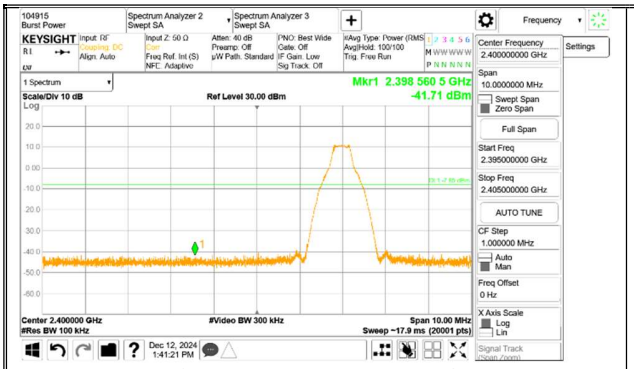
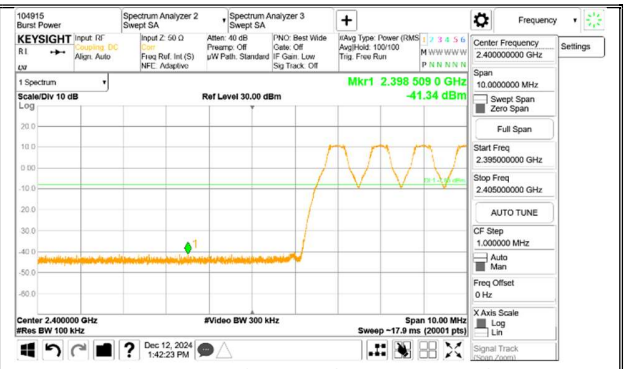
10.8.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

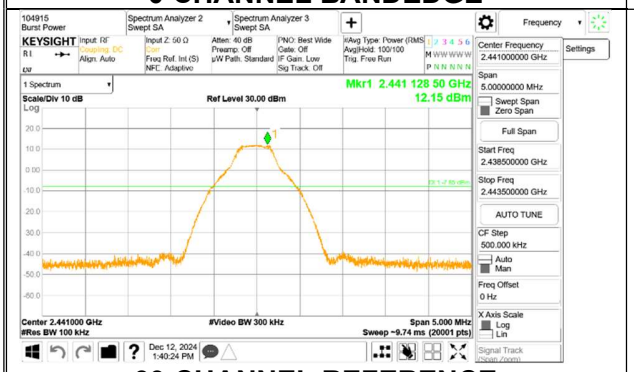
SPURIOUS EMISSIONS – ANT0



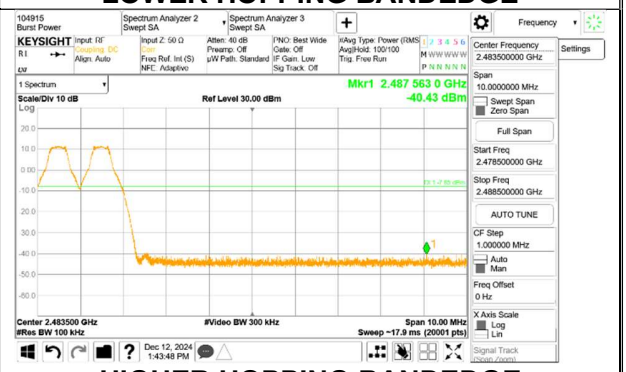
0 CHANNEL BANDEDGE



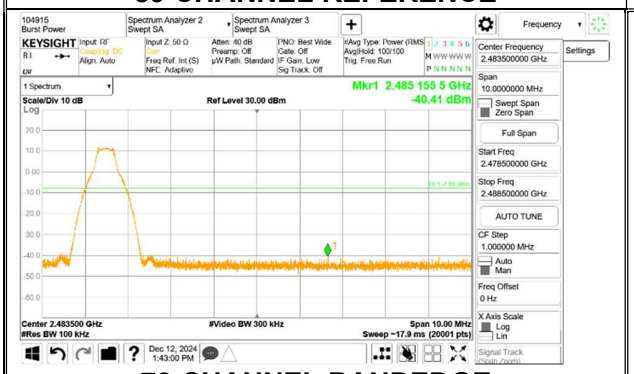
LOWER HOPPING BANDEDGE



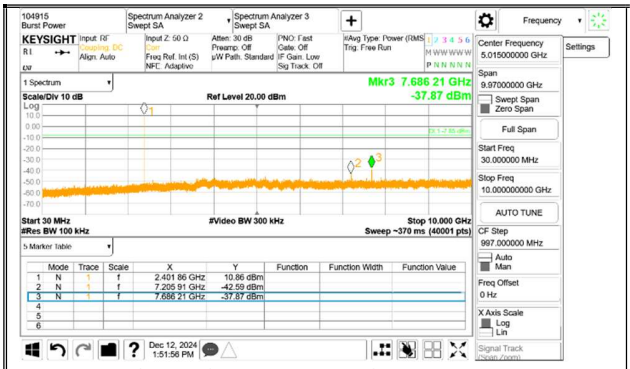
39 CHANNEL REFERENCE



HIGHER HOPPING BANDEDGE

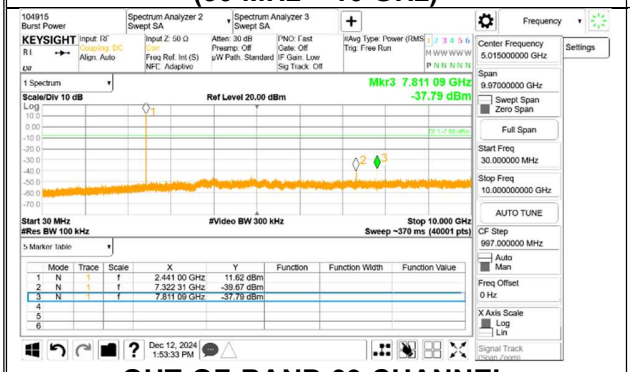


78 CHANNEL BANDEDGE

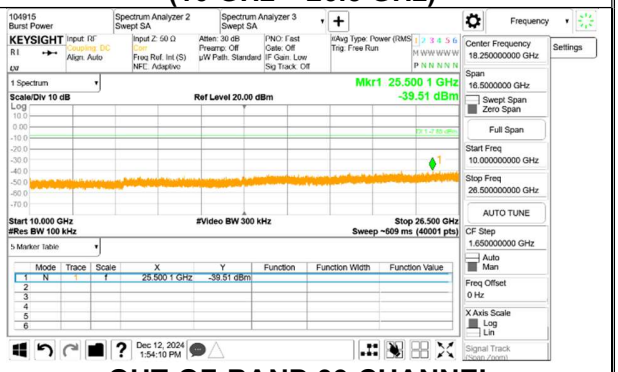


OUT-OF-BAND 0 CHANNEL
(30 MHz – 10 GHz)

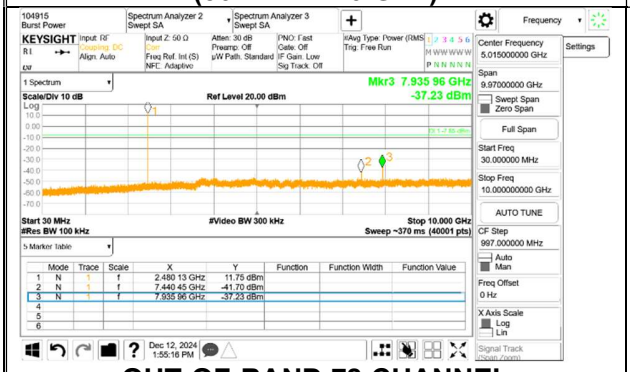
OUT-OF-BAND 0 CHANNEL
(10 GHz – 26.5 GHz)



OUT-OF-BAND 39 CHANNEL
(30 MHz – 10 GHz)



OUT-OF-BAND 39 CHANNEL
(10 GHz – 26.5 GHz)

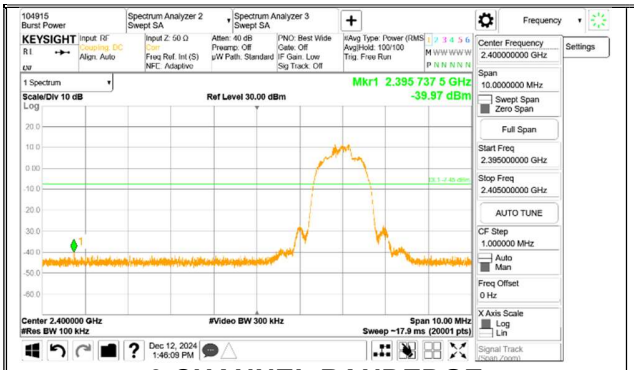


OUT-OF-BAND 78 CHANNEL
(30 MHz – 10 GHz)

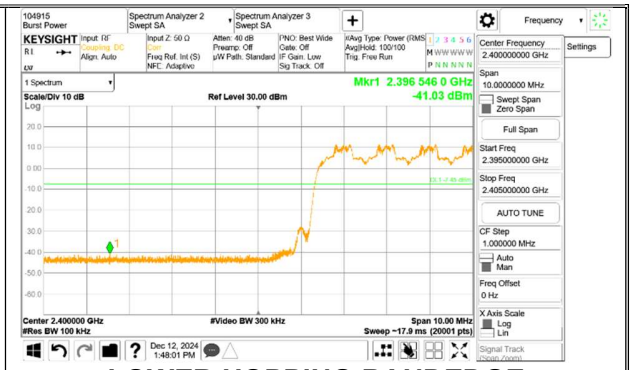
OUT-OF-BAND 78 CHANNEL
(10 GHz – 26.5 GHz)

10.8.2. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

SPURIOUS EMISSIONS, NON-HOPPING – ANT0



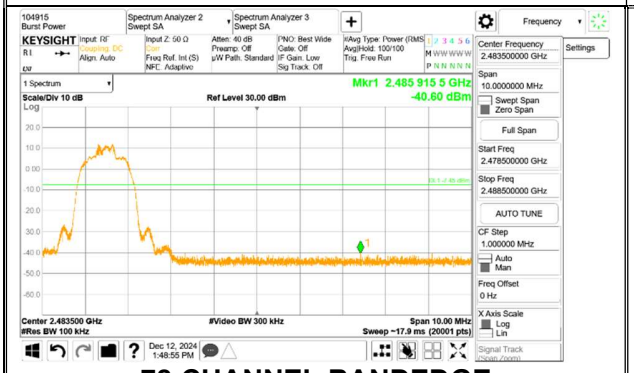
0 CHANNEL BANDEDGE



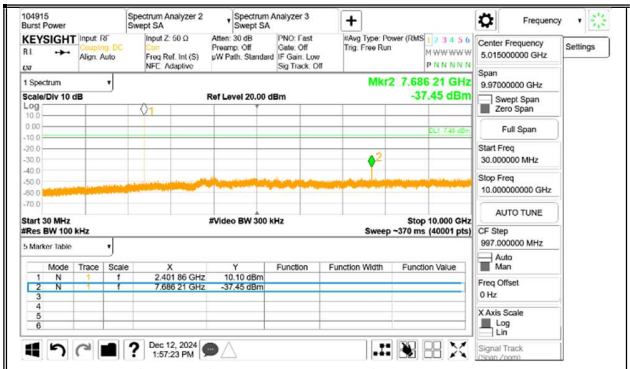
LOWER HOPPING BANDEDGE

39 CHANNEL REFERENCE

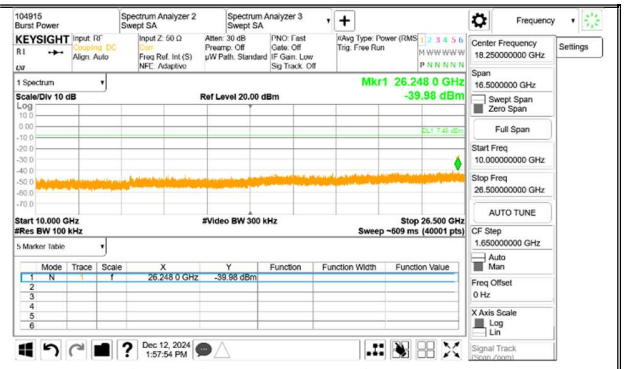
HIGHER HOPPING BANDEDGE



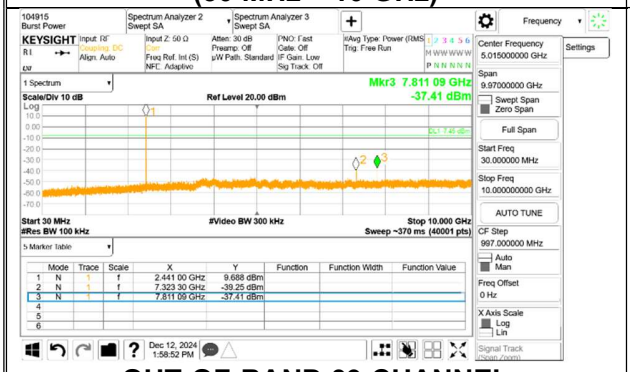
78 CHANNEL BANDEDGE



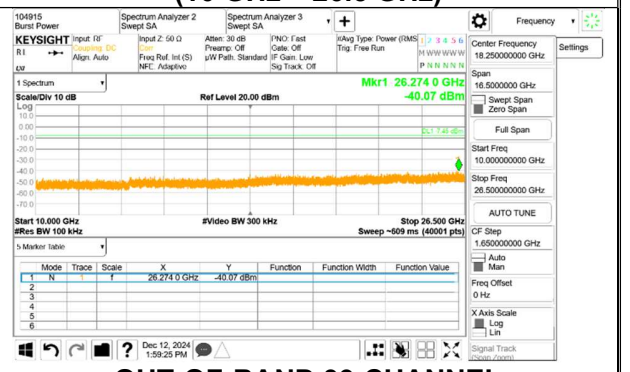
OUT-OF-BAND 0 CHANNEL
(30 MHz – 10 GHz)



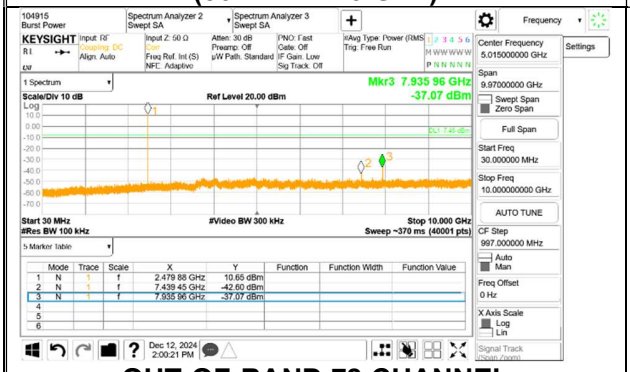
OUT-OF-BAND 0 CHANNEL
(10 GHz – 26.5 GHz)



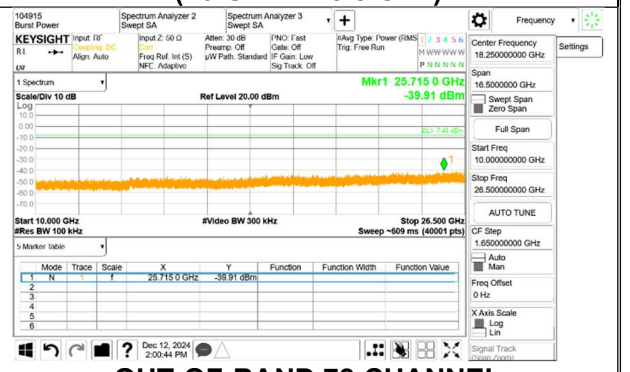
OUT-OF-BAND 39 CHANNEL
(30 MHz – 10 GHz)



OUT-OF-BAND 39 CHANNEL
(10 GHz – 26.5 GHz)



OUT-OF-BAND 78 CHANNEL
(30 MHz – 10 GHz)



OUT-OF-BAND 78 CHANNEL
(10 GHz – 26.5 GHz)

11. RADIATED TEST RESULTS

LIMITS

IC RSS-GEN (8.9) & (8.10) / 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.

RSS-Gen (8.9)

Frequency (MHz)	Field strength (μV/m at 3 m)
30 – 88	100
88 – 216	150
216 – 960	200
Above 960	500

Frequency (MHz)	Magnetic field strength (H-Field) (μA/m)	Measurement Distance (m)
0.009–0.490 Note 1	6.37/F (F in kHz)	300
0.490–1.705	63.7/F (F in kHz)	30
1.705–30.0	0.08	30
Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.		

Note: The limits in CFR 47, Part 15, Subpart C, paragraph 15.209(a), are identical to those in RSS-GEN Section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377Ω. For example, the measurement frequency X kHz resulted in a level of Y dBuV/m, which is equivalent to Y-51.5 = Z dBuA/m, which has the same margin, W dB, to the corresponding RSS-GEN Table 6 limit as it has to be 15.209(a) limit.

RSS-Gen (8.10) / FCC Part 15.205 (a): Restricted frequency bands

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			

▪ RSS-Gen 8.10 : Certain frequency bands listed in table 7 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.
▪ 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 = 348Hz.

The minimum VBW was 348Hz, but test receiver(ESU40) couldn't set value 348Hz. 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.

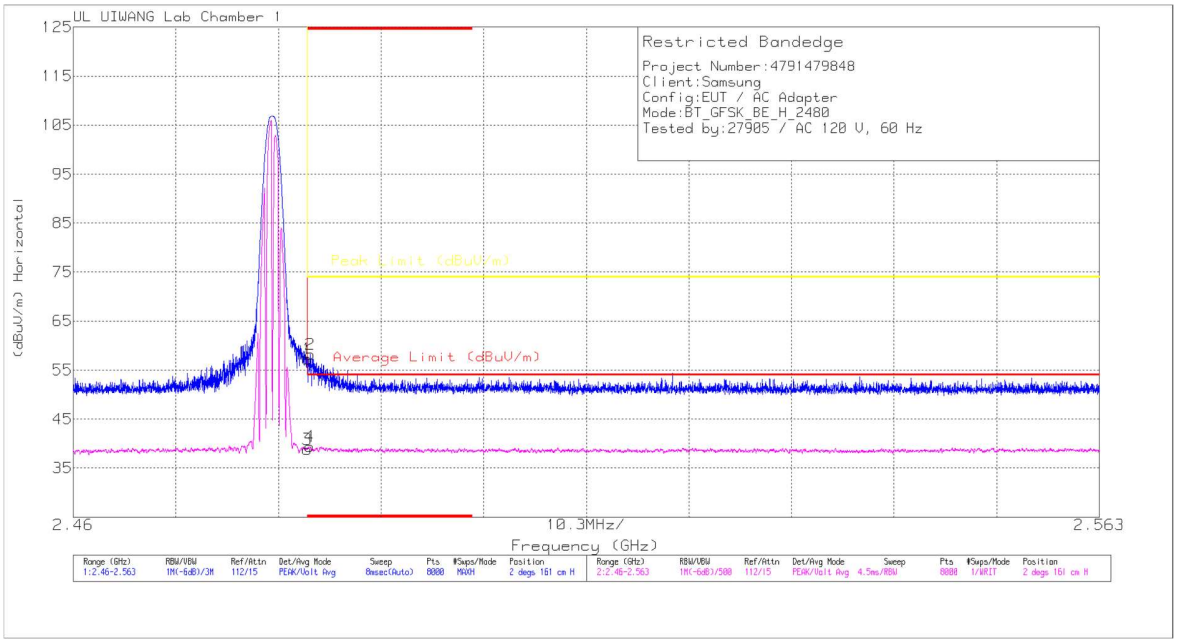
UL Korea, Ltd. Uiwang Laboratory FORM ID: FCC_15C(05)
42, Obongsandan 1-ro, Uiwang-si, Gyeonggi-do, Republic of Korea TEL: (031) 389-9603 FAX: (031) 462-8355

11.1. TRANSMITTER ABOVE 1 GHz

11.1.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

BANDEDGE(WORST CASE: 2480 MHz, ANT 0)

HORIZONTAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	CH1_AF_1-18G_3117_240924 Antenna Factor(dB/m)	FB1_PL_1-18G_10dB_240718 Gain(dB)	CH1_CL_1-40G_Thru_241104 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	48.5	Pk	32.1	-30.5	7.2	57.3	-	-	74	-16.7	2	161	H
2	* 2.48381	49.46	Pk	32.1	-30.5	7.2	58.26	-	-	74	-15.74	2	161	H
3	* 2.4835	30.05	VA1T	32.1	-30.5	7.2	38.85	54	-15.15	-	-	2	161	H
4	* 2.48375	30.58	VA1T	32.1	-30.5	7.2	39.38	54	-14.62	-	-	2	161	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

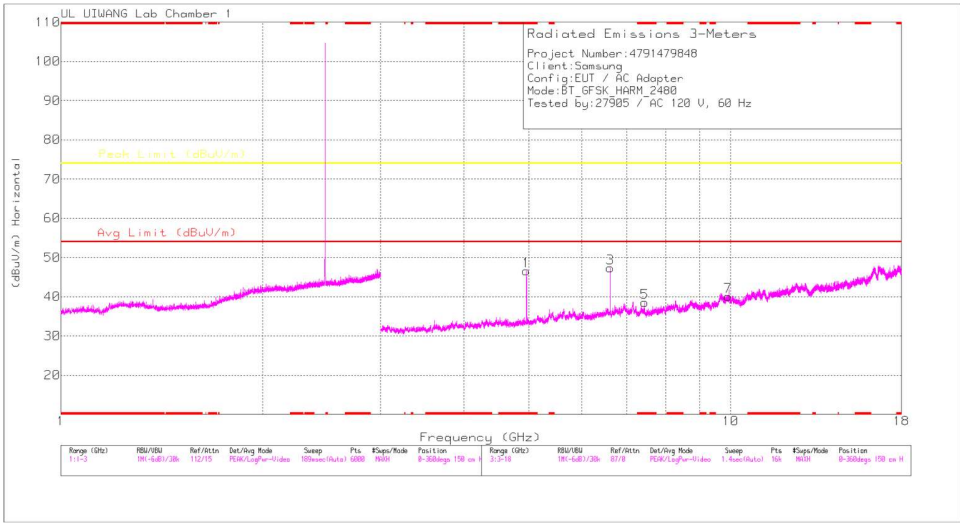
BANDEDGE TEST DATA

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	FB Gain [dB]	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	ANT0	* 2.39	43.41	Pk	31.90	-34.10	6.60	47.81	-	-	74.00	-26.19	310	100	H
		* 2.36663	46.41	Pk	31.80	-34.00	6.60	50.81	-	-	74.00	-23.19	310	100	H
		* 2.39	31.82	VA1T	31.90	-34.10	6.60	36.22	54.00	-17.78	-	-	310	100	H
		* 2.38314	32.07	VA1T	31.80	-34.00	6.60	36.47	54.00	-17.53	-	-	310	100	H
		* 2.39	43.48	Pk	31.90	-34.10	6.60	47.88	-	-	74.00	-26.12	166	360	V
		* 2.3195	46.65	Pk	31.70	-34.00	6.50	50.85	-	-	74.00	-23.15	166	360	V
		* 2.39	31.54	VA1T	31.90	-34.10	6.60	35.94	54.00	-18.06	-	-	166	360	V
		* 2.33469	32.10	VA1T	31.70	-33.90	6.50	36.40	54.00	-17.60	-	-	166	360	V
2480	ANT0	* 2.4835	48.50	Pk	32.10	-30.50	7.20	57.30	-	-	74.00	-16.70	2	161	H
		* 2.48381	49.46	Pk	32.10	-30.50	7.20	58.26	-	-	74.00	**-15.74**	2	161	H
		* 2.4835	30.05	VA1T	32.10	-30.50	7.20	38.85	54.00	-15.15	-	-	2	161	H
		* 2.48375	30.58	VA1T	32.10	-30.50	7.20	39.38	54.00	**-14.62**	-	-	2	161	H
		* 2.4835	45.64	Pk	32.10	-30.50	7.20	54.44	-	-	74.00	-19.56	177	291	V
		* 2.48378	48.86	Pk	32.10	-30.50	7.20	57.66	-	-	74.00	-16.34	177	291	V
		* 2.4835	29.20	VA1T	32.10	-30.50	7.20	38.00	54.00	-16.00	-	-	177	291	V
		2.553	30.28	VA1T	32.20	-30.50	7.20	39.18	54.00	-14.82	-	-	177	291	V

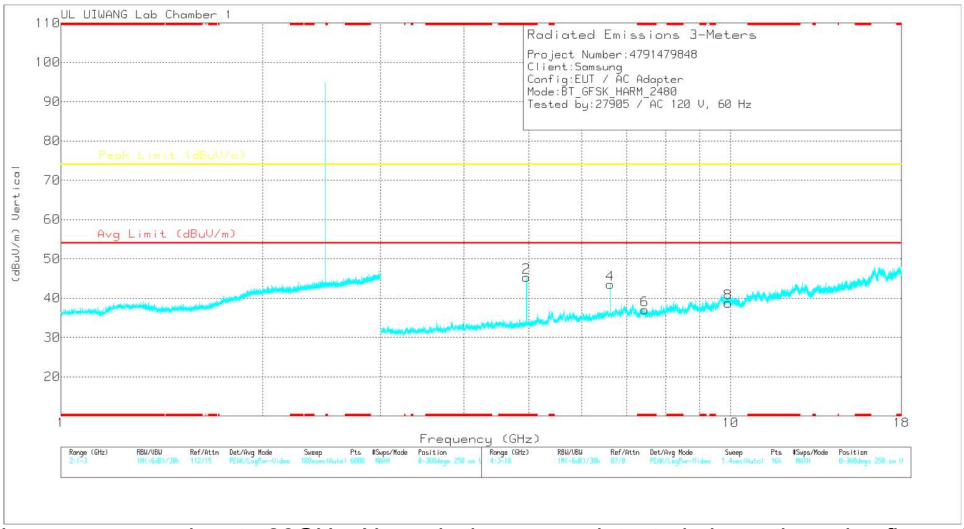
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

HARMONICS AND SPURIOUS EMISSIONS(WORST CASE: 2480 MHz, ANT 0)

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	CH1_AF_1-18G_3117_240924 Antenna Facotr(dB/m)	FB1_PL_1-18G_3G HP_240718 Gain(dB)	CH1_CL_1-40G_Thru_241104 Loss(dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.95979	46.47	PKFH	33.9	-39.6	9.9	50.67	-	-	74	-23.33	37	312	H
* 4.95998	41.6	VA1T	33.9	-39.6	9.9	45.8	54	-8.2	-	-	37	312	H
* 4.95969	44.97	PKFH	33.9	-39.6	9.9	49.17	-	-	74	-24.83	318	341	V
* 4.95975	39.86	VA1T	33.9	-39.6	9.9	44.06	54	-9.94	-	-	318	341	V
6.61322	43.92	PKFH	35.5	-38.9	11.5	52.02	-	-	74	-21.98	38	104	H
6.61328	42.54	PKFH	35.5	-38.9	11.5	50.64	-	-	74	-23.36	125	384	V
* 7.44002	37.5	PKFH	35.6	-39.1	12.3	46.3	-	-	74	-27.7	139	101	H
* 7.43985	27.36	VA1T	35.6	-39.1	12.3	36.16	54	-17.84	-	-	139	101	H
* 7.43947	37.79	PKFH	35.6	-39.1	12.3	46.59	-	-	74	-27.41	94	323	V
* 7.44005	27.67	VA1T	35.6	-39.1	12.3	36.47	54	-17.53	-	-	94	323	V
9.91958	35.25	PKFH	36.9	-37.8	14.5	48.85	-	-	74	-25.15	334	101	H
9.92145	33.68	PKFH	36.9	-37.7	14.5	47.38	-	-	74	-26.62	258	366	V

* - indicates frequency in CFR47 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

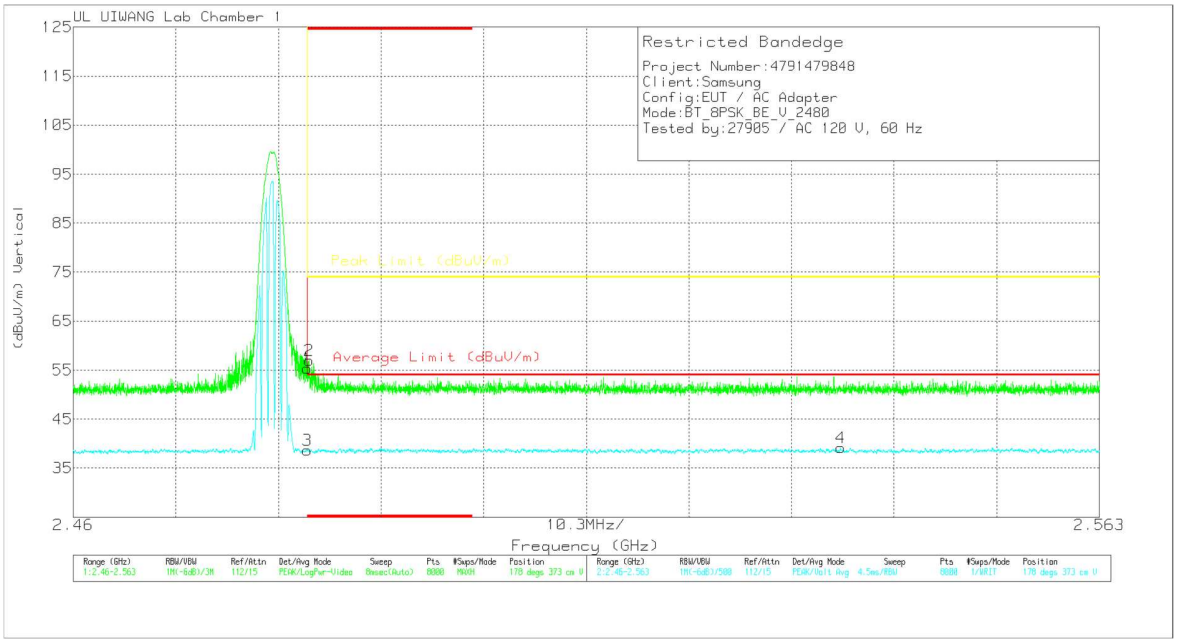
Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	FB Gain [dB]	Loss [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2402	ANT0	* 4.80361	44.53	PKFH	33.90	-39.40	9.60	48.63	-	-	74.00	-25.37	64	313	H
		* 4.80373	40.34	VA1T	33.90	-39.40	9.60	44.44	54.00	-9.56	-	-	64	313	H
		* 4.80381	43.84	PKFH	33.90	-39.40	9.60	47.94	-	-	74.00	-26.06	341	301	V
		* 4.80353	40.09	VA1T	33.90	-39.40	9.60	44.19	54.00	-9.81	-	-	341	301	V
		6.405	44.07	PKFH	35.50	-39.30	11.10	51.37	-	-	74.00	-22.63	41	102	H
		6.405	41.06	PKFH	35.50	-39.30	11.10	48.36	-	-	74.00	-25.64	172	371	V
		7.206	39.73	PKFH	35.60	-39.10	12.60	48.83	-	-	74.00	-25.17	135	109	H
		7.205	38.35	PKFH	35.60	-39.00	12.60	47.55	-	-	74.00	-26.45	100	395	V
		9.607	35.19	PKFH	36.50	-37.90	14.40	48.19	-	-	74.00	-25.81	331	108	H
		9.608	34.41	PKFH	36.50	-37.90	14.40	47.41	-	-	74.00	-26.59	144	365	V
2441	ANT0	* 4.88192	43.66	PKFH	33.90	-42.40	9.70	44.86	-	-	74.00	-29.14	138	101	H
		* 4.88188	33.15	VA1T	33.90	-42.40	9.70	34.35	54.00	-19.65	-	-	138	101	H
		* 4.88202	41.76	PKFH	33.90	-42.40	9.70	42.96	-	-	74.00	-31.04	209	108	V
		* 4.88186	30.70	VA1T	33.90	-42.40	9.70	31.90	54.00	-22.10	-	-	209	108	V
		* 7.3234	40.88	PKFH	35.60	-40.40	11.70	47.78	-	-	74.00	-26.22	290	116	H
		* 7.3229	29.22	VA1T	35.60	-40.40	11.70	36.12	54.00	-17.88	-	-	290	116	H
		* 7.32313	40.31	PKFH	35.60	-40.40	11.70	47.21	-	-	74.00	-26.79	190	389	V
		* 7.32287	29.48	VA1T	35.60	-40.40	11.70	36.38	54.00	-17.62	-	-	190	389	V
		7.811	41.73	PKFH	35.70	-40.30	12.10	49.23	-	-	74.00	-24.77	125	109	H
		7.811	39.23	PKFH	35.70	-40.30	12.10	46.73	-	-	74.00	-27.27	230	107	V
		9.764	34.55	PKFH	36.80	-38.20	13.60	46.75	-	-	74.00	-27.25	0	100	H
		9.764	34.43	PKFH	36.80	-38.20	13.60	46.63	-	-	74.00	-27.37	0	100	V
2480	ANT0	* 4.95979	46.47	PKFH	33.90	-39.60	9.90	50.67	-	-	74.00	-23.33	37	312	H
		* 4.95998	41.60	VA1T	33.90	-39.60	9.90	45.80	54.00	**-8.20**	-	-	37	312	H
		* 4.95969	44.97	PKFH	33.90	-39.60	9.90	49.17	-	-	74.00	-24.83	318	341	V
		* 4.95975	39.86	VA1T	33.90	-39.60	9.90	44.06	54.00	-9.94	-	-	318	341	V
		6.613	43.92	PKFH	35.50	-38.90	11.50	52.02	-	-	74.00	**-21.98**	38	104	H
		6.613	42.54	PKFH	35.50	-38.90	11.50	50.64	-	-	74.00	-23.36	125	384	V
		* 7.44002	37.50	PKFH	35.60	-39.10	12.30	46.30	-	-	74.00	-27.70	139	101	H
		* 7.43985	27.36	VA1T	35.60	-39.10	12.30	36.16	54.00	-17.84	-	-	139	101	H
		* 7.43947	37.79	PKFH	35.60	-39.10	12.30	46.59	-	-	74.00	-27.41	94	323	V
		* 7.44005	27.67	VA1T	35.60	-39.10	12.30	36.47	54.00	-17.53	-	-	94	323	V
		9.920	35.25	PKFH	36.90	-37.80	14.50	48.85	-	-	74.00	-25.15	334	101	H
		9.921	33.68	PKFH	36.90	-37.70	14.50	47.38	-	-	74.00	-26.62	258	366	V

* - indicates frequency in CFR47 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

11.1.2. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

BANDEDGE(WORST CASE: 2480 MHz, ANT 0)

VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	CH1_AF_1-18G_3117_240924 Antenna Factor(dB/m)	FB1_PL_1-18G_10dB_240718 Gain(dB)	CH1_CL_1-40G_Thru_241104 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	46.55	Pk	32.1	-30.5	7.2	55.35	-	-	74	-18.65	178	373	V
2	* 2.48366	48.13	Pk	32.1	-30.5	7.2	56.93	-	-	74	-17.07	178	373	V
3	* 2.4835	29.85	VA1T	32.1	-30.5	7.2	38.65	54	-15.35	-	-	178	373	V
4	2.53704	30.29	VA1T	32.2	-30.5	7.2	39.19	54	-14.81	-	-	178	373	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

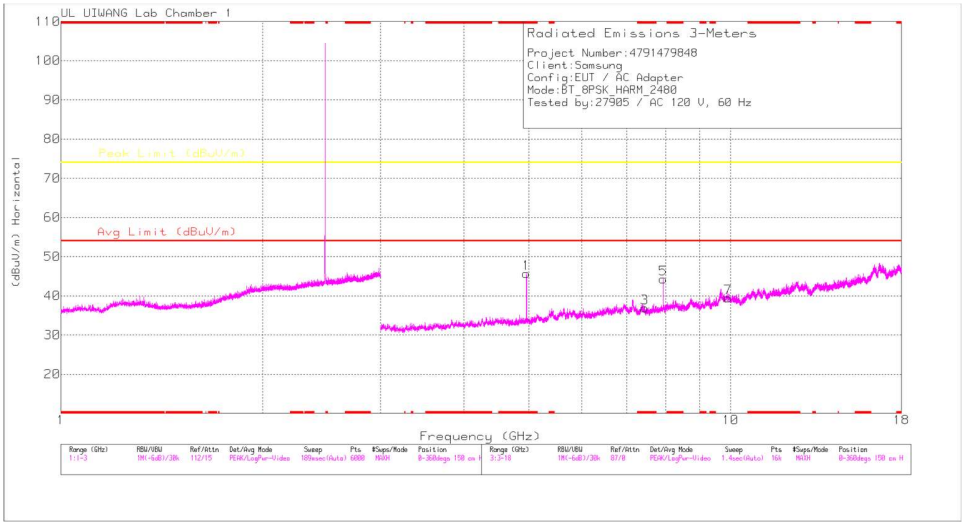
BANDEDGE TEST DATA

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	FB Gain [dB]	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	ANT0	* 2.39	41.55	Pk	31.90	-30.50	6.90	49.85	-	-	74.00	-24.15	323	100	H
		* 2.33275	44.69	Pk	31.80	-30.50	6.80	52.79	-	-	74.00	-21.21	323	100	H
		* 2.39	29.88	VA1T	31.90	-30.50	6.90	38.18	54.00	-15.82	-	-	323	100	H
		* 2.35836	30.28	VA1T	31.90	-30.50	6.90	38.58	54.00	-15.42	-	-	323	100	H
		* 2.39	41.39	Pk	31.90	-30.50	6.90	49.69	-	-	74.00	-24.31	175	249	V
		* 2.36664	44.89	Pk	31.90	-30.50	6.90	53.19	-	-	74.00	-20.81	175	249	V
		* 2.39	29.89	VA1T	31.90	-30.50	6.90	38.19	54.00	-15.81	-	-	175	249	V
		* 2.37233	30.29	VA1T	31.90	-30.50	6.90	38.59	54.00	-15.41	-	-	175	249	V
2480	ANT0	* 2.4835	44.61	Pk	32.10	-30.50	7.20	53.41	-	-	74.00	-20.59	3	163	H
		* 2.48368	47.61	Pk	32.10	-30.50	7.20	56.41	-	-	74.00	-17.59	3	163	H
		* 2.4835	30.16	VA1T	32.10	-30.50	7.20	38.96	54.00	-15.04	-	-	3	163	H
		* 2.4852	30.25	VA1T	32.20	-30.50	7.20	39.15	54.00	-14.85	-	-	3	163	H
		* 2.4835	46.55	Pk	32.10	-30.50	7.20	55.35	-	-	74.00	-18.65	178	373	V
		* 2.48366	48.13	Pk	32.10	-30.50	7.20	56.93	-	-	74.00	**-17.07**	178	373	V
		* 2.4835	29.85	VA1T	32.10	-30.50	7.20	38.65	54.00	-15.35	-	-	178	373	V
		2.537	30.29	VA1T	32.20	-30.50	7.20	39.19	54.00	**-14.81**	-	-	178	373	V

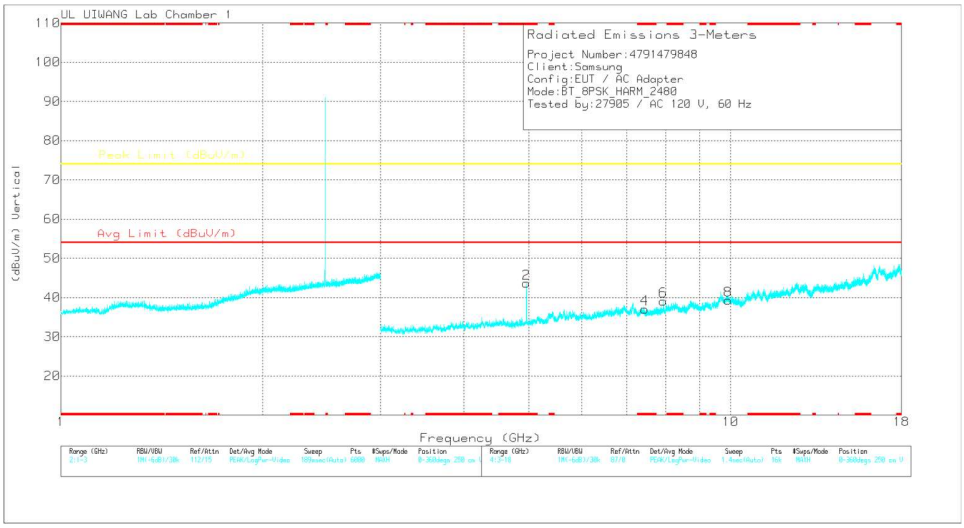
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

HARMONICS AND SPURIOUS EMISSIONS(WORST CASE: 2480 MHz, ANT 0)

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	CH1_AF_1-18G_3117_240924 Antenna Factor(dB/m)	FB1_PL_1-18G_3G HP_240718 Gain(dB)	CH1_CL_1-40G_Thru_241104 Loss(dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.96023	46.35	PKFH	33.9	-39.6	9.9	50.55	-	-	74	-23.45	15	314	H
* 4.95995	35.3	VA1T	33.9	-39.6	9.9	39.5	54	-14.5	-	-	15	314	H
* 4.96038	43.98	PKFH	33.9	-39.6	9.9	48.18	-	-	74	-25.82	333	385	V
* 4.95999	33.81	VA1T	33.9	-39.6	9.9	38.01	54	-15.99	-	-	333	385	V
* 7.43895	36.98	PKFH	35.6	-39.1	12.3	45.78	-	-	74	-28.22	140	112	H
* 7.43978	24.12	VA1T	35.6	-39.1	12.3	32.92	54	-21.08	-	-	140	112	H
* 7.43967	35.78	PKFH	35.6	-39.1	12.3	44.58	-	-	74	-29.42	188	387	V
* 7.4403	23.57	VA1T	35.6	-39.1	12.3	32.37	54	-21.63	-	-	188	387	V
7.93577	40.42	PKFH	35.9	-38.8	12.9	50.42	-	-	74	-23.58	39	107	H
7.93617	38	PKFH	35.9	-38.8	12.9	48	-	-	74	-26	318	112	V
9.92001	34.14	PKFH	36.9	-37.8	14.5	47.74	-	-	74	-26.26	334	101	H
9.91961	35.08	PKFH	36.9	-37.8	14.5	48.68	-	-	74	-25.32	239	388	V

* - indicates frequency in CFR47 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

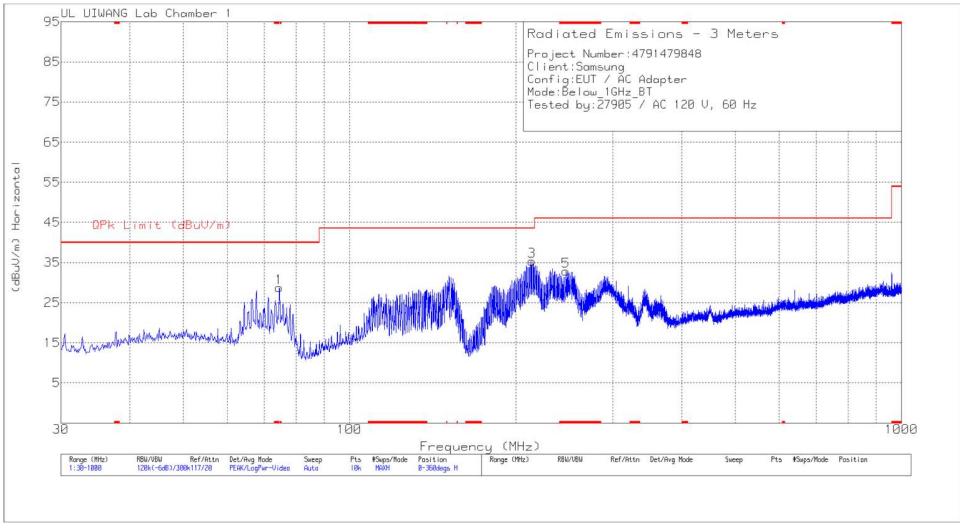
HARMONICS AND SPURIOUS EMISSIONS TEST DATA

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	FB Gain [dB]	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	ANT0	* 4.80407	44.15	PKFH	33.90	-39.40	9.60	48.25	-	-	74.00	-25.75	71	105	H
		* 4.80403	32.66	VA1T	33.90	-39.40	9.60	36.76	54.00	-17.24	-	-	71	105	H
		* 4.80385	43.29	PKFH	33.90	-39.40	9.60	47.39	-	-	74.00	-26.61	339	253	V
		* 4.80403	31.69	VA1T	33.90	-39.40	9.60	35.79	54.00	-18.21	-	-	339	253	V
		6.405	43.42	PKFH	35.50	-39.30	11.10	50.72	-	-	74.00	-23.28	34	105	H
		6.405	42.03	PKFH	35.50	-39.30	11.10	49.33	-	-	74.00	-24.67	142	370	V
		7.205	37.51	PKFH	35.60	-39.00	12.60	46.71	-	-	74.00	-27.29	137	104	H
		7.204	36.66	PKFH	35.60	-39.00	12.70	45.96	-	-	74.00	-28.04	195	100	V
		9.607	34.94	PKFH	36.50	-37.90	14.40	47.94	-	-	74.00	-26.06	335	113	H
		9.608	34.16	PKFH	36.50	-37.90	14.40	47.16	-	-	74.00	-26.84	162	364	V
2441	ANT0	* 4.88199	40.60	PKFH	33.90	-39.40	9.70	44.80	-	-	74.00	-29.20	37	258	H
		* 4.88212	29.52	VA1T	33.90	-39.40	9.70	33.72	54.00	-20.28	-	-	37	258	H
		* 4.88202	38.82	PKFH	33.90	-39.40	9.70	43.02	-	-	74.00	-30.98	133	388	V
		* 4.88168	27.01	VA1T	33.90	-39.40	9.70	31.21	54.00	-22.79	-	-	133	388	V
		6.509	42.86	PKFH	35.50	-38.90	11.60	51.06	-	-	74.00	**-22.94**	38	100	H
		6.510	42.17	PKFH	35.50	-38.90	11.60	50.37	-	-	74.00	-23.63	137	396	V
		* 7.32297	37.86	PKFH	35.60	-39.30	12.30	46.46	-	-	74.00	-27.54	136	104	H
		* 7.32301	24.17	VA1T	35.60	-39.30	12.30	32.77	54.00	-21.23	-	-	136	104	H
		* 7.32364	36.72	PKFH	35.60	-39.30	12.30	45.32	-	-	74.00	-28.68	198	100	V
		* 7.32316	23.24	VA1T	35.60	-39.30	12.30	31.84	54.00	-22.16	-	-	198	100	V
		9.763	35.00	PKFH	36.70	-37.70	14.40	48.40	-	-	74.00	-25.60	330	113	H
		9.764	33.75	PKFH	36.70	-37.70	14.40	47.15	-	-	74.00	-26.85	300	352	V
2480	ANT0	* 4.96023	46.35	PKFH	33.90	-39.60	9.90	50.55	-	-	74.00	-23.45	15	314	H
		* 4.95995	35.30	VA1T	33.90	-39.60	9.90	39.50	54.00	**-14.50**	-	-	15	314	H
		* 4.96038	43.98	PKFH	33.90	-39.60	9.90	48.18	-	-	74.00	-25.82	333	385	V
		* 4.95999	33.81	VA1T	33.90	-39.60	9.90	38.01	54.00	-15.99	-	-	333	385	V
		* 7.43895	36.98	PKFH	35.60	-39.10	12.30	45.78	-	-	74.00	-28.22	140	112	H
		* 7.43978	24.12	VA1T	35.60	-39.10	12.30	32.92	54.00	-21.08	-	-	140	112	H
		* 7.43967	35.78	PKFH	35.60	-39.10	12.30	44.58	-	-	74.00	-29.42	188	387	V
		* 7.4403	23.57	VA1T	35.60	-39.10	12.30	32.37	54.00	-21.63	-	-	188	387	V
		7.936	40.42	PKFH	35.90	-38.80	12.90	50.42	-	-	74.00	-23.58	39	107	H
		7.936	38.00	PKFH	35.90	-38.80	12.90	48.00	-	-	74.00	-26.00	318	112	V
		9.920	34.14	PKFH	36.90	-37.80	14.50	47.74	-	-	74.00	-26.26	334	101	H
		9.920	35.08	PKFH	36.90	-37.80	14.50	48.68	-	-	74.00	-25.32	239	388	V

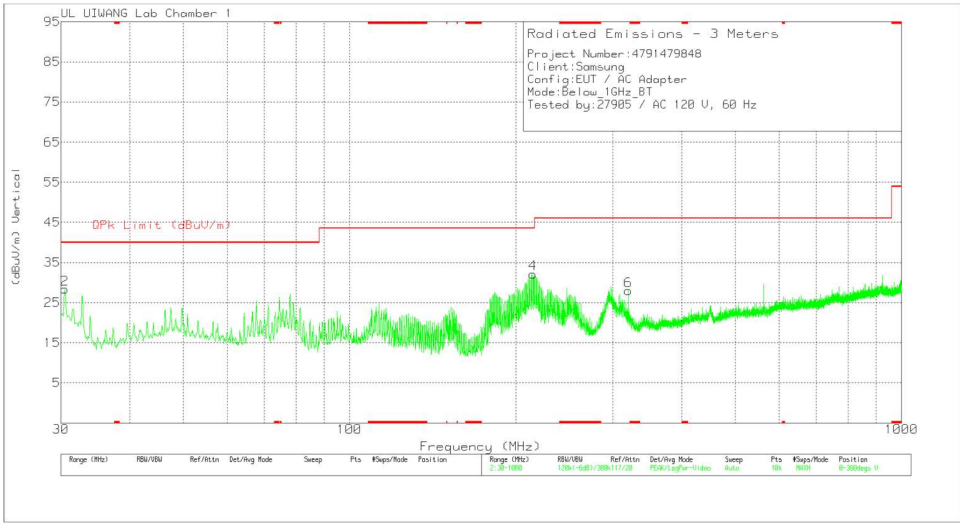
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PKFH FHSS/BT RB=100k for Frequencies<1GHz / RB=1MHz for Frequencies>1GHz, VB=3 x RB, Peak
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

11.2. 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	VULB 9163 Antenna Factor(dB/m)	1Cham_30M-1000M_AMP(ELN A03-40D Gain(dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	74.6246	54.98	Pk	13.4	-39.7	28.68	40	-11.32	0-360	200	H
2	30.4851	52.55	Pk	15.8	-40	28.35	40	-11.65	0-360	100	V
3	213.834	57.83	Pk	16.5	-39	35.33	43.52	-8.19	0-360	100	H
4	214.8041	54.56	Pk	16.6	-39	32.16	43.52	-11.36	0-360	100	V
5	* 246.5263	53.23	Pk	18.5	-38.9	32.83	46.02	-13.19	0-360	100	H
6	320.0599	47.2	Pk	19.4	-38.6	28	46.02	-18.02	0-360	100	V

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

12. 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

12.1. AC Power Line

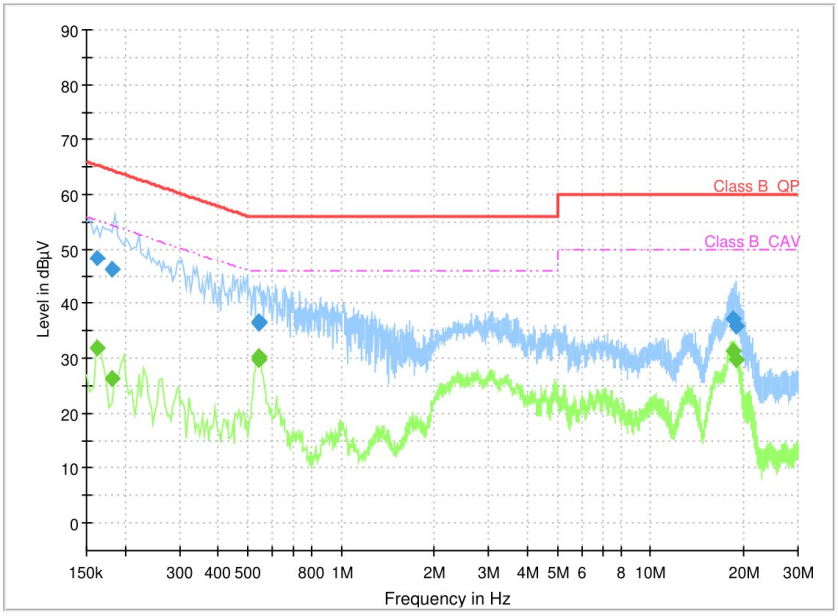
LINE 1 RESULTS

AC LINE BT-L 1 / 1

Test Report

Common Information

Project No:	479147984
Test Description:	Shielded Room#1, Conducted Emission
Test Standard:	FCC Part 15 Subpart C
Model Name:	WCF934M
Test Voltage:	AC 120 V, 60 Hz
Test Mode:	AC Line BT
Opeartor:	27905
Line:	LINE



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.162510	48.35	---	65.34	16.98	9.000	L1	ON	9.8
0.162510	---	31.90	55.34	23.44	9.000	L1	ON	9.8
0.182150	46.19	---	64.39	18.20	9.000	L1	ON	9.9
0.182150	---	26.35	54.39	28.04	9.000	L1	ON	9.9
0.541520	36.58	---	56.00	19.42	9.000	L1	ON	9.8
0.541520	---	30.23	46.00	15.77	9.000	L1	ON	9.8
0.542830	36.44	---	56.00	19.56	9.000	L1	ON	9.8
0.542830	---	29.67	46.00	16.33	9.000	L1	ON	9.8
18.474330	37.31	---	60.00	22.69	9.000	L1	ON	10.0
18.474330	---	31.36	50.00	18.64	9.000	L1	ON	10.0
18.942360	35.91	---	60.00	24.09	9.000	L1	ON	10.0
18.942360	---	29.65	50.00	20.35	9.000	L1	ON	10.0

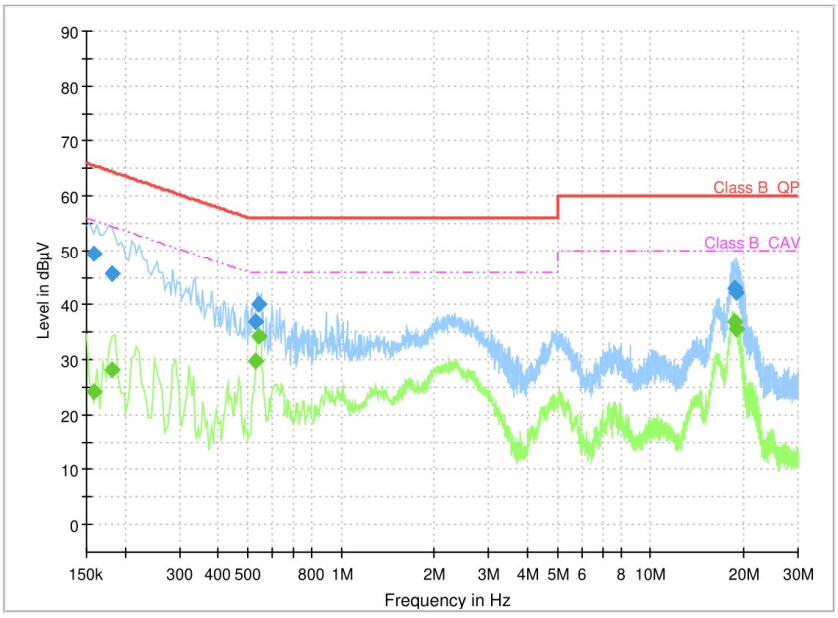
LINE 2 RESULTS

AC LINE BT-N 1 / 1

Test Report

Common Information

Project No:	479147984
Test Description:	Shielded Room#1, Conducted Emission
Test Standard:	FCC Part 15 Subpart C
Model Name:	WCF934M
Test Voltage:	AC 120 V, 60 Hz
Test Mode:	AC Line BT
Opeartor:	27905
Line:	NEUTRAL



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.159000	49.28	---	65.52	16.24	9.000	N	ON	9.8
0.159000	---	24.31	55.52	31.20	9.000	N	ON	9.8
0.182000	45.72	---	64.39	18.68	9.000	N	ON	9.9
0.182000	---	28.30	54.39	26.09	9.000	N	ON	9.9
0.530110	36.96	---	56.00	19.04	9.000	N	ON	9.9
0.530110	---	29.89	46.00	16.11	9.000	N	ON	9.9
0.541290	40.13	---	56.00	15.87	9.000	N	ON	9.9
0.541290	---	34.22	46.00	11.78	9.000	N	ON	9.9
18.618450	42.97	---	60.00	17.03	9.000	N	ON	10.0
18.618450	---	36.92	50.00	13.08	9.000	N	ON	10.0
18.953580	42.24	---	60.00	17.76	9.000	N	ON	10.1
18.953580	---	35.53	50.00	14.47	9.000	N	ON	10.1

END OF TEST REPORT

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