

### ABOVE 1G



The setting of the spectrum analyser

RBW	1M
VBW	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 average measurements. For the Duty Cycle please refer to clause 8.1.ON TIME AND DUTY CYCLE.





Note 1: 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.

Note 2: The EUT was fully exercised with external accessories during the test. In the case of multiple accessory external ports, an external accessory shall be connected to one of each type of port.

#### **TEST ENVIRONMENT**

Temperature	25°C	Relative Humidity	58%
Atmosphere Pressure	101kPa	Test Voltage	DC 12.0V



### 9.1. RESTRICTED BANDEDGE

### 9.1.1. 802.11b MODE

#### Antenna1+Antenna2 TX MODE (WORST-CASE CONFIGURATION)



#### **RESTRICTED BANDEDGE (LOW CHANNEL)**

	NO.	Frequency	Result	Limit	Margin	Remark
		(MHz)	(dBuV/m)	(dBuV/m)	(dB)	
	1 0005 4040	52.33	74.00	-21.67	Peak	
1	I	2323.4913	39.03	54.00	-14.97	Average
0	0000 0000	53.99	74.00	-20.01	Peak	
	2	2390.0000	40.98	54.00	-13.02	Average

- Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
  - 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
  - 3. AVG: VBW=1/Ton where: Ton is transmit duration.
  - 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.
  - 5. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
  - 6. For all the test results have been considered the correct factors.

Test Mode	Channel	Polarization	Verdict
11B SISO	LCH	Vertical	PASS



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	
1	2341.4725	53.30	74.00	-20.70	Peak
1		39.76	54.00	-14.24	Average
2	2200.0000	55.84	74.00	-18.16	Peak
2	2390.0000	40.98	54.00	-13.02	Average

- Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit. 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
  - 3. AVG: VBW=1/Ton where: Ton is transmit duration.
  - 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.
  - 5. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
  - 6. For all the test results have been considered the correct factors.





#### **RESTRICTED BANDEDGE (HIGH CHANNEL)**

No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	
1	1 2483.5000	54.28	74.00	-19.72	Peak
I		40.44	54.00	-13.56	Average
0	2500 2105	54.09	74.00	-19.91	Peak
2	2590.3195	40.66	54.00	-13.34	Average

- Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
  - 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
  - 3. AVG: VBW=1/Ton where: Ton is transmit duration.
  - 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.
  - 5. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
  - 6. For all the test results have been considered the correct factors.



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.5000	54.22	74.00	-19.78	Peak
I		40.52	54.00	-13.48	Average
2	2541 2400	53.93	74.00	-20.07	Peak
2	2041.2409	40.16	54.00	-13.84	Average

- Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit. 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
  - 3. AVG: VBW=1/Ton where: Ton is transmit duration.
  - 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.
  - 5. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
  - 6. For all the test results have been considered the correct factors.



### 9.1.2. 802.11g MODE

#### Antenna1+Antenna2 MODE (WORST-CASE CONFIGURATION)



#### **RESTRICTED BANDEDGE (LOW CHANNEL)**

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.
- 5. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 6. For all the test results have been considered the correct factors.



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	
1	1 2364.8645	54.73	74.00	-19.27	Peak
1		41.10	54.00	-12.90	Average
2	2 2390.0000	55.13	74.00	-18.87	Peak
2		41.68	54.00	-12.32	Average

- Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit. 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
  - 3. AVG: VBW=1/Ton where: Ton is transmit duration.
  - 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.
  - 5. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
  - 6. For all the test results have been considered the correct factors.

#### RESTRICTED BANDEDGE (HIGH CHANNEL)



- Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
  - 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
  - 3. AVG: VBW=1/Ton where: Ton is transmit duration.
  - 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.
  - 5. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
  - 6. For all the test results have been considered the correct factors.



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.5000	57.16	74.00	-16.84	Peak
I		43.36	54.00	-10.64	Average
0 0547 0000	2547 2000	56.19	74.00	-17.81	Peak
Z	2047.3990	41.78	54.00	-12.22	Average

- Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit. 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
  - 3. AVG: VBW=1/Ton where: Ton is transmit duration.
  - 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.
  - 5. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
  - 6. For all the test results have been considered the correct factors.

### 9.1.3. 802.11n HT20 MODE

#### Antenna1+Antenna2 MODE (WORST-CASE CONFIGURATION)



#### **RESTRICTED BANDEDGE (LOW CHANNEL)**

			41.50	54.00	-12.44	Average	
2		55.49	74.00	-18.51	Peak		
	Z	2390.0000	42.19	54.00	-11.81	Average	

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.
- 5. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 6. For all the test results have been considered the correct factors.



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	
1	2350.8156	55.97	74.00	-18.03	Peak
I		41.98	54.00	-12.02	Average
2	0 0000 0000	56.54	74.00	-17.46	Peak
2	2390.0000	42.61	54.00	-11.39	Average

- Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit. 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
  - 3. AVG: VBW=1/Ton where: Ton is transmit duration.
  - 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.
  - 5. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
  - 6. For all the test results have been considered the correct factors.

#### **RESTRICTED BANDEDGE (HIGH CHANNEL)**



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.5000	57.68	74.00	-16.32	Peak
		43.24	54.00	-10.76	Average
0 05	2541 0294	55.65	74.00	-18.35	Peak
2	2041.9204	41.73	54.00	-12.27	Average

- Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
  - 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
  - 3. AVG: VBW=1/Ton where: Ton is transmit duration.
  - 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.
  - 5. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
  - 6. For all the test results have been considered the correct factors.



No. Frequency		Result Limit		Margin	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	
1	2492 5000	56.94	74.00	-17.06	Peak
I	2463.3000	43.12	54.00	-10.88	Average
2	2549 2056	55.64	74.00	-18.36	Peak
Z	2040.0900	41.79	54.00	-12.21	Average

- Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit. 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
  - 3. AVG: VBW=1/Ton where: Ton is transmit duration.
  - 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.
  - 5. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
  - 6. For all the test results have been considered the correct factors.

### 9.1.4. 802.11n HT40 MODE

#### Antenna1+Antenna2 MODE (WORST-CASE CONFIGURATION)



#### **RESTRICTED BANDEDGE (LOW CHANNEL)**

		(MHz)	(dBuV/m)	(dBuV/m)	(dB)	
	1	2333.6346	53.96	74.00	-20.04	Peak
	I		40.71	54.00	-13.29	Average
	C	2390.0000	56.95	74.00	-17.05	Peak
	Z		42.60	54.00	-11.40	Average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.
- 5. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 6. For all the test results have been considered the correct factors.



No.	Frequency	Result Limit		Margin	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	
1	2225 1070	54.61	74.00	-19.39	Peak
I	2323.1070	40.94	54.00	-13.06	Average
2	2200,0000	57.14	74.00	-16.86	Peak
2	2390.0000	43.46	54.00	-10.54	Average

- Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit. 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
  - 3. AVG: VBW=1/Ton where: Ton is transmit duration.
  - 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.
  - 5. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
  - 6. For all the test results have been considered the correct factors.

#### **RESTRICTED BANDEDGE (HIGH CHANNEL)**



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	
1	2482 5000	57.97	74.00	-16.03	Peak
	2403.5000	43.98	54.00	-10.02	Average
2	2569 5014	55.60	74.00	-18.40	Peak
2	2506.5014	41.91	54.00	-12.09	Average

- Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
  - 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
  - 3. AVG: VBW=1/Ton where: Ton is transmit duration.
  - 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.
  - 5. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
  - 6. For all the test results have been considered the correct factors.



ſ	No. Frequency (MHz)		Result	Result Limit		Remark
			(dBuV/m)	(dBuV/m)	(dB)	
	1	2492 5000	56.91	74.00	-17.09	Peak
	I	2403.3000	43.09	54.00	-10.91	Average
ſ	0	2539.0445	55.61	74.00	-18.39	Peak
	2		41.64	54.00	-12.36	Average

- Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit. 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
  - 3. AVG: VBW=1/Ton where: Ton is transmit duration.
  - 4. Only the worst case emission was recorded, if it complies with the limit, the other emissions deemed to comply with the limit.
  - 5. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
  - 6. For all the test results have been considered the correct factors.



# 9.2. SPURIOUS EMISSIONS (1~18GHz)

### 9.2.1. 802.11b MODE

#### Antenna1+Antenna2 MODE (WORST-CASE CONFIGURATION)

#### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL)



No	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Pomark
NO.	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Renark
1	1394.1314	41.38	74.00	-32.62			Peak
2	1795.5985	42.67	74.00	-31.33			Peak
3	3032.5054	44.87	74.00	-29.13			Peak
4	4060.1767	46.28	74.00	-27.72			Peak
5	8005.8343	50.73	74.00	-23.27			Peak
6	1394.1314	41.38	74.00	-32.62			Peak
7	17132.3205	54.42	74.00	-19.58			Peak
/		41.16			54.00	-12.84	Average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.

Test Mode	Channel	Polarization	Verdict
11B SISO	LCH	Vertical	PASS



No	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Pomork
NO.	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Kennark
1	1199.3998	41.86	74.00	-32.14			Peak
2	1794.9316	46.59	74.00	-27.41			Peak
3	3190.0317	46.44	74.00	-27.56			Peak
4	4822.8038	46.88	74.00	-27.12			Peak
5	8113.3522	49.81	74.00	-24.19			Peak
6	15000 5204	53.17	74.00	-20.83			Peak
0	15009.5304	39.26			54.00	-14.74	Average
7	47047 0440	56.15	74.00	-17.85			Peak
/	17047.3412	41.06			54.00	-12.94	Average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.



#### HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL)



No	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Pomork
NO.	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Remark
1	1394.1314	42.41	74.00	-31.59			Peak
2	1799.5999	44.40	74.00	-29.60			Peak
3	4212.7021	46.16	74.00	-27.84			Peak
4	8053.3422	49.85	74.00	-24.15			Peak
5	11511.4186	51.69	74.00	-22.31			Peak
6	17124.8839	54.76	74.00	-19.24			Peak
0		41.07			54.00	-12.93	Average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.





No	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Pomork
NO.	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Kennark
1	1798.2661	44.51	74.00	-29.49			Peak
2	3187.5313	46.29	74.00	-27.71			Peak
3	4532.7555	47.04	74.00	-26.96			Peak
4	6283.0472	48.44	74.00	-25.56			Peak
5	11618.9365	52.23	74.00	-21.77			Peak
6	16947.2936	54.72	74.00	-19.28			Peak
0		41.65			54.00	-12.35	Average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.



#### HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL)



No	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Pomark
NO.	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Kennark
1	1395.4652	41.53	74.00	-32.47		-	Peak
2	1800.2668	43.76	74.00	-30.24		-	Peak
3	3950.1584	45.82	74.00	-28.18		-	Peak
4	6348.0580	48.47	74.00	-25.53		-	Peak
5	11836.4727	52.27	74.00	-21.73		-	Peak
6	15251 0050	53.74	74.00	-20.26			Peak
0	15251.9950	40.12			54.00	-13.88	Average
7	17152.3587	54.80	74.00	-19.20			Peak
/		41.04			54.00	-12.96	Average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.





No	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Domork
NO.	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Remark
1	1198.0660	40.93	74.00	-33.07			Peak
2	1796.2654	44.12	74.00	-29.88		-	Peak
3	4592.7655	46.88	74.00	-27.12		-	Peak
4	6803.1339	48.68	74.00	-25.32		-	Peak
5	11576.4294	52.15	74.00	-21.85		-	Peak
6	16739.74	53.63	74.00	-20.37			Peak
0		40.11			54.00	-13.89	Average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.



## 9.2.2. 802.11g MODE

#### Antenna1+Antenna2 MODE (WORST-CASE CONFIGURATION)



#### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL)

No.	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Pomork
	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Kennark
1	1400.1334	42.46	74.00	-31.54			Peak
2	1798.2661	42.28	74.00	-31.72			Peak
3	4015.1692	46.26	74.00	-27.74			Peak
4	8115.8526	49.19	74.00	-24.81			Peak
5	11581.4302	52.98	74.00	-21.02			Peak
6	16022 2572	54.78	74.00	-19.22			Peak
0	10932.3373	41.37			54.00	-12.63	Average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.





No.	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Pomark
	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Kennark
1	1120.0400	40.30	74.00	-33.70			Peak
2	1793.5979	44.37	74.00	-29.63		-	Peak
3	3192.5321	46.20	74.00	-27.80		-	Peak
4	5645.4409	47.39	74.00	-26.61		-	Peak
5	11421.4036	51.56	74.00	-22.44		-	Peak
6	16020 9465	54.79	74.00	-19.21			Peak
0	10929.0403	41.24			54.00	-12.76	Average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.



#### HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL)



No.	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Pomork
	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Kennark
1	1400.1334	41.65	74.00	-32.35			Peak
2	1793.5979	43.63	74.00	-30.37			Peak
3	4400.2334	46.23	74.00	-27.77			Peak
4	6280.5468	48.83	74.00	-25.17			Peak
5	11568.9282	51.67	74.00	-22.33			Peak
6	16022 2706	55.34	74.00	-18.66			Peak
0	10922.2700	40.91			54.00	-13.09	Average

Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.

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No.	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Pomark
	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Kemark
1	1194.7316	41.10	74.00	-32.90			Peak
2	1798.2661	43.82	74.00	-30.18			Peak
3	4382.7305	46.47	74.00	-27.53			Peak
4	8078.3464	49.45	74.00	-24.55			Peak
5	11561.4269	51.90	74.00	-22.10			Peak
6	14550 4400	52.51	74.00	-21.49			Peak
0	14559.4490	39.09			54.00	-14.91	Average
7	17100 9666	55.03	74.00	-18.97			Peak
/	17 199.0000	40.93			54.00	-13.07	Average

- Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
  - 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
  - 3. AVG: VBW=1/Ton where: Ton is transmit duration.
  - 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
  - 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
  - 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.



#### HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL)



- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.





No.	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Pomark
	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Remark
1	1792.9310	45.56	74.00	-28.44			Peak
2	3765.1275	46.23	74.00	-27.77			Peak
3	6333.0555	48.47	74.00	-25.53			Peak
4	8003.3339	50.00	74.00	-24.00			Peak
5	11513.9190	52.94	74.00	-21.06			Peak
6	14401 0221	53.29	74.00	-20.71			Peak
0	14401.9521	39.58			54.00	-14.42	Average
7	47000 0050	55.40	74.00	-18.60			Peak
/	17009.9350	41.65			54.00	-12.35	Average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.

### 9.2.3. 802.11n HT20 MODE

#### Antenna1+Antenna2 TX MODE (WORST-CASE CONFIGURATION)



#### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL)

No.	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Pomork
	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Kemark
1	1397.4658	41.07	74.00	-32.93			Peak
2	1793.5979	45.38	74.00	-28.62			Peak
3	3617.6029	45.93	74.00	-28.07			Peak
4	5005.3342	46.62	74.00	-27.38			Peak
5	7828.3047	50.08	74.00	-23.92			Peak
6	14100 2412	56.15	74.00	-17.85			Peak
0	14109.3413	42.43			54.00	-11.57	Average
7	17000 0202	57.28	74.00	-16.72			Peak
	17029.0303	42.84			54.00	-11.16	Average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.





No.	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Pomark
	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Kemark
1	1196.0654	41.12	74.00	-32.88			Peak
2	1799.5999	43.95	74.00	-30.05			Peak
3	3495.0825	45.89	74.00	-28.11			Peak
4	5787.9647	48.00	74.00	-26.00			Peak
5	7923.3206	50.14	74.00	-23.86			Peak
6	14004 2749	56.33	74.00	-17.67			Peak
0	14004.3746	42.50			54.00	-11.50	Average
7	47040 4054	54.47	74.00	-19.53			Peak
/	17012.4304	41.93			54.00	-12.07	Average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.



#### HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL)



No.	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Pomark
	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Kemark
1	1396.1320	40.68	74.00	-33.32		-	Peak
2	1794.2648	41.85	74.00	-32.15		-	Peak
3	3545.0908	45.50	74.00	-28.50		-	Peak
4	6160.5268	48.61	74.00	-25.39		-	Peak
5	11543.9240	52.32	74.00	-21.68		-	Peak
6	14001 0017	56.70	74.00	-17.30			Peak
0	14021.0017	42.56			54.00	-11.44	Average
-	47004 0005	55.78	74.00	-18.22			Peak
/	17294.0020	42.63			54.00	-11.37	Average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.

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Test Mode	Channel	Polarization	Verdict
11N20MIMO	MCH	Vertical	PASS



No.	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Pomark
	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Kemark
1	1196.7322	40.43	74.00	-33.57			Peak
2	1797.5992	43.27	74.00	-30.73			Peak
3	3625.1042	45.50	74.00	-28.50			Peak
4	5662.9438	47.03	74.00	-26.97			Peak
5	11553.9257	52.05	74.00	-21.95			Peak
6	14074 2401	56.45	74.00	-17.55			Peak
0	14074.3401	42.25			54.00	-11.75	Average
7	47044.0400	55.37	74.00	-22.63			Peak
/	17044.0400	44.18			54.00	-9.82	Average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.



#### HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL)



No.	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Bomork
	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Kemark
1	1398.1327	41.41	74.00	-32.59			Peak
2	1796.9323	41.95	74.00	-32.05			Peak
3	4227.7046	47.08	74.00	-26.92			Peak
4	7998.3331	49.76	74.00	-24.24			Peak
5	11588.9315	52.58	74.00	-21.42			Peak
6	15277 0071	55.35	74.00	-18.65			Peak
0	15277.0071	41.99			54.00	-12.01	Average
7	17604 0242	54.98	74.00	-19.02			Peak
/	17004.9342	43.60			54.00	-10.40	Average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.





No.	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Pomark
	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Kemark
1	1198.0660	41.25	74.00	-32.75			Peak
2	1572.1907	42.78	74.00	-31.22			Peak
3	1794.9316	46.20	74.00	-27.80			Peak
4	3475.0792	46.80	74.00	-27.20			Peak
5	6218.0363	48.50	74.00	-25.50			Peak
6	12974 2946	55.24	74.00	-18.76			Peak
0	13074.2040	41.63			54.00	-12.37	Average
7	16010 9200	54.89	74.00	-23.11			Peak
/	10919.0200	43.13			54.00	-10.87	Average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.

### 9.2.1. 802.11n HT40 MODE

#### Antenna1+Antenna2 TX MODE (WORST-CASE CONFIGURATION)

#### HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL)



No	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Pomork
NO.	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Remark
1	1394.7983	41.69	74.00	-32.31			Peak
2	1798.9330	42.69	74.00	-31.31			Peak
3	3502.5838	45.61	74.00	-28.39			Peak
4	7988.3314	50.21	74.00	-23.79			Peak
5	11503.9173	51.49	74.00	-22.51			Peak
6	12004 2547	55.51	74.00	-18.49			Peak
0	13904.3347	42.22			54.00	-11.78	Average
7	17042 2404	55.89	74.00	-18.11			Peak
1	17042.3404	43.49			54.00	-10.51	Average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.

Test Mode	Channel	Polarization	Verdict
11N40MIMO	LCH	Vertical	PASS



No	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Pomark
NO.	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Remark
1	1194.0647	38.88	74.00	-35.12			Peak
2	1796.9323	43.61	74.00	-30.39			Peak
3	1990.3301	45.18	74.00	-28.82			Peak
4	3917.6529	45.79	74.00	-28.21			Peak
5	7923.3206	49.69	74.00	-24.31			Peak
6	12090 2090	56.00	74.00	-18.00			Peak
0	13909.3000	42.25			54.00	-11.75	Average
7	16042 2227	55.36	74.00	-22.64			Peak
/	10942.3237	43.39			54.00	-10.61	Average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.

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#### HARMONICS AND SPURIOUS EMISSIONS (MID CHANNEL)



No	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Pomork
NO.	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Remark
1	1394.1314	41.05	74.00	-32.95			Peak
2	1794.2648	42.61	74.00	-31.39			Peak
3	3527.5879	45.24	74.00	-28.76			Peak
4	6218.0363	48.91	74.00	-25.09			Peak
5	11656.4427	52.44	74.00	-21.56			Peak
6	14021 9106	56.06	74.00	-17.94			Peak
0	14021.0190	42.54			54.00	-11.46	Average
7	16052 2254	55.65	74.00	-18.35			Peak
/	10952.5254	43.75			54.00	-10.25	Average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.





No	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Pomark
NO.	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Remark
1	1197.3991	41.09	74.00	-32.91			Peak
2	1793.5979	43.55	74.00	-30.45			Peak
3	3632.6054	45.86	74.00	-28.14			Peak
4	7905.8176	50.04	74.00	-23.96			Peak
5	11516.4194	52.55	74.00	-21.45			Peak
6	12050 2020	55.10	74.00	-18.90			Peak
0 13039.2020	13039.2020	41.66			54.00	-12.34	Average
7	17157 2506	55.42	74.00	-18.58			Peak
/	17157.3590	43.04			54.00	-10.96	Average

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.



### HARMONICS AND SPURIOUS EMISSIONS (HIGH CHANNEL)



No	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Pomark	
NO.	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Remark	
1	1398.1327	42.80	74.00	-31.20			Peak	
2	1794.9316	42.57	74.00	-31.43			Peak	
3	3622.6038	44.95	74.00	-29.05			Peak	
4	7843.3072	49.94	74.00	-24.06			Peak	
5	12474.0790	53.53	74.00	-20.47			Peak	
6	15444 5500	56.20	74.00	-17.80			Peak	
6	15444.5502	42.10			54.00	-11.90	Average	
7	17610 0267	55.01	74.00	-21.99			Peak	
	17019.9307	42.47			54.00	-11.53	Average	

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. AVG: VBW=1/Ton where: Ton is transmit duration.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
- 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
- 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.





No	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Pomark
NO.	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	Remark
1	1196.0654	40.18	74.00	-33.82			Peak
2	1800.2668	44.57	74.00	-29.43			Peak
3	3902.6504	45.81	74.00	-28.19			Peak
4	8075.8460	49.63	74.00	-24.37			Peak
5	11428.9048	51.50	74.00	-22.50			Peak
0	1/15/ 2566	54.86	74.00	-19.14			Peak
0	14154.5500	41.59			54.00	-12.41	Average
0	17072 2454	54.35	74.00	-23.15			Peak
Э	17072.3434	42.72			54.00	-11.28	Average

- Note: 1. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
  - 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
  - 3. AVG: VBW=1/Ton where: Ton is transmit duration.
  - 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical.
  - 5. Filter losses were only considered in then spurious frequency bands and the authorized Band was not corrected for BRF losses.
  - 6. Proper operation of the transmitter prior to adding the filter to the measurement chain.



## 9.3. SPURIOUS EMISSIONS (18~25GHz)

### 9.3.1. 802.11G MODE

#### Antenna 1+Antenna 2 MODE (WORST-CASE CONFIGURATION)

#### SPURIOUS EMISSIONS (MID CHANNEL)

Test Mode	Channel	Polarization	Verdict
11G SISO	MCH	Horizontal	PASS



No.	Frequency	Result	Limit	Margin	Limit	Margin	Remark
			(Реак)	(Реак)	(Ave)	(Ave)	
	(MHz)	(dBuV	(dBuV/m)	(dB)	(dBuV/m)	(dB)	
		/m)					
1	18420.7921	45.89	74.00	-28.11	54.00	-8.11	peak
2	19603.2603	44.60	74.00	-29.40	54.00	-9.40	peak
3	21156.3656	44.54	74.00	-29.46	54.00	-9.46	peak
4	22014.1014	44.76	74.00	-29.24	54.00	-9.24	peak
5	23634.3634	43.13	74.00	-30.87	54.00	-10.87	peak
6	25652.4652	48.22	74.00	-25.78	54.00	-5.78	peak

- 2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
- 3. Peak: Peak detector.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical. Pre-testing all test modes and all test channels, but only data of the worst case is shown in this test report.

Test Mode	Channel	Polarization	Verdict
11G SISO	MCH	Vertical	PASS



No.	Frequency	Result	Limit (Peak)	Margin (Peak)	Limit (Ave)	Margin (Ave)	Remark
	(MHz)	(dBuV /m)	(dBuV/m)	(dB)	(dBuV/m)	(dB)	
1	18640.9641	45.57	74.00	-28.43	54.00	-8.43	peak
2	20467.7968	44.69	74.00	-29.31	54.00	-9.31	peak
3	22150.1150	44.50	74.00	-29.50	54.00	-9.50	peak
4	23570.6071	43.97	74.00	-30.03	54.00	-10.03	peak
5	24945.1945	47.14	74.00	-26.86	54.00	-6.86	peak
6	25725.5726	48.75	74.00	-25.25	54.00	-5.25	peak

2. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

- 3. Peak: Peak detector.
- 4. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical. Pre-testing all test modes and all test channels, but only data of the worst case is shown in this test report.



## 9.4. SPURIOUS EMISSIONS (0.03 ~ 1 GHz)

### 9.4.1. 802.11G MODE

#### Antenna 1+Antenna 2 MODE (WORST-CASE CONFIGURATION)

#### Test Mode Channel Polarization Verdict 11G SISO MCH Horizontal PASS FCC PART 15 C(Horizontal) 60 50 40 Level[dBµV/m] 30 20 10 0 30M 100M 1G QP Limit PK Frequency[Hz] QP Detector 0

#### SPURIOUS EMISSIONS (MID CHANNEL, HORIZONTAL)

No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)	
1	154.2491	32.14	43.50	-11.36	QP
2	215.2304	39.99	43.50	-3.51	QP
3	236.4422	42.94	46.00	-3.06	QP
4	297.9506	41.06	46.00	-4.94	QP
5	411.7329	35.09	46.00	-10.91	QP
6	476.2720	32.98	46.00	-13.02	QP

- Note: 1. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
  - 2. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.
  - 3. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical. Pre-testing all test modes and all test channels, but only data of the worst case is shown in this test report.







No.	Frequency	Result	Limit	Margin	Remark	
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)		
1	46.5440	19.67	40.00	-20.33	QP	
2	121.8566	22.01	43.50	-21.49	QP	
3	237.0185	34.05	46.00	-11.95	QP	
4	297.9506	37.91	46.00	-8.09	QP	
5	368.9505	35.76	46.00	-10.24	QP	
6	487.2327	34.41	46.00	-11.59	QP	

- Note: 1. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit. 2. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.
  - 3. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical. Pre-testing all test modes and all test channels, but only data of the worst case is shown in this test report.



### 9.5. SPURIOUS EMISSIONS BELOW 30M

### 9.5.1. 802.11G MODE

#### Antenna 1+Antenna 2 MODE (WORST-CASE CONFIGURATION)



#### SPURIOUS EMISSIONS (MID CHANNEL\_ FACE-ON)

No.	Frequency	Result	Limit	Margin	Remark	
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)		
1	0.0168	-33.40	43.09	-76.49	Peak	
2	0.0269	-29.77	38.99	-68.76	Peak	
3	0.0538	-33.38	32.98	-66.36	Peak	
4	0.0808	-37.75	29.46	-67.21	Peak	
5	0.1077	-42.55	26.96	-69.51	Peak	
6	0.1443	-46.89	24.42	-71.31	Peak	

Note:

- 1. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.
- For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical. Pre-testing all test modes and all test channels, but only data of the worst case is shown in this test report.





No.	Frequency	Result	Limit	Margin	Remark	
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)		
1	0.1934	-37.90	21.87	-59.77	Peak	
2	0.2306	-38.32	20.35	-58.67	Peak	
3	0.2698	-40.87	18.98	-59.85	Peak	
4	0.3160	-41.59	17.61	-59.20	Peak	
5	0.3866	-41.85	15.86	-57.71	Peak	
6	0.4424	-44.50	14.33	-58.83	Peak	

Note:

- 1. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.
- For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical. Pre-testing all test modes and all test channels, but only data of the worst case is shown in this test report.



Test Mode	Channel	Frequency Range	Verdict
11G SISO	MCH	150KHz~490KHz	PASS



No.	Frequency	Result	Limit	Margin	Remark	
	(MHz)	(dBuV/m)	(dBuV/m)	(dB)		
1	0.6907	-7.48	30.82	-38.30	Peak	
2	1.4020	-10.17	24.67	-34.84	Peak	
3	3.4620	-0.07	29.54	-29.61	Peak	
4	4.0552	1.18	29.54	-28.36	Peak	
5	6.7733	-9.49	29.54	-39.03	Peak	
6	20.7418	-10.37	29.54	-39.91	Peak	

Note:

- 1. If Peak Result complies with AV and QP limit, AV and QP Result are deemed to comply with AV limit.
- For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical. Pre-testing all test modes and all test channels, but only data of the worst case is shown in this test report.



# **10. AC POWER LINE CONDUCTED EMISSIONS**

### <u>LIMITS</u>

Please refer to CFR 47 FCC §15.207 (a)

	Limit (dBuV)				
	Quasi-peak	Average			
0.15 -0.5	66 - 56 *	56 - 46 *			
0.50 -5.0	56.00	46.00			
5.0 -30.0	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) used to test the emissions from both sides of AC line. According to the requirements in Section 7 and 13 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.

#### TEST ENVIRONMENT

Temperature	25°C	Relative Humidity	58%
Atmosphere Pressure	101kPa	Test Voltage	DC 12.0V

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### 10.1. 802.11G MODE



#### Antenna1+Antenna2 MODE (WORST-CASE CONFIGURATION)

# Final\_Result

Frequency (MHz)	QuasiPeak	Average	Limit	Margin (dB)	Meas.	Bandwidth	Line	Filter	Corr.
(11112)	(ub <i>µ</i> v)		(αΒ μ V)	(00)	(ms)	(((12)			(ab)
0.179850		31.20	54.49	23.30	1000.0	9.000	L1	OFF	9.6
0.179850	48.91		64.49	15.58	1000.0	9.000	L1	OFF	9.6
0.202238		28.05	53.52	25.47	1000.0	9.000	L1	OFF	9.6
0.209700	46.67		63.22	16.55	1000.0	9.000	Ν	OFF	9.6
0.224625		26.02	52.65	26.63	1000.0	9.000	Ν	OFF	9.6
0.224625	41.23		62.65	21.42	1000.0	9.000	Ν	OFF	9.6
0.388800	32.75		58.09	25.34	1000.0	9.000	Ν	OFF	9.6
0.433575		29.19	47.18	18.00	1000.0	9.000	Ν	OFF	9.6
0.455963		33.27	46.77	13.50	1000.0	9.000	Ν	OFF	9.6
0.455963	40.90		56.77	15.87	1000.0	9.000	Ν	OFF	9.6
0.470888		28.41	46.50	18.09	1000.0	9.000	Ν	OFF	9.6
4.993163	26.78		56.00	29.22	1000.0	9.000	L1	OFF	9.7

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.
- 5. For this product, it has two antennas, antenna1 and antenna2, the 802.11B SISO&802.11G SISO modes are use the SISO technical, but the ant1 and ant2 can transmitter in the same time under these modes. The 802.11N(HT20&HT40) uses both the SISO and MIMO technical. Pre-testing all test modes and all test channels, but only data of the worst case is shown in this test report.



# 11. 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 two Internal Antennas.

#### ANTENNA GAIN

The antenna gain of EUT is less than 6 dBi.

# **END OF REPORT**