

FCC TEST REPORT

FCC ID:I4S-EM100R

Product : IN EAR MONITOR RECEIVER

Trade Name : N/A

Model Number : EM-100

Serial Model : N/A

Report No. : ISOT15080133E

Prepared for

Peavey Electronics Corporation

5022 Hartley Peavey Drive, Meridian, Mississippi, United States 39305

Prepared by

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TEST RESULT CERTIFICATION

Applicant's name : Peavey Electronics Corporation
 Address : 5022 Hartley Peavey Drive, Meridian, Mississippi, United States
 : 39305

Manufacturer's Name : Shenzhen Uniwisdom Technologies Co., Ltd.
 Address : Bldg.91-94 3rd Industrial Zone, Lisonglang, GongmingTown,
 : Bao'an District, Shenzhen, P.R.China

Product description

Product name : IN EAR MONITOR RECEIVER
 Model and/or type reference : EM-100

Standards : FCC Part15B:01 Oct.2014
 : ANSI C63.4:2014

This device described above has been tested by ISOTek, and the test results show that the equipment under test (EUT) is in compliance with Part 15 of FCC/IC Rules. And it is applicable only to the tested sample identified in the report.

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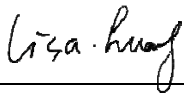
Date of Test :

Date (s) of performance of tests : 26 Aug. 2015 ~20 Sept. 2015

Date of Issue : 30 Dec. 2015

Test Result : **Pass**

Compiled by:



 Lisa Huang/ Project Engineer

Approved by:



 Richard Chen/ Manager

※ Revision History ※ ※

REV.	REPORT NO.	Page Revised	ISSUED DATE	Contents
Original	ISOT15080133E	N/A	20 Sept. 2015	N/A
01	ISOT15080133E	P14,P21~P22	30 Dec. 2015	Update the CONDUCTED EMISSION MEASUREMENT and test photo.

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1. TEST SUMMARY

Test procedures according to the technical standards:

EMC Emission				
Standard	Test Item	Limit	Judgment	Remark
FCC Part15B:2014; ANSI C63.4: 2014	Conducted Emission	Class B	N/A	
	Radiated Emission	Class B	PASS	

NOTE:

- (1) 'N/A' denotes test is not applicable in this Test Report
- (2) For client's request and manual description, the test will not be executed.

1.1 TEST FACILITY

Shenzhen ISOTek Standards Technical Services Co.,Ltd.

Add.: 13/F, HuaFengRui Building, XinHu Rd., XiXiang, Bao'an District, Shenzhen, China

FCC Registration No.: 918037; IC Registration Number:20400-1

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately **95** %.

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U , (dB)	NOTE
ISOTekC01	ANSI	150 KHz ~ 30MHz	3.2	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	U , (dB)	NOTE
ISOTekA01	ANSI	30MHz ~ 1000MHz	4.7	
		1GHz ~12.4GHz	5.0	

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	IN EAR MONITOR RECEIVER	
Model Name	EM-100	
Additional Model Number(s)	N/A	
Model Difference	N/A	
Product Description	The EUT is a IN EAR MONITOR RECEIVER.	
	Connecting I/O port:	DC Input, Balanced out, Unbalanced out, ANT A,ANT B
	Operation Frequency:	565.05~589.8 MHz(Only Receiver)
	Modulation Type:	FM
	highest operating frequency	589.8 MHz
	Hardware version:	REV:02
	Software version:	REV:01
Power Source	DC 3.0V	
Adapter	N/A	
Battery	DC 1.5V*2 cell LR6	

2.1.1 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	Receive 565.050MHz
Mode 2	Receive 577.300MHz
Mode 3	Receive 589.800MHz

For Conducted Test	
Final Test Mode	Description
Mode 1	N/A

For Radiated Test	
Final Test Mode	Description
Mode 3	Receive 589.800MHz

Note: Final Test Mode: Through Pre-scan, find the mode 3 is the worst case.

Only the worst case mode is recorded in the report.

2.2 DESCRIPTION OF TEST SETUP

E-1
EUT

2.3 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
E-1	IN EAR MONITOR Stereo Transmitter	N/A	EM-100	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” means “shielded” “with core”; “NO” means “unshielded” “without core”.

2.4 MEASUREMENT INSTRUMENTS LIST

2.4.1 Radiatio Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Aglient	E4446A	US44300451	2015.07.06	2016.07.05	1 year
2	EMI Test Receiver	R&S	ESCI	101165	2015.07.06	2016.07.05	1 year
3	Bilog Antenna	Schwarzbeck	VULB 9168	VULB9168-438	2015.07.06	2016.07.05	1 year
4	Horn Antenna	Schwarzbeck	BBHA 9120D	9170-182	2015.07.06	2016.07.05	1 year
5	Amplifier	Schwarzbeck	BBV9743	9743-019	2015.07.06	2016.07.05	1 year
6	Test Cable Below 1GHz	ATM	R-01	3564	2015.07.06	2016.07.05	1 year
7	Test Cable Above 1GHz	ATM	R-02	3565	2015.07.06	2016.07.05	1 year

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	LISN	messtec	AN3019	NO.1	Jul. 06, 2015	Jul. 05, 2016	1 year
2	LISN	SCHWARZBECK	NNLK 8129	8126466	Jul. 06, 2015	Jul. 05, 2016	1 year
3	Pulse Limiter	SCHWARZBECK	VTSD9596F	9618	Jul. 06, 2015	Jul. 05, 2016	1 year
4	EMI Test Receiver	R&S	ESCI	100843	Jul. 06, 2015	Jul. 05, 2016	1 year
5	Switch	Schwarzbeck	CX - 210	100196	Jul. 06, 2015	Jul. 05, 2016	1 year
6	Test Cable 9KHz-300MHz	ATM	C01	3566	Jul. 06, 2015	Jul. 05, 2016	1 year

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

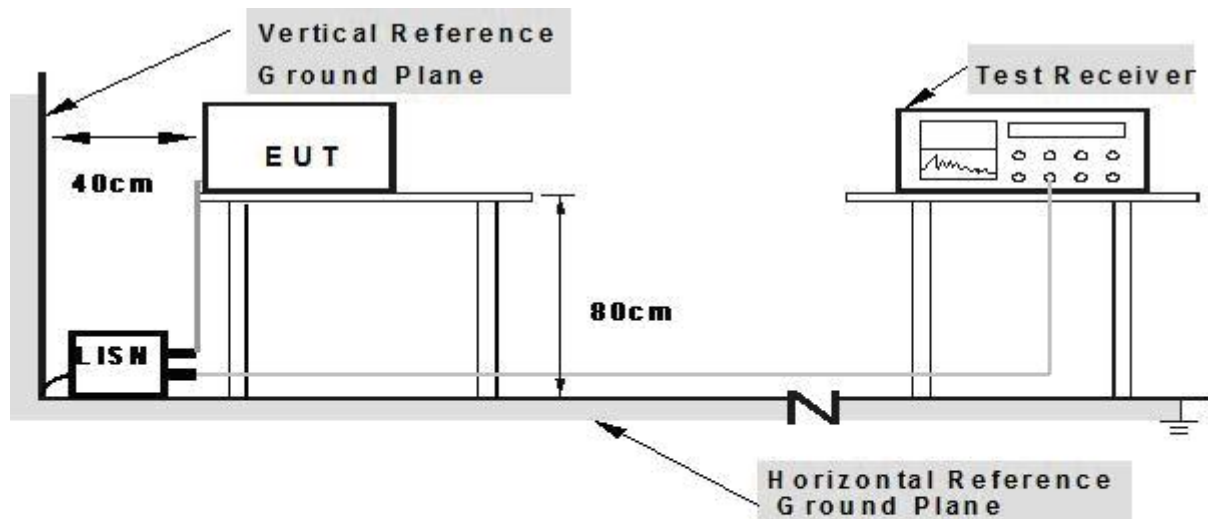
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.2 TEST PROCEDURE

- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 TEST SETUP



Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

3.1.5 TEST RESULTS

EUT :	IN EAR MONITOR RECEIVER	Model Name. :	EM-100
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	N/A
Test Mode :	N/A	Phase :	N/A
Test Voltage :	N/A		

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 3m)
	dBuV/m	dBuV/m
30 ~ 88	39.0	40.0
88 ~ 216	43.5	43.5
216 ~ 960	46.5	46.0
Above 960	49.5	54.0

Notes:

- (1) The limit for radiated test was performed according to as following:
FCC PART 15B /ICES-003.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

3.2.2 TEST PROCEDURE

Test Arrangement for Radiated Emissions up to 1 GHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited test facility. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. 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 rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

Note: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for quasi-peak detection (QP) at frequency below 1GHz.

Test Arrangement for Radiated Emissions above 1 GHz.

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna can be varied from one meter to four meters, the height of adjustment depends on the EUT height and the antenna 3dB beamwidth both, to detect the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

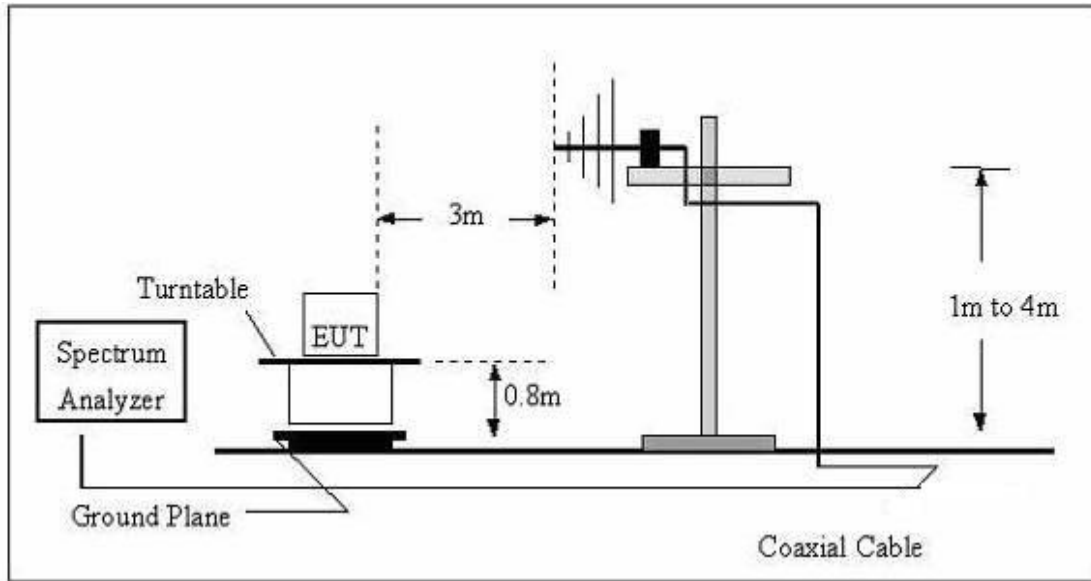
Note: For the hand-held device, the EUT should be measured for all 3 axes and only the worst case is recorded in the report

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

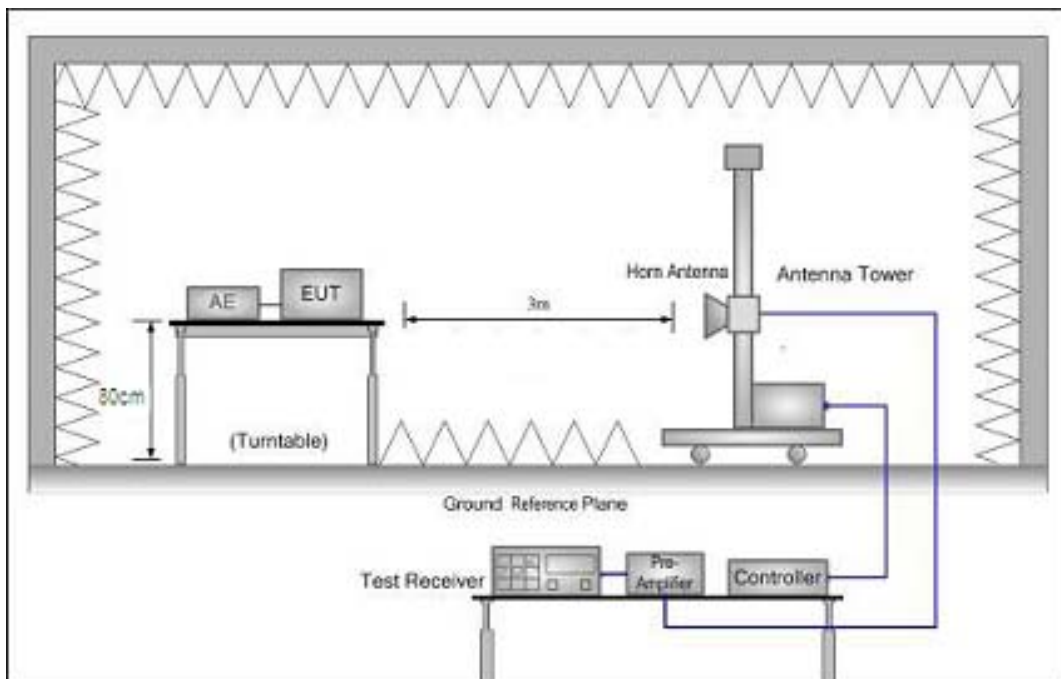
Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	1 MHz
	Peak	1 MHz	10 Hz

3.2.3 TEST SETUP

For Radiated Emission 30~1000MHz



(B) Radiated Emission Test Set-Up Frequency Above 1GHz



3.2.4 TEST RESULTS

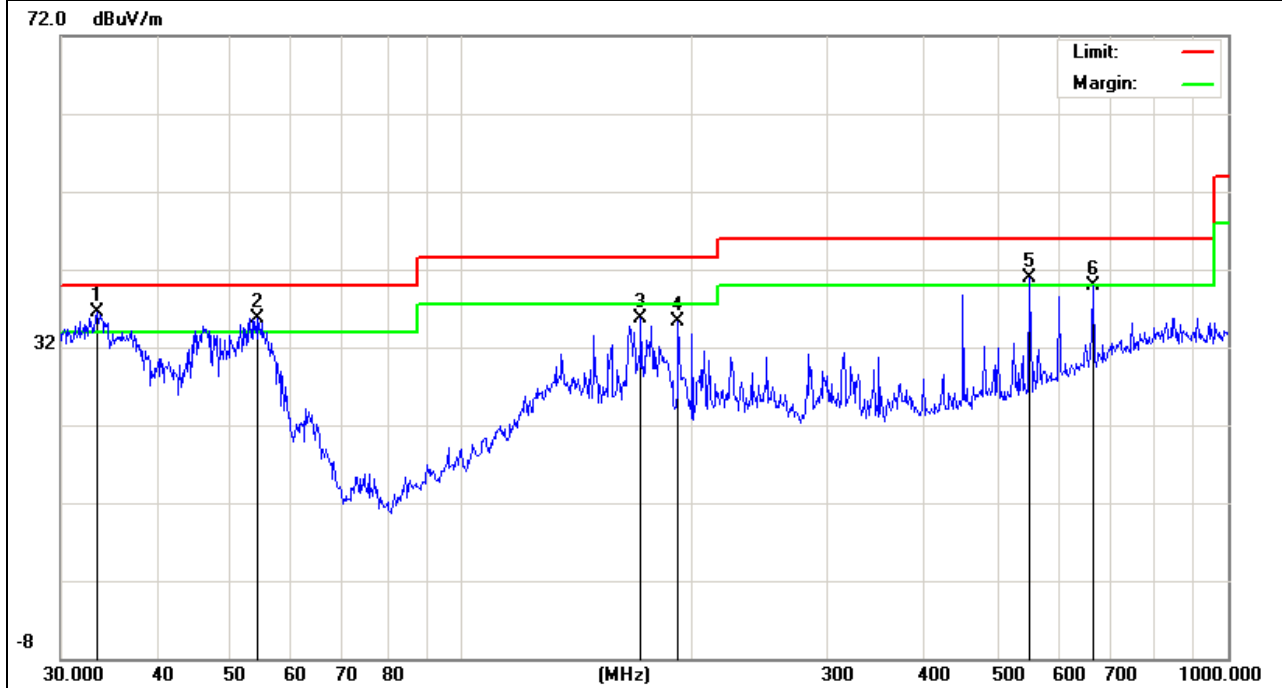
TEST RESULTS (30~1000 MHz)

EUT :	IN EAR MONITOR RECEIVER	Model Name :	EM-100
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2015-09-10
Test Mode :	Mode 3	Polarization :	Vertical
Test Power :	DC3V		

Freq. (MHz)	Reading (dBuV)	Factor (dBuV)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Remark
33.4448	18.96	17.54	36.50	40.00	-3.50	QP
54.0711	26.19	9.53	35.72	40.00	-4.28	QP
171.3925	25.13	10.57	35.70	43.50	-7.80	QP
191.7450	24.60	10.71	35.31	43.50	-8.19	QP
550.9479	19.54	21.36	40.90	46.00	-5.10	QP
665.8034	16.01	23.85	39.86	46.00	-6.14	QP

Remark:

Factor = Antenna Factor + Cable Loss - Amplifier.

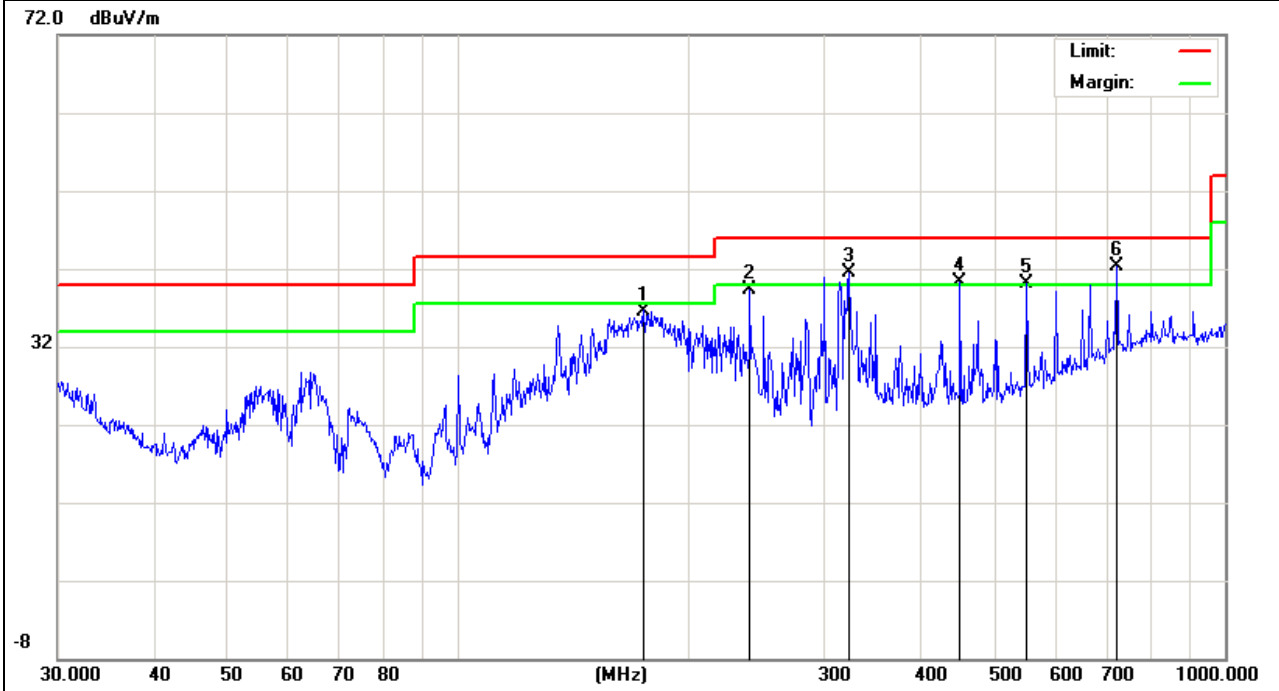


EUT :	IN EAR MONITOR RECEIVER	Model Name :	EM-100
Temperature :	24 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2015-09-10
Test Mode :	Mode 3	Polarization :	Horizontal
Test Power :	DC3V		

Freq. (MHz)	Reading (dBuV)	Factor (dBuV)	Measurement (dBuV)	Limit (dBuV)	Over (dB)	Remark
174.4241	26.02	10.58	36.60	43.50	-6.90	QP
239.9874	25.91	13.49	39.40	46.00	-6.60	QP
323.3204	26.33	15.12	41.45	46.00	-4.55	QP
451.1349	20.97	19.33	40.30	46.00	-5.70	QP
550.9479	18.65	21.36	40.01	46.00	-5.99	QP
721.7259	16.94	25.36	42.30	46.00	-3.70	QP

Remark:

Factor = Antenna Factor + Cable Loss - Amplifier.



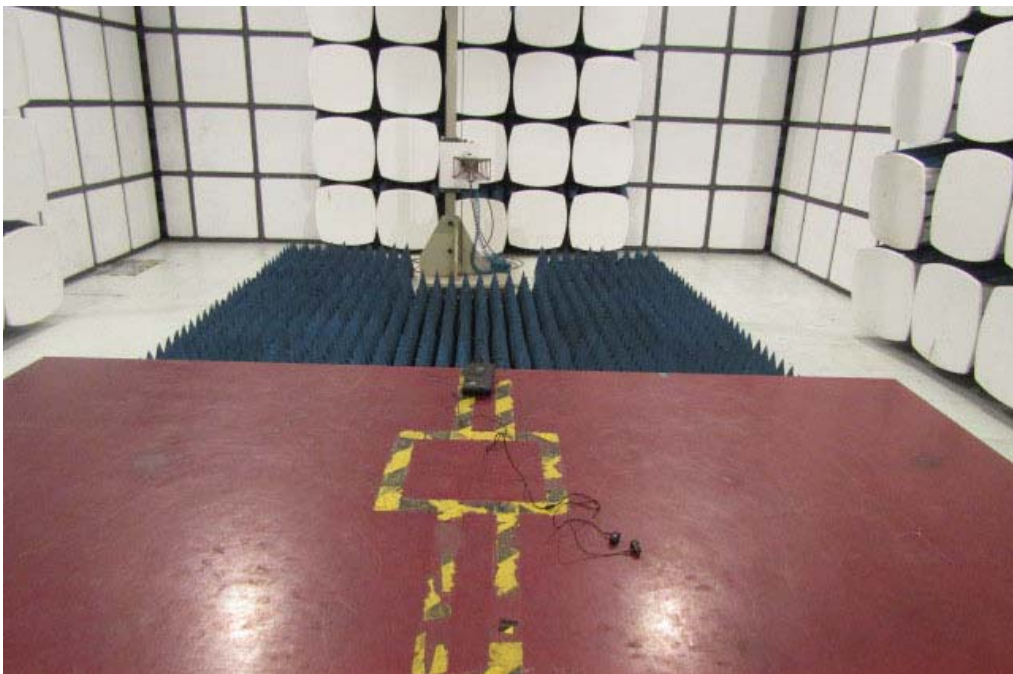
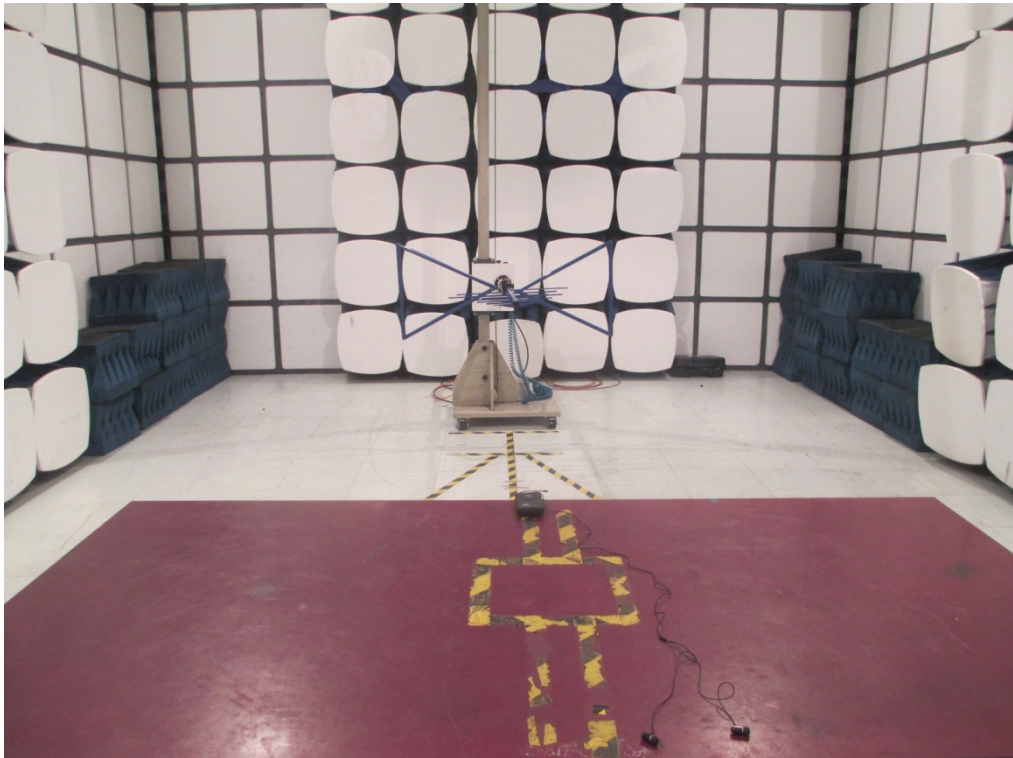
3.2.5 TEST RESULTS(1000~5000MHz)

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	
V	1178.5	65.15	-18.27	46.88	74.00	-27.12	peak
V	1178.5	42.75	-18.27	24.48	54.00	-29.52	AVG
V	2035.0	63.42	-13.30	50.12	74.00	-23.88	peak
V	2035.0	41.97	-13.30	28.67	54.00	-25.33	AVG
V	2725.0	63.08	-11.78	51.30	74.00	-22.70	peak
V	2725.0	40.69	-11.78	28.91	54.00	-25.09	AVG
V	2925.0	62.34	-11.96	50.38	74.00	-23.62	peak
V	2925.0	42.33	-11.96	30.37	54.00	-23.63	AVG
H	1387.5	59.98	-17.43	42.55	74.00	-31.45	peak
H	1387.5	39.79	-17.43	22.36	54.00	-31.64	AVG
H	2000.0	58.74	-13.30	45.44	74.00	-28.56	peak
H	2000.0	38.17	-13.30	24.87	54.00	-29.13	AVG
H	2775.0	58.58	-11.61	46.97	74.00	-27.03	peak
H	2775.0	37.30	-11.61	25.69	54.00	-28.31	AVG
H	4837.5	53.08	-3.55	49.53	74.00	-24.47	peak
H	4837.5	32.02	-3.55	28.47	54.00	-25.53	AVG

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit

4. EUT TEST PHOTO



--End of the report--