Prüfbericht - Nr.: *Test Report No.:*	**16013261 001**	**Seite 1 von 20** *Page 1 of 20*

Auftraggeber: *Client:*	**Uni-Art Precise Products Ltd.** **11-12/F., YUE XIU IND'L BLDG.** **87 HUNG TO ROAD,** **KWUN TONG, KOWLOON** **HONG KONG**		
Gegenstand der Prüfung: *Test item:*	**Wireless Speaker Receiver**		
Bezeichnung: *Identification:*	**SP3292**	**FCC ID:** *FCC ID*	**MVASP3292-001R**
Wareneingangs-Nr.: *Receipt No.:*	**173037931**	**Eingangsdatum:** *Date of receipt:*	**19.06.2008**
Prüfort: *Testing location:*	**TÜV Rheinland (Guangdong) Ltd. EMC Laboratory** **Guangzhou Auto Market, Yuan Gang Section of Guangshan Road, Guangzhou 510650,** **P. R. China**	Listed test laboratory according to FCC rules section 2.948 for measuring devices under Parts 15	
Prüfgrundlage: *Test specification:*	**ANSI C63.4:2003** **FCC Part 15: 20, Sep. 2007** **Subpart B section 15.107, 15.109 and 15.121**		
Prüfergebnis: *Test Result:*	**Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).** *The test item passed the test specification(s).*		
Prüflaboratorium: *Testing Laboratory:*	**TÜV Rheinland (Guangdong) Ltd.**		

geprüft/ *tested by:*

Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*
04. Sep. 2008	Ricky Liu/Project Manager	Ricky Liu

kontrolliert/ *reviewed by:*

Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*
09. Sep. 2008	Liangdong Xie/Project Manager	

Sonstiges/ Other Aspects:

Abkürzungen:				*Abbreviations:*			
	P(ass)	=	*entspricht Prüfgrundlage*		*P(ass)*	=	*passed*
	F(ail)	=	*entspricht nicht Prüfgrundlage*		*F(ail)*	=	*failed*
	N/A	=	*nicht anwendbar*		*N/A*	=	*not applicable*
	N/T	=	*nicht getestet*		*N/T*	=	*not tested*

TEST SUMMARY

5.1 CONDUCTED EMISSION FOR FCC PART 15 PER SECTION 15.107(A)
RESULT: *Pass*

5.2 RADIATED EMISSION FOR FCC PART 15 PER SECTION 15.109(A)
RESULT: *Pass*

5.3 38 DB REJECTION SIGNAL FROM CELLULAR FREQUENCY BAND 15.121(B)
RESULT: *Pass*

Contents

1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix 1: Test result

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Guangdong) Ltd. EMC Laboratory

Guangzhou Auto Market, Yuan Gang Section of Guangshan Road
Guangzhou 510650

P. R. China

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Type	Manufacturer	S/N	Calibrated until	Calibrated Interval
EMI Test Receiver	ESCI-3	Rohde & Schwarz	100216	26.Nov.2008	1 year
Spectrum Analyzer	FSP30	Rohde & Schwarz	100286	24.Aug.2008	1 year
Trilog-Broadband Antenna	VULB9168	SCHWARZBECK MESS-ELEKTRONIK	210	08.May.2009	2 year
Double-Ridged Waveguide Horn Antenna	HF906	Rohde & Schwarz	100385	18.Jul.2009	2 year
Double-Ridged Waveguide Horn Antenna	HF906	Rohde & Schwarz	100407	08.May.2009	2 year
Pre-amplifier	AFS42-00101800-25-S-42	MITEQ	1101599	31.Jul.2009	2 year
Band Reject Filter	BRM50702	Micro-Tronics	023	15.Feb.2010	2 year
Standard Gain Horn Antenna	3160-09	EMCO	21642	N/A	2 year
Standard Gain Horn Antenna	3160-09	EMCO	21645	N/A	2 year
Pre-amplifier	AFS33-18002650-30-8P-44	MITEQ	1108282	31.Jul.2009	2 year
3m Anechoic Chamber	N/A	Albatross Project GmbH	N/A	16.Apr.2009	3 year
EMI Test Receiver	ESCS30	Rohde & Schwarz	100316	27.Mar.2009	1 year
Two-Line V-Network	ESH3-Z5	Rohde & Schwarz	100308	27.Mar.2009	1 year
Pulse Limiter	ESH3-Z2	Rohde & Schwarz	100701	27.Mar.2009	1 year

2.3 Trace ability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

Uncertainty for conducted emissions measurements is ± 2.51dB.
Uncertainty for radiated emissions measurements is ± 4.9dB (30MHz-1GHz), ± 4.84dB (>1GHz).

The reported expanded uncertainty is based on a standard uncertainty multiply by a coverage factor k=2, providing a level of confidence of approximately 95%.

2.6 Location of original data

The original copies of all test data taken during actual testing were attached at Appendix 1 of this report and delivered to the applicant. A copy has been retained in the TUV Rheinland (Guangzhou) file for certification follow-up purposes.

2.7 Status of facility used for testing

TÜV Rheinland (Guangdong) Ltd. EMC Laboratory; Guangzhou Auto Market, Yuan Gang Section of Guangshan Road, Guangzhou 510650, P. R. China is listed on the US Federal Communications Commission list of facilities approved to perform measurements, the register no. 833845

3 General Product Information

Brief description of the test sample:
The EUT is analogue Wireless Speaker Receiver with 2 operating frequencies. The EUT will auto-scan the two channels and stay on the channel with signal detected.

Please refer to User Manual for further details.

3.1 Product Function and Intended Use

For details, refer to User Manual.

3.2 Ratings and System Details

Frequency range	:	912.00MHz, 913.00MHz
Number of channels	:	2 (auto tunable)
Type of antenna	:	Integral antenna
Modulation Type	:	FM
FCC ID:		MVASP3292– 001R
Power supply	:	DC 9V from AC/DC adaptor; 12×"AA" size DC 1.5V Alkaline batteries (6 per speaker)
Ports	:	DC power input
Protection Class	:	III

Refer to technical documentation for further information

3.3 Independent Operation Modes

The basic operation modes are:

Receiving with volume, freq. auto adjustable

For further information refer to User Manual

3.4 Submitted Documents

Block Diagram
Circuit Diagram
PCB Layout
FCC Label
User Manual
Photo Document

4 Test Set-up and Operation Mode

4.1 Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Refer to Test set-up in chapter 5.

4.3 Special Accessories and Auxiliary Equipment

The product has been tested together with the following power switching supply Adaptor:

Model	: SSA-12W-09
Input	: AC 100-240V, 50/60Hz
Output	: DC 9V / 1.2A
Protection class	: II

4.4 Countermeasures to achieve EMC Compliance

The test sample, which has been tested, contained the noise suppression parts as described in the Constructional Data Form or the Technical document. No additional measures were employed to achieve compliance.

4.5 Test set-up

Diagram 1 of Measurement Equipment Configuration for Testing Conducted Emission

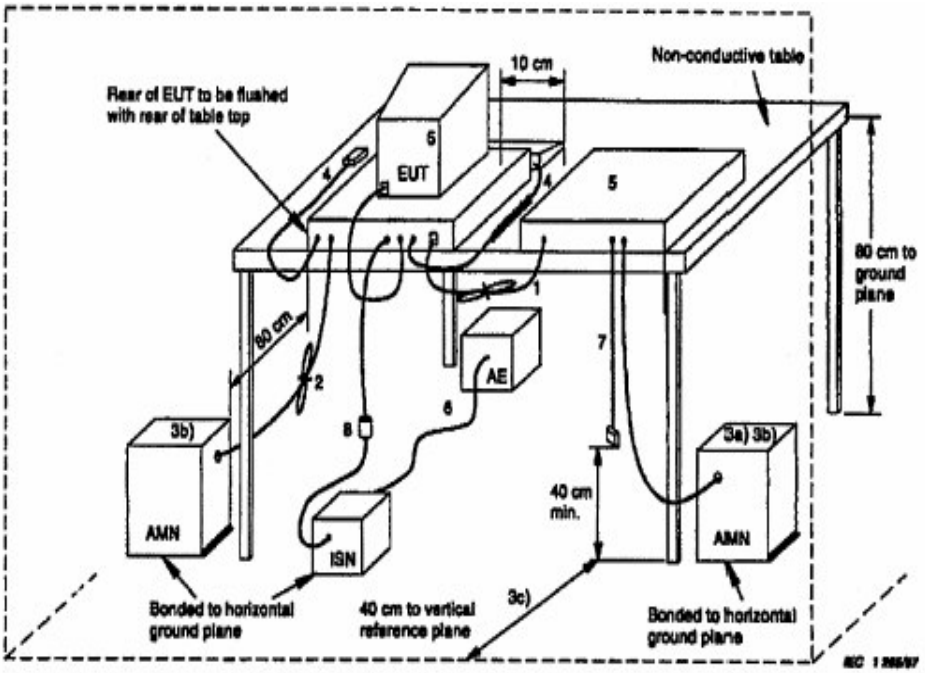


Diagram 2 of Measurement Equipment Configuration for Testing Radiated Emission

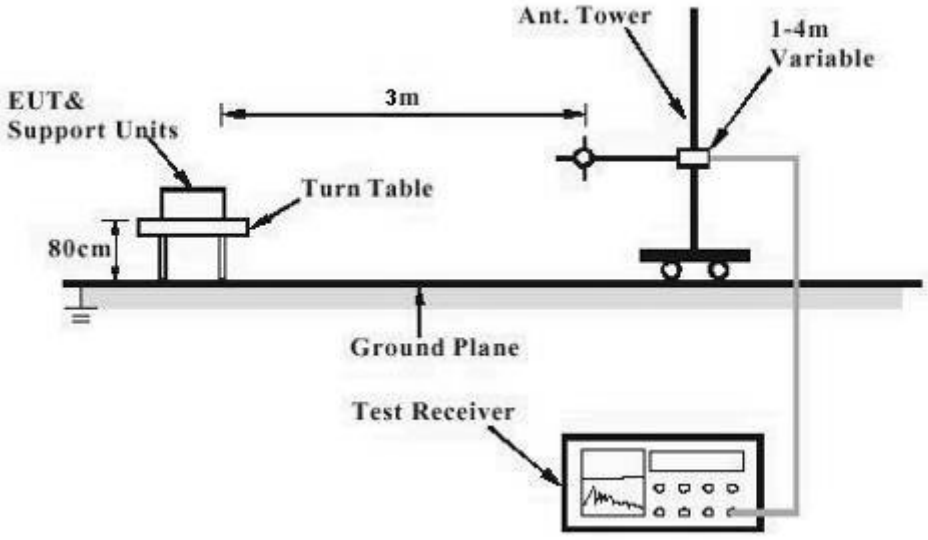


Diagram 3 of Equipment Configuration for Testing Conducted Emission

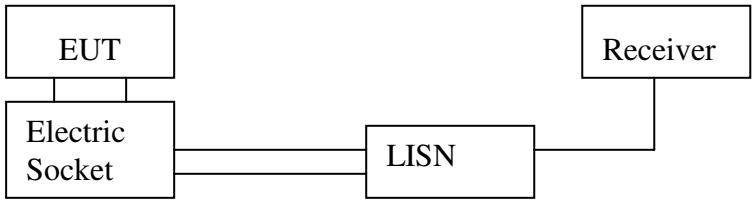
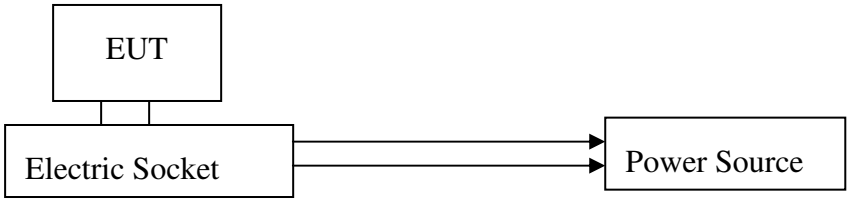


Diagram 4 of Equipment Configuration for Testing Radiated Emission



5 Test Results E M I S S I O N

5.1 Conducted Emission for FCC Part 15 Per Section 15.107(a)

RESULT: **Pass**

Date of testing	:	27.06.2008
Test specification	:	FCC Part 15 Per Section 15.107(a)
Limits	:	FCC Part 15 Per Section 15.107(a)
Test procedure	:	Procedure specified in ANSI C63.4 were followed
Deviations from Standard Test procedures	:	None
Kind of test site	:	Shielded room
Operation mode	:	Receiving
Temperature	:	21°C
Humidity	:	50%

Test procedure:
1. Place the EUT as specified in ANSI C63.4 Clause 7.2.1

2. Plug the LISN to a correct power source (pay attention to: AC/DC, voltage, frequency).

4. Connect the EUT to LISN and choose N or L1 on the LISN.

5. Connect ESCS30 and LISN via a 50-ohm coaxial cable and a pulse limiter then begin exploratory measurement as specified in ANSI C63.4 Clause 7.2.3

6. Make final measurement as specified in ANSI C63.4 Clause 7.2.4

7. Switch to the other line on the LISN and repeat step 4 to 6.

Table 2: Disturbance Voltage on AC Mains

Frequency [MHz]	**Line**	**QP** [dBµV]	**AV** [dBµV]	**Quasi Peak Limit** [dBµV]	**Average Limit** [dBµV]
*)					

*) Disturbances level is far below the limit. Please refer to the Appendix 1 for the noise floor.

If the result of the measurement with the Quasi Peak detector is below the Average limit, the measurement with Average Detector may be omitted.

The spectral diagrams in Appendix 1 display the exploratory measurement of un-weighted peak values and average values.

5.2 Radiated Emission for FCC Part 15 Per Section 15.109(a)

RESULT: **Pass**

Date of testing	:	26.06.2008
Test specification	:	FCC Part 15 Per Section 15.109(a)
Limits	:	FCC Part 15 Per Section 15.109(a)
Test procedure	:	Procedure specified in ANSI C63.4 were followed
Deviations from Standard Test procedures	:	None
Kind of test site	:	3m Semi-anechoic chamber
Operation mode	:	Scanning and Receiving
Temperature	:	21°C
Humidity	:	50%

Test procedure:

1. The EUT was placed on the top of a rotatable table 0.8 meters above the ground with 3-orthogonal direction and be kept close enough to the receiving antenna. The table was rotated 360 degrees to determine the suspected emission frequency and the position of the worst radiation case with both horizontal and vertical antenna polarization.

2. The EUT was then set 3 meters away from the receiving antenna, which was mounted on a variable-height antenna tower.

3. For each suspected emission frequency recorded in step 1, the EUT was arranged to its worst case that 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 read the maximum emission.

Table 3: Radiated Emission

Frequency	QP	AV	PK	Corr. Factor	Polarity	Limit		
						QP	AV	PK
[MHz]	[dBµV/m]			(dB)	(H/V)	[dBµV/m]		
40.2	27.4	N/A	N/A	14.4	V	40	N/A	N/A
54.25	16.8	N/A	N/A	12.2	V	40	N/A	N/A
112.80	11.1	N/A	N/A	9.7	V	43.5	N/A	N/A
149.90	12.0	N/A	N/A	12.3	V	43.5	N/A	N/A
40.65	14.4	N/A	N/A	14.3	H	40	N/A	N/A
176.70	9.0	N/A	N/A	13.5	H	43.5	N/A	N/A
744.90	23.6	N/A	N/A	26.2	H	46.0	N/A	N/A
1734.00	N/A	33.6	35.5	-14.4	V	N/A	54	74
2707.00	N/A	40.0	41.1	-11.7	V	N/A	54	74
3605.00	N/A	34.0	39.5	-8.8	V	N/A	54	74
2007.50	N/A	24.7	34.0	-13.0	H	N/A	54	74
2707.00	N/A	41.5	44.7	-11.7	H	N/A	54	74
4060.00	N/A	31.2	40.4	-7.7	H	N/A	54	74
*)---								

*) Disturbance form 30MHz up to 5GHz is measured. Disturbances other than those mentioned above are small or not detectable.

Disturbance mentioned above is the worst case among scanning mode, receiving mode in channel low and channel high.

The final measurement for frequencies below 1000MHz is performed with Quasi Peak detector; the final measurement for frequencies above 1000MHz is performed with Average and Peak detector.

The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.

The resolution bandwidth of test receiver/spectrum analyzer is 120 kHz at frequency below 1GHz.

The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz at frequency above 1GHz.

5.3 38 dB rejection signal from Cellular Frequency band

RESULT: **Pass**

Date of testing	:	26.06.2008
Test specification	:	FCC Part 15 Per Section 15.121(b)
Limit	:	FCC Part 15 Per Section 15.121(b)
Operation mode:		Receiving
Kind of test site	:	Shielded room
Test signal	:	RF signal FM at 1kHz audio, 19kHz pilot with 75kHz deviation
Reference level	:	-40dBm

Test procedure:
1. Set the wanted signal to establish reference sensitivity (12dB SINAD), the level of wanted signal input was recorded as reference level.

2. Inject unwanted cellular signal into the EUT and increase the unwanted signal lever until the SINAD is reached 12dB or its level is 41dB (add 3dB margin with the 38dB rejection) higher than the reference level recorded in step 1.

3. Record the level of the unwanted mobile signal relative to the reference in step 1. The result is the rejection level in dB.

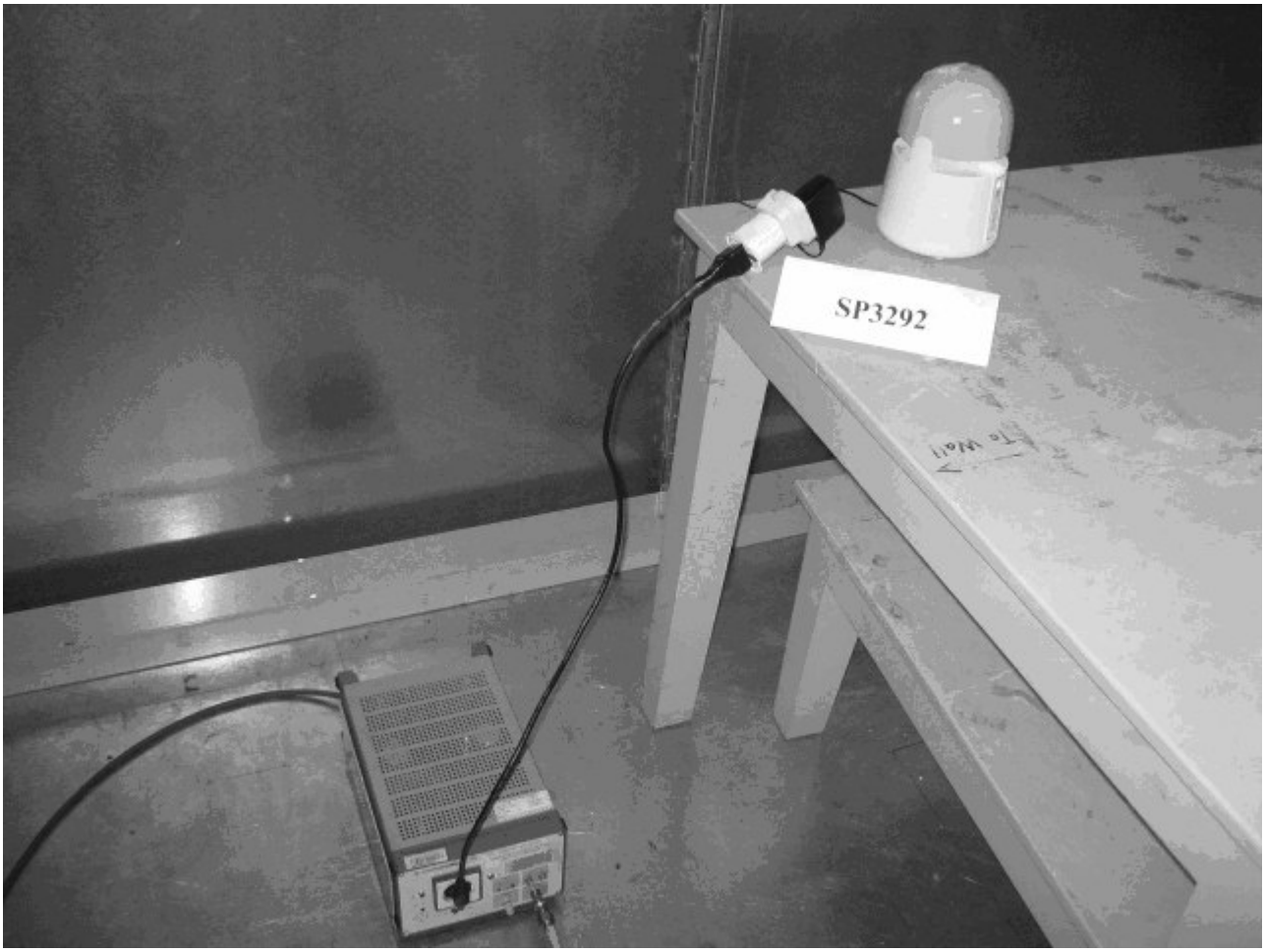
4. Repeat test steps 2-3 for other cellular frequencies.

Table 4: 38 dB Rejection

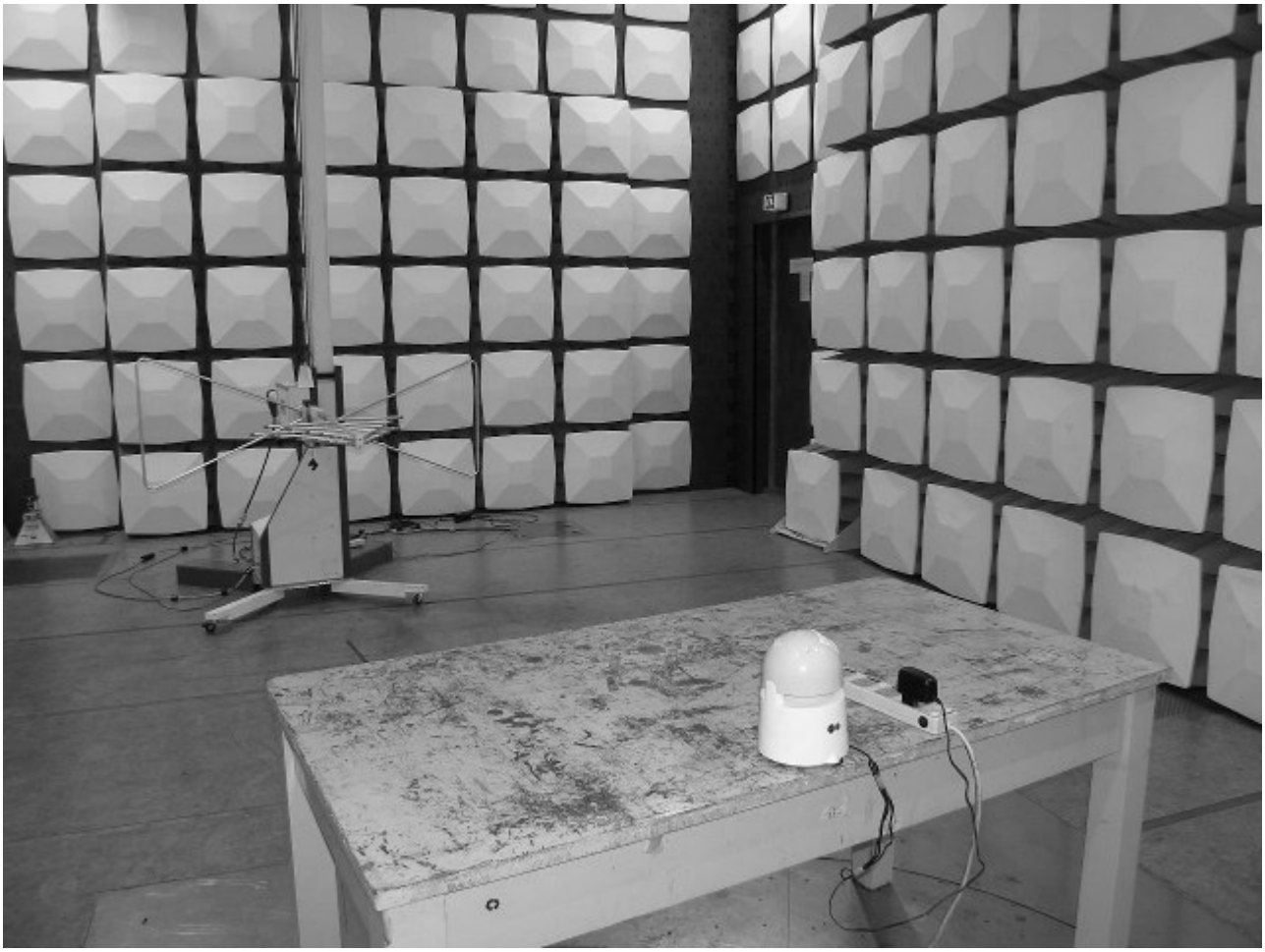
Injection frequency(Cellular) in MHz	Rejection in dB	Limit in dB
824.04	>41	38
836.00	>41	38
848.97	>41	38
869.04	>41	38
881.00	>41	38
893.97	>41	38

6 Photographs of the Test Set-Up

Photograph 1: Set up for Conducted Emission on AC Mains



Photograph 2: Set-up for Radiation Measurement below 1GHz



Photograph 3: Set-up for Radiation Measurement above 1GHz

7 List of Tables

8 List of Photographs

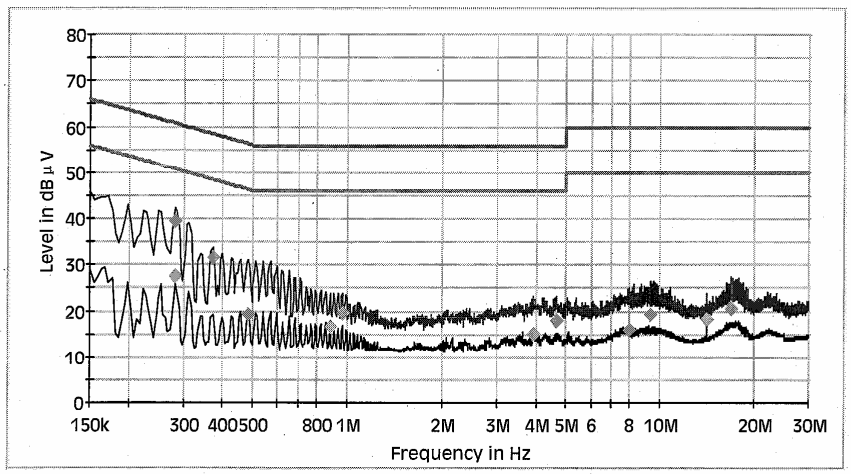
2 of 29

EMC32 Report

Test Information

EUT Name:	Wireless speaker
Model/Type:	SP3292
Operating Conditions:	Receiving
Comment:	AC120 60Hz, N
Hardware Setup:	1phase LISN ESH3-Z5 to ESCS30
Level Unit:	dBµV

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
150kHz - 30MHz	Peak; Average	9kHz	4.5kHz	10ms	ESCS 30



ECR 2008.7.01 Checked

DW 2008.7.03 Checked

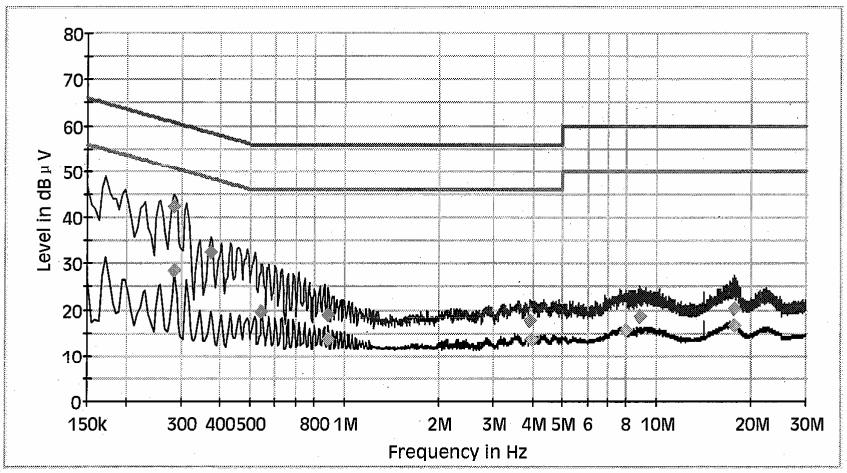
4 of 29

EMC32 Report

Test Information

EUT Name:	Wireless speaker
Model/Type:	SP3292
Operating Conditions:	Receiving
Comment:	AC120 60Hz, L
Hardware Setup:	1phase LISN ESH3-Z5 to ESCS30
Level Unit:	dB µ V

Subrange	Detectors	IF Bandwidth	Step Size	Meas. Time	Receiver
150kHz - 30MHz	Peak; Average	9kHz	4.5kHz	10ms	ESCS 30



DV
2008 7 03
Checked