

FCC TEST REPORT
for
HuiZhou Vezon Electronic Technology Co., Ltd.

RAPID AR Wall Lock
Model No.: 98185

Prepared for : HuiZhou Vezon Electronic Technology Co., Ltd.
Address : 4/F Building B, 10Moons Technology Park, No.6 Hechang Road,
Zhongkai High-Tech Zone, Huizhou City, Guangdong, China

Prepared By : Shenzhen Anbotek Compliance Laboratory Limited
Address : 1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road,
Nanshan District, Shenzhen, Guangdong, China
Tel: (86) 755-26066544
Fax: (86) 755-26014772

Report Number : R011610162I
Date of Test : Oct. 15~ Nov. 22, 2016
Date of Report : Nov. 23, 2016

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TEST REPORT VERIFICATION

Applicant : HuiZhou Vezon Electronic Technology Co., Ltd.
Manufacturer : HuiZhou Vezon Electronic Technology Co., Ltd.
EUT : RAPID AR Wall Lock
Model No. : 98185
Trade Mark : Hornady Security
Rating : Input DC 12.0V, 1.0A
(Via Adapter Input: AC 100-240V, 50/60Hz, 0.6A, Output:
DC 12.0V, 1.0A, or DC 6V by "AAA" Battery*4)

Measurement Procedure Used:

FCC Part 15 Subpart C 2016, 15.207&15.209

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited To determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits both radiated and conducted emissions. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited Is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Test : Oct. 15~ Nov. 22, 2016

Prepared by :

Baron Wen

(Engineer/ Baron Wen)

Reviewer :

Amy Ding

(Project Manager/ Amy Ding)

Approved & Authorized Signer :

Tom Chen

(Manager/ Tom Chen)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	: RAPID AR Wall Lock
Model Number	: 98185
Test Power Supply	: AC 120V, 60Hz for adapter/ AC 240V, 60Hz for adapter
Adapter	: Model No.: RK-1201000 Input: AC 100-240V, 50/60Hz, 0.6A Output: DC 12.0V, 1.0A
Frequency	: 125KHz
Modulation	: ASK
Antenna Type	: Loop Antenna
Antenna Gain	: 0dBi
Applicant Address	: HuiZhou Vezon Electronic Technology Co., Ltd. : 4/F Building B, 10Moons Technology Park, No.6 Hechang Road, Zhongkai High-Tech Zone, Huizhou City, Guangdong, China
Manufacturer Address	: HuiZhou Vezon Electronic Technology Co., Ltd. : 4/F Building B, 10Moons Technology Park, No.6 Hechang Road, Zhongkai High-Tech Zone, Huizhou City, Guangdong, China
Factory Address	: HuiZhou Vezon Electronic Technology Co., Ltd. : 4/F Building B, 10Moons Technology Park, No.6 Hechang Road, Zhongkai High-Tech Zone, Huizhou City, Guangdong, China
Date of Sample received	: Oct. 15, 2016
Date of Test	: Oct. 15~ Nov. 22, 2016

1.2. Description of Test Facility

N/A

1.3. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 752021

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 752021, July 06, 2016.

IC-Registration No.: 8058A-1

Shenzhen Anbotek Compliance Laboratory Limited., EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration 8058A, Jun. 13, 2016.

Test Location

All Emissions tests were performed at
Shenzhen Anbotek Compliance Laboratory Limited. at 1/F., Building 1, SEC
Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong,
China

1.4. Measurement Uncertainty

Radiation Uncertainty	:	Ur = 4.1 dB (Horizontal) Ur = 4.3 dB (Vertical)
Conduction Uncertainty	:	Uc = 3.4dB

2. Test Procedure

GENERAL: This report shall NOT be reproduced except in full without the written approval of Shenzhen Anbotek Compliance Laboratory Limited. The EUT was transmitting a test signal during the testing.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-2009 using a spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100KHz and the video bandwidth was 300KHz up to 1.0GHz and 1.0MHz with a video BW of 3.0MHz above 1.0GHz. The ambient temperature of the EUT was 74.3oF with a humidity of 69%.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Preselector was accounted for in the Spectrum Analyzer Meter Reading.

Example:

Freq (MHz) METER READING + ACF = FS
33 20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

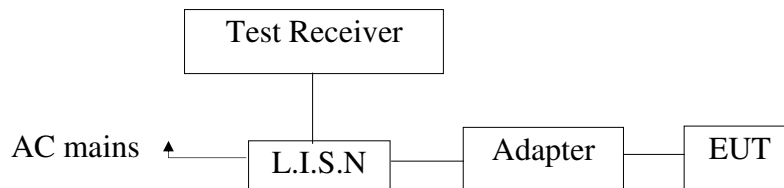
ANSI STANDARD C63.4-2009 10.1.7 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

3. Conducted Emission Test

3.1. Block Diagram of Test Setup

3.1.1. Block diagram of connection between the EUT and simulators



3.2. Power Line Conducted Emission Measurement Limits (15.207)

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

3.3. Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

3.4. Operating Condition of EUT

3.4.1. Setup the EUT and simulator as shown as Section 3.1.

3.4.2. Turn on the power of all equipment.

3.4.3. Let the EUT work in test mode (RFID Mode) and measure it.

3.5. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.10-2013 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9KHz.

The frequency range from 150KHz to 30MHz is checked.

The test results are reported on Section 3.6.

3.6. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Two-Line V-network	Rohde & Schwarz	ENV216	100055	Jul. 19, 2016	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Jun. 17, 2016	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Jun. 17, 2016	1 Year

3.7. Power Line Conducted Emission Measurement Results

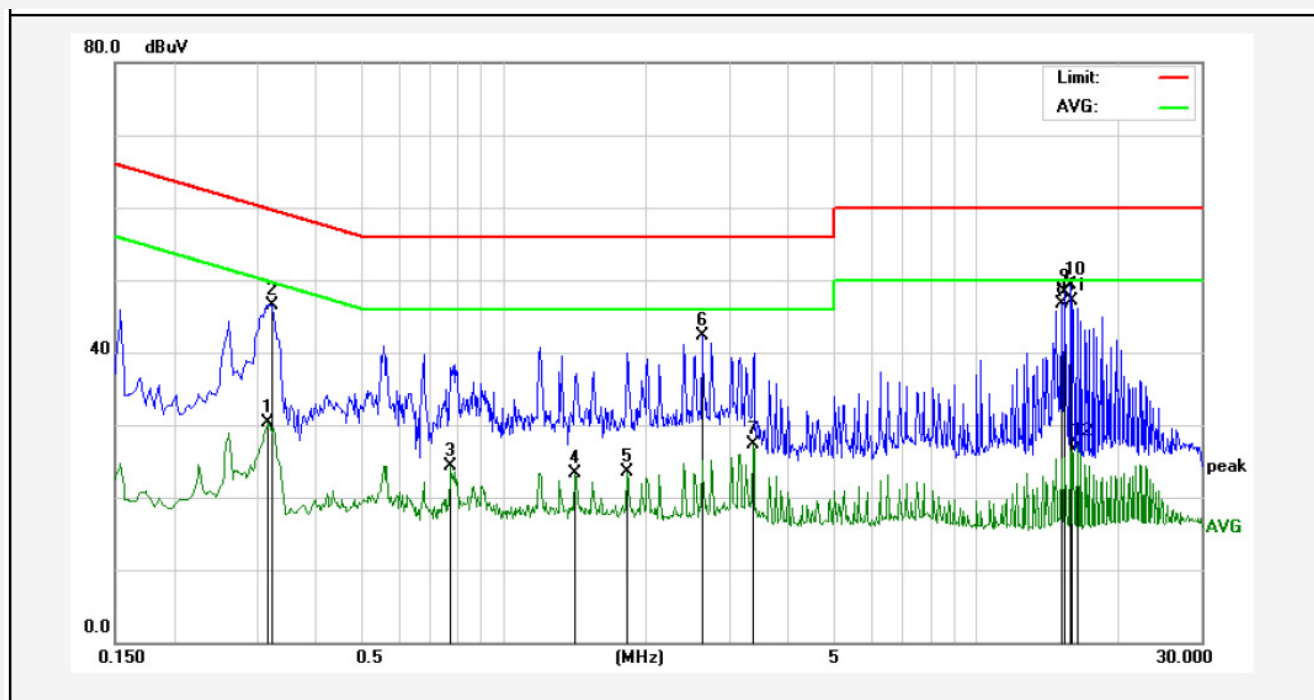
PASS.

The frequency range from 150KHz to 30 MHz is investigated.

Please refer the following pages.

CONDUCTED EMISSION TEST DATA

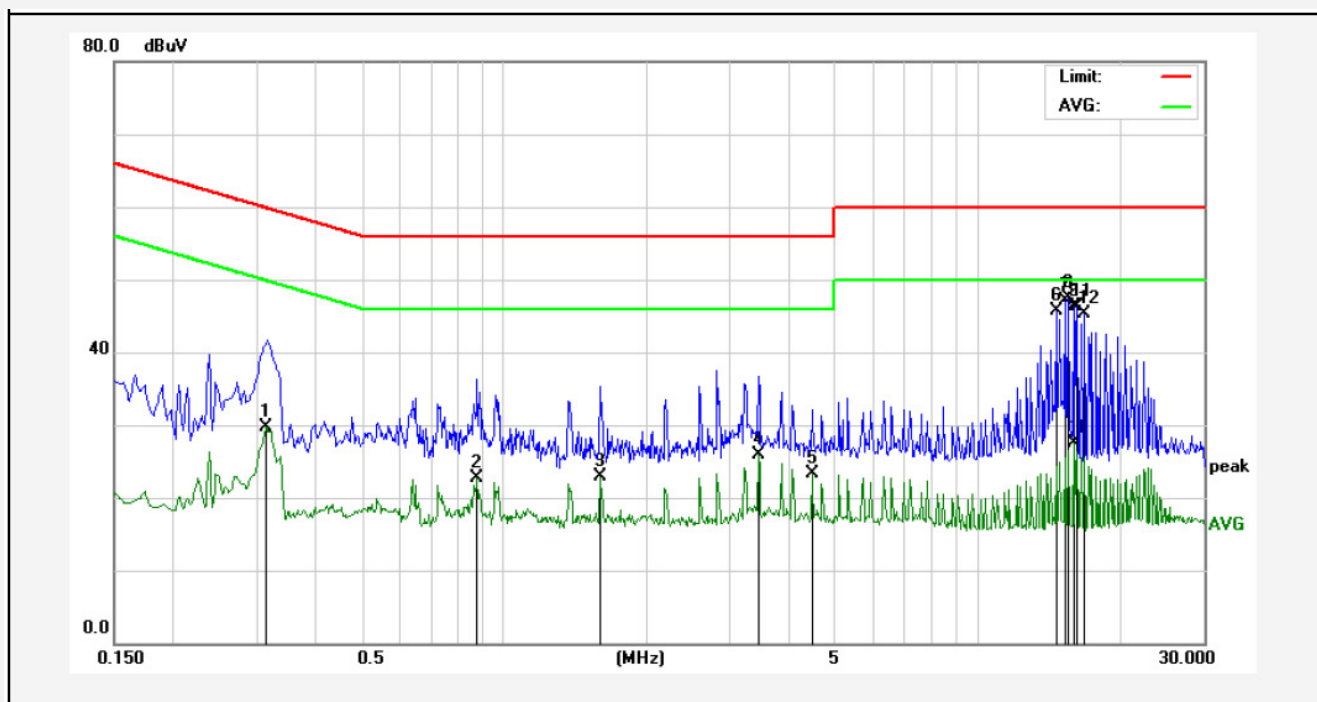
Test Site: 1# Shielded Room
Operating Condition: RFID Mode
Test Specification: AC 120V, 60Hz for adapter
Comment: Live Line
Tem.:24℃ Hum.:49%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.3180	10.33	19.90	30.23	49.76	-19.53	AVG	
2	0.3220	26.55	19.90	46.45	59.65	-13.20	QP	
3	0.7740	4.29	20.06	24.35	46.00	-21.65	AVG	
4	1.4140	3.27	20.13	23.40	46.00	-22.60	AVG	
5	1.8220	3.32	20.14	23.46	46.00	-22.54	AVG	
6	2.6300	22.07	20.15	42.22	56.00	-13.78	QP	
7	3.3780	7.07	20.17	27.24	46.00	-18.76	AVG	
8	15.1860	26.50	20.26	46.76	60.00	-13.24	QP	
9	15.4180	28.07	20.27	48.34	60.00	-11.66	QP	
10	15.8220	29.11	20.27	49.38	60.00	-10.62	QP	
11	16.0540	26.87	20.28	47.15	60.00	-12.85	QP	
12	16.4660	6.76	20.28	27.04	50.00	-22.96	AVG	

CONDUCTED EMISSION TEST DATA

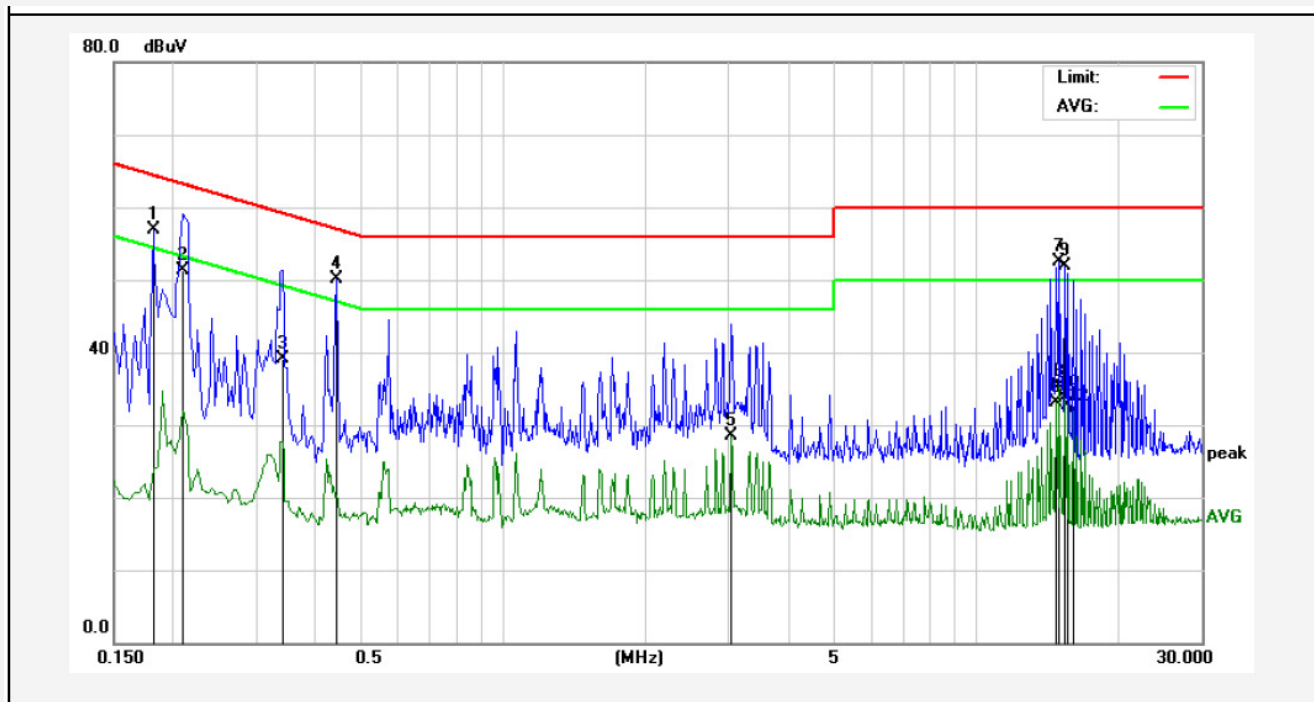
Test Site: 1# Shielded Room
Operating Condition: RFID Mode
Test Specification: AC 120V, 60Hz for adapter
Comment: Neutral Line
Tem.:24℃ Hum.:49%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.3140	9.88	19.90	29.78	49.86	-20.08	AVG	
2	0.8780	2.57	20.09	22.66	46.00	-23.34	AVG	
3	1.5980	2.75	20.13	22.88	46.00	-23.12	AVG	
4	3.4460	5.68	20.17	25.85	46.00	-20.15	AVG	
5	4.4660	3.17	20.19	23.36	46.00	-22.64	AVG	
6	14.6220	25.48	20.27	45.75	60.00	-14.25	QP	
7	15.2700	26.92	20.26	47.18	60.00	-12.82	QP	
8	15.5060	27.28	20.27	47.55	60.00	-12.45	QP	
9	15.9180	25.94	20.27	46.21	60.00	-13.79	QP	
10	15.9180	7.19	20.27	27.46	50.00	-22.54	AVG	
11	16.1500	26.00	20.28	46.28	60.00	-13.72	QP	
12	16.7860	25.10	20.29	45.39	60.00	-14.61	QP	

CONDUCTED EMISSION TEST DATA

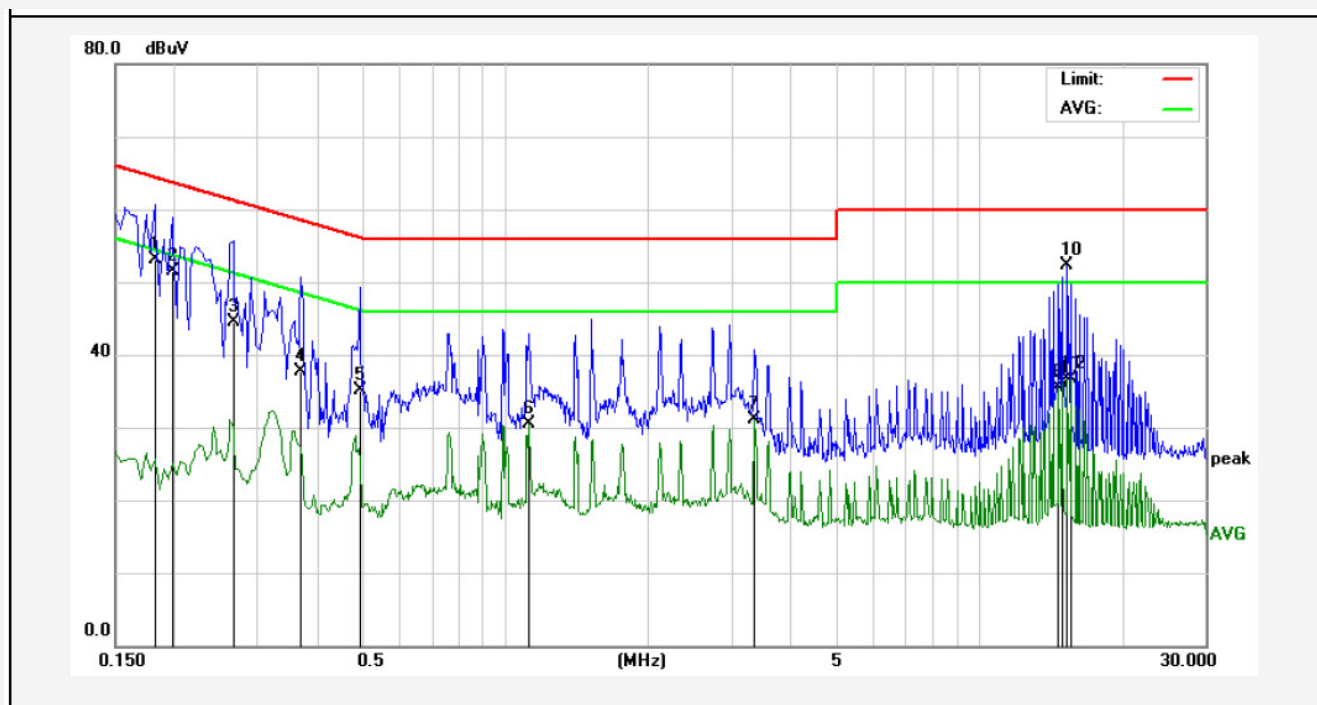
Test Site: 1# Shielded Room
Operating Condition: RFID Mode
Test Specification: AC 240V, 60Hz for adapter
Comment: Live Line
Tem.:24℃ Hum.:49%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1819	37.06	19.90	56.96	64.39	-7.43	QP	
2	0.2100	31.41	19.90	51.31	63.20	-11.89	QP	
3	0.3420	19.17	19.91	39.08	59.15	-20.07	QP	
4	0.4460	30.16	19.96	50.12	56.95	-6.83	QP	
5	3.0380	8.26	20.16	28.42	46.00	-17.58	AVG	
6	14.8180	12.85	20.26	33.11	50.00	-16.89	AVG	
7	15.0460	32.19	20.26	52.45	60.00	-7.55	QP	
8	15.0460	15.02	20.26	35.28	50.00	-14.72	AVG	
9	15.4580	31.68	20.27	51.95	60.00	-8.05	QP	
10	15.4580	13.35	20.27	33.62	50.00	-16.38	AVG	
11	15.6860	12.50	20.27	32.77	50.00	-17.23	AVG	
12	16.0980	11.67	20.28	31.95	50.00	-18.05	AVG	

CONDUCTED EMISSION TEST DATA

Test Site: 1# Shielded Room
Operating Condition: RFID Mode
Test Specification: AC 240V, 60Hz for adapter
Comment: Neutral Line
Tem.:24℃ Hum.:49%



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Over Limit (dB)	Detector	Remark
1	0.1819	33.19	19.90	53.09	64.39	-11.30	QP	
2	0.1980	31.60	19.90	51.50	63.69	-12.19	QP	
3	0.2660	24.69	19.89	44.58	61.24	-16.66	QP	
4	0.3700	17.78	19.92	37.70	58.50	-20.80	QP	
5	0.4940	15.07	19.98	35.05	56.10	-21.05	QP	
6	1.1180	10.29	20.12	30.41	46.00	-15.59	AVG	
7	3.3620	10.98	20.17	31.15	46.00	-14.85	AVG	
8	14.7420	15.16	20.26	35.42	50.00	-14.58	AVG	
9	14.9700	15.82	20.26	36.08	50.00	-13.92	AVG	
10	15.3820	32.04	20.27	52.31	60.00	-7.69	QP	
11	15.3820	16.50	20.27	36.77	50.00	-13.23	AVG	
12	15.6100	16.39	20.27	36.66	50.00	-13.34	AVG	

4. RADIATED EMISSION MEASUREMENT

4.1. Radiated Emission Limits

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

Note:

- (1) The tighter limit shall apply at the boundary between two frequency range.
- (2) Limitation expressed in dBuV/m is calculated by 20log Emission Level (uV/m).
- (3) If measurement is made at 3m distance, then F.S Limitation at 3m distance is adjusted by using the formula of $Ld1 = Ld2 * (d2/d1)^2$.

Example:

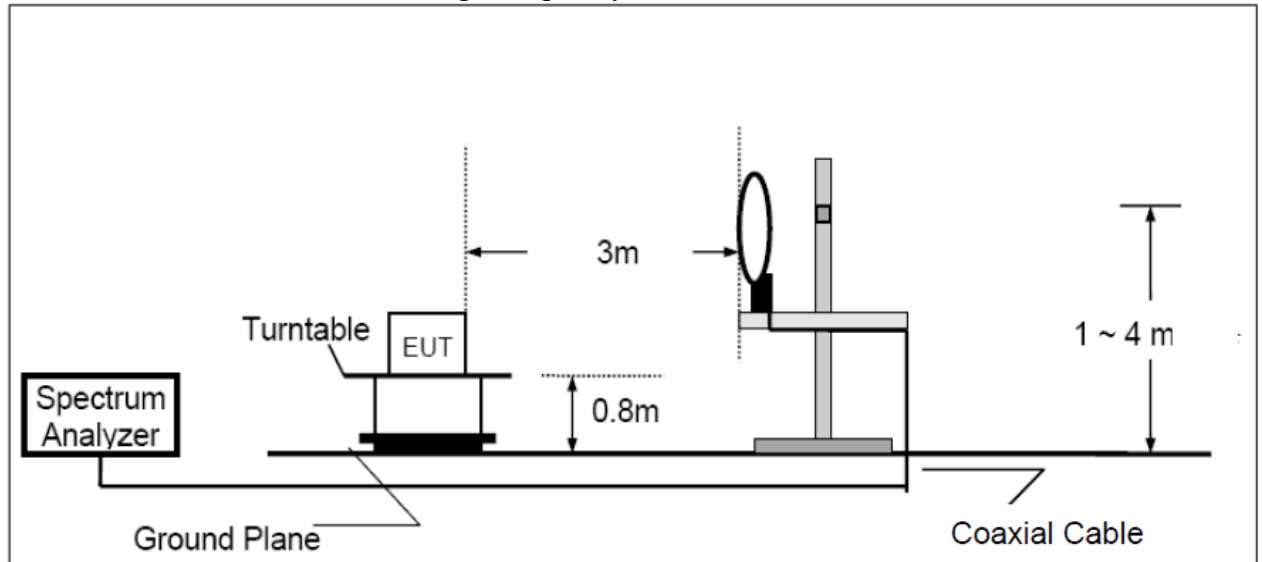
F.S Limit at 30m distance is 30uV/m , then F.S Limitation at 3m distance is adjusted as
 $Ld1 = L1 = 30uV/m * (10)^2 = 100 * 30 uV/m$

4.2. Test Procedure

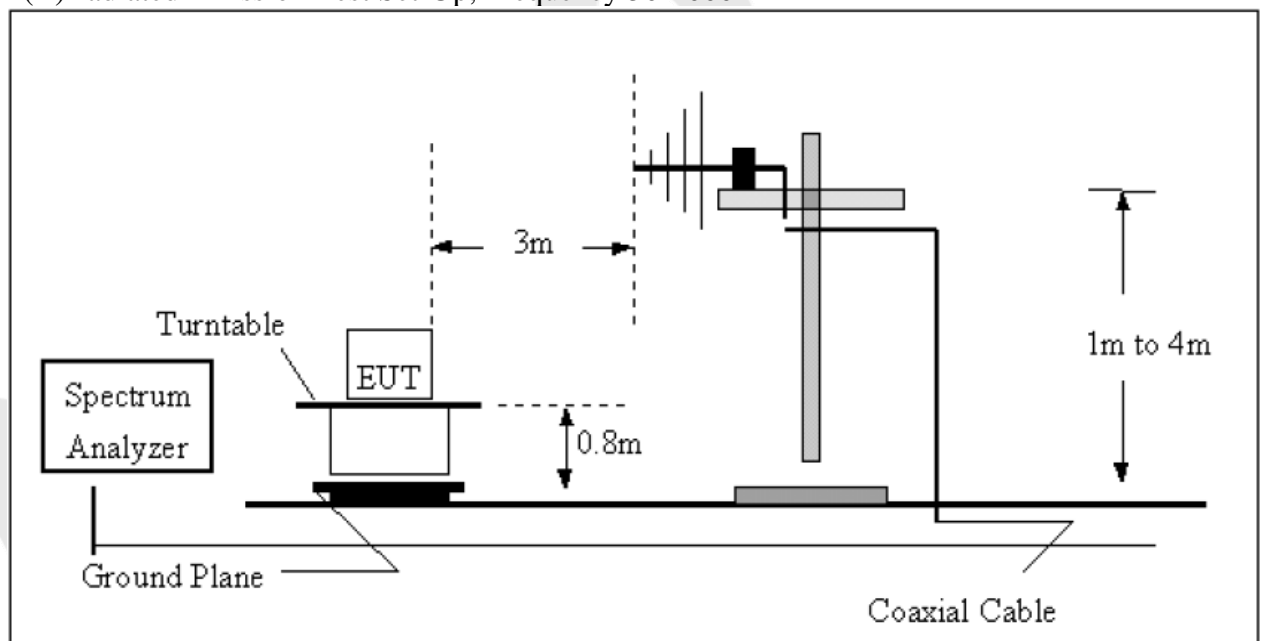
- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. 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.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.3. Test Setup

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



(B) Radiated Emission Test Set-Up, Frequency 30-1000MHz



Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Jun. 17, 2016	1 Year
2.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	May 06, 2016	1 Year
3.	Pre-amplifier	SONOMA	310N	186860	Jun. 17, 2016	1 Year
4.	Loop Antenna	Schwarzbeck	FMZB 1519	012	May 11, 2016	1 Year

4.4. Test Results (Below 30MHz)

Freq.(KHz)	Reading at 3m (dBuV/m)	Factor (dB) Cable loss	Result at 3m (dBuV/m)	Field Strength Limit (uV/m)	Required Measurement Distance (m)	Limitation Converted 3m dist. (dBuV/m)	Over Limit (dB)	Detector (PK/AV)
125.00	80.21	16.00	96.21	19.20	300.00	105.67	-9.46	PK
250.00	49.02	15.60	64.62	9.60	300.00	99.66	-35.04	PK
375.00	48.52	15.30	63.82	6.40	300.00	96.12	-32.30	PK
500.00	42.69	14.80	57.49	48.00	30.00	73.62	-16.13	PK
625.00	41.33	14.50	55.83	38.40	30.00	71.69	-15.86	PK
800.00	38.45	13.95	52.40	30.00	30.00	69.54	-17.14	PK
925.00	--	--	--	--	--	--	--	--
1050.00	--	--	--	--	--	--	--	--
1250.00	--	--	--	--	--	--	--	--
1500.00	--	--	--	--	--	--	--	--

Remark:

(1) Spectrum Setting:

9 KHz – 150 KHz, RBW= 1 KHz, VBW=1 KHz, Sweep time = 200 ms.

150 K Hz – 30 MHz, RBW= 9 KHz, VBW=9 KHz, Sweep time = 200 ms.

(2) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measure-ment didn't perform.

(3) The Log-Bicon Antenna will use to test frequency range from 30MHz to 1000MHz and the Loop Antenna will use to test frequency below 30MHz.

(4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table

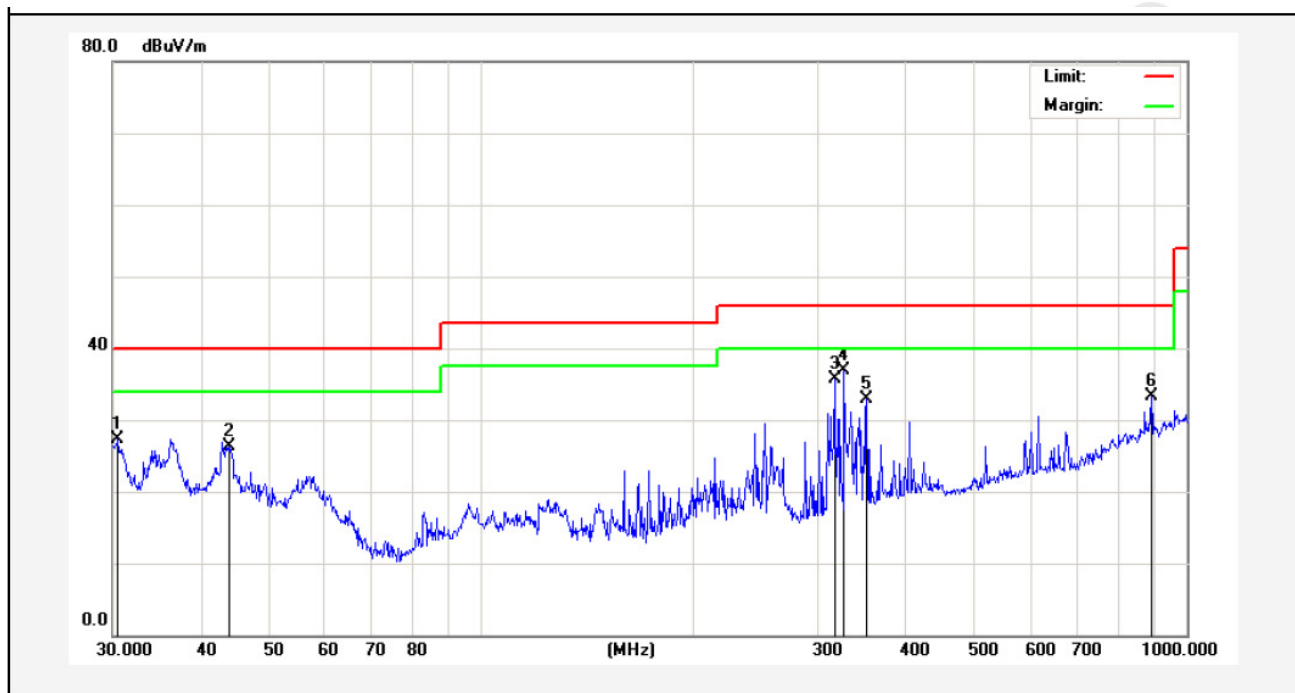
4.5. Test Results (Between 30-1000MHz)

Pass

The EUT was tested on (Standby mode, RFID Mode, Key-press Mode) modes, only the worst data of (RFID Mode) is attached in the following pages.

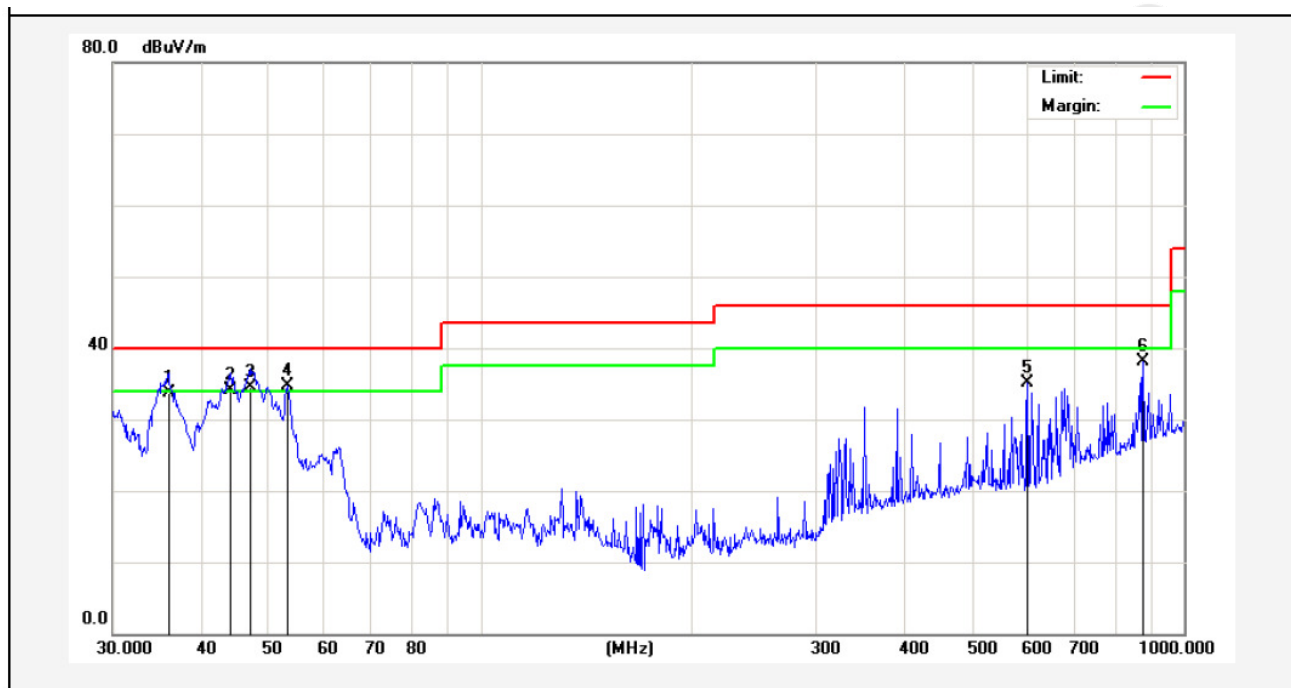
Only the worst case (x orientation).

Job No.:	011610162I	Polarziation:	Horizontal
Standard:	(RE)FCC PART15 C _3m	Power Source:	AC 120V, 60Hz for adapter
Test item:	Radiation Test	Temp.(C)/Hum.(%RH):	24.3(C)/55%RH
Test Mode:	RFID Mode	Distance:	3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	30.5305	43.97	-16.66	27.31	40.00	-12.69	QP			
2	43.9658	38.18	-11.92	26.26	40.00	-13.74	QP			
3	316.5889	51.45	-15.67	35.78	46.00	-10.22	QP			
4	326.7395	51.78	-14.93	36.85	46.00	-9.15	QP			
5	351.7078	46.88	-13.93	32.95	46.00	-13.05	QP			
6	890.7278	38.32	-4.93	33.39	46.00	-12.61	QP			

Job No.:	011610162I	Polarization:	Vertical
Standard:	(RE)FCC PART15 C _3m	Power Source:	AC 120V, 60Hz for adapter
Test item:	Radiation Test	Temp.(C)/Hum.(% RH):	24.3(C)/55% RH
Test Mode:	RFID Mode	Distance:	3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	36.0007	47.20	-13.50	33.70	40.00	-6.30	QP			
2	44.1200	46.08	-11.98	34.10	40.00	-5.90	QP			
3	47.1599	47.89	-13.29	34.60	40.00	-5.40	QP			
4	53.1313	49.49	-14.79	34.70	40.00	-5.30	QP			
5	599.3212	44.27	-9.25	35.02	46.00	-10.98	QP			
6	875.2469	42.30	-4.18	38.12	46.00	-7.88	QP			

5. Antenna Application

5.1. Antenna Requirement

The EUT'S antenna should meet the requirement of FCC part 15C section 15.203.

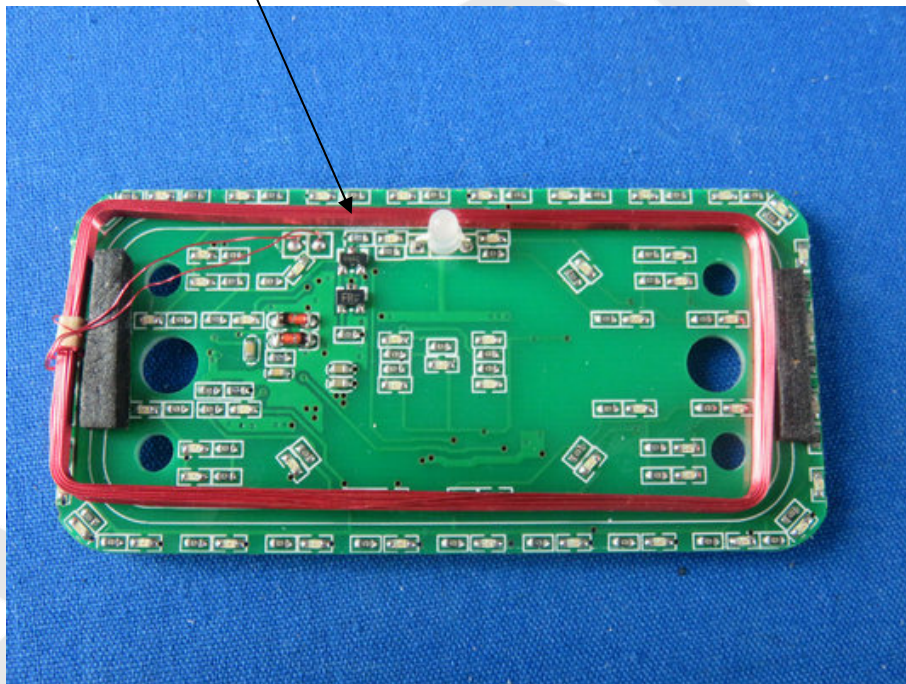
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Antenna requirement must meet at least one of the following:

- 1) Antenna must be permanently attached to device.
- 2) The antenna must use a unique type of connector to attach to the device.
- 3) Device must be professionally installed. The installer shall be responsible for ensuring that the correct antenna is employed by the device.

5.2. Result

The EUT's antenna used a Loop Antenna, The antenna's gain is 0dBi and meets the requirement.

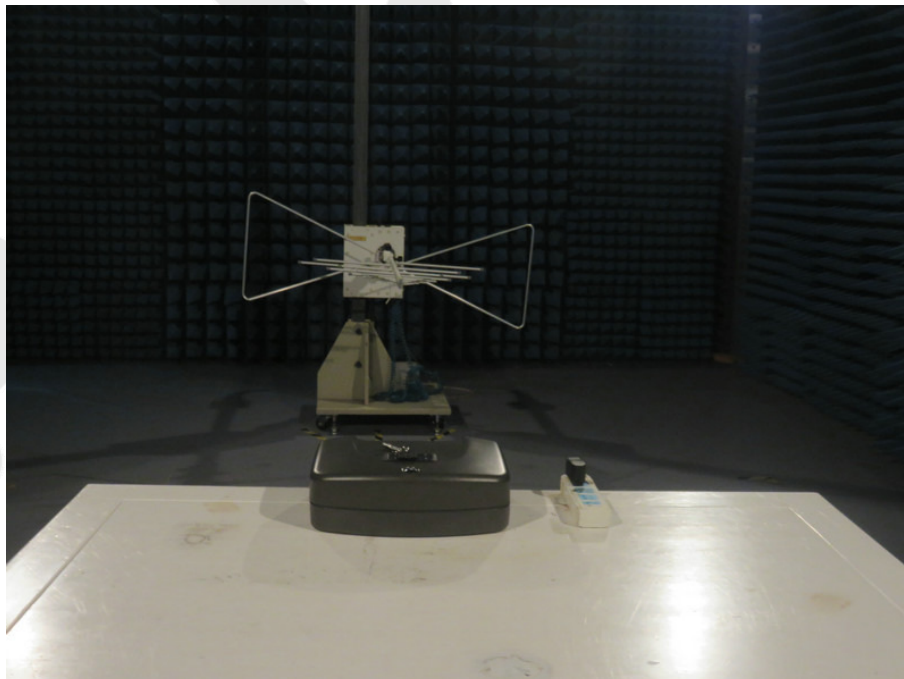


6. PHOTOGRAPH

6.1 Photo of Power Line Conducted Emission Measurement



6.2 Photo of Radiation Emission Test





APPENDIX I (EXTERNAL PHOTOS)

1. Figure
The EUT-Overall View



2. Figure
The EUT-Top View



3. Figure
The EUT-Bottom View



4. Figure
The EUT-Front View



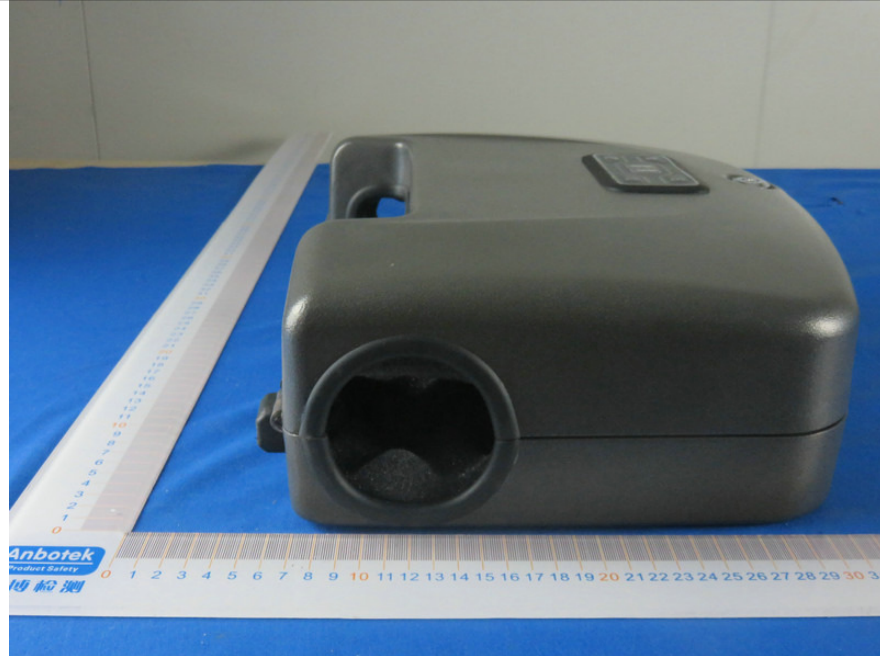
5. Figure
The EUT-Back View



6. Figure
The EUT-Right View

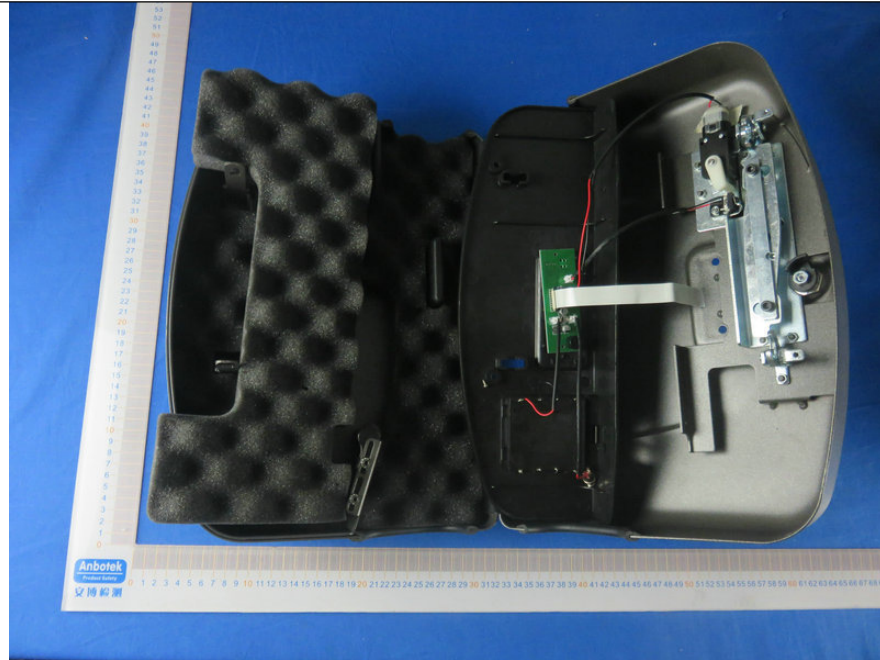


7. Figure
The EUT-Left View

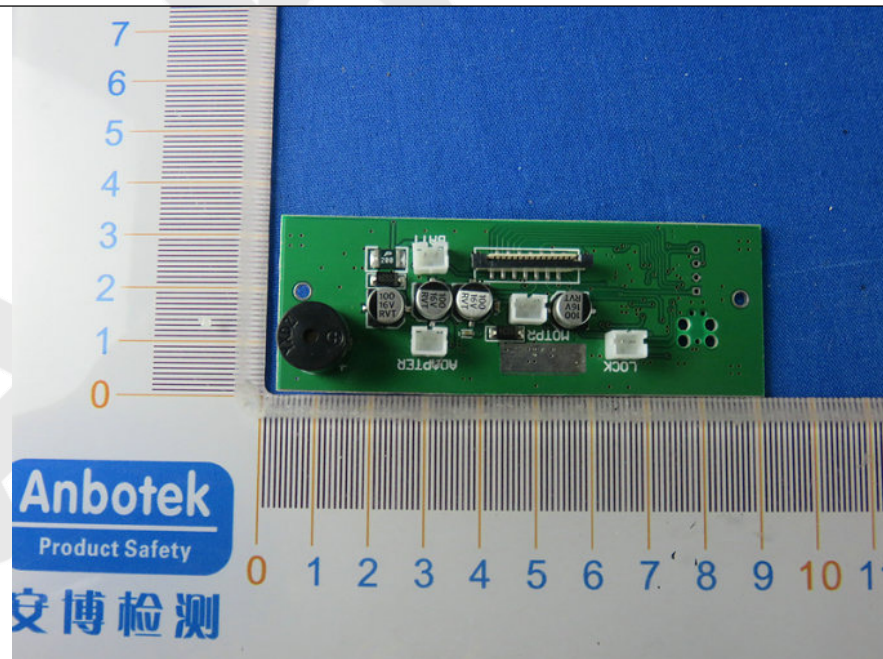


APPENDIX II (INTERNAL PHOTOS)

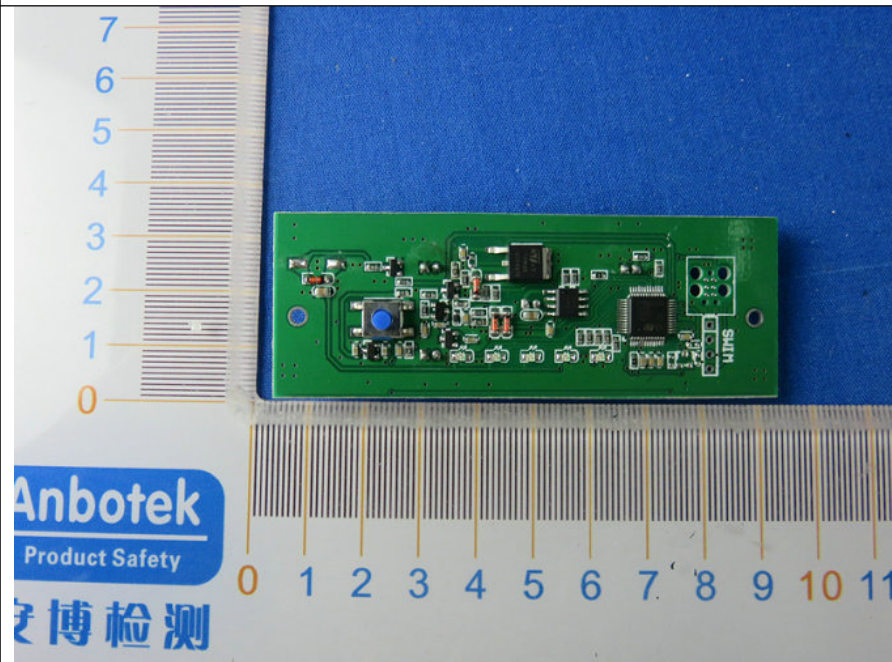
1. Figure
The EUT-Inside View



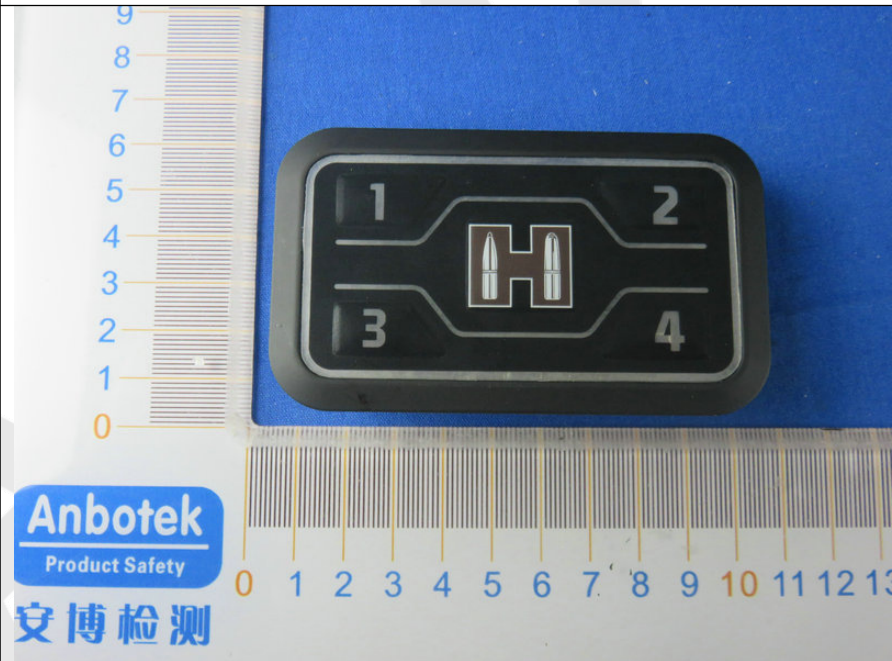
2. Figure
PCB of the EUT-Front View



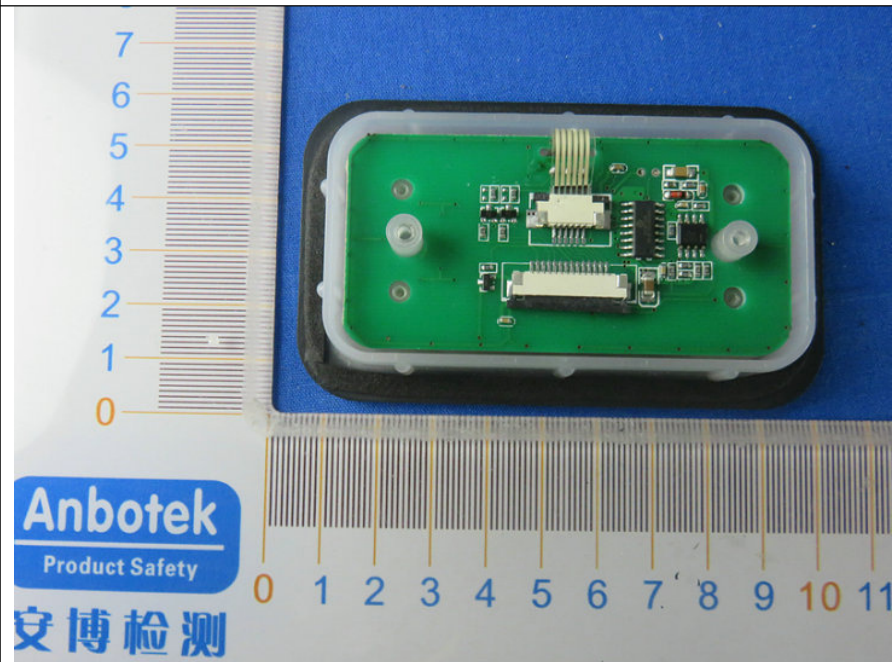
3. Figure
PCB of the EUT-Back View



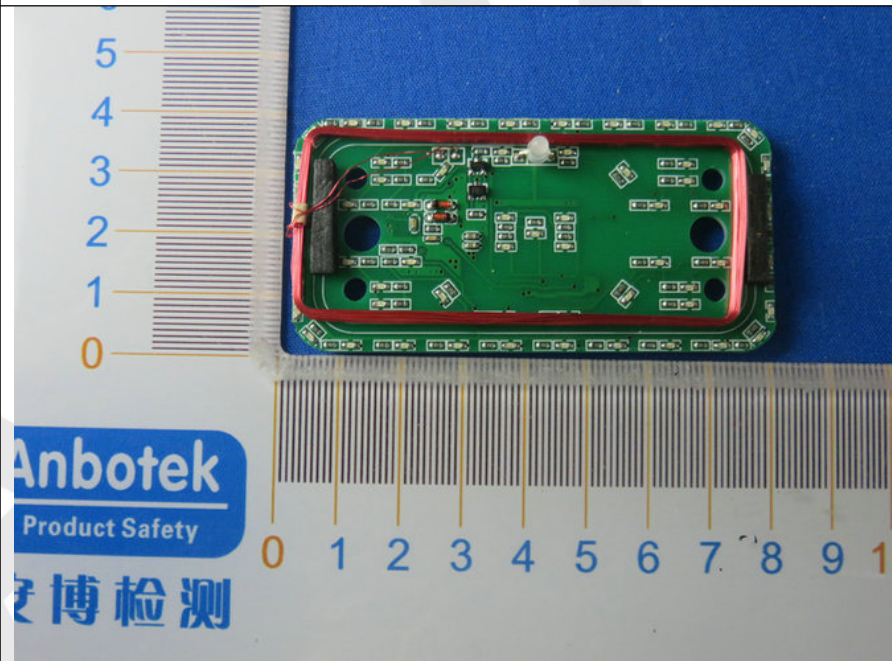
4. Figure
The EUT-Inside View



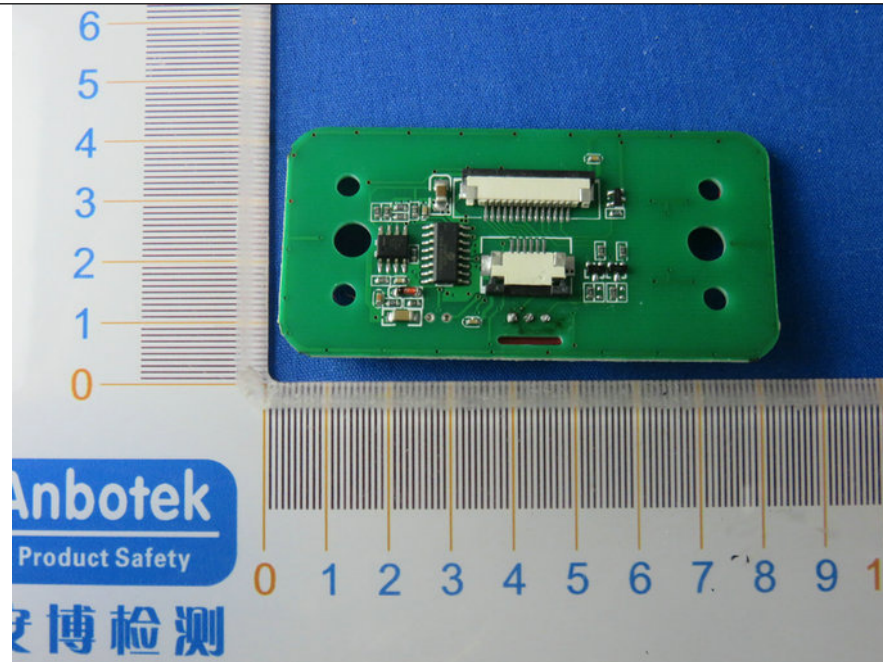
5. Figure
The EUT-Inside View



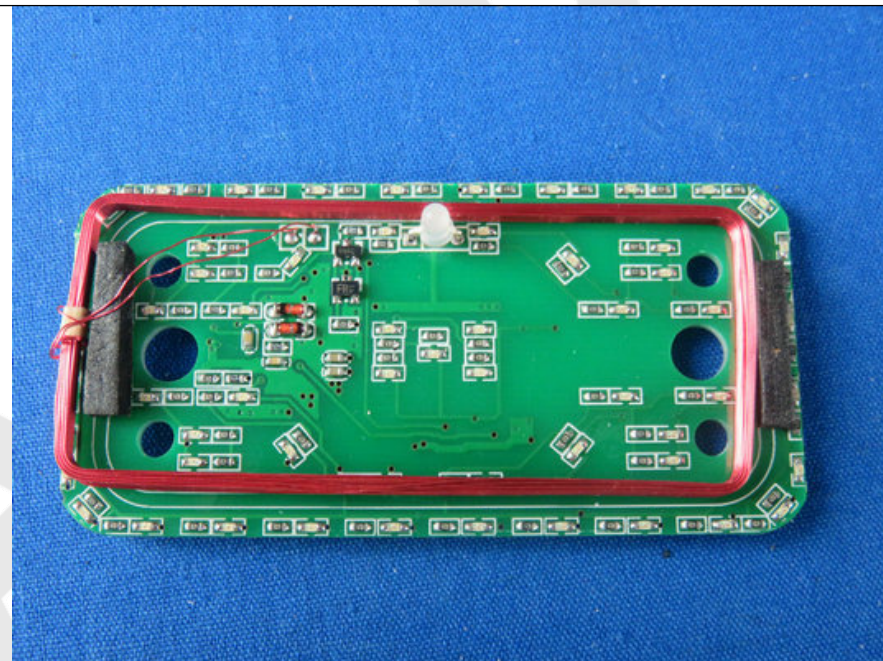
6. Figure
PCB of the EUT-Front View



7. Figure
PCB of the EUT-Back View



8. Figure
PCB of the EUT-Front View



9. Figure
PCB of the EUT-Back View

