

**FCC 47 CFR PART 15 SUBPART C  
CERTIFICATION TEST REPORT**



*For*

**Smart deadbolt lock**

**MODEL NUMBER: H2 C20, H1 C20**

**REPORT NUMBER: E04A24080413F00104**

**ISSUE DATE: September 25, 2024**

**FCC ID: 2BEW6-H1C20**

*Prepared for*

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*Prepared by*

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Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V0	September 25, 2024	Initial Issue	

Summary of Test Results			
Clause	Test Items	FCC Rules	Test Results
1	20 dB Bandwidth	CFR 47 FCC §15.215 (c)	PASS
2	Transmitter Frequency Stability (Temperature & Voltage Variation)	CFR 47 FCC §15.225(e)	PASS
3	Fundamental Field Strength	CFR 47 FCC §5.225(a)(b)(c)(d)	PASS
4	Radiated Emissions	CFR 47 FCC§15.209(a) CFR 47 FCC§15.225(d)	PASS
5	Band Edge Radiated Emissions	CFR 47 FCC §15.209(a) CFR 47 FCC §15.225(c)(d)	PASS
6	Conducted Emission Test for AC Power Port	CFR 47 FCC §15.207	PASS
7	Antenna Requirement	CFR 47 FCC §15.203	Pass
<p>Note 1: This test report is only published to and used by the applicant, and it is not for evidence purpose in China.</p> <p>Note 2: The measurement result for the sample received is &lt;Pass&gt; according to &lt; CFR 47 FCC PART 15 SUBPART C &gt; when &lt;Accuracy Method&gt; decision rule is applied.</p>			

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# 1. ATTESTATION OF TEST RESULTS

## Applicant Information

Company Name: Shenzhen Fenda Smart Home Co., Ltd.  
 Address: Floors 7-9, Building 2, Phase II, Fenda Industrial Park, Baoyuan Community, Shiyan Street, Bao'an District, Shenzhen, China

## Manufacturer Information

Company Name: Shenzhen Fenda Smart Home Co., Ltd.  
 Address: Floors 7-9, Building 2, Phase II, Fenda Industrial Park, Baoyuan Community, Shiyan Street, Bao'an District, Shenzhen, China

## Factory Information

Company Name: Shenzhen Fenda Smart Home Co., Ltd.  
 Address: Floors 7-9, Building 2, Phase II, Fenda Industrial Park, Baoyuan Community, Shiyan Street, Bao'an District, Shenzhen, China

## EUT Information

EUT Name: Smart deadbolt lock  
 Model: H1 C20  
 Serial Model: H2 C20  
 Brand: N/A  
 Sample Received Date: August 20, 2024  
 Sample Status: Normal  
 Sample ID: A24080413 001  
 Date of Tested: August 28, 2024 to September 11, 2024

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 FCC PART 15 SUBPART C	PASS

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## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with KDB 414788 D01 Radiated Test Site v01r01, FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013.

## 3. FACILITIES AND ACCREDITATION

Accreditation Certificate	<p><b>A2LA (Certificate No.: 6947.01)</b> Guangdong Global Testing Technology Co., Ltd. has been assessed and proved to be in compliance with A2LA.</p> <p><b>FCC (FCC Designation No.: CN1343)</b> Guangdong Global Testing Technology Co., Ltd. has been recognized to perform compliance testing on equipment subject to Supplier's Declaration of Conformity (SDoC) and Certification rules</p> <p><b>ISED (Company No.: 30714)</b> Guangdong Global Testing Technology Co., Ltd. has been registered and fully described in a report filed with ISED. The Company Number is 30714 and the test lab Conformity Assessment Body Identifier (CABID) is CN0148.</p>
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Note: All tests measurement facilities use to collect the measurement data are located at Room 101-105, 203-210, Building 1, No.2, Keji 8 Road, Songshan Lake Park, Dongguan city, Guangdong, People's Republic of China, 523808

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognize national standards.

### 4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

1. Test Items	k	Uncertainty
DTS Bandwidth	1.96	±9.2 PPM
20dB Emission Bandwidth	1.96	±9.2 PPM
Carrier Frequency Separation	1.96	±9.2 PPM
Time of Occupancy	1.96	±0.57%
Conducted Output Power	1.96	±1.5 dB
Power Spectral Density Level	1.96	±1.9 dB
Conducted Spurious Emission	1.96	9 kHz-30 MHz: ± 0.95 dB 30 MHz-1 GHz: ± 1.5 dB 1GHz-12.75GHz: ± 1.8 dB 12.75 GHz-26.5 GHz: ± 2.1dB

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

Test Item	Measurement Frequency Range	K	U(dB)
Conducted emissions from the AC mains power ports (AMN)	150 kHz ~ 30 MHz	2	3.37
Radiated emissions	9 kHz ~ 30 MHz	2	4.16
Radiated emissions	30 MHz ~ 1 GHz	2	3.79
Radiated emissions	1 GHz ~ 18 GHz	2	5.62
Radiated emissions	18 GHz ~ 40 GHz	2	5.54

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

EUT Name		Smart deadbolt lock
Model		H1 C20
Series Model		H2 C20
Hardware Version		V1.1
Software Version		2.0.4
Ratings		Battery 7.4V
Power Supply	AC	120V/60Hz From Adapter
	DC	Battery 7.4V

### 5.2. MAXIMUM FIELD STRENGTH

Frequency (MHz)	Max Peak field strength (dB $\mu$ V/m)
13.56	36.86

### 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

Frequency (MHz)	Antenna Type	Antenna Gain (dBi)
13.56	PVC	0

Note: The value of the antenna gain was declared by customer.



### 5.4. TEST ENVIRONMENT

Environment Parameter	Selected Values During Tests	
Relative Humidity	55 ~ 65 %	
Atmospheric Pressure:	1025 Pa	
Temperature	TN	23 ~ 28 °C
Voltage:	VL	N/A
	VN	DC 7.4 V
	VH	N/A

Note: VL= Lower Extreme Test Voltage  
 VN= Nominal Voltage  
 VH= Upper Extreme Test Voltage  
 TN= Normal Temperature

## 5.5. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name
1	Laptop	Lenovo	T14
2	Test Card	N/A	N/A

### ACCESSORY

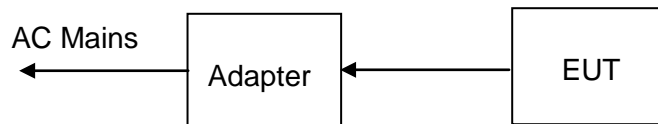
Item	Accessory	Brand Name	Model Name	Description
1	Adapter	XIAOMI	MDY-11-EX	Input: 100-240Vac 50/60Hz Output: 5Vdc 3A, 9Vdc 3A, 12Vdc 2.25A, 20Vdc 1.35A, 11Vdc 3A Max

### TEST SETUP

The EUT can continue work normally when a card touched.

### SETUP DIAGRAM FOR TESTS

#### AC conducted emission :



#### Radiated Emission:



#### RF conducted:



## 5.6. MEASURING INSTRUMENT AND SOFTWARE USED

Test Equipment of Conducted RF					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
Spectrum Analyzer	Rohde & Schwarz	FSV40	102257	2023/09/18	2024/09/17
Spectrum Analyzer	KEYSIGHT	N9020A	MY51285127	2023/09/18	2024/09/17
EXG Analog Signal Generator	KEYSIGHT	N5173B	MY61253075	2023/09/18	2024/09/17
Vector Signal Generator	Rohde & Schwarz	SMM100A	101899	2023/09/18	2024/09/17
RF Control box	MWRF-test	MW100-RFCB	MW220926GTG	2023/09/18	2024/09/17
Wideband Radio Communication Tester	Rohde & Schwarz	CMW270	102792	2023/09/18	2024/09/17
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	103235	2023/09/18	2024/09/17
temperature humidity chamber	Espec	SH-241	SH-241-2014	2023/09/18	2024/09/17
RF Test Software	MWRF-test	MTS8310E (Ver. V2/0)	N/A	N/A	N/A

Test Equipment of Radiated emissions below 1GHz					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
3m Semi-anechoic Chamber	ETS	9m*6m*6m	Q2146	2022/08/30	2025/08/29
EMI Test Receiver	Rohde & Schwarz	ESCI3	101409	2023/09/18	2024/09/17
Spectrum Analyzer	KEYSIGHT	N9020A	MY51283932	2023/09/18	2024/09/17
Pre-Amplifier	HzEMC	HPA-9K0130	HYP A21001	2023/09/18	2024/09/17
Biconilog Antenna	Schwarzbeck	VULB 9168	01315	2022/10/10	2025/10/09
Biconilog Antenna	ETS	3142E	00243646	2022/03/23	2025/03/22
Loop Antenna	ETS	6502	243668	2022/03/30	2025/03/29
Test Software	Farad	EZ-EMC (Ver.FA-03A2 RE)	N/A	N/A	N/A

Test Equipment of Radiated emissions above 1GHz					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
3m Semi-anechoic Chamber	ETS	9m*6m*6m	Q2149	2022/08/30	2025/08/29
Spectrum Analyzer	Rohde & Schwarz	FSV40	101413	2023/09/18	2024/09/17
Spectrum Analyzer	KEYSIGHT	N9020A	MY51283932	2023/09/18	2024/09/17
Pre-Amplifier	A-INFO	HPA-1G1850	HYP A21003	2023/09/18	2024/09/17
Horn antenna	A-INFO	3117	246069	2022/03/11	2025/03/10

Pre-Amplifier	ZKJC	HPA-184057	HYP A21004	2023/09/18	2024/09/17
Horn antenna	ZKJC	3116C	246265	2022/03/29	2025/03/28
Test Software	Farad	EZ-EMC (Ver.FA-03A2 RE+)	N/A	N/A	N/A

<b>Test Equipment of Conducted emissions</b>					
<b>Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Serial No.</b>	<b>Last Cal.</b>	<b>Due Date</b>
Shielded Room	CHENG YU	8m*5m*4m	N/A	2022/10/29	2025/10/28
EMI Test Receiver	Rohde & Schwarz	ESR3	102647	2023/09/18	2024/09/17
LISN/AMN	Rohde & Schwarz	ENV216	102843	2023/09/18	2024/09/17
NNLK 8129 RC	Schwarzbeck	NNLK 8129 RC	5046	2023/09/18	2024/09/17
Test Software	Farad	EZ-EMC (Ver. EMC-con-3A1 1+)	N/A	N/A	N/A

## 6. ANTENNA PORT TEST RESULTS

### 6.1. 20 DB BANDWIDTH

#### LIMITS

FCC Part15 (15.247) Subpart C		
Section	Test Item	Limit
Clause 6.7 Issue 5	20 dB Bandwidth	For reporting purposes only.

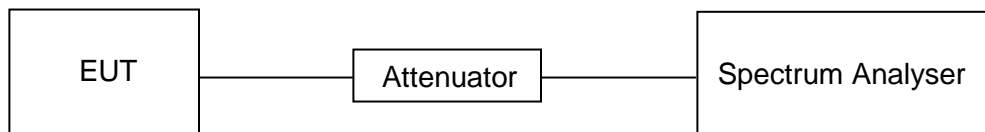
#### TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	1 % to 5 % of the occupied bandwidth
VBW	approximately 3×RBW
Trace	Max hold
Sweep	Auto couple

Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies).

#### TEST SETUP

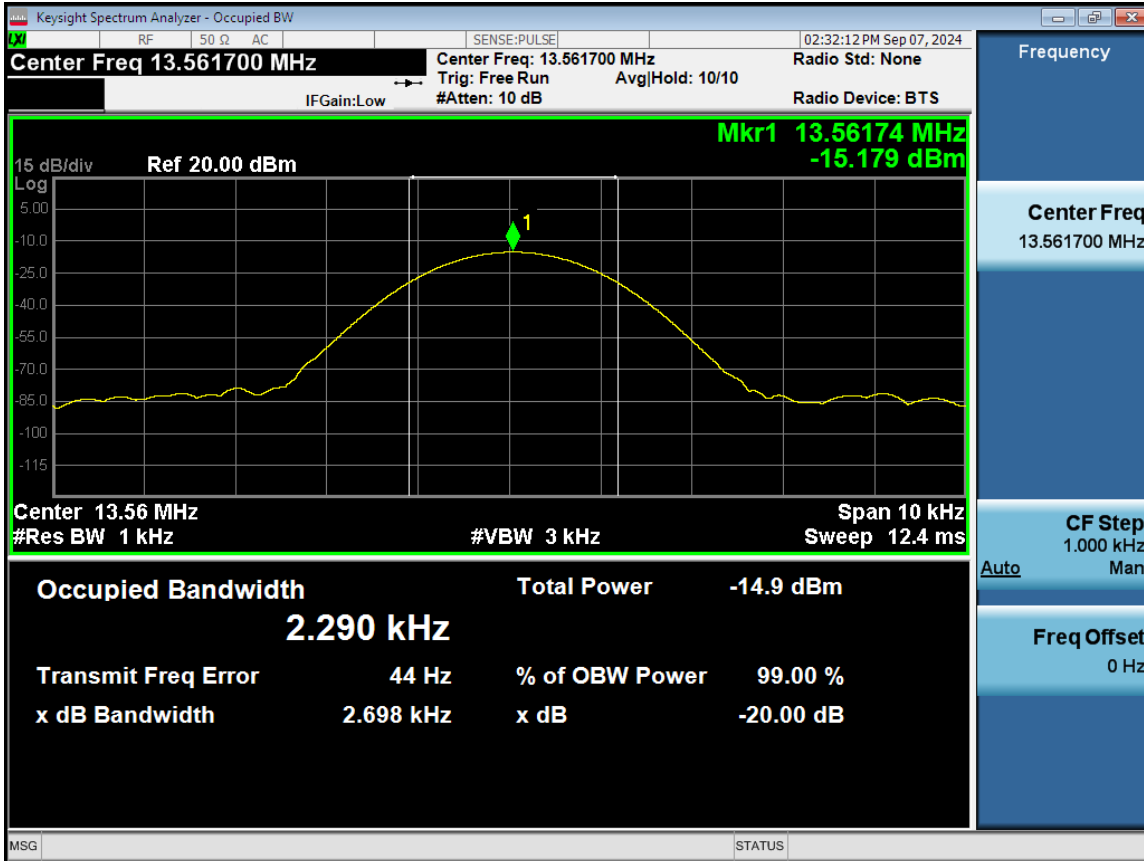


#### TEST ENVIRONMENT

Temperature	23.5 °C	Relative Humidity	57.0 %
Atmosphere Pressure	101 kPa	Test Voltage	DC 6 V

#### RESULTS

Frequency (MHz)	20 dB bandwidth (kHz)
13.56	2.698



## 6.2. TRANSMITTER FREQUENCY STABILITY

### LIMITS

CFR 47 FCC §15.225(e)

The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01$  % of the operating frequency over a temperature variation of  $-20$  degrees to  $+ 50$  degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85 % to 115 % of the rated supply voltage at a temperature of 20 degrees C.

### TEST SETUP AND PROCEDURE

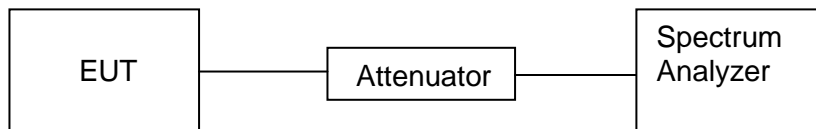
Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	PEAK
RBW	10 kHz
VBW	$\geq 3 \times$ RBW
Span	Encompass the entire emissions bandwidth (EBW) of the signal
Trace	Max hold
Sweep time	Auto

Allow the trace to stabilize, find the peak value of the power envelope and record the frequency, then calculated the frequency drift.

The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.

### TEST SETUP



**TEST ENVIRONMENT**

Temperature	23.9 °C	Relative Humidity	56.2 %
Atmosphere Pressure	101 kPa	Test Voltage	Battery 7.4V

**TEST RESULTS**

Maximum frequency error of the EUT with variations in ambient temperature

Temperature (°C)	Time after Start-			
	0 minutes	2 minutes	5 minutes	10 minutes
NT	13.5606 MHz	13.5605 MHz	13.5606 MHz	13.5606 MHz
LT	13.5606 MHz	13.5605 MHz	13.5603 MHz	13.5605 MHz
HT	13.5605 MHz	13.5606 MHz	13.5606 MHz	13.5606 MHz

Maximum frequency error of the EUT with variations in nominal operating voltage at an ambient normal temperature

Supply Voltage (V)	Nominal Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (%)	Limit (%)	Margin (%)	Result
6.29	13.56	13.5608	800	0.006	0.01	0.004	Pass
7.4	13.56	13.5606	600	0.004	0.01	0.006	Pass
8.51	13.56	13.5607	700	0.005	0.01	0.005	Pass



## 7. RADIATED EMISSION TEST RESULTS

### LIMITS

Fundamental field strength

FCC Reference:	Part 15.225(a)(b)(c)(d) & 15.209(a)
Test Method Used:	ANSI C63.10 Sections 6.3, 6.4 and 6.5

Frequency (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measured Distance (Meters)
13.553-13.567	15848	84	30
13.410-13.553/13.567-13.710	334	50.47	30
13.110-13.410/13.710-14.010	106	40.51	30

Note(s):

1. The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in §15.209.

2. The limit is specified at a test distance of 30 meters. However, as specified by FCC Section 15.31 (f)(2), measurements may be performed at a closer distance and the measured level corrected to the specified measurement distance by using the square of an inverse linear distance extrapolation factor (40dB/decade).

Radiation Disturbance Test Limit for FCC (Class B) (9 kHz-1 GHz)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

Note: 1) At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

(2) At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). This paragraph (f) shall not apply to Access BPL devices operating below 30 MHz.

Restricted bands of operation

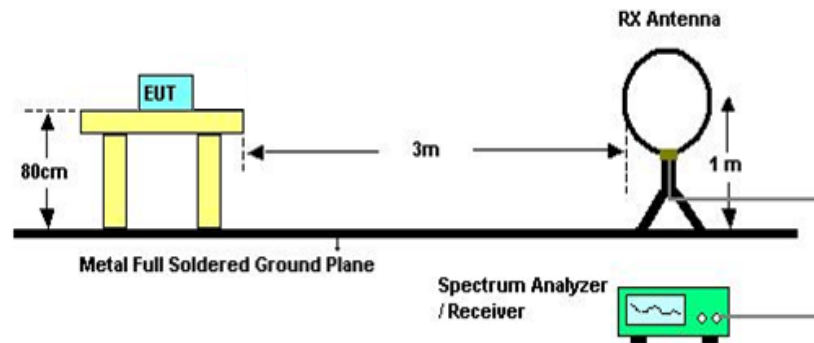
MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
<sup>1</sup> 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	( <sup>2</sup> )
13.36-13.41			

Note: <sup>1</sup>Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup>Above 38.6c

**TEST SETUP AND PROCEDURE**

Below 30 MHz

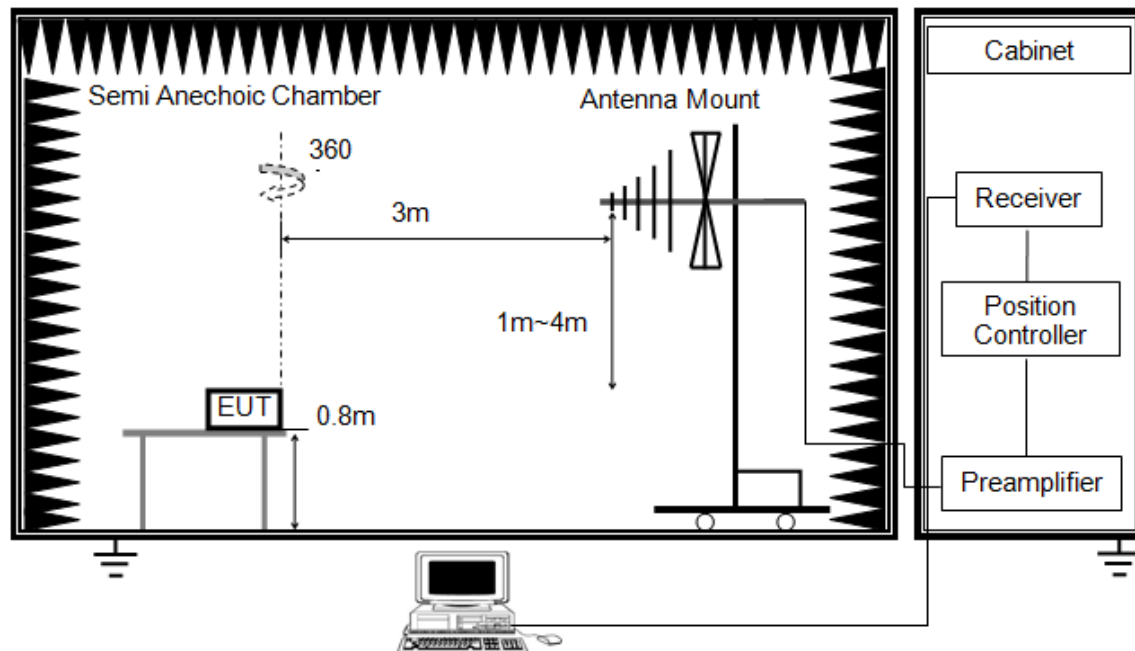


The setting of the spectrum analyser

RBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
VBW	200 Hz (From 9 kHz to 0.15 MHz)/ 9 kHz (From 0.15 MHz to 30 MHz)
Sweep	Auto
Detector	Peak/QP/ Average
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.
2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both Horizontal, Face-on and Face-off polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 80cm meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a 1m height antenna tower.
5. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
6. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
7. The radiated emission limits are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
8. Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30m open field site. Therefore, the sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

Below 1 GHz

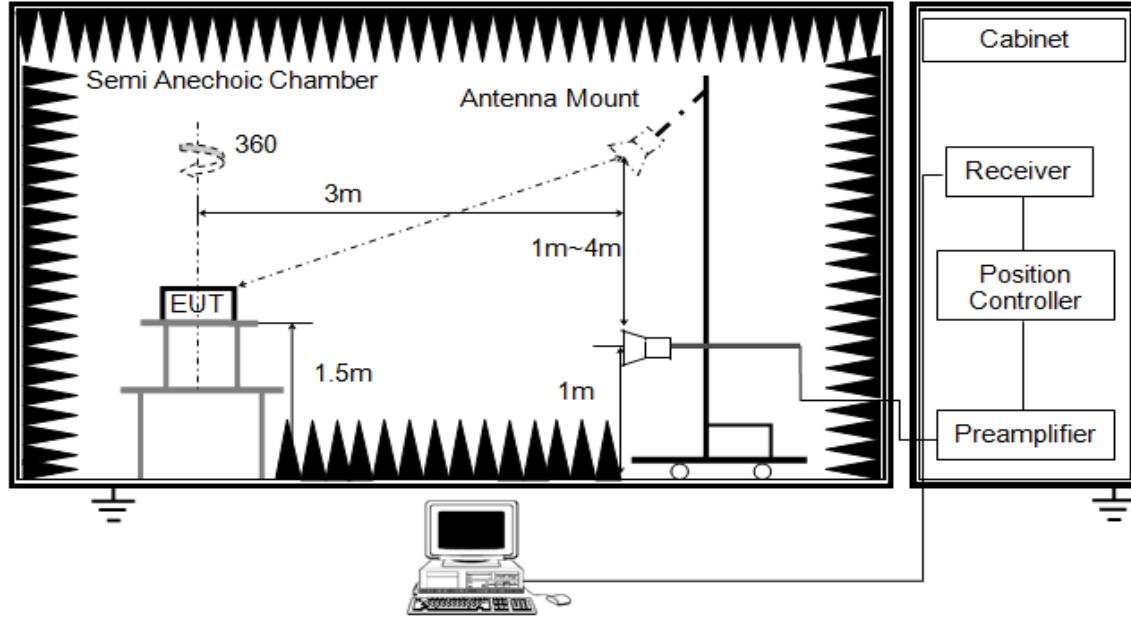


The setting of the spectrum analyser

RBW	120 kHz
VBW	300 kHz
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 80cm above ground.
4. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
5. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
6. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
7. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

Above 1 GHz

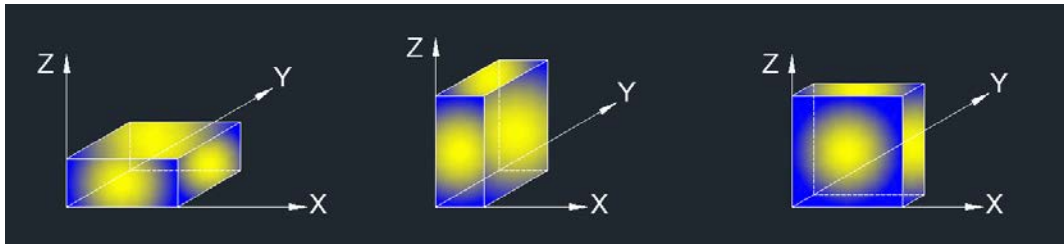


The setting of the spectrum analyser

RBW	1 MHz
VBW	PEAK: 3 MHz AVG: see note 6
Sweep	Auto
Detector	Peak
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.
2. The EUT was arranged to its worst case and then tune the antenna tower (1.5 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter or band reject filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 80cm above ground.
4. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
5. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
6. For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements. Where necessary, average emission are determined by applying the Duty Cycle Correction Factor to the peak measurements. For the Duty Cycle and Correction Factor please refer to clause 6.1. ON TIME AND DUTY CYCLE.

X axis, Y axis, Z axis positions:



Note 1: For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis for horizontal and Y axis for vertical) data recorded in the report.

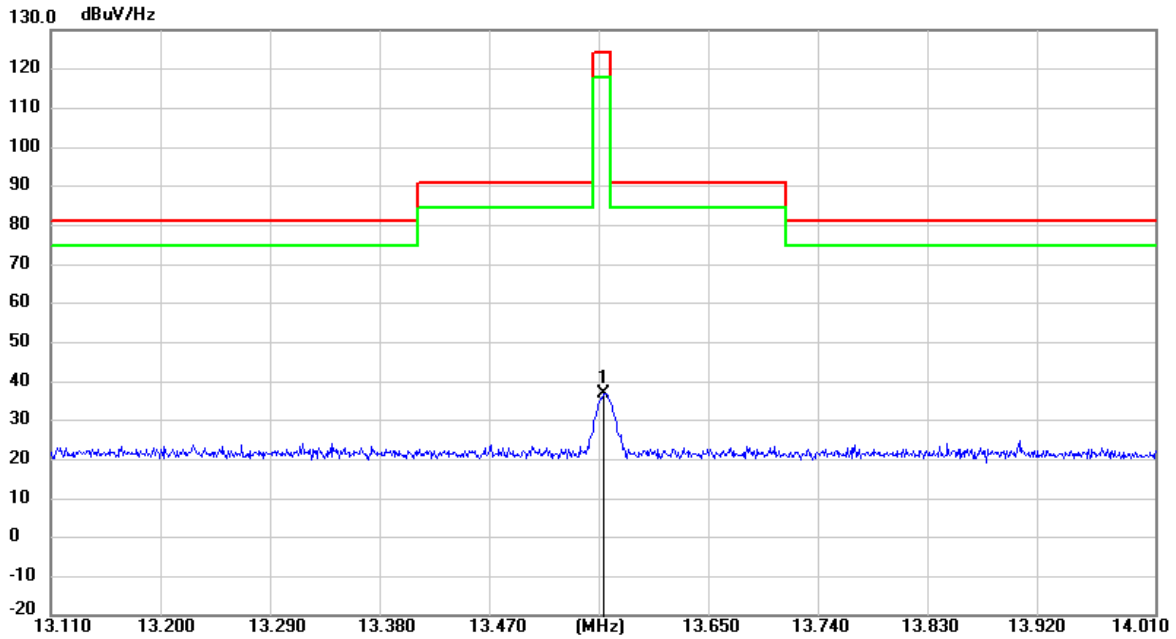
### **TEST ENVIRONMENT**

Temperature	24.3 °C	Relative Humidity	55.2%
Atmosphere Pressure	101 kPa	Test Voltage	Battery 7.4V

### **RESULTS**

## 7.1. FIELD STRENGTH OF INTENTIONAL EMISSIONS

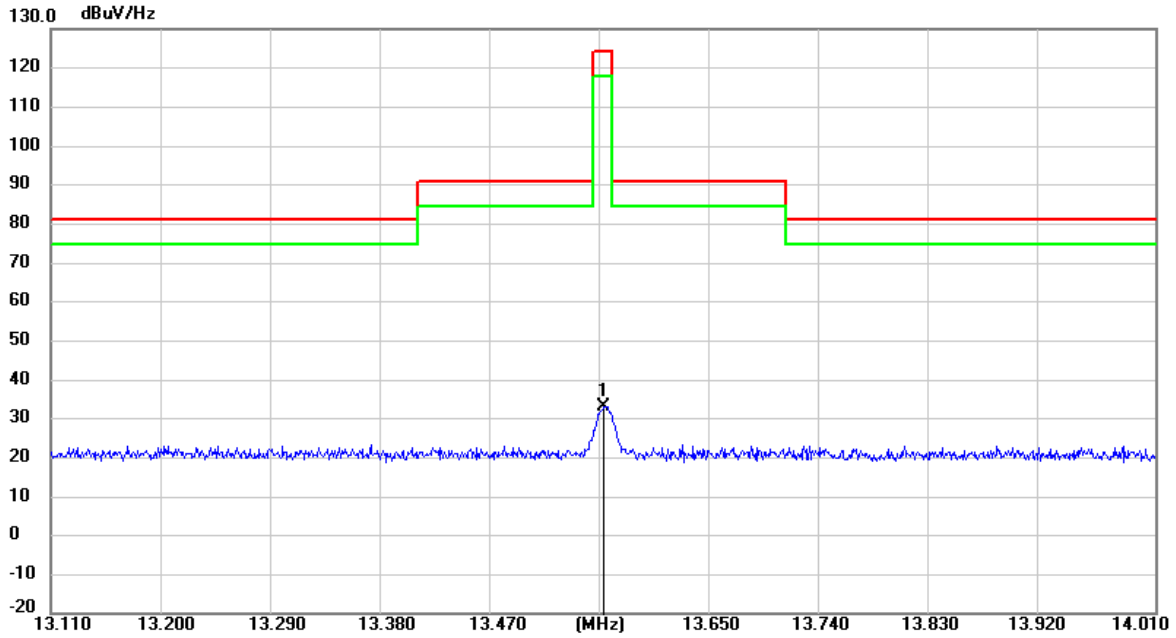
### FIELD STRENGTH OF INTENTIONAL EMISSIONS (HORIZONTAL)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result 3m (dBuV/m)	Result 30m (dBuV/m)	Limit 3m (dBuV/m)	Limit 30m (dBuV/m)	Margin (dB)	Remark
1	13.5610	26.13	10.73	36.86	-3.14	124.00	84.00	-87.14	peak

Note: 1. Result 3m= Reading+ Correct Factor  
 2. Result 30m= Result 3m-40

**FIELD STRENGTH OF INTENTIONAL EMISSIONS (VERTICAL)**



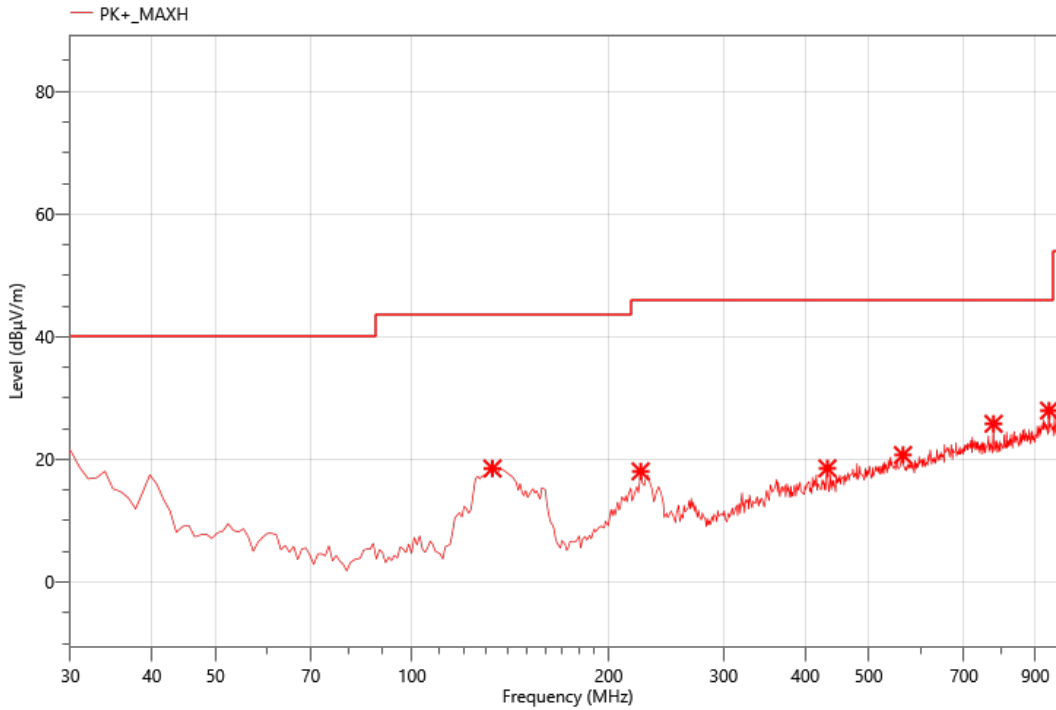
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result 3m (dBuV/m)	Result 30m (dBuV/m)	Limit 3m (dBuV/m)	Limit 30m (dBuV/m)	Margin (dB)	Remark
2	13.5610	22.51	10.73	33.24	-6.76	124.00	84.00	-90.76	peak

Note: 1. Result 3m= Reading+ Correct Factor  
 2. Result 30m= Result 3m-40



## 7.2. SPURIOUS EMISSIONS BELOW 1 GHz AND ABOVE 30 MHz

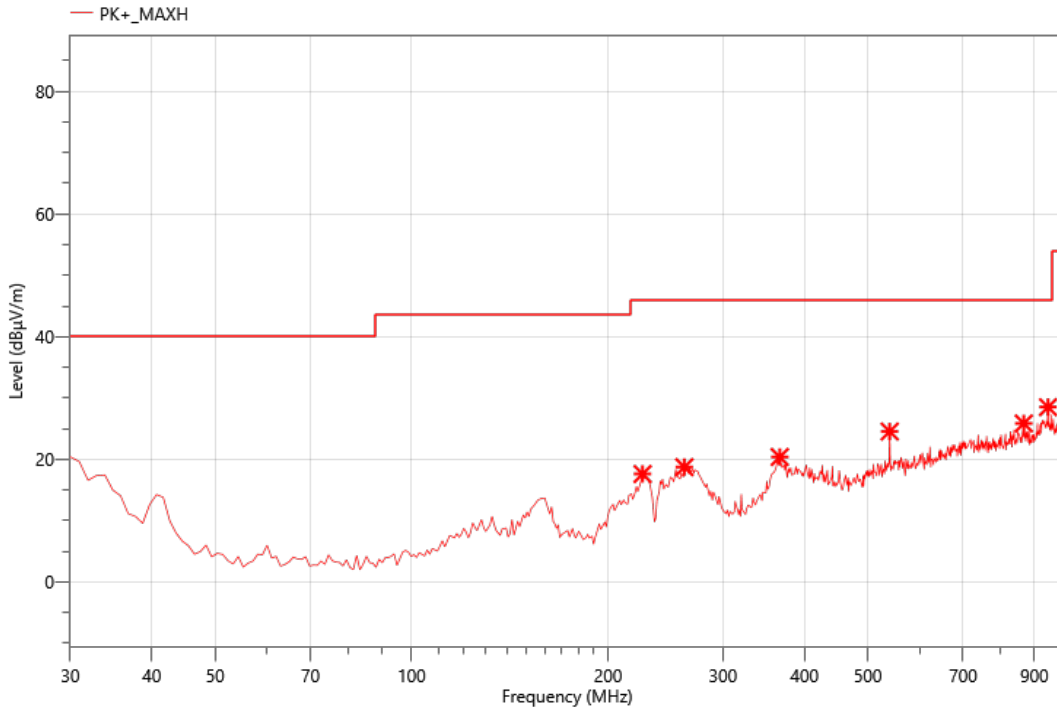
### SPURIOUS EMISSIONS (HORIZONTAL)



No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Pol.
1	132.820	42.59	-24.06	18.53	43.50	24.97	PK+	V
2	224.000	38.66	-20.6	18.06	46.00	27.94	PK+	V
3	432.550	32.70	-14.15	18.55	46.00	27.45	PK+	V
4	564.470	31.32	-10.6	20.72	46.00	25.28	PK+	V
5	776.900	32.72	-6.91	25.81	46.00	20.19	PK+	V
6	944.710	31.30	-3.33	27.97	46.00	18.03	PK+	V

Note: [Margin=Limit-Meas.]; [Meas.=Reading+Corr. ]

**HARMONICS AND SPURIOUS EMISSIONS (VERTICAL)**



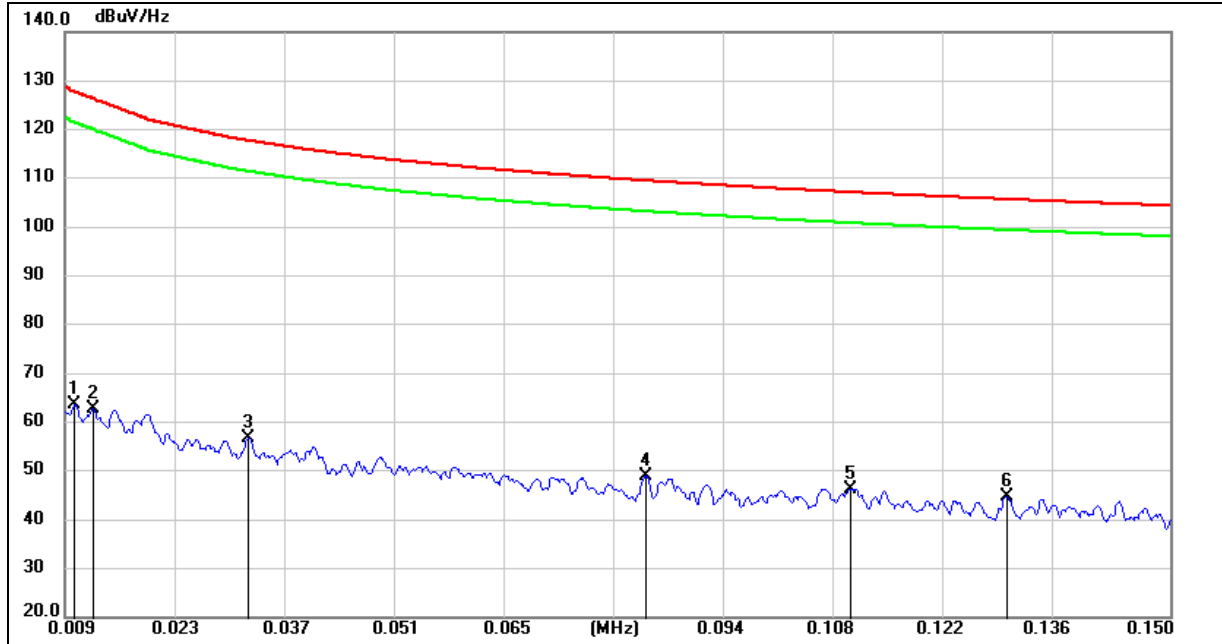
No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Pol.
1	225.940	38.08	-20.49	17.59	46.00	28.41	PK+	H
2	261.830	37.20	-18.49	18.71	46.00	27.29	PK+	H
3	366.590	35.91	-15.54	20.37	46.00	25.63	PK+	H
4	540.220	34.77	-10.25	24.52	46.00	21.48	PK+	H
5	867.110	31.33	-5.49	25.84	46.00	20.16	PK+	H
6	944.710	31.83	-3.33	28.50	46.00	17.50	PK+	H

Note: [Margin=Limit-Meas.]; [Meas.=Reading+Corr. ]

### 7.3. SPURIOUS EMISSIONS BELOW 30 MHz

#### SPURIOUS EMISSIONS (LOOP ANTENNA FACE ON TO THE EUT)

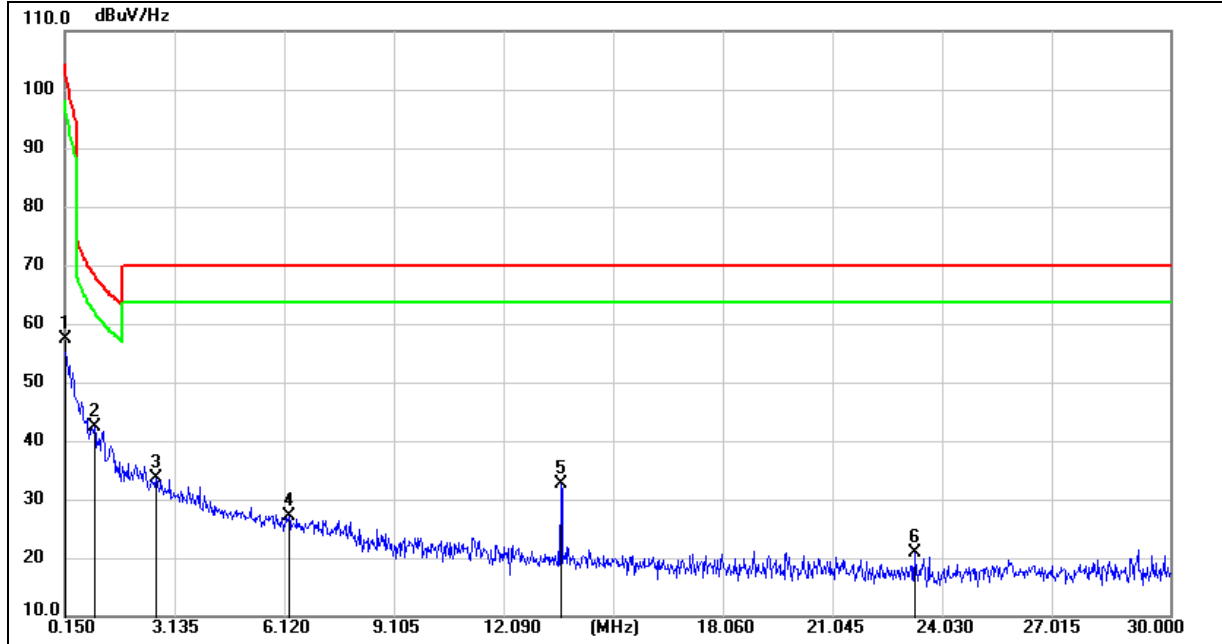
0.09 kHz~ 150 kHz



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measurement(dBuV/Hz)	Limit (dBuV/Hz)	Margin (dB)	Detector	Comment
1	0.0103	45.29	18.43	63.72	127.42	-63.70	peak	
2	0.0126	45.32	17.42	62.74	126.03	-63.29	peak	
3	0.0324	43.60	13.05	56.65	117.46	-60.81	peak	
4	0.0832	38.15	10.91	49.06	109.21	-60.15	peak	
5	0.1093	35.58	10.76	46.34	106.84	-60.50	peak	
6	0.1291	34.11	10.72	44.83	105.39	-60.56	peak	

Note: Measurement = Reading Level + Correct Factor.

**150 kHz ~ 30MHz**

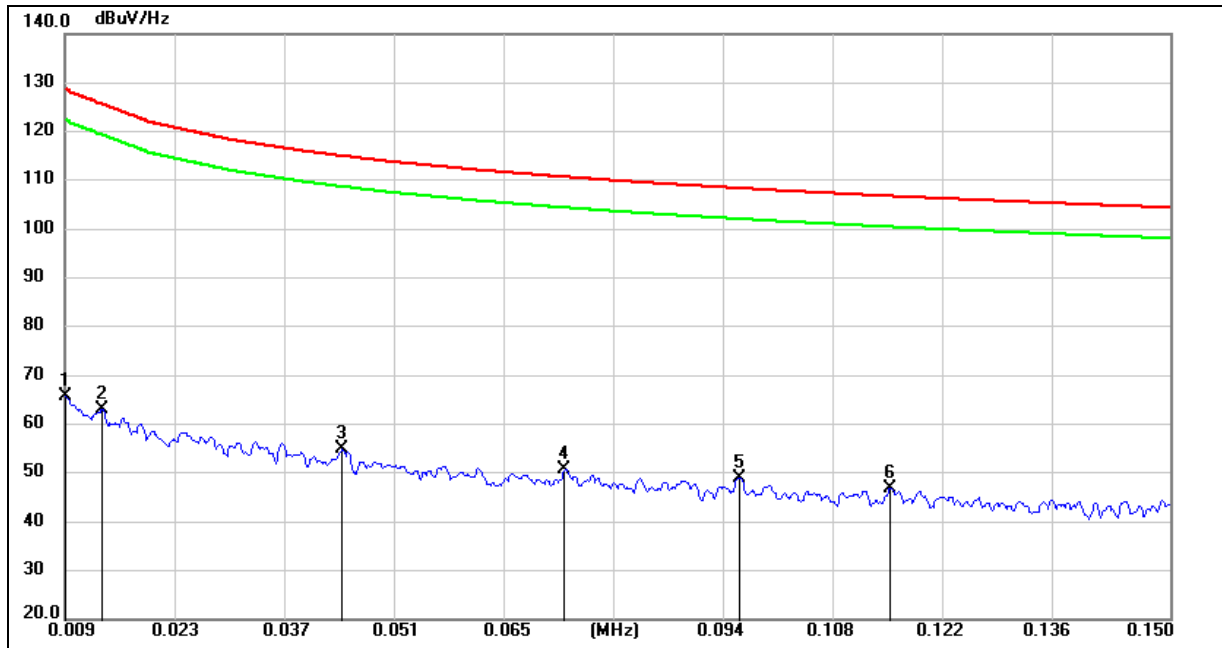


No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measurement(dBuV/Hz)	Limit (dBuV/Hz)	Margin (dB)	Detector	Comment
1	0.1500	46.82	10.68	57.50	104.08	-46.58	peak	
2	0.9560	31.85	10.55	42.40	68.00	-25.60	peak	
3	2.6276	23.03	10.68	33.71	69.54	-35.83	peak	
4	6.2096	16.34	10.89	27.23	69.54	-42.31	peak	
5	13.5527	21.94	10.73	32.67	69.54	-36.87	peak	
6	23.1047	11.29	9.61	20.90	69.54	-48.64	peak	

Note: Note: Measurement = Reading Level + Correct Factor.

**SPURIOUS EMISSIONS (LOOP ANTENNA FACE OFF TO THE EUT)**

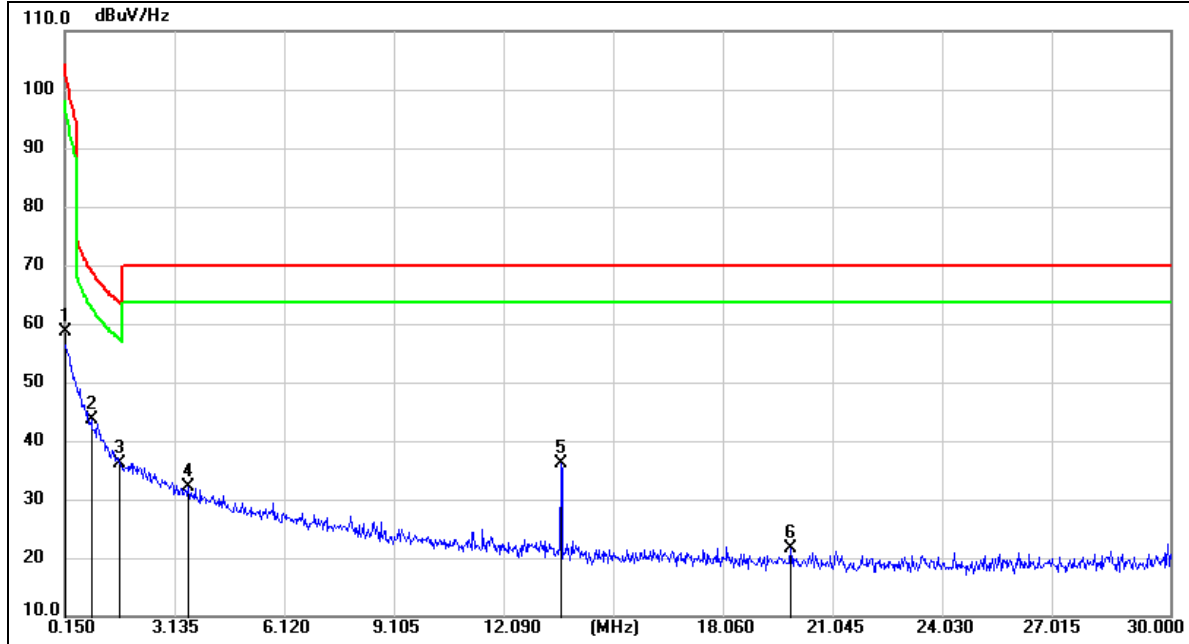
**0.09 kHz~ 150 kHz**



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measurement(dBuV/Hz)	Limit (dBuV/Hz)	Margin (dB)	Detector	Comment
1	0.0091	46.44	19.19	65.63	128.43	-62.80	peak	
2	0.0138	46.06	16.89	62.95	125.31	-62.36	peak	
3	0.0444	42.90	11.97	54.87	114.71	-59.84	peak	
4	0.0728	39.60	11.01	50.61	110.38	-59.77	peak	
5 *	0.0952	38.21	10.82	49.03	108.04	-59.01	peak	
6	0.1143	36.09	10.75	46.84	106.45	-59.61	peak	

Note: Measurement = Reading Level + Correct Factor.

**150 kHz ~ 30MHz**



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measurement(dBuV/Hz)	Limit (dBuV/Hz)	Margin (dB)	Detector	Comment
1	0.1500	47.98	10.68	58.66	104.08	-45.42	peak	
2 *	0.8664	33.19	10.54	43.73	68.86	-25.13	peak	
3	1.6425	25.64	10.60	36.24	63.30	-27.06	peak	
4	3.4932	21.42	10.75	32.17	69.54	-37.37	peak	
5	13.5527	25.39	10.73	36.12	69.54	-33.42	peak	
6	19.7615	11.43	10.14	21.57	69.54	-47.97	peak	

Note: Note: Measurement = Reading Level + Correct Factor.

## 8. AC POWER LINE CONDUCTED EMISSIONS

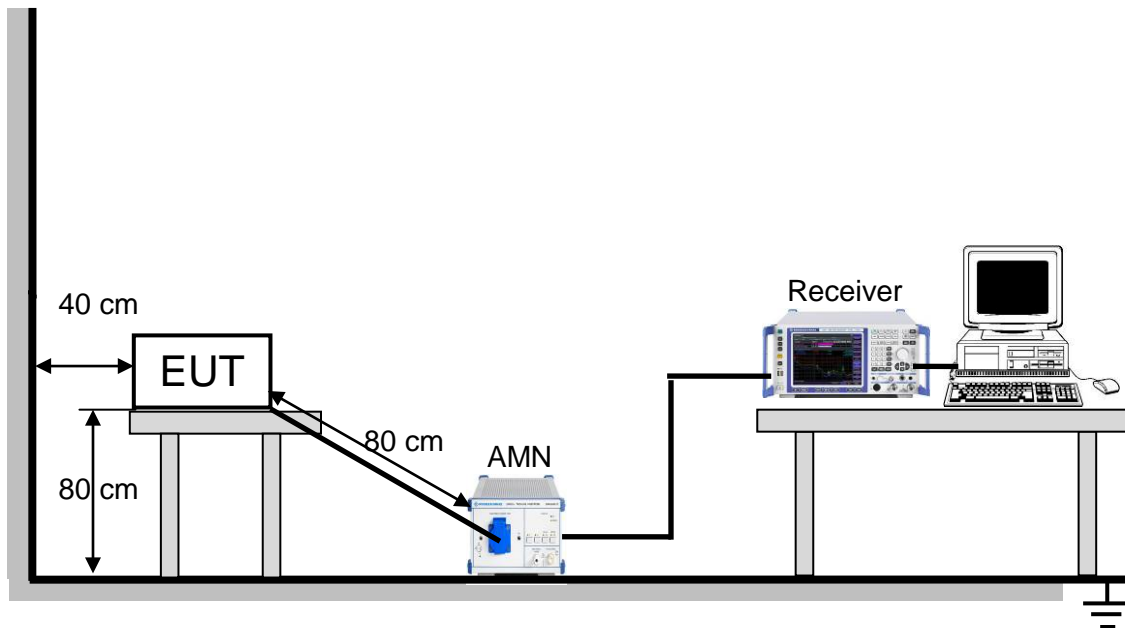
### LIMITS

Please refer to CFR 47 FCC §15.207 (a) and ISED RSS-Gen Clause 8.8

FREQUENCY (MHz)	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

**TEST SETUP AND PROCEDURE**

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

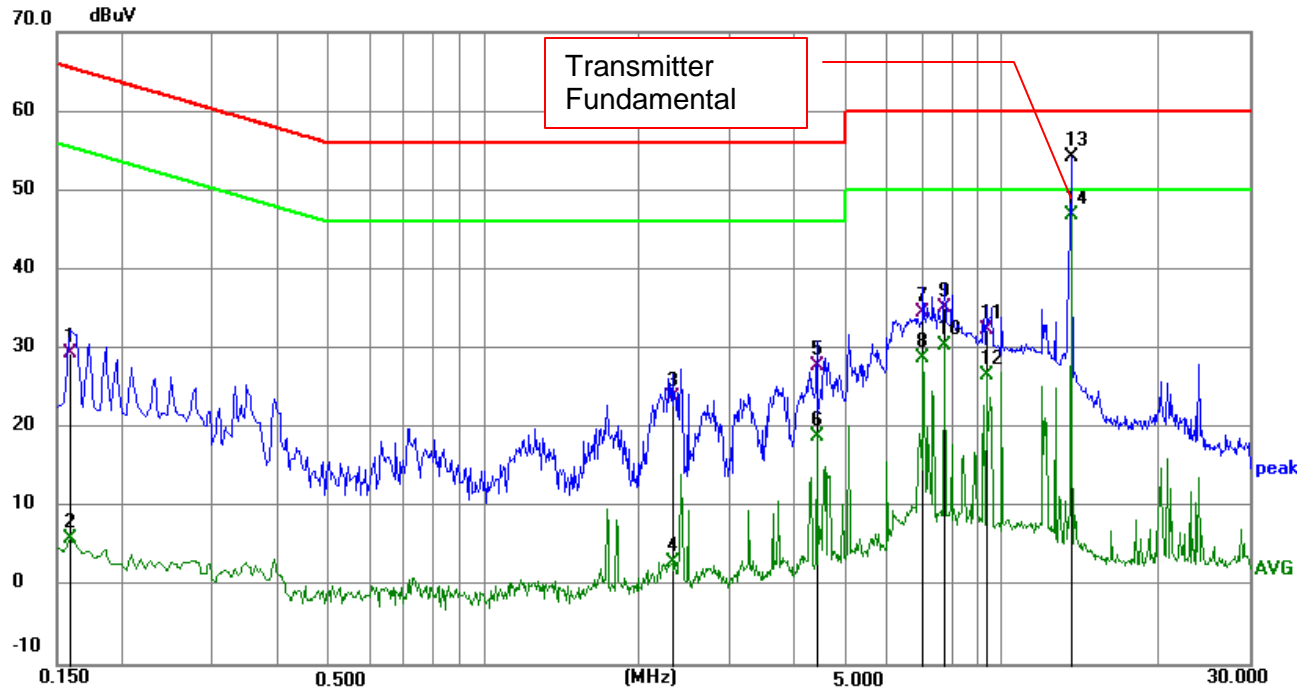
1. The testing follows the guidelines in ANSI C63.10-2013.
2. The EUT was placed on the top of a rotating table 0.8 meters above the horizontal ground plane and being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 ohm/ 50 uH of coupling impedance for the measuring instrument.
3. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
4. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
5. LISN at least 80 cm from nearest part of EUT chassis.
6. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.
7. The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application.



**TEST ENVIRONMENT**

Temperature	22.6 °C	Relative Humidity	57 %
Atmosphere Pressure	101 kPa	Test Voltage	AC 120V 60Hz

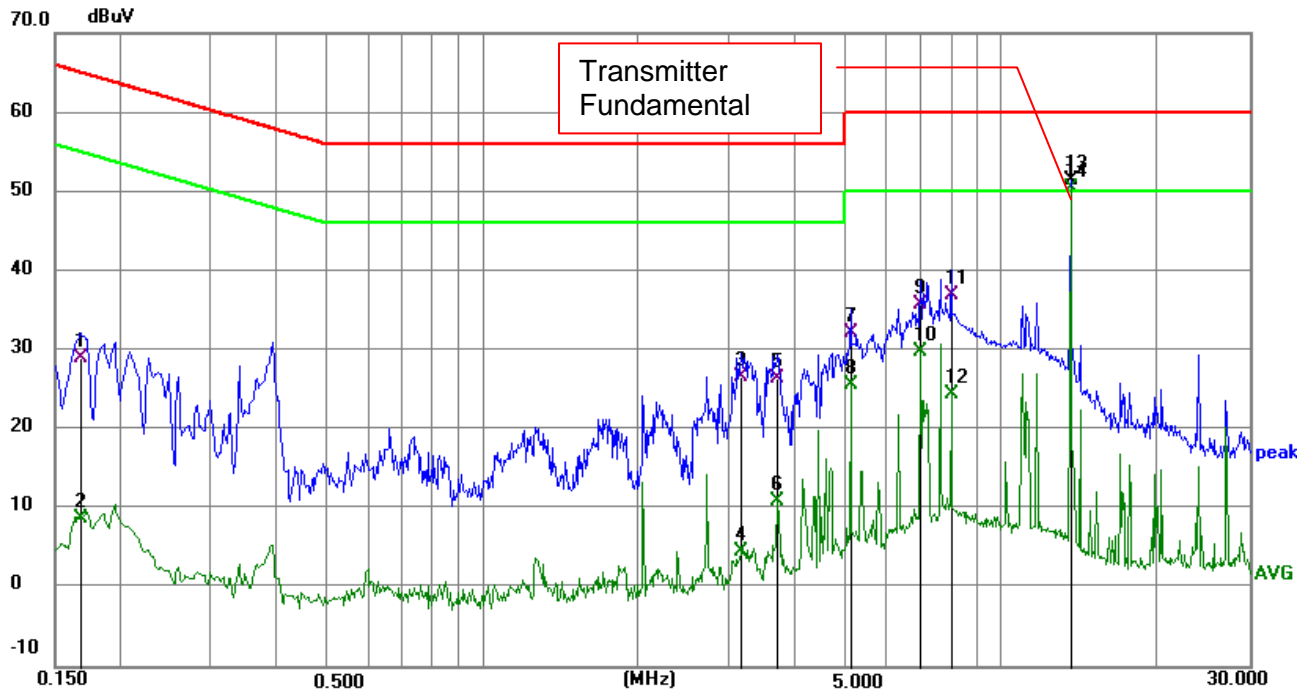
**LINE N RESULTS**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1590	19.45	9.97	29.42	65.52	-36.10	QP
2	0.1590	-4.05	9.97	5.92	55.52	-49.60	AVG
3	2.3190	13.67	10.18	23.85	56.00	-32.15	QP
4	2.3190	-7.16	10.18	3.02	46.00	-42.98	AVG
5	4.3935	17.62	10.28	27.90	56.00	-28.10	QP
6	4.3935	8.51	10.28	18.79	46.00	-27.21	AVG
7	7.0620	24.06	10.50	34.56	60.00	-25.44	QP
8	7.0620	18.33	10.50	28.83	50.00	-21.17	AVG
9	7.7325	24.60	10.60	35.20	60.00	-24.80	QP
10	7.7325	19.76	10.60	30.36	50.00	-19.64	AVG
11	9.3075	21.47	10.85	32.32	60.00	-27.68	QP
12	9.3075	15.85	10.85	26.70	50.00	-23.30	AVG
13	13.5645	43.18	10.99	54.17	--	--	peak
14	13.5645	35.97	10.99	46.96	--	--	AVG

Note: Result = Reading +Correct

**LINE L RESULTS**



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1680	19.19	9.91	29.10	65.06	-35.96	QP
2	0.1680	-1.18	9.91	8.73	55.06	-46.33	AVG
3	3.1514	16.48	10.08	26.56	56.00	-29.44	QP
4	3.1514	-5.48	10.08	4.60	46.00	-41.40	AVG
5	3.7095	16.23	10.17	26.40	56.00	-29.60	QP
6	3.7095	0.84	10.17	11.01	46.00	-34.99	AVG
7	5.1135	21.95	10.25	32.20	60.00	-27.80	QP
8	5.1135	15.47	10.25	25.72	50.00	-24.28	AVG
9	6.9585	25.22	10.56	35.78	60.00	-24.22	QP
10	6.9585	19.32	10.56	29.88	50.00	-20.12	AVG
11	7.9890	26.28	10.72	37.00	60.00	-23.00	QP
12	7.9890	13.75	10.72	24.47	50.00	-25.53	AVG
13	13.5600	40.45	10.97	51.42	--	--	peak
14	13.5600	39.38	10.97	50.35	--	--	AVG

Note: Result = Reading +Correct

## 9. ANTENNA REQUIREMENTS

### APPLICABLE REQUIREMENTS

Please refer to FCC §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. 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.

Please refer to FCC §15.247(b)(4)

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### RESULTS

Complies

## APPENDIX: PHOTOGRAPHS OF TEST CONFIGURATION

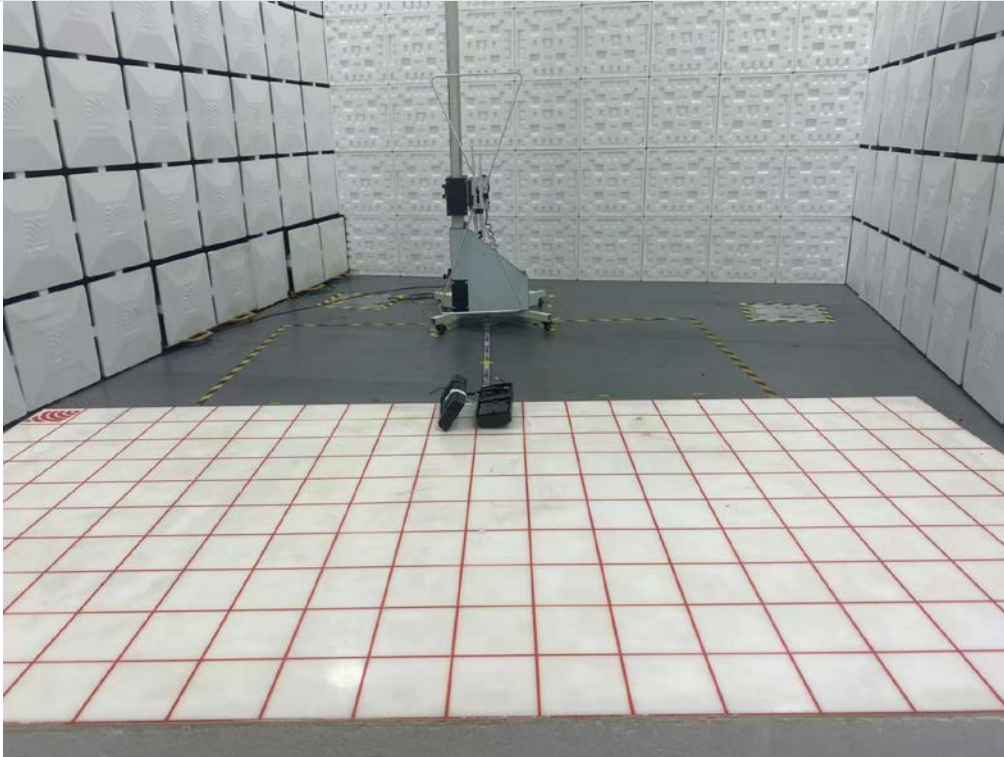
Conducted emissions



Radiated emissions 9K-30MHz



**Radiated emissions below 1GHz**



## **APPENDIX: PHOTOGRAPHS OF THE EUT**

Please refer to the report : E04A24080413F00101.

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**END OF REPORT**