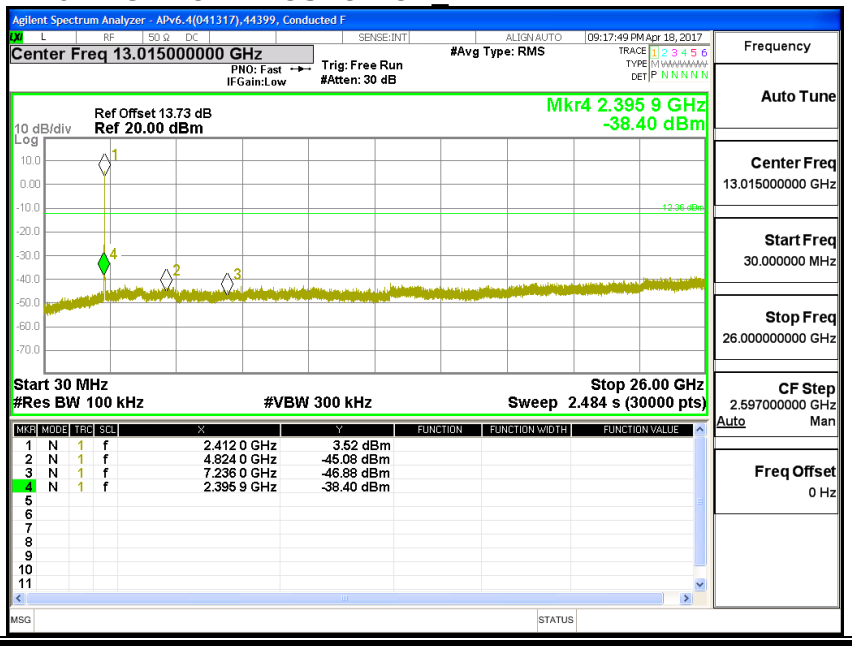
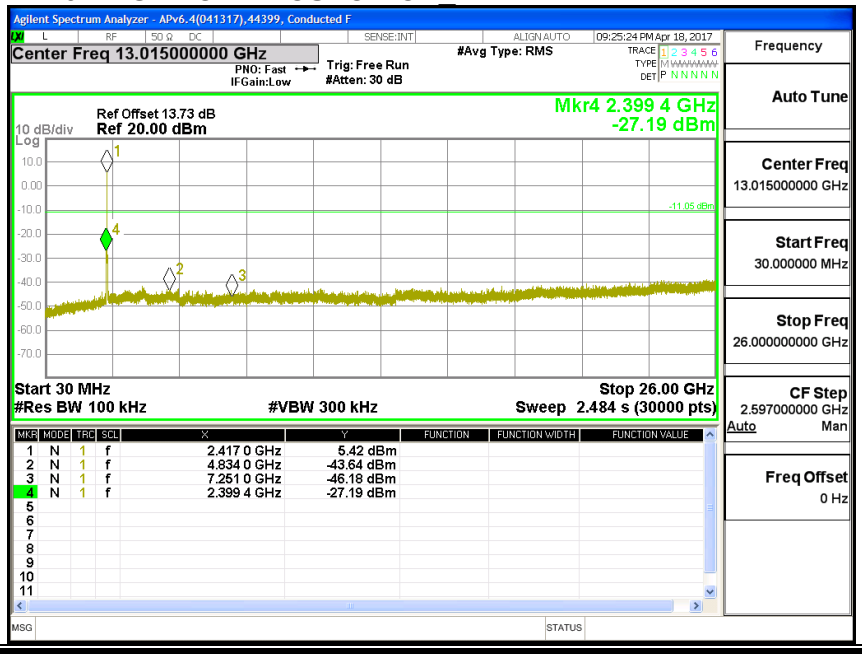
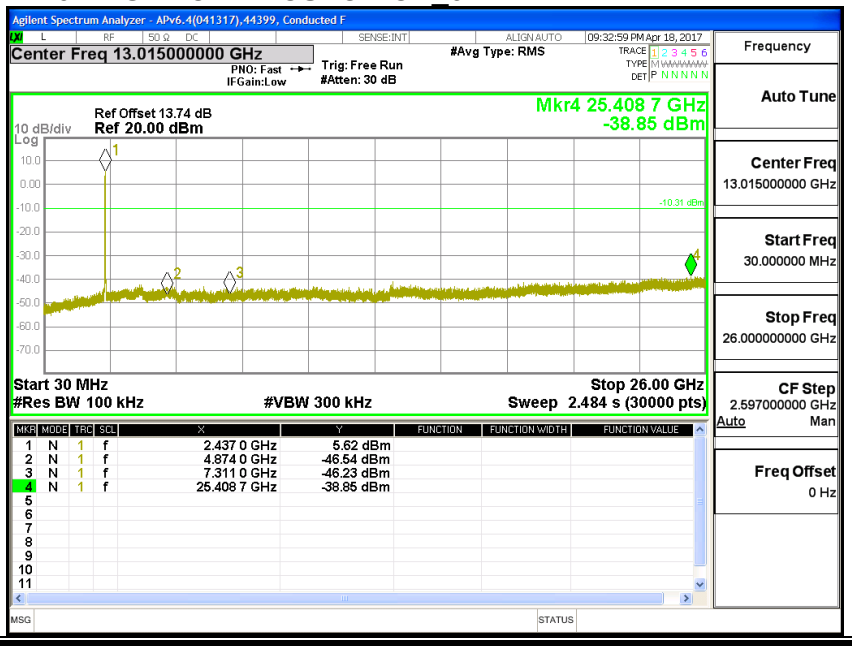
HT20 2.4GHz UAT 1 CSPUR CH_1



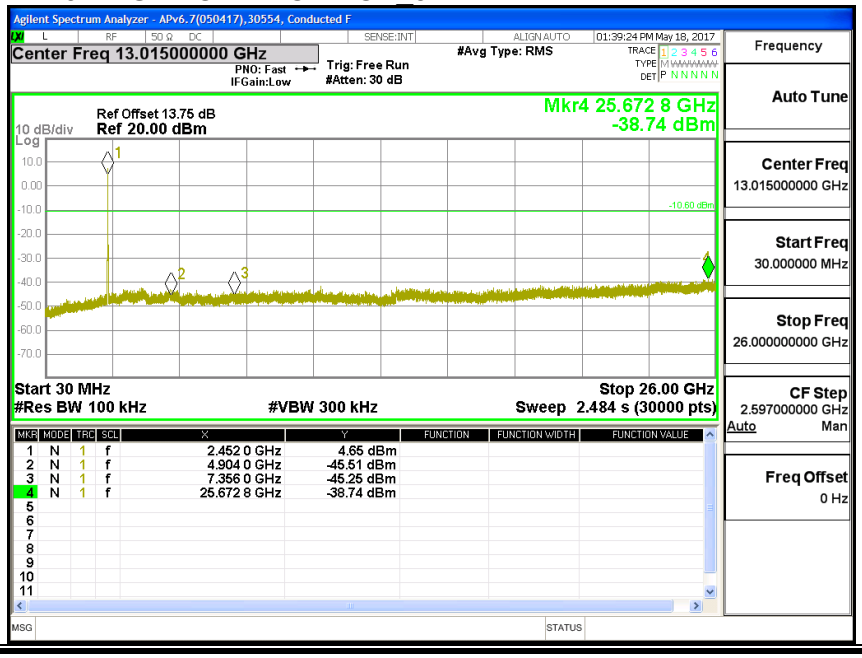
HT20 2.4GHz UAT 1 CSPUR CH_2



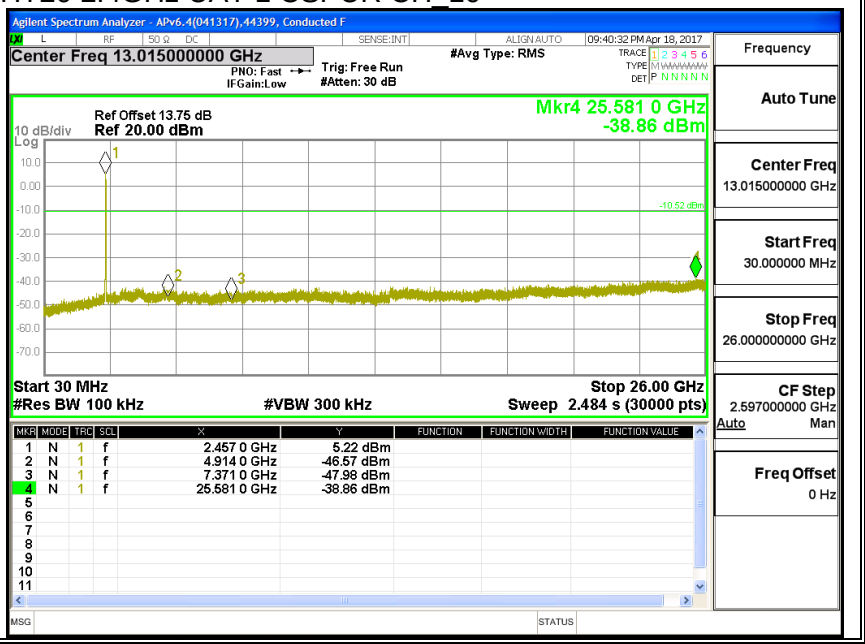
HT20 2.4GHz UAT 1 CSPUR CH_6



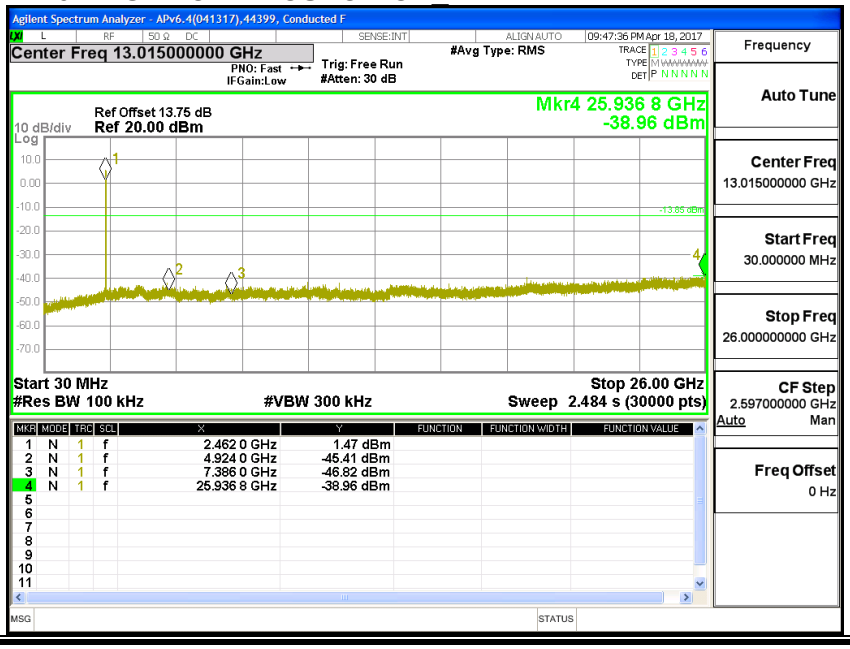
HT20 2.4GHz UAT 1 CBE CH_9



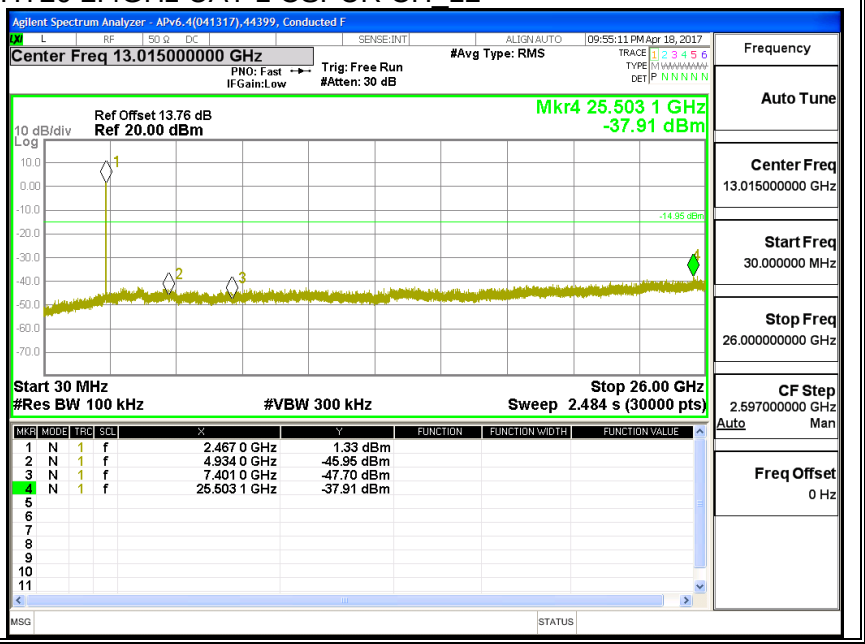
HT20 2.4GHz UAT 1 CSPUR CH_10



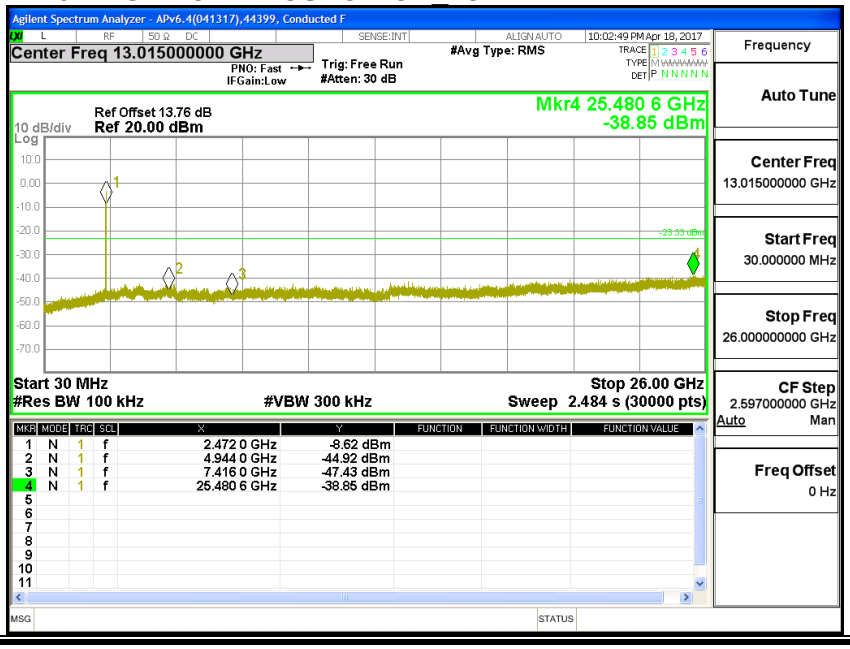
HT20 2.4GHz UAT 1 CSPUR CH_11



HT20 2.4GHz UAT 1 CSPUR CH_12



HT20 2.4GHz UAT 1 CSPUR CH_13



8.5. 11n HT20 LAT 3 SISO MODE IN THE 2.4GHz BAND

8.5.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

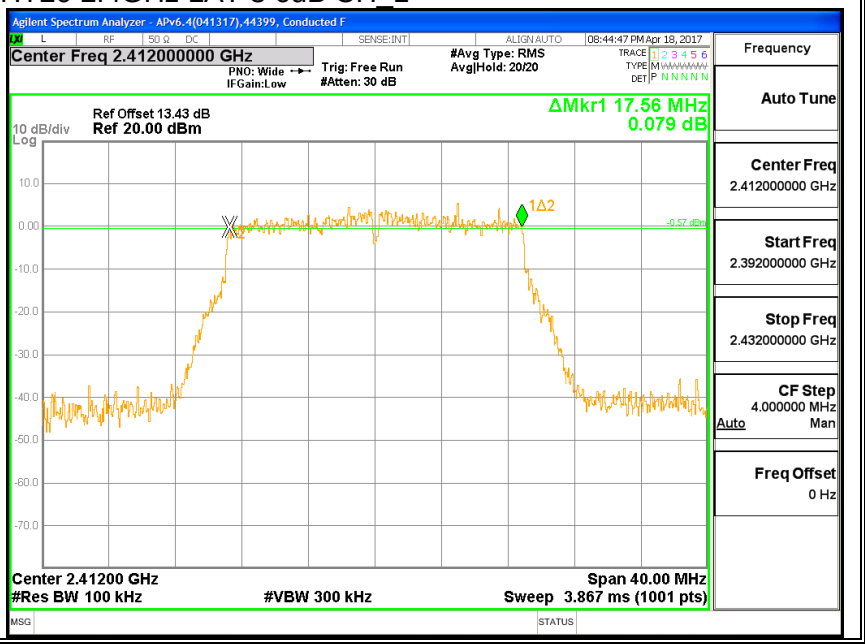
IC RSS-247 (5.2) (a)

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

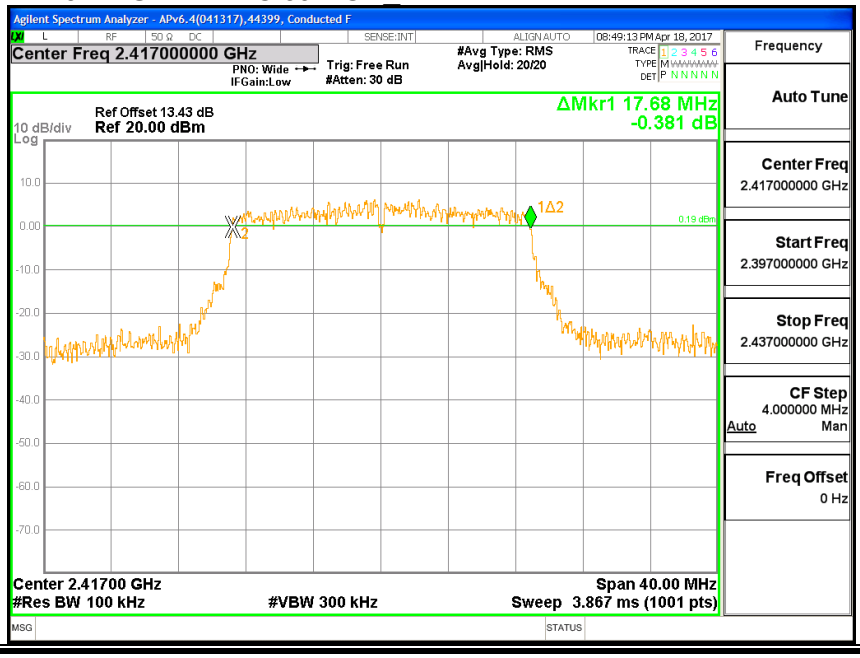
RESULTS

Channel	Frequency	6 dB BW LAT 3 (MHz)	Minimum Limit (MHz)
Low_1	2412	17.56	0.5
Low_2	2417	17.68	0.5
Middle_6	2437	17.36	0.5
High_9	2452	17.56	0.5
High_10	2457	15.56	0.5
High_11	2462	17.56	0.5
High_12	2467	17.40	0.5
High_13	2472	15.04	0.5

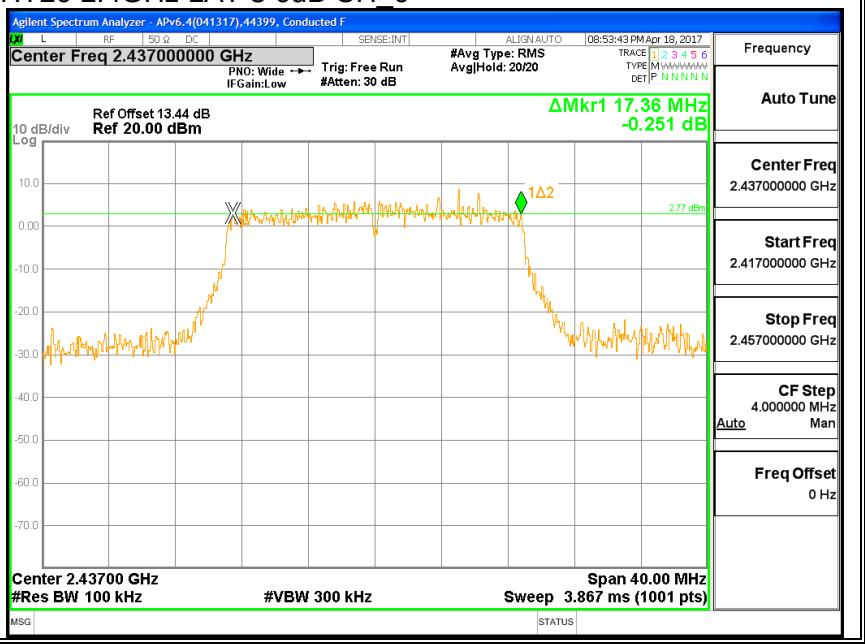
HT20 2.4GHz LAT 3 6dB CH_1



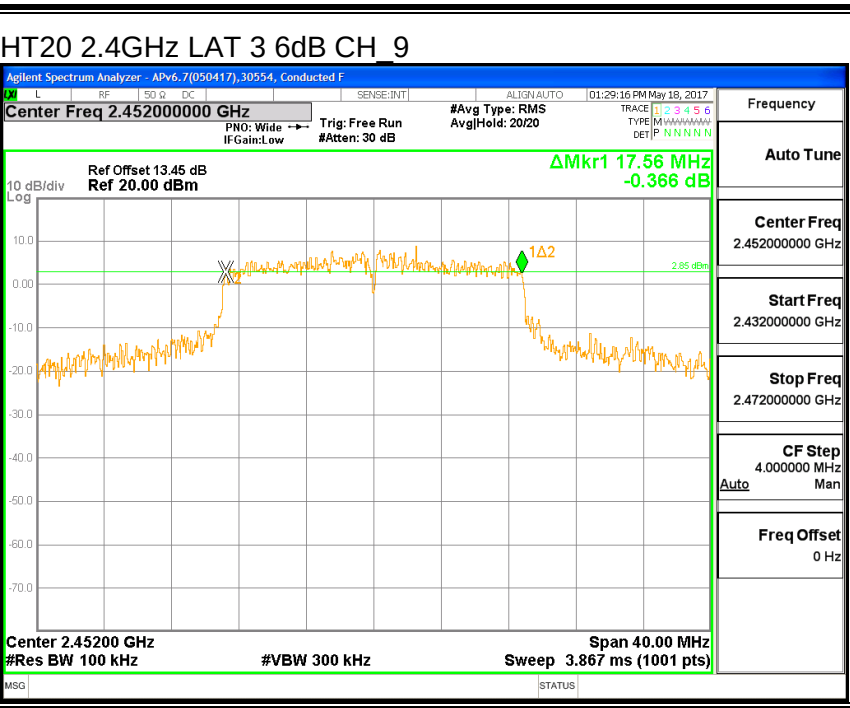
HT20 2.4GHz LAT 3 6dB CH_2



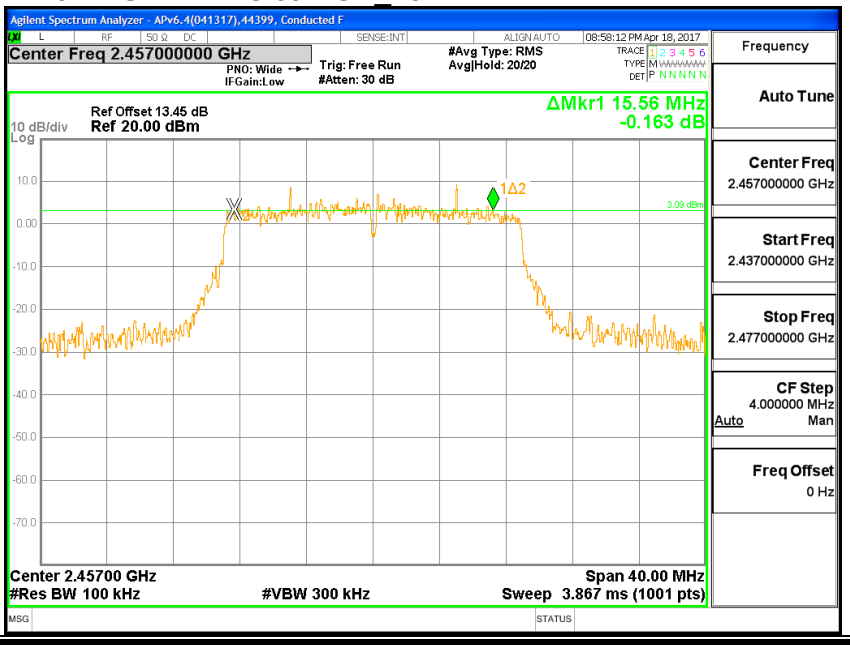
HT20 2.4GHz LAT 3 6dB CH_6



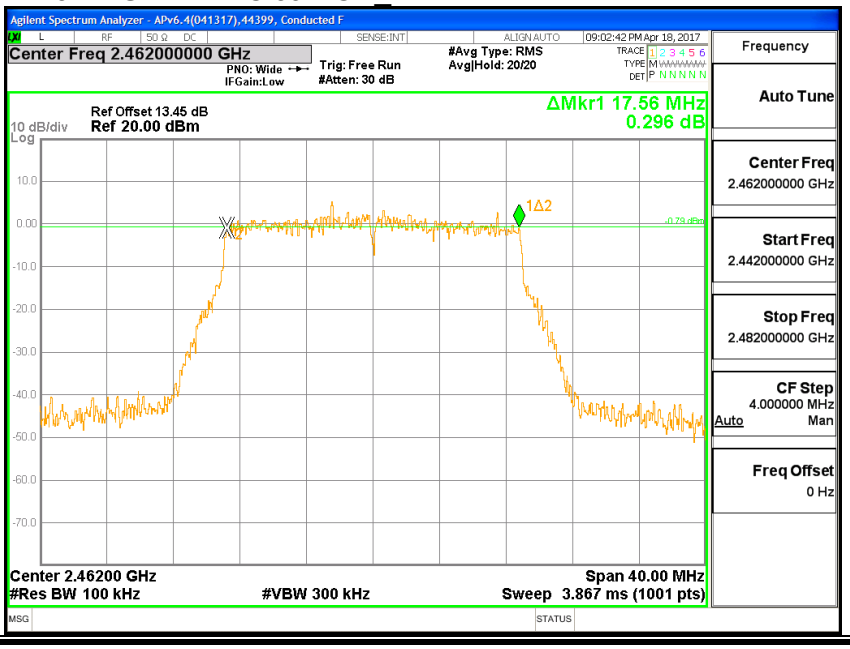
HT20 2.4GHz LAT 3 6dB CH_9



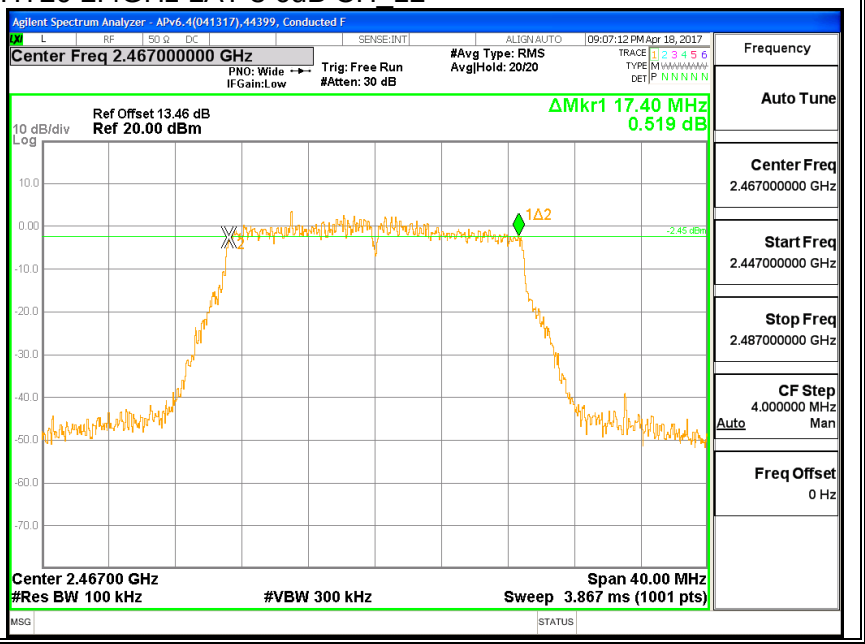
HT20 2.4GHz LAT 3 6dB CH_10



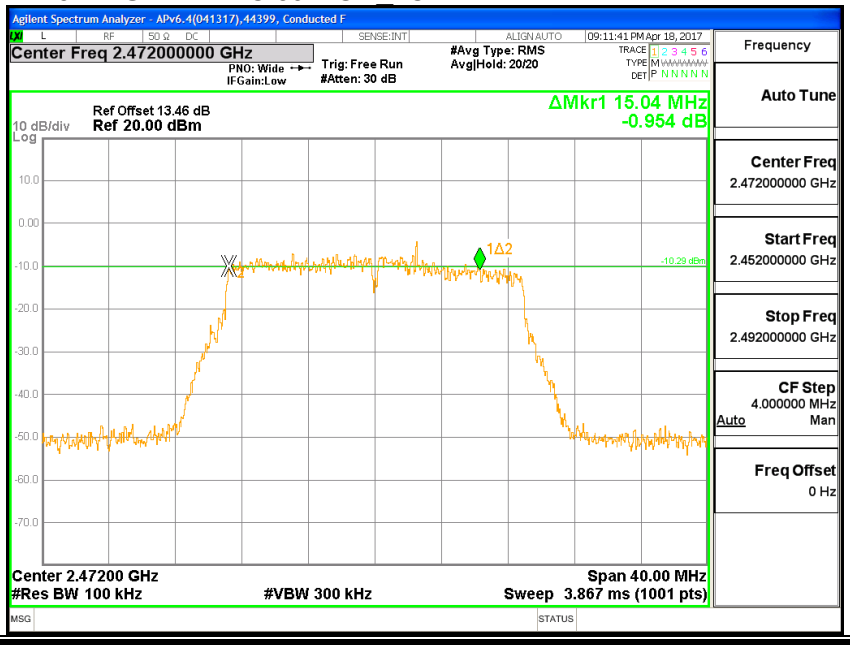
HT20 2.4GHz LAT 3 6dB CH_11



HT20 2.4GHz LAT 3 6dB CH_12



HT20 2.4GHz LAT 3 6dB CH_13



8.5.2. 99% BANDWIDTH

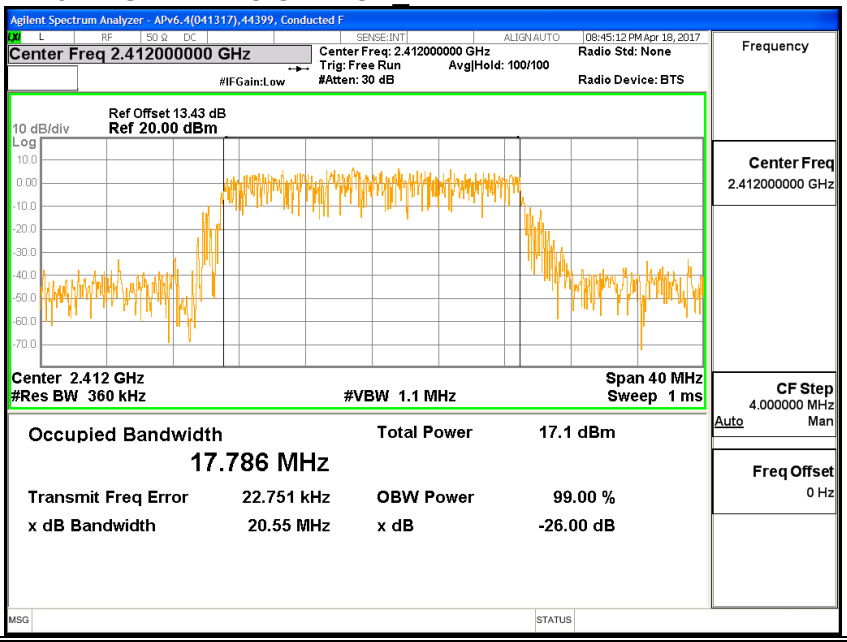
LIMITS

None; for reporting purposes only.

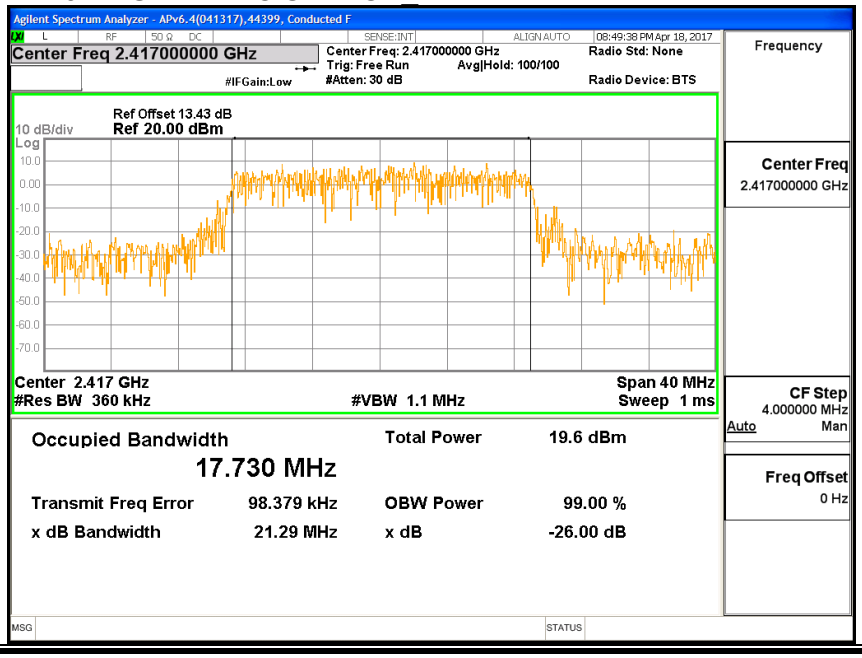
RESULTS

Channel	Frequency (MHz)	99% Bandwidth LAT 3 (MHz)
Low_1	2412	17.786
Low_2	2417	17.73
Middle_6	2437	17.811
High_9	2452	19.302
High_10	2457	17.796
High_11	2462	17.717
High_12	2467	17.741
High_13	2472	17.666

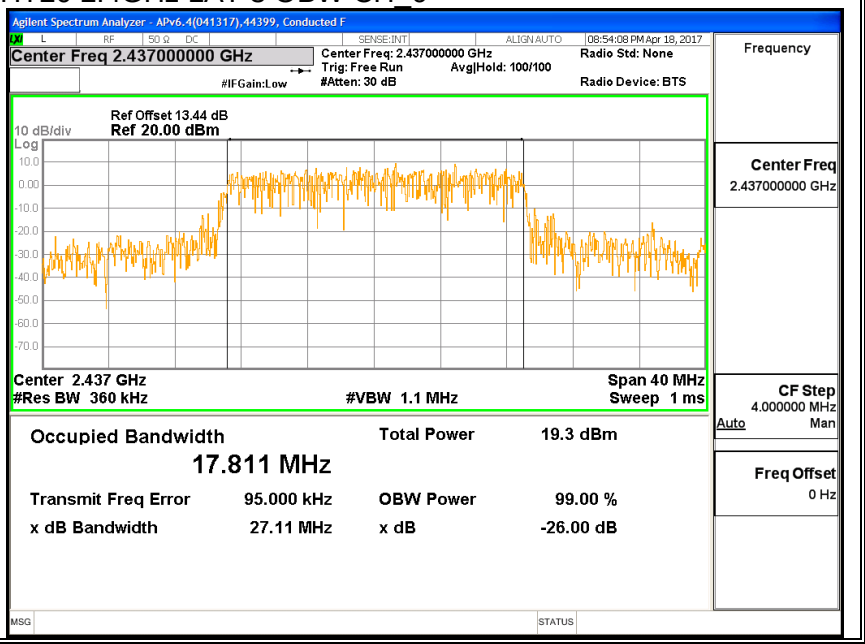
HT20 2.4GHz LAT 3 OBW CH_1



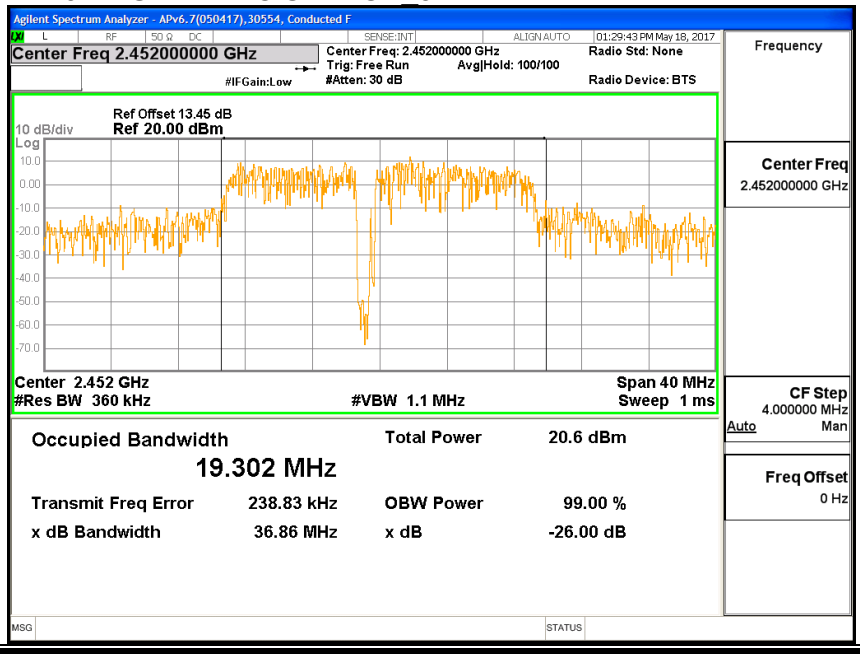
HT20 2.4GHz LAT 3 OBW CH_2



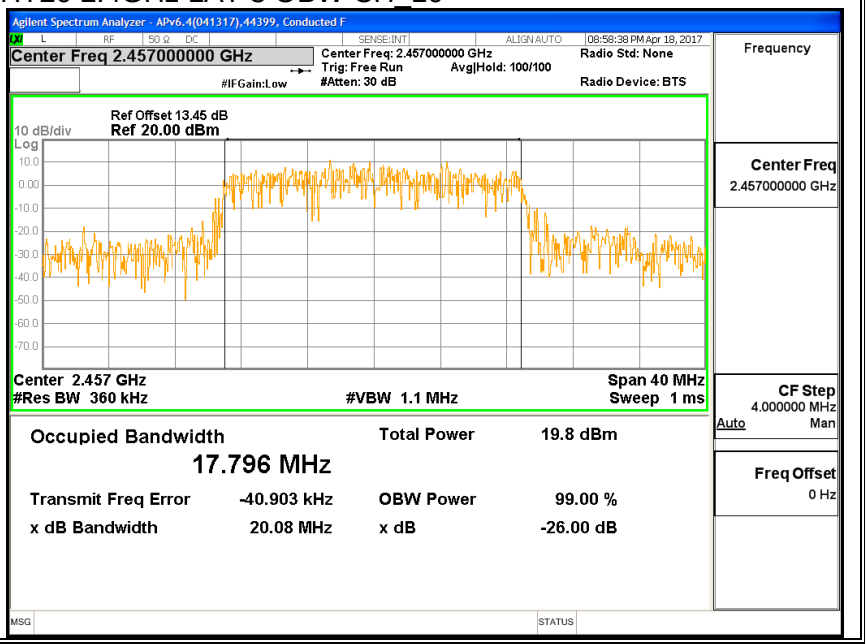
HT20 2.4GHz LAT 3 OBW CH_6



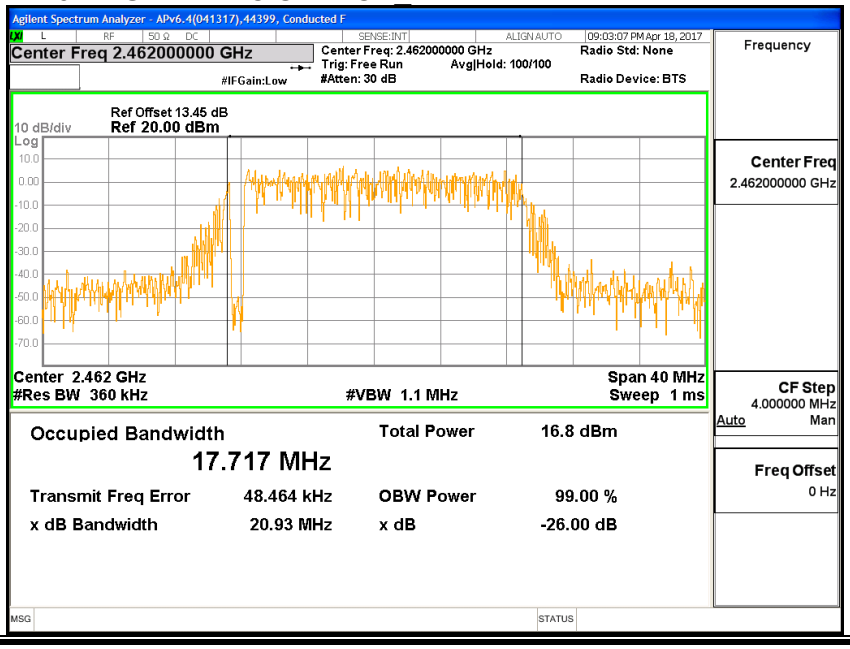
HT20 2.4GHz LAT 3 OBW CH_9



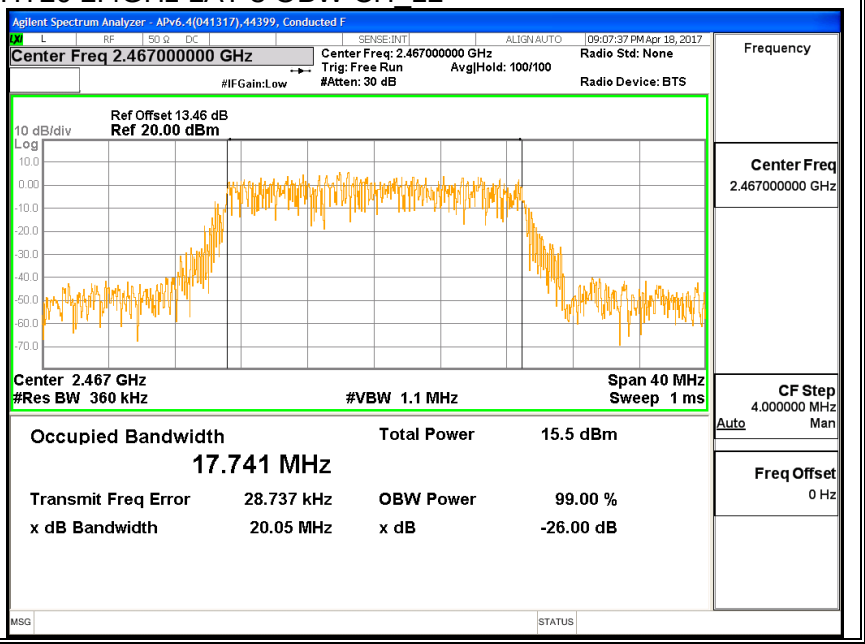
HT20 2.4GHz LAT 3 OBW CH_10



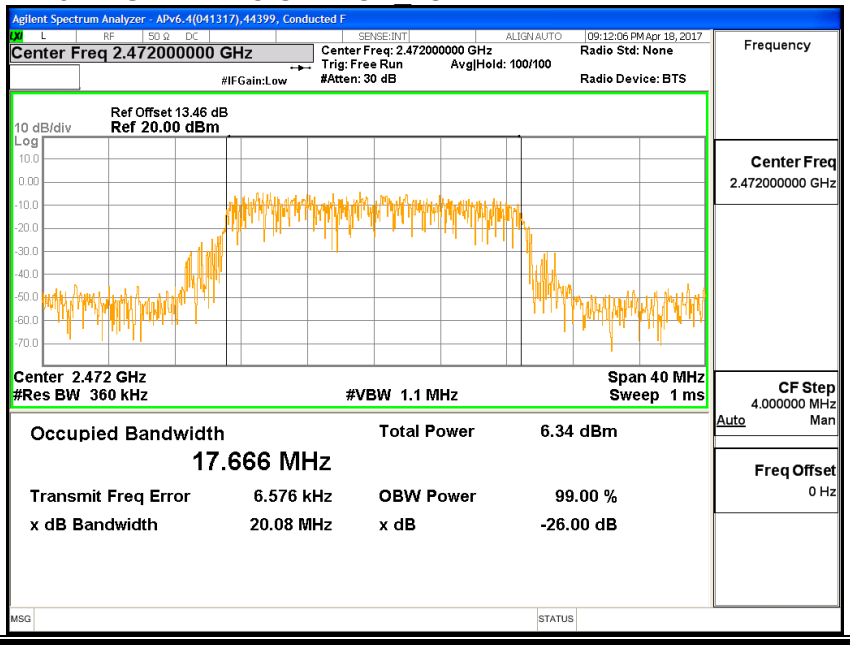
HT20 2.4GHz LAT 3 OBW CH_11



HT20 2.4GHz LAT 3 OBW CH_12



HT20 2.4GHz LAT 3 OBW CH_13



8.5.3. AVERAGE POWER

ID:	30554	Date:	7/13/17

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	Power LAT 3 (MHz)
Low_1	2412	16.45
Low_2	2417	18.97
Middle_6	2437	20.90
High_9	2452	20.75
High_10	2457	18.78
High_11	2462	16.46
High_12	2467	13.82
High_13	2472	5.86

8.5.4. OUTPUT POWER

ID:	30554	Date:	7/13/17

LIMITS

FCC §15.247

IC RSS-247 (5.4) (d)

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_1	2412	-1.30	30.00	30	36	30.00
Low_2	2417	-1.30	30.00	30	36	30.00
Mid	2437	-1.30	30.00	30	36	30.00
High_9	2452	-1.30	30.00	30	36	30.00
High_10	2457	-1.30	30.00	30	36	30.00
High_11	2462	-1.30	30.00	30	36	30.00
High_12	2467	-1.30	30.00	30	36	30.00
High_13	2472	-1.30	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_1	2412	22.71	22.71	30.00	-7.29
Low_2	2417	25.34	25.34	30.00	-4.66
Mid	2437	27.53	27.53	30.00	-2.47
High_9	2452	27.12	27.12	30.00	-2.88
High_10	2457	25.48	25.48	30.00	-4.52
High_11	2462	23.08	23.08	30.00	-6.92
High_12	2467	20.17	20.17	30.00	-9.83
High_13	2472	12.43	12.43	30.00	-17.57

8.5.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247

IC RSS-247 (5.2) (b)

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.

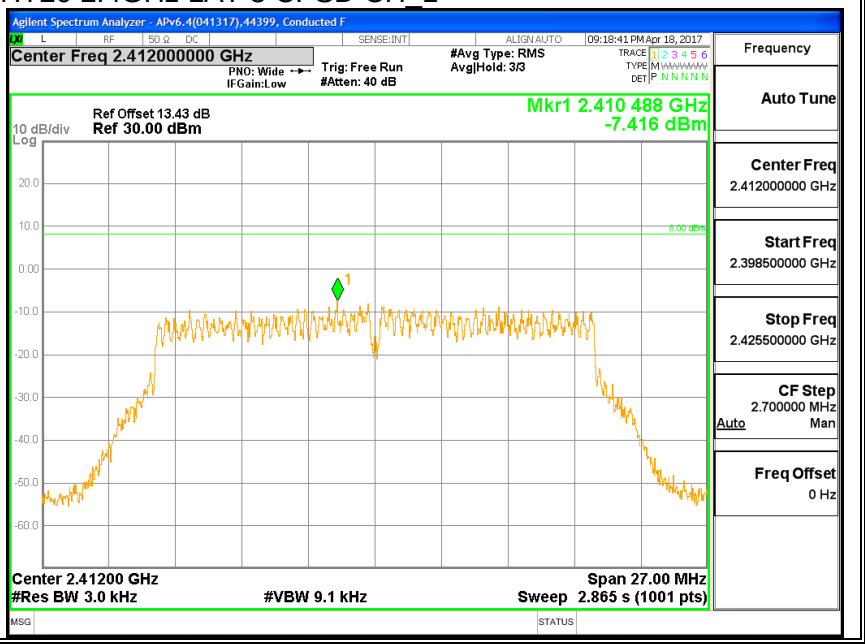
RESULTS

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

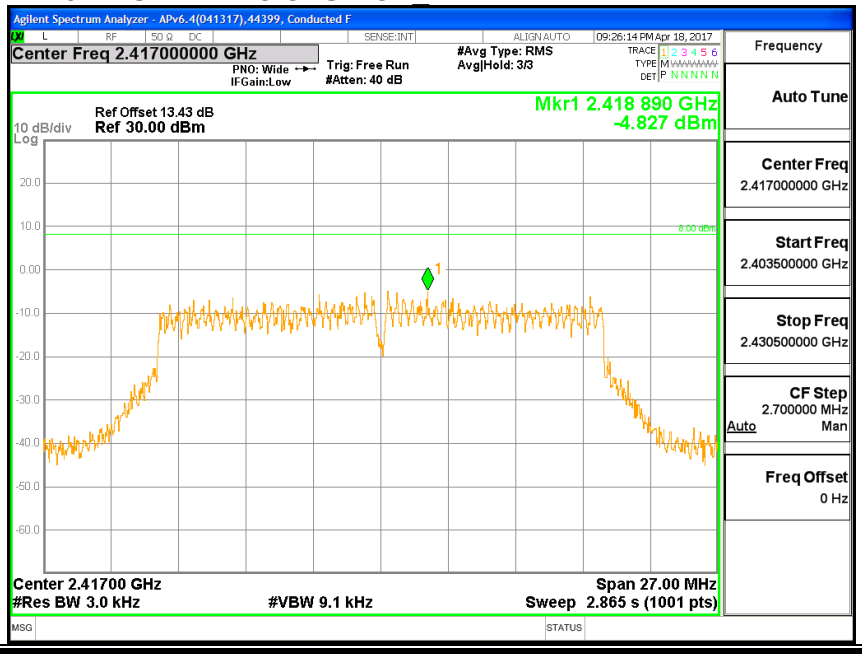
PSD Results

Channel	Frequency (MHz)	Meas PSD (dBm/3KHz)	Total Corr'd (dBm/3KHz)	Limit (dBm/3KHz)	Margin (dB)
Low_1	2412	-7.42	-7.42	8.0	-15.4
Low_2	2417	-4.83	-4.83	8.0	-12.8
Mid	2437	-5.65	-5.65	8.0	-13.6
High_9	2452	-4.55	-4.55	8.0	-12.6
High_10	2457	-4.79	-4.79	8.0	-12.8
High_11	2462	-9.00	-9.00	8.0	-17.0
High_12	2467	-9.76	-9.76	8.0	-17.8
High_13	2472	-18.30	-18.30	8.0	-26.3

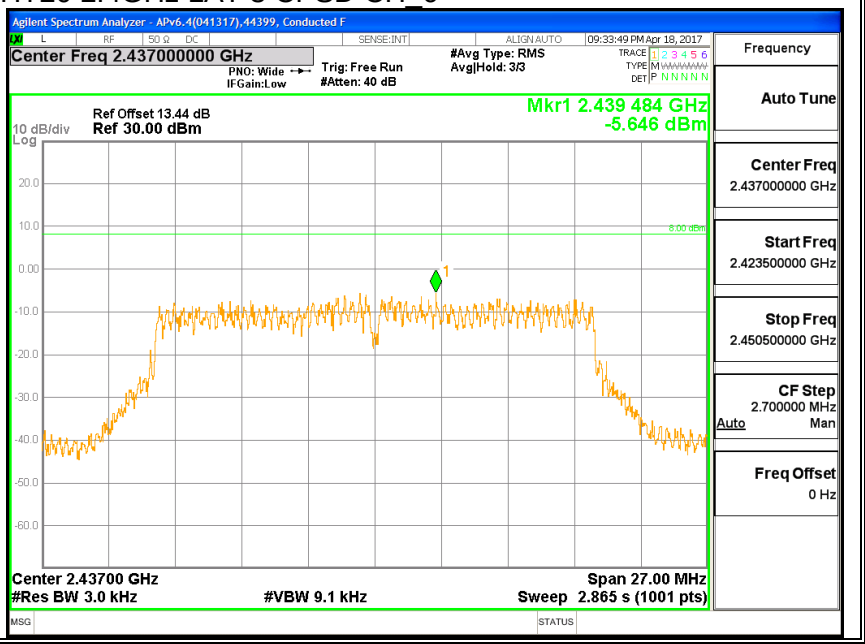
HT20 2.4GHz LAT 3 CPSD CH_1



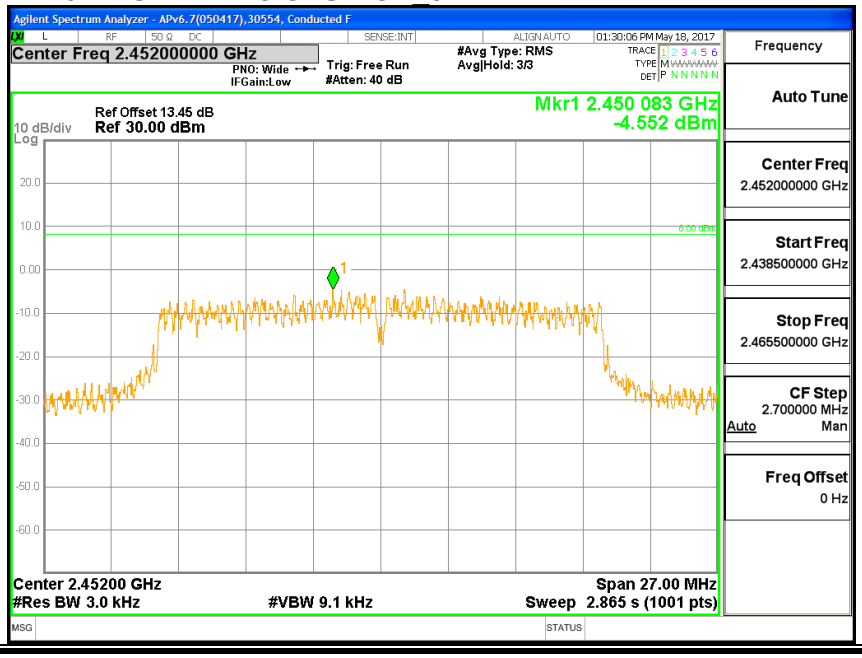
HT20 2.4GHz LAT 3 CPSD CH_2



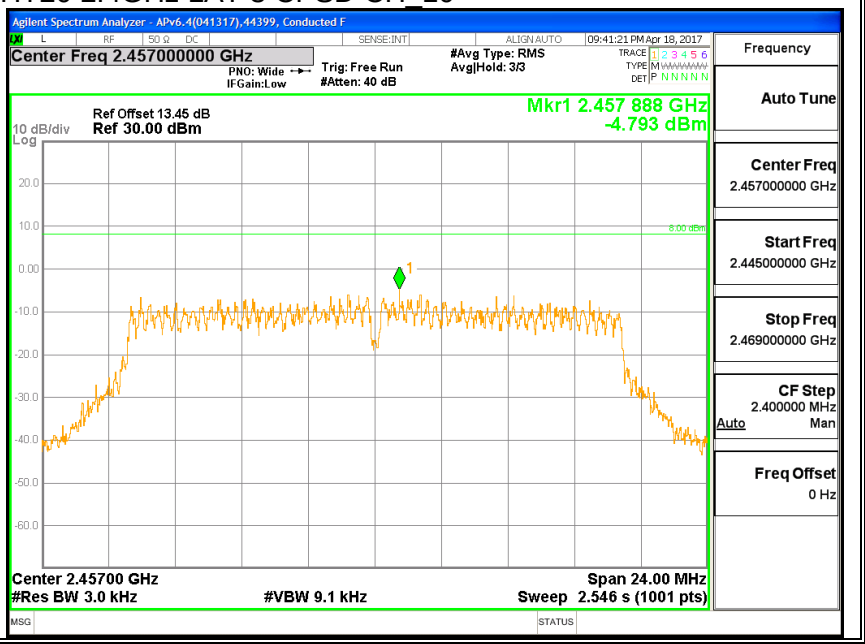
HT20 2.4GHz LAT 3 CPSD CH_6



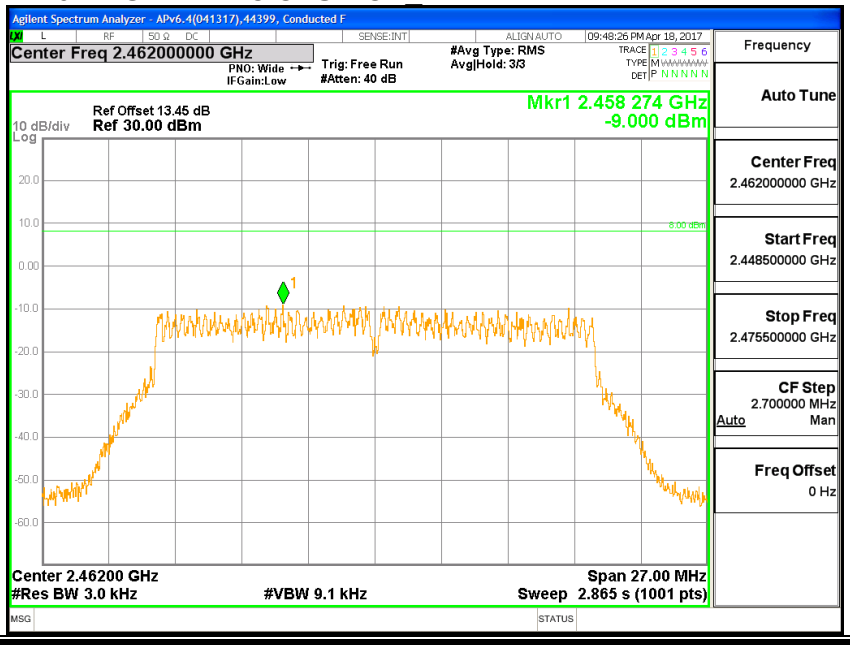
HT20 2.4GHz LAT 3 CPSD CH_9



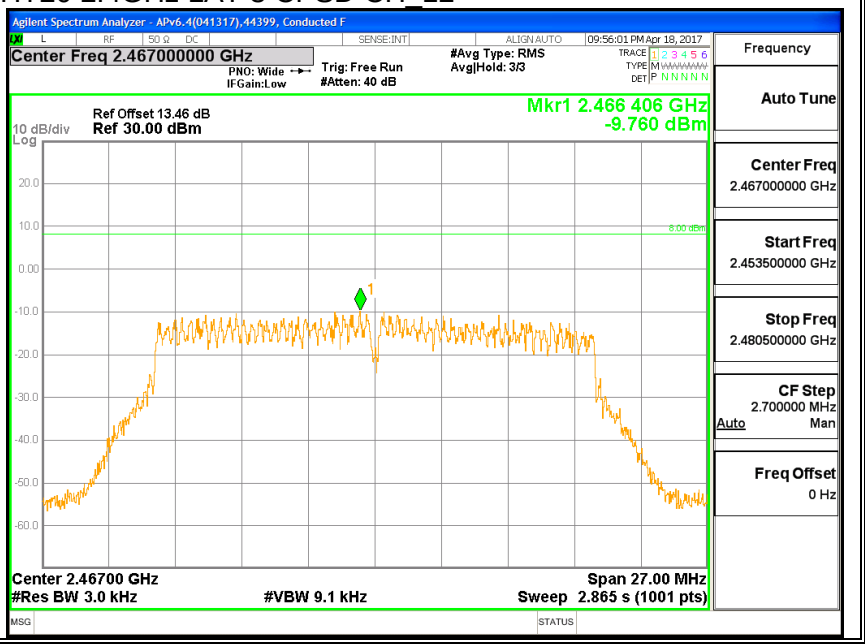
HT20 2.4GHz LAT 3 CPSD CH_10



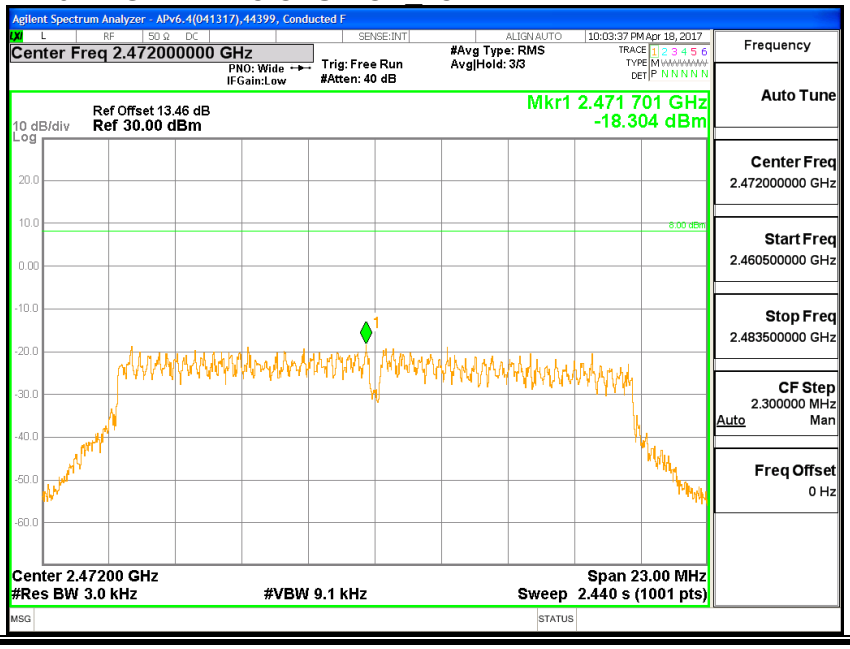
HT20 2.4GHz LAT 3 CPSD CH_11



HT20 2.4GHz LAT 3 CPSD CH_12



HT20 2.4GHz LAT 3 CPSD CH_13



8.5.6. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

LIMITS

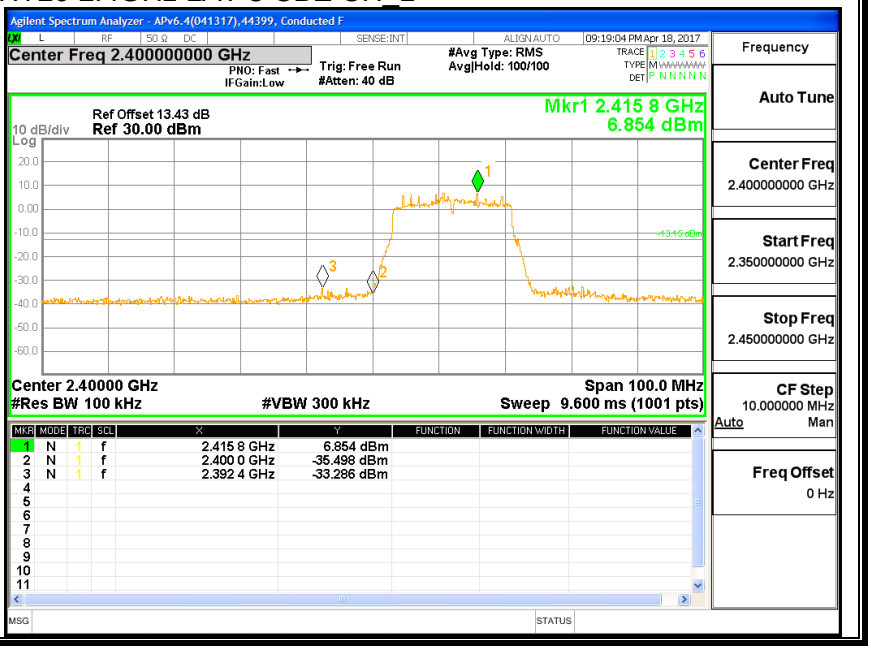
FCC §15.247 (d)

IC RSS-247 (5.5)

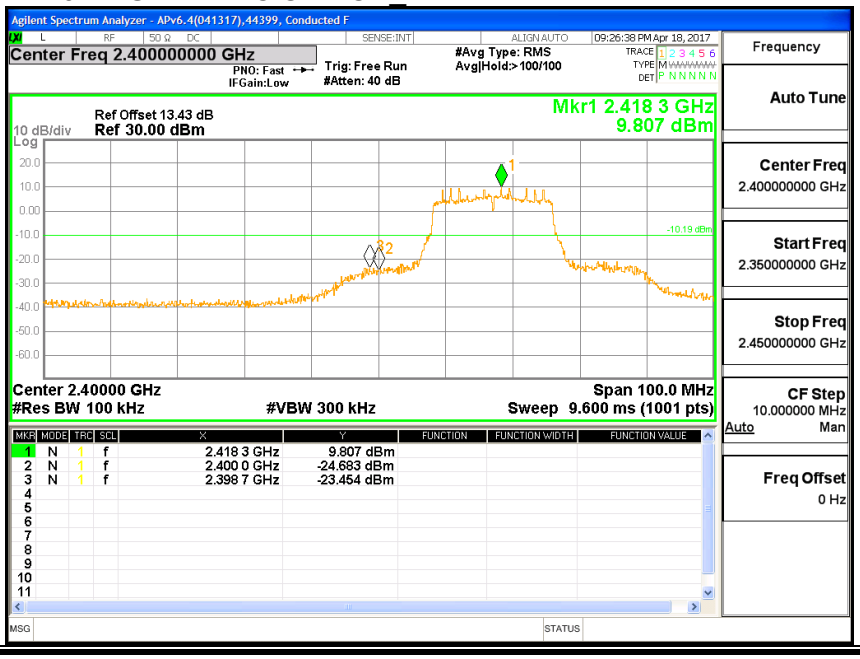
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the 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.

CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

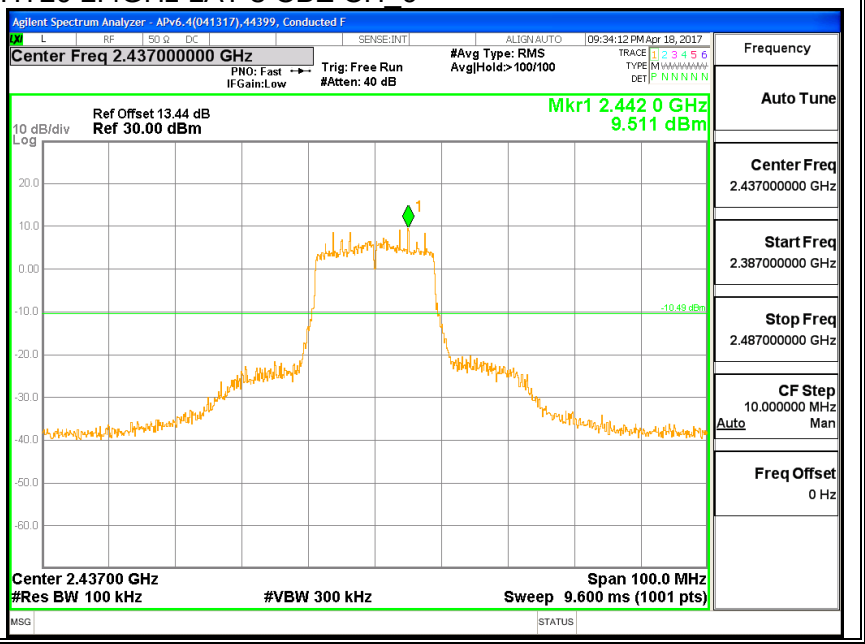
HT20 2.4GHz LAT 3 CBE CH_1



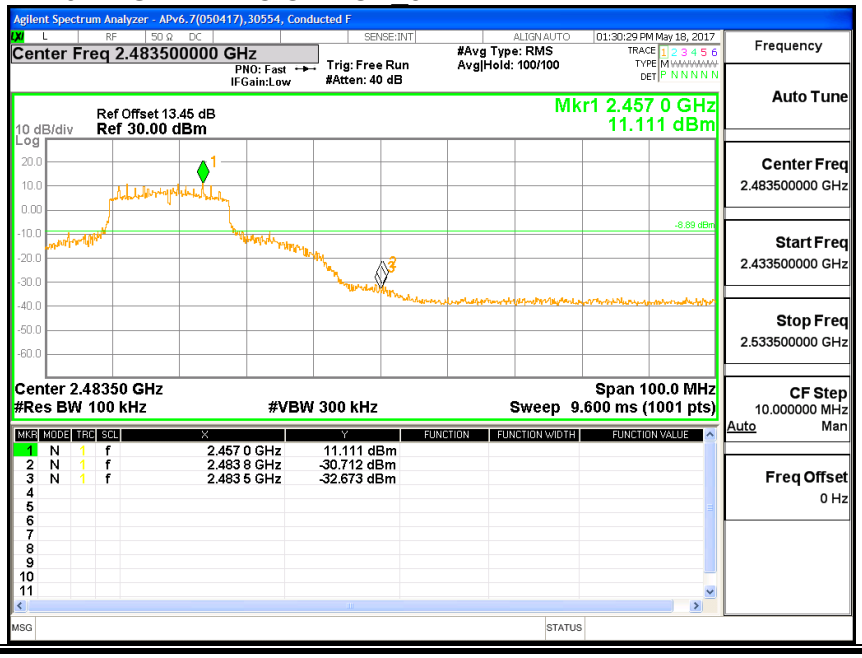
HT20 2.4GHz LAT 3 CBE CH_2



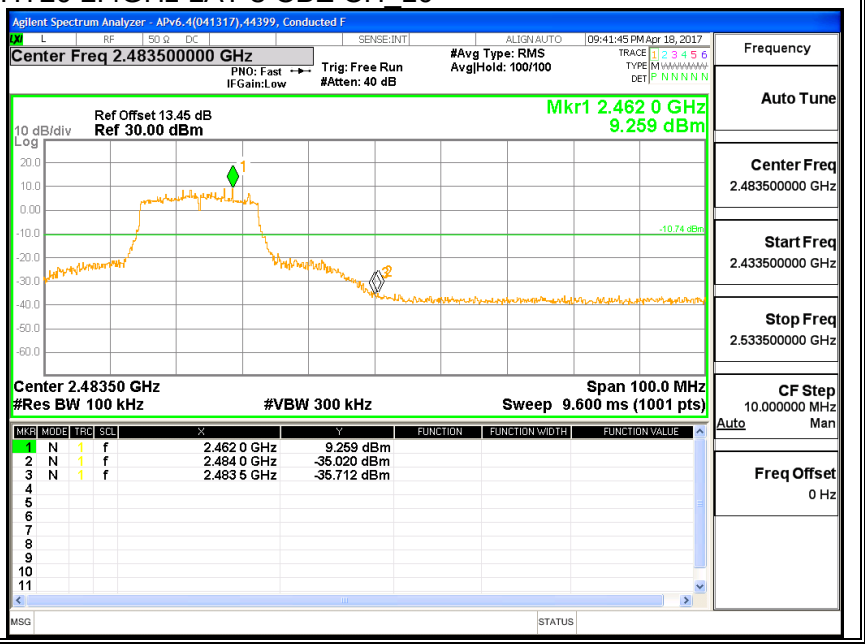
HT20 2.4GHz LAT 3 CBE CH_6



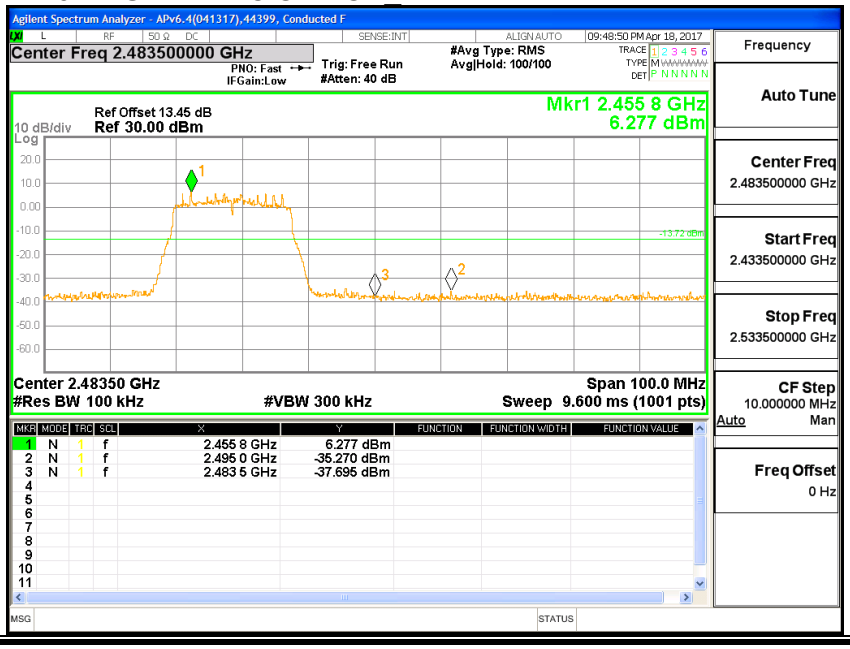
HT20 2.4GHz LAT 3 CBE CH_9



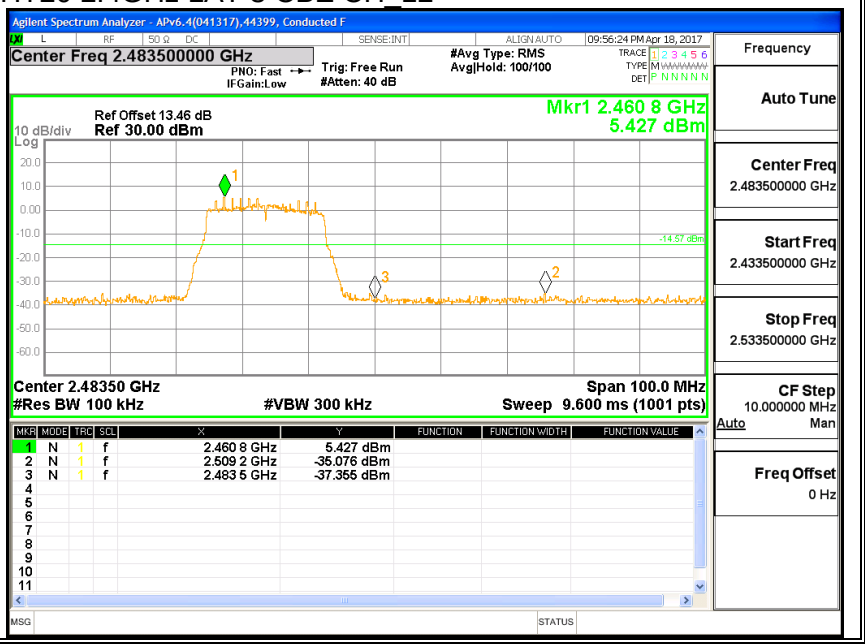
HT20 2.4GHz LAT 3 CBE CH_10



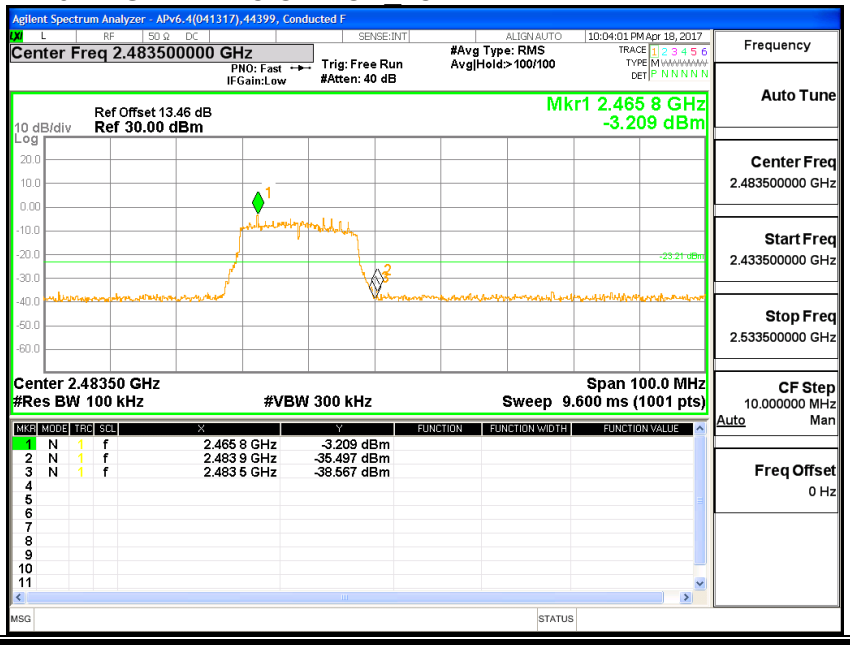
HT20 2.4GHz LAT 3 CBE CH_11



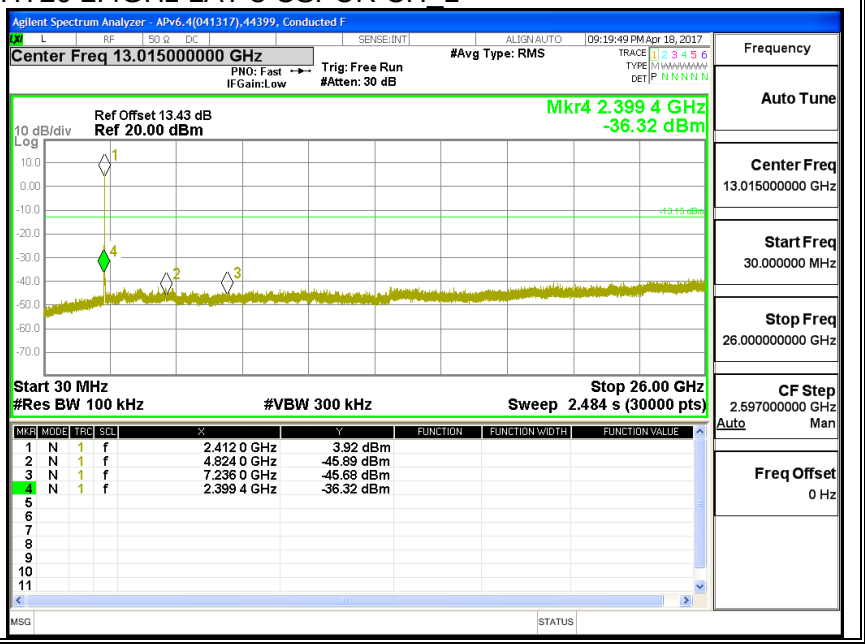
HT20 2.4GHz LAT 3 CBE CH_12



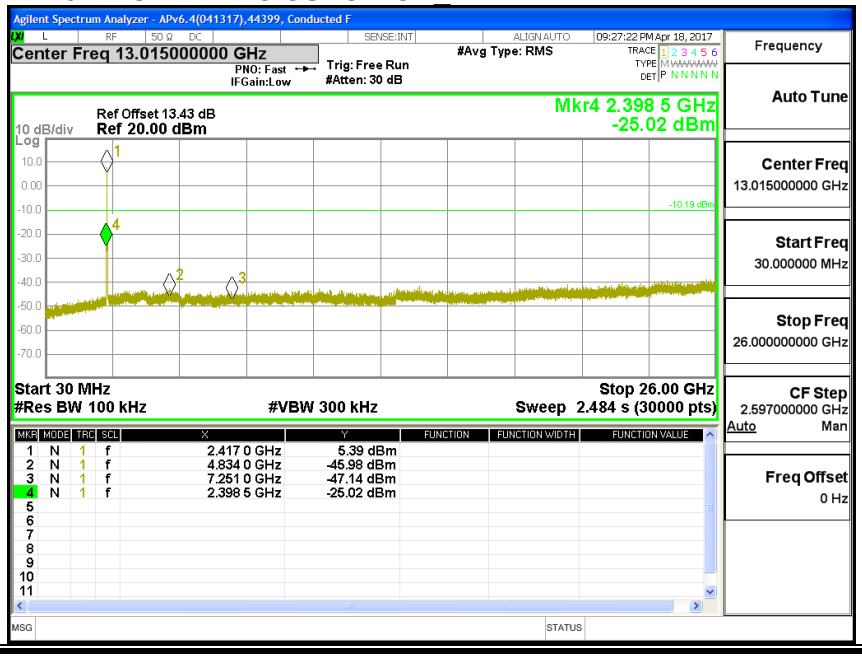
HT20 2.4GHz LAT 3 CBE CH_13



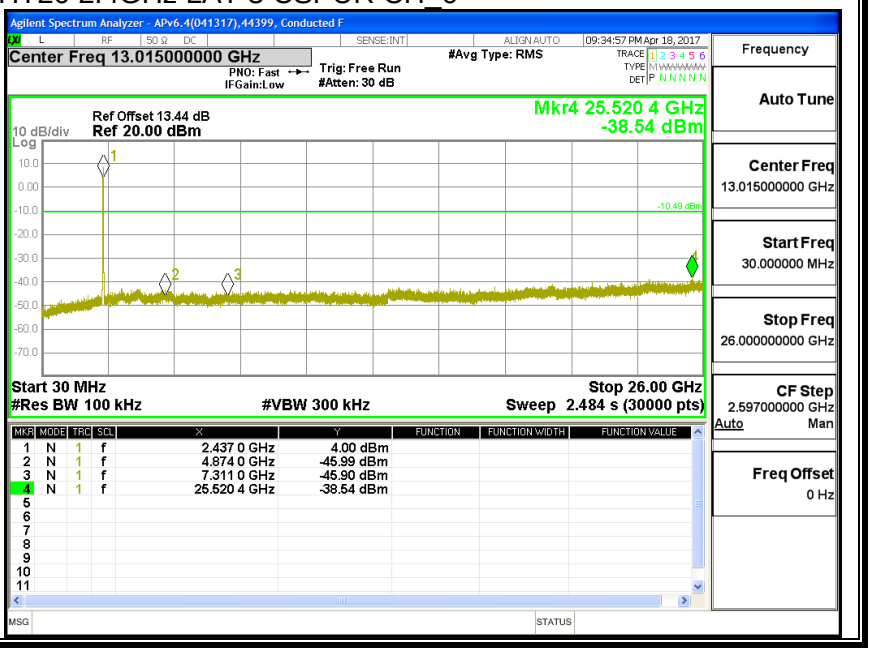
HT20 2.4GHz LAT 3 CSPUR CH_1



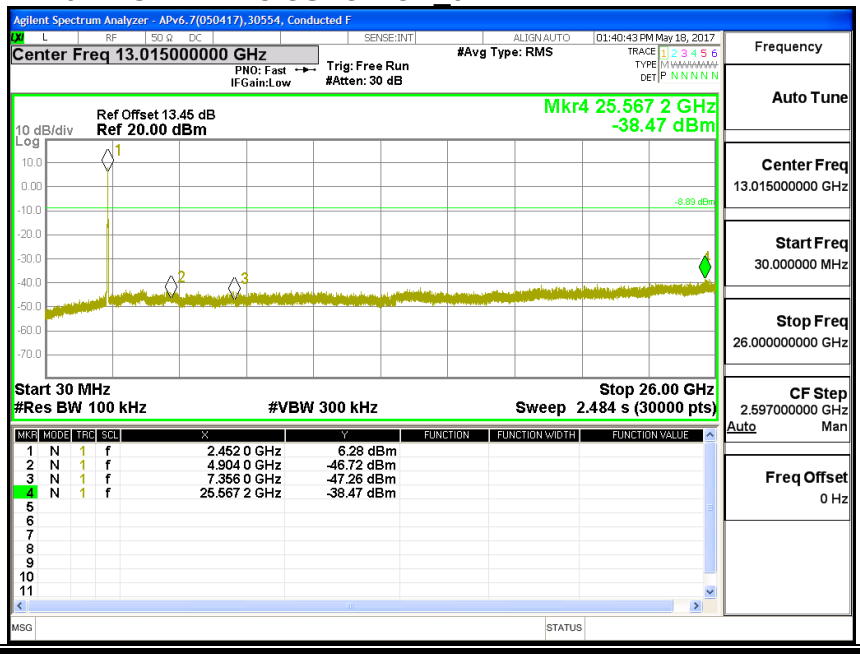
HT20 2.4GHz LAT 3 CSPUR CH_2



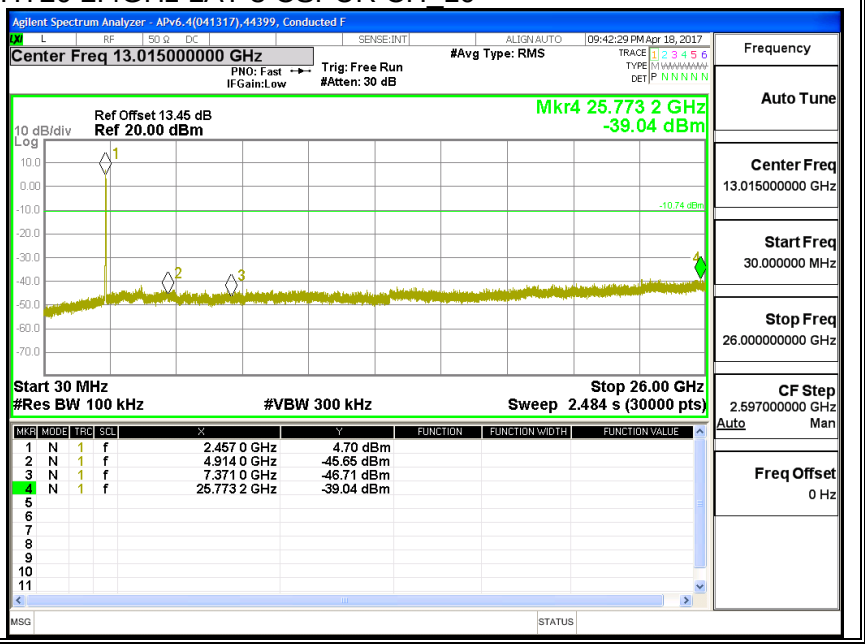
HT20 2.4GHz LAT 3 CSPUR CH_6



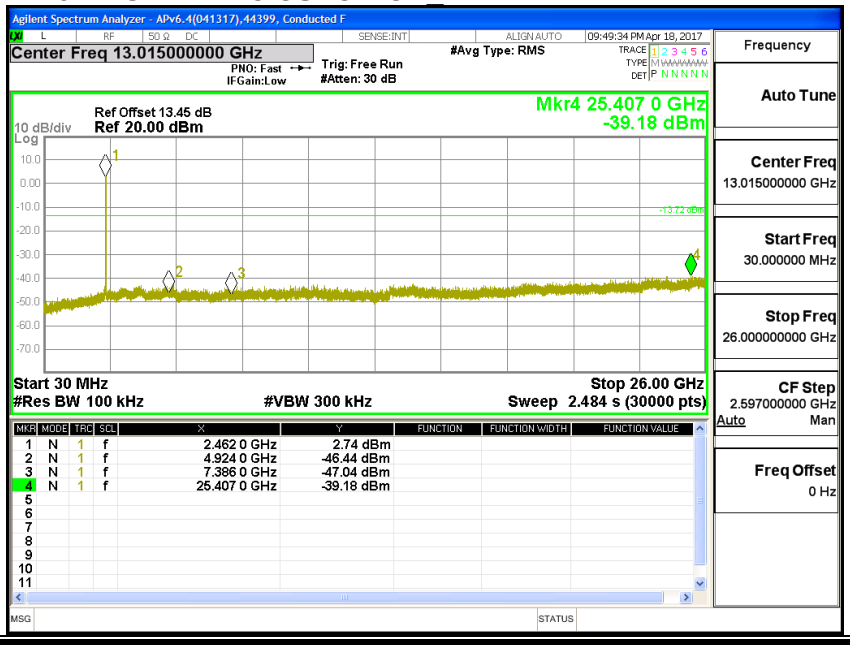
HT20 2.4GHz LAT 3 CSPUR CH_9



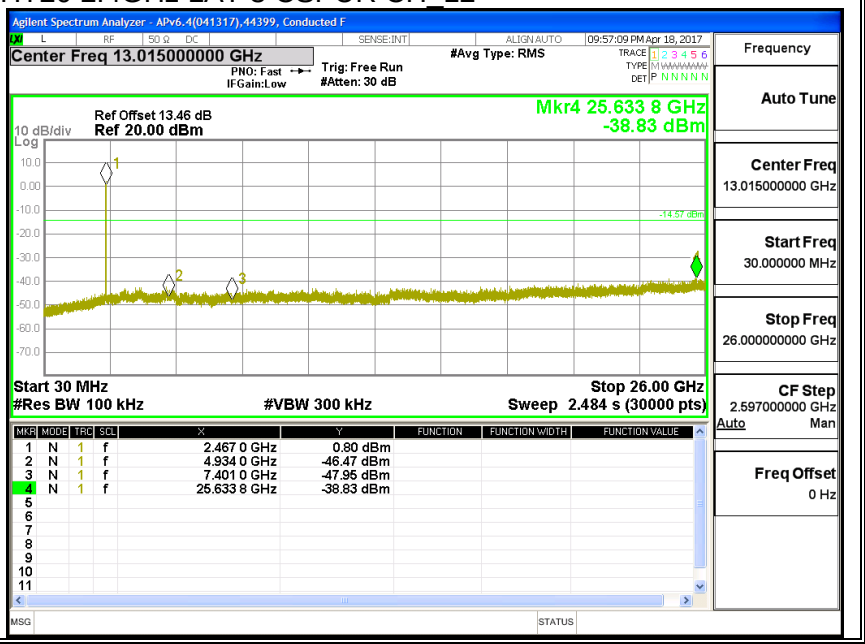
HT20 2.4GHz LAT 3 CSPUR CH_10



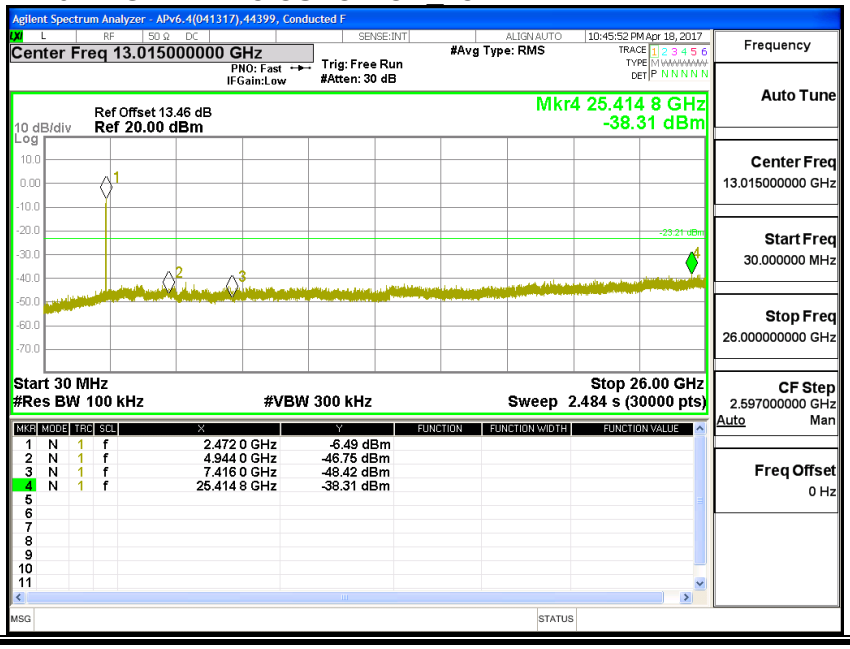
HT20 2.4GHz LAT 3 CSPUR CH_11



HT20 2.4GHz LAT 3 CSPUR CH_12



HT20 2.4GHz LAT 3 CSPUR CH_13



8.6. 11n HT20 2TX CDD MIMO MODE IN THE 2.4GHz BAND

8.6.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

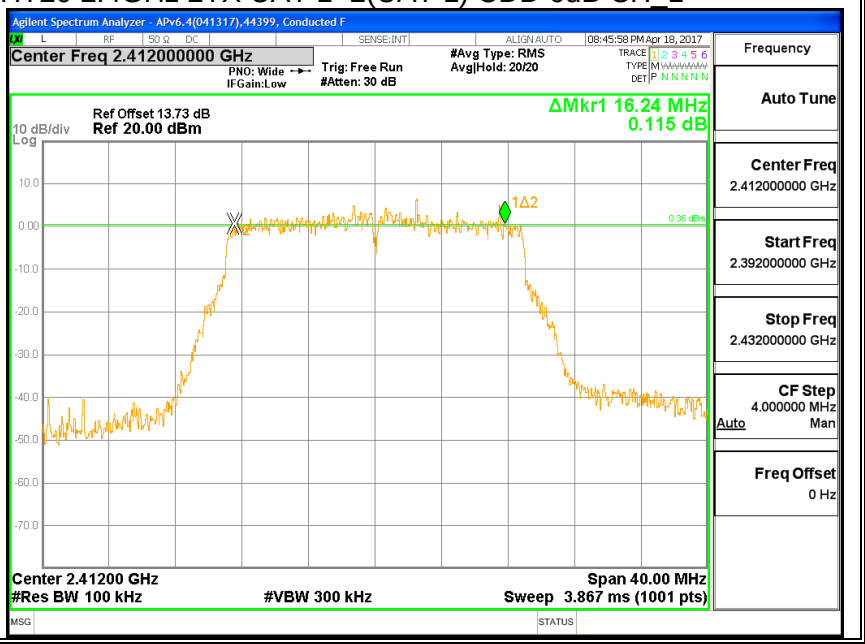
IC RSS-247 (5.2) (a)

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

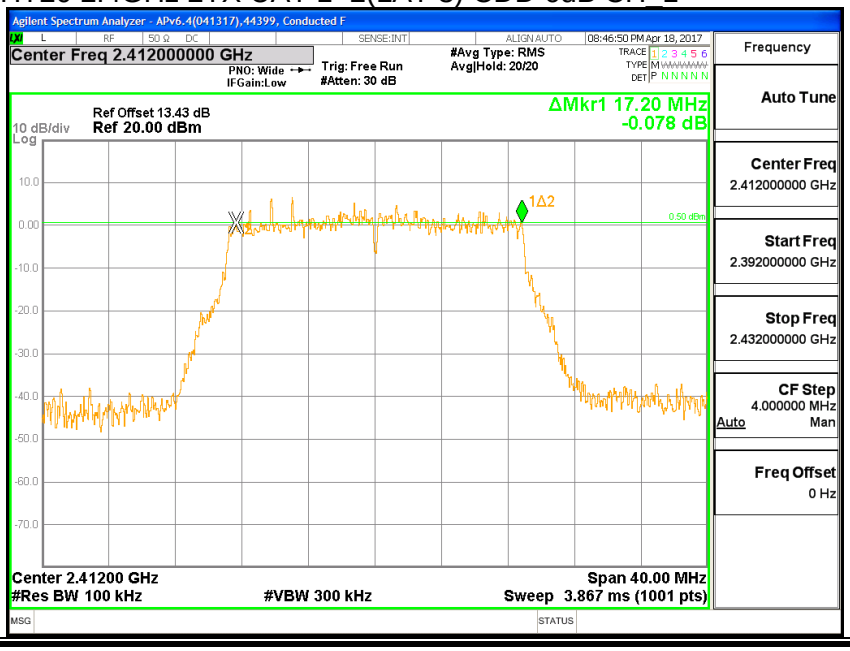
RESULTS

Channel	Frequency	6 dB BW UAT 1 (MHz)	6 dB BW LAT 3 (MHz)	Minimum Limit (MHz)
Low_1	2412	16.24	17.20	0.5
Low_2	2417	17.16	17.60	0.5
Middle_6	2437	17.68	16.32	0.5
High_9	2452	16.64	17.60	0.5
High_10	2457	17.28	17.72	0.5
High_11	2462	16.36	17.12	0.5
High_12	2467	17.76	17.68	0.5
High_13	2472	17.64	16.36	0.5

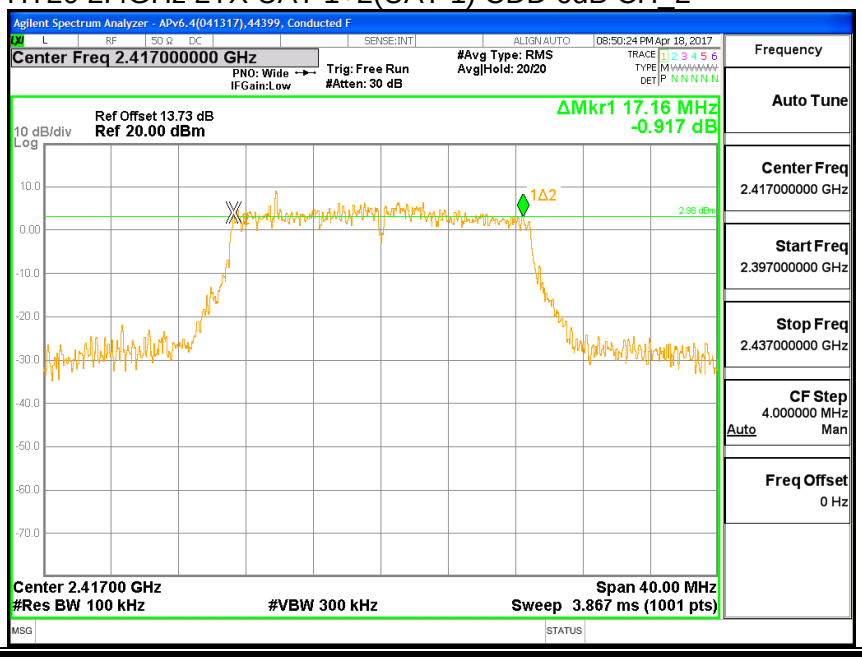
HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD 6dB CH_1



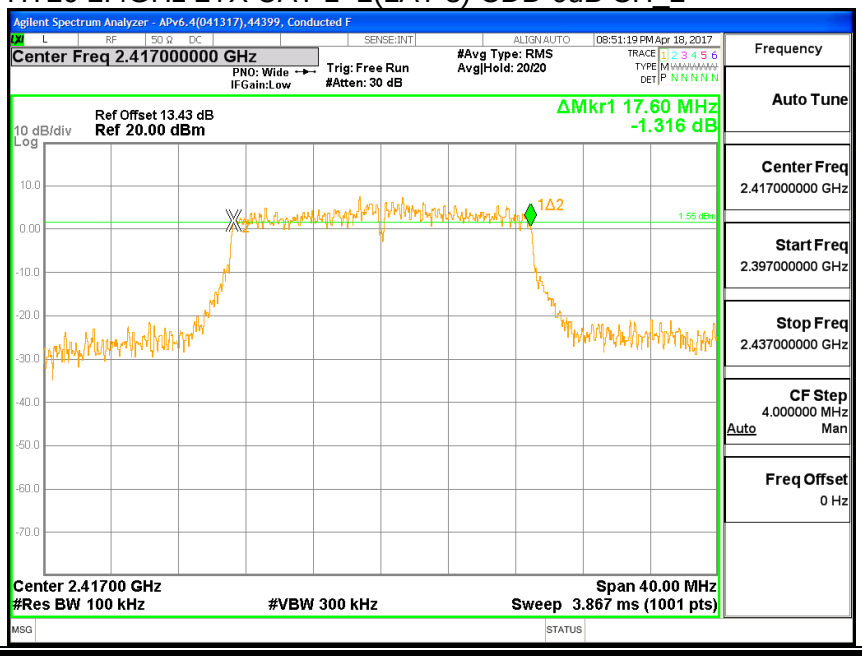
HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD 6dB CH_1



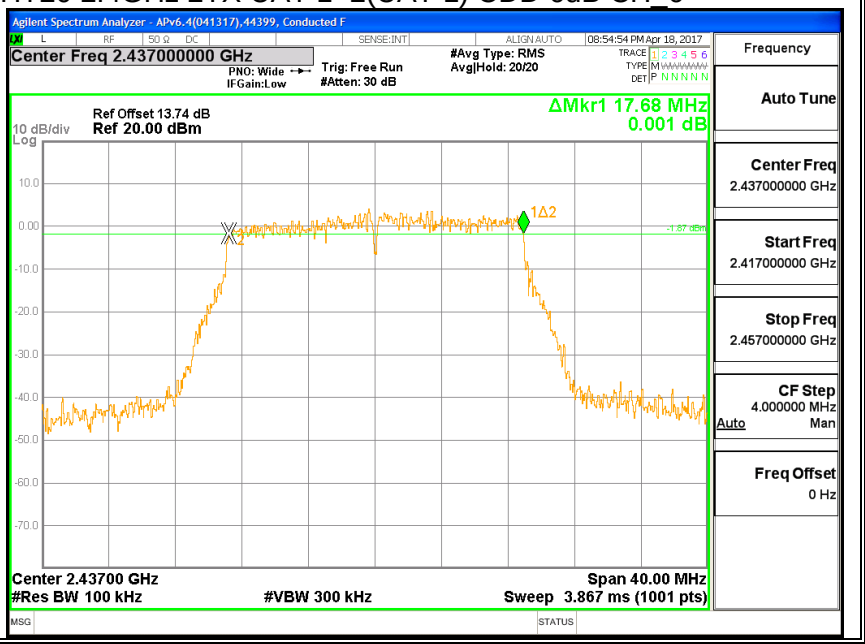
HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD 6dB CH_2



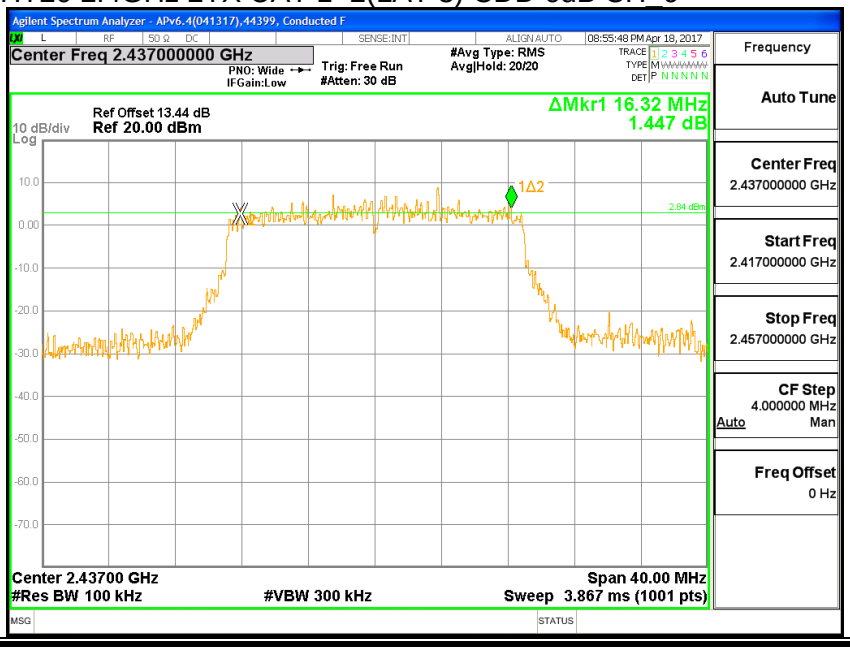
HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD 6dB CH_2



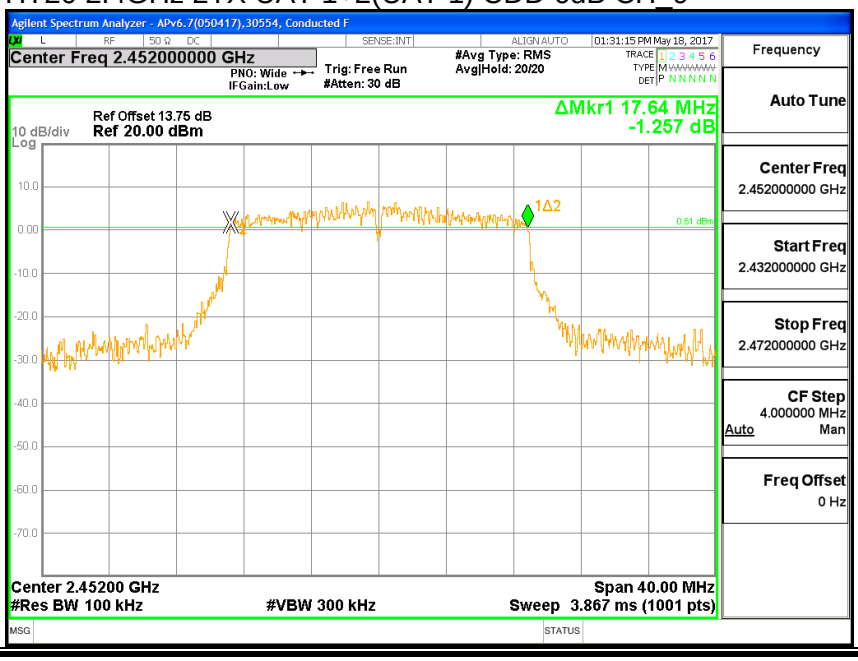
HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD 6dB CH_6



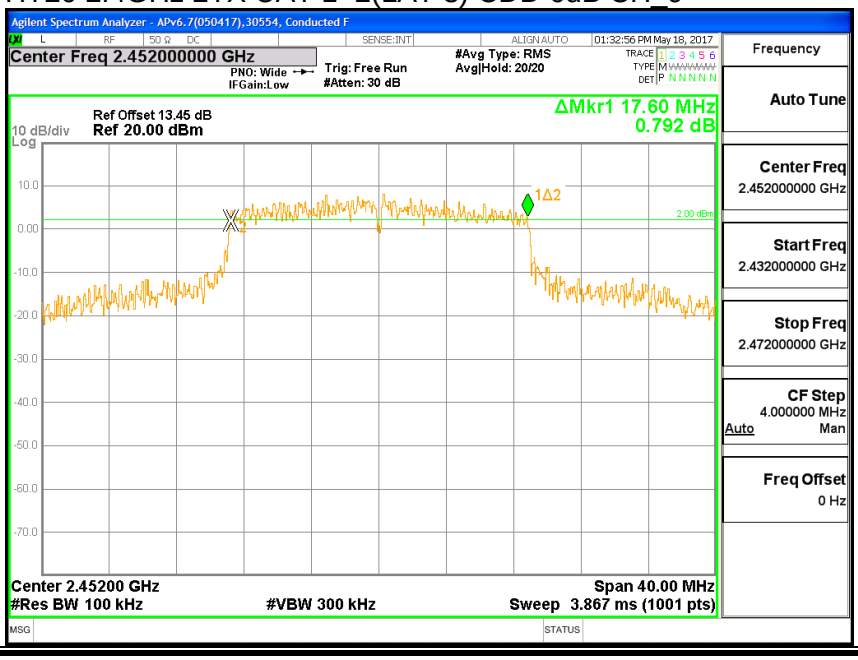
HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD 6dB CH_6



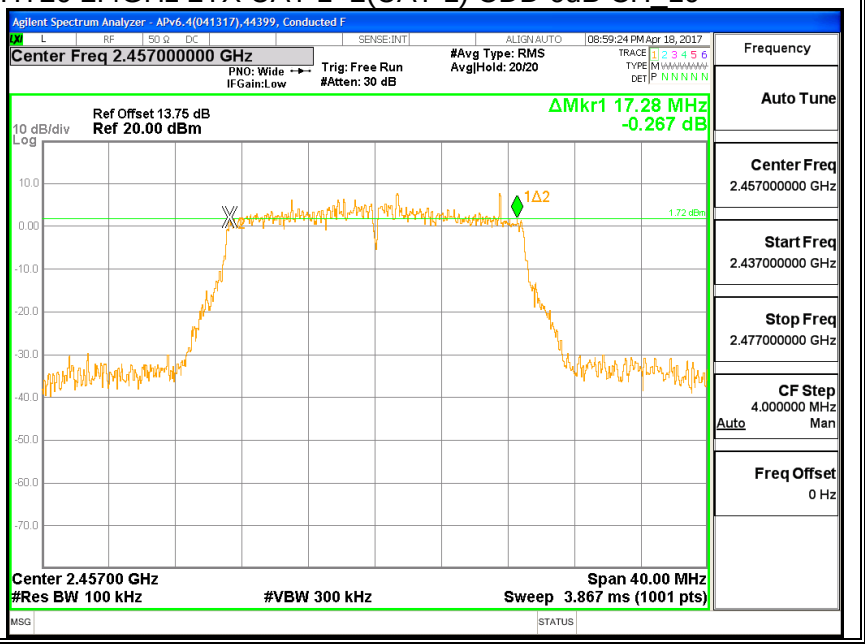
HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD 6dB CH_9



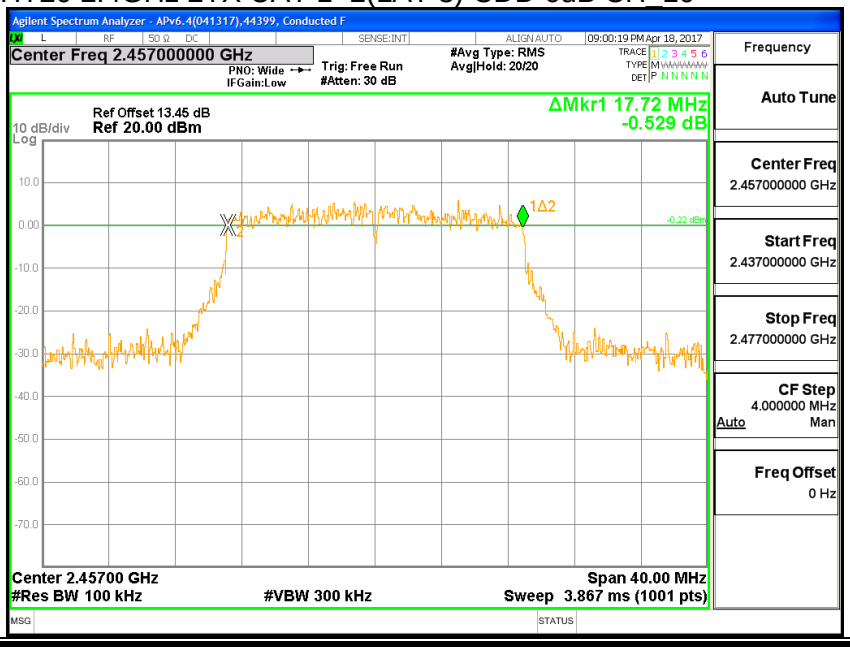
HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD 6dB CH_9



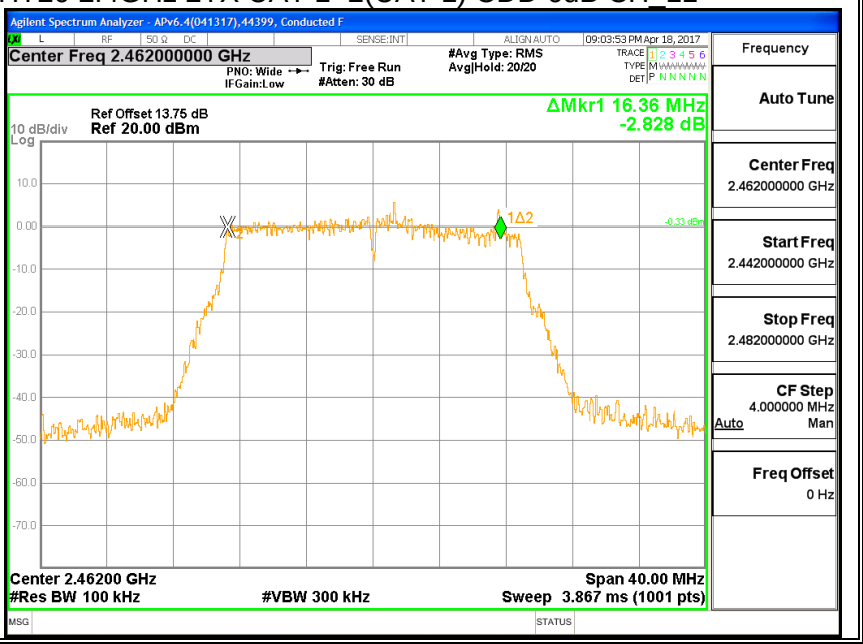
HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD 6dB CH_10



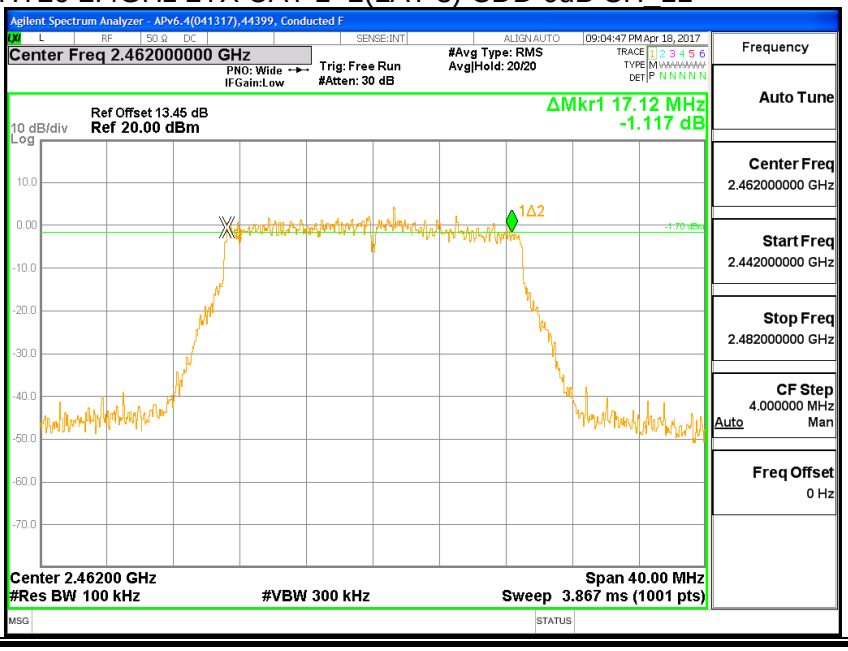
HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD 6dB CH_10



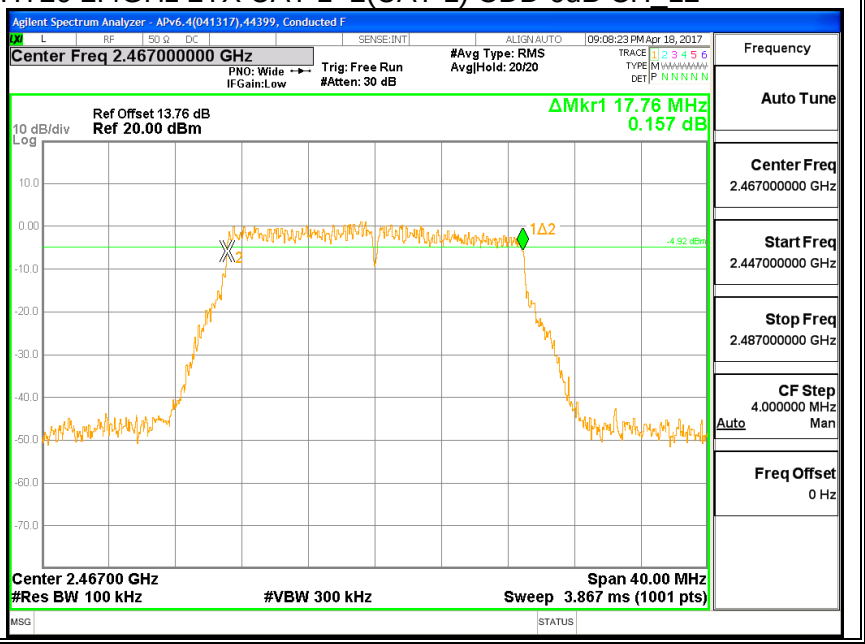
HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD 6dB CH_11



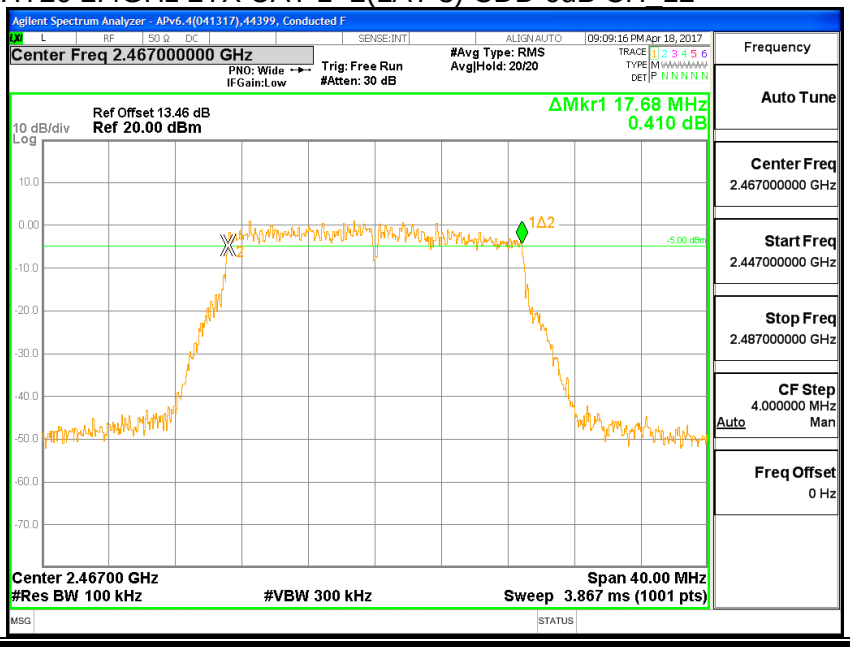
HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD 6dB CH_11



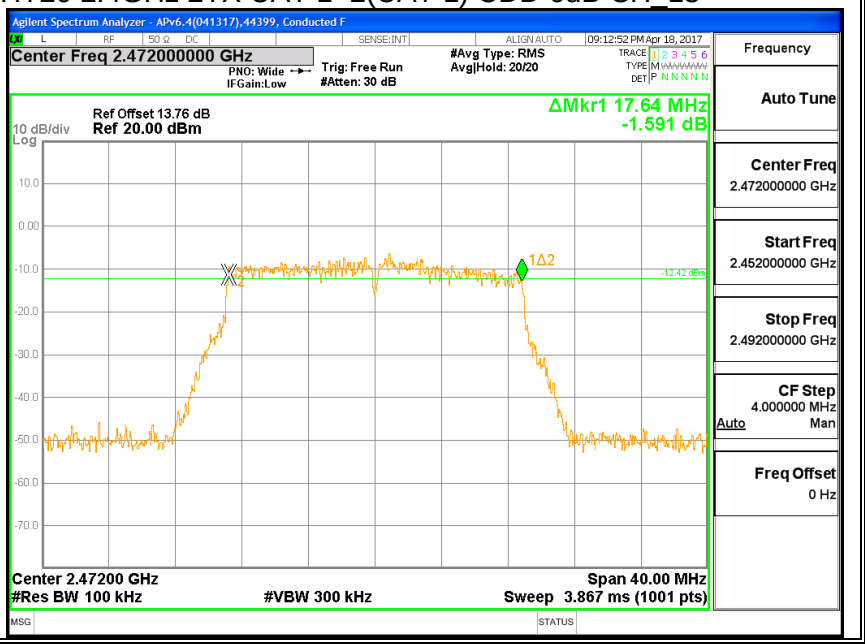
HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD 6dB CH_12



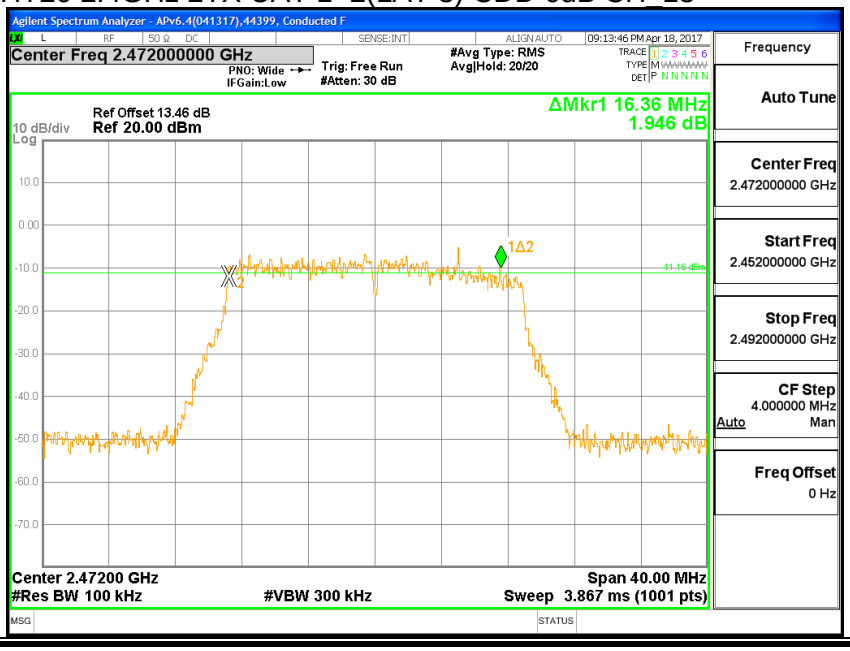
HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD 6dB CH_12



HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD 6dB CH_13



HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD 6dB CH_13



8.6.2. 99% BANDWIDTH

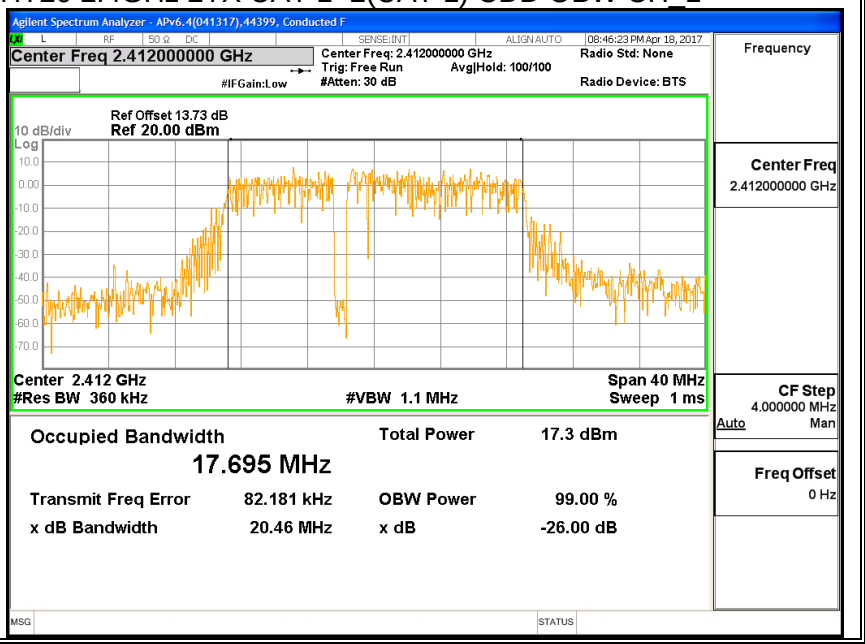
LIMITS

None; for reporting purposes only.

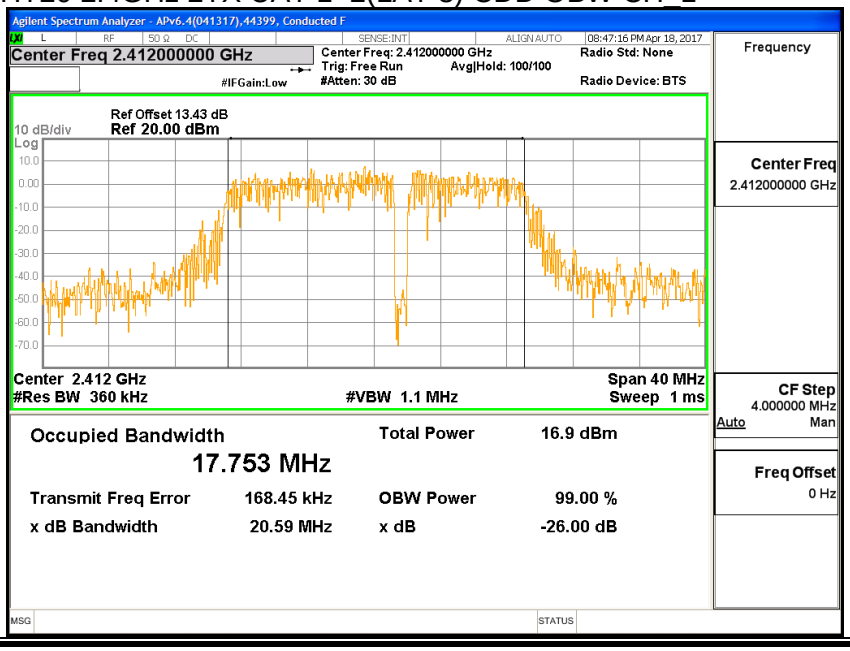
RESULTS

Channel	Frequency (MHz)	99% Bandwidth UAT 1 (MHz)	99% Bandwidth LAT 3 (MHz)
Low_1	2412	17.695	17.753
Low_2	2417	17.823	17.699
Middle_6	2437	17.767	17.670
High_9	2452	19.78	21.089
High_10	2457	17.833	17.865
High_11	2462	17.598	17.714
High_12	2467	17.737	17.782
High_13	2472	17.759	17.700

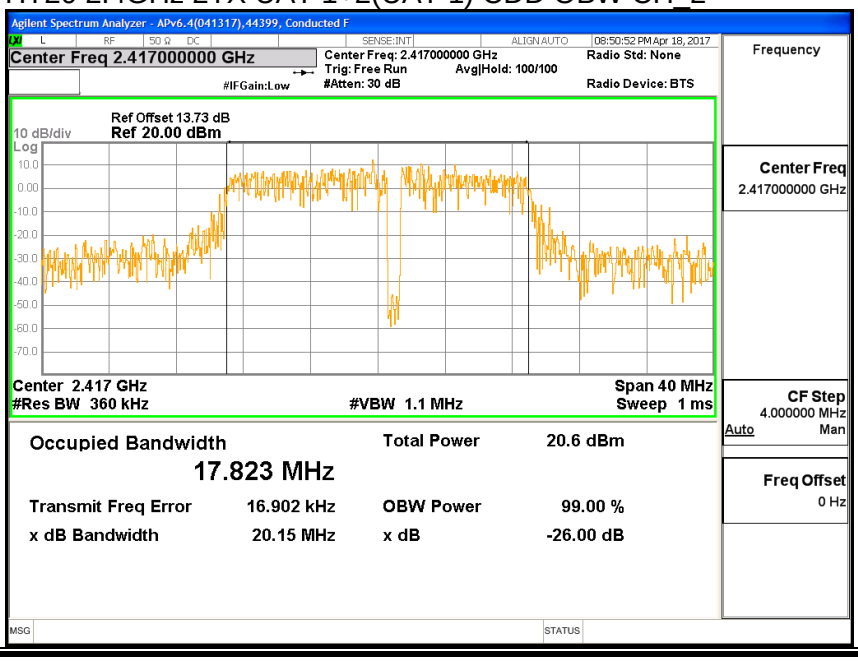
HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD OBW CH_1



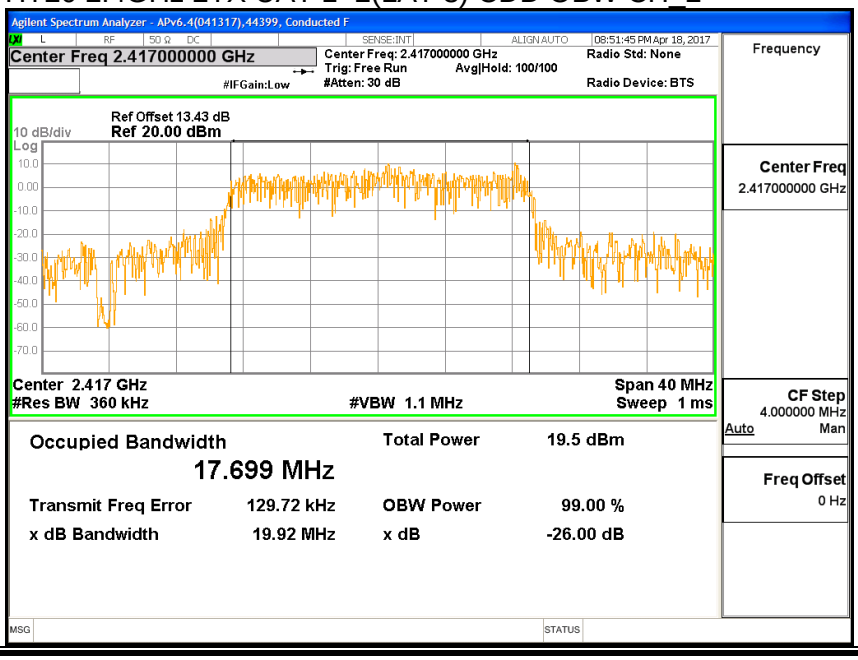
HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD OBW CH_1



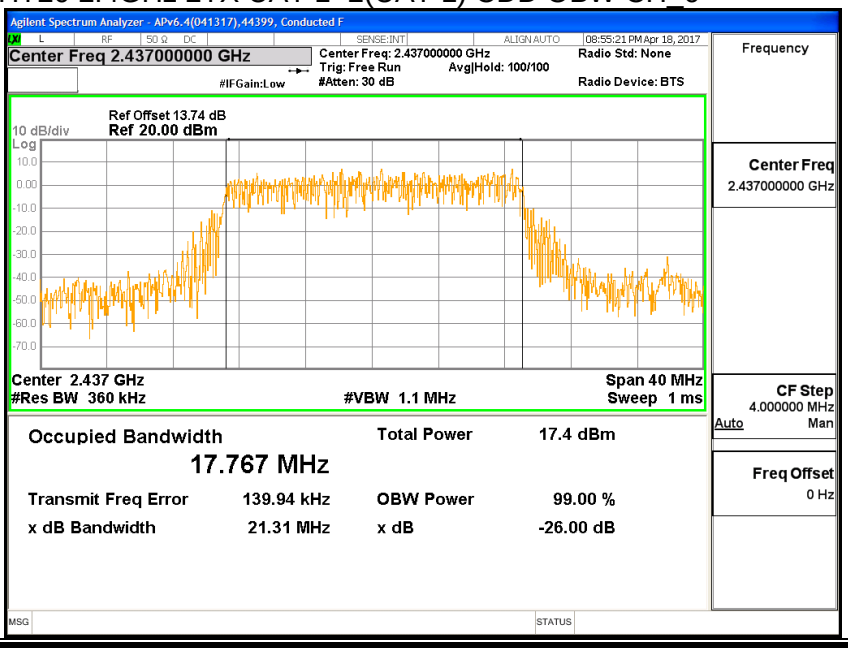
HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD OBW CH_2



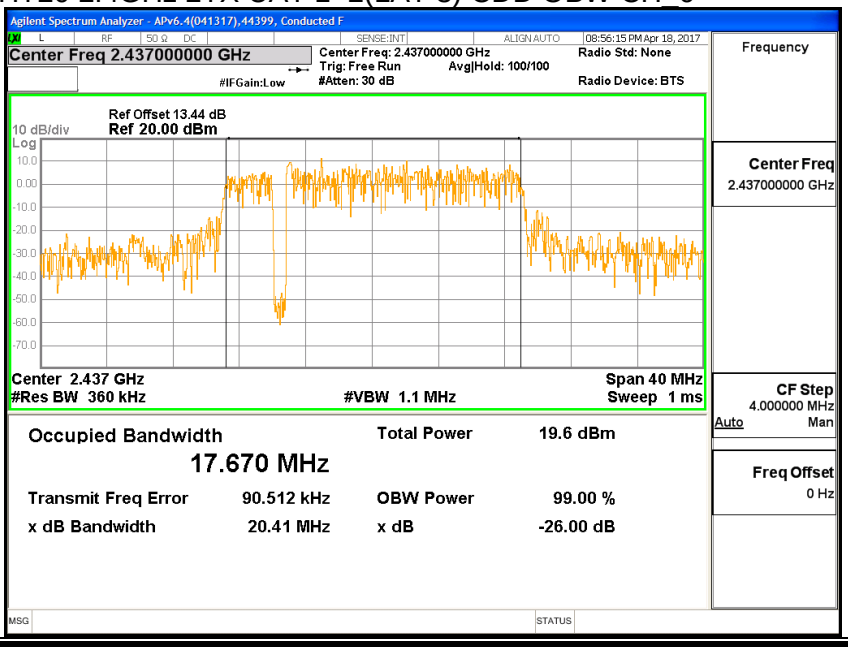
HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD OBW CH_2



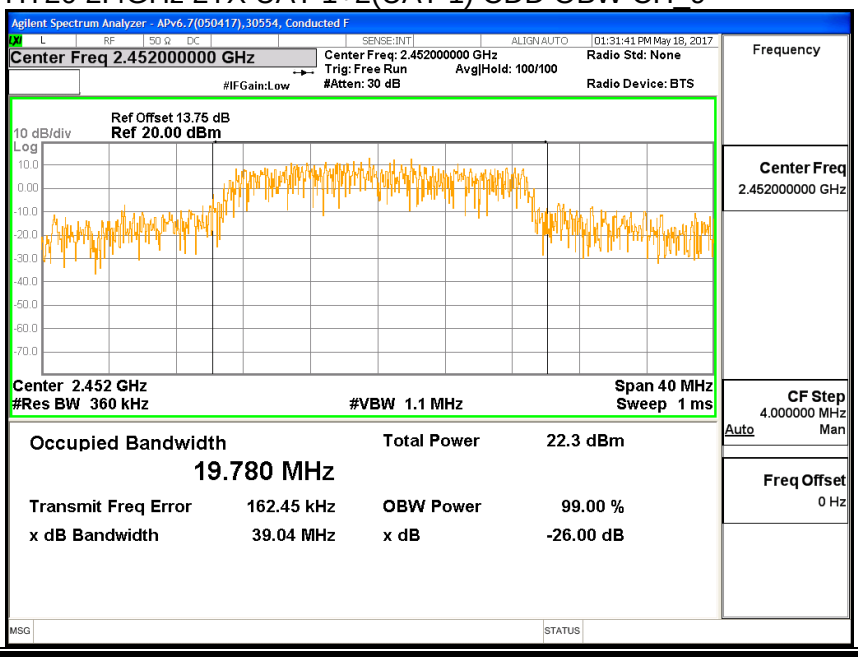
HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD OBW CH_6



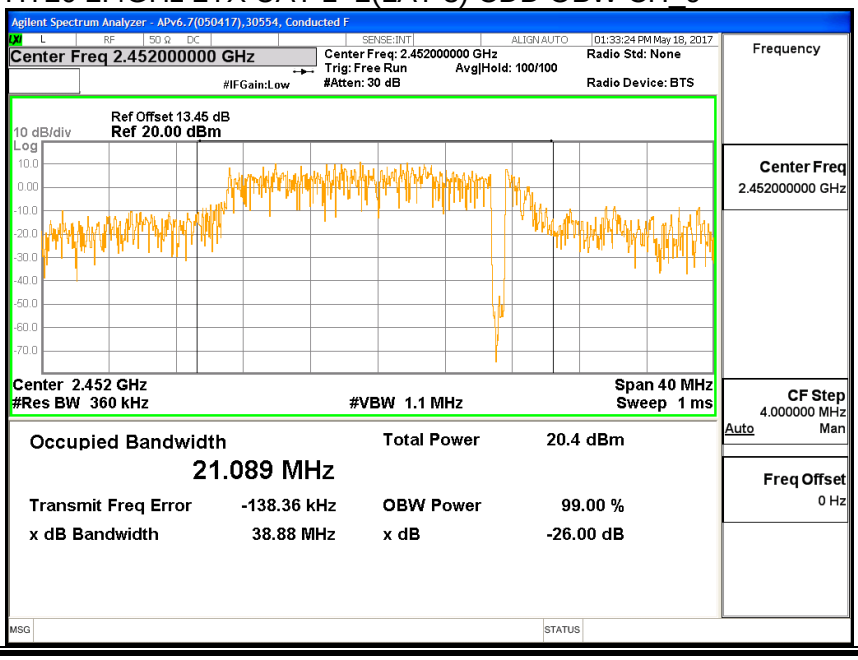
HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD OBW CH_6



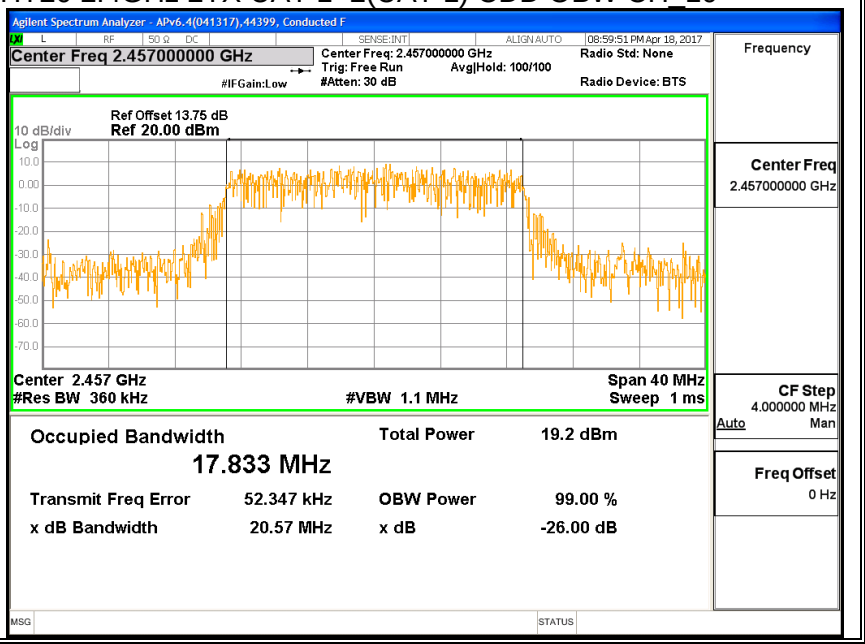
HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD OBW CH_9



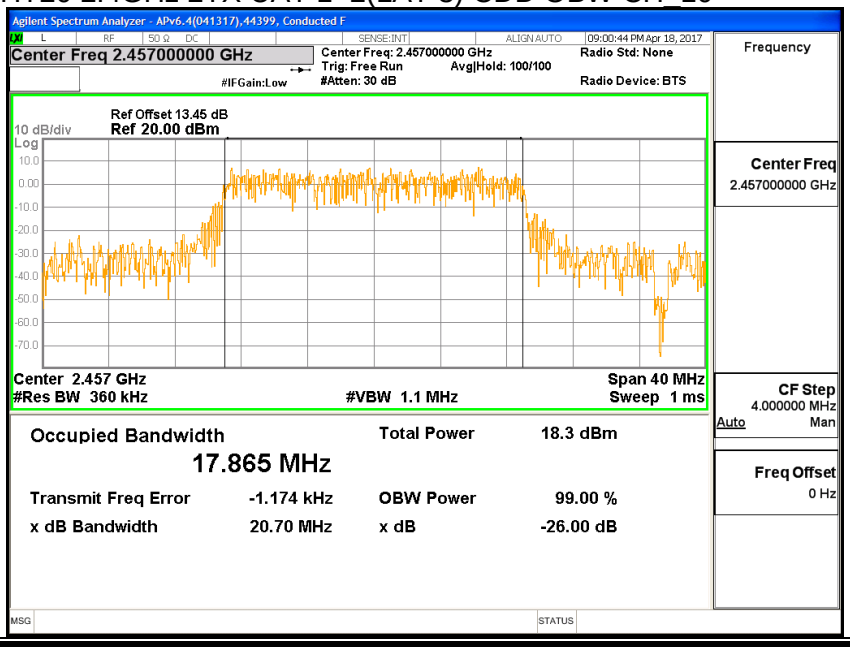
HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD OBW CH_9



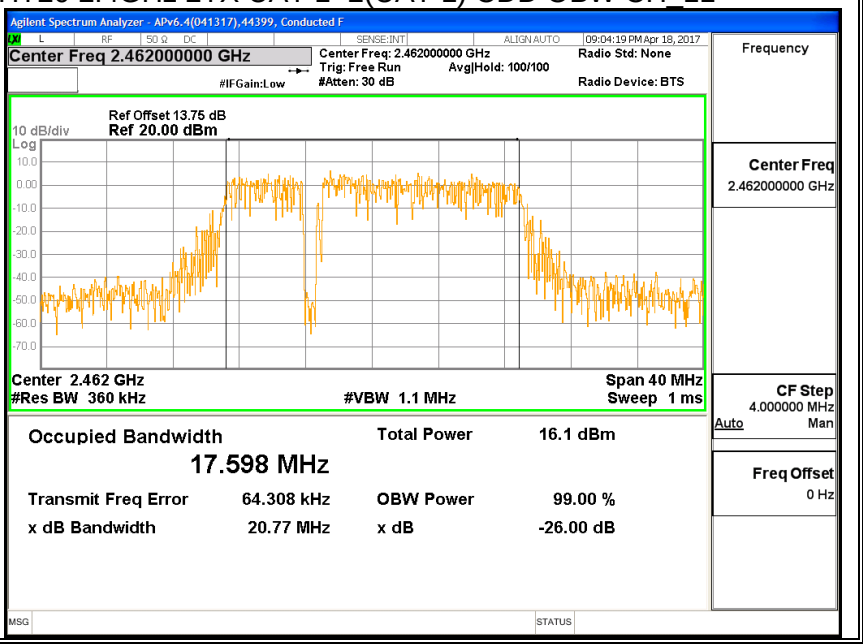
HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD OBW CH_10



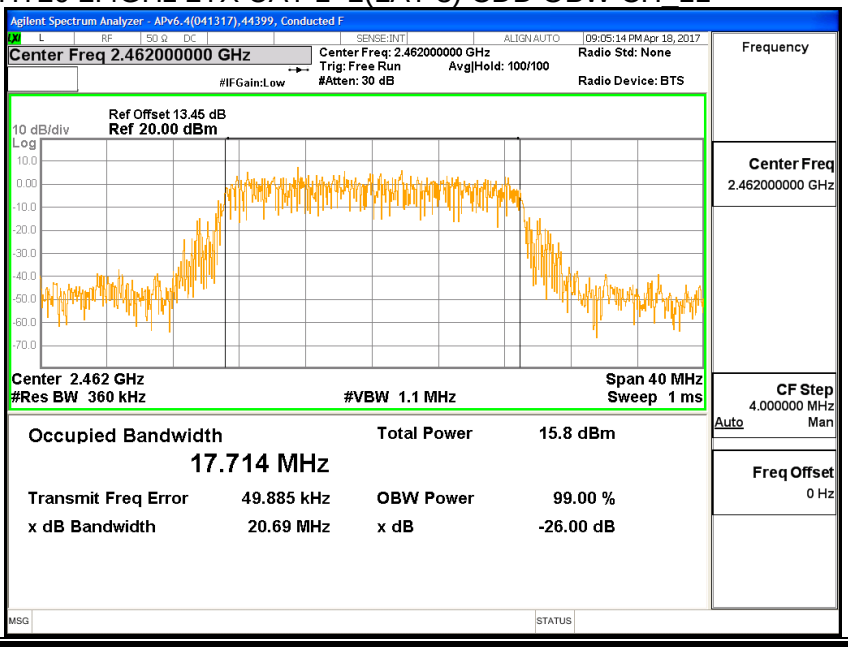
HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD OBW CH_10



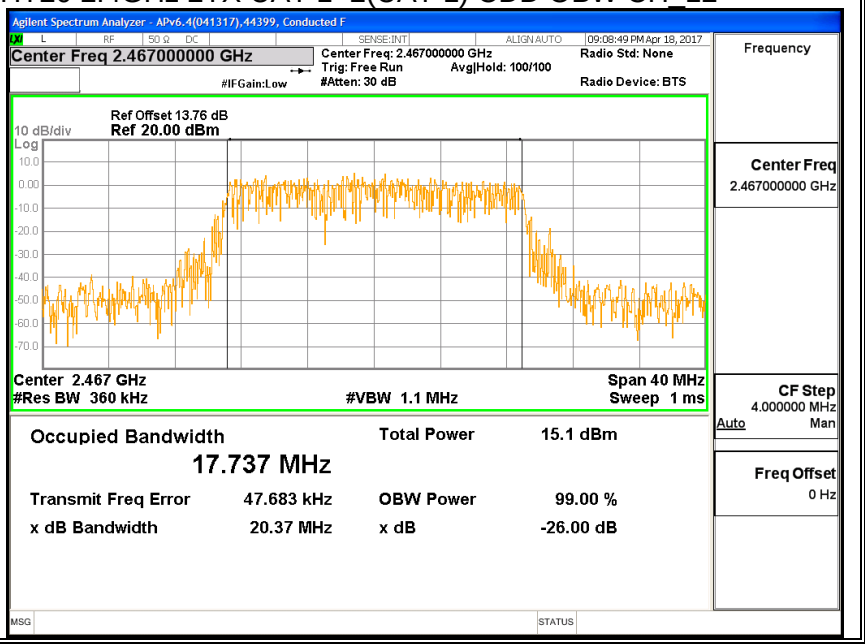
HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD OBW CH_11



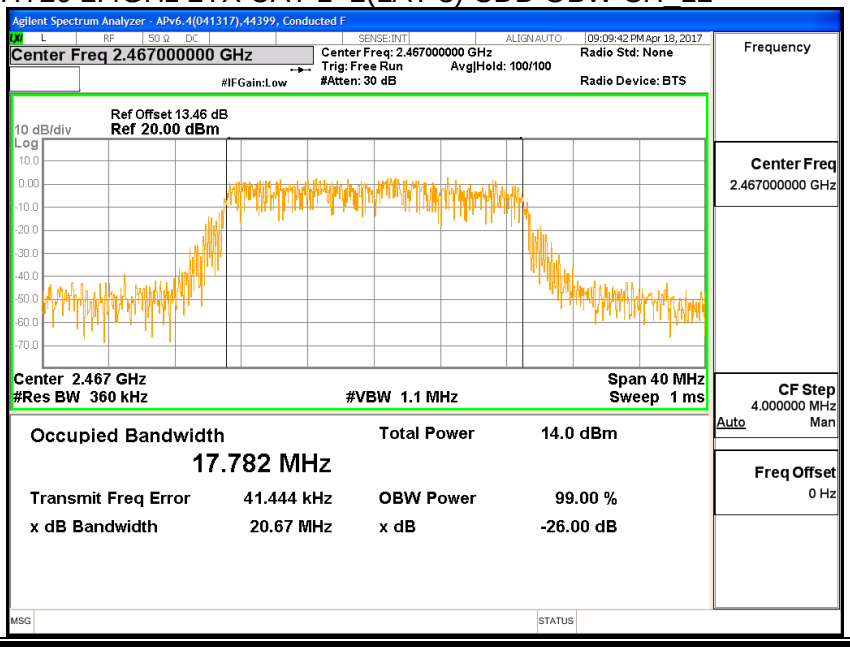
HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD OBW CH_11



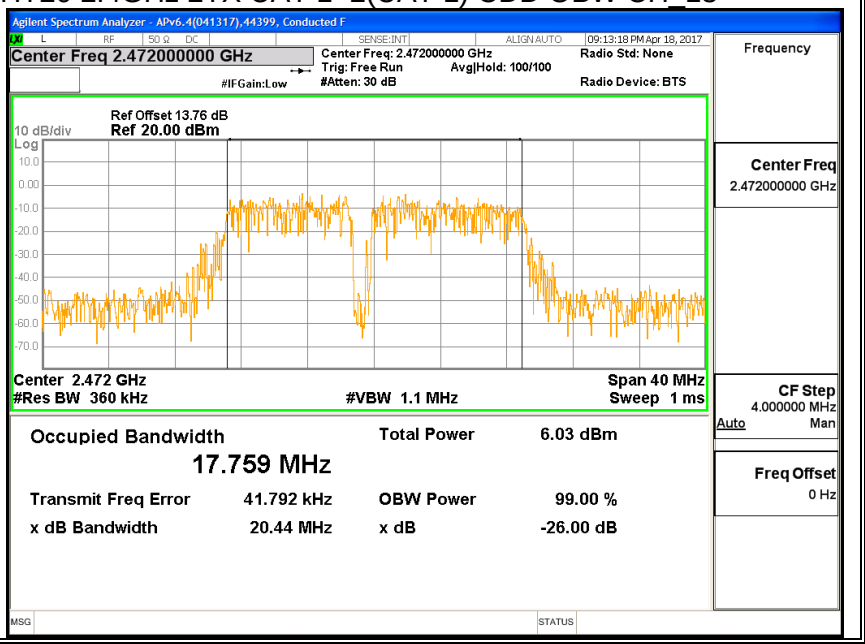
HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD OBW CH_12



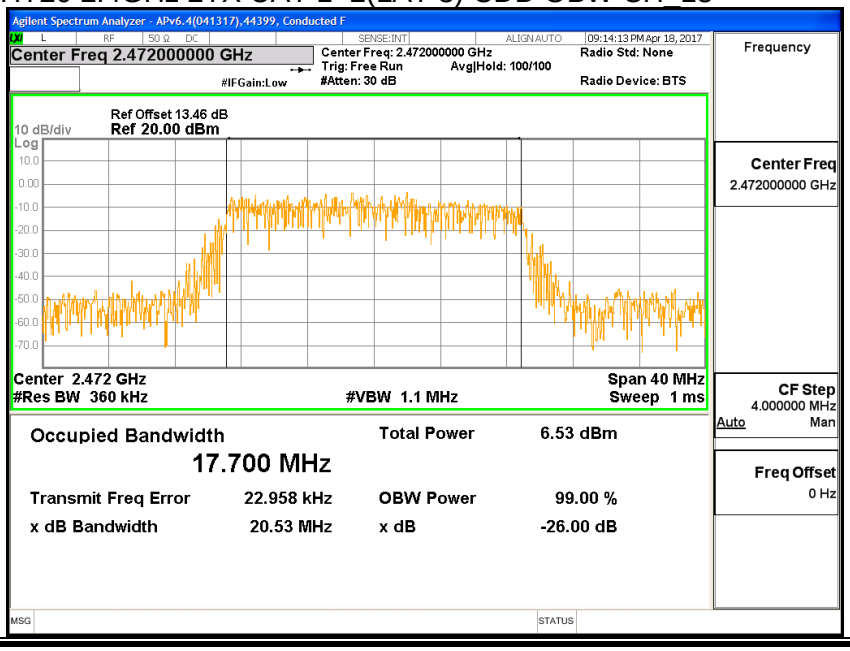
HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD OBW CH_12



HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD OBW CH_13



HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD OBW CH_13



8.6.3. AVERAGE POWER

ID:	30554	Date:	7/13/17

LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	Power UAT 1 (MHz)	Power LAT 3 (MHz)
Low_1	2412	15.33	15.29
Low_2	2417	17.98	17.77
Middle_6	2437	20.82	20.75
High_9	2452	19.37	19.34
High_10	2457	17.89	17.84
High_11	2462	15.34	15.33
High_12	2467	12.90	12.80
High_13	2472	4.93	4.76

8.6.4. OUTPUT POWER

ID:	30554	Date:	7/13/17

LIMITS

FCC §15.247

IC RSS-247 (5.4) (d)

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

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

UAT 1 Gain (dBi)	LAT 3 Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
-2.54	-1.30	-1.88

RESULTS

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low_1	2412	-1.88	30.00	30	36	30.00
Low_2	2417	-1.88	30.00	30	36	30.00
Mid	2437	-1.88	30.00	30	36	30.00
High_9	2452	-1.88	30.00	30	36	30.00
High_10	2457	-1.88	30.00	30	36	30.00
High_11	2462	-1.88	30.00	30	36	30.00
High_12	2467	-1.88	30.00	30	36	30.00
High_13	2472	-1.88	30.00	30	36	30.00

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

Results

Channel	Frequency (MHz)	UAT 1 Meas Power (dBm)	LAT 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low_1	2412	21.96	21.89	24.94	30.00	-5.06
Low_2	2417	24.45	24.34	27.41	30.00	-2.59
Mid	2437	26.89	26.92	29.92	30.00	-0.08
High_9	2452	25.74	25.70	28.73	30.00	-1.27
High_10	2457	24.48	24.37	27.44	30.00	-2.56
High_11	2462	21.76	21.76	24.77	30.00	-5.23
High_12	2467	19.25	19.21	22.24	30.00	-7.76
High_13	2472	11.51	11.45	14.49	30.00	-15.51

8.6.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247

IC RSS-247 (5.2) (b)

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.

DIRECTIONAL ANTENNA GAIN

For PSD used correlated gain: The TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

UAT 1 Antenna Gain (dBi)	LAT 3 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
-2.54	-1.30	1.11

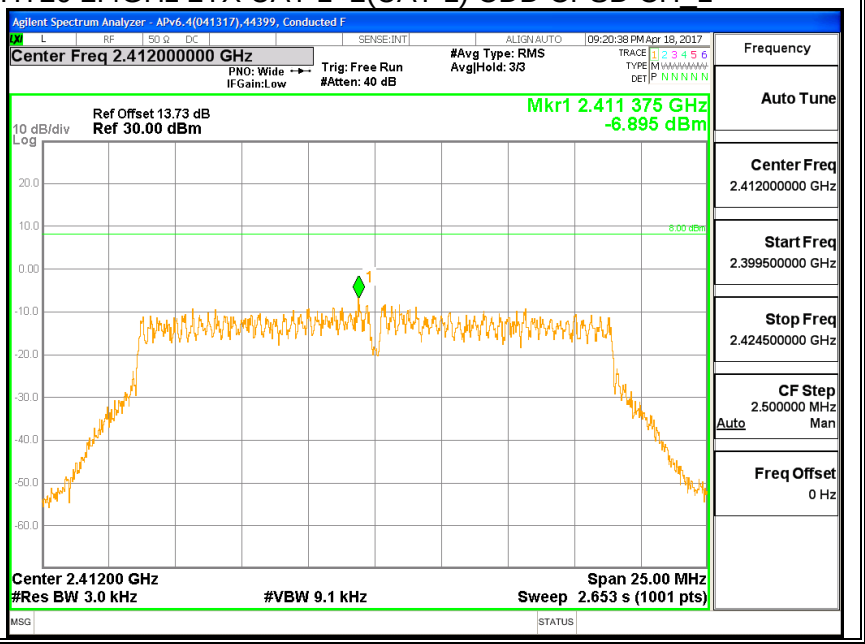
RESULTS

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

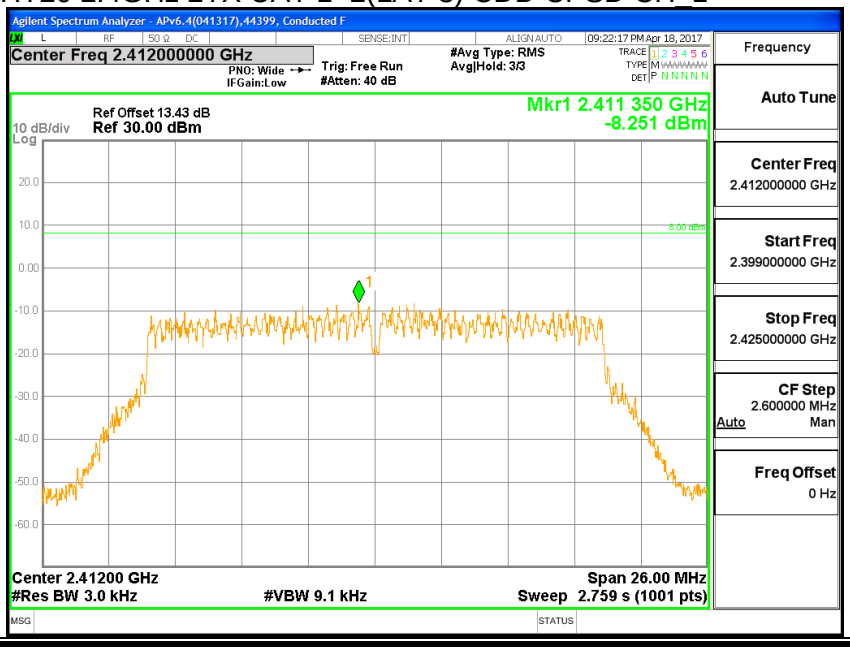
PSD Results

Channel	Frequency (MHz)	UAT 1 Meas (dBm/3KHz)	LAT 3 Meas (dBm/3KHz)	Total Corr'd (dBm/3KHz)	Limit (dBm/3KHz)	Margin (dB)
Low_1	2412	-6.895	-8.251	-4.51	8.0	-12.5
Low_2	2417	-5.424	-5.877	-2.63	8.0	-10.6
Mid	2437	-6.955	-5.165	-2.96	8.0	-11.0
High_9	2452	-2.794	-5.641	-0.98	8.0	-9.0
High_10	2457	-5.762	-5.142	-2.43	8.0	-10.4
High_11	2462	-8.563	-8.818	-5.68	8.0	-13.7
High_12	2467	-10.855	-10.755	-7.79	8.0	-15.8
High_13	2472	-19.397	-18.333	-15.82	8.0	-23.8

HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD CPSD CH_1



HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD CPSD CH_1



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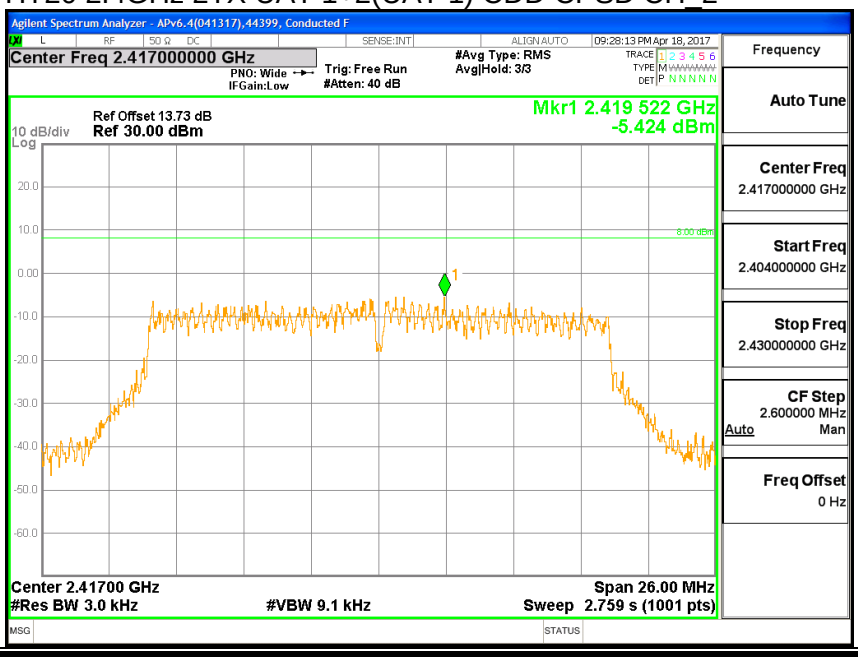
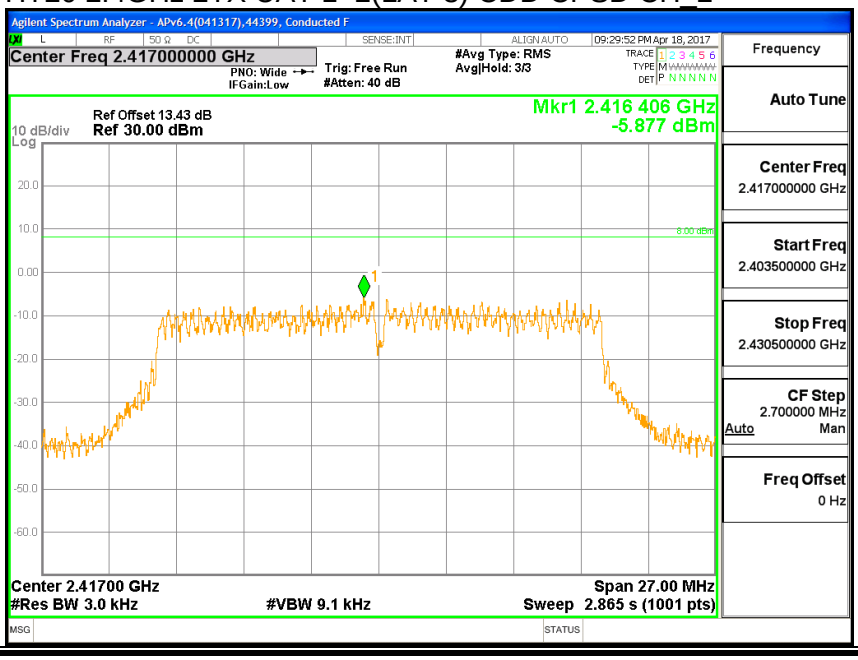
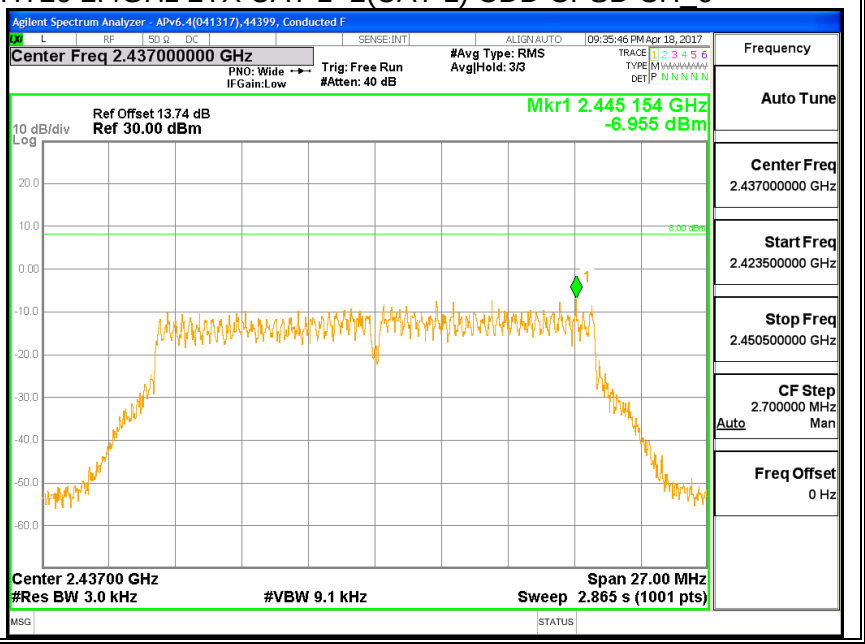


HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD CPSD CH_2



HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD CPSD CH_6



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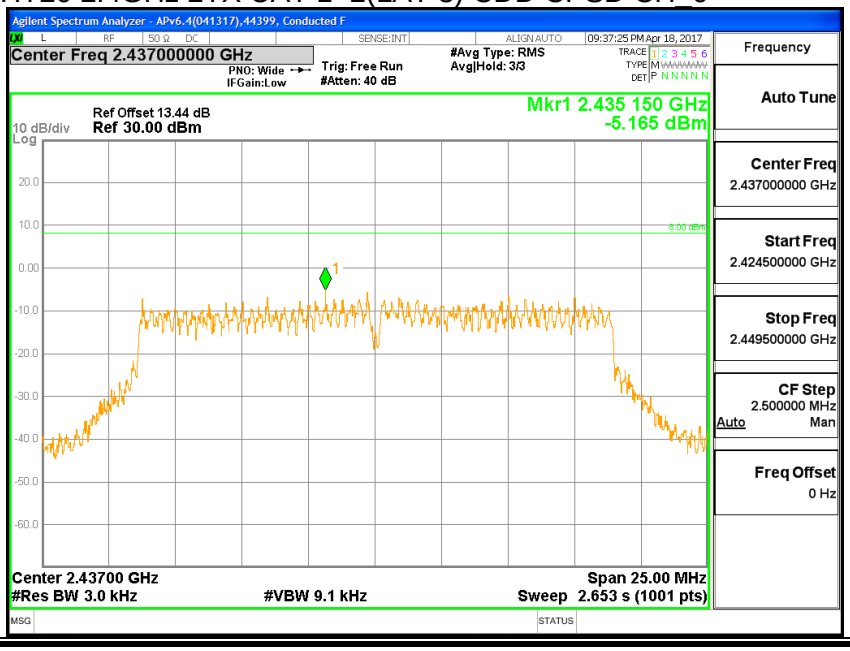
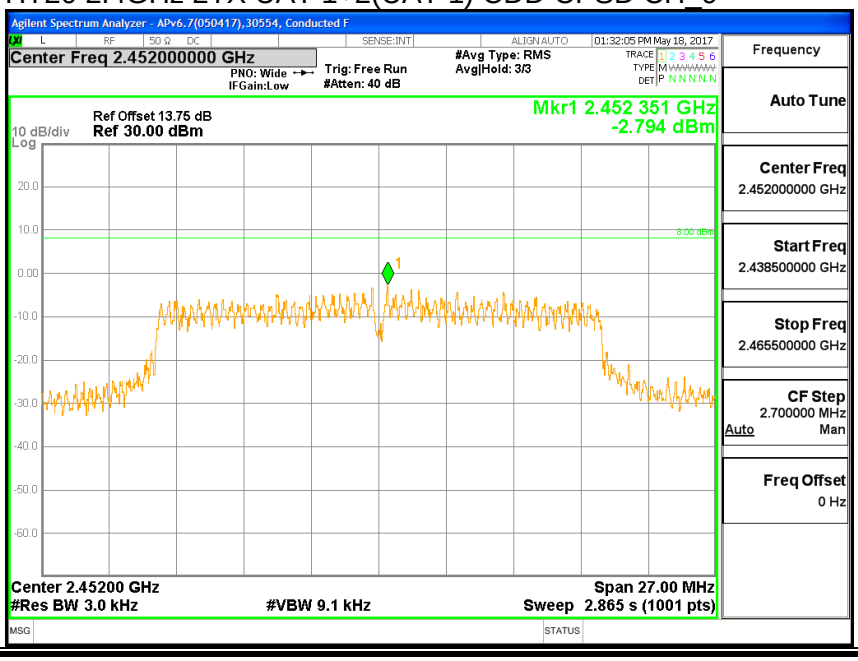


HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD CPSD CH_9



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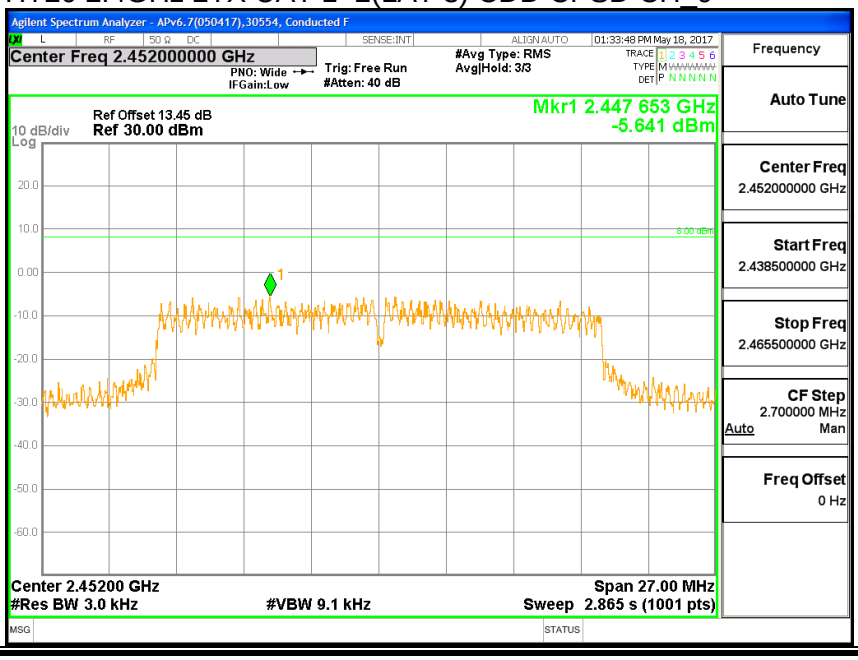
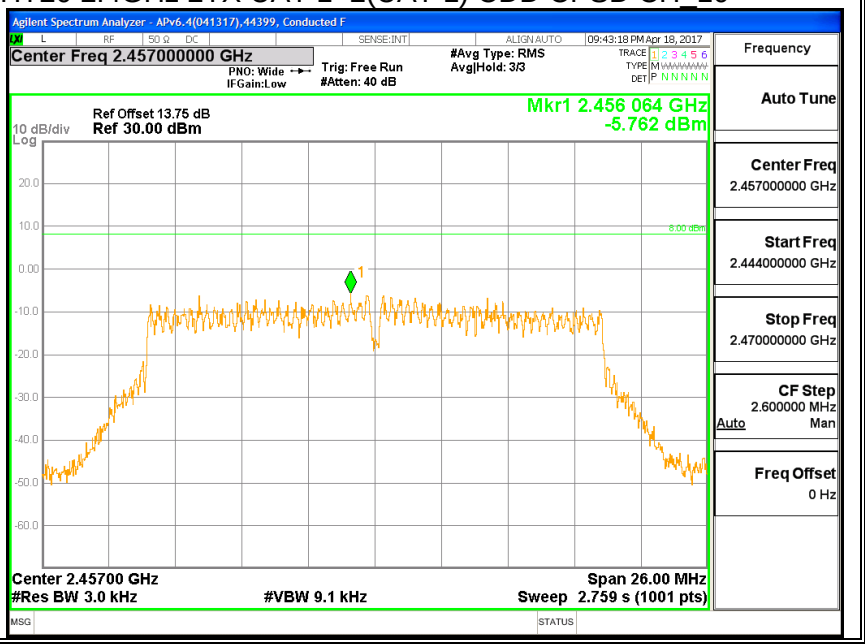


HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD CPSD CH_10



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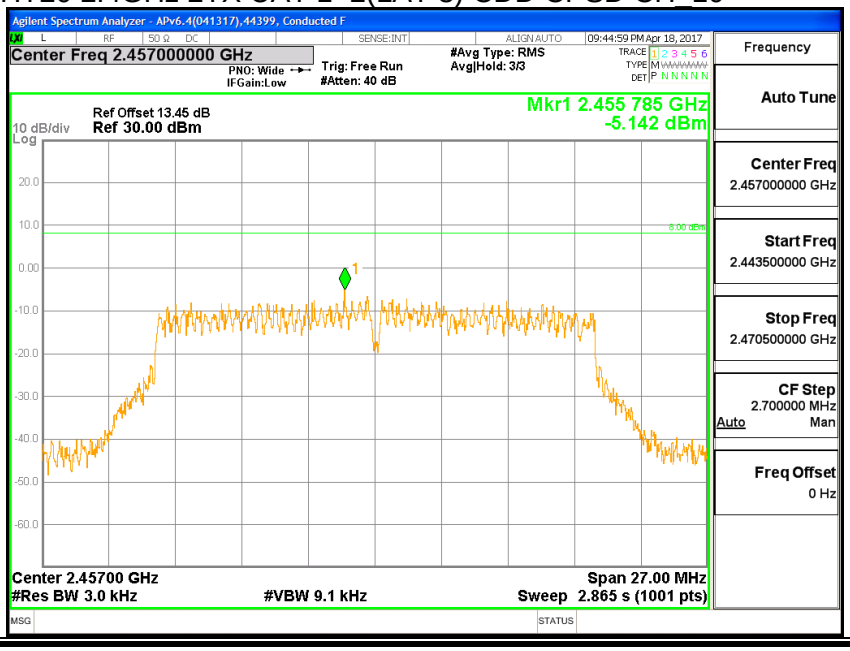
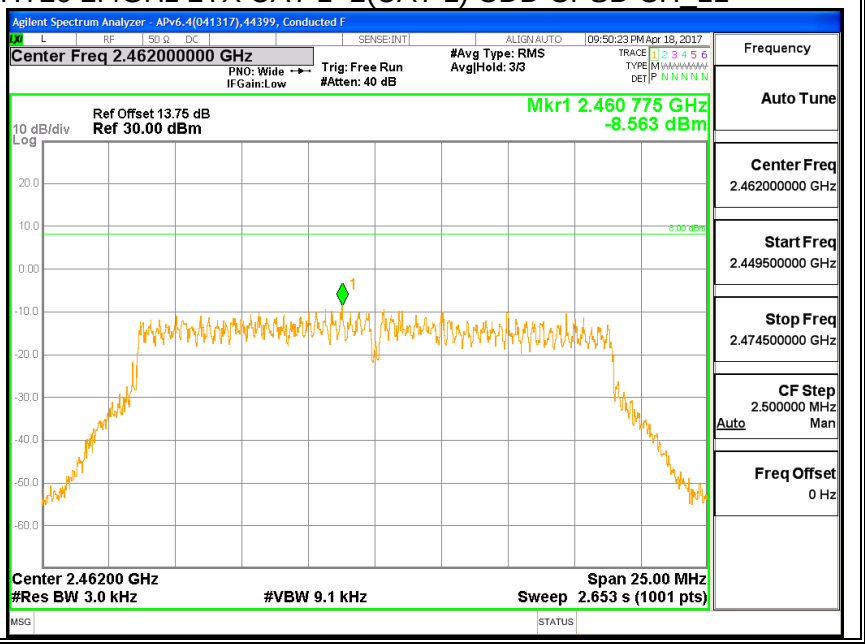


HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD CPSD CH_11



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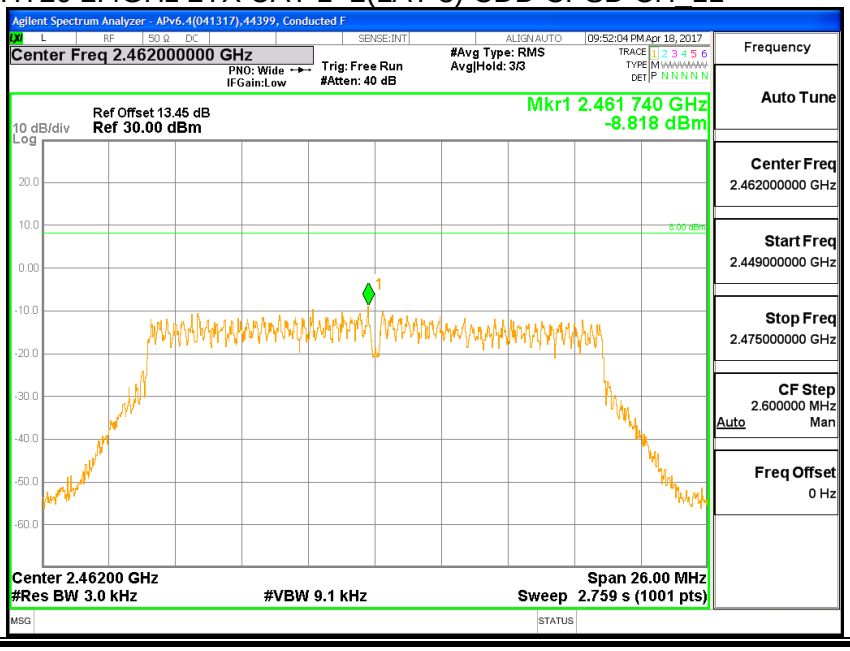
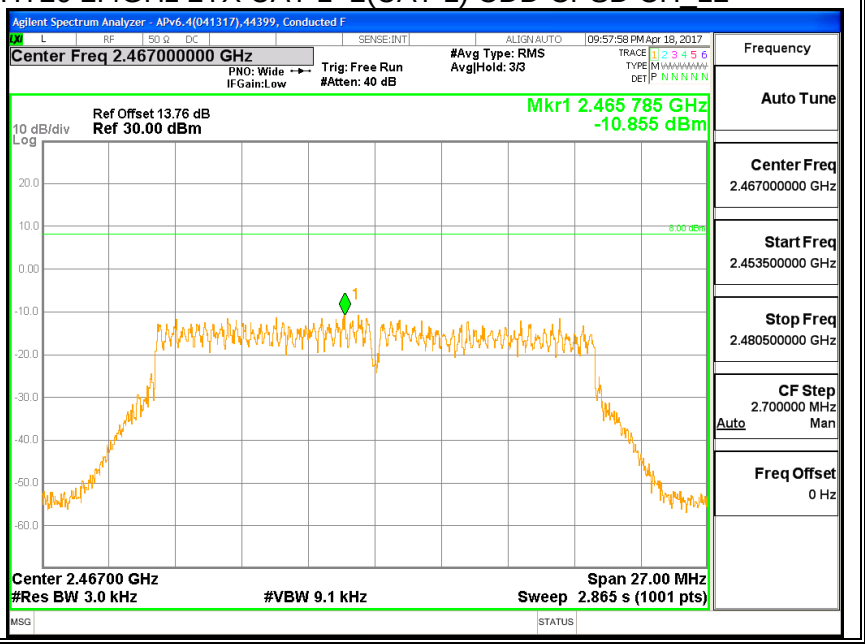
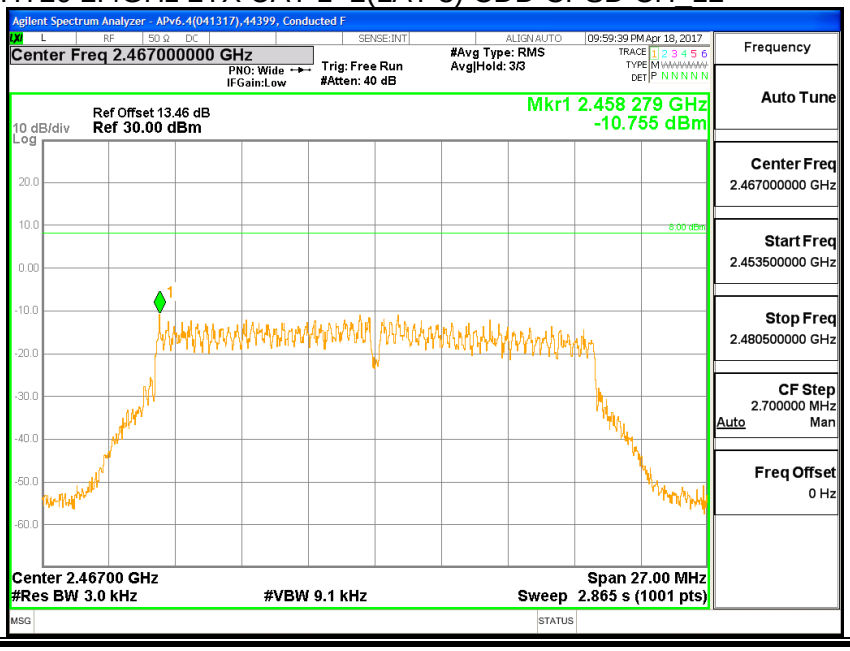


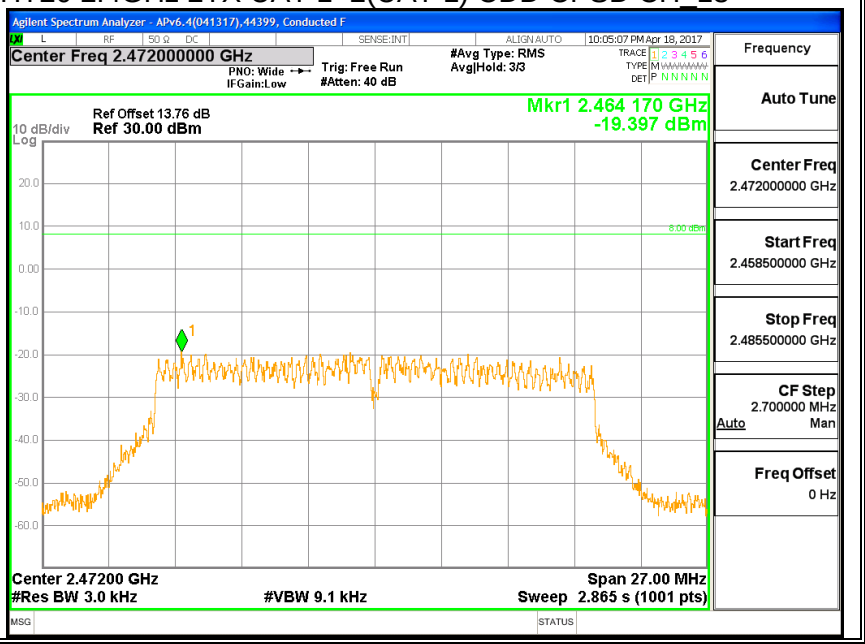
HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD CPSD CH_12



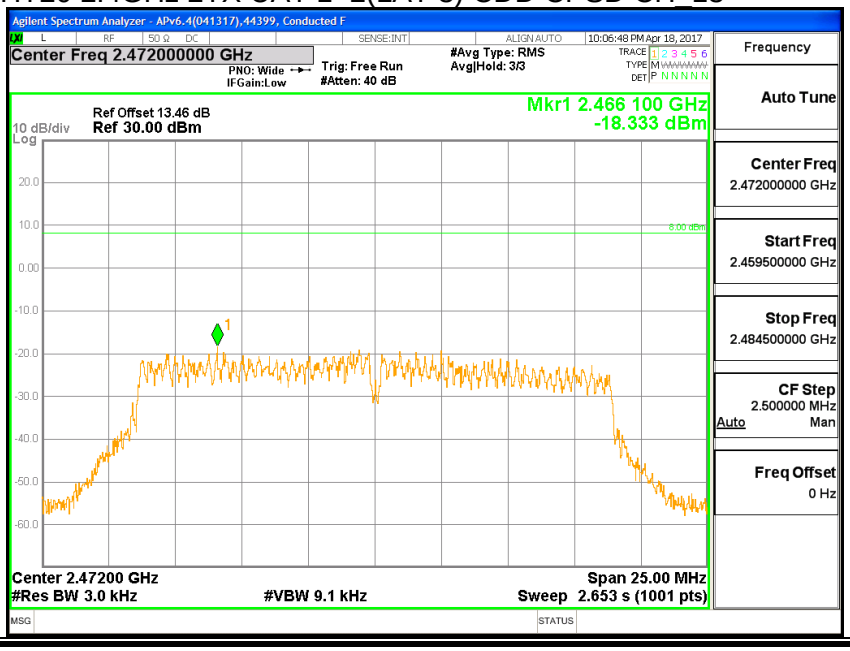
HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD CPSD CH_12



HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD CPSD CH_13



HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD CPSD CH_13



8.6.6. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

LIMITS

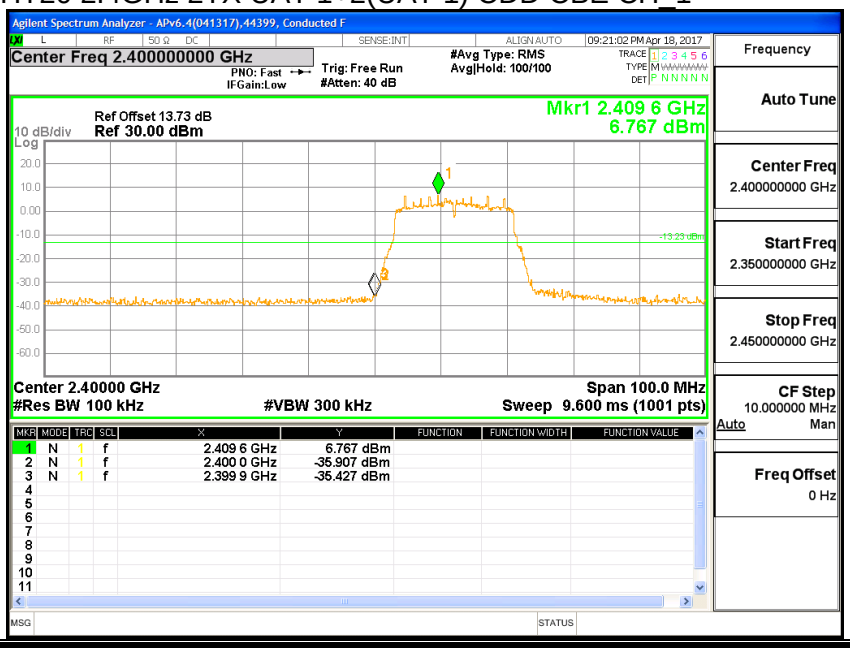
FCC §15.247 (d)

IC RSS-247 (5.5)

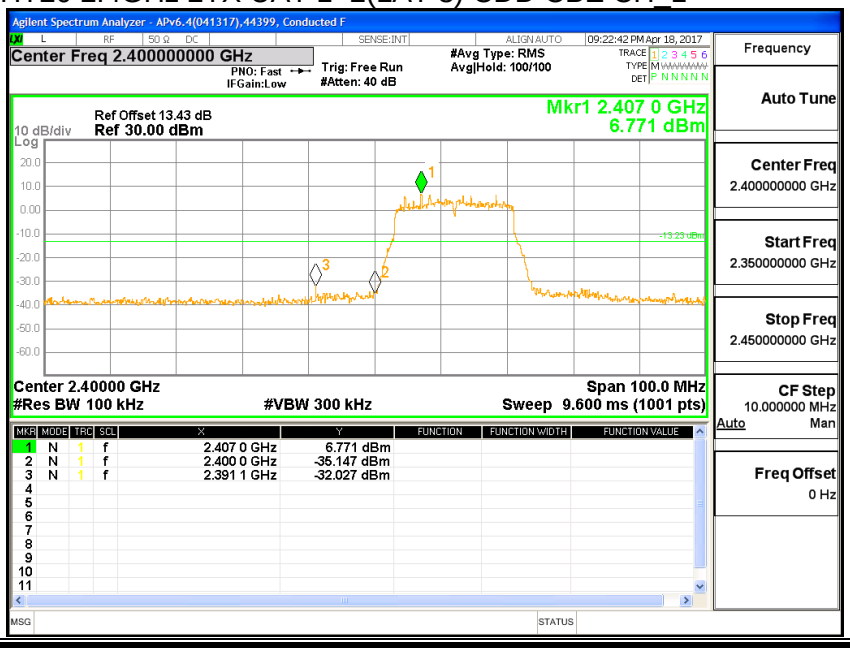
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the 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.

CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

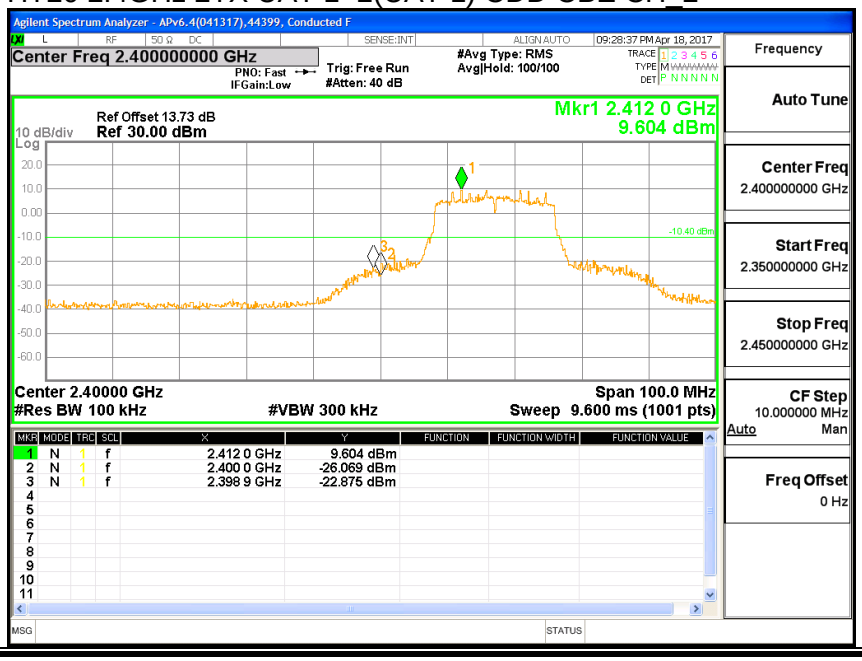
HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD CBE CH_1



HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD CBE CH_1



HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD CBE CH_2



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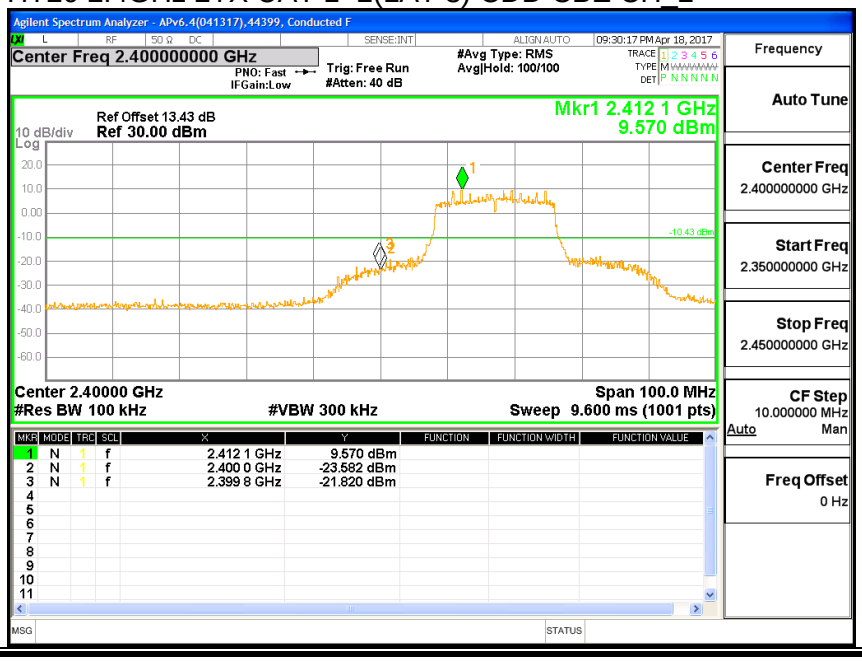
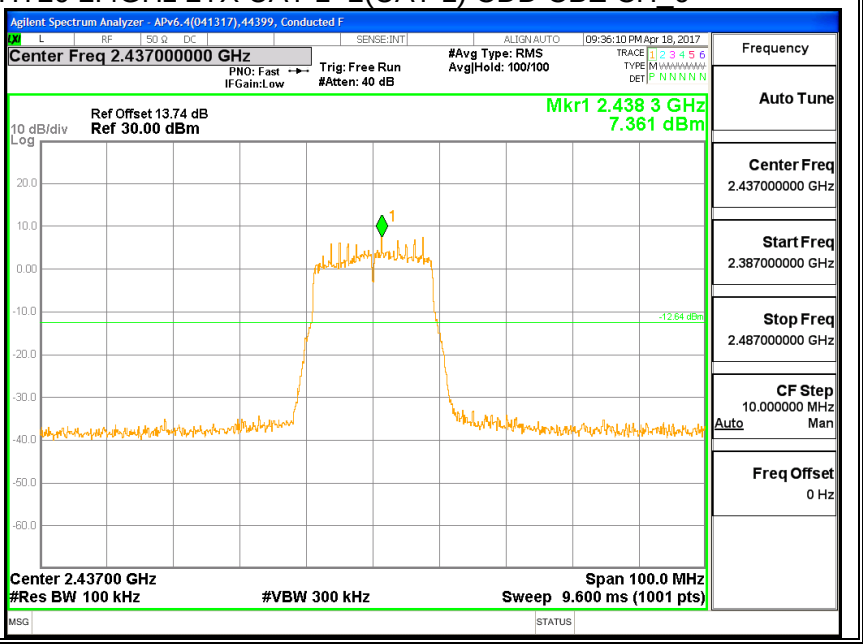


HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD CBE CH_6



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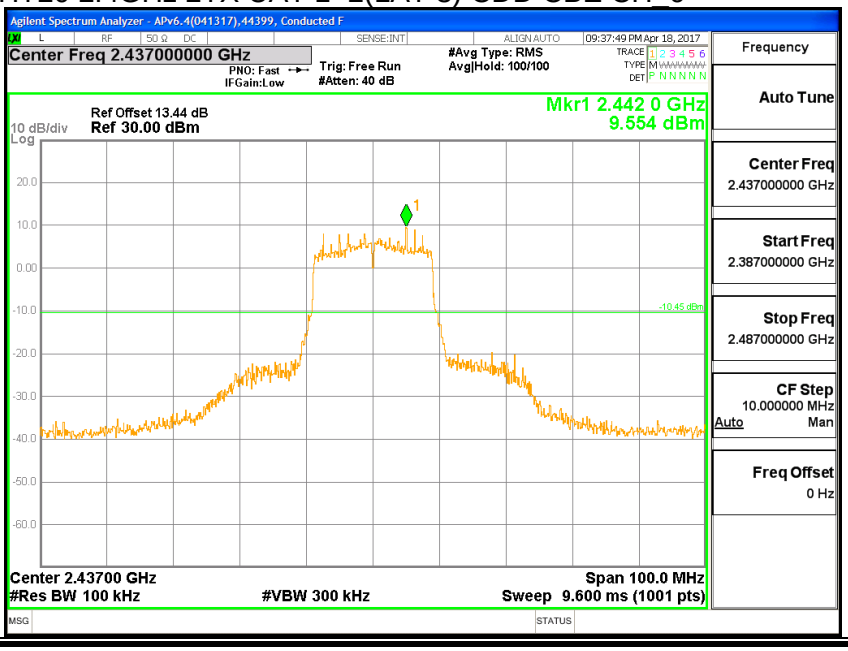

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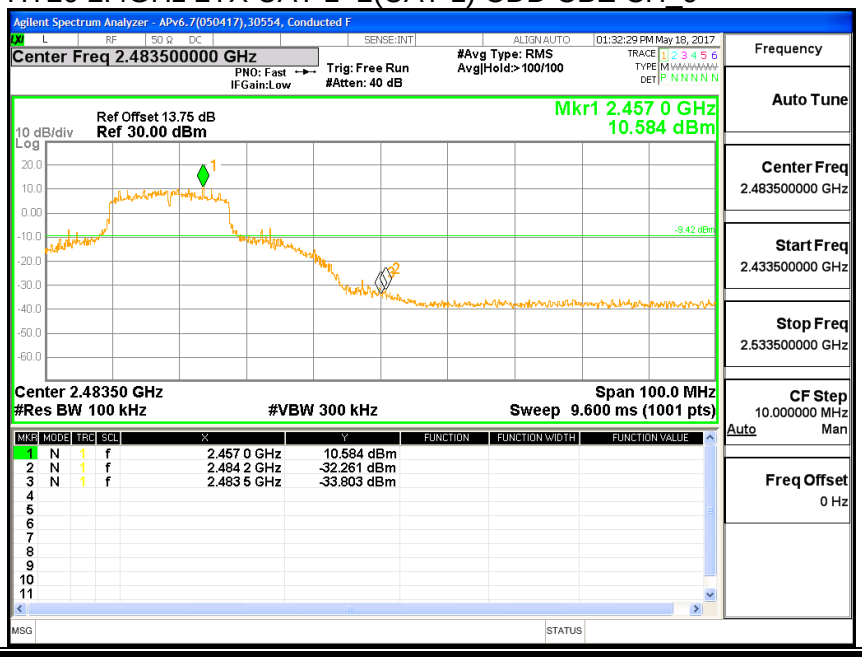

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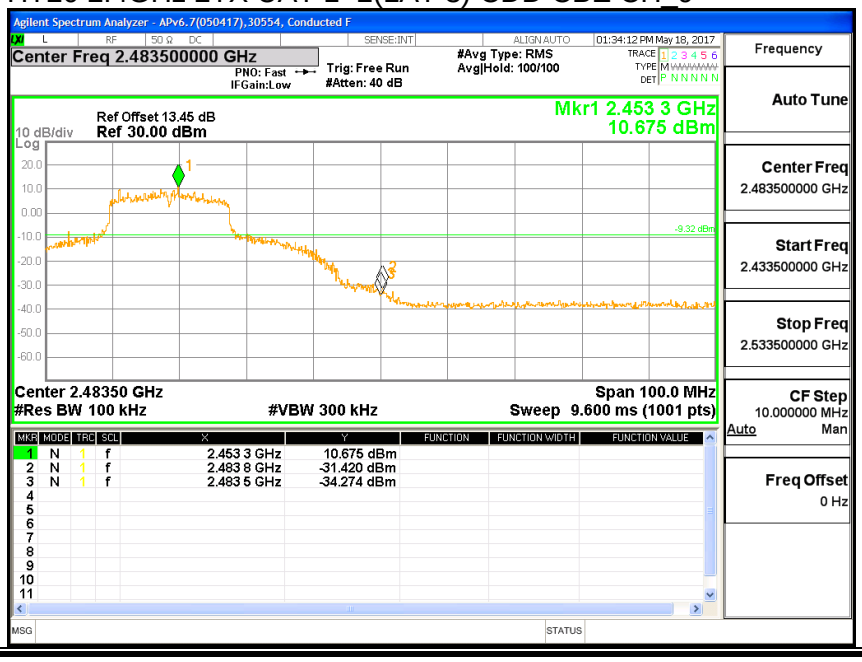

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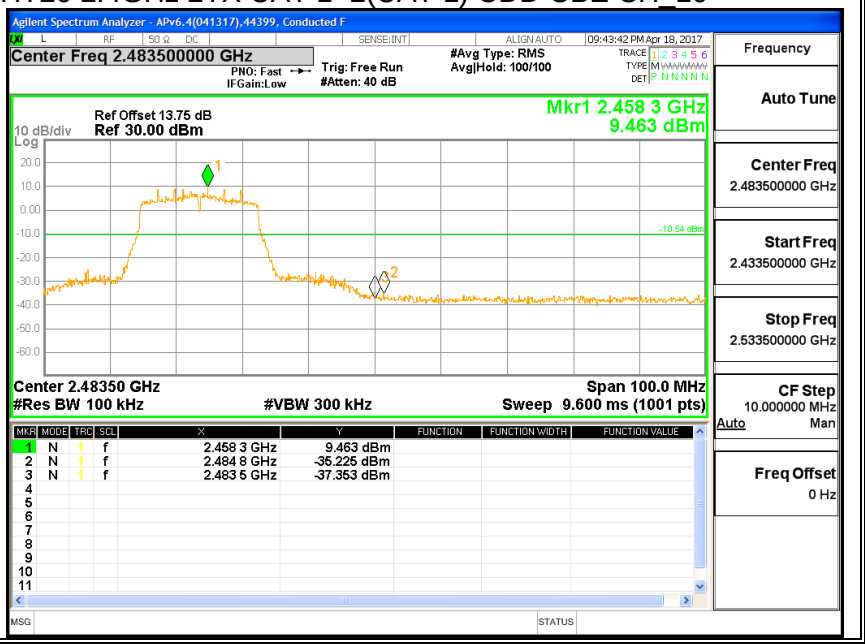
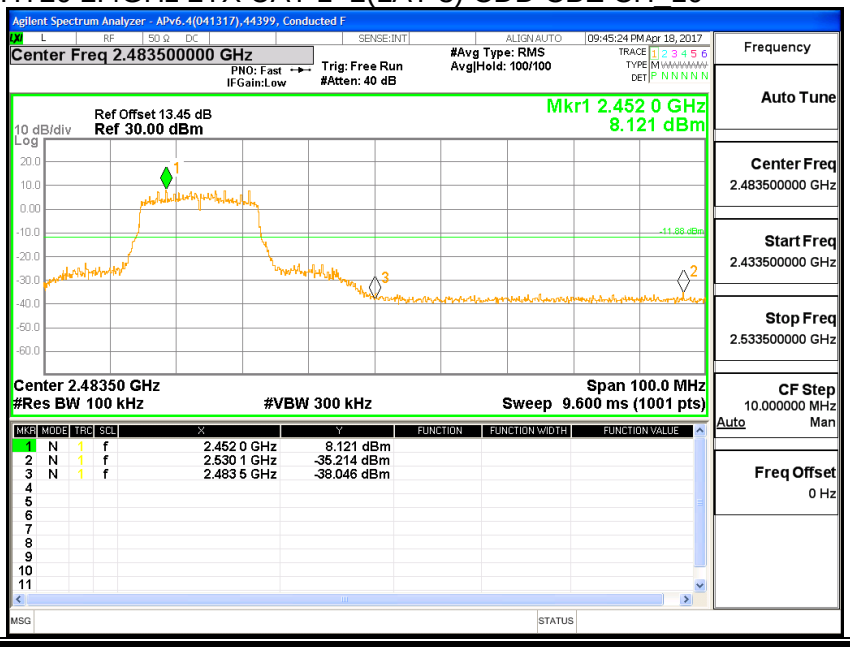


HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD CBE CH_10



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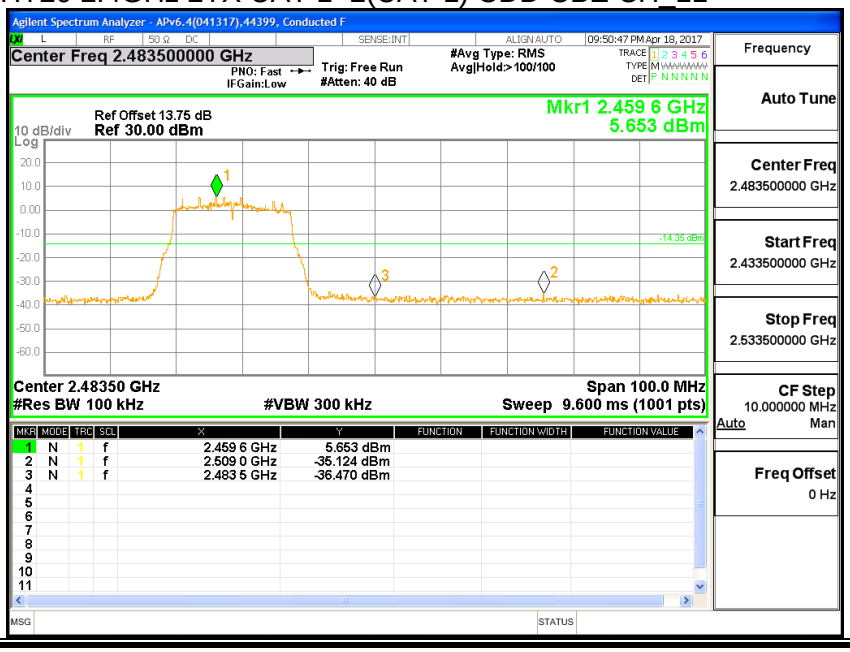

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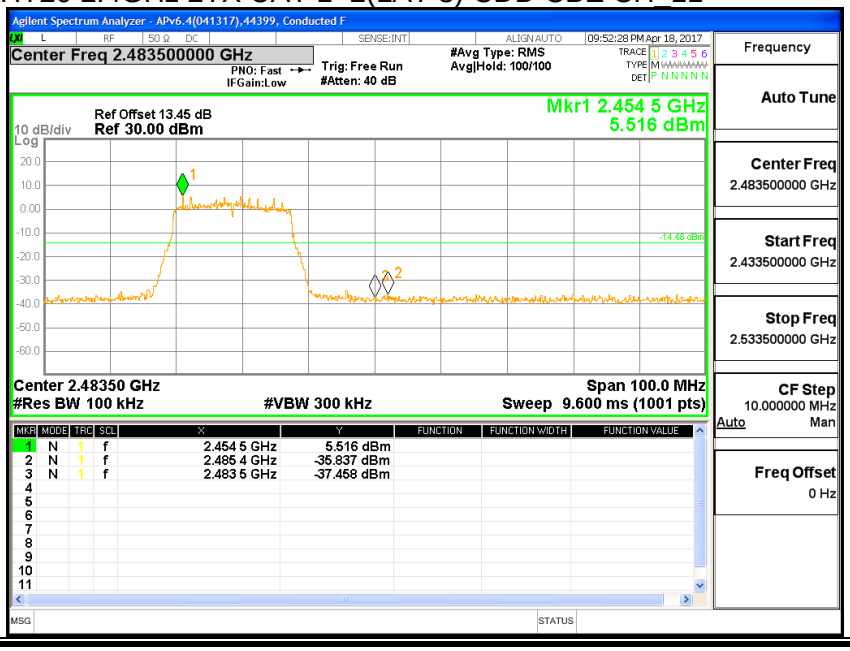

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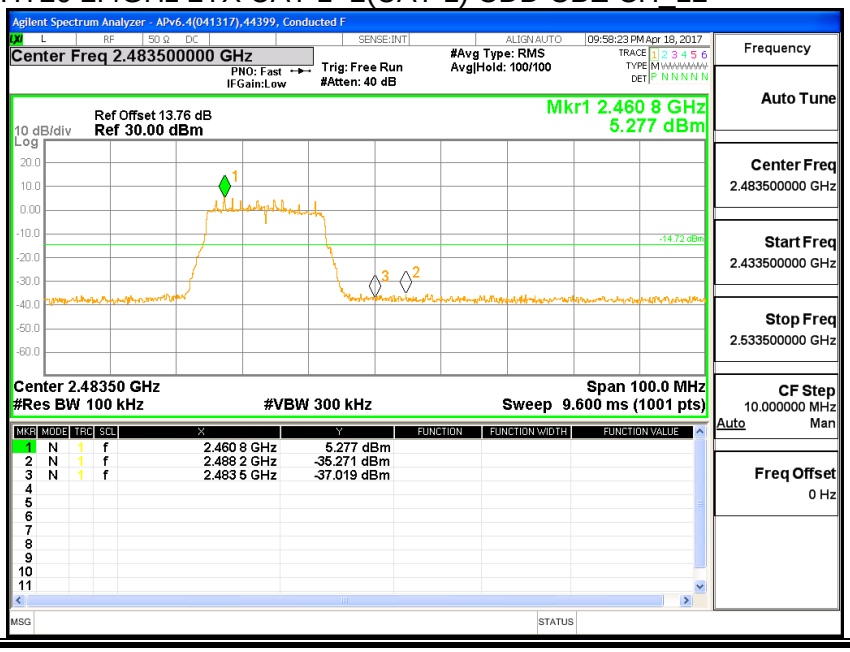

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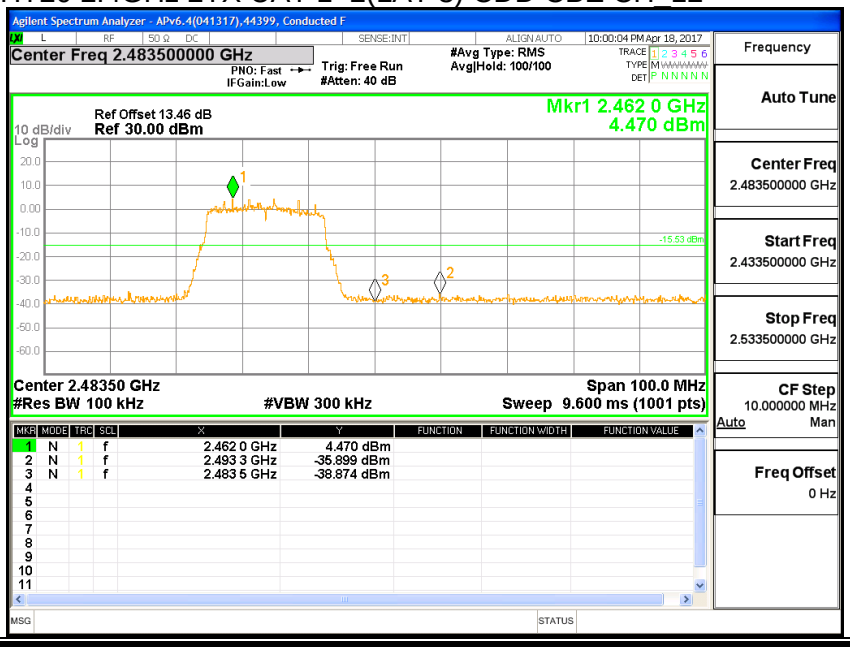

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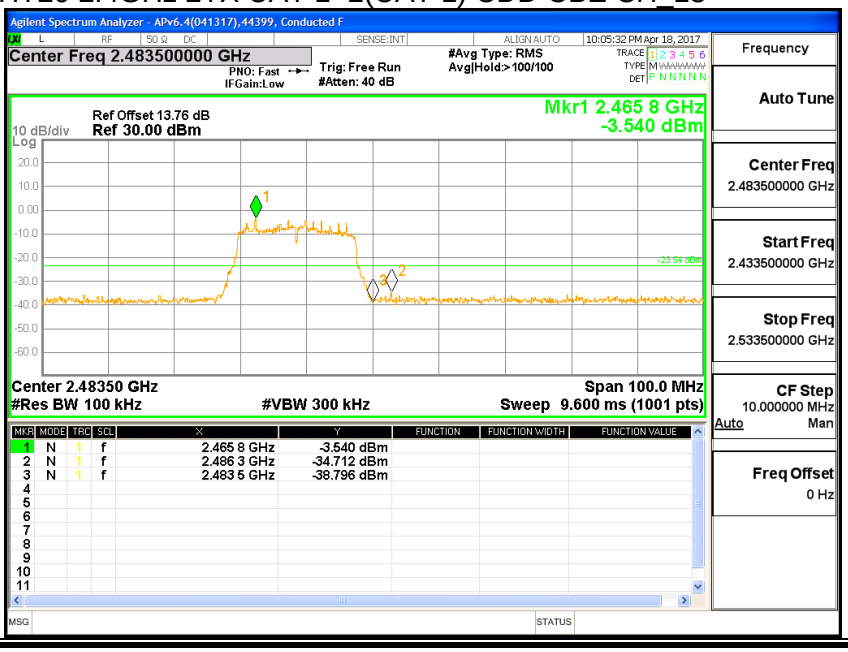

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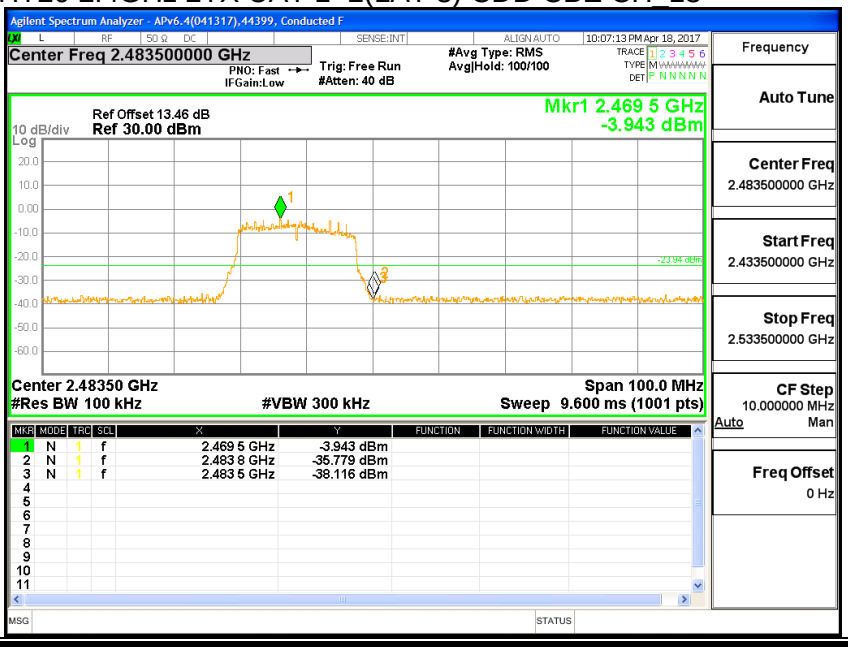
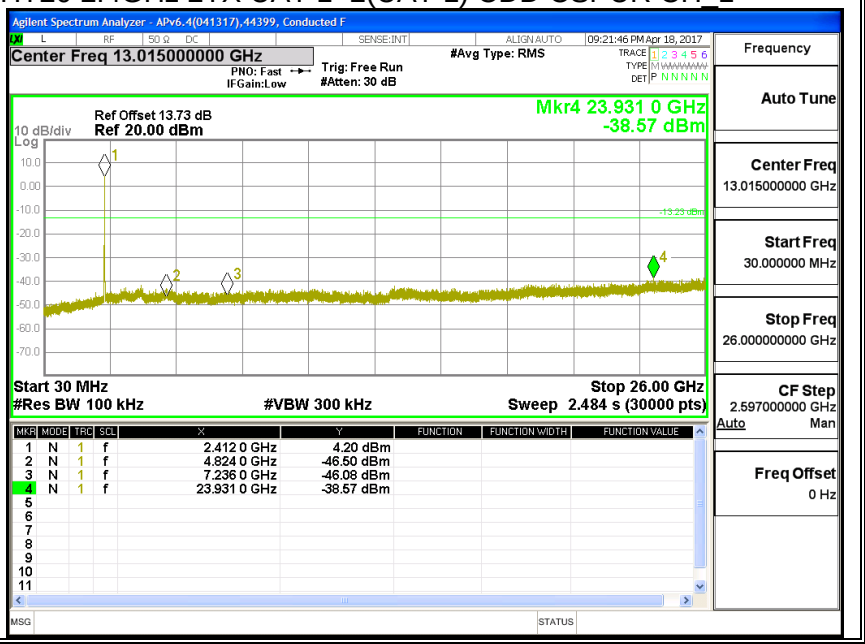


HT20 2.4GHz 2TX UAT 1+2(UAT 1) CDD CSPUR CH_1



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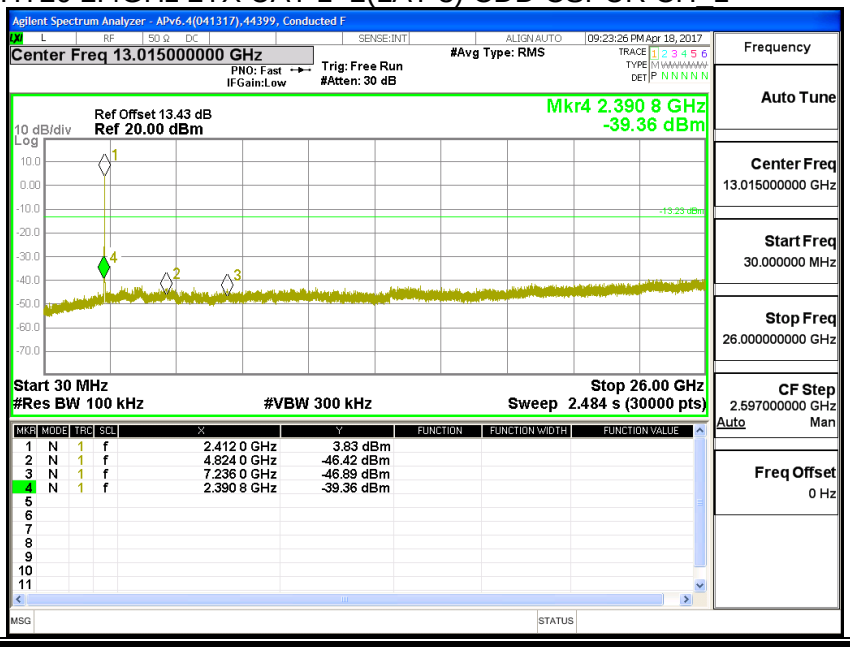

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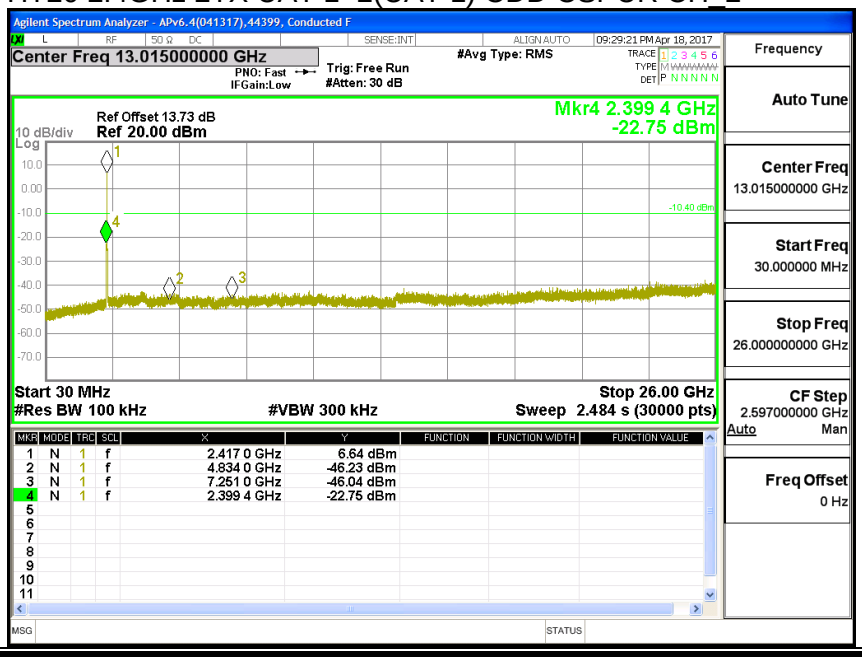

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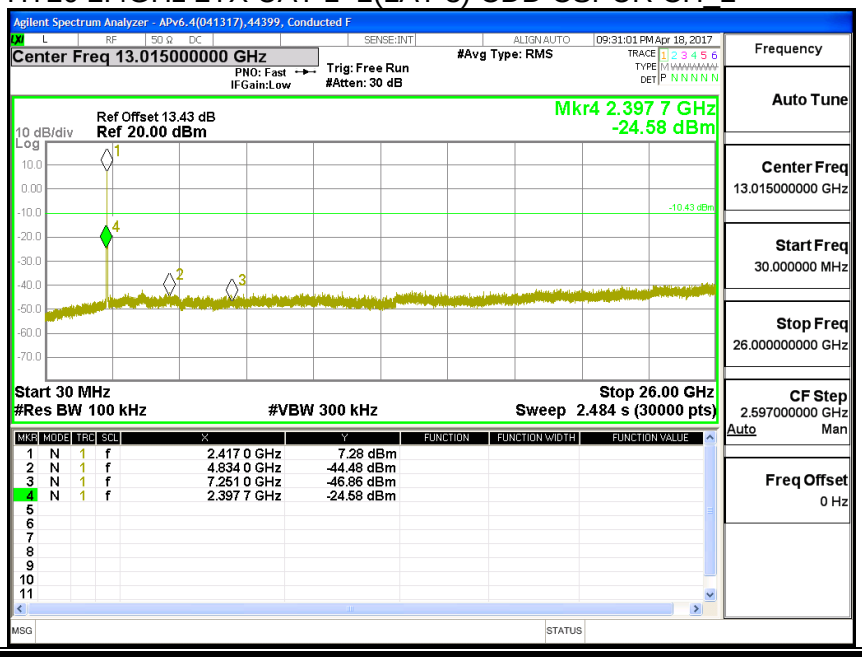

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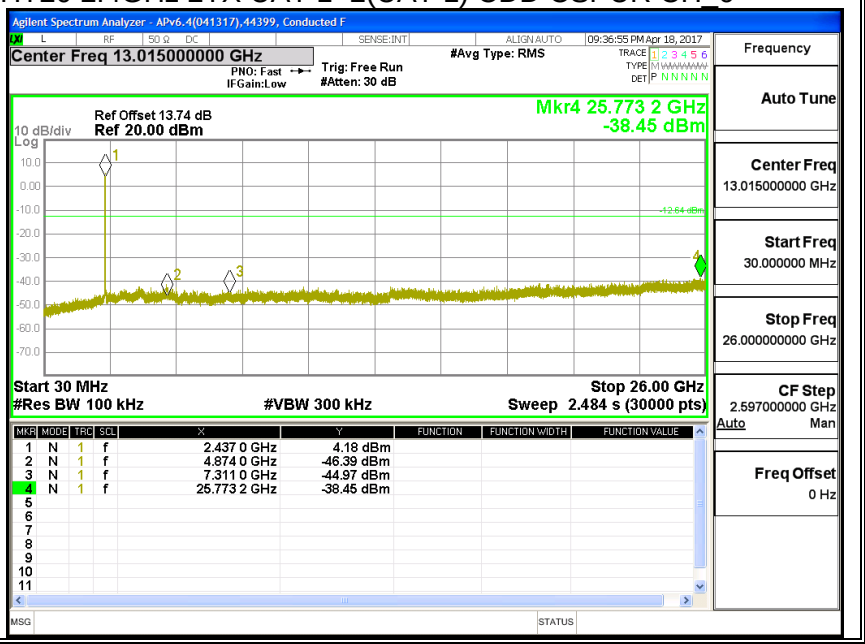

HT20 2.4GHz 2TX UAT 1+2(LAT 3) CDD CSPUR CH_6