TEST REPORT

Report Reference No. ..... :	**180118001RFC-1**	R/C.....: 68626
FCC ID ..... :	**2AEY7-S8A003**	
Applicant's name ..... :	**Bak USA Technologies Corp.**	
Address ..... :	425 Michigan Avenue,Buffalo,New York 14203,USA	
Manufacturer..... :	Bak USA Technologies Corp.	
Address..... :	425 Michigan Avenue,Buffalo,New York 14203,USA	
Test item description..... :	**Tablet PC**	
Trade Mark..... :	-	
Model/Type reference ..... :	LTE Flashlight 1.0	
Listed Model(s) ..... :	-	
Standard..... :	**FCC CFR Title 47 Part 15 Subpart E Section 15.407**	
Date of receipt of test sample..... :	Jan.18, 2018	
Date of testing..... :	Jan.18, 2018- Jan.19, 2018	
Date of issue..... :	Jan.19, 2018	
Result ..... :	**PASS**	
Tested by ..... :	Engineer : Henry Lu	
Reviewed by..... :	Senior Engineer : Kevin Liang	
Approved by..... :	Assistant Manager : Jim Long	
Testing Laboratory Name..... :	**Shenzhen UnionTrust Quality and Technology Co., Ltd.**	
Address ..... :	16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China	

UnionTrust Laboratories UnionTrust * Certified *

Contents

1. TEST STANDARDS AND REPORT VERSION

1.4 Test Standards

The tests were performed according to following standards:
FCC Rules Part 15.407: General technical requirements.

ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices

KDB789033 D02 v01r04: GUIDELINES FOR COMPLIANCE TESTING OF UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII) DEVICES PART 15, SUBPART E

2.4 Report Version

Version No.	Date of issue	Description
00	Jan.19, 2018	Original

2. TEST DESCRIPTION

Test Item	FCC Rule	Result	Test Engineer
Line Conducted Emissions (AC Main)	15.207	Pass	Andy
Radiated Emissions	15.209	Pass	Robing luo

Remark: 1.The measurement uncertainty is not included in the test result.
2.The EUT is a client device without radar detection.a TPC mechanism is not required for systems with an e.i.r.p. of less than 500mW.

3. SUMMARY

1.4 Client Information

Applicant:	Bak USA Technologies Corp.
Address:	425 Michigan Avenue,Buffalo,New York 14203,USA
Manufacturer:	Bak USA Technologies Corp.
Address:	425 Michigan Avenue,Buffalo,New York 14203,USA

2.4 Product Description

Name of EUT	Tablet PC		
Trade Mark:	-		
Model No.:	LTE Flashlight 1.0		
Listed Model(s):	-		
Power supply:	DC 3.7V From exchange battery		
Adapter information :	Input: 100-240Va.c., 50/60Hz, 0.6A Output: 5Vd.c.,5A		
5G WIFI			
Supported type:	☒ 802.11a	☒ 802.11n(HT20)	☒ 802.11n(HT40)
	☐ 802.11ac(HT20)	☐ 802.11ac(HT40)	☐ 802.11ac(HT80)
Function:	☐ Outdoor AP	☐ Indoor AP	☐ Fixed P2P
	☒ Client		
DFS type:	☐ master devices	☐ Slave devices with radar detection	☒ Slave devices without radar detection
Modulation:	BPSK, QPSK, 16QAM, 64QAM		
Operation frequency:	☒ Band I:	5150MHz~5250MHz	
	☒ Band II:	5250MHz~5350MHz	
	☒ Band III:	5470MHz~5725MHz	
	☒ Band IV:	5725MHz~5850MHz	
Supported Bandwidth	20MHz:	802.11a, 802.11n	
	40MHz:	802.11n	
Antenna type:	Integral antenna		
Antenna gain:	2.0dBi		

3.4 Operation state

◆ **Frequency list**

According to section 15.31(m), regards to the operating frequency range over 10 MHz, must select three channel which were tested. the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, please see the above gray bottom.

Band	Test Channel	20MHz		40MHz	
		Channel	Frequency (MHz)	Channel	Frequency (MHz)
I	CH_L	36	5180	38	5190
	CH_M	40	5200	-	-
	CH_H	48	5240	46	5230
II	CH_L	52	5260	54	5270
	CH_M	56	5280	-	-
	CH_H	64	5320	62	5310
III	CH_L	100	5500	102	5510
	CH_M	120	5600	118	5590
	CH_H	140	5700	134	5670
IV	CH_L	149	5745	151	5755
	CH_M	157	5785	-	-
	CH_H	165	5825	159	5795

◆ **Data Rated**

Preliminary tests were performed in different data rate, and found which the below bit rate is worst case mode, so only show data which it is a worst case mode.

Mode	Data rate (worst mode)
802.11a	6Mbps
802.11n(HT20)	MCS0
802.11n(HT40)	MCS0

◆ **Test mode**

For RF test items:

the engineering test program was provided and enabled to make EUT continuous transmit/receive. The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.

For AC power line conducted emissions:

the EUT was set to connect with the WLAN AP under large package sizes transmission.

4.4 EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

- ● - supplied by the manufacturer
- ○ - supplied by the lab

○	N/A	Manufacturer :	N/A
		Model No. :	N/A
○	N/A	Manufacturer :	N/A
		Model No. :	N/A

5.4 Modifications

No modifications were implemented to meet testing criteria.

4. TEST ENVIRONMENT

1.4 Address of the test laboratory

Shenzhen UnionTrust Quality and Technology Co., Ltd.
Address: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China 518109
Phone: +86 (0) 755 2823 0888 Fax: +86 (0) 755 2823 0886

2.4 Test Facility

CNAS-Lab Code: L9069
The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

IC-Registration No.: 21600-1
The 3m Semi-anechoic chamber of Shenzhen UnionTrust Quality and Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 21600-1

A2LA-Lab Certificate No.: 4312.01
Shenzhen UnionTrust Quality and Technology Co., Ltd. has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC Accredited Lab
Designation Number: CN1194
Test Firm Registration Number: 25948

3.4 Equipments Used during the Test

Radiated Emission Test Equipment List						
Used	**Equipment**	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm dd, yyyy)**	**Cal. Due date (mm dd, yyyy)**
☑	3M Chamber & Accessory Equipment	ETS-LINDGREN	3M	N/A	Dec. 20, 2015	Dec. 19, 2018
☑	Receiver	R&S	ESIB26	100114	Dec. 10, 2017	Dec. 10, 2018
☑	Broadband Antenna	ETS-LINDGREN	3142E	00201566	Dec. 17, 2017	Dec. 17, 2018
☑	Preamplifier	HP	8447F	2805A02960	Dec. 10, 2017	Dec. 10, 2018
☑	Multi device Controller	ETS-LINDGREN	7006-001	00160105	N/A	N/A
☑	Test Software	Audix	e3	Software Version: 9.160323		

Conducted Emission Test Equipment List						
Used	**Equipment**	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm dd, yyyy)**	**Cal. Due date (mm dd, yyyy)**
☑	Receiver	R&S	ESR7	1316.3003K07 -101181-K3	Dec. 10, 2017	Dec. 10, 2018
☑	Pulse Limiter	R&S	ESH3-Z2	0357.8810.54	Dec. 10, 2017	Dec. 10, 2018
☑	LISN	R&S	ESH2-Z5	860014/024	Dec. 10, 2017	Dec. 10, 2018
☑	Test Software	Audix	e3	Software Version: 9.160323		

4.4 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35°C
Relative Humidity:	30~60 %
Air Pressure:	950~1050mba

5.4 Statement of the measurement uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2

No.	Item	Measurement Uncertainty
1	Conducted emission 9KHz-150KHz	±3.8 dB
2	Conducted emission 150KHz-30MHz	±3.4 dB
3	Radiated emission 9KHz-30MHz	±4.9 dB
4	Radiated emission 30MHz-1GHz	±4.7 dB
5	Radiated emission 1GHz-18GHz	±5.1 dB
6	Radiated emission 18GHz-26GHz	±5.2 dB
7	Radiated emission 26GHz-40GHz	±5.2 dB

5. TEST CONDITIONS AND RESULTS

5.1. Conducted Emissions (AC Main)

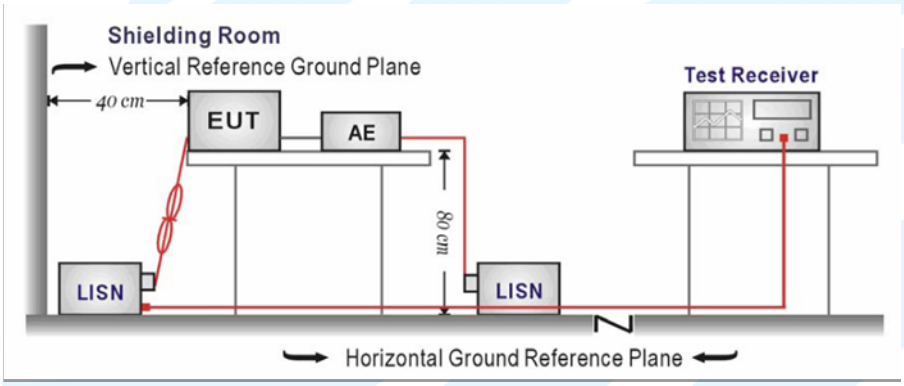
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207:

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

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was setup according to ANSI C63.10:2013 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor,was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted Emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

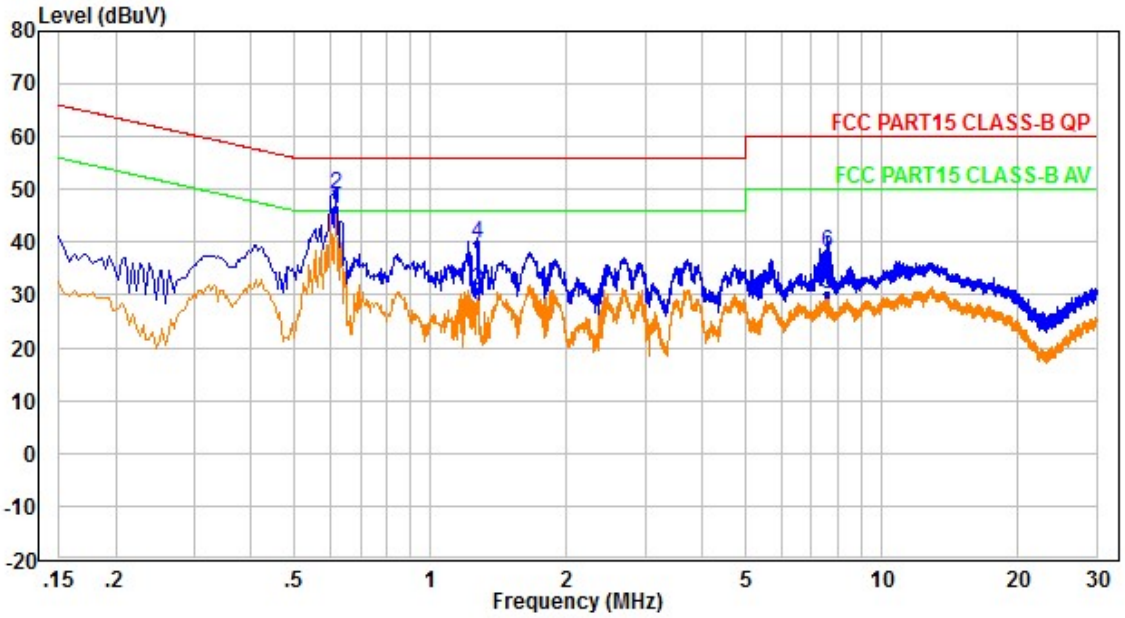
TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

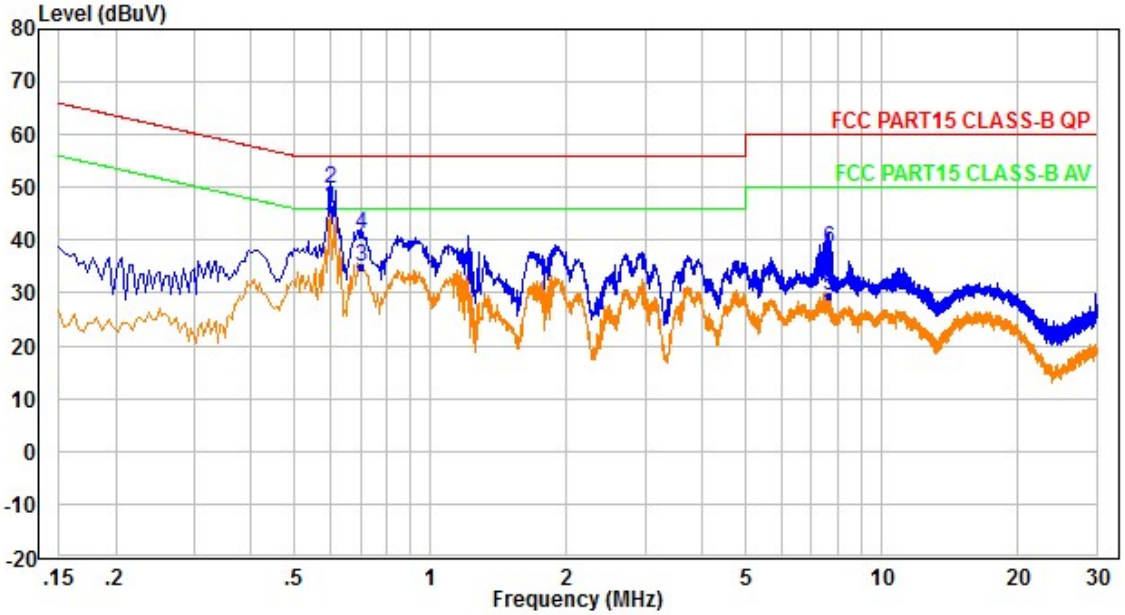
☒ **Passed** ☐ **Not Applicable**

Test Line:	L



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	0.614	36.00	10.20	44.20	46.00	-1.80	Average
2	0.614	38.70	10.20	48.90	56.00	-7.10	QP
3	1.274	20.40	10.30	30.70	46.00	-15.30	Average
4	1.274	29.40	10.30	39.70	56.00	-16.30	QP
5	7.590	19.20	10.80	30.00	50.00	-20.00	Average
6	7.590	27.20	10.80	38.00	60.00	-22.00	QP

Test Line:	N



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1*	0.598	35.70	10.40	44.50	46.00	-1.50	Average
2	0.598	39.50	10.40	49.90	56.00	-6.10	QP
3	0.702	24.70	10.40	35.10	46.00	-10.90	Average
4	0.702	30.70	10.40	41.10	56.00	-14.90	QP
5	7.637	18.70	10.90	29.60	50.00	-20.40	Average
6	7.637	27.70	10.90	38.60	60.00	-21.40	QP

Remark:

1. Margin= Result - Limit

2. An initial pre-scan was performed on the Phase and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

5.2. Radiated Emissions

LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.209

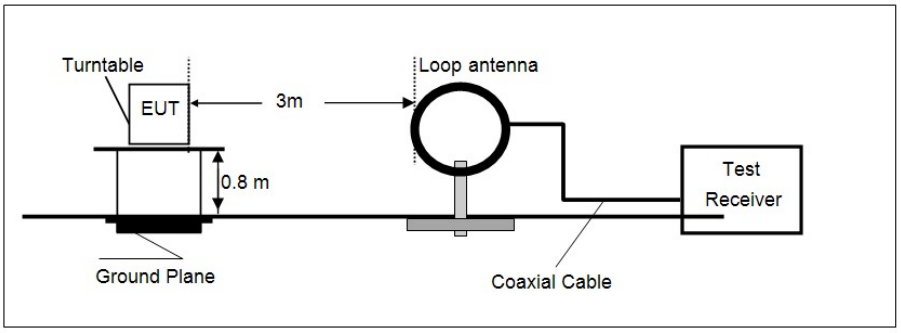
Frequency	Limit (dBuV/m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

* Increase/Decreases with the linearly of the frequency.

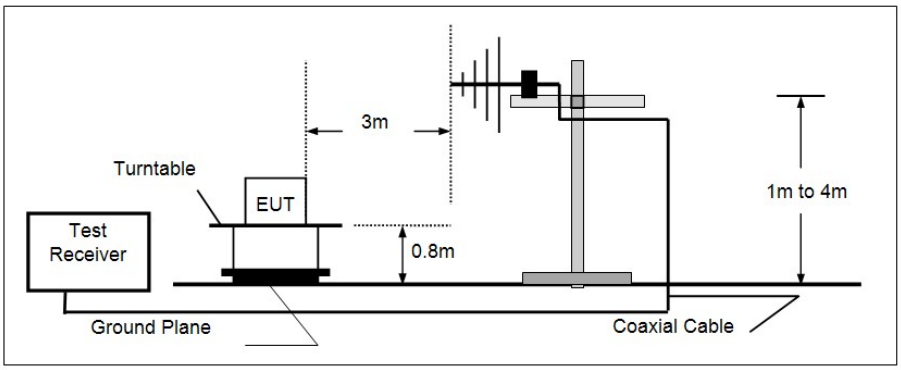
For emission above 1GHz and in restricted band, according to FCC KDB 789033 D02 General UNII Test Procedure, all emission that complies with both the average and peak limits of Section 15.209 is not required to satisfy the -27 dBm/MHz peak emission limit. E[dBμV/m] = EIRP[dBm] + 95.2, for d = 3 meters.

TEST CONFIGURATION

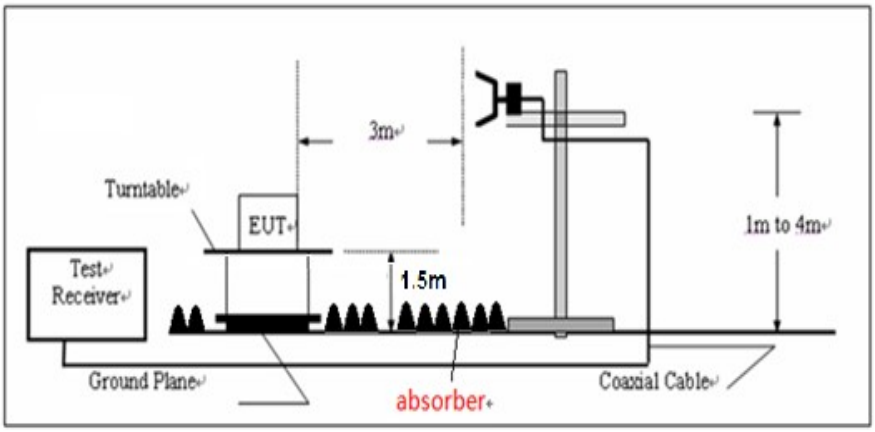
- 9KHz ~30MHz



- 30MHz ~ 1GHz



- Above 1GHz



TEST PROCEDURE

1. The EUT was tested according to ANSI C63.10:2013 for compliance to FCC 47CFR 15.247 requirements.
2. The EUT is placed on a turn table which is 0.8/1.5 meter above ground plane. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT waspositioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. Thisis repeated for both horizontal and vertical polarization of the antenna.
5. Use the following spectrum analyzer settings
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Below 1GHz, RBW=120KHz, VBW=300KHz, Sweep=auto, Detector function=peak, Trace=max hold;
   If the emission level of the EUT measured by the peak detectoris 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.
   (3) Above 1GHz, RBW=1MHz, VBW=3MHz Peak detetor for Peak value
   RBW=1MHz, VBW=3MHz RMS detetor for Average value.

Remark: “floor-standing equipment” Where possible, the antenna(s) of the EUT shall be located at a height of 1.5 m above the floor, and the intentional radiator circuitry shall be located within the system at a height of at least 0.8 m above the floor.

TEST RESULTS

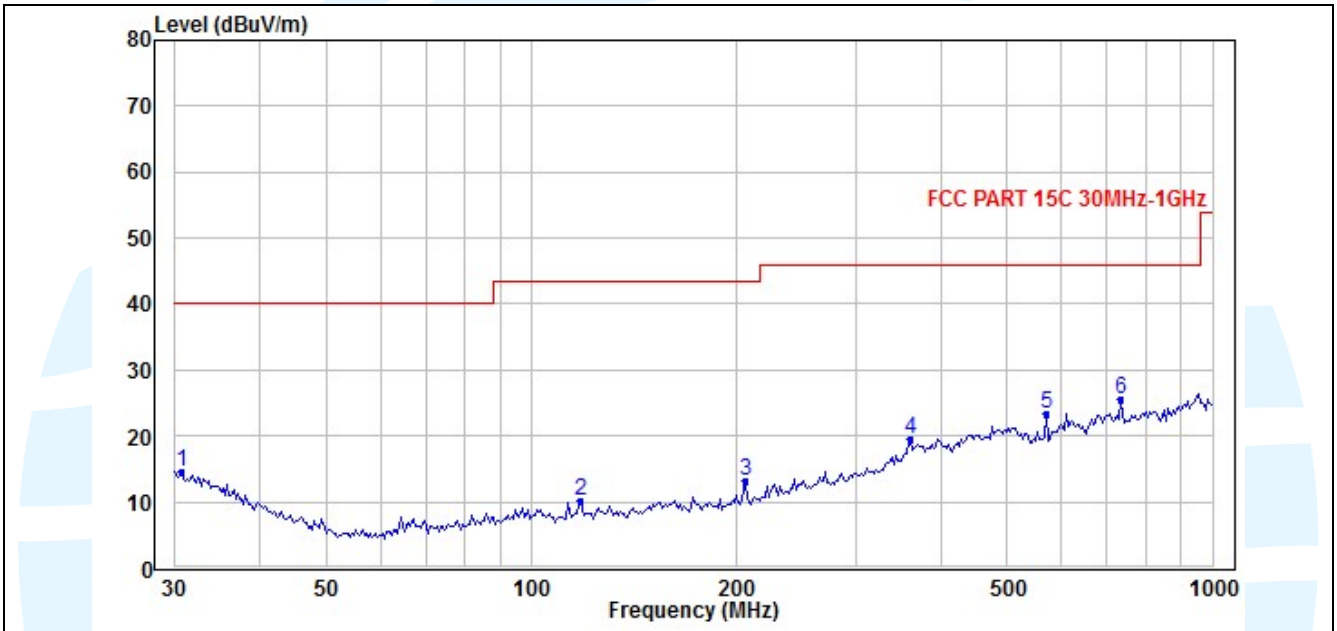
Measurement data:

■ **9kHz ~ 30MHz**

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.
Pre-scan all of the 802.11a/n(HT20) /n(HT40) mode at U-NII band I/II/III and IV. And found 802.11a mode was the worst case at this four bands. So only the worst data was shown on the report.

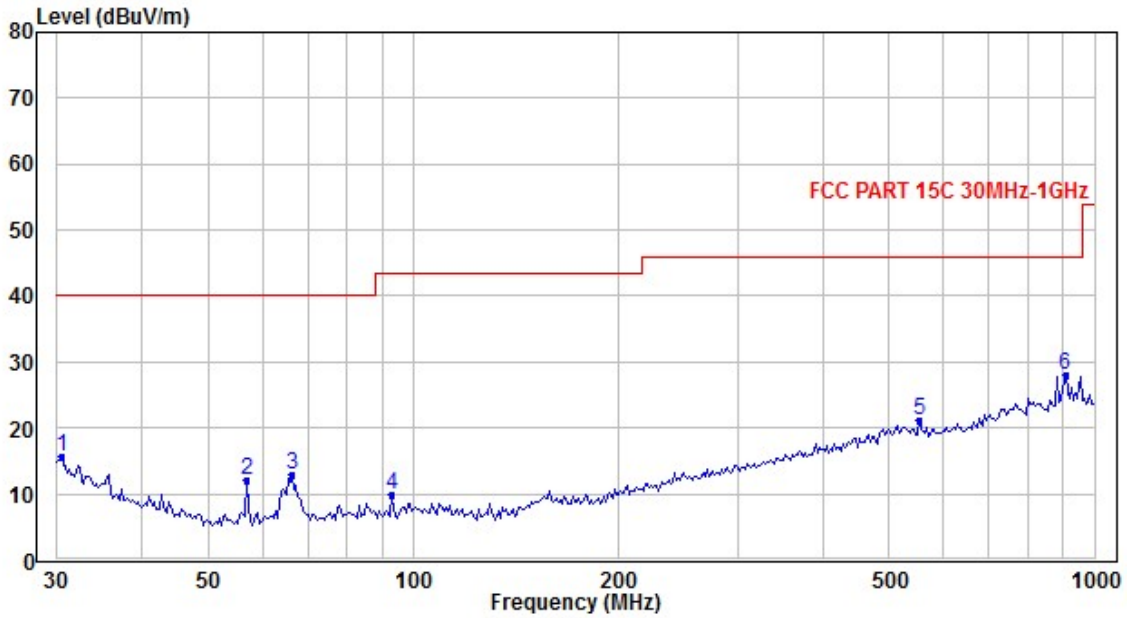
■ **30MHz ~ 1GHz**

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.639	26.21	-11.55	14.66	40.00	-25.34	QP
2	118.096	28.33	-18.08	10.25	43.50	-33.25	QP
3	205.746	28.46	-15.23	13.23	43.50	-30.27	QP
4	360.977	29.21	-9.71	19.50	46.00	-26.50	QP
5	569.969	29.41	-5.97	23.44	46.00	-22.56	QP
6*	734.037	28.26	-2.79	25.47	46.00	-20.53	QP

Vertical

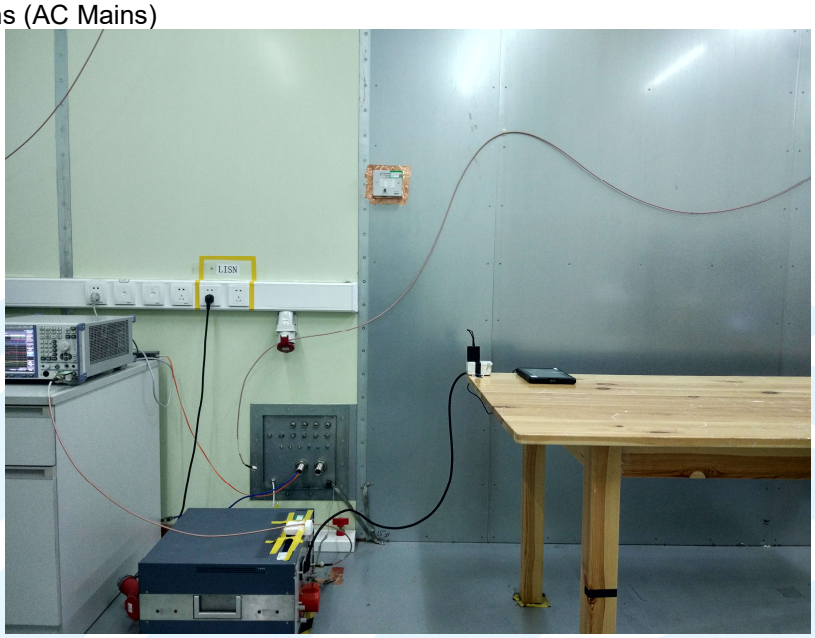


No.	Frequency (MHz)	Reading (dBuV)	Correction factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.425	28.01	-12.43	15.58	40.00	-24.42	QP
2	56.864	32.24	-20.16	12.08	40.00	-27.92	QP
3	66.371	32.66	-19.80	12.86	40.00	-27.14	QP
4	92.997	29.17	-19.29	9.88	43.50	-33.62	QP
5	554.171	27.48	-6.26	21.22	46.00	-24.78	QP
6*	906.304	28.31	-0.31	28.00	46.00	-18.00	QP

Remark:Result=Reading+ Correction factor; Margin= Result - Limit

6. Test Setup Photos of the EUT

Conducted Emissions (AC Mains)



Radiated Emissions

7. External and Internal Photos of the EUT

Reference to Test Report No.: TRE1712001101.

----------End of Report----------