



Report No.: File Reference No.:	FCC1911048-01 2020-04-01
Applicant:	Shenzhen Jingwah Information Technology Co., Ltd.
Product:	Wireless Bluetooth Speaker
Model No.:	BKS800
Trademark:	Brookstone
Test Standards:	FCC Part 15 Subpart C
Test Result:	It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4&FCC Part 15 Subpart C, for the evaluation of electromagnetic compatibility
Approved By	
Approved By Jack Chung	
Jack Chung	
Manager	
Dated:	April 01, 2020
	erein relate only to the sample tested ts is issued errors and omissions exempt and is subject to
SHENZHEN	N TIMEWAY TESTING LABORATORIES

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com



# **Special Statement**:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meets with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

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

# CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

# FCC-Registration No.: 744189

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 744189.

# Industry Canada (IC) — Registration No.: 5205A

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

# A2LA (Certification Number:5013.01)

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

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Test Report Conclusion Content

1.0	General Details	4
1.1	Test Lab Details	4
1.2	Applicant Details	4
1.3	Description of EUT	4
1.4	Submitted Sample	5
1.5	Test Duration	5
1.6	Test Uncertainty	5
1.7	Test By	5
2.0	List of Measurement Equipment	6
3.0	Technical Details	7
3.1	Summary of Test Results	7
3.2	Test Standards	7
4.0	EUT Modification	7
5.0	Power Line Conducted Emission Test	8
5.1	Schematics of the Test	8
5.2	Test Method and Test Procedure	8
5.3	Configuration of the EUT	8
5.4	EUT Operating Condition	9
5.5	Conducted Emission Limit	9
5.6	Test Result	9
6.0	Radiated Emission test	12
6.1	Test Method and Test Procedure	12
6.2	Configuration of the EUT	13
6.3	EUT Operation Condition	13
6.4	Radiated Emission Limit	13
6.5	Test Result	14
7.0	20dB Bandwidth Test	18
8.0	Antenna Requirement	20
9.0	FCC Label	21
10.0	Photo of Testing	22

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#### 1.0 General Details

#### 1.1 Test Lab Details

Name :	SHENZHEN TIMEWAY TESTING LABORATORIES.
Address:	Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le
	Village, Nanshan District, Shenzhen, China
Telephone:	+86 755 83448688
Fax:	+86 755 83442996
Site on File w	vith the Federal Communications Commission – United Sates
Registration N	Number: 744189
For 3m Anech	hoic Chamber

# 1.2 Applicant Details

Applicant:	Shenzhen Jingwah Information Technology Co., Ltd.
Address:	6F, Bldg.4, Jinghua Square, No. 168, Zhenzhong Rd., Fuqiang Community, Huaqiangbei,
	Futian District, Shenzhen
Telephone:	0755-84688843
Fax:	0755-83976520

#### 1.3 Description of EUT

Description of LOT	
Product:	Wireless Bluetooth Speaker
Manufacturer:	Shenzhen Jingwah Information Technology Co., Ltd.
Address:	6F, Bldg.4, Jinghua Square, No. 168, Zhenzhong Rd., Fuqiang Community,
	Huaqiangbei, Futian District, Shenzhen
Brand Name:	Brookstone
Model Number:	BKS800
Additional Model Name	N/A
Additional Trade Name	N/A
Input:	DC20V,3.25A
Battery:	DC11.1V, 5000mAh,55.5wh, 18650 Li-ion battery
Power Supply:	Model: JHD-AD065C-200325; Input:100-240V~, 50/60Hz, 1.5A;
	Output: DC20V, 3.25A
Operation Frequency:	See below table

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	0.1115	06	0.140	11	0.165	16	0.190
02	0.120	07	0.145	12	0.170	17	0.195

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03	0.125	08	0.150	13	0.175	18	0.200
04	0.130	09	0.155	14	0.180	19	0.205
05	0.135	10	0.160	15	0.185		
Teas channel		Freque	ency (MHz)				
CH13		0.17	75 MHz				

Modulation Type:MSKAntenna DesignationInductive Loop Antenna with Gain 0dBi

- 1.4 Submitted Sample 1 Samples
- 1.5 Test Duration 2019-11-07 to 2020-04-01
- 1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB Radiated Emissions below 9kHz-30MHz Uncertainty =4.3dB Radiated Emissions below 30MHz-1GHz Uncertainty =4.7dB Radiated Emissions above 1GHz Uncertainty =6.0dB Conducted Power Uncertainty =6.0dB Occupied Channel Bandwidth Uncertainty =5%

1.7 Test Engineer

Terry Tang

The sample tested by

Print Name: Terry Tang

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2.0 Test Equipment							
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date		
ESPI Test Receiver	R&S	ESPI 3	100379	2019-06-21	2020-06-20		
LISN	R&S	EZH3-Z5	100294	2019-06-21	2020-06-20		
LISN	R&S	EZH3-Z5	100253	2019-06-21	2020-06-20		
Ultra Broadband ANT	R&S	HL562	100157	2019-06-21	2020-06-20		
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2019-06-21	2020-06-20		
Loop Antenna	EMCO	6507	00078608	2018-06-25	2021-06-24		
Spectrum	R&S	FSIQ26	100292	2019-06-21	2020-06-20		
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2019-06-21	2021-06-20		
Horn Antenna	R&S	BBHA 9120D	9120D-631	2018-07-09	2021-07-08		
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2018-07-04	2021-07-03		
9*6*6 Anechoic			N/A	2018-02-07	2021-02-06		
EMI Test Receiver	RS	ESVB	826156/011	2019-06-21	2020-06-20		
EMI Test Receiver	RS	ESH3	860904/006	2019-06-21	2020-06-20		
Spectrum	HP/Agilent	ESA-L1500A	US37451154	2019-06-21	2020-06-20		
Spectrum	HP/Agilent	E4407B	MY50441392	2019-06-21	2020-06-20		
Spectrum	RS	FSP	1164.4391.38	2020-01-18	2021-01-17		
RF Cable	Zhengdi	ZT26-NJ-NJ-8 M/FA		2019-06-21	2020-06-20		
RF Cable	Zhengdi	7m		2019-06-21	2020-06-20		
RF Switch	EM	EMSW18	060391	2019-06-21	2020-06-20		
Pre-Amplifier	Schwarebeck	BBV9743	#218	2019-06-21	2020-06-20		
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2019-06-21	2020-06-20		
LISN	SCHAFFNER	NNB42	00012	2020-01-07	2020-01-06		

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### **3.0** Technical Details

#### 3.1 Summary of test results

The EUT has been tested according to the following specifications:							
Standard	Test Type	Result	Notes				
FCC Part 15, Paragraph 15.203	Antenna requirements	PASS	Compliant				
FCC Part 15, Paragraph 15.207	Conducted Emission Test	PASS	Compliant				
FCC Part 15, Paragraph 15.209 (a) (f)	General Requirement	PASS	Compliant				
FCC Part 15, Paragraph 15.215	20dB Bandwidth Testing	PASS	Compliant				

#### 3.2 Test Standards

# FCC Part 15 Subpart C , ANSI C63.4 :2014 and ANSI C63.10 :2013

#### 4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES

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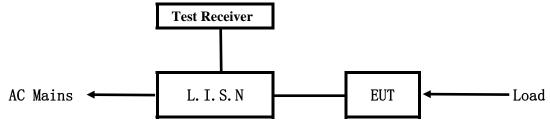
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# 5. Power Line Conducted Emission Test

5.1 Schematics of the test

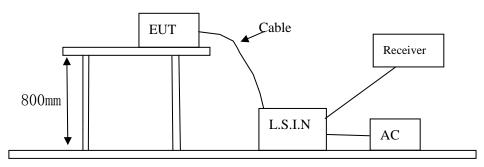


EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 500hm/50uH as specified by section 5.1 of ANSI C63.10 –2013.

Block diagram of Test setup



### 5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2014. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

A. EUT

Device	Manufacturer		Model		FCC ID	
Wireless Bluetooth	Shenzhen Jingwah Information	BKS800		D	RBD-BKS800	
Speaker	Technology Co., Ltd.	DRSOUU		K	KDD-DK2000	
B. Internal Device						
Device	Manufacturer		Model		FCC ID/DOC	
N/A						

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#### C. Peripherals

	Device	Manufacturer	Model	Rating				
5.4	EUT Operating Condition							

Operating condition is according to ANSI C63.10 -2013.

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

#### 5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency	Class A Lim	its (dB µ V)	Class B Limits (dB µ V)		
(MHz)	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level	
$0.15~\sim~0.50$	79.0	66.0	66.0~56.0*	56.0~46.0*	
$0.50~\sim~5.00$	73.0	60.0	56 0	46.0	
$5.00 \sim 30.00$	73.0	60.0	60.0	50.0	

Notes: 1. \*Decreasing linearly with logarithm of frequency.

2. The tighter limit shall apply at the transition frequencies

# 5.6 Test Results

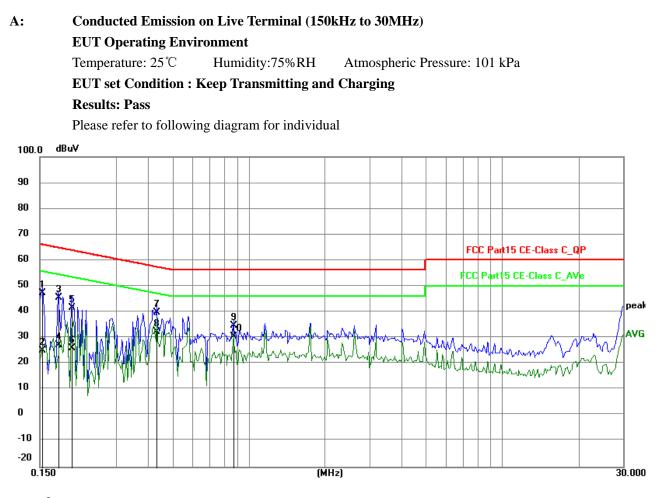
The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz. (The average detector is necessary when the Quasi-peak emission level beyond the average Limit.)

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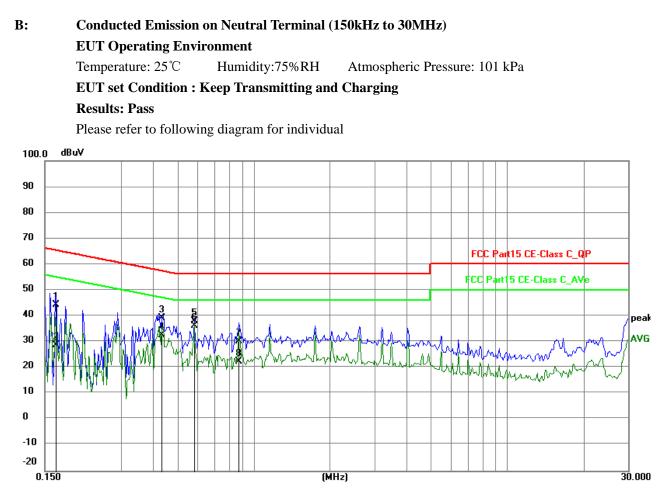


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1539	37.42	9.78	47.20	65.79	-18.59	QP	Ρ
2	0.1539	15.35	9.78	25.13	55.79	-30.66	AVG	Ρ
3	0.1773	35.88	9.77	45.65	64.61	-18.96	QP	Ρ
4	0.1773	17.54	9.77	27.31	54.61	-27.30	AVG	Ρ
5	0.2007	32.00	9.75	41.75	63.58	-21.83	QP	Ρ
6	0.2007	16.41	9.75	26.16	53.58	-27.42	AVG	Ρ
7	0.4347	29.99	9.77	39.76	57.16	-17.40	QP	Ρ
8	0.4347	22.70	9.77	32.47	47.16	-14.69	AVG	Ρ
9	0.8715	25.00	9.79	34.79	56.00	-21.21	QP	Ρ
10	0.8715	20.71	9.79	30.50	46.00	-15.50	AVG	Ρ

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No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1655	34.50	9.77	44.27	65.18	-20.91	QP	Ρ
2	0.1655	18.85	9.77	28.62	55.18	-26.56	AVG	Ρ
3	0.4351	29.61	9.77	39.38	57.15	-17.77	QP	Ρ
4	0.4351	22.74	9.77	32.51	47.15	-14.64	AVG	Ρ
5	0.5829	28.15	9.77	37.92	56.00	-18.08	QP	Ρ
6	0.5829	26.40	9.77	36.17	46.00	-9.83	AVG	Ρ
7	0.8754	20.40	9.79	30.19	56.00	-25.81	QP	Ρ
8	0.8754	12.54	9.79	22.33	46.00	-23.67	AVG	Ρ

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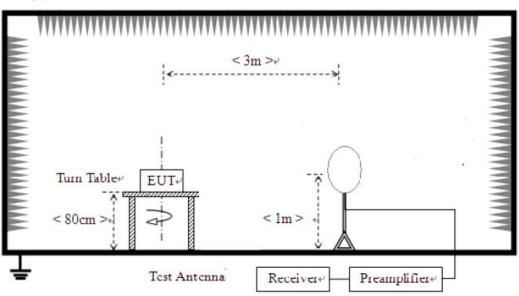


#### 6 Radiated Emission Test

- 6.1 Test Method and test Procedure:
- The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at TIMEWAY EMC Laboratory. This site is on file with the FCC laboratory division, Registration No.744189
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.
- (3) The frequency spectrum from 9 kHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with RBW=120 kHz/VBW=300 kHz; All readings from 9 kHz to 30 MHz are quasi-peak values with RBW=10 kHz/VBW=30 kHz. For the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz Radiated emission test in these three bands are based on measurements employing an average detector. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "**QP**" in the data table.
- (6) The antenna polarization: Vertical polarization and Horizontal polarization.

#### **Block diagram of Test setup**

#### 9kHz-30MHz

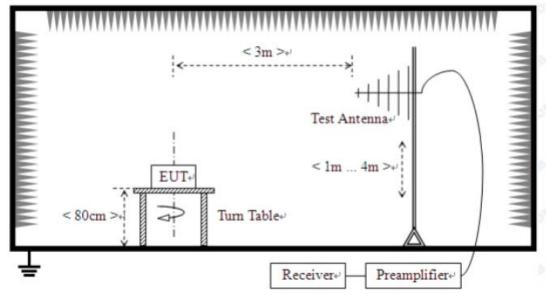


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#### 30MHz-1000MHz



- 6.2 Configuration of The EUT Same as section 5.3 of this report
- 6.3 EUT Operating Condition Same as section 5.4 of this report.
- 6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

# B. Frequencies in restricted band are compiled to limit on Paragraph 15.209. Limits for frequency below 30MHz

Frequency Range (MHz)	Distance (m)	Field strength (V/m)
0.009-0.490	300	24000/F(kHz)
0.490-1.705	30	2400/F(kHz)
1.705-30	30	30

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#### Limits for frequency above 30MHz

Frequency Range (MHz)	Distance (m)	Field strength (dB $\mu$ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

# Note: 1. RF Voltage (dBuV) = $20 \log \text{RF}$ Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

4. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

#### 6.5 Test result

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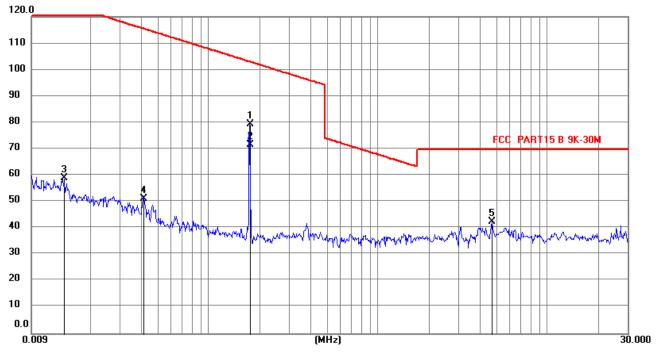
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# Measurement data:

Note: Limit dBuV/m @3m = Limit dBuV/m @300m+ 80 Limit dBuV/m @3m = Limit dBuV/m @30m + 40

# 9 kHz~30 MHz



No.	Frequency (MHz)	Reading ()	Factor (dB)	Level (dBuV/m)		Margin (dB)	Detector	P/F
1	0.1753	69.56	9.77	79.33	102.68	-23.35	QP	Ρ
2	0.1753	61.89	9.77	71.66	102.68	-31.02	AVG	Ρ
3	0.0140	48.77	10.14	58.91	124.51	-65.60	peak	Ρ
4	0.0413	41.13	9.96	51.09	115.17	-64.08	peak	Ρ
5	4.7187	32.58	9.92	42.50	69.54	-27.04	peak	Ρ

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# A. General Radiated Emission Data Radiated Emission In Horizontal (30MHz----1000MHz)

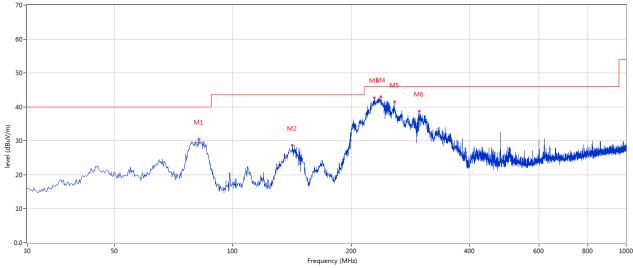
EUT set Condition: Keep Transmitting

**Results:** 

Please refer to following diagram for individual

Pass

FCC\_FCC Part 15C Class B 30MHz-1GHz



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	82.124	30.44	-17.17	40.0	-9.56	Peak	195.00	200	Н	Pass
2	141.765	28.70	-17.29	43.5	-14.80	Peak	89.00	200	Н	Pass
3	229.285	42.73	-12.69	46.0	-3.27	Peak	360.00	200	Н	Pass
4	238.013	42.89	-12.46	46.0	-3.11	Peak	0.00	100	Н	Pass
5	257.893	41.40	-11.84	46.0	-4.60	Peak	339.00	100	Н	Pass
6	297.896	38.71	-11.15	46.0	-7.29	Peak	298.00	100	Н	Pass

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## B. General Radiated Emission Data

#### Radiated Emission In Vertical (30MHz----1000MHz)

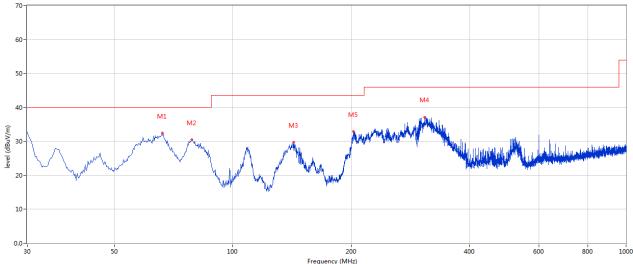
EUT set Condition: Keep Transmitting

**Results:** 

#### Please refer to following diagram for individual

Pass

FCC\_FCC Part 15C Class B 30MHz-1GHz



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	66.123	32.44	-13.97	40.0	-7.56	Peak	279.00	100	V	Pass
2	78.730	30.47	-17.47	40.0	-9.53	Peak	314.00	100	V	Pass
3	142.734	29.77	-17.30	43.5	-13.73	Peak	250.00	100	V	Pass
4	307.836	37.17	-10.93	46.0	-8.83	Peak	177.00	200	V	Pass
5	202.617	32.88	-13.40	43.5	-10.62	Peak	360.00	200	V	Pass

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# 7.0 20dB Bandwidth Testing

## 7.1 Test Procedure

With the EUT's antenna attached, the EUT's 20dB Bandwidth was received by the test antenna which was connected to the spectrum analyzer with the START and STOP frequencies set to the EUT's operation band.

## 7.3 Test Data

Frequency (MHz)	20dB Bandwidth Emission (kHz)	Limit (kHz)	Result
0.175	3.33		Pass

Refer to attached plots:

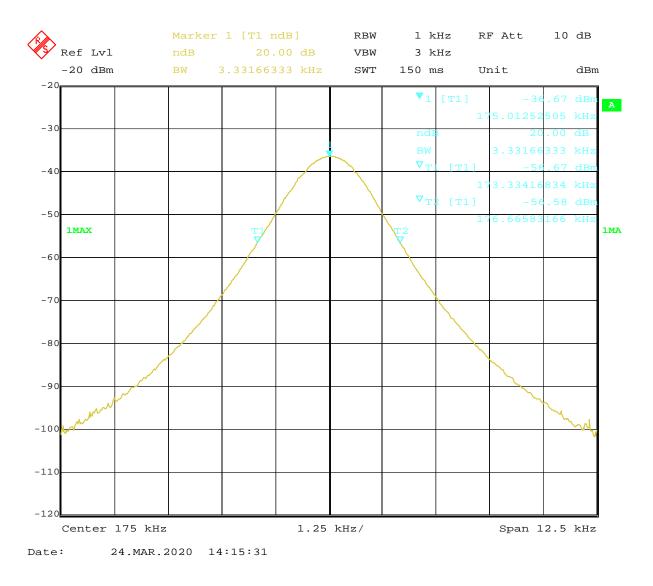
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#### 20dB Bandwidth



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# 8.0 Antenna Requirement

#### 8.1 Standard Applicable

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. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

#### 8.2 Antenna Connected constructions

The antenna is Inductive Loop Antenna. The antenna gain is 0dBi. So it meets the requirement of 15.203

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#### 9.0 FCC ID Label

#### FCC ID: RBD-BKS800

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

#### **Mark Location:**



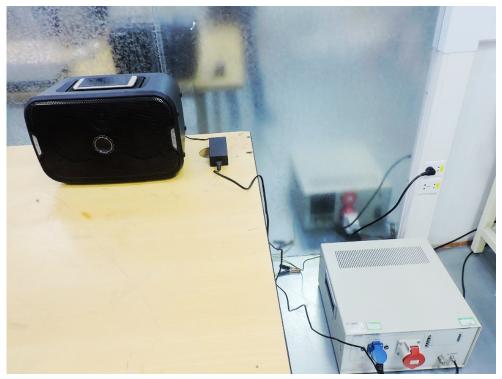
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#### 10.0. Photo of testing

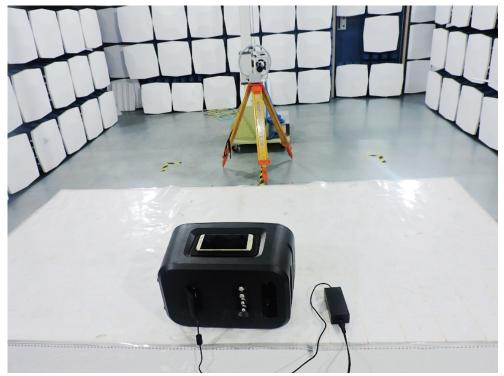
10.1 Conducted test View

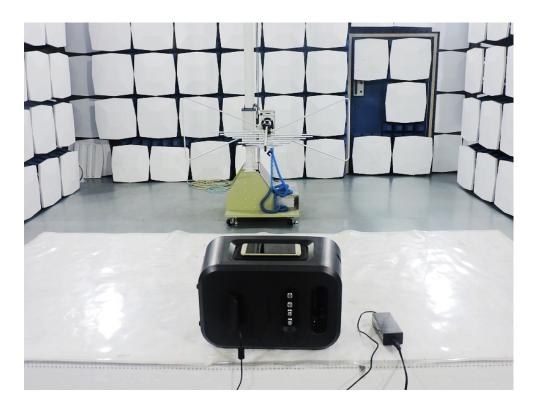


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10.2 Radiated emission test view





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Photo for the EUT





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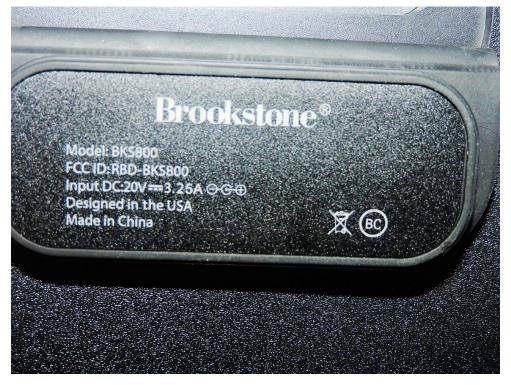


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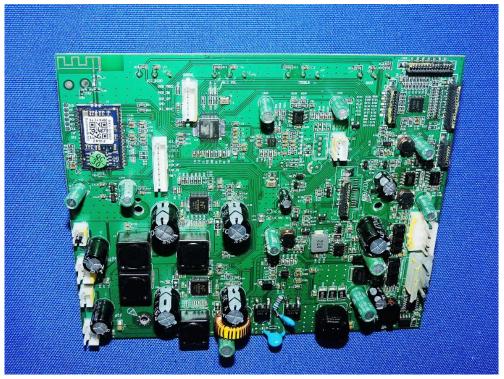




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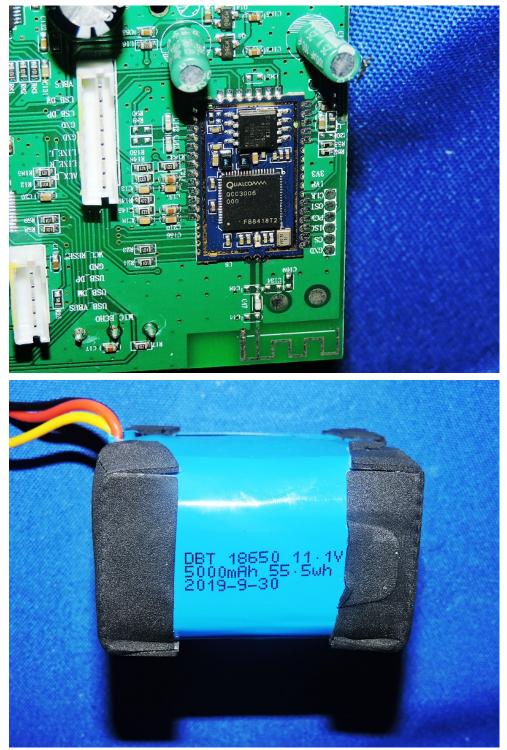




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