



#### 8.4 MAXIMUM POWER SPECTRAL DENSITY

#### 8.4.1 Applicable Standard

According to FCC Part15.247(e) and KDB 558074 D01 15.247 Meas Guidance v05r02 According to RSS-247, 5.2(b) and RSS-Gen6.12

#### 8.4.2 Conformance Limit

The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of section 5.4(d), (i.e. the power spectral density shall be determined using the same method as is used to determine the conducted output power).

#### 8.4.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

#### 8.4.4 Test Procedure

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

The transmitter output (antenna port) was connected to the spectrum analyzer

Set analyzer center frequency to DTS channel center frequency.

Set the span to 1.5 times the DTS bandwidth.

Set the RBW to: 3 kHz Set the VBW to:10 kHz.

Set Detector = peak.

Set Sweep time = auto couple.

Set Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum amplitude level within the RBW.

### 8.4.5 Test Results

Temperature:	25 °C
Relative Humidity:	45%
ATM Pressure:	1011 mbar

Note: N/A



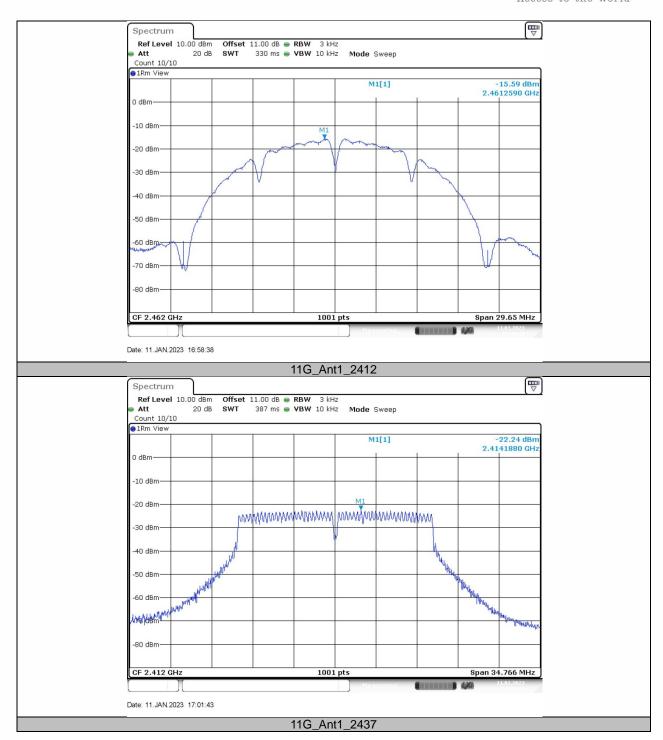
TestMode	Antenna	Frequency[MHz]	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
		2412	-16.07	≤8.00	PASS
11B	Ant1	2437	-15.86	≤8.00	PASS
		2462	-15.59	≤8.00	PASS
		2412	-22.24	≤8.00	PASS
11G	Ant1	2437	-22.46	≤8.00	PASS
		2462	-22.31	≤8.00	PASS
	Ant1	2412	-22.85	≤8.00	PASS
11N20SISO		2437	-22.64	≤8.00	PASS
		2462	-22.58	≤8.00	PASS
		2422	-26.12	≤8.00	PASS
11N40SISO	Ant1	2437	-25.81	≤8.00	PASS
		2452	-25.79	≤8.00	PASS



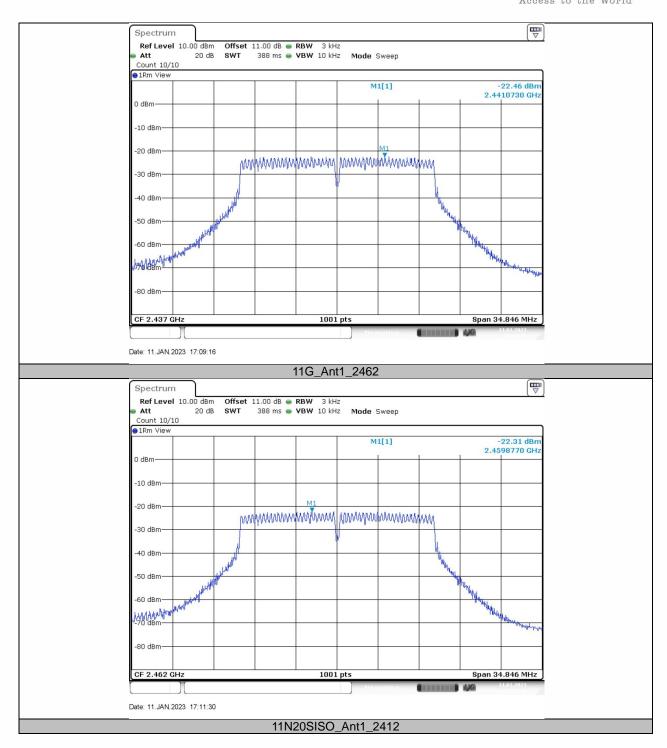




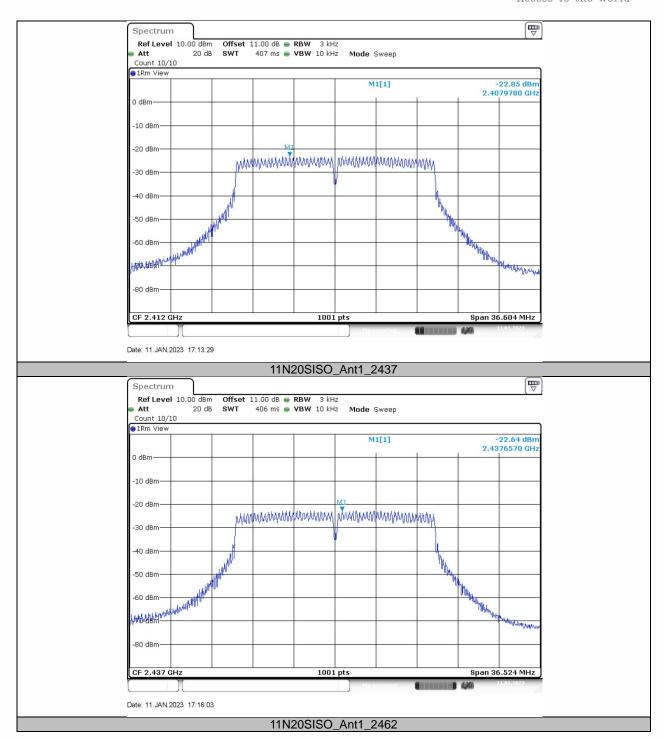




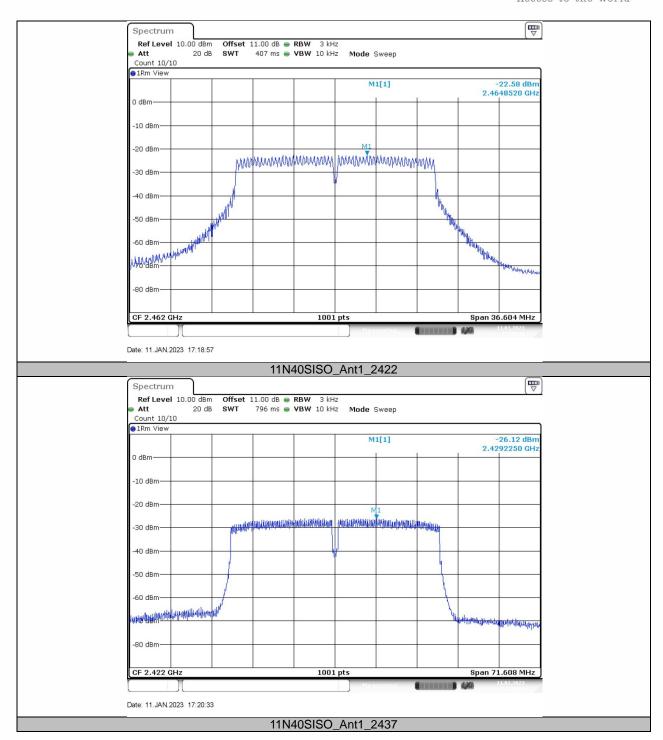




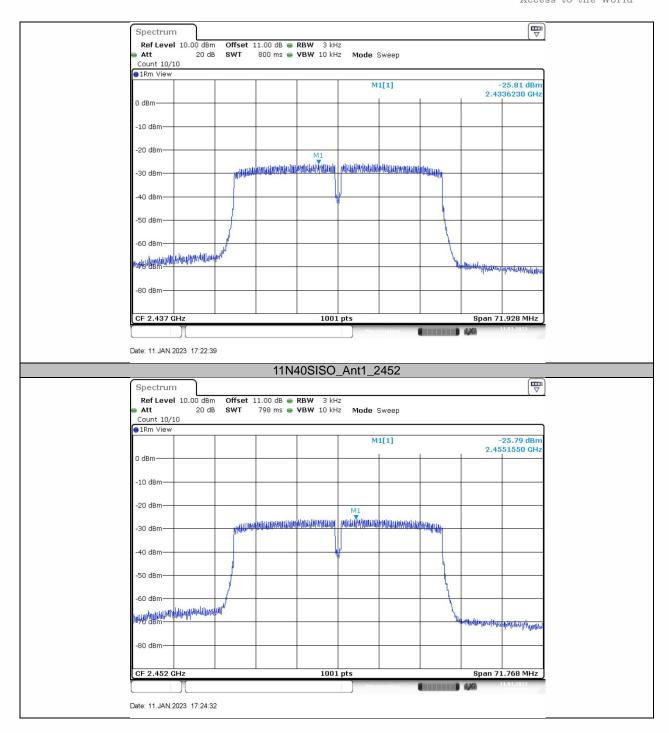














#### 8.5 UNWANTED EMISSIONS IN NON-RESTRICTED FREQUENCY BANDS

### 8.5.1 Applicable Standard

According to FCC Part15.247(d) and KDB 558074 D01 15.247 Meas Guidance v05r02 According to RSS-247, 5.5

#### 8.5.2 Conformance Limit

According to FCC Part 15.247(d):

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 undersection 5.4(d), 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.

### 8.5.3 Test Configuration

Test according to clause 6.1 radio frequency test setup

#### 8.5.4 Test Procedure

The transmitter output (antenna port) was connected to the spectrum analyzer

#### ■ Reference level measurement

Establish a reference level by using the following procedure:

Set instrument center frequency to DTS channel center frequency.

Set the span to ≥ 1.5 times the DTS bandwidth.

Set the RBW = 100 kHz.

Set the VBW  $\geq$  3 x RBW.

Set Detector = peak.

Set Sweep time = auto couple.

Set Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum PSD level.

Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

### ■ Band-edge measurement

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the emission operating on the channel closest to the band-edge, as well as any modulation products which fall outside of the authorized band of operation Set RBW  $\geq$  1% of the span=100kHz Set VBW  $\geq$ 3 x RBW

Set Sweep = autoSet Detector function = peakSet Trace = max hold

Allow the trace to stabilize. Set the marker on the emission at the bandedge, or on the highest modulation product outside of the band, if this level is greater than that at the bandedge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. The marker-delta value now displayed must comply with the limit specified in this Section.

## ■ Emission level measurement

Set the center frequency and span to encompass frequency range to be measured.

Set the RBW = 100 kHz.

Set the VBW =300 kHz.

Set Detector = peak

Sweep time = auto couple.

Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements. Report the three highest emissions relative to the limit.



## 8.5.5 Test Results

Temperature:	25 °C
Relative Humidity:	45%
ATM Pressure:	1011 mbar

Note: N/A

All theantenna(Antenna 1)and modes(802.11b/g/n)have been tested and the worst(Antenna 1,802.11b) resultrecorded was report as below:





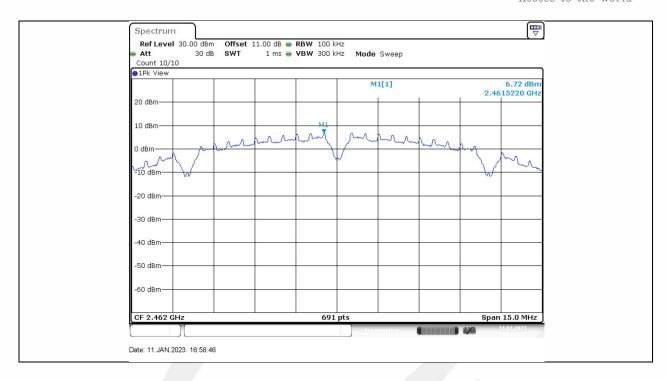
TestMode	Antenna	Freq(MHz)	Max.Point[MHz]	Result[dBm]
	2412	2412.54	6.33	
11B	11B Ant1	2437	2436.52	6.56
		2462	2461.52	6.72





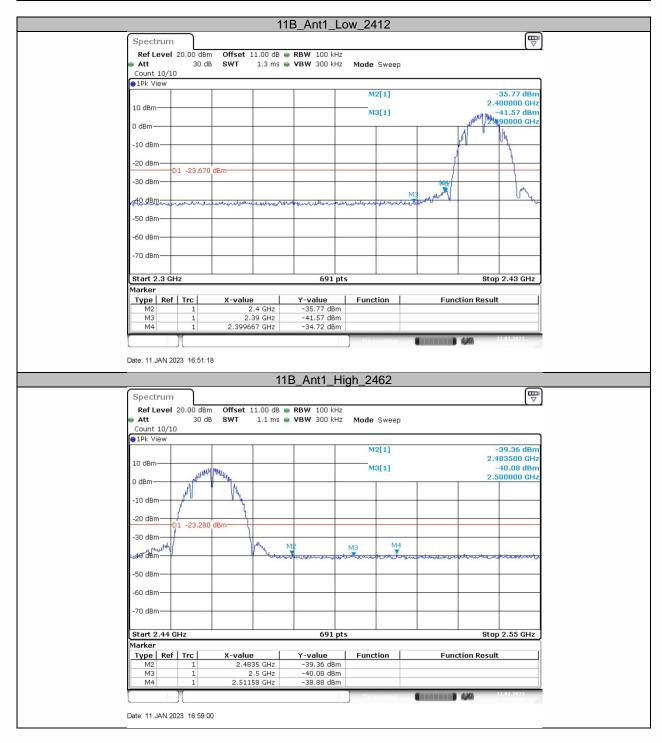








	TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
ĺ	11B	Ant1	Low	2412	6.33	-34.72	≤-23.67	PASS
	ПБ	AIILI	High	2462	6.72	-38.88	≤-23.28	PASS

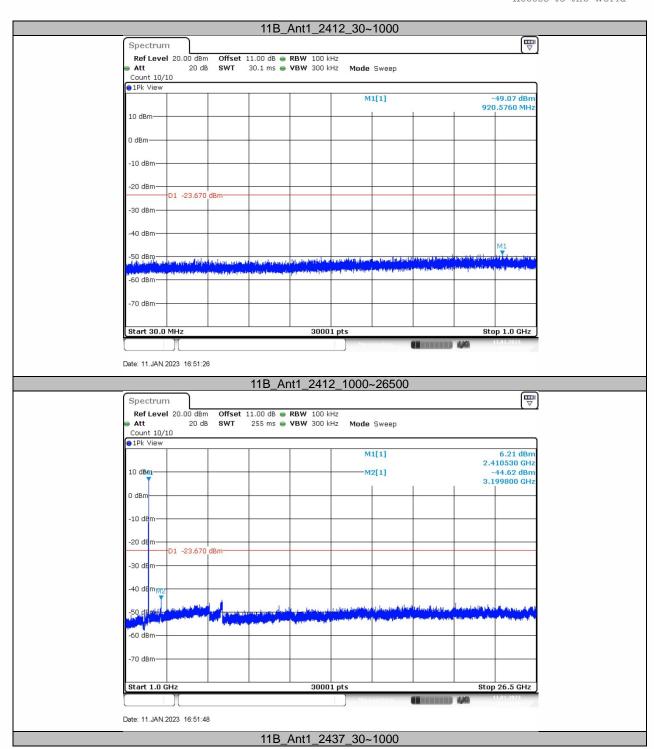




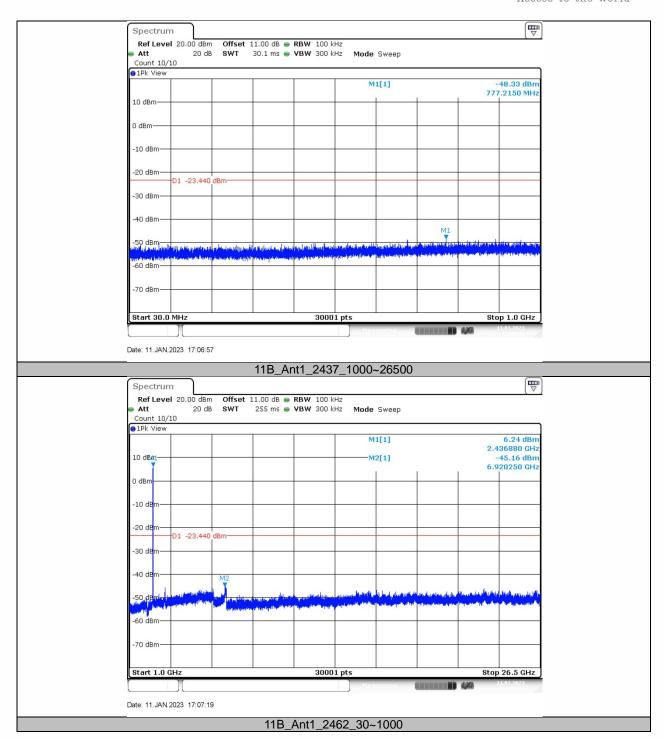
TestMode	Antenna	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
		2412	30~1000	6.33	-49.07	≤-23.67	PASS
		2412	1000~26500	6.33	-44.62	≤-23.67	PASS
11D	A mat 1	A-14 0407	30~1000	6.56	-48.33	≤-23.44	PASS
11B Ant1	Anti	2437	1000~26500	6.56	-45.16	≤-23.44	PASS
		0.400	30~1000	6.72	-48.87	≤-23.28	PASS
			2462	1000~26500	6.72	-44.24	≤-23.28



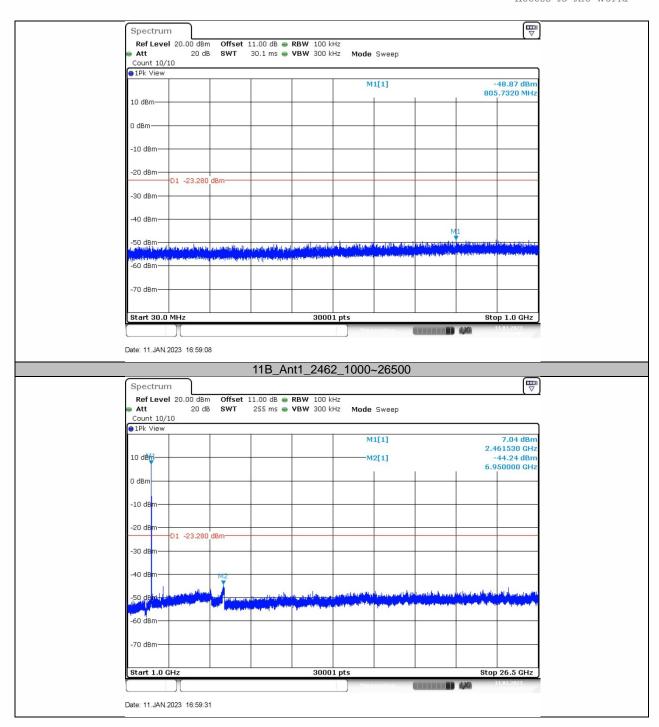














#### 8.6 RADIATED SPURIOUS EMISSION

#### 8.6.1 Applicable Standard

According to FCC Part 15.247(d),15.205, 15.209 and KDB 558074 D01 15.247 Meas Guidancev05r02 According to IC RSS-Gen and RSS-247

#### 8.6.2 Conformance Limit

According to FCC Part 15.247(d): 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)).

According to FCC Part15.205, Restricted bands

According to 1 00 1 drifts:200, Accordicted balles							
MHz MHz		MHz	GHz				
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15				
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46				
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75				
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5				
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2				
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5				
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7				
6.26775-6.26825	123-138	2200-2300	14.47-14.5				
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2				
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4				
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12				
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0				
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8				
12.51975-12.52025	12.51975-12.52025 240-285		36.43-36.5				
12.57675-12.57725	322-335.4	3600-4400	(2)				
13.36-13.41							

According to FCC Part 15.205 the level of any transmitter spurious emission in Restricted bands shall not exceed the level of the emission specified in the following table

Restricted	Field Strength (µV/m)	Field Strength	Measurement	
Frequency(MHz)		(dBµV/m)	Distance	
0.009-0.490	2400/F(KHz)	20 log (uV/m)	300	
0.490-1.705	24000/F(KHz)	20 log (uV/m)	30	
1.705-30	30	29.5	30	
30-88	100	40	3	
88-216	150	43.5	3	
216-960	200	46	3	
Above 960	500	54	3	

#### 8.6.3 Test Configuration

Test according to clause 6.2 radio frequency test setup

#### 8.6.4 Test Procedure

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:

For Above 1GHz:

The EUT was placed on a turn table which is 1.5m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz

 $VBW \ge RBW$ 

Sweep = auto

Detector function = peak

Trace = max hold



For Below 1GHz:

The EUT was placed on a turn table which is 0.8m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Span = wide enough to fully capture the emission being measured

RBW = 100 kHz for

 $VBW \geq RBW$ 

Sweep = auto

Detector function = peak

Trace = max hold

For Below 30MHz:

The EUT was placed on a turn table which is 0.8m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Span = wide enough to fully capture the emission being measured

RBW = 9kHz

 $VBW \ge RBW$ 

Sweep = auto

Detector function = peak

Trace = max hold

For Below 150KHz:

The EUT was placed on a turn table which is 0.8m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Span = wide enough to fully capture the emission being measured

RBW = 200Hz

 $VBW \ge RBW$ 

Sweep = auto

Detector function = peak

Trace = max hold

Follow the guidelines in ANSI C63.10 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit. Submit this data.

Now set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a "duty cycle correction factor", derived from 20log(dwell time/100 ms), in an effort to demonstrate compliance with the limit. Submit this data.

Repeat above procedures until all frequency measured was complete.

## 8.6.5 Test Results

Temperature:	26° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

# ■ Spurious Emission below 30MHz(9KHz to 30MHz)

Freq.	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
(MHz)	H/V	PK `	ÁV	PK	AV	PK	AV
							-

Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Distance extrapolation factor =40log(Specific distance/ test distance)( dB);

Limit line=Specific limits(dBuV) + distance extrapolation factor



## ■ Spurious Emission Above 1GHz(1GHz to 25GHz)

All theantenna(Antenna 1)and modes(802.11b/g/n)have been tested and the worst(Antenna 1,802.11b) resultrecorded was report as below:

Test mode:	802.	.11b Freque		ency: Channel 1: 2412MHz			
Freq. (MHz)	t l Level(dBuv/m)   ` ` ` ´				Over	(dB)	
(IVII IZ)	H/V	PK	AV	PK	AV	PK	AV
11486.25	V	60.76	49.69	74.00	54.00	-13.24	-4.31
14626.87	V	63.97	50.06	74.00	54.00	-10.03	-3.94
17600.62	V	70.30	50.75	74.00	54.00	-3.70	-3.25
11508.75	Н	60.74	49.61	74.00	54.00	-13.26	-4.39
14647.5	Н	64.80	50.21	74.00	54.00	-9.20	-3.79
17602.5	Н	70.09	50.18	74.00	54.00	-3.91	-3.82

Test mode: 802.11b Frequency: Channel 6: 2437MHz

Freq. Ant.Pol.		Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
(MHz)	H/V	PK	AV	PK	AV	PK	AV
11503.12	V	61.71	49.62	74.00	54.00	-12.29	-4.38
14613.75	V	64.67	50.97	74.00	54.00	-9.33	-3.03
17640	V	70.16	49.49	74.00	54.00	-3.84	-4.51
11263.12	Н	59.68	48.57	74.00	54.00	-14.32	-5.43
14694.37	Н	64.80	49.68	74.00	54.00	-9.20	-4.32
17596.87	Н	70.15	50.62	74.00	54.00	-3.85	-3.38

Test mode:	802.11b	Frequency:	Channel 11: 2462MHz

Freq. (MHz)	Ant.Pol.	Emis Level(d	ssion BuV/m)	Limit 3m	(dBuV/m)	Over(dB)		
(IVII IZ)	H/V	PK	AV	PK	AV	PK	AV	
11531.25	V	60.14	49.08	74.00	54.00	-13.86	-4.92	
14671.87	V	64.31	50.46	74.00	54.00	-9.69	-3.54	
17679.37	V	69.92	47.63	74.00	54.00	-4.08	-6.37	
11512.5	Н	60.81	49.42	74.00	54.00	-13.19	-4.58	
14658.75	Н	64.22	50.00	74.00	54.00	-9.78	-4.00	
17619.37	Н	70.23	49.62	74.00	54.00	-3.77	-4.38	

Note:

- (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).
- (2) Emission Level= Reading Level+Correct Factor.
- (3) Correct Factor= Ant\_F + Cab\_L Preamp
- (4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



■ Spurious Emission in Restricted Band 2310-2390MHz and 2483.5-2500MHz All the antenna(Antenna 1) and modes(802.11b/g/n) have been tested and the worst(Antenna 1,802.11b) resultrecorded was report as below:

Test mode:	802.11b	Frequency:		Channel 1: 2412MHz		
Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)	
2325.35	Н	44.91	74.00	41.77	54.00	
2326.63	V	44.97	74.00	41.45	54.00	

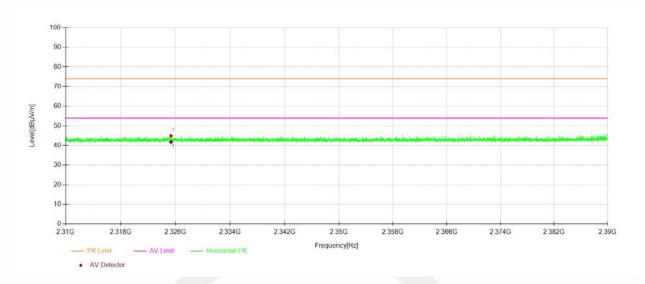
lest mode:	802.11b	Freque	ency: C	Channel 11: 2462MHz			
Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)		
2484.24	Н	46.18	74.00	43.19	54.00		
2484.21	V	46.75	74.00	43.62	54.00		

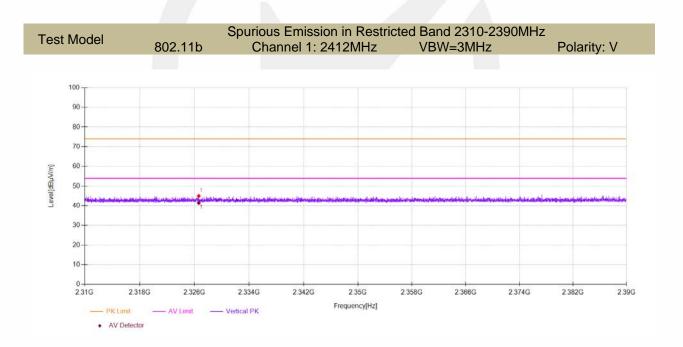
Note:

- (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).
- (2) Emission Level= Reading Level+Correct Factor.
- (3) Correct Factor= Ant\_F + Cab\_L Preamp
- (4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



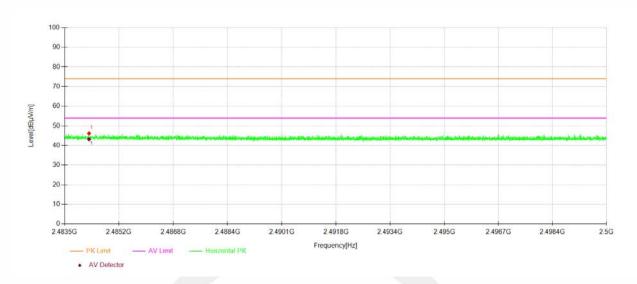
Test Model Spurious Emission in Restricted Band 2310-2390MHz
802.11b Channel 1: 2412MHz VBW=3MHz Polarity: H

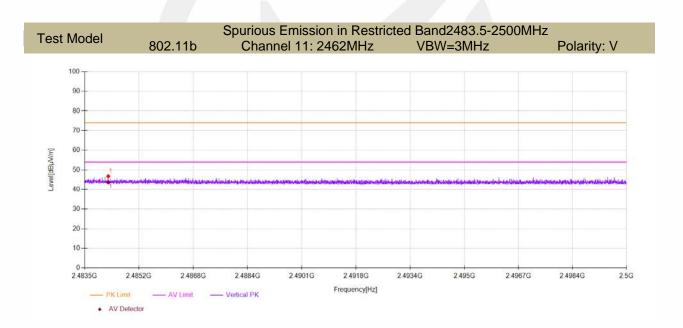






Test Model Spurious Emission in Restricted Band 2483.5-2500MHz
802.11b Channel 11: 2462MHz VBW=3MHz Polarity: H

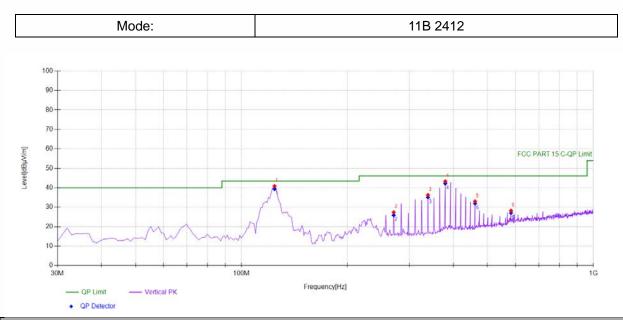






# ■ Spurious Emission below 1GHz (30MHz to 1GHz)

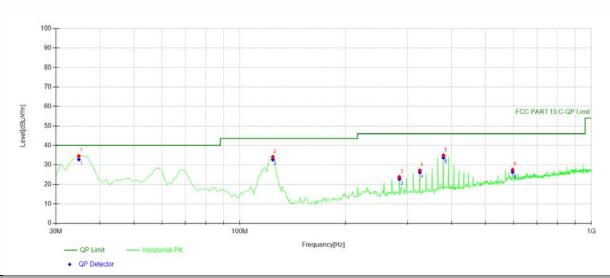
All the antenna(Antenna 1) and modes(802.11b/g/n) have been tested and the worst(Antenna 1,802.11b) resultrecorded was report as below:



Susp	Suspected Data List										
NO	Freq. [MHz]	Readin g [dBµV]	Facto r [dB/m ]	Level [dBµV/ m]	Detect or	Limit [dBµV/ m]	Margi n [dB]	Polarit y	Angle[ °]	Height[c m]	
1	124.184 2	59.19	-18.3 7	40.82	PK	43.50	2.68	Vertic al	170	100	
2	270.800 8	42.09	-14.7 0	27.39	PK	46.00	18.61	Vertic al	197	100	
3	338.768 8	49.71	-13.4 9	36.22	PK	46.00	9.78	Vertic al	329	100	
4	379.549 6	55.15	-11.8 6	43.29	PK	46.00	2.71	Vertic al	329	100	
5	461.111 1	43.99	-10.9 7	33.02	PK	46.00	12.98	Vertic al	174	100	
6	583.453 5	35.33	-7.14	28.19	PK	46.00	17.81	Vertic al	41	100	



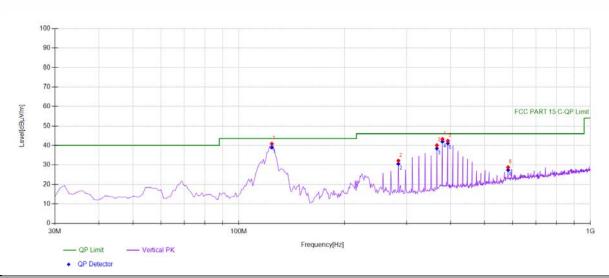




Sus	Suspected Data List										
NO	Freq. [MHz]	Readin g [dBµV]	Facto r [dB/ m]	Level [dBµV/ m]	Detect or	Limit [dBµV/ m]	Margi n [dB]	Polarity	Angle[ °]	Height[c m]	
1	34.8549	52.78	-18.2 3	34.55	PK	40.00	5.45	Horizont al	301	100	
2	124.184 2	52.51	-18.3 7	34.14	PK	43.50	9.36	Horizont al	301	100	
3	284.394 4	37.98	-14.1 7	23.81	PK	46.00	22.19	Horizont al	95	100	
4	325.175 2	41.16	-13.9 3	27.23	PK	46.00	18.77	Horizont al	338	100	
5	379.549 6	46.76	-11.8 6	34.90	PK	46.00	11.10	Horizont al	319	100	
6	597.047	34.71	-7.14	27.57	PK	46.00	18.43	Horizont al	187	100	



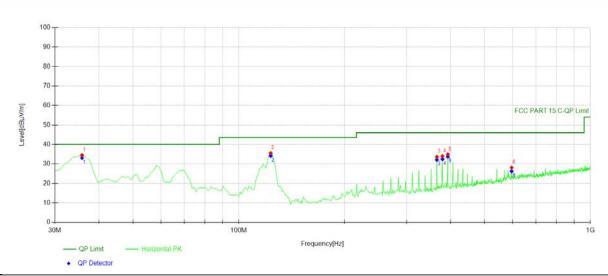




Susp	Suspected Data List										
NO	Freq. [MHz]	Readin g [dBµV]	Facto r [dB/m ]	Level [dBµV/ m]	Detect or	Limit [dBµV/ m]	Margi n [dB]	Polarit y	Angle[ °]	Height[c m]	
1	124.184 2	59.28	-18.3 7	40.91	PK	43.50	2.59	Vertic al	329	100	
2	284.394 4	46.34	-14.1 7	32.17	PK	46.00	13.83	Vertic al	329	100	
3	365.956	53.00	-12.9 6	40.04	PK	46.00	5.96	Vertic al	325	100	
4	379.549 6	55.13	-11.8 6	43.27	PK	46.00	2.73	Vertic al	329	100	
5	393.143 1	54.17	-11.8 2	42.35	PK	46.00	3.65	Vertic al	325	100	
6	583.453 5	35.92	-7.14	28.78	PK	46.00	17.22	Vertic al	72	100	



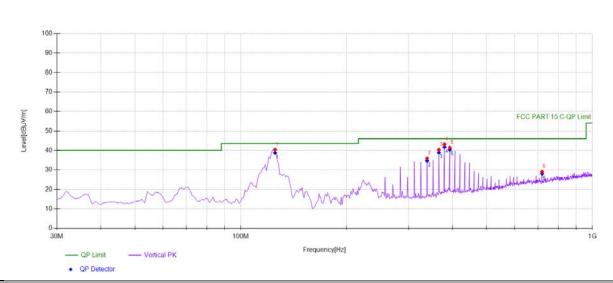




Sus	Suspected Data List										
NO	Freq. [MHz]	Readin g [dBµV]	Facto r [dB/ m]	Level [dBµV/ m]	Detect or	Limit [dBµV/ m]	Margi n [dB]	Polarity	Angle[ °]	Height[c m]	
1	35.8258	52.67	-18.1 7	34.50	PK	40.00	5.50	Horizont al	49	100	
2	123.213 2	53.85	-18.2 7	35.58	PK	43.50	7.92	Horizont al	300	100	
3	365.956	46.65	-12.9 6	33.69	PK	46.00	12.31	Horizont al	331	100	
4	379.549 6	45.87	-11.8 6	34.01	PK	46.00	11.99	Horizont al	322	100	
5	393.143 1	46.73	-11.8 2	34.91	PK	46.00	11.09	Horizont al	309	100	
6	597.047	35.22	-7.14	28.08	PK	46.00	17.92	Horizont al	281	100	



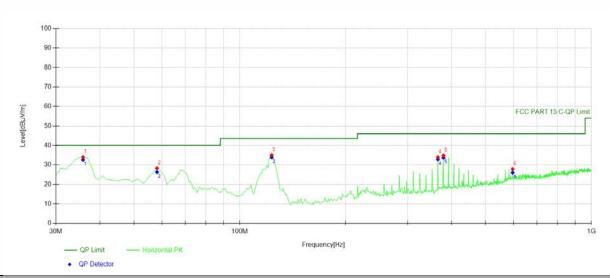
Mode: 11B 2462



Susp	Suspected Data List										
NO	Freq. [MHz]	Readin g [dBµV]	Facto r [dB/m ]	Level [dBµV/ m]	Detect or	Limit [dBµV/ m]	Margi n [dB]	Polarit y	Angle[ °]	Height[c m]	
1	125.155 2	58.88	-18.4 7	40.41	PK	43.50	3.09	Vertic al	329	100	
2	338.768 8	49.46	-13.4 9	35.97	PK	46.00	10.03	Vertic al	329	100	
3	365.956	53.32	-12.9 6	40.36	PK	46.00	5.64	Vertic al	329	100	
4	379.549 6	55.02	-11.8 6	43.16	PK	46.00	2.84	Vertic al	329	100	
5	393.143 1	53.26	-11.8 2	41.44	PK	46.00	4.56	Vertic al	315	100	
6	719.389 4	34.93	-5.82	29.11	PK	46.00	16.89	Vertic al	288	100	







Sus	Suspected Data List										
NO	Freq. [MHz]	Readin g [dBµV]	Facto r [dB/ m]	Level [dBµV/ m]	Detect or	Limit [dBµV/ m]	Margi n [dB]	Polarity	Angle[ °]	Height[c m]	
1	35.8258	52.11	-18.1 7	33.94	PK	40.00	6.06	Horizont al	300	100	
2	58.1582	46.61	-18.3 0	28.31	PK	40.00	11.69	Horizont al	81	100	
3	123.213 2	53.28	-18.2 7	35.01	PK	43.50	8.49	Horizont al	300	100	
4	365.956	46.92	-12.9 6	33.96	PK	46.00	12.04	Horizont al	350	100	
5	379.549 6	46.68	-11.8 6	34.82	PK	46.00	11.18	Horizont al	318	100	
6	597.047	35.00	-7.14	27.86	PK	46.00	18.14	Horizont al	176	100	



#### 8.7 CONDUCTED EMISSION TEST

## 8.7.1 Applicable Standard

According to FCC Part 15.207(a) According to IC RSS-Gen 8.8

#### 8.7.2 Conformance Limit

## Conducted Emission Limit

Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

### 8.7.3 Test Configuration

Test according to clause 6.3conducted emission test setup

### 8.7.4 Test Procedure

The EUT was placed on a table which is 0.8m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Repeat above procedures until all frequency measured were complete.

#### 8.7.5 Test Results

Pass

The AC120V &240V voltage have been tested, and the worst result recorded was report as below: