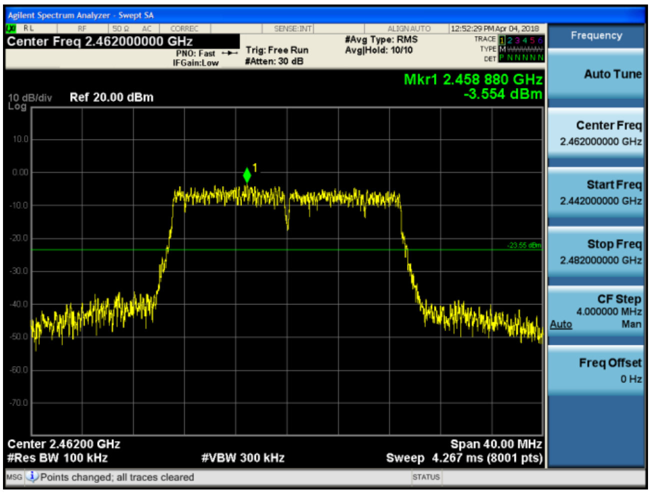
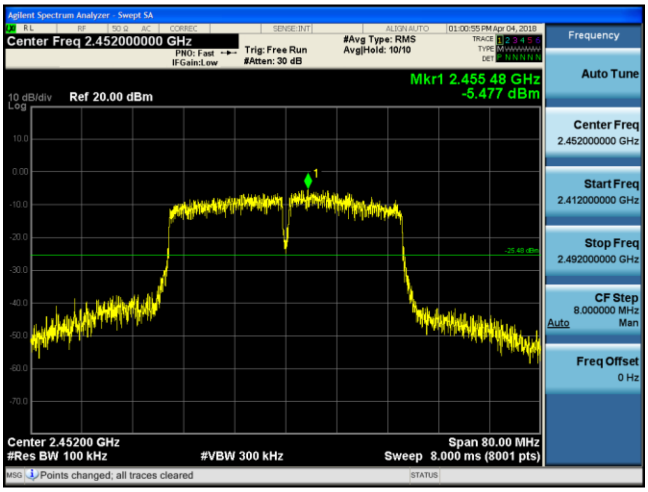
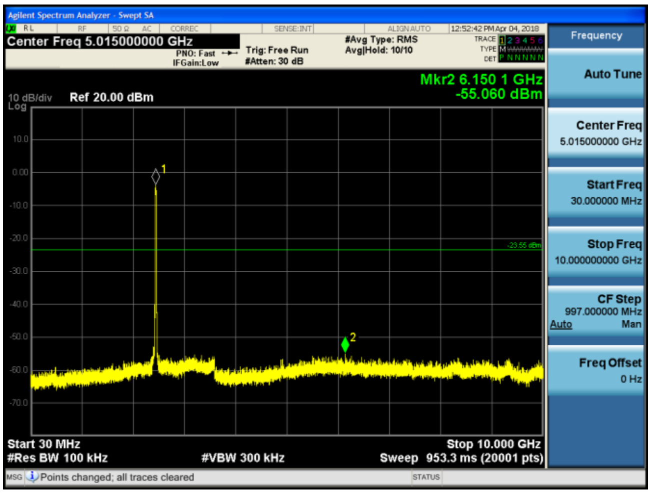
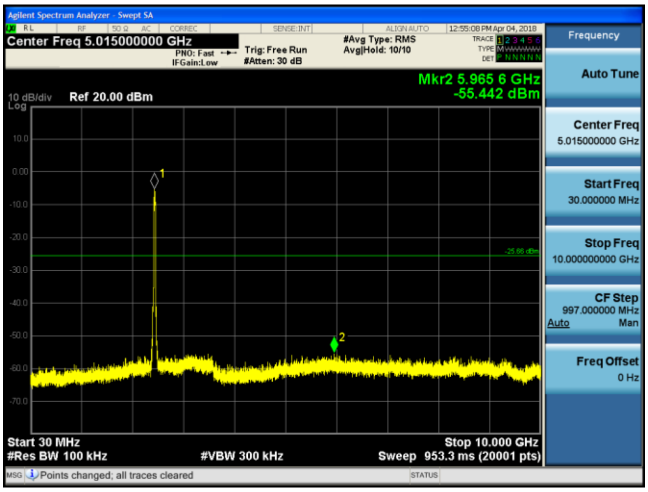
RF Conducted Spurious Emissions	
Antenna 0	Antenna 0
IEEE 802.11n HT20	IEEE 802.11n HT40
Channel 11 / 2462 MHz	Channel 9 / 2452 MHz



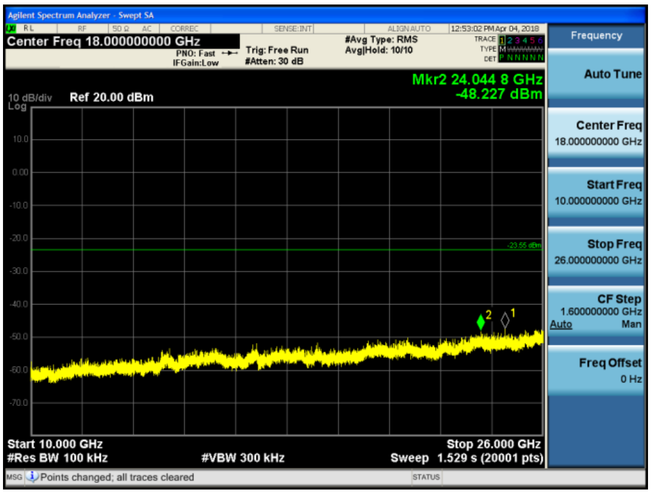


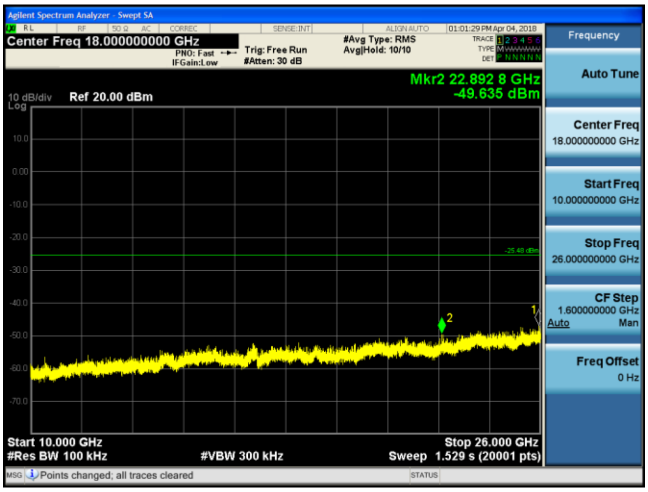
2442 MHz – 2482 MHz	2412 MHz – 2492 MHz



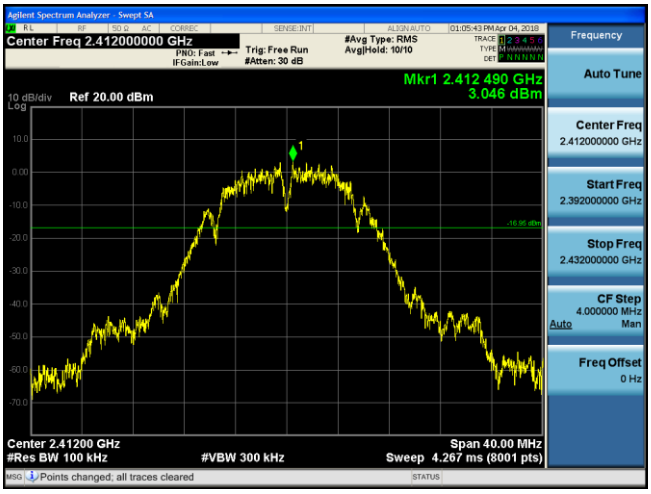
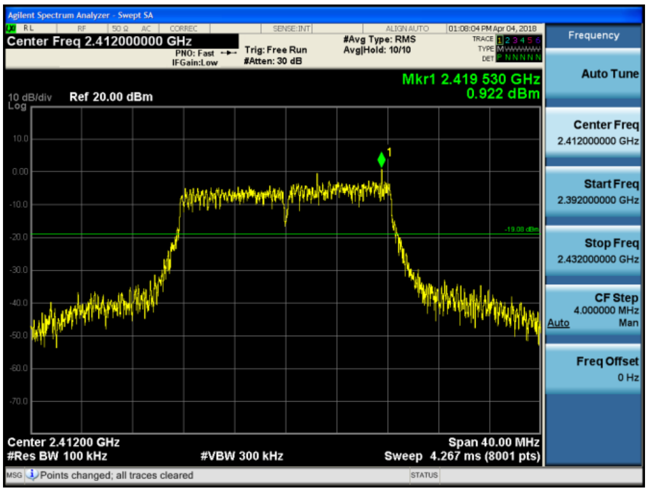
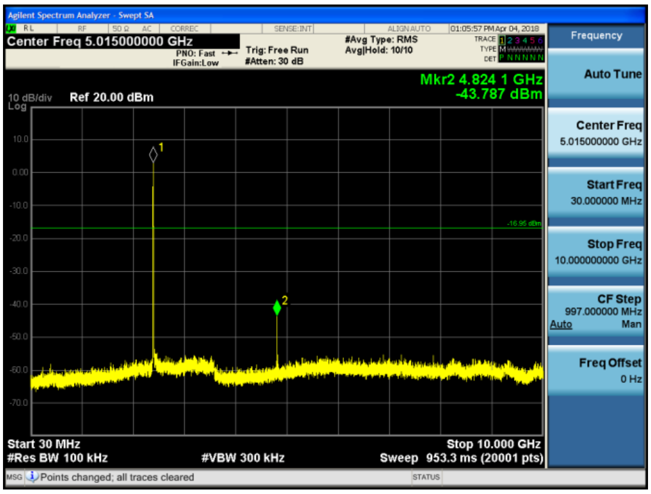
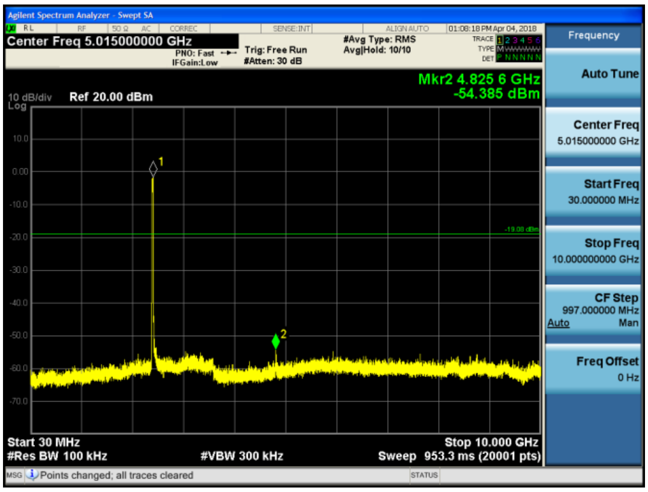
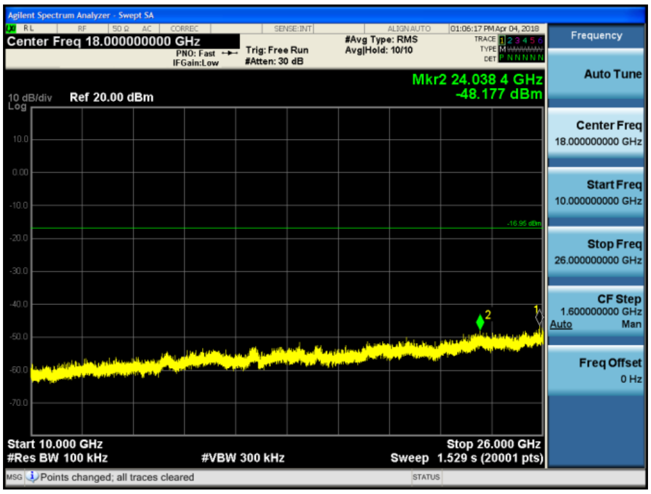
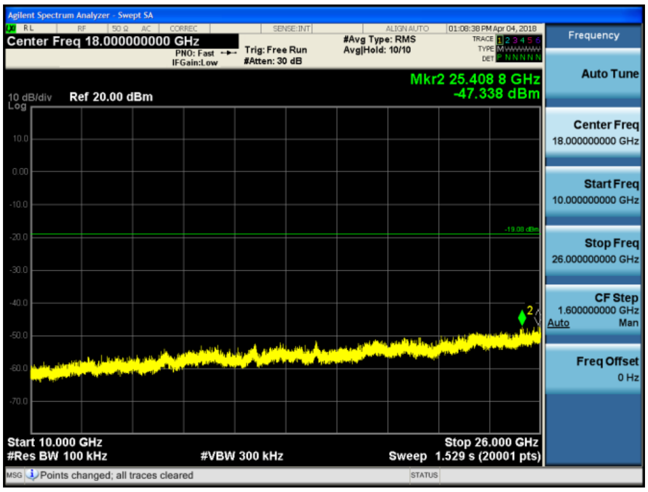


30 MHz – 10 GHz	30 MHz – 10 GHz

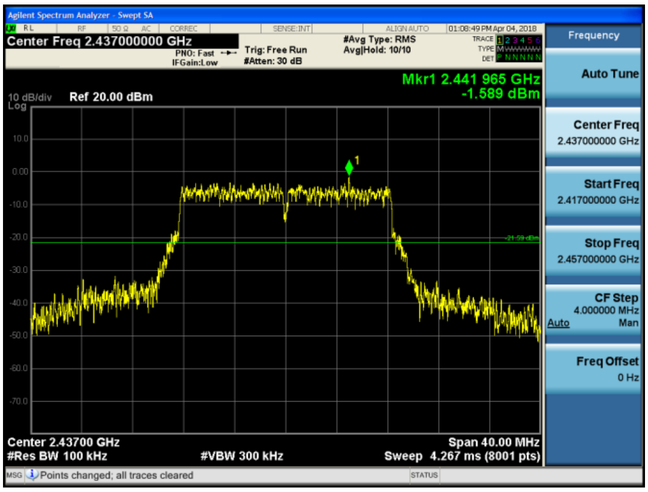


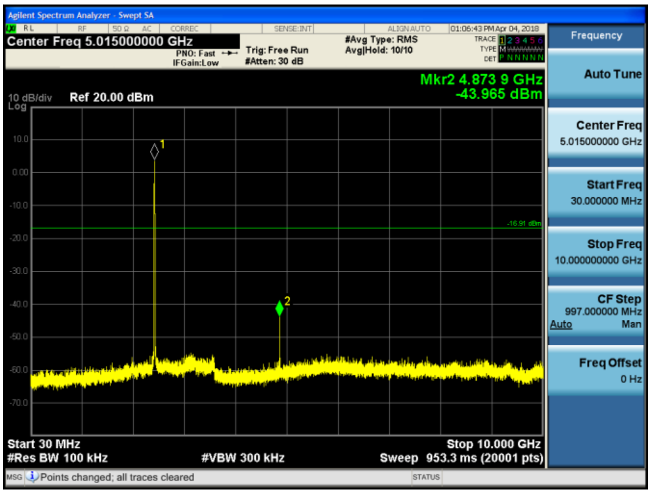


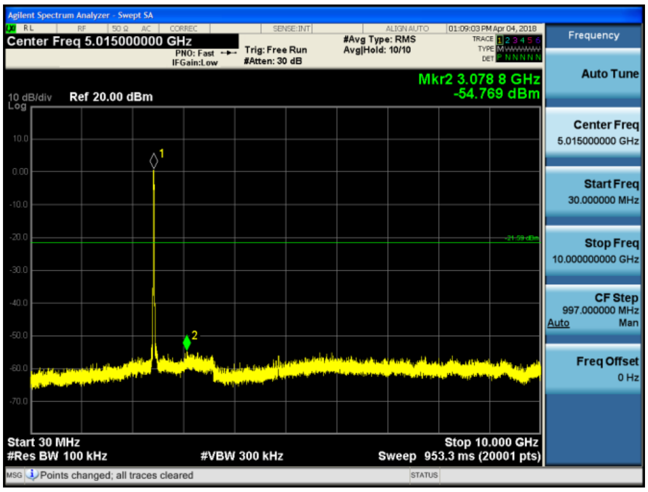
10 GHz – 26 GHz	10 GHz – 26 GHz

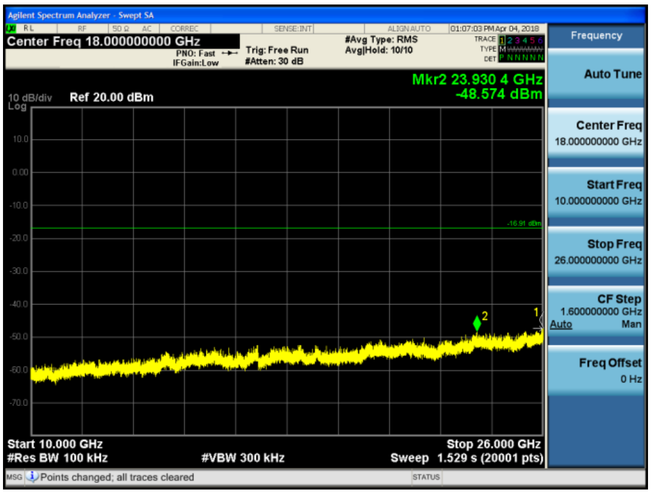
RF Conducted Spurious Emissions	
Antenna 1	Antenna 1
IEEE 802.11b	IEEE 802.11g
Channel 1 / 2412 MHz	Channel 1 / 2412 MHz
	
2392 MHz – 2432 MHz	2392 MHz – 2432 MHz
	
30 MHz – 10 GHz	30 MHz – 10 GHz
	
10 GHz – 26 GHz	10 GHz – 26 GHz

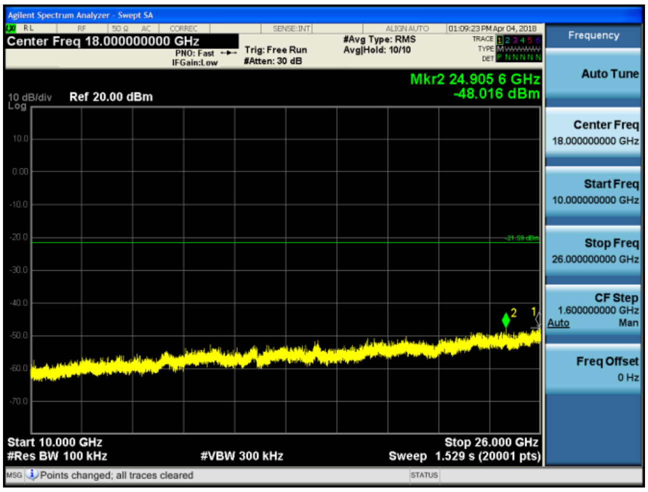
<table>
<tr><th colspan="2">RF Conducted Spurious Emissions</th></tr>
<tr><td>Antenna 1</td><td>Antenna 1</td></tr>
<tr><td>IEEE 802.11b</td><td>IEEE 802.11g</td></tr>
<tr><td>Channel 6 / 2437 MHz</td><td>Channel 6 / 2437 MHz</td></tr>
<tr><td>


</td><td>


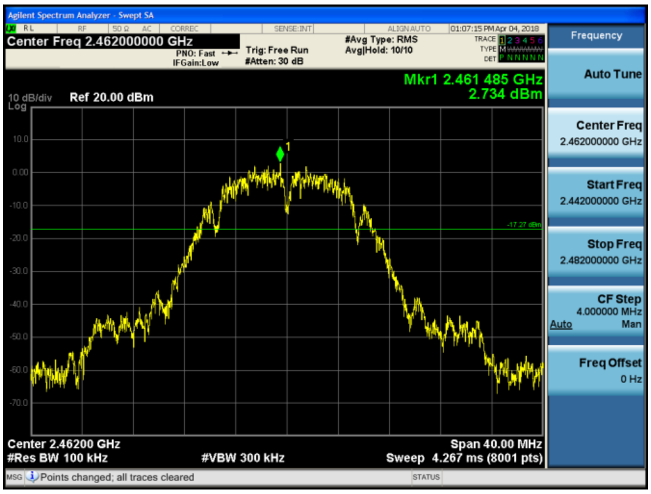
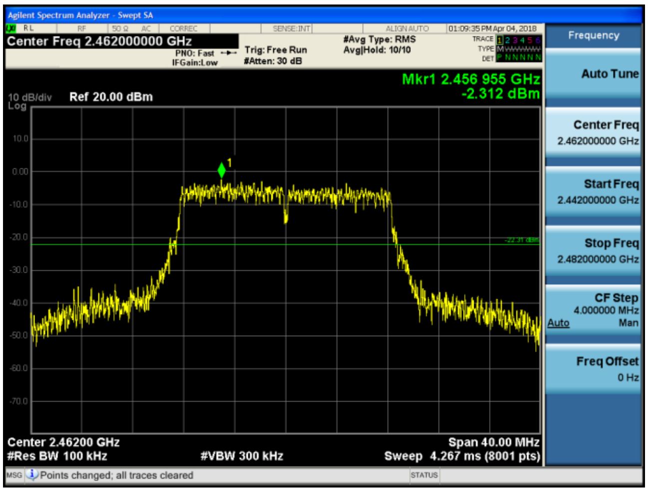
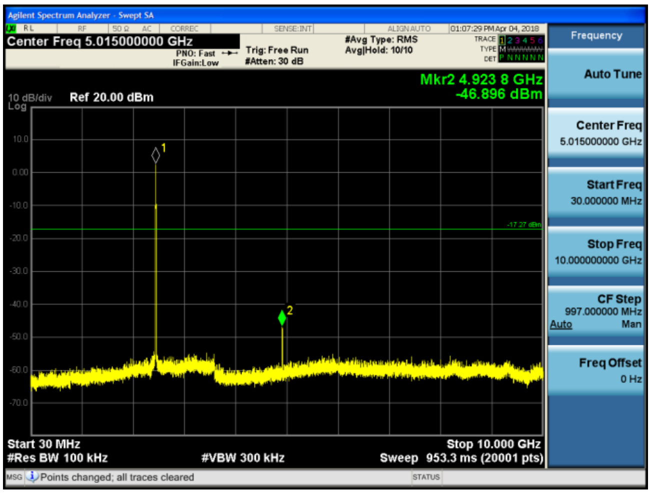
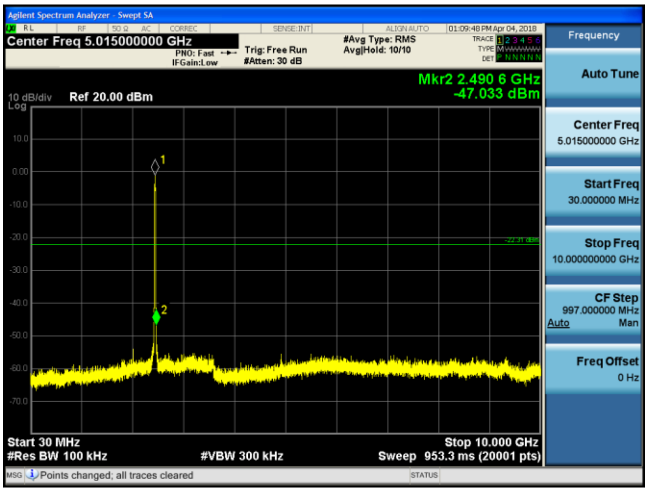
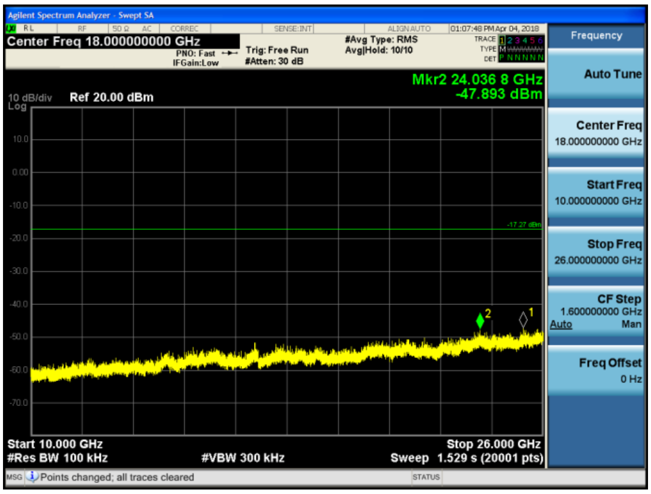
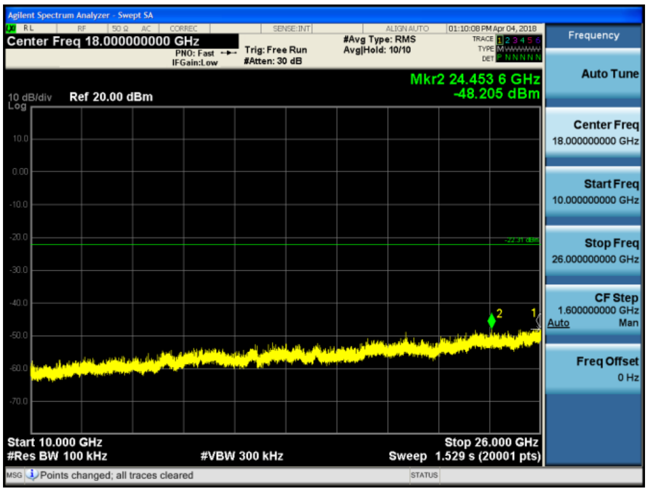
</td></tr>
<tr><td>2417 MHz – 2457 MHz</td><td>2417 MHz – 2457 MHz</td></tr>
<tr><td>


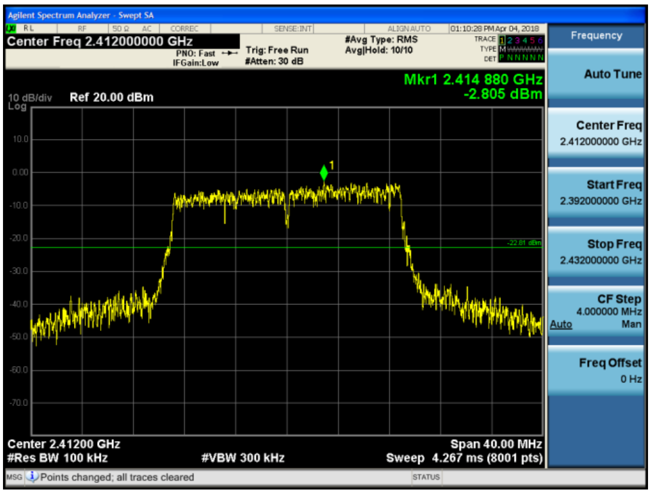
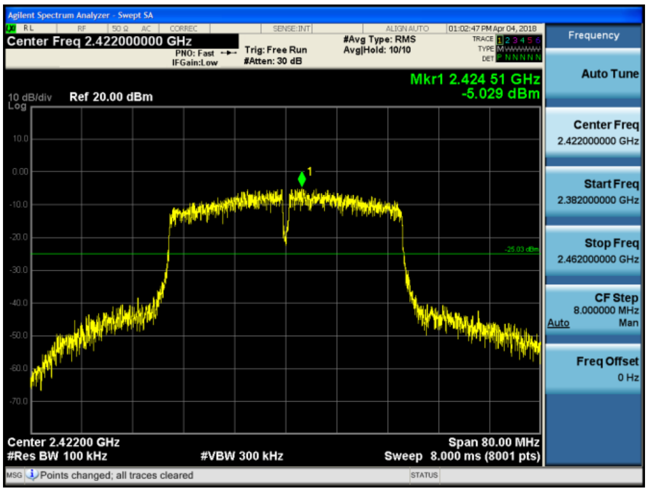
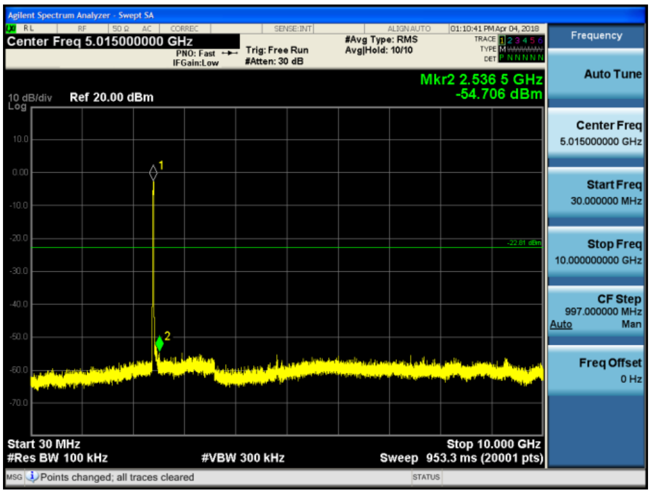
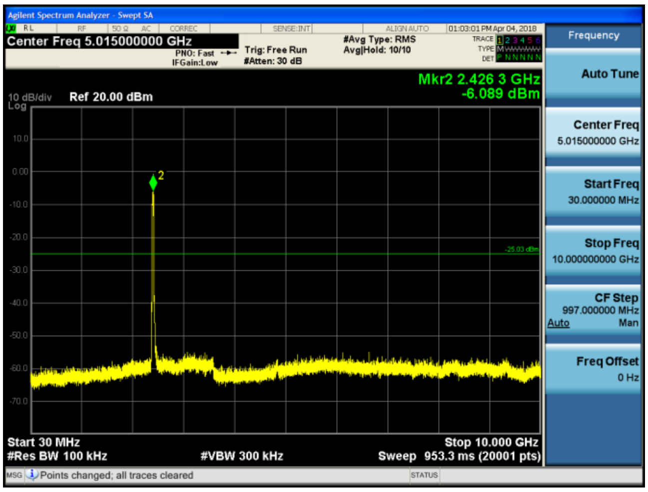
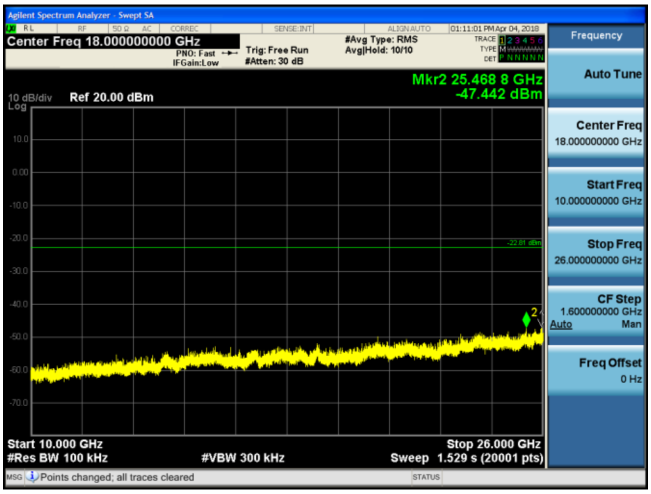
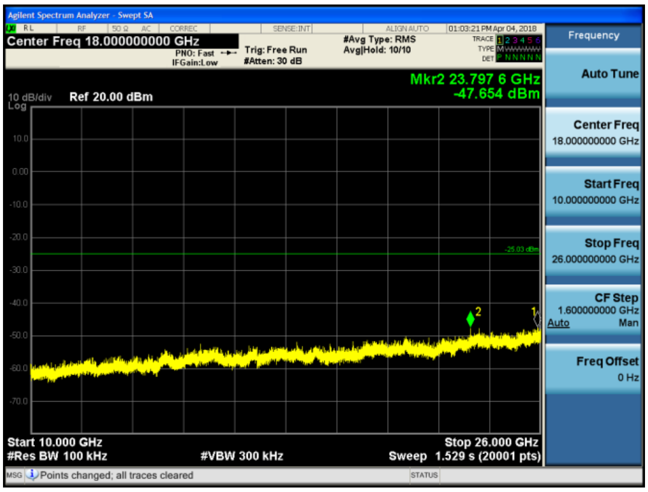
</td><td>


</td></tr>
<tr><td>30 MHz – 10 GHz</td><td>30 MHz – 10 GHz</td></tr>
<tr><td>


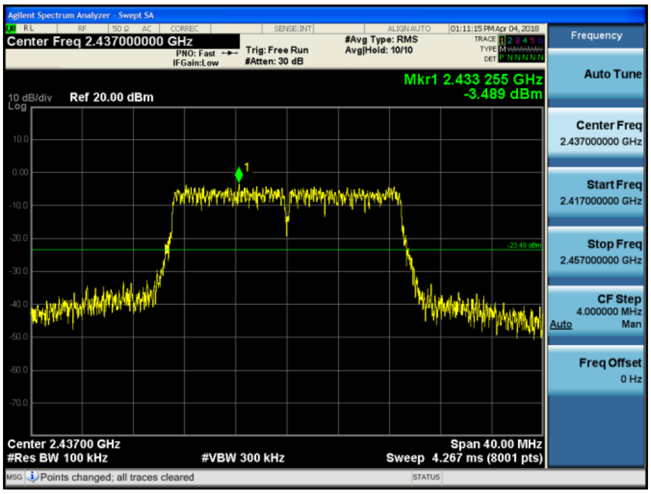
</td><td>


</td></tr>
<tr><td>10 GHz – 26 GHz</td><td>10 GHz – 26 GHz</td></tr>
</table>

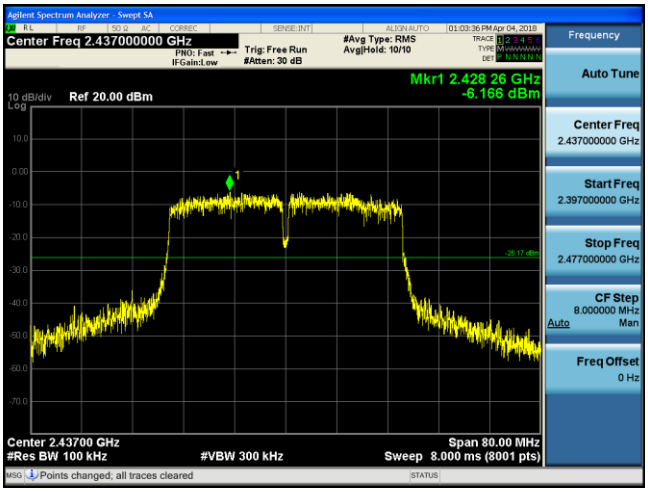
<table>
<tr><th colspan="2">RF Conducted Spurious Emissions</th></tr>
<tr><td>Antenna 1</td><td>Antenna 1</td></tr>
<tr><td>IEEE 802.11b</td><td>IEEE 802.11g</td></tr>
<tr><td>Channel 11 / 2462 MHz</td><td>Channel 11 / 2462 MHz</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>2442 MHz – 2482 MHz</td><td>2442 MHz – 2482 MHz</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>30 MHz – 10 GHz</td><td>30 MHz – 10 GHz</td></tr>
<tr><td>
</td><td>
</td></tr>
<tr><td>10 GHz – 26 GHz</td><td>10 GHz – 26 GHz</td></tr>
</table>

<table>
<tr><th colspan="2">RF Conducted Spurious Emissions</th></tr>
<tr><td>Antenna 1</td><td>Antenna 1</td></tr>
<tr><td>IEEE 802.11n HT20</td><td>IEEE 802.11n HT40</td></tr>
<tr><td>Channel 1 / 2412 MHz</td><td>Channel 3 / 2422 MHz</td></tr>
<tr><td></td><td></td></tr>
<tr><td>2392 MHz – 2432 MHz</td><td>2382 MHz – 2462 MHz</td></tr>
<tr><td></td><td></td></tr>
<tr><td>30 MHz – 10 GHz</td><td>30 MHz – 10 GHz</td></tr>
<tr><td></td><td></td></tr>
<tr><td>10 GHz – 26 GHz</td><td>10 GHz – 26 GHz</td></tr>
</table>

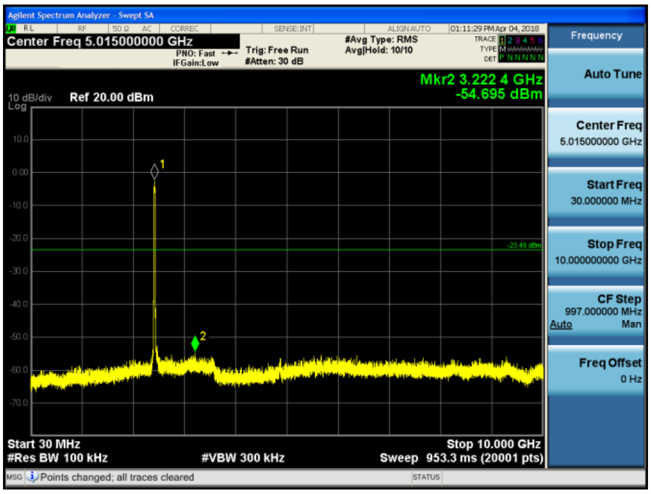
RF Conducted Spurious Emissions	
Antenna 1	Antenna 1
IEEE 802.11n HT20	IEEE 802.11n HT40
Channel 6 / 2437 MHz	Channel 6 / 2437 MHz



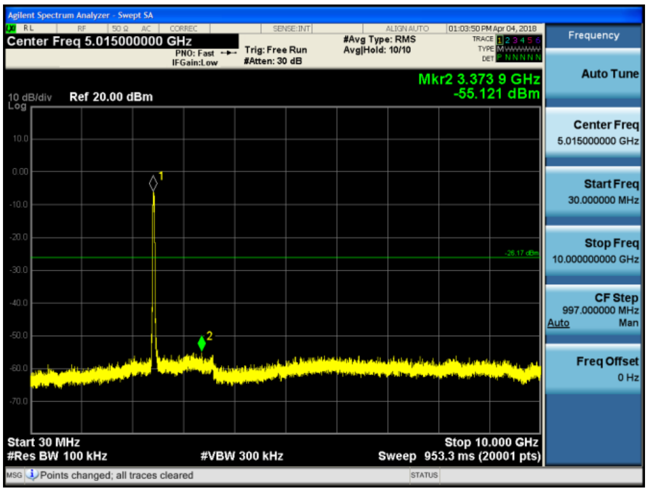
2417 MHz – 2457 MHz



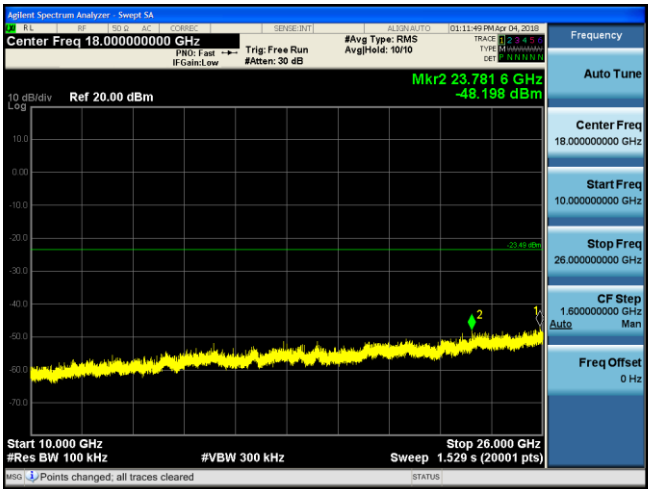
2397 MHz – 2477 MHz



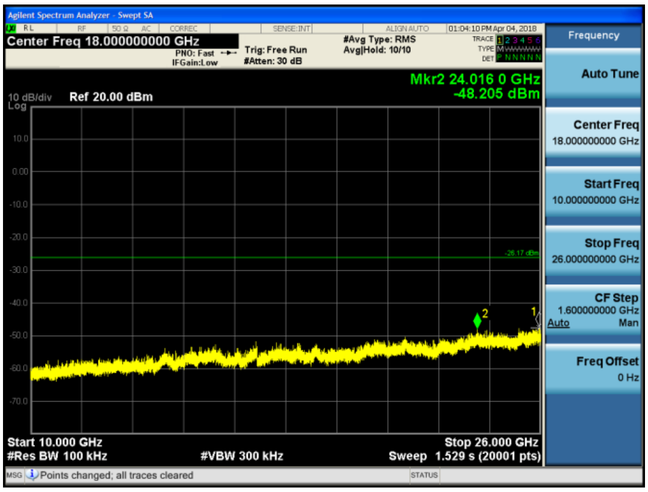
30 MHz – 10 GHz



30 MHz – 10 GHz

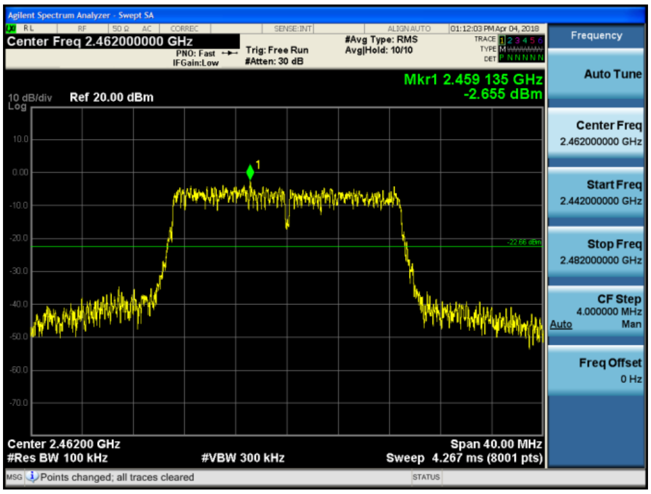


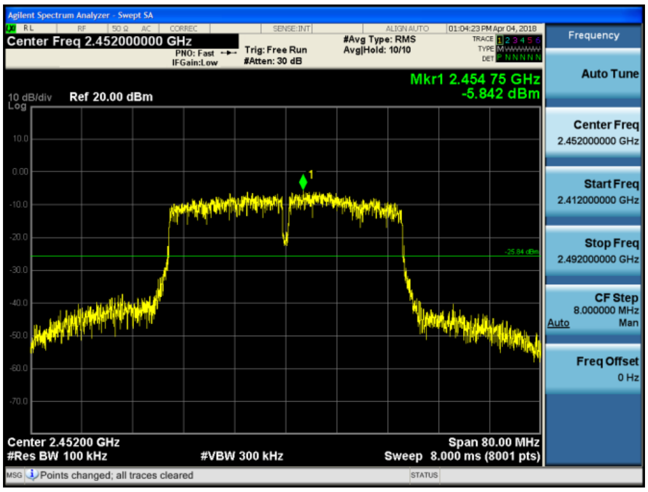
10 GHz – 26 GHz



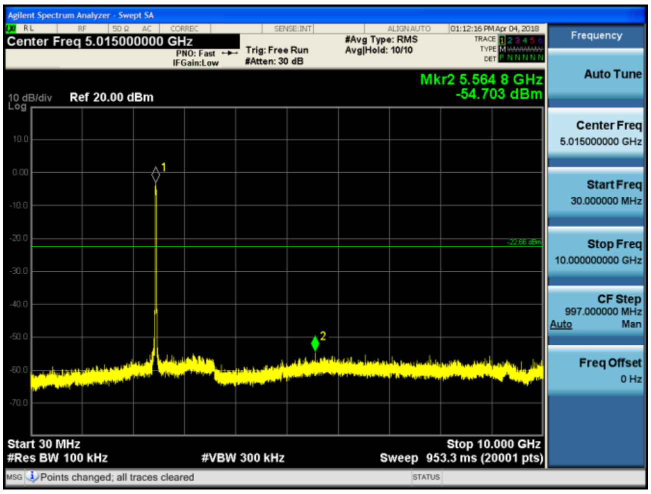
10 GHz – 26 GHz

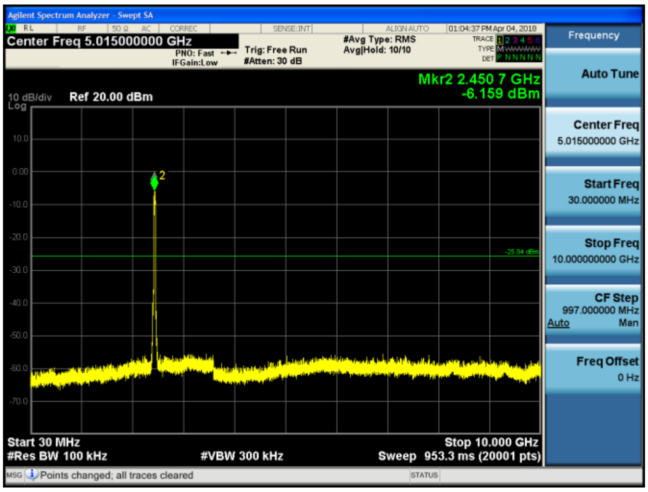
RF Conducted Spurious Emissions	
Antenna 1	Antenna 1
IEEE 802.11n HT20	IEEE 802.11n HT40
Channel 11 / 2462 MHz	Channel 9 / 2452 MHz



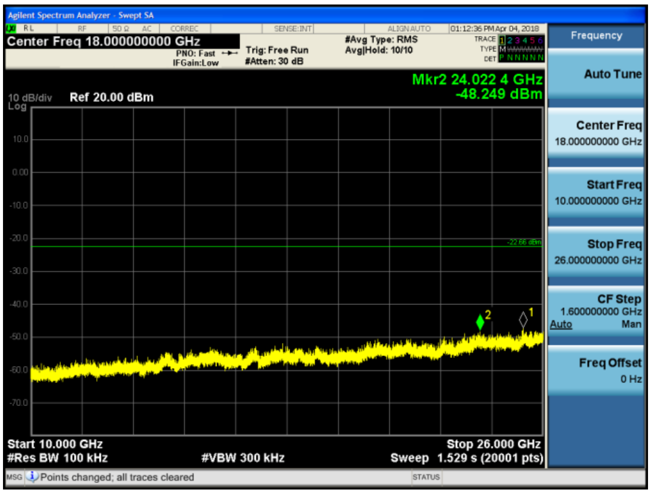


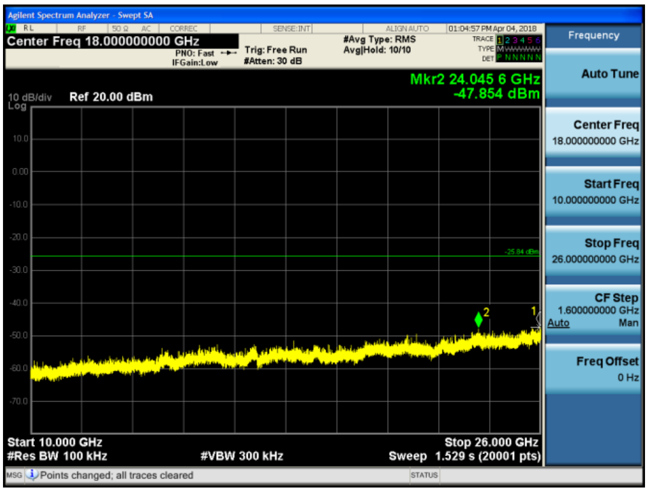
2442 MHz – 2482 MHz	2412 MHz – 2492 MHz



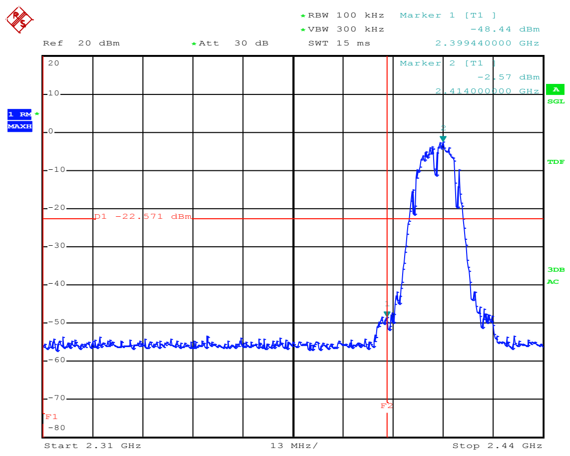
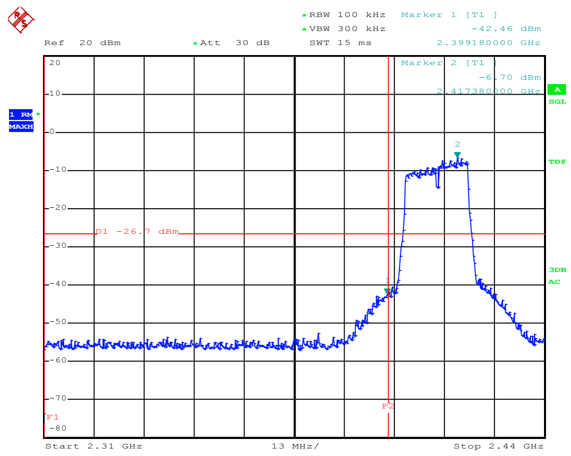
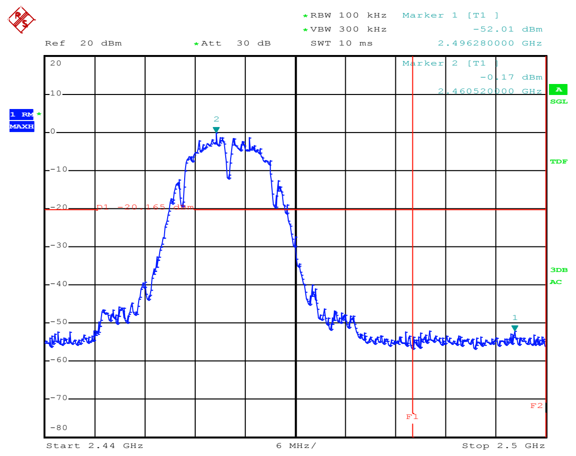
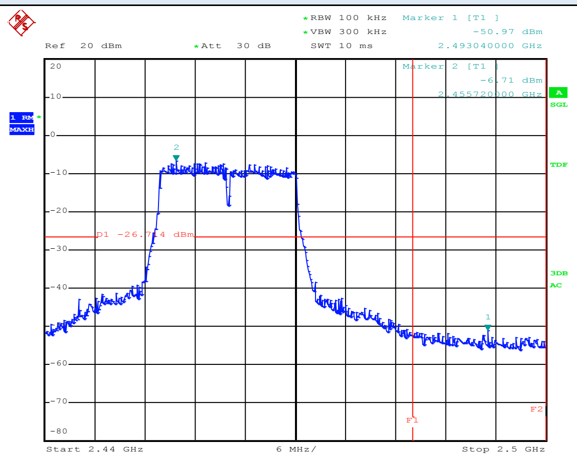
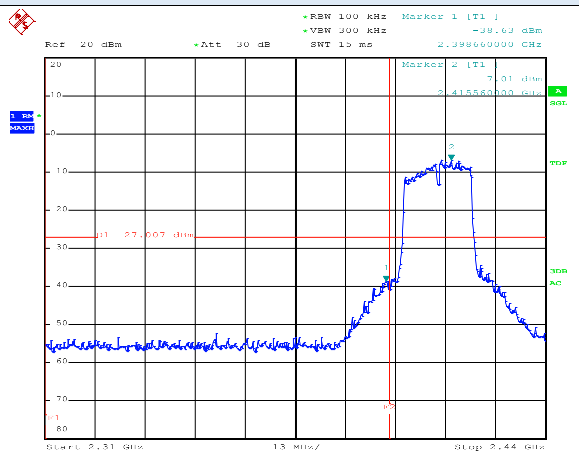
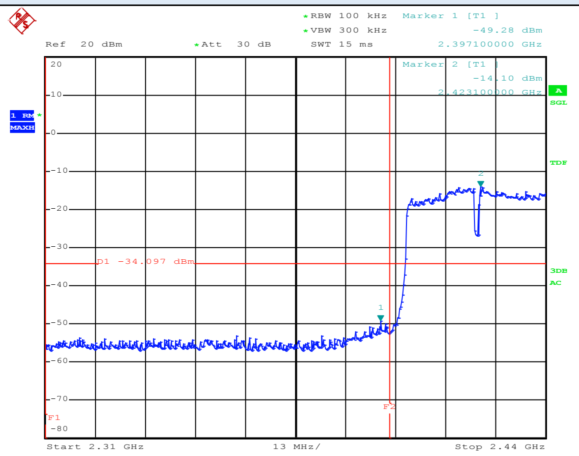


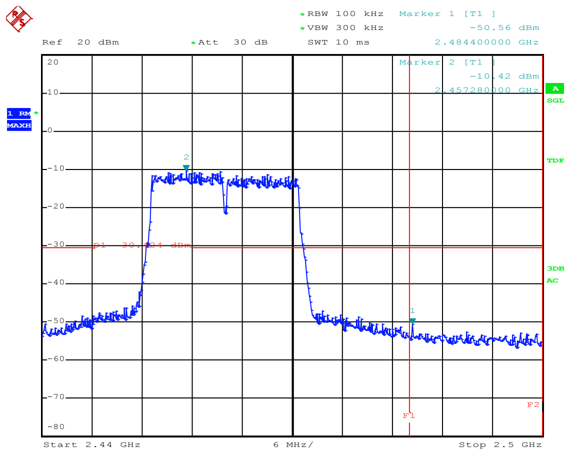
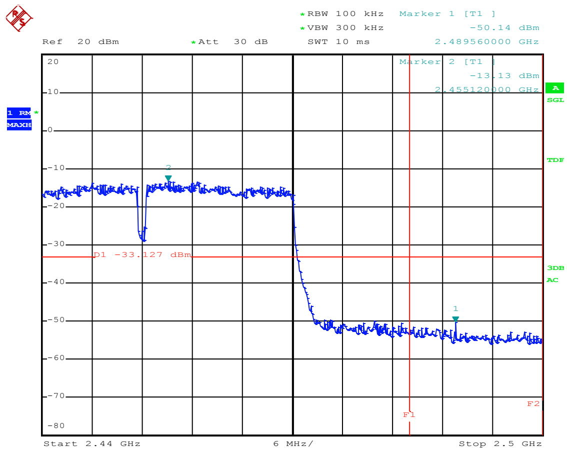
30 MHz – 10 GHz	30 MHz – 10 GHz

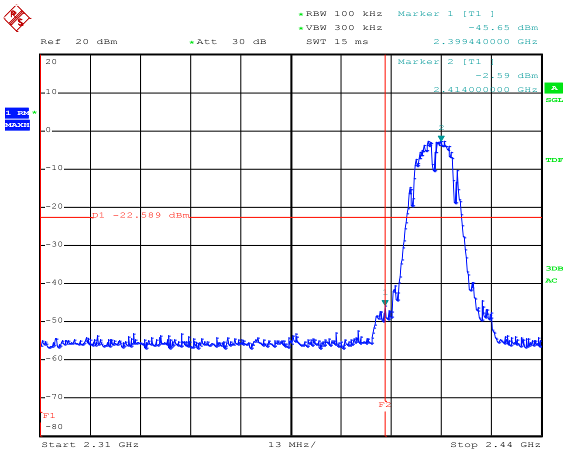
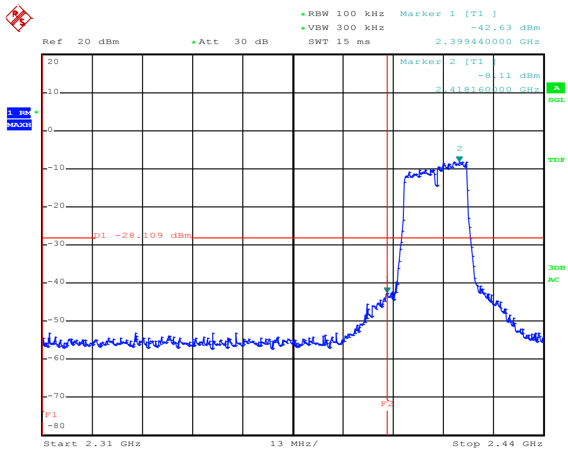
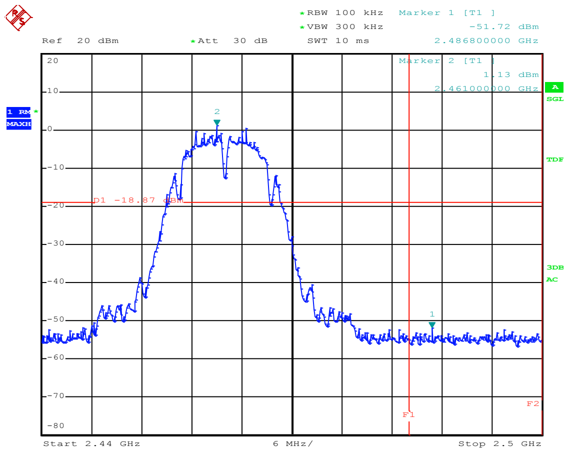
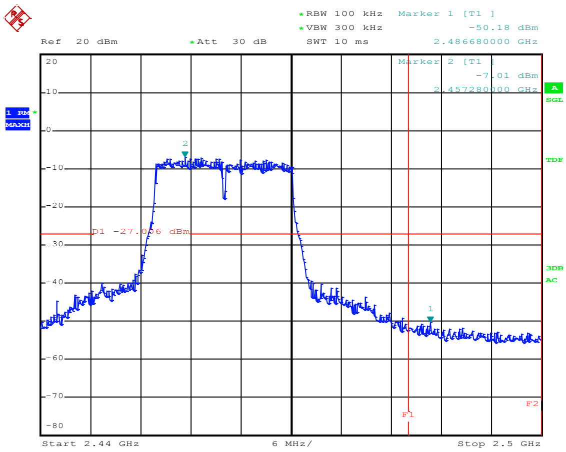
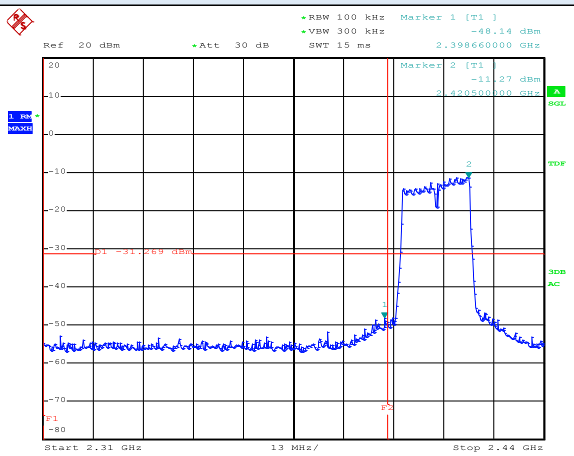
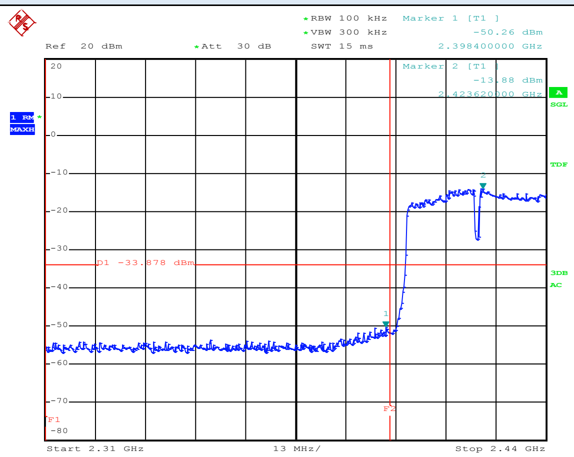


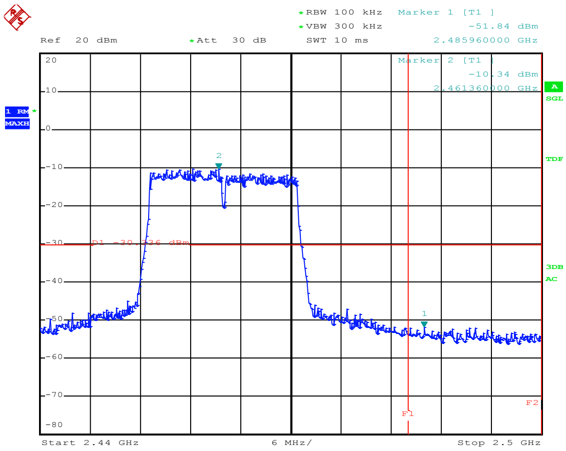
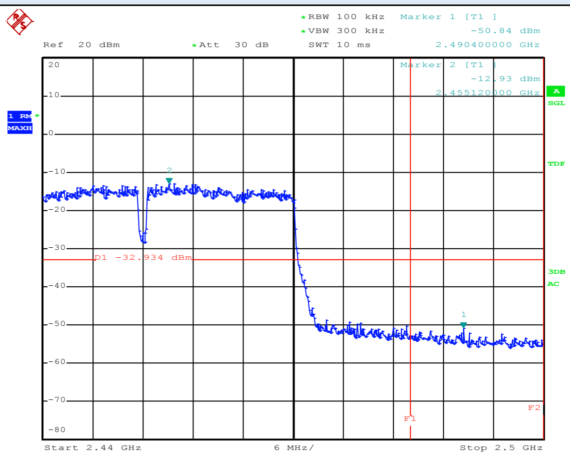


10 GHz – 26 GHz	10 GHz – 26 GHz

<table>
<tr><th colspan="2">Band-edge Measurements for Conducted Emissions</th></tr>
<tr><td>Antenna 0</td><td>Antenna 0</td></tr>
<tr><td>IEEE 802.11b</td><td>IEEE 802.11g</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Channel 1 / 2412 MHz</td><td>Channel 1 / 2412 MHz</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Channel 11 / 2462 MHz</td><td>Channel 11 / 2462 MHz</td></tr>
<tr><td>IEEE 802.11n HT20</td><td>IEEE 802.11n HT40</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Channel 1 / 2412 MHz</td><td>Channel 3 / 2422 MHz</td></tr>
</table>

Band-edge Measurements for Conducted Emissions	
Antenna 0	Antenna 0
IEEE 802.11n HT20	IEEE 802.11n HT40
	
Channel 11 / 2462 MHz	Channel 9 / 2452 MHz

Band-edge Measurements for Conducted Emissions	
Antenna 1	Antenna 1
IEEE 802.11b	IEEE 802.11g
	
Channel 1 / 2412 MHz	Channel 1 / 2412 MHz
	
Channel 11 / 2462 MHz	Channel 11 / 2462 MHz
IEEE 802.11n HT20	IEEE 802.11n HT40
	
Channel 1 / 2412 MHz	Channel 3 / 2422 MHz

Band-edge Measurements for Conducted Emissions	
Antenna 1	Antenna 1
IEEE 802.11n HT20	IEEE 802.11n HT40
	
Channel 11 / 2462 MHz	Channel 9 / 2452 MHz

5.7. Power line conducted emissions

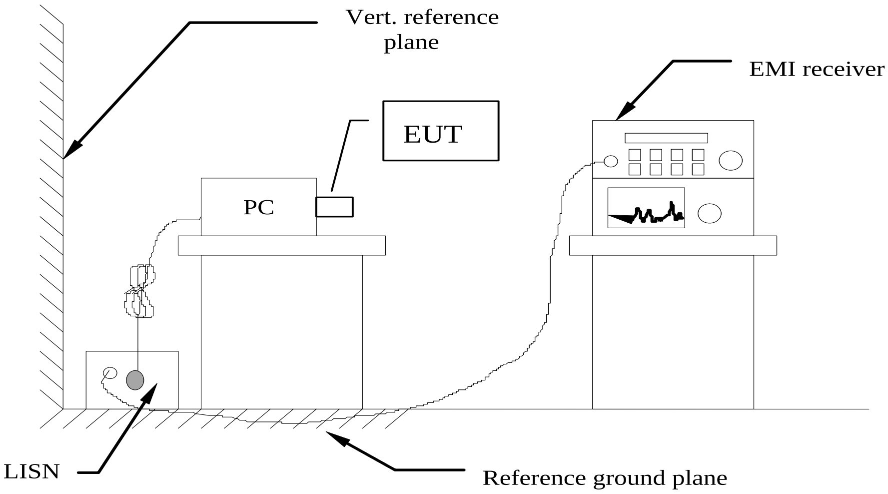
5.7.1 Standard Applicable

According to §15.207 (a): For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range are listed as follows:

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

* Decreasing linearly with the logarithm of the frequency

5.7.2 Block Diagram of Test Setup



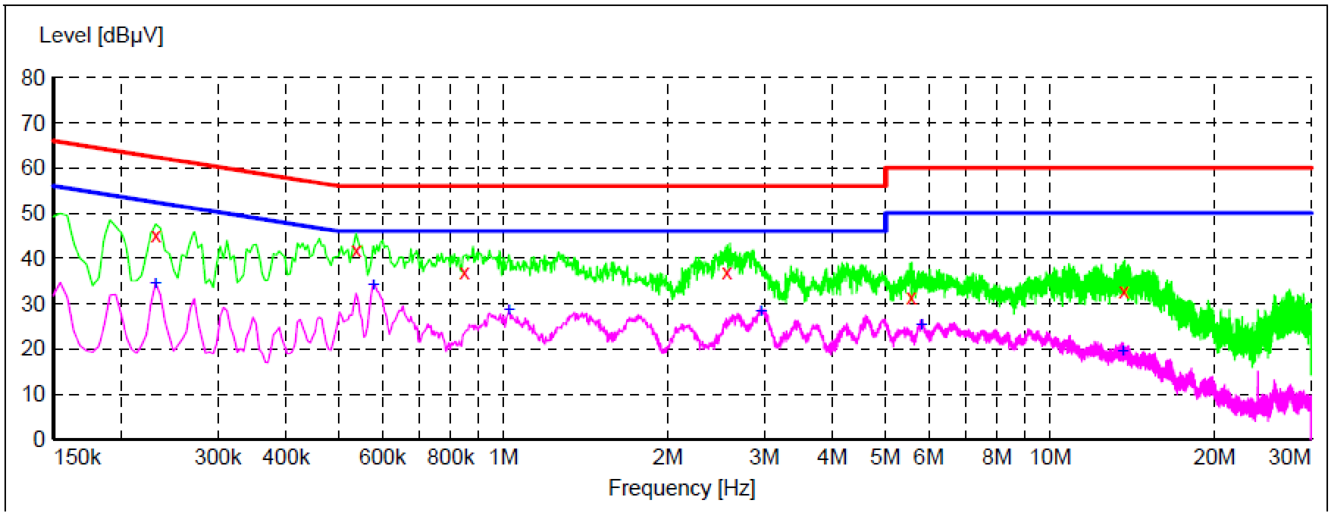
5.7.3 Test Results

PASS.

The test data please refer to following page.

AC Conducted Emission of power adapter @ AC 120V/60Hz @ IEEE 802.11n HT40 (worst case)

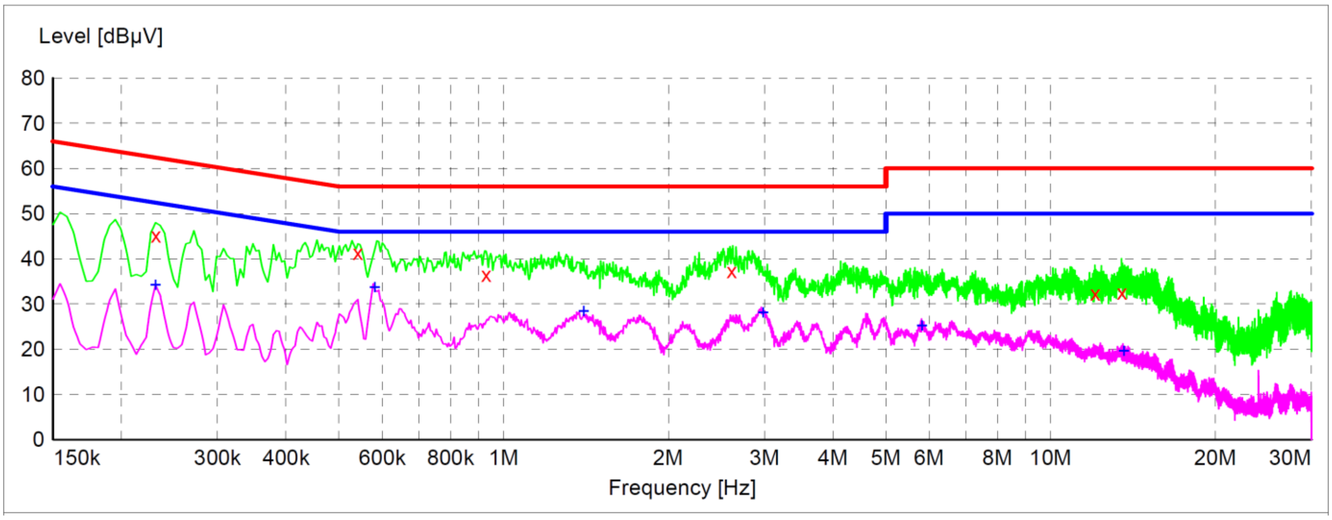
Line



Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.231000	45.20	10.6	62	17.2	QP	L1	GND
0.537000	41.90	10.0	56	14.1	QP	L1	GND
0.847500	36.90	9.9	56	19.1	QP	L1	GND
2.562000	37.10	9.8	56	18.9	QP	L1	GND
5.568000	31.50	9.8	60	28.5	QP	L1	GND
13.636500	32.70	9.9	60	27.3	QP	L1	GND

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.231000	34.40	10.6	52	18.0	AV	L1	GND
0.577500	34.00	10.0	46	12.0	AV	L1	GND
1.023000	28.40	9.8	46	17.6	AV	L1	GND
2.958000	28.20	9.8	46	17.8	AV	L1	GND
5.820000	25.20	9.8	50	24.8	AV	L1	GND
13.578000	19.50	9.9	50	30.5	AV	L1	GND

Neutral



Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.231000	45.20	10.6	62	17.2	QP	N	GND
0.541500	41.30	10.0	56	14.7	QP	N	GND
0.928500	36.50	9.8	56	19.5	QP	N	GND
2.611500	37.30	9.8	56	18.7	QP	N	GND
12.057000	32.30	9.9	60	27.7	QP	N	GND
13.510500	32.60	9.9	60	27.4	QP	N	GND

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.231000	34.20	10.6	52	18.2	AV	N	GND
0.582000	33.70	10.0	46	12.3	AV	N	GND
1.401000	28.40	9.8	46	17.6	AV	N	GND
2.985000	28.10	9.8	46	17.9	AV	N	GND
5.820000	25.20	9.8	50	24.8	AV	N	GND
13.627500	19.60	9.9	50	30.4	AV	N	GND

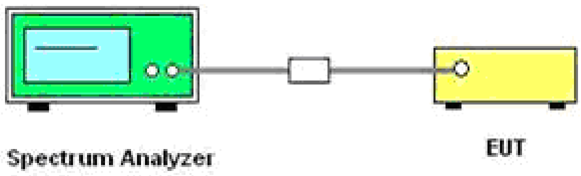
****Note: Pre-scan all modes and recorded the worst case results in this report (IEEE 802.11n HT40).*

5.8. Band-edge measurements for radiated emissions

5.8.1 Standard Applicable

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. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

5.8.2 Test Setup Layout



5.8.3. Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of Spectrum Analyzer.

5.8.4. Test Procedures

According to KDB 558074 D01 for Antenna-port conducted measurement. Antenna-port conducted measurements may also be used as an alternative to radiated measurements for demonstrating compliance in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case spurious emissions is required.

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Remove the antenna from the EUT and then connect to a low loss RF cable from the antenna port to an EMI test receiver, then turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
3. Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge, for Radiated emissions restricted band RBW=1MHz, VBW=3MHz for peak detector and RBW=1MHz, VBW=1/B for AV detector.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.
6. Measure the conducted output power (in dBm) using the detector specified by the appropriate regulatory agency (see 12.2.2, 12.2.3, and 12.2.4 for guidance regarding measurement procedures for determining quasi-peak, peak, and average conducted output power, respectively).
7. Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level (see 12.2.5 for guidance on determining the applicable antenna gain)
8. Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies ≤ 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies > 1000 MHz).
9. For devices with multiple antenna-ports, measure the power of each individual chain and sum the EIRP of all chains in linear terms (e.g., Watts, mW).
10. Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:

$$E = EIRP – 20\log D + 104.77=EIRP+95.23$$

Where:
E = electric field strength in dBμV/m,
EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

11. Since the out-of-band characteristics of the EUT transmit antenna will often be unknown, the use of a conservative antenna gain value is necessary. Thus, when determining the EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2 dBi, whichever is greater. However, for devices that operate in multiple frequency bands while using the same transmit antenna, the highest gain of the antenna within the operating band nearest in frequency to the restricted band emission being measured may be used in lieu of the overall highest gain when the emission is at a frequency that is within 20 percent of the nearest band edge frequency, but in no case shall a value less than 2 dBi be used.
12. Per KDB662911 D01 section b) In cases where a combination of conducted measurements and cabinet radiated measurements are permitted to demonstrate compliance with absolute radiated out-of-band and spurious limits (e.g., KDB Publications 558074 for DTS and 789033 for U-NII), the conducted measurements must be combined with directional gain to compute the radiated levels of the out-of-band and spurious emissions as described in this section.
13. Compare the resultant electric field strength level to the applicable regulatory limit.
14. Perform radiated spurious emission test duress until all measured frequencies were complete.

5.8.5 Test Results

Antenna 0

IEEE 802.11b								
Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Ground Reflection Factor (dB)	Covert Radiated E Level At 3m (dBuV/m)	Detector	Limit (dBuV/m)	Over limit dB	Verdict
2346.72	-47.40	2.15	0.00	49.98	Peak	74.00	-24.02	PASS
2389.38	-59.19	2.15	0.00	38.19	Average	54.00	-15.81	PASS
2486.98	-46.01	2.15	0.00	51.37	Peak	74.00	-22.63	PASS
2485.86	-57.02	2.15	0.00	40.36	Average	54.00	-13.64	PASS

IEEE 802.11g								
Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Ground Reflection Factor (dB)	Covert Radiated E Level At 3m (dBuV/m)	Limit (dBuV/m)	Limit (dBuV/m)	Over limit dB	Verdict
2389.38	-37.54	2.15	0.00	59.84	Peak	74.00	-14.16	PASS
2389.92	-53.57	2.15	0.00	43.81	Average	54.00	-10.19	PASS
2484.04	-36.41	2.15	0.00	60.97	Peak	74.00	-13.03	PASS
2484.04	-51.82	2.15	0.00	45.56	Average	54.00	-8.44	PASS

IEEE 802.11n HT20								
Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Ground Reflection Factor (dB)	Covert Radiated E Level At 3m (dBuV/m)	Detector	Limit (dBuV/m)	Over limit dB	Verdict
2389.92	-41.15	2.15	0.00	56.23	Peak	74.00	-17.77	PASS
2389.92	-56.68	2.15	0.00	40.70	Average	54.00	-13.30	PASS
2484.32	-38.84	2.15	0.00	58.54	Peak	74.00	-15.46	PASS
2484.04	-54.07	2.15	0.00	43.31	Average	54.00	-10.69	PASS

IEEE 802.11n HT40								
Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Ground Reflection Factor (dB)	Covert Radiated E Level At 3m (dBuV/m)	Detector	Limit (dBuV/m)	Over limit dB	Verdict
2389.38	-39.47	2.15	0.00	57.91	Peak	74.00	-16.09	PASS
2389.92	-54.29	2.15	0.00	43.09	Average	54.00	-10.91	PASS
2484.88	-38.33	2.15	0.00	59.05	Peak	74.00	-14.95	PASS
2484.04	-52.42	2.15	0.00	44.96	Average	54.00	-9.04	PASS

Antenna 1

IEEE 802.11b								
Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Ground Reflection Factor (dB)	Covert Radiated E Level At 3m (dBuV/m)	Detector	Limit (dBuV/m)	Over limit dB	Verdict
2388.57	-46.42	2.15	0.00	50.96	Peak	74.00	-23.04	PASS
2389.92	-59.11	2.15	0.00	38.27	Average	54.00	-15.73	PASS
2495.66	-45.42	2.15	0.00	51.96	Peak	74.00	-22.04	PASS
2486.00	-56.89	2.15	0.00	40.49	Average	54.00	-13.51	PASS

IEEE 802.11g								
Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Ground Reflection Factor (dB)	Covert Radiated E Level At 3m (dBuV/m)	Detector	Limit (dBuV/m)	Over limit dB	Verdict
2389.92	-39.69	2.15	0.00	57.69	Peak	74.00	-16.31	PASS
2389.92	-54.15	2.15	0.00	43.23	Average	54.00	-10.77	PASS
2484.04	-35.51	2.15	0.00	61.87	Peak	74.00	-12.13	PASS
2484.04	-51.00	2.15	0.00	46.38	Average	54.00	-7.62	PASS

IEEE 802.11n HT20								
Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Ground Reflection Factor (dB)	Covert Radiated E Level At 3m (dBuV/m)	Detector	Limit (dBuV/m)	Over limit dB	Verdict
2389.38	-39.13	2.15	0.00	58.25	Peak	74.00	-15.75	PASS
2389.92	-56.37	2.15	0.00	41.01	Average	54.00	-12.99	PASS
2484.18	-37.99	2.15	0.00	59.39	Peak	74.00	-14.61	PASS
2484.04	-53.84	2.15	0.00	43.54	Average	54.00	-10.46	PASS

IEEE 802.11n HT40								
Frequency (MHz)	Conducted Power (dBm)	Antenna Gain (dBi)	Ground Reflection Factor (dB)	Covert Radiated E Level At 3m (dBuV/m)	Detector	Limit (dBuV/m)	Over limit dB	Verdict
2389.11	-39.18	2.15	0.00	58.20	Peak	74.00	-15.80	PASS
2389.92	-54.16	2.15	0.00	43.22	Average	54.00	-10.78	PASS
2484.32	-36.12	2.15	0.00	61.26	Peak	74.00	-12.74	PASS
2484.04	-52.28	2.15	0.00	45.10	Average	54.00	-8.90	PASS

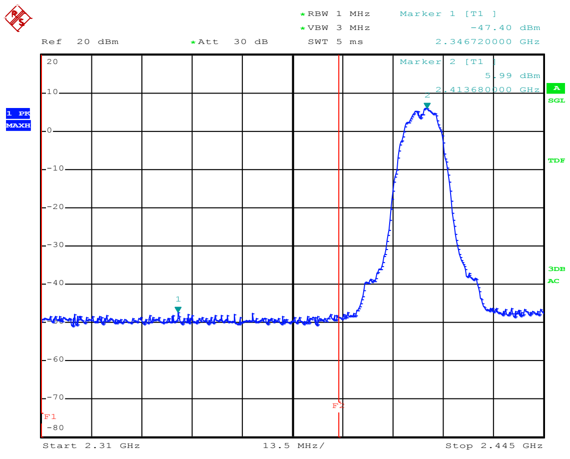
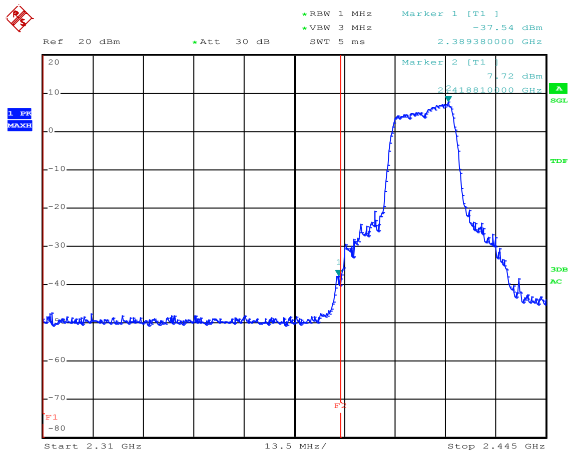
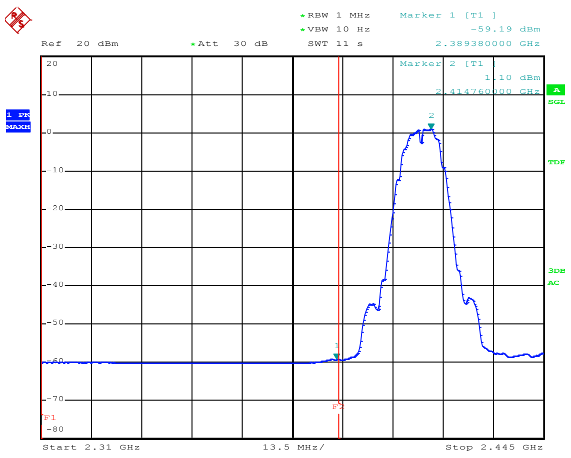
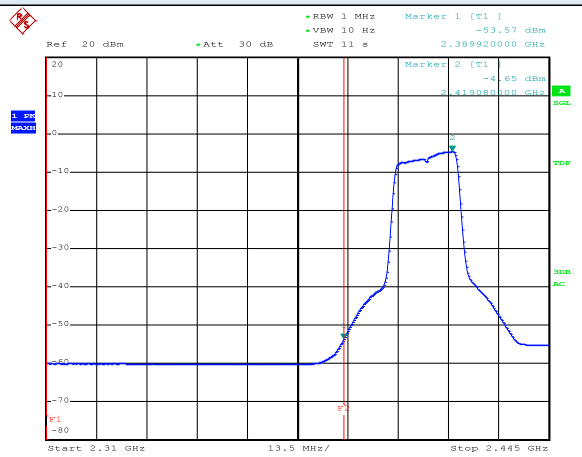
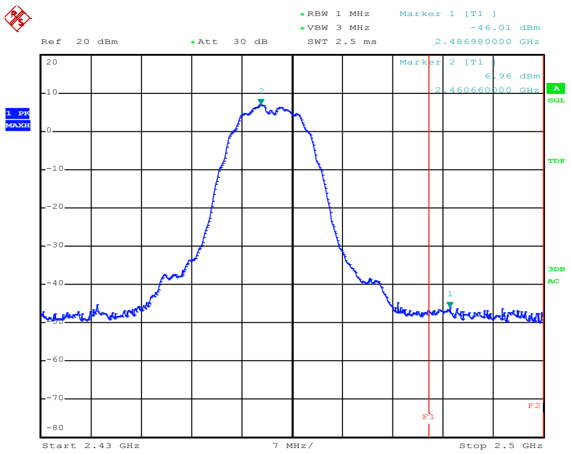
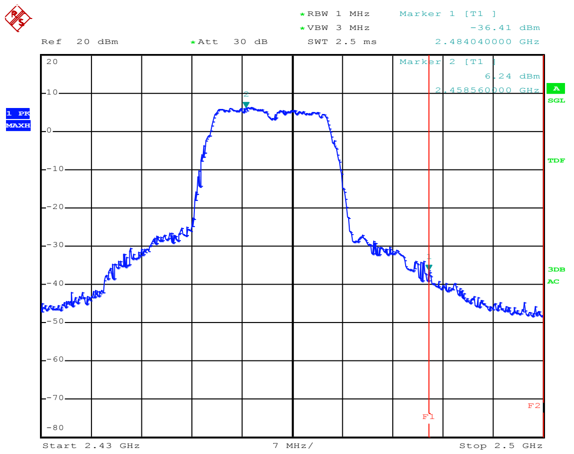
Combined Antenna 0 and Antenna 1

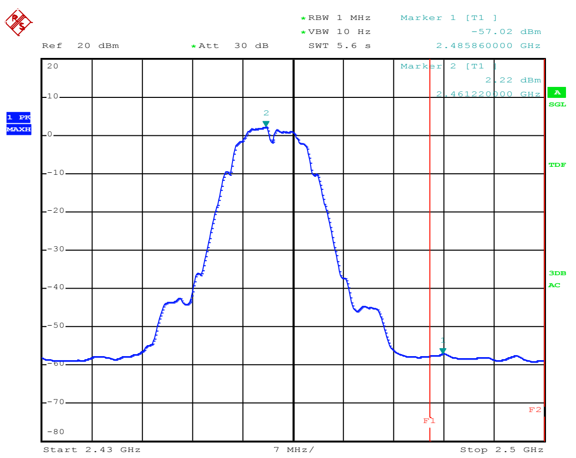
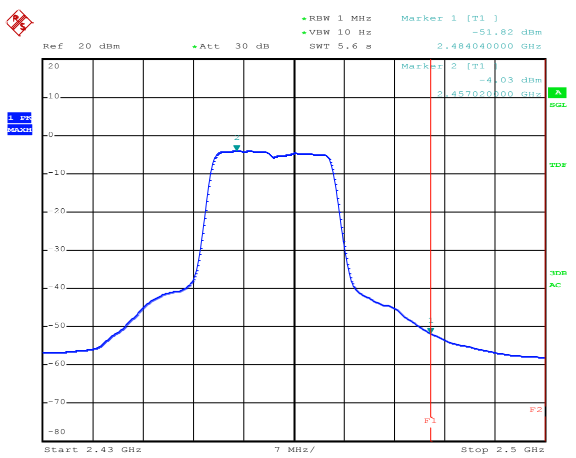
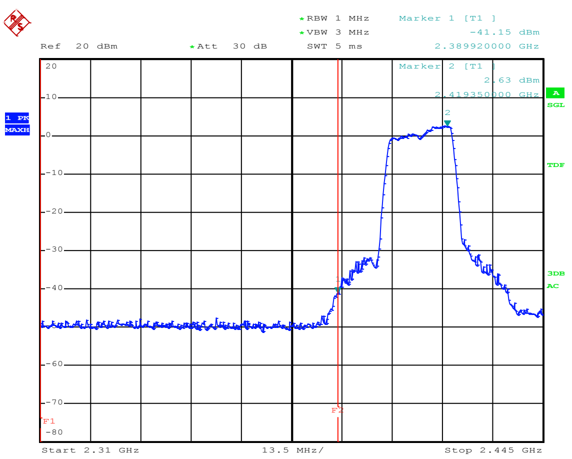
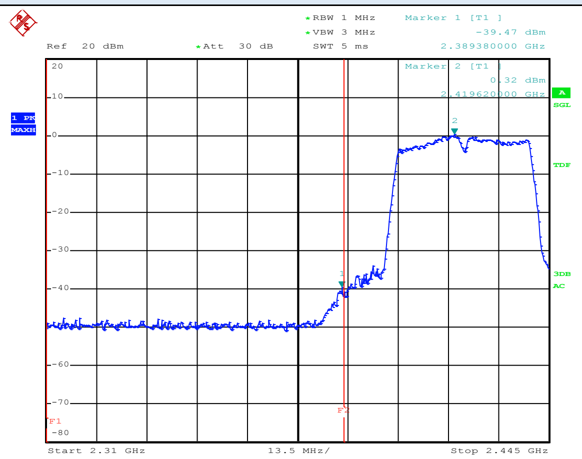
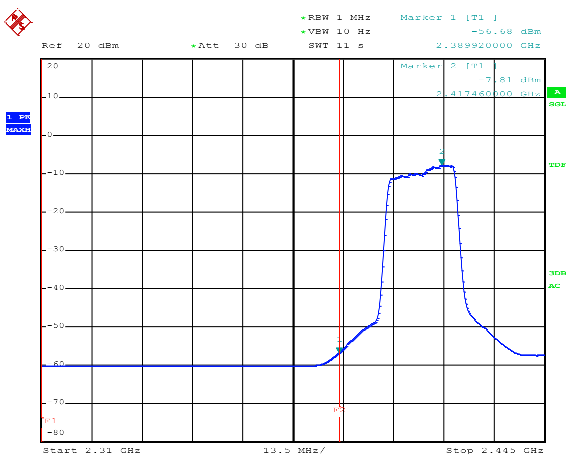
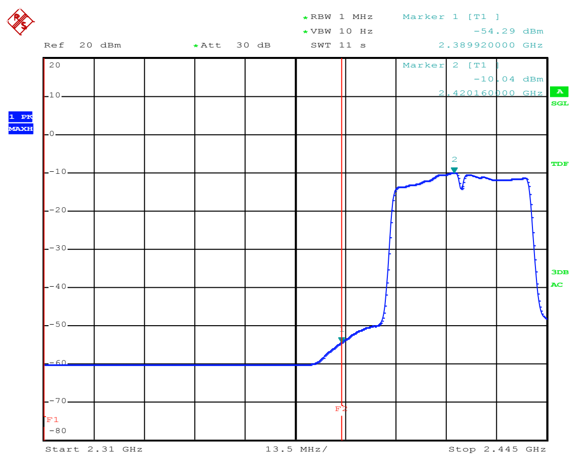
IEEE 802.11n HT20										
Frequency (MHz)	Conducted Power (dBm)			Directional Gain (dB)	Ground Reflection Factor (dB)	Covert Radiated E Level At 3m (dBuV/m)	Detector	Limit (dBuV/m)	Over limit dB	Verdict
	Antenna 0	Antenna 1	Sum							
2310.00-2390.00	-41.15	-39.13	-37.01	2.15	0	60.37	Peak	74	-13.63	PASS
2310.00-2390.00	-56.68	-56.37	-53.51	2.15	0	43.87	AV	54	-10.13	PASS
2483.50-2500.00	-38.84	-37.99	-35.38	2.15	0	62.00	Peak	74	-12.00	PASS
2483.50-2500.00	-54.07	-53.84	-50.94	2.15	0	46.44	AV	54	-7.56	PASS

IEEE 802.11n HT40										
Frequency (MHz)	Conducted Power (dBm)			Directional Gain (dB)	Ground Reflection Factor (dB)	Covert Radiated E Level At 3m (dBuV/m)	Detector	Limit (dBuV/m)	Over limit dB	Verdict
	Antenna 0	Antenna 1	Sum							
2310.00-2390.00	-39.47	-39.18	-36.31	2.15	0	61.07	Peak	74	-12.93	PASS
2310.00-2390.00	-54.29	-54.16	-51.21	2.15	0	46.17	AV	54	-7.83	PASS
2483.50-2500.00	-38.33	-36.12	-34.08	2.15	0	63.30	Peak	74	-10.70	PASS
2483.50-2500.00	-52.42	-52.28	-49.34	2.15	0	48.04	AV	54	-5.96	PASS

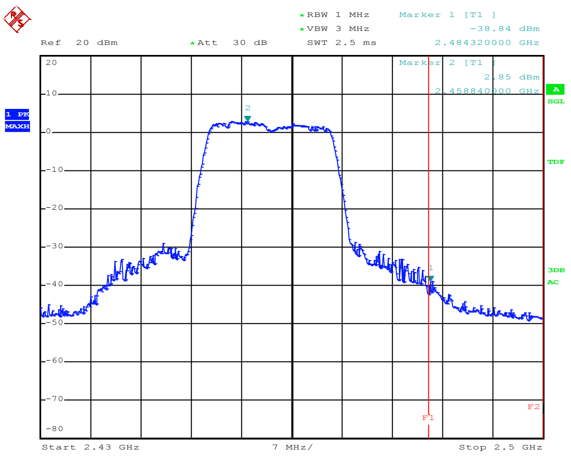
Remark:

1. *Measured Band-edge measurements for radiated emissions at difference data rate for each mode and recorded worst case for each mode.*
2. *Test results including cable loss;*
3. *Worst case data at 1Mbps at IEEE 802.11b; 6Mbps at IEEE 802.11g; 6.5Mbps at IEEE 802.11n HT20; 13.5Mbps at IEEE 802.11n HT40;*
4. *“---“means that the fundamental frequency not for 15.209 limits requirement.*
5. *No need measure Average values if Peak values meets Average limits;*
6. ** means maximum values of frequency band 2310 – 2390 MHz, 2483.5 – 2500 MHz;*
7. *For MIMO with CCD technology device, The Directional Gain= Gain of individual transmit antennas (dBi) + Array gain;*
   Array gain = 10 log (N_{ant}), where N_{ant} is the number of transmit antennas.
8. *Covert Radiated E Level At 3m = Conducted average power + Directional Gain + 104.77-20*log(3);*
9. *Please refer to following plots;*

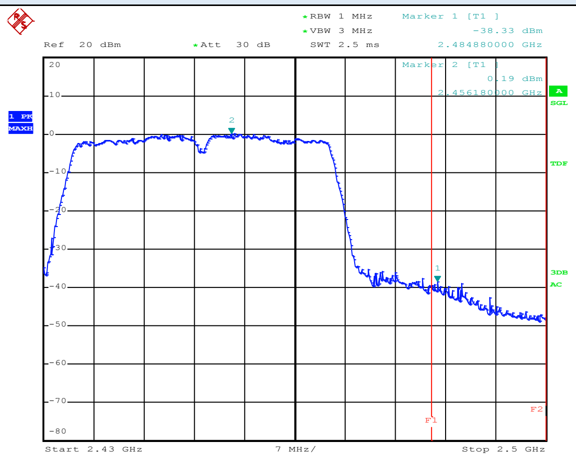
Band-edge measurements for radiated emissions	
Antenna 0	Antenna 0
IEEE 802.11b	IEEE 802.11g
	
Channel 1 / 2412 MHz – Peak	Channel 1 / 2412 MHz – Peak
	
Channel 1 / 2412 MHz – Average	Channel 1 / 2412 MHz – Average
	
Channel 11 / 2462 MHz – Peak	Channel 11 / 2462 MHz – Peak

Band-edge measurements for radiated emissions	
Antenna 0	Antenna 0
IEEE 802.11b	IEEE 802.11g
	
Channel 11 / 2462 MHz – Average	Channel 11 / 2462 MHz – Average
IEEE 802.11n HT20	IEEE 802.11n HT40
	
Channel 1 / 2412 MHz – Peak	Channel 3 / 2422 MHz – Peak
	
Channel 1 / 2412 MHz – Average	Channel 3 / 2422 MHz – Average

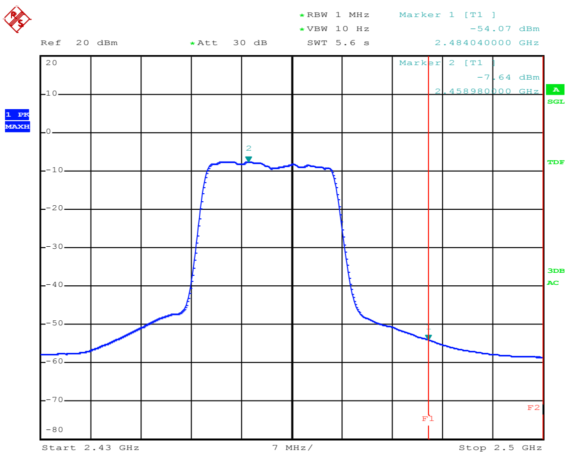
<table>
<tr><th colspan="2">Band-edge measurements for radiated emissions</th></tr>
<tr><td>Antenna 0</td><td>Antenna 0</td></tr>
<tr><td>IEEE 802.11n HT20</td><td>IEEE 802.11n HT40</td></tr>
<tr><td>



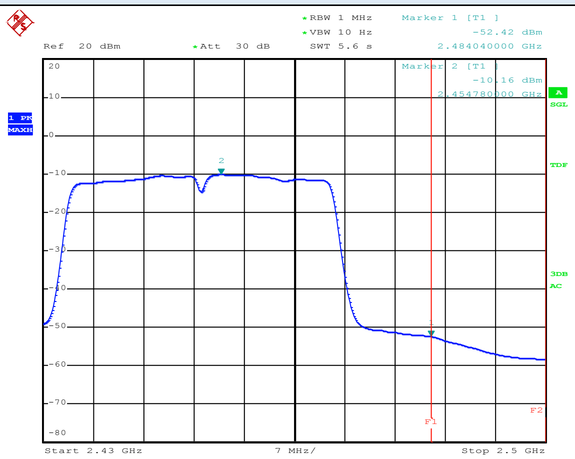
</td><td>



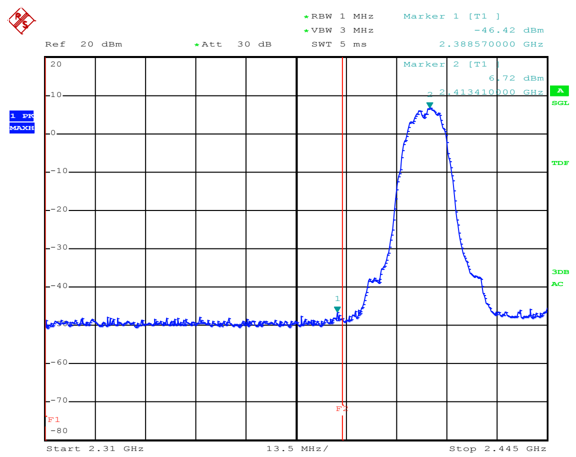
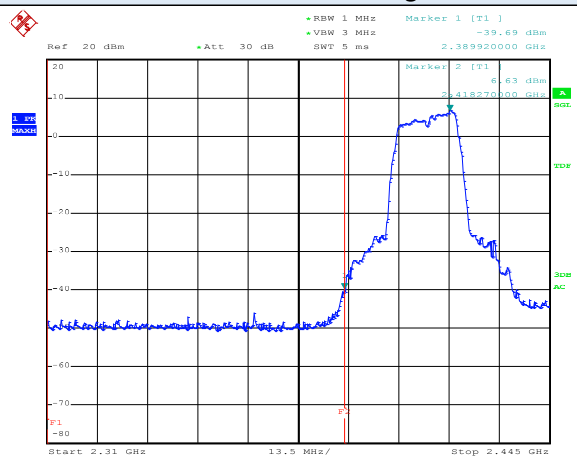
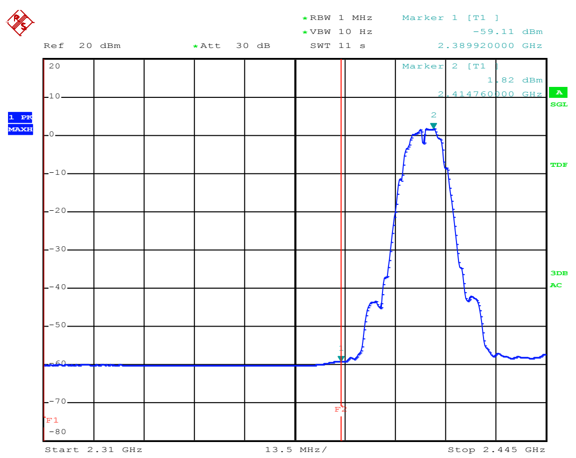
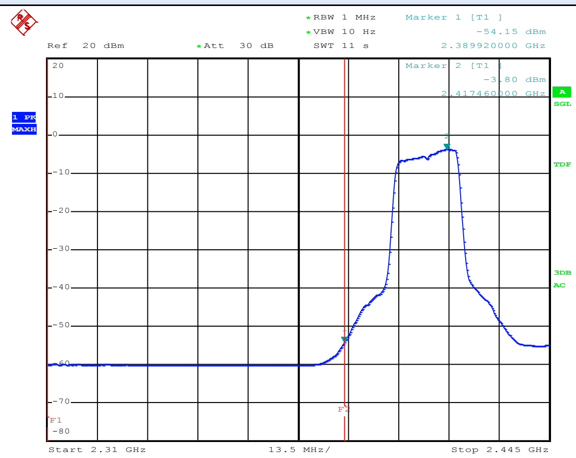
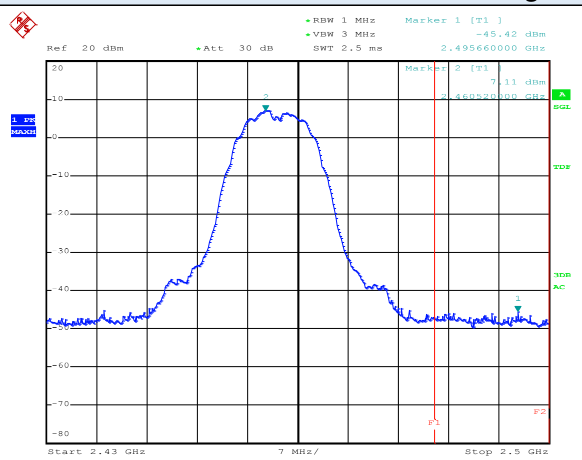
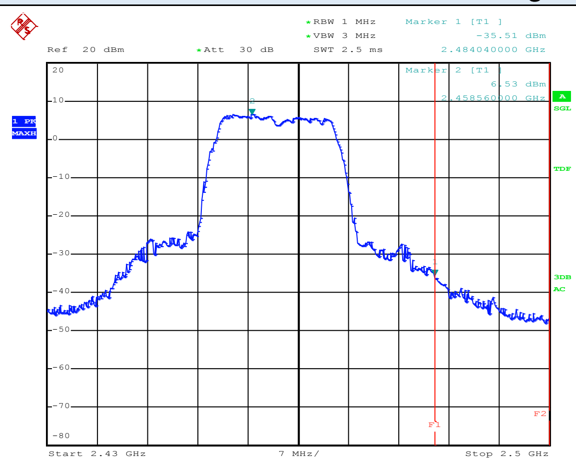
</td></tr>
<tr><td>Channel 11 / 2462 MHz – Peak</td><td>Channel 9 / 2452 MHz – Peak</td></tr>
<tr><td>

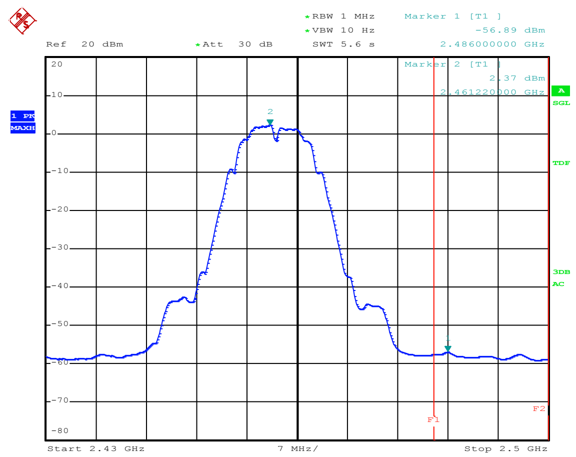
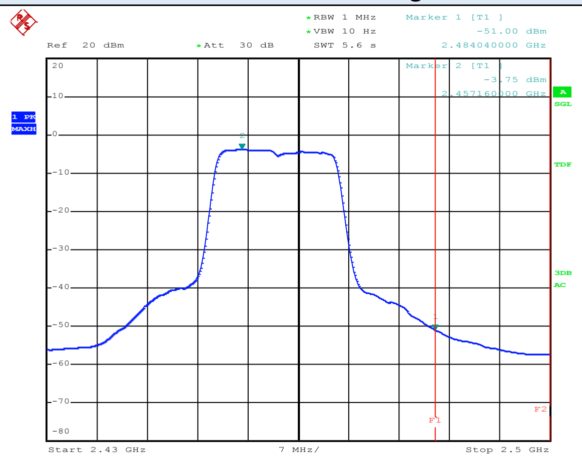
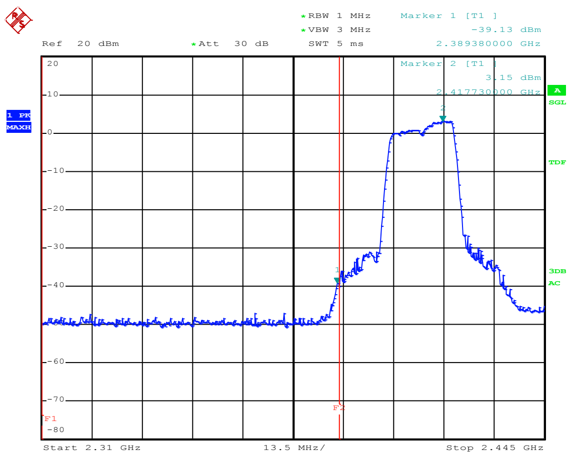
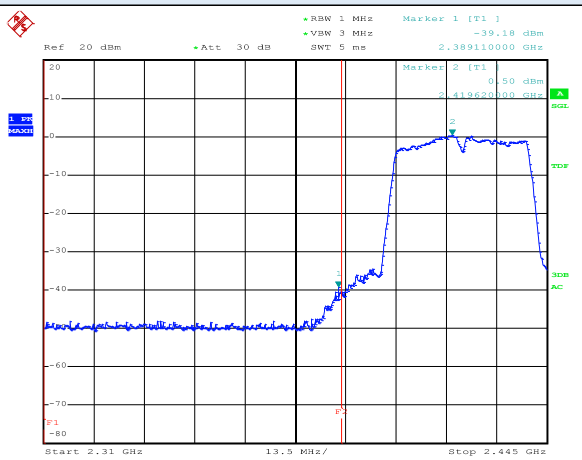
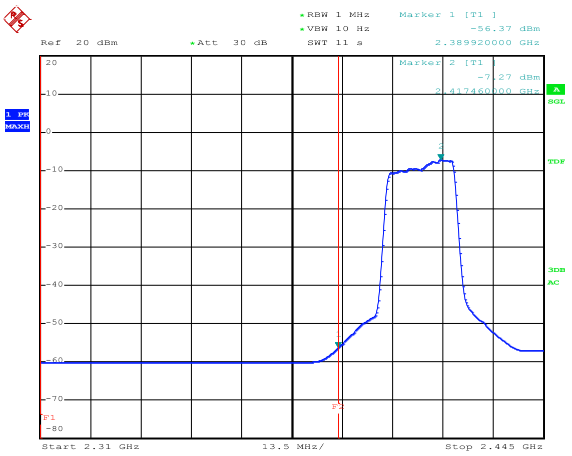
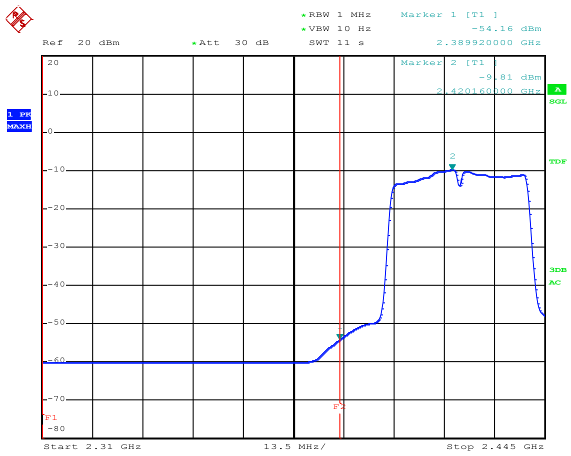


</td><td>

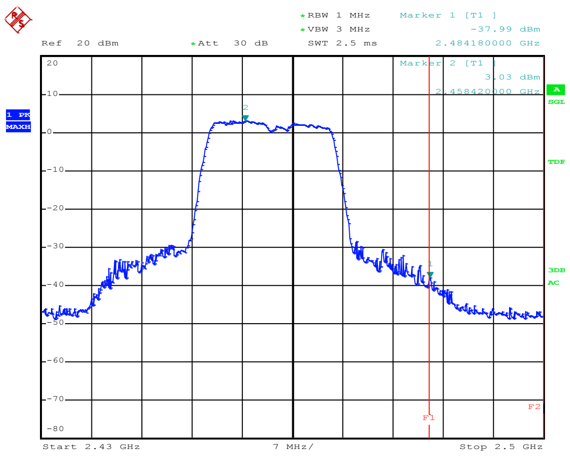


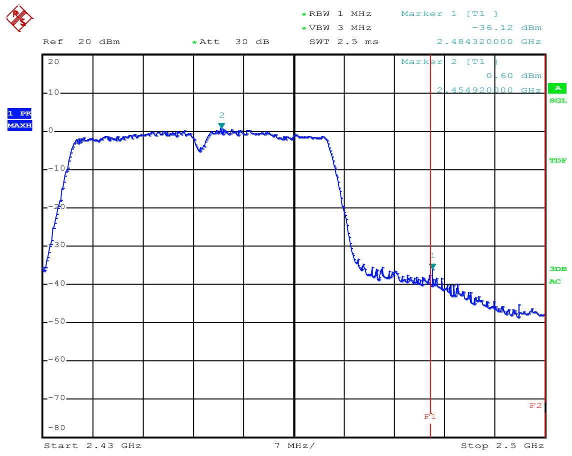
</td></tr>
<tr><td>Channel 11 / 2462 MHz – Average</td><td>Channel 9 / 2452 MHz – Average</td></tr>
</table>

Band-edge measurements for radiated emissions	
Antenna 1	Antenna 1
IEEE 802.11b	IEEE 802.11g
	
Channel 1 / 2412 MHz – Peak	Channel 1 / 2412 MHz – Peak
	
Channel 1 / 2412 MHz – Average	Channel 1 / 2412 MHz – Average
	
Channel 11 / 2462 MHz – Peak	Channel 11 / 2462 MHz – Peak

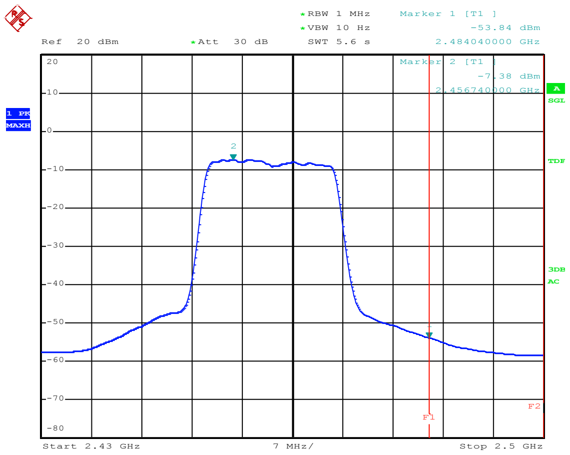
Band-edge measurements for radiated emissions	
Antenna 1	Antenna 1
IEEE 802.11b	IEEE 802.11g
	
Channel 11 / 2462 MHz – Average	Channel 11 / 2462 MHz – Average
IEEE 802.11n HT20	IEEE 802.11n HT40
	
Channel 1 / 2412 MHz – Peak	Channel 3 / 2422 MHz – Peak
	
Channel 1 / 2412 MHz – Average	Channel 3 / 2422 MHz – Average

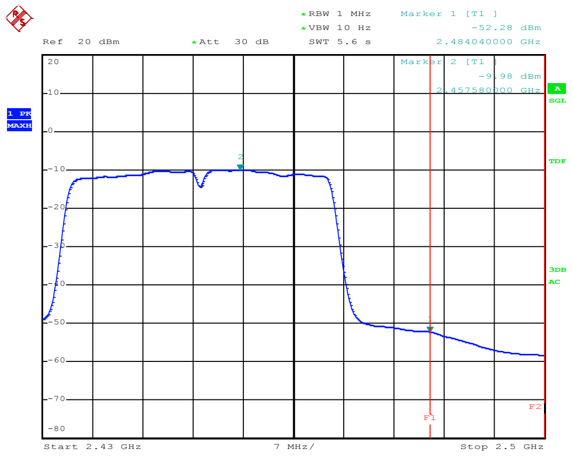
Band-edge measurements for radiated emissions	
Antenna 1	Antenna 1
IEEE 802.11n HT20	IEEE 802.11n HT40





Channel 11 / 2462 MHz – Peak	Channel 9 / 2452 MHz – Peak





Channel 11 / 2462 MHz – Average	Channel 9 / 2452 MHz – Average

5.9. Antenna Requirements

5.9.1. Standard Applicable

According to antenna requirement of §15.203.

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be re-placed by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

And according to §15.247(4)(1), system operating in the 2400-2483.5MHz bands that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

5.9.2. Antenna Connected Construction

5.9.2.1. Standard Applicable

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

5.9.2.2. Antenna Connector Construction

The directional gains of antenna used for transmitting is 2.15dBi, and the antenna is a Internal antenna connect to PCB board and no consideration of replacement. Please see EUT photo for details.

5.9.2.3. Results: Compliance.

Measurement

The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module.

Conducted power refers ANSI C63.10:2013 Output power test procedure for DTS devices.

Radiated power refers to ANSI C63.10:2013 Radiated emissions tests.

Measurement parameters

Measurement parameter	
Detector:	Peak
Sweep Time:	Auto
Resolution bandwidth:	1MHz
Video bandwidth:	3MHz
Trace-Mode:	Max hold

Note: The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module. For normal WLAN devices, the IEEE 802.11b mode is used.

Limits

FCC	ISED
Antenna Gain	
6 dBi	

Antenna 0

T_{nom}	V_{nom}	Lowest Channel 2412 MHz	Middle Channel 2437 MHz	Highest Channel 2462 MHz
Conducted power [dBm] Measured with DSSS modulation		10.96	11.06	11.26
Radiated power [dBm] Measured with DSSS modulation		12.08	12.41	12.68
Gain [dBi] Calculated		1.12	1.35	1.42
Measurement uncertainty			± 1.6 dB (cond.) / ± 3.8 dB (rad.)	

Antenna 1

T_{nom}	V_{nom}	Lowest Channel 2412 MHz	Middle Channel 2437 MHz	Highest Channel 2462 MHz
Conducted power [dBm] Measured with DSSS modulation		11.37	11.35	11.70
Radiated power [dBm] Measured with DSSS modulation		12.58	12.83	13.23
Gain [dBi] Calculated		1.21	1.48	1.53
Measurement uncertainty			± 1.6 dB (cond.) / ± 3.8 dB (rad.)	

6. LIST OF MEASURING EQUIPMENTS

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Power Meter	R&S	NRVS	100444	2017-06-17	2018-06-16
2	Power Sensor	R&S	NRV-Z81	100458	2017-06-17	2018-06-16
3	Power Sensor	R&S	NRV-Z32	10057	2017-06-17	2018-06-16
4	ESA-E SERIES SPECTRUM ANALYZER	Agilent	E4407B	MY41440754	2017-11-17	2018-11-16
5	MXA Signal Analyzer	Agilent	N9020A	MY49100040	2017-06-17	2018-06-16
6	SPECTRUM ANALYZER	R&S	FSP	100503	2017-06-17	2018-06-16
7	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2017-06-17	2018-06-16
8	Positioning Controller	MF	MF-7082	/	2017-06-17	2018-06-16
9	EMI Test Software	AUDIX	E3	N/A	2017-06-17	2018-06-16
10	EMI Test Receiver	R&S	ESR 7	101181	2017-06-17	2018-06-16
11	AMPLIFIER	QuieTek	QTK-A2525G	CHM10809065	2017-11-17	2018-11-16
12	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	00005	2017-06-23	2018-06-22
13	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2017-05-02	2018-05-01
14	Horn Antenna	EMCO	3115	6741	2017-06-23	2018-06-22
15	Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	791	2017-09-21	2018-09-20
16	Broadband Preamplifier	SCHWARZBECK	BBV 9719	9719-025	2017-09-21	2018-09-20
17	RF Cable-R03m	Jye Bao	RG142	CB021	2017-06-17	2018-06-16
18	RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	2017-06-17	2018-06-16
19	TEST RECEIVER	R&S	ESCI	101142	2017-06-17	2018-06-16
20	RF Cable-CON	UTIFLEX	3102-26886-4	CB049	2017-06-17	2018-06-16
21	10dB Attenuator	SCHWARZBECK	MTS-IMP136	261115-001-0032	2017-06-17	2018-06-16
22	Artificial Mains	R&S	ENV216	101288	2017-06-17	2018-06-16
Note: All equipment is calibrated through GUANGZHOU LISAI CALIBRATION AND TEST CO.,LTD.						

7. TEST SETUP PHOTOGRAPHS OF EUT

Please refer to separated files for Test Setup Photos of the EUT.

8. EXTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for External Photos of the EUT.

9. INTERIOR PHOTOGRAPHS OF THE EUT

Please refer to separated files for Internal Photos of the EUT.

----------------THE END OF REPORT---------------