Produkte
Products

TÜVRheinland®

Prüfbericht - Nr.: *Test Report No.:*	**17029713 001**	**Seite 1 von 17** *Page 1 of 17*

Auftraggeber: *Client:*	Seikaku Technical Group Limited Offshor Chambers, P.O. Box 217, Apia, Samoa
Gegenstand der Prüfung: *Test item:*	Wireless Microphone Receiver
Bezeichnung: *Identification:*	UP-8DR UP-81DR UB-82R TMW-9144R TMW-9144M TMW-9162R TMW-9162M
Serien-Nr.: *Serial No.:*	n.a.
Wareneingangs-Nr.: *Receipt No.:*	164001346
Eingangsdatum: *Date of receipt:*	2012-11-22
Zustand des Prüfgegenstandes bei Anlieferung: **Condition of test item at delivery:**	The sample is OK for testing and not damaged
Prüfort: *Testing location:*	TÜV Rheinland (Guangdong) Ltd. EMC Laboratory (FCC Registration No.: 833845 & Industry Canada Test Site No.: 2932C-1) Shenzhen HuaTongWei International Inspection Co., Ltd. (FCC Registration No.: 662850 & Industry Canada Test Site No.: 5377A-1)
Prüfgrundlage: *Test specification:*	Code of Federal Regulations, Title 47, Part 15, Subpart B
Prüfergebnis: *Test Result:*	**Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).** *The test item passed the test specification(s).*
Prüflaboratorium: *Testing Laboratory:*	TÜV Rheinland (Shenzhen) Co., Ltd.

geprüft/ *tested by:*			**kontrolliert/** *reviewed by:*		
2013-05-15	Winnie Hou/ Project Manager		2013-05-20	Sam Lin/ Senior Project Manager	
Datum *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*	**Datum** *Date*	**Name/Stellung** *Name/Position*	**Unterschrift** *Signature*

Sonstiges/ *Other Aspects:*

Abkürzungen:	*P(ass)*	= *entspricht Prüfgrundlage*	*Abbreviations:*	*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

5.1.1 CONDUCTED EMISSION FOR CFR TITLE47 PART15 SUBPART B SECTION 15.107(A)
RESULT: Passed

6.1.1 RADIATED EMISSION FOR CFR TITLE47 PART15 SUBPART B SECTION 15.109(A)
RESULT: Passed

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 Results

2. Test Sites

2.1 Test Facilities

TÜV Rheinland (Guangdong) Ltd. EMC Laboratory
(FCC Registration No.: 833845 & Industry Canada Test Site No.: 2932C-1)

Guangzhou Auto Market, Yuan Gang Section, Guangshan Road, Guangzhou, P.R. China

Shenzhen HuaTongWei International Inspection Co., Ltd.
(FCC Registration No.: 662850 & Industry Canada Test Site No.: 5377A-1)

Keji Nan No. 12 Road, Hi-Tech Park, Shenzhen, China

The tests at the test site have been conducted under the supervision of a TÜV engineer.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Manufacturer	Type	S/N	Calibrated until
Conducted emissions				
EMI Test Receiver	Rohde & Schwarz	ESCS30	100316	2014-03-12
Artificial Mains Network	Rohde & Schwarz	ESH2-Z5	100114	2014-03-12
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100701	2014-03-12
Radiated emissions				
Spectrum Analyzer	Rohde & Schwarz	FSP30	100286	2014-03-12
EMI Test Receiver	Rohde & Schwarz	ESCI	100216	2014-03-12
Pre-Amplifier	MITEQ	AFS42-00101800	1101599	2013-07-30
Trilog-Broadband Antenna	Schwarzbeck	VULB9168	209	2014-03-12
Double-Ridged Waveguide Horn	Rohde & Schwarz	HF 906	100385	2013-08-23
Radiated emissions				
EMI TEST RECEIVER	Rohde & Schwarz	ESI 26	100009	2013-10-27
Ultra-Broadband Antenna	SCHWARZBECK	VULB9163	538	2013-10-27
Ultra-Broadband Antenna	SCHWARZBECK	VULB9163	539	2013-10-27
HORN ANTENNA	SCHWARZBECK	9120D	1011	2013-10-27
HORN ANTENNA	SCHWARZBECK	9120D	1012	2013-10-27
TURNTABLE	MATURO	TT2.0	----	2013-10-27
ANTENNA MAST	MATURO	TAM-4.0-P	----	2013-10-27

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, 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 basics using in house standards or comparisons.

2.5 Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO/IEC 17025 are:

Table 2: Measurement Uncertainty

Items		Extended Uncertainty
CE	Disturbance Voltage (dBuV)	U=2.68dB, k=2, σ=95%
RE (30-1000MHz)	Field strength (dBuV/m)	U=4.94dB, k=2, σ=95%
RE (above 1000MHz)	Field strength (dBuV/m)	U=4.88dB, k=2, σ=95%

2.6 Location of Original Data

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

2.7 Status of Facility Used for Testing

The TÜV Rheinland (Guangdong) Ltd. EMC Laboratory and Shenzhen HuaTongWei International Inspection Co., Ltd. facility located at Guangzhou Auto Market, Yuan Gang Section, Guangshan Road, Guangzhou, P.R. China and Keji Nan No. 12 Road, Hi-Tech Park, Shenzhen, China are listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3. General Product Information

3.1 Product Function and Intended Use

The EUT is receiver in wireless microphone system.

Models UP-8DR, UB-82R, UP-81DR and TMW-9144R, TMW-9144M, TMW-9162R, TMW-9162M are receiver. Details of difference refer to following table.

Model	Description		Difference
	Trademark	Electrical & Enclosure	
UP-8DR	SHOW	Identical, Metallic front panel	1. Different Trademark 2. Different model name 3. Plastic front panel for UP-81DR
TMW-9144R, TMW-9144M	TOPP PRO		
UP-81DR	SHOW	Plastic front panel	
UB-82R	SHOW	Identical, dual-receiver module.	1. Different Trademark 2. Different model name
TMW-9162R, TMW-9162M	TOPP PRO		

For more information refer to the Instruction Manual.

3.2 Ratings and System Details

Table 3: Information of EUT

Kind of Equipment:	Wireless Microphone Receiver
Type Designation:	UP-8DR, UP-81DR, UB-82R, TMW-9144R, TMW-9144M, TMW-9162R, TMW-9162M
FCC ID:	H38UP-8DR

Table 4: Technical Specification of EUT

Technical Specification	Value
Operating Frequency:	638 - 662
Operation Voltage:	DC 12-18V (via AC/DC adaptor)
Modulation:	FM
Antenna Type:	External dedicated antenna, Non-User Replaceable
Number of Channels:	12 channels per group, total 10 group

Table 5: List of Channel

Item	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9	Group 10
Channel 1	638.125	638.325	638.525	638.725	638.925	639.125	639.325	639.525	639.725	639.925
Channel 2	640.125	640.325	640.525	640.725	640.925	641.125	641.325	641.525	641.725	641.925
Channel 3	642.125	642.325	642.525	642.725	642.925	643.125	643.325	643.525	643.725	643.925
Channel 4	644.125	644.325	644.525	644.725	644.925	645.125	645.325	645.525	645.725	645.925
Channel 5	646.125	646.325	646.525	646.725	646.925	647.125	647.325	647.525	647.725	647.925
Channel 6	648.125	648.325	648.525	648.725	648.925	649.125	649.325	649.525	649.725	649.925
Channel 7	650.125	650.325	650.525	650.725	650.925	651.125	651.325	651.525	651.725	651.925
Channel 8	652.125	652.325	652.525	652.725	652.925	653.125	653.325	653.525	653.725	653.925
Channel 9	654.125	654.325	654.525	654.725	654.925	655.125	655.325	655.525	655.725	655.925
Channel 10	656.125	656.325	656.525	656.725	656.925	657.125	657.325	657.525	657.725	657.925
Channel 11	658.125	658.325	658.525	658.725	658.925	659.125	659.325	659.525	659.725	659.925
Channel 12	660.125	660.325	660.525	660.725	660.925	661.125	661.325	661.525	661.725	661.925

Table 6: Information of AC/DC adapter

Kind of Equipment:	AC/DC adapter
Type Designation:	KSAC1500080W1UV-1
Input Voltage:	AC 100-240V, 50/60Hz, 0.4A
Output Rating	DC 15V, 0.8A

3.3 Independent Operation Modes

The basic operation modes are:

A. On, receiving
B. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.5 Submitted Documents

- Bill of Material
- Constructional Drawing
- PCB Layout
- Photo Document
- Circuit Diagram
- Instruction Manual
- Rating Label

4. Test Set-up and Operation Modes

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

Test operation refers to test setup in chapter 5&6.
Due to the difference in clause 3.1, all tests were applied to UP-8DR and UB-82R.

4.3 Special Accessories and Auxiliary Equipment

None.

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 Construction File. No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test

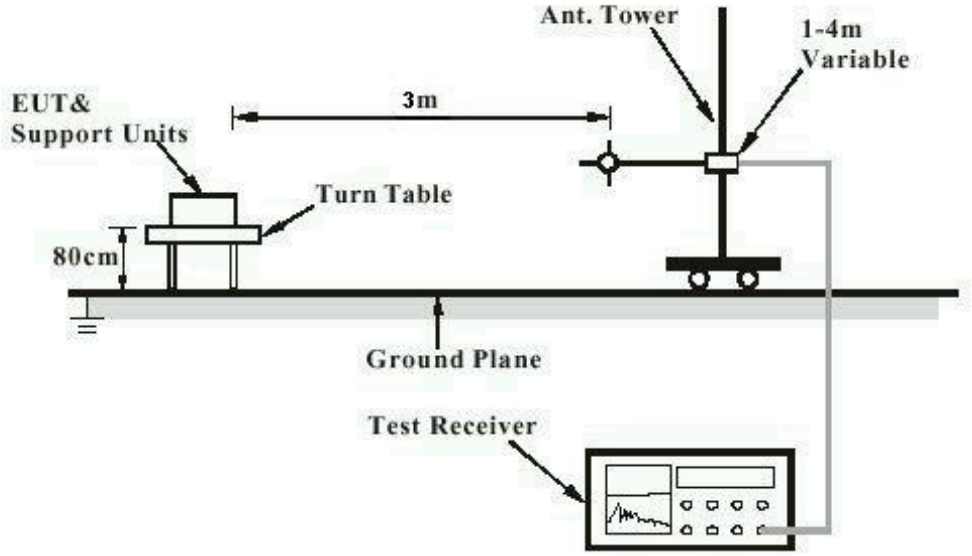


Diagram of Measurement Equipment Configuration for Conduction Measurement

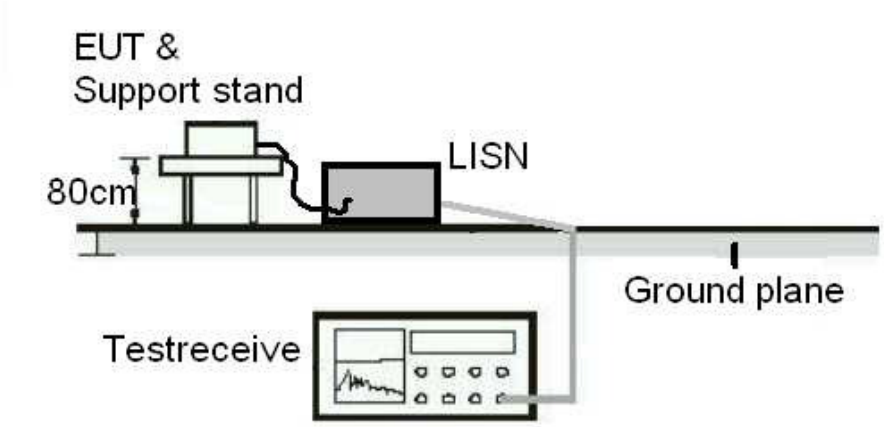
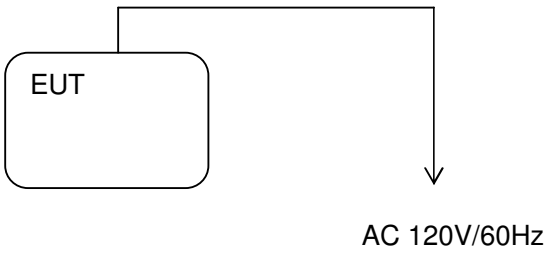


Diagram of Equipment Configuration for Testing



5. Test Results EMISSION

5.1 Emission in the Frequency Range up to 30 MHz

5.1.1 Conducted Emission for CFR Title47 Part15 Subpart B Section 15.107(a)

RESULT: **Passed**

Date of testing	:	2012-03-19
Test specification	:	CFR Title47 Part15 Subpart B Section 15.107(a)
Frequency range	:	0.15 – 30MHz
Classification	:	Class B
Test procedure	:	ANSI C63.4:2009
Kind of test site	:	Shielded room

Test setup

Input Voltage	:	AC 120V, 60Hz
Operation mode	:	A
Ambient temperature	:	22℃
Relative humidity	:	55%
Atmospheric pressure	:	101 kPa

Refer to attached Appendix 1 for details.

6. Emission in the Frequency Range above 30 MHz

6.1.1 Radiated Emission for CFR Title47 Part15 Subpart B Section 15.109(a)

RESULT: **Passed**

Date of testing	:	2012-03-22
Test standard	:	CFR Title47 Part15 Subpart B Section 15.109(a)
Frequency range	:	30 - 1000MHz, 1- 5GHz
Classification	:	Class B
Test procedure	:	ANSI C63.4:2009
Kind of test site	:	3m Chamber

Test setup

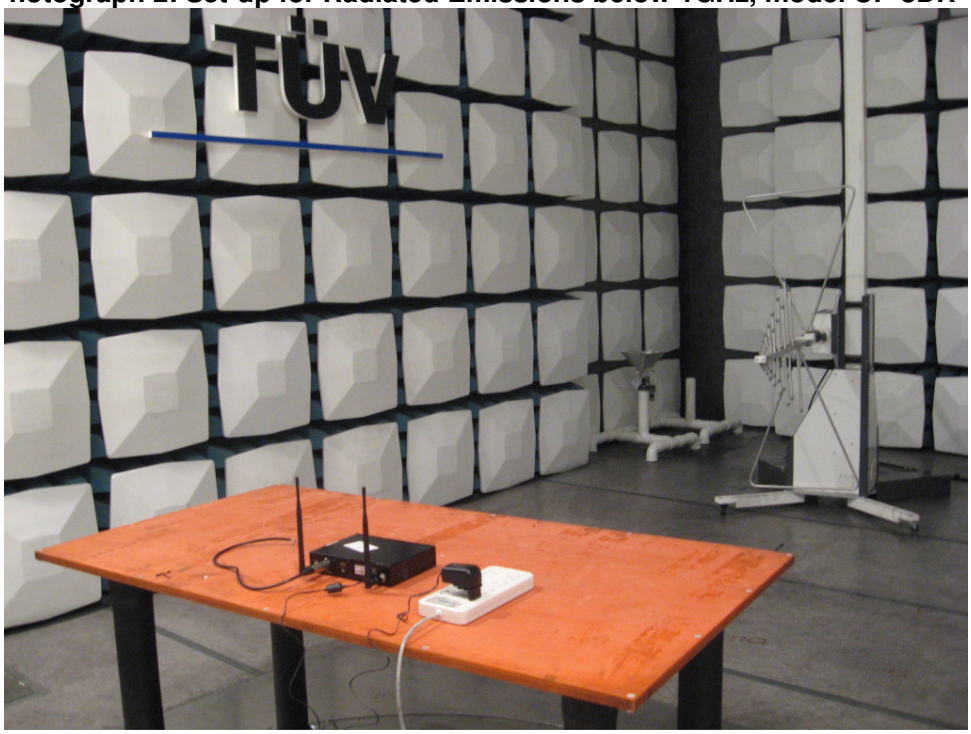
Input Voltage	:	AC 120V, 60Hz
Operation mode	:	A
Ambient temperature	:	23℃
Relative humidity	:	50%
Atmospheric pressure	:	101 kPa

Refer to attached Appendix 1 for details.

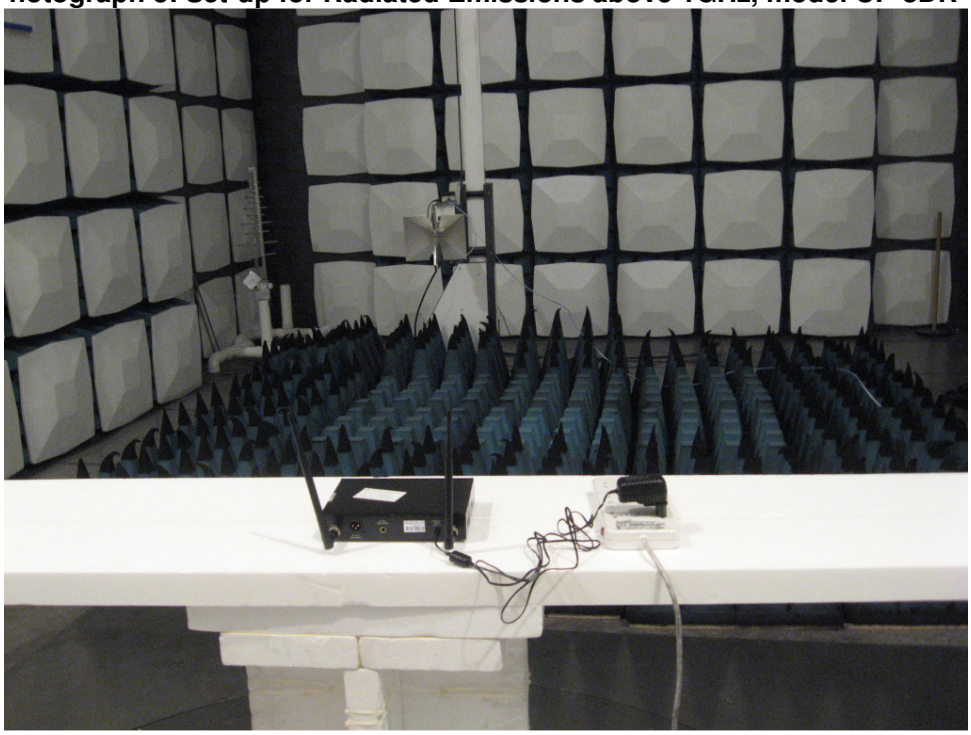
7. Photographs of the Test Set-Up

Photograph 1: Set-up for Conducted Emissions, model UP-8DR

Photograph 2: Set-up for Radiated Emissions below 1GHz, model UP-8DR

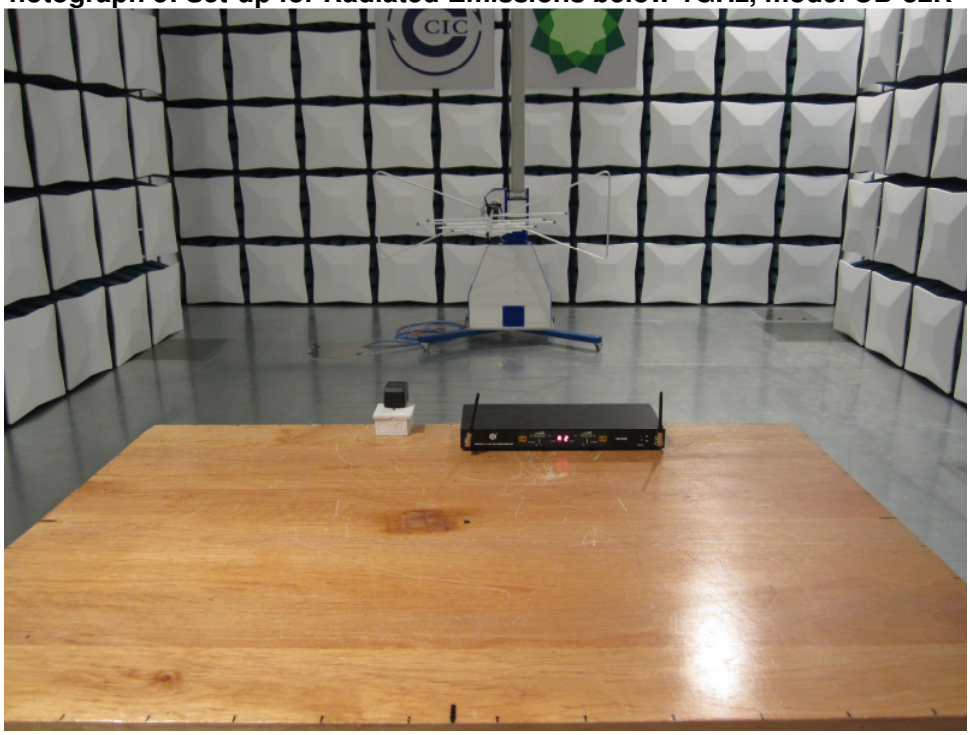


Photograph 3: Set-up for Radiated Emissions above 1GHz, model UP-8DR

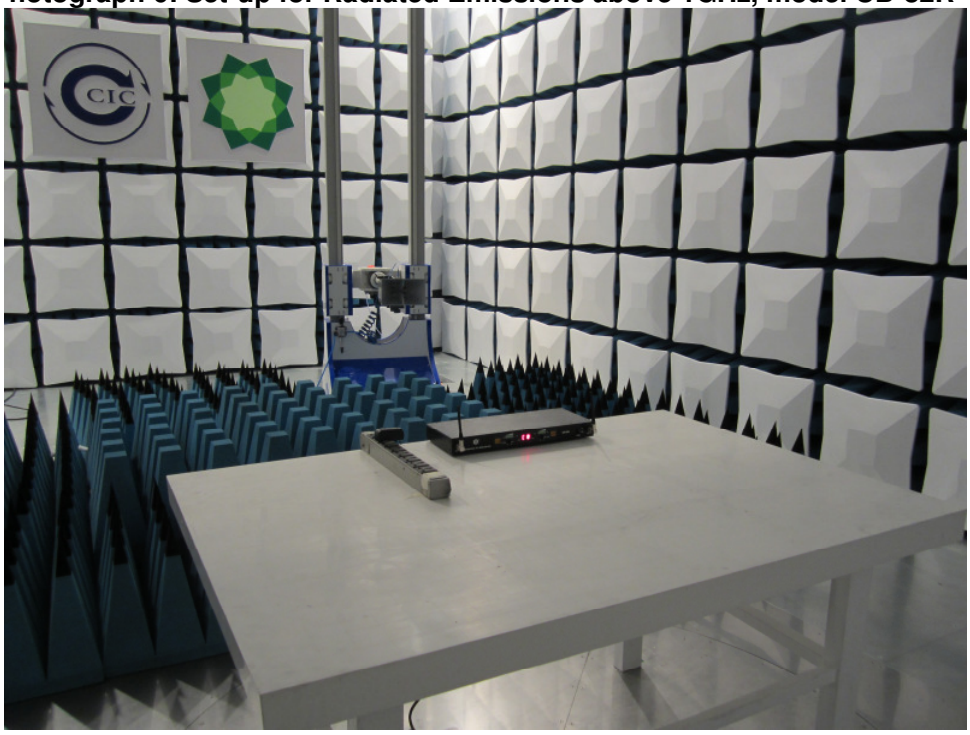


Photograph 4: Set-up for Conducted Emissions, model UB-82R

Photograph 5: Set-up for Radiated Emissions below 1GHz, model UB-82R



Photograph 6: Set-up for Radiated Emissions above 1GHz, model UB-82R



8. List of Tables

9. List of Photographs