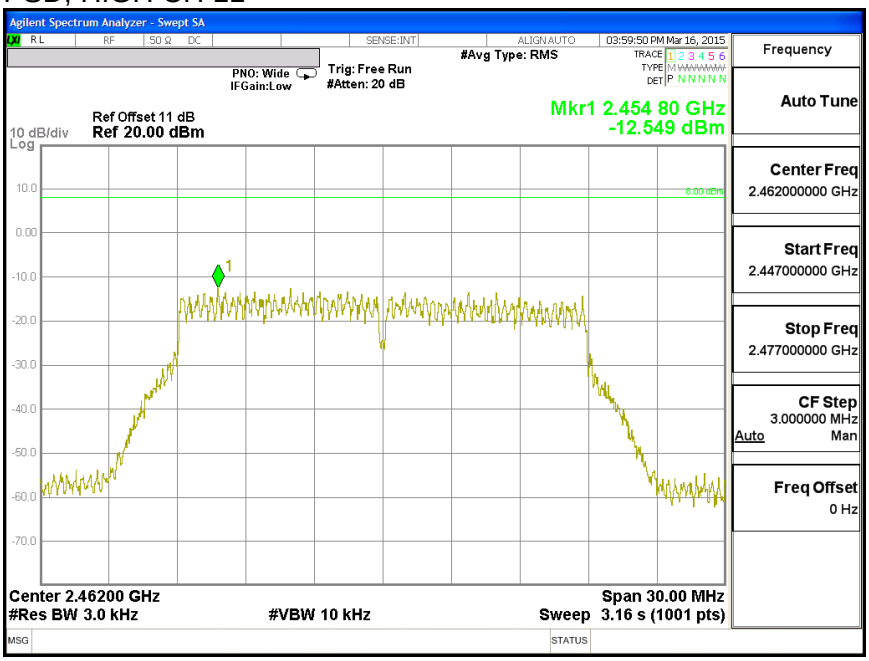
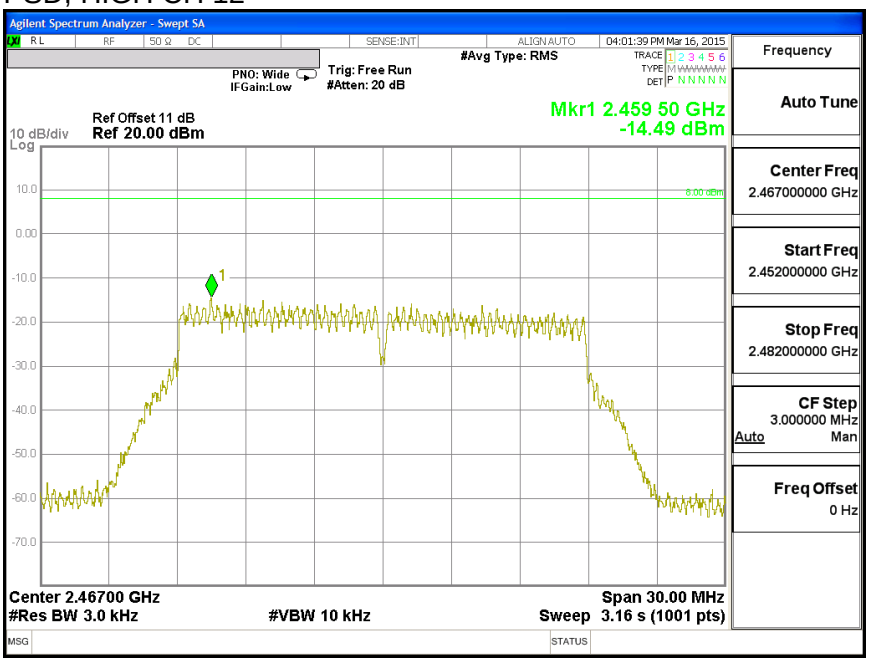
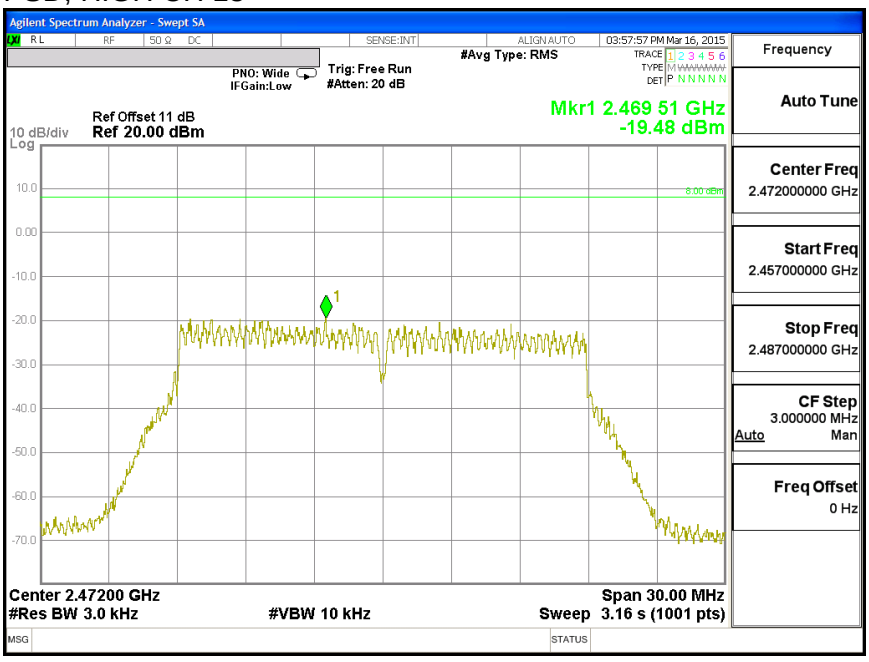
PSD, HIGH CH 11



PSD, HIGH CH 12



PSD, HIGH CH 13



8.5.6. OUT-OF-BAND EMISSIONS

LIMITS

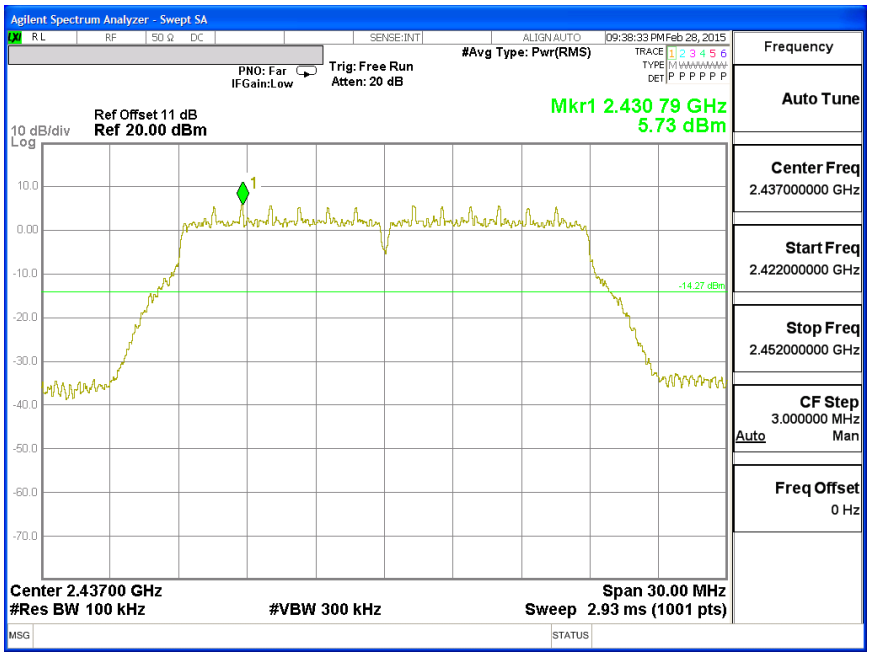
FCC §15.247 (d)

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

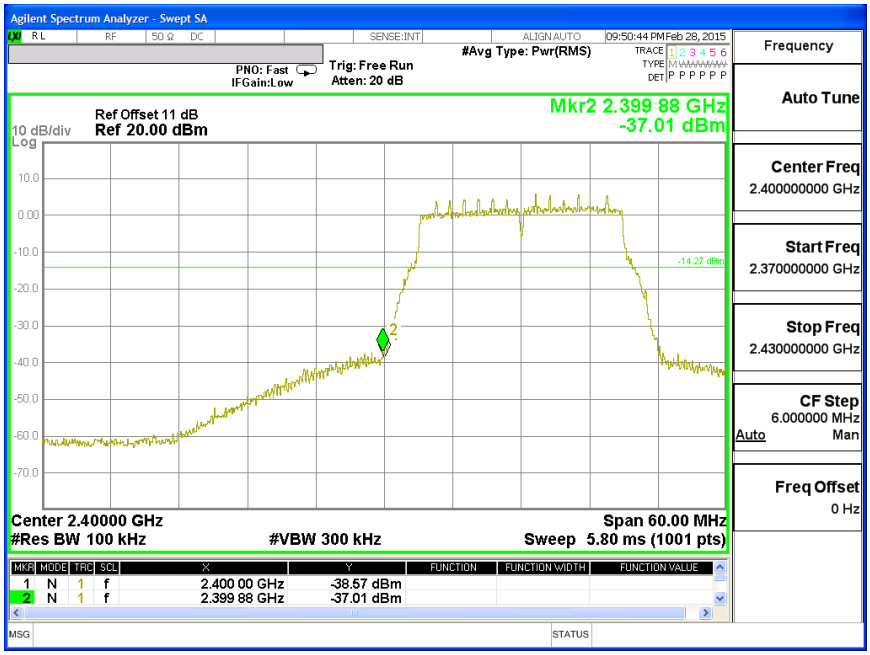
IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH



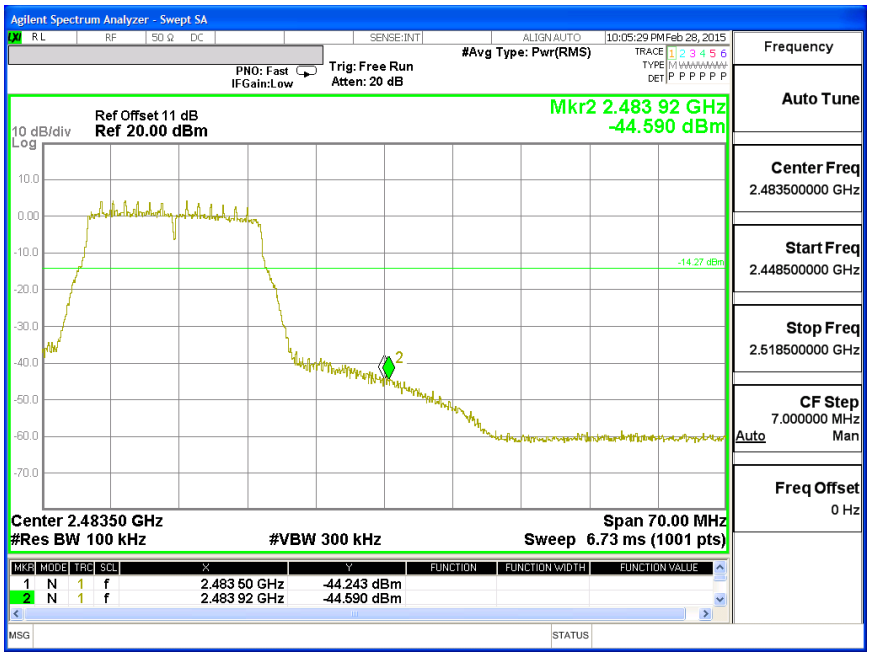
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH

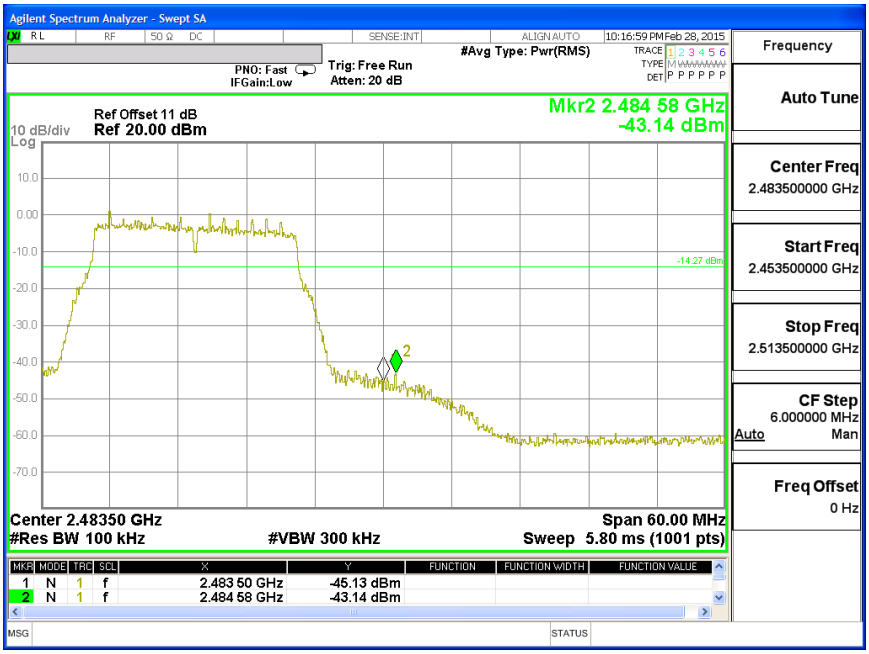


HIGH CHANNEL BANDEDGE

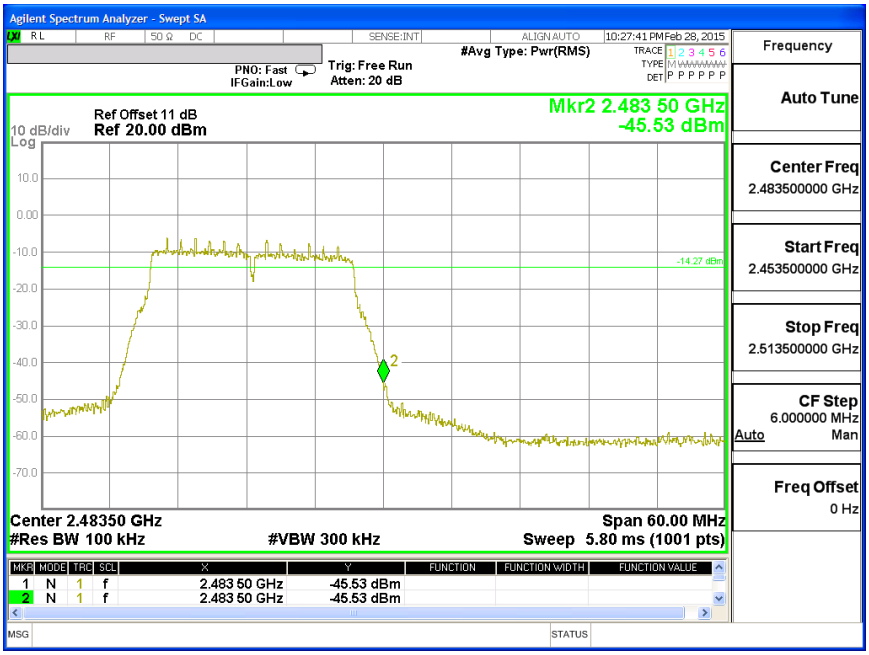
AUTHORIZED BAND EDGE HIGH CH



AUTHORIZED BAND EDGE HIGH CH 12

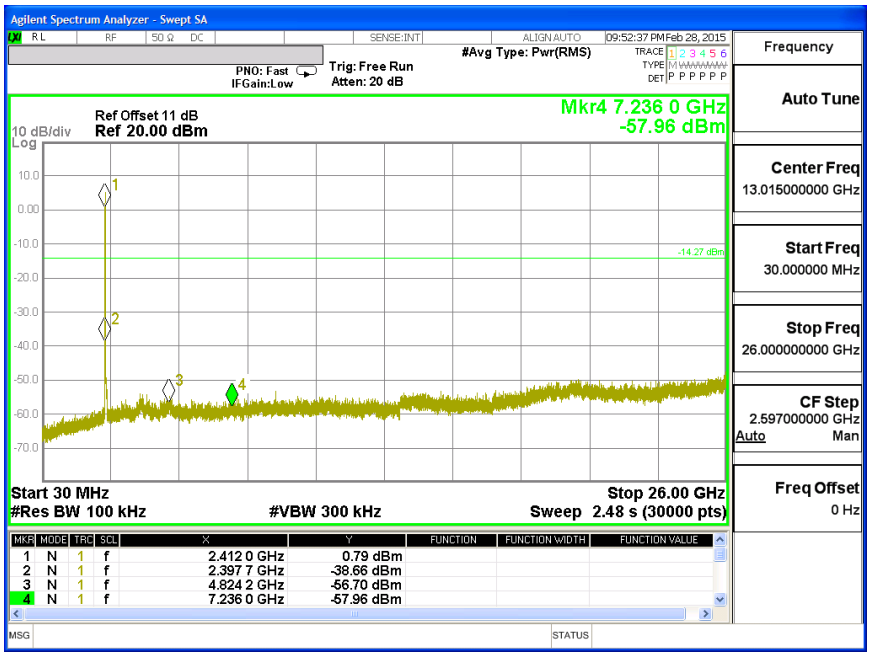


AUTHORIZED BAND EDGE HIGH CH 13

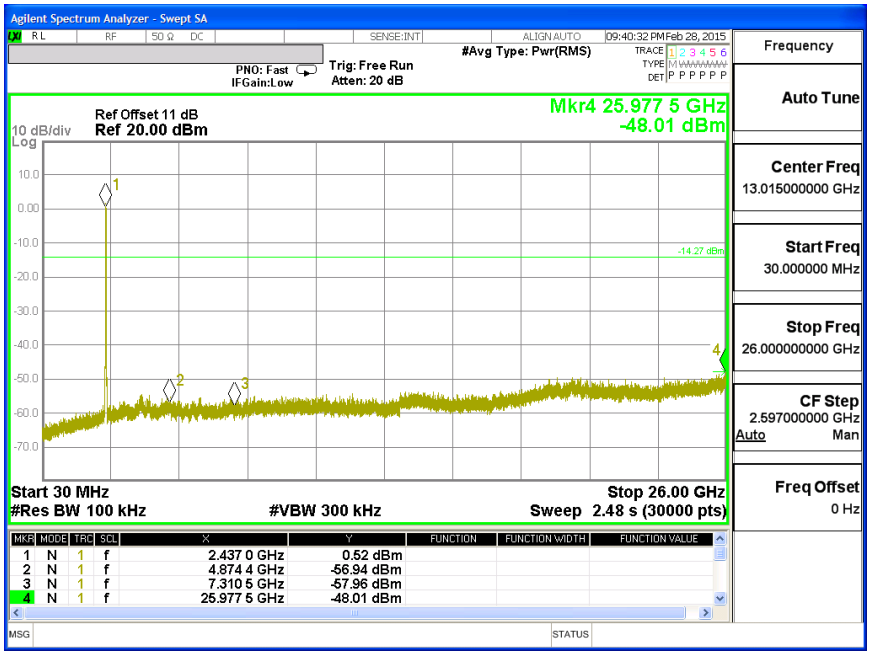


OUT-OF-BAND EMISSIONS

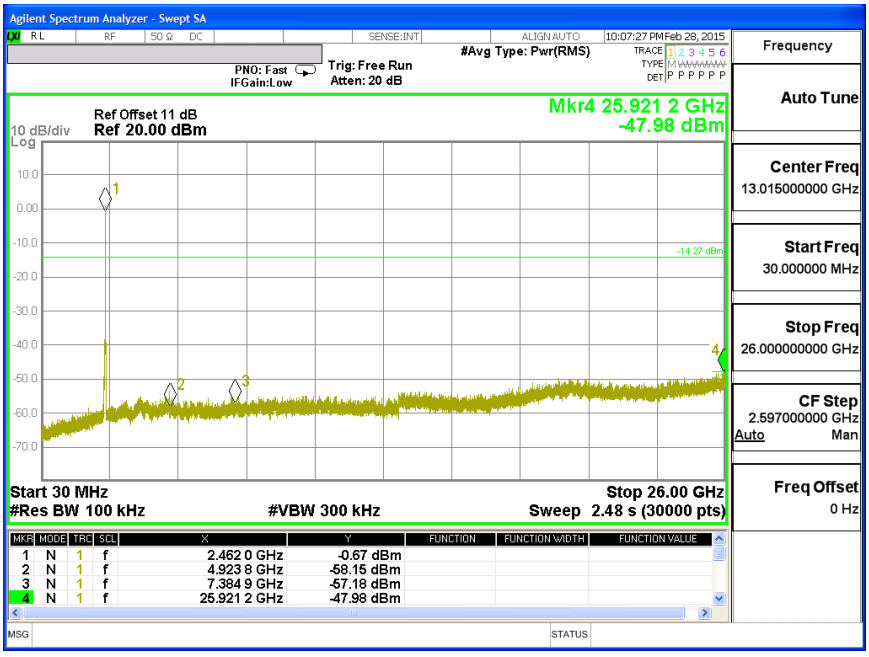
OUT OF BAND LOW CH



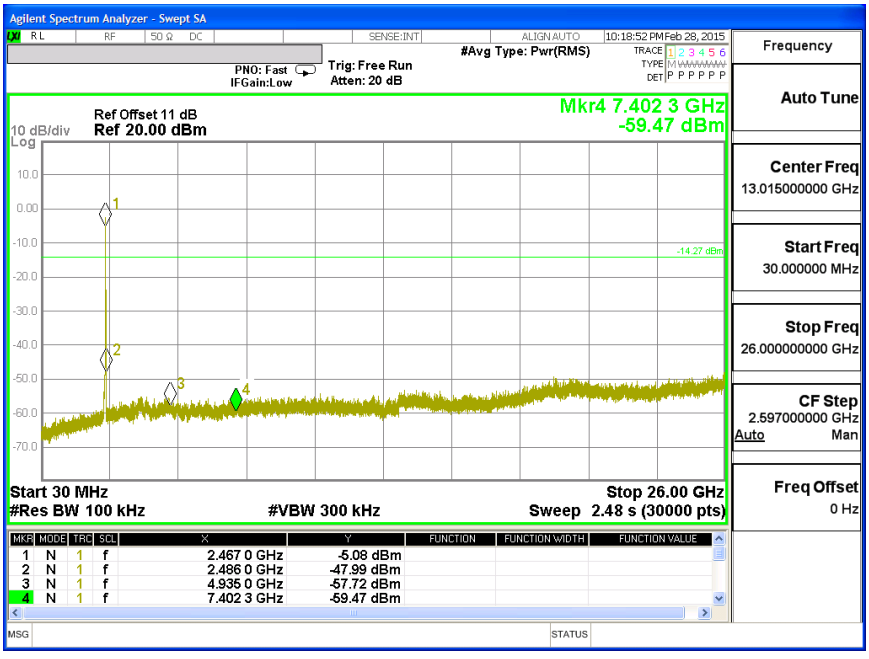
OUT OF BAND MID CH



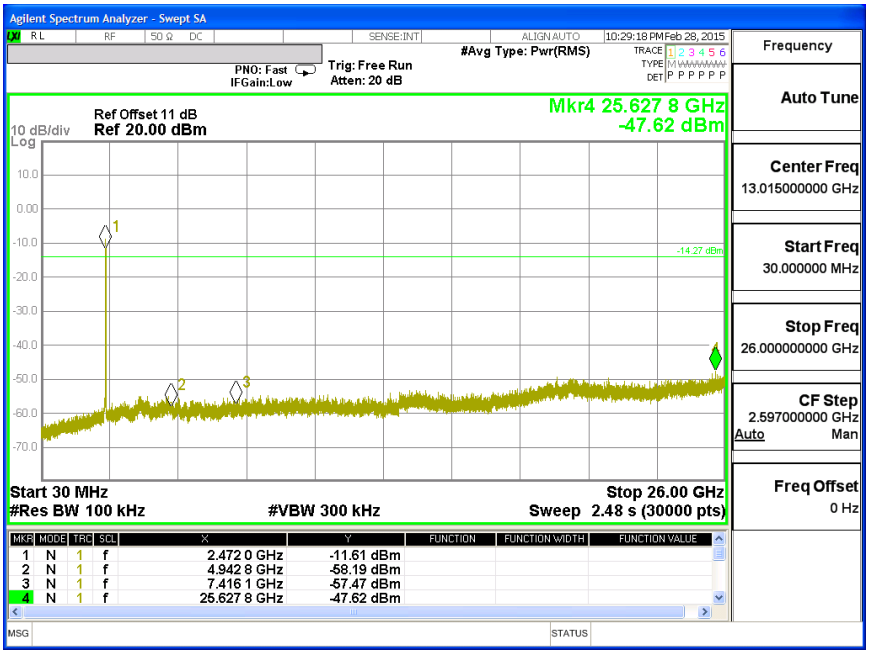
OUT OF BAND HIGH CH



OUT OF BAND HIGH CH 12



OUT OF BAND HIGH CH 13



8.6. 802.11n HT20 SISO MODE IN THE 2.4 GHz BAND (ANTENNA D)

8.6.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

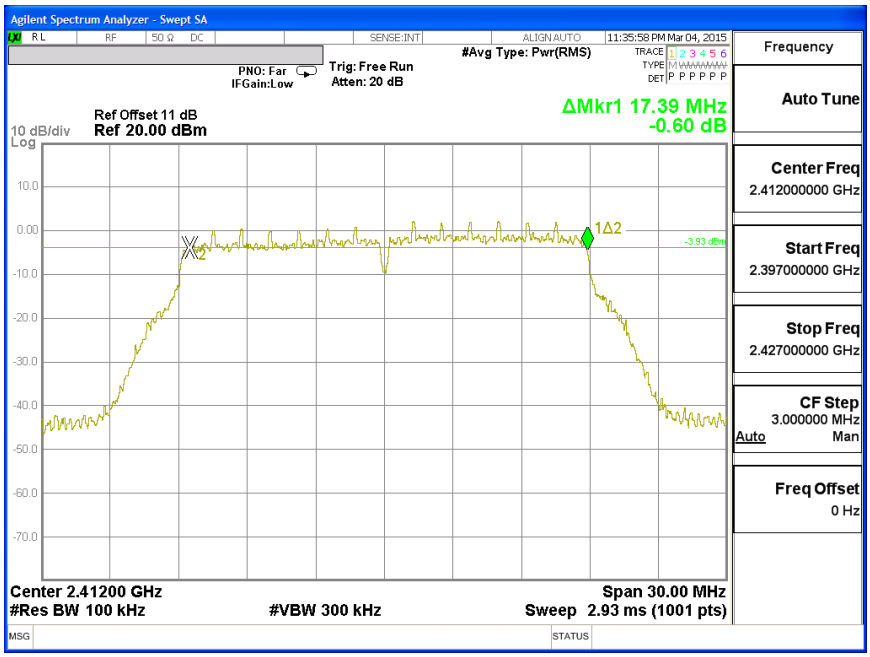
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

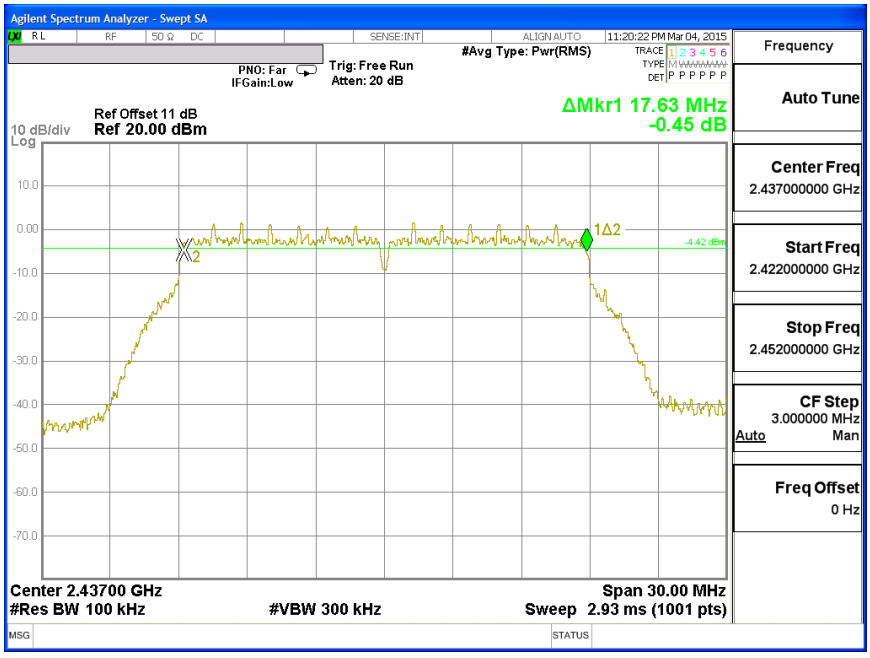
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	17.390	0.5
Mid	2437	17.630	0.5
High	2462	17.610	0.5
High	2467	17.640	0.5
High	2472	17.340	0.5

6 dB BANDWIDTH

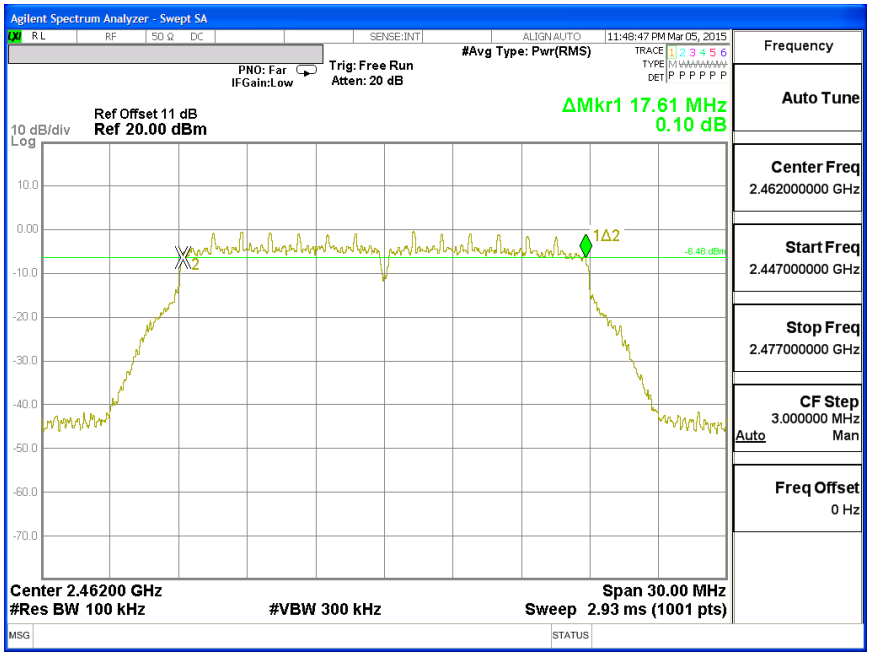
6 dB BANDWIDTH LOW CH



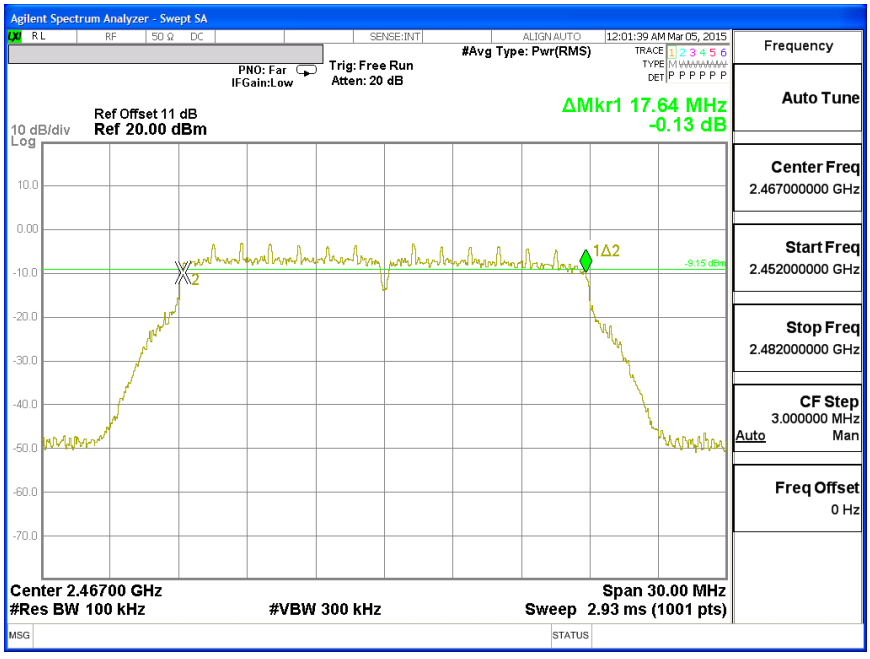
6 dB BANDWIDTH MID CH



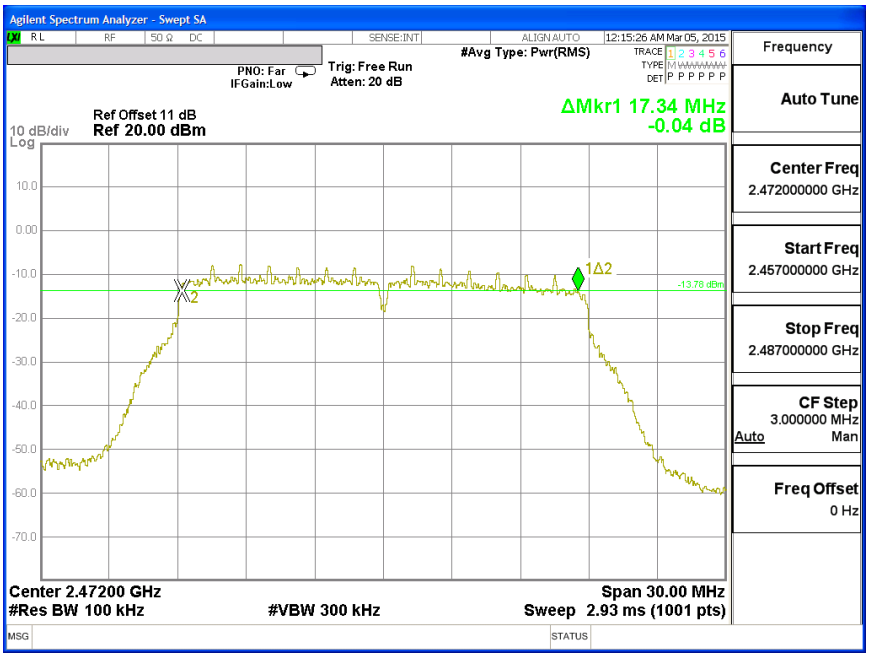
6 dB BANDWIDTH HIGH CH



6 dB BANDWIDTH HIGH CH 12



6 dB BANDWIDTH HIGH CH 13



8.6.2. 99% BANDWIDTH

LIMITS

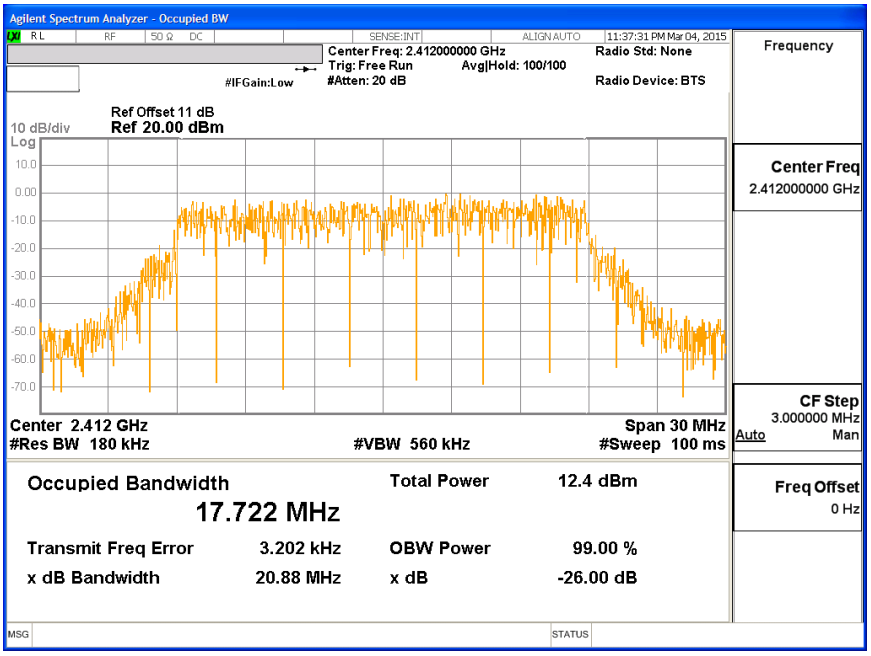
None; for reporting purposes only.

RESULTS

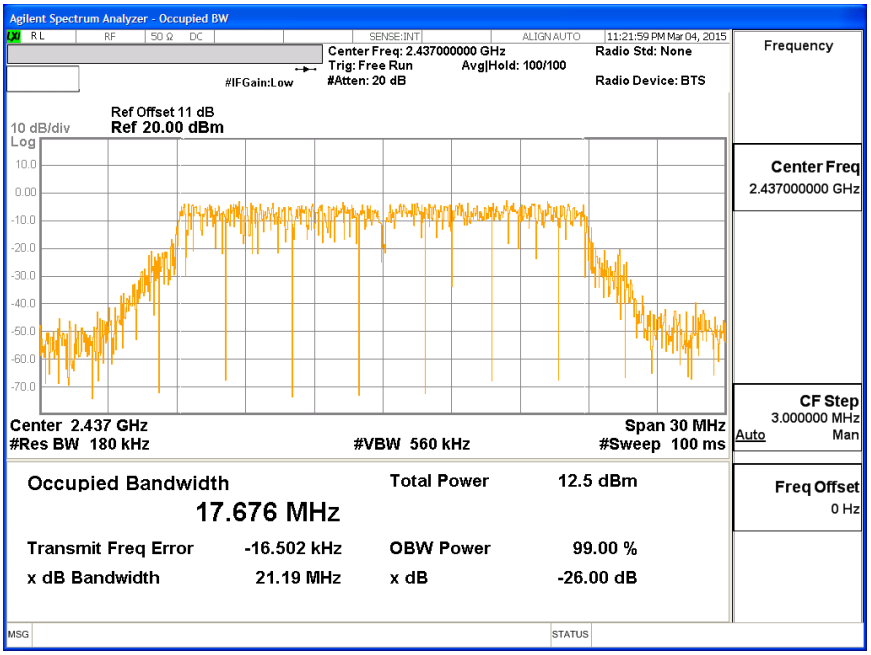
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.722
Mid	2437	17.676
High	2462	17.713
High	2467	17.759
High	2472	17.630

99% BANDWIDTH

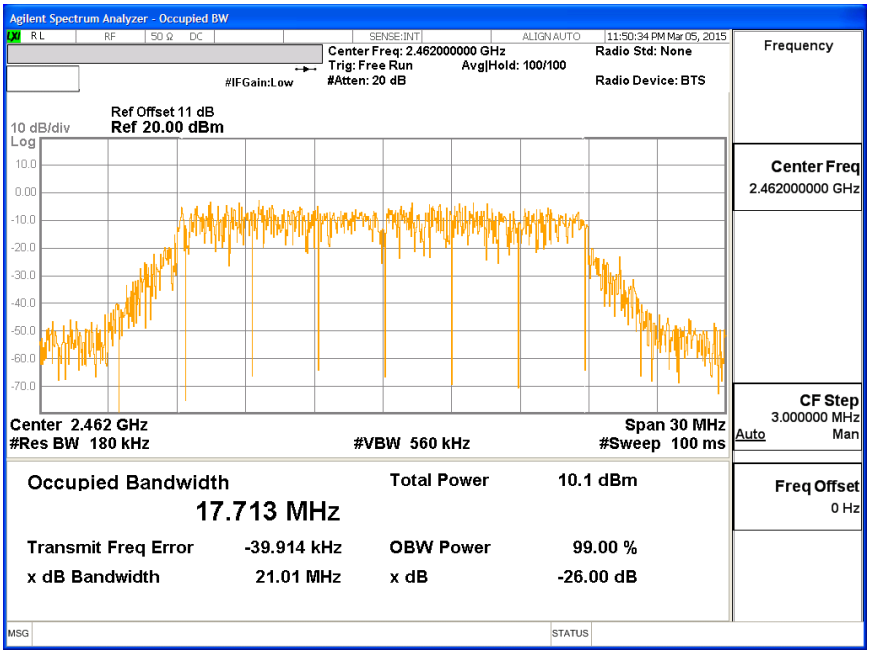
99% BANDWIDTH LOW CH



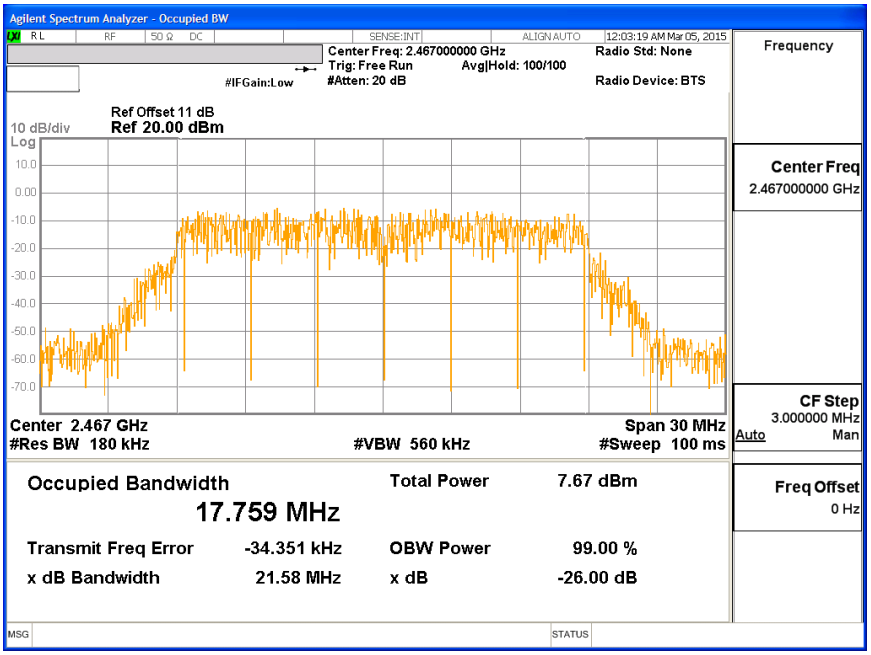
99% BANDWIDTH MID CH



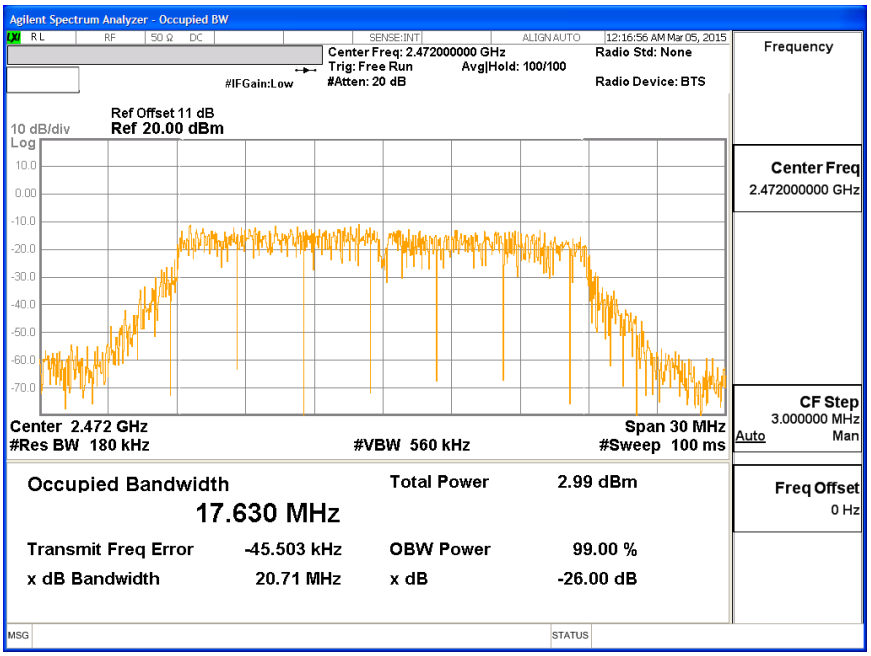
99% BANDWIDTH HIGH CH 11



99% BANDWIDTH HIGH CH 12



99% BANDWIDTH HIGH CH 13



8.6.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
Low	2412	12.41
Mid	2437	12.49
High	2462	10.48
High	2467	7.94
High	2472	2.98

8.6.4. OUTPUT POWER

LIMITS

FCC §15.247

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

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	2.50	30.00	30	36	30.00
Mid	2437	2.50	30.00	30	36	30.00
High	2462	2.50	30.00	30	36	30.00
High	2467	2.50	30.00	30	36	30.00
High	2472	2.50	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Antenna D Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	20.64	20.64	30.00	-9.36
Mid	2437	20.83	20.83	30.00	-9.17
High	2462	18.71	18.71	30.00	-11.29
High	2467	15.94	15.94	30.00	-14.06
High	2472	11.19	11.19	30.00	-18.81

8.6.5. PSD

LIMITS

FCC §15.247

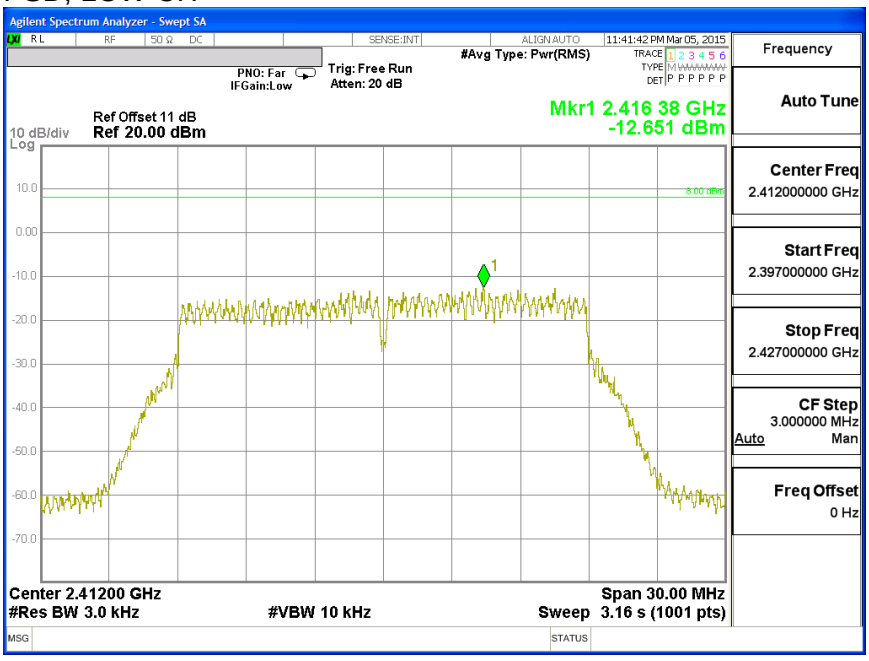
RESULTS

PSD Results

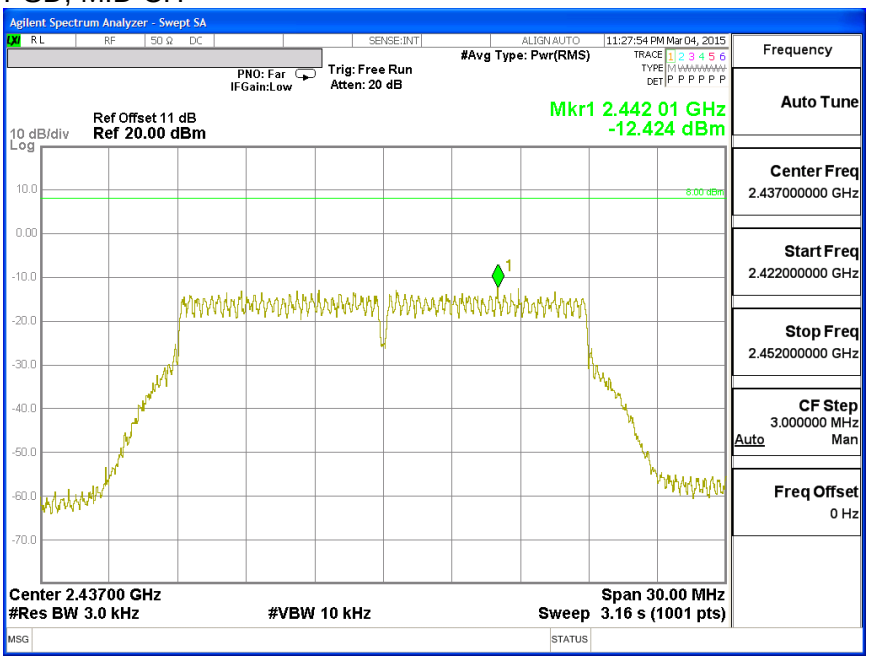
Channel	Frequency (MHz)	Antenna D Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-12.65	8.0	-20.7
Mid	2437	-12.42	8.0	-20.4
High	2462	-14.29	8.0	-22.3
High	2467	-17.32	8.0	-25.3
High	2472	-22.09	8.0	-30.1

PSD

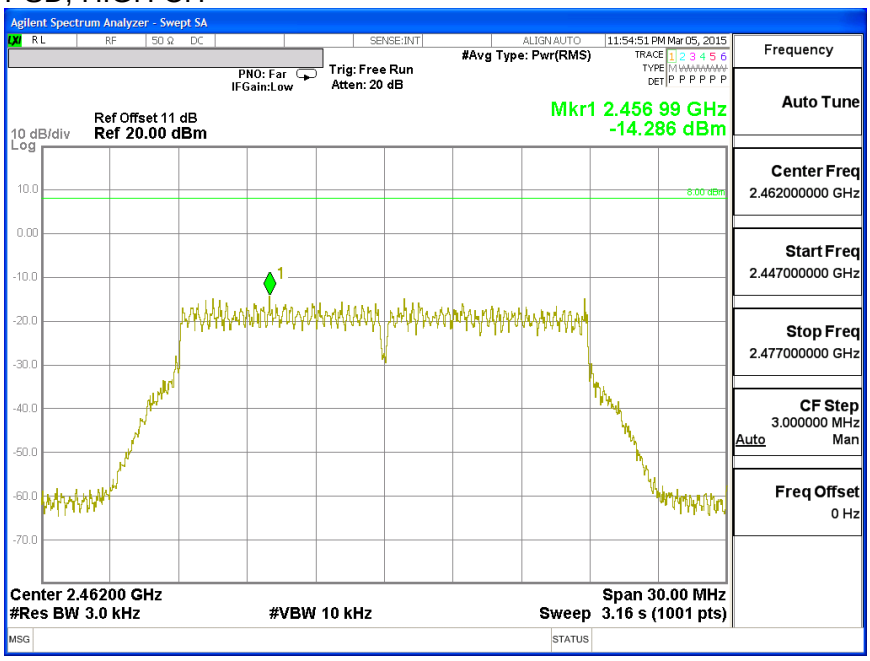
PSD, LOW CH



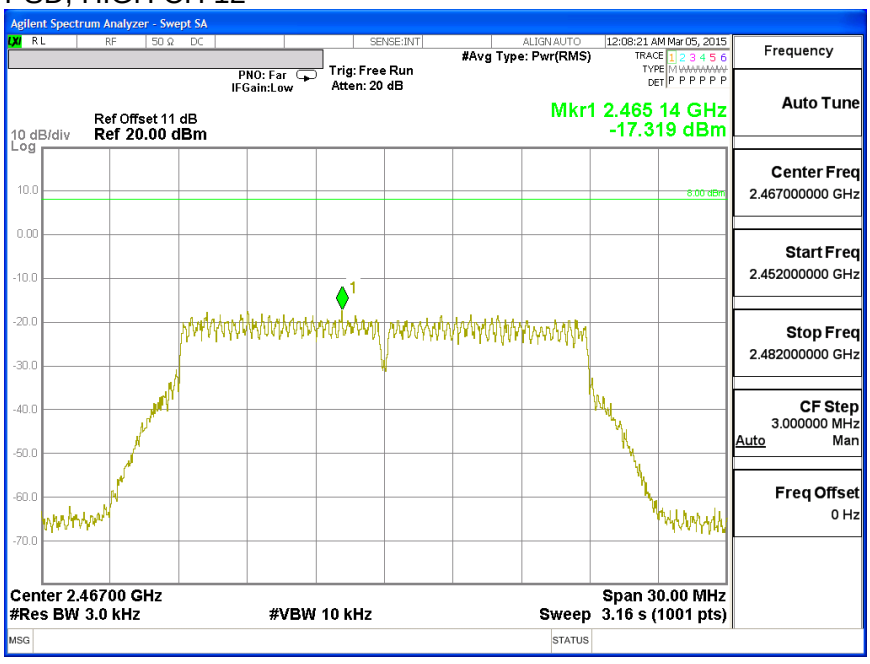
PSD, MID CH



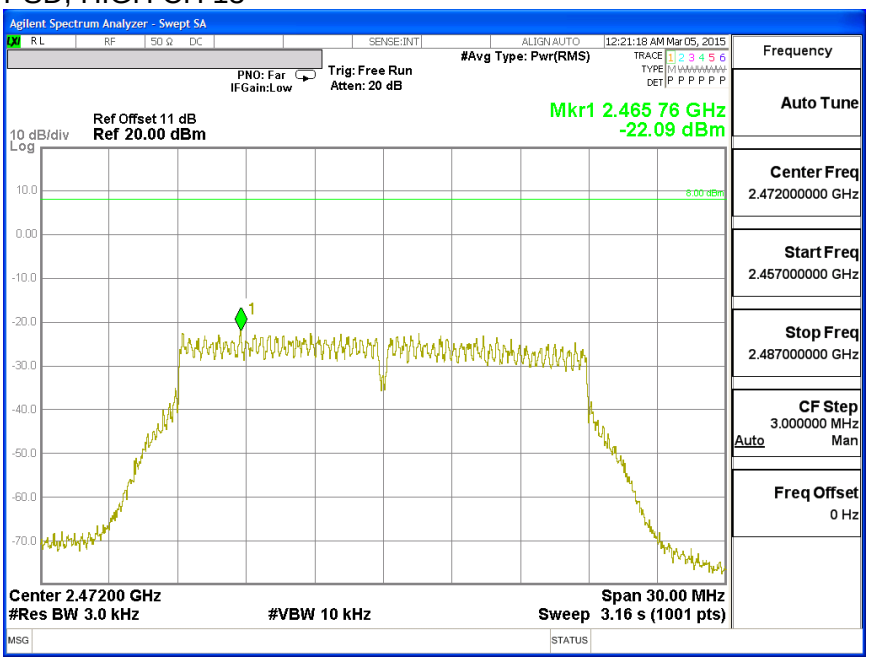
PSD, HIGH CH



PSD, HIGH CH 12



PSD, HIGH CH 13



8.6.6. OUT-OF-BAND EMISSIONS

LIMITS

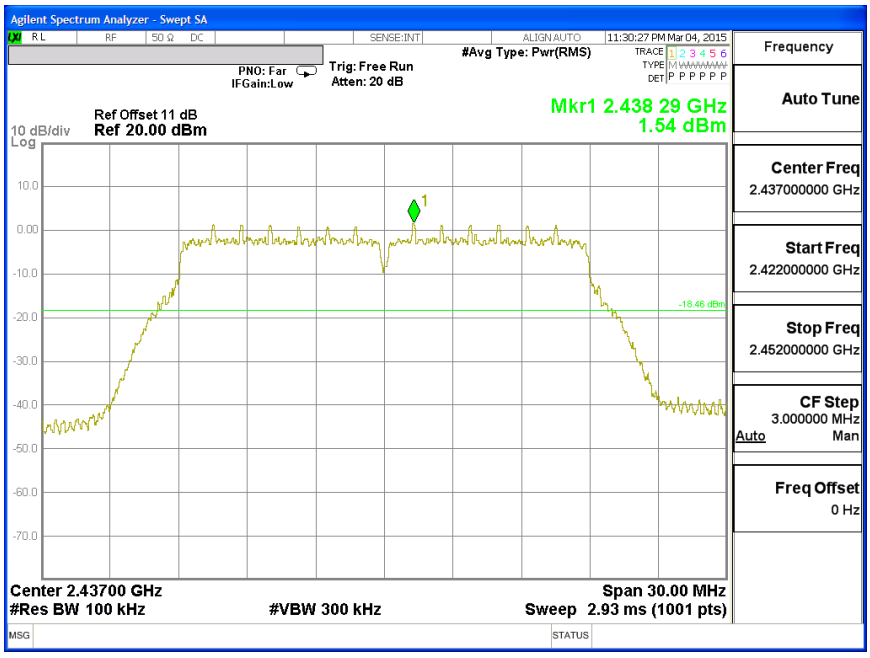
FCC §15.247 (d)

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

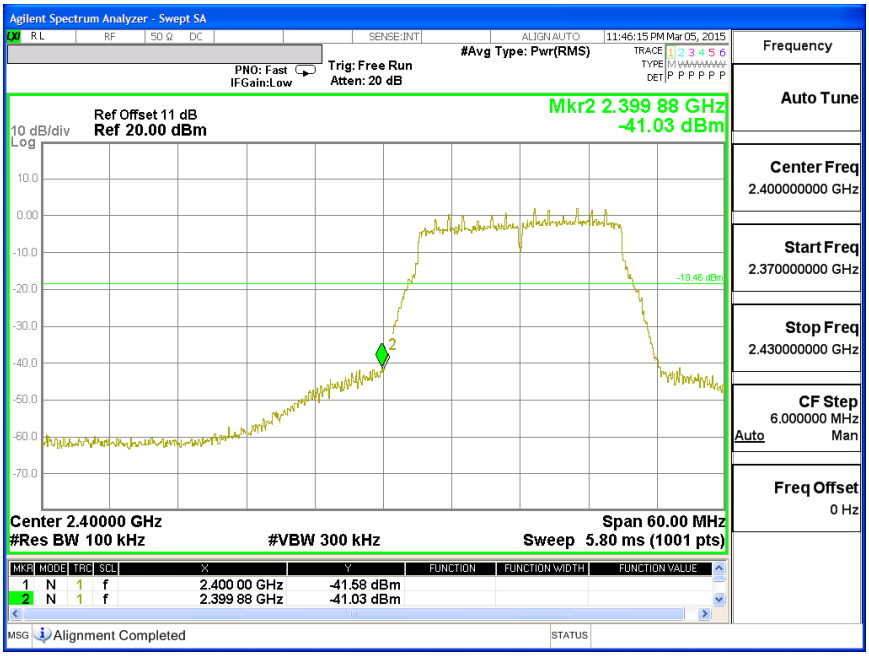
IN-BAND REFERENCE LEVEL

REFERENCE LEVEL MID CH



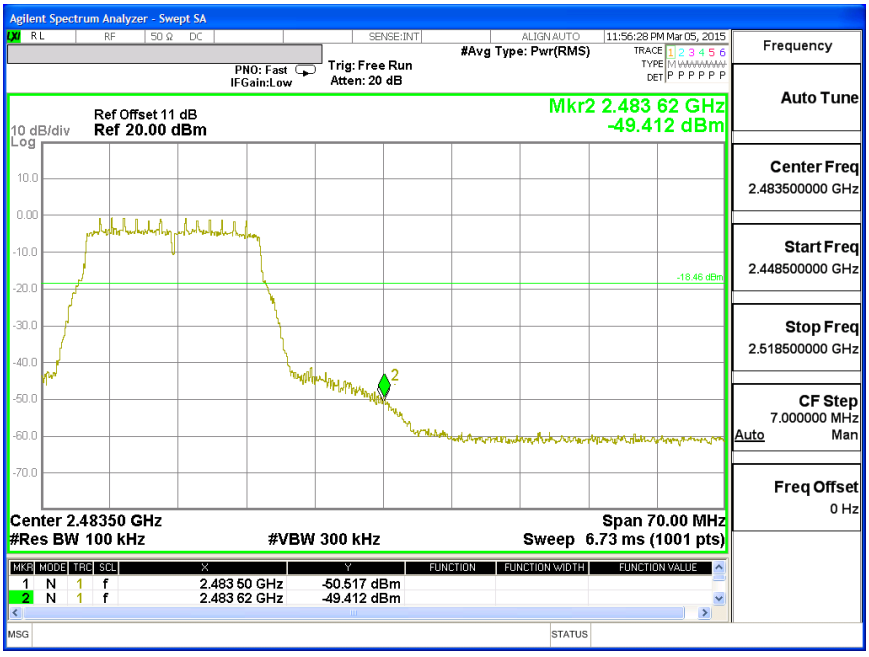
LOW CHANNEL BANDEDGE

AUTHORIZED BAND EDGE LOW CH

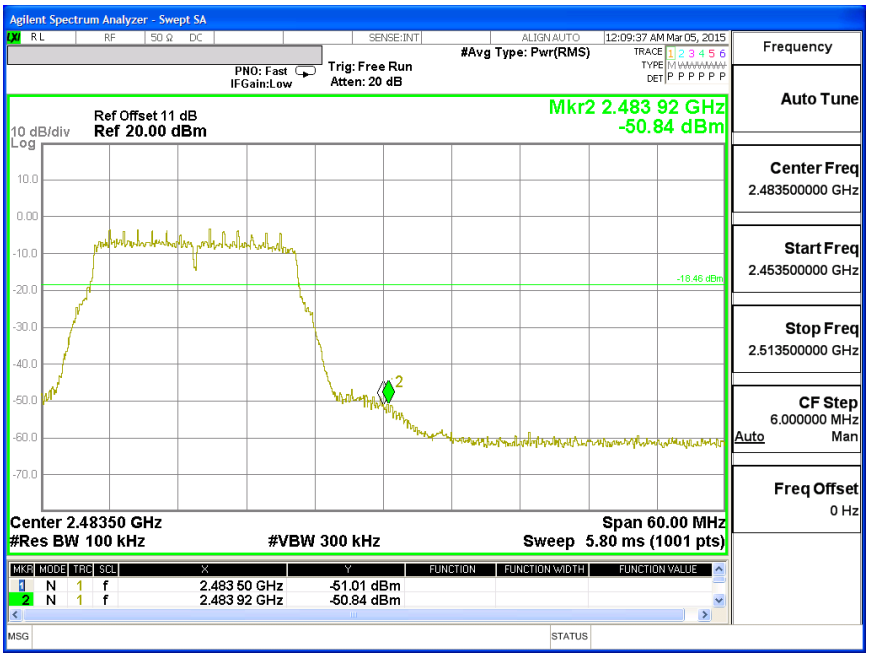


HIGH CHANNEL BANDEDGE

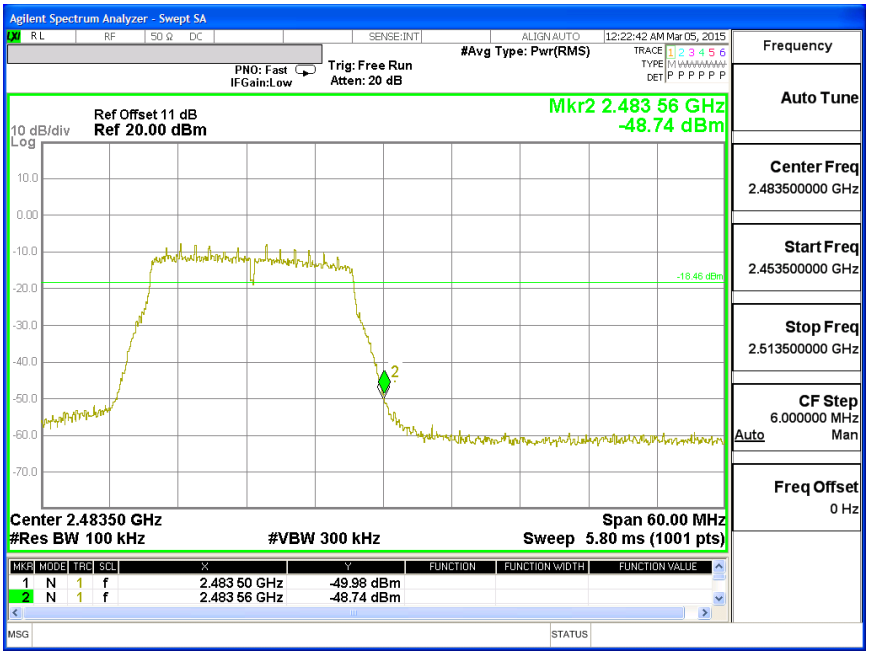
AUTHORIZED BAND EDGE HIGH CH



AUTHORIZED BAND EDGE HIGH CH 12

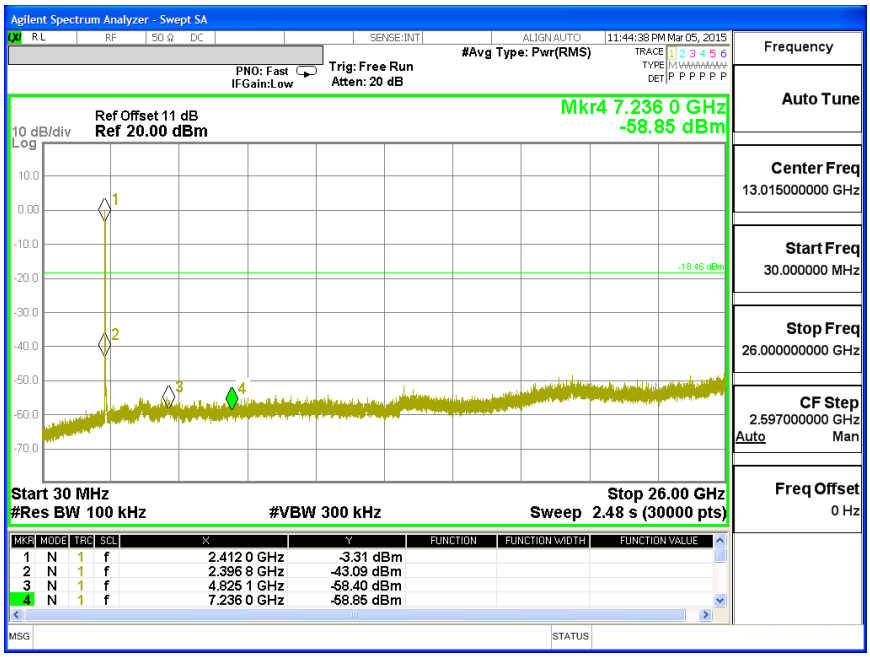


AUTHORIZED BAND EDGE HIGH CH 13

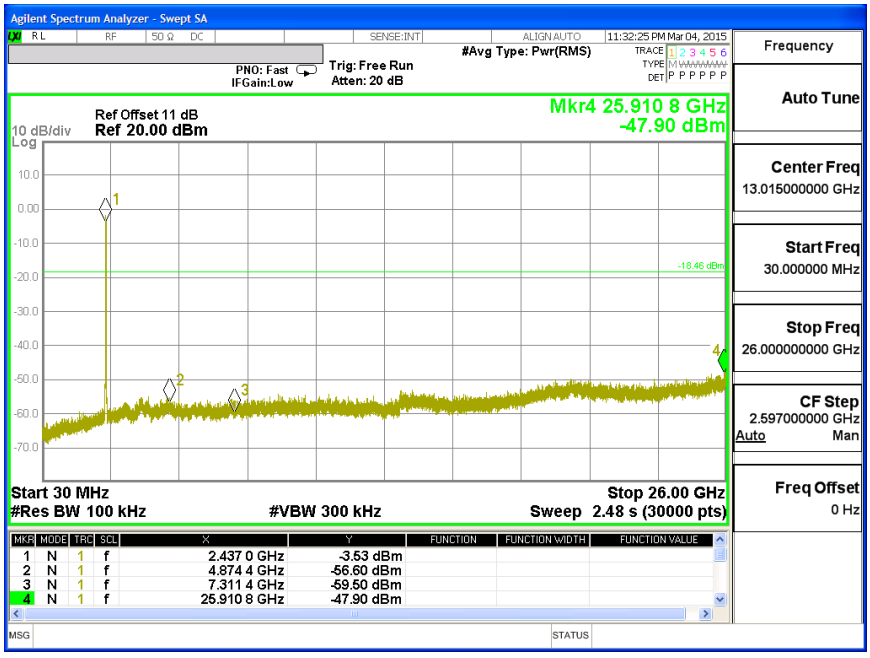


OUT-OF-BAND EMISSIONS

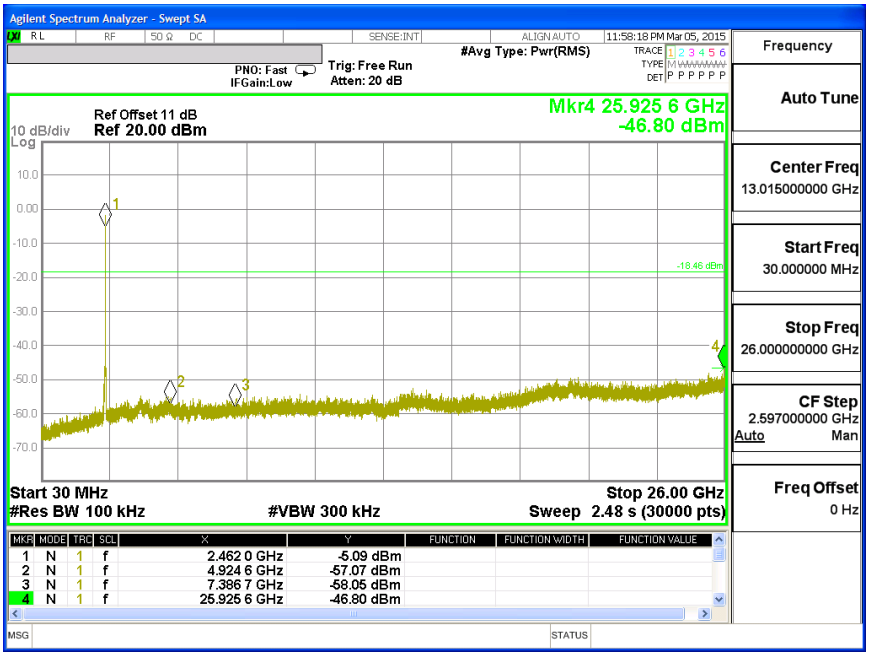
OUT OF BAND LOW CH



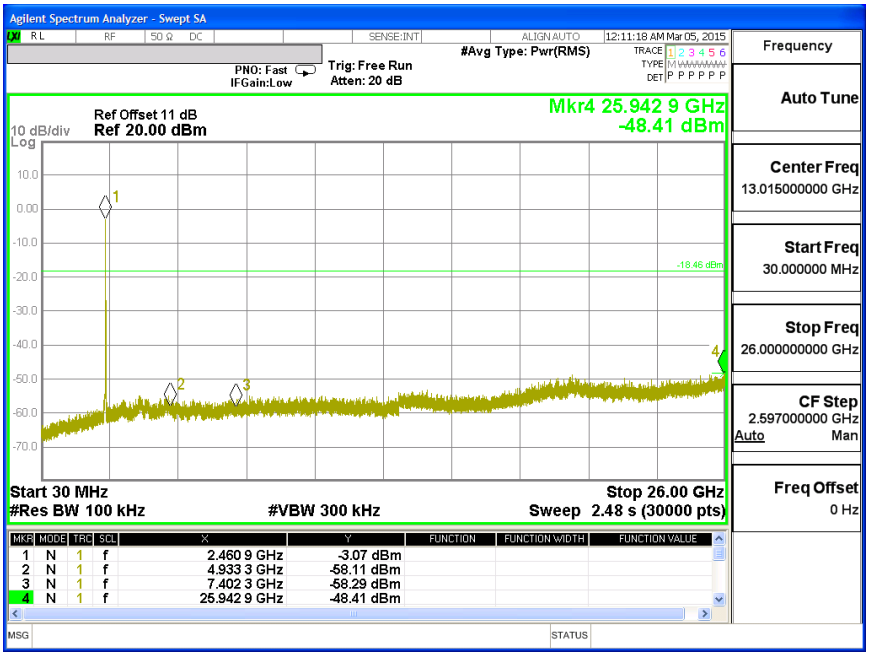
OUT OF BAND MID CH



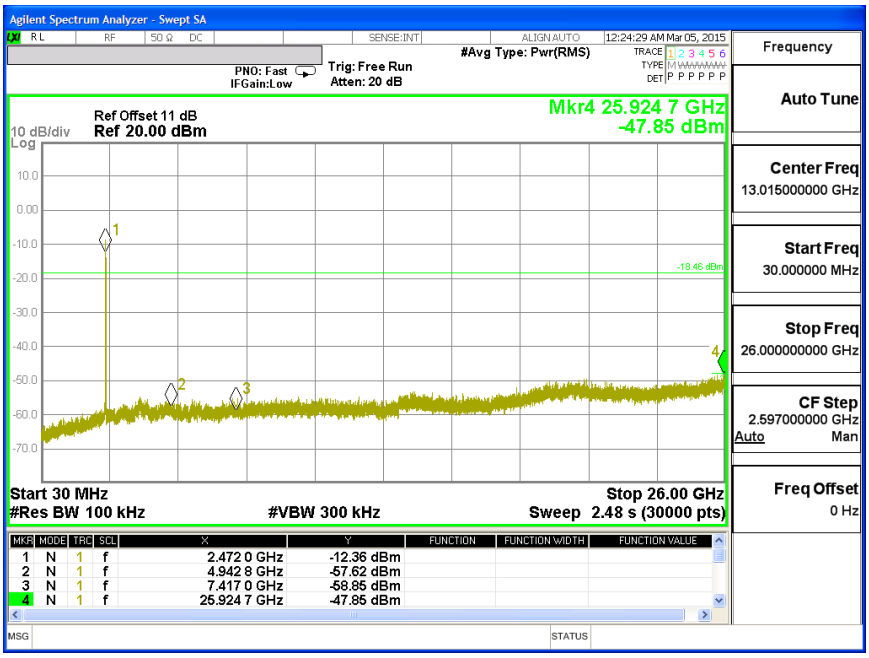
OUT OF BAND HIGH CH



OUT OF BAND HIGH CH 12



OUT OF BAND HIGH CH 13



8.7. 802.11n HT20 2TX CDD MODE IN THE 2.4 GHz BAND (ANTENNA B & A)

8.7.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

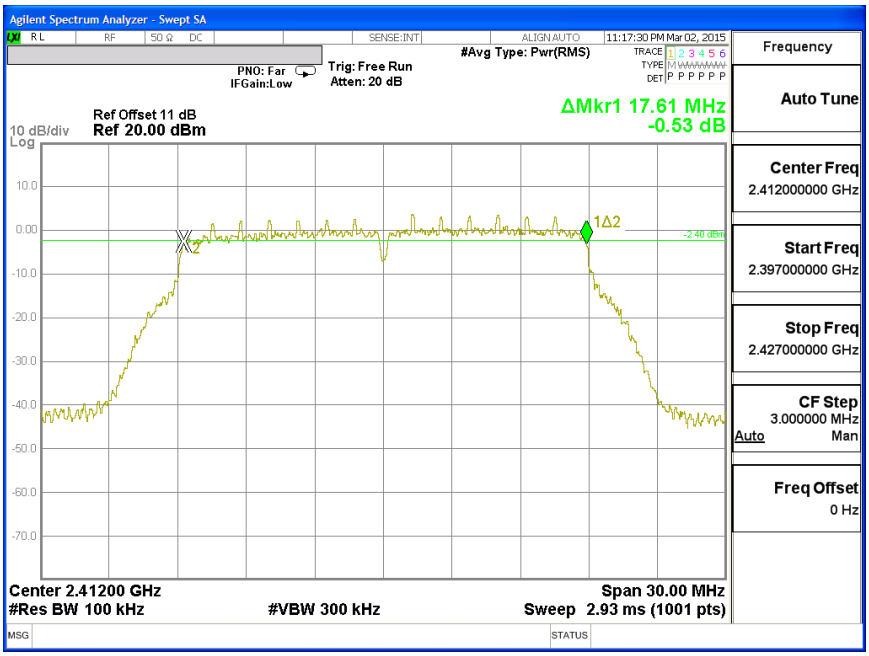
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

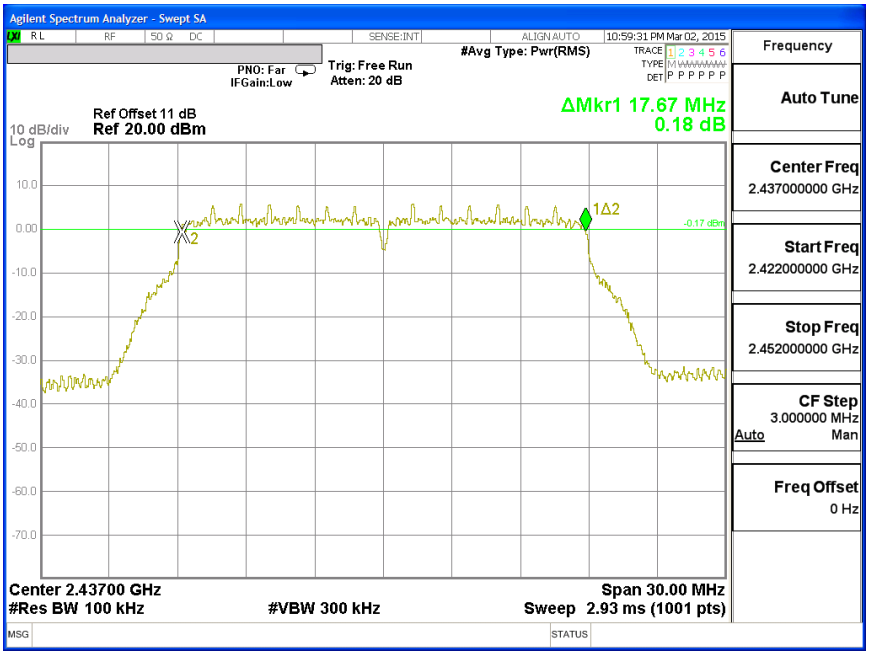
Channel	Frequency (MHz)	6 dB BW Antenna B (MHz)	6 dB BW Antenna A (MHz)	Minimum Limit (MHz)
Low	2412	17.610	17.682	0.5
Mid	2437	17.670	17.682	0.5
High	2462	17.640	17.679	0.5
High	2467	17.640	17.630	0.5
High	2472	17.670	17.630	0.5

6 dB BANDWIDTH, ANTENNA B

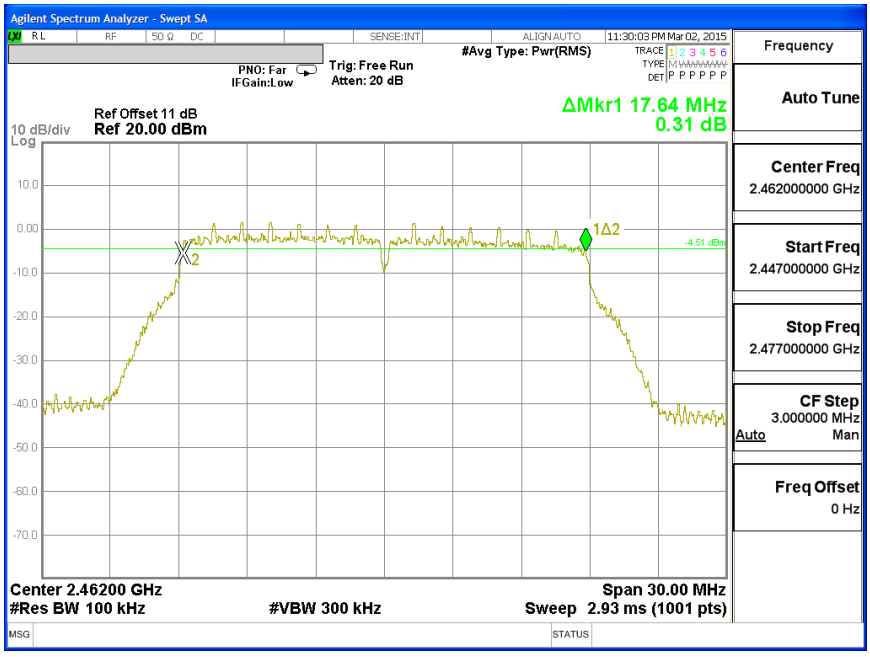
6 dB BANDWIDTH LOW CH



6 dB BANDWIDTH MID CH

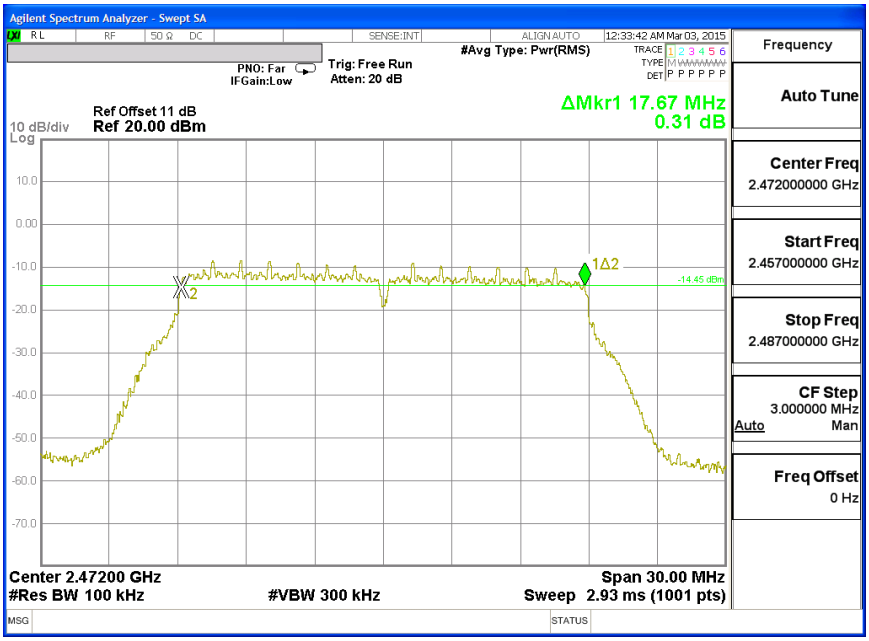


6 dB BANDWIDTH HIGH CH



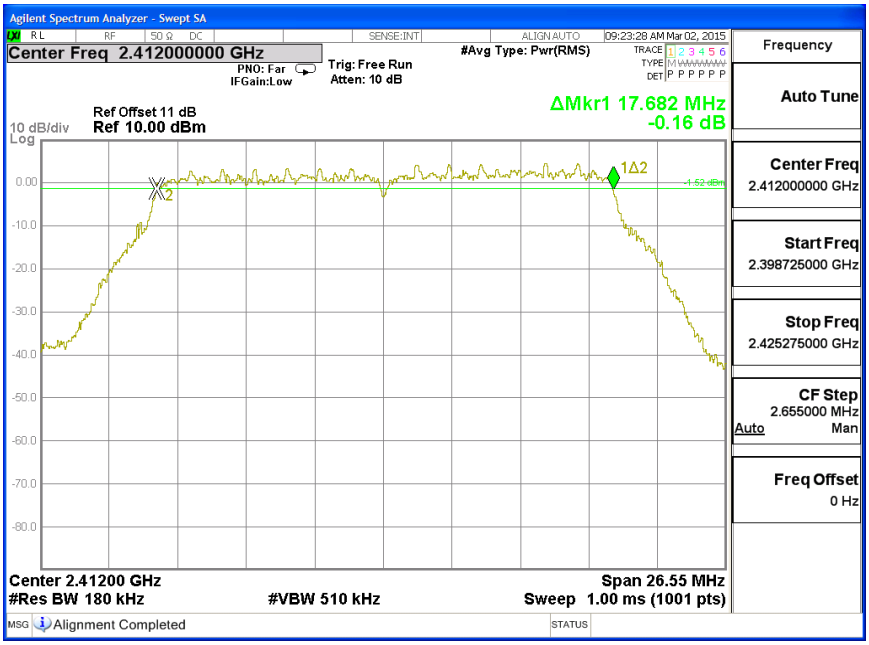
6 dB BANDWIDTH HIGH CH 12

6 dB BANDWIDTH HIGH CH 13

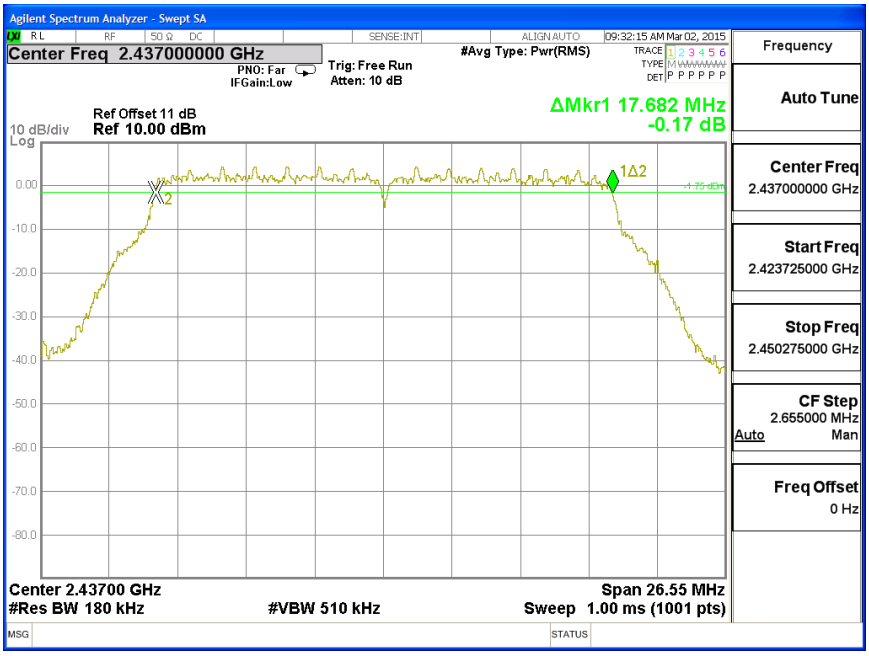


6 dB BANDWIDTH, ANTENNA A

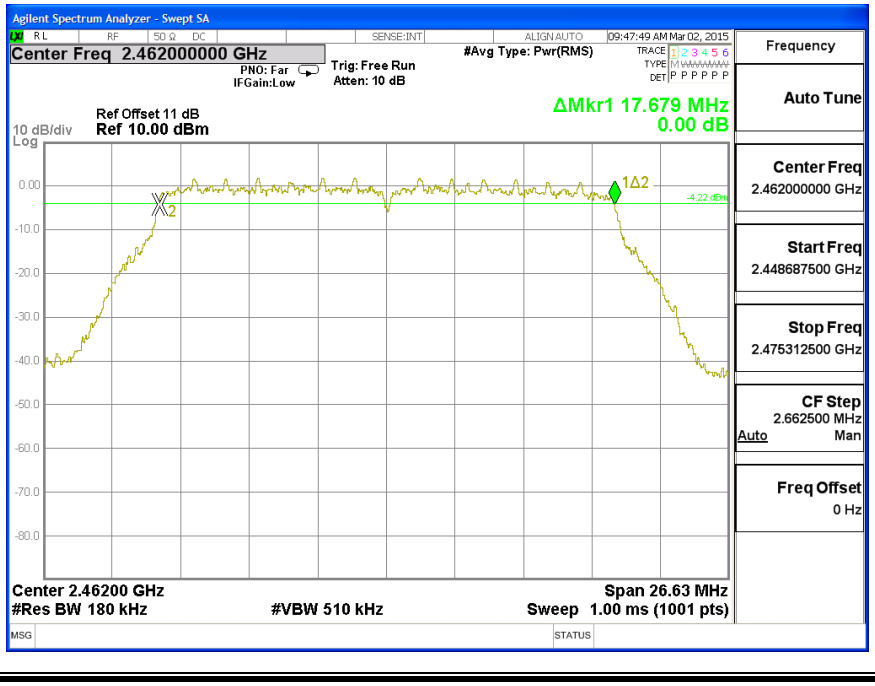
6 dB BANDWIDTH LOW CH



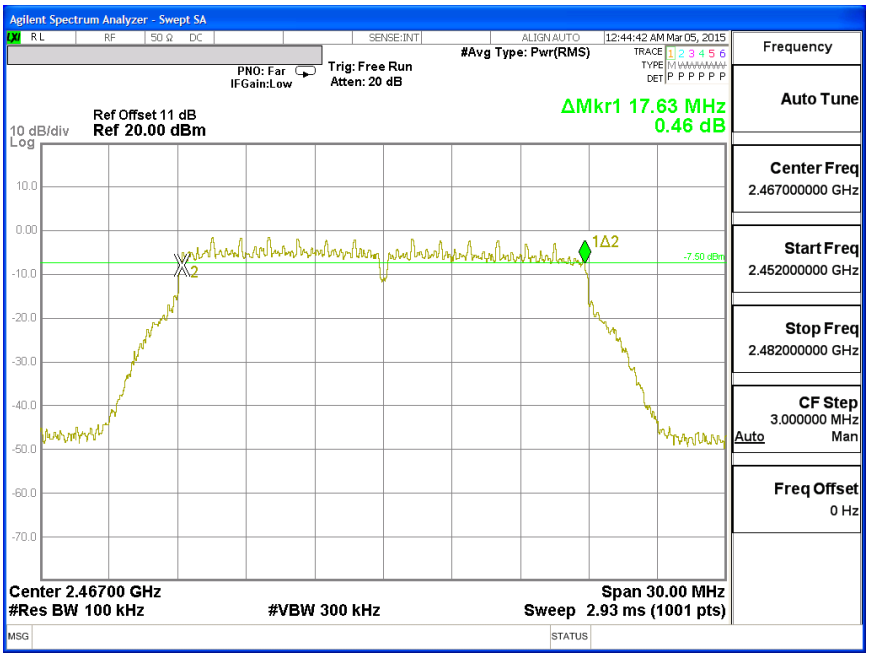
6 dB BANDWIDTH MID CH



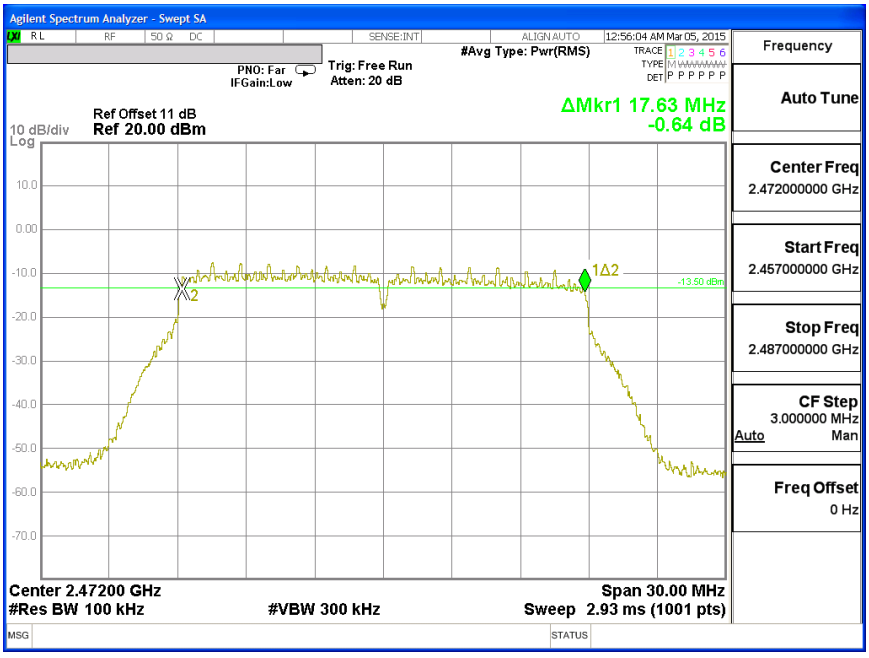
6 dB BANDWIDTH HIGH CH



6 dB BANDWIDTH HIGH CH 12



6 dB BANDWIDTH HIGH CH 13



8.7.2. 99% BANDWIDTH

LIMITS

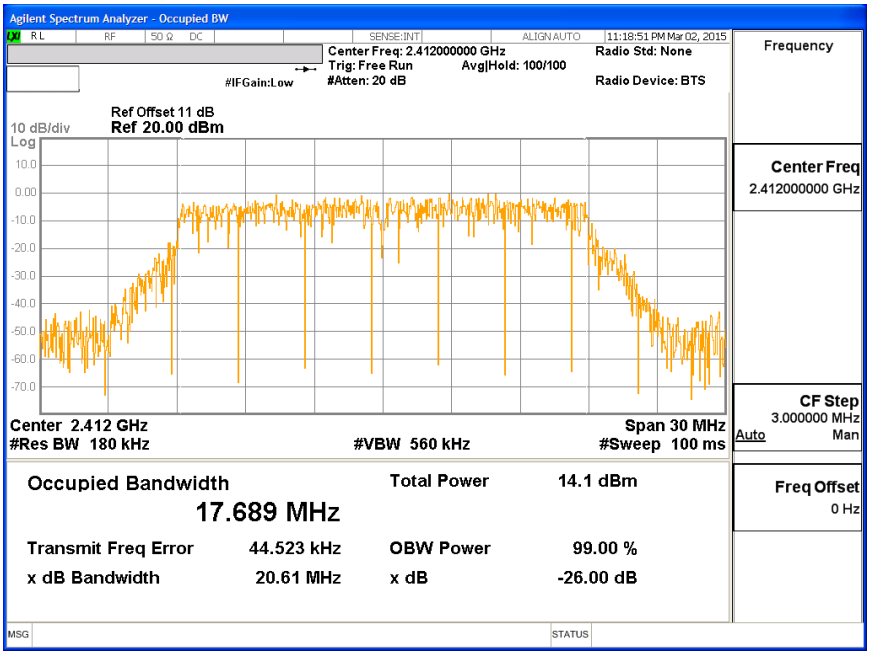
None; for reporting purposes only.

RESULTS

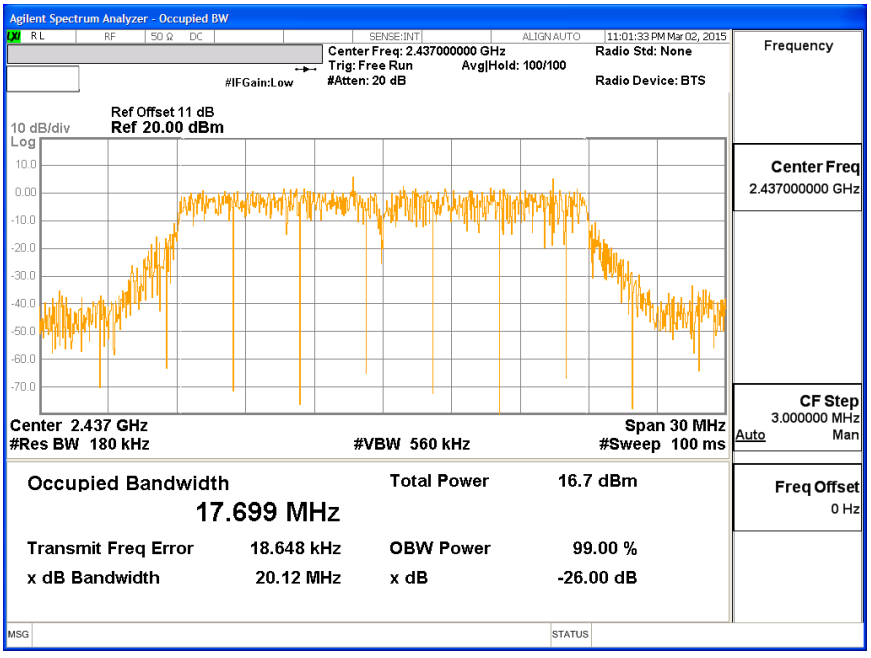
Channel	Frequency (MHz)	99% Bandwidth (MHz) Antenna B	99% Bandwidth (MHz) Antenna A
Low	2412	17.689	17.725
Mid	2437	17.699	17.680
High	2462	17.725	17.713
High	2467	17.633	17.720
High	2472	17.783	17.705

99% BANDWIDTH ANTENNA B

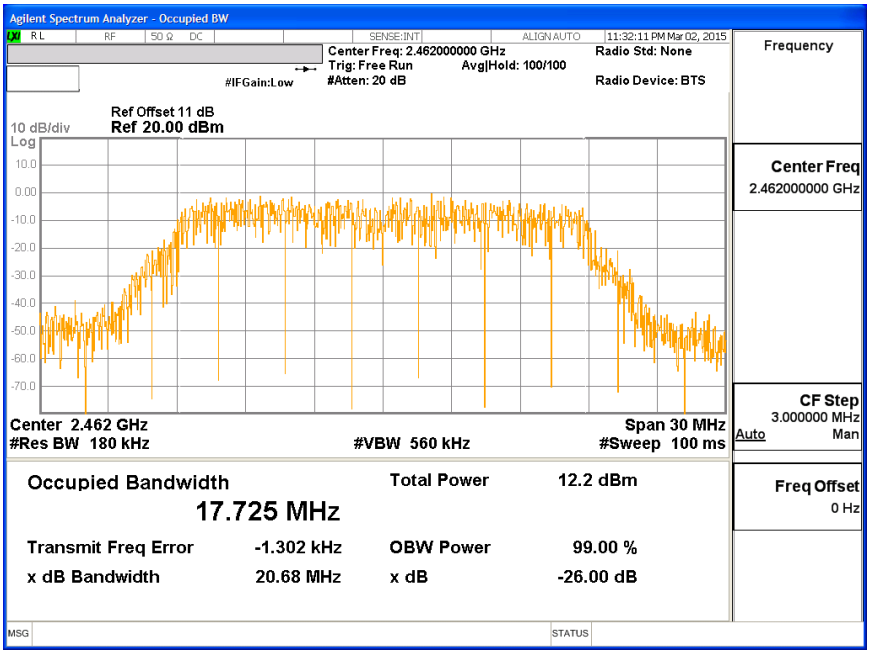
99% BANDWIDTH LOW CH



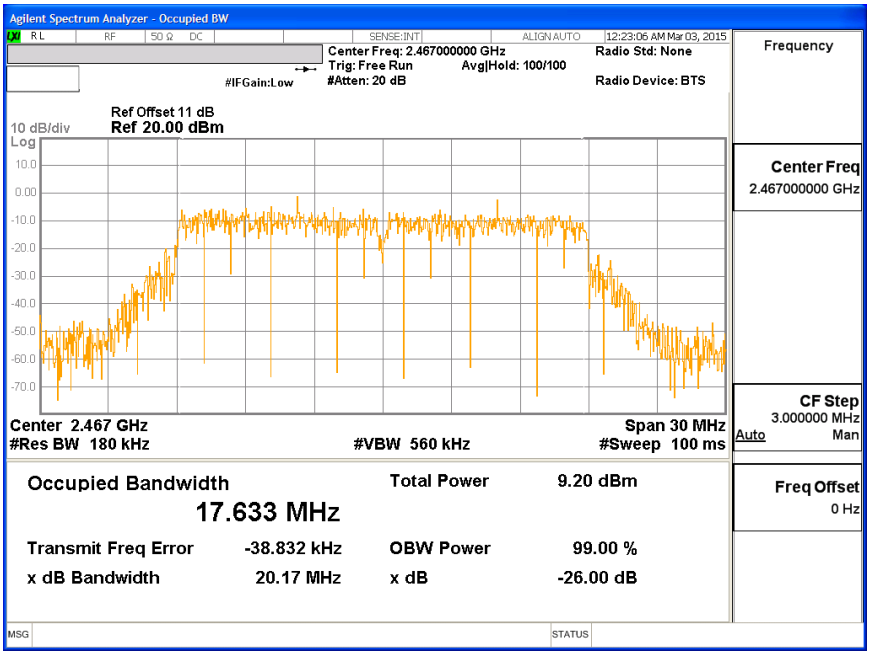
99% BANDWIDTH MID CH



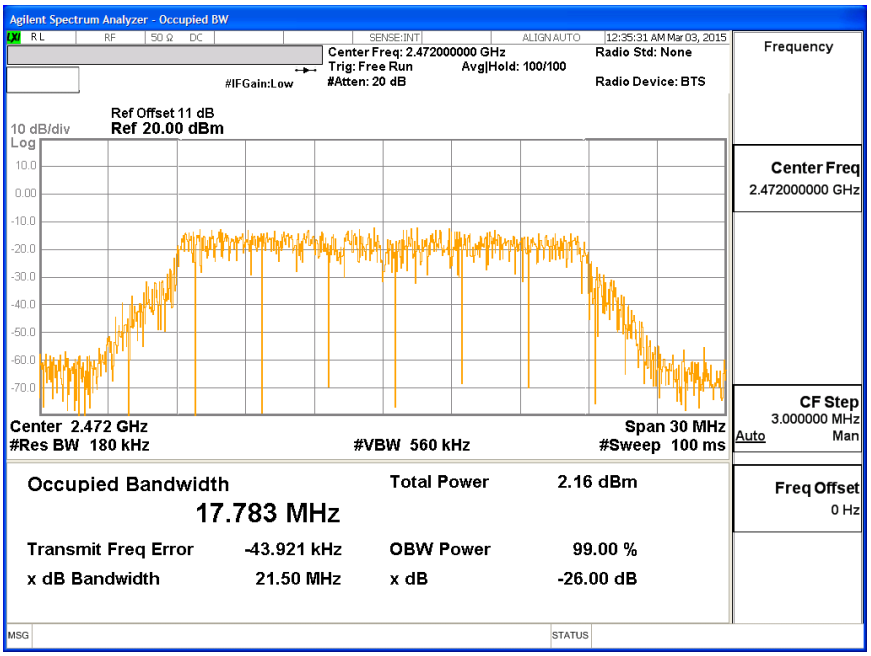
99% BANDWIDTH HIGH CH 11



99% BANDWIDTH HIGH CH 12

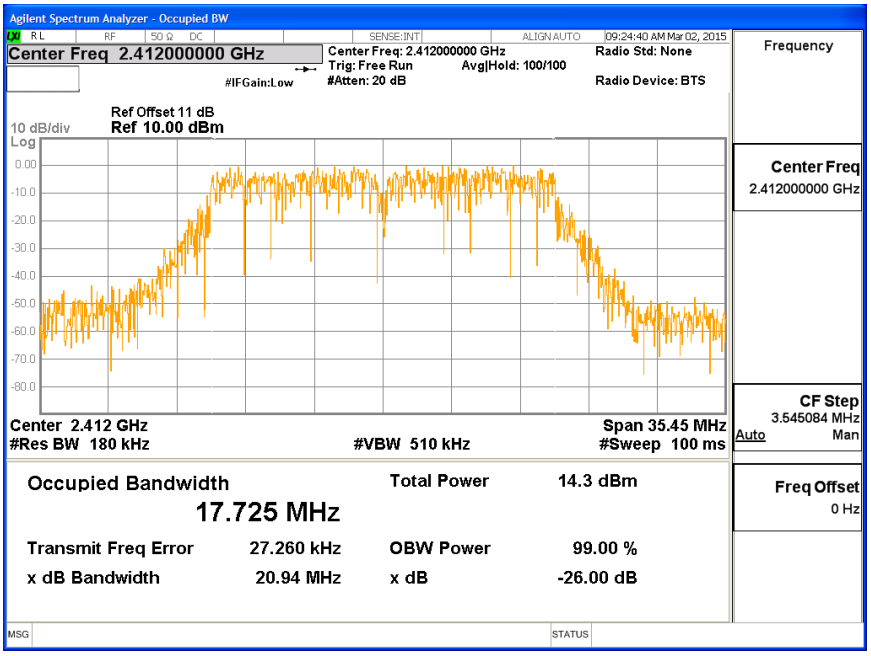


99% BANDWIDTH HIGH CH 13

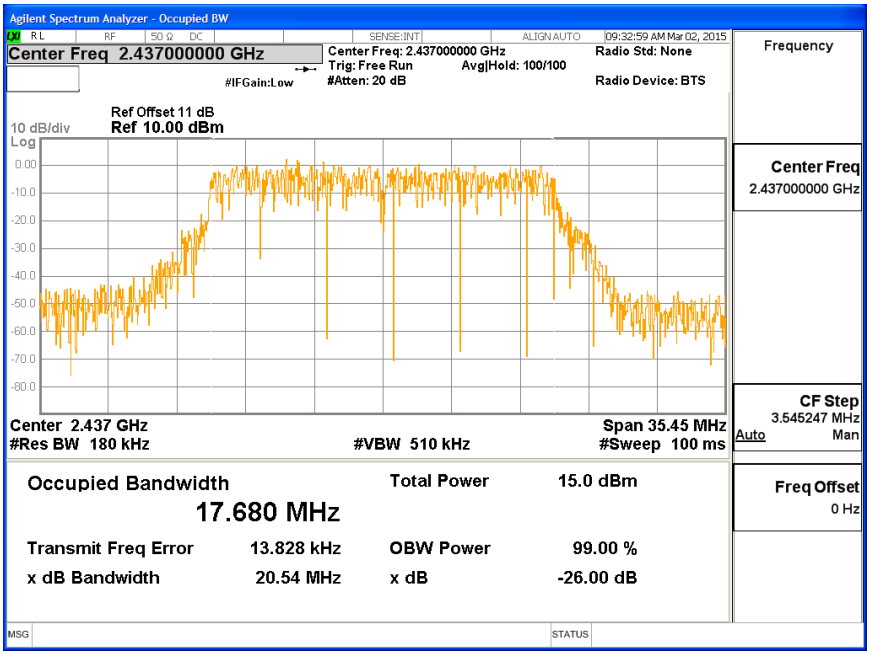


99% BANDWIDTH ANTENNA A

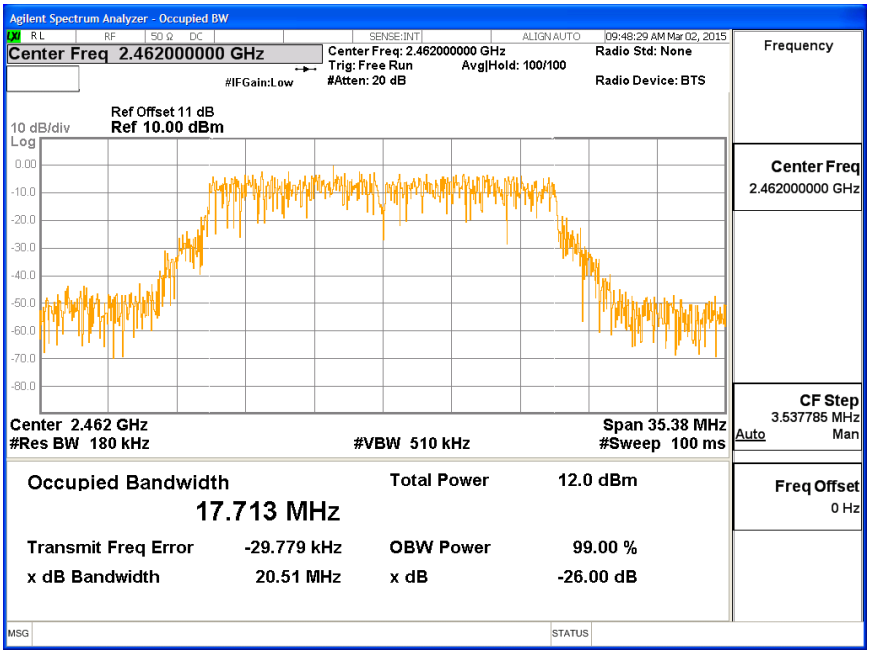
99% BANDWIDTH LOW CH



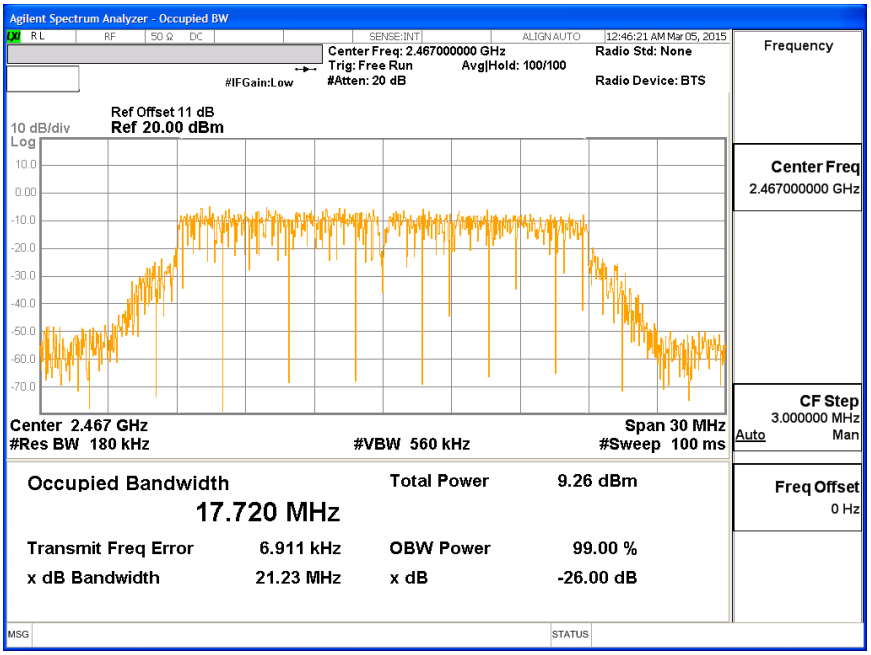
99% BANDWIDTH MID CH



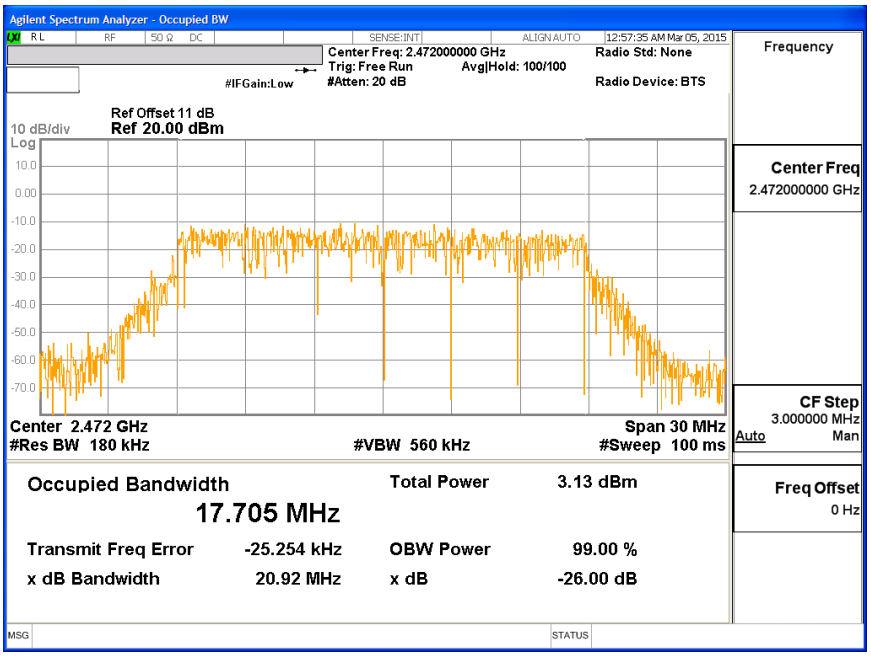
99% BANDWIDTH HIGH CH 11



99% BANDWIDTH HIGH CH 12



99% BANDWIDTH HIGH CH 13



8.7.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	Antenna B Power (dBm)	Antenna A Power (dBm)	Total Power (dBm)
Low	2412	13.97	13.88	16.94
Mid	2437	16.46	14.96	18.78
High	2462	11.92	11.99	14.97
High	2467	8.91	8.97	11.95
High	2472	2.94	2.99	5.98

8.7.4. OUTPUT POWER

LIMITS

FCC §15.247

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:

Antenna B Antenna Gain (dBi)	Antenna A Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
-1.00	0.20	-0.36

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	-0.36	30.00	30	36	30.00
Mid	2437	-0.36	30.00	30	36	30.00
High	2462	-0.36	30.00	30	36	30.00
High	2467	-0.36	30.00	30	36	30.00
High	2472	-0.36	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Antenna B Meas Power (dBm)	Antenna A Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	23.25	23.16	26.22	30.00	-3.78
Mid	2437	24.84	23.96	27.43	30.00	-2.57
High	2462	20.36	20.19	23.29	30.00	-6.71
High	2467	17.36	18.21	20.82	30.00	-9.18
High	2472	10.09	10.22	13.17	30.00	-16.83

8.7.5. PSD

LIMITS

FCC §15.247

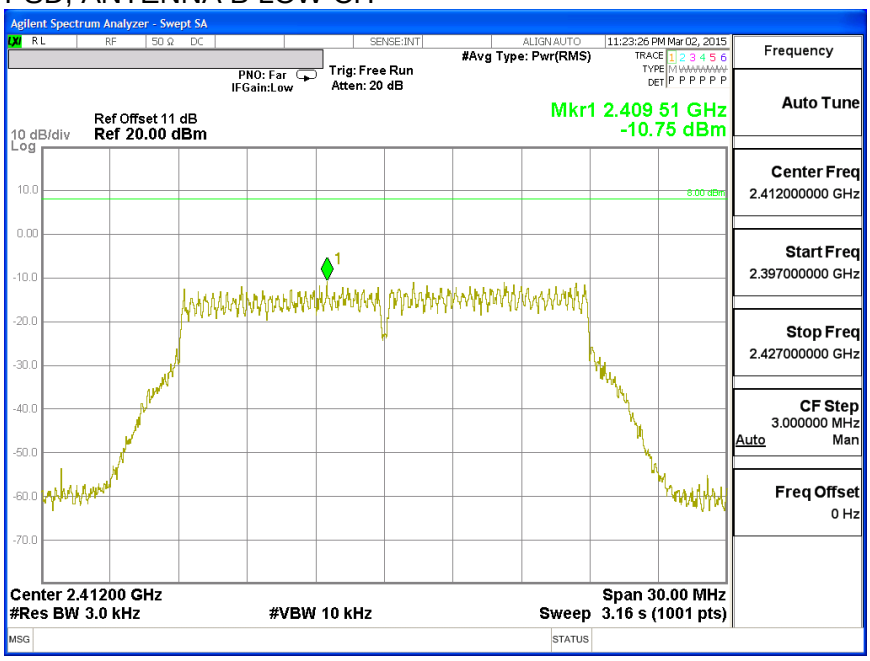
RESULTS

PSD Results

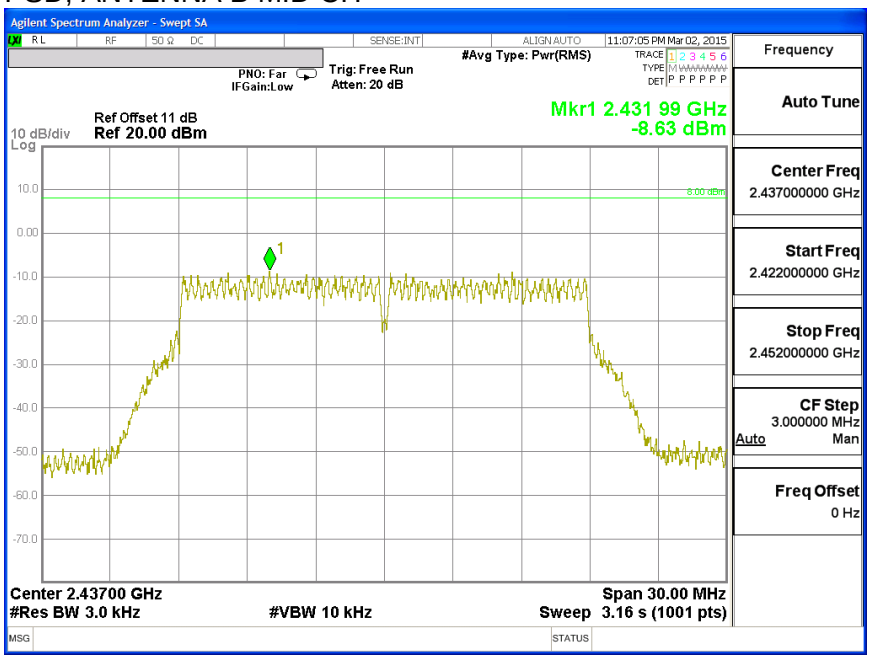
Channel	Frequency (MHz)	Antenna B Meas (dBm)	Antenna A Meas (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-10.75	-12.10	-8.36	8.0	-16.4
Mid	2437	-8.36	-11.71	-6.71	8.0	-14.7
High	2462	-13.24	-12.64	-9.92	8.0	-17.9
High	2467	-15.67	-16.11	-12.87	8.0	-20.9
High	2472	-22.90	-20.92	-18.79	8.0	-26.8

PSD, ANTENNA B

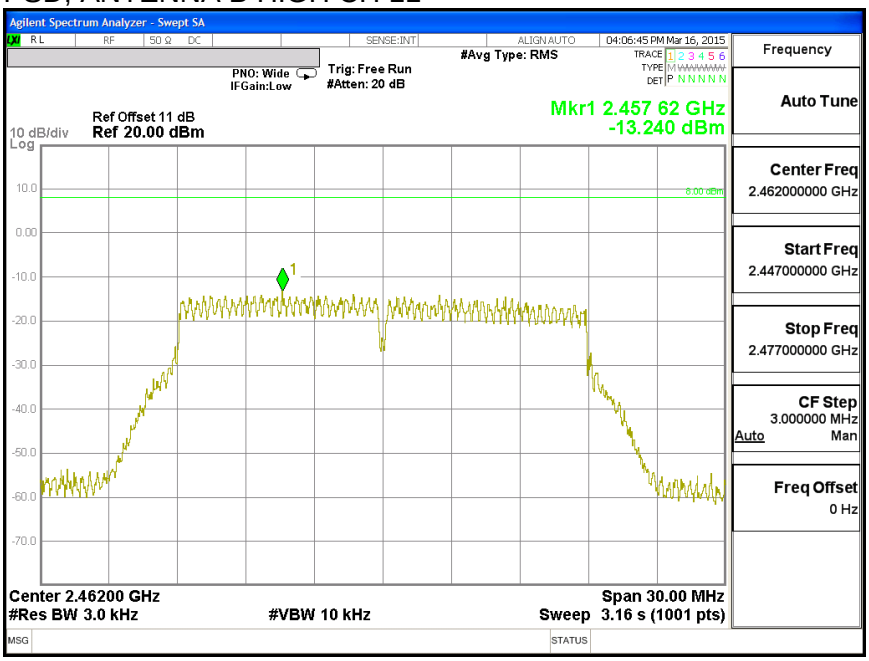
PSD, ANTENNA B LOW CH



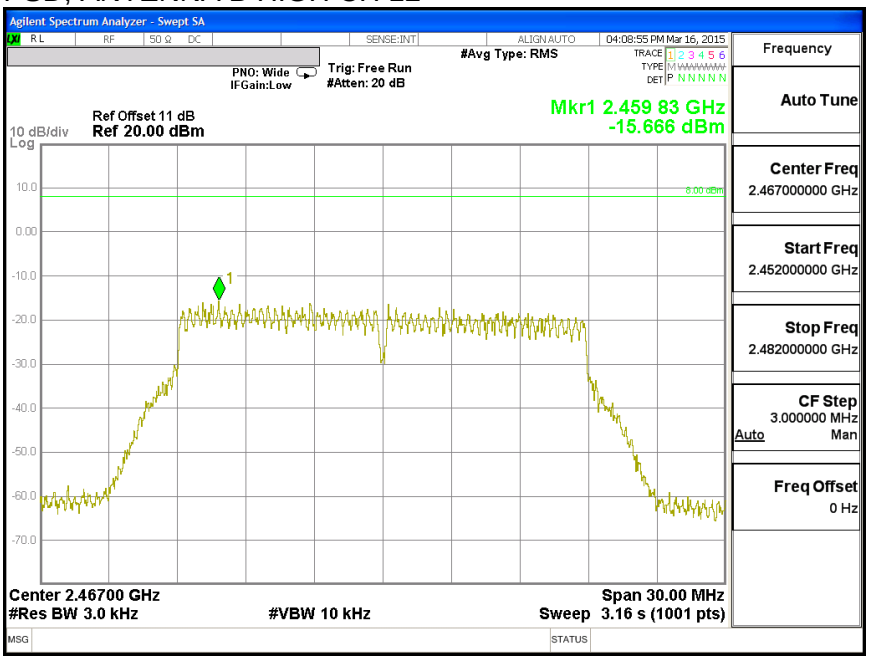
PSD, ANTENNA B MID CH



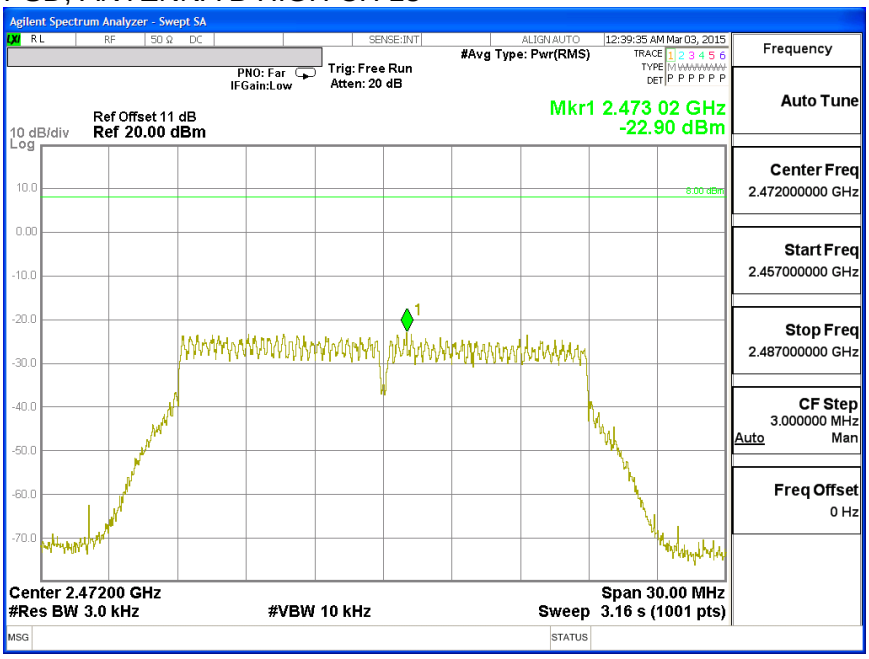
PSD, ANTENNA B HIGH CH 11



PSD, ANTENNA B HIGH CH 12

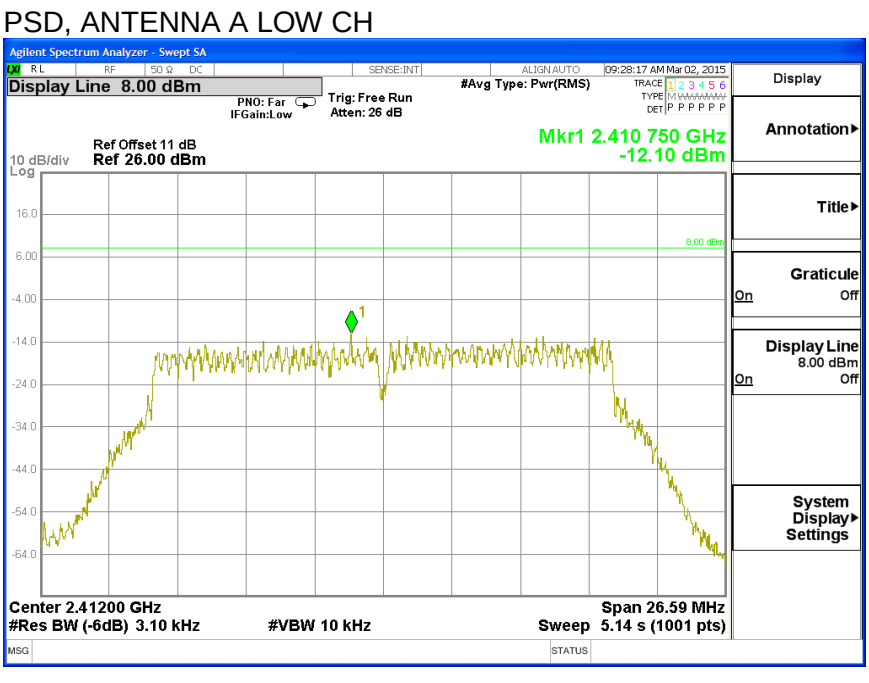


PSD, ANTENNA B HIGH CH 13

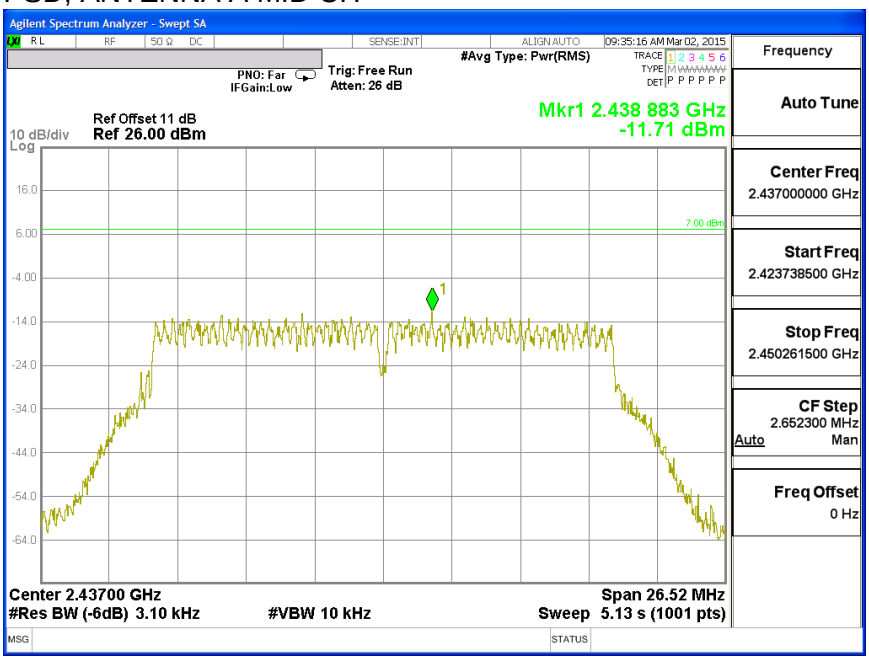


PSD, ANTENNA A

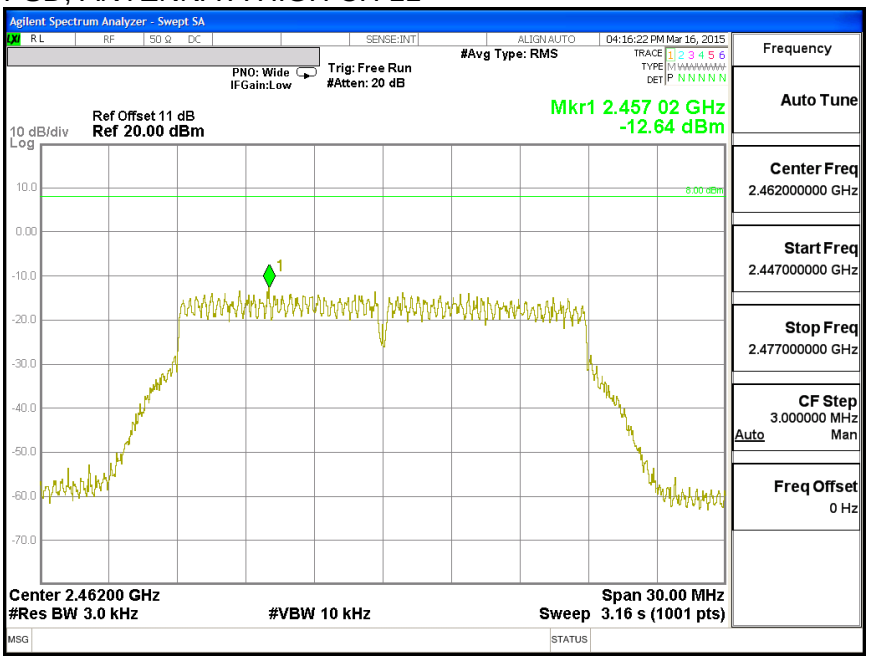
PSD, ANTENNA A LOW CH



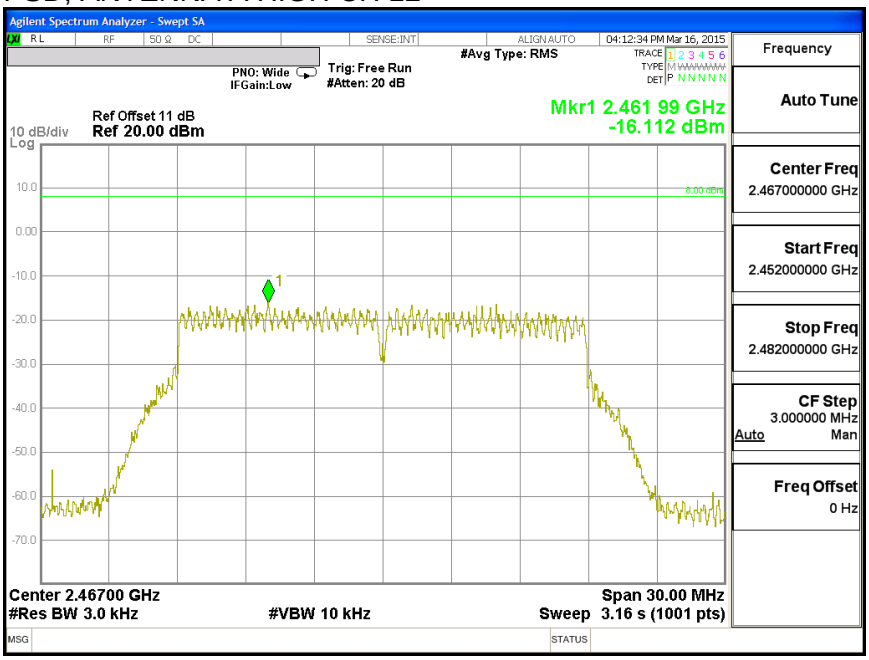
PSD, ANTENNA A MID CH



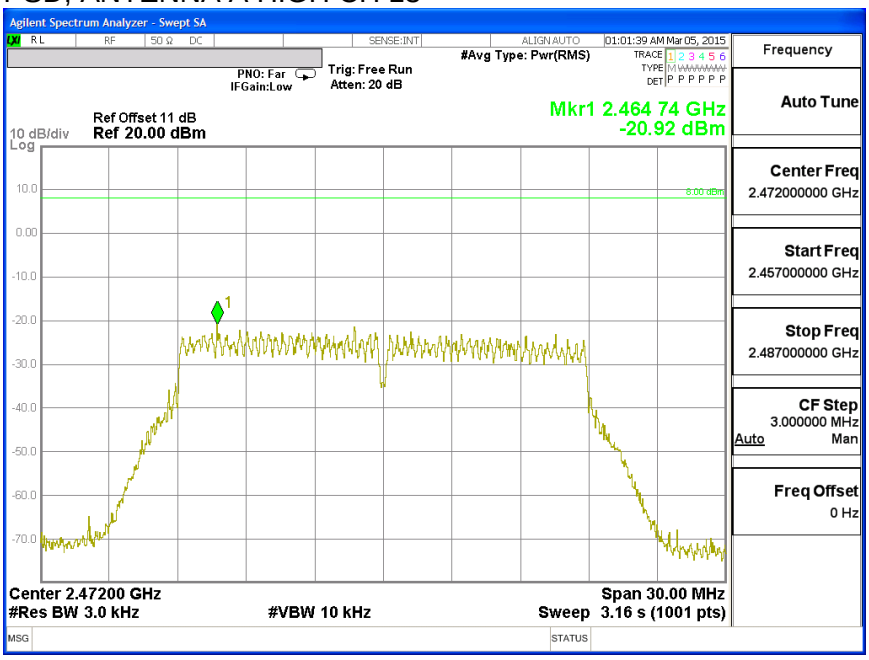
PSD, ANTENNA A HIGH CH 11



PSD, ANTENNA A HIGH CH 12



PSD, ANTENNA A HIGH CH 13



8.7.6. OUT-OF-BAND EMISSIONS

LIMITS

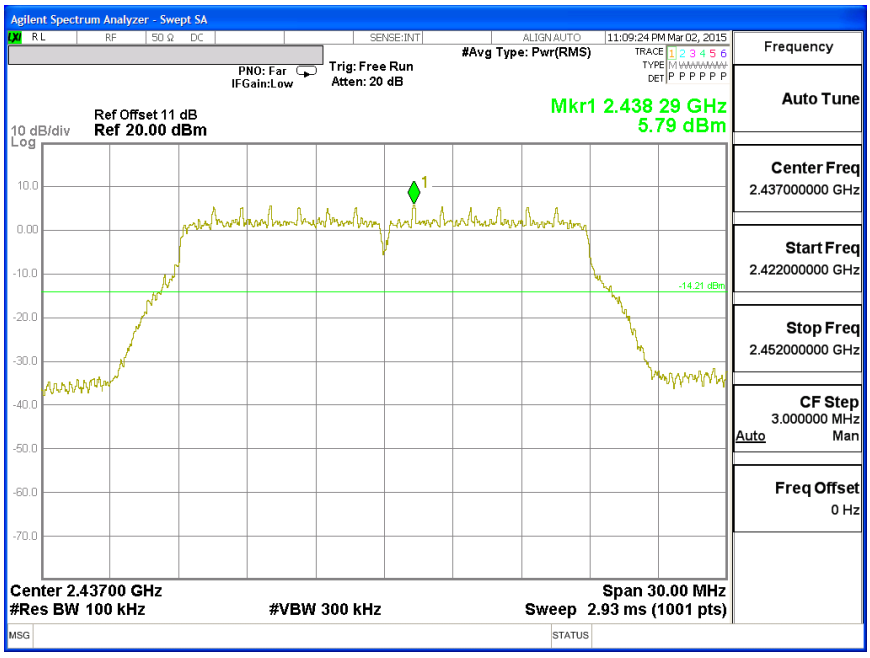
FCC §15.247 (d)

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

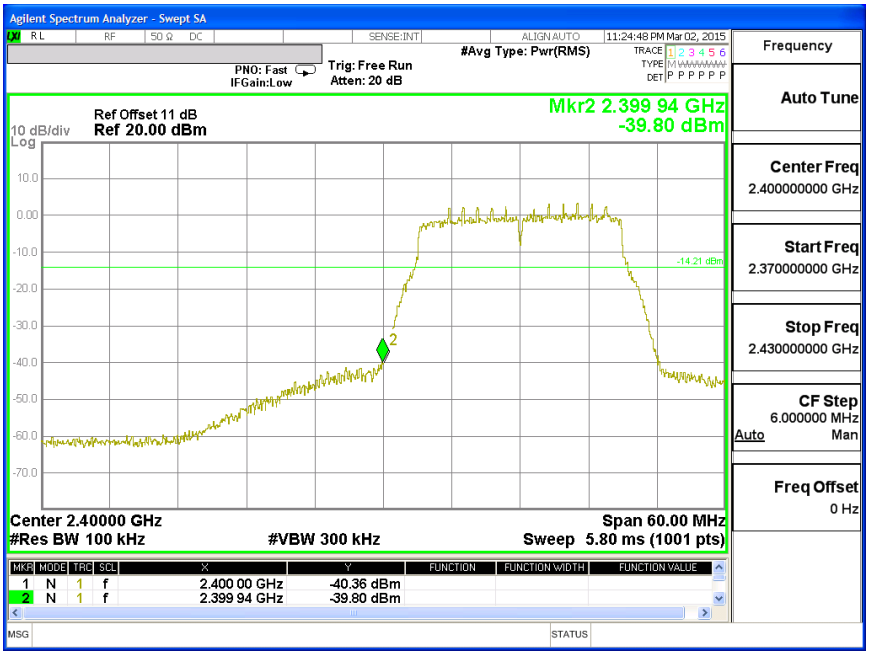
IN-BAND REFERENCE LEVEL, ANTENNA B

REFERENCE LEVEL MID CH



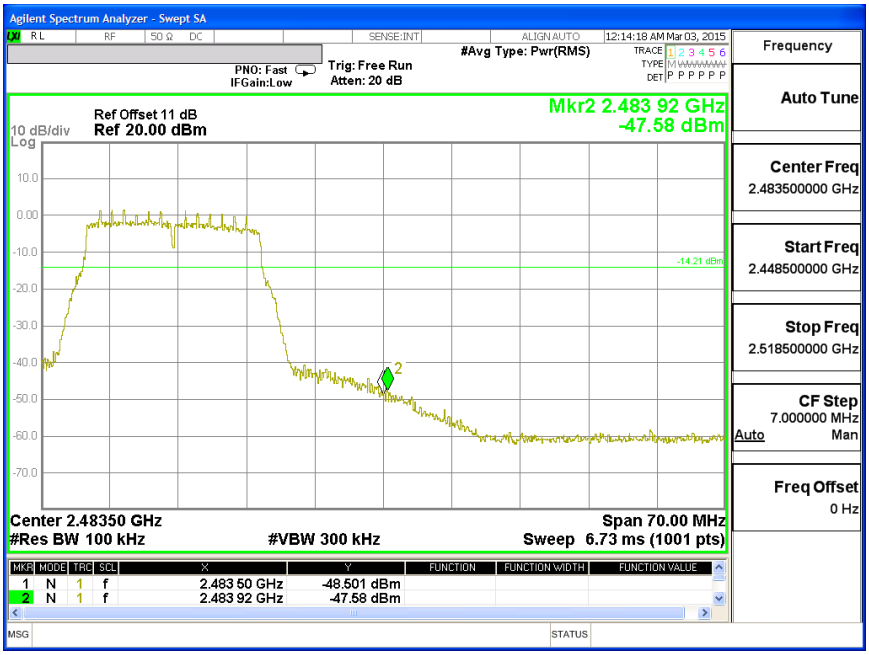
LOW CHANNEL BANDEDGE, ANTENNA B

AUTHORIZED BAND EDGE LOW CH

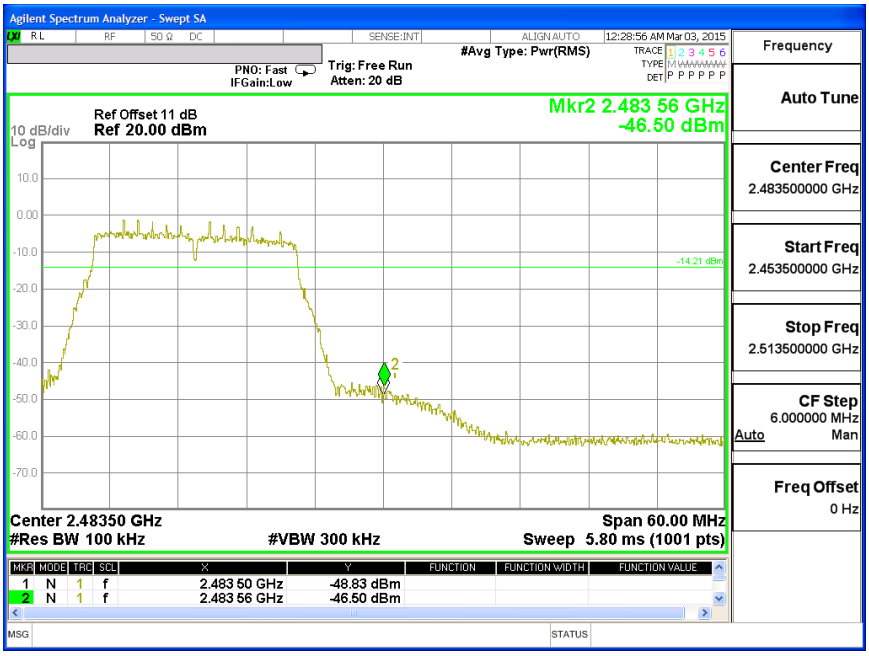


HIGH CHANNEL BANDEDGE, ANTENNA B

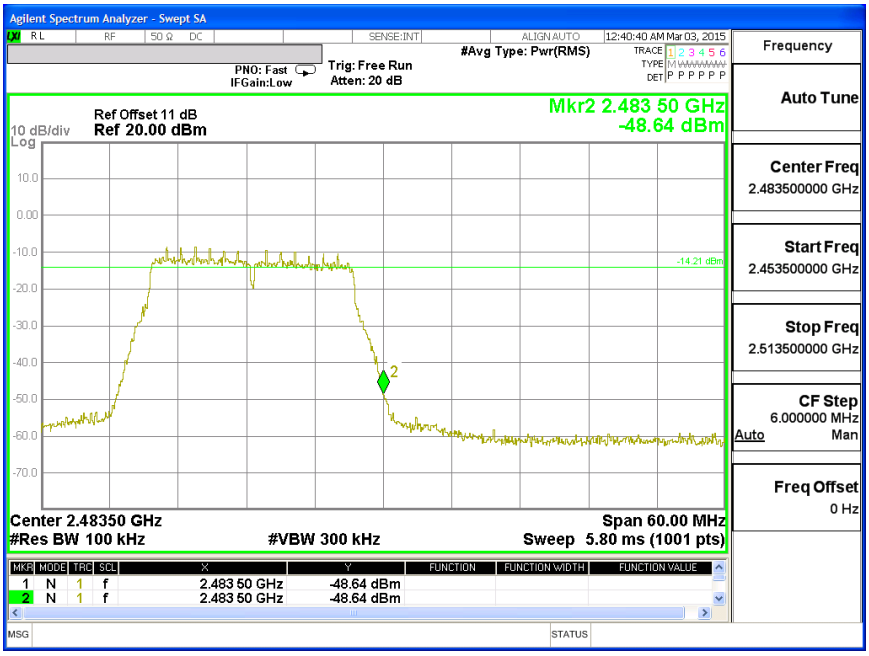
AUTHORIZED BAND EDGE HIGH CH



AUTHORIZED BAND EDGE HIGH CH 12

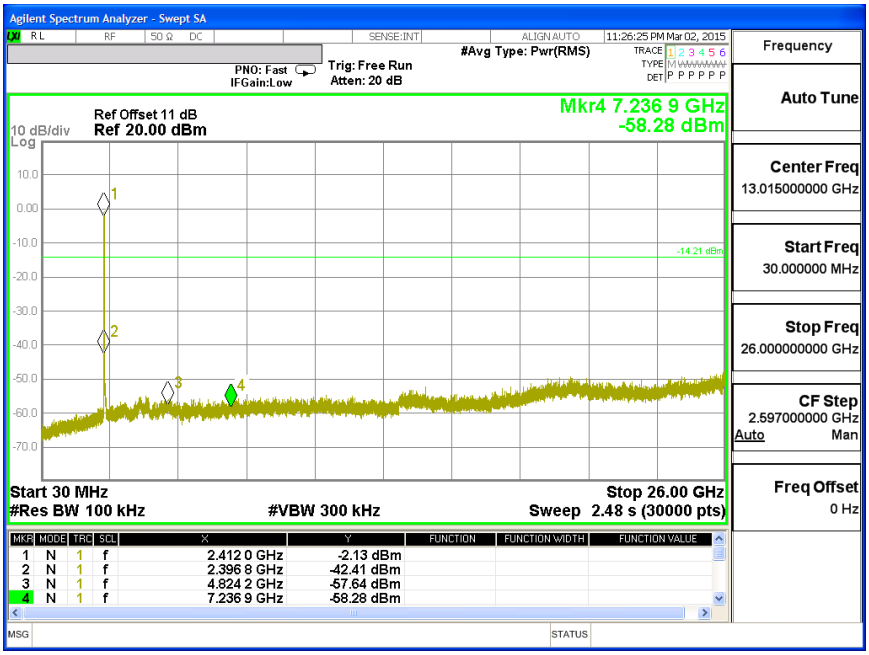


AUTHORIZED BAND EDGE HIGH CH 13

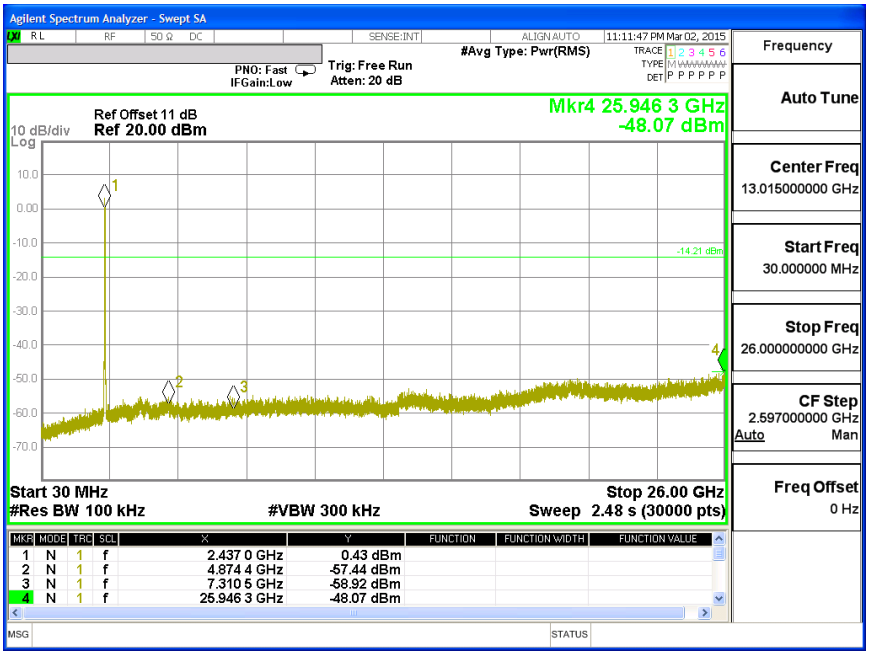


OUT-OF-BAND EMISSIONS, ANTENNA B

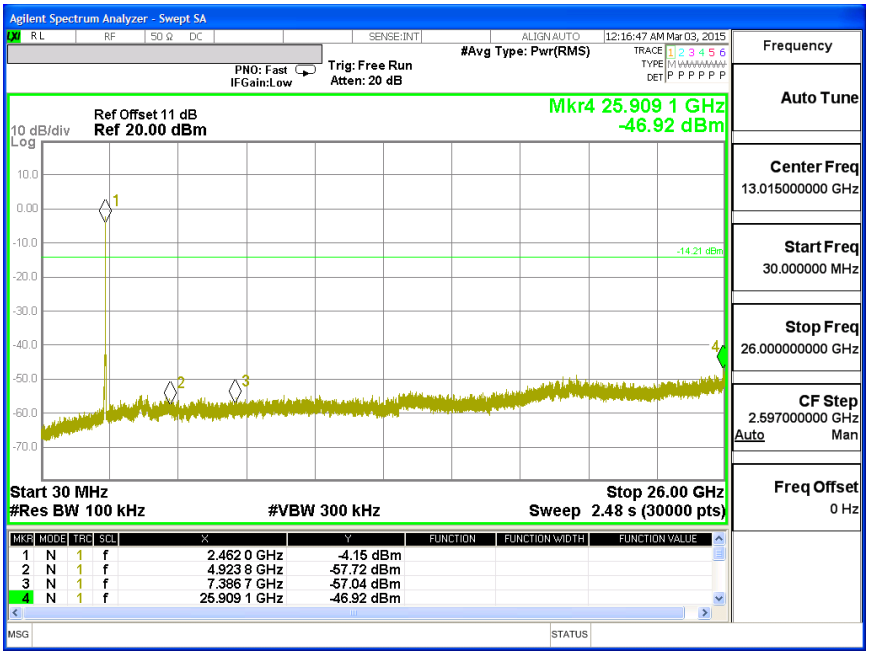
OUT OF BAND LOW CH



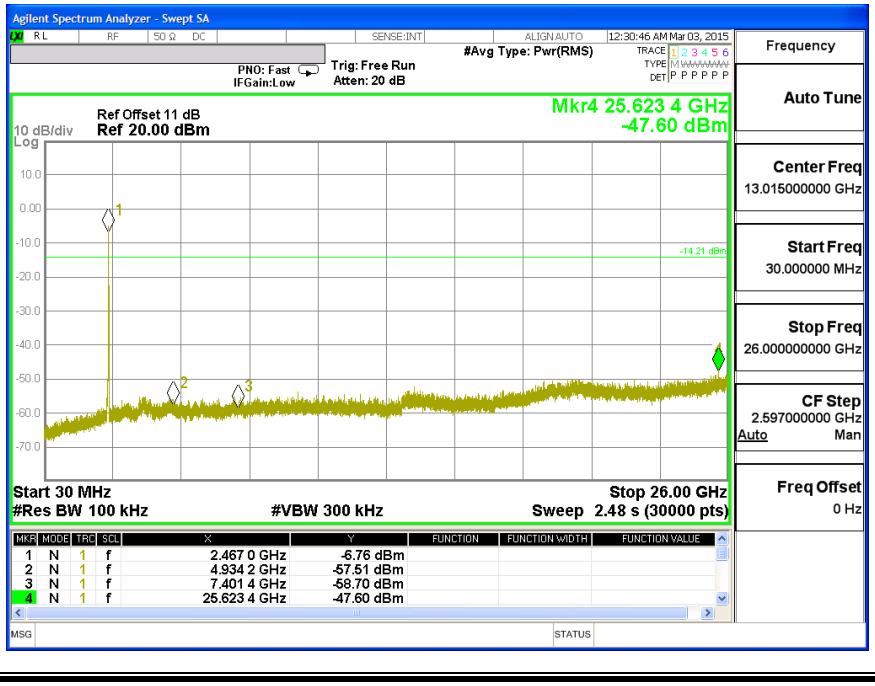
OUT OF BAND MID CH



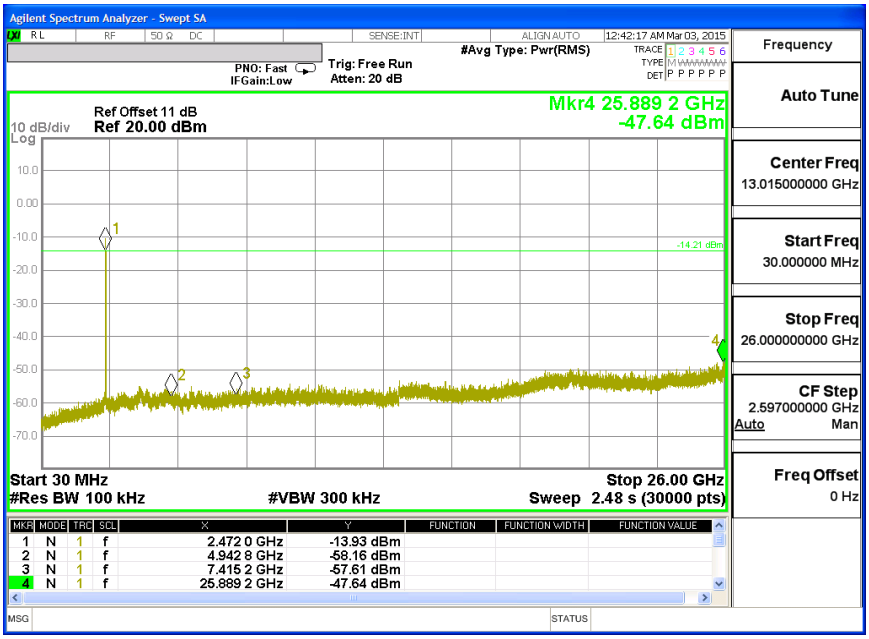
OUT OF BAND HIGH CH



OUT OF BAND HIGH CH 12

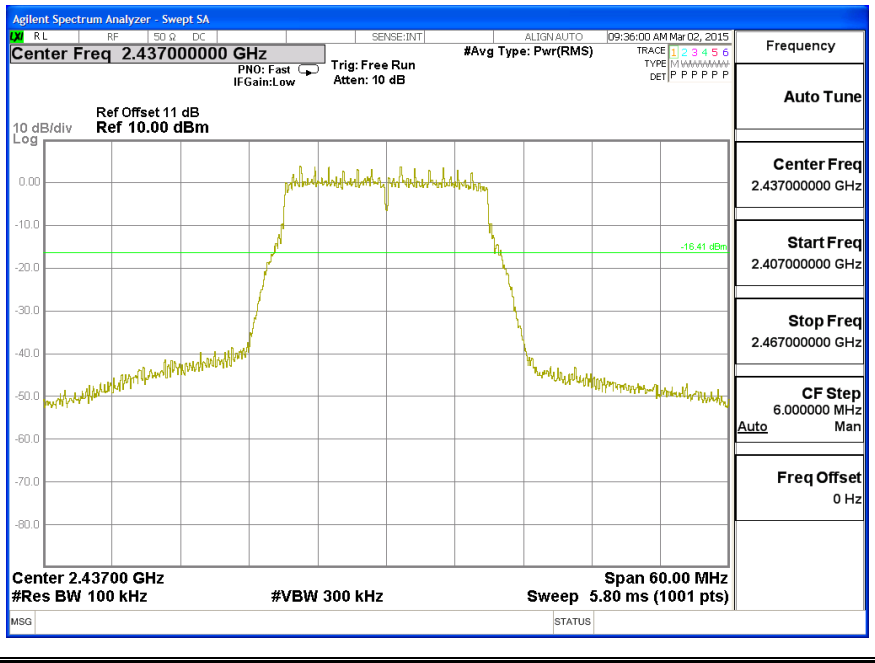


OUT OF BAND HIGH CH 13



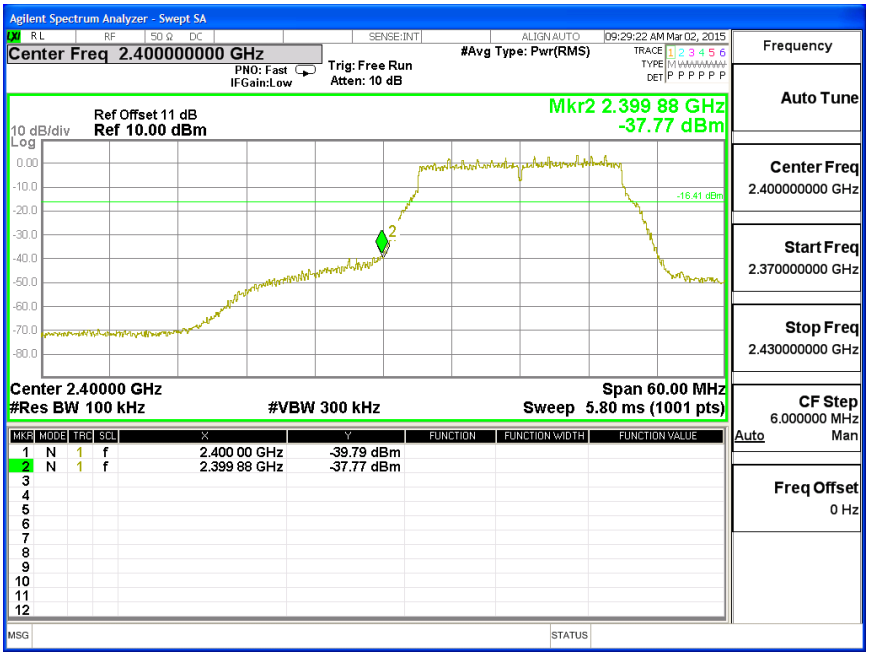
IN-BAND REFERENCE LEVEL, ANTENNA A

REFERENCE LEVEL MID CH



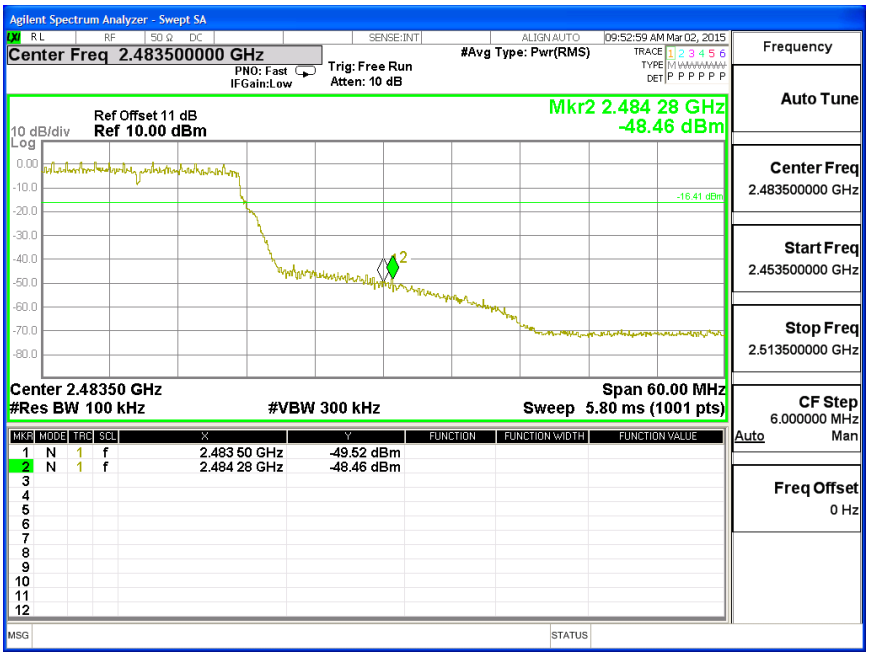
LOW CHANNEL BANDEDGE, ANTENNA A

AUTHORIZED BAND EDGE LOW CH

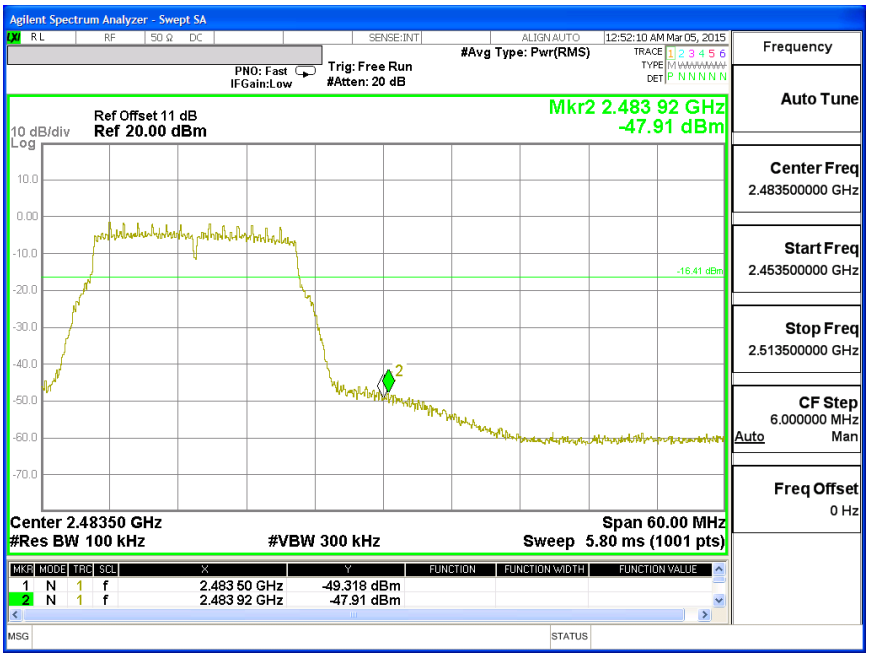


HIGH CHANNEL BANDEDGE, ANTENNA A

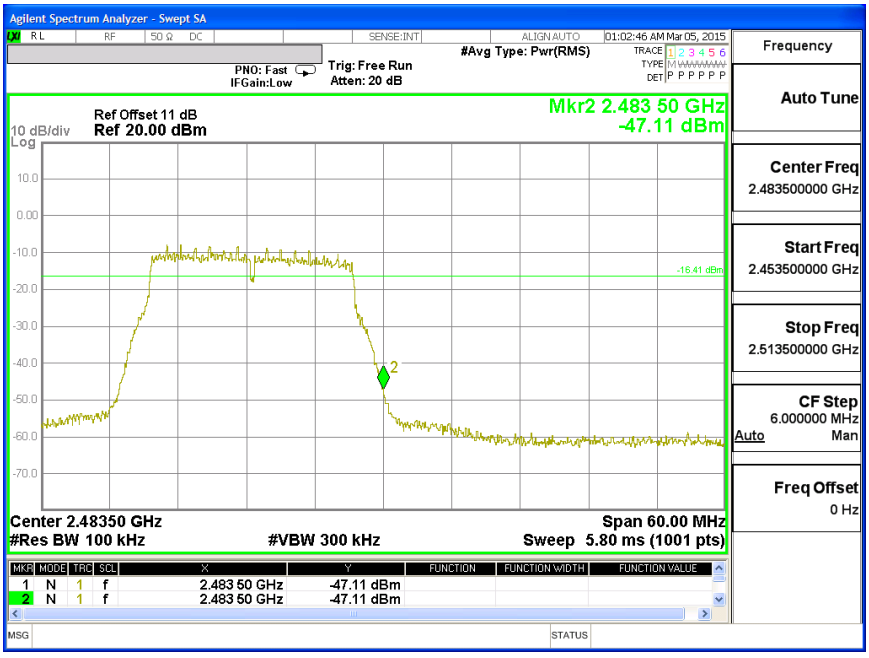
AUTHORIZED BAND EDGE HIGH CH



AUTHORIZED BAND EDGE HIGH CH 12

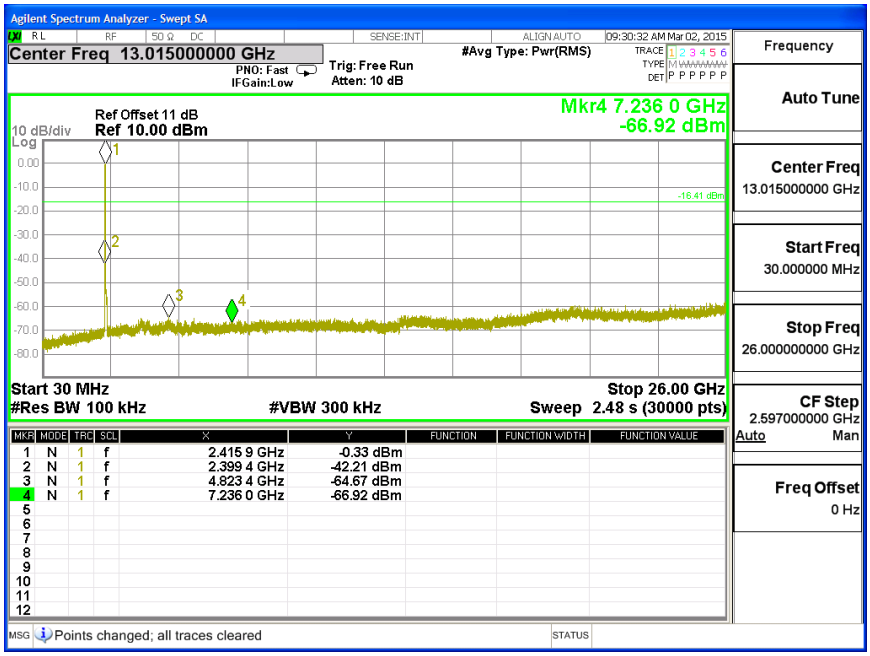


AUTHORIZED BAND EDGE HIGH CH 13

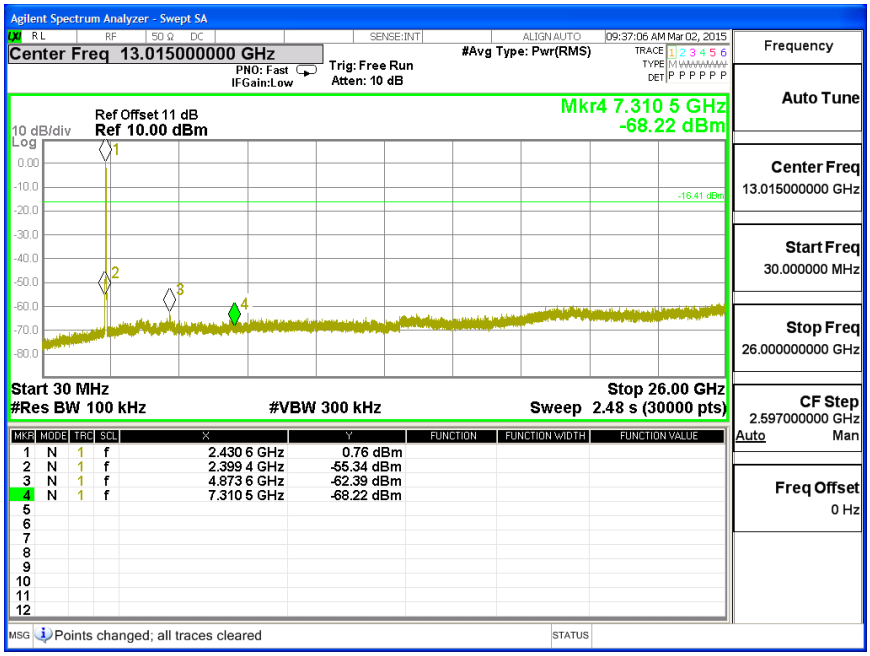


OUT-OF-BAND EMISSIONS, ANTENNA A

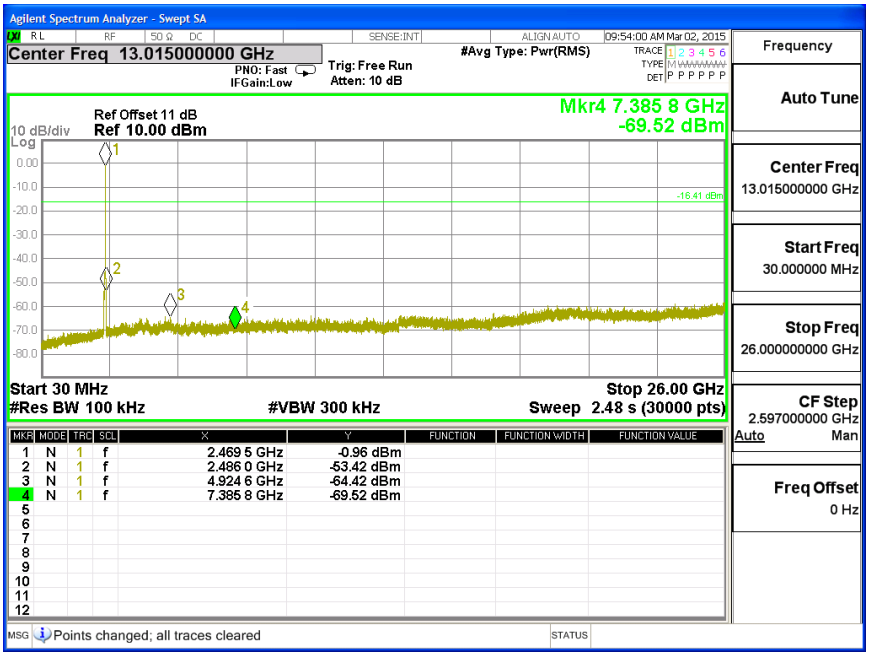
OUT OF BAND LOW CH



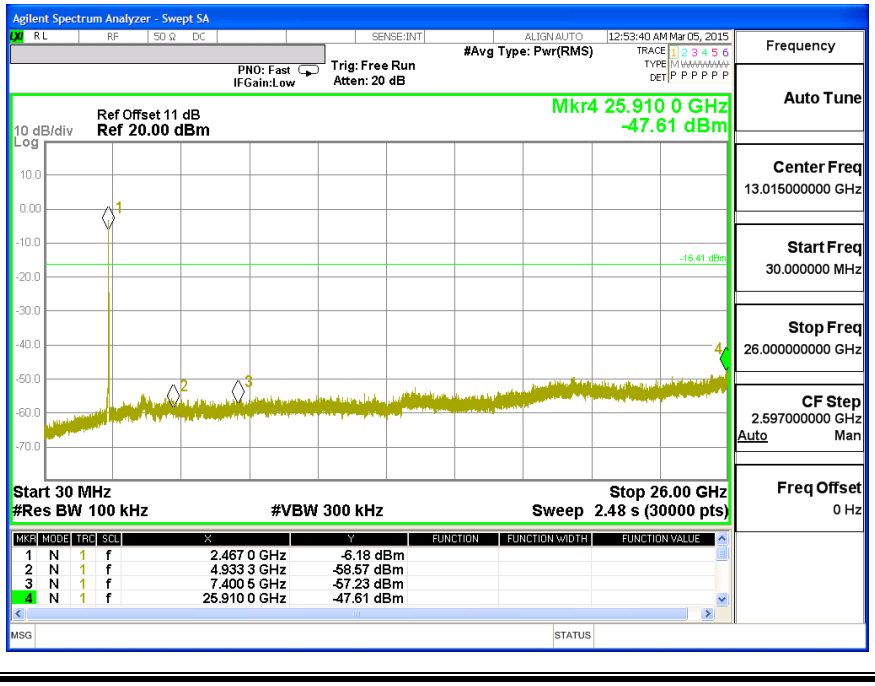
OUT OF BAND MID CH



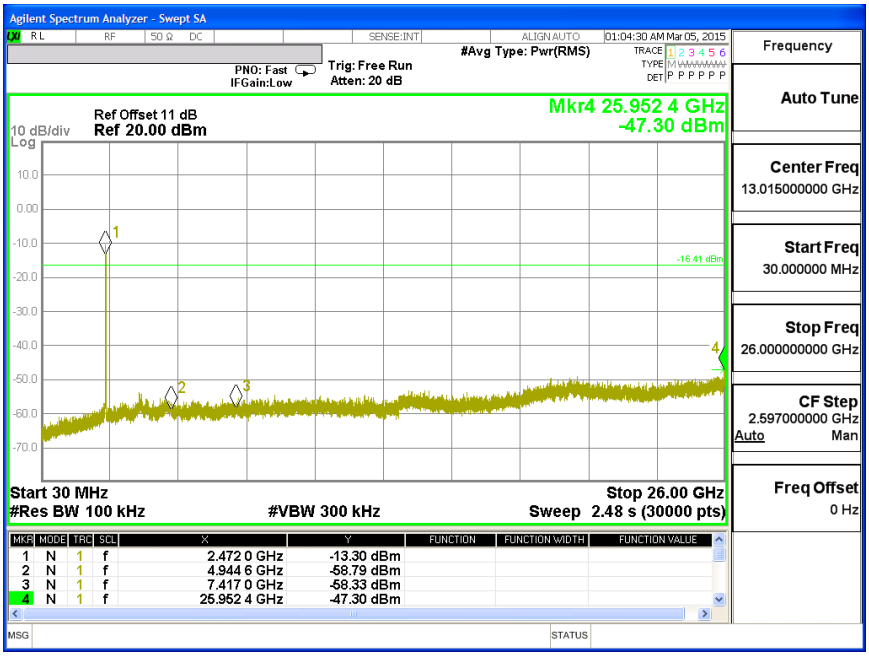
OUT OF BAND HIGH CH



OUT OF BAND HIGH CH 12



OUT OF BAND HIGH CH 13



8.8. 802.11n HT20 2TX CDD MODE IN THE 2.4 GHz BAND (ANTENNA D & A)

8.8.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

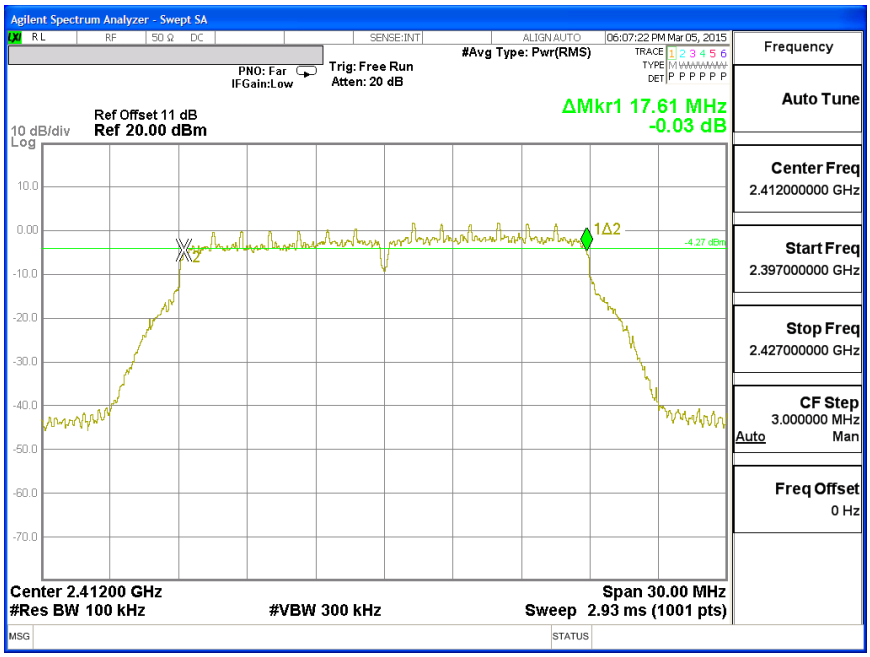
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

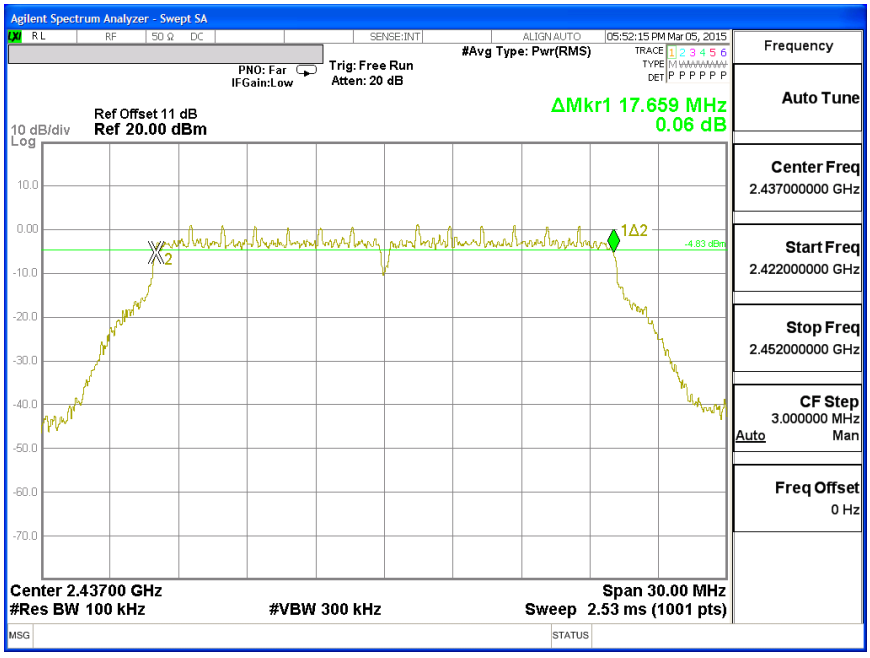
Channel	Frequency (MHz)	6 dB BW Antenna D (MHz)	6 dB BW Antenna A (MHz)	Minimum Limit (MHz)
Low	2412	17.610	17.640	0.5
Mid	2437	17.659	17.670	0.5
High	2462	17.640	17.670	0.5
High	2467	17.640	17.670	0.5
High	2472	17.400	17.700	0.5

6 dB BANDWIDTH, ANTENNA D

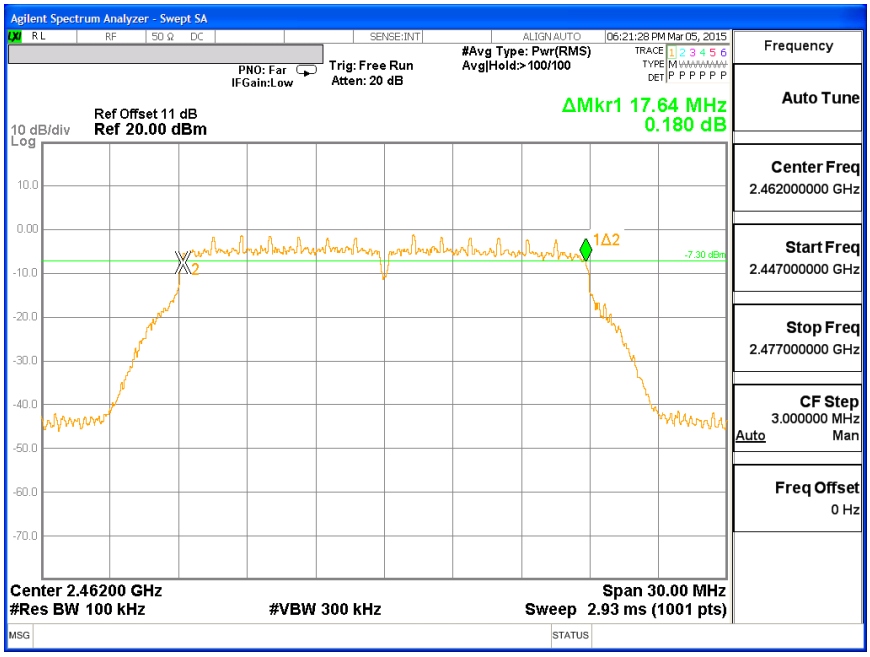
6 dB BANDWIDTH LOW CH



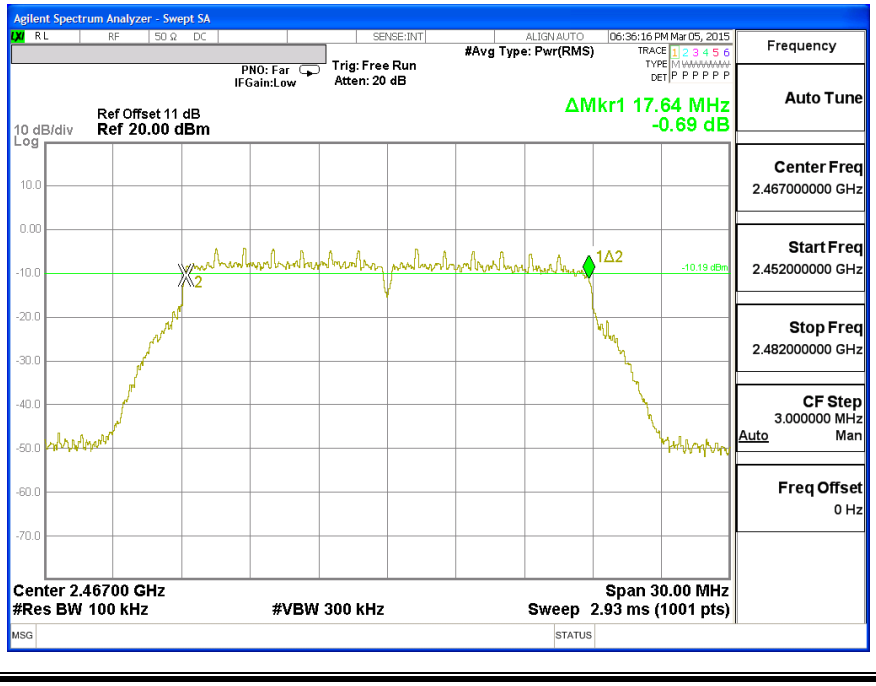
6 dB BANDWIDTH MID CH



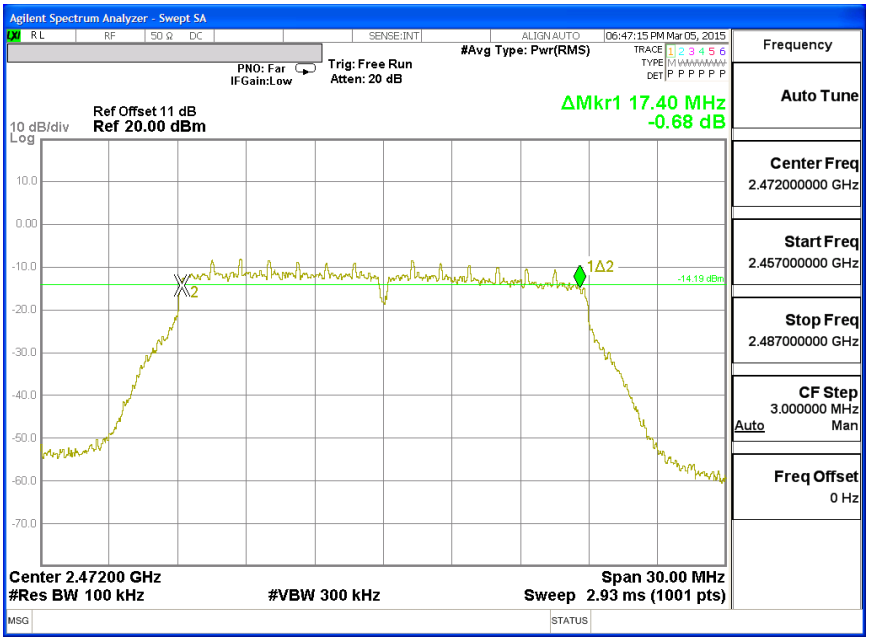
6 dB BANDWIDTH HIGH CH



6 dB BANDWIDTH HIGH CH 12

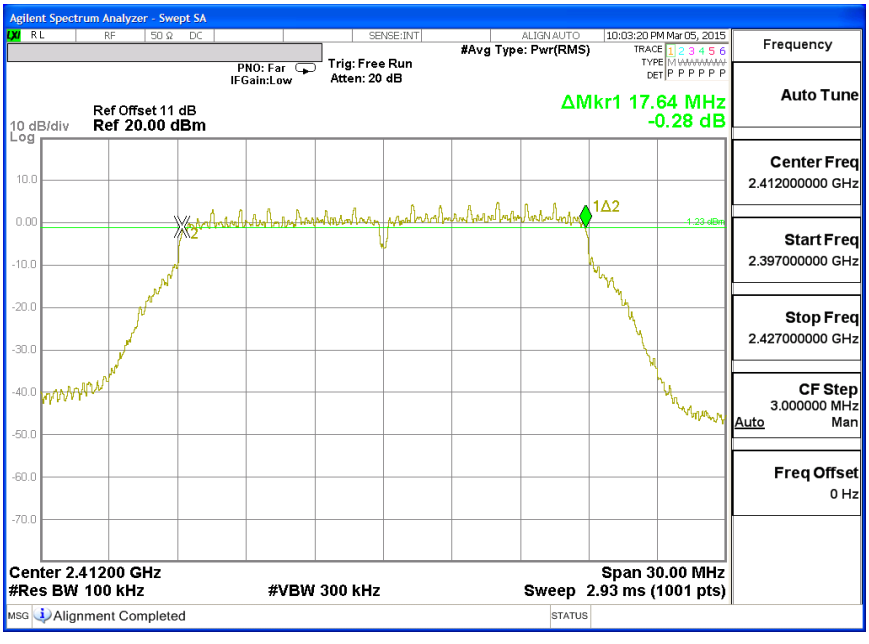


6 dB BANDWIDTH HIGH CH 13

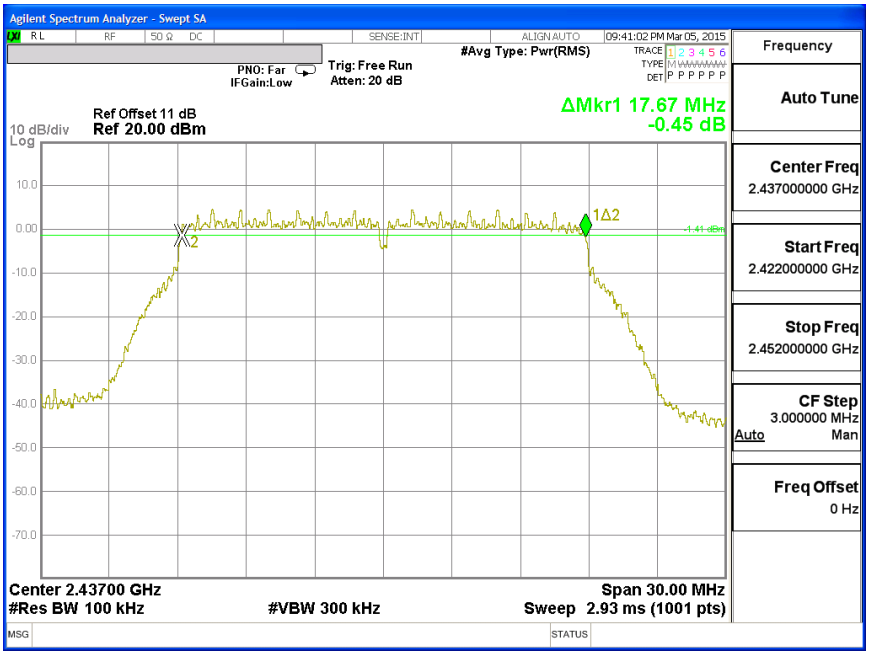


6 dB BANDWIDTH, ANTENNA A

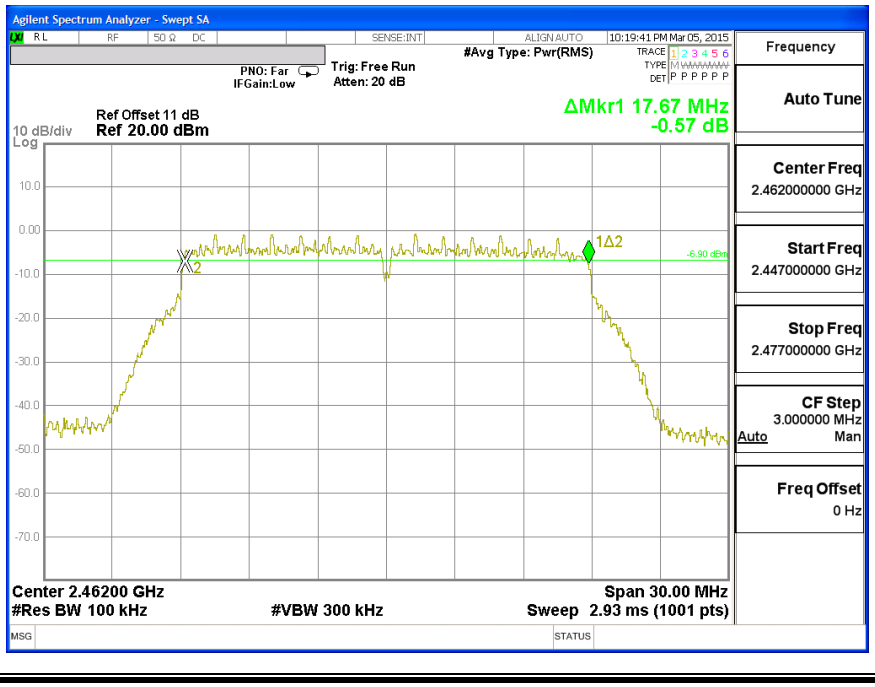
6 dB BANDWIDTH LOW CH



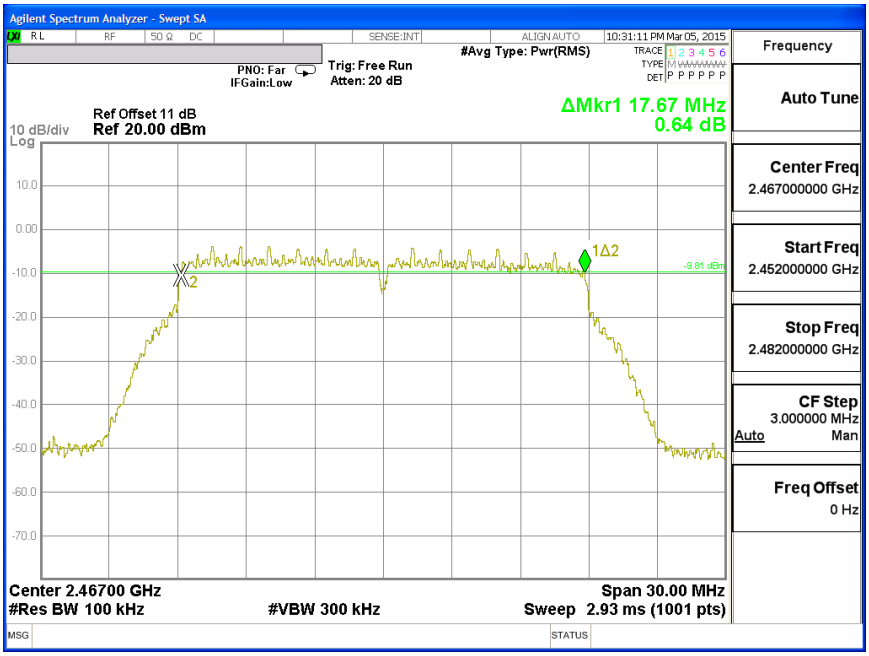
6 dB BANDWIDTH MID CH



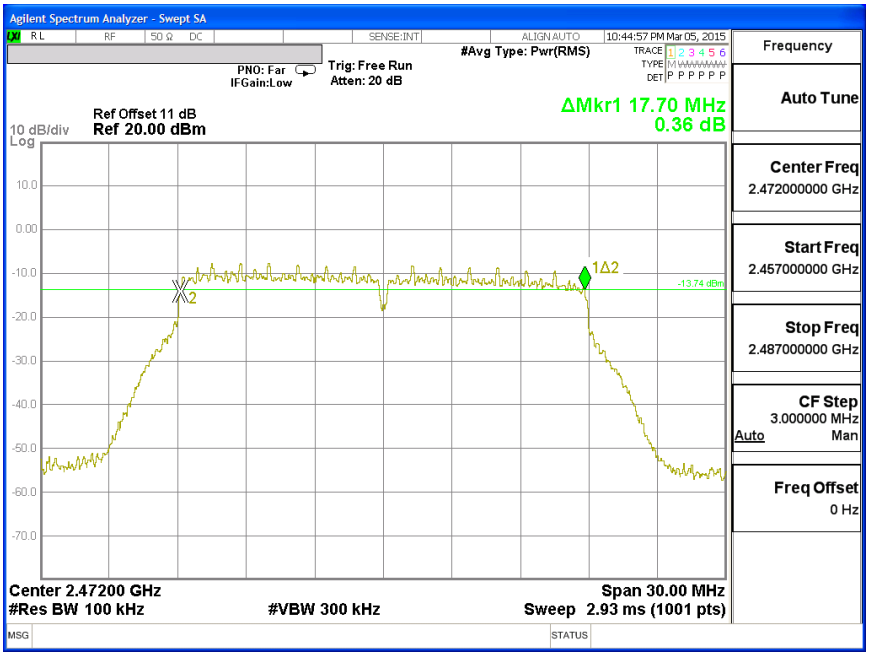
6 dB BANDWIDTH HIGH CH



6 dB BANDWIDTH HIGH CH 12



6 dB BANDWIDTH HIGH CH 13



8.8.2. 99% BANDWIDTH

LIMITS

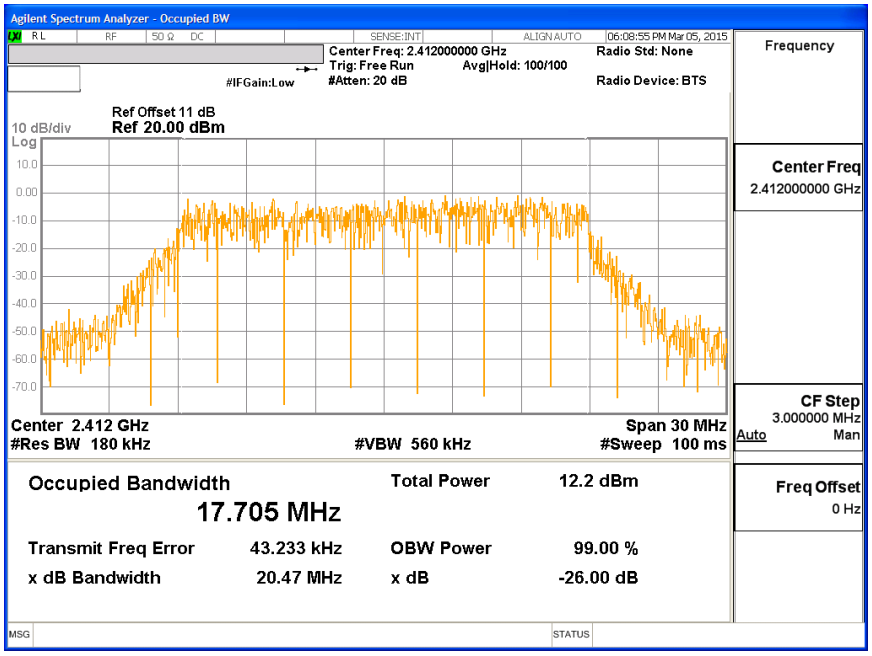
None; for reporting purposes only.

RESULTS

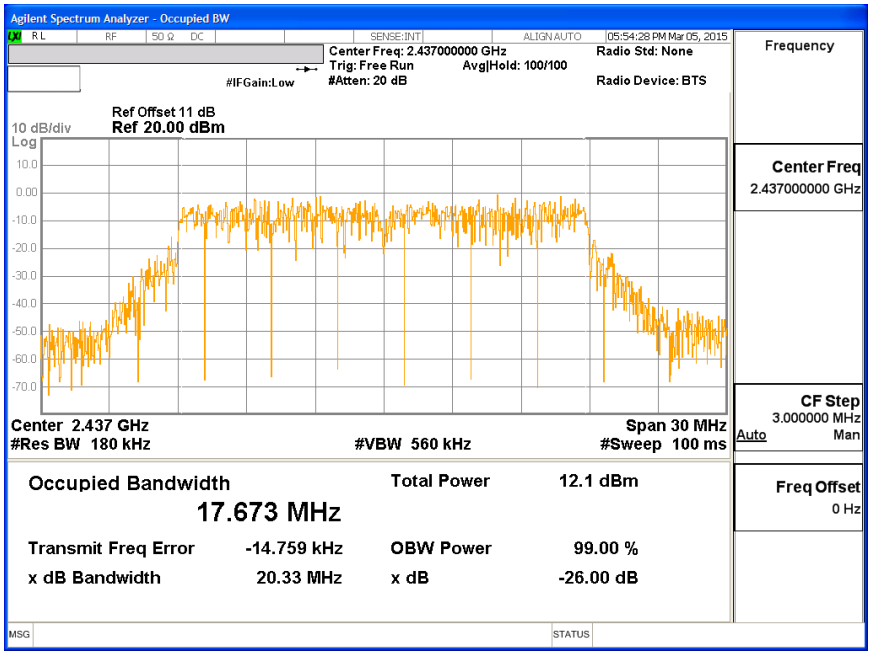
Channel	Frequency (MHz)	99% Bandwidth (MHz) Antenna D	99% Bandwidth (MHz) Antenna A
Low	2412	17.705	17.717
Mid	2437	17.673	17.819
High	2462	17.745	17.658
High	2467	17.642	17.721
High	2472	17.619	17.785

99% BANDWIDTH ANTENNA D

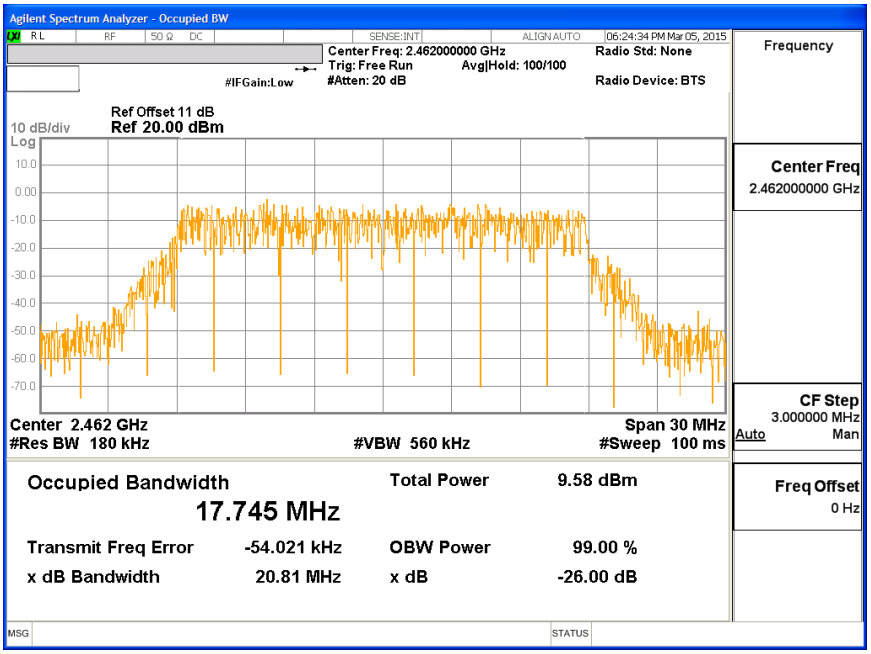
99% BANDWIDTH LOW CH



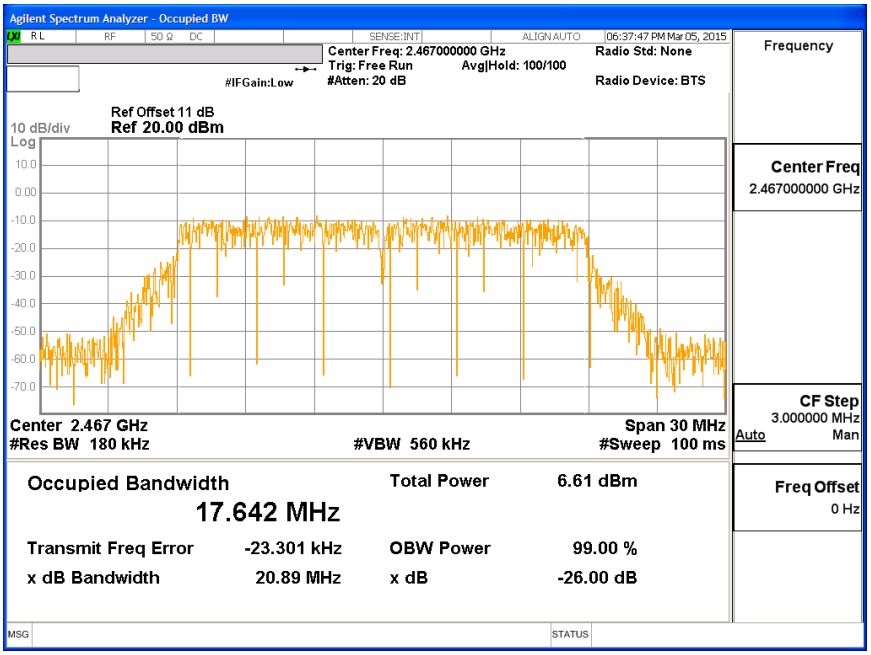
99% BANDWIDTH MID CH



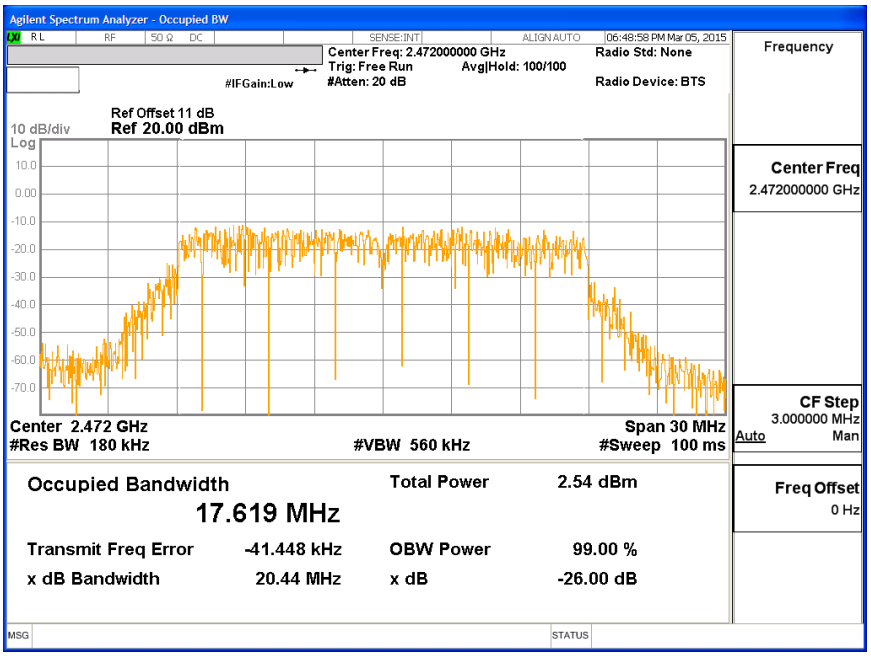
99% BANDWIDTH HIGH CH 11



99% BANDWIDTH HIGH CH 12

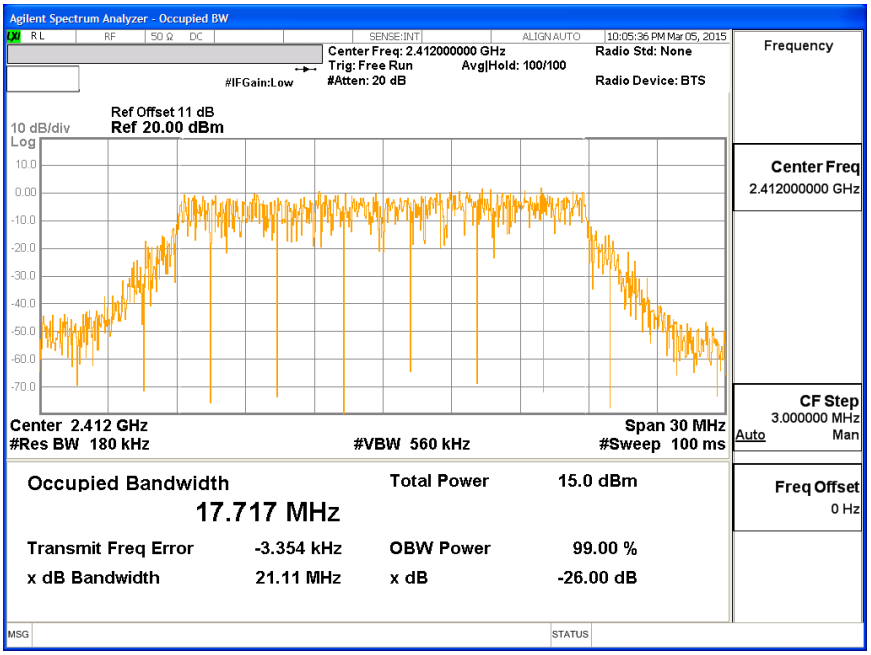


99% BANDWIDTH HIGH CH 13

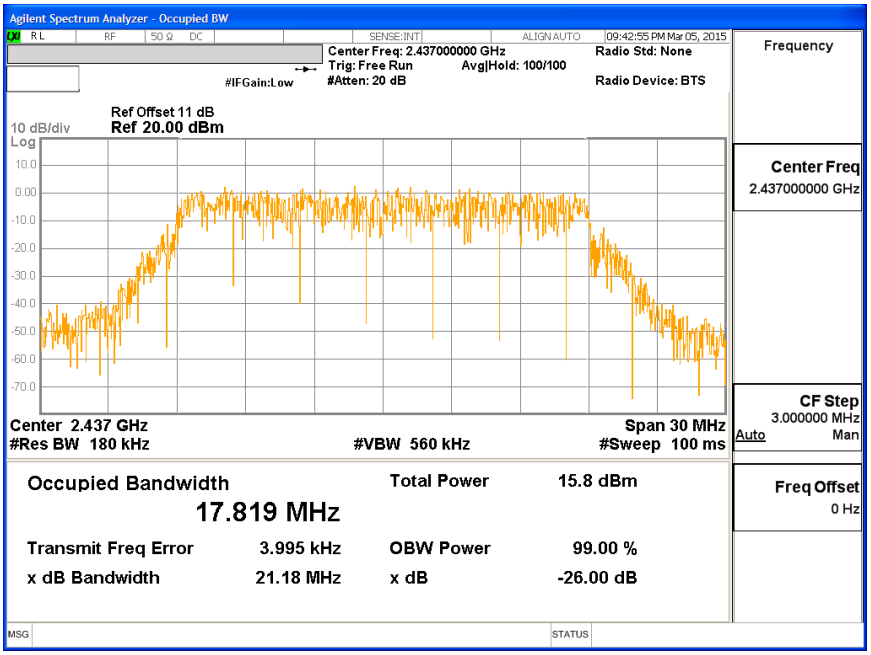


99% BANDWIDTH ANTENNA A

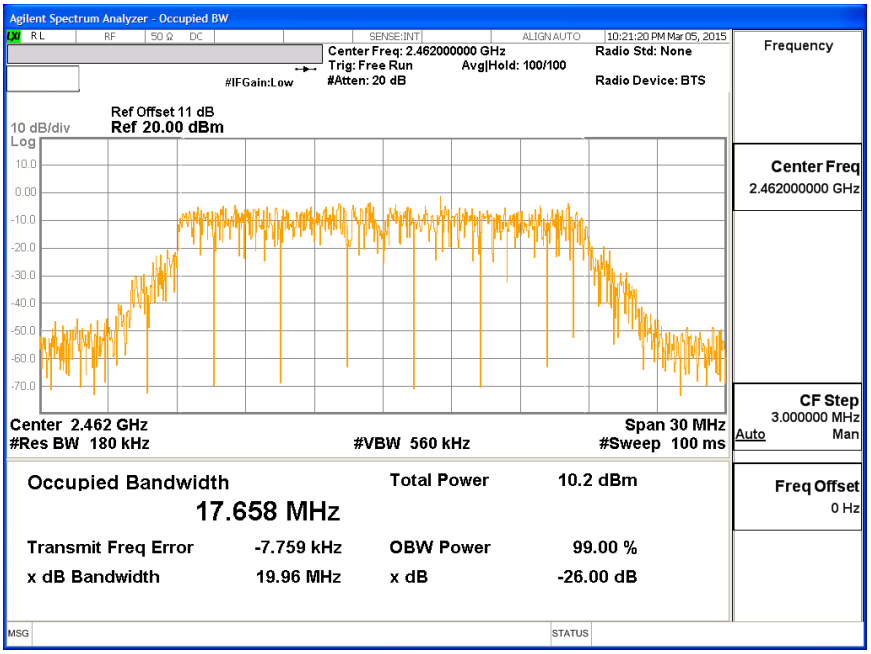
99% BANDWIDTH LOW CH



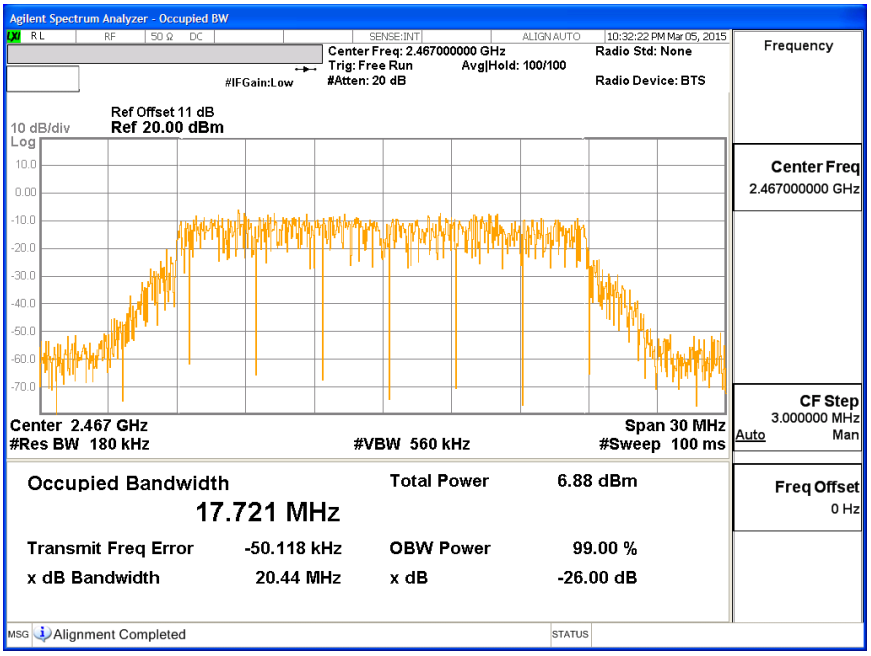
99% BANDWIDTH MID CH



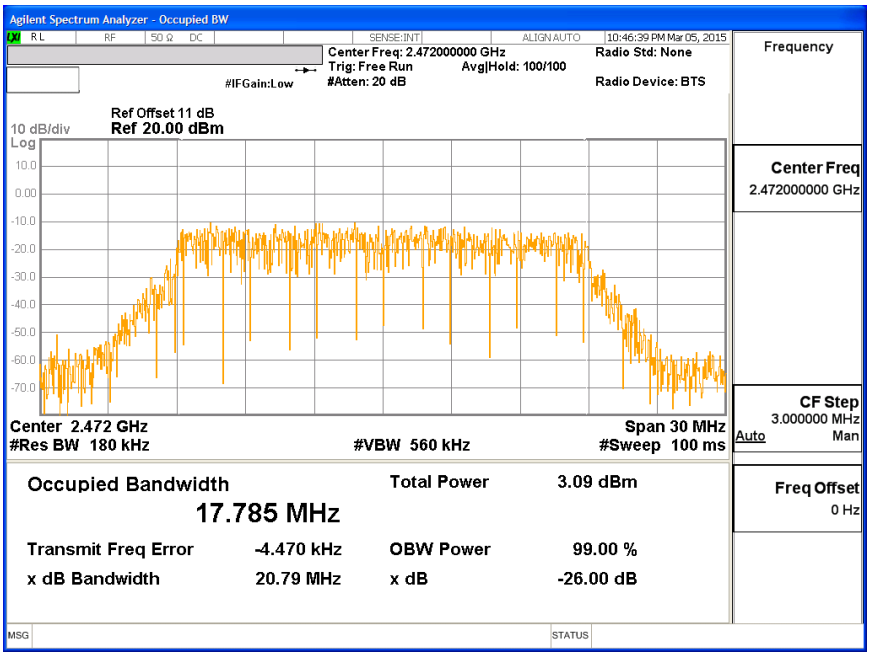
99% BANDWIDTH HIGH CH 11



99% BANDWIDTH HIGH CH 12



99% BANDWIDTH HIGH CH 13



8.8.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	Antenna D Power (dBm)	Antenna A Power (dBm)	Total Power (dBm)
Low	2412	12.49	14.80	16.81
Mid	2437	12.50	14.84	16.84
High	2462	9.82	11.88	13.98
High	2467	6.92	8.95	11.06
High	2472	0.96	2.99	5.10

8.8.4. OUTPUT POWER

LIMITS

FCC §15.247

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:

Antenna D Antenna Gain (dBi)	Antenna A Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
2.50	0.20	1.50

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	1.50	30.00	30	36	30.00
Mid	2437	1.50	30.00	30	36	30.00
High	2462	1.50	30.00	30	36	30.00
High	2467	1.50	30.00	30	36	30.00
High	2472	1.50	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Antenna D Meas Power (dBm)	Antenna A Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	20.49	24.40	25.88	30.00	-4.12
Mid	2437	20.52	24.74	26.13	30.00	-3.87
High	2462	17.82	21.16	22.81	30.00	-7.19
High	2467	14.92	18.17	19.85	30.00	-10.15
High	2472	8.56	12.57	14.02	30.00	-15.98

8.8.5. PSD

LIMITS

FCC §15.247

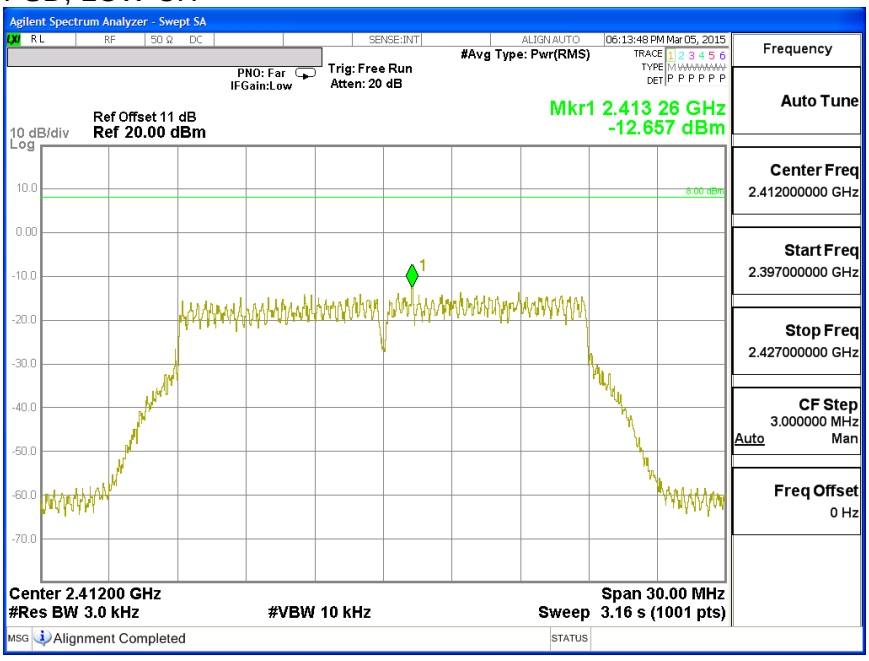
RESULTS

PSD Results

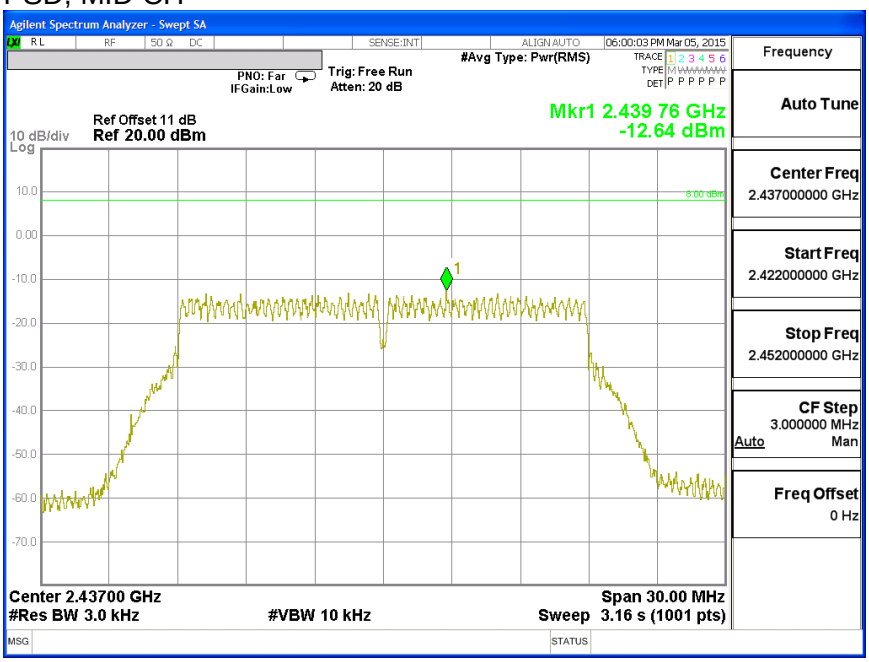
Channel	Frequency (MHz)	Antenna D Meas (dBm)	Antenna A Meas (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-12.66	-9.91	-8.06	8.0	-16.1
Mid	2437	-12.64	-9.68	-7.90	8.0	-15.9
High	2462	-16.22	-13.44	-11.60	8.0	-19.6
High	2467	-18.58	-16.72	-14.54	8.0	-22.5
High	2472	-22.30	-21.49	-18.87	8.0	-26.9

PSD, ANTENNA D

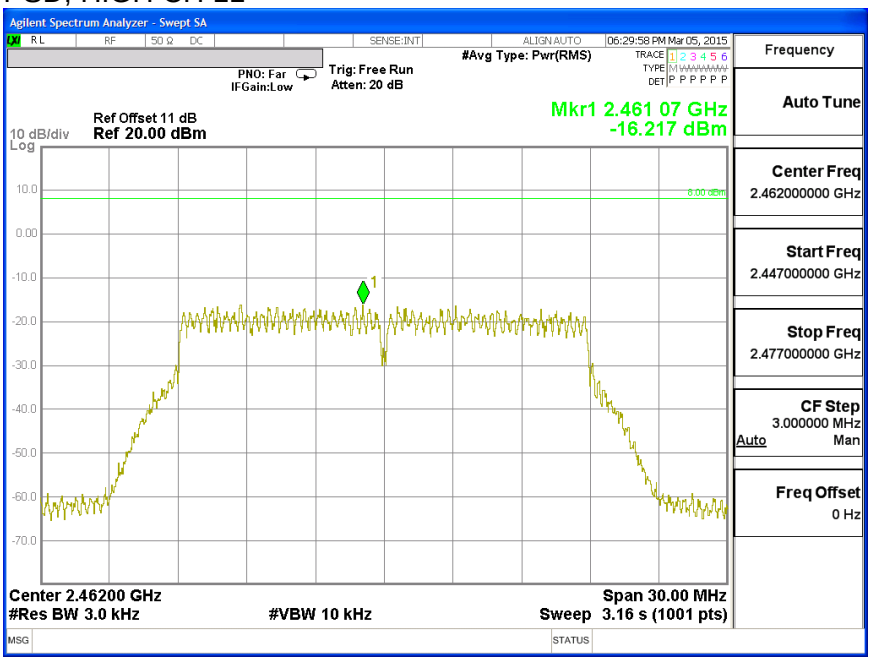
PSD, LOW CH



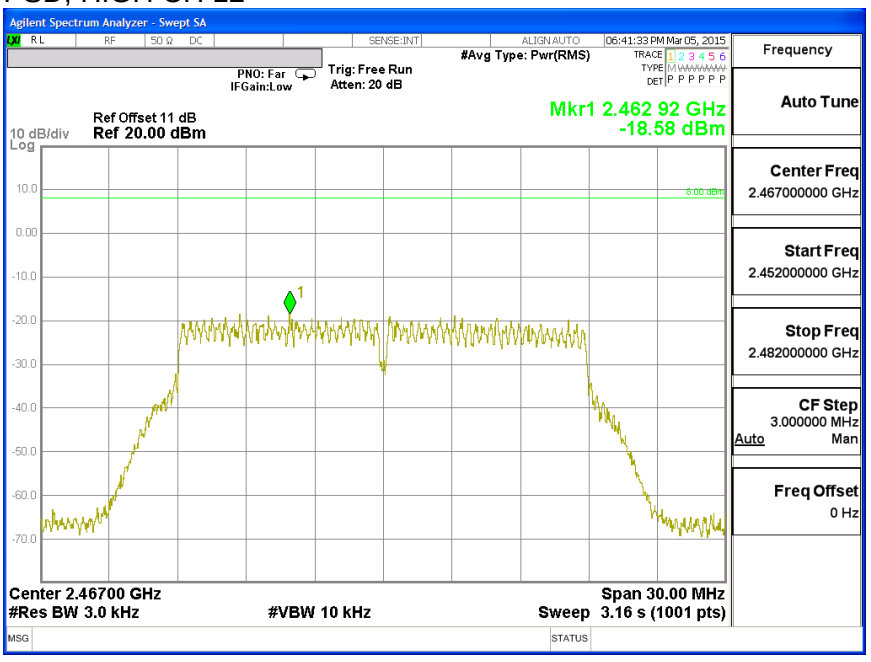
PSD, MID CH



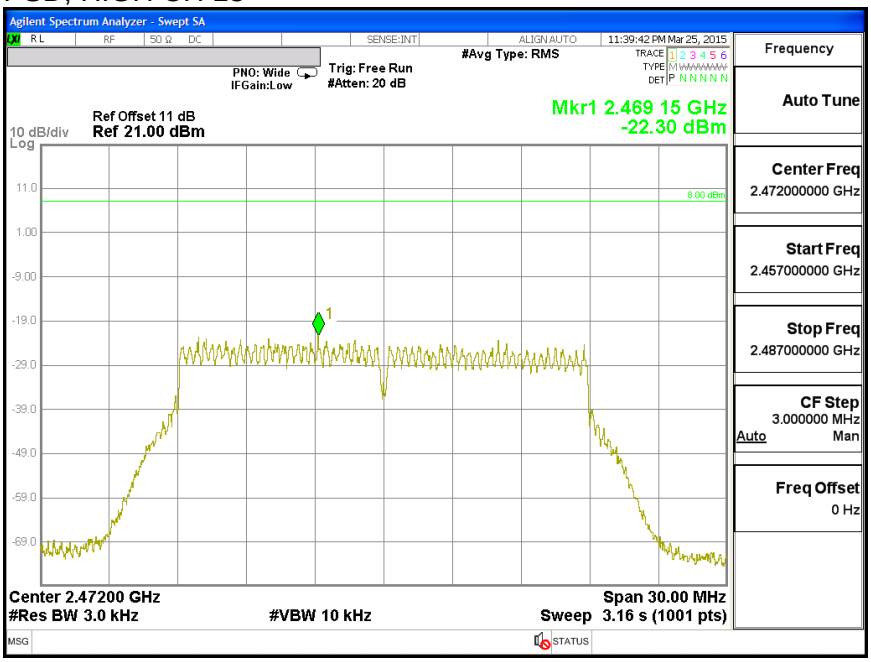
PSD, HIGH CH 11



PSD, HIGH CH 12

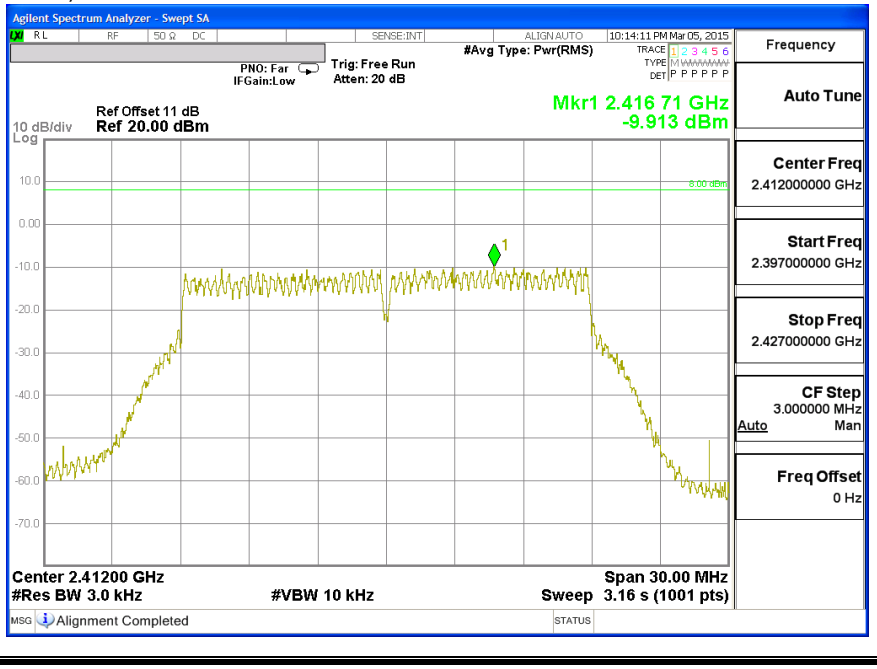


PSD, HIGH CH 13

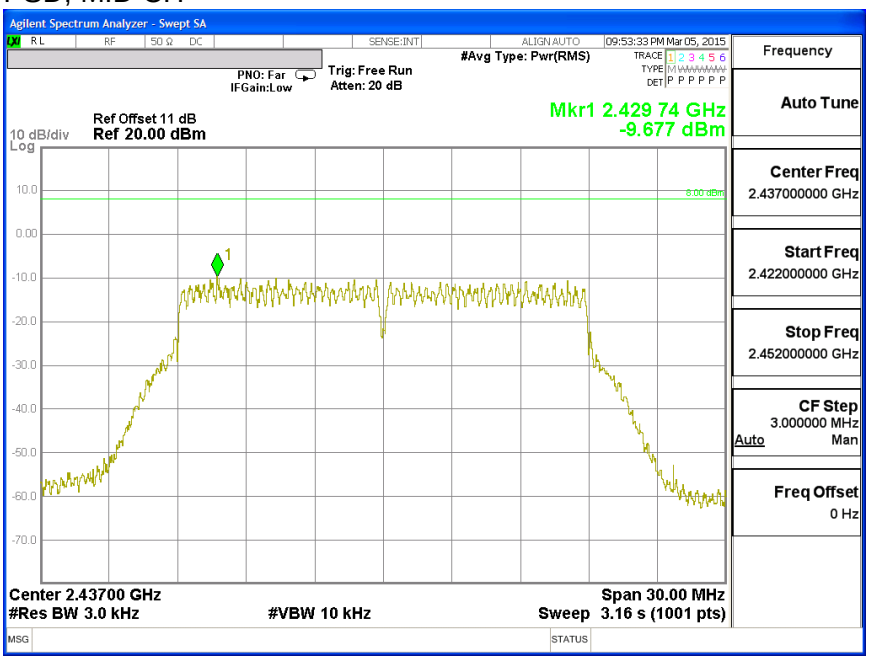


PSD, ANTENNA A

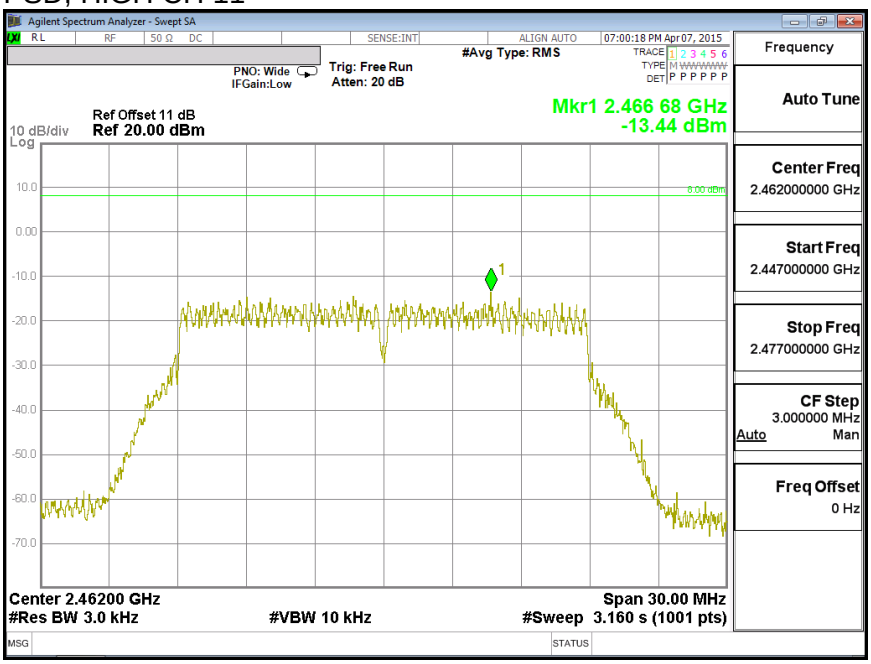
PSD, LOW CH



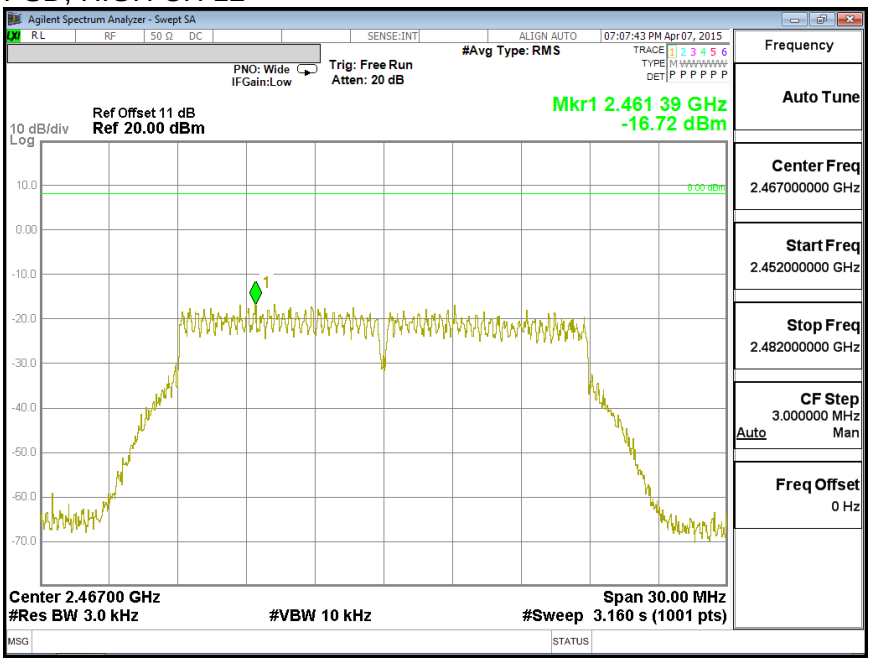
PSD, MID CH



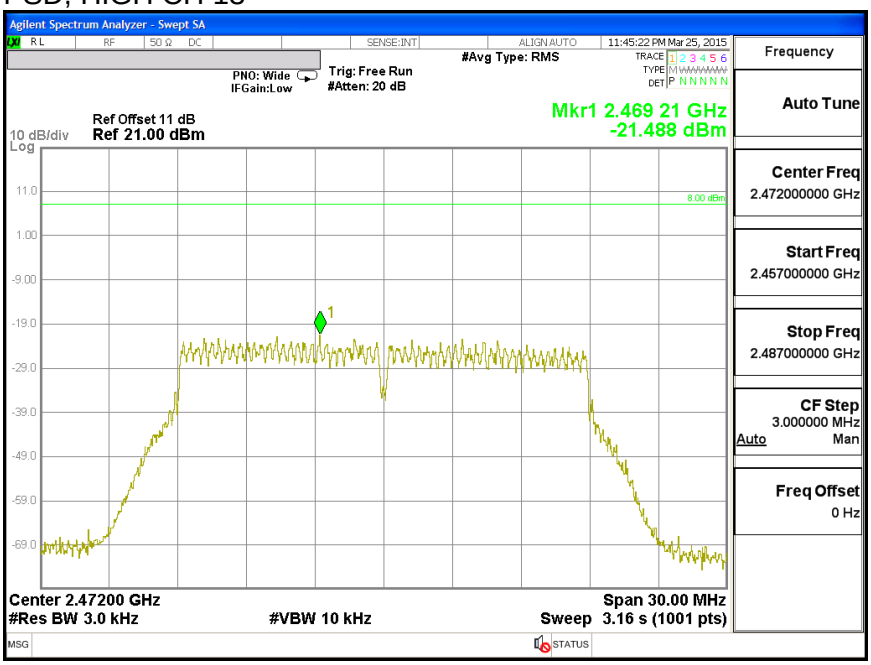
PSD, HIGH CH 11



PSD, HIGH CH 12



PSD, HIGH CH 13



8.8.6. OUT-OF-BAND EMISSIONS

LIMITS

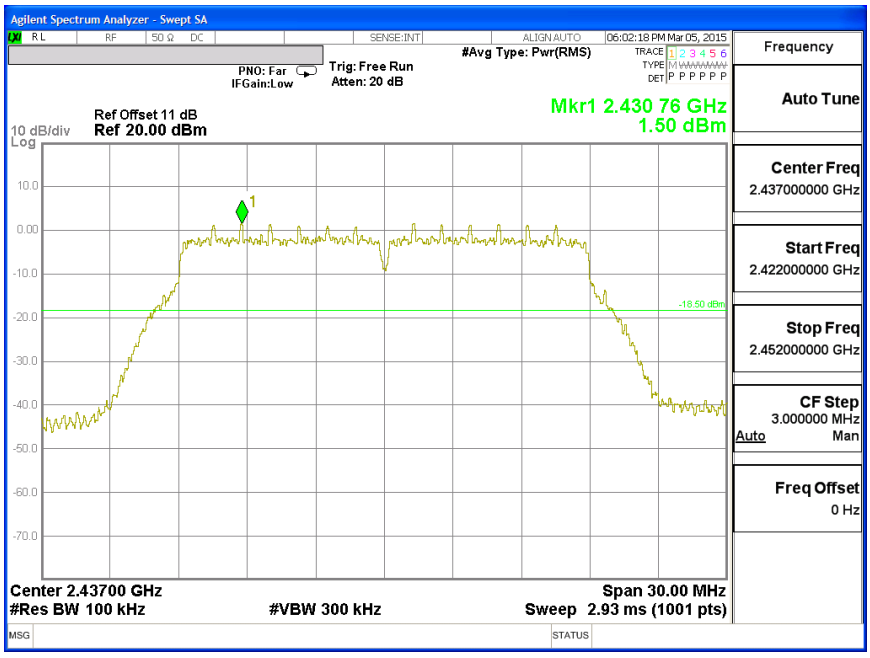
FCC §15.247 (d)

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

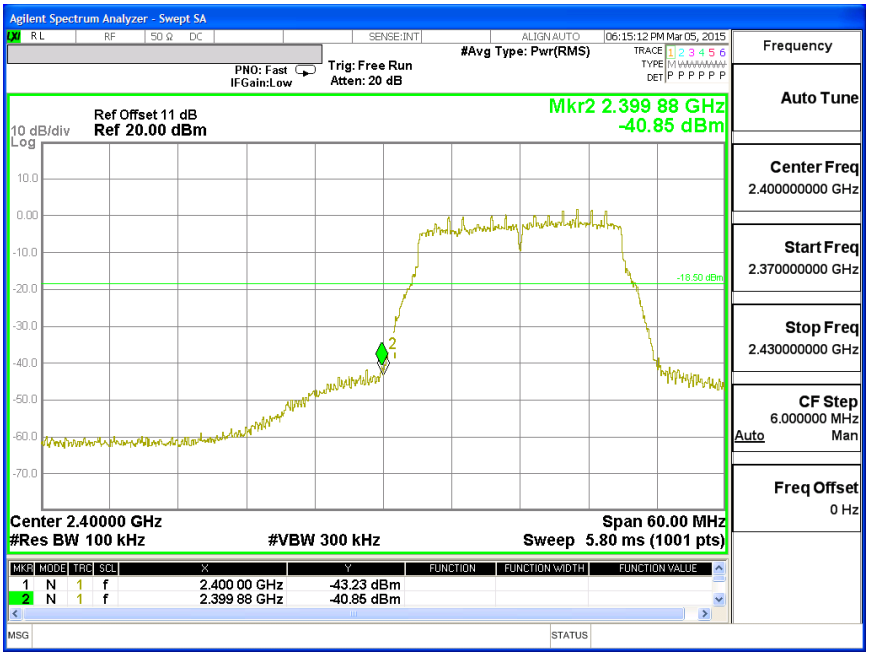
IN-BAND REFERENCE LEVEL, ANTENNA D

REFERENCE LEVEL MID CH



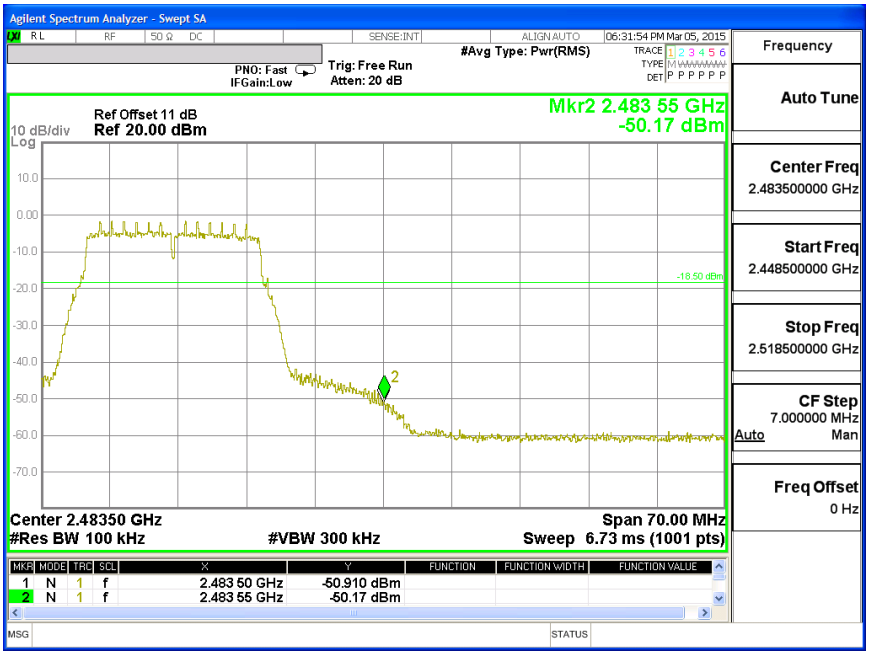
LOW CHANNEL BANDEDGE, ANTENNA D

AUTHORIZED BAND EDGE LOW CH

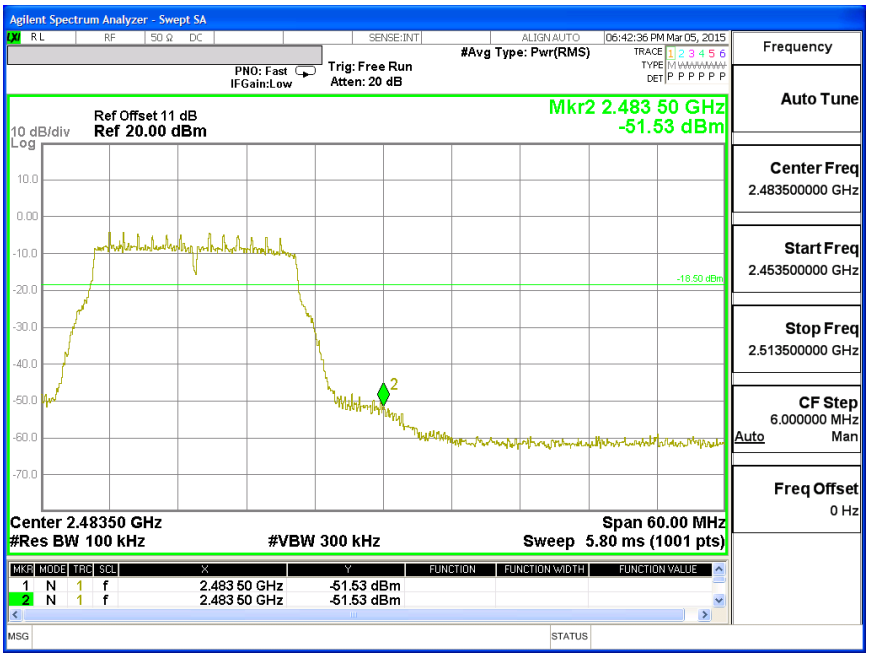


HIGH CHANNEL BANDEDGE, ANTENNA D

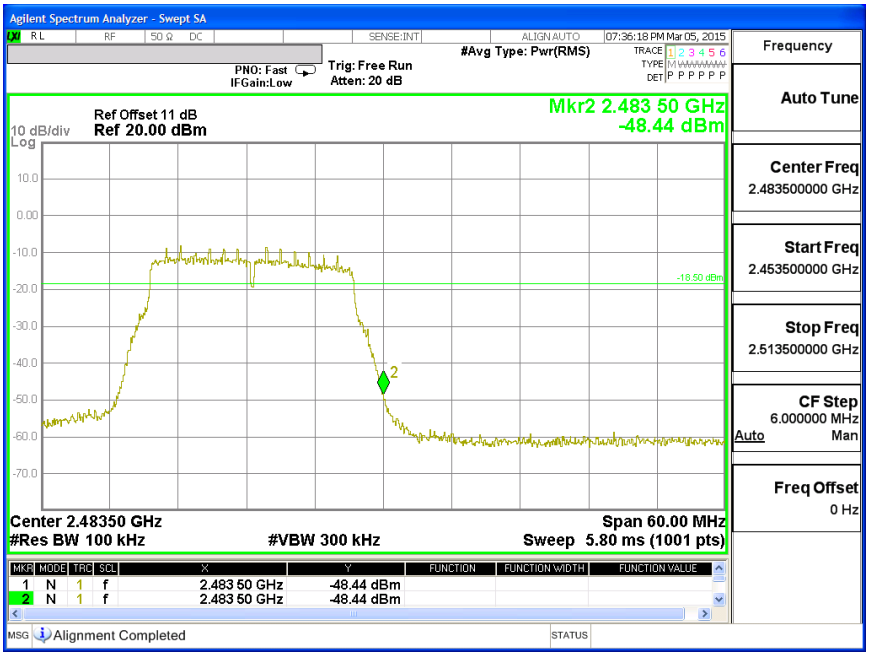
AUTHORIZED BAND EDGE HIGH CH



AUTHORIZED BAND EDGE HIGH CH 12

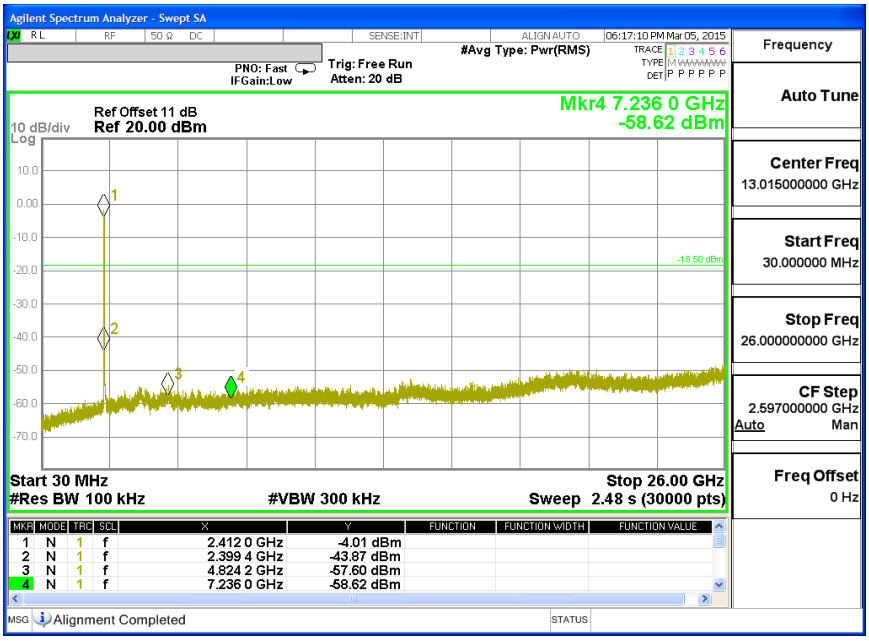


AUTHORIZED BAND EDGE HIGH CH 13

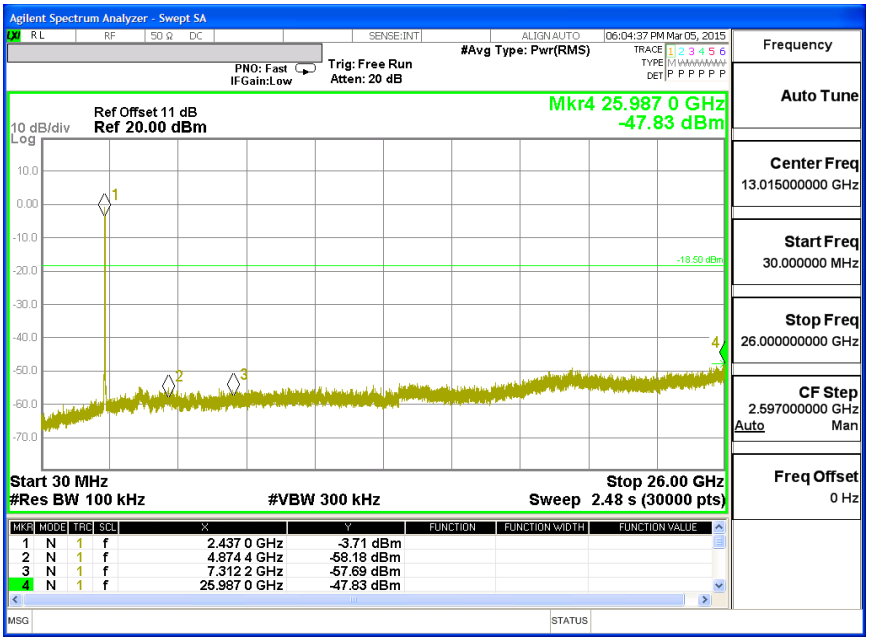


OUT-OF-BAND EMISSIONS, ANTENNA D

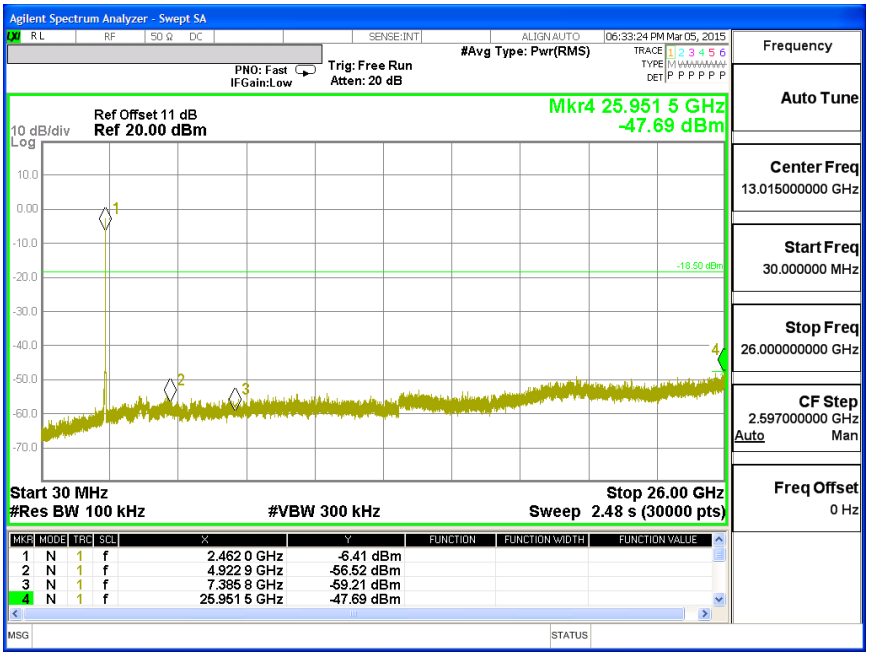
OUT OF BAND LOW CH



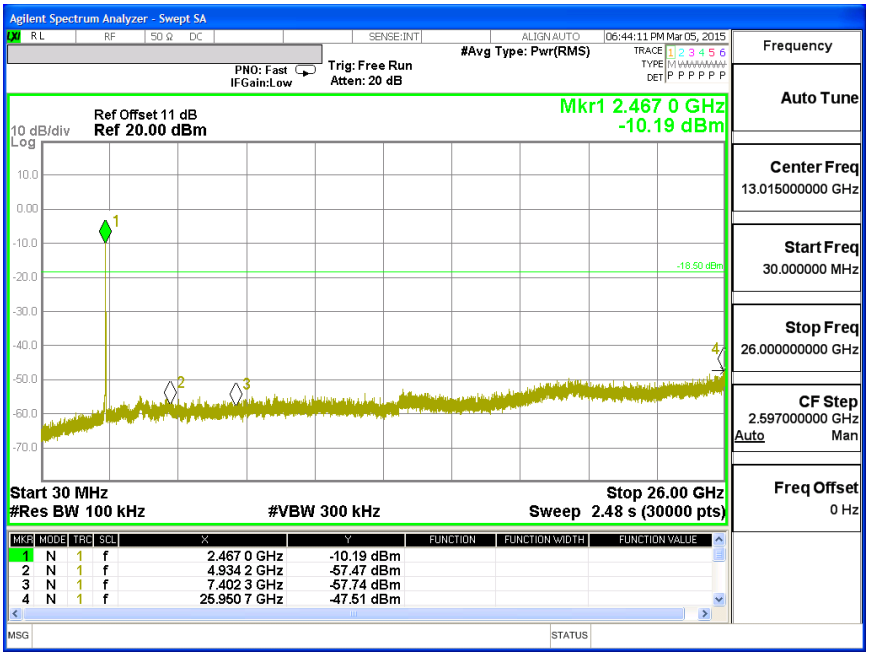
OUT OF BAND MID CH



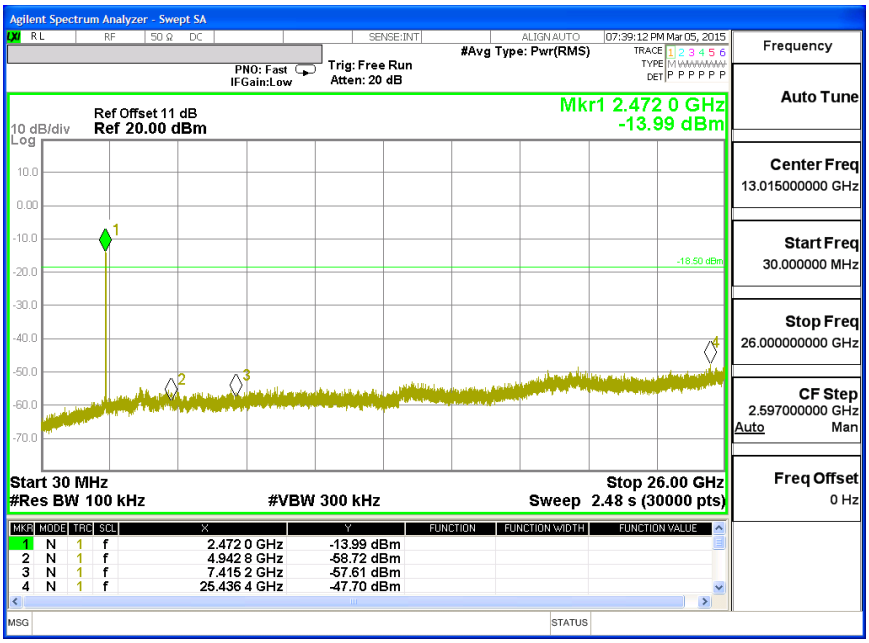
OUT OF BAND HIGH CH



OUT OF BAND HIGH CH 12

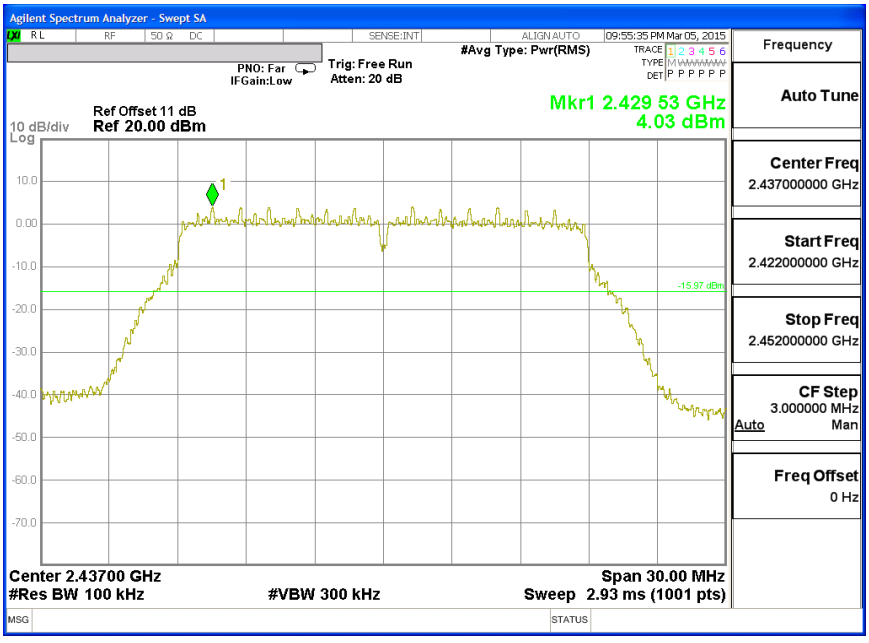


OUT OF BAND HIGH CH 13

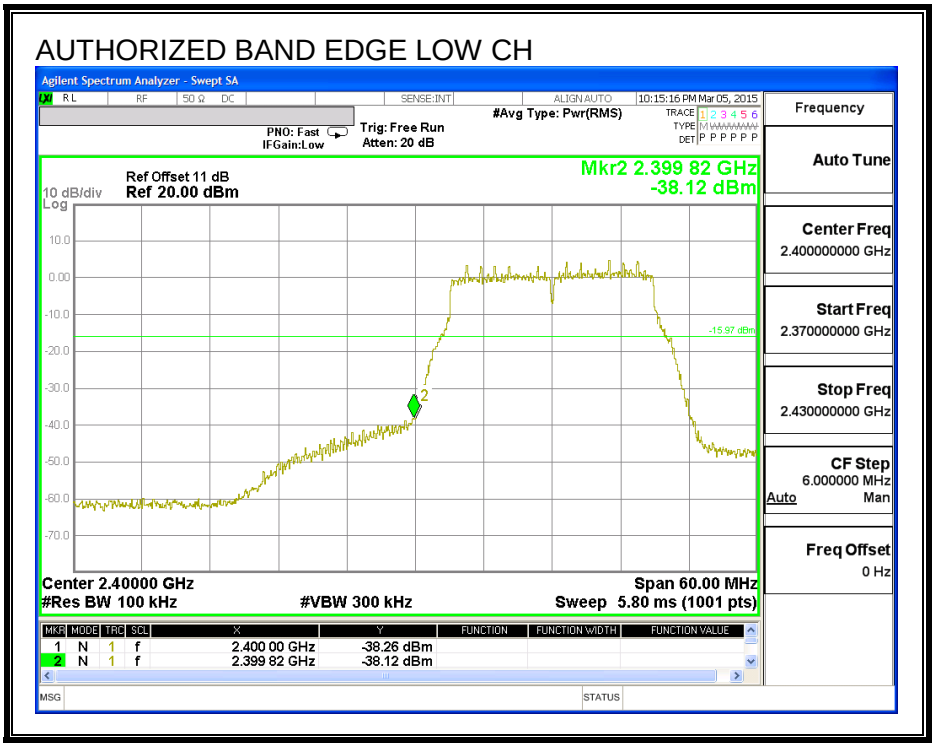


IN-BAND REFERENCE LEVEL, ANTENNA A

REFERENCE LEVEL MID CH



LOW CHANNEL BANDEDGE, ANTENNA A



HIGH CHANNEL BANDEDGE, ANTENNA A