# 8. RADIATED TEST RESULTS

#### LIMITS

#### Please refer to FCC §15.205 and §15.209

Please refer to RSS-GEN Clause 8.9

Radiation Disturbance Test Limit for FCC (Class B)(9KHz-1GHz)

Frequency	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

Note: 1) At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

(2) At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). This paragraph (f) shall not apply to Access BPL devices operating below 30 MHz.

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### Radiation Disturbance Test Limit for FCC (Above 1G)

Frequency (MHz)	dB(uV/m) (at 3 meters)				
	Peak	Average			
Above 1000	74	54			

Restricted bands of operation

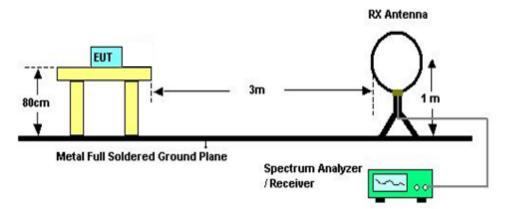
MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
<sup>1</sup> 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	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	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	( <sup>2</sup> )
13.36-13.41			

Note: <sup>1</sup>Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz. <sup>2</sup>Above 38.6c

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#### TEST SETUP AND PROCEDURE

Below 30MHz



The setting of the spectrum analyser

RBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
VBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
Sweep	Auto
Detector	Peak/QP/ Average
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013

2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 0.8 meter above ground.

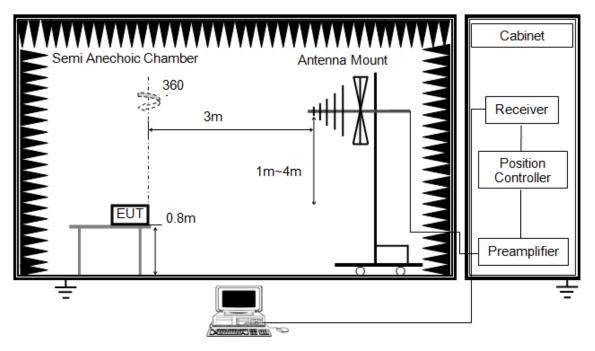
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

6. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)

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#### Below 1G



The setting of the spectrum analyser

RBW	120K
VBW	300K
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 0.8 meter above ground.

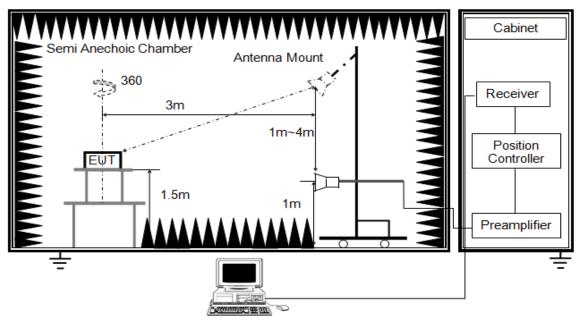
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

6. For the actual test configuration, please refer to the related Item in this test report (Photographs of the Test Configuration)

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# ABOVE 1G



The setting of the spectrum analyser

RBW	1M
NBW	PEAK: 3M AVG: see note 6
Sweep	Auto
Detector	Peak
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 1.5m above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. For measurement above 1GHz, the emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the limit specified in Section 15.209.

6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector. For the Duty Cycle and Correction Factor please refer to clause 7.1.ON TIME AND DUTY CYCLE. If the EUT is configured to transmit with  $D \ge 98\%$ , then set VBW  $\le$  RBW / 100, but not less than 10 Hz. If the EUT D is < 98%, then set

 $VBW \ge 1 / T.$ 

7. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)

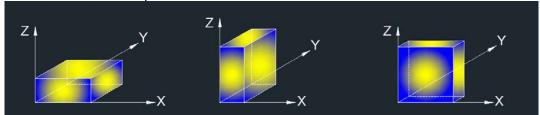
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adiation AVG (Above 1G)

ss B

X axis, Y axis, Z axis positions:



Note1: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (x axis) data recorded in the report

# 8.1. RESTRICTED BANDEDGE

# 8.1.1. 802.11b MODE

117

107

97

87

77

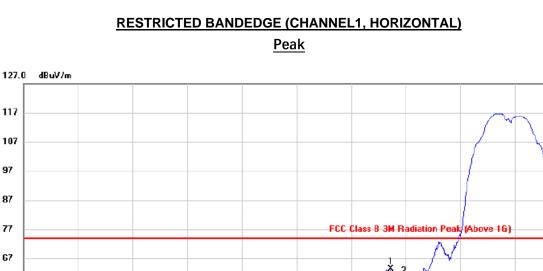
67

57

47

37 27.0

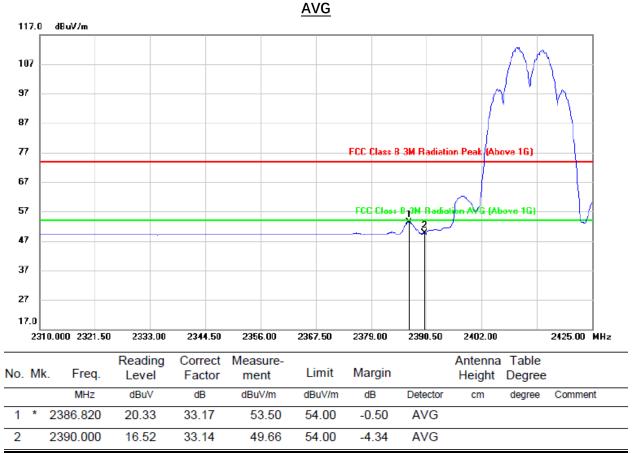
# **3TX MODE (WORST-CASE CONFIGURATION)**



	231	0.000 2321.50	2333.00	2344.50	2356.00	2367.50	2379.00	2390.50	2402.00		2425.00 MH;
No.	Mł	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		Antenna Height		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	2387.395	30.14	33.16	63.30	74.00	-10.70	peak			
2		2390.000	26.95	33.14	60.09	74.00	-13.91	peak			

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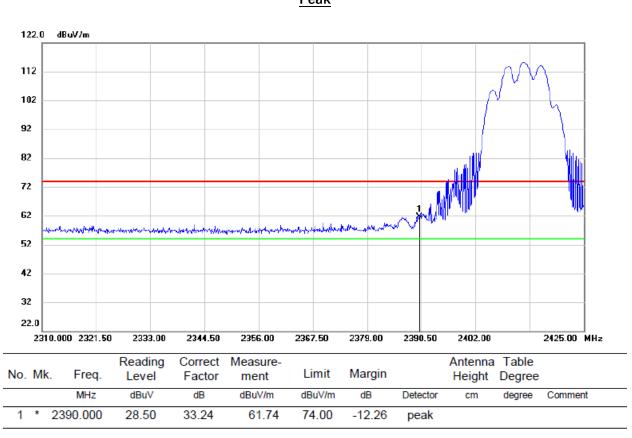
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).

5. For transmit duration, please refer to clause 7.1.

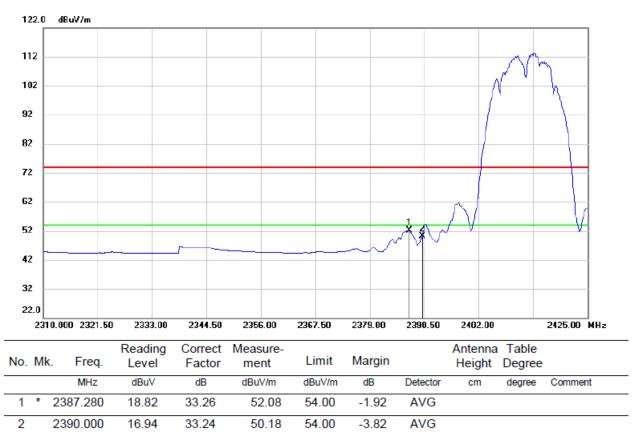
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**RESTRICTED BANDEDGE (CHANNEL1, VERTICAL)** 

Peak

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AVG

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

- 4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).
- 5. For transmit duration, please refer to clause 7.1.

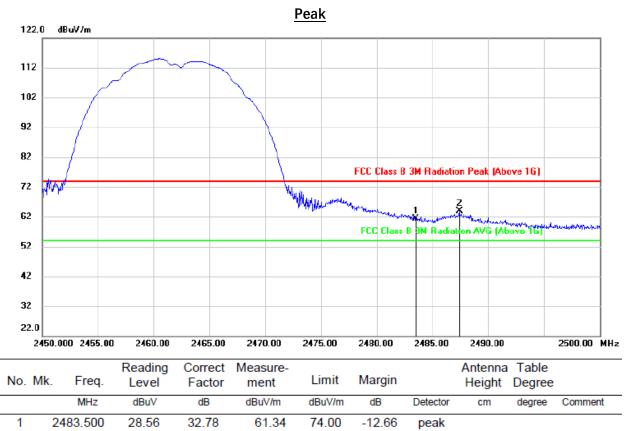
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2 \*

2487.400

32.79

31.16



74.00

63.95

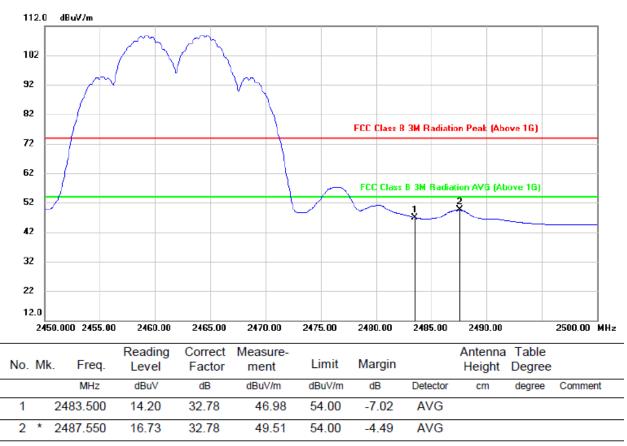
-10.05

peak

**RESTRICTED BANDEDGE (CHANNEL11, HORIZONTAL)** 

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AVG



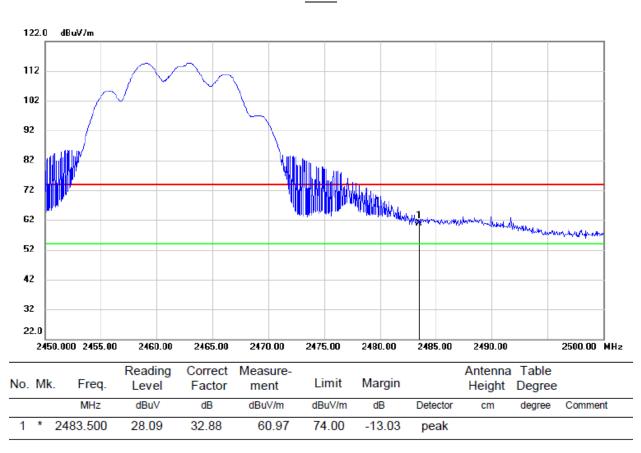
Note: 1. Measurement = Reading Level + Correct Factor.

If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).

5. For transmit duration, please refer to clause 7.1.

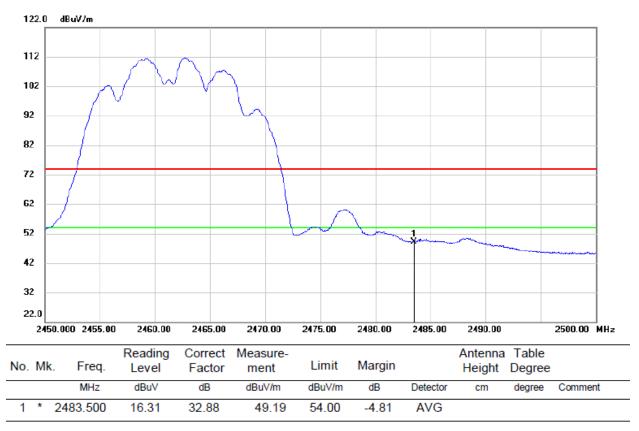
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#### RESTRICTED BANDEDGE (CHANNEL11, VERTICAL) Peak

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AVG



Note: 1. Measurement = Reading Level + Correct Factor.

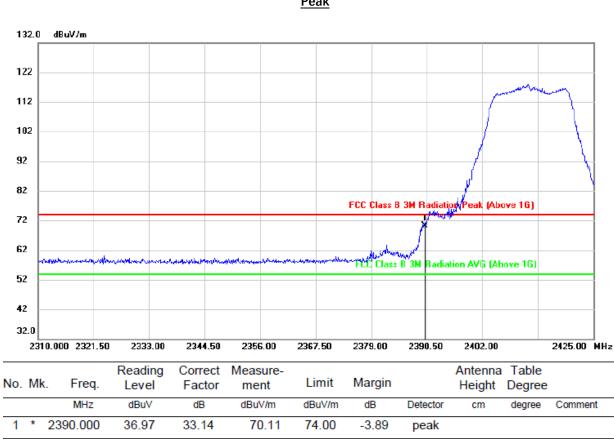
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

- 4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).
- 5. For transmit duration, please refer to clause 7.1.

# 8.1.2. 802.11g MODE

#### 3TX Mode (WORST-CASE CONFIGURATION)

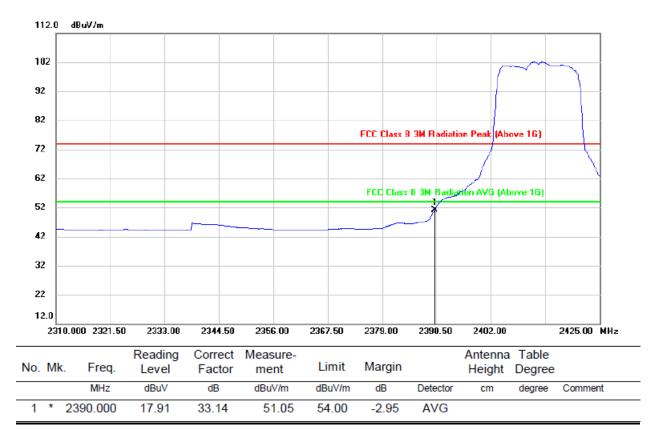


**RESTRICTED BANDEDGE (CHANNEL1, HORIZONTAL)** 

Peak

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AVG



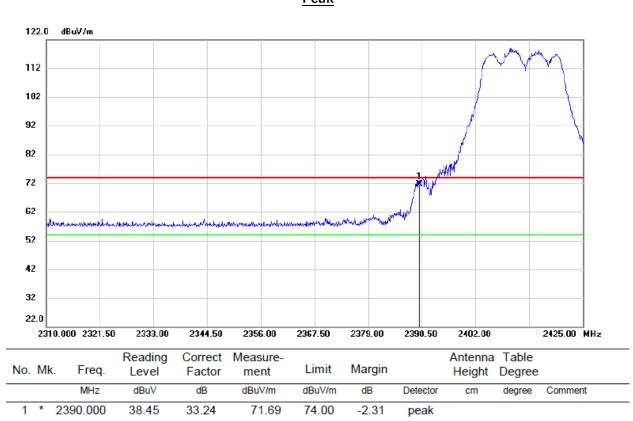
Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

- 4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).
- 5. For transmit duration, please refer to clause 7.1.

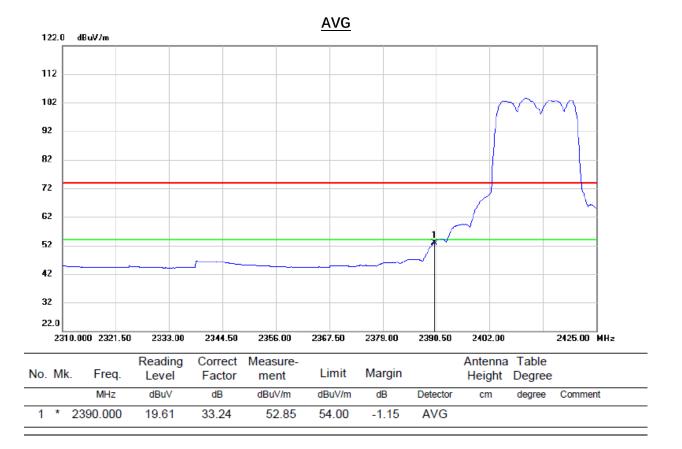
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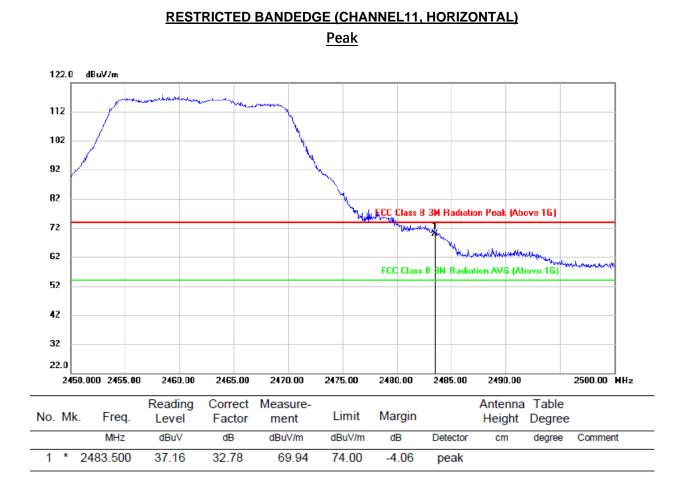
#### **RESTRICTED BANDEDGE (CHANNEL1, VERTICAL)**

**Peak** 

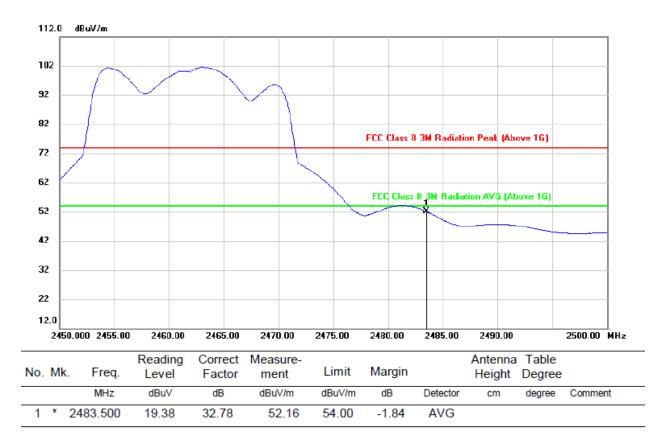
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- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak: Peak detector.
- 4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).
- 5. For transmit duration, please refer to clause 7.1.

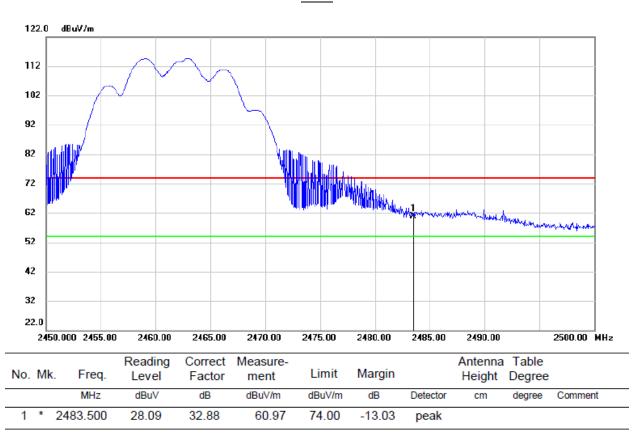


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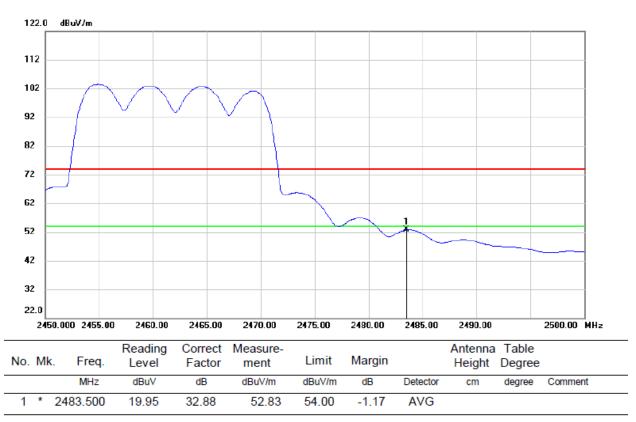
- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak: Peak detector.
- 4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).
- 5. For transmit duration, please refer to clause 7.1.

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#### RESTRICTED BANDEDGE (CHANNEL11, VERTICAL) Peak

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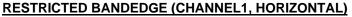


- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak: Peak detector.
- 4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).
- 5. For transmit duration, please refer to clause 7.1.

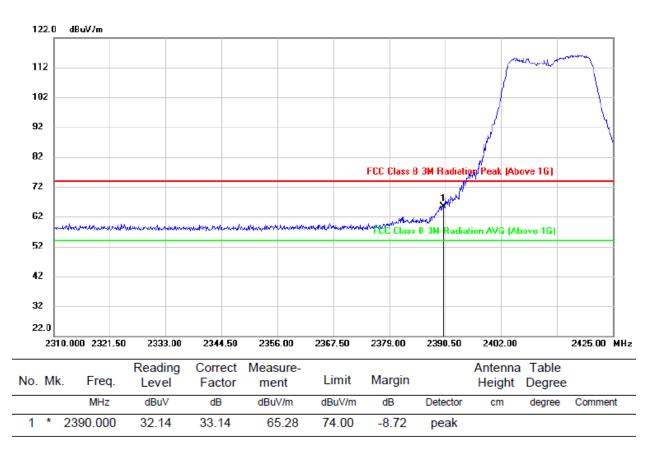
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# 8.1.3. 802.1120 MODE

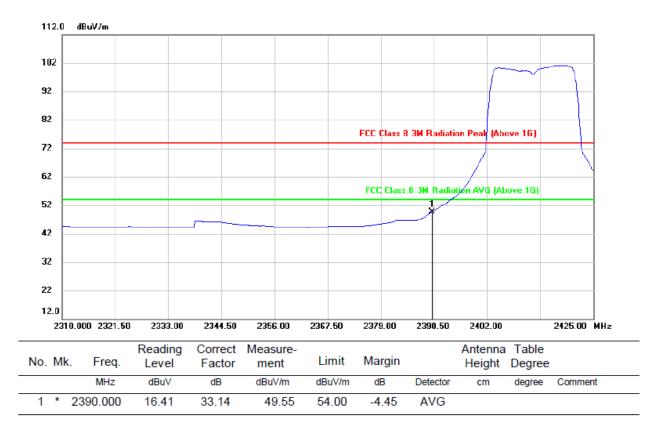
#### 3TX Mode (WORST-CASE CONFIGURATION)



<u>Peak</u>

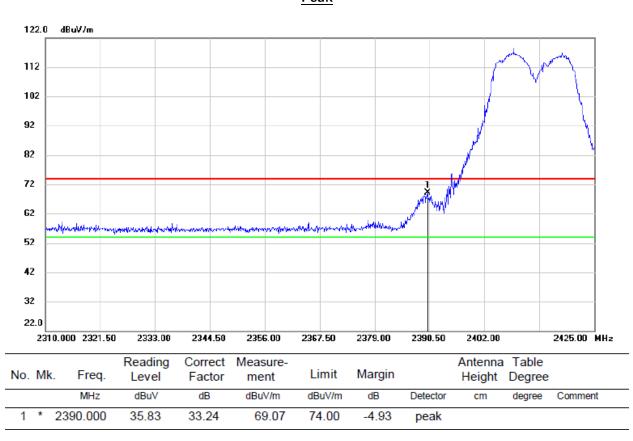


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- If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
   Peak: Peak detector.
- 4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).
- 5. For transmit duration, please refer to clause 7.1.

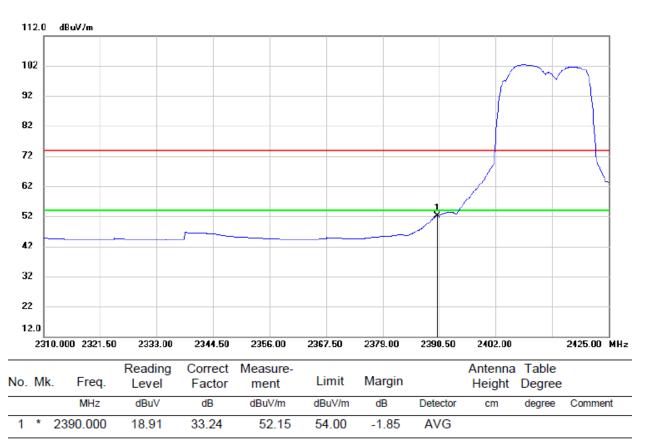
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#### **RESTRICTED BANDEDGE (CHANNEL1, VERTICAL)**

Peak

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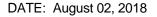
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

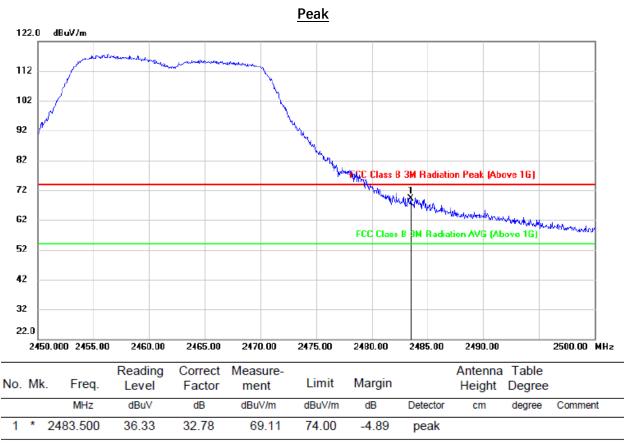
3. Peak: Peak detector.

4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).

5. For transmit duration, please refer to clause 7.1.

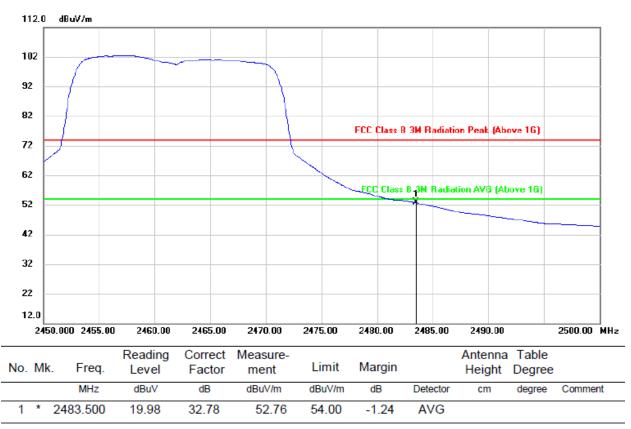
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# **RESTRICTED BANDEDGE (CHANNEL11, HORIZONTAL)**

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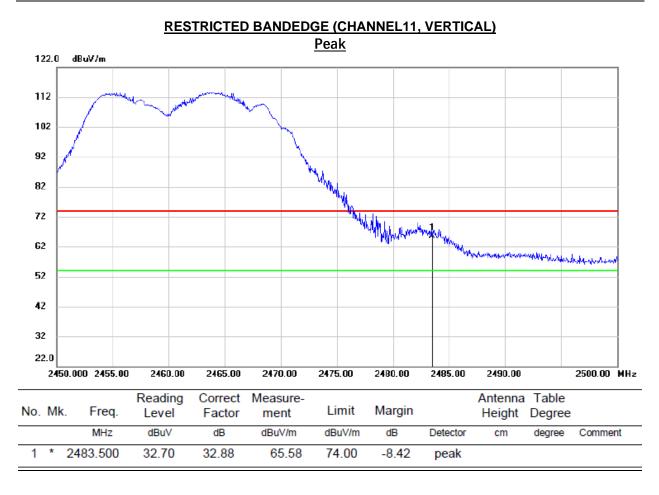


If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

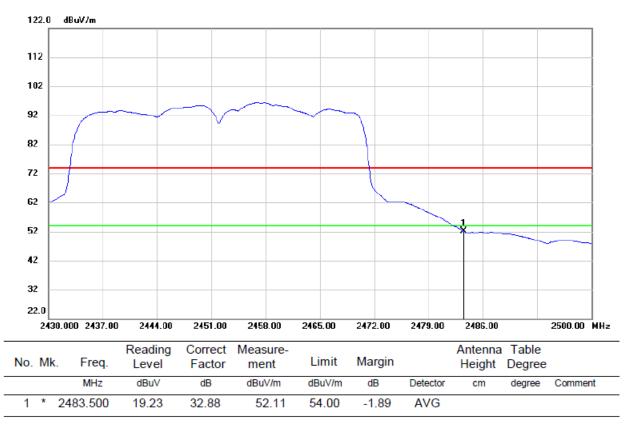
- 4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).
- 5. For transmit duration, please refer to clause 7.1.

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2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).

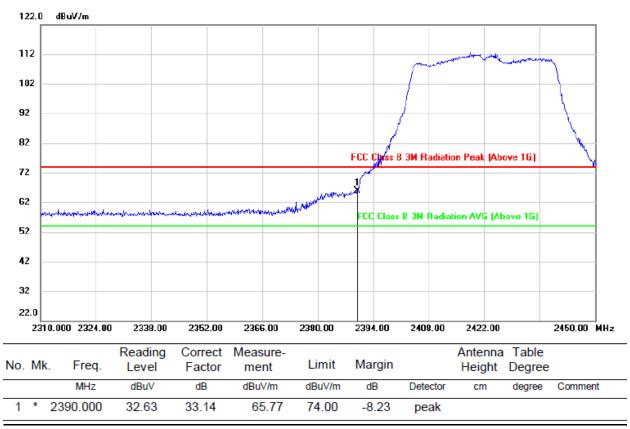
5. For transmit duration, please refer to clause 7.1.

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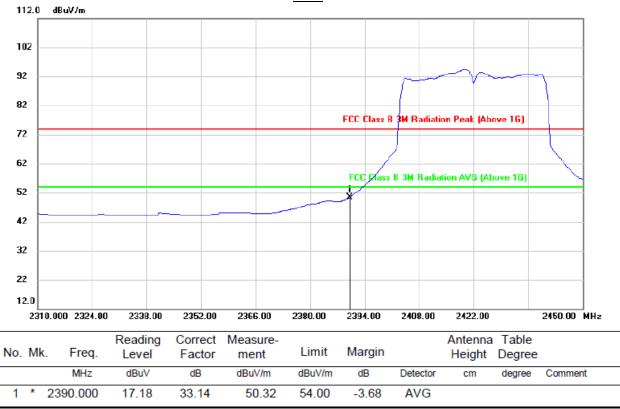
# 8.1.4. 802.11n40 MODE

#### 3TX Mode (WORST-CASE CONFIGURATION)

# RESTRICTED BANDEDGE (CHANNEL3, HORIZONTAL) Peak

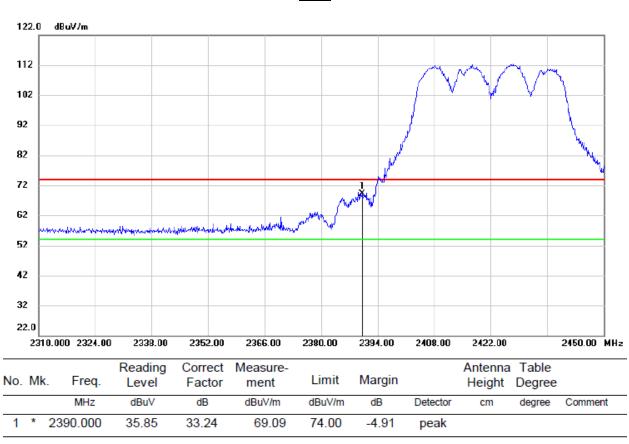


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- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak: Peak detector.
- 4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).
- 5. For transmit duration, please refer to clause 7.1.

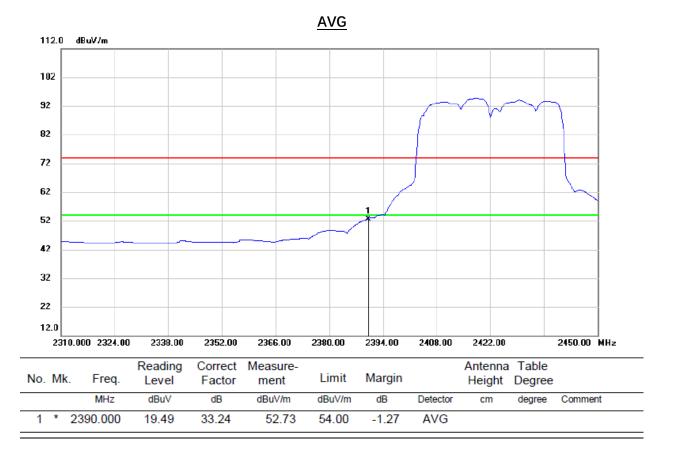
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**RESTRICTED BANDEDGE (CHANNEL3, VERTICAL)** 

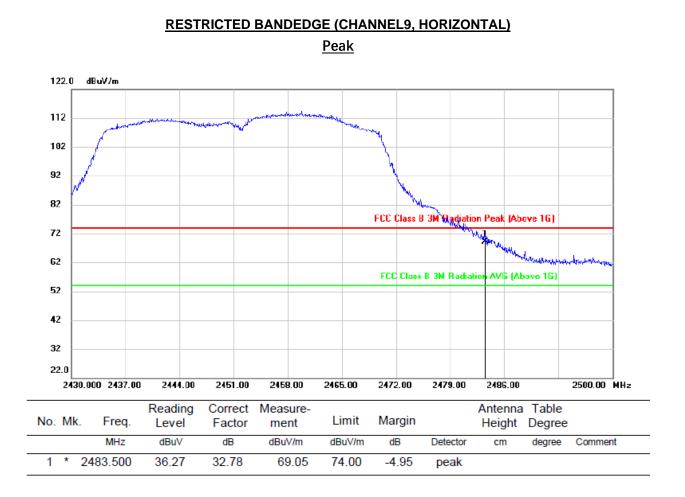
Peak

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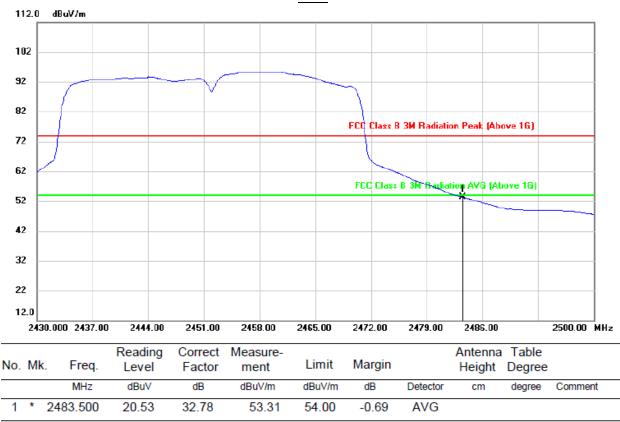


- If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
   Peak: Peak detector.
- 4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).
- 5. For transmit duration, please refer to clause 7.1.

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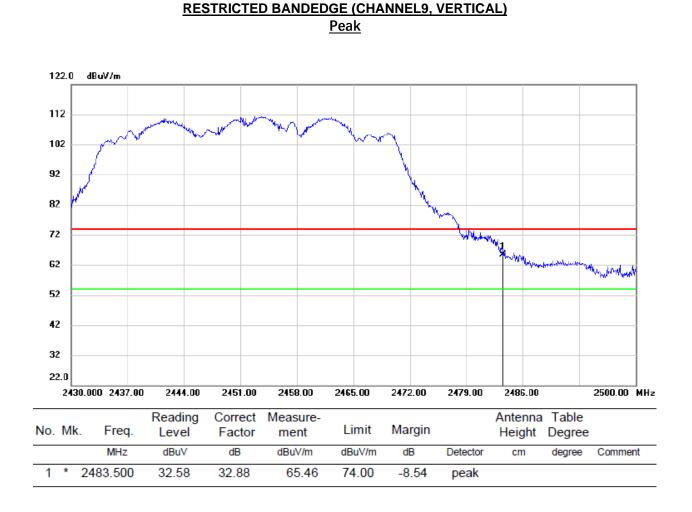


- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak: Peak detector.
- 4. AVG:VBW=1/T,(For the value of 1/T, please refer to the table on page 17).
- 5. For transmit duration, please refer to clause 7.1.

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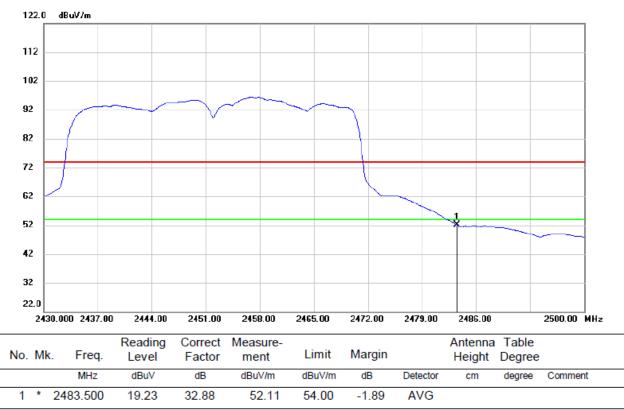
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2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

- 4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).
- 5. For transmit duration, please refer to clause 7.1.

Note: All transmission modes and antennas were tested, but only the worst data was recorded in the report.

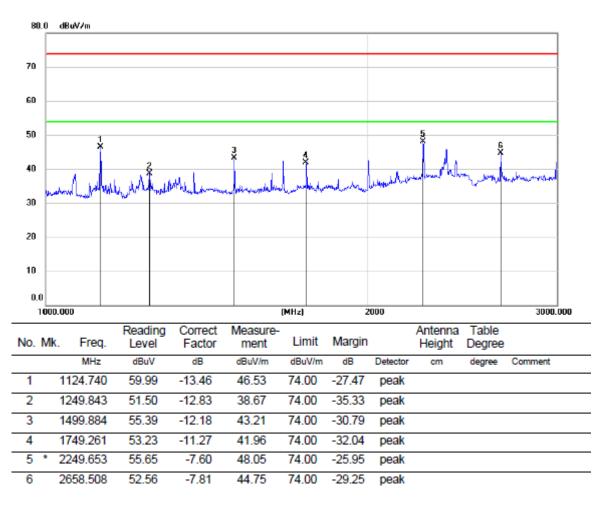
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# 8.2. SPURIOUS EMISSIONS (1~18GHz)

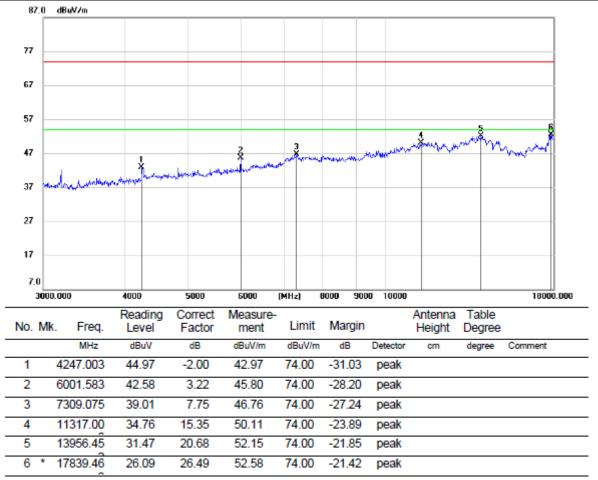
## 8.2.1. 802.11b MODE



## HARMONICS AND SPURIOUS EMISSIONS (CHANNEL1, HORIZONTAL)



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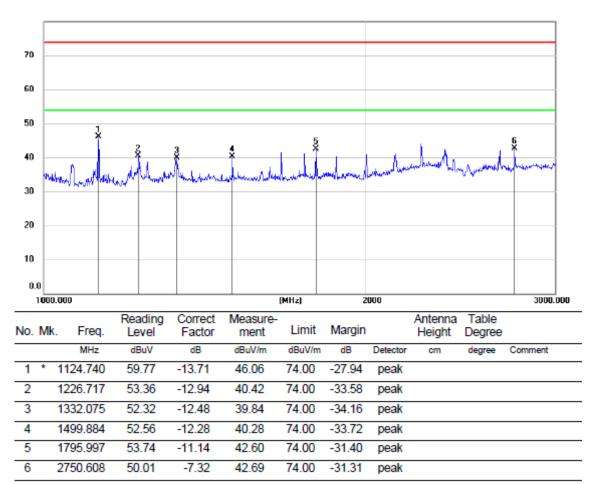
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).

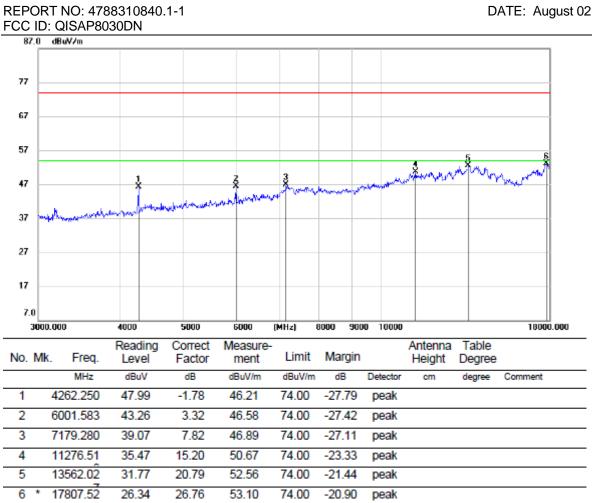
5. For transmit duration, please refer to clause 7.1.

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#### HARMONICS AND SPURIOUS EMISSIONS (CHANNEL1, VERTICAL)

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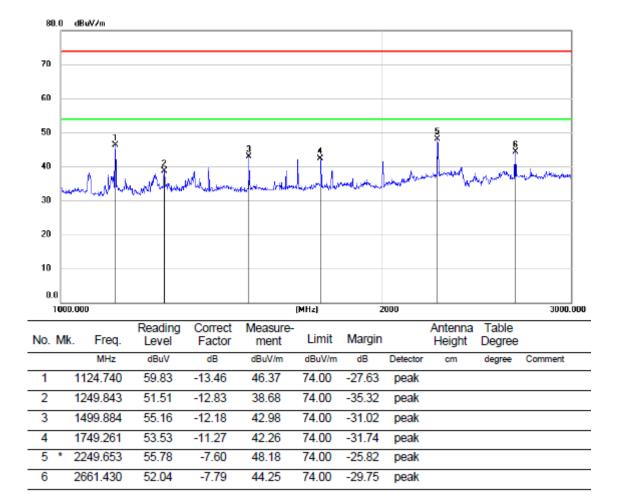
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit. 3. Peak: Peak detector.

4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).

5. For transmit duration, please refer to clause 7.1.

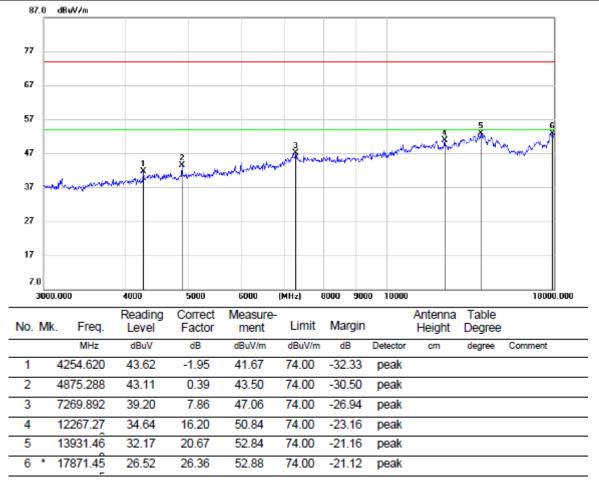
DATE: August 02, 2018

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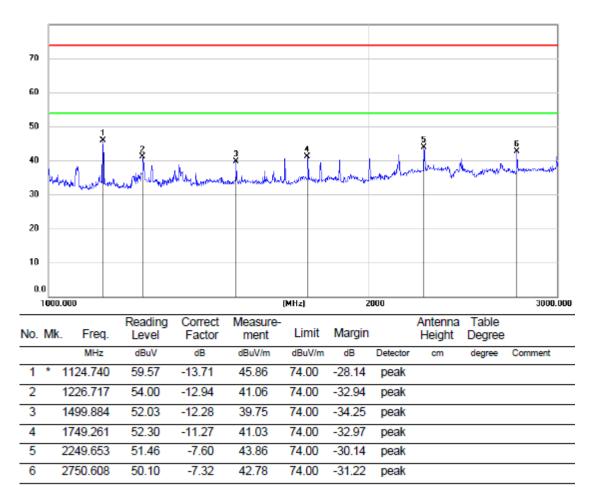
#### HARMONICS AND SPURIOUS EMISSIONS (CHANNEL6, HORIZONTAL)

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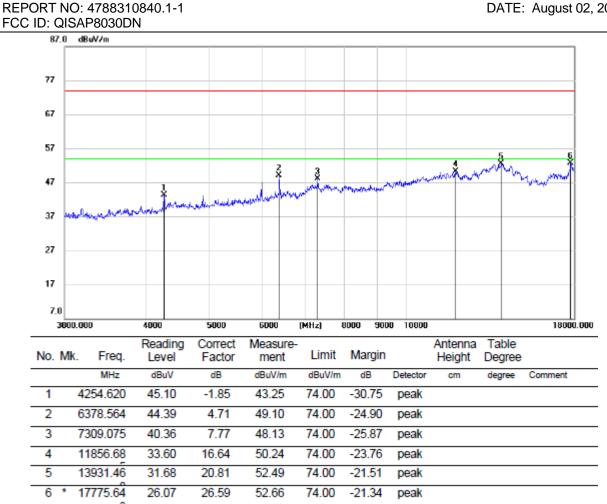
- If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
   Peak: Peak detector.
- 4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).
- 5. For transmit duration, please refer to clause 7.1.

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#### HARMONICS AND SPURIOUS EMISSIONS (CHANNEL6, VERTICAL)

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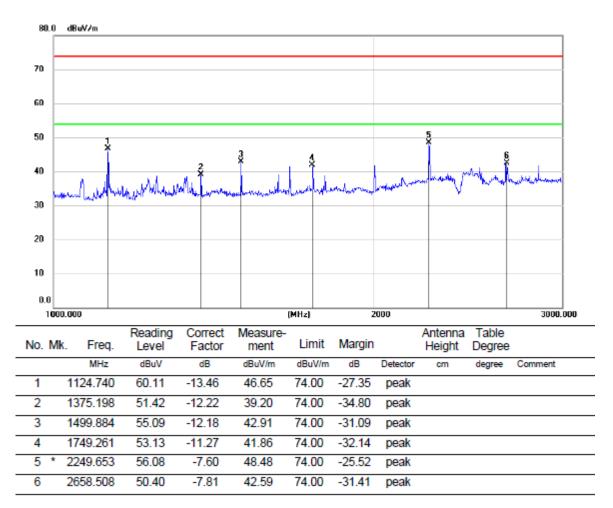
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit. 3. Peak: Peak detector.

4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).

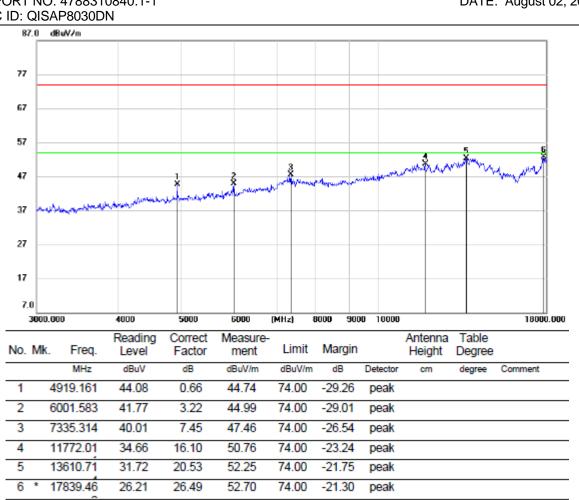
5. For transmit duration, please refer to clause 7.1.

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REPORT NO: 4788310840.1-1 FCC ID: QISAP8030DN

Note: 1. Measurement = Reading Level + Correct Factor.

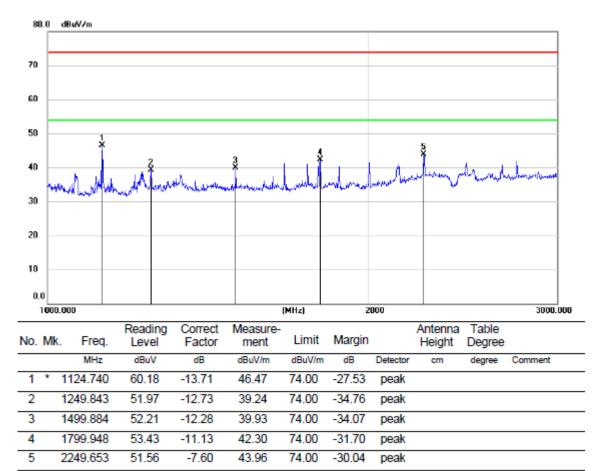
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit. 3. Peak: Peak detector.

4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).

5. For transmit duration, please refer to clause 7.1.

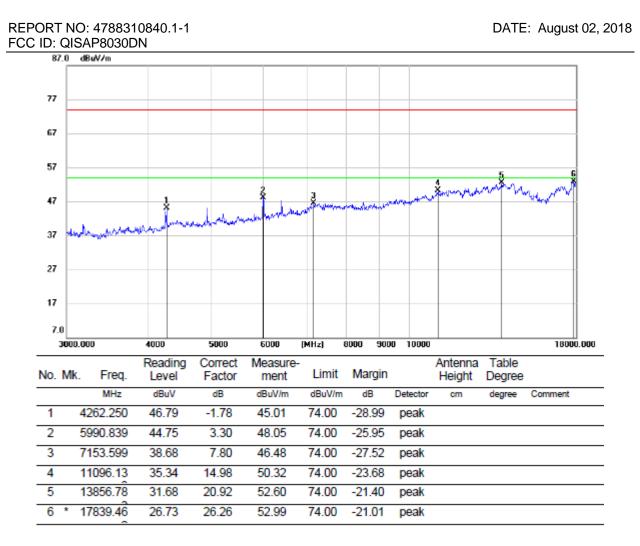
DATE: August 02, 2018

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#### HARMONICS AND SPURIOUS EMISSIONS (CHANNEL11, VERTICAL)

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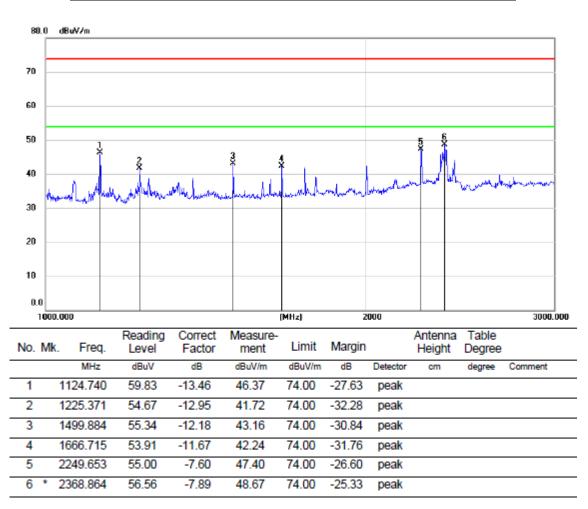


- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak: Peak detector.
- 4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).
- 5. For transmit duration, please refer to clause 7.1.

Note: All transmission modes and antennas were tested, but only the worst data was recorded in the report.

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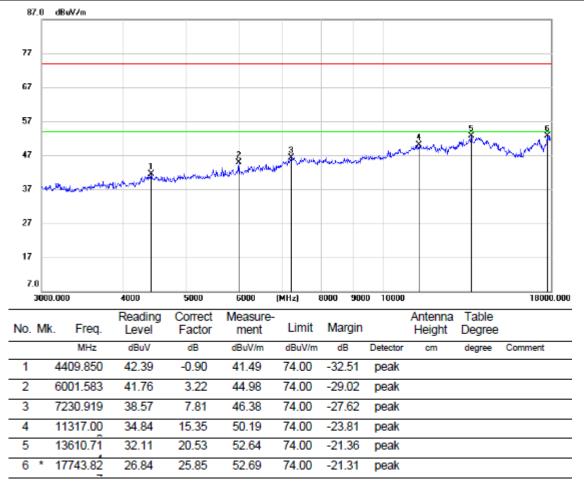
# 8.2.2. 802.11g MODE



#### 3TX Mode (WORST-CASE CONFIGURATION)

#### HARMONICS AND SPURIOUS EMISSIONS (CHANNEL1, HORIZONTAL)

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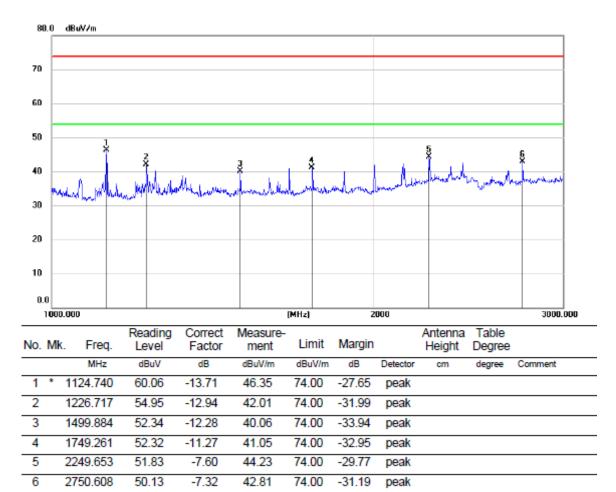


If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).

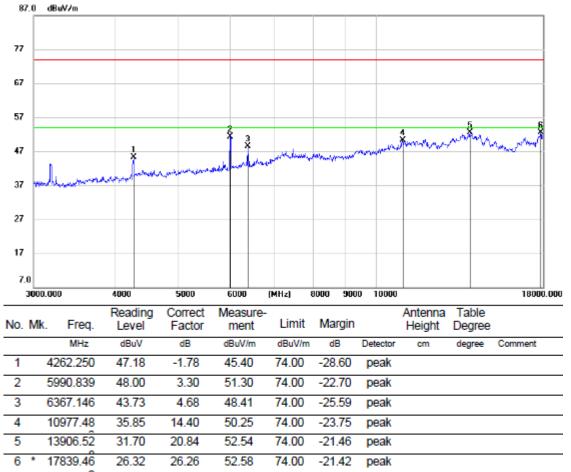
5. For transmit duration, please refer to clause 7.1.

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#### HARMONICS AND SPURIOUS EMISSIONS (CHANNEL1, VERTICAL)

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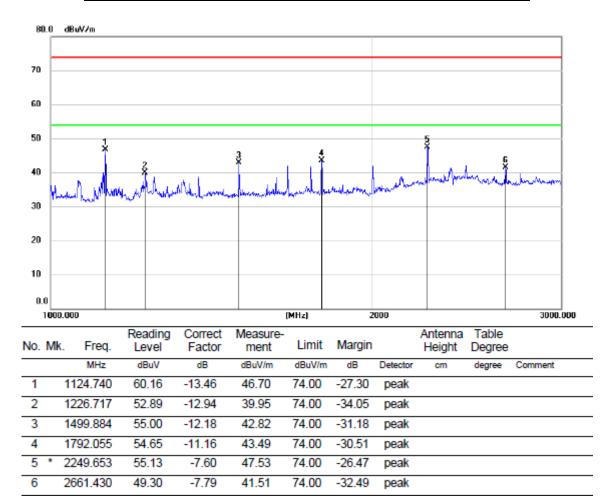


If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).

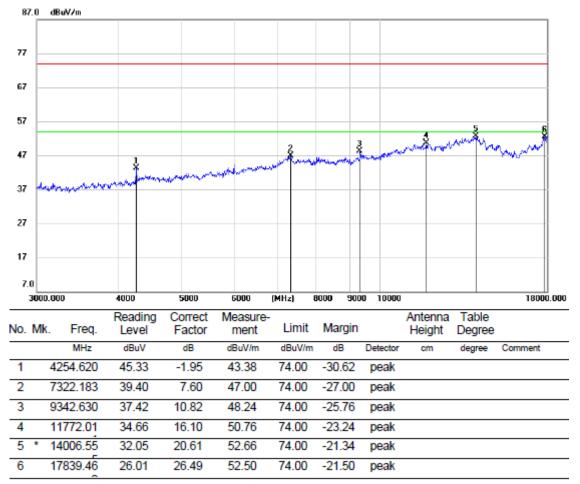
5. For transmit duration, please refer to clause 7.1.

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#### HARMONICS AND SPURIOUS EMISSIONS (CHANNEL6, HORIZONTAL)

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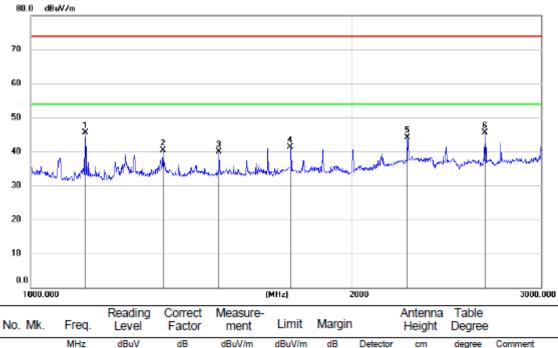


If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).

5. For transmit duration, please refer to clause 7.1.

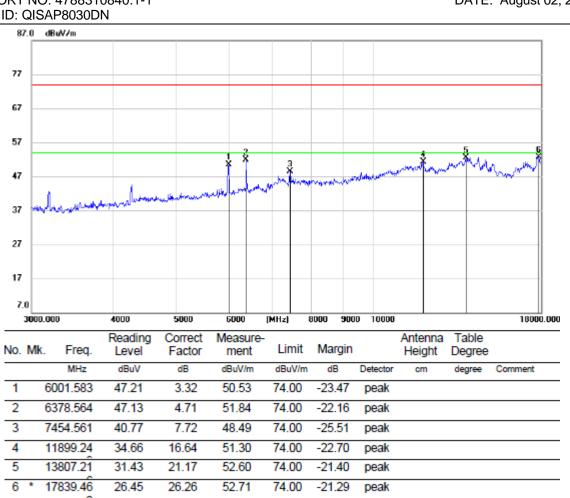
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#### HARMONICS AND SPURIOUS EMISSIONS (CHANNEL6, VERTICAL)

No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	1124.740	59.28	-13.71	45.57	74.00	-28.43	peak			
2		1330.612	52.83	-12.50	40.33	74.00	-33.67	peak			
3		1499.884	52.18	-12.28	39.90	74.00	-34.10	peak			
4		1749.261	52.54	-11.27	41.27	74.00	-32.73	peak			
5		2249.653	51.70	-7.60	44.10	74.00	-29.90	peak			
6		2658.508	53.44	-7.89	45.55	74.00	-28.45	peak			

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### REPORT NO: 4788310840.1-1 FCC ID: QISAP8030DN

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit. 3. Peak: Peak detector.

4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).

5. For transmit duration, please refer to clause 7.1.

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5

6

2249.653

2658.508

55.43

49.98

-7.60

-7.81

47.83

42.17

74.00

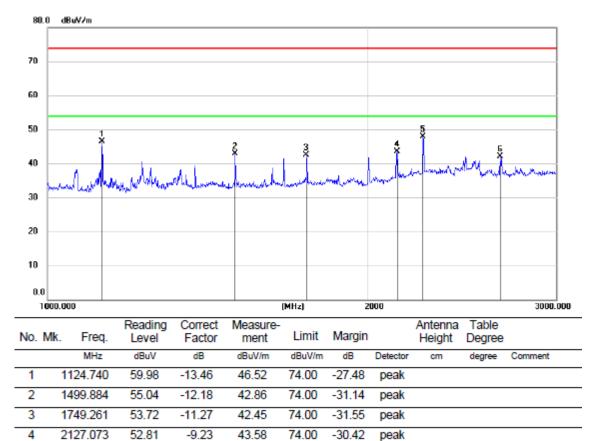
74.00

-26.17

-31.83

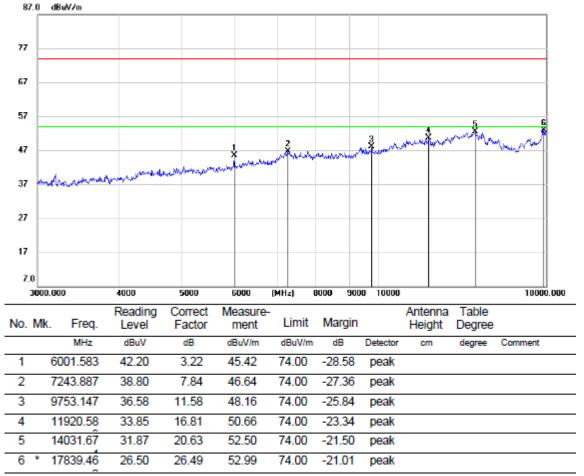
peak

peak



## HARMONICS AND SPURIOUS EMISSIONS (CHANNEL11, HORIZONTAL)

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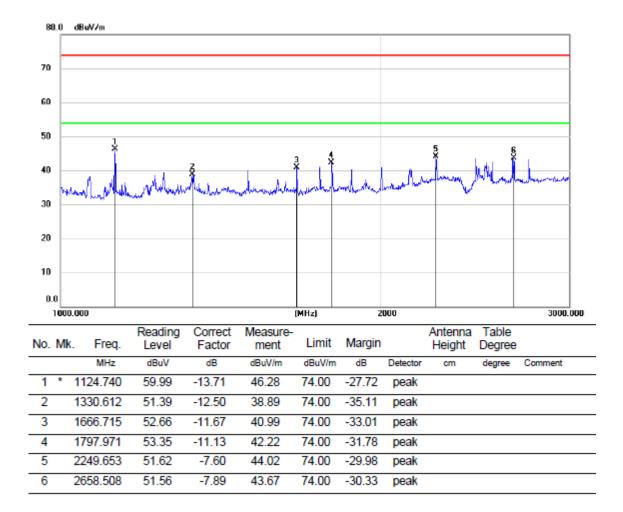
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).

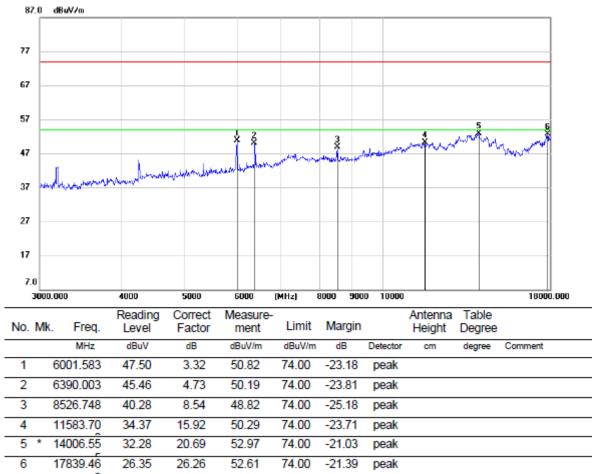
5. For transmit duration, please refer to clause 7.1.

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#### HARMONICS AND SPURIOUS EMISSIONS (CHANNEL11, VERTICAL)

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2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

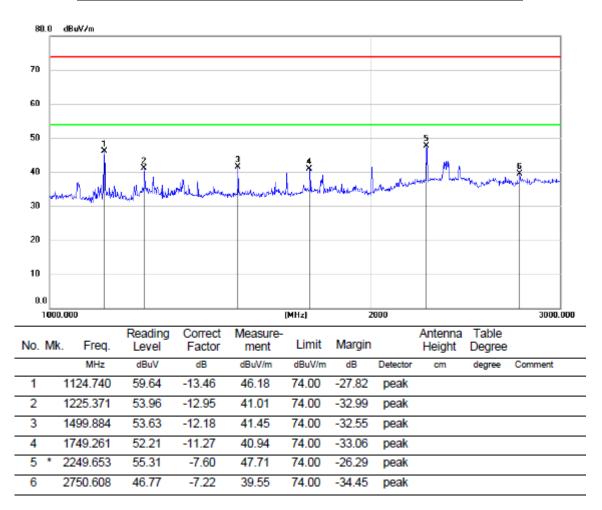
4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).

5. For transmit duration, please refer to clause 7.1.

Note: All the antennas had been tested, but only the worst data record in the report.

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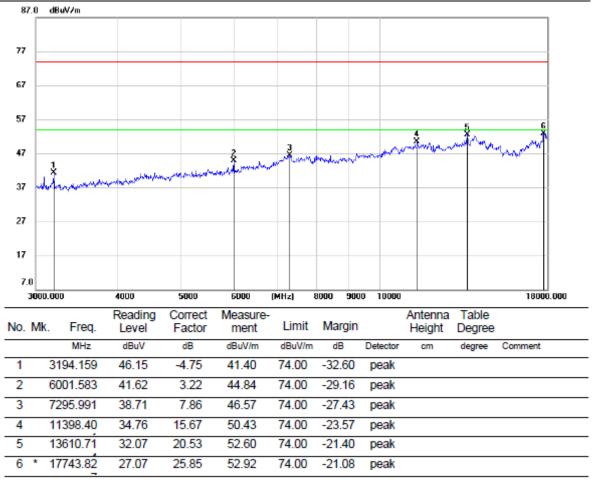
## 8.2.3. 802.11n20 MODE



#### 3TX Mode (WORST-CASE CONFIGURATION)

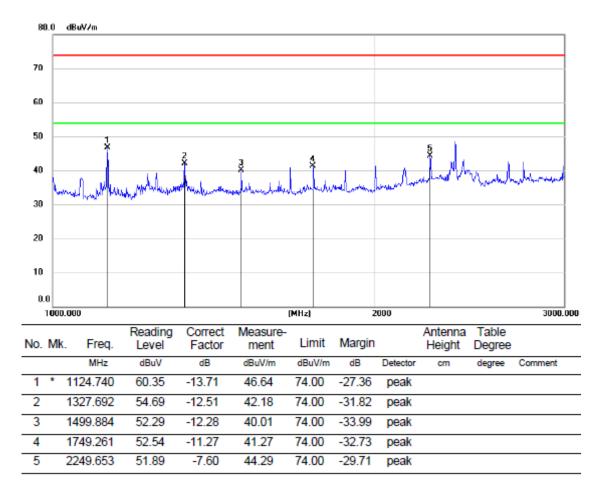
### HARMONICS AND SPURIOUS EMISSIONS (CHANNEL1, HORIZONTAL)

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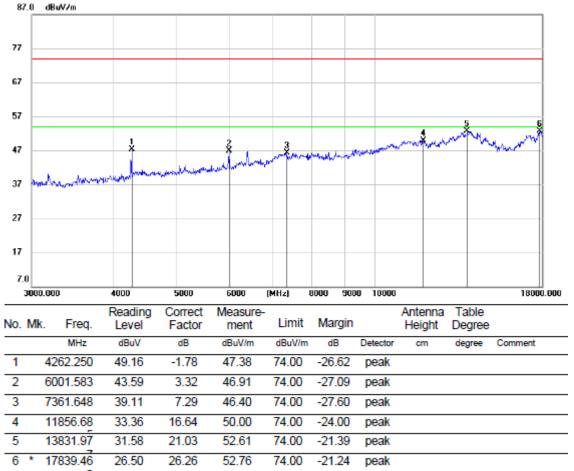
- Note: 1. Measurement = Reading Level + Correct Factor.
  - 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
  - 3. Peak: Peak detector.
  - 4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).
  - 5. For transmit duration, please refer to clause 7.1.

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#### HARMONICS AND SPURIOUS EMISSIONS (CHANNEL1, VERTICAL)

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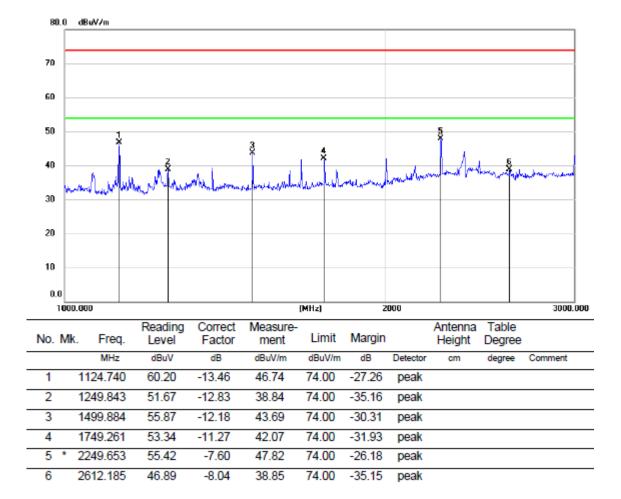


If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).

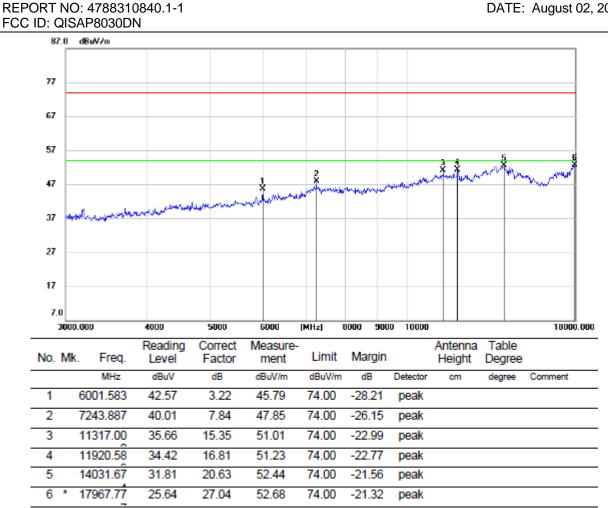
5. For transmit duration, please refer to clause 7.1.

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#### HARMONICS AND SPURIOUS EMISSIONS (CHANNEL6, HORIZONTAL)

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2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

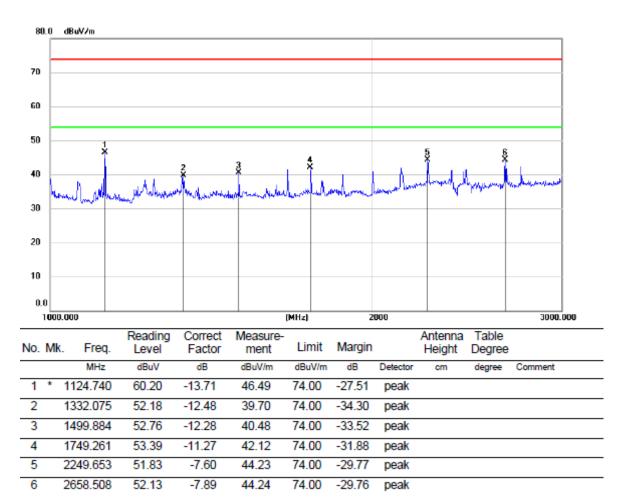
3. Peak: Peak detector.

4. AVG:VBW=1/T, (For the value of 1/T, please refer to the table on page 17).

5. For transmit duration, please refer to clause 7.1.

DATE: August 02, 2018

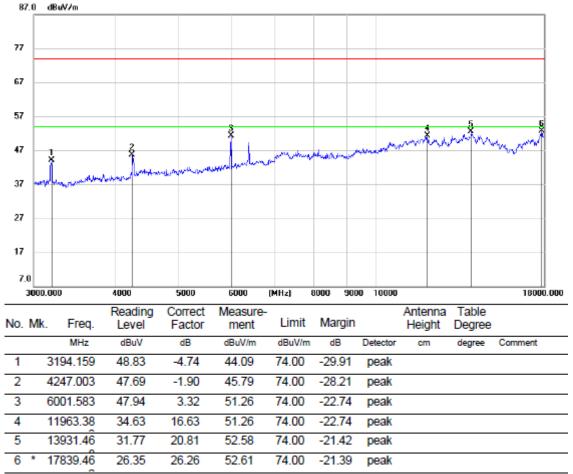
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#### HARMONICS AND SPURIOUS EMISSIONS (CHANNEL6, VERTICAL)

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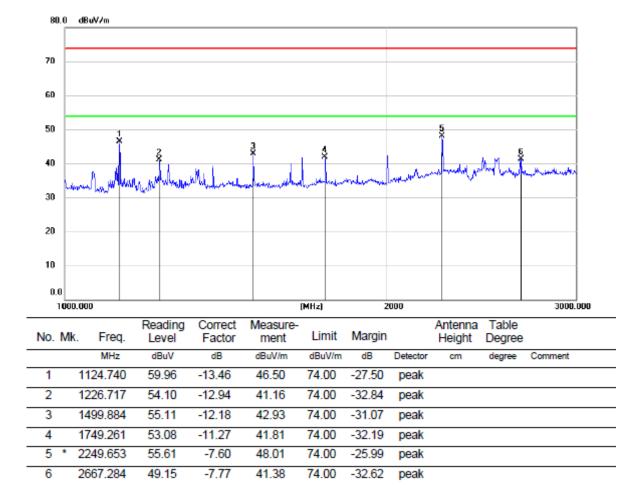


If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).

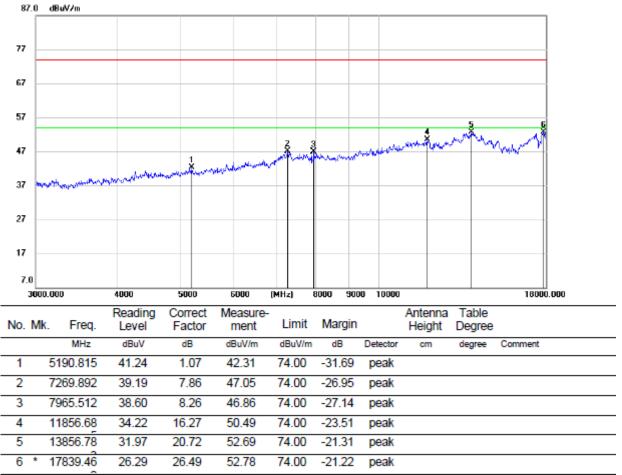
5. For transmit duration, please refer to clause 7.1.

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#### HARMONICS AND SPURIOUS EMISSIONS (CHANNEL11, HORIZONTAL)

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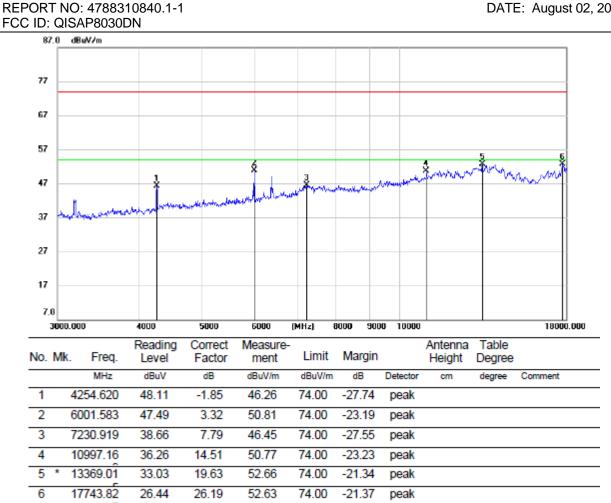
If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

- 4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).
- 5. For transmit duration, please refer to clause 7.1.

#### 80.0 dBuV/m 70 60 50 5 3 40 30 20 10 0.0 1000.000 (MHz) 2000 3000.000 Reading Correct Measure-Antenna Table Limit Margin No. Mk. Freq. Level Factor ment Height Degree MHz dBuV dB dBuV/m dBuV/m dB Detector cm degree Comment \* 1 1124.740 60.61 -13.71 46.90 74.00 -27.10 peak 2 1226.717 55.11 -12.9442.17 74.00 -31.83 peak 3 1330.612 53.91 -12.50 41.41 74.00 -32.59 peak 4 1749.261 53.41 -11.27 42.14 74.00 -31.86 peak 5 2249.653 52.45 -7.60 44.85 74.00 -29.15 peak 6 2750.608 49.48 -7.32 42.16 74.00 -31.84 peak

#### HARMONICS AND SPURIOUS EMISSIONS (CHANNEL11, VERTICAL)

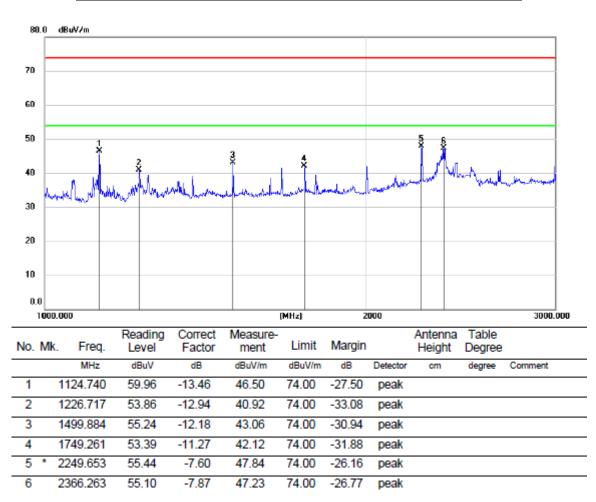
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- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak: Peak detector.
- 4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).
- 5. For transmit duration, please refer to clause 7.1.

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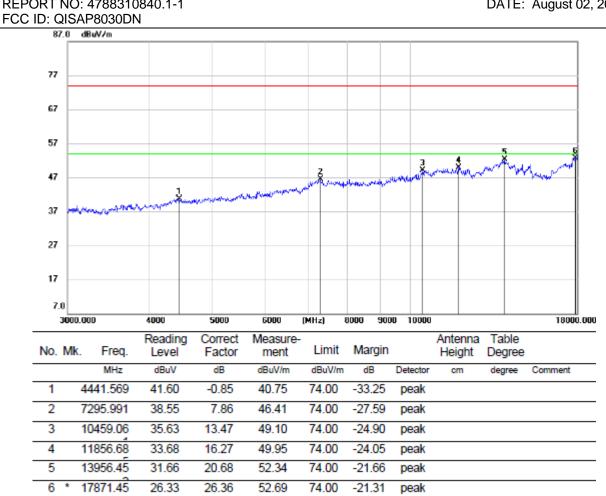
## 8.2.4. 802.11n40 MODE



#### 3TX Mode (WORST-CASE CONFIGURATION)

#### HARMONICS AND SPURIOUS EMISSIONS (CHANNEL3, HORIZONTAL)

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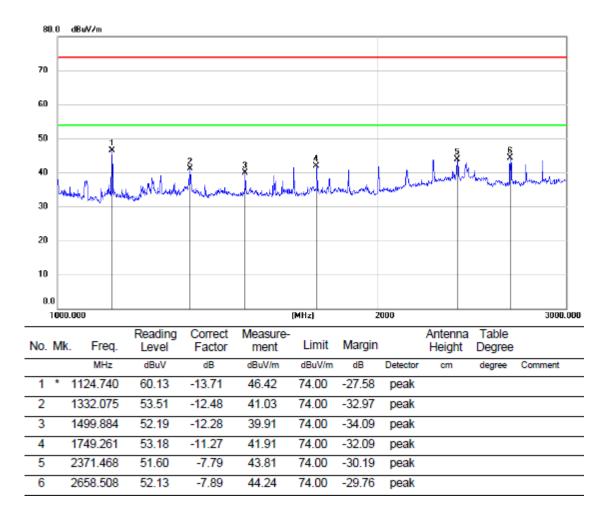
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit. 3. Peak: Peak detector.

4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).

5. For transmit duration, please refer to clause 7.1.

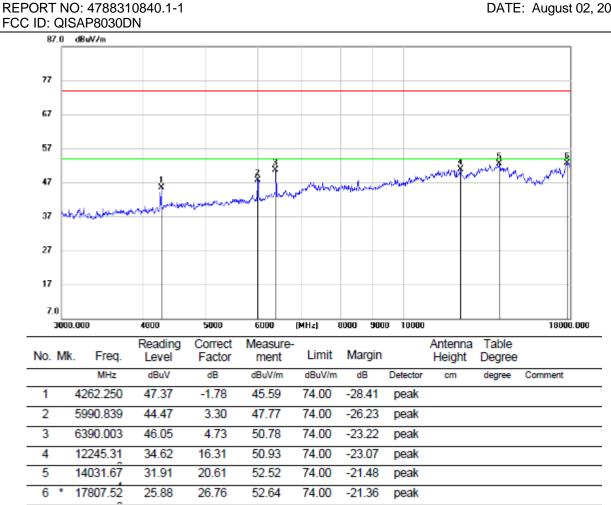
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#### HARMONICS AND SPURIOUS EMISSIONS (CHANNEL3, VERTICAL)

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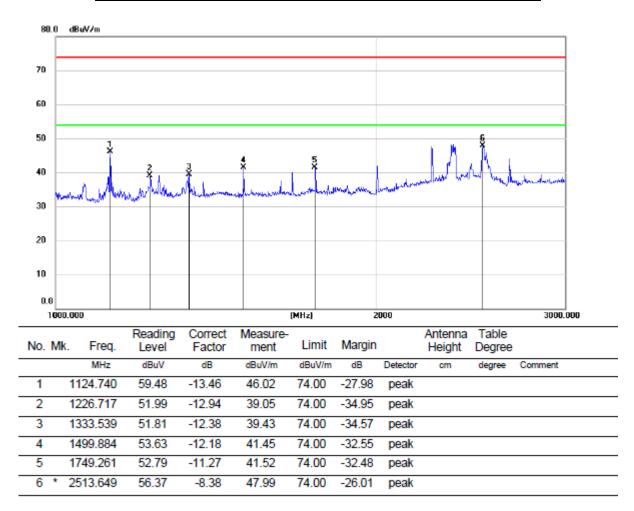
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).

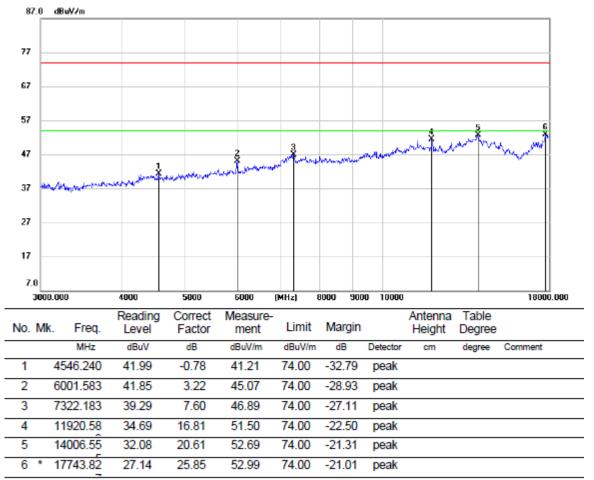
5. For transmit duration, please refer to clause 7.1.

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#### HARMONICS AND SPURIOUS EMISSIONS (CHANNEL6, HORIZONTAL)

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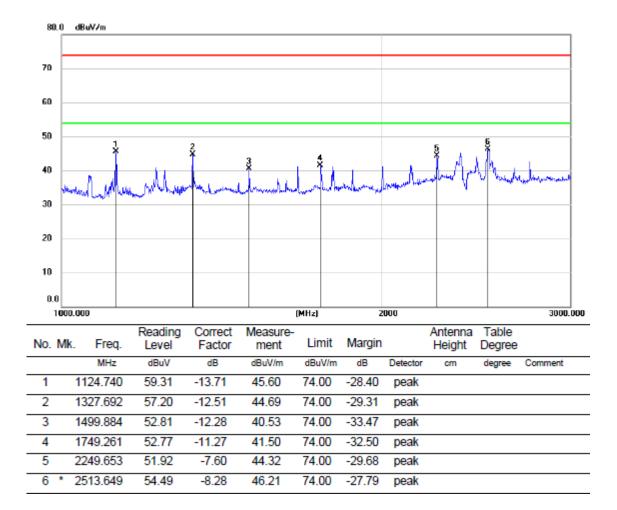


If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).

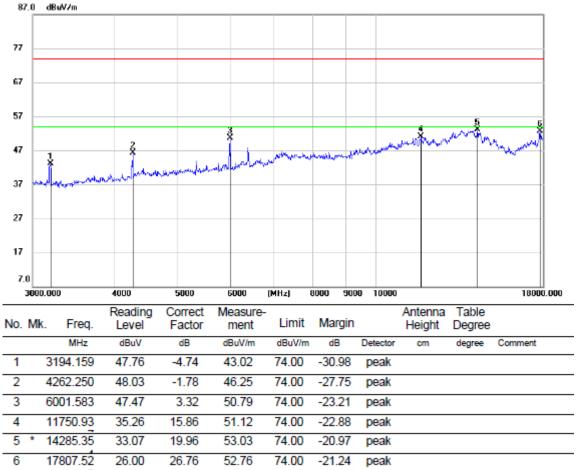
5. For transmit duration, please refer to clause 7.1.

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#### HARMONICS AND SPURIOUS EMISSIONS (CHANNEL6, VERTICAL)

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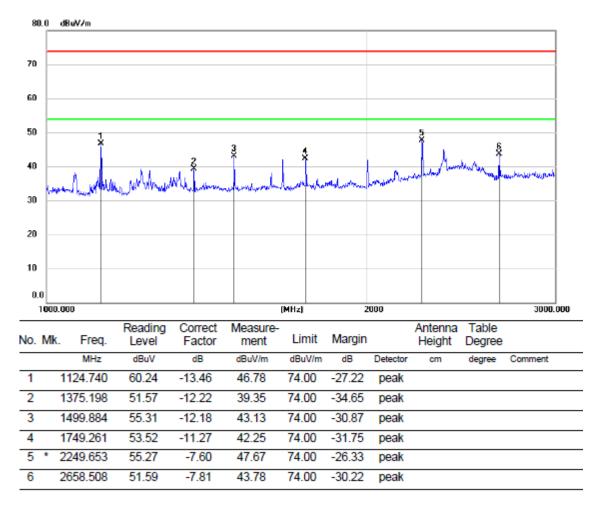


If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 Peak: Peak detector.

4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).

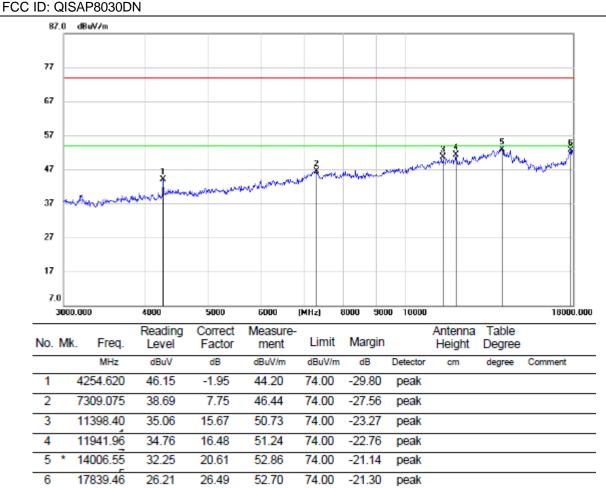
5. For transmit duration, please refer to clause 7.1.

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#### HARMONICS AND SPURIOUS EMISSIONS (CHANNEL9, HORIZONTAL)

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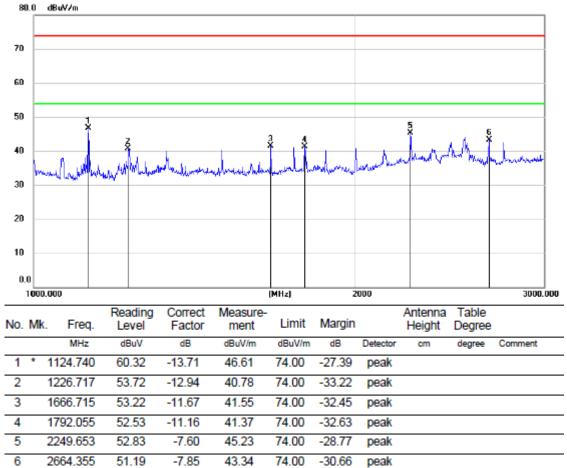


- 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Peak: Peak detector.

REPORT NO: 4788310840.1-1

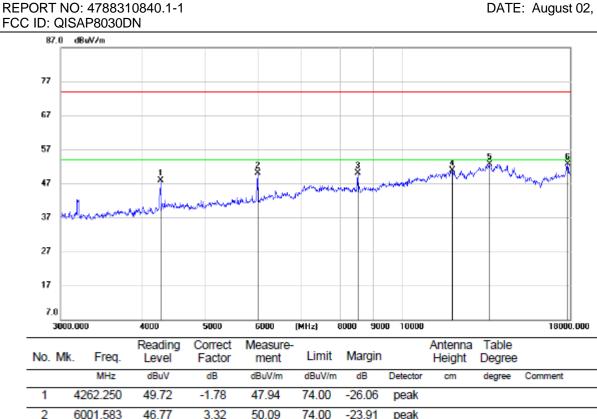
- 4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).
- 5. For transmit duration, please refer to clause 7.1.

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#### HARMONICS AND SPURIOUS EMISSIONS (CHANNEL9, VERTICAL)

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2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

74.00

74.00

74.00

74.00

-23.80

-23.03

-21.37

-21.39

peak

peak

peak

peak

3. Peak: Peak detector.

3

4

5

6

\*

8526.748

11899.24

13586.34

17839.46

- 4. AVG:VBW=1/T,(For the value of 1/T,please refer to the table on page 17).
- 5. For transmit duration, please refer to clause 7.1.

8.54

16.64

20.51

26.26

50.20

50.97

52.63

52.61

41.66

34.33

32.12

26.35

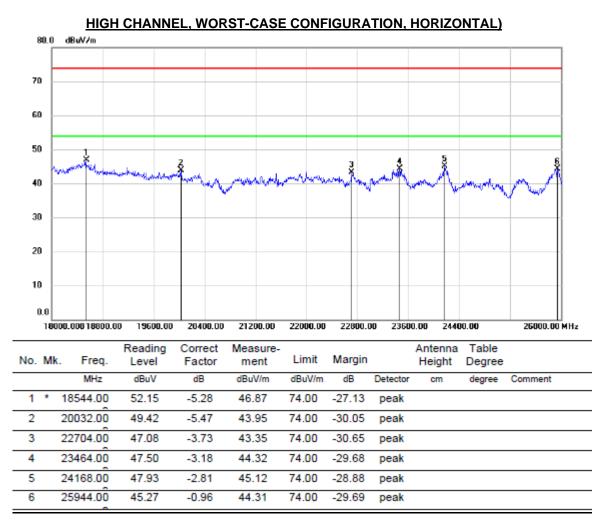
Note: All transmission modes and antennas were tested, but only the worst data was recorded in the report.

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# 8.3. SPURIOUS EMISSIONS (18~25GHz)

### 8.3.1. 802.11b MODE



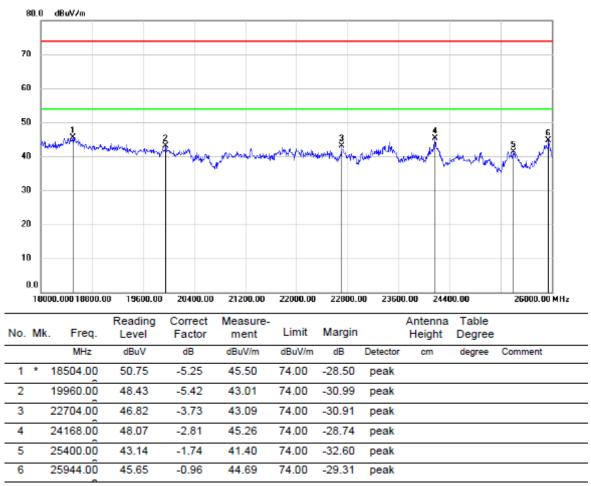
SPURIOUS EMISSIONS 3TX Mod,

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit. 3. Peak: Peak detector.

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#### SPURIOUS EMISSIONS (HIGH CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)



Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Peak: Peak detector.

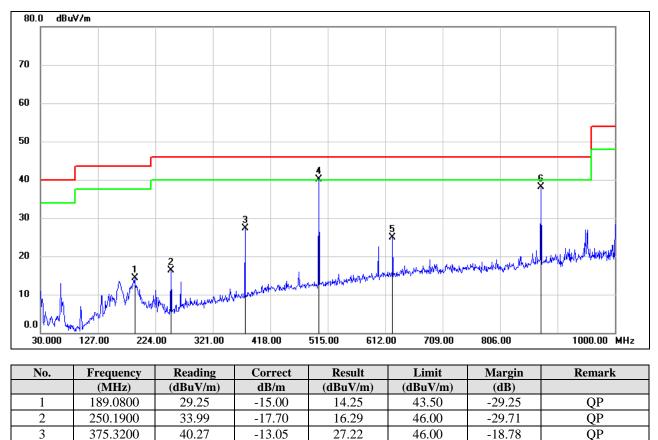
Note: All transmission modes and channels had been tested, but only the worst data recorded in the report.

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## 8.4. SPURIOUS EMISSIONS (30M ~ 1 GHz)

### 8.4.1. 802.11b MODE

### SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, HORIZONTAL)



4 500.4500 51.25 -11.11 40.14 46.00 -5.86 QP 33.79 24.99 5 624.6100 -8.80 46.00 -21.01 QP 6 874.8700 43.89 -5.70 38.19 46.00 -7.81 QP

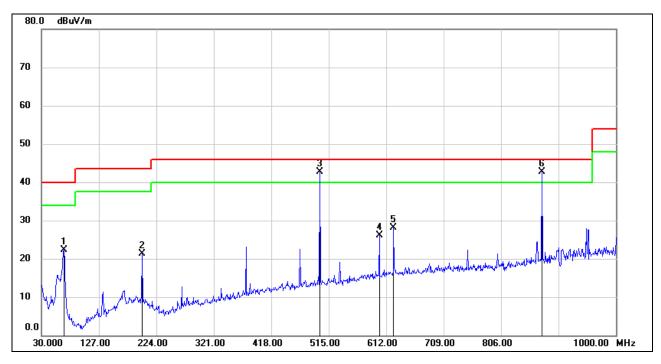
Note: 1. Result Level = Read Level + Correct Factor.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

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No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	( <b>dB</b> )	
1	67.8300	43.97	-21.59	22.38	40.00	-17.62	QP
2	199.7500	36.19	-14.88	21.31	43.50	-22.19	QP
3	500.4500	53.81	-11.11	42.70	46.00	-3.30	QP
4	600.3600	35.17	-9.01	26.16	46.00	-19.84	QP
5	624.6100	36.95	-8.80	28.15	46.00	-17.85	QP
6	874.8700	48.42	-5.70	42.72	46.00	-3.28	QP

Note: 1. Result Level = Read Level + Correct Factor.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto

Note: All transmission modes and channels had been tested, but only the worst data recorded in the report.

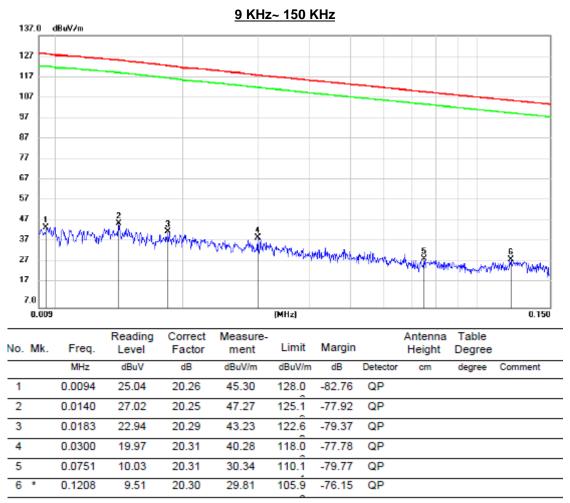
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### 8.5. SPURIOUS EMISSIONS BELOW 30M

### 8.5.1. 802.11b MODE

#### SPURIOUS EMISSIONS (Without 3TX MODE, LOW CHANNEL,

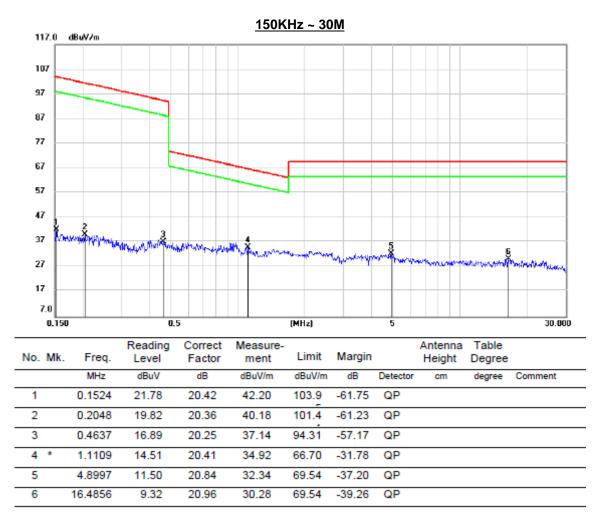
#### WORST-CASE CONFIGURATION, HORIZONTAL)



Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

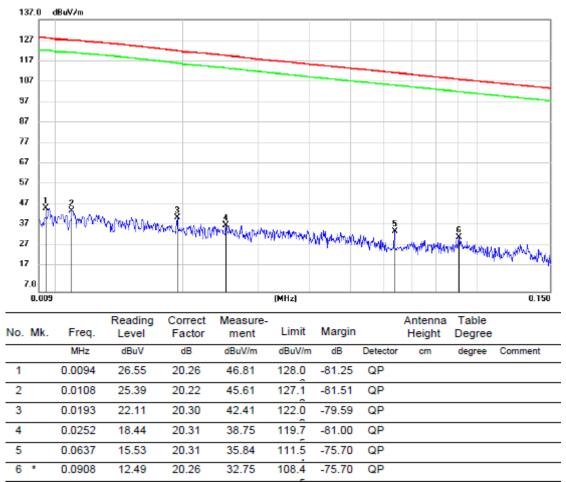
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2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

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#### SPURIOUS EMISSIONS (LOW CHANNEL, WORST-CASE CONFIGURATION, VERTICAL)



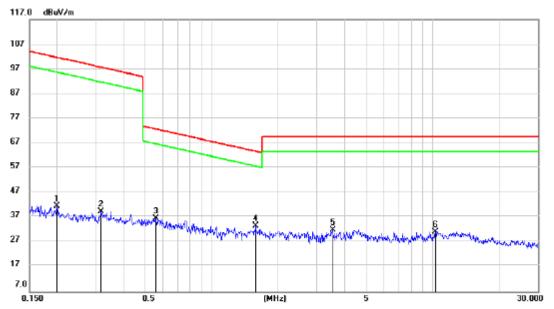
<u>9KHz~ 150KHz</u>

Note: 1. Measurement = Reading Level + Correct Factor.

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

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No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Margin		Antenna Height	Table Degree	
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	0.1995	21.27	20.37	41.64	101.6	-59.96	QP			
2	0.3165	18.99	20.30	39.29	97.65	-58.36	QP			
3	0.5581	16.22	20.26	36.48	72.71	-36.23	QP			
4 *	1.5766	12.91	20.58	33.49	63.65	-30.16	QP			
5	3.5278	10.89	20.98	31.87	69.54	-37.67	QP			
6	10.2873	10.13	21.05	31.18	69.54	-38.36	QP			

2. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.

Note: All transmission modes and channels had been tested, but only the worst data recorded in the report.

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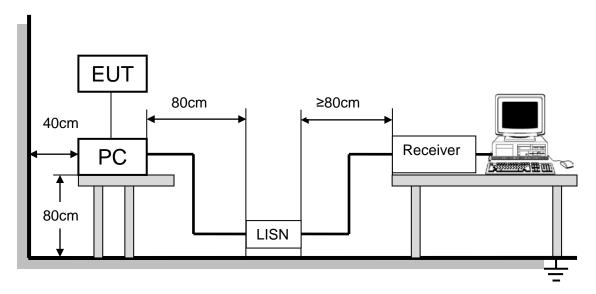
# 9. AC POWER LINE CONDUCTED EMISSIONS

### LIMITS

Please refer to FCC §15.207 (a) and RSS-Gen Clause 8.8.

FREQUENCY (MHz)	Class A	(dBuV)	Class B (dBuV)		
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	
0.50 -5.0	73.00	60.00	56.00	46.00	
5.0 -30.0	73.00	60.00	60.00	50.00	

### TEST SETUP AND PROCEDURE

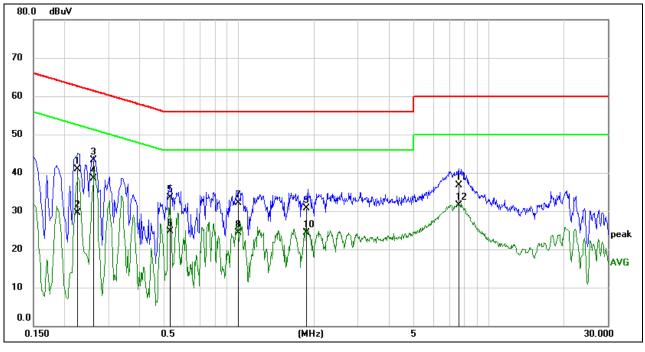


The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI Measurement Receiver (R&S Test Receiver ESR3) is used to test the emissions from both sides of AC line. According to the requirements in Section 6.2 of ANSI C63.10 -2013.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode. The bandwidth of EMI test receiver is set at 9kHz.

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application.

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### 9.1.1. 802.11b MODE



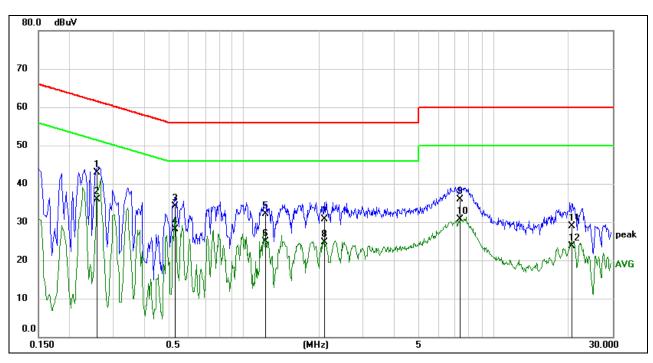
### LINE N RESULTS (LOW CHANNEL, WORST-CASE CONFIGURATION)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	( <b>dB</b> )	
1	0.2261	31.33	9.63	40.96	62.59	-21.63	QP
2	0.2261	19.79	9.63	29.42	52.59	-23.17	AVG
3	0.2597	33.63	9.63	43.26	61.44	-18.18	QP
4	0.2597	28.83	9.63	38.46	51.44	-12.98	AVG
5	0.5326	23.95	9.63	33.58	56.00	-22.42	QP
6	0.5326	15.12	9.63	24.75	46.00	-21.25	AVG
7	0.9895	22.42	9.64	32.06	56.00	-23.94	QP
8	0.9895	14.62	9.64	24.26	46.00	-21.74	AVG
9	1.8643	20.99	9.66	30.65	56.00	-25.35	QP
10	1.8643	14.62	9.66	24.28	46.00	-21.72	AVG
11	7.6230	26.85	9.84	36.69	60.00	-23.31	QP
12	7.6230	21.58	9.84	31.42	50.00	-18.58	AVG

Note: 1. Result = Reading +Correct Factor.

- 2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
- 4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

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### LINE L RESULTS (LOW CHANNEL, WORST-CASE CONFIGURATION)

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	( <b>dB</b> )	
1	0.2577	33.33	9.63	42.96	61.51	-18.55	QP
2	0.2577	26.24	9.63	35.87	51.51	-15.64	AVG
3	0.5326	24.53	9.63	34.16	56.00	-21.84	QP
4	0.5326	18.48	9.63	28.11	46.00	-17.89	AVG
5	1.2129	22.45	9.64	32.09	56.00	-23.91	QP
6	1.2129	15.19	9.64	24.83	46.00	-21.17	AVG
7	2.0905	21.05	9.65	30.70	56.00	-25.30	QP
8	2.0905	15.03	9.65	24.68	46.00	-21.32	AVG
9	7.3838	26.06	9.81	35.87	60.00	-24.13	QP
10	7.3838	20.87	9.81	30.68	50.00	-19.32	AVG
11	20.5254	19.02	9.90	28.92	60.00	-31.08	QP
12	20.5254	13.80	9.90	23.70	50.00	-26.30	AVG

Note: 1. Result = Reading +Correct Factor.

- 2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
- 3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
- 4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

Note: All transmission modes and channels had been tested, but only the worst data recorded in the report.

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# **10. ANTENNA REQUIREMENTS**

### **APPLICABLE REQUIREMENTS**

#### Please refer to FCC §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 replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

#### Please refer to FCC §15.247(b)(4)

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### **ANTENNA CONNECTOR**

EUT has an external antenna with antenna connector, it will be installed in a specific environment and users cannot change the antenna.

#### **ANTENNA GAIN**

The antenna gain of EUT is greater than 6 dBi.

# **END OF REPORT**

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