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4.3 Power Spectral Density

Test Procedures(ANSI C63.10-2013 11.10.2)

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance.

Test Settings:

Center frequency = the highest, middle and the lowest channels

- a) RBW : $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$
- b) VBW $\geq 3 \times \text{RBW}$
- c) span $\geq 1.5 \times \text{DTS bandwidth}$
- d) Sweep time = auto couple
- e) Detector = peak
- f) Trace mode= max hold
- g) Allow trace to fully stabilize
- h) Use the peak marker function to determine the maximum amplitude level within the RBW.

Limit :

Power Spectral Density < 8 dBm @ 3 kHz BW



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Test Data

ANT 0

Mode	Channel	Frequency [MHz]	Measurement data [dBm]	Limit [dBm]	Result
802.11b	Low	2 412	-7.181	8	Complies
	Middle	2 437	-6.237		
	High	2 462	-7.318		
802.11g	Low	2 412	-10.986	8	Complies
	Middle	2 437	-10.709		
	High	2 462	-10.950		

ANT 1

Mode	Channel	Frequency [MHz]	Measurement data [dBm]	Limit [dBm]	Result
802.11b	Low	2 412	-6.513	8	Complies
	Middle	2 437	-6.478		
	High	2 462	-6.287		
802.11g	Low	2 412	-9.860	8	Complies
	Middle	2 437	-9.821		
	High	2 462	-10.044		

ANT 0 + ANT 1

Mode	Frequency [MHz]	ANT 0 [dBm]	ANT 1 [dBm]	ANT 0 + ANT 1 [dBm]	Limit [dBm]	Result
802.11n (HT20)	2 412	-11.834	-13.925	-9.745	8	Complies
	2 437	-11.629	-13.883	-9.601		
	2 462	-11.466	-13.699	-9.430		
802.11n (HT40)	2 412	-18.335	-16.002	-14.003	8	Complies
	2 437	-18.162	-16.719	-14.371		
	2 462	-17.880	-16.599	-14.182		

See next pages for actual measured spectrum plots.



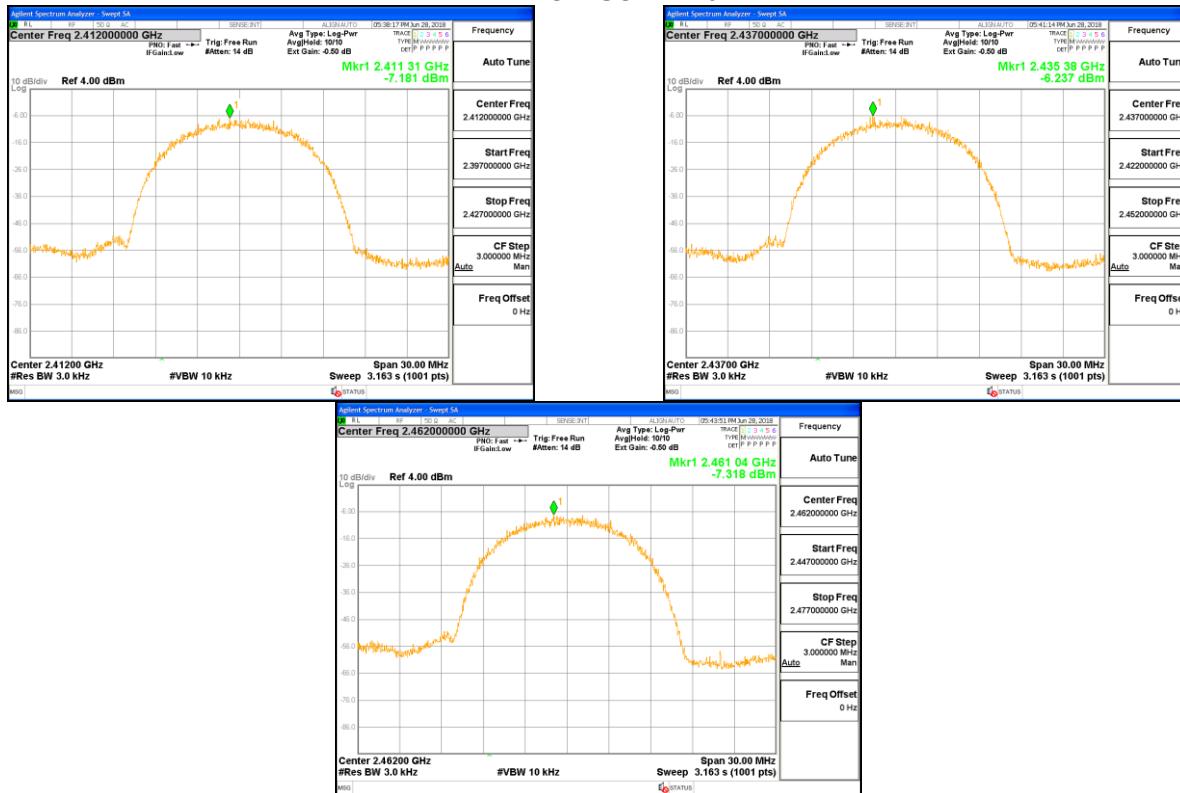
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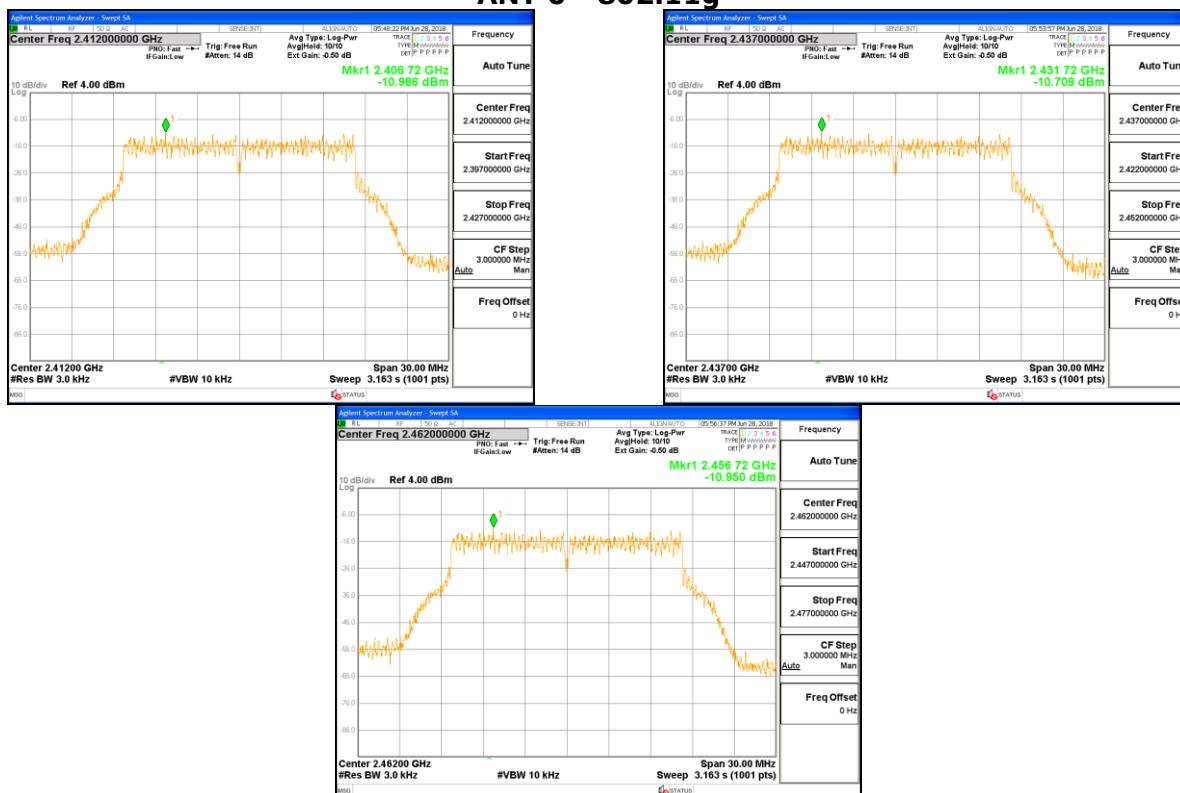
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ANT 0 - 802.11b



ANT 0 - 802.11g





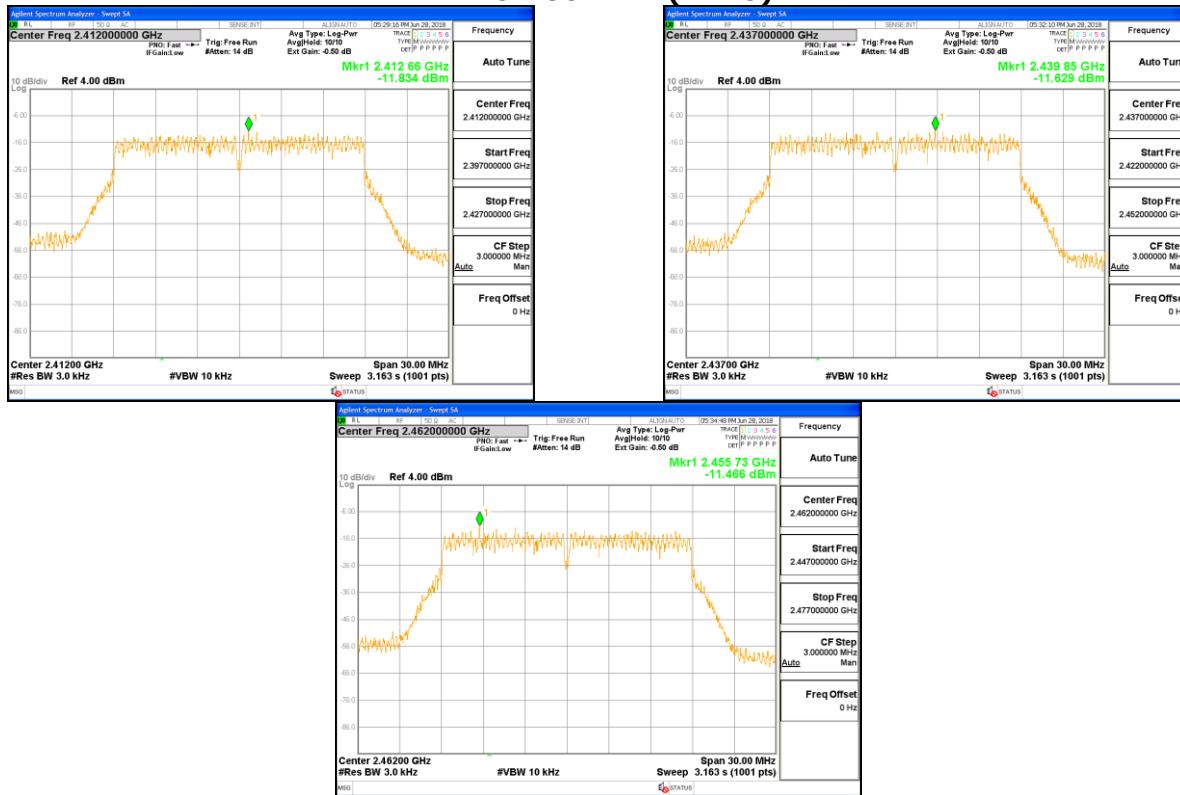
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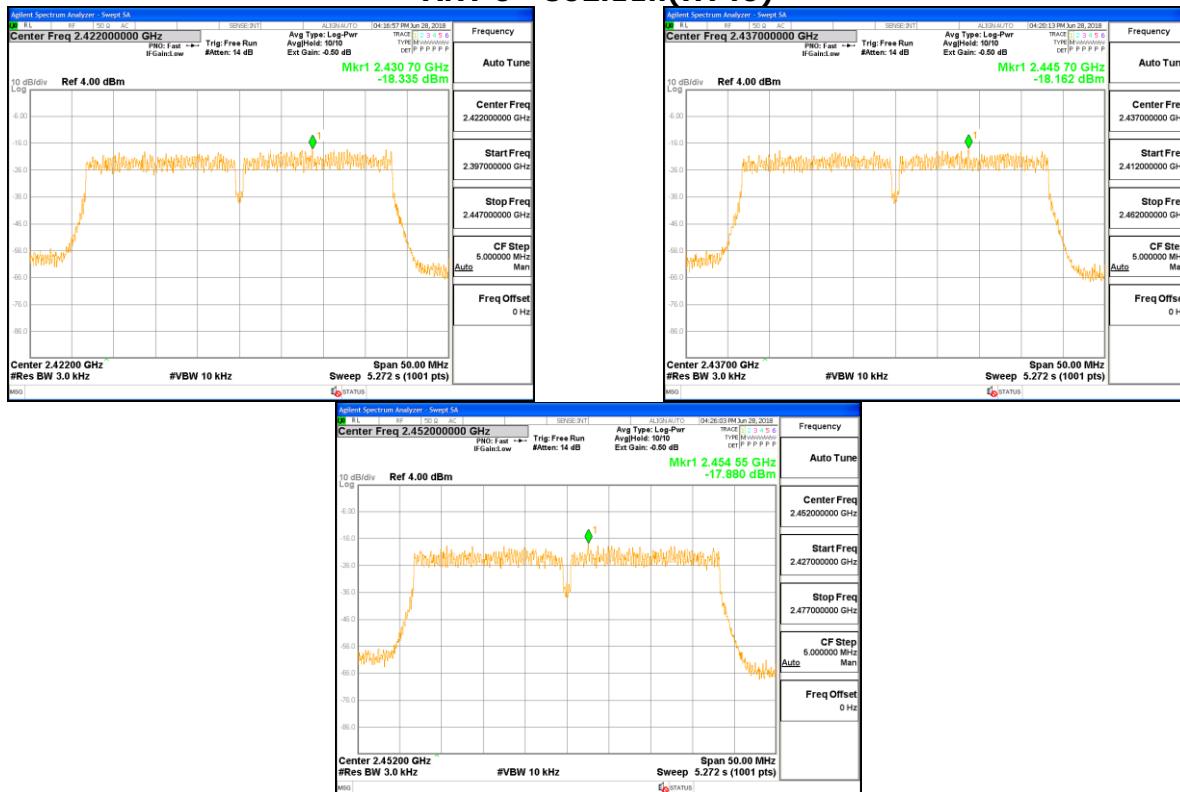
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ANT 0 - 802.11n(HT20)



ANT 0 - 802.11n(HT40)





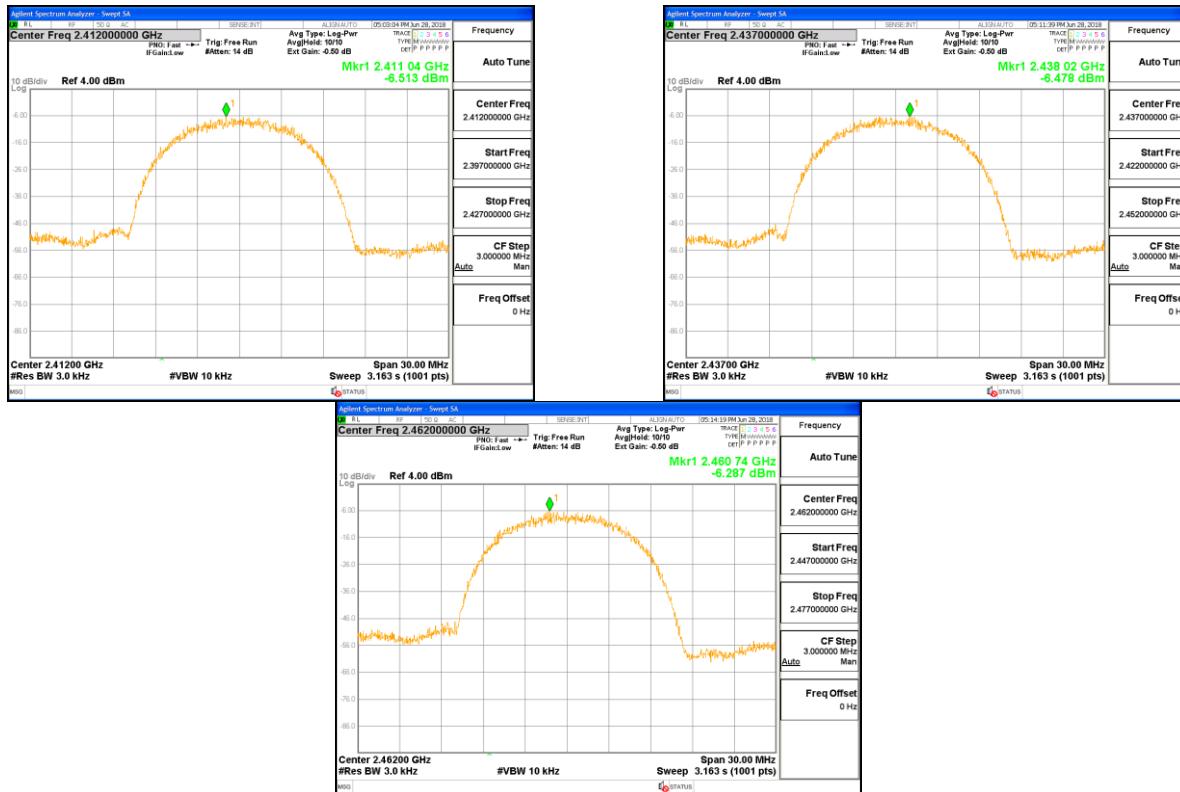
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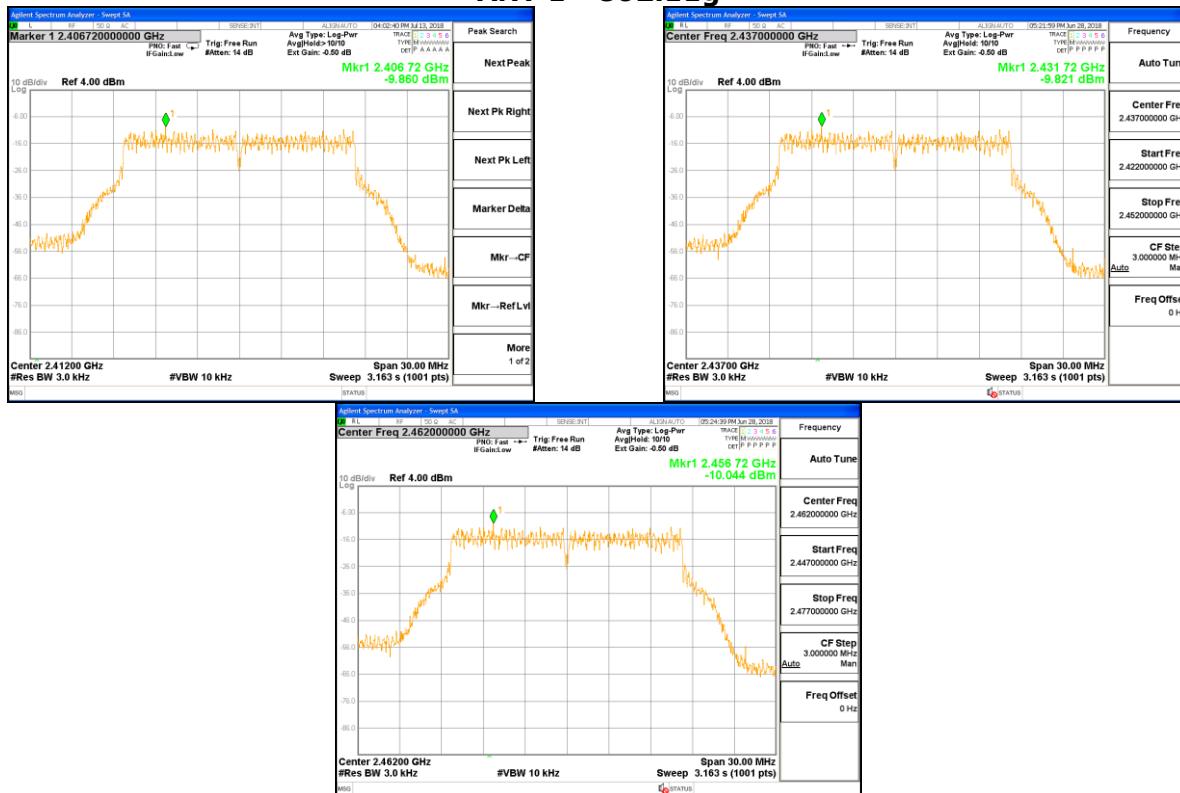
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ANT 1 - 802.11b



ANT 1 - 802.11g





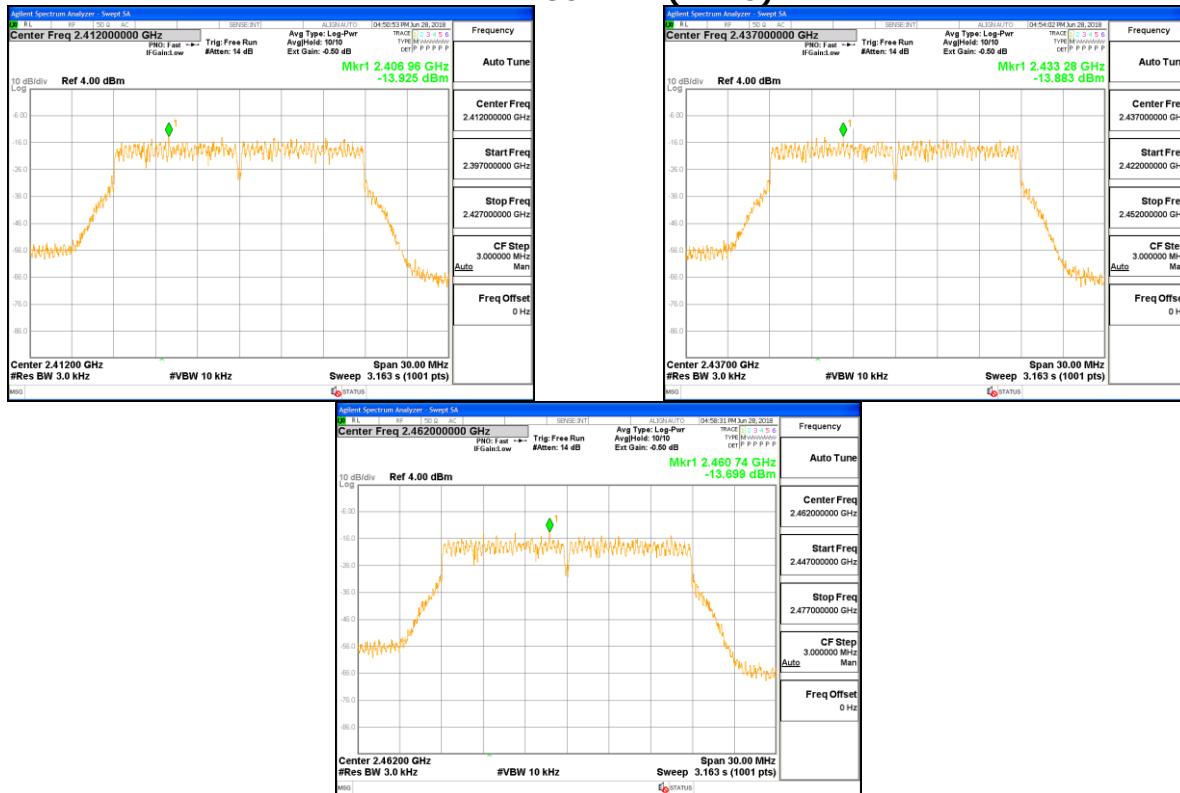
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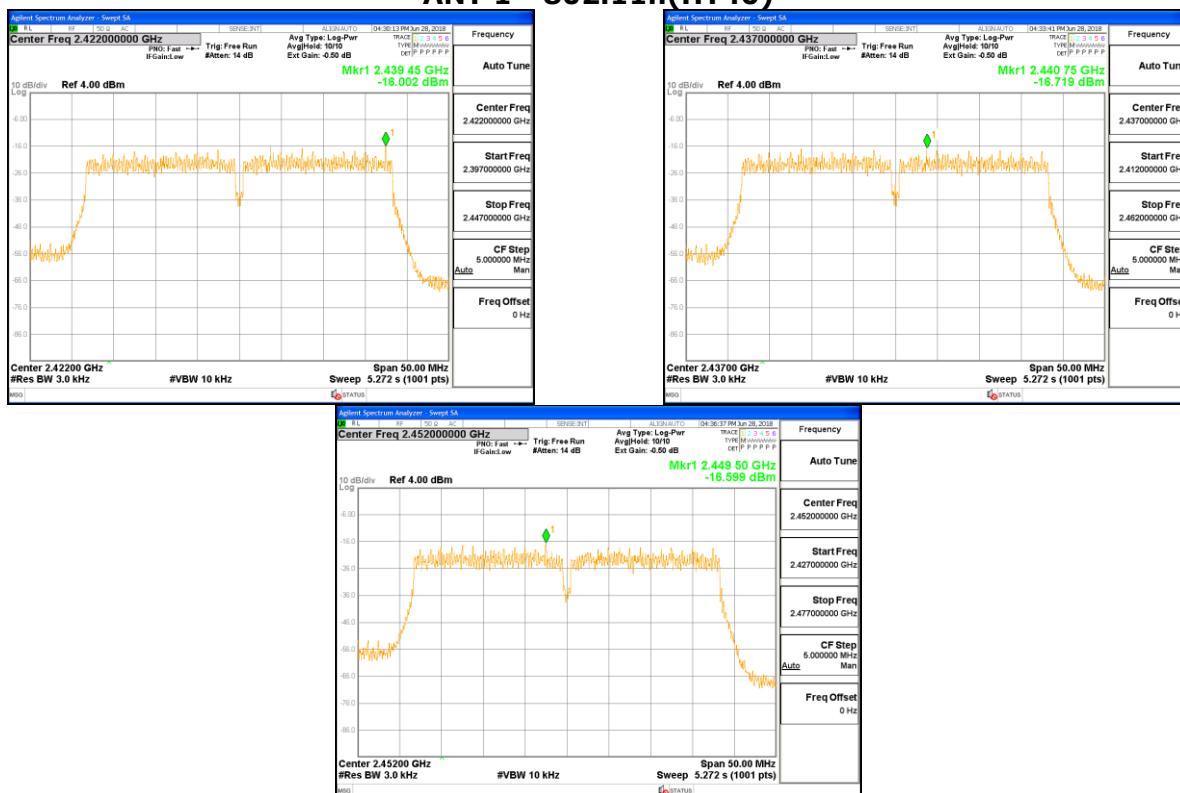
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ANT 1 - 802.11n(HT20)



ANT 1 - 802.11n(HT40)





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4.4 Band Edge & Conducted Spurious emission

Test Procedures(ANSI C63.10-2013 11.11.3)

The Unwanted emission from the EUT were measured according to the dictates PKPSD measurement procedure in section 11.11 of ANSI C63.10-2013.

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

Test Settings:

Center frequency = the highest, middle and the lowest channels

- | | |
|---|-----------------------------|
| a) RBW = 100 kHz | b) VBW \geq 3 x RBW |
| c) Detector = peak | d) Sweep time = auto couple |
| e) Trace mode= max hold | |
| f) Allow trace to fully stabilize | |
| g) Use the peak marker function to determine the maximum amplitude level. | |

Limit :

Emission level < 30 dBc

Test Data: Complies

- All conducted emission in any 100 kHz bandwidth outside of the spread spectrum band was at least 30dB lower than the highest in-band spectral density. Therefore the applying equipment meets the requirement.

See next pages for actual measured spectrum plots.



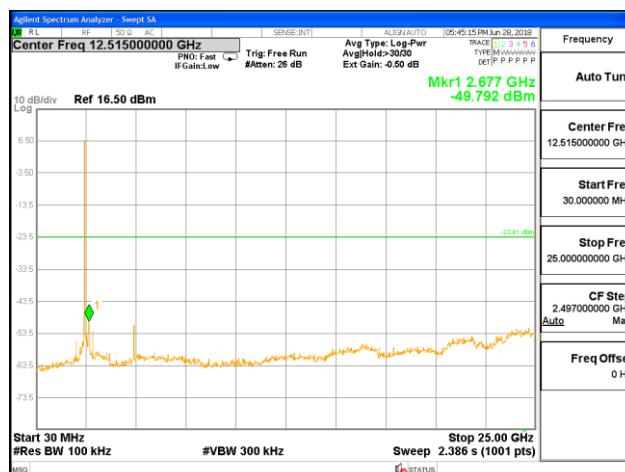
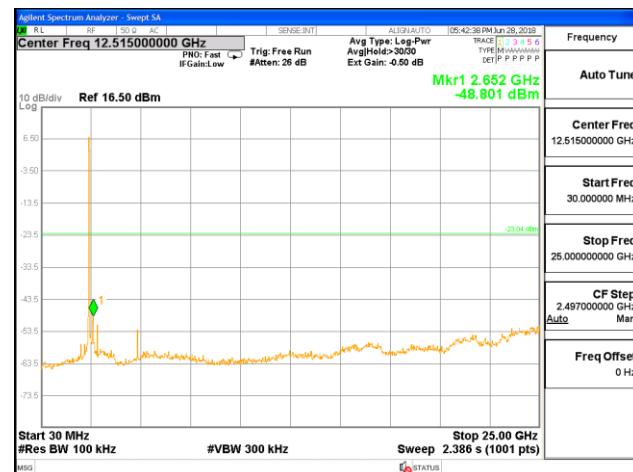
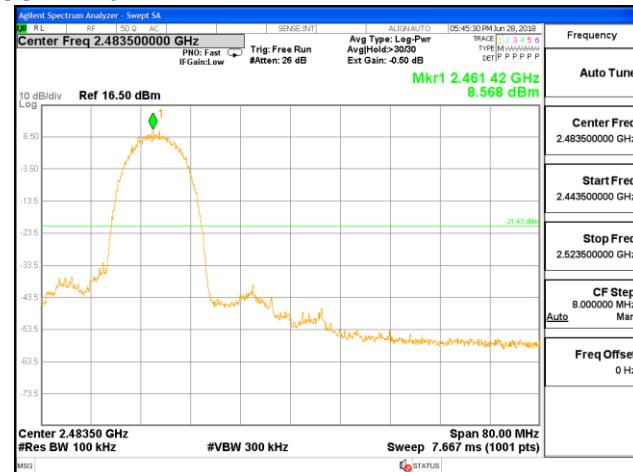
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ANT 0 - 802.11b





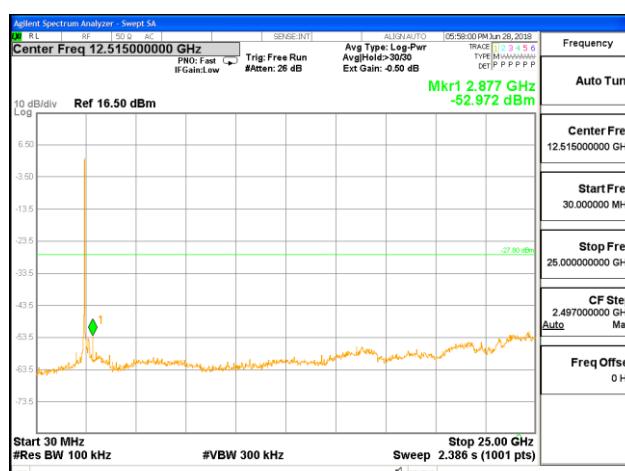
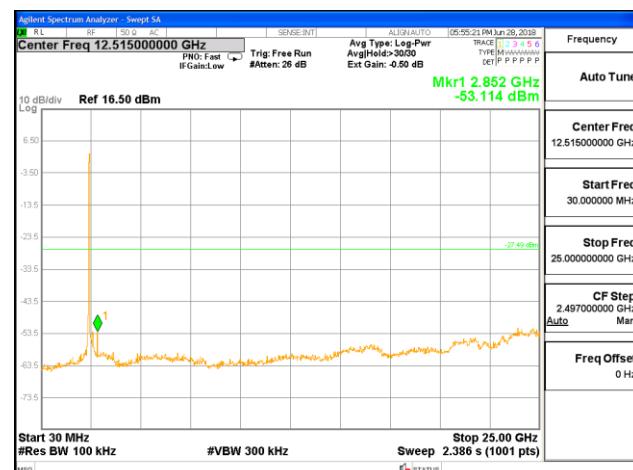
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ANT 0 - 802.11g





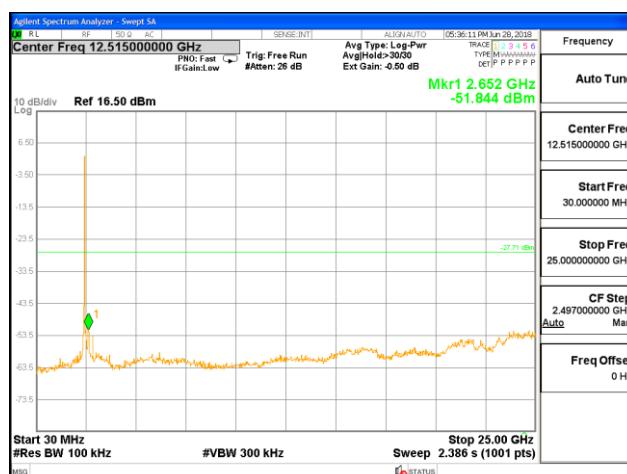
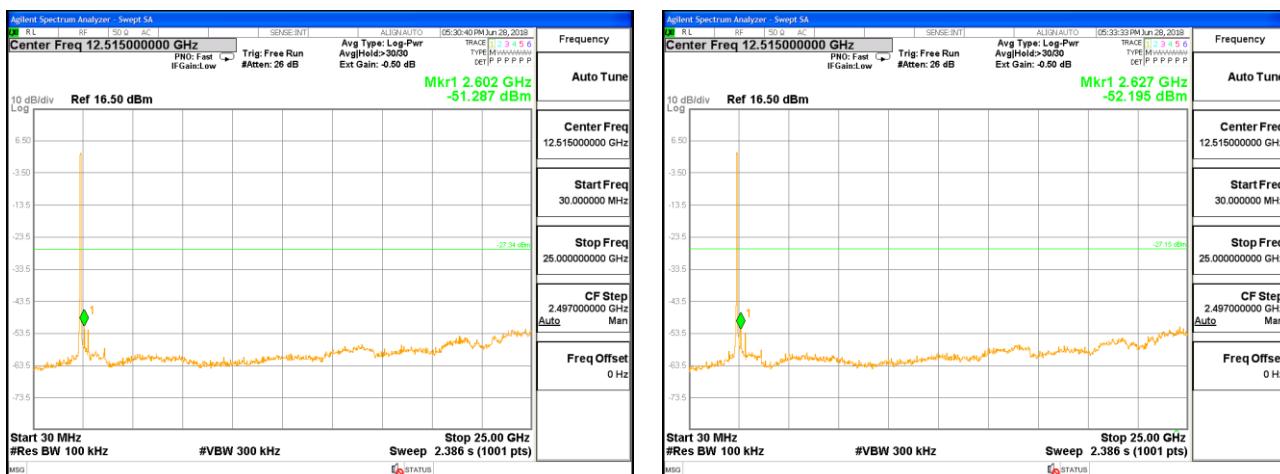
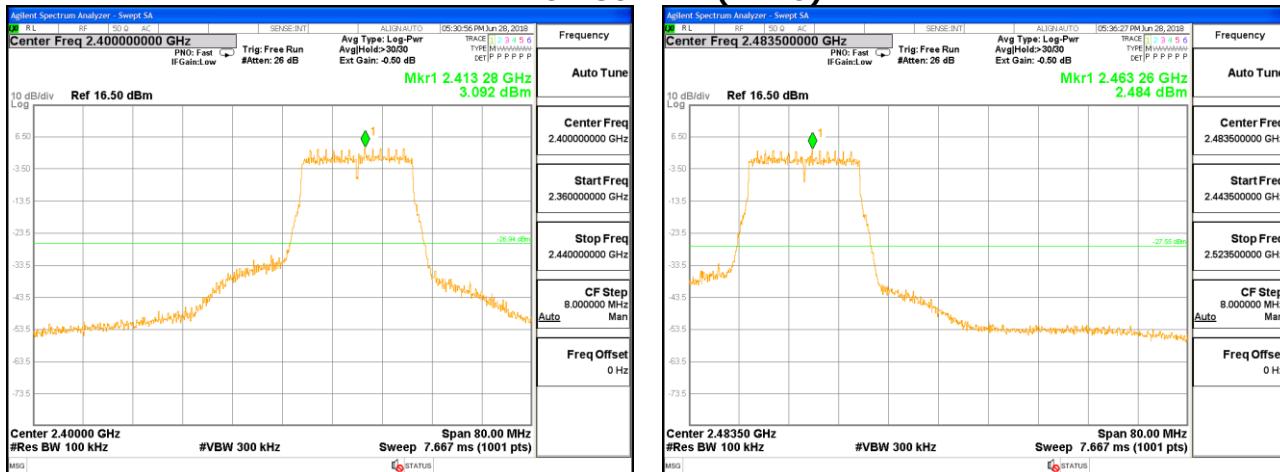
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ANT 0 - 802.11n(HT20)





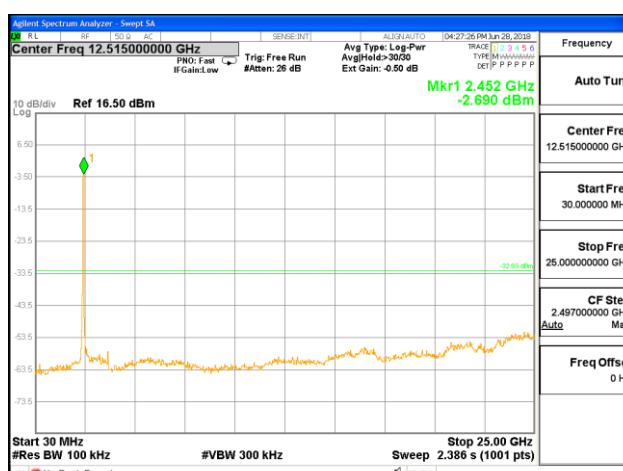
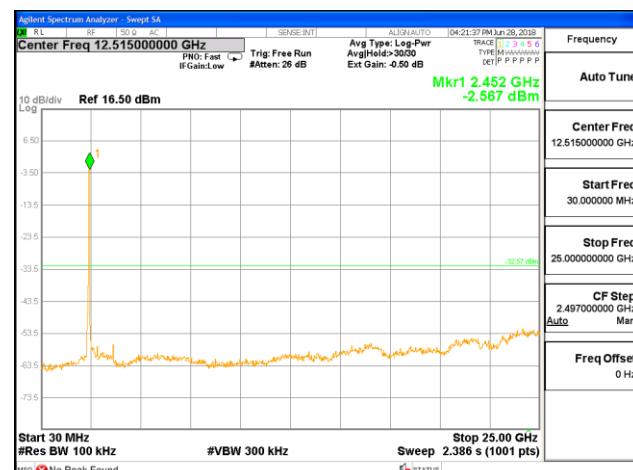
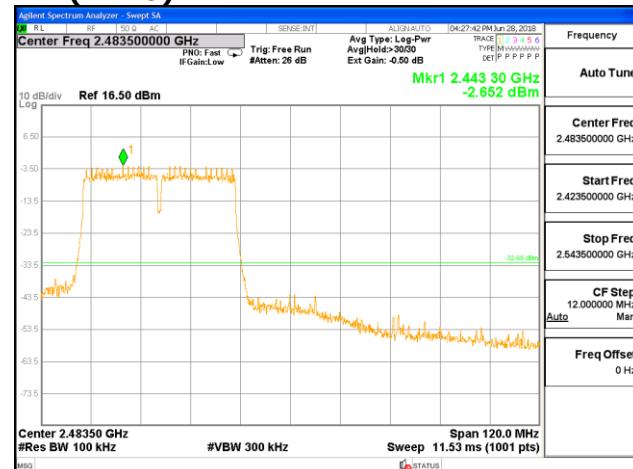
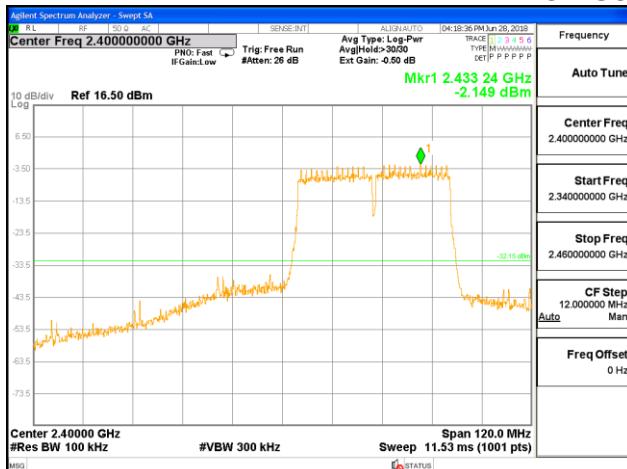
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ANT 0 - 802.11n(HT40)





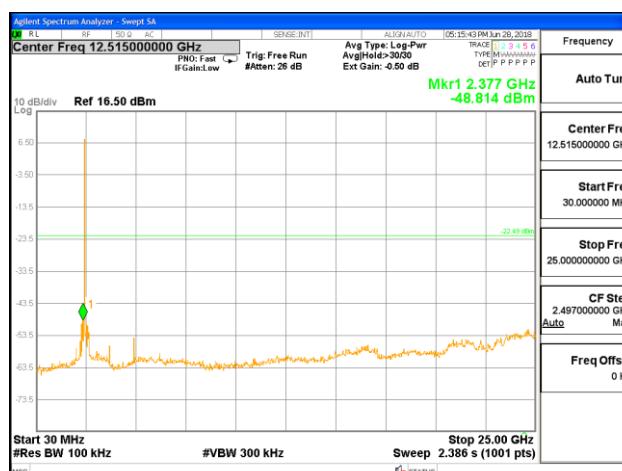
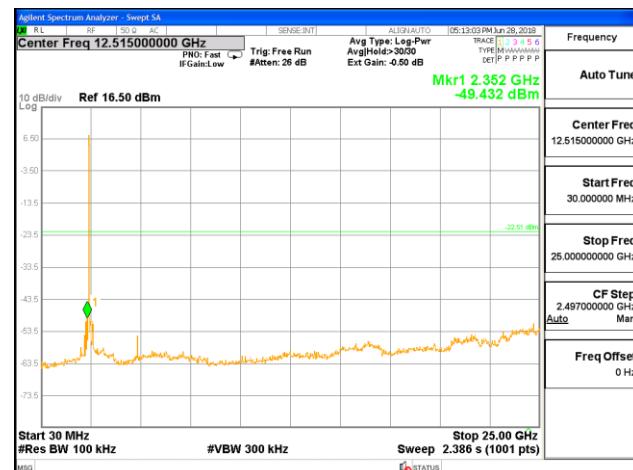
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ANT 1 - 802.11b





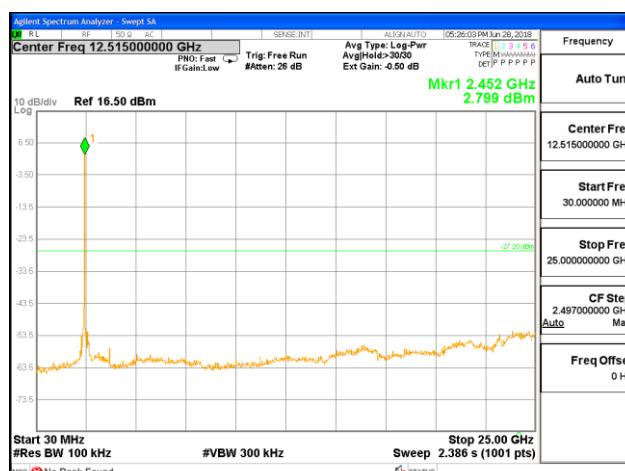
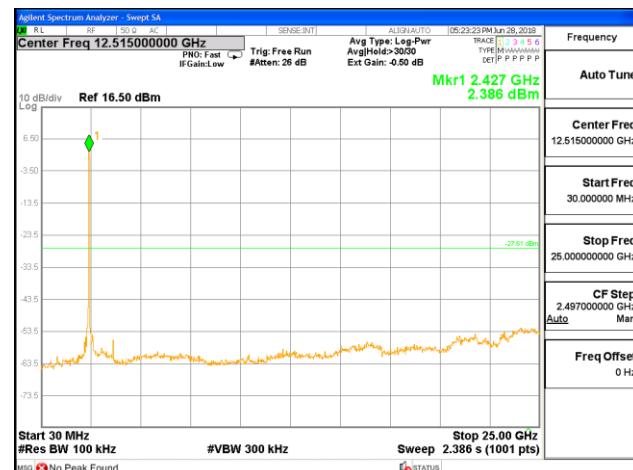
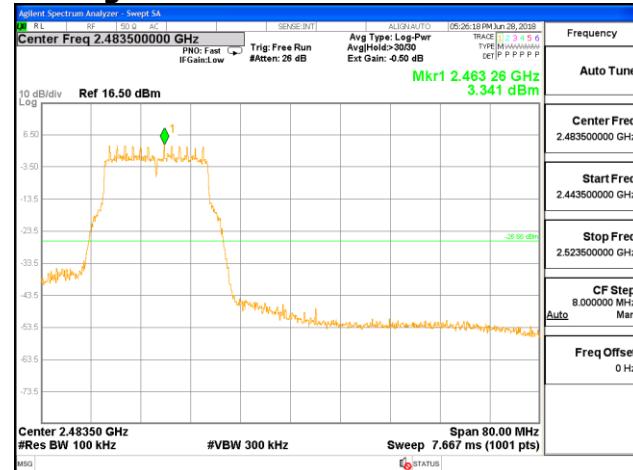
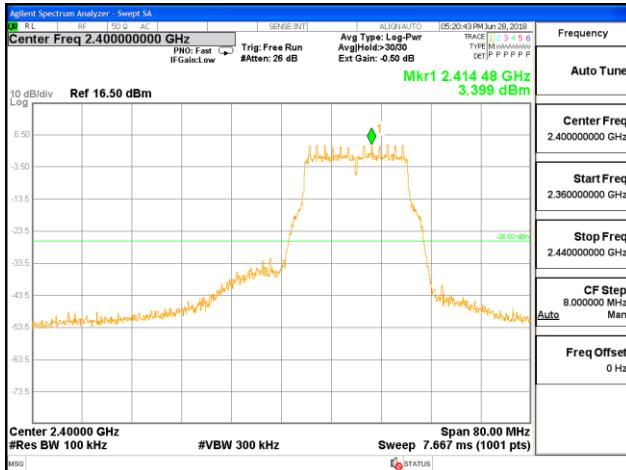
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ANT 1 - 802.11g





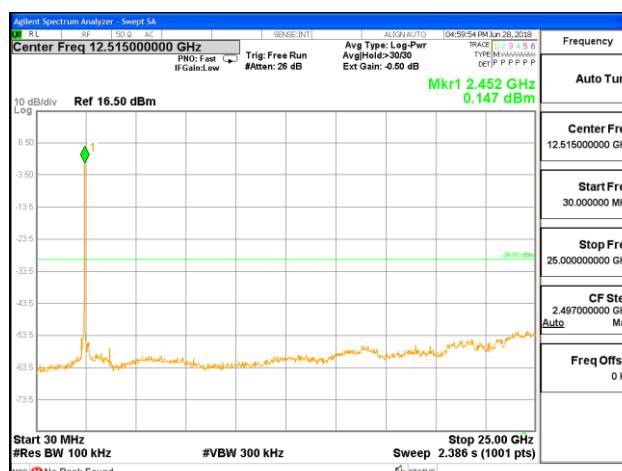
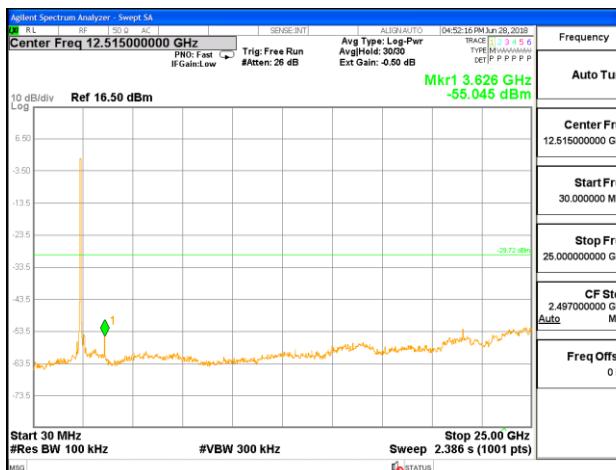
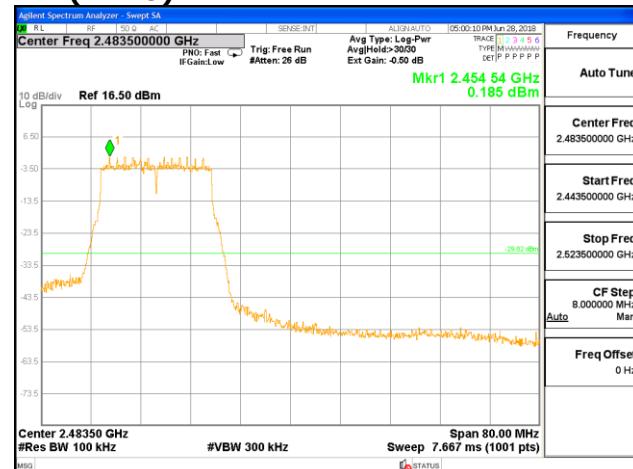
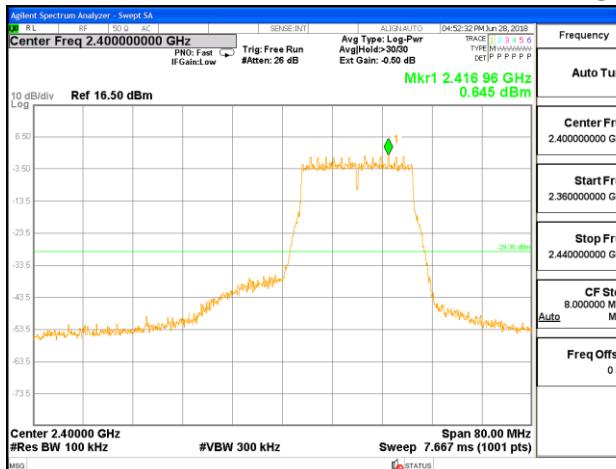
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ANT 1 - 802.11n(HT20)





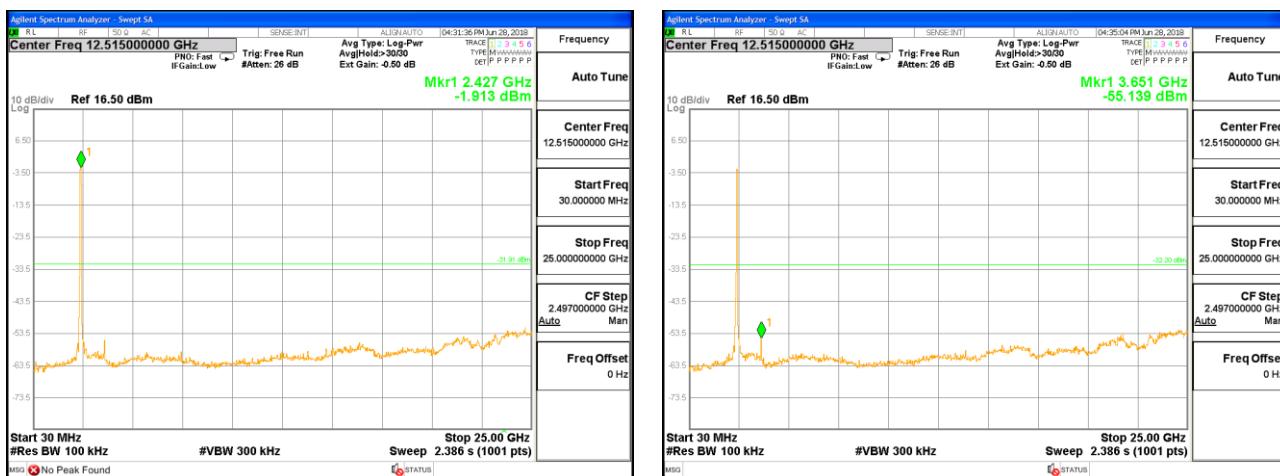
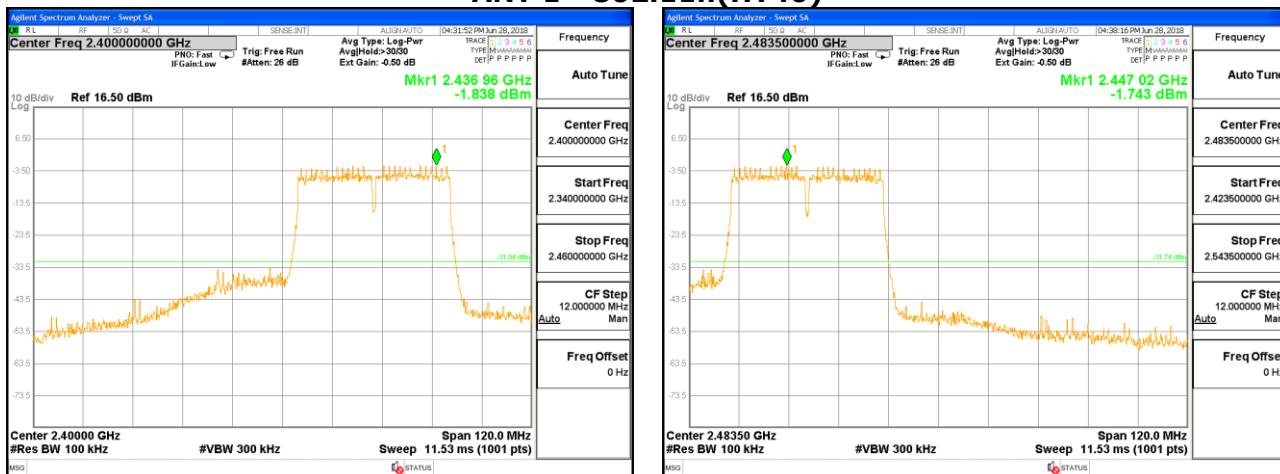
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ANT 1 - 802.11n(HT40)





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4.5 Radiated Emissions

Test Location

- 10 m SAC (test distance : 10 m, 3 m)
- 3 m SAC (test distance : 3 m)

Test Procedures

- 1) In the frequency range of 9 kHz to 30 MHz, magnetic field is measured with Loop Antenna. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.
- 2) In the frequency rage above 30 MHz, Bi-Log Test Antenna(30 MHz to 1 GHz) and Horn Test Antenna(above 1 GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is carried from 1m to 4m above the ground to determine the maximum value of the field strength. The emissions levels at both horizontal and vertical polarizations should be tested.

Instrument Settings

Frequency Range = 9 kHz ~ 25 GHz (2.4 GHz 10th harmonic)

- a) RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz, 9 kHz for $f < 30$ MHz
- b) VBW \geq RBW
- c) Sweep time = auto couple

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Limit :

FCC Part 15 § 15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

Table 1. Restricted Frequency Bands*

MHz	MHz	MHz	MHz	MHz	GHz
0.09-0.11	8.37626-8.38675	73-74.6	399.9-410	2690-2900	10.6-12.7
¹ 0.495-0.505	8.41425-8.41475	74.8-75.2	608-614	3260-3267	13.25-13.4
2.1735-2.1905	12.29-12.293	108-121.94	960-1240	3332-3339	14.47-14.5
4.125-4.128	12.51975-12.52025	123-138	1300-1427	3345.8-3358	15.35-16.2
4.17725-4.17775	12.57675-12.57725	149.9-150.05	1435-1626.5	3600-4400	17.7-21.4
4.20725-4.20775	13.36-13.41	156.52475-156.52525	1645.5-1646.5	4500-5150	22.01-23.12
6.215-6.218	16.42-16.423	156.7-156.9	1660-1710	5350-5460	23.6-24
6.26775-6.26825	16.69475-16.69525	162.0125-167.17	1718.8-1722.2	7250-7750	31.2-31.8
6.31175-6.31225	16.80425-16.80475	167.72-173.2	2200-2300	8025-8500	36.43-36.5
8.291-8.294	25.5-25.67	240-285	2310-2390	9000-9200	² Above 38.6
8.362-8.366	37.5-38.25	322-335.4	2483.5-2500	9300-9500	

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

§ 15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

*Certain frequency bands listed in Table 6 and in band above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to the devices are set out in the 200- and 300-series of RSSs, such as RSS-210 and RSS-310, which contain the requirements that apply to licence-exempt radio apparatus.



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FCC Part 15 § 15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table :

Frequency(MHz)	Field Strength uV/m@3m	Field Strength dBuV/m@3m	Deasurement Distance (meters)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	30
1.705-30	30	-	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

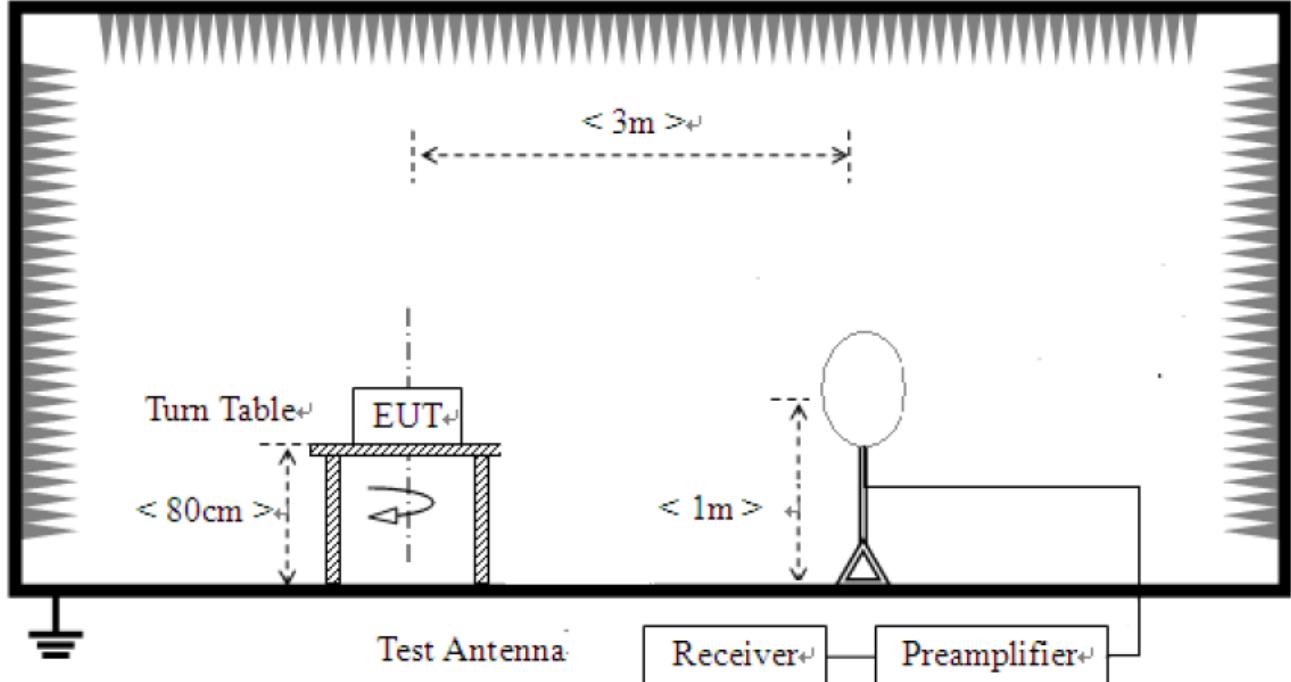
** Except as provided in 15.209(g).fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72MHz, 76-88MHz, 174-216MHz, 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g.15.231 and 15.241.

Note :

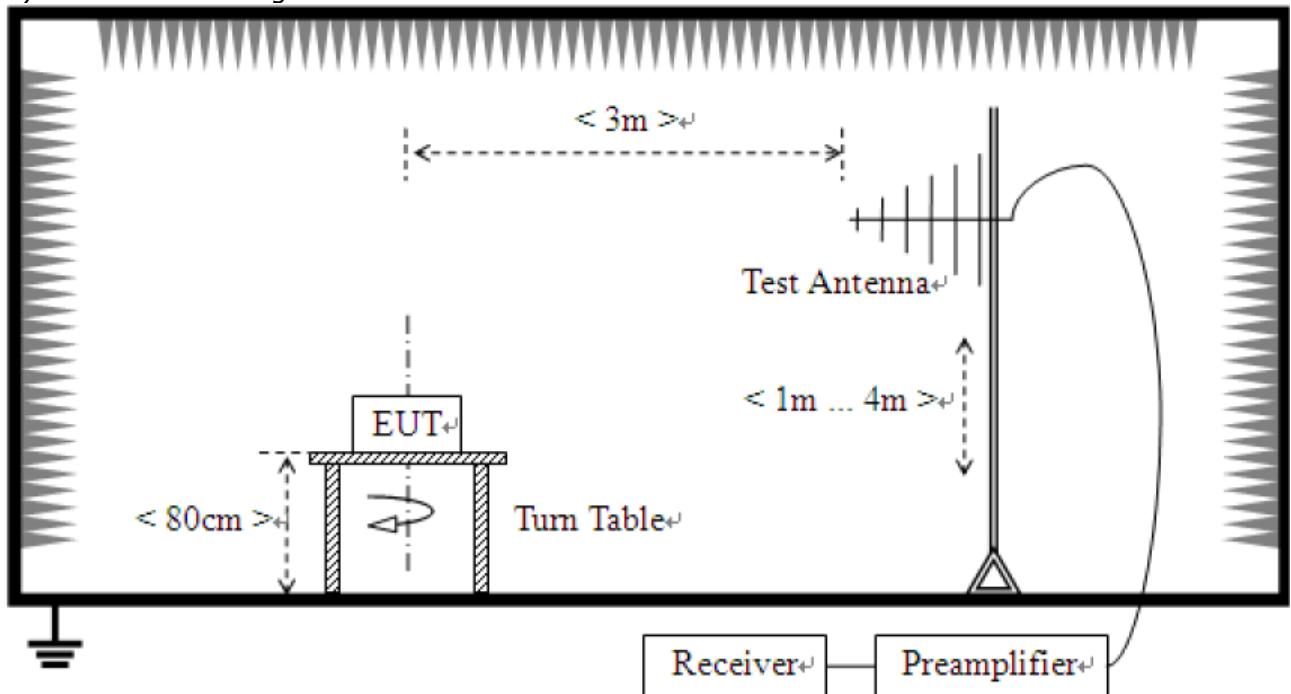
- 1) For above 1 GHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.
- 2) For above 1 GHz, limit field strength of harmonics : 54 dBuV/m@3m (AV) and 74 dBuV/m@3m (PK)
- 3) For measurement above 1GHz, the resolution bandwidth is set to 1 MHz and video bandwidth is set to 1 MHz for peak measurement and 10 Hz for average measurement.(Duty Cycle is > 98%,)
- 4) Duty Cycle is < 98%, VBW setting will need to > 1/T.

Test Setup:

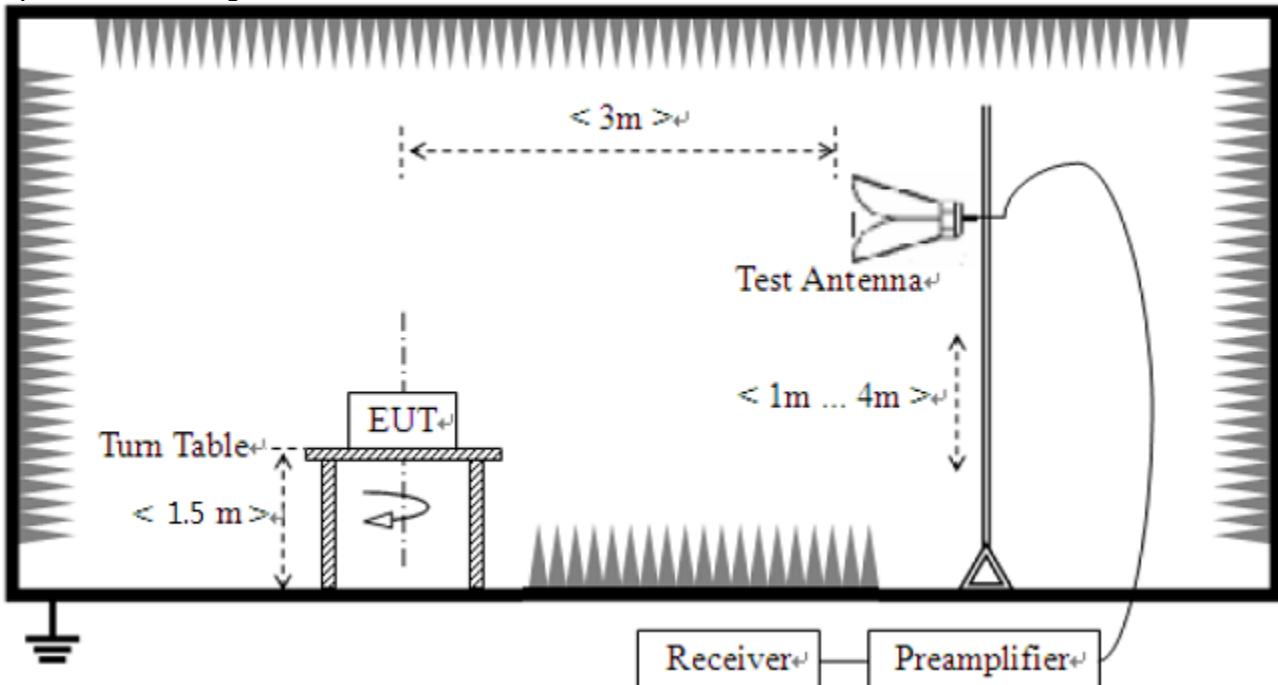
- 1) For field strength of emissions from 9 kHz to 30 MHz



- 2) For field strength of emissions from 30 MHz to 1 GHz



3) For field strength of emissions above 1 GHz



Test results

1) 9 kHz to 30 MHz

The requirements are:

- Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
-	-	-	See note

Note :

The amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB)

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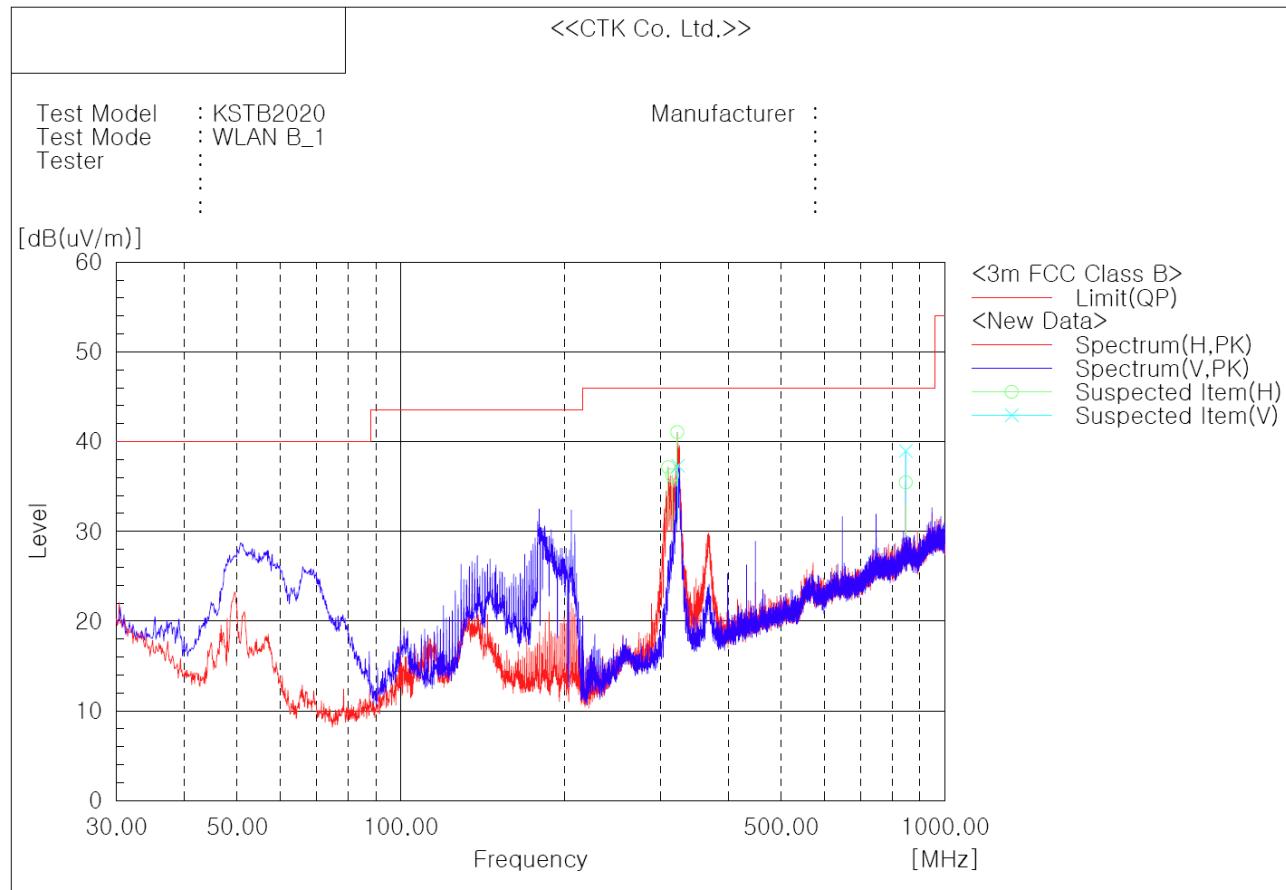
2) 30 MHz to 1 GHz

Test mode : ANT 0, 802.11b, low channel(Worst case)

The requirements are:

Complies

Test Data



Spectrum Selection

No.	Frequency (P) [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
1	310.088	H 45.9	-8.8	37.1	46.0	8.9	101.0	110.0
2	315.301	H 44.7	-8.5	36.2	46.0	9.8	101.0	110.0
3	322.213	H 49.4	-8.3	41.1	46.0	4.9	101.0	31.0
4	323.183	V 45.6	-8.3	37.3	46.0	8.7	200.0	321.0
5	847.468	V 34.9	4.0	38.9	46.0	7.1	101.0	0.0
6	847.468	H 31.5	4.0	35.5	46.0	10.5	101.0	57.0

Remark :

1. The Unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in lie-down position(X axis) and the worst case was recorded.
2. Result = Reading + c.f(Correction factor)
3. Correction factor = Antenna factor + Cable loss + 6 dB attenuator - Amp Gain
4. This data is the Peak(PK) value.

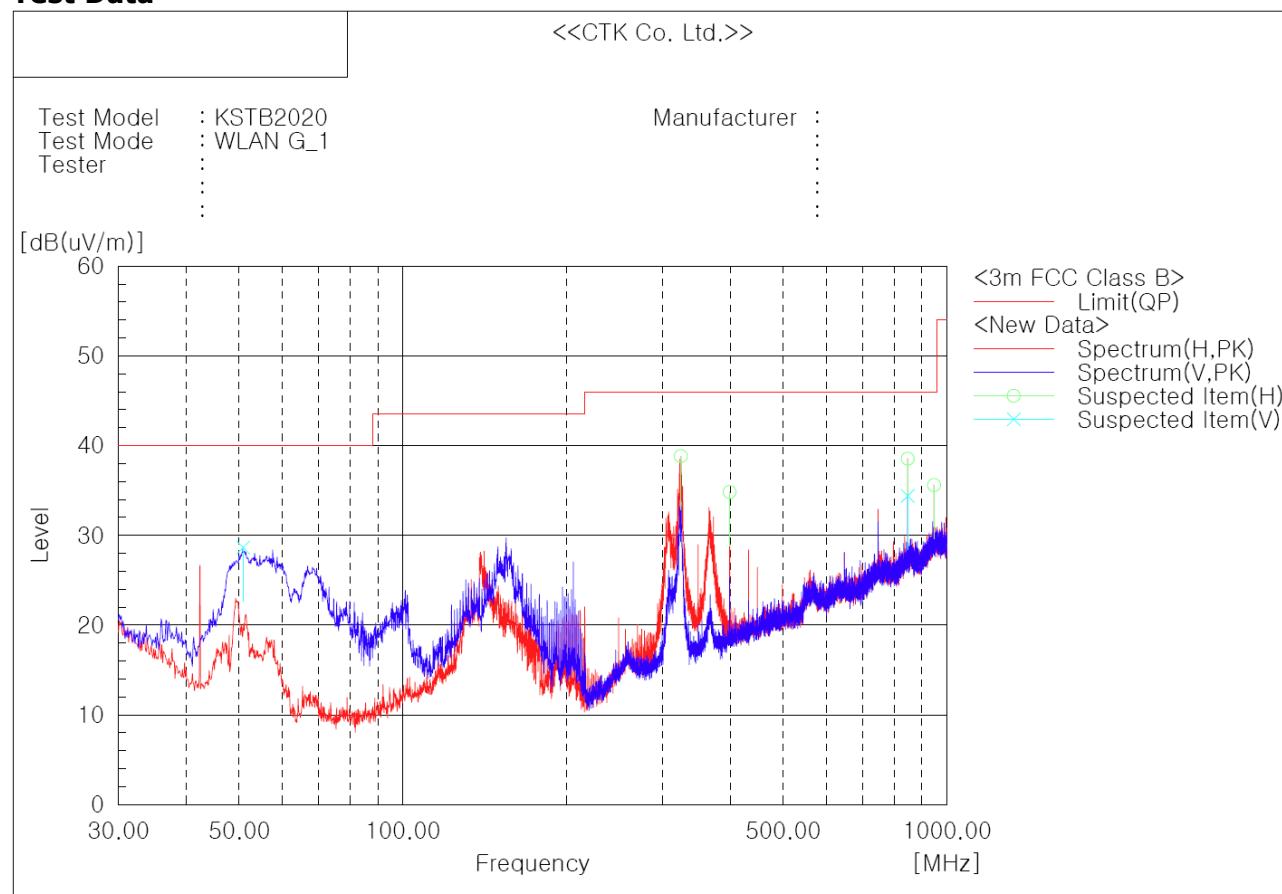
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Test mode : ANT 0, 802.11g, low channel(Worst case)

The requirements are:

 Complies**Test Data****Spectrum Selection**

No.	Frequency [MHz]	(P)	Reading [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Limit QP [dB]	Margin QP [dB]	Height [cm]	Angle [deg]
1	50.855	V	44.7	-16.1	28.6	40.0	11.4	101.0	91.0
2	324.274	H	47.1	-8.3	38.8	46.0	7.2	101.0	162.0
3	398.721	H	40.2	-5.4	34.8	46.0	11.2	101.0	30.0
4	847.468	H	34.5	4.0	38.5	46.0	7.5	101.0	83.0
5	847.468	V	30.4	4.0	34.4	46.0	11.6	101.0	39.0
6	947.135	H	29.1	6.5	35.6	46.0	10.4	101.0	57.0

Remark :

1. The Unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in lie-down position(X axis) and the worst case was recorded.
2. Result = Reading + c.f(Correction factor)
3. Correction factor = Antenna factor + Cable loss + 6 dB attenuator - Amp Gain
4. This data is the Peak(PK) value.

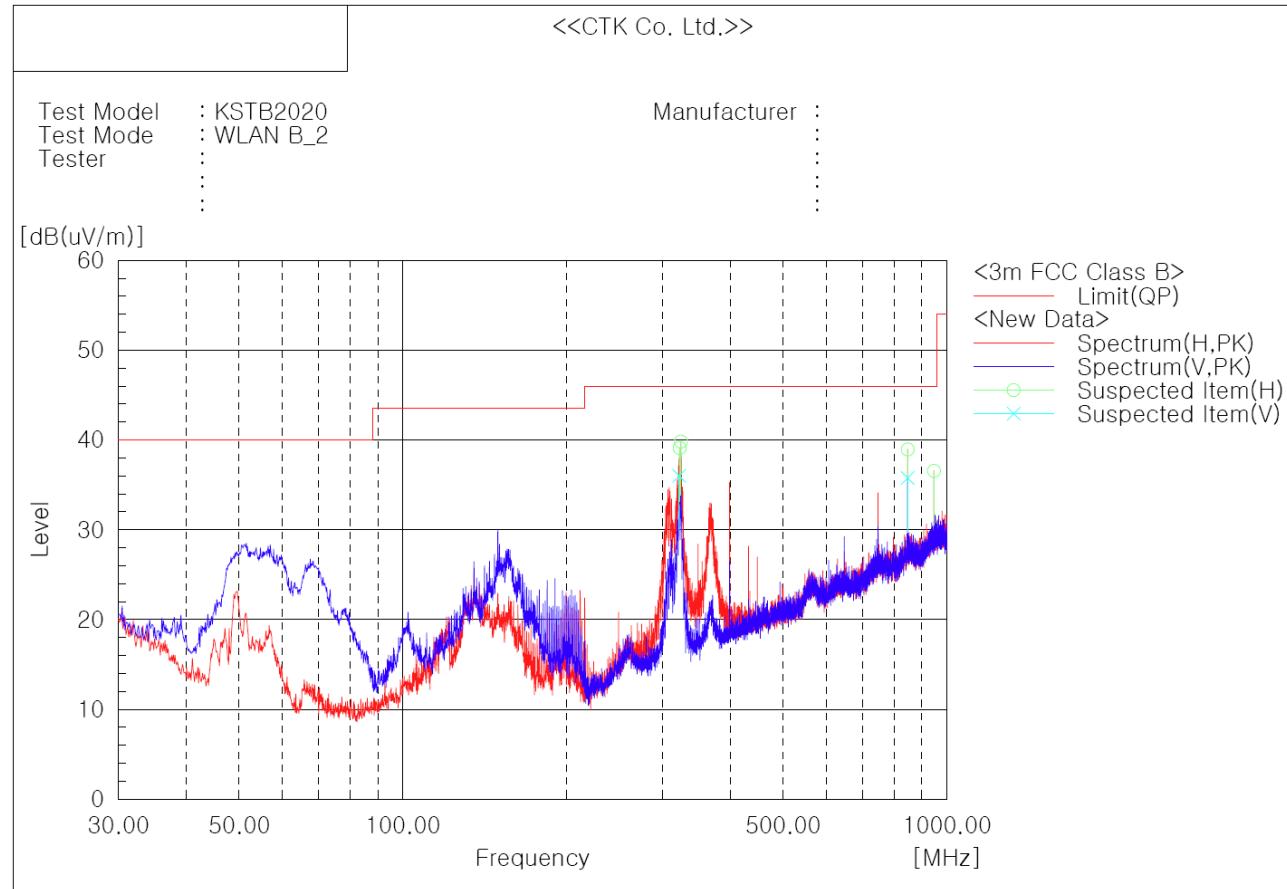
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Test mode : ANT 1, 802.11b, low channel(Worst case)

The requirements are:

 Complies**Test Data****Spectrum Selection**

No.	Frequency (P) [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
1	322.091	V 44.3	-8.3	36.0	46.0	10.0	101.0	250.0
2	322.819	H 47.4	-8.3	39.1	46.0	6.9	101.0	163.0
3	324.516	H 48.1	-8.3	39.8	46.0	6.2	101.0	189.0
4	847.468	H 34.9	4.0	38.9	46.0	7.1	101.0	110.0
5	847.468	V 31.8	4.0	35.8	46.0	10.2	101.0	0.0
6	947.135	H 30.1	6.5	36.6	46.0	9.4	101.0	57.0

Remark :

1. The Unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in lie-down position(X axis) and the worst case was recorded.
2. Result = Reading + c.f(Correction factor)
3. Correction factor = Antenna factor + Cable loss + 6 dB attenuator - Amp Gain
4. This data is the Peak(PK) value.

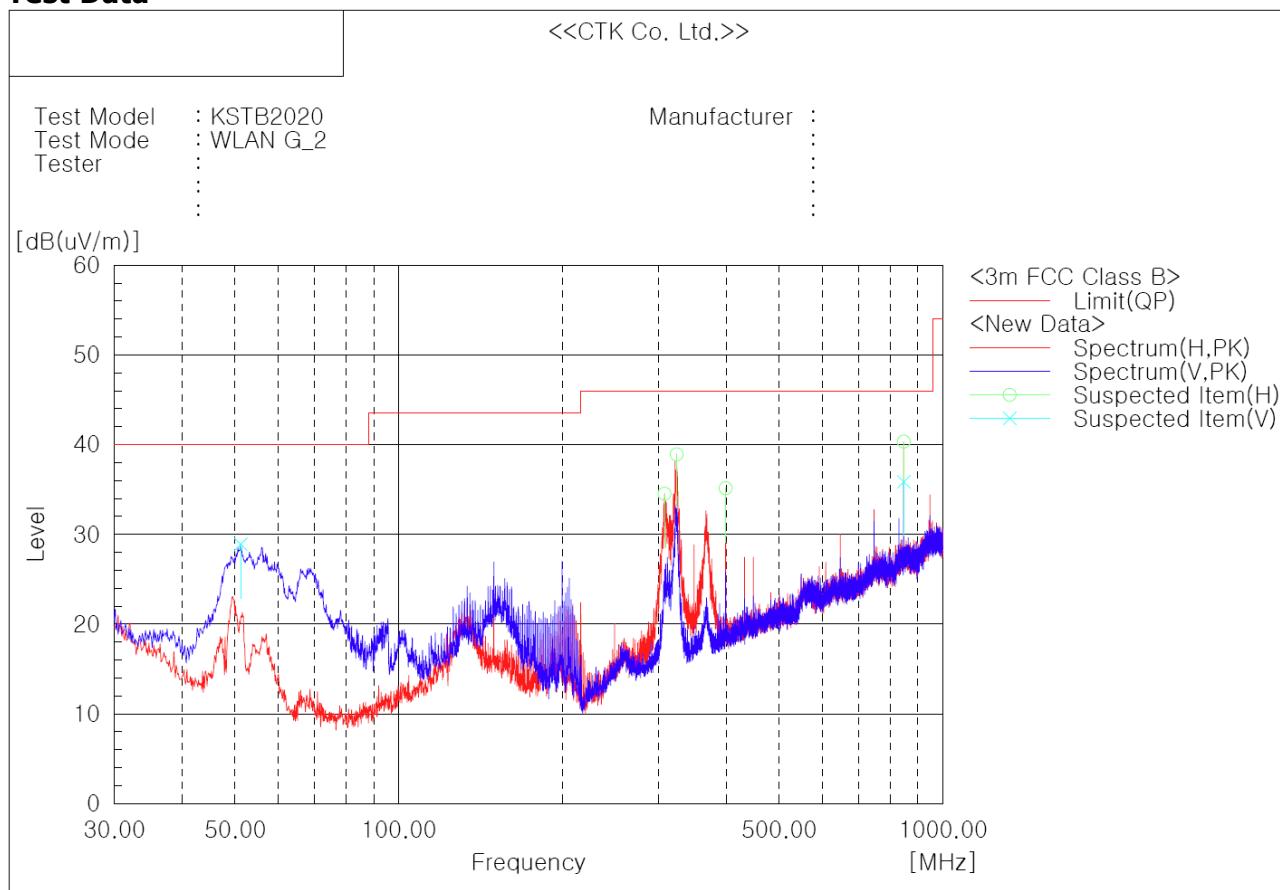
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Test mode : ANT 1, 802.11g, low channel(Worst case)

The requirements are:

 Complies**Test Data****Spectrum Selection**

No.	Frequency (P)	Reading	c.f	Result PK	Limit QP	Margin QP	Height	Angle
	[MHz]	[dB(uV)]	[dB(1/m)]	[dB(uV/m)]	[dB(uV/m)]	[dB]	[cm]	[deg]
1	51.219	V	45.2	-16.3	28.9	40.0	11.1	101.0
2	308.026	H	43.3	-8.8	34.5	46.0	11.5	101.0
3	324.153	H	47.2	-8.3	38.9	46.0	7.1	101.0
4	398.721	H	40.6	-5.4	35.2	46.0	10.8	199.0
5	847.468	H	36.3	4.0	40.3	46.0	5.7	101.0
6	847.468	V	31.9	4.0	35.9	46.0	10.1	304.0

Remark :

1. The Unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in lie-down position(X axis) and the worst case was recorded.
2. Result = Reading + c.f(Correction factor)
3. Correction factor = Antenna factor + Cable loss + 6 dB attenuator - Amp Gain
4. This data is the Peak(PK) value.

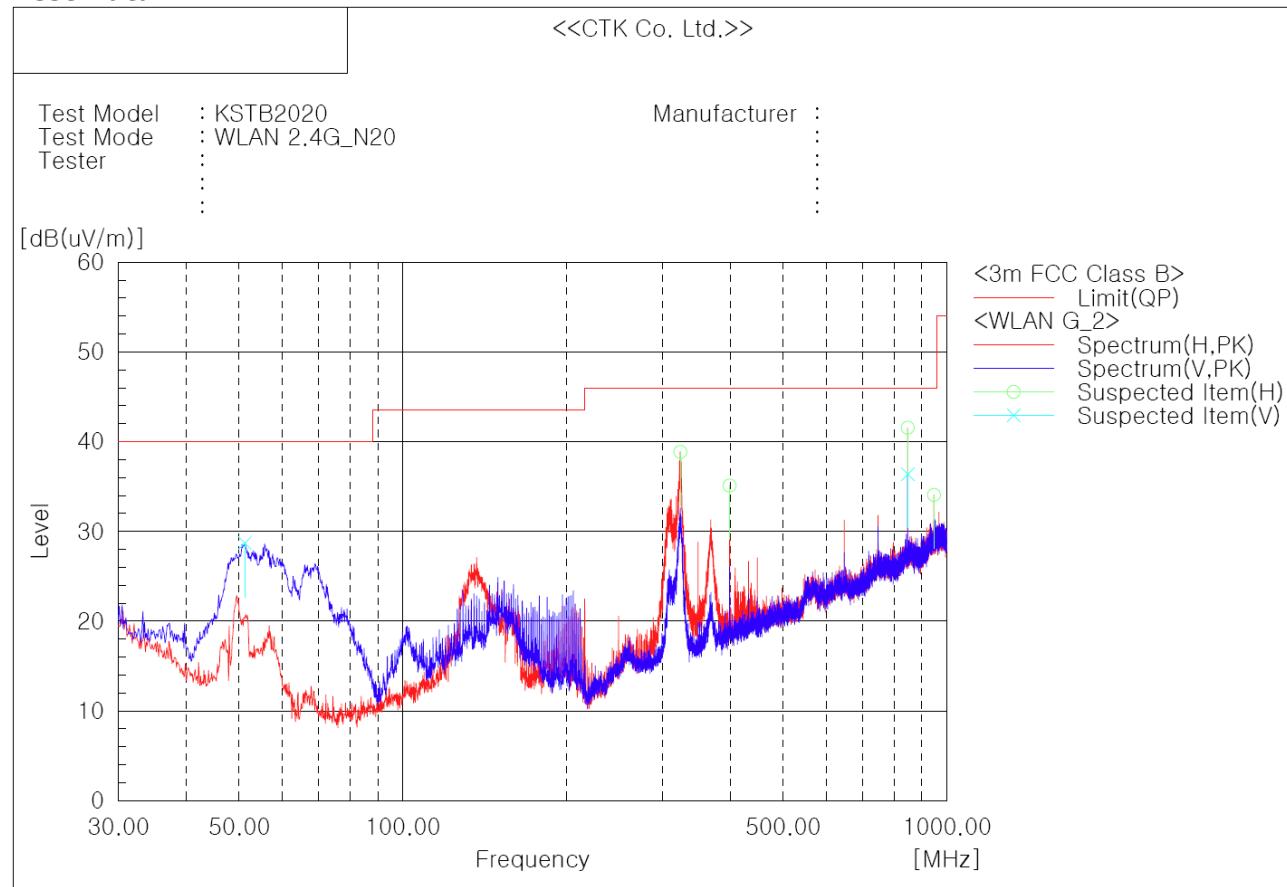
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Test mode : ANT 0 + ANT 1, 802.11n(HT20), low channel(Worst case)

The requirements are:

 Complies**Test Data****Spectrum Selection**

No.	Frequency (P) [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Limit QP [dB]	Margin QP [dB]	Height [cm]	Angle [deg]
1	51.219	V 45.0	-16.3	28.7	40.0	11.3	101.0	58.0
2	323.789	H 47.2	-8.3	38.9	46.0	7.1	101.0	197.0
3	398.721	H 40.5	-5.4	35.1	46.0	10.9	101.0	65.0
4	847.468	H 37.6	4.0	41.6	46.0	4.4	101.0	302.0
5	847.468	V 32.4	4.0	36.4	46.0	9.6	101.0	0.0
6	947.135	H 27.6	6.5	34.1	46.0	11.9	101.0	65.0

Remark :

1. The Unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in lie-down position(X axis) and the worst case was recorded.
2. Result = Reading + c.f(Correction factor)
3. Correction factor = Antenna factor + Cable loss + 6 dB attenuator - Amp Gain
4. This data is the Peak(PK) value.

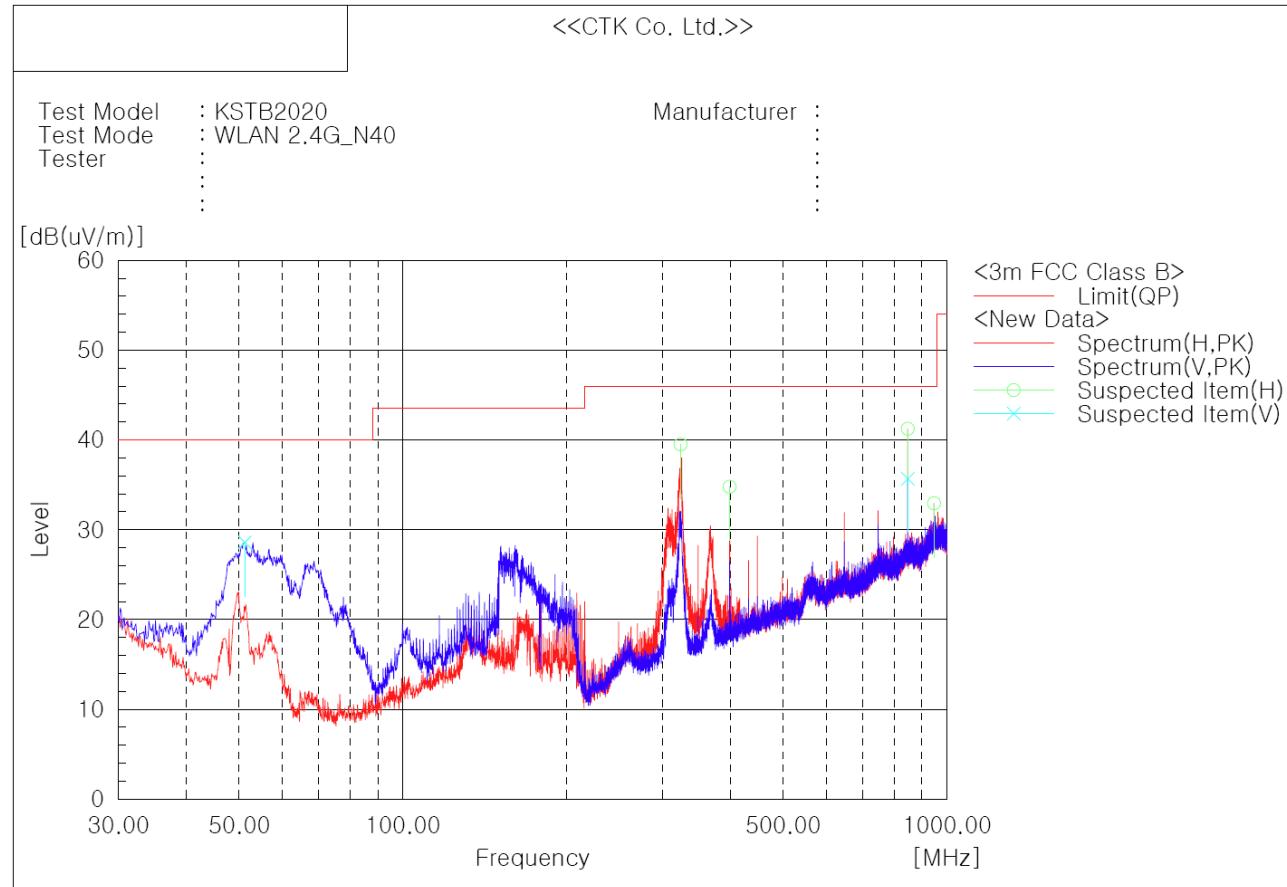
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Test mode : ANT 0 + ANT 1, 802.11n(HT40), low channel(Worst case)

The requirements are:

 Complies**Test Data****Spectrum Selection**

No.	Frequency [MHz]	(P) [dB(uV)]	Reading [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
1	51.219	V	44.9	-16.3	28.6	40.0	11.4	101.0	190.0
2	324.031	H	47.8	-8.3	39.5	46.0	6.5	101.0	224.0
3	398.721	H	40.2	-5.4	34.8	46.0	11.2	101.0	39.0
4	847.468	H	37.2	4.0	41.2	46.0	4.8	101.0	303.0
5	847.468	V	31.7	4.0	35.7	46.0	10.3	201.0	358.0
6	947.135	H	26.4	6.5	32.9	46.0	13.1	101.0	119.0

Remark :

1. The Unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in lie-down position(X axis) and the worst case was recorded.
2. Result = Reading + c.f(Correction factor)
3. Correction factor = Antenna factor + Cable loss + 6 dB attenuator - Amp Gain
4. This data is the Peak(PK) value.

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3) 1 GHz to 25 GHz

The requirements are:

Complies

Test Data

Test mode : ANT 0, 802.11b

Channel	Frequency [MHz]	Ant. Pol. (V/H)	Reading [dBuV/m]	c.f [dB/m]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Low	2 387	H	62.1	-3.8	58.3	74	15.7	Peak
	2 387	H	50.2	-3.8	46.4	54	7.6	Average
	11 176	H	42.0	9.3	51.3	74	22.7	Peak
	11 201	H	31.1	9.3	40.4	54	13.6	Average
Middle	12 625	V	42.0	9.6	51.6	74	22.4	Peak
	12 729	V	30.4	10.1	40.5	54	13.5	Average
High	2 484	H	60.5	-3.7	56.8	74	17.2	Peak
	2 484	H	48.5	-3.7	44.8	54	9.2	Average
	12 693	H	42.4	9.9	52.3	74	21.7	Peak
	12 693	H	30.2	9.9	40.1	54	13.9	Average

Test mode : ANT 0, 802.11g

Channel	Frequency [MHz]	Ant. Pol. (V/H)	Reading [dBuV/m]	c.f [dB/m]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Low	2 390	H	70.5	-3.8	66.7	74	7.3	Peak
	2 390	H	53.9	-3.8	50.1	54	3.9	Average
	12 647	V	42.3	9.7	52.0	74	22.0	Peak
	12 745	V	30.3	10.3	40.6	54	13.4	Average
Middle	12 533	H	41.9	9.3	51.2	74	22.8	Peak
	12 730	H	30.5	10.2	40.7	54	13.3	Average
High	2 484	H	66.9	-3.7	63.2	74	10.8	Peak
	2 484	H	49.6	-3.7	45.9	54	8.1	Average
	12 521	V	42.6	9.2	51.8	74	22.22	Peak
	12 748	V	30.0	10.3	40.3	54	13.7	Average

Remarks

1. The Unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in lie-down position(X axis) and the worst case was recorded.
2. Result = Reading + c.f(Correction factor)
3. Correction factor = Antenna factor + Cable loss - Amp Gain

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Test mode : ANT 1, 802.11b

Channel	Frequency [MHz]	Ant. Pol. (V/H)	Reading [dBuV/m]	c.f [dB/m]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Low	2 386	H	66.2	-3.8	62.4	74	11.6	Peak
	2 386	H	53.1	-3.8	49.3	54	4.7	Average
	12 720	V	41.5	10.1	51.6	74	22.4	Peak
	12 734	V	30.0	10.2	40.2	54	13.8	Average
Middle	12 529	V	42.1	9.3	51.4	74	22.6	Peak
	12 736	V	30.2	10.2	50.4	54	13.6	Average
High	2 486	H	60.1	-3.7	56.4	74	17.6	Peak
	2 484	H	48.3	-3.7	44.6	54	9.4	Average
	11 070	H	42.9	9.1	52.0	74	22.0	Peak
	12 738	H	30.2	10.2	40.4	54	13.6	Average

Test mode : ANT 1, 802.11g

Channel	Frequency [MHz]	Ant. Pol. (V/H)	Reading [dBuV/m]	c.f [dB/m]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Low	2 390	H	73.6	-3.8	69.8	74	4.2	Peak
	2 390	H	56.9	-3.8	53.1	54	0.9	Average
	12 707	H	43.0	10.0	53.0	74	21.0	Peak
	12 521	H	31.1	9.2	40.3	54	13.7	Average
Middle	12 733	V	41.5	10.2	51.7	74	22.3	Peak
	12 506	V	31.1	9.2	40.3	54	13.7	Average
High	2 485	H	68.0	-3.7	64.3	74	9.7	Peak
	2 484	H	51.6	-3.7	47.9	54	6.1	Average
	12 521	H	42.1	9.2	51.3	74	22.7	Peak
	12 522	H	31.3	9.2	40.5	54	13.5	Average

Remarks

1. The Unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in lie-down position(X axis) and the worst case was recorded.
2. Result = Reading + c.f(Correction factor)
3. Correction factor = Antenna factor + Cable loss - Amp Gain



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Test mode : ANT 0 + ANT 1, 802.11n(HT20)

Channel	Frequency [MHz]	Ant. Pol. (V/H)	Reading [dBuV/m]	c.f [dB/m]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Low	2 389	H	71.9	-3.8	68.1	74	5.9	Peak
	2 389	H	51.9	-3.8	48.1	54	5.9	Average
	12 418	V	42.3	9.1	51.4	74	22.6	Peak
	12 746	V	30.1	10.3	40.4	54	13.6	Average
Middle	11 149	H	41.9	9.2	51.1	74	22.9	Peak
	12 492	H	31.3	9.2	40.5	54	13.5	Average
High	2 484	H	72.0	-3.7	68.3	74	5.7	Peak
	2 484	H	51.0	-3.7	47.3	54	6.7	Average
	12 696	H	41.4	9.9	51.3	74	22.7	Peak
	12 749	H	30.2	10.3	40.5	54	13.5	Average

Test mode : ANT 0 + ANT 1, 802.11n(HT40)

Channel	Frequency [MHz]	Ant. Pol. (V/H)	Reading [dBuV/m]	c.f [dB/m]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Low	2 390	H	73.3	-3.8	69.5	74	4.5	Peak
	2 388	H	52.2	-3.8	48.4	54	5.6	Average
	12 711	H	41.3	10.0	51.3	74	22.7	Peak
	12 700	H	30.4	10.0	40.4	54	13.6	Average
Middle	12 742	V	41.2	10.2	51.4	74	22.6	Peak
	12 749	V	30.1	10.3	40.4	54	13.6	Average
High	2 484	H	60.7	-3.7	57.0	74	17.0	Peak
	2 484	H	46.8	-3.7	43.1	54	10.9	Average
	11 152	H	42.6	9.2	51.8	74	22.2	Peak
	12 685	H	30.4	9.9	40.3	54	13.7	Average

Remarks

- The Unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in lie-down position(X axis) and the worst case was recorded.
- Result = Reading + c.f(Correction factor)
- Correction factor = Antenna factor + Cable loss - Amp Gain



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4.6 AC Conducted Emissions

A radio apparatus that is designed to be connected to the public utility (AC) power line shall ensure that the radio frequency voltage, which is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz-30 MHz, shall not exceed the limits.

Instrument Settings

IF Band Width: 9 kHz

Test Procedures

The EUT was placed on a non-metallic table 0.8m above the metallic, grounded floor and 0.4m from the reference ground plane wall. The distance to other metallic surfaces was at least 0.8m.

Amplitude measurements were performed with a quasi-peak detector and an average detector.

Limit

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average**
0.15 ~ 0.5	66 to 56*	56 to 46*
0.5 ~ 5	56	46
5 ~ 30	60	50

* The level decreases linearly with the logarithm of the frequency.

** A linear average detector is required.

Test Results

The requirements are:

Complies

Test mode : ANT 0 + ANT 1, 802.11n(HT20), low channel(Worst case)

Frequency [MHz]	Measured Data [dBuV]	Margin [dB]	Remark
0.465	33.8	12.8	Average



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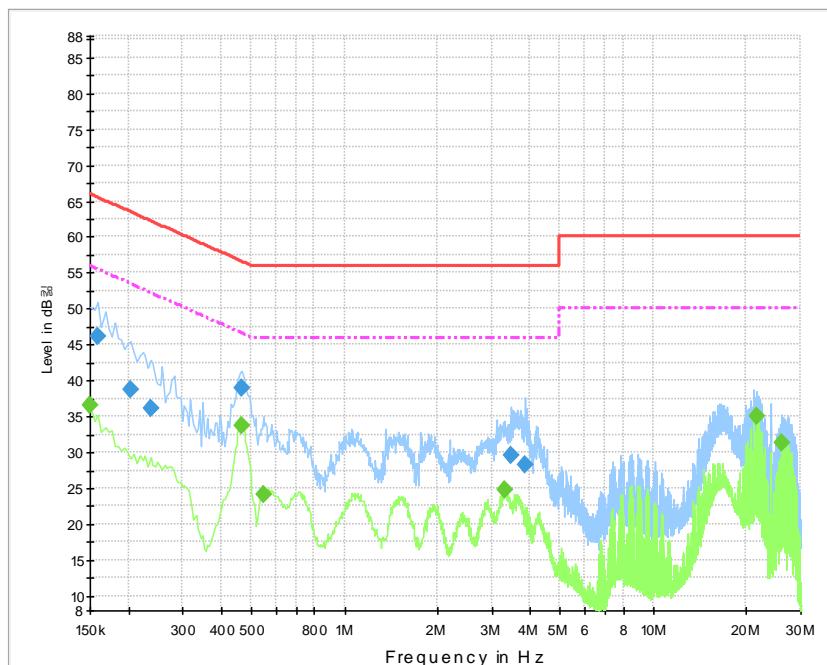
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Test Data

[LINE]

Class B_L1



Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.159000	46.2	1000.0	9.000	On	L1	9.8	19.3	65.5
0.204000	38.7	1000.0	9.000	On	L1	9.9	24.8	63.4
0.235500	36.2	1000.0	9.000	On	L1	9.8	26.0	62.3
0.465000	38.9	1000.0	9.000	On	L1	9.9	17.7	56.6
3.471000	29.5	1000.0	9.000	On	L1	9.8	26.5	56.0
3.831000	28.2	1000.0	9.000	On	L1	9.8	27.8	56.0

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	36.5	1000.0	9.000	On	L1	9.8	19.5	56.0
0.465000	33.8	1000.0	9.000	On	L1	9.9	12.8	46.6
0.550500	24.1	1000.0	9.000	On	L1	9.9	22.0	46.0
3.318000	24.9	1000.0	9.000	On	L1	9.8	21.1	46.0
21.759000	35.0	1000.0	9.000	On	L1	10.0	15.0	50.0
26.200500	31.4	1000.0	9.000	On	L1	10.0	18.6	50.0



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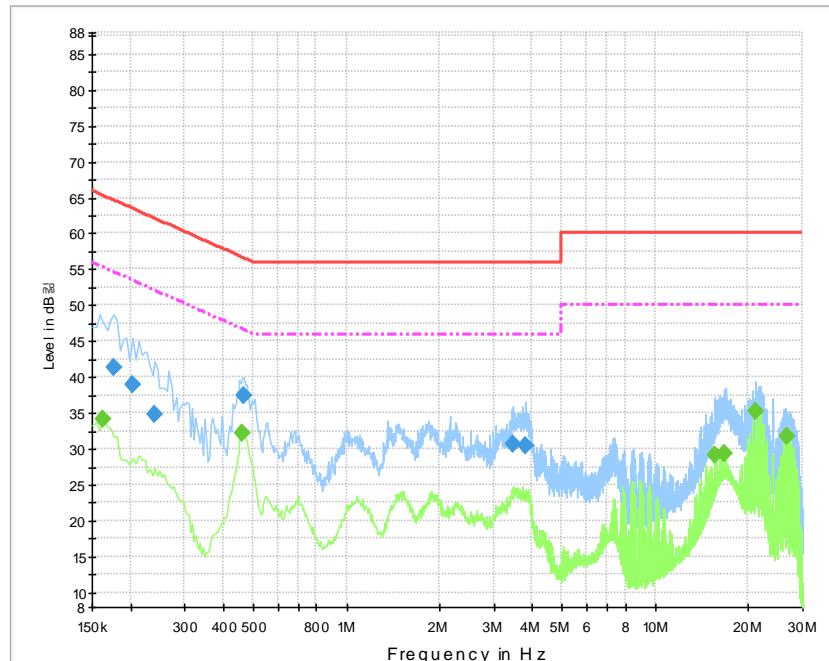
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[NEUTRAL]

Class B_N



Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.177000	41.4	1000.0	9.000	On	N	9.8	23.2	64.6
0.204000	39.0	1000.0	9.000	On	N	9.9	24.4	63.4
0.240000	34.8	1000.0	9.000	On	N	9.7	27.3	62.1
0.465000	37.3	1000.0	9.000	On	N	9.9	19.3	56.6
3.448500	30.6	1000.0	9.000	On	N	9.8	25.4	56.0
3.813000	30.4	1000.0	9.000	On	N	9.8	25.6	56.0

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.163500	34.1	1000.0	9.000	On	N	9.8	21.2	55.3
0.460500	32.2	1000.0	9.000	On	N	9.9	14.5	46.7
15.679500	29.1	1000.0	9.000	On	N	10.0	20.9	50.0
16.759500	29.3	1000.0	9.000	On	N	10.0	20.7	50.0
21.201000	35.3	1000.0	9.000	On	N	10.1	14.7	50.0
26.799000	31.8	1000.0	9.000	On	N	10.1	18.2	50.0

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APPENDIX A – Test Equipment Used For Tests

	Name of Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Signal Analyzer	Agilent	N9020A	MY50510324	2018-01-26	2019-01-26
2	Signal Generator	Rohde & Schwarz	SMB100A	175528	2017-11-01	2018-11-01
3	EMI Test Receiver	Rohde & Schwarz	ESCI7	100814	2017-10-25	2018-10-25
4	Bilog Antenna	Schaffner	CBL6111C	2551	2018-05-10	2020-05-10
5	Active Loop Antenna	SCHWARZBECK	FMZB 1513	1513-125	2018-05-02	2020-05-02
6	6dB Attenuator	BIRD	5W 6dB	1744	2018-01-17	2019-01-17
7	AMPLIFIER	SONOMA	310	291721	2018-02-02	2019-02-02
8	EMI Test Receiver	Rohde & Schwarz	ESU40	100336	2018-02-01	2019-02-01
9	LISN	Rohde & Schwarz	ENV216	101760	2018-01-31	2019-01-31
10	Preamplifier	Agilent	8449B	3008A02011	2017-11-30	2018-11-30
11	Horn Antenna	ETS-Lindgren	3116	00062504	2017-12-04	2019-12-04
12	Horn Antenna	ETS-Lindgren	3117	00154525	2017-09-14	2019-09-14
13	Band Reject Filter	Micro Tronics	BRM50702	G233	2018-01-26	2019-01-26