



FCC Part 15B TEST REPORT

FCC ID: 2ADGT-LE103

Product : Full Metal Bluetooth Headset

Trade Name : iLIKE

Model Number : LE103

Serial Model : N/A

Report No. : STS1410033E01

Prepared for

Dongguan DINGKU Technology Co.,Ltd

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Prepared by

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TEST RESULT CERTIFICATION

Applicant's name: Dongguan DINGKU Technology Co.,Ltd

Address: Suizhan Building,xingyi Road,Wusha,Chang'an Town,Dongguan.

Manufacture's Name: Shenzhen Vtsonic CO.,Ltd

Address: No.35 the 2nd Industry Rosd, Tangxiayong Village , Songgang Town , Bao'an District , Shenzhen,PRC

Product description

Product name: Full Metal Bluetooth Headset

Brand name: iLIKE

Model and/or type reference...: LE103

Serial Model.....: N/A

Ratings: DC 5V

Standards: FCC 47 CFR Part 15 Subpart B

Test procedure.....: ANSI C63.4-2009

This device described above has been tested by STS, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. 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 .. 25 Oct. 2014 ~ 03 Nov. 2014

Date of Issue 04 Nov. 2014

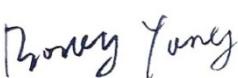
Test Result..... **Pass**

Testing Engineer : 

(Tony Liu)

Technical Manager : 

(Vita Li)

Authorized Signatory : 

(Bovey Yang)



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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

EMISSION			
Standard	Item	Result	Remarks
FCC 47 CFR Part 15 Subpart B (10-1-05 Edition)	Conducted Emission	PASS	Meet Class B limit
	Radiated Emission	PASS	Meet Class B limit

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

1.1 TEST FACILITY

Shenzhen STS Test Services Co., Ltd.

Add. : 1/F, Building 2, Zhuoke Science Park, Chongqing Road, Fuyong, Baoan District, Shenzhen, China.

FCC Registration No.: 842334

1.2 MEASUREMENT UNCERTAINTY

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

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	RF power,conducted	$\pm 0.16\text{dB}$
3	Spurious emissions,conducted	$\pm 0.21\text{dB}$
4	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^\circ\text{C}$
7	Humidity	$\pm 2\%$

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Full Metal Bluetooth Headset
Trade Name	ILIKE
Model Name	LE103
Serial Model	N/A
Model Difference	N/A
Channel List	Please refer to the Note 2.
Adapter	Input:AC 100-240V,50/60Hz,0.15A Output:DC 5V,550mA
Battery	Rated Voltage: 3.7V capacity :290mAh
Hardware version number	V4.0
Software versioning number	V4.0
Connecting I/O Port(s)	Please refer to the User's Manual
CPU processor speed	1.2GHz

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible 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	USB Model
Mode 2	BT Mode

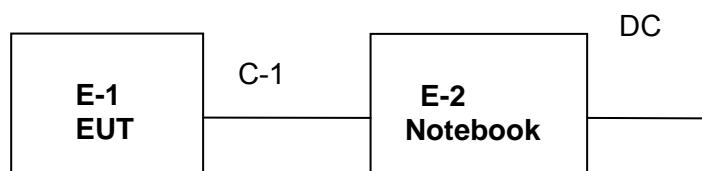
For Conducted Emission	
Final Test Mode	Description
Mode1	USB Model

For Radiated Emission	
Final Test Mode	Description
Mode 1	USB Model

Note:

- (1) Due to the different configuration and test, in this list only some worse mode. The worst test data of the worse mode is reported by this report.

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

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	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Full Metal Bluetooth Headset	iLIKE	LE103	N/A	EUT
E-2	Notebook	Lenovo	B460	WB03928113	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	0.5m	
C-2	NO	NO	1.2m	

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" is means "shielded" "with core"; "NO" is means "unshielded" "without core".

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Due
1	Spectrum Analyzer	Agilent	E4407B	160400005	Jul. 06. 2015
2	Test Receiver	R&S	ESPI	101318	Jul. 06. 2015
3	Bilog Antenna	TESEQ	CBL6111D	31216	Nov.23. 2014
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	Jul. 06. 2015
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	Jul. 06. 2015
6	Horn Antenna	EM	EM-AH-10180	2011071402	Nov.23. 2014
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	Jul. 06. 2015
8	Amplifier	EM	EM-30180	060538	Jul. 06. 2015
9	Loop Antenna	ARA	PLA-1030/B	1029	Jul. 06. 2015
10	Power Meter	R&S	NRVS	100696	Jul. 06. 2015
11	Power Sensor (Peak)	R&S	NRV-Z31	0396.0101.19	Jul. 06. 2015
12	Notebook	Lenovo	B460	WB03928113	Jul. 06. 2015

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Test Receiver	R&S	ESCI	101160	Jul. 06. 2015
2	LISN	R&S	ENV216	101313	Jul. 06. 2015
3	LISN	EMCO	3816/2	00042990	Jul. 06. 2015
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	Jul. 06. 2015
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	Jul. 06. 2015
6	Absorbing clamp	R&S	MOS-21	100423	Jul. 06. 2015
7	RICOH Aficio	LI GUANG	3025 PCL 6	125471	Jul.06.2015
8	MOUSE	SteelSeries	Kinzu v2 Pro	584667	Jul.06.2015
12	Notebook	Lenovo	B460	WB03928113	Jul. 06. 2015

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

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

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

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

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

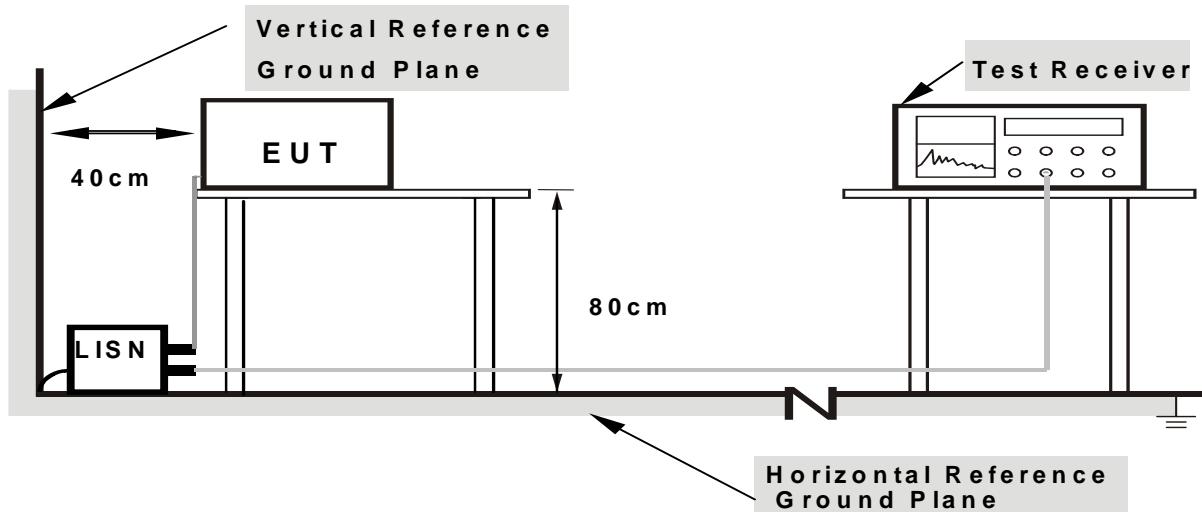
3.1.2 TEST PROCEDURE

- a. The EUT was placed 0.4 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.
- b. 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.
- c. 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.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 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

3.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

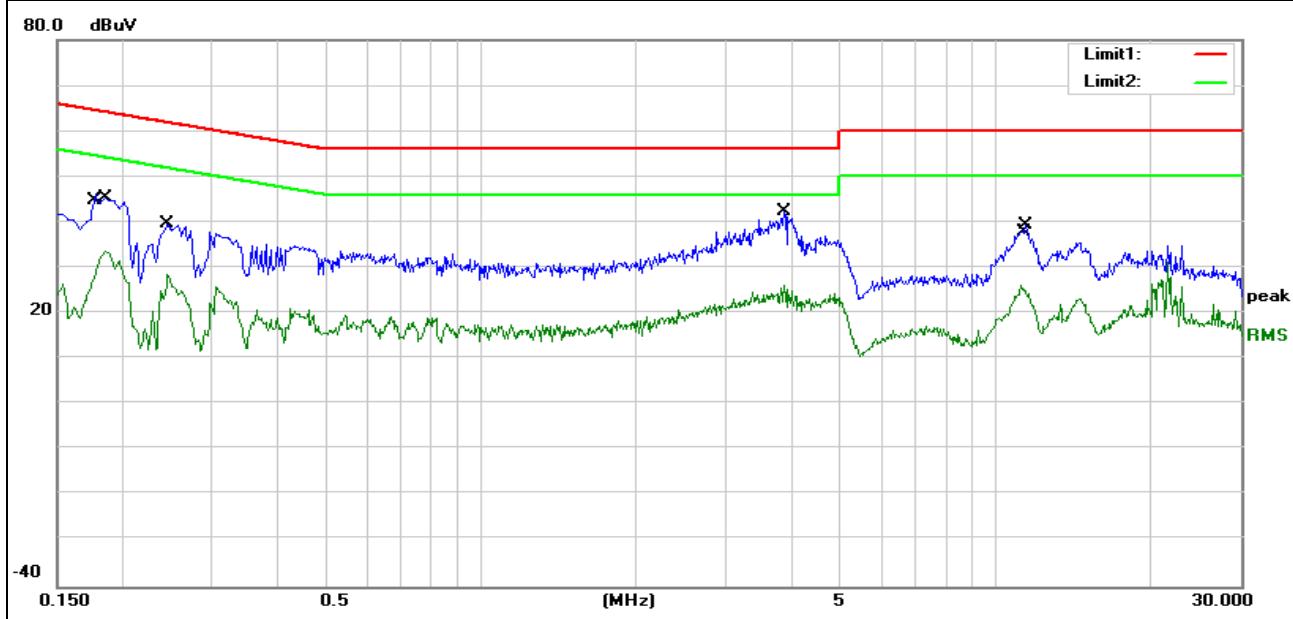
3.1.6 TEST RESULTS

EUT :	Full Metal Bluetooth Headset	Model Name. :	LE103
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5V from Adapter with AC 120V/60Hz	Test Mode :	Mode 1

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
0.1743	26.23	10.45	36.68	64.75	-28.07	QP
0.1743	13.11	10.45	23.56	54.75	-31.19	AVG
0.186	23.14	10.44	33.58	54.21	-20.63	AVG
0.2444	26.8	10.43	37.23	61.95	-24.72	QP
0.2444	15.28	10.43	25.71	51.95	-26.24	AVG
0.246	18.25	10.43	28.68	51.89	-23.21	AVG
3.8771	20.84	10.63	31.47	56	-24.53	QP
3.8771	10.34	10.63	20.97	46	-25.03	AVG
3.898	15.41	10.63	26.04	46	-19.96	AVG
11.21	15.38	10.69	26.07	50	-23.93	AVG
11.4622	22.07	10.69	32.76	60	-27.24	QP
11.4622	12.42	10.69	23.11	50	-26.89	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

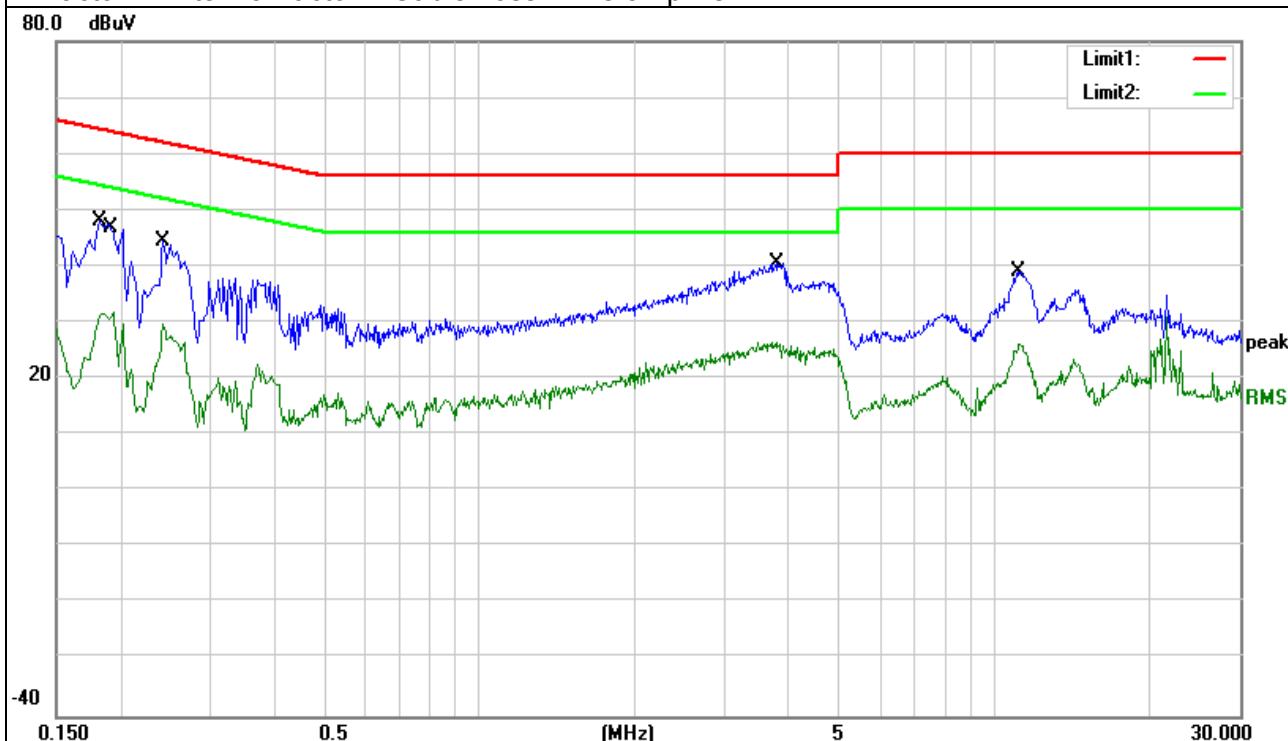


EUT :	Full Metal Bluetooth Headset	Model Name. :	LE103
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5V from Adapter with AC 120V/60Hz	Test Mode :	Mode 1

Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB)	(dBuV)	(dBuV)	(dB)	
0.194	21.29	10.44	31.73	53.86	-22.13	AVG
0.242	19.47	10.43	29.9	52.03	-22.13	AVG
3.766	15.91	10.63	26.54	46	-19.46	AVG
11.182	15.45	10.69	26.14	50	-23.86	AVG
0.183	33.34	10.44	43.78	64.35	-20.57	QP
0.183	18.83	10.44	29.27	54.35	-25.08	AVG
0.241	30.96	10.43	41.39	62.06	-20.67	QP
0.241	14.71	10.43	25.14	52.06	-26.92	AVG
3.8203	22.89	10.63	33.52	56	-22.48	QP
3.8203	13.88	10.63	24.51	46	-21.49	AVG
11.1805	23.05	10.69	33.74	60	-26.26	QP
11.1805	13.19	10.69	23.88	50	-26.12	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class A (dBuV/m) (at 3M)		Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80	60	74	54

Notes:

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

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 1 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 1 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

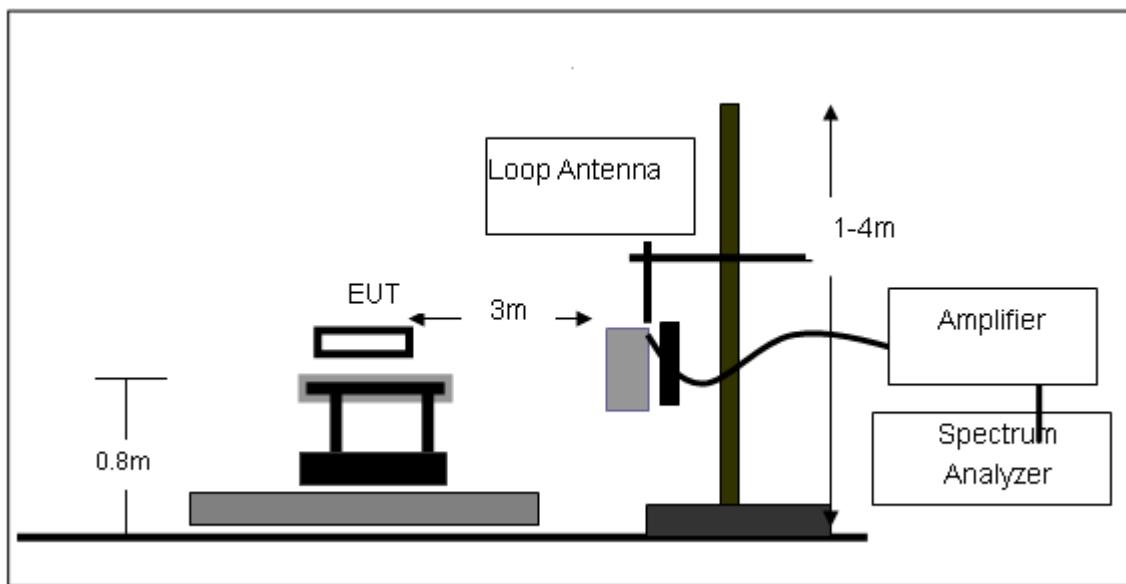
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

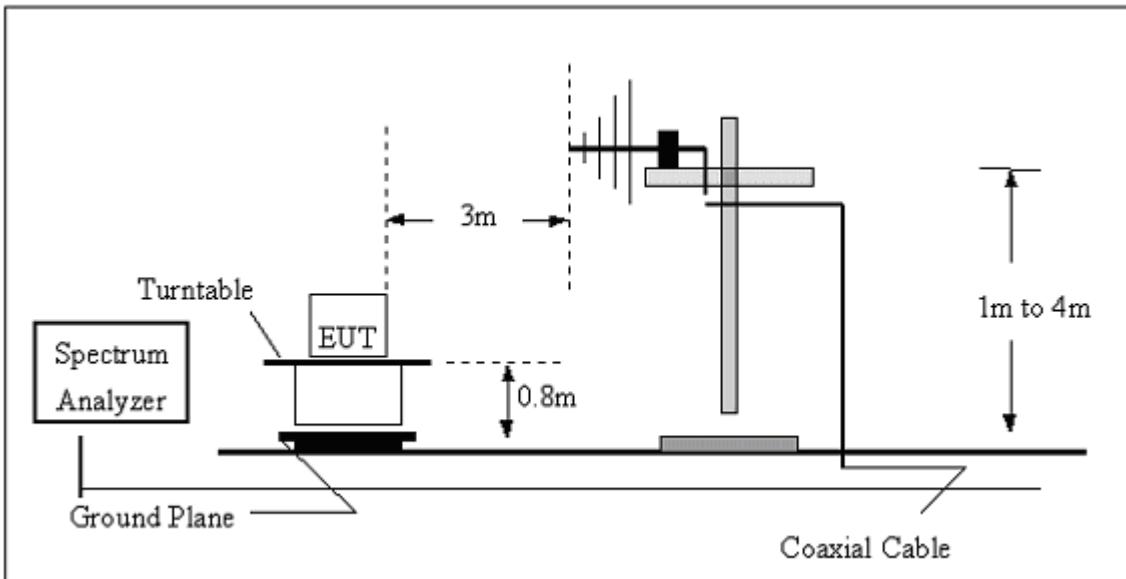
No deviation

3.2.4 TEST SETUP

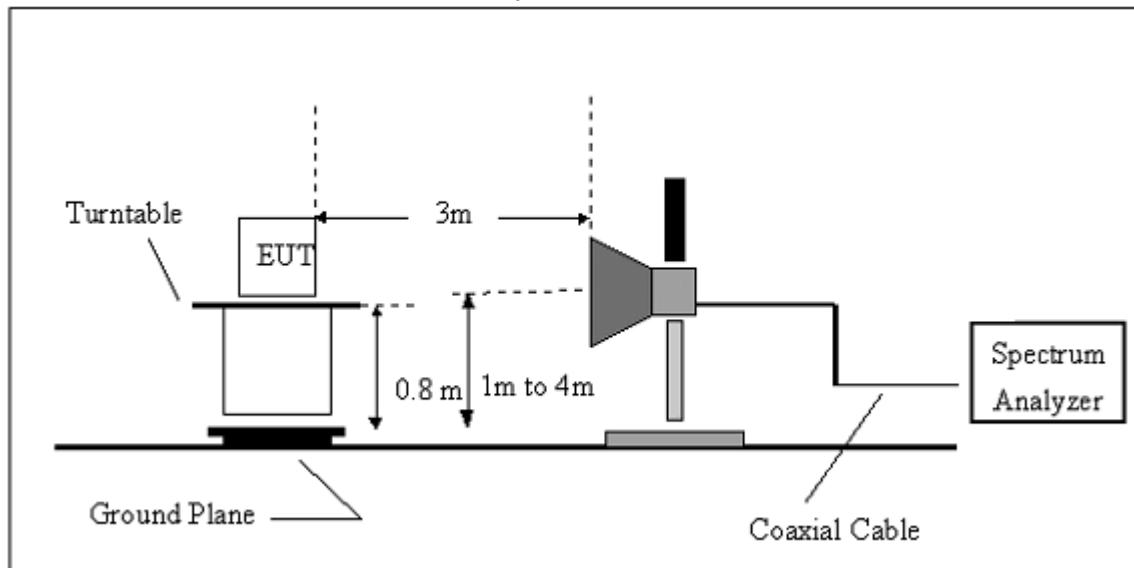
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz

**3.2.5 EUT OPERATING CONDITIONS**

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS (BELOW 30 MHZ)

EUT :	Full Metal Bluetooth Headset	Model Name. :	LE103
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Polarization :	---
Test Voltage :	DC 5V from Adapter AC 120V/60Hz		
Test Mode :	Mode 1		

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance}/\text{test distance})$ (dB);
 Limit line = specific limits(dBuV) + distance extrapolation factor.

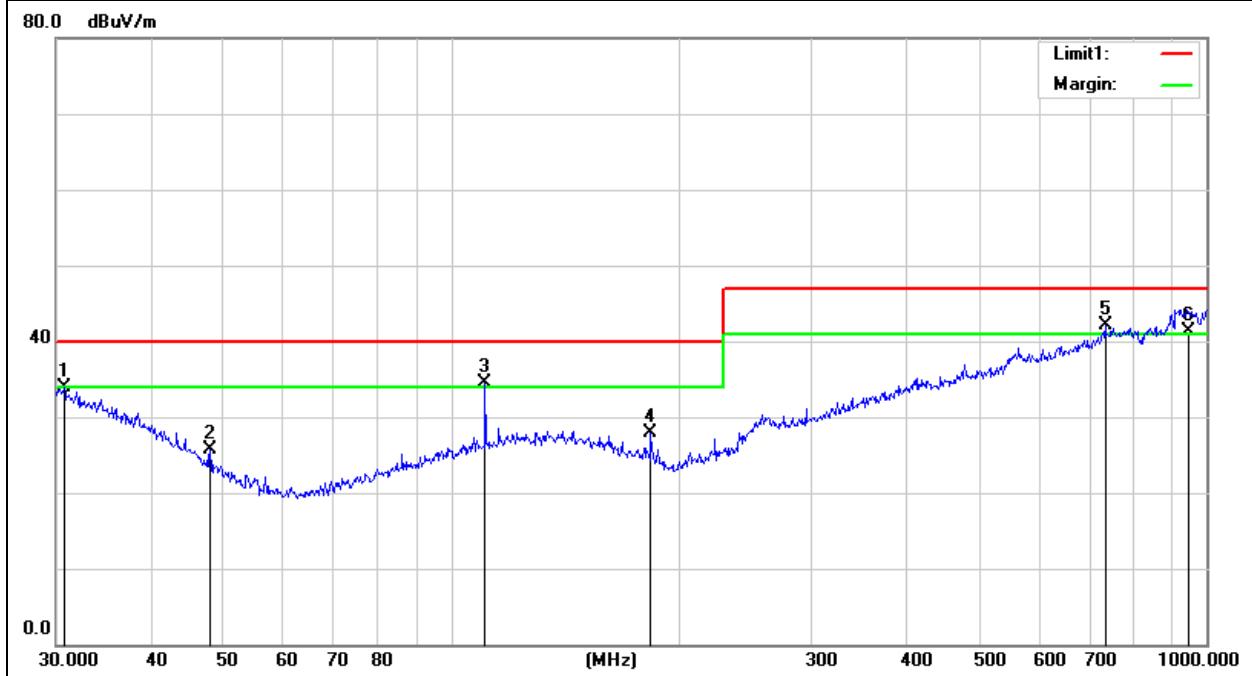
3.2.7 TEST RESULTS (BETWEEN 30M – 1000 MHZ)

EUT :	Full Metal Bluetooth Headset	Model Name. :	LE103
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Polarization :	Horizontal
Test Voltage :	DC 5V from Adapter AC 120V/60Hz		
Test Mode :	Mode 1		

	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
30.7455	15.42	18.56	33.98	40.00	-6.02	QP	
47.9940	16.23	9.45	25.68	40.00	-14.32	QP	
110.9571	22.38	12.06	34.44	40.00	-5.56	QP	
183.8440	17.60	10.21	27.81	40.00	-12.19	QP	
734.4913	16.23	25.89	42.12	47.00	-4.88	QP	
948.7610	12.19	29.13	41.32	47.00	-5.68	QP	

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

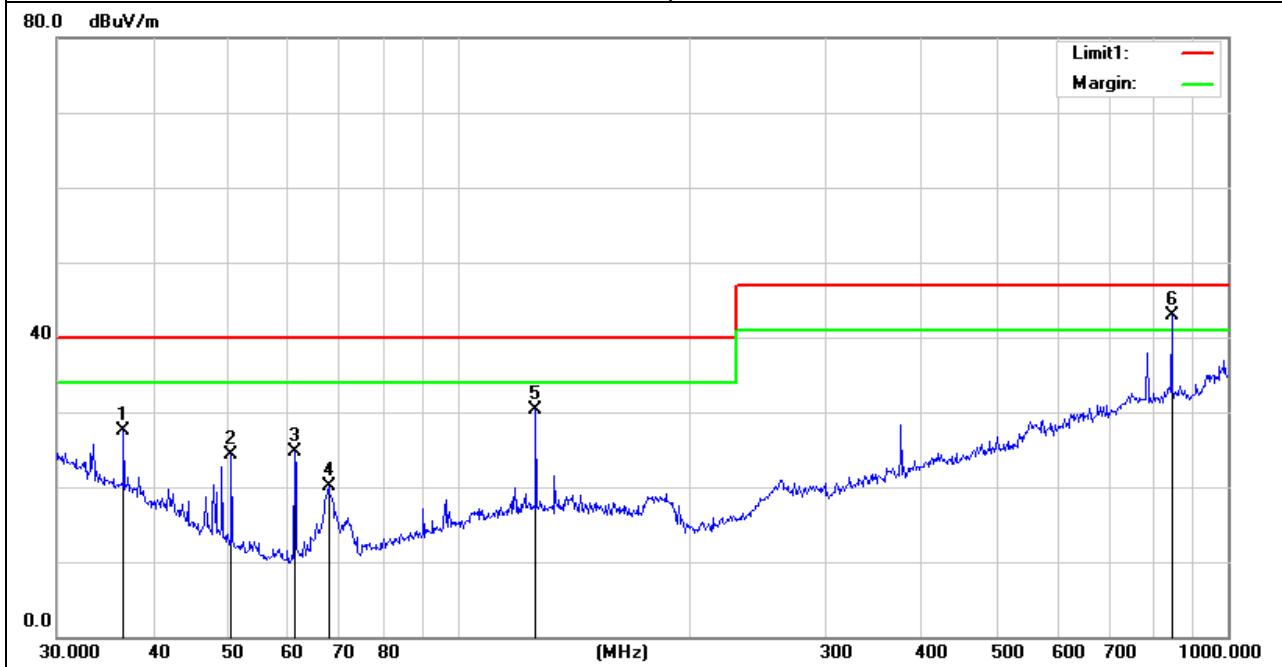


EUT :	Full Metal Bluetooth Headset	Model Name. :	LE103
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Polarization :	Vertical
Test Voltage :	DC 5V from Adapter AC 120V/60Hz		
Test Mode :	Mode 1		

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
36.6375	11.95	15.52	27.47	40.00	-12.53	QP
50.5860	16.20	8.10	24.30	40.00	-15.70	QP
61.1316	19.03	5.71	24.74	40.00	-15.26	QP
67.6751	13.94	6.09	20.03	40.00	-19.97	QP
125.8864	17.49	12.75	30.24	40.00	-9.76	QP
845.0878	15.61	27.30	42.91	47.00	-4.09	QP

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



The worst test data above 1 GHz was showed as the follow:

EUT :	Full Metal Bluetooth Headset	Model Name. :	LE103
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Polarization :	Vertical
Test Voltage :	DC 5V from Adapter AC 120V/60Hz		
Test Mode :	Mode 1		

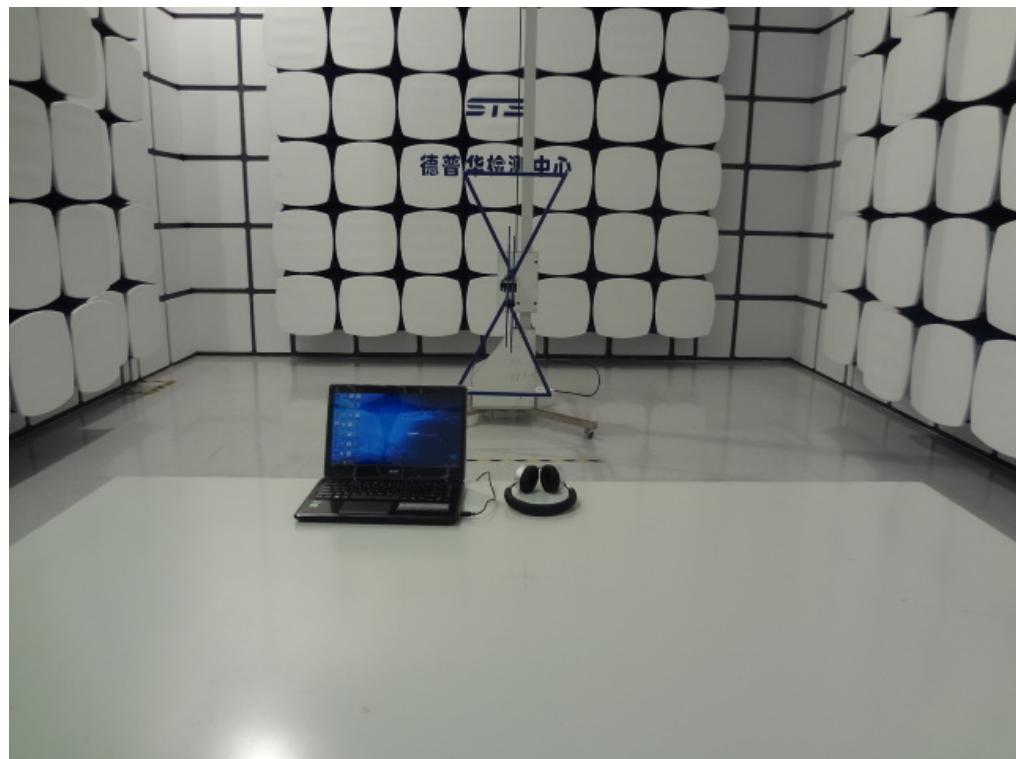
Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant./CL CF	Actual Fs		Peak	AV	Peak	AV
							Limit	Limit	margin	margin
1087.22	H	59.23	41.32	5.15	64.38	46.47	74	54	-9.62	-7.53
2676.43	H	53.13	38.24	9.45	62.58	47.69	74	54	-11.42	-6.31
N/A										
1087.22	V	55.43	37.55	5.15	60.58	42.7	74	54	-13.42	-11.30
2676.43	V	50.25	32.14	9.45	59.7	41.59	74	54	-14.30	-12.41
N/A										

Notes:

1. Measuring frequencies from 1 GHz to 6GHz.
2. Radiated emissions measured in frequency above 1000MHz were made
 - a. Peak detector, RBW = 1MHz, VBW = 1MHz, Sweep time = *auto*. Peak measurement.
 - b. Peak detector, RBW = 1MHz, VBW = 10Hz, Sweep time = *auto*. AVG measurement.
3. THE FREQUENCY THAT ABOVE 3GHZ IS MAINLY FROM THE ENVIRONMENT NOISE.

4. EUT TEST PHOTO

Radiated Measurement Photos Blow 1GHz



Above 1GHz



Conducted Measurement Photos

