

8.4. 11n HT20 LAT 3 SISO MODE IN THE 2.4GHz BAND

8.4.1. 6 dB BANDWIDTH

LIMITS

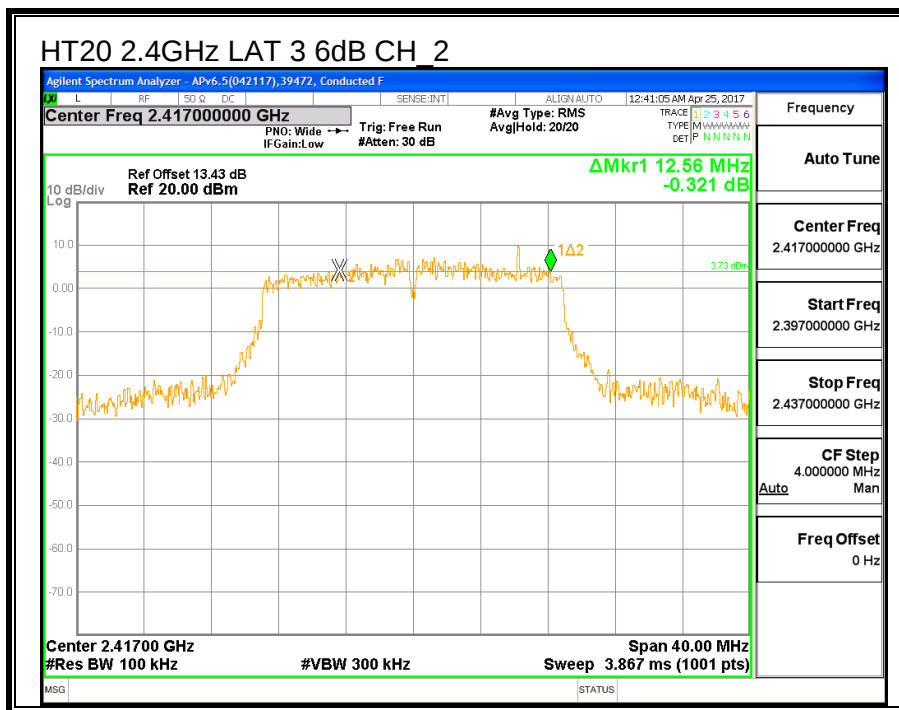
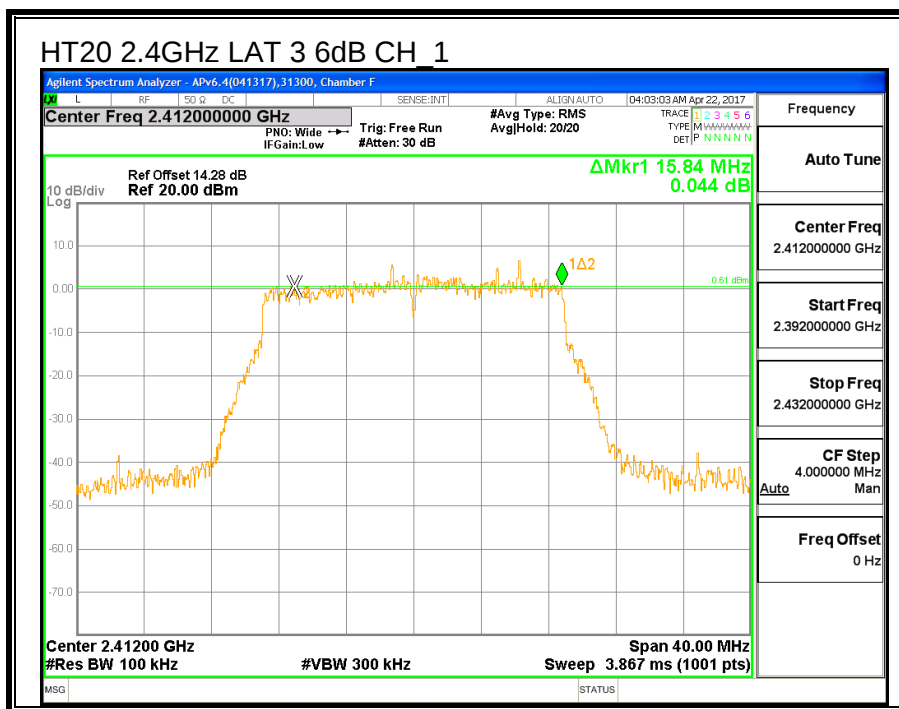
FCC §15.247 (a) (2)

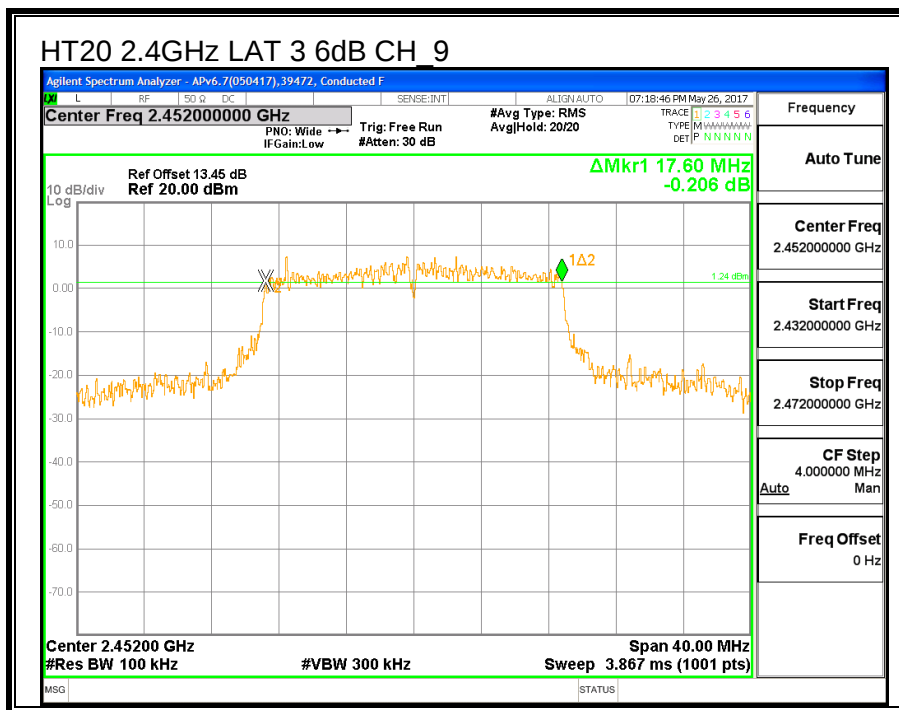
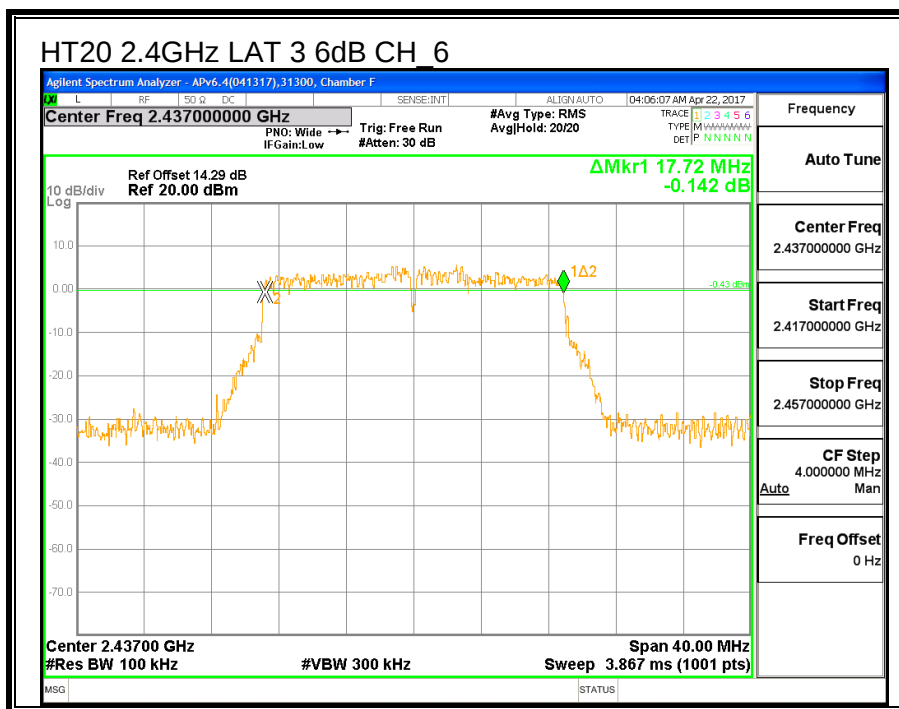
IC RSS-247 (5.2) (a)

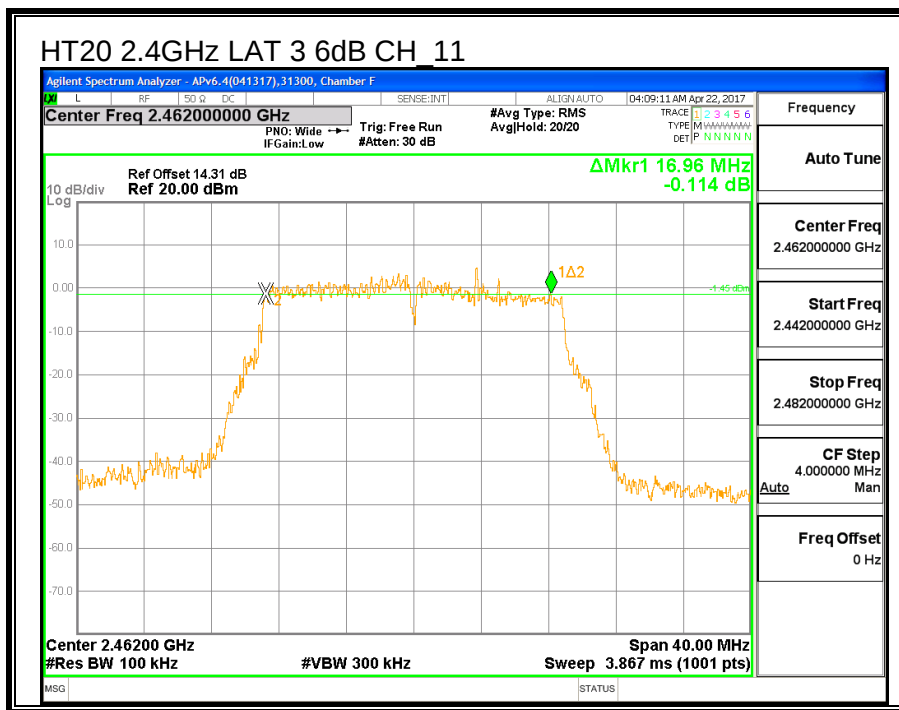
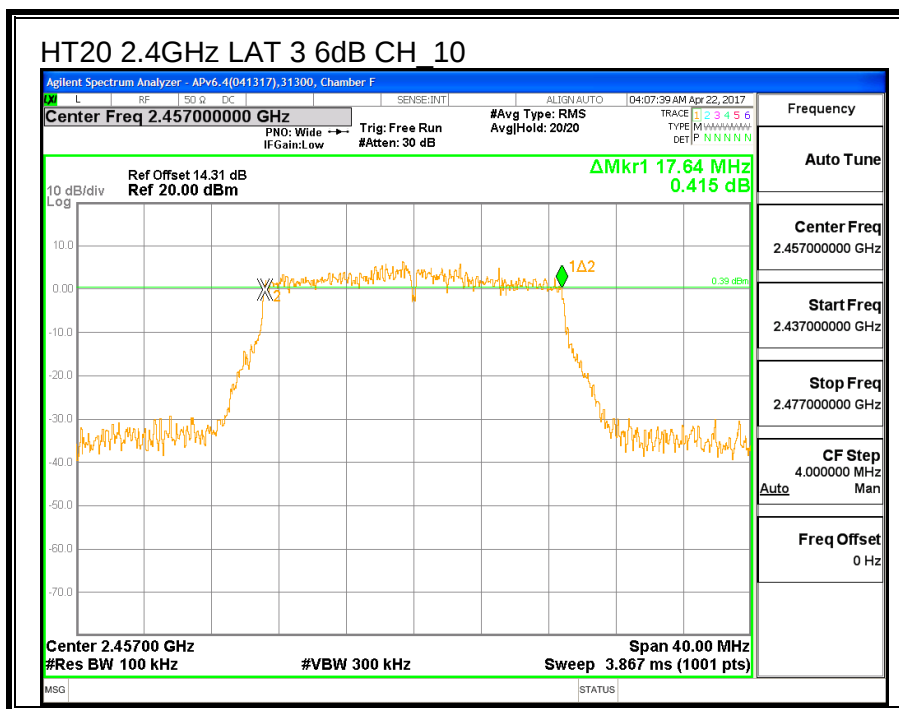
The minimum 6 dB bandwidth shall be at least 500 kHz.

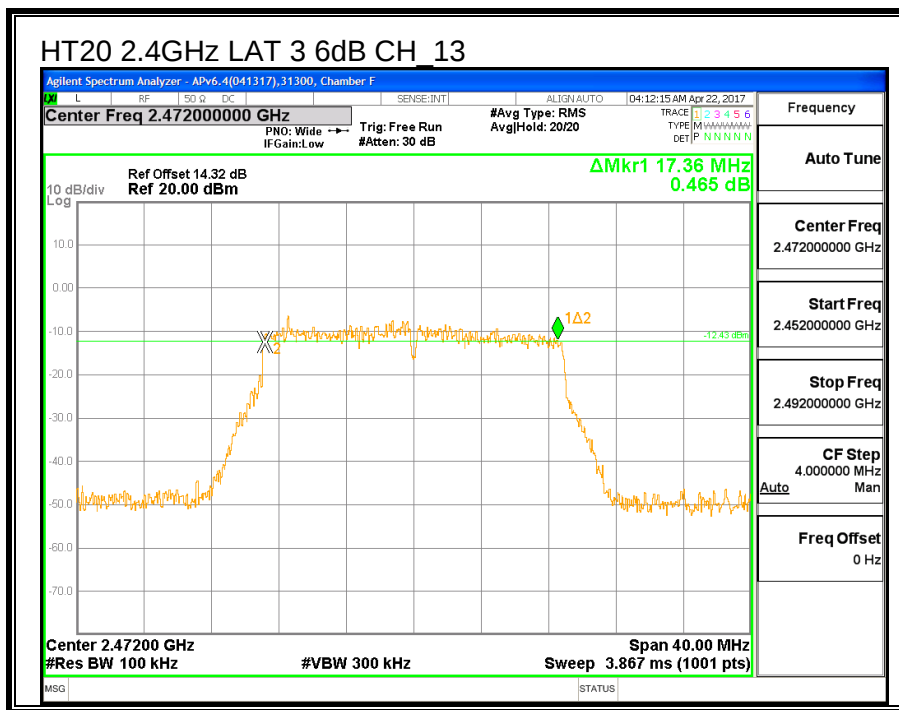
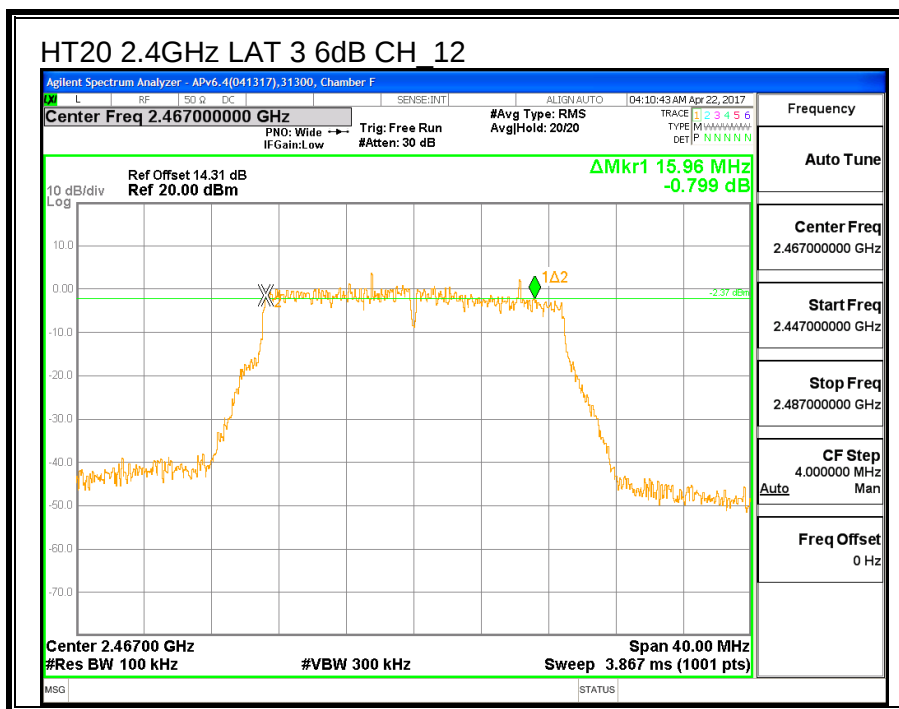
RESULTS

Channel	Frequency	6 dB BW LAT 3 (MHz)	Minimum Limit (MHz)
Low_1	2412	15.84	0.5
Low_2	2417	12.56	0.5
Middle_6	2437	17.72	0.5
High_9	2452	17.6	0.5
High_10	2457	17.64	0.5
High_11	2462	16.96	0.5
High_12	2467	15.96	0.5
High_13	2472	17.36	0.5









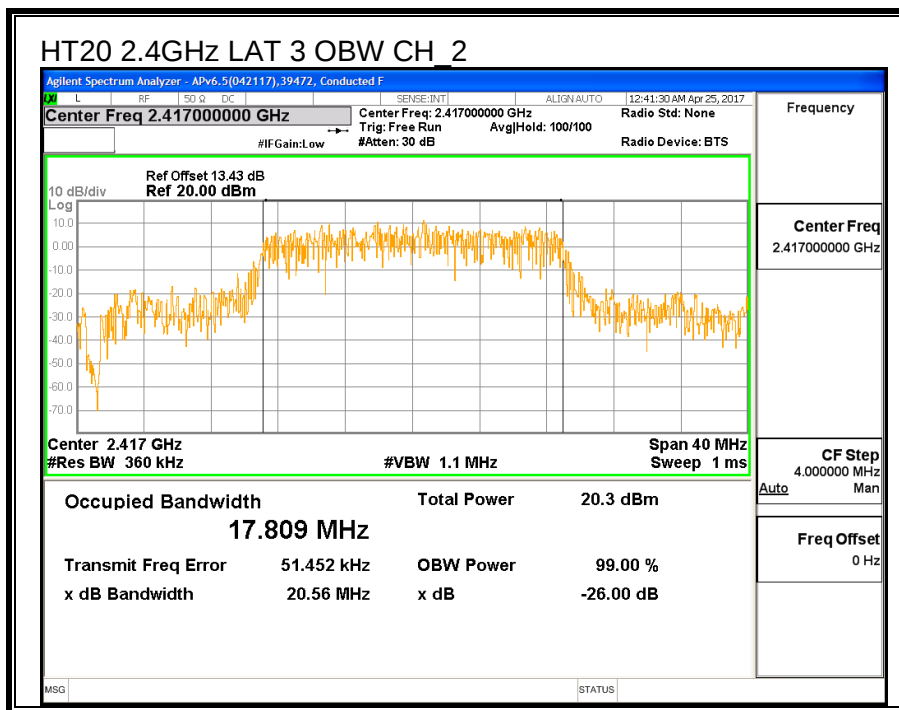
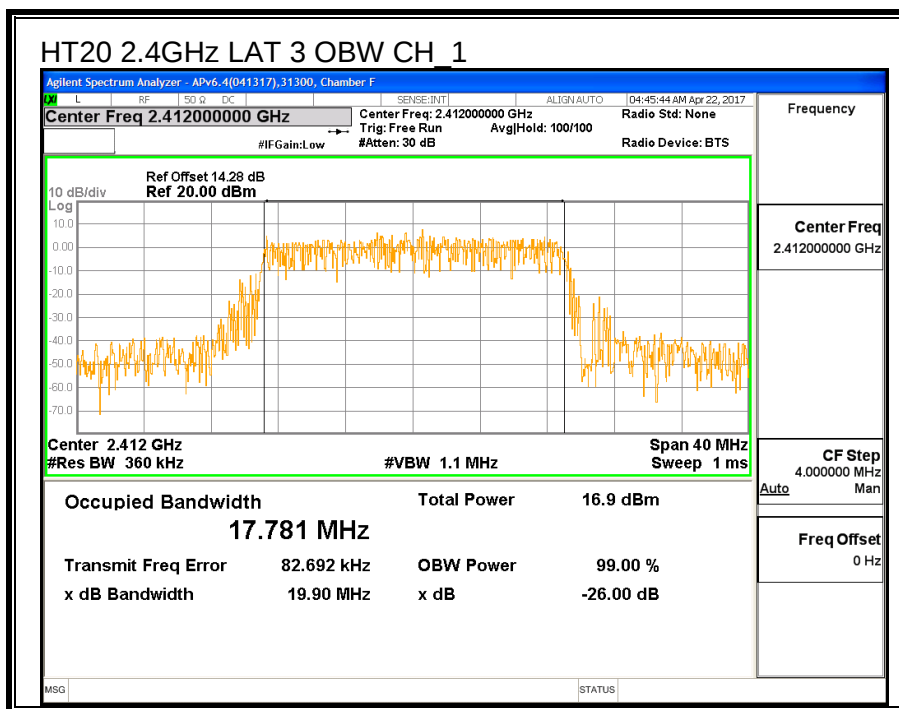
8.4.2. 99% BANDWIDTH

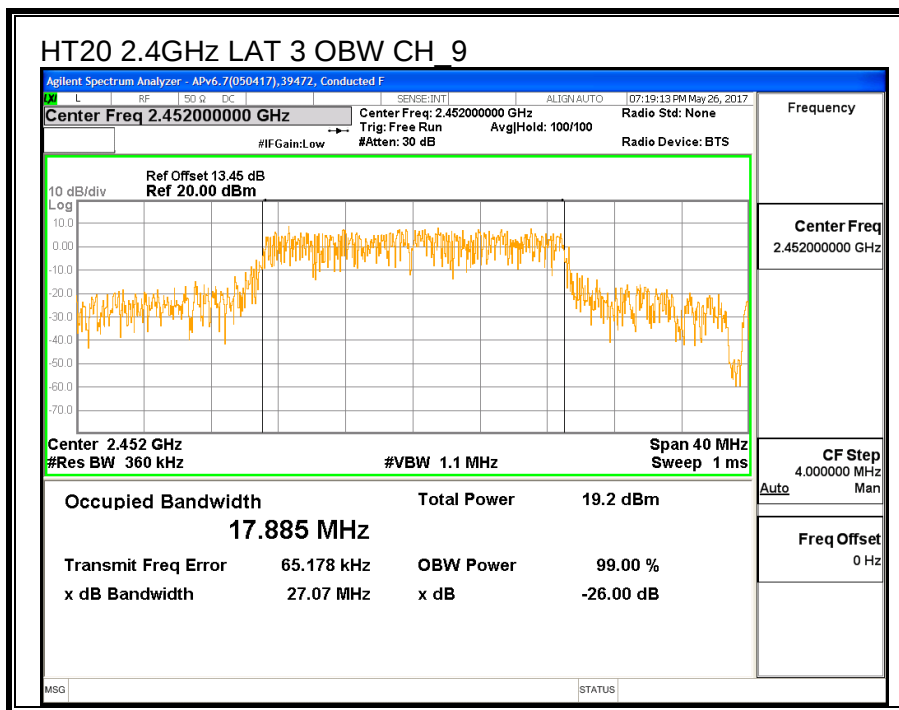
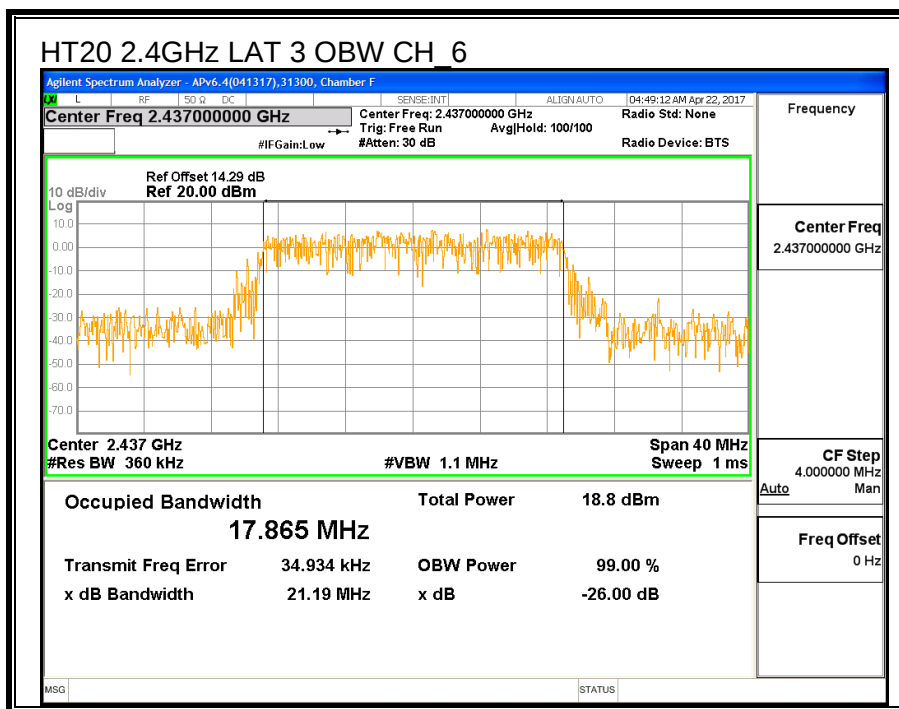
LIMITS

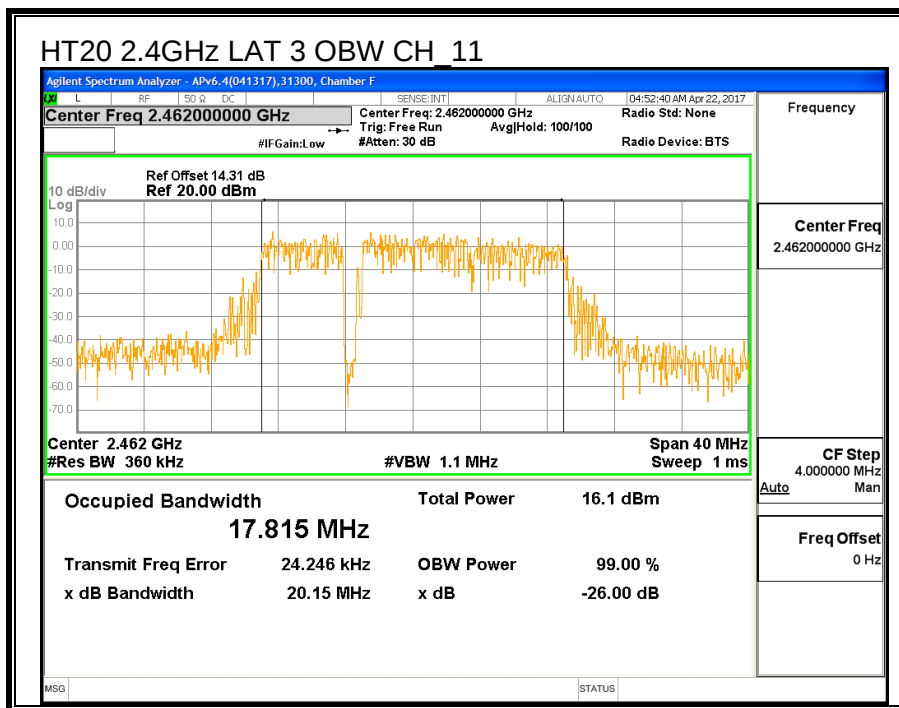
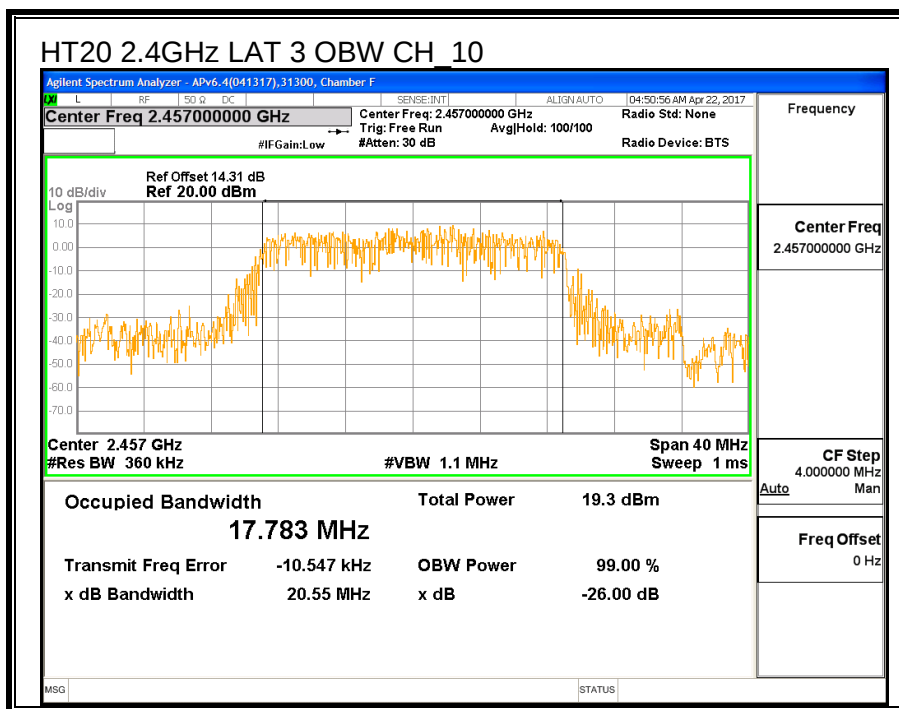
None; for reporting purposes only.

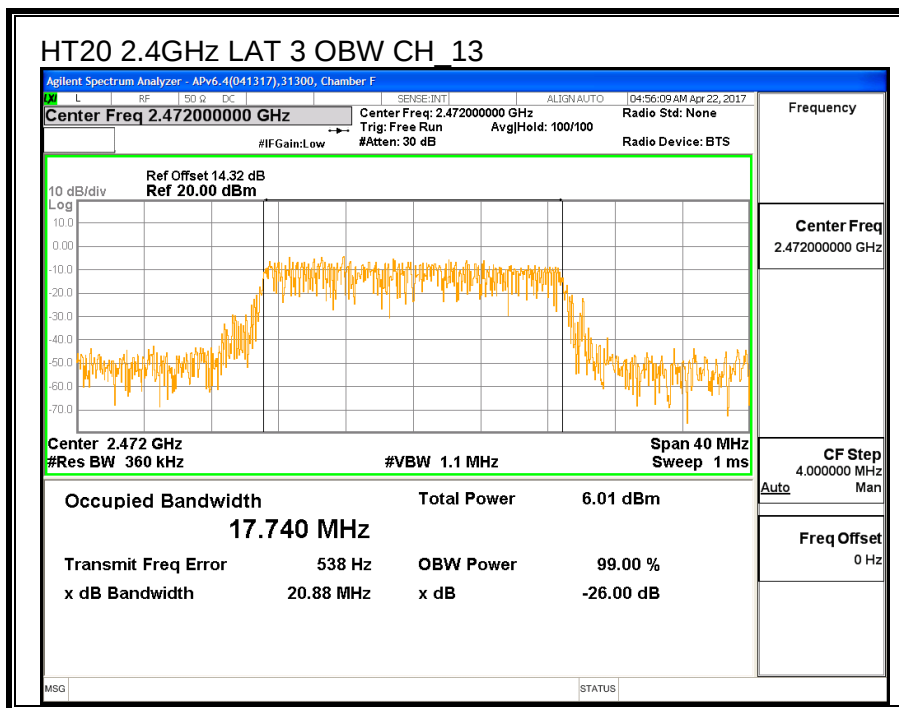
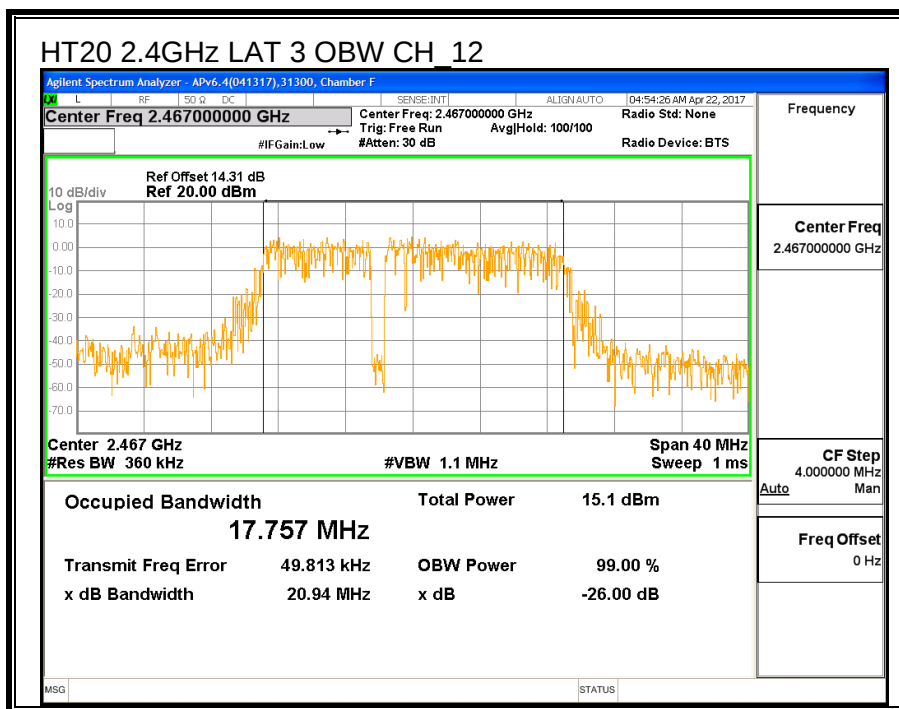
RESULTS

Channel	Frequency (MHz)	99% Bandwidth LAT 3 (MHz)
Low_1	2412	17.781
Low_2	2417	17.809
Middle_6	2437	17.865
High_9	2452	17.885
High_10	2457	17.783
High_11	2462	17.815
High_12	2467	17.757
High_13	2472	17.74









8.4.3. AVERAGE POWER

ID:	30554	Date:	7/13/17
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LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
Low_1	2412	16.25
Low_2	2417	18.80
Mid_6	2437	20.97
High_9	2452	20.98
High_10	2457	18.79
High_11	2462	16.44
High_12	2467	13.86
High_13	2472	5.84

8.4.4. OUTPUT POWER

ID:	30554	Date:	7/13/17
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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	-0.44	30.00	30	36	30.00
Low_2	2417	-0.44	30.00	30	36	30.00
Mid_6	2437	-0.44	30.00	30	36	30.00
High_9	2452	-0.44	30.00	30	36	30.00
High_10	2457	-0.44	30.00	30	36	30.00
High_11	2462	-0.44	30.00	30	36	30.00
High_12	2467	-0.44	30.00	30	36	30.00
High_13	2472	-0.44	30.00	30	36	30.00

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

Channel	Frequency (MHz)	Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low_1	2412	22.90	22.90	30.00	-7.10
Low_2	2417	25.11	25.11	30.00	-4.89
Mid_6	2437	27.65	27.65	30.00	-2.35
High_9	2452	27.22	27.22	30.00	-2.78
High_10	2457	25.36	25.36	30.00	-4.64
High_11	2462	22.72	22.72	30.00	-7.28
High_12	2467	20.46	20.46	30.00	-9.54
High_13	2472	12.24	12.24	30.00	-17.76

8.4.5. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247

IC RSS-247 (5.2) (b)

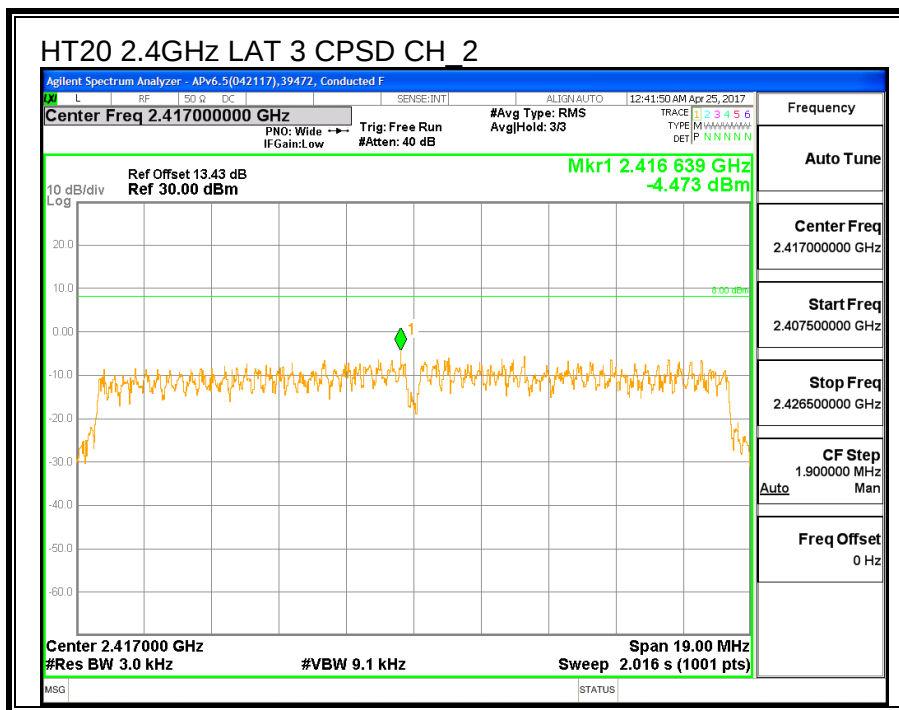
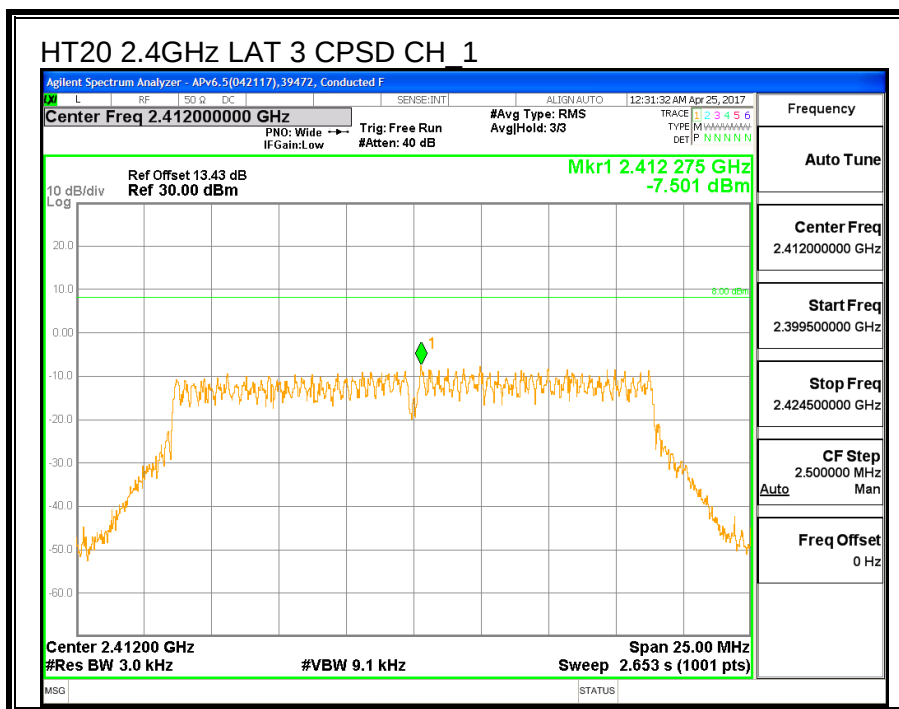
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 KHz band during any time interval of continuous transmissions.

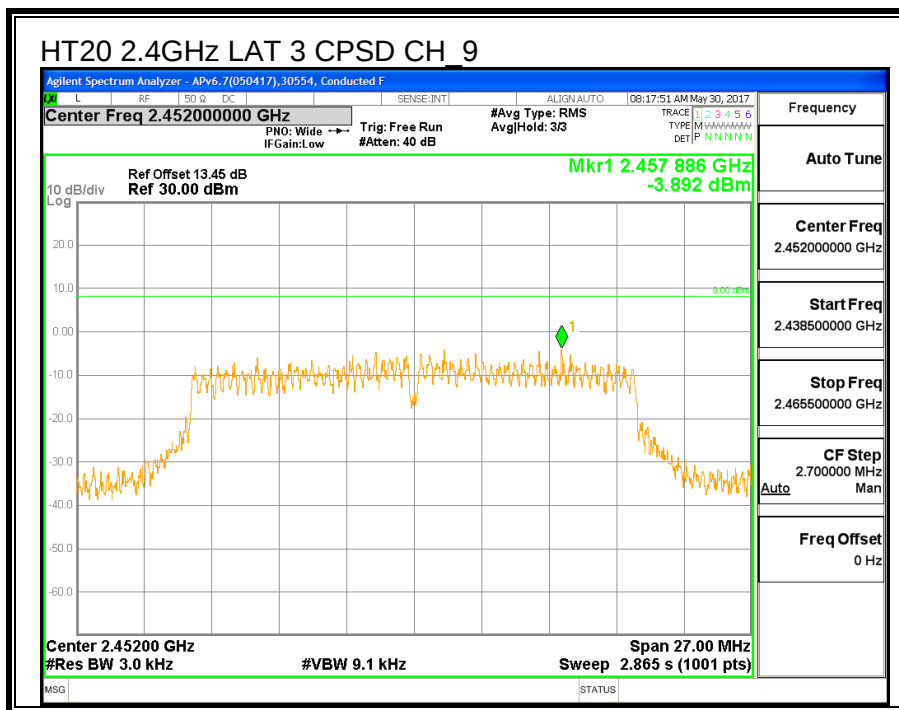
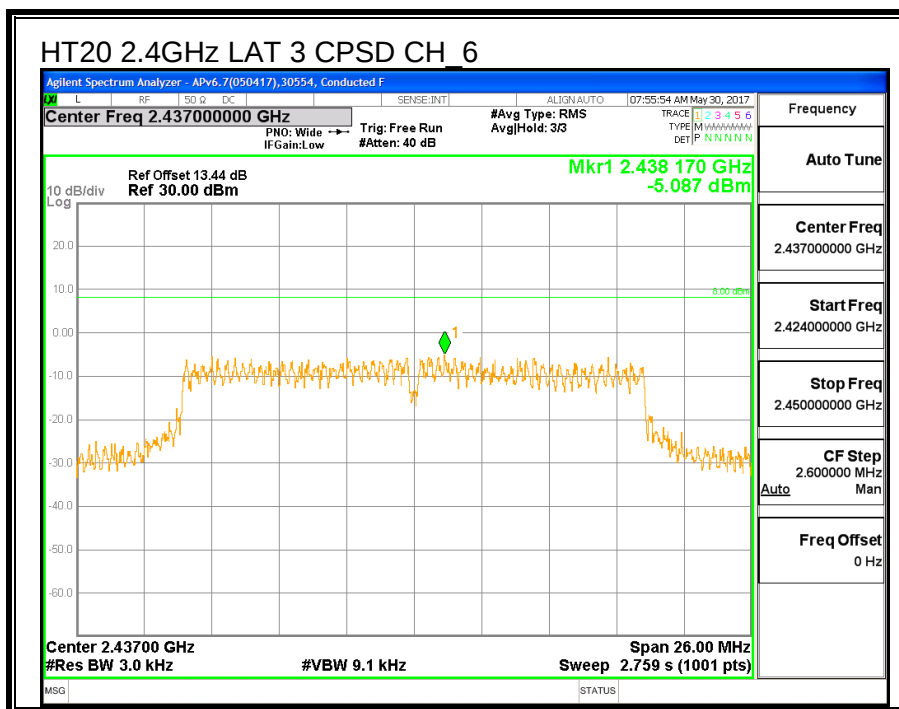
RESULTS

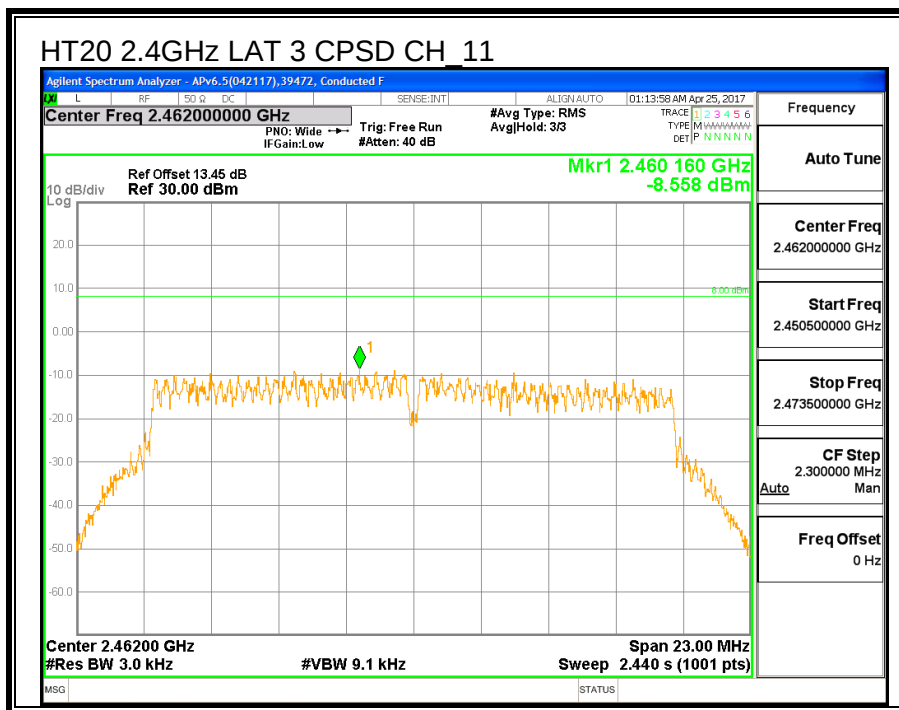
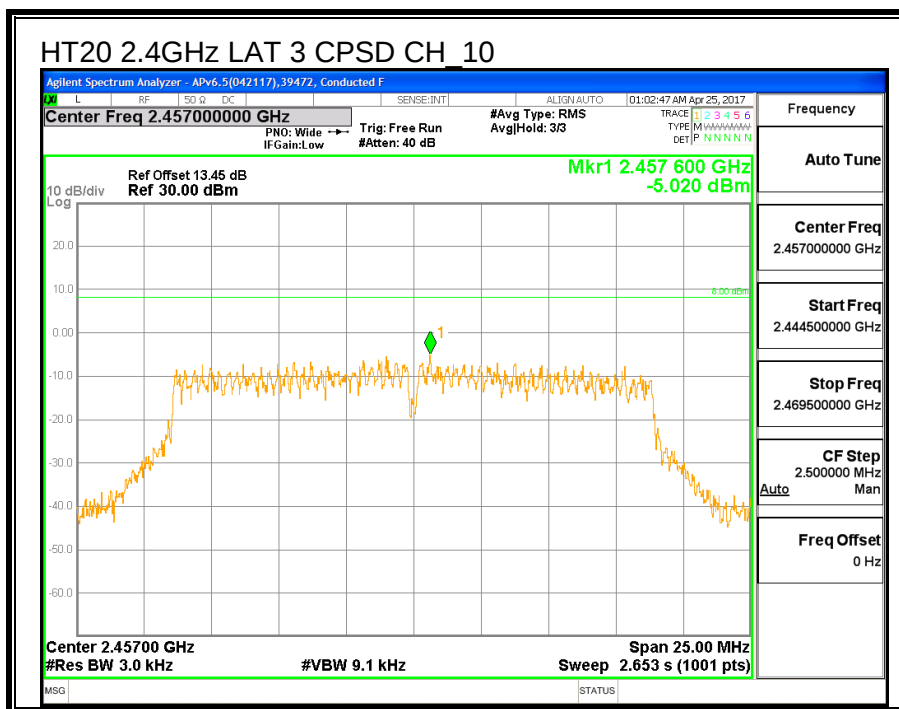
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD
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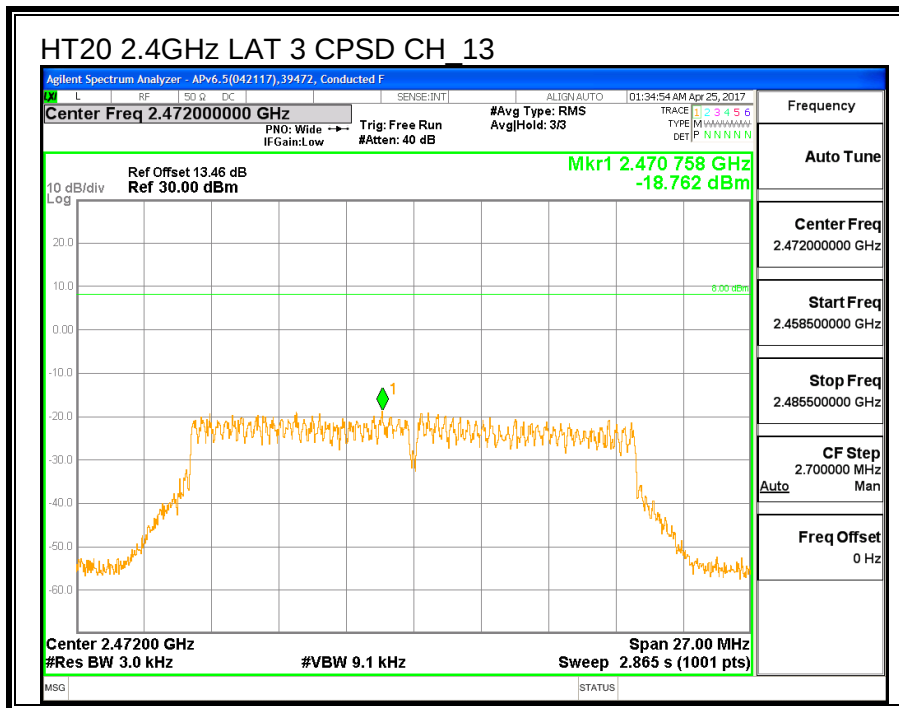
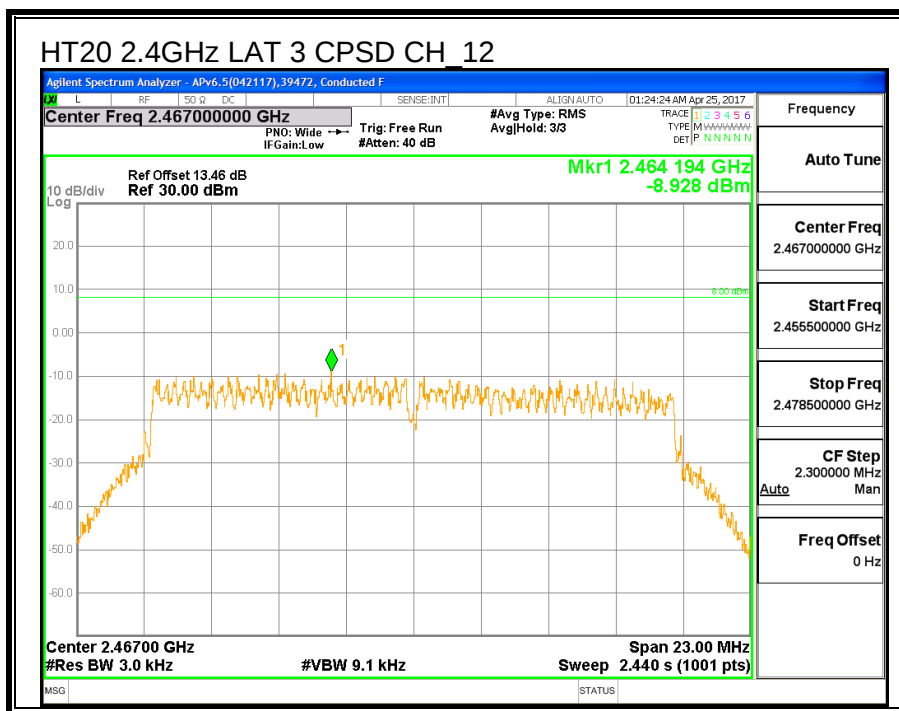
PSD Results

Channel	Frequency (MHz)	Meas (dBm)	Total Corr'd (dBm)	Limit (dBm)	Margin (dB)
Low_1	2412	-7.50	-7.50	8.0	-15.5
Low_2	2417	-4.47	-4.47	9.0	-13.5
Mid_6	2437	-5.09	-5.09	8.0	-13.1
High_9	2452	-3.89	-3.89	8.0	-11.9
High_10	2457	-5.02	-5.02	8.0	-13.0
High_11	2462	-8.56	-8.56	8.0	-16.6
High_12	2467	-8.93	-8.93	8.0	-16.9
High_13	2472	-18.76	-18.76	8.0	-26.8









8.4.6. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

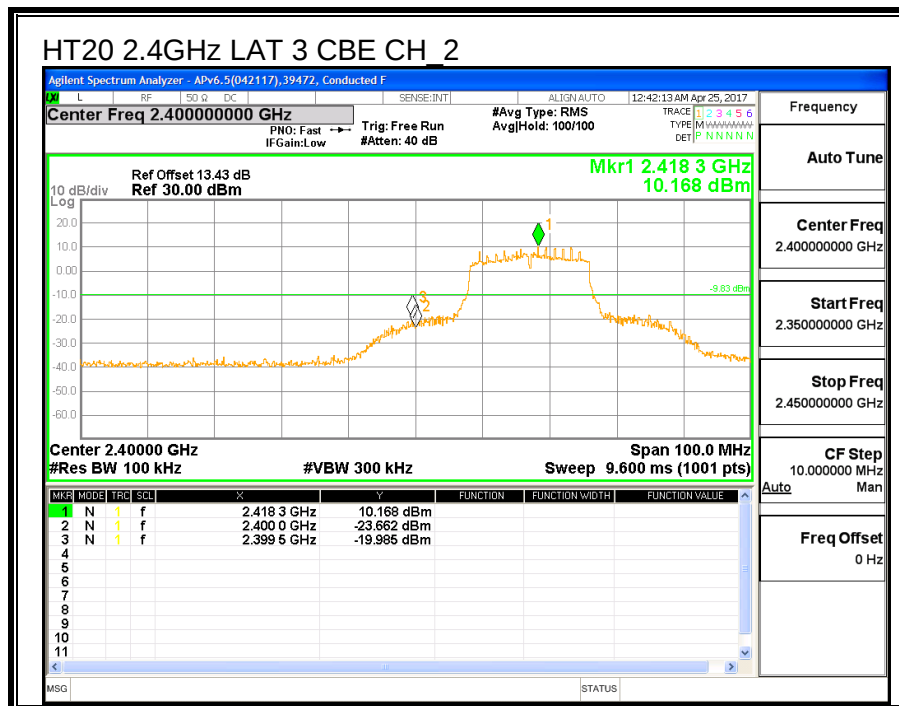
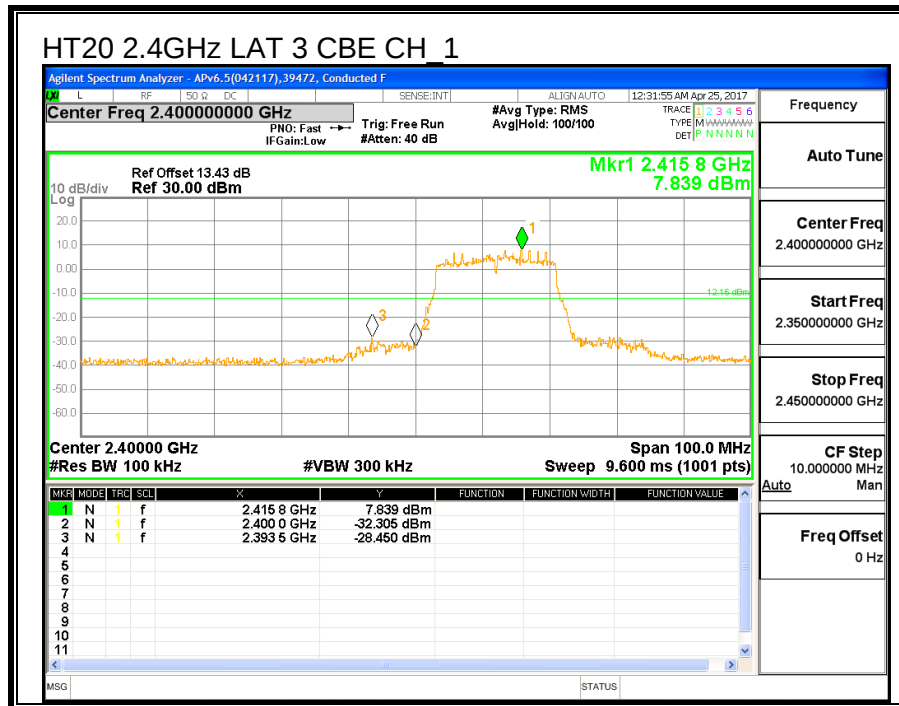
LIMITS

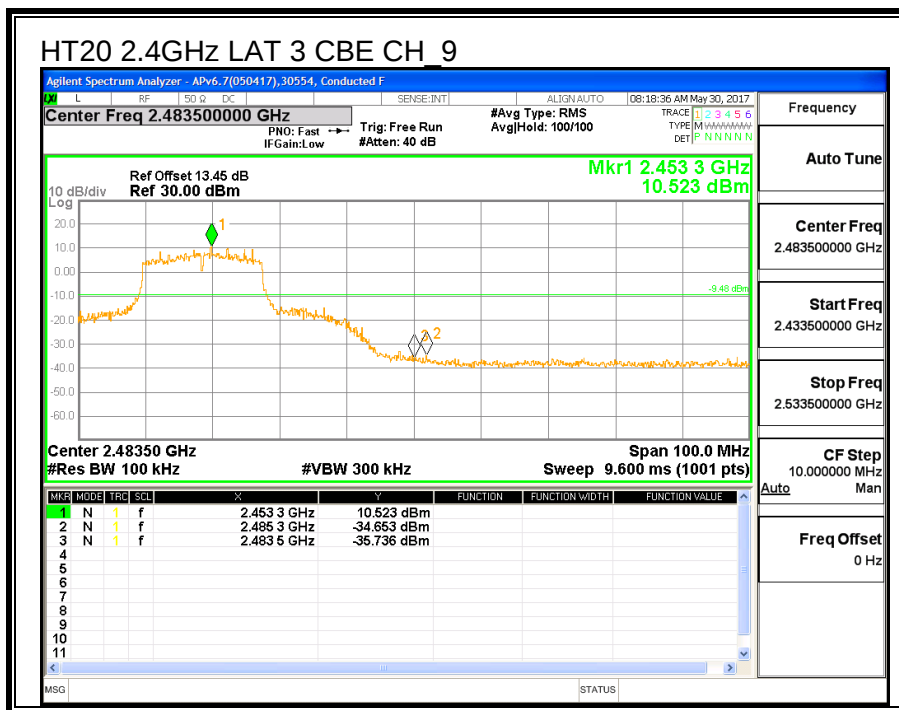
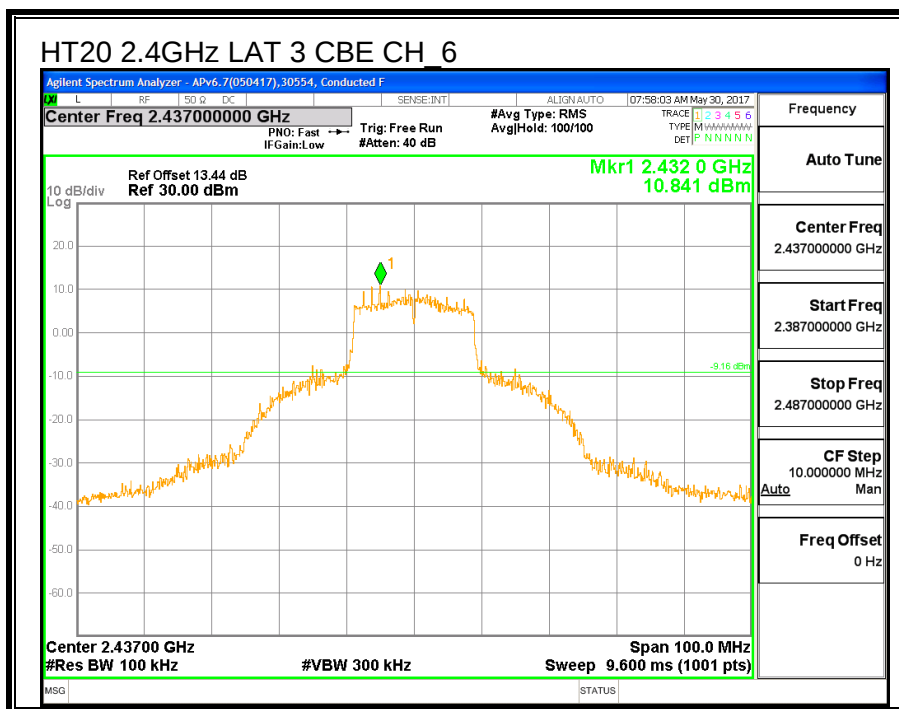
FCC §15.247 (d)

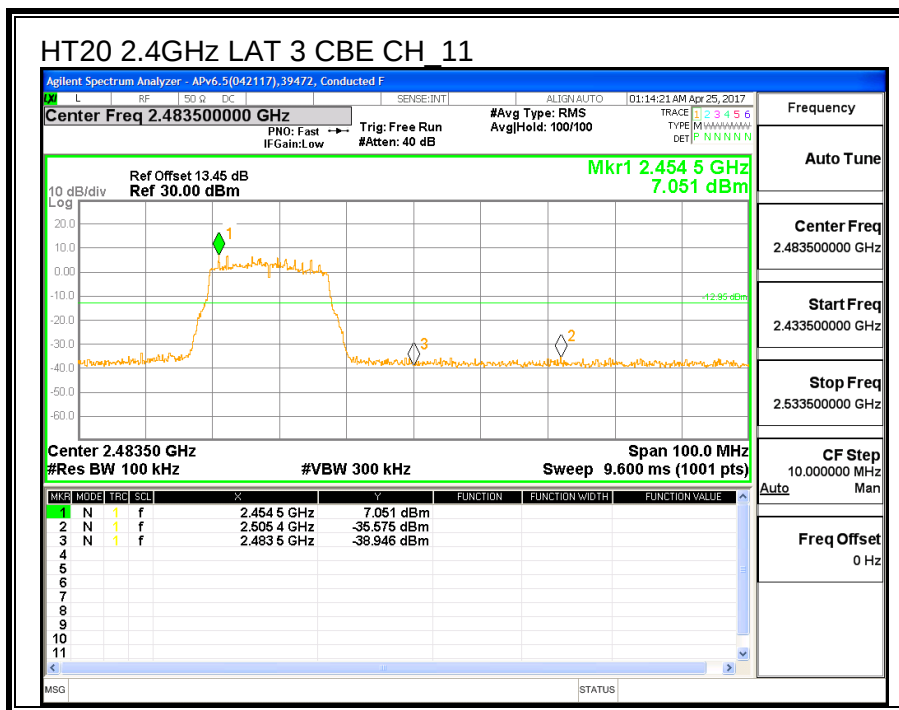
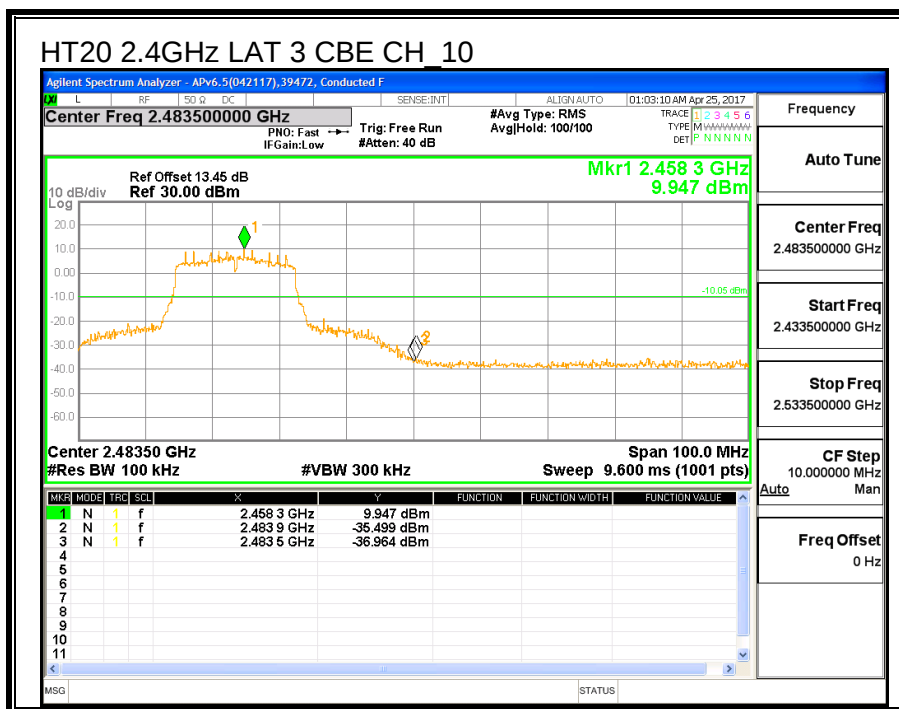
IC RSS-247 (5.5)

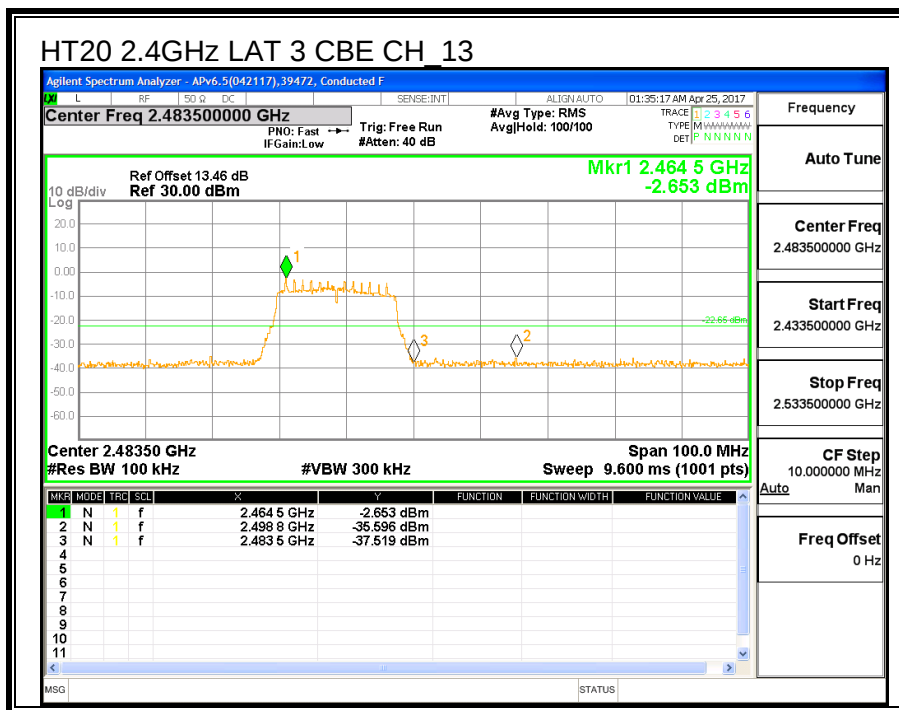
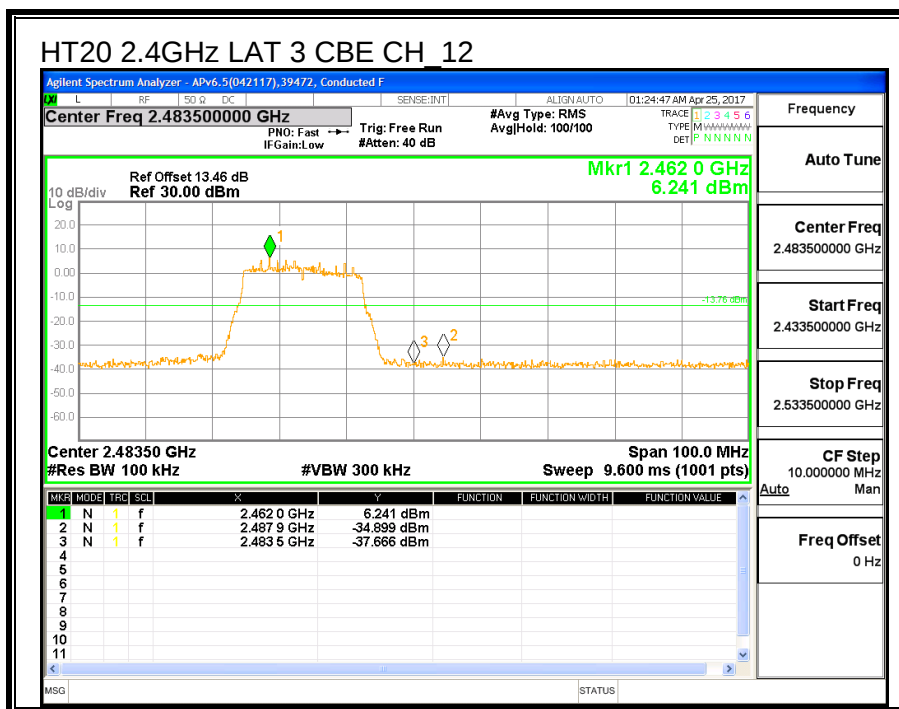
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the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

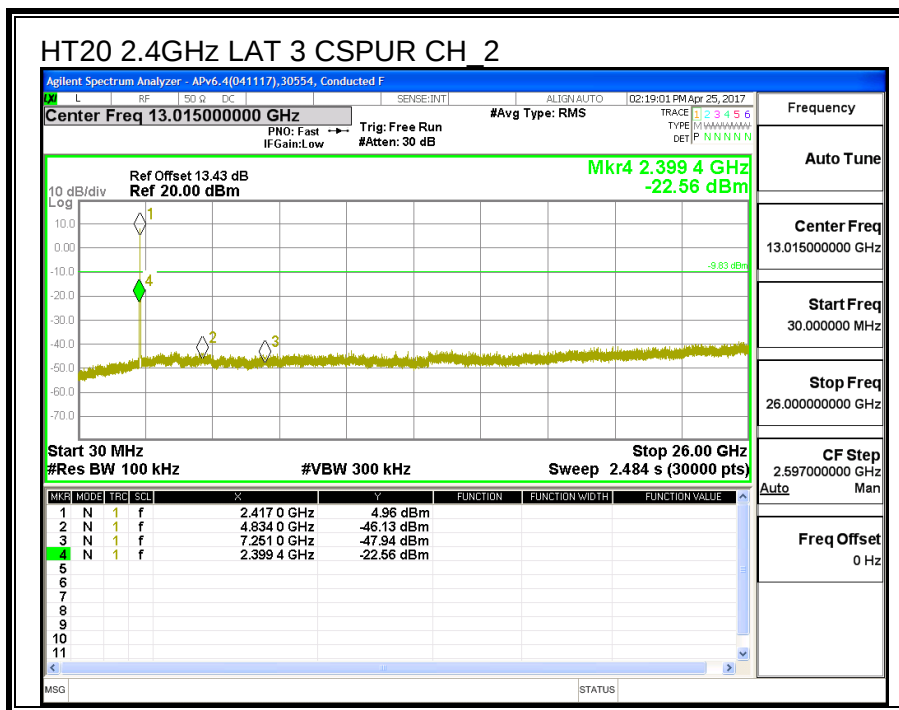
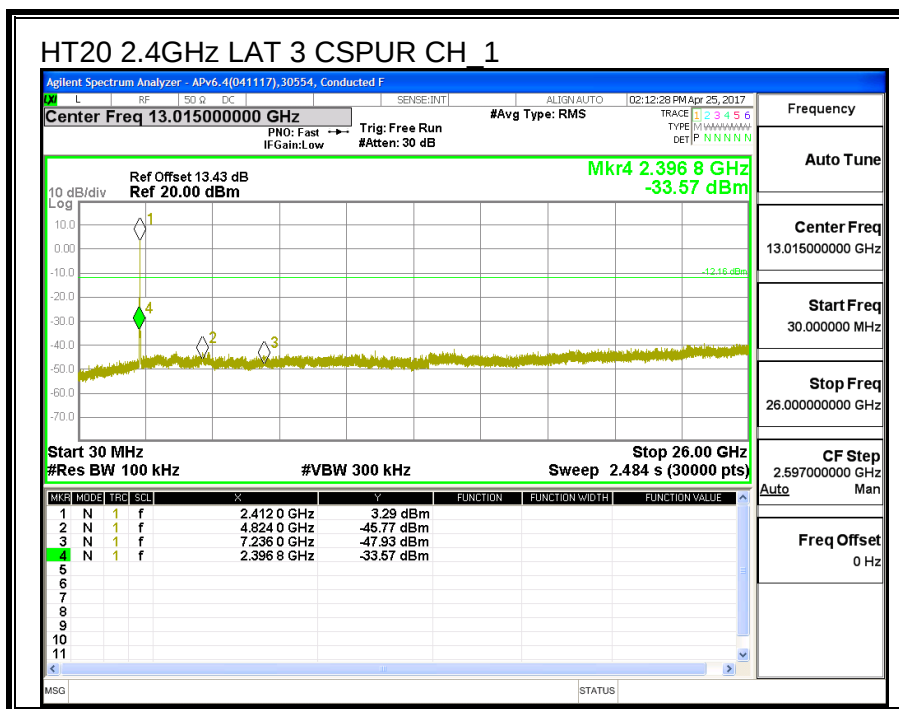
CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

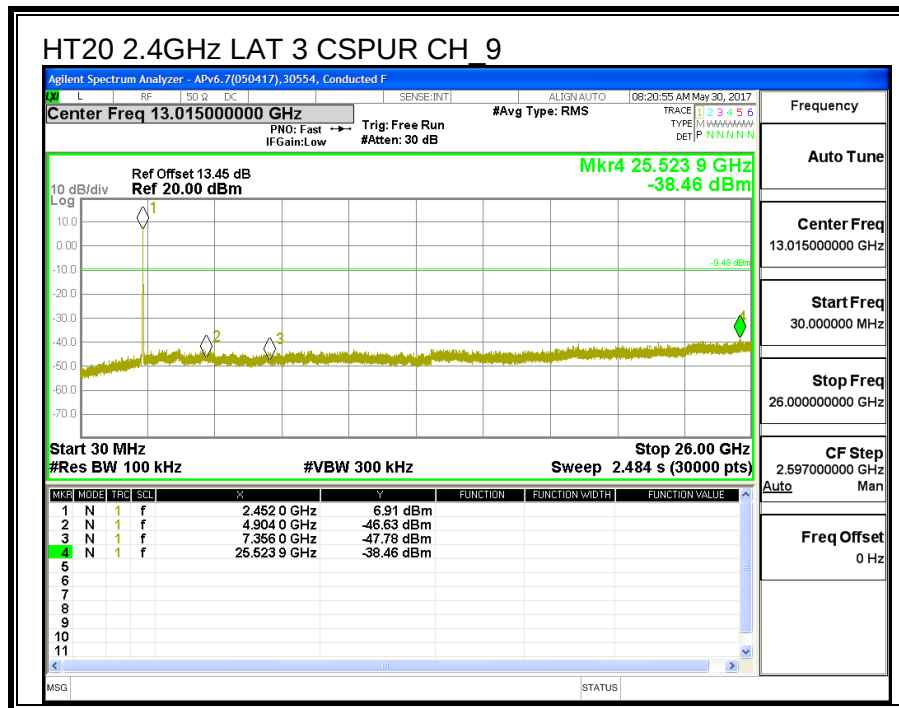
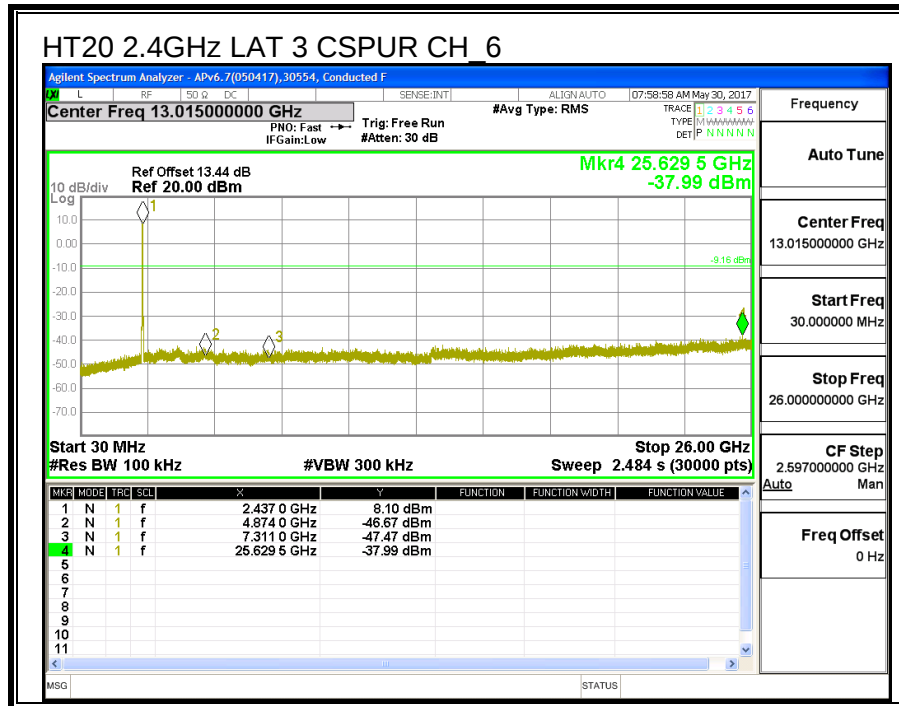


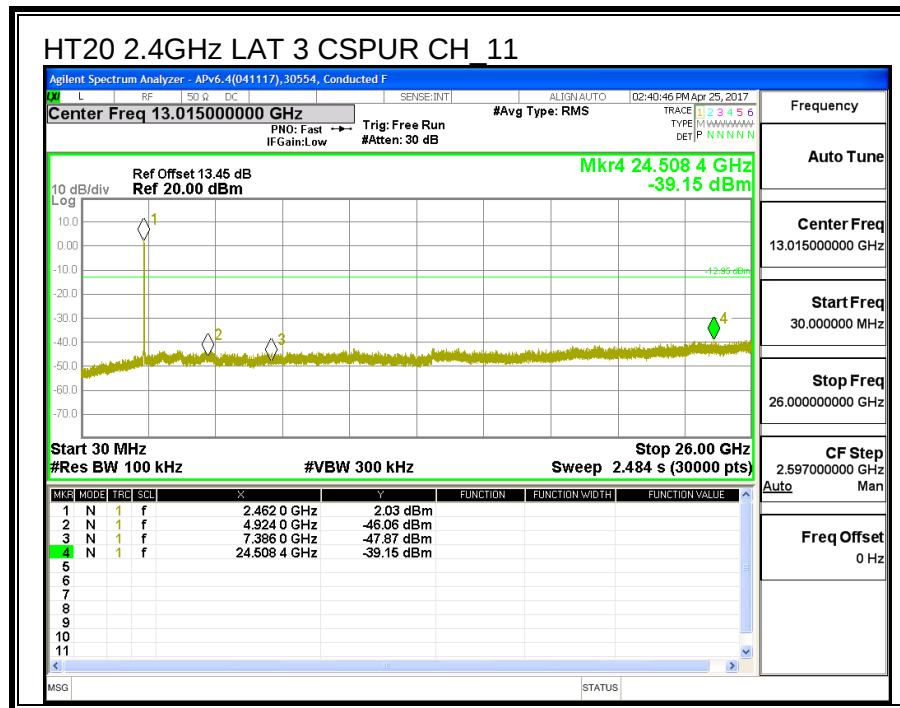
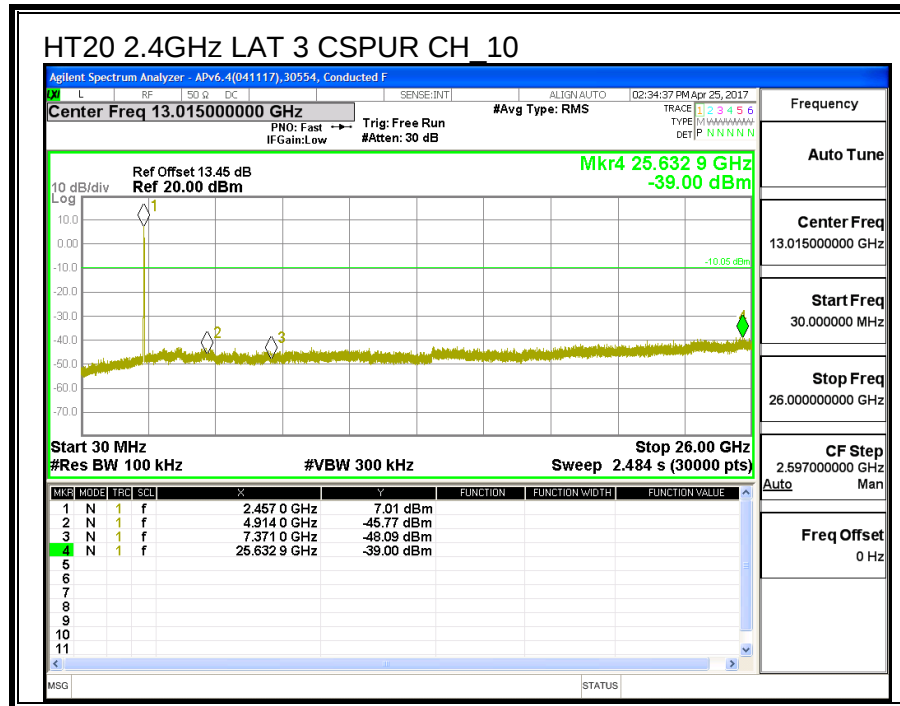


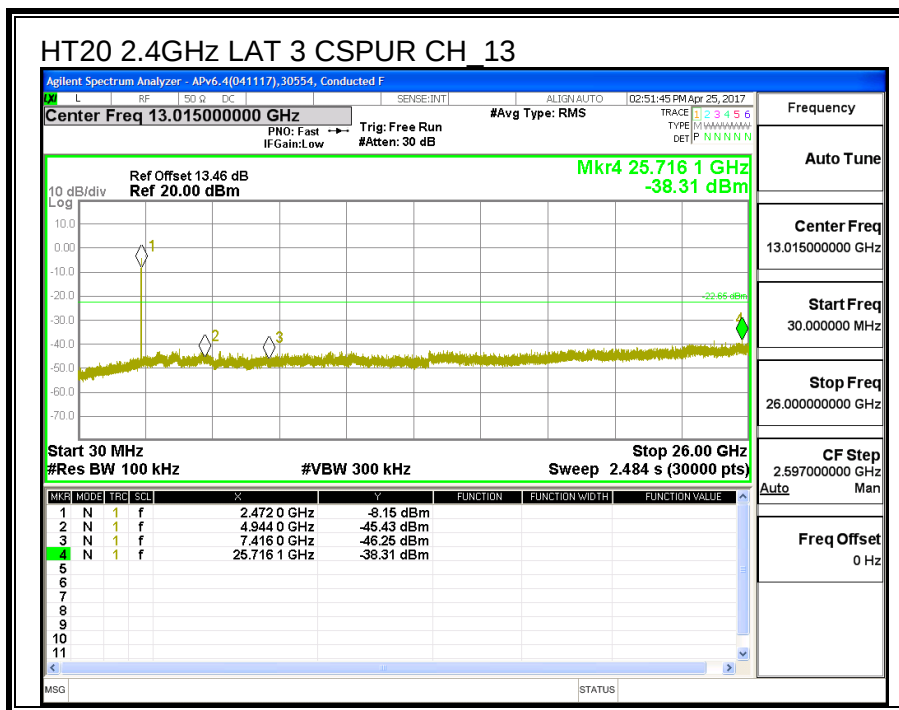
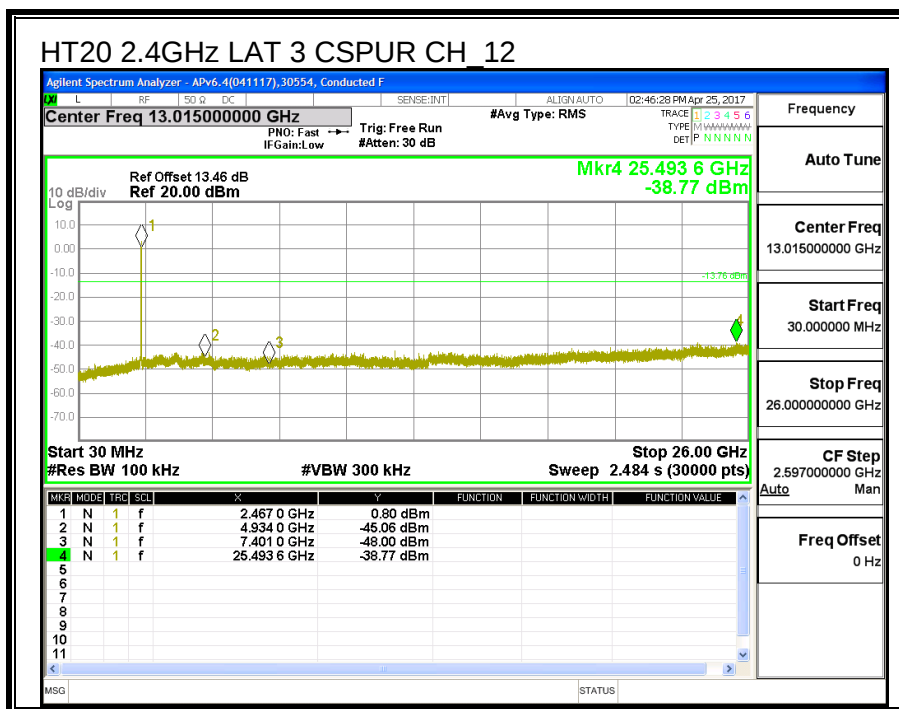












8.5. 11n HT20 2TX CDD MIMO MODE IN THE 2.4GHz BAND

8.5.1. 6 dB BANDWIDTH

LIMITS

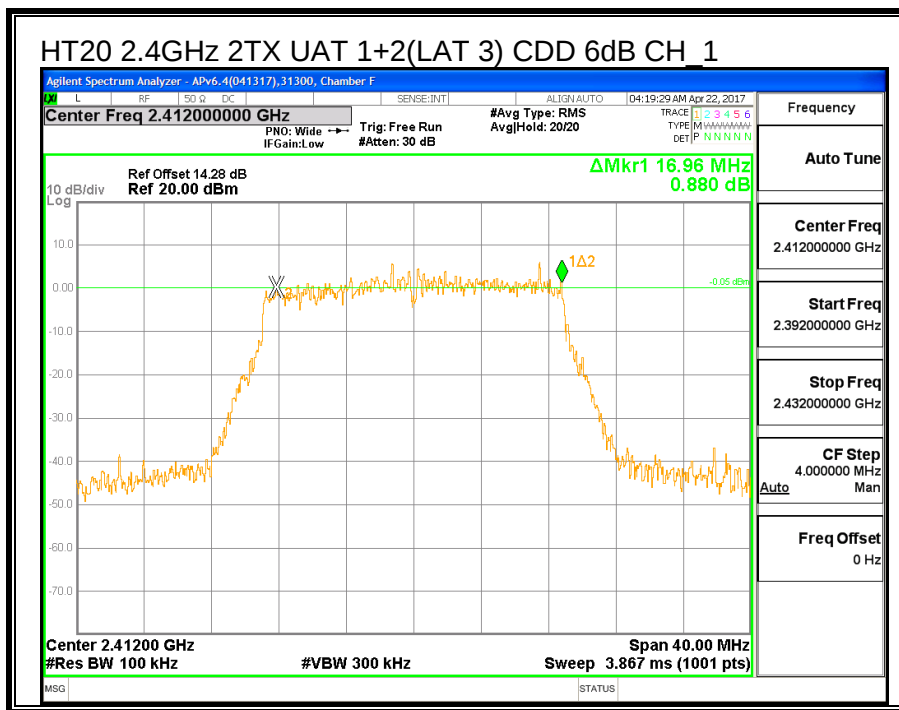
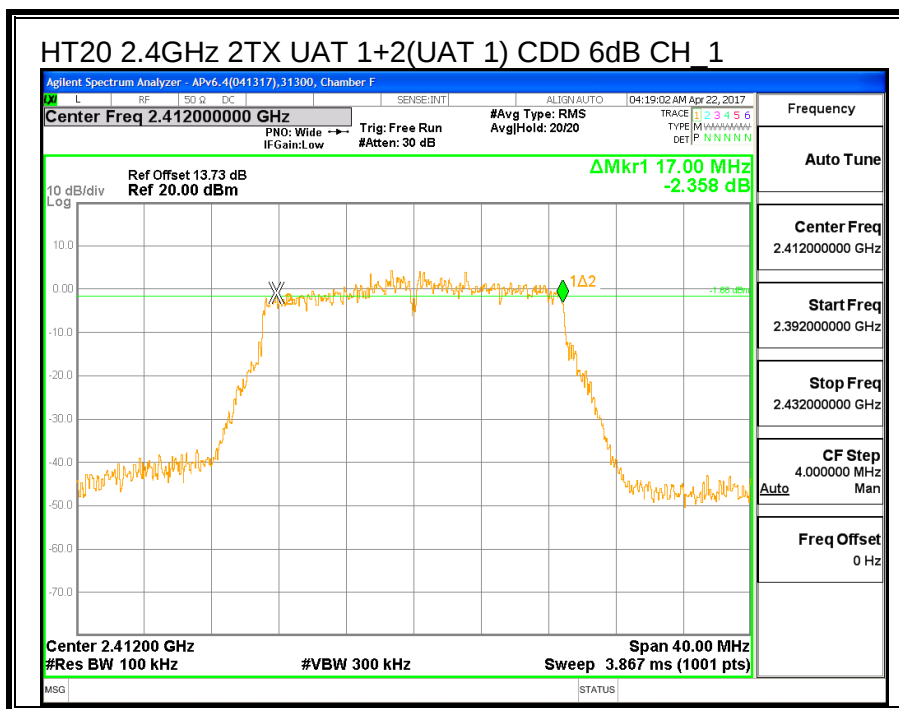
FCC §15.247 (a) (2)

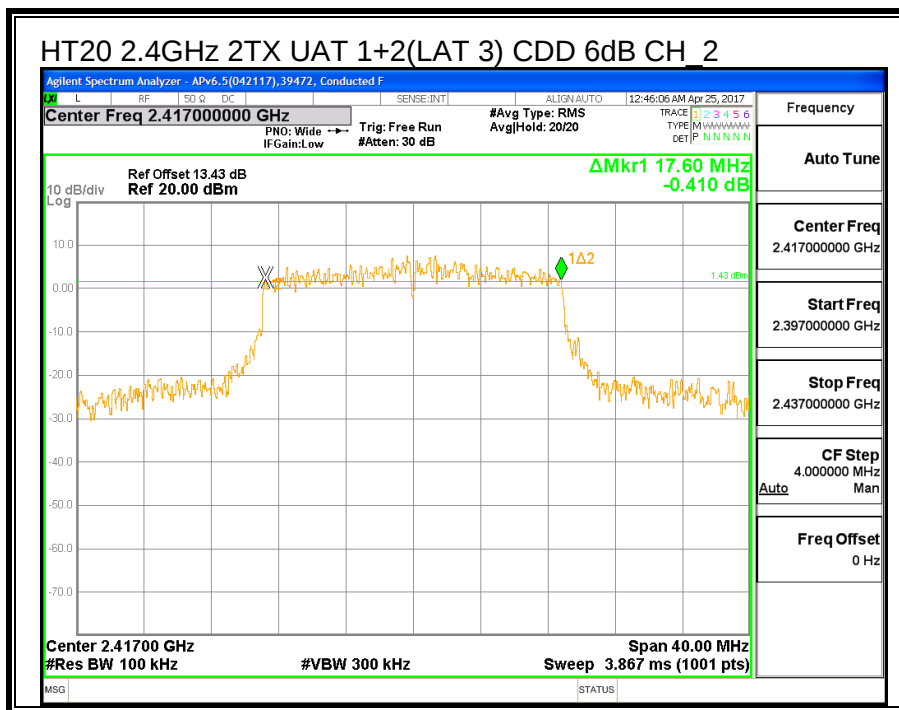
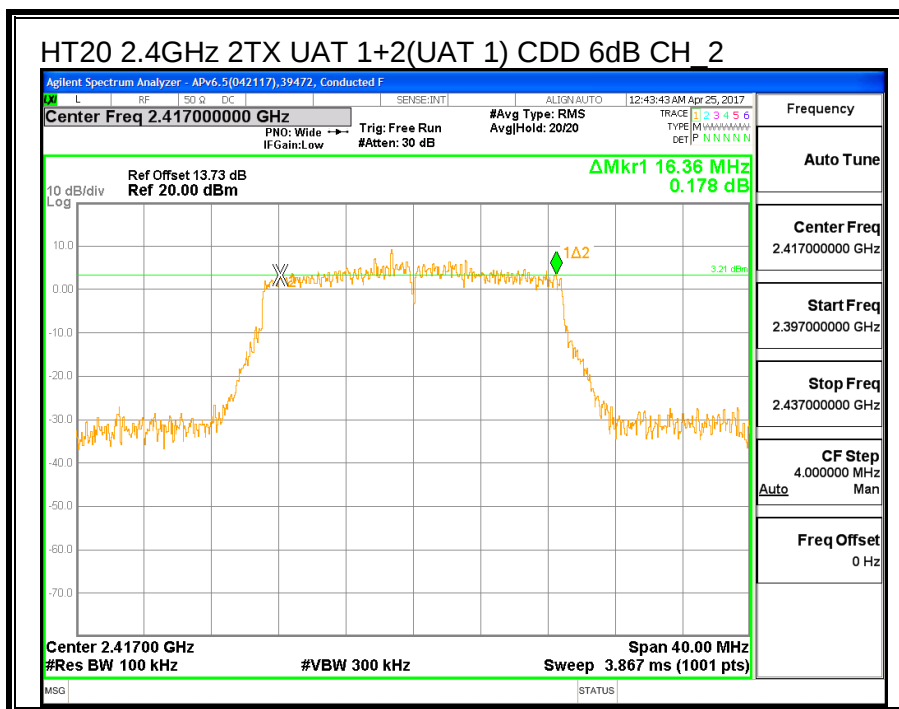
IC RSS-247 (5.2) (a)

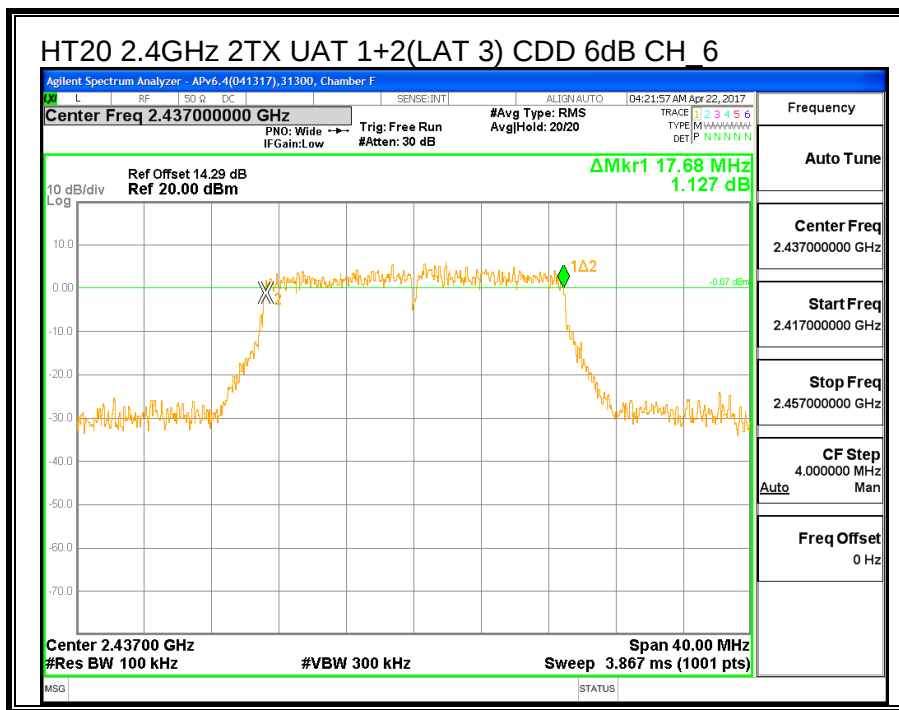
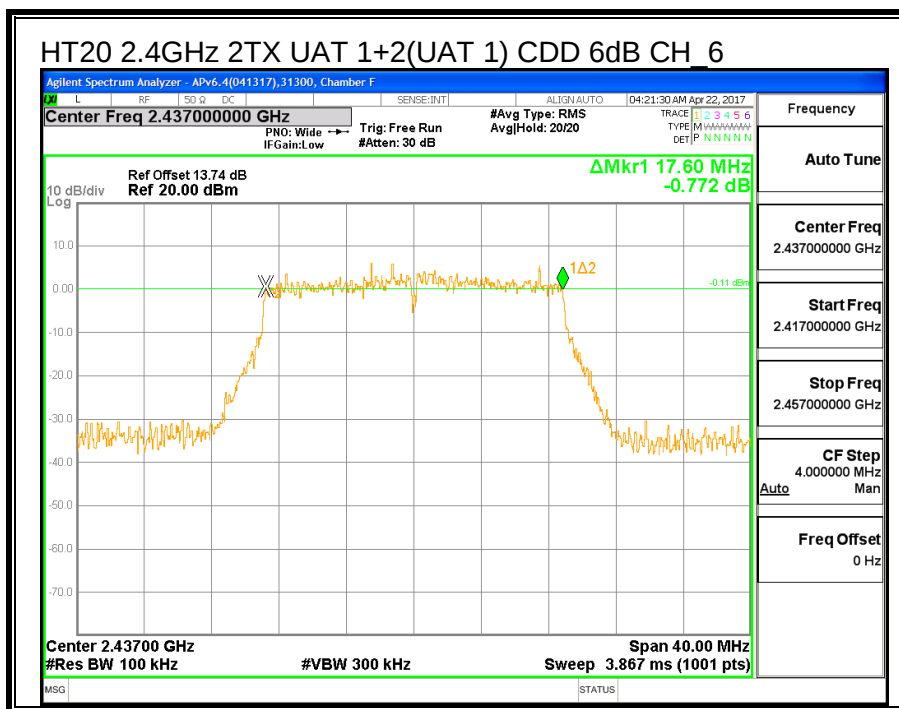
The minimum 6 dB bandwidth shall be at least 500 kHz.

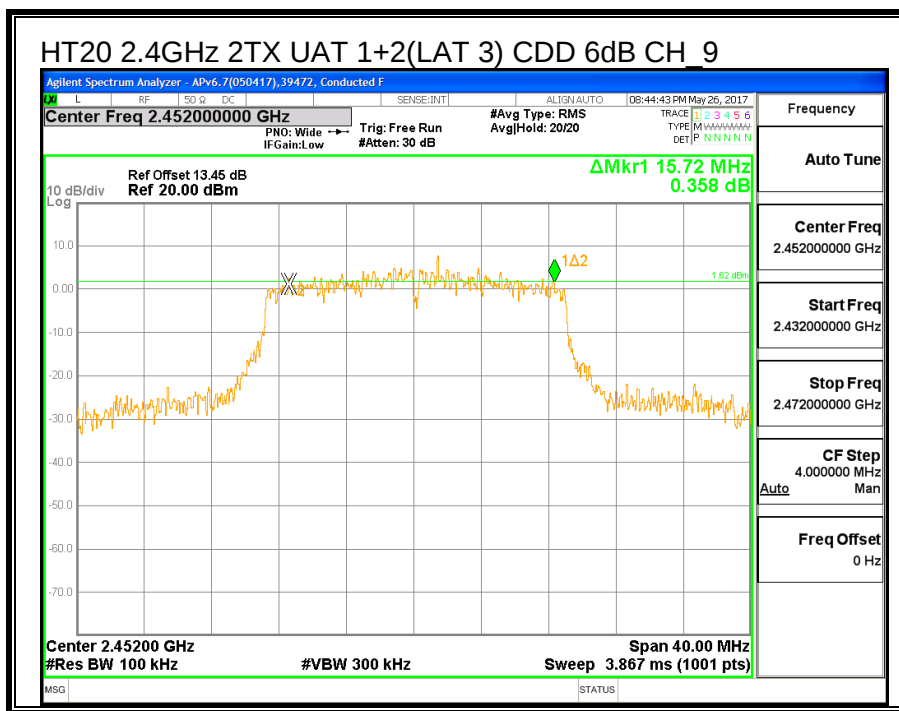
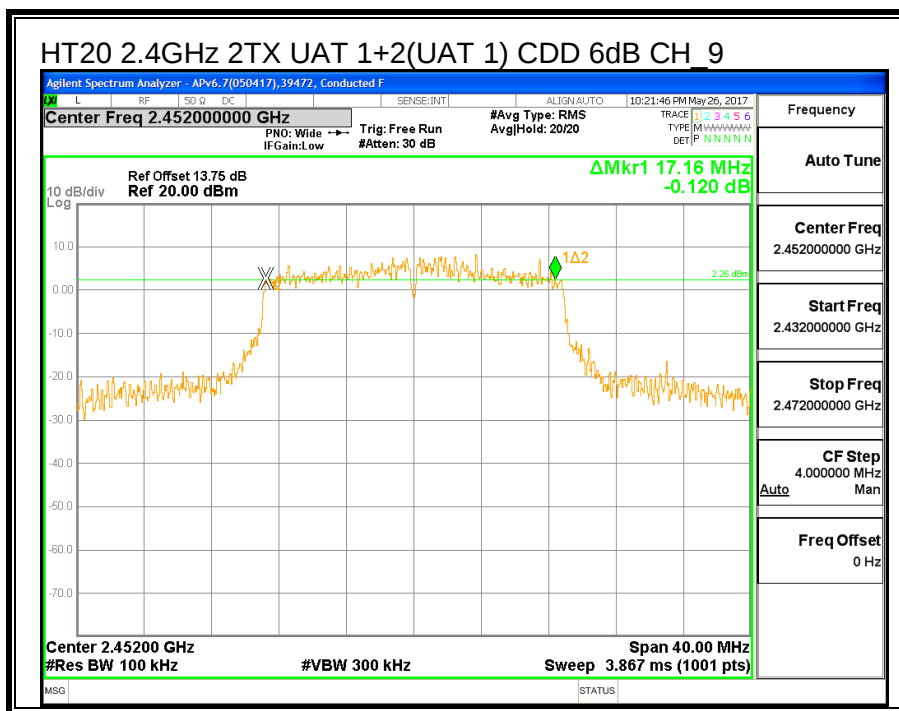
RESULTS

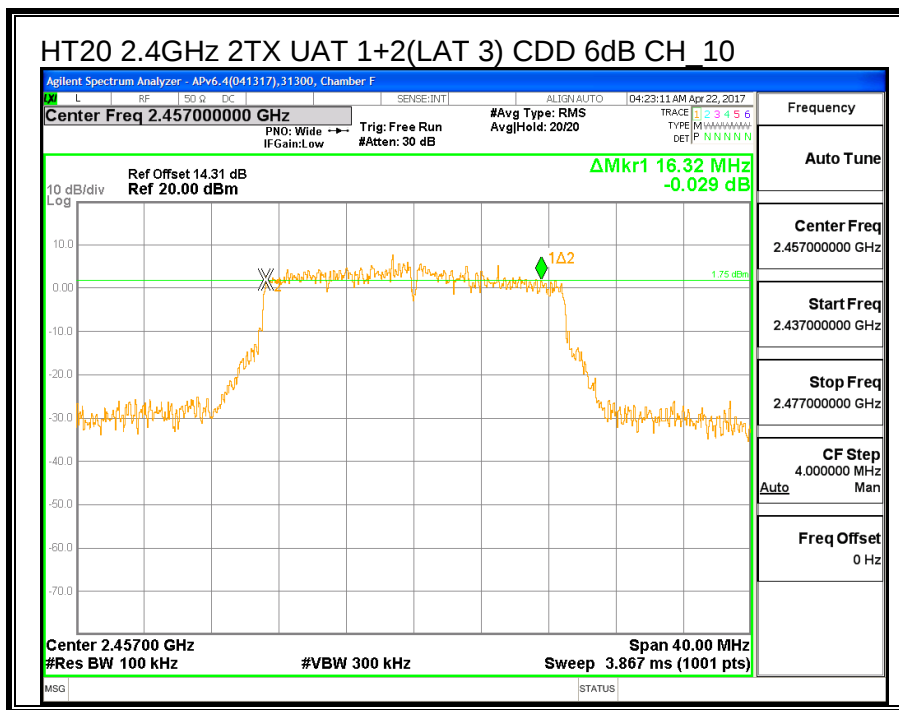
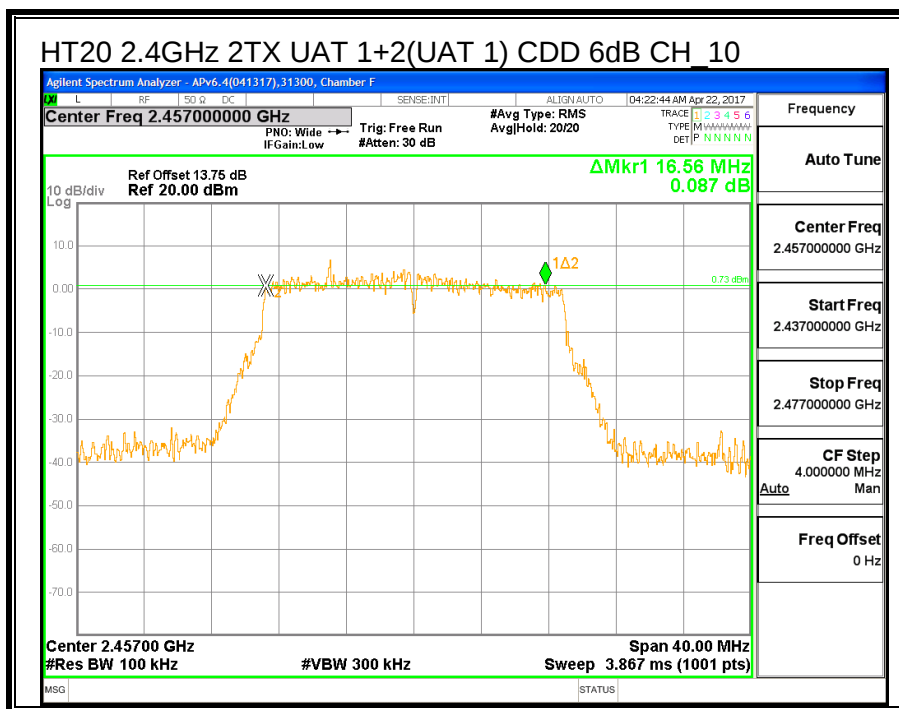
Channel	Frequency	6 dB BW UAT 1 (MHz)	6 dB BW LAT 3 (MHz)	Minimum Limit (MHz)
Low_1	2412	17.00	16.96	0.5
Low_2	2417	16.36	17.60	0.5
Middle_6	2437	17.60	17.68	0.5
High_9	2452	17.16	15.72	0.5
High_10	2457	16.56	16.32	0.5
High_11	2462	17.72	17.08	0.5
High_12	2467	17.60	17.68	0.5
High_13	2472	16.96	16.72	0.5

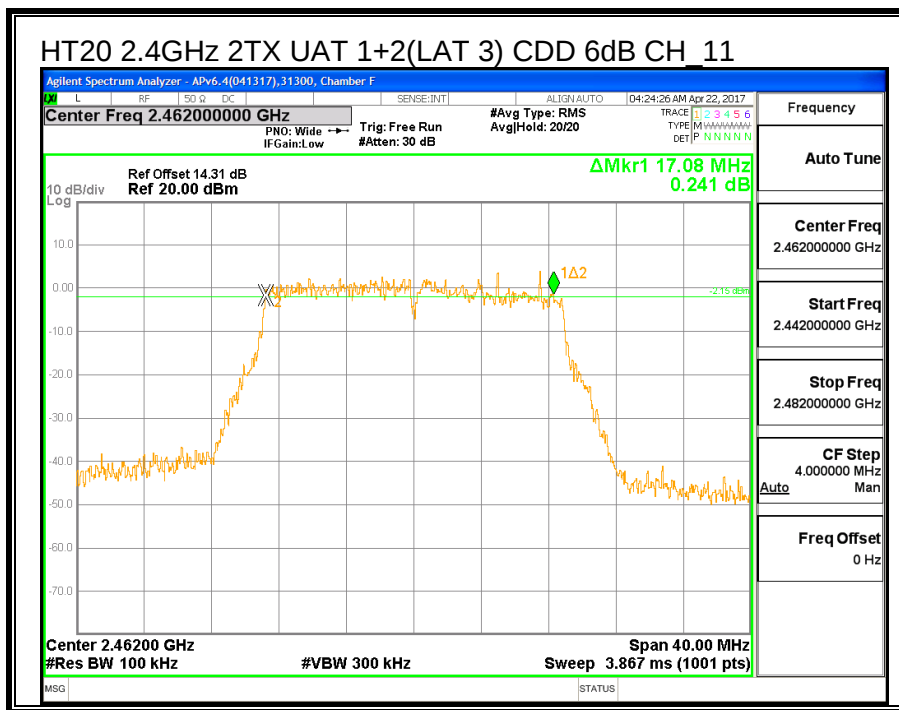
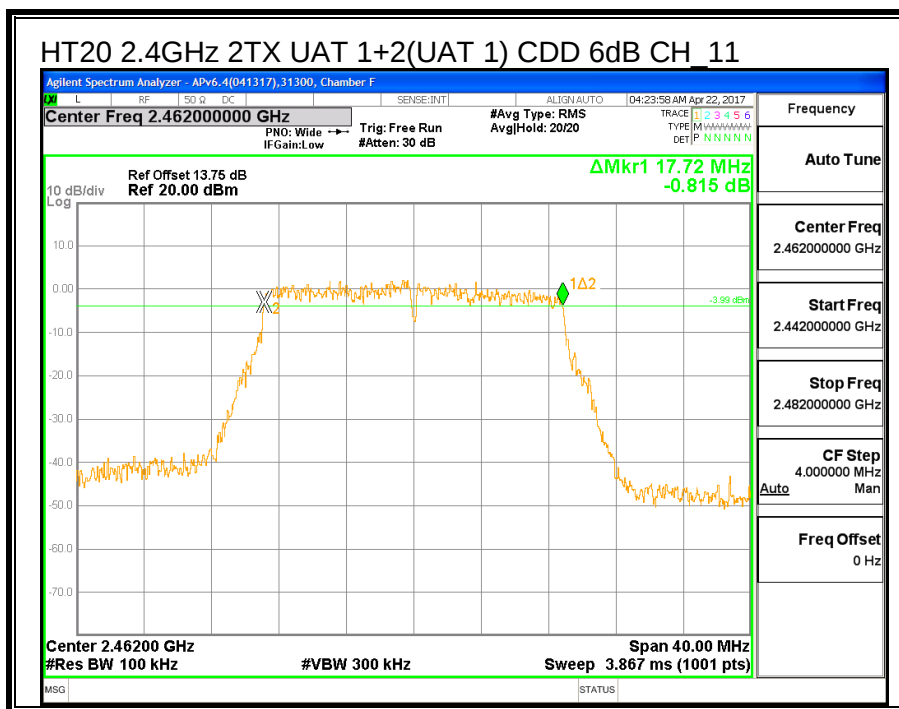


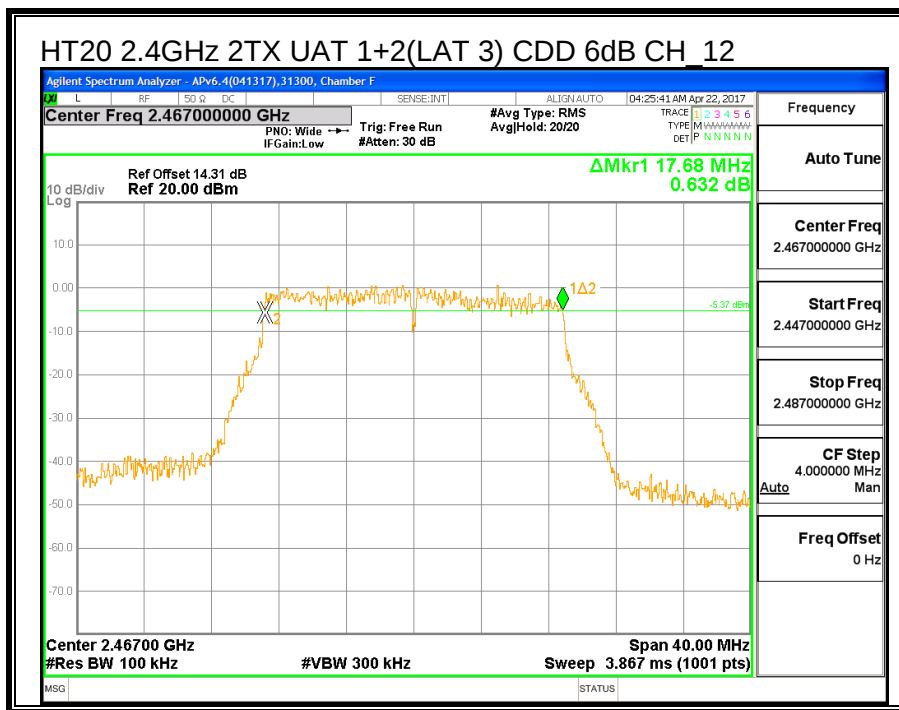
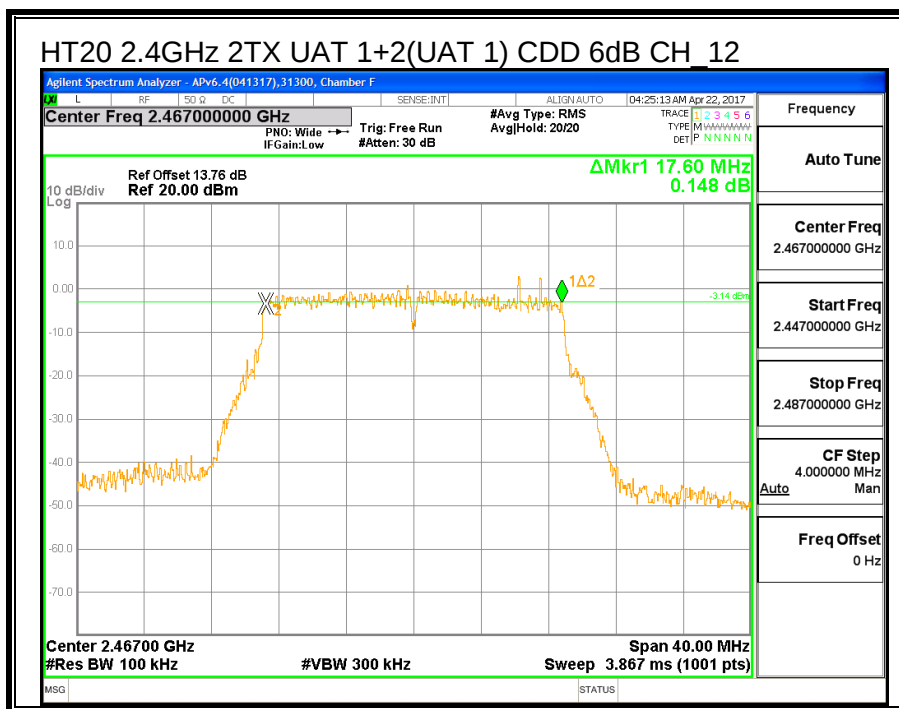


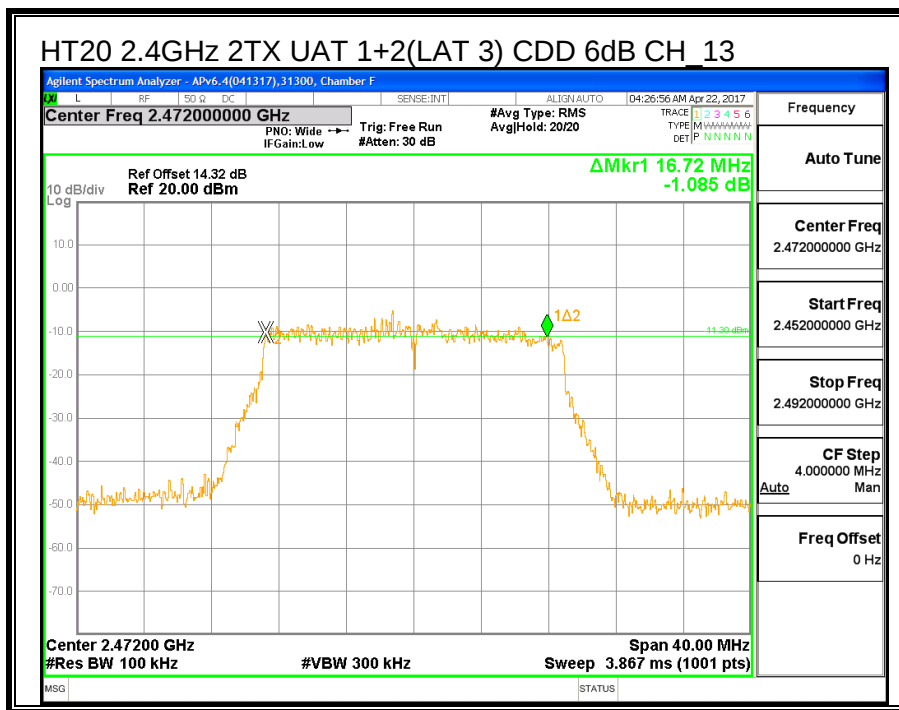
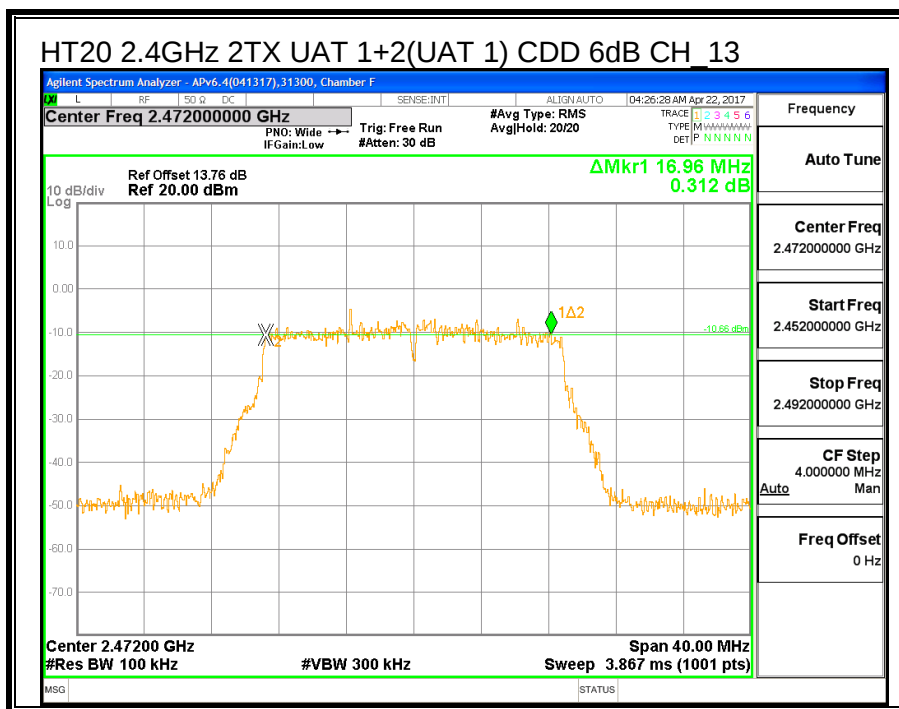












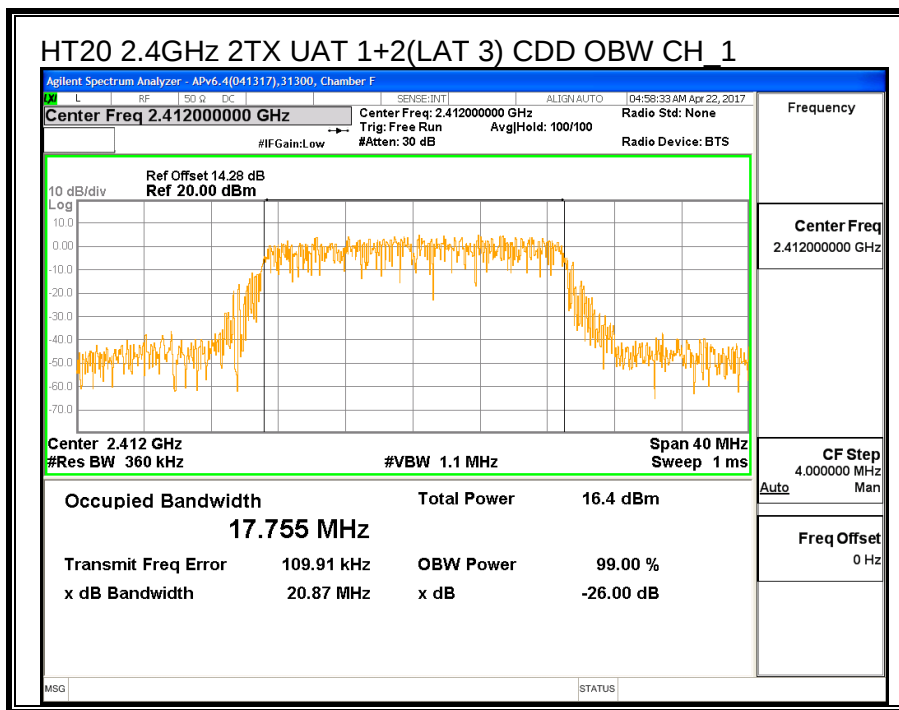
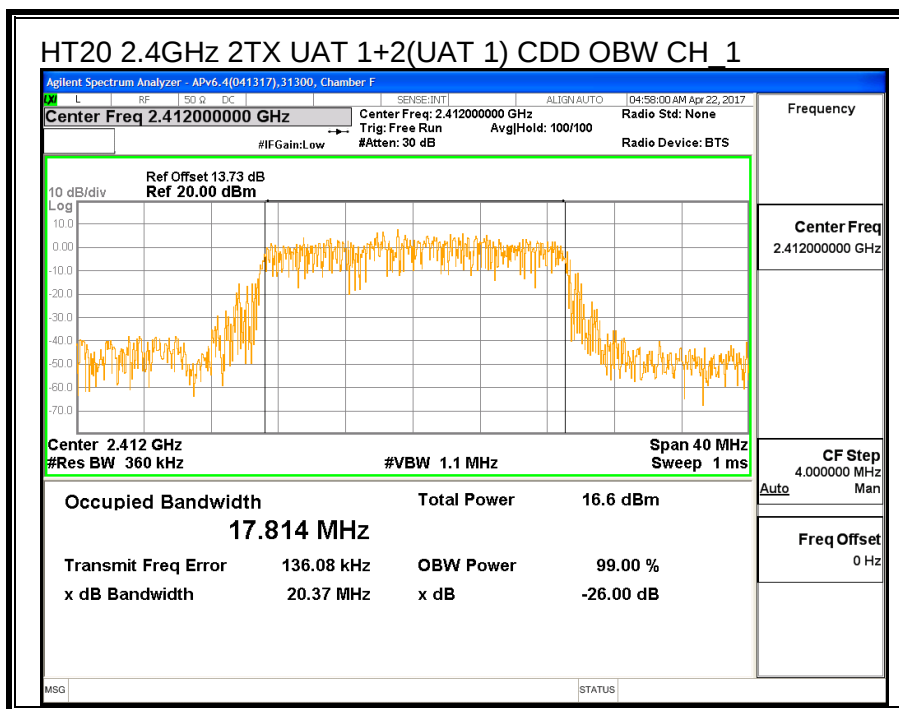
8.5.2. 99% BANDWIDTH

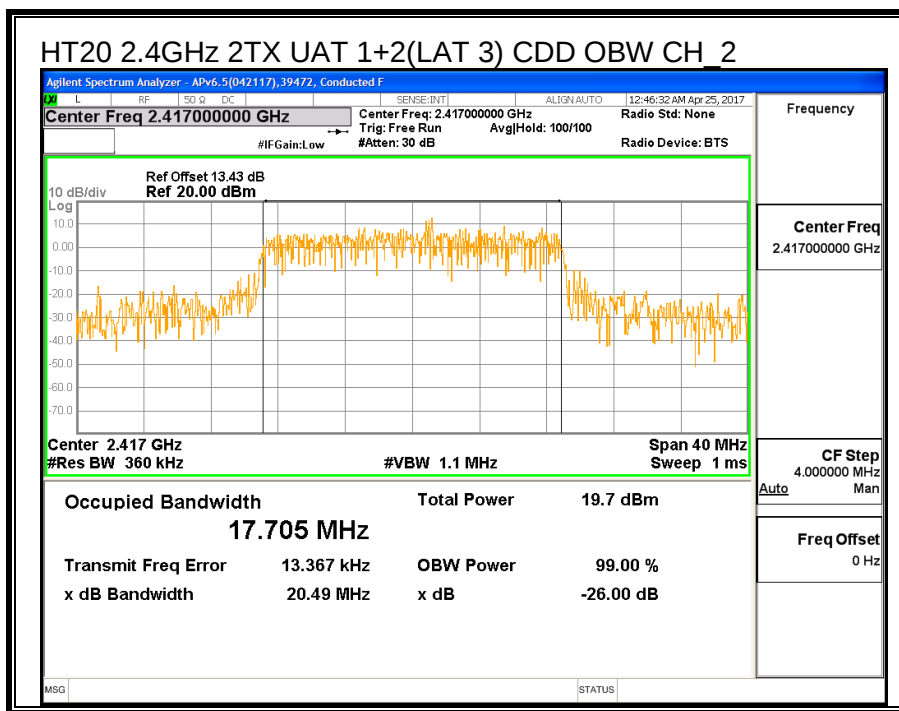
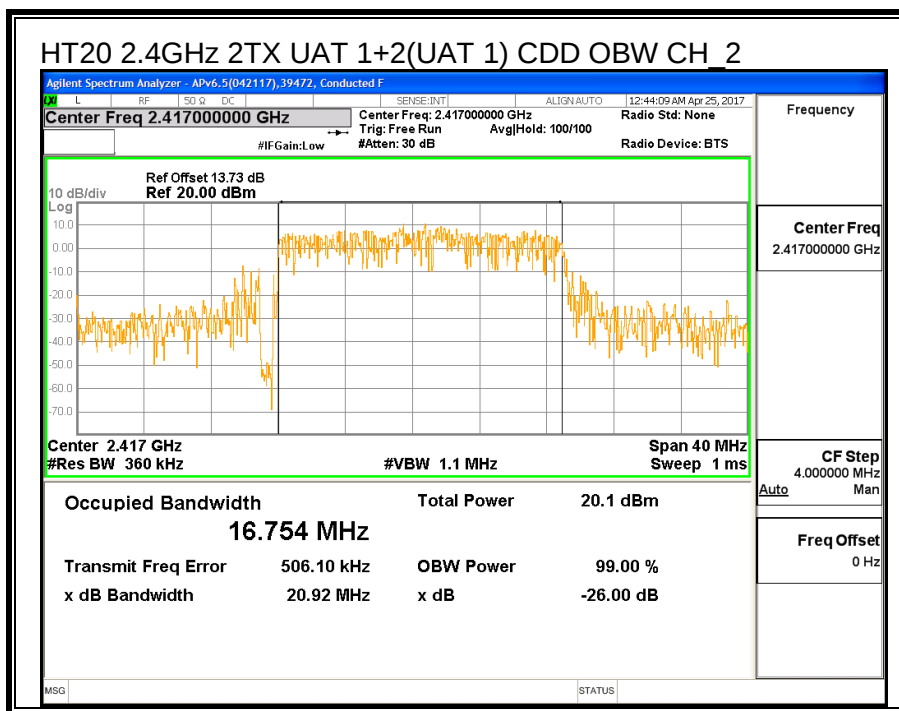
LIMITS

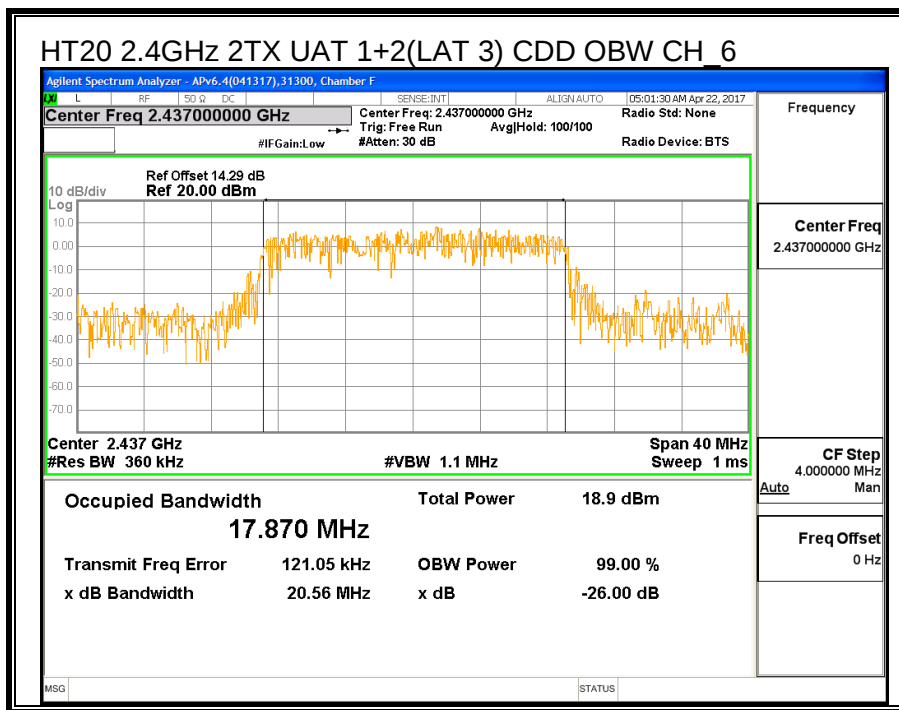
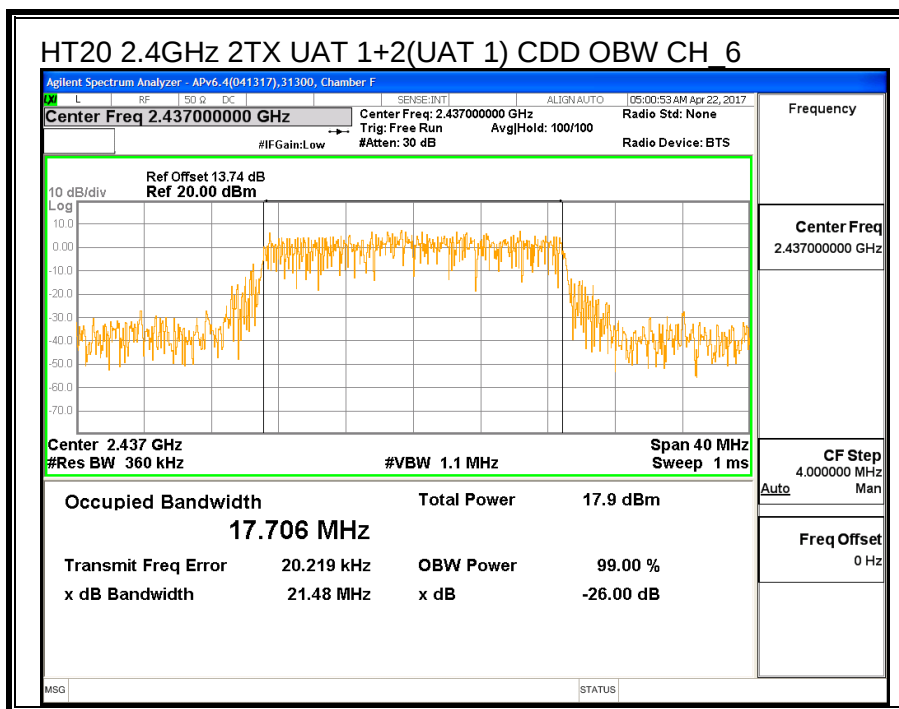
None; for reporting purposes only.

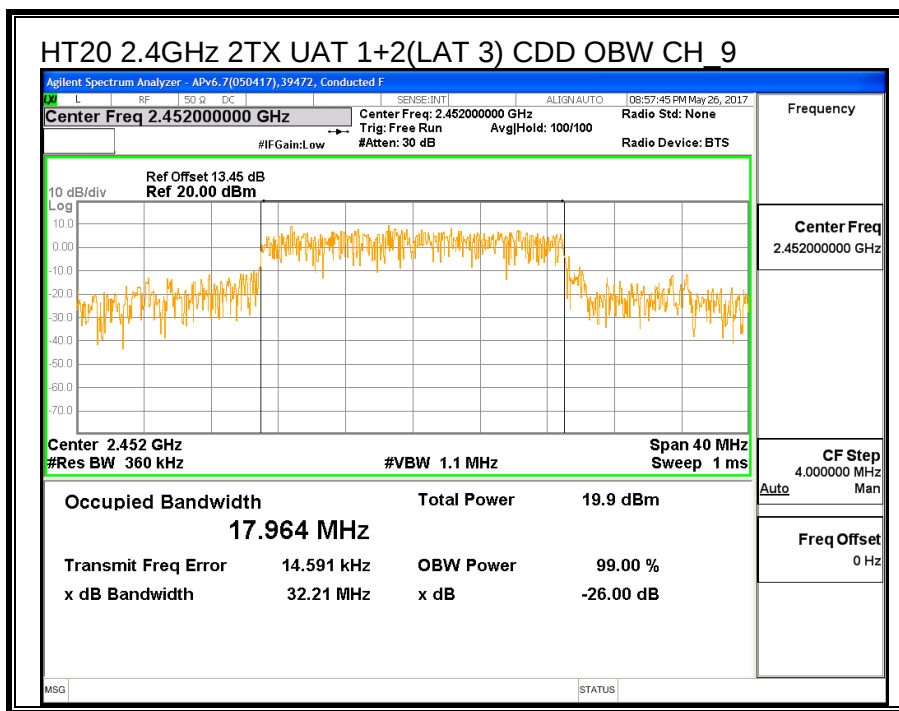
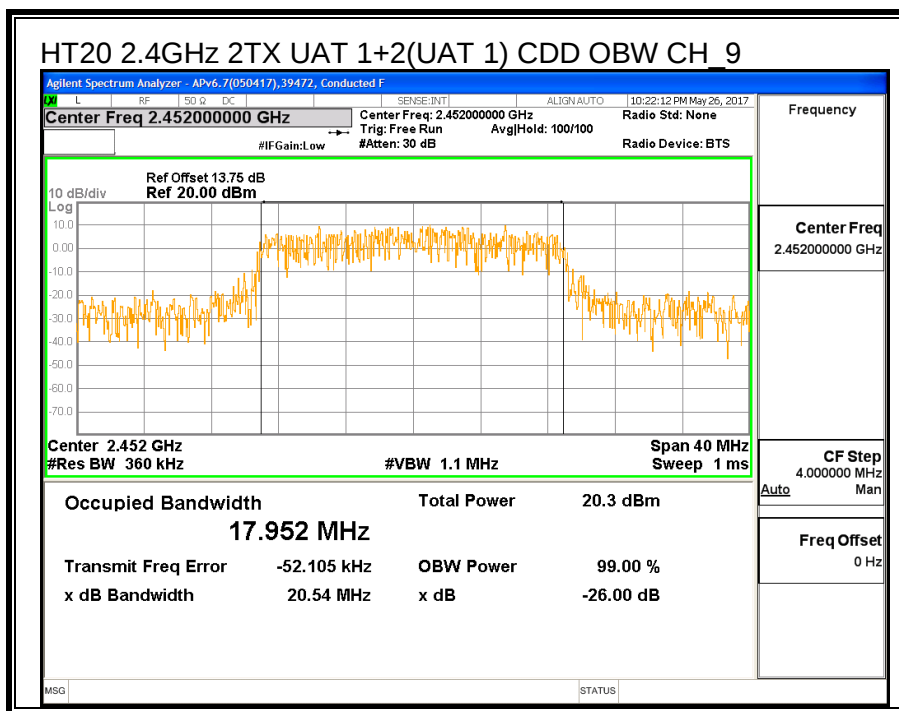
RESULTS

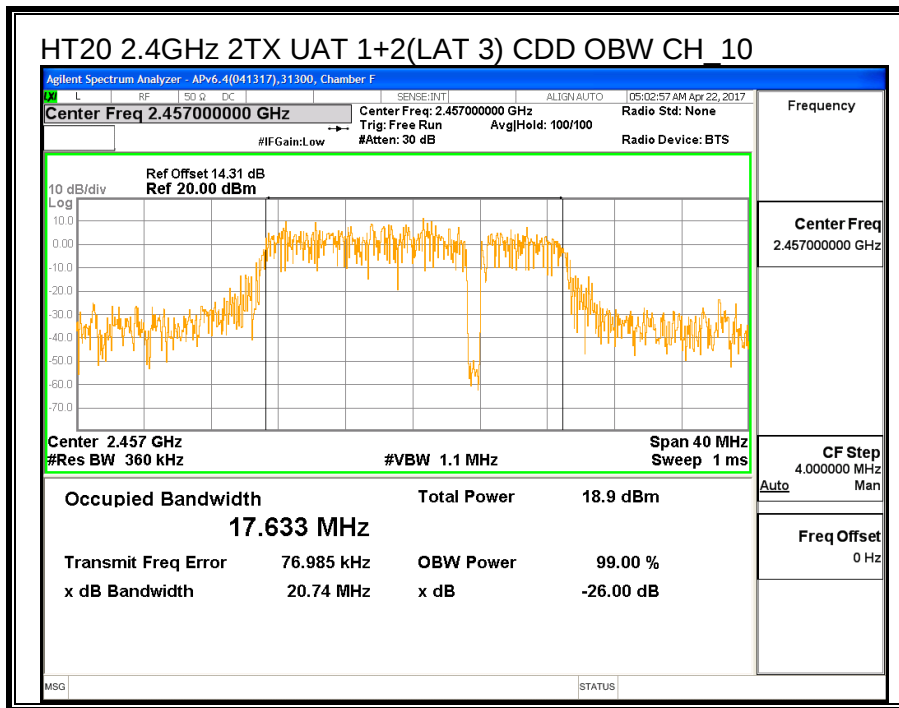
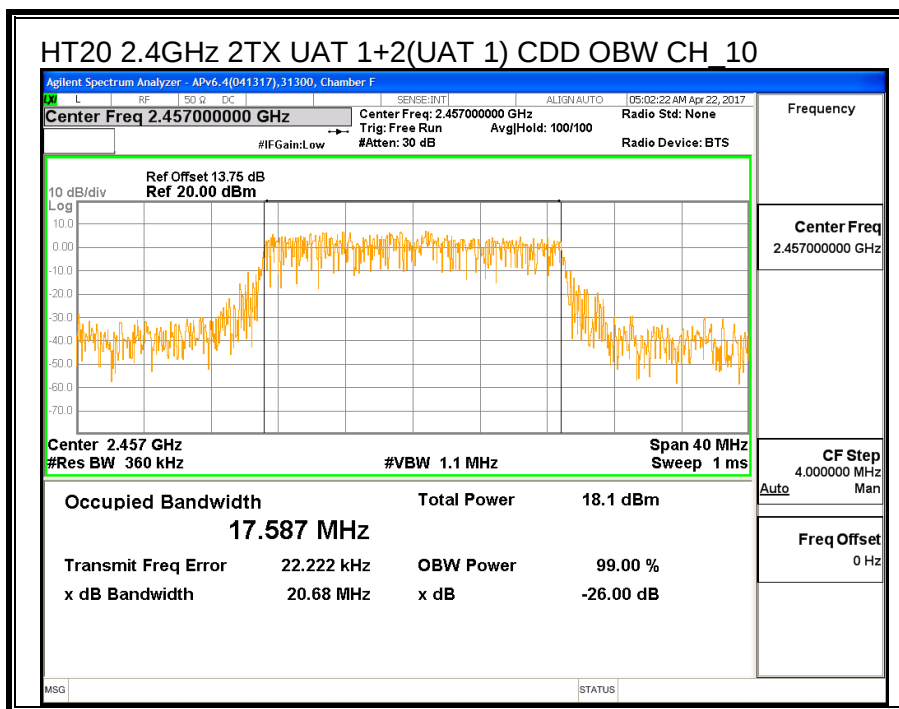
Channel	Frequency (MHz)	99% Bandwidth UAT 1 (MHz)	99% Bandwidth LAT 3 (MHz)
Low_1	2412	17.814	17.755
Low_2	2417	16.754	17.705
Middle_6	2437	17.706	17.87
High_9	2452	17.952	17.964
High_10	2457	17.587	17.633
High_11	2462	17.483	17.742
High_12	2467	17.777	17.779
High_13	2472	17.776	17.569

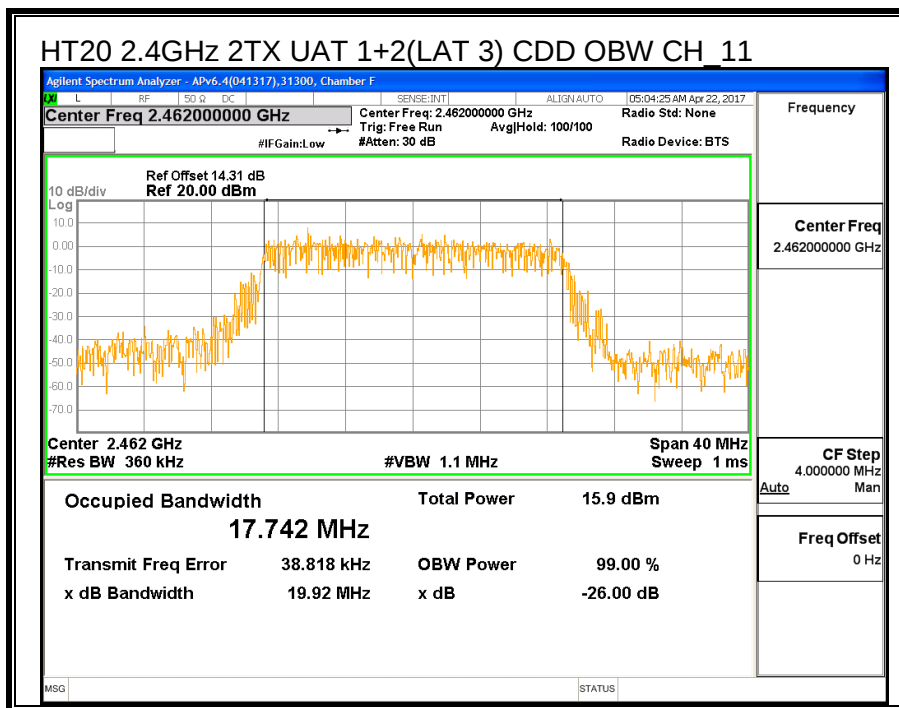
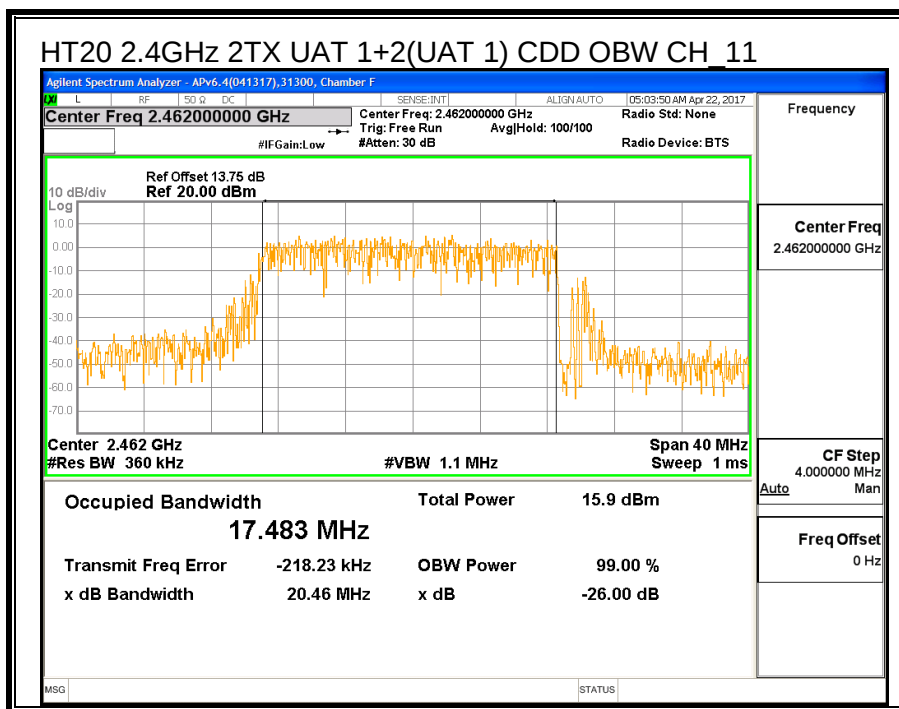


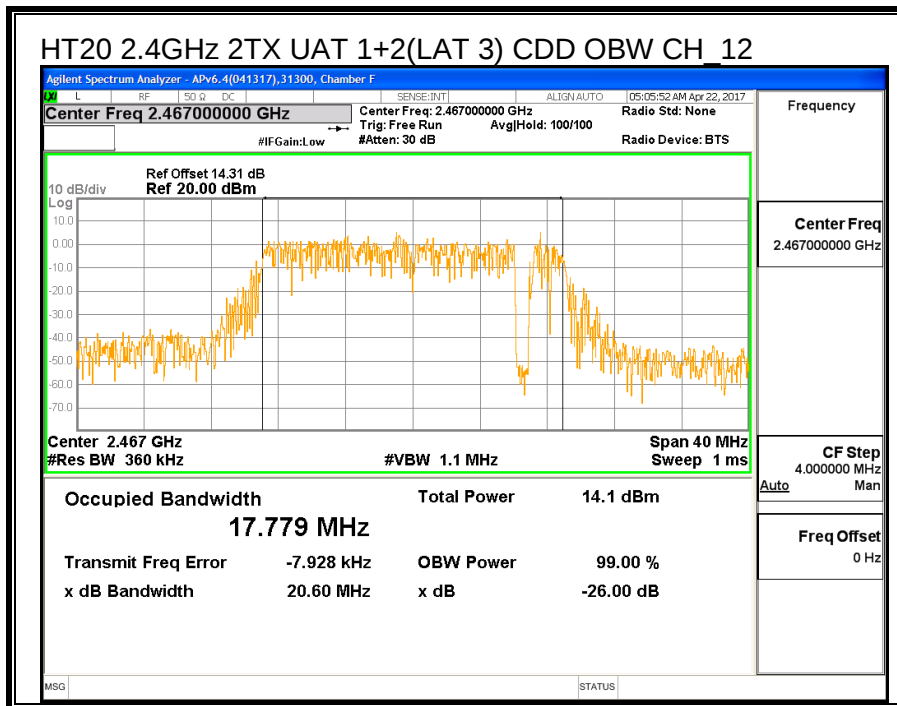
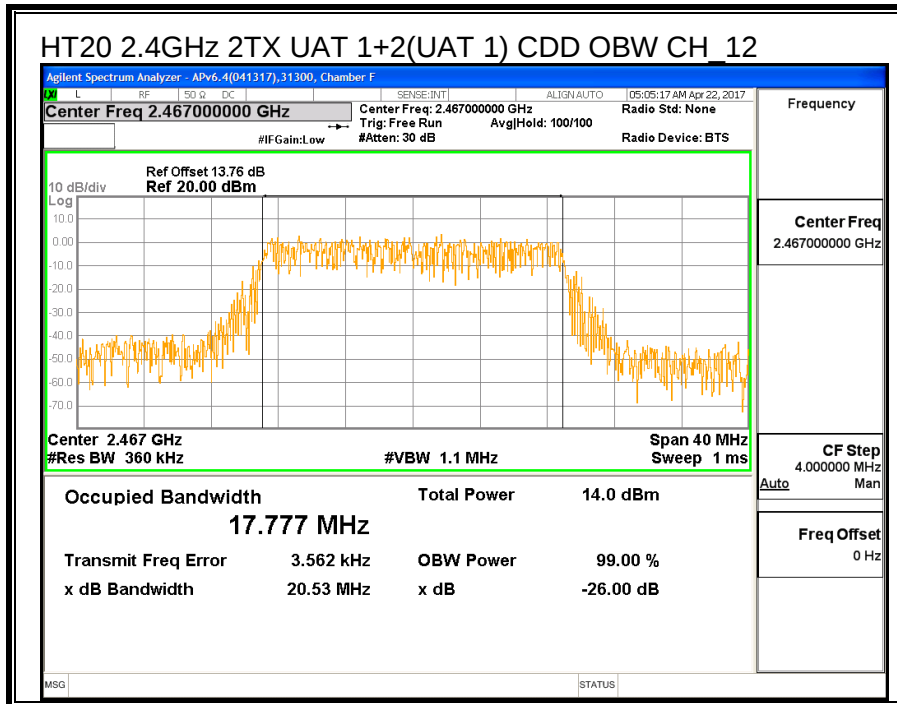


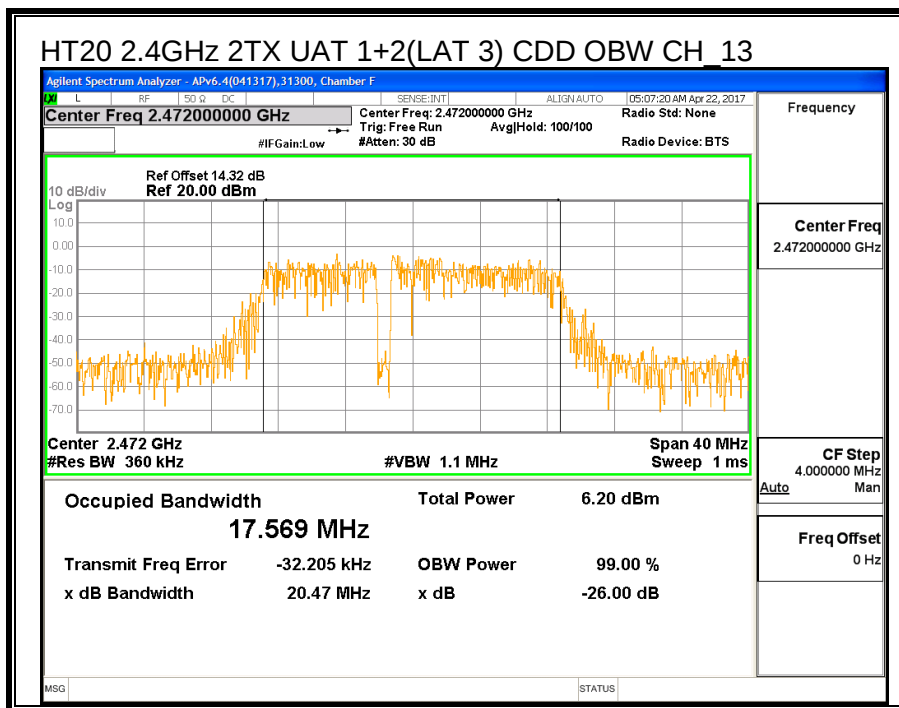
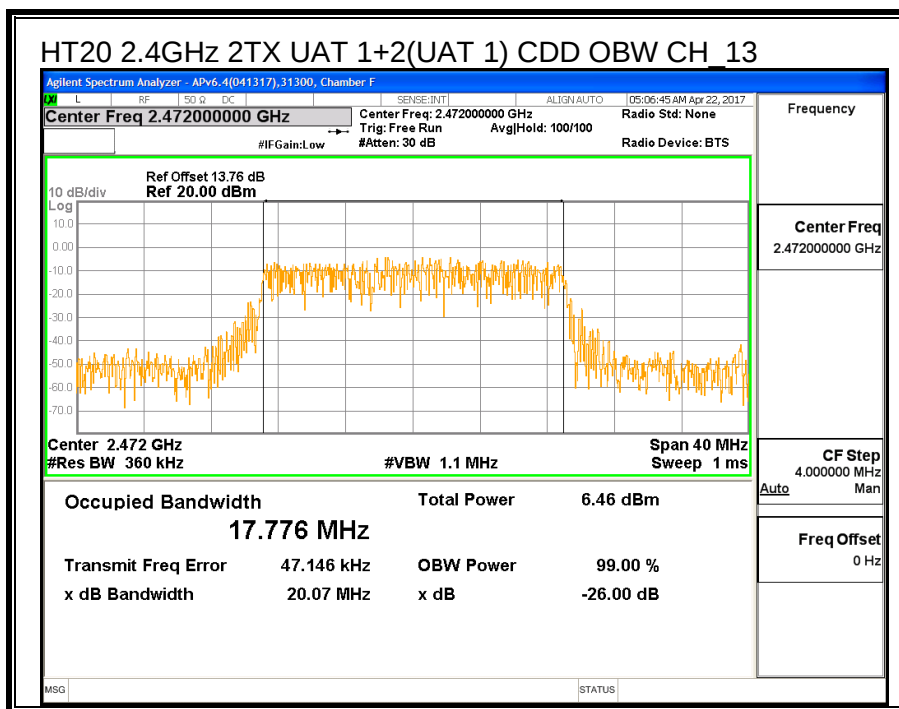












8.5.3. AVERAGE POWER

ID:	30554	Date:	7/13/17
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LIMITS

None; for reporting purposes only.

RESULTS

Channel	Frequency (MHz)	UAT 1 Power (dBm)	LAT 3 Power (dBm)	Total Power (dBm)
Low_1	2412	15.20	15.34	18.28
Low_2	2417	17.83	17.91	20.88
Mid_6	2437	20.75	20.86	23.82
High_9	2452	19.20	19.33	22.28
High_10	2457	17.82	17.96	20.90
High_11	2462	15.20	15.48	18.35
High_12	2467	12.84	12.98	15.92
High_13	2472	4.79	4.91	7.86

8.5.4. OUTPUT POWER

ID:	30554	Date:	7/13/17
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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

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

UAT 1	LAT 3	Uncorrelated Chains
Gain (dBi)	Gain (dBi)	Directional Gain (dBi)
-2.20	-0.44	-1.23

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	-1.23	30.00	30	36	30.00
Low_2	2417	-1.23	30.00	30	36	30.00
Mid_6	2437	-1.23	30.00	30	36	30.00
High_9	2452	-1.23	30.00	30	36	30.00
High_10	2457	-1.23	30.00	30	36	30.00
High_11	2462	-1.23	30.00	30	36	30.00
High_12	2467	-1.23	30.00	30	36	30.00
High_13	2472	-1.23	30.00	30	36	30.00

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

Channel	Frequency (MHz)	UAT 1 Meas Power (dBm)	LAT 3 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi (dB)
Low_1	2412	21.51	21.58	24.56	30.00	-5.44
Low_2	2417	24.44	24.31	27.39	30.00	-2.61
Mid_6	2437	26.89	26.96	29.94	30.00	-0.06
High_9	2452	25.55	25.70	28.64	30.00	-1.36
High_10	2457	24.52	24.58	27.56	30.00	-2.44
High_11	2462	21.54	21.82	24.69	30.00	-5.31
High_12	2467	19.35	19.50	22.44	30.00	-7.56
High_13	2472	11.40	11.59	14.51	30.00	-15.49

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 from 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.

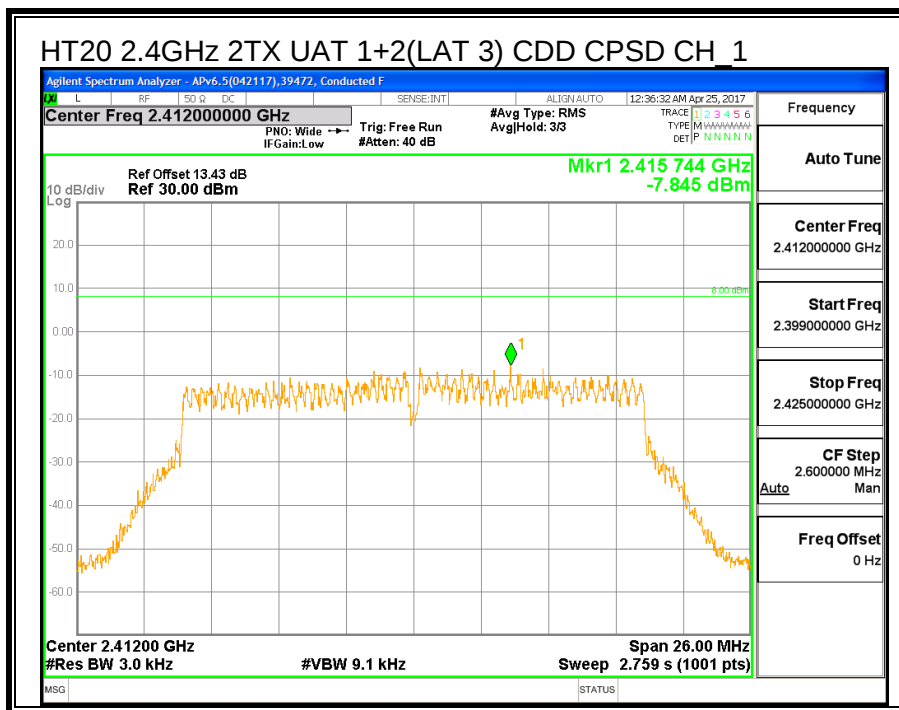
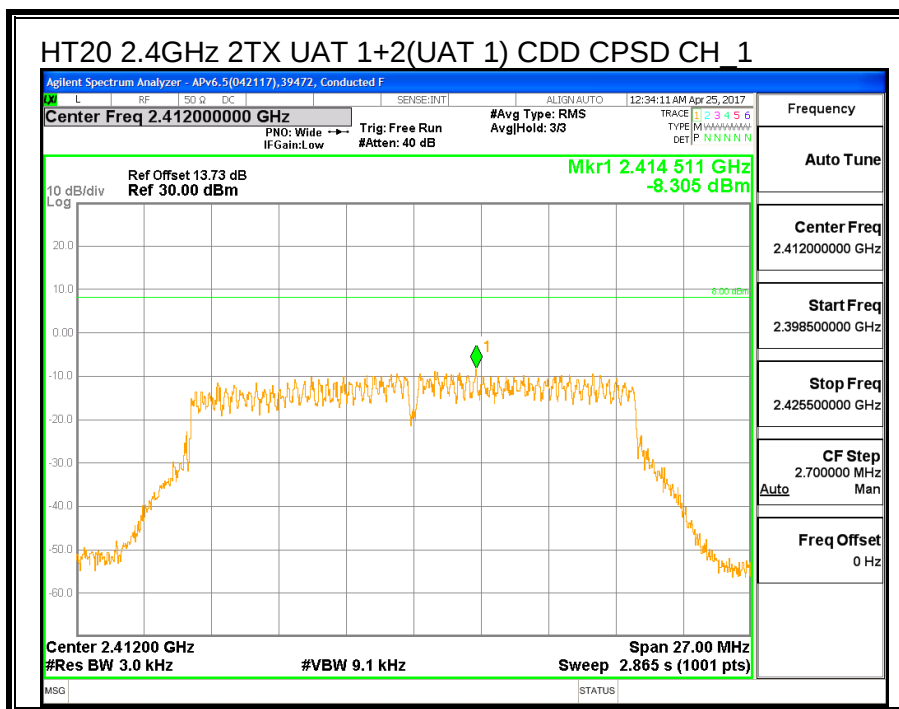
DIRECTIONAL ANTENNA GAIN

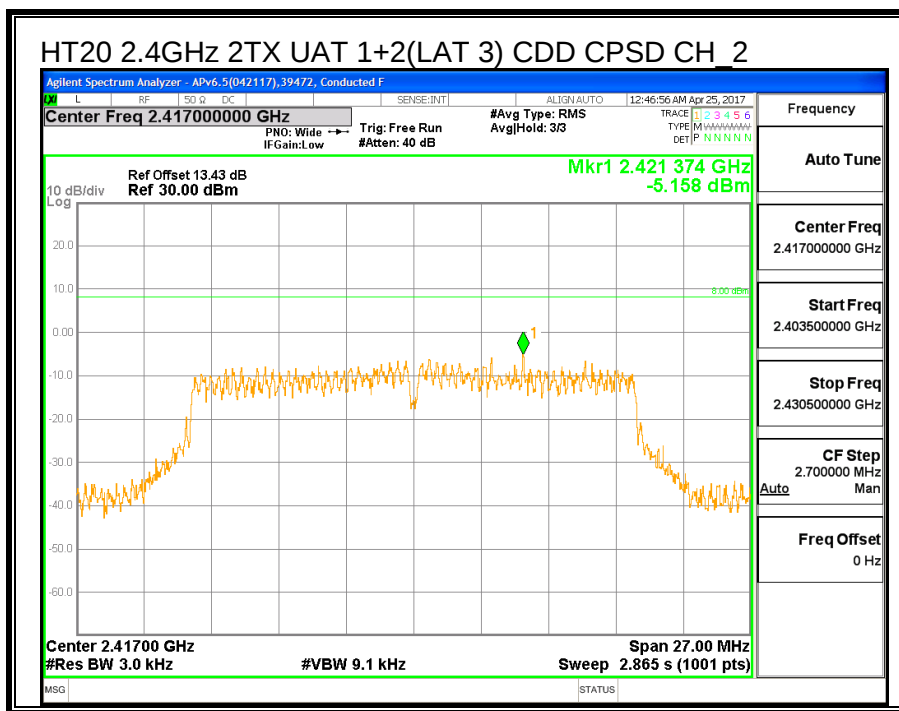
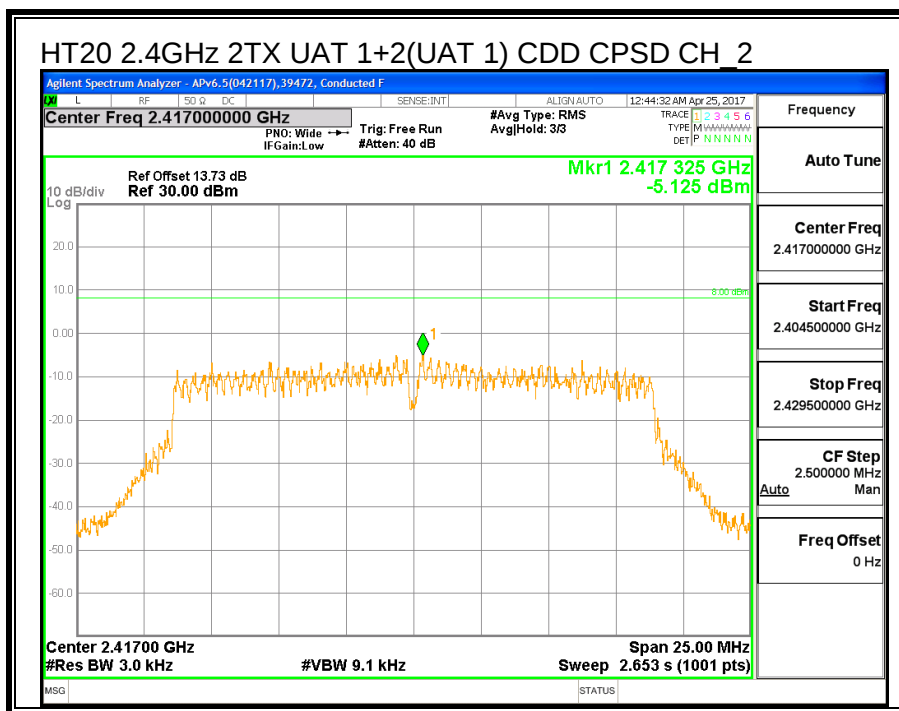
The TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

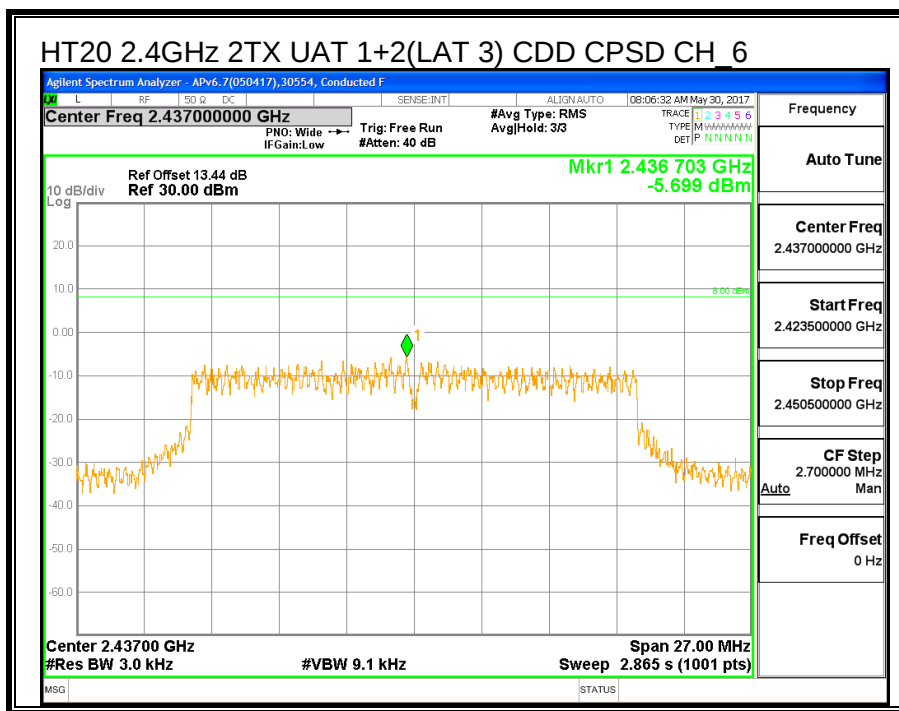
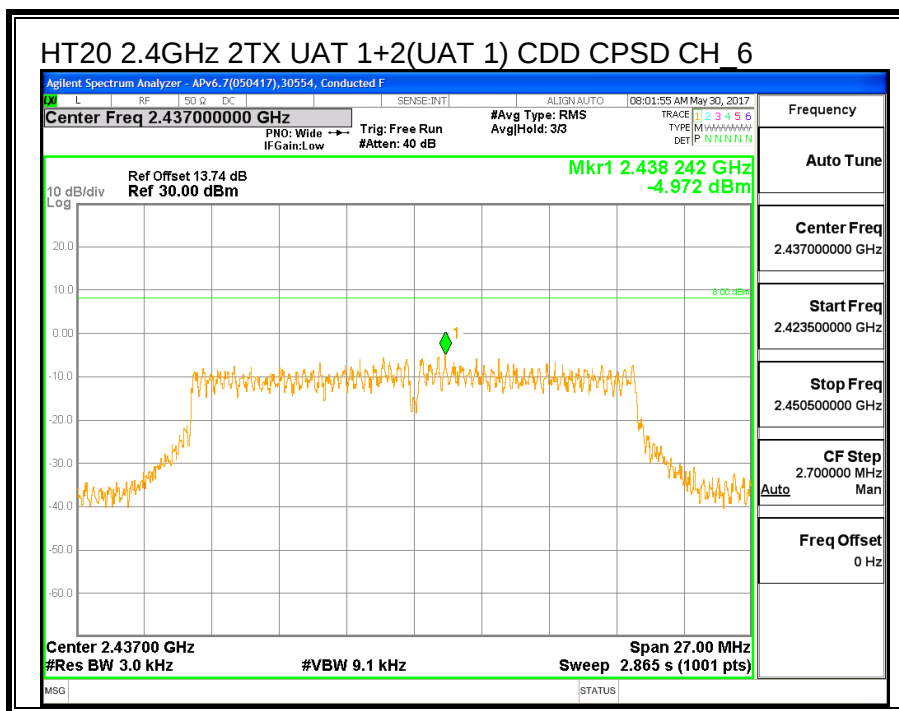
UAT 1 Antenna Gain (dBi)	LAT 3 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
-2.20	-0.44	1.73

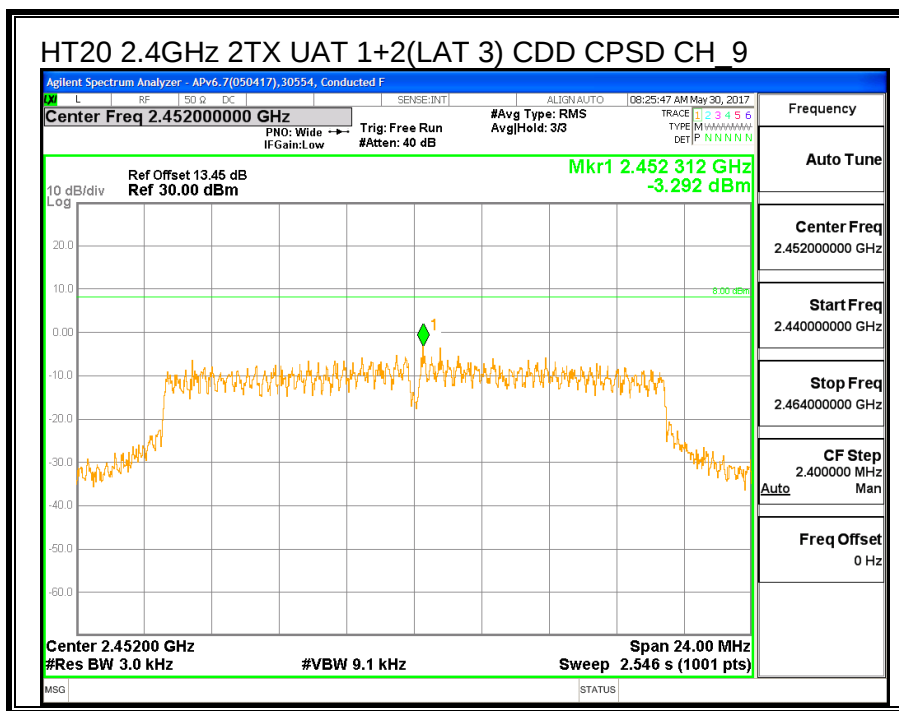
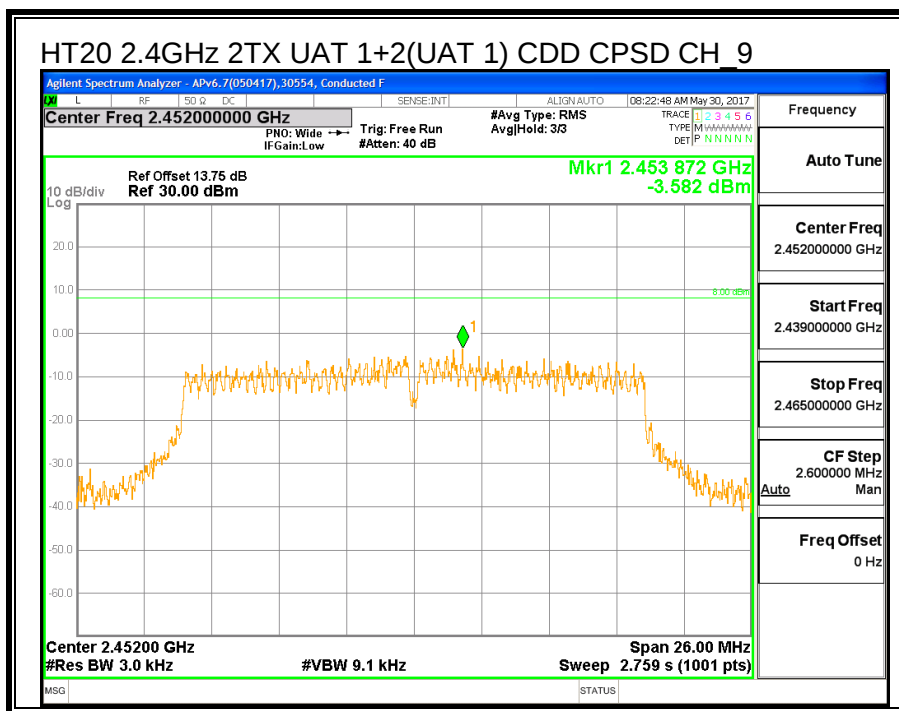
RESULTS

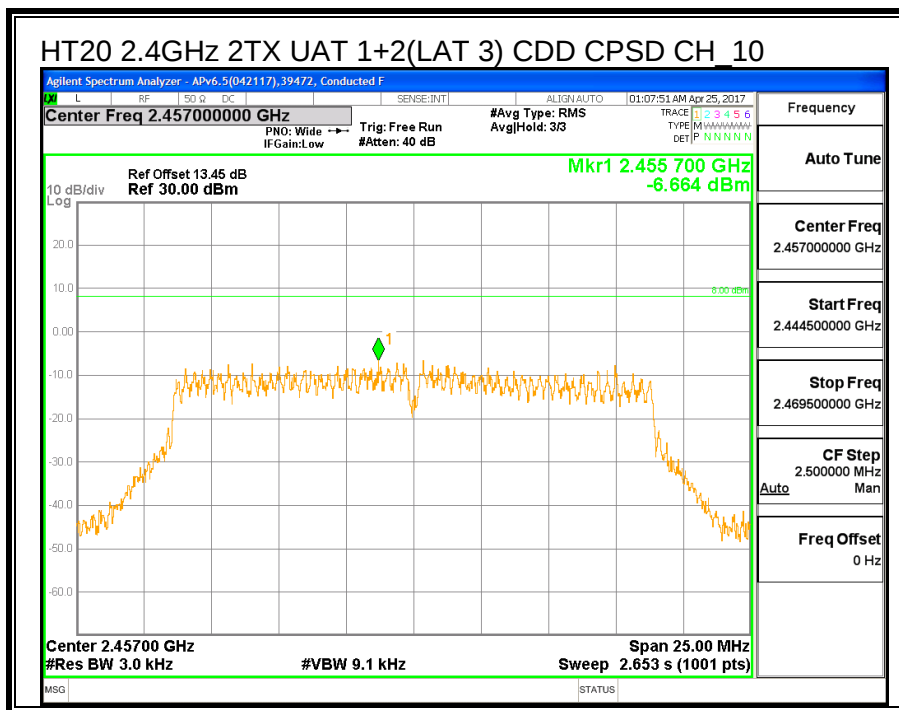
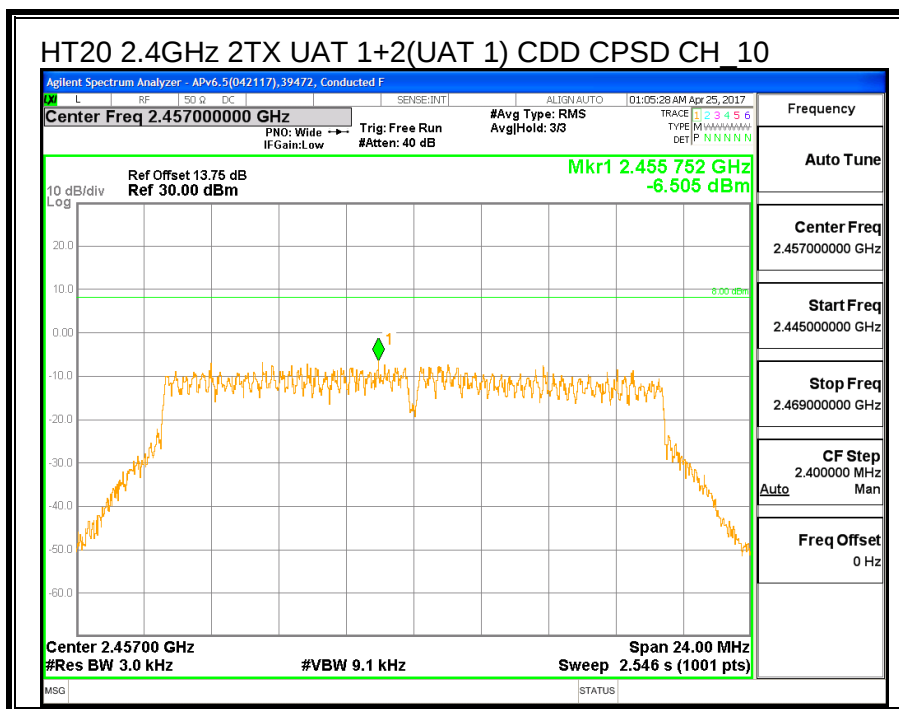
Duty Cycle CF (dB)		0.00	Included in Calculations of Corr'd PSD			
PSD Results						
Channel	Frequency	UAT 1 Meas	LAT 3 Meas	Total Corr'd	Limit	Margin
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low_1	2412	-8.31	-7.85	-5.06	8.0	-13.1
Low_2	2417	-5.13	-5.16	-2.13	8.0	-10.1
Mid_6	2437	-4.97	-5.70	-2.31	8.0	-10.3
High_9	2452	-3.58	-3.29	-0.42	8.0	-8.4
High_10	2457	-6.51	-6.66	-3.57	8.0	-11.6
High_11	2462	-8.64	-8.17	-5.39	8.0	-13.4
High_12	2467	-10.98	-10.35	-7.64	8.0	-15.6
High_13	2472	-17.59	-19.19	-15.31	8.0	-23.3

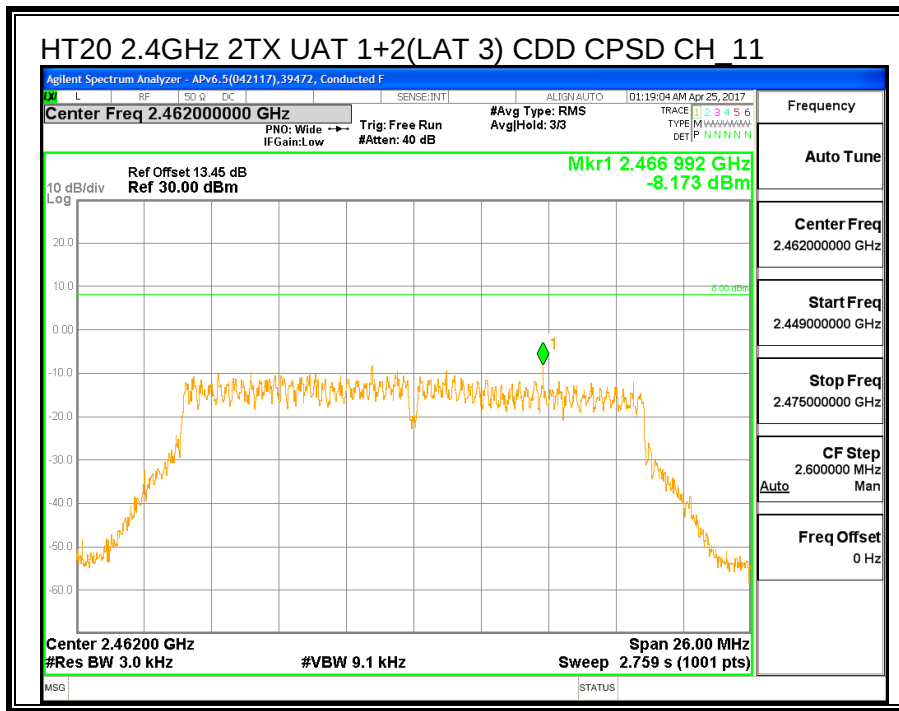
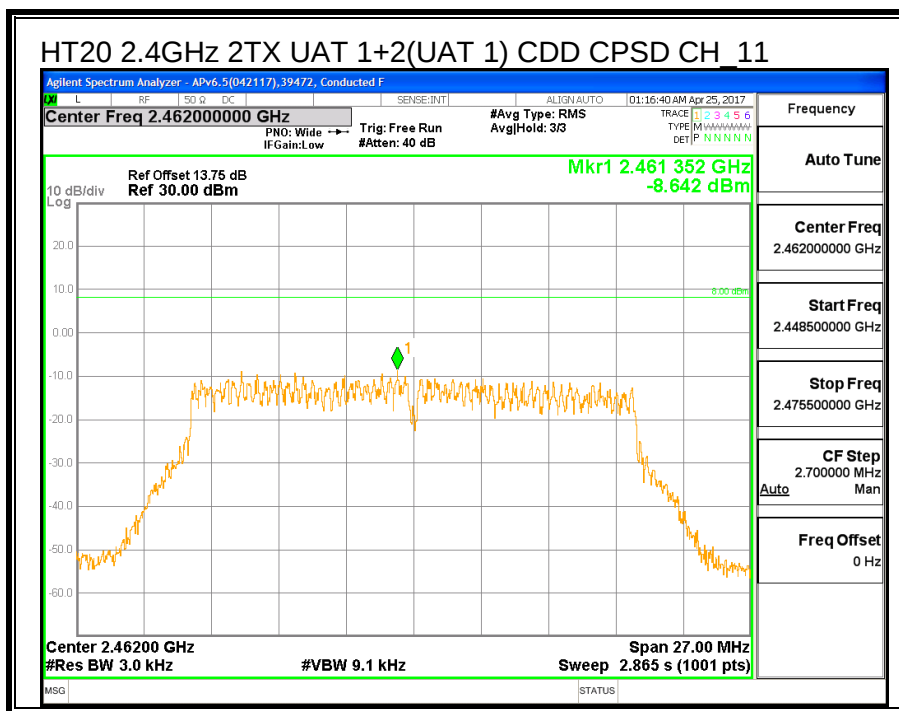


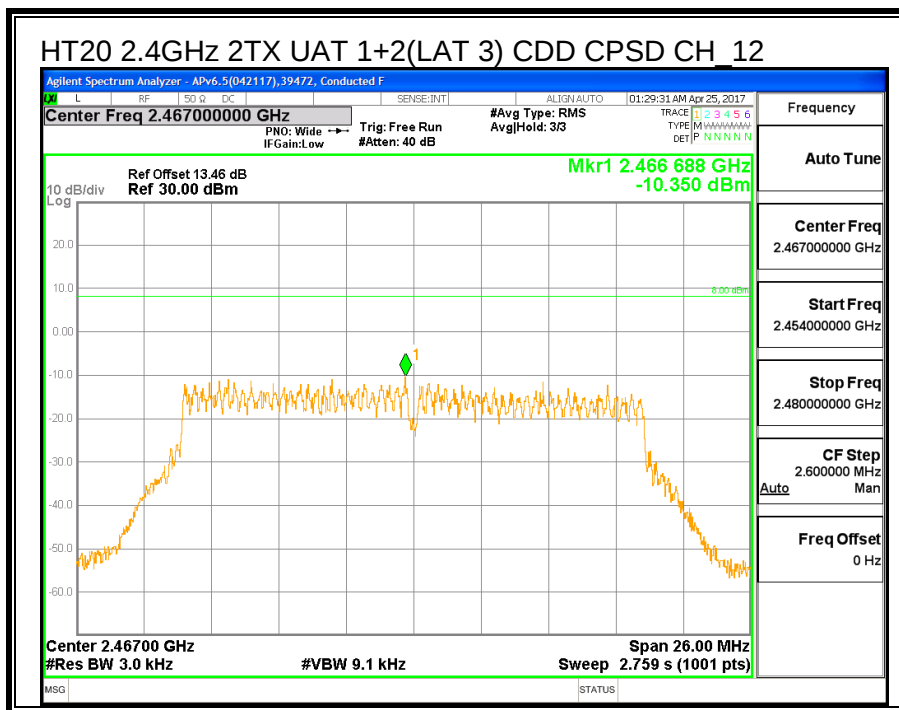
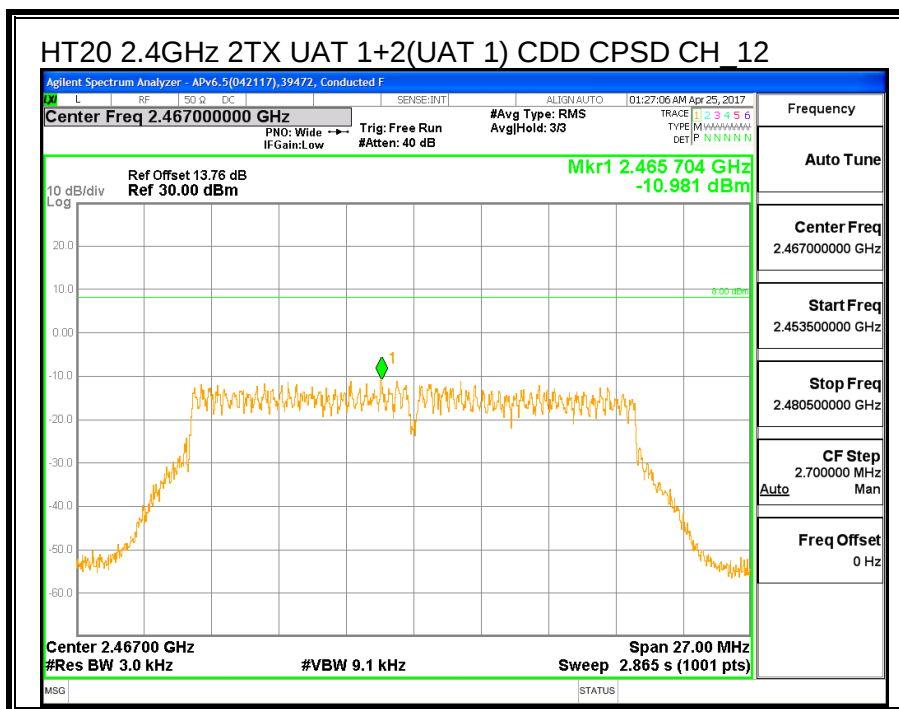


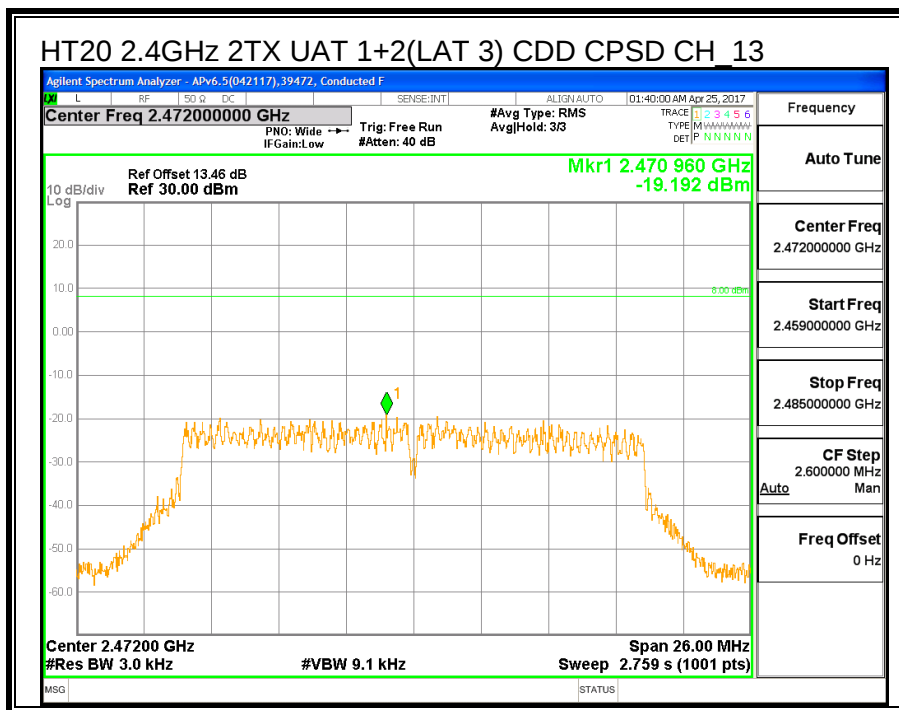
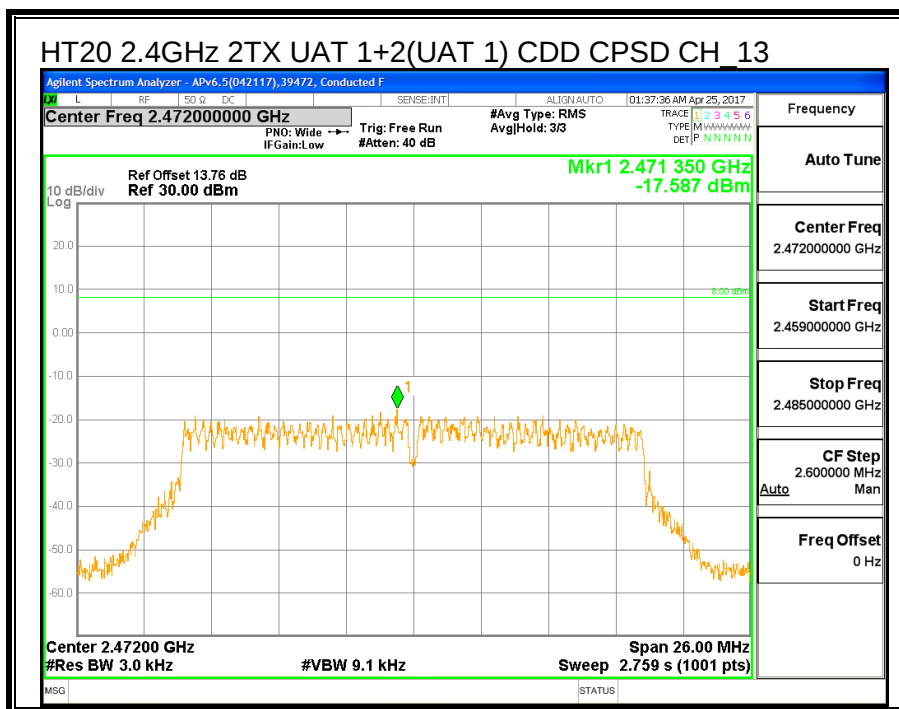












8.5.6. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

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

