ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION

Product Name	**:**	RAC00-12635
Model Number	**:**	Outdoor Shields Plus
IC	**:**	2721A-3001054
FCC ID	**:**	KE3-3001054
Trade Name	**:**	Invisible Fence
Report Number	**:**	SZEE100126119718
Date	**:**	Mar. 02, 2010

Standards	Results
☒ RSS 210 Issue 7: 2007	Pass
☒ RSS-Gen Issue 2: 2007	Pass
☒ FCC Part 15C: 2009	Pass

Prepared for:

Radio Systems Corporation
Shenzhen Representative Office of:
Radio Systems Corporation
10427 Electric Ave. Knoxville, TN 37932 USA
TEL: +1 865 218 1557
FAX: +1 865 671 6854

Prepared by:

CENTRE TESTING INTERNATIONAL CORPORATION
Building C, Hongwei Industrial Zone, Baoan 70 District,
Shenzhen, Guangdong, China
TEL: +86-755-3368 3362
FAX: +86-755-3368 3385

This report shall not be reproduced, except in full, without the written approval of CENTRE TESTING INTERNATIONAL CORPORATION

TABLE OF CONTENTS

Description Page

N/A means not applicable.

1. GENERAL INFORMATION

Applicant & Address:	Radio Systems Corporation Shenzhen Representative Office of: Radio Systems Corporation 10427 Electric Ave. Knoxville, TN 37932 USA
Manufacturer & Address:	Whitways Enterprises Limited Whitways Electronics Factory, San Zhong Management Zone, Qing Xi, Dong Guan Shi, Guang Dong Province, China
Equipment Under Test:	RAC00-12635
Model Name:	Outdoor Shields Plus
IC:	2721A-3001054
FCC ID:	KE3-3001054
Trade Name:	Invisible Fence
Serial Number:	N/A
Technical Data:	DC 6V
Date of test:	Jan. 26, 2010 to Mar. 02, 2010
Condition of Test Sample:	Normal

The above equipment was tested by Centre Testing International Corporation for compliance with the requirements set forth in the RSS 210, RSS-Gen, FCC Part15 Section 15.209 and the measurement procedure according to IC requirements and ANSI C63.4. The test results of this report relate only to the tested sample identified in this report.

Prepared by : Christy Chen

Reviewed by : Louisa Lu

Approved by : Jim Zhang
Manager

Date : Mar. 02, 2010

2. TEST SUMMARY

Clause	Test Item	Rule	Result
6	99% bandwidth	RSS-Gen 4.6.1	**PASS**
7	Radiated Emission	RSS-210 Table 2, Table 3 & FCC Part15.209 (a)	**PASS**

*: The power supply of EUT is by battery.

3. MEASUREMENT UNCERTAINTY

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement items	Uncertainty
Radiated Emissions	4.6 dB

4. PRODUCT INFORMATION

Items	Description
Rating	DC 6V
Equipments Class	Magnetic Field Transmitter
Modulation	OOK
Operated Frequency	7.25kHz and 10.7kHz
Channel Number	1
Antenna	Inductive Antenna

5. TEST EQUIPMENT

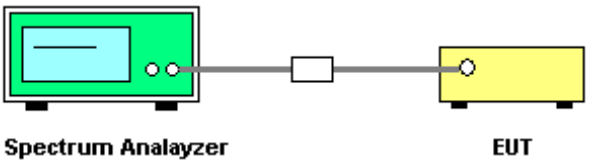
Equipment	Manufacturer	Model Number	Serial Number	Due Date
Receiver	R&S	ESCI	100435	08/25/2010
Spectrum Analyzer	Agilent	E4443A	MY45300910	01/19/2011
Biconilog Antenna	ETS-LINGREN	3142C	920250	01/19/2011
Horn Antenna	ETS-LINDGREN	3117	00057407	06/07/2010
Loop Antenna	ETS-LINDGREN	6502	00071730	09/22/2010
Multi device Controller	ETS-LINGREN	2090	00057230	01/19/2011
3M Chamber & Accessories	ETS-LINDGREN	FACT-3	N/A	01/19/2011
Preamplifier(9kHz-1GHz)	Agilent	11909A	186871	08/25/2010

6. 99% BANDWIDTH MEASUREMENT

6.1. LIMITS

No limits.

6.2. BLOCK DIAGRAM OF TEST SETUP

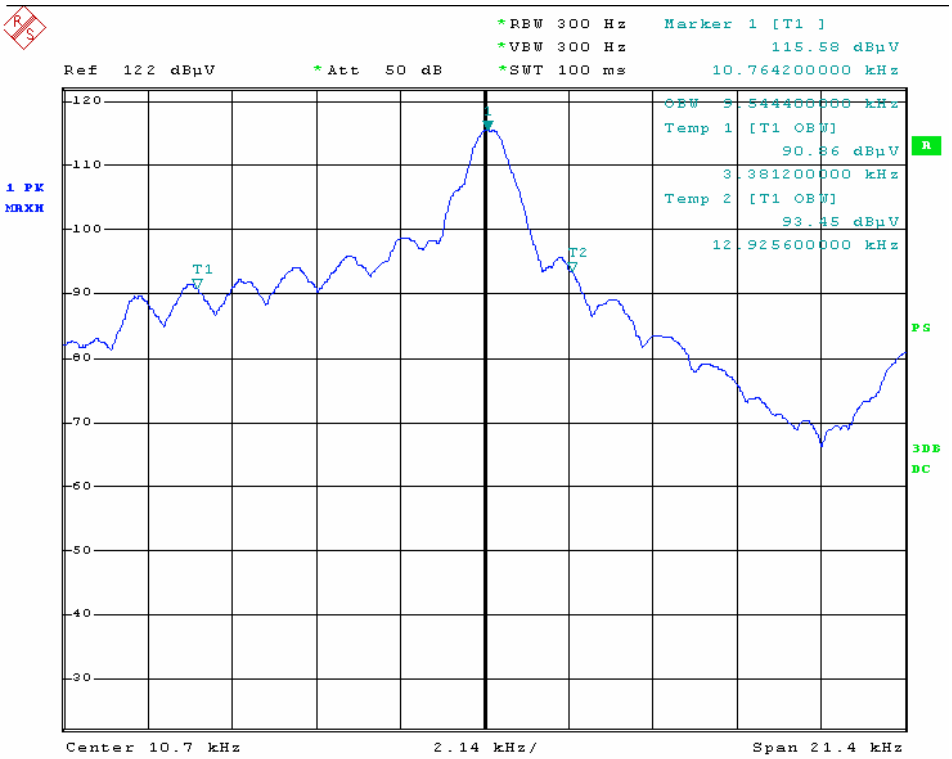


6.3. TEST PROCEDURE

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. Set spectrum analyzer's RBW and VBW to applicable value with Peak in Max Hold.
3. A PEAK output reading and 99% OBW function in spectrum analyzer were taken.

6.4. TEST RESULT

Channel	Frequency	99% BW
1	10.7kHz	9.54kHz



7. RADIATED EMISSIONS MEASUREMENT

7.1. LIMITS

RSS-210 Table 2, Table 3 & FCC Part15.209 (a)

Table 1: General Field Strength Limits for Transmitters and Receivers at Frequencies Above 30 MHz

Frequency (MHz)	Field Strength microvolts/m at 3 metres	
	Transmitters	Receivers
30-88	100	100
88-216	150	150
216-960	200	200
Above 960	500	500

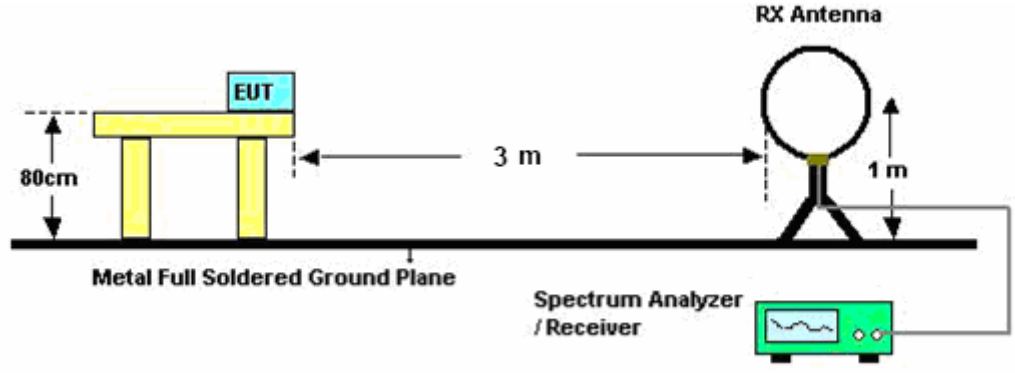
Table 2: General Field Strength Limits for Transmitters at Frequencies Below 30 MHz (Transmit)

Frequency (fundamental or spurious)	Field Strength (microvolts/m)	Measurement Distance (metres)
9-490 kHz	2400/F (F in kHz)	300
490-1,705 kHz	24000/F (F in kHz)	30
1.705-30 MHz	30	30

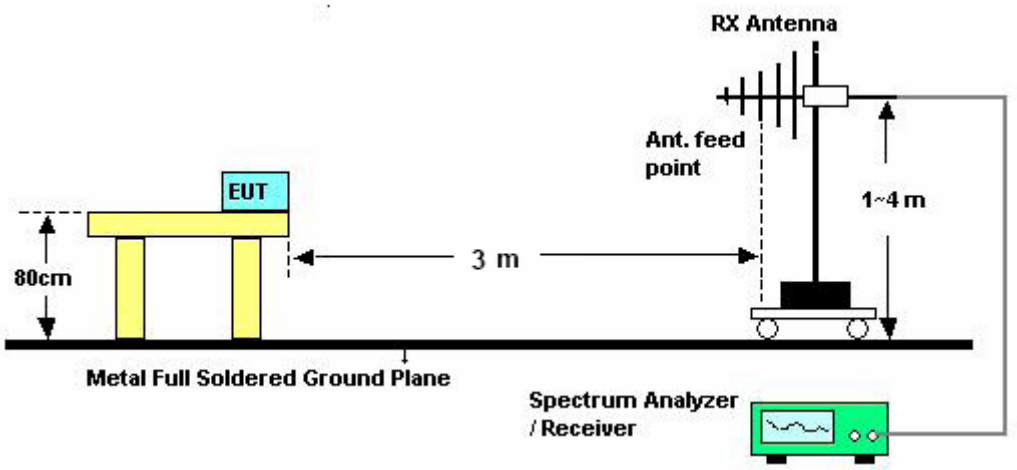
Note: The emission limits for the bands 9-90 kHz and 110-490 kHz are based on measurements employing an average detector (RSS-210 Table 3).

7.2. BLOCK DIAGRAM OF TEST SETUP

For radiated emissions from 9 kHz to 30MHz



For radiated emissions from 30 - 1000MHz



7.3. TEST PROCEDURE

A. Above 30MHz

a. The EUT was placed on the top of a turntable 0.8 meters above the ground in the chamber, 3 meters away from the antenna (wideband antenna), which was mounted on the top of a variable-height antenna tower. The maximum values of the field strength are recorded by adjusting the polarizations of the test antenna and rotating the turntable.

b. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the turn table was turned from 0 degrees to 360 degrees to find the maximum reading.

c. The test frequency analyzer system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

B. Below 30MHz

a. The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 1 meter away from the antenna (loop antenna). The maximum values of the field strength are recorded by adjusting the polarizations of the test antenna and rotating the turntable.

b. For each suspected emission, the EUT was arranged to its worst case and then turn table was turned from 0 degrees to 360 degrees to find the maximum reading.

c. The test frequency analyzer system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

7.4. TEST RESULT

The worst test data and figure are in below:

Note: Limit dBμV/m @3m = Limit dBμV/m @300m+ 80
Limit dBμV/m @3m = Limit dBμV/m @30m + 40

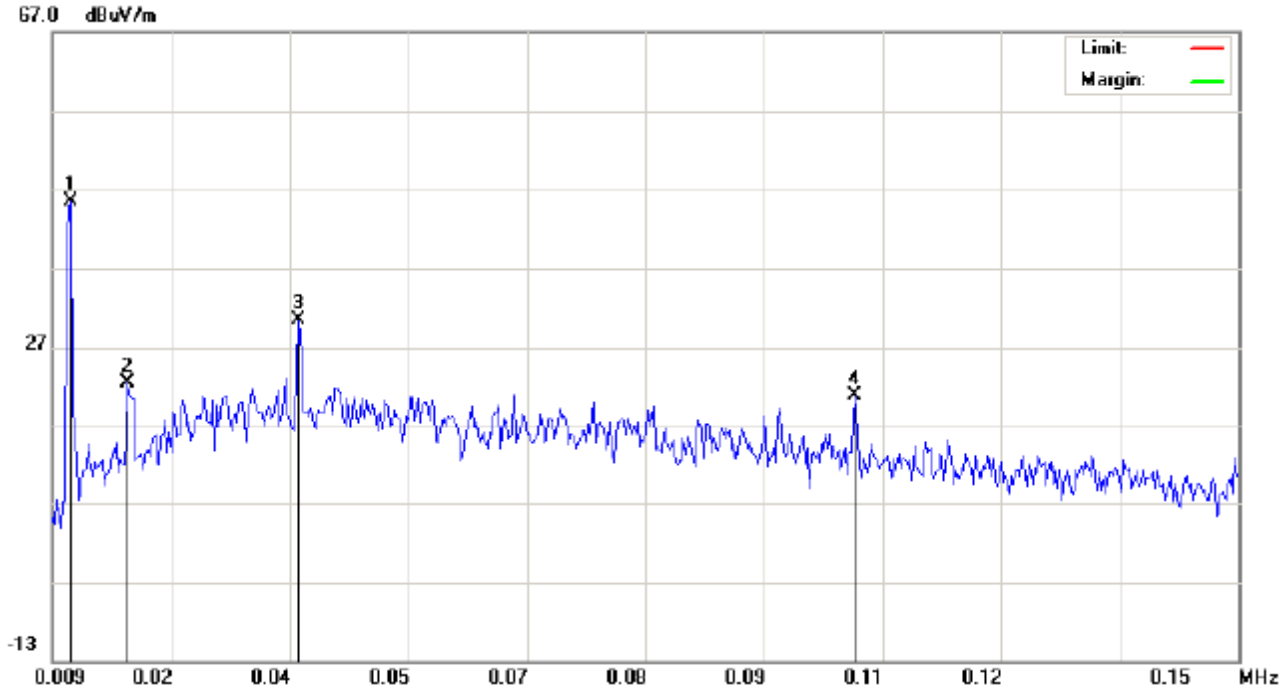
Table 3: Test data of Radiated Emissions, 9kHz ~ 30MHz

Frequency	Measurement _peak	Limit _AV _3m	Limit _QP _3m	Result	Polarization	Measurement Distance
(kHz)	(dBμV/m)	(dBμV/m)	(dBμV/m)	(P/F)	(H/V)	
10.7*	45.53	127.02	---	P	H	3m
17.9	22.39	122.55	---	P	H	3m
38.1	30.42	115.99	---	P	H	3m
104.4	20.99	107.23	---	P	H	3m
150.0	27.55	104.08	---	P	H	3m
10.7*	51.70	127.02	---	P	V	3m
37.7	29.42	116.08	---	P	V	3m
73.2	23.59	110.31	---	P	V	3m
84.7	22.34	109.05	---	P	V	3m
100.4	19.09	107.57	---	P	V	3m
150.0	26.72	104.08	---	P	V	3m

*: Fundament frequency

Figure 1: Test figure of radiated emission, 9kHz ~ 150kHz, 3m distance

H:



V:

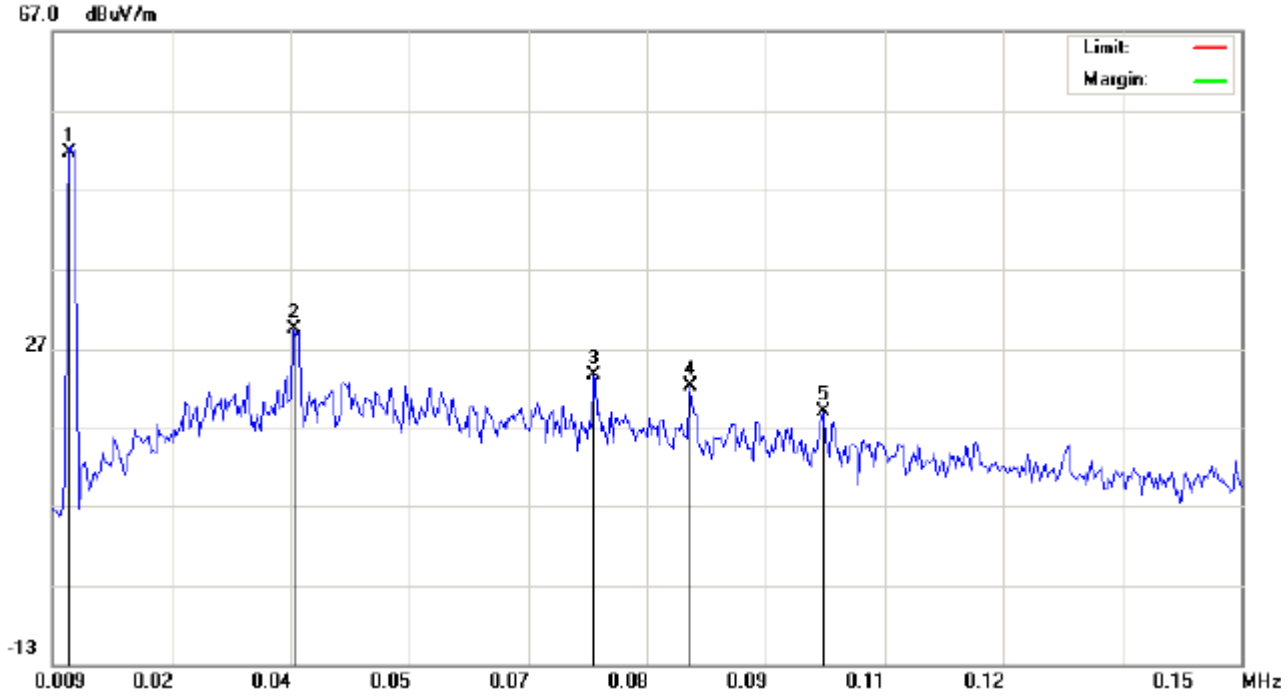
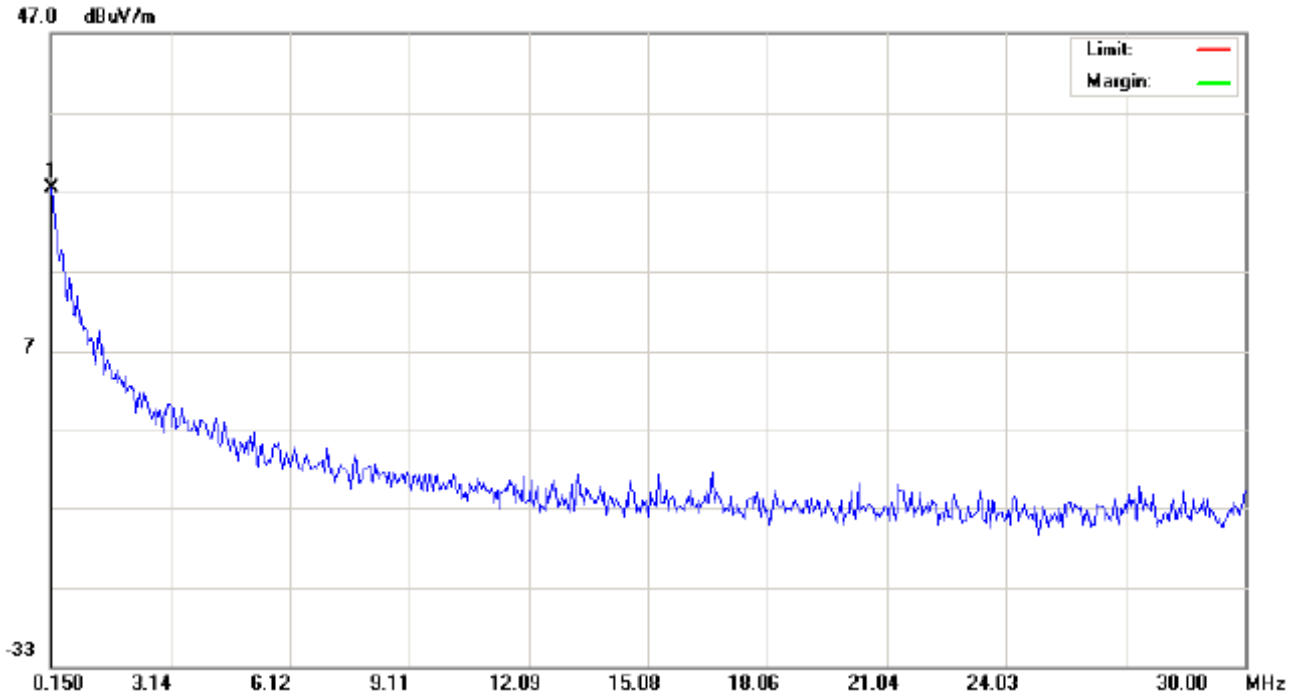


Figure 2: Test figure of radiated emission, 150kHz ~ 30MHz, 3m distance

H:



V:

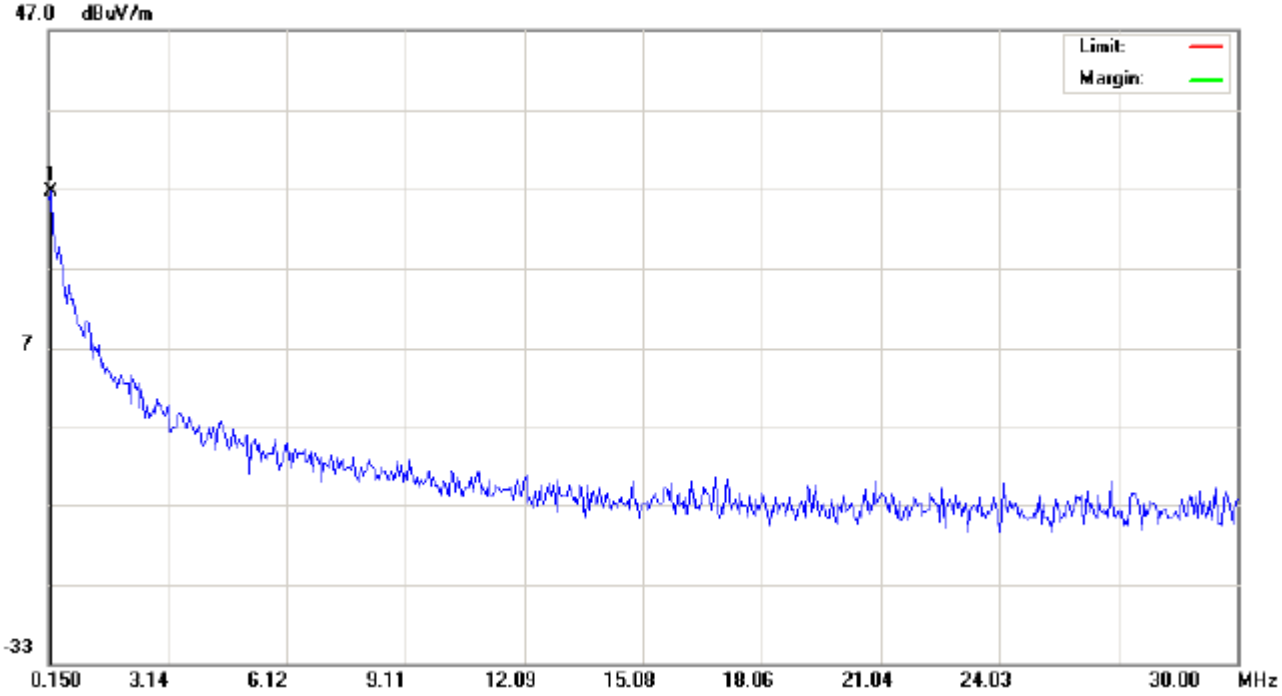
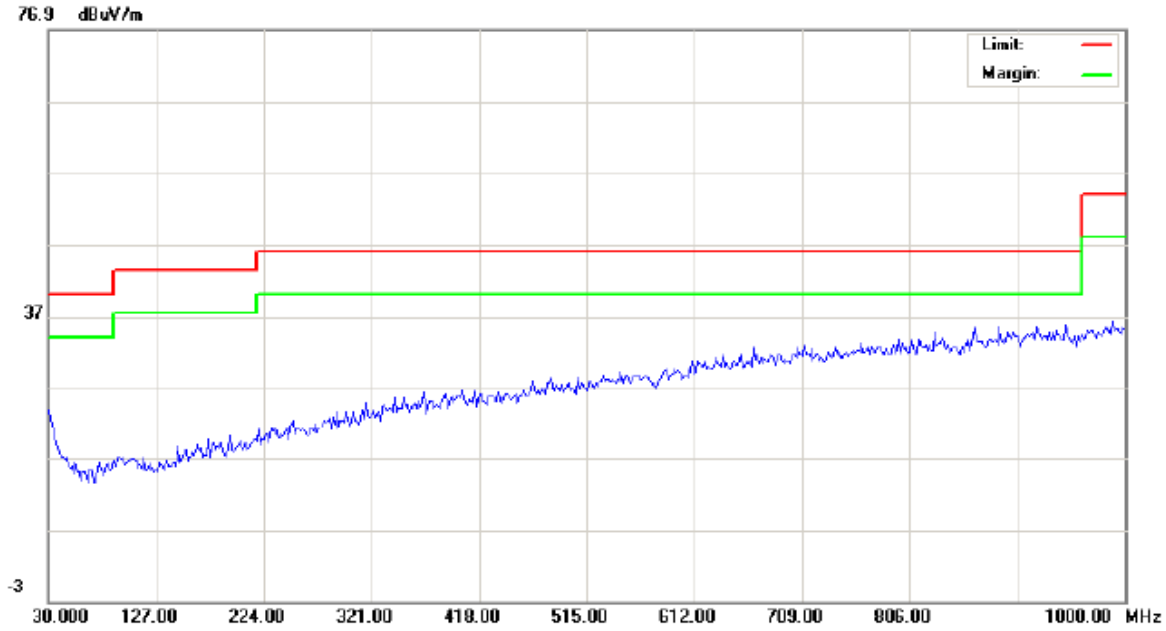

47.0 dBuV/m
Limit:
Margin:
1
7
-33
0.150
3.14
6.12
9.11
12.09
15.08
18.06
21.04
24.03
30.00
MHz

Figure 3: Test figure of radiated emission, 30MHz ~ 1GHz, 3m distance

H:



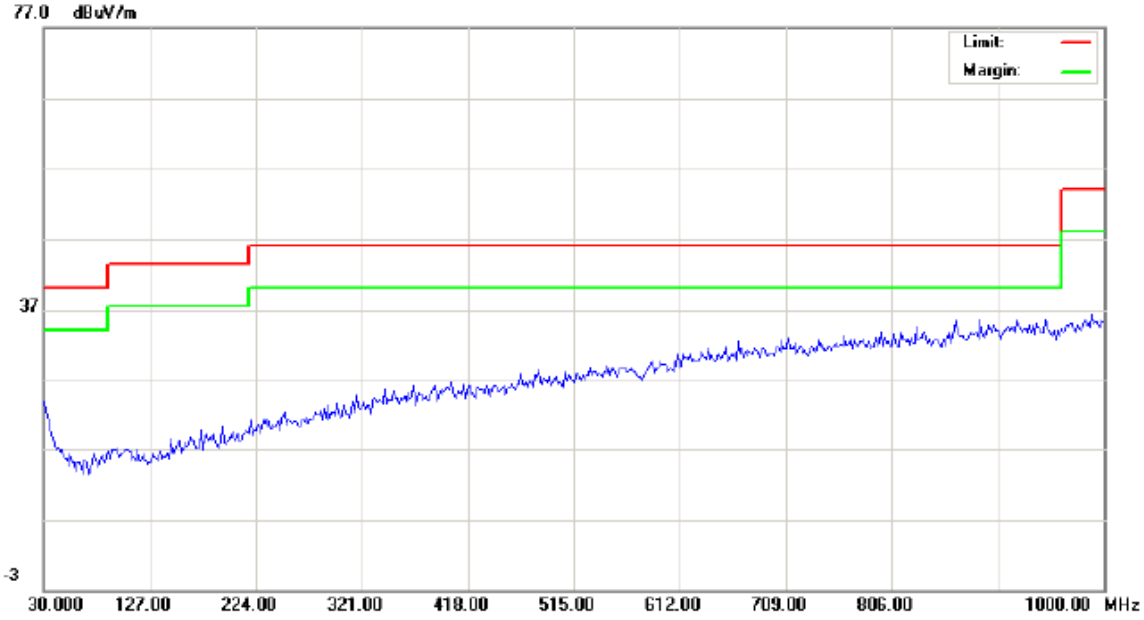
Site site #1	Polarization: *Horizontal*	Temperature: 23
Limit: FCC/IC 3M Radiation	Power: DC 6V	Humidity: 60 %
EUT: RAC00-12635		
M/N: Outdoor Shields Plus		
Mode: TX		
Note:		

No.	Freq.	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)			
	MHz	Peak	QP	AVG	dB	peak	QP	AVG	QP	AVG	QP	AVG	P/F	Comment

Note:

The test data are too low, and they are not recorded.

V:



Site site #1
Limit: FCC/IC 3M Radiation
EUT: RAC00-12635
M/N: Outdoor Shields Plus
Mode: TX
Note:

Polarization: *Vertical*
Power: DC 6V

Temperature: 23
Humidity: 60 %

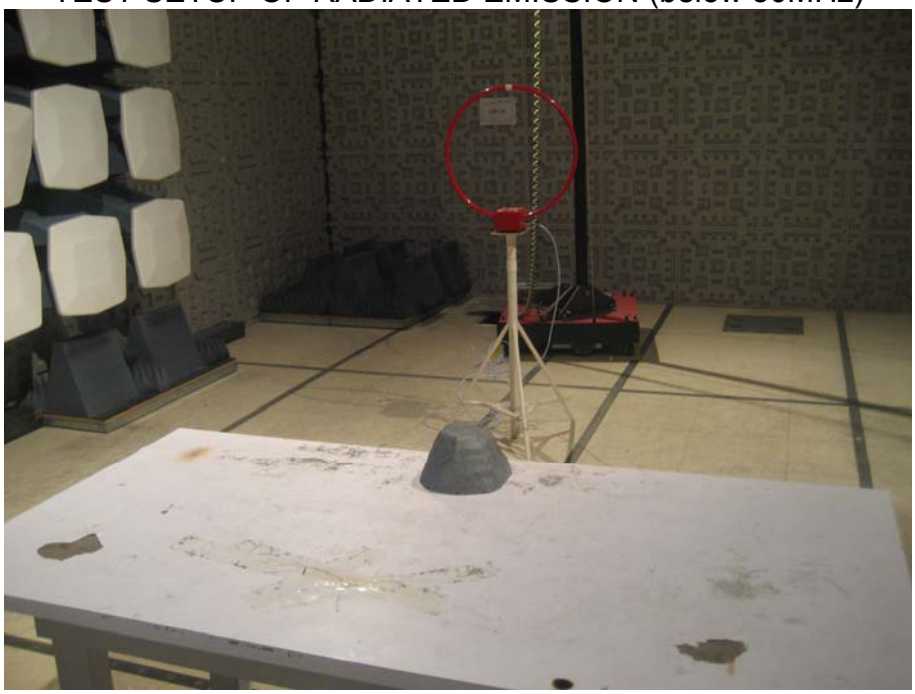
No.	Freq.	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV/m)			Limit (dBuV/m)		Margin (dB)			
	MHz	Peak	QP	AVG	dB	peak	QP	AVG	QP	AVG	QP	AVG	P/F	Comment

Note:

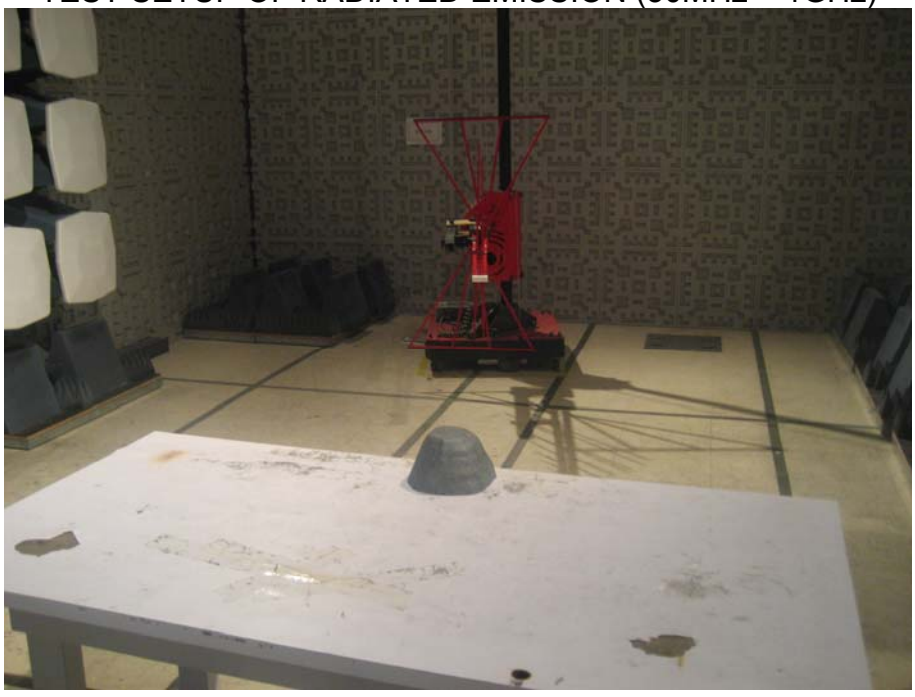
The test data are too low, and they are not recorded.

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

TEST SETUP OF RADIATED EMISSION (below 30MHz)

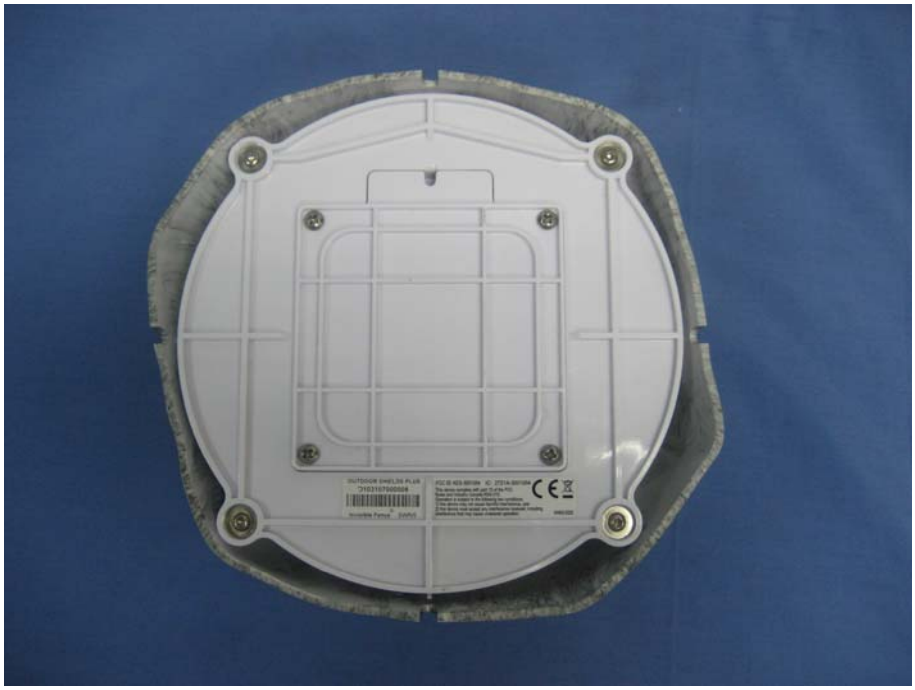


TEST SETUP OF RADIATED EMISSION (30MHz ~ 1GHz)



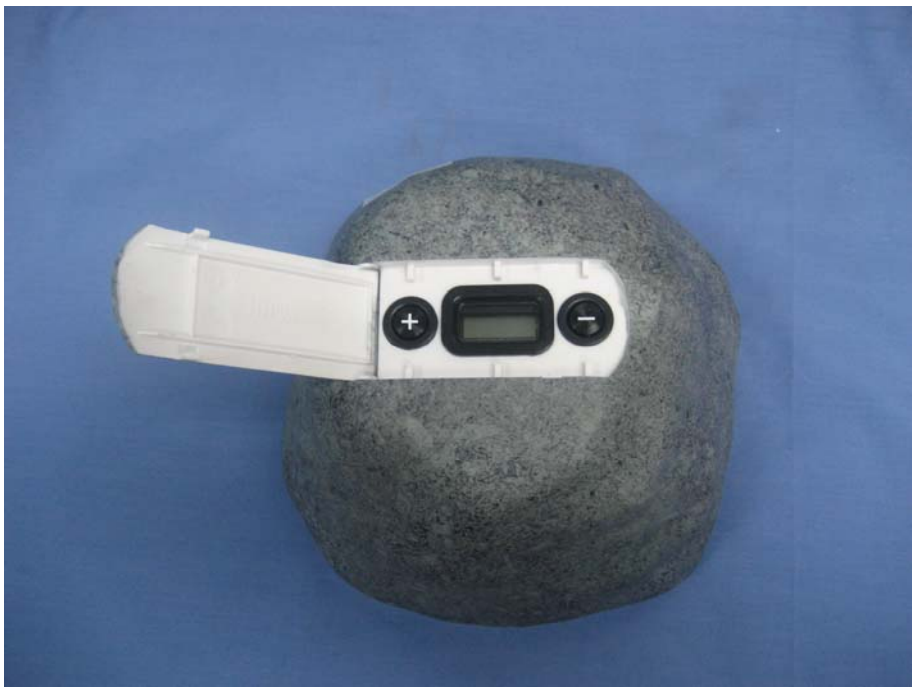
APPENDIX 2 EXTERNAL PHOTOGRAPHS OF EUT

View of external EUT-1



View of external EUT-2

APPENDIX 3 INTERNAL PHOTOGRAPHS OF EUT

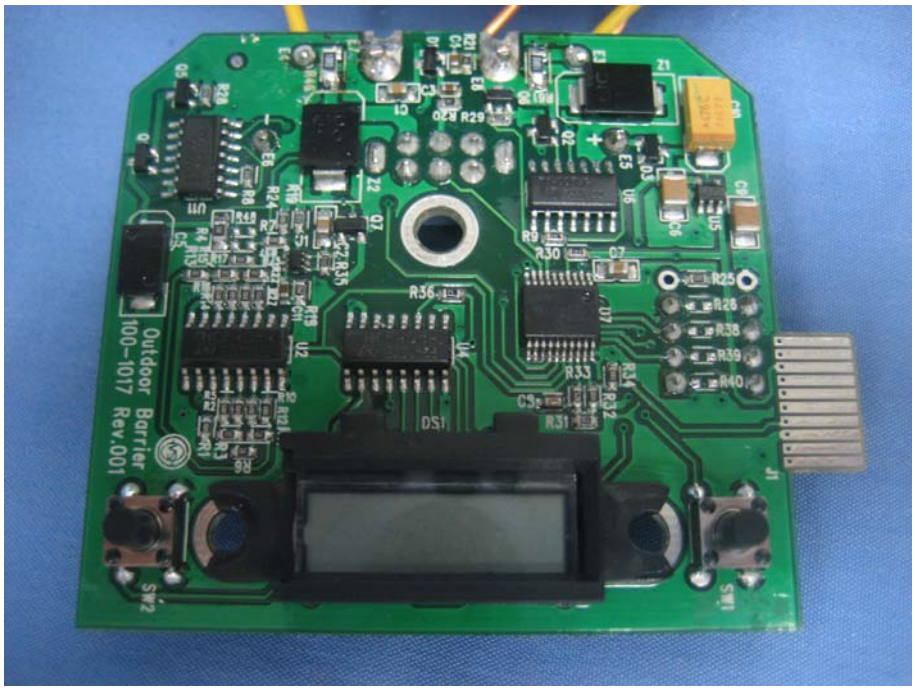


View of internal EUT-1

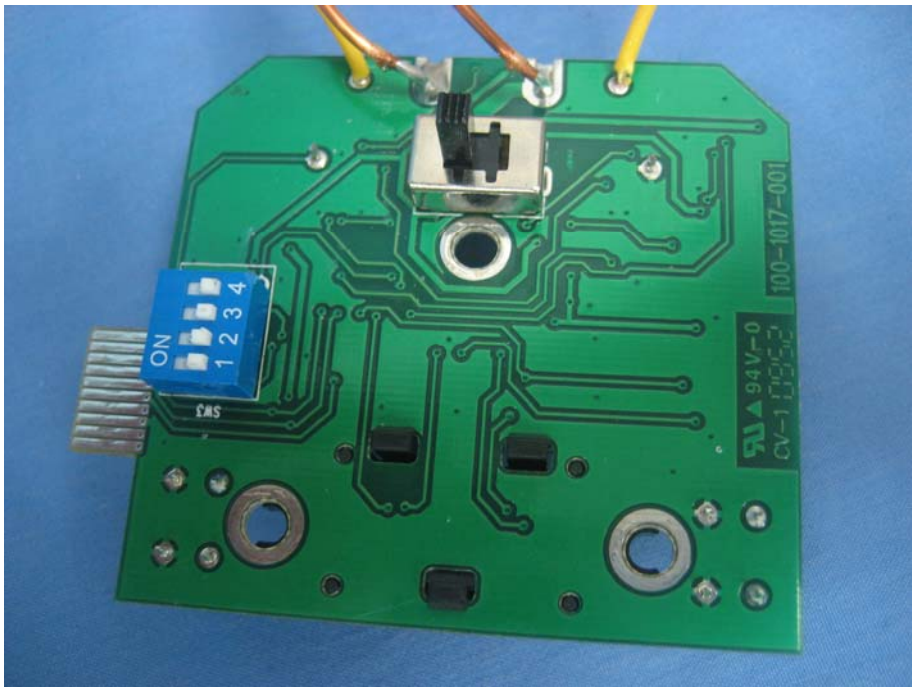
View of internal EUT-2

View of internal EUT-3

View of internal EUT-4



View of internal EUT-5



View of internal EUT-6

View of Antenna

------- End of report -------