



**SPORTON LAB.**

Certificate No: ER300919

# CERTIFICATE OF COMPLIANCE

● **EQUIPMENT : Wireless Pedometer/Tracker**

**MODEL NO. : M903**

**APPLICANT : ASE Group**

4F, No 133, Sec 4, Mingsheng E Rd, Songshan Dist, Taipei, Taiwan



**I HEREBY**

**CERTIFY THAT:**

The measurements shown in this test report were made in accordance with the procedures given in **ETSI EN 300 328 V1.7.1 (2006-10)**. Testing was carried out on **Oct. 23, 2013** at SPORTON International Inc. LAB. **EN 300 328 V1.7.1 (2006-10)** harmonized essential requirements of article 3.2 of the R&TTE Directive 1999/5/EC.

**Wayne Hsu**  
**Assistant Manager**

# CE Test Report

Equipment : Wireless Pedometer/Tracker  
Brand Name : ASE Group  
Model No. : M903  
Standard : EN 300 328 V1.7.1 (2006-10)  
Operating Band : 2400 MHz – 2483.5 MHz  
Applicant : ASE Group  
Manufacturer : 4F, No 133, Sec 4, Mingsheng E Rd,  
Songshan Dist, Taipei, Taiwan

The product sample received on Oct. 09, 2013 and completely tested on Oct. 23, 2013. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in EN 300 328 V1.7.1 (2006-10) and shown compliance with the applicable technical standards. The equipment under R&TTE Directive 1999/5/EC of article 3.2 harmonized essential for the radio spectrum requirements.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:

  
**Wayne Hsu / Assistant Manager**



## Table of Contents

<b>1</b>	<b>GENERAL DESCRIPTION .....</b>	<b>5</b>
1.1	Information.....	5
1.2	Product Details .....	7
1.3	Support Equipment.....	7
1.4	Testing Applied Standards .....	7
1.5	Testing Location Information .....	7
1.6	Measurement Uncertainty .....	8
<b>2</b>	<b>TEST CONFIGURATION OF EUT .....</b>	<b>9</b>
2.1	The Worse Case Modulation Configuration .....	9
2.2	Test Channel Frequencies Configuration.....	9
2.3	The Worse Case Power Setting Parameter .....	9
2.4	The Worst Case Measurement Configuration.....	10
2.5	Test Setup Diagram .....	11
<b>3</b>	<b>TRANSMITTER TEST RESULT .....</b>	<b>12</b>
3.1	Maximum Transmit Power.....	12
3.2	Maximum e.i.r.p. Spectral Density .....	14
3.3	Emission Bandwidth .....	15
3.4	Frequency Range.....	16
3.5	Transmitter Spurious Emissions.....	18
<b>4</b>	<b>RECEIVER TEST RESULT .....</b>	<b>26</b>
4.1	Receiver Spurious Emissions.....	26
<b>5</b>	<b>TEST EQUIPMENT AND CALIBRATION DATA .....</b>	<b>34</b>
<b>APPENDIX A. TEST PHOTOS</b>		
<b>APPENDIX B. PHOTOGRAPHS OF EUT</b>		

## Summary of Test Result

Harmonized Standard Requirements and Conformance Test Specifications					
Report Clause	Ref. Std. Clause	Description	Measured	Limit	Result
3.1	4.3.1	Maximum Transmit Power	EIRP (dBm) DSSS-LE:-3.04	DSSS - 20 dBm	Complied
3.2	4.3.2	Maximum e.i.r.p. Spectral Density	EIRP PSD [dBm/MHz] DSSS-LE:-3.38	10 dBm/MHz	N/A
3.3	-	Emission Bandwidth	666 kHz	Information only	Complied
3.4	4.3.3	Frequency Range	Fall in band	Fall in band	Complied
1.1.5	4.3.5	Medium Access Protocol	With mechanism designed to facilitate spectrum sharing that declared by supplier	IEEE 802.15.1 and Bluetooth Specifications	Complied
3.5	4.3.6	Transmitter Spurious Emissions	[e.i.r.p.]: 4960MHz -49.30dBm (Margin 19.30dB)	EN 300 328 Table 2, 3	Complied
4.1	4.3.7	Receiver Spurious Emissions	[e.i.r.p.]: 915.61MHz -64.00dBm (Margin 7.00dB)	EN 300 328 Table 4, 5	Complied



## Revision History

Report No.	Version	Description	Issued Date
ER300919	Rev. 01	Initial issue of report	Nov. 07, 2013

# 1 General Description

## 1.1 Information

### 1.1.1 RF General Information

RF General Information				
Frequency Range (MHz)	Bluetooth Mode	Ch. Frequency (MHz)	Channel Number	EIRP - Output Power (dBm)
2400-2483.5	LE	2402-2480	0-39 [40]	-0.34
Note 1: Bluetooth LE uses a GFSK (1Mbps) modulation for wide band modulations other than FHSS.				

### 1.1.2 Antenna Information

Antenna Category	
<input checked="" type="checkbox"/>	Integral antenna (antenna permanently attached)
<input type="checkbox"/>	Temporary RF connector provided
<input checked="" type="checkbox"/>	No temporary RF connector provided Transmit chains bypass antenna and soldered temporary RF connector provided for connected measurement. In case of conducted measurements the transmitter shall be connected to the measuring equipment via a suitable attenuator and correct for all losses in the RF path.
<input type="checkbox"/>	External antenna (dedicated antennas)

Antenna General Information			
No.	Ant. Cat.	Ant. Type	Gain (dBi)
1	Integral	Printed	-1.50

### 1.1.3 Type of EUT

Identify EUT	
EUT Serial Number	N/A
Presentation of Equipment	<input type="checkbox"/> Production ; <input type="checkbox"/> Pre-Production ; <input checked="" type="checkbox"/> Prototype
Type of EUT	
<input checked="" type="checkbox"/>	Stand-alone
<input type="checkbox"/>	Combined (EUT where the radio part is fully integrated within another device) Combined Equipment - Brand Name / Model No.:
<input type="checkbox"/>	Plug-in radio (EUT intended for a variety of host systems) Host System - Brand Name / Model No.:
<input type="checkbox"/>	Other:





**1.1.4 Test Signal Duty Cycle**

Operated Mode for Worst Duty Cycle	
<input checked="" type="checkbox"/> Operated normally hopping mode for worst duty cycle	
<input checked="" type="checkbox"/> Operated test mode for worst duty cycle	
Test Signal Duty Cycle (x)	Power Duty Factor [dB] – (10 log 1/x)
<input checked="" type="checkbox"/> 68.84% - normally mode - LE	1.56
Bluetooth ACL packets can be 1, 3, or 5 time slots. The DH1 packet can cover a single time slot. The DH3 packet can cover up to 3 time slots. The DH5 packet can cover up to 5 time slots. Operate DH5 at maximum dwell time and maximum duty cycle.	

**1.1.5 Medium Access Protocol**

Medium Access Protocol	
Medium Access Protocol:	<input type="checkbox"/> IEEE Std. 802.11-2007
	<input type="checkbox"/> IEEE Std. 802.11n-2009
	<input type="checkbox"/> IEEE Std. 802.15.4-2006
	<input checked="" type="checkbox"/> IEEE Std. 802.15.1-2005
	<input type="checkbox"/> Other:
A medium access protocol has been implemented by the equipment. With mechanism designed to facilitate spectrum sharing with other devices in a wireless network. The equipment implements an adequate spectrum sharing mechanism and users will be equal access wireless network.	

**1.1.6 EUT Operational Condition**

<b>Supply Voltage</b>	<input type="checkbox"/> AC mains	<input checked="" type="checkbox"/> DC	
<b>Type of DC Source</b>	<input type="checkbox"/> Internal DC supply	<input type="checkbox"/> External DC adapter	<input checked="" type="checkbox"/> Battery
<b>Test Voltage</b>	<input checked="" type="checkbox"/> Vnom (3.00 V)	<input checked="" type="checkbox"/> Vmax (3.30 V)	<input checked="" type="checkbox"/> Vmin (2.70 V)
<b>Test Climatic</b>	<input checked="" type="checkbox"/> Tnom (20°C)	<input checked="" type="checkbox"/> Tmax (70°C)	<input checked="" type="checkbox"/> Tmin (0°C)

## 1.2 Product Details

The equipment is Wireless Pedometer. There are two samples of EUT. The only difference is the outward appearances. For more detailed features description, please refer to the specifications or user's manual.

## 1.3 Support Equipment

Support Equipment			
No.	Equipment	Brand Name	Model Name
1	Test Fixture	-	-
2	DC power supply	GW	GPC-6030D

## 1.4 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- EN 300 328 V1.7.1 (2006-10)

## 1.5 Testing Location Information

Testing Location			
<input checked="" type="checkbox"/>	HWA YA	ADD : No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-327-0973	
Test Condition	Test Site No.	Test Engineer	Test Environment
RF Conducted	TH01-HY	Wei	25°C / 65%
Radiated Emission	05CH01-HY	Thor	24°C / 63%



## 1.6 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

<b>Measurement Uncertainty</b>			
<b>Test Item</b>		<b>Uncertainty</b>	<b>Limit</b>
Radio Frequency		$\pm 8.7 \times 10^{-7}$	$\pm 1 \times 10^{-5}$
RF output power, conducted		$\pm 0.63$ dB	$\pm 1.5$ dB
Power density, conducted		$\pm 1.21$ dB	$\pm 3$ dB
Unwanted emissions, conducted	30 – 1000 MHz	$\pm 0.51$ dB	$\pm 3$ dB
	1 – 12.75 GHz	$\pm 0.67$ dB	$\pm 3$ dB
All emissions, radiated	30 – 1000 MHz	$\pm 2.28$ dB	$\pm 6$ dB
	1 – 12.75 GHz	$\pm 2.59$ dB	$\pm 6$ dB
Temperature		$\pm 0.8$ °C	$\pm 1$ °C
Humidity		$\pm 3$ %	$\pm 5$ %
DC and low frequency voltages		$\pm 3$ %	$\pm 3$ %

## 2 Test Configuration of EUT

### 2.1 The Worse Case Modulation Configuration

Worst Modulation Used for Conformance Testing					
Bluetooth Mode	Transmit Chains (N <sub>TX</sub> )	Data Rate	Modulation Mode	Conducted Power (dBm) [for TnomVnom]	Worst Mode
LE	1	1 Mbps	LE-1Mbps	-0.34	LE-1Mbps

Note 3: Bluetooth LE (Low Energy) uses as a low-power and low-latency using GFSK modulation for wide band modulations other than FHSS.

### 2.2 Test Channel Frequencies Configuration

Test Channel Frequencies Configuration	
Bluetooth Mode	Test Channel Freq. (MHz)
LE	2402-(F1), 2440-(F2), 2480-(F3)

### 2.3 The Worse Case Power Setting Parameter

The Worst Case Power Setting Parameter			
Test Software Version	RealTerm Serial Capture Program		
Modulation Mode	2402 MHz	2440 MHz	2480 MHz
LE, 1Mbps	Default	Default	Default

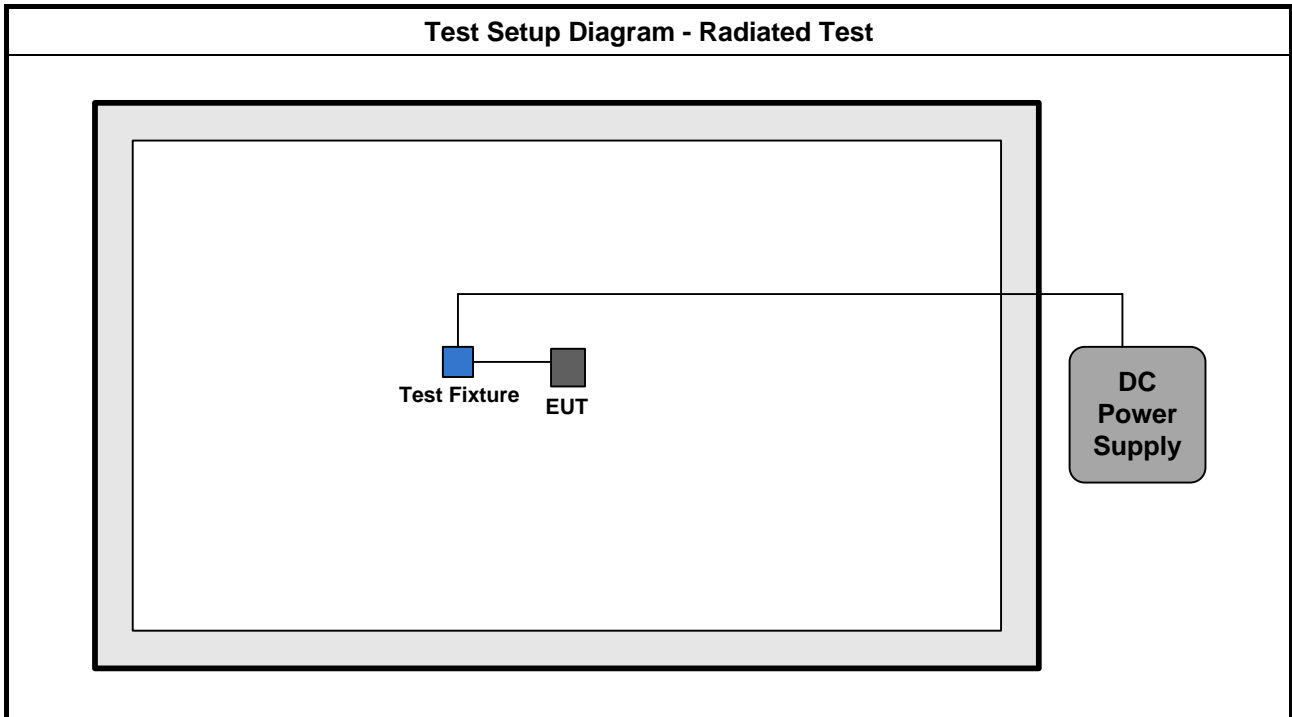
## 2.4 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	Maximum Transmit Power, Emission Bandwidth, Frequency Range
<b>Test Condition</b>	Conducted measurement at transmit chains Operate DH5 at maximum Dwell Time and maximum Duty Cycle <input checked="" type="checkbox"/> Non-adaptive frequency hopping systems (Non-AFH) <input checked="" type="checkbox"/> adaptive frequency hopping systems (AFH)
<b>Modulation Mode</b>	BR-1Mbps, EDR-3Mbps, LE-1Mbps

The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	Maximum e.i.r.p. Spectral Density
<b>Test Condition</b>	Conducted measurement at transmit chains. FHSS w/o test.
<b>Modulation Mode</b>	LE-1Mbps

The Worst Case Mode for Following Conformance Tests	
<b>Tests Item</b>	Transmitter Spurious Emissions, Receiver Spurious Emissions
<b>Test Condition</b>	Radiated measurement
<b>User Position</b>	<input checked="" type="checkbox"/> EUT will be placed in fixed position.
	<input type="checkbox"/> EUT will be placed in mobile position and operating multiple positions. EUT shall be performed two orthogonal planes.
	<input type="checkbox"/> EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions. EUT shall be performed two or three orthogonal planes.
<b>Operating Mode &lt; 1GHz</b>	<input checked="" type="checkbox"/> 1. Transmit / Receive
<b>Modulation Mode</b>	LE-1Mbps

## 2.5 Test Setup Diagram



### 3 Transmitter Test Result

#### 3.1 Maximum Transmit Power

##### 3.1.1 Maximum Transmit Power Limit

Maximum Transmit Power Limit	
<b>Type of Frequency Hopping Equipment:</b>	
<input checked="" type="checkbox"/>	mean equivalent isotropic radiated power (e.i.r.p.) $\leq$ 20 dBm
<b>Type of Equipment Using Wide Band Modulations Other than FHSS:</b>	
<input checked="" type="checkbox"/>	mean equivalent isotropic radiated power (e.i.r.p.) $\leq$ 20 dBm

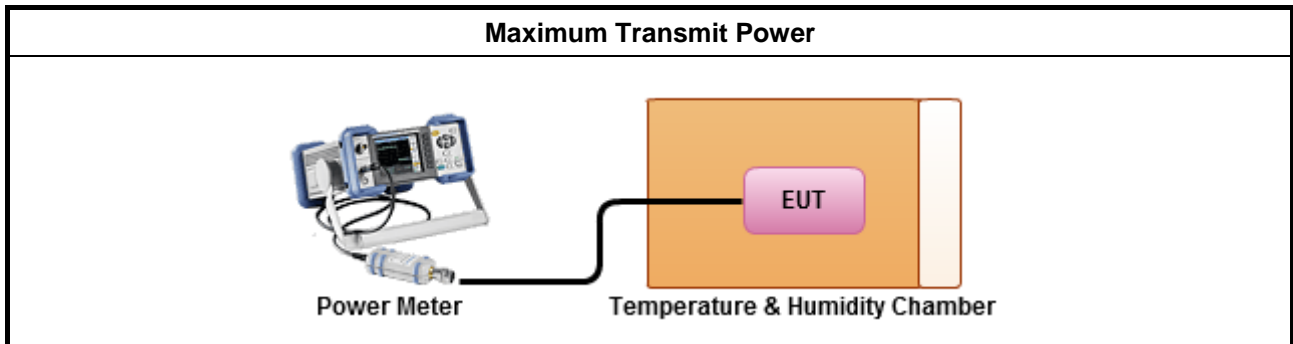
##### 3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

##### 3.1.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	The measurements shall be performed at both normal environmental conditions and at the extremes of the operating temperature range.
<input checked="" type="checkbox"/>	Refer as EN 300 328, clause 5.7.2.2 for conducted measurement.
<input checked="" type="checkbox"/>	The EUT supports single transmit chain and measurements performed on this transmit chain.
<input type="checkbox"/>	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
<input type="checkbox"/>	Refer as EN 300 328, clause 5.7.2.2 for radiated measurement.

##### 3.1.4 Test Setup





3.1.5 Test Result of Maximum Transmit Power

RF Output Power Result					
Gain (dBi)		-1.50	RF Output Power (dBm)		
Condition	Modulation Mode	Freq. (MHz)	Conducted Power	EIRP Power	EIRP Limit
TnomVnom	LE-1Mbps	2402	-3.21	-4.71	20
TminVmax	LE-1Mbps	2402	-3.33	-4.83	20
TminVmin	LE-1Mbps	2402	-3.34	-4.84	20
TmaxVmax	LE-1Mbps	2402	-5.11	-6.61	20
TmaxVmin	LE-1Mbps	2402	-5.12	-6.62	20
TnomVnom	LE-1Mbps	2440	-1.43	-2.93	20
TminVmax	LE-1Mbps	2440	-1.16	-2.66	20
TminVmin	LE-1Mbps	2440	-1.15	-2.65	20
TmaxVmax	LE-1Mbps	2440	-3.52	-5.02	20
TmaxVmin	LE-1Mbps	2440	-3.54	-5.04	20
TnomVnom	LE-1Mbps	2480	-0.41	-1.91	20
TminVmax	LE-1Mbps	2480	-0.34	-1.84	20
TminVmin	LE-1Mbps	2480	-0.35	-1.85	20
TmaxVmax	LE-1Mbps	2480	-2.34	-3.84	20
TmaxVmin	LE-1Mbps	2480	-2.35	-3.85	20
<b>Result</b>			<b>Complied</b>		

### 3.2 Maximum e.i.r.p. Spectral Density

#### 3.2.1 Maximum e.i.r.p. Spectral Density Limit

Maximum e.i.r.p. Spectral Density Limit	
Type of Equipment Using Wide Band Modulations Other than FHSS:	
<input checked="" type="checkbox"/>	mean equivalent isotropic radiated power (e.i.r.p.) density $\leq 10$ dBm/MHz

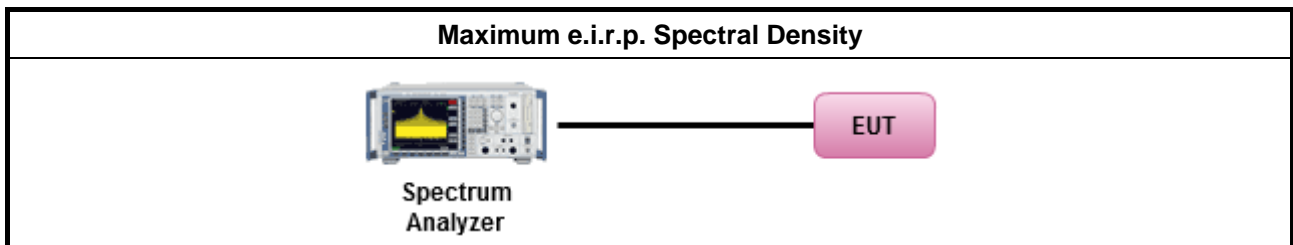
#### 3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

#### 3.2.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	Refer as EN 300 328, clause 5.7.3 for the maximum spectral power density shall be measured using one of the options below:
<input checked="" type="checkbox"/>	Option 1: Using a spectrum analyser with an average detector and/or PSD measurement feature
<input type="checkbox"/>	Option 2: Using a spectrum analyser with a narrow IF output port
<input checked="" type="checkbox"/>	Refer as EN 300 328, clause 5.7.2.2 for conducted measurement.
<input checked="" type="checkbox"/>	The EUT supports single transmit chain and measurements performed on this transmit chain.
<input type="checkbox"/>	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
<input type="checkbox"/>	Refer as EN 300 328, clause 5.7.2.1 for radiated measurement.

#### 3.2.4 Test Setup



#### 3.2.5 Test Result of Maximum e.i.r.p. Spectral Density

Maximum e.i.r.p. Spectral Density Result					
Modulation Mode	Freq. (MHz)	PD (dBm/MHz)	Max. Gain (dBi)	EIRP PD (dBm/MHz)	EIRP Limit (dBm/MHz)
LE-1Mbps	2402	-4.68	-1.50	-6.18	10
LE-1Mbps	2440	-3.33	-1.50	-4.83	10
LE-1Mbps	2480	-1.88	-1.50	-3.38	10
<b>Result</b>		<b>Complied</b>			



### 3.3 Emission Bandwidth

#### 3.3.1 Emission Bandwidth Limit

<b>Emission Bandwidth Digital Modulation Limit</b>
Information only

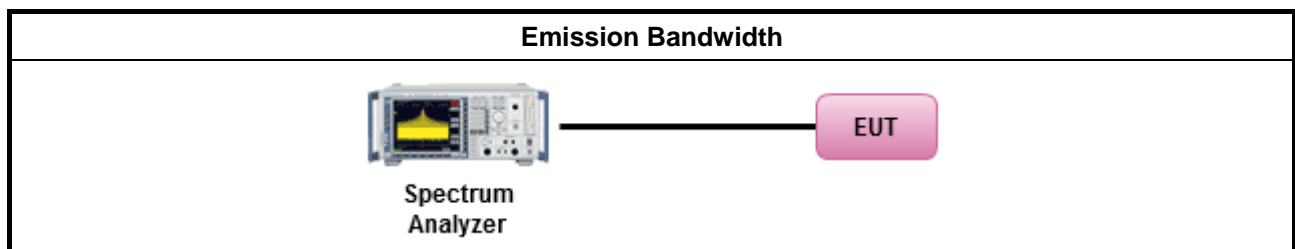
#### 3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

#### 3.3.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	Refer as EN 300 328, clause 5.3.8.2.1 for conducted measurement.
<input checked="" type="checkbox"/>	The EUT supports single transmit chain and measurements performed on this transmit chain.
<input type="checkbox"/>	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
<input type="checkbox"/>	Refer as EN 300 328, clause 5.3.8.2.2 clause 5.3.8.2.2 for radiated measurement.

#### 3.3.4 Test Setup



#### 3.3.5 Test Result of Emission Bandwidth

Emission Bandwidth Result					
Modulation Mode	Frequency (MHz)	99% Bandwidth (MHz)	F <sub>L</sub> at 99% BW (MHz)	F <sub>H</sub> at 99% BW (MHz)	6dB Bandwidth (MHz)
LE-1Mbps	2402	1.056	2401.52	2402.576	0.666
LE-1Mbps	2480	1.050	2479.496	2480.546	0.672
<b>Limit</b>		<b>N/A</b>	<b>2400</b>	<b>2483.5</b>	Information only
<b>Result</b>		<b>Complied</b>			

### 3.4 Frequency Range

#### 3.4.1 Frequency Range Limit

Frequency Range Limit
For all equipment the frequency range shall lie within the band 2.4 GHz to 2.4835 GHz ( $f_L \geq 2.4$ GHz and $f_H \leq 2.4835$ GHz).

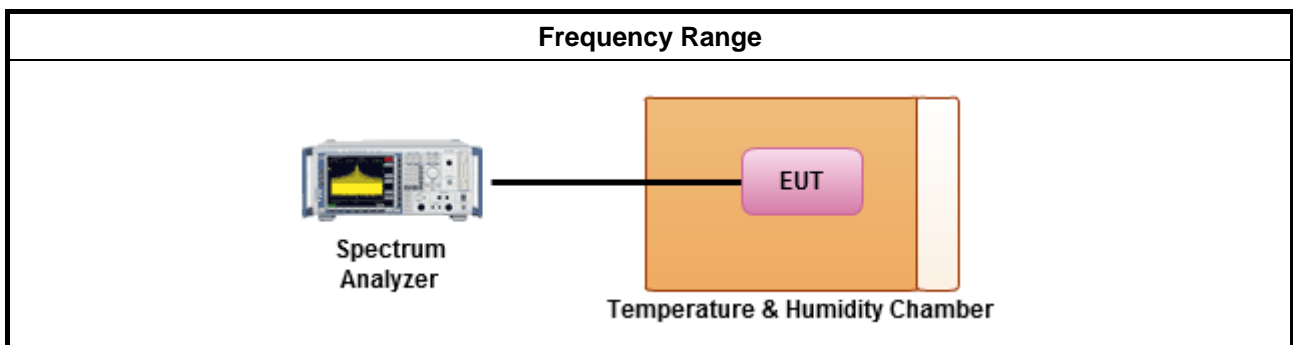
#### 3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

#### 3.4.3 Test Procedures

Test Method
<input checked="" type="checkbox"/> The measurements shall be performed at both normal environmental conditions and at the extremes of the operating temperature range.
<input checked="" type="checkbox"/> Refer as EN 300 328, clause 5.7.4 for the frequency range shall be measured using one of the options below.
<input checked="" type="checkbox"/> Option 1: Using a spectrum analyser average detector (Duty Cycle $\leq$ 100%)
<input type="checkbox"/> Option 2: Using a spectrum analyser video averaging mode (Duty Cycle = 100%)
<input checked="" type="checkbox"/> For conducted measurement.
<input checked="" type="checkbox"/> The EUT supports single transmit chain and measurements performed on this transmit chain.
<input type="checkbox"/> The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
<input type="checkbox"/> For radiated measurement.

#### 3.4.4 Test Setup



**3.4.5 Test Result of Frequency Range**

Frequency Range Result					
Max. Gain (dBi)		-1.50	Frequency Range (MHz)		
Condition	Modulation Mode	Freq. (MHz)	Threshold Level (dBm/100kHz)	F <sub>L</sub> and F <sub>H</sub>	Limit
TnomVnom	LE-1Mbps	2402	-30	2401.5218	2400
TminVmax	LE-1Mbps	2402	-30	2401.5158	2400
TminVmin	LE-1Mbps	2402	-30	2401.4984	2400
TmaxVmax	LE-1Mbps	2402	-30	2401.5281	2400
TmaxVmin	LE-1Mbps	2402	-30	2401.5263	2400
TnomVnom	LE-1Mbps	2480	-30	2480.5946	2483.5
TminVmax	LE-1Mbps	2480	-30	2480.6041	2483.5
TminVmin	LE-1Mbps	2480	-30	2480.6264	2483.5
TmaxVmax	LE-1Mbps	2480	-30	2480.5703	2483.5
TmaxVmin	LE-1Mbps	2480	-30	2480.5854	2483.5
<b>Result</b>			<b>Complied</b>		

### 3.5 Transmitter Spurious Emissions

#### 3.5.1 Transmitter Spurious Emissions Limit

Transmitter limits for narrowband spurious emissions		
Frequency range	Limit when operating	Limit when in standby
30 MHz to 1 GHz	-36 dBm	-57 dBm
above 1 GHz to 12,75 GHz	-30 dBm	-47 dBm
1,8 GHz to 1,9 GHz 5,15 GHz to 5,3 GHz	-47 dBm	-47 dBm

Transmitter limits for wideband spurious emissions		
Frequency range	Limit when operating	Limit when in standby
30 MHz to 1 GHz	-86 dBm/Hz	-107 dBm/Hz
above 1 GHz to 12,75 GHz	-80 dBm/Hz	-97 dBm/Hz
1,8 GHz to 1,9 GHz 5,15 GHz to 5,3 GHz	-97 dBm/Hz	-97 dBm/Hz

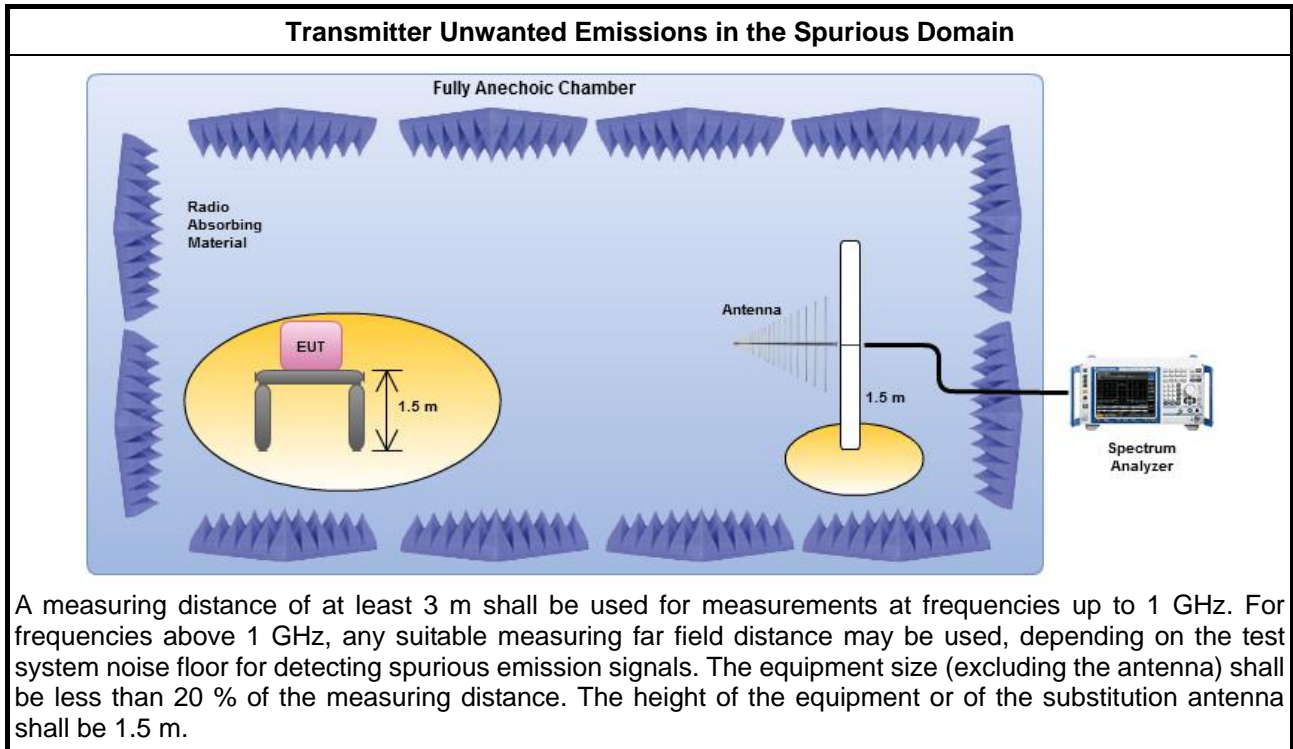
#### 3.5.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

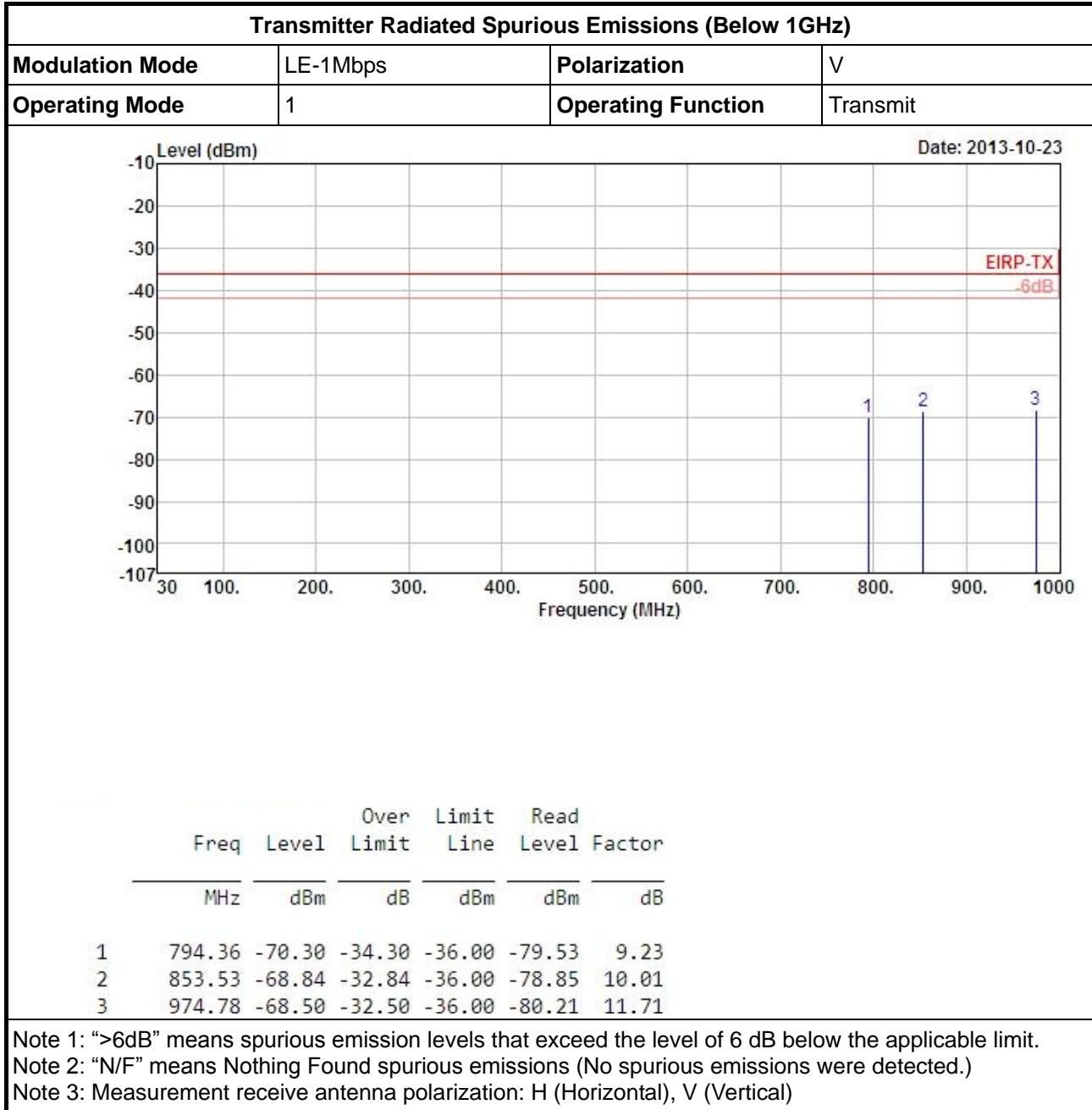
#### 3.5.3 Test Procedures

Test Method	
<input type="checkbox"/>	Refer as EN 300 328, clause 5.7.5 a) for conducted and cabinet radiated measurement. Conducted spurious emissions and radiated by the cabinet with the antenna connector(s) terminated by a specified load (cabinet radiation).
<input type="checkbox"/>	The EUT supports single transmit chain and measurements performed on this transmit chain.
<input type="checkbox"/>	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
<input checked="" type="checkbox"/>	Refer as EN 300 328, clause 5.7.5 b) for radiated measurement.

### 3.5.4 Test Setup



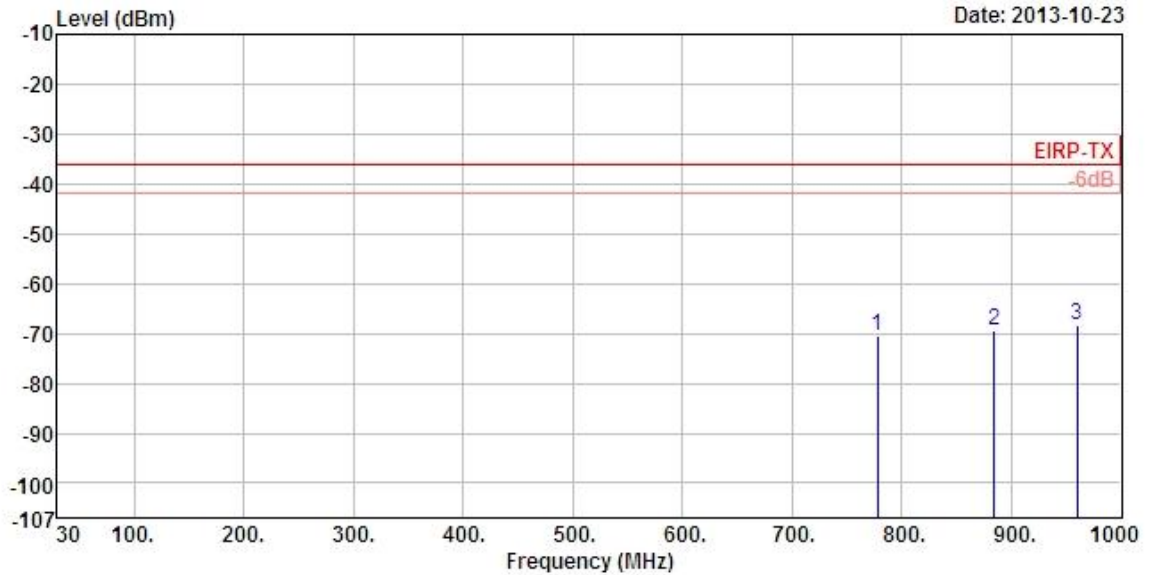
### 3.5.5 Transmitter Radiated Unwanted Emissions (Below 1GHz)





Transmitter Radiated Spurious Emissions (Below 1GHz)

Modulation Mode	LE-1Mbps	Polarization	H
Operating Mode	1	Operating Function	Transmit

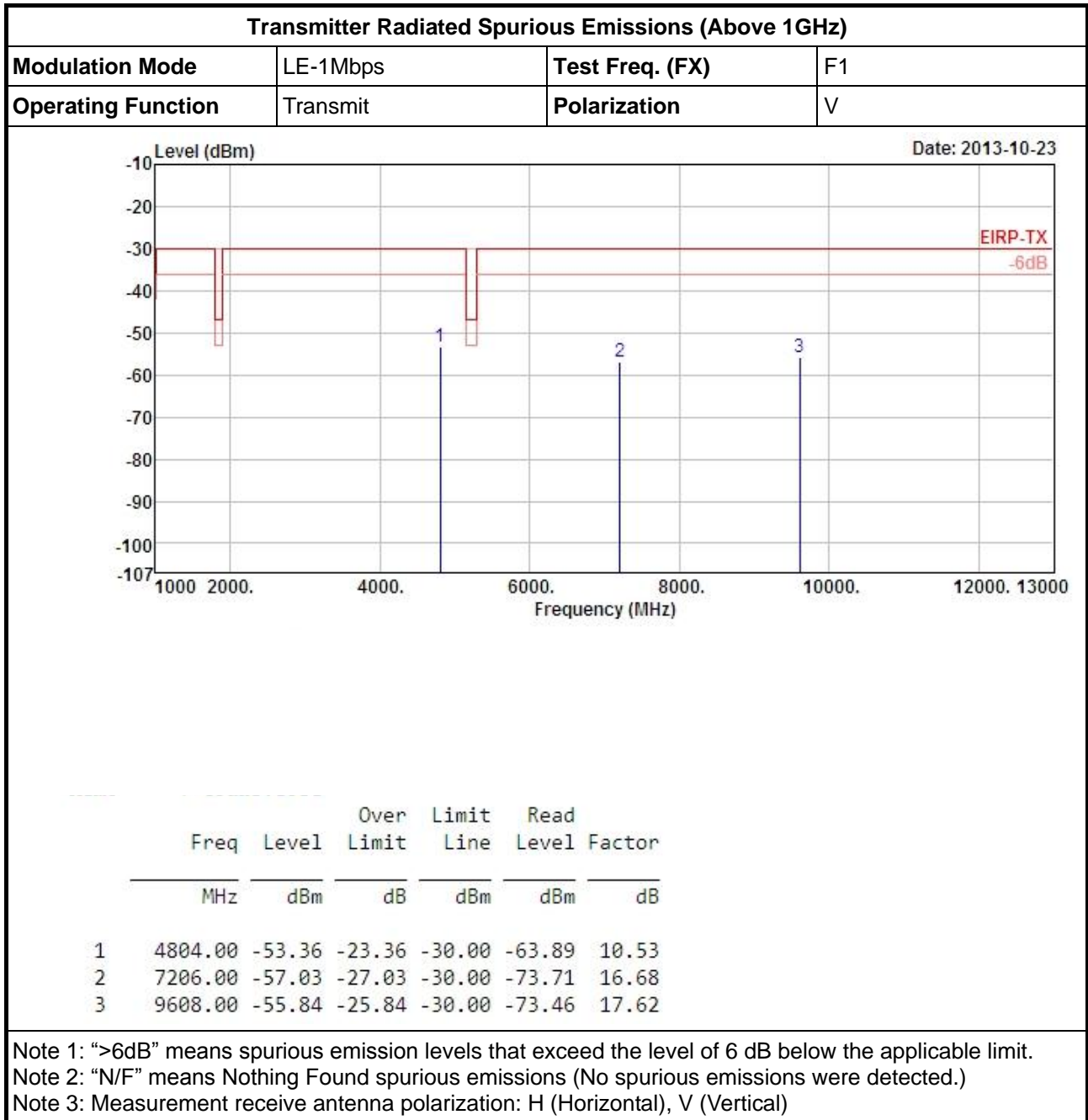


	Freq	Level	Over	Limit	Read	
	MHz	dBm	Limit	Line	Level	Factor
			dB	dBm	dBm	dB
1	777.87	-70.39	-34.39	-36.00	-78.79	8.40
2	884.57	-69.32	-33.32	-36.00	-79.54	10.22
3	960.23	-68.29	-32.29	-36.00	-79.84	11.55

Note 1: ">6dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.  
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)  
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



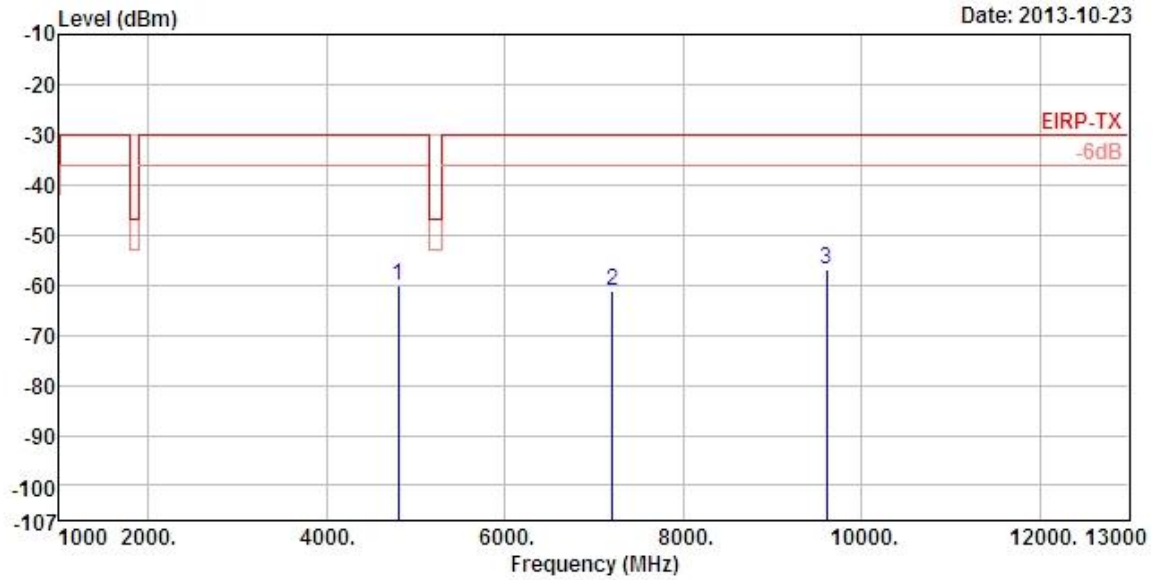
3.5.6 Transmitter Radiated Unwanted Emissions (Above 1GHz)





Transmitter Radiated Spurious Emissions (Above 1GHz)

Modulation Mode	LE-1Mbps	Test Freq. (FX)	F1
Operating Function	Transmit	Polarization	H



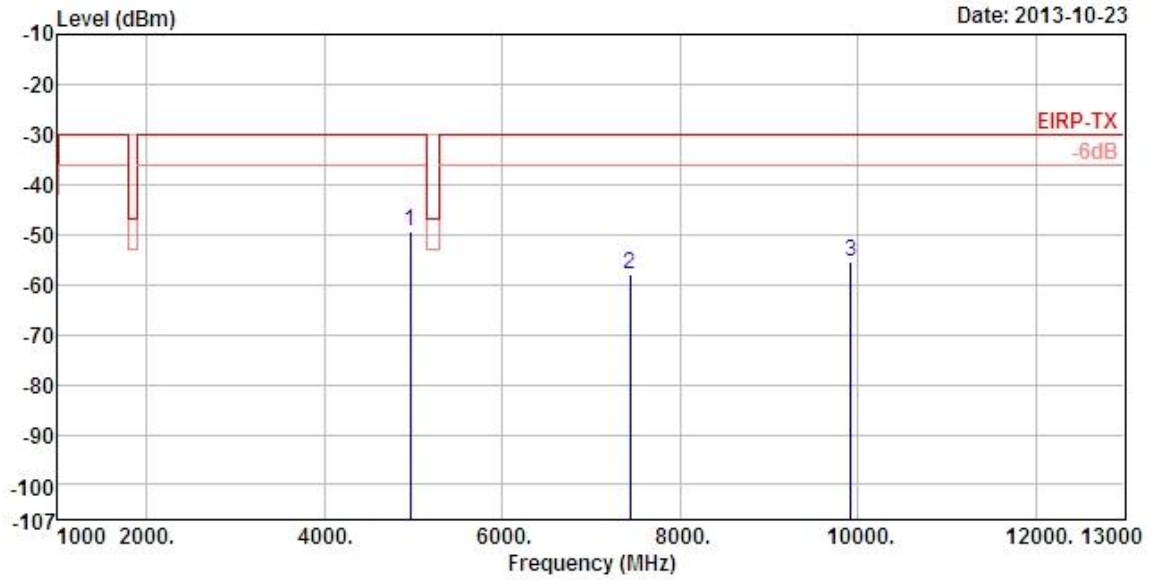
	Freq	Level	Over	Limit	Read	
	MHz	dBm	Limit	Line	Level	Factor
			dB	dBm	dBm	dB
1	4804.00	-60.16	-30.16	-30.00	-69.89	9.73
2	7206.00	-61.14	-31.14	-30.00	-75.49	14.35
3	9608.00	-56.88	-26.88	-30.00	-70.54	13.66

Note 1: ">6dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.  
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)  
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



Transmitter Radiated Spurious Emissions (Above 1GHz)

Modulation Mode	LE-1Mbps	Test Freq. (FX)	F3
Operating Function	Transmit	Polarization	V



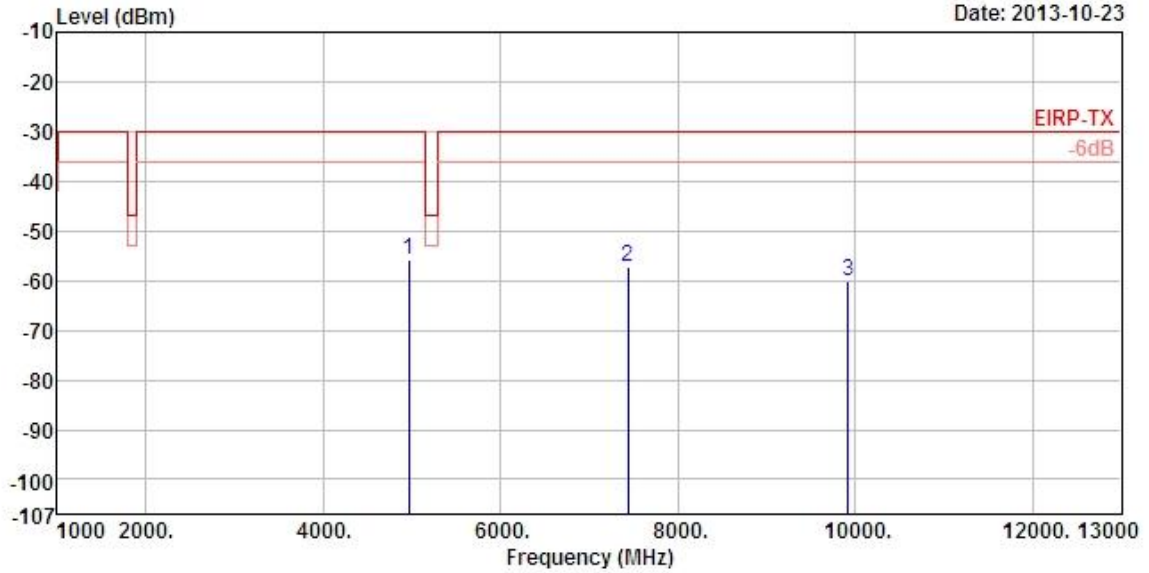
	Freq	Level	Over	Limit	Read	
	MHz	dBm	Limit	Line	Level	Factor
			dB	dBm	dBm	dB
1	4960.00	-49.30	-19.30	-30.00	-60.34	11.04
2	7440.00	-57.85	-27.85	-30.00	-75.23	17.38
3	9920.00	-55.58	-25.58	-30.00	-73.38	17.80

Note 1: ">6dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.  
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)  
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



Transmitter Radiated Spurious Emissions (Above 1GHz)

Modulation Mode	LE-1Mbps	Test Freq. (FX)	F3
Operating Function	Transmit	Polarization	H



	Freq	Level	Over	Limit	Read	
	MHz	dBm	Limit	Line	Level	Factor
			dB	dBm	dBm	dB
1	4960.00	-55.74	-25.74	-30.00	-66.07	10.33
2	7440.00	-57.17	-27.17	-30.00	-71.95	14.78
3	9920.00	-60.00	-30.00	-30.00	-73.64	13.64

Note 1: ">6dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.  
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)  
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

## 4 Receiver Test Result

### 4.1 Receiver Spurious Emissions

#### 4.1.1 Receiver Spurious Emissions Limit

Narrowband spurious emission limits for receivers	
Frequency range	Limit
30 MHz to 1 GHz	-57 dBm
above 1 GHz to 12,75 GHz	-47 dBm

Wideband spurious emission limits for receivers	
Frequency range	Limit
30 MHz to 1 GHz	-107 dBm/Hz
above 1 GHz to 12,75 GHz	-97 dBm/Hz

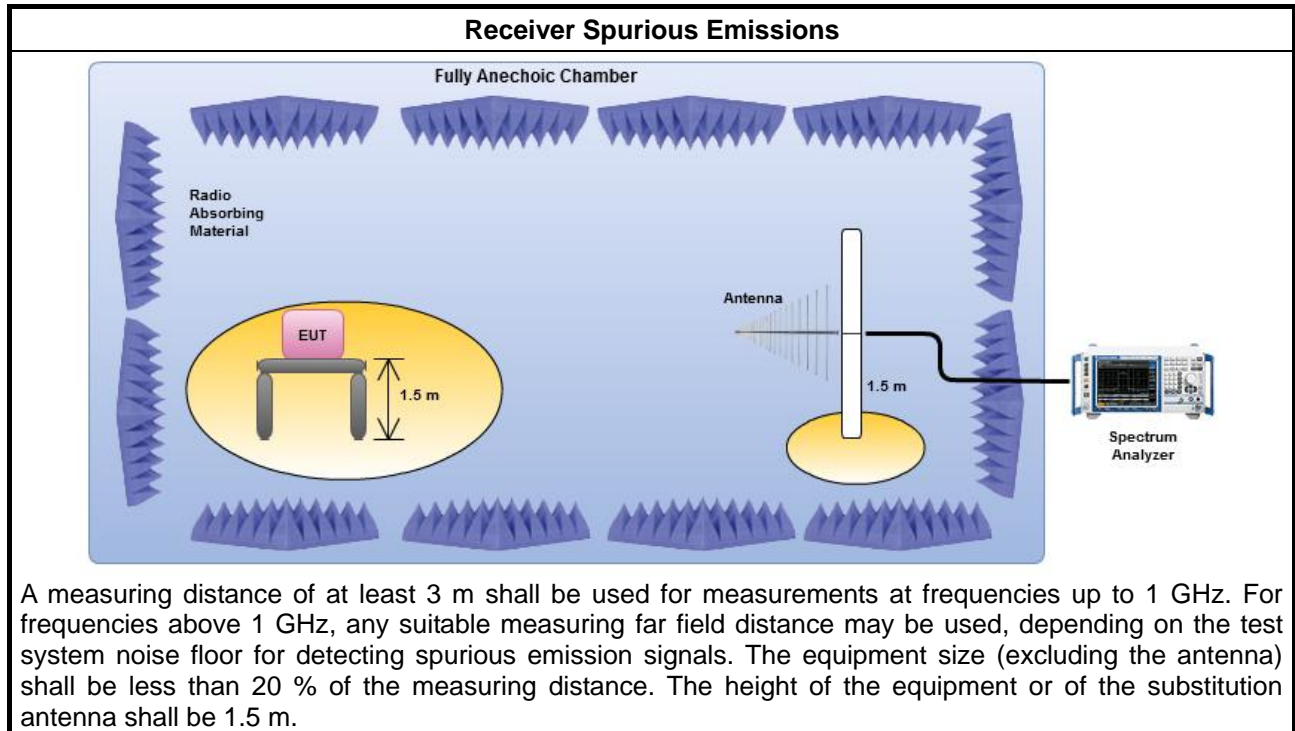
#### 4.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

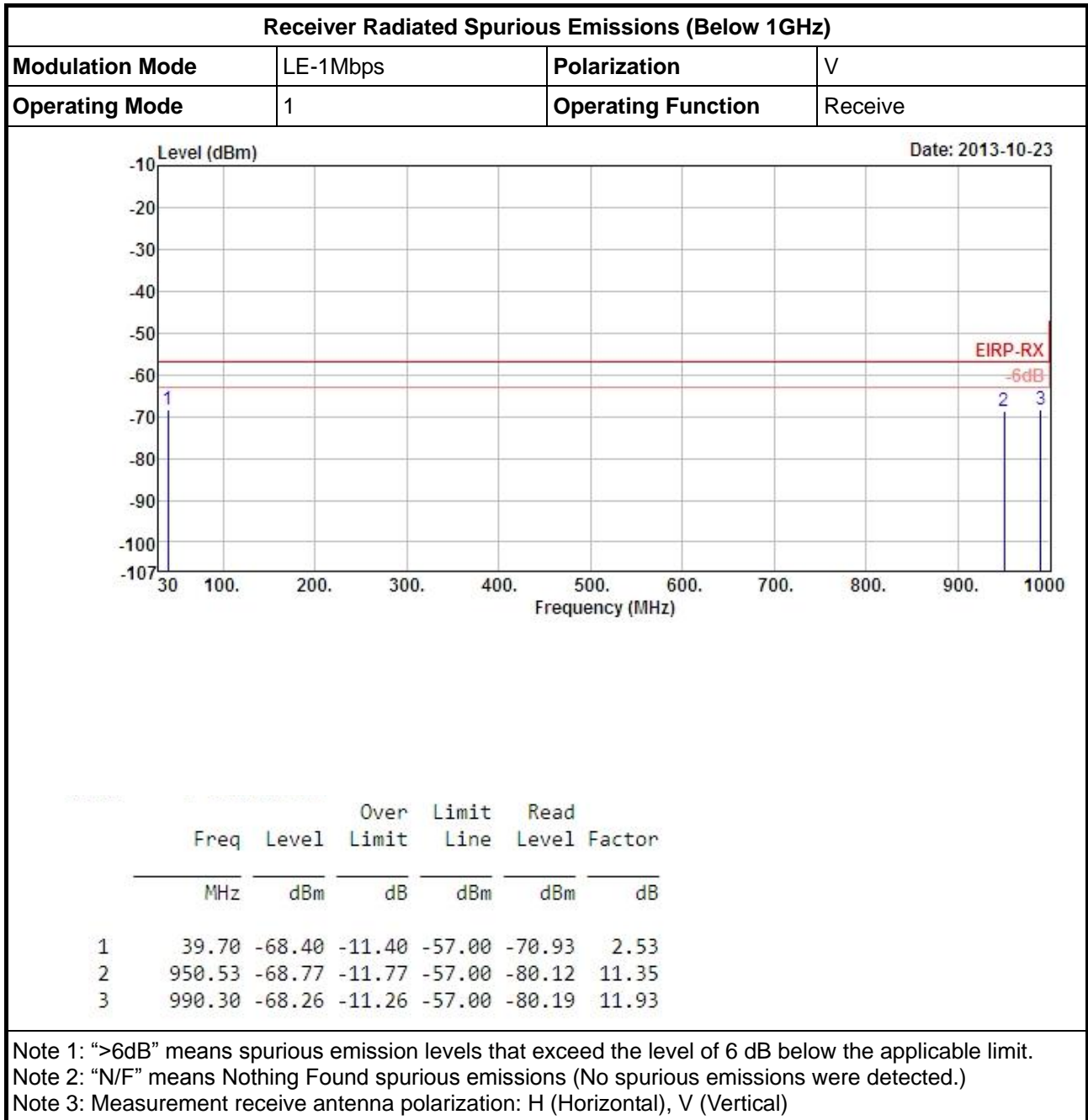
#### 4.1.3 Test Procedures

Test Method	
<input type="checkbox"/>	Refer as EN 300 328, clause 5.7.6 a) for conducted and cabinet radiated measurement. Conducted spurious emissions and radiated by the cabinet with the antenna connector(s) terminated by a specified load (cabinet radiation).
<input type="checkbox"/>	The EUT supports single receive chain and measurements performed on this receive chain.
<input type="checkbox"/>	The EUT supports diversity receiving and the results on receive chain port 1 is the worst case.
<input checked="" type="checkbox"/>	Refer as EN 300 328, clause 5.7.6 b) for radiated measurement.

#### 4.1.4 Test Setup



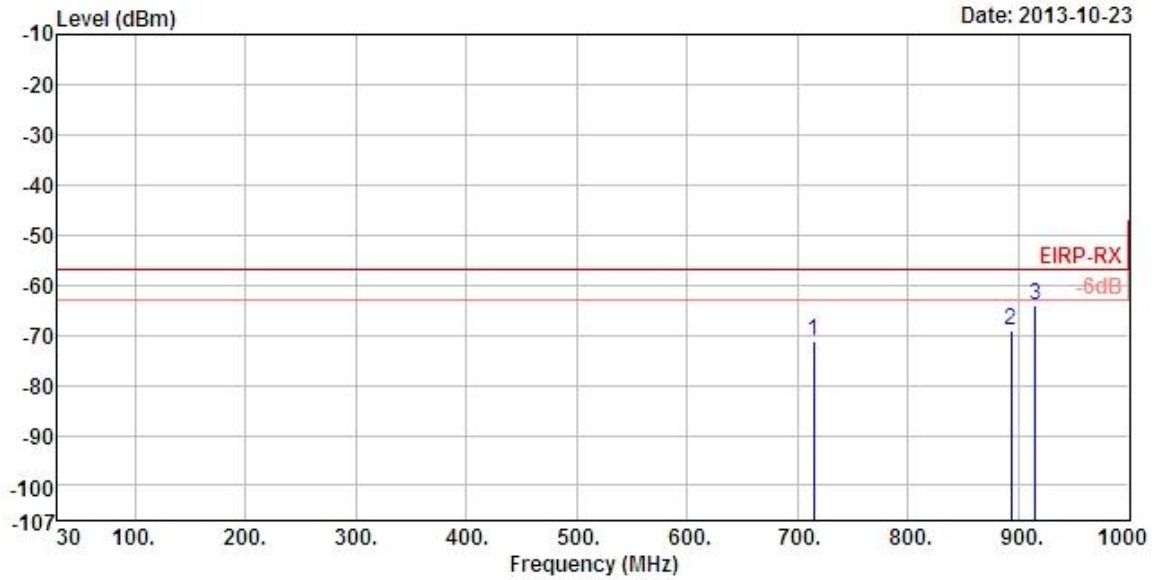
4.1.5 Receiver Radiated Spurious Emissions (Below 1GHz)





Receiver Radiated Spurious Emissions (Below 1GHz)

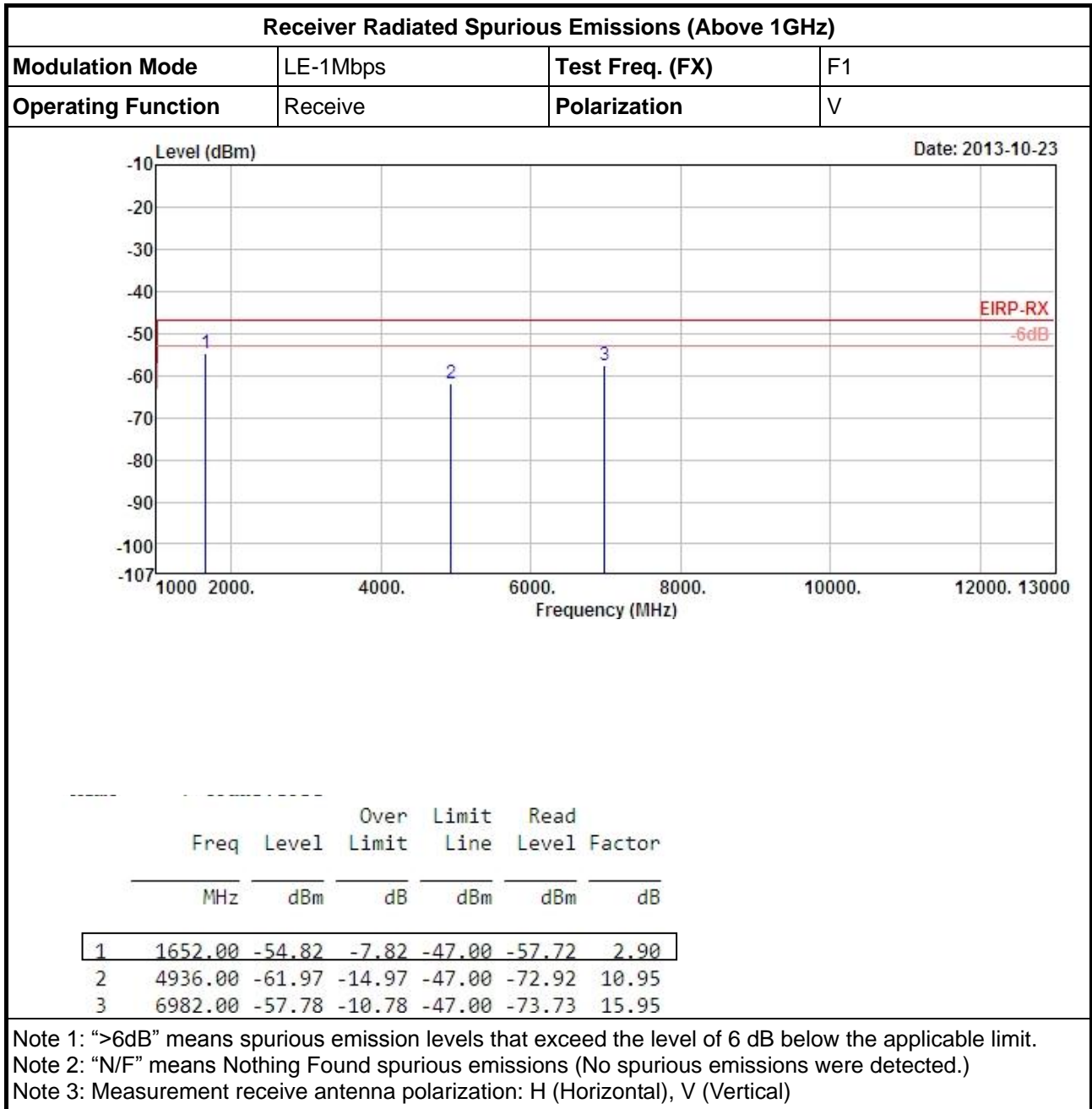
Modulation Mode	LE-1Mbps	Polarization	V
Operating Mode	1	Operating Function	Receive



	Freq	Level	Over	Limit	Read	
	MHz	dBm	Limit	Line	Level	Factor
			dB	dBm	dBm	dB
1	714.82	-71.32	-14.32	-57.00	-78.53	7.21
2	893.30	-69.12	-12.12	-57.00	-79.47	10.35
3	915.61	-64.00	-7.00	-57.00	-74.76	10.76

Note 1: ">6dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.  
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)  
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

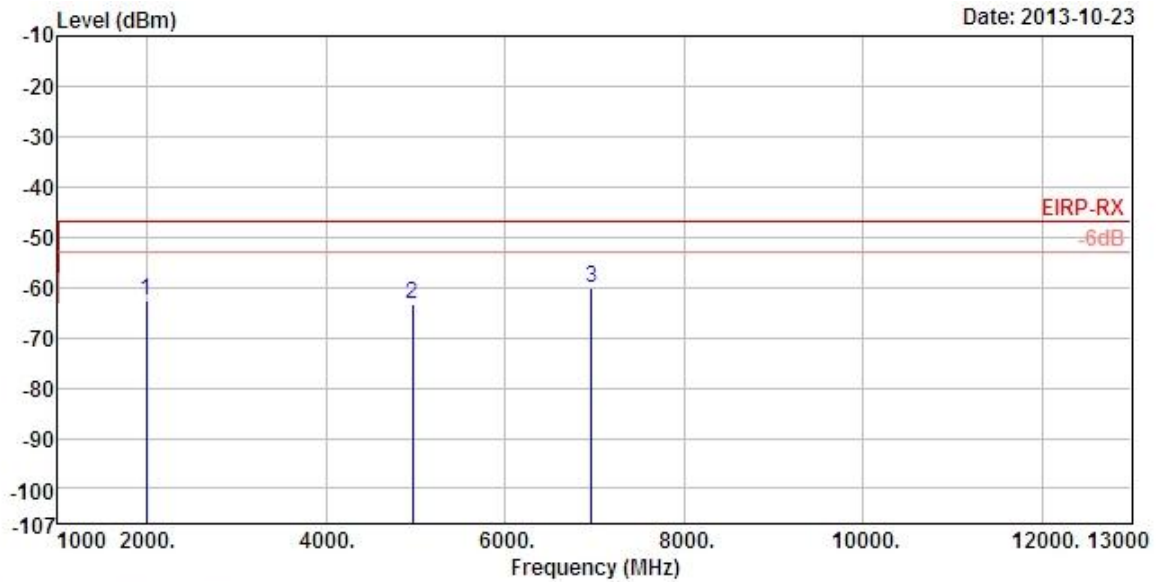
4.1.6 Receiver Radiated Spurious Emissions (Above 1GHz)





Receiver Radiated Spurious Emissions (Above 1GHz)

Modulation Mode	LE-1Mbps	Test Freq. (FX)	F1
Operating Function	Receive	Polarization	H



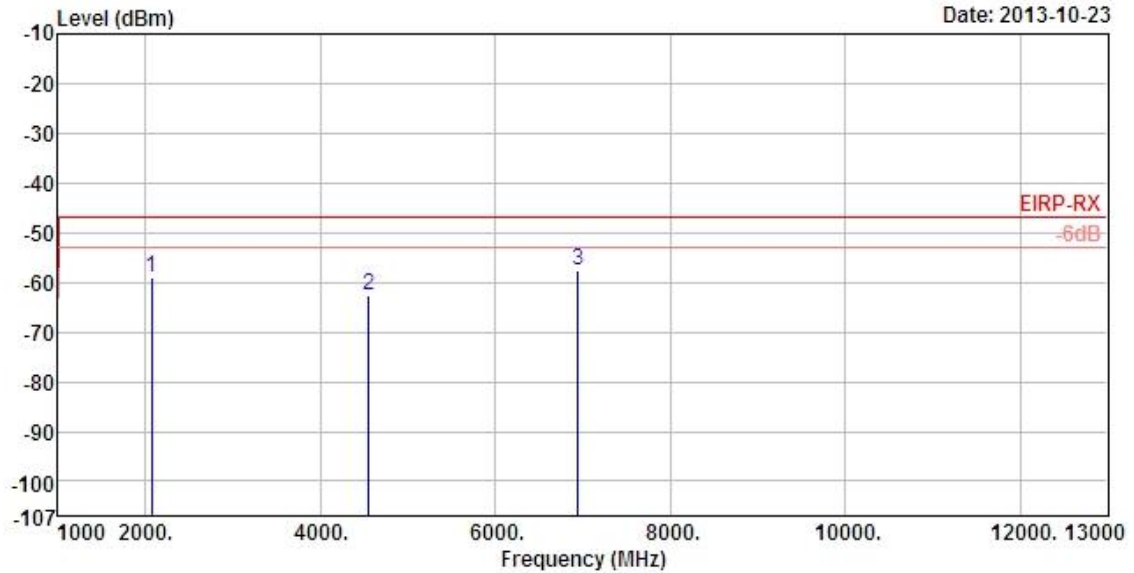
	Freq	Level	Over	Limit	Read	
	MHz	dBm	Limit	Line	Level	Factor
			dB	dBm	dBm	dB
1	1992.00	-62.56	-15.56	-47.00	-68.91	6.35
2	4968.00	-63.43	-16.43	-47.00	-73.79	10.36
3	6962.00	-59.95	-12.95	-47.00	-73.73	13.78

Note 1: ">6dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.  
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)  
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



Receiver Radiated Spurious Emissions (Above 1GHz)

Modulation Mode	LE-1Mbps	Test Freq. (FX)	F3
Operating Function	Receive	Polarization	V



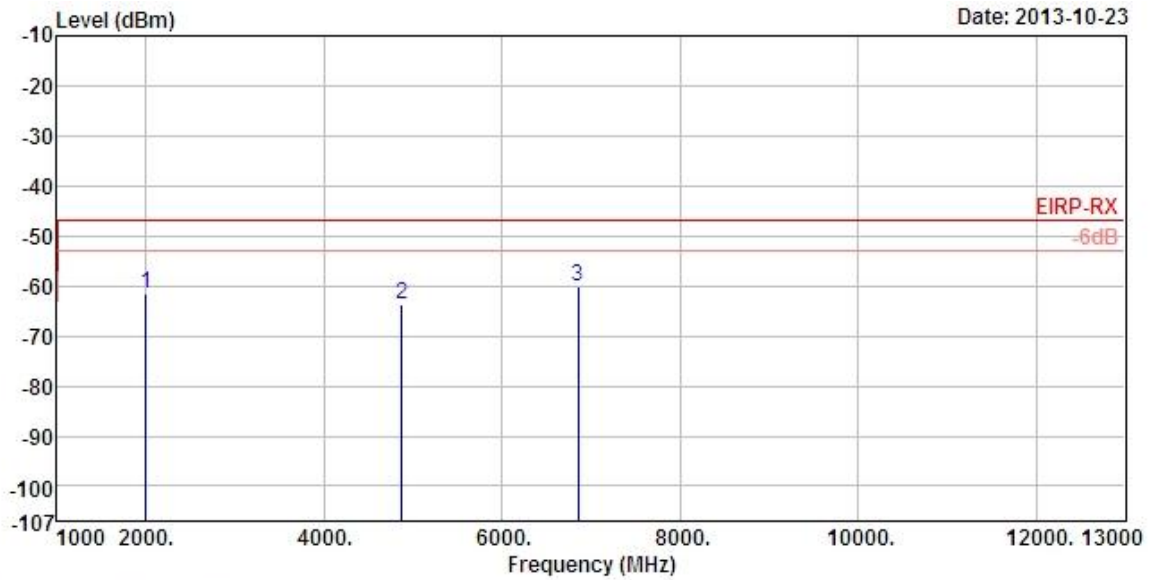
	Freq	Level	Over Limit	Limit Line	Read Level	Factor
	MHz	dBm	dB	dBm	dBm	dB
1	2072.00	-59.16	-12.16	-47.00	-65.23	6.07
2	4550.00	-62.79	-15.79	-47.00	-72.48	9.69
3	6944.00	-57.66	-10.66	-47.00	-73.34	15.68

Note 1: ">6dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.  
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)  
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



Receiver Radiated Spurious Emissions (Above 1GHz)

Modulation Mode	LE-1Mbps	Test Freq. (FX)	F3
Operating Function	Receive	Polarization	H



	Freq	Level	Over	Limit	Read	
	MHz	dBm	Limit	Line	Level	Factor
			dB	dBm	dBm	dB
1	1994.00	-61.37	-14.37	-47.00	-67.74	6.37
2	4878.00	-63.58	-16.58	-47.00	-73.58	10.00
3	6852.00	-59.95	-12.95	-47.00	-73.17	13.22

Note 1: ">6dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.  
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)  
 Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)



## 5 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSV 40	101013	10Hz ~ 40GHz	Jan. 29, 2013	Conducted (TH01-HY)
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Jun. 19, 2013	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Jun. 27, 2013	Conducted (TH01-HY)
Temp. and Humidity Chamber	Giant Force	GTH-225-20-SP-SD	MAA1112-007	-20 ~ 100°C	Nov. 21, 2012	Conducted (TH01-HY)
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	Feb. 02, 2013	Conducted (TH01-HY)
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	Feb. 02, 2013	Conducted (TH01-HY)
RF Cable-2m	HUBER+SUHNER	SUCOFLEX_104	SN 345675/4	1GHz ~ 26.5GHz	Dec. 04. 2012	Conducted (TH01-HY)

Note: Calibration Interval of instruments listed above is one year.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSV40	101514	10Hz ~ 40GHz	Apr. 26, 2013	Radiation (05CH01-HY)
Amplifier	Agilent	8447D	2944A11146	100kHz ~ 1.3GHz	Jul. 05 , 2013	Radiation (05CH01-HY)
Amplifier	Agilent	8449B	3008A02096	1GHz ~ 26.5GHz	Mar. 27, 2013	Radiation (05CH01-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2737	25MHz ~ 2GHz	Oct. 10, 2013	Radiation (05CH01-HY)
Horn Antenna	COM-POWER	AH-118	10091	1GHz ~ 18GHz	Jan. 29, 2013	Radiation (05CH01-HY)
RF Cable-R03m	Jye Bao	RG142	CB031	30MHz ~ 1GHz	Dec. 02, 2012	Radiation (05CH01-HY)
RF Cable-high	SUHNER	SUCOFLEX 106	SN 345675/4	1GHz ~ 26.5GHz	Dec. 02, 2012	Radiation (05CH01-HY)
Turn Table	HD	DS 420	420/655/12	0 ~ 360 degree	N/A	Radiation (05CH01-HY)
Antenna Mast	HD	MA 240	240/569/12	1 ~ 4 m	N/A	Radiation (05CH01-HY)

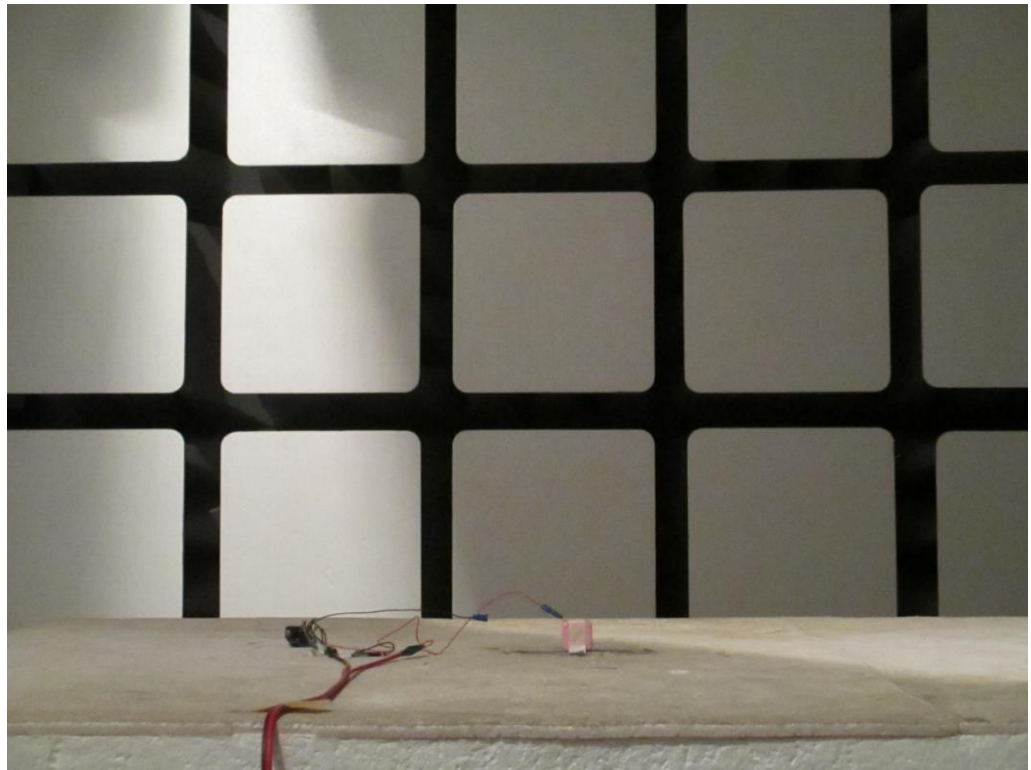
Note: Calibration Interval of instruments listed above is one year.



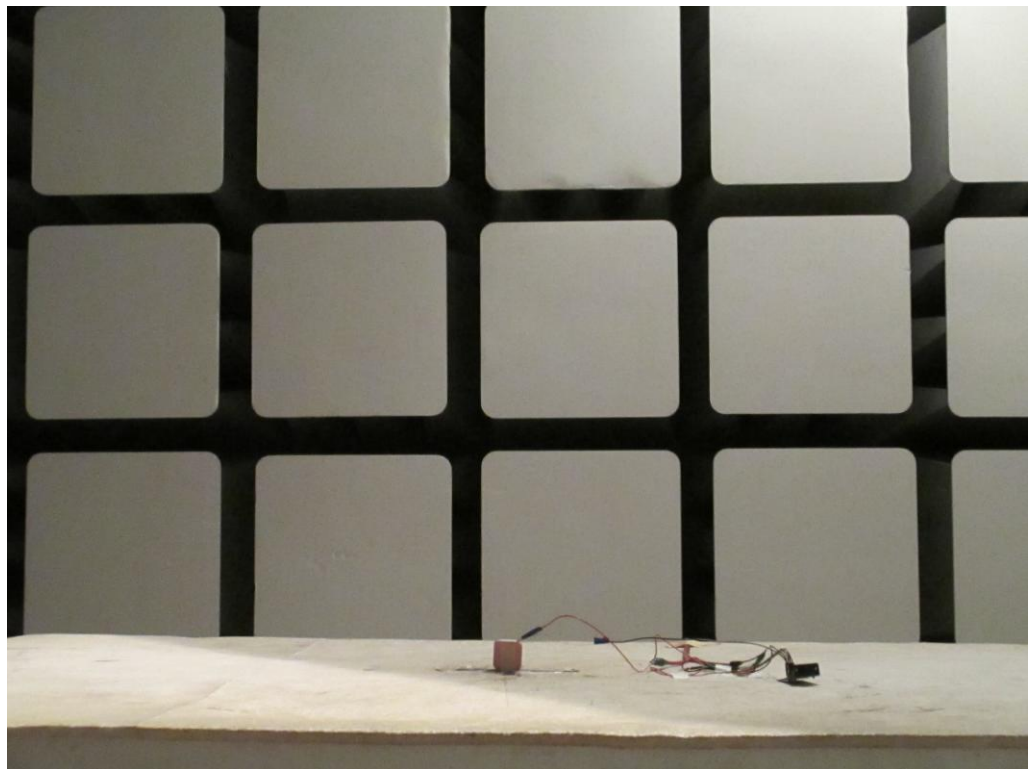
## **Appendix A. Test Photos**

## 1 Photographs of Radiated Emissions Test Configuration

**FRONT VIEW**

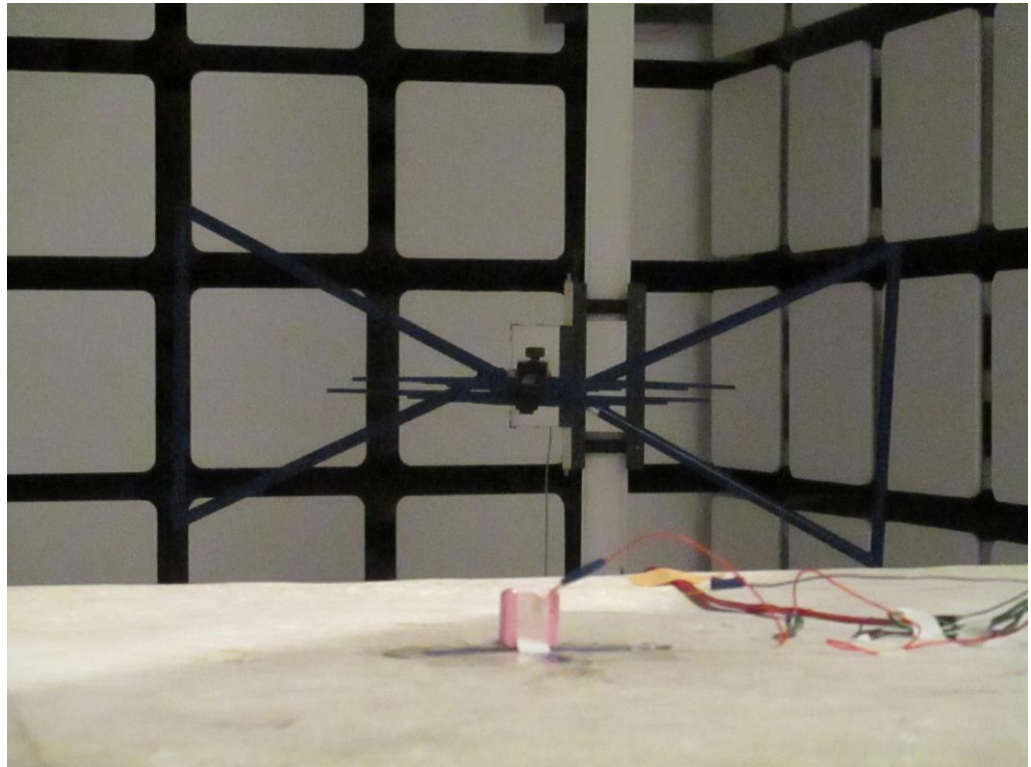


**REAR VIEW**

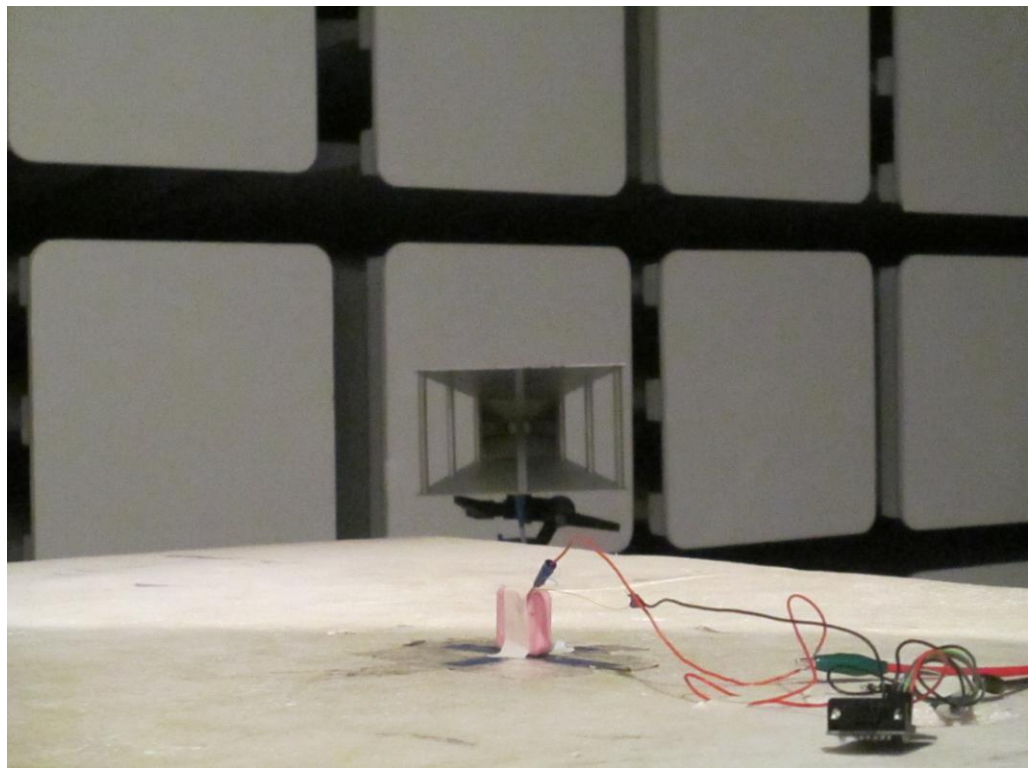




**BILOG ANTENNA**



**HORN ANTENNA**



APPENDIX B. Photographs of EUT

