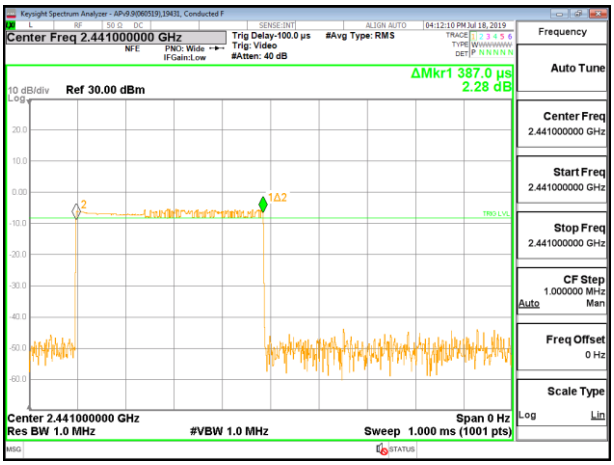
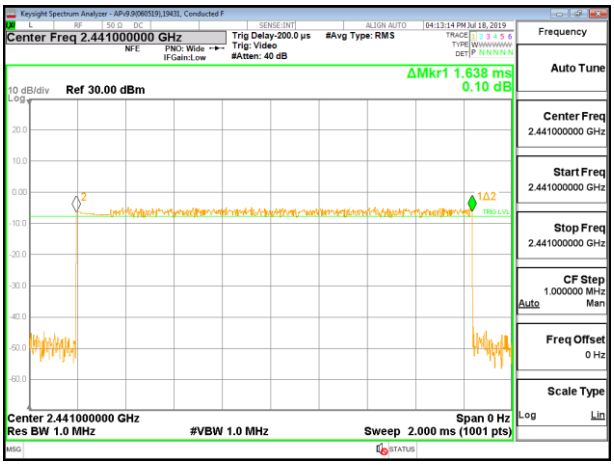
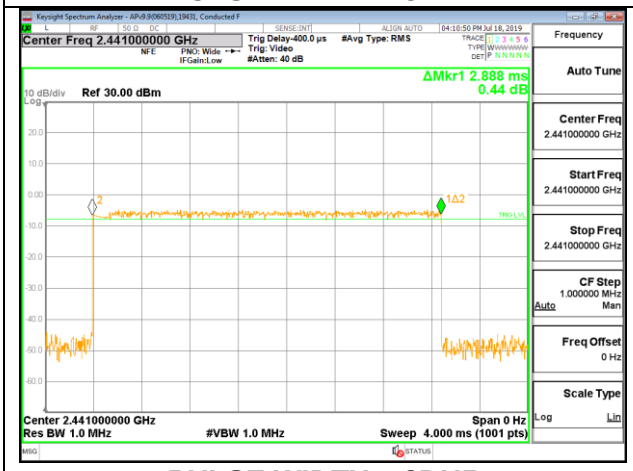


PULSE WIDTH – 3DH1

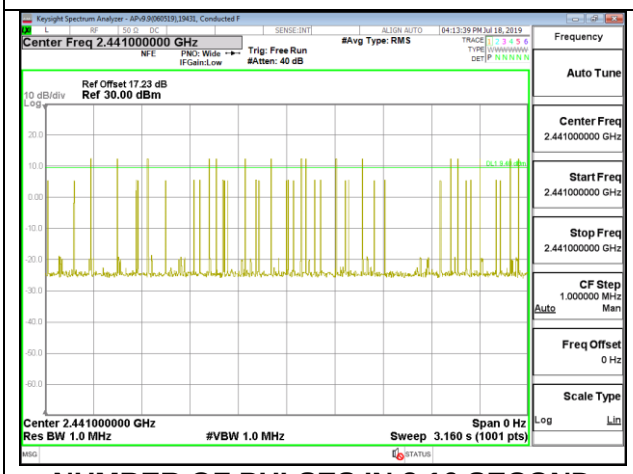


PULSE WIDTH – 3DH3



PULSE WIDTH – 3DH5

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3DH1



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3DH3

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3DH5

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8.6 OUTPUT POWER

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.

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for a gated peak reading of power.

RESULTS

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8.6.1 HIGH POWER BASIC DATA RATE GFSK MODULATION

Antenna 4

Tested By:	50820
Date:	7/24/2019

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	17.13	21	-3.87
Middle	2441	17.22	21	-3.78
High	2480	17.19	21	-3.81

Antenna 3

Tested By:	50820
Date:	43670

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	19.55	21	-1.45
Middle	2441	19.62	21	-1.38
High	2480	19.57	21	-1.43

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8.6.2 HIGH POWER ENHANCED DATA RATE QPSK MODULATION

Antenna 4

Tested By:	50820
Date:	7/24/2019

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	17.91	21	-3.09
Middle	2441	17.98	21	-3.02
High	2480	17.93	21	-3.07

Antenna 3

Tested By:	50820
Date:	43670

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	17.88	21	-3.12
Middle	2441	17.95	21	-3.05
High	2480	17.92	21	-3.08

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8.6.3 HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

Antenna 4

Tested By:	50820
Date:	7/24/2019

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	18.13	21	-2.87
Middle	2441	18.20	21	-2.8
High	2480	18.17	21	-2.83

Antenna 3

Tested By:	50820
Date:	43670

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	18.09	21	-2.91
Middle	2441	18.15	21	-2.85
High	2480	18.06	21	-2.94

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8.6.4 LOW POWER BASIC DATA RATE GFSK MODULATION

Antenna 4

Tested By:	50820
Date:	43670

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	12.61	21	-8.39
Middle	2441	12.69	21	-8.31
High	2480	12.64	21	-8.36

Antenna 3

Tested By:	50820
Date:	43670

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	12.63	21	-8.37
Middle	2441	12.72	21	-8.28
High	2480	12.66	21	-8.34

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8.6.5 LOW POWER ENHANCED DATA RATE QPSK MODULATION

Antenna 4

Tested By:	50820
Date:	7/24/2019

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.91	21	-10.09
Middle	2441	10.99	21	-10.01
High	2480	10.93	21	-10.07

Antenna 3

Tested By:	50820
Date:	43670

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.92	21	-10.08
Middle	2441	11.01	21	-9.99
High	2480	10.97	21	-10.03

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8.6.6 LOW POWER ENHANCED DATA RATE 8PSK MODULATION

Antenna 4

Tested By:	50820
Date:	7/24/2019

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	11.19	21	-9.81
Middle	2441	11.28	21	-9.72
High	2480	11.23	21	-9.77

Antenna 3

Tested By:	50820
Date:	43670

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	11.22	21	-9.78
Middle	2441	11.30	21	-9.7
High	2480	11.18	21	-9.82

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8.7 AVERAGE POWER

LIMITS

None; for reporting purposes only

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

The cable assembly insertion loss of 10.5 dB (including 10 dB pad and 0.5 dB cable) was entered as an offset in the power meter to allow for a gated average reading of power.

RESULTS

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8.7.1 HIGH POWER BASIC DATA RATE GFSK MODULATION

Antenna 4

Tested By:	50820
Date	7/24/2019

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	16.84
Middle	2441	16.92
High	2480	16.87

Antenna 3

Tested By:	50820
Date	43670

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	19.32
Middle	2441	19.45
High	2480	19.4

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8.7.2 HIGH POWER ENHANCED DATA RATE QPSK MODULATION

Antenna 4

Tested By:	50820
Date	7/24/2019

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	15.62
Middle	2441	15.67
High	2480	15.65

Antenna 3

Tested By:	50820
Date	7/24/2019

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	15.54
Middle	2441	15.73
High	2480	15.66

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8.7.3 HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

Antenna 4

Tested By:	50820
Date	7/24/2019

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	15.82
Middle	2441	15.87
High	2480	15.85

Antenna 3

Tested By:	50820
Date	7/24/2019

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	15.76
Middle	2441	15.91
High	2480	15.84

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8.7.4 LOW POWER BASIC DATA RATE GFSK MODULATION

Antenna 4

Tested By:	50820
Date	7/24/2019

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	12.32
Middle	2441	12.41
High	2480	12.37

Antenna 3

Tested By:	50820
Date	7/24/2019

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	12.34
Middle	2441	12.44
High	2480	12.39

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8.7.5 LOW POWER ENHANCED DATA RATE QPSK MODULATION

Antenna 4

Tested By:	50820
Date	7/24/2019

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	8.62
Middle	2441	8.66
High	2480	8.59

Antenna 3

Tested By:	50820
Date	7/24/2019

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	8.65
Middle	2441	8.67
High	2480	8.62

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8.7.6 LOW POWER ENHANCED DATA RATE 8PSK MODULATION

Antenna 4

Tested By:	50820
Date	7/24/2019

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	8.84
Middle	2441	8.91
High	2480	8.87

Antenna 3

Tested By:	50820
Date	7/24/2019

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	8.86
Middle	2441	8.93
High	2480	8.91

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8.8 CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

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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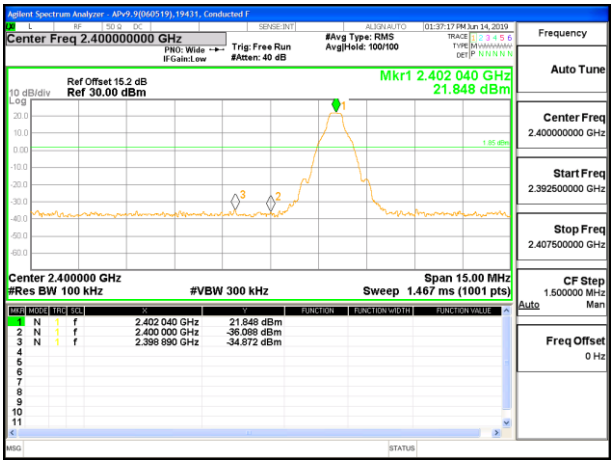
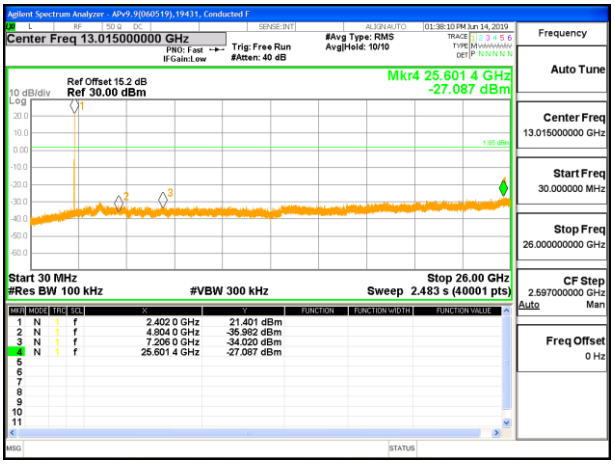
8.8.1 HIGH POWER BASIC DATA RATE GFSK MODULATION

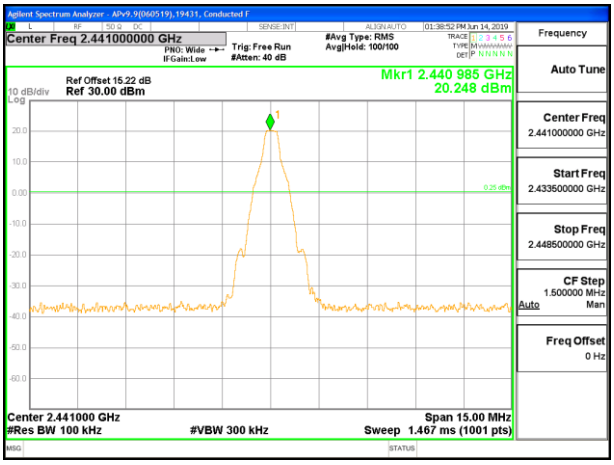
Antenna 4 SPURIOUS EMISSIONS, NON-HOPPING



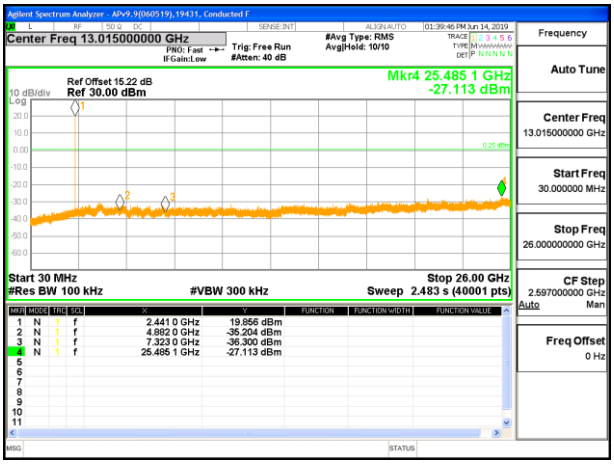
LOW CHANNEL BANDEDGE



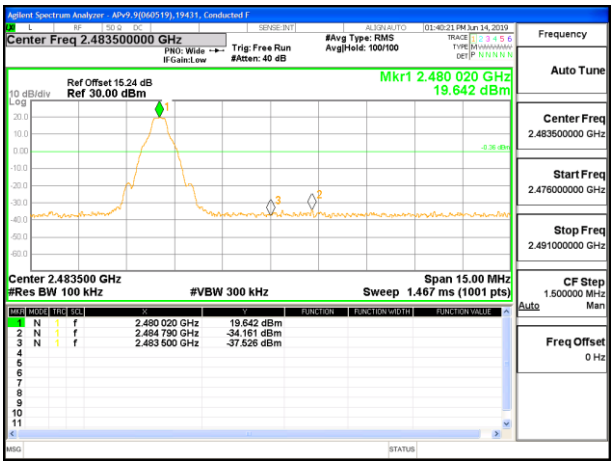
OUT-OF-BAND LOW CHANNEL



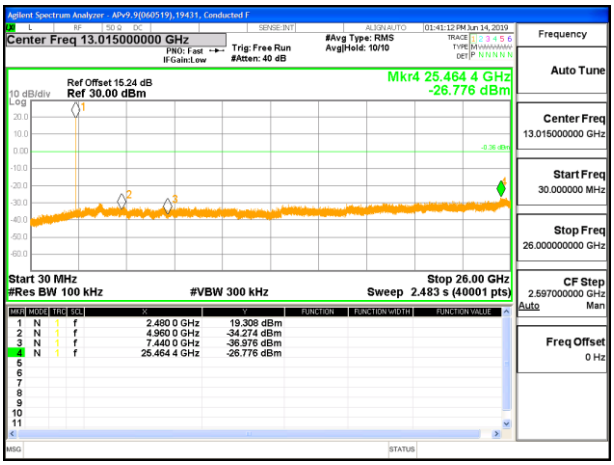
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

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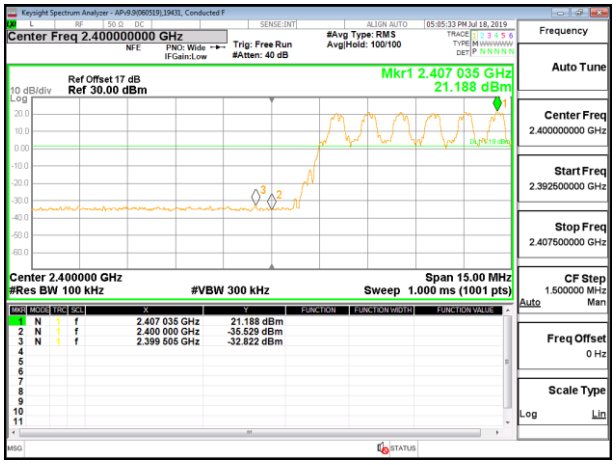
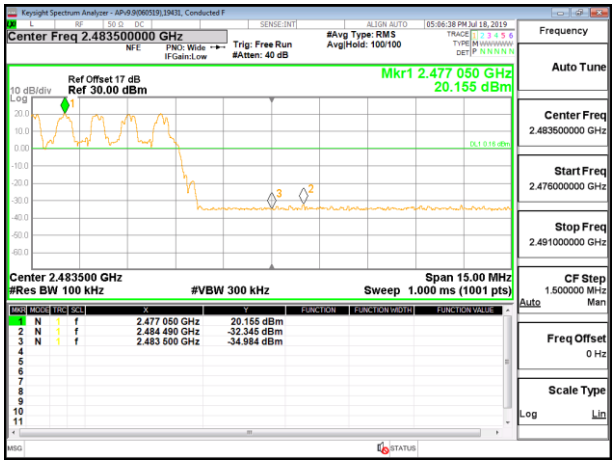
Antenna 4 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



LOW BANDEDGE



HIGH BANDEDGE

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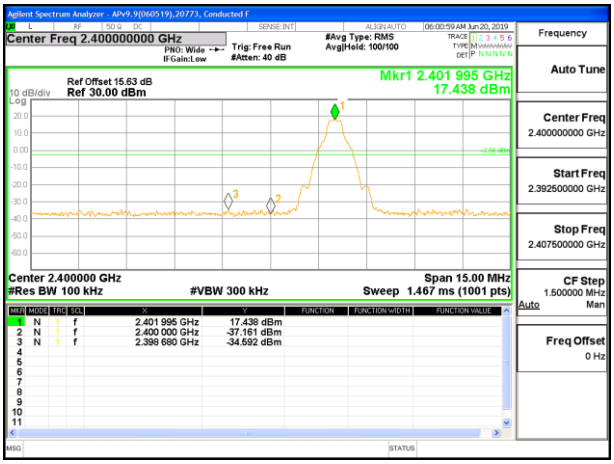
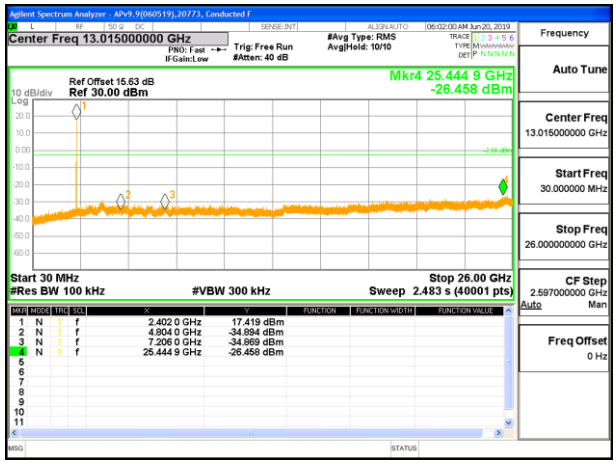
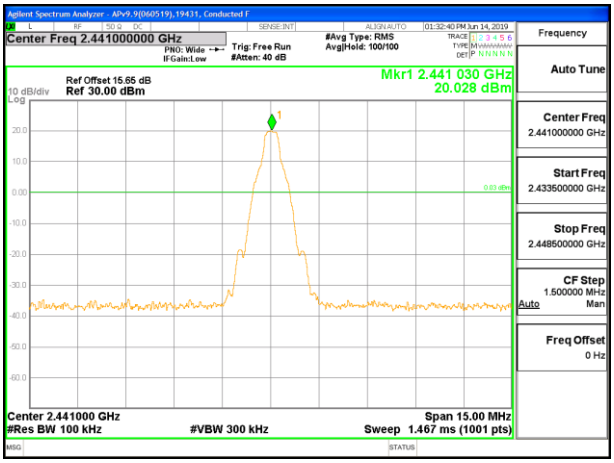
Antenna 3 SPURIOUS EMISSIONS, NON-HOPPING



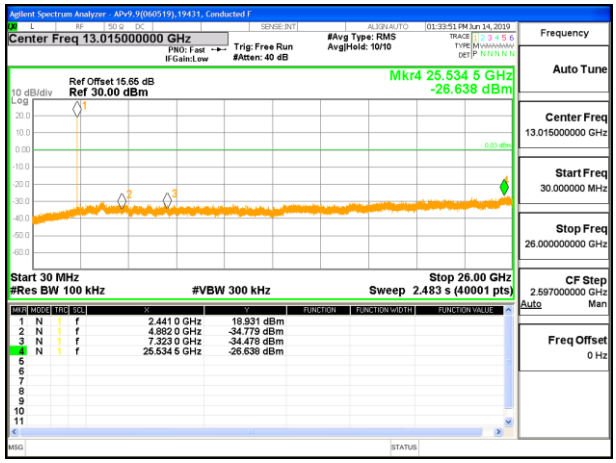
LOW CHANNEL BANDEDGE



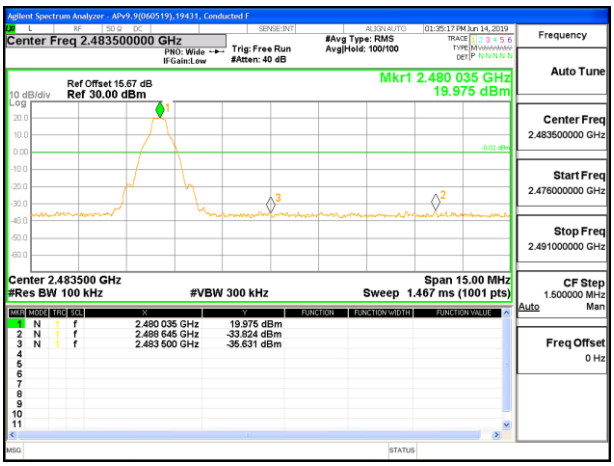
OUT-OF-BAND LOW CHANNEL



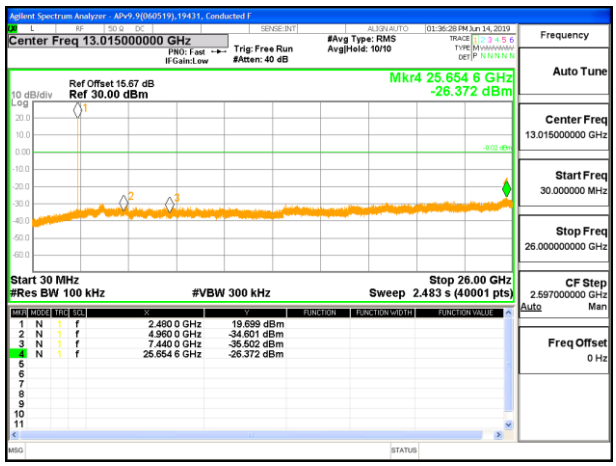
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

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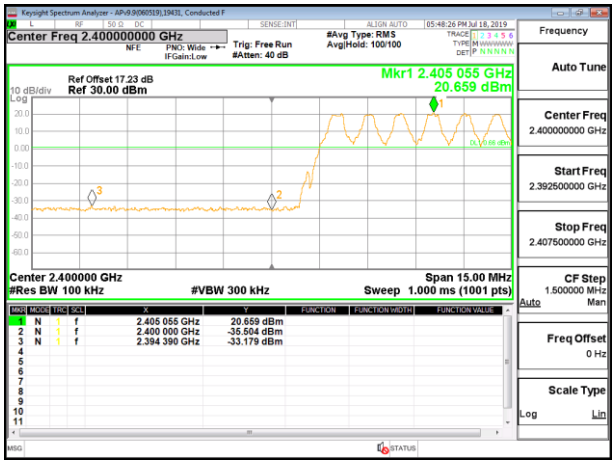
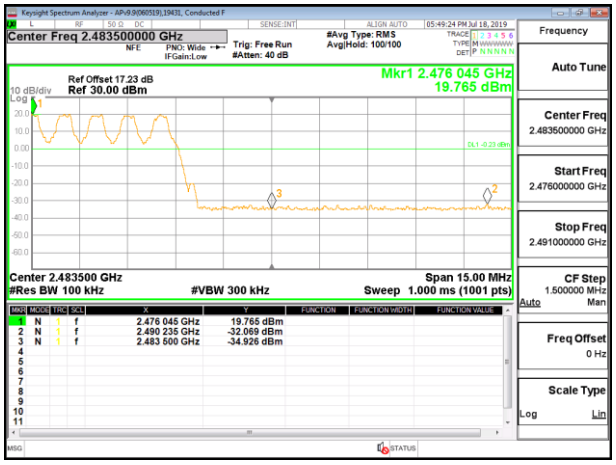
Antenna 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



LOW BANDEDGE



HIGH BANDEDGE

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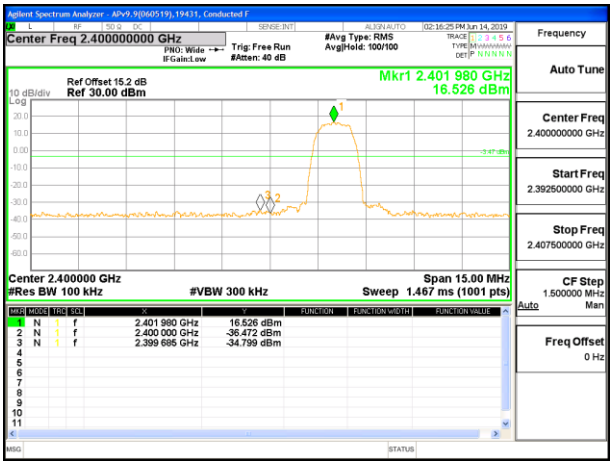
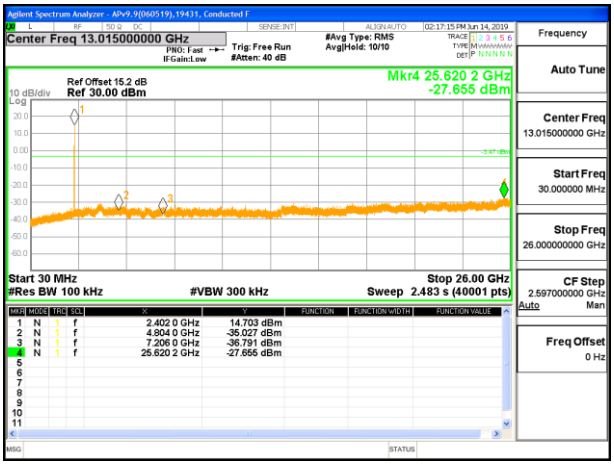
8.8.2 HIGH POWER ENHANCED DATA RATE 8PSK MODULATION

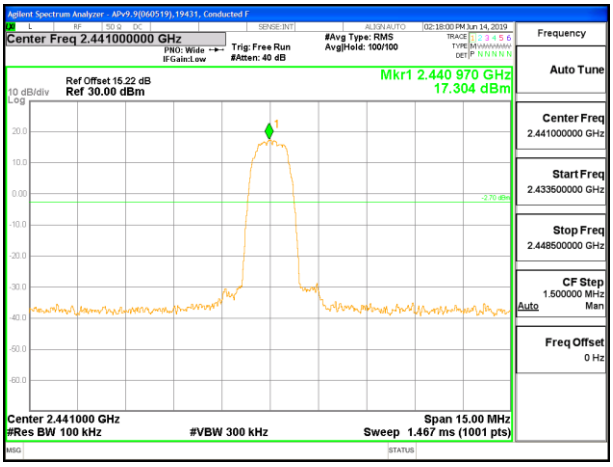
Antenna 4 SPURIOUS EMISSIONS, NON-HOPPING



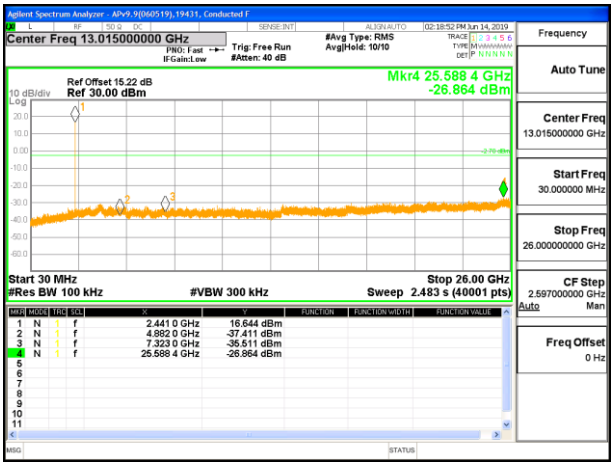
LOW CHANNEL BANDEDGE



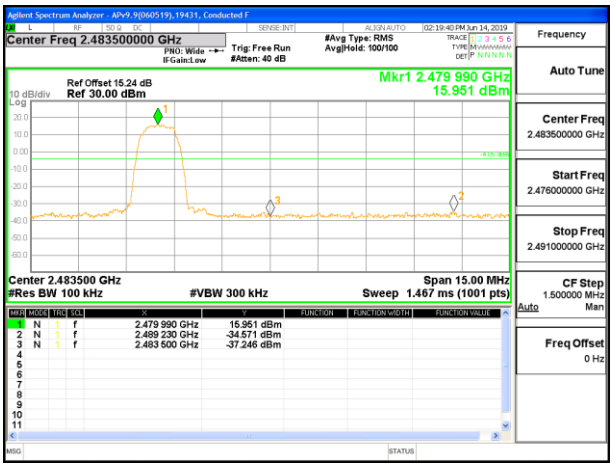
OUT-OF-BAND LOW CHANNEL



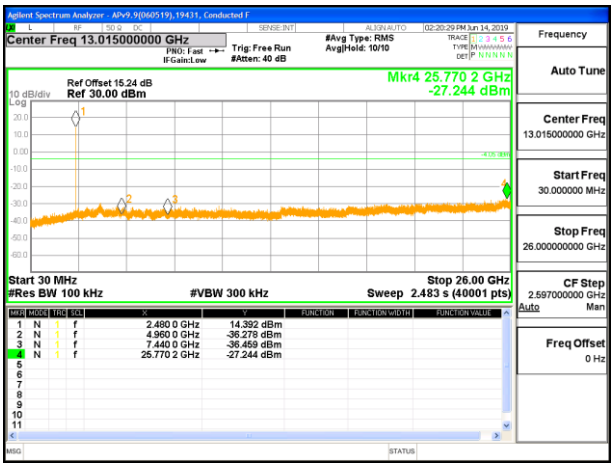
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

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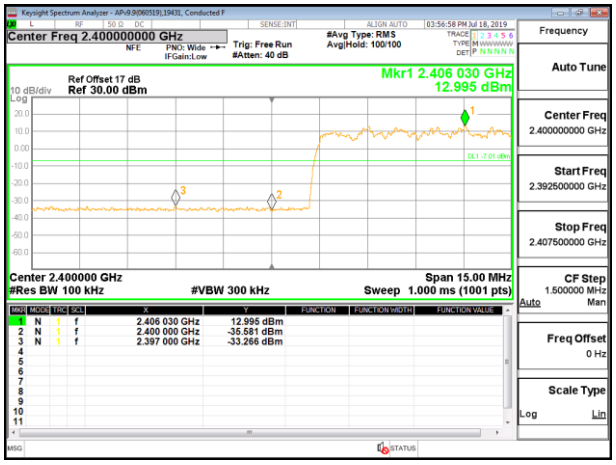
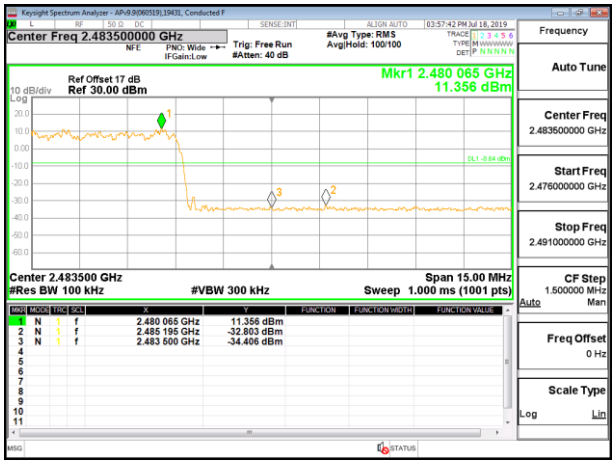
Antenna 4 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



LOW BANDEDGE



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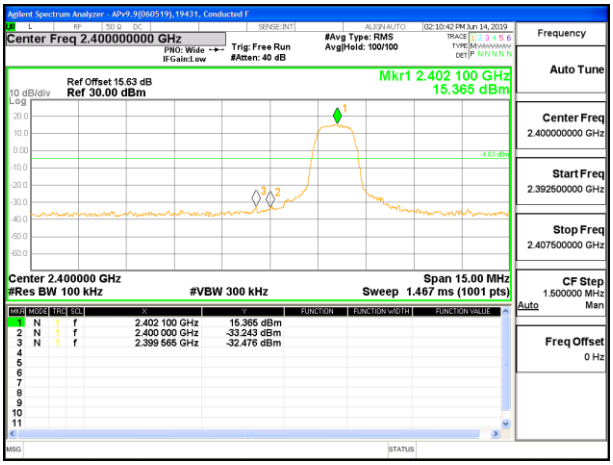
Antenna 3 SPURIOUS EMISSIONS, NON-HOPPING



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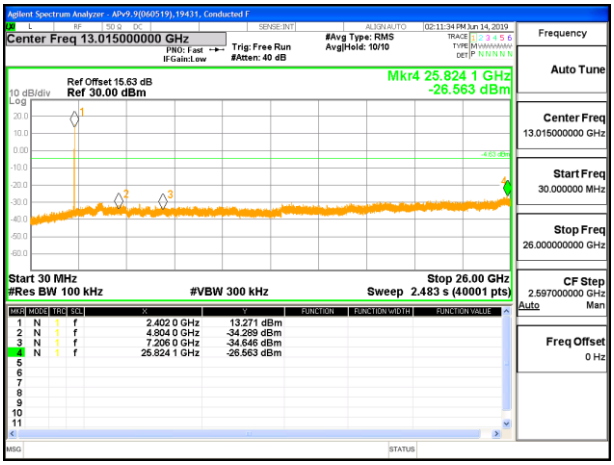
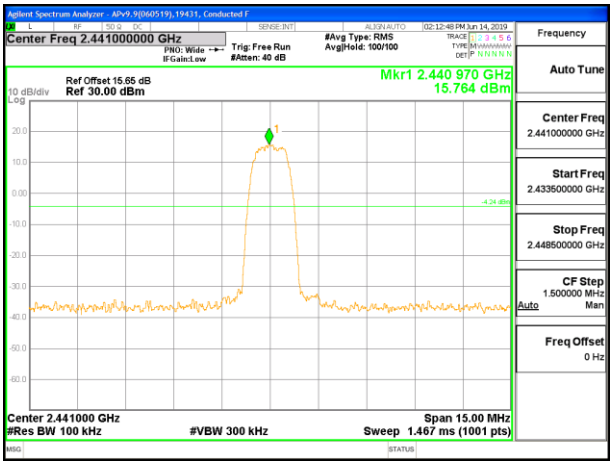
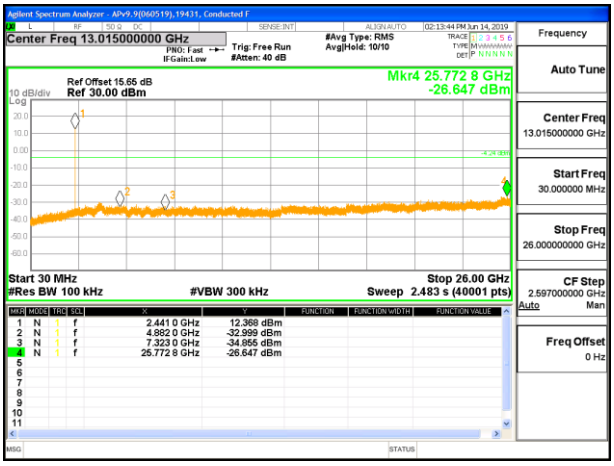


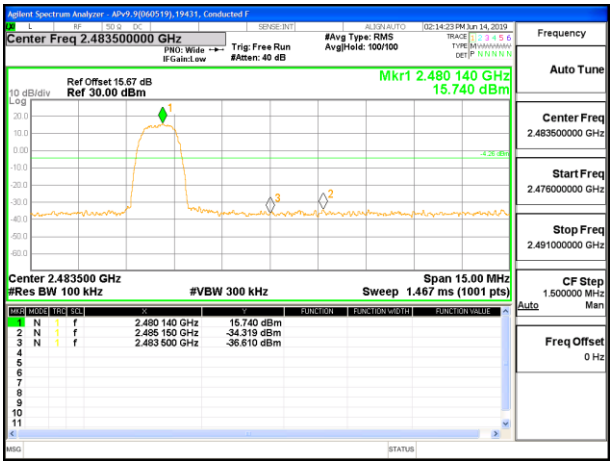
OUT-OF-BAND LOW CHANNEL



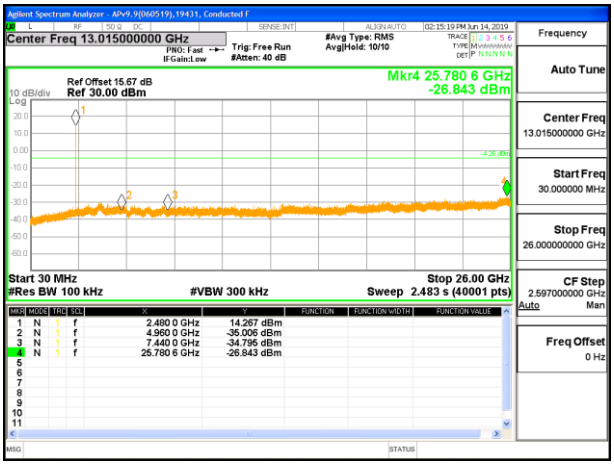
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



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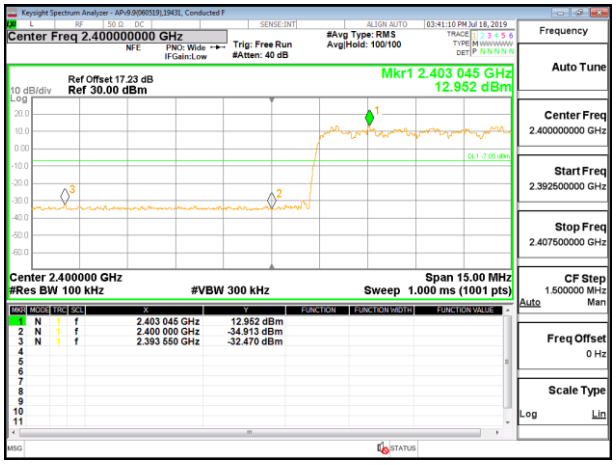
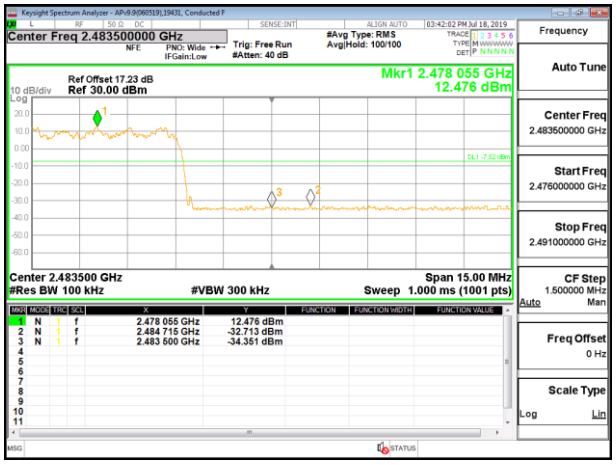
Antenna 3 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



LOW BANDEDGE



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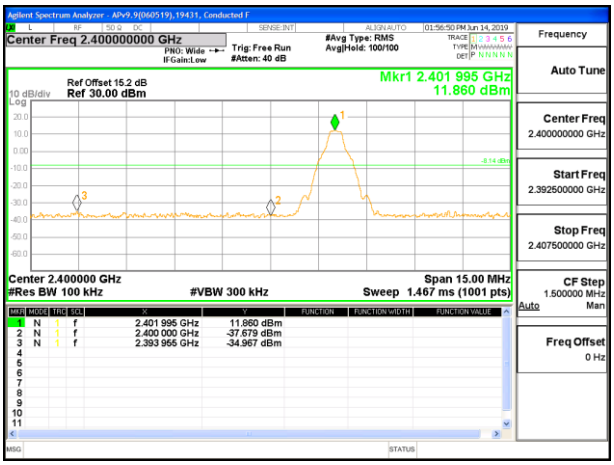
8.8.3 LOW POWER BASIC DATA RATE GFSK MODULATION

Antenna 4 SPURIOUS EMISSIONS, NON-HOPPING



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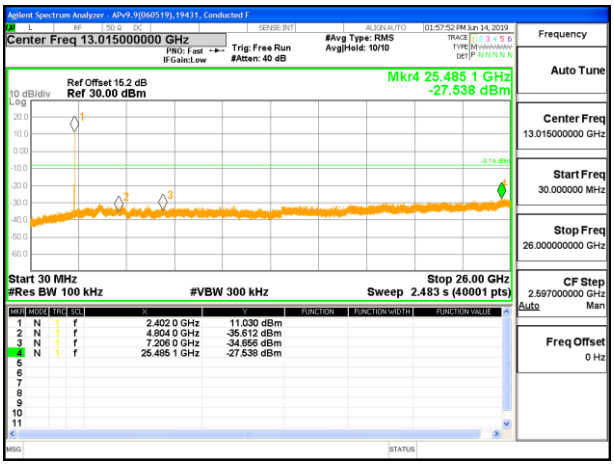
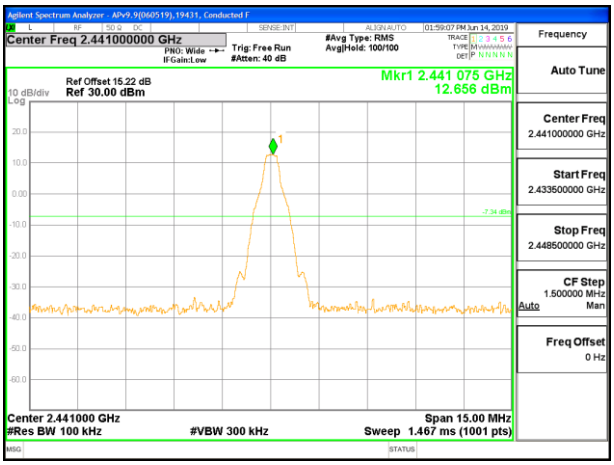
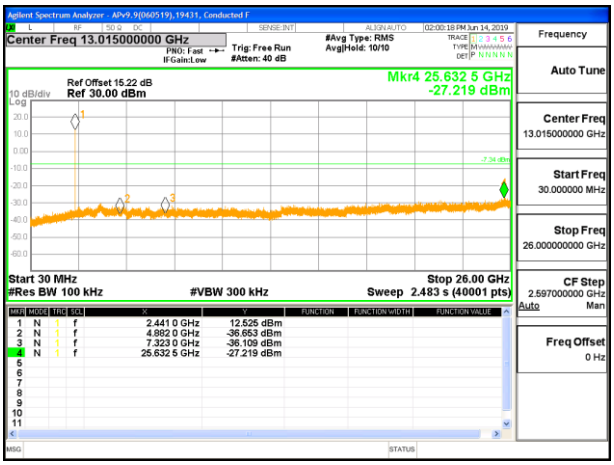


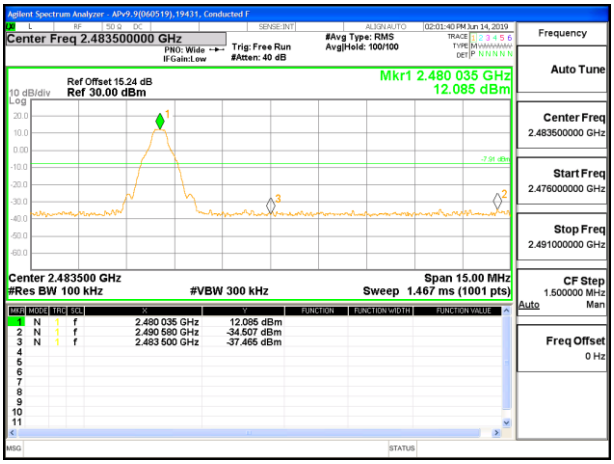
OUT-OF-BAND LOW CHANNEL



IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



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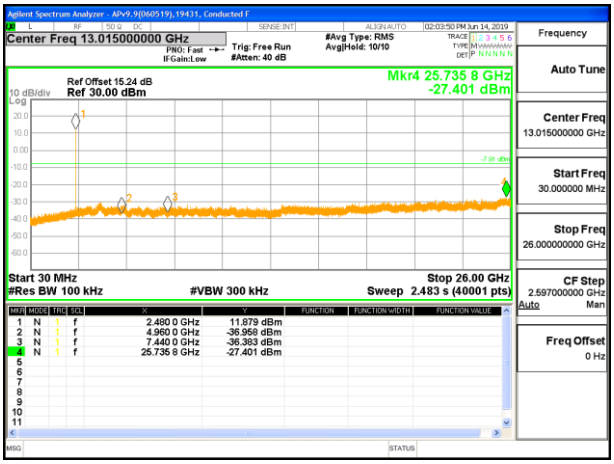

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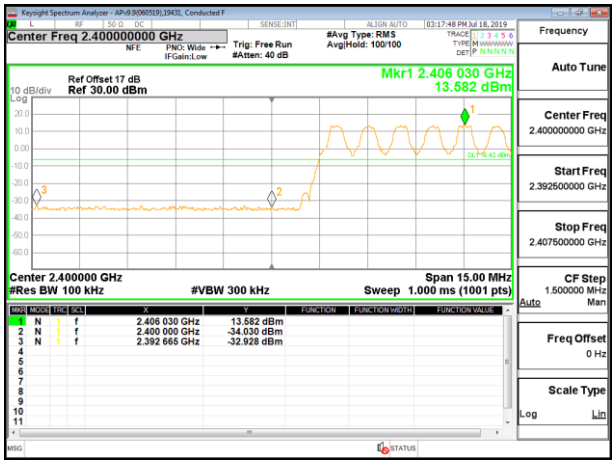
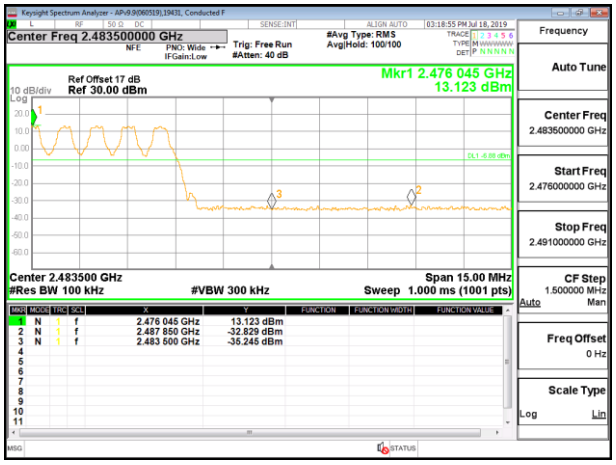
Antenna 4 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



LOW BANDEDGE



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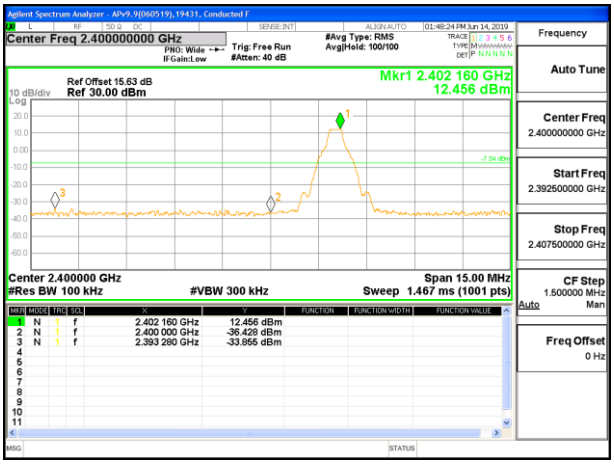
Antenna 3 SPURIOUS EMISSIONS, NON-HOPPING



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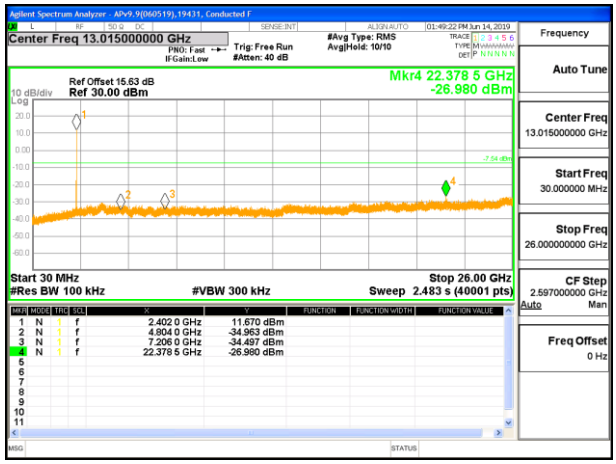
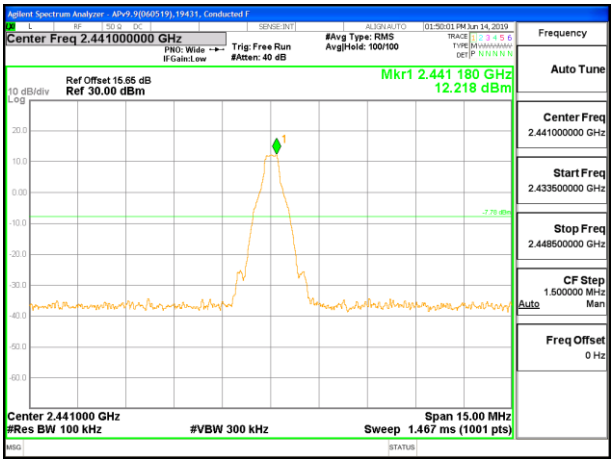
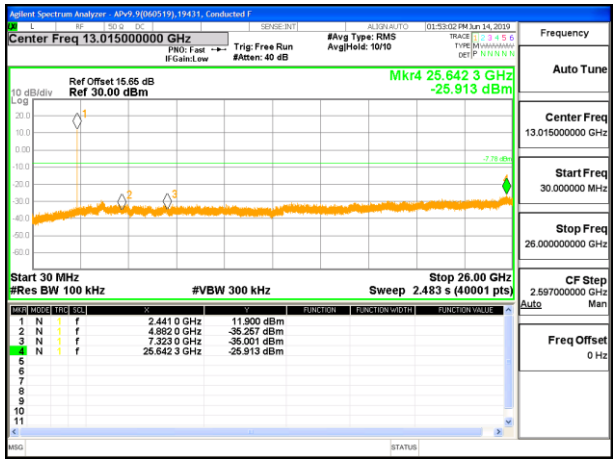


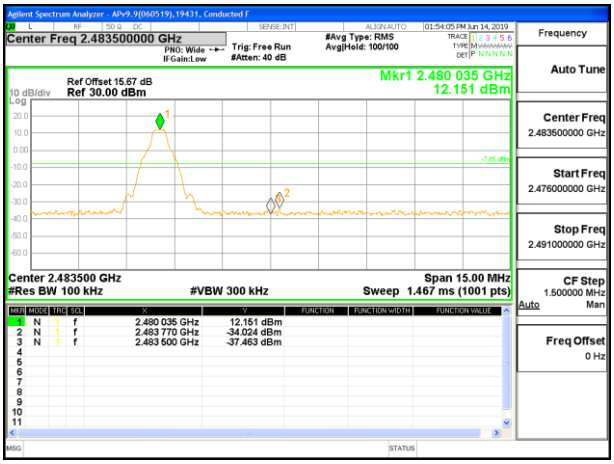
OUT-OF-BAND LOW CHANNEL



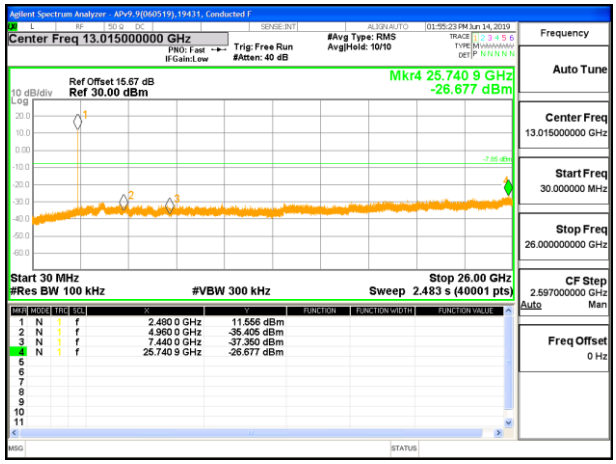
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



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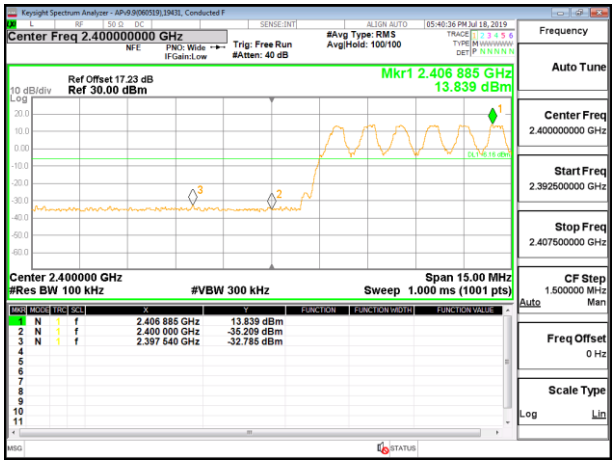
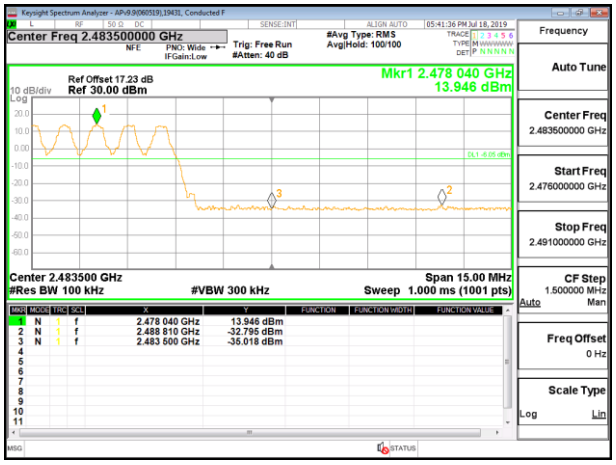


LOW BANDEDGE



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