FCC Test Report

Report No.: AGC00808190601FE03

FCC ID	:	2ADZI-B11
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	doorbell/alarm
BRAND NAME	:	N/A
MODEL NAME	:	B11, X(X=A-Z)X(X=01-20), 118, 218, 228, 338, 358, 368, 518, 528, 538, 618, 668, 728, 758, 768, 818, 828, 838, 868, 988, 998, X(X=C,D)X(X=01-99)X(X=1-9)X(X=1-9)X(X=3,4,8,9)X(X=1-9)X(X=U,K,E,A)
APPLICANT	:	ATake Digital Technology (ShenZhen) Co., Ltd
DATE OF ISSUE	:	Aug. 02, 2019
STANDARD(S)	:	FCC Part 15 Rules
REPORT VERSION	:	V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Aug. 02, 2019	Valid	Initial Release

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1. VERIFICATION OF CONFORMITY

Applicant	ATake Digital Technology (ShenZhen) Co., Ltd
Address	3F, 15th Building, Changxing Industry Zone, Changzhen Village, Gong Ming , Guang Ming New District, Shenzhen, China
Manufacturer	ATake Digital Technology (ShenZhen) Co., Ltd
Address	3F, 15th Building, Changxing Industry Zone, Changzhen Village, Gong Ming , Guang Ming New District, Shenzhen, China
Factory	ATake Digital Technology (ShenZhen) Co., Ltd
Address	3F, 15th Building, Changxing Industry Zone, Changzhen Village, Gong Ming , Guang Ming New District, Shenzhen, China
Product Designation	doorbell/alarm
Brand Name	N/A
Test Model	B11
Series Model	X(X=A-Z)X(X=01-20), 118, 218, 228, 338, 358, 368, 518, 528, 538, 618, 668, 728, 758, 768, 818, 828, 838, 868, 988, 998,X(X=C,D)X(X=01-99)X(X=1-9)X(X=1-9)X(X=3,4,8,9)X(X=1-9)X(X=U,K,E,A)
Difference Description	All the same except the model name.
Date of test	July 01, 2019~Aug. 01, 2019
Deviation	None
Condition of Test Sample	Normal
Report Template	AGCRT-US-BR/RF (2013-03-01)

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.231.

Tested By Calvin Liu

Calvin Liu(Liu junchen) Aug. 01, 2019

Reviewed By Max Zhang

Max Zhang(Zhang Yi) Aug. 01, 2019

Approved By Forrest Lei

Forrest Lei(Lei Yonggang)
Authorized Officer Aug. 01, 2019

2. GENERAL INFORMATION

2.1. PRODUCT DESCRIPTION

A major technical description of EUT is described as following

Operation Frequency	433.92MHz
Field Strength(3m)	433.92MHz: 88.95dBuV/m(PK)@3m 433.92MHz: 79.76dBuV/m(AV)@3m
Modulation	ASK
Number of channels	1
Hardware Version	SS-017TX SELF POWER
Software Version	V1.0
Antenna Designation	Integral antenna
Power Supply	DC 3.0V

2.2. RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2ADZI-B11** filing to comply with Section 15.231 of the FCC Part 15, Subpart C Rules.

2.3. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4 (2010). Radiated testing was performed at an antenna to EUT distance 3 meters.

2.4. SPECIAL ACCESSORIES

Refer to section 5.1.

2.5. EQUIPMENT MODIFICATIONS

Not available for this EUT intended for grant.

3. MEASUREMENT UNCERTAINTY

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

- Uncertainty of Conducted Emission, Uc = ±3.2 dB
- Uncertainty of Radiated Emission below 1GHz, Uc = ±3.9 dB
- Uncertainty of Radiated Emission above 1GHz, Uc = ±4.8 dB
- Uncertainty of Occupied Channel Bandwidth: Uc = ±2 %

4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION
1	Transmitting mode
Note: 1. The test modes can be supply by battery or adapter, only the result of the worst case was recorded in the report, if no other cases. 2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.	

5. SYSTEM TEST CONFIGURATION

5.1. EQUIPMENT USED IN EUT SYSTEM

Item	Equipment	Model No.	ID or Specification	Remark
1	N/A	N/A	N/A	N/A

5.2. SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.203	Antenna Requirement	Compliant
§15.231(a)(2)	Activated automatically	Compliant
§15.231(b)	Average Factor	Compliant
§15.231(e) & §15.209	Field Strength of Fundamental and Spurious Emission	Compliant
§15.231(c)	Bandwidth	Compliant

6. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Designation Number	CN1259
FCC Test Firm Registration Number	975832
A2LA Cert. No.	5054.02
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA

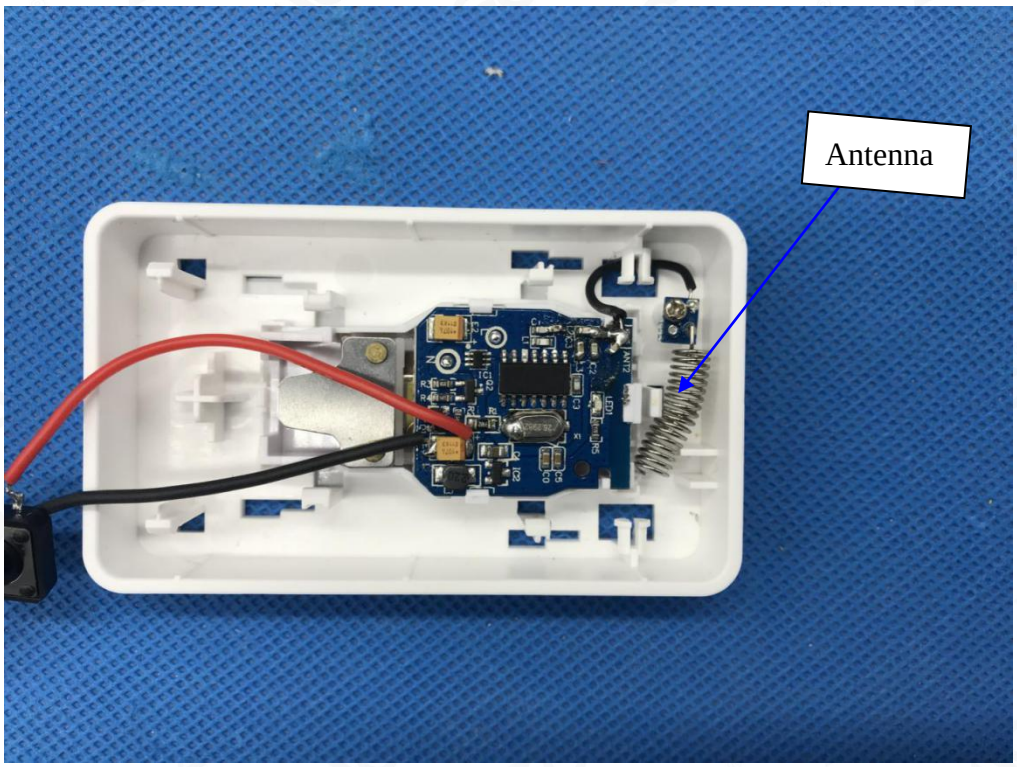
ALL TEST EQUIPMENT LIST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	Jun. 10, 2019	Jun. 09, 2020
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Dec. 20, 2018	Dec. 19, 2019
Attenuator	Weinachel Corp	58-30-33	N/A	Jun. 10, 2019	Jun. 09, 2020
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	18051	Jun. 14, 2018	Jun. 13, 2020
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	May. 26, 2018	May. 25, 2020
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Oct. 25, 2018	Oct. 24, 2019
ANTENNA	SCHWARZBECK	VULB9168	D69250	Sep. 28, 2017	Sep. 27, 2019

7. ANTENNA REQUIREMENT

According to §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 EuT has fixed antenna, which accordance to the above sections, is considered sufficient to comply with the provisions of these sections. Please see EuT photo for details.



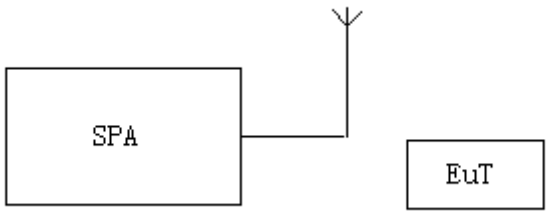
The requirements of section 15.203 are **FULFILLED**.

8. PROVISION FOR MOMENTARY OPERATION

8.1 MEASUREMENT PROCEDURE

1. Set the parameters of SPA as below:
   Centre frequency = Operation Frequency
   RBW=1MHz, VBW=3MHz
   Span: 0Hz
   Sweep time: 10S
2. Set the EUT to transmit by manually operated. Use the “View” function of SPA to find the transmission time of being released.
3. Record the data and Reported.

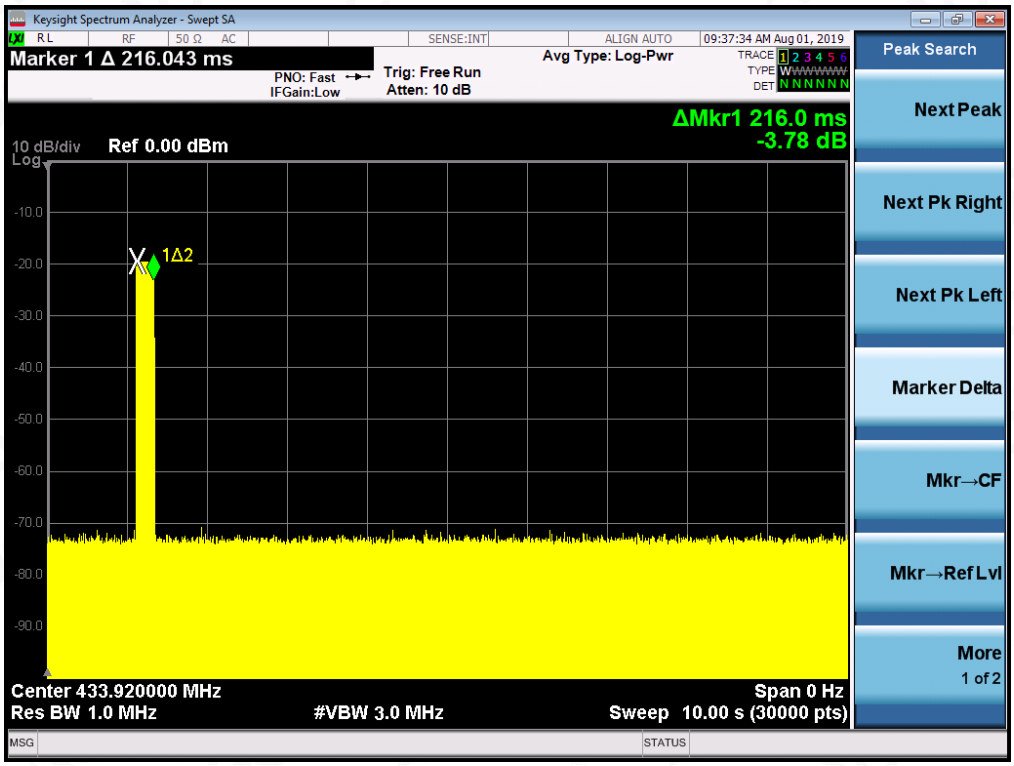
8.2 TEST SETUP



8.3 TEST RESULT

Test Mode: EUT @ 433.92MHz for RF Transmitter

The time of stopping transmission after automatically activation by alarm sensor(s)	Limit (s)
0.216	5.00



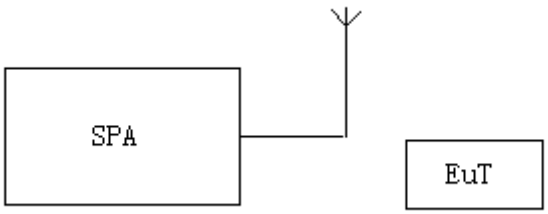
RESULT: PASS

9. Duty Cycle Correction factor

9.1 MEASUREMENT PROCEDURE

1. Set the parameters of SPA as below:
   Centre frequency = Operation Frequency
   RBW=1MHz, VBW=3MHz
   Span: 0Hz
   Sweep time: more than two pulse trains or more than each type of pulse occupancy time
2. Set the EUT to transmit by manually operated. Use the “Delta mark” function of SPA to find the period time between two pulse trains and each type of pulse occupancy time.
3. Record the plots and Reported.

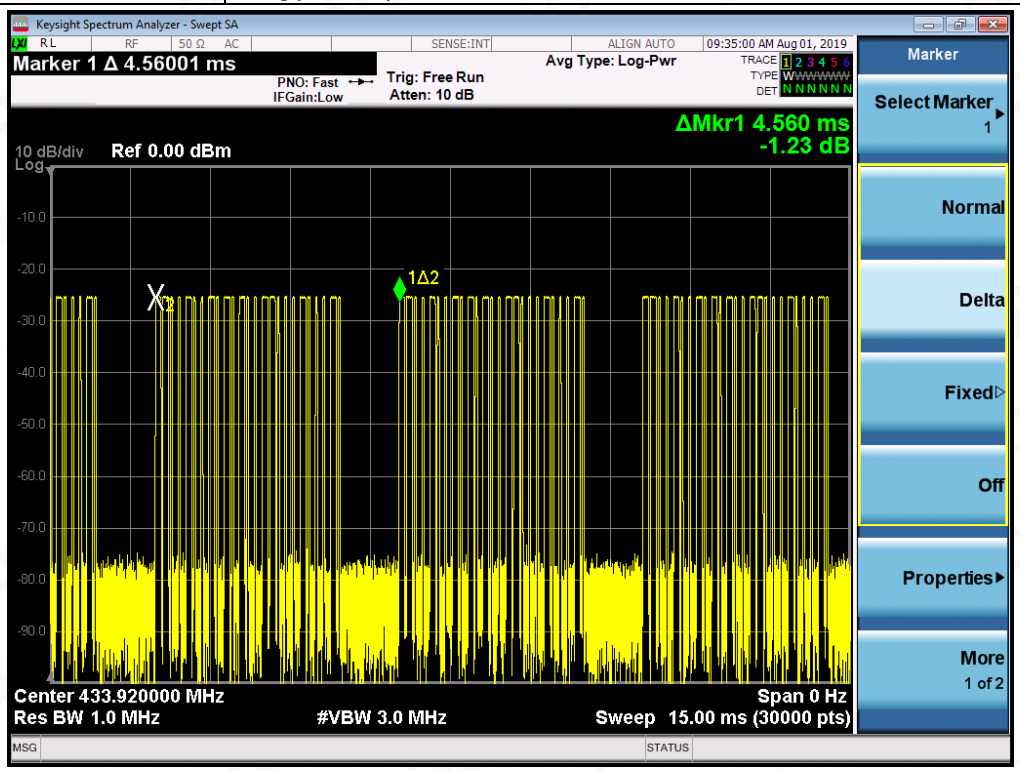
9.2 TEST SETUP

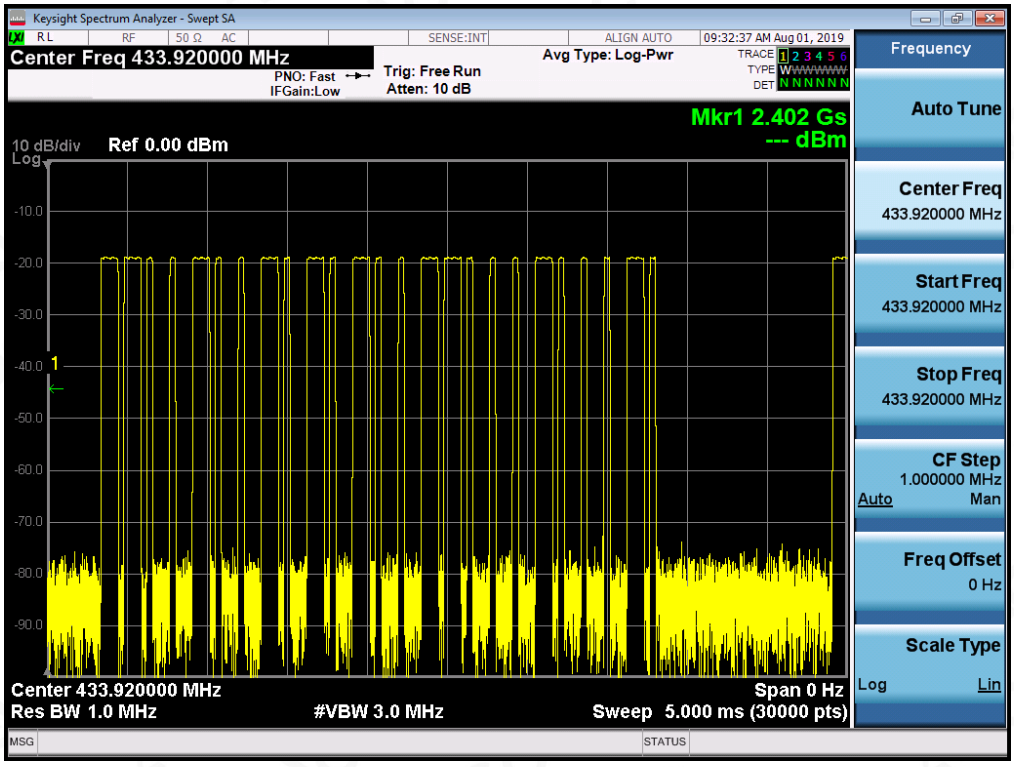


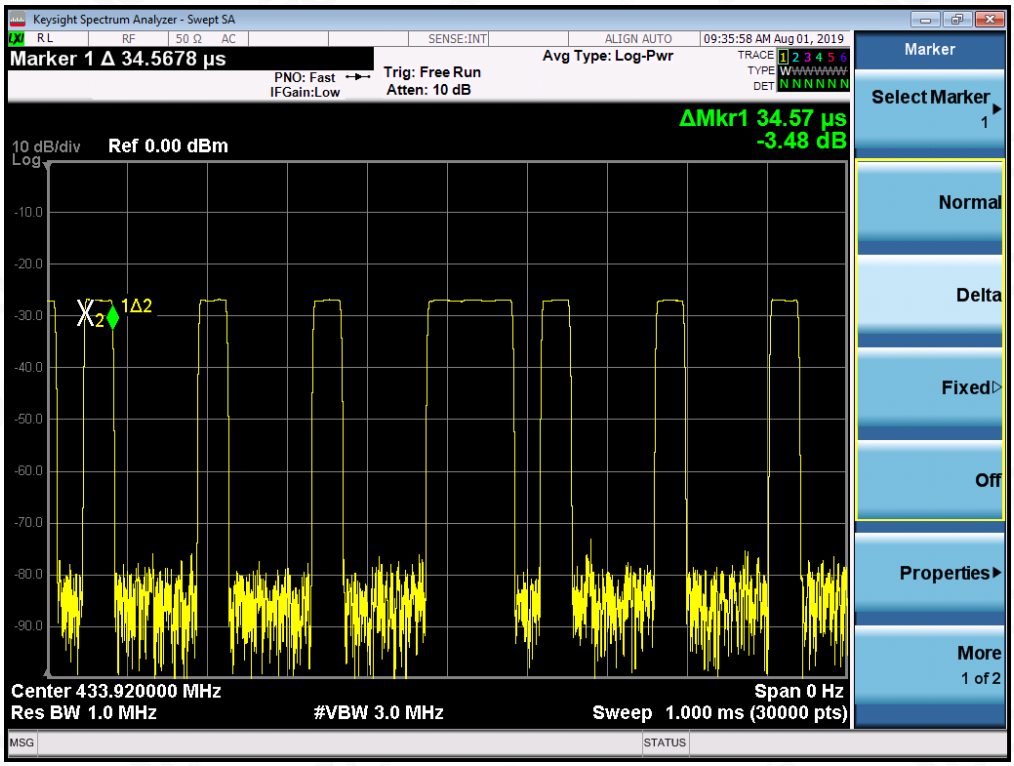
9.3 TEST RESULT

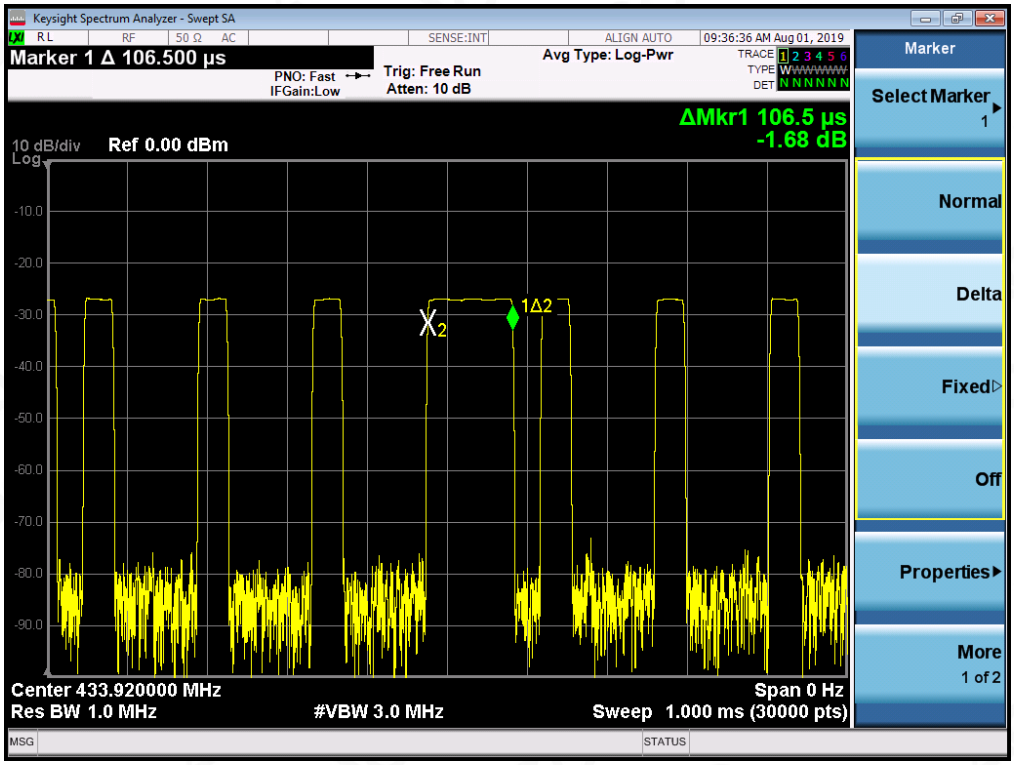
Test Mode: EUT @ 433.92MHz for RF Transmitter

Duty Cycle:	(0.03457ms*15+0.1065ms*10)/4.560ms=0.3472
Duty Cycle Correction Factor:	20lg(0.3472)=-9.19dB






Keysight Spectrum Analyzer - Swept SA
Marker 1 Δ 34.5678 µs
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
Avg Type: Log-Pwr
09:35:58 AM Aug 01, 2019
ΔMkr1 34.57 µs
-3.48 dB
10 dB/div
Log
Ref 0.00 dBm
Center 433.920000 MHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 1.000 ms (30000 pts)
Marker
Select Marker
Normal
Delta
Fixed
Off
Properties
More
1 of 2


Keysight Spectrum Analyzer - Swept SA
Marker 1 Δ 106.500 µs
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 10 dB
Avg Type: Log-Pwr
09:36:36 AM Aug 01, 2019
ΔMkr1 106.5 µs
-1.68 dB
10 dB/div
Log
Ref 0.00 dBm
Center 433.920000 MHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 1.000 ms (30000 pts)
Marker
Select Marker
Normal
Delta
Fixed
Off
Properties
More
1 of 2

10. RADIATED EMISSION

10.1. MEASUREMENT PROCEDURE

1. Configure the EUT according to ANSI C63.4. The EUT was placed on the top of the turntable 0.8 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions below 1GHz, use 120KHz RBW and VBW>=3RBW for QP reading.
7. For emissions above 1GHz, use 1MHz VBW and RBW for peak reading. Then 1MHz RBW and 10Hz VBW for average reading in spectrum analyzer.
8. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
9. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
10. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
11. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.
12. Only the worst case is reported.

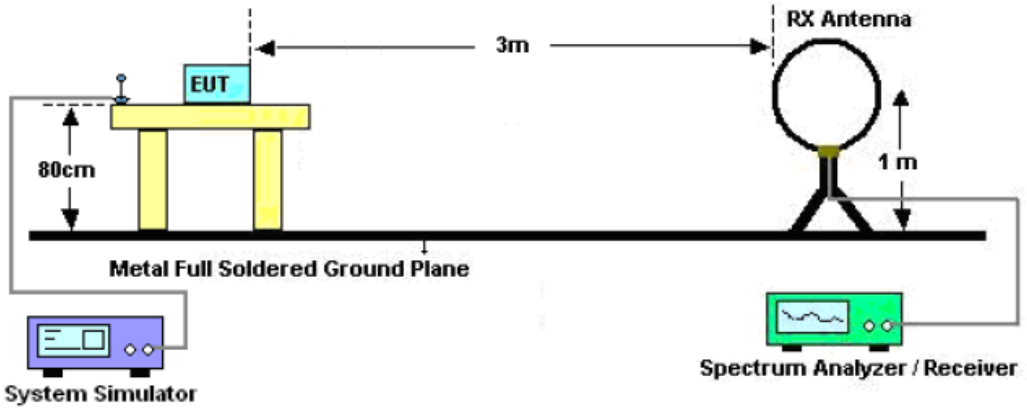
The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RBW 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RBW 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RBW 120KHz for QP
Start ~Stop Frequency	1GHz~26.5GHz 1MHz/1MHz for Peak, 1MHz/10Hz for Average

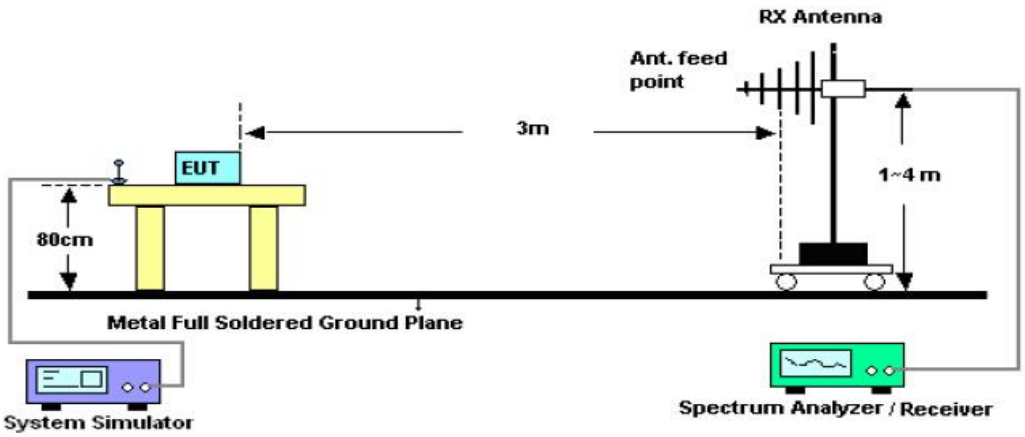
Receiver Parameter	Setting
Start ~Stop Frequency	9KHz~150KHz/RBW 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RBW 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RBW 120KHz for QP

10.2. TEST SETUP

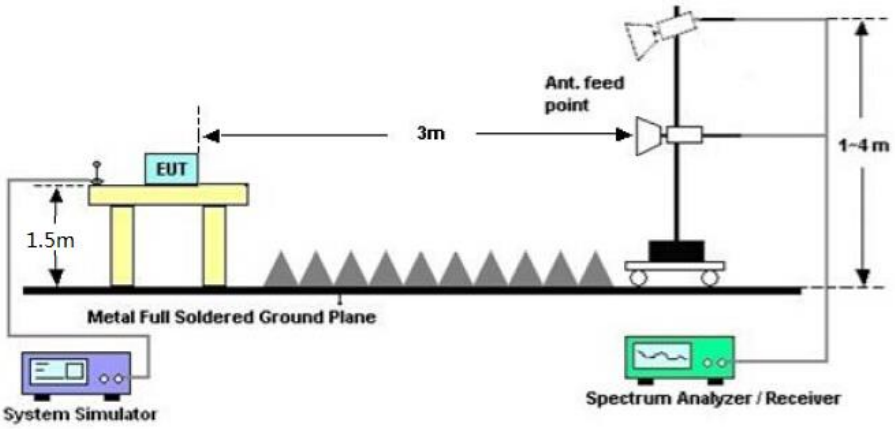
Radiated Emission Test-Setup Frequency Below 30MHz



RADIATED EMISSION TEST SETUP 30MHz-1000MHz



RADIATED EMISSION TEST SETUP ABOVE 1000MHz



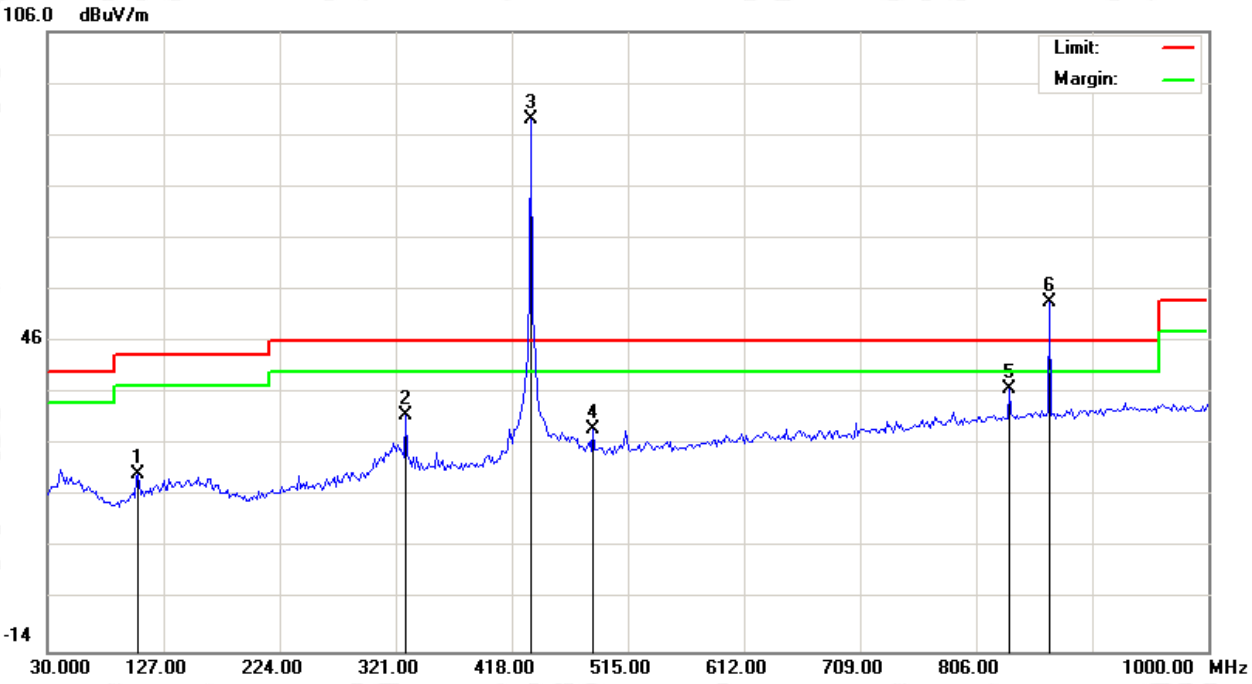
10.3. TEST RESULT

Test Mode: EUT @ 433.92MHz for RF Transmitter

RADIATED EMISSION BELOW 30MHZ

No emission found between lowest internal used/generated frequencies to 30MHz.

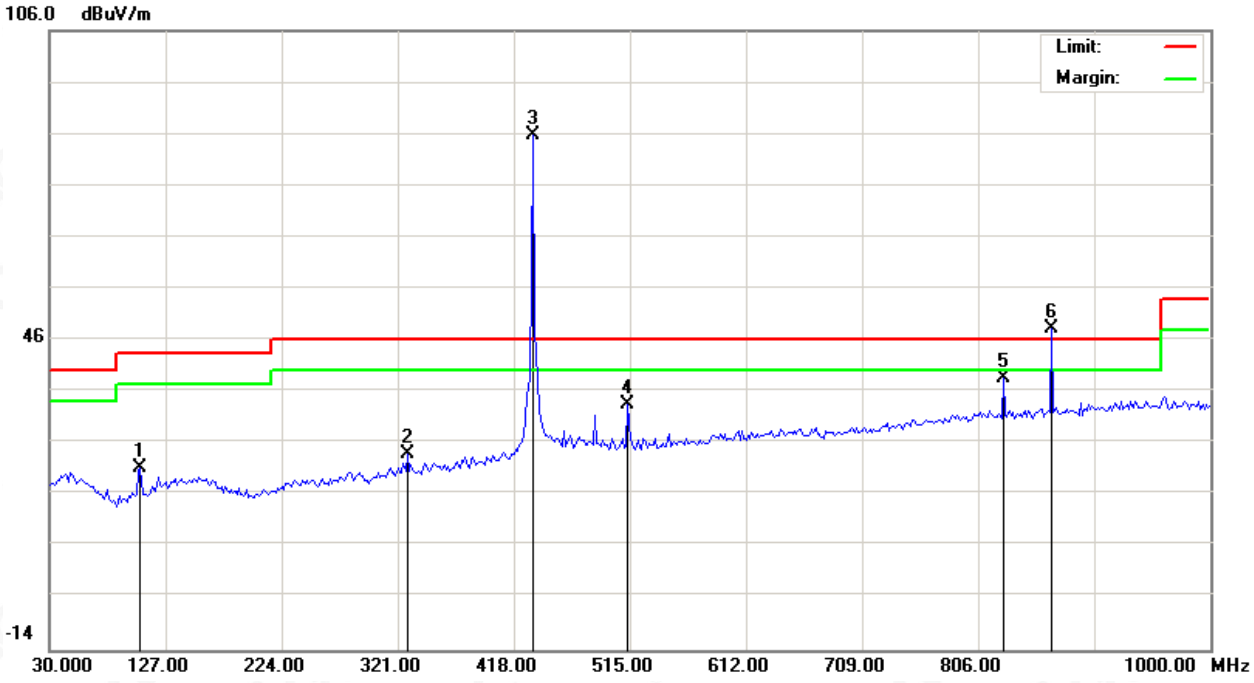
RADIATED EMISSION BELOW 1GHZ-Horizontal



No.	Mk.	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		105.9830	3.62	16.60	20.22	43.50	-23.28	peak			
2		329.0833	11.41	20.49	31.90	46.00	-14.10	peak			
3	*	434.1666	65.28	23.67	88.95	100.80	-11.85	peak			
4		485.8999	4.20	24.71	28.91	46.00	-17.09	peak			
5		833.4832	6.05	30.84	36.89	46.00	-9.11	peak			
6	X	867.4333	22.46	31.28	53.74	80.80	-27.06	peak			

Frequency MHz	Polarization	PK Level dB(uV/m)	Duty Cycle Correction Factor: dB	AV Level dB(uV/m)	Limit dB(uV/m) AV	Margin dB PK	Pass/Fail	Detector	Remark
434.1666	H	88.95	-9.19	79.76	80.80	-1.04	Pass	PK	Fundamental
867.4333	H	53.74	-9.19	44.54	60.80	-16.26	Pass	PK	Harmonic

RADIATED EMISSION BELOW 1GHZ-Vertical



No.	Mk	Freq.	Reading	Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		cm	degree	
1		105.9830	4.74	16.60	21.34	43.50	-22.16	peak			
2		329.0833	3.57	20.49	24.06	46.00	-21.94	peak			
3	*	434.1666	62.02	23.67	85.69	100.80	-15.11	peak			
4		513.3831	8.41	25.25	33.66	46.00	-12.34	peak			
5		827.0167	8.03	30.76	38.79	46.00	-7.21	peak			
6	X	867.4333	17.01	31.28	48.29	80.80	-32.51	peak			

Frequency MHz	Polarization	Level dB(uV/m)	Duty Cycle Correction Factor: dB	AV Level dB(uV/m)	Limit dB(uV/m) AV	Margin dB PK	Pass/Fail	Detector	Remark
434.1666	V	85.69	-9.19	76.50	80.80	-4.3	Pass	PK	Fundamental
867.4333	V	48.29	-9.19	39.10	60.80	-21.7	Pass	PK	Harmonic

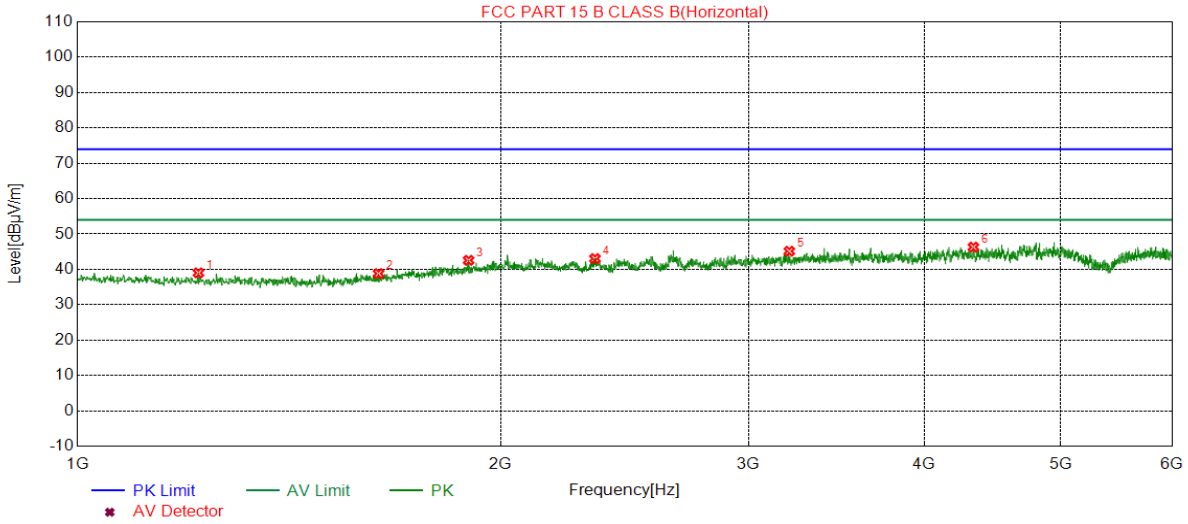
RESULT: PASS

Note: 1. Factor=Antenna Factor + Cable loss - Amplifier gain, Margin=Measurement-Limit.

2. AV Level = PK Level + Duty cycle correction factor.

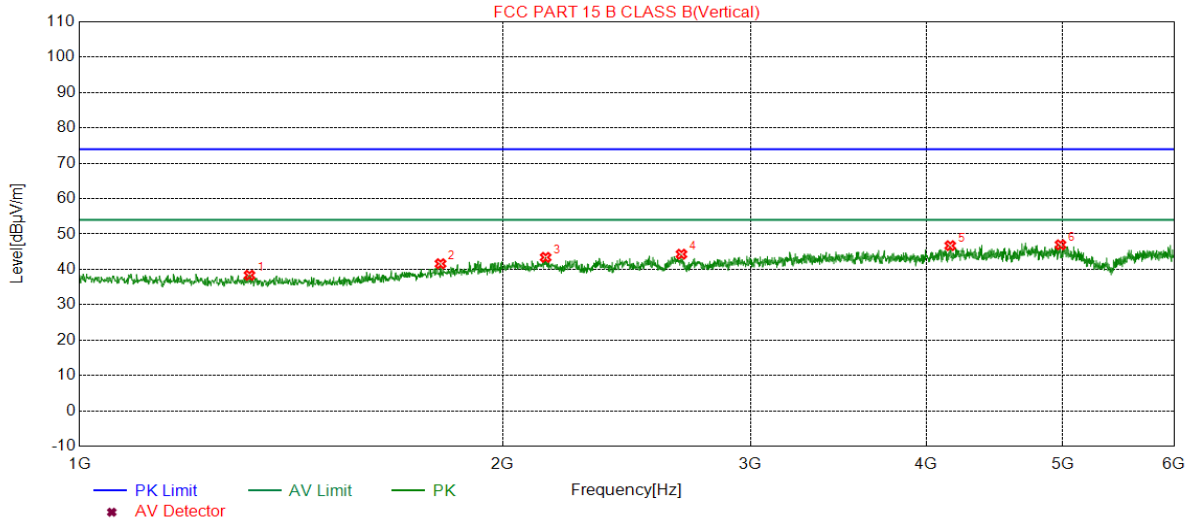
3. The “Factor” value can be calculated automatically by software of measurement system.

RADIATED EMISSION ABOVE 1GHZ –Horizontal



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1219.0438	39.00	-16.85	74.00	35.00	200	200	Horizontal
2	1637.1274	38.80	-15.67	74.00	35.20	150	270	Horizontal
3	1897.1794	42.56	-12.91	74.00	31.44	200	120	Horizontal
4	2333.2667	43.04	-10.42	74.00	30.96	200	110	Horizontal
5	3207.4415	45.12	-8.61	74.00	28.88	150	300	Horizontal
6	4335.6671	46.30	-5.63	74.00	27.70	100	10	Horizontal

RADIATED EMISSION ABOVE 1GHZ –Vertical



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1321.0642	38.32	-16.95	74.00	35.68	100	340	Vertical
2	1806.1612	41.59	-13.88	74.00	32.41	150	280	Vertical
3	2145.2290	43.39	-11.21	74.00	30.61	150	50	Vertical
4	2679.3359	44.29	-9.58	74.00	29.71	150	100	Vertical
5	4160.6321	46.69	-6.08	74.00	27.31	150	20	Vertical
6	4983.7968	46.94	-4.74	74.00	27.06	150	330	Vertical

Note: Other emissions have 20dB margin. No recording in the test report.

Factor=Antenna Factor + Cable loss - Amplifier gain, Margin=Measurement-Limit.

The “Factor” value can be calculated automatically by software of measurement system.

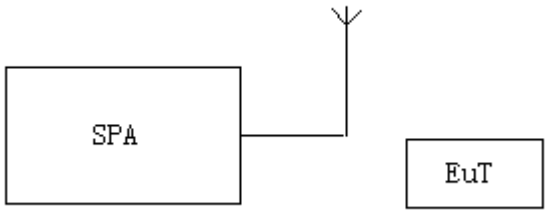
RESULT: PASS

11. BANDWIDTH

11.1. MEASUREMENT PROCEDURE

1. Set the parameters of SPA as below:
   Centre frequency = Operation Frequency
   RBW=3KHz
   VBW=10KHz
   Span: 500KHz
   Sweep time: Auto
2. Set the EUT to continue transmitting mode. Allow the trace to stabilize. Use the “N dB down” function of SPA to define the bandwidth.
3. Record the plots and Reported.

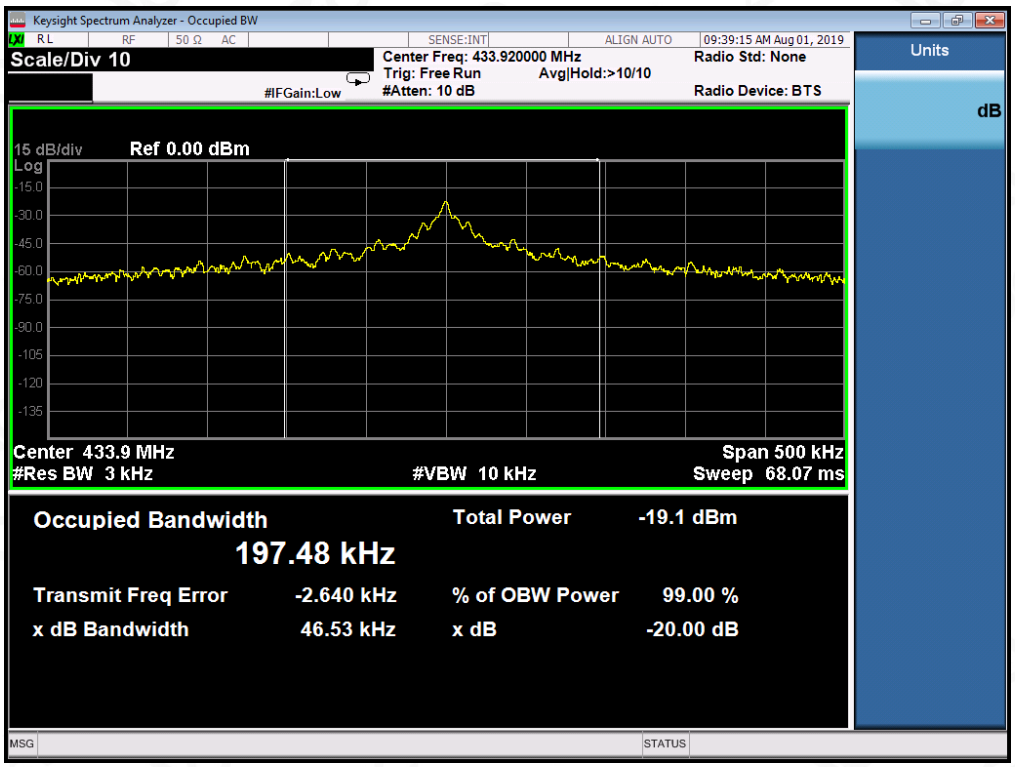
11.2. TEST SETUP



11.3. TEST RESULT

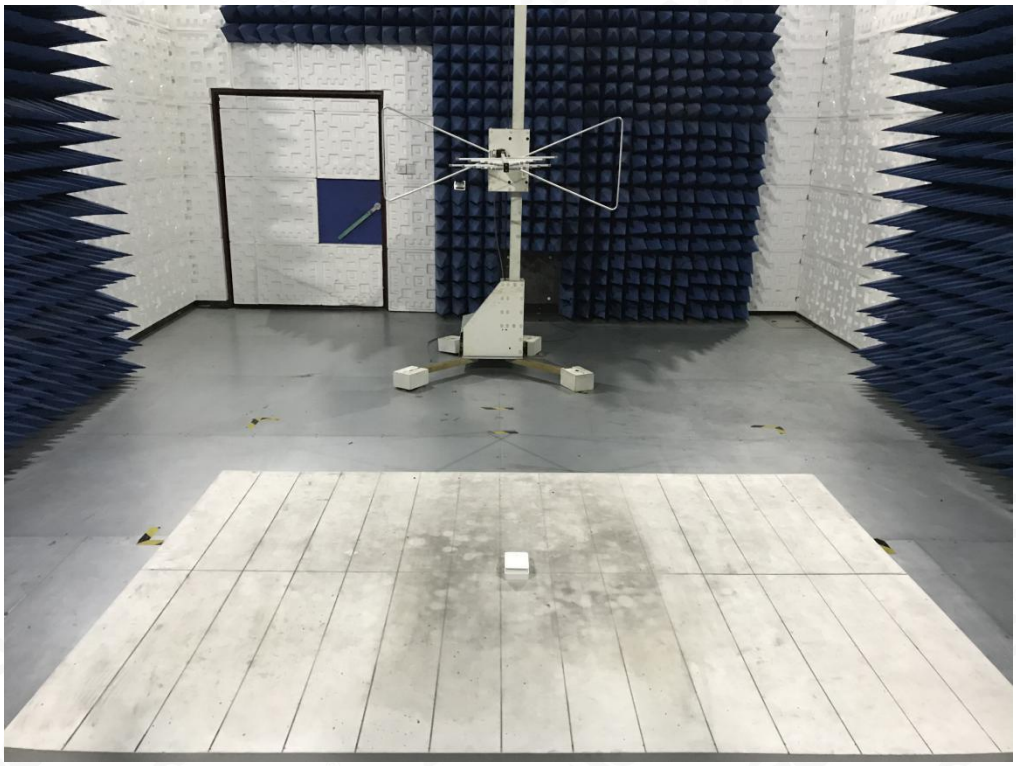
Test Mode: EUT @ 433.92MHz for RF Transmitter

OBW	LIMIT	RESULT
46.53KHz	1084.8KHz	Pass
Note: Limit= Operation Frequency ×0.25%		



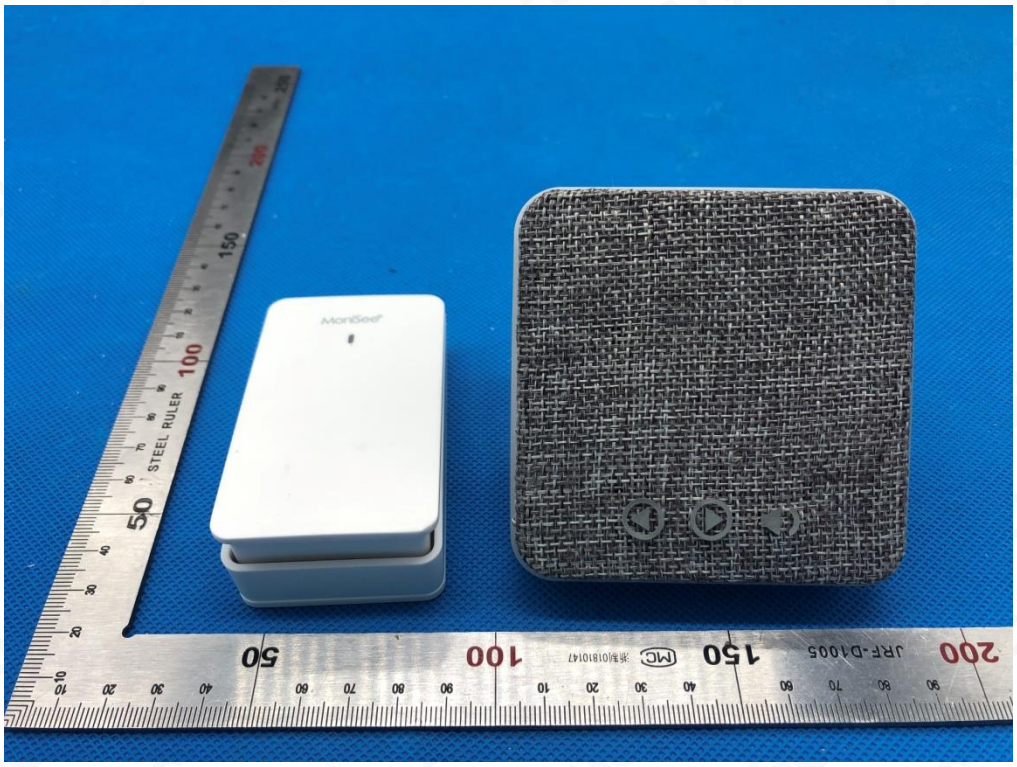
APPENDIX A: PHOTOGRAPHS OF TEST SETUP

RADIATED EMISSION TEST SETUP



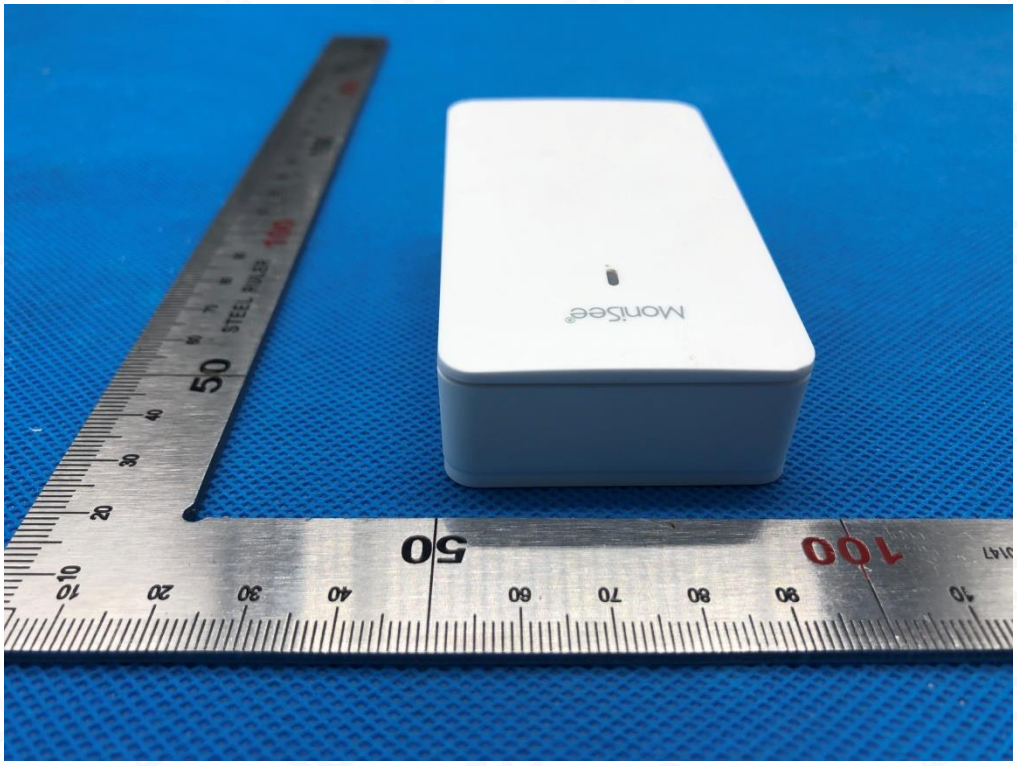
APPENDIX B: PHOTOGRAPHS OF EUT

ALL VIEW OF EUT

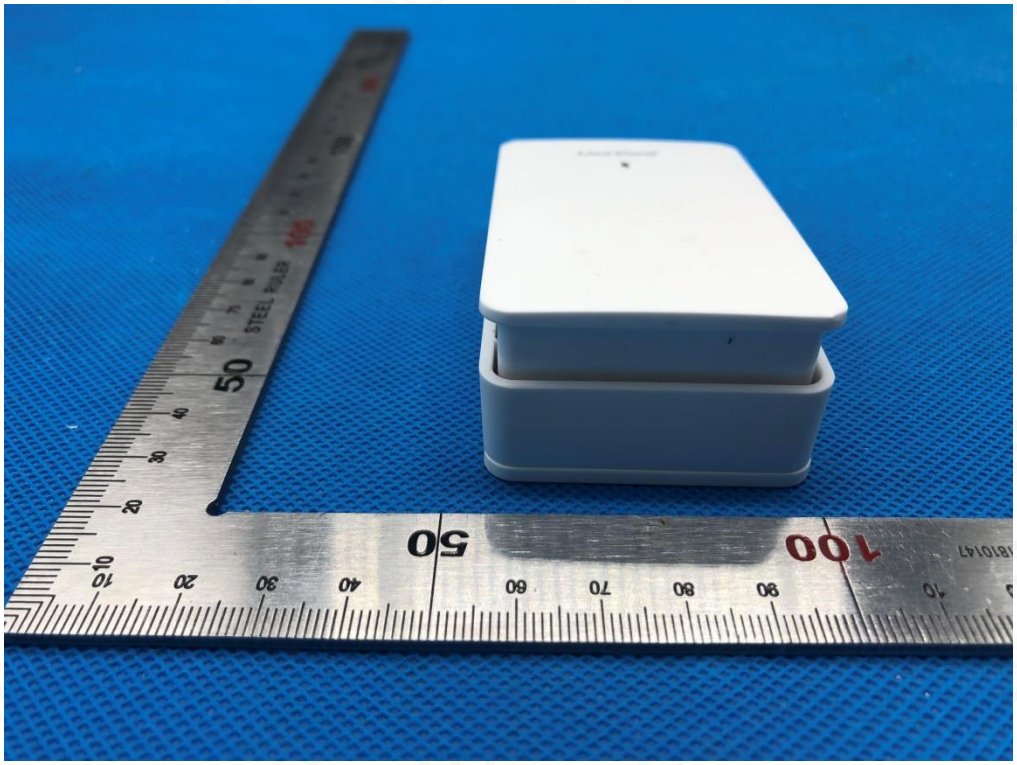


Transmitter

TOP VIEW OF EUT

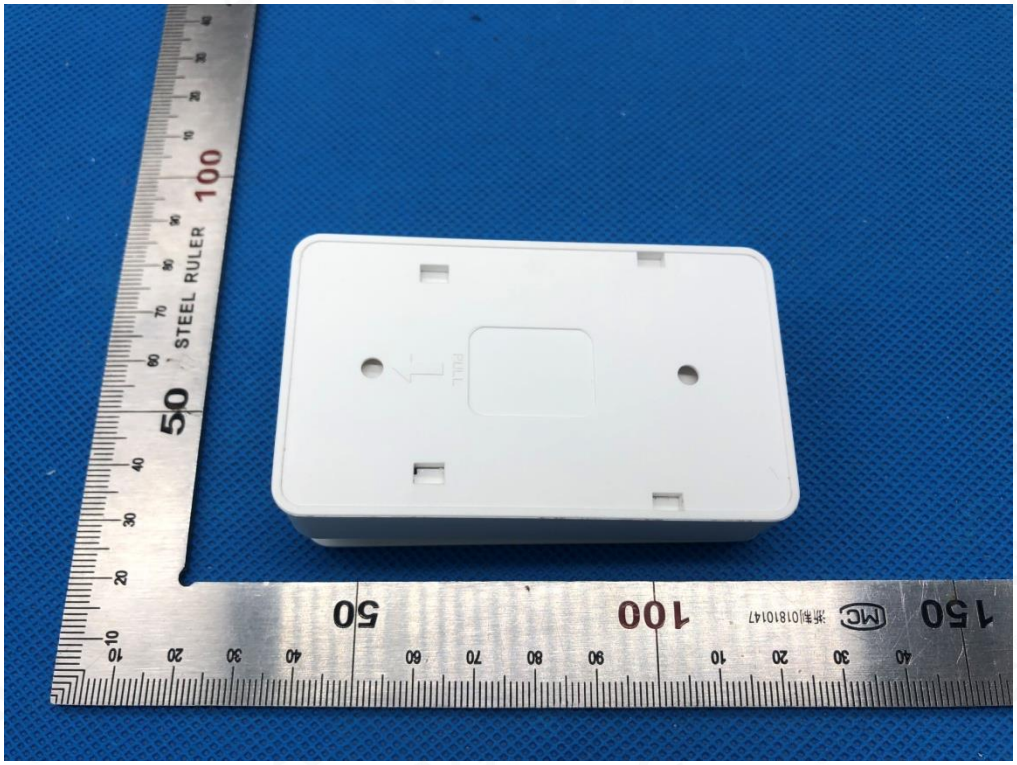


BOTTOM VIEW OF EUT



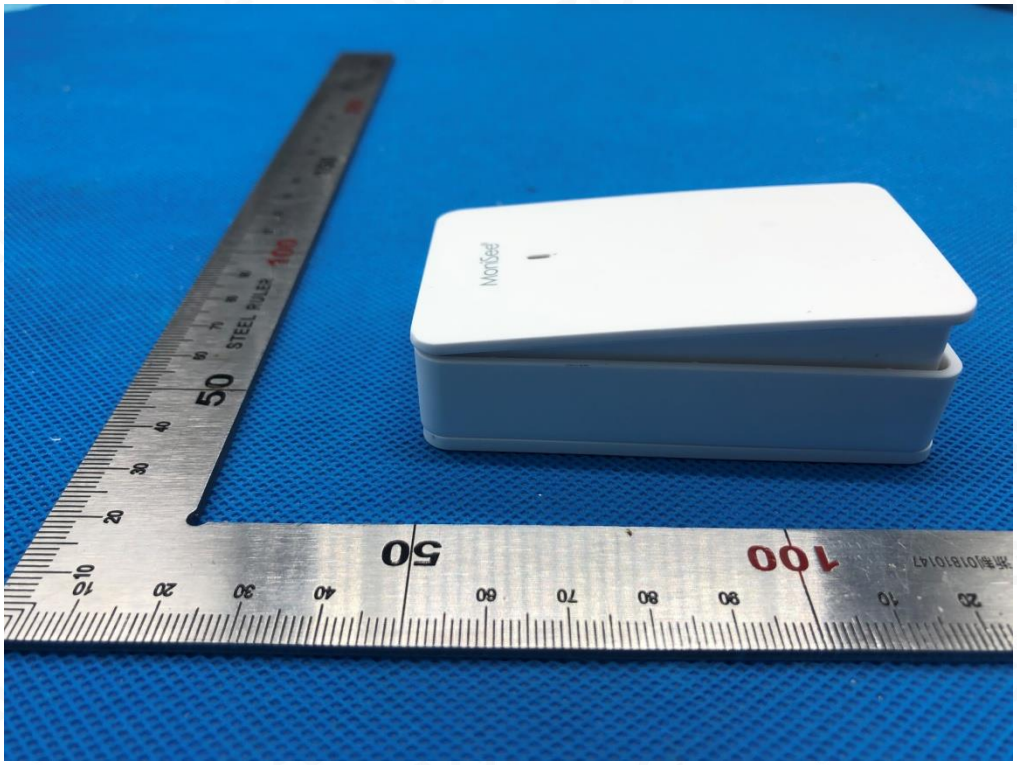
FRONT VIEW OF EUT

BACK VIEW OF EUT

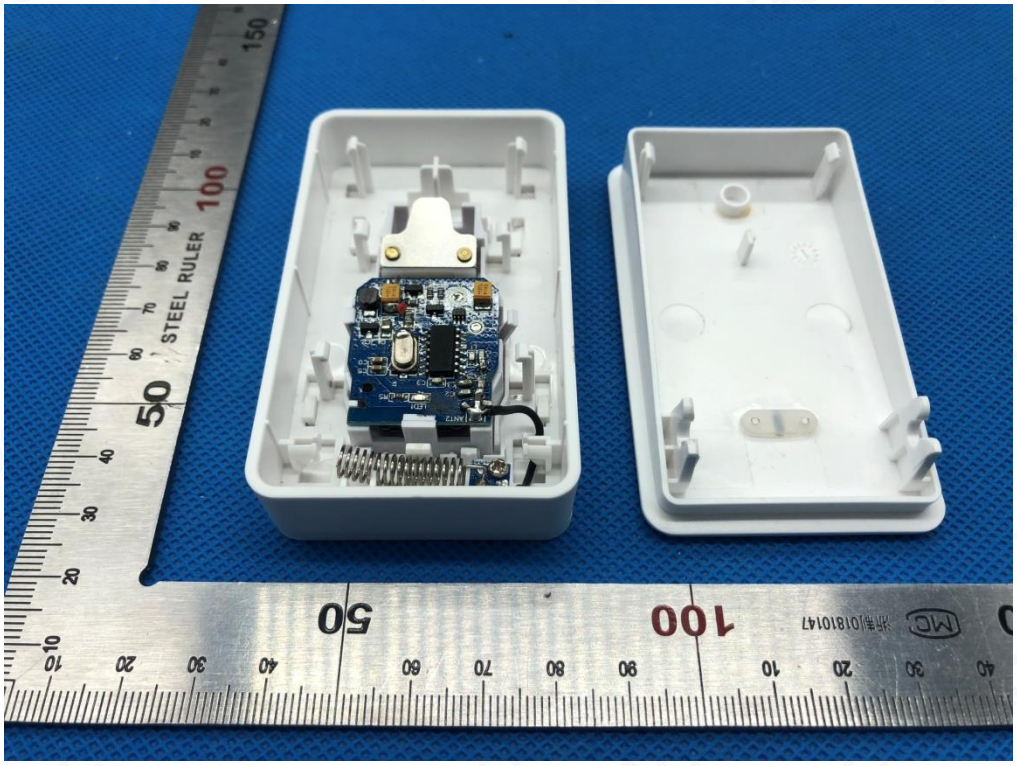


LEFT VIEW OF EUT

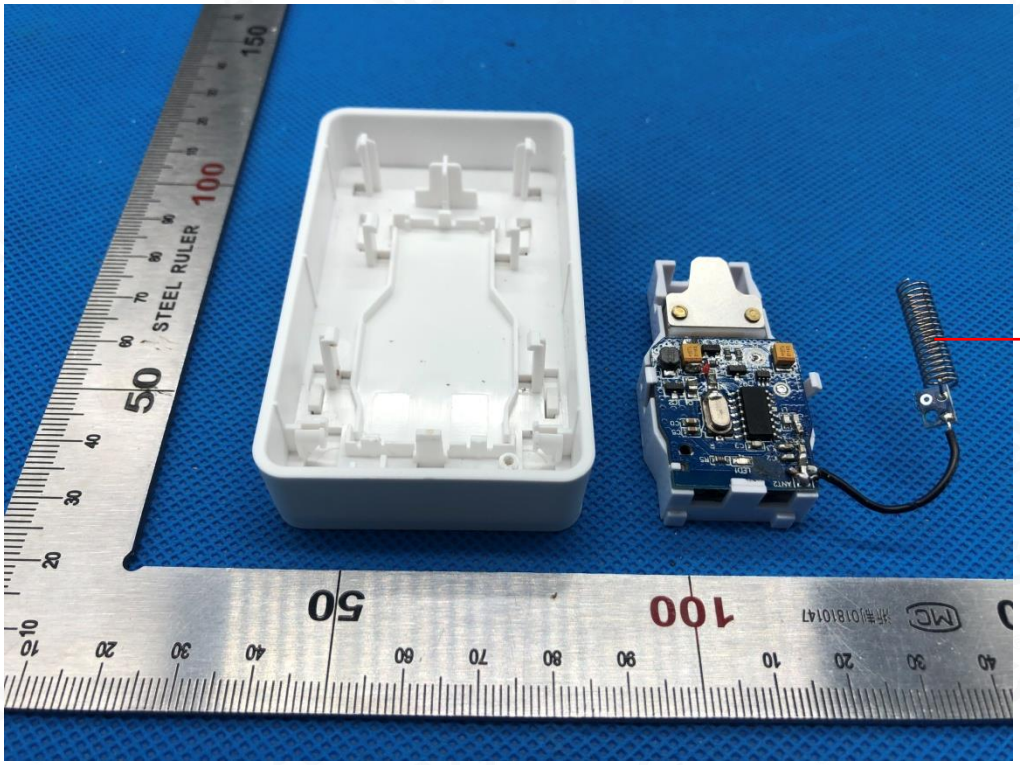
RIGHT VIEW OF EUT



OPEN VIEW OF EUT-1



OPEN VIEW OF EUT-2



OPEN VIEW OF EUT-3