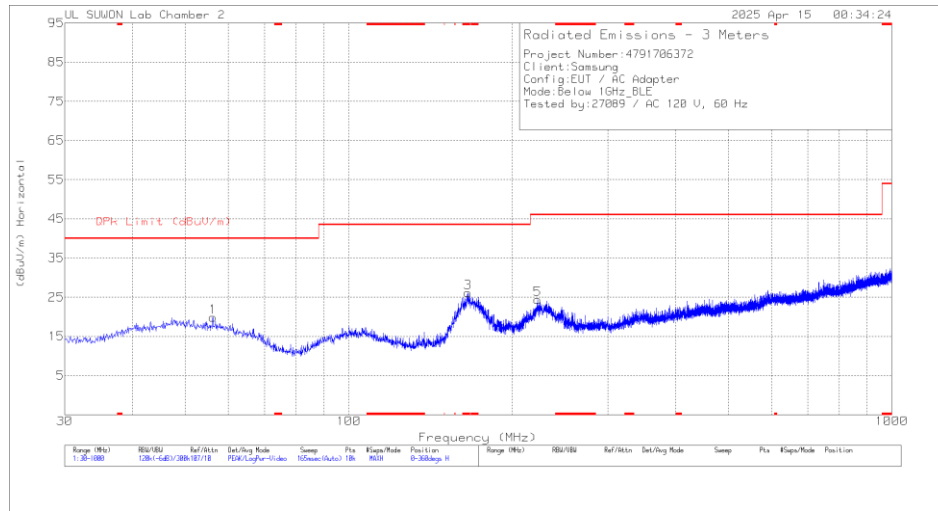
Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	DC Corr [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2404	ANT1	* 4.80797	38.86	PK2	34.30	-29.80	0.00	43.36	-	-	74.00	-30.64	0	100	H
		* 4.80912	39.44	PK2	34.30	-29.80	0.00	43.94	-	-	74.00	-30.06	0	100	V
		7.212	35.11	PK2	35.80	-25.70	0.00	45.21	-	-	74.00	-28.79	0	100	H
		7.211	34.60	PK2	35.80	-25.70	0.00	44.70	-	-	74.00	-29.30	0	100	V
		9.614	32.55	PK2	36.70	-21.70	0.00	47.55	-	-	74.00	-26.45	0	100	H
		9.615	32.65	PK2	36.70	-21.70	0.00	47.65	-	-	74.00	-26.35	0	100	V
2440	ANT1	* 4.87839	39.16	PK2	34.20	-30.60	0.00	42.76	-	-	74.00	-31.24	0	100	H
		* 4.88023	38.81	PK	34.20	-30.50	0.00	42.51	-	-	74.00	-31.49	0	100	V
		* 7.31931	34.38	PK2	35.80	-25.20	0.00	44.98	-	-	74.00	-29.02	0	100	H
		* 7.31575	34.50	PK2	35.80	-25.10	0.00	45.20	-	-	74.00	-28.80	0	100	V
		9.763	32.41	PK2	36.90	-21.20	0.00	48.11	-	-	74.00	-25.89	0	100	H
		9.761	32.78	PK2	36.90	-21.20	0.00	48.48	-	-	74.00	-25.52	0	100	V
2478	ANT1	* 4.95634	39.20	PK2	34.30	-30.30	0.00	43.20	-	-	74.00	-30.80	0	100	H
		* 4.95656	38.97	PK2	34.30	-30.30	0.00	42.97	-	-	74.00	-31.03	0	100	V
		* 7.43418	34.50	PK2	35.70	-25.00	0.00	45.20	-	-	74.00	-28.80	0	100	H
		* 7.4363	35.11	PK2	35.70	-25.00	0.00	45.81	-	-	74.00	-28.19	0	100	V
		9.912	32.47	PK2	37.10	-21.40	0.00	48.17	-	-	74.00	-25.83	0	100	H
		9.913	32.28	PK2	37.10	-21.40	0.00	47.98	-	-	74.00	-26.02	0	100	V

Note1. PK2 - KDB558074 Method: Maximum Peak / MAV1 - KDB558074 Option 1 Maximum RMS Average

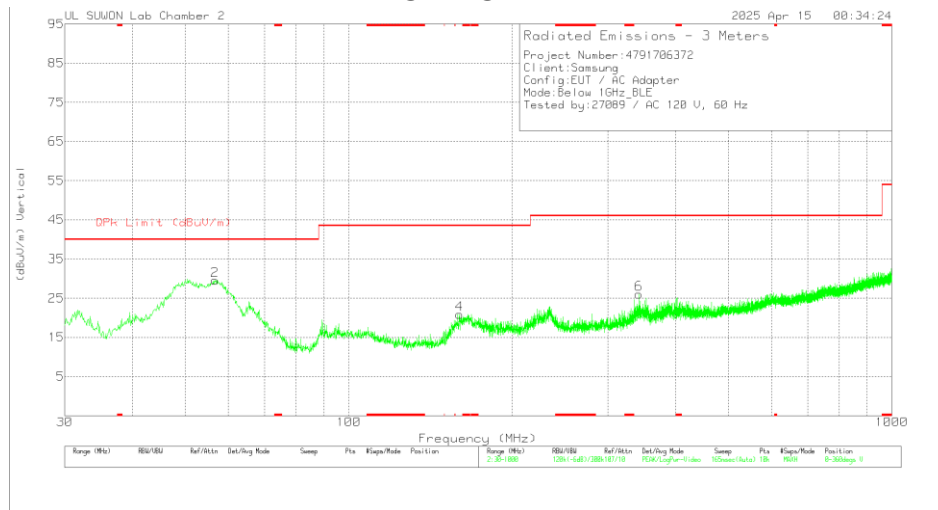
Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

10.3. WORST CASE BELOW 1 GHz

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



HORIZONTAL



VERTICAL

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Antenna_Factor (dB/m)	Below_1G_Path Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	QPK Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	56.19	32.3	Pk	19.2	-31.6	0	19.9	40	-20.1	0-360	300	H
3	* 165.8	42.61	Pk	14.4	-30.9	0	26.11	43.52	-17.41	0-360	100	H
5	222.836	37.66	Pk	17.3	-30.6	0	24.36	46.02	-21.66	0-360	100	H
2	56.675	42.09	Pk	19.1	-31.6	0	29.59	40	-10.41	0-360	100	V
4	159.883	37.54	Pk	14.2	-30.9	0	20.84	43.52	-22.68	0-360	100	V
6	342.243	35.71	Pk	20.5	-30.2	0	26.01	46.02	-20.01	0-360	100	V

Pk - Peak detector

11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

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.

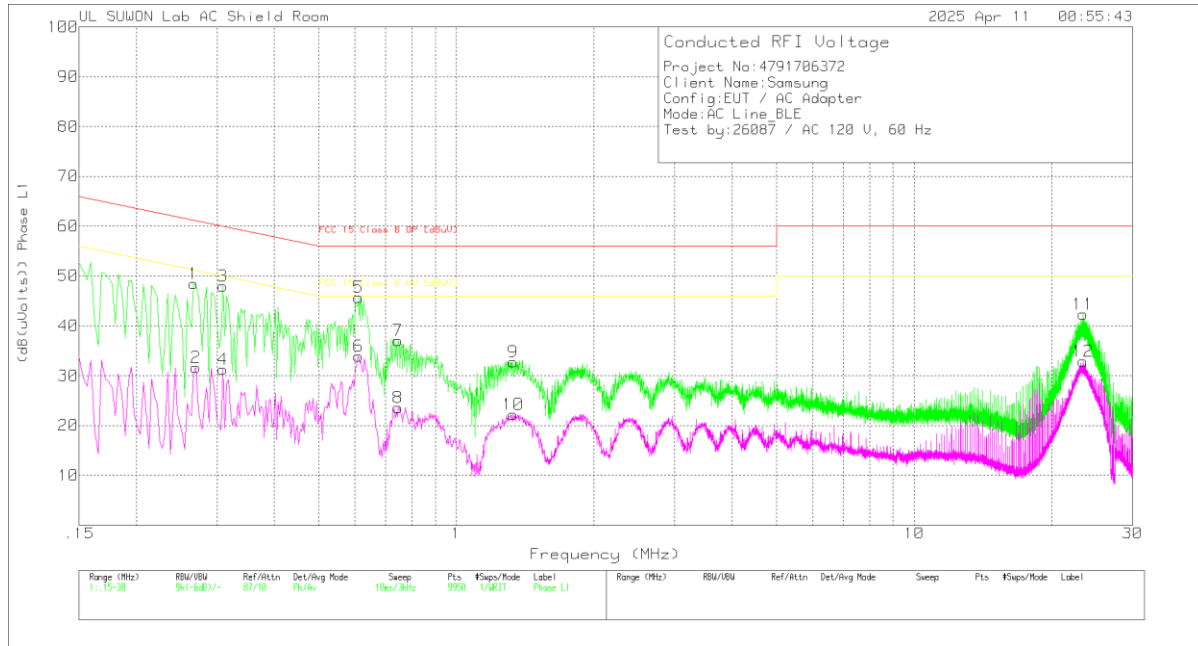
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

11.1. AC Power Line

LINE 1 RESULTS



Trace Markers

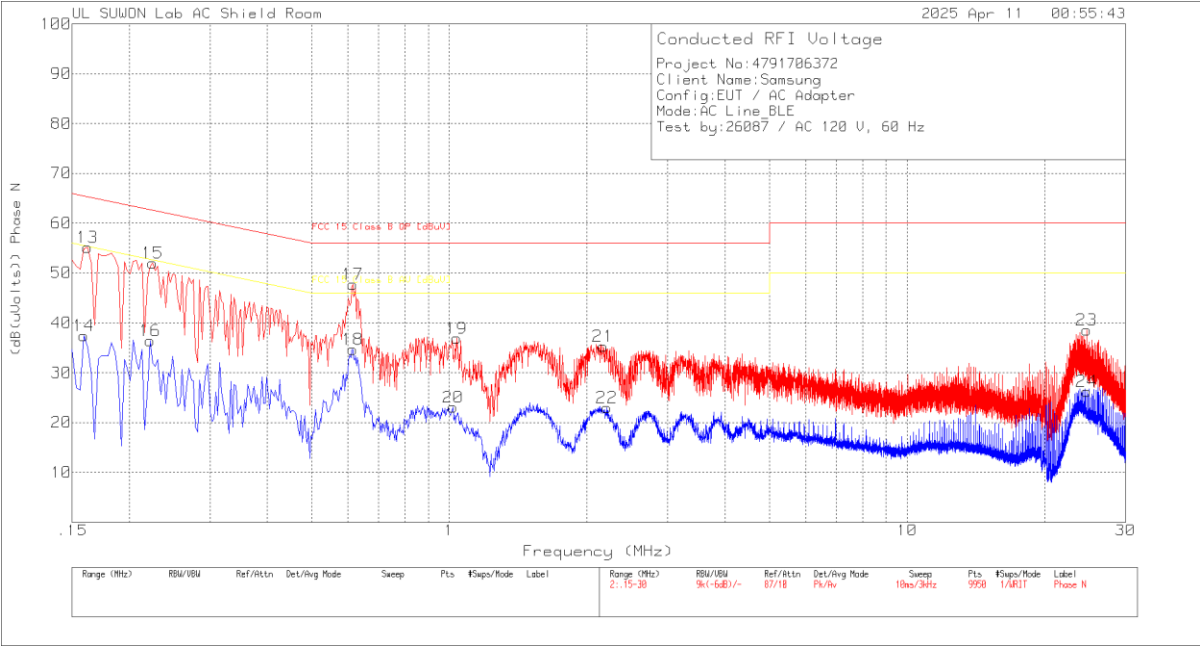
Range 1: Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_L1 [dB]	Cable Loss [dB]	Corrected Reading (dB(uVolts))	FCC 15 Class B QP [dBuV]	Margin (dB)	FCC 15 Class B AV [dBuV]	Margin (dB)
1	.267	38.83	Pk	9.6	.1	48.53	61.21	-12.68	-	-
2	.27	21.99	Av	9.6	.1	31.69	-	-	51.12	-19.43
3	.309	38.18	Pk	9.7	.1	47.98	60	-12.02	-	-
4	.309	21.43	Av	9.7	.1	31.23	-	-	50	-18.77
5	.612	35.8	Pk	9.8	.1	45.7	56	-10.3	-	-
6	.612	24.05	Av	9.8	.1	33.95	-	-	46	-12.05
7	.747	27.18	Pk	9.8	.1	37.08	56	-18.92	-	-
8	.747	13.76	Av	9.8	.1	23.66	-	-	46	-22.34
9	1.332	22.97	Pk	9.7	.1	32.77	56	-23.23	-	-
10	1.332	12.38	Av	9.7	.1	22.18	-	-	46	-23.82
11	23.388	31.75	Pk	10.3	.3	42.35	60	-17.65	-	-
12	23.388	22.3	Av	10.3	.3	32.9	-	-	50	-17.1

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]	Cable Loss [dB]	Corrected Reading (dB(uVolts))	FCC 15 Class B QP [dBuV]	Margin (dB)	FCC 15 Class B AV [dBuV]	Margin (dB)
13	.162	45.15	Pk	9.9	.1	55.15	65.36	-10.21	-	-
14	.159	27.51	Av	9.8	.1	37.41	-	-	55.52	-18.11
15	.225	42.19	Pk	9.7	.1	51.99	62.63	-10.64	-	-
16	.222	26.52	Av	9.8	.1	36.42	-	-	52.74	-16.32
17	.615	37.84	Pk	9.8	.1	47.74	56	-8.26	-	-
18	.615	24.77	Av	9.8	.1	34.67	-	-	46	-11.33
19	1.038	27.07	Pk	9.7	.1	36.87	56	-19.13	-	-
20	1.02	13.25	Av	9.7	.1	23.05	-	-	46	-22.95
21	2.169	25.45	Pk	9.7	.1	35.25	56	-20.75	-	-
22	2.211	13.18	Av	9.7	.1	22.98	-	-	46	-23.02
23	24.705	27.77	Pk	10.5	.3	38.57	60	-21.43	-	-
24	24.705	15.49	Av	10.5	.3	26.29	-	-	50	-23.71

Pk - Peak detector

Av - Average detection

Quasi-Peak Emissions

Range 2: Phase N .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_N [dB]	Cable Loss [dB]	Corrected Reading (dB(uVolts))	FCC 15 Class B QP [dBuV]	Margin (dB)	FCC 15 Class B AV [dBuV]	Margin (dB)
.61515	34.49	Qp	9.8	.1	44.39	56	-11.61	-	-

Qp - Quasi-Peak detector

END OF TEST REPORT