CERTIFICATION TEST REPORT

Report Number. : S-4791427005-E6V1

Applicant	:	SAMSUNG ELECTRONICS CO., LTD. 129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI, GYEONGGI-DO, 16677, KOREA
Model	:	SM-A165M/DS, SM-A165M
FCC ID	:	A3LSMA165M
EUT Description	:	GSM/WCDMA/LTE 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:
2024-09-13

Prepared by:
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Suwon Test Site: UL KOREA LTD. Suwon Laboratory
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ACCREDITED
Testing Laboratory
TL-637

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2024-09-13	Initial issue	Myeongjun Kwon

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION:	GSM/WCDMA/LTE Phone + BT/BLE, DTS/UNII a/b/g/n/ac and NFC.
MODEL NUMBER:	SM-A165M/DS, SM-A165M
SERIAL NUMBER:	R38X7005NNF, R38X7005NPM (CONDUCTED); R38X7005NXA, R38X7005NWB (RADIATED)
DATE TESTED:	2024-08-12 - 2024-09-13;

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:

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
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 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-A165M
SM-A165M/DS	Hardware	SIM tray is single SIM
	Software	Dual SIM not supported

The model SM-A165M/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	500 kbps (37 pkt)	Peak	7.590	5.741
		Average	7.225	5.279
	2 Mbps (37 pkt)	Peak	7.540	5.675
		Average	7.218	5.269

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: -2.02 dBi

“Antenna A(WiFi)” 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.
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 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]	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	6.101	2	2 Mbps 37 pkt ANT1	2 402	6.016
		2 440	7.189			2 440	7.218
		2 480	6.593			2 480	6.233
	1 Mbps 255 pkt ANT1	2 402	6.107		2 Mbps 255 pkt ANT1	2 402	6.021
		2 440	7.189			2 440	6.972
		2 480	6.583			2 480	6.222
1 Coded S=8	125 kbps 37 pkt ANT1	2 402	6.100	1 Coded S=2	500 kbps 37 pkt ANT1	2 402	6.143
		2 440	7.181			2 440	7.225
		2 480	6.577			2 480	6.633
	125 kbps 255 pkt ANT1	2 402	6.087		500 kbps 255 pkt ANT1	2 402	6.131
		2 440	7.165			2 440	7.204
		2 480	6.557			2 480	6.595

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

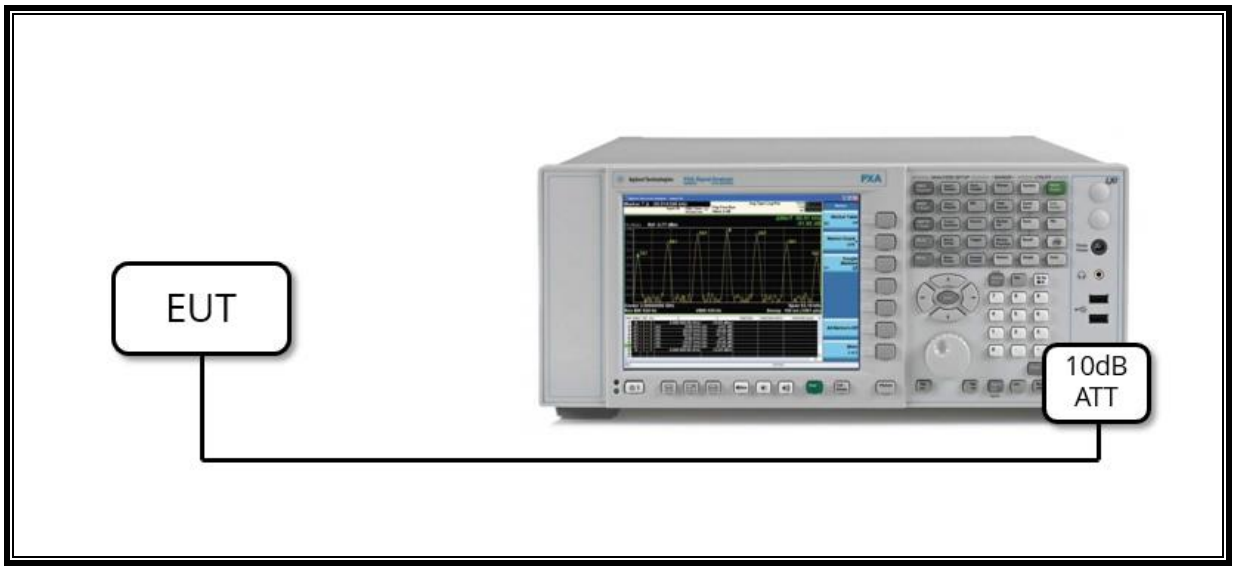
I/O CABLE

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

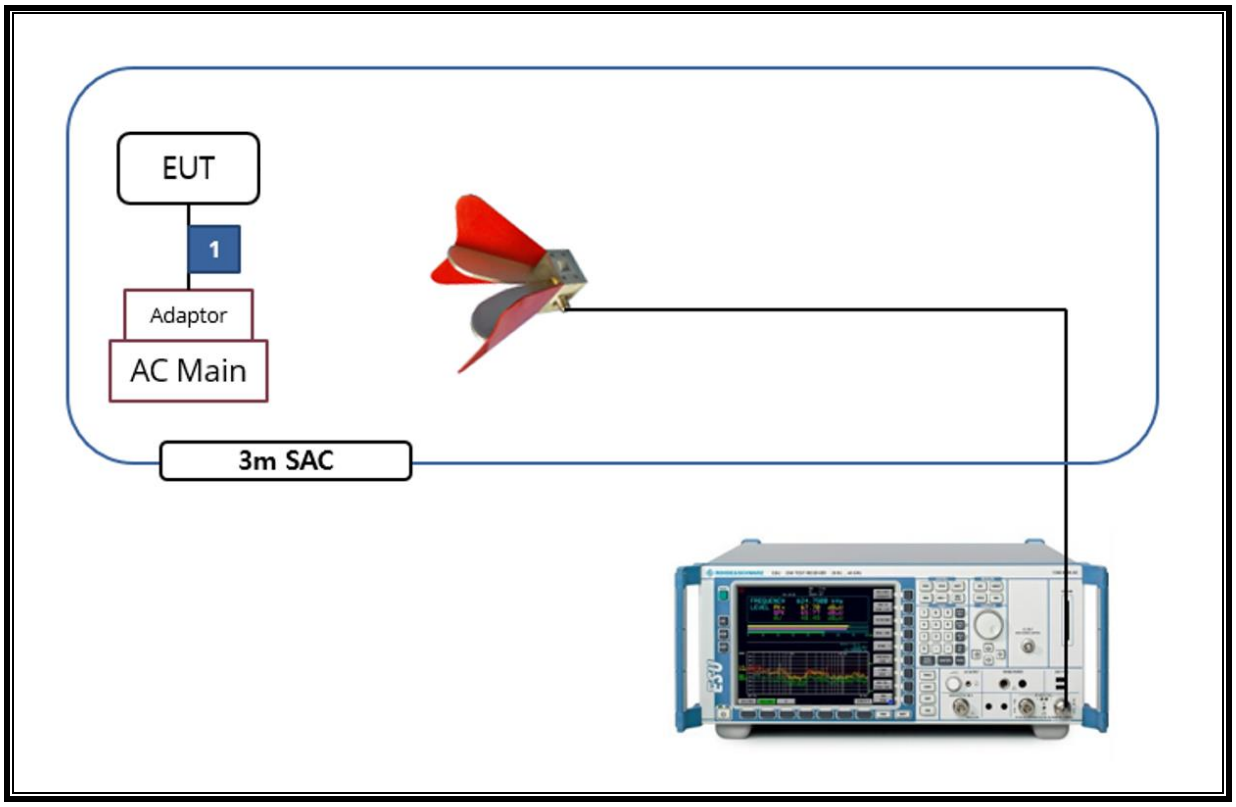
TEST SETUP

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 ≥ 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
RF Switching Unit	TA Engineering	TA-018S-16	SW-1	N/A
Average Power Sensor	Agilent / HP	U2000A	MY54270007	2025-07-23
Average Power Sensor	Agilent / HP	U2000A	MY54260010	2025-07-23
Attenuator	PASTERNACK	PE7087-10	A001	2025-07-23
Attenuator	PASTERNACK	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

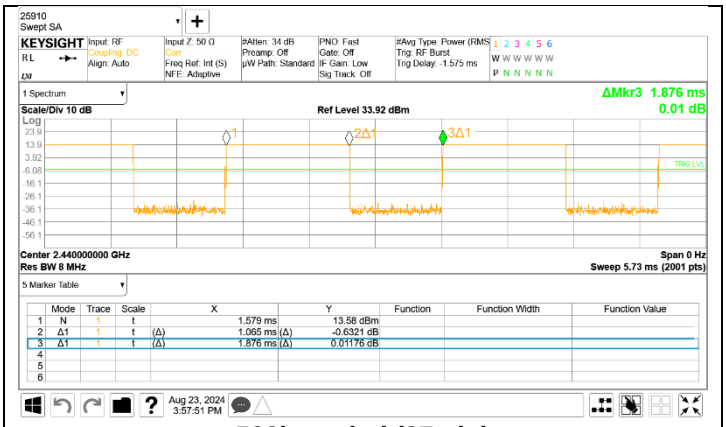
9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

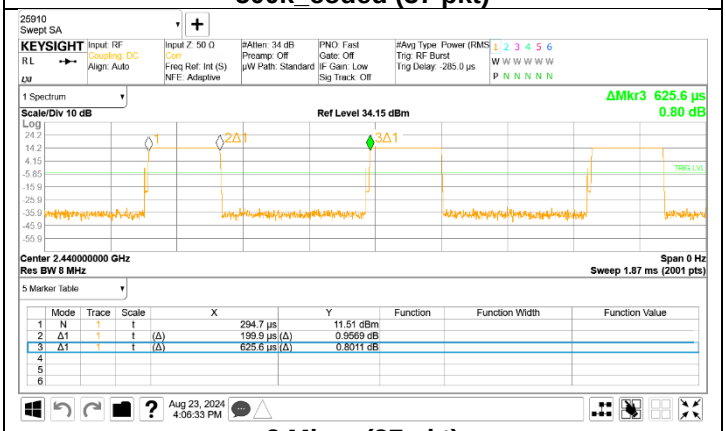
LIMITS

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						
500 kbps [37 pkt]	1.065	1.876	0.568	56.770	2.46	0.939
2 Mbps [37 pkt]	0.200	0.626	0.319	31.933	4.96	5.003



500k_coded (37 pkt)



2 Mbps (37 pkt)

9.2. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

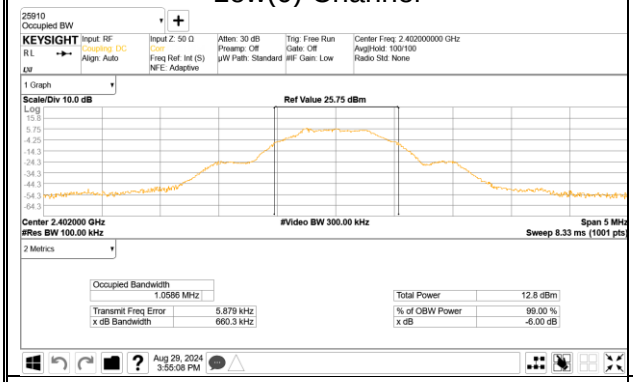
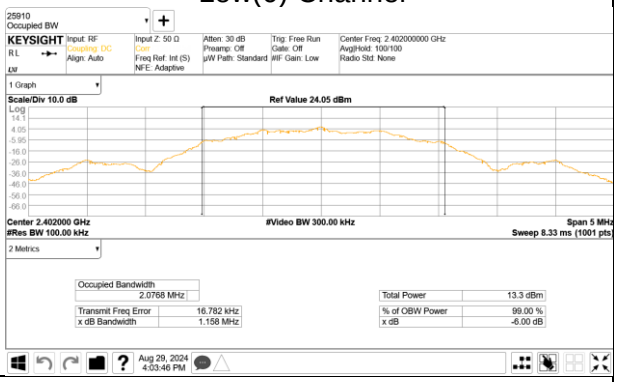
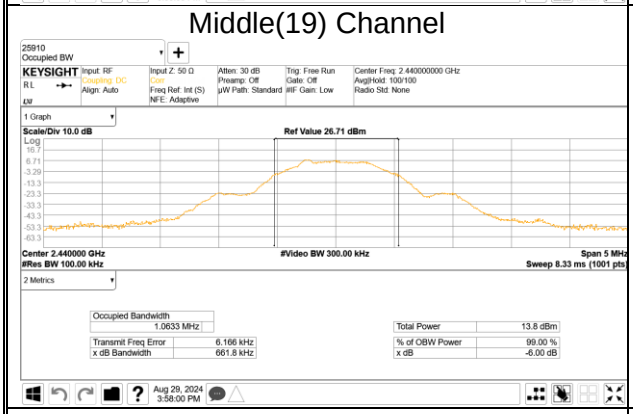
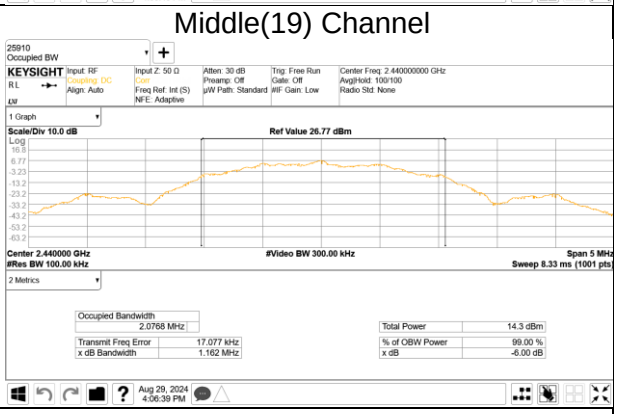
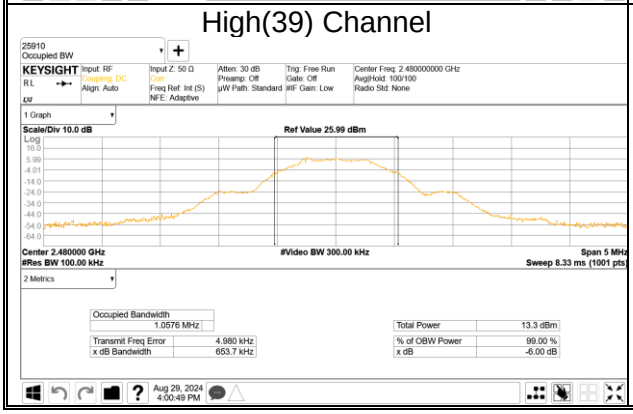
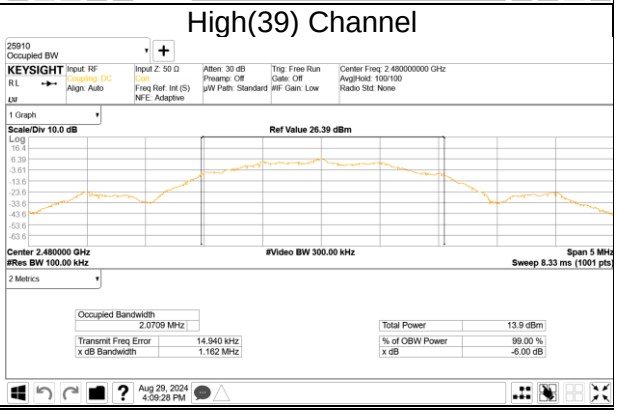
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

9.2.1. Test data

Mode	Antenna	Channel	Frequency [MHz]	6 dB Bandwidth [kHz]	Minimum Limit [kHz]
500 kbps (37pkt)	ANT1	0	2 402	660.3	500.0
		19	2 440	661.8	
		39	2 480	653.7	
2 Mbps (37pkt)	ANT1	0	2 402	1158.0	
		19	2 440	1162.0	
		39	2 480	1162.0	
Worst				**653.7**	**500.0**

9.2.2. 6 dB BANDWIDTH PLOTS

500 kbps ANT1	2 Mbps ANT1
Low(0) Channel	Low(0) Channel
	
Middle(19) Channel	Middle(19) Channel
	
High(39) Channel	High(39) Channel
	

9.3. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

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

TEST PROCEDURE

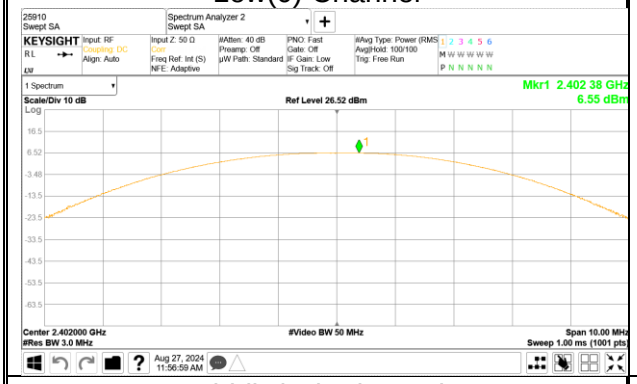
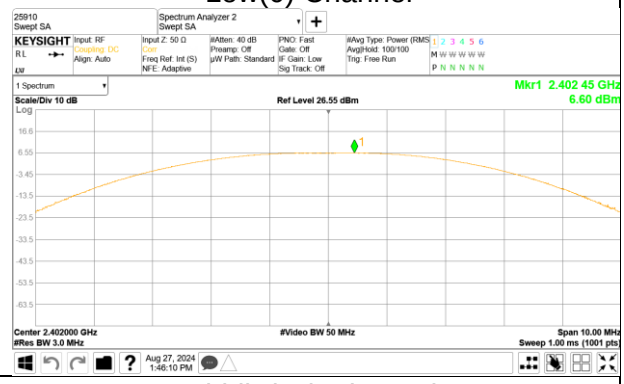
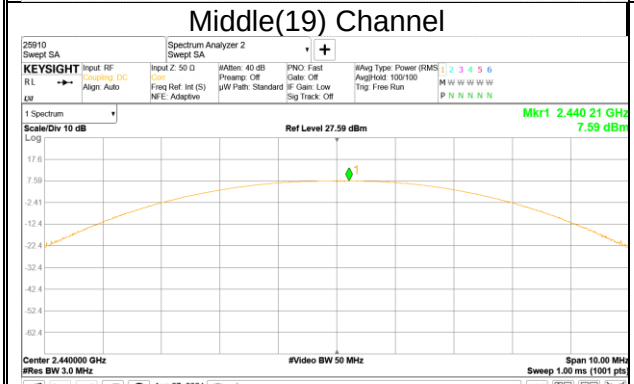
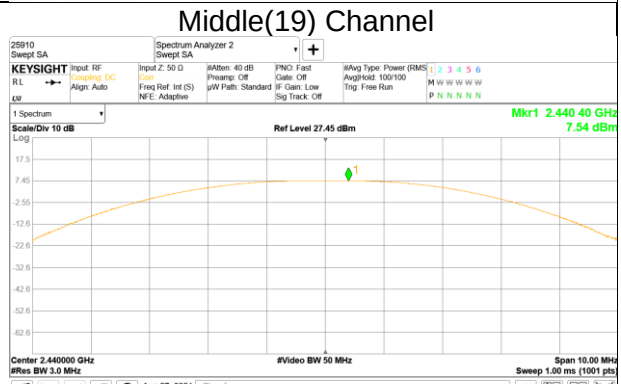
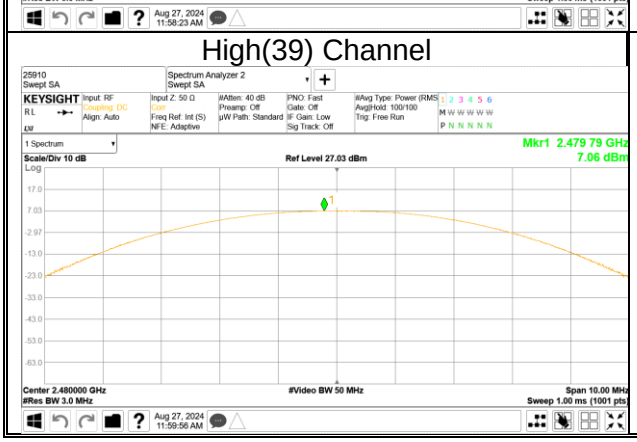
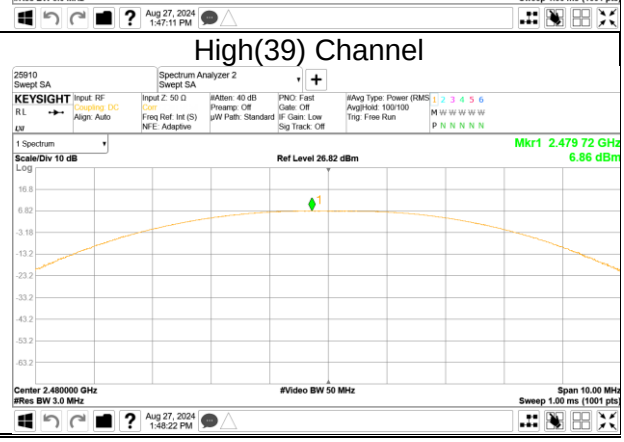
Peak power is measured using ANSI C63.10(2020) under section 11.9.1.1 utilizing spectrum analyzer(RBW ≧ DTS bandwidth).

RESULTS

9.3.1. SISO MODE TEST DATA

Mode	Antenna	Channel	Frequency [MHz]	Peak Output Power [dBm]	Limit [dBm]	Margin [dB]
500 kbps (37 pkt)	ANT1	0	2 402	6.550	30.000	-23.45
		19	2 440	7.590		-22.41
		39	2 480	7.060		-22.94
2 Mbps (37 pkt)	ANT1	0	2 402	6.600		-23.40
		19	2 440	7.540		-22.46
		39	2 480	6.860		-23.14
Worst				**7.590**		**-22.41**

9.3.2. PEAK POWER PLOTS

500 kbps SISO MODE ANT1	2 Mbps SISO MODE ANT1
Low(0) Channel	Low(0) Channel
	
Middle(19) Channel	Middle(19) Channel
	
High(39) Channel	High(39) Channel
	

9.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

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

RESULTS

9.4.1. SISO MODE TEST DATA

Mode	Antenna	Channel	Frequency [MHz]	Average Output Power [dBm]	Average Output Power [mW]
500 kbps (37 pkt)	ANT1	0	2 402	6.143	4.115
		19	2 440	7.225	5.279
		39	2 480	6.633	4.606
2 Mbps (37 pkt)	ANT1	0	2 402	6.016	3.996
		19	2 440	7.218	5.269
		39	2 480	6.233	4.200

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

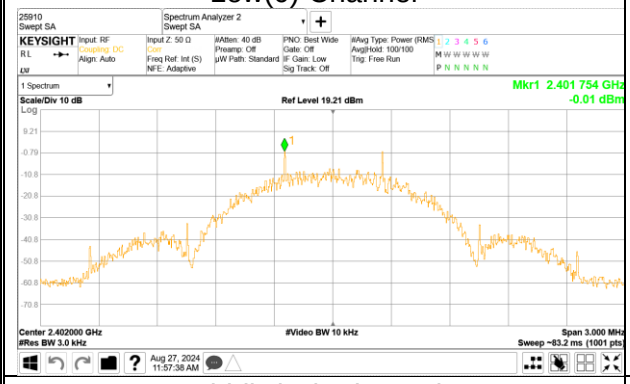
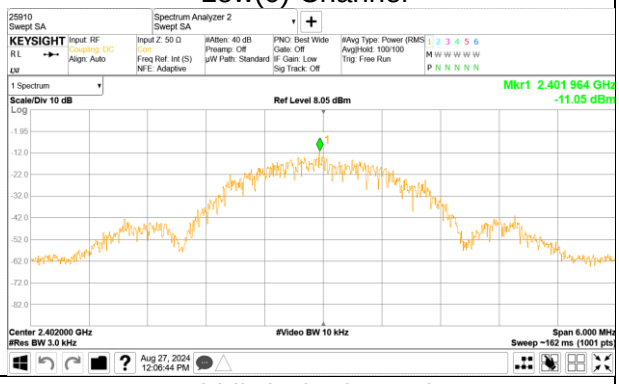
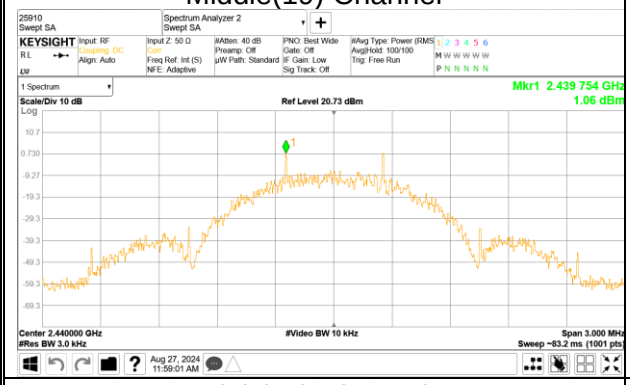
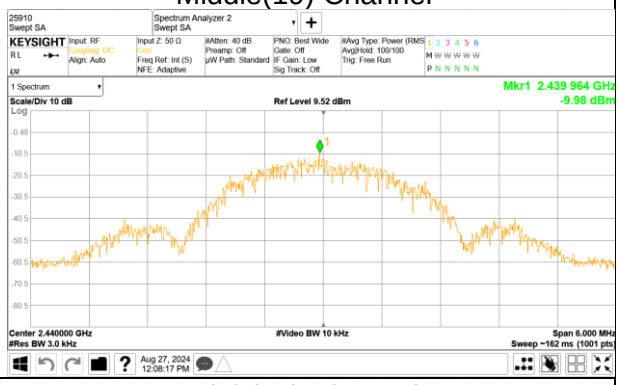
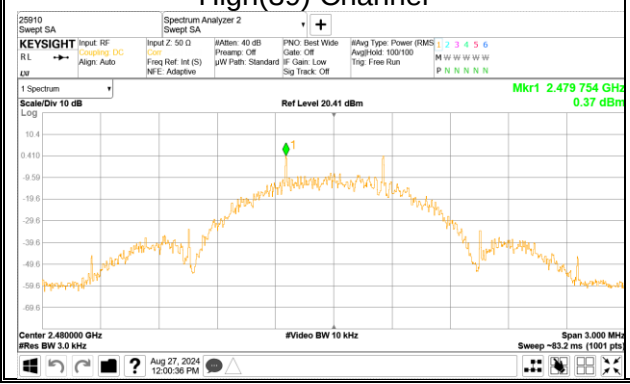
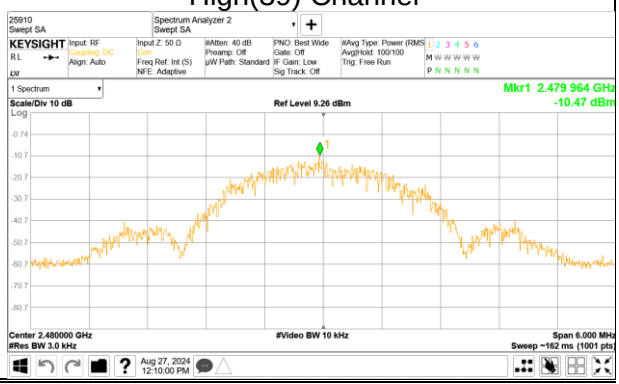
ANSI C63.10-2020, Section 11.10.2 Method PKPSD (peak PSD)

RESULTS

9.5.1. Test data

Mode	Antenna	Channel	Frequency [MHz]	PSD [dBm/3kHz]	Limit [dBm/3kHz]	Margin [dB]
500 kbps (37 pkt)	ANT1	0	2 402	-0.01	8.00	-8.01
		19	2 440	1.06		-6.94
		39	2 480	0.37		-7.63
2 Mbps (37 pkt)	ANT1	0	2 402	-11.05		-19.05
		19	2 440	-9.98		-17.98
		39	2 480	-10.47		-18.47
Worst				**1.06**		**-6.94**

9.5.2. PSD TEST PLOTS

500 kbps ANT1	2 Mbps ANT1
Low(0) Channel	Low(0) Channel
	
Middle(19) Channel	Middle(19) Channel
	
High(39) Channel	High(39) Channel
	

9.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

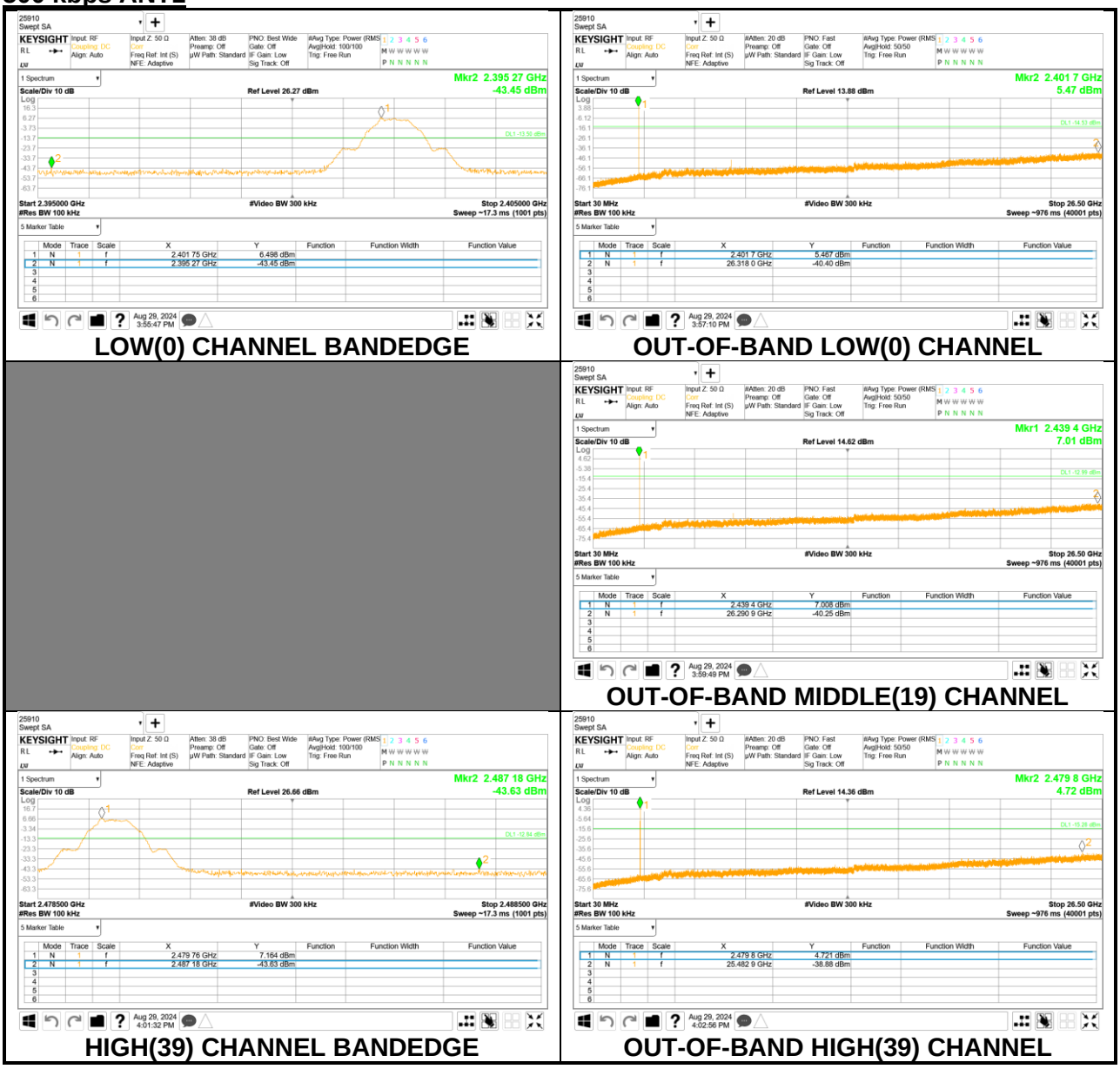
FCC §15.247 (d)

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

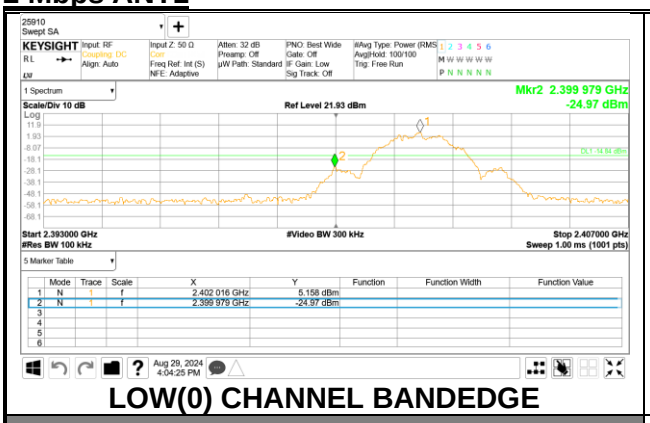
RESULTS

9.6.1. Test plot

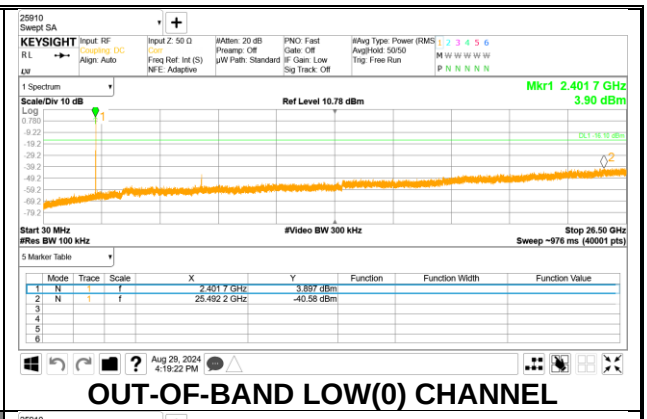
500 kbps ANT1



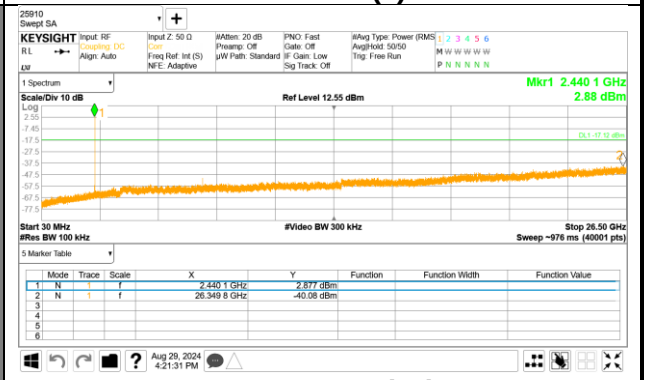
2 Mbps ANT1



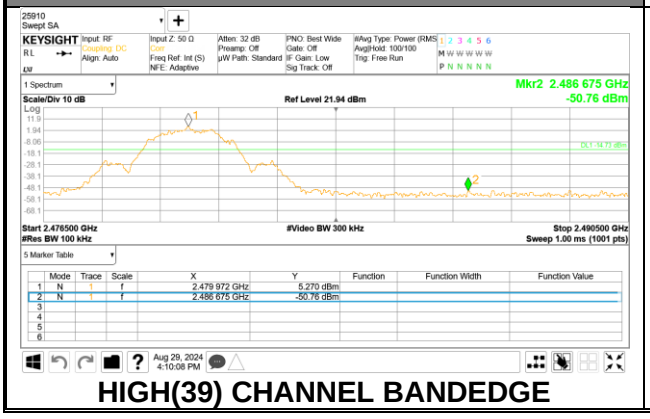
LOW(0) CHANNEL BANDEDGE



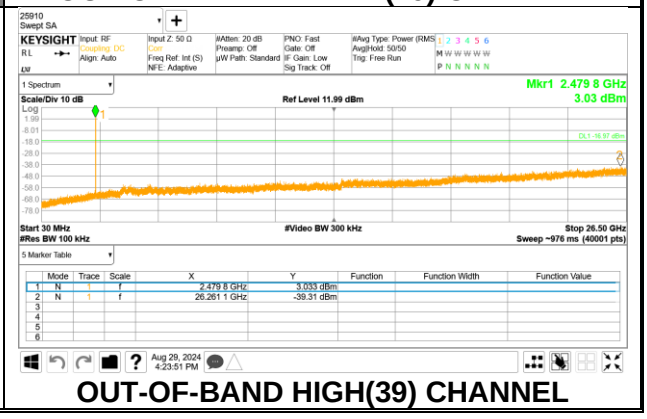
OUT-OF-BAND LOW(0) CHANNEL



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 500 Kbps, DCF = 10log(1/0.564)= 2.456 dB (Spectrum Analyzer round it up to 2.46 dB) and for 2 Mbps, DCF = 10log(1/0.316)= 4.957 dB (Spectrum Analyzer round it up to 4.96 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.

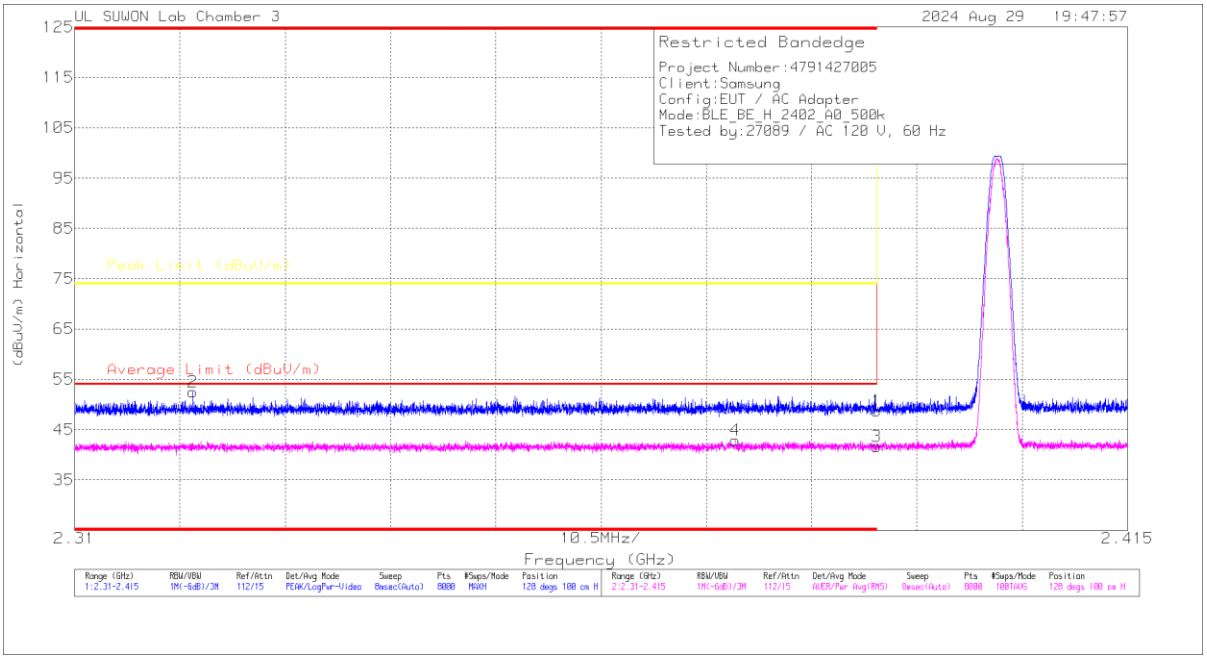
Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 30 m open are test site.
Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field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

10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. 500 Kbps ANT1

BANDEDGE (0 CHANNEL)

HORIZONTAL RESULT

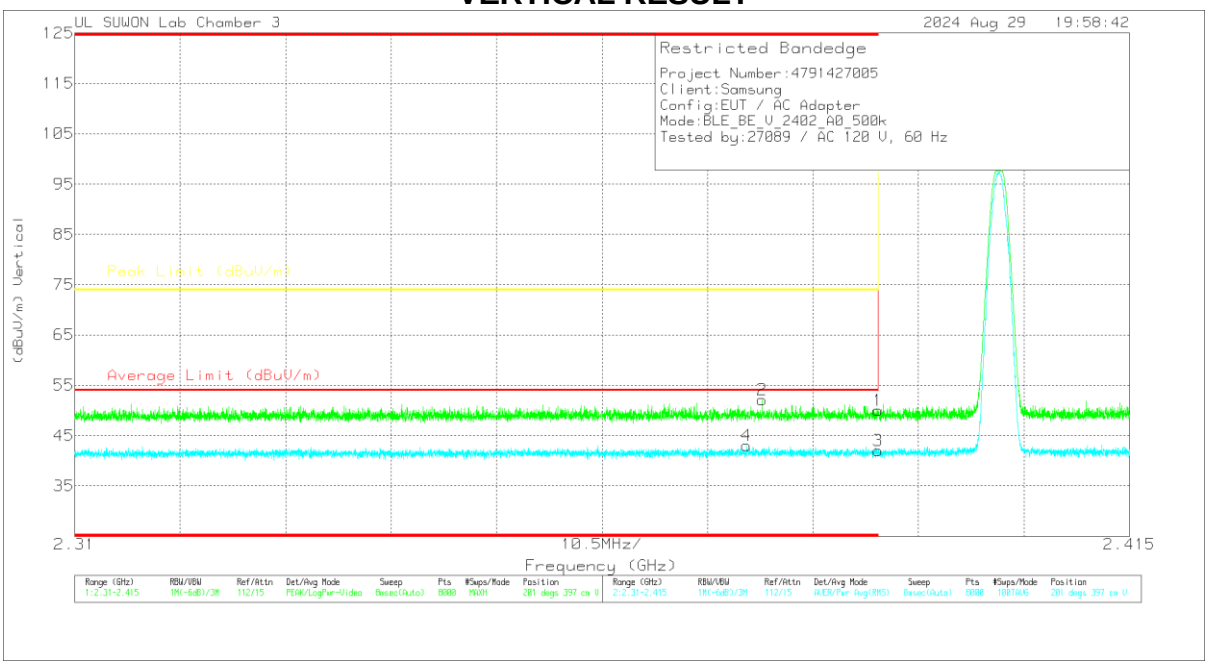


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_Factor(dB /m)	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	* 2.39	41.47	Pk	32.1	-24.8	0	48.77	-	-	74	-25.23	128	100	H
2	* 2.32179	45.38	Pk	31.9	-24.8	0	52.48	-	-	74	-21.52	128	100	H
3	* 2.39	31.87	RMS	32.1	-24.8	2.46	41.63	54	-12.37	-	-	128	100	H
4	* 2.37588	33.23	RMS	32.1	-24.9	2.46	42.89	54	-11.11	-	-	128	100	H

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

VERTICAL RESULT



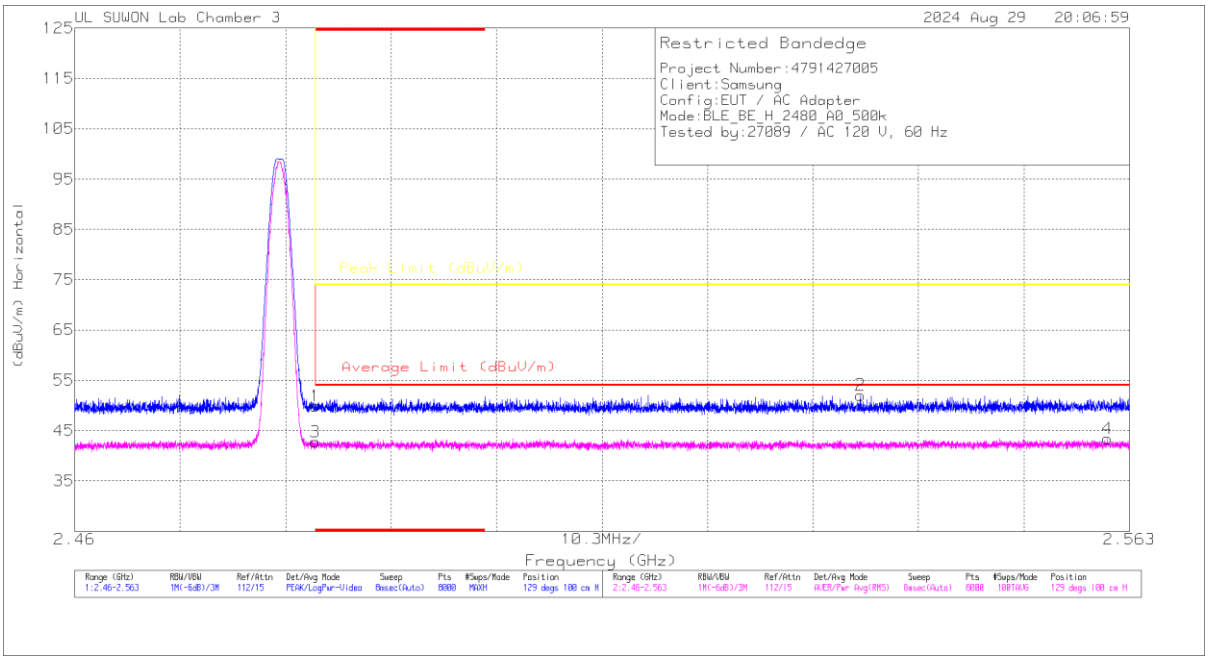
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_Factor(dB/m)	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	* 2.39	42.66	Pk	32.1	-24.8	0	49.96	-	-	74	-24.04	201	397	V
2	* 2.37844	44.86	Pk	32.1	-24.8	0	52.16	-	-	74	-21.84	201	397	V
3	* 2.39	32.23	RMS	32.1	-24.8	2.46	41.99	54	-12.01	-	-	201	397	V
4	* 2.3769	33.26	RMS	32.1	-24.8	2.46	43.02	54	-10.98	-	-	201	397	V

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

BANDEDGE (39 CHANNEL)

HORIZONTAL RESULT

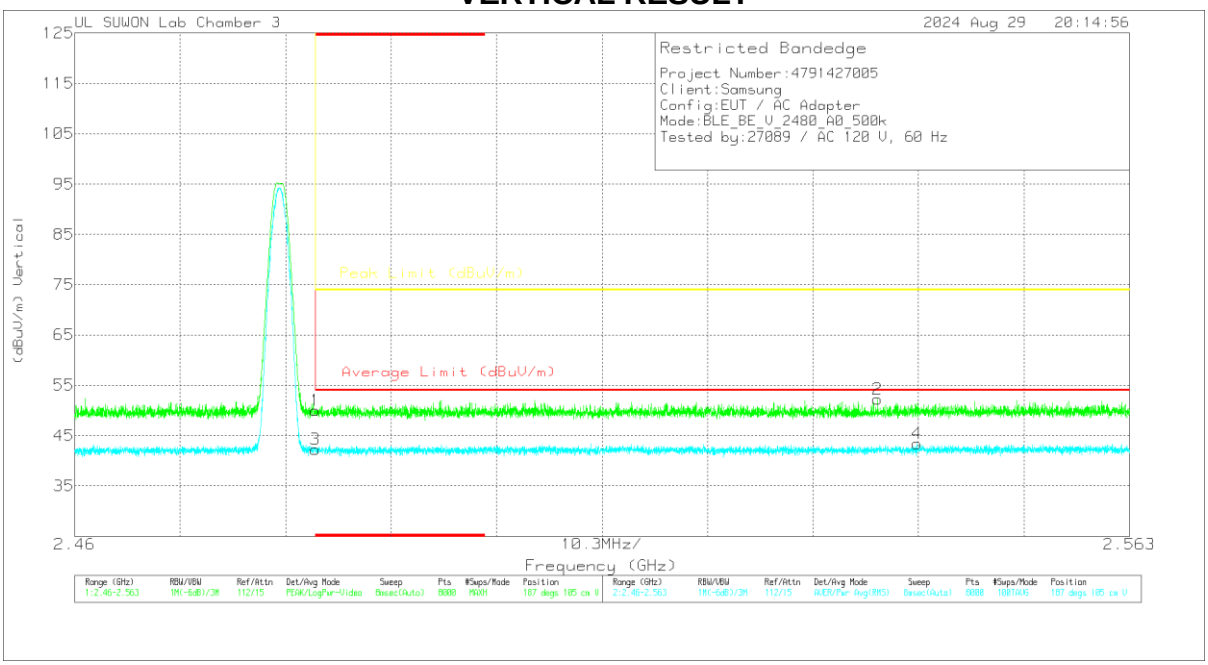


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_Factor(dB/m)	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	42.29	Pk	32.4	-24.8	0	49.89	-	-	74	-24.11	129	100	H
2	2.53672	44.46	Pk	32.4	-24.8	0	52.06	-	-	74	-21.94	129	100	H
3	* 2.4835	32.67	RMS	32.4	-24.8	2.46	42.73	54	-11.27	-	-	129	100	H
4	2.56083	33.25	RMS	32.4	-24.7	2.46	43.41	54	-10.59	-	-	129	100	H

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

VERTICAL RESULT



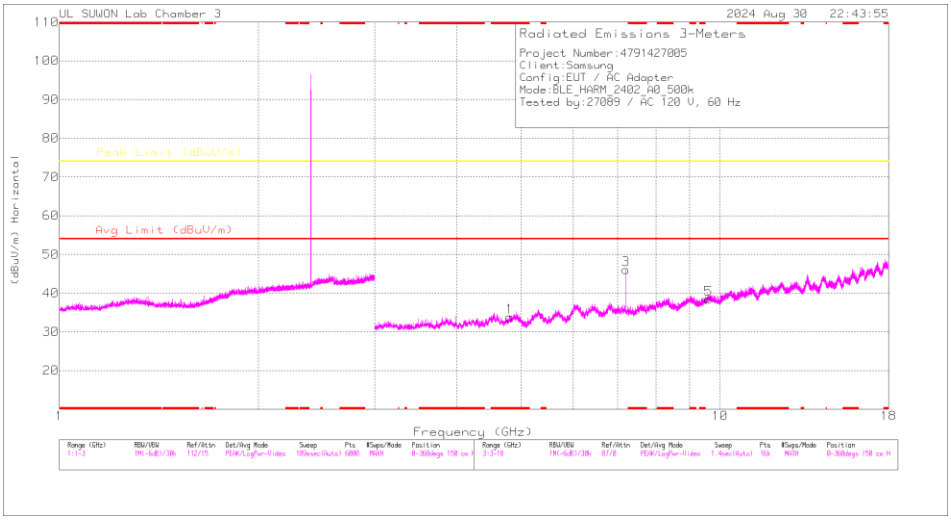
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_Factor(dB/m)	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	42.42	Pk	32.4	-24.8	0	50.02	-	-	74	-23.98	187	105	V
2	2.5384	44.52	Pk	32.4	-24.7	0	52.22	-	-	74	-21.78	187	105	V
3	* 2.4835	32.2	RMS	32.4	-24.8	2.46	42.26	54	-11.74	-	-	187	105	V
4	2.54225	33.23	RMS	32.4	-24.7	2.46	43.39	54	-10.61	-	-	187	105	V

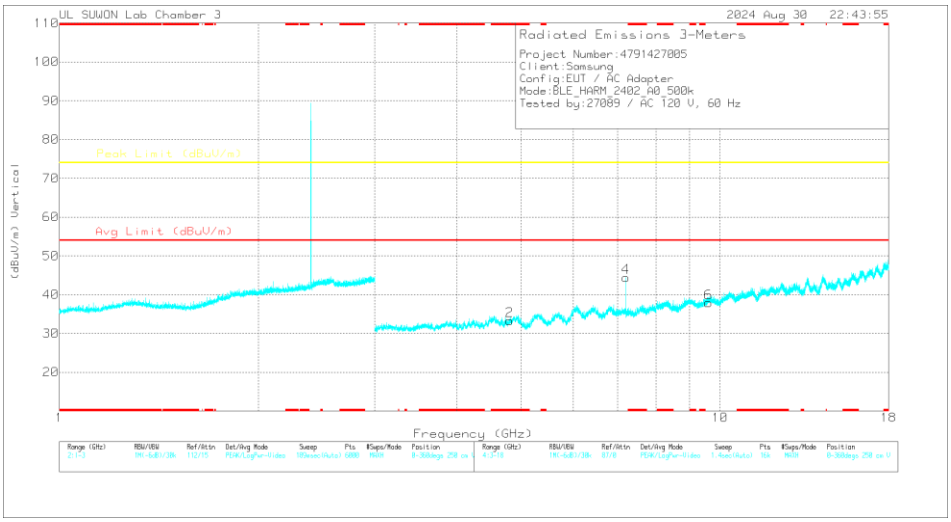
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

0 CHANNEL RESULTS



HORIZONTAL



VERTICAL

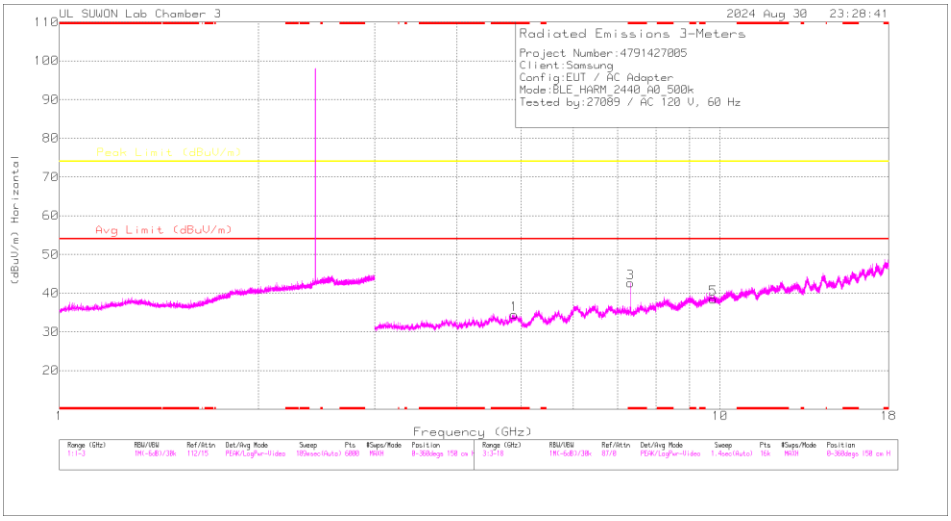
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

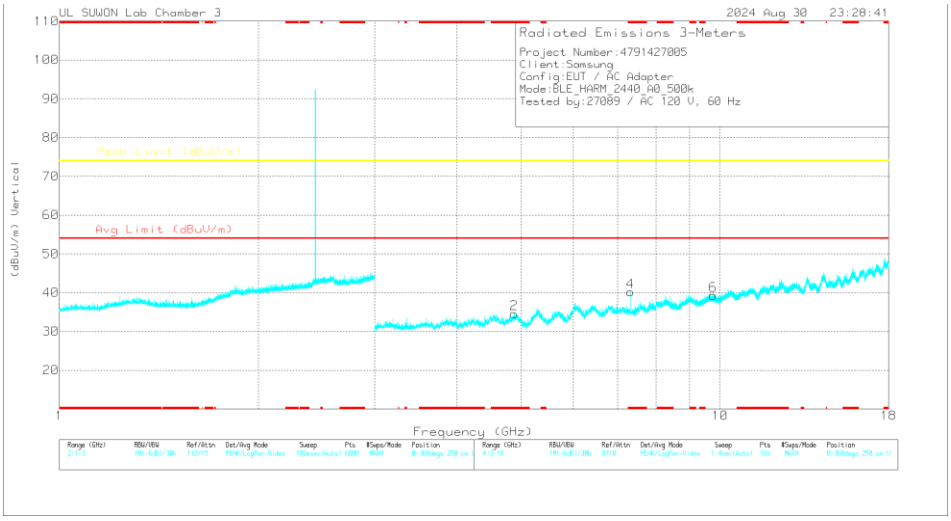
Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_ Factor(dB/m)	3GHz_HP_Pat h Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.80352	39.88	PK2	34.3	-30.1	0	44.08	-	-	74	-29.92	359	110	H
* 4.80358	28.76	MAv1	34.3	-30.1	2.46	35.42	54	-18.58	-	-	359	110	H
* 4.79681	40.17	PK2	34.3	-30.1	0	44.37	-	-	74	-29.63	79	100	V
* 4.80314	27.69	MAv1	34.3	-30.1	2.46	34.35	54	-19.65	-	-	79	100	V
7.20603	43.14	PK2	35.8	-25.9	0	53.04	-	-	74	-20.96	121	100	H
7.20599	43.69	PK2	35.8	-25.9	0	53.59	-	-	74	-20.41	191	103	V
9.61271	33.81	PK2	36.7	-21.7	0	48.81	-	-	74	-25.19	0	100	H
9.61309	33.53	PK2	36.7	-21.7	0	48.53	-	-	74	-25.47	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

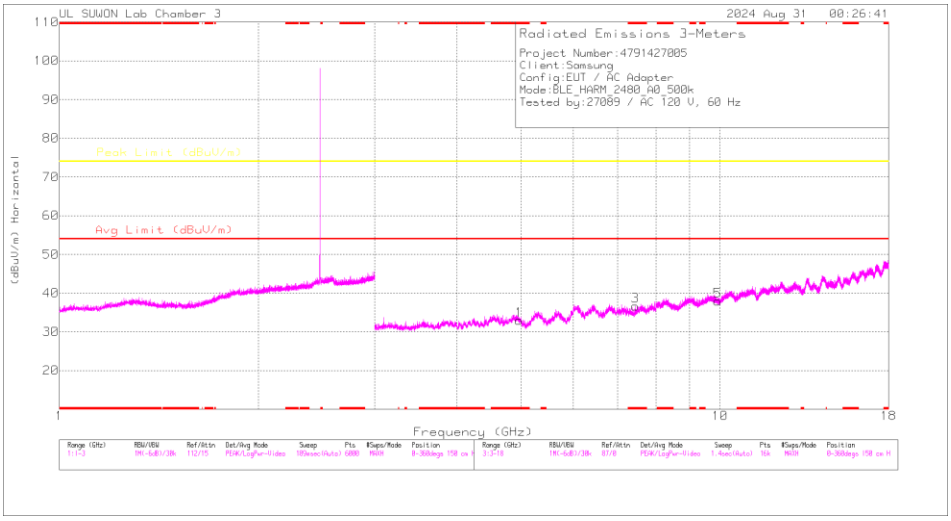
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

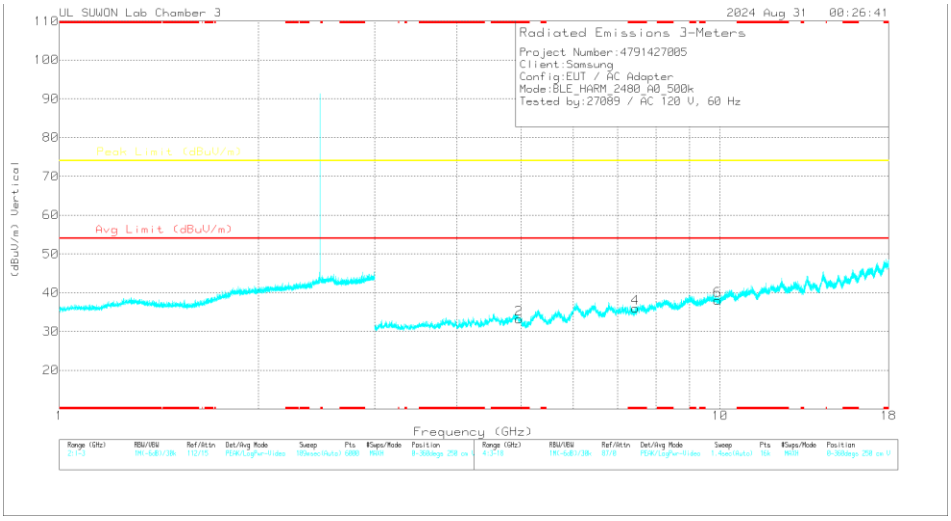
Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_ Factor(dB/m)	3GHz_HP_Pat h Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.87987	40.39	PK2	34.2	-29.9	0	44.69	-	-	74	-29.31	357	100	H
* 4.8805	29.46	MAv1	34.2	-29.9	2.46	36.22	54	-17.78	-	-	357	100	H
* 4.88054	39.61	PK2	34.2	-29.9	0	43.91	-	-	74	-30.09	92	389	V
* 4.87973	28.05	MAv1	34.2	-29.9	2.46	34.81	54	-19.19	-	-	92	389	V
* 7.31987	40.84	PK2	35.8	-25.5	0	51.14	-	-	74	-22.86	106	104	H
* 7.32005	31.86	MAv1	35.8	-25.5	2.46	44.62	54	-9.38	-	-	106	104	H
* 7.31997	40.04	PK2	35.8	-25.5	0	50.34	-	-	74	-23.66	192	100	V
* 7.31999	31.12	MAv1	35.8	-25.5	2.46	43.88	54	-10.12	-	-	192	100	V
9.75693	32.79	PK2	36.9	-21.6	0	48.09	-	-	74	-25.91	0	100	H
9.76155	33.27	PK2	36.9	-21.5	0	48.67	-	-	74	-25.33	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

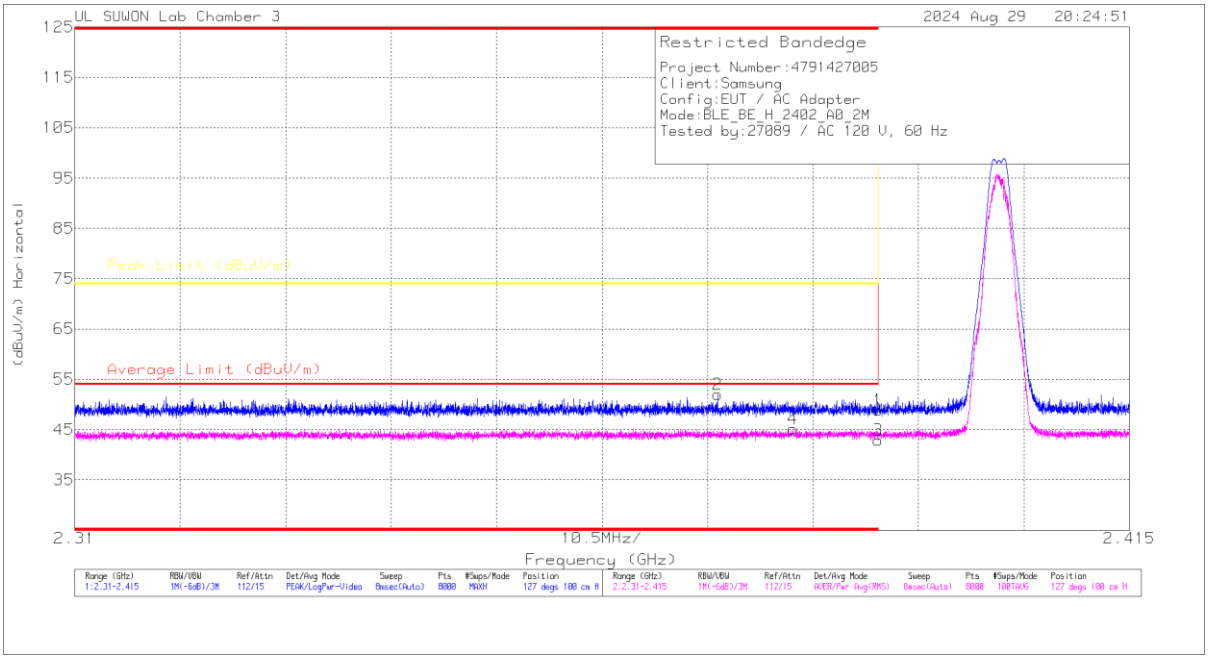
Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_ Factor(dB/m)	3GHz_HP_Pat h Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.95574	38.97	PK2	34.3	-30.1	0	43.17	-	-	74	-30.83	348	100	H
* 4.96044	27.92	MAv1	34.3	-30	2.46	34.68	54	-19.32	-	-	348	100	H
* 4.96991	38.73	PK2	34.3	-30.1	0	42.93	-	-	74	-31.07	288	395	V
* 4.95698	27.42	MAv1	34.3	-30.1	2.46	34.08	54	-19.92	-	-	288	395	V
* 7.43992	37.28	PK2	35.7	-25.2	0	47.78	-	-	74	-26.22	94	105	H
* 7.44	26.81	MAv1	35.7	-25.2	2.46	39.77	54	-14.23	-	-	94	105	H
* 7.44048	35.99	PK2	35.7	-25.2	0	46.49	-	-	74	-27.51	247	105	V
* 7.43992	26.19	MAv1	35.7	-25.2	2.46	39.15	54	-14.85	-	-	247	105	V
9.91641	32.64	PK2	37.1	-21.3	0	48.44	-	-	74	-25.56	0	100	H
9.91656	32.29	PK2	37.1	-21.3	0	48.09	-	-	74	-25.91	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)

HORIZONTAL RESULT

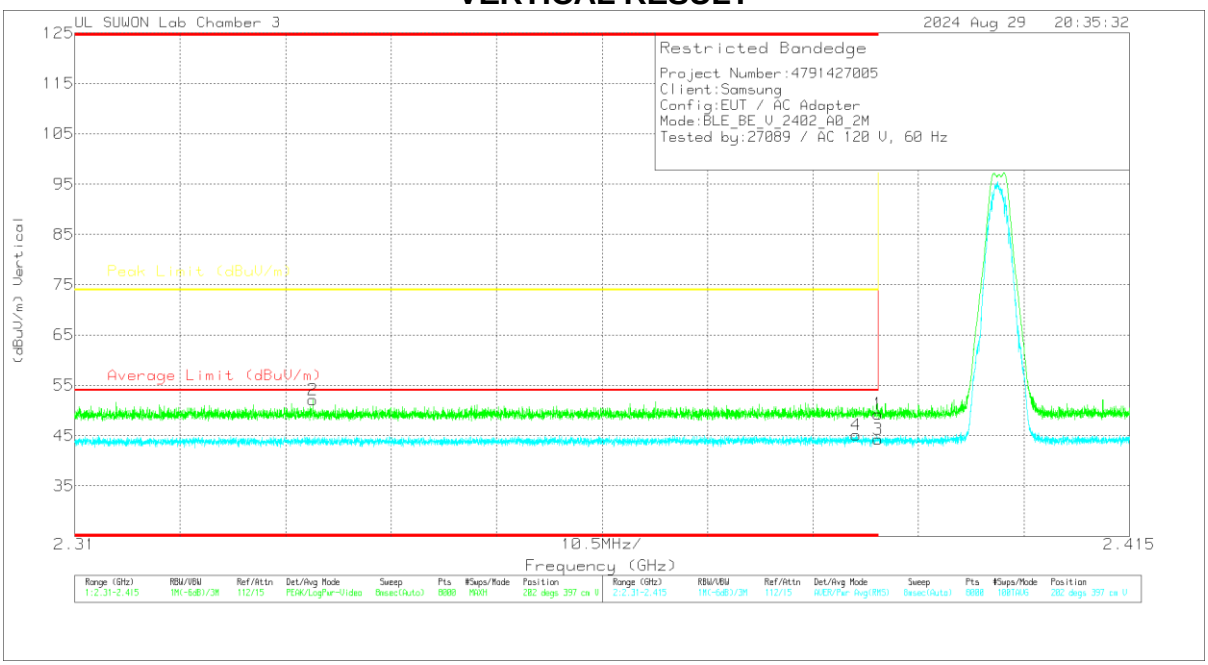


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_Factor(dB /m)	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	* 2.39	41.63	Pk	32.1	-24.8	0	48.93	-	-	74	-25.07	127	100	H
2	* 2.37402	44.88	Pk	32	-24.9	0	51.98	-	-	74	-22.02	127	100	H
3	* 2.39	30.68	RMS	32.1	-24.8	4.96	42.94	54	-11.06	-	-	127	100	H
4	* 2.38149	33.02	RMS	32.1	-24.9	4.96	45.18	54	-8.82	-	-	127	100	H

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

VERTICAL RESULT



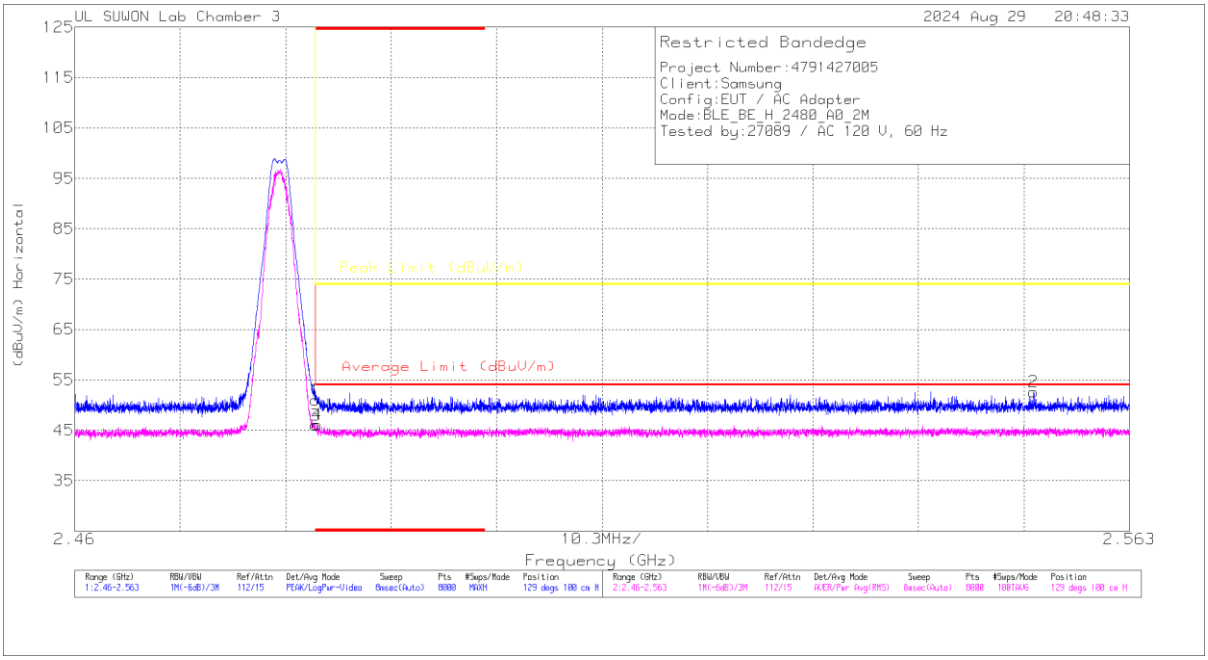
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_Factor(dB/m)	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	* 2.39	42.02	Pk	32.1	-24.8	0	49.32	-	-	74	-24.68	202	397	V
2	* 2.33371	44.99	Pk	31.9	-24.8	0	52.09	-	-	74	-21.91	202	397	V
3	* 2.39	32.01	RMS	32.1	-24.8	4.96	44.27	54	-9.73	-	-	202	397	V
4	* 2.38779	32.86	RMS	32.1	-24.8	4.96	45.12	54	-8.88	-	-	202	397	V

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

BANDEDGE (39 CHANNEL)

HORIZONTAL RESULT

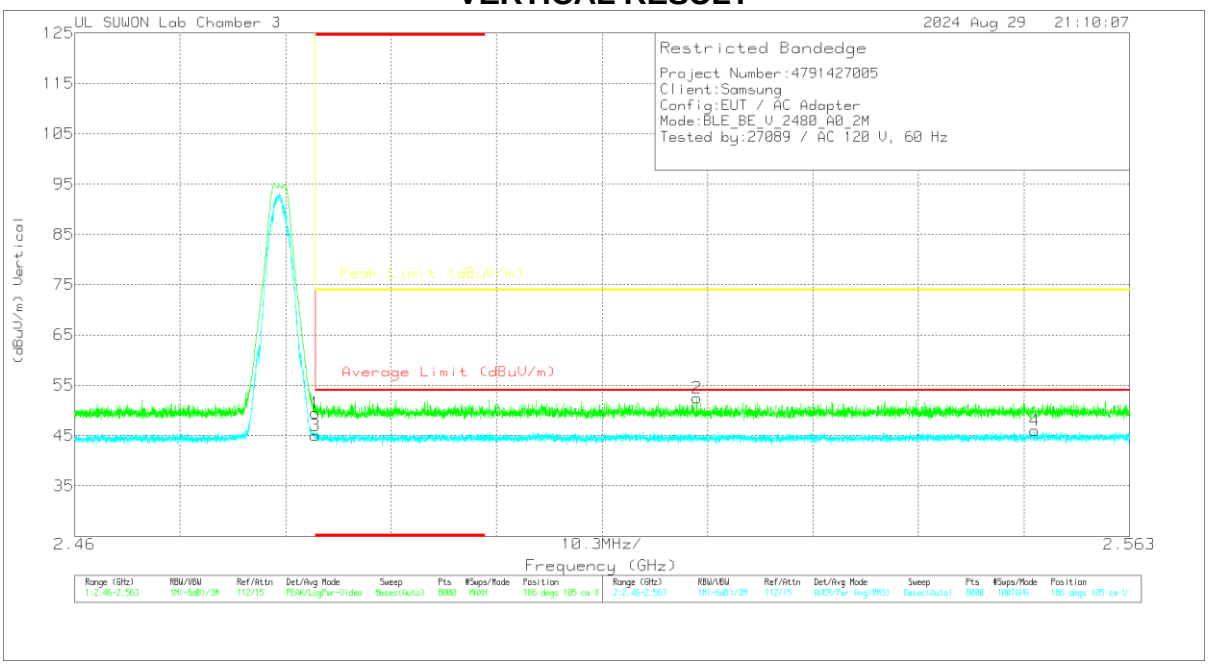


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_Factor(dB/m)	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	43.42	Pk	32.4	-24.8	0	51.02	-	-	74	-22.98	129	100	H
2	2.55365	44.86	Pk	32.4	-24.6	0	52.66	-	-	74	-21.34	129	100	H
3	* 2.4835	33.49	RMS	32.4	-24.8	4.96	46.05	54	-7.95	-	-	129	100	H
4	* 2.48367	33.61	RMS	32.4	-24.8	4.96	46.17	54	-7.83	-	-	129	100	H

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

VERTICAL RESULT



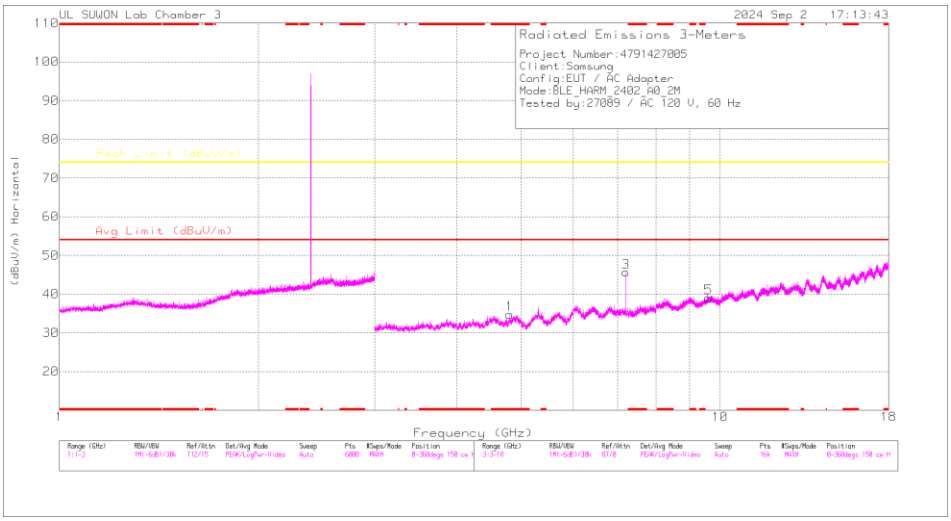
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_Factor(dB/m)	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	41.91	Pk	32.4	-24.8	0	49.51	-	-	74	-24.49	186	105	V
2	2.52074	44.93	Pk	32.4	-24.8	0	52.53	-	-	74	-21.47	186	105	V
3	* 2.4835	32.49	RMS	32.4	-24.8	4.96	45.05	54	-8.95	-	-	186	105	V
4	2.55373	33.22	RMS	32.4	-24.6	4.96	45.98	54	-8.02	-	-	186	105	V

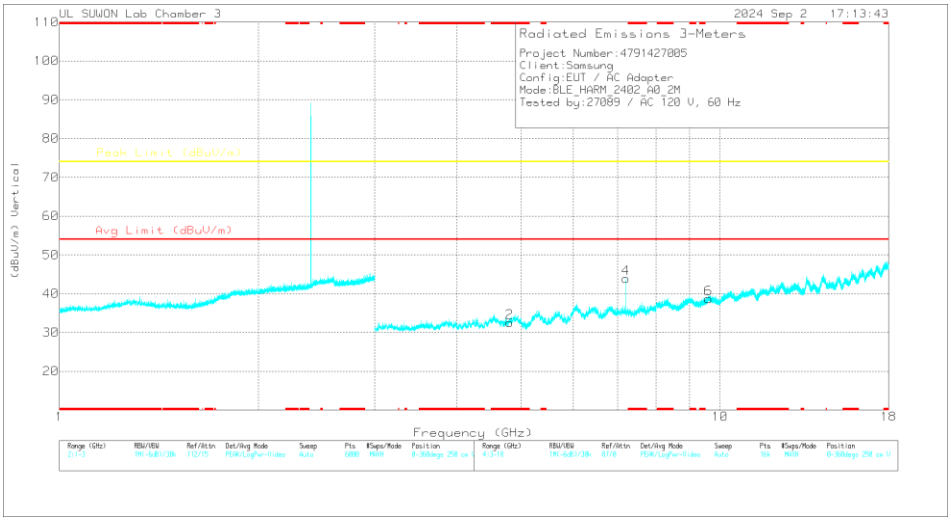
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

0 CHANNEL RESULTS



HORIZONTAL



VERTICAL

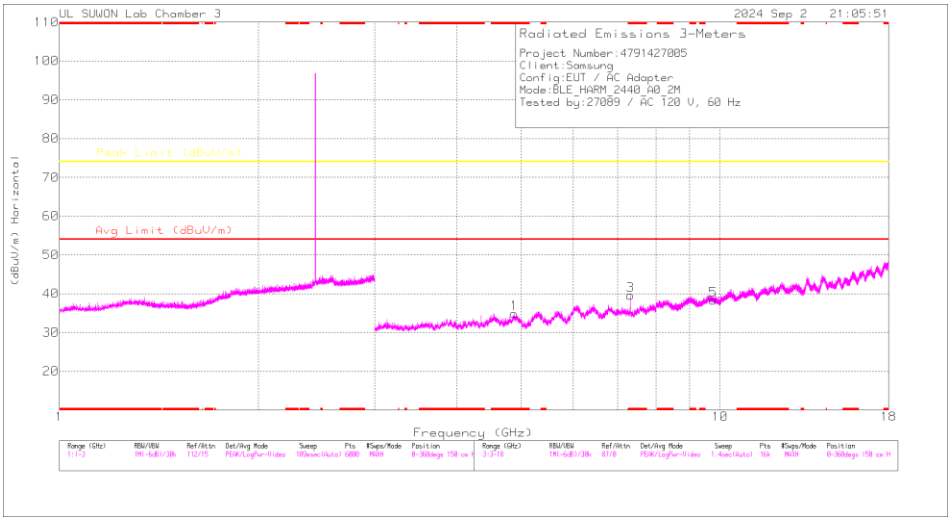
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

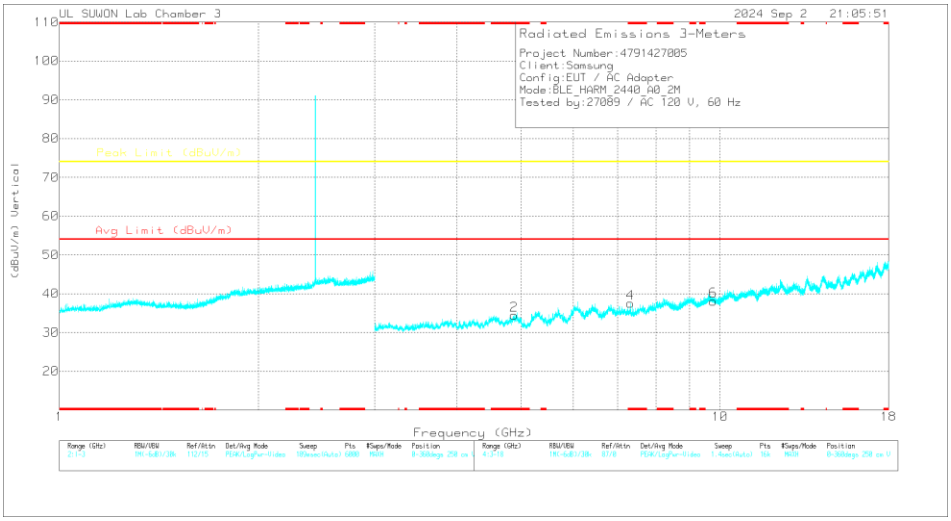
Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_ Factor(dB/m)	3GHz_HP_Pat h Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.80423	41.19	PK2	34.3	-30.1	0	45.39	-	-	74	-28.61	357	113	H
* 4.80342	29.61	MAv1	34.3	-30.1	4.96	38.77	54	-15.23	-	-	357	113	H
* 4.80412	39.17	PK2	34.3	-30.1	0	43.37	-	-	74	-30.63	94	334	V
* 4.80446	27.84	MAv1	34.3	-30.1	4.96	37	54	-17	-	-	94	334	V
7.20611	43.87	PK2	35.8	-25.9	0	53.77	-	-	74	-20.23	102	106	H
7.20593	44.22	PK2	35.8	-25.9	0	54.12	-	-	74	-19.88	209	101	V
9.60865	34.03	PK2	36.7	-21.7	0	49.03	-	-	74	-24.97	0	100	H
9.60599	33.81	PK2	36.7	-21.8	0	48.71	-	-	74	-25.29	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

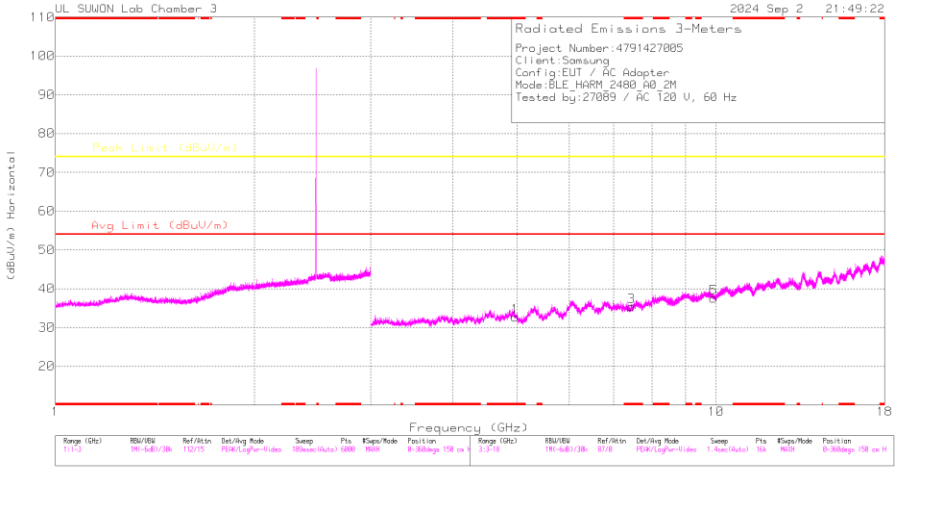
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

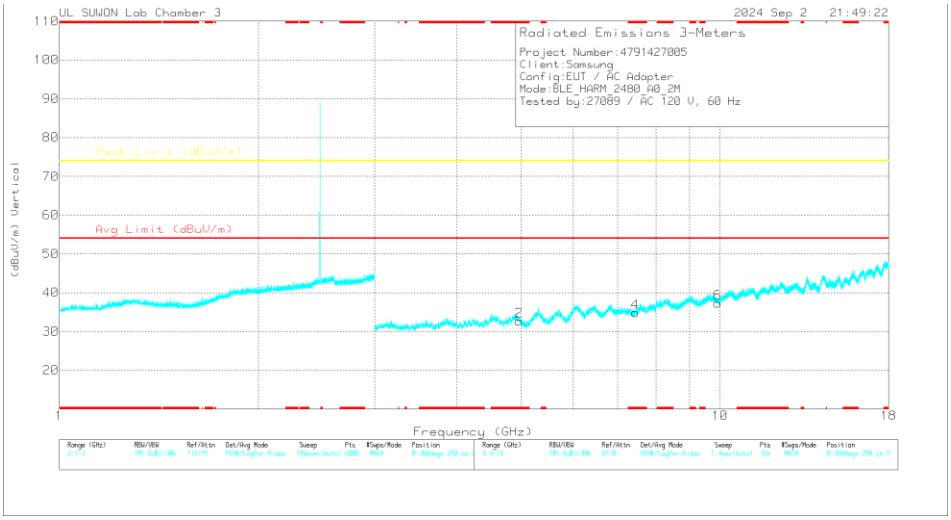
Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_ Factor(dB/m)	3GHz_HP_Pat h Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.87917	39.81	PK2	34.2	-29.9	0	44.11	-	-	74	-29.89	0	100	H
* 4.87963	28.13	MAv1	34.2	-29.9	4.96	37.39	54	-16.61	-	-	0	100	H
* 4.88051	39.67	PK2	34.2	-29.9	0	43.97	-	-	74	-30.03	0	100	V
* 7.32023	39.11	PK2	35.8	-25.5	0	49.41	-	-	74	-24.59	103	103	H
* 7.32005	28.17	MAv1	35.8	-25.5	4.96	43.43	54	-10.57	-	-	103	103	H
* 7.32017	38.36	PK2	35.8	-25.5	0	48.66	-	-	74	-25.34	232	100	V
* 7.32029	27.12	MAv1	35.8	-25.5	4.96	42.38	54	-11.62	-	-	232	100	V
9.75493	32.84	PK2	36.9	-21.6	0	48.14	-	-	74	-25.86	0	100	H
9.76975	32.67	PK2	36.9	-21.5	0	48.07	-	-	74	-25.93	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.

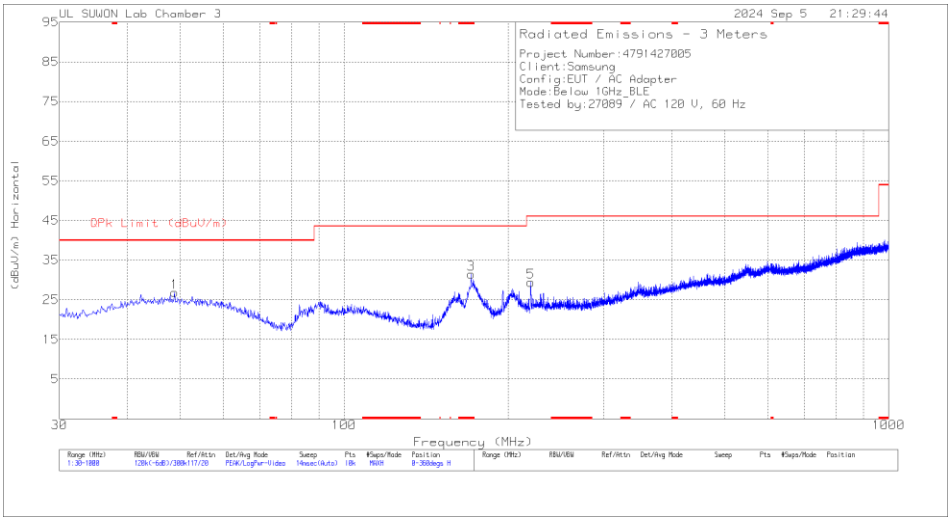
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_ Factor(dB/m)	3GHz_HP_Pat h 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
* 4.95914	39.25	PK2	34.3	-30	0	43.55	-	-	74	-30.45	0	100	H
* 4.95123	38.63	PK2	34.3	-30.1	0	42.83	-	-	74	-31.17	0	100	V
* 7.4396	35.96	PK2	35.7	-25.2	0	46.46	-	-	74	-27.54	90	103	H
* 7.44004	24.73	MAv1	35.7	-25.2	4.96	40.19	54	-13.81	-	-	90	103	H
* 7.43962	35.29	PK2	35.7	-25.2	0	45.79	-	-	74	-28.21	248	100	V
* 7.43974	23.97	MAv1	35.7	-25.2	4.96	39.43	54	-14.57	-	-	248	100	V
9.92243	31.96	PK2	37.1	-21.3	0	47.76	-	-	74	-26.24	0	100	H
9.9145	32.7	PK2	37.1	-21.4	0	48.4	-	-	74	-25.6	0	100	V

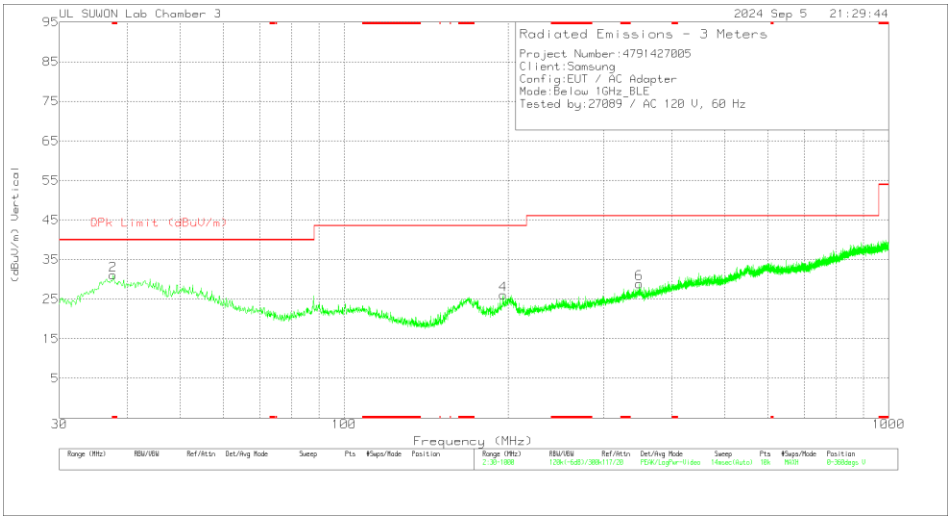
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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_845_Factor(dB)	Below_1G_Path Loss(dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	48.8199	38.81	Pk	19.8	-31.8	0	26.81	40	-13.19	0-360	300	H
3	* 171.1496	47.97	Pk	14.5	-31	0	31.47	43.52	-12.05	0-360	100	H
5	220.3336	43.52	Pk	16.7	-30.8	0	29.42	46.02	-16.6	0-360	100	H
2	* 37.6638	45.28	Pk	17.8	-32	0	31.08	40	-8.92	0-360	100	V
4	195.8871	40.05	Pk	16.9	-30.8	0	26.15	43.52	-17.37	0-360	100	V
6	348.3868	38.62	Pk	20.5	-30.2	0	28.92	46.02	-17.1	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.

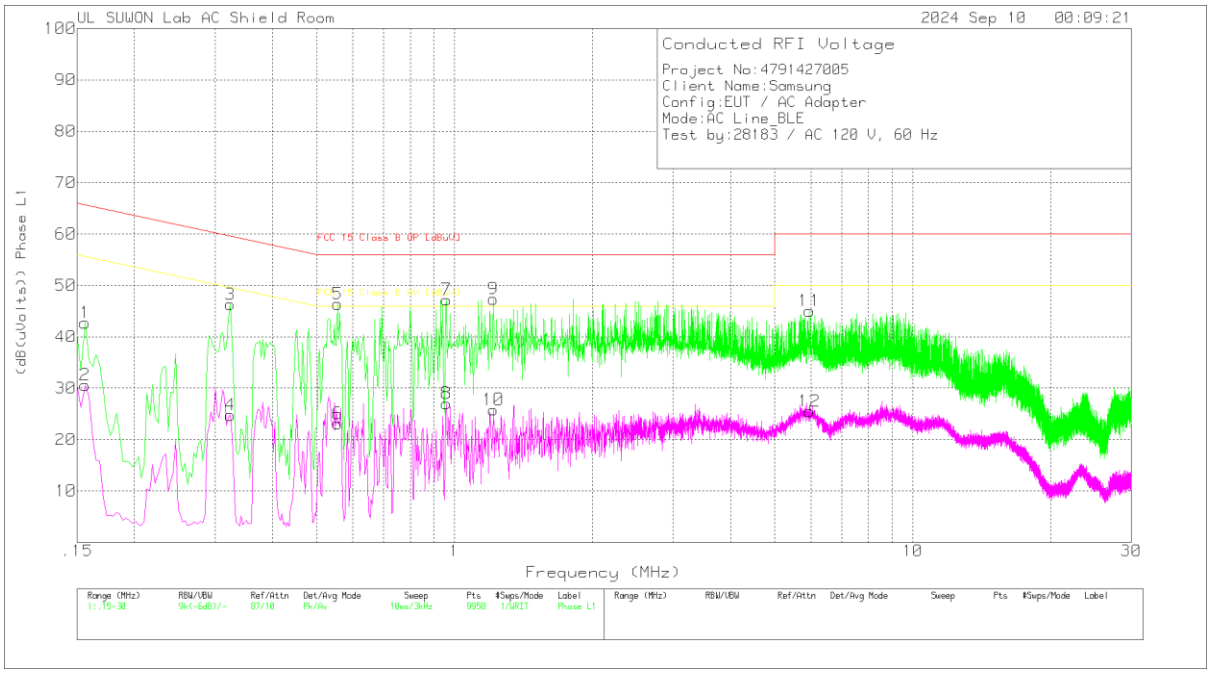
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

11.1. AC Power Line

LINE 1 RESULTS



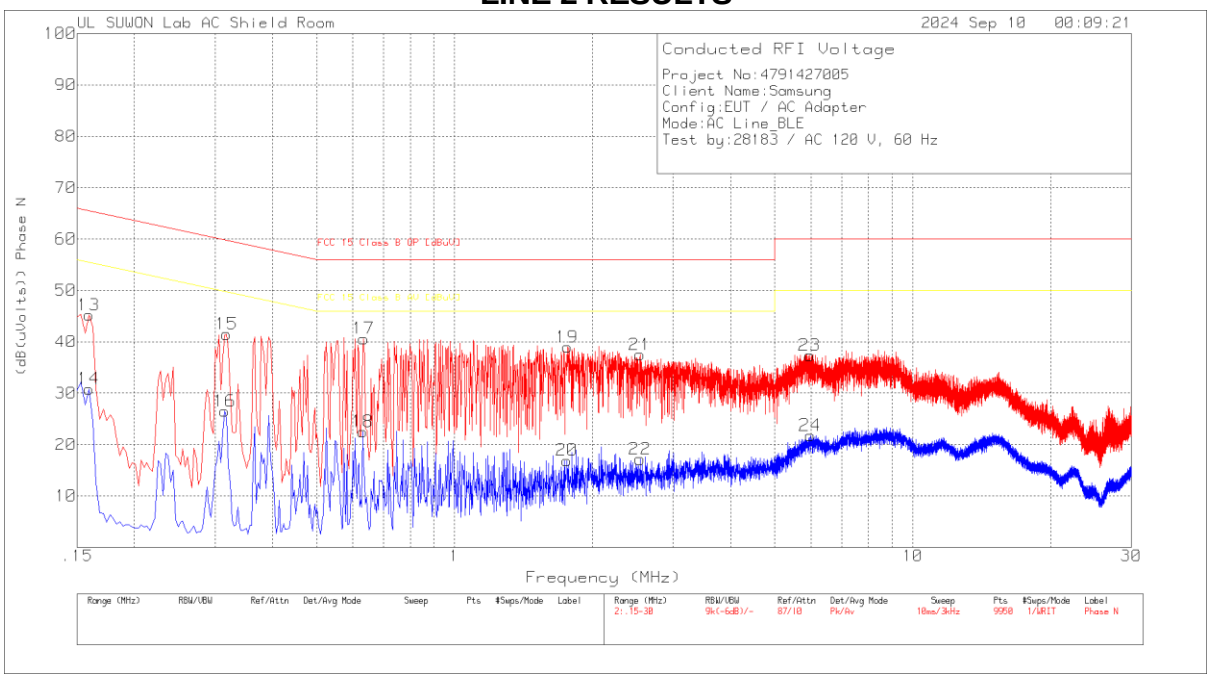
Trace Markers

Range 1: Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With 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	.156	32.82	Pk	9.8	.1	42.72	65.67	-22.95	-	-
2	.156	20.71	Av	9.8	.1	30.61	-	-	55.67	-25.06
3	.324	36.5	Pk	9.7	.1	46.3	59.6	-13.3	-	-
4	.324	14.95	Av	9.7	.1	24.75	-	-	49.6	-24.85
5	.555	36.5	Pk	9.8	.1	46.4	56	-9.6	-	-
6	.555	13.19	Av	9.8	.1	23.09	-	-	46	-22.91
7	.96	37.3	Pk	9.8	.1	47.2	56	-8.8	-	-
8	.96	17.14	Av	9.8	.1	27.04	-	-	46	-18.96
9	1.215	37.56	Pk	9.7	.1	47.36	56	-8.64	-	-
10	1.215	15.98	Av	9.7	.1	25.78	-	-	46	-20.22
11	5.949	35.05	Pk	9.8	.2	45.05	60	-14.95	-	-
12	5.949	15.52	Av	9.8	.2	25.52	-	-	50	-24.48

Pk - Peak detector
Av - Average detection

LINE 2 RESULTS



Trace Markers

Range 2: Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_With EX_N [dB]	Cable Loss [dB]	Corrected Reading [dBuV]	FCC 15 Class B QP [dBuV]	Margin (dB)	FCC 15 Class B AV [dBuV]	Margin (dB)
13	.159	35.3	Pk	9.8	.1	45.2	65.52	-20.32	-	-
14	.159	20.93	Av	9.8	.1	30.83	-	-	55.52	-24.69
15	.318	31.69	Pk	9.7	.1	41.49	59.76	-18.27	-	-
16	.315	16.71	Av	9.7	.1	26.51	-	-	49.84	-23.33
17	.633	30.72	Pk	9.8	.1	40.62	56	-15.38	-	-
18	.63	12.59	Av	9.8	.1	22.49	-	-	46	-23.51
19	1.761	29.17	Pk	9.7	.1	38.97	56	-17.03	-	-
20	1.758	7.1	Av	9.7	.1	16.9	-	-	46	-29.1
21	2.538	27.68	Pk	9.7	.1	37.48	56	-18.52	-	-
22	2.538	7.38	Av	9.7	.1	17.18	-	-	46	-28.82
23	5.955	27.34	Pk	9.8	.2	37.34	60	-22.66	-	-
24	5.973	11.77	Av	9.8	.2	21.77	-	-	50	-28.23

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]	Cable Loss [dB]	Corrected Reading (dB(uVolts))	FCC 15 Class B QP [dBuV]	Margin (dB)	FCC 15 Class B AV [dBuV]	Margin (dB)
.555	22.49	Qp	9.8	.1	32.39	56	-23.61	-	-
.96	28.34	Qp	9.8	.1	38.24	56	-17.76	-	-
1.215	27.83	Qp	9.7	.1	37.63	56	-18.37	-	-

Qp - Quasi-Peak detector

END OF TEST REPORT