

Report No.: SZEMO10060336601

1 of 21

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

Email: sgs\_internet\_operations@sgs.com Page:

**FCC REPORT** 

**Application No.:** SZEMO100603366RF

Applicant: SHENZHEN CHEGNYAN SCIENCE AND TECHNOLOGY

CO., LTD

Product Name: Wireless Headphone

Operation Frequency: 913.5MHz, 914MHz, 914.5MHz

FCC ID: YILMH2001H

Standards: FCC CFR Title 47 Part 15 Subpart C Section 15.249: 2008

**Date of Receipt** 2010-06-07

**Date of Test** 2010-06-08 to 2010-07-28

**Date of Issue** 2010-07-28

Test Result : PASS \*

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

Authorized Signature:

Jack Zhang

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.



Report No.: SZEMO10060336601

Page: 2 of 21

## 2 Contents

		Page
1	COVER PAGE	1
2	CONTENTS	2
3	TEST SUMMARY	3
4	GENERAL INFORMATION	
	4.1 CLIENT INFORMATION	4
	4.2 GENERAL DESCRIPTION OF E.U.T.	4
	4.3 E.U.T OPERATION MODE	
	4.4 TEST FACILITY	6
	4.5 TEST LOCATION	6
	4.6 OTHER INFORMATION REQUESTED BY THE CUSTOMER	6
	4.7 TEST INSTRUMENTS LIST:	7
5	TEST RESULTS AND MEASUREMENT DATA	8
	5.1 ANTENNA REQUIREMENT:	8
	5.2 CONDUCTED EMISSIONS	9
	5.3 RADIATED EMISSION	
	5.3.1 Field Strength Of The Fundamental Signal	
	5.3.2 Spurious Emissions	
	5.4 20DB BANDWIDTH	19-21



Report No.: SZEMO10060336601

Page: 3 of 21

# 3 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Passed
AC Power Line Conducted Emission	15.207	Passed
Field strength of the fundamental signal	15.249 (a)	Passed
Spurious emissions	15.249 (a)/15.209	Passed
20dB Occupied Bandwidth	15.215 (c)	Passed

Remark: Passed: The EUT complies with the essential requirements in the standard.

Failed: The EUT does not comply with the essential requirements in the standard.

#### Remark:

Item No.: MH-2001H, 20199

Only the Item MH-2001H in the picture 5.3 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above items.



Report No.: SZEMO10060336601

Page: 4 of 21

# 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.

Product Name:	Wireless Headphone	
Trade Name:	N/A	
Item No.:	MH-2001H, 20199	
Operation Frequency:	913.5MHz, 914MHz, 914.5MHz	
Channel numbers:	3	
Channel separation:	0.5MHz	
Modulation type:	FM	
Antenna Type:	Integral	
Antenna gain:	1dBi	
Transmitter Adapter	Input: AC 120V 60Hz 0.5A	
	Output: DC 9.0 V 200mA	
Receiver Power supply:	DC3.0V(2*1.5V"AA" Size Batteries)	



Report No.: SZEMO10060336601

Page: 5 of 21

## 4.3 E.U.T Operation mode

### **Operating Environment:**

Temperature: 24.0 °C
Humidity: 52 % RH
Atmospheric Pressure: 1008 mbar

Test mode:

On mode: Transmitter playing test signal with ipod, headphone set receiving



Report No.: SZEMO10060336601

Page: 6 of 21

### 4.4 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, June 27, 2008.

#### 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.

### 4.5 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 Other Information Requested by the Customer

None.



Report No.: SZEMO10060336601

Page: 7 of 21

### 4.7 Test Instruments list:

RE i	RE in Chamber								
Item	Item Test Equipment Manufacturer		Model No. Inventory No.		Cal.Date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)			
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	2010-06-17	2011-06-17			
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	2009-11-05	2010-11-05			
3	EMI Test software	AUDIX	E3	SEL0050	N/A	N/A			
4	Coaxial cable	SGS	N/A	SEL0028	2008-06-18	2011-06-18			
5	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	2009-11-05	2010-11-05			
6	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0006	2009-11-10	2011-11-10			
7	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	2010-06-02	2011-06-02			

Con	Conducted Emission								
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)			
1	Shielding Room	ZhongYu Electron	GB-88	SEL0042	N/A	N/A			
2	LISN	ETS-LINDGREN	3816/2	SEL0021	2010-06-02	2011-06-02			
3	Two-Line V-Network	Rohde & Schwarz	ENV216	SEL0152	2009-10-22	2010-10-22			
4	EMI Test Receiver	Rohde & Schwarz	ESCI	SEL0022	2010-06-02	2011-06-02			
5	Coaxial Cable	SGS	N/A	SEL0024	2008-06-18	2011-06-18			

RF c	RF conducted								
Item	Test Equipment	Equipment Manufacturer		Inventory No.	Cal.Date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)			
1	Spectrum Analyzer	Rohde & Schwarz	FSP 30	SEL0154	2009-10-22	2010-10-22			
2	Coaxial cable	SGS	N/A	SEL0028	2008-06-18	2011-06-18			



Report No.: SZEMO10060336601

Page: 8 of 21

## 5 Test results and Measurement Data

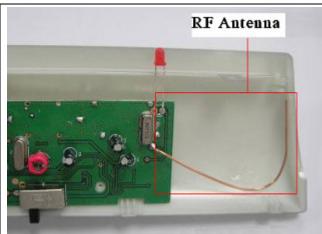
## 5.1 Antenna requirement:

**Standard requirement:** FCC Part15 C Section 15.203

15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

#### **E.U.T Antenna:**





Report No.: SZEMO10060336601

Page: 9 of 21

### 5.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207				
Test Method:	ANSI C63.4: 2003				
Test Frequency Range:	150KHz to 30MHz				
Class / Severity:	Class B				
Limit:	Fraguency range (MIII)	Limit (d	dBuV)		
	Frequency range (MHz)	Quasi-peak	Average		
	0.15-0.5	66 to 56*	56 to 46*		
	0.5-5	56	46		
	5-30	60	50		
	* Decreases with the logarithm The E.U.T and simulators are				
	impedance stabilization network(L.I.S.N.). The provide a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.				
Test setup:	Reference Plane				
	AUX Equipment  Test table/Insulation plane  Remark E.U.T: Equipment Under Test LISN: Line Impedence Stabilization Network Test table height=0.8m				
Test mode:	On mode				
Test Instruments:	Refer to section 4.7 for details				
Test results:	Passed				

#### **Measurement Data**

An initial pre-scan was performed on the live and neutral lines with peak detector.

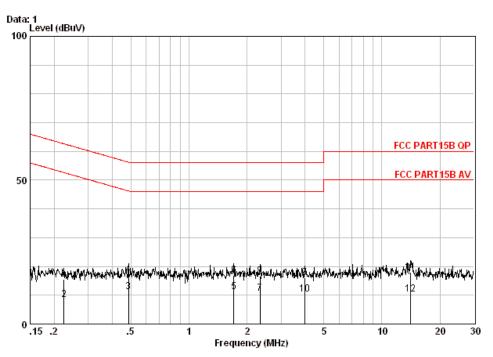
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.



Report No.: SZEMO10060336601

Page: 10 of 21

#### Live Line:



Bite : Shielding Room

Condition : FCC PART15B QP CE LINE

EUT : MP3 PLAYER Job NO. : 3366RF MODE : ON

		Cable	LISN	Read		Limit	Over	
	Freq	Loss	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.22437	0.04	-0.04	15.48	15.47	62.66	-47.18	QP
2	0.22437	0.04	-0.04	8.50	8.50	52.66	-44.16	Average
3	0.48632	0.06	-0.04	11.05	11.07	46.23	-35.16	Average
4	0.48632	0.06	-0.04	17.05	17.07	56.23	-39.16	QP
5	1.707	0.11	-0.06	11.10	11.15	46.00	-34.85	Average
6	1.707	0.11	-0.06	16.97	17.02	56.00	-38.98	QP
7	2.334	0.13	-0.07	10.54	10.60	46.00	-35.40	Average
8	2.334	0.13	-0.07	16.54	16.60	56.00	-39.40	QP
9	3.985	0.16	-0.09	16.03	16.09	56.00	-39.91	QP
10	3.985	0.16	-0.09	10.20	10.27	46.00	-35.73	Average
11	14.063	0.24	-0.47	18.31	18.09	60.00	-41.91	QP
12	14.063	0.24	-0.47	10.50	10.28	50.00	-39.72	Average

#### Notes:

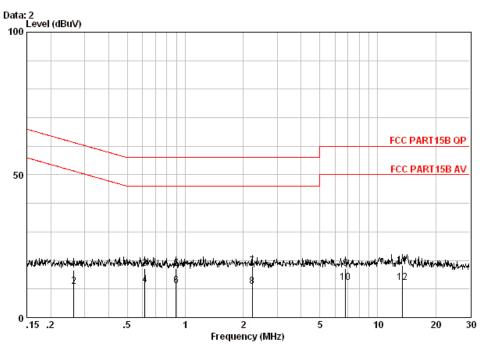
- 1. The following Quasi-Peak and Average measurements were performed on the EUT:
- 2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.



Report No.: SZEMO10060336601

Page: 11 of 21

#### **Neutral Line:**



Site : Shielding Room

: ON

Condition : FCC PART15B QP CE NEUTRAL

EUT : MP3 PLAYER Job NO. : 3366RF

Cable LISN Limit Over Limit Remark Line Freq Loss Factor Level Level MHz dBuV dBuV dBuV dB dB dB 1 -0.04 0.26303 0.05 16.72 16.72 61.34 -44.61 QP 2 -0.04 10.90 10.91 0.26303 0.05 51.34 -40.43 Average -0.04 56.00 -38.71 QP 3 0.61726 17.28 0.06 17.29 46.00 -34.58 Average 4 0.61726 0.06 -0.04 11.40 11.42 5 0.89441 0.07 -0.04 17.20 56.00 -38.78 QP 17.22 6 0.89441 0.07 -0.04 11.20 11.22 46.00 -34.78 Average -0.06 17.80 7 2.225 0.12 17.86 56.00 -38.14 QP 46.00 -35.04 Average 8 2.225 0.12 -0.06 10.90 10.96 9 6.805 0.19 -0.17 17.20 17.21 60.00 -42.79 QP 12.20 -0.17 10 6.805 0.19 12.21 50.00 -37.79 Average 11 13.479 0.24 -0.42 18.31 18.13 60.00 -41.87 QP -0.42 12.50 12.32 50.00 -37.68 Average 13.479 12 0.24

#### Notes:

MODE

- 1. The following Quasi-Peak and Average measurements were performed on the EUT:
- 2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.



Report No.: SZEMO10060336601

Page: 12 of 21

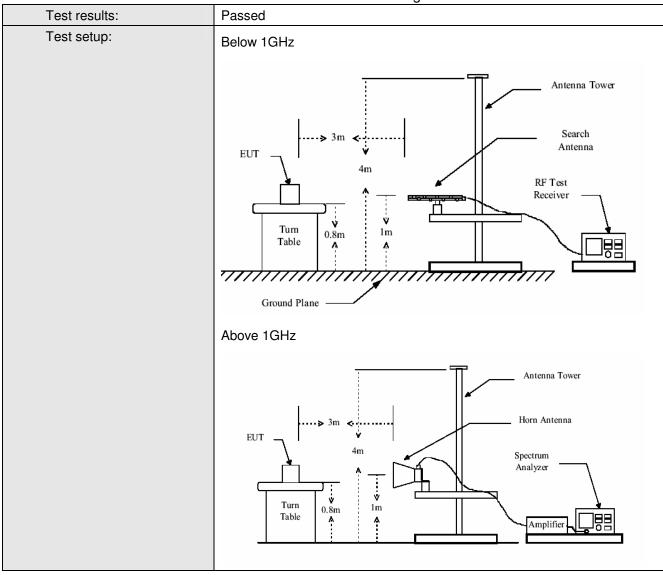
### 5.3 Radiated Emission

Test Method: Test Frequency Range:  Test site:  Measurement Distance: 3m (Semi-Anechoic Chamber)  Receiver setup:  Frequency Detector RBW VBW Remark 30MHz-1GHz Quasi-peak 100KHz 300KHz Quasi-peak Value Above 1GHz Peak 1MHz 10Hz Average Value  Limit: (Field strength of the fundamental signal)  Limit: (Spurious Emissions)  Frequency Limit (dBuV/m@3m) Remark 902MHz to 928MHz 94.0 Quasi-peak Value  Frequency Limit (dBuV/m@3m) Remark 902MHz to 928MHz 94.0 Quasi-peak Value  Frequency Limit (dBuV/m@3m) Remark 902MHz to 928MHz 94.0 Quasi-peak Value  Limit: (Spurious Emissions)  Frequency Limit (dBuV/m@3m) Remark 902MHz to 928MHz 40.0 Quasi-peak Value  Limit: (Spurious Emissions)  Frequency Limit (dBuV/m@3m) Remark 902MHz 16Hz 43.5 Quasi-peak Value  Limit: (Spurious Emissions)  Frequency Limit (dBuV/m@3m) Remark 902MHz 16Hz 43.5 Quasi-peak Value 216MHz-960MHz 43.5 Quasi-peak Value 216MHz-960MHz 43.5 Quasi-peak Value Above 1GHz 54.0 Average Value  Above 1GHz 54.0 Average Value  Above 1GHz 74.0 Peak Value  Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.  Test mode:  On mode  Test Procedure:  1 Test Procedure:  2 The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.  3 Test mode:  2 The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the maximum value of the highest from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.  3 Test Instruments:  1 Test Procedure:  1 Test Instruments:  1 Test Procedure	Test Requirement:	FCC Part15 C Section 15.249 and 15.209				
Test site: Measurement Distance: 3m (Semi-Anechoic Chamber)    Receiver setup:   Frequency	Test Method:	ANSI C63.4: 2003				
Frequency   Detector   RBW   VBW   Remark   30MHz-1GHz   Quasi-peak Value   Above 1GHz   Peak   1MHz   30MHz   Peak Value   Peak   1MHz   30MHz   Peak Value   Peak   1MHz   10Hz   Average Value   Peak Value   Peak   1MHz   10Hz   Average Value   Peak Value	Test Frequency Range:	30MHz to 25000	OMHz			
Frequency   Detector   RBW   VBW   Remark   30MHz-1GHz   Quasi-peak   100KHz   30MKHz   Quasi-peak Value   Above 1GHz   Peak   1MHz   3MHz   10Hz   Average Value   Peak   1MHz   10Hz   Average Value   Peak   1MHz   10Hz   Average Value   VBW   Peak Value   Peak   1MHz   10Hz   Average Value   VBW   Peak Value   Peak   1MHz   10Hz   Average Value   VBW   Peak Value   VBW   Peak Value   VBW   VBW   Peak Value   VBW   VBW   Peak Value   VBW	Test site:	Measurement D	istance: 3m (S	Semi-Anecho	ic Chambei	r)
South   Sout	Receiver setup:			_		
Limit: (Field strength of the fundamental signal)  Limit: (Spurious Emissions)  Frequency   Limit (dBuV/m @3m)   Remark   902MHz to 928MHz   94.0   Quasi-peak Value   10   Qu	· ·					
Limit: (Field strength of the fundamental signal)  Limit: (Spurious Emissions)  Frequency Limit (dBuV/m @3m) Remark 902MHz to 928MHz 94.0 Quasi-peak Value  Limit: (Spurious Emissions)  Frequency Limit (dBuV/m @3m) Remark 30MHz-88MHz 94.0 Quasi-peak Value 88MHz-216MHz 40.0 Quasi-peak Value 216MHz-960MHz 46.0 Quasi-peak Value 960MHz-1GHz 54.0 Quasi-peak Value Above 1GHz 54.0 Average Value Above 1GHz 54.0 Average Value Above 1GHz 54.0 Average Value Above 1GHz 54.0 Peak Value Winchever is the lesser attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.  Test mode:  On mode  Test Procedure:  a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. b. The EUT was sel 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.  c. The antenna height is varied from one meter to four meters above the ground to determine the position of the highest radiation. b. The EUT was a sel 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.  c. The antenna 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.  e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.  f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be r		30MHz-1GHz				
Limit: (Field strength of the fundamental signal)  Limit: (Spurious Emissions)  Frequency   Limit (dBuV/m @3m)   Remark   902MHz to 928MHz   94.0   Quasi-peak Value    Frequency   Limit (dBuV/m @3m)   Remark   30MHz-88MHz   40.0   Quasi-peak Value   43.5   Quasi-peak Value   216MHz-960MHz   44.0   Quasi-peak Value   960MHz-1GHz   54.0   Quasi-peak Value   960MHz-1GHz   54.0   Quasi-peak Value   46.0   Quasi-peak Value   960MHz-1GHz   54.0   Quasi-peak Value   960MHz-1GHz   54.0   Quasi-peak Value   46.0   Quasi-peak Value   46.0   Quasi-peak Value   960MHz-1GHz   74.0   Peak Value   74.0   Peak Valu		Above 1GHz				
Frequency   Limit (dBuV/m @3m)   Remark   902MHz to 928MHz   94.0   Quasi-peak Value	Limit:		Peak	I IVITZ	1002	Average value
Limit: (Spurious Emissions)  Frequency  Limit (GBuV/m @3m)  Remark  30MHz-88MHz  40.0  Quasi-peak Value  88MHz-216MHz  40.0  Quasi-peak Value  216MHz-960MHz  45.5  Quasi-peak Value  216MHz-960MHz-1GHz  Above 1GHz  Above 1GHz  Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.  Test mode:  On mode  Test Procedure:  a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. 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 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.  e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.  f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.		Freque	ency	Limit (dBuV	/m @3m)	Remark
Limit: (Spurious Emissions)    Frequency						
Frequency						
30MHz-88MHz   40.0   Quasi-peak Value   216MHz-960MHz   43.5   Quasi-peak Value   216MHz-960MHz   46.0   Quasi-peak Value   960MHz-1GHz   54.0   Quasi-peak Value   360MHz-1GHz   54.0   Quasi-peak Value   Above 1GHz   74.0   Peak Value   Above 1GHz   74.0   Peak Value   Feat Value   Peak V		Freque	ency	Limit (dBuV/	m @3m)	Remark
216MHz-960MHz	(Opunous Emissions)			40.0	)	Quasi-peak Value
Second Period						
Above 1GHz    St.0   Average Value						
Limit: (band edge)  Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.  Test mode:  On mode  Test Procedure:  a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. 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 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.  e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.  If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasipeak or average method as specified and then reported in a data sheet.		960MHz-	1GHz			
Limit: (band edge)  Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.  Test mode:  On mode  Test Procedure:  a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. 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 height is varied from one meter to four meters above the ground to determine the maximum value of the filed 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.  e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.  f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasipeak or average method as specified and then reported in a data sheet.		Above 1	GHz			
have 10dB margin would be re-tested one by one using peak, quasi- peak or average method as specified and then reported in a data sheet.	Test mode:	Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.  On mode  a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. 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 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.  e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.  f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values				
	Test Instruments:	peak or ave sheet.	rage method a			



Report No.: SZEMO10060336601

Page: 13 of 21



#### Note:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor



Report No.: SZEMO10060336601

Page: 14 of 21

### **Measurement Data**

## 5.3.1 Field Strength Of The Fundamental Signal

### QP value:

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)	Polarization
913.5	3.62	23.25	26.43	81.27	81.71	94.00	-12.29	Horizontal
913.5	3.62	23.25	26.43	77.99	78.43	94.00	-15.57	Vertical
914.0	3.62	23.26	26.43	76.92	77.37	94.00	-16.63	Horizontal
914.0	3.62	23.26	26.43	79.12	79.57	94.00	-14.43	Vertical
914.5	3.62	23.26	26.43	79.69	80.14	94.00	-13.86	Horizontal
914.5	3.62	23.26	26.43	78.81	79.26	94.00	-14.74	Vertical



Report No.: SZEMO10060336601

Page: 15 of 21

5.3.2	Spurious Emissions			
30MHz~1GI	30MHz~1GHz			
Test mode:		On mode		

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)	Polarization
86.425	1.10	8.36	27.97	38.76	20.25	40.00	-19.75	Vertical
260.950	1.73	12.53	26.87	32.09	19.48	46.00	-26.52	Vertical
455.950	2.43	17.09	27.58	40.29	32.23	46.00	-13.77	Vertical
609.025	2.72	20.05	27.59	32.10	27.28	46.00	-18.72	Vertical
721.150	2.97	21.60	27.21	32.16	29.52	46.00	-16.48	Vertical
831.325	3.34	22.40	26.77	33.22	32.19	46.00	-13.81	Vertical
238.525	1.62	11.93	26.96	31.49	18.08	46.00	-27.92	Horizontal
359.425	2.09	15.65	27.15	30.96	21.55	46.00	-24.45	Horizontal
455.950	2.43	17.09	27.58	43.89	35.83	46.00	-10.17	Horizontal
550.525	2.65	18.90	27.66	31.77	25.66	46.00	-20.34	Horizontal
670.450	2.84	21.32	27.37	32.31	29.10	46.00	-16.90	Horizontal
795.250	3.19	22.08	26.96	32.43	30.74	46.00	-15.26	Horizontal



Report No.: SZEMO10060336601

Page: 16 of 21

Above 1GHz					
Test mode:	Transmitting	Test channel:	Lowest	Remark:	Peak

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)	polarization
1351.000	4.49	26.63	39.14	54.99	46.97	74.00	-27.03	Vertical
1810.000	5.63	28.02	38.79	56.89	51.75	74.00	-22.25	Vertical
2719.000	6.23	31.07	39.03	59.15	57.42	74.00	-16.58	Vertical
3187.000	7.08	32.15	39.48	57.37	57.12	74.00	-16.88	Vertical
4567.490	9.44	33.94	41.17	57.00	59.21	74.00	-14.79	Vertical
5480.901	12.29	35.16	41.71	51.64	57.38	74.00	-16.62	Vertical
1351.000	4.49	26.63	39.14	52.58	44.56	74.00	-29.44	Horizontal
1810.000	5.63	28.02	38.79	53.09	47.95	74.00	-26.05	Horizontal
2719.000	6.23	31.07	39.03	54.38	52.65	74.00	-21.35	Horizontal
3187.000	7.08	32.15	39.48	52.56	52.31	74.00	-21.69	Horizontal
4555.000	9.35	33.92	40.91	53.13	55.49	74.00	-18.51	Horizontal
5024.060	9.95	34.52	41.21	56.00	59.26	74.00	-14.74	Horizontal

Test mode:	Tran	smitting	Test char	nnel: L	owest	Remark:	ave	erage
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)	polarization
1351.000	4.49	26.63	39.14	46.32	38.30	54.00	-15.70	Vertical
1810.000	5.63	28.02	38.79	49.22	44.08	54.00	-9.92	Vertical
2719.000	6.23	31.07	39.03	50.24	48.51	54.00	-5.49	Vertical
3187.000	7.08	32.15	39.48	50.12	49.87	54.00	-4.13	Vertical
4567.490	9.44	33.94	41.17	49.00	51.21	54.00	-2.79	Vertical
5480.901	12.29	35.16	41.71	42.00	47.74	54.00	-6.26	Vertical
1351.000	4.49	26.63	39.14	41.26	33.24	54.00	-20.76	Horizontal
1810.000	5.63	28.02	38.79	43.58	38.44	54.00	-15.56	Horizontal
2719.000	6.23	31.07	39.03	43.88	42.15	54.00	-11.85	Horizontal
3187.000	7.08	32.15	39.48	45.48	45.23	54.00	-8.77	Horizontal
4555.000	9.35	33.92	40.91	44.10	46.46	54.00	-7.54	Horizontal
5024.060	9.95	34.52	41.21	41.50	44.76	54.00	-9.24	Horizontal



5014.000

9.95

34.52

41.21

## SGS-CSTC Standards Technical Services Ltd.

Report No.: SZEMO10060336601

Page: 17 of 21

74.00

-15.28

Horizontal

Test mode:	Tran	smitting	Test char	nnel: M	iddle	Remark:	Pe	ak
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)	polarization
1378.000	4.47	26.73	38.87	54.65	46.98	74.00	-27.02	Vertical
1819.000	5.62	28.05	38.92	56.63	51.38	74.00	-22.62	Vertical
2746.000	6.29	31.15	39.02	55.79	54.21	74.00	-19.79	Vertical
3187.000	7.08	32.15	39.48	56.35	56.10	74.00	-17.90	Vertical
4570.020	9.44	33.94	41.17	57.00	59.21	74.00	-14.79	Vertical
5483.893	12.29	35.16	41.71	56.57	62.31	74.00	-11.69	Vertical
1351.000	4.49	26.63	39.14	51.58	43.56	74.00	-30.44	Horizontal
1810.000	5.63	28.02	38.79	52.97	47.83	74.00	-26.17	Horizontal
3187.000	7.08	32.15	39.48	54.62	54.37	74.00	-19.63	Horizontal
3646.000	7.92	32.72	40.07	52.44	53.01	74.00	-20.99	Horizontal
4555.000	9.35	33.92	40.91	54.90	57.26	74.00	-16.74	Horizontal

55.46

58.72

Test mode:	Tran	smitting	Test char	nnel: N	Middle	Remark:	av	erage
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)	polarization
1378.000	4.47	26.73	38.87	48.32	40.65	54.00	-13.35	Vertical
1819.000	5.62	28.05	38.92	49.99	44.74	54.00	-9.26	Vertical
2746.000	6.29	31.15	39.02	48.34	46.76	54.00	-7.24	Vertical
3187.000	7.08	32.15	39.48	47.54	47.29	54.00	-6.71	Vertical
4570.020	9.44	33.94	41.17	48.21	50.42	54.00	-3.58	Vertical
5483.893	12.29	35.16	41.71	40.22	45.96	54.00	-8.04	Vertical
1351.000	4.49	26.63	39.14	42.99	34.97	54.00	-19.03	Horizontal
1810.000	5.63	28.02	38.79	43.15	38.01	54.00	-15.99	Horizontal
3187.000	7.08	32.15	39.48	44.66	44.41	54.00	-9.59	Horizontal
3646.000	7.92	32.72	40.07	44.25	44.82	54.00	-9.18	Horizontal
4555.000	9.35	33.92	40.91	44.15	46.51	54.00	-7.49	Horizontal
5014.000	9.95	34.52	41.21	42.15	45.41	54.00	-8.59	Horizontal



Report No.: SZEMO10060336601

Page: 18 of 21

Test mode:	Tran	smitting	Test char	nnel: Hi	ghest	Remark:	Pe	ak
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)	polarization
1351.000	4.49	26.63	39.14	55.76	47.74	74.00	-26.26	Vertical
1819.000	5.62	28.05	38.92	57.13	51.88	74.00	-22.12	Vertical
2719.000	6.23	31.07	39.03	57.53	55.80	74.00	-18.20	Vertical
3187.000	7.08	32.15	39.48	59.52	59.27	74.00	-14.73	Vertical
4572.637	9.44	33.94	41.17	59.68	61.89	74.00	-12.11	Vertical
5486.979	12.29	35.16	41.71	54.37	60.11	74.00	-13.89	Vertical
1819.000	5.62	28.05	38.92	52.65	47.40	74.00	-26.60	Horizontal
2719.000	6.23	31.07	39.03	52.23	50.50	74.00	-23.50	Horizontal
3187.000	7.08	32.15	39.48	55.46	55.21	74.00	-18.79	Horizontal
4572.515	9.44	33.94	41.17	57.60	59.81	74.00	-14.19	Horizontal
5014.000	9.95	34.52	41.21	56.55	59.81	74.00	-14.19	Horizontal
5554.000	12.54	35.24	41.89	52.50	58.39	74.00	-15.61	Horizontal

Test mode:	Tran	smitting	Test char	nnel:	Highest	Remark:	ave	erage
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)	polarization
1351.000	4.49	26.63	39.14	46.57	38.55	54.00	-15.45	Vertical
1819.000	5.62	28.05	38.92	48.21	42.96	54.00	-11.04	Vertical
2719.000	6.23	31.07	39.03	47.58	45.85	54.00	-8.15	Vertical
3187.000	7.08	32.15	39.48	50.24	49.99	54.00	-4.01	Vertical
4572.637	9.44	33.94	41.17	48.95	51.16	54.00	-2.84	Vertical
5486.979	12.29	35.16	41.71	40.98	46.72	54.00	-7.28	Vertical
1819.000	5.62	28.05	38.92	43.37	38.12	54.00	-15.88	Horizontal
2719.000	6.23	31.07	39.03	44.35	42.62	54.00	-11.38	Horizontal
3187.000	7.08	32.15	39.48	43.68	43.43	54.00	-10.57	Horizontal
4572.515	9.44	33.94	41.17	45.32	47.53	54.00	-6.47	Horizontal
5014.000	9.95	34.52	41.21	42.35	45.61	54.00	-8.39	Horizontal
5554.000	12.54	35.24	41.89	38.32	44.21	54.00	-9.79	Horizontal



Report No.: SZEMO10060336601

Page: 19 of 21

### 5.4 20dB Bandwidth

Test Requirement:	FCC Part15 C Section 15.249/15.215					
Test Method:	ANSI C63.4:2003					
Limit:	Operation Frequency range 902MHz to 928MHz					
Test Procedure:	According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT.					
	2. Set the EUT to proper test channel.					
	3. Max hold the radiated emissions, mark the peak power frequency point and the -20dB upper and lower frequency points.					
	4. Read 20dB bandwidth.					
Test setup:						
	Spectrum Analyzer					
	E.U.T					
	Non-Conducted Table					
	Ground Reference Plane					
Test Instruments:	Refer to section 4.7 for details					
Test mode:	On mode					
Test results:	Passed					

### **Measurement Data**

Test channel	20dB bandwidth (MHz)	Results
Lowest	0.282	PASS
Middle	0.288	PASS
Highest	0.282	PASS



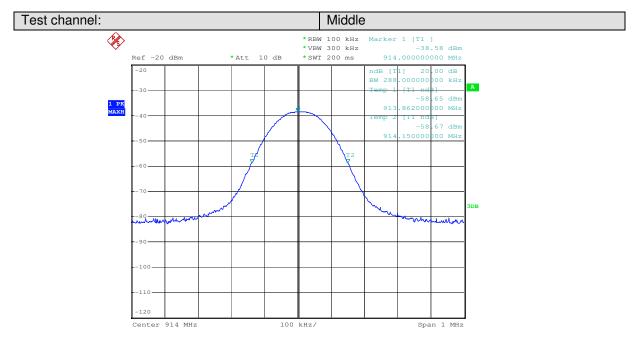
Report No.: SZEMO10060336601

Page: 20 of 21

### Test plot as follows:



Date: 27.JUL.2010 14:10:08

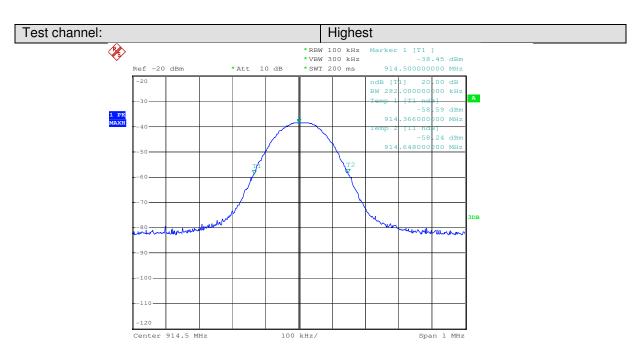


Date: 27.JUL.2010 14:09:08



Report No.: SZEMO10060336601

Page: 21 of 21



Date: 27.JUL.2010 14:07:51