8.7.3. NUMBER OF HOPPING CHANNELS

LIMITS

FCC §15.247 (a) (1) (iii)

IC RSS-247 (5.1) (d)

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

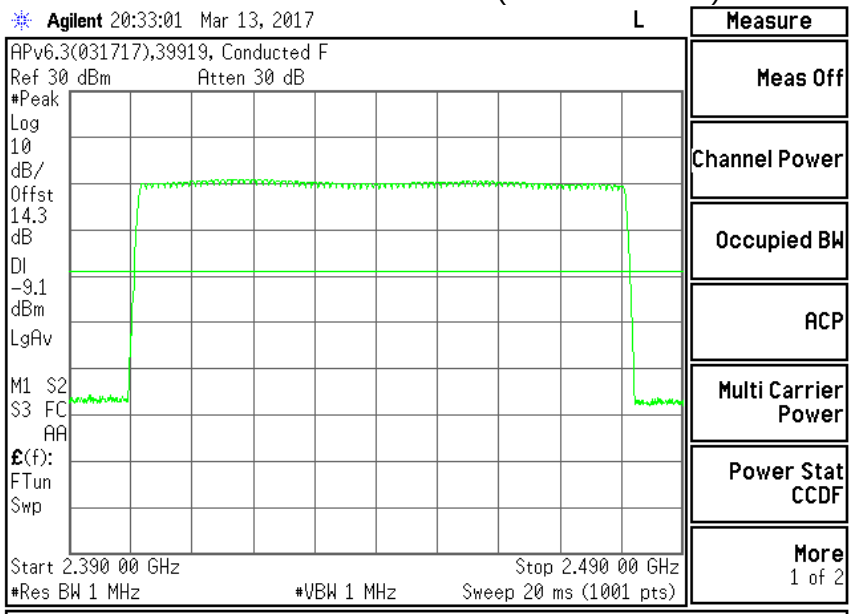
TEST PROCEDURE

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 (100 MHz SPAN)



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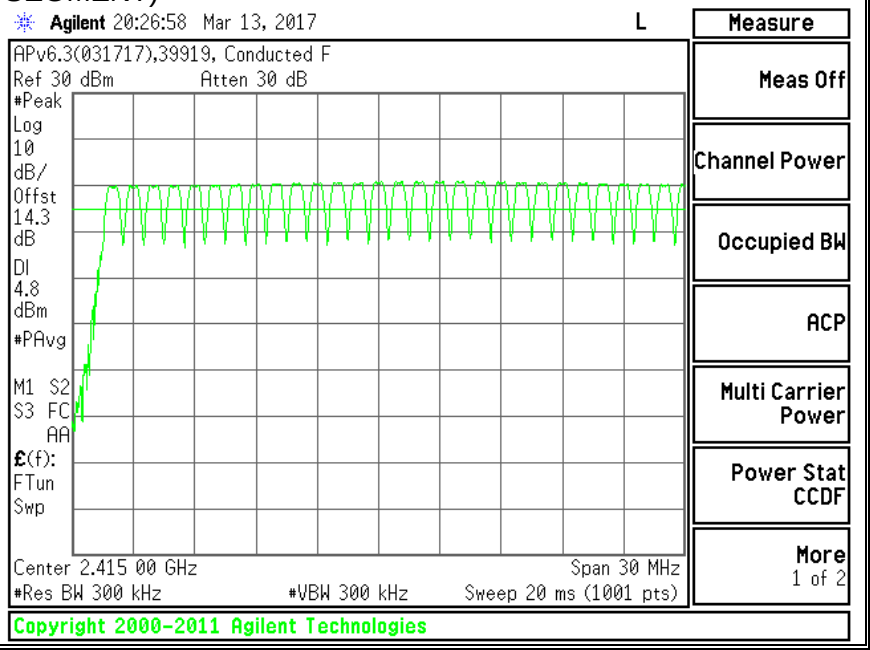
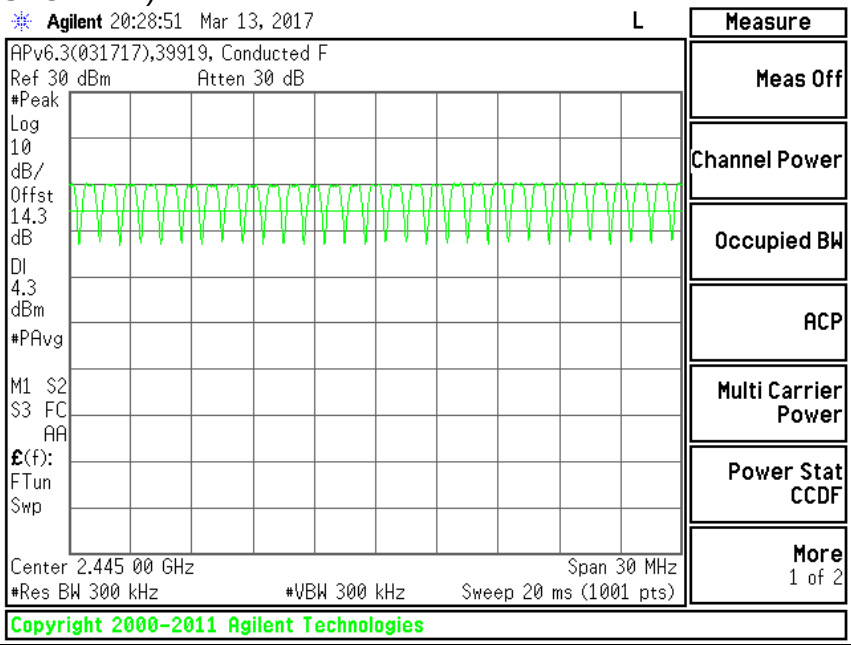
NUMBER OF HOPPING CHANNELS (30 MHz SPAN, FIRST SEGMENT)



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



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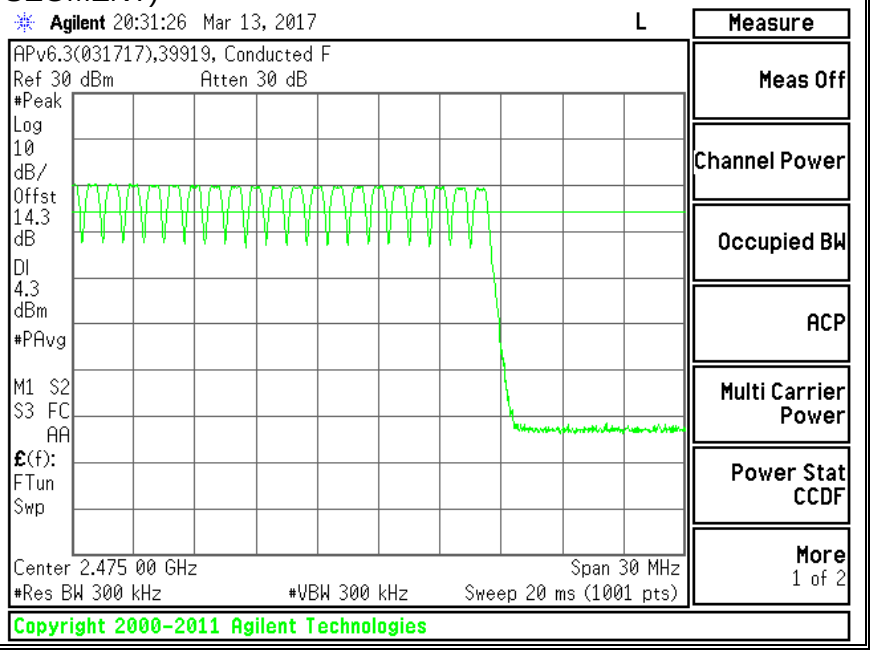
NUMBER OF HOPPING CHANNELS (30 MHz SPAN, THIRD SEGMENT)



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8.7.4. AVERAGE TIME OF OCCUPANCY

LIMITS

FCC §15.247 (a) (1) (iii)

IC RSS-247 (5.1) (d)

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 * (# of pulses in 3.16 s) * 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 * (# of pulses in 0.8 s) * pulse width.

RESULTS

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK Normal Mode					
DH1	0.3828	32	0.122	0.4	-0.278
DH3	1.639	19	0.311	0.4	-0.089
DH5	2.887	10	0.289	0.4	-0.111
DH Packet	Pulse Width (msec)	Number of Pulses in 0.8 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK AFH Mode					
DH1	0.3828	8	0.031	0.4	-0.369
DH3	1.639	4.75	0.078	0.4	-0.322
DH5	2.887	2.5	0.072	0.4	-0.328

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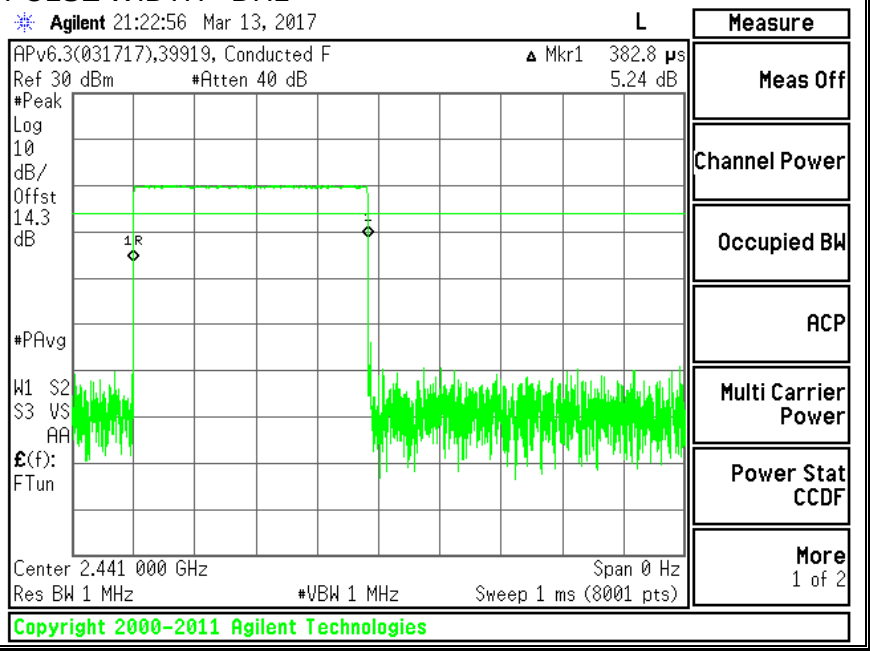
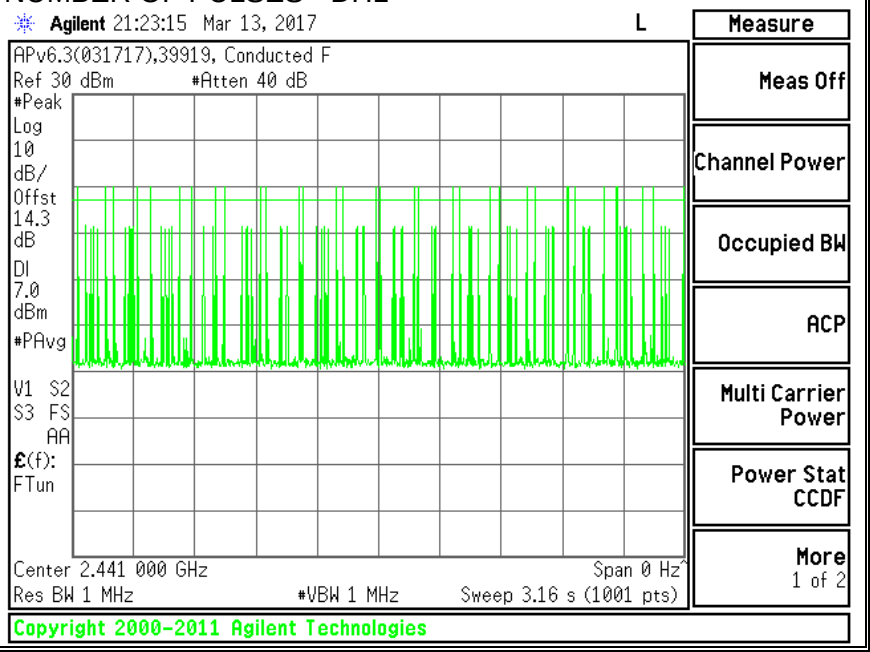
PULSE WIDTH - DH1



NUMBER OF PULSES - DH1



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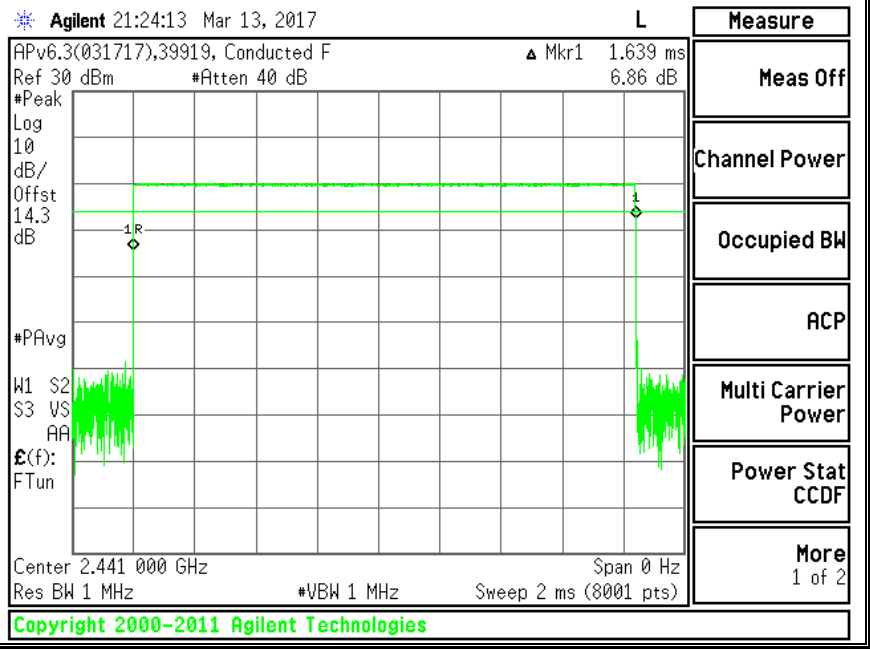
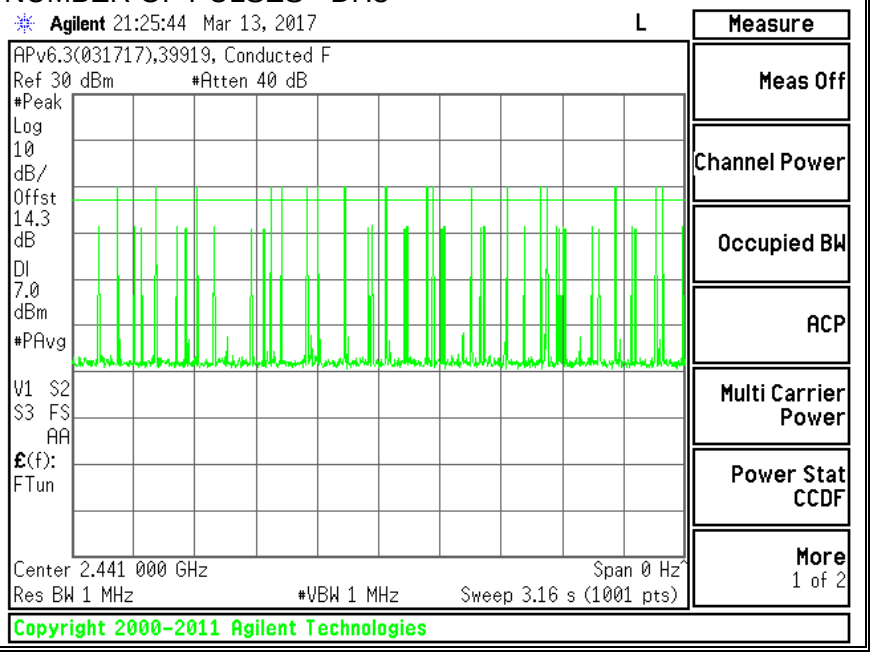
PULSE WIDTH - DH3



NUMBER OF PULSES - DH3



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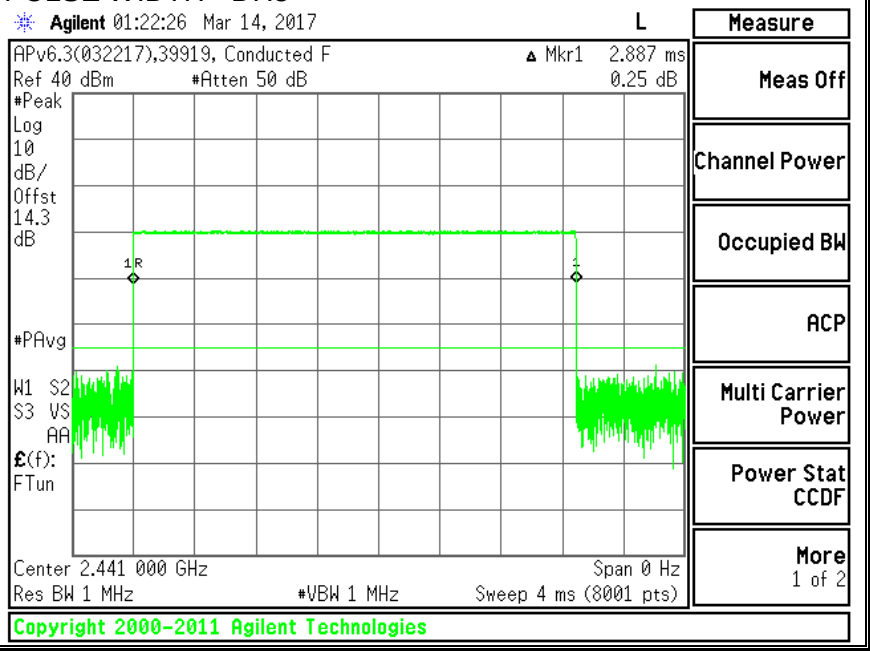
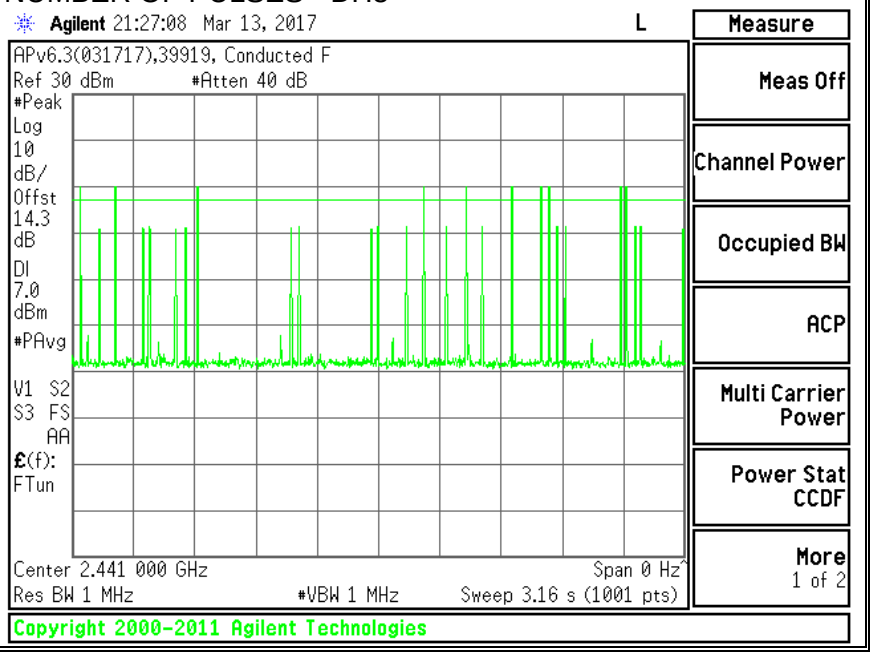
PULSE WIDTH - DH5



NUMBER OF PULSES - DH5



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8.7.5. OUTPUT POWER

ID:	30554	Date:	6/11/17

LIMITS

§15.247 (b) (1)

RSS-247 (5.4) (b)

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	20.03	30	-9.97
Middle	2441	20.18	30	-9.82
High	2480	19.97	30	-10.03

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8.7.6. AVERAGE POWER

ID:	30554	Date:	6/11/17

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	19.70
Middle	2441	19.86
High	2480	19.65

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8.7.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-247 (5.5)

Limit = -20 dBc

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

The bandedges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

RESULTS

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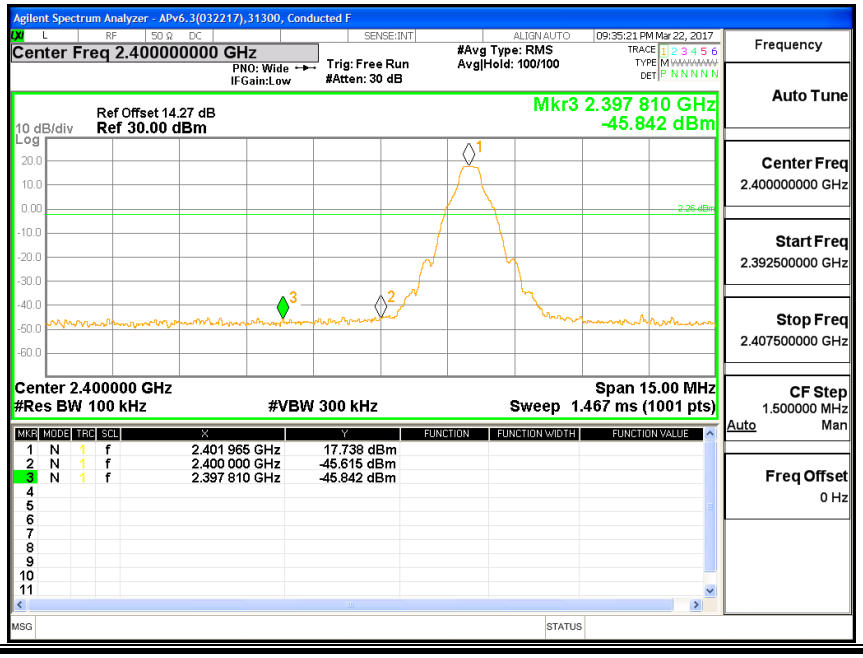
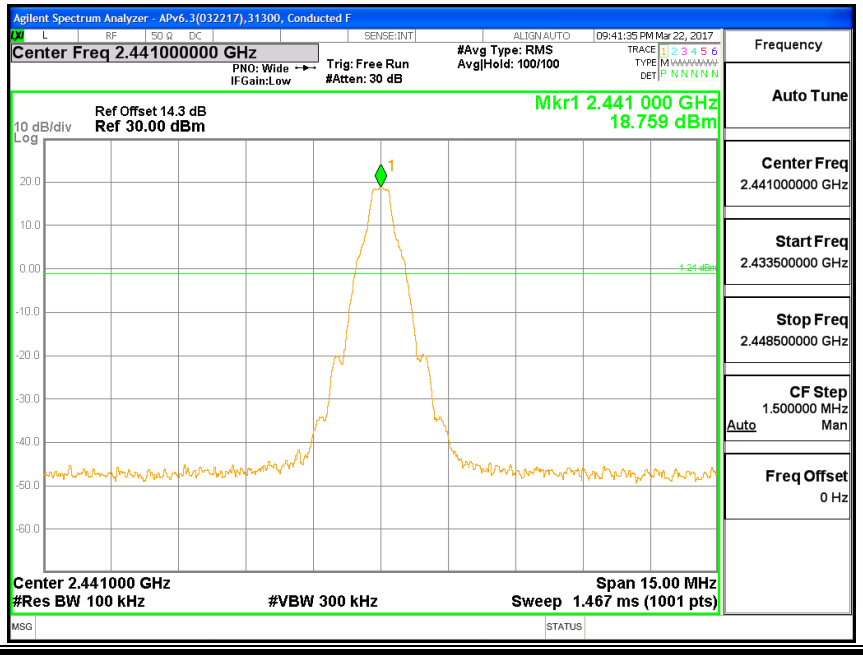
CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

CONDUCTED BANDEDGE LOW CH



CONDUCTED BANDEDGE MID CH



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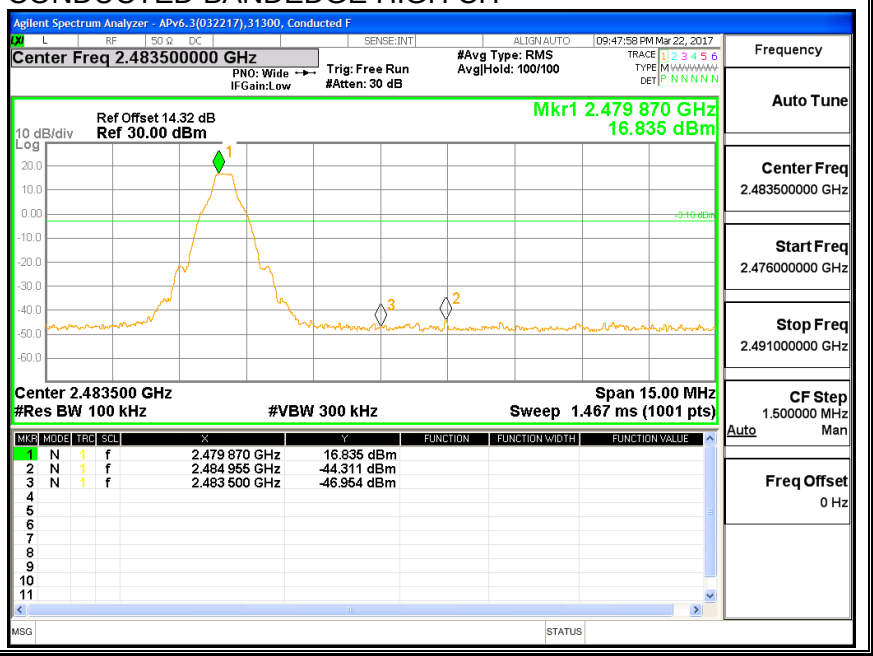
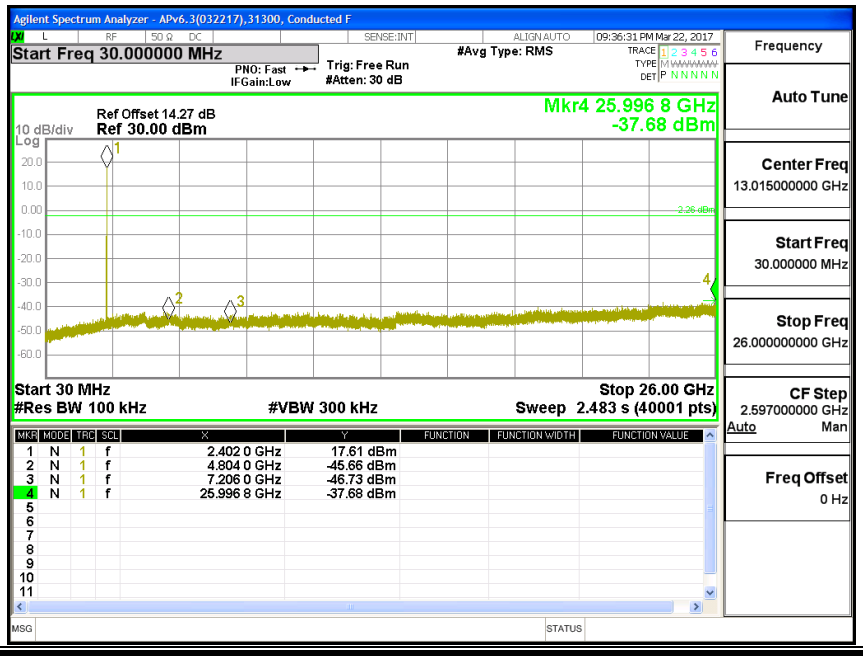
CONDUCTED BANDEDGE HIGH CH



CONDUCTED SPURIOUS EMISSIONS LOW CH



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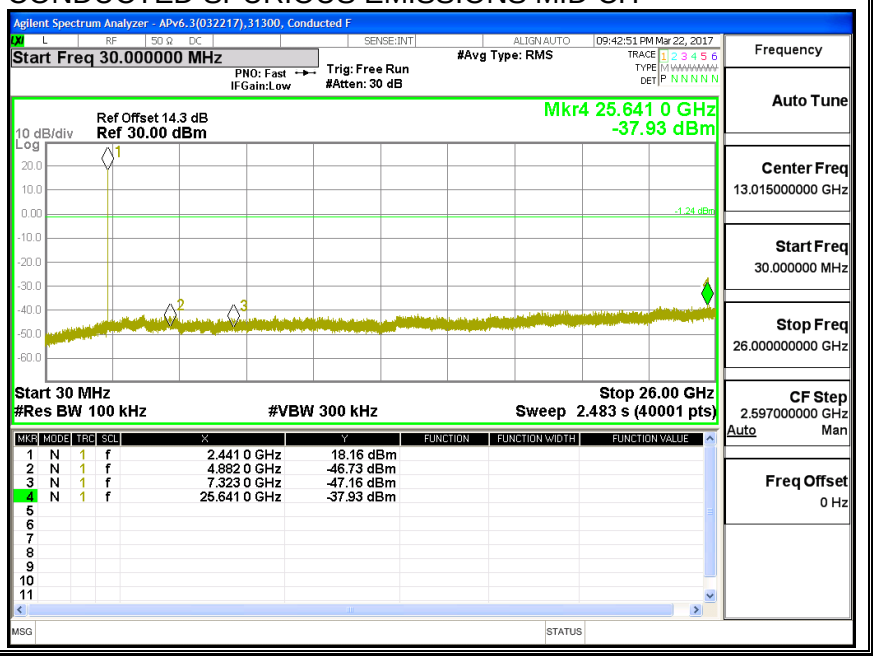
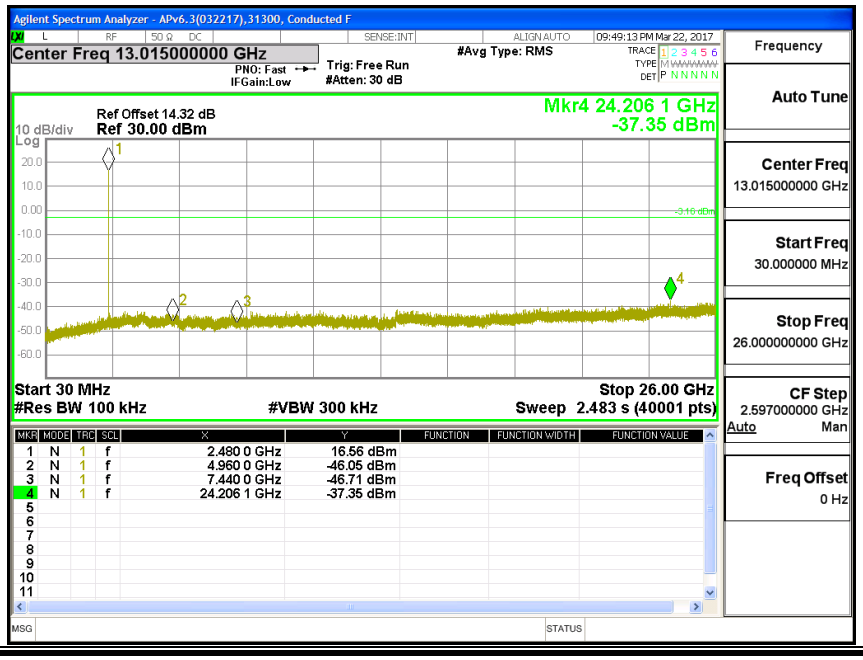
CONDUCTED SPURIOUS EMISSIONS MID CH



CONDUCTED SPURIOUS EMISSIONS HIGH CH



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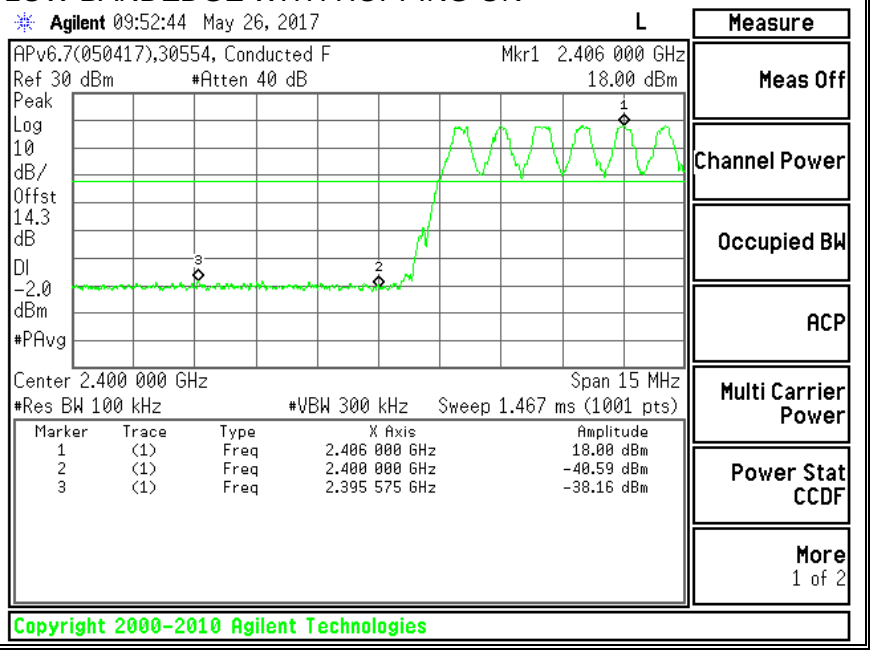
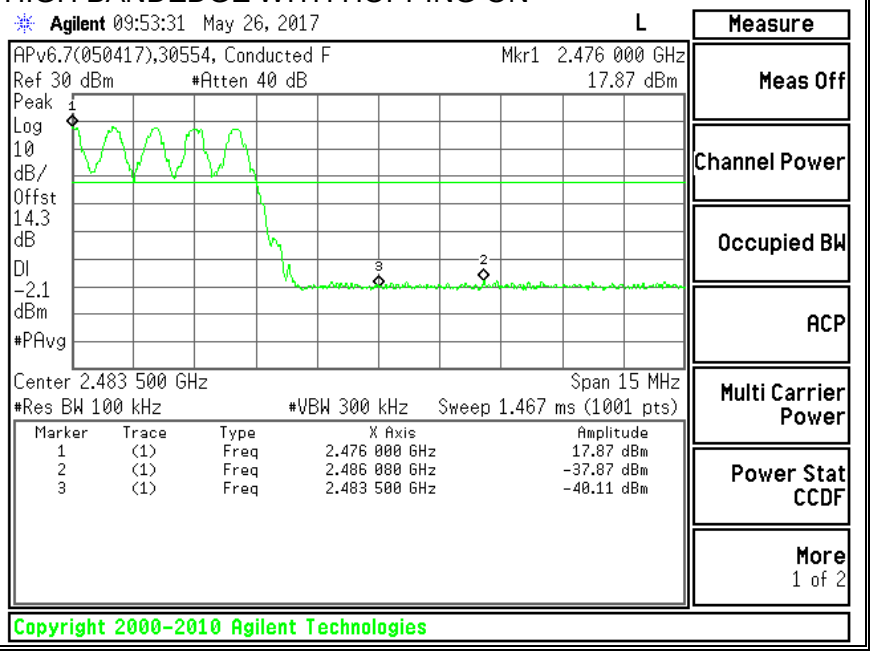
LOW BANDEDGE WITH HOPPING ON



HIGH BANDEDGE WITH HOPPING ON



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8.8. LAT 3, PMAX ENHANCED DATA RATE QPSK MODULATION

8.8.1. OUTPUT POWER

ID:	39472	Date:	6/14/17

LIMITS

§15.247 (b) (1)

RSS-247 (5.4) (b)

The maximum antenna gain is less than 6 dBi, therefore the limit is 30 dBm.
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 wideband peak and average power meter.

RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	19.86	21	-1.14
Middle	2441	19.96	21	-1.04
High	2480	19.88	21	-1.12

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8.8.2. AVERAGE POWER

ID:	39472	Date:	6/14/17

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	17.44
Middle	2441	17.49
High	2480	17.46

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8.9. LAT 3, PMAX ENHANCED DATA RATE 8PSK MODULATION

8.9.1. 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 ≥ 1% of the 20 dB bandwidth. The VBW is set to ≥ RBW. The sweep time is coupled.

RESULTS

Channel	Frequency (MHz)	20 dB Bandwidth (KHz)	99% Bandwidth (KHz)
Low	2402	1343	1211.6
Middle	2441	1331	1210.9
High	2480	1362	1249.3

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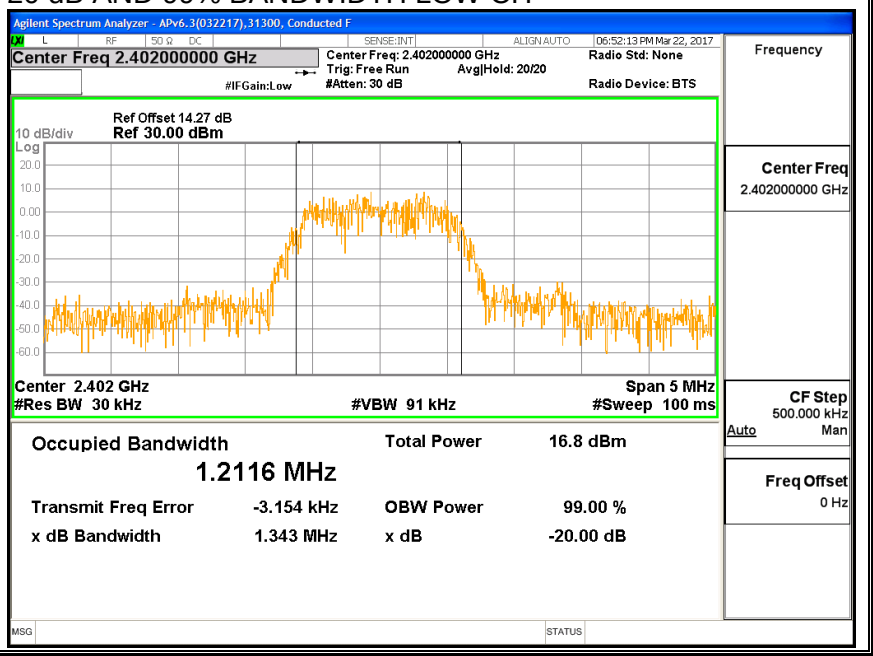
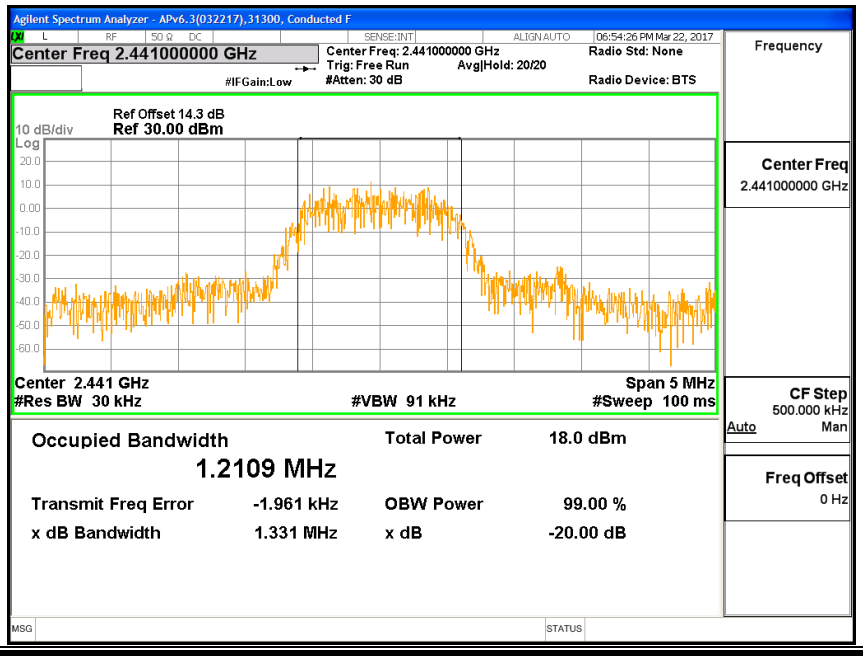
20 dB AND 99% BANDWIDTH LOW CH



20 dB AND 99% BANDWIDTH MID CH



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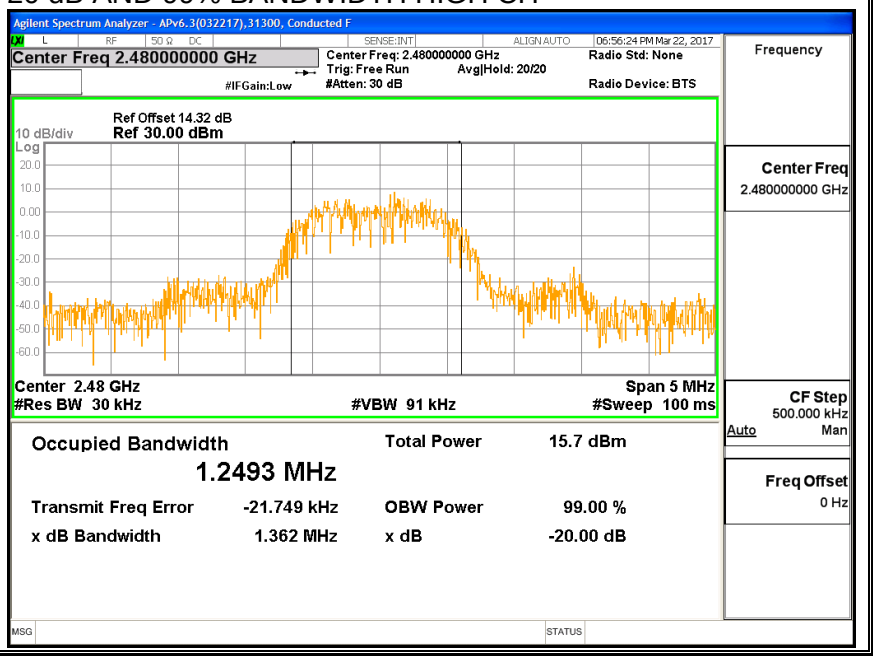
20 dB AND 99% BANDWIDTH HIGH CH



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8.9.2. HOPPING FREQUENCY SEPARATION

LIMITS

FCC §15.247 (a) (1)

IC RSS-247 (5.1) (b)

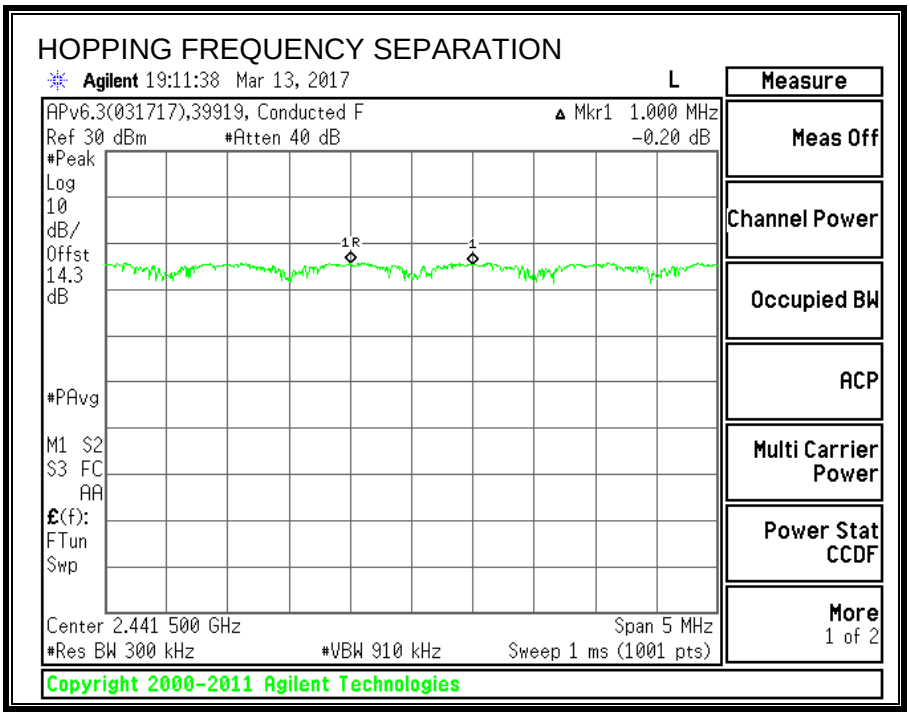
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hoping channel, whichever is greater.

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



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8.9.3. NUMBER OF HOPPING CHANNELS

LIMITS

FCC §15.247 (a) (1) (iii)

IC RSS-247 (5.1) (d)

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

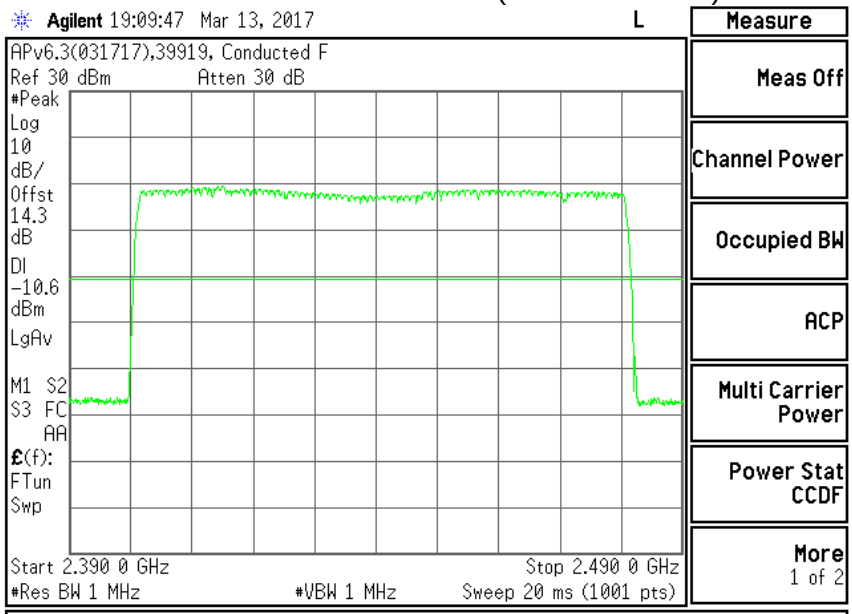
TEST PROCEDURE

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 (100 MHz SPAN)



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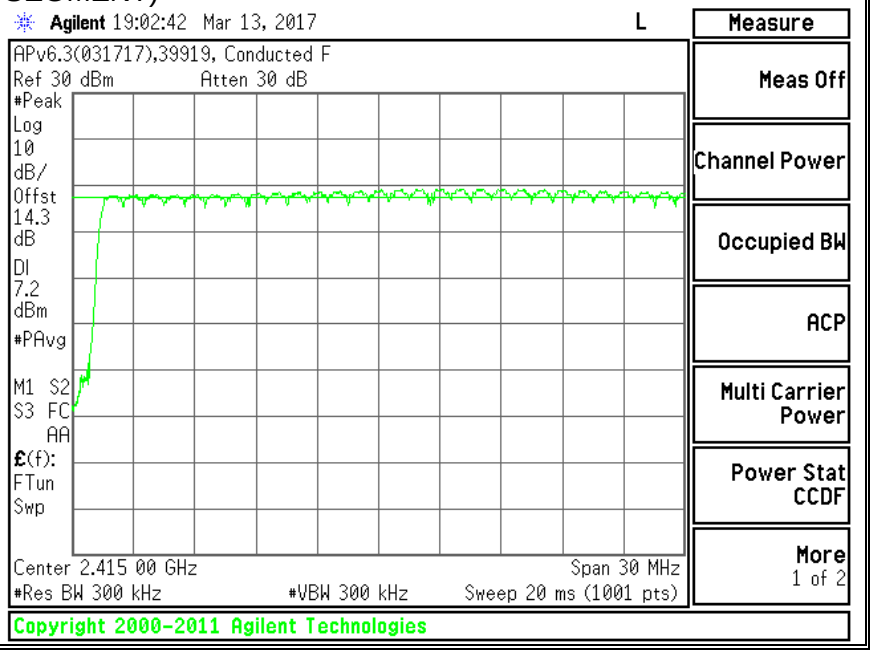
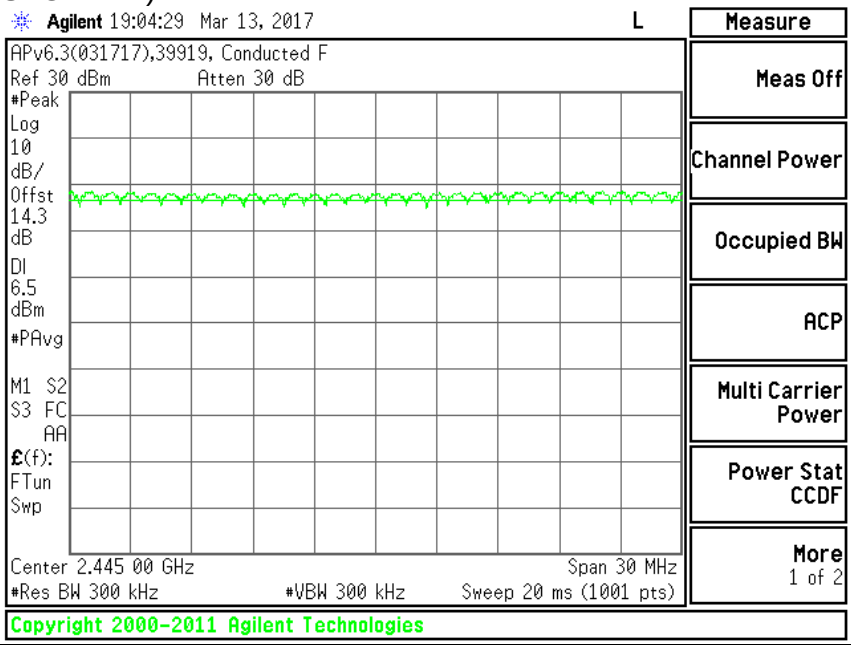
NUMBER OF HOPPING CHANNELS (30 MHz SPAN, FIRST SEGMENT)



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



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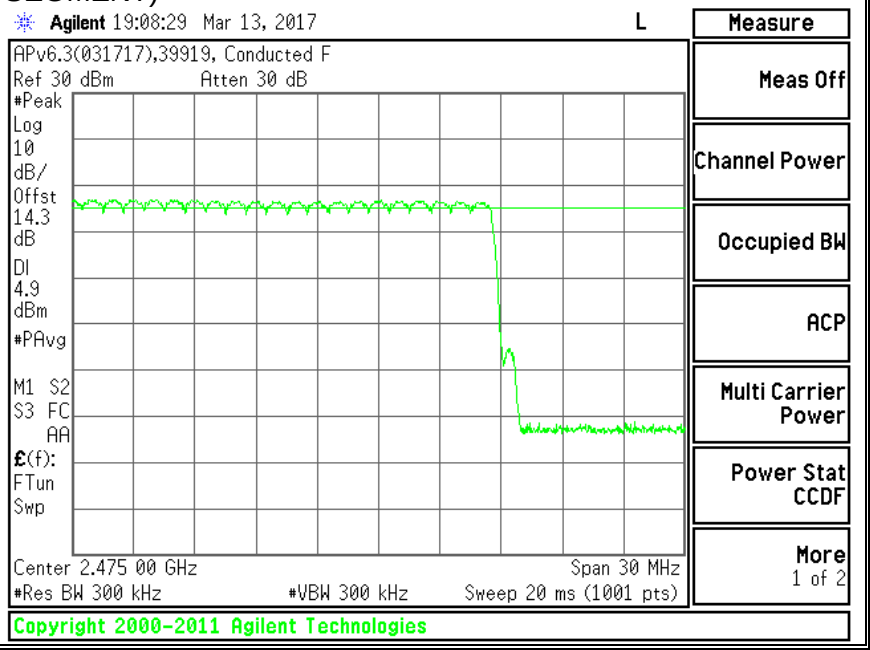
NUMBER OF HOPPING CHANNELS (30 MHz SPAN, THIRD SEGMENT)



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8.9.4. AVERAGE TIME OF OCCUPANCY

LIMITS

FCC §15.247 (a) (1) (iii)

IC RSS-247 (5.1) (d)

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 * (# of pulses in 3.16 s) * pulse width.

RESULTS

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
8PSK (EDR) Mode					
3DH1	0.3888	30	0.117	0.4	-0.283
3DH3	1.64	14	0.230	0.4	-0.170
3DH5	2.876	11	0.316	0.4	-0.084

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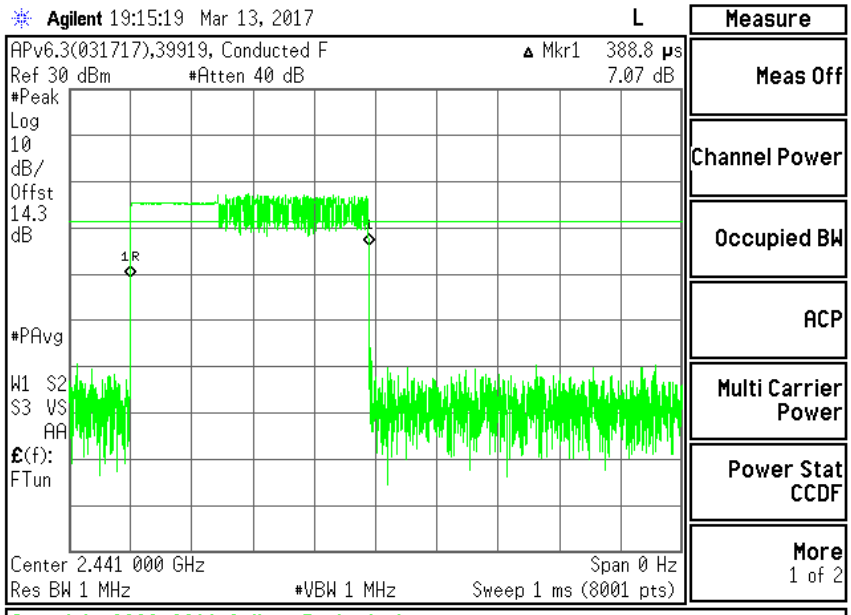
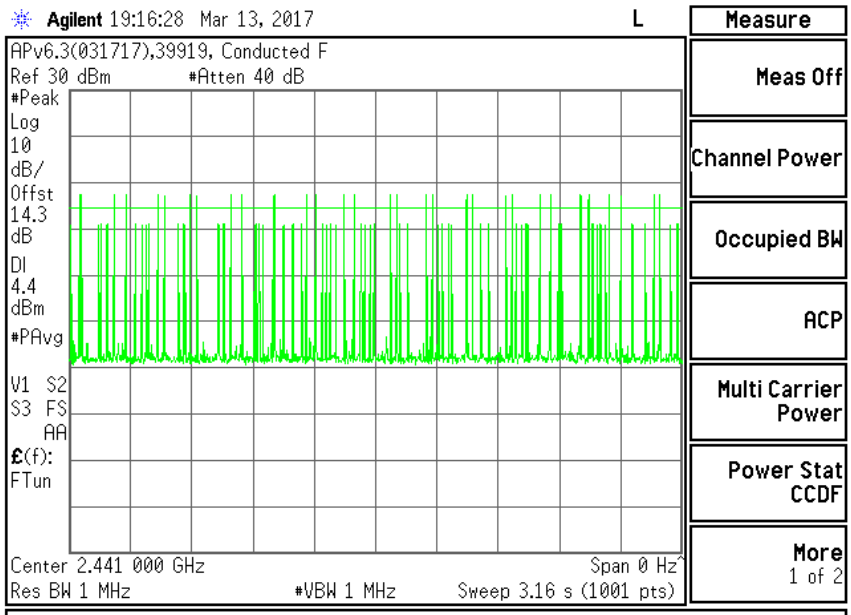
PULSE WIDTH - 3DH1



NUMBER OF PULSES - 3DH1



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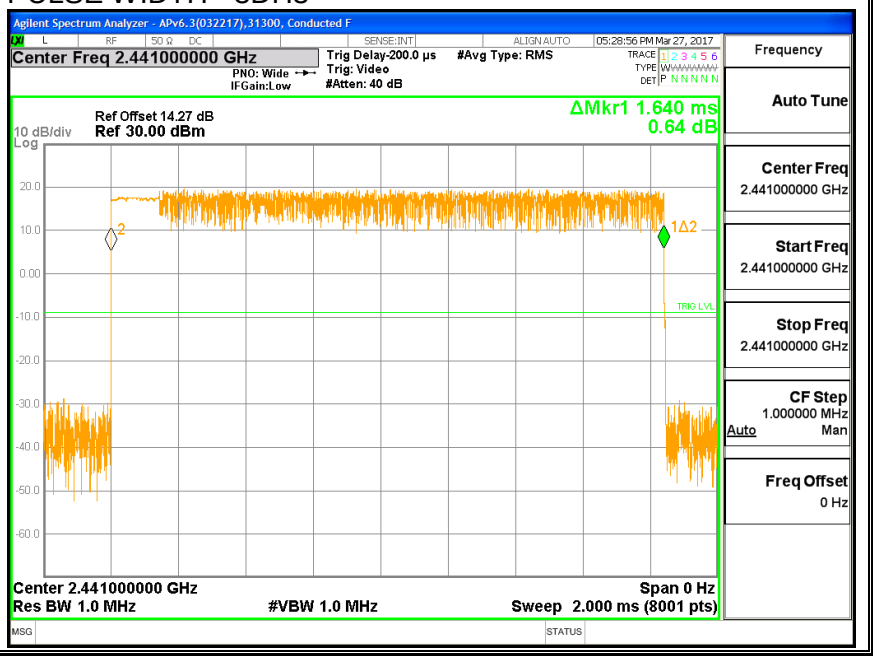
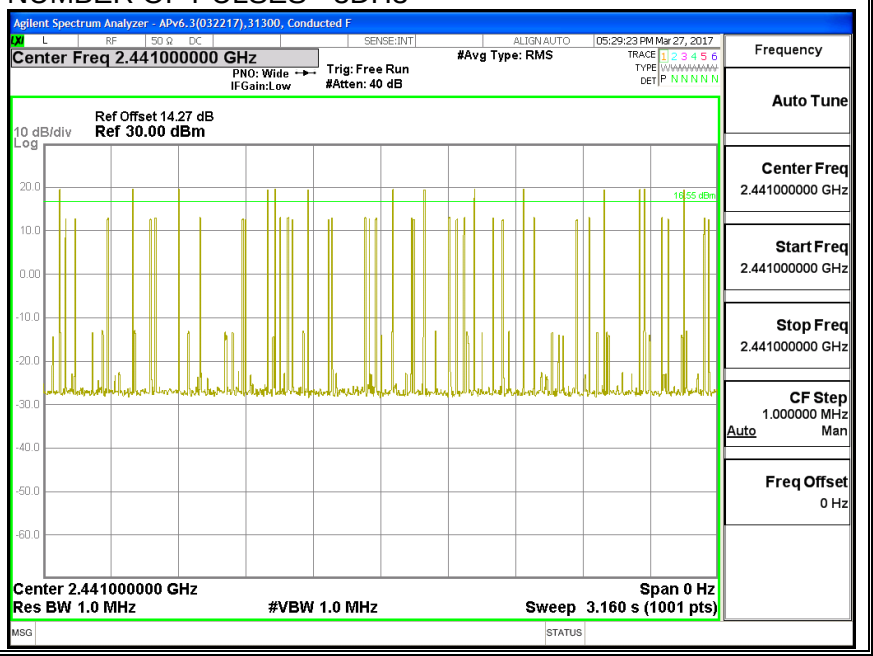
PULSE WIDTH - 3DH3



NUMBER OF PULSES - 3DH3



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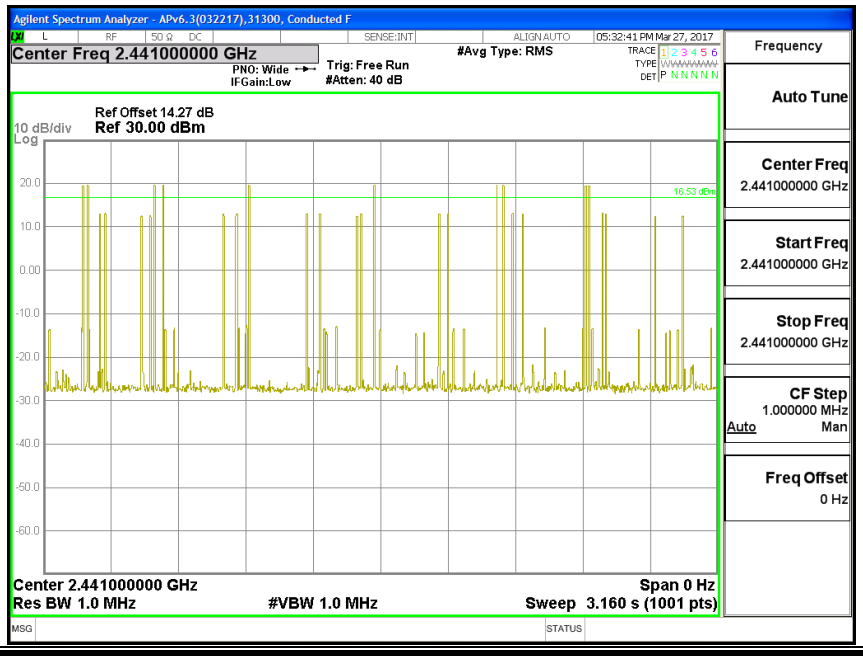
PULSE WIDTH - 3DH5

NUMBER OF PULSES - 3DH5



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8.9.5. OUTPUT POWER

ID:	30554	Date:	6/11/17

LIMITS

§15.247 (b) (1)

RSS-247 (5.4) (b)

The maximum antenna gain is less than 6 dBi, therefore the limit is 30 dBm.
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 wideband peak and average power meter.

RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	20.03	21	-0.94
Middle	2441	20.21	21	-0.76
High	2480	20.16	21	-0.81

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8.9.6. AVERAGE POWER

ID:	30554	Date:	6/11/17

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	17.33
Middle	2441	17.45
High	2480	17.40

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8.9.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-247 (5.5)

Limit = -20 dBc

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

The bandedges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

RESULTS

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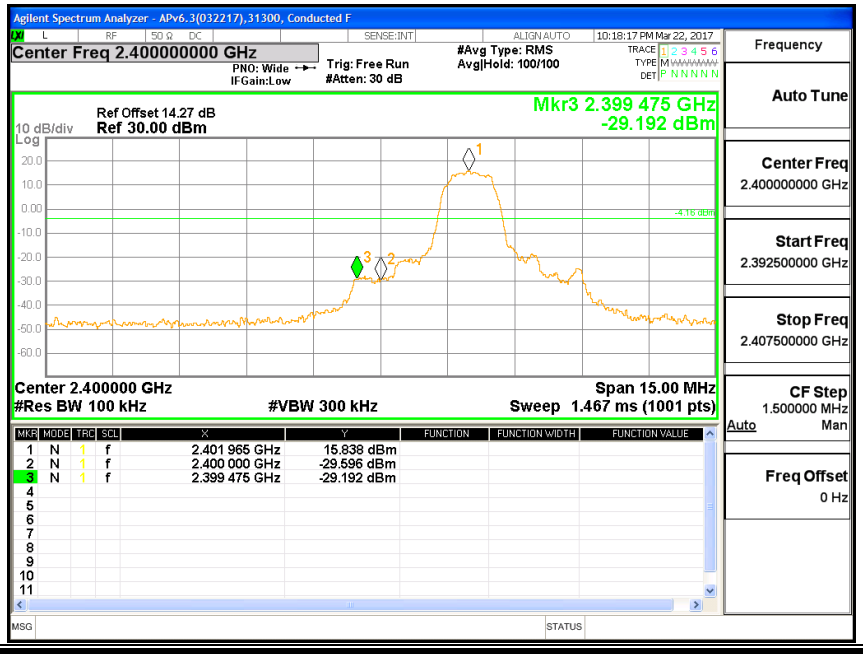
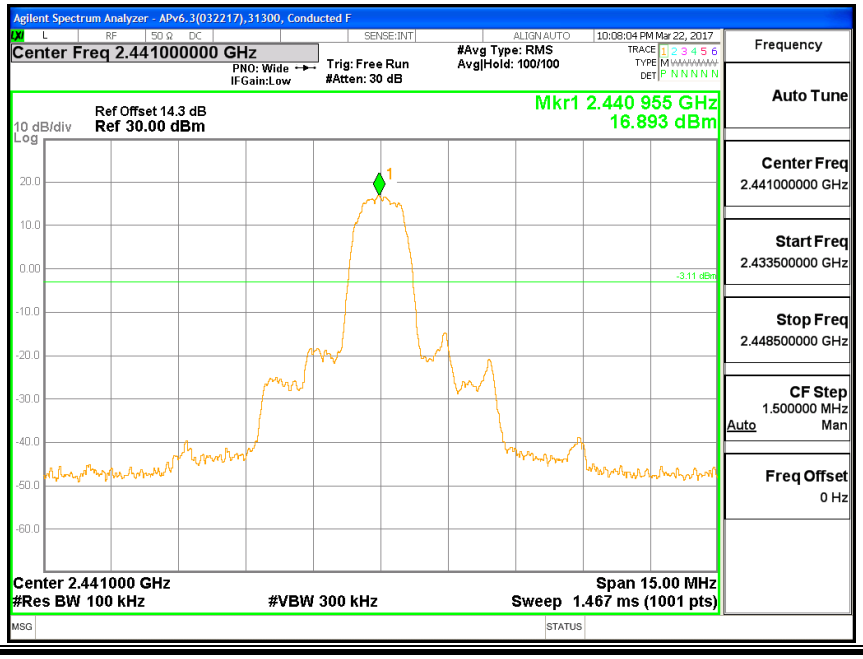
CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

CONDUCTED BANDEDGE LOW CH



CONDUCTED BANDEDGE MID CH



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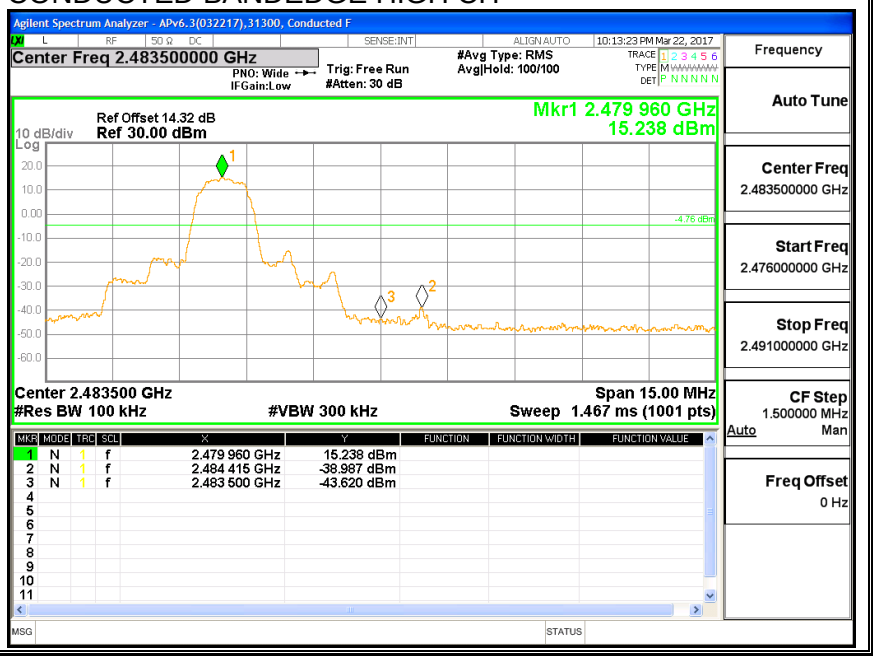
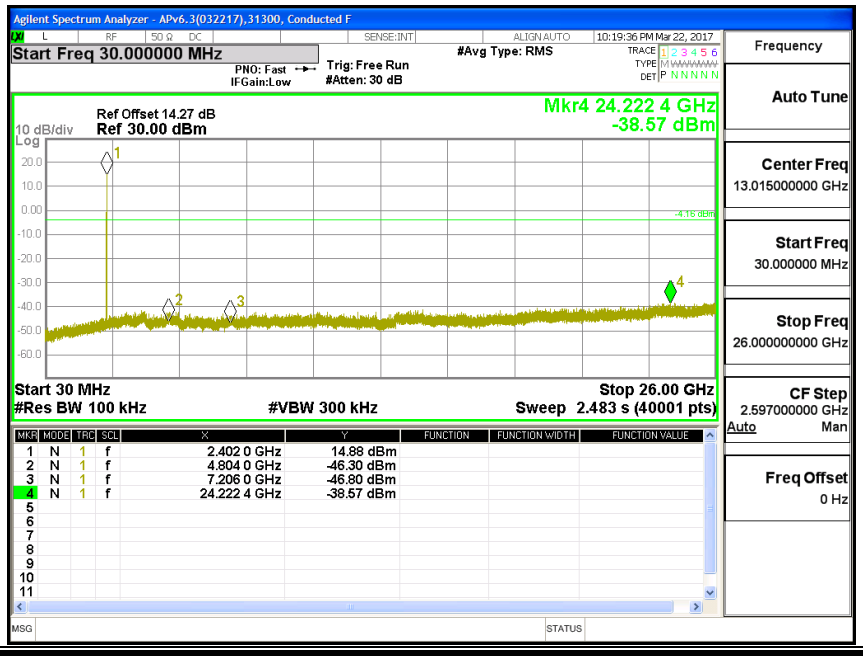
CONDUCTED BANDEDGE HIGH CH



CONDUCTED SPURIOUS EMISSIONS LOW CH



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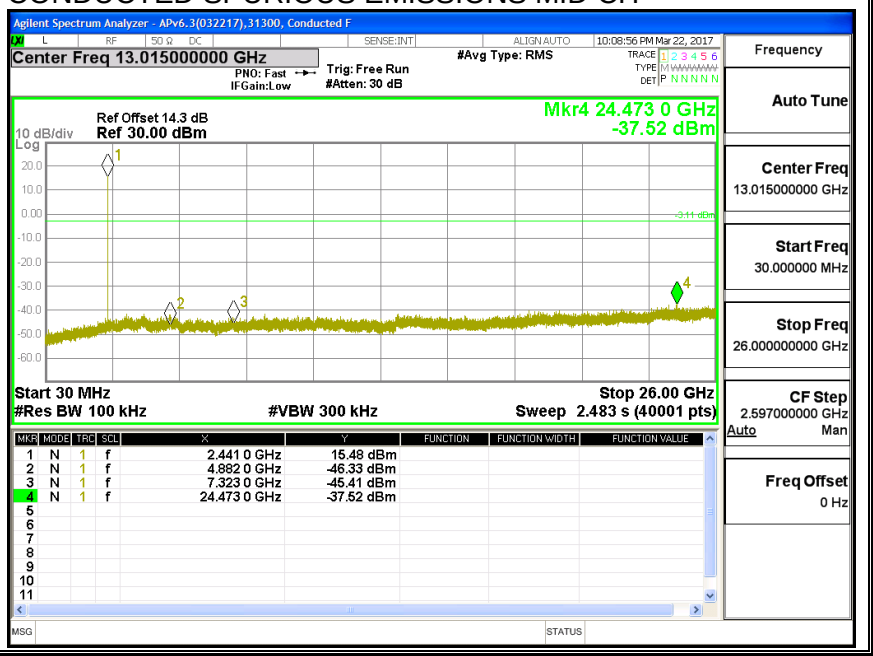
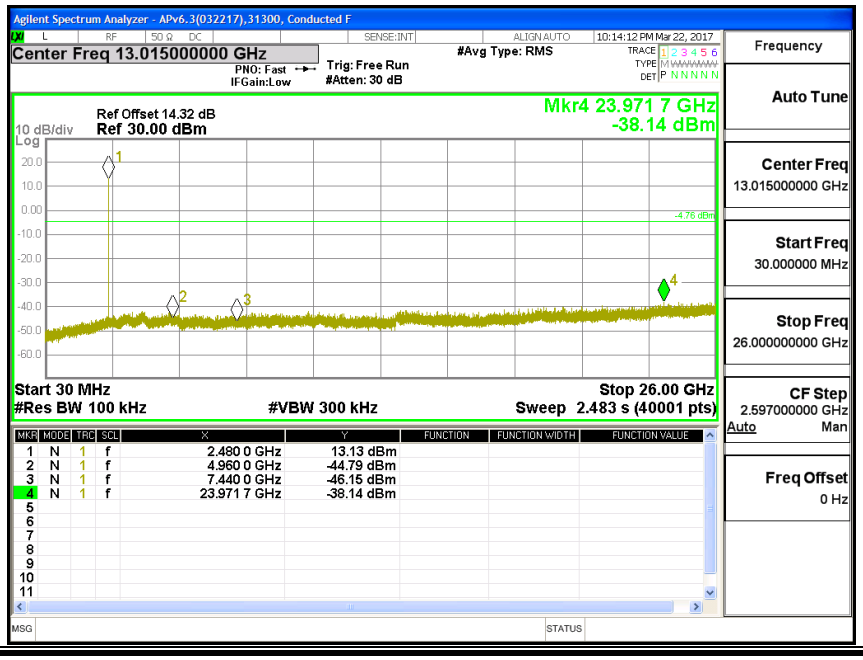
CONDUCTED SPURIOUS EMISSIONS MID CH



CONDUCTED SPURIOUS EMISSIONS HIGH CH



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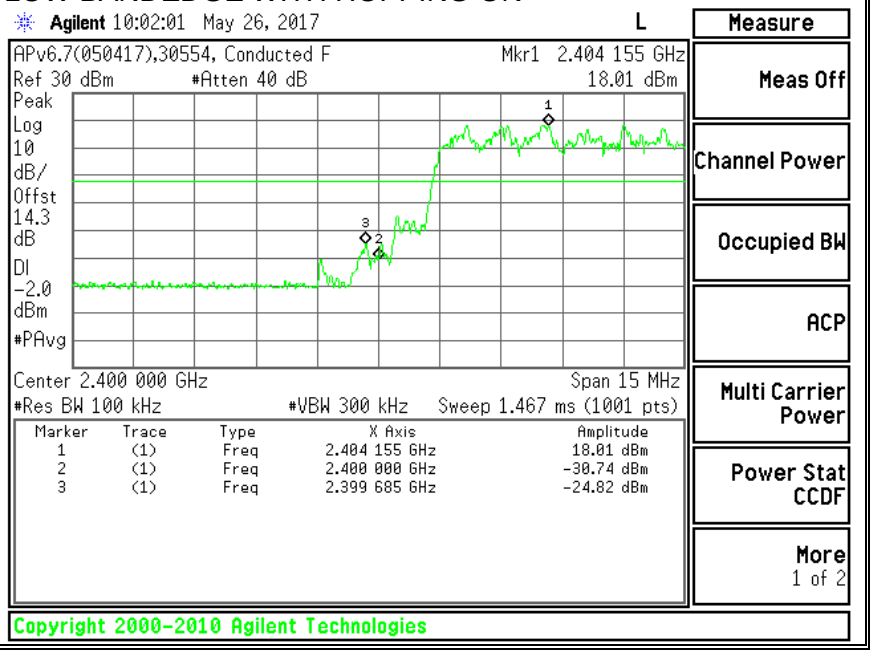
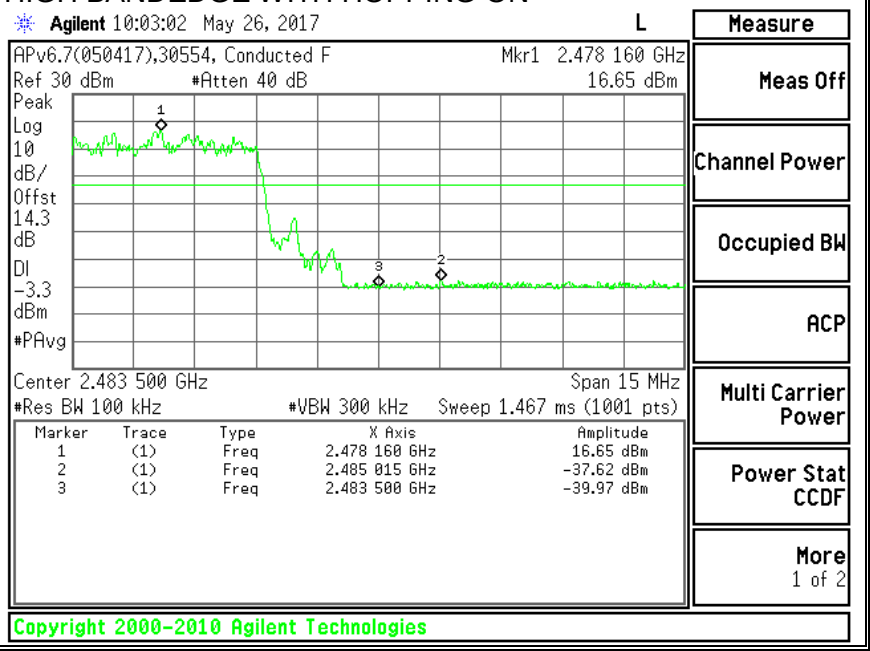
LOW BANDEDGE WITH HOPPING ON



HIGH BANDEDGE WITH HOPPING ON



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8.10. LAT 3, PLOW BASIC DATA RATE GFSK MODULATION

8.10.1. 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 ≥ 1% of the 20 dB bandwidth. The VBW is set to ≥ RBW. The sweep time is coupled.

RESULTS

Channel	Frequency (MHz)	20 dB Bandwidth (KHz)	99% Bandwidth (KHz)
Low	2402	942.6	930.34
Middle	2441	858.6	852.72
High	2480	922.1	912.81

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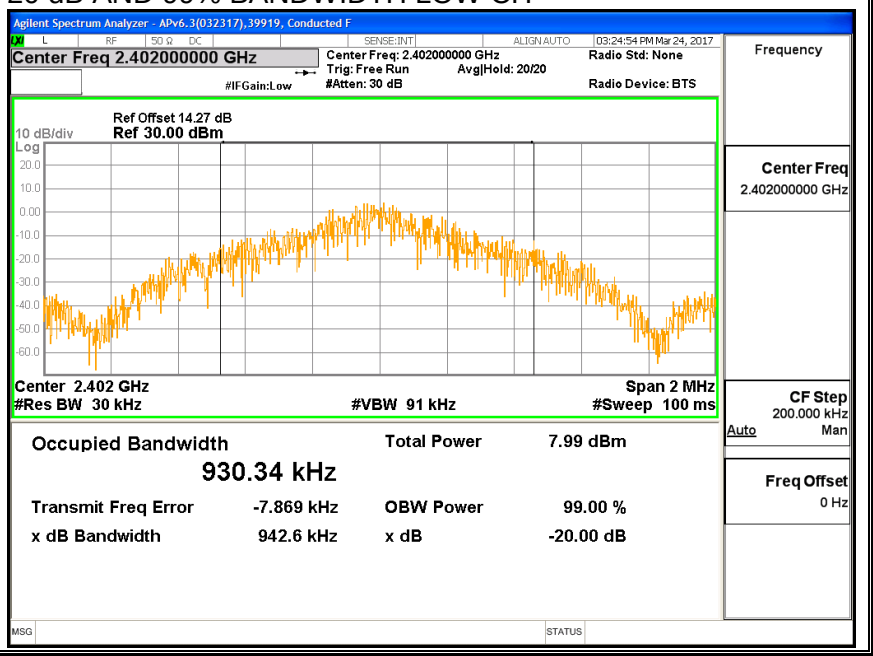
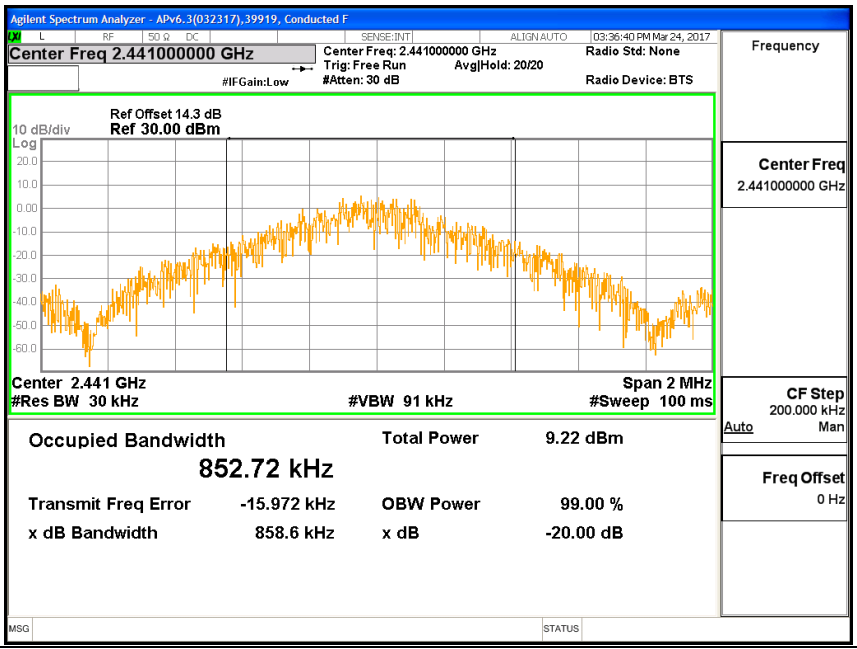
20 dB AND 99% BANDWIDTH LOW CH



20 dB AND 99% BANDWIDTH MID CH



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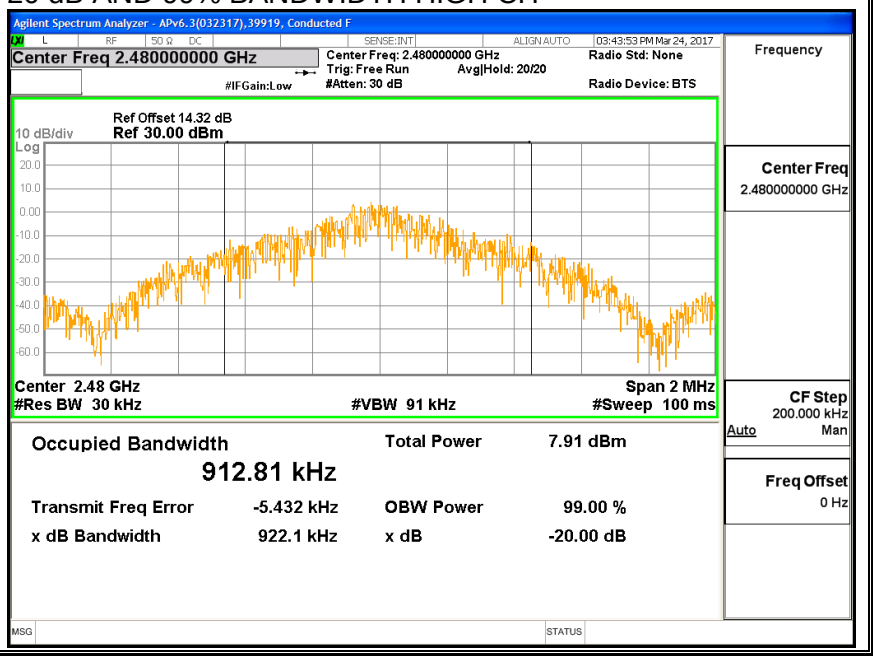
20 dB AND 99% BANDWIDTH HIGH CH



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8.10.2. HOPPING FREQUENCY SEPARATION

LIMITS

FCC §15.247 (a) (1)

IC RSS-247 (5.1) (b)

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

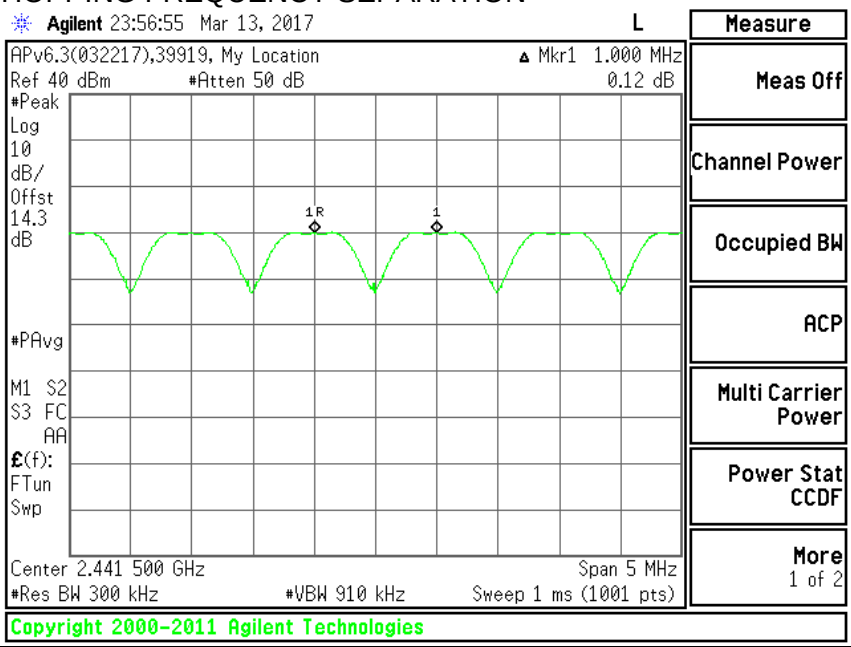
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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

HOPPING FREQUENCY SEPARATION



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8.10.3. NUMBER OF HOPPING CHANNELS

LIMITS

FCC §15.247 (a) (1) (iii)

IC RSS-247 (5.1) (d)

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

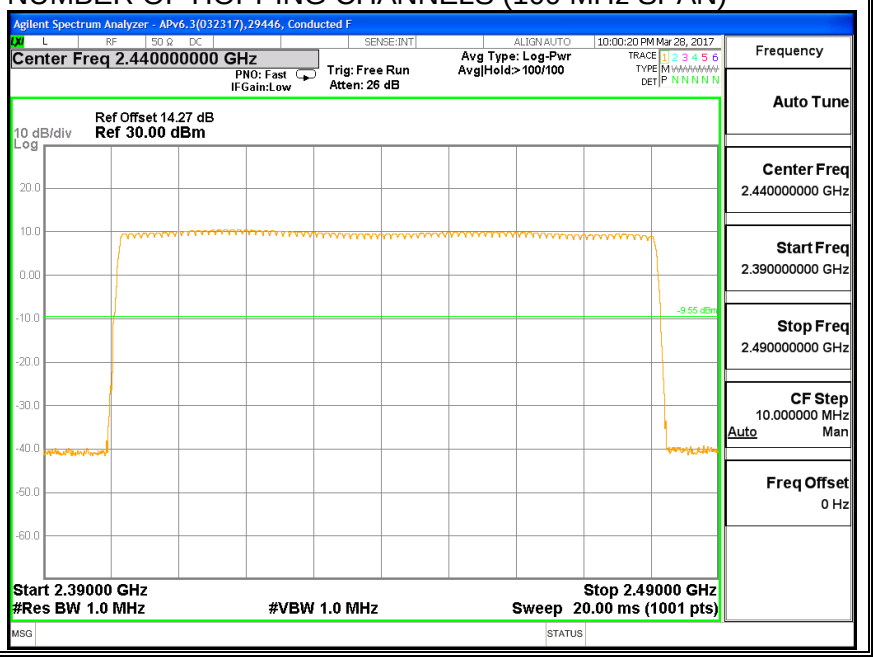
TEST PROCEDURE

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 (100 MHz SPAN)



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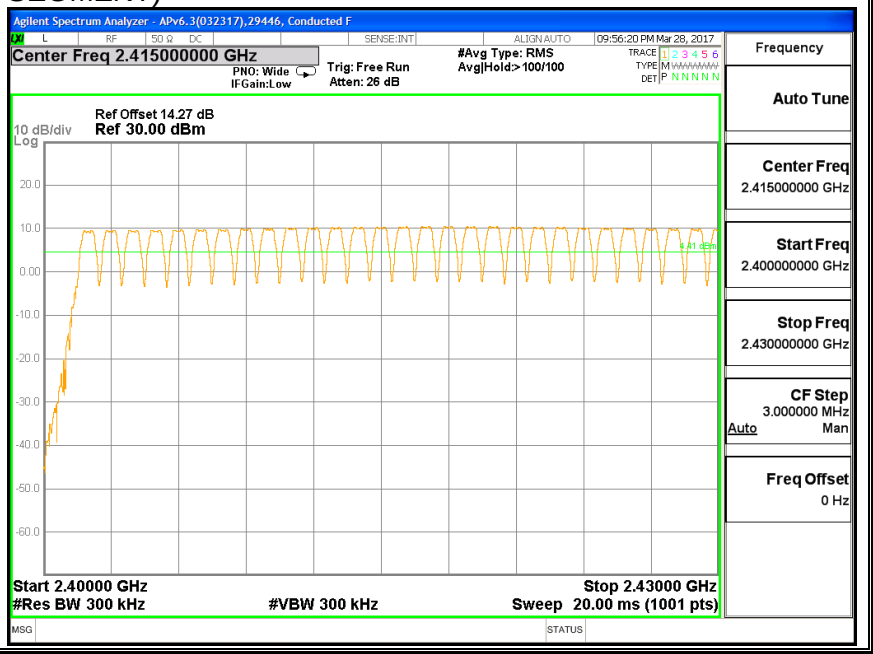
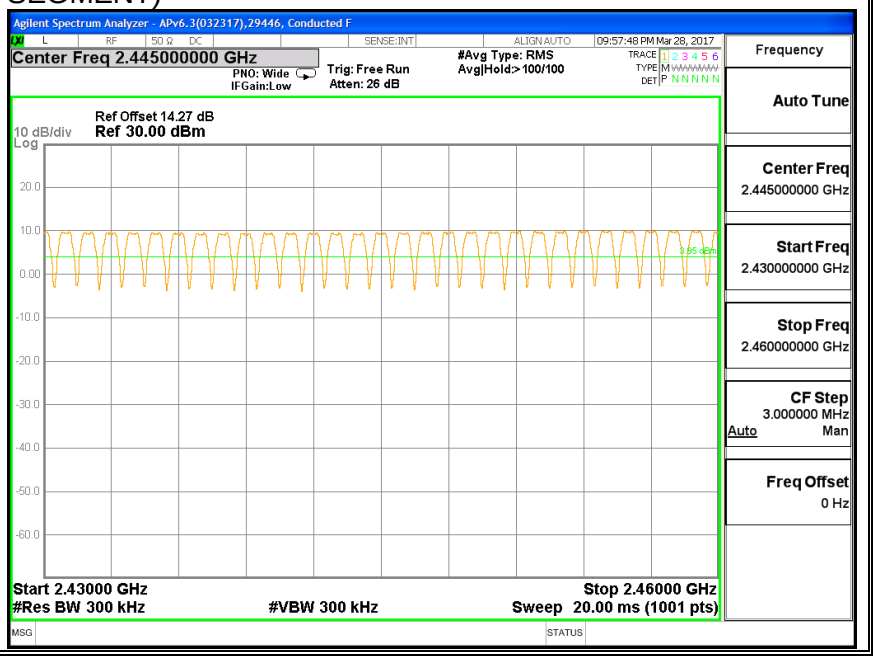
NUMBER OF HOPPING CHANNELS (30 MHz SPAN, FIRST SEGMENT)



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



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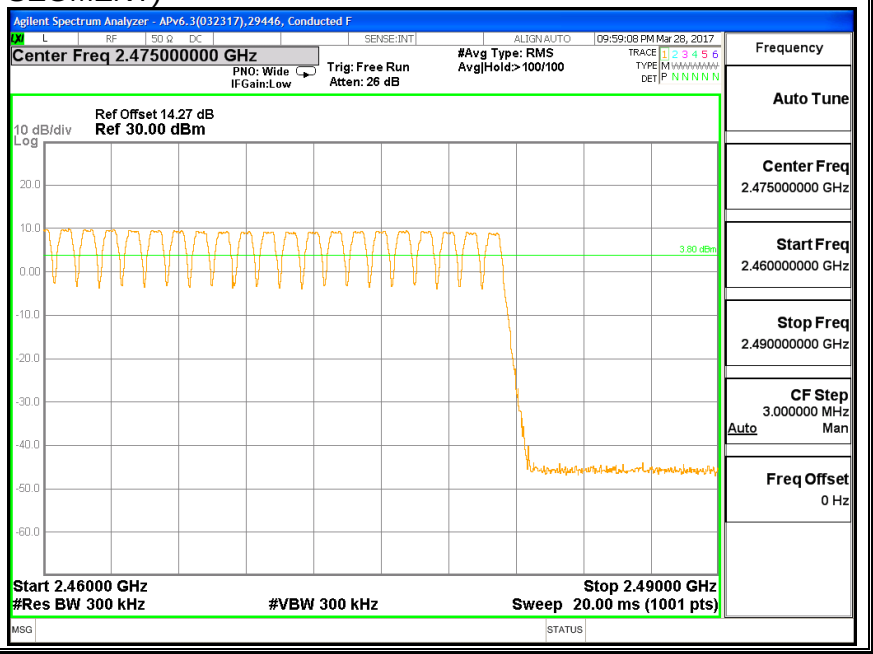
NUMBER OF HOPPING CHANNELS (30 MHz SPAN, THIRD SEGMENT)



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8.10.4. AVERAGE TIME OF OCCUPANCY

LIMITS

FCC §15.247 (a) (1) (iii)

IC RSS-247 (5.1) (d)

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 * (# of pulses in 3.16 s) * 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 * (# of pulses in 0.8 s) * pulse width.

RESULTS

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK Normal Mode					
DH1	0.3816	32	0.122	0.4	-0.278
DH3	1.644	16	0.263	0.4	-0.137
DH5	2.886	12	0.346	0.4	-0.054
DH Packet	Pulse Width (msec)	Number of Pulses in 0.8 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK AFH Mode					
DH1	0.3816	8	0.031	0.4	-0.369
DH3	1.644	4	0.066	0.4	-0.334
DH5	2.886	3	0.087	0.4	-0.313

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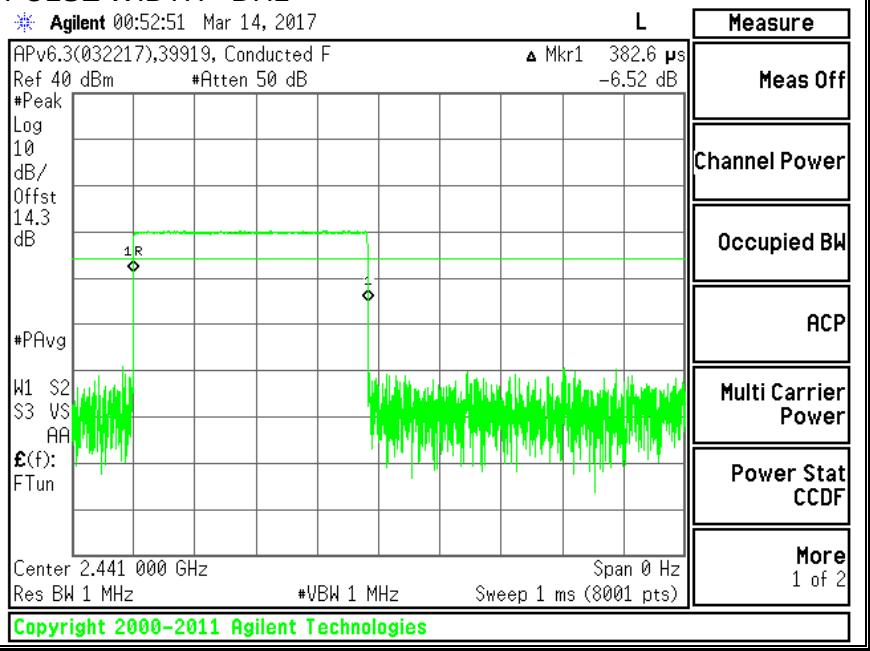
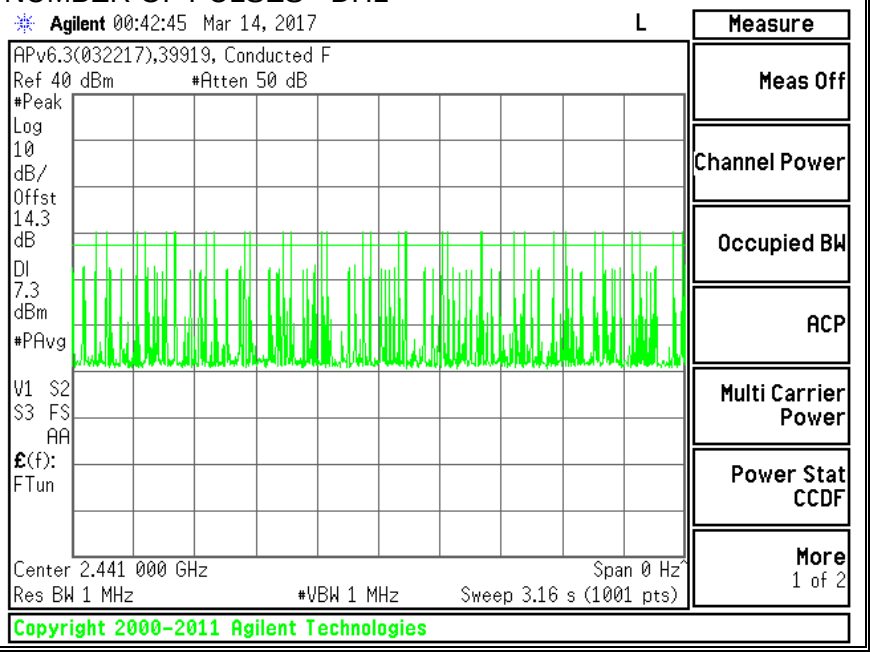
PULSE WIDTH - DH1



NUMBER OF PULSES - DH1



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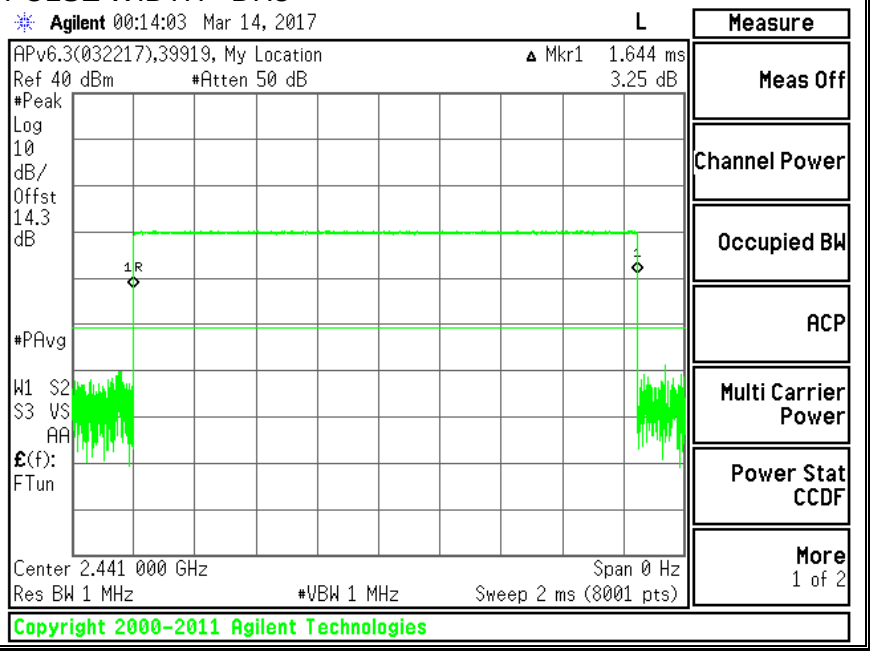
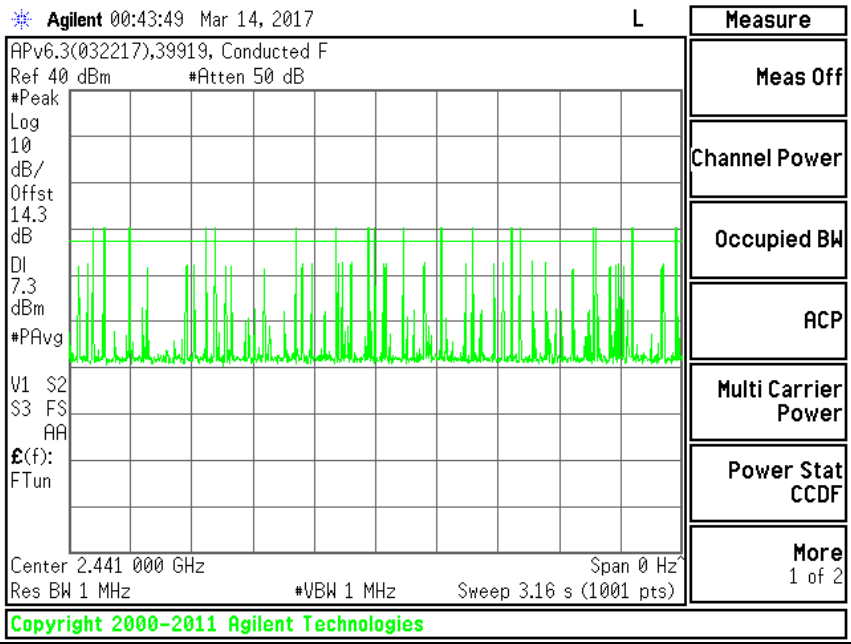
PULSE WIDTH - DH3



NUMBER OF PULSES - DH3



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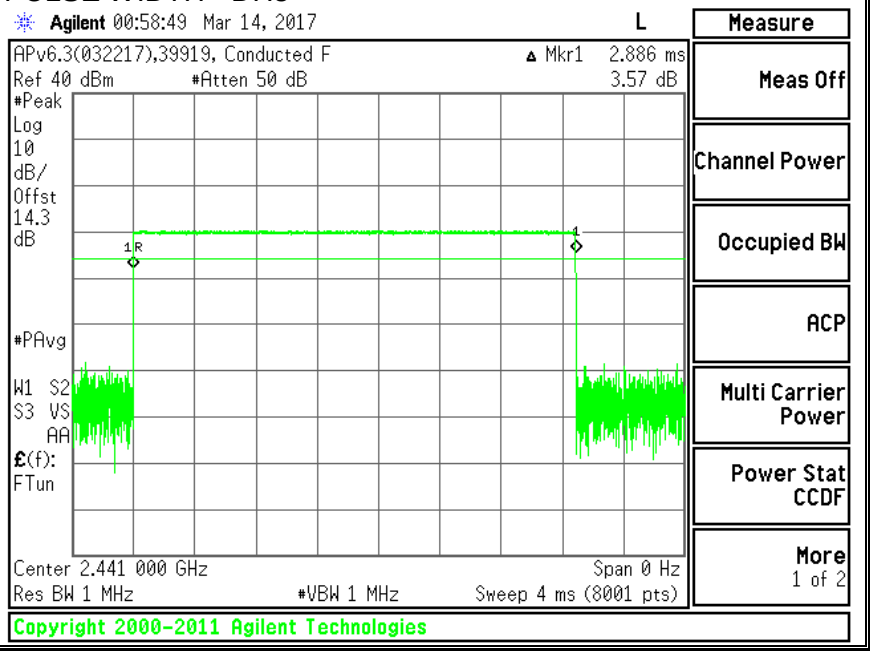
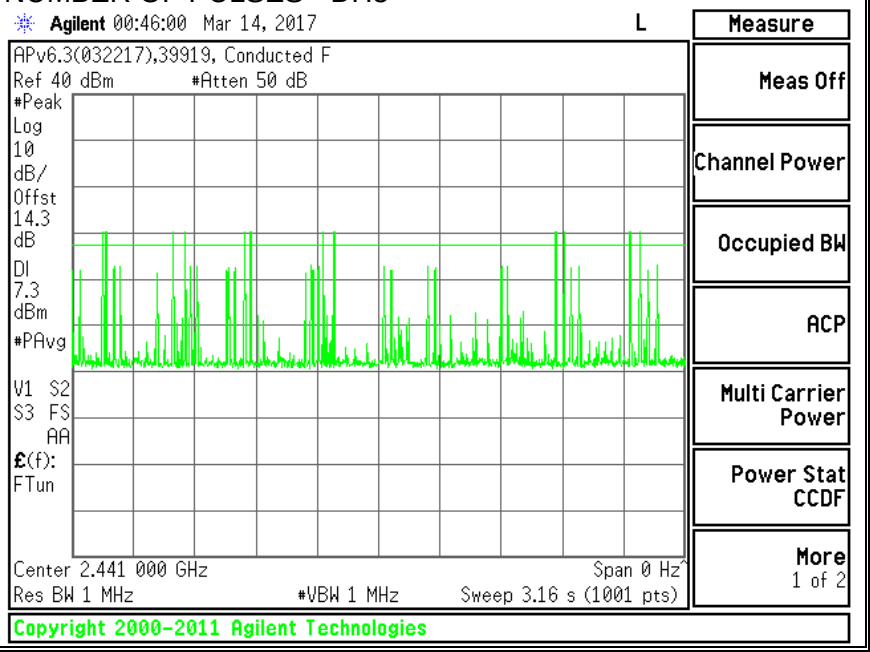
PULSE WIDTH - DH5



NUMBER OF PULSES - DH5



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8.10.5. OUTPUT POWER

ID:	30554	Date:	6/11/17

LIMITS

§15.247 (b) (1)

RSS-247 (5.4) (b)

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	10.10	30	-19.90
Middle	2441	10.21	30	-19.79
High	2480	9.98	30	-20.02

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8.10.6. AVERAGE POWER

ID:	30554	Date:	6/11/17

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	9.80
Middle	2441	9.90
High	2480	9.70

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8.10.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-247 (5.5)

Limit = -20 dBc

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

The bandedges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

RESULTS

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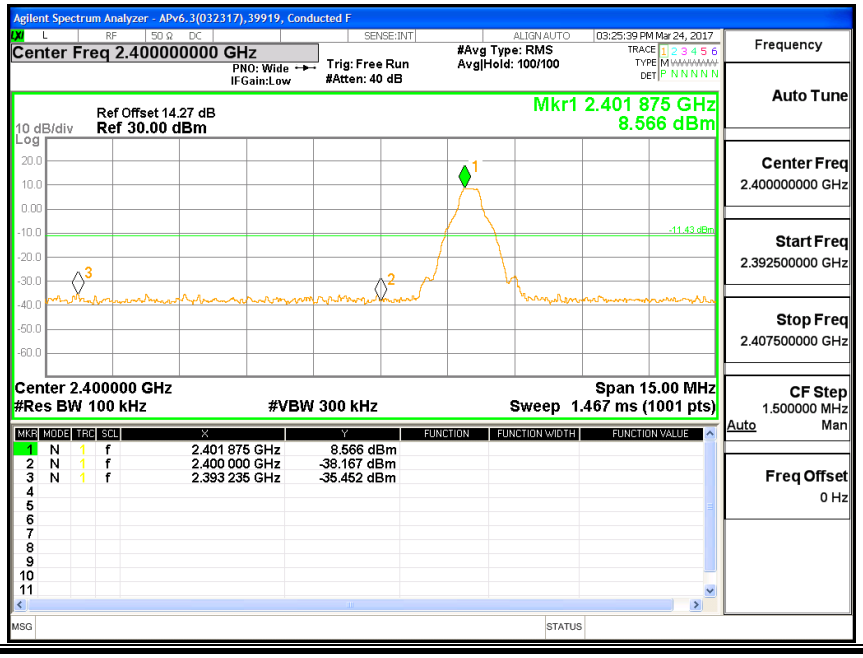
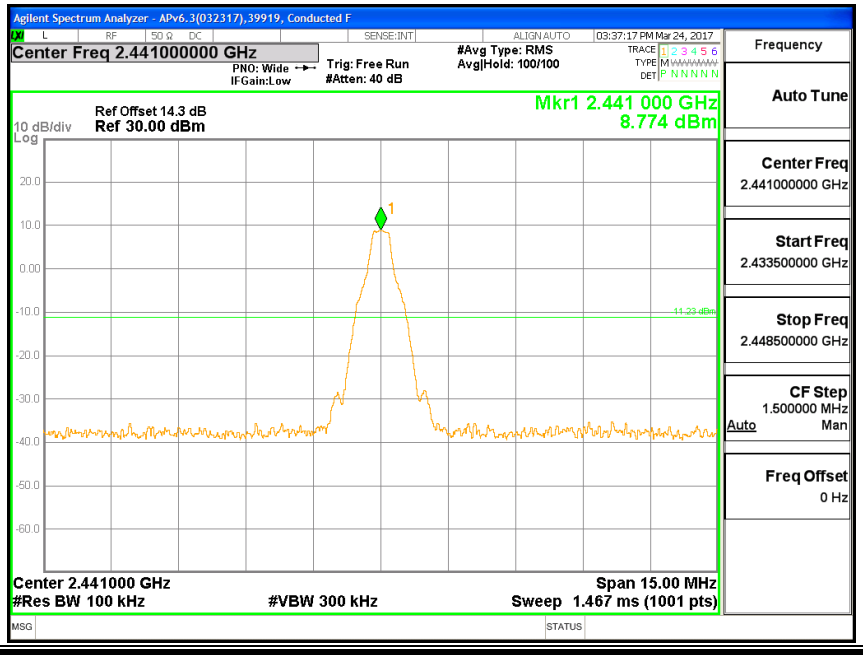
CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

CONDUCTED BANDEDGE LOW CH



CONDUCTED BANDEDGE MID CH



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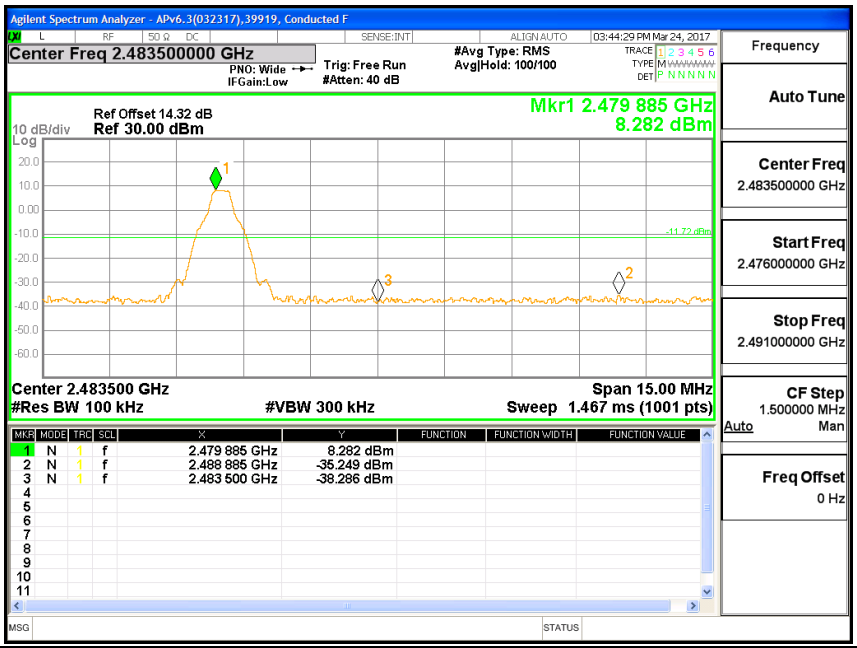
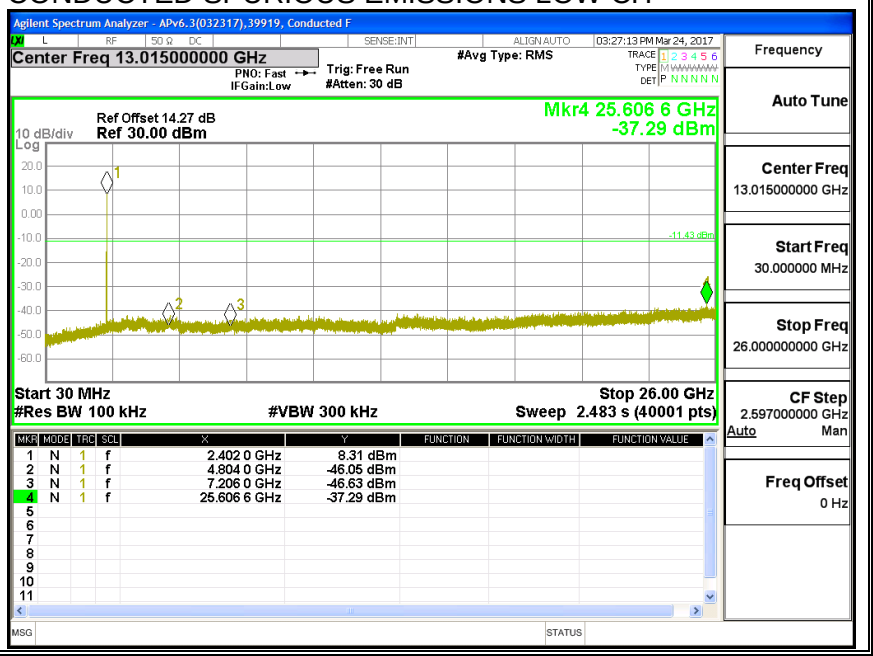
CONDUCTED BANDEDGE HIGH CH



CONDUCTED SPURIOUS EMISSIONS LOW CH



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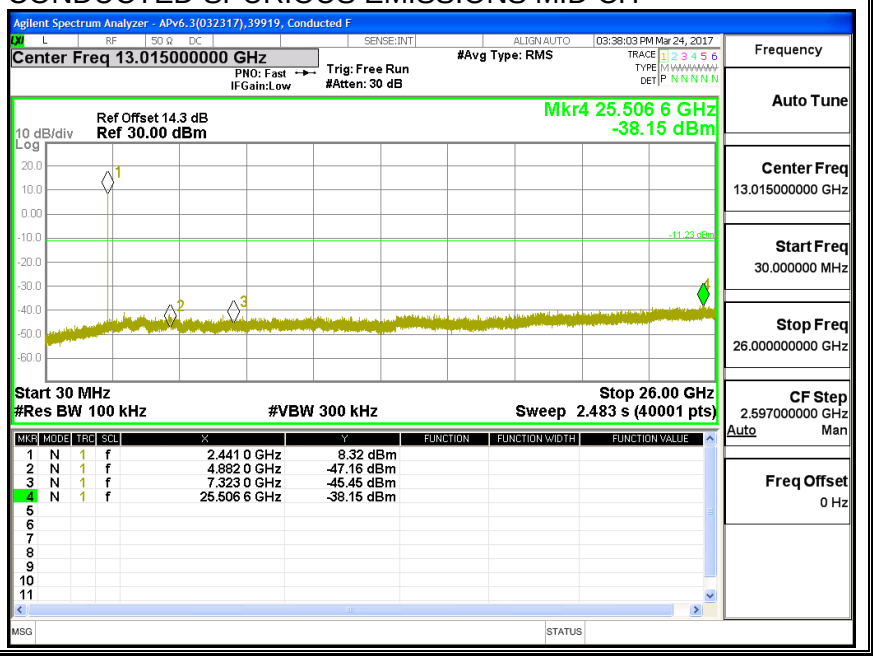
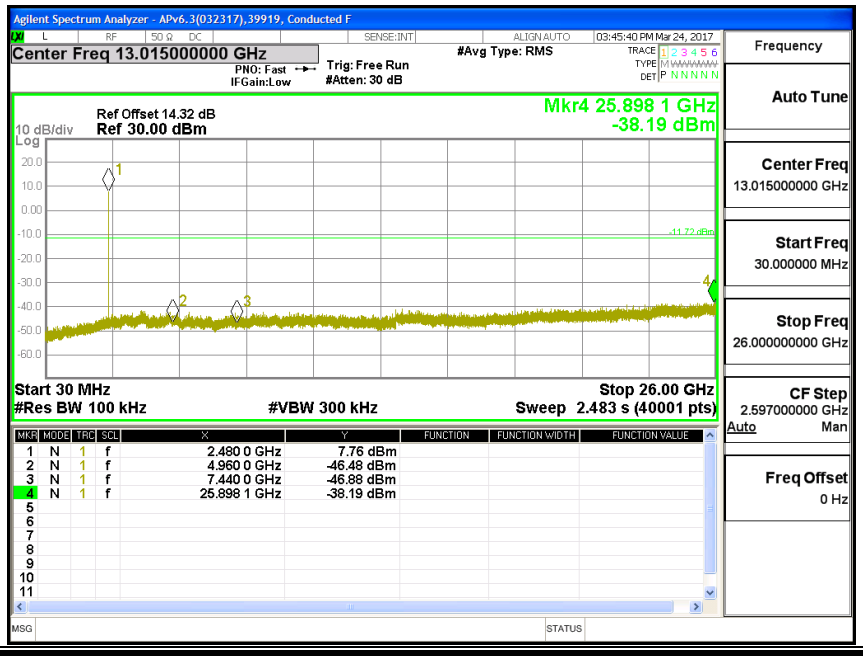
CONDUCTED SPURIOUS EMISSIONS MID CH



CONDUCTED SPURIOUS EMISSIONS HIGH CH



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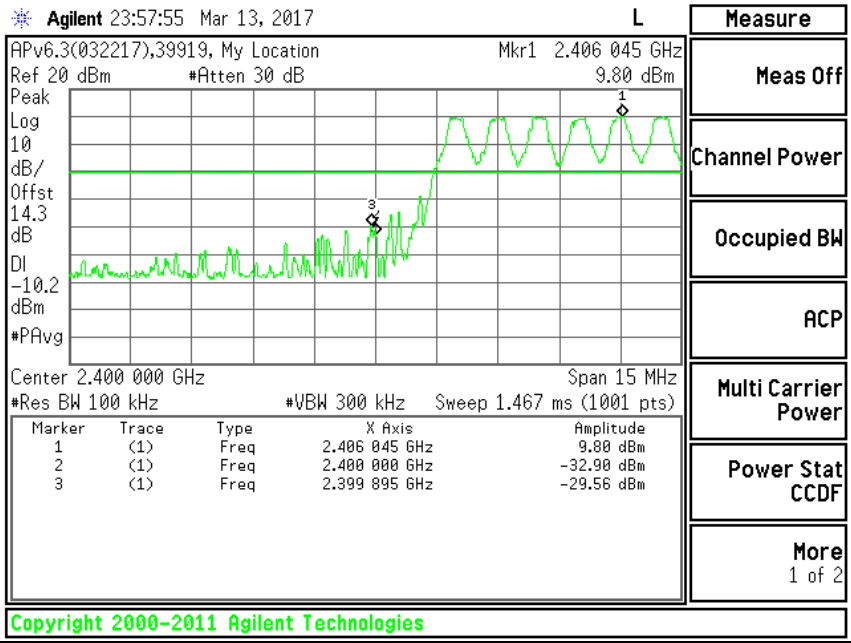
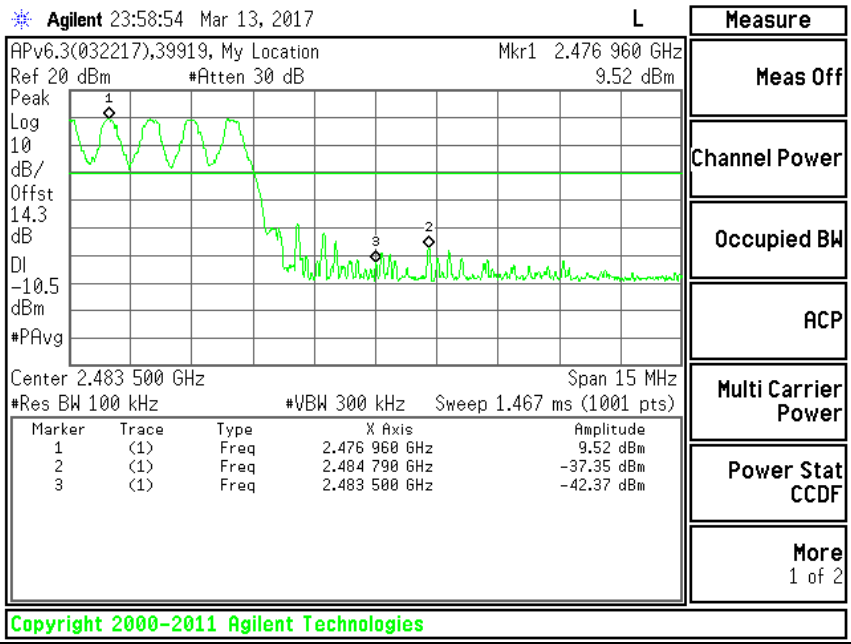
LOW BANDEDGE WITH HOPPING ON



HIGH BANDEDGE WITH HOPPING ON



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8.11. LAT 3, PLOW ENHANCED DATA RATE QPSK MODULATION

8.11.1. OUTPUT POWER

ID:	39472	Date:	6/14/17

LIMITS

§15.247 (b) (1)

RSS-247 (5.4) (b)

The maximum antenna gain is less than 6 dBi, therefore the limit is 30 dBm.
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 wideband peak and average power meter.

RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.02	21	-10.98
Middle	2441	10.12	21	-10.88
High	2480	9.90	21	-11.10

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8.11.2. AVERAGE POWER

ID:	39472	Date:	6/14/2017

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	7.60
Middle	2441	7.72
High	2480	7.47

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8.12. LAT 3, PLOW ENHANCED DATA RATE 8PSK MODULATION

8.12.1. 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 ≥ 1% of the 20 dB bandwidth. The VBW is set to ≥ RBW. The sweep time is coupled.

RESULTS

Channel	Frequency (MHz)	20 dB Bandwidth (KHz)	99% Bandwidth (KHz)
Low	2402	1357	1232.2
Middle	2441	1353	1227.5
High	2480	1357	1236.9

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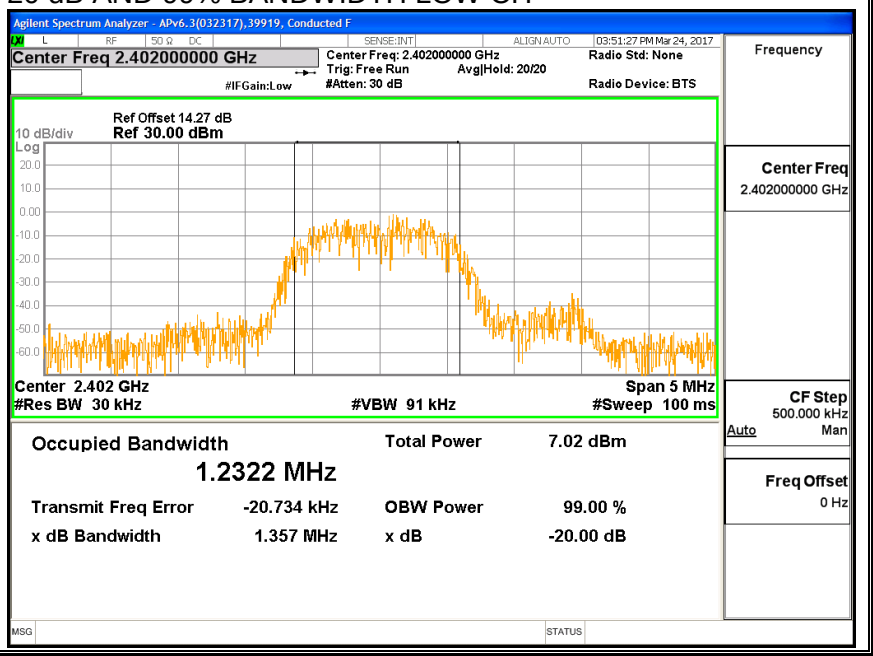
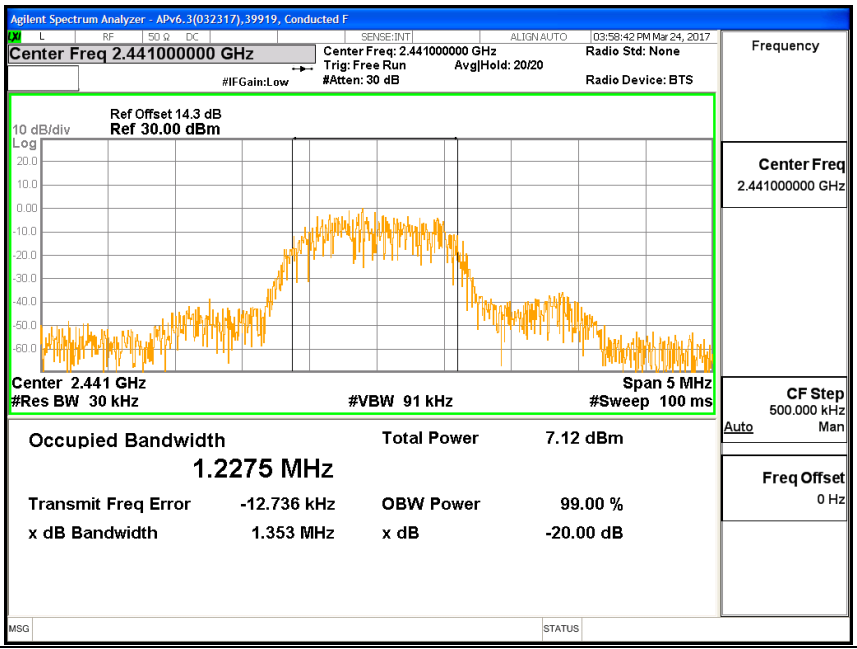
20 dB AND 99% BANDWIDTH LOW CH



20 dB AND 99% BANDWIDTH MID CH



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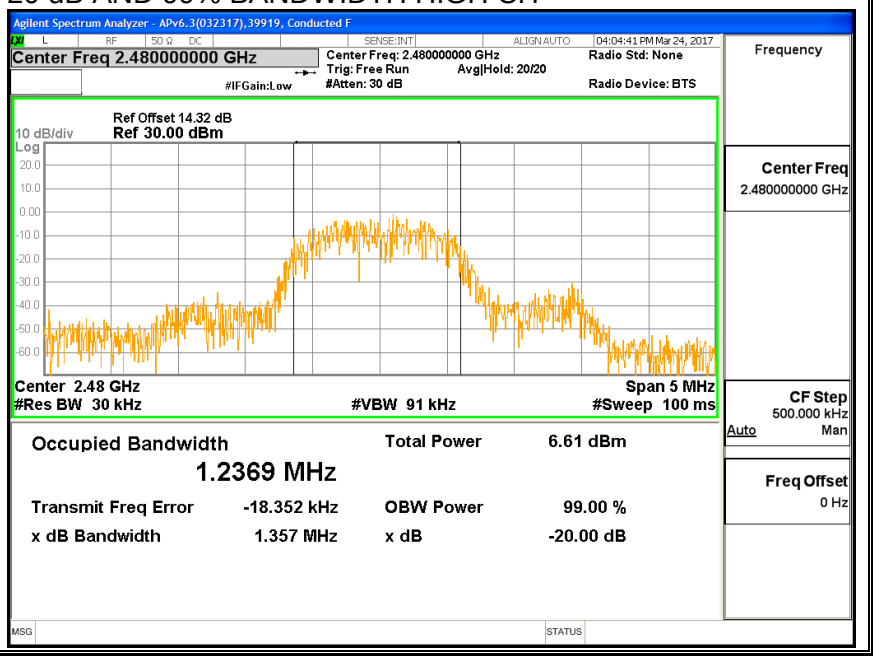
20 dB AND 99% BANDWIDTH HIGH CH



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8.12.2. HOPPING FREQUENCY SEPARATION

LIMITS

FCC §15.247 (a) (1)

IC RSS-247 (5.1) (b)

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

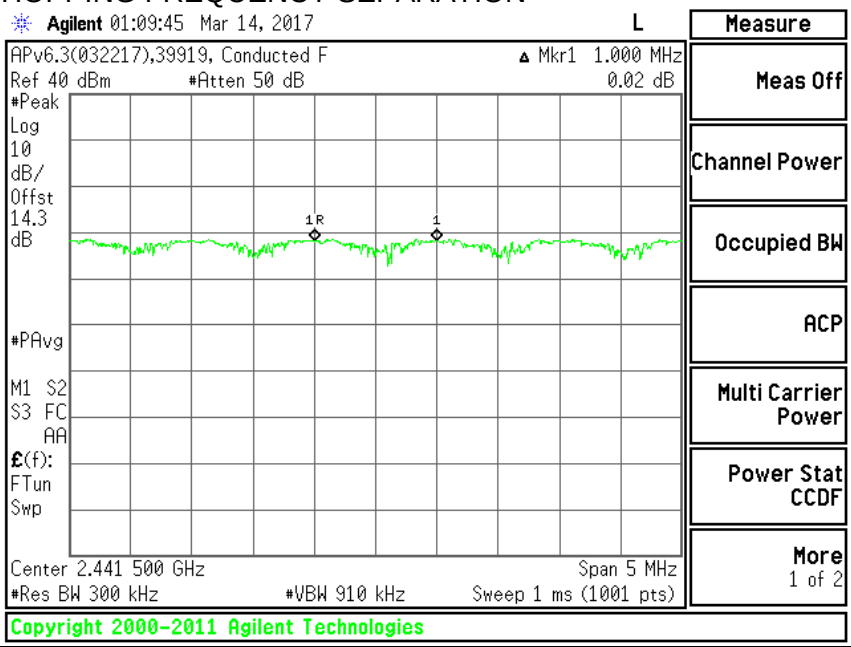
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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

HOPPING FREQUENCY SEPARATION



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8.12.3. NUMBER OF HOPPING CHANNELS

LIMITS

FCC §15.247 (a) (1) (iii)

IC RSS-247 (5.1) (d)

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

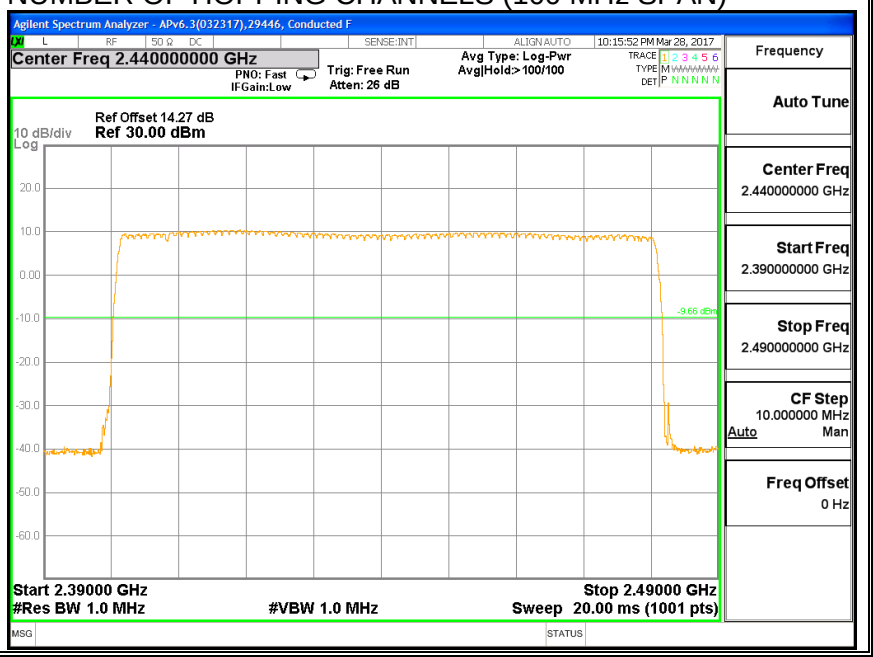
TEST PROCEDURE

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 (100 MHz SPAN)



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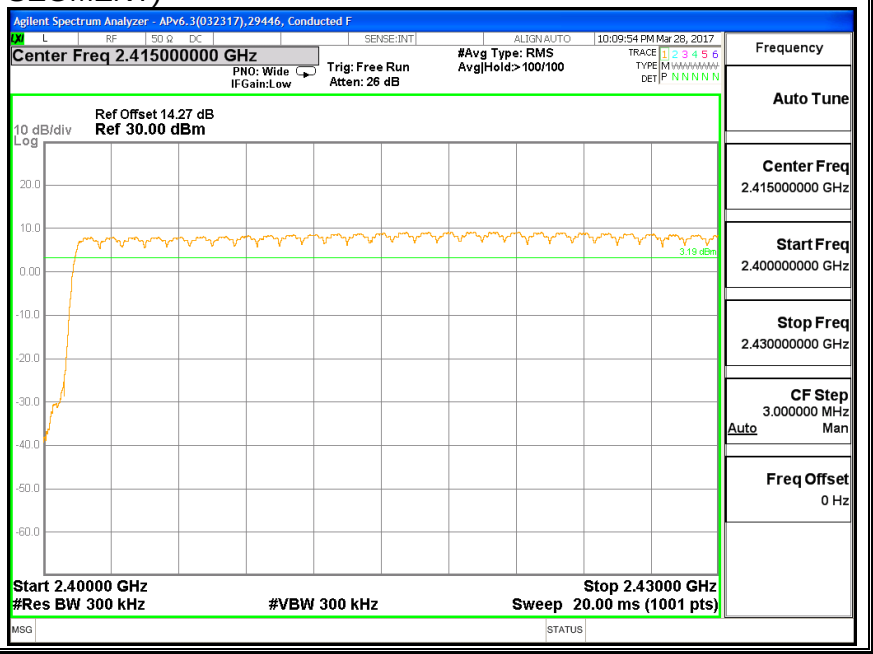
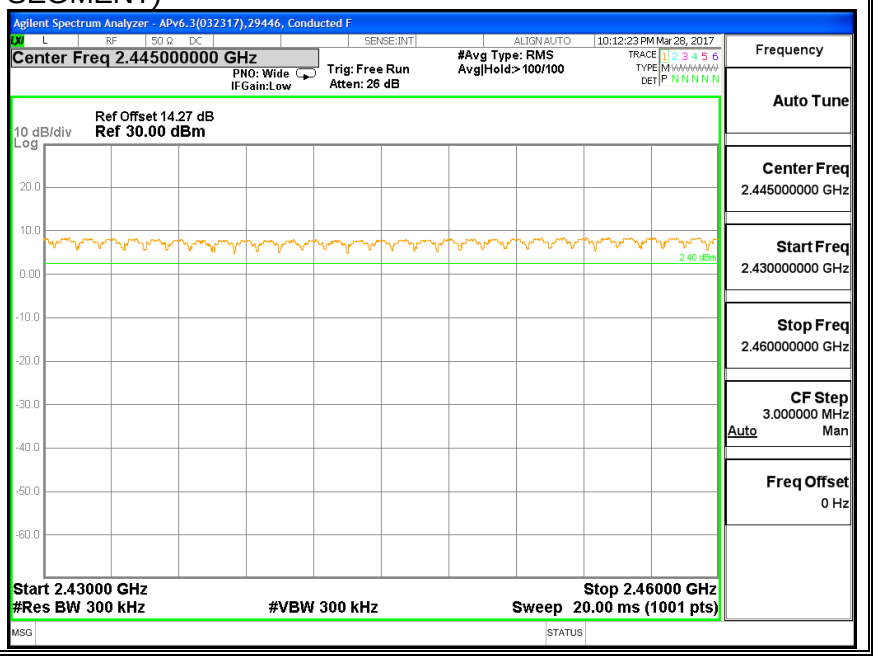
NUMBER OF HOPPING CHANNELS (30 MHz SPAN, FIRST SEGMENT)



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



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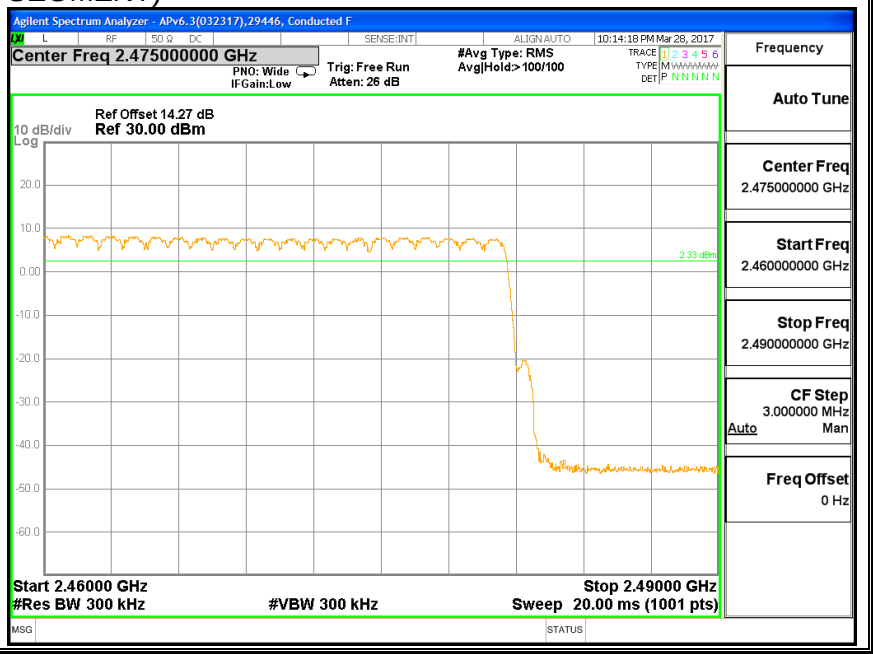
NUMBER OF HOPPING CHANNELS (30 MHz SPAN, THIRD SEGMENT)



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8.12.4. AVERAGE TIME OF OCCUPANCY

LIMITS

FCC §15.247 (a) (1) (iii)

IC RSS-247 (5.1) (d)

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 * (# of pulses in 3.16 s) * pulse width.

RESULTS

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
8PSK (EDR) Mode					
3DH1	0.3887	30	0.117	0.4	-0.283
3DH3	1.641	16	0.263	0.4	-0.137
3DH5	2.892	10	0.289	0.4	-0.111

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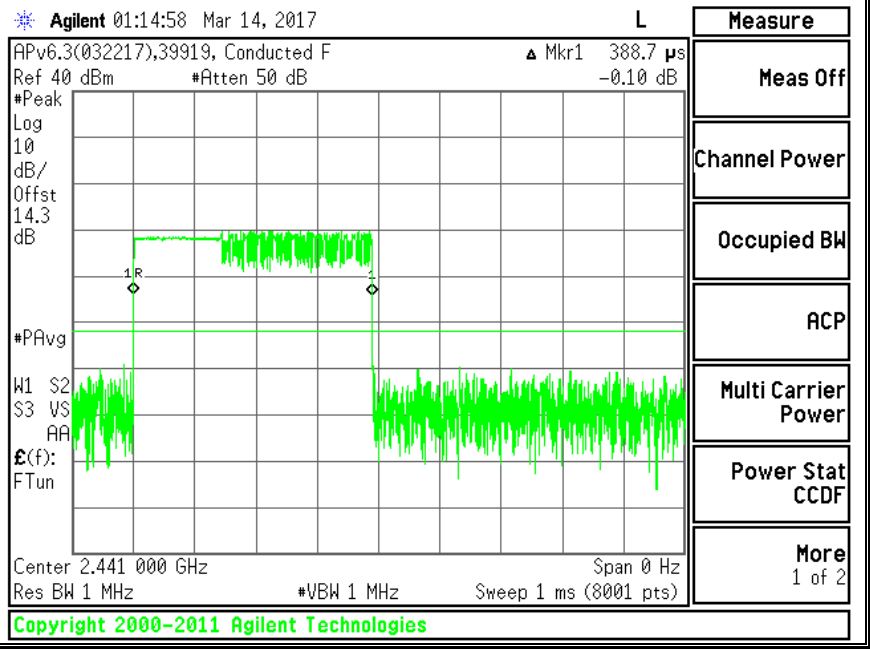
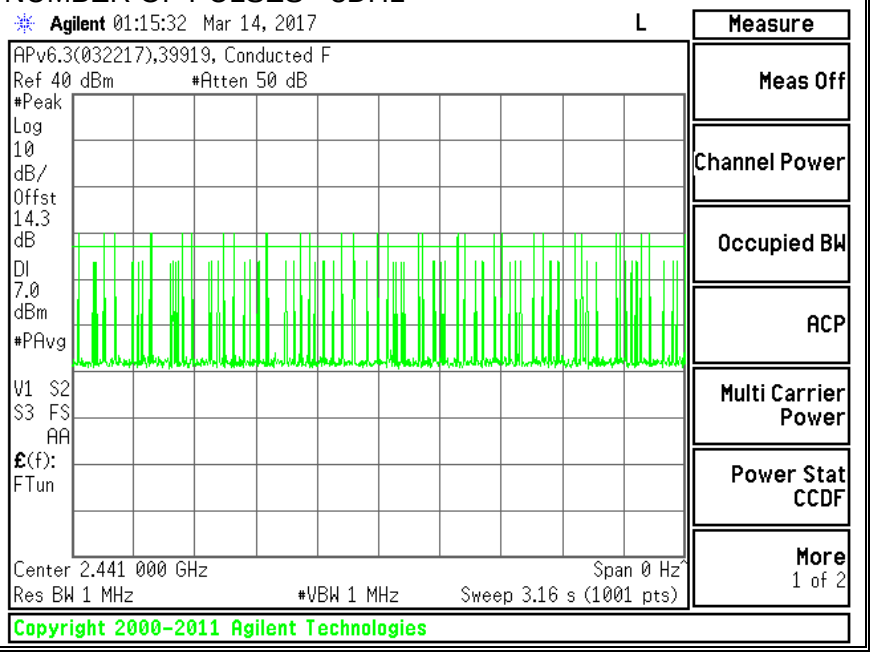
PULSE WIDTH - 3DH1



NUMBER OF PULSES - 3DH1



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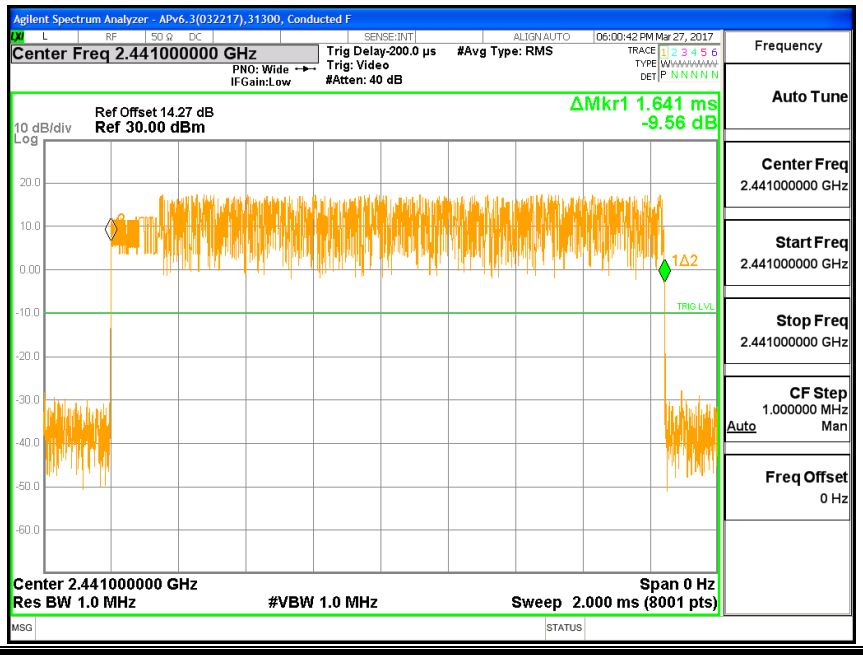
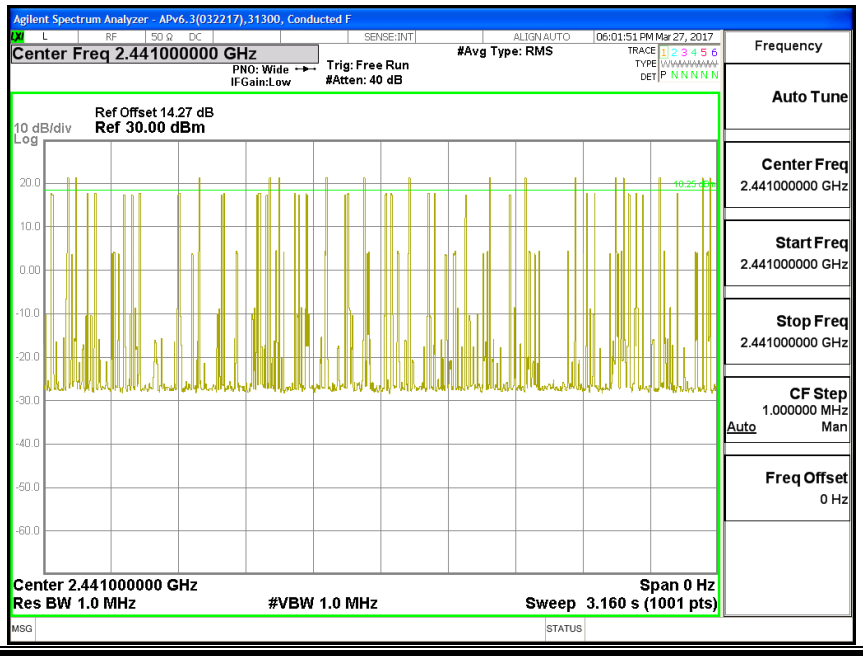
PULSE WIDTH - 3DH3



NUMBER OF PULSES - 3DH3



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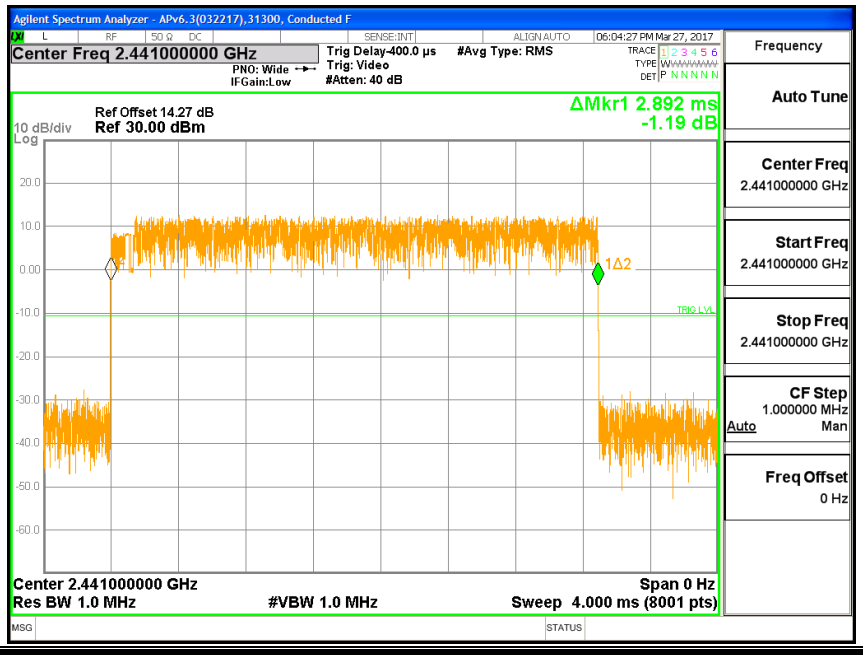
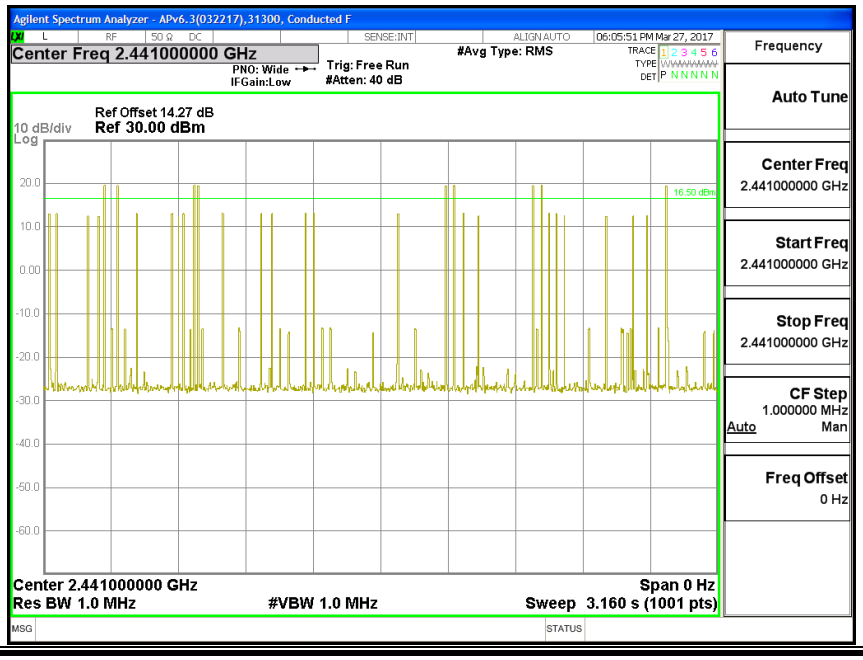
PULSE WIDTH - 3DH5



NUMBER OF PULSES - 3DH5



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8.12.5. OUTPUT POWER

ID:	30554	Date:	6/11/17

LIMITS

§15.247 (b) (1)

RSS-247 (5.4) (b)

The maximum antenna gain is less than 6 dBi, therefore the limit is 30 dBm.
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 wideband peak and average power meter.

RESULTS

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.17	21	-10.80
Middle	2441	10.20	21	-10.77
High	2480	10.12	21	-10.85

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8.12.6. AVERAGE POWER

ID:	30554	Date:	6/11/17

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	7.65
Middle	2441	7.75
High	2480	7.60

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8.12.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-247 (5.5)

Limit = -20 dBc

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

The bandedges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping mode.

RESULTS

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47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
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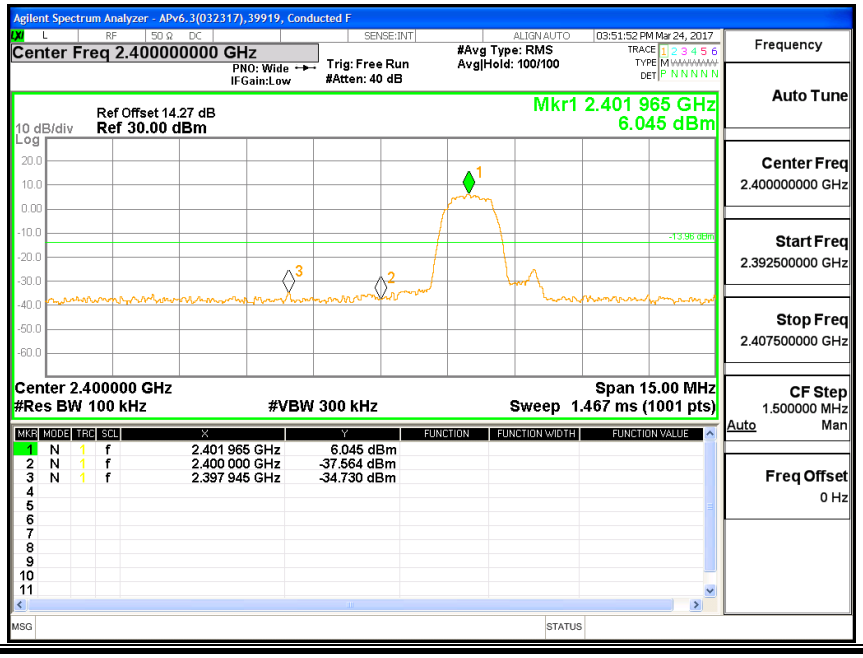
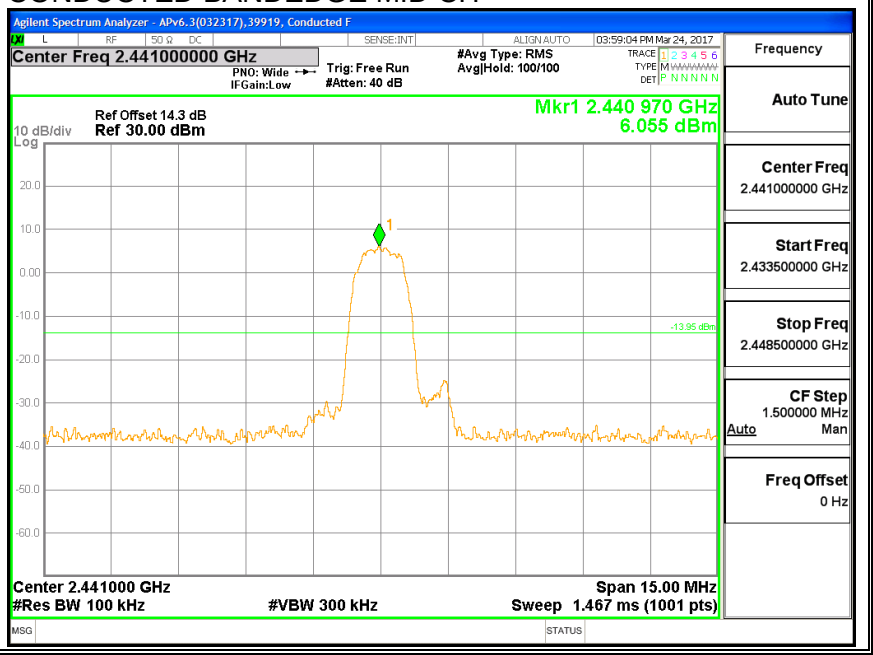
CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

CONDUCTED BANDEDGE LOW CH



CONDUCTED BANDEDGE MID CH



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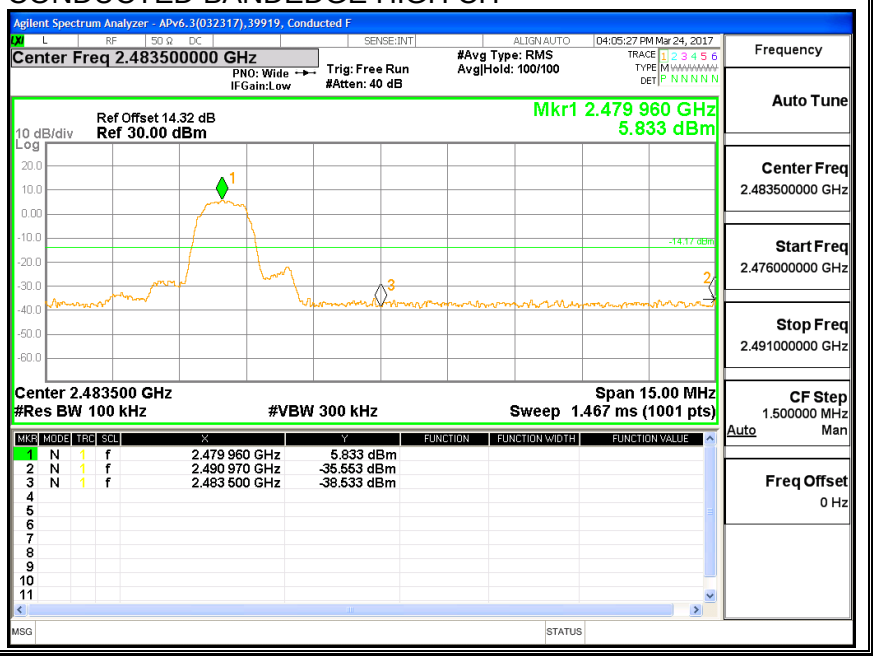
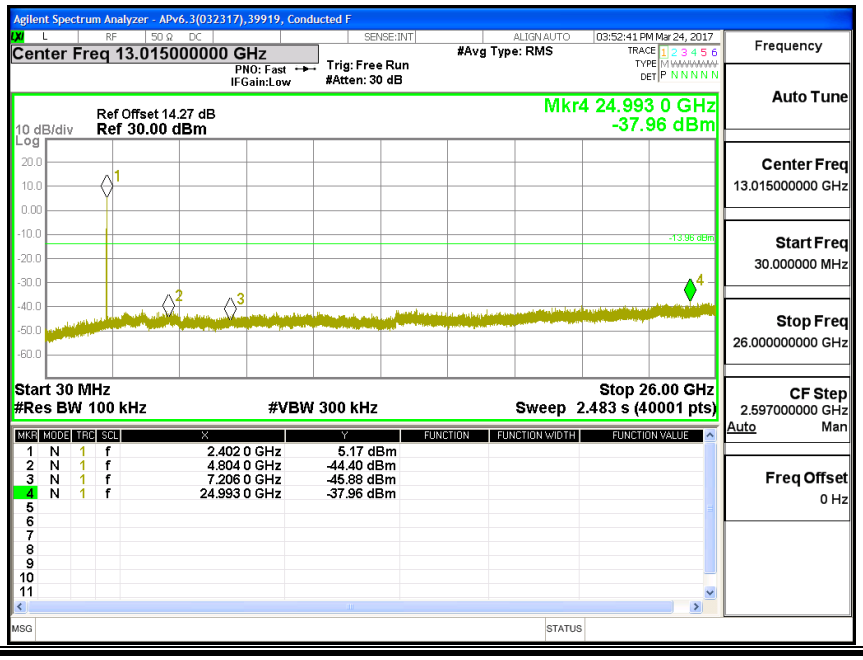
CONDUCTED BANDEDGE HIGH CH



CONDUCTED SPURIOUS EMISSIONS LOW CH



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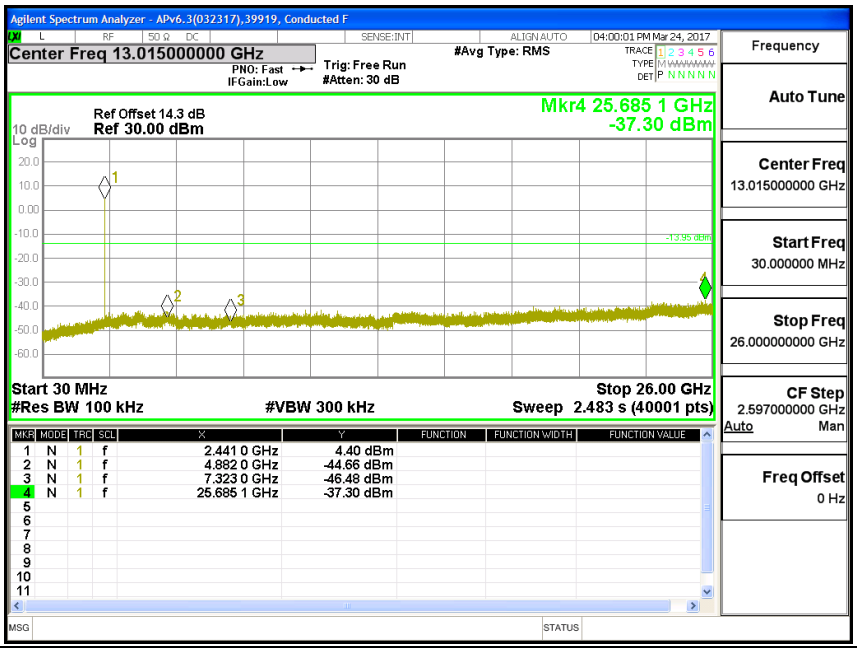
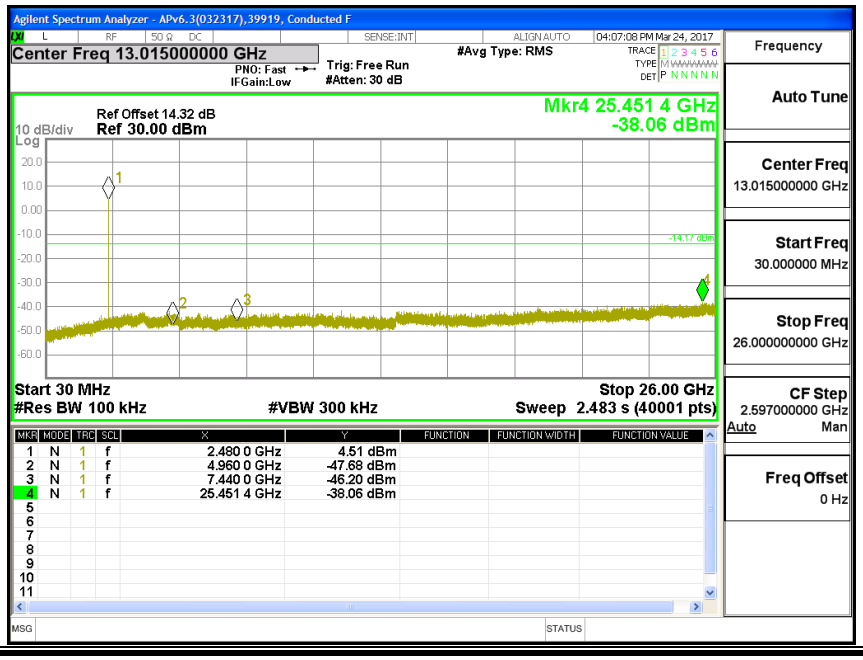
CONDUCTED SPURIOUS EMISSIONS MID CH



CONDUCTED SPURIOUS EMISSIONS HIGH CH



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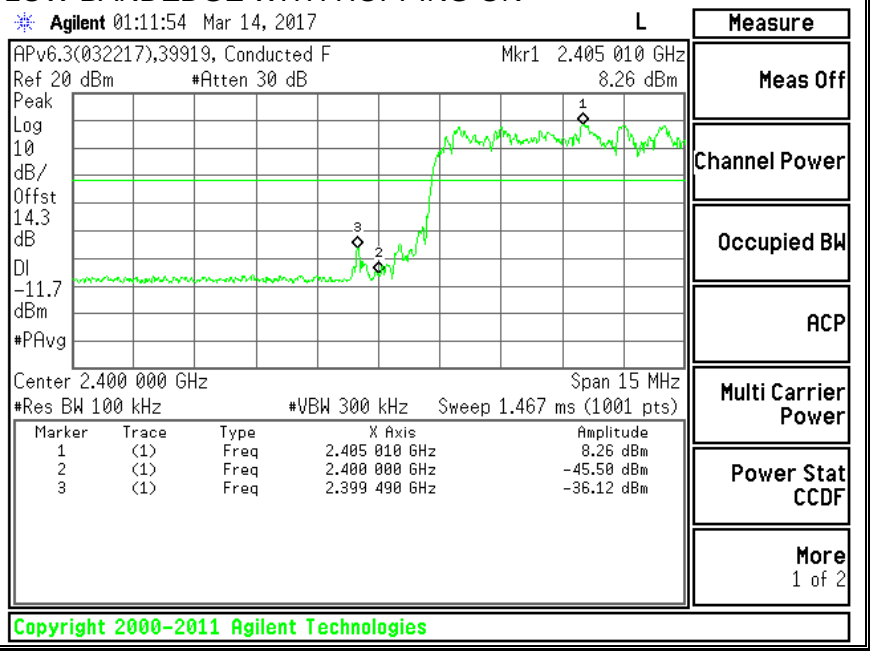
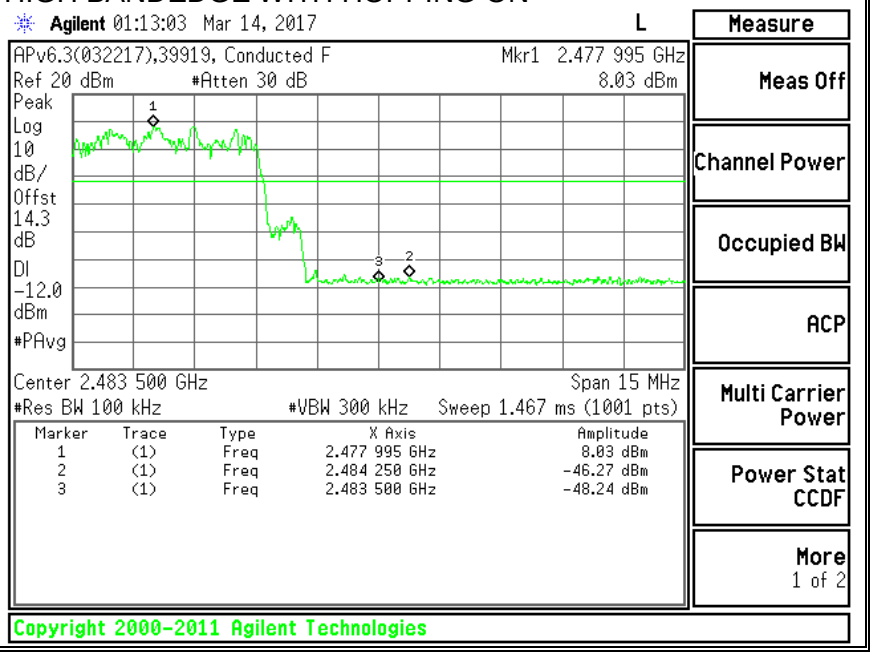
LOW BANDEDGE WITH HOPPING ON



HIGH BANDEDGE WITH HOPPING ON



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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

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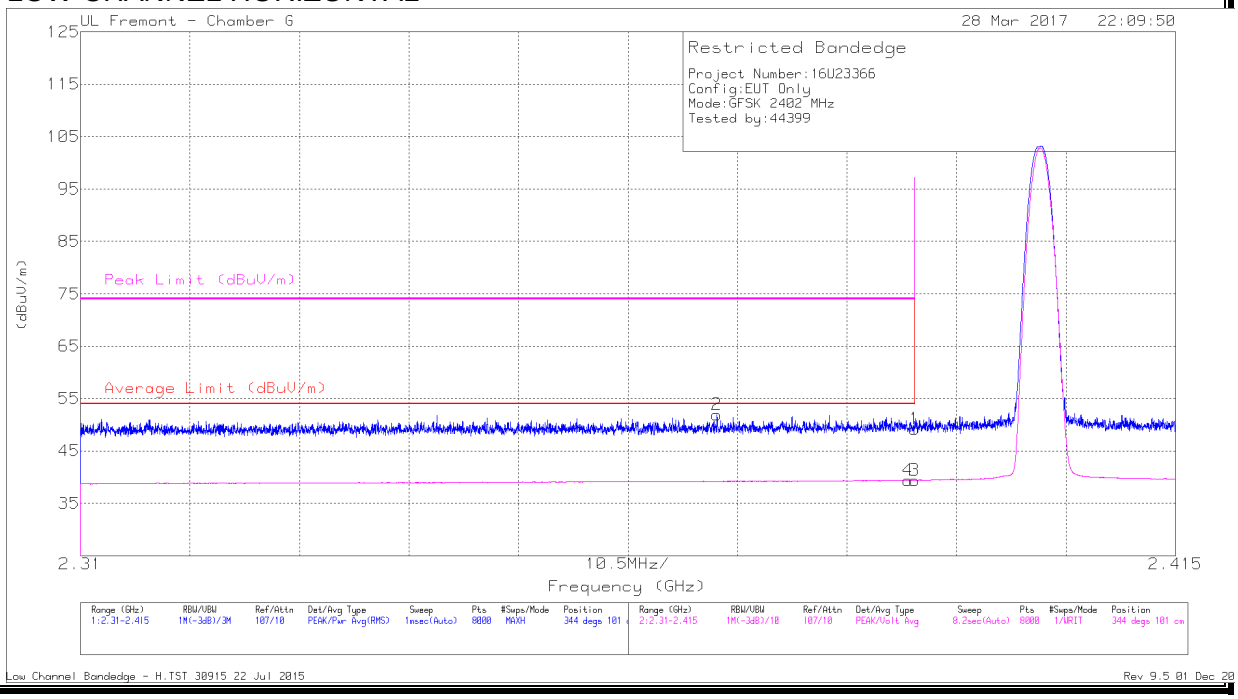
9.2. UAT 1, PMAX BASIC DATA RATE GFSK MODULATION

9.2.1. RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/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
2	* 2.371	43.66	Pk	32	-23.8	51.86			74	-22.14	344	101	H
4	* 2.389	31.01	VA1T	32.1	-23.7	39.41	54	-14.59			344	101	H
1	* 2.39	40.74	Pk	32.1	-23.7	49.14			74	-24.86	344	101	H
3	* 2.39	30.96	VA1T	32.1	-23.7	39.36	54	-14.64			344	101	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
Rev 9.5 01 Dec 2016

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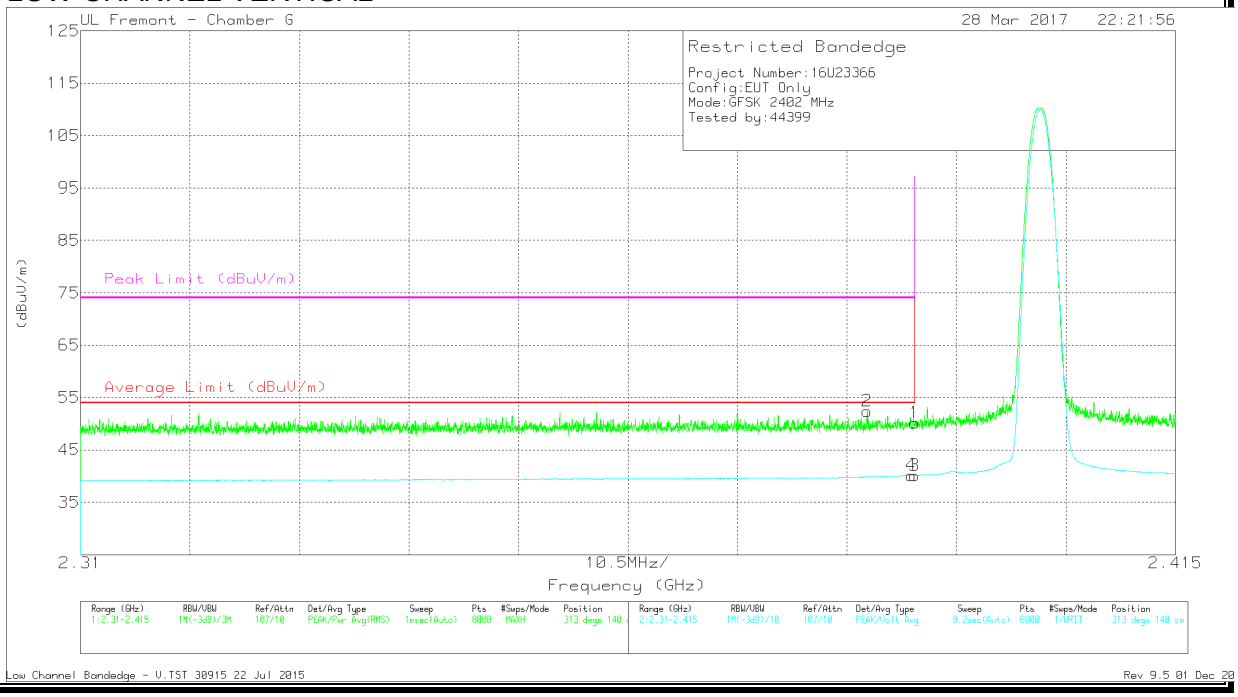
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/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
2	* 2.385	44	Pk	32.1	-23.7	52.4	-		74	-21.6	313	140	V
1	* 2.39	41.74	Pk	32.1	-23.7	50.14	-		74	-23.86	313	140	V
3	* 2.39	31.71	VA1T	32.1	-23.7	40.11	54	-13.89			313	140	V
4	* 2.39	31.75	VA1T	32.1	-23.7	40.15	54	-13.85			313	140	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
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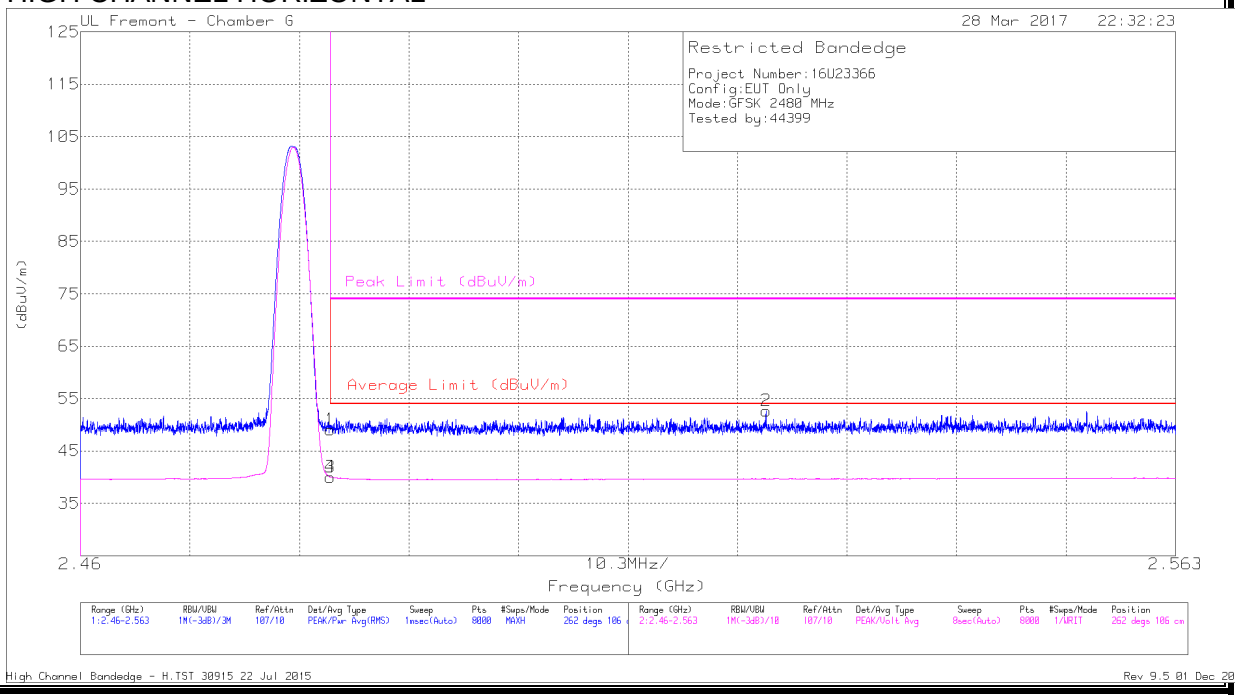
9.2.2. AUTHORIZED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/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	* 2.484	40.42	Pk	32.3	-23.7	49.02			74	-24.98	262	106	H
3	* 2.484	31.41	VA1T	32.3	-23.7	40.01	54	-13.99			262	106	H
4	* 2.484	31.41	VA1T	32.3	-23.7	40.01	54	-13.99			262	106	H
2	2.524	43.81	Pk	32.5	-23.7	52.61			74	-21.39	262	106	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
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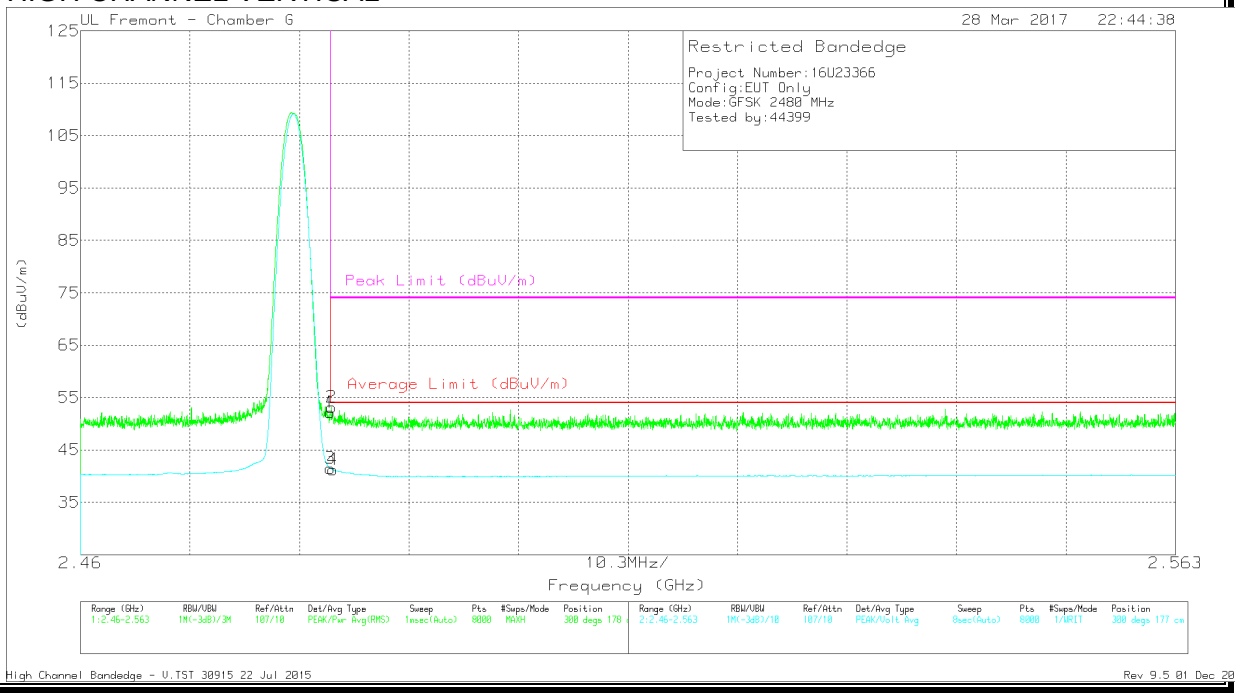
HIGH CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/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	* 2.484	43.51	Pk	32.3	-23.7	52.11	-	-	74	-21.89	300	178	V
2	* 2.484	44.58	Pk	32.3	-23.7	53.18	-	-	74	-20.82	300	178	V
3	* 2.484	32.89	VA1T	32.3	-23.7	41.49	54	-12.51			300	177	V
4	* 2.484	32.62	VA1T	32.3	-23.7	41.22	54	-12.78			300	177	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
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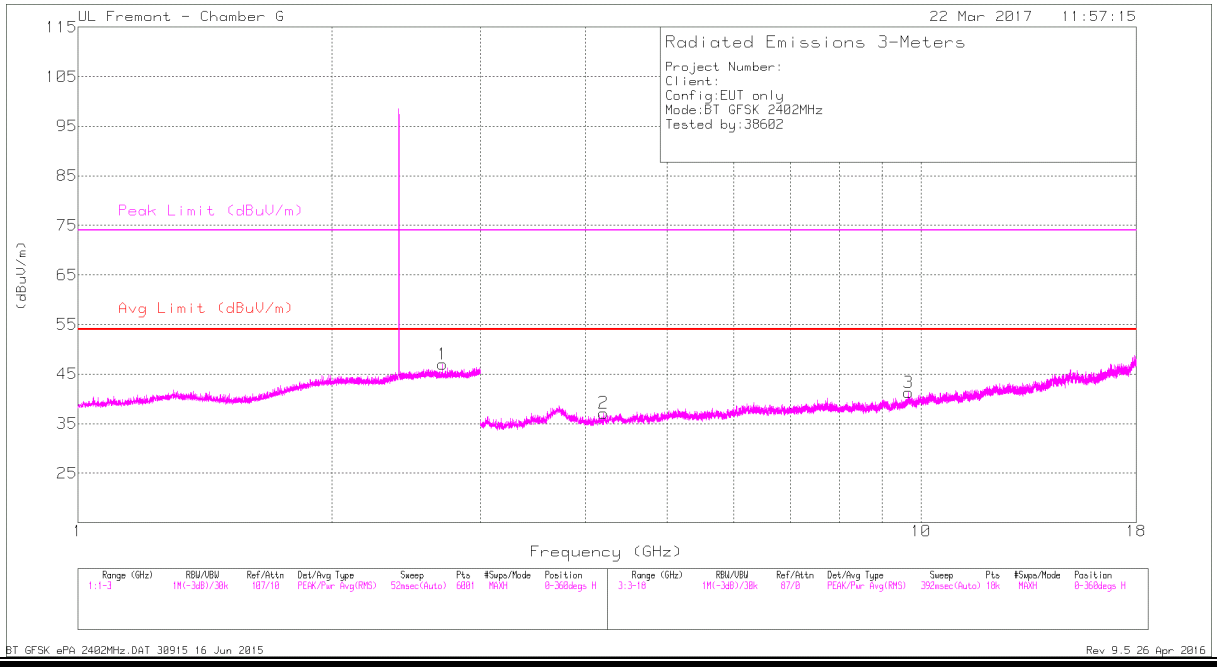
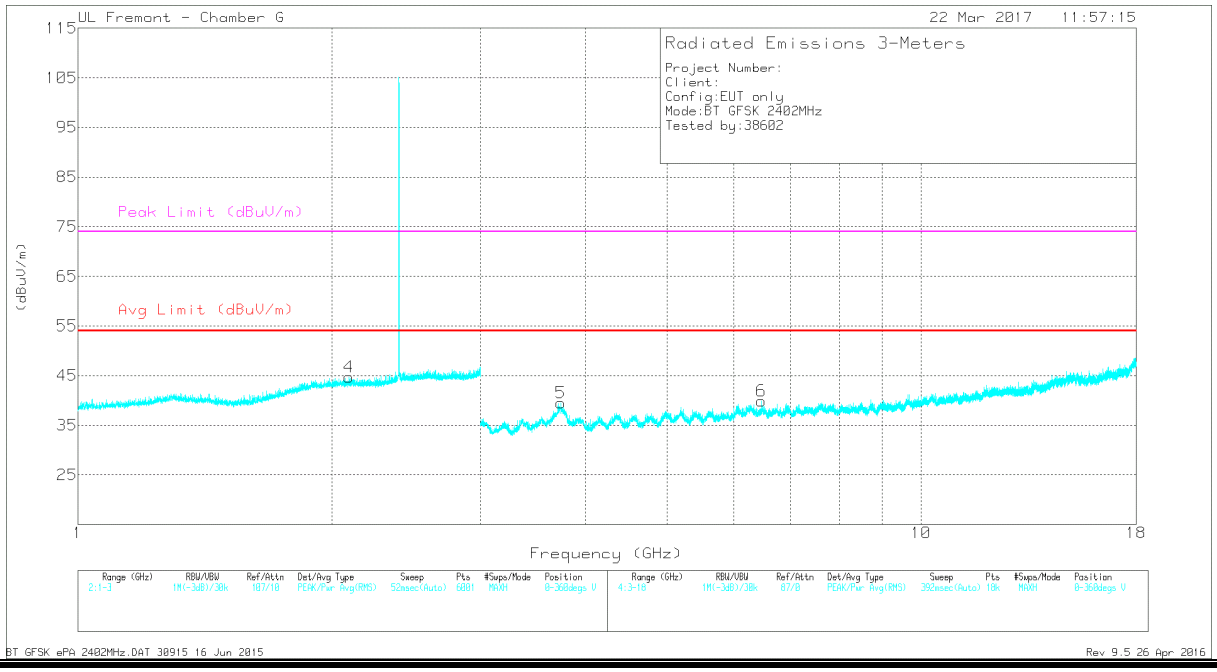
9.2.3. HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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DATA

Radiated Emissions

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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	* 2.709	43.15	PKFH	32.5	-23.6	52.05	-	-	74	-21.95	0	144	H
	* 2.706	31.26	VA1T	32.5	-23.6	40.16	54	-13.84	-	-	0	144	H
2	* 4.205	40.31	PKFH	33.7	-32.2	41.81	-	-	74	-32.19	352	122	H
	* 4.201	28.85	VA1T	33.7	-32.2	30.35	54	-23.65	-	-	352	122	H
5	* 3.737	39.44	PKFH	34.1	-30.8	42.74	-	-	74	-31.26	334	151	V
	* 3.736	28.16	VA1T	34.1	-30.8	31.46	54	-22.54	-	-	334	151	V
4	2.095	37.13	PKFH	31.6	-24	44.73	-	-	-	-	97	100	V
6	6.467	35.94	PKFH	35.7	-31.8	39.84	-	-	-	-	100	201	V
3	9.666	31.32	PKFH	36.7	-26.7	41.32	-	-	-	-	95	201	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
BT GFSK ePA 2402MHz.DAT 30915 16 Jun 2015
Rev 9.5 26 Apr 2016

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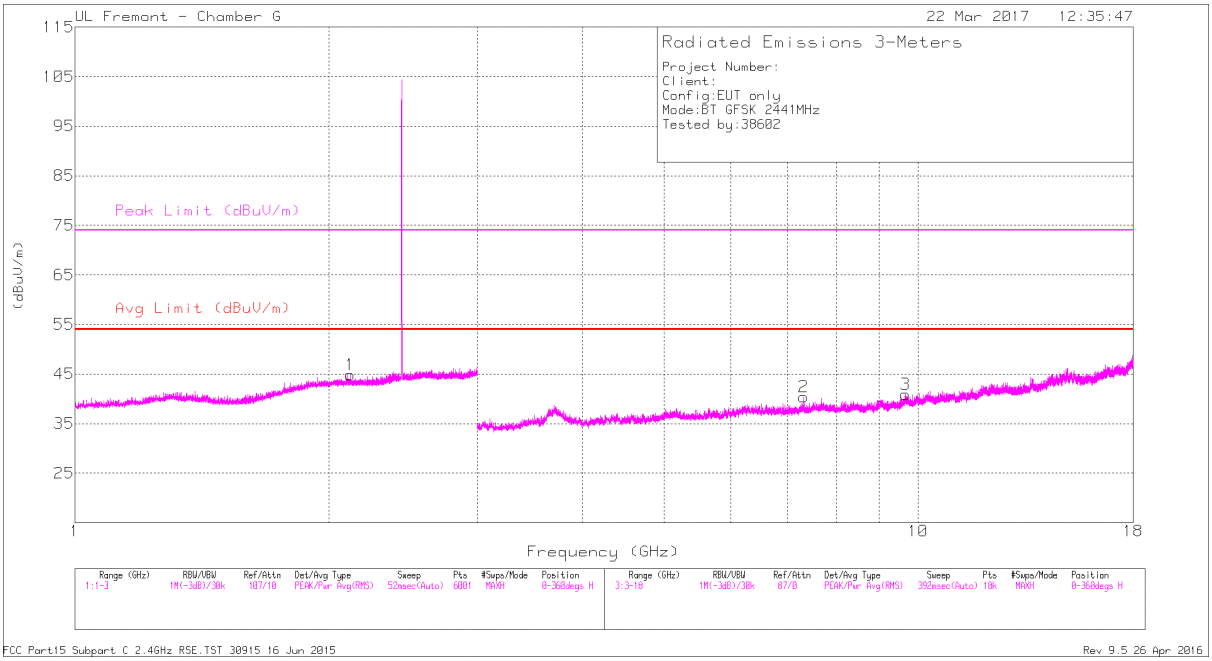
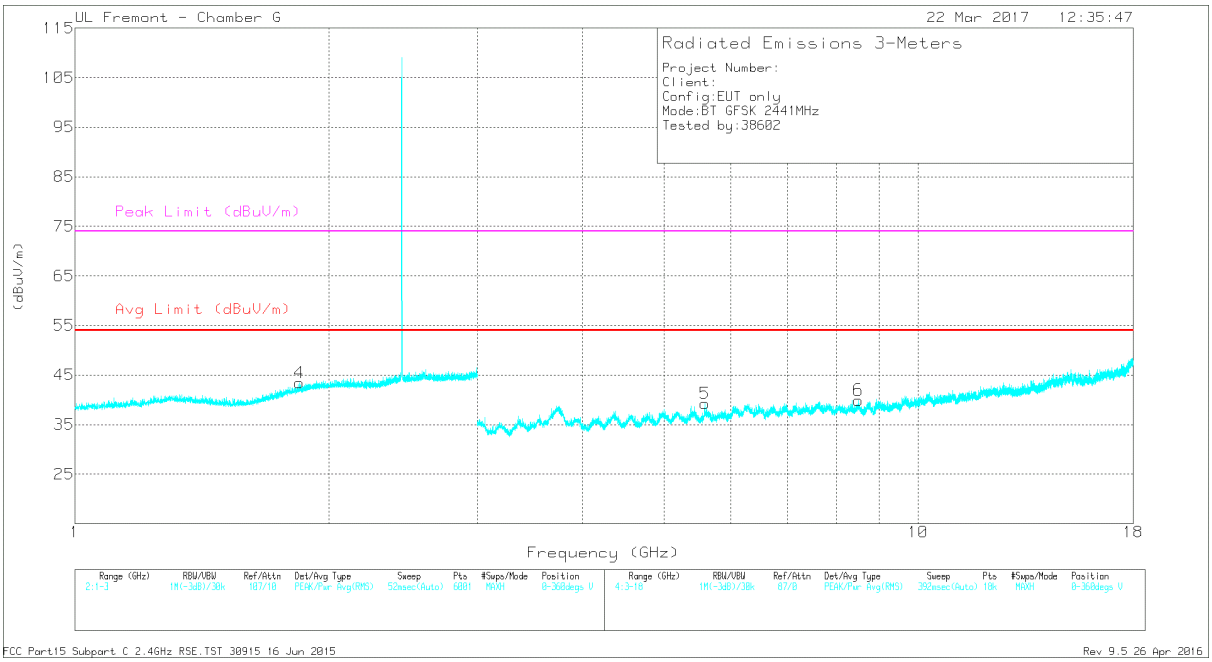
MID CHANNEL HORIZONTAL



MID CHANNEL VERTICAL



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DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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
2	* 7.322	40.33	PKFH	35.8	-29.9	46.23	-	-	74	-27.77	211	103	H
2	* 7.323	30.85	VA1T	35.8	-29.9	36.75	54	-17.25	-	-	211	103	H
4	1.846	36.79	PKFH	30.9	-24.3	43.39	-	-	-	-	0	201	V
1	2.12	37.27	PKFH	31.6	-24	44.87	-	-	-	-	85	201	H
5	5.589	36.4	PKFH	34.6	-31.8	39.2	-	-	-	-	88	100	V
6	8.504	32.95	PKFH	35.8	-28.8	39.95	-	-	-	-	95	201	V
3	9.661	30.87	PKFH	36.7	-26.7	40.87	-	-	-	-	110	100	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

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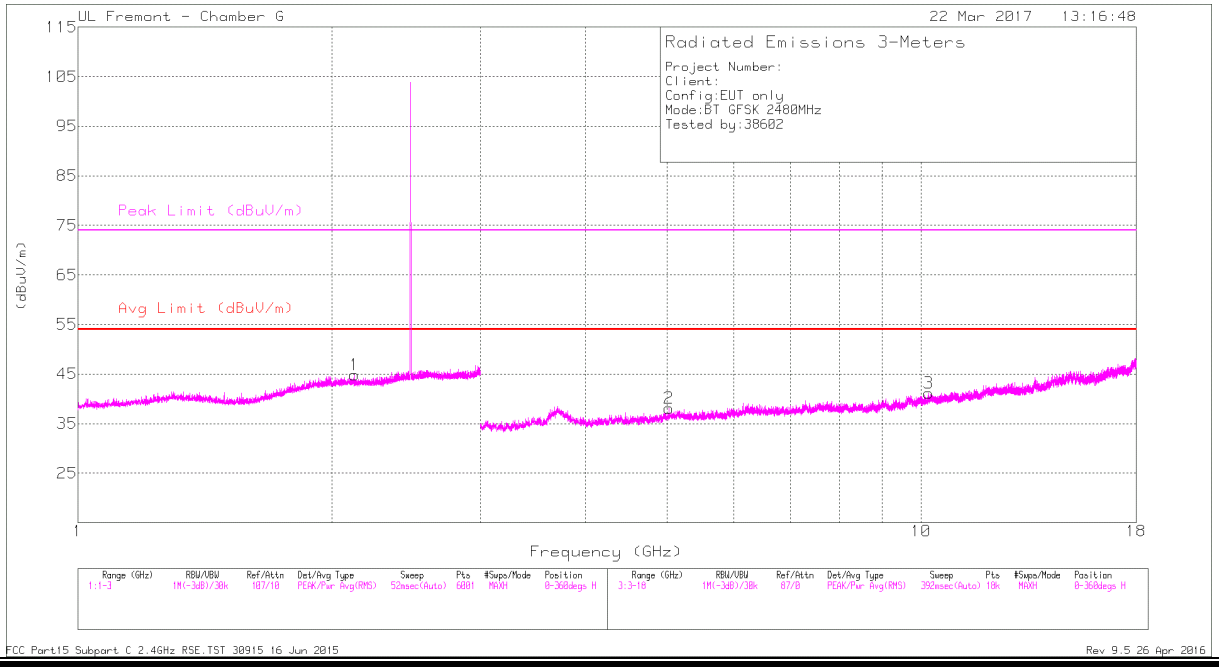
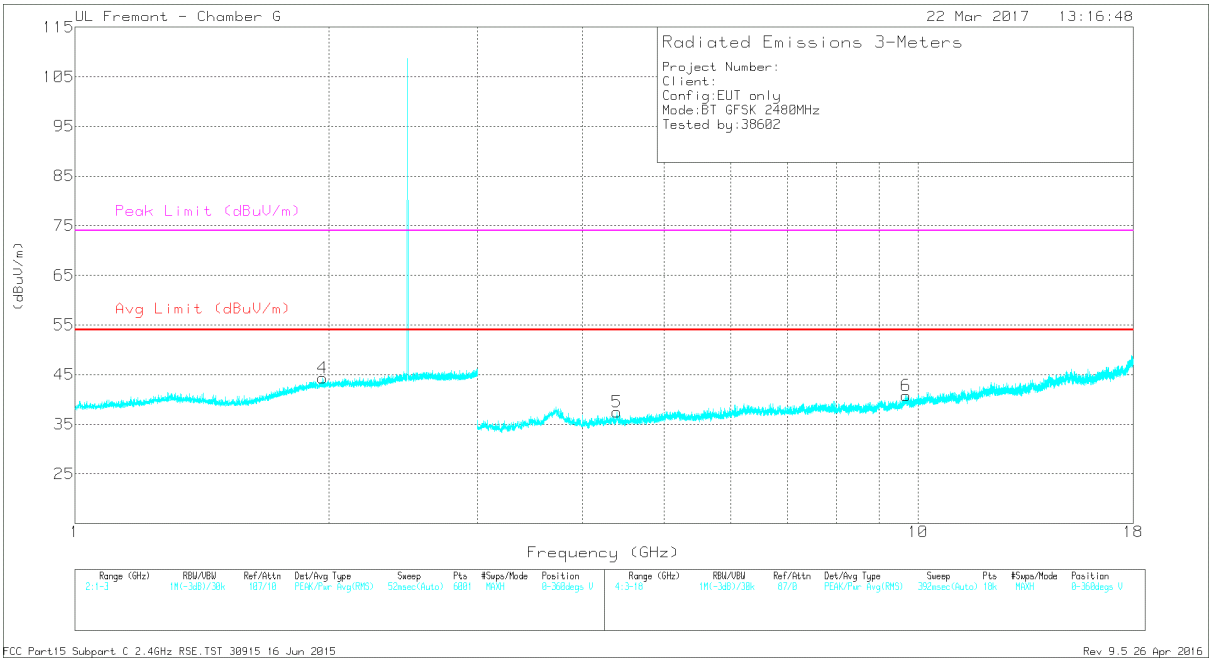
HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 5.027	39.92	PKFH	34.7	-31.6	43.02	-	-	74	-30.98	347	160	H
	* 5.023	28.41	VA1T	34.7	-31.6	31.51	54	-22.49	-	-	347	160	H
5	* 4.39	40.41	PKFH	34.1	-31.7	42.81	-	-	74	-31.19	53	375	V
	* 4.389	28.75	VA1T	34.1	-31.7	31.15	54	-22.85	-	-	53	375	V
4	1.967	37.07	PKFH	31.5	-24.2	44.37	-	-	-	-	0	200	V
1	2.13	37.2	PKFH	31.6	-24	44.8	-	-	-	-	55	102	H
6	9.68	30.92	PKFH	36.7	-26.8	40.82	-	-	-	-	85	200	V
3	10.204	31.11	PKFH	37.3	-27.2	41.21	-	-	-	-	97	100	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

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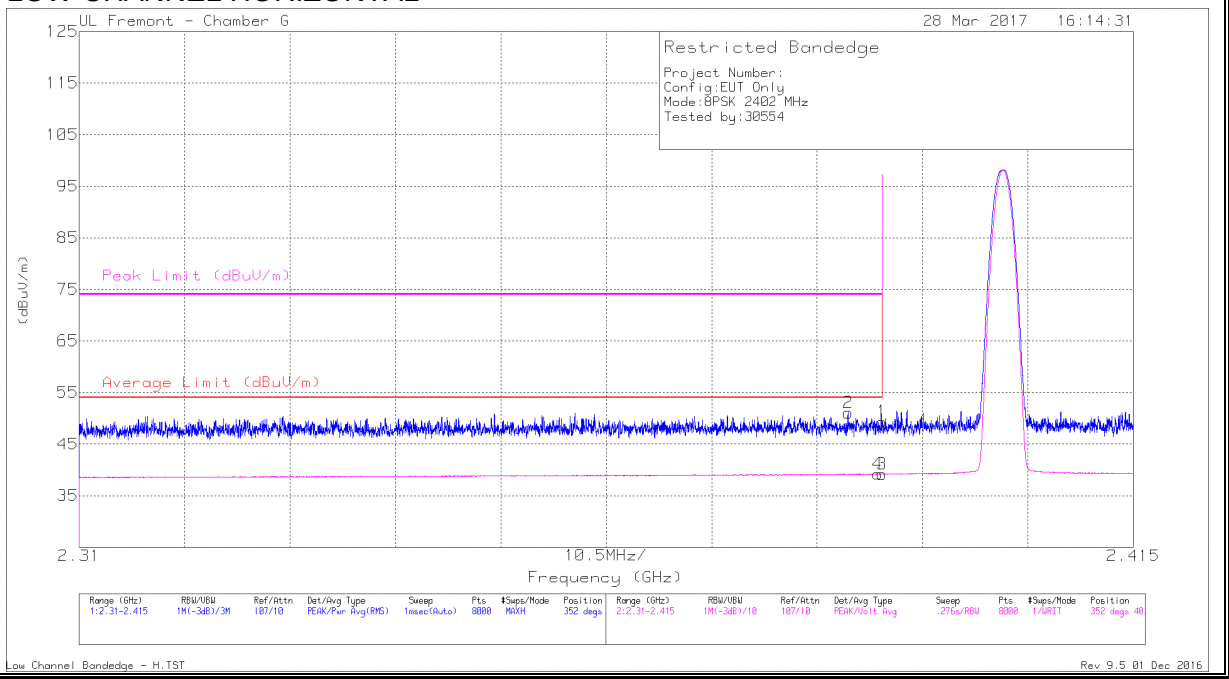
9.3. UAT 1, PMAX ENHANCED DATA RATE 8PSK MODULATION

9.3.1. RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/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	40.96	Pk	32.1	-23.7	49.36	-	-	74	-24.64	352	403	H
2	* 2.387	42.68	Pk	32.1	-23.7	51.08	-	-	74	-22.92	352	403	H
3	* 2.39	30.77	VA1T	32.1	-23.7	39.17	54	-14.83	-	-	352	403	H
4	* 2.39	30.82	VA1T	32.1	-23.7	39.22	54	-14.78	-	-	352	403	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
Rev 9.5 01 Dec 2016

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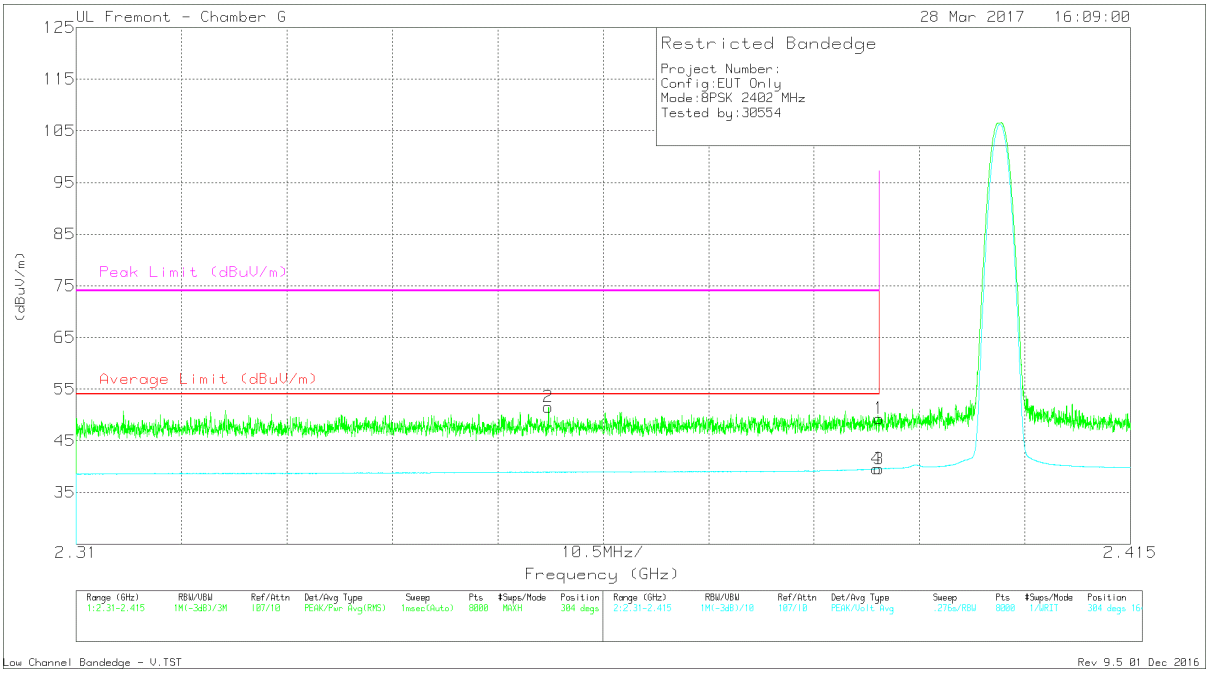
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/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	40.92	Pk	32.1	-23.7	49.32	-	-	74	-24.68	304	164	V
2	* 2.357	43.36	Pk	31.9	-23.7	51.56	-	-	74	-22.44	304	164	V
3	* 2.39	31.15	VA1T	32.1	-23.7	39.55	54	-14.45	-	-	304	164	V
4	* 2.39	31.18	VA1T	32.1	-23.7	39.58	54	-14.42	-	-	304	164	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

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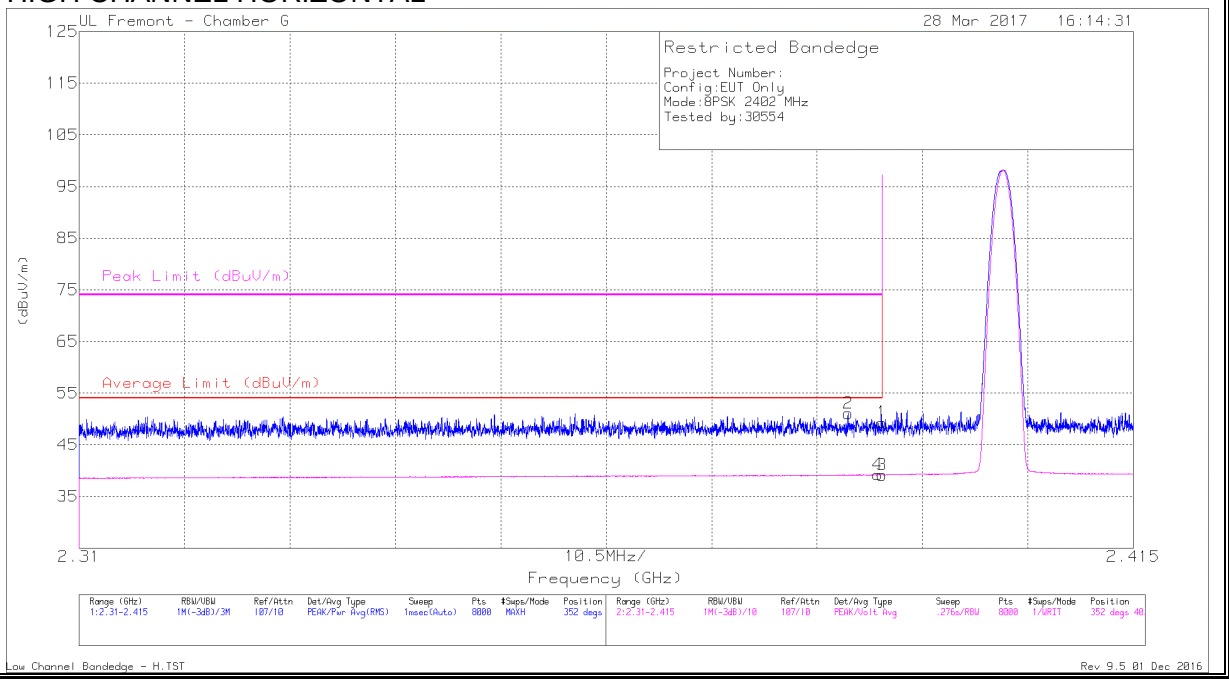
9.3.2. AUTHORIZED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/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	40.96	Pk	32.1	-23.7	49.36	-	-	74	-24.64	352	403	H
2	* 2.387	42.68	Pk	32.1	-23.7	51.08	-	-	74	-22.92	352	403	H
3	* 2.39	30.77	VA1T	32.1	-23.7	39.17	54	-14.83	-	-	352	403	H
4	* 2.39	30.82	VA1T	32.1	-23.7	39.22	54	-14.78	-	-	352	403	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
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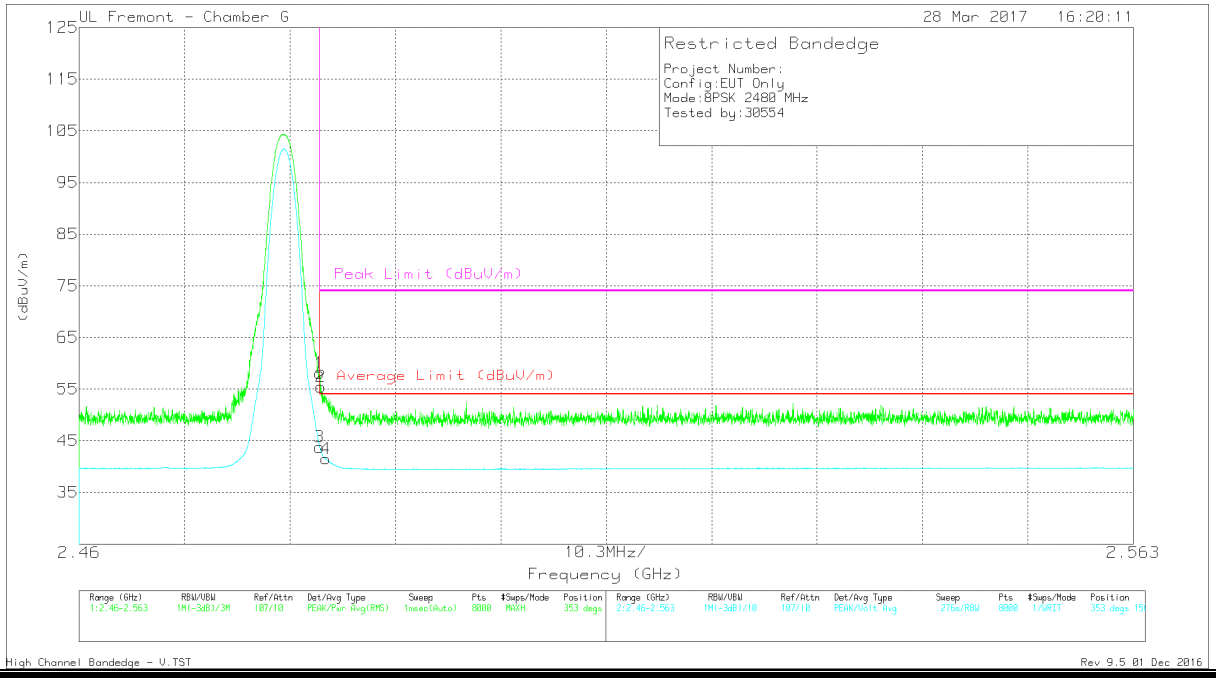
HIGH CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/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	* 2.484	49.47	Pk	32.3	-23.7	58.07	-	-	74	-15.93	353	150	V
2	* 2.484	46.86	Pk	32.3	-23.7	55.46	-	-	74	-18.54	353	150	V
3	* 2.484	35.18	VA1T	32.3	-23.7	43.78	54	-10.22	-	-	353	150	V
4	* 2.484	32.89	VA1T	32.3	-23.7	41.49	54	-12.51	-	-	353	150	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

Rev 9.5 01 Dec 2016

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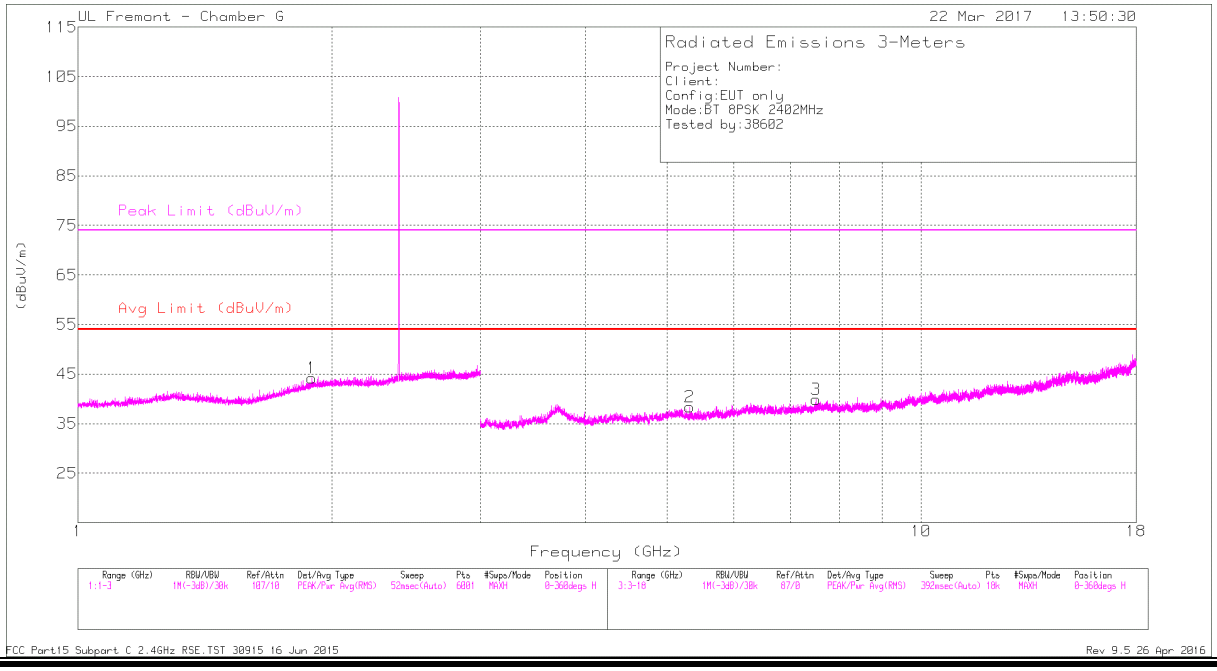
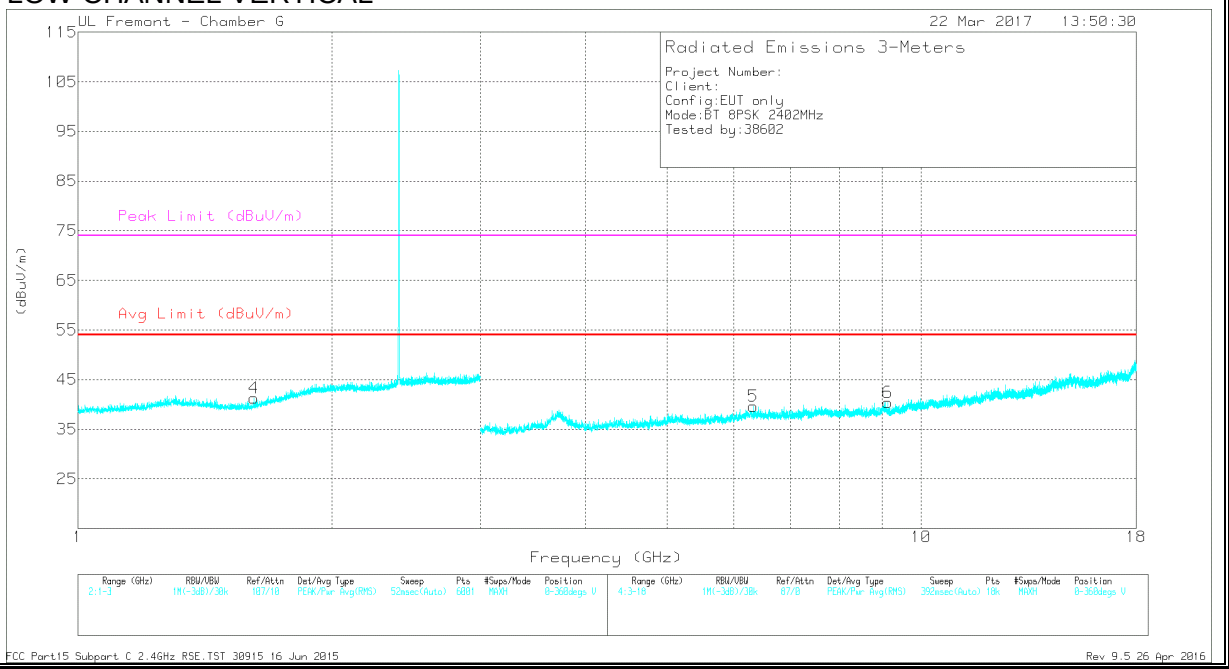
9.3.3. HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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DATA

Radiated Emissions

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Flt r/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	* 1.618	42.94	PKFH	28.3	-24.4	46.84	-	-	74	-27.16	71	386	V
	* 1.616	31.54	VA1T	28.3	-24.4	35.44	54	-18.56	-	-	71	386	V
3	* 7.508	38.66	PKFH	36	-29.5	45.16	-	-	74	-28.84	259	321	H
	* 7.506	26.98	VA1T	36	-29.5	33.48	54	-20.52	-	-	259	321	H
6	* 9.132	37.11	PKFH	36.2	-28.1	45.21	-	-	74	-28.79	36	126	V
	* 9.131	25.64	VA1T	36.2	-28.1	33.74	54	-20.26	-	-	36	126	V
1	1.895	37.24	PKFH	31.4	-24.4	44.24	-	-	-	-	0	100	H
2	5.314	34.91	PKFH	35	-31.6	38.31	-	-	-	-	95	201	H
5	6.326	34.85	PKFH	35.6	-30.8	39.65	-	-	-	-	125	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

FCC Part15 Subpart C 2.4GHz RSE.TST 30915 16 Jun 2015
Rev 9.5 26 Apr 2016

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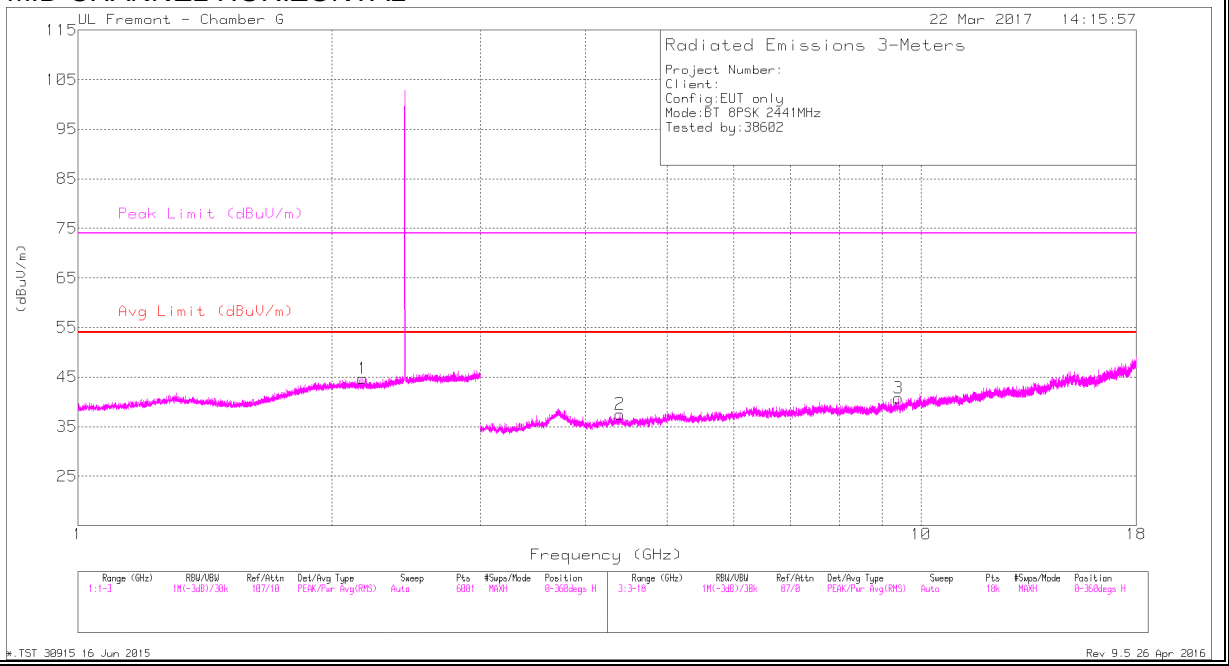
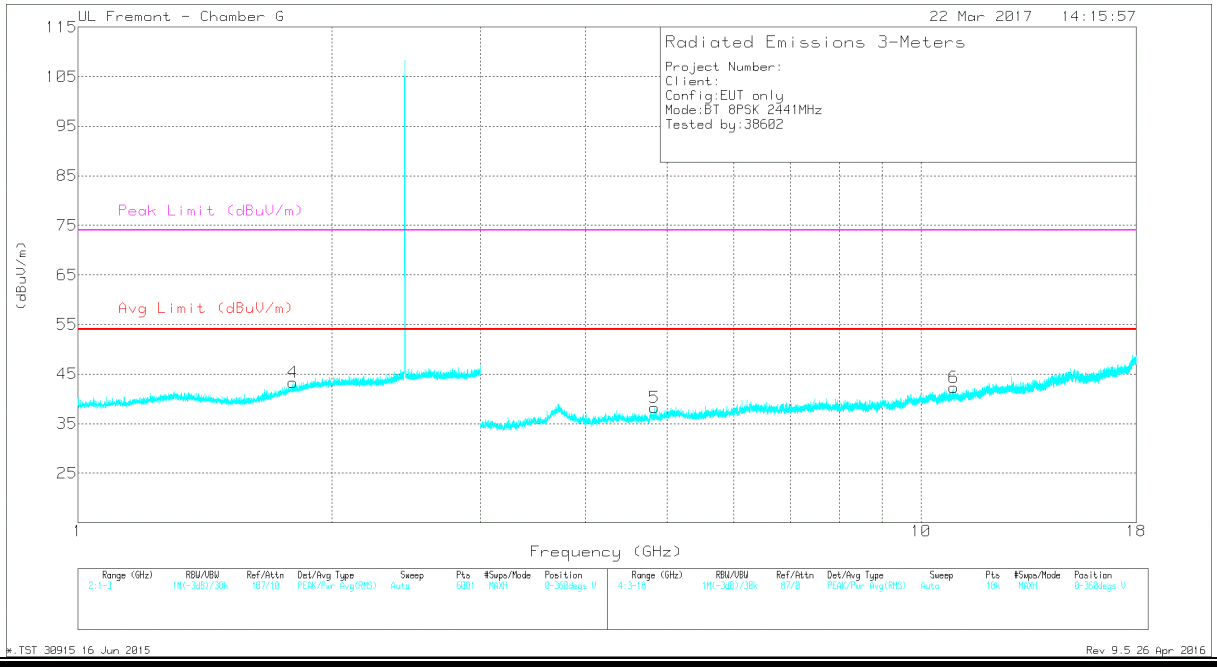
MID CHANNEL HORIZONTAL



MID CHANNEL VERTICAL



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Radiated Emissions

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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
2	* 4.395	40.96	PKFH	34.1	-31.8	43.26	-	-	74	-30.74	67	143	H
	* 4.397	28.96	VA1T	34.1	-31.8	31.26	54	-22.74	-	-	67	143	H
3	* 9.402	36.72	PKFH	36.5	-28	45.22	-	-	74	-28.78	331	118	H
	* 9.402	25.53	VA1T	36.5	-28	34.03	54	-19.97	-	-	331	118	H
5	* 4.831	39.98	PKFH	34.5	-31.8	42.68	-	-	74	-31.32	319	212	V
	* 4.829	28.37	VA1T	34.5	-31.8	31.07	54	-22.93	-	-	319	212	V
6	* 10.941	35.06	PKFH	37.6	-25.9	46.76	-	-	74	-27.24	74	308	V
	* 10.941	23.98	VA1T	37.6	-25.9	35.68	54	-18.32	-	-	74	308	V
4	1.798	37.27	PKFH	30.4	-24.3	43.37	-	-	-	-	25	201	V
1	2.178	37.22	PKFH	31.5	-24	44.72	-	-	-	-	55	201	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

*.TST 30915 16 Jun 2015

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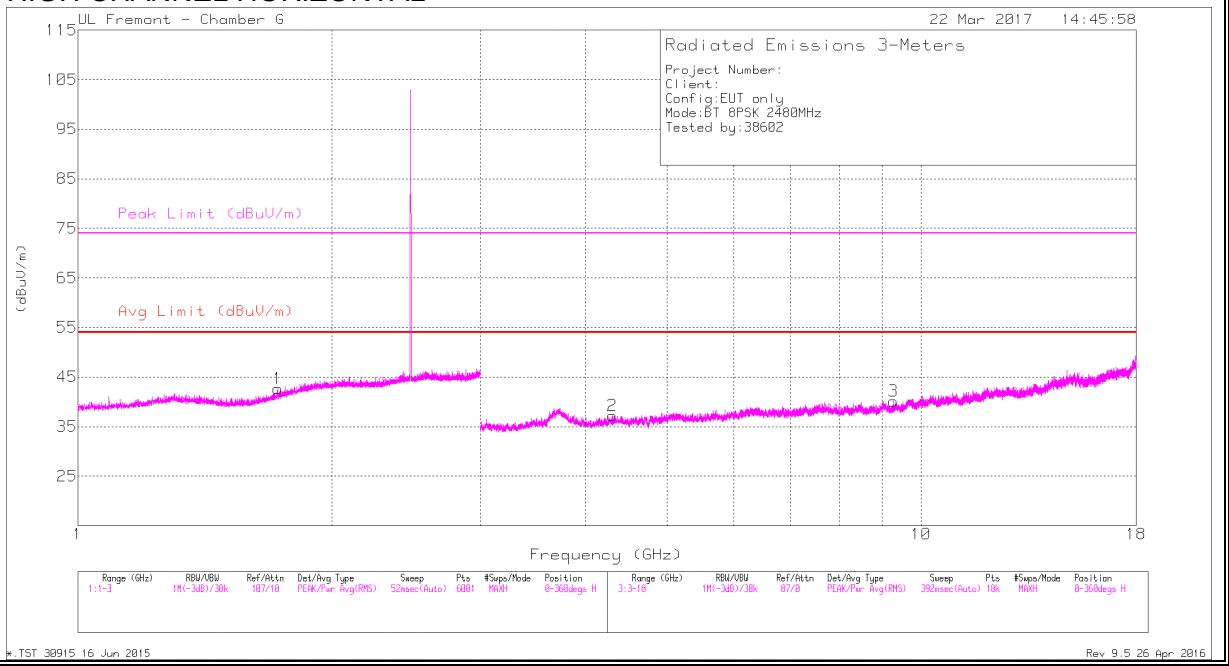
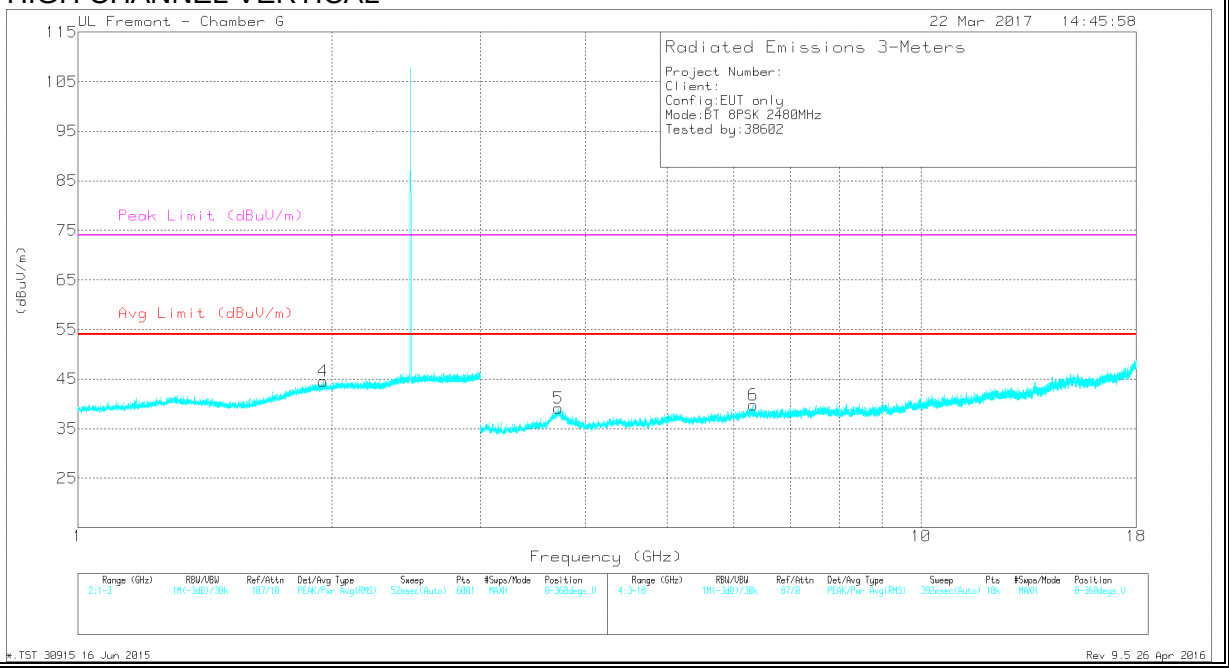
HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



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DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Flt r/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 4.308	39.28	PKFH	33.9	-31.4	41.78	-	-	74	-32.22	121	117	H
	* 4.306	28	VA1T	33.9	-31.4	30.5	54	-23.5	-	-	121	117	H
5	* 3.715	40.03	PKFH	34.2	-30.7	43.53	-	-	74	-30.47	34	385	V
	* 3.714	28.7	VA1T	34.2	-30.7	32.2	54	-21.8	-	-	34	385	V
1	1.725	37.51	PKFH	29.5	-24.3	42.71	-	-	-	-	0	101	H
4	1.955	37.38	PKFH	31.5	-24.3	44.58	-	-	-	-	0	100	V
6	6.321	34.82	PKFH	35.6	-30.7	39.72	-	-	-	-	92	201	V
3	9.282	32.18	PKFH	36.3	-28.3	40.18	-	-	-	-	110	100	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

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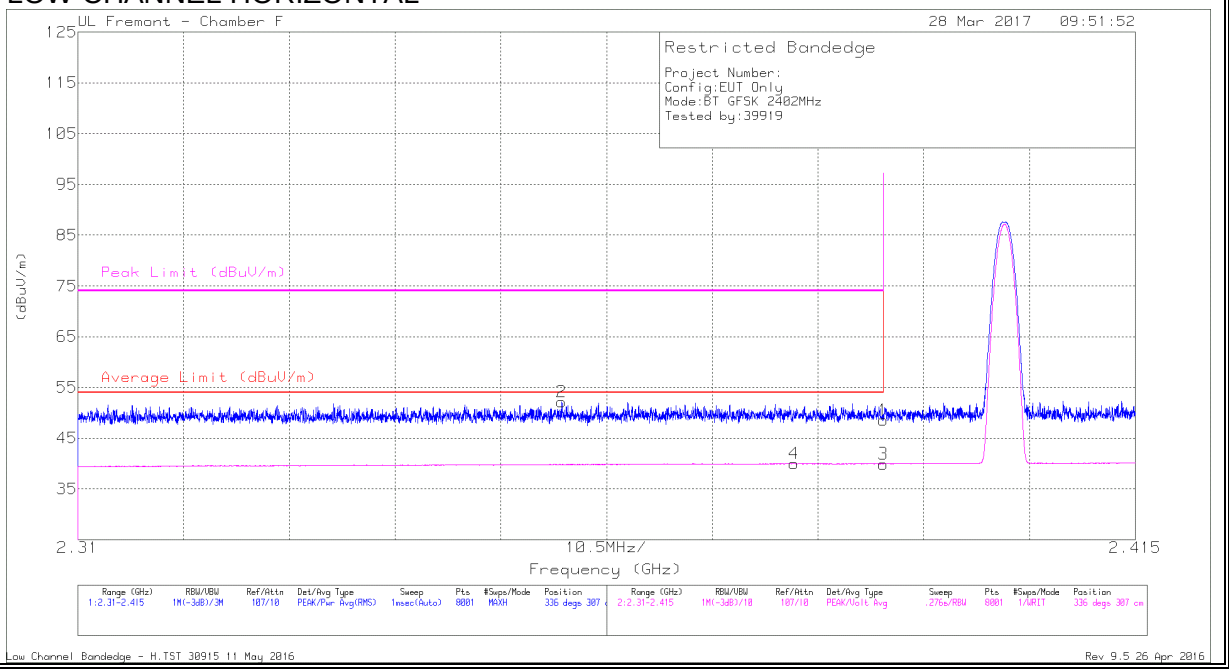
9.4. UAT 1, PLOW BASIC DATA RATE GFSK MODULATION

9.4.1. RESTRICTED BANDEDGE (LOW CHANNEL)

LOW CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/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	37.5	Pk	32.1	-21	48.6	-	-	74	-25.4	336	307	H
2	* 2.358	41.15	Pk	32	-21	52.15	-	-	74	-21.85	336	307	H
3	* 2.39	28.82	VA1T	32.1	-21	39.92	54	-14.08	-	-	336	307	H
4	* 2.381	28.82	VA1T	32.1	-20.9	40.02	54	-13.98	-	-	336	307	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 11 May 2016
Rev 9.5 26 Apr 2016

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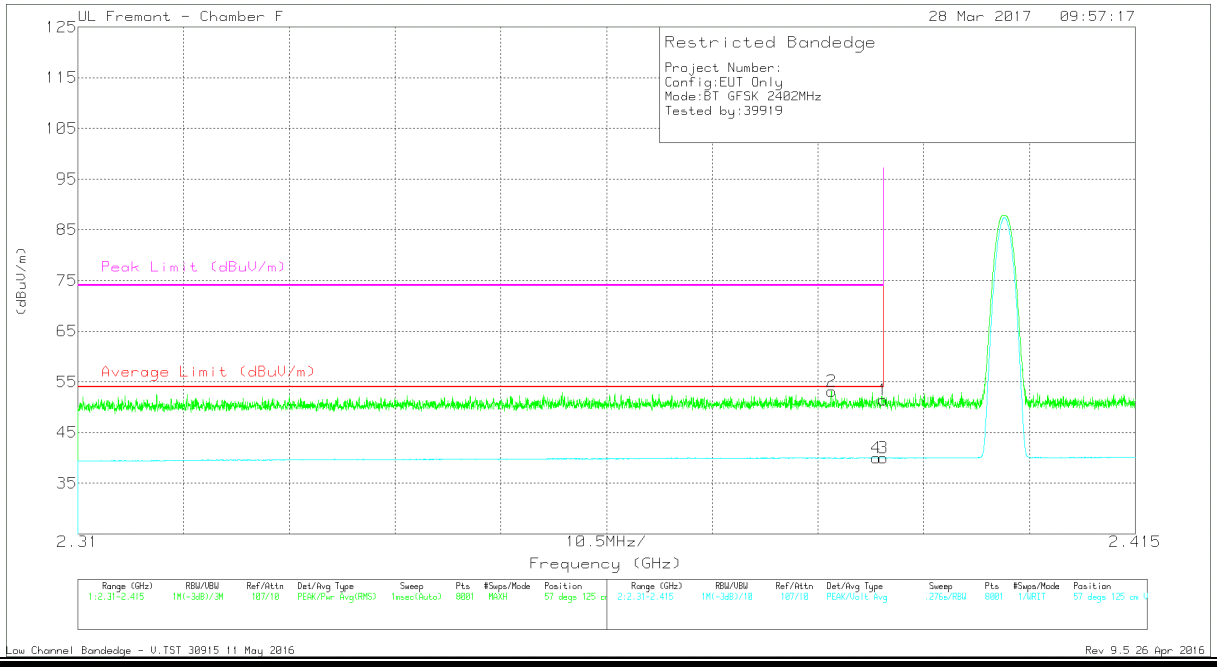
LOW CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T344 (dB/m)	Amp/Cbl/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	40.29	Pk	32.1	-21	51.39	-	-	74	-22.61	57	125	V
2	* 2.385	41.93	Pk	32.1	-20.9	53.13	-	-	74	-20.87	57	125	V
3	* 2.39	28.85	VA1T	32.1	-21	39.95	54	-14.05	-	-	57	125	V
4	* 2.389	28.79	VA1T	32.1	-20.9	39.99	54	-14.01	-	-	57	125	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 11 May 2016
Rev 9.5 26 Apr 2016

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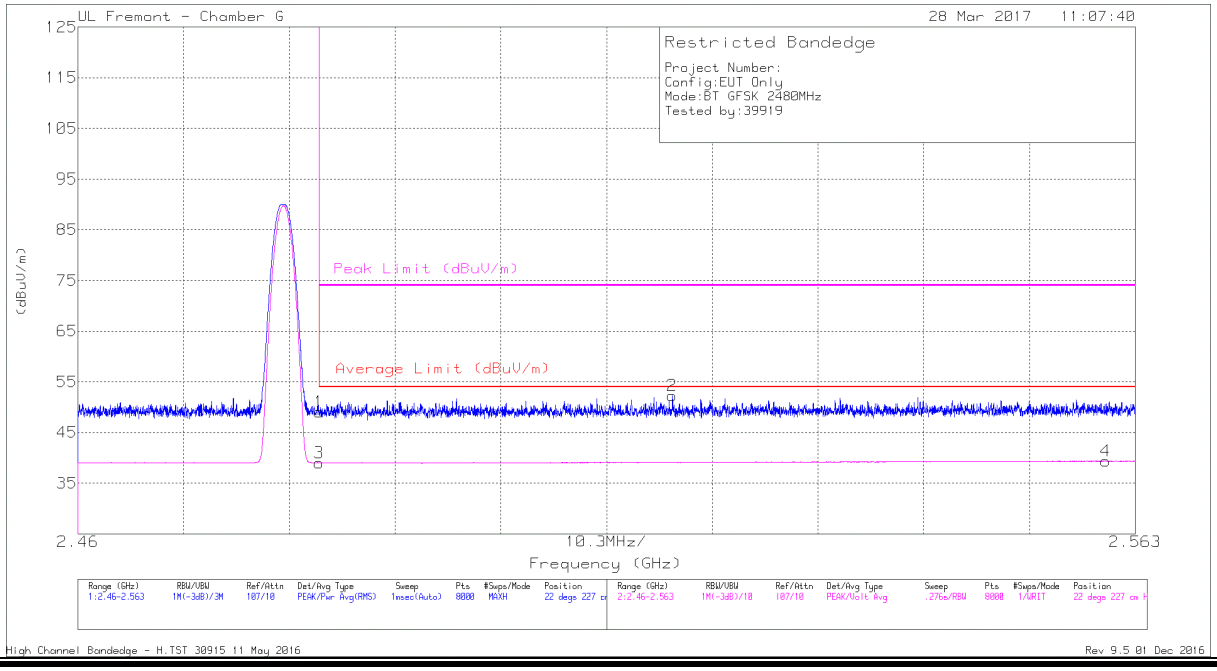
9.4.2. AUTHORIZED BANDEDGE (HIGH CHANNEL)

HIGH CHANNEL HORIZONTAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/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	* 2.484	40.48	Pk	32.3	-23.7	49.08	-	-	74	-24.92	22	227	H
3	* 2.484	30.4	VA1T	32.3	-23.7	39	54	-15	-	-	22	227	H
2	2.518	43.54	Pk	32.4	-23.7	52.24	-	-	74	-21.76	22	227	H
4	2.56	30.47	VA1T	32.6	-23.7	39.37	54	-14.63	-	-	22	227	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 11 May 2016
Rev 9.5 01 Dec 2016

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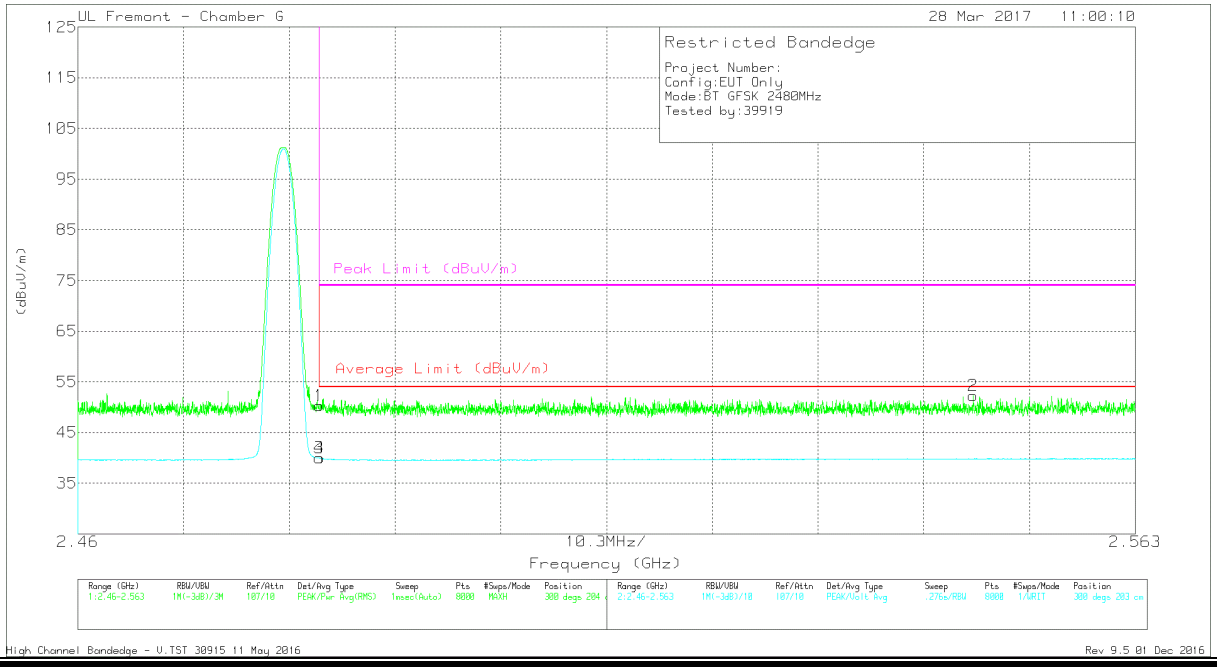
HIGH CHANNEL VERTICAL



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/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	* 2.484	41.72	Pk	32.3	-23.7	50.32	-	-	74	-23.68	300	204	V
3	* 2.484	31.34	VA1T	32.3	-23.7	39.94	54	-14.06	-	-	300	203	V
4	* 2.484	31.35	VA1T	32.3	-23.7	39.95	54	-14.05	-	-	300	203	V
2	2.547	43.34	Pk	32.6	-23.7	52.24	-	-	74	-21.76	300	204	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 11 May 2016
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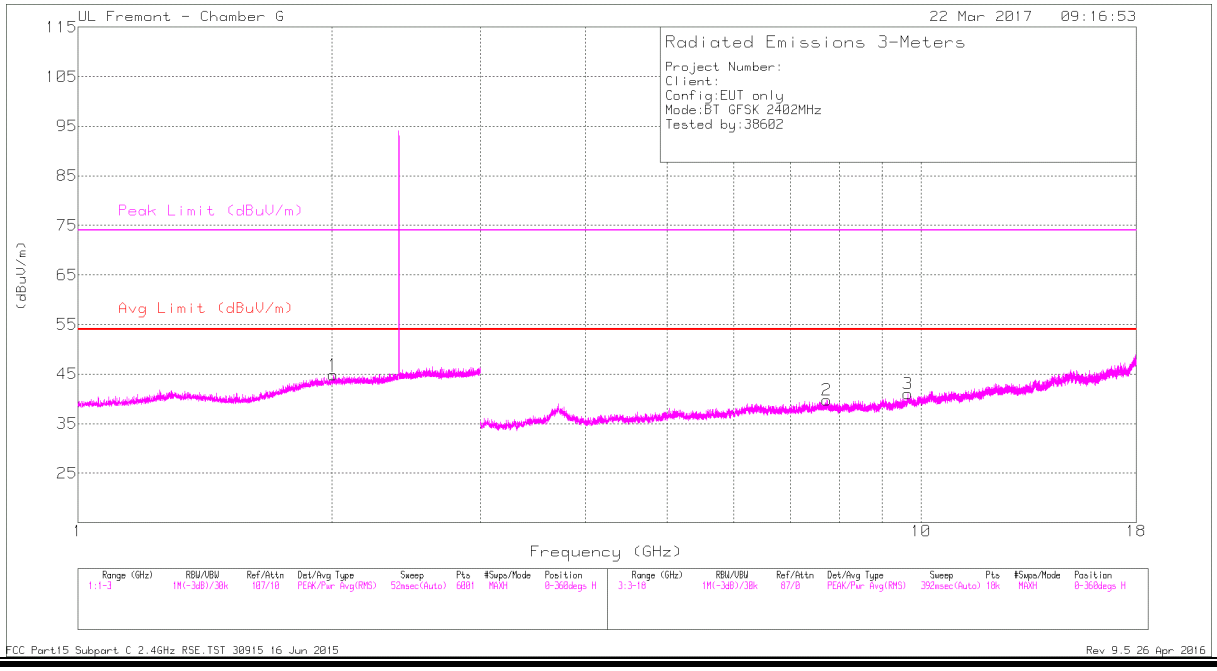
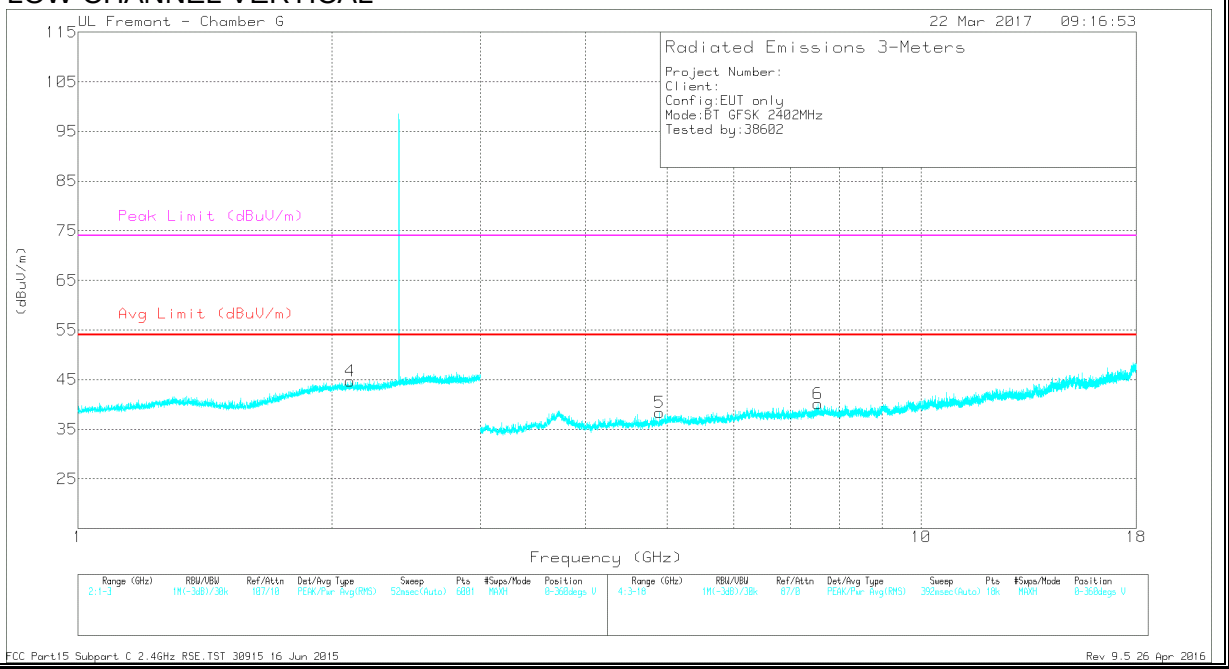
9.4.3. HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



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DATA

Radiated Emissions

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (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
2	* 7.727	38.53	PKFH	36.1	-29.8	44.83	-	-	74	-29.17	316	267	H
	* 7.727	27.08	VA1T	36.1	-29.8	33.38	54	-20.62	-	-	316	267	H
5	* 4.895	40.45	PKFH	34.5	-31.8	43.15	-	-	74	-30.85	238	189	V
	* 4.895	28.31	VA1T	34.5	-31.8	31.01	54	-22.99	-	-	238	189	V
6	* 7.55	38.05	PKFH	36	-29.2	44.85	-	-	74	-29.15	147	193	V
	* 7.551	26.85	VA1T	36	-29.2	33.65	54	-20.35	-	-	147	193	V
1	2.007	37.36	PKFH	31.6	-24.1	44.86	-	-	-	-	0	100	H
4	2.103	37.1	PKFH	31.6	-24	44.7	-	-	-	-	120	201	V
3	9.65	31.14	PKFH	36.7	-26.8	41.04	-	-	-	-	58	100	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 Part15 Subpart C 2.4GHz RSE.TST 30915 16 Jun 2015
Rev 9.5 26 Apr 2016

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701I
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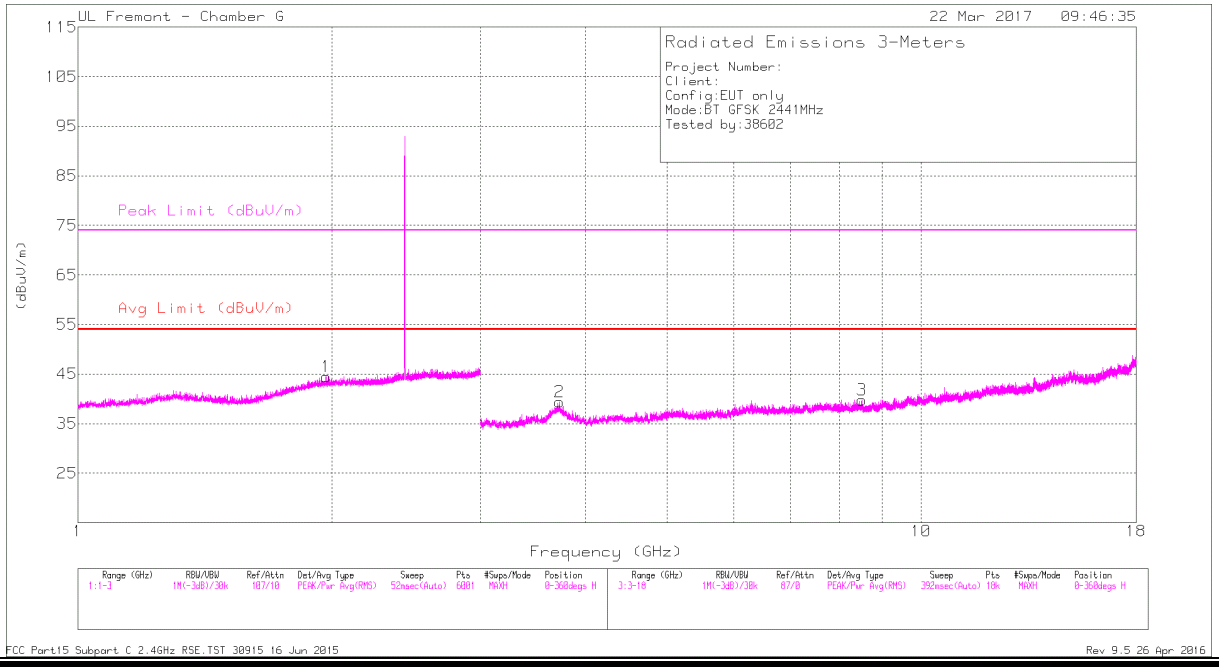
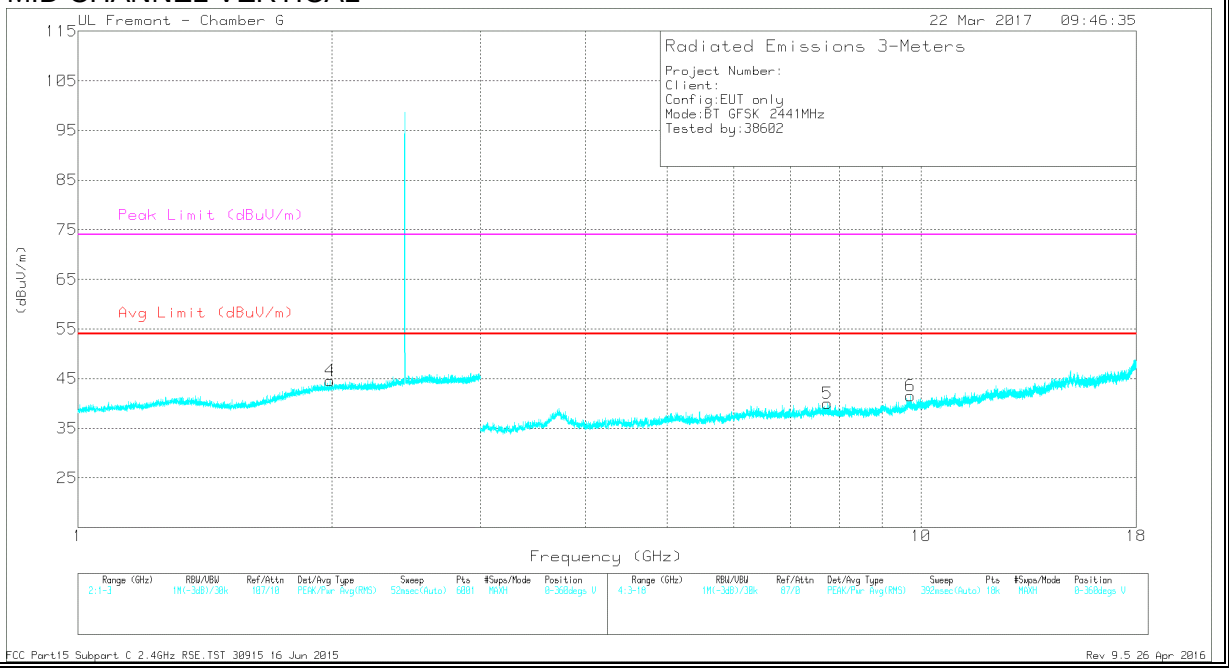
MID CHANNEL HORIZONTAL



MID CHANNEL VERTICAL



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