

FCC Test Report

**Test report
On Behalf of
Shenzhen Boeleo Intelligent Co., Ltd.
For
Smart voice device**

**Model No.: S85, S10, S10 pro, S15, S15 pro, S20, S20 pro, S25, S25pro,
S30, S30 pro, S35, S35 pro, S50, S50 pro, S55, S55 pro, S60, S60 pro,
S65, S65pro, S80, S80 pro, S85 pro, S90, S95, S95 pro**

FCC ID: 2BE3N-S85

**Prepared For : Shenzhen Boeleo Intelligent Co., Ltd.
5F, No. 1-6, Tongfukang Science and Technology Innovation Park, Shiyan Street,
Baoan District, Shenzhen, China**

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Street, Bao'an District, Shenzhen, Guangdong, China**

Date of Test: Dec. 21, 2023 ~ Apr. 17, 2026

Date of Report: Apr. 17, 2026

Report Number: HK2603300424-2E

Test Result Certification

Applicant's name Shenzhen Boeleo Intelligent Co., Ltd.

Address 5F, No. 1-6, Tongfukang Science and Technology Innovation Park, Shiyan Street, Baoan District, Shenzhen, China

Manufacturer's Name Shenzhen Boeleo Intelligent Co., Ltd.

Address 5F, No. 1-6, Tongfukang Science and Technology Innovation Park, Shiyan Street, Baoan District, Shenzhen, China

Product description

Trade Mark: N/A

Product name Smart voice device

Model and/or type reference S85, S10, S10 pro, S15, S15 pro, S20, S20 pro, S25, S25pro, S30, S30 pro, S35, S35 pro, S50, S50 pro, S55, S55 pro, S60, S60 pro, S65, S65pro, S80, S80 pro, S85 pro, S90, S90 pro, S95, S95 pro

Standards 47 CFR FCC Part 15 Subpart C 15.247

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Date of Test

Date (s) of performance of tests Dec. 21, 2023 ~ Apr. 17, 2026

Date of Issue Apr. 17, 2026

Test Result Pass

Testing Engineer :

Len Liao

(Len Liao)

Technical Manager :

Sliver Wan

(Sliver Wan)

Authorized Signatory :

Jason Zhou

(Jason Zhou)



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**** Issued History ****

Revision	Description	Issued Date	Remark
Revision 1.0	Initial Test Report Release	Jan. 17, 2024	Jason Zhou
Revision 2.0	The battery voltage is updated from "3.7V" to "3.8V", so conducted and radiation test data are updated. All test data were obtained from: HK2312216261-2E	Apr. 17, 2026	Jason Zhou



1. Summary

1.1. Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.

ANSI C63.10:2020: American National Standard for Testing Unlicensed Wireless Devices.

1.2. Test Description

FCC PART 15.247		
FCC Part 15.207	AC Power Conducted Emission	PASS
FCC Part 15.215	20dB Bandwidth & 99% Bandwidth	PASS
FCC Part 15.247(d)	Spurious RF Conducted Emission	PASS
FCC Part 15.247(b)	Maximum Peak Output Power	PASS
FCC Part 15.247(a)(1)	Pseudorandom Frequency Hopping Sequence	PASS
FCC Part 15.247(a)(1)(iii)	Number of hopping frequency & Time of Occupancy	PASS
FCC Part 15.247(a)(1)	Frequency Separation	PASS
FCC Part 15.205/15.209	Radiated Emissions	PASS
FCC Part 15.247(d)	Band Edge Compliance of RF Emission	PASS

Note:

1. PASS: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.



HUAKE TESTING

1.3. Information of the Test Laboratory

Shenzhen HUAKE Testing Technology Co., Ltd.

Add.: 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

1.4. Statement of the Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission 0.15~30MHz	$\pm 2.71\text{dB}$
2	All Emissions, Radiated(<1G)	$\pm 3.90\text{dB}$
3	All Emissions, Radiated(>1G)	$\pm 4.28\text{dB}$
4	Transmitter Power Conducted	$\pm 0.37\text{dB}$
5	Conducted Spurious Emission	$\pm 2.20\text{dB}$
6	Occupied Bandwidth	$\pm 1.5\%$
7	Temperature	$\pm 0.1^\circ\text{C}$
8	Humidity	$\pm 1.0\%$



2. General Information

2.1. Environmental Conditions

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

Normal Temperature:	25°C
Relative Humidity:	55 %
Air Pressure:	101 kPa

2.2. General Description of EUT

Product Name:	Smart voice device
Model/Type reference:	S85
Series Model:	S10, S10 pro, S15, S15 pro, S20, S20 pro, S25, S25pro, S30, S30 pro, S35, S35 pro, S50, S50 pro, S55, S55 pro, S60, S60 pro, S65, S65pro, S80, S80 pro, S85 pro, S90, S90 pro, S95, S95 pro
Model Difference:	All model's the function, software and electric circuit are the same, only with a product color and model named different. Test sample model: S85.
Power supply:	DC 5V From Type-C or DC 3.8V From Battery
Version:	Supported EDR
Modulation:	GFSK, $\pi/4$ QPSK
Operation frequency:	2402MHz~2480MHz
Channel number:	79CH
Channel separation:	1MHz
Antenna type:	Internal Antenna
Antenna gain:	0.46dBi
Hardware Version:	V1.3
Software Version:	V1.3
Note:	1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual. 2. Antenna gain Refer to the antenna specifications. 3. The cable loss data is obtained from the supplier. 4. The test results in the report only apply to the tested sample.



2.3. Description of Test Modes and Test Frequency

The Applicant provides communication tools software to control the EUT for staying in continuous transmitting and receiving mode for testing.

There are 79 channels provided to the EUT and Channel 00/39/78 was selected for testing.

Operation Frequency :

Channel	Frequency (MHz)
00	2402
01	2403
:	:
38	2440
39	2441
40	2442
:	:
77	2479
78	2480

Note: The line display in grey were the channel selected for testing.

Preliminary tests were performed in each mode and packet length of BT, and found worst case as bellow, finally test were conducted at those mode and recorded in this report.

Test Items	Worst case
AC Conducted Emissions	Working while charging
Radiated Emissions and Band Edge	DH5 Low channel
Maximum Conducted Output Power	DH5/2DH5
20dB Bandwidth & 99% Bandwidth	DH5/2DH5
Frequency Separation	DH5/2DH5 Middle channel
Number of hopping frequency	DH5/2DH5
Time of Occupancy (Dwell Time)	DH1/DH3/DH5 Middle channel 2DH1/2DH3/2DH5 Middle channel
Out-of-band Emissions	DH5/2DH5



2.4. Equipments Used During the Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	R&S	ENV216	HKE-002	Feb. 17, 2023	1 Year
2.	Receiver	R&S	ESR-7	HKE-005	Feb. 17, 2023	1 Year
3.	RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 17, 2023	1 Year
4.	Spectrum analyzer	R&S	FSP40	HKE-025	Feb. 17, 2023	1 Year
5.	Spectrum analyzer	Agilent	N9020A	HKE-048	Feb. 17, 2023	1 Year
6.	Preamplifier	Schwarzbeck	BBV 9743	HKE-006	Feb. 17, 2023	1 Year
7.	EMI Test Receiver	Rohde & Schwarz	ESR-7	HKE-010	Feb. 17, 2023	1 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	HKE-012	Feb. 17, 2023	1 Year
9.	Loop Antenna	Schwarzbeck	FMZB 1519 B	HKE-014	Feb. 17, 2023	1 Year
10.	Horn Antenna	Schwarzbeck	9120D	HKE-013	Feb. 17, 2023	1 Year
11.	Pre-amplifier	EMCI	EMC051845 SE	HKE-015	Feb. 17, 2023	1 Year
12.	Pre-amplifier	Agilent	83051A	HKE-016	Feb. 17, 2023	1 Year
13.	EMI Test Software EZ-EMC	Tonscend	JS1120-B Version	HKE-083	N/A	N/A
14.	Power Sensor	Agilent	E9300A	HKE-086	Feb. 17, 2023	1 Year
15.	Spectrum analyzer	Agilent	N9020A	HKE-048	Feb. 17, 2023	1 Year
16.	Signal generator	Agilent	N5182A	HKE-029	Feb. 17, 2023	1 Year
17.	Signal Generator	Agilent	83630A	HKE-028	Feb. 17, 2023	1 Year
18.	Shielded room	Shiel Hong	4*3*3	HKE-039	Dec. 09, 2021	3 Year
19.	Power meter	Agilent	E4419B	HKE-085	Feb. 17, 2023	1 Year
20.	High gain antenna	Schwarzbeck	LB-180400K F	HKE-054	Feb. 17, 2023	1 Year
21.	10dB Attenuator	Schwarzbeck	VTSD9561F	HKE-153	Feb. 17, 2023	1 Year



Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N.	R&S	ENV216	HKE-002	2026/02/11	1 Year
2	L.I.S.N.	R&S	ENV216	HKE-059	2026/02/04	1 Year
3	EMI Test Receiver	R&S	ESR-7	HKE-005	2026/02/06	1 Year
4	Spectrum analyzer	Agilent	N9020A	HKE-025	2026/02/06	1 Year
5	Spectrum analyzer	KEYSIGHT	N9020A	HKE-117	2026/02/06	1 Year
6	Spectrum analyzer	R&S	FSV3044	HKE-126	2026/02/06	1 Year
7	Preamplifier	Schwarzbeck	EMC051845S E	HKE-006	2026/02/04	1 Year
8	Preamplifier	Agilent	83051A	HKE-016	2026/02/04	1 Year
9	Preamplifier	A.H. Systems	SAS-574	HKE-182	2026/02/04	1 Year
10	6dB Attenuator	Pasternack	6dB	HKE-152	2026/02/06	1 Year
11	EMI Test Receiver	R&S	ESR-7	HKE-010	2026/02/06	1 Year
12	Broadband Antenna	Schwarzbeck	VULB9168	HKE-167	2026/02/06	2 Year
13	Loop Antenna	COM-POWER	AL-130R	HKE-014	2026/02/06	2 Year
14	Horn Antenna	Schwarzbeck	9120D	HKE-013	2026/02/06	2 Year
15	EMI Test Software	Tonscend	JS32-CE 2.5.0.6	HKE-081	/	/
16	EMI Test Software	Tonscend	JS32-RE 5.0.0	HKE-082	/	/
17	RF Automatic control unit	Tonscend	JS0806-2	HKE-060	2026/02/06	1 Year
18	High pass filter unit	Tonscend	JS0806-F	HKE-055	2026/02/06	1 Year
19	Wireless Communication Test Set	R&S	CMW500	HKE-027	2026/02/06	1 Year
20	High-low temperature chamber	Guangke	HT-80L	HKE-118	2025/06/09	1 Year
21	Temperature and humidity meter	Boyang	HTC-1	HKE-075	2025/06/09	1 Year
22	RF Test Software	Tonscend	JS1120-3 Version 3.5.39	HKE-083	/	/
23	10dB Attenuator	Schwarzbeck	VTSD9561F	HKE-153	2026/02/04	1 Year
24	RSE Test Software	Tonscend	JS36-RSE 5.0.0	HKE-184	/	/

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2.5. Related Submittal(S) / Grant (S)

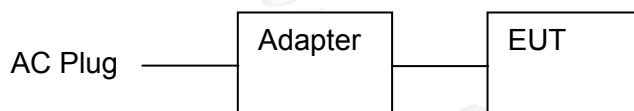
This submittal(s) (test report) is intended to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

2.6. Modifications

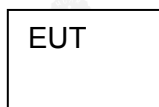
No modifications were implemented to meet testing criteria.

2.7. Description of Test Setup

Operation of EUT during conducted testing and below 1GHz radiation testing:



Operation of EUT during above 1GHz radiation testing:



The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages. The worst case is X position.

2.8. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Trade Mark	Model/Type No.	Specification	Remark
1	Smart voice device	N/A	S85	N/A	EUT
2	Adapter	N/A	N/A	Input: 100-240V, 50/60Hz, 0.5A Output: 5VDC, 2A	
3	USB Cable	N/A	N/A	Length:1.0m	

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
3. For conducted measurements (Output Power, 20db Bandwidth, Frequency Separation, Number of Hopping Frequency, Time of Occupancy (Dwell Time), Out-of-Band Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.



3. Test Conditions and Results

3.1. AC Conducted Emissions Test

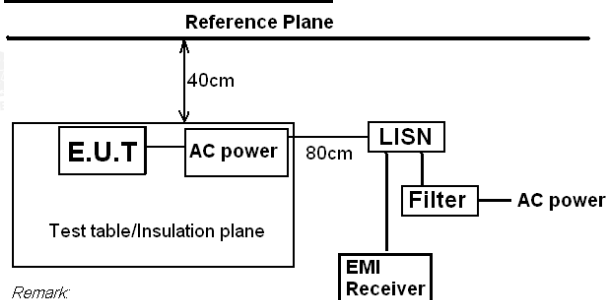
LIMIT

According to FCC CFR Title 47 Part 15 Subpart C Section 15.207, AC Power Line Conducted Emissions Limits for License-Exempt Radio Apparatus as below:

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



Remark
E.U.T: Equipment Under Test
LISN: Line Impedance Stabilization Network
Test table height=0.8m

TEST PROCEDURE

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. The adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.

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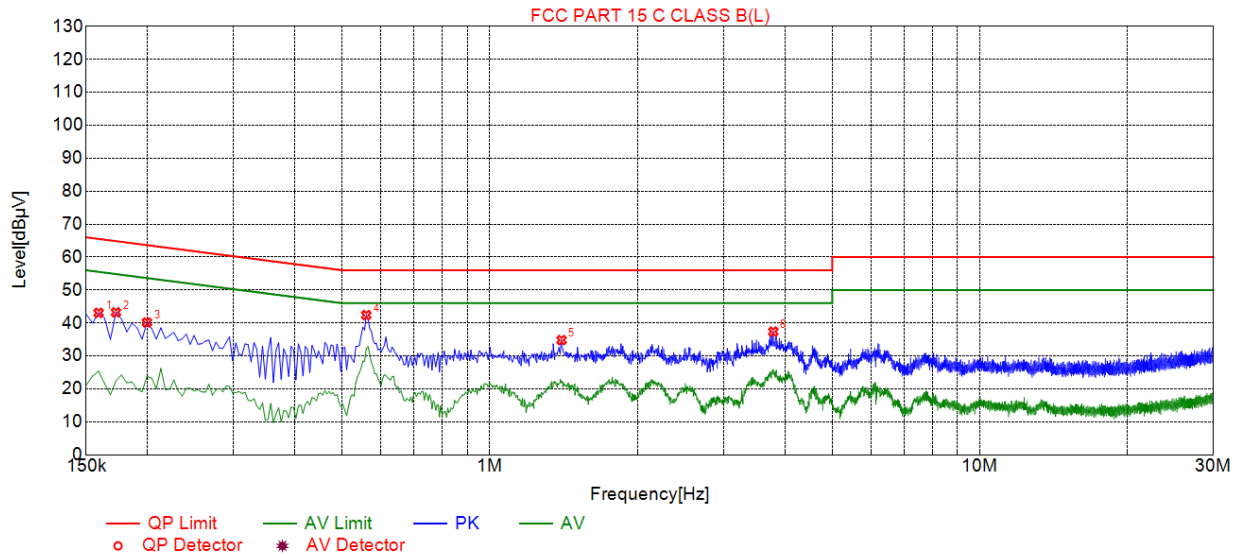


HUAKE TESTING

TEST RESULTS

All the test modes completed for test. Only the worst result was reported as below:

Test Specification: Line



Suspected List

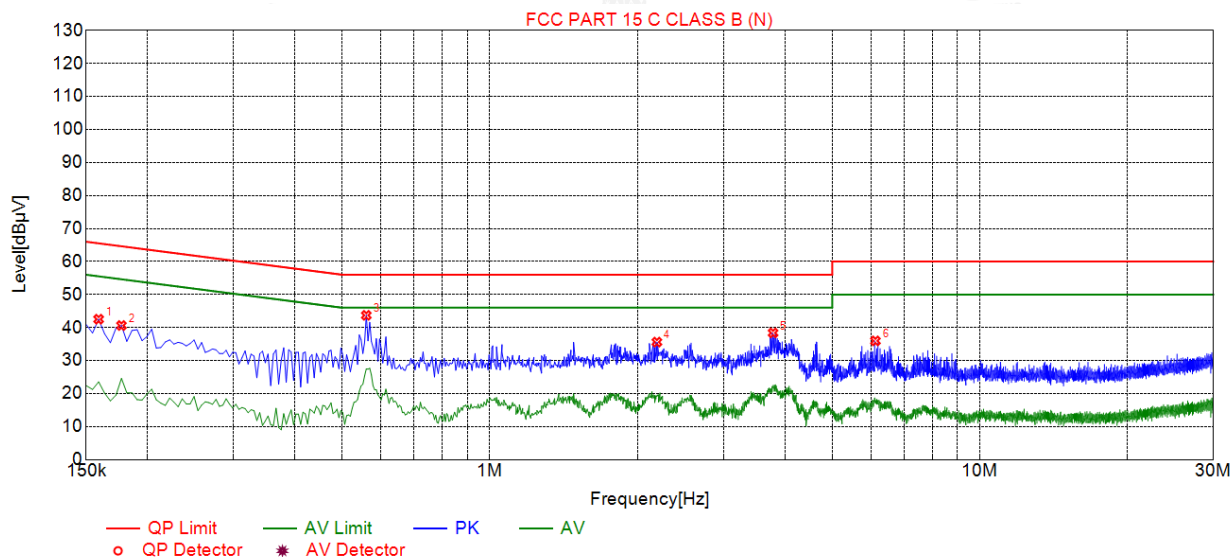
NO.	Freq. [MHz]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Reading [dBμV]	Detector	Type
1	0.1590	43.07	19.83	65.52	22.45	23.24	PK	L
2	0.1725	43.23	19.81	64.84	21.61	23.42	PK	L
3	0.1995	40.16	19.75	63.63	23.47	20.41	PK	L
4	0.5595	42.39	19.88	56.00	13.61	22.51	PK	L
5	1.4010	34.80	19.95	56.00	21.20	14.85	PK	L
6	3.7905	37.38	20.18	56.00	18.62	17.20	PK	L

Remark: Margin = Limit – Level

Correction factor = Cable lose + LISN insertion loss

Level=Test receiver reading + correction factor

Test Specification: Neutral



Suspected List

NO.	Freq. [MHz]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Reading [dBμV]	Detector	Type
1	0.1590	42.53	19.91	65.52	22.99	22.62	PK	N
2	0.1770	40.62	19.84	64.63	24.01	20.78	PK	N
3	0.5595	43.70	19.95	56.00	12.30	23.75	PK	N
4	2.1930	35.60	20.17	56.00	20.40	15.43	PK	N
5	3.7860	38.38	20.19	56.00	17.62	18.19	PK	N
6	6.1260	35.96	20.56	60.00	24.04	15.40	PK	N

Remark: Margin = Limit – Level

Correction factor = Cable lose + LISN insertion loss

Level=Test receiver reading + correction factor



3.2. Radiated Emissions and Band Edge

Limit

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission out of authorized band shall not exceed the following table at a 3 meters measurement distance.

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).

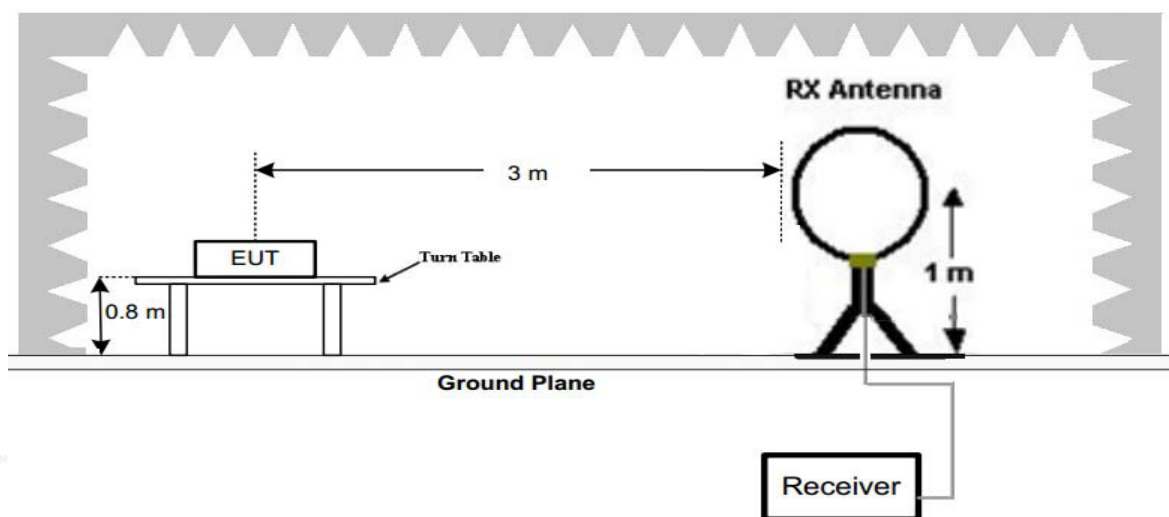
Except when the requirements applicable to a given device state otherwise, emissions from license-exempt transmitters shall comply with the field strength limits shown in table below. Additionally, the level of any transmitter emission shall not exceed the level of the transmitter's fundamental emission.

Radiated emission limits

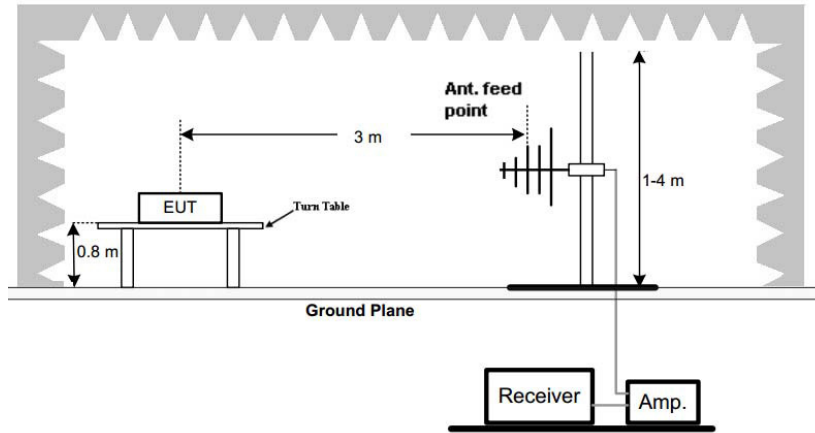
Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	$20\log(2400/F(\text{KHz}))+40\log(300/3)$	$2400/F(\text{KHz})$
0.49-1.705	3	$20\log(24000/F(\text{KHz}))+40\log(30/3)$	$24000/F(\text{KHz})$
1.705-30	3	$20\log(30)+40\log(30/3)$	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

TEST CONFIGURATION

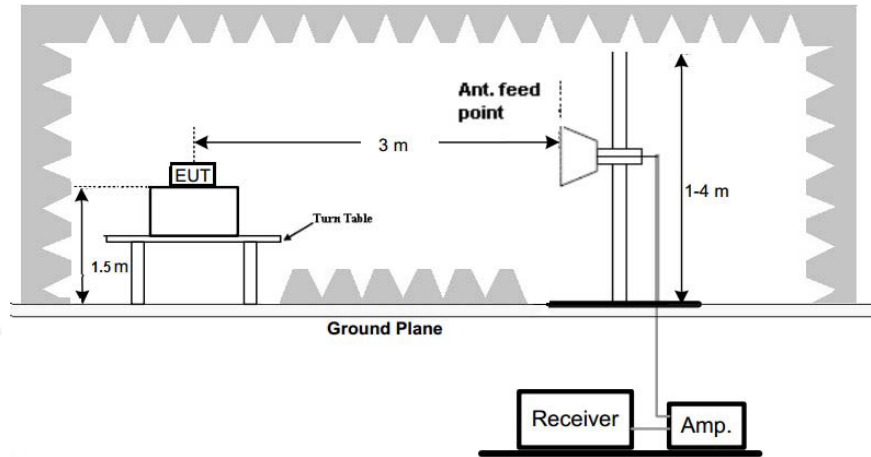
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz.



(B) Radiated Emission Test Set-Up, Frequency below 1000MHz.



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz.



Test Procedure

1. The EUT was placed on turn table which is 0.8m above ground plane for below 1GHz test, and on a low permittivity and low loss tangent turn table which is 1.5m above ground plane for above 1GHz test.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0° to 360° to acquire the highest emissions from EUT.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.

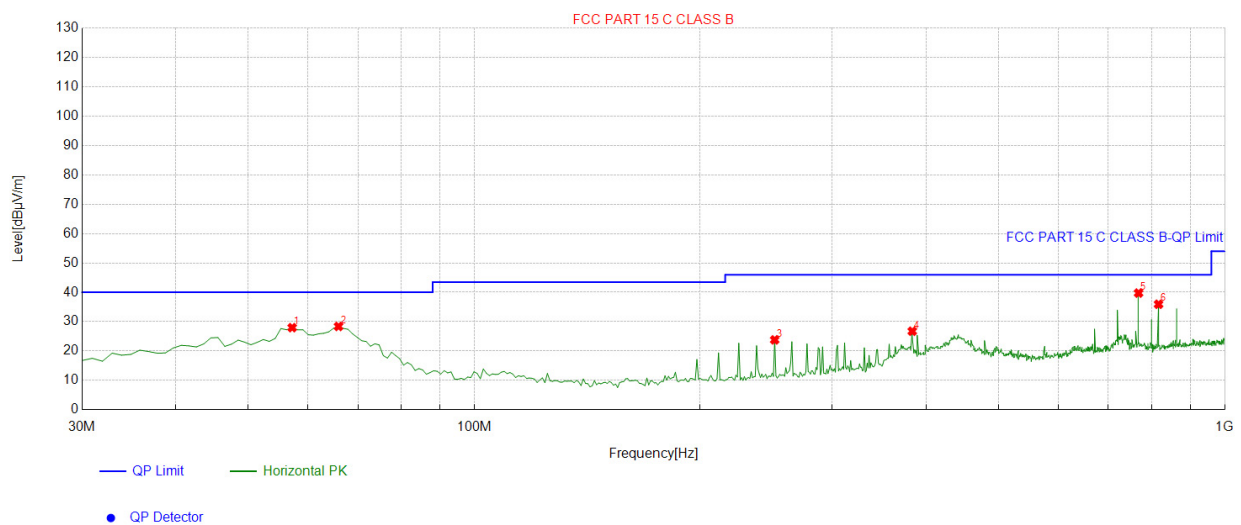
**TEST RESULTS**

Remark:

1. Radiated Emission measured at GFSK and $\pi/4$ DQPSK mode from 9 KHz to 10th harmonic of fundamental and recorded worst case at GFSK DH5 mode.
2. There is no emission found except system noise floor in 9 KHz to 30MHz and not recorded in this report.
3. For below 1GHz testing recorded worst at GFSK DH5 low channel.

Below 1GHz Test Results

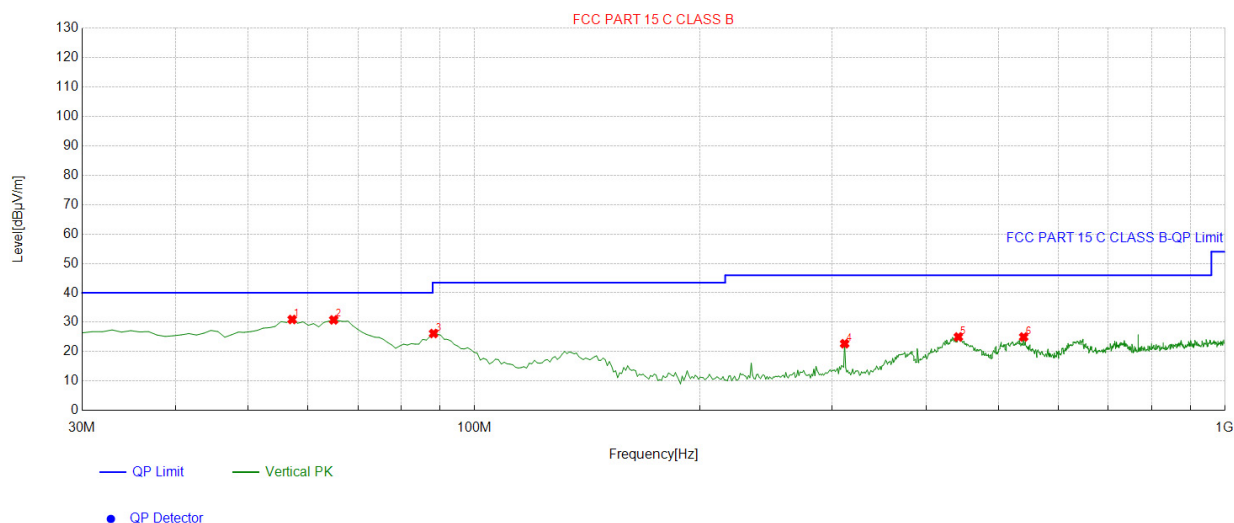
Antenna polarity: Horizontal



Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	57.187	-13.73	41.70	27.97	40.00	12.03	100	220	Horizontal
2	65.926	-15.37	43.75	28.38	40.00	11.62	100	187	Horizontal
3	251.381	-13.08	36.88	23.80	46.00	22.20	100	3	Horizontal
4	383.433	-10.18	36.93	26.75	46.00	19.25	100	298	Horizontal
5	767.938	-2.88	42.63	39.75	46.00	6.25	100	70	Horizontal
6	816.486	-2.25	38.19	35.94	46.00	10.06	100	70	Horizontal

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

Antenna polarity: Vertical



Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	57.187	-13.73	44.68	30.95	40.00	9.05	100	155	Vertical
2	64.955	-15.07	45.88	30.81	40.00	9.19	100	0	Vertical
3	88.258	-16.83	43.01	26.18	43.50	17.32	100	358	Vertical
4	311.582	-11.80	34.52	22.72	46.00	23.28	100	344	Vertical
5	441.692	-8.87	33.88	25.01	46.00	20.99	100	351	Vertical
6	539.760	-6.93	31.93	25.00	46.00	21.00	100	225	Vertical

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

Harmonics and Spurious Emissions

Frequency Range (9kHz-30MHz)

Frequency (MHz)	Level@3m (dBμV/m)	Limit@3m (dBμV/m)
--	--	--
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Note: 1. Emission Level=Reading+ Cable loss+ Antenna factor-Amp factor.

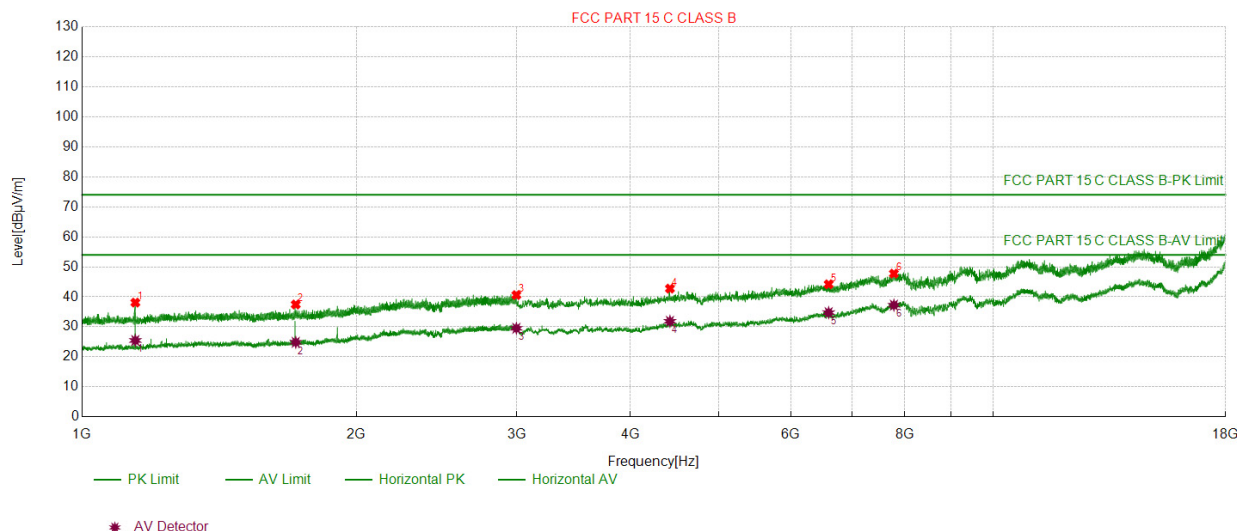
2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement.

Above 1GHz Test Results

All the test modes completed for test. Only the worst result was reported as below:

For 1GHz to 18GHz

Antenna polarity: Horizontal



Suspected Data List

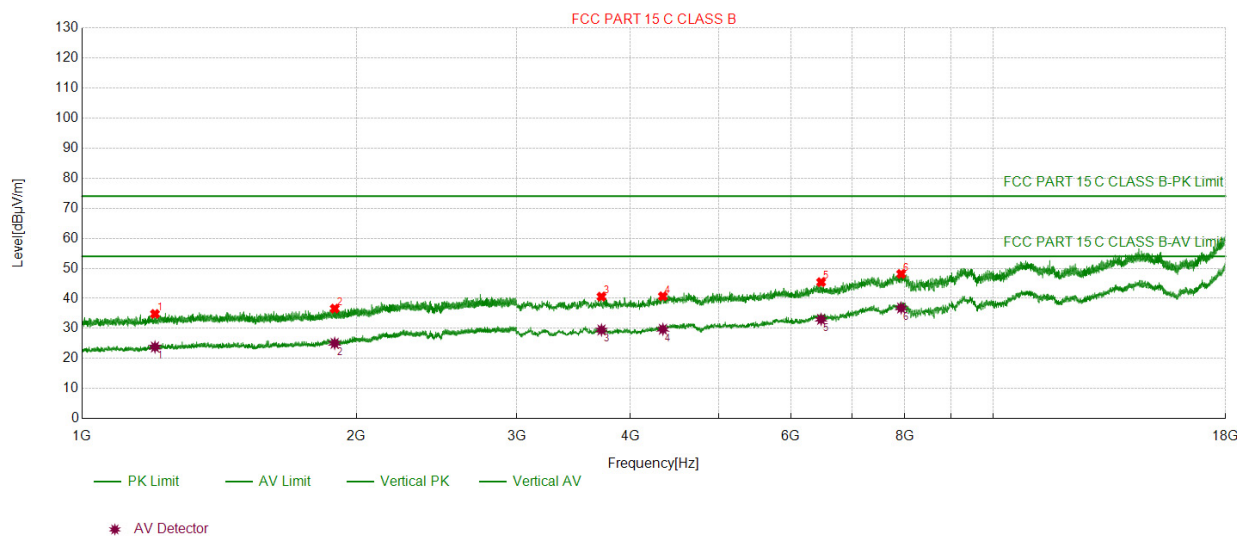
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1144.214	57.75	38.09	-19.66	74.00	35.91	150	301	Horizontal
2	1716.272	55.65	37.46	-18.19	74.00	36.54	150	265	Horizontal
3	2997.600	53.24	40.60	-12.64	74.00	33.40	150	199	Horizontal
4	4419.142	53.52	42.76	-10.76	74.00	31.24	150	154	Horizontal
5	6600.360	50.28	44.19	-6.09	74.00	29.81	150	136	Horizontal
6	7783.978	50.78	47.75	-3.03	74.00	26.25	150	130	Horizontal

AV Final Data List

NO	Freq. [MHz]	Factor [dB]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1144.214	-19.66	25.48	54.00	28.52	150	301	Horizontal
2	1716.272	-18.19	24.87	54.00	29.13	150	265	Horizontal
3	2997.600	-12.64	29.53	54.00	24.47	150	199	Horizontal
4	4419.142	-10.76	31.85	54.00	22.15	150	154	Horizontal
5	6600.360	-6.09	34.76	54.00	19.24	150	136	Horizontal
6	7783.978	-3.03	37.25	54.00	16.75	150	130	Horizontal

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

Antenna polarity: Vertical



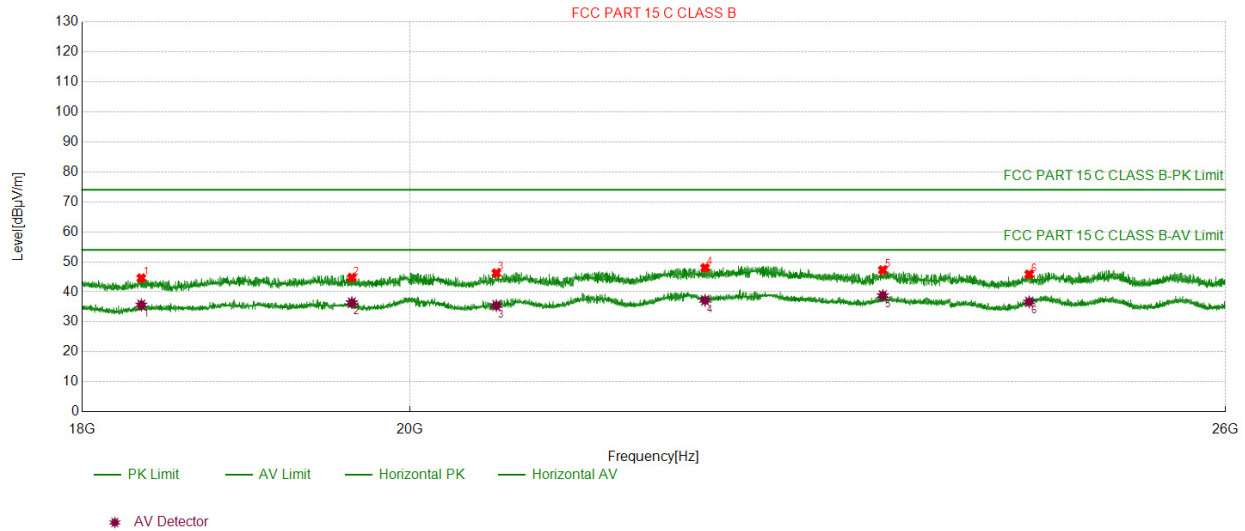
Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1202.420	54.10	34.84	-19.26	74.00	39.16	150	272	Vertical
2	1893.689	53.67	36.61	-17.06	74.00	37.39	150	260	Vertical
3	3717.072	52.76	40.58	-12.18	74.00	33.42	150	116	Vertical
4	4341.134	51.73	40.72	-11.01	74.00	33.28	150	52	Vertical
5	6475.848	51.83	45.40	-6.43	74.00	28.60	150	141	Vertical
6	7927.993	50.75	48.13	-2.62	74.00	25.87	150	259	Vertical

AV Final Data List								
NO	Freq. [MHz]	Factor [dB]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1202.420	-19.26	23.85	54.00	30.15	150	272	Vertical
2	1893.689	-17.06	25.07	54.00	28.93	150	260	Vertical
3	3717.072	-12.18	29.52	54.00	24.48	150	116	Vertical
4	4341.134	-11.01	29.73	54.00	24.27	150	52	Vertical
5	6475.848	-6.43	33.03	54.00	20.97	150	141	Vertical
6	7927.993	-2.62	36.82	54.00	17.18	150	259	Vertical

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

For 18GHz to 26GHz

Antenna polarity: Horizontal



Suspected Data List

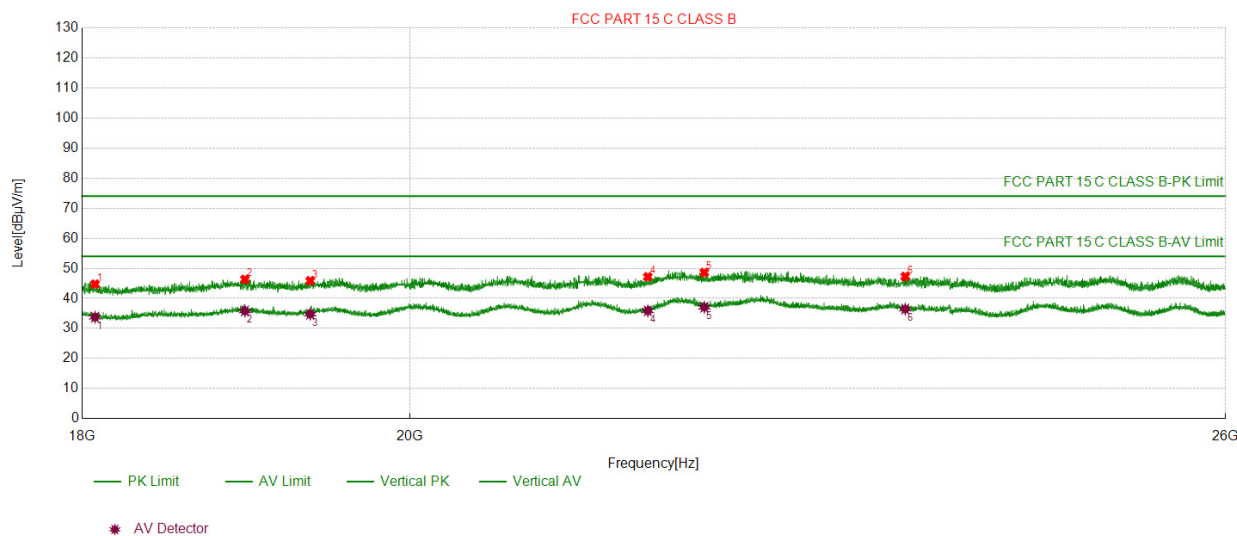
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18346.435	39.00	44.58	5.58	74.00	29.42	150	20	Horizontal
2	19631.363	38.66	44.76	6.10	74.00	29.24	150	170	Horizontal
3	20565.057	40.34	46.25	5.91	74.00	27.75	150	110	Horizontal
4	21993.199	42.27	48.00	5.73	74.00	26.00	150	360	Horizontal
5	23286.129	41.59	47.26	5.67	74.00	26.74	150	220	Horizontal
6	24408.641	40.22	45.85	5.63	74.00	28.15	150	210	Horizontal

AV Final Data List

NO	Freq. [MHz]	Factor [dB]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18346.435	5.58	35.68	54.00	18.32	150	20	Horizontal
2	19631.363	6.10	36.42	54.00	17.58	150	170	Horizontal
3	20565.057	5.91	35.44	54.00	18.56	150	110	Horizontal
4	21993.199	5.73	37.17	54.00	16.83	150	360	Horizontal
5	23286.129	5.67	38.77	54.00	15.23	150	220	Horizontal
6	24408.641	5.63	36.65	54.00	17.35	150	210	Horizontal

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

Antenna polarity: Vertical



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18075.208	38.63	44.74	6.11	74.00	29.26	150	140	Vertical
2	18968.097	40.68	46.34	5.66	74.00	27.66	150	280	Vertical
3	19370.537	39.81	45.85	6.04	74.00	28.15	150	280	Vertical
4	21591.559	41.80	47.18	5.38	74.00	26.82	150	280	Vertical
5	21987.599	42.88	48.61	5.73	74.00	25.39	150	260	Vertical
6	23454.945	41.60	47.28	5.68	74.00	26.72	150	200	Vertical

AV Final Data List

NO	Freq. [MHz]	Factor [dB]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18075.208	6.11	33.75	54.00	20.25	150	140	Vertical
2	18968.097	5.66	35.84	54.00	18.16	150	280	Vertical
3	19370.537	6.04	34.76	54.00	19.24	150	280	Vertical
4	21591.559	5.38	35.87	54.00	18.13	150	280	Vertical
5	21987.599	5.73	37.06	54.00	16.94	150	260	Vertical
6	23454.945	5.68	36.46	54.00	17.54	150	200	Vertical

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



3.3. Maximum Peak Conducted Output Power

Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

Test Procedure

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the RF automatic control unit.

Test Configuration



Test Results

Type	Channel	Maximum Peak Conducted Output Power (dBm)	Limit (dBm)	Result
GFSK	00	-0.54	21.00	Pass
	39	-0.34		
	78	-0.06		
$\pi/4$ DQPSK	00	0.27	21.00	Pass
	39	0.27		
	78	0.49		

Note: 1.The test results including the cable lose.



3.4. 20db Bandwidth

Limit

For frequency hopping systems operating in the 2400MHz-2483.5MHz no limit for 20dB bandwidth.

Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 30 KHz RBW and 100 KHz VBW.

The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

RBW=1% to 5% of the OBW

VBW=approximately 3 X RBW

Detector=Peak

Trace Mode: Max Hold

Use the 99% power bandwidth function of the instrument to measure the Occupied Bandwidth and recorded.

Test Configuration



Test Results

Modulation	Channel	20dB bandwidth (MHz)	Result
GFSK	CH00	0.954	Pass
	CH39	0.942	
	CH78	0.960	
$\pi/4$ DQPSK	CH00	1.308	
	CH39	1.314	
	CH78	1.320	

Test plot as follows:



HUAKE TESTING
20dB bandwidth

GFSK Modulation



CH00



CH39



CH78

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$\pi/4$ DQPSK Modulation



CH00



CH39



CH78

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