




# TEST REPORT

Report No. .... : CHTEW20080138 Report Verification: 

Project No..... : SHT2005030103EW

FCC ID..... : 2AAR8TD158

Applicant's name..... : HENAN ESHOW ELECTRONIC COMMERCE CO. LTD

Address..... : Room 722, Sanjiang Building, No.170 Nanyang Road, Huiji District,Zhengzhou, Henan Province, China

Manufacturer..... : HENAN ESHOW ELECTRONIC COMMERCE CO. LTD

Address..... : Room 722, Sanjiang Building, No.170 Nanyang Road, Huiji District,Zhengzhou, Henan Province, China

Test item description ..... : Queue Wireless Calling System

Trade Mark ..... : RETEKES

Model/Type reference..... : TD158

Listed Model(s) ..... : T118,T119,TD103,TD156,TD159,TD160,TD161,TD162,TD163,T D164,TD165,TD166,TD167,TD168,TD169,TD170,TD171

Standard ..... : FCC CFR Title 47 Part 15 Subpart C Section 15.231

Date of receipt of test sample..... : Jun. 16, 2020

Date of testing..... : Jun. 17, 2020- Aug. 17, 2020

Date of issue..... : Aug. 18, 2020

Result..... : PASS

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Testing Laboratory Name ..... : Shenzhen Huatongwei International Inspection Co., Ltd.

Address..... : 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

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## Contents

<b><u>1.</u></b>	<b><u>TEST STANDARDS AND REPORT VERSION</u></b>	<b><u>3</u></b>
1.1.	Test Standards	3
1.2.	Report version	3
<b><u>2.</u></b>	<b><u>TEST DESCRIPTION</u></b>	<b><u>4</u></b>
<b><u>3.</u></b>	<b><u>SUMMARY</u></b>	<b><u>5</u></b>
3.1.	Client Information	5
3.2.	Product Description	5
3.3.	Radio Specification Description	5
3.4.	Testing Laboratory Information	5
<b><u>4.</u></b>	<b><u>TEST CONFIGURATION</u></b>	<b><u>6</u></b>
4.1.	Test frequency list	6
4.2.	Test mode	6
4.3.	Support unit used in test configuration and system	6
4.4.	Testing environmental condition	7
4.5.	Measurement uncertainty	7
4.6.	Equipment Used during the Test	8
<b><u>5.</u></b>	<b><u>TEST CONDITIONS AND RESULTS</u></b>	<b><u>10</u></b>
5.1.	Antenna Requirement	10
5.2.	AC Conducted Emission	11
5.3.	20dB bandwidth	14
5.4.	99% Occupied Bandwidth	16
5.5.	Transmission Time	18
5.6.	Duty Cycle Corrected Factor	20
5.7.	Radiated field strength of the fundamental signal	22
5.8.	Radiated Spurious Emission	24
<b><u>6.</u></b>	<b><u>TEST SETUP PHOTOS</u></b>	<b><u>27</u></b>
<b><u>7.</u></b>	<b><u>EXTERANAL AND INTERNAL PHOTOS</u></b>	<b><u>29</u></b>

## 1. TEST STANDARDS AND REPORT VERSION

### 1.1. Test Standards

The tests were performed according to following standards:

- [FCC Rules Part 15.231\(a\)](#): Periodic operation in the band 40.66–40.70 MHz and above 70 MHz.
- [ANSI C63.10:2013](#): American National Standard for Testing Unlicensed Wireless Devices

### 1.2. Report version

Revision No.	Date of issue	Description
N/A	2020-08-18	Original

## 2. TEST DESCRIPTION

Report clause	Test Items	Standard Requirement	Result
5.1	Antenna Requirement	15.203	PASS
5.2	AC Conducted Emission	15.207	N/A
5.3	20dB Bandwidth	15.231(c)	PASS
5.4	99% Occupied Bandwidth	-	PASS*1
5.5	Transmission time	15.231(a)(1)	PASS
5.6	Duty cycle corrected factor	-	PASS*1
5.7	Field strength of the Fundamental signal	15.231(b)	PASS
5.8	Radiated Spurious Emission	15.231(b)/15.205/15.209	PASS

Note:

- The measurement uncertainty is not included in the test result.
- \*1: No requirement on standard, only report these test data.

### 3. SUMMARY

#### 3.1. Client Information

Applicant:	HENAN ESHOW ELECTRONIC COMMERCE CO. LTD
Address:	Room 722, Sanjiang Building, No.170 Nanyang Road, Huiji District,Zhengzhou, Henan Province, China
Manufacturer:	HENAN ESHOW ELECTRONIC COMMERCE CO. LTD
Address:	Room 722, Sanjiang Building, No.170 Nanyang Road, Huiji District,Zhengzhou, Henan Province, China

#### 3.2. Product Description

Name of EUT:	Queue Wireless Calling System
Trade Mark:	RETEKESS
Model No.:	TD158
Listed Model(s):	T118,T119,TD103,TD156,TD159,TD160,TD161,TD162,TD163,TD164,TD165,TD166,TD167,TD168,TD169,TD170,TD171
Power supply:	12.0V by adapter
Hardware version:	V12
Software version:	V15

#### 3.3. Radio Specification Description

Operation frequency:	433.92 MHz
Modulation:	OOK
Channel number:	1
Antenna type:	PCB Antenna
Antenna gain:	5.0dBi

#### 3.4. Testing Laboratory Information

Laboratory Name	Shenzhen Huatongwei International Inspection Co., Ltd.	
Laboratory Location	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China	
Qualifications	Type	Accreditation Number
	CNAS	L1225
	A2LA	3902.01
	FCC	762235
	Canada	5377A

## 4. TEST CONFIGURATION

### 4.1. Test frequency list

According to section ANSI C63.10 section 5.6.1,

Measurements of unlicensed wireless devices shall be performed and, if required, reported for each band in which the EUT can be operated with the device operating at the number of frequencies in each band specified in Table 4

**Table 4—Number of frequencies to be tested**

Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
1 MHz or less	1	Middle
1 MHz to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

So test frequency as follow:

Channel	Frequency (MHz)
CH	433.92

### 4.2. Test mode

For RF test items
The engineering test program was provided and enabled to make EUT continuous transmit.
For AC power line conducted emissions:
The EUT was set to connect with large package sizes transmission.
For Radiated spurious emissions test item:
The engineering test program was provided and enabled to make EUT continuous transmit. The EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data Recorded in the report.

### 4.3. Support unit used in test configuration and system

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

The following peripheral devices and interface cables were connected during the measurement:

Whether support unit is used?					
✓ No					
Item	Equipment	Trade Name	Model No.	FCC ID	Power cord
1					
2					

#### 4.4. Testing environmental condition

Type	Requirement	Actual
Temperature:	15~35°C	25°C
Relative Humidity:	25~75%	50%
Air Pressure:	860~1060mbar	1000mbar

#### 4.5. Measurement uncertainty

Test Item	Measurement Uncertainty
AC Conducted Emission (150kHz~30MHz)	3.02 dB
Radiated Emission (30MHz~1000MHz)	4.90 dB
Radiated Emissions (1GHz~25GHz)	4.96 dB
Peak Output Power	0.51 dB
Power Spectral Density	0.51 dB
Conducted Spurious Emission	0.51 dB
6dB Bandwidth	70 Hz

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

#### 4.6. Equipment Used during the Test

● Conducted Emission							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Shielded Room	Albatross projects	HTWE0114	N/A	N/A	2018/09/28	2023/09/27
●	EMI Test Receiver	R&S	HTWE0111	ESCI	101247	2019/10/26	2020/10/25
●	Artificial Mains	SCHWARZBECK	HTWE0113	NNLK 8121	573	2019/10/23	2020/10/22
●	Pulse Limiter	R&S	HTWE0033	ESH3-Z2	100499	2019/10/23	2020/10/22
●	RF Connection Cable	HUBER+SUHNER	HTWE0113-02	ENVIROFLE X_142	EF-NM-BNCM-2M	2019/10/23	2020/10/22
●	Test Software	R&S	N/A	ES-K1	N/A	N/A	N/A

● Radiated emission-6th test site							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0127	SAC-3m-02	C11121	2018/09/30	2021/09/29
●	EMI Test Receiver	R&S	HTWE0099	ESCI	100900	2019/10/26	2020/10/25
●	Loop Antenna	R&S	HTWE0170	HFH2-Z2	100020	2018/04/02	2021/04/01
●	Ultra-Broadband Antenna	SCHWARZBECK	HTWE0119	VULB9163	546	2018/04/04	2021/04/03
●	Pre-Amplifier	SCHWARZBECK	HTWE0295	BBV 9742	N/A	2019/11/14	2020/11/13
●	RF Connection Cable	HUBER+SUHNER	HTWE0062-01	N/A	N/A	2019/08/21	2020/08/20
●	RF Connection Cable	HUBER+SUHNER	HTWE0062-02	SUCOFLEX 104	501184/4	2020/05/27	2021/05/26
●	Test Software	R&S	N/A	ES-K1	N/A	N/A	N/A

● Radiated emission-7th test site							
Used	Test Equipment	Manufacturer	Equipment No.	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	HTWE0122	SAC-3m-01	N/A	2018/09/27	2021/09/26
●	Spectrum Analyzer	R&S	HTWE0098	FSP40	100597	2019/10/26	2020/10/25
●	Horn Antenna	SCHWARZBECK	HTWE0126	9120D	1011	2020/04/01	2023/03/31
●	Horn Antenna	SCHWARZBECK	HTWE0103	BBHA9170	25841	2018/10/11	2021/10/10
●	Broadband Horn Antenna	SCHWARZBECK	HTWE0103	BBHA9170	BBHA9170472	2018/10/11	2021/10/10
●	Pre-amplifier	CD	HTWE0071	PAP-0102	12004	2019/11/14	2020/11/13
●	Broadband Pre-amplifier	SCHWARZBECK	HTWE0201	BBV 9718	9718-248	2020/05/23	2021/05/22
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-01	6m 18GHz S Serisa	N/A	2020/05/10	2021/05/09
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-02	6m 3GHz RG Serisa	N/A	2020/05/10	2021/05/09
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-03	6m 3GHz RG Serisa	N/A	2020/05/10	2021/05/09
●	RF Connection Cable	HUBER+SUHNER	HTWE0120-04	6m 3GHz RG Serisa	N/A	2020/05/10	2021/05/09
●	RF Connection Cable	HUBER+SUHNER	HTWE0121-01	6m 18GHz S Serisa	N/A	2020/05/10	2021/05/09
●	Test Software	Audix	N/A	E3	N/A	N/A	N/A



● RF Conducted Method						
Used	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Signal and spectrum Analyzer	R&S	FSV40	100048	2019/10/26	2020/10/25
●	Spectrum Analyzer	Agilent	N9020A	MY50510187	2019/10/26	2020/10/25
●	Power Meter	Anritsu	ML249A	N/A	2019/10/26	2020/10/25
○	Radio communication tester	R&S	CMW500	137688-Lv	2019/10/26	2020/10/25

## 5. TEST CONDITIONS AND RESULTS

### 5.1. Antenna Requirement

#### Requirement

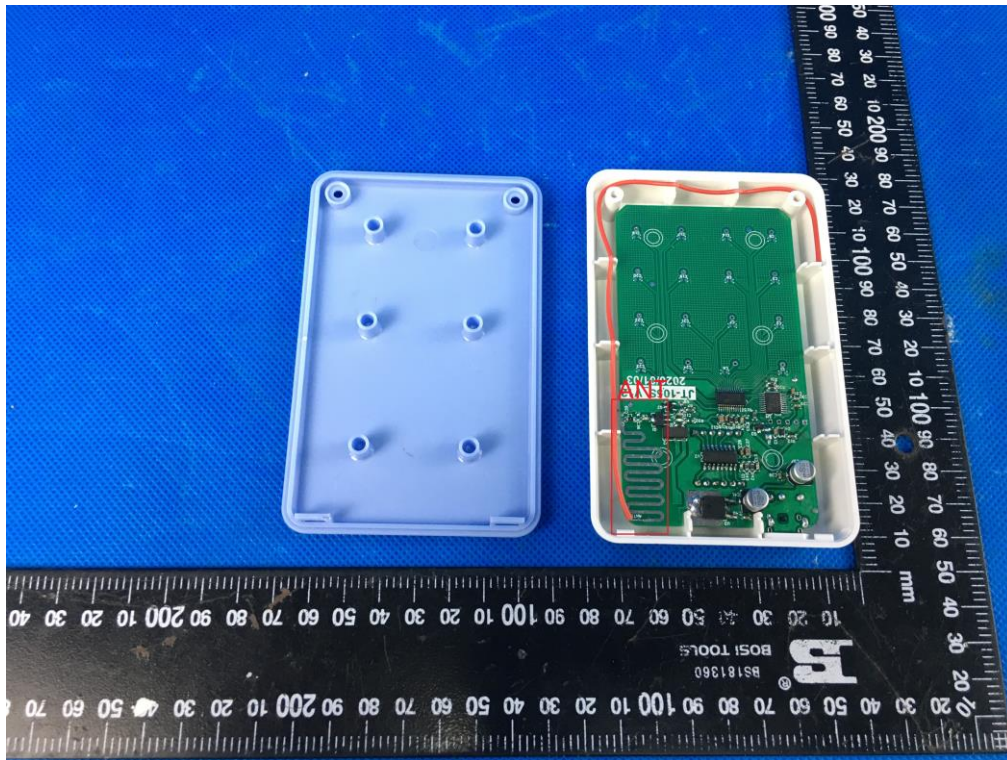
##### **FCC CFR Title 47 Part 15 Subpart C Section 15.203:**

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, 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.

#### TEST RESULT

☒ **Passed**      ☐ **Not Applicable**

The antenna type is a PCB antenna, the directional gain of the antenna less than 6 dBi, please refer to the below antenna photo.



## 5.2. AC Conducted Emission

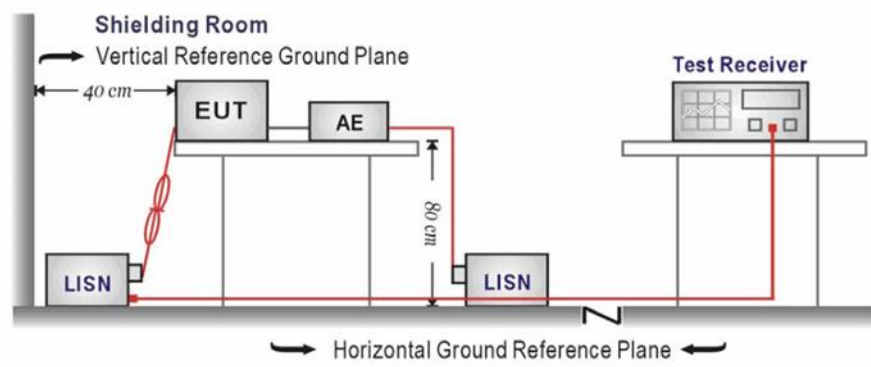
### LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207

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



### TEST PROCEDURE

1. The EUT was setup according to ANSI C63.10 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

### TEST MODE:

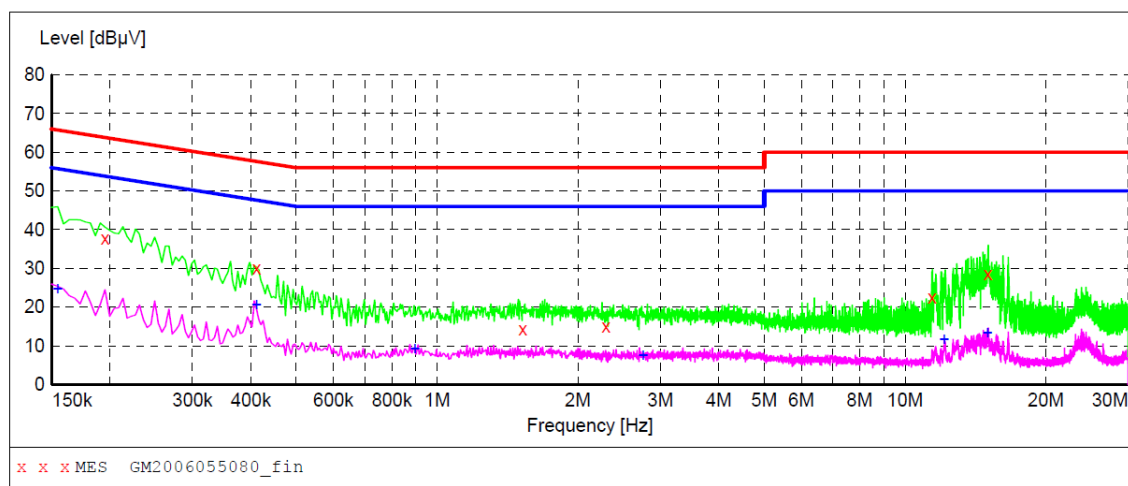
Please refer to the clause 4.2

### TEST RESULT

☒ Passed ☐ Not Applicable

Test Line:

L

**MEASUREMENT RESULT: "GM2006055080\_fin"**

6/5/2020 4:28PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.195000	37.70	10.0	64	26.1	QP	L1	GND
0.411000	30.00	10.1	58	27.6	QP	L1	GND
1.522500	14.30	10.1	56	41.7	QP	L1	GND
2.296500	14.90	10.1	56	41.1	QP	L1	GND
11.422500	22.60	10.4	60	37.4	QP	L1	GND
15.027000	28.50	10.4	60	31.5	QP	L1	GND

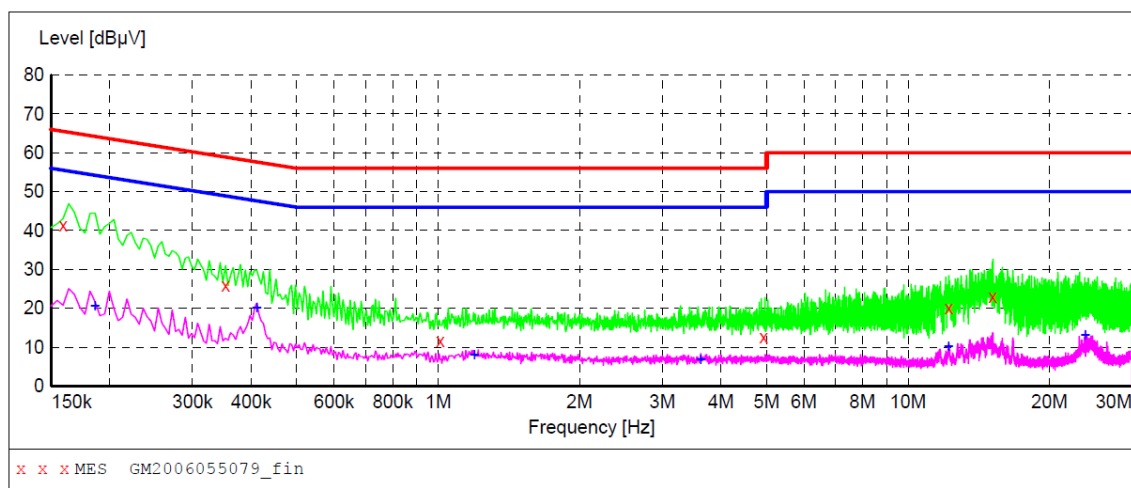
**MEASUREMENT RESULT: "GM2006055080\_fin2"**

6/5/2020 4:28PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.154500	24.80	10.0	56	31.0	AV	L1	GND
0.411000	20.70	10.1	48	26.9	AV	L1	GND
0.897000	9.10	10.1	46	36.9	AV	L1	GND
2.751000	7.40	10.2	46	38.6	AV	L1	GND
12.129000	11.60	10.4	50	38.4	AV	L1	GND
15.004500	13.40	10.4	50	36.6	AV	L1	GND

Test Line:

N

**MEASUREMENT RESULT: "GM2006055079\_fin"**

6/5/2020 4:25PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.159000	41.30	10.0	66	24.2	QP	N	GND
0.352500	25.90	10.1	59	33.0	QP	N	GND
1.009500	11.70	10.1	56	44.3	QP	N	GND
4.929000	12.60	10.2	56	43.4	QP	N	GND
12.219000	20.10	10.4	60	39.9	QP	N	GND
15.130500	23.10	10.4	60	36.9	QP	N	GND

**MEASUREMENT RESULT: "GM2006055079\_fin2"**

6/5/2020 4:25PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.186000	20.70	10.0	54	33.5	AV	N	GND
0.411000	20.00	10.1	48	27.6	AV	N	GND
1.194000	8.00	10.1	46	38.0	AV	N	GND
3.619500	6.90	10.2	46	39.1	AV	N	GND
12.196500	10.10	10.4	50	39.9	AV	N	GND
23.829000	13.00	10.5	50	37.0	AV	N	GND

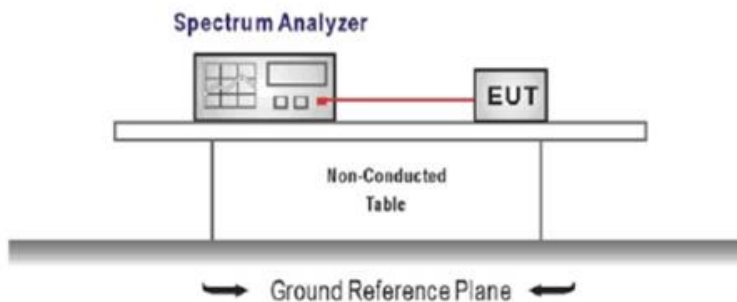
### 5.3. 20dB bandwidth

#### LIMIT

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70MHz and below 900 MHz.

For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency.

#### TEST CONFIGURATION



#### TEST PROCEDURE

1. Connect the antenna port(s) to the spectrum analyzer input.
2. Configure the spectrum analyzer as shown below (enter all losses between the transmitter output and the spectrum analyzer).  
 Center Frequency = channel center frequency  
 Span= approximately 2 to 3 times the 20 dB bandwidth  
 RBW = 100 kHz, VBW  $\geq 3 \times$  RBW  
 Sweep time= auto couple  
 Detector = Peak  
 Trace mode = max hold
3. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter waveform on the spectrum analyzer.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission, and record the pertinent measurements.

#### TEST MODE:

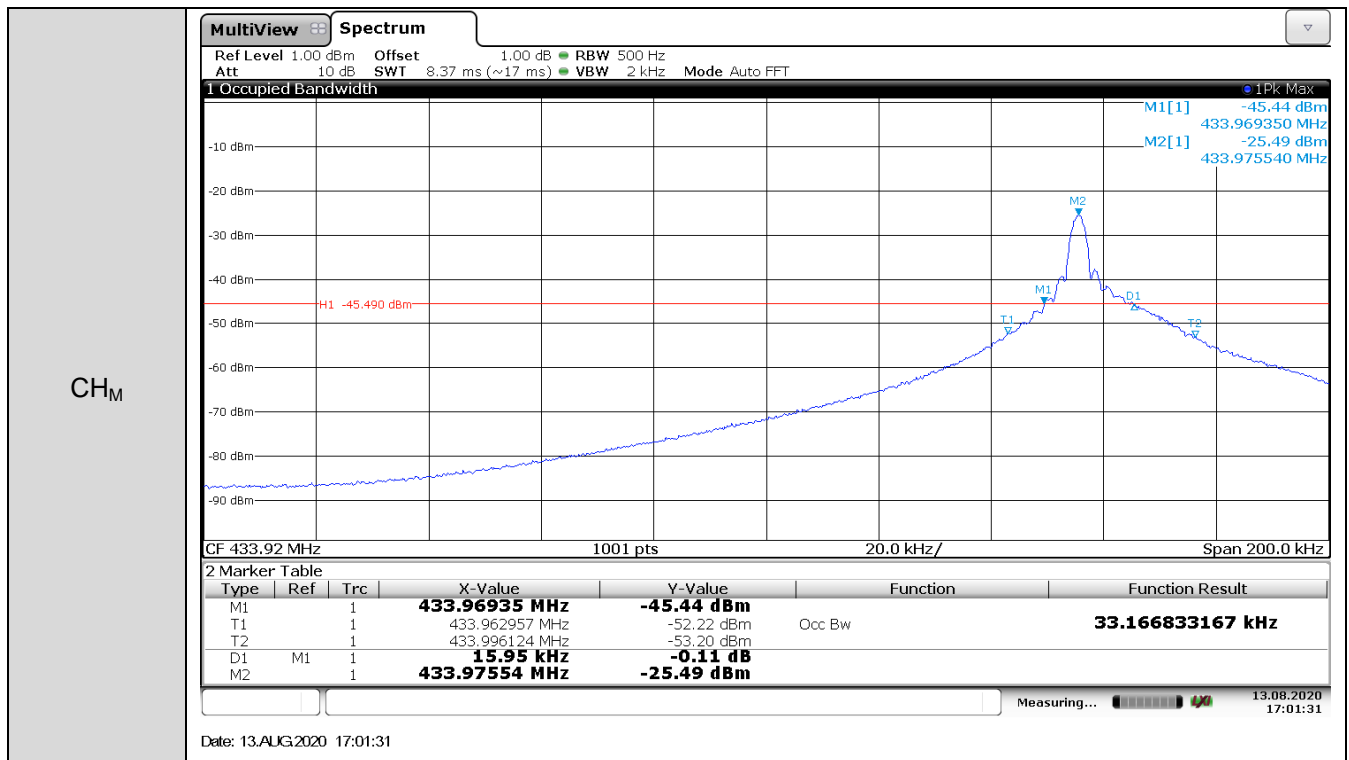
Please refer to the clause 4.2

#### TEST RESULT

☒ Passed ☐ Not Applicable

Test Channel	20dB Bandwidth (kHz)	Limit (kHz)	Result
CH	15.95	1084.8	Pass

NOTE: Limit=0.25%\*Center Frequency=0.25%\*433.92MHz=1084.8kHz

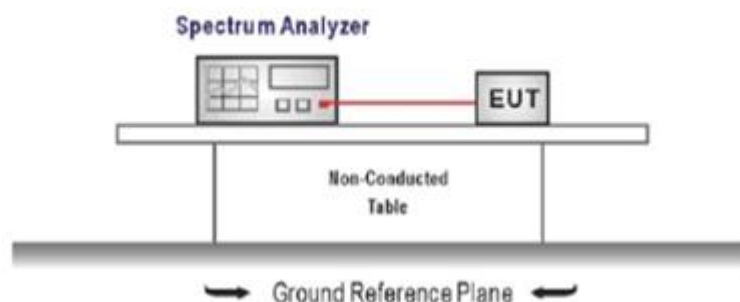


## 5.4. 99% Occupied Bandwidth

### LIMIT

N/A

### TEST CONFIGURATION



### TEST PROCEDURE

1. Connect the antenna port(s) to the spectrum analyzer input.
2. Configure the spectrum analyzer as shown below (enter all losses between the transmitter output and the spectrum analyzer).  
 Center Frequency = channel center frequency  
 Span  $\geq 1.5 \times \text{OBW}$   
 RBW = 1%~5%OBW  
 VBW  $\geq 3 \times \text{RBW}$   
 Sweep time = auto couple  
 Detector = Peak  
 Trace mode = max hold
3. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter waveform on the spectrum analyzer.

### TEST MODE:

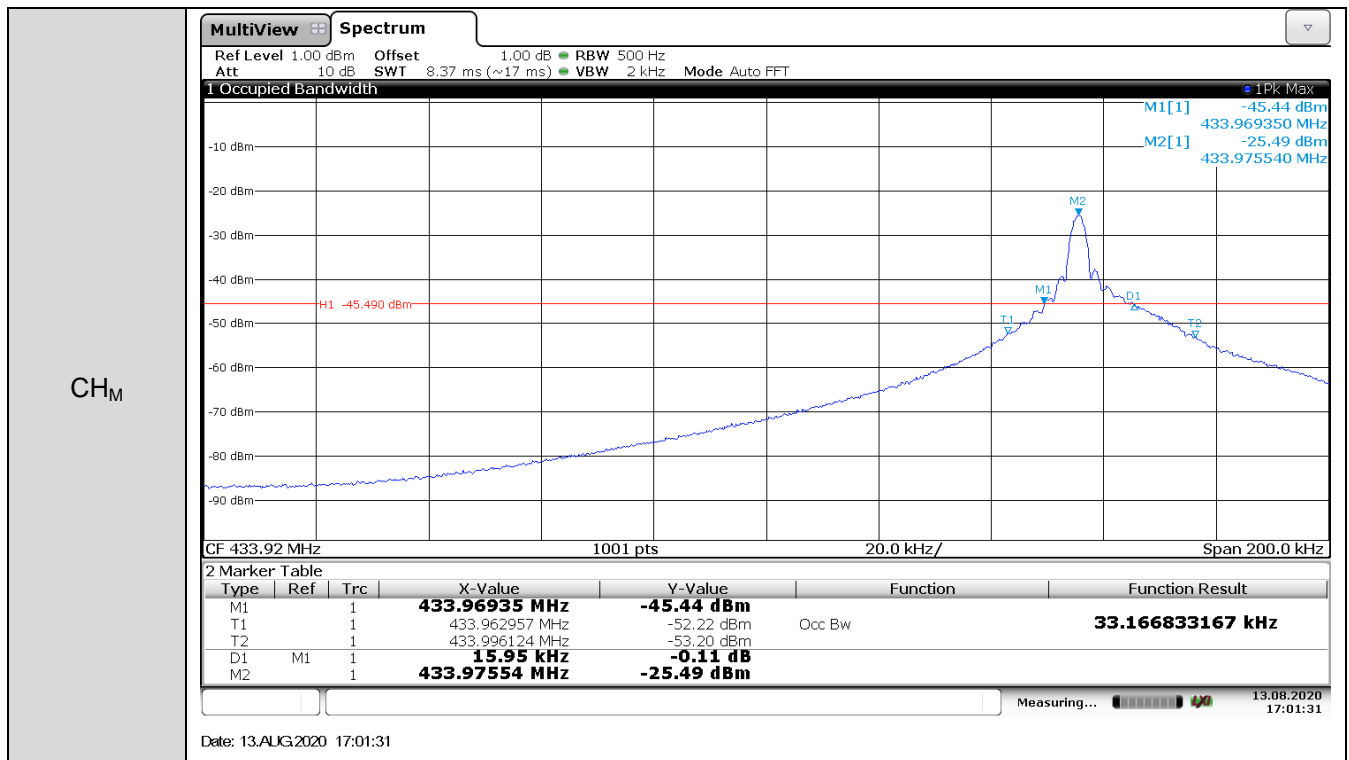
Please refer to the clause 4.2

### TEST RESULT

☒ **Passed**      ☐ **Not Applicable**

Test Channel	99% Occupied Bandwidth (kHz)	Limit (kHz)	Result
CH	33.17	-	Pass



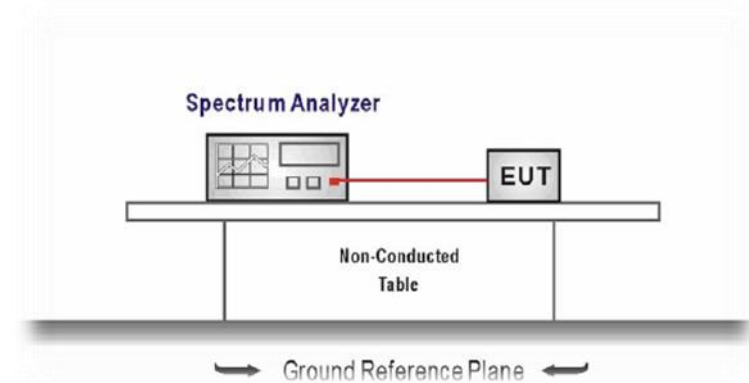


## 5.5. Transmission Time

### LIMIT

A manually operated transmitter shall employ a switch that will auto-matically deactivate the transmitter within not more than 5 seconds of being released.

### TEST CONFIGURATION



### TEST PROCEDURE

1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously
3. Use the following spectrum analyzer settings:  
Frequency=Center carrier frequency  
RBW=100kHz, VBW=300kHz, Span= zero,  
Sweep time= 10second, Detector function = peak, Trace = single
4. Measure and record the results in the test report.

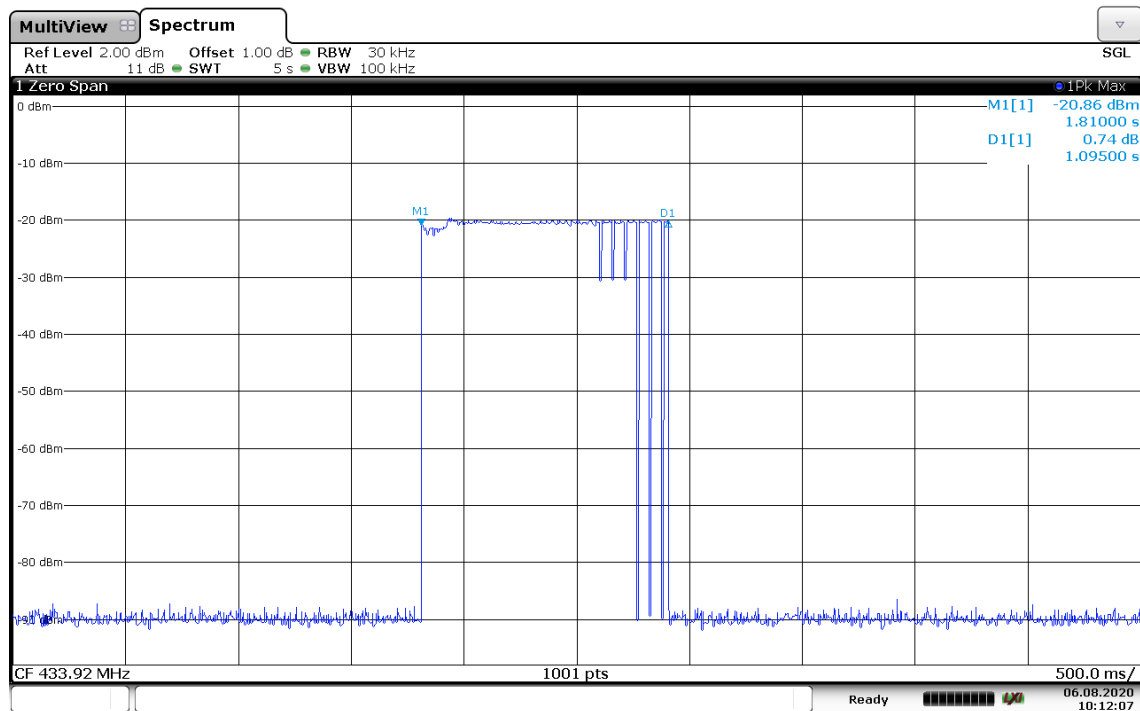
### TEST MODE:

Please refer to the clause 4.2

### TEST RESULTS

☒ Passed ☐ Not Applicable

Transmission time (second)	Limit (second)	Result
1.81	5	Pass



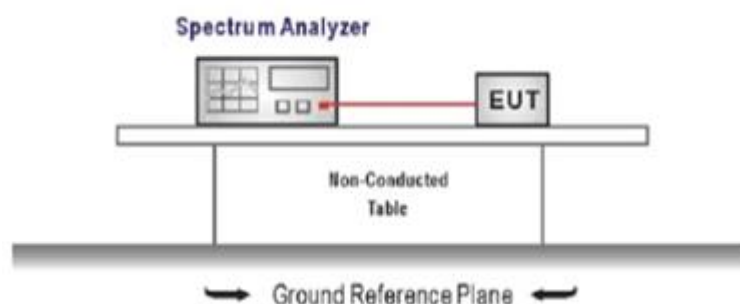
Date: 6.AUG.2020 10:12:07

## 5.6. Duty Cycle Corrected Factor

### LIMIT

N/A

### TEST CONFIGURATION



### TEST PROCEDURE

1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously
3. Use the following spectrum analyzer settings:  
Span=zero span, Frequency=centered channel, RBW= 1MHz, VBW ≥ RBW  
Sweep time=as necessary to capture the entire dwell time,  
Detector function = peak, Trigger mode
4. Measure and record the duty cycle data

### TEST MODE:

Please refer to the clause 4.2

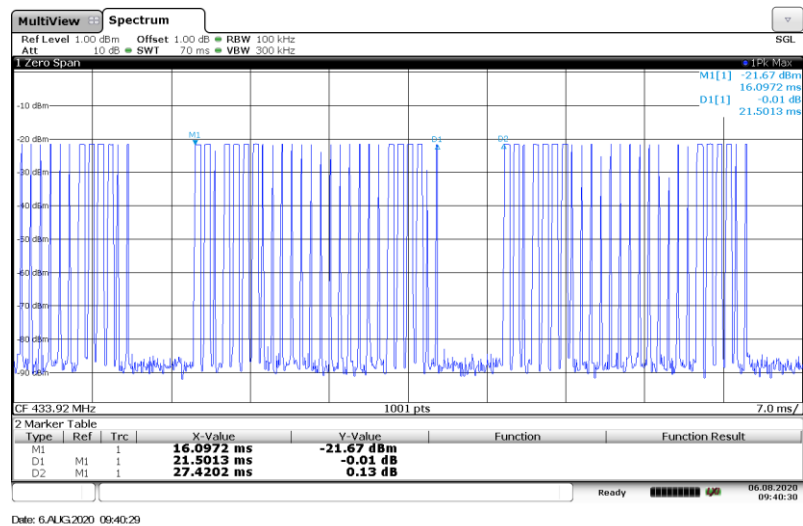
### TEST DATA:

Duty Cycle= Total On Time/ Period

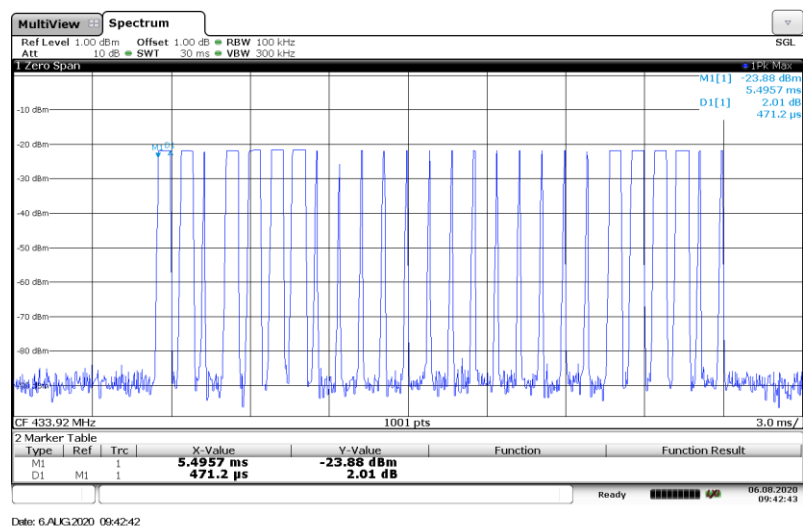
Duty Cycle Corrected Factor/DCCF= $20 \cdot \log(\text{Duty Cycle})$ 

Total On Time (ms) :	$10 \cdot 0.4712 + 16 \cdot 0.1635 = 7.328$
Period(ms) :	27.42
Duty Cycle :	0.267
Duty Cycle Corrected Factor:	-11.47

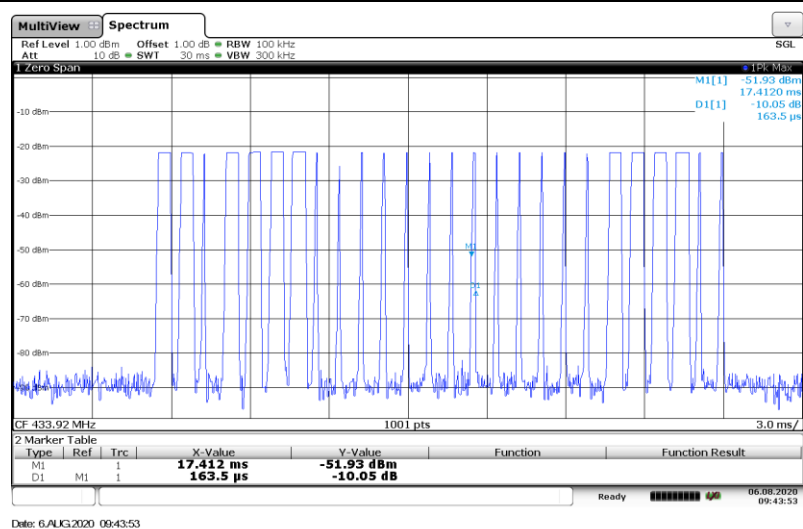
Pulse Width :



Pulse 1:



Pulse 2:



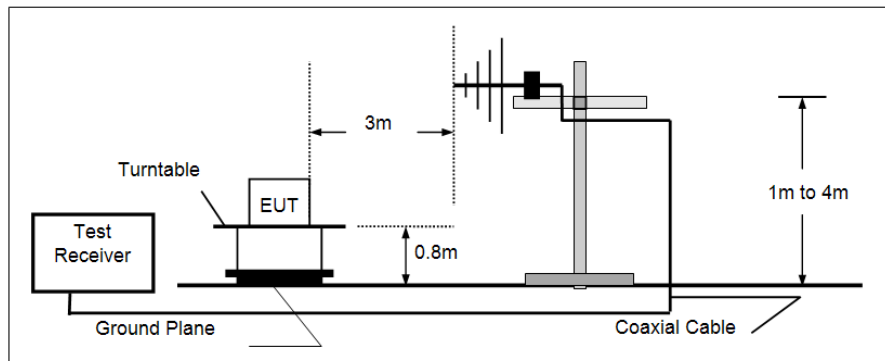
## 5.7. Radiated field strength of the fundamental signal

### LIMIT

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emissions (microvolts/meter)
40.66-40.70	2,250	225
70-130	1,250	125
130-174	<sup>1</sup> 1,250 to 3,750	<sup>1</sup> 125 to 375
174-260	3,750	375
260-470	<sup>1</sup> 3,750 to 12,500	<sup>1</sup> 375 to 1,250
Above 470	12,500	1,250

<sup>1</sup>Linear interpolations.

### TEST CONFIGURATION



### TEST PROCEDURE

1. The EUT was setup and tested according to ANSI C63.10.
2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1GHz, The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, 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 to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Use the following spectrum analyzer settings
  - a) Span shall wide enough to fully capture the emission being measured;
  - b) RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold;

If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

### TEST MODE:

Please refer to the clause 4.2

### TEST RESULTS

☒ Passed ☐ Not Applicable

Note:

- 1) Level= Reading + Factor; Factor =Antenna Factor+ Cable Loss- Preamp Factor
- 2) Margin = Limit – Level

Fundamental of Peak								
No.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	433.92	44.29	24.3	68.59	100.80	31.21	Vertical	PK
2	433.92	49.05	24.3	73.35	100.80	27.45	Horizontal	PK

Fundamental of Average								
No.	Freq. [MHz]	PK level [dBμV/m]	DCCF [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity	Detector
1	433.92	68.59	-11.47	57.12	80.80	23.68	Vertical	AV
2	433.92	73.35	-11.47	61.88	80.80	18.92	Horizontal	AV

## 5.8. Radiated Spurious Emission

### LIMIT

#### FCC CFR Title 47 Part 15 Subpart C Section 15.231(b)

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emissions (microvolts/meter)
40.66-40.70	2,250	225
70-130	1,250	125
130-174	<sup>1</sup> 1,250 to 3,750	<sup>1</sup> 125 to 375
174-260	3,750	375
260-470	<sup>1</sup> 3,750 to 12,500	<sup>1</sup> 375 to 1,250
Above 470	12,500	1,250

#### FCC CFR Title 47 Part 15 Subpart C Section 15.209

Frequency	Limit (dBuV/m)	Value
0.009 MHz ~0.49 MHz	2400/F(kHz) @300m	Quasi-peak
0.49 MHz ~ 1.705 MHz	24000/F(kHz) @30m	Quasi-peak
1.705 MHz ~30 MHz	30 @30m	Quasi-peak

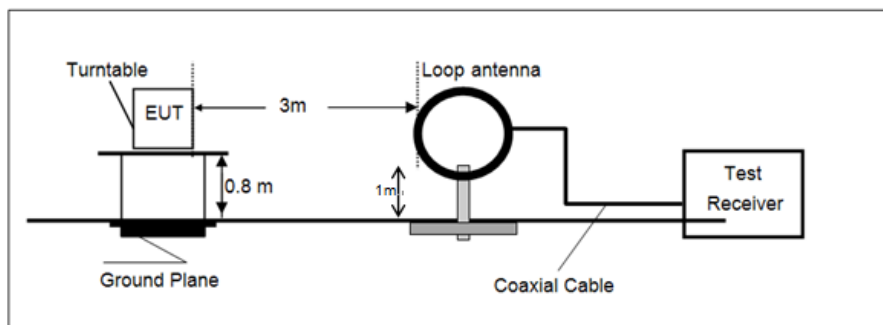
Note: Limit dBuV/m @3m = Limit dBuV/m @300m + 40\*log(300/3)= Limit dBuV/m @300m +80,

Limit dBuV/m @3m = Limit dBuV/m @30m +40\*log(30/3)= Limit dBuV/m @30m + 40.

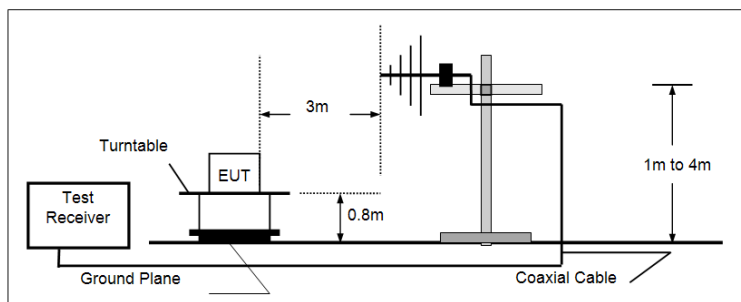
Frequency	Limit (dBuV/m @3m)	Value
30MHz~88MHz	40.00	Quasi-peak
88MHz~216MHz	43.50	Quasi-peak
216MHz~960MHz	46.00	Quasi-peak
960MHz~1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

### TEST CONFIGURATION

- 9 kHz ~ 30 MHz

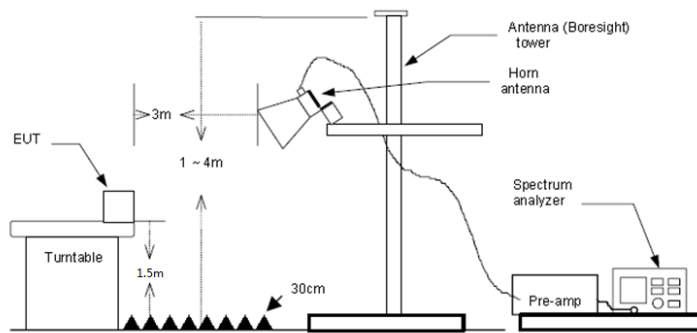


- 30 MHz ~ 1 GHz



- Above 1 GHz





## TEST PROCEDURE

1. The EUT was setup and tested according to ANSI C63.10.
2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, 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 to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Use the following spectrum analyzer settings
  - a) Span shall wide enough to fully capture the emission being measured;
  - b) Below 1 GHz:
 

RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold;

If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
  - c) Set RBW=1MHz, VBW=3MHz for >1GHz, Sweep time=auto, Detector=peak, Trace=max hold for Peak measurement

For average measurement:

Average level = Peak level – DCCF

## TEST MODE:

Please refer to the clause 4.2

## TEST RESULT

☒ Passed ☐ Not Applicable

Note:

- 1) Level= Reading + Factor/Transd; Factor/Transd =Antenna Factor+ Cable Loss- Preamp Factor
- 2) Margin = Limit – Level
- 3) Average measurement was not performed if peak level is lower than average limit(54 dBuV/m) for above 1GHz.

## TEST DATA FOR 9 kHz ~ 30 MHz

The EUT was pre-scanned this frequency band, found the radiated level 20dB lower than the limit, so don't show data on this report.

**PK**

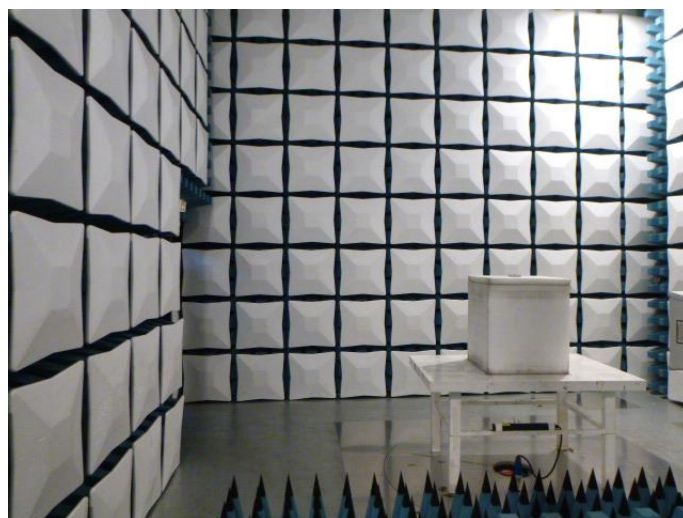
Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dBuV/m)	Polarization	Test Result
867.84	58.80	80.83	-22.03	Vertical	Pass
1301.76	47.30	74.00	-26.7	Vertical	Pass
1735.68	46.10	74.00	-27.9	Vertical	Pass
2169.60	41.10	74.00	-32.9	Vertical	Pass
2603.52	45.51	74.00	-28.49	Vertical	Pass
3037.44	43.05	74.00	-30.95	Vertical	Pass
867.84	55.90	80.83	-24.93	Horizontal	Pass
1301.76	42.70	74.00	-31.3	Horizontal	Pass
1735.68	42.40	74.00	-31.6	Horizontal	Pass
2169.60	40.60	74.00	-33.4	Horizontal	Pass
2603.52	41.00	74.00	-33	Horizontal	Pass
3037.44	45.80	74.00	-28.2	Horizontal	Pass

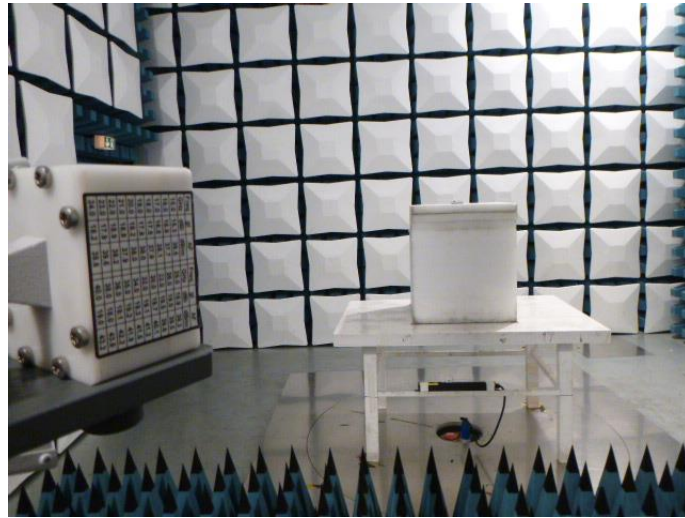
**AV**

Frequency (MHz)	Peak Value (dBuV/m)	Dutycycle Factor	Average Value(dBuV/m)	Limit (dBuV/m)	Over Limit (dBuV/m)	Polarization	Test Result
867.84	58.80	-11.47	47.33	60.83	-13.5	Vertical	Pass
1301.76	47.50	-11.47	35.83	54.00	-18.17	Vertical	Pass
1735.68	47.10	-11.47	34.63	54.00	-19.37	Vertical	Pass
2169.60	41.10	-11.47	29.63	54.00	-24.37	Vertical	Pass
2603.52	46.50	-11.47	34.04	54.00	-19.96	Vertical	Pass
3037.44	46.00	-11.47	31.58	54.00	-22.42	Vertical	Pass
867.84	56.90	-11.47	44.43	60.83	-16.4	Horizontal	Pass
1301.76	43.70	-11.47	31.23	54.00	-22.77	Horizontal	Pass
1735.68	42.40	-11.47	30.93	54.00	-23.07	Horizontal	Pass
2169.60	40.80	-11.47	29.13	54.00	-24.87	Horizontal	Pass
2603.52	48.00	-11.47	29.53	54.00	-24.47	Horizontal	Pass
3037.44	45.50	-11.47	34.33	54.00	-19.67	Horizontal	Pass

## 6. TEST SETUP PHOTOS

### Radiated Emission





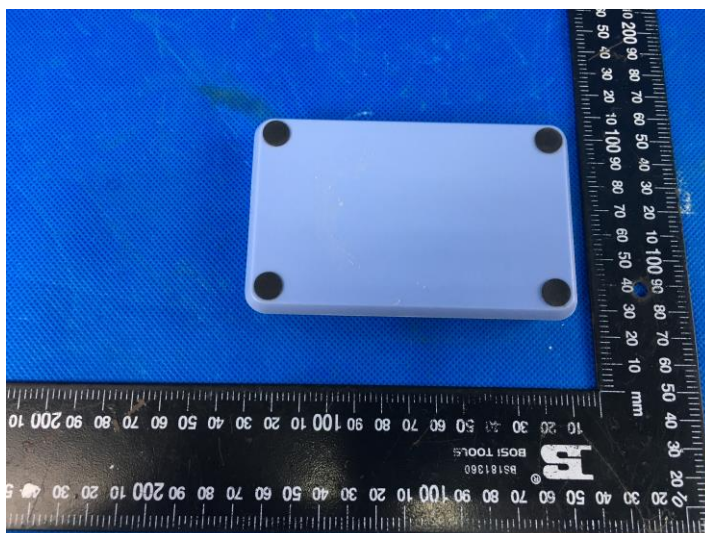
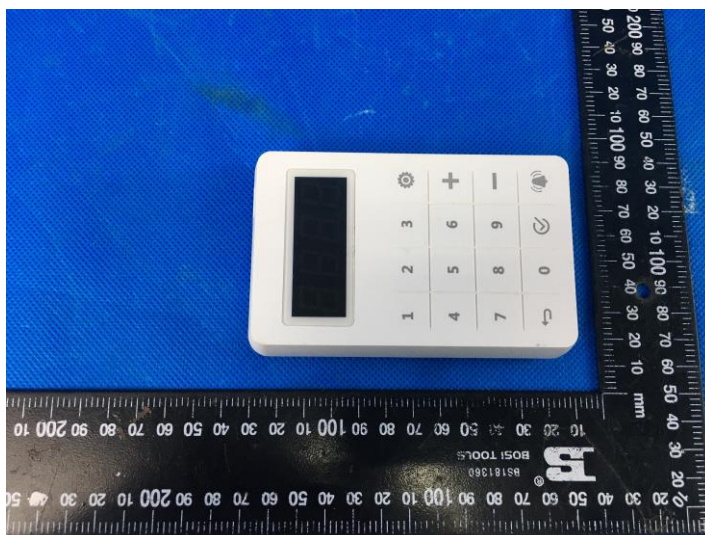
#### AC Conducted Emission

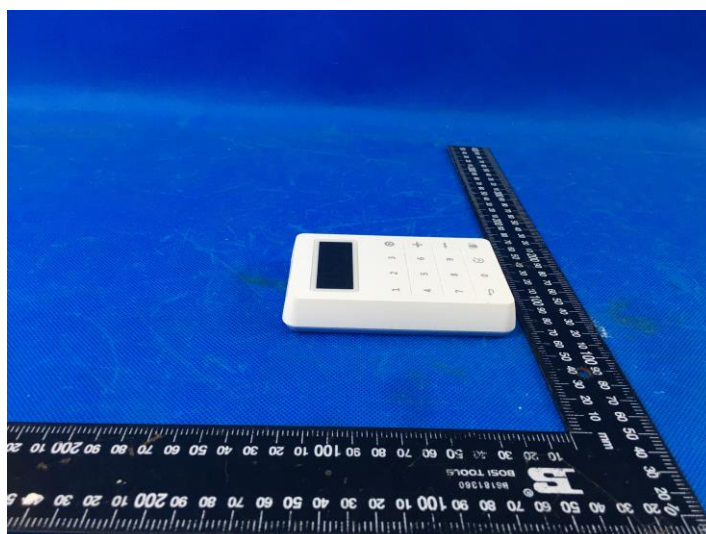
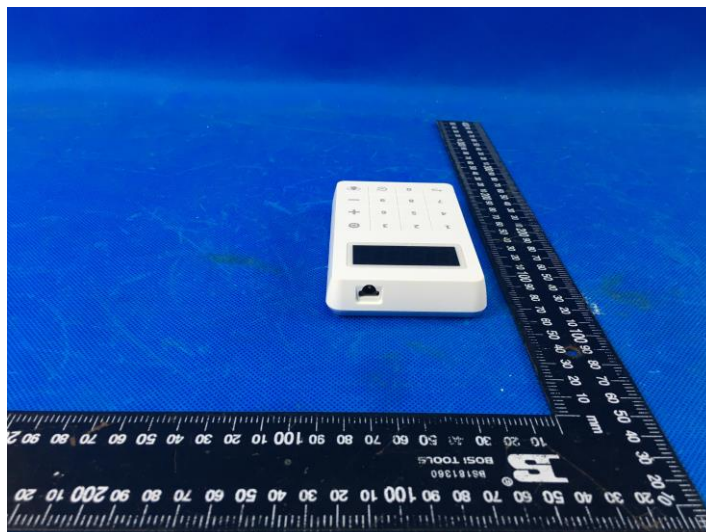
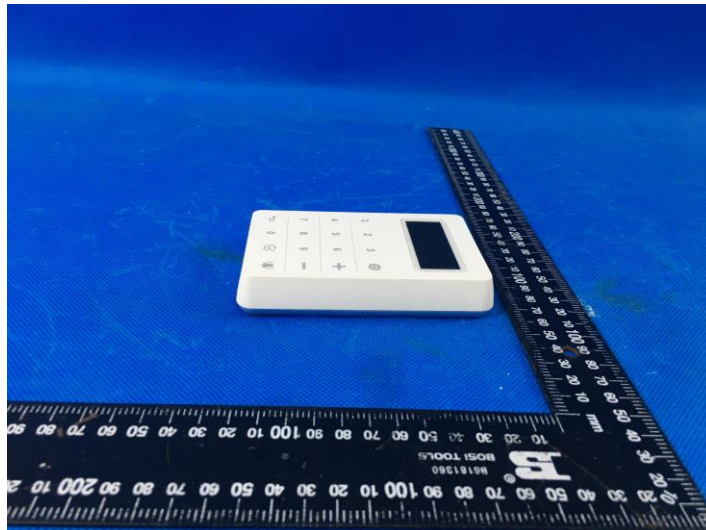




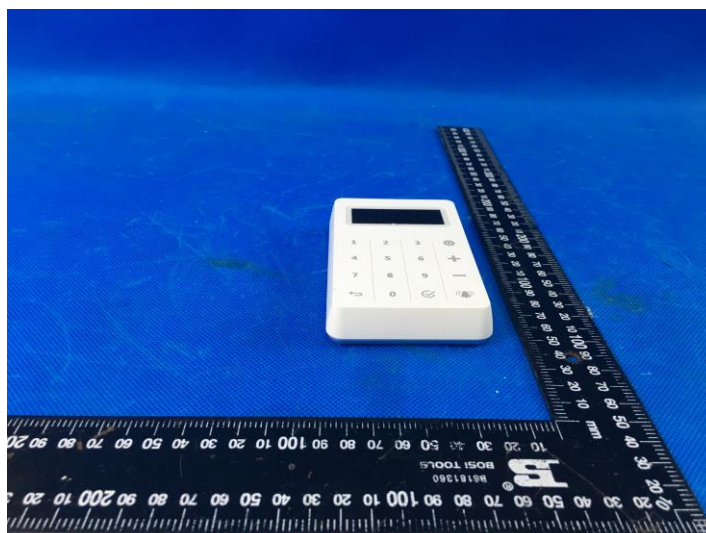
## 7. EXTERNAL AND INTERNAL PHOTOS

### External photos of EUT





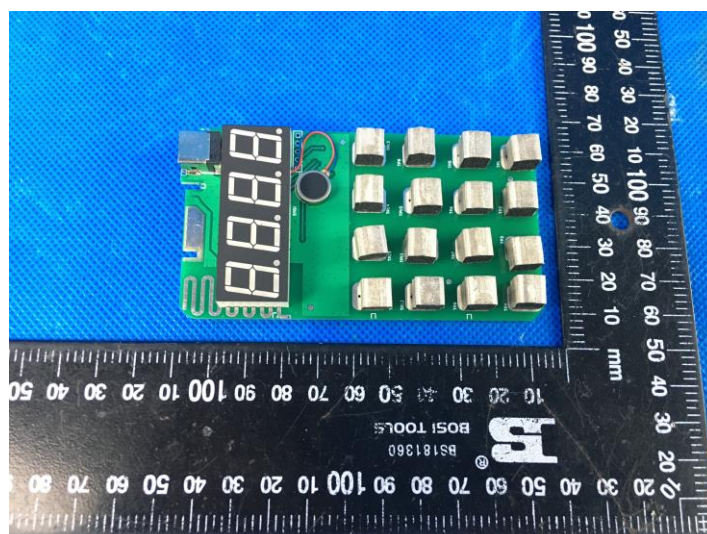
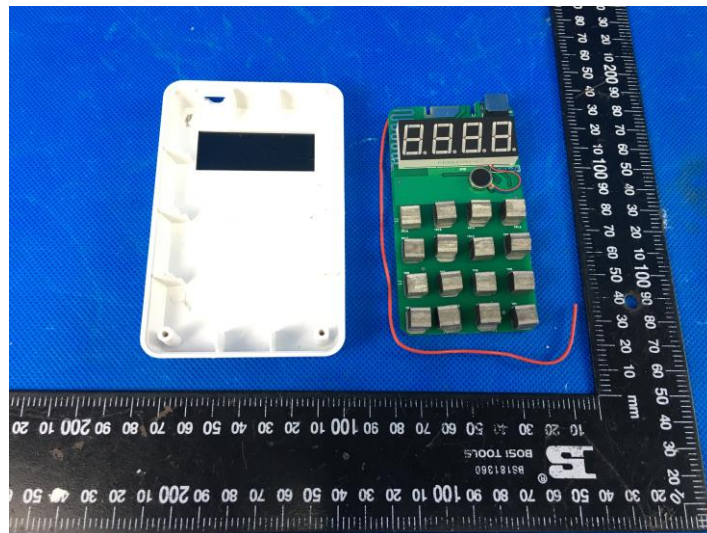
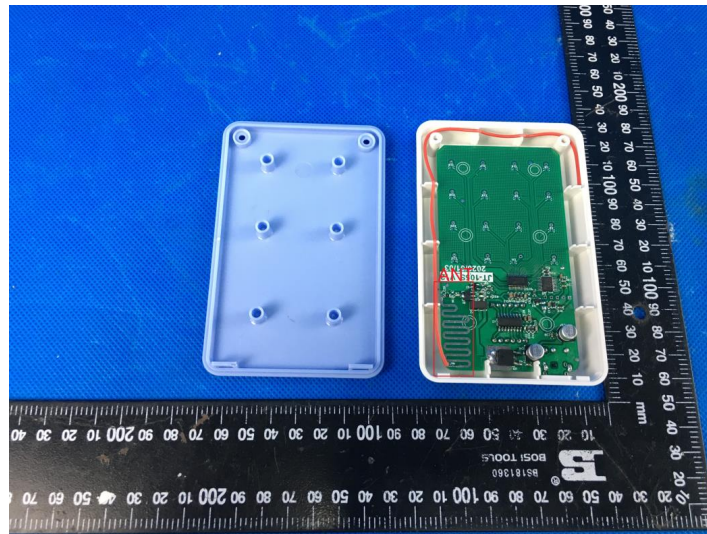


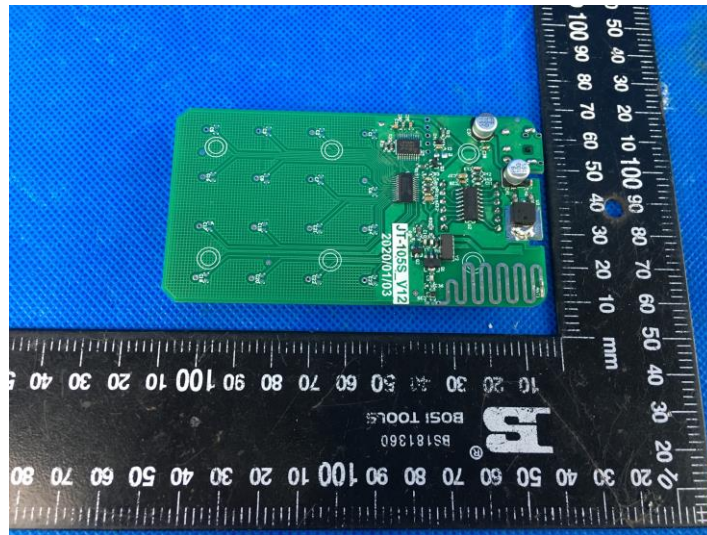






### Internal photos of EUT





-----End of Report-----