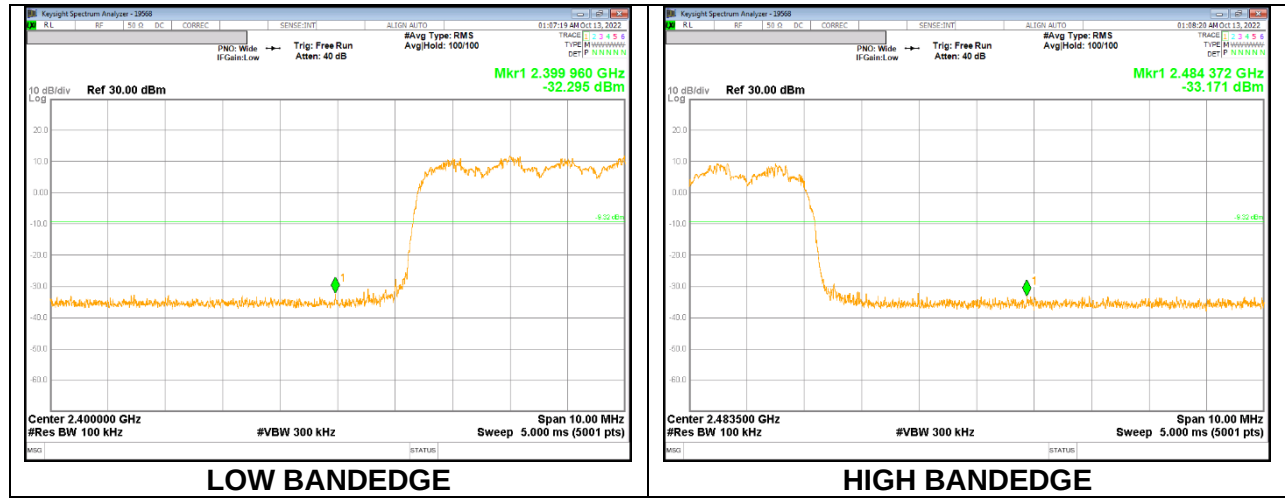


SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



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.

$$\text{GFSK} = 1/T = 1 / 0.00288\text{s} = 347\text{Hz}.$$

The minimum VBW was 347Hz, 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.

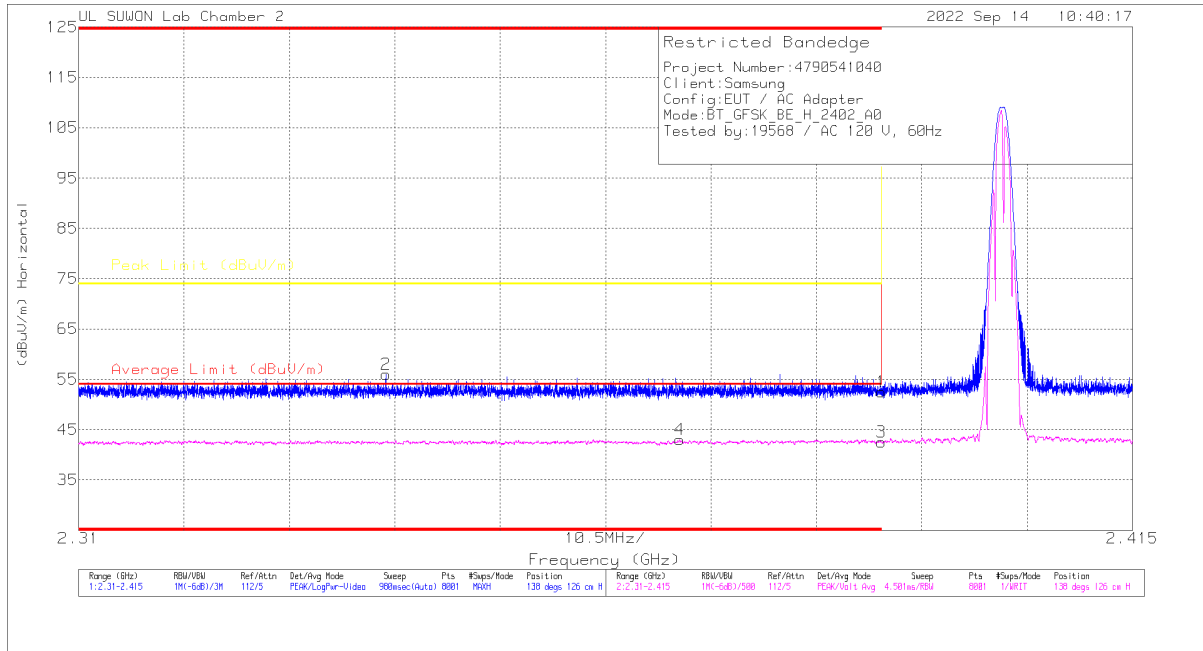
Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 30 m open are test site.
Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the one of tests made in an open field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

10.1. TRANSMITTER ABOVE 1 GHz

10.1.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

- ANT1
BANDEDGE (0 CHANNEL)

HORIZONTAL RESULT



Trace Markers

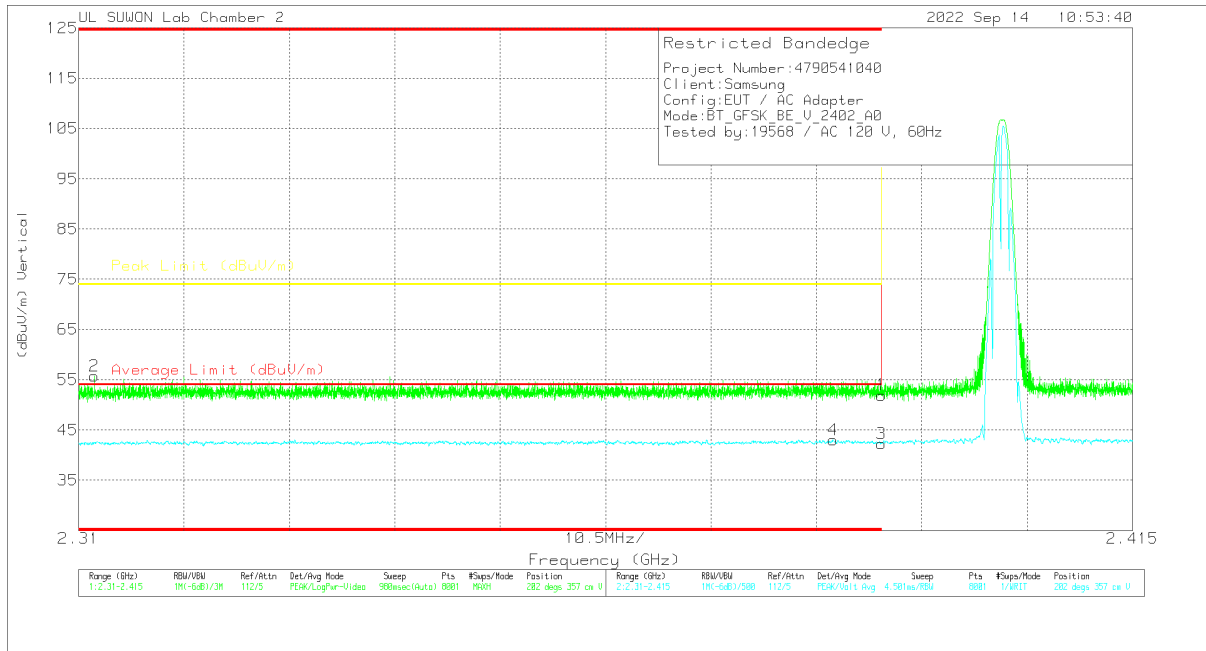
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	40.47	Pk	31.7	-19.7	52.47	-	-	74	-21.53	138	126	H
2	* 2.34061	44.04	Pk	31.6	-19.6	56.04	-	-	74	-17.96	138	126	H
3	* 2.39	30.56	VA1T	31.7	-19.7	42.56	54	-11.44	-	-	138	126	H
4	* 2.36988	30.95	VA1T	31.7	-19.6	43.05	54	-10.95	-	-	138	126	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

VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.94	Pk	31.7	-19.7	51.94	-	-	74	-22.06	202	357	V
2	* 2.31156	43.7	Pk	31.6	-19.6	55.7	-	-	74	-18.3	202	357	V
3	* 2.39	30.32	VA1T	31.7	-19.7	42.32	54	-11.68	-	-	202	357	V
4	* 2.38515	30.95	VA1T	31.7	-19.6	43.05	54	-10.95	-	-	202	357	V

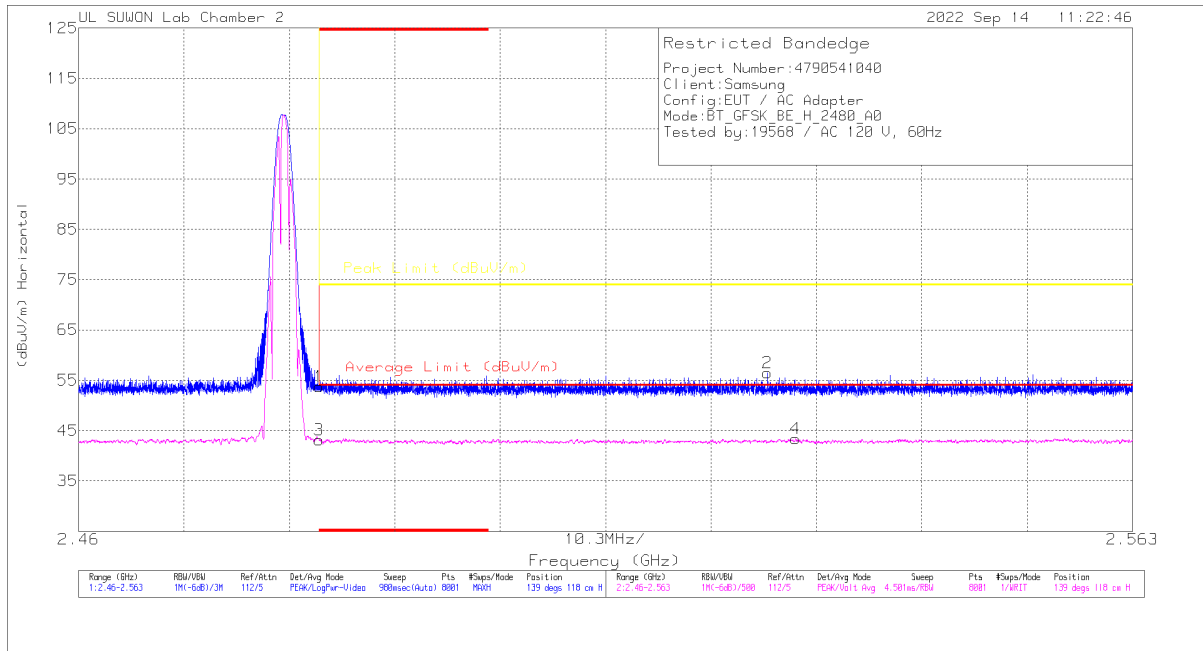
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

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

BANDEDGE (78 CHANNEL)

HORIZONTAL RESULT



Trace Markers

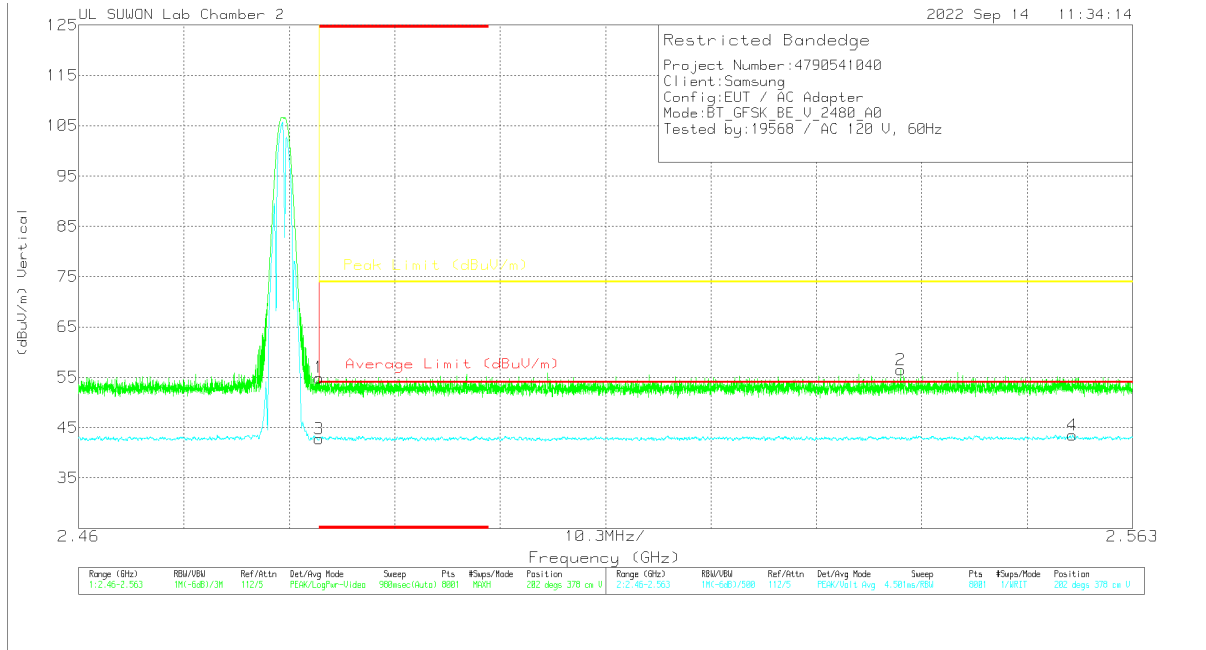
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	41.39	Pk	31.9	-19.6	53.69	-	-	74	-20.31	139	118	H
2	2.52731	44.11	Pk	31.9	-19.5	56.51	-	-	74	-17.49	139	118	H
3	* 2.48351	30.89	VA1T	31.9	-19.6	43.19	54	-10.81	-	-	139	118	H
4	2.53008	30.84	VA1T	31.9	-19.3	43.44	54	-10.56	-	-	139	118	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

VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	42.63	Pk	31.9	-19.6	54.93	-	-	74	-19.07	202	378	V
2	2.54033	43.93	Pk	32	-19.4	56.53	-	-	74	-17.47	202	378	V
3	* 2.48351	30.48	VA1T	31.9	-19.6	42.78	54	-11.22	-	-	202	378	V
4	2.55713	30.89	VA1T	32	-19.4	43.49	54	-10.51	-	-	202	378	V

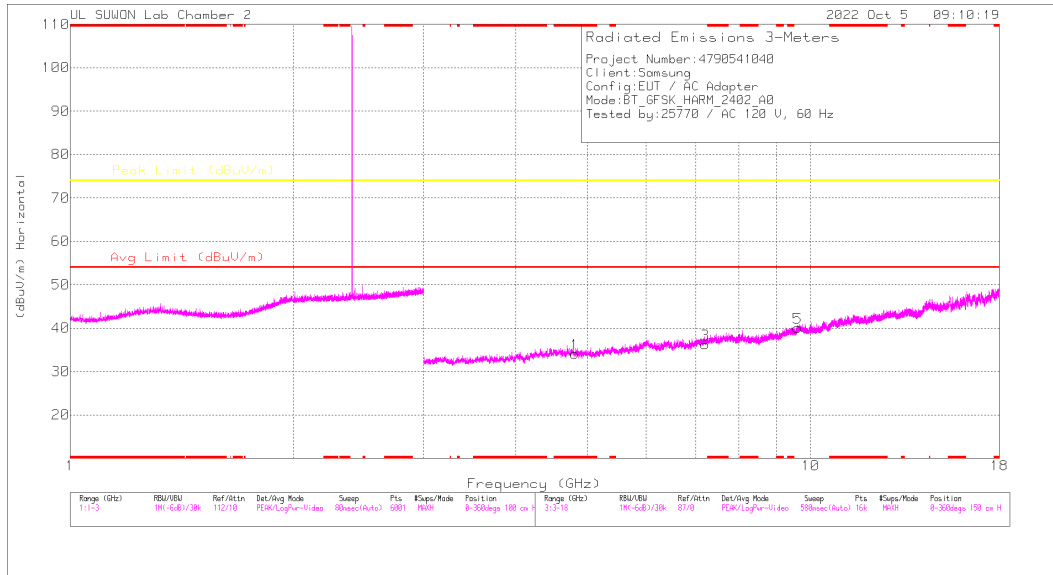
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

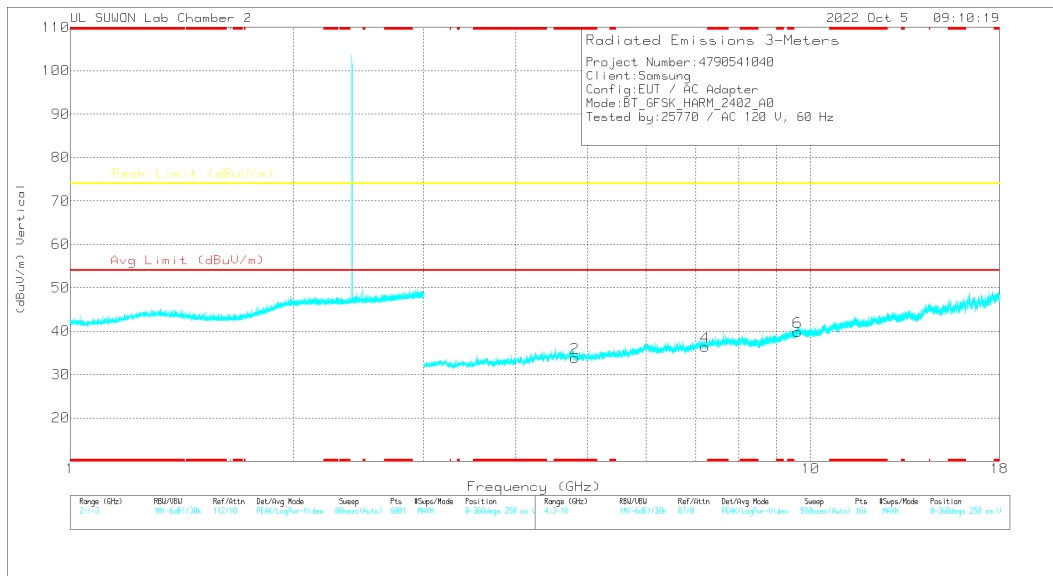
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

HARMONICS AND SPURIOUS EMISSIONS

0 CHANNEL RESULTS



HORIZONTAL



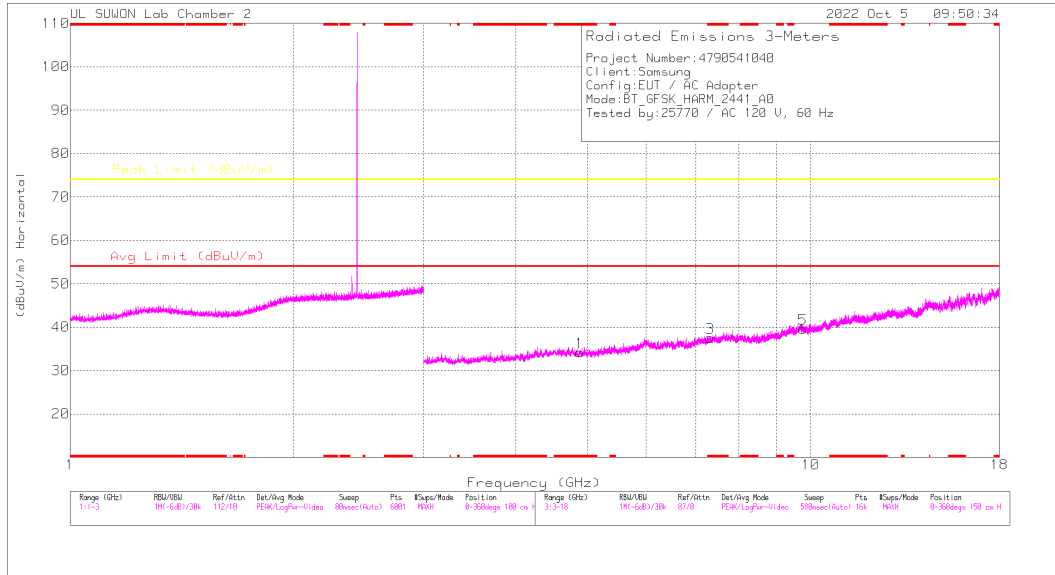
VERTICAL

RADIATED EMISSIONS

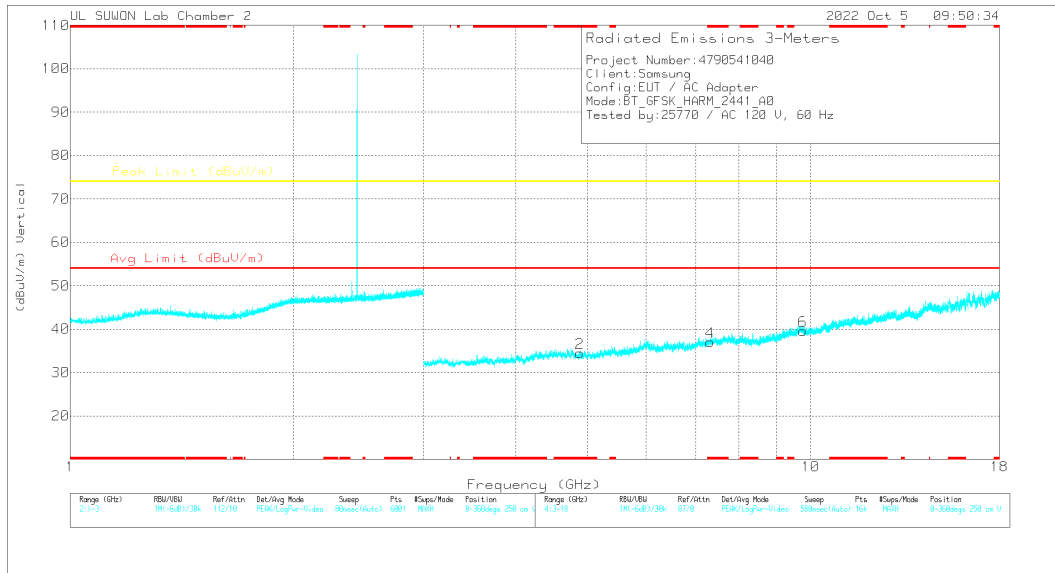
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_0016872 4	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.81006	35.51	PKFH	34	-27.8	0	41.71	-	-	74	-32.29	0	100	H
* 4.80349	35.33	PKFH	34	-27.7	0	41.63	-	-	74	-32.37	0	100	V
7.19797	34.3	PKFH	35.6	-25	0	44.9	-	-	74	-29.1	0	100	H
7.21372	34.26	PKFH	35.7	-25.1	0	44.86	-	-	74	-29.14	0	100	V
9.61337	31.38	PKFH	36.9	-21.2	0	47.08	-	-	74	-26.92	0	100	H
9.6121	31.66	PKFH	36.9	-21.3	0	47.26	-	-	74	-26.74	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

39 CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

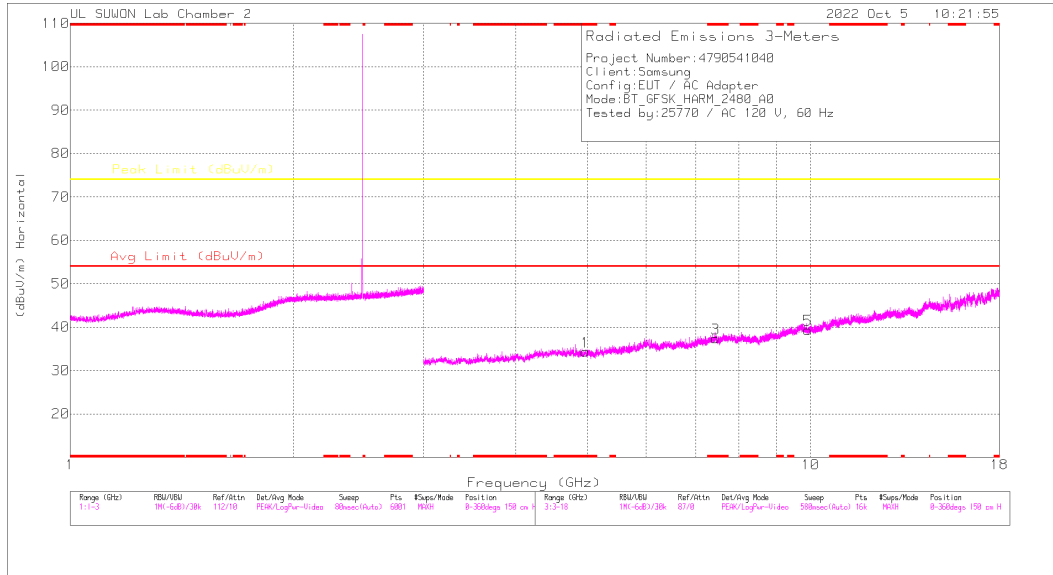
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_0016872_4	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.88001	36.15	PKFH	34	-27.7	0	42.45	-	-	74	-31.55	0	100	H
* 4.88749	36.25	PKFH	34	-27.6	0	42.65	-	-	74	-31.35	0	100	V
* 7.3259	33.78	PKFH	35.7	-24.4	0	45.08	-	-	74	-28.92	0	100	H
* 7.31391	35.6	PKFH	35.7	-24.6	0	46.7	-	-	74	-27.3	0	100	V
9.76697	31.52	PKFH	37.1	-21	0	47.62	-	-	74	-26.38	0	100	H
9.75998	31.52	PKFH	37.1	-21	0	47.62	-	-	74	-26.38	0	100	V

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

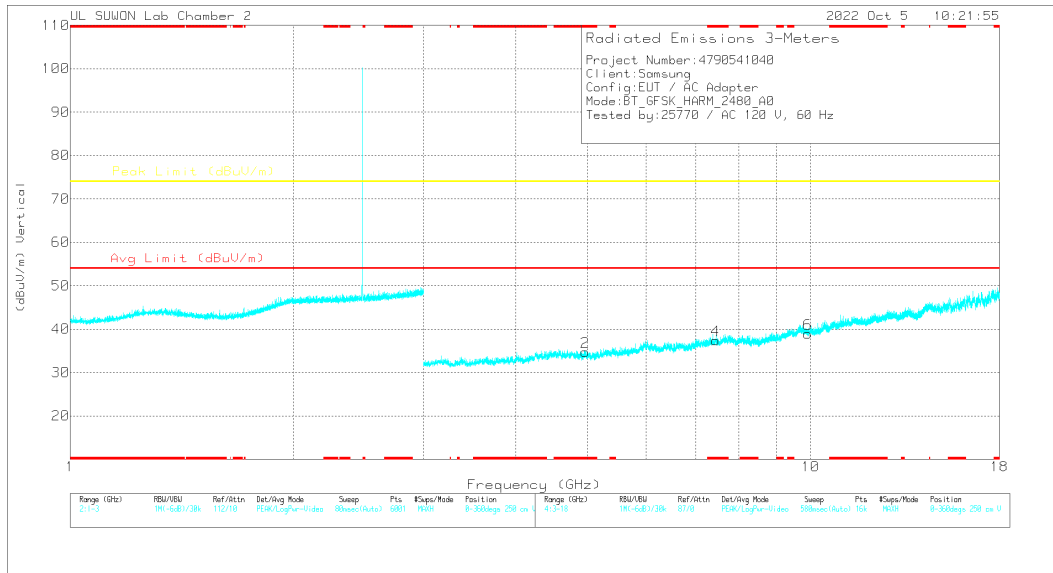
PKFH FHSS/BT RB=100k for Frequencies<1GHz / RB=1MHz for Frequencies>1GHz, VB=3 x RB, Peak

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

78 CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

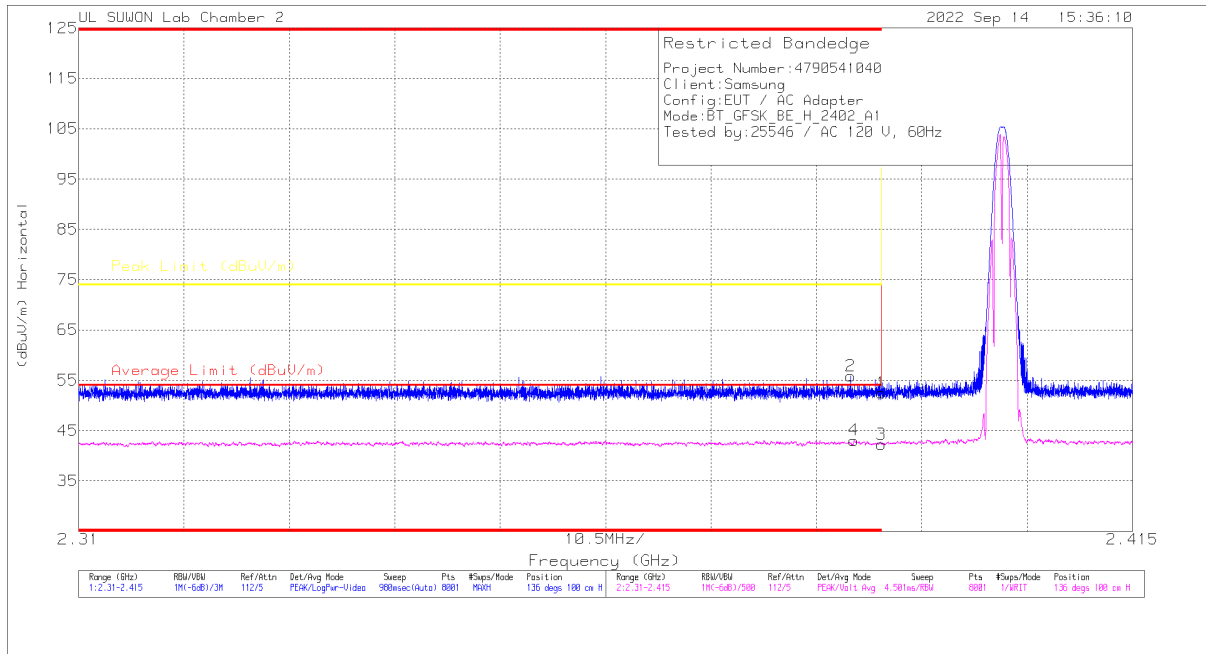
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_0016872 4	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.96326	35.01	PKFH	34	-26.9	0	42.11	-	-	74	-31.89	0	100	H
* 4.96972	35.25	PKFH	34	-27	0	42.25	-	-	74	-31.75	0	100	V
* 7.43607	34.13	PKFH	35.7	-23.7	0	46.13	-	-	74	-27.87	0	100	H
* 7.44347	33.6	PKFH	35.7	-23.7	0	45.6	-	-	74	-28.4	0	100	V
9.92127	31.37	PKFH	37.3	-21.1	0	47.57	-	-	74	-26.43	0	100	H
9.91143	30.8	PKFH	37.3	-21.1	0	47	-	-	74	-27	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

- ANT2
BANDEDGE (0 CHANNEL)

HORIZONTAL RESULT



Trace Markers

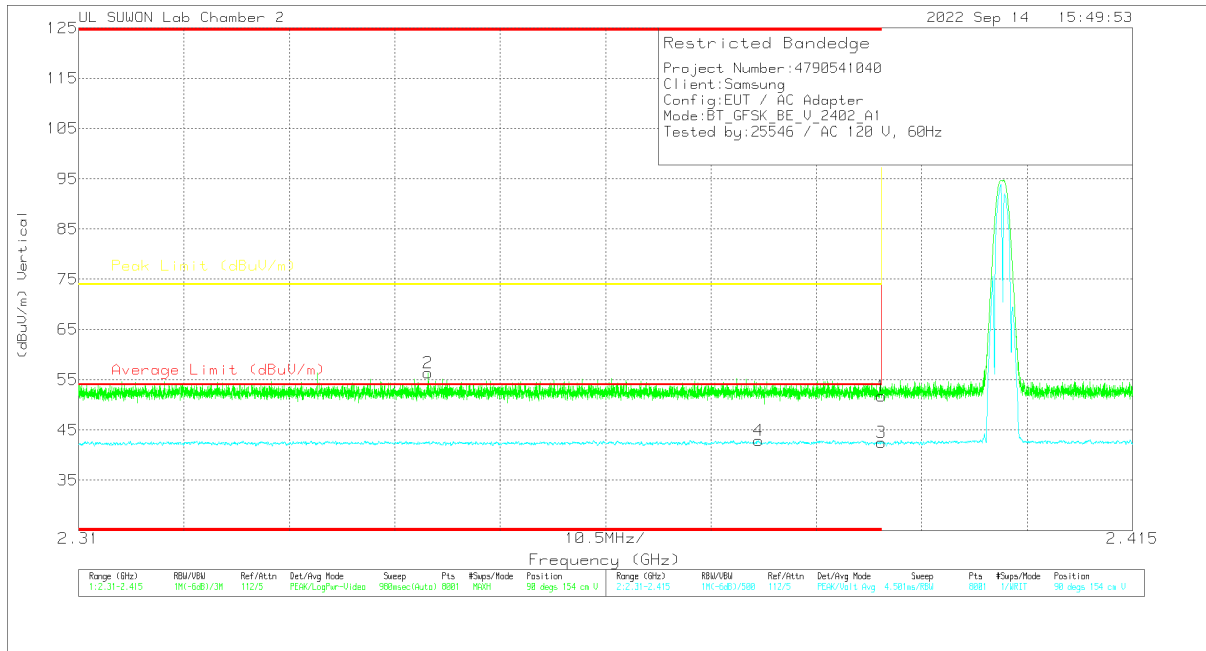
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	40.53	Pk	31.7	-19.7	52.53	-	-	74	-21.47	136	100	H
2	* 2.3869	43.82	Pk	31.7	-19.6	55.92	-	-	74	-18.08	136	100	H
3	* 2.39	30.29	VA1T	31.7	-19.7	42.29	54	-11.71	-	-	136	100	H
4	* 2.38725	30.99	VA1T	31.7	-19.6	43.09	54	-10.91	-	-	136	100	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

VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.7	Pk		-19.7	51.7	-	-	74	-22.3	90	154	V
2	* 2.34483	44.32	Pk		-19.6	56.32	-	-	74	-17.68	90	154	V
3	* 2.39	30.53	VA1T		-19.7	42.53	54	-11.47	-	-	90	154	V
4	* 2.37775	30.72	VA1T		-19.5	42.92	54	-11.08	-	-	90	154	V

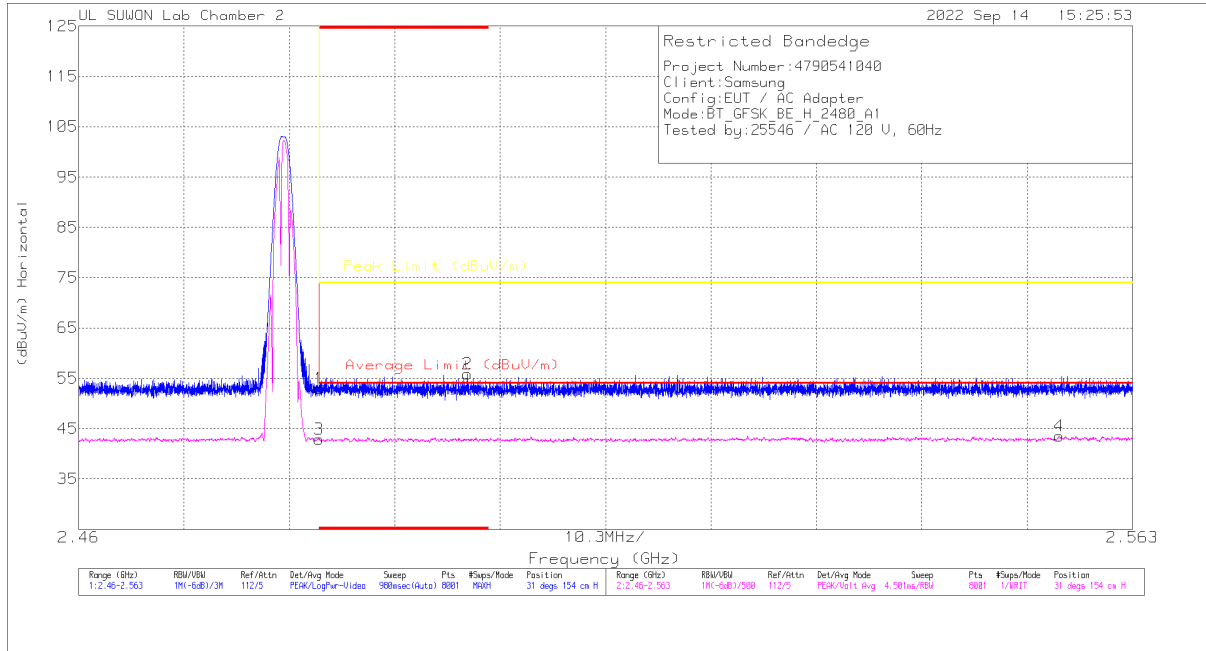
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

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

BANDEDGE (78 CHANNEL)

HORIZONTAL RESULT



Trace Markers

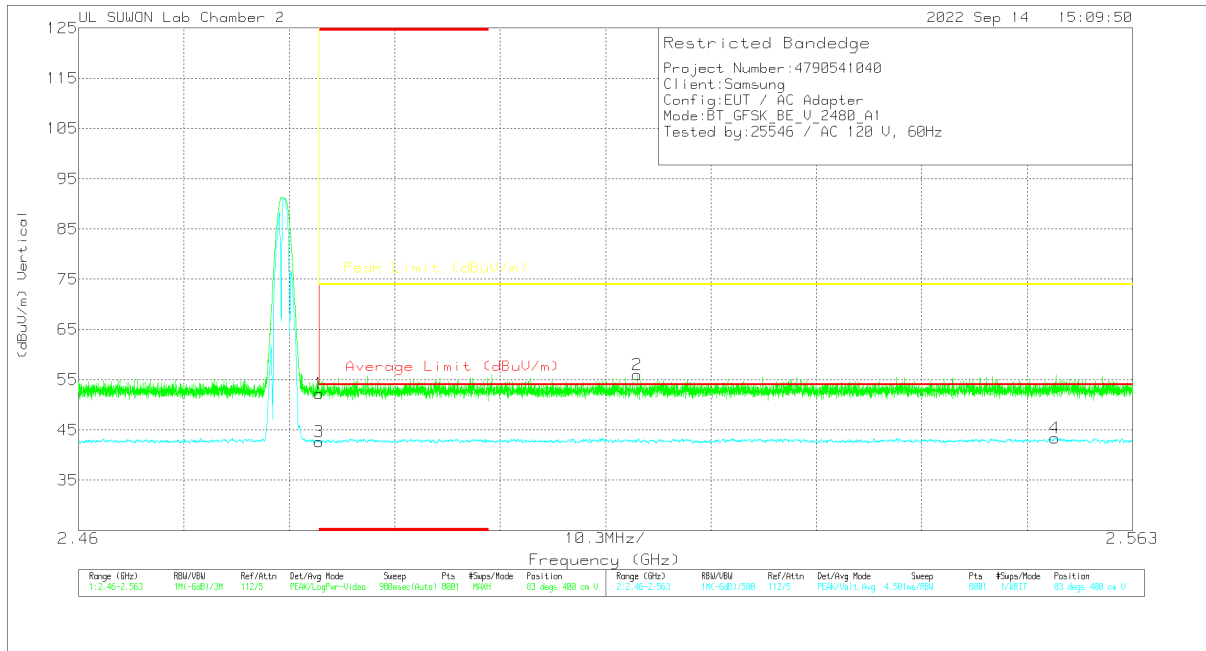
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	40.71	Pk	31.9	-19.6	53.01	-	-	74	-20.99	31	154	H
2	* 2.49798	43.41	Pk	31.9	-19.5	55.81	-	-	74	-18.19	31	154	H
3	* 2.48351	30.61	VA1T	31.9	-19.6	42.91	54	-11.09	-	-	31	154	H
4	2.55583	30.79	VA1T	32	-19.3	43.49	54	-10.51	-	-	31	154	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

VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Altitude (Degs)	Height (cm)	Polarity
1	* 2.48351	39.91	PK	31.9	-19.6	52.21	-	-	74	-21.79	83	400	V
2	2.51456	43.71	PK	31.9	-19.6	56.01	-	-	74	-17.99	83	400	V
3	* 2.48351	30.39	VA1T	31.9	-19.6	42.69	54	-11.31	-	-	83	400	V
4	2.55542	30.75	VA1T	32	-19.3	43.45	54	-10.55	-	-	83	400	V

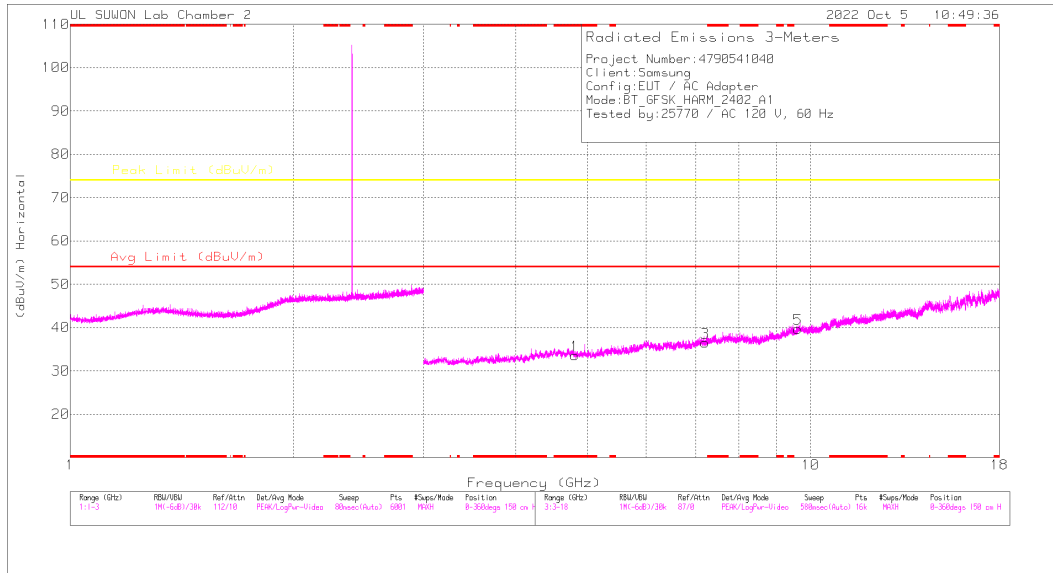
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK - Peak detector

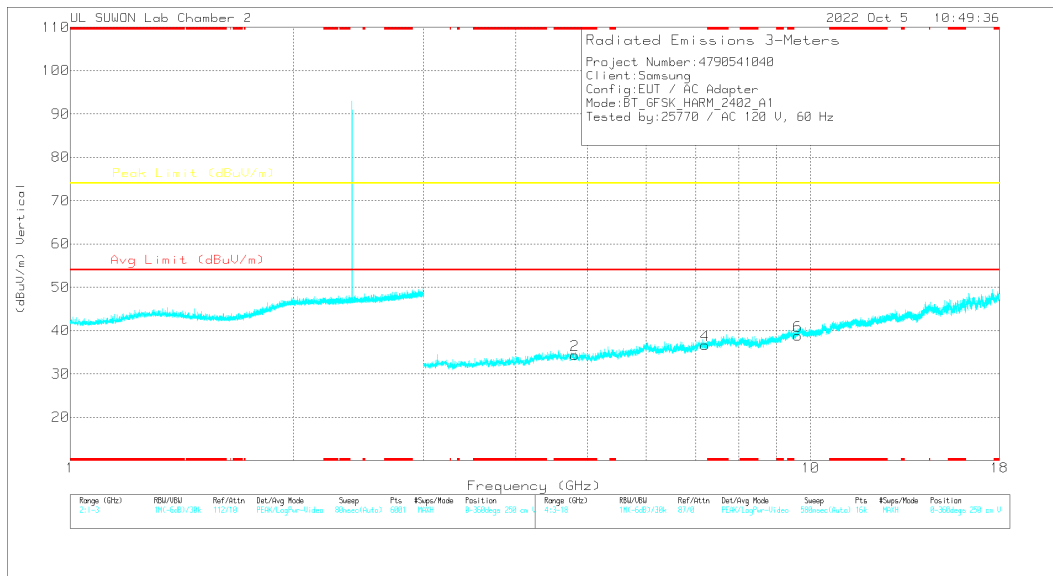
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

HARMONICS AND SPURIOUS EMISSIONS

0 CHANNEL RESULTS



HORIZONTAL



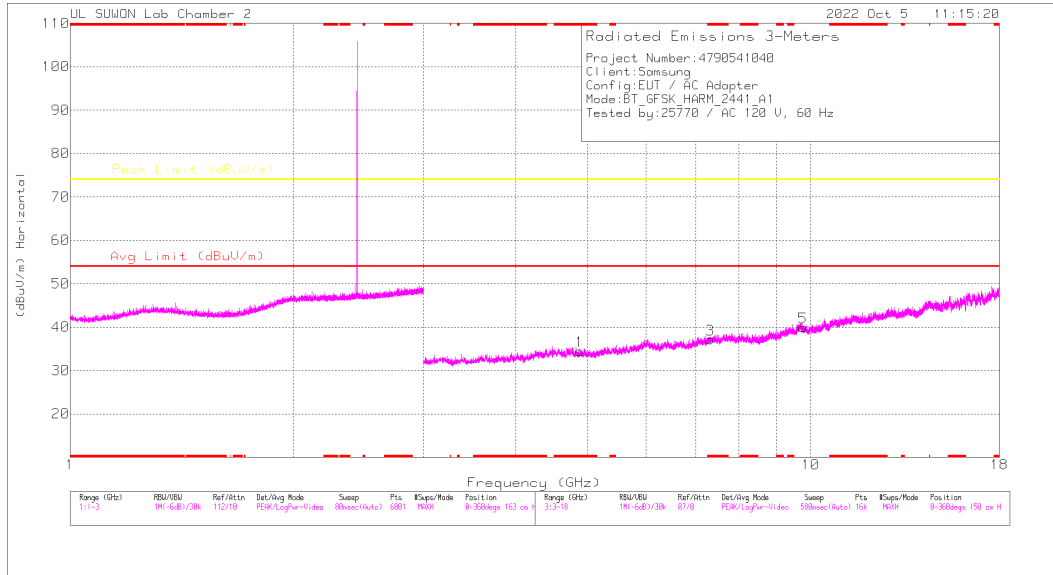
VERTICAL

RADIATED EMISSIONS

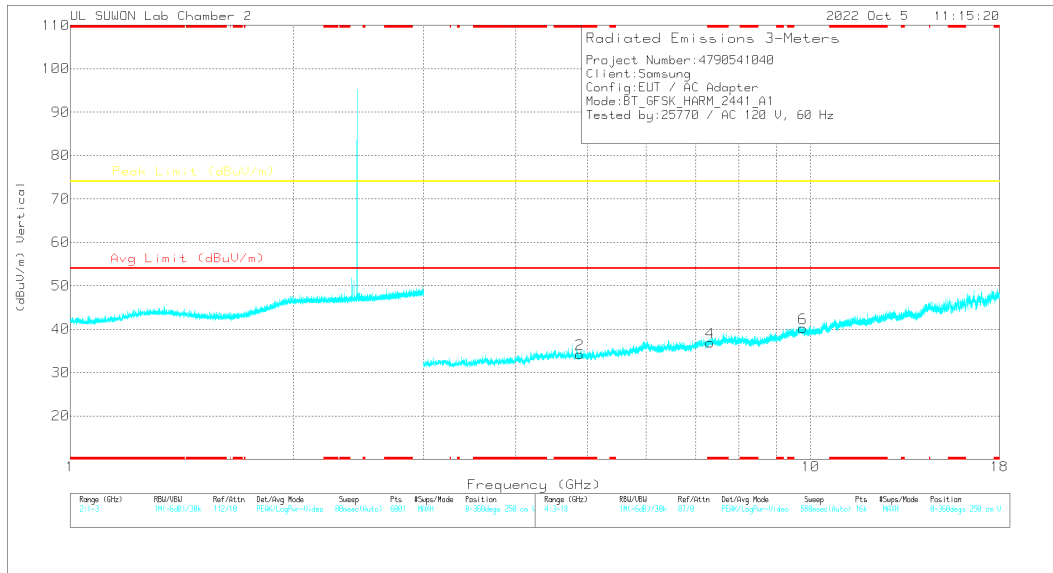
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_0016872 4	3GHz_HPI[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.80391	35.44	PKFH	34	-27.7	0	41.74	-	-	74	-32.26	0	100	H
* 4.80975	35.02	PKFH	34	-27.8	0	41.22	-	-	74	-32.78	0	100	V
7.20406	34.09	PKFH	35.7	-25	0	44.79	-	-	74	-29.21	0	100	H
7.20481	34.43	PKFH	35.7	-25	0	45.13	-	-	74	-28.87	0	100	V
9.61816	31.81	PKFH	36.9	-21.1	0	47.61	-	-	74	-26.39	0	100	H
9.61803	31.67	PKFH	36.9	-21.1	0	47.47	-	-	74	-26.53	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

39 CHANNEL RESULTS



HORIZONTAL



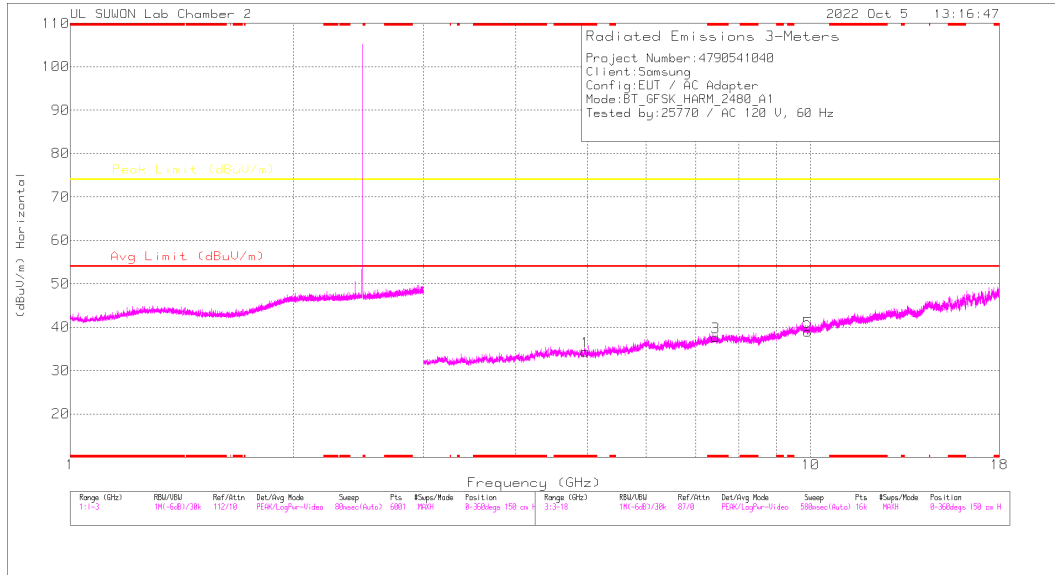
VERTICAL

RADIATED EMISSIONS

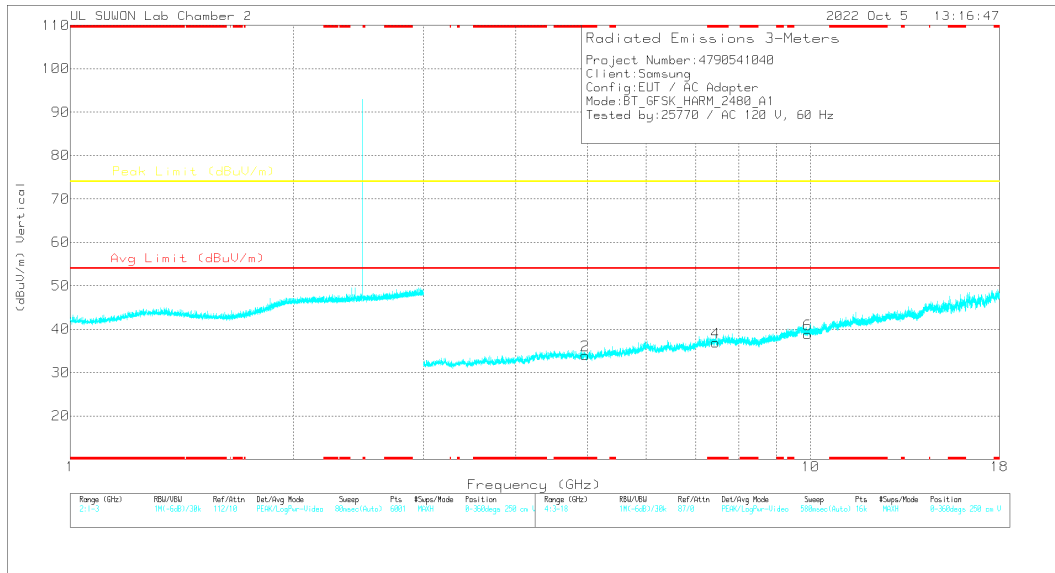
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_0016872_4	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.88297	36.47	PKFH	34	-27.6	0	42.87	-	-	74	-31.13	0	100	H
* 4.88877	36.09	PKFH	34	-27.5	0	42.59	-	-	74	-31.41	0	100	V
* 7.31715	33.94	PKFH	35.7	-24.6	0	45.04	-	-	74	-28.96	0	100	H
* 7.3138	34	PKFH	35.7	-24.6	0	45.1	-	-	74	-28.9	0	100	V
9.75494	31.66	PKFH	37.1	-20.9	0	47.86	-	-	74	-26.14	0	100	H
9.7645	32.03	PKFH	37.1	-21	0	48.13	-	-	74	-25.87	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

78 CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

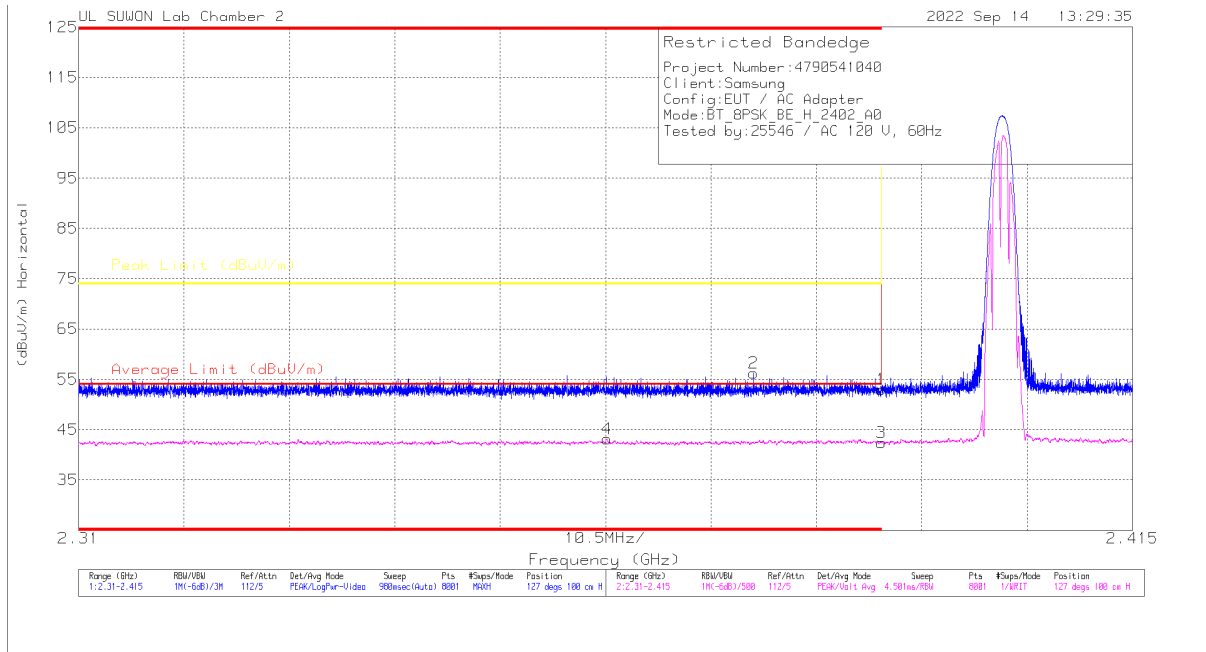
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_0016872 4	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.95544	35.9	PKFH	34	-27	0	42.9	-	-	74	-31.1	0	100	H
* 4.96675	35.35	PKFH	34	-27	0	42.35	-	-	74	-31.65	0	100	V
* 7.44594	33.35	PKFH	35.7	-23.8	0	45.25	-	-	74	-28.75	0	100	H
* 7.44654	32.95	PKFH	35.7	-23.8	0	44.85	-	-	74	-29.15	0	100	V
9.92128	30.45	PKFH	37.3	-21.1	0	46.65	-	-	74	-27.35	0	100	H
9.92764	31.12	PKFH	37.3	-21	0	47.42	-	-	74	-26.58	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

10.1.2. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

- ANT1 BANDEDGE (0 CHANNEL)

HORIZONTAL RESULT



Trace Markers

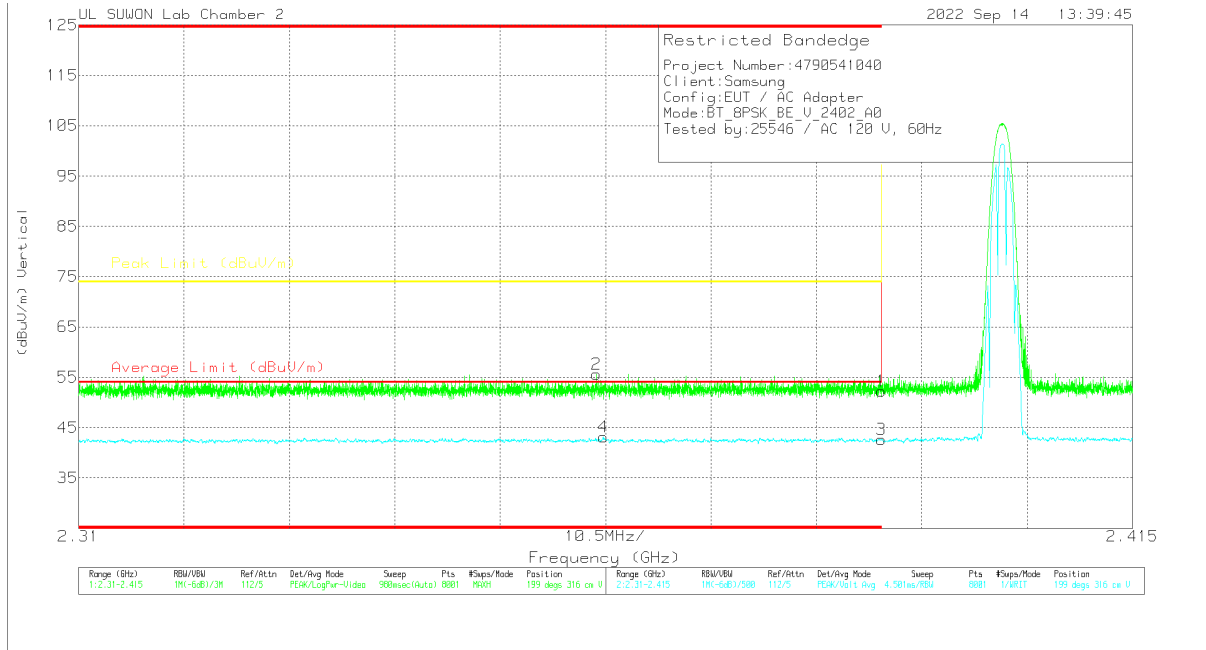
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	41.05	Pk	31.7	-19.7	53.05	-	-	74	-20.95	127	100	H
2	* 2.37727	44.19	Pk	31.7	-19.6	56.29	-	-	74	-17.71	127	100	H
3	* 2.39	30.38	VA1T	31.7	-19.7	42.38	54	-11.62	-	-	127	100	H
4	* 2.36263	31.02	VA1T	31.6	-19.5	43.12	54	-10.88	-	-	127	100	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

VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	40.2	Pk	31.7	-19.7	52.2	-	-	74	-21.8	199	316	V
2	* 2.36161	43.55	Pk	31.6	-19.5	55.65	-	-	74	-18.35	199	316	V
3	* 2.39	30.6	VA1T	31.7	-19.7	42.6	54	-11.4	-	-	199	316	V
4	* 2.36225	31.03	VA1T	31.6	-19.5	43.13	54	-10.87	-	-	199	316	V

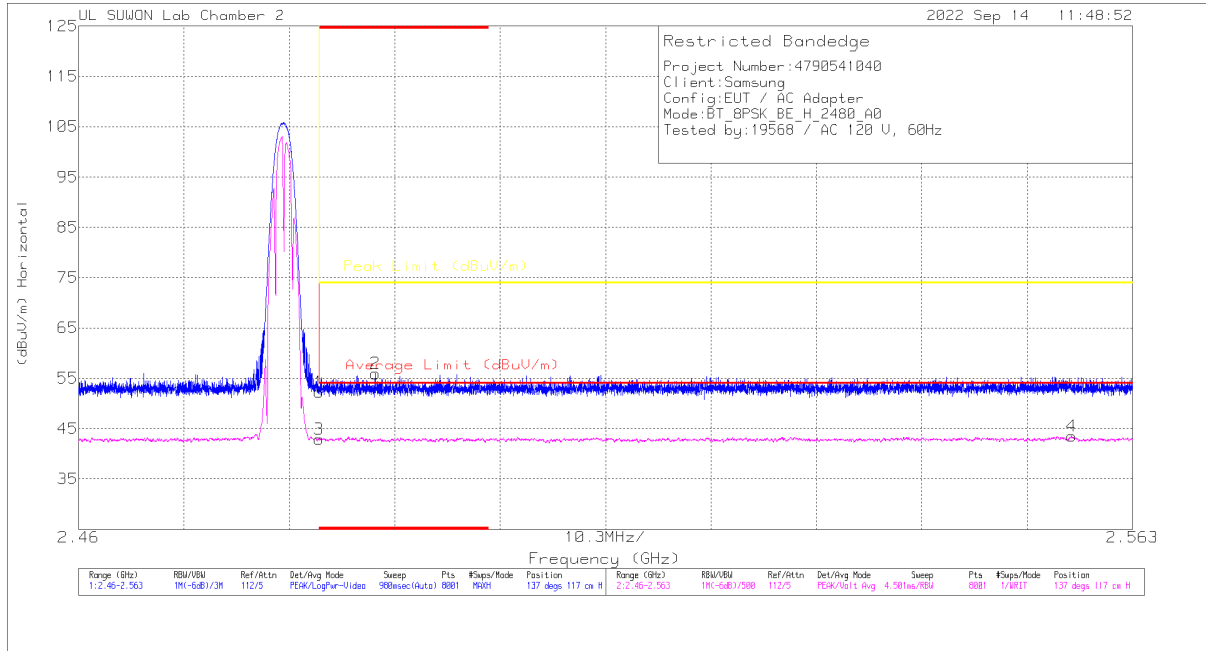
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

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

BANDEDGE (78 CHANNEL)

HORIZONTAL RESULT



Trace Markers

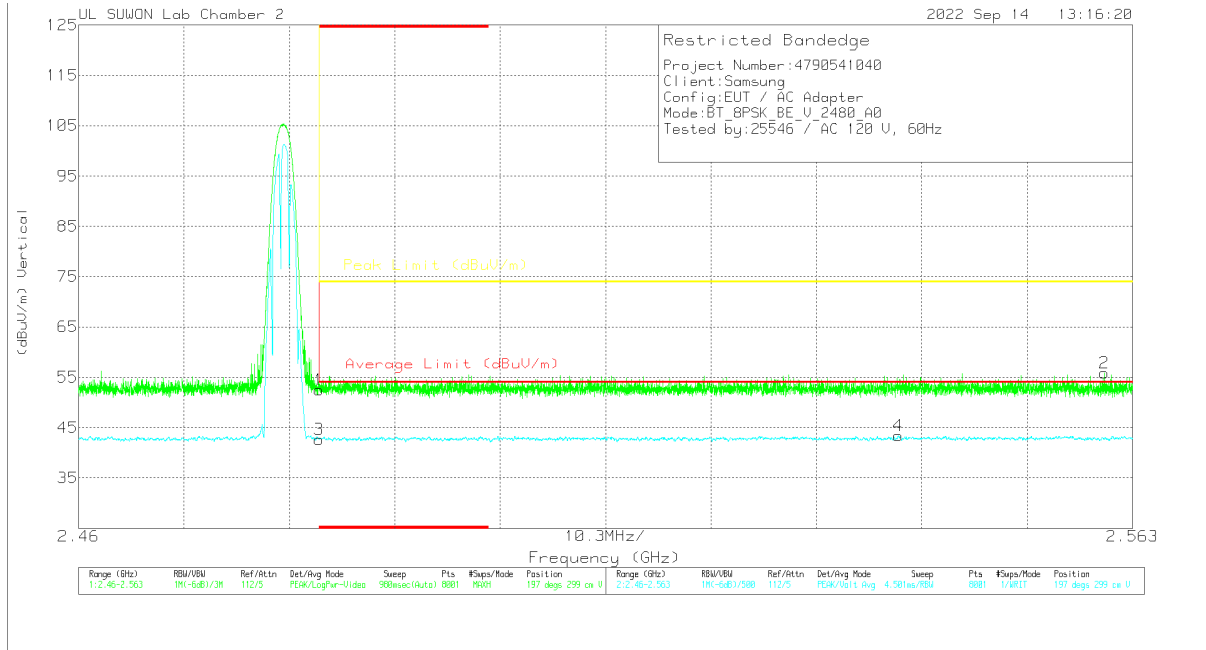
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	39.95	Pk		-19.6	52.25	-	-	74	-21.75	137	117	H
2	* 2.48898	43.63	Pk		-19.6	55.93	-	-	74	-18.07	137	117	H
3	* 2.48351	30.58	VA1T		-19.6	42.88	54	-11.12	-	-	137	117	H
4	2.55704	30.9	VA1T	32	-19.4	43.5	54	-10.5	-	-	137	117	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

VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	40.23	Pk	31.9	-19.6	52.53	-	-	74	-21.47	197	299	V
2	2.56024	43.41	Pk	32	-19.5	55.91	-	-	74	-18.09	197	299	V
3	* 2.48351	30.41	VA1T	31.9	-19.6	42.71	54	-11.29	-	-	197	299	V
4	2.5401	30.81	VA1T	32	-19.4	43.41	54	-10.59	-	-	197	299	V

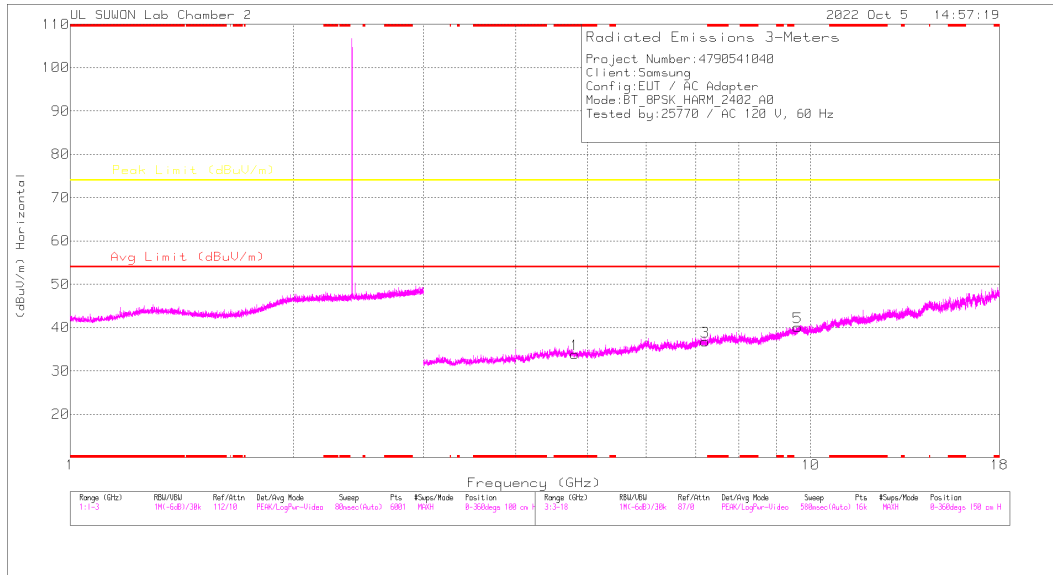
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

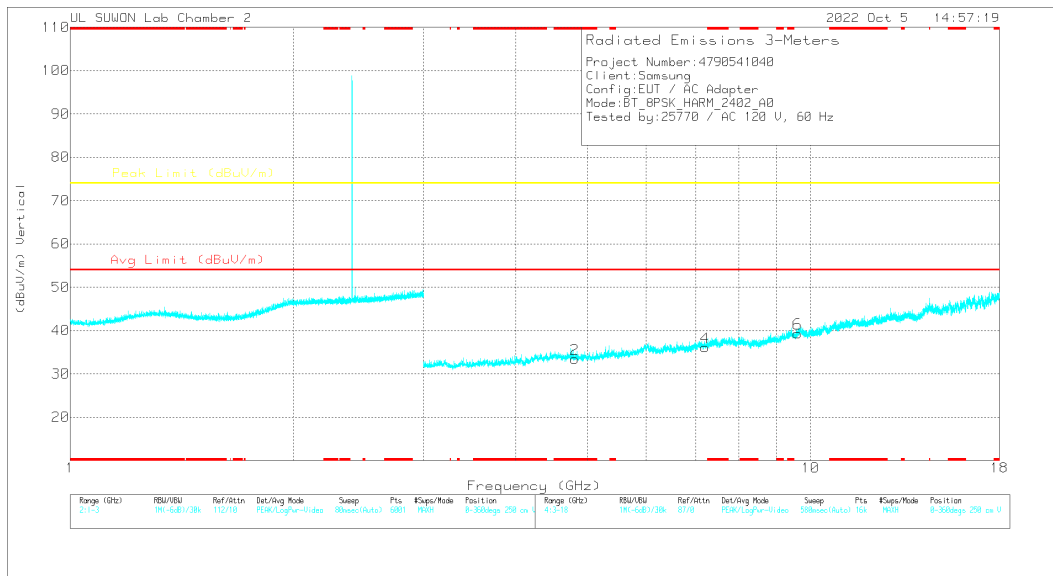
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

HARMONICS AND SPURIOUS EMISSIONS

0 CHANNEL RESULTS



HORIZONTAL



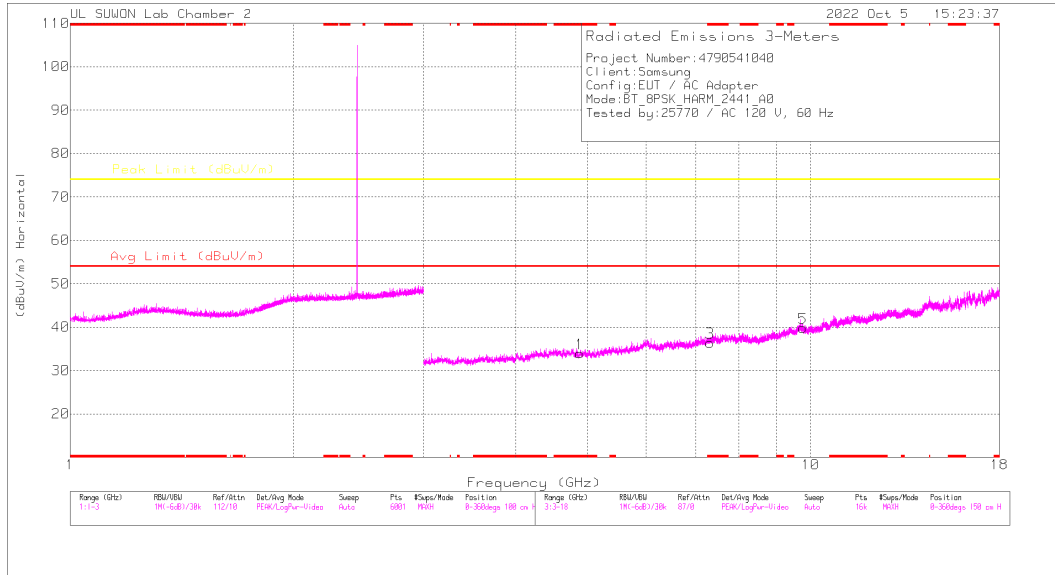
VERTICAL

RADIATED EMISSIONS

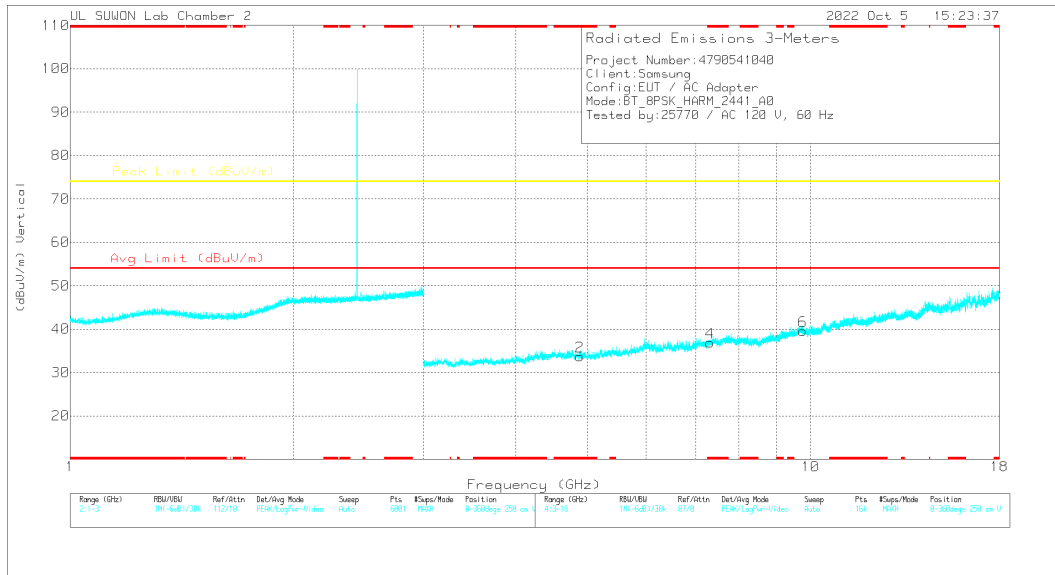
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_0016872_4	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.81156	35.36	PKFH	34	-27.7	0	41.66	-	-	74	-32.34	0	100	H
* 4.69634	36.11	PKFH	34.1	-27.7	0	42.51	-	-	74	-31.49	0	100	V
7.21355	34.5	PKFH	35.7	-25.1	0	45.1	-	-	74	-28.9	0	100	H
7.20545	33.79	PKFH	35.7	-25	0	44.49	-	-	74	-29.51	0	100	V
9.60169	32.43	PKFH	36.9	-21.3	0	48.03	-	-	74	-25.97	0	100	H
9.60983	31.49	PKFH	36.9	-21.2	0	47.19	-	-	74	-26.81	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

39 CHANNEL RESULTS



HORIZONTAL



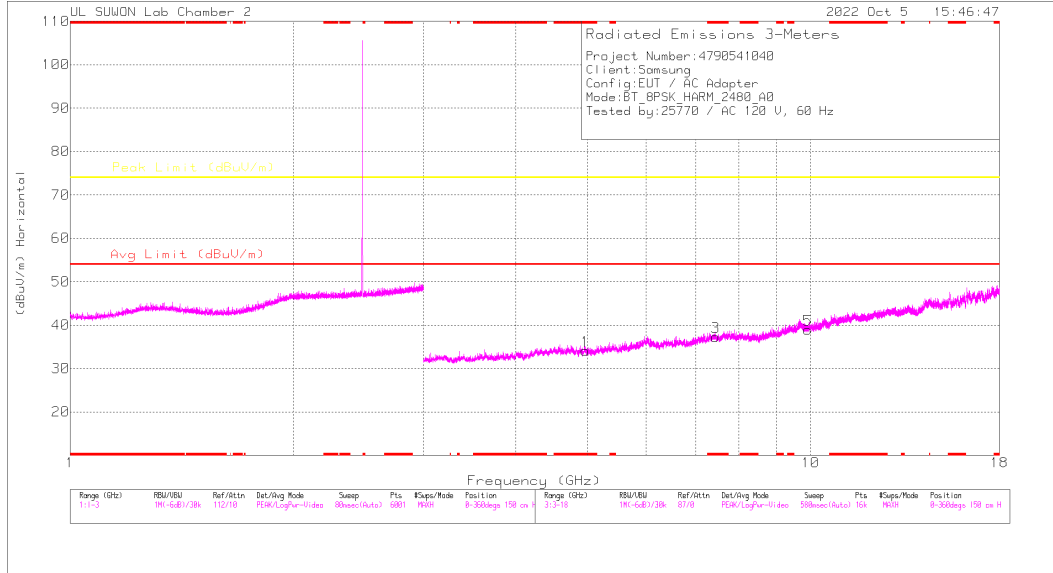
VERTICAL

RADIATED EMISSIONS

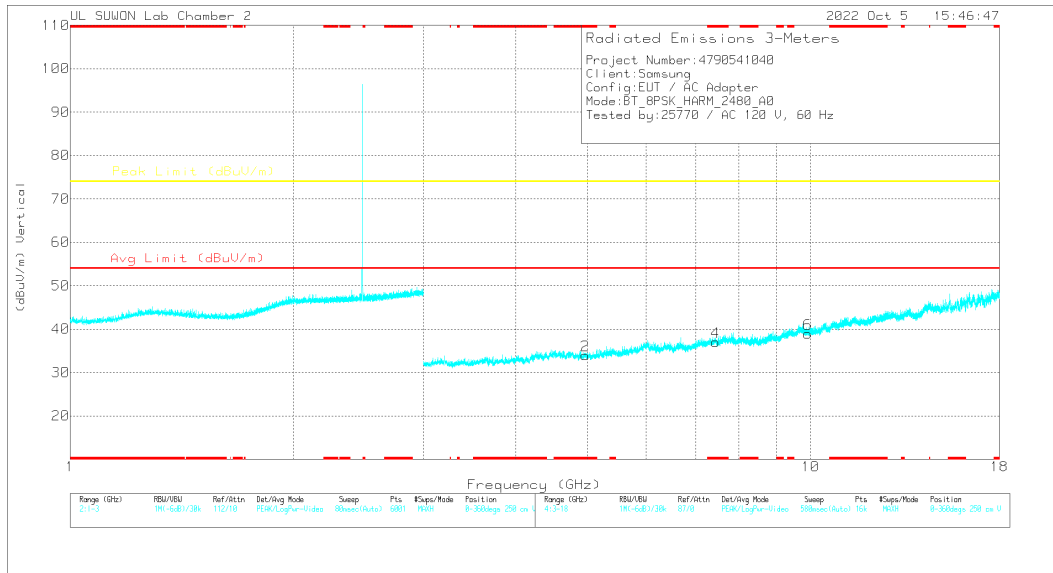
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_0016872_4	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.89238	35.67	PKFH	34	-27.5	0	42.17	-	-	74	-31.83	0	100	H
* 4.89934	35.8	PKFH	34	-27.5	0	42.3	-	-	74	-31.7	0	100	V
* 7.3178	34.07	PKFH	35.7	-24.6	0	45.17	-	-	74	-28.83	0	100	H
* 7.32038	34.47	PKFH	35.7	-24.5	0	45.67	-	-	74	-28.33	0	100	V
9.75706	31.72	PKFH	37.1	-20.9	0	47.92	-	-	74	-26.08	0	100	H
9.76913	30.97	PKFH	37.1	-21	0	47.07	-	-	74	-26.93	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

78 CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

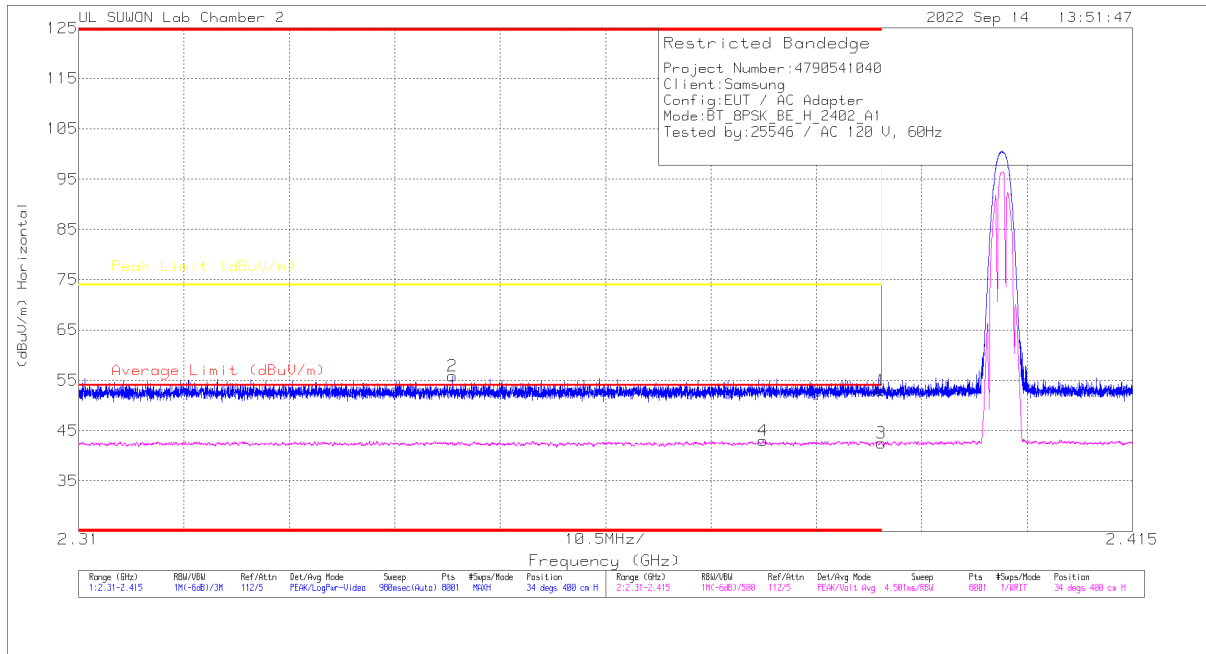
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_0016872_4	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.95233	34.79	PKFH	34	-27	0	41.79	-	-	74	-32.21	0	100	H
* 4.96034	35.57	PKFH	34	-27	0	42.57	-	-	74	-31.43	0	100	V
* 7.43588	33.89	PKFH	35.7	-23.7	0	45.89	-	-	74	-28.11	0	100	H
* 7.45056	33.4	PKFH	35.7	-23.8	0	45.3	-	-	74	-28.7	0	100	V
9.92003	31.34	PKFH	37.3	-21.1	0	47.54	-	-	74	-26.46	0	100	H
9.91966	30.9	PKFH	37.3	-21.1	0	47.1	-	-	74	-26.9	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

- ANT2
BANEDGE (0 CHANNEL)

HORIZONTAL RESULT



Trace Markers

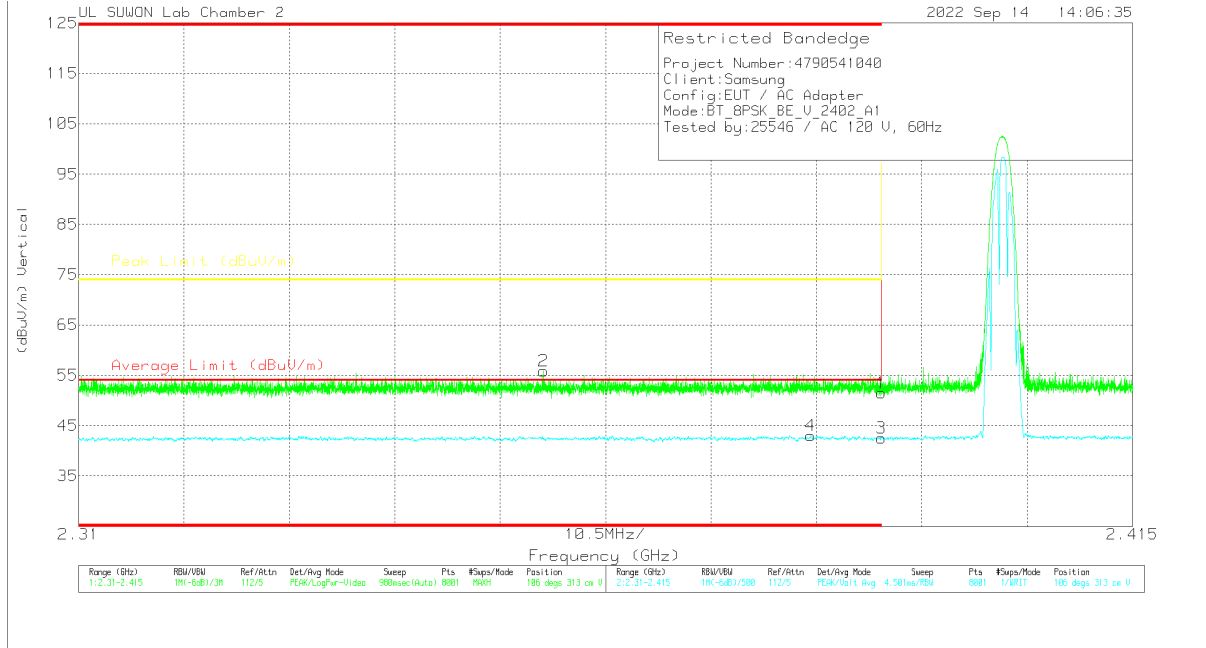
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	40.98	Pk	31.7	-19.7	52.98	-	-	74	-21.02	34	400	H
2	* 2.34722	43.92	Pk	31.6	-19.6	55.92	-	-	74	-18.08	34	400	H
3	* 2.39	30.55	VA1T	31.7	-19.7	42.55	54	-11.45	-	-	34	400	H
4	* 2.37821	30.87	VA1T	31.7	-19.5	43.07	54	-10.93	-	-	34	400	H

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

Pk - Peak detector

VA1T - FHSS: Linear Voltage Average $V_B=1/T_{on}$ where: T_{on} is transmit duration

VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	39.48	PK	31.7	-19.7	51.48	-	-	74	-22.52	106	313	V
2	* 2.35632	43.81	PK	31.6	-19.6	55.81	-	-	74	-18.19	106	313	V
3	* 2.39	30.58	VA1T	31.7	-19.7	42.58	54	-11.42	-	-	106	313	V
4	* 2.38295	30.94	VA1T	31.7	-19.6	43.04	54	-10.96	-	-	106	313	V

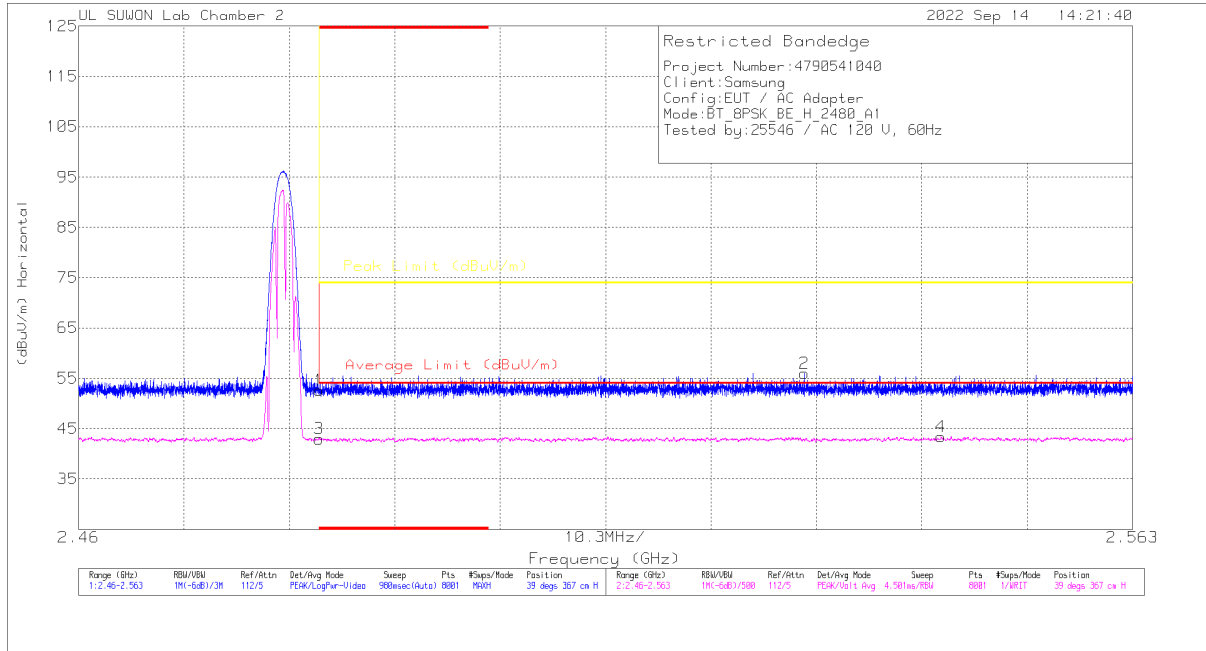
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK - Peak detector

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

BANDEDGE (78 CHANNEL)

HORIZONTAL RESULT



Trace Markers

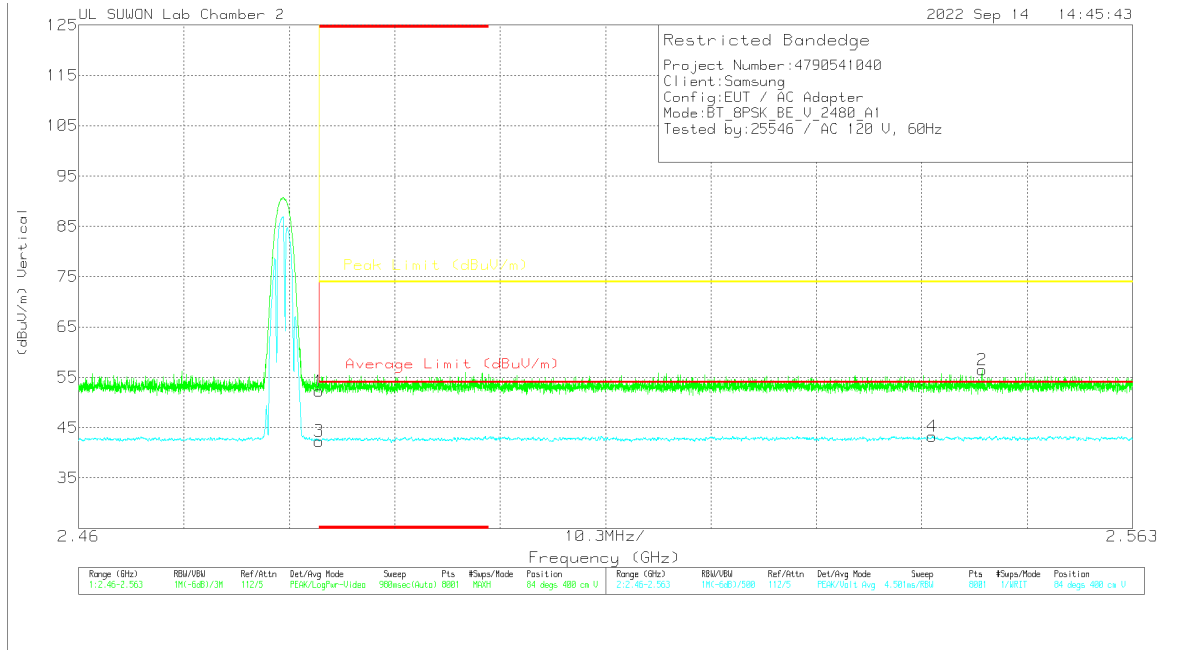
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	40.33	Pk	31.9	-19.6	52.63	-	-	74	-21.37	39	367	H
2	2.5309	43.49	Pk	31.9	-19.4	55.99	-	-	74	-18.01	39	367	H
3	* 2.48351	30.67	VA1T	31.9	-19.6	42.97	54	-11.03	-	-	39	367	H
4	2.54428	30.87	VA1T	32	-19.5	43.37	54	-10.63	-	-	39	367	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

VERTICAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168724	10dB_ATT[dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.48351	39.98	PK	31.9	-19.6	52.28	-	-	74	-21.72	84	400	V
2	2.54828	44.02	PK	32	-19.5	56.52	-	-	74	-17.48	84	400	V
3	* 2.48351	30.04	VA1T	31.9	-19.6	42.34	54	-11.66	-	-	84	400	V
4	2.54343	30.81	VA1T	32	-19.5	43.31	54	-10.69	-	-	84	400	V

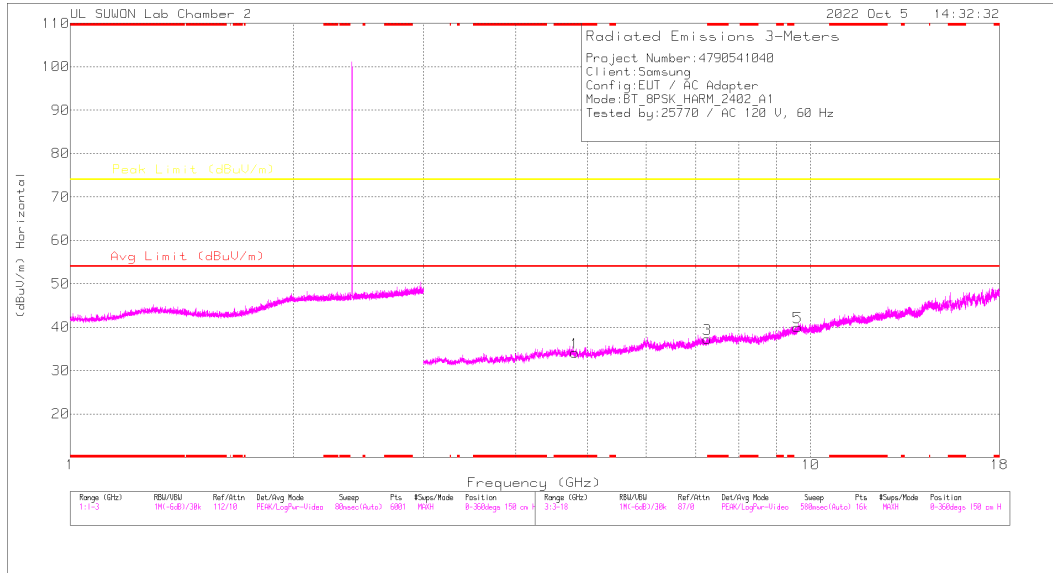
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PK - Peak detector

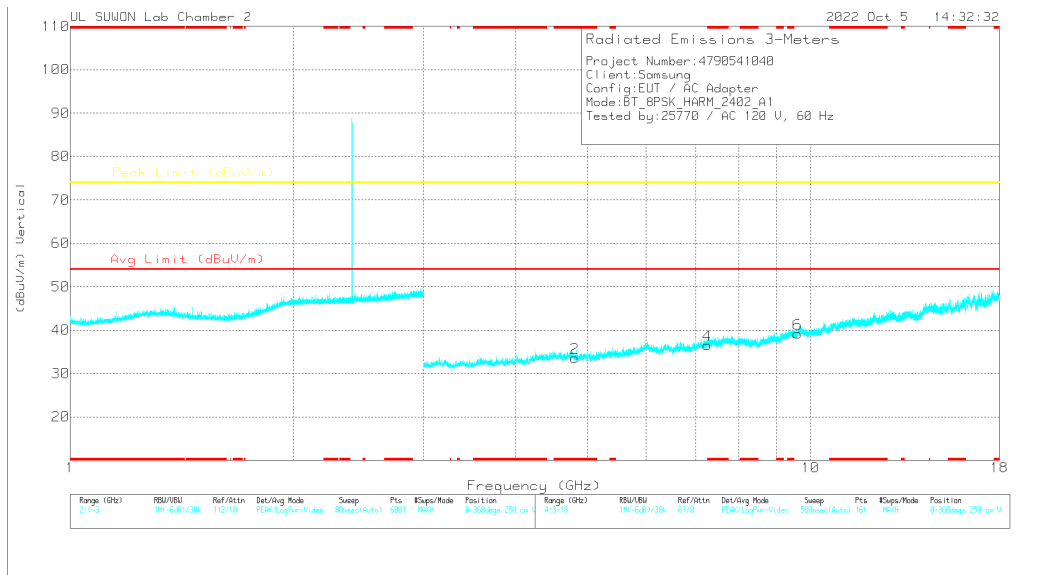
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

HARMONICS AND SPURIOUS EMISSIONS

0 CHANNEL RESULTS



HORIZONTAL



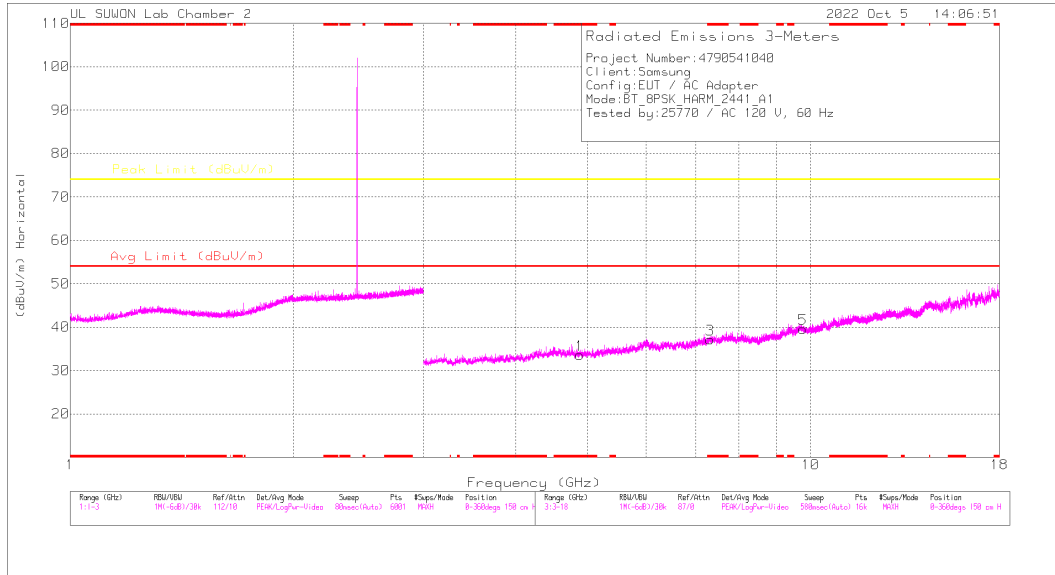
VERTICAL

RADIATED EMISSIONS

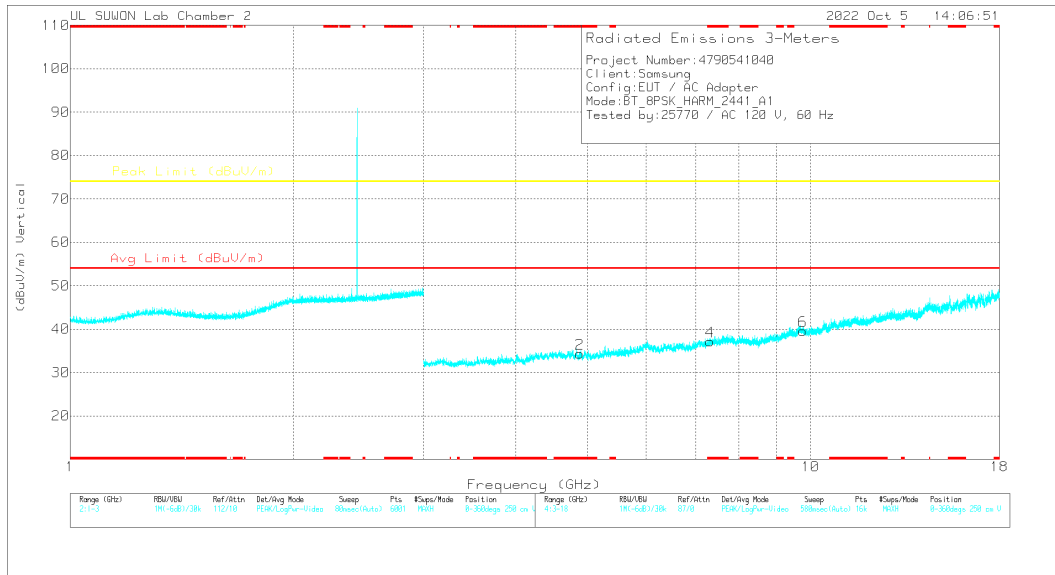
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_0016872 4	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.79995	36.11	PKFH	34	-27.7	0	42.41	-	-	74	-31.59	0	100	H
* 4.80351	36.14	PKFH	34	-27.7	0	42.44	-	-	74	-31.56	0	100	V
* 7.25372	34.26	PKFH	35.7	-25.2	0	44.76	-	-	74	-29.24	0	100	H
* 7.25103	34.13	PKFH	35.7	-25.2	0	44.63	-	-	74	-29.37	0	100	V
9.60095	32.26	PKFH	36.9	-21.4	0	47.76	-	-	74	-26.24	0	100	H
9.61773	32.24	PKFH	36.9	-21.1	0	48.04	-	-	74	-25.96	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

39 CHANNEL RESULTS



HORIZONTAL



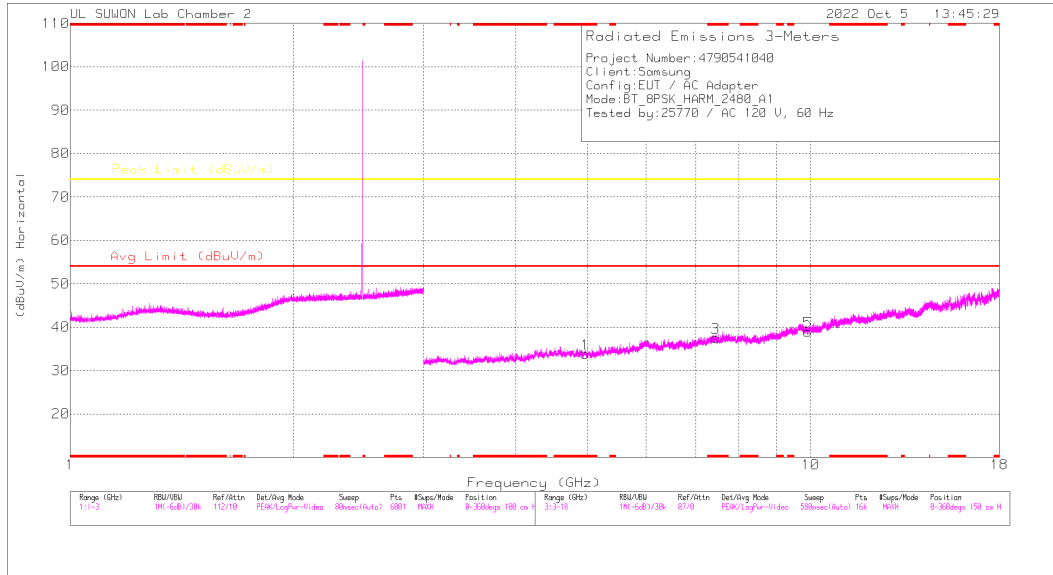
VERTICAL

RADIATED EMISSIONS

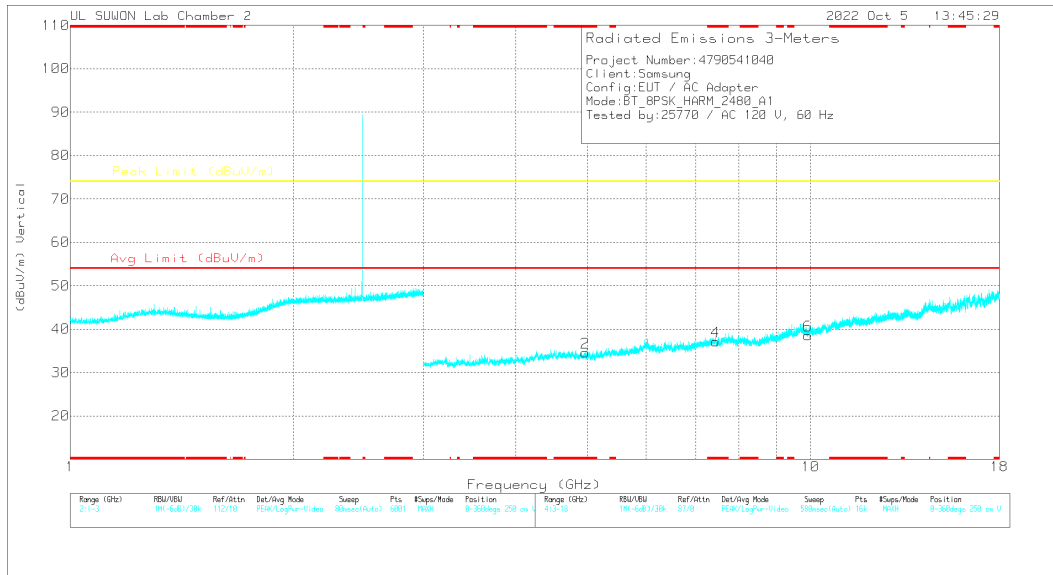
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_0016872_4	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.89094	36.82	PKFH	34	-27.5	0	43.32	-	-	74	-30.68	0	100	H
* 4.87822	35.47	PKFH	34	-27.7	0	41.77	-	-	74	-32.23	0	100	V
* 7.3275	34.02	PKFH	35.7	-24.4	0	45.32	-	-	74	-28.68	0	100	H
* 7.32511	34.24	PKFH	35.7	-24.4	0	45.54	-	-	74	-28.46	0	100	V
9.76763	31.82	PKFH	37.1	-21	0	47.92	-	-	74	-26.08	0	100	H
9.77421	31.24	PKFH	37.1	-21.1	0	47.24	-	-	74	-26.76	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

78 CHANNEL RESULTS



HORIZONTAL



VERTICAL

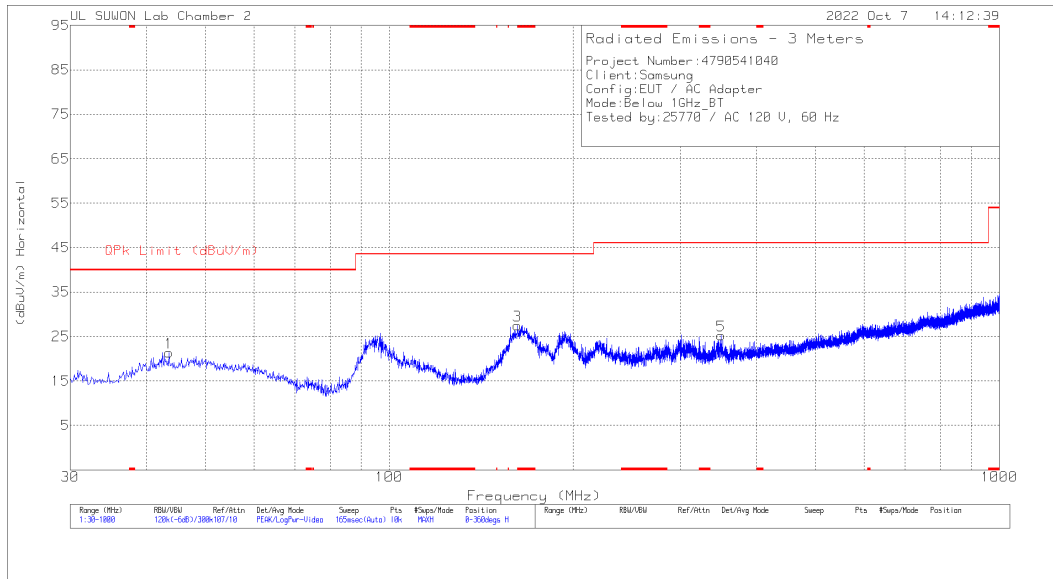
RADIATED EMISSIONS

Frequency (GHz)	Meter Reading (dBuV)	Det	3117_0016872_4	3GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.96859	35.48	PKFH	34	-27	0	42.48	-	-	74	-31.52	0	100	H
* 4.95104	34.42	PKFH	34	-27.1	0	41.32	-	-	74	-32.68	0	100	V
* 7.4323	33.88	PKFH	35.7	-23.7	0	45.88	-	-	74	-28.12	0	100	H
* 7.44177	33.41	PKFH	35.7	-23.7	0	45.41	-	-	74	-28.59	0	100	V
9.92333	30.96	PKFH	37.3	-21	0	47.26	-	-	74	-26.74	0	100	H
9.91966	30.84	PKFH	37.3	-21.1	0	47.04	-	-	74	-26.96	0	100	V

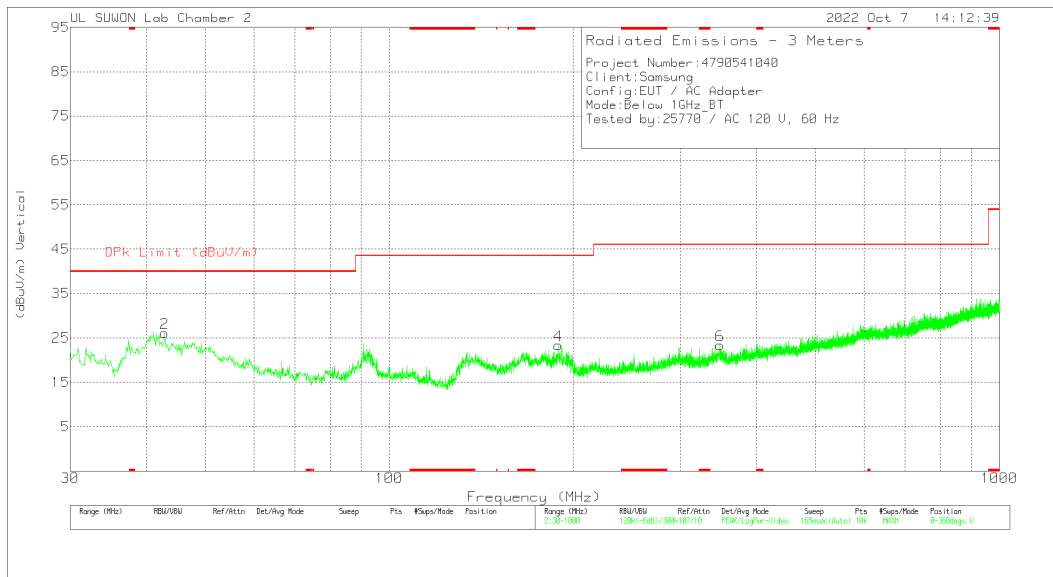
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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

10.2. WORST CASE BELOW 1 GHZ SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)



HORIZONTAL



VERTICAL

BELOW 1GHZ

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_749	Below 1G[dB]	Corrected Reading (dBuV/m)	OPK Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	43.58	33.03	Pk	19.6	-31.3	21.33	40	-18.67	0-360	100	H
2	42.804	37.99	Pk	19.5	-31.4	26.09	40	-13.91	0-360	100	V
3	* 162.308	43.09	Pk	14.4	-30	27.49	43.52	-16.03	0-360	100	H
4	189.274	36.89	Pk	16.3	-29.8	23.39	43.52	-20.13	0-360	100	V
5	349.712	33.22	Pk	20.8	-28.8	25.22	46.02	-20.8	0-360	100	H
6	348.063	31.36	Pk	20.7	-28.7	23.36	46.02	-22.66	0-360	100	V

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

11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

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 C63.4.

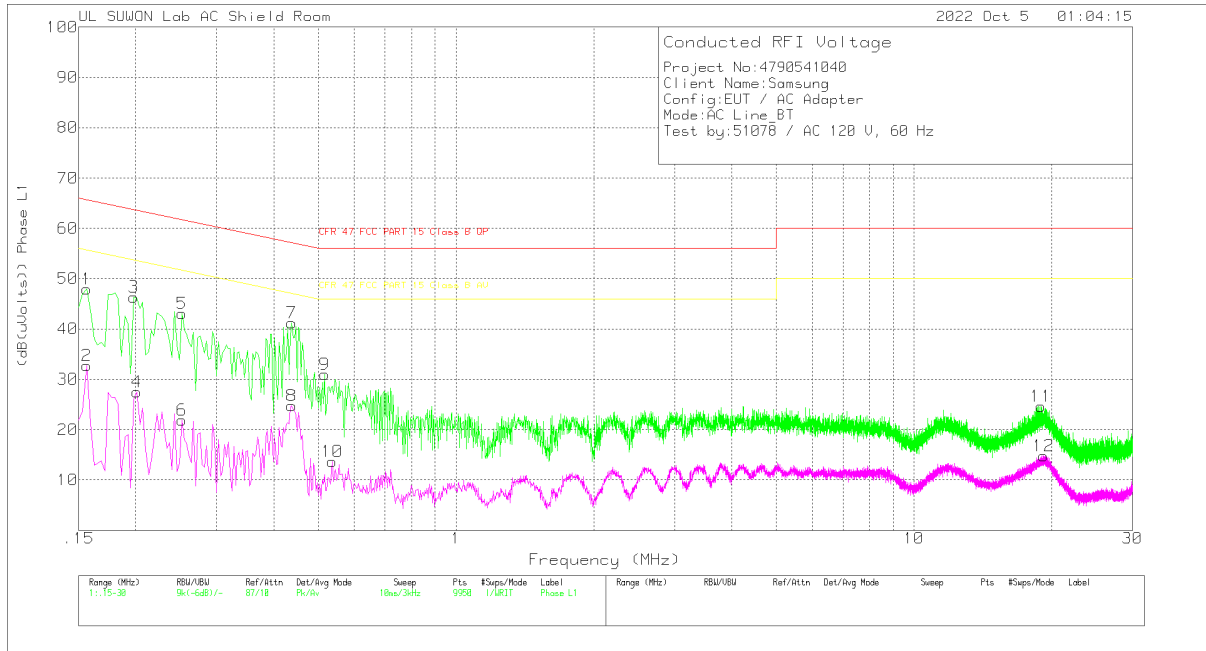
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

11.1.1. AC Power Line

LINE 1 RESULTS



Trace Markers

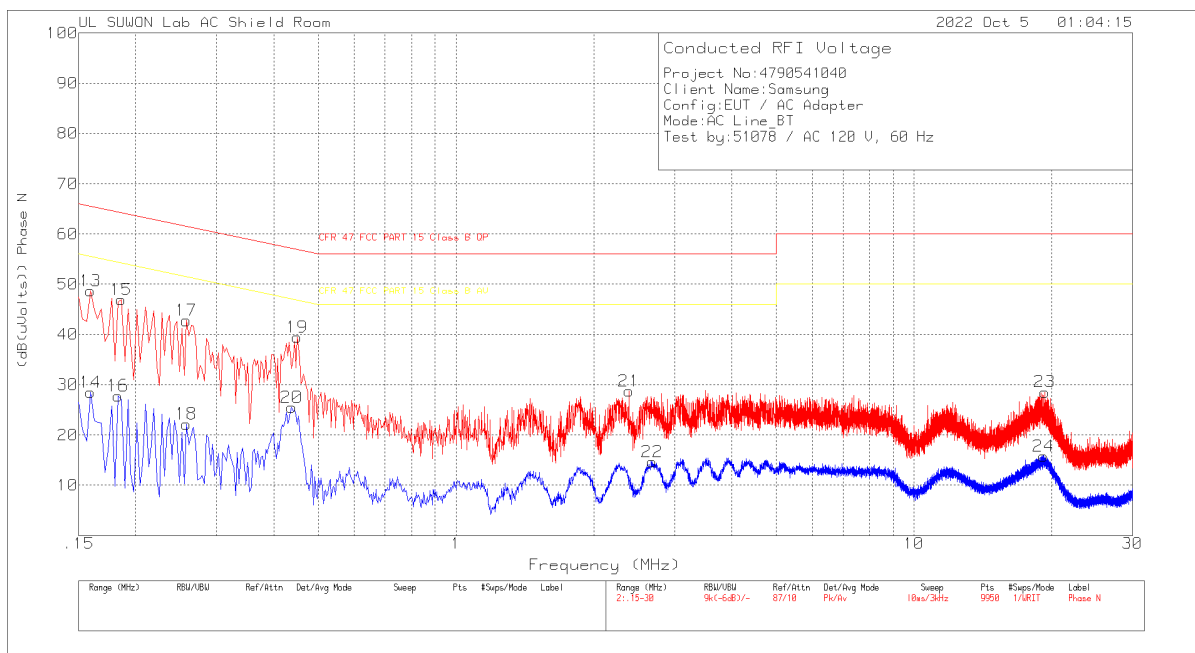
Range 1: Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_L1[dB]	CABLELOS S(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
1	.156	38.03	Pk	9.8	.1	47.93	65.67	-17.74	-	-
2	.156	22.81	Av	9.8	.1	32.71	-	-	55.67	-22.96
3	.198	36.38	Pk	9.8	.2	46.38	63.69	-17.31	-	-
4	.201	17.49	Av	9.8	.2	27.49	-	-	53.57	-26.08
5	.252	33.33	Pk	9.6	.2	43.13	61.69	-18.56	-	-
6	.252	12.1	Av	9.6	.2	21.9	-	-	51.69	-29.79
7	.438	31.17	Pk	9.8	.2	41.17	57.1	-15.93	-	-
8	.438	14.71	Av	9.8	.2	24.71	-	-	47.1	-22.39
9	.516	20.87	Pk	9.9	.2	30.97	56	-25.03	-	-
10	.537	3.62	Av	9.9	.2	13.72	-	-	46	-32.28
11	18.921	14.08	Pk	10.1	.4	24.58	60	-35.42	-	-
12	19.203	4.25	Av	10.1	.4	14.75	-	-	50	-35.25

Pk - Peak detector

Av - Average detection

LINE 2 RESULTS



Trace Markers

Range 2: Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	101836_Wit h EX_N[dB]	CABLELOS S(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
13	.159	38.73	Pk	9.8	.1	48.63	65.52	-16.89	-	-
14	.159	18.64	Av	9.8	.1	28.54	-	-	55.52	-26.98
15	.186	36.81	Pk	9.9	.2	46.91	64.21	-17.3	-	-
16	.183	17.71	Av	9.9	.2	27.81	-	-	54.35	-26.54
17	.258	32.97	Pk	9.6	.2	42.77	61.5	-18.73	-	-
18	.258	12.4	Av	9.6	.2	22.2	-	-	51.5	-29.3
19	.45	29.39	Pk	9.9	.2	39.49	56.88	-17.39	-	-
20	.438	15.36	Av	9.9	.2	25.46	-	-	47.1	-21.64
21	2.385	18.76	Pk	9.7	.3	28.76	56	-27.24	-	-
22	2.682	4.61	Av	9.7	.3	14.61	-	-	46	-31.39
23	19.299	17.96	Pk	10.2	.4	28.56	60	-31.44	-	-
24	19.173	5.23	Av	10.2	.4	15.83	-	-	50	-34.17

Pk - Peak detector

Av - Average detection

END OF TEST REPORT