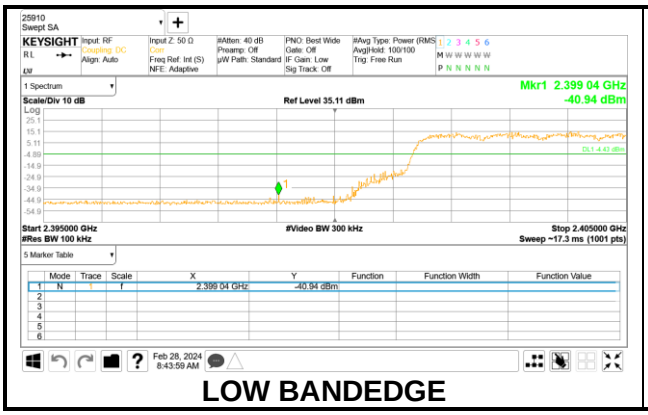
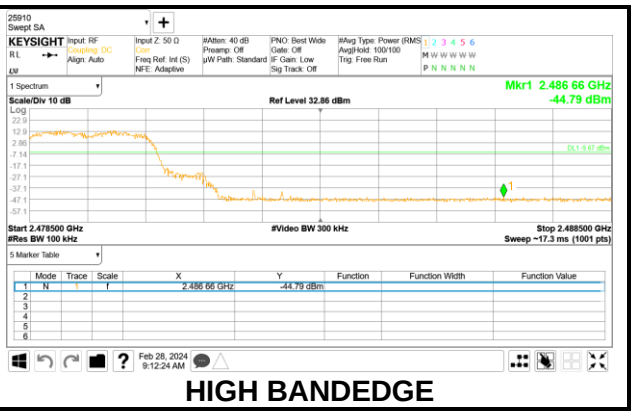
SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON – ANT1

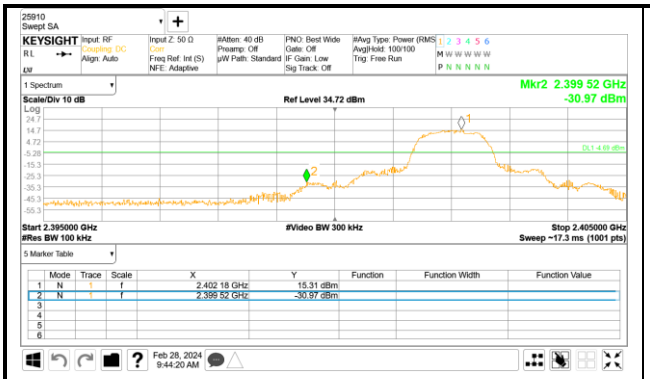


LOW BANDEDGE

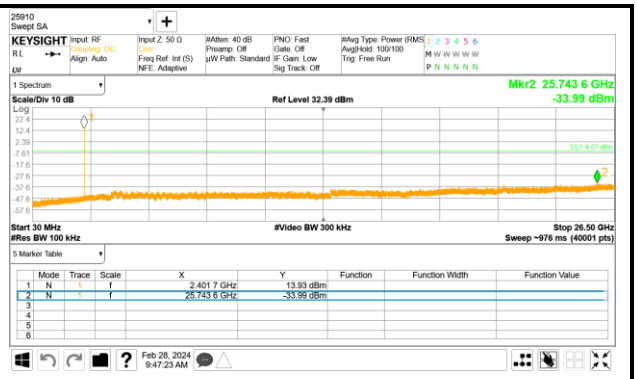


HIGH BANDEDGE

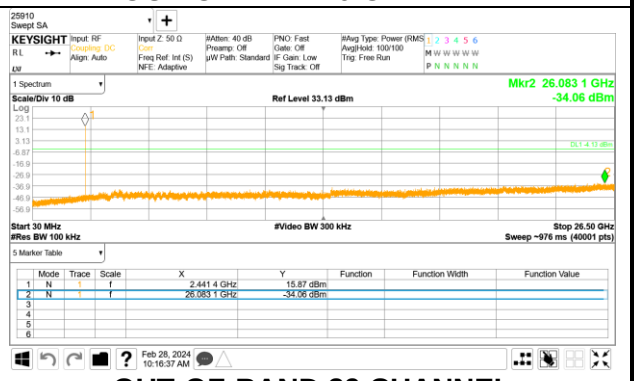
SPURIOUS EMISSIONS, NON-HOPPING – ANT2



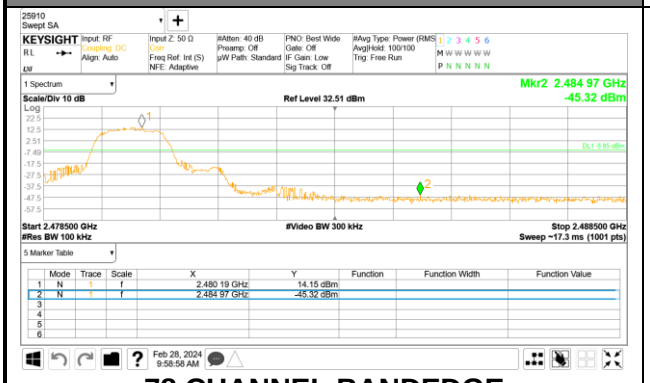
0 CHANNEL BANDEDGE



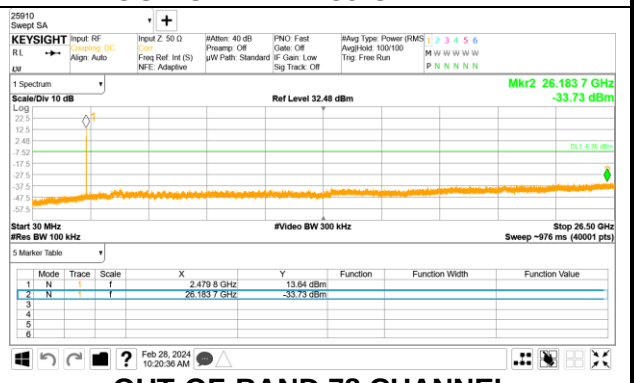
OUT-OF-BAND 0 CHANNEL



OUT-OF-BAND 39 CHANNEL

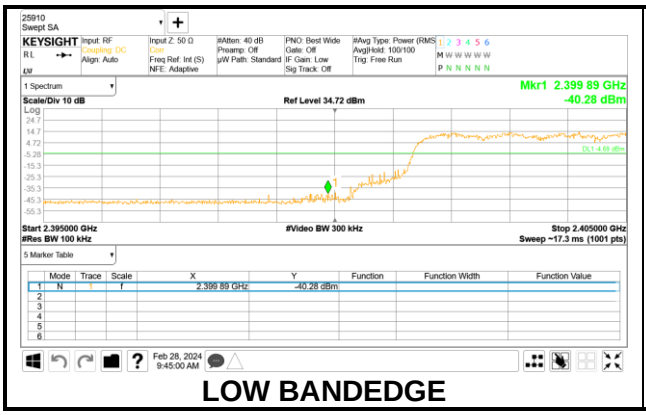


78 CHANNEL BANDEDGE

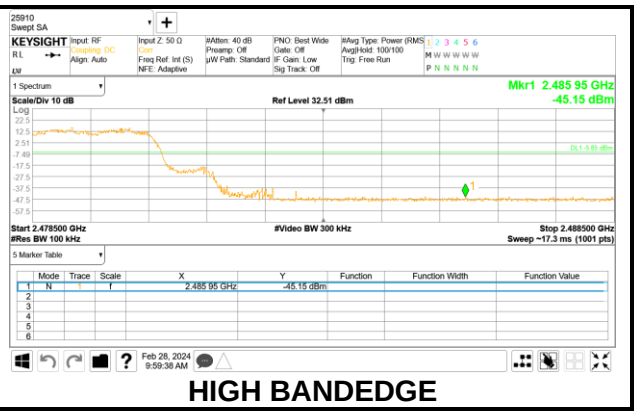


OUT-OF-BAND 78 CHANNEL

SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON – ANT2



LOW BANDEDGE



HIGH BANDEDGE

10. 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 = 347Hz.

The minimum VBW was 347Hz, but test receiver(ESU40) couldn’t set value 347Hz. 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.

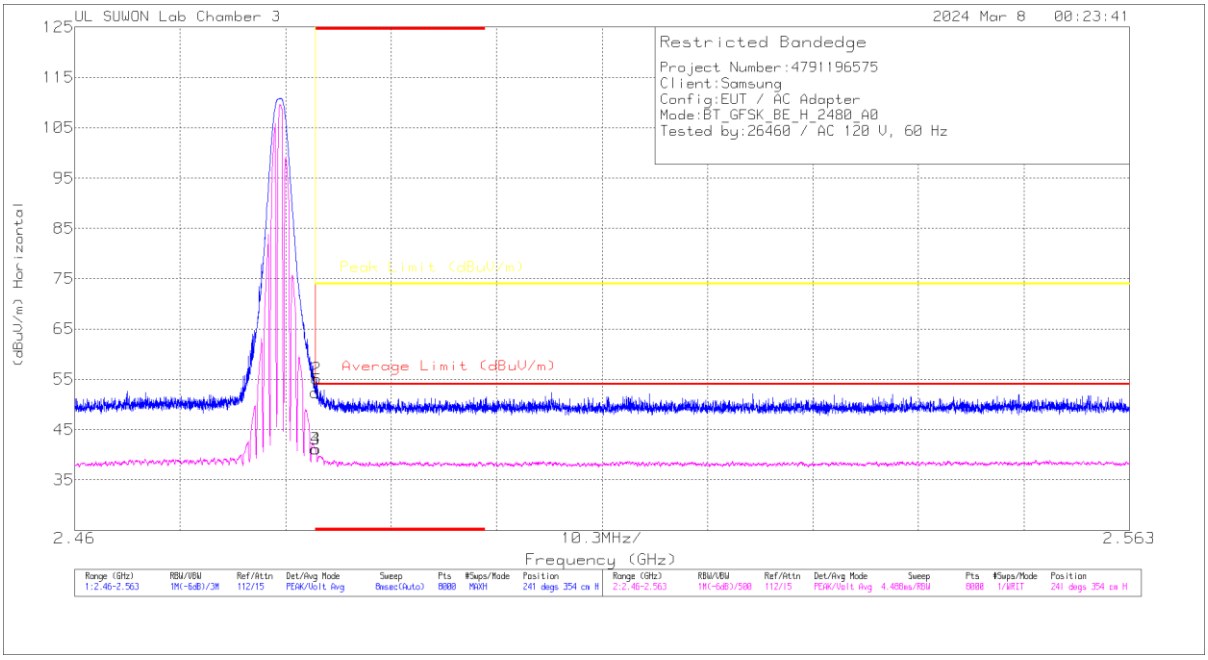
Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 30 m open are test site.
Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field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

10.1. TRANSMITTER ABOVE 1 GHz

10.1.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

BANDEDGE (WORST CASE: 78 CHANNEL, ANT1)

HORIZONTAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_Factor(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	44.78	Pk	32.4	-24.8	52.38	-	-	74	-21.62	241	354	H
2	* 2.48364	47.54	Pk	32.4	-24.8	55.14	-	-	74	-18.86	241	354	H
3	* 2.4835	33.6	VA1T	32.4	-24.8	41.2	54	-12.8	-	-	241	354	H
4	* 2.48354	33.51	VA1T	32.4	-24.8	41.11	54	-12.89	-	-	241	354	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]	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	41.87	Pk	32.10	-24.80	49.17	-	-	74.00	-24.83	243	333	H
		* 2.3262	44.60	Pk	31.90	-24.80	51.70	-	-	74.00	-22.30	243	333	H
		* 2.39	29.76	VA1T	32.10	-24.80	37.06	54.00	-16.94	-	-	243	333	H
		* 2.38652	30.54	VA1T	32.10	-24.80	37.84	54.00	-16.16	-	-	243	333	H
		* 2.39	41.24	Pk	32.10	-24.80	48.54	-	-	74.00	-25.46	157	347	V
		* 2.36236	44.76	Pk	32.00	-24.90	51.86	-	-	74.00	-22.14	157	347	V
		* 2.39	29.68	VA1T	32.10	-24.80	36.98	54.00	-17.02	-	-	157	347	V
		* 2.37835	30.39	VA1T	32.10	-24.80	37.69	54.00	-16.31	-	-	157	347	V
2480	ANT1	* 2.4835	44.78	Pk	32.40	-24.80	52.38	-	-	74.00	-21.62	241	354	H
		* 2.48364	47.54	Pk	32.40	-24.80	55.14	-	-	74.00	**-18.86**	241	354	H
		* 2.4835	33.60	VA1T	32.40	-24.80	41.20	54.00	**-12.80**	-	-	241	354	H
		* 2.48354	33.51	VA1T	32.40	-24.80	41.11	54.00	-12.89	-	-	241	354	H
		* 2.4835	43.70	Pk	32.40	-24.80	51.30	-	-	74.00	-22.70	199	318	V
		* 2.48353	45.18	Pk	32.40	-24.80	52.78	-	-	74.00	-21.22	199	318	V
		* 2.4835	32.30	VA1T	32.40	-24.80	39.90	54.00	-14.10	-	-	199	318	V
		* 2.48371	31.78	VA1T	32.40	-24.80	39.38	54.00	-14.62	-	-	199	318	V

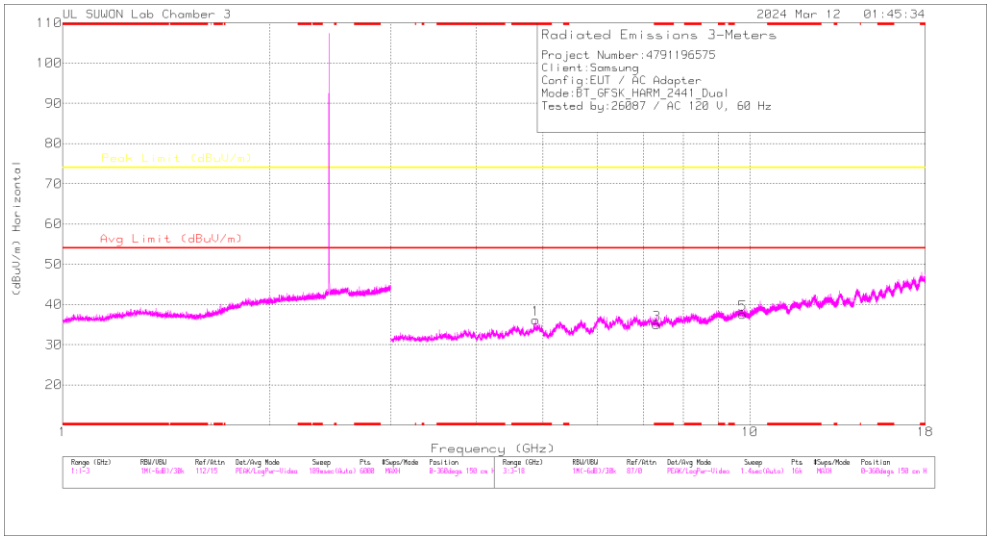
Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2402	ANT2	* 2.39	41.23	Pk	32.10	-24.80	48.53	-	-	74.00	-25.47	138	360	H
		* 2.37116	44.86	Pk	32.00	-24.90	51.96	-	-	74.00	-22.04	138	360	H
		* 2.39	29.92	VA1T	32.10	-24.80	37.22	54.00	-16.78	-	-	138	360	H
		* 2.38733	30.33	VA1T	32.10	-24.80	37.63	54.00	-16.37	-	-	138	360	H
		* 2.39	41.67	Pk	32.10	-24.80	48.97	-	-	74.00	-25.03	242	308	V
		* 2.3729	44.61	Pk	32.00	-24.90	51.71	-	-	74.00	-22.29	242	308	V
		* 2.39	30.03	VA1T	32.10	-24.80	37.33	54.00	-16.67	-	-	242	308	V
		* 2.38993	30.25	VA1T	32.10	-24.80	37.55	54.00	-16.45	-	-	242	308	V
2480	ANT2	* 2.4835	42.72	Pk	32.40	-24.80	50.32	-	-	74.00	-23.68	140	374	H
		* 2.484	46.86	Pk	32.40	-24.80	54.46	-	-	74.00	-19.54	140	374	H
		* 2.4835	31.04	VA1T	32.40	-24.80	38.64	54.00	-15.36	-	-	140	374	H
		2.561	31.21	VA1T	32.40	-24.70	38.91	54.00	-15.09	-	-	140	374	H
		* 2.4835	51.02	Pk	32.40	-24.80	58.62	-	-	74.00	**-15.38**	239	287	V
		* 2.48431	50.17	Pk	32.40	-24.80	57.77	-	-	74.00	-16.23	239	287	V
		* 2.4835	30.69	VA1T	32.40	-24.80	38.29	54.00	-15.71	-	-	239	287	V
		* 2.48367	31.77	VA1T	32.40	-24.80	39.37	54.00	**-14.63**	-	-	239	287	V

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/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	DUAL	* 2.39	42.46	Pk	32.10	-24.80	49.76	-	-	74.00	-24.24	218	132	H
		* 2.36057	44.58	Pk	32.00	-24.90	51.68	-	-	74.00	-22.32	218	132	H
		* 2.39	29.98	VA1T	32.10	-24.80	37.28	54.00	-16.72	-	-	218	132	H
		* 2.38762	30.48	VA1T	32.10	-24.80	37.78	54.00	-16.22	-	-	218	132	H
		* 2.39	41.02	Pk	32.10	-24.80	48.32	-	-	74.00	-25.68	281	278	V
		* 2.38417	44.87	Pk	32.10	-24.90	52.07	-	-	74.00	-21.93	281	278	V
		* 2.39	29.71	VA1T	32.10	-24.80	37.01	54.00	-16.99	-	-	281	278	V
		* 2.37032	30.47	VA1T	32.00	-24.80	37.67	54.00	-16.33	-	-	281	278	V
2480	DUAL	* 2.4835	43.47	Pk	32.40	-24.80	51.07	-	-	74.00	-22.93	154	378	H
		* 2.48402	45.13	Pk	32.40	-24.80	52.73	-	-	74.00	-21.27	154	378	H
		* 2.4835	31.15	VA1T	32.40	-24.80	38.75	54.00	-15.25	-	-	154	378	H
		2.554	31.31	VA1T	32.40	-24.60	39.11	54.00	-14.89	-	-	154	378	H
		* 2.4835	48.08	Pk	32.40	-24.80	55.68	-	-	74.00	-18.32	263	231	V
		* 2.48353	49.35	Pk	32.40	-24.80	56.95	-	-	74.00	**-17.05**	263	231	V
		* 2.4835	31.72	VA1T	32.40	-24.80	39.32	54.00	-14.68	-	-	263	231	V
		* 2.48356	31.83	VA1T	32.40	-24.80	39.43	54.00	**-14.57**	-	-	263	231	V

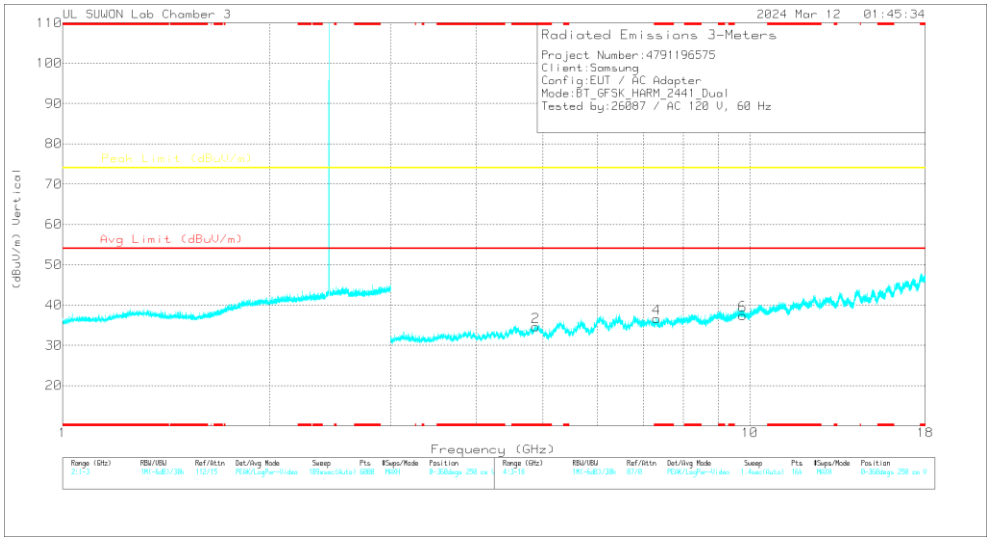
Note1. Pk - Peak detector, VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration
Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

HARMONICS AND SPURIOUS EMISSIONS(WORST CASE – DUAL MODE)

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
* 4.88222	39.4	PKFH	34.2	-30	43.6	-	-	74	-30.4	170	161	H
* 4.88212	29.48	VA1T	34.2	-30	33.68	54	-20.32	-	-	170	161	H
* 4.88179	39.11	PKFH	34.2	-30	43.31	-	-	74	-30.69	211	146	V
* 4.88194	28.19	VA1T	34.2	-30	32.39	54	-21.61	-	-	211	146	V
* 7.323	34.36	PKFH	35.8	-25.5	44.66	-	-	74	-29.34	102	151	H
* 7.32303	21.91	VA1T	35.8	-25.5	32.21	54	-21.79	-	-	102	151	H
* 7.32262	35.26	PKFH	35.8	-25.5	45.56	-	-	74	-28.44	339	154	V
* 7.32287	23.05	VA1T	35.8	-25.5	33.35	54	-20.65	-	-	339	154	V
9.76686	30.49	PKFH	36.9	-21.5	45.89	-	-	74	-28.11	0	100	H
9.76119	30.71	PKFH	36.9	-21.5	46.11	-	-	74	-27.89	0	100	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]	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	* 4.80377	38.78	PKFH	34.30	-30.10	42.98	-	-	74.00	-31.02	313	124	H
		* 4.804	28.21	VA1T	34.30	-30.10	32.41	54.00	-21.59	-	-	313	124	H
		* 4.80399	38.08	PKFH	34.30	-30.10	42.28	-	-	74.00	-31.72	63	101	V
		* 4.80408	26.58	VA1T	34.30	-30.10	30.78	54.00	-23.22	-	-	63	101	V
		7.207	34.52	PKFH	35.80	-25.90	44.42	-	-	74.00	-29.58	0	100	H
		7.206	34.07	PKFH	35.80	-25.90	43.97	-	-	74.00	-30.03	76	112	V
		9.606	31.92	PKFH	36.70	-21.80	46.82	-	-	74.00	**-27.18**	0	100	H
		9.610	31.03	PKFH	36.70	-21.70	46.03	-	-	74.00	-27.97	0	100	V
2440	ANT1	* 4.88201	38.65	PKFH	34.20	-30.00	42.85	-	-	74.00	-31.15	183	125	H
		* 4.88209	27.72	VA1T	34.20	-30.00	31.92	54.00	-22.08	-	-	183	125	H
		* 4.88155	39.02	PKFH	34.20	-29.90	43.32	-	-	74.00	-30.68	60	103	V
		* 4.8821	27.83	VA1T	34.20	-30.00	32.03	54.00	-21.97	-	-	60	103	V
		* 7.3234	33.99	PKFH	35.80	-25.50	44.29	-	-	74.00	-29.71	9	113	H
		* 7.32356	21.03	VA1T	35.80	-25.50	31.33	54.00	-22.67	-	-	9	113	H
		* 7.3229	33.57	PKFH	35.80	-25.50	43.87	-	-	74.00	-30.13	64	111	V
		* 7.32333	21.32	VA1T	35.80	-25.50	31.62	54.00	-22.38	-	-	64	111	V
		9.763	30.60	PKFH	36.90	-21.50	46.00	-	-	74.00	-28.00	0	100	H
		9.762	30.61	PKFH	36.90	-21.50	46.01	-	-	74.00	-27.99	0	100	V
2480	ANT1	* 4.96008	39.46	PKFH	34.30	-30.00	43.76	-	-	74.00	-30.24	308	122	H
		* 4.96015	27.78	VA1T	34.30	-30.00	32.08	54.00	-21.92	-	-	308	122	H
		* 4.95995	38.87	PKFH	34.30	-30.00	43.17	-	-	74.00	-30.83	235	120	V
		* 4.95994	28.24	VA1T	34.30	-30.00	32.54	54.00	**-21.46**	-	-	235	120	V
		* 7.44109	33.27	PKFH	35.70	-25.20	43.77	-	-	74.00	-30.23	0	100	H
		* 7.44196	33.59	PKFH	35.70	-25.20	44.09	-	-	74.00	-29.91	0	100	V
		9.919	29.58	PKFH	37.10	-21.30	45.38	-	-	74.00	-28.62	0	100	H
		9.921	29.07	PKFH	37.10	-21.40	44.77	-	-	74.00	-29.23	0	100	V

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/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	* 4.80375	38.84	PKFH	34.30	-30.10	43.04	-	-	74.00	-30.96	61	100	H
		* 4.80379	26.55	VA1T	34.30	-30.10	30.75	54.00	-23.25	-	-	61	100	H
		* 4.80314	38.16	PKFH	34.30	-30.10	42.36	-	-	74.00	-31.64	183	369	V
		* 4.80381	26.05	VA1T	34.30	-30.10	30.25	54.00	-23.75	-	-	183	369	V
		7.209	33.36	PKFH	35.80	-25.90	43.26	-	-	74.00	-30.74	0	100	H
		7.212	33.69	PKFH	35.80	-25.90	43.59	-	-	74.00	-30.41	0	100	V
		9.604	31.33	PKFH	36.70	-21.70	46.33	-	-	74.00	-27.67	0	100	H
		9.607	31.58	PKFH	36.70	-21.80	46.48	-	-	74.00	-27.52	0	100	V
2441	ANT2	* 4.88166	37.91	PKFH	34.20	-29.90	42.21	-	-	74.00	-31.79	118	119	H
		* 4.88189	26.64	VA1T	34.20	-30.00	30.84	54.00	**-23.16**	-	-	118	119	H
		* 4.8822	38.79	PKFH	34.20	-30.00	42.99	-	-	74.00	-31.01	151	129	V
		* 4.88194	26.09	VA1T	34.20	-30.00	30.29	54.00	-23.71	-	-	151	129	V
		* 7.32272	32.87	PKFH	35.80	-25.50	43.17	-	-	74.00	-30.83	0	100	H
		* 7.32518	32.96	PKFH	35.80	-25.50	43.26	-	-	74.00	-30.74	0	100	V
		9.768	31.84	PKFH	36.90	-21.50	47.24	-	-	74.00	**-26.76**	0	100	H
		9.764	30.64	PKFH	36.90	-21.50	46.04	-	-	74.00	-27.96	0	100	V
2480	ANT2	* 4.96458	37.41	PKFH	34.30	-30.10	41.61	-	-	74.00	-32.39	115	173	H
		* 4.95983	25.89	VA1T	34.30	-30.00	30.19	54.00	-23.81	-	-	115	173	H
		* 4.96216	38.98	PKFH	34.30	-30.10	43.18	-	-	74.00	-30.82	153	132	V
		* 4.95954	25.26	VA1T	34.30	-30.00	29.56	54.00	-24.44	-	-	153	132	V
		* 7.44292	33.82	PKFH	35.70	-25.20	44.32	-	-	74.00	-29.68	0	100	H
		* 7.43231	33.95	PKFH	35.70	-25.20	44.45	-	-	74.00	-29.55	0	100	V
		9.921	29.50	PKFH	37.10	-21.40	45.20	-	-	74.00	-28.80	0	100	H
		9.920	29.94	PKFH	37.10	-21.40	45.64	-	-	74.00	-28.36	0	100	V

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/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	DUAL	* 4.80417	38.89	PKFH	34.30	-30.10	43.09	-	-	74.00	-30.91	173	113	H
		* 4.80398	27.64	VA1T	34.30	-30.10	31.84	54.00	-22.16	-	-	173	113	H
		* 4.80387	38.36	PKFH	34.30	-30.10	42.56	-	-	74.00	-31.44	219	202	V
		* 4.80377	28.10	VA1T	34.30	-30.10	32.30	54.00	-21.70	-	-	219	202	V
		7.206	36.47	PKFH	35.80	-25.90	46.37	-	-	74.00	**-27.63**	155	146	H
		7.206	36.27	PKFH	35.80	-25.90	46.17	-	-	74.00	-27.83	348	172	V
		9.610	31.26	PKFH	36.70	-21.70	46.26	-	-	74.00	-27.74	0	100	H
		9.610	31.19	PKFH	36.70	-21.70	46.19	-	-	74.00	-27.81	0	100	V
2441	DUAL	* 4.88222	39.40	PKFH	34.20	-30.00	43.60	-	-	74.00	-30.40	170	161	H
		* 4.88212	29.48	VA1T	34.20	-30.00	33.68	54.00	**-20.32**	-	-	170	161	H
		* 4.88179	39.11	PKFH	34.20	-30.00	43.31	-	-	74.00	-30.69	211	146	V
		* 4.88194	28.19	VA1T	34.20	-30.00	32.39	54.00	-21.61	-	-	211	146	V
		* 7.323	34.36	PKFH	35.80	-25.50	44.66	-	-	74.00	-29.34	102	151	H
		* 7.32303	21.91	VA1T	35.80	-25.50	32.21	54.00	-21.79	-	-	102	151	H
		* 7.32262	35.26	PKFH	35.80	-25.50	45.56	-	-	74.00	-28.44	339	154	V
		* 7.32287	23.05	VA1T	35.80	-25.50	33.35	54.00	-20.65	-	-	339	154	V
		9.767	30.49	PKFH	36.90	-21.50	45.89	-	-	74.00	-28.11	0	100	H
		9.761	30.71	PKFH	36.90	-21.50	46.11	-	-	74.00	-27.89	0	100	V
2480	DUAL	* 4.95998	38.56	PKFH	34.30	-30.00	42.86	-	-	74.00	-31.14	175	162	H
		* 4.96019	27.24	VA1T	34.30	-30.00	31.54	54.00	-22.46	-	-	175	162	H
		* 4.96236	39.66	PKFH	34.30	-30.10	43.86	-	-	74.00	-30.14	173	288	V
		* 4.95997	25.47	VA1T	34.30	-30.00	29.77	54.00	-24.23	-	-	173	288	V
		* 7.4401	34.05	PKFH	35.70	-25.20	44.55	-	-	74.00	-29.45	109	164	H
		* 7.44005	22.53	VA1T	35.70	-25.20	33.03	54.00	-20.97	-	-	109	164	H
		* 7.4401	33.82	PKFH	35.70	-25.20	44.32	-	-	74.00	-29.68	334	102	V
		* 7.4399	22.16	VA1T	35.70	-25.20	32.66	54.00	-21.34	-	-	334	102	V
		9.919	30.03	PKFH	37.10	-21.30	45.83	-	-	74.00	-28.17	0	100	H
		9.920	30.23	PKFH	37.10	-21.40	45.93	-	-	74.00	-28.07	0	100	V

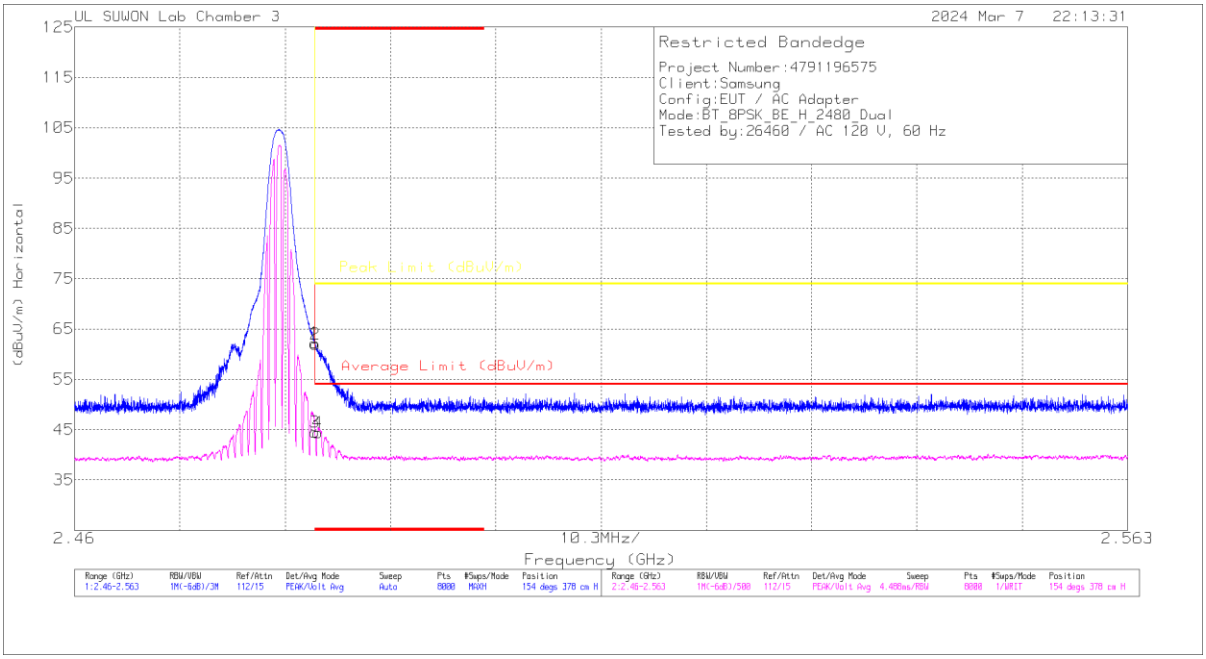
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PKFH FHSS/BT RB=100k for Frequencies<1GHz / RB=1MHz for Frequencies>1GHz, VB=3 x RB, Peak
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

10.1.2. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

ANT1

BANDEDGE (WORST CASE: 78 CHANNEL, DUAL)

HORIZONTAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_Factor(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	54.63	Pk	32.4	-24.8	62.23	-	-	74	-11.77	154	378	H
2	* 2.48354	54.41	Pk	32.4	-24.8	62.01	-	-	74	-11.99	154	378	H
3	* 2.4835	36.94	VA1T	32.4	-24.8	44.54	54	-9.46	-	-	154	378	H
4	* 2.48382	36.77	VA1T	32.4	-24.8	44.37	54	-9.63	-	-	154	378	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]	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	42.46	Pk	32.10	-24.80	49.76	-	-	74.00	-24.24	243	333	H
		* 2.38255	44.70	Pk	32.10	-24.90	51.90	-	-	74.00	-22.10	243	333	H
		* 2.39	29.74	VA1T	32.10	-24.80	37.04	54.00	-16.96	-	-	243	333	H
		* 2.38032	30.45	VA1T	32.10	-24.90	37.65	54.00	-16.35	-	-	243	333	H
		* 2.39	41.20	Pk	32.10	-24.80	48.50	-	-	74.00	-25.50	157	347	V
		* 2.34161	44.50	Pk	32.00	-24.90	51.60	-	-	74.00	-22.40	157	347	V
		* 2.39	29.52	VA1T	32.10	-24.80	36.82	54.00	-17.18	-	-	157	347	V
		* 2.37868	30.45	VA1T	32.10	-24.90	37.65	54.00	-16.35	-	-	157	347	V
2480	ANT1	* 2.4835	53.02	Pk	32.40	-24.80	60.62	-	-	74.00	-13.38	241	354	H
		* 2.48351	53.29	Pk	32.40	-24.80	60.89	-	-	74.00	**-13.11**	241	354	H
		* 2.4835	34.79	VA1T	32.40	-24.80	42.39	54.00	-11.61	-	-	241	354	H
		* 2.48351	34.93	VA1T	32.40	-24.80	42.53	54.00	**-11.47**	-	-	241	354	H
		* 2.4835	48.73	Pk	32.40	-24.80	56.33	-	-	74.00	-17.67	199	318	V
		* 2.48362	49.36	Pk	32.40	-24.80	56.96	-	-	74.00	-17.04	199	318	V
		* 2.4835	30.83	VA1T	32.40	-24.80	38.43	54.00	-15.57	-	-	199	318	V
		* 2.48368	32.73	VA1T	32.40	-24.80	40.33	54.00	-13.67	-	-	199	318	V

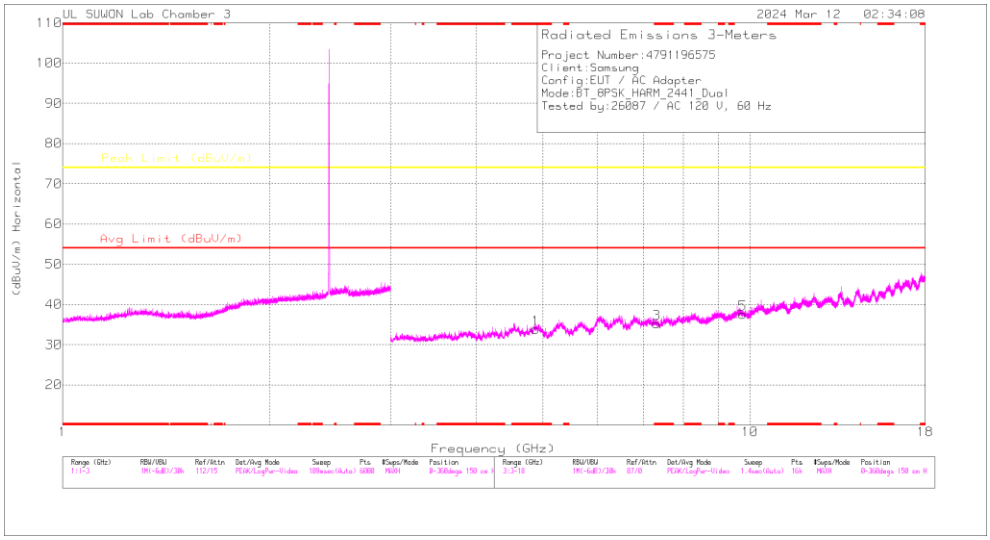
Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/m]	Loss [dB]	Result [dBuV/m]	AV Limit [dBuV/m]	AV Margin [dB]	PK Limit [dBuV/m]	PK Margin [dB]	Azimuth [Degs]	Height [cm]	Polarity
2402	ANT2	* 2.39	41.67	Pk	32.10	-24.80	48.97	-	-	74.00	-25.03	138	360	H
		* 2.33077	45.44	Pk	31.90	-24.80	52.54	-	-	74.00	-21.46	138	360	H
		* 2.39	29.74	VA1T	32.10	-24.80	37.04	54.00	-16.96	-	-	138	360	H
		* 2.32096	30.53	VA1T	31.90	-24.80	37.63	54.00	-16.37	-	-	138	360	H
		* 2.39	41.67	Pk	32.10	-24.80	48.97	-	-	74.00	-25.03	242	308	V
		* 2.35195	45.34	Pk	32.00	-24.80	52.54	-	-	74.00	-21.46	242	308	V
		* 2.39	30.00	VA1T	32.10	-24.80	37.30	54.00	-16.70	-	-	242	308	V
		* 2.33518	30.67	VA1T	31.90	-24.80	37.77	54.00	-16.23	-	-	242	308	V
2480	ANT2	* 2.4835	43.70	Pk	32.40	-24.80	51.30	-	-	74.00	-22.70	140	374	H
		* 2.48362	46.93	Pk	32.40	-24.80	54.53	-	-	74.00	-19.47	140	374	H
		* 2.4835	31.09	VA1T	32.40	-24.80	38.69	54.00	-15.31	-	-	140	374	H
		* 2.48356	31.48	VA1T	32.40	-24.80	39.08	54.00	-14.92	-	-	140	374	H
		* 2.4835	46.68	Pk	32.40	-24.80	54.28	-	-	74.00	-19.72	239	287	V
		* 2.48351	51.37	Pk	32.40	-24.80	58.97	-	-	74.00	**-15.03**	239	287	V
		* 2.4835	31.85	VA1T	32.40	-24.80	39.45	54.00	-14.55	-	-	239	287	V
		* 2.48371	32.03	VA1T	32.40	-24.80	39.63	54.00	**-14.37**	-	-	239	287	V

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/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	DUAL	* 2.39	42.49	Pk	32.10	-24.80	49.79	-	-	74.00	-24.21	218	132	H
		* 2.37814	44.43	Pk	32.10	-24.80	51.73	-	-	74.00	-22.27	218	132	H
		* 2.39	30.10	VA1T	32.10	-24.80	37.40	54.00	-16.60	-	-	218	132	H
		* 2.37532	30.49	VA1T	32.10	-24.90	37.69	54.00	-16.31	-	-	218	132	H
		* 2.39	42.07	Pk	32.10	-24.80	49.37	-	-	74.00	-24.63	281	278	V
		* 2.38183	44.38	Pk	32.10	-24.90	51.58	-	-	74.00	-22.42	281	278	V
		* 2.39	29.84	VA1T	32.10	-24.80	37.14	54.00	-16.86	-	-	281	278	V
		* 2.37775	30.28	VA1T	32.10	-24.80	37.58	54.00	-16.42	-	-	281	278	V
2480	DUAL	* 2.4835	54.63	Pk	32.40	-24.80	62.23	-	-	74.00	**-11.77**	154	378	H
		* 2.48354	54.41	Pk	32.40	-24.80	62.01	-	-	74.00	-11.99	154	378	H
		* 2.4835	36.94	VA1T	32.40	-24.80	44.54	54.00	**-9.46**	-	-	154	378	H
		* 2.48382	36.77	VA1T	32.40	-24.80	44.37	54.00	-9.63	-	-	154	378	H
		* 2.4835	48.54	Pk	32.40	-24.80	56.14	-	-	74.00	-17.86	263	231	V
		* 2.48363	49.60	Pk	32.40	-24.80	57.20	-	-	74.00	-16.80	263	231	V
		* 2.4835	32.60	VA1T	32.40	-24.80	40.20	54.00	-13.80	-	-	263	231	V
		* 2.48353	32.76	VA1T	32.40	-24.80	40.36	54.00	-13.64	-	-	263	231	V

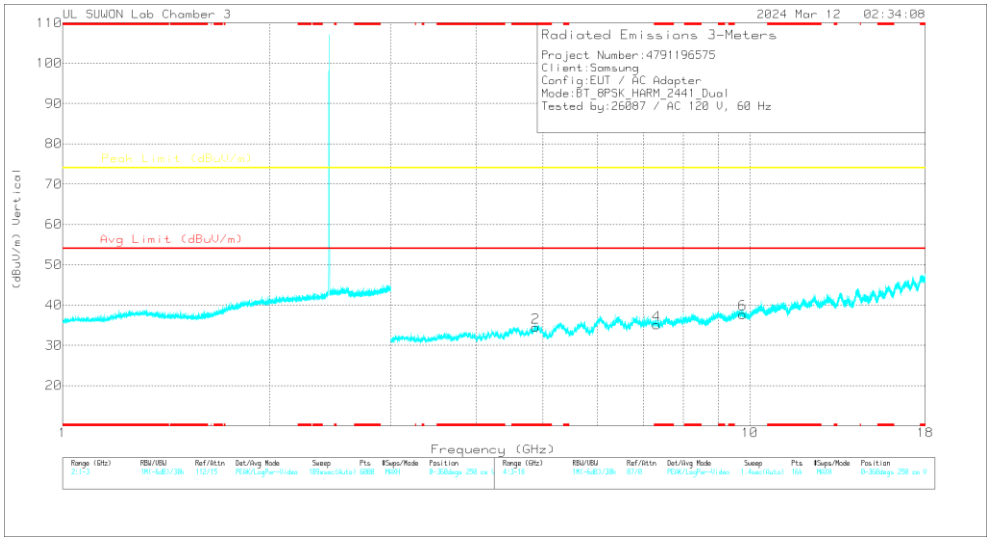
Note1. Pk - Peak detector, VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration
Note2. * - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

HARMONICS AND SPURIOUS EMISSIONS(WORST CASE – DUAL MODE)

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
* 4.88069	38.05	PKFH	34.2	-29.9	42.35	-	-	74	-31.65	167	170	H
* 4.88205	26.67	VA1T	34.2	-30	30.87	54	-23.13	-	-	167	170	H
* 4.87998	38.39	PKFH	34.2	-29.9	42.69	-	-	74	-31.31	211	103	V
* 4.88215	26.17	VA1T	34.2	-30	30.37	54	-23.63	-	-	211	103	V
* 7.32383	32.94	PKFH	35.8	-25.5	43.24	-	-	74	-30.76	102	151	H
* 7.32293	20.9	VA1T	35.8	-25.5	31.2	54	-22.8	-	-	102	151	H
* 7.32302	33.18	PKFH	35.8	-25.5	43.48	-	-	74	-30.52	335	168	V
* 7.32292	21.41	VA1T	35.8	-25.5	31.71	54	-22.29	-	-	335	168	V
9.76785	30.66	PKFH	36.9	-21.5	46.06	-	-	74	-27.94	0	100	H
9.76561	31.52	PKFH	36.9	-21.5	46.92	-	-	74	-27.08	0	100	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]	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	* 4.8024	37.85	PKFH	34.30	-30.10	42.05	-	-	74.00	-31.95	313	122	H
		* 4.80388	26.04	VA1T	34.30	-30.10	30.24	54.00	-23.76	-	-	313	122	H
		* 4.80477	37.69	PKFH	34.30	-30.10	41.89	-	-	74.00	-32.11	158	102	V
		* 4.80378	25.87	VA1T	34.30	-30.10	30.07	54.00	-23.93	-	-	158	102	V
		7.207	33.59	PKFH	35.80	-25.90	43.49	-	-	74.00	-30.51	0	100	H
		7.206	33.29	PKFH	35.80	-25.90	43.19	-	-	74.00	-30.81	0	100	V
		9.608	31.72	PKFH	36.70	-21.70	46.72	-	-	74.00	**-27.28**	0	100	H
		9.606	30.45	PKFH	36.70	-21.80	45.35	-	-	74.00	-28.65	0	100	V
2441	ANT1	* 4.88193	38.22	PKFH	34.20	-30.00	42.42	-	-	74.00	-31.58	312	104	H
		* 4.88219	25.98	VA1T	34.20	-30.00	30.18	54.00	-23.82	-	-	312	104	H
		* 4.88436	38.24	PKFH	34.20	-29.90	42.54	-	-	74.00	-31.46	60	101	V
		* 4.8817	25.92	VA1T	34.20	-29.90	30.22	54.00	-23.78	-	-	60	101	V
		* 7.32501	33.64	PKFH	35.80	-25.50	43.94	-	-	74.00	-30.06	7	111	H
		* 7.32283	20.67	VA1T	35.80	-25.50	30.97	54.00	-23.03	-	-	7	111	H
		* 7.3254	33.29	PKFH	35.80	-25.50	43.59	-	-	74.00	-30.41	66	106	V
		* 7.32304	20.71	VA1T	35.80	-25.50	31.01	54.00	**-22.99**	-	-	66	106	V
		9.764	30.38	PKFH	36.90	-21.50	45.78	-	-	74.00	-28.22	0	100	H
		9.768	30.87	PKFH	36.90	-21.50	46.27	-	-	74.00	-27.73	0	100	V
2480	ANT1	* 4.96038	38.28	PKFH	34.30	-30.00	42.58	-	-	74.00	-31.42	307	120	H
		* 4.96012	25.86	VA1T	34.30	-30.00	30.16	54.00	-23.84	-	-	307	120	H
		* 4.96155	38.35	PKFH	34.30	-30.10	42.55	-	-	74.00	-31.45	159	100	V
		* 4.96039	25.83	VA1T	34.30	-30.00	30.13	54.00	-23.87	-	-	159	100	V
		* 7.43885	32.97	PKFH	35.70	-25.20	43.47	-	-	74.00	-30.53	0	100	H
		* 7.43998	32.92	PKFH	35.70	-25.20	43.42	-	-	74.00	-30.58	0	100	V
		9.921	29.30	PKFH	37.10	-21.40	45.00	-	-	74.00	-29.00	0	100	H
		9.921	29.36	PKFH	37.10	-21.40	45.06	-	-	74.00	-28.94	0	100	V

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/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	* 4.80733	37.85	PKFH	34.30	-30.00	42.15	-	-	74.00	-31.85	62	100	H
		* 4.80378	25.49	VA1T	34.30	-30.10	29.69	54.00	**-24.31**	-	-	62	100	H
		* 4.80232	38.11	PKFH	34.30	-30.10	42.31	-	-	74.00	-31.69	168	328	V
		* 4.80393	25.49	VA1T	34.30	-30.10	29.69	54.00	**-24.31**	-	-	168	328	V
		7.204	34.29	PKFH	35.80	-25.90	44.19	-	-	74.00	-29.81	0	100	H
		7.206	34.80	PKFH	35.80	-25.90	44.70	-	-	74.00	-29.30	0	100	V
		9.612	31.19	PKFH	36.70	-21.80	46.09	-	-	74.00	-27.91	0	100	H
		9.614	31.20	PKFH	36.70	-21.70	46.20	-	-	74.00	-27.80	0	100	V
2441	ANT2	* 4.88084	38.38	PKFH	34.20	-29.90	42.68	-	-	74.00	-31.32	0	100	H
		* 4.88239	25.43	VA1T	34.20	-30.00	29.63	54.00	-24.37	-	-	0	100	H
		* 4.88263	38.16	PKFH	34.20	-30.00	42.36	-	-	74.00	-31.64	153	122	V
		* 4.88485	25.34	VA1T	34.20	-29.90	29.64	54.00	-24.36	-	-	153	122	V
		* 7.32498	33.41	PKFH	35.80	-25.50	43.71	-	-	74.00	-30.29	0	100	H
		* 7.32021	33.28	PKFH	35.80	-25.50	43.58	-	-	74.00	-30.42	0	100	V
		9.760	30.56	PKFH	36.90	-21.50	45.96	-	-	74.00	-28.04	0	100	H
		9.765	30.93	PKFH	36.90	-21.50	46.33	-	-	74.00	**-27.67**	0	100	V
2480	ANT2	* 4.95709	38.67	PKFH	34.30	-30.10	42.87	-	-	74.00	-31.13	114	183	H
		* 4.95981	25.37	VA1T	34.30	-30.00	29.67	54.00	-24.33	-	-	114	183	H
		* 4.95734	37.40	PKFH	34.30	-30.10	41.60	-	-	74.00	-32.40	153	148	V
		* 4.95935	25.15	VA1T	34.30	-30.00	29.45	54.00	-24.55	-	-	153	148	V
		* 7.43993	33.32	PKFH	35.70	-25.20	43.82	-	-	74.00	-30.18	0	100	H
		* 7.44359	33.07	PKFH	35.70	-25.20	43.57	-	-	74.00	-30.43	0	100	V
		9.918	30.18	PKFH	37.10	-21.30	45.98	-	-	74.00	-28.02	0	100	H
		9.923	29.67	PKFH	37.10	-21.30	45.47	-	-	74.00	-28.53	0	100	V

Freq. [MHz]	Antenna	Frequency [GHz]	Reading [dBuV]	Detector Mode	ANT Factor [dB/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	MIMO	* 4.80379	39.55	PKFH	34.30	-30.10	43.75	-	-	74.00	-30.25	173	141	H
		* 4.80403	25.93	VA1T	34.30	-30.10	30.13	54.00	-23.87	-	-	173	141	H
		* 4.80397	37.63	PKFH	34.30	-30.10	41.83	-	-	74.00	-32.17	205	191	V
		* 4.80435	26.41	VA1T	34.30	-30.10	30.61	54.00	-23.39	-	-	205	191	V
		7.206	36.02	PKFH	35.80	-25.90	45.92	-	-	74.00	-28.08	153	149	H
		7.205	35.22	PKFH	35.80	-25.90	45.12	-	-	74.00	-28.88	6	164	V
		9.607	31.07	PKFH	36.70	-21.70	46.07	-	-	74.00	-27.93	0	100	H
		9.613	31.33	PKFH	36.70	-21.70	46.33	-	-	74.00	-27.67	0	100	V
2441	MIMO	* 4.88069	38.05	PKFH	34.20	-29.90	42.35	-	-	74.00	-31.65	167	170	H
		* 4.88205	26.67	VA1T	34.20	-30.00	30.87	54.00	-23.13	-	-	167	170	H
		* 4.87998	38.39	PKFH	34.20	-29.90	42.69	-	-	74.00	-31.31	211	103	V
		* 4.88215	26.17	VA1T	34.20	-30.00	30.37	54.00	-23.63	-	-	211	103	V
		* 7.32383	32.94	PKFH	35.80	-25.50	43.24	-	-	74.00	-30.76	102	151	H
		* 7.32293	20.90	VA1T	35.80	-25.50	31.20	54.00	-22.80	-	-	102	151	H
		* 7.32302	33.18	PKFH	35.80	-25.50	43.48	-	-	74.00	-30.52	335	168	V
		* 7.32292	21.41	VA1T	35.80	-25.50	31.71	54.00	**-22.29**	-	-	335	168	V
		9.768	30.66	PKFH	36.90	-21.50	46.06	-	-	74.00	-27.94	0	100	H
		9.766	31.52	PKFH	36.90	-21.50	46.92	-	-	74.00	**-27.08**	0	100	V
2480	MIMO	* 4.95812	36.92	PKFH	34.30	-30.10	41.12	-	-	74.00	-32.88	0	100	H
		* 4.95925	37.72	PKFH	34.30	-30.00	42.02	-	-	74.00	-31.98	0	100	V
		* 7.44105	33.05	PKFH	35.70	-25.20	43.55	-	-	74.00	-30.45	153	136	H
		* 7.43952	20.78	VA1T	35.70	-25.20	31.28	54.00	-22.72	-	-	153	136	H
		* 7.43918	33.96	PKFH	35.70	-25.20	44.46	-	-	74.00	-29.54	152	111	V
		* 7.44056	21.09	VA1T	35.70	-25.20	31.59	54.00	-22.41	-	-	152	111	V
		9.920	30.17	PKFH	37.10	-21.40	45.87	-	-	74.00	-28.13	0	100	H
		9.922	29.75	PKFH	37.10	-21.30	45.55	-	-	74.00	-28.45	0	100	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

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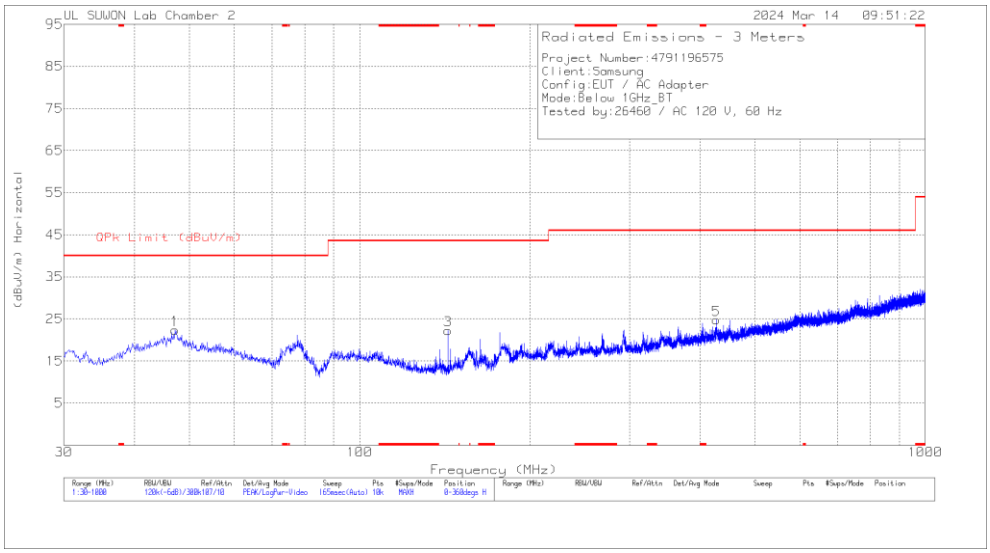
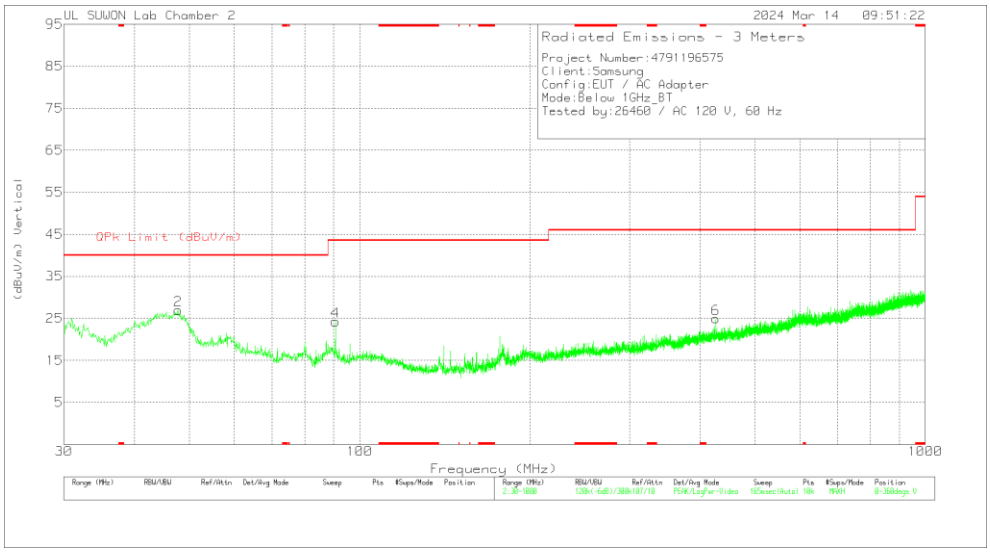
10.2. WORST CASE BELOW 1 GHz

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



HORIZONTAL



VERTICAL

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Antenna_749_Factor(dB/m)	Below_1G_Path Loss(dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	47.169	34.08	Pk	20	-31.7	22.38	40	-17.62	0-360	200	H
3	143.296	39.29	Pk	13.9	-30.9	22.29	43.52	-21.23	0-360	200	H
5	427.506	32.8	Pk	21.7	-29.7	24.8	46.02	-21.22	0-360	100	H
2	47.751	38.46	Pk	20.1	-31.6	26.96	40	-13.04	0-360	100	V
4	90.625	39.57	Pk	16	-31.3	24.27	43.52	-19.25	0-360	100	V
6	426.439	32.92	Pk	21.7	-29.7	24.92	46.02	-21.1	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 C63.10:2013.

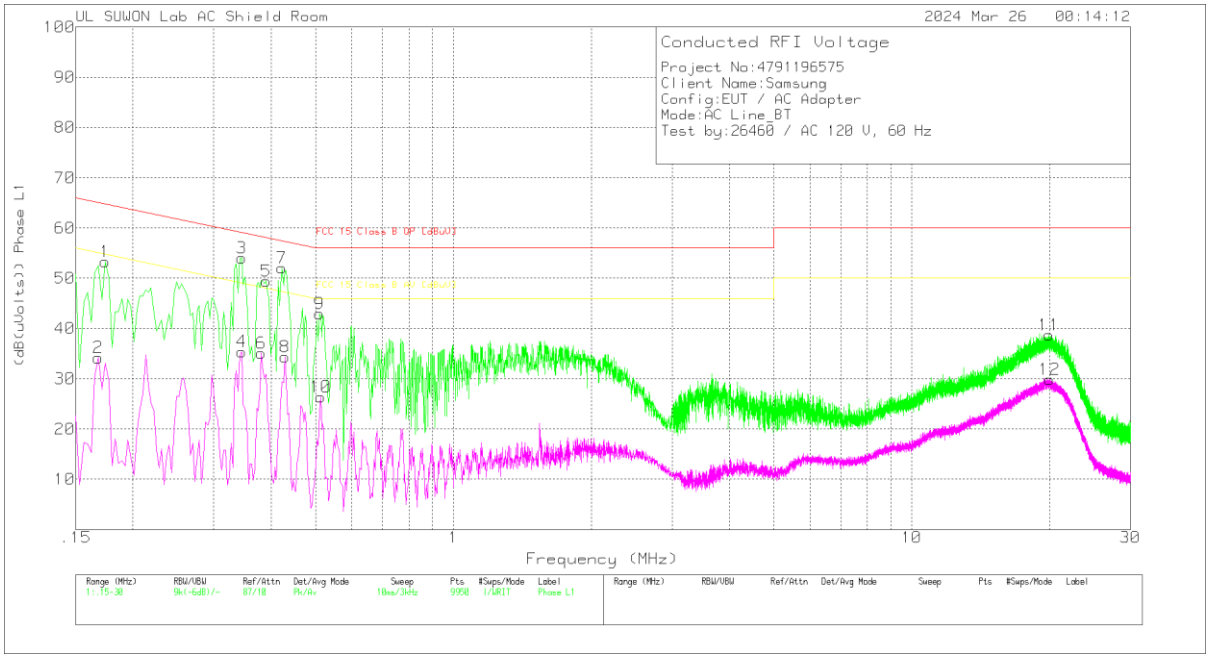
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

11.1. AC Power Line

LINE 1 RESULTS



Trace Markers

Range 1: Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_L1 [dB]	Cable Loss [dB]	Corrected Reading (dBuVolts)	FCC 15 Class B QP [dBuV]	Margin (dB)	FCC 15 Class B AV [dBuV]	Margin (dB)
1	.174	43.21	Pk	10	.1	53.31	64.77	-11.46	-	-
2	.168	24.07	Av	10	.1	34.17	-	-	55.06	-20.89
3	.345	44.19	Pk	9.8	.1	54.09	59.08	-4.99	-	-
4	.345	25.51	Av	9.8	.1	35.41	-	-	49.08	-13.67
5	.39	39.56	Pk	9.8	.1	49.46	58.06	-8.6	-	-
6	.381	25.22	Av	9.8	.1	35.12	-	-	48.26	-13.14
7	.423	42.2	Pk	9.8	.1	52.1	57.39	-5.29	-	-
8	.429	24.46	Av	9.8	.1	34.36	-	-	47.27	-12.91
9	.51	32.96	Pk	9.9	.1	42.96	56	-13.04	-	-
10	.513	16.41	Av	9.9	.1	26.41	-	-	46	-19.59
11	19.893	28.24	Pk	10.2	.3	38.74	60	-21.26	-	-
12	19.995	19.35	Av	10.2	.3	29.85	-	-	50	-20.15

Pk - Peak detector
Av - Average detection

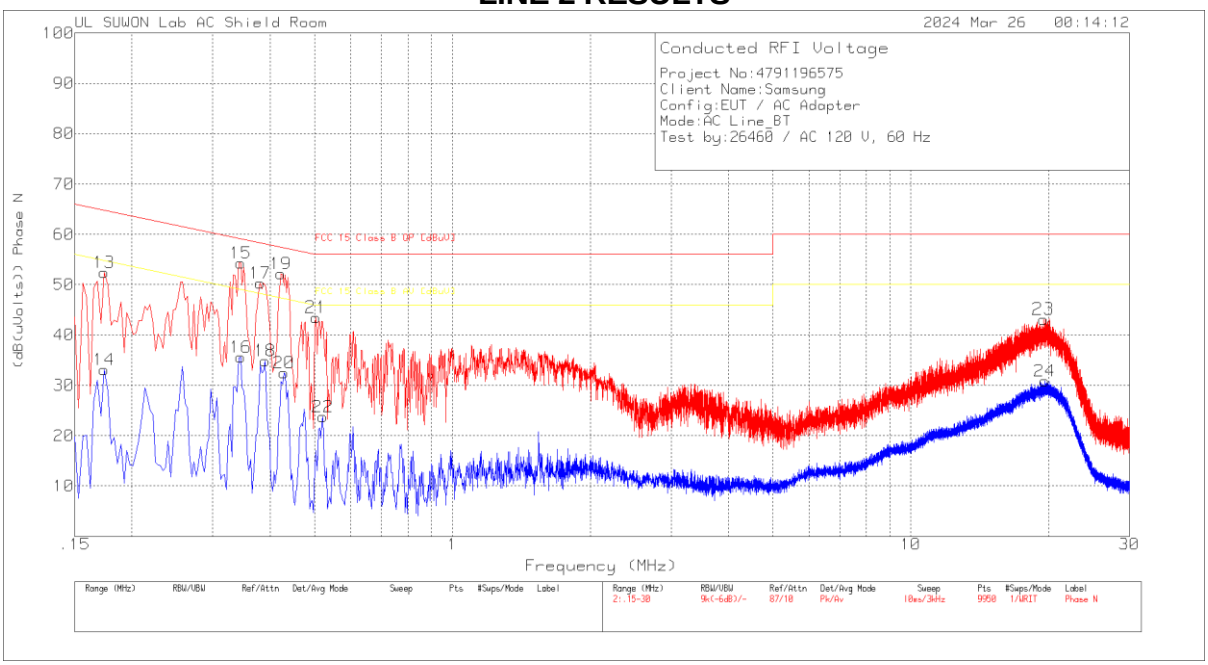
Quasi-Peak Emissions

Range 1: Phase L1 .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_L1 [dB]	Cable Loss [dB]	Corrected Reading (dBuVolts)	FCC 15 Class B QP [dBuV]	Margin (dB)	FCC 15 Class B AV [dBuV]	Margin (dB)
.34515	41.9	Qp	9.8	.1	51.8	59.08	-7.28	-	-
.38925	37.63	Qp	9.8	.1	47.53	58.08	-10.55	-	-
.42375	39.84	Qp	9.8	.1	49.74	57.37	-7.63	-	-

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_Wit h EX_N [dB]	Cable Loss [dB]	Corrected Reading (dBuVolts)	FCC 15 Class B QP [dBuV]	Margin (dB)	FCC 15 Class B AV [dBuV]	Margin (dB)
13	.174	42.3	Pk	10	.1	52.4	64.77	-12.37	-	-
14	.174	23.03	Av	10	.1	33.13	-	-	54.77	-21.64
15	.345	44.42	Pk	9.8	.1	54.32	59.08	-4.76	-	-
16	.345	25.71	Av	9.8	.1	35.61	-	-	49.08	-13.47
17	.381	40.4	Pk	9.8	.1	50.3	58.26	-7.96	-	-
18	.39	25.01	Av	9.8	.1	34.91	-	-	48.06	-13.15
19	.423	42.26	Pk	9.8	.1	52.16	57.39	-5.23	-	-
20	.429	22.6	Av	9.8	.1	32.5	-	-	47.27	-14.77
21	.504	33.51	Pk	9.9	.1	43.51	56	-12.49	-	-
22	.522	13.76	Av	9.9	.1	23.76	-	-	46	-22.24
23	19.458	32.64	Pk	10.2	.3	43.14	60	-16.86	-	-
24	19.62	20.41	Av	10.2	.3	30.91	-	-	50	-19.09

Pk - Peak detector
Av - Average detection

Quasi-Peak Emissions

Range 2: Phase N .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_N [dB]	Cable Loss [dB]	Corrected Reading (dBuVolts)	FCC 15 Class B QP [dBuV]	Margin (dB)	FCC 15 Class B AV [dBuV]	Margin (dB)
.34515	42.88	Qp	9.8	.1	52.78	59.08	-6.3	-	-
.38175	37.84	Qp	9.8	.1	47.74	58.24	-10.5	-	-
.42375	40.08	Qp	9.8	.1	49.98	57.37	-7.39	-	-

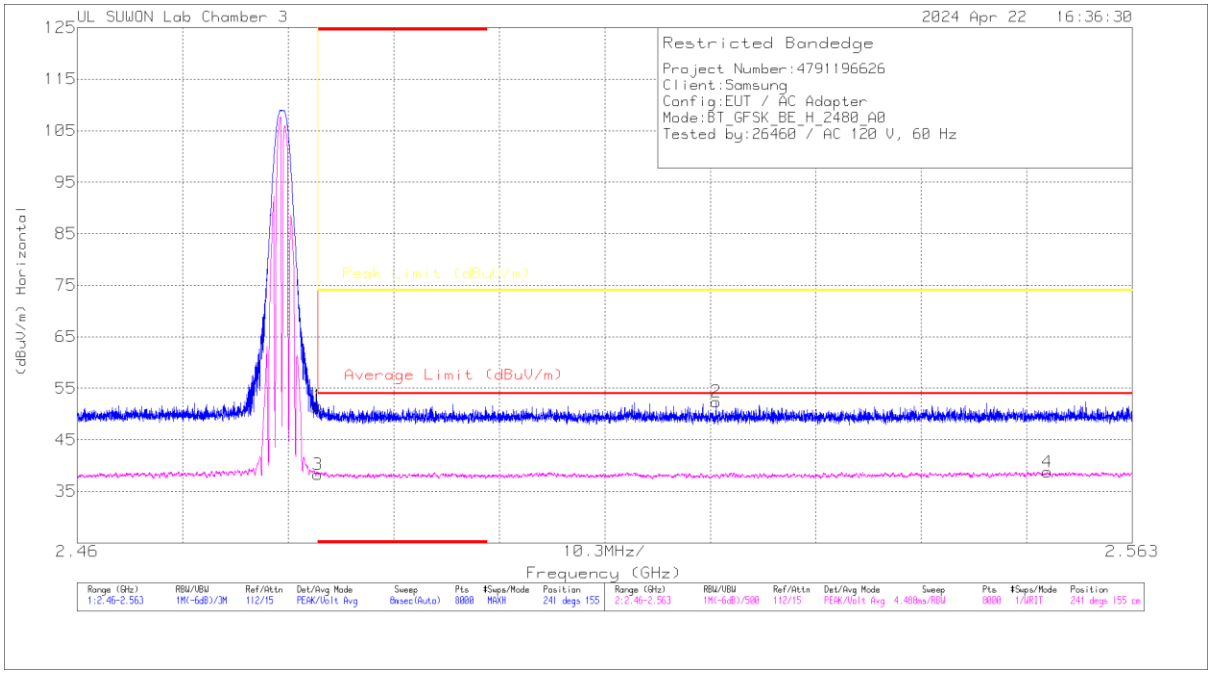
Qp - Quasi-Peak detector

12. SPOT-CHECK THEST RESULT

BDR ANT1

BANDEDGE (WORST CASE : 2480 MHz)

2480 MHz HORIZONTAL



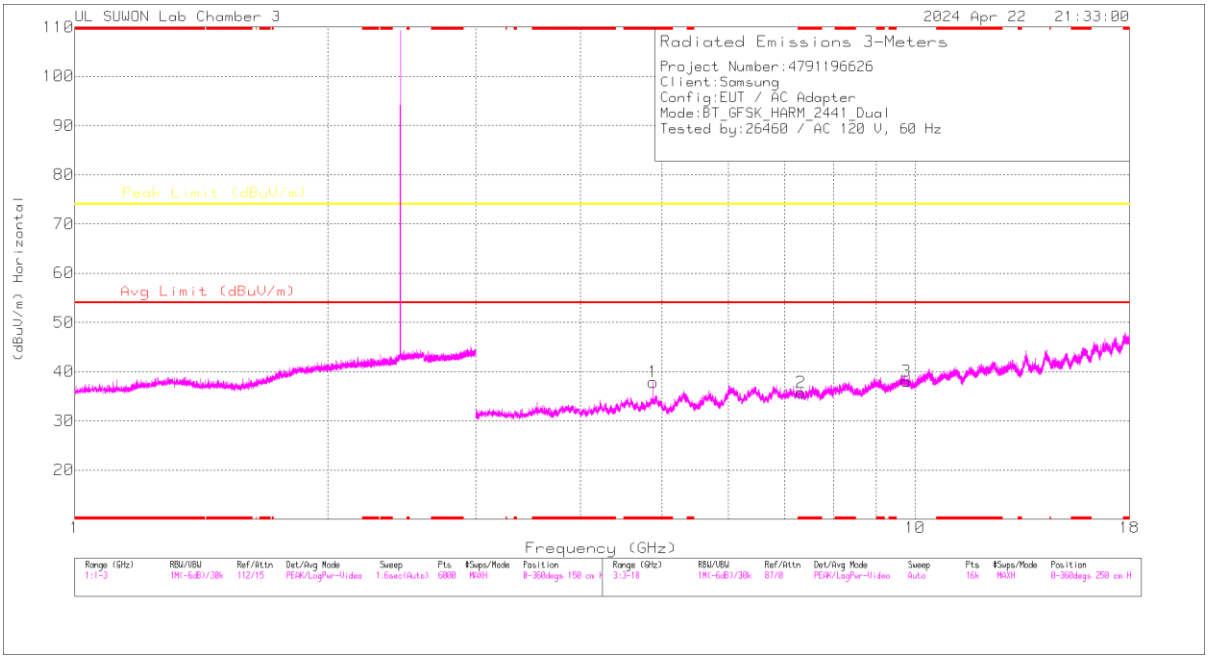
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_Factor(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	44	Pk	32.4	-24.8	51.6	-	-	74	-22.4	241	155	H
2	2.52236	44.89	Pk	32.4	-24.9	52.39	-	-	74	-21.61	241	155	H
3	* 2.4835	30.69	VA1T	32.4	-24.8	38.29	54	-15.71	-	-	241	155	H
4	2.55471	30.96	VA1T	32.4	-24.6	38.76	54	-15.24	-	-	241	155	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

HARMONICS AND SPURIOUS EMISSIONS (WORST CASE: BDR DUAL 2441 MHz)

2441 MHz HORIZONTAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Radiated Emissions

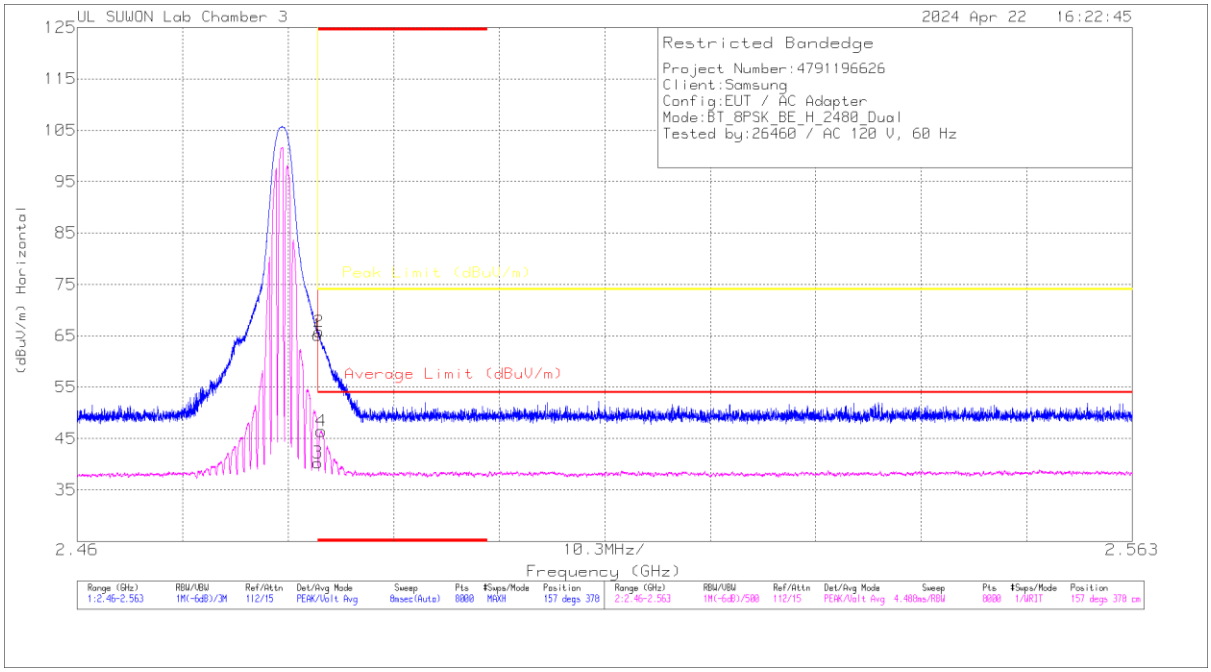
Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_ Factor(dB)	3GHz_HP_Pat h Loss(dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.88237	40.84	PKFH	34.2	-30	45.04	-	-	74	-28.96	196	184	H
* 4.88203	33.27	VA1T	34.2	-30	37.47	54	-16.53	-	-	196	184	H

* - 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

EDR DUAL

BANDEDGE (WORST CASE : 2480 MHz)

2480 MHz HORIZONTAL



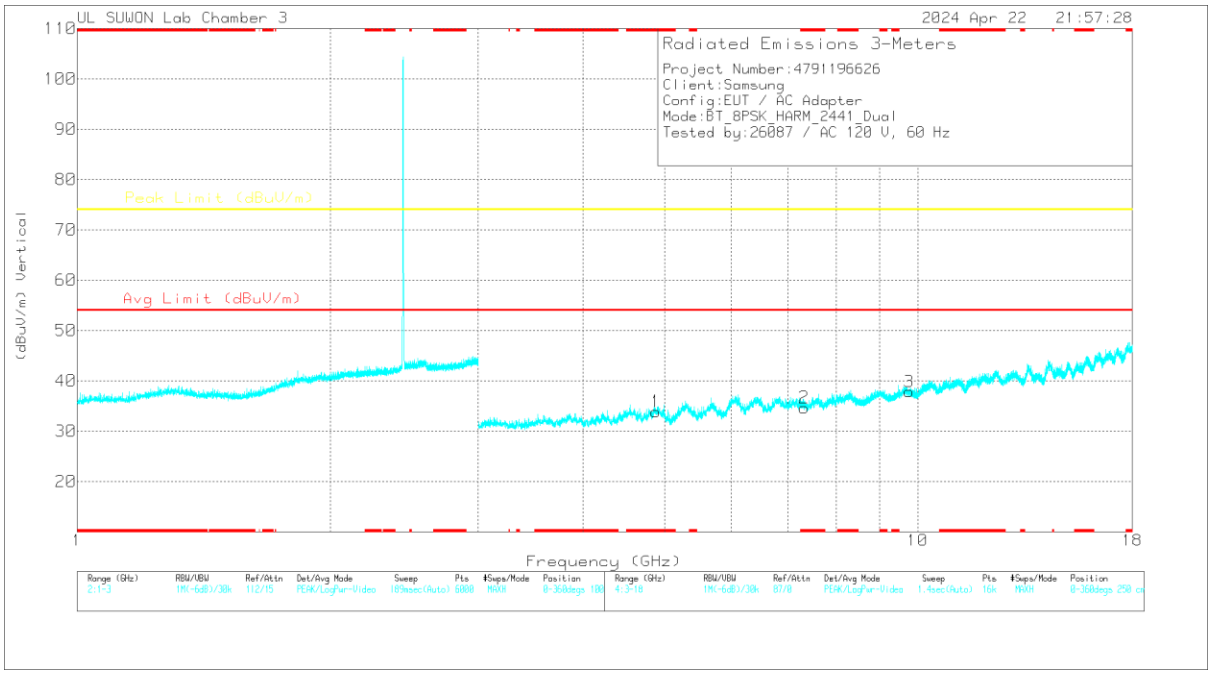
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Antenna_957_Factor(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	57.55	Pk	32.4	-24.8	65.15	-	-	74	-8.85	157	378	H
2	* 2.4836	58.18	Pk	32.4	-24.8	65.78	-	-	74	-8.22	157	378	H
3	* 2.4835	32.69	VA1T	32.4	-24.8	40.29	54	-13.71	-	-	157	378	H
4	* 2.48382	38.85	VA1T	32.4	-24.8	46.45	54	-7.55	-	-	157	378	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

HARMONICS AND SPURIOUS EMISSIONS (WORST CASE: EDR DUAL 2441 MHz)

2441 MHz VERTICAL



Note: Emission was scanned up to 40GHz; 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)	3GHz_HP_Path Loss(dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 7.32206	33.14	PKFH	35.8	-25.5	43.44	-	-	74	-30.56	176	392	V
* 7.32256	20.9	VA1T	35.8	-25.5	31.2	54	-22.8	-	-	176	392	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

END OF TEST REPORT