8.2.6. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

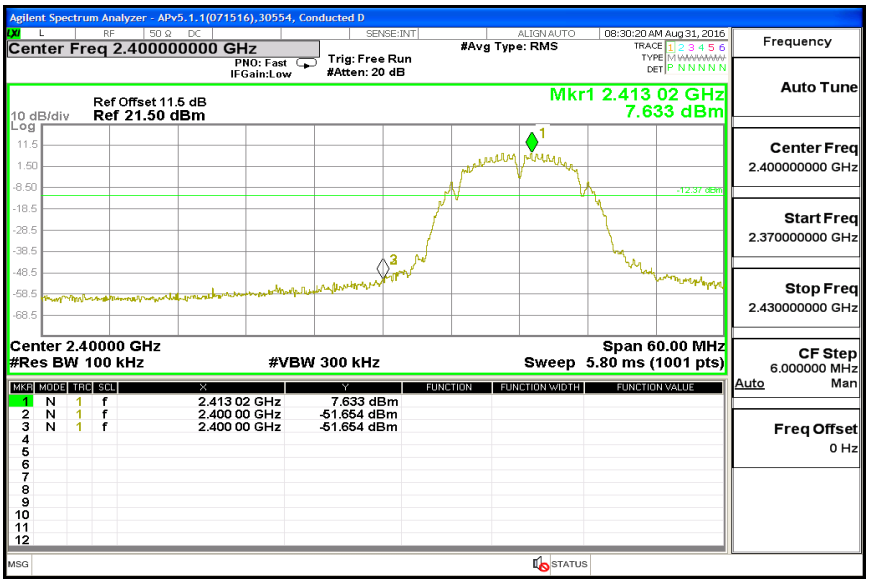
IC RSS-247 (5.5)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

RESULTS

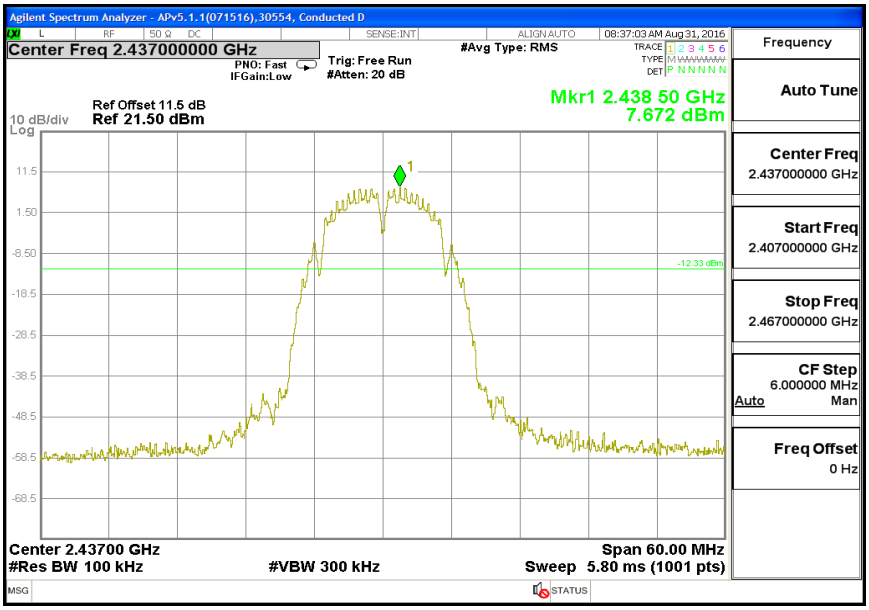
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



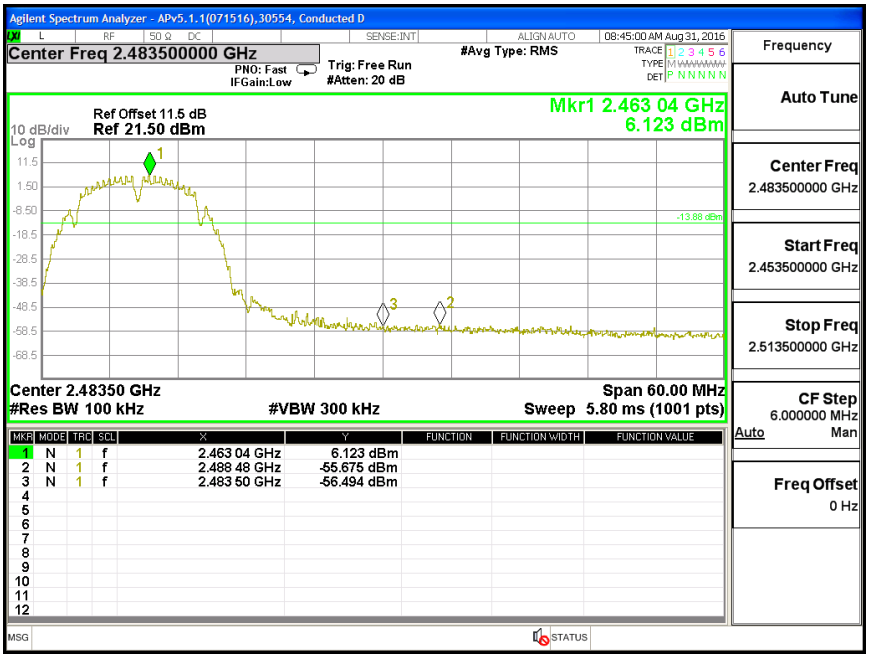
MID CHANNEL REFERENCE

REFERENCE MID CH

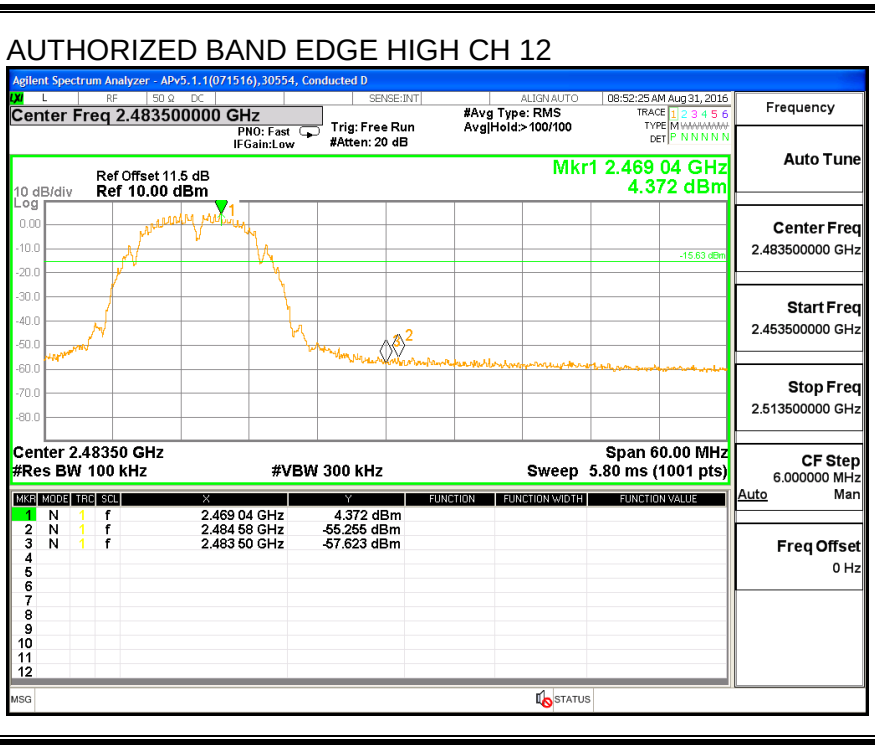


HIGH CHANNEL BANDEDGE

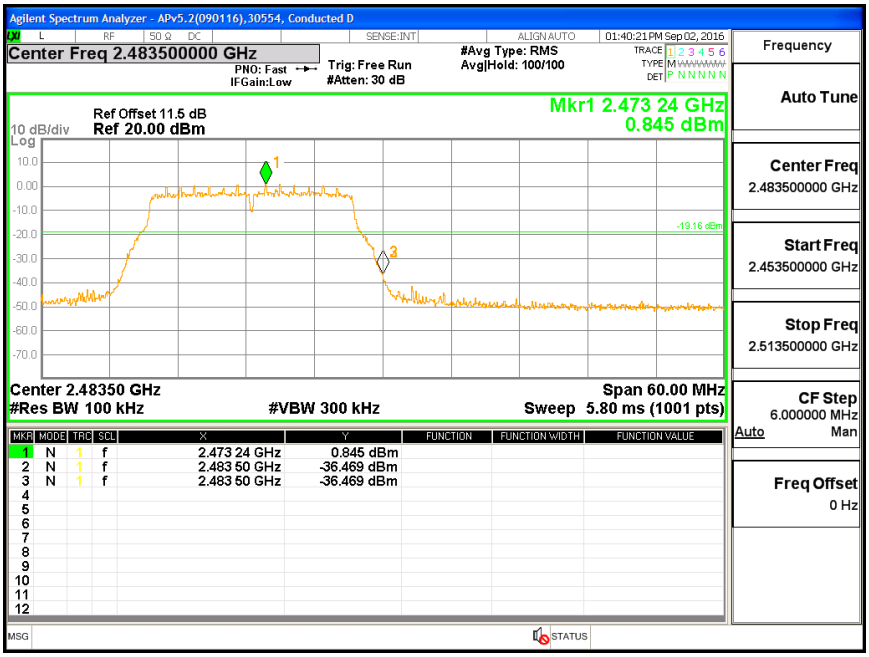
AUTHORIZED BAND EDGE HIGH CH 11



AUTHORIZED BAND EDGE HIGH CH 12

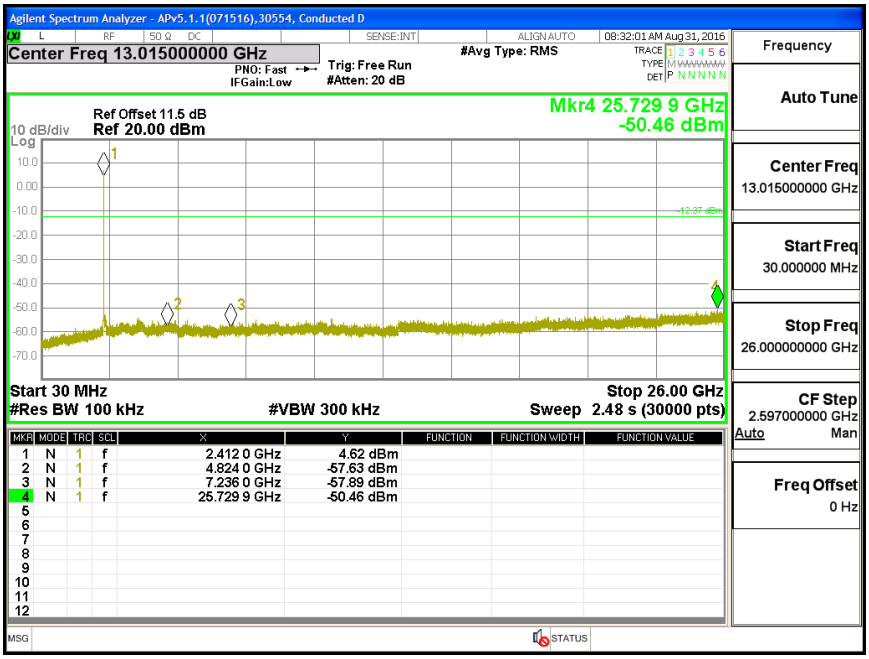


AUTHORIZED BAND EDGE HIGH CH 13

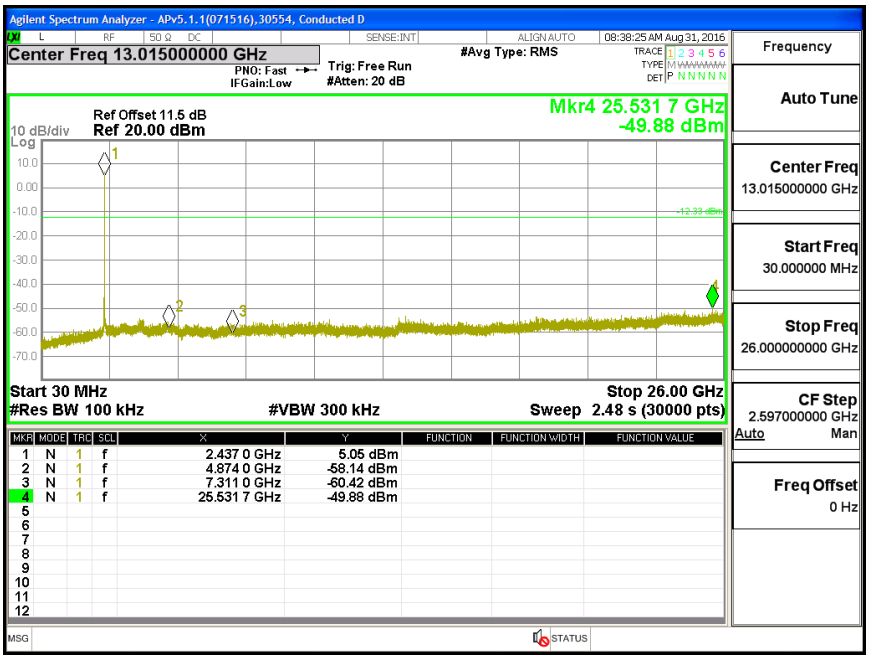


OUT-OF-BAND EMISSIONS

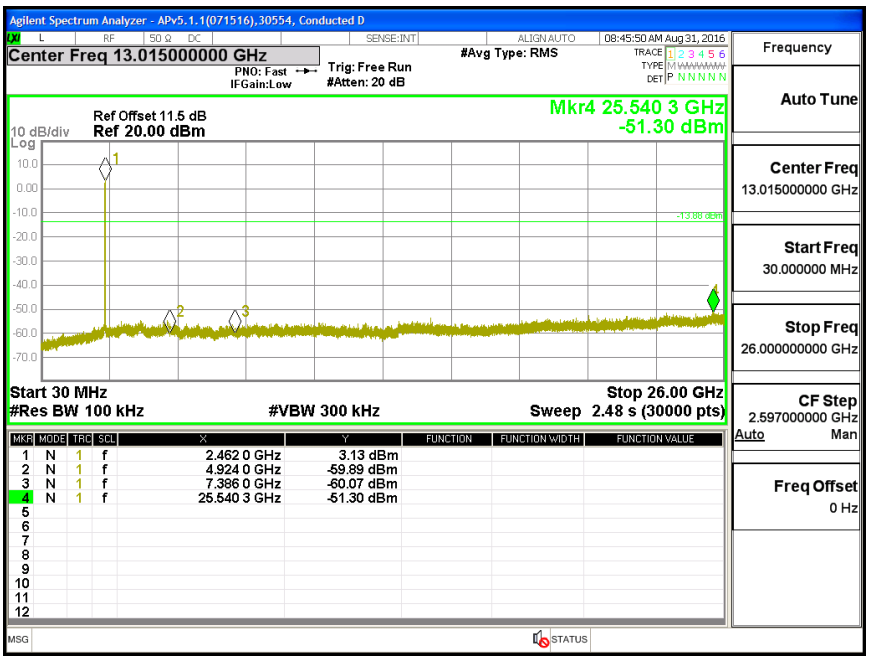
OUT OF BAND LOW CH



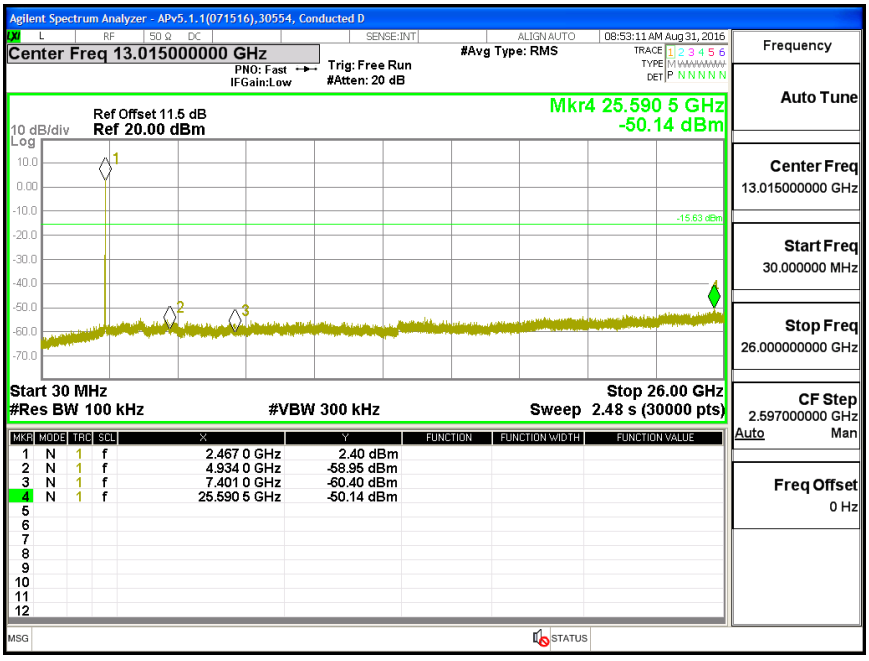
OUT OF BAND MID CH



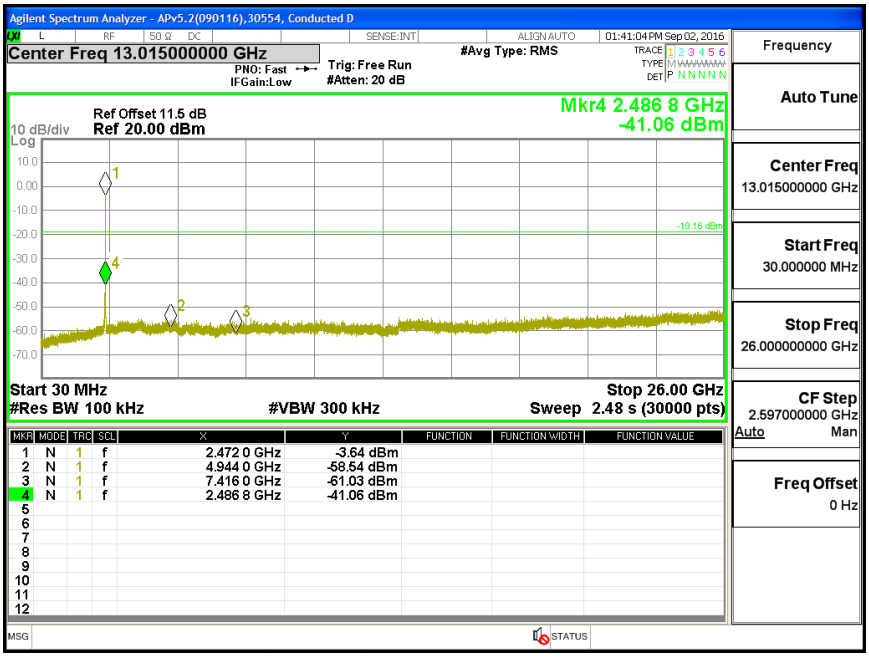
OUT OF BAND HIGH CH 11



OUT OF BAND HIGH CH 12



OUT OF BAND HIGH CH 13



8.3. 802.11b SISO MODE IN THE 2.4 GHZ BAND, CHAIN 2

8.3.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-247 (5.2) (1)

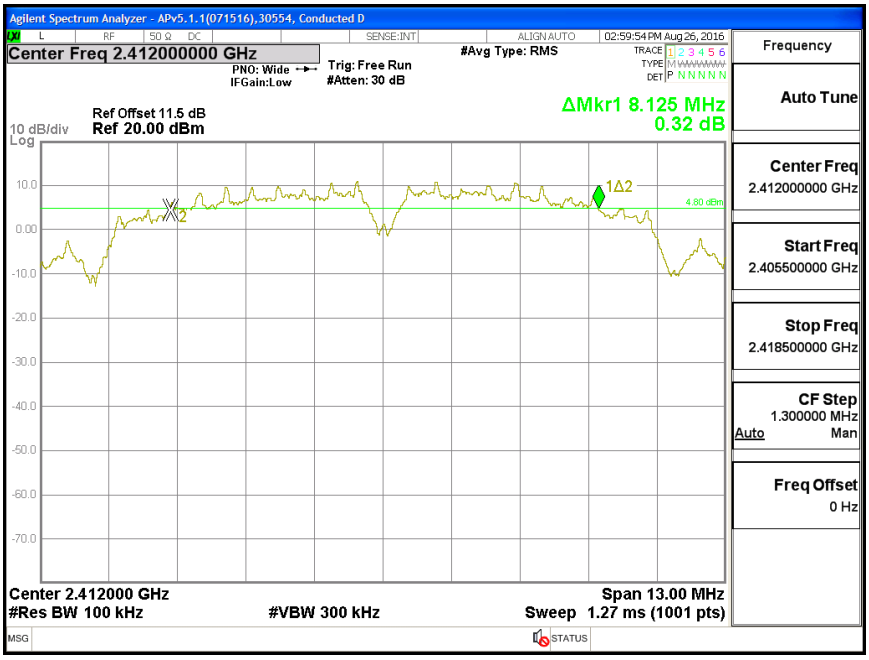
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

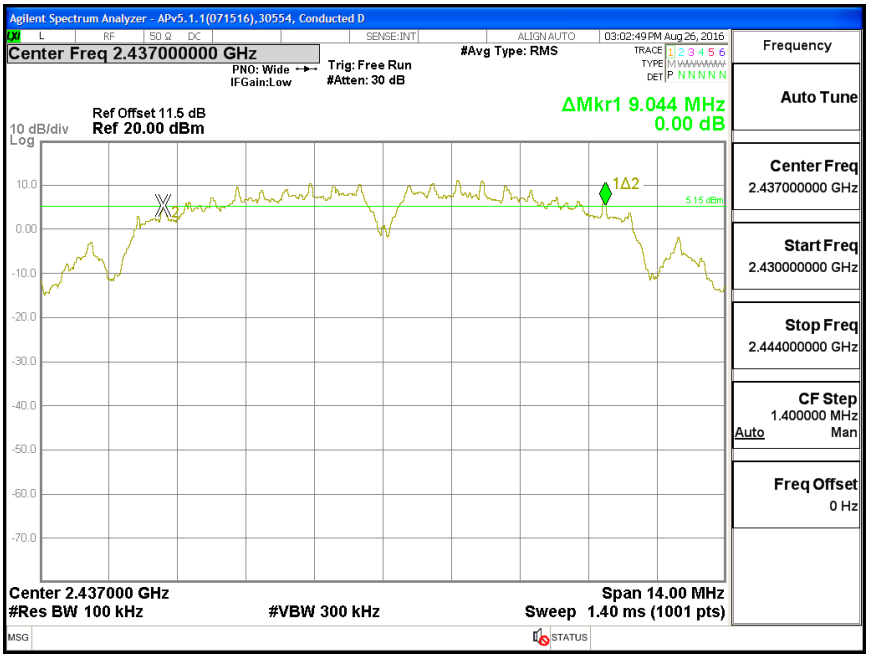
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	8.125	0.5
Mid	2437	9.044	0.5
High_11	2462	9.100	0.5
High_12	2467	8.606	0.5
High_13	2472	8.112	0.5

6 dB BANDWIDTH

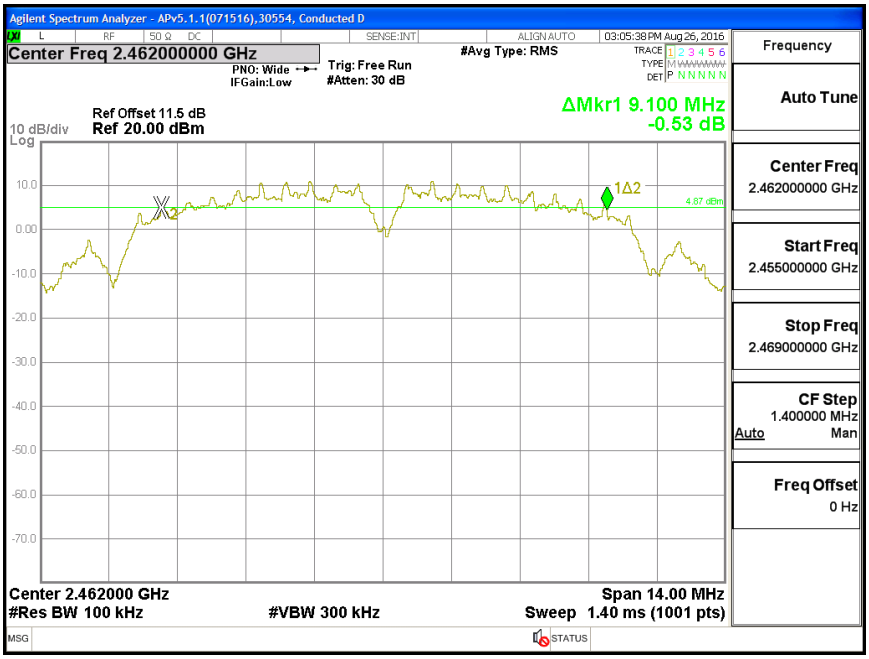
6 dB BANDWIDTH LOW CH



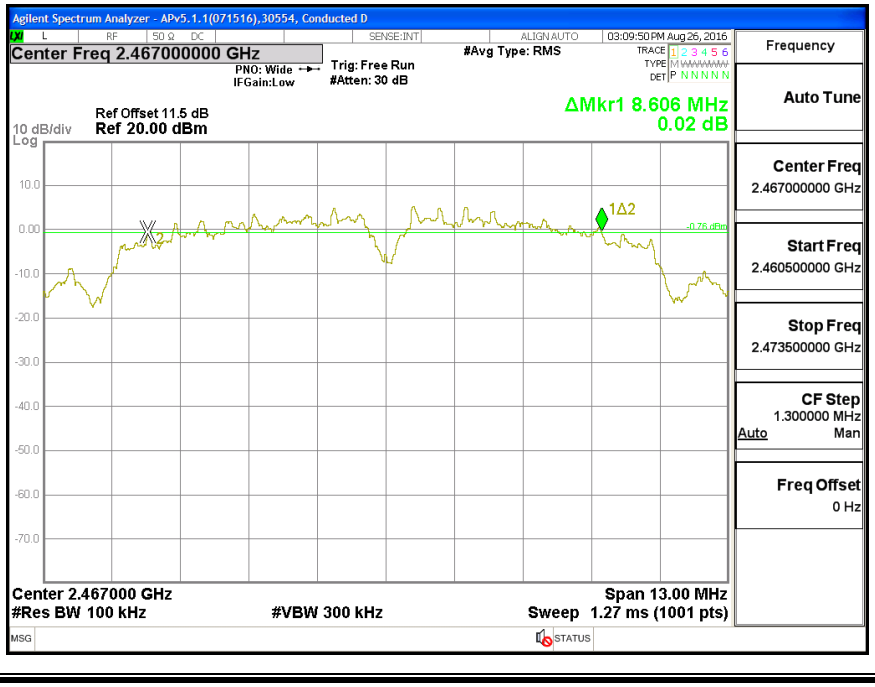
6 dB BANDWIDTH MID CH



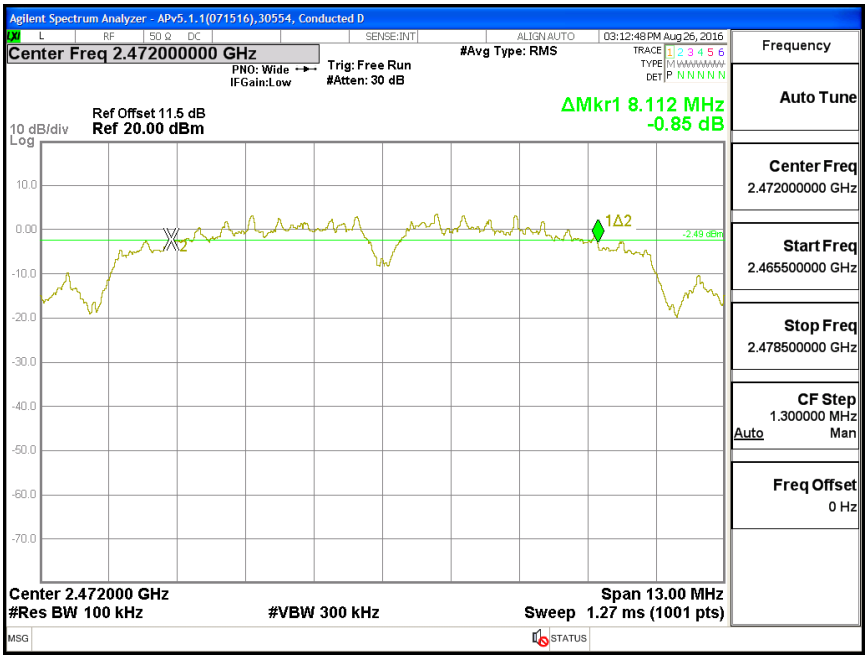
6 dB BANDWIDTH HIGH CH 11



6 dB BANDWIDTH HIGH CH 12



6 dB BANDWIDTH HIGH CH 13



8.3.2. 99% BANDWIDTH

LIMITS

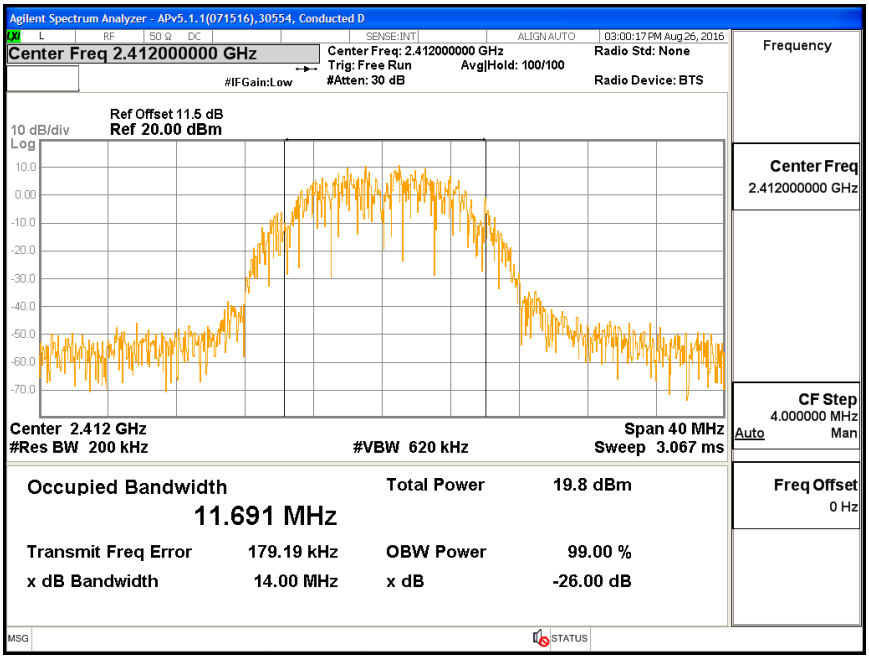
None; for reporting purposes only.

RESULTS

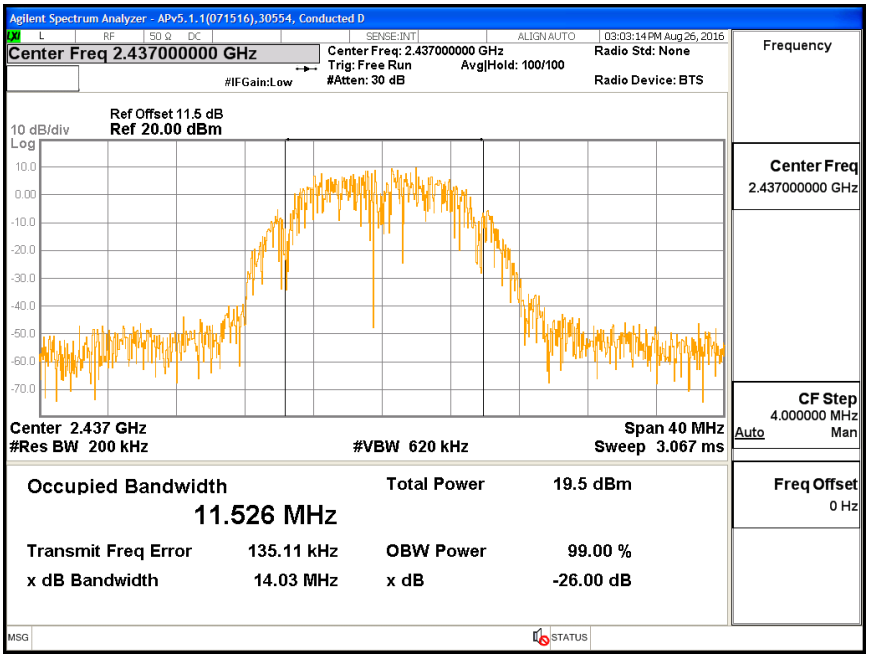
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	11.691
Mid	2437	11.526
High_11	2462	11.715
High_12	2467	10.680
High_13	2472	11.336

99% BANDWIDTH

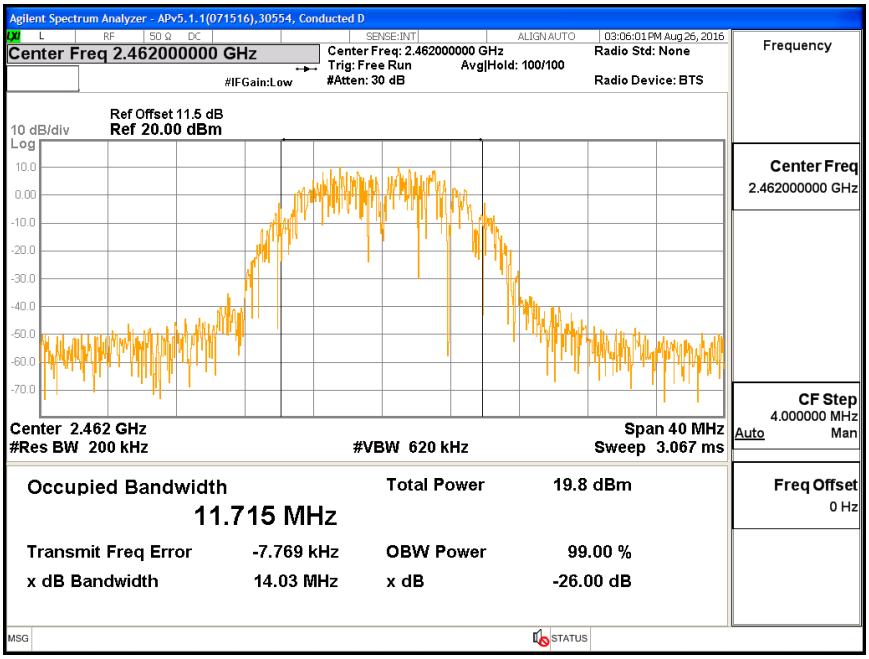
BANDWIDTH LOW CH



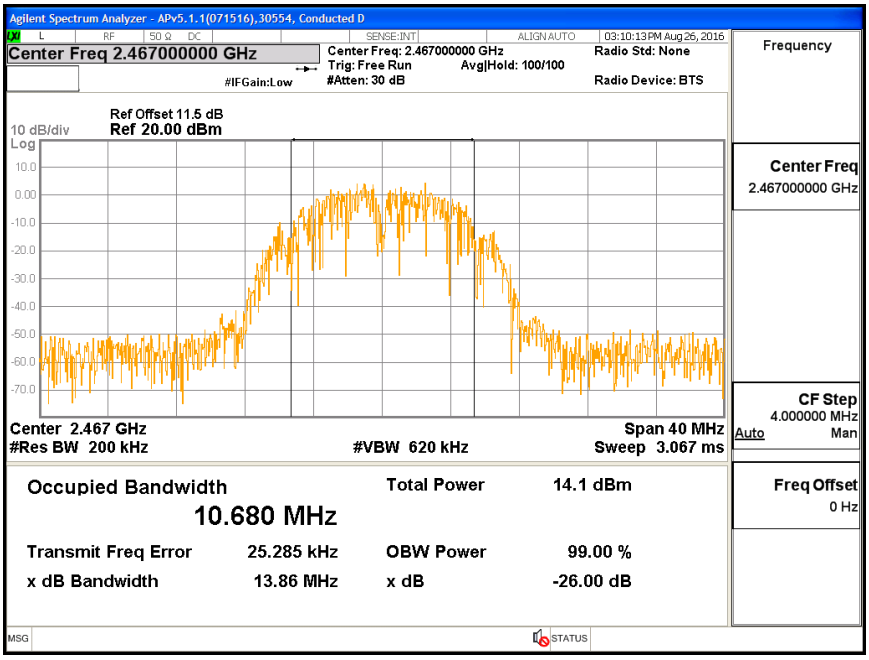
BANDWIDTH MID CH



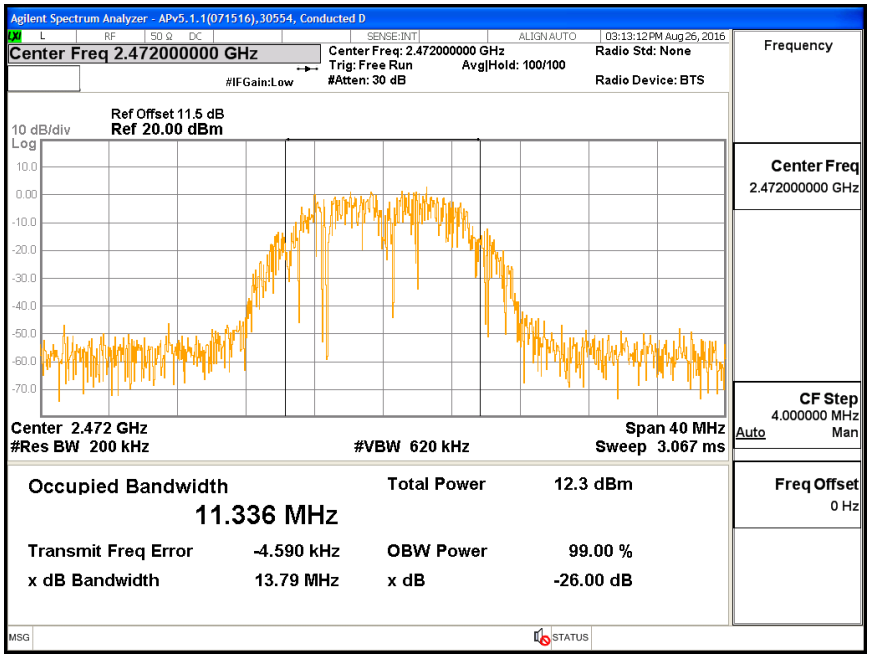
BANDWIDTH HIGH CH 11



BANDWIDTH HIGH CH 12



BANDWIDTH HIGH CH 13



8.3.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
Low	2412	16.38
Mid	2437	16.44
High_11	2462	14.91
High_12	2467	12.90
High_13	2472	11.89

8.3.4. OUTPUT POWER

LIMITS

FCC §15.247

IC RSS-247 (5.4) (4)

For systems using digital modulation in the 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	2.1	30.00	30	36	30.00
Mid	2437	2.1	30.00	30	36	30.00
High_11	2462	2.1	30.00	30	36	30.00
High_12	2467	2.1	30.00	30	36	30.00
High_13	2472	2.1	30.00	30	36	30.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power

Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	19.42	19.42	30.00	-10.58
Mid	2437	19.50	19.50	30.00	-10.50
High_11	2462	18.03	18.03	30.00	-11.97
High_12	2467	16.11	16.11	30.00	-13.89
High_13	2472	15.09	15.09	30.00	-14.91

8.3.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247

IC RSS-247 (5.2) (2)

For digitally modulated systems, the power spectral density conducted form the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 KHz band during any time interval of continuous transmissions.

RESULTS

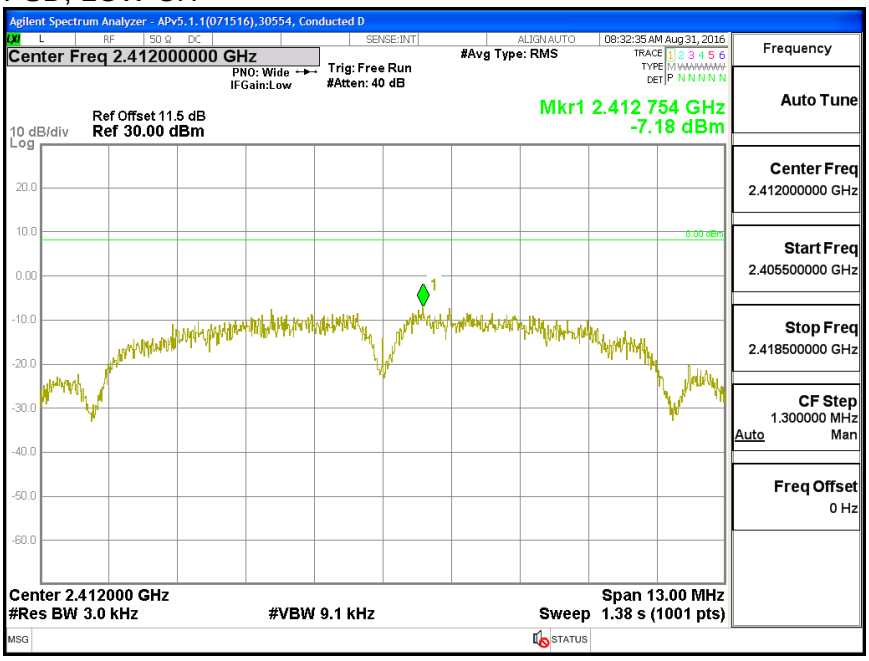
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

PSD Results

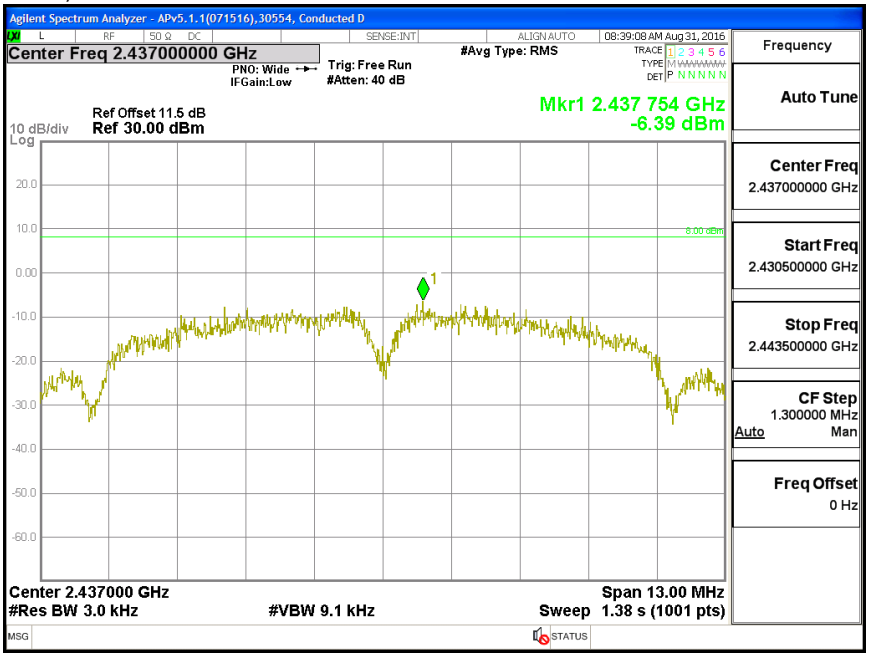
Channel	Frequency (MHz)	Meas (dBm)	Total Corr'd PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-7.18	-7.18	8.0	-15.2
Mid	2437	-6.39	-6.39	8.0	-14.4
High_11	2462	-8.62	-8.62	8.0	-16.6
High_12	2467	-10.21	-10.21	8.0	-18.2
High_13	2472	-13.63	-13.63	8.0	-21.6

PSD

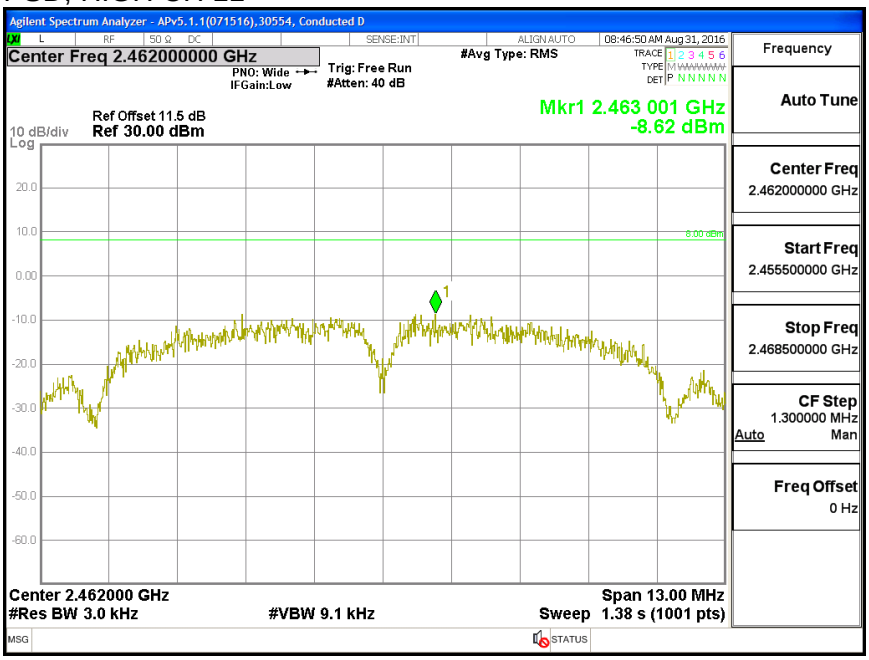
PSD, LOW CH



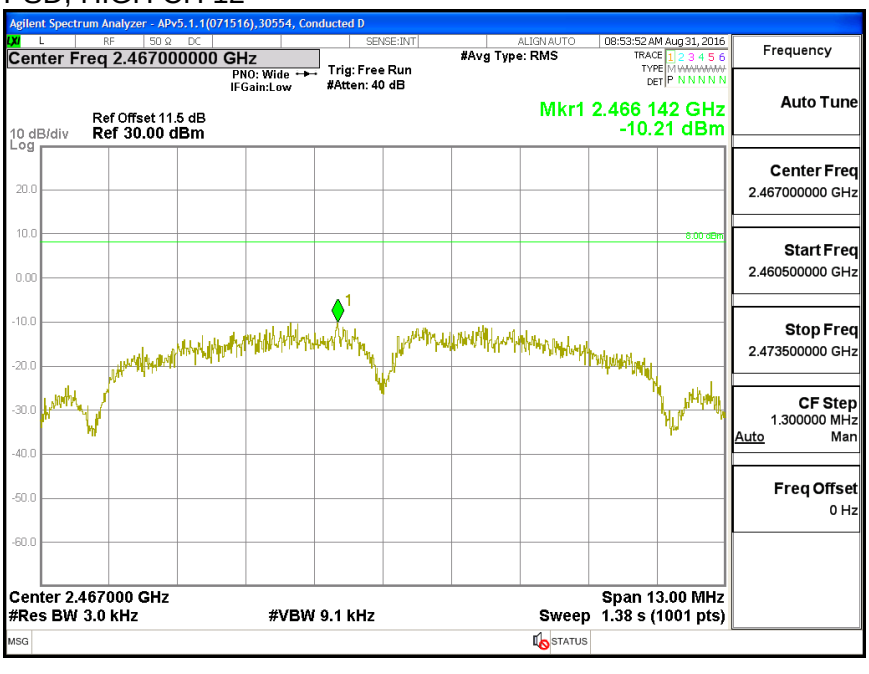
PSD, MID CH



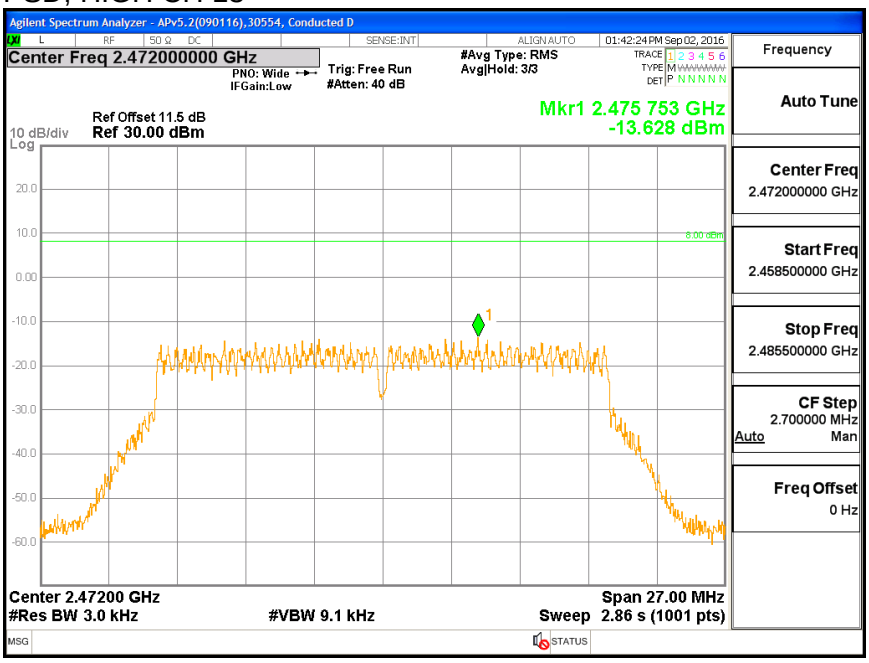
PSD, HIGH CH 11



PSD, HIGH CH 12



PSD, HIGH CH 13



8.3.6. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

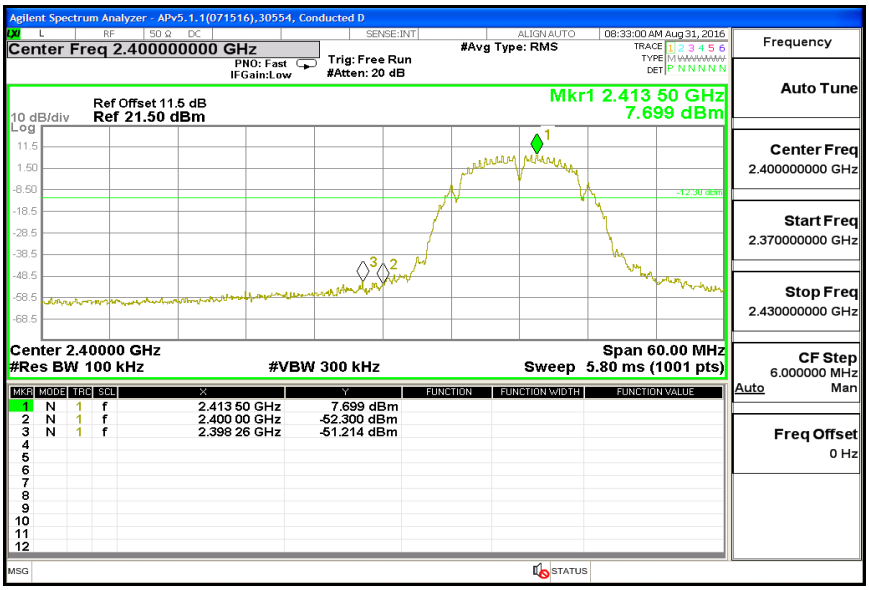
IC RSS-247 (5.5)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

RESULTS

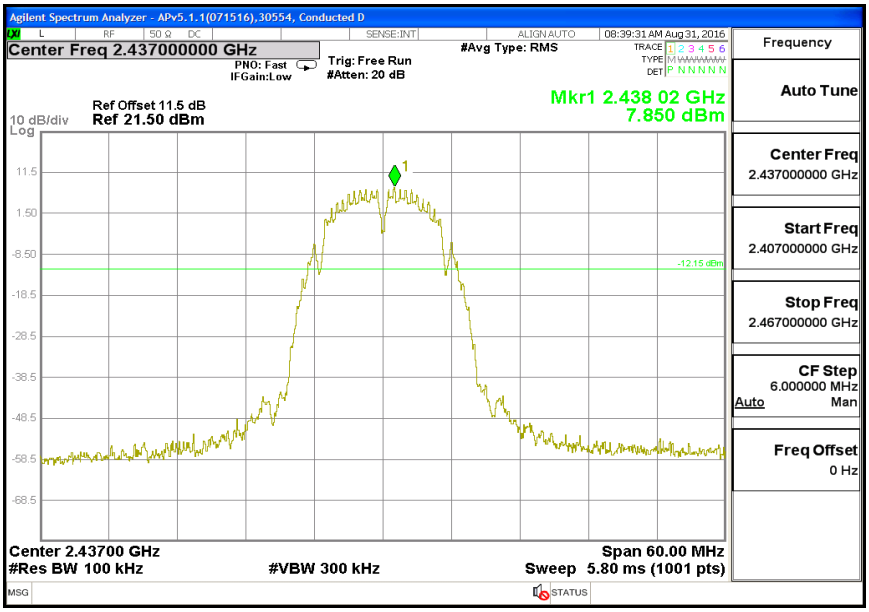
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH



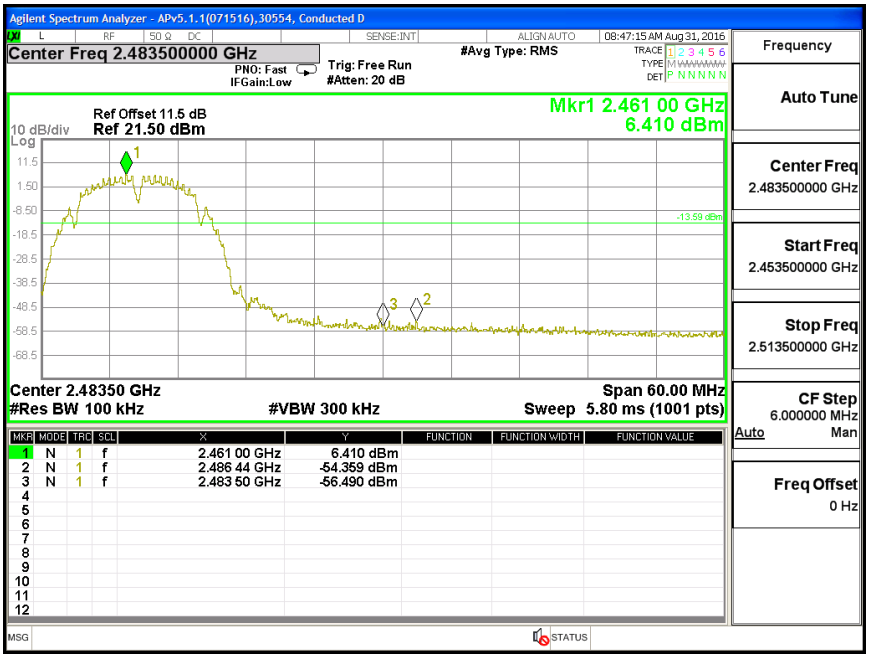
MID CHANNEL REFERENCE

REFERENCE MID CH

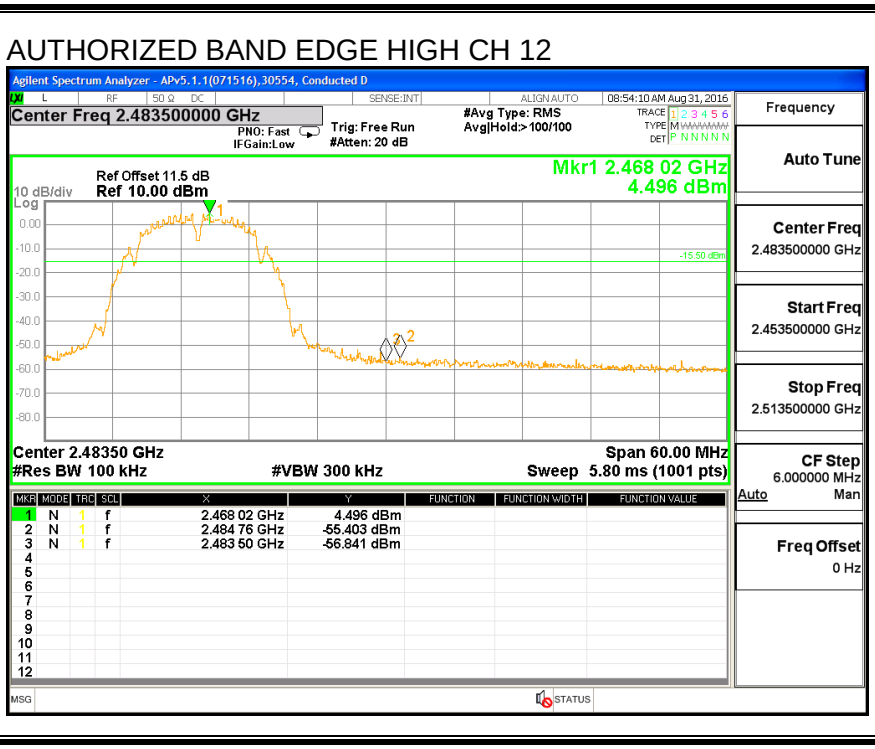


HIGH CHANNEL BANDEDGE

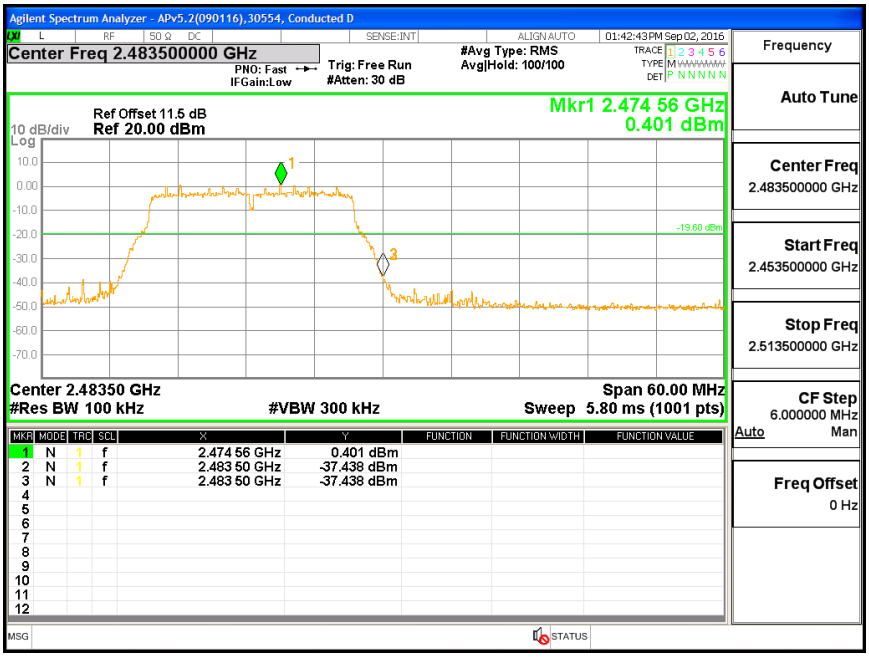
AUTHORIZED BAND EDGE HIGH CH 11



AUTHORIZED BAND EDGE HIGH CH 12

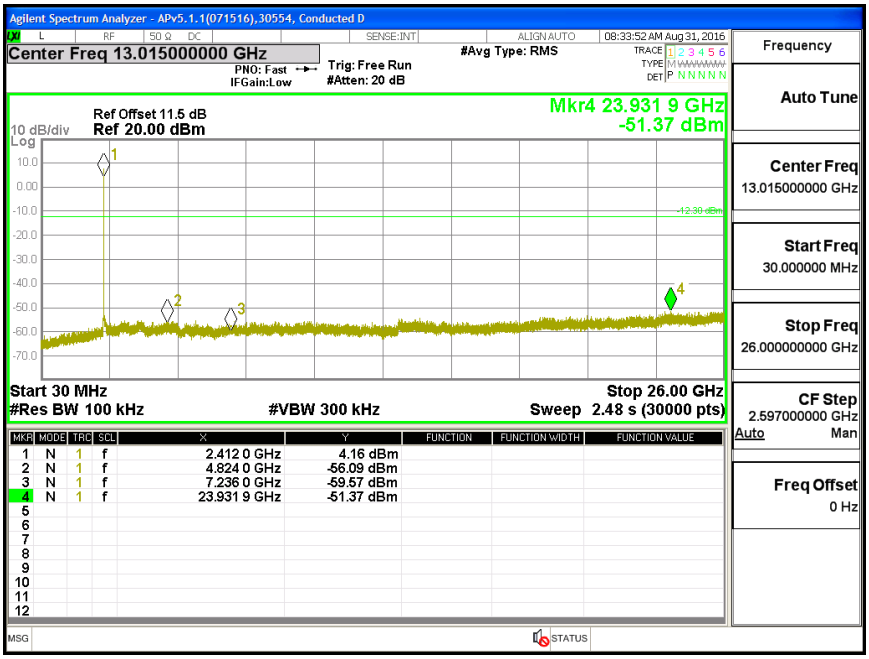


AUTHORIZED BAND EDGE HIGH CH 13

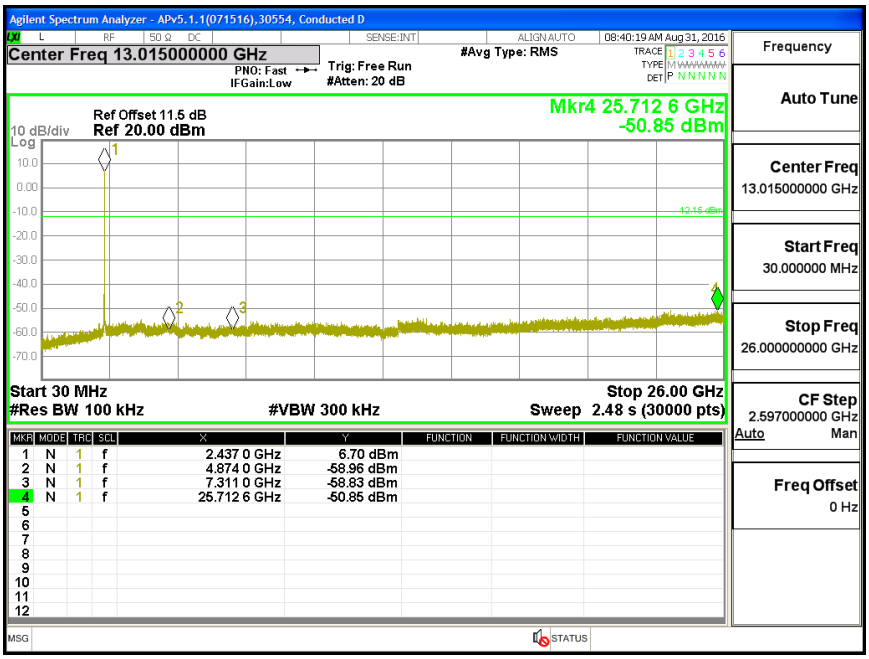


OUT-OF-BAND EMISSIONS

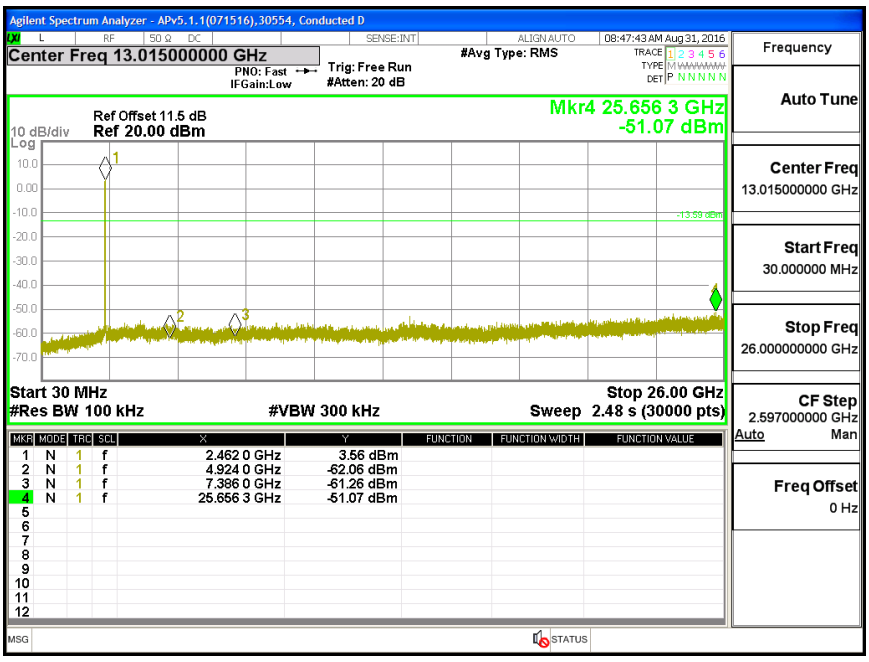
OUT OF BAND LOW CH



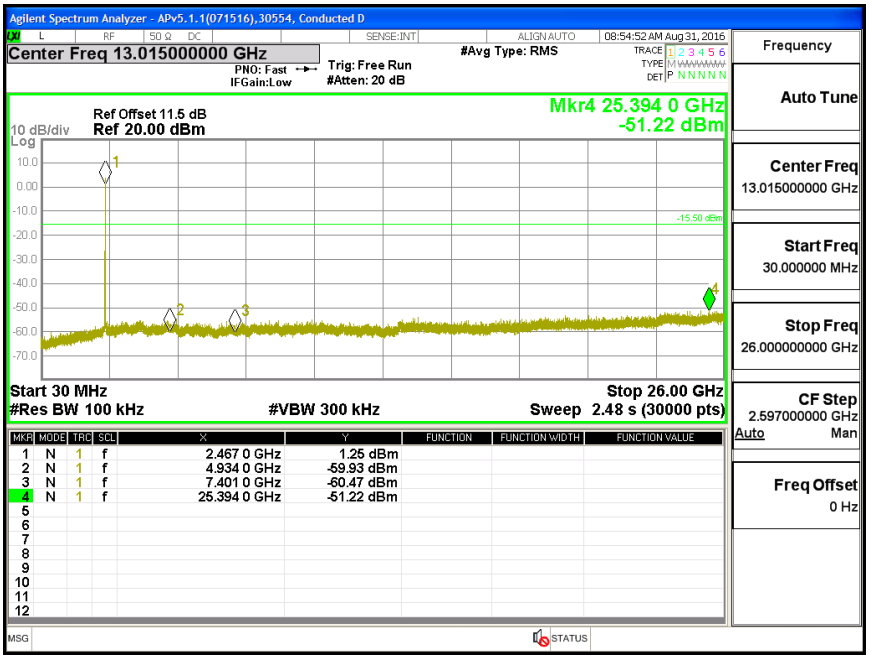
OUT OF BAND MID CH



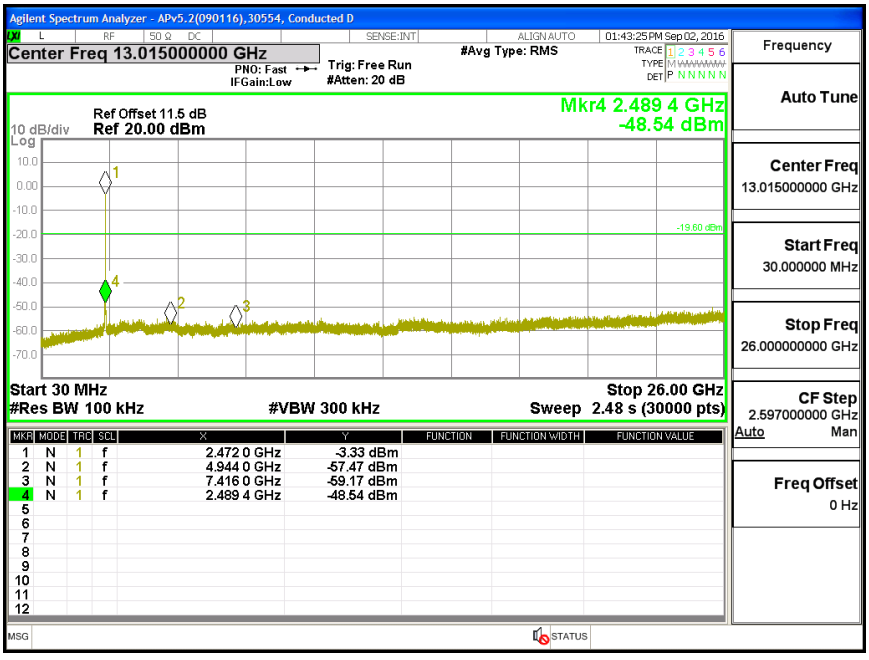
OUT OF BAND HIGH CH 11



OUT OF BAND HIGH CH 12



OUT OF BAND HIGH CH 13



8.4. 802.11b 2TX MODE IN THE 2.4 GHZ BAND, CHAIN 0+1

8.4.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-247 (5.2) (1)

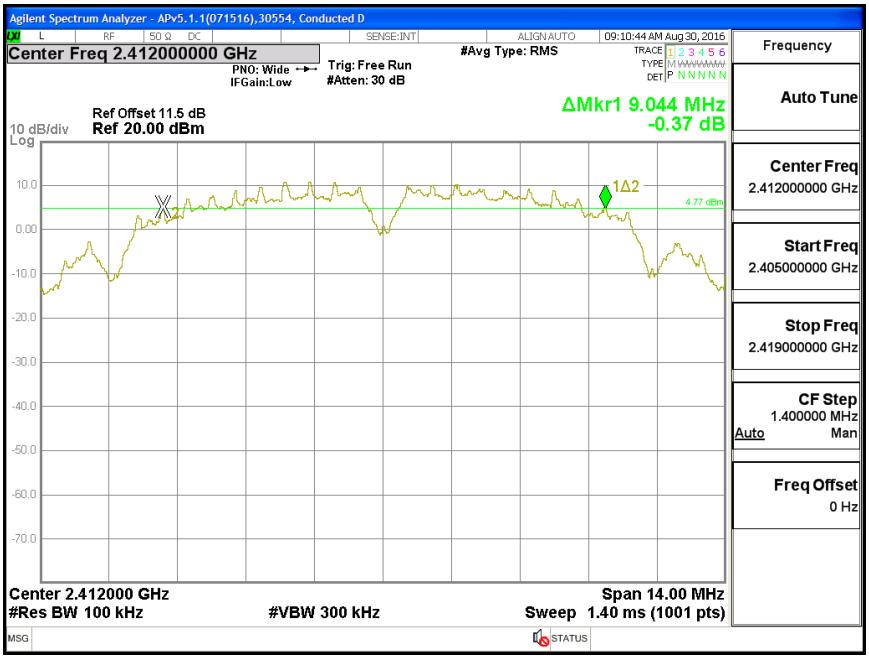
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

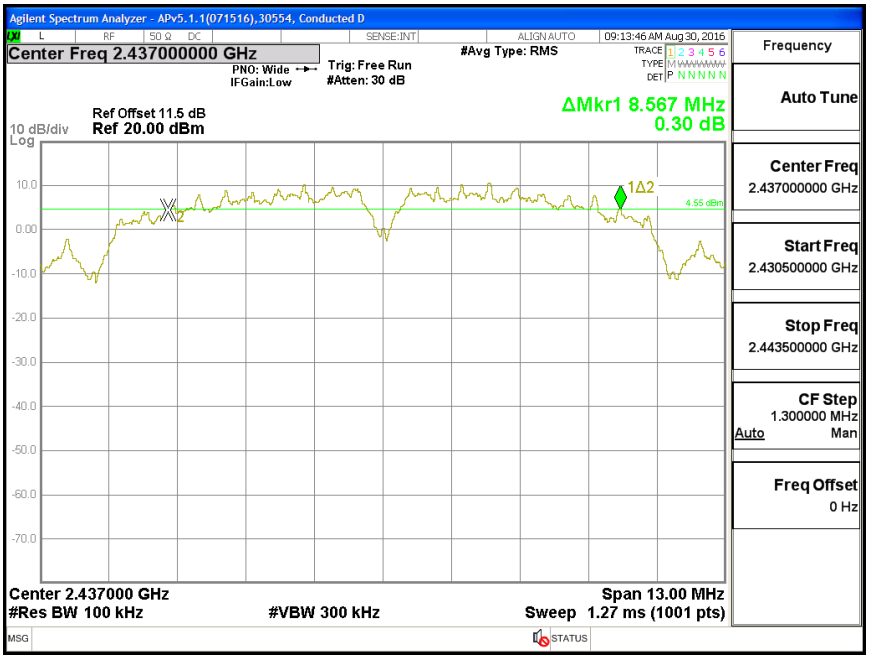
Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low	2412	9.044	9.016	0.5
Mid	2437	8.567	8.593	0.5
High_11	2462	8.593	8.112	0.5
High_12	2467	9.086	9.016	0.5

6 dB BANDWIDTH, Chain 0

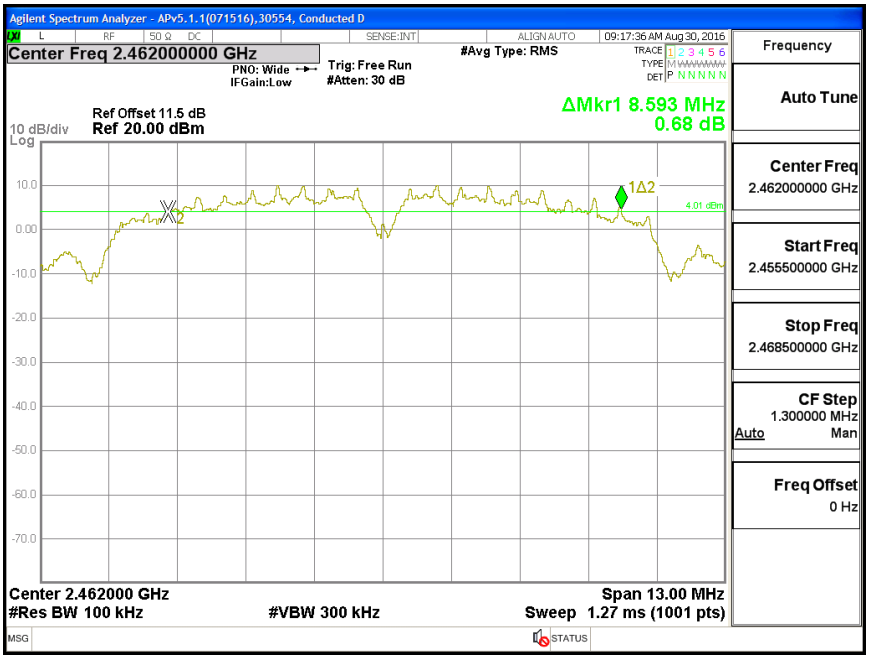
6 dB BANDWIDTH LOW CH



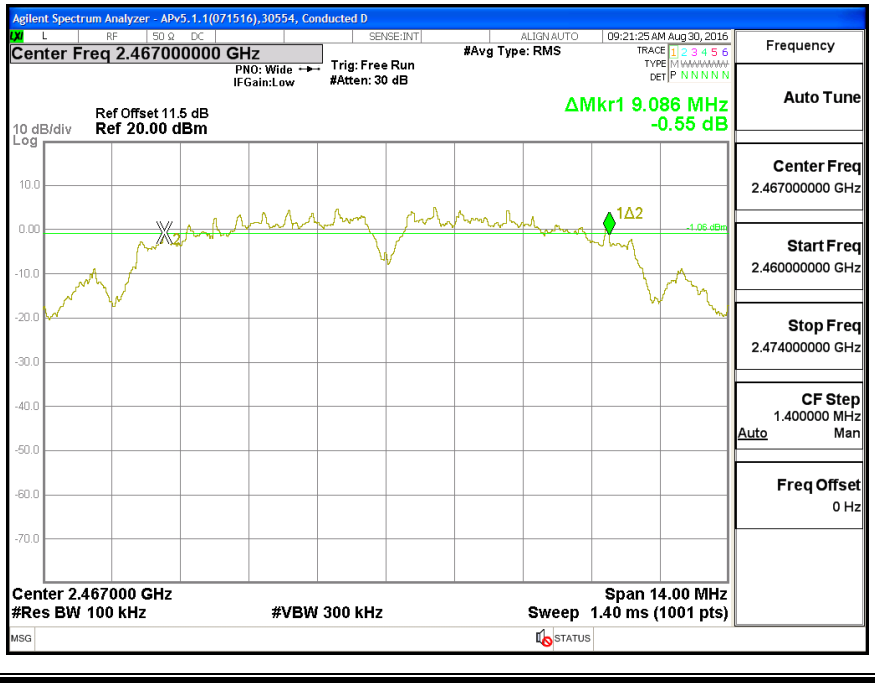
6 dB BANDWIDTH MID CH



6 dB BANDWIDTH HIGH CH 11

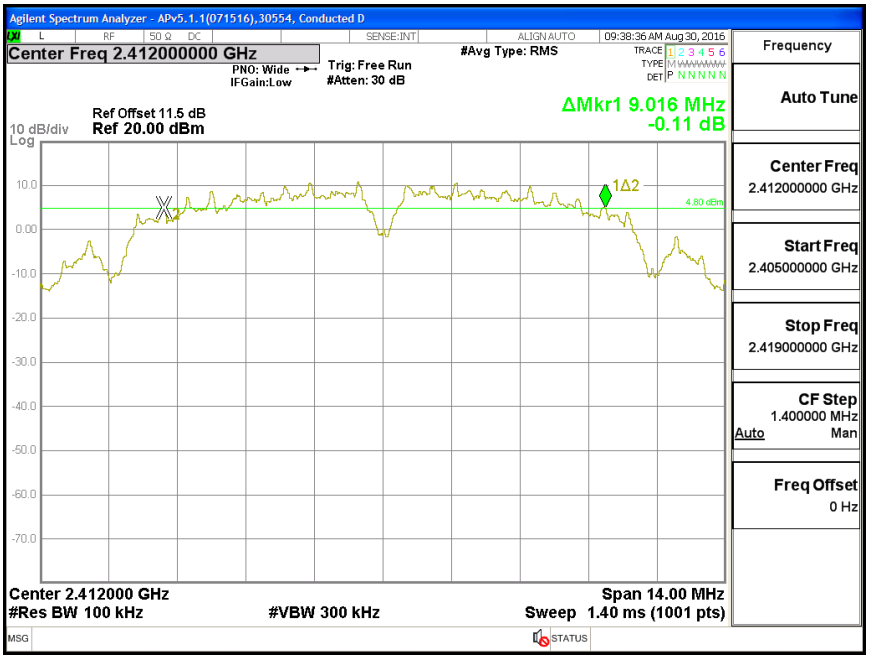


6 dB BANDWIDTH HIGH CH 12

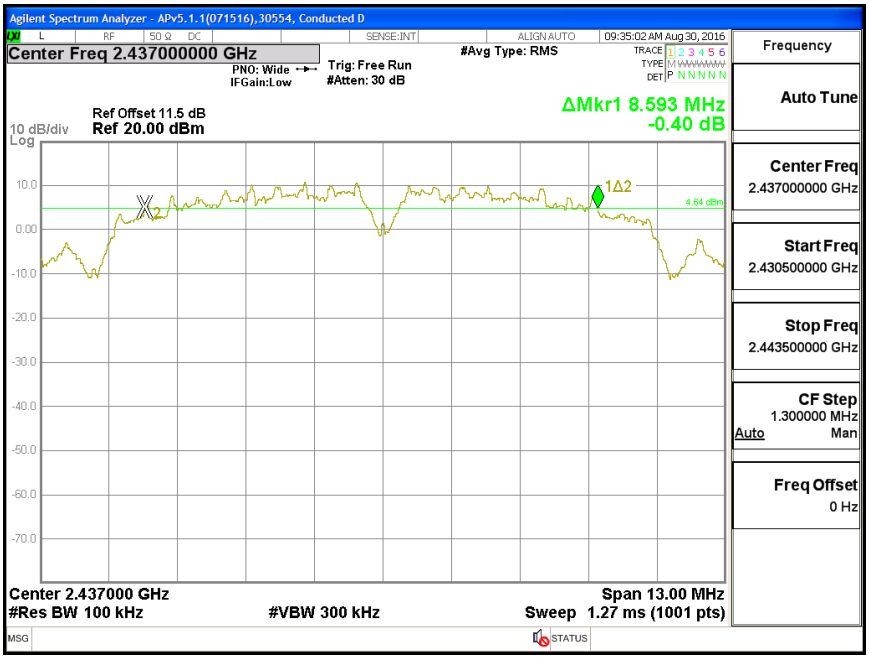


6 dB BANDWIDTH, Chain 1

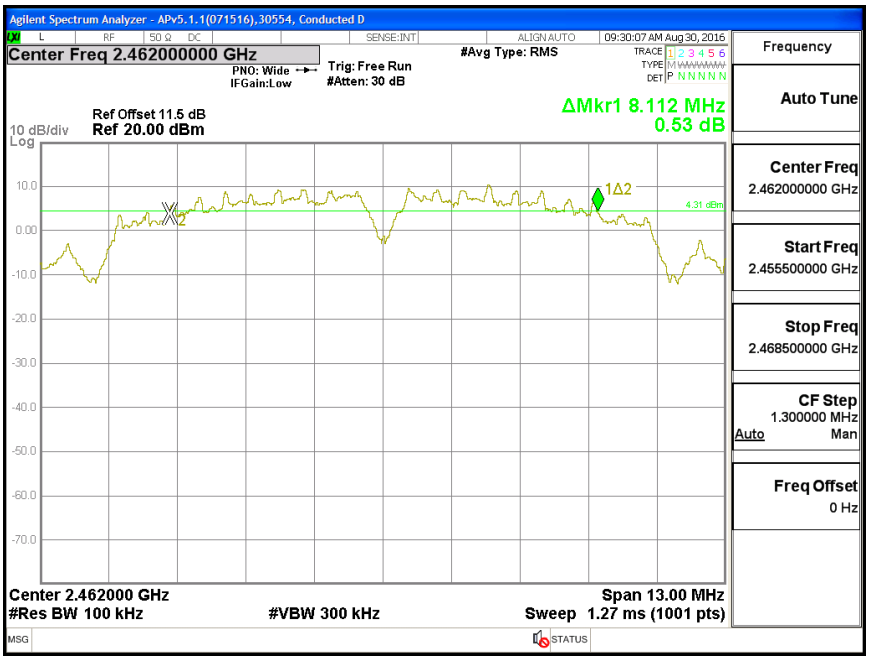
6 dB BANDWIDTH LOW CH



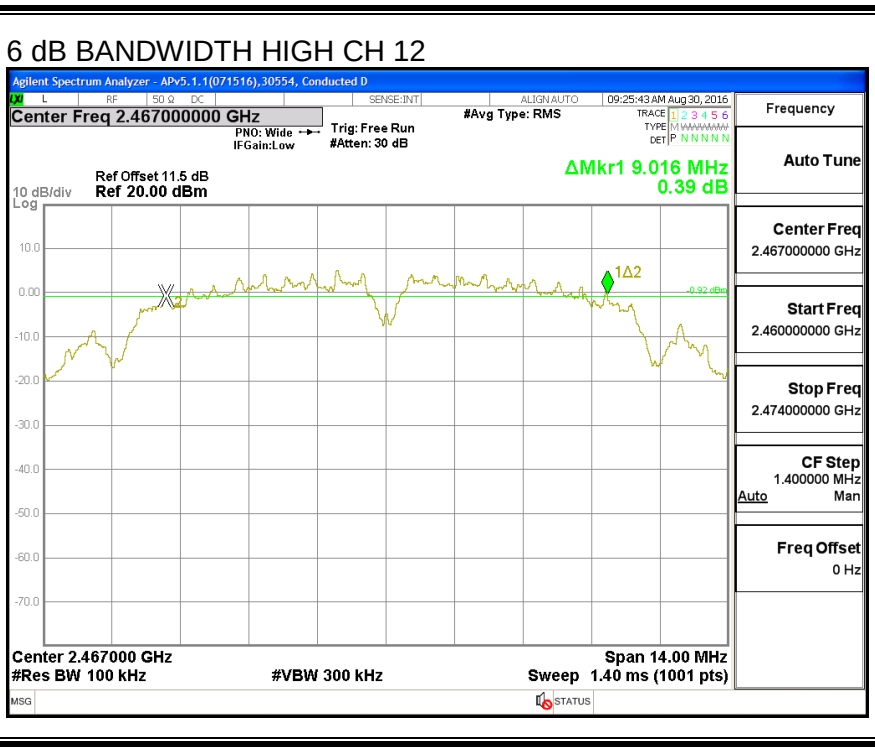
6 dB BANDWIDTH MID CH



6 dB BANDWIDTH HIGH CH 11



6 dB BANDWIDTH HIGH CH 12



8.4.2. 99% BANDWIDTH

LIMITS

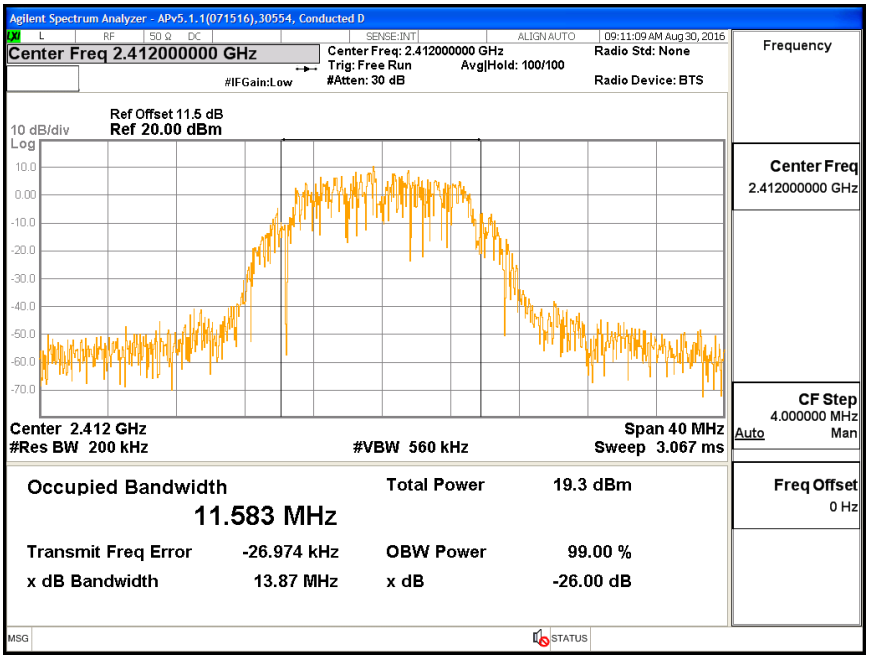
None; for reporting purposes only.

RESULTS

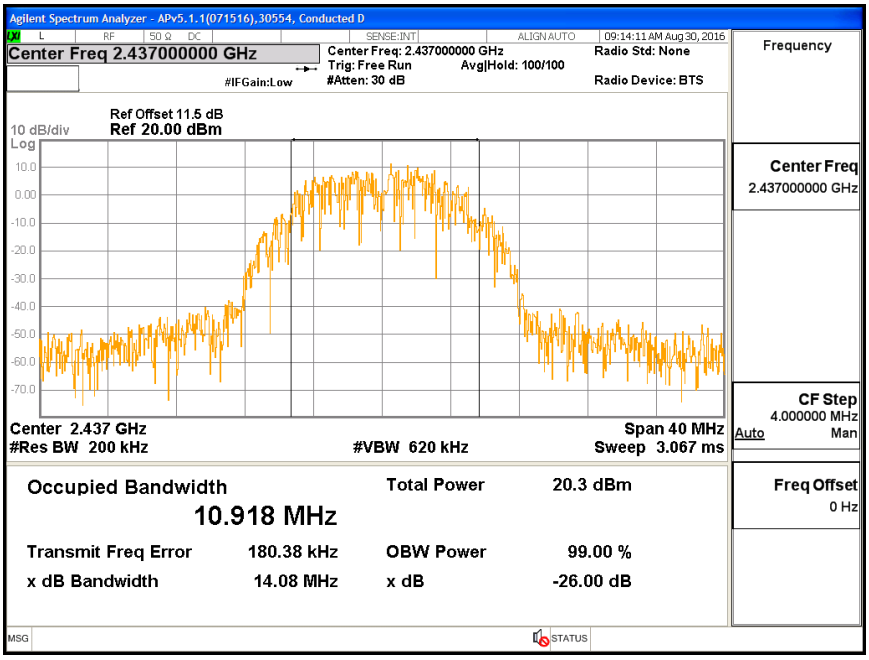
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	2412	11.583	10.917
Mid	2437	10.918	11.300
High_11	2462	11.529	11.293
High_12	2467	11.714	11.887

99% BANDWIDTH, Chain 0

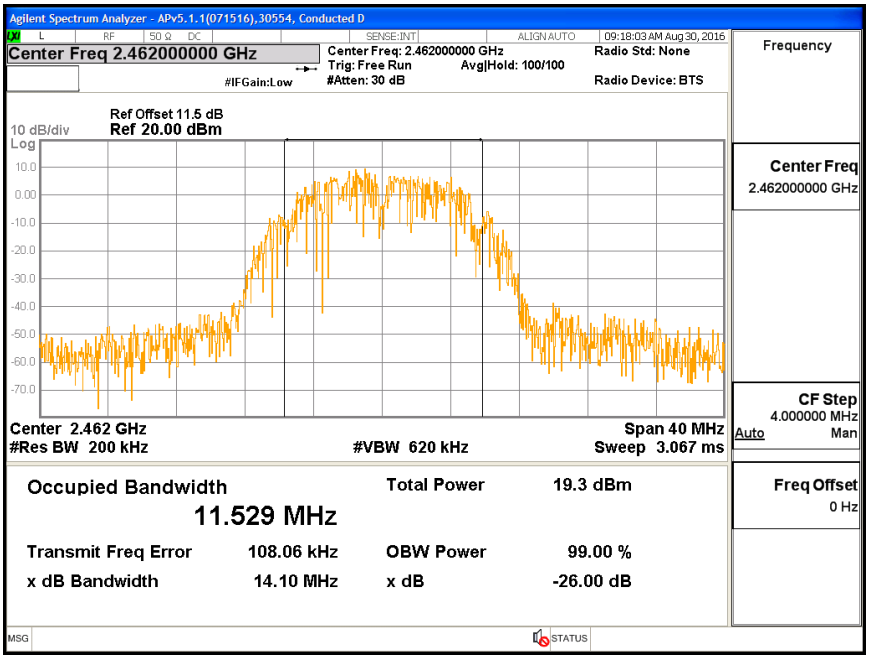
99% BANDWIDTH LOW CH



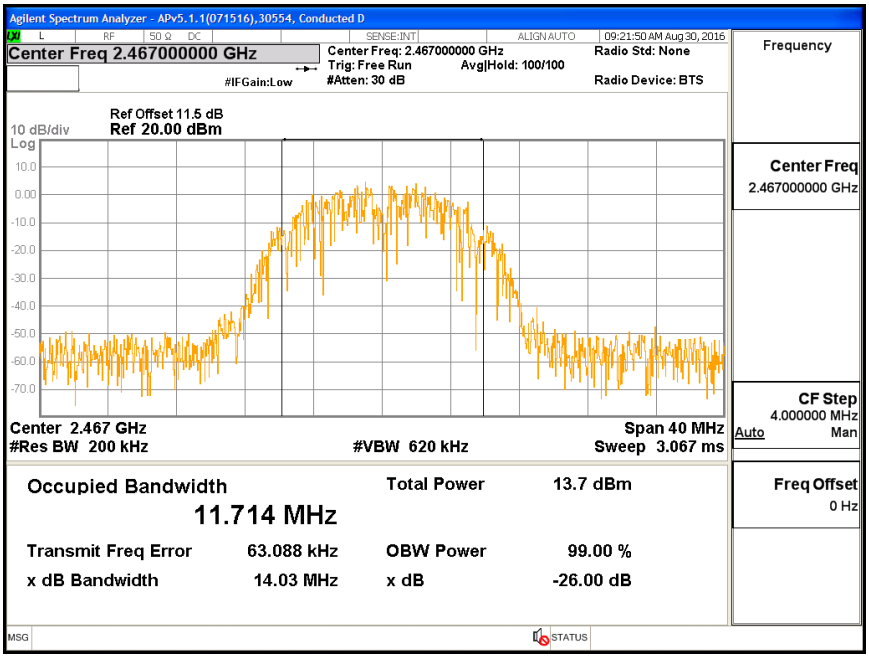
99% BANDWIDTH MID CH



99% BANDWIDTH HIGH CH 11

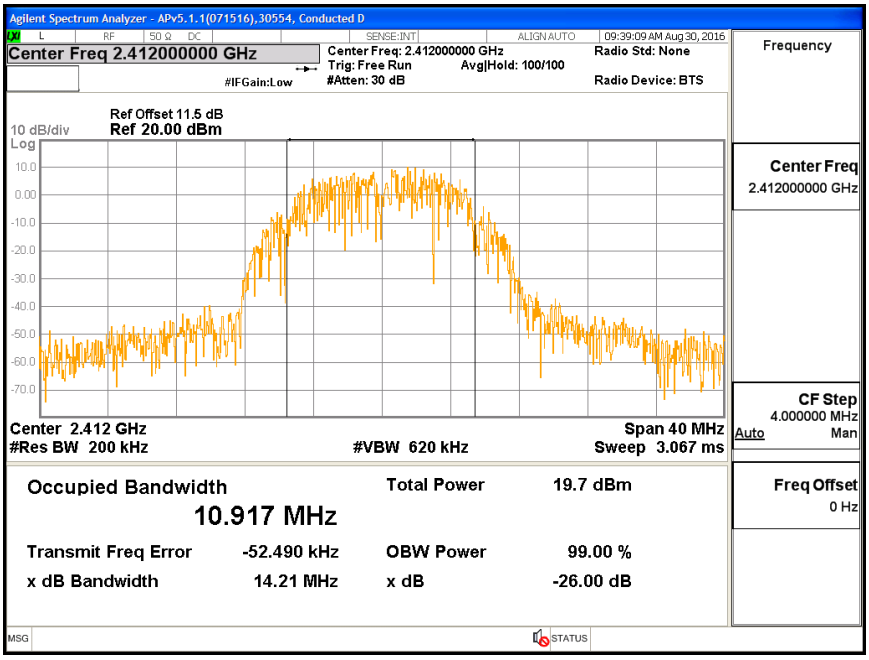


99% BANDWIDTH HIGH CH 12

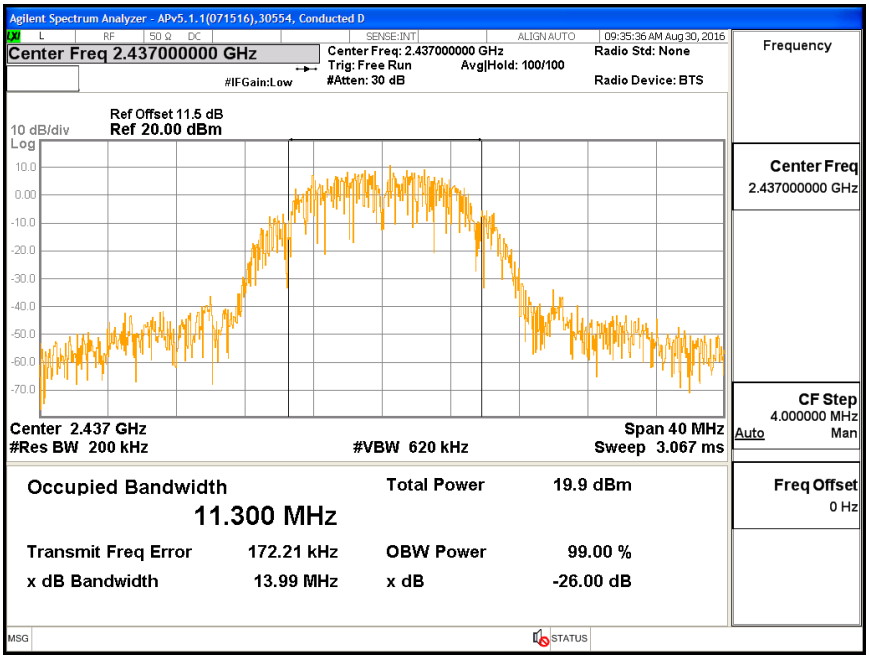


99% BANDWIDTH, Chain 1

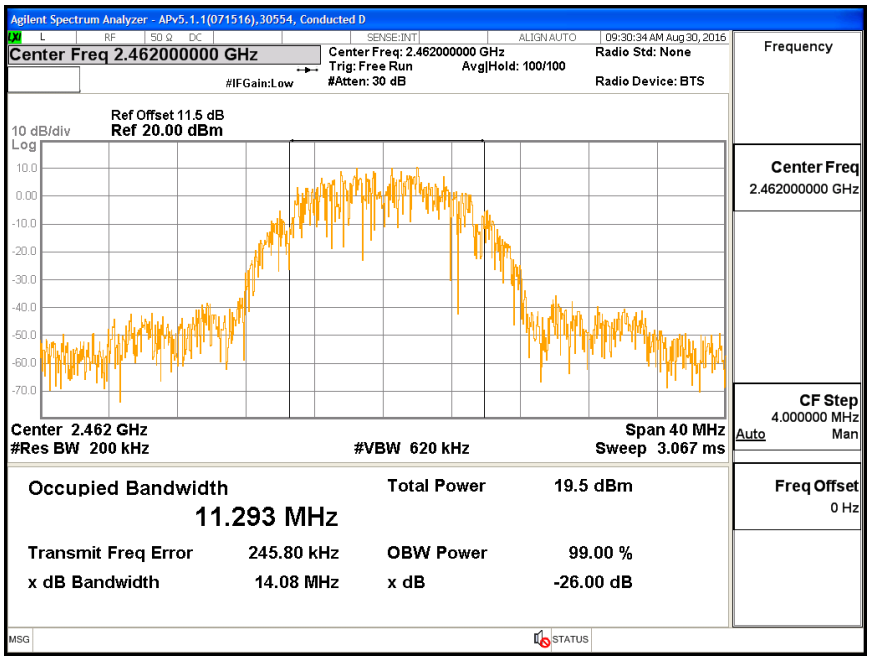
99% BANDWIDTH LOW CH



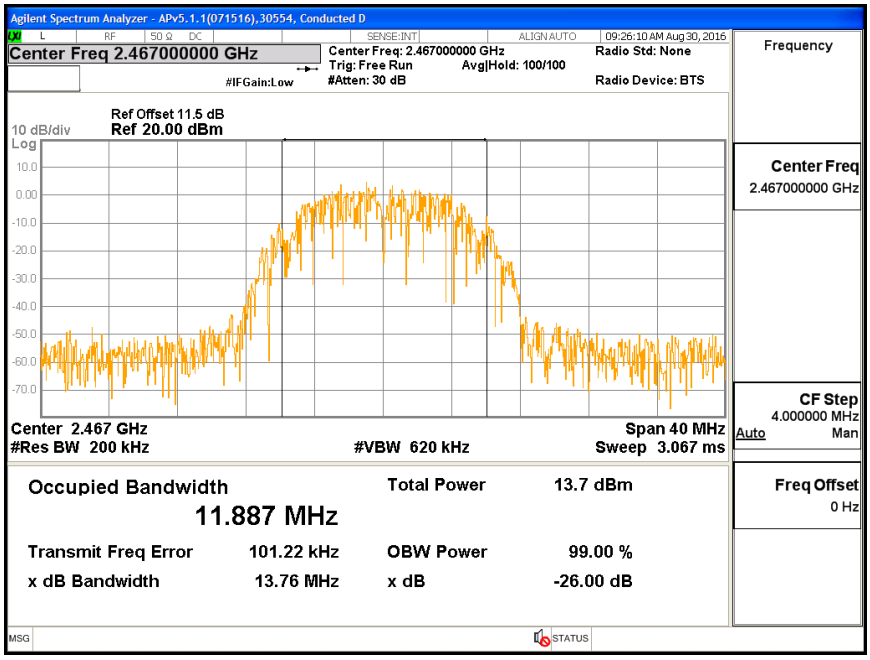
99% BANDWIDTH MID CH



99% BANDWIDTH HIGH CH 11



99% BANDWIDTH HIGH CH 12



8.4.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	Chain 0 Power (dBm)	Chain 1 Power (dBm)	Total Power (dBm)
Low	2412	16.44	16.48	19.47
Mid	2437	16.45	16.47	19.47
High_11	2462	14.98	14.90	17.95
High_12	2467	12.96	12.93	15.96

8.4.4. OUTPUT POWER

LIMITS

FCC §15.247

IC RSS-247 (5.4) (4)

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is unequal among the chains. The directional gain is:

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
2.1	3.3	2.7

RESULTS

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	2.7	30.00	30	36	30.00
Mid	2437	2.7	30.00	30	36	30.00
High_11	2462	2.7	30.00	30	36	30.00
High_12	2467	2.7	30.00	30	36	30.00

Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd Power

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi (dB)
Low	2412	19.56	19.61	22.60	30.00	-7.40
Mid	2437	19.57	19.60	22.60	30.00	-7.40
High_11	2462	18.09	18.01	21.06	30.00	-8.94
High_12	2467	16.12	16.09	19.12	30.00	-10.88

8.4.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247

IC RSS-247 (5.2) (2)

For digitally modulated systems, the power spectral density conducted form the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 KHz band during any time interval of continuous transmissions.

RESULTS

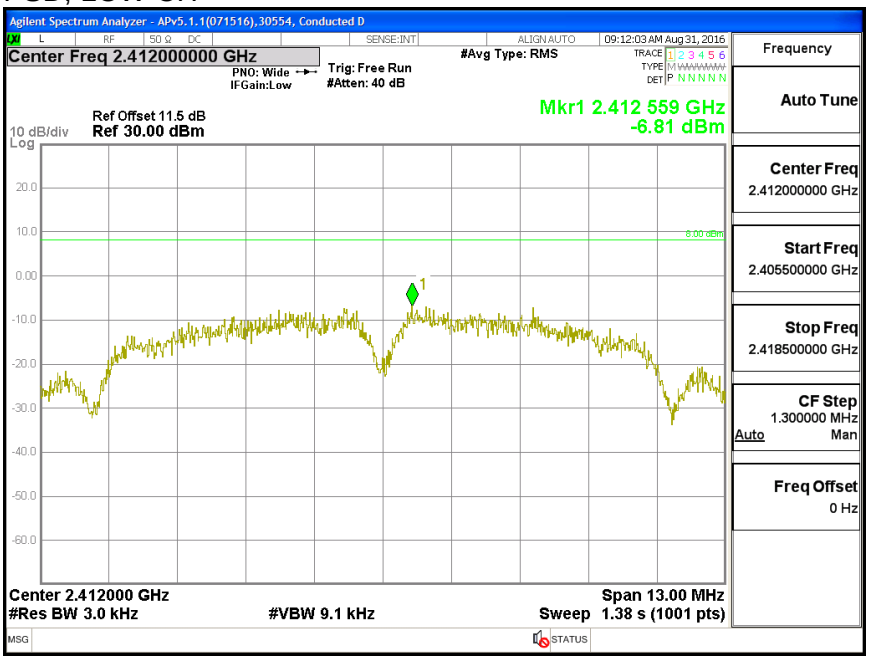
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

PSD Results

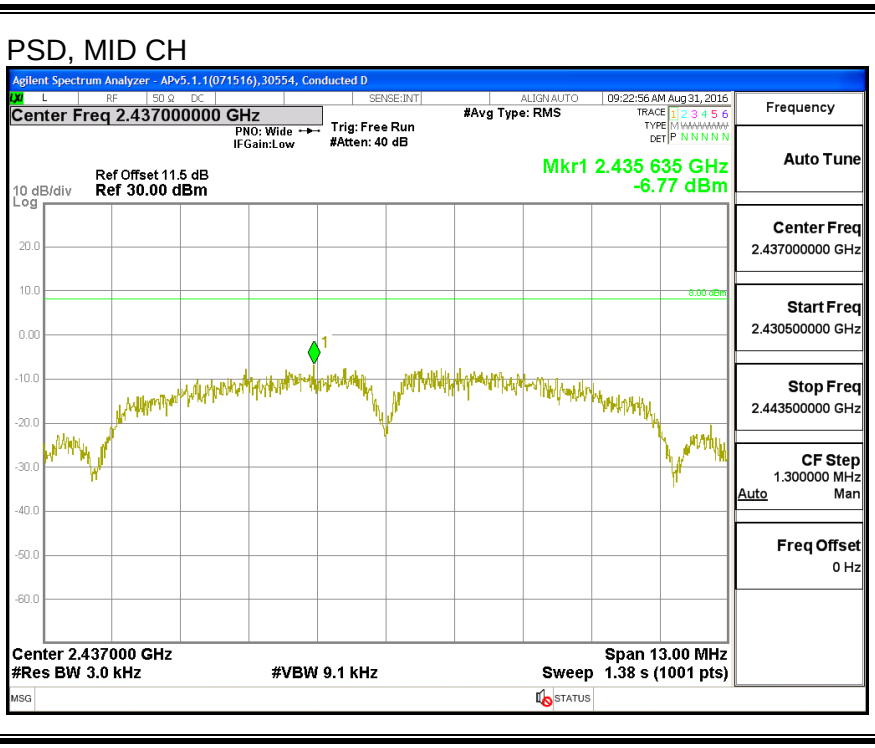
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total Corr'd PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-6.81	-6.59	-3.69	8.0	-11.7
Mid	2437	-6.77	-6.63	-3.69	8.0	-11.7
High_11	2462	-7.20	-7.99	-4.57	8.0	-12.6
High_12	2467	-9.22	-9.31	-6.25	8.0	-14.3

PSD, Chain 0

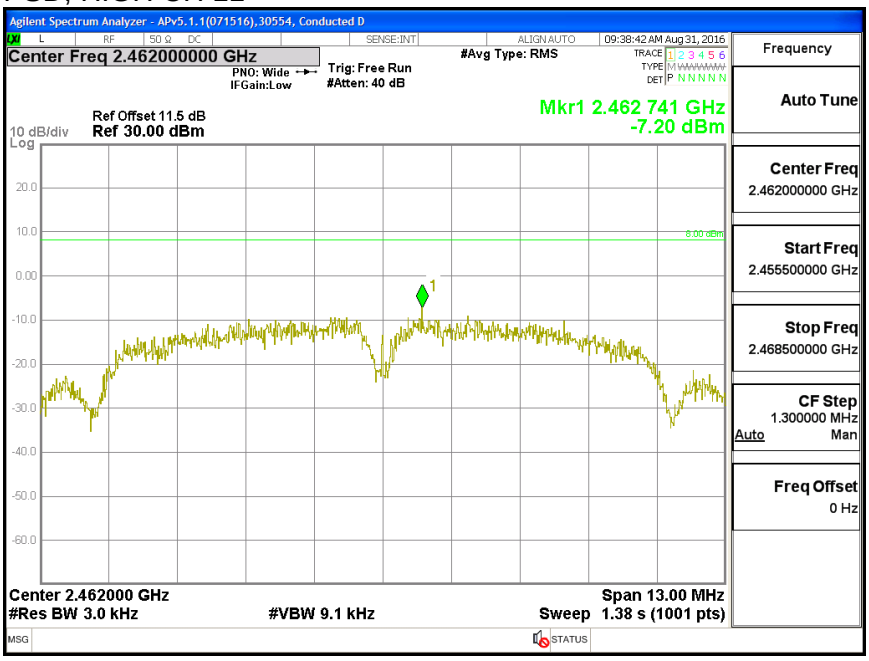
PSD, LOW CH



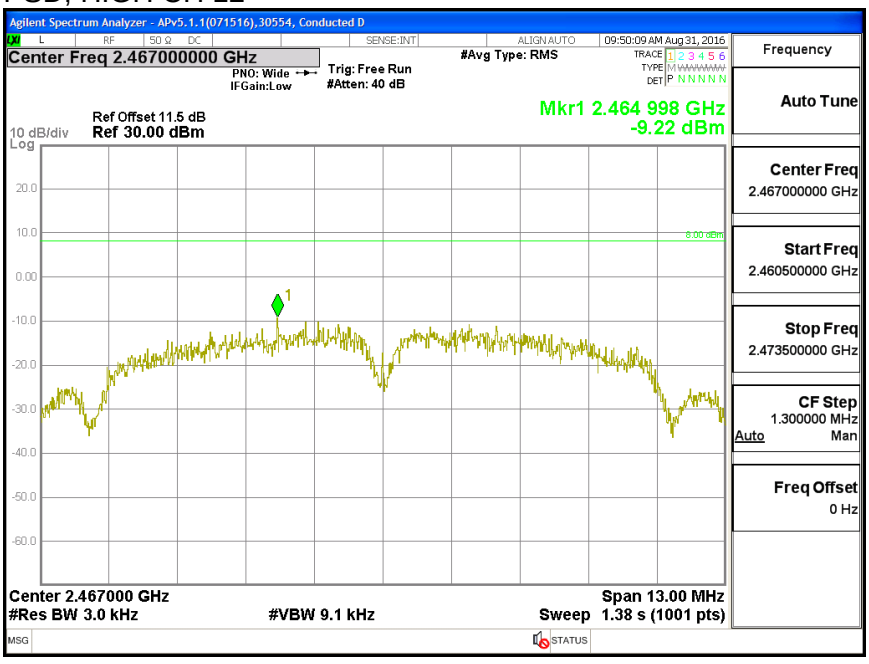
PSD, MID CH



PSD, HIGH CH 11

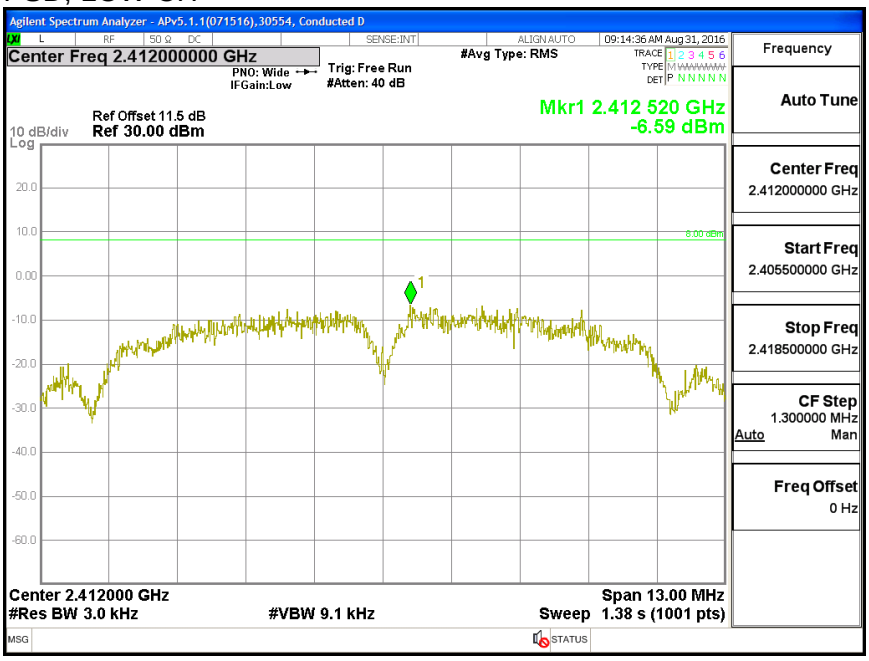


PSD, HIGH CH 12

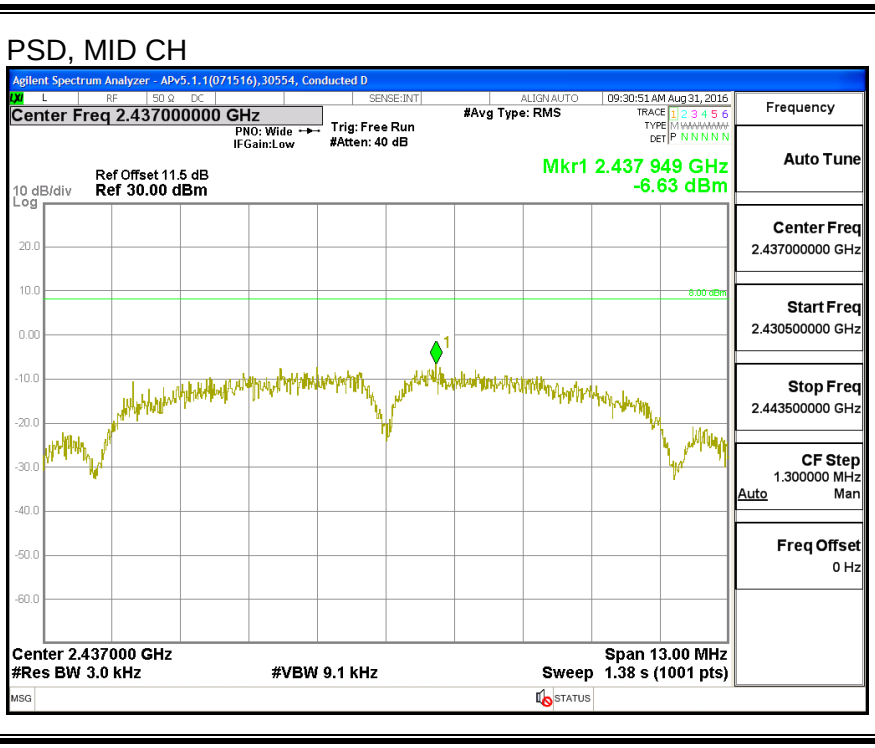


PSD, Chain 1

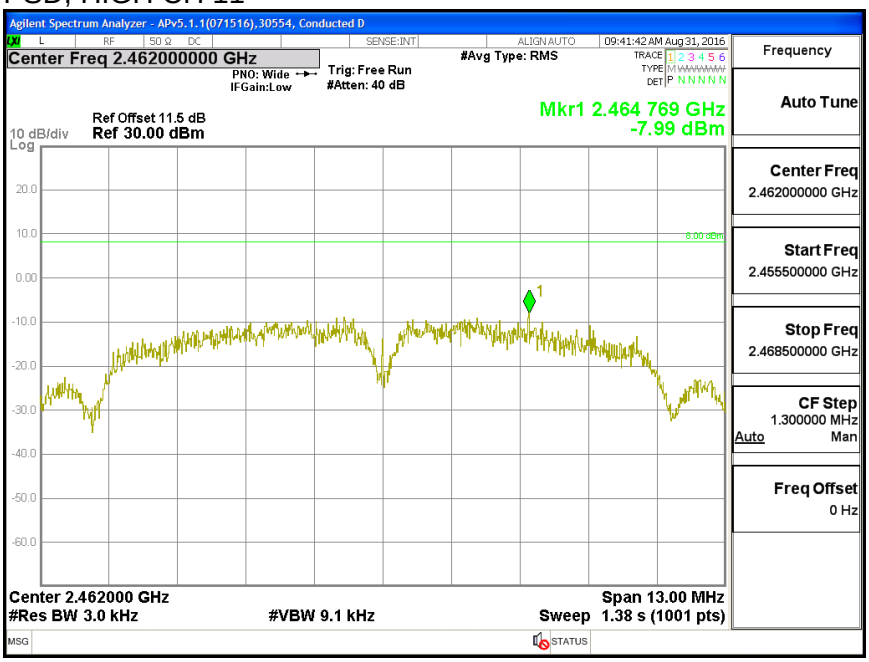
PSD, LOW CH



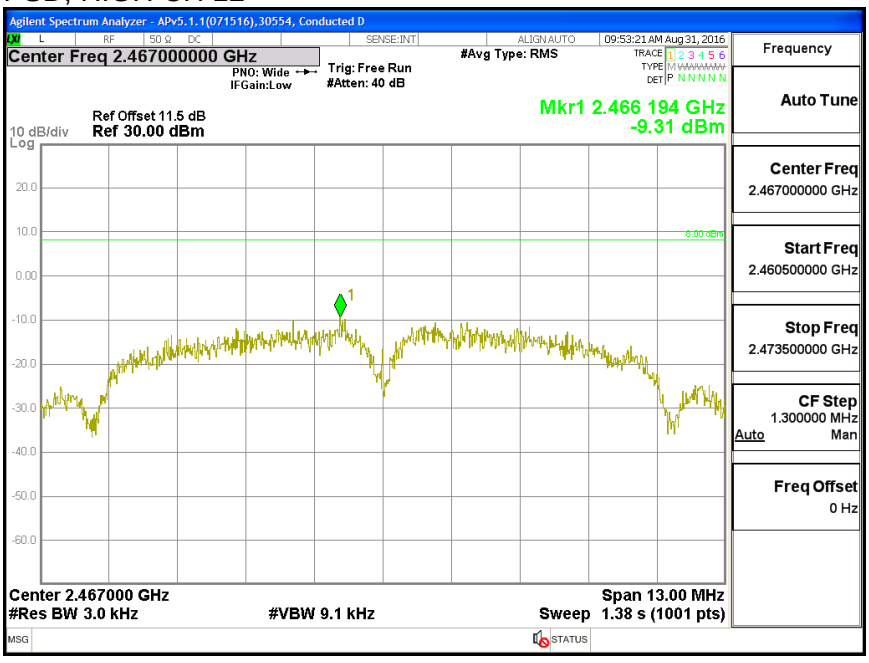
PSD, MID CH



PSD, HIGH CH 11



PSD, HIGH CH 12



8.4.6. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

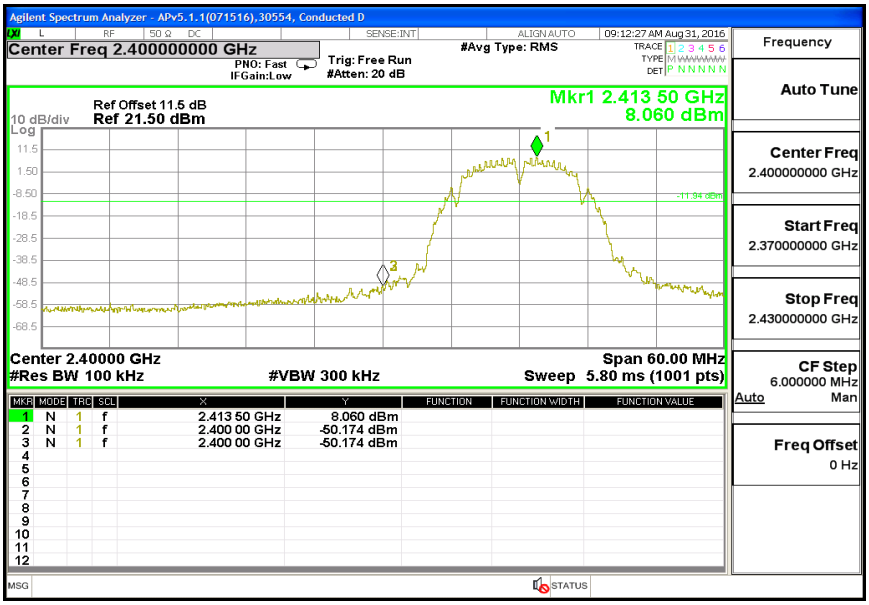
IC RSS-247 (5.5)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

RESULTS

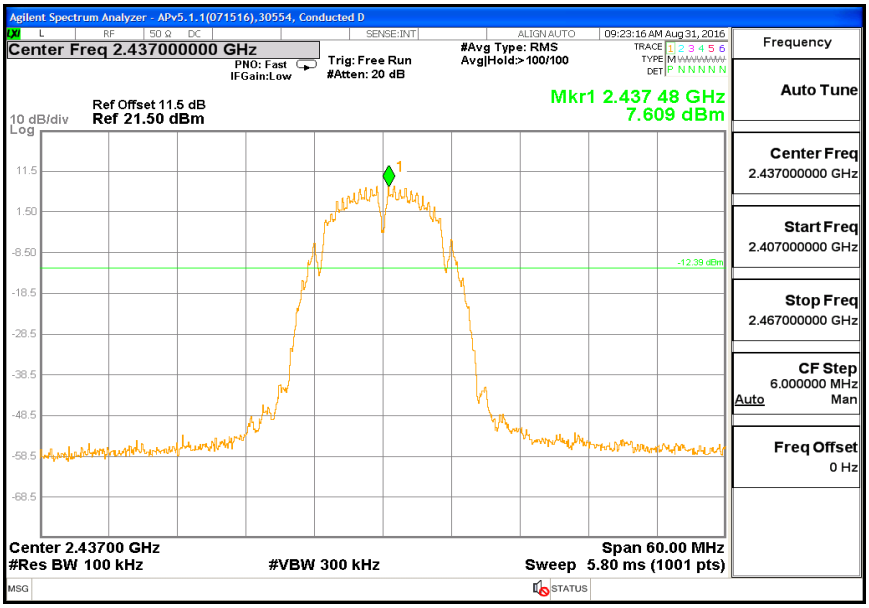
LOW CHANNEL BANDEDGE, Chain 0

AUTHORIZED BAND EDGE LOW CH



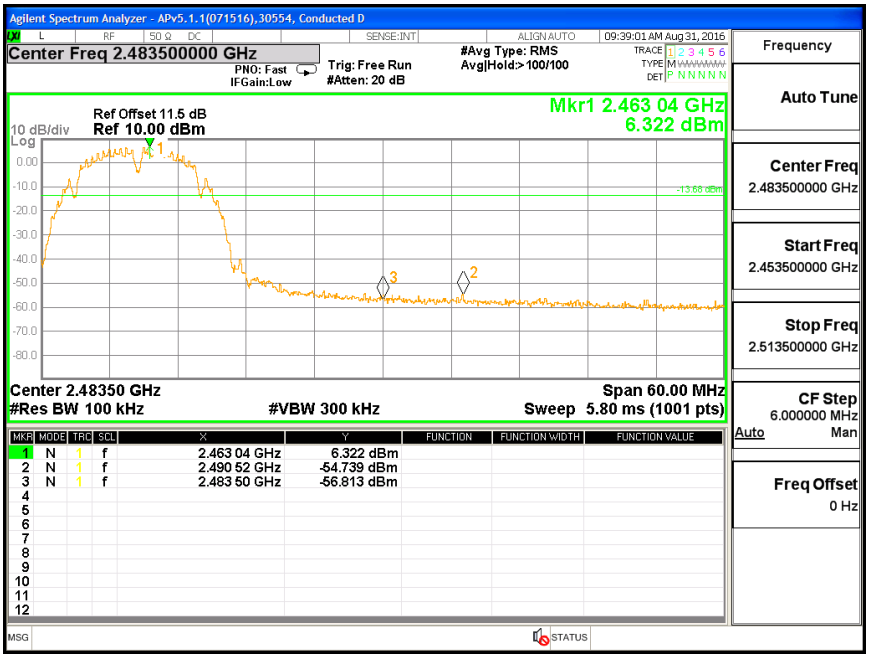
MID CHANNEL REFERENCE, Chain 0

REFERENCE MID CH

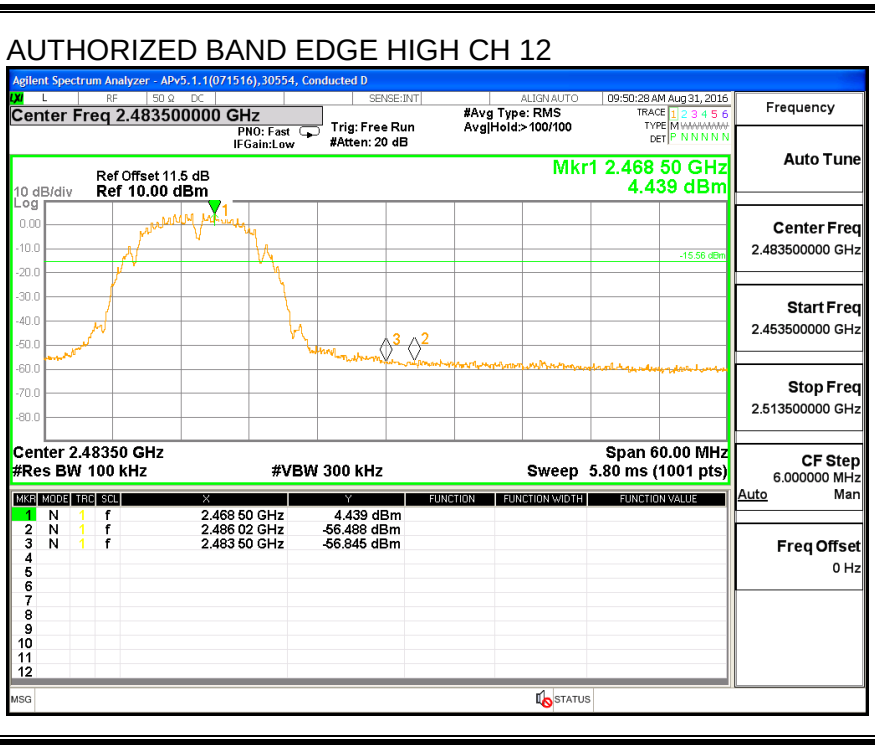


HIGH CHANNEL BANDEDGE, Chain 0

AUTHORIZED BAND EDGE HIGH CH 11

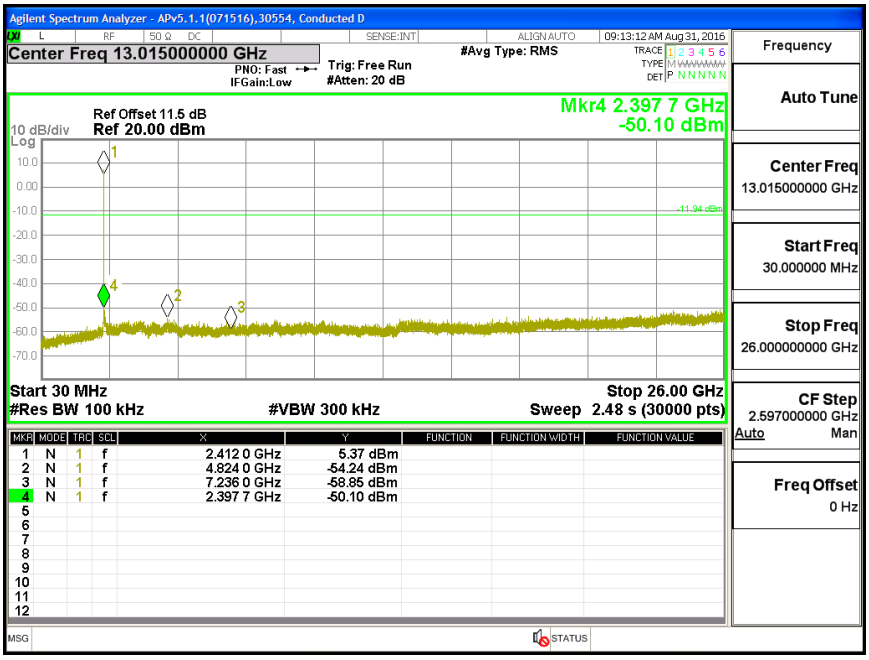


AUTHORIZED BAND EDGE HIGH CH 12

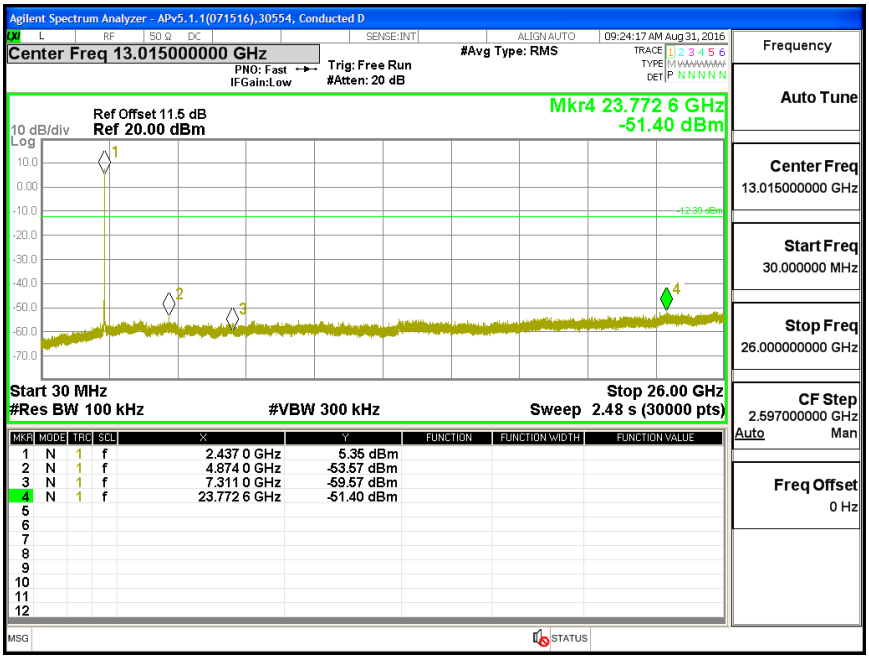


OUT-OF-BAND EMISSIONS, Chain 0

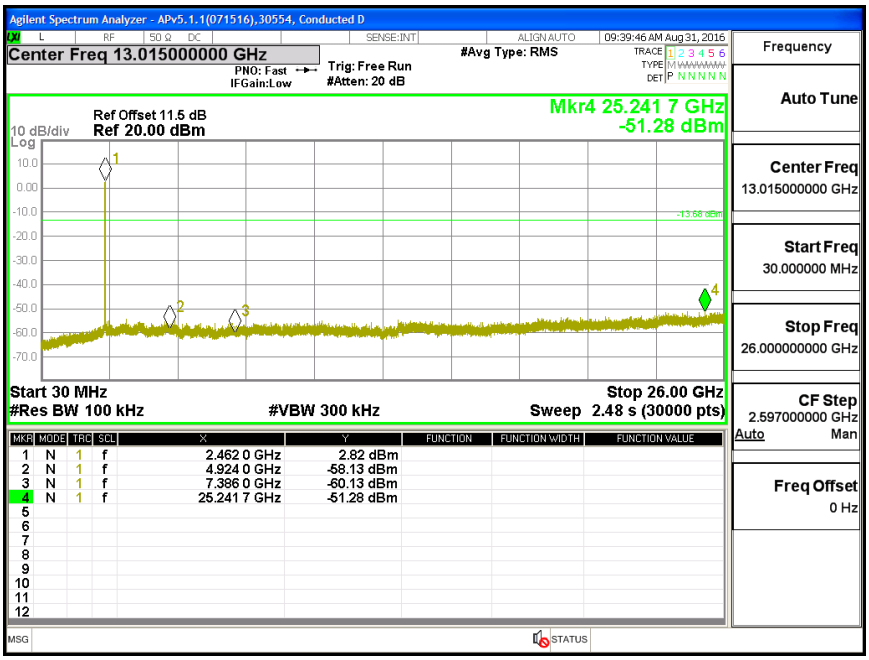
OUT OF BAND LOW CH



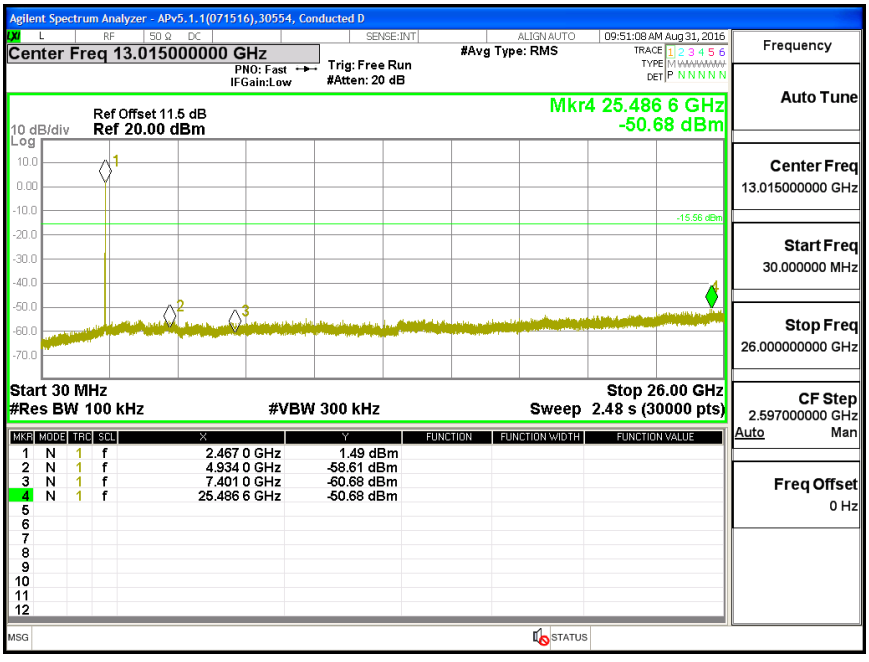
OUT OF BAND MID CH



OUT OF BAND HIGH CH 11

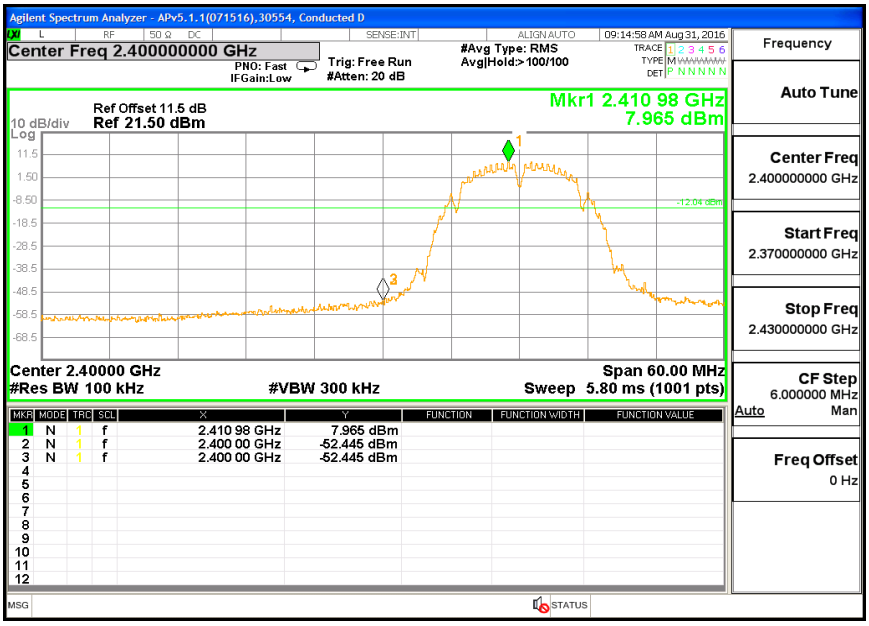


OUT OF BAND HIGH CH 12



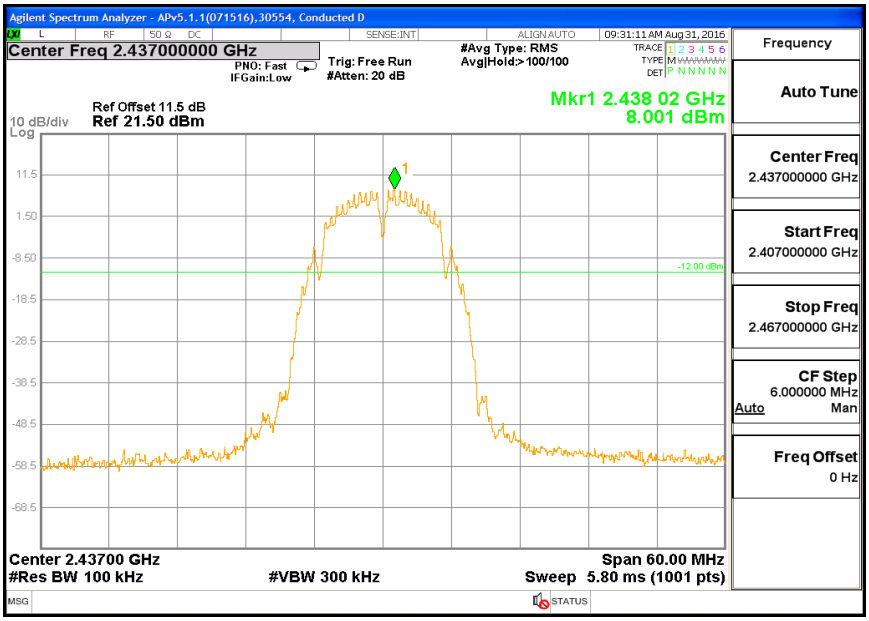
LOW CHANNEL BANDEDGE, Chain 1

AUTHORIZED BAND EDGE LOW CH



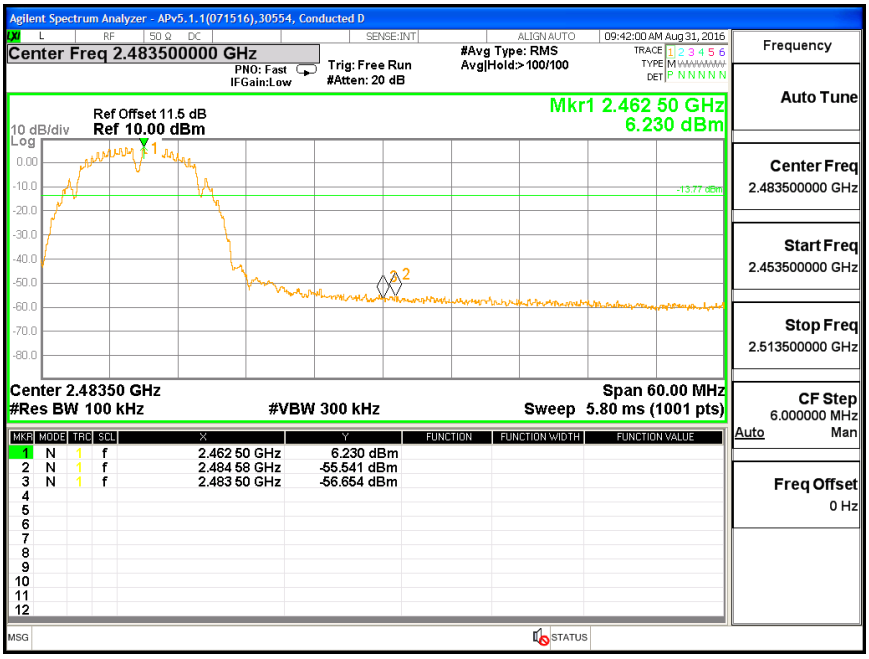
MID CHANNEL REFERENCE, Chain 1

REFEREBCE MID CH

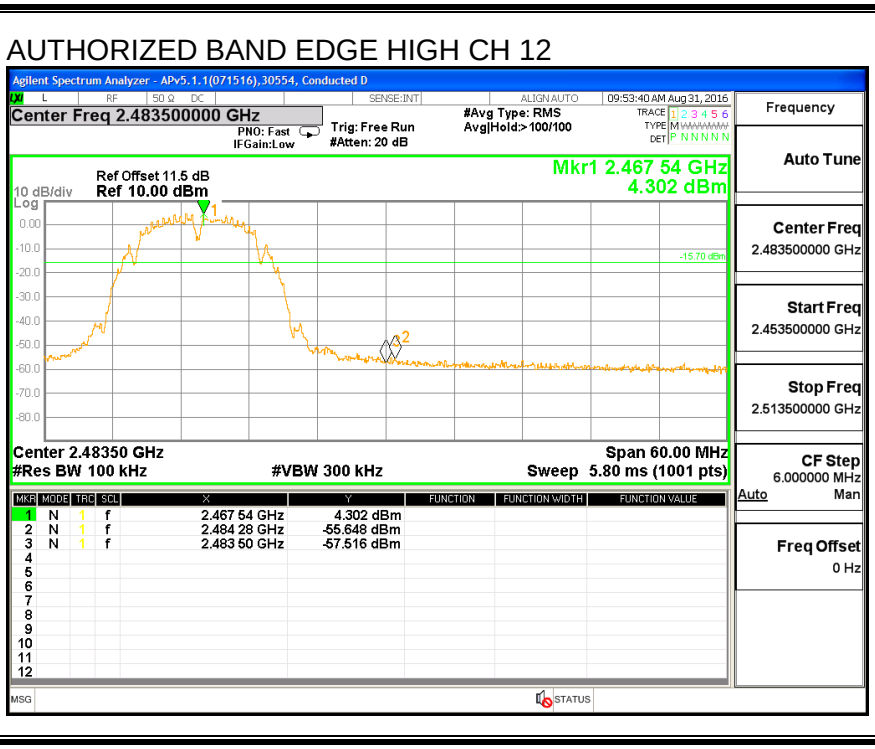


HIGH CHANNEL BANDEDGE, Chain 1

AUTHORIZED BAND EDGE HIGH CH 11

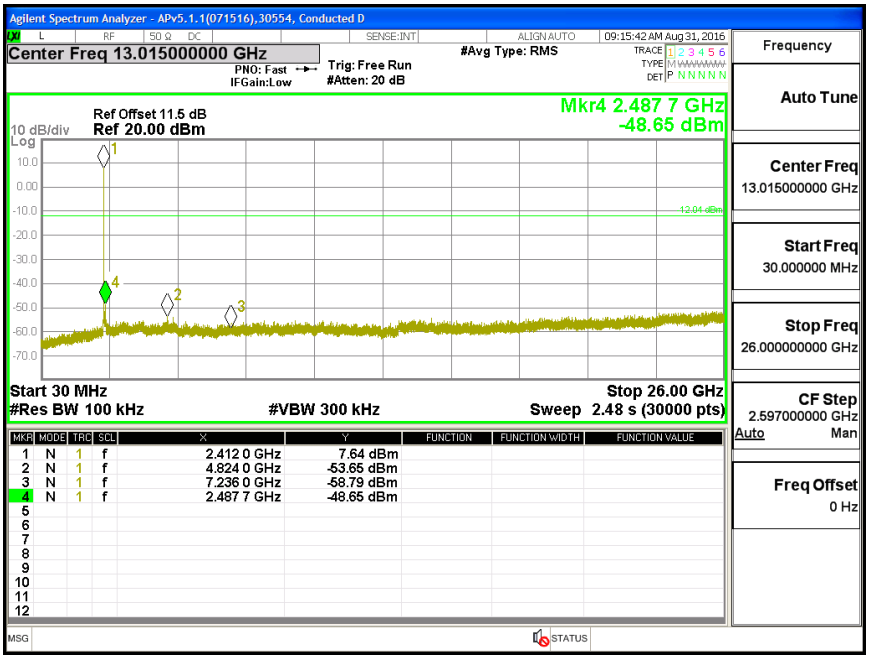


AUTHORIZED BAND EDGE HIGH CH 12

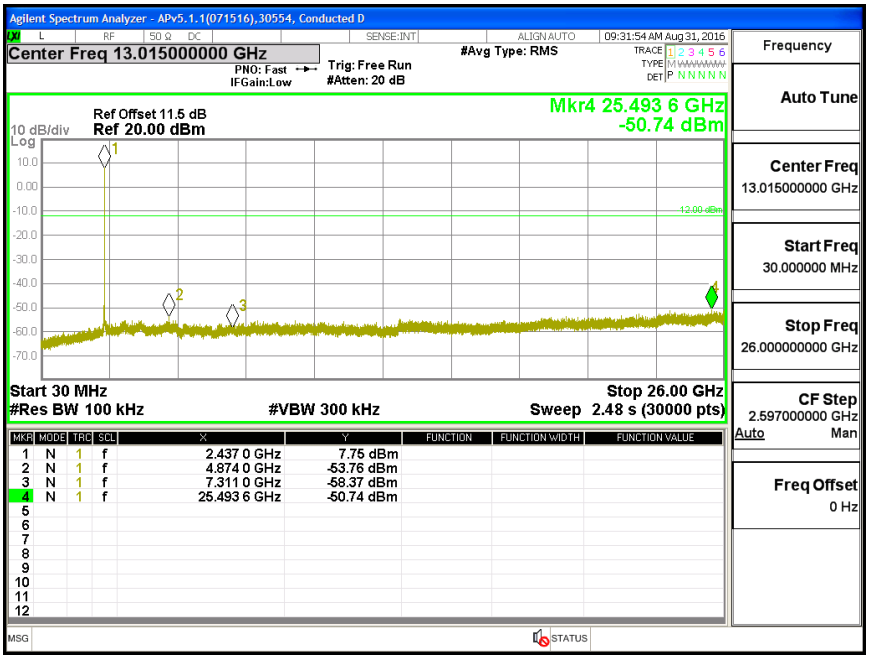


OUT-OF-BAND EMISSIONS, Chain 1

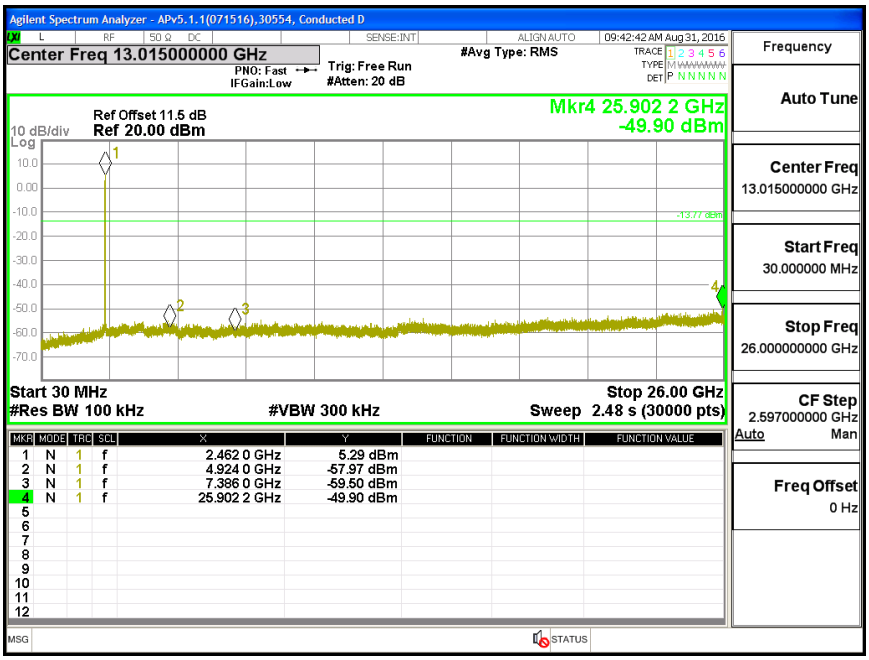
OUT OF BAND LOW CH



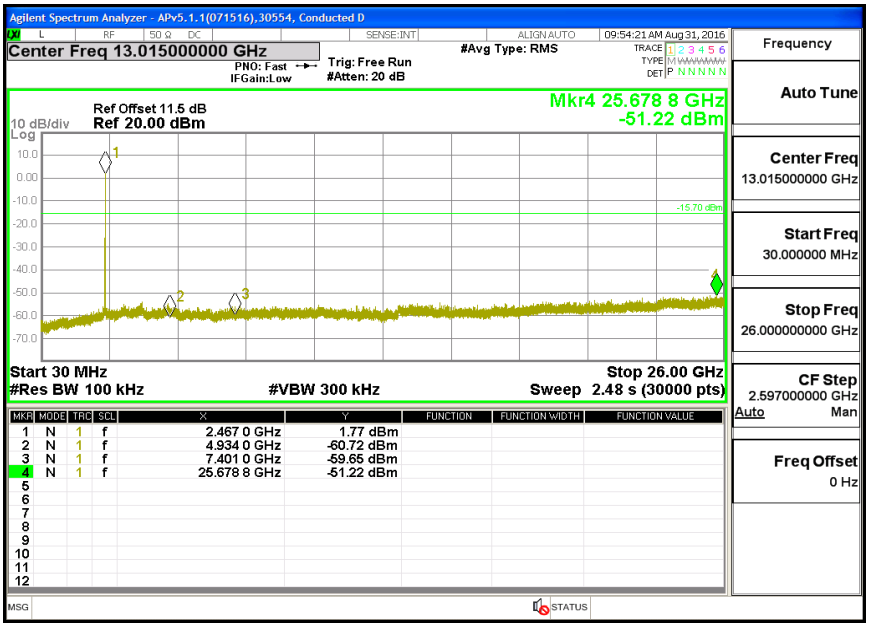
OUT OF BAND MID CH



OUT OF BAND HIGH CH 11



OUT OF BAND Chain 1 HIGH CH 12



8.5. 802.11b 2TX MODE IN THE 2.4 GHz BAND, CHAIN 0+2

8.5.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-247 (5.2) (1)

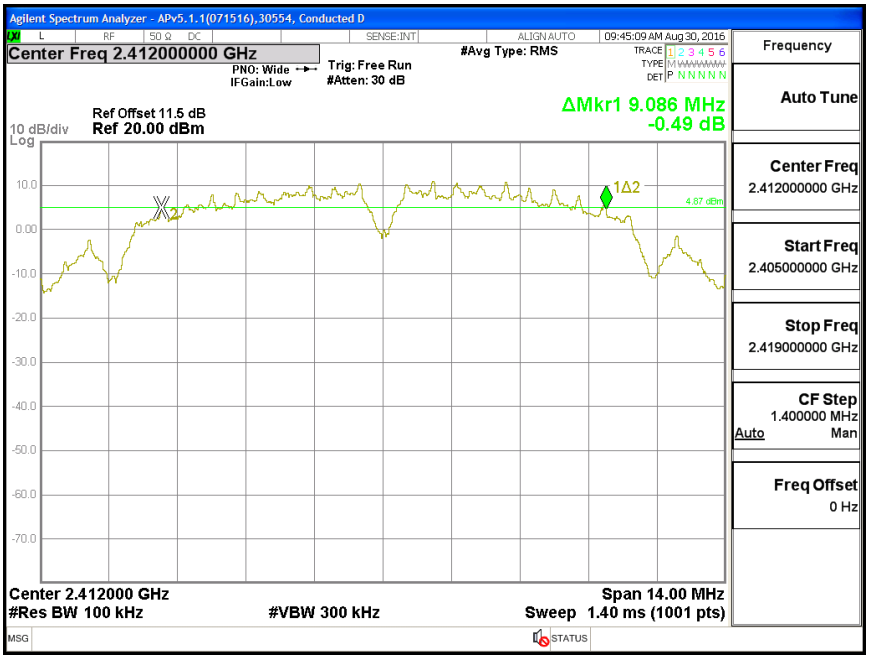
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

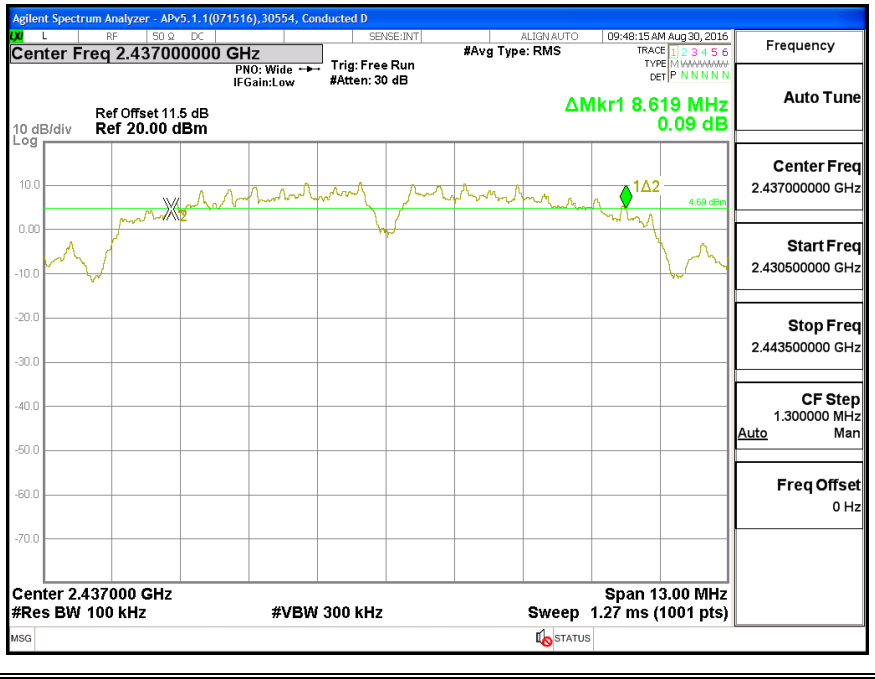
Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 2 (MHz)	Minimum Limit (MHz)
Low	2412	9.086	9.100	0.5
Mid	2437	8.619	9.044	0.5
High_11	2462	9.044	9.030	0.5
High_12	2467	8.112	9.072	0.5

6 dB BANDWIDTH, Chain 0

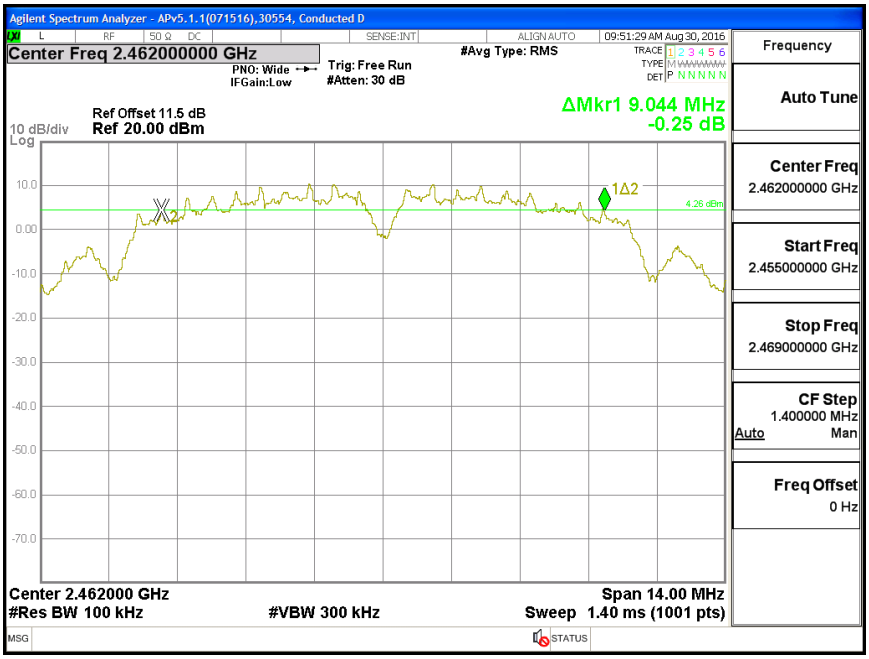
6 dB BANDWIDTH LOW CH



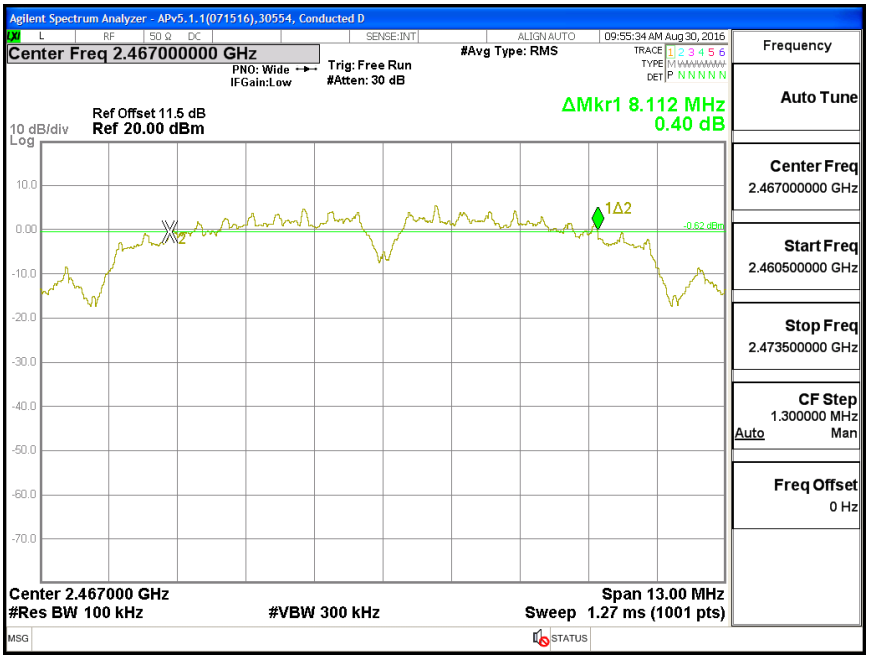
6 dB BANDWIDTH MID CH



6 dB BANDWIDTH HIGH CH 11

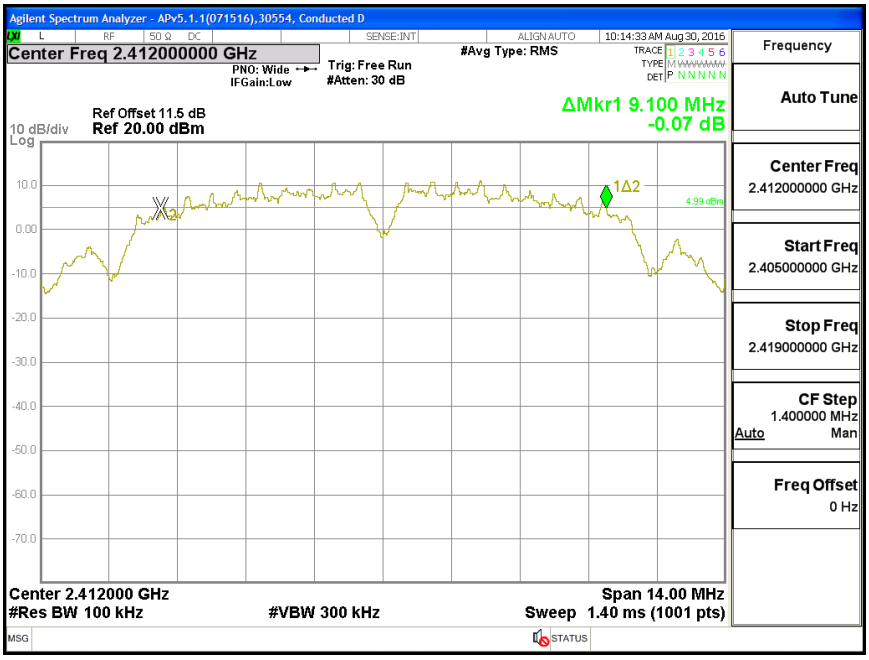


6 dB BANDWIDTH HIGH CH 12

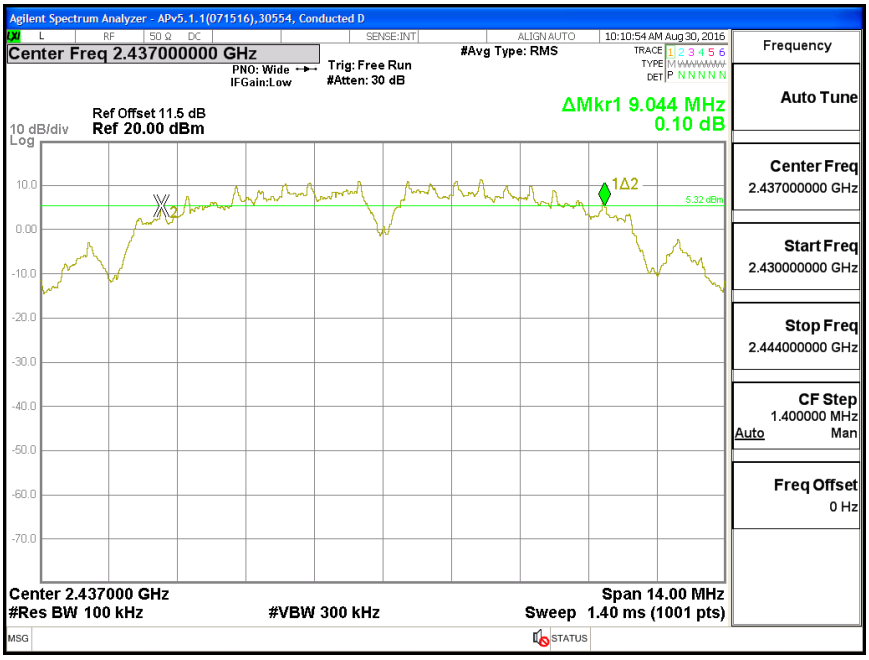


6 dB BANDWIDTH, Chain 2

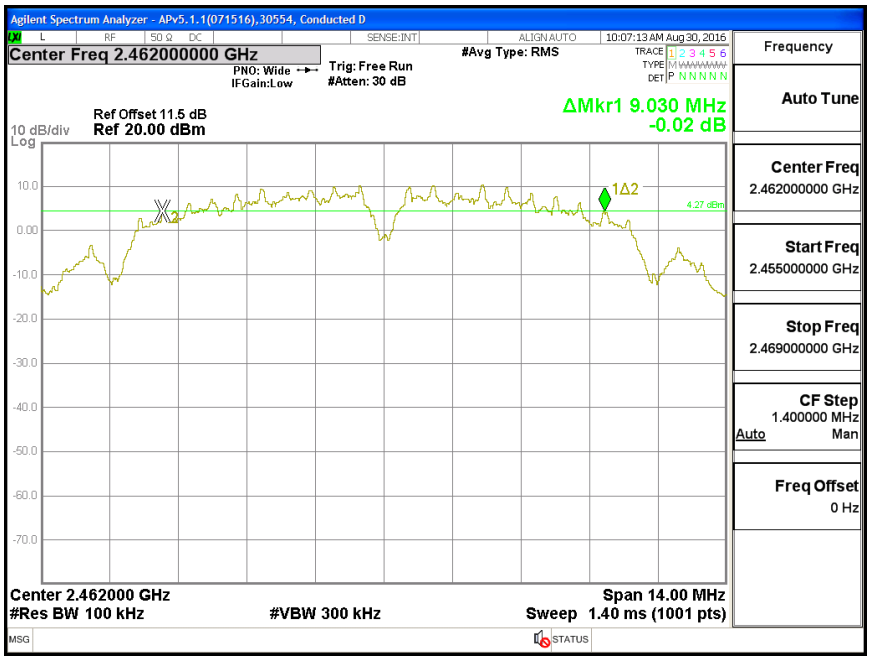
6 dB BANDWIDTH LOW CH



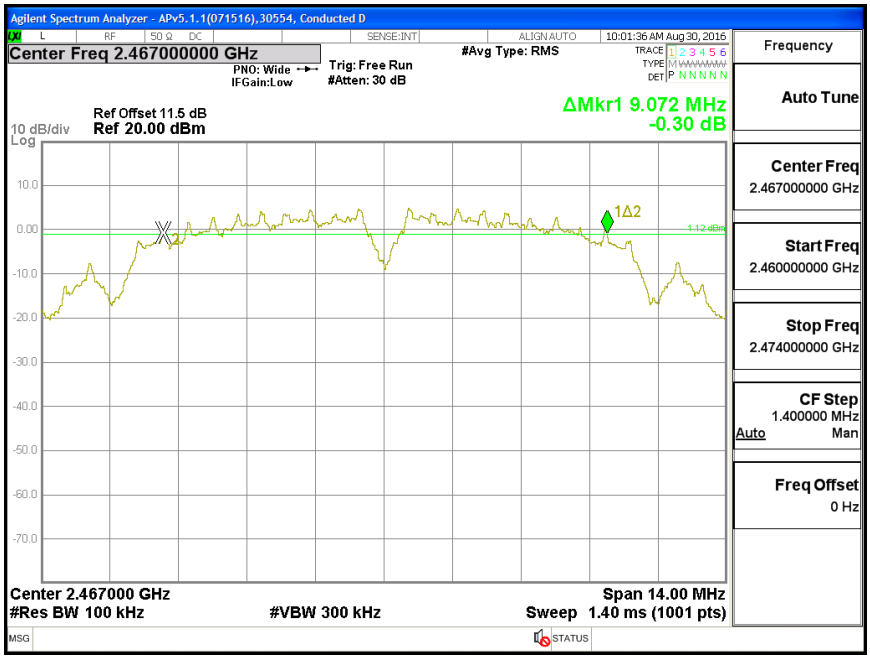
6 dB BANDWIDTH MID CH



6 dB BANDWIDTH HIGH CH 11



6 dB BANDWIDTH HIGH CH 12



8.5.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 2 (MHz)
Low	2412	11.555	11.275
Mid	2437	11.115	11.827
High_11	2462	11.366	11.690
High_12	2467	11.283	11.226