Test Report

Applicant:	Enping Sange Electronic Co., Ltd.
Address of Applicant:	No. 12, F District, Individual & Foreign Capital Industry Zone, Enping City, Guangdong Province, P. R. China
Equipment Under Test (EUT):	
EUT Name:	Wireless Microphone
Model No.:	HD-1, HD-2, HD-3, HD-4, HD-5, WHM-16, WHM-16X
Trade Mark:	NA
Serial No.:	Not supplied by client
Standards:	FCC PART15 SUBPART C: 2008
Date of Receipt:	Dec. 20, 2011
Date of Test:	Dec. 20 to 29, 2011
Date of Issue:	Dec. 31, 2011
Test Result :	**PASS***

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Henly Xie / Manager

This report refers to the General Conditions for Inspection and Testing Services, printed overleaf

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

All test results in this report can be traceable to National or International Standards.

The test report prepare by:

Guangzhou Huesent Testing Service Co.,Ltd.

Self-ordained 68# courtyard, No.91, Dongguanzhuang Road,Guangzhou,China.

Tel: 86-20-28263298 Fax: 86-20-28263237

http://www.hst.org.cn E-mail:hst@hst.org.cn

1 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission (30MHz to 1GHz)	FCC PART 15.249	ANSI C63.4:2003	Class B	PASS
Occupied Bandwidth	FCC PART 15.215	ANSI C63.4:2003	Class B	PASS

Remark:

♣

Channel	Frequency/ MHz
Lowest	902.2
Mid	911.2
Highest	927.8

The tests were carried out on the 3 samples with the typical frequency listed above.

Model: HD-1, HD-2, HD-3, HD-4, HD-5, WHM-16, WHM-16X

Only tested HD-1, since the other models listed above are electric identical with only difference being the model name.

Fresh battery was used during testing.

2 Contents

3 General Information

4.1. Client Information

Applicant:	Enping Sange Electronic Co., Ltd.
Address of Applicant:	No. 12, F District, Individual & Foreign Capital Industry Zone, Enping City, Guangdong Province, P. R. China

4.2. General Description of E.U.T.

EUT Name:	Wireless Microphone
Item No.:	HD-1, HD-2, HD-3, HD-4, HD-5, WHM-16, WHM-16X
Serial No.:	Not supplied by client

4.3. Details of E.U.T.

Power Supply:	1.5Vdc, AAA size Battery
Main Function:	Wireless microphone system with an associated receiver for transmitting voice.

Frequency Range: 902.200 MHz to 927.800 MHz for all the models listed in the cover. 16 channels for each microphone.

Modulation: F3E.

Antenna Type: Fixed; Gained: 0 dBi

4.4. Description of Support Units

Test the EUT with signal generator.

4.5. Standards Applicable for Testing

The standard used was FCC PART 15, SUBPART C, PART 15.249.

The EUT belongs to unlicensed low power auxiliary devices.

4.6. Test Location

GuangZhou Huesent Testing Service Co., Ltd.

No.91, Dongguanzhuang Road, Guangzhou, China.

Tel: 86-20-87221905, Fax: 86-20-87223892

CNAS- Accreditation No.: L2885.

CMA- Authorisation Certificate No.: 2008191614Z

ERP & Spurious Emission tests were subcontracted to the laboratory following-

CEPREI (headquarters) lab.

No.110, Dongguanzhuang Road, Tianhe District, Guangzhou city, Guangdong Province, P.R. China

Tel: 86-20-87237178 Fax: 86-20-87236171 Email: emc@ceprei.biz

FCC- Registration No: 258518 on Mar 25, 2005
CNAS- Accreditation No: L0462.

4.7. Deviation from Standards

None.

4.8. Abnormalities from Standard Conditions

None.

5. Equipments Used during Test

Test Equipment	Manufactory	Model No,	Serial o.	Cal Date
Antenna	R & S	HF906	/	2011-5-10
3m Semi-anechoic Chamber	ABLATROSS	SAC-3	/	2011-5-10
EMI Receiver	R & S	ESCI-3	/	2011-5-10
RF Generator	Rohde & Schwarz	SMT06	61-318	2011-6-8
Anechoic Chamber	ETS•Lindgren	RFSD-F-100	2693	2011-6-8
Double Ridged Guide Antenna	EMCO	3115	640201028-08	2011-6-8
Spectrum Analyzer	R&S	CMU 200	/	2011-6-8
EMI Test Receiver	Rohde & Schwarz	ESU	/	2011-6-8
Power Meter	Rohde & Schwarz	URV35	EMC1506	2011-6-8
Signal generator	R&S	SMT06	/	2011-6-8
RF Power Amplifier	AR	50SIG4A 0.8-4.2GHz	/	2011-6-8
RF Power Amplifier	AR	150W1000 80M-1000MHz	/	2011-6-8
18G RF Pre-amplifier	MITEQ	AFS44	1381096	2011-6-8
Power Meter	Rohde & Schwarz	URV35	EMC1506	2011-6-8
Audio Analyzer	Rohde & Schwarz	UPL	EMC1508	2011-6-8
Power Sensor	Rohde & Schwarz	URV5-Z7	EMC1507	2011-6-8
Temperature Chamber	Gongwen	GDS-250	1150	2011-6-8
D.C. Power Supply	WELLSTAR	PS-205A	SEL0045	2011-6-8
Humidity/ Temperature Meter	Shanghai	ZJ1-2B	SEL0101 to SEL0103	2011-6-8
Barometer	ChangChun	DYM3	SEL0088	2011-6-8
Multimeter	Victor	VC9805A+	3000125	2011-6-8
DC Power Supply	DG HuaYang	PS-3030	9862036	2011-6-8
Low Loss Coaxial Cable	HST	2 m	EMC1008	2011-6-8
Monopole Antenna	HST	N/A	N/A	2011-6-8
Noise Generaror	Ningbo Zhongce	DF1681	EMC0009	2011-6-8
Spectrum Analyzer	R&S	FSP30	EMC0001	2011-1-11
Multifunction Counter	Electonix	HC-F1000L	EMC0013	2011-11-14

6. Test Results

6.1. RADIATION INTERFERENCE

Test Requirement:	FCC Part15.249, a) & FCC Part15.209
Test Method:	ANSI C63.4
Detector:	Peak for pre-scan (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.) Average detector if maximised peak within 6dB of limit
Test Date:	Dec. 21, 2011

6.1.1 E.U.T. Operation

Operating Environment:

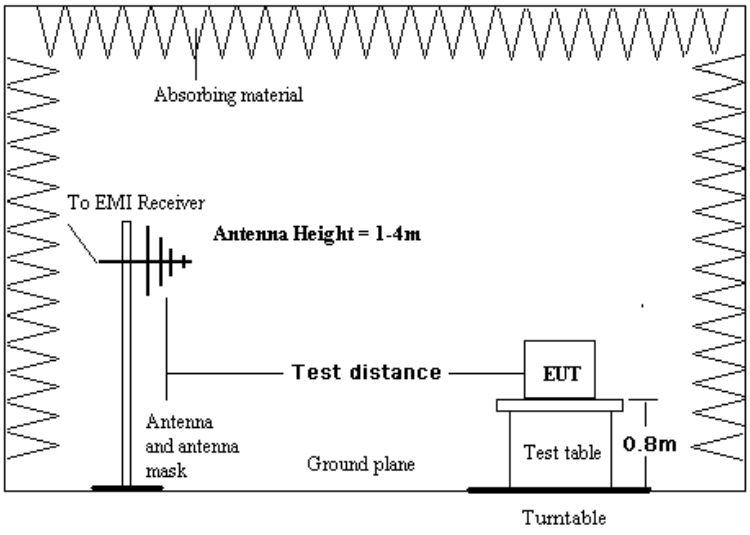
Temperature: 15°C Humidity:45% RH Atmospheric Pressure: 1020mBar

EUT Operation:

In the fundamental test, an Apple's Ipod supplied a sinusoidal signal at 1 kHz as input in worst case (within 1kHz to 20kHz input for pre-testing), connecting with the EUT to peripheral devices.

Test the EUT work normally in on mode during the whole test.

6.1.2 Test Setup



6.1.3 Test Procedure

ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES:

An initial pre-scan was performed in the 3m chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. 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 polarities. From 30MHz to 9.3GHz, the EUT have been tested .

6.1.4 Measurement Data

Quasi-Peak measurement of carrier

Frequency	Level		Transducer	Limit	Min. Margin
MHz	dBuV/m		dB		dB
	V	H			
902.2 (L)	81.9	77.3	30.4	94 dBuV/m (50mV/m)	12.1
911.2 (M)	82.5	77.6	30.6		11.5
927.8 (H)	83.4	78.2	30.8		10.6

Frequency		Level				Transducer	Limit	Min. Margin
MHz		dBuV/m				dB	dBuV/m	dB AVG
		V		H				
		Peak	Avg.	Peak	Avg.			
2nd	1804.4	61.0	<44	67.8	<44	-11.8	AVG: 54dB 500μV/m	6.2
3rd	2706.6	55.5	<44	62.8	<44	-7.9		>10
4th	3608.8	46.8	<44	51.0	<44	-4.6		>10
5th	4511.0	<45	<44	<45	<44	-3.6		>10
6th	5413.2	<45	<44	<45	<44	-2.0	Peak: 74dB	>10
7th	6315.4	<45	<44	<45	<44	-0.7		>10
Above to 9.3G		<45	<44	<45	<44			NA
Average and Peak measurement at middle channel 911.2MHz								
2nd	1822.4	61.2	<44	68.2	<44	-11.8	AVG: 54dB 500μV/m	5.8
3rd	2733.6	55.4	<44	63.5	<44	-7.9		>10
4th	3644.8	47.2	<44	50.8	<44	-4.6		>10
5th	4556.0	<45	<44	<45	<44	-3.6		>10
6th	5467.2	<45	<44	<45	<44	-2.0	Peak: 74dB	>10
7th	6378.4	<45	<44	<45	<44	-0.7		>10
Above to 9.3G		<45	<44	<45	<44			NA
Average and Peak measurement at highest channel 927.8MHz								
2nd	1855.6	60.9	<44	68.7	<44	-11.8	AVG: 54dB 500μV/m	5.3
3rd	2783.4	55.2	<44	64.1	<44	-7.9		9.9
4th	3711.2	48.1	<44	51.2	<44	-4.6		>10
5th	4639.0	<45	<44	<45	<44	-3.6		>10
6th	5566.8	<45	<44	<45	<44	-2.0	Peak: 74dB	>10
7th	6494.6	<45	<44	<45	<44	-0.7		>10
Above to 9.3G		<45	<44	<45	<44			NA

Note: The transducer factor = antenna factor + cable loss - preamplifier.

The Level = Read level + transducer factor.

6.2. Occupied Bandwidth

Test Requirement:	FCC Part15.215
Test Method:	ANSI C63.4
Detector:	Peak for scan (The resolution bandwidth was 1kHz and the video bandwidth was 1kHz, span was 2M/600k Hz) maximised peak hold
Test Date:	Dec. 22, 2011

6.2.1 E.U.T. Operation

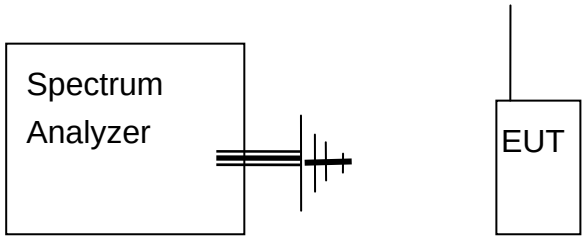
Operating Environment:

Temperature: 15°C Humidity:45% RH Atmospheric Pressure: 1020mBar

EUT Operation:

Test the EUT work normally in on mode during the whole test.

6.2.2 Test Setup



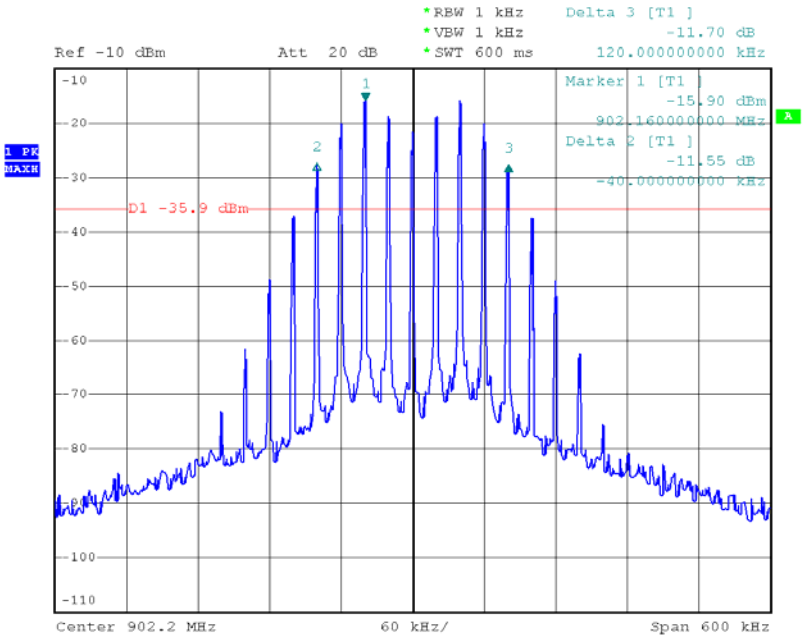
6.2.3 Test Procedure

ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES:

An initial pre-scan was performed in the 3m chamber using the spectrum analyzer in peak detection mode. Average measurements were conducted based on the peak sweep graph. 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 polarities.

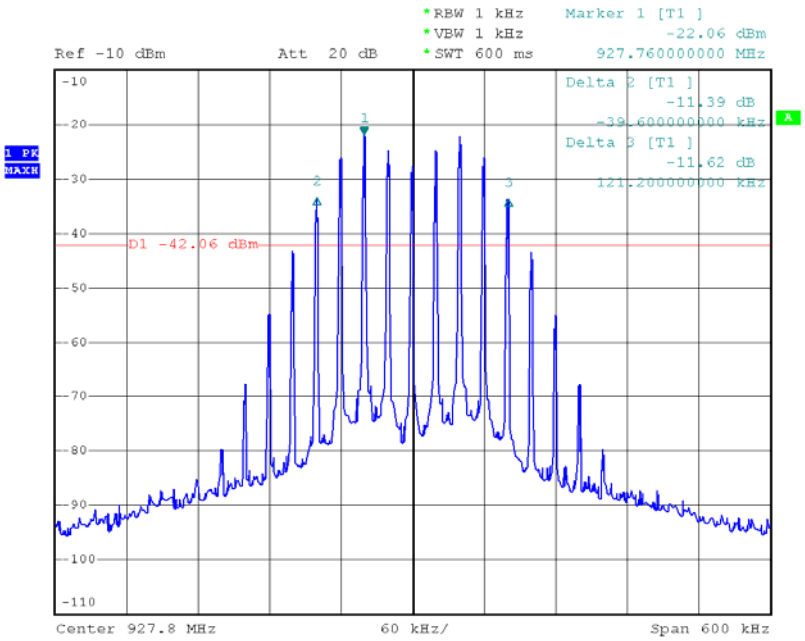
6.2.4 Measurement Data

Maximum Peak hold measurement for lowest channel 902.2M



Date: 1.MAR.2012 09:53:02

Maximum Peak hold measurement for highest channel 927.8M



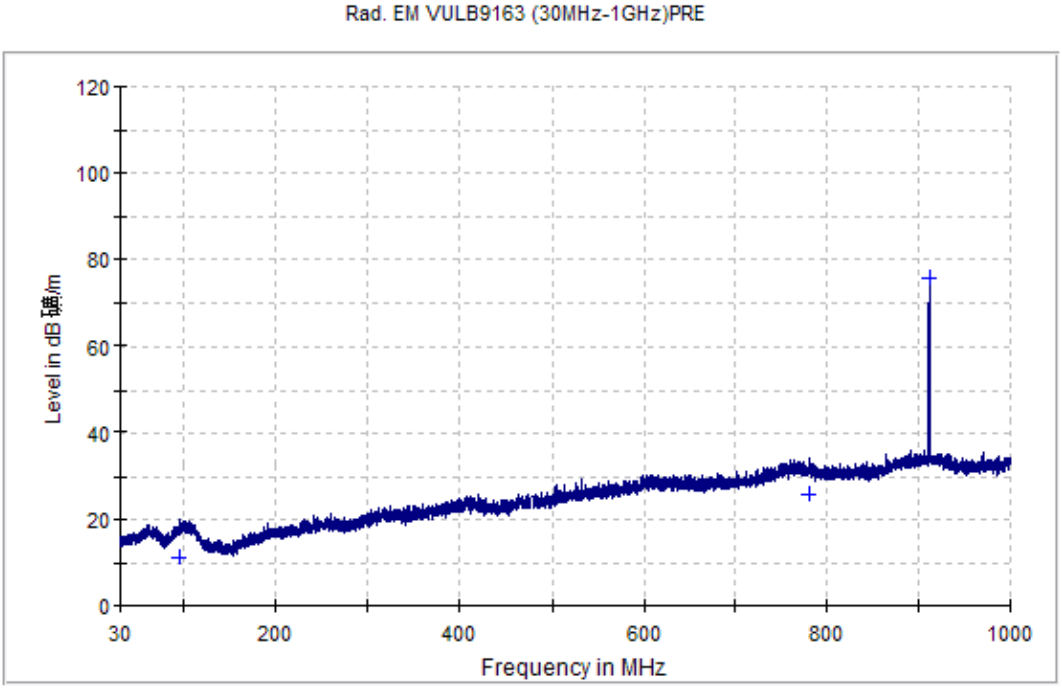
Date: 1.MAR.2012 09:50:50

The 20 Bandwidth is 160 kHz: An Apple's Ipod supplied a sinusoidal signal at 20 kHz as input in worst case (within 1kHz to 20kHz input for pre-testing).

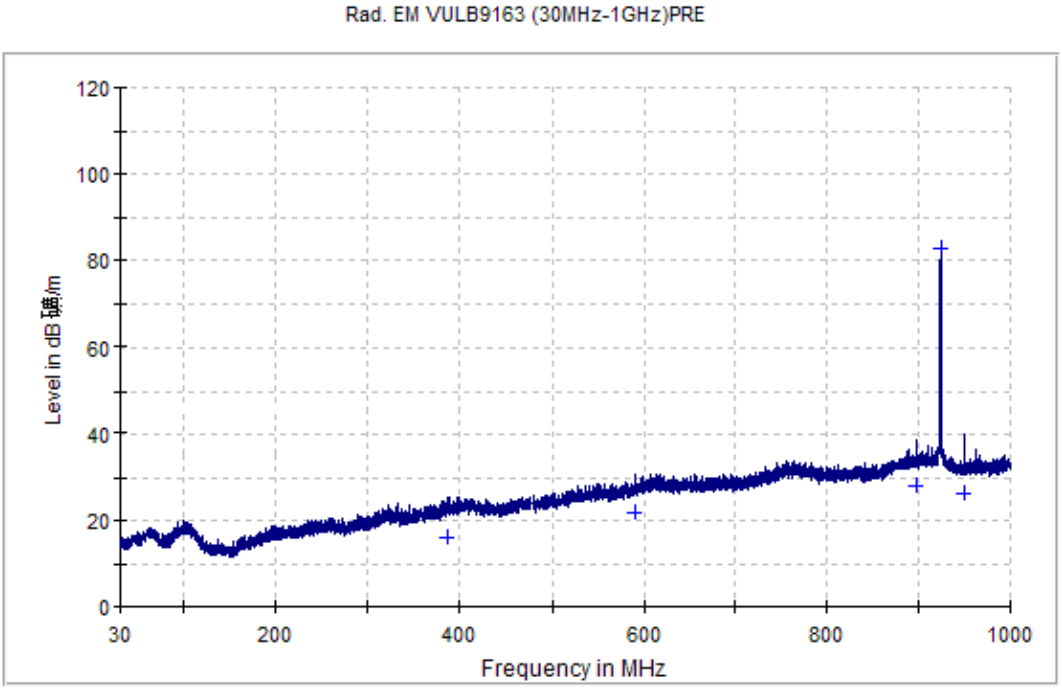
Test curves:

30MHz-1GHz, RBW: 120kHz, VBW: 300kHz, test in 3m semi-anechoic chamber

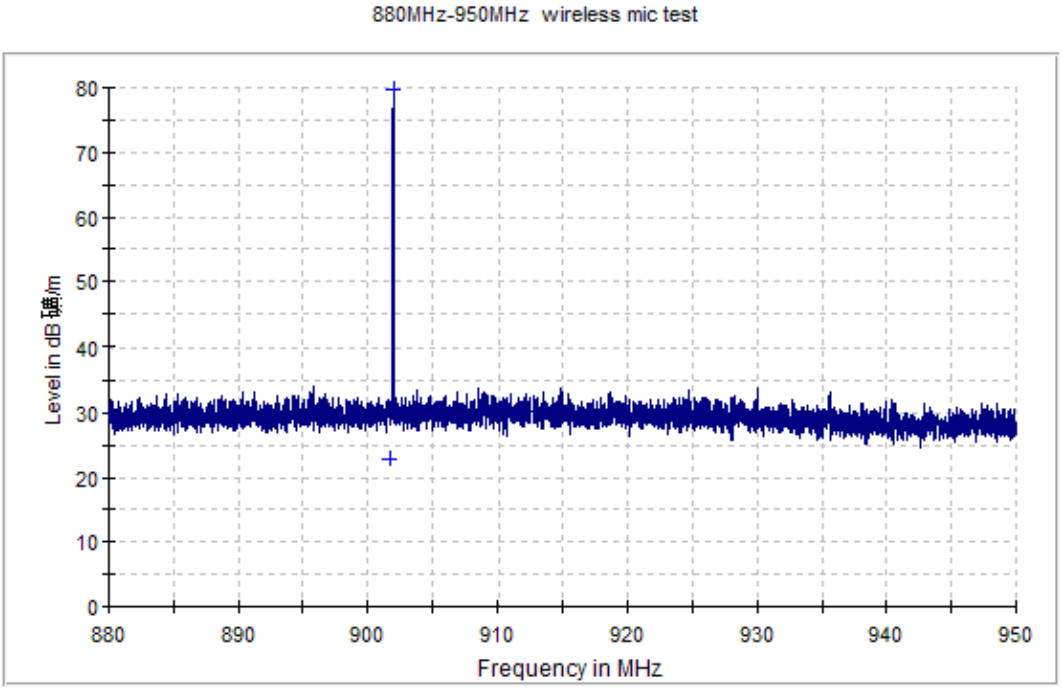
Vertical (Channel: 911.2 MHz)



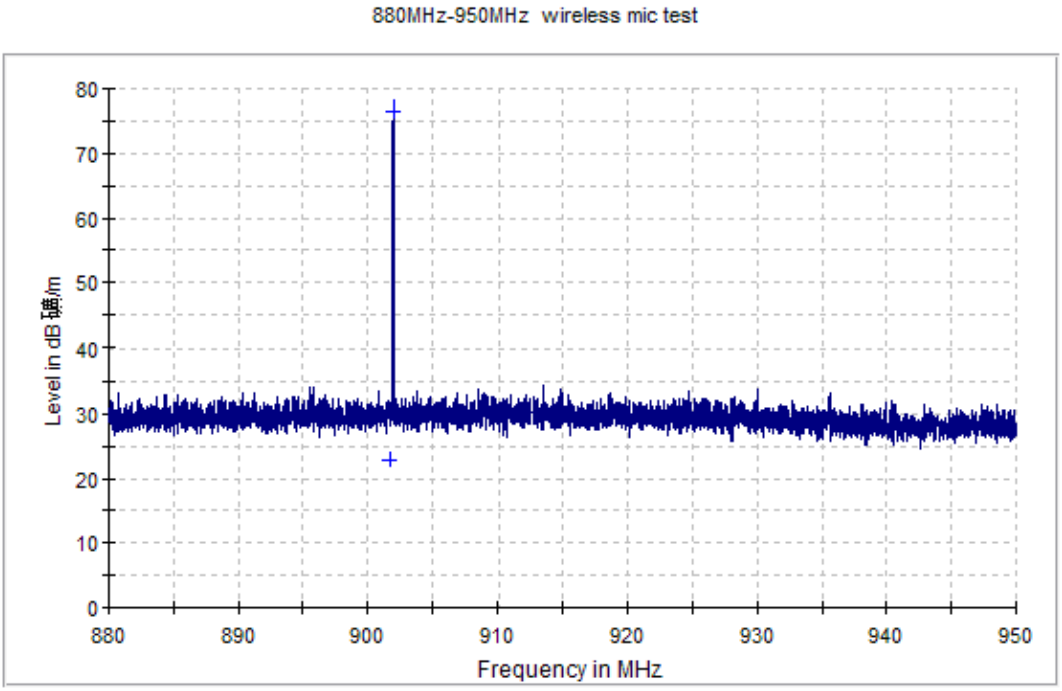
Horizontal (Channel: 911.2 MHz)



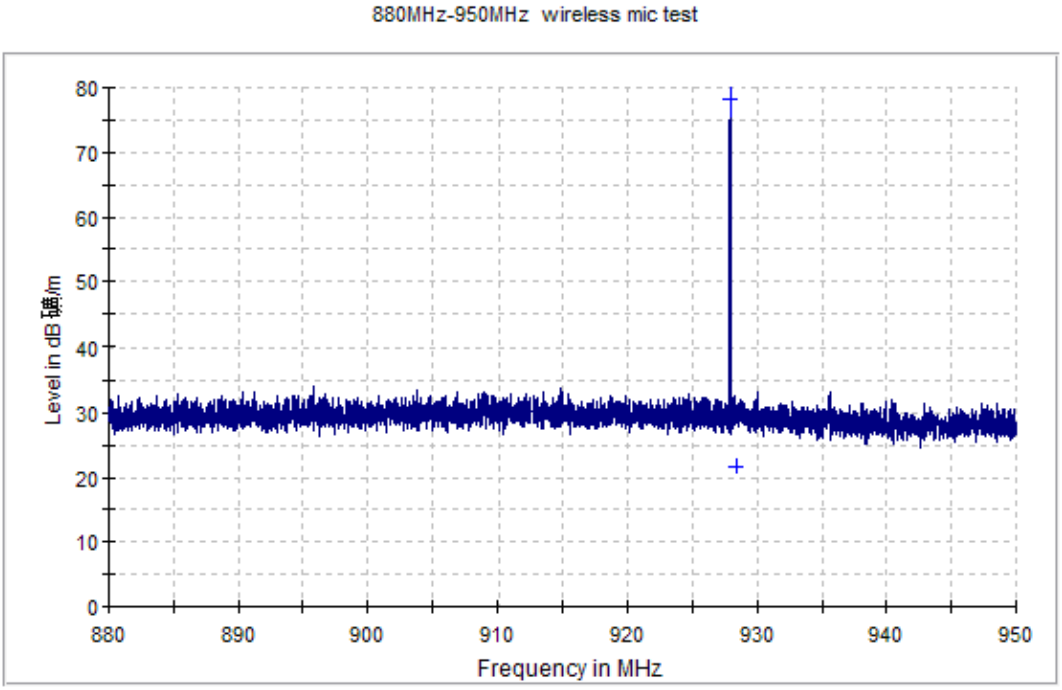
Vertical (Channel: 902.2 MHz)



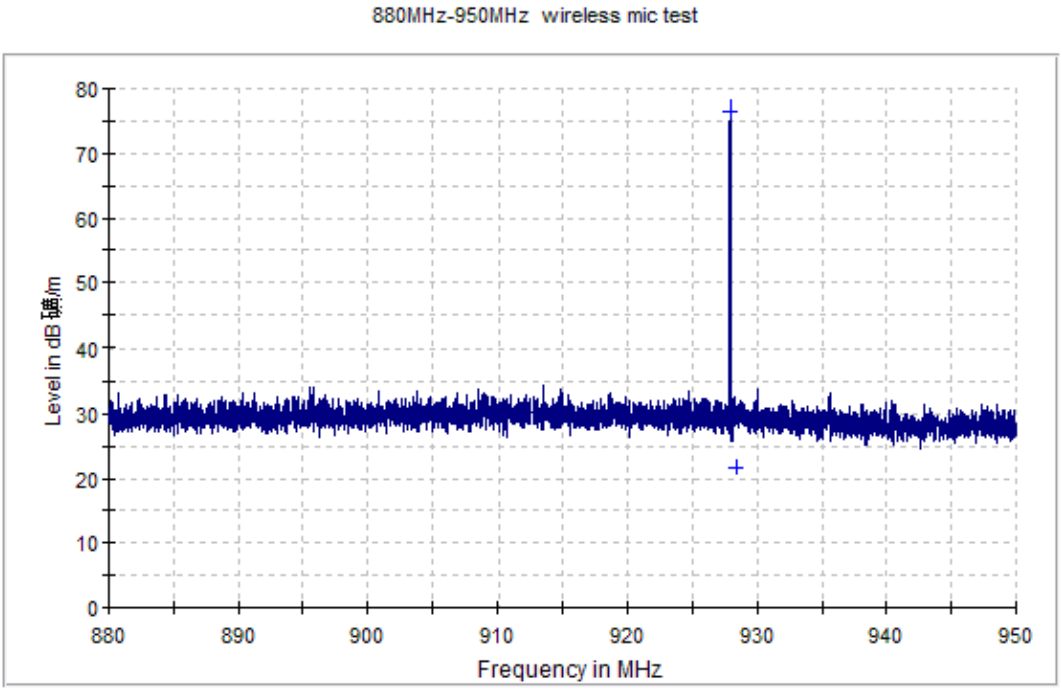
Horizontal (Channel: 902.2 MHz)



Vertical (Channel: 927.8 MHz)



Horizontal (Channel: 927.8 MHz)



Test Channel: MHz	Frequency: MHz	Peak Value: dBuV/m	
		Vertical	Horizontal
902.2	902.0	17.4*	17.5*
927.8	928.0	17.8*	18.0*

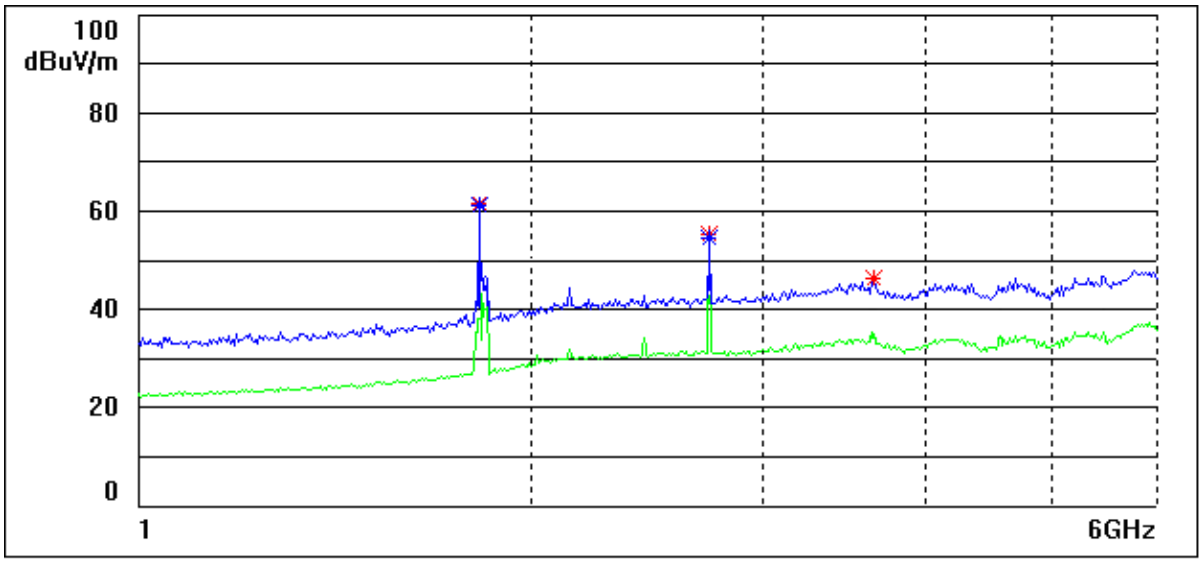
Note:

Data * mean they were tested with a 30dB pre-amplifier.

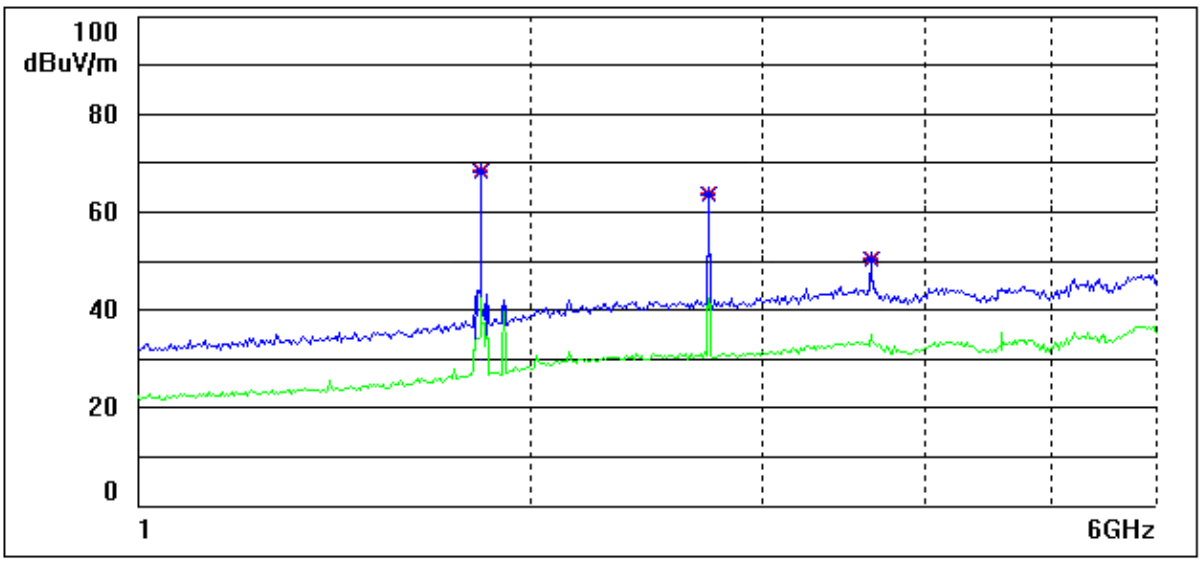
Frequencies of 902.2 MHz and 927.8 MHz were the emissions radiated outside of the specified frequency bands, and they complied with the FCC Part15.249d).

1GHz-6GHz, RBW: 1MHz, VBW: 3MHz, test in 3m full anechoic chamber

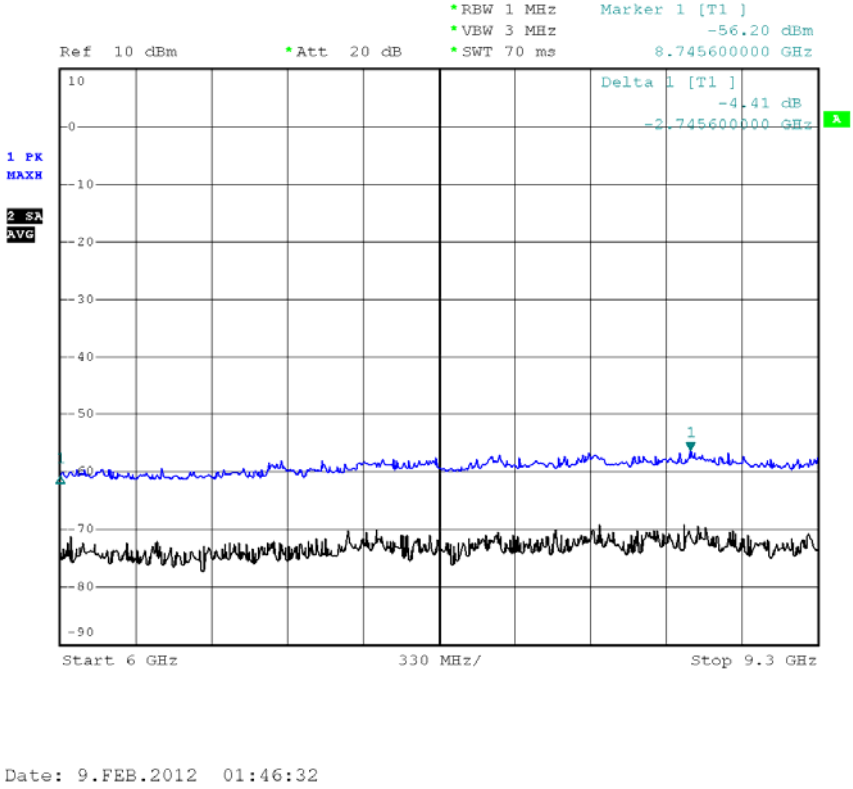
Vertical



Horizontal



6GHz-9.3GHz, RBW: 1MHz, VBW: 3MHz, test with conducted method



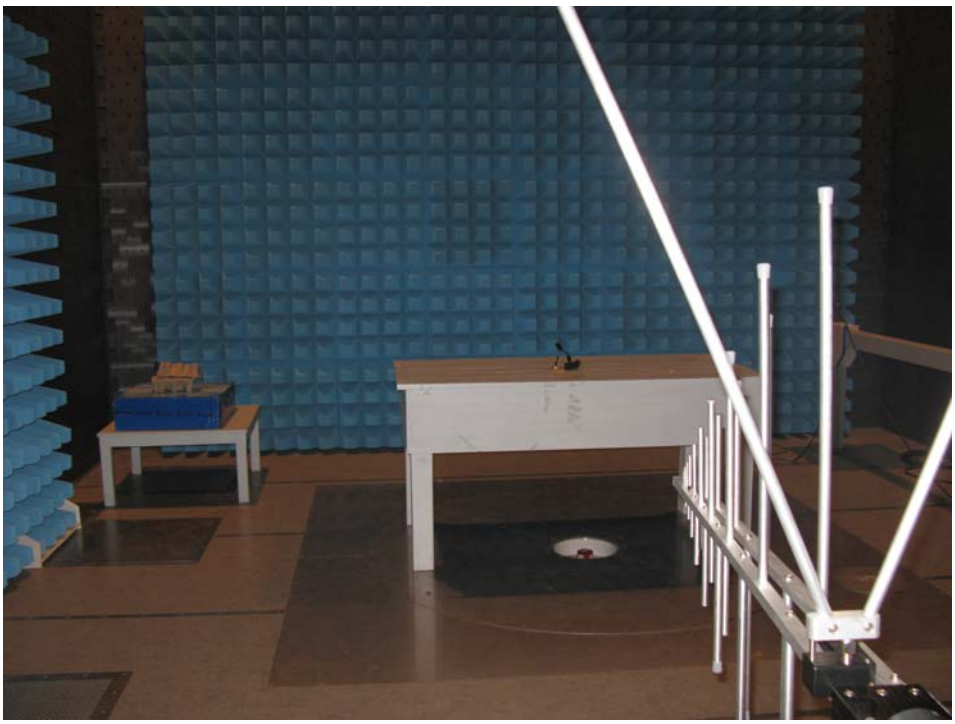
Value	Level		Limit
	dBm	Unit transition dBuV/m	dBuV/m
Peak	<-55	<52	74
Average	<-65	<42	54

Note:

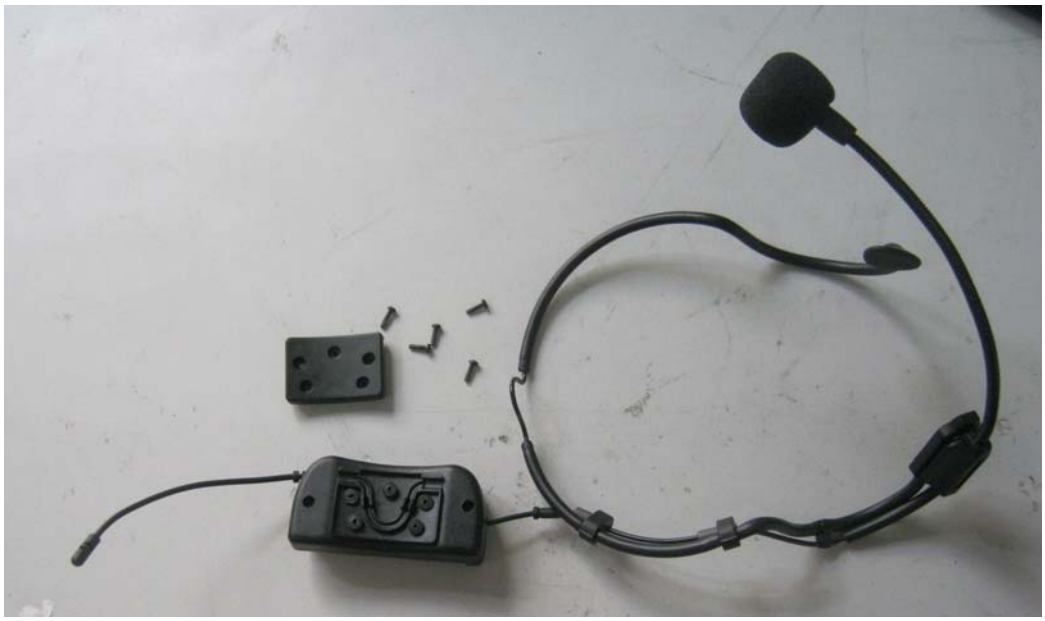
In 50-Ohm system, $Level_{dBuV/m} = Level_{dBm} + 107dB$

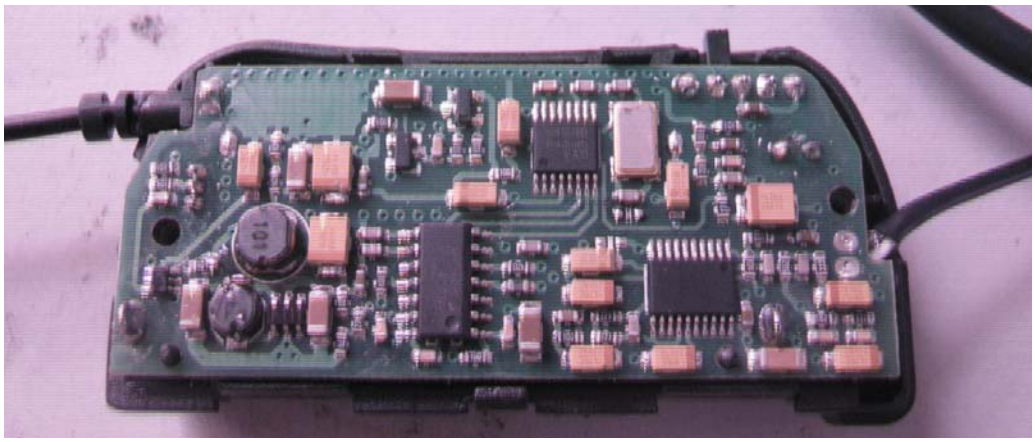
7. Photographs

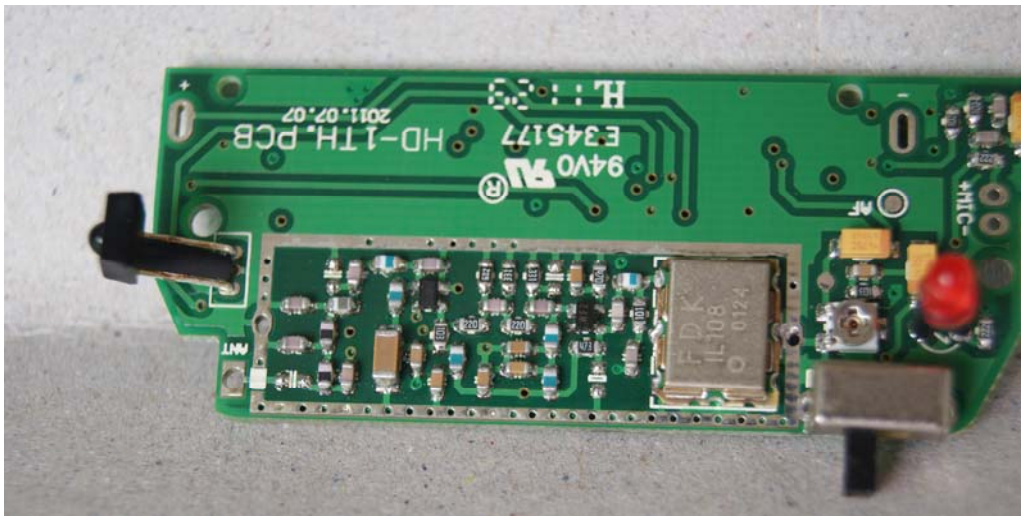
7.1. Radiated Emission Test Setup

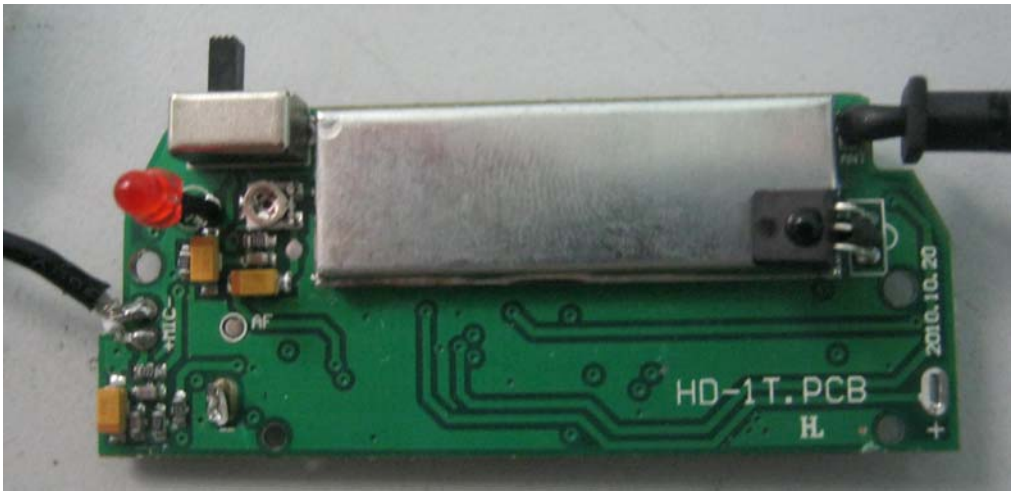


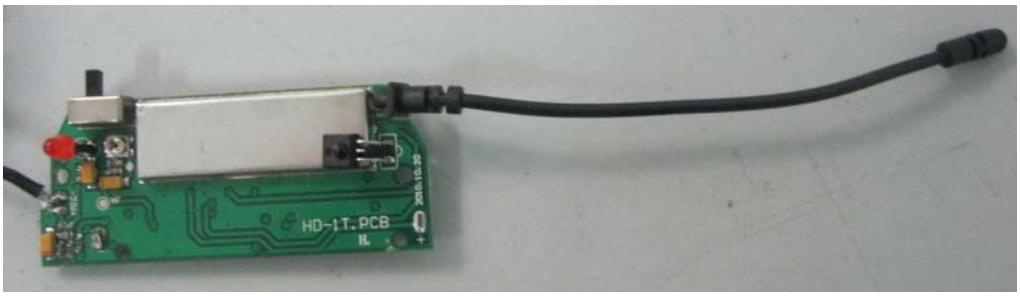
7.2. EUT Constructional Details



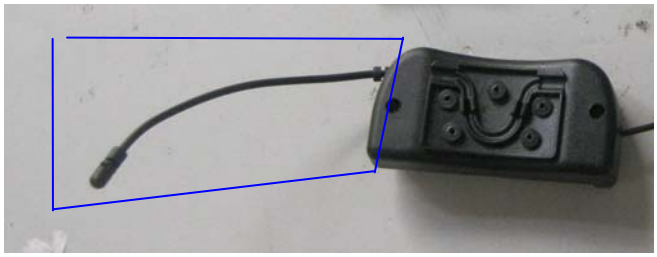


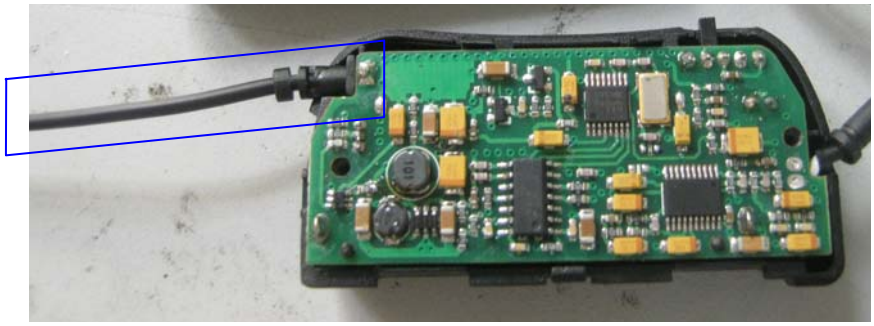

HD-1TH.PCB
2011.07.07
E345177
94V0
FDK
IL108
0124
ANT
AF
+MIC-

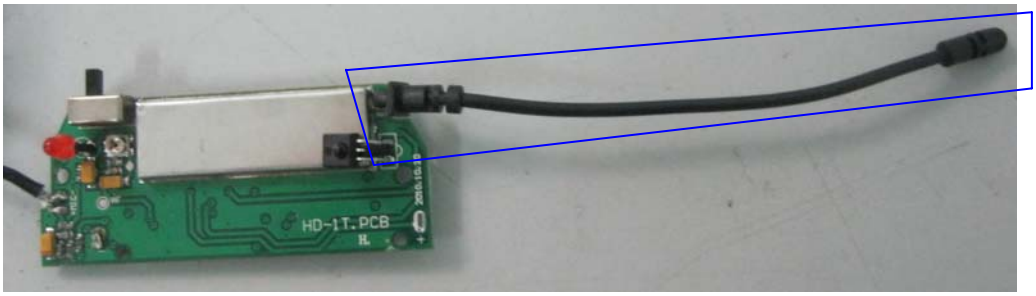

HD-1T.PCB
HL
2010.10.20
AF
+MIC-


HD-1T.PCB

7.3. Antenna Photo







*****End of Report*****