FCC Test Report

Test report
On Behalf of
Shenzhen Konix Technology Co., Ltd
For
Wireless Transceiver
Model No.: WF01, WF*, WF*PRO, * means 01-100, different color, different looks

FCC ID: 2AX4N-WF01

Prepared For :	**Shenzhen Konix Technology Co., Ltd** **Building 2, YuFeng Industrial Area, Shangfen Community, Minzhi Street, Longhua, Shenzhen, China**
Prepared By :	**Shenzhen HUAK Testing Technology Co., Ltd.** **1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China**

Date of Test:	**Sept. 13, 2024~Sept. 24, 2024**
Date of Report:	**Sept. 24, 2024**
Report Number:	**HK2409135324-E**

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Test Result Certification

Applicant's name ..... : Shenzhen Konix Technology Co., Ltd

Address ..... : Building 2, YuFeng Industrial Area, Shangfen Community, Minzhi Street, Longhua, Shenzhen, China

Manufacturer's Name ..... : Guangdong Konix Technology Co., Ltd

Address ..... : No.76, baijia road, qingxitown, Dongguan, Guangdong, China

Product description

Trade Mark: N/A

Product name ..... : Wireless Transceiver

Model and/or type reference : WF01, WF*, WF*PRO, * means 01-100, different color, different looks

Standards ..... : FCC Rules and Regulations Part 15 Subpart C Section 15.249
ANSI C63.10: 2013

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Date of Test.....:

Date (s) of performance of tests .....: Sept. 13, 2024~Sept. 24, 2024

Date of Issue.....: Sept. 24, 2024

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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**** Modified History ****

Revision	Description	Issued Data	Remark
Revision 1.0	Initial Test Report Release	Sept. 24, 2024	Jason Zhou

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1. Test Summary

1.1. Test Procedures and Results

DESCRIPTION OF TEST	SECTION NUMBER	RESULT
CONDUCTED EMISSIONS TEST	15.207	COMPLIANT
RADIATED EMISSION TEST	15.249(a)/15.209	COMPLIANT
BAND EDGE	15.249(d)/15.205	COMPLIANT
OCCUPIED BANDWIDTH MEASUREMENT	15.215（c）	COMPLIANT
ANTENNA REQUIREMENT	15.203	COMPLIANT
FIELD STRENGTH OF FUNDAMENTAL	15.249(a)	COMPLIANT

1.2. Information of the Test Laboratory

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

Testing Laboratory Authorization：

A2LA Accreditation Code is 4781.01.
FCC Designation Number is CN1229.
Canada IC CAB identifier is CN0045.
CNAS Registration Number is L9589.

1.3. Measurement Uncertainty

Measurement Uncertainty

Conducted Emission Expanded Uncertainty	=	2.71dB, k=2
Radiated emission expanded uncertainty(9kHz-30MHz)	=	3.90dB, k=2
Radiated emission expanded uncertainty(30MHz-1000MHz)	=	3.90dB, k=2
Radiated emission expanded uncertainty(Above 1GHz)	=	4.28dB, k=2

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2. General Information

2.1. General Description of EUT

Equipment:	Wireless Transceiver
Model Name:	WF01
Series Model:	WF*, WF*PRO, * means 01-100, different color, different looks
Model Difference:	All model's the function, software and electric circuit are the same, only with a product appearance, color and model named different. Test sample mode: WF01.
Trade Mark:	N/A
FCC ID:	2AX4N-WF01
Antenna Type:	Internal Antenna
Antenna Gain:	1.7dBi
Operation frequency:	913 MHz -922MHz
Number of Channels:	10CH
Modulation Type:	GFSK
Power Source:	DC 5V From Type-C or DC 3.7V From Battery
Power Rating:	DC 5V From Type-C or DC 3.7V From Battery

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.

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2.2. Carrier Frequency of Channels

Description of Channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	913	04	916	07	919	10	922
02	914	05	917	08	920		
03	915	06	918	09	921		

2.3. Operation of EUT During Testing

Operating Mode
The mode is used: **Transmitting mode**
Low Channel: 913MHz
Middle Channel: 917MHz
High Channel: 922MHz

2.4. Description of Test Setup

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

Operation of EUT during above1GHz 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.

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2.5. 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	Wireless Transceiver	N/A	WF01	N/A	EUT
2	USB Cable	N/A	N/A	Length:0.22m	Accessory
3	Laptop	N/A	TP00096A	Input: DC 20V, 2.25A/3.25A	Peripheral
4	Adapter	N/A	MDY-10-EH	Input: 100-240V, 50/60Hz, 0.7A Output: 5V, 3A/9V, 3A/12V, 2.25A/20V, 1.35A	Peripheral
5	Adapter	N/A	N/A	Input: 100-240V, 50/60Hz, 0.5A Output: 5VDC, 2A	Peripheral

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 (Occupied Bandwidth), 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.

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2.6. Measurement Instruments List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	L.I.S.N.	R&S	ENV216	HKE-002	2024/02/20	1 Year
2	L.I.S.N.	R&S	ENV216	HKE-059	2024/02/20	1 Year
3	EMI Test Receiver	R&S	ESR	HKE-005	2024/02/20	1 Year
4	Spectrum analyzer	Agilent	N9020A	HKE-025	2024/02/20	1 Year
5	Spectrum analyzer	R&S	FSV3044	HKE-126	2024/02/20	1 Year
6	Preamplifier	EMCI	EMC051845S	HKE-006	2024/02/20	1 Year
7	Preamplifier	Schwarzbeck	BBV 9743	HKE-016	2024/02/20	1 Year
8	Preamplifier	A.H. Systems	SAS-574	HKE-182	2024/02/20	1 Year
9	6d Attenuator	Pasternack	6db	HKE-184	2024/02/20	1 Year
10	EMI Test Receiver	Rohde & Schwarz	ESR-7	HKE-010	2024/02/20	1 Year
11	Broadband Antenna	Schwarzbeck	VULB9168	HKE-167	2024/02/21	2 Year
12	Loop Antenna	COM-POWER FMZB 1519 012 May 11, 2016 1 Year	AL-130R	HKE-014	2024/02/21	2 Year
13	Horn Antenna	Schwarzbeck	9120D	HKE-013	2024/02/21	2 Year
14	EMI Test Software	Tonscend	JS32-CE 2.5.0.6	HKE-081	/	/
15	EMI Test Software	Tonscend	JS32-RE 5.0.0	HKE-082	/	/
16	RF Automatic control unit	Tonscend	JS0806-2	HKE-060	2024/02/20	1 Year
17	High pass filter unit	Tonscend	JS0806-F	HKE-055	2024/02/20	1 Year
18	Wireless Communication Test Set	R&S	CMU200	HKE-026	2024/02/20	1 Year
19	Wireless Communication Test Set	R&S	CMW500	HKE-027	2024/02/20	1 Year
20	High-low temperature chamber	Guangke	HT-80L	HKE-118	2024/06/10	1 Year
21	Temperature and humidity meter	Boyang	HTC-1	HKE-075	2024/06/10	1 Year
22	RF Test Software	Tonscend	JS1120-3 Version 3.3.23	HKE-083	/	/
23	10dB Attenuator	Schwarzbeck	VTSD9561F	HKE-153	2024/02/20	1 Year
24	RSE Test Software	Tonscend	JS36-RSE 5. 0.0	HKE-184	/	/

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3. Conducted Emissions Test

3.1. Conducted Power Line Emission Limit

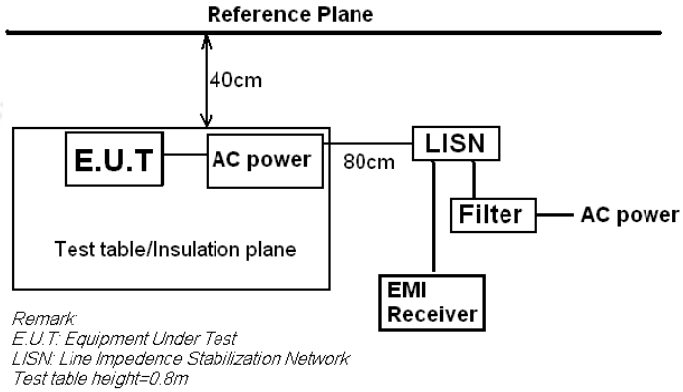
For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following.

Frequency (MHz)	Maximum RF Line Voltage (dBμV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency.

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

3.2. Test Setup



3.3. 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. If a EUT received DC power from the USB Port of Notebook PC, the PC's 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.

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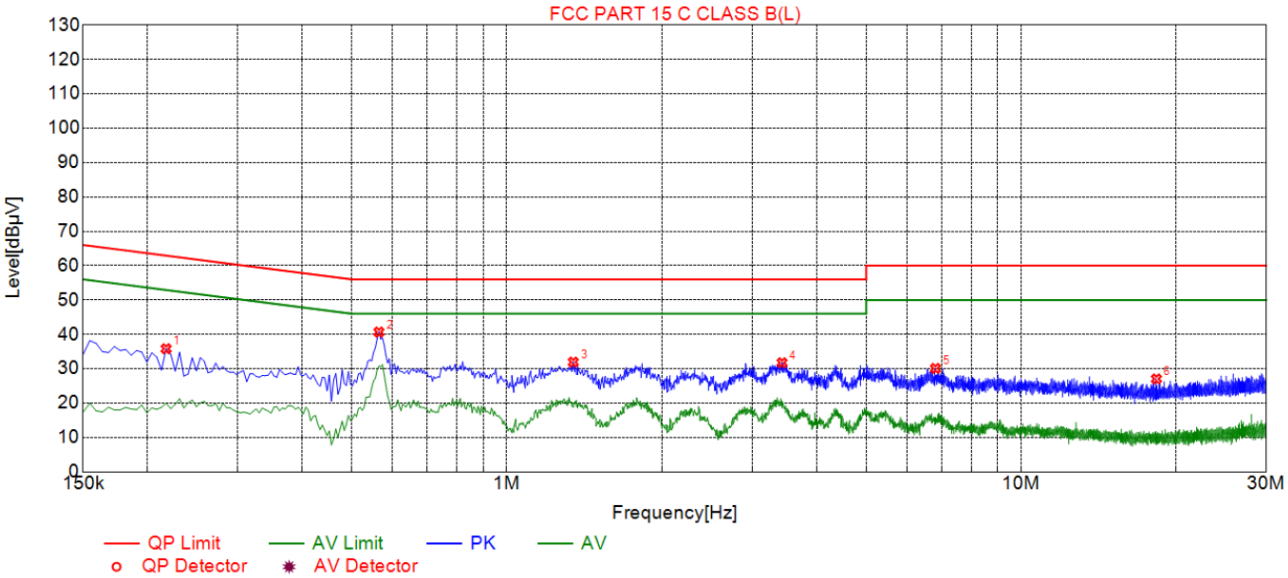
3.4. Test Result

PASS

All the test modes completed for test. only the worst result of Low channel 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	0.2175	35.83	19.85	62.91	27.08	15.98	PK	L
2	0.5640	40.67	19.86	56.00	15.33	20.81	PK	L
3	1.3470	31.93	19.92	56.00	24.07	12.01	PK	L
4	3.4305	31.73	20.08	56.00	24.27	11.65	PK	L
5	6.8190	30.10	20.07	60.00	29.90	10.03	PK	L
6	18.3390	27.03	19.86	60.00	32.97	7.17	PK	L

Remark: Margin = Limit – Level

Correction factor = Cable lose + LISN insertion loss

Level=Test receiver reading + correction factor

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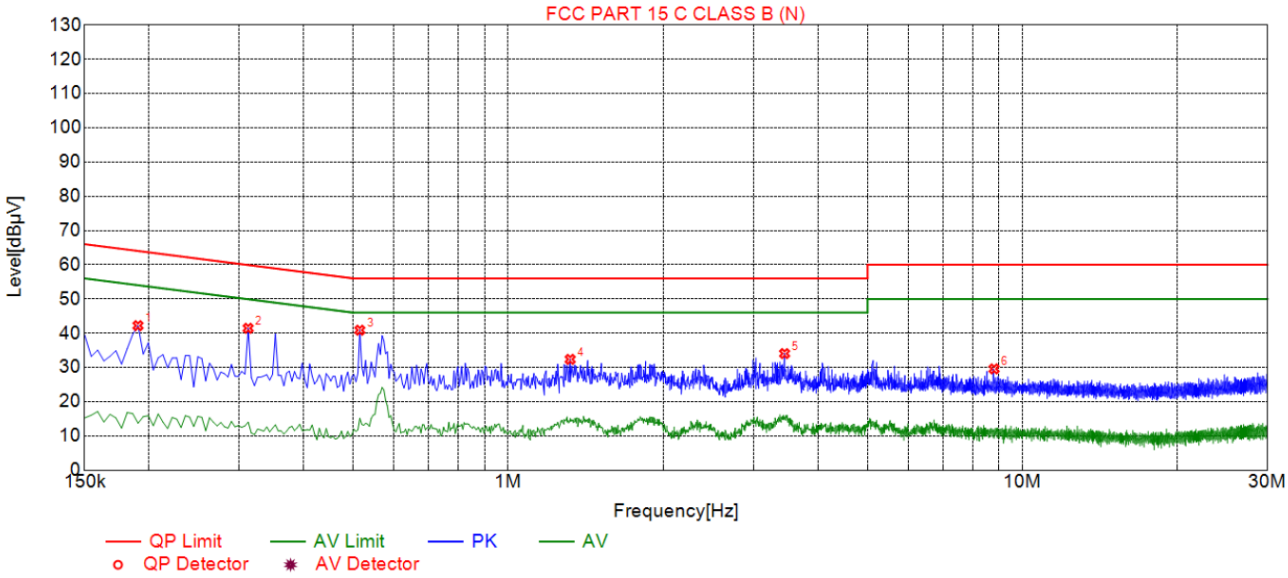
Test Specification: Neutral



Suspected List								
NO.	Freq. [MHz]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Reading [dBμV]	Detector	Type
1	0.1905	42.21	19.74	64.01	21.80	22.47	PK	N
2	0.3120	41.44	19.75	59.92	18.48	21.69	PK	N
3	0.5145	40.87	19.73	56.00	15.13	21.14	PK	N
4	1.3200	32.37	19.78	56.00	23.63	12.59	PK	N
5	3.4485	34.05	19.96	56.00	21.95	14.09	PK	N
6	8.8125	29.58	19.91	60.00	30.42	9.67	PK	N

Remark: Margin = Limit – Level

Correction factor = Cable lose + LISN insertion loss

Level=Test receiver reading + correction factor

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4. Field Strength of Fundamental

4.1. Limit

FCC§15.249(a);
The field strength of fundamental and harmonic emissions, measured at 3 m, shall not exceed 50 mV/m and 0.5 mV/m respectively.

The field strength limits shall be measured using an average detector, except for the fundamental emission in the frequency band 902-928 MHz, which is based on measurements using an International Special Committee on Radio Interference (CISPR) quasi-peak detector

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

4.2. Test Procedure

1. Below 1GHz measurement the EUT is placed on turntable which is 0.8m above ground plane. And above 1GHz measurement EUT was placed on low permittivity and low tangent turn table which is 1.5m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The test frequency range from 9KHz to 25GHz per FCC PART 15.33(a).

Note:
For battery operated equipment, the equipment tests shall be performed using a new battery.

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4.3. Test Result

Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
913.00	97.04	-4.64	92.4	114	-21.6	peak
913.00	83.54	-4.64	78.9	94	-15.1	AVG
917.00	94.41	-4.43	89.98	114	-24.02	peak
917.00	82.35	-4.43	77.92	94	-16.08	AVG
922.00	92.73	-4.25	88.48	114	-25.52	peak
922.00	80.05	-4.25	75.8	94	-18.2	AVG
Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor;; Margin = Level-Limit.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
913.00	95.22	-4.64	90.58	114	-23.42	peak
913.00	84.08	-4.64	79.44	94	-14.56	AVG
917.00	93.23	-4.43	88.8	114	-25.2	peak
917.00	83.46	-4.43	79.03	94	-14.97	AVG
922.00	91.54	-4.25	87.29	114	-26.71	peak
922.00	81.13	-4.25	76.88	94	-17.12	AVG
Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Level-Limit.						

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5. Radiated Emission Test

5.1. Radiation Limit

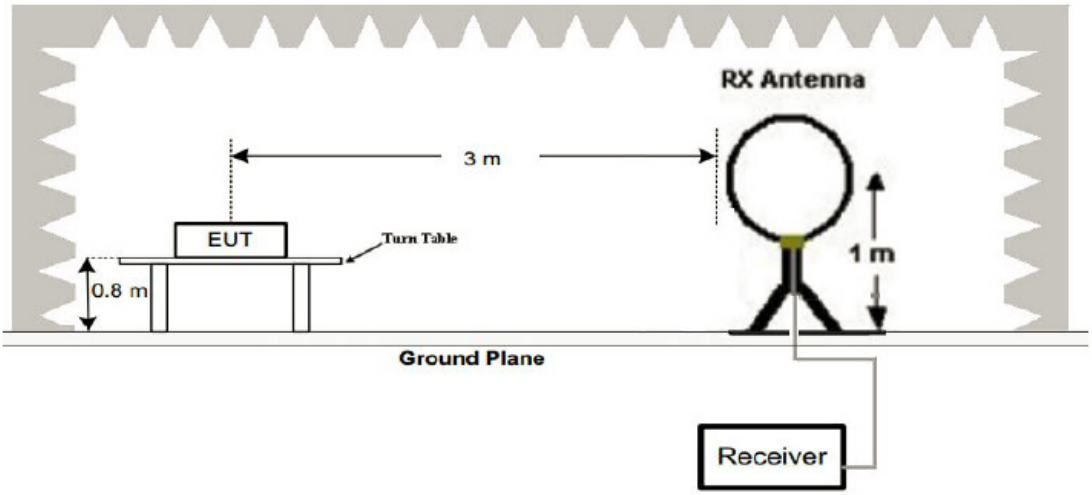
For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values：

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.490	300	20log 2400/F (kHz)	2400/F (kHz)
0.490-1.705	30	20log 24000/F (kHz)	24000/F (kHz)
1.705-30	30	20log 30	30
30-88	3	40	100
88-216	3	43.5	150
216-960	3	46	200
Above 960	3	54	500

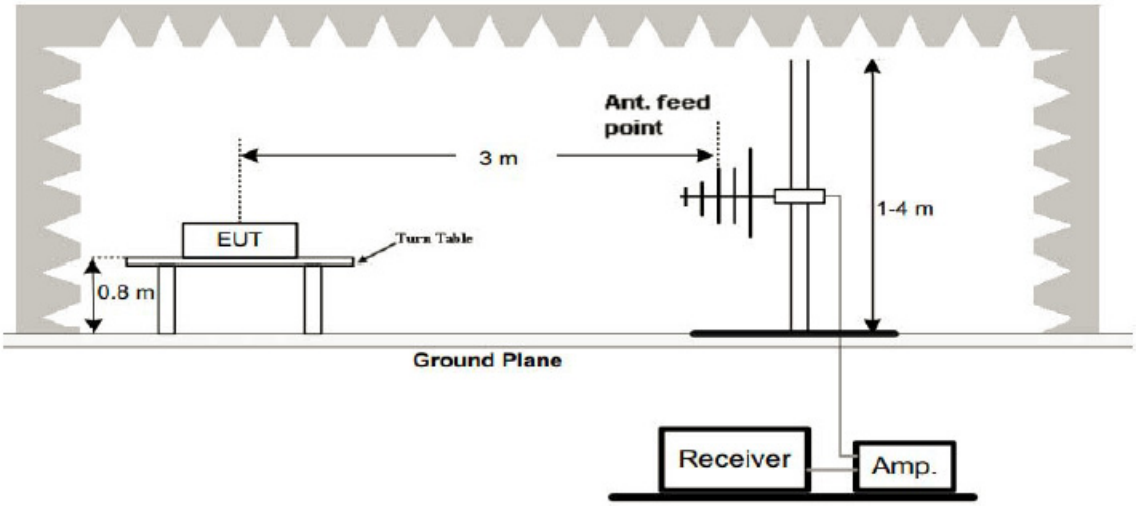
For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

5.2. Test Setup

（1）Radiated Emission Test-Up Frequency Below 30MHz



（2）Radiated Emission Test-Up Frequency 30MHz~1GHz



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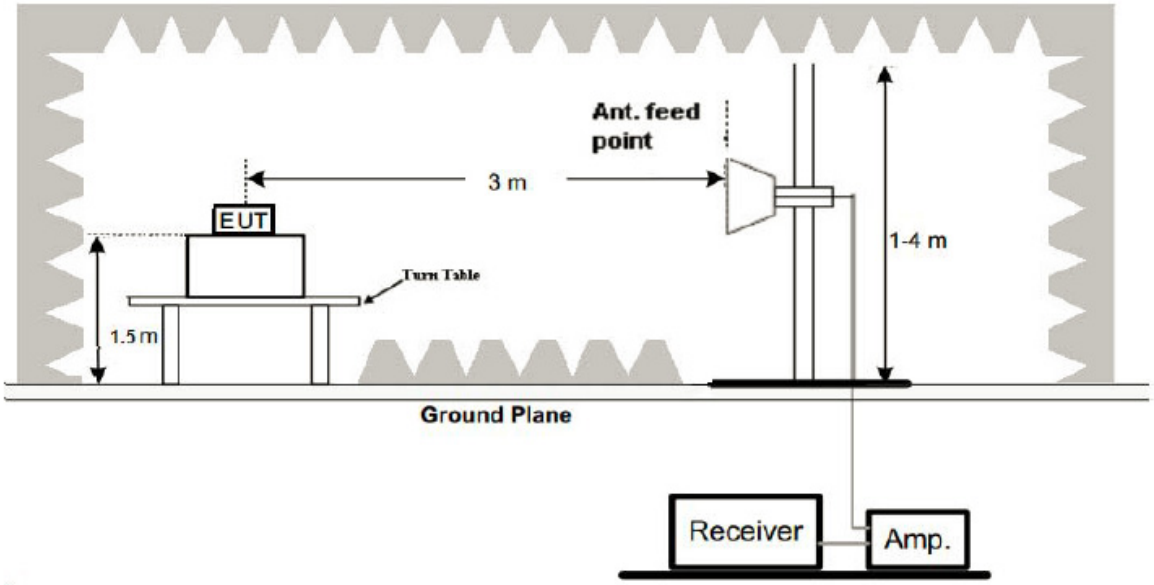
（3）Radiated Emission Test-Up Frequency Above 1GHz



5.3. Test Procedure

1. Below 1GHz measurement the EUT is placed on turntable which is 0.8m above ground plane. And above 1GHz measurement EUT was placed on low permittivity and low tangent turn table which is 1.5m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The test frequency range from 9KHz to 25GHz per FCC PART 15.33(a).

Note:
For battery operated equipment, the equipment tests shall be performed using a new battery.

5.4. Test Result

PASS
All the test modes completed for test. The worst case of Radiated Emission is Low channel; the test data of this mode was reported.

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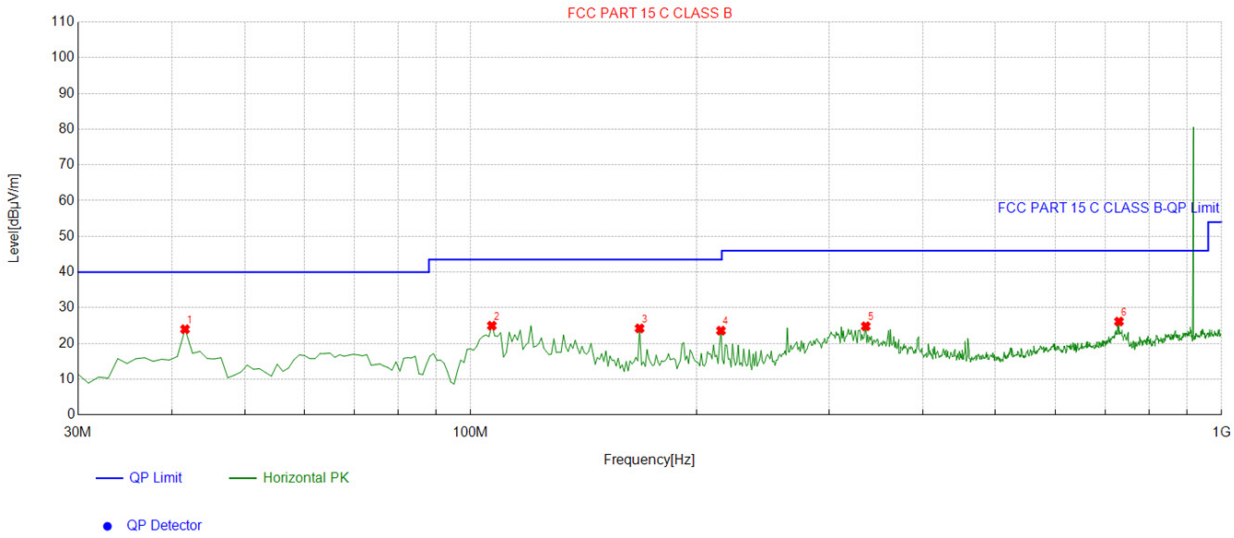
Below 1GHz Test Results:

Antenna polarity: H



Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	41.651652	-13.41	37.41	24.00	40.00	16.00	100	173	Horizontal
2	106.70670	-14.49	39.48	24.99	43.50	18.51	100	118	Horizontal
3	167.87787	-17.31	41.54	24.23	43.50	19.27	100	11	Horizontal
4	215.45545	-14.72	38.32	23.60	43.50	19.90	100	76	Horizontal
5	335.85585	-10.57	35.40	24.83	46.00	21.17	100	354	Horizontal
6	730.07007	-3.46	29.61	26.15	46.00	19.85	100	49	Horizontal

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

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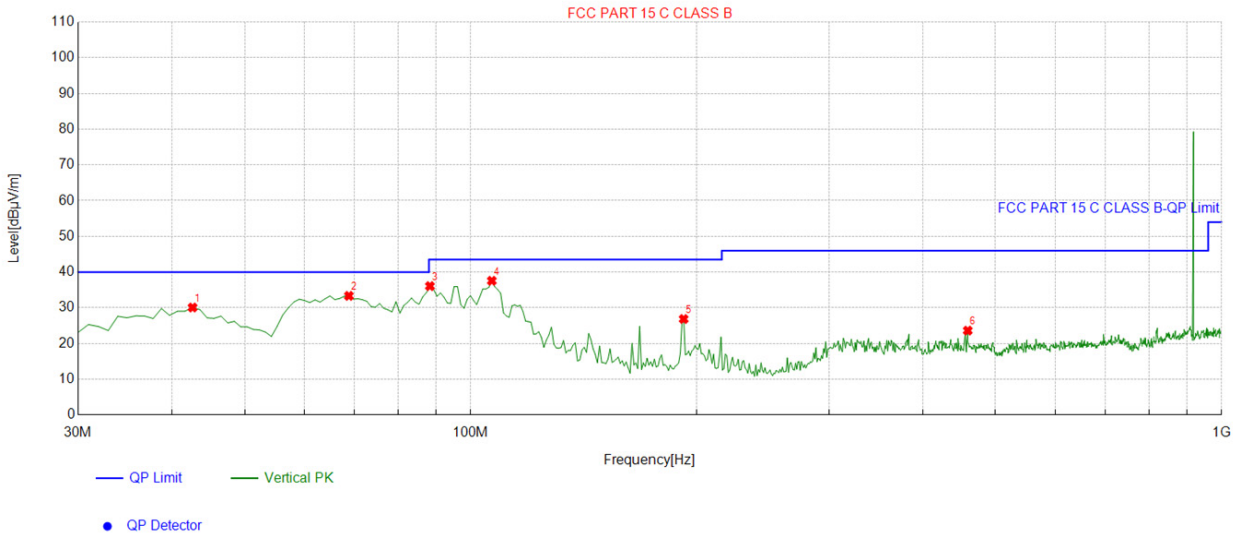
Antenna polarity: V



Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	42.622623	-13.31	43.38	30.07	40.00	9.93	100	332	Vertical
2	68.838839	-16.41	49.75	33.34	40.00	6.66	100	148	Vertical
3	88.258258	-17.03	53.10	36.07	43.50	7.43	100	85	Vertical
4	106.70670	-14.49	52.05	37.56	43.50	5.94	100	358	Vertical
5	192.15215	-15.74	42.59	26.85	43.50	16.65	100	120	Vertical
6	459.16916	-8.94	32.57	23.63	46.00	22.37	100	54	Vertical

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

Harmonics and Spurious Emissions

Frequency Range (9 kHz-30MHz)

Frequency (MHz)	Level@3m (dBμV/m)	Limit@3m (dBμV/m)
--	--	--
--	--	--
--	--	--
--	--	--

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.

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Above 1 GHz Test Results:

CH Low (913MHz)

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1826	54.26	-3.64	50.62	74	-23.38	peak
1826	43.16	-3.64	39.52	54	-14.48	AVG
2739	52.17	-0.95	51.22	74	-22.78	peak
2739	40.69	-0.95	39.74	54	-14.26	AVG
Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Level-Limit.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1826	53.44	-3.64	49.8	74	-24.2	peak
1826	40.22	-3.64	36.58	54	-17.42	AVG
2739	51.95	-0.95	51	74	-23	peak
2739	39.14	-0.95	38.19	54	-15.81	AVG
Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Level-Limit.						

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CH Middle (917MHz)

Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1834	53.17	-3.51	49.66	74	-24.34	peak
1834	42.22	-3.51	38.71	54	-15.29	AVG
2751	51.69	-0.82	50.87	74	-23.13	peak
2751	41.06	-0.82	40.24	54	-13.76	AVG
Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Level-Limit.						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1834	53.68	-3.51	50.17	74	-23.83	peak
1834	43.11	-3.51	39.6	54	-14.4	AVG
2751	52.49	-0.82	51.67	74	-22.33	peak
2751	40.39	-0.82	39.57	54	-14.43	AVG
Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Level-Limit.						

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CH High (922MHz)

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1844	53.13	-3.43	49.7	74	-24.3	peak
1844	41.74	-3.43	38.31	54	-15.69	AVG
2766	50.29	-0.75	49.54	74	-24.46	peak
2766	40.45	-0.75	39.7	54	-14.3	AVG
Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Level-Limit.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1844	54.44	-3.43	51.01	74	-22.99	peak
1844	40.91	-3.43	37.48	54	-16.52	AVG
2766	51.72	-0.75	50.97	74	-23.03	peak
2766	39.33	-0.75	38.58	54	-15.42	AVG
Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Level-Limit.						

Remark：
(1) Measuring frequencies from 1 GHz to the 25 GHz.
(2) “F” denotes fundamental frequency; “H” denotes spurious frequency; “E” denotes band edge frequency.
(3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
(4)The emissions are attenuated more than 20dB below the permissible limits are not record in the report.
(5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
(6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.
(7) All modes of operation were investigated and the worst-case emissions are reported.

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6. Band Edge

6.1. Limits

FCC PART 15.249(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

6.2. Test Procedure

The band edge compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW to 100KHz and VBM to 300KHz to measure the peak field strength.

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6.3. Test Result

PASS

Radiated Band Edge Test:

Operation Mode: TX CH Low (913MHz)

Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
902	42.39	-5.81	36.58	46	-9.42	QP
Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Level-Limit.						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
902	41.89	-5.81	36.08	46	-9.92	QP
Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Level-Limit.						

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Operation Mode: TX CH High (922MHz)

Horizontal

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
928	43.22	-5.65	37.57	46	-8.43	QP
Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Level-Limit.						

Vertical:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
928	41.09	-5.65	35.44	46	-10.56	QP
Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Level-Limit.						
Remark: All the other emissions not reported were too low to read and deemed to comply with FCC limit.						

Remark:

1. If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.
2. In restricted bands of operation, the spurious emissions below the permissible value more than 20dB.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

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7. Occupied Bandwidth Measurement

7.1. Test Setup

Same as Radiated Emission Measurement

7.2. Test Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as normal operation.
3. Based on ANSI C63.10 section 6.9.2: RBW= 10KHz. VBW=30 KHz, Span=500KHz.
4. The useful radiated emission from the EUT was detected by the spectrum analyzer with peak detector.

7.3. Measurement Equipment Used

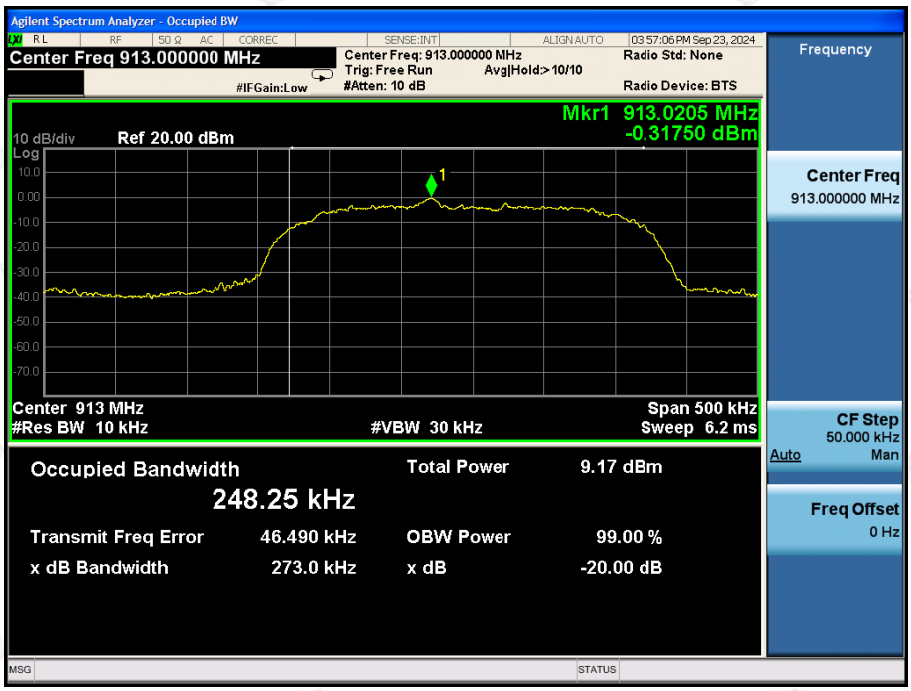
Same as Radiated Emission Measurement

7.4. Test Result

PASS

Frequency	20dB Bandwidth (MHz)	Result
913 MHz	0.2730	PASS
917 MHz	0.2714	PASS
922 MHz	0.2719	PASS

CH Low: 913MHz



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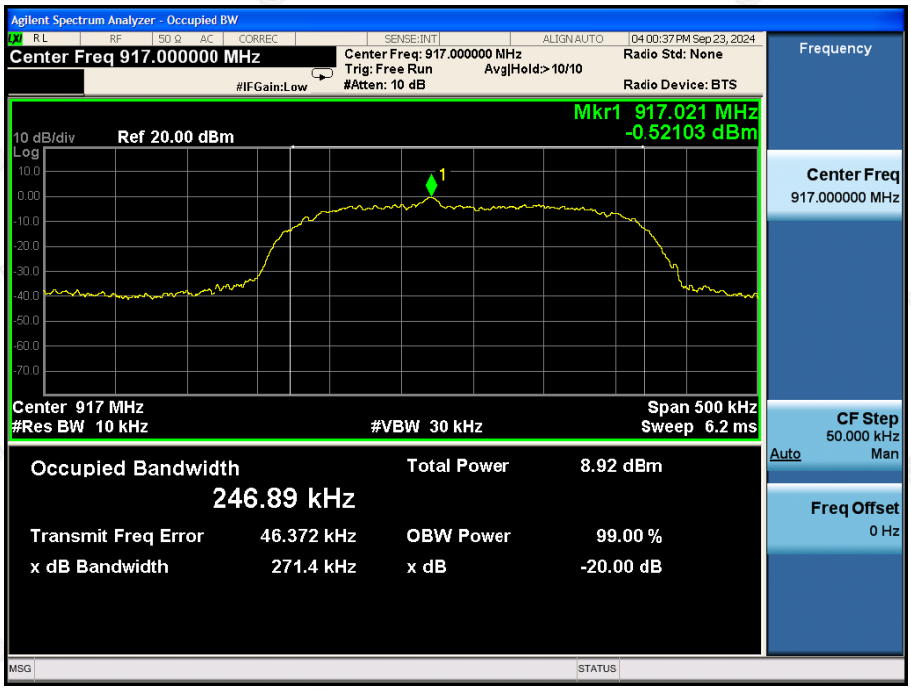
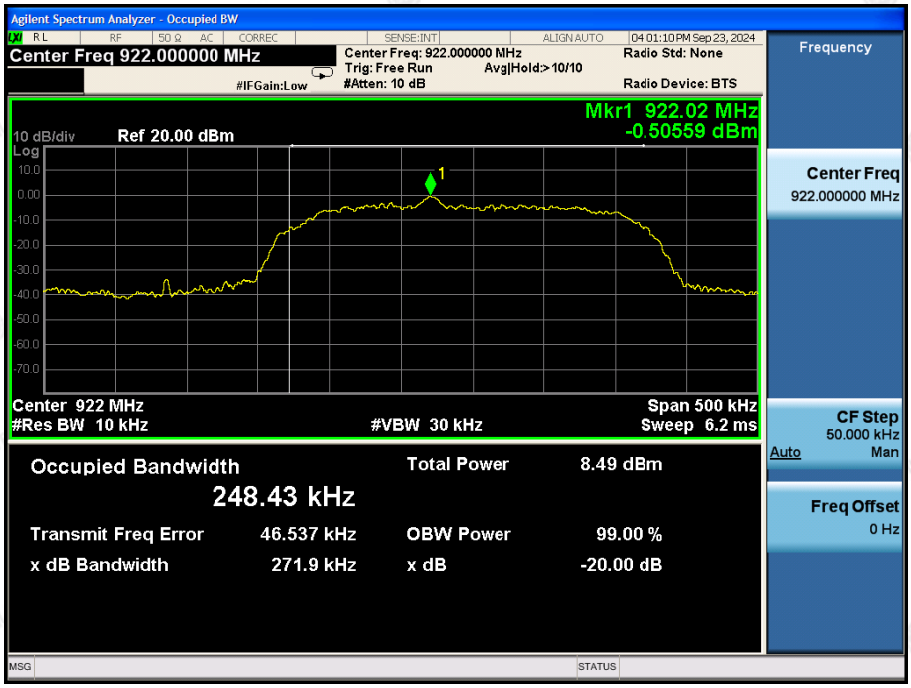
CH Middle: 917MHz



CH High: 922MHz



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8. Antenna Requirement

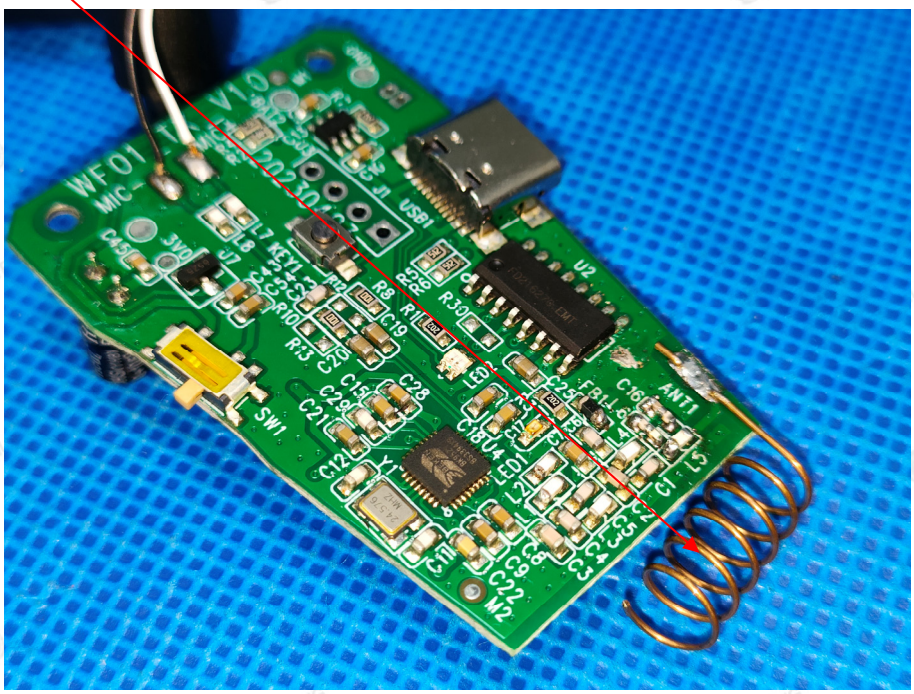
Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, 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.

Antenna Connected Construction

The antenna used in this product is a Internal Antenna, which permanently attached. It conforms to the standard requirements. The directional gains of antenna used for transmitting is 1.7dBi.

Antenna



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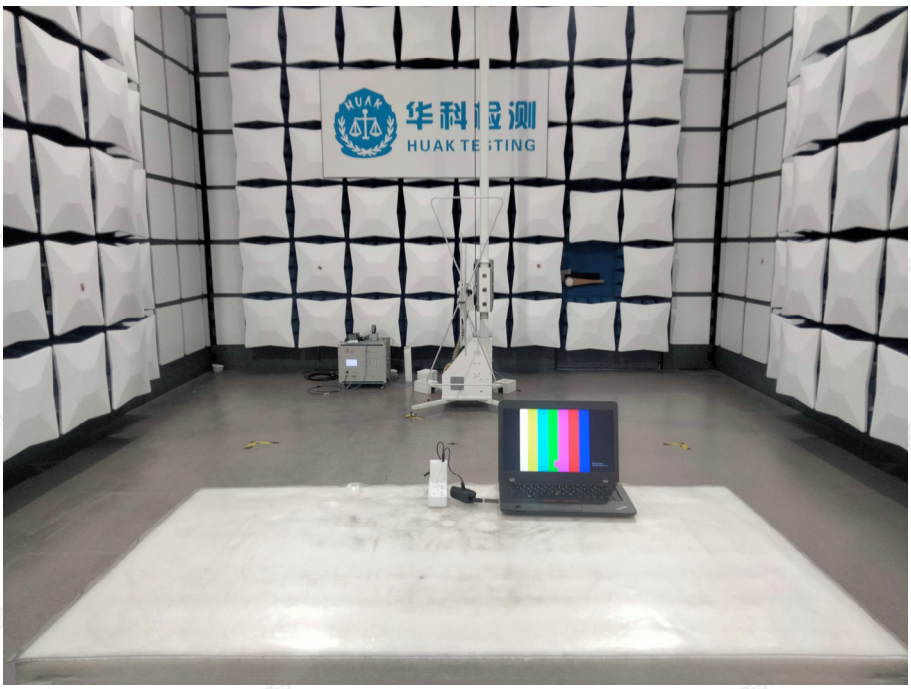
9. Photograph of Test

Radiated Emission



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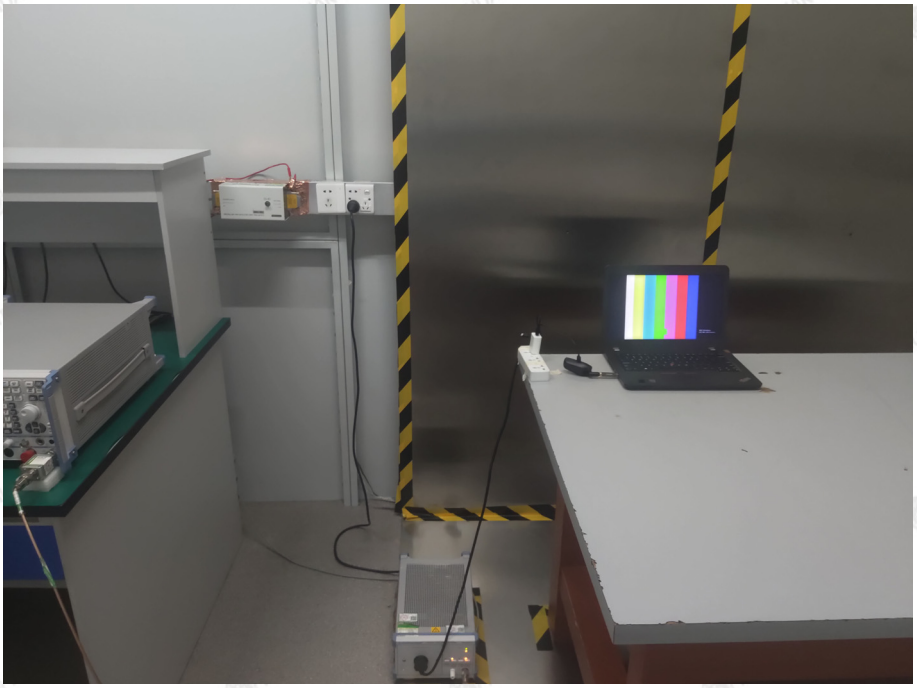
Conducted Emission



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10. Photos of the EUT

Reference to the report: ANNEX A of external photos and ANNEX B of internal photos.

---------End of test report---------

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