

# Test Report

**Applicant** : Dongguan Huien Electronic Technology Co., Ltd  
Room 301, Building of 1, No. 429, Changdong  
**Address** : Road, Changping Town, Dongguan city,  
Guangdong Province , China  
**Product Name** : TWS wireless bluetooth earphones  
**Brand Mark** : N/A  
**Model** : J66  
**Series model** : J67,J68,J69,J70,HE-076,HE-076A,HE-076B,  
HE-076C,HE-076D  
**Report Number** : BLA-EMC-202407-A2802  
**FCC ID** : 2A2BYHE-J66  
**Date of Receipt** : 2024.07.04  
**Date of Test** : 2024.07.06 to 2024.07.23  
**Test Standard** : 47 CFR Part 15, Subpart C 15.247  
**Test Result** : Pass

Compiled by: *charlie*

Review by: *Sueels*

Approved by: *13 Steve Zheng*

Issued Date: 2024.07.24



## BlueAsia of Technical Services(Shenzhen) Co.,Ltd.

Address: Building C, No. 107, Shihuan Road, Shiyan Sub-District, Baoan District,  
Shenzhen, Guangdong Province, China



*The test report is effective only with both signature and specialized stamp and The result(s) shown in this report refer only to the sample(s) tested. Without written approval of BlueAsia, this report can't be reproduced except in full. The results described in this report do not represent the quality or characteristics of the sampled batch, nor do they represent any similar or identical products that are not explicitly stated.*

## Table of Contents

<b>1 General information</b> .....	<b>5</b>
1.1 General information .....	5
1.2 General description of EUT .....	5
<b>2 Test summary</b> .....	<b>6</b>
<b>3 Test Configuration</b> .....	<b>7</b>
3.1 Test mode .....	7
3.2 Operation Frequency each of channel .....	7
3.3 Test channel .....	8
3.4 Auxiliary equipment .....	8
3.5 Test environment .....	8
<b>4 Laboratory information</b> .....	<b>9</b>
4.1 Laboratory and accreditations .....	9
4.2 Measurement uncertainty .....	9
<b>5 Test equipment</b> .....	<b>10</b>
<b>6 Test result</b> .....	<b>12</b>
6.1 Antenna requirement .....	12
6.2 Conducted emissions at AC power line (150 kHz-30 MHz) .....	13
6.3 Conducted peak output Power .....	17
6.4 20dB Bandwidth .....	18
6.5 Conducted Band Edges Measurement .....	19
6.6 Conducted spurious emissions .....	20
6.7 Carrier Frequencies Separation .....	21
6.8 Hopping Channel Number .....	22
6.9 Dwell Time .....	23
6.10 Radiated spurious emissions .....	24
6.11 Radiated emissions which fall in the restricted bands .....	35
<b>7 Appendix A</b> .....	<b>42</b>
7.1 Maximum Conducted Output Power .....	42
7.2 -20dB Bandwidth .....	46
7.3 Occupied Channel Bandwidth .....	50

7.4 Band Edge .....	54
7.5 Band Edge(Hopping) .....	59
7.6 Conducted RF Spurious Emission .....	64
7.7 Carrier Frequencies Separation .....	71
7.8 Number of Hopping Channel .....	73
7.9 Dwell Time .....	75
<b>Appendix B: photographs of test setup .....</b>	<b>81</b>
<b>Appendix C: photographs of EUT .....</b>	<b>83</b>

BlueAsia

## Revise Record

Version No.	Date	Description
01	2024.07.24	Original

BlueAsia

# 1 General information

## 1.1 General information

Applicant	Dongguan Huien Electronic Technology Co., Ltd
Address	Room 301, Building of 1, No. 429, Changdong Road, Changping Town, Dongguan city, Guangdong Province , China
Manufacturer	Dongguan Huien Electronic Technology Co., Ltd
Address	Room 301, Building of 1, No. 429, Changdong Road, Changping Town, Dongguan city, Guangdong Province , China
Factory	Dongguan Huien Electronic Technology Co., Ltd
Address	Room 301, Building of 1, No. 429, Changdong Road, Changping Town, Dongguan city, Guangdong Province , China

## 1.2 General description of EUT

Product Name	TWS wireless bluetooth earphonesJ66
Model No.	J67,J68,J69,J70,HE-076,HE-076A,HE-076B,HE-076C,HE-076D
Series model	all models are electrically identical , only model no is different
Differences of Series model	
Operation Frequency:	2402MHz-2480MHz
Modulation Type:	GFSK, pi/4DQPSK
Channel Spacing:	1MHz
Number of Channels:	79
Antenna Type:	Ceramic Chip Antenna
Antenna Gain:	2.78dBi(Provided by customer)
Power supply or adapter information	Earphone Battery:DC3.7V
Hardware Version	V1.2
Software Version	V241
Engineer sample no	BLA-EMC-202407-A28

*Note: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.*

## 2 Test summary

No.	Test item	Result	Remark
1	Antenna Requirement	Pass	
2	Conducted Emissions at AC Power Line (150kHz-30MHz)	Pass	
3	Conducted Peak Output Power	Pass	
4	20dB Bandwidth	Pass	
5	Conducted Band Edges Measurement	Pass	
6	Conducted Spurious Emissions	Pass	
7	Carrier Frequencies Separation	Pass	
8	Hopping Channel Number	Pass	
9	Dwell Time	Pass	
10	Radiated Spurious Emissions	Pass	
11	Radiated Emissions which fall in the restricted bands	Pass	

### 3 Test Configuration

#### 3.1 Test mode

Test Mode <sup>Note 1</sup>	Description
TX	Keep the EUT in continuously transmitting mode with modulation. (hopping and non-hopping mode all have been tested)
RX	Keep the EUT in receiving mode
TX Low channel	Keep the EUT in continuously transmitting mode in low channel
TX middle channel	Keep the EUT in continuously transmitting mode in middle channel
TX high channel	Keep the EUT in continuously transmitting mode in high channel

*Note 1: The EUT was configured to measure its highest possible emission and/or immunity level. The test modes were adapted according to the operation manual for use*

#### 3.2 Operation Frequency each of channel

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	20	2422MHz	40	2442MHz	60	2462MHz
1	2403MHz	21	2423MHz	41	2443MHz	61	2463MHz
2	2404MHz	22	2424MHz	42	2444MHz	62	2464MHz
3	2405MHz	23	2425MHz	43	2445MHz	63	2465MHz
4	2406MHz	24	2426MHz	44	2446MHz	64	2466MHz
5	2407MHz	25	2427MHz	45	2447MHz	65	2467MHz
6	2408MHz	26	2428MHz	46	2448MHz	66	2468MHz
7	2409MHz	27	2429MHz	47	2449MHz	67	2469MHz
8	2410MHz	28	2430MHz	48	2450MHz	68	2470MHz
9	2411MHz	29	2431MHz	49	2451MHz	69	2471MHz
10	2412MHz	30	2432MHz	50	2452MHz	70	2472MHz
11	2413MHz	31	2433MHz	51	2453MHz	71	2473MHz
12	2414MHz	32	2434MHz	52	2454MHz	72	2474MHz
13	2415MHz	33	2435MHz	53	2455MHz	73	2475MHz

14	2416MHz	34	2436MHz	54	2456MHz	74	2476MHz
15	2417MHz	35	2437MHz	55	2457MHz	75	2477MHz
16	2418MHz	36	2438MHz	56	2458MHz	76	2478MHz
17	2419MHz	37	2439MHz	57	2459MHz	77	2479MHz
18	2420MHz	38	2440MHz	58	2460MHz	78	2480MHz
19	2421MHz	39	2441MHz	59	2461MHz	--	

### 3.3 Test channel

Channel	Frequency
The lowest channel	2402MHz
The middle channel	2441MHz
The Highest channel	2480MHz

### 3.4 Auxiliary equipment

Device Type	Manufacturer	Model Name	Serial No.	Remark
PC	Lenovo	E460C	N/A	From lab (No.BLA-ZC-BS-2022005)

**Note:**

“--” mean no any auxiliary device during testing.

### 3.5 Test environment

Environment	Temperature	Voltage
Normal	25°C	DC 3.7V



## 4 Laboratory information

### 4.1 Laboratory and accreditations

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

Company name:	BlueAsia of Technical Services(Shenzhen) Co., Ltd.
Address:	Building C, No. 107, Shihuan Road, Shiyan Sub-District, Baoan District, Shenzhen, Guangdong Province, China
CNAS accredited No.:	L9788
A2LA Cert. No.:	5071.01
FCC Designation No.:	CN1252
ISED CAB identifier No.:	CN0028
Telephone:	+86-755-28682673
FAX:	+86-755-28682673

### 4.2 Measurement uncertainty

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=1.96$ .

Parameter	Expanded Uncertainty
Radiated Emission(9kHz-30MHz)	$\pm 4.34$ dB
Radiated Emission(30Mz-1000MHz)	$\pm 4.24$ dB
Radiated Emission(1GHz-18GHz)	$\pm 4.68$ dB
AC Power Line Conducted Emission(150kHz-30MHz)	$\pm 3.45$ dB
Occupied Channel Bandwidth	$\pm 5$ %
RF output power, conducted	$\pm 1.5$ dB
Power Spectral Density, conducted	$\pm 3.0$ dB
Unwanted Emissions, conducted	$\pm 3.0$ dB
Temperature	$\pm 3$ °C
Supply voltages	$\pm 3$ %
Time	$\pm 5$ %

## 5 Test equipment

Equipment No.	Equipment Name	Model No.	Manufacture	S/N	Cal. Date	Next Cal. Date
BLA-EMC-008	Spectrum	FSP40	R&S	100817	2023/08/30	2024/08/29
BLA-EMC-009	EMI Receiver	ESR7	R&S	101199	2023/08/30	2024/08/29
BLA-EMC-011	LISN	ENV216	R&S	101372	2023/08/30	2024/08/29
BLA-EMC-012	broad band Antenna	VULB9168	Schwarz beck	00836 P:00227	2022/10/12	2025/10/11
BLA-EMC-013	Horn Antenna	BBHA9120D	Schwarz beck	01892	2022/09/13	2025/09/12
BLA-EMC-014	Amplifier	PA_000318G-4 5	SKET	PA2018043003	2023/08/30	2024/08/29
BLA-EMC-016	Signal Generator	N5182A	Agilent	MY52420567	2023/11/16	2024/11/15
BLA-EMC-028	Spectrum	N9020A	Agilent	MY53420839	2023/11/16	2024/11/15
BLA-EMC-038	Spectrum	N9020A	Agilent	MY49100060	2023/08/30	2024/08/29
BLA-EMC-041	LISN	AT166-2	ATTEN	AKK1806000003	2023/08/30	2024/08/29
BLA-EMC-042	Power sensor	RPR3006W	DARE	14I00889SN042	2023/09/01	2024/08/31
BLA-EMC-043	Loop antenna	FMZB1519B	SCHNARZBE CK	00102	2022/09/14	2025/09/13
BLA-EMC-044	Wideband radio communication tester	CMW500	R&S	132429	2023/08/30	2024/08/29
BLA-EMC-045	Impedance stable network	ISNT8-cat6	TESEQ	53580	2023/08/30	2024/08/29
BLA-EMC-046	Filter bank	2.4G/5G Filter bank	SKET	N/A	2023/07/07	2025/07/06
BLA-EMC-061	Receiver	ESPI7	R&S	101477	2023/07/07	2025/07/06
BLA-EMC-062	Signal Generator	N5181A	Agilent	MY46240904	2023/07/07	2025/07/06
BLA-EMC-064	Signal Generator	N5182B	KEYSIGHT	MY58108892	2023/07/07	2025/07/06
BLA-EMC-065	broadband Antenna	VULB9168	Schwarz beck	01065P	2022/12/12	2025/12/11
BLA-EMC-066	Amplifier	LNPA_30M01G -30	SKET	SK2021060801	2023/07/07	2025/07/06
BLA-EMC-079	Spectrum	N9020A	Agilent	MY54420161	2023/08/30	2024/08/29
BLA-EMC-080	Signal Generator	N5182A	Agilent	MY47420955	2023/08/30	2024/08/29

BLA-EMC-086	Amplifier	LNPA_18G40G- 50dB	SKET	SK2022071301	2023/08/14	2024/08/13
-------------	-----------	----------------------	------	--------------	------------	------------

BlueAsia

## 6 Test result

### 6.1 Antenna requirement

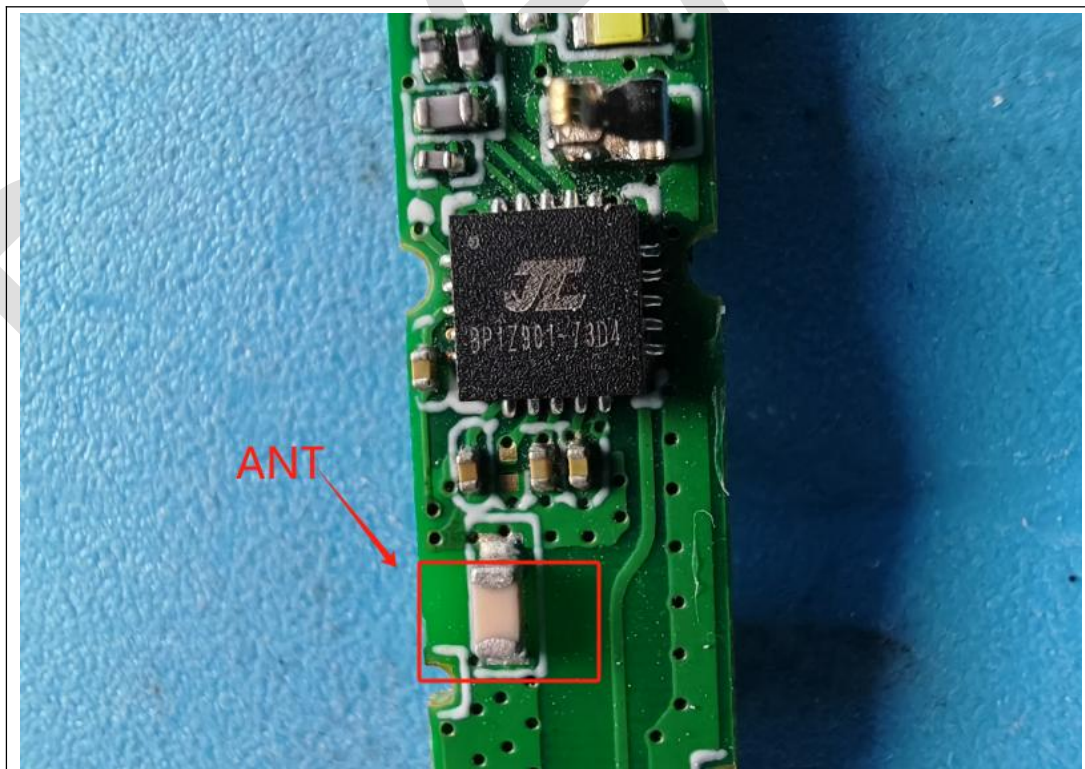
<b>Test Standard</b>	47 CFR Part 15, Subpart C 15.247
<b>Test Method</b>	N/A

#### 6.1.1 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 an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit permanently attached antenna or of a so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

EUT antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 2.78 dBi.



## 6.2 Conducted emissions at AC power line (150 kHz-30 MHz)

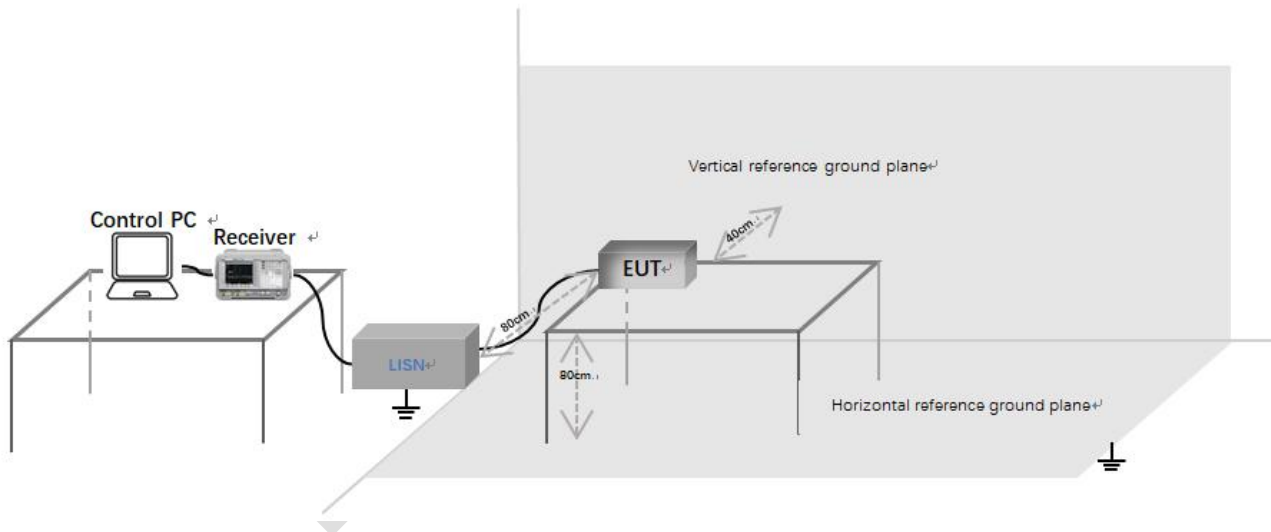
<b>Test Standard</b>	47 CFR Part 15, Subpart C 15.247
<b>Test Method</b>	ANSI C63.10 (2013) Section 6.2
<b>Test Mode (Pre-Scan)</b>	TX
<b>Test Mode (Final Test)</b>	TX

### 6.2.1 Limit

Frequency of emission(MHz)	Conducted limit(dB $\mu$ V)	
	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.

### 6.2.2 Test setup



Description of test setup connection:

- Connect the control PC to the receiver through a USB to GPIB cable;
- The receiver is connected to the LISN through a coaxial line;
- Connect the power port of LISN to the EUT.

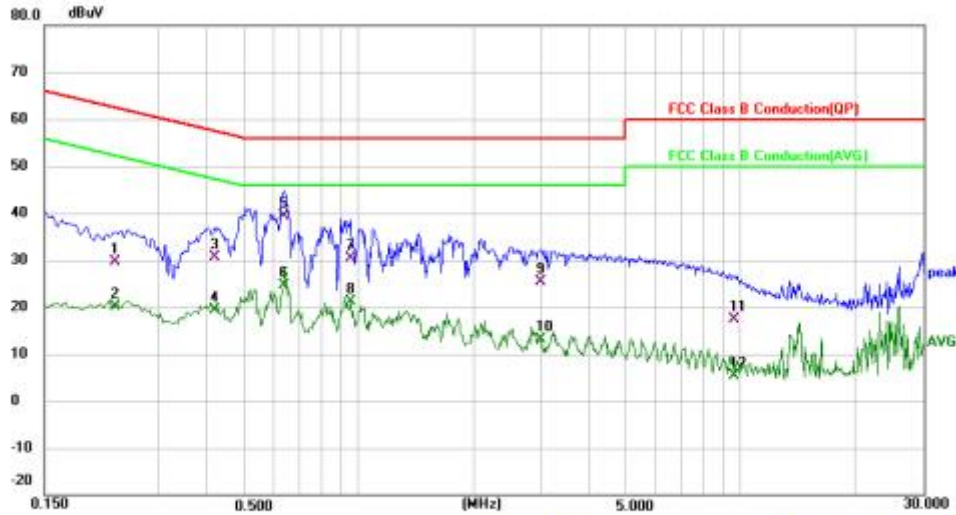
### 6.2.3 Procedure

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50H + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

LISN=Read Level+ Cable Loss+ LISN Factor

6.2.4 Test data

[Test mode: TX]; [Line: Line];[Power:AC120V/60Hz]

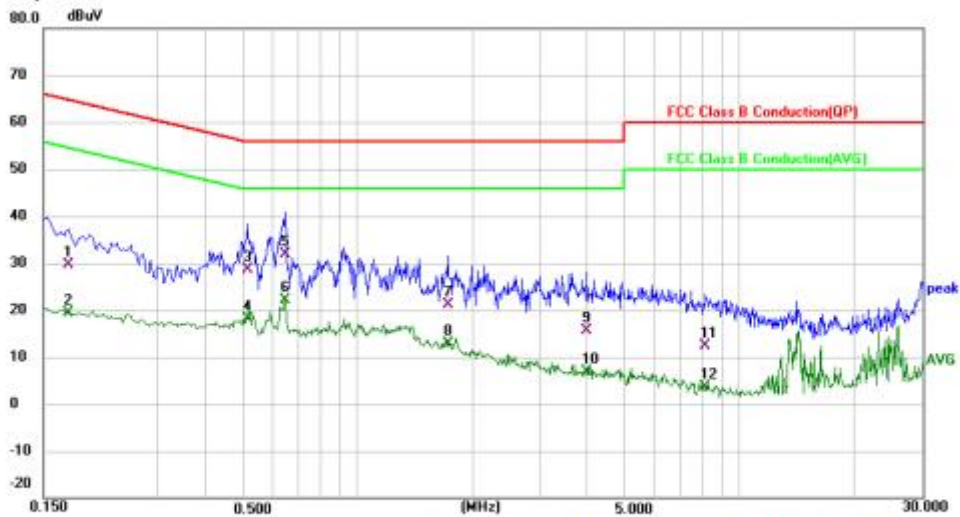


Site: Phase: **L1** Temperature: (C)  
 Limit: FCC Class B Conduction(QP) Power: Humidity: %RH  
 EUT: Distance: RBW: 9 KHz  
 MW: VBW: 30 KHz Sweep Time: 10 ms  
 Mode: BT TX  
 Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Antenna Height cm	Table Degree degree	Comment
1		0.2292	19.10	10.46	29.56	62.48	-32.92	QP			
2		0.2292	9.68	10.46	20.14	52.48	-32.34	AVG			
3		0.4180	20.60	9.96	30.56	57.49	-26.93	QP			
4		0.4180	9.41	9.96	19.37	47.49	-28.12	AVG			
5	*	0.6340	29.40	9.95	39.35	56.00	-16.65	QP			
6		0.6340	14.57	9.95	24.52	46.00	-21.48	AVG			
7		0.9500	20.49	9.85	30.34	56.00	-25.66	QP			
8		0.9500	11.18	9.85	21.03	46.00	-24.97	AVG			
9		2.9940	15.33	10.07	25.40	56.00	-30.60	QP			
10		2.9940	2.95	10.07	13.02	46.00	-32.98	AVG			
11		9.6140	5.85	11.44	17.29	60.00	-42.71	QP			
12		9.6140	-6.05	11.44	5.39	50.00	-44.61	AVG			

Test Result: Pass

[Test mode: TX]; [Line: Neutral]; [Power: AC120V/60Hz]



Site: Phase: **N** Temperature: (C)  
 Limit: FCC Class B Conduction(QP) Power: Humidity: %RH  
 EUT: Distance: RBW: 9 KHz  
 MN: VBW: 30 KHz Sweep Time: 10 ms  
 Mode: BT TX  
 Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Antenna Height cm	Table Degree	Detector	Comment
1		0.1740	19.46	10.16	29.62	64.77	-35.15			QP	
2		0.1740	9.15	10.16	19.31	54.77	-35.46			AVG	
3		0.5140	18.69	9.82	28.51	56.00	-27.49			QP	
4		0.5140	8.31	9.82	18.13	46.00	-27.87			AVG	
5		0.6460	21.90	9.91	31.81	56.00	-24.19			QP	
6	*	0.6460	12.24	9.91	22.15	46.00	-23.85			AVG	
7		1.7180	11.19	9.97	21.16	56.00	-34.84			QP	
8		1.7180	2.87	9.97	12.84	46.00	-33.16			AVG	
9		3.9700	5.48	10.05	15.53	56.00	-40.47			QP	
10		3.9700	-3.18	10.05	6.87	46.00	-39.13			AVG	
11		8.1220	1.20	11.17	12.37	60.00	-47.63			QP	
12		8.1220	-7.65	11.17	3.52	50.00	-46.48			AVG	

**Test Result: Pass**



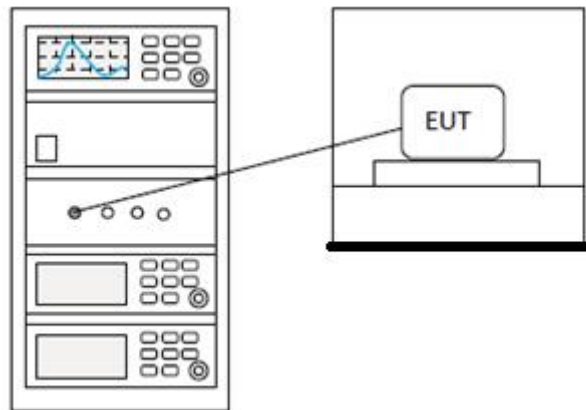
### 6.3 Conducted peak output Power

<b>Test Standard</b>	47 CFR Part 15, Subpart C 15.247
<b>Test Method</b>	ANSI C63.10 (2013) Section 7.8.5
<b>Test Mode (Pre-Scan)</b>	TX
<b>Test Mode (Final Test)</b>	TX

#### 6.3.1 Limit

Frequency range(MHz)	Output power of the intentional radiator(watt)
902-928	1 for $\geq 50$ hopping channels
	0.25 for $25 \leq$ hopping channels $< 50$
	1 for digital modulation
2400-2483.5	1 for $\geq 75$ non-overlapping hopping channels
	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation

#### 6.3.2 Test setup



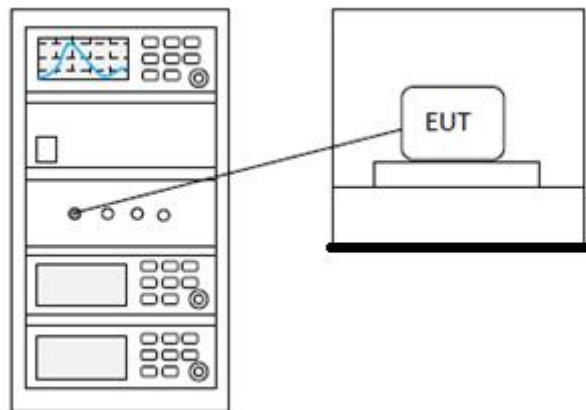
#### 6.3.3 Test data

Pass: Please refer to appendix A for details

## 6.4 20dB Bandwidth

<b>Test Standard</b>	47 CFR Part 15, Subpart C 15.247
<b>Test Method</b>	ANSI C63.10 (2013) Section 7.8.7
<b>Test Mode (Pre-Scan)</b>	TX
<b>Test Mode (Final Test)</b>	TX
<b>Tester</b>	Charlie
<b>Temperature</b>	25°C
<b>Humidity</b>	60%

### 6.4.1 Test setup



### 6.4.2 Test data

Pass: Please refer to appendix A for details

## 6.5 Conducted Band Edges Measurement

<b>Test Standard</b>	47 CFR Part 15, Subpart C 15.247
<b>Test Method</b>	ANSI C63.10 (2013) Section 7.8.8 & Section 11.13.3.2
<b>Test Mode (Pre-Scan)</b>	TX
<b>Test Mode (Final Test)</b>	TX

### 6.5.1 Limit

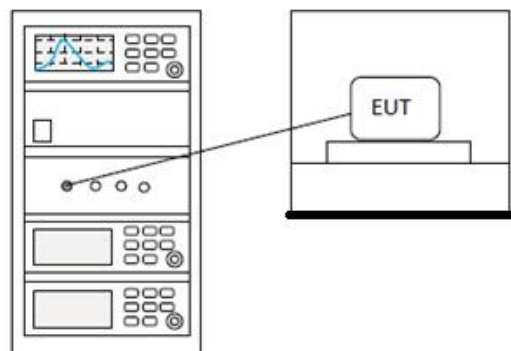
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20dB.

Attenuation below the general limits specified in §15.209(a) is not required.

In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

### 6.5.2 Test setup



### 6.5.3 Test data

Pass: Please refer to appendix A for details

## 6.6 Conducted spurious emissions

<b>Test Standard</b>	47 CFR Part 15, Subpart C 15.247
<b>Test Method</b>	ANSI C63.10 (2013) Section 7.8.6 & Section 11.11
<b>Test Mode (Pre-Scan)</b>	TX
<b>Test Mode (Final Test)</b>	TX

### 6.6.1 Limit

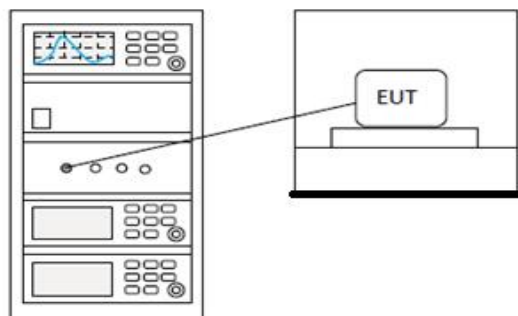
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20dB.

Attenuation below the general limits specified in §15.209(a) is not required.

In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

### 6.6.2 Test setup



### 6.6.3 Test data

Pass: Please refer to appendix A for details