

7.2.5. OUTPUT POWER

LIMITS

§15.247 (b) (1)

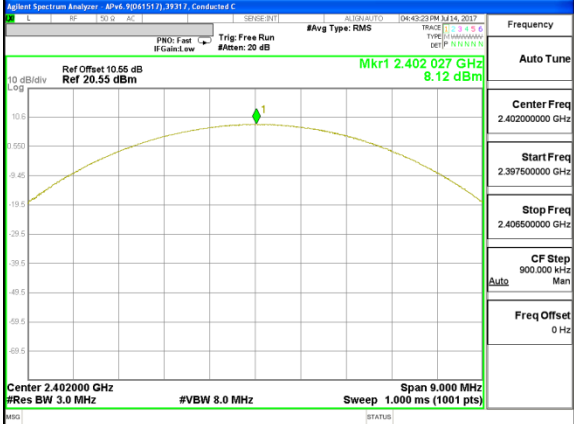
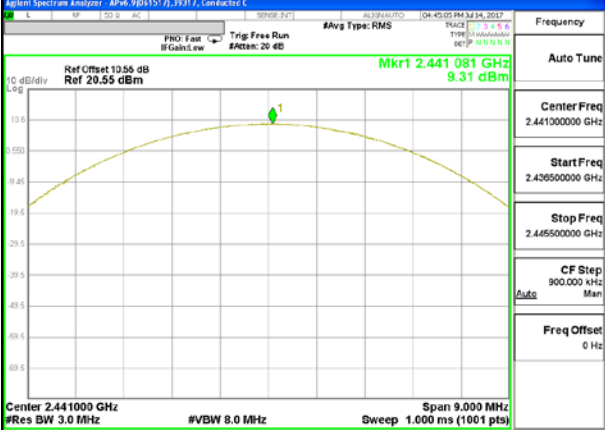
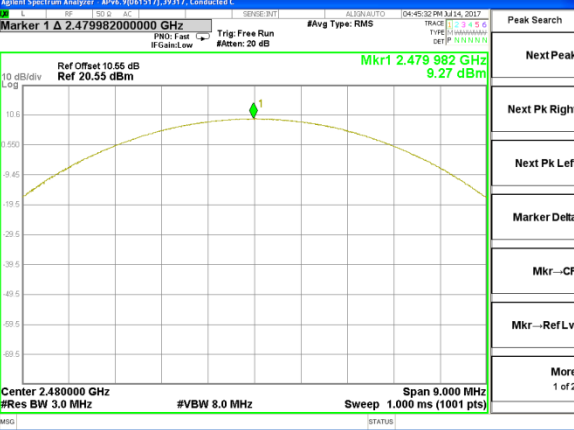
The maximum antenna gain is less than 6 dBi, therefore the limit is 30 dBm.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer.

RESULTS

TEST ENGINEER:	39317	Date:	07/14/2017
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TEST RESULT TABLE	LOW CHANNEL																				
<table border="1"> <thead> <tr> <th>Channel</th> <th>Frequency (MHz)</th> <th>Output Power (dBm)</th> <th>Limit (dBm)</th> <th>Margin (dB)</th> </tr> </thead> <tbody> <tr> <td>Low</td> <td>2402</td> <td>8.12</td> <td>30</td> <td>-21.88</td> </tr> <tr> <td>Middle</td> <td>2441</td> <td>9.31</td> <td>30</td> <td>-20.69</td> </tr> <tr> <td>High</td> <td>2480</td> <td>9.27</td> <td>30</td> <td>-20.73</td> </tr> </tbody> </table>	Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)	Low	2402	8.12	30	-21.88	Middle	2441	9.31	30	-20.69	High	2480	9.27	30	-20.73	 <p>Agilent Spectrum Analyzer - APx 9061517J, 39317, Connected C</p> <p>Frequency: 2.402027 GHz</p> <p>Mkr1 2.402 027 GHz 8.12 dBm</p> <p>Center Freq: 2.40200000 GHz</p> <p>Start Freq: 2.39750000 GHz</p> <p>Stop Freq: 2.40650000 GHz</p> <p>CF Step: 900.000 kHz</p> <p>Freq Offset: 0 Hz</p> <p>Center 2.402000 GHz #VBW 8.0 MHz Sweep 1.000 ms (1001 pts)</p>
Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)																	
Low	2402	8.12	30	-21.88																	
Middle	2441	9.31	30	-20.69																	
High	2480	9.27	30	-20.73																	
MID CHANNEL	HIGH CHANNEL																				
 <p>Agilent Spectrum Analyzer - APx 9061517J, 39317, Connected C</p> <p>Frequency: 2.441081 GHz</p> <p>Mkr1 2.441 081 GHz 9.31 dBm</p> <p>Center Freq: 2.44100000 GHz</p> <p>Start Freq: 2.43650000 GHz</p> <p>Stop Freq: 2.44550000 GHz</p> <p>CF Step: 900.000 kHz</p> <p>Freq Offset: 0 Hz</p> <p>Center 2.441000 GHz #Res BW 3.0 MHz #VBW 8.0 MHz Sweep 1.000 ms (1001 pts)</p>	 <p>Agilent Spectrum Analyzer - APx 9061517J, 39317, Connected C</p> <p>Marker 1 2.479982000000 GHz</p> <p>Frequency: 2.479982 GHz</p> <p>Mkr1 2.479 982 GHz 9.27 dBm</p> <p>Center Freq: 2.48000000 GHz</p> <p>Start Freq: 2.47550000 GHz</p> <p>Stop Freq: 2.48450000 GHz</p> <p>CF Step: 900.000 kHz</p> <p>Freq Offset: 0 Hz</p> <p>Center 2.480000 GHz #Res BW 3.0 MHz #VBW 8.0 MHz Sweep 1.000 ms (1001 pts)</p>																				
NOTE:																					

7.2.6. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

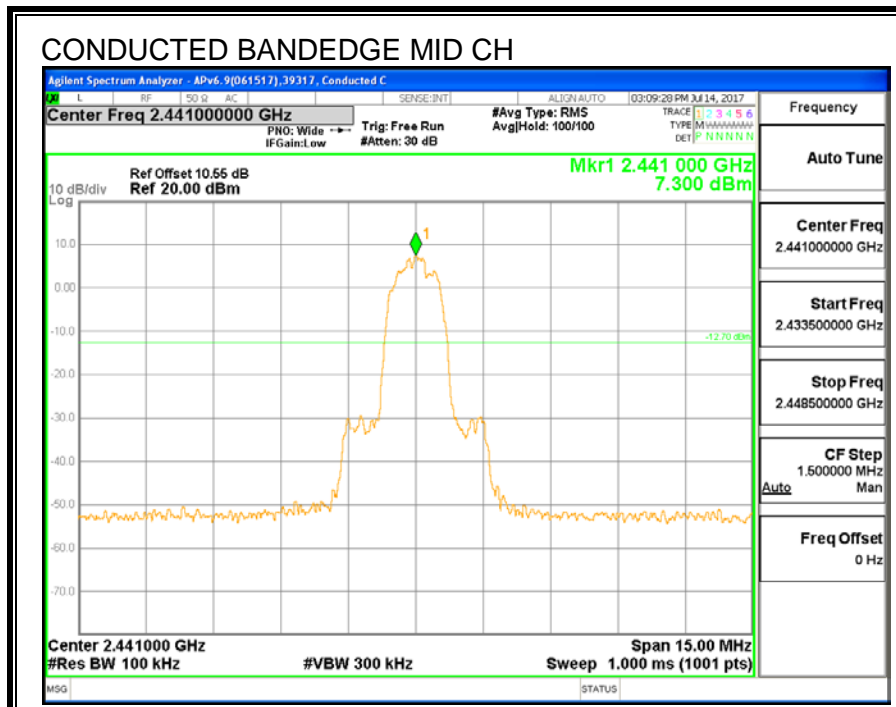
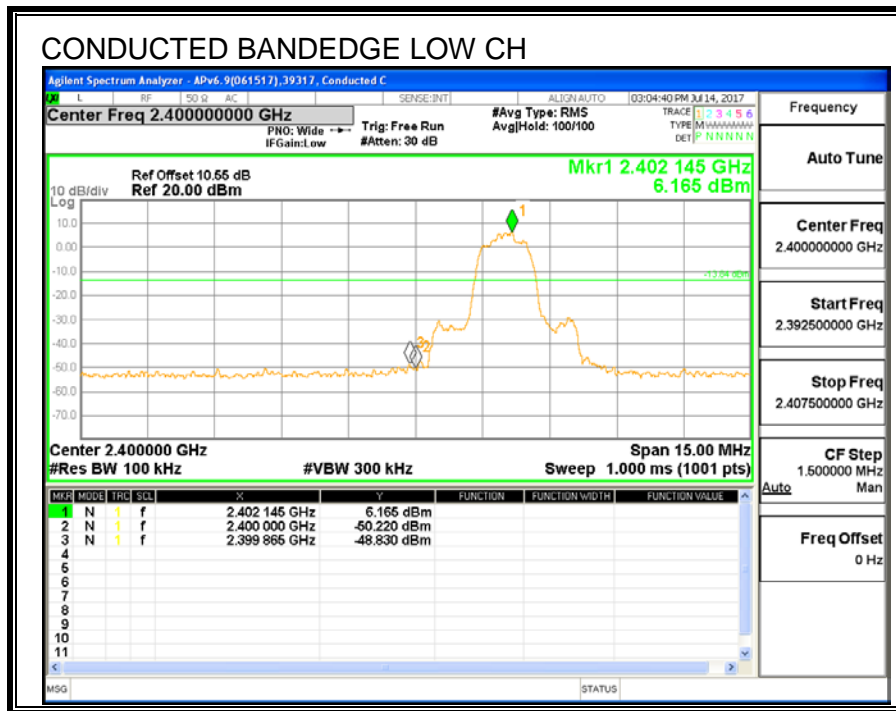
RESULTS

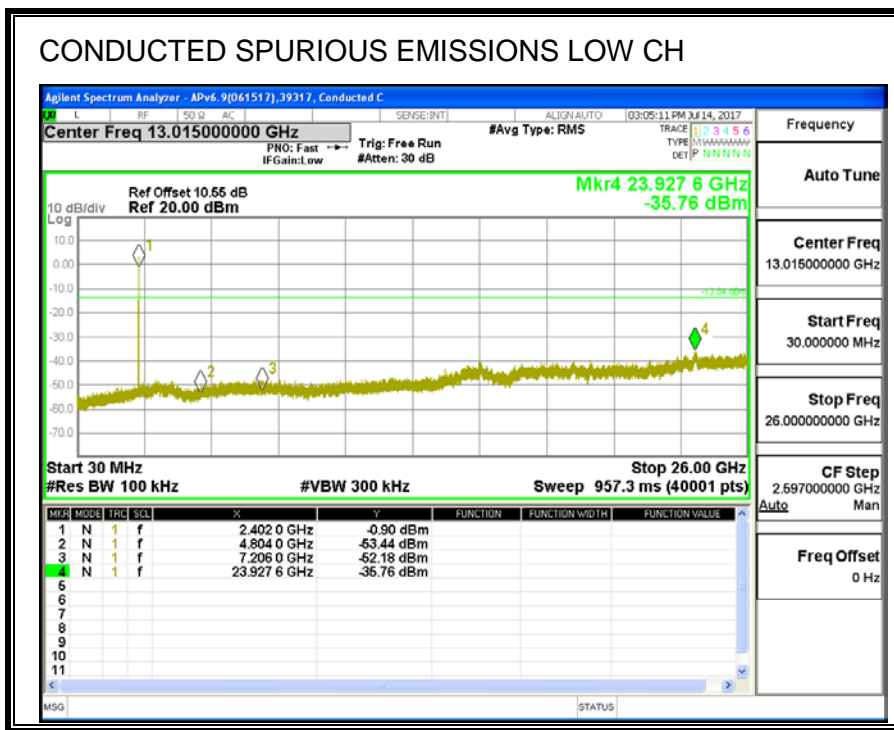
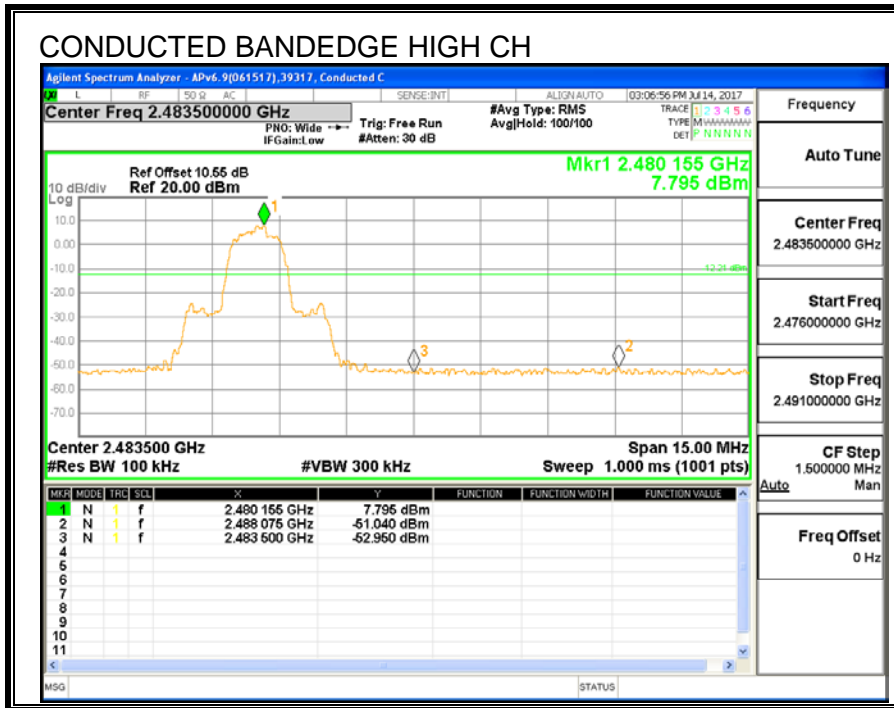
The cable assembly insertion loss of 10.6 dB (including 10 dB pad and 0.6 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

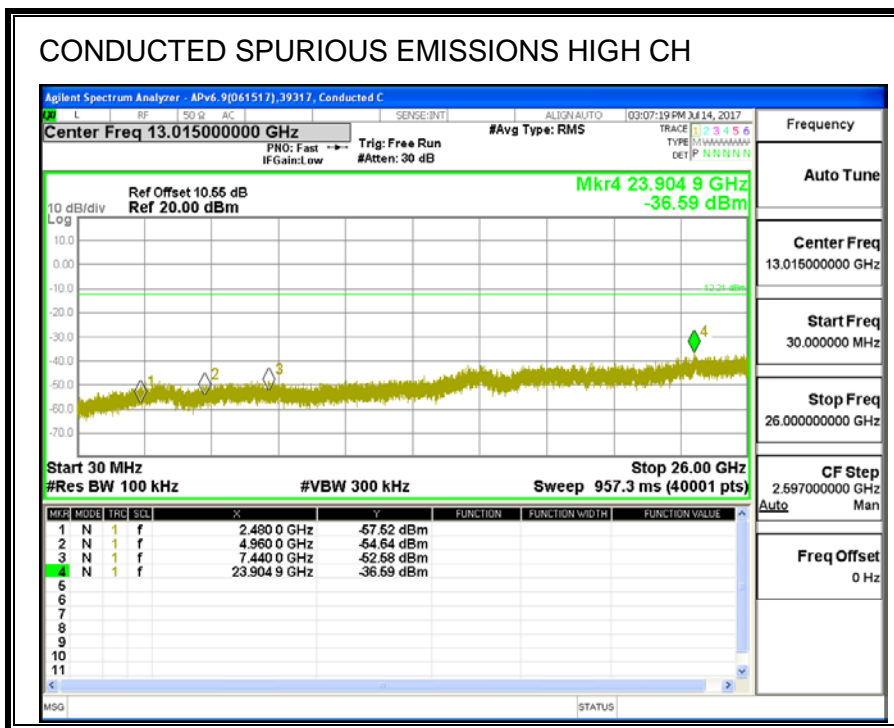
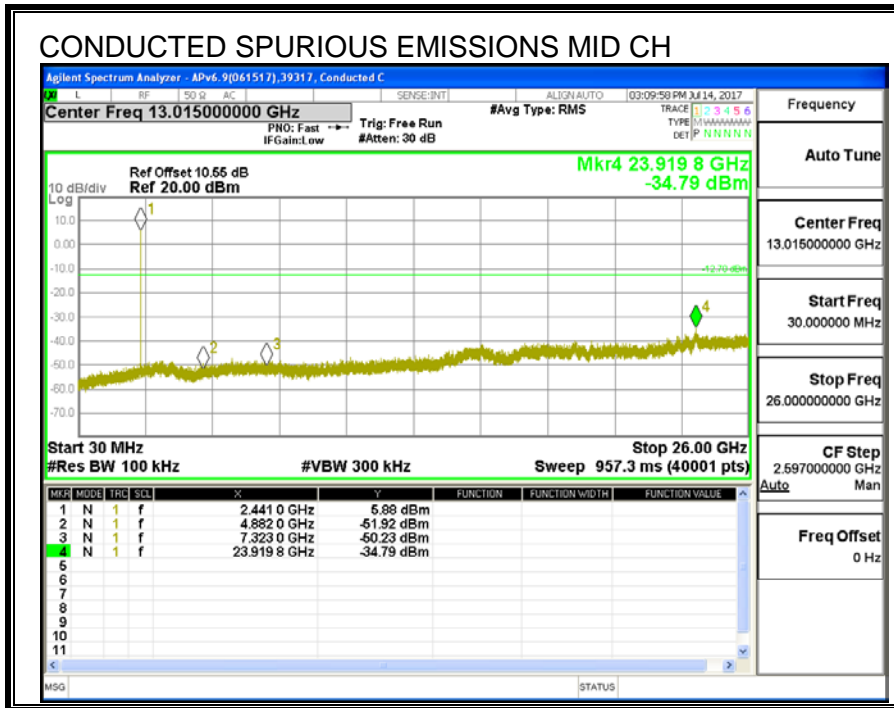
TEST ENGINEER:	45258	Date:	07/14/17
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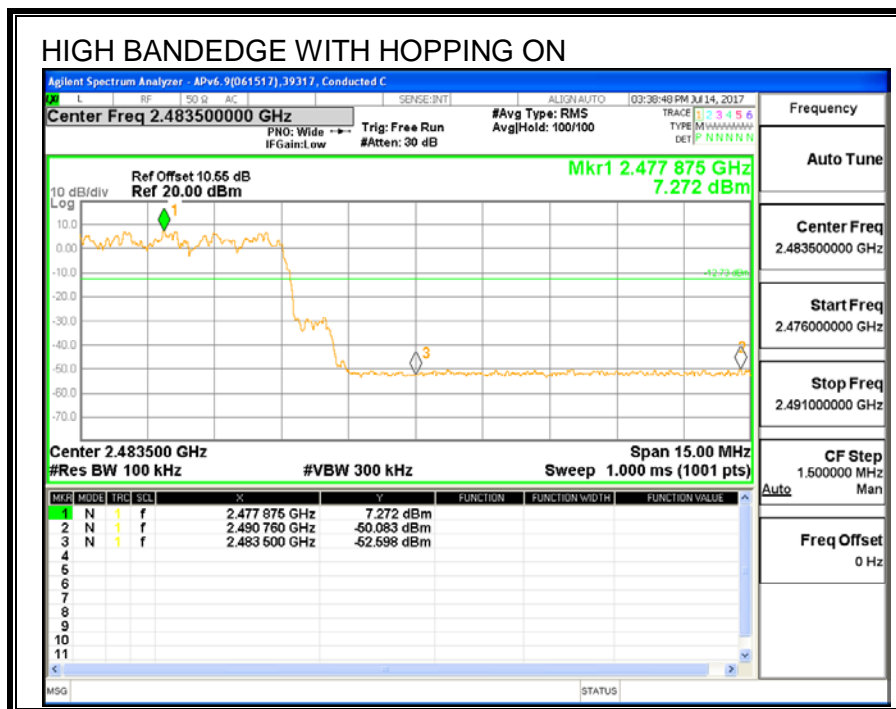
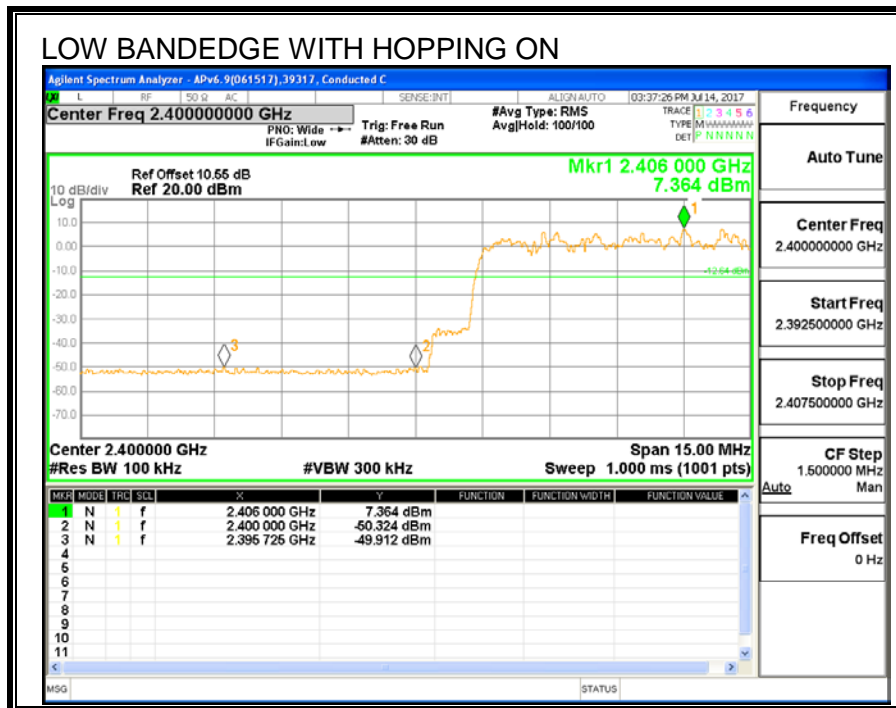
Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	5.72
Middle	2441	7.06
High	2480	7.27

7.2.7. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS









8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300 m	-
0.490-1.705	24000/F(kHz) @ 30 m	-
1.705 - 30	30 @ 30m	-
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T (10 Hz) video bandwidth with peak detector for average measurements.

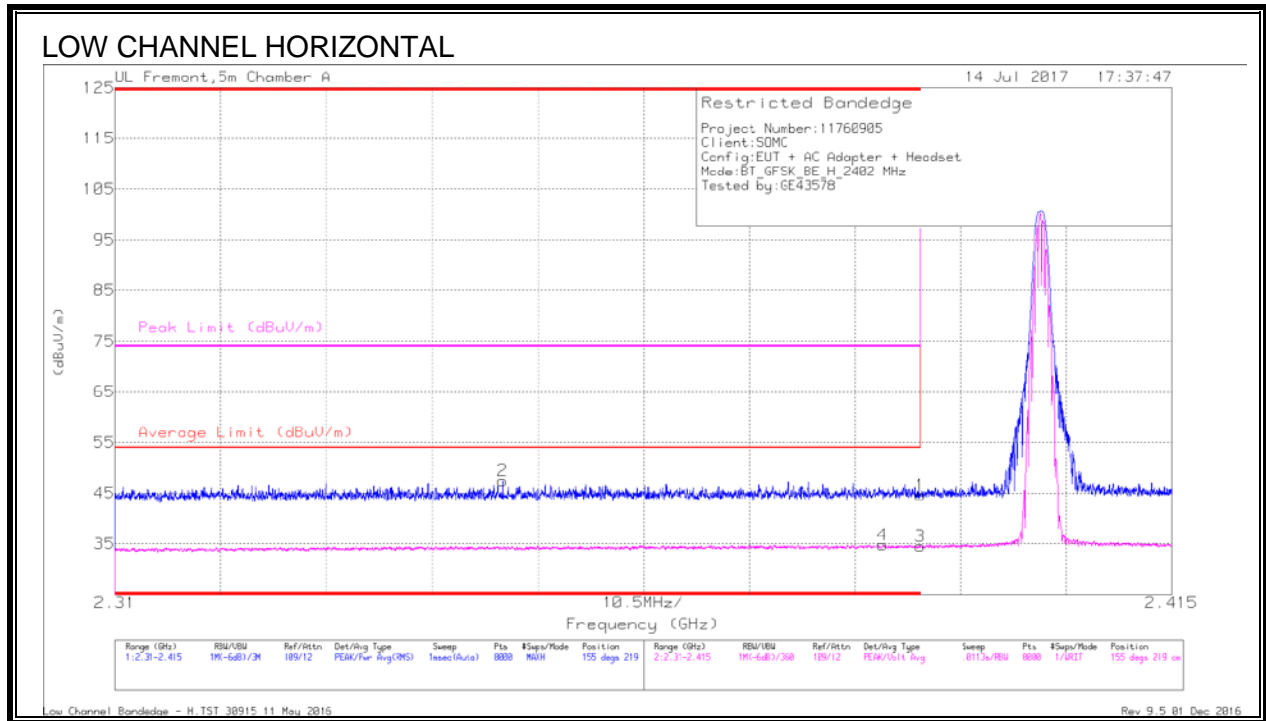
The spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 1GHz and above 18GHz emissions, the channel with the highest output power was tested.

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.

RESULTS

8.2. BASIC DATA RATE GFSK MODULATION

8.2.1. RESTRICTED BANDEGE (LOW CHANNEL)

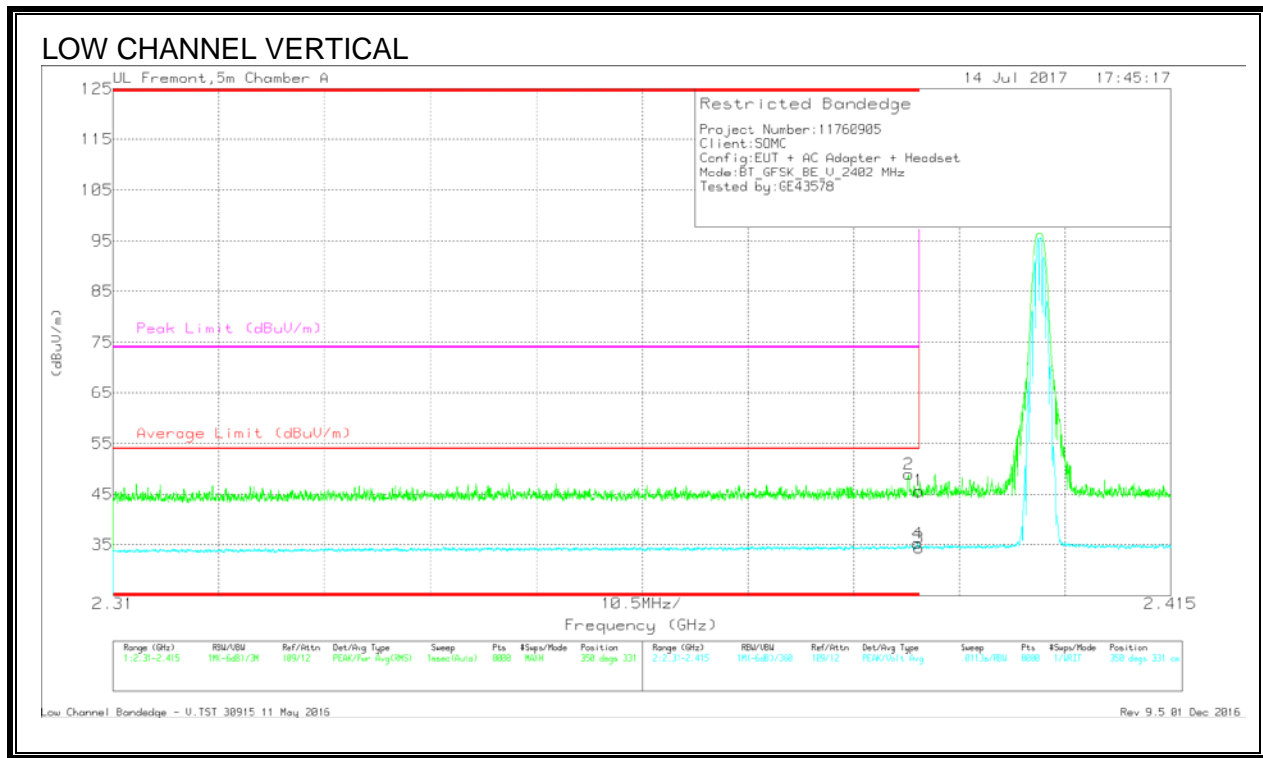


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Filtr/Pa d (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	35.97	Pk	31.8	-23.2	44.57	-	-	74	-29.43	155	219	H
2	* 2.349	39	Pk	31.6	-23.2	47.4	-	-	74	-26.6	155	219	H
3	* 2.39	25.98	VA1T	31.8	-23.2	34.58	54	-19.42	-	-	155	219	H
4	* 2.386	26.14	VA1T	31.8	-23.2	34.74	54	-19.26	-	-	155	219	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



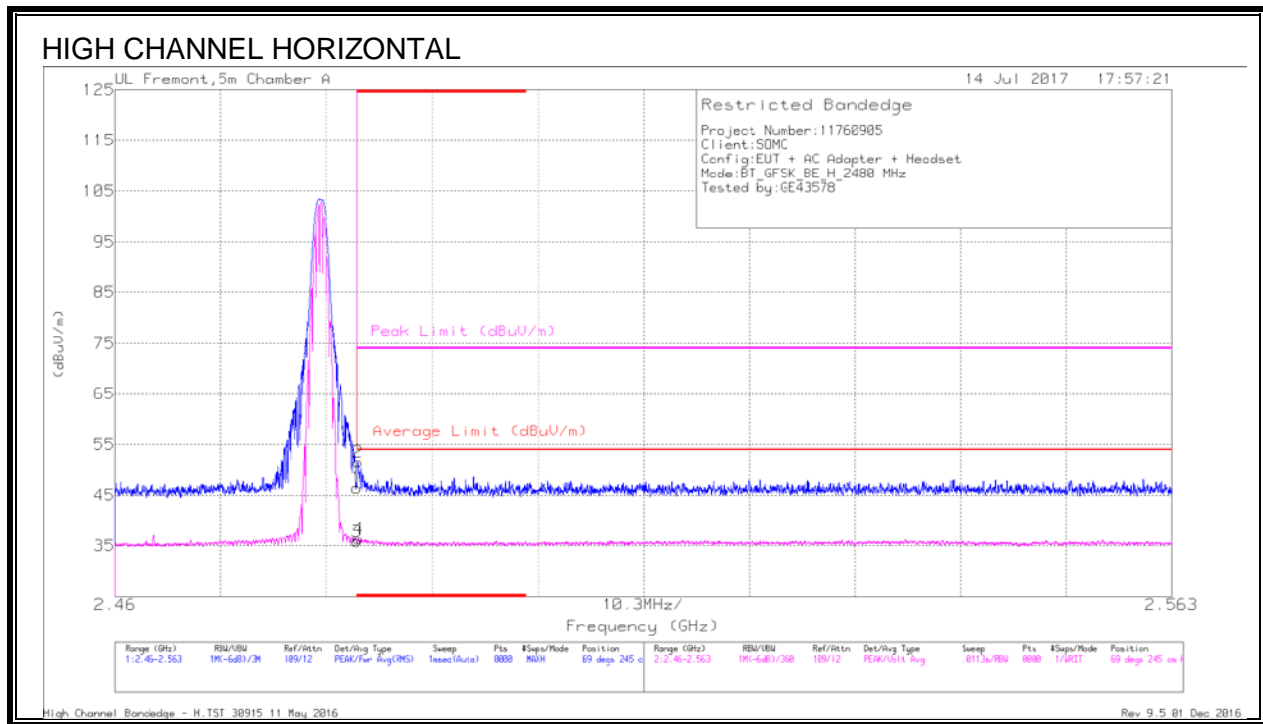
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	37.04	Pk	31.8	-23.2	45.64	-	-	74	-28.36	350	331	V
2	* 2.389	40.38	PK	31.8	-23.2	48.98	-	-	74	-25.02	350	331	V
3	* 2.39	25.77	VA1T	31.8	-23.2	34.37	54	-19.63	-	-	350	331	V
4	* 2.39	26.67	VA1T	31.8	-23.2	35.27	54	-18.73	-	-	350	331	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

8.2.2. AUTHORIZED BANDEDGE (HIGH CHANNEL)

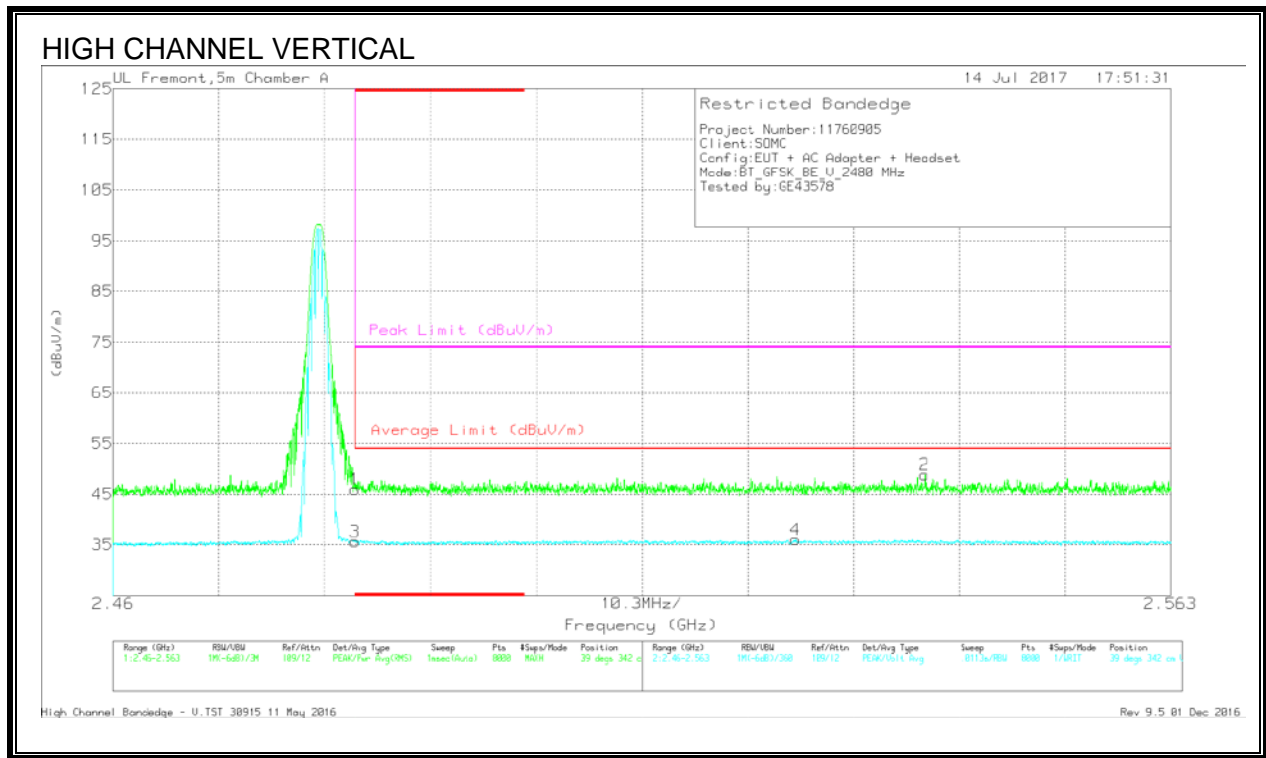


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AFT862 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	37.3	Pk	32.3	-23.1	46.5	-	-	74	-27.5	69	245	H
2	* 2.484	42.39	Pk	32.3	-23.1	51.59	-	-	74	-22.41	69	245	H
3	* 2.484	26.71	VA1T	32.3	-23.1	35.91	54	-18.09	-	-	69	245	H
4	* 2.484	27.18	VA1T	32.3	-23.1	36.38	54	-17.62	-	-	69	245	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



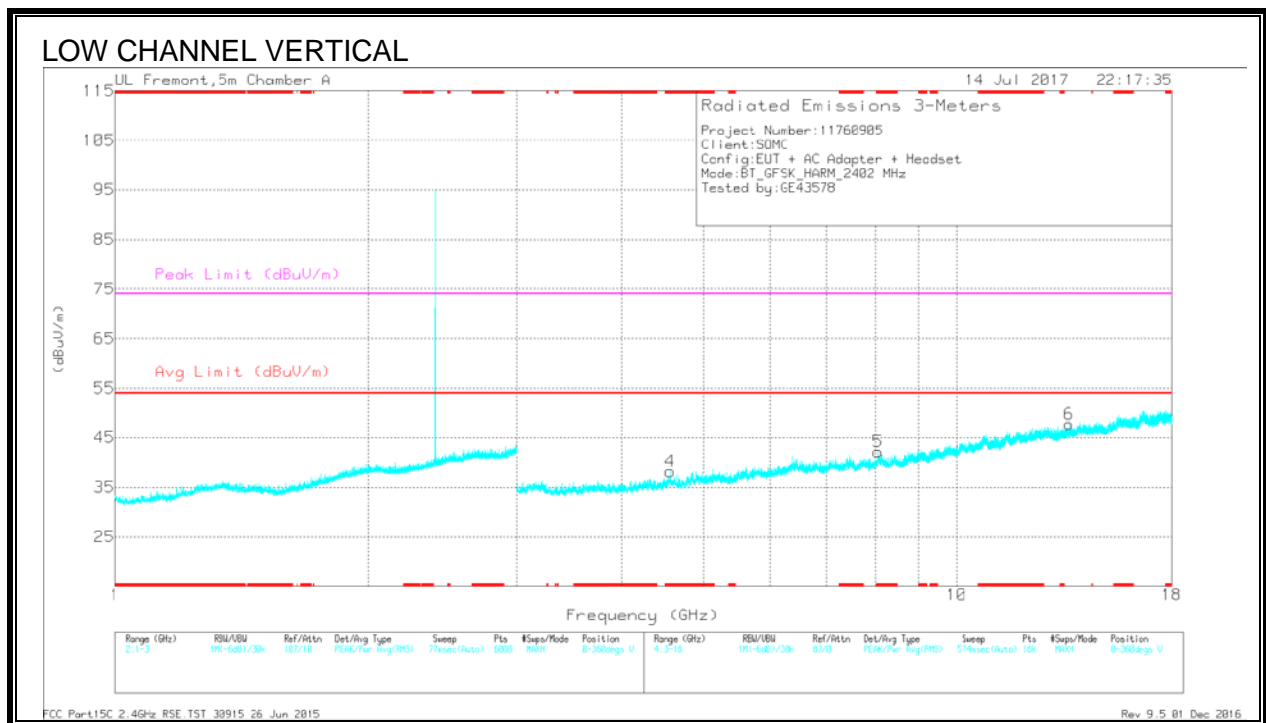
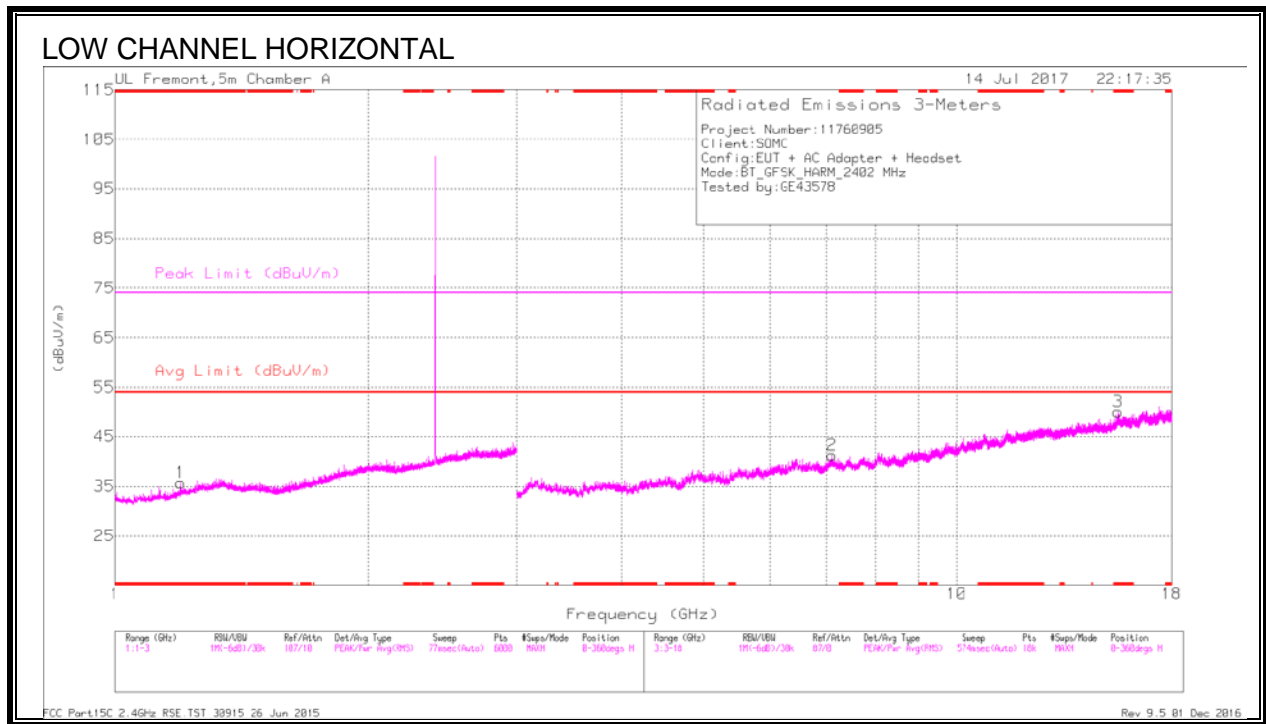
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Filtr/Pa d (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	36.72	Pk	32.3	-23.1	45.92	-	-	74	-28.08	39	342	V
3	* 2.484	26.45	VA1T	32.3	-23.1	35.65	54	-18.35	-	-	39	342	V
4	2.526	26.67	VA1T	32.4	-23	36.07	54	-17.93	-	-	39	342	V
2	2.539	39.46	Pk	32.4	-23	48.86	-	-	74	-25.14	39	342	V

* - 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

8.2.3. HARMONICS AND SPURIOUS EMISSIONS

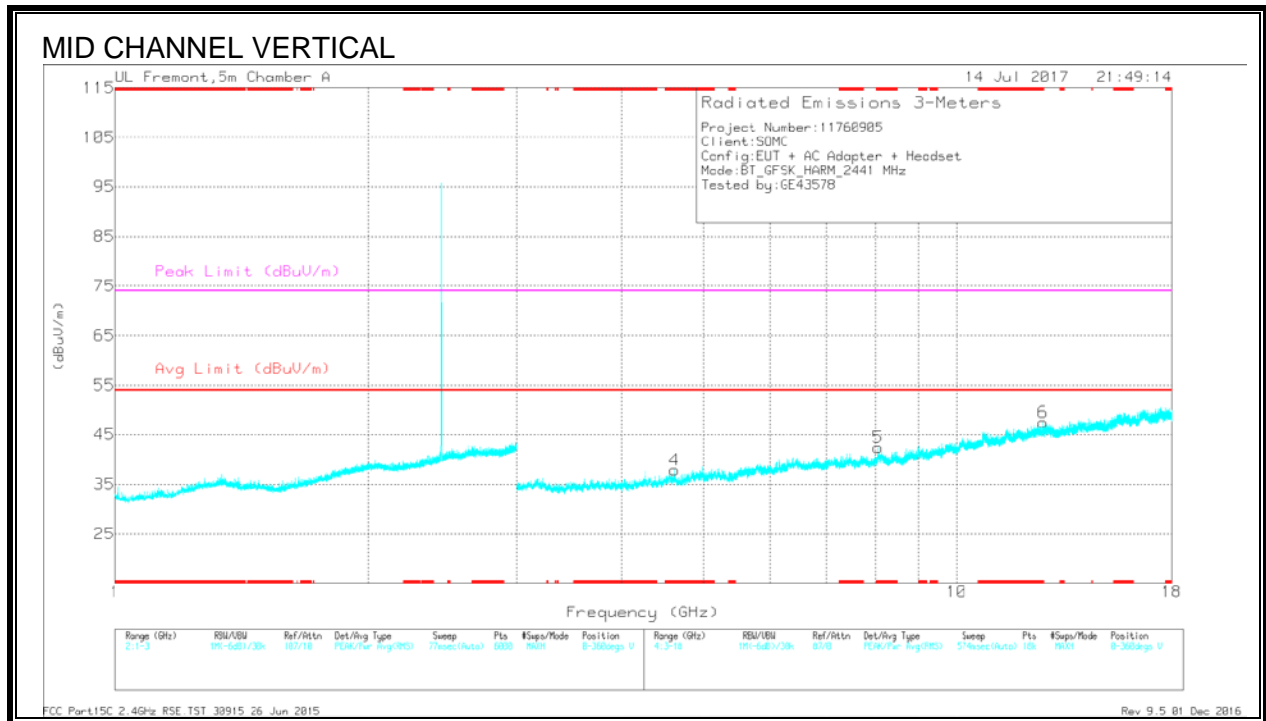
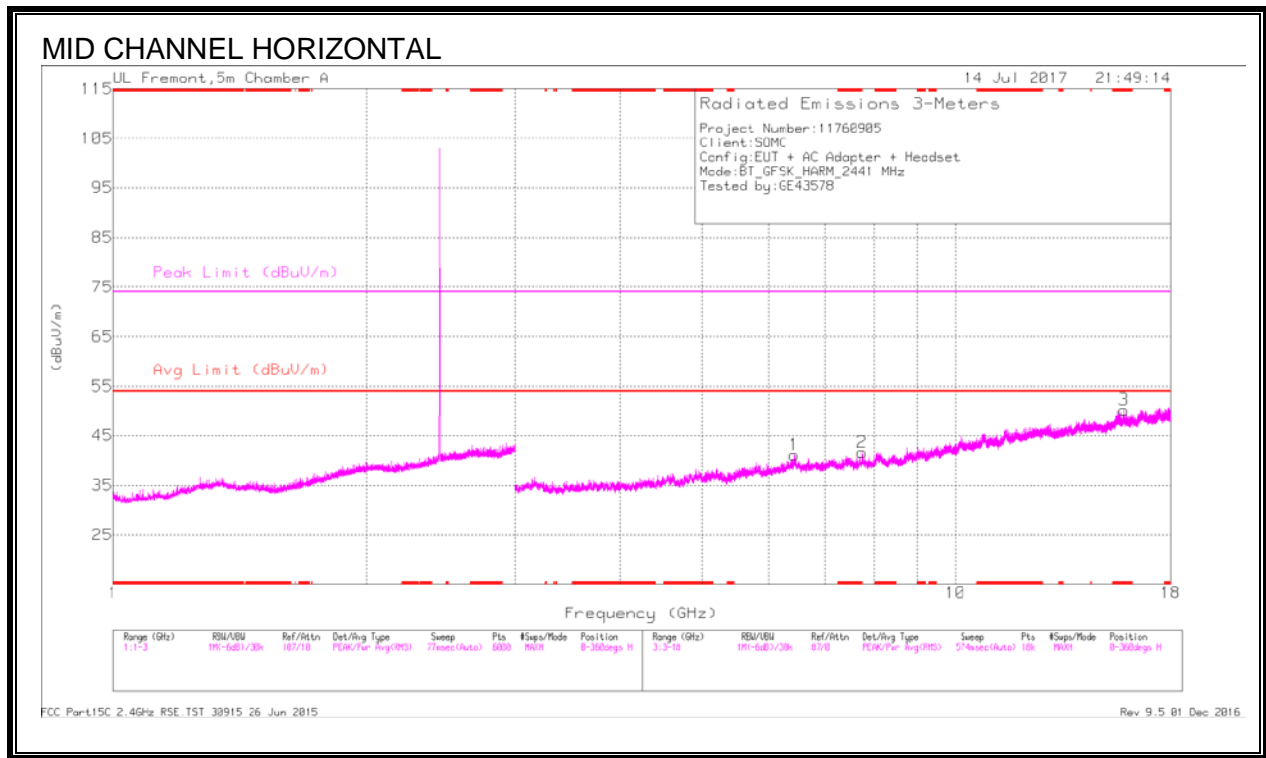


Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fitr/P ad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.197	34.3	PKFH	28.2	-23.6	38.9	-	-	74	-35.1	246	100	H
* 1.197	23.46	VA1T	28.2	-23.6	28.06	54	-25.94	-	-	246	100	H
* 15.55	31.47	PKFH	40	-17.4	54.07	-	-	74	-19.93	163	102	H
* 15.549	19.96	VA1T	40	-17.4	42.56	54	-11.44	-	-	163	102	H
* 4.561	35.03	PKFH	34	-27.8	41.23	-	-	74	-32.77	134	200	V
* 4.562	24.66	VA1T	34	-27.8	30.86	54	-23.14	-	-	134	200	V
* 8.063	32.18	PKFH	35.9	-21.7	46.38	-	-	74	-27.62	229	102	V
* 8.065	21.04	VA1T	35.9	-21.7	35.24	54	-18.76	-	-	229	102	V
7.117	21.49	VA1T	35.7	-23.2	33.99	-	-	-	-	51	199	H
7.118	32.78	PKFH	35.7	-23.1	45.38	-	-	-	-	51	199	H
13.607	31.92	PKFH	39.2	-18.9	52.22	-	-	-	-	305	102	V
13.607	20.8	VA1T	39.2	-18.9	41.1	-	-	-	-	305	102	V

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

PKFH - FHSS: RB=100k/1MHz VB=3 x RB, Peak

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

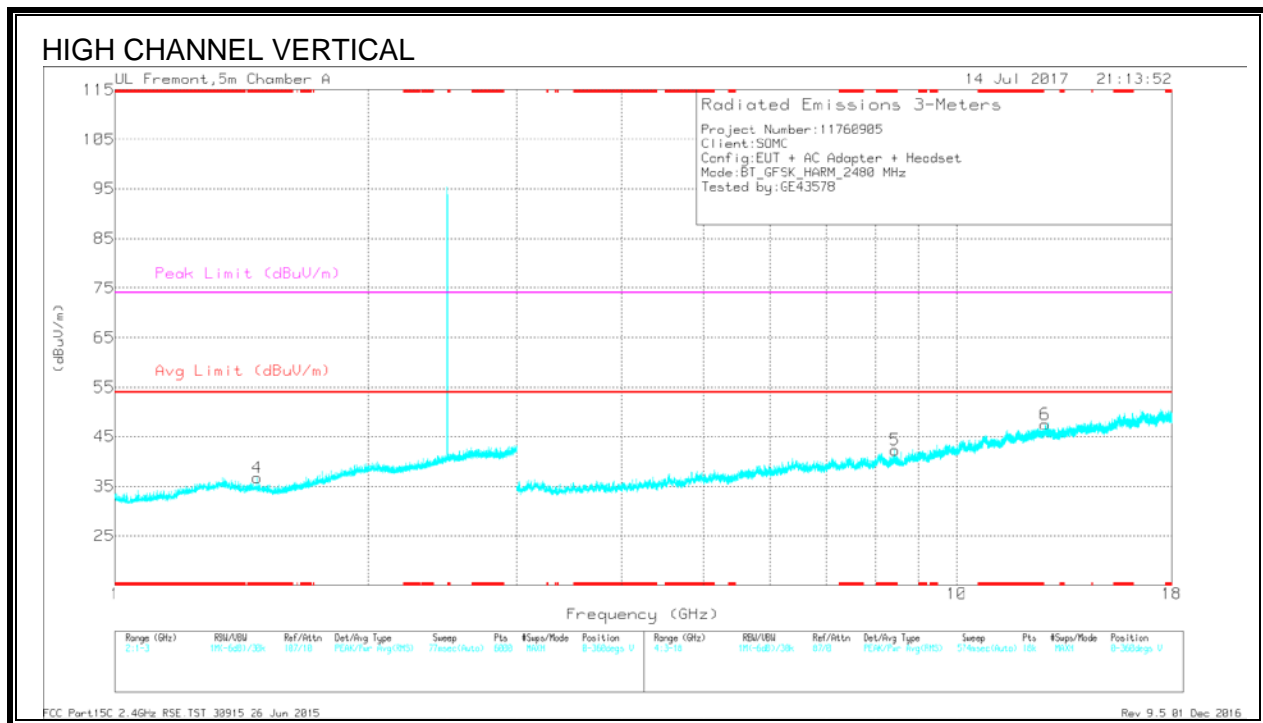
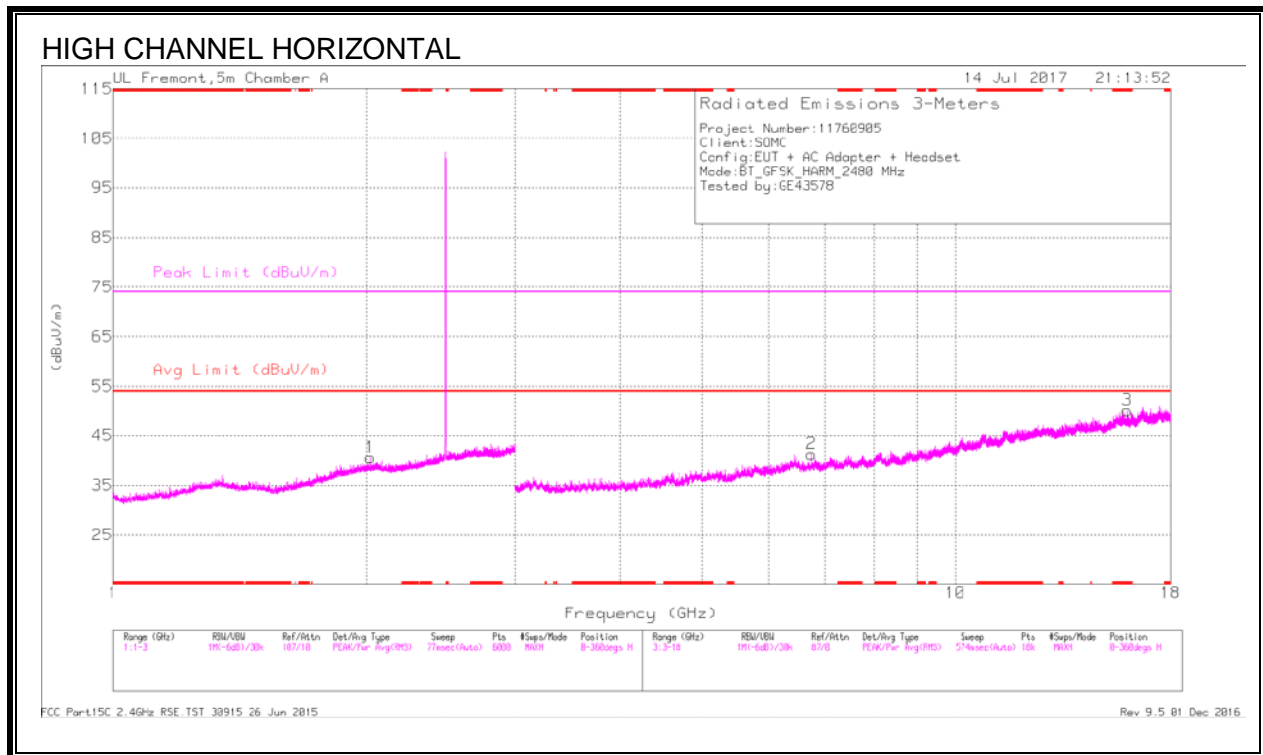


Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fitr/P ad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 15.858	31.94	PKFH	40.3	-17.5	54.74	-	-	74	-19.26	24	199	H
* 15.856	19.93	VA1T	40.3	-17.5	42.73	54	-11.27	-	-	24	199	H
* 4.618	35.43	PKFH	34.1	-28	41.53	-	-	74	-32.47	221	102	V
* 4.619	24.72	VA1T	34	-28	30.72	54	-23.28	-	-	221	102	V
* 8.063	31.73	PKFH	35.9	-21.7	45.93	-	-	74	-28.07	52	102	V
* 8.061	21.02	VA1T	35.9	-21.8	35.12	54	-18.88	-	-	52	102	V
* 12.672	30.69	PKFH	39.2	-18.5	51.39	-	-	74	-22.61	29	200	V
* 12.671	19.71	VA1T	39.2	-18.5	40.41	54	-13.59	-	-	29	200	V
6.441	33.84	PKFH	35.8	-23.9	45.74	-	-	-	-	176	100	H
6.442	22.45	VA1T	35.8	-23.9	34.35	-	-	-	-	176	100	H
7.755	21.17	VA1T	35.8	-22.4	34.57	-	-	-	-	45	199	H
7.756	31.83	PKFH	35.8	-22.4	45.23	-	-	-	-	45	199	H

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

PKFH - FHSS: RB=100k/1MHz VB=3 x RB, Peak

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



Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.473	34.44	PKFH	28.6	-23.2	39.84	-	-	74	-34.16	327	199	V
* 1.475	23.31	VA1T	28.6	-23.2	28.71	54	-25.29	-	-	327	199	V
* 15.981	33.4	PKFH	40.4	-18.1	55.7	-	-	74	-18.3	93	199	H
* 15.979	20.3	VA1T	40.4	-18.1	42.6	54	-11.4	-	-	93	199	H
* 8.441	31.86	PKFH	35.8	-21.7	45.96	-	-	74	-28.04	79	199	V
* 8.444	20.79	VA1T	35.8	-21.7	34.89	54	-19.11	-	-	79	199	V
2.02	35.15	PKFH	31.4	-23	43.55	-	-	-	-	220	199	H
2.02	24.08	VA1T	31.4	-23	32.48	-	-	-	-	220	199	H
6.737	32.69	PKFH	35.5	-23.9	44.29	-	-	-	-	230	199	H
6.737	21.88	VA1T	35.5	-23.9	33.48	-	-	-	-	230	199	H
12.737	30.67	PKFH	39.2	-18.5	51.37	-	-	-	-	118	199	V
12.738	19.71	VA1T	39.2	-18.5	40.41	-	-	-	-	118	199	V

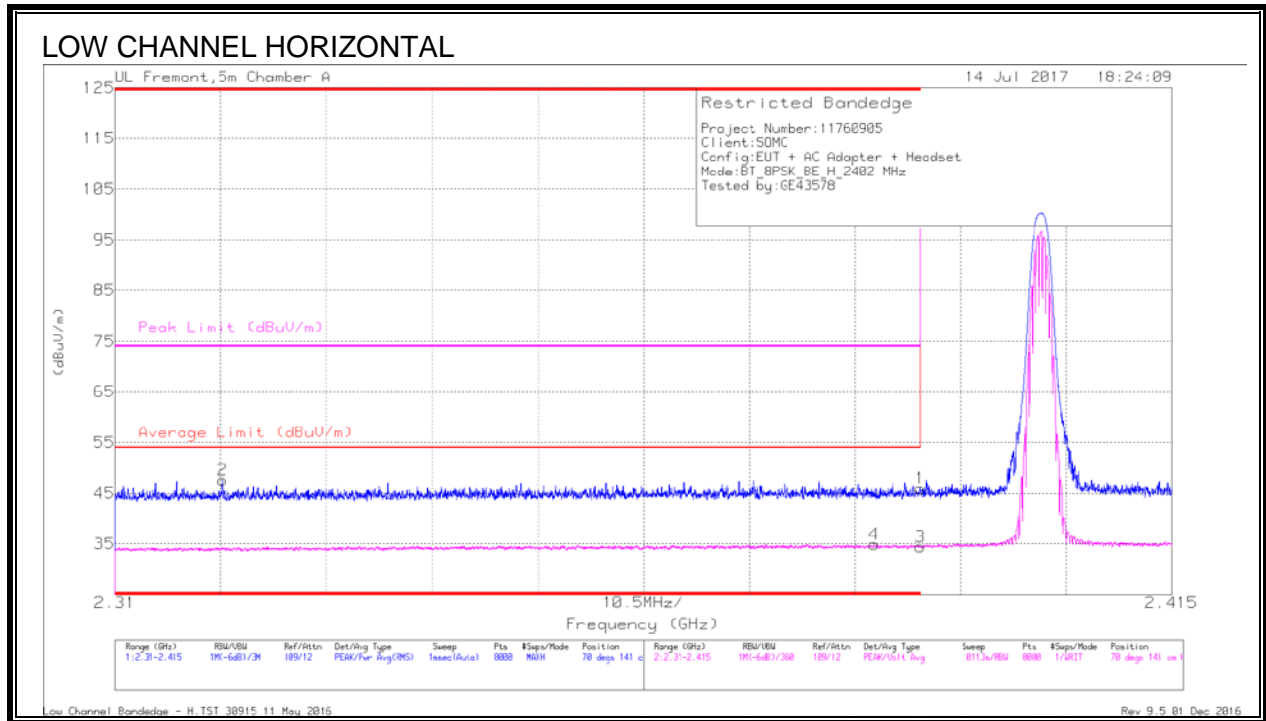
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

PKFH - FHSS: RB=100k/1MHz VB=3 x RB, Peak

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

8.3. ENHANCED DATA RATE 8PSK MODULATION

8.3.1. RESTRICTED BANDEGE (LOW CHANNEL)



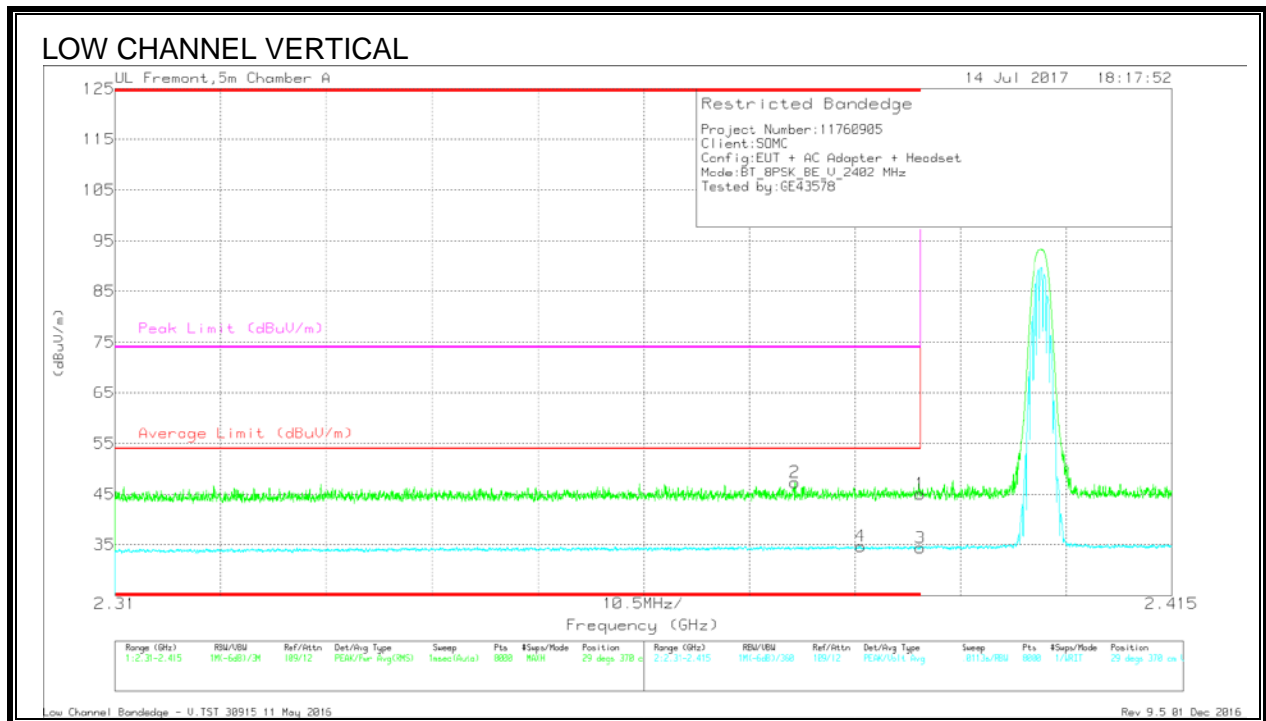
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb1/Ftr/Pa d (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	37.32	Pk	31.8	-23.2	45.92	-	-	74	-28.08	70	141	H
2	* 2.321	39.22	Pk	31.6	-23.3	47.52	-	-	74	-26.48	70	141	H
3	* 2.39	25.78	VA1T	31.8	-23.2	34.38	54	-19.62	-	-	70	141	H
4	* 2.385	26.25	VA1T	31.8	-23.2	34.85	54	-19.15	-	-	70	141	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



Trace Markers

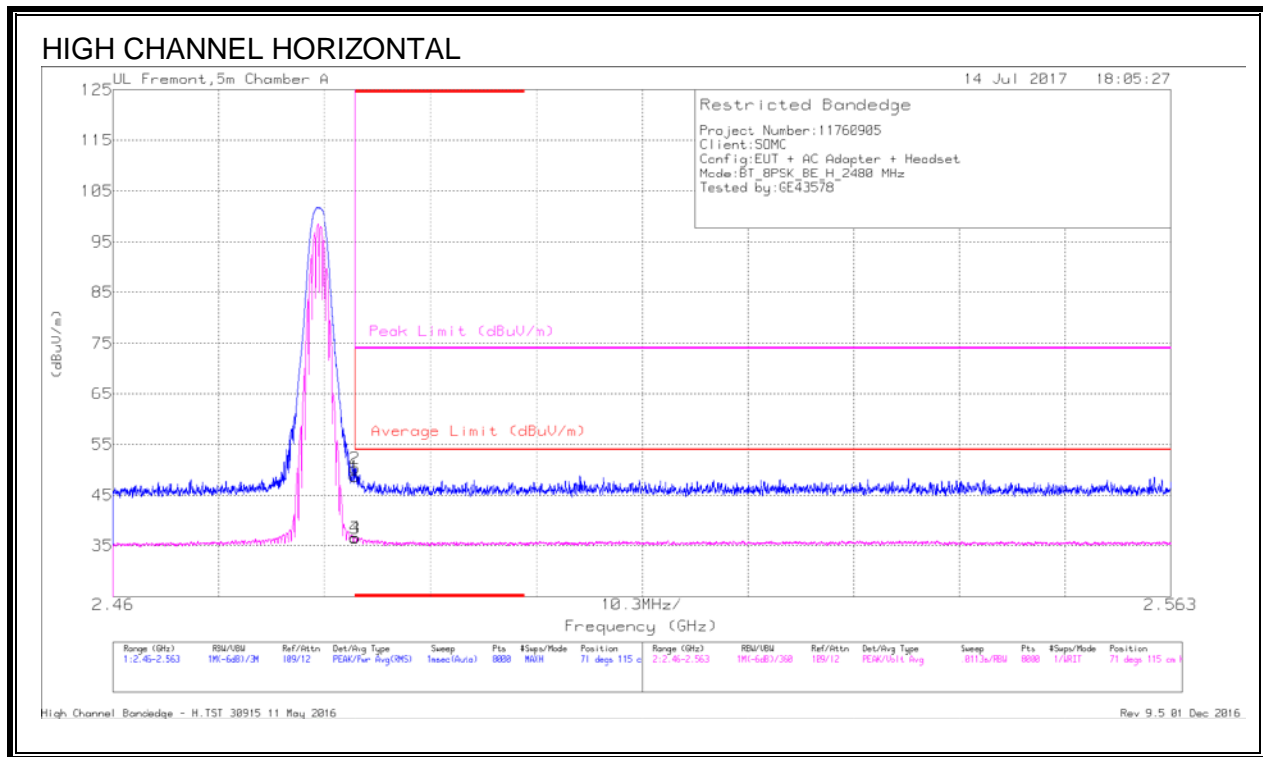
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.39	36.45	Pk	31.8	-23.2	45.05	-	-	74	-28.95	29	370	V
2	* 2.378	38.78	Pk	31.7	-23.2	47.28	-	-	74	-26.72	29	370	V
3	* 2.39	25.83	VA1T	31.8	-23.2	34.43	54	-19.57	-	-	29	370	V
4	* 2.384	26.11	VA1T	31.8	-23.2	34.71	54	-19.29	-	-	29	370	V

* - 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

8.3.2. AUTHORIZED BANDEDGE (HIGH CHANNEL)



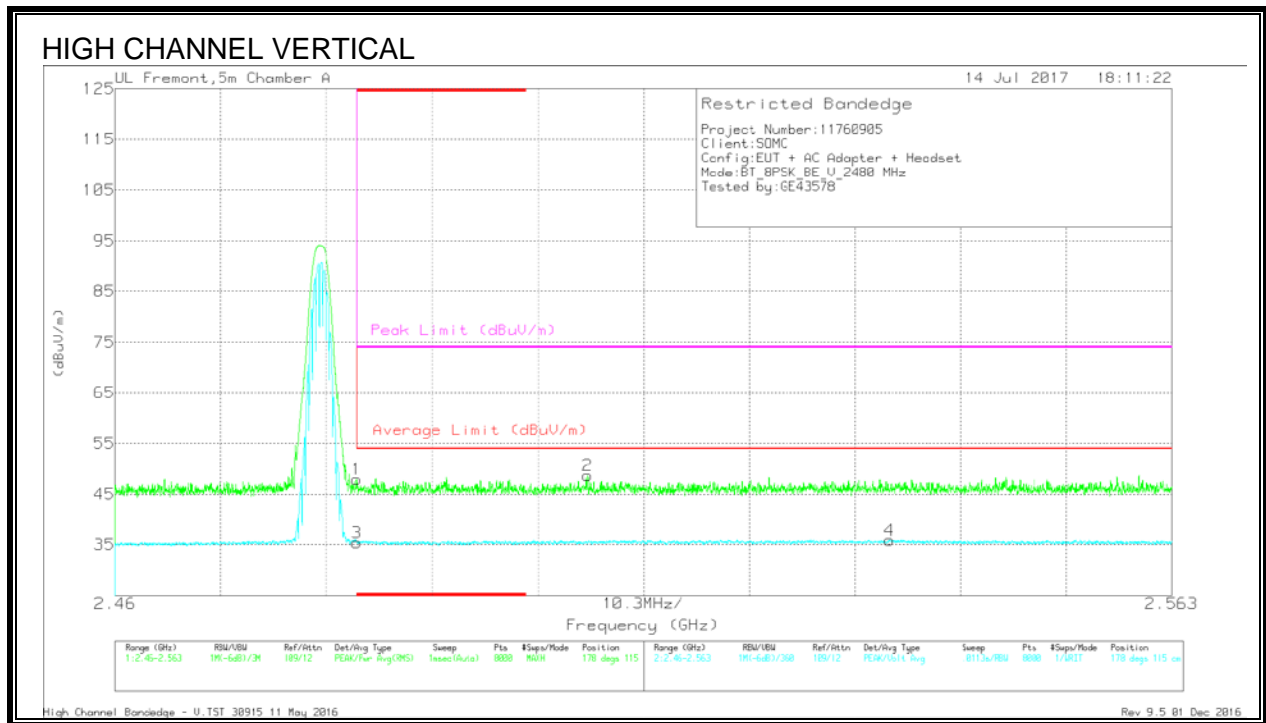
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cb/Fltr/Pa d (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	39.49	Pk	32.3	-23.1	48.69	-	-	74	-25.31	71	115	H
2	* 2.484	41.13	Pk	32.3	-23.1	50.33	-	-	74	-23.67	71	115	H
3	* 2.484	27.33	VA1T	32.3	-23.1	36.53	54	-17.47	-	-	71	115	H
4	* 2.484	27.46	VA1T	32.3	-23.1	36.66	54	-17.34	-	-	71	115	H

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

Pk - Peak detector

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



Trace Markers

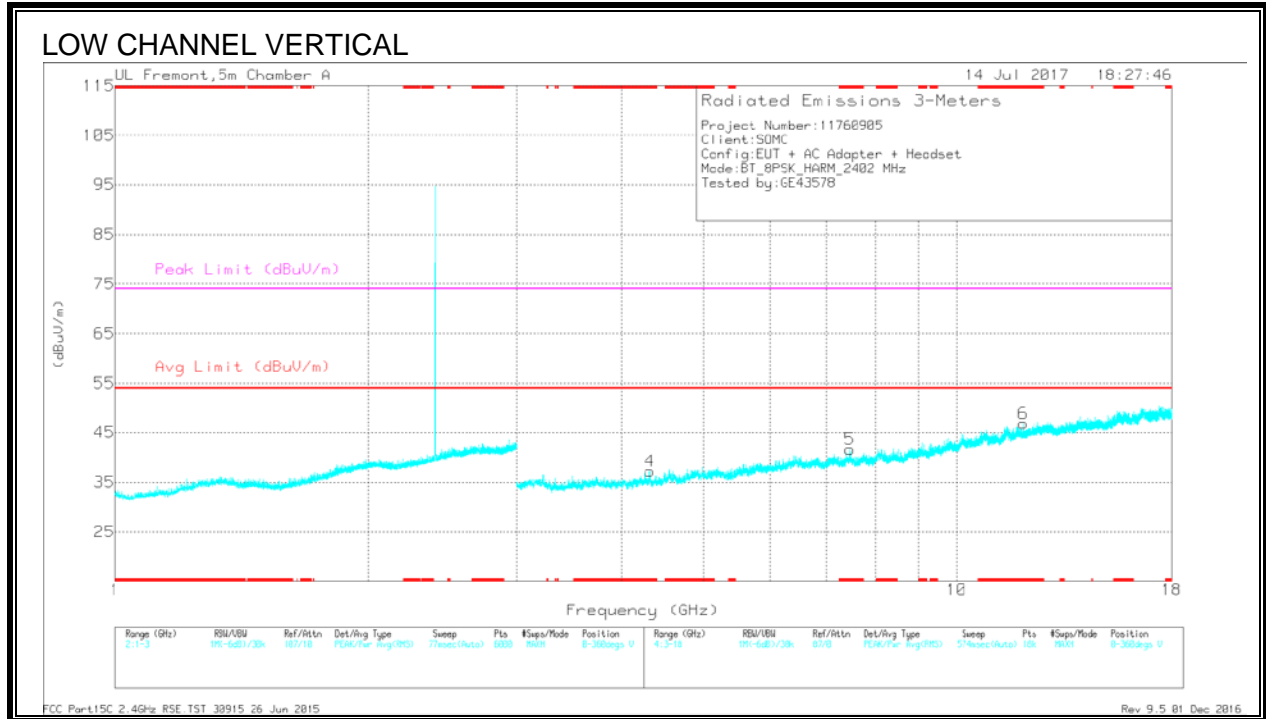
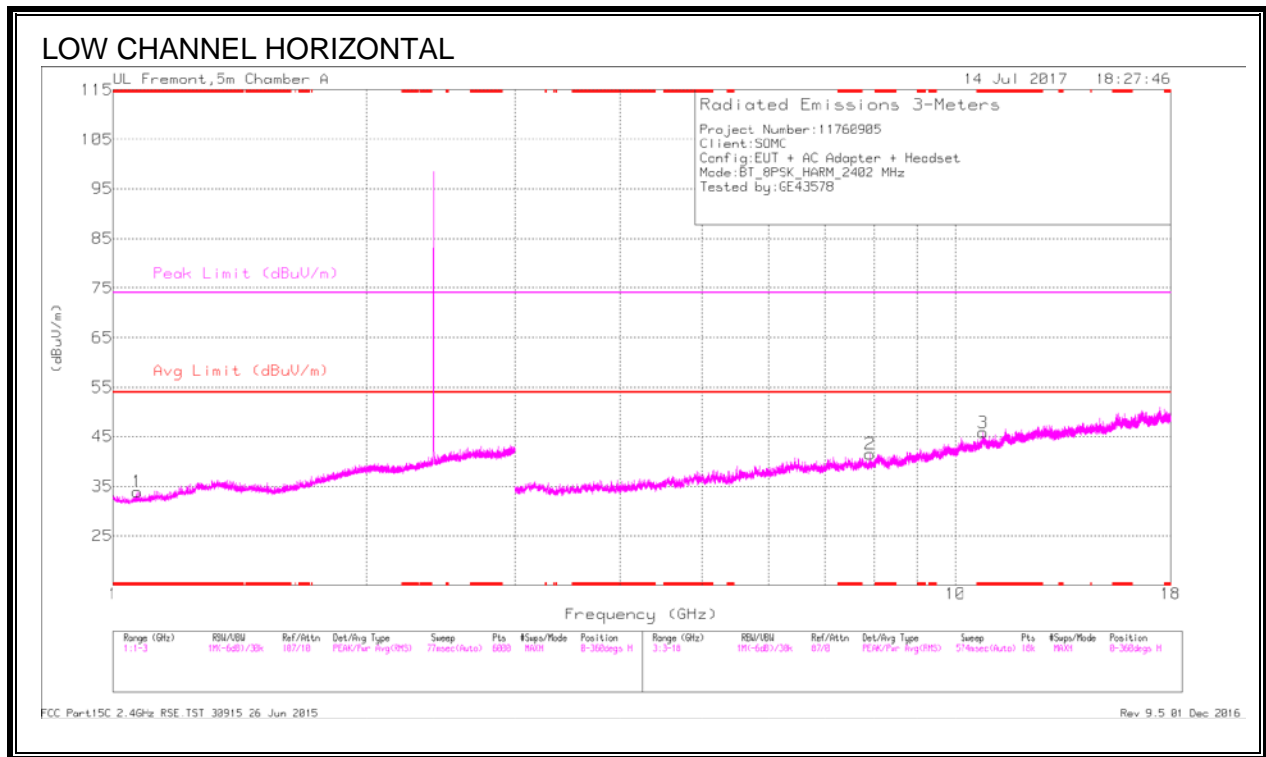
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	38.69	Pk	32.3	-23.1	47.89	-	-	74	-26.11	178	115	V
3	* 2.484	26.24	VA1T	32.3	-23.1	35.44	54	-18.56	-	-	178	115	V
2	2.506	39.33	Pk	32.4	-23.1	48.63	-	-	74	-25.37	178	115	V
4	2.535	26.41	VA1T	32.4	-22.9	35.91	54	-18.09	-	-	178	115	V

* - 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

8.3.3. HARMONICS AND SPURIOUS EMISSIONS

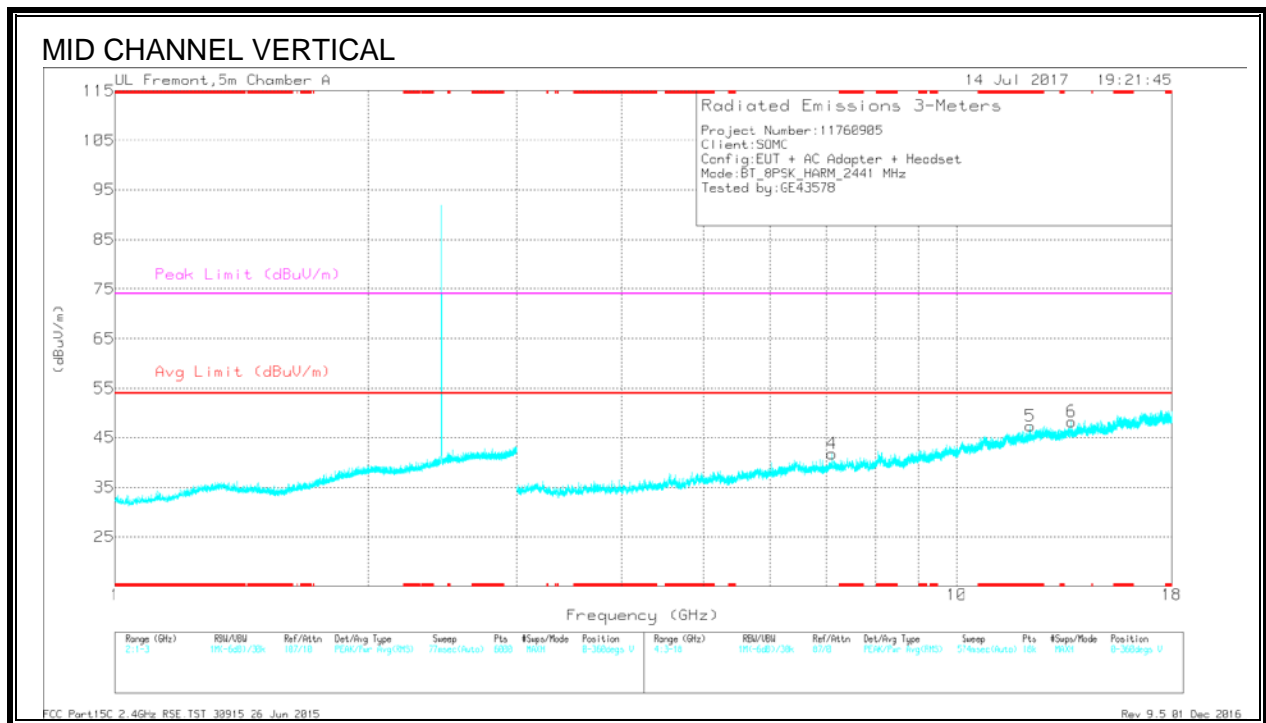
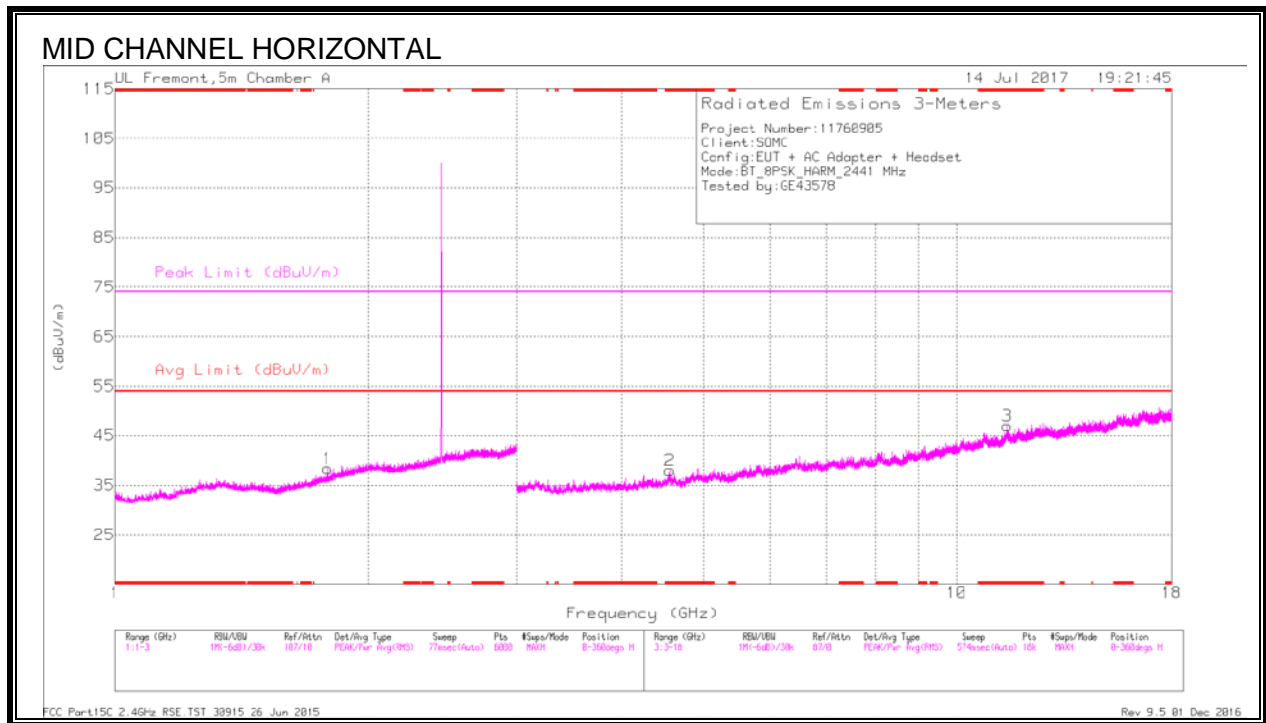


Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fitr/P ad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.066	34.62	PKFH	27.3	-23.9	38.02	-	-	74	-35.98	295	100	H
* 1.067	23.3	VA1T	27.3	-23.9	26.7	54	-27.3	-	-	295	100	H
* 10.772	31.09	PKFH	37.8	-18.7	50.19	-	-	74	-23.81	186	199	H
* 10.773	19.78	VA1T	37.8	-18.7	38.88	54	-15.12	-	-	186	199	H
* 4.319	36.55	PKFH	33.6	-28.5	41.65	-	-	74	-32.35	28	199	V
* 4.321	25.34	VA1T	33.6	-28.6	30.34	54	-23.66	-	-	28	199	V
* 7.469	31.32	PKFH	35.7	-22.2	44.82	-	-	74	-29.18	300	199	V
* 7.468	20.67	VA1T	35.7	-22.1	34.27	54	-19.73	-	-	300	199	V
* 11.992	31.21	PKFH	38.9	-19.2	50.91	-	-	74	-23.09	331	102	V
* 11.993	19.64	VA1T	38.9	-19.2	39.34	54	-14.66	-	-	331	102	V
7.919	21.29	VA1T	35.8	-23.2	33.89	-	-	-	-	113	199	H
7.92	32.13	PKFH	35.8	-23.2	44.73	-	-	-	-	113	199	H

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

PKFH - FHSS: RB=100k/1MHz VB=3 x RB, Peak

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

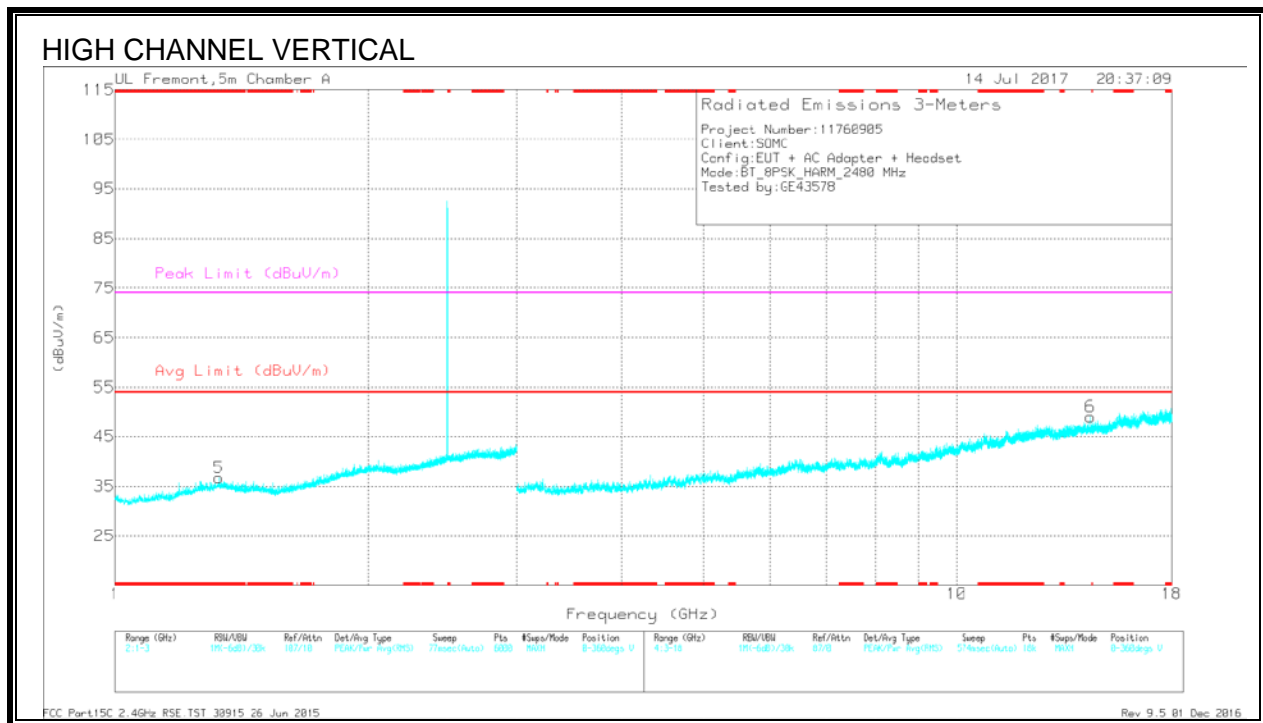
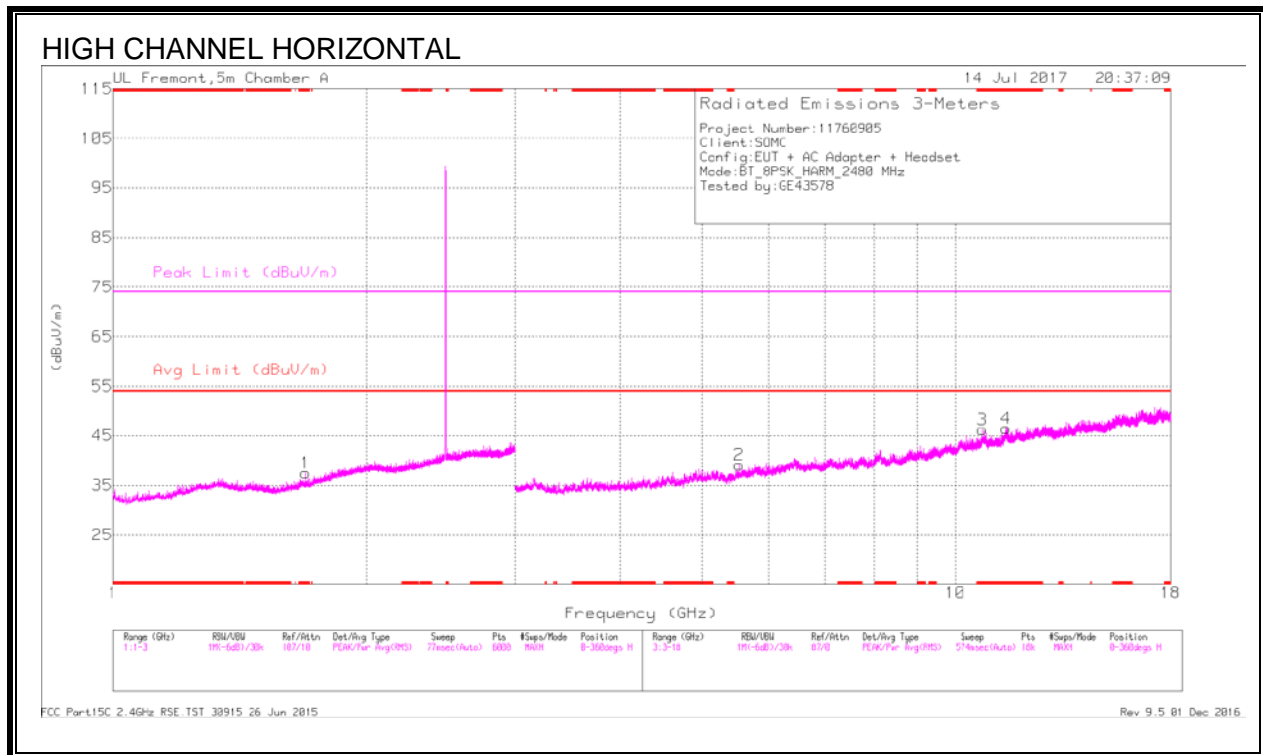


Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fitr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.558	36.9	PKFH	34	-27.7	43.2	-	-	74	-30.8	205	199	H
* 4.558	24.81	VA1T	34	-27.7	31.11	54	-22.89	-	-	205	199	H
* 11.483	30.96	PKFH	38.3	-18.3	50.96	-	-	74	-23.04	0	102	H
* 11.484	19.76	VA1T	38.3	-18.3	39.76	54	-14.24	-	-	0	102	H
* 12.217	30.5	PKFH	39	-19	50.5	-	-	74	-23.5	289	200	V
* 12.216	19.83	VA1T	39	-19	39.83	54	-14.17	-	-	289	200	V
1.787	34.13	PKFH	30.1	-23.3	40.93	-	-	-	-	319	100	H
1.791	23.66	VA1T	30.1	-23.3	30.46	-	-	-	-	319	100	H
7.109	33.63	PKFH	35.7	-23.3	46.03	-	-	-	-	160	102	V
7.109	21.55	VA1T	35.7	-23.3	33.95	-	-	-	-	160	102	V
13.693	31.6	PKFH	39.3	-19.4	51.5	-	-	-	-	296	200	V
13.696	20.65	VA1T	39.3	-19.4	40.55	-	-	-	-	296	200	V

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

PKFH - FHSS: RB=100k/1MHz VB=3 x RB, Peak

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



Frequency (GHz)	Meter Reading (dBuV)	Det	AF T862 (dB/m)	Amp/Cbl/Fitr/P ad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 1.691	34.42	PKFH	28.9	-23.3	40.02	-	-	74	-33.98	90	100	H
* 1.692	23.63	VA1T	28.9	-23.3	29.23	54	-24.77	-	-	90	100	H
* 1.327	34.76	PKFH	29.5	-23.5	40.76	-	-	74	-33.24	351	100	V
* 1.328	23.39	VA1T	29.5	-23.5	29.39	54	-24.61	-	-	351	100	V
* 10.764	31.21	PKFH	37.8	-18.9	50.11	-	-	74	-23.89	33	102	H
* 10.764	19.93	VA1T	37.8	-18.9	38.83	54	-15.17	-	-	33	102	H
* 11.492	32.02	PKFH	38.3	-18.5	51.82	-	-	74	-22.18	101	102	H
* 11.494	19.78	VA1T	38.3	-18.5	39.58	54	-14.42	-	-	101	102	H
5.53	23.65	VA1T	35	-26.6	32.05	-	-	-	-	141	199	H
5.532	35.08	PKFH	35	-26.6	43.48	-	-	-	-	141	199	H
14.404	20.4	VA1T	39.7	-19.1	41	-	-	-	-	22	200	V
14.407	32.56	PKFH	39.7	-19.2	53.06	-	-	-	-	22	200	V

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

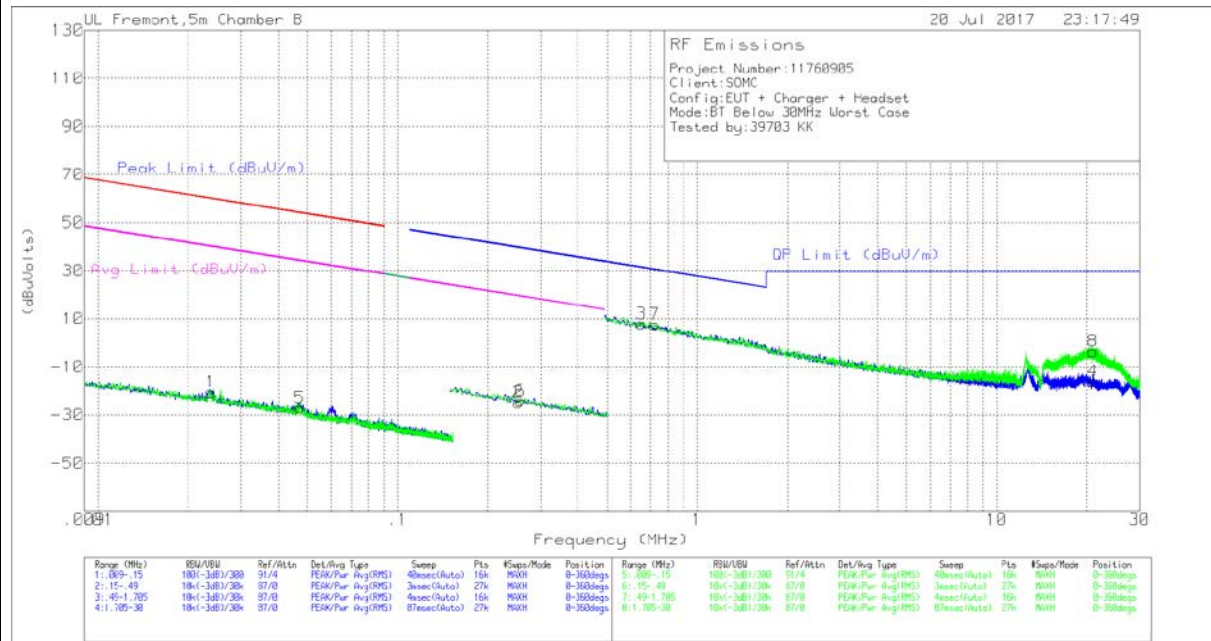
PKFH - FHSS: RB=100k/1MHz VB=3 x RB, Peak

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

8.4. WORST-CASE BELOW 30 MHz

SPURIOUS EMISSIONS BELOW 30 MHz (WORST-CASE CONFIGURATION)

HORIZONTAL AND VERTICAL PLOTS



FCC 15.209 Below 30MHz TST 30915 20 Apr 2017 Rev. 9.5 01 Dec 2016

NOTE: KDB 414788 OATS and Chamber Correlation Justification

- Based on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.
- OATs and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

Trace Markers

Marker	Frequency	Meter	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr 300m	Corrected	Peak Limit (dBuV/m)	Margin	Avg Limit (dBuV/m)	Margin	QP Limit (dBuV/m)	Margin	QP Limit (dBuV/m)	Margin	Peak Limit (dBuV/m)	Margin	Avg Limit (dBuV/m)	Margin	Azimuth	
1	0.02381	43.17	Pk	14.9	1.4	-80	-20.53	60.05	-80.58	40.05	-60.58	-	-	-	-	-	-	-	-	-	0-360
5	0.04722	38.91	Pk	12.7	1.4	-80	-26.99	54.1	-81.09	34.1	-61.09	-	-	-	-	-	-	-	-	-	0-360
2	0.25369	42.25	Pk	11.5	1.5	-80	-24.75	-	-	-	-	-	-	-	-	39.53	-64.28	19.53	-44.28	-	0-360
6	0.25739	42.89	Pk	11.5	1.5	-80	-24.11	-	-	-	-	-	-	-	-	39.4	-63.51	19.4	-43.51	-	0-360

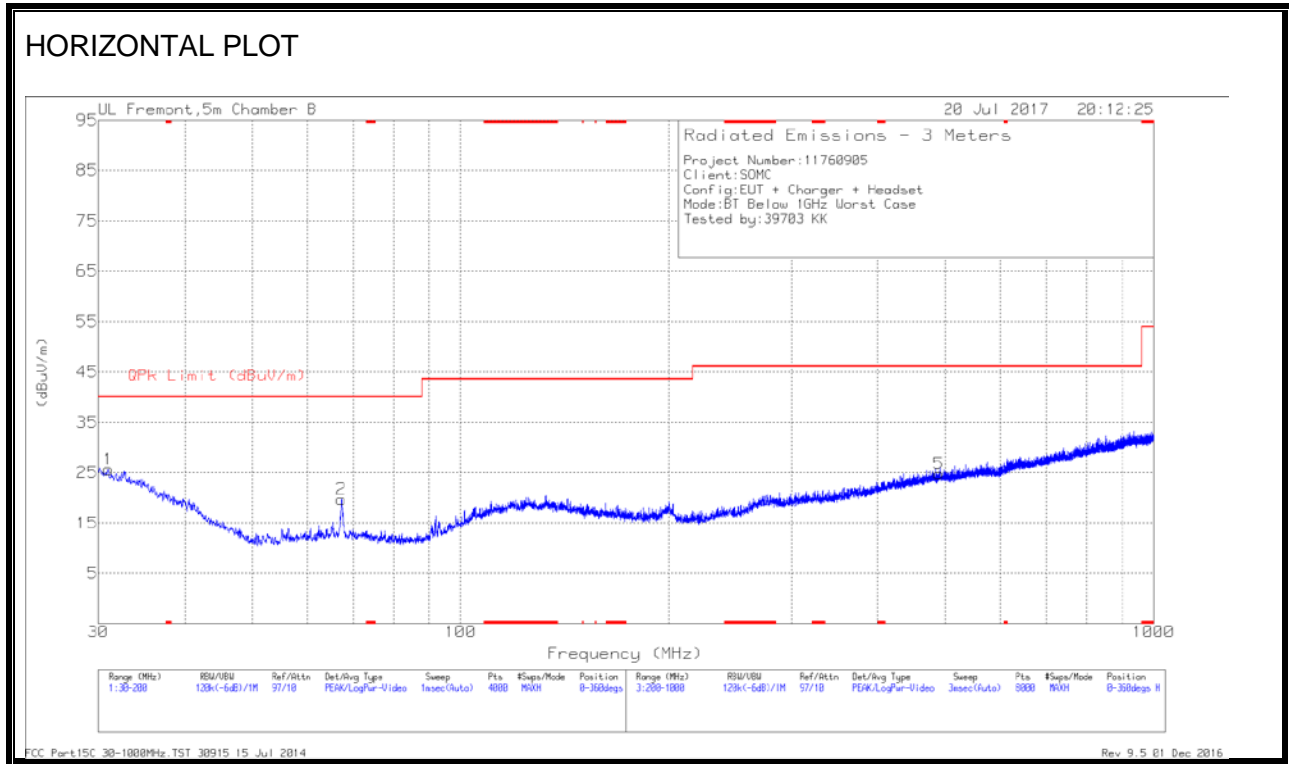
Pk - Peak detector

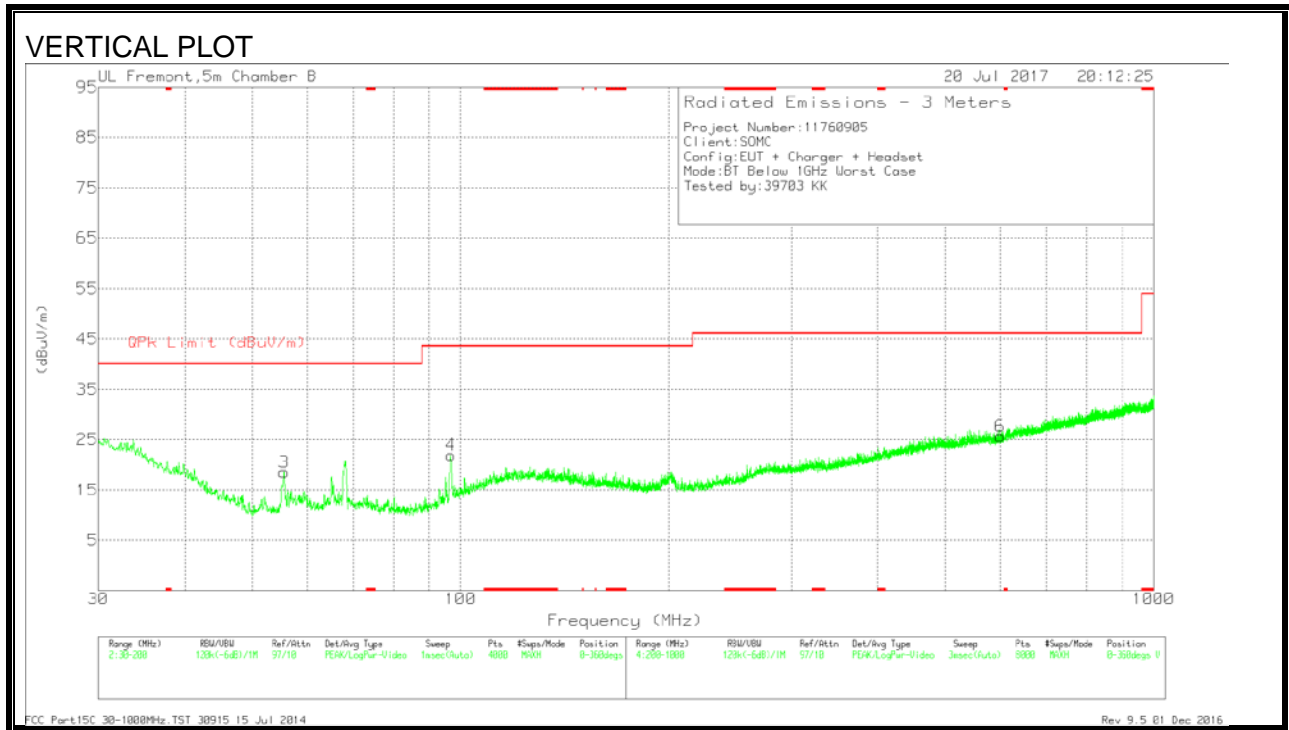
Marker	Frequency	Meter	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr (dB) 40Log	Corrected	Peak Limit (dBuV/m)	Margin	Avg Limit (dBuV/m)	Margin	QP Limit (dBuV/m)	Margin	QP Limit (dBuV/m)	Margin	Peak Limit (dBuV/m)	Margin	Avg Limit (dBuV/m)	Margin	Azimuth	
3	0.65089	34.91	Pk	11.5	1.5	-40	7.91	-	-	-	-	-	-	31.34	-23.43	-	-	-	-	-	0-360
7	0.72385	34.62	Pk	11.5	1.5	-40	7.62	-	-	-	-	-	-	30.42	-22.8	-	-	-	-	-	0-360
4	20.9636	12.82	Pk	9.5	1.7	-40	-15.98	-	-	-	-	-	-	29.5	-45.48	-	-	-	-	-	0-360
8	20.9641	25.29	Pk	9.5	1.7	-40	-3.51	-	-	-	-	-	-	29.5	-33.01	-	-	-	-	-	0-360

Pk - Peak detector

8.5. WORST-CASE BELOW 1 GHz

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





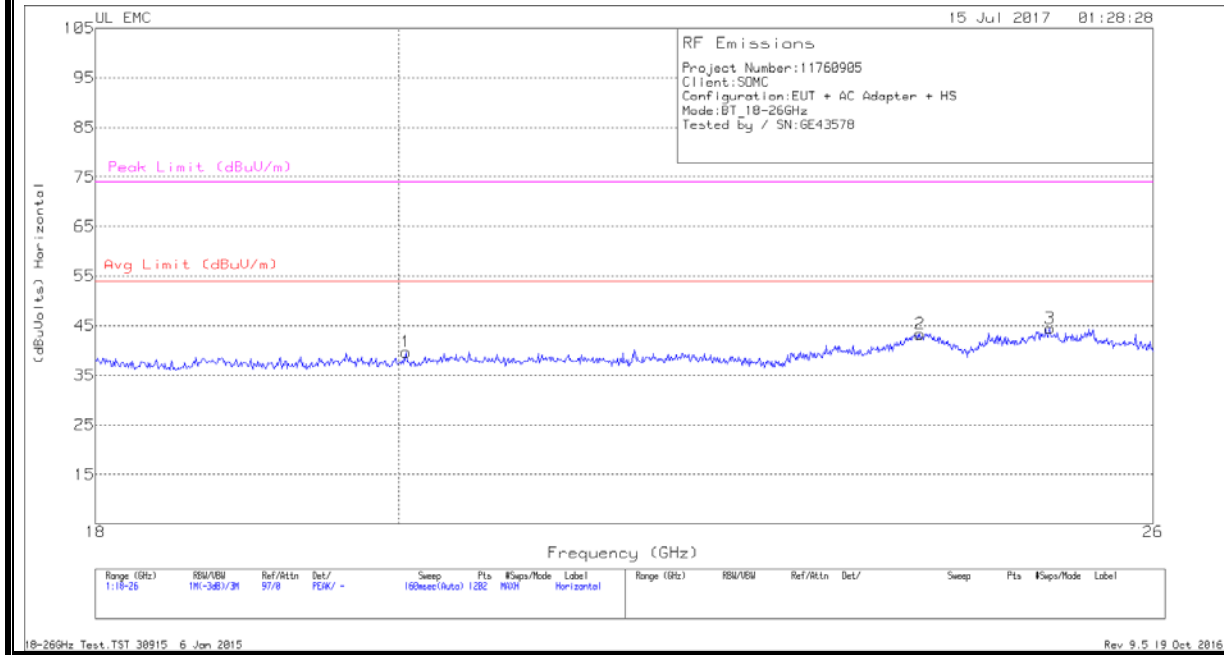
DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T899 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	31.0203	29.7	Pk	24.7	-28.8	25.6	40	-14.4	0-360	100	H
3	55.6341	35.82	Pk	11.1	-28.4	18.52	40	-21.48	0-360	100	V
2	67.2609	35.91	Pk	12.1	-28.3	19.71	40	-20.29	0-360	200	H
4	96.806	36.62	Pk	13.3	-28	21.92	43.52	-21.6	0-360	100	V
5	489.1376	28.95	Pk	21.6	-25.8	24.75	46.02	-21.27	0-360	200	H
6	600.352	28.88	Pk	22.4	-25.6	25.68	46.02	-20.34	0-360	200	V

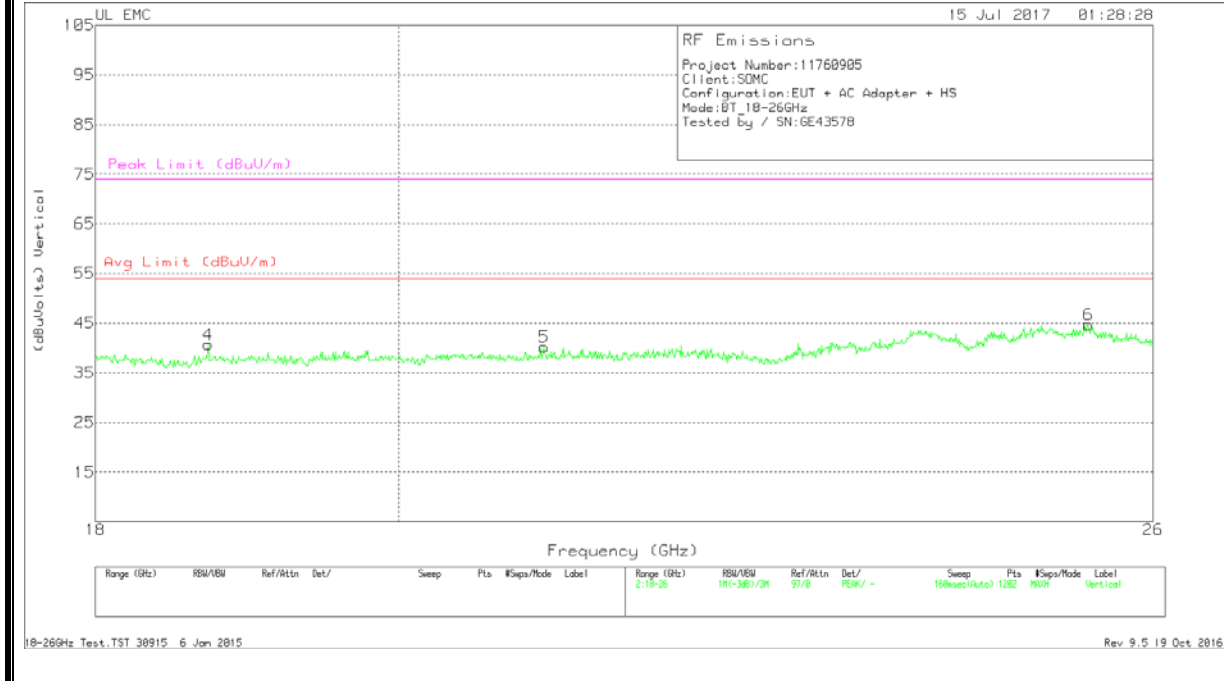
8.6. WORST-CASE ABOVE 18 GHz

SPURIOUS EMISSIONS 18 TO 26 GHz (WORST-CASE CONFIGURATION)

HORIZONTAL PLOT



VERTICAL PLOT



Data

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T449 AF (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	20.052	41.37	Pk	32.8	-25	-9.5	39.67	54	-14.33	74	-34.33
2	23.975	43.13	Pk	33.9	-24.2	-9.5	43.33	54	-10.67	74	-30.67
3	25.081	44.3	Pk	34.3	-24.6	-9.5	44.5	54	-9.5	74	-29.5
4	18.719	42.57	Pk	32.3	-24.7	-9.5	40.67	54	-13.33	74	-33.33
5	21.037	41.67	Pk	33.2	-25.2	-9.5	40.17	54	-13.83	74	-33.83
6	25.42	44.07	Pk	34.4	-24.3	-9.5	44.67	54	-9.33	74	-29.33

Pk - Peak detector

9. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

TEST PROCEDURE

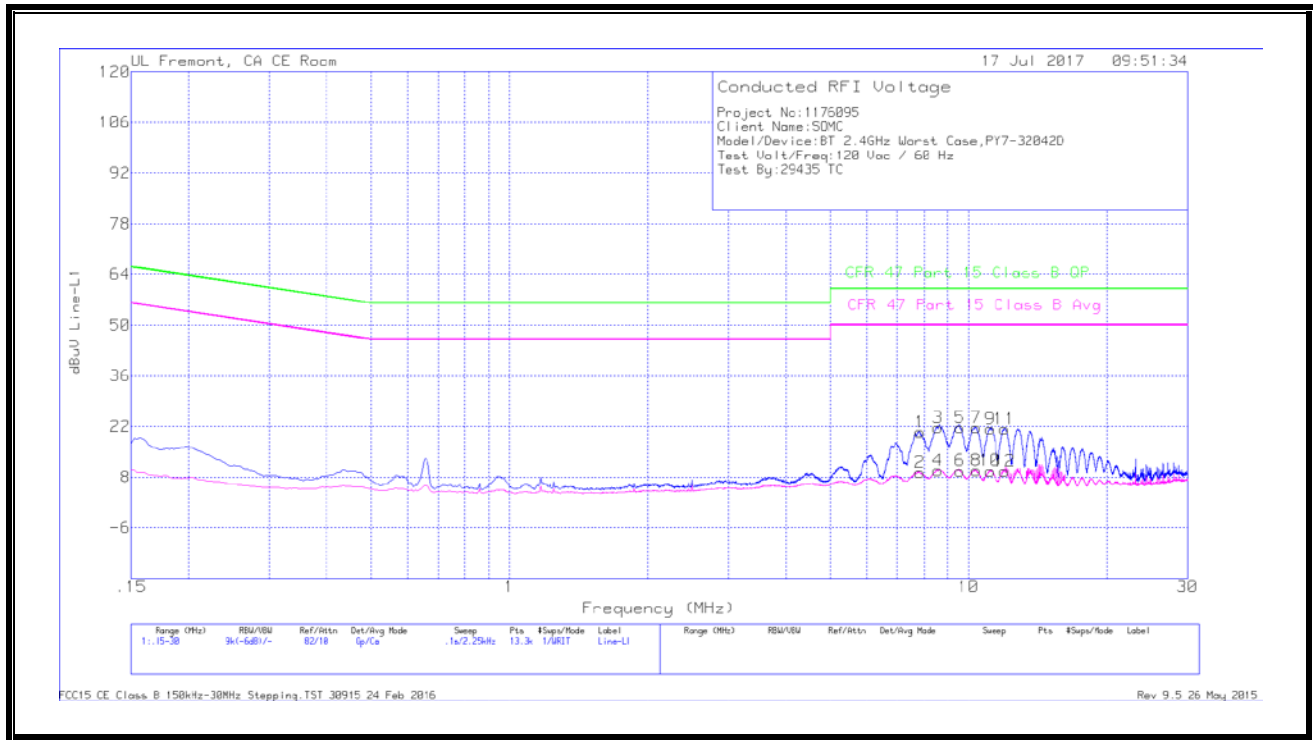
The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

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

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

RESULTS

LINE 1 RESULTS



WORST EMISSIONS

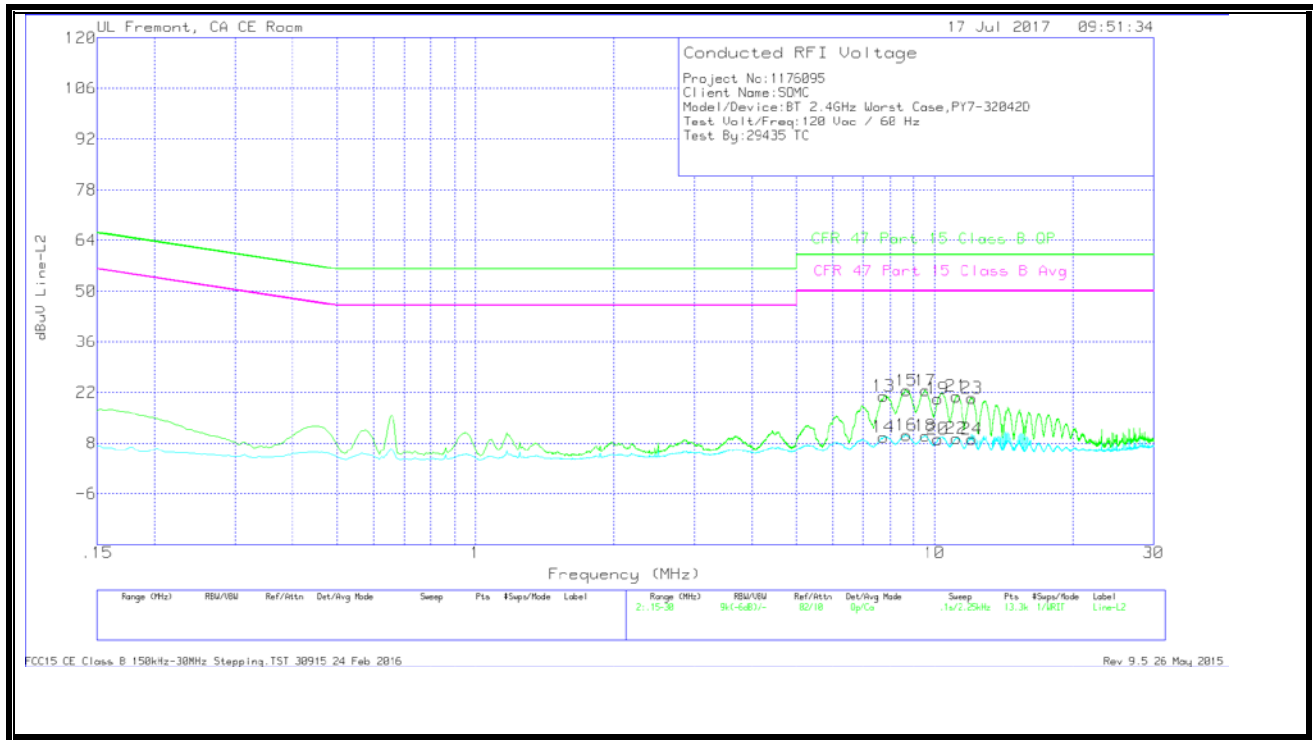
Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L1	LC Cables C1&C3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
1	7.82363	10.1	Qp	0	.2	10.2	20.5	60	-39.5	-	-
2	7.8225	-1.02	Ca	0	.2	10.2	9.38	-	-	50	-40.62
3	8.592	11.23	Qp	0	.2	10.2	21.63	60	-38.37	-	-
4	8.5695	-.6	Ca	0	.2	10.2	9.8	-	-	50	-40.2
5	9.5685	11.2	Qp	0	.2	10.2	21.6	60	-38.4	-	-
6	9.57975	-.64	Ca	0	.2	10.2	9.76	-	-	50	-40.24
7	10.40325	11.29	Qp	0	.2	10.2	21.69	60	-38.31	-	-
8	10.3875	-.48	Ca	0	.2	10.2	9.92	-	-	50	-40.08
9	11.1345	10.98	Qp	0	.2	10.2	21.38	60	-38.62	-	-
10	11.1345	-.64	Ca	0	.2	10.2	9.76	-	-	50	-40.24
11	11.994	10.85	Qp	.1	.2	10.2	21.35	60	-38.65	-	-
12	11.97825	-.81	Ca	.1	.2	10.2	9.69	-	-	50	-40.31

Qp - Quasi-Peak detector

Ca - CISPR average detection

LINE 2 RESULTS



WORST EMISSIONS

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L2	LC Cables C2&C3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
13	7.74375	10.51	Qp	0	.2	10.2	20.91	60	-39.09	-	-
14	7.74375	-.67	Ca	0	.2	10.2	9.73	-	-	50	-40.27
15	8.6775	12.14	Qp	0	.2	10.2	22.54	60	-37.46	-	-
16	8.6775	-.2	Ca	0	.2	10.2	10.2	-	-	50	-39.8
17	9.53925	12.1	Qp	0	.2	10.2	22.5	60	-37.5	-	-
18	9.53925	-.36	Ca	0	.2	10.2	10.04	-	-	50	-39.96
19	10.18163	9.87	Qp	0	.2	10.2	20.27	60	-39.73	-	-
20	10.18275	-1.33	Ca	0	.2	10.2	9.07	-	-	50	-40.93
21	11.157	10.49	Qp	0	.2	10.2	20.89	60	-39.11	-	-
22	11.15588	-1.02	Ca	0	.2	10.2	9.38	-	-	50	-40.62
23	12.057	9.99	Qp	0	.2	10.2	20.39	60	-39.61	-	-
24	12.05925	-1.17	Ca	0	.2	10.2	9.23	-	-	50	-40.77

Qp - Quasi-Peak detector

Ca - CISPR average detection