

# FCC REPORT

**Applicant:** Shenzhen Senkaixin Technology Co. Ltd.

**Address of Applicant:** Nine 101 Hongqiaotou Hengzhao Industrial Zone, Songgang Street, Bao'an District, Shenzhen

## Equipment Under Test (EUT)

**Product Name:** Airbase Wireless

**Model No.:** AFW-KK-NA, ABW-KK-NA

**FCC ID:** 2AQKH-AFW-KK-NA

**Applicable standards:** FCC CFR Title 47 Part 15 Subpart C Section 15.209

**Date of sample receipt:** 06 Aug., 2018

**Date of Test:** 06 Aug., to 15 Aug., 2018

**Date of report issue:** 16 Aug., 2018

**Test Result:** PASS\*

\* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang  
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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## 2 Version

Version No.	Date	Description
00	16 Aug., 2018	Original

**Prepared By:**

*Zora Lee*

**Date:**

16 Aug., 2018

**Report Clerk**

**Check By:**

*Wimew Wang*

**Date:**

16 Aug., 2018

**Project Engineer**

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## 4 Test Summary

Test Item	Section in CFR 47	Result
Spurious emissions	15.209	Pass
20dB Bandwidth	15.215(c)	Pass
Conducted Emission	15.207	Pass

*Remark:*  
*Pass: The EUT complies with the essential requirements in the standard.*

Note: Test according to ANSI C63.4-2014 ; ANSI C63.10-2013

## 5 General Information

### 5.1 Client Information

Applicant:	Shenzhen Senkaixin Technology Co. Ltd.
Address:	Nine 101 Hongqiaotou Hengzhao Industrial Zone, Songgang Street, Bao'an District, Shenzhen
Manufacturer/Factory:	Shenzhen Senkaixin Technology Co. Ltd.
Address:	Nine 101 Hongqiaotou Hengzhao Industrial Zone, Songgang Street, Bao'an District, Shenzhen

### 5.2 General Description of E.U.T.

Product Name:	Airbase Wireless
Model No.:	AFW-KK-NA, ABW-KK-NA
Operation Frequency:	112.00kHz~146.20kHz
Modulation type:	ASK
Antenna Type:	Coil Antenna
Power supply:	Input: 5V, 2A / 9V, 1.67A Output: 5W/7.5W/10W
Remark:	Model No.: AFW-KK-NA, ABW-KK-NA were identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference being model name.

### 5.3 Test mode

Transmitting mode:	Keep the EUT in transmitting mode with modulation
Remark: Tested with input: 5V/2A, output: 5W mode /7.5W mode /10W mode and input: 9V/1.67A, output: 5W mode /7.5W mode /10W mode , Then found input: 5V/2A, output: 10W mode was worse case . Only worse case is reported.	

### 5.4 Description of Support Units

Manufacturer	Description	Model	S/N	FCC ID/DoC
Skytek	Wireless charging match load	N/A	N/A	N/A
Shenzhen HengChangshengding Electronics Co., Ltd.	USB Cable	N/A	N/A	N/A
Shenzhen HengChangshengding Electronics Co., Ltd.	Adapter	HCSD-12650100	N/A	SDOC

## 5.5 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%)
Conducted Emission (9kHz ~ 30MHz)	±2.22 dB
Radiated Emission (9kHz ~ 30MHz)	±2.76 dB
Radiated Emission (30MHz ~ 1000MHz)	±4.28 dB
Radiated Emission (1GHz ~ 18GHz)	±5.72 dB
Radiated Emission (18GHz ~ 26.5GHz)	±2.88 dB

## 5.6 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC - Registration No.: 727551**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The Registration No. is 727551.

- **IC - Registration No.: 10106A-1**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

- **CNAS - Registration No.: CNAS L6048**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

- **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: <https://portal.a2la.org/scopepdf/4346-01.pdf>

## 5.7 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.

Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road, Bao'an District, Shenzhen, Guangdong, China

Tel: +86-755-23118282, Fax: +86-755-23116366

Email: info@ccis-cb.com, Website: http://www.ccis-cb.com

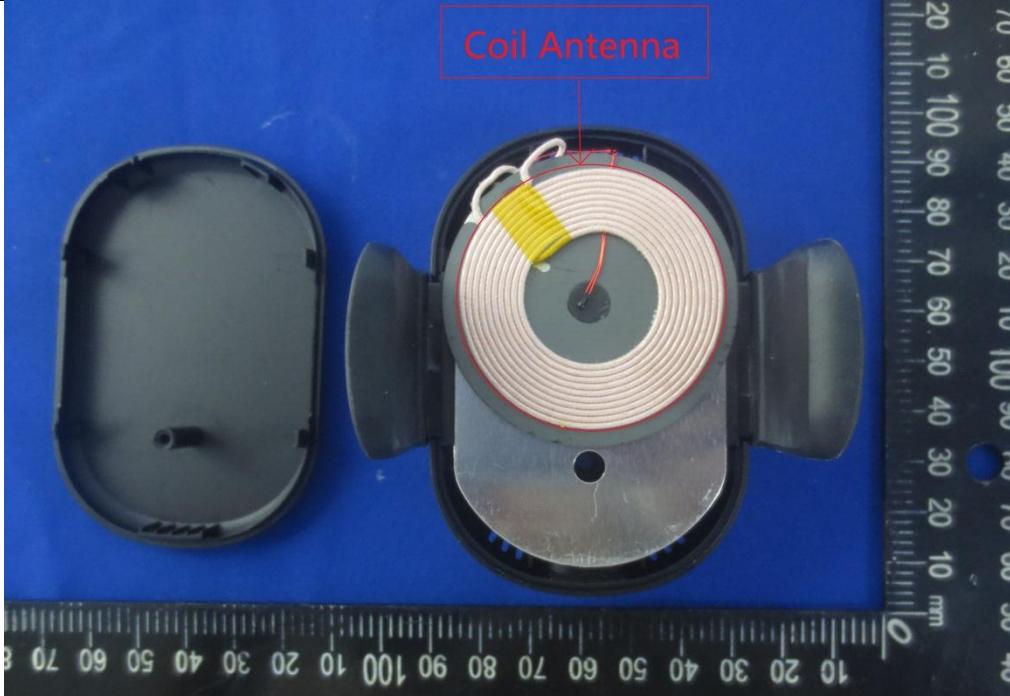
## 5.8 Test Instrumentslist

Radiated Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	SAEMC	9m*6m*6m	966	07-22-2017	07-21-2020
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	03-16-2018	03-15-2019
Horn Antenna	SCHWARZBECK	BBHA9120D	916	03-16-2018	03-15-2019
Loop Antenna	SCHWARZBECK	FMZB 1519 B	00044	02-25-2018	02-24-2019
EMI Test Software	AUDIX	E3	6.110919b	N/A	N/A
Pre-amplifier	HP	8447D	2944A09358	03-07-2018	03-06-2019
Pre-amplifier	CD	PAP-1G18	11804	03-07-2018	03-06-2019
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-07-2018	03-06-2019
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-07-2018	03-06-2019
Simulated Station	Anritsu	MT8820C	6201026545	03-07-2018	03-06-2019
Cable	ZDECL	Z108-NJ-NJ-81	1608458	03-07-2018	03-06-2019
Cable	MICRO-COAX	MFR64639	K10742-5	03-07-2018	03-06-2019
Cable	SUHNER	SUCOFLEX100	58193/4PE	03-07-2018	03-06-2019

Conducted Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
EMI Test Receiver	Rohde & Schwarz	ESCI	101189	03-07-2018	03-06-2019
Pulse Limiter	SCHWARZBECK	OSRAM 2306	9731	03-07-2018	03-06-2019
LISN	CHASE	MN2050D	1447	03-19-2018	03-18-2019
LISN	Rohde & Schwarz	ESH3-Z5	8438621/010	07-21-2018	07-20-2019
Cable	HP	10503A	N/A	03-07-2018	03-06-2019
EMI Test Software	AUDIX	E3	6.110919b	N/A	N/A

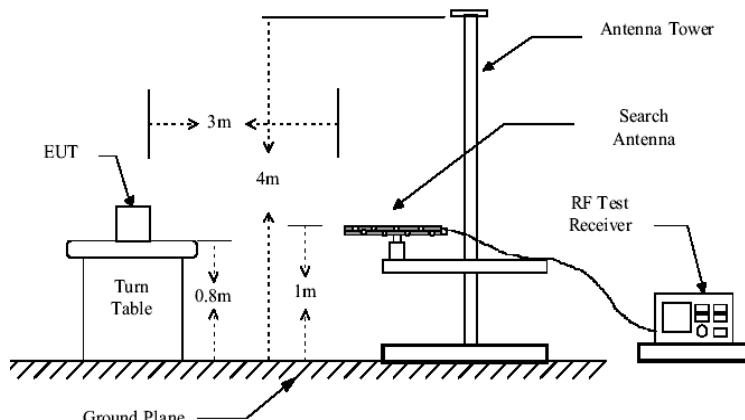
## 6 Test results and Measurement Data

### 6.1 Antenna requirement

<b>Standard requirement:</b>	FCC Part15 C Section 15.203
15.203 requirement:	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, 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.
<b>E.U.T Antenna:</b>	

## 6.2 Radiated Emission

Test Requirement:	FCC Part15 C Section 15.209						
Test Method:	ANSI C63.4-2014 ; ANSI C63.10-2013						
Test Frequency Range:	9kHz to 1000MHz						
Test site:	Measurement Distance: 3m(Semi-Anechoic Chamber)						
Receiver setup:	Frequency	Detector	RBW	VBW	Remark		
	9kHz-150kHz	PK /AV	200Hz	600Hz	PK /AV		
	150kHz-30MHz	PK/ AV /QP	9kHz	30kHz	PK/ AV /QP		
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value		
Limit:	Above 1GHz	Peak	1MHz	3MHz	Peak Value		
	Frequency (MHz)	Limit (uV/m @3m)		Distance (m)			
	0.009-0.490	2400/F(kHz)		300			
	0.490-1.705	24000/F(kHz)		30			
	1.705-30	30		30			
	30-88	100		3			
	88-216	150		3			
	216-960	200		3			
Test Procedure:	Above 1GHz	500		3			
	a.	The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.					
	b.	The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.					
	c.	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.					
	d.	For each suspected emission, the EUT was arranged to its worst case and the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.					
	e.	The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.					
	f.	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 setup:	<p>9kHz-30MHz</p> <p>30MHz-1GHz</p>						

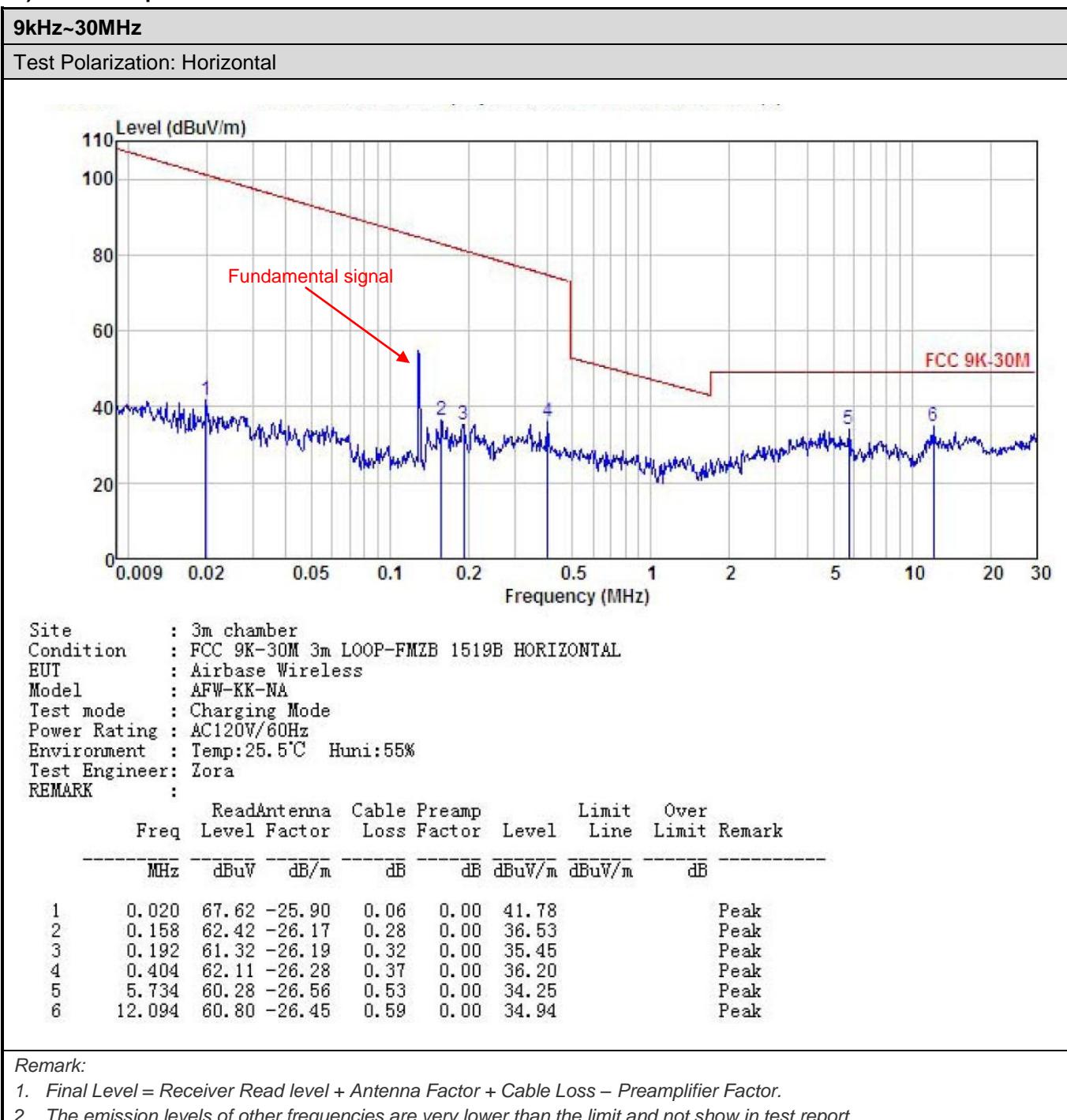


Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass
Remark:	The emission levels of above 1 GHz are very lower than the limit and not show in test report.

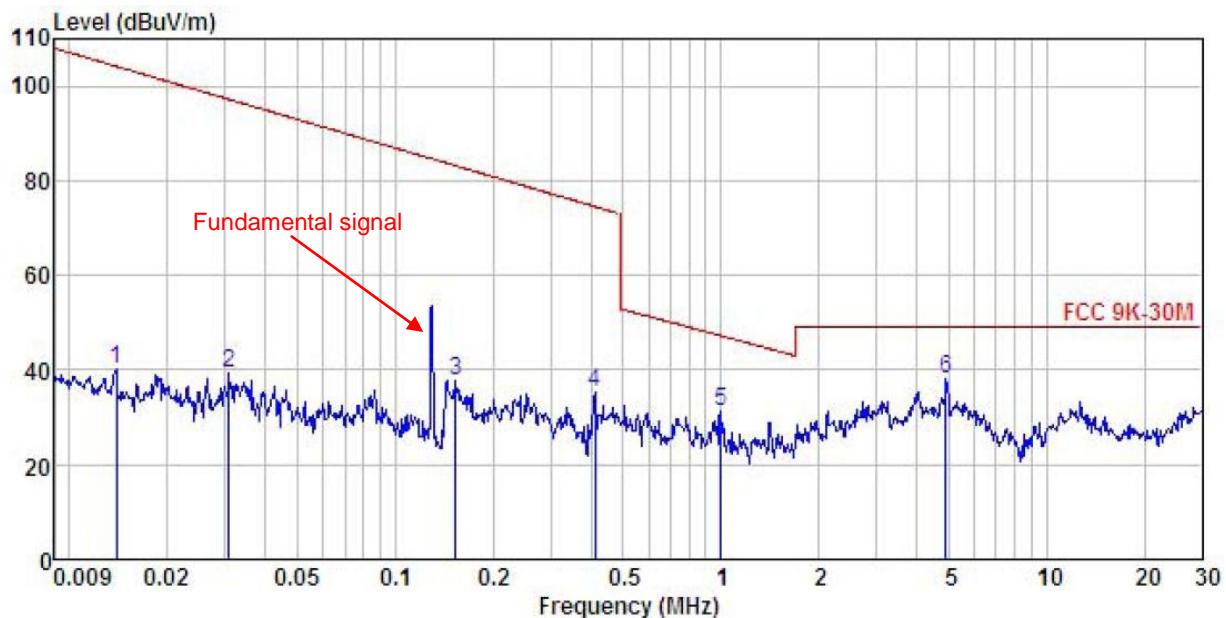
**Measurement Data: MID CH 129.1KHz****a) Fundamental field strength**

<b>Peak value</b>				
Test Polarization	Frequency (kHz)	H-field@3m (dB $\mu$ V)	Limit@3m (dB $\mu$ V)	Result
Horizontal	129.10	58.65	125.39	Pass
Vertical	129.10	57.81	125.39	Pass
<b>Average value</b>				
Test Polarization	Frequency (kHz)	H-field@3m (dB $\mu$ V)	Limit@3m (dB $\mu$ V)	Result
Horizontal	129.10	47.77	105.39	Pass
Vertical	129.10	46.24	105.39	Pass

## b) Radiated spurious:



## Test Polarization: Vertical



Site : 3m chamber

Condition : FCC 9K-30M 3m LOOP-FMZB 1519B VERTICAL

EUT : Airbase Wireless

Model : AFW-KK-NA

Test mode : Charging Mode

Power Rating : AC120V/60Hz

Environment : Temp:25.5°C Humi:55%

Test Engineer: Zora

REMARK :

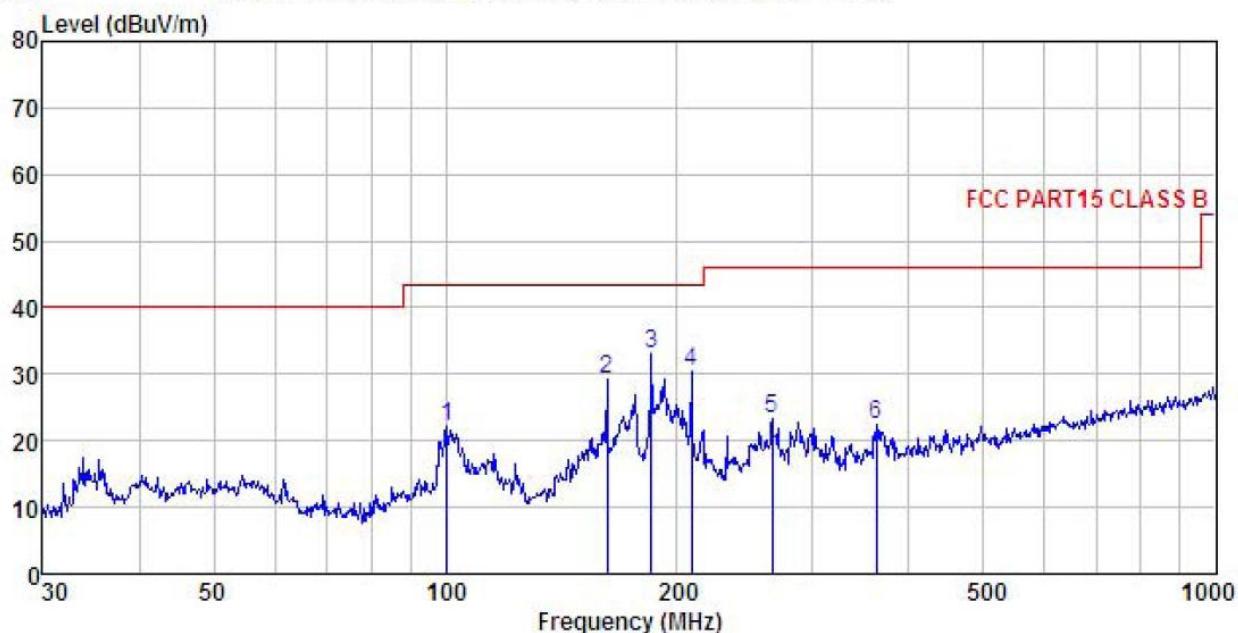
Freq	ReadAntenna		Cable Preamp		Limit Line	Over Limit	Remark
	Freq	Level Factor	Loss Factor	Level			
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	0.014	65.86	-25.85	0.04	0.00	40.05	Peak
2	0.031	65.11	-25.95	0.12	0.00	39.28	Peak
3	0.154	63.74	-26.16	0.27	0.00	37.85	Peak
4	0.411	61.11	-26.28	0.38	0.00	35.21	Peak
5	1.002	57.10	-26.30	0.61	0.00	31.41	Peak
6	4.915	64.33	-26.60	0.59	0.00	38.32	Peak

## Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
- The emission levels of other frequencies are very lower than the limit and not show in test report.

## 30MHz~1000MHz

Test Polarization: Horizontal



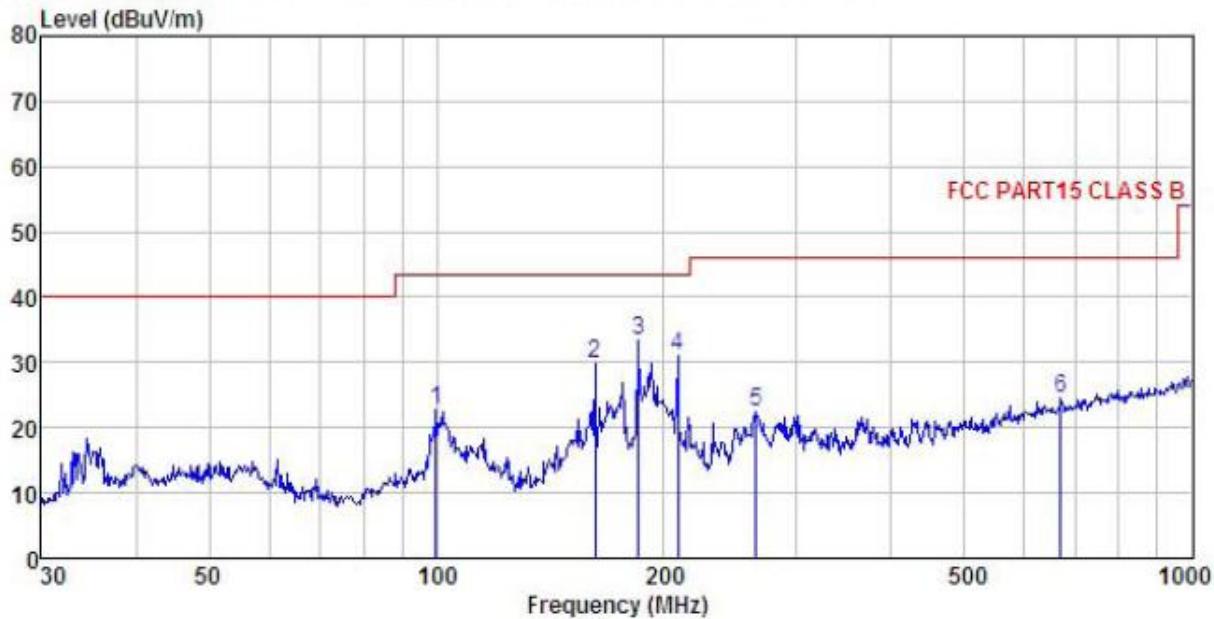
Site : 3m chamber  
 Condition : FCC PART15 CLASS B 3m VULB9163(30M2G) HORIZONTAL  
 EUT : Airbase Wireless  
 Model : AFW-KK-NA  
 Test mode : Charing mode  
 Power Rating : AC 120V/60Hz  
 Environment : Temp:25.5°C Huni:55% 101KPa  
 Test Engineer: Zora  
 REMARK :

Freq	Read	Antenna	Cable	Preamp	Limit	Over	Remark	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	100.581	37.92	11.74	1.94	29.52	22.08	43.50	-21.42 QP
2	162.041	46.72	9.16	2.60	29.12	29.36	43.50	-14.14 QP
3	185.138	48.78	10.53	2.77	28.93	33.15	43.50	-10.35 QP
4	208.580	44.58	11.84	2.86	28.78	30.50	43.50	-13.00 QP
5	265.676	35.47	13.40	2.85	28.51	23.21	46.00	-22.79 QP
6	362.985	33.09	14.85	3.09	28.62	22.41	46.00	-23.59 QP

## Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
- The emission levels of other frequencies are very lower than the limit and not show in test report.

Test Polarization: Vertical



Site : 3m chamber  
 Condition : FCC PART15 CLASS B 3m VULB9163(30M2G) VERTICAL  
 EUT : Airbase Wireless  
 Model : AFW-KK-NA  
 Test mode : Charing mode  
 Power Rating : AC 120V/60Hz  
 Environment : Temp:25.5°C Humi:55% 101KPa  
 Test Engineer: Zora  
 REMARK :

Freq	Read	Antenna	Cable	Preamp	Limit	Over	Remark	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	99.878	38.62	11.68	1.94	29.53	22.71	43.50	-20.79 QP
2	162.041	47.12	9.16	2.60	29.12	29.76	43.50	-13.74 QP
3	185.138	49.04	10.53	2.77	28.93	33.41	43.50	-10.09 QP
4	208.580	45.17	11.84	2.86	28.78	31.09	43.50	-12.41 QP
5	264.746	34.59	13.39	2.85	28.51	22.32	46.00	-23.68 QP
6	670.489	29.42	19.80	3.99	28.73	24.48	46.00	-21.52 QP

Remark:

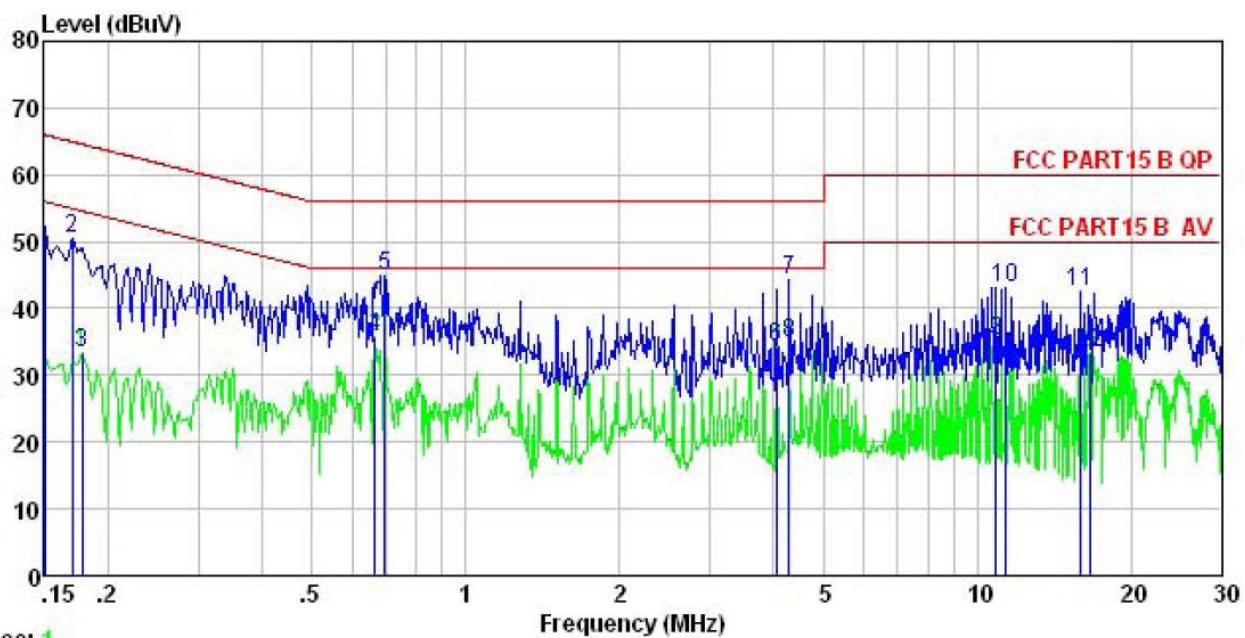
- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
- The emission levels of other frequencies are very lower than the limit and not show in test report.

### 6.3 Conducted Emission

Test Requirement:	FCC Part 15 B Section 15.107					
Test Method:	ANSI C63.4-2014 ; ANSI C63.10-2013					
Test Frequency Range:	150kHz to 30MHz					
Class / Severity:	Class B					
Receiver setup:	RBW=9kHz, VBW=30kHz					
Limit:	Frequency range (MHz)	Limit (dB $\mu$ V)				
		Quasi-peak	Average			
		0.15-0.5	66 to 56*			
		0.5-5	56			
		0.5-30	46			
	* Decreases with the logarithm of the frequency.					
Test setup:	<p>Reference Plane</p> <p>Test table/Insulation plane</p> <p>Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p>					
Test procedure	<ol style="list-style-type: none"> <li>1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). They provide a 50ohm/50uH coupling impedance for the measuring equipment.</li> <li>2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs).</li> <li>3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.</li> </ol>					
Test environment:	Temp.:	23 °C	Humid.:	56%	Press.:	101kPa
Test Instruments:	Refer to section 5.9 for details					
Test mode:	Refer to section 5.3 for details					
Test results:	Pass					

## Measurement data:

Test Phase: Line



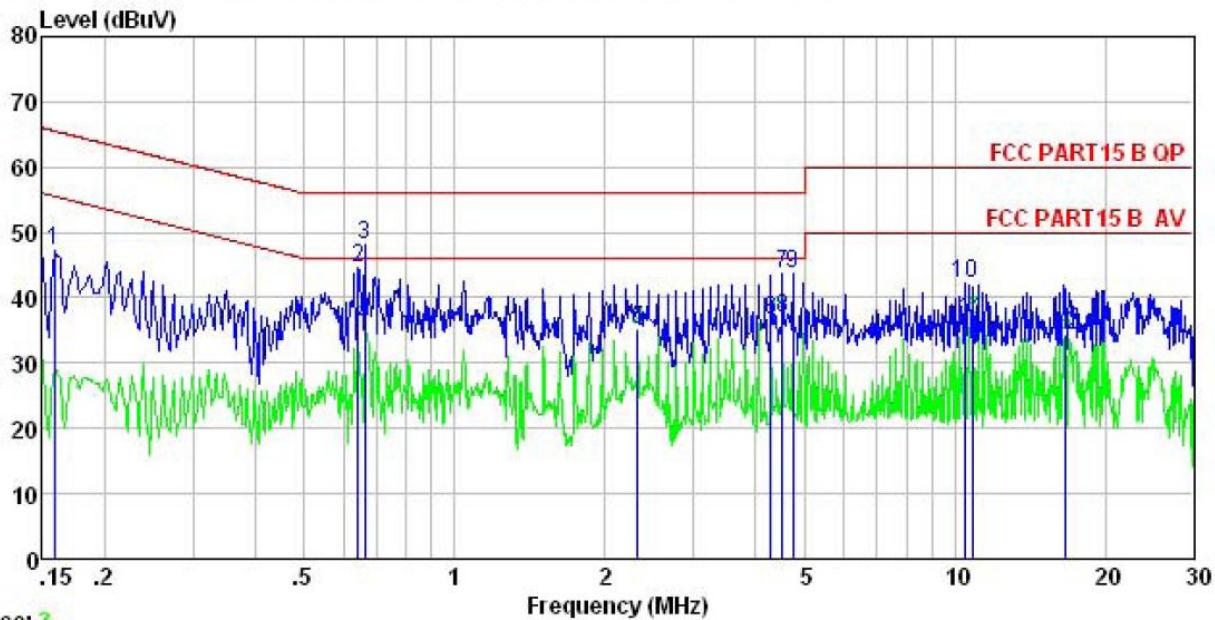
Site : CCIS Shielding Room  
 Condition : FCC PART15 B QP LISN LINE  
 EUT : Airbase Wireless  
 Model : AFW-KK-NA  
 Test mode : Charging Mode  
 Power Rating : AC 120V/60Hz  
 Environment : Temp:25.5°C Huni:55%  
 Test Engineer: Zora  
 Remark :

Freq	Read	LISN	Cable	Limit	Over	Remark
	MHz	dBuV	Factor	Loss	Level	
1	0.150	41.32	0.18	10.78	52.28	66.00 -13.72 QP
2	0.170	39.53	0.17	10.77	50.47	64.94 -14.47 QP
3	0.178	22.30	0.16	10.77	33.23	54.59 -21.36 Average
4	0.665	24.85	0.13	10.77	35.75	46.00 -10.25 Average
5	0.694	34.01	0.13	10.77	44.91	56.00 -11.09 QP
6	4.049	23.09	0.18	10.89	34.16	46.00 -11.84 Average
7	4.292	33.32	0.19	10.88	44.39	56.00 -11.61 QP
8	4.292	23.63	0.19	10.88	34.70	46.00 -11.30 Average
9	10.905	23.88	0.32	10.93	35.13	50.00 -14.87 Average
10	11.377	31.91	0.32	10.93	43.16	60.00 -16.84 QP
11	15.970	31.18	0.31	10.91	42.40	60.00 -17.60 QP
12	16.661	22.15	0.30	10.91	33.36	50.00 -16.64 Average

## Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss.

Test Phase: Neutral



Trace: 3

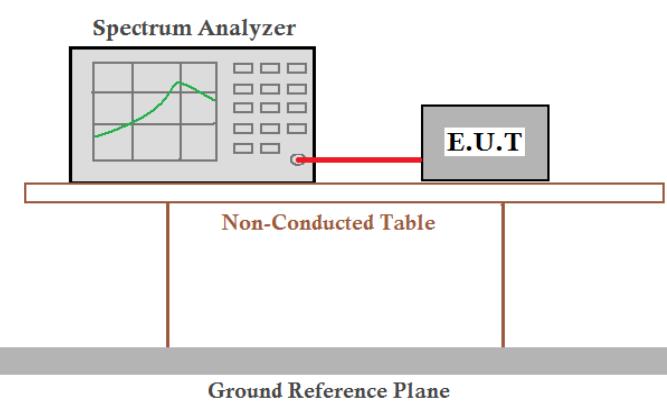
Site : CCIS Shielding Room  
 Condition : FCC PART15 B QP LISN NEUTRAL  
 EUT : Airbase Wireless  
 Model : AFW-KK-NA  
 Test mode : Charging Mode  
 Power Rating : AC 120V/60Hz  
 Environment : Temp:25.5°C Humi:55%  
 Test Engineer: Zora  
 Remark :

	Read Freq	LISN Level	Cable Factor	Limit Loss	Line Level	Over Line Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB
1	0.158	35.44	0.98	10.77	47.19	65.56	-18.37 QP
2	0.641	32.82	0.97	10.77	44.56	56.00	-11.44 QP
3	0.661	36.46	0.97	10.77	48.20	56.00	-7.80 QP
4	0.661	23.98	0.97	10.77	35.72	46.00	-10.28 Average
5	2.321	23.13	0.98	10.94	35.05	46.00	-10.95 Average
6	4.292	24.84	1.00	10.88	36.72	46.00	-9.28 Average
7	4.525	31.79	1.00	10.87	43.66	56.00	-12.34 QP
8	4.525	25.09	1.00	10.87	36.96	46.00	-9.04 Average
9	4.746	31.88	1.01	10.86	43.75	56.00	-12.25 QP
10	10.452	30.24	1.01	10.94	42.19	60.00	-17.81 QP
11	10.905	24.71	1.00	10.93	36.64	50.00	-13.36 Average
12	16.661	22.39	0.83	10.91	34.13	50.00	-15.87 Average

## Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss.

## 6.4 20dB Bandwidth

Test Requirement:	FCC Part15 C Section 15.215 (c)
Test Method:	ANSI C63.4-2014 ; ANSI C63.10-2013
Receiver setup:	RBW=1 kHz, VBW=3 kHz, detector: Peak
Limit:	The fundamental emission be kept within atleast the central 80% of the permitted band
Test Procedure:	<ol style="list-style-type: none"> <li>1. According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT.</li> <li>2. Set the EUT to proper test channel.</li> <li>3. Max hold the radiated emissions, mark the peak power frequency point and the -20dB upper and lower frequency points.</li> <li>4. Read 20dB bandwidth.</li> </ol>
Test setup:	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

### Measurement Data

20dB bandwidth (kHz)	Limits
2.72	
2.90	N/A

Remark: For report purpose only.

Test plot as follows:

