



MOST TECHNOLOGY SERVICE CO., LTD.  
Tel:(86) 755-86170306 Fax:(86) 755-86170310  
Http:// www. szmost.com Email: szmost@szmost.com

**Test Report**

Product Name: FM TRANSMITTER

FCC ID: WDS-SAGET91-M

Model No.: T91-M

Applicant:

**Sage Human Electronics Co., Ltd.**

**4/F, No.A9 Building, Guigudongli.Qinghu Industry Park, Longhua,  
Baoan District, Shenzhen, China**

**Date Received: 06/18/2008**

**Date Tested: 06/17/2008**



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## EMC Equipment List

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	ROHDE&SCHWARZ	ESCI	100492	Apr.05,2008	1 Year
LISN	ROHDE&SCHWARZ	ENV216	100093	Apr.05,2008	1Year
EMI Test Receiver	ROHDE&SCHWARZ	ESCI	101202	Apr.05,2008	1 Year
Spectrum Analyzer	ANRITSU	MS2651B	6200238316	Apr.05,2008	1 Year
50 Coaxial Switch	ANRITSU CORP	MP59B	6200283933	Apr.05,2008	1 Year
Bilog Antenna	Sunol	JB3	A121206	Apr.05,2008	1 Year
Horn Antenna	EMCO	3115	640201028-06	Apr.05,2008	1 Year
50 Coaxial Switch	ANRITSU CORP	MP59B	6200283933	Apr.05,2008	1 Year
Cable	Resenberger	N/A	NO.1	Apr.05,2008	1 Year
Cable	SCHWARZBECK	N/A	NO.2	Apr.05,2008	1 Year
Cable	SCHWARZBECK	N/A	NO.3	Apr.05,2008	1 Year
Single Phase Power Line Filter	Kikusui	LIN40MA-PC R-L	LM002352	Apr.05,2008	1Year
AC Power Source	Kikusui	AC40MA	LM003232	Apr.05,2008	1Year
Test analyzer	Kikusui	KHA1000	LM003720	Apr.05,2008	1Year
ESD Tester	Kikusui	KES4021	LM003537	Apr.07,2008	1 Year
Signal Generator	IFR	2032	203002/100	Apr.07,2008	1 Year
Amplifier	A&R	150W1000	301584	NCR	NCR
Dual Directional Coupler	A&R	DC6080	301508	Apr.05,2008	1 Year
Power Head	A&R	PH2000	301193	Apr.05,2008	1 Year
Power Meter	A&R	PM2002	302799	Apr.05,2008	1 Year
Field Monitor	A&R	FM5004	300329	Apr.05,2008	1 Year
Field Probe	A&R	FP5000	300221	Apr.05,2008	1 Year
EMC PRO System	EM Test	UCS-500-M4	V0648102026	Apr.05,2008	1 Year
EMC PRO System	EM Test	UCS-500-M4	V0648102026	Apr.05,2008	1 Year

Remark:

Test Firm Name: Most Technology Service Co., Ltd.

Test Firm Address:

No. 5, 2nd Langshan Road, North District, Hi-tech Industrial  
 Park, Nanshan, Shenzhen, Guangdong, China

FCC Registered Test Site Number: 490827

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## TEST PROCEDURE

**GENERAL:** This report shall NOT be reproduced except in full without the written approval of MOST TECHNOLOGY SERVICE CO., LTD. The EUT was transmitting a test signal during the testing.

**POWER LINE CONDUCTED INTERFERENCE:** The test procedure used was ANSI Standard C63.4-2003 using a 50 UH LISN. Both Lines were observed. The bandwidth of the receiver was 10kHz with an appropriate sweep speed. The ambient temperature of the EUT was 25 with a humidity of 58%.

**RADIATION INTERFERENCE:** The test procedure used was ANSI Standard C63.4-2003 using a ANRITSU spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a micro volt at the output of the antenna. The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz up to 1 GHz and 1 MHz with a video BW of 3 MHz above 1 GHz. The ambient temperature of the EUT was 25 with a humidity of 58%.

**FORMULA OF CONVERSION FACTORS:** The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer and cable loss. The antenna correction factors and cable loss are stated in terms of dB. The gain of the Pre-selector was accounted for in the Spectrum Analyzer Meter Reading.

Example:

Freq (MHz) METER READING + ACF + CABLE = FS  
33                      20 dBuV + 10.36 dB + 0.9 dB= 31.26 dBuV/m @ 3m

**ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES:** The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to 10th harmonic of the fundamental.

Peak readings were taken in three (3) orthogonal planes and the highest readings were converted to average readings based on the duration of "ON" time.

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 planes.

The situation was similar for the conducted measurement except that the table did not rotate. The EUT was setup as described in ANSI Standard C63.4-2003 10.1.7 with the EUT 40 cm from the vertical ground wall.



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**APPLICANT:** Sage Human Electronics Co., Ltd.

**FCC ID:** WDS-SAGET91-M

**NAME OF TEST:** RADIATION INTERFERENCE

**RULES PART NUMBER:** 15.239, 15.209

**REQUIREMENTS:**

FIELD STRENGTH of Fundamental: S15.209

88-108 MHZ 30 -88 MHz 40 dBuV/m @3M  
 88 - 216 MHz 43.5  
 216 - 960 MHz 46  
 47.96 dBuV/m @3m ABOVE 960 MHz 54dBuV/m

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 15.209, WHICHEVER IS THE LESSER ATTENUATION.

**REMARK: Emissions attenuated more than 20 dB below the permissible value are not reported.**

Fundamental Radiation Interference Data:

Frequency (MHz)	Antenna Polarization	Emission Level (dBuV/m)			FCC 15 Subpart C Limit (dBuV/m)
		Avg	QP	Peak	
88.1MHz					
88.100	Horizontal	--	39.21	42.19	47.96
88.100	Vertical	--	40.23	43.01	47.96
89.1MHz					
89.100	Horizontal	--	38.91	41.32	47.96
89.100	Vertical	--	40.01	42.91	47.96



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**REMARK: Emissions attenuated more than 20 dB below the permissible value are not reported.**

Fundamental Radiation Interference Data:

Frequency (MHz)	Antenna Polarization	Emission Level (dBuV/m)			FCC 15 Subpart C Limit (dBuV/m)
		Avg	QP	Peak	
106.7MHz					
106.700	Horizontal	--	39.43	41.66	47.96
106.700	Vertical	--	40.40	43.63	47.96
107.9MHz					
107.900	Horizontal	--	39.63	41.55	47.96
107.900	Vertical	--	40.63	43.70	47.96



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**NAME OF TEST:** RADIATION INTERFERENCE

**RULES PART NUMBER:** 15.239, 15.209

**REQUIREMENTS:**

FIELD STRENGTH of Fundamental: S15.209

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 88 - 216 MHz 43.5  
 216 - 960 MHz 46  
 47.96 dBuV/m @3m ABOVE 960 MHz 54 dBuV/m

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 15.209, WHICHEVER IS THE LESSER ATTENUATION.

**Continued:**

General Radiation Interference Data:

Frequency (MHz)	Antenna Polarization	Emission Level (dBuV/m)			FCC 15 Subpart C Limit (dBuV/m)
		Avg	QP	Peak	
36.79	Horizontal	--	30.05	32.21	40.0
196.00	Horizontal	--	30.19	32.82	43.5
294.00	Horizontal	--	29.92	32.39	46.0
392.00	Horizontal	--	30.42	32.06	46.0
32.91	Vertical	--	28.17	30.11	40.0
196.00	Vertical	--	28.89	30.84	43.5
294.00	Vertical	--	27.10	29.21	46.0
392.00	Vertical	--	27.04	29.98	46.0

TEST PROCEDURE: ANSI Standard C63.4-2003 using a ANRITSU spectrum analyzer with a pre-selector and an appropriate antenna. The resolution bandwidth of spectrum analyzer was 100 kHz below 1 GHz and 1 MHz above 1 GHz. An appropriate sweep speed was used. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported. The spectrum was searched to at least the tenth (10) harmonic of the fundamental.

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**APPLICANT:** Sage Human Electronics Co., Ltd.

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**NAME OF TEST:** Occupied Bandwidth and Band Edge Compliance

**RULES PART NUMBER:** 15.239, 15.209

**REQUIREMENTS:** Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88-108 MHz.

Band edge emissions plots are included on the following pages

**METHOD OF MEASUREMENT:** A small sample of the transmitter output was fed into the spectrum analyzer and the attached plot was printed. The vertical scale is set to 10 dB per division.

**TEST RESULTS:** The unit DOES meet the FCC requirements.

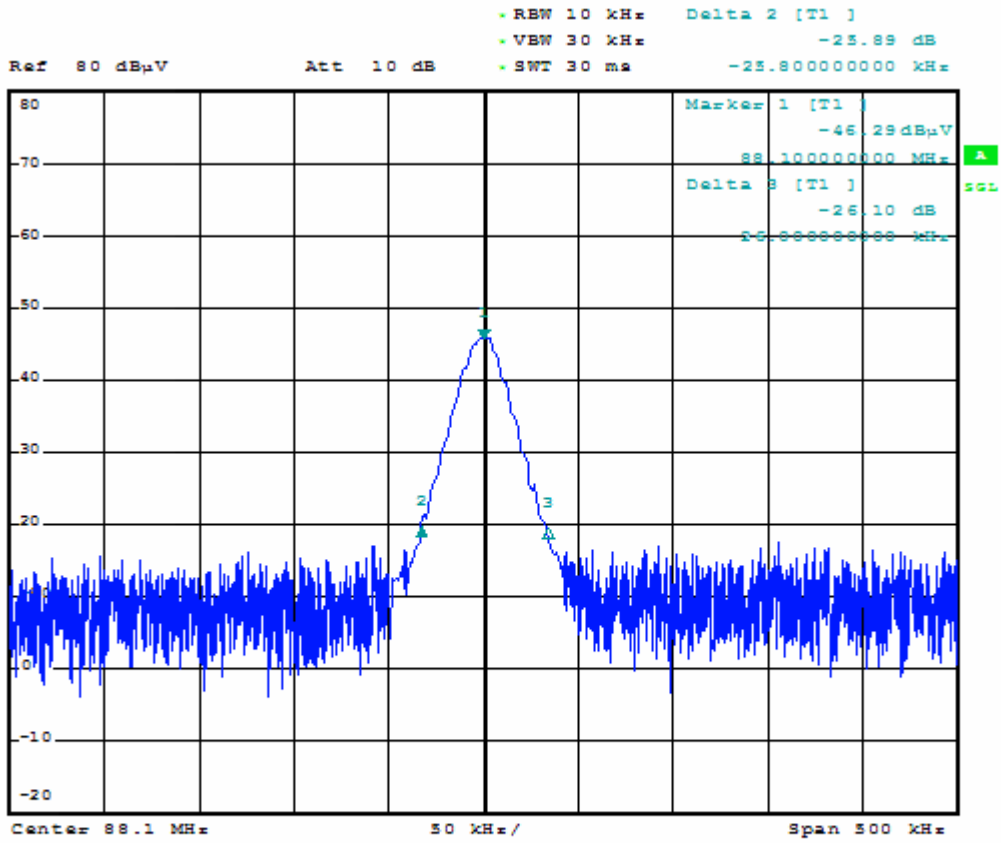




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When the EUT transmits the real MP3 file with max volume level.

88.1MHz



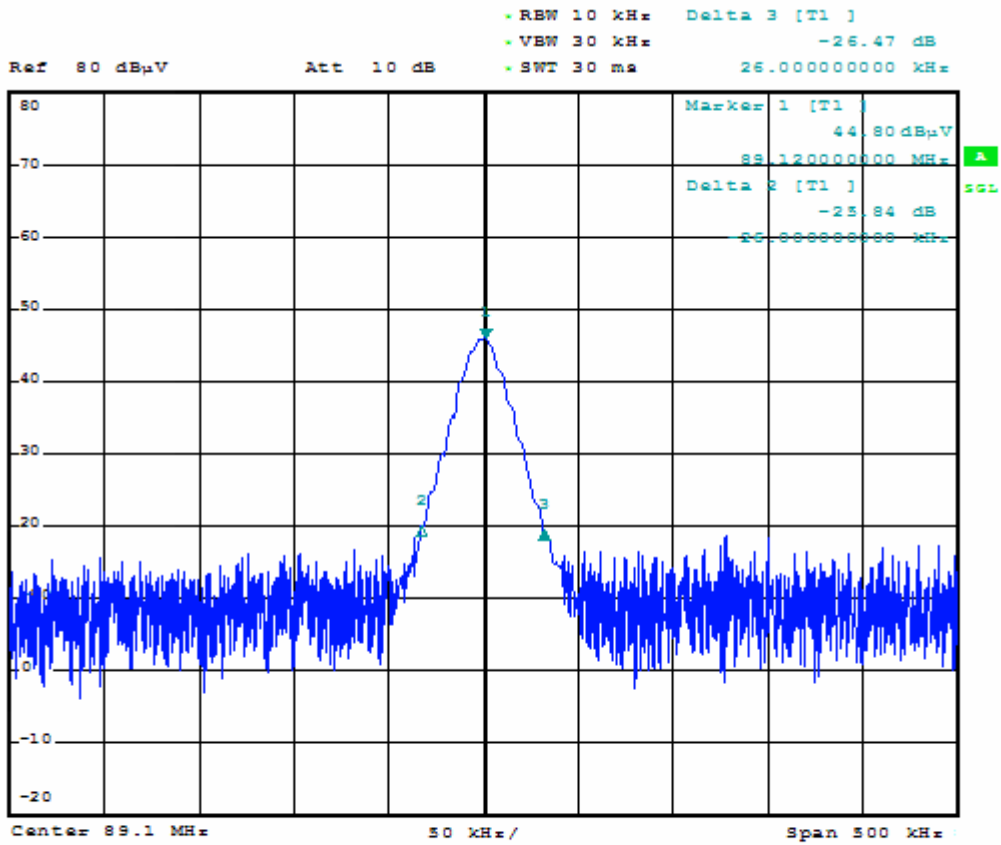


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89.1MHz



1 AP  
CLRWR



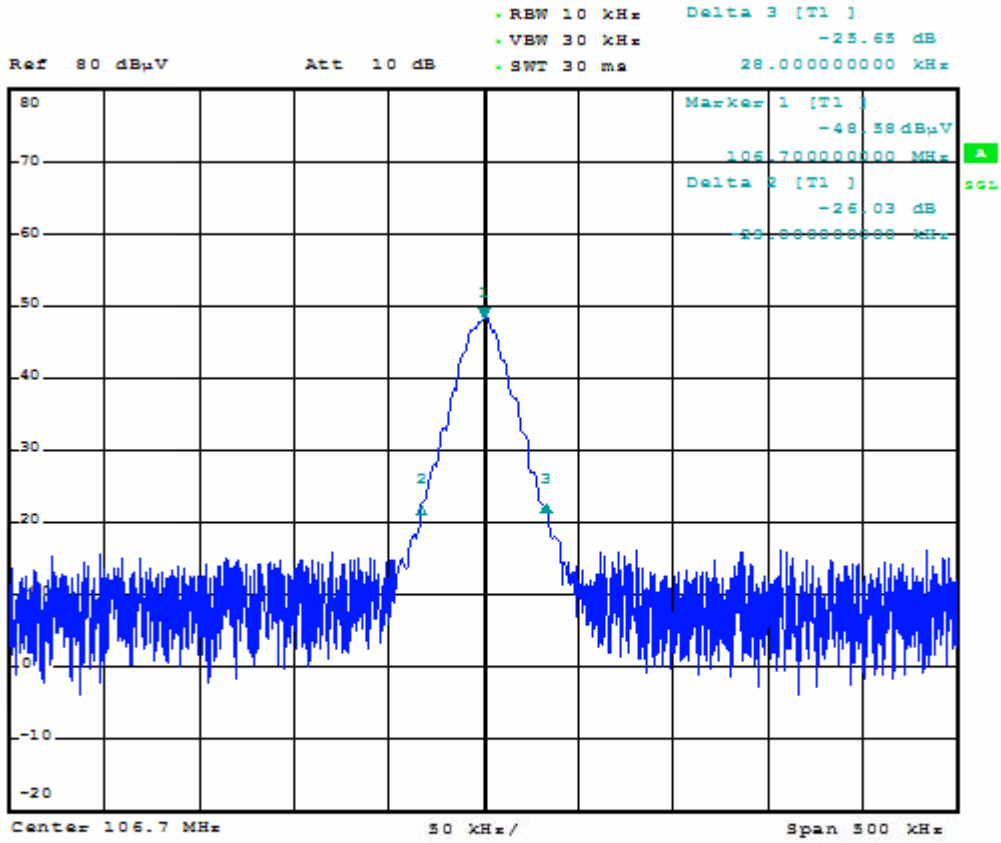


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106.7MHz



1 AP  
- CLRWD





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107.9MHz

