TECHNICAL REPORT

卓時檢測 TIMEWAY TESTING LABORATORY

TESTING CNAS L2292

ISO/IEC17025 Accredited Lab.

Report No:	FCC1005213
File reference No:	2010-06-24
Applicant:	Longhorn Security Technology Co.,Ltd
Product:	Outdoor Intelligence Triple Technology Intruder Detector
Model No:	LH-934IC
Trademark:	Longhorn
Test Standards:	FCC Part 15 Subpart C, Paragraph 15.245
Test result:	It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4&FCC Part 15 Subpart C, Paragraph 15.245 regulations for the evaluation of electromagnetic compatibility

Approved By

Jack Chung

Jack Chung
Manager

Dated: June. 24 .2010

Results appearing herein relate only to the sample tested
The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO LTD

5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District, Shenzhen,CHINA.

Tel (755) 83448688 Fax (755) 83442996

Special Statement:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meets with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

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

CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 899988

The 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 No.:899988.

IC- Registration No.: IC5205A-01

The 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 No.: IC 5205A-01.

Test Report Conclusion

Content

TEST REPORT

1.0 **General Details**

1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO LTD

Address: 5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District, Shenzhen,CHINA.

Telephone: (755) 83448688

Fax: (755) 83442996

Site on File with the Federal Communications Commission – United Sates

Registration Number: 899988

For 3m & 10 m OATS

Site Listed with Industry Canada of Ottawa, Canada

Registration Number: IC: 5205A-01

For 3m & 10 m OATS

1.2 Applicant Details

Applicant: Longhorn Security Technology Co.,Ltd

Address: The 4th Building, 1st fool of the 5th Building, New and High Technology Industrial Park, Guangming, Wan Dai Hengguangming, Shenzhen, China

Telephone: +86-755-33265551

Fax: +86-755-33265577

1.3 Description of EUT

Product:	Outdoor Intelligence Triple Technology Intruder Detector
Brand Name:	Longhorn
Model Number:	LH-9341C
Additional Model Name	N/A
Rating:	DC 9-16V ， 0.4W
Operation Frequency	10.525GHz
Antenna Designation	A permanent fixed antenna, which is built-in, designed as an indispensable part of the EUT.

1.4 Submitted Sample: 1 Sample

1.5 Test Duration

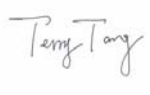
2010-5-19 to 2010-06-24

1.6 Test Uncertainty

Conducted Emissions Uncertainty = ± 3.0dB

Radiated Emissions Uncertainty = ± 6.0dB

1.7 Test Engineer

The sample tested by 

Print Name: Terry Tang

2.0	**Test Equipments**				
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	ROHDE&SCHWARZ	ESPI 3	100379	2009-12-05	2010-12-04
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100294	2009-12-05	2010-12-04
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100253	2009-12-05	2010-12-04
Ultra Broadband ANT	Schwarebeck	VULB9163	9163/340	2010-04-18	2011-04-17
ESDV Test Receiver	ROHDE&SCHWARZ	ESDV	100008	2009-03-30	2011-03-29
Impuls-Begrenzer	ROHDE&SCHWARZ	ESH3-Z2	100281	2010-02-25	2011-02-24
System Controller	CT	SC100	-	2010-02-25	2011-02-24
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170265	2009-08-15	2010-08-14
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-631	2009-07-02	2010-07-01
Spectrum Analyzer	ROHDE&SCHWARZ	FSP40	100012	2009-09-21	2010-09-20
Power Amplifier	AR	150W1000	300999	2010-02-25	2011-02-24
Loop Antenna	EMCO	6507	102615	2010-04-26	2011-04-25
ESPI Test Receiver	ROHDE&SCHWARZ	ESI26	838786/013	2010-02-25	2011-02-24
3m OATS	--	--	N/A	2010-02-25	2011-02-24

3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.207	Conducted Emission Test	**PASS**	Complies
FCC Part 15 Subpart C Paragraph 15.245 Limit	Field Strength of Fundamental	**PASS**	Complies
FCC Part 15, Paragraph 15.209	Radiated Emission Test	**PASS**	Meets Class B Limit
Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the Radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).	Band Edge Test	**PASS**	The field strength of any Emissions, which appear Outside of this band, shall not exceed the general Radiated emission limits in Section 15.209.

3.2 Test Standards

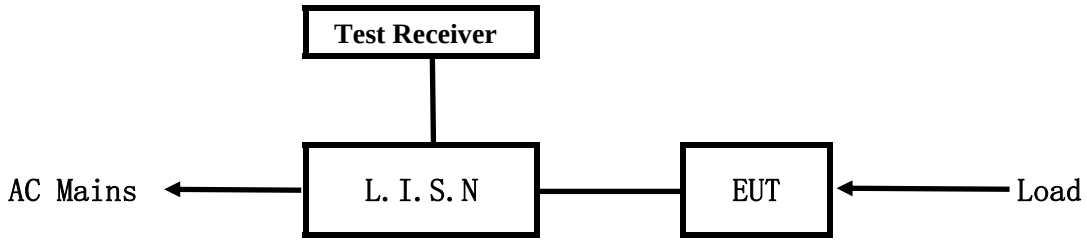
FCC Part 15 Subpart C, Paragraph 15.245

4.0 EUT Modification

No modification by Shenzhen Timeway Technology Consulting Co.,Ltd

5. Power Line Conducted Emission Test

5.1 Schematics of the test

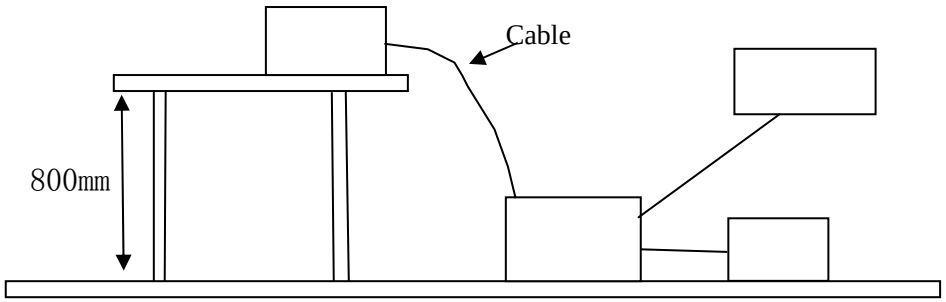


EUT: Equipment Under Test

5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2003.The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.4 –2003.

Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.4-2003. All interface ports were connected to the Appropriate peripherals. All peripherals and cables are listed below.

Note: EUT can be powered by vehicle with 12V electrical system or batteries. During radiated emission test, EUT power by a regulated DC power supply because it produced more emission at this time.

A. EUT

Device	Manufacturer	Model	FCC ID
Outdoor Intelligence Triple Technology Intruder Detector	Longhorn Security Technology Co.,Ltd	LH-934IC	YGWLH-934IC

B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

C. Peripherals

Device	Manufacturer	Model	FCC ID/DOC	Cable
N/A	N/A	-	N/A	N/A

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.4 -2003.

5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency (MHz)	Class A Limits (dB μ V)		Class B Limits (dB μ V)	
	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level
0.15 ～ 0.50	79.0	66.0	66.0～56.0*	56.0～46.0*
0.50 ～ 5.00	73.0	60.0	56.0	46.0
5.00 ～ 30.00	73.0	60.0	60.0	50.0

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

N/A = not applicable. Due to DC Operation

6 Radiated Emission Test

6.1 Test Method and test Procedure:

(1) The EUT was tested according to ANSI C63.4 –2003. The radiated test was performed at Timeway Laboratory. This site is on file with the FCC laboratory division, Registration No.899988

(2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-2003.

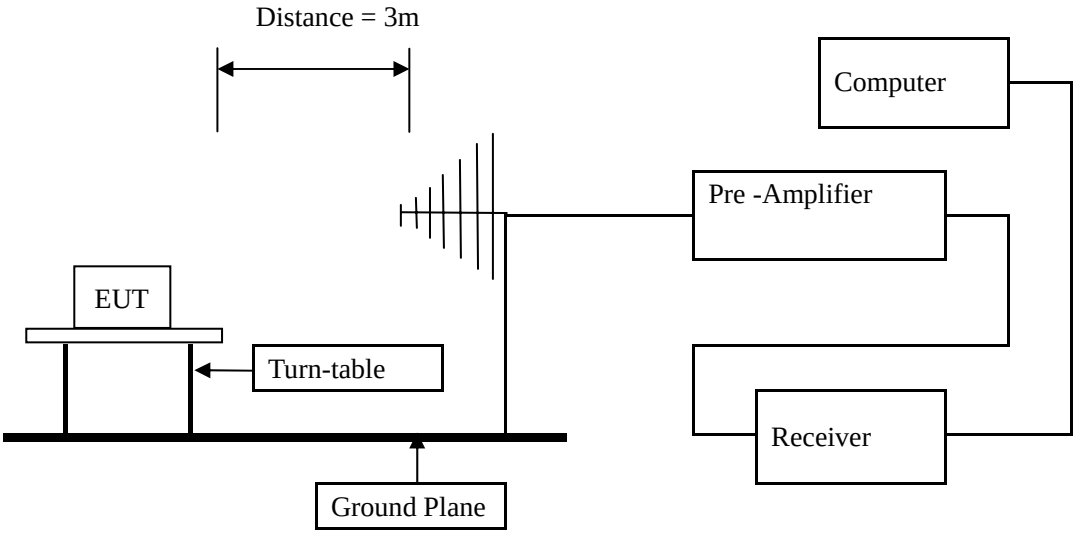
(3) The frequency spectrum from 30 MHz to 1 GHz was investigated. ,All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 kHz. VBW 300KHz .All readings are above 1 GHz, peak values with a resolution bandwidth of 1MHz. VBW 3MHz
with a resolution bandwidth of 1 MHz . Measurements were made at 3 meters.

(4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.

(5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "**QP**" in the data table.

(6) The antenna polarization : Vertical polarization and Horizontal polarization.

Block diagram of Test setup



6.2 Configuration of The EUT
Same as section 5.3 of this report

6.3 EUT Operating Condition
Same as section 5.4 of this report.

6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

A FCC Part 15 Subpart C Paragraph 15.245 Limit

Fundamental Frequency (MHz)	Field Strength of Fundamental (3m)
10500-10550	2500 mV/m
	Field Strength of Harmonics (3m)
	Harmonic emissions in the restricted bands at and above 17.7 GHz: 7.5mV/m
	Harmonic emissions in the non-restricted bands: 25mV/m

Note: 1. RF Field Strength (dBuV) = 20 log RF Voltage (uV)

2.Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3. The emission limit in this paragraph is based on measurement instrumentation employing an average detector.

B. Frequencies in restricted band are complied to limit on Paragraph 15.209.

Frequency Range (MHz)	Distance (m)	Field strength (dBμV/m)
0.009-0.490	300	2400/F(kHz)
0.490-1.705	30	24000/F(kHz)
1.705-30.0	30	30
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note: 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

Test Uncertainly: ±6dB

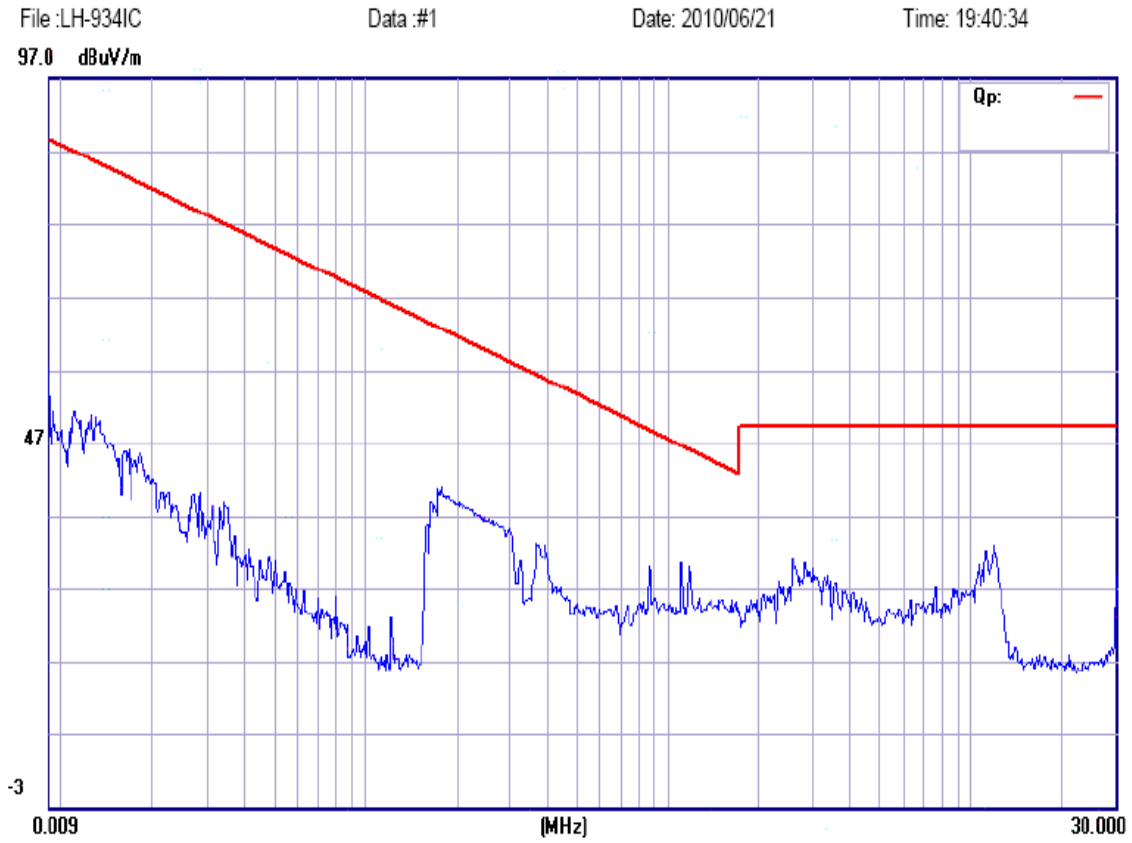
A **General Radiated Emission Data and Harmonics Radiated Emission Data**

Radiated Emission In Horizontal (0.009MHz----30MHz)

EUT set Condition: Transmitting

Results: **Pass**

Please refer to following diagram for individual



Frequency (MHz)	Level@3m (dB μ V/m)	Limit@3m (dB μ V/m)
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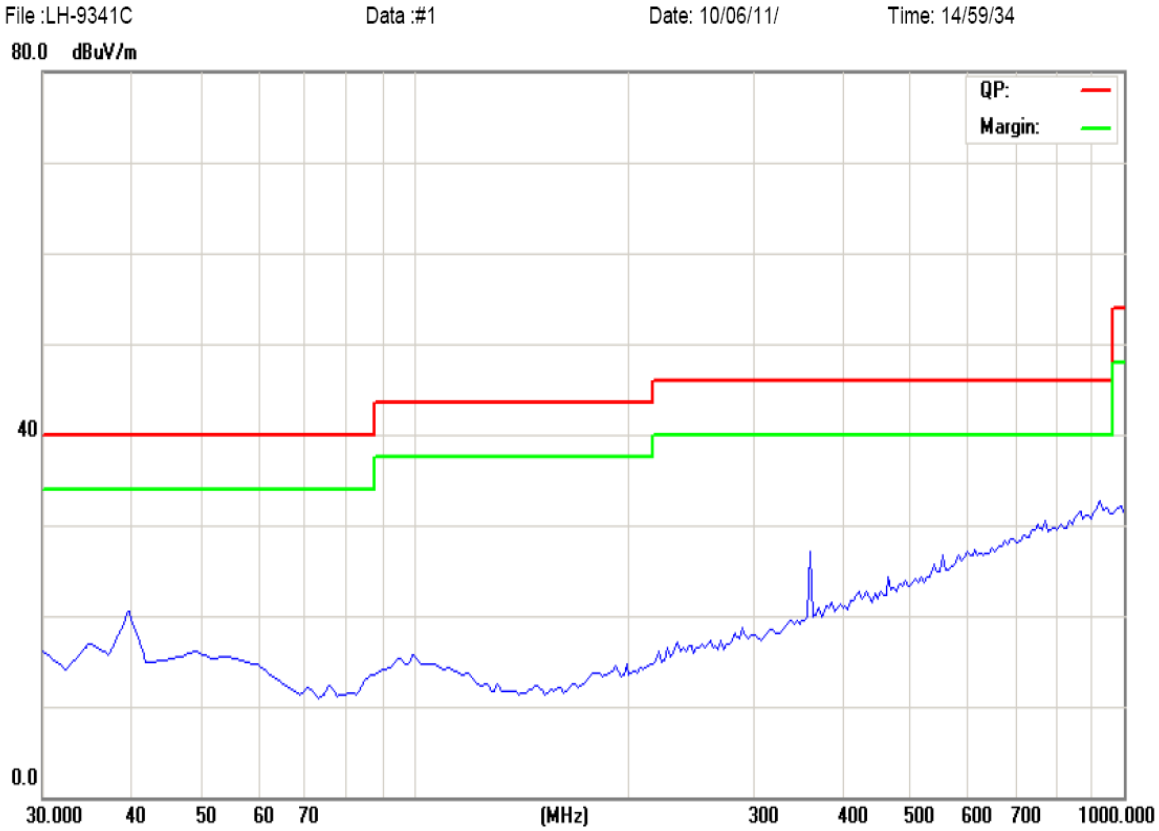
B. **General Radiated Emission Data and Harmonics Radiated Emission Data**

Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Transmitting

Results: **Pass**

Please refer to following diagram for individual



Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
360.456	28.89	H	46.00

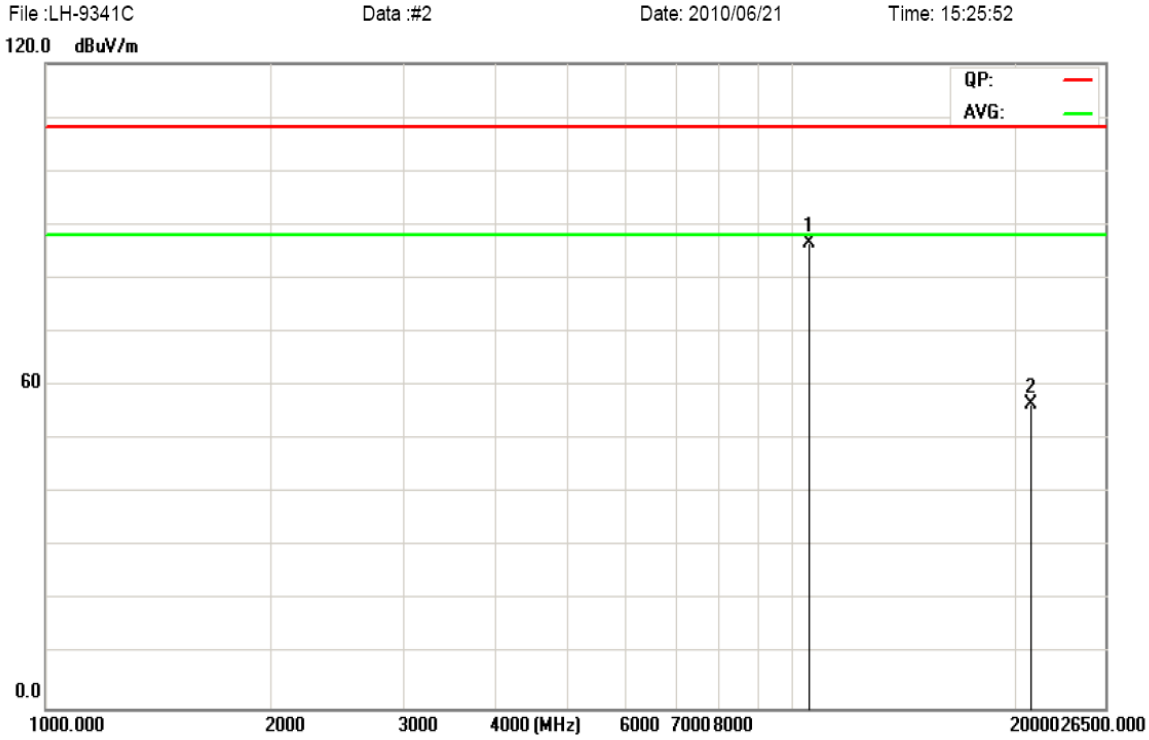
B1. **General Radiated Emission Data and Harmonics Radiated Emission Data**

Radiated Emission In Horizontal (1000MHz----26500MHz)

EUT set Condition: Transmitting

Results: Pass

Please refer to following diagram for individual



Frequency (GHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
10526.344	86.46	H	128.00 (PK)
21052.452	56.34	H	108.00（PK）

B2. **General Radiated Emission Data and Harmonics Radiated Emission Data**

Radiated Emission In Horizontal (26500MHz----40000MHz)

EUT set Condition: Transmitting

Results: Pass

Please refer to following diagram for individual

Frequency (GHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
31575.896	48.12	H	108.00（PK）

C. **General Radiated Emission Data and Harmonics Radiated Emission Data**

Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: Transmitting

Results: **Pass**

Please refer to following diagram for individual

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
47.985	27.10	V	40.00

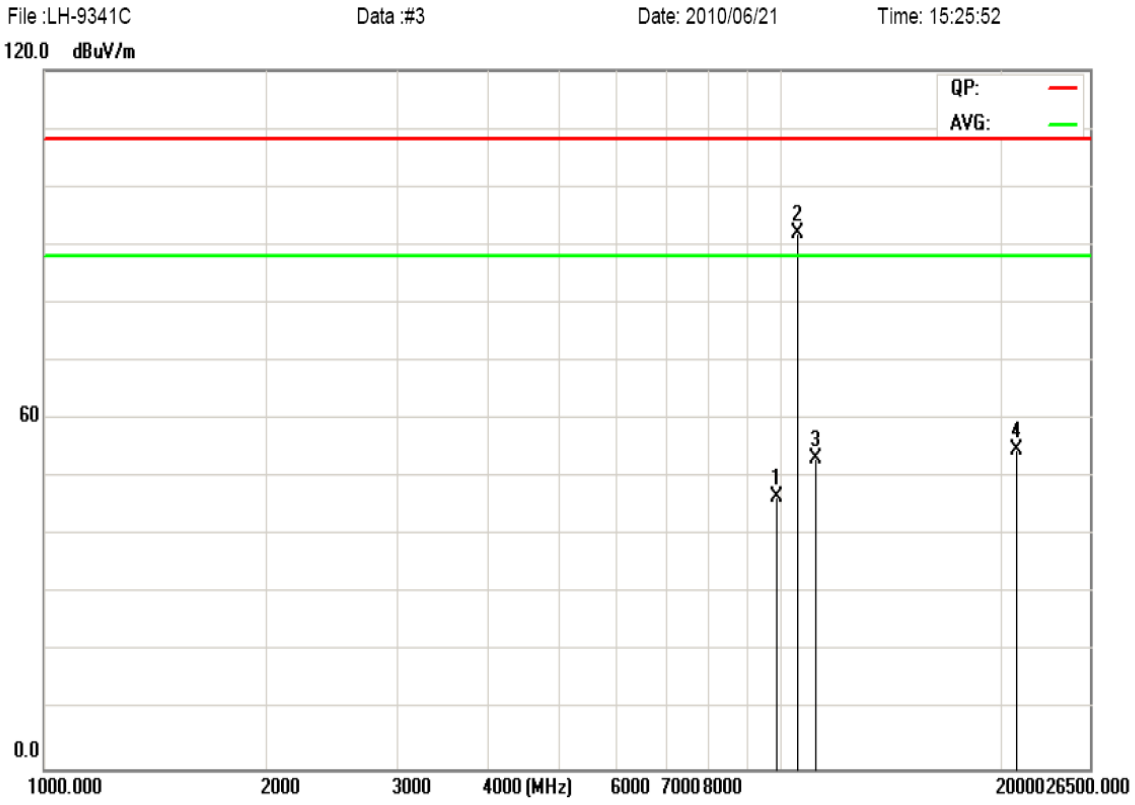
C1. **General Radiated Emission Data and Harmonics Radiated Emission Data**

Radiated Emission In Vertical (1000MHz----26500MHz)

EUT set Condition: Transmitting

Results: **Pass**

Please refer to following diagram for individual



Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
9840.632	46.54 (PK)	V	54.00（AV）
10526.127	92.03 (PK)	V	128.00(AV)
11170.986	53.23(PK)	V	74.00（PK）
11170.986	36.56(PK)	V	54.00（AV）
21052.825	54.64(PK)	V	88.00（AV）

C2. **General Radiated Emission Data and Harmonics Radiated Emission Data**

Radiated Emission In Vertical (26500MHz----40000MHz)

EUT set Condition: Transmitting

Results: **Pass**

Please refer to following diagram for individual

Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
31575.464	49.51 (PK)	V	88.00（AV）

NOTE1：“>20dB”means the tables in this clause should only list values of spurious emissions that exceed the Level of 20 dB below the applicable limit, see ANSI C63.4, CLAUSE 10.1.8.2.

NOTE2：in the test range 40GHz-60GHz, no spurious emissions were detected.

7. Band Edge

7.1 Test Method and test Procedure:

(1) The EUT was tested according to ANSI C63.4 –2003. The radiated test was performed at Timeway Laboratory. This site is on file with the FCC laboratory division, Registration No.899988

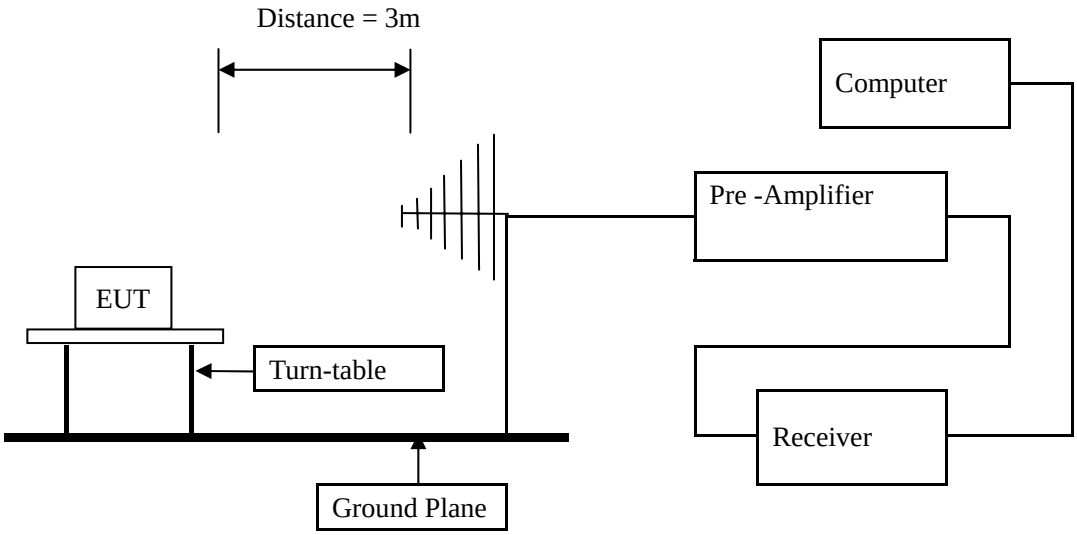
(2) The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 10 KHz. All readings are above 1 GHz , peak values with a resolution bandwidth of 1 MHz . Measurements were made at 3 meters.

(3) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.

(4) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "**QP**" in the data table.

(5) The antenna polarization : Vertical polarization and Horizontal polarization.

7. 2 Radiated Test Setup



For the actual test configuration , please refer to the related items – Photos of Testing

7.3 Configuration of The EUT

Same as section 5.3 of this report

7.4 EUT Operating Condition

Same as section 5.3 of this report.

7.5 Band Edge Limit

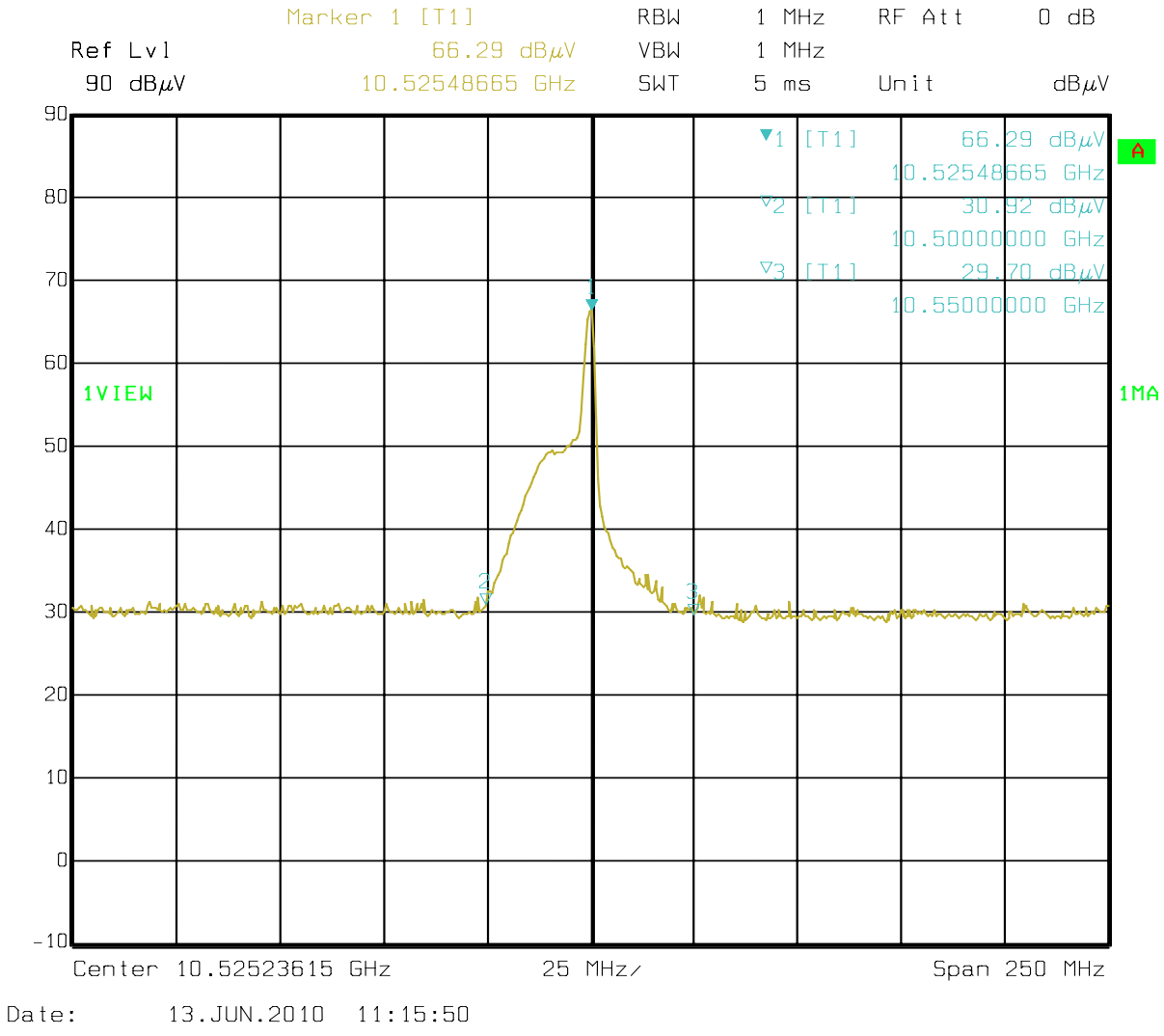
Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

7.6 Band Edge Test Result

Product:	Outdoor Intelligence Triple Technology Intruder Detector	Test Mode:	Transmitting
Test Item:	Band Edge	Temperature:	25℃
Test Voltage:	DC 12V	Humidity:	56%
Test Result:	Pass		

Antenna Polarity: Horizontal

Test Figure:

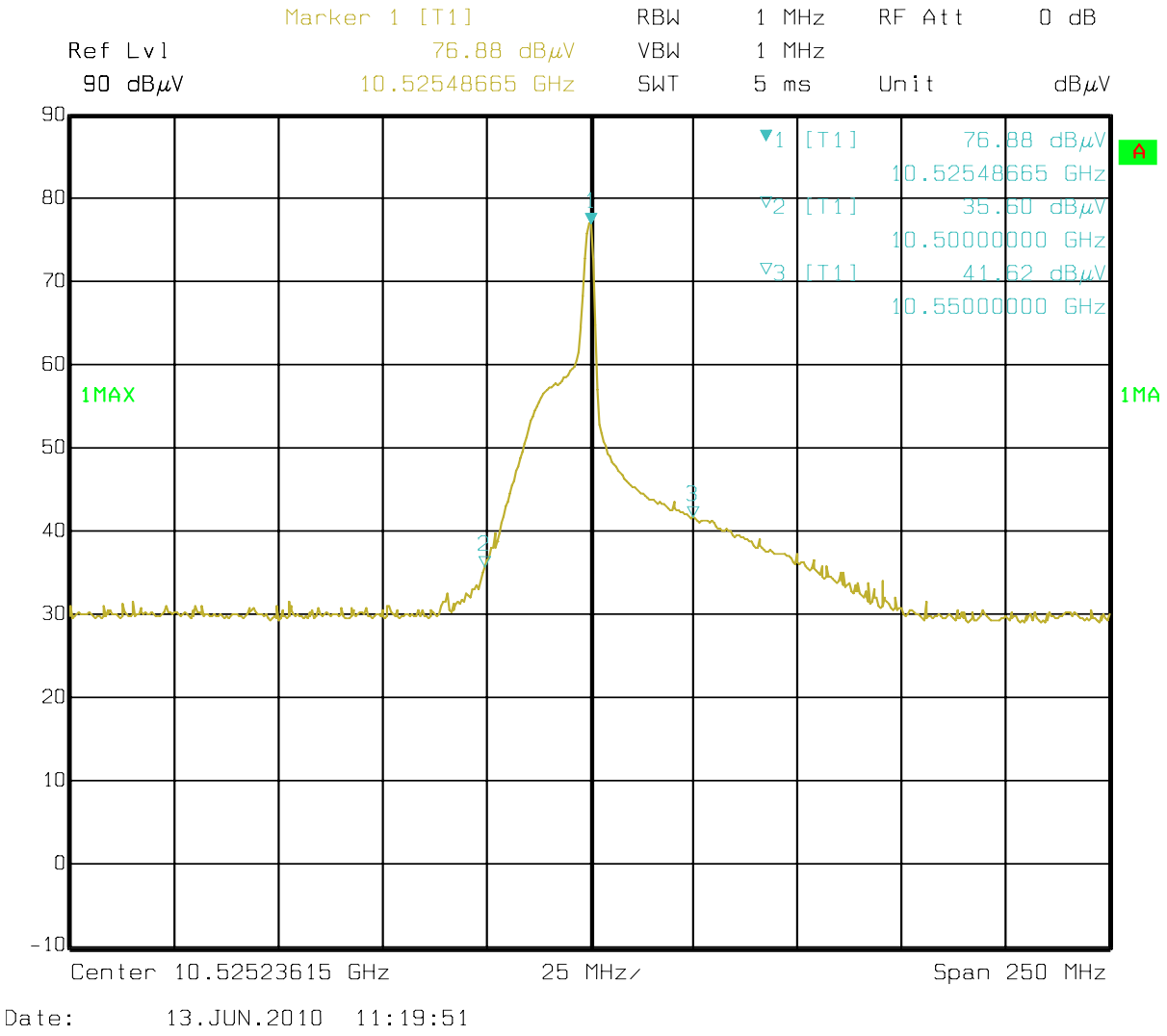


7.6 Band Edge Test Result

Product:	Outdoor Intelligence Triple Technology Intruder Detector	Test Mode:	Transmitting
Test Item:	Band Edge	Temperature:	25℃
Test Voltage:	DC 12V	Humidity:	56%
Test Result:	Pass		

Antenna Polarity: Vertical

Test Figure:



8. 20 dB Bandwidth

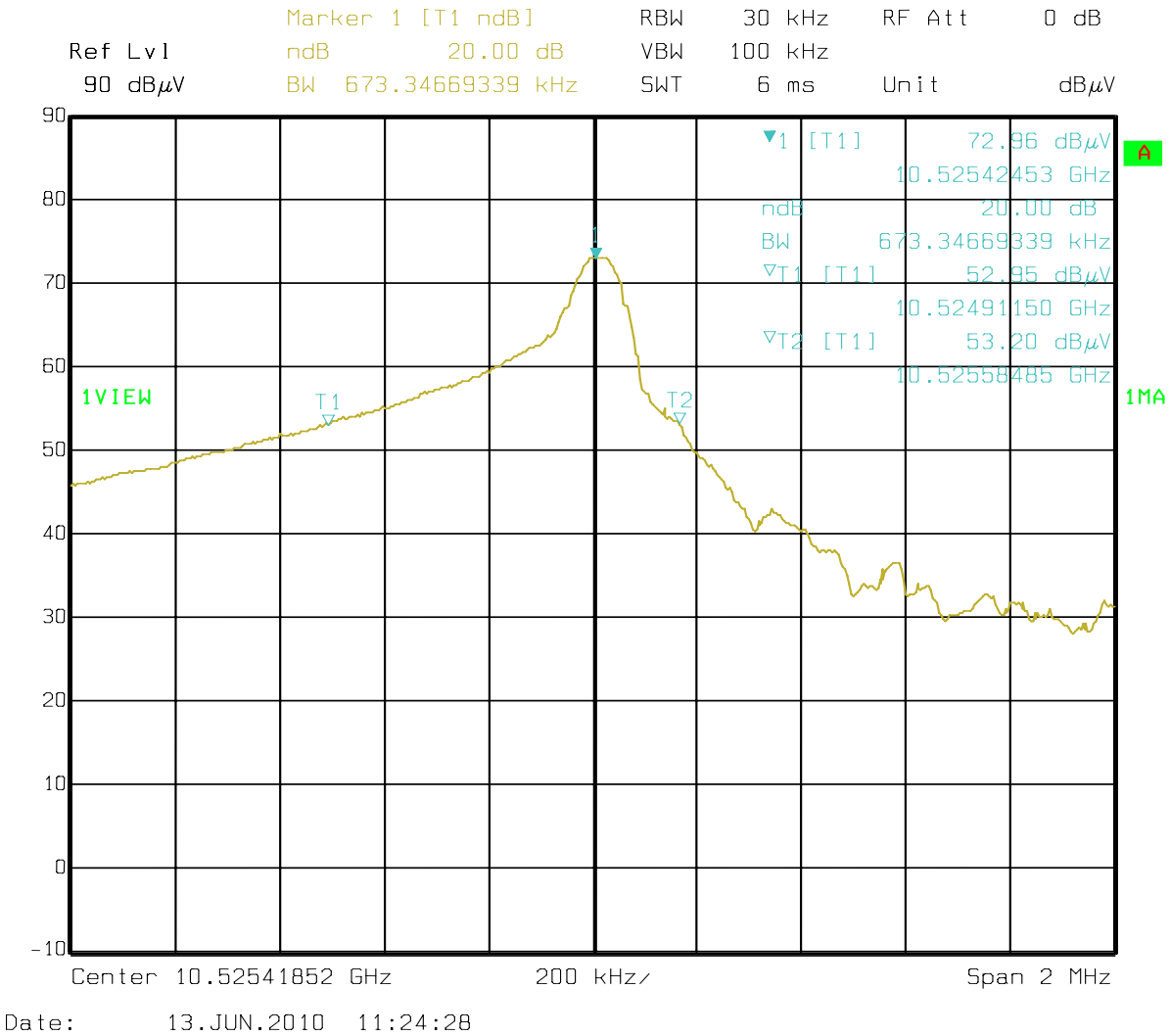
8.1 20dB Bandwidth Requirement

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission,

8.2 20dB Bandwidth Test Result

Product:	Outdoor Intelligence Triple Technology Intruder Detector	Test Mode:	Transmitting
Test Item:	20dB Bandwidth	Temperature:	25℃
Test Voltage:	DC 12V	Humidity:	56%
Bandwidth	673kHz	Test Result:	Pass

Test Figure:



9.0 Maximum Permissible Exposure

9.1 Limit of Maximum Permissible Exposure

Limit for Occupational / Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength(E)(V/m)	Magnetic Field Strength(H)(A/m)	Power Density(S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6
Limit for General / Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength(E)(V/m)	Magnetic Field Strength(H)(A/m)	Power Density(S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$or S (minutes)
0.3-3.0	614	1.63	(100)*	30
3.0-30	842/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30
NOTE1: f = frequency in MHz ;*Plane-wave equivalent power densidy NOTE2: For the applicable limit, see FCC 1.1310 and 2.1091				

9.2 MPE Calculation Method

$$E\ (V/m) = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density:} \quad Pd\ (W/m^2) = \frac{E^2}{377}$$

E = Electric field (V/m)

P = RF output power (W)

G = EUT Antenna numeric gain (numeic)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

9.3 Result of Maximum Permissible Exposure

9.3.1 Maximum Permissible Exposure

Exposure Environment: General Population / Uncontrolled Exposure						
TPC range: 1			Operating Mode:			
Duty Cycle: 100%	Test Results					
Humidity:56% Ambient Temp:25℃ Maximum EIRP Power of Test Frequency(GMz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S)	Limit of Power Density(S)
10.525 GHz	4.66	2.75	-14.97	0.03184198	7.742302e-4	1.0
NOTE: For applicable limit , see FCC 1.1310 and 2.1091						

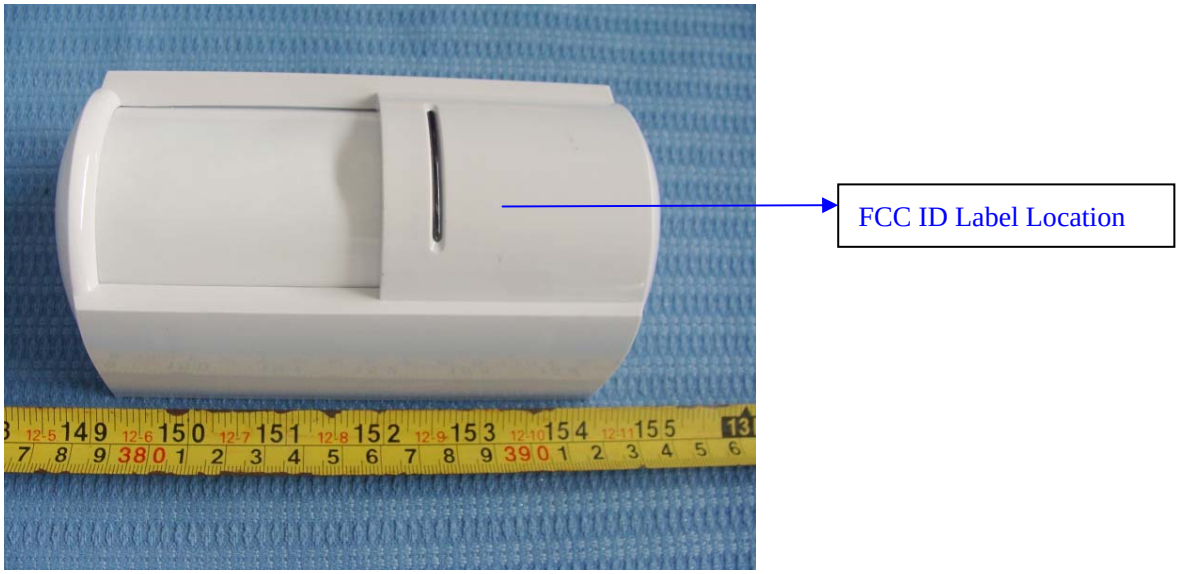
10.0 FCC ID Label

FCC ID: YGWLH-934IC

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

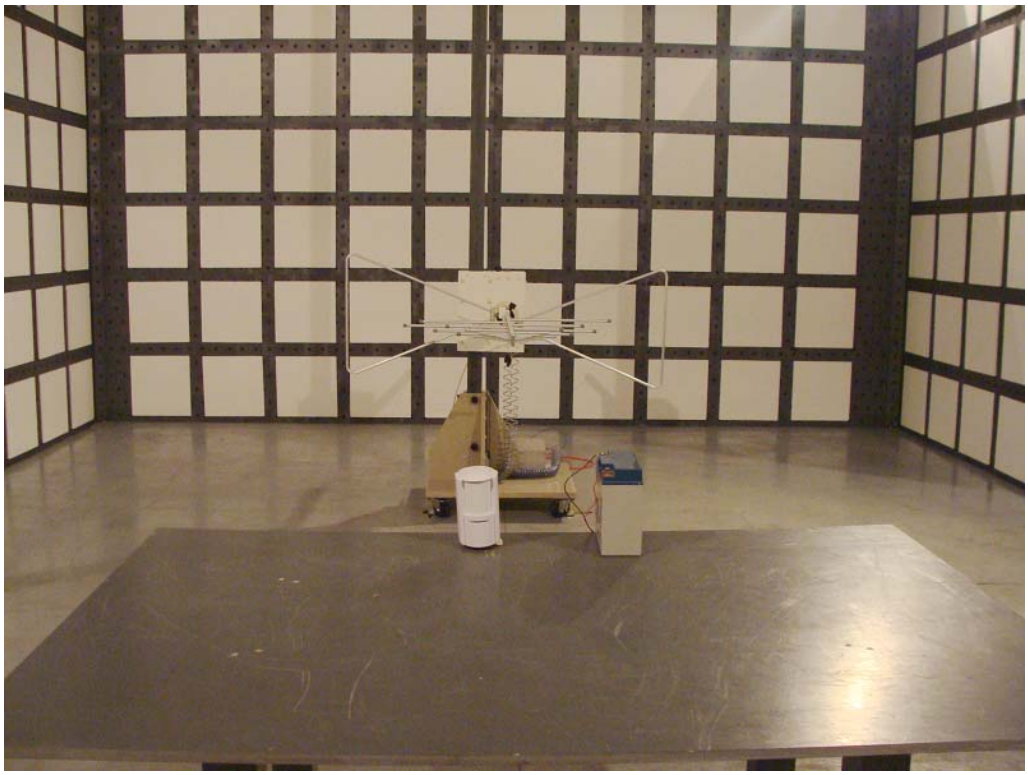
The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Mark Location:



11.0 Photo of testing

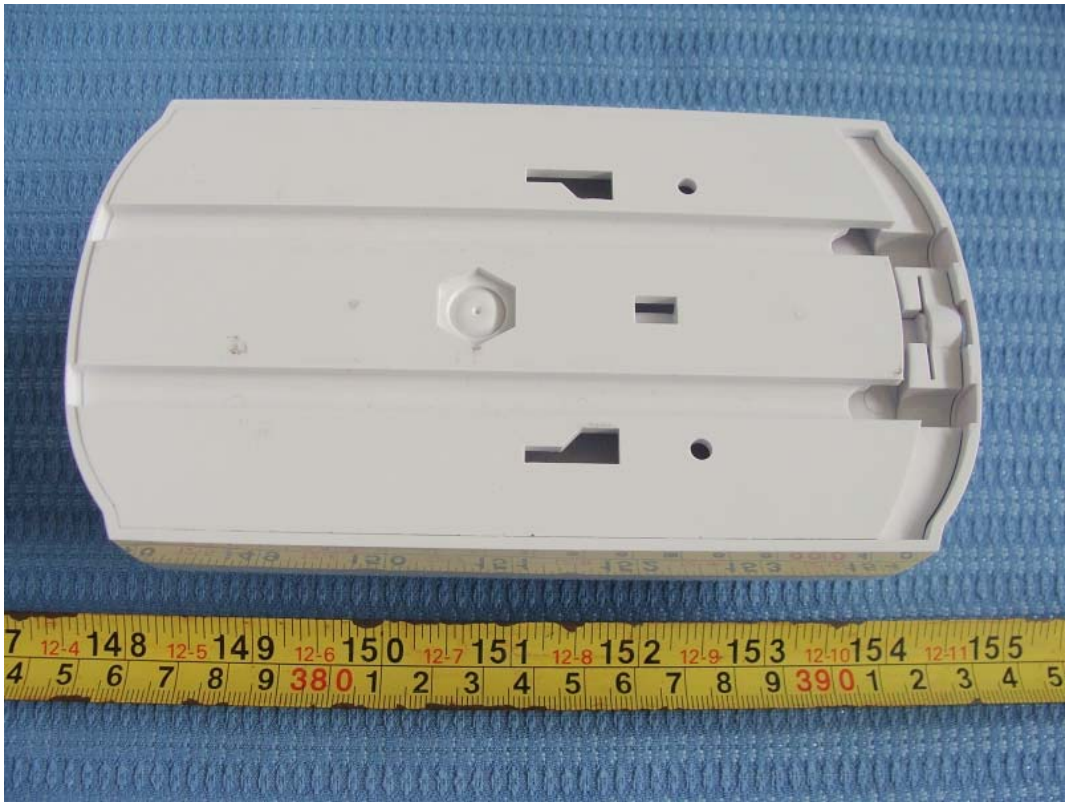
11.1 Radiated emission test view



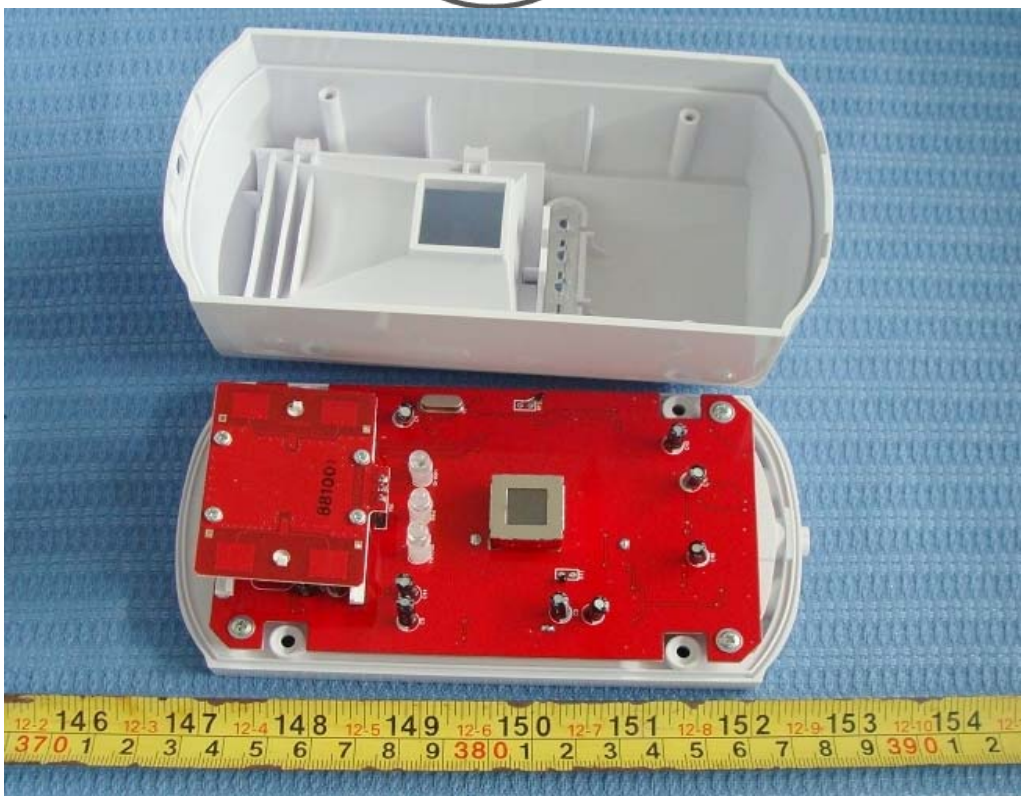
9.3 Photo for the EUT

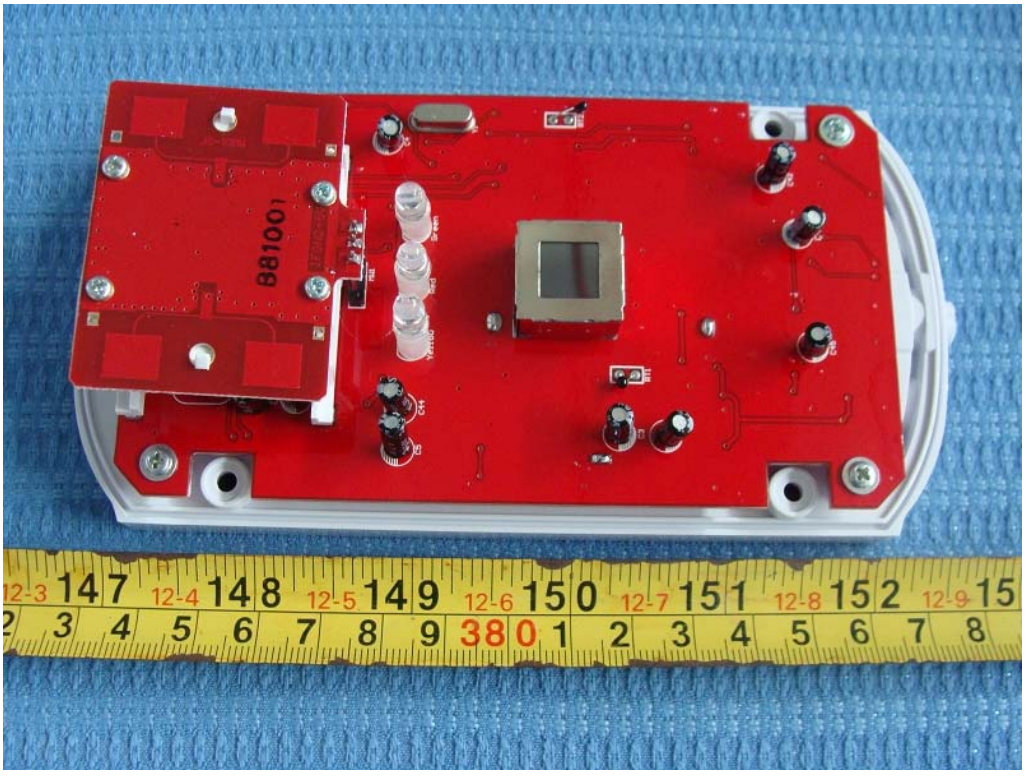
Front View

Back View

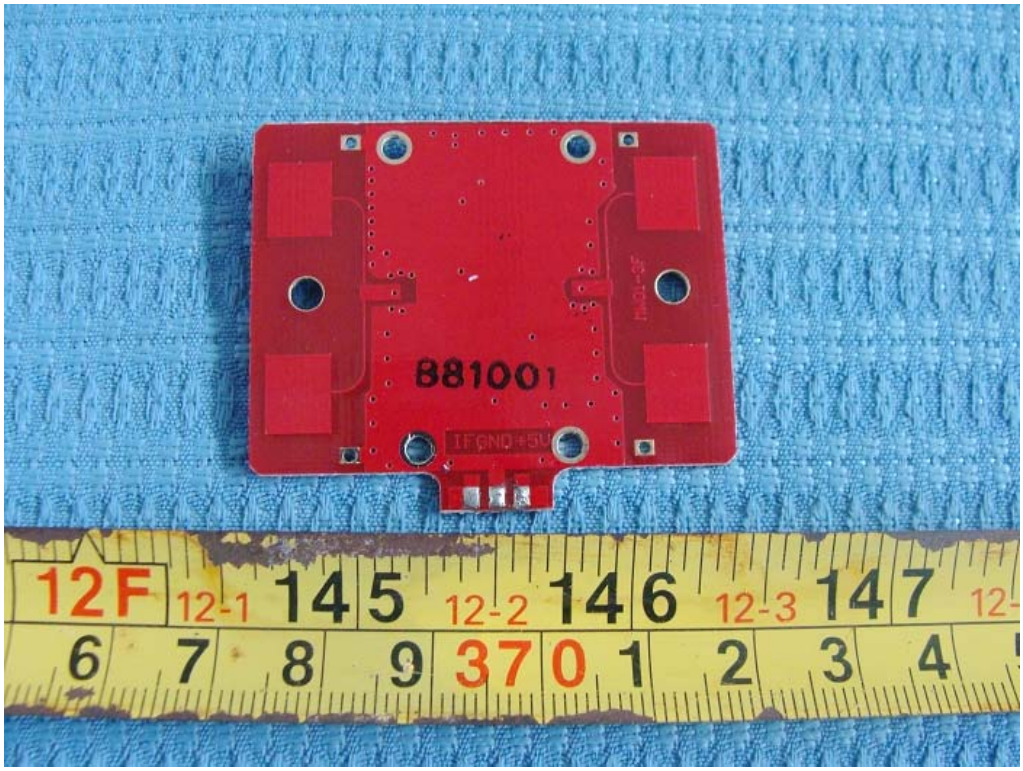


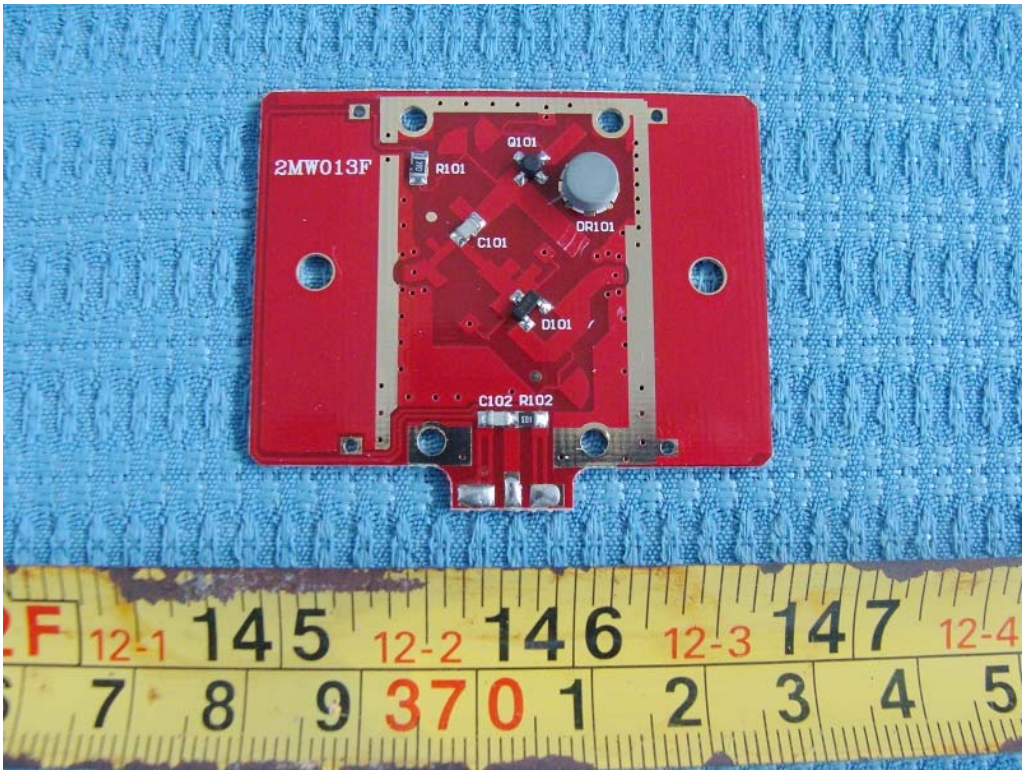
Interior View1



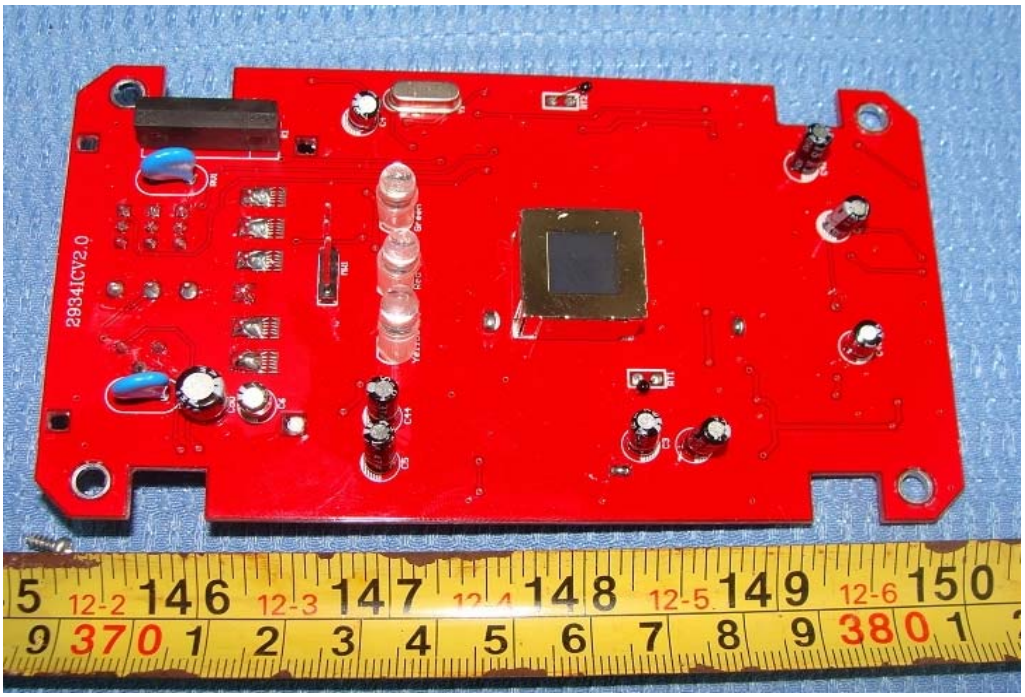


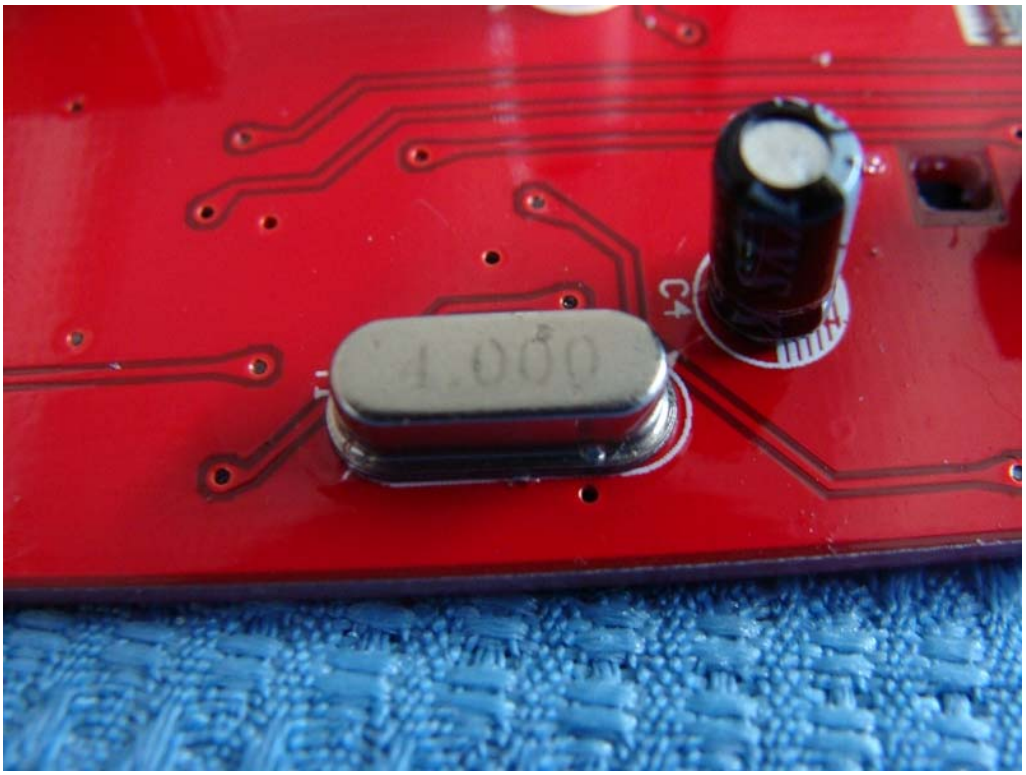
Interior View2



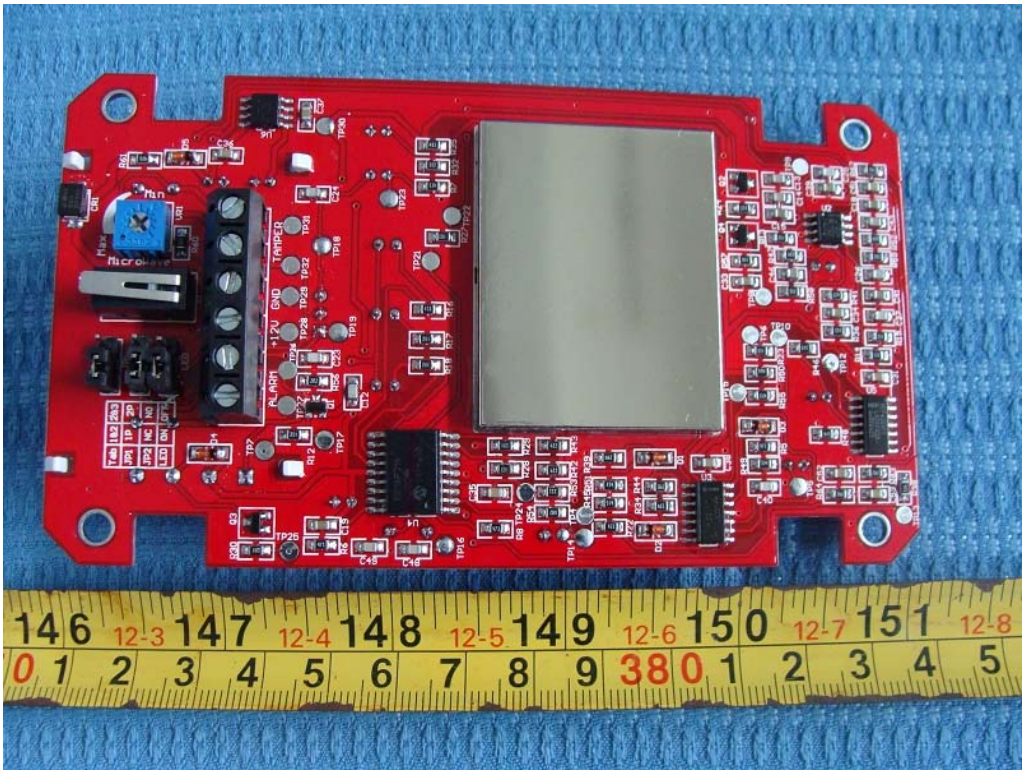


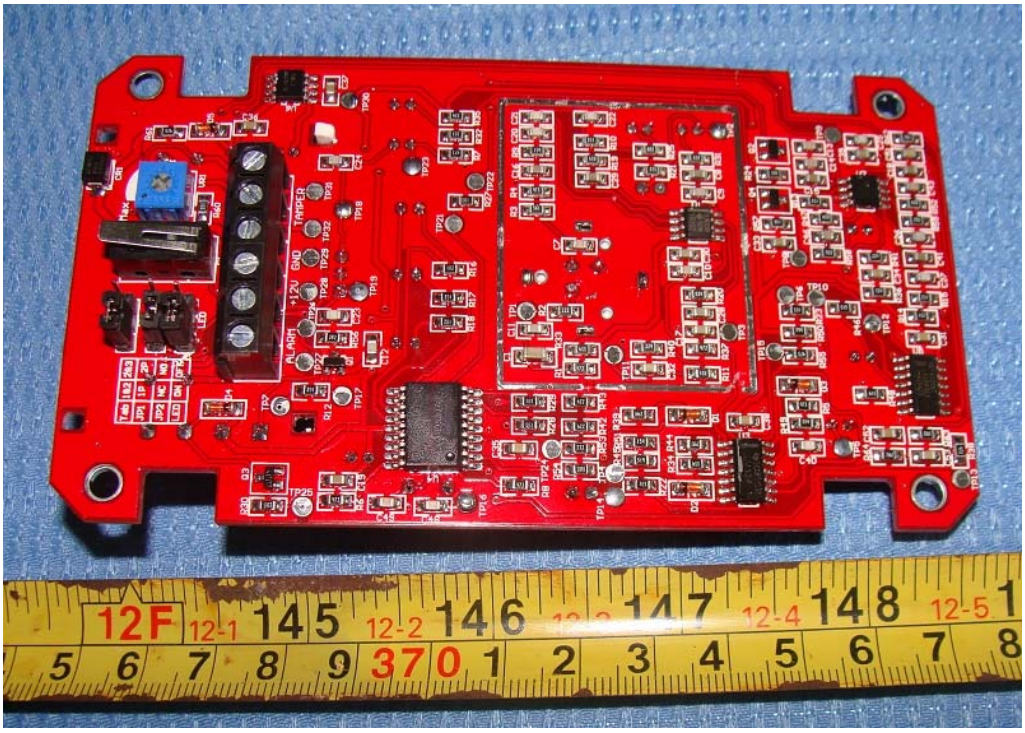
Interior View3





Interior View4





End of the report