

8.6. LOW POWER ENHANCED DATA RATE DQPSK MODULATION

8.6.1. OUTPUT POWER

ID:	39472	Date:	01/24/2017
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LIMITS

§15.247 (b) (1)

RSS-247 (5.4) (2)

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

TEST PROCEDURE

The transmitter output is connected to a wideband peak and average power meter.

RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	11.50	21	-9.50
Middle	2441	11.05	21	-9.95
High	2480	11.27	21	-9.73

8.6.2. AVERAGE POWER

ID:	39472	Date:	1/24/17
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LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 11 dB (including 10 dB pad and 1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	8.60
Middle	2441	8.77
High	2480	8.71

8.7. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

8.7.1. 20 dB AND 99% BANDWIDTH

LIMITS

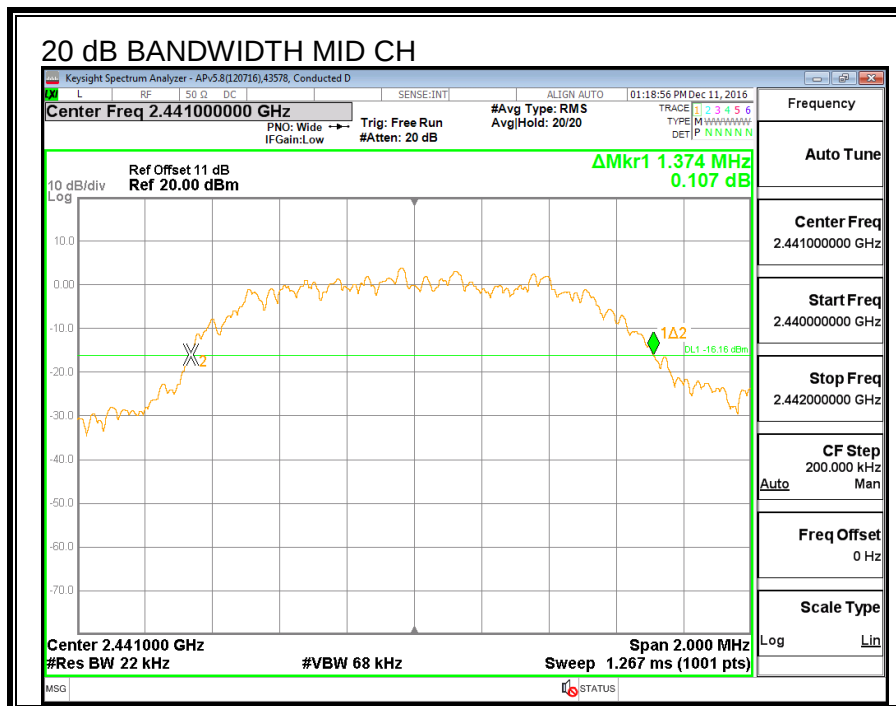
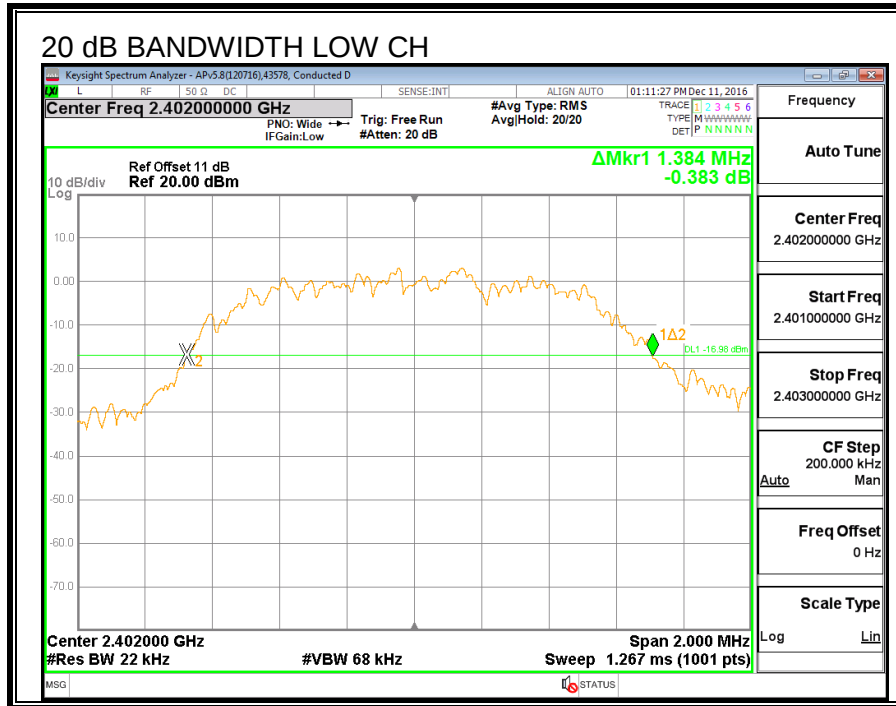
None; for reporting purposes only.

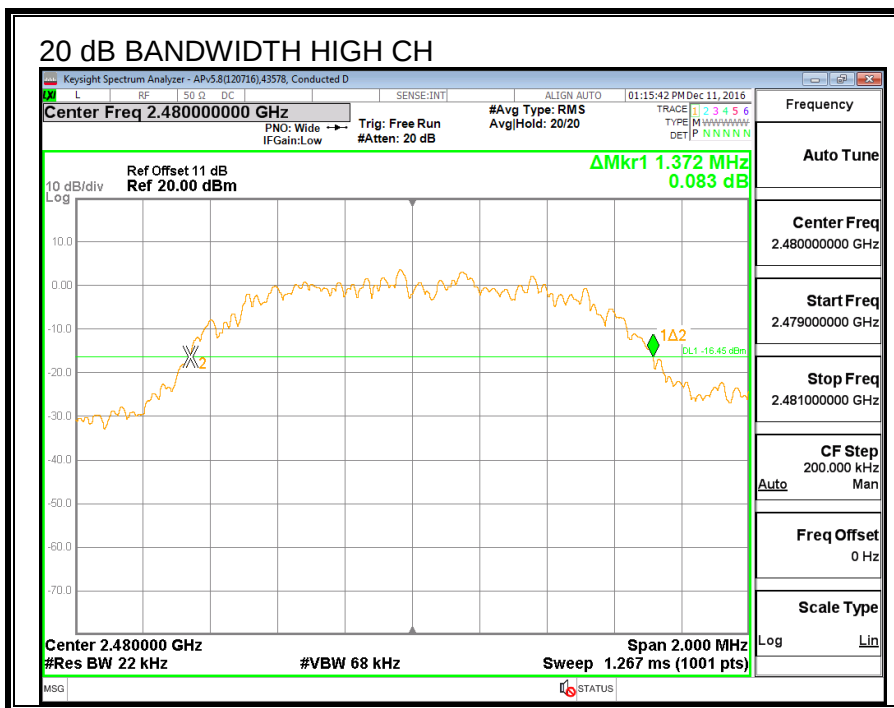
TEST PROCEDURE

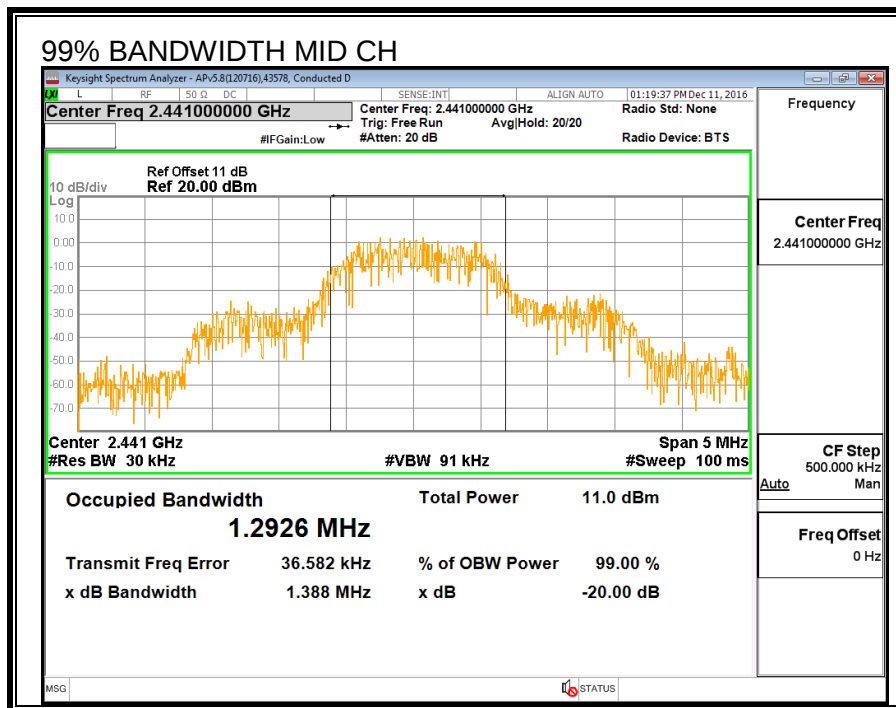
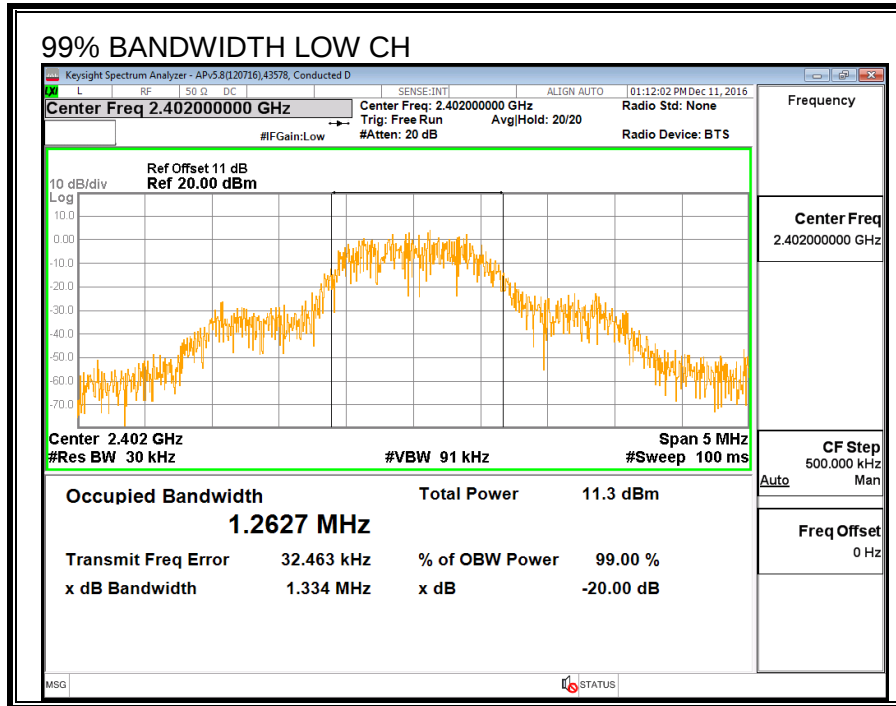
The transmitter output is connected to a spectrum analyzer. The RBW is set to $\geq 1\%$ of the 20 dB bandwidth. The VBW is set to $\geq$ RBW. The sweep time is coupled.

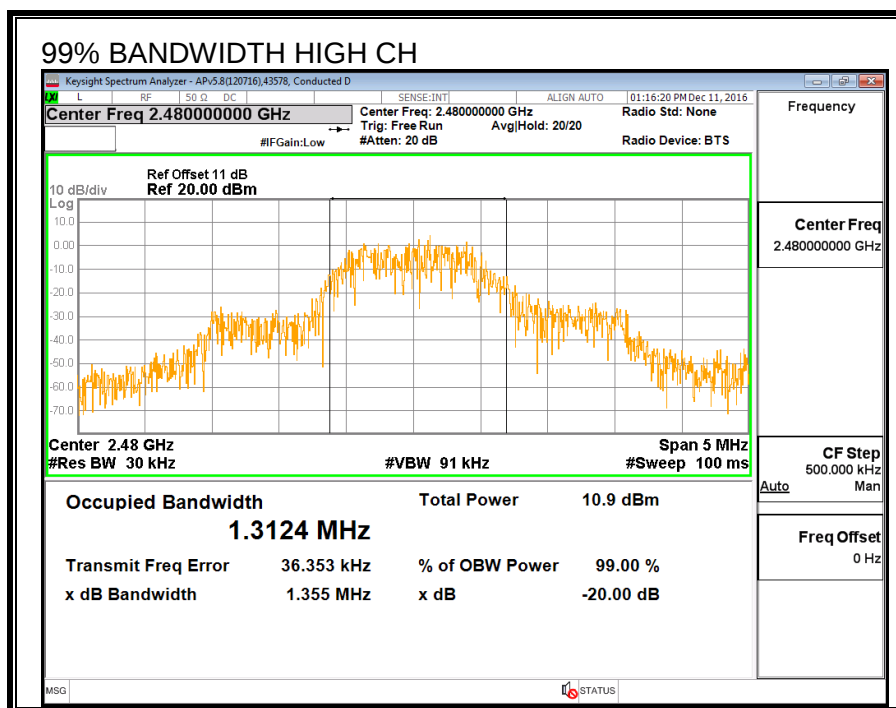
RESULTS

Channel	Frequency (MHz)	20 dB Bandwidth (KHz)	99% Bandwidth (KHz)
Low	2402	1384	1262.7
Middle	2441	1374	1292.6
High	2480	1372	1312.4









8.7.2. HOPPING FREQUENCY SEPARATION

LIMITS

FCC §15.247 (a) (1)

IC RSS-247 (5.1) (2)

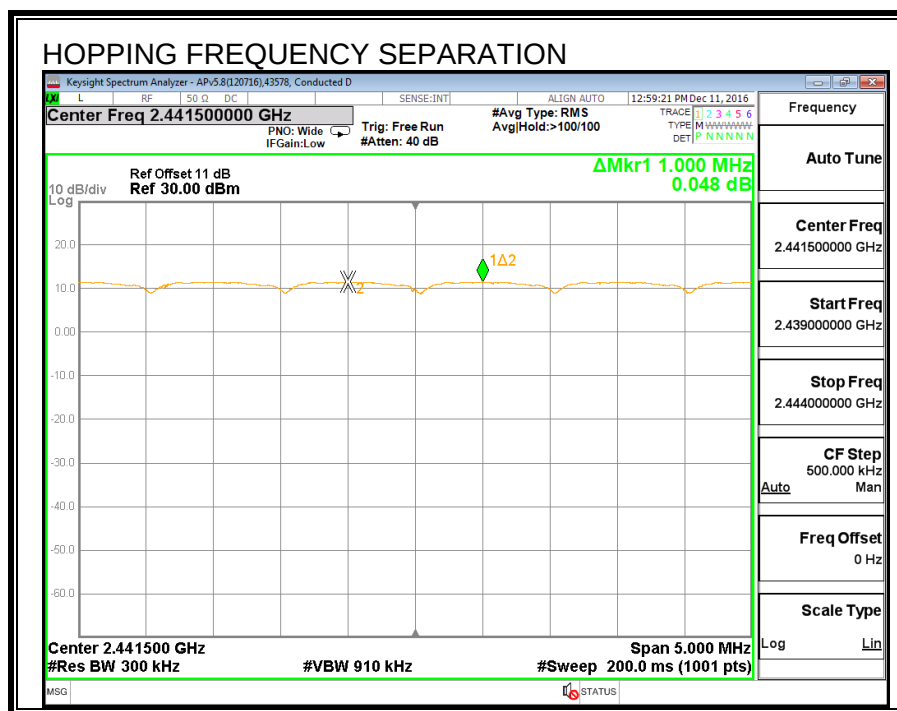
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 300 kHz and the VBW is set to 910 kHz. The sweep time is coupled.

RESULTS



8.7.3. NUMBER OF HOPPING CHANNELS

LIMITS

FCC §15.247 (a) (1) (iii)

IC RSS-247 (5.1) (4)

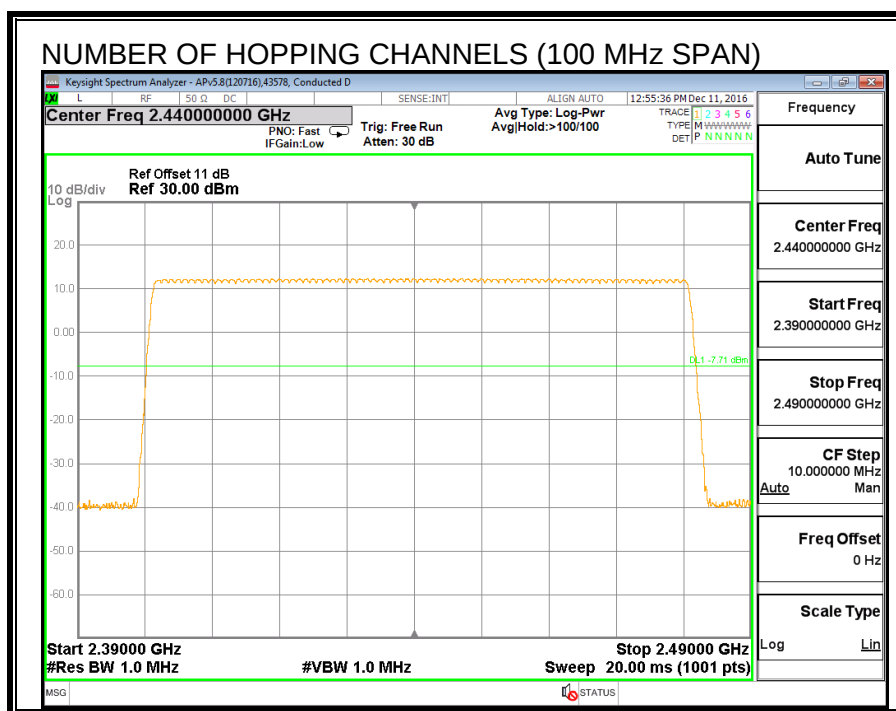
Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels.

TEST PROCEDURE

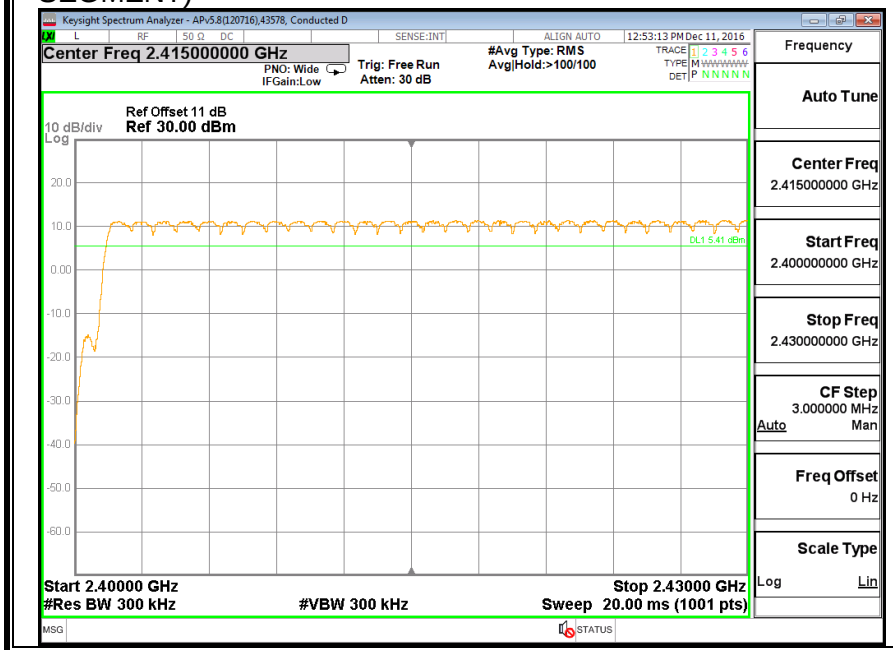
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

RESULTS

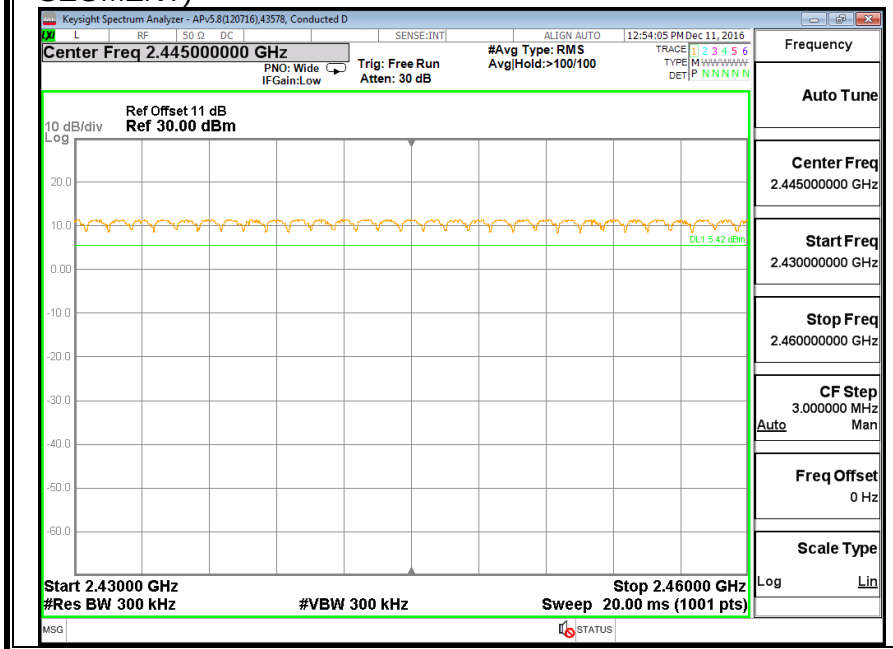
Normal Mode: 79 Channels observed.

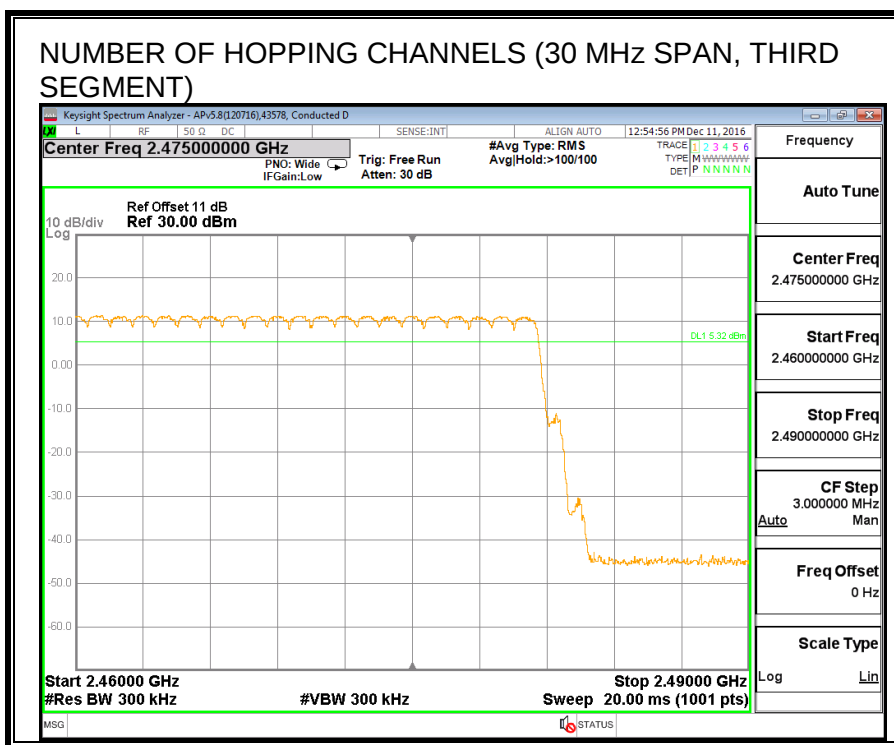


NUMBER OF HOPPING CHANNELS (30 MHz SPAN, FIRST SEGMENT)



NUMBER OF HOPPING CHANNELS (30 MHz SPAN, SECOND SEGMENT)





8.7.4. AVERAGE TIME OF OCCUPANCY

LIMITS

FCC §15.247 (a) (1) (iii)

IC RSS-247 (5.1) (4)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The span is set to 0 Hz, centered on a single, selected hopping channel. The width of a single pulse is measured in a fast scan. The number of pulses is measured in a 3.16 second scan, to enable resolution of each occurrence.

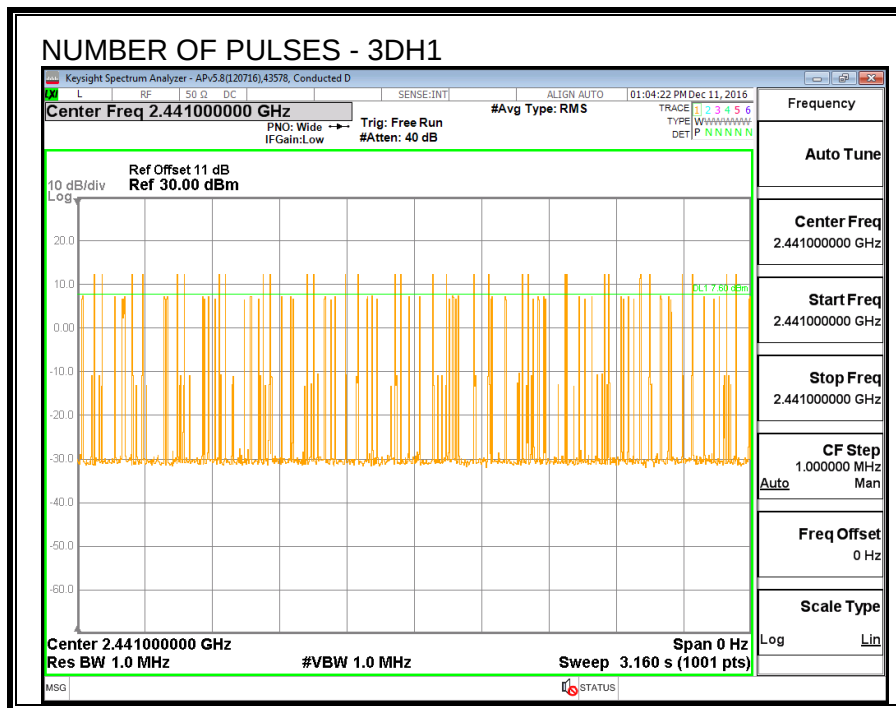
The average time of occupancy in the specified 31.6 second period (79 channels * 0.4 s) is equal to $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{pulse width}$.

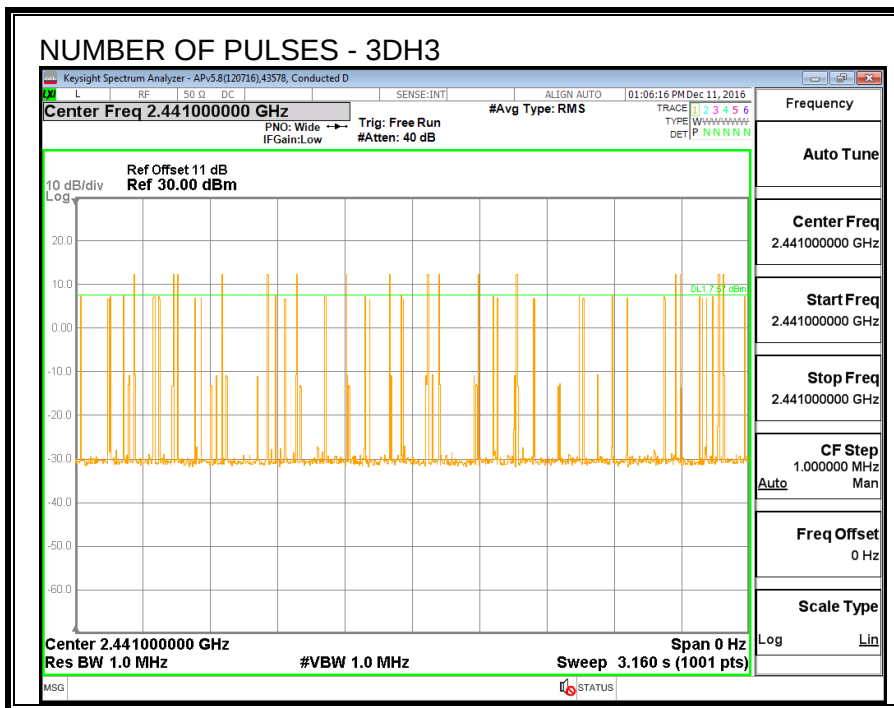
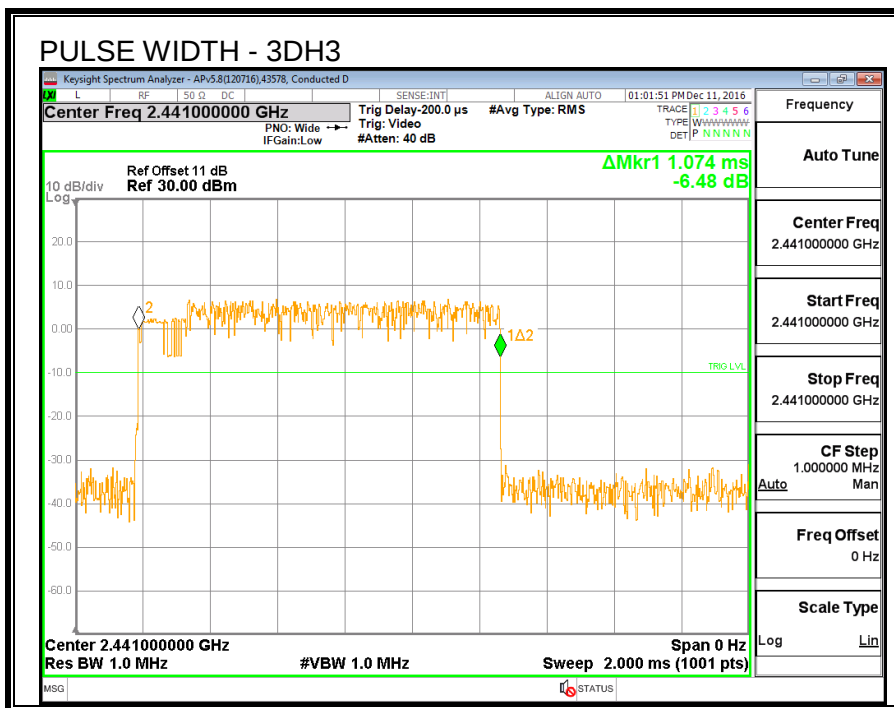
For AFH mode, the average time of occupancy in the specified 8 second period (20 channels * 0.4 seconds) is equal to $10 * (\# \text{ of pulses in } 0.8 \text{ s}) * \text{pulse width}$.

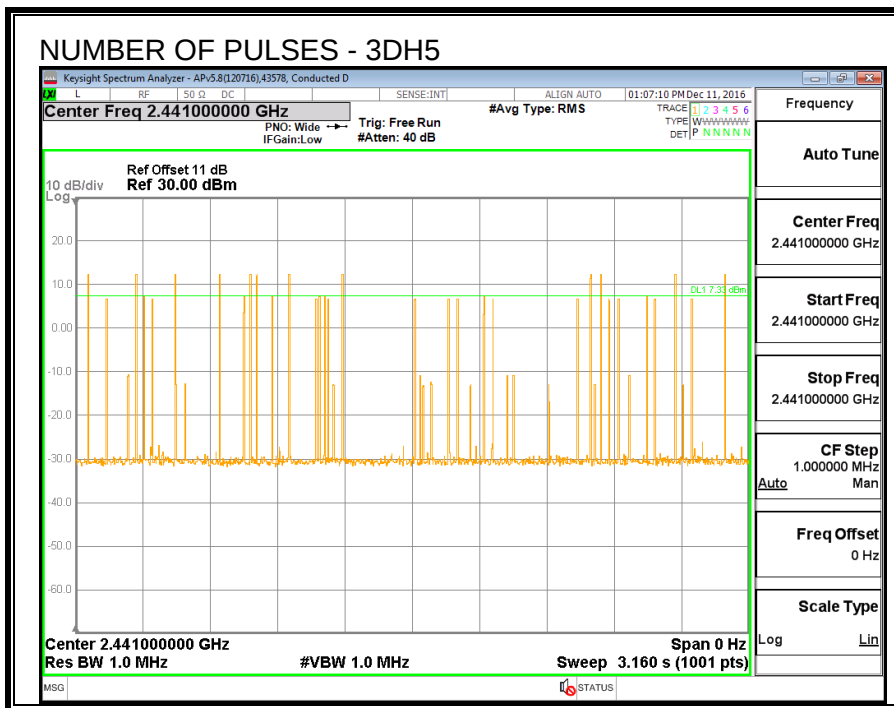
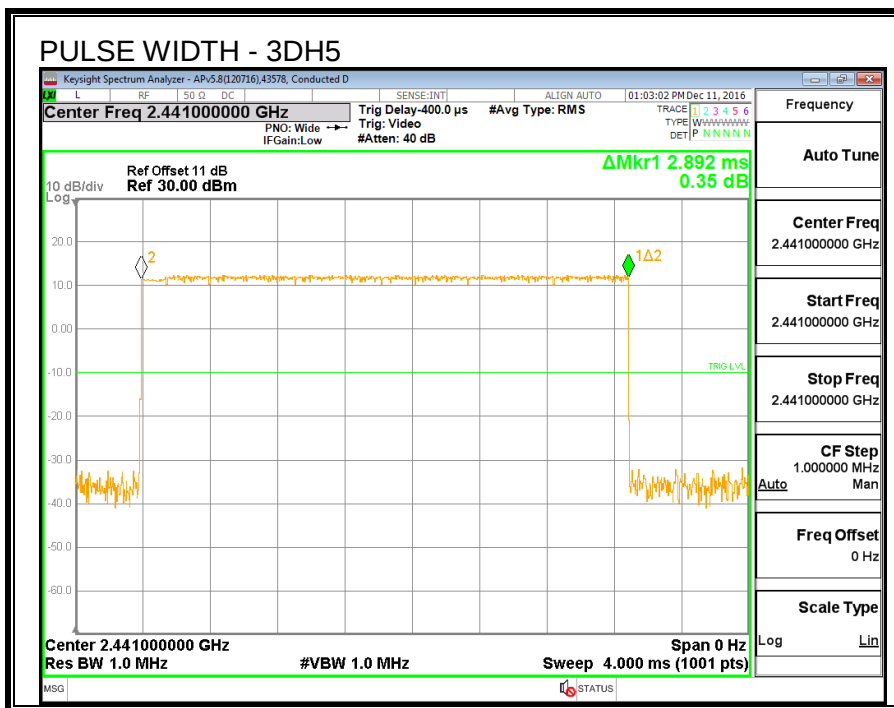
RESULTS

8PSK (EDR) Mode

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of (sec)	Limit (sec)	Margin (sec)
3DH1	0.391	32	0.125	0.4	-0.275
3DH3	1.074	16	0.172	0.4	-0.228
3DH5	2.892	12	0.347	0.4	-0.053







8.7.5. OUTPUT POWER

ID:	39472	Date:	01/24/2017
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LIMITS

§15.247 (b) (1)

RSS-247 (5.4) (2)

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

TEST PROCEDURE

The transmitter output is connected to a wideband peak and average power meter.

RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	11.53	21	-9.47
Middle	2441	11.67	21	-9.33
High	2480	11.60	21	-9.40

8.7.6. AVERAGE POWER

ID:	40802	Date:	01/11/2017
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LIMITS

None; for reporting purposes only.

TEST PROCEDURE

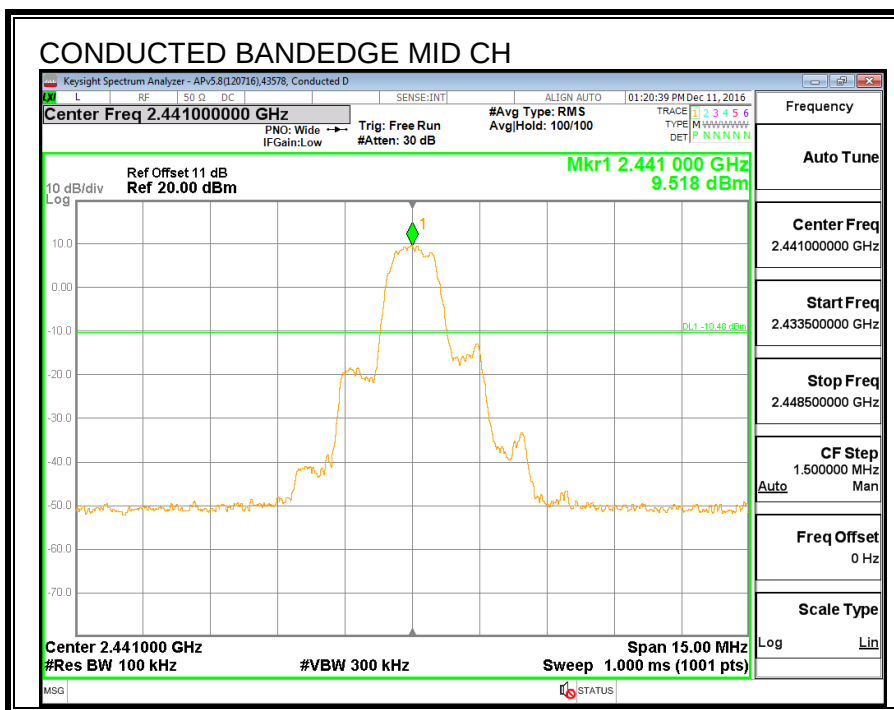
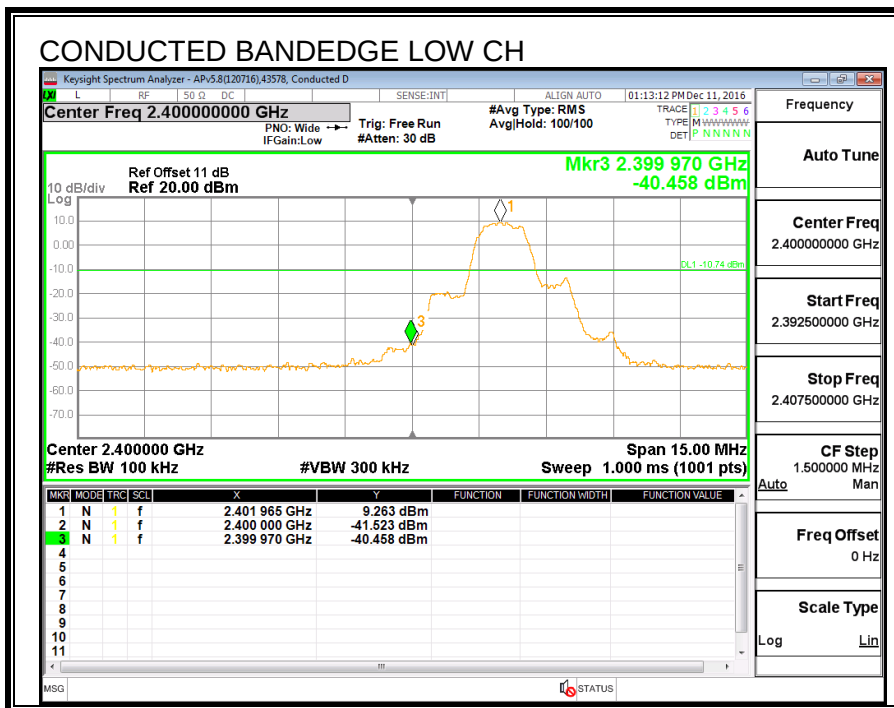
The transmitter output is connected to a power meter.

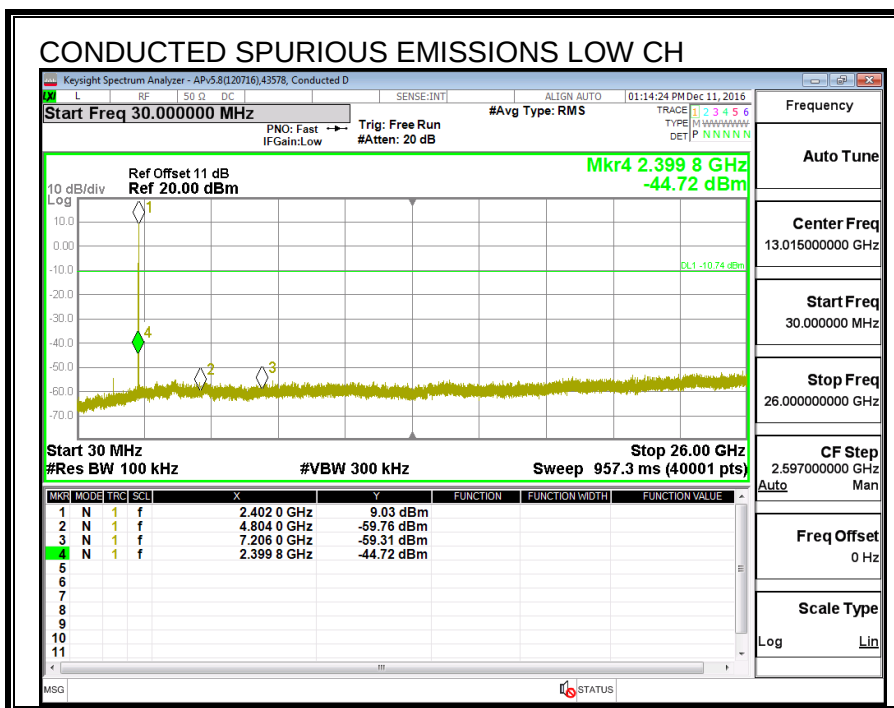
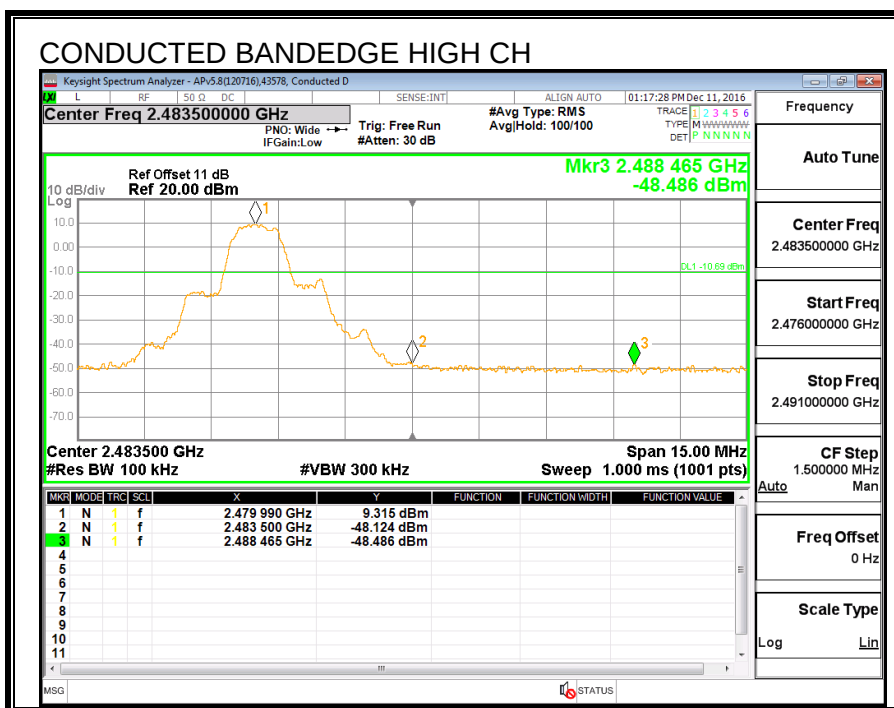
RESULTS

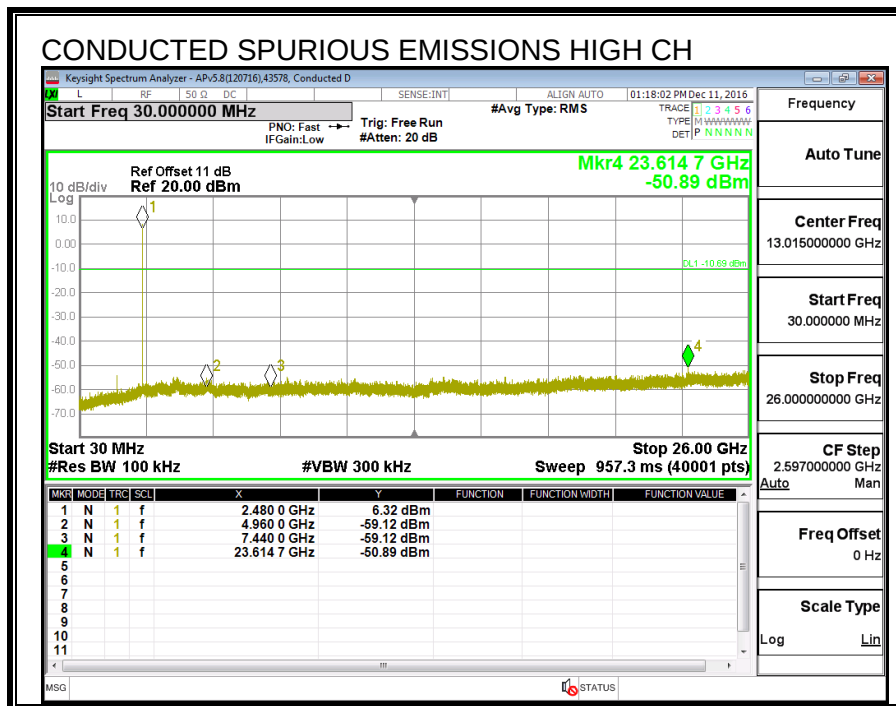
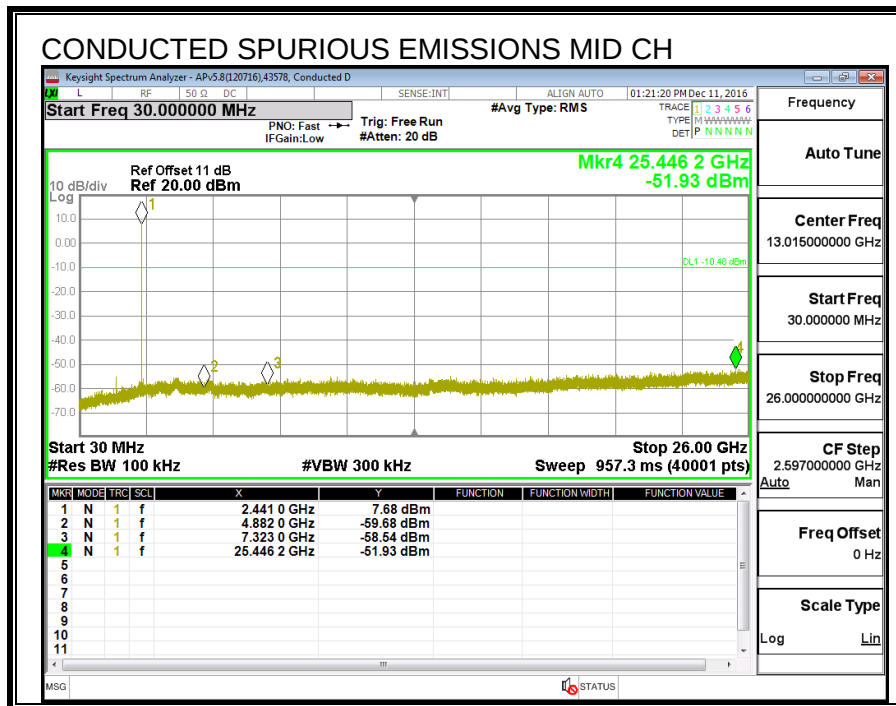
The cable assembly insertion loss of 11 dB (including 10 dB pad and 1 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

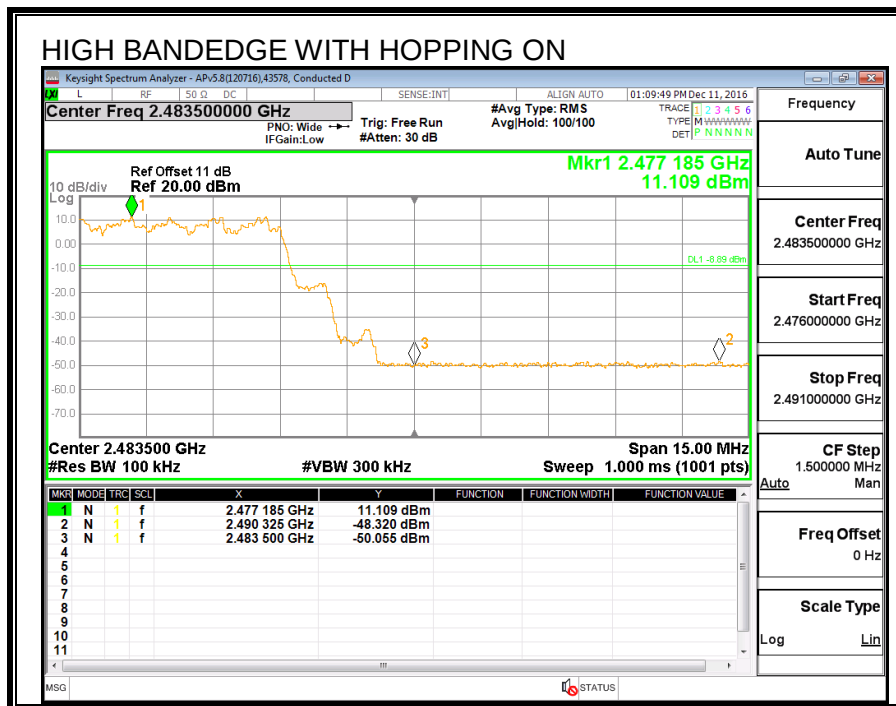
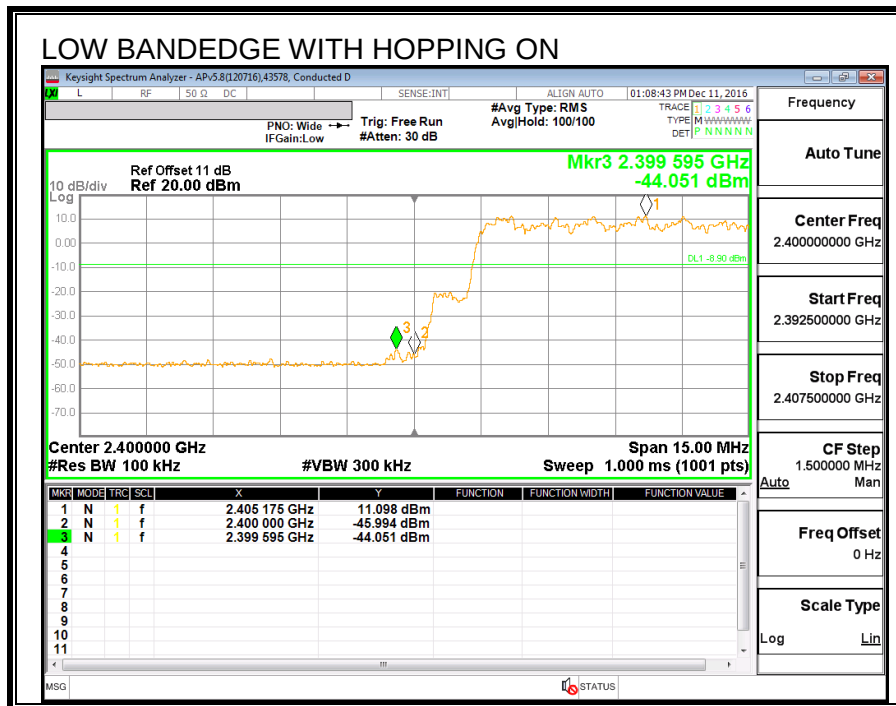
Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	8.74
Middle	2441	8.92
High	2480	8.87

8.7.7. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS









9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-GEN, Section 8.9 and 8.10.

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
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 pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 KHz for peak measurements.

For final scans 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.

PKFH - FHSS: RB=100k/1MHz VB=3 x RB, Peak→ this is a note from Radiated automation software. When the frequency is below 1G, software is using RB=100kHz; when the frequency is above 1G, software is using RB=1MHz.

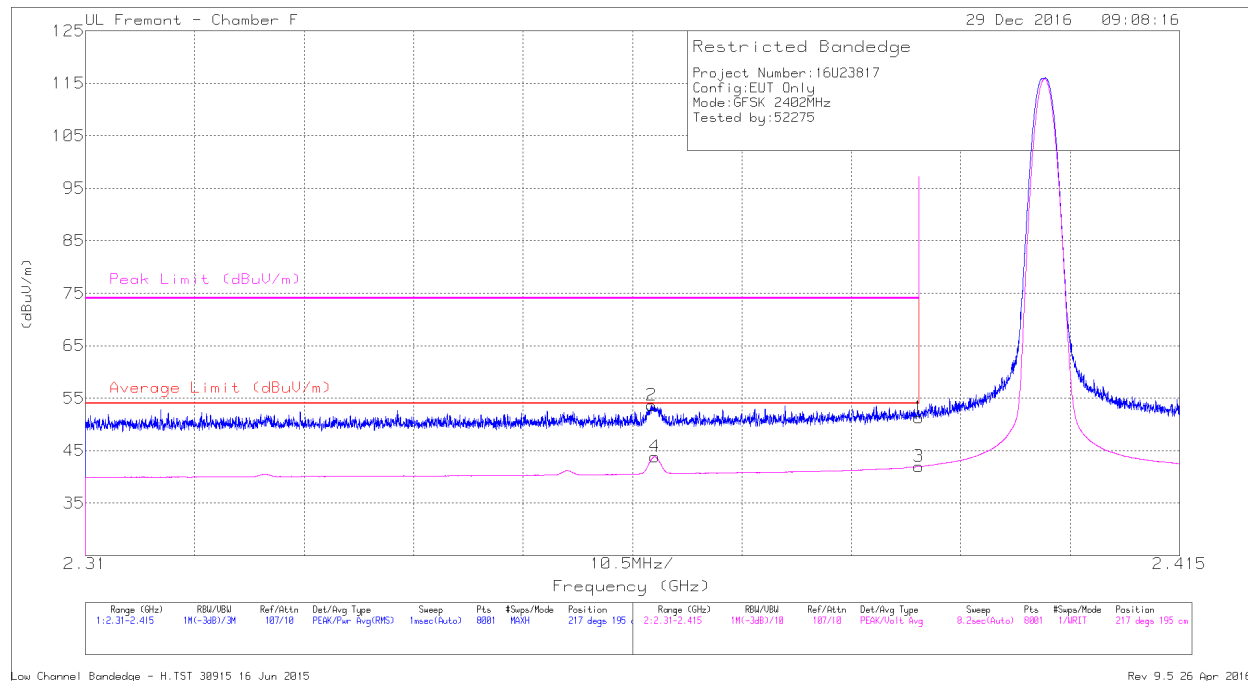
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

RESULTS

9.2. HIGH POWER BASIC DATA RATE GFSK MODULATION

9.2.1. RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cb/Fltr/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	40.06	Pk	32.1	-20.9	51.26	-	-	74	-22.74	217	195	H
2	* 2.364	42.59	Pk	32	-20.9	53.69	-	-	74	-20.31	217	195	H
3	* 2.39	30.77	VA1T	32.1	-20.9	41.97	54	-12.03	-	-	217	195	H
4	* 2.365	32.71	VA1T	32	-20.9	43.81	54	-10.19	-	-	217	195	H

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

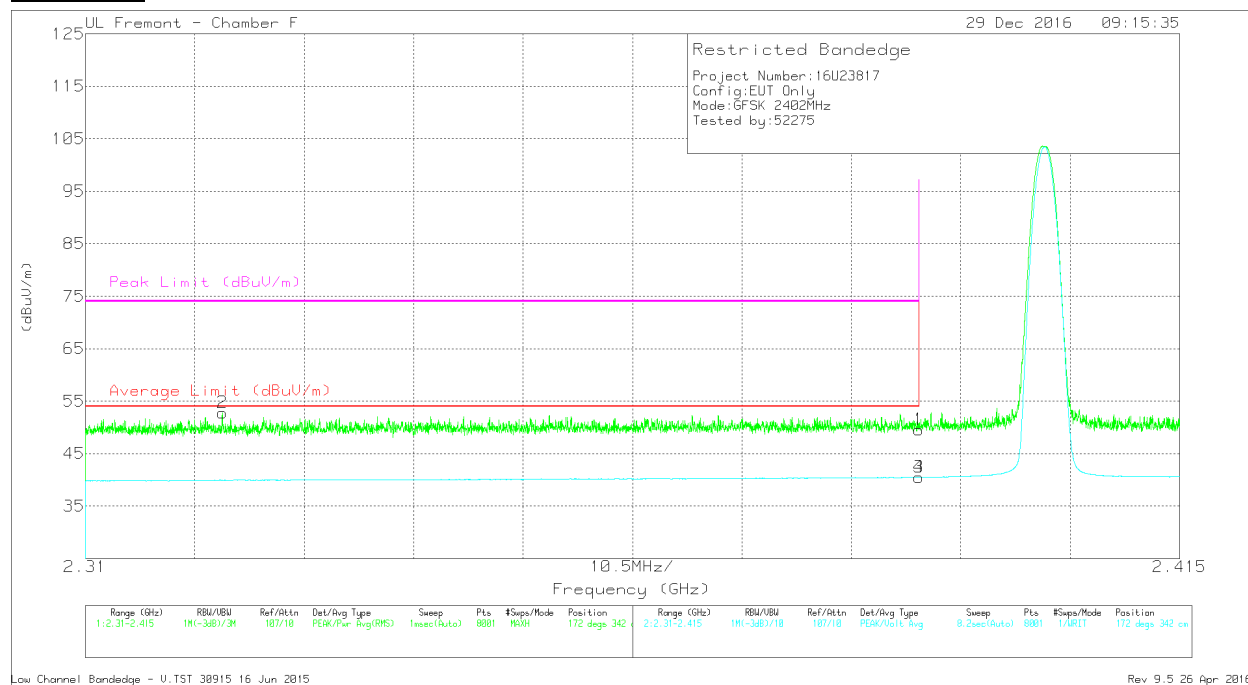
Pk - Peak detector

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

Low Channel Bandedge - H.TST 30915 16 Jun 2015

Rev 9.5 26 Apr 2016

VERTICAL



Trace Markers

Marker	Frequenc y (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/ m)	Amp/C bl/Filtr/ Pad (dB)	Correct ed Readin g (dBuV/ m)	Averag e Limit (dBuV/ m)	Margin (dB)	Peak Limit (dBuV/ m)	PK Margin (dB)	Azimet h (Degs)	Height (cm)	Polarity
1	* 2.39	38.38	Pk	32.1	-20.9	49.58	-	-	74	-24.42	172	342	V
2	* 2.323	41.91	Pk	31.8	-20.9	52.81	-	-	74	-21.19	172	342	V
3	* 2.39	29.32	VA1T	32.1	-20.9	40.52	54	-13.48	-	-	172	342	V
4	* 2.39	29.31	VA1T	32.1	-20.9	40.51	54	-13.49	-	-	172	342	V

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

Pk - Peak detector

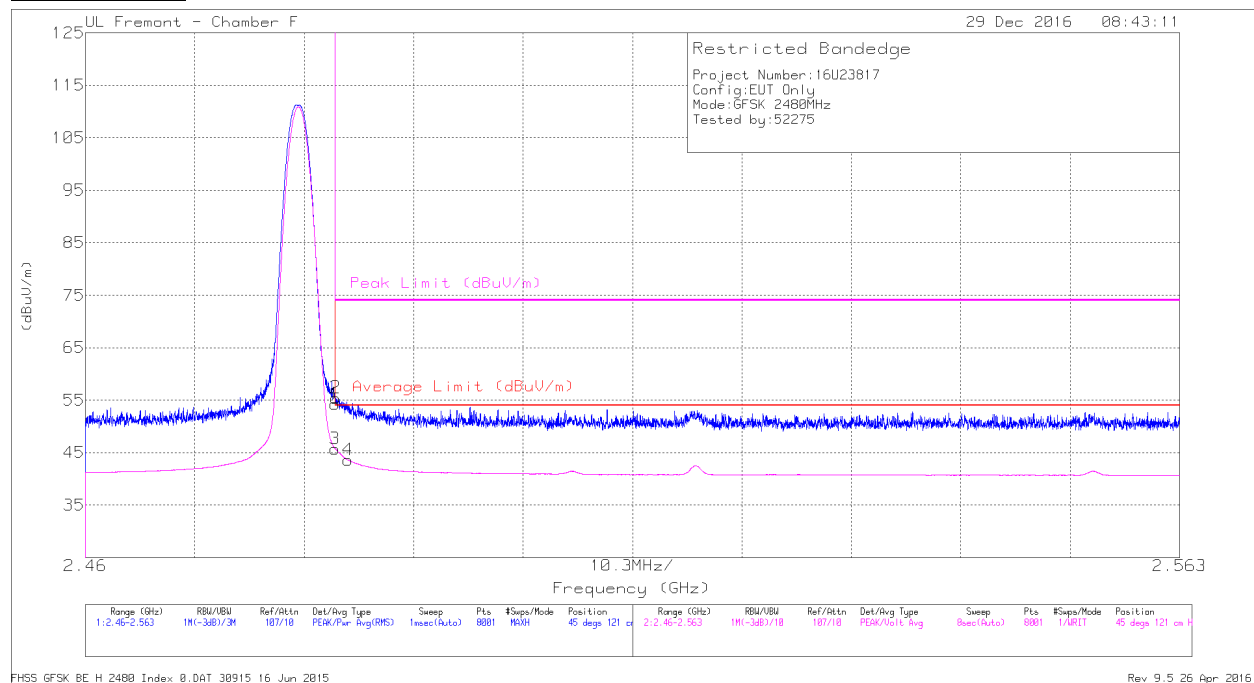
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

Low Channel Bandedge - V.TST 30915 16 Jun 2015

Rev 9.5 26 Apr 2016

9.2.2. AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL



Trace Markers

Marker	Frequenc y (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/ m)	Amp/C bl/Filtr/ Pad (dB)	Correct ed Readin g (dBuV/ m)	Averag e Limit (dBuV/ m)	Margin (dB)	Peak Limit (dBuV/ m)	PK Margin (dB)	Azimet h (Degs)	Height (cm)	Polarity
1	* 2.484	42.94	Pk	32.3	-21	54.24	-	-	74	-19.76	45	121	H
2	* 2.484	44.14	Pk	32.3	-21	55.44	-	-	74	-18.56	45	121	H
3	* 2.484	34.38	VA1T	32.3	-21	45.68	54	-8.32	-	-	45	121	H
4	* 2.485	32.16	VA1T	32.3	-20.9	43.56	54	-10.44	-	-	45	121	H

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

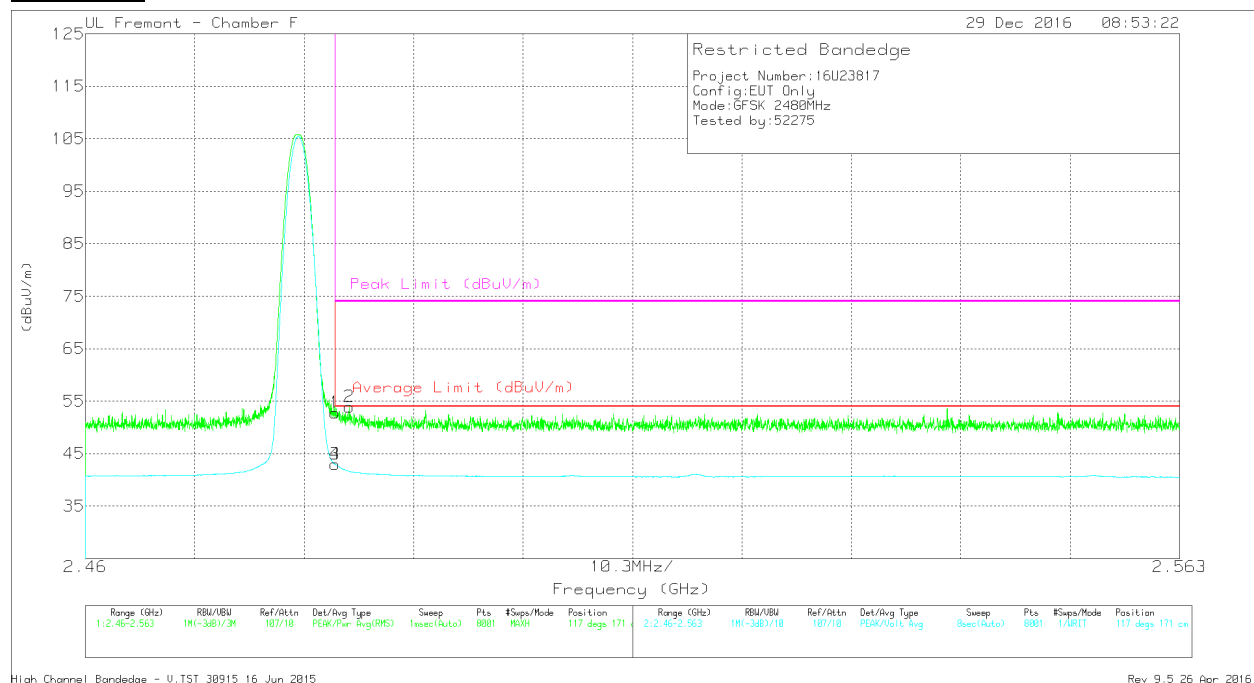
Pk - Peak detector

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

FHSS_GFSK_BE_H_2480_Index 0.DAT 30915 16 Jun 2015

Rev 9.5 26 Apr 2016

VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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	* 2.484	41.53	Pk	32.3	-21	52.83	-	-	74	-21.17	117	171	V
2	* 2.485	42.54	Pk	32.3	-20.9	53.94	-	-	74	-20.06	117	171	V
3	* 2.484	31.66	VA1T	32.3	-21	42.96	54	-11.04	-	-	117	171	V
4	* 2.484	31.66	VA1T	32.3	-21	42.96	54	-11.04	-	-	117	171	V

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

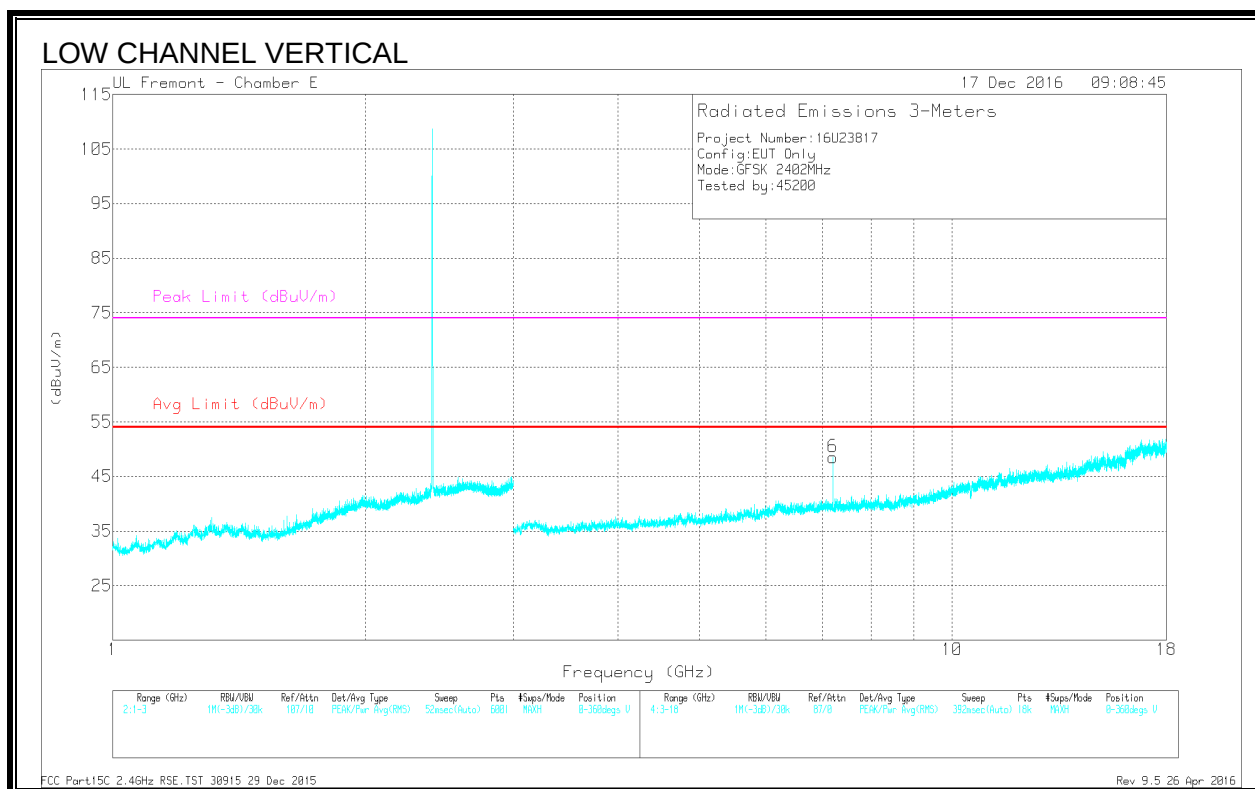
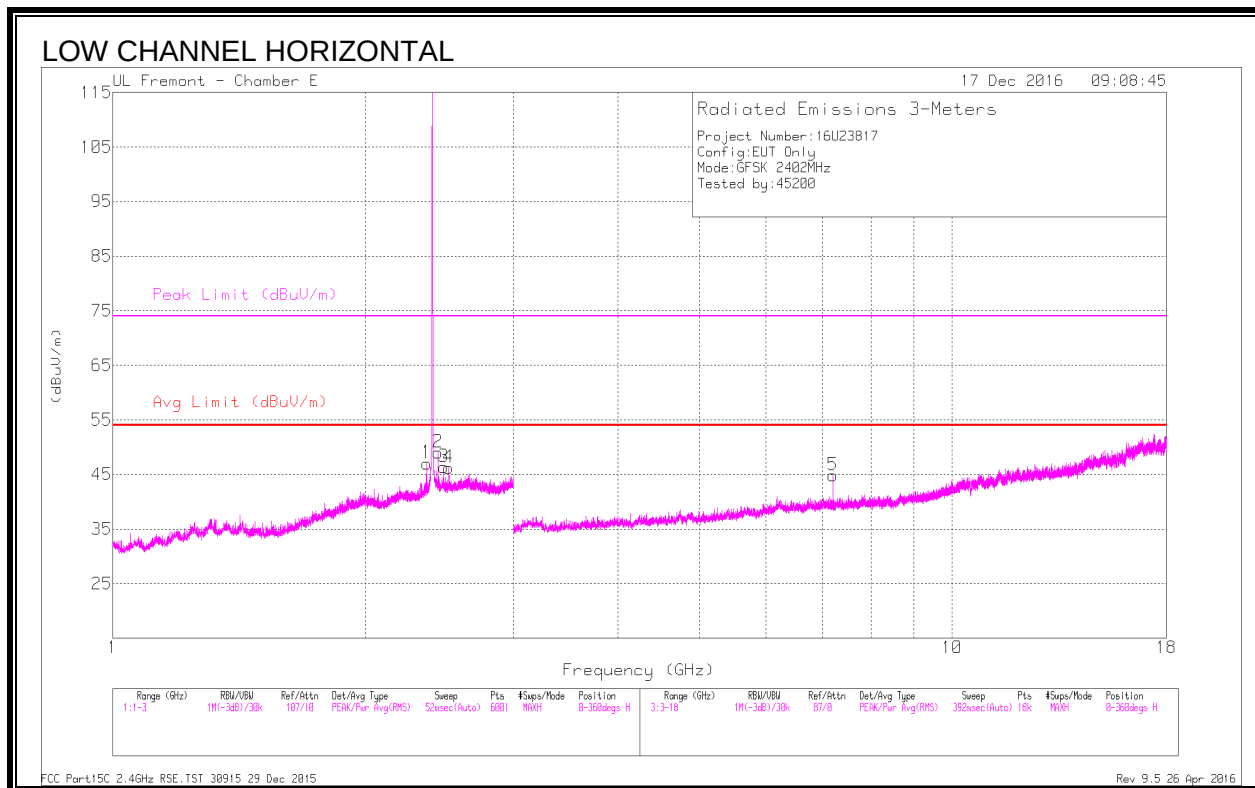
Pk - Peak detector

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

High Channel Bandedge - V.TST 30915 16 Jun 2015

Rev 9.5 26 Apr 2016

9.2.3. HARMONICS AND SPURIOUS EMISSIONS



Marker	Frequen cy (GHz)	Meter Readin g (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl /Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/ m)	PK Margin (dB)	Azimu th (Degs)	Heig ht (cm)	Polari ty
1	* 2.365	39.57	PKFH	31.9	-19.7	51.77	-	-	74	-22.23	355	204	H
	* 2.365	30.29	VA1T	31.9	-19.7	42.49	54	-11.51	-	-	355	204	H
2	2.439	41.57	PKFH	32.2	-19.8	53.97	-	-	-	-	8	168	H
3	2.477	38.3	PKFH	32.3	-19.7	50.9	-	-	-	-	4	243	H
4	2.514	38.6	PKFH	32.3	-19.8	51.1	-	-	-	-	360	141	H
5	7.206	42.83	PKFH	35.6	-27.7	50.73	-	-	-	-	4	207	H
6	7.207	44.74	PKFH	35.6	-27.7	52.64	-	-	-	-	13	131	V

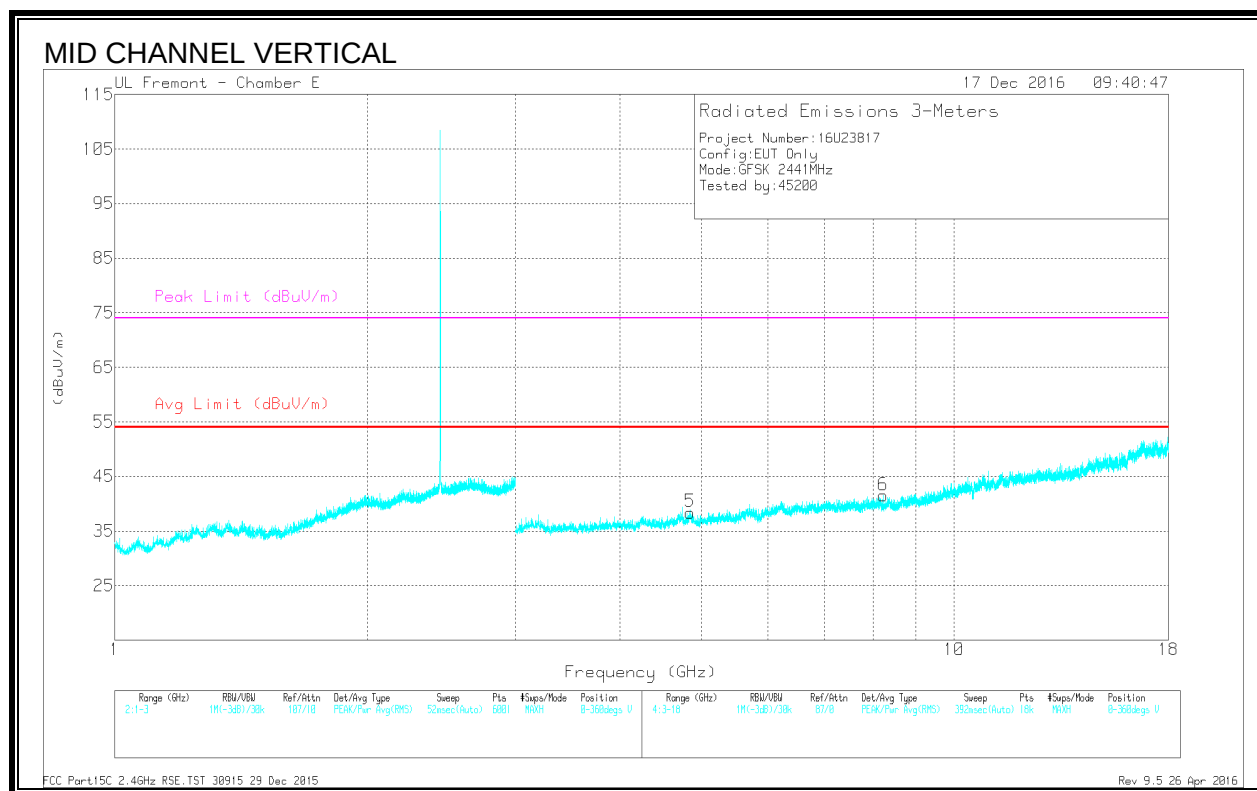
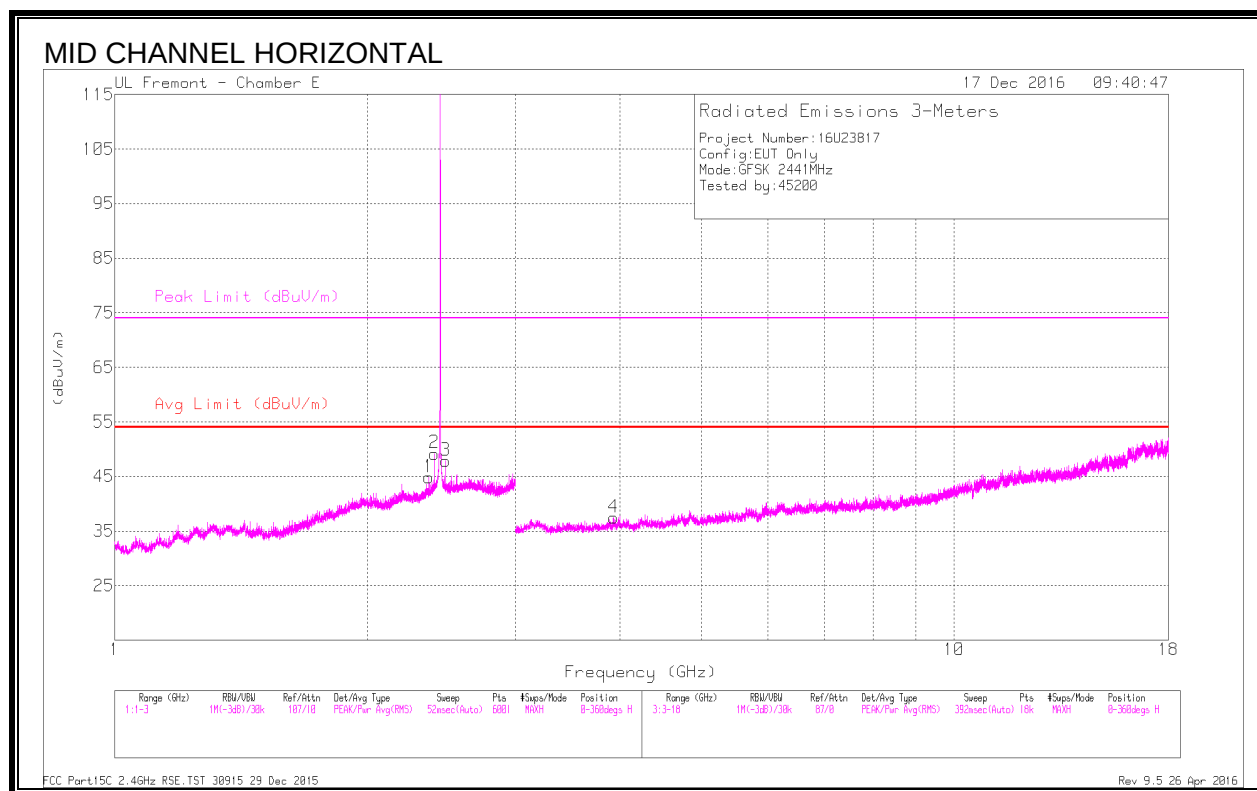
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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

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

FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015

Rev 9.5 26 Apr 2016



Marker	Frequen cy (GHz)	Meter Readin g (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	Correcte d Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimu th (Degs)	Heig ht (cm)	Polari ty
1	* 2.366	37.84	PKFH	31.9	-19.8	49.94	-	-	74	-24.06	354	205	H
	* 2.366	25.88	VA1T	31.9	-19.8	37.98	54	-16.02	-	-	354	205	H
4	* 3.927	39.6	PKFH	33.3	-29.6	43.3	-	-	74	-30.7	61	196	H
	* 3.927	27.96	VA1T	33.3	-29.6	31.66	54	-22.34	-	-	61	196	H
5	* 4.85	40.38	PKFH	34	-30.1	44.28	-	-	74	-29.72	87	116	V
	* 4.849	28.67	VA1T	34	-30.1	32.57	54	-21.43	-	-	87	116	V
6	* 8.227	37.05	PKFH	35.8	-26.9	45.95	-	-	74	-28.05	114	242	V
	* 8.227	26.04	VA1T	35.8	-26.9	34.94	54	-19.06	-	-	114	242	V
2	2.403	41.27	PKFH	32.2	-19.7	53.77	-	-	-	-	360	172	H
3	2.478	40.24	PKFH	32.3	-19.7	52.84	-	-	-	-	355	176	H

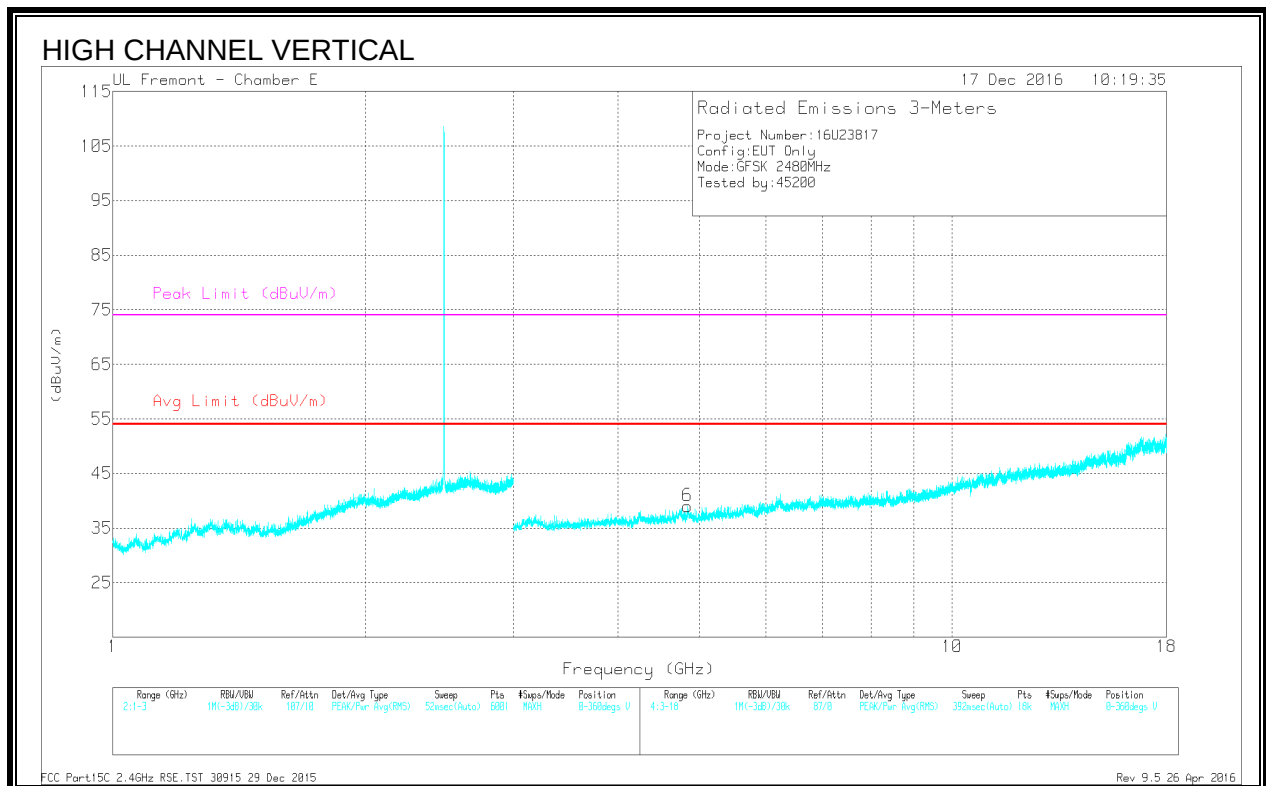
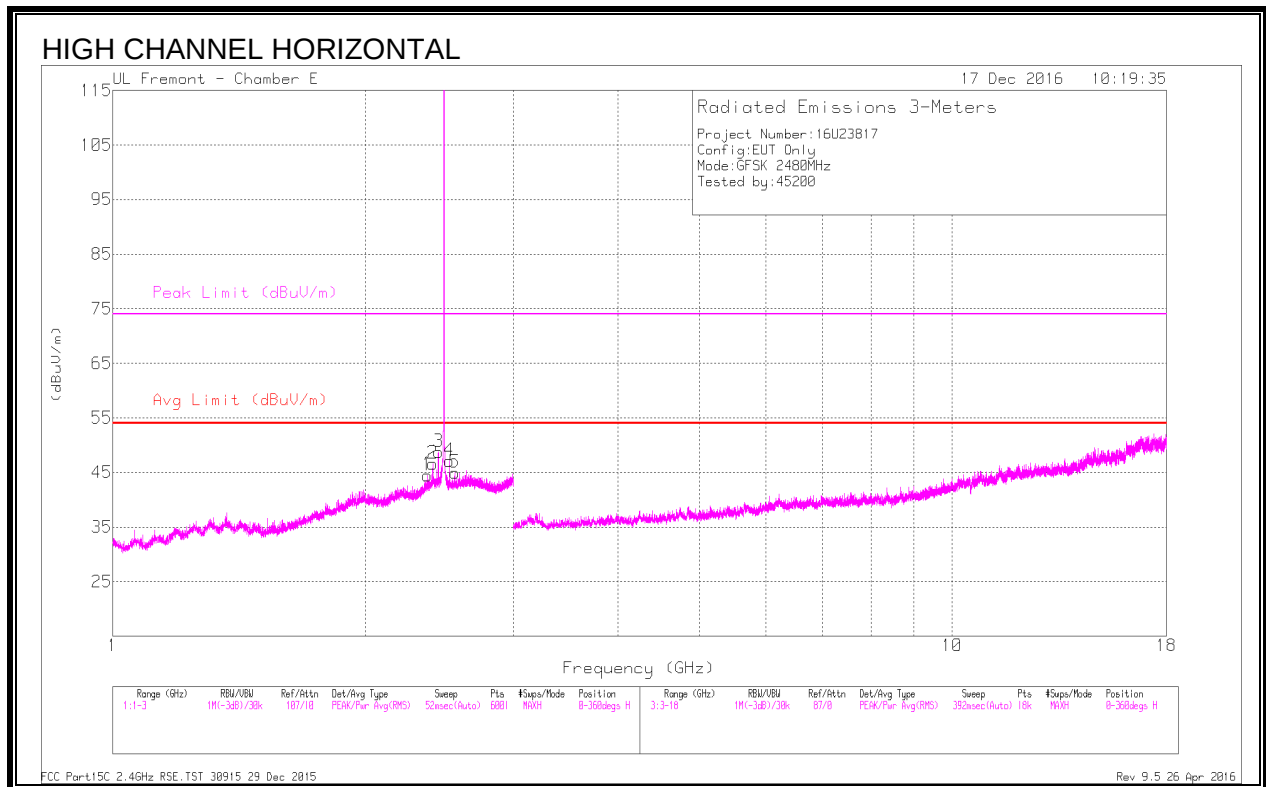
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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

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

FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015

Rev 9.5 26 Apr 2016



Marker	Frequen cy (GHz)	Meter Readin g (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimu th (Degs)	Heig ht (cm)	Polari ty
1	* 2.368	37.13	PKFH	31.9	-19.8	49.23	-	-	74	-24.77	26	126	H
	* 2.368	22.28	VA1T	31.9	-19.8	34.38	54	-19.62	-	-	26	126	H
6	* 4.834	40.08	PKFH	34	-30	44.08	-	-	74	-29.92	356	380	V
	* 4.837	29.11	VA1T	34	-30	33.11	54	-20.89	-	-	356	380	V
2	2.405	40	PKFH	32.2	-19.7	52.5	-	-	-	-	354	208	H
3	2.442	40.05	PKFH	32.2	-19.6	52.65	-	-	-	-	357	244	H
4	2.518	38.9	PKFH	32.3	-19.8	51.4	-	-	-	-	356	197	H
5	2.555	37.4	PKFH	32.4	-19.9	49.9	-	-	-	-	0	152	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

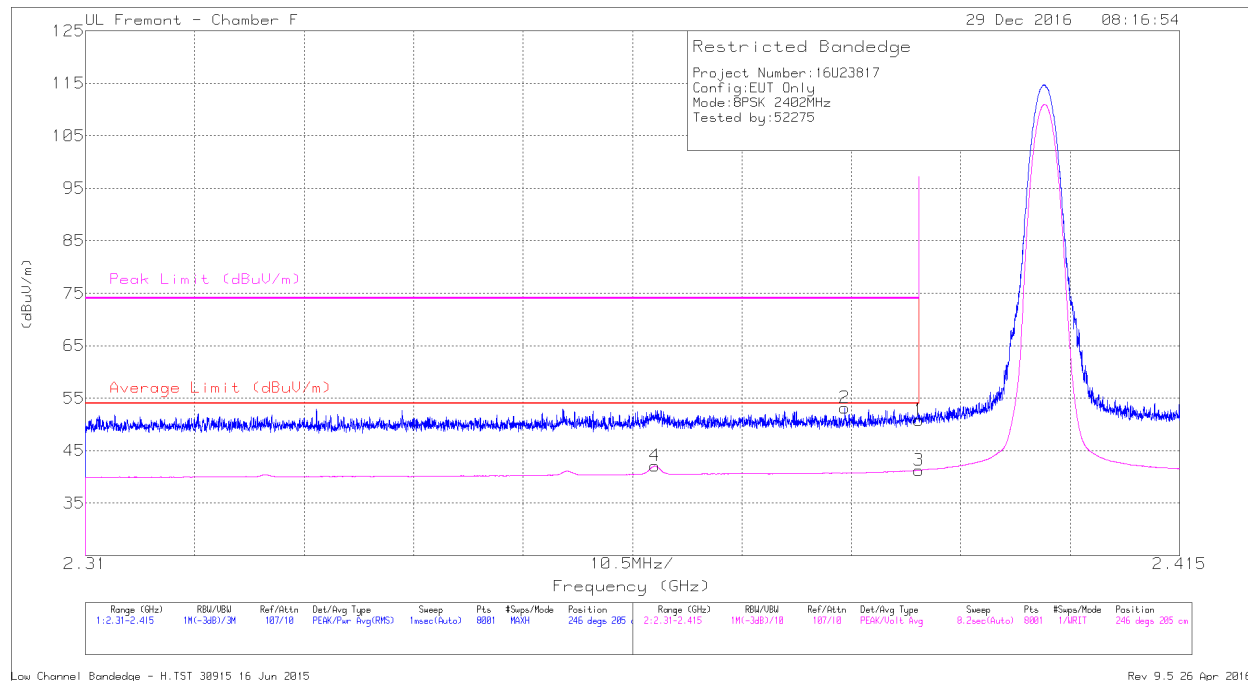
FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015

Rev 9.5 26 Apr 2016

9.3. HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

9.3.1. RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Fit r/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	39.6	Pk	32.1	-20.9	50.8	-	-	74	-23.2	246	205	H
2	* 2.383	41.92	Pk	32.1	-20.9	53.12	-	-	74	-20.88	246	205	H
3	* 2.39	30.02	VA1T	32.1	-20.9	41.22	54	-12.78	-	-	246	205	H
4	* 2.365	30.96	VA1T	32	-20.9	42.06	54	-11.94	-	-	246	205	H

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

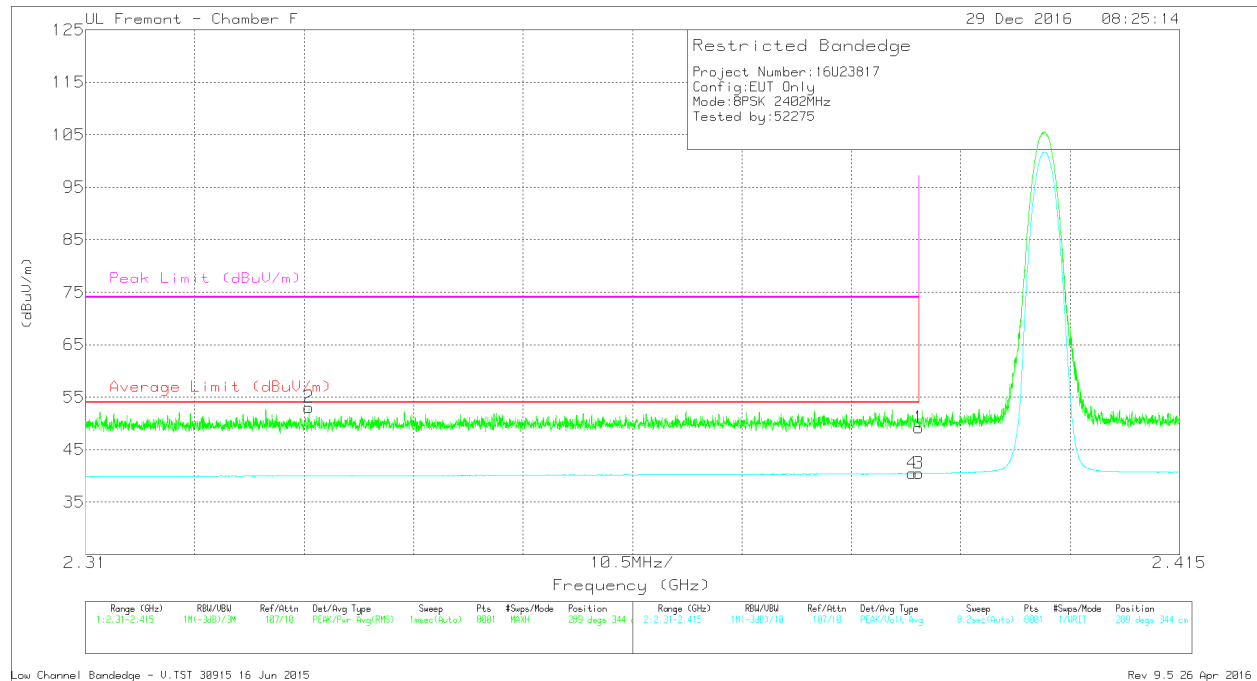
Pk - Peak detector

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

Low Channel Bandedge - H.TST 30915 16 Jun 2015

Rev 9.5 26 Apr 2016

VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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	38.01	Pk	32.1	-20.9	49.21	-	-	74	-24.79	289	344	V
2	* 2.331	42.18	Pk	31.8	-20.9	53.08	-	-	74	-20.92	289	344	V
3	* 2.39	29.25	VA1T	32.1	-20.9	40.45	54	-13.55	-	-	289	344	V
4	* 2.389	29.29	VA1T	32.1	-20.9	40.49	54	-13.51	-	-	289	344	V

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

Pk - Peak detector

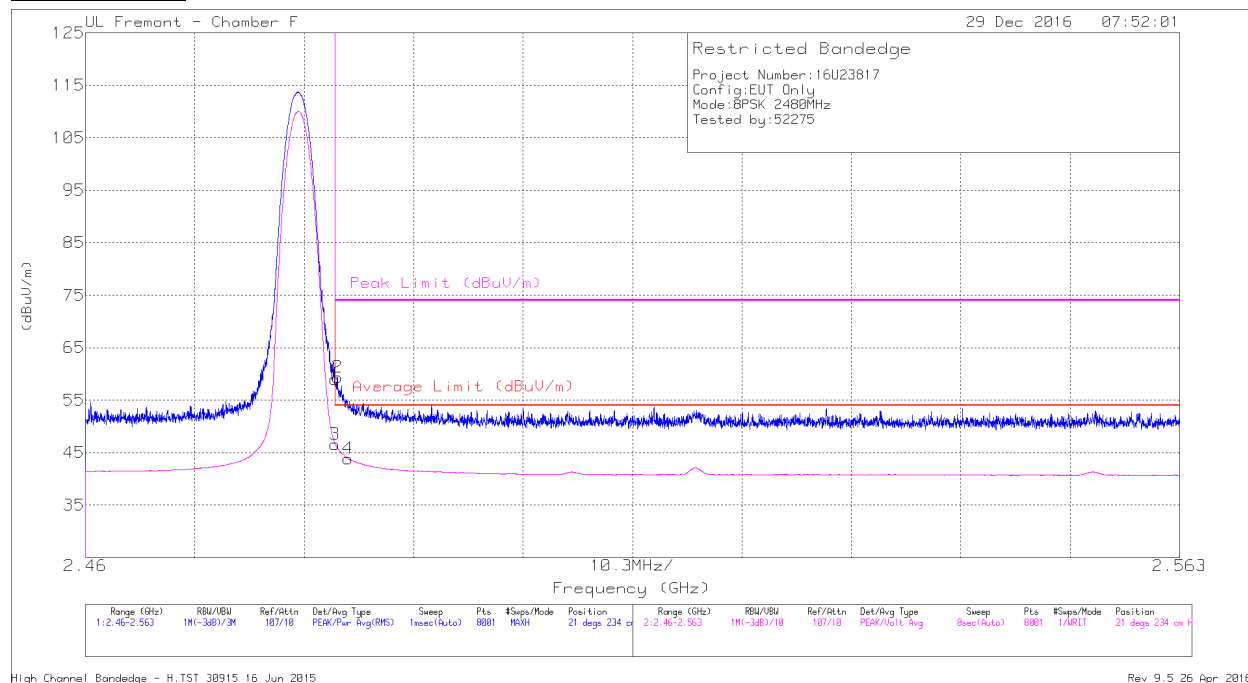
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

Low Channel Bandedge - V.TST 30915 16 Jun 2015

Rev 9.5 26 Apr 2016

9.3.2. AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Ftr/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	47.72	Pk	32.3	-21	59.02	-	-	74	-14.98	21	234	H
2	* 2.484	48.05	Pk	32.3	-21	59.35	-	-	74	-14.65	21	234	H
3	* 2.484	35.3	VA1T	32.3	-21	46.6	54	-7.4	-	-	21	234	H
4	* 2.485	32.42	VA1T	32.3	-20.9	43.82	54	-10.18	-	-	21	234	H

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

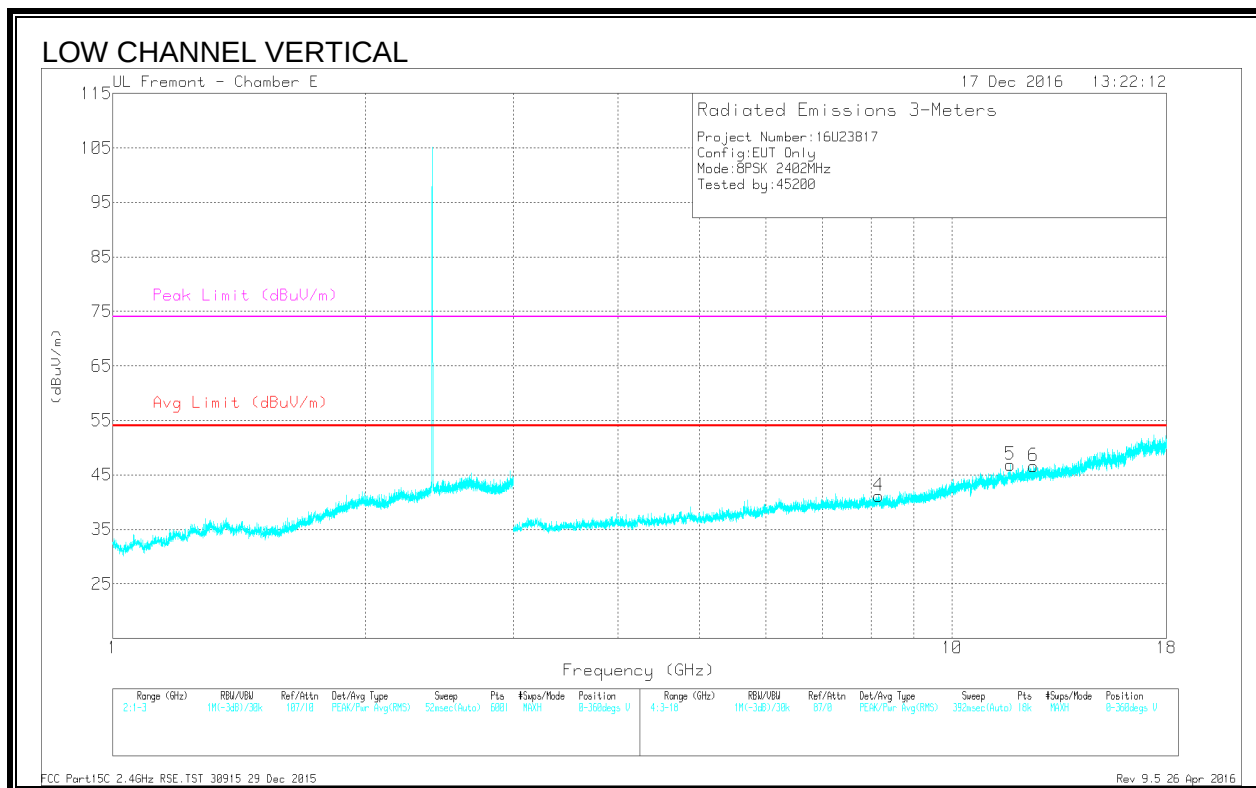
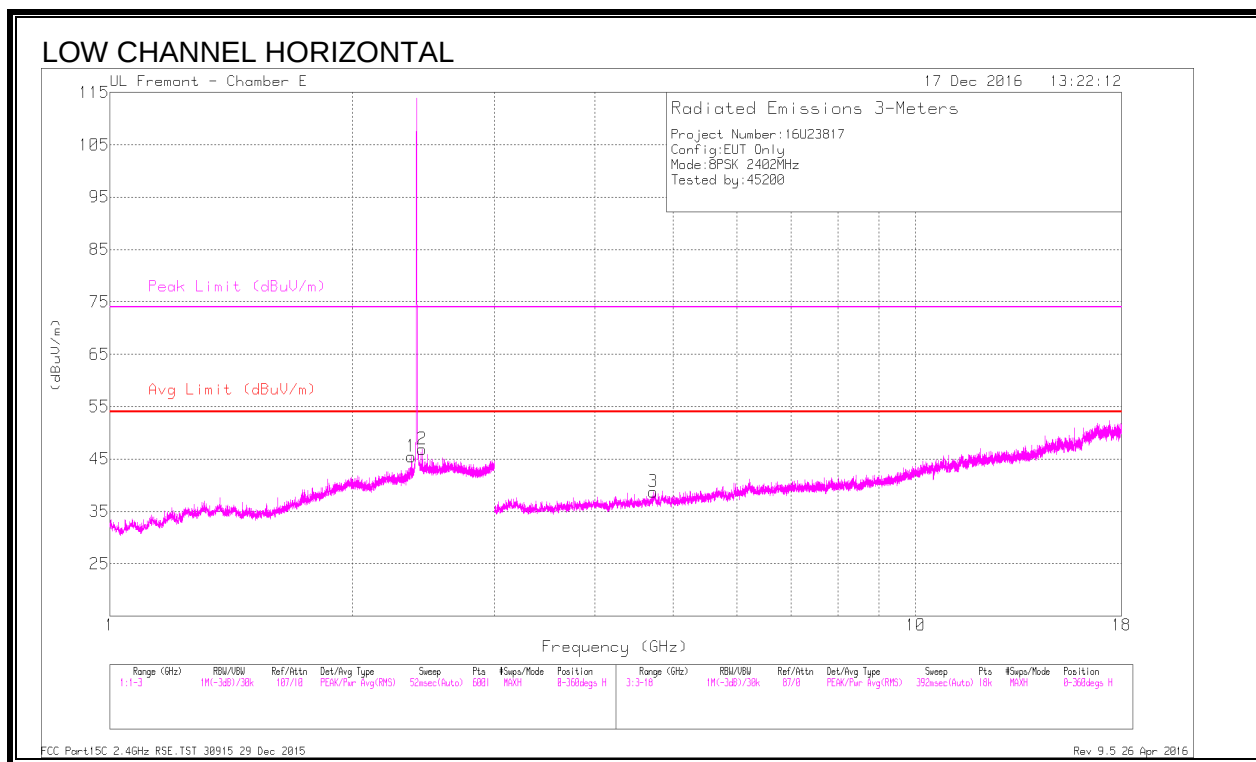
Pk - Peak detector

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

High Channel Bandedge - H.TST 30915 16 Jun 2015

Rev 9.5 26 Apr 2016

9.3.3. HARMONICS AND SPURIOUS EMISSIONS



Marker	Frequen cy (GHz)	Meter Readi ng (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimu th (Degs)	Heig ht (cm)	Polari ty
1	* 2.364	39.04	PKFH	31.9	-19.7	51.24	-	-	74	-22.76	350	206	H
	* 2.365	27.69	VA1T	31.9	-19.7	39.89	54	-14.11	-	-	350	206	H
3	* 4.728	39.48	PKFH	34	-29	44.48	-	-	74	-29.52	15	141	H
	* 4.726	27.51	VA1T	34	-29.1	32.41	54	-21.59	-	-	15	141	H
4	* 8.174	36.53	PKFH	35.8	-25.9	46.43	-	-	74	-27.57	343	107	V
	* 8.173	25.15	VA1T	35.8	-25.9	35.05	54	-18.95	-	-	343	107	V
5	* 11.722	35.32	PKFH	38.6	-22.3	51.62	-	-	74	-22.38	130	134	V
	* 11.724	23.81	VA1T	38.7	-22.3	40.21	54	-13.79	-	-	130	134	V
6	* 12.503	36.82	PKFH	39.1	-23.9	52.02	-	-	74	-21.98	53	294	V
	* 12.503	24.83	VA1T	39.1	-23.9	40.03	54	-13.97	-	-	53	294	V
2	2.439	38.84	PKFH	32.2	-19.8	51.24	-	-	-	-	7	145	H

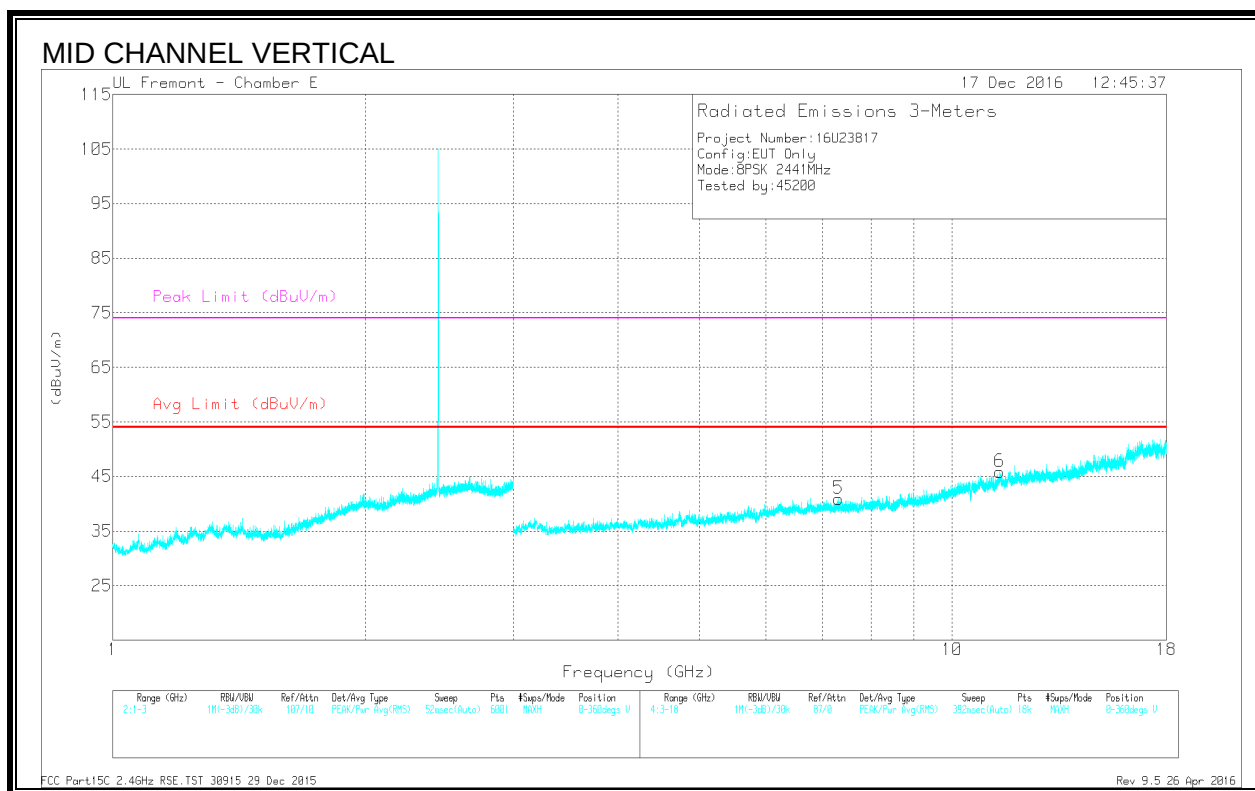
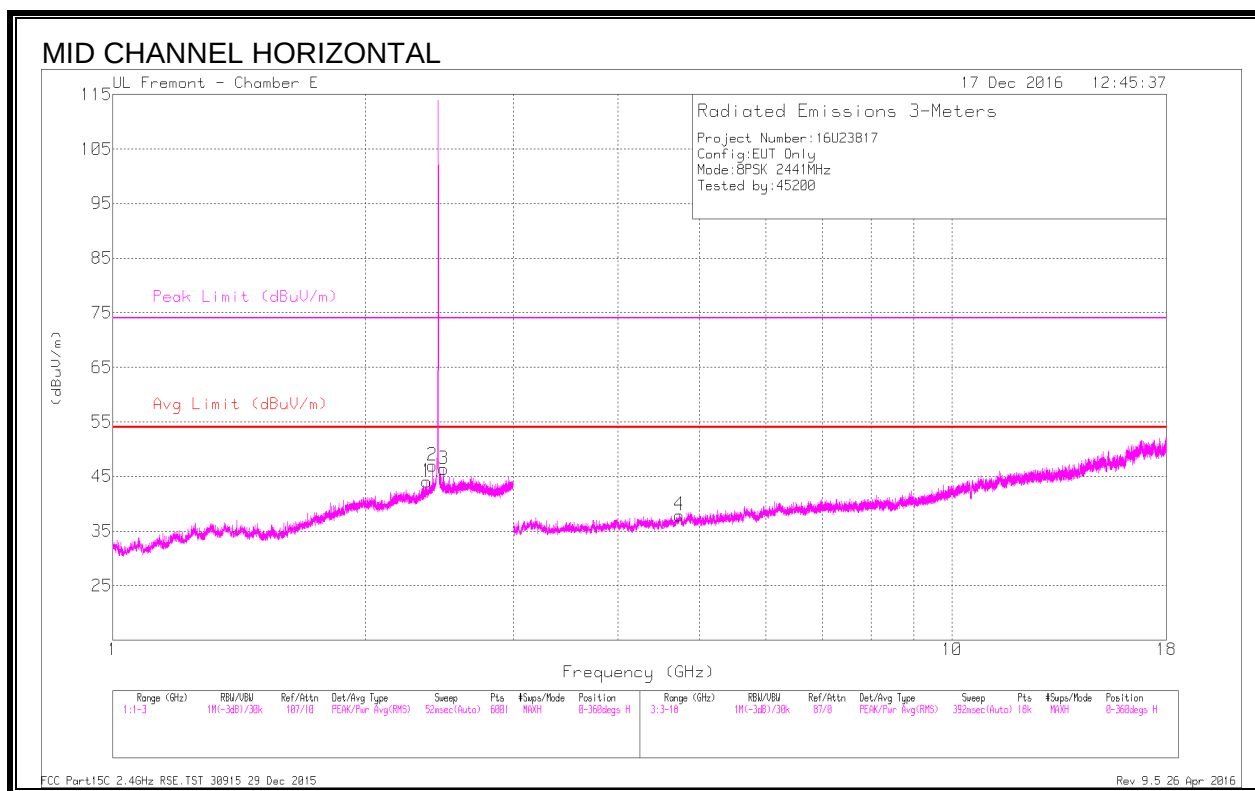
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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

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

FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015

Rev 9.5 26 Apr 2016



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Fltr/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	* 2.367	37.97	PKFH	31.9	-19.8	50.07	-	-	74	-23.93	4	181	H
	* 2.366	26.18	VA1T	31.9	-19.8	38.28	54	-15.72	-	-	4	181	H
4	* 4.731	39.34	PKFH	34	-29	44.34	-	-	74	-29.66	48	174	H
	* 4.735	27.64	VA1T	34	-29.1	32.54	54	-21.46	-	-	48	174	H
5	* 7.319	36.93	PKFH	35.6	-26.3	46.23	-	-	74	-27.77	291	106	V
	* 7.318	25.23	VA1T	35.6	-26.3	34.53	54	-19.47	-	-	291	106	V
6	* 11.395	36.12	PKFH	38.2	-21.7	52.62	-	-	74	-21.38	335	294	V
	* 11.398	23.3	VA1T	38.2	-21.6	39.9	54	-14.1	-	-	335	294	V
2	2.404	40.5	PKFH	32.2	-19.7	53	-	-	-	-	352	170	H
3	2.478	39.76	PKFH	32.3	-19.7	52.36	-	-	-	-	357	166	H

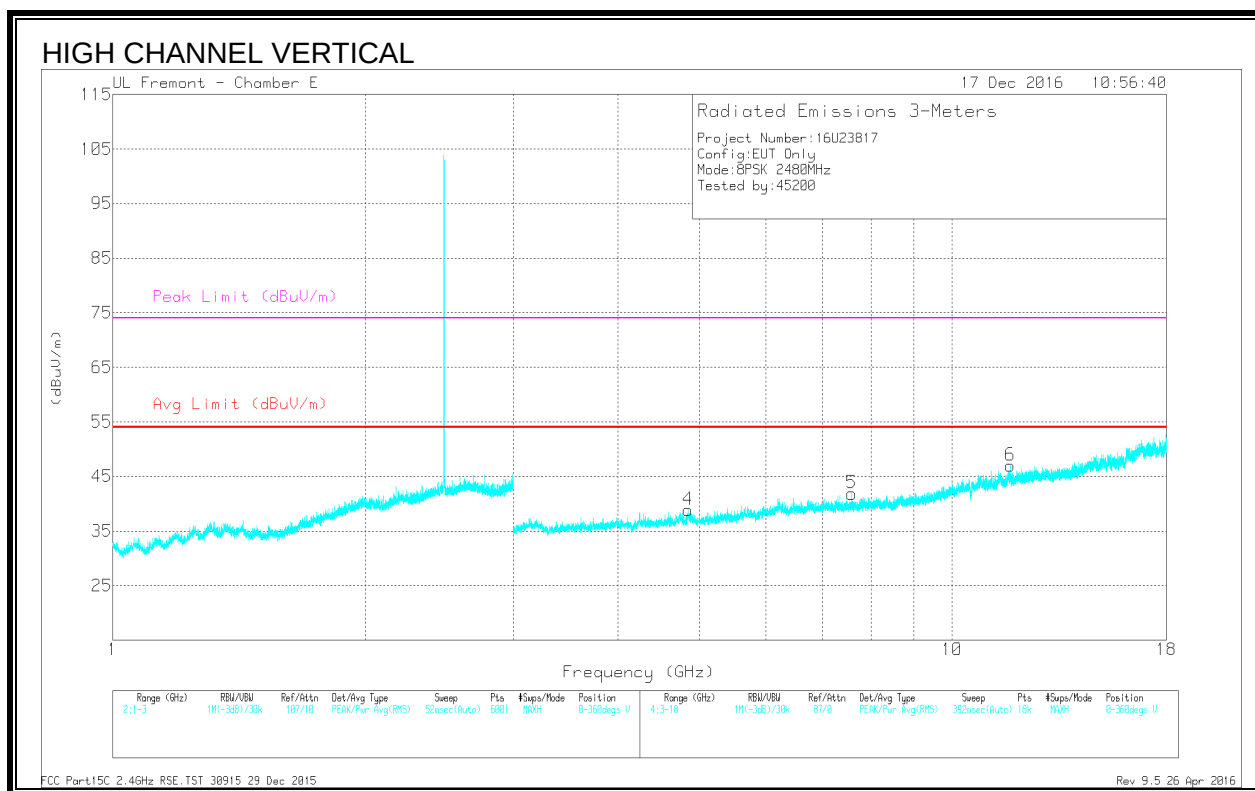
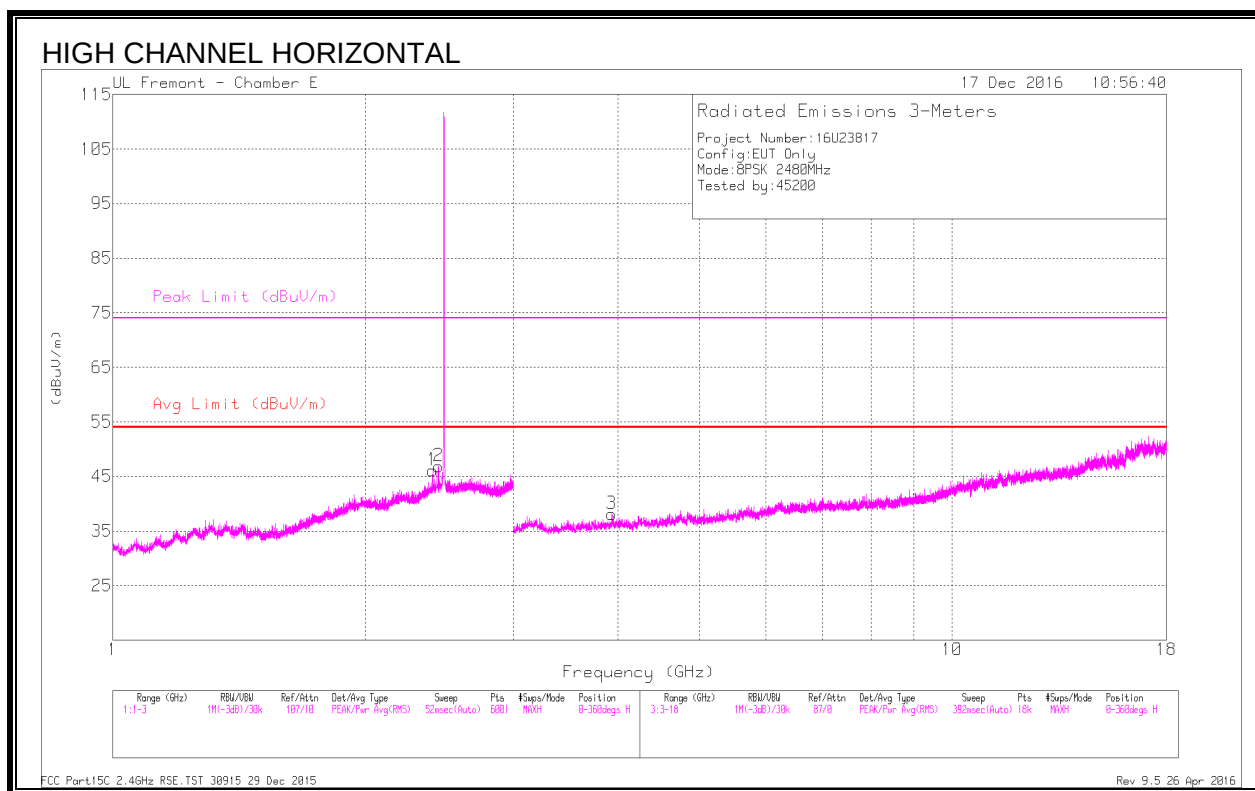
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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

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

FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015

Rev 9.5 26 Apr 2016



Marker	Frequen cy (GHz)	Meter Readi ng (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimu th (Degs)	Heig ht (cm)	Polari ty
3	* 3.931	39.06	PKFH	33.3	-29.3	43.06	-	-	74	-30.94	21	381	H
	* 3.928	27.67	VA1T	33.3	-29.5	31.47	54	-22.53	-	-	21	381	H
4	* 4.842	41.04	PKFH	34	-30.1	44.94	-	-	74	-29.06	135	361	V
	* 4.842	28.93	VA1T	34	-30.1	32.83	54	-21.17	-	-	135	361	V
5	* 7.594	36.24	PKFH	35.7	-25.7	46.24	-	-	74	-27.76	7	138	V
	* 7.595	25.06	VA1T	35.7	-25.7	35.06	54	-18.94	-	-	7	138	V
6	* 11.717	35.4	PKFH	38.6	-22.4	51.6	-	-	74	-22.4	298	159	V
	* 11.721	23.54	VA1T	38.6	-22.3	39.84	54	-14.16	-	-	298	159	V
1	2.405	39.25	PKFH	32.2	-19.7	51.75	-	-	-	-	360	170	H
2	2.443	39.29	PKFH	32.2	-19.6	51.89	-	-	-	-	5	178	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

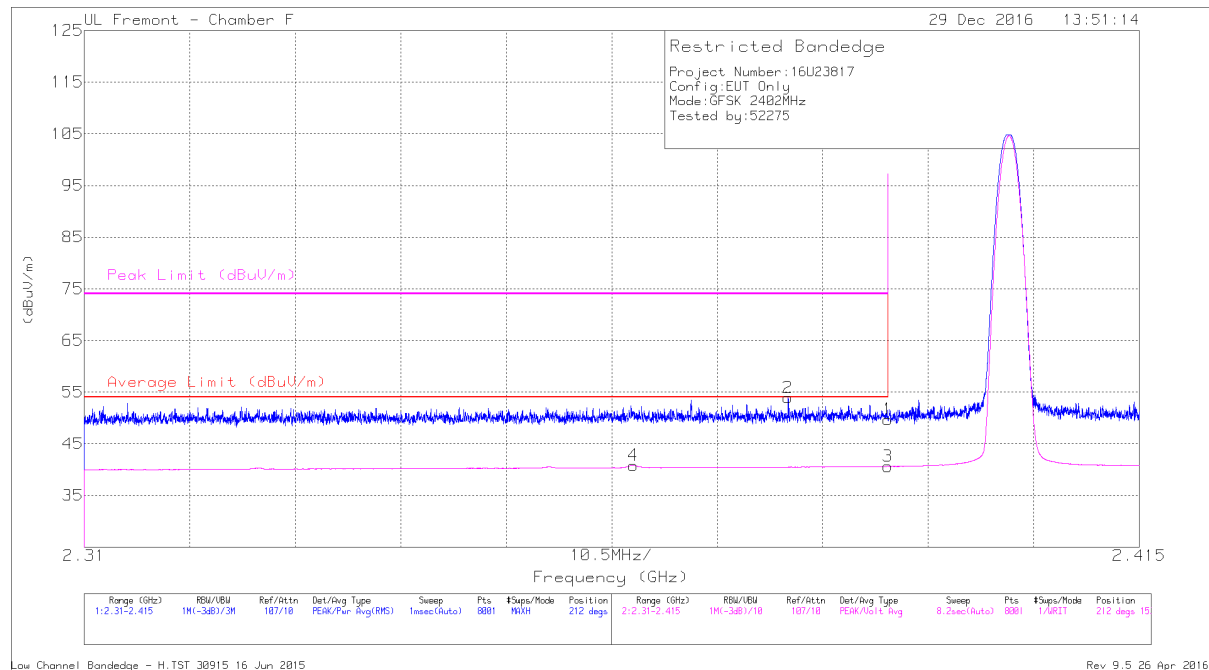
FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015

Rev 9.5 26 Apr 2016

9.4. LOW POWER BASIC DATA RATE GFSK MODULATION

9.4.1. RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/F ltr/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	38.53	Pk	32.1	-20.9	49.73	-	-	74	-24.27	212	153	H
2	* 2.38	42.7	Pk	32.1	-20.9	53.9	-	-	74	-20.1	212	153	H
3	* 2.39	29.43	VA1T	32.1	-20.9	40.63	54	-13.37	-	-	212	153	H
4	* 2.365	29.71	VA1T	32	-20.9	40.81	54	-13.19	-	-	212	153	H

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

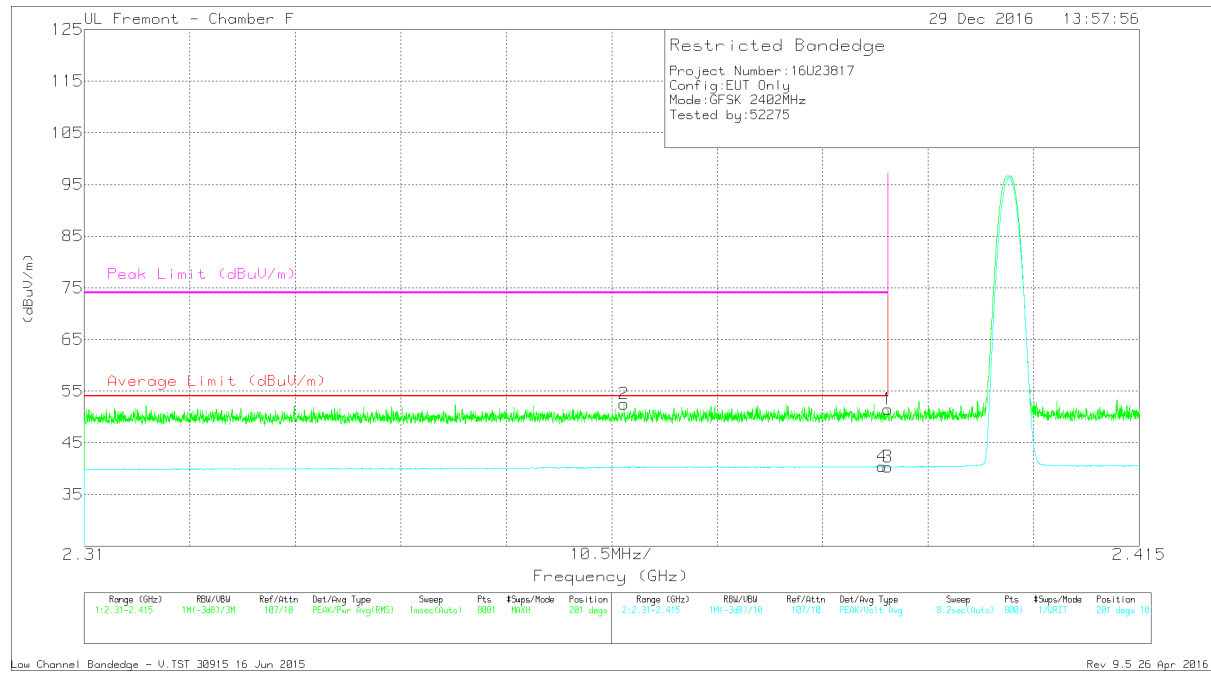
Pk - Peak detector

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

Low Channel Bandedge - H.TST 30915 16 Jun 2015

Rev 9.5 26 Apr 2016

VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/F ltr/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	40.31	PK	32.1	-20.9	51.51	-	-	74	-22.49	201	103	V
2	* 2.364	41.45	PK	32	-20.9	52.55	-	-	74	-21.45	201	103	V
3	* 2.39	29.12	VA1T	32.1	-20.9	40.32	54	-13.68	-	-	201	103	V
4	* 2.389	29.19	VA1T	32.1	-20.9	40.39	54	-13.61	-	-	201	103	V

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

PK - Peak detector

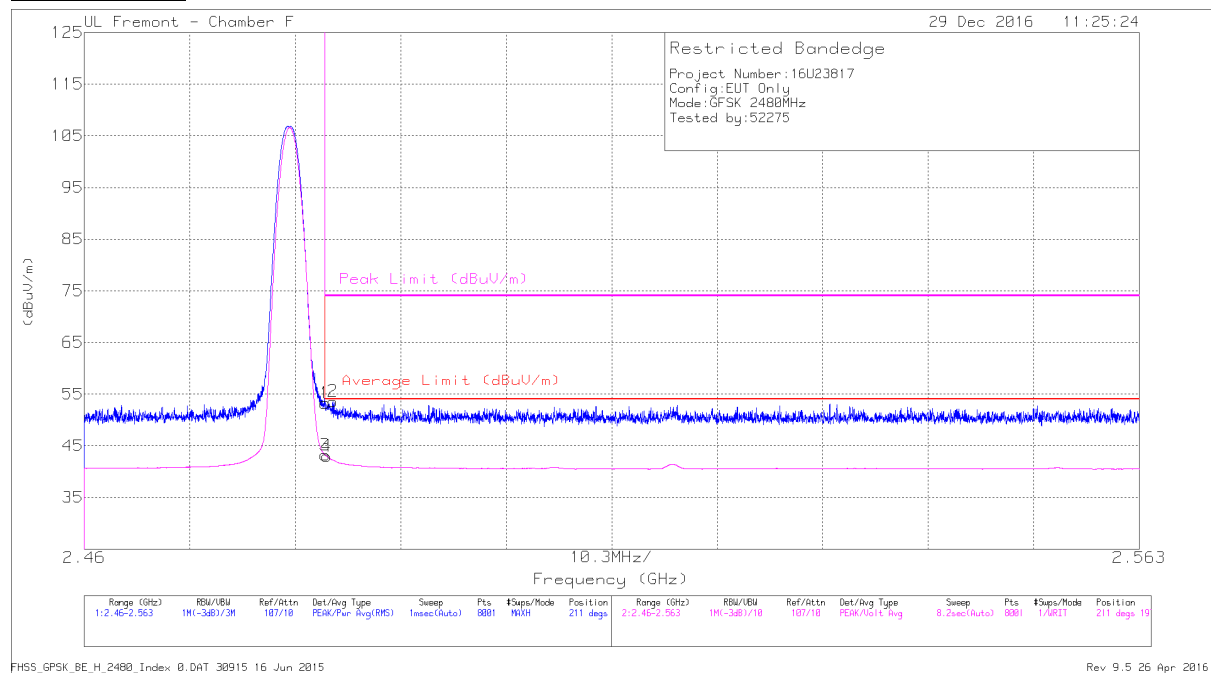
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

Low Channel Bandedge - V.TST 30915 16 Jun 2015

Rev 9.5 26 Apr 2016

9.4.2. AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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	* 2.484	41.98	Pk	32.3	-21	53.28	-	-	74	-20.72	211	197	H
2	* 2.484	42.29	Pk	32.3	-21	53.59	-	-	74	-20.41	211	197	H
3	* 2.484	31.89	VA1T	32.3	-21	43.19	54	-10.81	-	-	211	197	H
4	* 2.484	31.69	VA1T	32.3	-21	42.99	54	-11.01	-	-	211	197	H

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

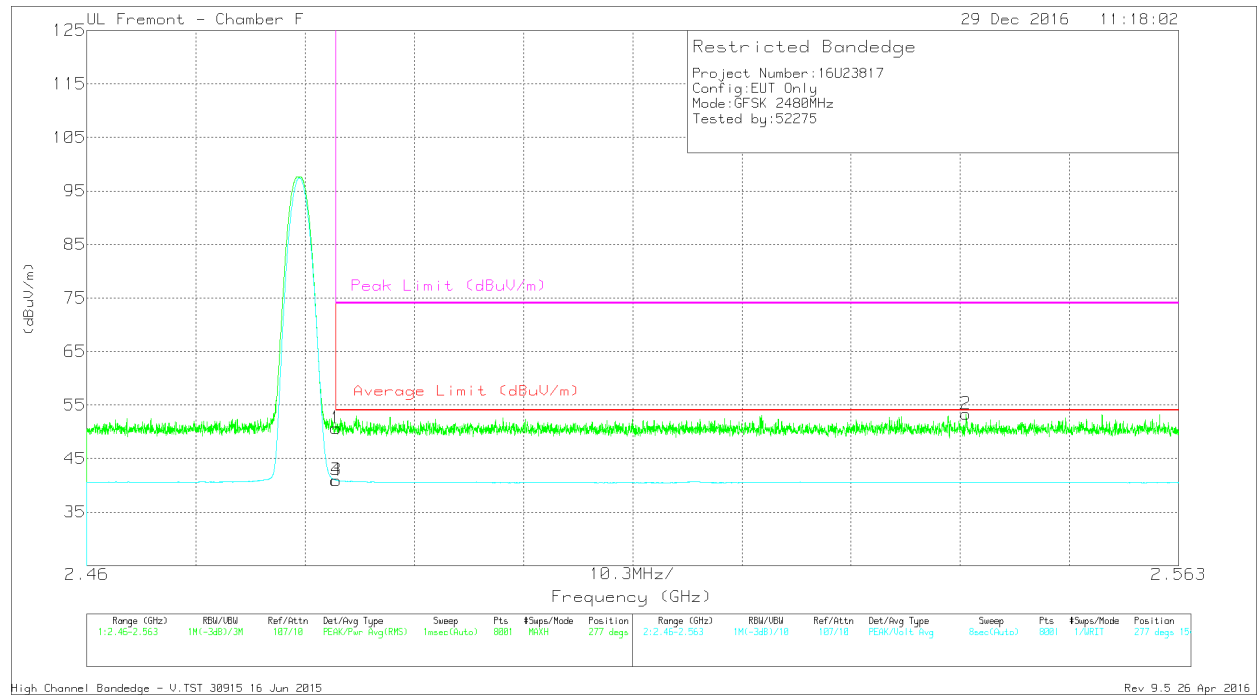
Pk - Peak detector

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

FHSS_GPSK_BE_H_2480_Index 0.DAT 30915 16 Jun 2015

Rev 9.5 26 Apr 2016

VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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	* 2.484	39.35	Pk	32.3	-21	50.65	-	-	74	-23.35	277	154	V
2	2.543	42.03	Pk	32.2	-20.9	53.33	-	-	74	-20.67	277	154	V
3	* 2.484	29.66	VA1T	32.3	-21	40.96	54	-13.04	-	-	277	154	V
4	* 2.484	29.65	VA1T	32.3	-21	40.95	54	-13.05	-	-	277	154	V

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

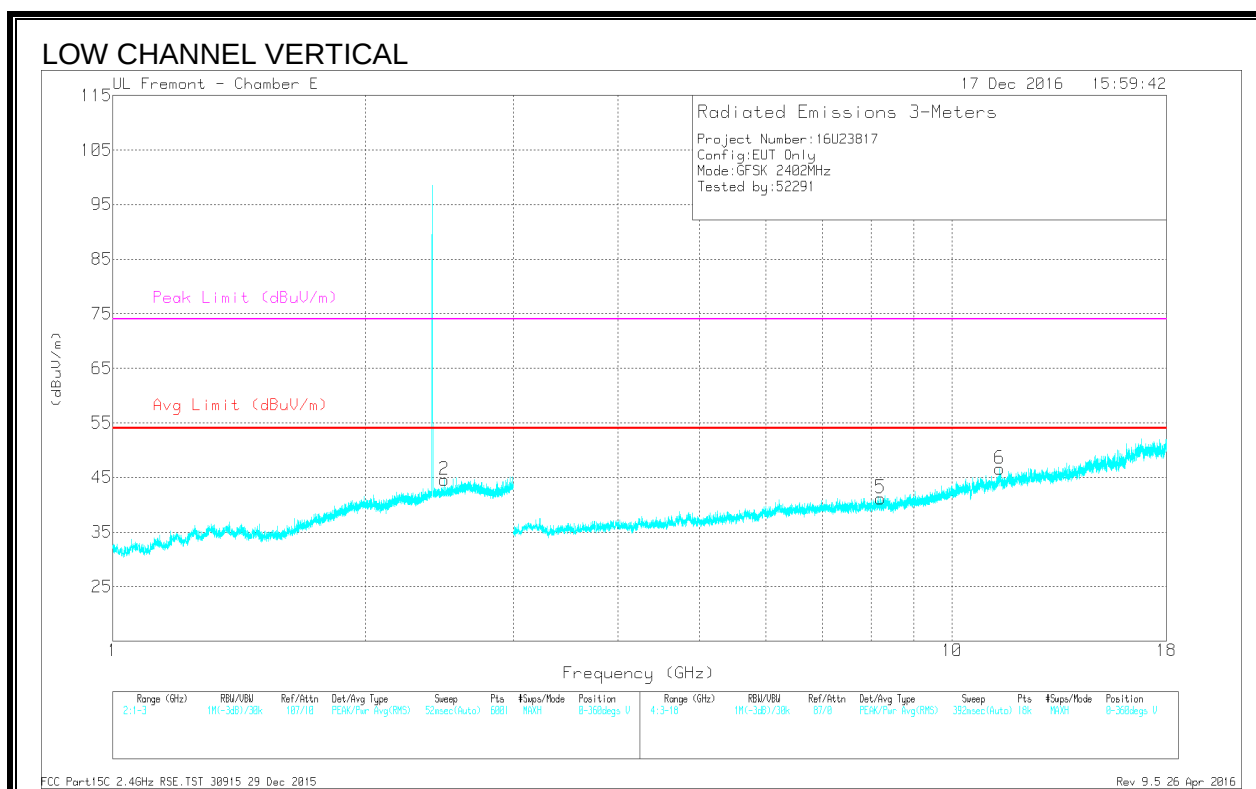
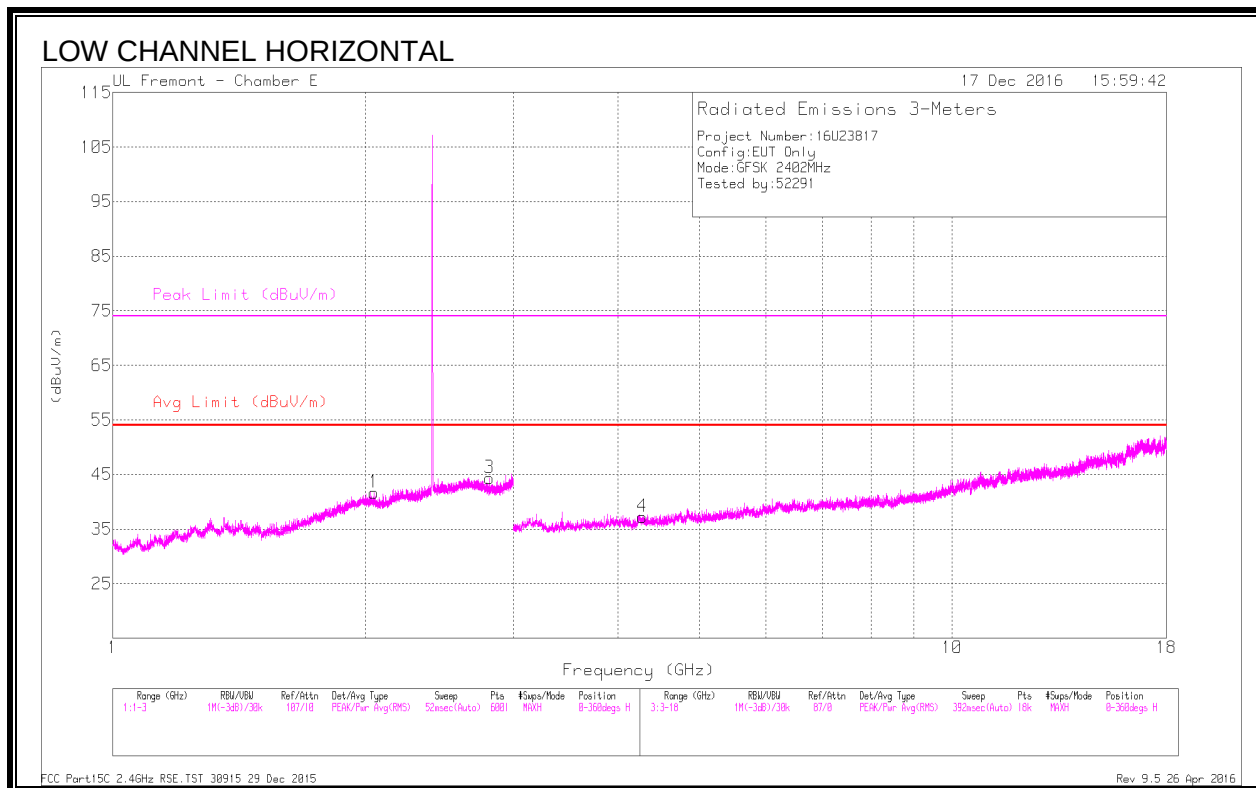
Pk - Peak detector

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

High Channel Bandedge - V.TST 30915 16 Jun 2015

Rev 9.5 26 Apr 2016

9.4.3. HARMONICS AND SPURIOUS EMISSIONS



Marker	Frequen cy (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/ Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimu th (Degs)	Heig ht (cm)	Polari ty
3	* 2.813	35.93	PKFH	32.4	-19.7	48.63	-	-	74	-25.37	46	244	H
	* 2.811	18.86	VA1T	32.4	-19.7	31.56	54	-22.44	-	-	46	244	H
4	* 2.497	36.52	PKFH	32.3	-19.9	48.92	-	-	74	-25.08	135	223	V
	* 2.491	19.31	VA1T	32.3	-19.9	31.71	54	-22.29	-	-	135	223	V
5	* 4.273	39.38	PKFH	33.3	-29.2	43.48	-	-	74	-30.52	80	199	H
	* 4.272	27.7	VA1T	33.3	-29.2	31.8	54	-22.2	-	-	80	199	H
6	* 8.216	37.01	PKFH	35.8	-26.8	46.01	-	-	74	-27.99	266	165	V
	* 8.218	25.86	VA1T	35.8	-26.7	34.96	54	-19.04	-	-	266	165	V
1	* 11.391	36	PKFH	38.2	-21.9	52.3	-	-	74	-21.7	231	134	V
	* 11.39	23.27	VA1T	38.2	-22	39.47	54	-14.53	-	-	231	134	V
2	2.045	34.17	PKFH	31.4	-20.2	45.37	-	-	-	-	202	200	H
	2.047	18.86	VA1T	31.4	-20.1	30.16	-	-	-	-	202	200	H

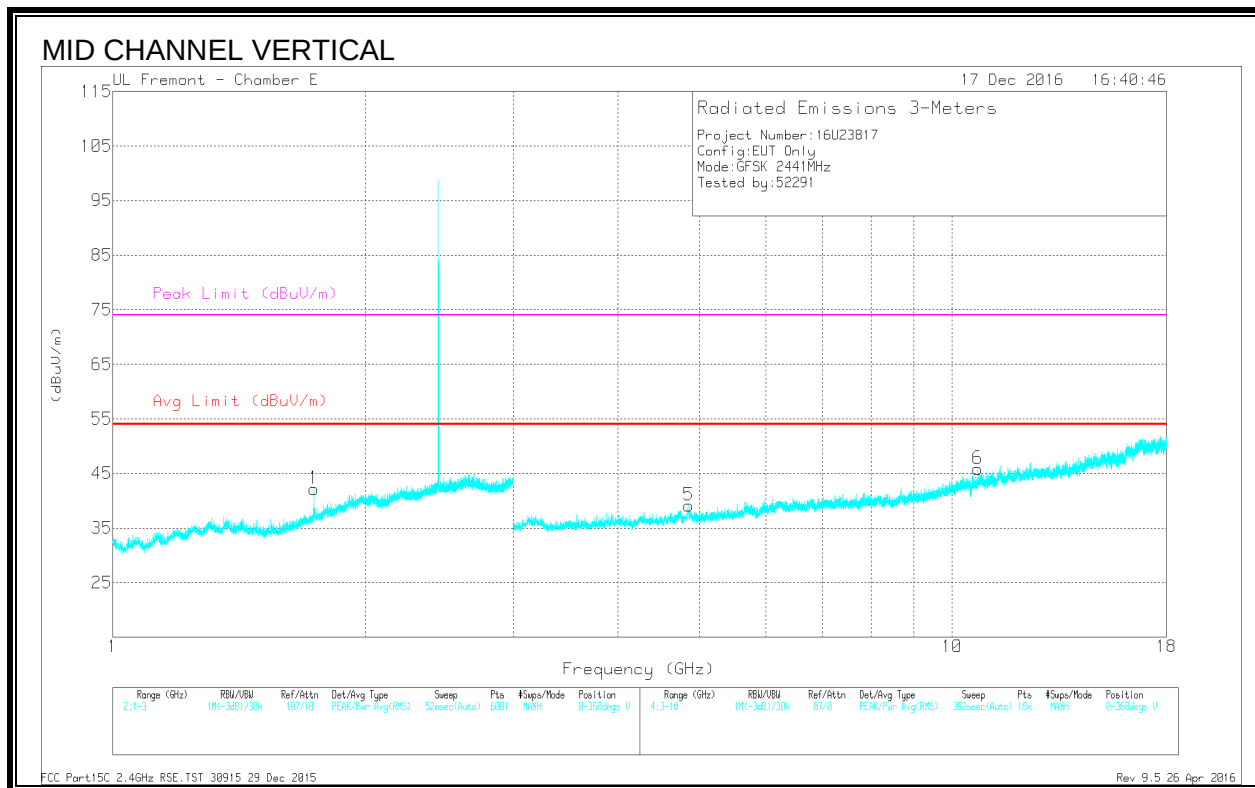
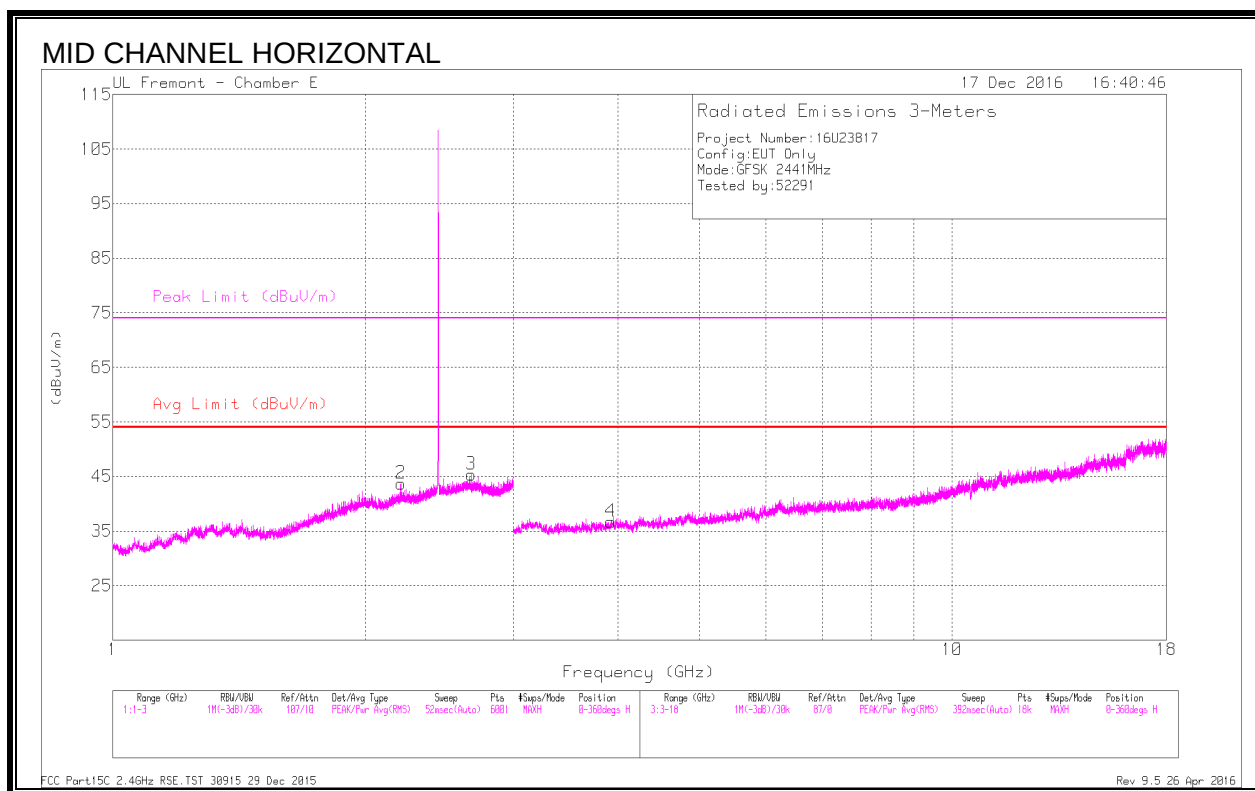
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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

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

FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015

Rev 9.5 26 Apr 2016



Markers	Frequen cy (GHz)	Meter Readin g (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/ Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/ m)	Margin (dB)	Peak Limit (dBuV/ m)	PK Margin (dB)	Azimu th (Degs)	Heig ht (cm)	Polari ty
2	* 2.204	34.53	PKFH	31.8	-19.5	46.83	-	-	74	-27.17	360	189	H
	* 2.204	18.21	VA1T	31.8	-19.5	30.51	54	-23.49	-	-	360	189	H
3	* 2.672	34.55	PKFH	32.6	-19.2	47.95	-	-	74	-26.05	343	380	H
	* 2.672	18.81	VA1T	32.6	-19.2	32.21	54	-21.79	-	-	343	380	H
4	* 3.92	40.34	PKFH	33.3	-29.7	43.94	-	-	74	-30.06	233	207	H
	* 3.917	28.11	VA1T	33.3	-29.9	31.51	54	-22.49	-	-	233	207	H
5	* 4.855	39.98	PKFH	34	-30.1	43.88	-	-	74	-30.12	192	224	V
	* 4.856	28.54	VA1T	34	-30.1	32.44	54	-21.56	-	-	192	224	V
6	* 10.735	36.05	PKFH	37.9	-23.1	50.85	-	-	74	-23.15	115	180	V
	* 10.735	23.87	VA1T	37.9	-23.1	38.67	54	-15.33	-	-	115	180	V
1	1.737	33.7	PKFH	29.6	-20.2	43.1	-	-	-	-	296	325	V
	1.738	18.74	VA1T	29.7	-20.2	28.24	-	-	-	-	296	325	V

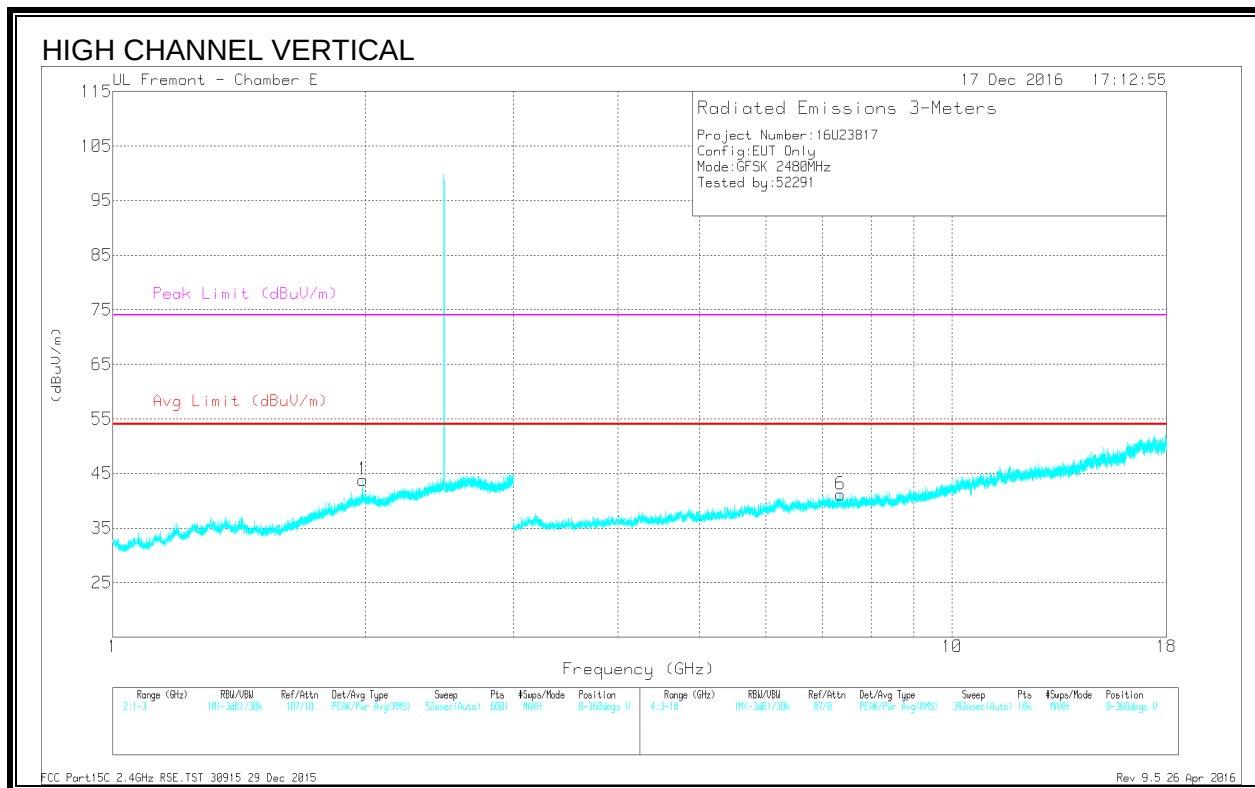
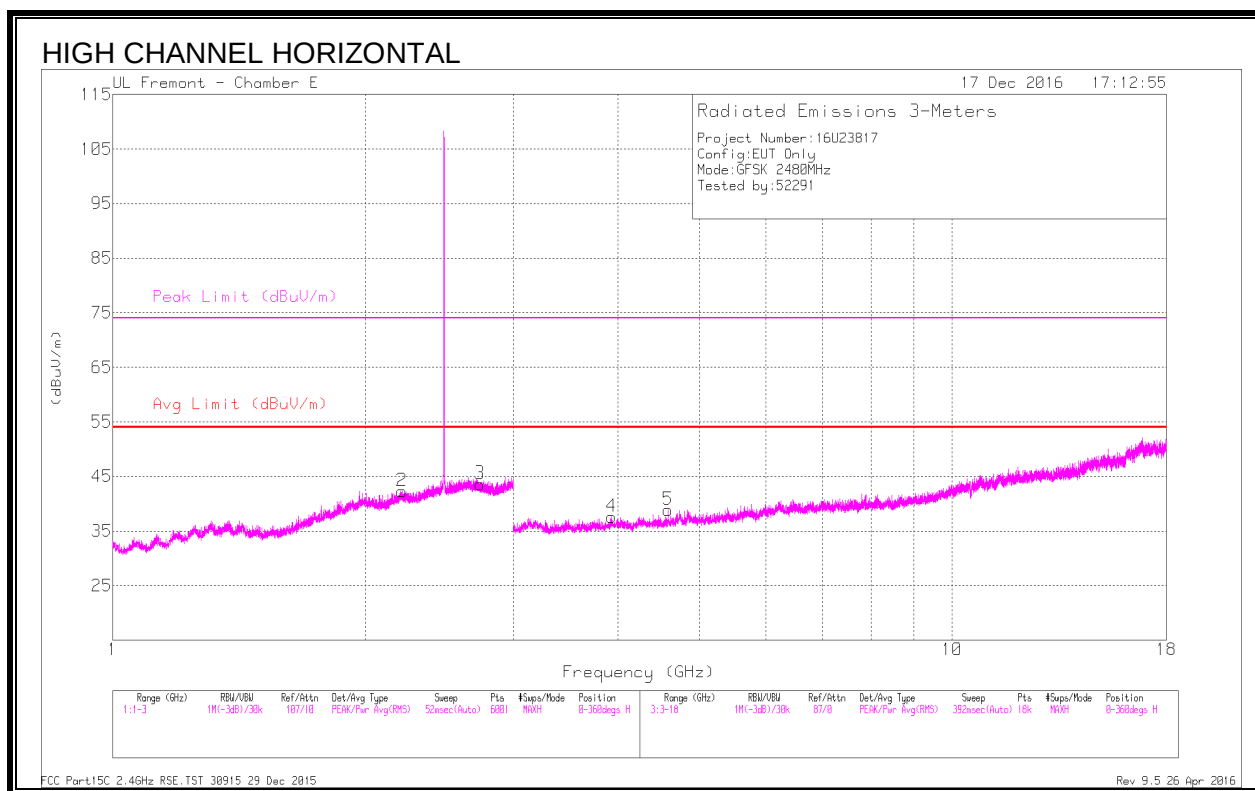
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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

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

FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015

Rev 9.5 26 Apr 2016



Marker	Frequen cy (GHz)	Meter Readin g (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimu th (Degs)	Heig ht (cm)	Polari ty
2	* 2.211	34.42	PKFH	31.8	-19.6	46.62	-	-	74	-27.38	248	141	H
	* 2.212	18.29	VA1T	31.8	-19.6	30.49	54	-23.51	-	-	248	141	H
3	* 2.738	35.04	PKFH	32.5	-19.5	48.04	-	-	74	-25.96	7	186	H
	* 2.737	18.68	VA1T	32.5	-19.5	31.68	54	-22.32	-	-	7	186	H
4	* 3.928	38.69	PKFH	33.3	-29.6	42.39	-	-	74	-31.61	130	242	H
	* 3.926	27.58	VA1T	33.3	-29.6	31.28	54	-22.72	-	-	130	242	H
5	* 4.589	39.77	PKFH	33.8	-30.1	43.47	-	-	74	-30.53	204	223	H
	* 4.59	28.91	VA1T	33.8	-30.1	32.61	54	-21.39	-	-	204	223	H
6	* 7.365	38.87	PKFH	35.6	-27.3	47.17	-	-	74	-26.83	299	323	V
	* 7.363	26.38	VA1T	35.6	-27.3	34.68	54	-19.32	-	-	299	323	V
1	1.986	33.48	PKFH	31.8	-20	45.28	-	-	-	-	360	271	V
	1.986	18.47	VA1T	31.8	-20	30.27	-	-	-	-	360	271	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

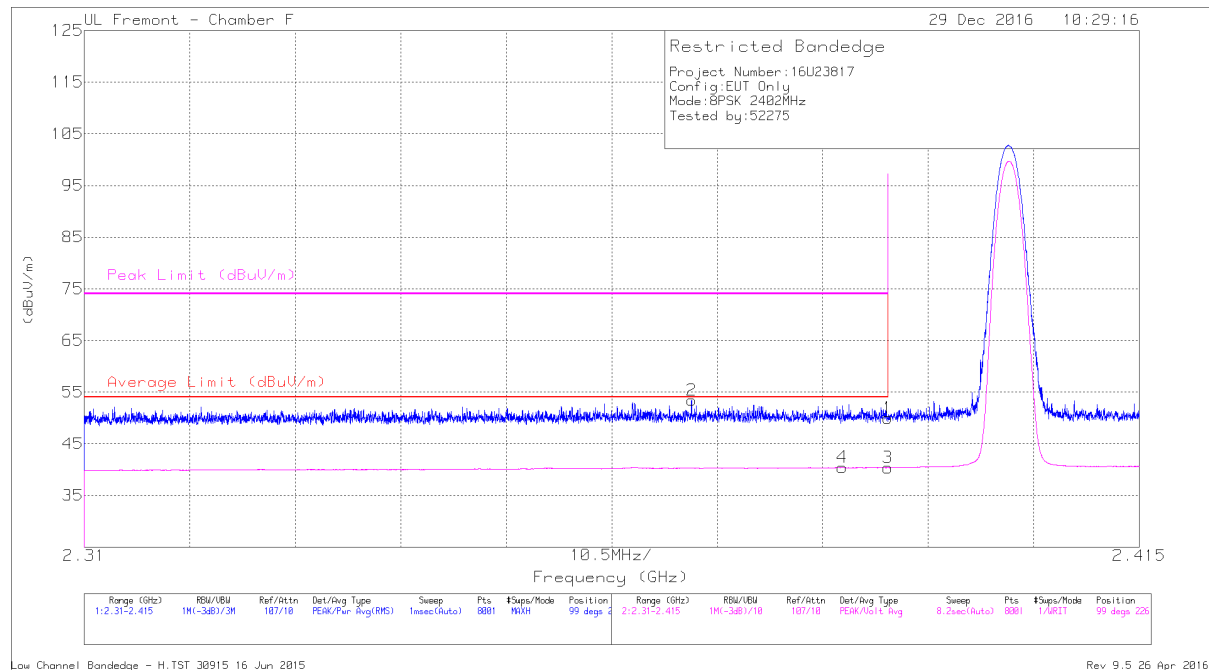
FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015

Rev 9.5 26 Apr 2016

9.5. LOW POWER ENHANCED DATA RATE 8PSK MODULATION

9.5.1. RESTRICTED BANDEDGE (LOW CHANNEL)

HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/F ltr/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	38.8	Pk	32.1	-20.9	50	-	-	74	-24	99	226	H
2	* 2.37	42.34	Pk	32	-20.9	53.44	-	-	74	-20.56	99	226	H
3	* 2.39	29.18	VA1T	32.1	-20.9	40.38	54	-13.62	-	-	99	226	H
4	* 2.385	29.23	VA1T	32.1	-20.9	40.43	54	-13.57	-	-	99	226	H

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

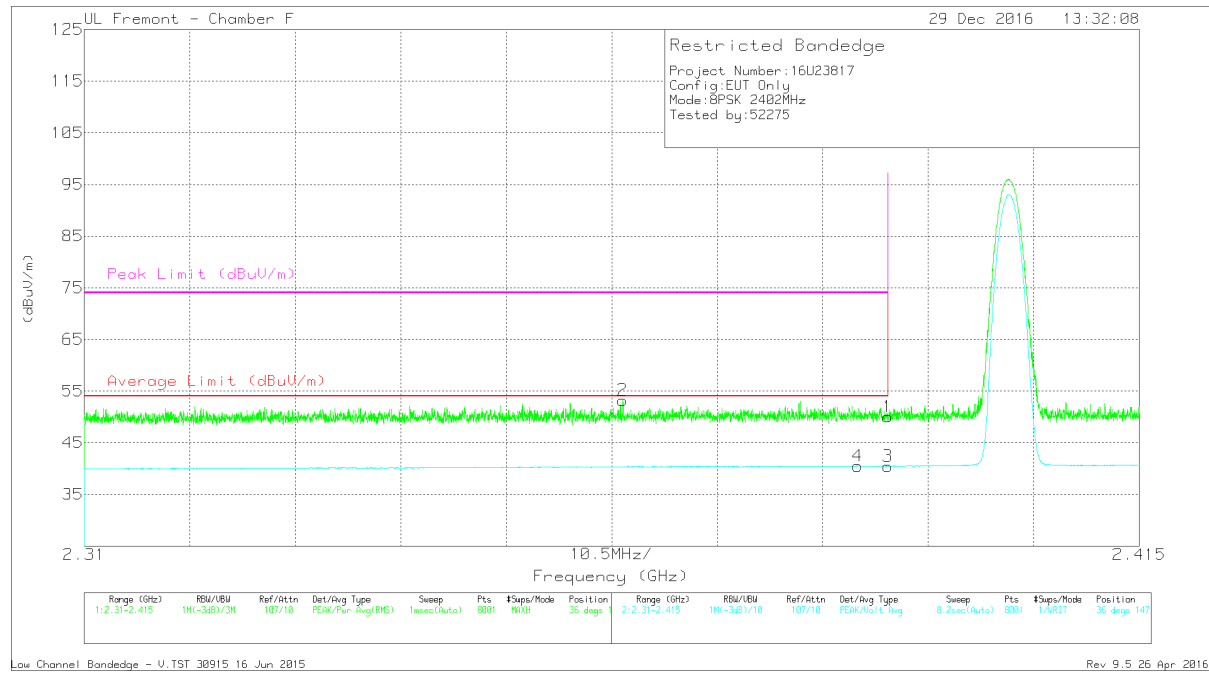
Pk - Peak detector

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

Low Channel Bandedge - H.TST 30915 16 Jun 2015

Rev 9.5 26 Apr 2016

VERTICAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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	38.82	Pk	32.1	-20.9	50.02	-	-	74	-23.98	36	147	V
2	* 2.364	42.12	Pk	32	-20.9	53.22	-	-	74	-20.78	36	147	V
3	* 2.39	29.26	VA1T	32.1	-20.9	40.46	54	-13.54	-	-	36	147	V
4	* 2.387	29.31	VA1T	32.1	-20.9	40.51	54	-13.49	-	-	36	147	V

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

Pk - Peak detector

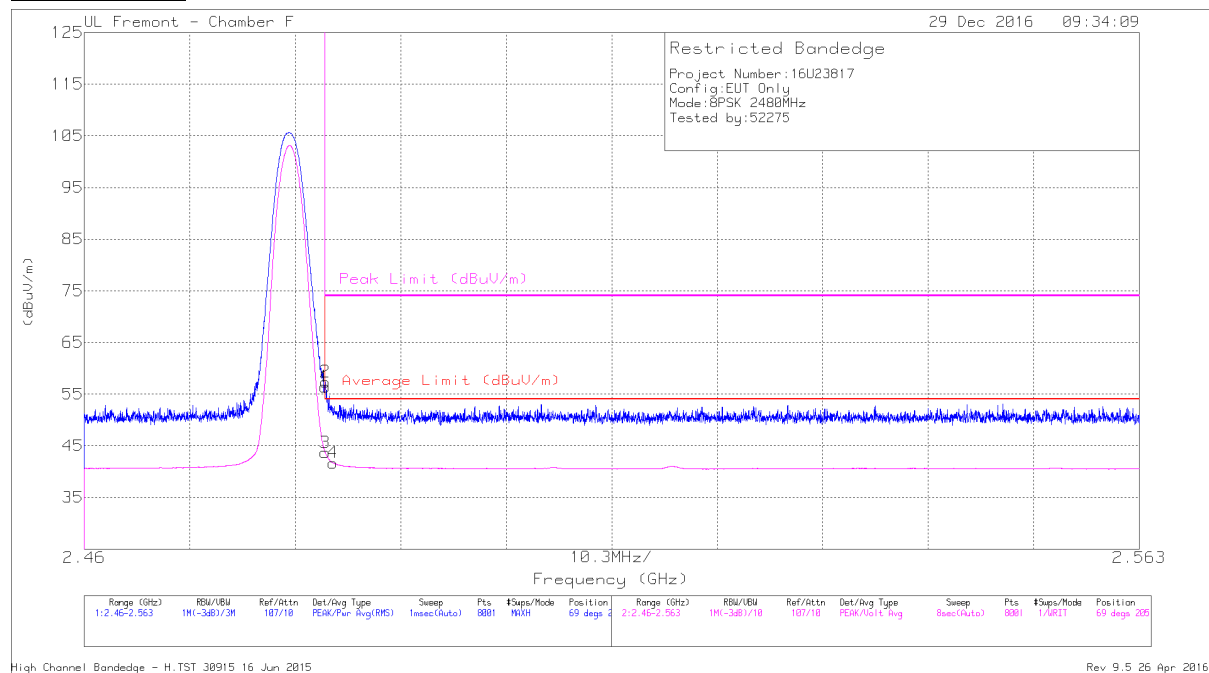
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

Low Channel Bandedge - V.TST 30915 16 Jun 2015

Rev 9.5 26 Apr 2016

9.5.2. AUTHORIZED BANDEDGE (HIGH CHANNEL)

HORIZONTAL



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (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	* 2.484	45.13	Pk	32.3	-21	56.43	-	-	74	-17.57	69	205	H
2	* 2.484	46.07	Pk	32.3	-21	57.37	-	-	74	-16.63	69	205	H
3	* 2.484	32.38	VA1T	32.3	-21	43.68	54	-10.32	-	-	69	205	H
4	* 2.484	30.4	VA1T	32.3	-21	41.7	54	-12.3	-	-	69	205	H

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

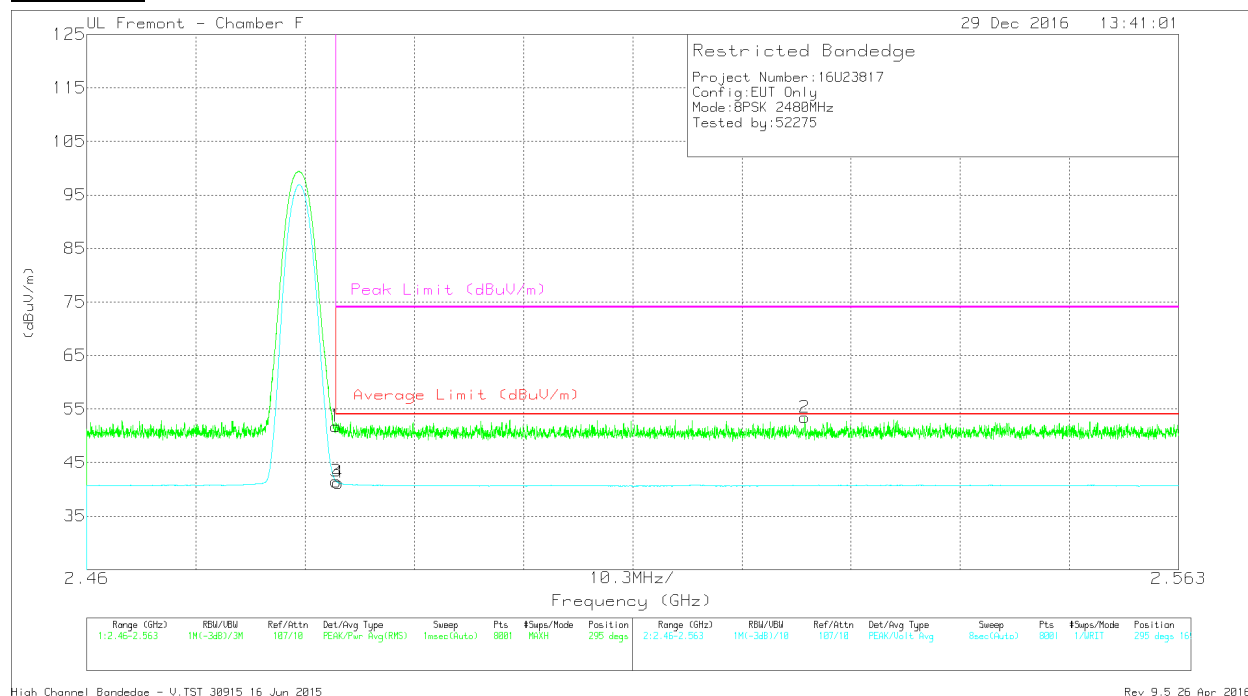
Pk - Peak detector

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

High Channel Bandedge - H.TST 30915 16 Jun 2015

Rev 9.5 26 Apr 2016

VERTICAL



Trace Markers

Mark er	Frequ ncy (GHz)	Meter Readin g (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/Fit r/Pad (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/ m)	Margin (dB)	Peak Limit (dBuV/ m)	PK Margin (dB)	Azimu th (Degs)	Heig ht (cm)	Polar ity
1	* 2.484	40.45	Pk	32.3	-21	51.75	-	-	74	-22.25	295	169	V
2	2.528	42.02	Pk	32.3	-20.9	53.42	-	-	74	-20.58	295	169	V
3	* 2.484	30.18	VA1T	32.3	-21	41.48	54	-12.52	-	-	295	169	V
4	* 2.484	29.94	VA1T	32.3	-21	41.24	54	-12.76	-	-	295	169	V

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

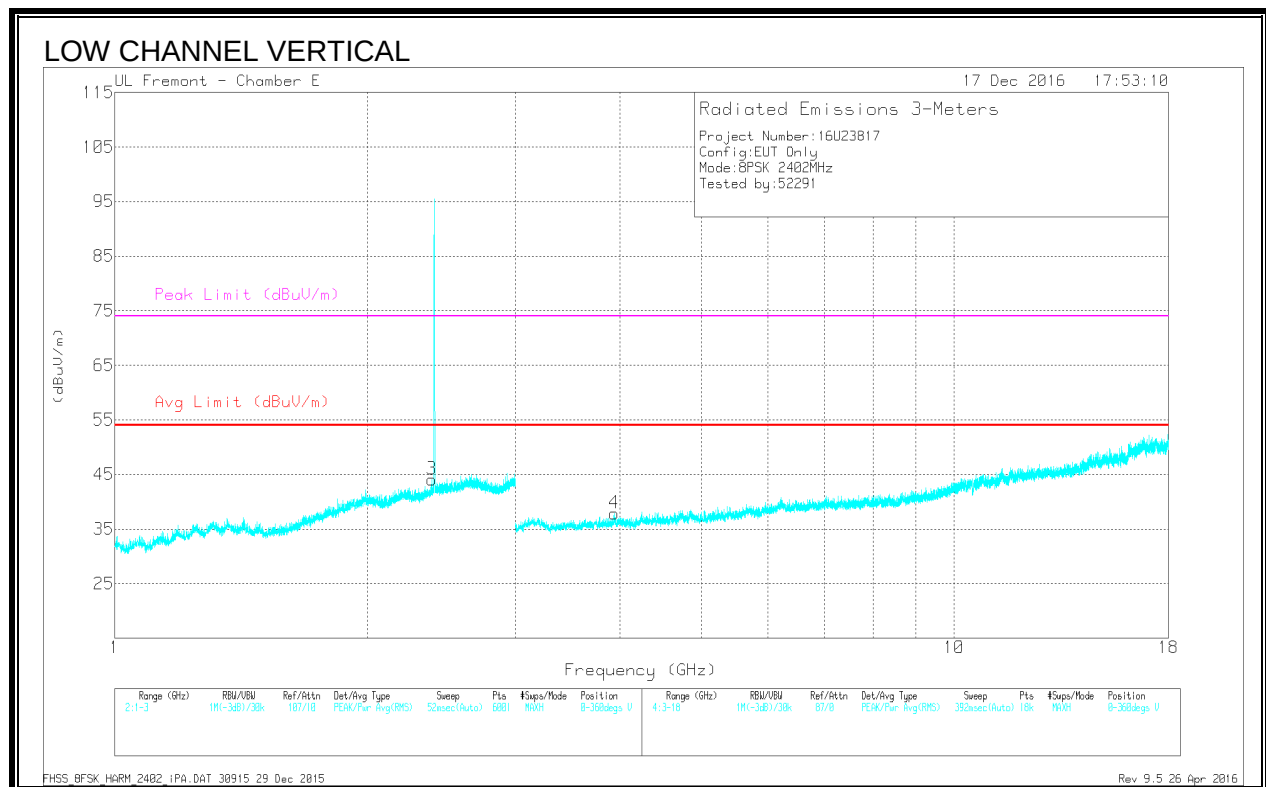
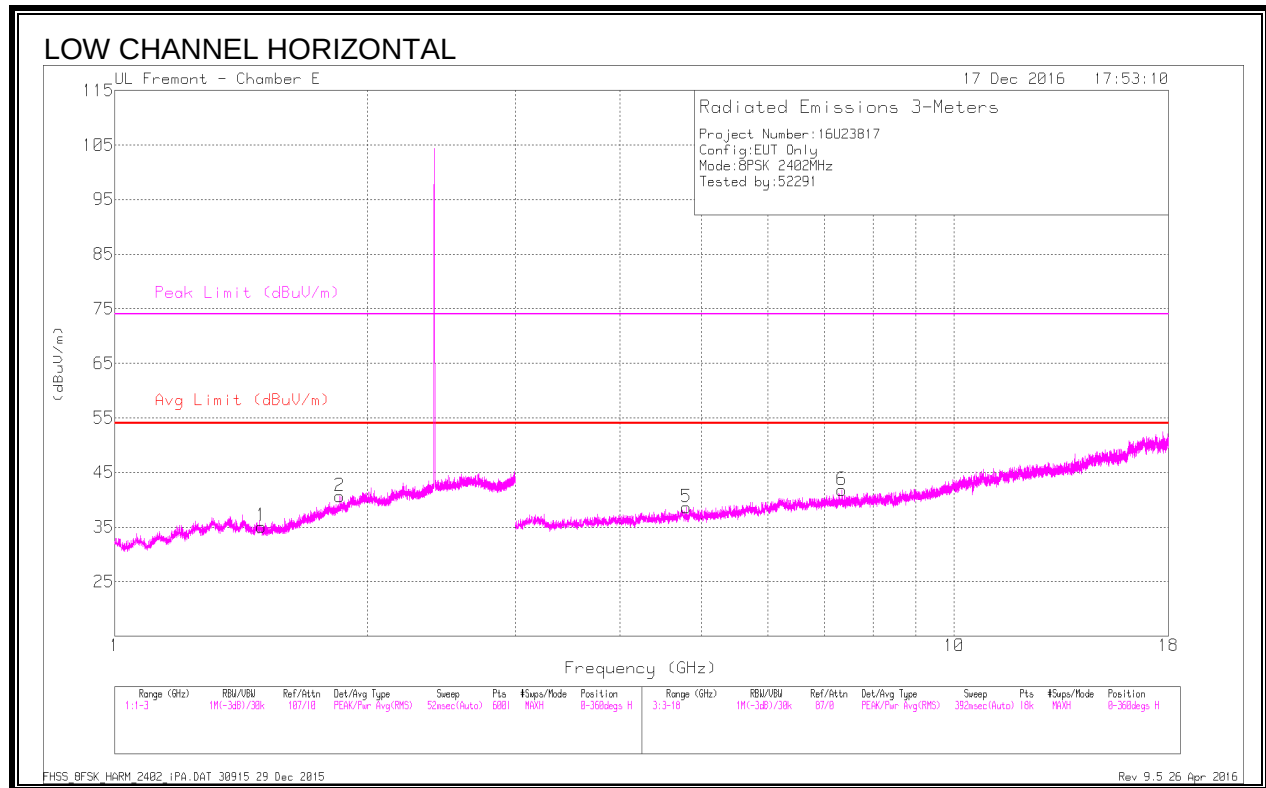
Pk - Peak detector

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

High Channel Bandedge - V.TST 30915 16 Jun 2015

Rev 9.5 26 Apr 2016

9.5.3. HARMONICS AND SPURIOUS EMISSIONS



Marker	Frequen cy (GHz)	Meter Readi ng (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margi n (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimu th (Degs)	Heig ht (cm)	Polari ty
1	* 1.496	32.84	PKFH	27.8	-20.7	39.94	-	-	74	-34.06	334	344	H
	* 1.494	18.58	VA1T	27.8	-20.9	25.48	54	-28.52	-	-	334	344	H
3	* 2.385	34.48	PKFH	32.1	-19.5	47.08	-	-	74	-26.92	318	257	V
	* 2.386	18.64	VA1T	32.1	-19.6	31.14	54	-22.86	-	-	318	257	V
5	* 4.798	39.67	PKFH	34	-29.4	44.27	-	-	74	-29.73	341	316	H
	* 4.797	28.09	VA1T	34	-29.5	32.59	54	-21.41	-	-	341	316	H
6	* 7.35	38.1	PKFH	35.6	-26.8	46.9	-	-	74	-27.1	91	168	H
	* 7.352	26.18	VA1T	35.6	-26.9	34.88	54	-19.12	-	-	91	168	H
4	* 3.94	39.32	PKFH	33.3	-29.4	43.22	-	-	74	-30.78	109	138	V
	* 3.94	27.63	VA1T	33.3	-29.4	31.53	54	-22.47	-	-	109	138	V
2	1.854	33.81	PKFH	30.9	-20.4	44.31	-	-	-	-	221	273	H
	1.854	18.81	VA1T	30.9	-20.4	29.31	-	-	-	-	221	273	H

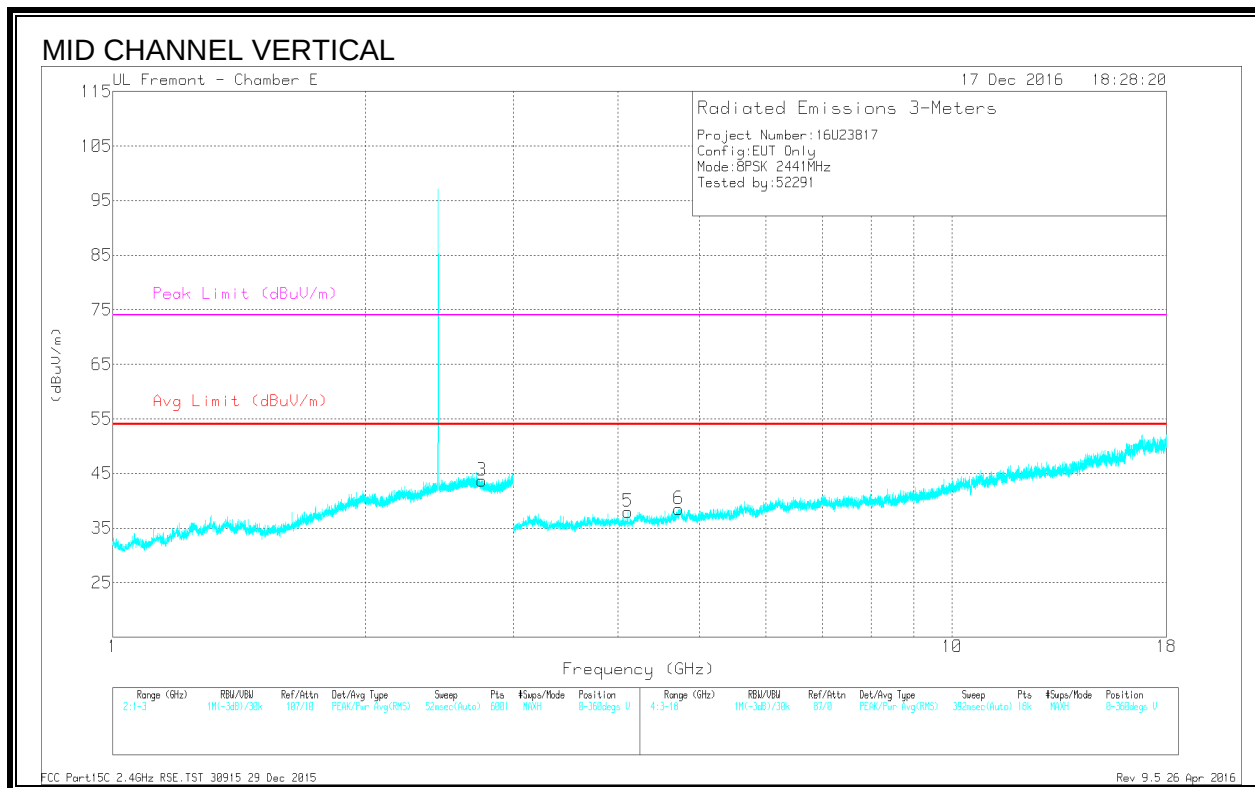
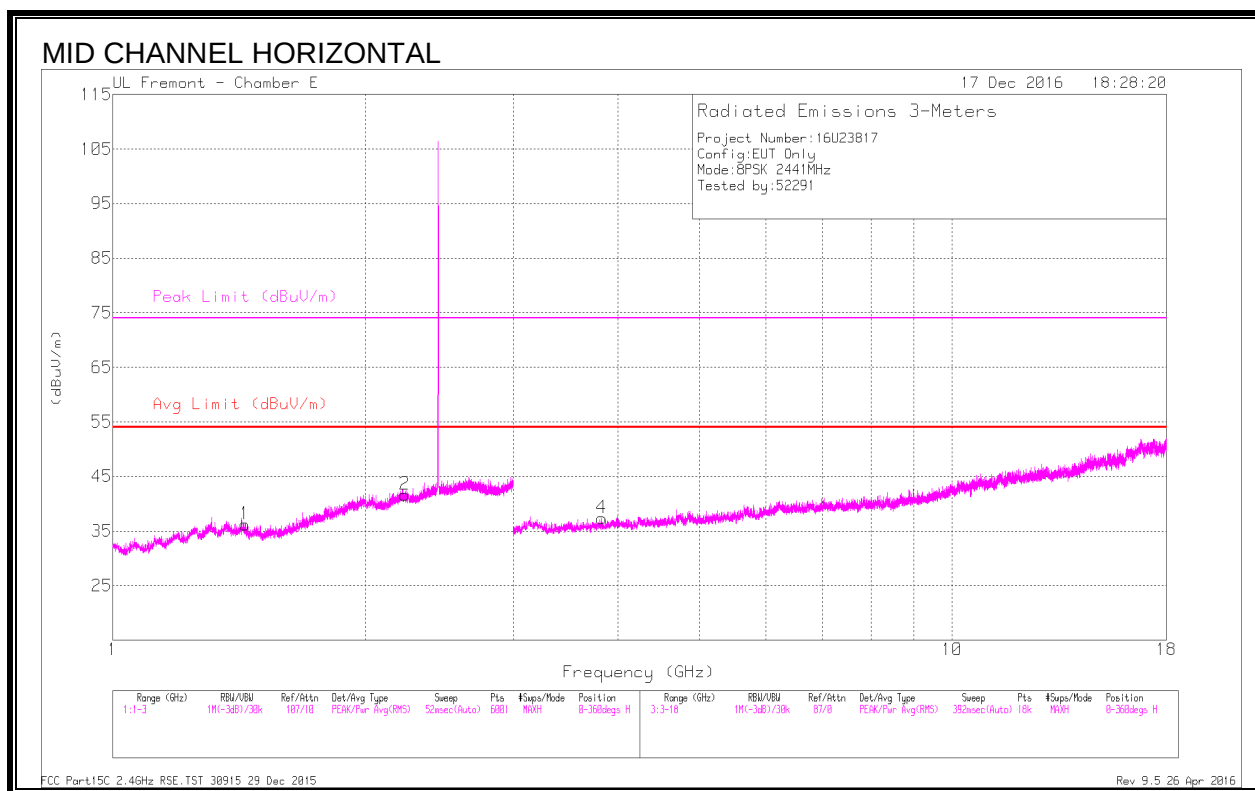
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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

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

FHSS_8FSK_HARM_2402.DAT 30915 29 Dec 2015

Rev 9.5 26 Apr 2016



Marker	Frequen cy (GHz)	Meter Readi ng (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margi n (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimu th (Degs)	Heig ht (cm)	Polari ty
1	* 1.421	33.89	PKFH	28.8	-21.3	41.39	-	-	74	-32.61	163	364	H
	* 1.37	19.31	VA1T	29.1	-21.7	26.71	54	-27.29	-	-	163	364	H
2	* 2.226	33.8	PKFH	31.7	-19.6	45.9	-	-	74	-28.1	208	330	H
	* 2.227	18.23	VA1T	31.7	-19.6	30.33	54	-23.67	-	-	208	330	H
3	* 2.754	34.23	PKFH	32.5	-19.6	47.13	-	-	74	-26.87	232	138	V
	* 2.752	18.59	VA1T	32.5	-19.6	31.49	54	-22.51	-	-	232	138	V
4	* 3.826	40.99	PKFH	33.1	-31	43.09	-	-	74	-30.91	190	158	H
	* 3.826	29.12	VA1T	33.1	-31	31.22	54	-22.78	-	-	190	158	H
5	* 4.106	41.06	PKFH	33.4	-30.7	43.76	-	-	74	-30.24	233	195	V
	* 4.108	28.54	VA1T	33.4	-30.7	31.24	54	-22.76	-	-	233	195	V
6	* 4.721	38.94	PKFH	34	-29.1	43.84	-	-	74	-30.16	122	227	V
	* 4.719	27.54	VA1T	34	-29.1	32.44	54	-21.56	-	-	122	227	V

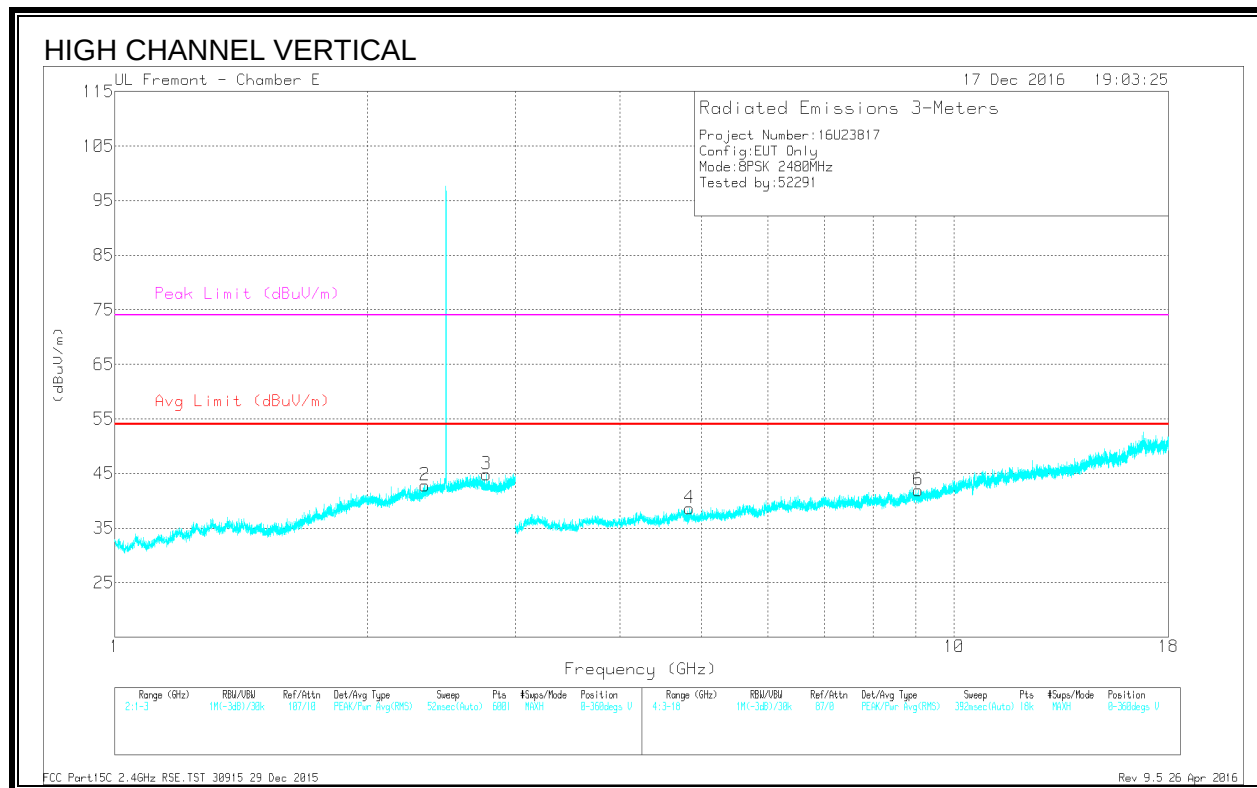
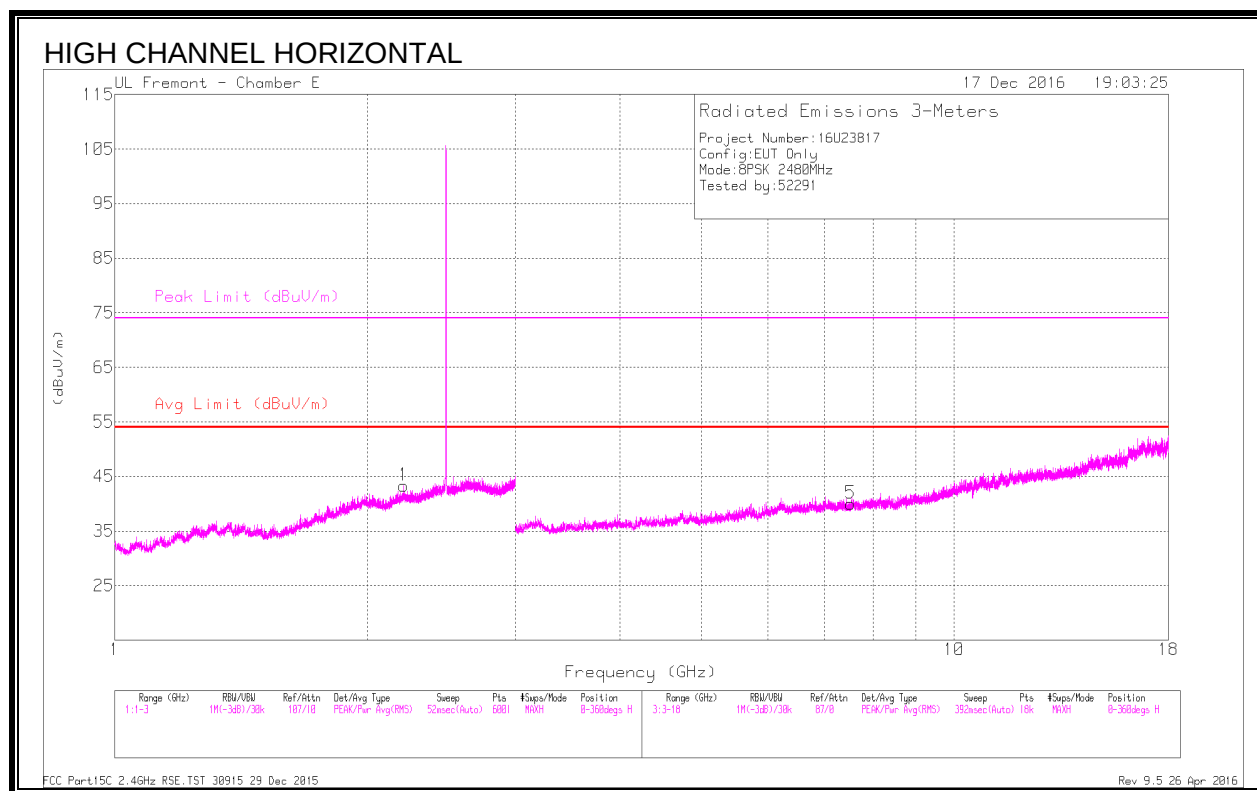
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

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

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

FCC Part15C 2.4GHz RSE.TST 30915 29 Dec 2015

Rev 9.5 26 Apr 2016



Marker	Frequen cy (GHz)	Meter Reading (dBuV)	Det	AF T711 (dB/m)	Amp/Cbl/Filtr /Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimu th (Degs)	Heig ht (cm)	Polari ty
1	* 2.211	34.25	PKFH	31.8	-19.6	46.45	-	-	74	-27.55	67	399	H
	* 2.211	18.15	VA1T	31.8	-19.6	30.35	54	-23.65	-	-	67	399	H
2	* 2.341	35.83	PKFH	31.7	-19.8	47.73	-	-	74	-26.27	128	359	V
	* 2.342	18.67	VA1T	31.7	-19.8	30.57	54	-23.43	-	-	128	359	V
3	* 2.775	35.9	PKFH	32.5	-19.7	48.7	-	-	74	-25.3	140	266	V
	* 2.773	18.66	VA1T	32.5	-19.6	31.56	54	-22.44	-	-	140	266	V
5	* 7.521	38.4	PKFH	35.6	-26.6	47.4	-	-	74	-26.6	99	232	H
	* 7.521	25.44	VA1T	35.6	-26.6	34.44	54	-19.56	-	-	99	232	H
4	* 4.84	40.72	PKFH	34	-30.1	44.62	-	-	74	-29.38	234	180	V
	* 4.842	29.08	VA1T	34	-30.1	32.98	54	-21.02	-	-	234	180	V
6	* 9.054	37.17	PKFH	36.1	-25.5	47.77	-	-	74	-26.23	129	277	V
	* 9.056	25.33	VA1T	36.1	-25.6	35.83	54	-18.17	-	-	129	277	V

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

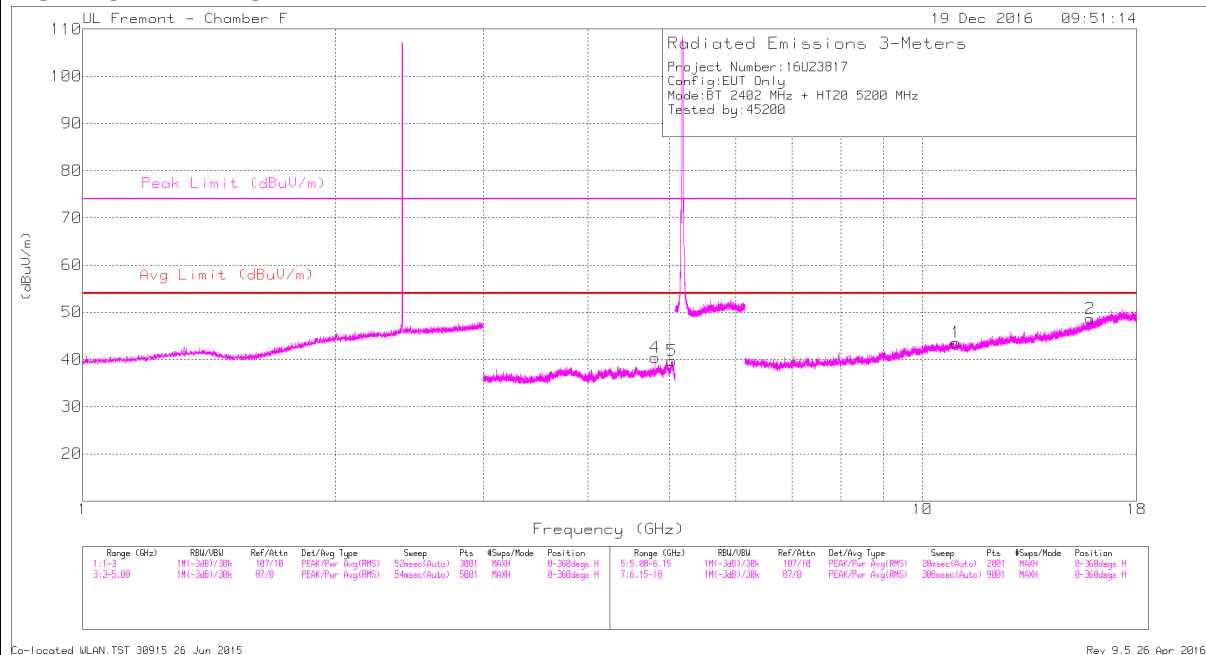
PKFH - FHSS: RB=100k/1MHz VB=3 x RB, Peak

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

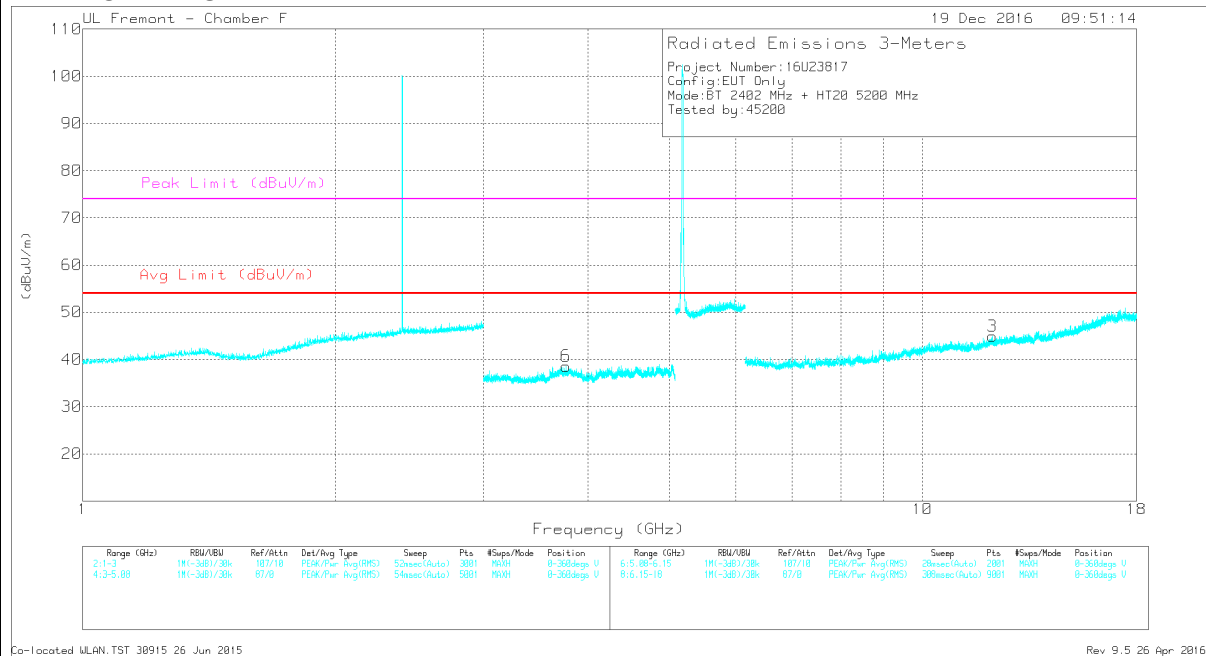
9.6. WORST-CASE CO-LOCATION

BLUETOOTH AND 802.11 HT20 2Tx CDD MODE IN THE 5.2GHz BAND

HORIZONTAL PLOT



VERTICAL PLOT



DATA

Radiated Emissions

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/FI tr/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	* 4.805	39.38	PK-U	34	-27.6	45.78	-	-	74	-28.22	191	126	H
	* 4.804	31.03	ADR	34	-27.6	37.43	54	-16.57	-	-	191	126	H
5	* 5.03	41.04	PK-U	34.2	-28.6	46.64	-	-	74	-27.36	258	112	H
	* 5.029	29.79	ADR	34.2	-28.6	35.39	54	-18.61	-	-	258	112	H
6	* 3.762	39.05	PK-U	33.4	-29	43.45	-	-	74	-30.55	118	135	V
	* 3.763	28.46	ADR	33.4	-29	32.86	54	-21.14	-	-	118	135	V
1	* 10.978	34.09	PK-U	37.9	-22.1	49.89	-	-	74	-24.11	143	263	H
	* 10.98	23.14	ADR	37.9	-22.1	38.94	54	-15.06	-	-	143	263	H
2	* 15.86	35.43	PK-U	40.9	-21.9	54.43	-	-	74	-19.57	125	272	H
	* 15.861	24.67	ADR	40.9	-21.9	43.67	54	-10.33	-	-	125	272	H
3	* 12.129	34.12	PK-U	38.9	-22.3	50.72	-	-	74	-23.28	294	146	V
	* 12.126	23.64	ADR	38.9	-22.3	40.24	54	-13.76	-	-	294	146	V

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

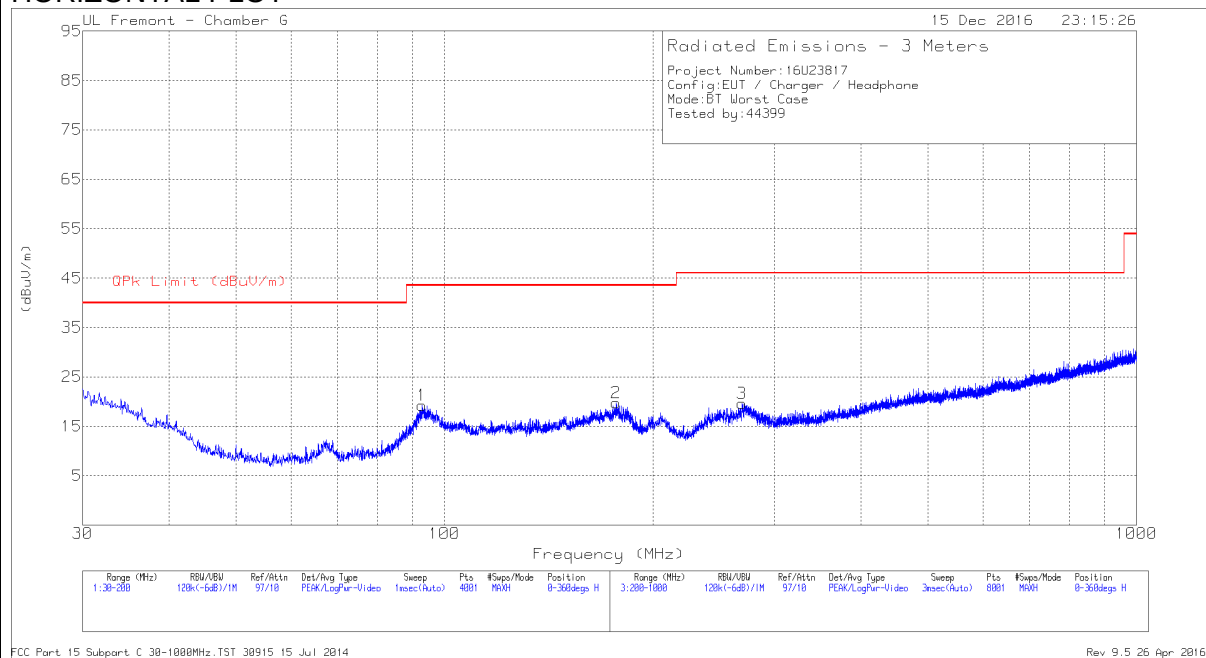
PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

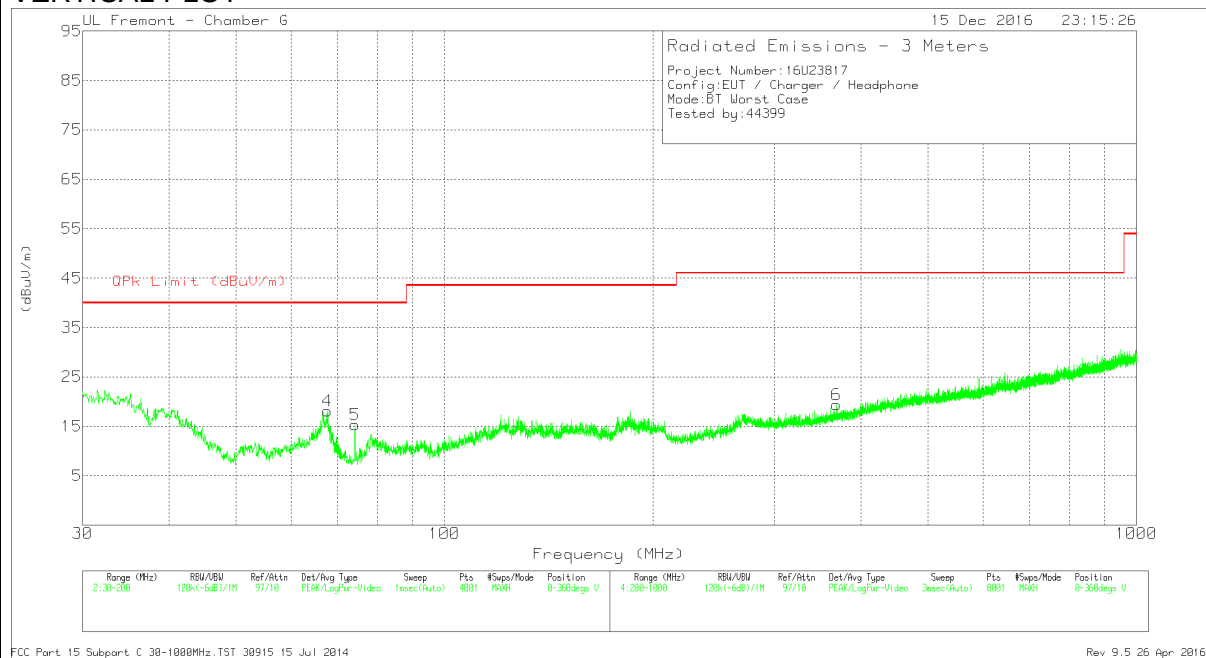
9.7. WORST-CASE BELOW 1 GHz

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

HORIZONTAL PLOT



VERTICAL PLOT



DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T900 (dB/m)	Amp Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 74.2425	34.05	Pk	12	-30.7	15.35	40	-24.65	0-360	100	V
3	* 269.3	31.68	Pk	17.1	-29.1	19.68	46.02	-26.34	0-360	100	H
4	67.7825	36.7	Pk	12.2	-30.8	18.1	40	-21.9	0-360	100	V
1	92.815	37.53	Pk	12.2	-30.5	19.23	43.52	-24.29	0-360	300	H
2	177.1775	34.23	Pk	15.3	-29.8	19.73	43.52	-23.79	0-360	200	H
6	368.7	29.12	Pk	18.8	-28.5	19.42	46.02	-26.6	0-360	100	V

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

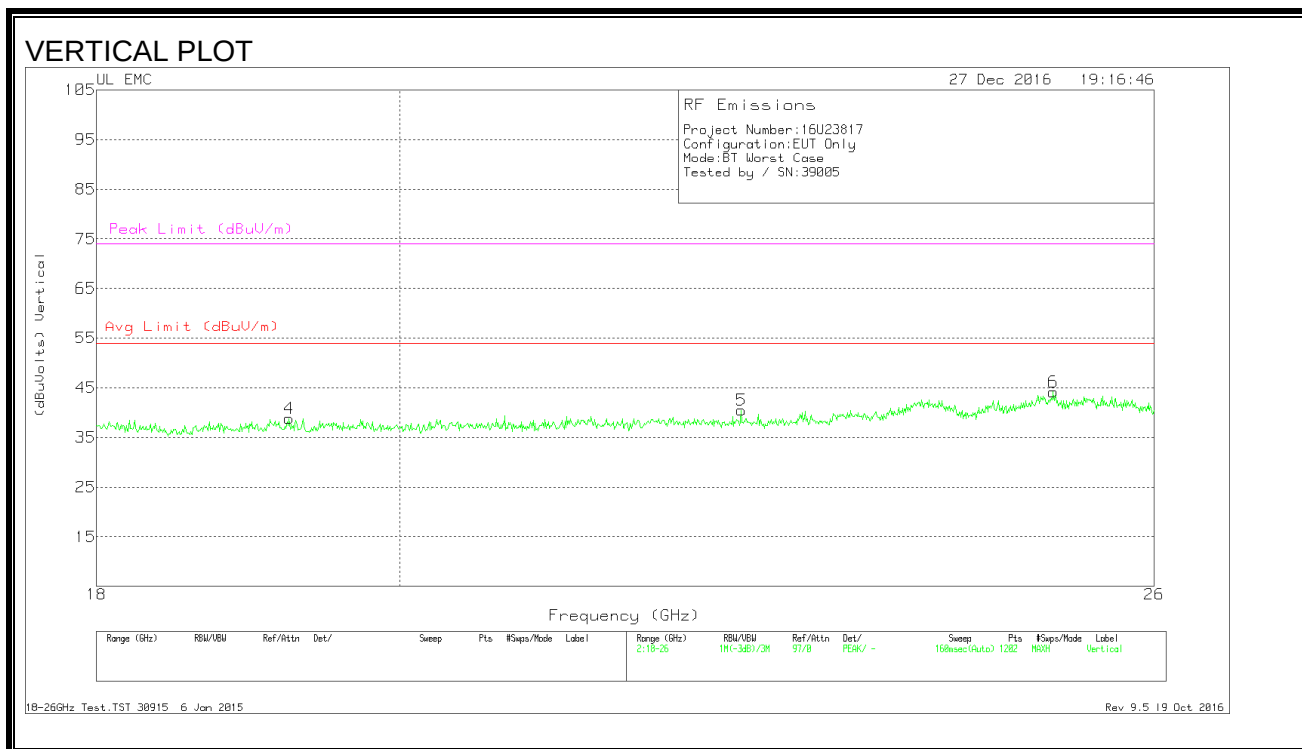
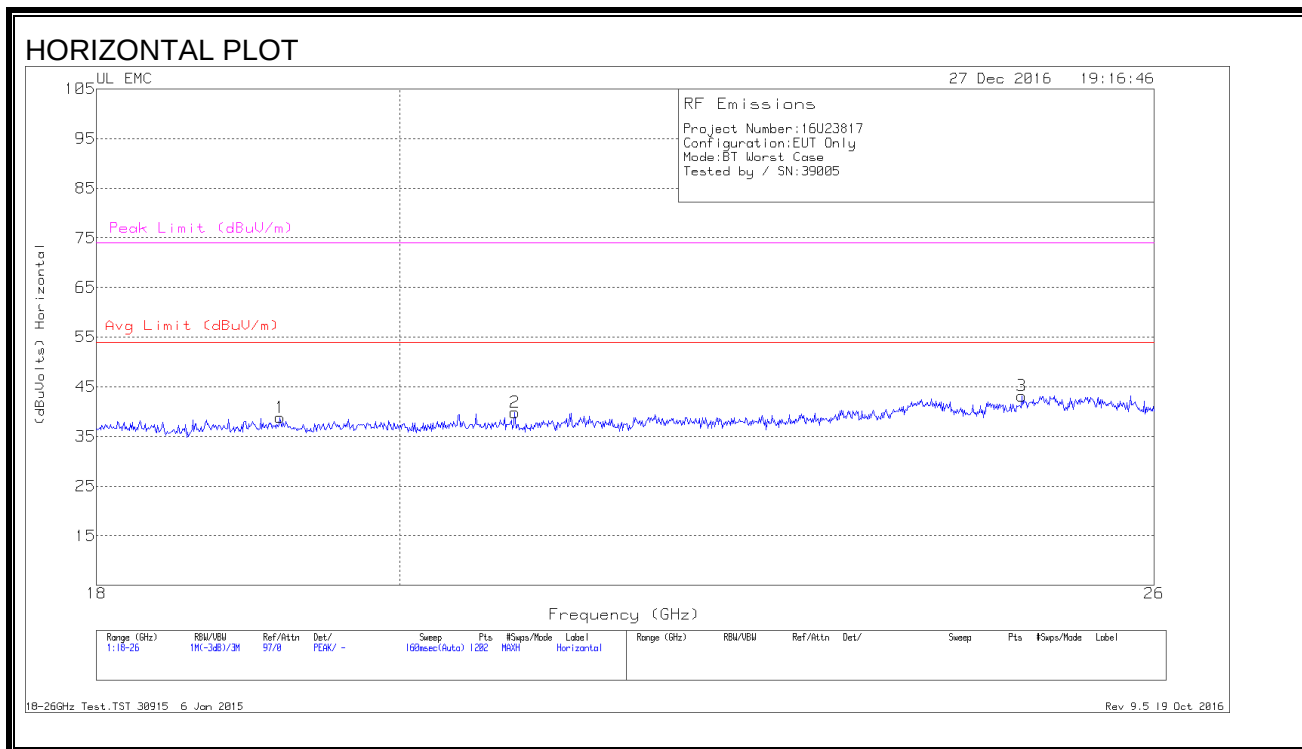
Pk - Peak detector

FCC Part 15 Subpart C 30-1000MHz.TST 30915 15 Jul 2014

Rev 9.5 26 Apr 2016

9.8. WORST-CASE ABOVE 18 GHz

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



Data

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T449 (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	19.186	40.33	Pk	32.7	-24.7	-9.5	38.83	54	-15.17	74	-35.17
2	20.818	41.63	Pk	33	-25.3	-9.5	39.83	54	-14.17	74	-34.17
3	24.828	43.07	Pk	34.2	-24.6	-9.5	43.17	54	-10.83	74	-30.83
4	19.246	40.53	Pk	32.7	-24.9	-9.5	38.83	54	-15.17	74	-35.17
5	22.523	41.6	Pk	33.5	-25.1	-9.5	40.5	54	-13.5	74	-33.5
6	25.101	43.77	Pk	34.3	-24.4	-9.5	44.17	54	-9.83	74	-29.83

Pk - Peak detector

18-26GHz Test.TST 30915 6 Jan 2015

Rev 9.5 19 Oct 2016

10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

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.

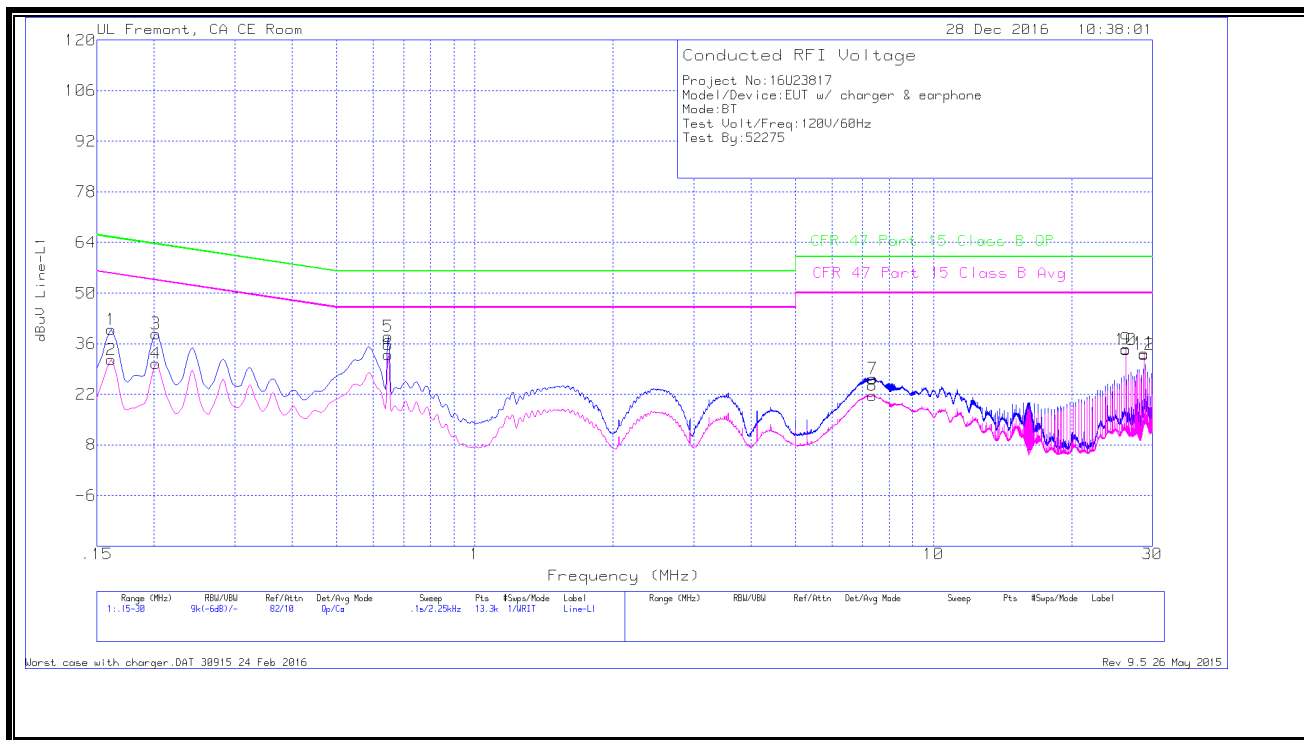
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

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

RESULTS

10.1. EUT POWERED BY AC/DC ADAPTER VIA USB CABLE

LINE 1 RESULTS



WORST EMISSIONS

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L1	LC Cables 1&3	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	.16125	29.78	Qp	0	0	10.1	39.88	65.4	-25.52	-	-
2	.16125	21.42	Ca	0	0	10.1	31.52	-	-	55.4	-23.88
3	.20175	28.68	Qp	0	0	10.1	38.78	63.54	-24.76	-	-
4	.20175	20.41	Ca	0	0	10.1	30.51	-	-	53.54	-23.03
5	.64725	27.94	Qp	0	0	10.1	38.04	56	-17.96	-	-
6	.64725	22.94	Ca	0	0	10.1	33.04	-	-	46	-12.96
7	7.37025	16.04	Qp	0	.1	10.2	26.34	60	-33.66	-	-
8	7.36238	11.36	Ca	0	.1	10.2	21.66	-	-	50	-28.34
9	26.25	23.68	Qp	.1	.3	10.5	34.58	60	-25.42	-	-
10	26.25	23.47	Ca	.1	.3	10.5	34.37	-	-	50	-15.63
11	28.74975	22.6	Qp	.1	.3	10.4	33.4	60	-26.6	-	-
12	28.74975	22.09	Ca	.1	.3	10.4	32.89	-	-	50	-17.11

Qp - Quasi-Peak detector

Ca - CISPR average detection

LINE 2 RESULTS



WORST EMISSIONS

Range 2: Line-L2 .15 - 30MHz											
Mark er	Frequency (MHz)	Meter Readin g (dBuV)	Det	LISN L2	LC Cables 2&3	Limiter (dB)	Correct ed Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
13	.16125	29.28	Qp	0	0	10.1	39.38	65.4	-26.02	-	-
14	.16125	20.47	Ca	0	0	10.1	30.57	-	-	55.4	-24.83
15	.20175	27.62	Qp	0	0	10.1	37.72	63.54	-25.82	-	-
16	.20175	17.97	Ca	0	0	10.1	28.07	-	-	53.54	-25.47
17	.708	17.46	Qp	0	0	10.1	27.56	56	-28.44	-	-
18	.708	12.55	Ca	0	0	10.1	22.65	-	-	46	-23.35
19	7.32975	17.19	Qp	0	.1	10.2	27.49	60	-32.51	-	-
20	7.341	12.55	Ca	0	.1	10.2	22.85	-	-	50	-27.15
21	26.25	24.86	Qp	.1	.3	10.5	35.76	60	-24.24	-	-
22	26.25	24.56	Ca	.1	.3	10.5	35.46	-	-	50	-14.54
23	28.74975	24.43	Qp	.1	.3	10.4	35.23	60	-24.77	-	-
24	28.74975	23.52	Ca	.1	.3	10.4	34.32	-	-	50	-15.68

Qp - Quasi-Peak detector

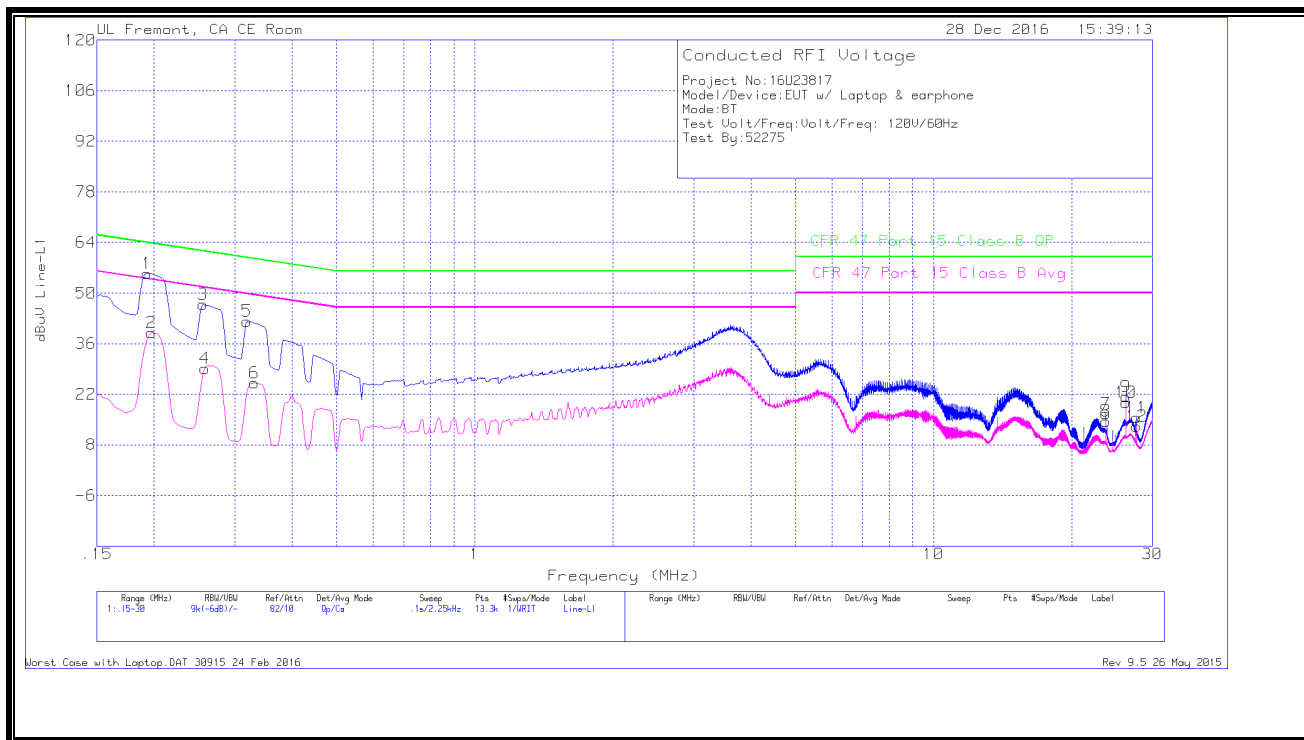
Ca - CISPR average detection

FCC15 CE Class B 150kHz-30MHz Stepping.TST

Rev 9.5 07 Dec 2016

10.2. EUT POWERED BY HOST PC VIA USB CABLE

LINE 1 RESULTS



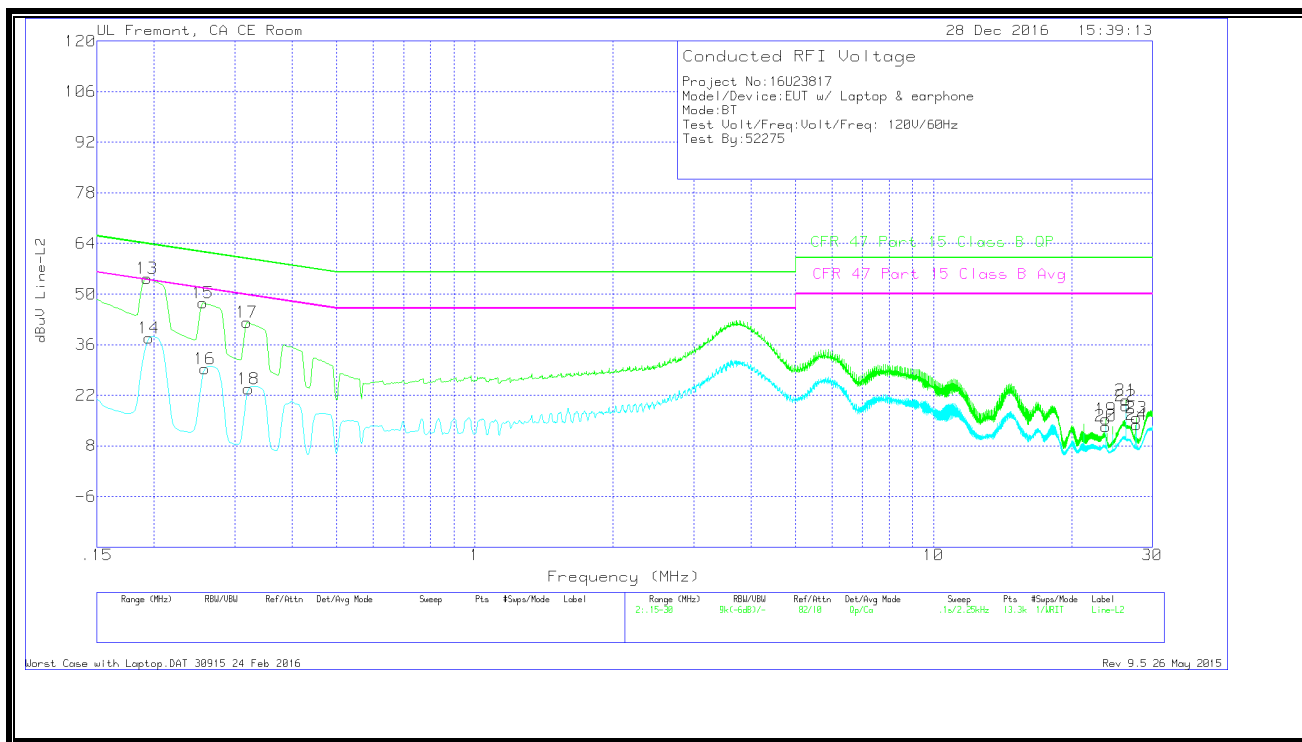
WORST EMISSIONS

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L1	LC Cables 1&3	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	.19275	45.33	Qp	0	0	10.1	55.43	63.92	-8.49	-	-
2	.19725	28.87	Ca	0	0	10.1	38.97	-	-	53.73	-14.76
3	.25575	36.74	Qp	0	0	10.1	46.84	61.57	-14.73	-	-
4	.258	19.11	Ca	0	0	10.1	29.21	-	-	51.5	-22.29
5	.31875	32.16	Qp	0	0	10.1	42.26	59.74	-17.48	-	-
6	.33112	14.97	Ca	0	0	10.1	25.07	-	-	49.42	-24.35
7	23.75025	5.99	Qp	.1	.2	10.4	16.69	60	-43.31	-	-
8	23.75025	3.92	Ca	.1	.2	10.4	14.62	-	-	50	-35.38
9	26.25	10.44	Qp	.1	.3	10.5	21.34	60	-38.66	-	-
10	26.25	8.92	Ca	.1	.3	10.5	19.82	-	-	50	-30.18
11	27.69225	4.68	Qp	.1	.3	10.5	15.58	60	-44.42	-	-
12	27.69225	2.18	Ca	.1	.3	10.5	13.08	-	-	50	-36.92

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 2&3	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	.19275	44.29	Qp	0	0	10.1	54.39	63.92	-9.53	-	-
14	.195	27.66	Ca	0	0	10.1	37.76	-	-	53.82	-16.06
15	.25575	37.43	Qp	0	0	10.1	47.53	61.57	-14.04	-	-
16	.258	19.28	Ca	0	0	10.1	29.38	-	-	51.5	-22.12
17	.31875	32.03	Qp	0	0	10.1	42.13	59.74	-17.61	-	-
18	.321	13.7	Ca	0	0	10.1	23.8	-	-	49.68	-25.88
19	23.75025	4.73	Qp	.1	.2	10.4	15.43	60	-44.57	-	-
20	23.75025	2.71	Ca	.1	.2	10.4	13.41	-	-	50	-36.59
21	26.25	9.79	Qp	.1	.3	10.5	20.69	60	-39.31	-	-
22	26.25	8.11	Ca	.1	.3	10.5	19.01	-	-	50	-30.99
23	27.69225	4.84	Qp	.1	.3	10.5	15.74	60	-44.26	-	-
24	27.69225	2.94	Ca	.1	.3	10.5	13.84	-	-	50	-36.16

Qp - Quasi-Peak detector

Ca - CISPR average detection

FCC15 CE Class B 150kHz-30MHz Stepping.TST

Rev 9.5 07 Dec 2016