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Report No.: SZEM111100466501
Page : 1 of 26

R&TTE EMC TEST REPORT

Application No.: SZEM1111004665RF
Applicant: SHENZHEN CHENGYAN SCIENCE AND TECHNOLOGY CO., LTD
Manufacturer/Factory: SHENZHEN YANXI SCIENCE AND TECHNOLOGY CO., LTD

Equipment under Test (EUT)

Name: Stereo Bluetooth Headphone
Model No.: MH-306B

Standards: ETSI EN 301489-17 V2.1.1 (2009-05)
ETSI EN 301489-1 V1.8.1 (2008-04)

Date of Receipt: 2011-11-10

Date of Test: 2011-11-11 to 2011-11-18

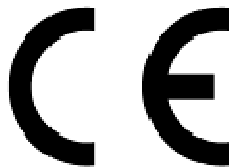
Date of Issue: 2011-11-21

Test Result :	PASS *
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- * In the configuration tested, the EUT complied with the standards specified above.
- * The other tests (e.g. Low Voltage Directive 2006/95/EC) required in R&TTE Directive 99/5/EC were not included in the report, only part tests related to EMC were performed and reported in this report. Hence to clarify compliance with R&TTE directive 99/5/EC shall comply with the other essential required tests additionally.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives.

Authorized Signature:



Jack Zhang
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. 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. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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.

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2 Test Summary

Electromagnetic Compatibility (EMC) Part for Tx & Rx					
Test	Test Requirement	Test Method	Class / Severity	Remark	Result
Radiated Emission, 30MHz to 6GHz	EN 301 489-17: 2009 V2.1.1 clause 7.1	EN 301 489-1 clause 8.2.2 EN 55016-2-3	Table3	Enclosure	PASS
ESD (Electrostatic Discharge)	EN 301 489-17: 2009 V2.1.1 clause 7.2	EN 301 489-1 clause 9.3.2 EN 61000-4-2	Table 2	Enclosure	PASS
Radiated Immunity, 80MHz to 2.7GHz	EN 301 489-17: 2009 V2.1.1 clause 7.2	EN 301 489-1 clause 9.2.2 EN 61000-4-3	Table 2	Enclosure	PASS

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

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4 General Information

4.1 Client Information

Applicant:	SHENZHEN CHENGYAN SCIENCE AND TECHNOLOGY CO., LTD
Address of Applicant:	Room 1808, Shenhua Commercial Building, Jiabin Rd., Luohu District, Shenzhen, P.R.China
Manufacturer/Factory:	SHENZHEN YANXI SCIENCE AND TECHNOLOGY CO., LTD
Address of Manufacturer/Factory:	2/F, Building E, Zhonghaixin Industrial Park, Shengbao Road, LongGang District, Shenzhen

4.2 General Description of E.U.T

EUT Name:	Stereo Bluetooth Headphone
Model No.:	MH-306B
Bluetooth version:	V2.1+ EDR
Antenna Type:	Integral
Antenna gain:	0dBi
Frequency Range:	2402 to 2480MHz
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channels:	79
Dwell Time:	$\leq 0.4s$

4.3 Details of E.U.T

Power Supply:	USB charge Lithium battery: 3.7V 400mAh
USB line:	90cm
AUX IN line:	115cm
Test mode:	
Bluetooth:	Keep the EUT at Bluetooth mode.
Idle mode	Keep the EUT at idle mode.

4.4 Description of Support Units

The EUT was tested with associated equipment as below:

Description	Manufacturer	Model No.
Mobile phone	Nokia	6300

4.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch E&E Lab

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.

4.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **VCCI**

The 3m Semi-anechoic chamber and Shielded Room (7.5m x 4.0m x 3.0m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2197 and C-2383 respectively.

Date of Registration: September 29, 2008. Valid until September 28, 2011.

- **FCC – Registration No.: 556682**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 556682, March 16, 2011

- **Industry Canada (IC)**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1.

4.7 Deviation from Standards

None.

4.8 Abnormalities from Standard Conditions

None.

4.9 Other Information Requested by the Customer

None.

4.10 Monitoring of EUT for the Immunity Test

Visual: Monitored the light, flash and communication status of the EUT.

Audio: Monitored the sound of the EUT.

5 EMC Requirements Specification in EN 301 489-17

EMI in EN 301 489-1, sub clause 7.1 table 1.

EMS in EN 301 489-1, sub clause 7.2 table 2.

5.1 EMI (Emission)

5.1.1 Radiated Emission

Test Method: EN 301 489-1 clause 8.2.2

EUT Operation:

Ambient: Temp.: 25.0 °C Humid.: 50 % Press.: 1015 mbar

Status: Bluetooth mode.

Receive setup:

Frequency range (MHz)	Detector	RBW	VBW
30-1000	Quasi-peak	120kHz	300kHz
Above 1000	Peak	1MHz	3MHz

Test Limit

Frequency	Limit(@3m)	Remark
30MHz-230MHz	40dBuv/m	QP value
230MHz-1GHz	47dBuv/m	QP value
1GHz-3GHz	50dBuv/m	Average value
	70dBuv/m	PK value
3GHz-6GHz	54dBuv/m	Average value
	74dBuv/m	PK value

Test procedure:

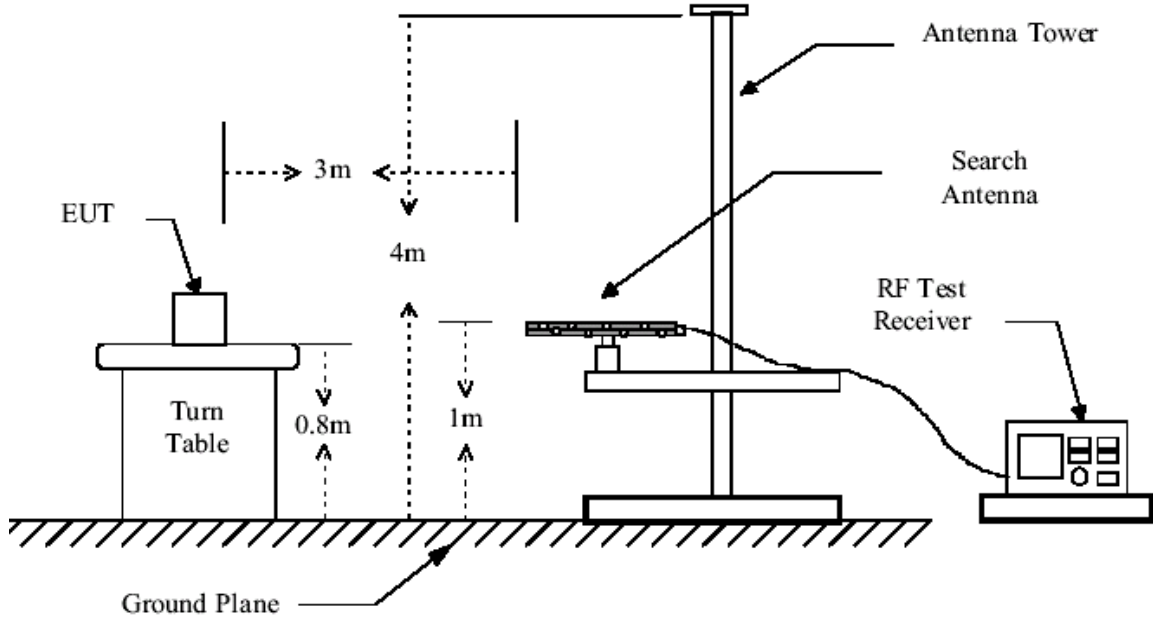
1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

Equipment Used:

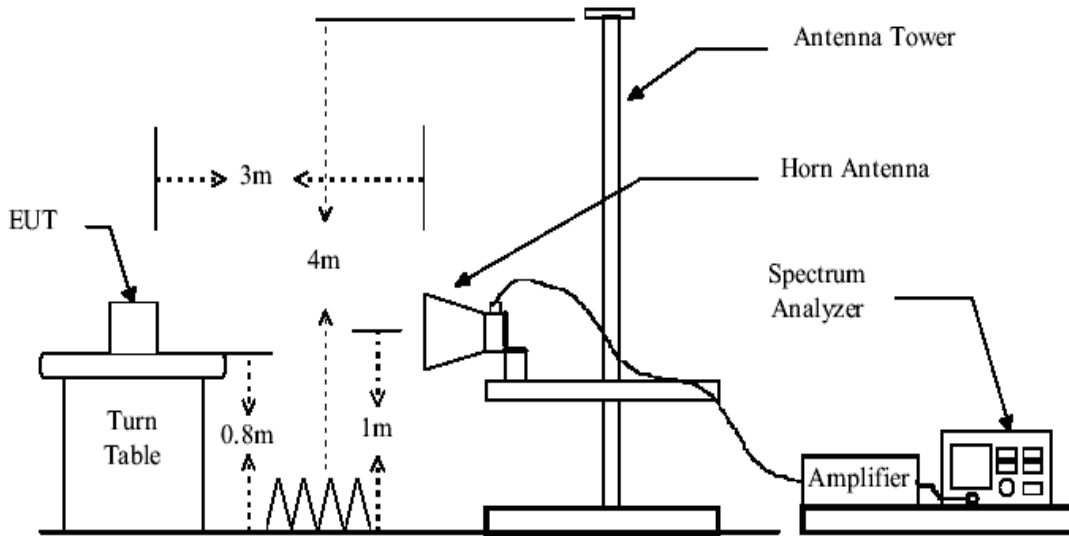
Refer to section 7 for details.

Test Configuration:

Below 1GHz



Above 1GHz



Measurement Record

Uncertainty: ± 6dB

Below 1GHz

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarity
44.901	0.70	9.50	27.30	37.02	19.92	40.00	-20.08	Vertical
96.775	1.17	8.98	27.20	33.32	16.27	40.00	-23.73	Vertical
133.619	1.28	7.84	26.99	41.78	23.91	40.00	-16.09	Vertical
215.268	1.49	11.01	26.65	39.04	24.89	40.00	-15.11	Vertical
625.078	2.75	20.50	27.51	30.29	26.03	47.00	-20.97	Vertical
965.542	3.67	23.70	26.47	35.91	36.81	47.00	-10.19	Vertical
37.416	0.60	12.40	27.33	29.75	15.42	40.00	-24.58	Horizontal
133.619	1.28	7.84	26.99	39.92	22.05	40.00	-17.95	Horizontal
172.599	1.36	9.61	26.81	36.10	20.26	40.00	-19.74	Horizontal
216.024	1.49	11.05	26.64	34.28	20.18	40.00	-19.82	Horizontal
373.311	2.13	15.97	26.95	42.83	33.98	47.00	-13.02	Horizontal
804.603	3.22	22.14	27.27	32.08	30.17	47.00	-16.83	Horizontal

Above 1GHz

Peak measurement

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarity
1534.540	2.54	28.35	39.37	46.47	37.99	70.00	-32.01	Vertical
1912.893	2.78	31.18	39.53	46.25	40.68	70.00	-29.32	Vertical
2191.948	2.91	32.14	39.71	47.31	42.65	70.00	-27.35	Vertical
2983.131	3.31	33.38	40.28	47.22	43.63	70.00	-26.37	Vertical
3119.795	3.41	33.35	40.40	48.42	44.78	74.00	-29.22	Vertical
3895.981	4.07	33.68	40.95	48.33	45.13	74.00	-28.87	Vertical
1599.100	2.58	28.84	39.40	48.68	40.70	70.00	-29.30	Horizontal
1968.526	2.81	31.55	39.55	47.67	42.48	70.00	-27.52	Horizontal
2405.992	2.99	32.54	39.86	47.50	43.17	70.00	-26.83	Horizontal
2919.675	3.27	33.28	40.24	48.64	44.95	70.00	-25.05	Horizontal
3549.384	3.78	33.26	40.70	49.16	45.50	74.00	-28.50	Horizontal
4125.890	4.24	34.17	41.14	48.86	46.13	74.00	-27.87	Horizontal

Remark:

1. The EUT was test at 3m in field chamber.
2. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak measurements were shown in the report.

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5.2 EMS (Immunity)

Performance Criteria of EN 301 489-17, sub clause 6.2 table 1.

Criteria	During test	After test
A	Shall operate as intended May show degradation of performance (see note 1) Shall be no loss of function Shall be no unintentional transmissions	Shall operate as intended Shall be no degradation of performance (see note 2) Shall be no loss of function Shall be no loss of stored data or user programmable functions
B	May show loss of function (one or more) May show degradation of performance (see note 1) No unintentional transmissions	Functions shall be self-recoverable Shall operate as intended after recovering Shall be no degradation of performance (see note 2) Shall be no loss of stored data or user programmable functions
C	May be loss of function (one or more)	Functions shall be recoverable by the operator Shall operate as intended after recovering Shall be no degradation of performance (see note 2)
<p>NOTE 1: Degradation of performance during the test is understood as a degradation to a level not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.</p> <p>NOTE 2: No degradation of performance after the test is understood as no degradation below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. After the test no change of actual operating data or user retrievable data is allowed. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.</p>		

5.2.1 Radiated Immunity

Test Method: EN301489-1 clause 9.2.2
EUT Operation:
 Ambient: Temp.: 25.0 °C Humid.: 50 % Press.: 1015 mbar
 Status: Bluetooth mode, Idle mode.
Test Procedure: Refer EN 61000-4-3.
Equipment Used: Refer to section 7 for details.

5.2.1.1 Test Results

Frequency	Level	Modulation	EUT Face	Antenna Polaxis	Result / Observations
80MHz-1GHz, 1.4GHz to 2.7GHz	3V/m	1kHz, 80% Amp. Mod, 1% increment Dwell time:3seconds	Front	V	A
				H	A
			Back	V	A
				H	A
			Left	V	A
				H	A
			Right	V	A
				H	A
			Top	V	A
				H	A
			Under	V	A
				H	A

Remarks:

A: No degradation in the performance of the E.U.T. was observed.

5.2.2 ESD

Test Method: EN 301489-1 clause 9.3.2

EUT Operation:

Ambient: Temp.: 25.0 °C Humid.: 50 % Press.: 1015 mbar

Status: Bluetooth mode, Idle mode.

Test Procedure: Refer EN 61000-4-2.

Equipment Used: Refer to section 7 for details.

Observations: Test Point:

1. All insulated enclosure and seams.
2. All accessible metal parts of the enclosure.

Direct Application Test Results

Direct Application			Test Results	
Discharge Level (kV)	Pulse No.	Test Point	Contact Discharge	Air Discharge
± 2,4,8	10 for every level	1	N/A	A
± 2, 4	10 for every level	2	A	N/A

Indirect Application Test Results

Indirect Application			Test Results	
Discharge Level (kV)	Pulse No.	Test Point	Horizontal Coupling	Vertical Coupling
± 2, 4	10 for every level	1	A	A

Results:

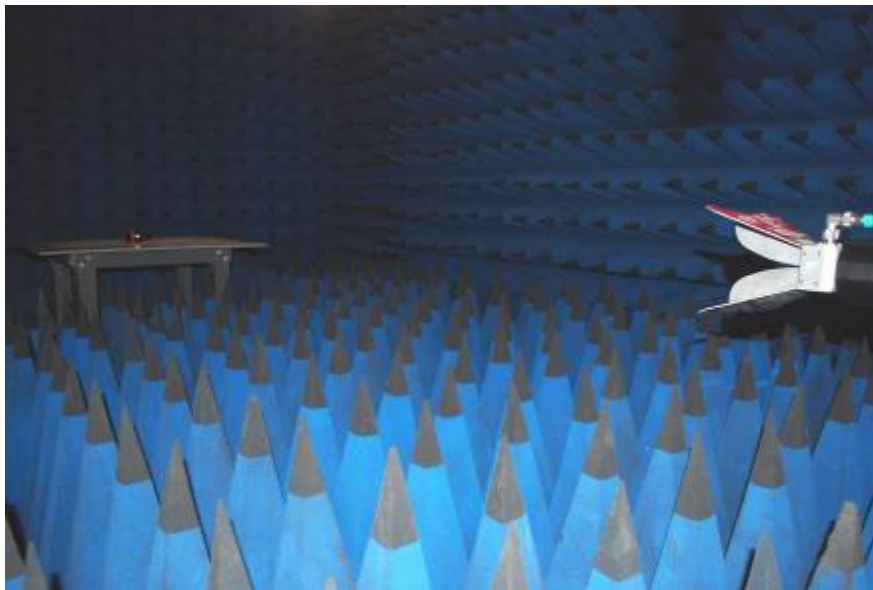
A: No degradation in the performance of the EUT was observed.

N/A: Not applicable (not requested by Standard).



6 Photographs (Test Model No: MH-306B)

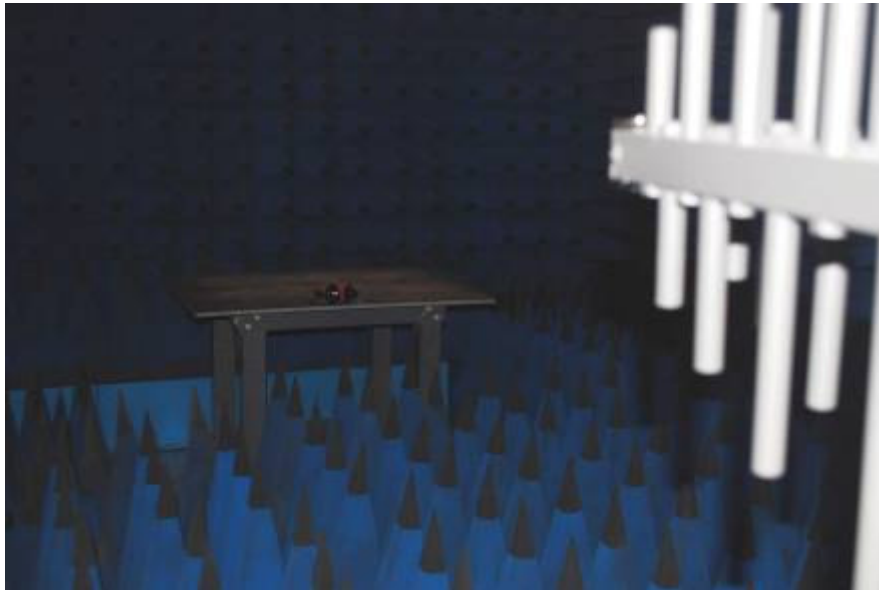
6.1 Radiated Emission Test Setup

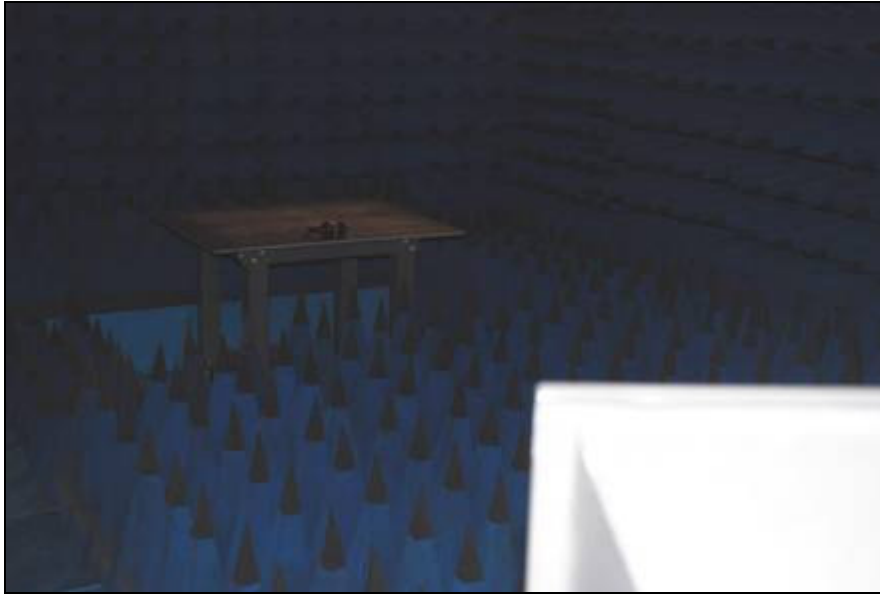


6.2 ESD test Setup



6.3 Radiated Immunity Test Setup





7 Appendix A: Instruments Used during Test

RE in Chamber					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Due date (yyyy-mm-dd)
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	2012-06-10
2	Shielding effectiveness of Anechoic Chamber	ChangZhou ZhongYu	854	SEL0169	2012-06-10
3	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	2012-03-11
4	EMI Test software	AUDIX	E3	SEL0050	N/A
5	Coaxial cable	SGS	N/A	SEL0028	2012-05-29
6	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	2012-10-29
7	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	2012-05-26
8	Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEL0168	2012-10-26
9	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0006	2012-10-29
10	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	2012-10-29
11	Band filter	Amindeon	Asi 3314	SEL0094	2012-05-26
12	Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	2012-10-29

ESD					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Due date (yyyy-mm-dd)
1	ESD Simulator	SCHAFFNER	NSG 438	SEL0035	2012-03-21
2	ESD Ground Plane	SGS(3m*3m)	N/A	SEL0004	N/A

Radiated Immunity					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Due date (yyyy-mm-dd)
1	Shielding effectiveness of Anechoic Chamber	ChangZhou ZhongYu	854	SEL0169	2012-06-10
2	Signal Generator	Rohde & Schwarz	SML03	SEL0068	2012-05-26
3	RF Amplifier 30M-1GHz	Amplifier Research	250W1000A	SEL0066	2012-10-23
4	RF Amplifier 0.8-3.0GHz	Amplifier Research	60S1G3	SEL0065	2012-10-23
5	Power Meter	Rohde & Schwarz	NRVD	SEL0069	2012-05-26
6	Power Sensor	Rohde & Schwarz	URV5-Z2	SEL0071	2012-05-26
7	Power Sensor	Rohde & Schwarz	URV5-Z2	SEL0072	2012-05-26
8	Software EMC32	Rohde & Schwarz	EMC32-S	SEL0082	N/A
9	Log-periodic Antenna	Amplifier Research	AT1080	SEL0073	N/A
10	Antenna Tripod	Amplifier Research	TP1000A	SEL0074	N/A
11	High Gain Horn Antenna (0.8-5GHz)	Amplifier Research	AT4002A	SEL0075	N/A

General used equipment					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Due date (yyyy-mm-dd)
1	Humidity/ Temperature Indicator	Shanghai	ZJ1-2B	SEL0102 to SEL0103	2012-10-27
2	Humidity/ Temperature Indicator	Shanghai	ZJ1-2B	SEL0101	2012-10-27
3	Barometer	ChangChun	DYM3	SEL0088	2012-05-18

8 EUT Constructional Details (Test Model No: MH-306B)



Subwoofer









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