

**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 15 SUBPART C REQUIREMENT**

OF

STAND-ALONE PIN&PROX DOOR CONTROLLER

Model No.: AC-F44,AC-F43

FCC ID: GCD-ACF4X

Trademark: Rosslare

Report No.:ES190618014E

Issue Date: June 27, 2019

Prepared for
Rosslare Enterprises Limited
Room 905, 12 Wang Tai Road , Kowloon Bay, Kowloon, Hong Kong

Prepared by
EMTEK (SHENZHEN) CO., LTD.

**Bldg 69, Majialong Industry Zone, Nanshan District, Shenzhen,
Guangdong, China.**

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VERIFICATION OF COMPLIANCE

Applicant:	Rosslare Enterprises Limited Room 905, 12 Wang Tai Road , Kowloon Bay, Kowloon, Hong Kong
Manufacturer:	Rosslare Electronics (Shenzhen) Ltd. Block 2, No. A-1 Baiwangxin Industrial Park, XiLi Town, Shenzhen, China
Product Description:	STAND-ALONE PIN&PROX DOOR CONTROLLER
Model Number:	AC-F44,AC-F43
Trademark:	Rosslare

We hereby certify that:

The above equipment was tested by EMTEK (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 C63.10-2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.209(2018).

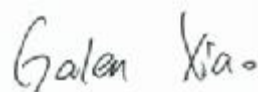
The test results of this report relate only to the tested sample identified in this report.

Date of Test : June 18, 2019 to June 27, 2019



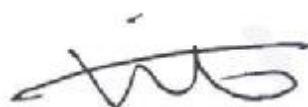
Prepared by : _____

Jason Gao/Editor



Reviewer : _____

Galen Xiao/Supervisor



Approved & Authorized Signer : _____

Lisa Wang/Manager

Modified Information

Version	Summary	Revision Date	Report No.
Ver.1.0	Original Report	/	ES190618014E

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1. General Information

1.1 Product Description

Characteristics	Description
Product Name	STAND-ALONE PIN&PROX DOOR CONTROLLER
Model number	AC-F44,AC-F43 (Note: These models are all the same except for the name and card swiping function. Here AC-F44 was selected for test.).
Power Supply for Test	AC 16-24V, DC 12-24V form adapter
Modulation	ASK
Operating Frequency Range	125KHz
Number of Channels	1 channel
Antenna Type	Internal antenna

Note: for a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

1.2 TEST SYSTEM UNCERTAINTY

The following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-5}$
Maximum Peak Output Power Test	$\pm 1.0\text{dB}$
Conducted Emissions Test	$\pm 2.0\text{dB}$
Radiated Emission Test	$\pm 2.0\text{dB}$
Power Density	$\pm 2.0\text{dB}$
Occupied Bandwidth Test	$\pm 1.0\text{dB}$
Band Edge Test	$\pm 3\text{dB}$
All emission, radiated	$\pm 3\text{dB}$
Antenna Port Emission	$\pm 3\text{dB}$
Temperature	$\pm 0.5^{\circ}\text{C}$
Humidity	$\pm 3\%$

Measurement Uncertainty for a level of Confidence of 95%

1.3 Test Facility

Site Description
EMC Lab.

: Accredited by CNAS, 2016.10.24
The certificate is valid until 2022.10.28
The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2006 (identical to ISO/IEC 17025:2005)
The Certificate Registration Number is L2291.

Accredited by TUV Rheinland Shenzhen 2016.5.19
The Laboratory has been assessed according to the requirements ISO/IEC 17025.

Accredited by FCC, August 03, 2017
Designation Number: CN1204
Test Firm Registration Number: 882943

Accredited by Industry Canada, November 24, 2015
The Certificate Registration Number is 4480A.

Accredited by A2LA, July 31, 2017
The Certificate Number is 4321.01.

Name of Firm
Site Location

: EMTEK (SHENZHEN) CO., LTD.
: Bldg 69, Majialong Industry Zone,
Nanshan District, Shenzhen, Guangdong, China

2. System Test Configuration

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is placed on a turn table which is 0.8 m above ground plane. According to the requirements in Section 6.2 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.

2.3.2 Radiated Emissions

The EUT is placed on a turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 6.3 of ANSI C63.10-2013.

2.4 Configuration of Tested System

Fig. 2-1 Configuration of Tested System

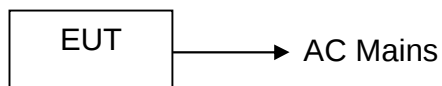


Table 2-1 Equipment Used in Tested System

Item	Equipment	Brand	Model No.	FCC ID	Series No.	Note
1	STAND-ALONE PIN&PROX DOOR CONTROLLER	Rosslare	AC-F44	GCD-ACF4X	N/A	EUT
2	Switching Adapter	Lenove	PA-1650-56L C	N/A	N/A	Support EUT

Note:

- (1) Unless otherwise denoted as EUT in 『 Remark 』 column, device(s) used in tested system is a support equipment.
- (2) Two samples AC-F43 AC-44 of EUT are tested. And the test results of the worst test panel(AC-44) were recorded.

3. Summary of Test Results

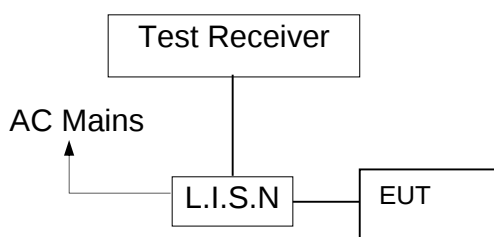
FCC Rules	Description Of Test	Result
§15.207	AC Power Conducted Emission	Compliant
§15.209	Radiated Emission	Compliant
§15.203	Antenna Application	Compliant

4. Conducted Emissions Test

4.1 Measurement Procedure

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured was complete.

4.2 Test SET-UP (Block Diagram of Configuration)



4.3 Measurement Equipment Used

Conducted Emission Test Site						
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	Characteristics	Last Cal.	Due date
Test Receiver	Rohde & Schwarz	ESCS30	828985/018	9kHz~3GHz	05/16/2019	05/15/2020
Artificial Network	Schwarzbeck	8126D	8126D-211	9KHz-300MHz	05/16/2019	05/15/2020
RF Switching Unit	CDS	RSU-M2	38401	9KHz-300MHz	05/16/2019	05/15/2020
Coaxial Cable	CDS	79254	46107086	9kHz~3GHz	05/16/2019	05/15/2020

4.4 Conducted Emission Limit

Conducted Emission

Frequency(MHz)

Quasi-peak

Average

0.15-0.5

66-56

56-46

0.5-5.0

56

46

5.0-30.0

60

50

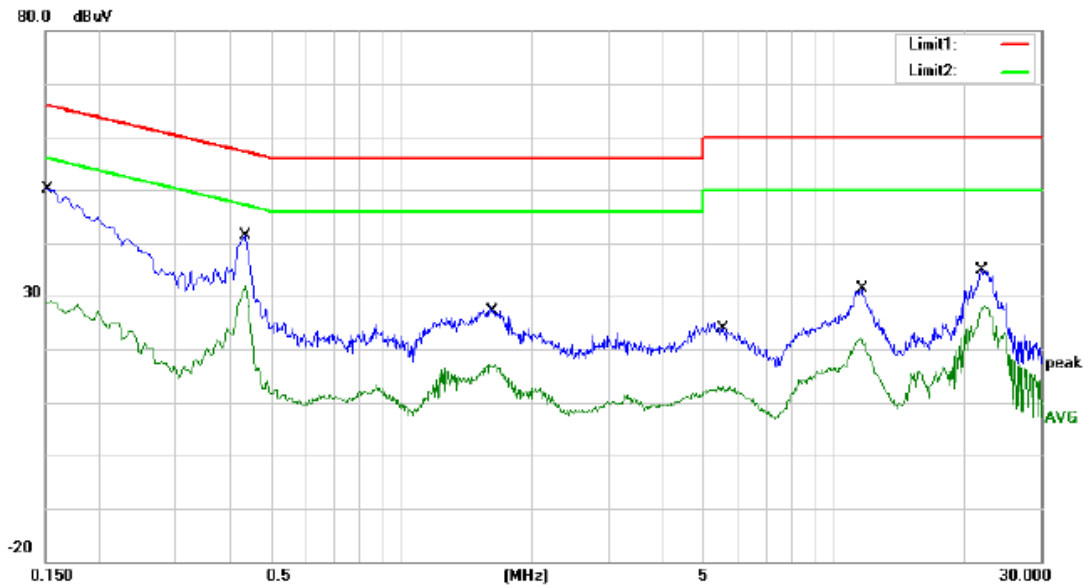
Note: 1. The lower limit shall apply at the transition frequencies

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.5 Measurement Result

Pass.

Please refer to the following.

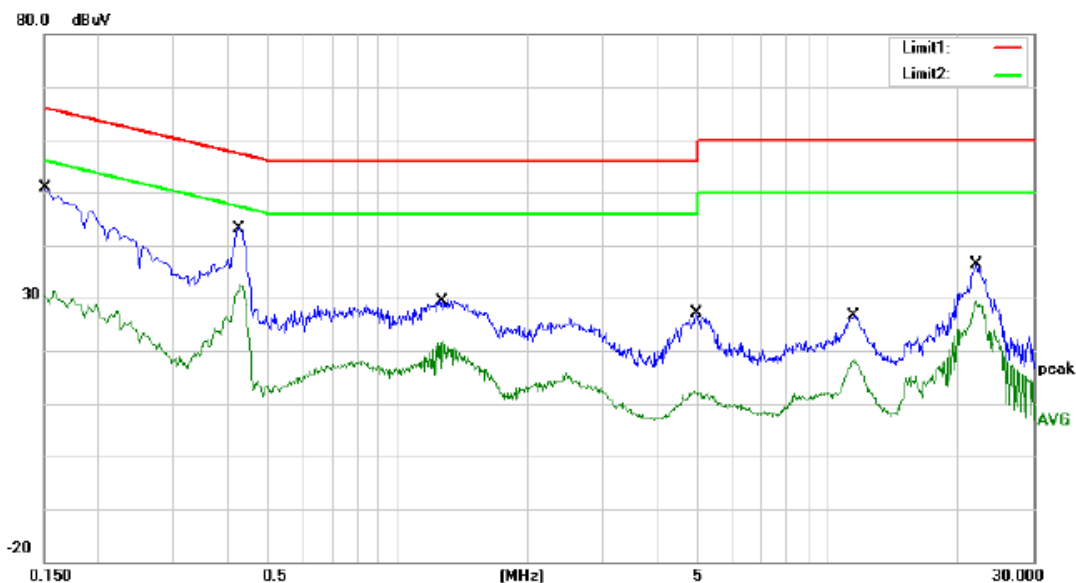


Site: site #1
 Limit: (CE)FCC PART 15 C_QP
 Mode: TX
 Note:

Phase: L1
 Power: AC 120V/60Hz
 Temperature: 25
 Humidity: 55 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1540	40.23	10.01	50.24	65.78	-15.54	QP	
2		0.1540	19.00	10.01	29.01	55.78	-26.77	AVG	
3		0.4340	31.12	10.15	41.27	57.18	-15.91	QP	
4	*	0.4340	21.78	10.15	31.93	47.18	-15.25	AVG	
5		1.6420	17.98	10.18	28.16	56.00	-27.84	QP	
6		1.6420	7.00	10.18	17.18	46.00	-28.82	AVG	
7		5.5580	15.06	10.18	25.24	60.00	-34.76	QP	
8		5.5580	2.75	10.18	12.93	50.00	-37.07	AVG	
9		11.4780	21.20	10.22	31.42	60.00	-28.58	QP	
10		11.4780	11.92	10.22	22.14	50.00	-27.86	AVG	
11		22.1980	24.91	10.29	35.20	60.00	-24.80	QP	
12		22.1980	17.84	10.29	28.13	50.00	-21.87	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator:



Site site #1 Phase: **N** Temperature: 25
 Limit: (CE)FCC PART 15 C_QP Power: AC 120V/60Hz Humidity: 55 %
 Mode: TX
 Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1516	40.79	10.01	50.80	65.91	-15.11	QP	
2		0.1516	19.98	10.01	29.99	55.91	-25.92	AVG	
3	*	0.4300	33.23	10.15	43.38	57.25	-13.87	QP	
4		0.4300	22.36	10.15	32.51	47.25	-14.74	AVG	
5		1.2660	11.63	10.18	21.81	46.00	-24.19	AVG	
6		1.2660	19.56	10.18	29.74	46.00	-16.26	AVG	
7		4.8860	17.01	10.18	27.19	56.00	-28.81	QP	
8		4.8860	2.11	10.18	12.29	46.00	-33.71	AVG	
9		11.4780	16.50	10.22	26.72	60.00	-33.28	QP	
10		11.4780	8.12	10.22	18.34	50.00	-31.66	AVG	
11		22.1460	26.08	10.29	36.37	60.00	-23.63	QP	
12		22.1460	18.96	10.29	29.25	50.00	-20.75	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator:

4.6 Conducted Measurement Photos



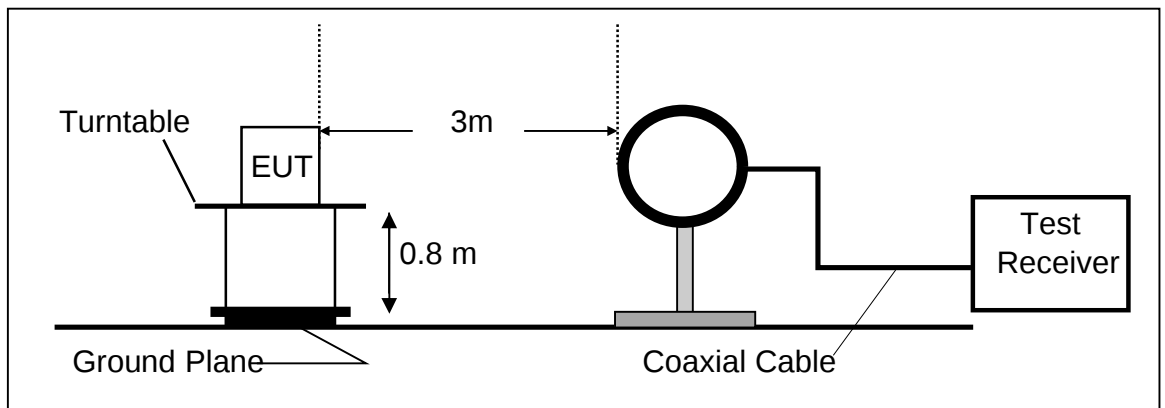
5. Radiated Emission Test

5.1 Measurement Procedure

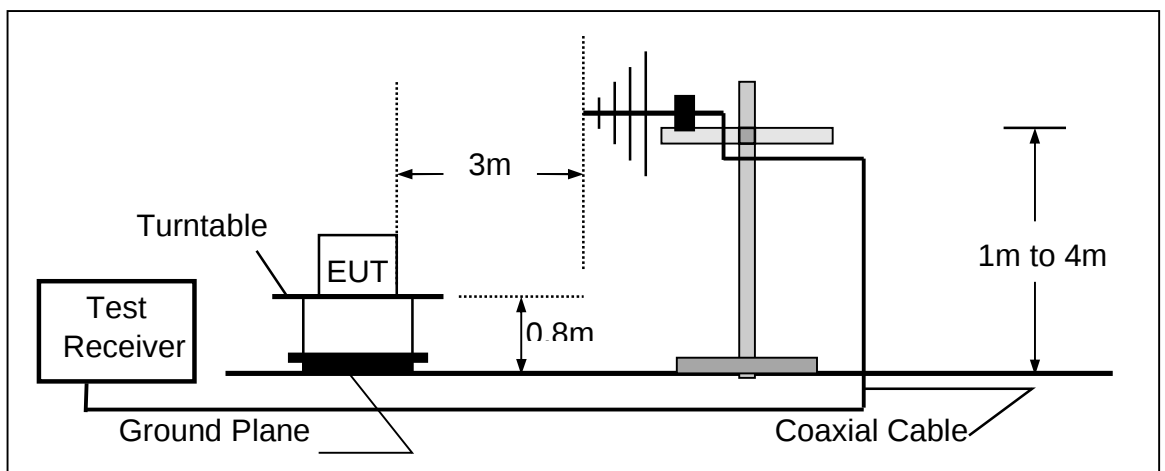
1. The EUT was placed on a turntable which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

5.2 Test SET-UP (Block Diagram of Configuration)

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



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



5.3 Measurement Equipment Used

Equipment	Serial No.	Manufacturer	Model No.	Cal. Date	Due Date
EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	05/16/2019	05/15/2020
Pre-Amplifier	HP	8447D	2944A07999	05/16/2019	05/15/2020
Bilog Antenna	Schwarzbeck	VULB9163	142	05/16/2019	05/15/2020
Loop Antenna	Schwarzbeck	FMZB 1519	012	05/16/2019	05/15/2020
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170399	05/16/2019	05/15/2020
Horn Antenna	Schwarzbeck	BBHA9120D	D143	05/16/2019	05/15/2020
Cable	Schwarzbeck	AK9513	ACRX1	05/16/2019	05/15/2020
Cable	Rosenberger	N/A	FP2RX2	05/16/2019	05/15/2020
Cable	Schwarzbeck	AK9513	CRPX1	05/16/2019	05/15/2020
Cable	Schwarzbeck	AK9513	CRRX2	05/16/2019	05/15/2020
Pre-Amplifier	A.H.	PAM-0126	1415261	05/16/2019	05/15/2020

5.4 Radiated Emission Limit

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table 15.209(a):

FCC Part 15.209				
Frequency (MHz)	Field Strength Limitation		Field Strength Limitation Frequency at 3m Measurement Distance	
	(uV/m)	Dist	(uV/m)	(dBuV/m)
0.009 – 0.490	2400 / F(KHz)	300m	$10000 * \frac{2400}{F(KHz)}$	$20\log 2400/F(KHz) + 80$
0.490 – 1.705	$\frac{24000}{F(KHz)}$	30m	$100 * \frac{24000}{F(KHz)}$	$20\log 24000/F(KHz) + 40$
1.705 – 30.00	30	30m	$100 * 30$	$20\log 30 + 40$
30.0 – 88.0	100	3m	100	$20\log 100$
88.0 – 216.0	150	3m	150	$20\log 150$
216.0 – 960.0	200	3m	200	$20\log 200$
Above 960.0	500	3m	500	$20\log 500$

15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 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	(²)

Remark 1. Emission level in dBuV/m=20 log (uV/m)

- :
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
 3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of x 15.205, and the emissions located in restricted bands also comply with 15.209 limit.

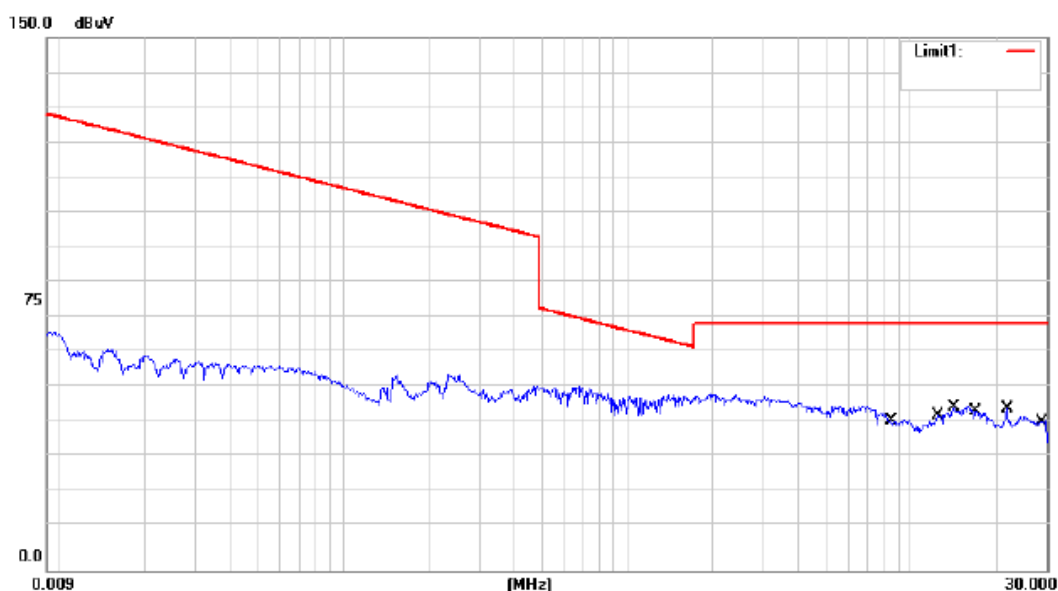
5.5 Measurement Result

Radiated Emission (Below 30MHz):

Fundamental

Frequency (MHz)	Ant.Pol (H/V)	Reading@3m (dBuV/m)		Limit@3m (dBuV/m)		Margin (dB)	
		Peak	Average	Peak	Average	Peak	Average
0.125	V	66.28	61.73	125.7	105.7	-59.42	-43.97
0.125	H	69.43	63.16	125.7	105.7	-56.27	-42.54

Other Emissions:



Site Chamber #1

Phase: **Vertical**

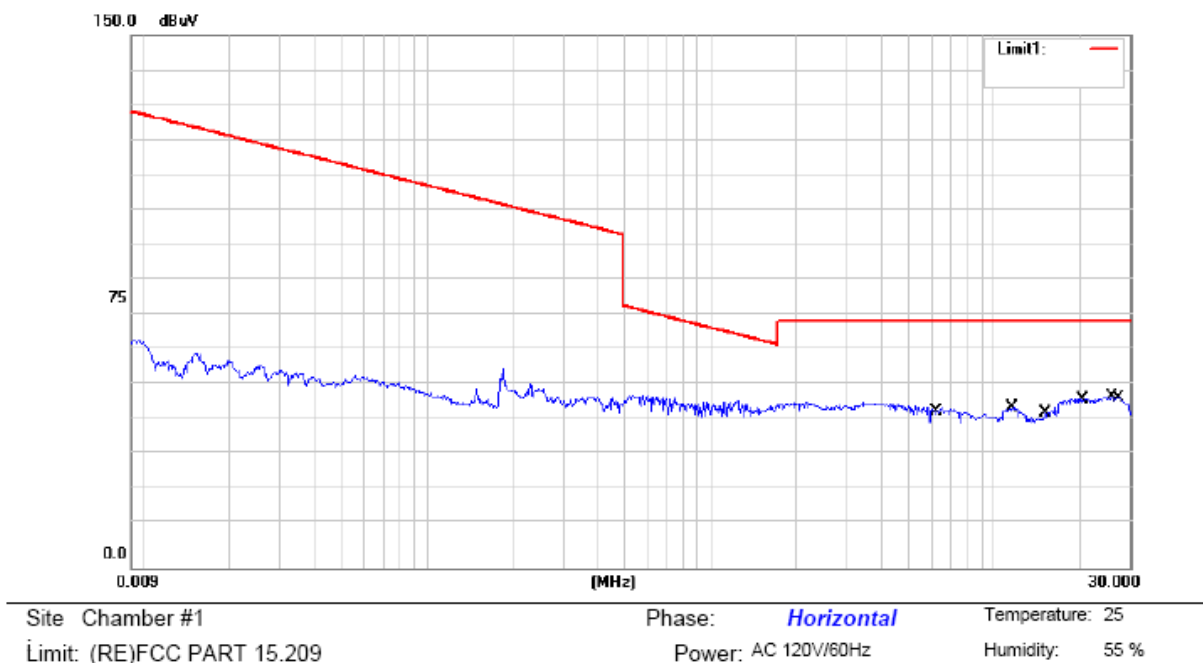
Temperature: 25

Limit: (RE)FCC PART 15.209

Power: AC 120V/60Hz

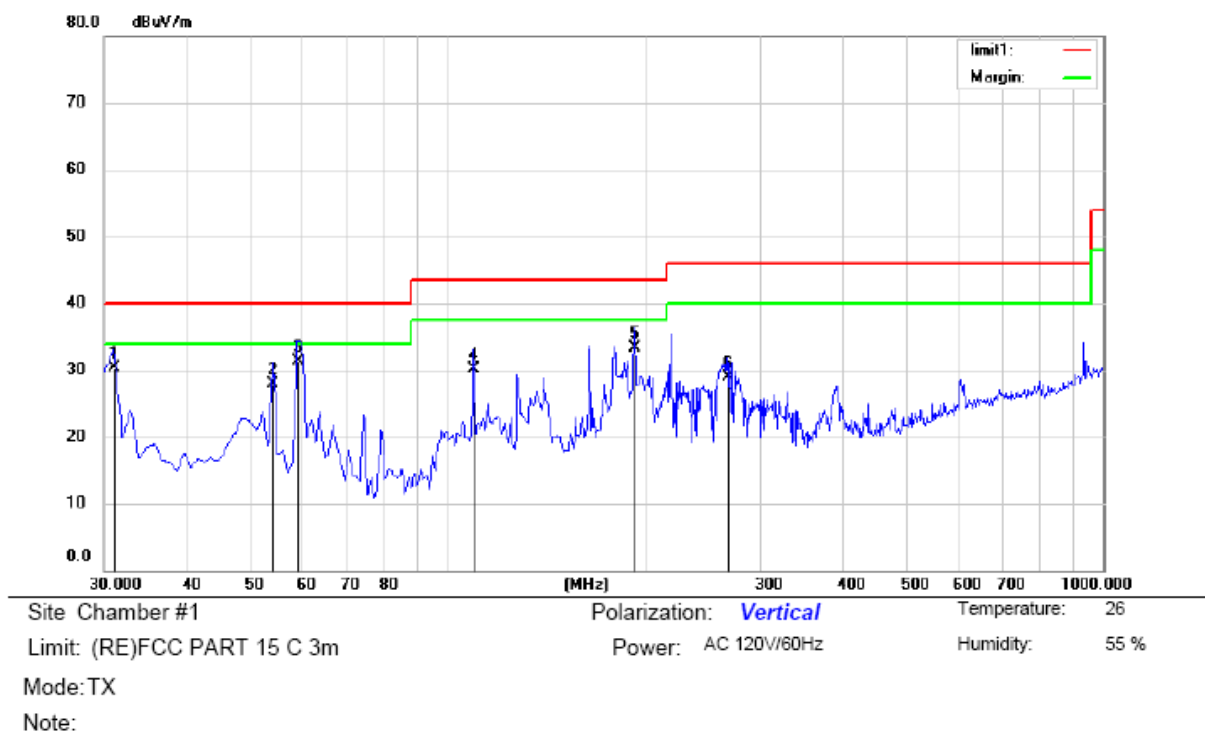
Humidity: 55 %

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)	Note
8.53	V	31.15	69.54	-38.39	QP
12.32	V	29.83	69.54	-39.71	QP
14.56	V	32.51	69.54	-37.03	QP
17.12	V	33.69	69.54	-35.85	QP
21.78	V	35.47	69.54	-34.07	QP
28.44	V	36.52	69.54	-33.02	QP



Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)	Note
6.17	H	32.63	69.54	-36.91	QP
11.78	H	31.72	69.54	-37.82	QP
15.22	H	35.86	69.54	-33.68	QP
20.66	H	36.11	69.54	-33.43	QP
25.34	H	33.27	69.54	-36.27	QP
27.21	H	36.53	69.54	-33.01	QP

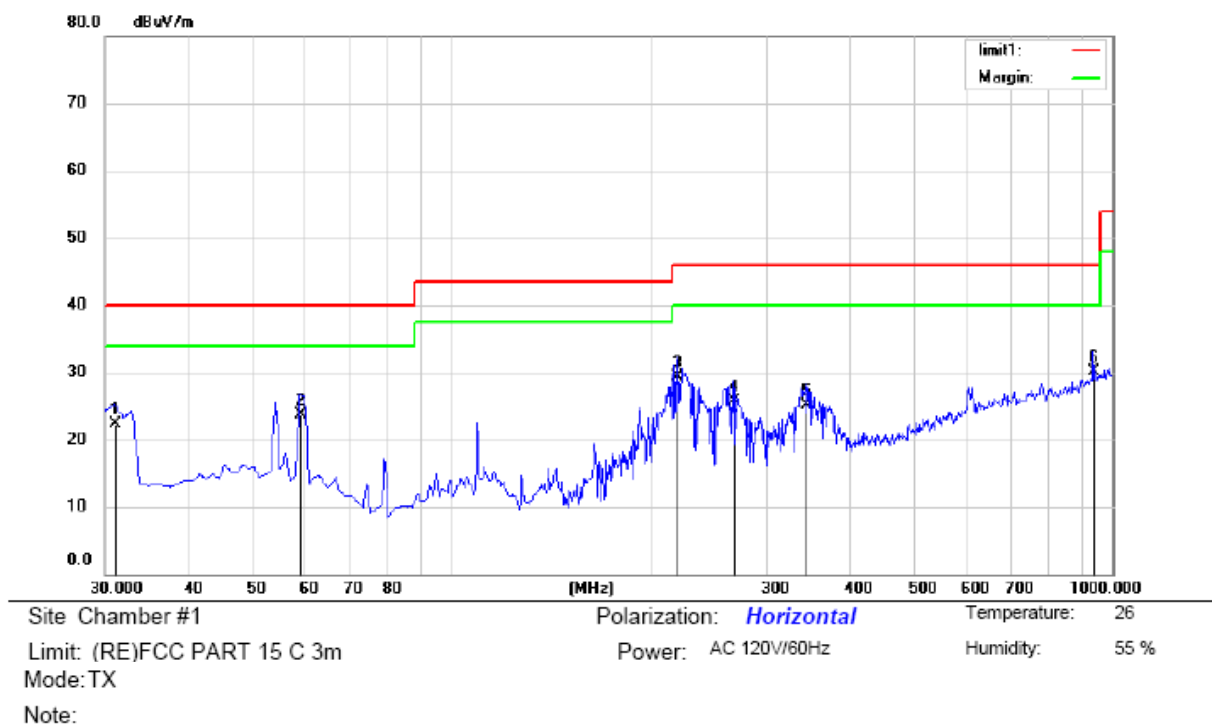
Radiated Emission (30MHz-1GHz):



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree
1		30.9700	49.10	-18.88	30.22	40.00	-9.78	QP		
2		54.2500	43.80	-15.86	27.94	40.00	-12.06	QP		
3	*	59.1000	48.31	-16.91	31.40	40.00	-8.60	QP		
4		109.5400	48.54	-18.38	30.16	43.50	-13.34	QP		
5		192.9600	51.27	-17.91	33.36	43.50	-10.14	QP		
6		266.6800	43.83	-14.85	28.98	46.00	-17.02	QP		

*:Maximum data x:Over limit !:over margin

Operator:

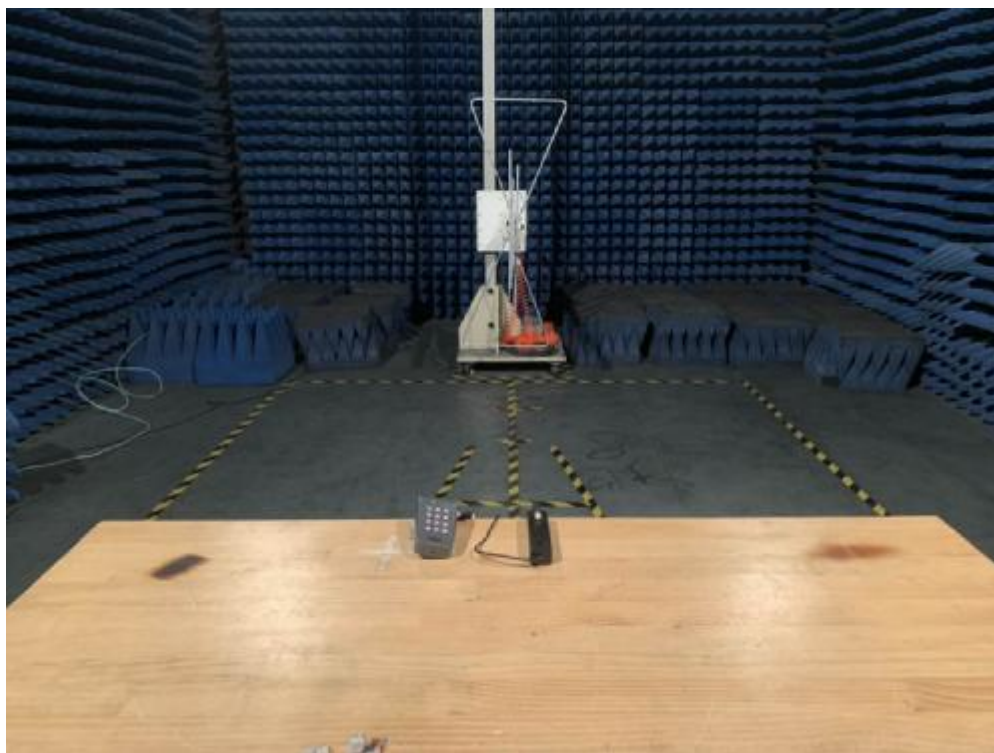
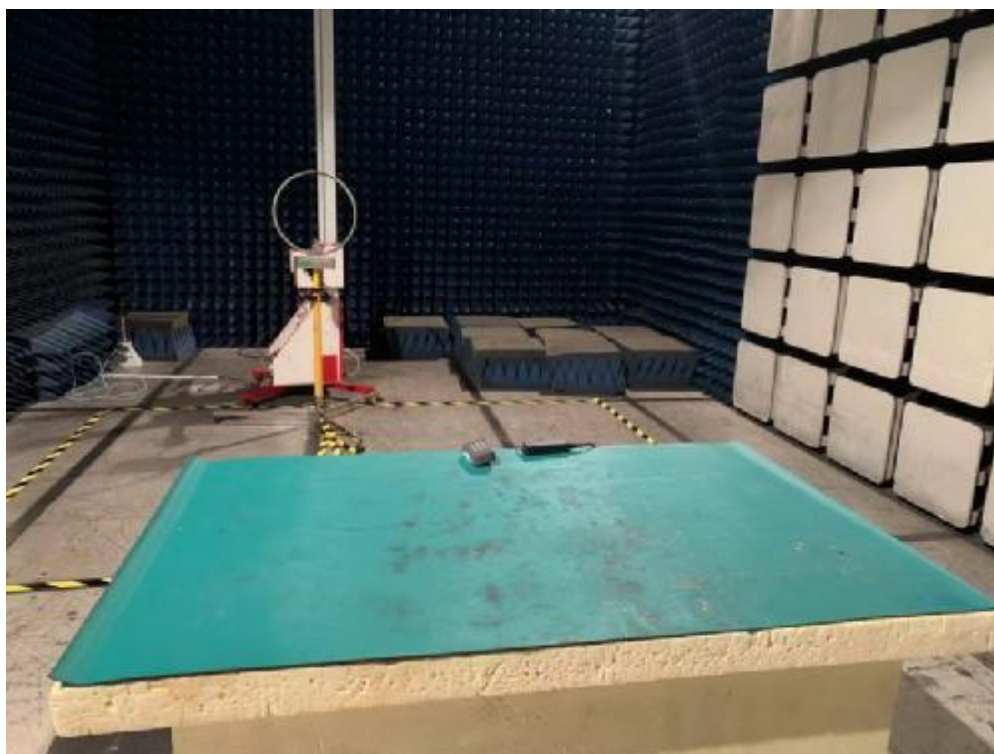


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1		30.9700	41.21	-18.88	22.33	40.00	-17.67	QP		
2		59.1000	40.55	-16.91	23.64	40.00	-16.36	QP		
3		219.1500	46.10	-16.82	29.28	46.00	-16.72	QP		
4		266.6800	40.50	-14.85	25.65	46.00	-20.35	QP		
5		345.2500	37.40	-12.25	25.15	46.00	-20.85	QP		
6	*	937.9200	30.90	-0.82	30.08	46.00	-15.92	QP		

*:Maximum data x:Over limit !:over margin

Operator:

5.6 Radiated Measurement Photos:



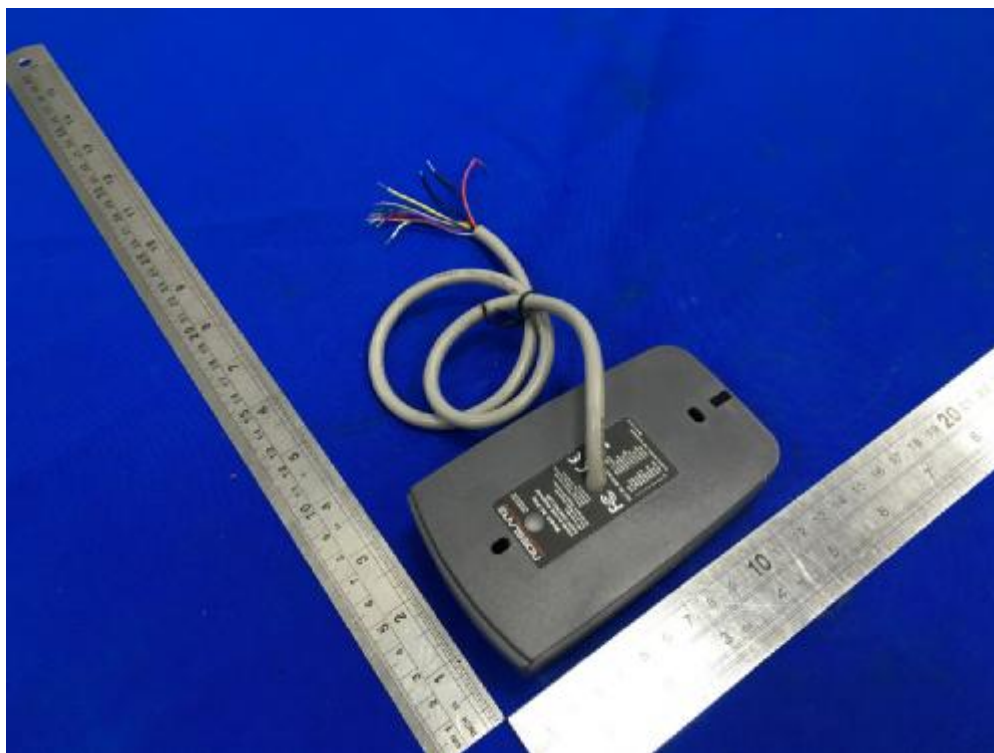
6. ANTENNA REQUIREMENT

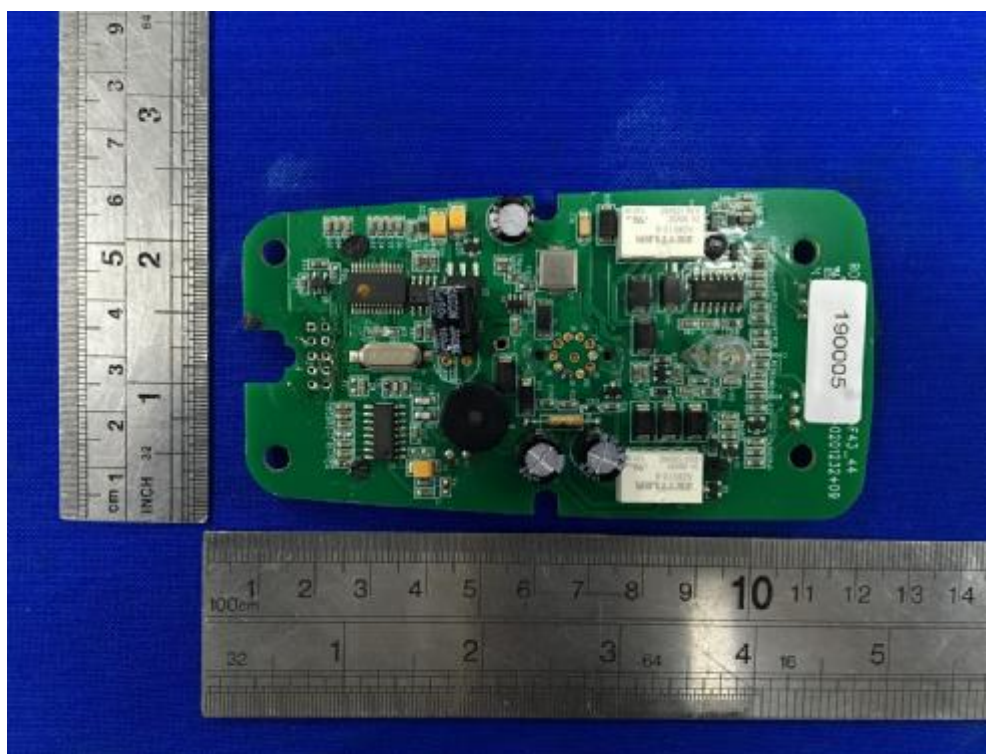
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

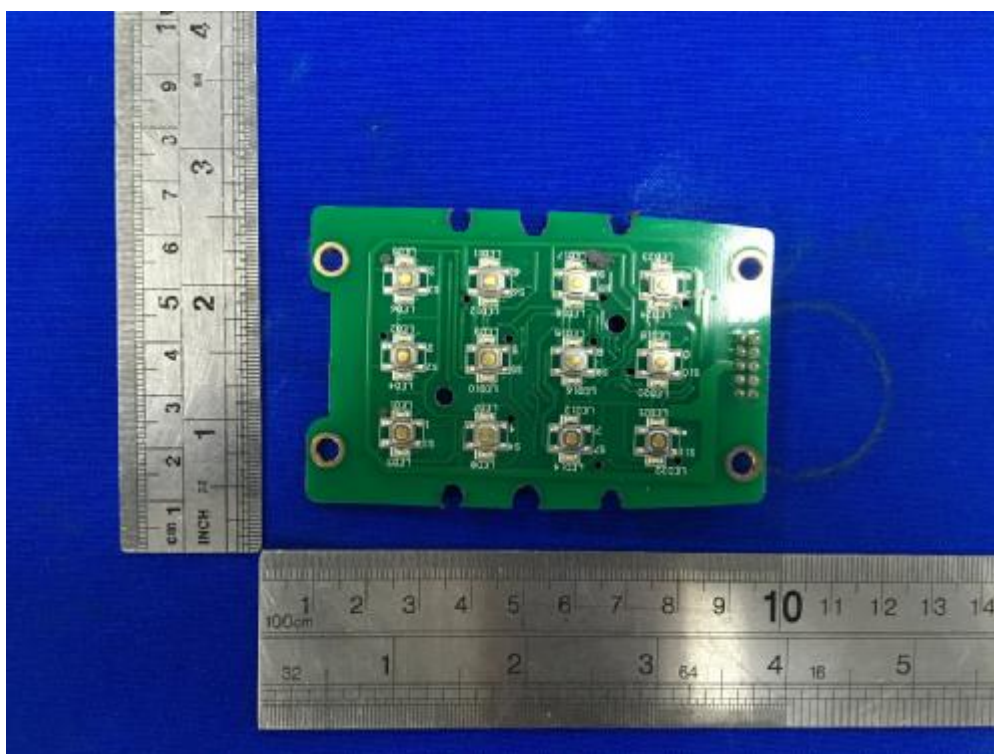
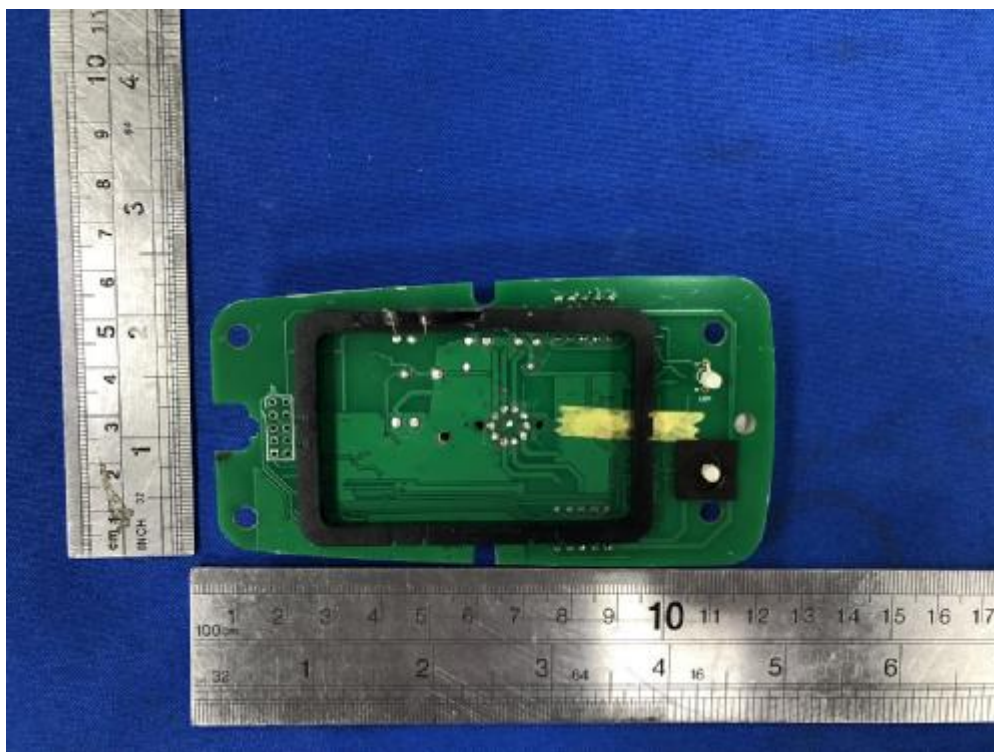
6.1 Result

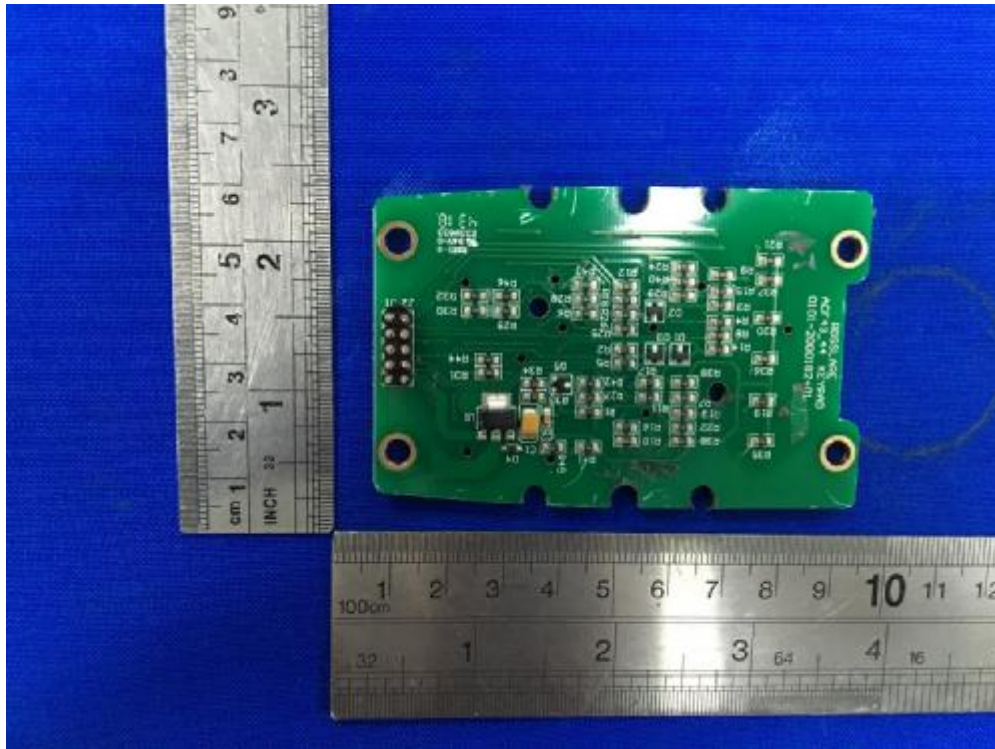
The antenna is permanently attached on PCB, no consideration of replacement. Please refer to internal Photos for details.

APPENDIX I (Photos of EUT)









-----The end-----