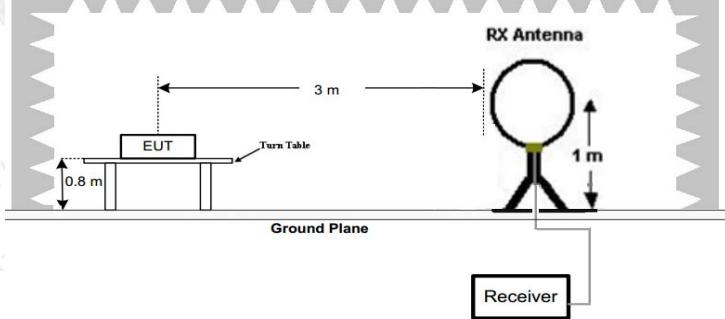
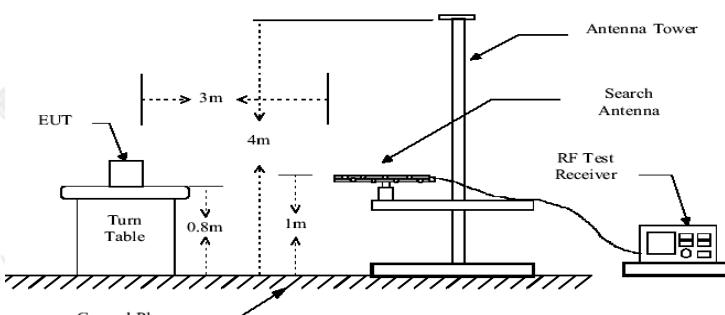




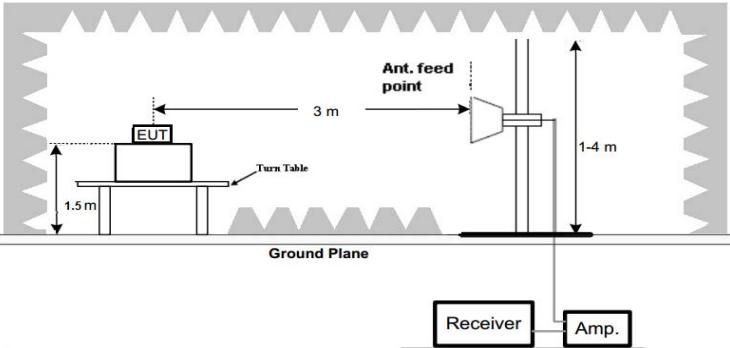
4.7. SPURIOUS EMISSION

4.7.1. Test Specification

Test Requirement:	FCC CFR47 Part 15 Section 15.407 & 15.209 & 15.205																																	
Test Method:	KDB 789033 D02 v02r01																																	
Frequency Range:	9kHz to 40GHz																																	
Measurement Distance:	3 m																																	
Antenna Polarization:	Horizontal & Vertical																																	
Operation mode:	Transmitting mode with modulation																																	
Receiver Setup:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Detector</th> <th>RBW</th> <th>VBW</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>9kHz- 150kHz</td> <td>Quasi-peak</td> <td>200Hz</td> <td>1kHz</td> <td>Quasi-peak Value</td> </tr> <tr> <td>150kHz- 30MHz</td> <td>Quasi-peak</td> <td>9kHz</td> <td>30kHz</td> <td>Quasi-peak Value</td> </tr> <tr> <td>30MHz-1GHz</td> <td>Quasi-peak</td> <td>120KHz</td> <td>300KHz</td> <td>Quasi-peak Value</td> </tr> <tr> <td rowspan="2">Above 1GHz</td><td>Peak</td> <td>1MHz</td> <td>3MHz</td> <td>Peak Value</td> </tr> <tr> <td>Peak</td> <td>1MHz</td> <td>10Hz</td> <td>Average Value</td> </tr> </tbody> </table>					Frequency	Detector	RBW	VBW	Remark	9kHz- 150kHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value	150kHz- 30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value	Above 1GHz	Peak	1MHz	3MHz	Peak Value	Peak	1MHz	10Hz	Average Value
Frequency	Detector	RBW	VBW	Remark																														
9kHz- 150kHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value																														
150kHz- 30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value																														
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value																														
Above 1GHz	Peak	1MHz	3MHz	Peak Value																														
	Peak	1MHz	10Hz	Average Value																														
Limit:	<p>(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.</p> <p>The limit of frequency below 1GHz and which fall in restricted bands should complies 15.209.</p>																																	
Test setup:	<p>For radiated emissions below 30MHz</p>  <p>30MHz to 1GHz</p>  <p>Above 1GHz</p> 																																	

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.



	
Test Procedure:	<ol style="list-style-type: none">1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading.5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test results:	PASS

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.



4.7.2. Test Data

test mode: TX 802.11a 5180MHz

All the test modes completed for test. The worst case of Radiated Emission; the test data of this mode was reported.

Below 1GHz

Horizontal

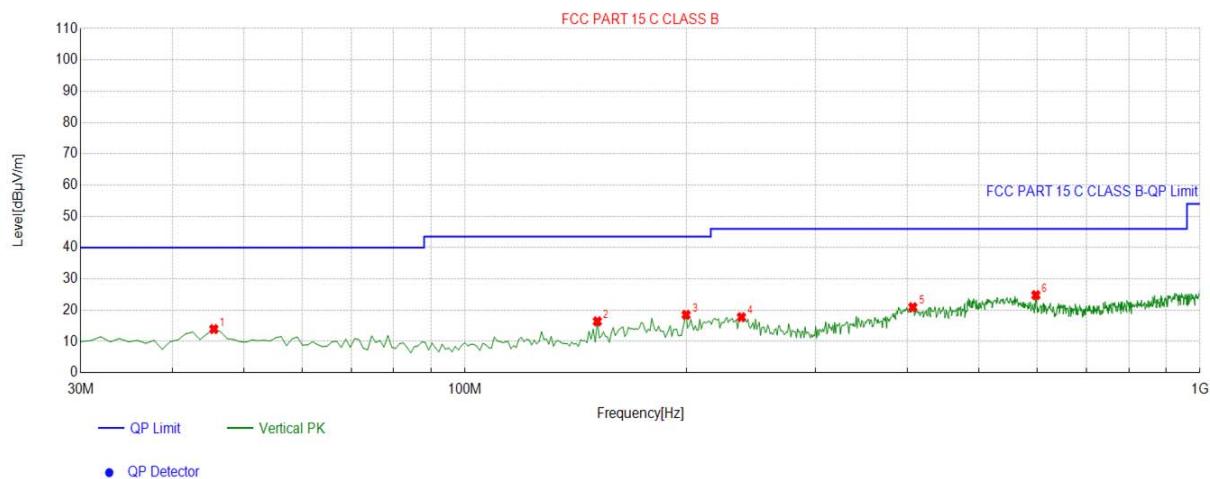


Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	177.5876	-16.96	38.14	21.18	43.50	22.32	100	114	Horizontal
2	219.3393	-14.58	40.83	26.25	46.00	19.75	100	87	Horizontal
3	249.4394	-13.42	39.73	26.31	46.00	19.69	100	300	Horizontal
4	393.1431	-10.57	35.05	24.48	46.00	21.52	100	268	Horizontal
5	597.0470	-6.31	32.88	26.57	46.00	19.43	100	32	Horizontal
6	799.9800	-3.12	31.89	28.77	46.00	17.23	100	209	Horizontal

Remark: Factor = Cable loss + Antenna factor – Preamplifier; Level = Reading + Factor; Margin = Limit – Level



Vertical



Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dB μ V/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	45.5355	-13.65	27.59	13.94	40.00	26.06	100	293	Vertical
2	151.3714	-18.84	35.26	16.42	43.50	27.08	100	155	Vertical
3	199.9199	-15.07	33.56	18.49	43.50	25.01	100	226	Vertical
4	237.7878	-13.96	31.72	17.76	46.00	28.24	100	194	Vertical
5	406.7367	-10.28	31.22	20.94	46.00	25.06	100	32	Vertical
6	598.0180	-6.24	31.03	24.79	46.00	21.21	100	135	Vertical

Remark: Factor = Cable loss + Antenna factor – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

Harmonics and Spurious Emissions

Frequency Range (9 kHz-30MHz)

Frequency (MHz)	Level@3m (dB μ V/m)	Limit@3m (dB μ V/m)
--	--	--
--	--	--
--	--	--
--	--	--

Note: 1. Emission Level=Reading+ Cable loss+ Antenna factor-Amp factor.

2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement.

**Above 1GHz****5.2G 802.11 a Mode**

All modes of operation were investigated and the worst-case of Antenna 1 are reported.
LOW CH 36

Horizontal:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
3647	60.13	-4.59	55.54	74	-18.46	peak
3647	47.39	-4.59	42.8	54	-11.2	AVG
10360	53.46	3.74	57.2	68.2	-11	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
3647	60.23	-4.59	55.64	74	-18.36	peak
3647	43.35	-4.59	38.76	54	-15.24	AVG
10360	51.81	3.74	55.55	68.2	-12.65	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



MID CH40

Horizontal:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
3647	62.25	-4.59	57.66	74	-16.34	peak
3647	45.08	-4.59	40.49	54	-13.51	AVG
10400	52.41	3.74	56.15	68.2	-12.05	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
3647	64.08	-4.59	59.49	74	-14.51	peak
3647	43.27	-4.59	38.68	54	-15.32	AVG
10400	52.49	3.74	56.23	68.2	-11.97	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



HIGH CH 48

Horizontal:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
3647	61.17	-4.59	56.58	74	-17.42	peak
3647	43.78	-4.59	39.19	54	-14.81	AVG
10480	54.99	3.75	58.74	68.2	-9.46	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
3647	60.58	-4.59	55.99	74	-18.01	peak
3647	44.81	-4.59	40.22	54	-13.78	AVG
10480	51.79	3.75	55.54	68.2	-12.66	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Remark:

- (1) Measuring frequencies from 1 GHz to the 40 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency; "E" denotes band edge frequency.
- (3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) The emissions are attenuated more than 20dB below the permissible limits are not record in the report.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dB μ V/m(PK Value) < 93.98(AV Limit), at harmonic 53.20 dB μ V/m(PK Value) < 54 dB μ V/m(AV Limit), the Average Detected not need to completed.



5.2G 802.11n20 Mode

All modes of operation were investigated and the worst-case of MIMO are reported.

LOW CH 36

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
3647	62.19	-4.59	57.6	74	-16.4	peak
3647	47.73	-4.59	43.14	54	-10.86	AVG
10360	55.84	3.74	59.58	68.2	-8.62	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
3647	62.04	-4.59	57.45	74	-16.55	peak
3647	45.52	-4.59	40.93	54	-13.07	AVG
10360	51.77	3.74	55.51	68.2	-12.69	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



MID CH40

Horizontal:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
3647	60.69	-4.59	56.1	74	-17.9	peak
3647	42.73	-4.59	38.14	54	-15.86	AVG
10400	51.31	3.74	55.05	68.2	-13.15	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
3647	60.94	-4.59	56.35	74	-17.65	peak
3647	45.45	-4.59	40.86	54	-13.14	AVG
10400	54.13	3.74	57.87	68.2	-10.33	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



HIGH CH 48

Horizontal:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
3647	61.18	-4.59	56.59	74	-17.41	
3647	44.31	-4.59	39.72	54	-14.28	AVG
10480	56.45	3.75	60.2	68.2	-8	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
3647	61.93	-4.59	57.34	74	-16.66	
3647	45.99	-4.59	41.4	54	-12.6	AVG
10480	50.62	3.75	54.37	68.2	-13.83	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Remark:

- (1) Measuring frequencies from 1 GHz to the 40 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency; "E" denotes band edge frequency.
- (3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) The emissions are attenuated more than 20dB below the permissible limits are not record in the report.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dB μ V/m(PK Value) < 93.98(AV Limit), at harmonic 53.20 dB μ V/m(PK Value) < 54 dB μ V/m(AV Limit), the Average Detected not need to completed.



5.2G 802.11n40 Mode

All modes of operation were investigated and the worst-case of MIMO are reported.
LOW CH 38

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
3647	60.02	-4.59	55.43	74	-18.57	peak
3647	45.19	-4.59	40.6	54	-13.4	AVG
10360	50.68	3.74	54.42	68.2	-13.78	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
3647	60.41	-4.59	55.82	74	-18.18	peak
3647	43.88	-4.59	39.29	54	-14.71	AVG
10360	51.64	3.74	55.38	68.2	-12.82	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



HIGH CH 46

Horizontal:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
3647	60.96	-4.59	56.37	74	-17.63	
3647	43.82	-4.59	39.23	54	-14.77	AVG
10480	54.27	3.75	58.02	68.2	-10.18	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
3647	62.31	-4.59	57.72	74	-16.28	
3647	47.64	-4.59	43.05	54	-10.95	AVG
10480	52.83	3.75	56.58	68.2	-11.62	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Remark:

- (1) Measuring frequencies from 1 GHz to the 40 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency; "E" denotes band edge frequency.
- (3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) The emissions are attenuated more than 20dB below the permissible limits are not record in the report.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dB μ V/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dB μ V/m(PK Value) <54 dB μ V/m(AV Limit), the Average Detected not need to completed.



5.2G 802.11ac20 Mode

All modes of operation were investigated and the worst-case of MIMO are reported.
LOW CH 36

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
3647	62.04	-4.59	57.45	74	-16.55	peak
3647	45.87	-4.59	41.28	54	-12.72	AVG
10360	52.03	3.74	55.77	68.2	-12.43	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
3647	62.22	-4.59	57.63	74	-16.37	peak
3647	42.43	-4.59	37.84	54	-16.16	AVG
10360	50.66	3.74	54.4	68.2	-13.8	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



MID CH40

Horizontal:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
3647	62.53	-4.59	57.94	74	-16.06	peak
3647	45.34	-4.59	40.75	54	-13.25	AVG
10400	53.48	3.74	57.22	68.2	-10.98	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
3647	62.22	-4.59	57.63	74	-16.37	peak
3647	41.83	-4.59	37.24	54	-16.76	AVG
10400	52.53	3.74	56.27	68.2	-11.93	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



HIGH CH 48

Horizontal:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
3647	60.58	-4.59	55.99	74	-18.01	peak
3647	46.52	-4.59	41.93	54	-12.07	AVG
10480	52.54	3.75	56.29	68.2	-11.91	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
3647	61.02	-4.59	56.43	74	-17.57	peak
3647	43.74	-4.59	39.15	54	-14.85	AVG
10480	52.84	3.75	56.59	68.2	-11.61	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Remark:

- (1) Measuring frequencies from 1 GHz to the 40 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency; "E" denotes band edge frequency.
- (3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) The emissions are attenuated more than 20dB below the permissible limits are not record in the report.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dB μ V/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dB μ V/m(PK Value) <54 dB μ V/m(AV Limit), the Average Detected not need to completed.



5.2G 802.11ac40 Mode

All modes of operation were investigated and the worst-case of MIMO are reported.
LOW CH 38

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
3647	60.13	-4.59	55.54	74	-18.46	peak
3647	47.35	-4.59	42.76	54	-11.24	AVG
10360	53.42	3.74	57.16	68.2	-11.04	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
3647	61.18	-4.59	56.59	74	-17.41	peak
3647	45.59	-4.59	41	54	-13	AVG
10360	51.34	3.74	55.08	68.2	-13.12	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.



HIGH CH 46

Horizontal:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
3647	60.67	-4.59	56.08	74	-17.92	peak
3647	42.84	-4.59	38.25	54	-15.75	AVG
10480	53.81	3.75	57.56	68.2	-10.64	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
3647	62.35	-4.59	57.76	74	-16.24	peak
3647	45.79	-4.59	41.2	54	-12.8	AVG
10480	52.65	3.75	56.4	68.2	-11.8	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Remark:

- (1) Measuring frequencies from 1 GHz to the 40 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency; "E" denotes band edge frequency.
- (3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) The emissions are attenuated more than 20dB below the permissible limits are not record in the report.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dB μ V/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dB μ V/m(PK Value) <54 dB μ V/m(AV Limit), the Average Detected not need to completed.



5.2G 802.11ac80 Mode

All modes of operation were investigated and the worst-case of MIMO are reported.
CH 42

Horizontal:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
3647	60.59	-4.59	56	74	-18	peak
3647	46.79	-4.59	42.2	54	-11.8	AVG
10360	54.67	3.74	58.41	68.2	-9.79	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
3647	60.95	-4.59	56.36	74	-17.64	peak
3647	45.35	-4.59	40.76	54	-13.24	AVG
10360	54.41	3.74	58.15	68.2	-10.05	peak

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

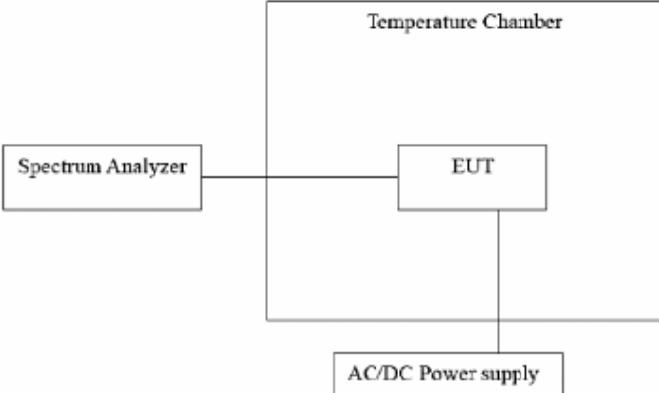
Remark:

- (1) Measuring frequencies from 1 GHz to the 40 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency; "E" denotes band edge frequency.
- (3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) The emissions are attenuated more than 20dB below the permissible limits are not record in the report.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dB μ V/m(PK Value) < 93.98(AV Limit), at harmonic 53.20 dB μ V/m(PK Value) < 54 dB μ V/m(AV Limit), the Average Detected not need to completed.



4.8. FREQUENCY STABILITY MEASUREMENT

4.8.1. Test Specification

Test Requirement:	FCC Part15 Section 15.407(g)
Test Method:	ANSI C63.10: 2013
Limit:	The frequency tolerance shall be maintained within the band of operation frequency over a temperature variation of 0 degrees to 35 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.
Test Setup:	
Test Procedure:	The EUT was placed inside the environmental test chamber and powered by nominal AC/DC voltage. b. Turn the EUT on and couple its output to a spectrum analyzer. c. Turn the EUT off and set the chamber to the highest temperature specified. d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature. f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.
Test Result:	PASS
Remark:	N/A

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannot be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at <http://www.cer-mark.com>.

**Test Result as follows:**

Mode	Voltage (V)	FHL (5180MHz)	Deviation (KHz)	FHH (5240MHz)	Deviation (KHz)
5.2G Band	4.25V	5179.978	-22	5240.016	16
	5V	5180.022	22	5239.975	-25
	5.75V	5179.976	-24	5239.985	-15

Mode	Temperature (°C)	FHL (5180MHz)	Deviation (KHz)	FHH (5240MHz)	Deviation (KHz)
5.2G Band	-30	5179.984	-16	5240.015	15
	-20	5180.013	13	5239.980	-20
	-10	5180.021	21	5240.015	15
	0	5179.977	-23	5239.978	-22
	10	5179.963	-37	5239.971	-29
	20	5180.019	19	5239.977	-23
	30	5179.974	-26	5240.009	9
	40	5180.024	24	5239.965	-35
	50	5180.011	11	5239.972	-28



4.9. ANTENNA REQUIREMENT

Standard Applicable

For intentional device, according to FCC 47 CFR Section 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. And according to FCC 47 CFR Section 15.249, if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Refer to statement below for compliance.

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

Antenna Connected Construction

The antenna used in this product is a External Antenna, which have non-standard antenna jack. It conforms to the standard requirements. and the best case gain of the antenna is Antenna port 1:1dBi and Antenna port 2:1dBi.

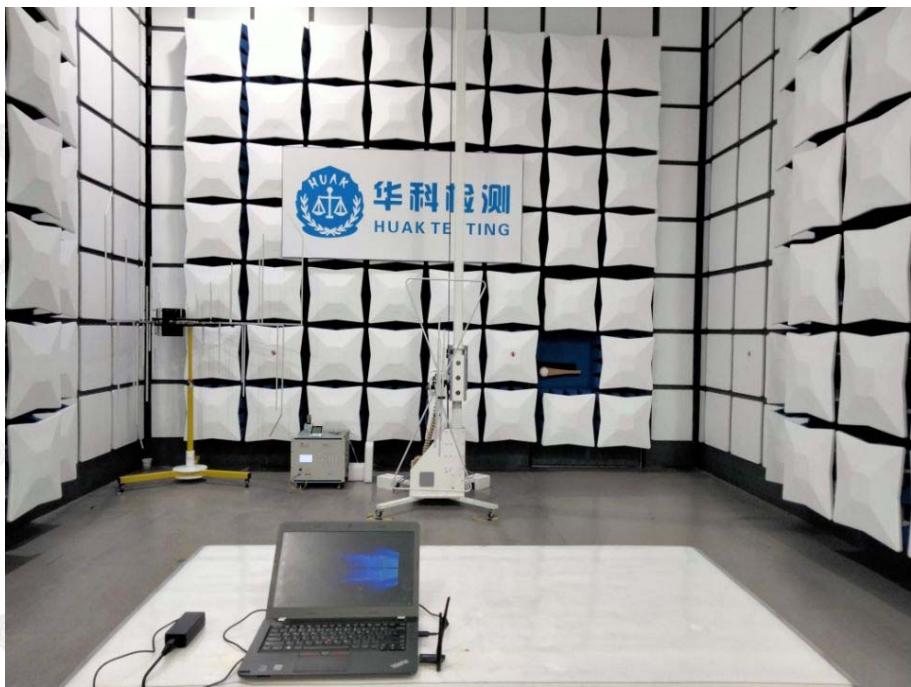
WIFI ANTENNA





5. PHOTOGRAPHS OF TEST SETUP

Radiated Emission



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**Conducted Emission**

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6. PHOTOS OF THE EUT

Reference to the report: ANNEX A of external photos and ANNEX B of internal photos.

-----End of report-----