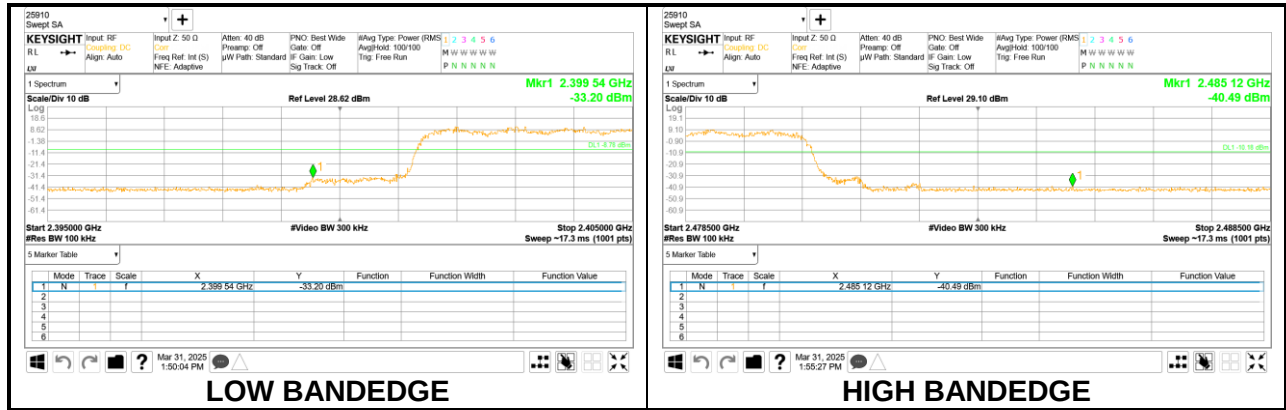
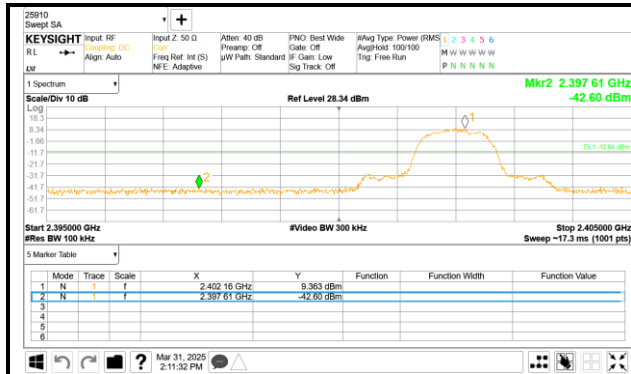


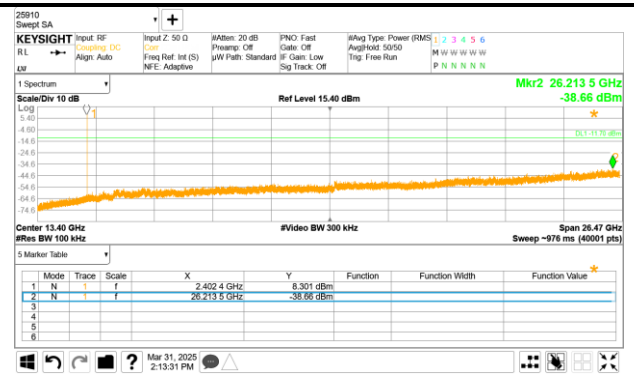
SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON – ANT1



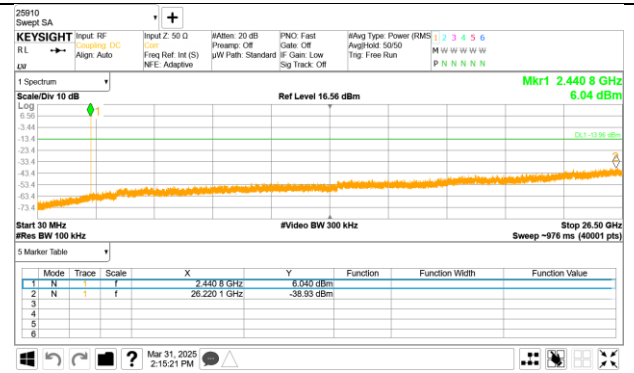
SPURIOUS EMISSIONS, NON-HOPPING – ANT2



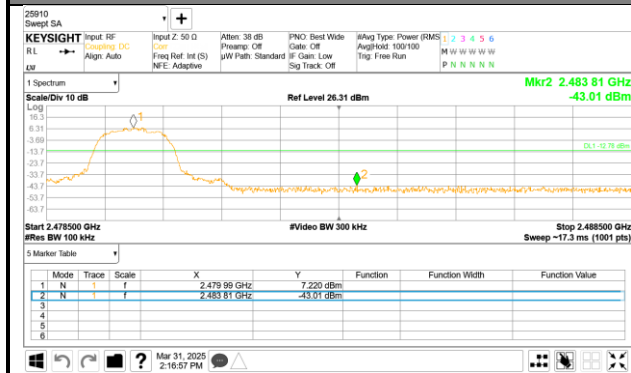
0 CHANNEL BANDEDGE



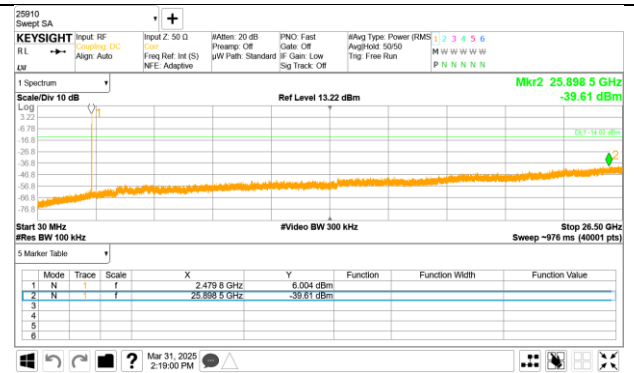
OUT-OF-BAND 0 CHANNEL



OUT-OF-BAND 39 CHANNEL

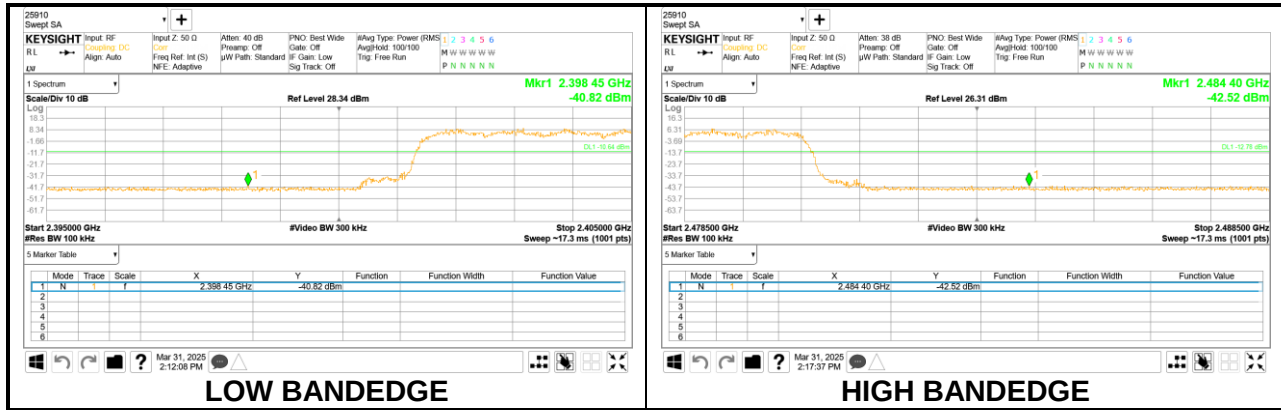


78 CHANNEL BANDEDGE



OUT-OF-BAND 78 CHANNEL

SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON – ANT2



RADIATED TEST RESULTS

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.

FCC Part 15.205 (a) : Only spurious emissions are permitted in any of the frequency bands listed below :

MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	8.41425 ~ 8.41475	108 ~ 121.94	1300 ~ 1427	4.5 ~ 5.15	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1435 ~ 1626.5	5.35 ~ 5.46	15.35 ~ 16.2
2.1735 ~ 2.1905	12.51975 ~ 12.52025	149.9 ~ 150.05	1645.5 ~ 1646.5	7.25 ~ 7.75	17.7 ~ 21.4
4.125 ~ 4.128	12.57675 ~ 12.57725	156.52475 ~	1660 ~ 1710	8.025 ~ 8.5	22.01 ~ 23.12
4.17725 ~ 4.17775	13.36 ~ 13.41	156.52525	1718.8 ~ 1722.2	9.0 ~ 9.2	23.6 ~ 24.0
4.20725 ~ 4.20775	16.42 ~ 16.423	156.7 ~ 156.9	2200 ~ 2300	9.3 ~ 9.5	31.2 ~ 31.8
6.215 ~ 6.218	16.69475 ~ 16.69525	162.0125 ~	2310 ~ 2390	10.6 ~ 12.7	36.43 ~ 36.5
6.26775 ~ 6.26825	16.80425 ~ 16.80475	167.17	2483.5 ~ 2500	13.25 ~ 13.4	Above 38.6
6.31175 ~ 6.31225	25.5 ~ 25.67	167.72 ~ 173.2	2655 ~ 2900		
8.291 ~ 8.294	37.5 ~ 38.25	240 ~ 285	3260 ~ 3267		
8.362 ~ 8.366	73 ~ 74.6	322 ~ 335.4	3332 ~ 3339		
8.37625 ~ 8.38675	74.8 ~ 75.2	399.90 ~ 410	3345.8 ~ 3358		
		608 ~ 614	3600 ~ 4400		
		960 ~ 1240			

▪ FCC Part 15.205(b): The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

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 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; the video bandwidth is set to 3 MHz 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.)

For band edge 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 1/T (on time) for average measurement.

$GFSK = 1/T = 1 / 0.00288s = 0.35 \text{ kHz}.$

The minimum VBW was 346Hz, but test receiver (ESU40) couldn't set value 346Hz. Due to this reason, testing VBW was set to 500Hz (Worst cases).

The spectrum from 1GHz 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.

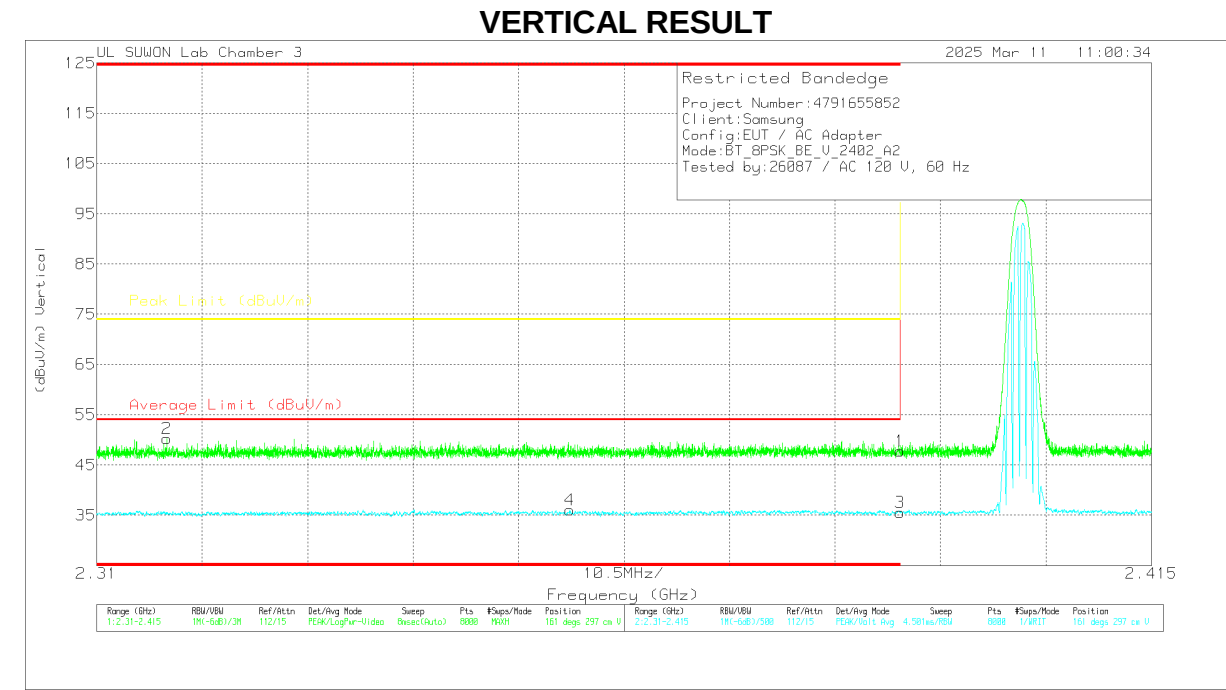
Note: Emission was pre-scanned from 9kHz to 30MHz; No emissions were detected which was at least 20dB below the specification limit (consider distance correction factor).
Per FCC part 15.31(o), test results were not reported.

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.

9.8. TRANSMITTER ABOVE 1 GHz

9.8.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

BANDEDGE (WORST CASE: 78 CHANNEL, ANT2)



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_F actor(dB)	10dB_Path Loss(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	40.52	PK	32.4	-24.9	48.02	-	-	74	-25.98	164	396	V
2	* 2.48821	43.81	PK	32.4	-24.9	51.31	-	-	74	-22.69	164	396	V
3	* 2.4835	28.82	VA1T	32.4	-24.9	36.32	54	-17.68	-	-	164	396	V
4	2.52348	29.77	VA1T	32.4	-24.8	37.37	54	-16.63	-	-	164	396	V

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
PK - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

BANDEDGE TEST DATA

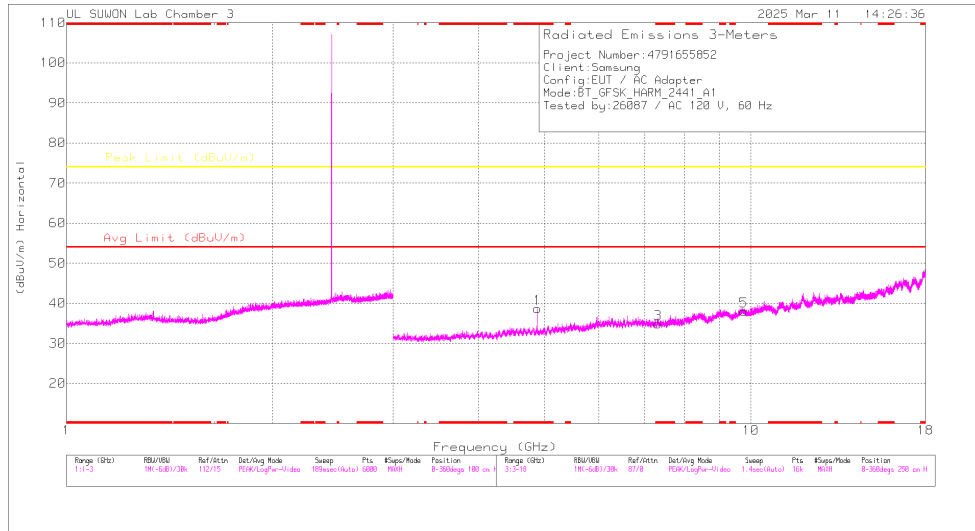
Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB(1/m)]	Loss [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2402	ANT1	* 2.39	40.19	Pk	32.10	-24.90	47.39	-	-	74.00	-26.61	127	166	H
		* 2.37525	43.10	Pk	32.10	-25.00	50.20	-	-	74.00	-23.80	127	166	H
		* 2.39	28.44	VA1T	32.10	-24.90	35.64	54.00	-18.36	-	-	127	166	H
		* 2.38976	28.87	VA1T	32.10	-24.90	36.07	54.00	-17.93	-	-	127	166	H
		* 2.39	40.06	Pk	32.10	-24.90	47.26	-	-	74.00	-26.74	209	384	V
		* 2.35286	43.33	Pk	32.00	-25.00	50.33	-	-	74.00	-23.67	209	384	V
		* 2.39	28.18	VA1T	32.10	-24.90	35.38	54.00	-18.62	-	-	209	384	V
		* 2.38082	28.96	VA1T	32.10	-25.00	36.06	54.00	-17.94	-	-	209	384	V
2480	ANT1	* 2.4835	39.84	Pk	32.40	-24.90	47.34	-	-	74.00	-26.66	129	179	H
		2.532	43.60	Pk	32.40	-24.80	51.20	-	-	74.00	-22.80	129	179	H
		* 2.4835	29.03	VA1T	32.40	-24.90	36.53	54.00	-17.47	-	-	129	179	H
		2.553	29.26	VA1T	32.40	-24.70	36.96	54.00	-17.04	-	-	129	179	H
		* 2.4835	40.74	Pk	32.40	-24.90	48.24	-	-	74.00	-25.76	209	400	V
		* 2.48378	44.08	Pk	32.40	-24.90	51.58	-	-	74.00	-22.42	209	400	V
		* 2.4835	28.87	VA1T	32.40	-24.90	36.37	54.00	-17.63	-	-	209	400	V
		2.502	29.31	VA1T	32.40	-24.70	37.01	54.00	-16.99	-	-	209	400	V
Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB(1/m)]	Loss [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2402	ANT2	* 2.39	40.93	Pk	32.10	-24.90	48.13	-	-	74.00	-25.87	192	115	H
		* 2.38313	43.31	Pk	32.10	-25.00	50.41	-	-	74.00	-23.59	192	115	H
		* 2.39	28.54	VA1T	32.10	-24.90	35.74	54.00	-18.26	-	-	192	115	H
		* 2.37473	29.10	VA1T	32.00	-25.00	36.10	54.00	-17.90	-	-	192	115	H
		* 2.39	40.66	Pk	32.10	-24.90	47.86	-	-	74.00	-26.14	161	297	V
		* 2.35554	43.31	Pk	32.00	-25.10	50.21	-	-	74.00	-23.79	161	297	V
		* 2.39	28.22	VA1T	32.10	-24.90	35.42	54.00	-18.53	-	-	161	297	V
		* 2.36823	29.05	VA1T	32.00	-25.00	36.05	54.00	-17.95	-	-	161	297	V
2480	ANT2	* 2.4835	40.98	Pk	32.40	-24.90	48.48	-	-	74.00	-25.52	235	110	H
		2.527	43.66	Pk	32.40	-24.80	51.26	-	-	74.00	-22.74	235	110	H
		* 2.4835	29.09	VA1T	32.40	-24.90	36.59	54.00	-17.41	-	-	235	110	H
		2.554	29.48	VA1T	32.40	-24.70	37.18	54.00	-16.82	-	-	235	110	H
		* 2.4835	40.52	Pk	32.40	-24.90	48.02	-	-	74.00	-25.98	164	396	V
		* 2.48821	43.81	Pk	32.40	-24.90	51.31	-	-	74.00	-22.69	164	396	V
		* 2.4835	28.82	VA1T	32.40	-24.90	36.32	54.00	-17.68	-	-	164	396	V
		2.523	29.77	VA1T	32.40	-24.80	37.37	54.00	-16.63	-	-	164	396	V

Note1. Pk - Peak detector, VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

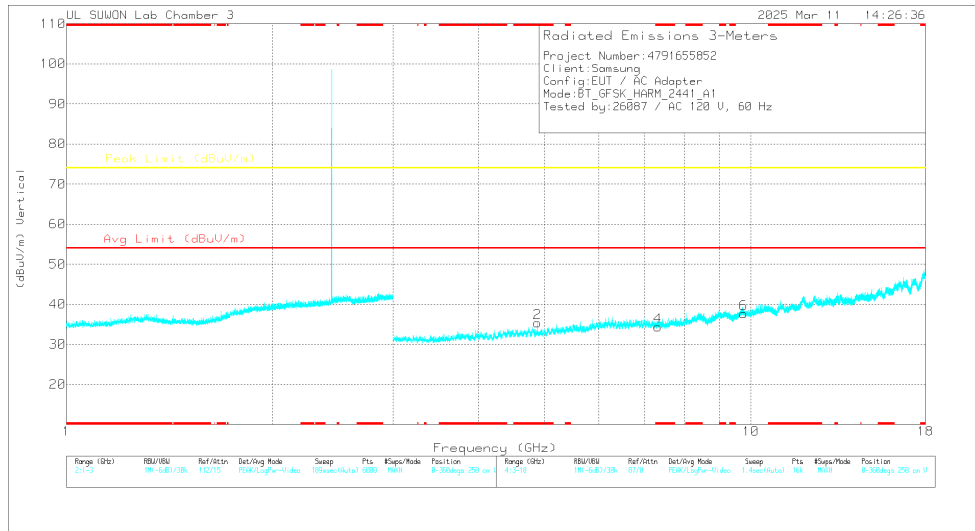
Note2. * - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band

HARMONICS AND SPURIOUS EMISSIONS(WORST CASE – ANT1)

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)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.88211	41.68	PKFH	34.2	-30.6	45.28	-	-	74	-28.72	152	116	H
* 4.88202	34.67	VA1T	34.2	-30.6	38.27	54	-15.73	-	-	152	116	H
* 4.88163	41.05	PKFH	34.2	-30.6	44.65	-	-	74	-29.35	199	324	V
* 4.88186	33.78	VA1T	34.2	-30.6	37.38	54	-16.62	-	-	199	324	V
* 7.3214	33.16	PKFH	35.8	-25.1	43.86	-	-	74	-30.14	0	100	H
* 7.32031	33.56	PKFH	35.8	-25.2	44.16	-	-	74	-29.84	0	100	V
9.76147	30.59	PKFH	36.9	-21.2	46.29	-	-	74	-27.71	0	100	H
9.76016	30.35	PKFH	36.9	-21.3	45.95	-	-	74	-28.05	0	100	V

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
PKFH FHSS/BT RB=100k for Frequencies<1GHz / RB=1MHz for Frequencies>1GHz, VB=3 x RB, Peak
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

HARMONICS AND SPURIOUS EMISSIONS TEST DATA

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB(1/m)]	Loss [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	* 4.80414	38.28	PKFH	34.30	-29.80	42.78	-	-	74.00	-31.22	150	117	H
		* 4.80376	27.92	VA1T	34.30	-29.80	32.42	54.00	-21.58	-	-	150	117	H
		* 4.80442	37.82	PKFH	34.30	-29.80	42.32	-	-	74.00	-31.68	31	106	V
		* 4.80391	26.73	VA1T	34.30	-29.80	31.23	54.00	-22.77	-	-	31	106	V
		7.203	33.65	PKFH	35.80	-25.70	43.75	-	-	74.00	-30.25	0	100	H
		7.207	33.65	PKFH	35.80	-25.70	43.75	-	-	74.00	-30.25	0	100	V
		9.609	31.06	PKFH	36.70	-21.70	46.06	-	-	74.00	-27.94	0	100	H
		9.609	30.34	PKFH	36.70	-21.70	45.34	-	-	74.00	-28.66	0	100	V
2441	ANT1	* 4.88211	41.68	PKFH	34.20	-30.60	45.28	-	-	74.00	-28.72	152	116	H
		* 4.88202	34.67	VA1T	34.20	-30.60	38.27	54.00	-15.73	-	-	152	116	H
		* 4.88163	41.05	PKFH	34.20	-30.60	44.65	-	-	74.00	-29.35	199	324	V
		* 4.88186	33.78	VA1T	34.20	-30.60	37.38	54.00	-16.62	-	-	199	324	V
		* 7.3214	33.16	PKFH	35.80	-25.10	43.86	-	-	74.00	-30.14	0	100	H
		* 7.32031	33.56	PKFH	35.80	-25.20	44.16	-	-	74.00	-29.84	0	100	V
		9.761	30.59	PKFH	36.90	-21.20	46.29	-	-	74.00	-27.71	0	100	H
		9.760	30.35	PKFH	36.90	-21.30	45.95	-	-	74.00	-28.05	0	100	V
2480	ANT1	* 4.95956	39.54	PKFH	34.30	-30.40	43.44	-	-	74.00	-30.56	151	101	H
		* 4.96004	32.38	VA1T	34.30	-30.40	36.28	54.00	-17.72	-	-	151	101	H
		* 4.95982	39.62	PKFH	34.30	-30.40	43.52	-	-	74.00	-30.48	200	316	V
		* 4.95997	29.67	VA1T	34.30	-30.40	33.57	54.00	-20.43	-	-	200	316	V
		* 7.44526	32.63	PKFH	35.70	-25.10	43.23	-	-	74.00	-30.77	0	100	H
		* 7.44391	32.66	PKFH	35.70	-25.00	43.36	-	-	74.00	-30.64	0	100	V
		9.920	30.24	PKFH	37.10	-21.30	46.04	-	-	74.00	-27.96	0	100	H
		9.924	29.76	PKFH	37.10	-21.40	45.46	-	-	74.00	-28.54	0	100	V
Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB(1/m)]	Loss [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2402	ANT2	* 4.80423	38.16	PKFH	34.30	-29.80	42.66	-	-	74.00	-31.34	147	109	H
		* 4.80412	27.49	VA1T	34.30	-29.80	31.99	54.00	-22.01	-	-	147	109	H
		* 4.80679	37.72	PKFH	34.30	-29.80	42.22	-	-	74.00	-31.78	194	301	V
		* 4.8038	26.33	VA1T	34.30	-29.80	30.83	54.00	-23.17	-	-	194	301	V
		7.207	33.38	PKFH	35.80	-25.70	43.48	-	-	74.00	-30.52	0	100	H
		7.203	32.77	PKFH	35.80	-25.70	42.87	-	-	74.00	-31.13	0	100	V
		9.603	30.35	PKFH	36.70	-21.70	45.35	-	-	74.00	-28.65	0	100	H
		9.611	31.06	PKFH	36.70	-21.70	46.06	-	-	74.00	-27.94	0	100	V
2441	ANT2	* 4.88179	40.21	PKFH	34.20	-30.60	43.81	-	-	74.00	-30.19	147	111	H
		* 4.88217	31.40	VA1T	34.20	-30.60	35.00	54.00	-19.00	-	-	147	111	H
		* 4.88221	39.66	PKFH	34.20	-30.60	43.26	-	-	74.00	-30.74	198	321	V
		* 4.88184	31.00	VA1T	34.20	-30.60	34.60	54.00	-19.40	-	-	198	321	V
		* 7.31958	32.98	PKFH	35.80	-25.20	43.58	-	-	74.00	-30.42	0	100	H
		* 7.32538	34.12	PKFH	35.80	-25.00	44.92	-	-	74.00	-29.08	0	100	V
		9.762	31.01	PKFH	36.90	-21.20	46.71	-	-	74.00	-27.29	0	100	H
		9.766	30.74	PKFH	36.90	-21.20	46.44	-	-	74.00	-27.56	0	100	V
2480	ANT2	* 4.95988	40.91	PKFH	34.30	-30.40	44.81	-	-	74.00	-29.19	150	100	H
		* 4.95988	31.95	VA1T	34.30	-30.40	35.85	54.00	-18.15	-	-	150	100	H
		* 4.9606	39.62	PKFH	34.30	-30.30	43.62	-	-	74.00	-30.38	202	312	V
		* 4.9601	31.93	VA1T	34.30	-30.40	35.83	54.00	-18.17	-	-	202	312	V
		* 7.43881	32.79	PKFH	35.70	-25.00	43.49	-	-	74.00	-30.51	0	100	H
		* 7.43709	33.57	PKFH	35.70	-25.00	44.27	-	-	74.00	-29.73	0	100	V
		9.924	29.93	PKFH	37.10	-21.40	45.63	-	-	74.00	-28.37	0	100	H
		9.920	31.51	PKFH	37.10	-21.30	47.31	-	-	74.00	-26.69	0	100	V

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band

PKFH FHSS/BT RB=100k for Frequencies<1GHz / RB=1MHz for Frequencies>1GHz, VB=3 x RB, Peak

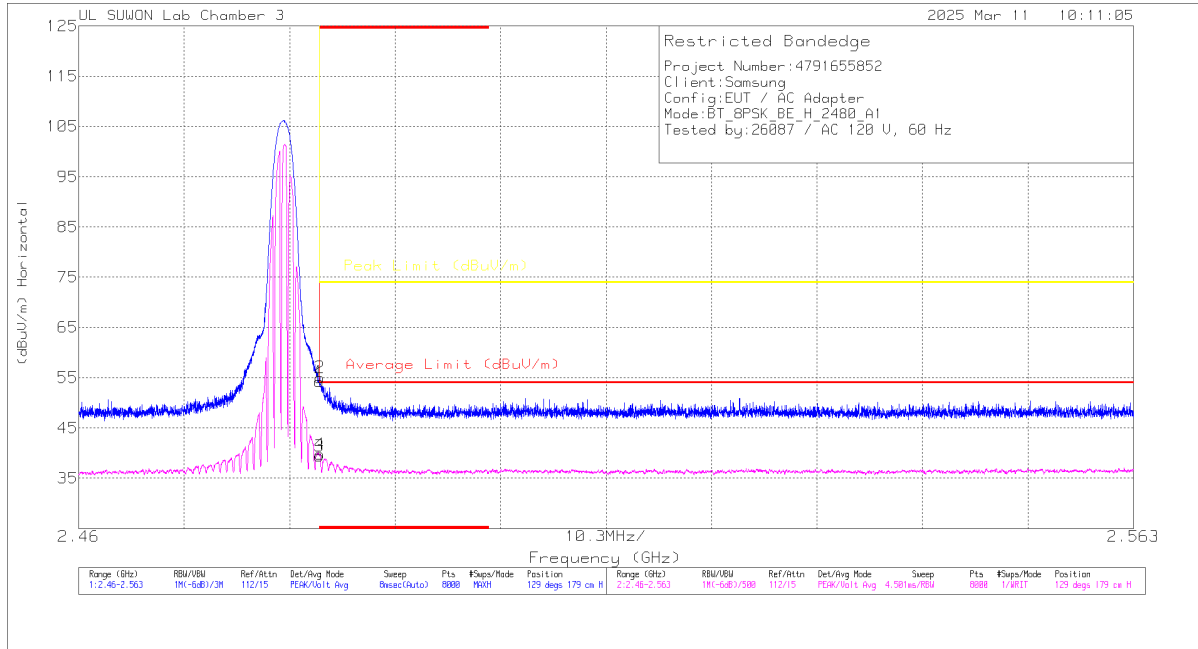
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

9.8.2. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

ANT1

BANDEDGE (WORST CASE: 78 CHANNEL, ANT1)

HORIZONTAL



RESULT

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_F actor(dB/m)	10dB_Path Loss(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	46.74	Pk	32.4	-24.9	54.24	-	-	74	-19.76	129	178	H
2	* 2.48356	47.55	Pk	32.4	-24.9	55.05	-	-	74	-18.95	129	178	H
3	* 2.4835	31.97	VA1T	32.4	-24.9	39.47	54	-14.53	-	-	129	178	H
4	* 2.48358	32.31	VA1T	32.4	-24.9	39.81	54	-14.19	-	-	129	178	H

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average $VB=1/Ton$ where: Ton is transmit duration

BANDEDGE TEST DATA

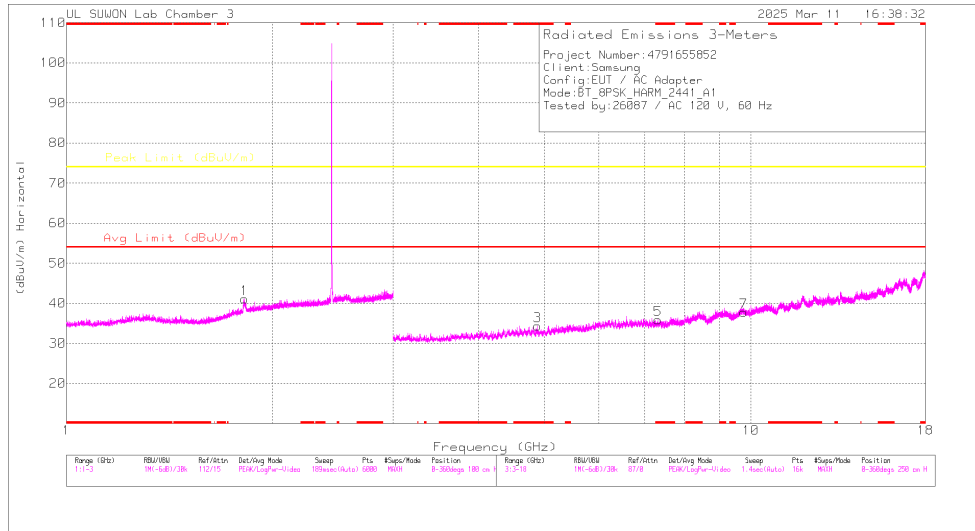
Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB(1/m)]	Loss [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2402	ANT1	* 2.39	40.18	Pk	32.10	-24.90	47.38	-	-	74.00	-26.62	128	166	H
		* 2.37193	43.25	Pk	32.00	-25.00	50.25	-	-	74.00	-23.75	128	166	H
		* 2.39	28.48	VA1T	32.10	-24.90	35.68	54.00	-18.32	-	-	128	166	H
		* 2.38296	28.97	VA1T	32.10	-25.00	36.07	54.00	-17.93	-	-	128	166	H
		* 2.39	40.23	Pk	32.10	-24.90	47.43	-	-	74.00	-26.57	208	386	V
		* 2.35352	43.06	Pk	32.00	-25.00	50.06	-	-	74.00	-23.94	208	386	V
		* 2.39	28.34	VA1T	32.10	-24.90	35.54	54.00	-18.46	-	-	208	386	V
		* 2.35369	29.08	VA1T	32.00	-25.00	36.08	54.00	-17.92	-	-	208	386	V
2480	ANT1	* 2.4835	46.74	Pk	32.40	-24.90	54.24	-	-	74.00	-19.76	129	178	H
		* 2.48356	47.55	Pk	32.40	-24.90	55.05	-	-	74.00	-18.95	129	178	H
		* 2.4835	31.97	VA1T	32.40	-24.90	39.47	54.00	-14.53	-	-	129	178	H
		* 2.48358	32.31	VA1T	32.40	-24.90	39.81	54.00	-14.19	-	-	129	178	H
		* 2.4835	45.11	Pk	32.40	-24.90	52.61	-	-	74.00	-21.39	211	400	V
		* 2.48354	46.02	Pk	32.40	-24.90	53.52	-	-	74.00	-20.48	211	400	V
		* 2.4835	30.95	VA1T	32.40	-24.90	38.45	54.00	-15.55	-	-	211	400	V
		* 2.48364	31.09	VA1T	32.40	-24.90	38.59	54.00	-15.41	-	-	211	400	V
Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB(1/m)]	Loss [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2402	ANT2	* 2.39	39.50	Pk	32.10	-24.90	46.70	-	-	74.00	-27.30	192	116	H
		* 2.32756	43.34	Pk	31.90	-25.00	50.24	-	-	74.00	-23.76	192	116	H
		* 2.39	28.09	VA1T	32.10	-24.90	35.29	54.00	-18.71	-	-	192	116	H
		* 2.37732	28.88	VA1T	32.10	-25.00	35.98	54.00	-18.02	-	-	192	116	H
		* 2.39	40.57	Pk	32.10	-24.90	47.77	-	-	74.00	-26.23	163	297	V
		* 2.31697	43.33	Pk	31.90	-25.00	50.23	-	-	74.00	-23.77	163	297	V
		* 2.39	28.38	VA1T	32.10	-24.90	35.58	54.00	-18.42	-	-	163	297	V
		* 2.35713	29.12	VA1T	32.00	-25.10	36.02	54.00	-17.98	-	-	163	297	V
2480	ANT2	* 2.4835	40.00	Pk	32.40	-24.90	47.50	-	-	74.00	-26.50	234	109	H
		* 2.536	43.36	Pk	32.40	-24.80	50.96	-	-	74.00	-23.04	234	109	H
		* 2.4835	28.99	VA1T	32.40	-24.90	36.49	54.00	-17.51	-	-	234	109	H
		* 2.560	29.36	VA1T	32.40	-24.70	37.06	54.00	-16.94	-	-	234	109	H
		* 2.4835	42.31	Pk	32.40	-24.90	49.81	-	-	74.00	-24.19	165	397	V
		* 2.523	43.57	Pk	32.40	-24.80	51.17	-	-	74.00	-22.83	165	397	V
		* 2.4835	28.57	VA1T	32.40	-24.90	36.07	54.00	-17.93	-	-	165	397	V
		* 2.560	29.74	VA1T	32.40	-24.70	37.44	54.00	-16.56	-	-	165	397	V

Note1. Pk - Peak detector, VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

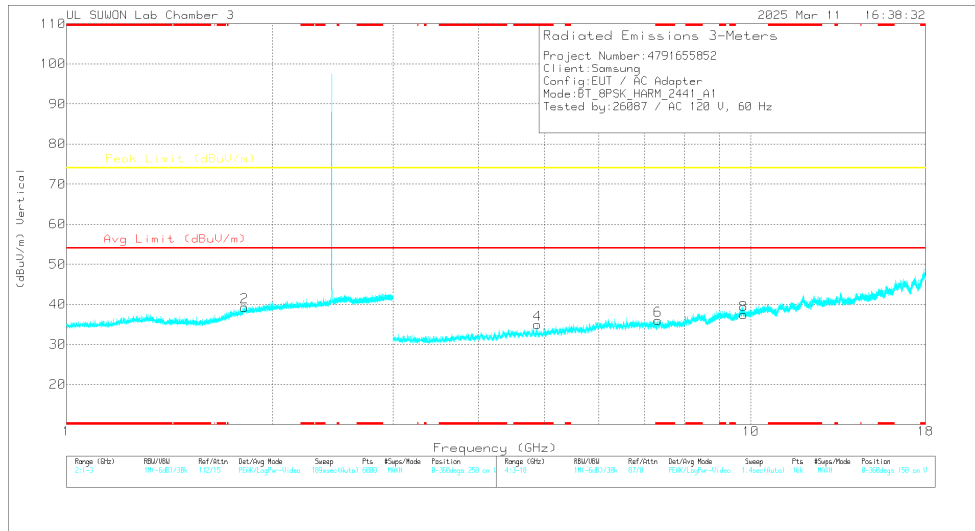
Note2. * - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band

HARMONICS AND SPURIOUS EMISSIONS(WORST CASE – ANT1)

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)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.88206	41.19	PKFH	34.2	-30.6	44.79	-	-	74	-29.21	152	116	H
* 4.88204	30.69	VA1T	34.2	-30.6	34.29	54	-19.71	-	-	152	116	H
* 4.88285	40.74	PKFH	34.2	-30.6	44.34	-	-	74	-29.66	199	324	V
* 4.88205	30.59	VA1T	34.2	-30.6	34.19	54	-19.81	-	-	199	324	V
* 7.32582	33.1	PKFH	35.8	-25	43.9	-	-	74	-30.1	0	100	H
* 7.32584	33.45	PKFH	35.8	-25	44.25	-	-	74	-29.75	0	100	V
9.76255	30.82	PKFH	36.9	-21.2	46.52	-	-	74	-27.48	0	100	H
9.76692	30.85	PKFH	36.9	-21.2	46.55	-	-	74	-27.45	0	100	V

* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band
PKFH FHSS/BT RB=100k for Frequencies<1GHz / RB=1MHz for Frequencies>1GHz, VB=3 x RB, Peak
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

HARMONICS AND SPURIOUS EMISSIONS TEST DATA

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB(1/m)]	Loss [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	* 4.80381	39.11	PKFH	34.30	-29.80	43.61	-	-	74.00	-30.39	150	117	H
		* 4.80382	26.67	VA1T	34.30	-29.80	31.17	54.00	-22.83	-	-	150	117	H
		* 4.80756	37.57	PKFH	34.30	-29.80	42.07	-	-	74.00	-31.93	31	106	V
		* 4.80382	25.94	VA1T	34.30	-29.80	30.44	54.00	-23.56	-	-	31	106	V
		7.201	32.65	PKFH	35.80	-25.70	42.75	-	-	74.00	-31.25	0	100	H
		7.206	32.73	PKFH	35.80	-25.70	42.83	-	-	74.00	-31.17	0	100	V
		9.608	30.80	PKFH	36.70	-21.70	45.80	-	-	74.00	-28.20	0	100	H
		9.607	32.08	PKFH	36.70	-21.70	47.08	-	-	74.00	-26.92	0	100	V
		* 4.88206	41.19	PKFH	34.20	-30.60	44.79	-	-	74.00	-29.21	152	116	H
2441	ANT1	* 4.88204	30.69	VA1T	34.20	-30.60	34.29	54.00	-19.71	-	-	152	116	H
		* 4.88285	40.74	PKFH	34.20	-30.60	44.34	-	-	74.00	-29.66	199	324	V
		* 4.88205	30.59	VA1T	34.20	-30.60	34.19	54.00	-19.81	-	-	199	324	V
		* 7.32582	33.10	PKFH	35.80	-25.00	43.90	-	-	74.00	-30.10	0	100	H
		* 7.32584	33.45	PKFH	35.80	-25.00	44.25	-	-	74.00	-29.75	0	100	V
		9.763	30.82	PKFH	36.90	-21.20	46.52	-	-	74.00	-27.48	0	100	H
		9.767	30.85	PKFH	36.90	-21.20	46.55	-	-	74.00	-27.45	0	100	V
		* 4.95954	40.10	PKFH	34.30	-30.40	44.00	-	-	74.00	-30.00	151	101	H
		* 4.95983	28.24	VA1T	34.30	-30.40	32.14	54.00	-21.86	-	-	151	101	H
2480	ANT1	* 4.95979	37.93	PKFH	34.30	-30.40	41.83	-	-	74.00	-32.17	200	316	V
		* 4.95983	26.63	VA1T	34.30	-30.40	30.53	54.00	-23.47	-	-	200	316	V
		* 7.44168	32.79	PKFH	35.70	-25.00	43.49	-	-	74.00	-30.51	0	100	H
		* 7.44424	32.92	PKFH	35.70	-25.00	43.62	-	-	74.00	-30.38	0	100	V
		9.919	31.79	PKFH	37.10	-21.30	47.59	-	-	74.00	-26.41	0	100	H
		9.919	30.91	PKFH	37.10	-21.30	46.71	-	-	74.00	-27.29	0	100	V
Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB(1/m)]	Loss [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2402	ANT2	* 4.80393	37.37	PKFH	34.30	-29.80	41.87	-	-	74.00	-32.13	147	109	H
		* 4.80414	25.78	VA1T	34.30	-29.80	30.28	54.00	-23.72	-	-	147	109	H
		* 4.80334	38.35	PKFH	34.30	-29.80	42.85	-	-	74.00	-31.15	194	301	V
		* 4.80433	25.07	VA1T	34.30	-29.80	29.57	54.00	-24.43	-	-	194	301	V
		7.203	32.18	PKFH	35.80	-25.70	42.28	-	-	74.00	-31.72	0	100	H
		7.210	33.48	PKFH	35.80	-25.80	43.48	-	-	74.00	-30.52	0	100	V
		9.606	30.55	PKFH	36.70	-21.60	45.65	-	-	74.00	-28.35	0	100	H
		9.613	31.63	PKFH	36.70	-21.70	46.63	-	-	74.00	-27.37	0	100	V
		* 4.88224	40.76	PKFH	34.20	-30.60	44.36	-	-	74.00	-29.64	147	111	H
2441	ANT2	* 4.88215	28.92	VA1T	34.20	-30.60	32.52	54.00	-21.48	-	-	147	111	H
		* 4.88231	39.21	PKFH	34.20	-30.60	42.81	-	-	74.00	-31.19	198	321	V
		* 4.88191	28.30	VA1T	34.20	-30.60	31.90	54.00	-22.10	-	-	198	321	V
		* 7.32375	33.03	PKFH	35.80	-25.00	43.83	-	-	74.00	-30.17	0	100	H
		* 7.32029	32.56	PKFH	35.80	-25.20	43.16	-	-	74.00	-30.84	0	100	V
		9.761	31.29	PKFH	36.90	-21.20	46.99	-	-	74.00	-27.01	0	100	H
		9.764	30.44	PKFH	36.90	-21.20	46.14	-	-	74.00	-27.86	0	100	V
		* 4.95989	39.36	PKFH	34.30	-30.40	43.26	-	-	74.00	-30.74	150	100	H
		* 4.95993	28.67	VA1T	34.30	-30.40	32.57	54.00	-21.43	-	-	150	100	H
2480	ANT2	* 4.95996	39.54	PKFH	34.30	-30.40	43.44	-	-	74.00	-30.56	202	312	V
		* 4.95998	28.59	VA1T	34.30	-30.40	32.49	54.00	-21.51	-	-	202	312	V
		* 7.43893	32.80	PKFH	35.70	-25.00	43.50	-	-	74.00	-30.50	0	100	H
		* 7.43818	33.02	PKFH	35.70	-25.00	43.72	-	-	74.00	-30.28	0	100	V
		9.925	30.84	PKFH	37.10	-21.40	46.54	-	-	74.00	-27.46	0	100	H
		9.919	29.95	PKFH	37.10	-21.30	45.75	-	-	74.00	-28.25	0	100	V

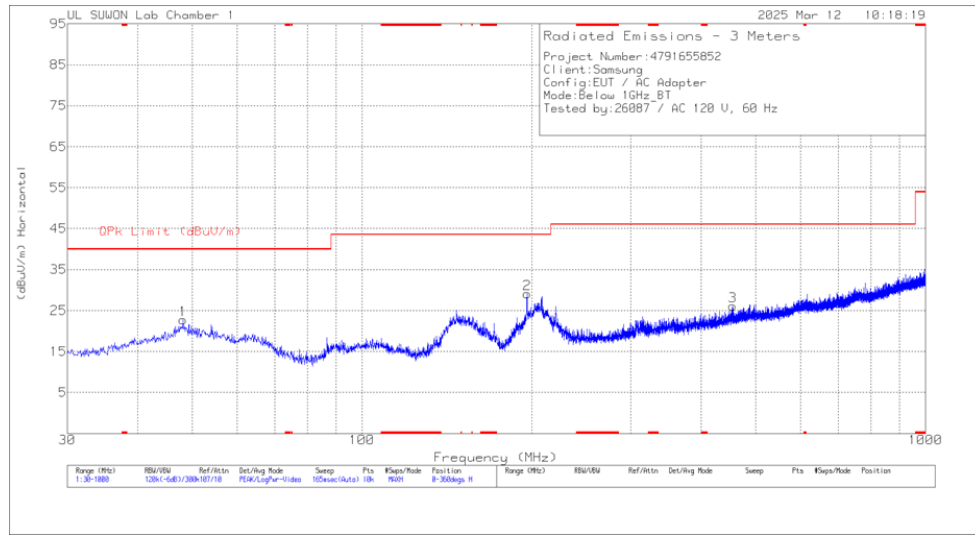
* - indicates frequency in 47 CFR Pt 15 / IC RSS-Restricted Band

PKFH FHSS/BT RB=100k for Frequencies<1GHz / RB=1MHz for Frequencies>1GHz, VB=3 x RB, Peak

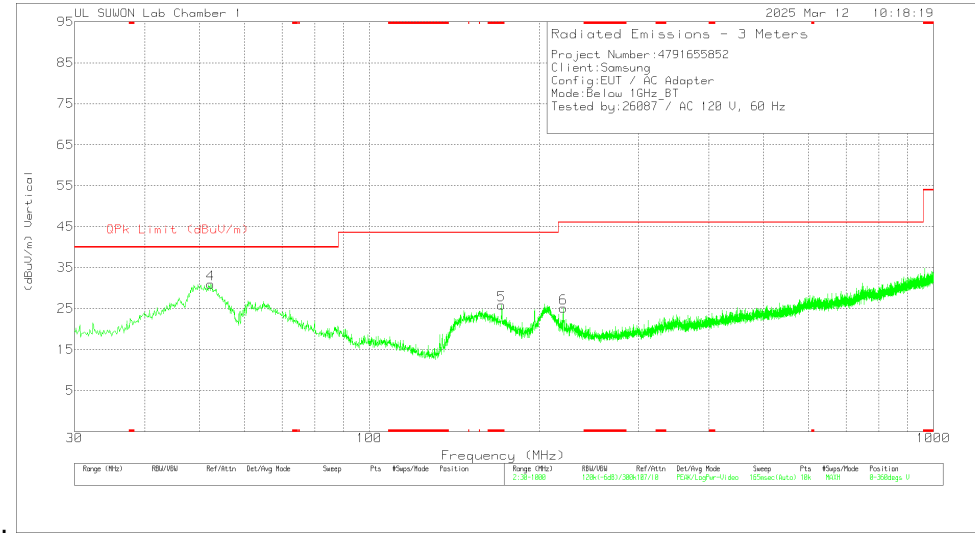
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

9.9. 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_750_Fact or(dB/m)	Below_1G_Path Loss(dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	48.139	33.86	Pk	19.8	-30.9	22.76	40	-17.24	0-360	200	H
2	196.258	41.03	Pk	17.4	-29.3	29.13	43.52	-14.39	0-360	100	H
3	454.569	31.86	Pk	22	-27.7	26.16	46.02	-19.86	0-360	200	H
4	52.31	42.21	Pk	19.7	-30.9	31.01	40	-8.99	0-360	200	V
5	* 171.523	40.82	Pk	14.5	-29.5	25.82	43.52	-17.7	0-360	200	V
6	220.605	37.11	Pk	17.1	-29.1	25.11	46.02	-20.91	0-360	200	V

Pk - Peak detector

10. 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 C63.10:2020.

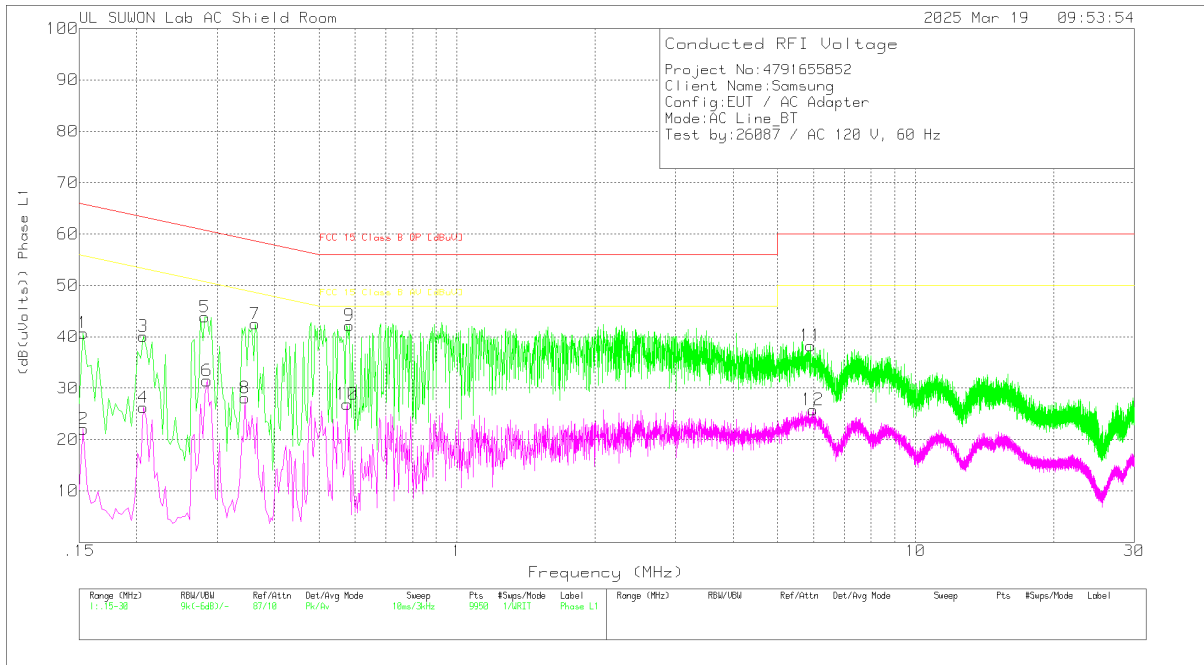
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

10.1. AC Power Line

LINE 1 RESULTS



Trace Markers

Range 1: Phase L1 .15 - 30MHz

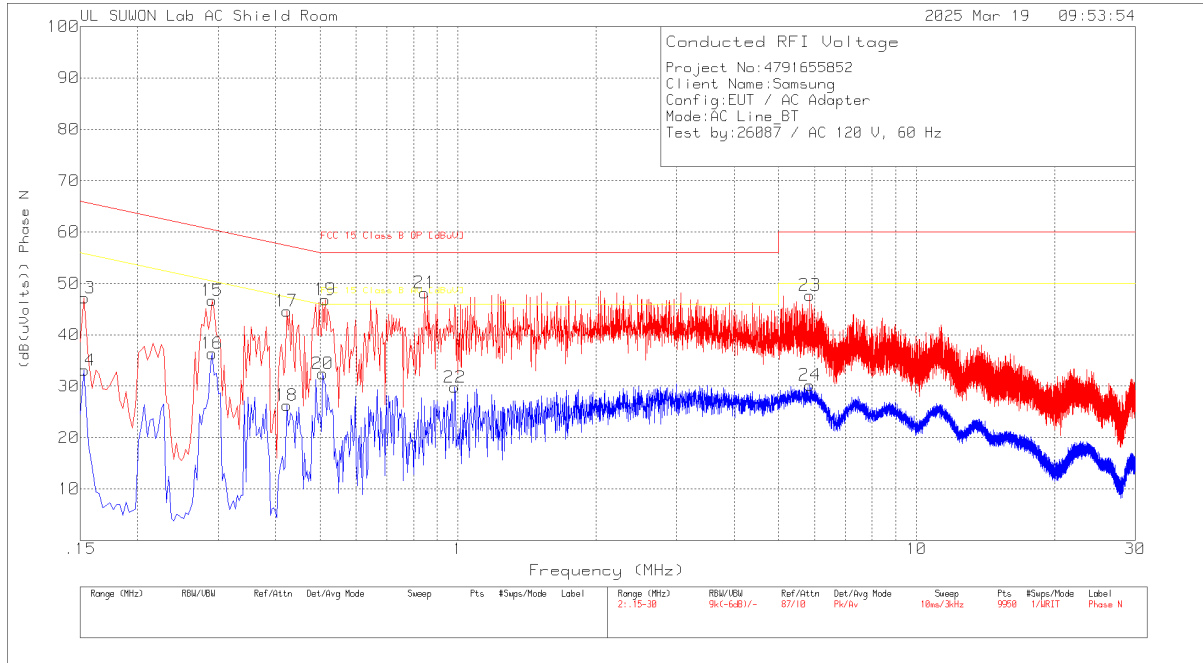
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_L1 [dB]	Cable Loss [dB]	Corrected Reading [dBuV]	FCC 15 Class B QP [dBuV]	Margin (dB)	FCC 15 Class B AV [dBuV]	Margin (dB)
1	.153	30.94	Pk	9.7	.1	40.74	65.84	-25.1	-	-
2	.153	12.26	Av	9.7	.1	22.06	-	-	55.84	-33.78
3	.207	30.29	Pk	9.7	.1	40.09	63.32	-23.23	-	-
4	.207	16.46	Av	9.7	.1	26.26	-	-	53.32	-27.06
5	.282	34.15	Pk	9.6	.1	43.85	60.76	-16.91	-	-
6	.285	21.78	Av	9.6	.1	31.48	-	-	50.67	-19.19
7	.363	32.7	Pk	9.7	.1	42.5	58.66	-16.16	-	-
8	.345	18.3	Av	9.7	.1	28.1	-	-	49.08	-20.98
9	.582	32.3	Pk	9.8	.1	42.2	56	-13.8	-	-
10	.576	17.01	Av	9.8	.1	26.91	-	-	46	-19.09
11	5.907	28.48	Pk	9.6	.2	38.28	60	-21.72	-	-
12	5.973	16.02	Av	9.6	.2	25.82	-	-	50	-24.18

Pk - Peak detector

Qp - Quasi-Peak detector

Av - Average detection

LINE 2 RESULTS



Trace Markers

Range 2: Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_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	.153	37.34	Pk	9.7	.1	47.14	65.84	-18.7	-	-
14	.153	23.28	Av	9.7	.1	33.08	-	-	55.84	-22.76
15	.291	36.98	Pk	9.6	.1	46.68	60.5	-13.82	-	-
16	.291	26.67	Av	9.6	.1	36.37	-	-	50.5	-14.13
17	.423	34.81	Pk	9.7	.1	44.61	57.39	-12.78	-	-
18	.423	16.47	Av	9.7	.1	26.27	-	-	47.39	-21.12
19	.513	36.94	Pk	9.8	.1	46.84	56	-9.16	-	-
20	.507	22.55	Av	9.8	.1	32.45	-	-	46	-13.55
21	.846	38.38	Pk	9.7	.1	48.18	56	-7.82	-	-
22	.984	20	Av	9.7	.1	29.8	-	-	46	-16.2
23	5.853	37.89	Pk	9.6	.2	47.69	60	-12.31	-	-
24	5.853	20.41	Av	9.6	.2	30.21	-	-	50	-19.79

Pk - Peak detector

Qp - Quasi-Peak detector

Av - Average detection

Quasi-Peak Emissions

Range 2: Phase N .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	101836_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)
.51375	31.27	Qp	9.8	.1	41.17	56	-14.83	-	-
.84675	27.55	Qp	9.7	.1	37.35	56	-18.65	-	-

Qp - Quasi-Peak detector

END OF TEST REPORT