

CERTIFICATION TEST REPORT

Report Number. : 4791377016 -E6V1

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

Model : SM-A166M/DS, SM-A166M

FCC ID : A3LSMA166M

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

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

Date Of Issue:

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Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2024-08-16	Initial issue	Myeongjun Kwon

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.

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

MODEL NUMBER: SM-A166M/DS, SM-A166M

SERIAL NUMBER: R3CX50MNLFY (CONDUCTED);
R3CX50MNK5Z, R3CX50MNJQV (RADIATED)

DATE TESTED: 2024-07-03 ~ 2024-08-16

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:



Myeongjun Kwon
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:

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

$$\begin{aligned} \text{AC Corrected Reading (dBuV)} &= \text{Measured Voltage (dBuV)} + \text{Extension Cord} \\ &\text{Loss (dB)} + \text{Cable Loss (dB)} \\ 44.72 \text{ dBuV} &= 34.72 \text{ dBuV} + 9.9 \text{ dB} + 0.1 \text{ dB} \end{aligned}$$

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	2.79 dB
Radiated Disturbance, 9 kHz to 30 MHz	1.69 dB
Radiated Disturbance, 30 MHz to 1 GHz	4.07 dB
Radiated Disturbance, 1 GHz to 18 GHz	4.99 dB
Radiated Disturbance, Above 18 GHz	5.96 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 GSM/WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac and NFC.
This test report addresses the DTS (BLE) operational mode.

Representative model	Difference	Derivative model
		SM-A166M
SM-A166M/DS	Hardware	SIM tray is single SIM
	Software	Dual SIM not supported

The model SM-A166M/DS was 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	1 Mbps (255 pkt)	Peak	7.580	5.728
		Average	7.345	5.426
	2 Mbps (255 pkt)	Peak	10.660	11.641
		Average	10.269	10.640

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: -4.60 dBi

“BT/WIFI_2.4GHz, 5GHz (SUB2)” as indicated in antenna specification are written as ANT1 in this report.

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.

ANT1
X

Radiated and power line conducted tests were performed with EUT connected to AC power adapter 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 1Tx 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.

For Radiated band-edge and spurious test, tests were performed on 1Tx mode.

Due to modulation characteristics, 125 kbps data is worse than 1Mbps in the RBW 3kHz PSD setting. 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 for the worst-case condition mode.

Power verification

The Output Power of all data rate are all investigated, the 1 Mbps(255 pkt) and 2 Mbps(255 pkt) power is the worst case for symbol rate. All tests were performed in these two modes.

Symbol Rate [Ms/s]	Mode	Freq. [MHz]	Conducted Burst Avg [dBm]	Symbol Rate [Ms/s]	Mode	Freq. [MHz]	Conducted Burst Avg [dBm]
1	1 Mbps 37 pkt ANT1	2 402	6.487	2	2 Mbps 37 pkt ANT1	2 402	9.273
		2 440	7.039			2 440	9.867
		2 480	4.863			2 480	7.410
	1 Mbps 255 pkt ANT1	2 402	6.808		2 Mbps 255 pkt ANT1	2 402	9.725
		2 440	7.345			2 440	10.269
		2 480	5.184			2 480	7.867
1 Coded S=8	125 kbps 37 pkt ANT1	2 402	6.567	1 Coded S=2	500 kbps 37 pkt ANT1	2 402	6.506
		2 440	7.050			2 440	7.083
		2 480	4.872			2 480	4.904
	125 kbps 255 pkt ANT1	2 402	6.798		500 kbps 255 pkt ANT1	2 402	6.488
		2 440	7.341			2 440	7.061
		2 480	5.188			2 480	4.905

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Charger	SAMSUNG	EP-TA800	R37TC7A00JBDKA	N/A
Data Cable	SAMSUNG	EP-DN980	GH39-02115A	N/A

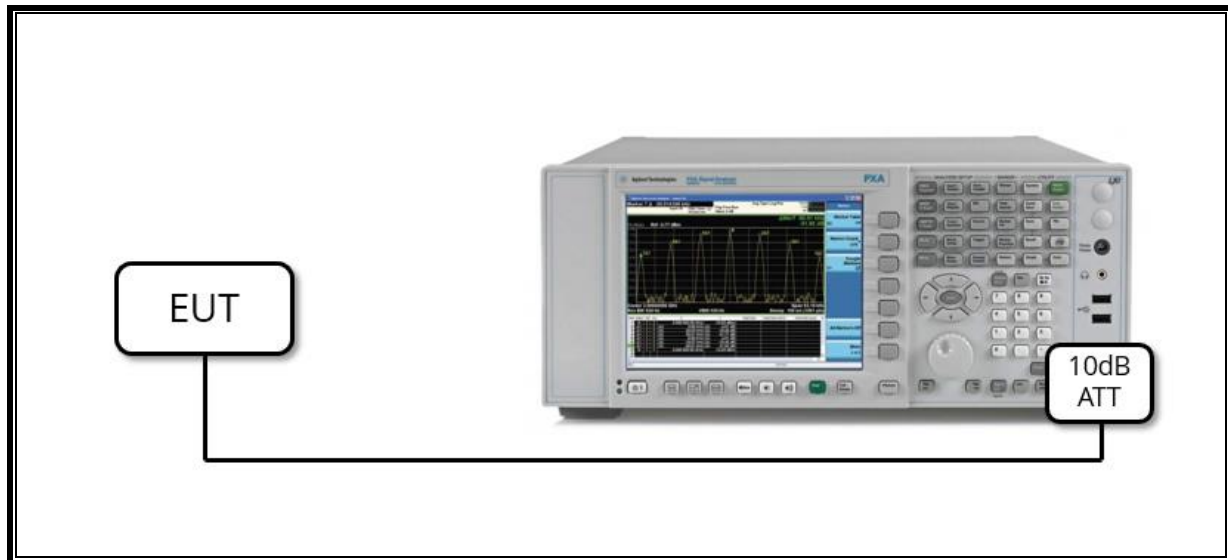
I/O CABLE

I/O Cable List						
Cable No.	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	C Type	Shielded	1.0 m	N/A

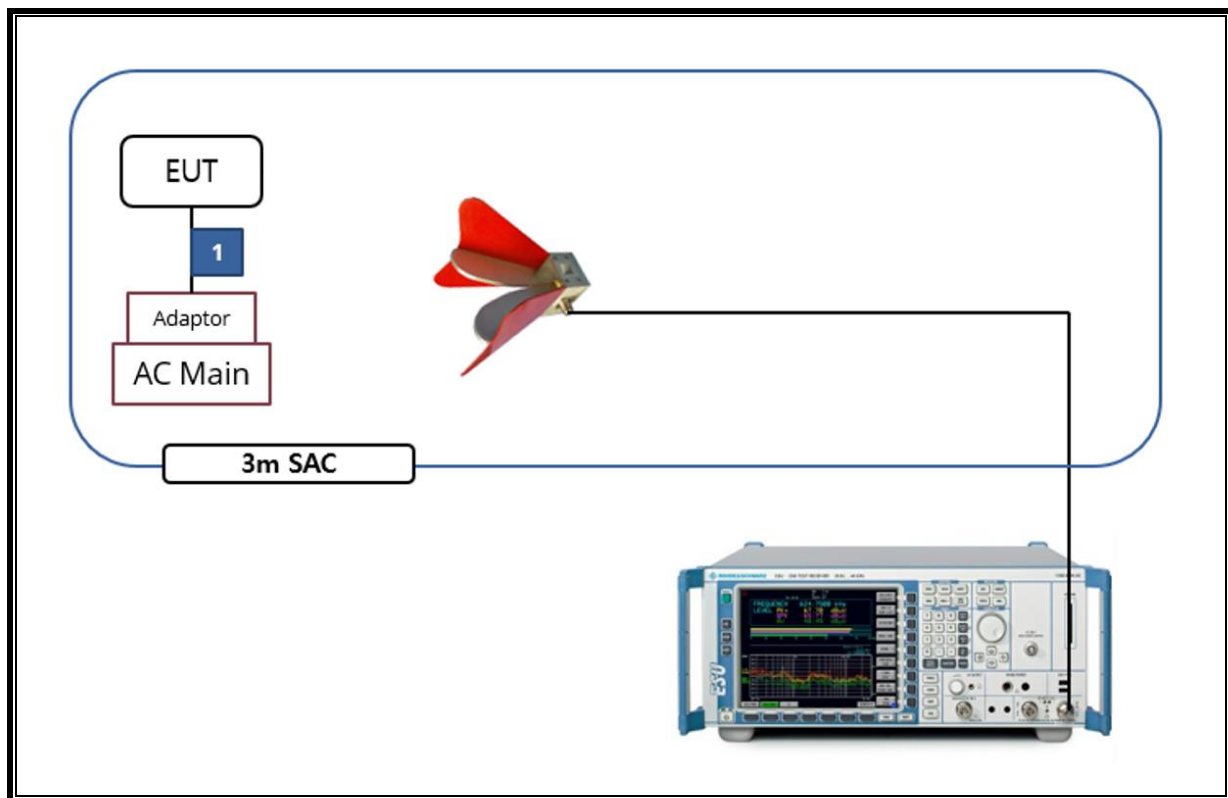
TEST SETUP

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

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



6. MEASUREMENT METHOD

6 dB BW : ANSI C63.10-2020, 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	Agilent / HP	N9030A	MY54490312	2025-01-03
Spectrum Analyzer, 44 GHz	KEYSIGHT	N9040B	MY60080268	2025-01-03
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 [255 pkt]	2.130	2.499	0.852	85.217	0.69	0.470
2 Mbps [255 pkt]	1.070	1.875	0.571	57.062	2.44	0.935



9.2. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

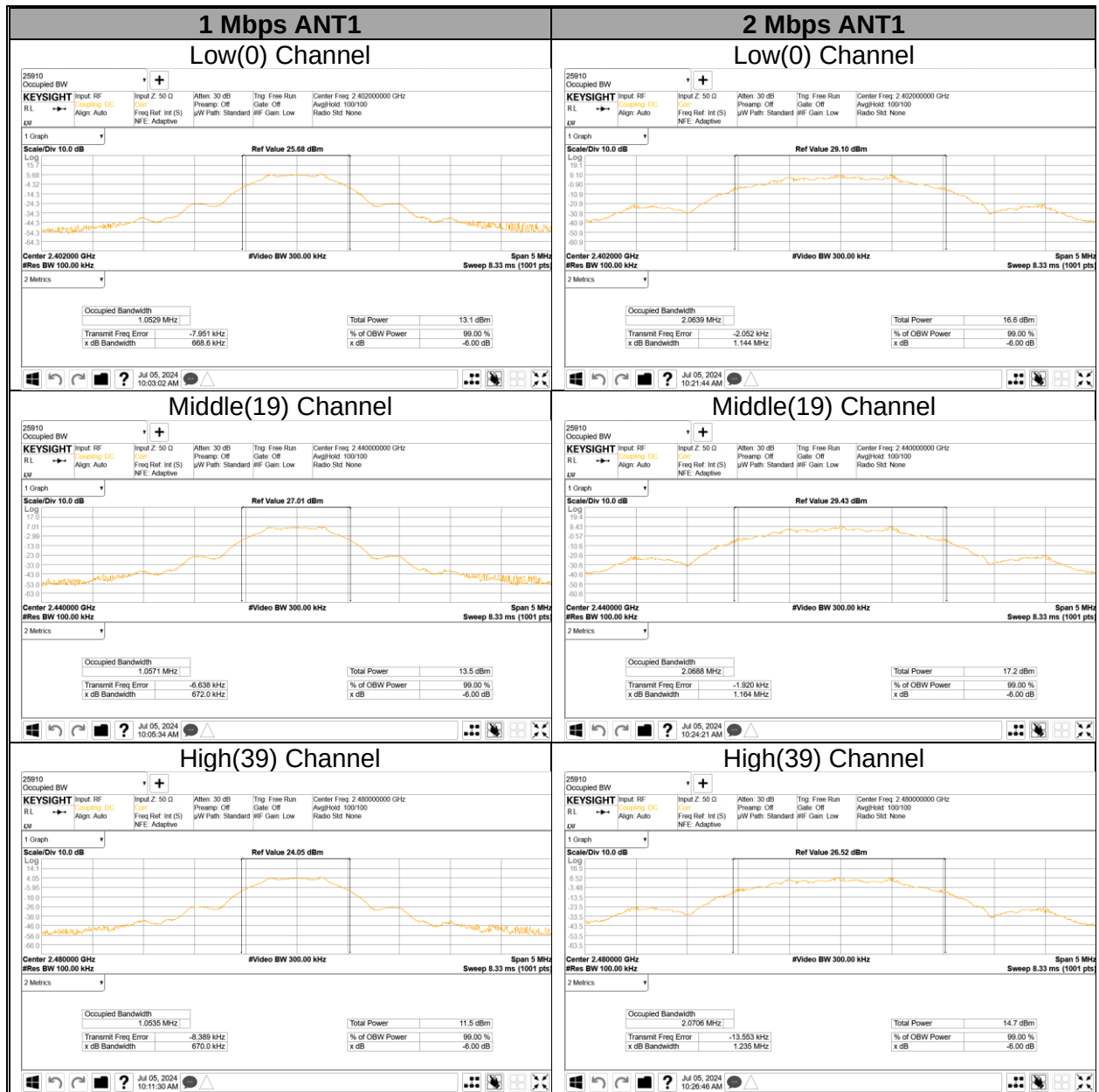
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

9.2.1. Test data

Mode	Antenna	Channel	Frequency [MHz]	6 dB Bandwidth [kHz]	Minimum Limit [kHz]
1 Mbps (255pkt)	ANT1	0	2 402	668.6	500.0
		19	2 440	672.0	
		39	2 480	670.0	
2 Mbps (255pkt)	ANT1	0	2 402	1144.0	
		19	2 440	1164.0	
		39	2 480	1235.0	
Worst				668.6	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

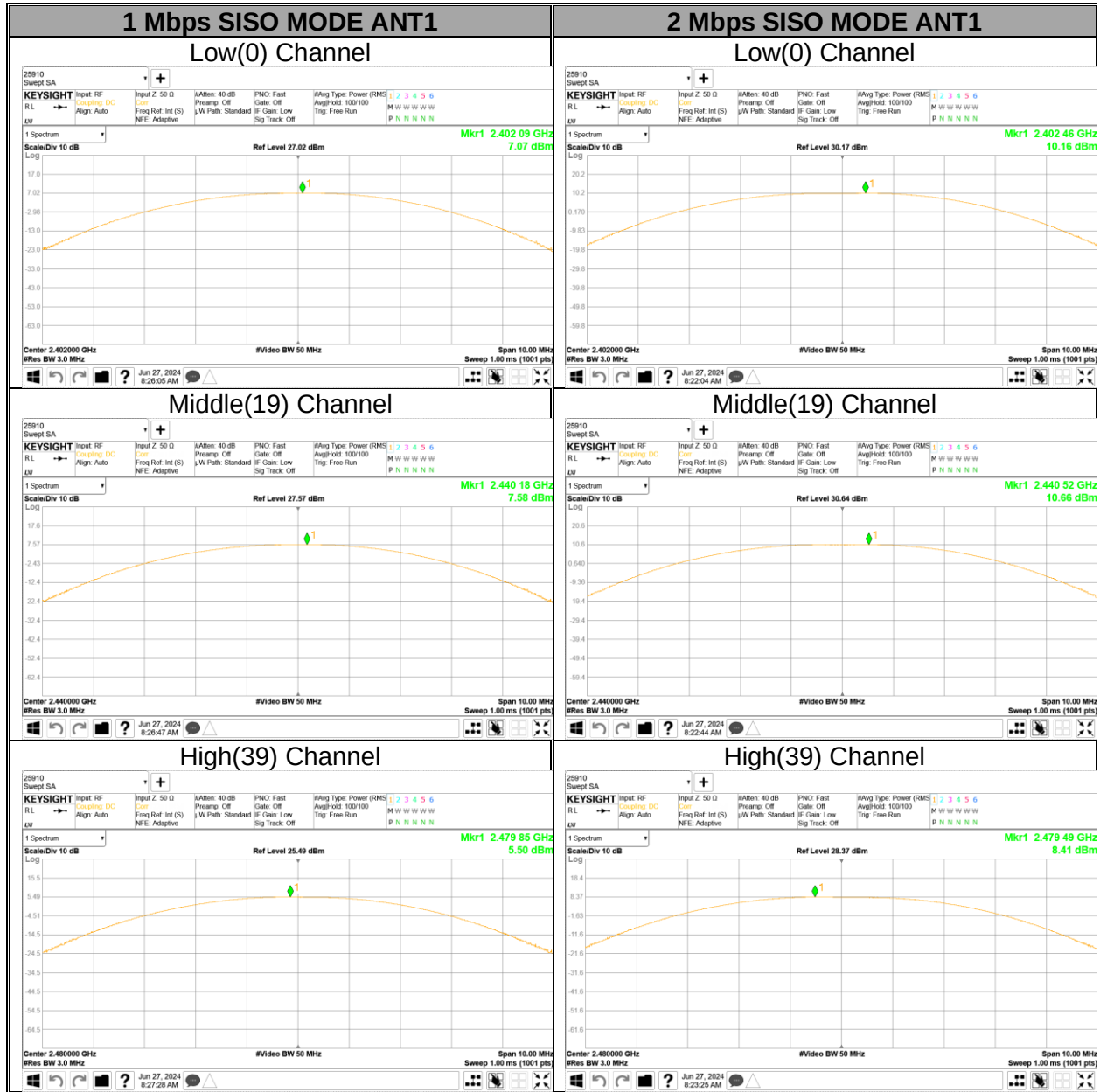
Peak power is measured using ANSI C63.10(2020) under section 11.9.1.1 utilizing spectrum analyzer(RBW $\geq$ DTS bandwidth).

RESULTS

9.3.1. SISO MODE TEST DATA

Mode	Antenna	Channel	Frequency [MHz]	Peak Output Power [dBm]	Limit [dBm]	Margin [dB]
1 Mbps (255 pkt)	ANT1	0	2 402	7.070	30.000	-22.93
		19	2 440	7.580		-22.42
		39	2 480	5.500		-24.50
2 Mbps (255 pkt)	ANT1	0	2 402	10.160		-19.84
		19	2 440	10.660		-19.34
		39	2 480	8.410		-21.59
Worst				10.660		-19.34

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 (255 pkt)	ANT1	0	2 402	6.808	4.795
		19	2 440	7.345	5.426
		39	2 480	5.184	3.299
2 Mbps (255 pkt)	ANT1	0	2 402	9.725	9.385
		19	2 440	10.269	10.640
		39	2 480	7.867	6.119

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

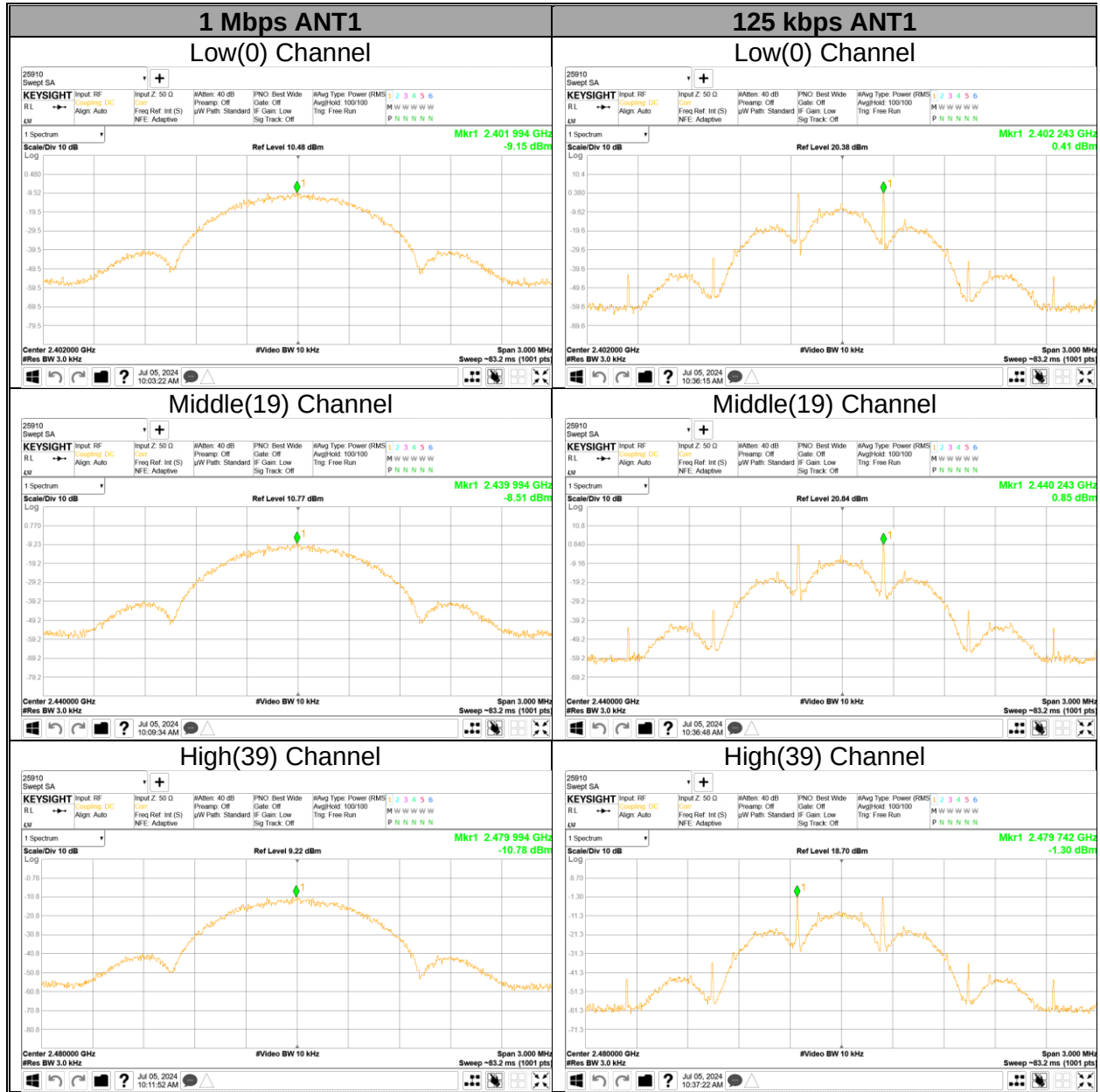
ANSI C63.10-2020, Section 11.10.2 Method PKPSD (peak PSD)

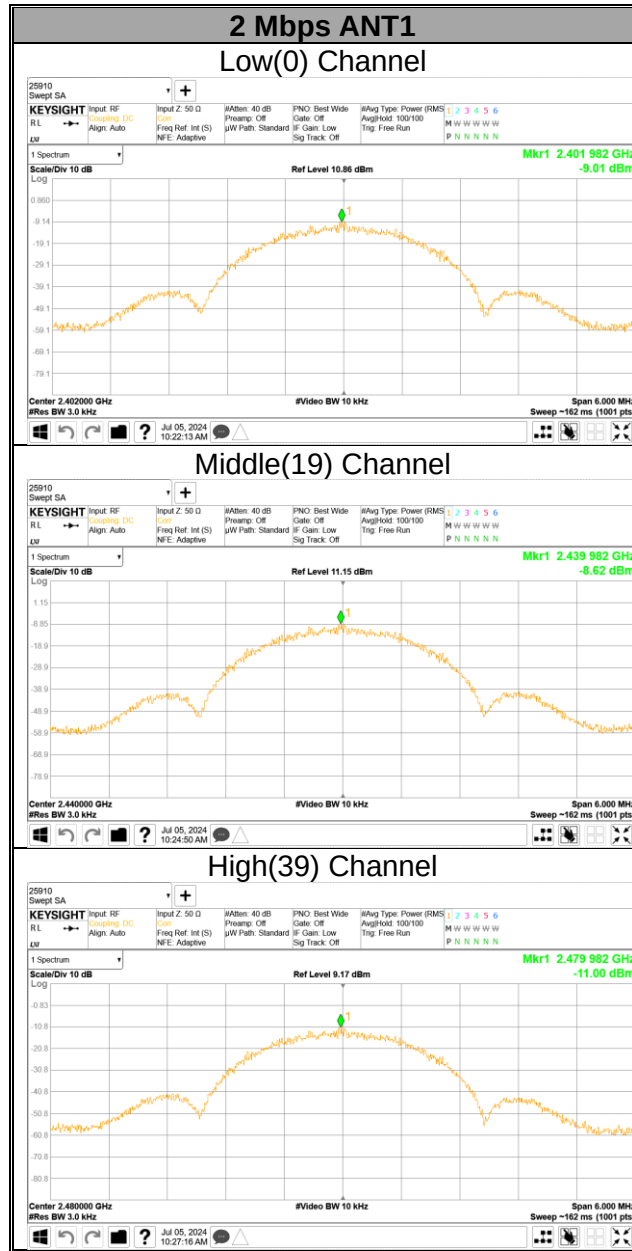
RESULTS

9.5.1. Test data

Mode	Antenna	Channel	Frequency [MHz]	PSD [dBm/3kHz]	Limit [dBm/3kHz]	Margin [dB]
1 Mbps (255pkt)	ANT1	0	2 402	-9.15	8.00	-17.15
		19	2 440	-8.51		-16.51
		39	2 480	-10.78		-18.78
125 kbps (255pkt)	ANT1	0	2 402	0.41		-7.59
		19	2 440	0.85		-7.15
		39	2 480	-1.30		-9.30
2 Mbps (255 pkt)	ANT1	0	2 402	-9.01		-17.01
		19	2 440	-8.62		-16.62
		39	2 480	-11.00		-19.00
Worst				0.85		-7.15

9.5.2. PSD TEST PLOTS





9.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

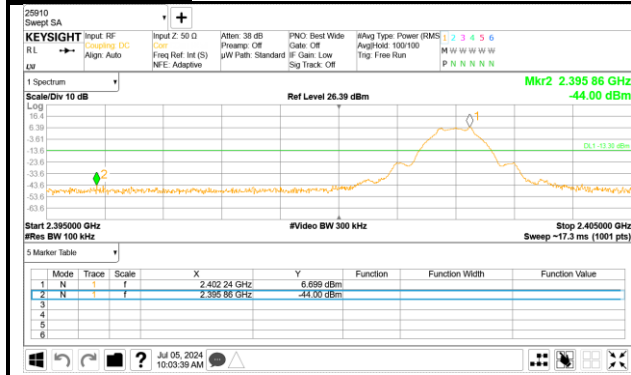
FCC §15.247 (d)

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

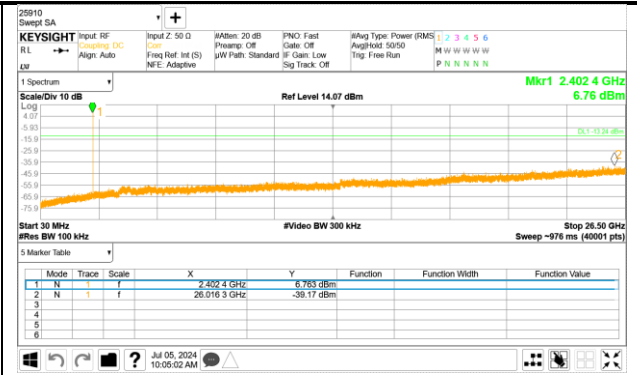
RESULTS

9.6.1. Test plot

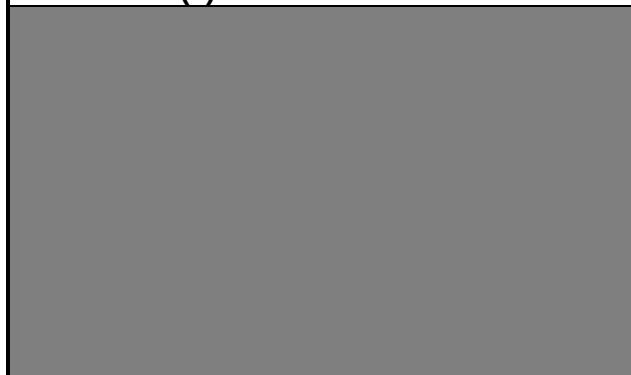
1 Mbps ANT1



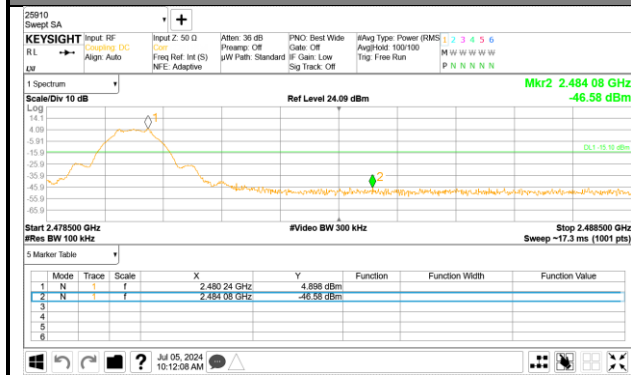
LOW(0) CHANNEL BANDEDGE



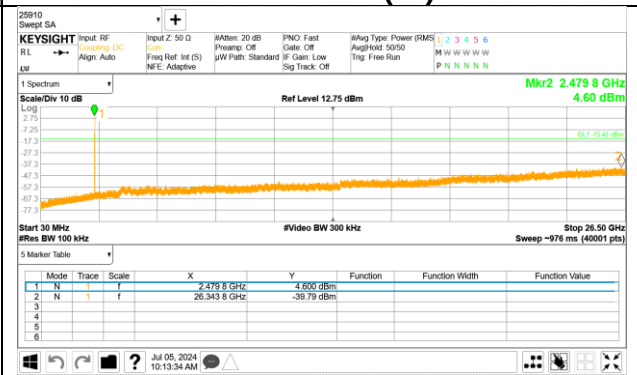
OUT-OF-BAND LOW(0) CHANNEL



OUT-OF-BAND MIDDLE(19) CHANNEL

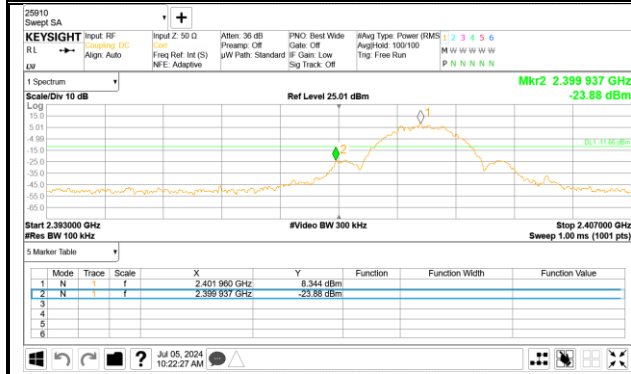


HIGH(39) CHANNEL BANDEDGE

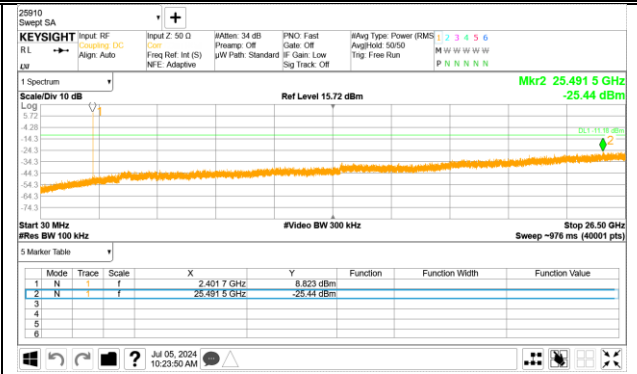


OUT-OF-BAND HIGH(39) CHANNEL

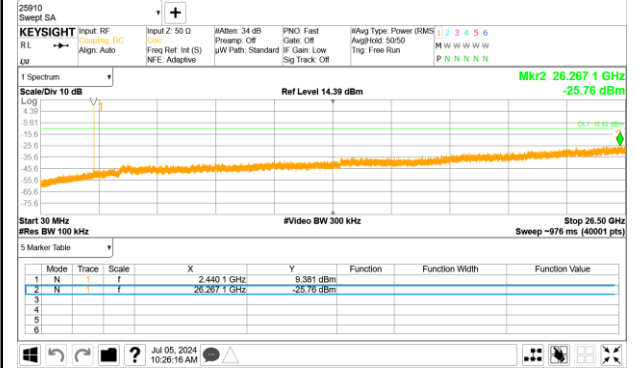
2 Mbps ANT1



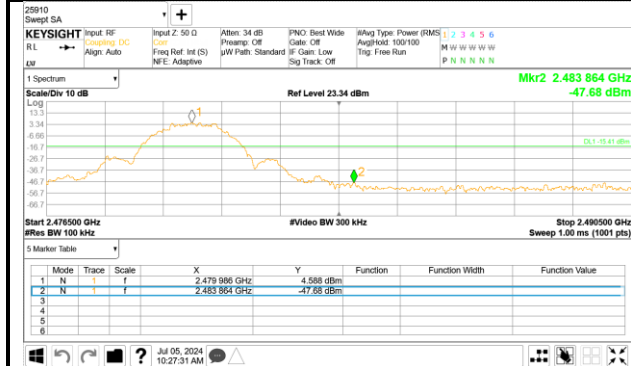
LOW(0) CHANNEL BANDEDGE



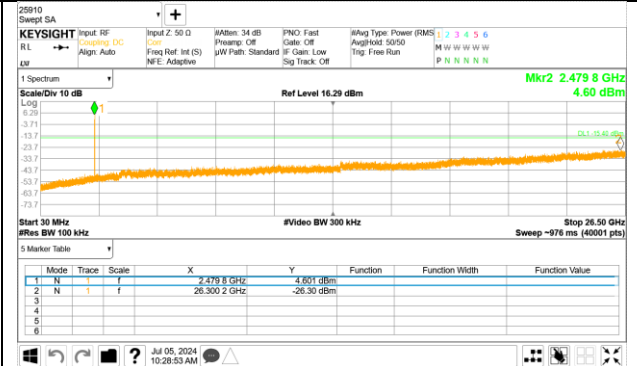
OUT-OF-BAND LOW(0) CHANNEL



OUT-OF-BAND MIDDLE(19) CHANNEL



HIGH(39) CHANNEL BANDEDGE



OUT-OF-BAND HIGH(39) CHANNEL

10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

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

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

TEST PROCEDURE

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

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

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

Duty cycle factor = $10 \log(1/x)$. For this sample: For 1 Mbps, DCF = $10 \log(1/0.852) = 0.694$ dB (Spectrum Analyzer round it up to 0.69 dB) and for 2 Mbps, DCF = $10 \log(1/0.571) = 2.436$ dB (Spectrum Analyzer round it up to 2.44 dB).

Pre-scans to detect harmonic and spurious emissions, the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 kHz for peak measurements.

The spectrum from 1 GHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

(From 30MHz to 1GHz, test was performed with the EUT set to transmit at the channel with highest output power)

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

Note : Emission was pre-scanned from 9kHz to 30MHz; No emissions were detected which was at least 20dB below the specification limit (consider distance correction factor).

Per FCC part 15.31(o), test results were not reported.

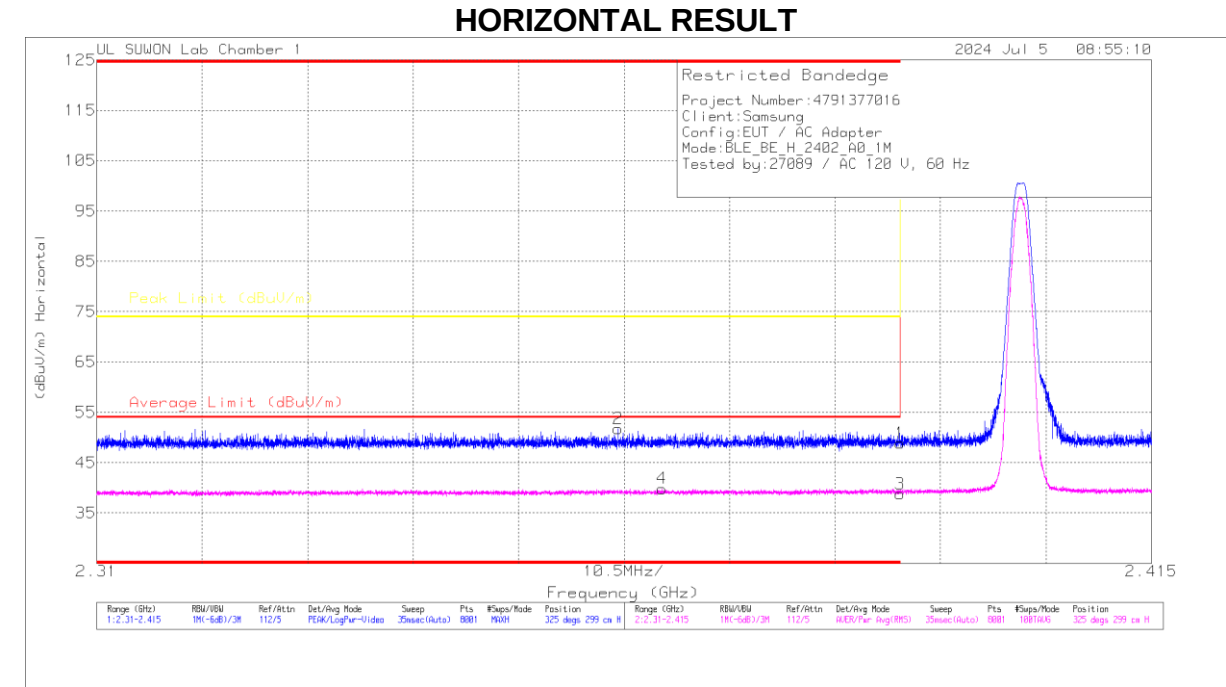
Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 30 m open are test site.

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

10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. 1 Mbps ANT1

BANDEDGE (0 CHANNEL)

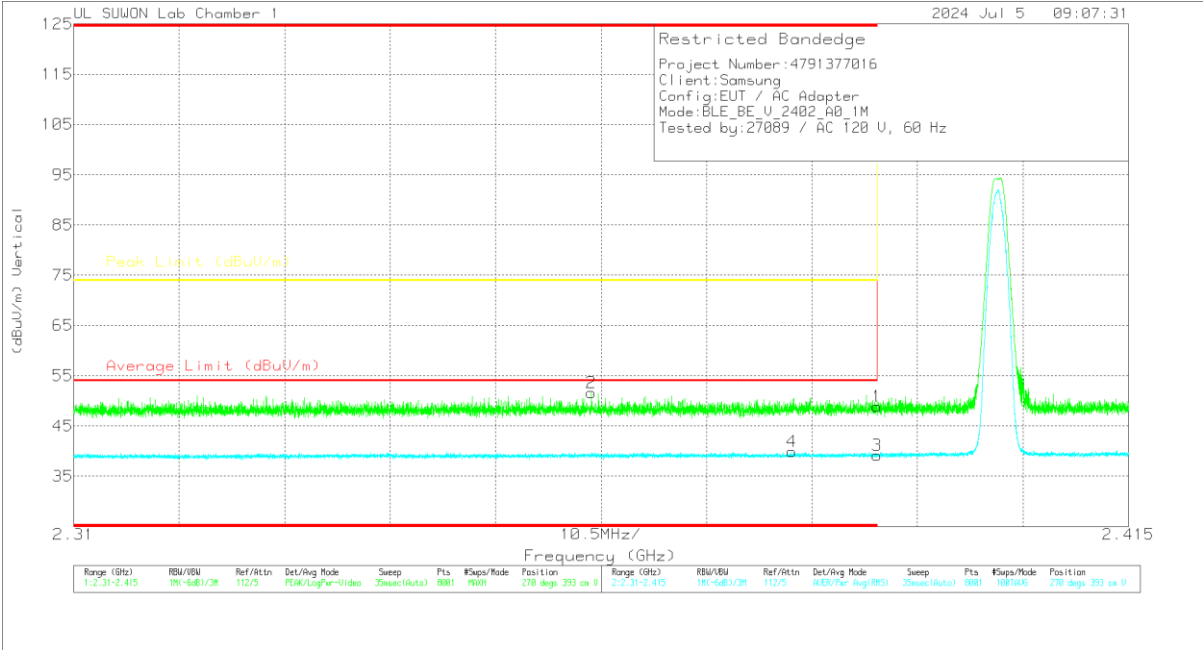


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor (dBm)	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 (m)	Polarity
1	* 2.39	42.91	PK	31.9	-25.9	0	48.91	-	-	74	-25.09	325	299	H
2	* 2.36191	45.87	PK	31.8	-25.9	0	51.77	-	-	74	-22.23	325	299	H
3	* 2.39	32.11	RMS	31.9	-25.9	.69	38.8	54	-15.2	-	-	325	299	H
4	* 2.36629	33.26	RMS	31.8	-25.9	.69	39.85	54	-14.15	-	-	325	299	H

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

VERTICAL RESULT

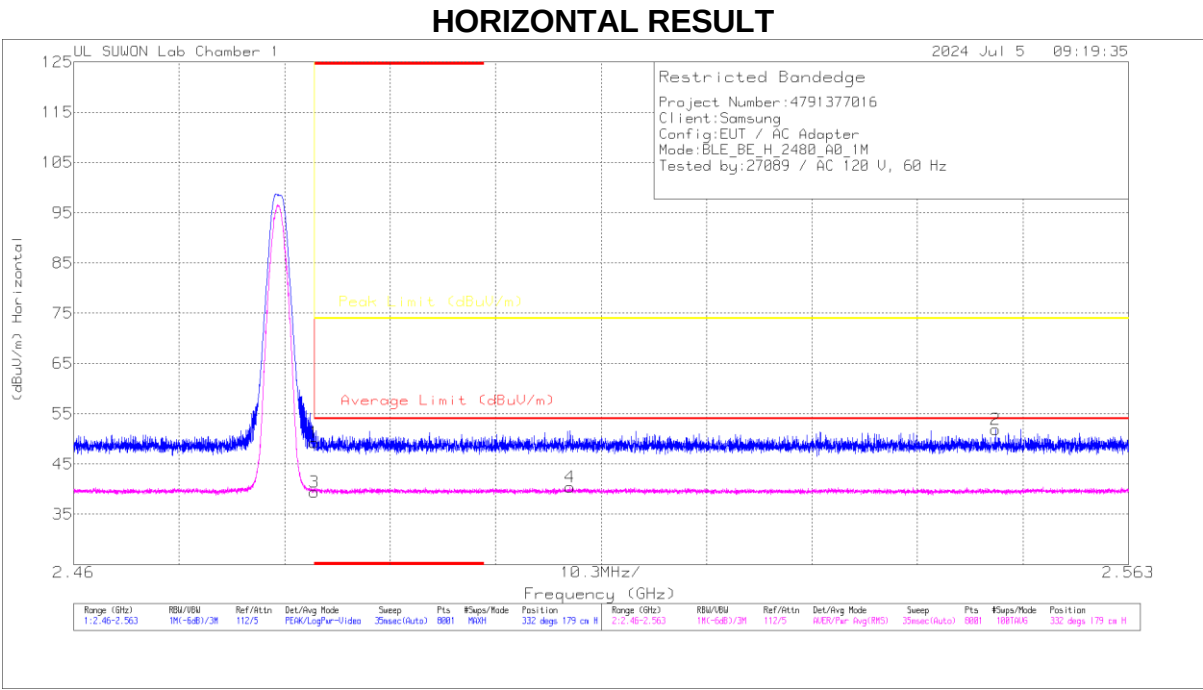


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor (dBm)	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	* 2.39	42.92	PK	31.9	-25.9	0	48.92	-	-	74	-25.08	270	393	V
2	* 2.36156	45.72	PK	31.8	-25.9	0	51.62	-	-	74	-22.38	270	393	V
3	* 2.39	32.48	RMS	31.9	-25.9	69	39.17	S4	-14.83	-	-	270	393	V
4	* 2.38152	33.19	RMS	31.9	-25.9	69	39.88	S4	-14.12	-	-	270	393	V

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

BANDEDGE (39 CHANNEL)

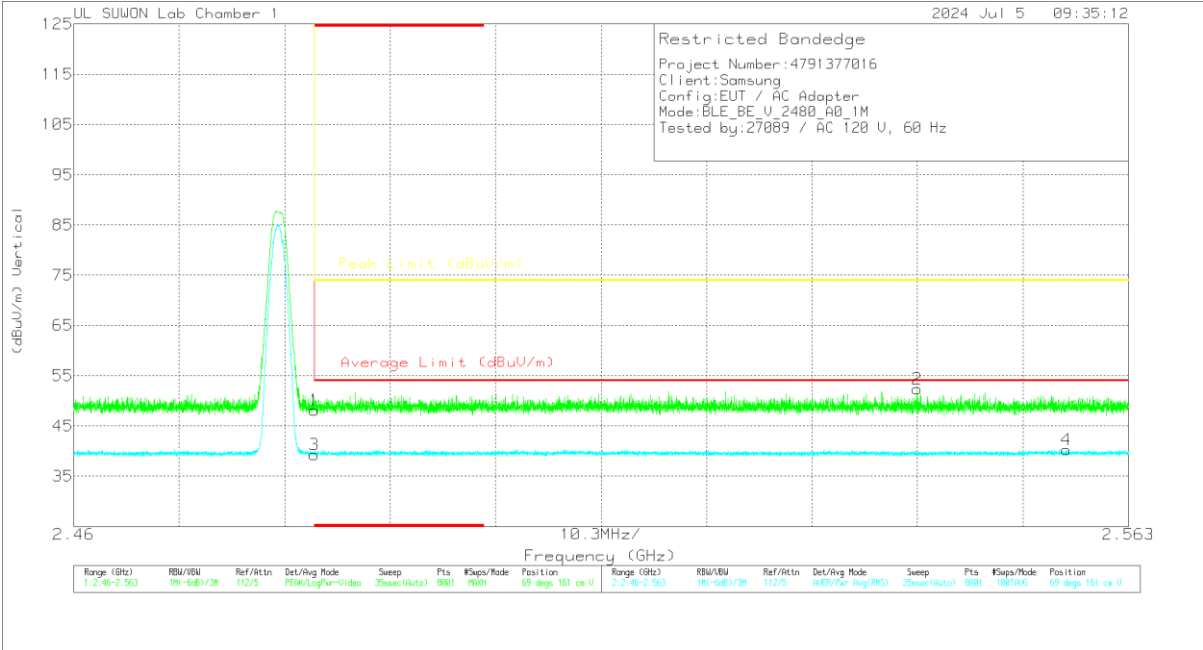


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor (dBm)	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 (m)	Polarity
1	* 2.48351	42.86	PK	32.2	-25.8	0	49.26	-	-	74	-24.74	332	179	H
2	2.55	45.44	PK	32.2	-25.8	0	51.94	-	-	74	-22.16	332	179	H
3	* 2.48351	32.37	RMS	32.2	-25.8	.69	39.46	54	-14.54	-	-	332	179	H
4	2.50849	33.17	RMS	32.2	-25.7	.69	40.36	54	-13.64	-	-	332	179	H

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

VERTICAL RESULT



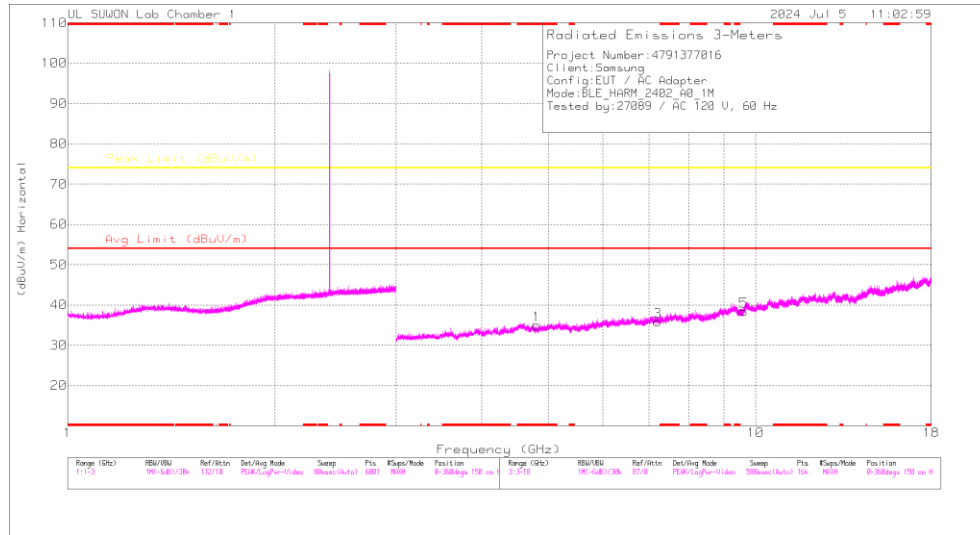
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor (dBm)	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	* 2.48351	41.68	PK	32.2	-25.8	0	48.08	-	-	74	-25.92	69	161	V
2	2.54235	46.08	PK	32.2	-25.9	0	52.38	-	-	74	-21.62	69	161	V
3	* 2.48351	32.18	RMS	32.2	-25.8	69	39.27	S4	-14.73	-	-	69	161	V
4	2.55692	33.23	RMS	32.2	-25.8	69	40.32	S4	-13.68	-	-	69	161	V

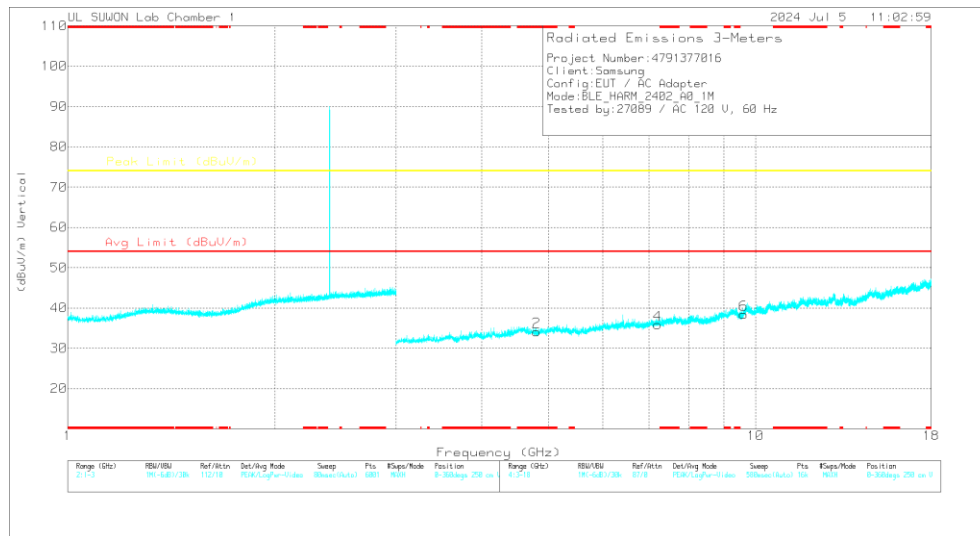
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK - Peak detector
RMS - RMS detection

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

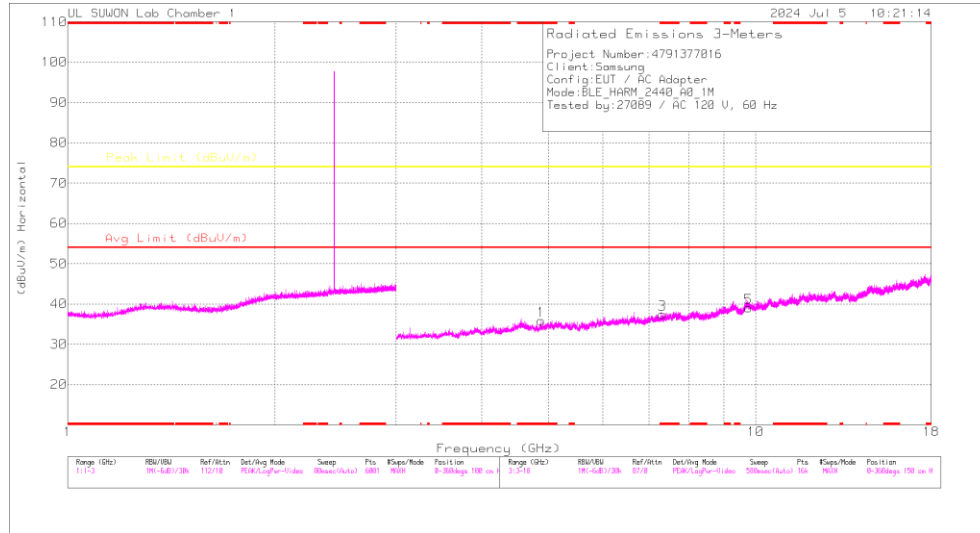
Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor (dB/m)	LossdB	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.80374	43.09	PK2	34.2	-32.6	0	44.69	-	-	74	-29.31	3	117	H
* 4.80418	31.95	MAv1	34.2	-32.7	.69	34.14	54	-19.86	-	-	3	117	H
* 4.79866	42.31	PK2	34.3	-32.7	0	43.91	-	-	74	-30.09	0	100	V
7.21418	40.09	PK2	35.8	-30.5	0	45.39	-	-	74	-28.61	0	100	H
7.21171	40.24	PK2	35.8	-30.5	0	45.54	-	-	74	-28.46	0	100	V
9.60281	36.62	PK2	37.1	-26.6	0	47.12	-	-	74	-26.88	0	100	H
9.61317	36.76	PK2	37.1	-26.4	0	47.46	-	-	74	-26.54	0	100	V

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

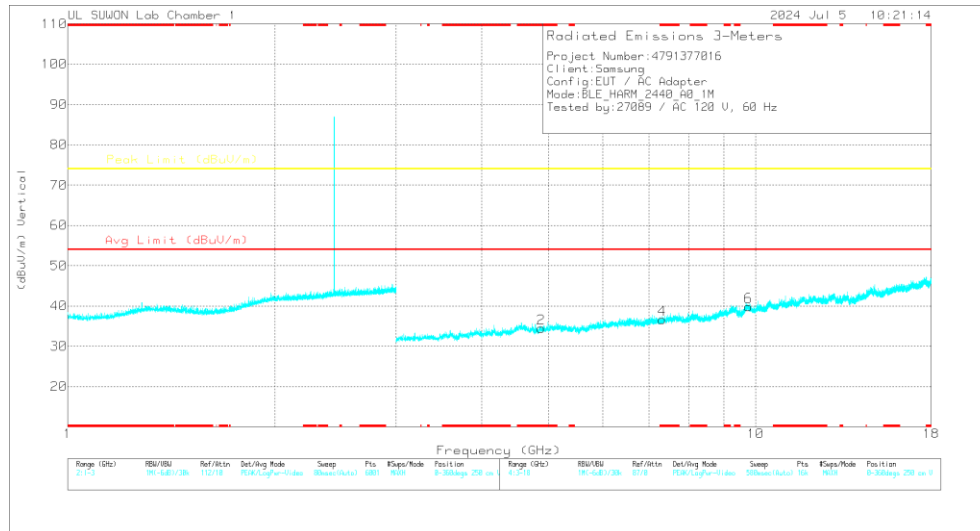
PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

19 CHANNEL RESULTS



HORIZONTAL



VERTICAL

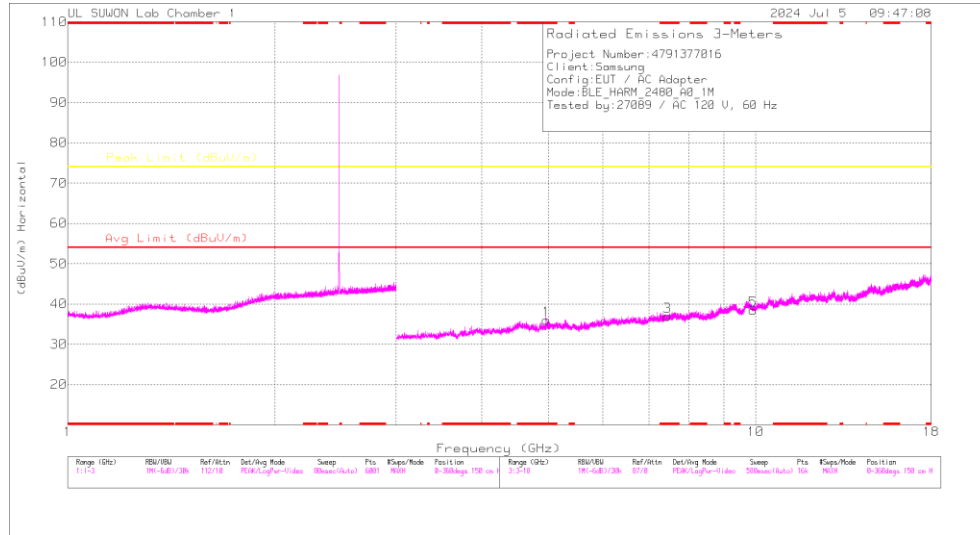
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

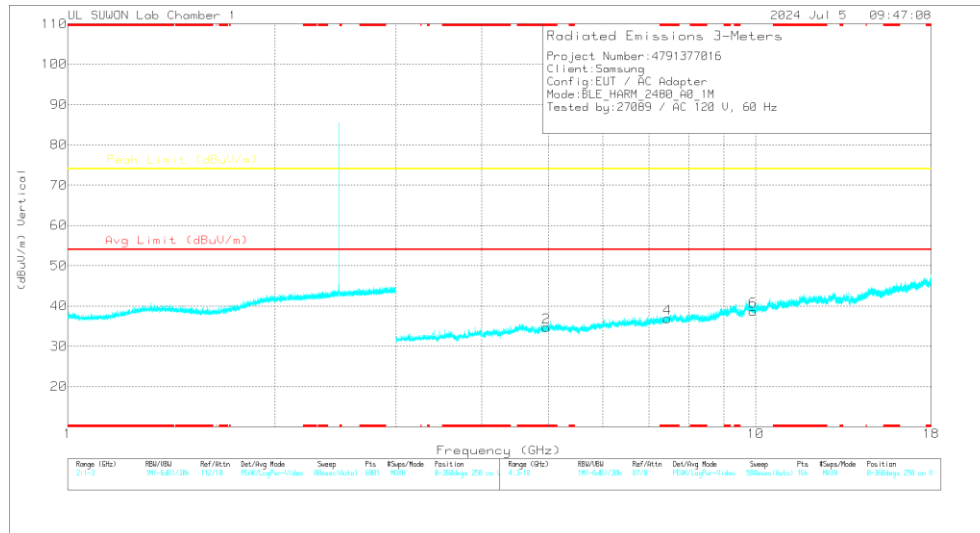
Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor (dB/m)	LossdB	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.87965	42.89	PK2	34.2	-32.8	0	44.29	-	-	74	-29.71	350	117	H
* 4.87987	32.29	MAV1	34.2	-32.8	.69	34.38	54	-19.62	-	-	350	117	H
* 4.88012	42.44	PK2	34.2	-32.8	0	43.84	-	-	74	-30.16	0	100	V
* 7.32789	40.57	PK2	35.7	-30.4	0	45.87	-	-	74	-28.13	0	100	H
* 7.31337	40.16	PK2	35.7	-30.5	0	45.36	-	-	74	-28.64	0	100	V
9.76388	36.9	PK2	37.4	-25.5	0	48.8	-	-	74	-25.2	0	100	H
9.75804	36.51	PK2	37.3	-25.6	0	48.21	-	-	74	-25.79	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

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.

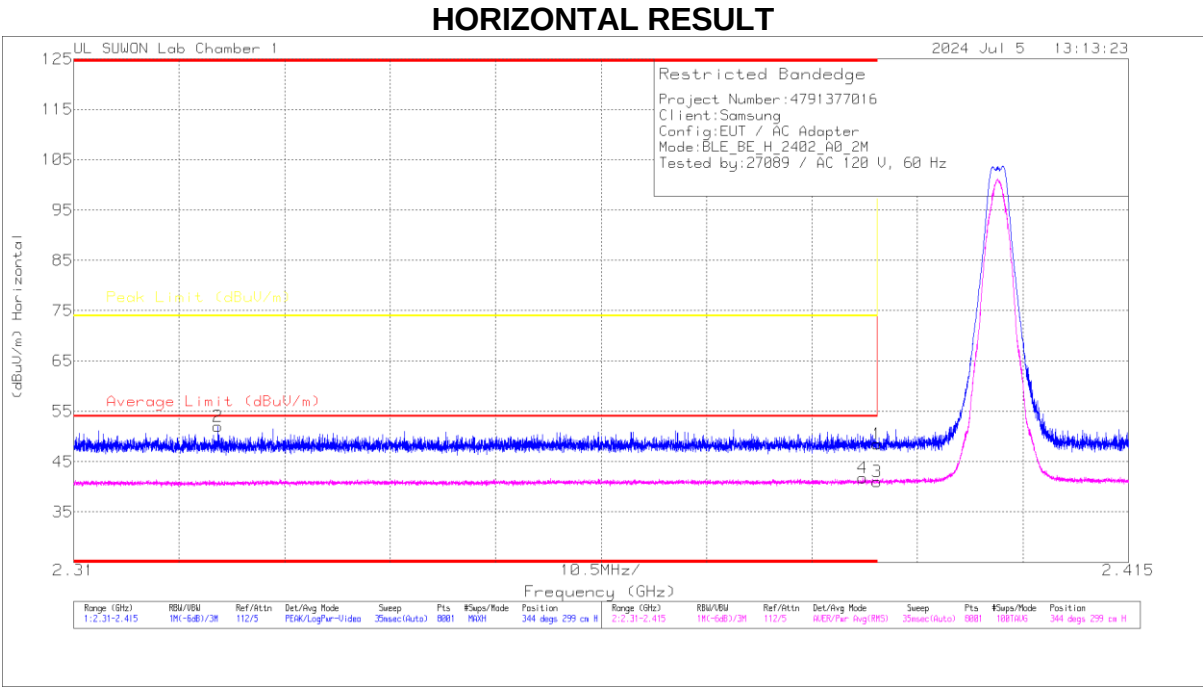
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor (dB/m)	LossdB	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.96031	44.01	PK2	34.2	-32.6	0	45.61	-	-	74	-28.39	357	112	H
* 4.95981	33.11	MAV1	34.2	-32.6	.69	35.4	54	-18.6	-	-	357	112	H
* 4.9692	41.96	PK2	34.2	-32.6	0	43.56	-	-	74	-30.44	0	100	V
* 7.43994	40.11	PK2	35.6	-29.9	0	45.81	-	-	74	-28.19	0	100	H
* 7.44011	40.54	PK2	35.6	-29.9	0	46.24	-	-	74	-27.76	0	100	V
9.92625	37.22	PK2	37.6	-26.6	0	48.22	-	-	74	-25.78	0	100	H
9.92035	36.79	PK2	37.6	-26.6	0	47.79	-	-	74	-26.21	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. 2 Mbps ANT1

BANDEDGE (0 CHANNEL)

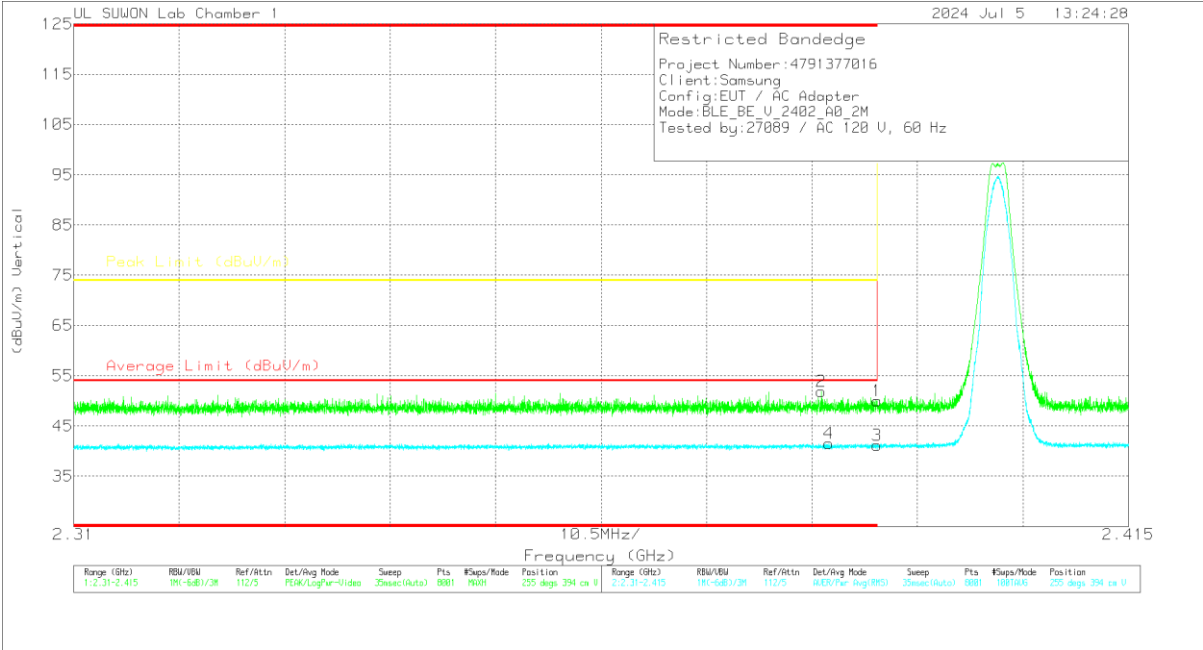


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor (dBm)	Loss(dB)	DC Cor (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Altitude (Degs)	Height (cm)	Polarity
1	* 2.39	42.48	PK	31.9	-25.9	0	48.48	-	-	74	-25.52	344	299	H
2	* 2.32433	46.35	PK	31.7	-26	0	52.05	-	-	74	-21.95	344	299	H
3	* 2.39	32.63	RMS	31.9	-25.9	2.44	41.07	54	-12.93	-	-	344	299	H
4	* 2.38857	33.29	RMS	31.9	-25.9	2.44	41.73	54	-12.27	-	-	344	299	H

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

VERTICAL RESULT



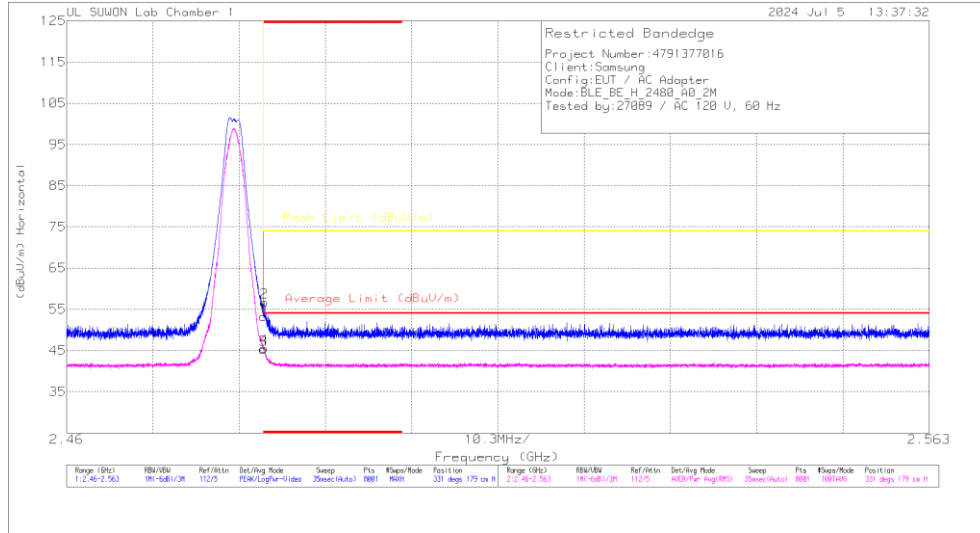
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor (dBm)	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	* 2.39	44	PK	31.9	-25.9	0	50	-	-	74	-24	255	394	V
2	* 2.38445	45.93	PK	31.9	-26	0	51.83	-	-	74	-22.17	255	394	V
3	* 2.39	32.73	RMS	31.9	-25.9	2.44	41.17	S4	-12.83	-	-	255	394	V
4	* 2.38518	33.24	RMS	31.9	-26	2.44	41.58	S4	-12.42	-	-	255	394	V

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

BANEDGE (39 CHANNEL)

HORIZONTAL RESULT

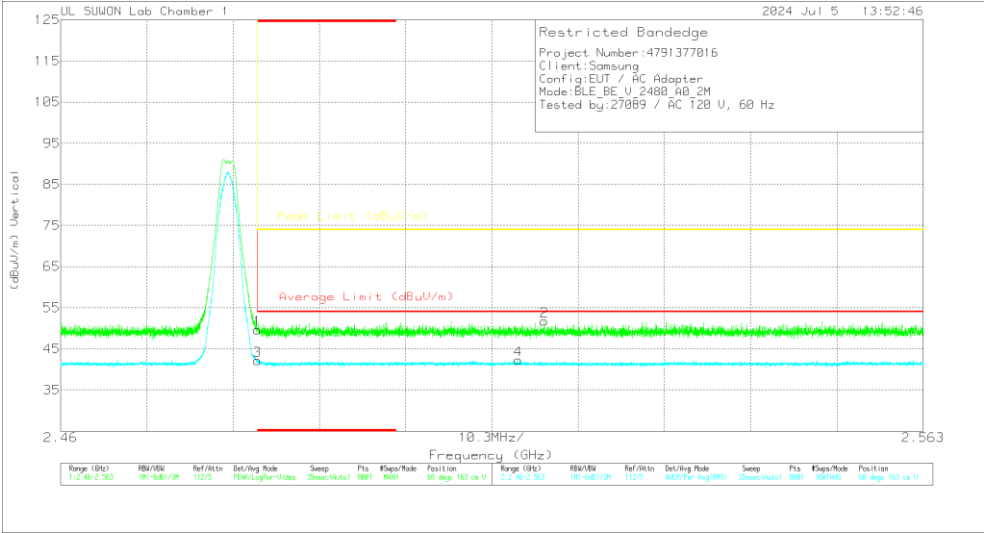


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor (dBm)	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	* 2.48351	46.83	PK	32.2	-25.8	0	53.23	-	-	74	-20.77	331	179	H
2	* 2.4836	50.35	PK	32.2	-25.8	0	56.75	-	-	74	-17.25	331	179	H
3	* 2.48351	36.48	RMS	32.2	-25.8	2.44	45.32	54	-8.68	-	-	331	179	H
4	* 2.48354	36.71	RMS	32.2	-25.8	2.44	45.55	54	-8.45	-	-	331	179	H

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

VERTICAL RESULT



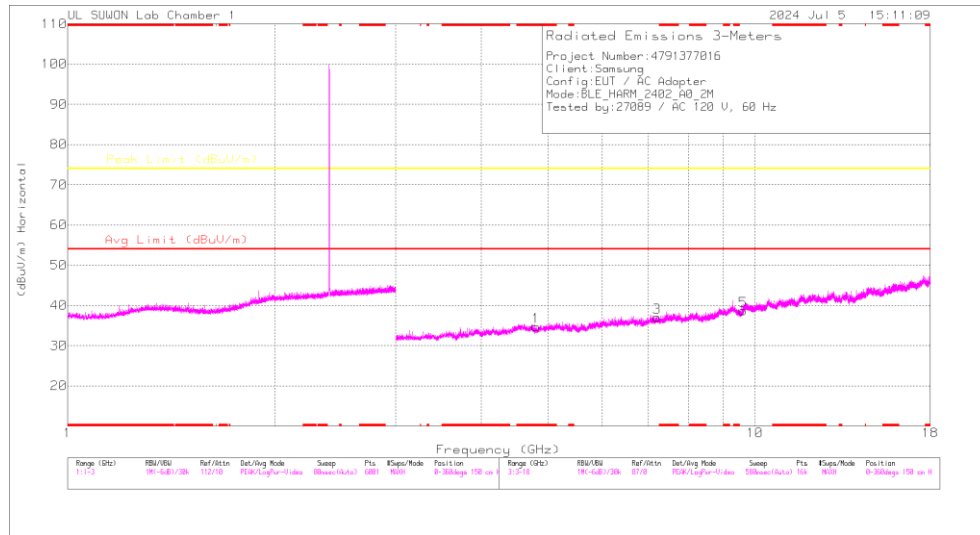
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor (dBm)	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	* 2.48351	43.29	PK	32.2	-25.8	0	49.69	-	-	74	-24.31	68	163	V
2	2.51777	45.36	PK	32.2	-25.8	0	51.76	-	-	74	-22.24	68	163	V
3	* 2.48351	33.31	RMS	32.2	-25.8	2.44	42.15	54	-11.85	-	-	68	163	V
4	2.51465	33.45	RMS	32.2	-25.8	2.44	42.29	54	-11.71	-	-	68	163	V

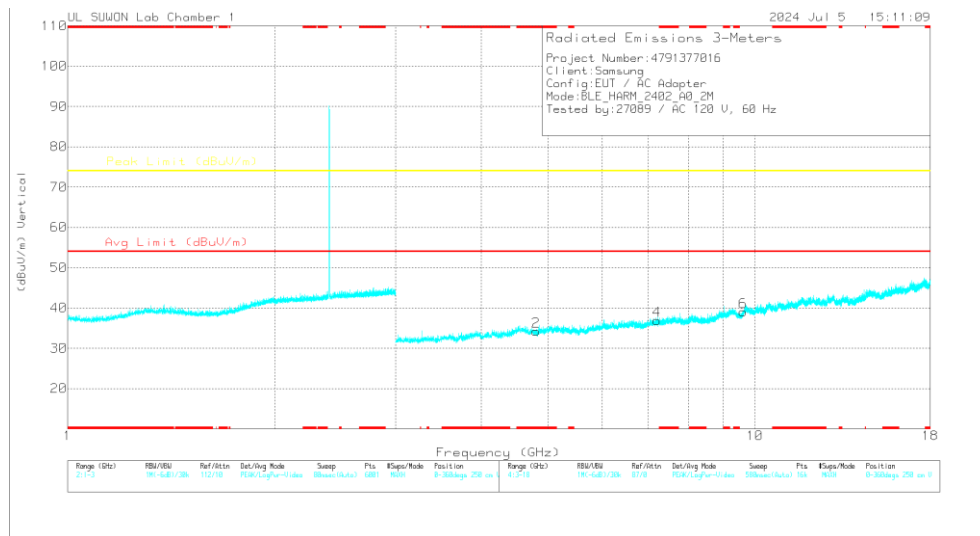
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

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

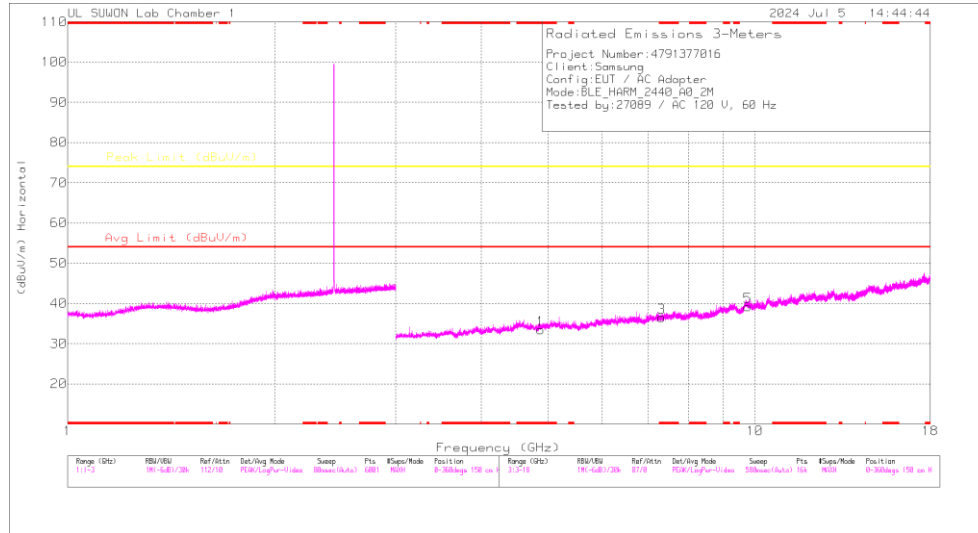
Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor (dB/m)	LossdB	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.80312	42.68	PK2	34.2	-32.6	0	44.28	-	-	74	-29.72	342	100	H
* 4.80412	30.84	MAV1	34.2	-32.7	2.44	34.78	54	-19.22	-	-	342	100	H
* 4.80868	42.19	PK2	34.2	-32.7	0	43.69	-	-	74	-30.31	0	100	V
7.20435	40.64	PK2	35.8	-30.5	0	45.94	-	-	74	-28.06	291	111	H
7.20251	40.32	PK2	35.8	-30.6	0	45.52	-	-	74	-28.48	0	100	V
9.61592	36.9	PK2	37.1	-26.4	0	47.6	-	-	74	-26.4	0	100	H
9.60182	37.23	PK2	37.1	-26.6	0	47.73	-	-	74	-26.27	0	100	V

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

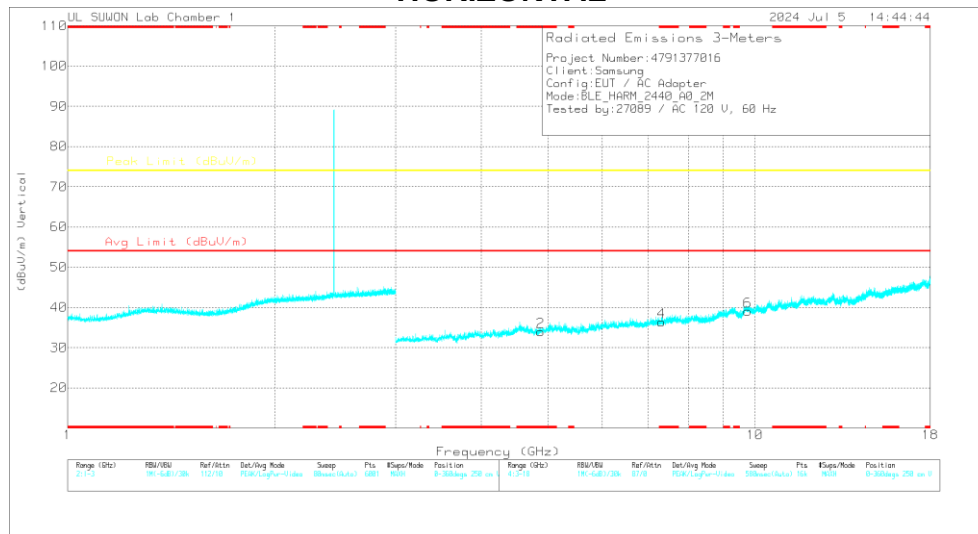
PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

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

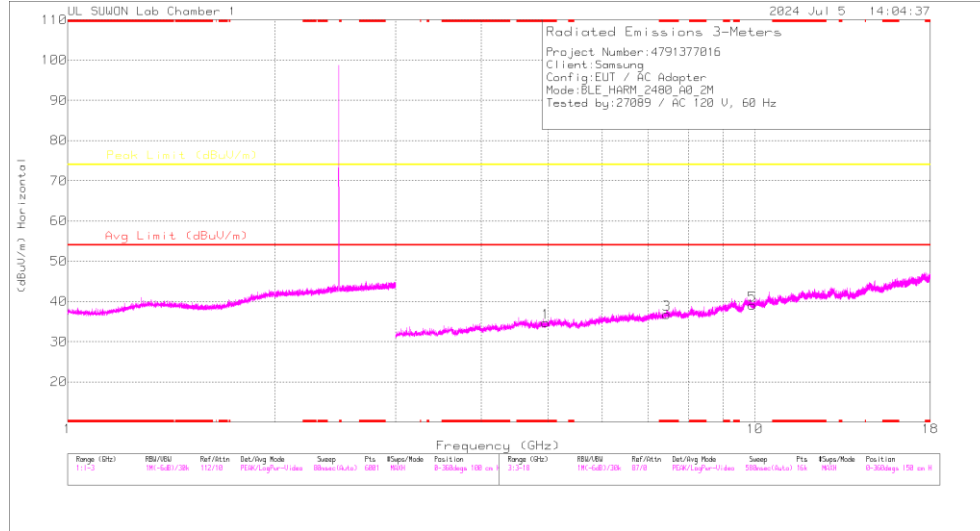
Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor (dB/m)	Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.87258	42.3	PK2	34.2	-32.7	0	43.8	-	-	74	-30.2	0	100	H
* 4.87234	42.01	PK2	34.2	-32.7	0	43.51	-	-	74	-30.49	0	100	V
* 7.32023	41.21	PK2	35.7	-30.4	0	46.51	-	-	74	-27.49	0	100	H
* 7.32474	41	PK2	35.7	-30.4	0	46.3	-	-	74	-27.7	0	100	V
9.76082	37.53	PK2	37.3	-25.5	0	49.33	-	-	74	-24.67	0	100	H
9.75217	36.57	PK2	37.3	-25.5	0	48.37	-	-	74	-25.63	0	100	V

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

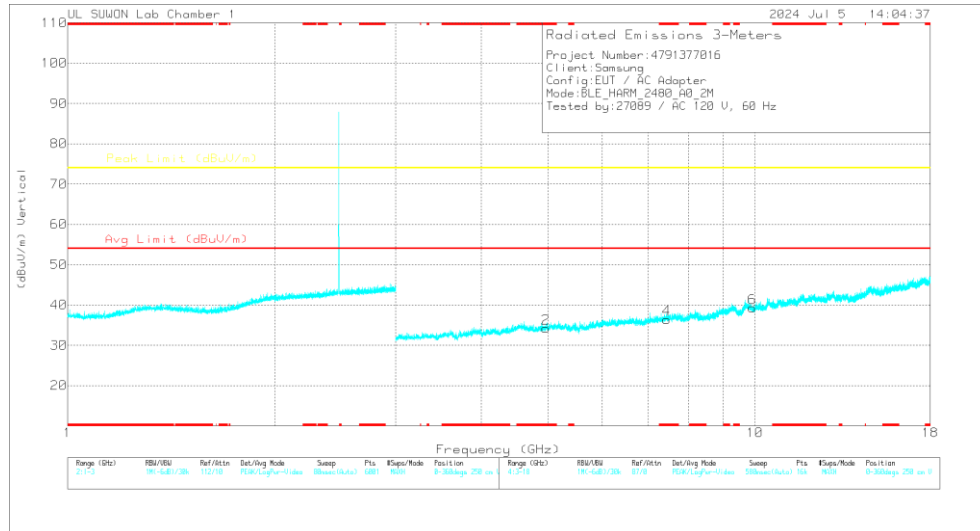
PK2 - KDB558074 Method: Maximum Peak

MAV1 - KDB558074 Option 1 Maximum RMS Average

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	Antenna Correction Factor (dB/m)	LossdB	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.96003	42.61	PK2	34.2	-32.6	0	44.21	-	-	74	-29.79	317	109	H
* 4.95907	30.9	MAV1	34.2	-32.6	2.44	34.94	54	-19.06	-	-	317	109	H
* 4.96947	42.31	PK2	34.2	-32.6	0	43.91	-	-	74	-30.09	0	100	V
* 7.43876	41.43	PK2	35.6	-29.9	0	47.13	-	-	74	-26.87	34	115	H
* 7.44106	29.02	MAV1	35.6	-29.9	2.44	37.16	54	-16.84	-	-	34	115	H
* 7.43897	39.95	PK2	35.6	-29.9	0	45.65	-	-	74	-28.35	0	100	V
9.91967	37.64	PK2	37.6	-26.6	0	48.64	-	-	74	-25.36	0	100	H
9.91998	37.54	PK2	37.6	-26.6	0	48.54	-	-	74	-25.46	0	100	V

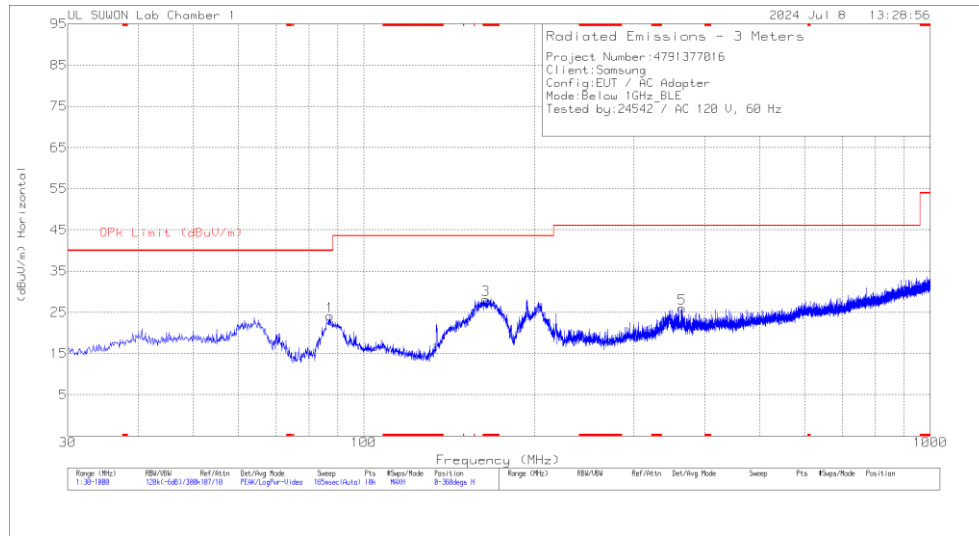
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK2 - KDB558074 Method: Maximum Peak

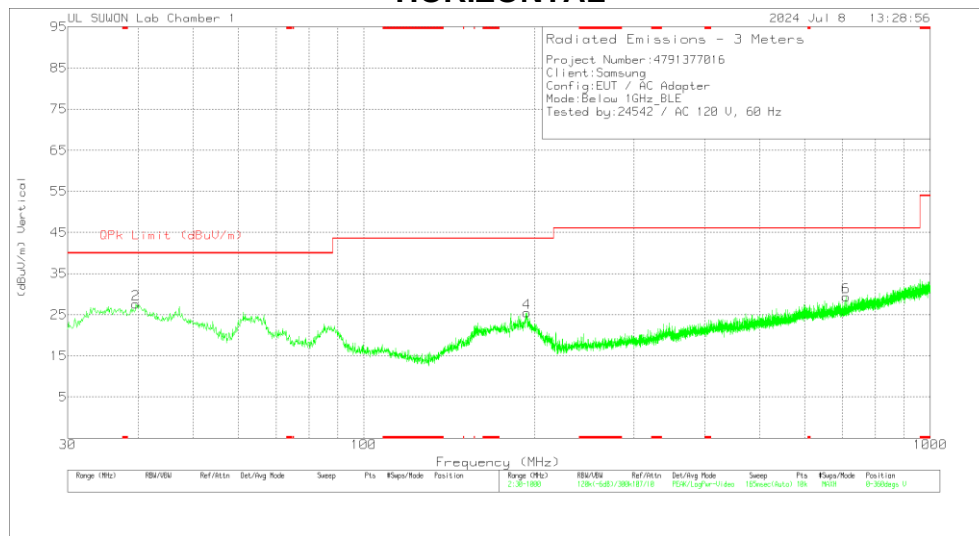
MAV1 - KDB558074 Option 1 Maximum RMS Average

10.3. WORST CASE BELOW 1 GHz

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



HORIZONTAL



VERTICAL

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Antenna Correction Factor (dB/m)	Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	87.133	39.83	Pk	14.7	-30.4	0	24.13	40	-15.87	0-360	200	H
3	* 164.151	43.3	Pk	14.4	-29.6	0	28.1	43.52	-15.42	0-360	100	H
5	365.038	33.88	Pk	20.3	-28.2	0	25.98	46.02	-20.04	0-360	100	H
2	39.603	40.36	Pk	18.3	-31.1	0	27.56	40	-12.44	0-360	200	V
4	194.027	37.83	Pk	16.9	-29.2	0	25.53	43.52	-17.99	0-360	200	V
6	711.037	31.32	Pk	24.7	-26.7	0	29.32	46.02	-16.7	0-360	300	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.

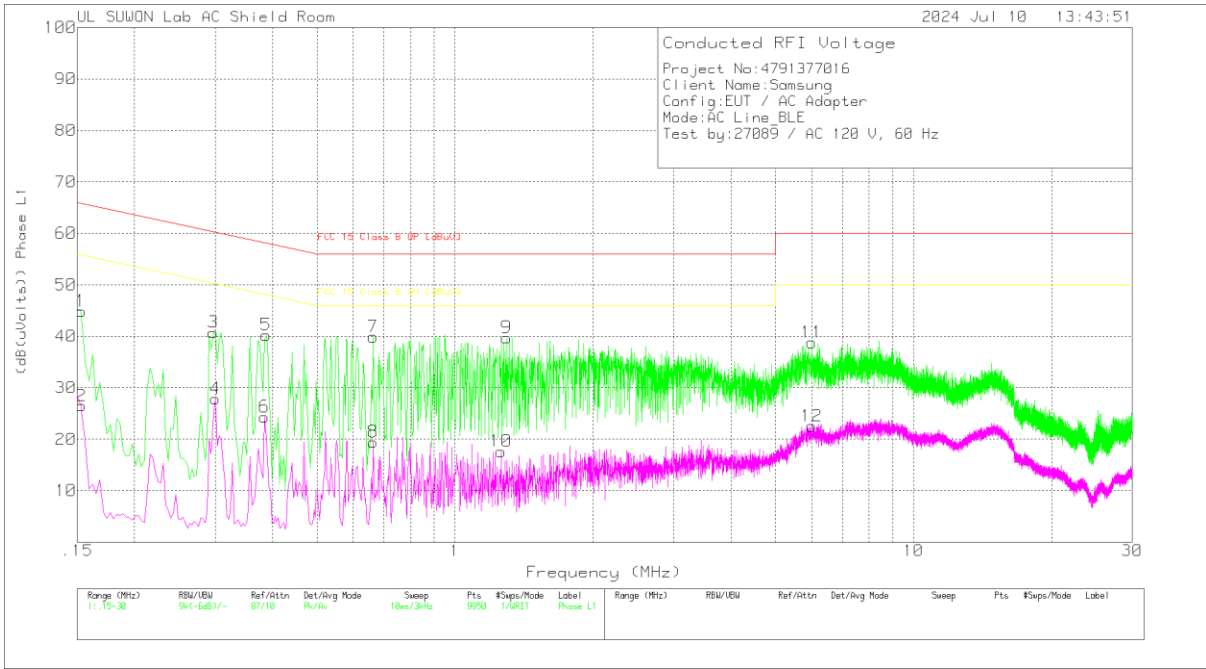
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

11.1. AC Power Line

LINE 1 RESULTS



Trace Markers

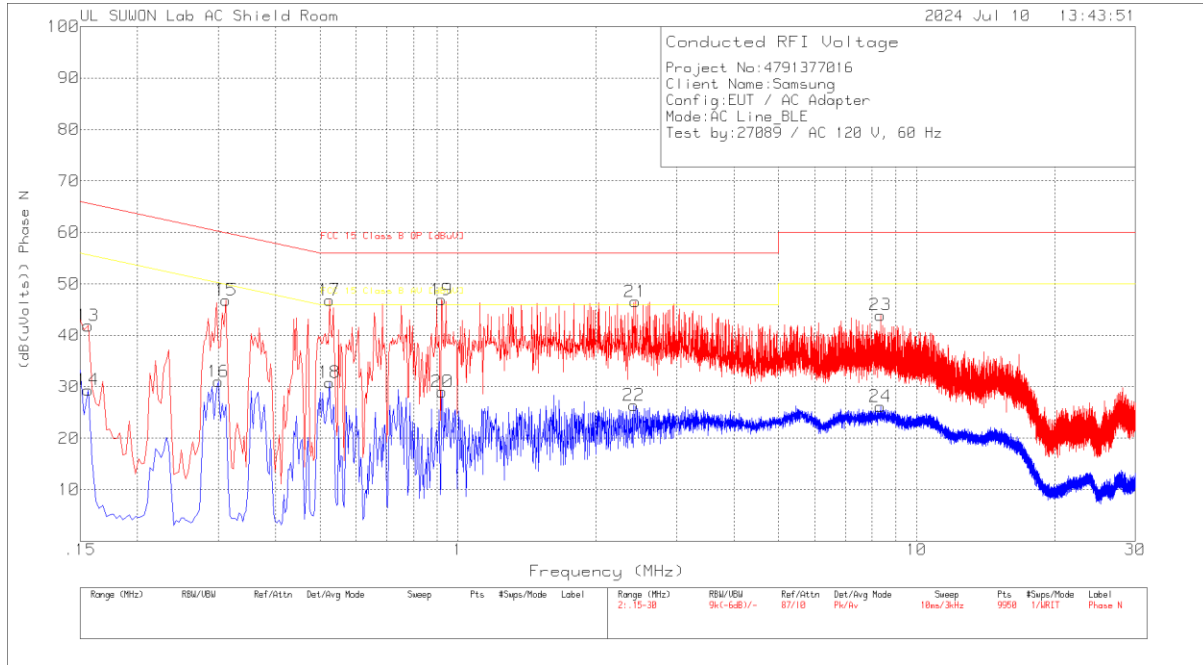
Range 1: Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_L1 [dB]	Cable Loss [dB]	Corrected Reading [dBuV]	FCC 15 Class B QP [dBuV]	Margin (dB)	FCC 15 Class B AV [dBuV]	Margin (dB)
1	.153	34.97	Pk	9.8	.1	44.87	65.84	-20.97	-	-
2	.153	16.59	Av	9.8	.1	26.49	-	-	55.84	-29.35
3	.297	30.94	Pk	9.7	.1	40.74	60.33	-19.59	-	-
4	.3	18.06	Av	9.7	.1	27.86	-	-	50.24	-22.38
5	.387	30.35	Pk	9.8	.1	40.25	58.13	-17.88	-	-
6	.384	14.44	Av	9.8	.1	24.34	-	-	48.19	-23.85
7	.663	30.01	Pk	9.8	.1	39.91	56	-16.09	-	-
8	.663	9.55	Av	9.8	.1	19.45	-	-	46	-26.55
9	1.296	29.96	Pk	9.7	.1	39.76	56	-16.24	-	-
10	1.26	7.84	Av	9.7	.1	17.64	-	-	46	-28.36
11	6	28.81	Pk	9.8	.2	38.81	60	-21.19	-	-
12	5.997	12.56	Av	9.8	.2	22.56	-	-	50	-27.44

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 [dBuV]	FCC 15 Class B QP [dBuV]	Margin (dB)	FCC 15 Class B AV [dBuV]	Margin (dB)
13	.156	31.96	Pk	9.8	.1	41.86	65.67	-23.81	-	-
14	.156	19.47	Av	9.8	.1	29.37	-	-	55.67	-26.3
15	.312	37.03	Pk	9.7	.1	46.83	59.92	-13.09	-	-
16	.3	21.23	Av	9.7	.1	31.03	-	-	50.24	-19.21
17	.525	36.85	Pk	9.9	.1	46.85	56	-9.15	-	-
18	.525	20.83	Av	9.9	.1	30.83	-	-	46	-15.17
19	.921	37	Pk	9.8	.1	46.9	56	-9.1	-	-
20	.924	19.14	Av	9.8	.1	29.04	-	-	46	-16.96
21	2.436	36.73	Pk	9.7	.1	46.53	56	-9.47	-	-
22	2.418	16.6	Av	9.7	.1	26.4	-	-	46	-19.6
23	8.343	33.83	Pk	9.9	.2	43.93	60	-16.07	-	-
24	8.343	16.07	Av	9.9	.2	26.17	-	-	50	-23.83

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 [dBuV]	FCC 15 Class B QP [dBuV]	Margin (dB)	FCC 15 Class B AV [dBuV]	Margin (dB)
.52515	29.93	Qp	9.9	.1	39.93	56	-16.07	-	-
.92115	29.38	Qp	9.8	.1	39.28	56	-16.72	-	-
2.43615	27.13	Qp	9.7	.1	36.93	56	-19.07	-	-

Qp - Quasi-Peak detector

END OF TEST REPORT