



STC Test Report

Date : 2012-12-21

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No. : HM168105

Applicant (GTC001): AQUATIC AV
1476 Camden Ave, Campbell, CA 95008, United states

Manufacturer: Eastern Partner Limited.
Room 1413, ICC Tower, Fuhau San Road, Futian CBD,
ShenZhen 518048 China.

Description of Sample(s): Product: Water/Dust Proof MP3/iPod Digital
Media Locker with Floating RF LCD 2-
way Remote Control
Brand Name: AQUATIC AV
Model Number: AQ-DM-4
FCC ID: WBQAQRFDM4D

Date Sample(s) Received: 2012-11-12

Date Tested: 2012-12-14

Investigation Requested: Perform ElectroMagnetic Interference measurement in
accordance with FCC 47CFR [Codes of Federal Regulations]
Part 15: 2011 and ANSI C63.4:2009 for FCC Certification.

Conclusion(s): The submitted product COMPLIED with the requirements of
Federal Communications Commission [FCC] Rules and
Regulations Part 15. The tests were performed in accordance
with the standards described above and on Section 2.2 in this
Test Report.

Remark(s): For additional models details, see page 3.

Dr. LEE Kam Chuen
Authorized Signatory
ElectroMagnetic Compatibility Department
For and on behalf of
The Hong Kong Standards and Testing Centre Ltd.



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1.0 General Details

1.1 Equipment Under Test [EUT]

Description of Sample(s)

Product: Water/Dust Proof MP3/iPod Digital Media Locker with Floating RF LCD 2-way Remote Control

Manufacturer: Eastern Partner Limited.
Room 1413, ICC Tower, Fuhau San Road, Futian CBD, ShenZhen 518048 China.

Brand Name: AQUATIC AV

Additional Brand Name(s): JACUZZI, SUNDANCE

Model Number: AQ-DM-4

Additional Model Number(s): AQ-DM-3B, AQ-DM-3BG, AQ-DM-4G, AQ-DM-4B, AQ-DM-4BG, AQ-DM-4U, AQ-DM-4UG, AQ-DM4UBT, AQ-DM-4UBTG, 6500-819, 6500-400, 6500-880, 6560-300, 6560-302, AQ-RFDM-4, AQ-RFDM-4U

Input Voltage: 12Vd.c. (Lead-acid battery)

1.2 Description of EUT Operation

The Equipment Under Test (EUT) is an AQUATIC AV., Water/Dust Proof MP3/iPod Digital Media Locker. The audio input is able to be provided digital device through Bluetooth, USB (the EUT act as a host) and Aux-in cable (3.5mm jack), the EUT is able to be controlled by a 2.4GHz remote controller, and also report status to the controller.

1.3 Date of Order

2012-11-12

1.4 Submitted Sample(s):

2 Samples

1.5 Test Duration

2012-12-14

1.6 Country of Origin

China

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2.0 Technical Details

2.1 Investigations Requested

Perform Electromagnetic Interference measurements in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2011 Regulations and ANSI C63.4:2009 for FCC Certification.

2.2 Test Standards and Results Summary Tables

EMISSION Results Summary						
Test Condition	Test Requirement	Test Method	Class / Severity	Test Result		
				Pass	Fail	N/A
Field Strength of Fundamental & Harmonics Emissions	FCC 47CFR 15.249	ANSI C63.4:2009	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Radiated Emissions	FCC 47CFR 15.209	ANSI C63.4:2009	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note: N/A - Not Applicable

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3.0 Test Results

3.1 Emission

3.1.1 Radiated Emissions

Test Requirement:	FCC 47CFR 15.249
Test Method:	ANSI C63.4:2009
Test Date:	2012-12-14
Mode of Operation:	On Mode

Test Method:

The sample was placed 0.8m above the ground plane on a standard radiated emission test site. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. In the frequency range of 9kHz to 30MHz, The center of the loop antenna shall be 1 meter above the ground and rotated loop axis for maximum reading. The emissions worst-case are shown in Test Results of the following pages.

Remark: 3 orthogonal axis apply to hand-held device only.

*: Semi-anechoic chamber located on the G/F of The Hong Kong Standards and Testing Centre Ltd. with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 607756.

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Spectrum Analyzer Setting:

9KHz – 30MHz (Pk & Av)

RBW: 10kHz
VBW: 30kHz
Sweep: Auto
Span: Fully capture the emissions being measured
Trace: Max. hold

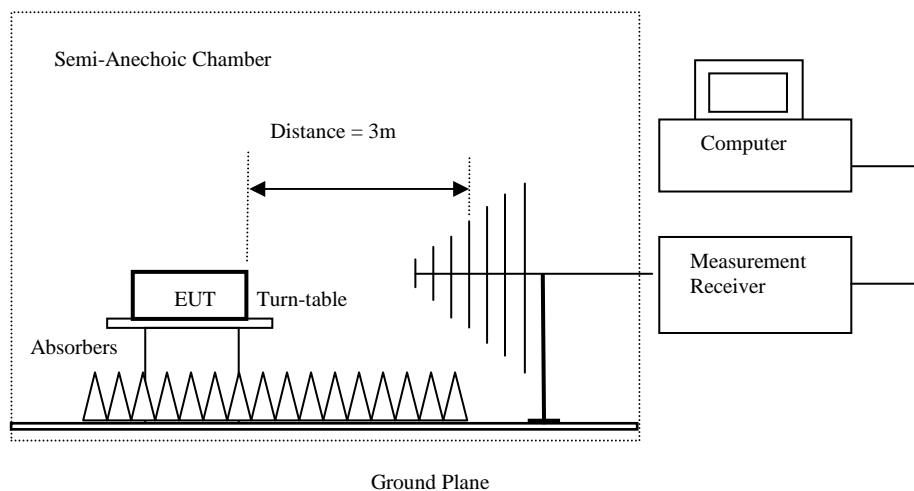
30MHz – 1GHz (QP)

RBW: 120kHz
VBW: 120kHz
Sweep: Auto
Span: Fully capture the emissions being measured
Trace: Max. hold

Above 1GHz (Pk & Av)

RBW: 3MHz
VBW: 3MHz
Sweep: Auto
Span: Fully capture the emissions being measured
Trace: Max. hold

Test Setup:



Absorbers placed on top of the ground plane are for measurements above 1000MHz only.

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Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.249]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [microvolts/meter]	Field Strength of Harmonics Emission [microvolts/meter]
902-928	50,000 [Average]	500 [Average]
2400-2483.5	50,000 [Average]	500 [Average]

Results of On Mode: Pass

Field Strength of Fundamental Emissions Peak Value						
Frequency MHz	Measured Level @3m dB μ V/m	Correction Factor dB μ V/m	Field Strength dB μ V/m	Field Strength μ V/m	Limit @3m μ V/m	E-Field Polarity
2422.8	51.9	28.0	79.9	9,885.5	500,000	Horizontal
* 4845.4	25.8	32.8	58.6	851.1	5,000	Horizontal
* 7268.5	5.1	37.2	42.3	130.3	5,000	Vertical
9691.2	Emissions detected are more than 20 dB below the FCC Limits				5,000	Vertical
12114.0					5,000	Vertical
14536.8					5,000	Vertical
16959.6					5,000	Vertical
* 19382.4					5,000	Vertical
21805.2					5,000	Vertical
24228.0					5,000	Vertical

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Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.249]:

Frequency Range of Fundamental	Field Strength of Fundamental Emission	Field Strength of Harmonics Emission
[MHz]	[microvolts/meter]	[microvolts/meter]
902-928	50,000 [Average]	500 [Average]
2400-2483.5	50,000 [Average]	500 [Average]

Results of On Mode: Pass

Field Strength of Fundamental Emissions						
Average Value						
Frequency MHz	Measured Level @3m dB μ V/m	Correction Factor dB μ V/m	Field Strength dB μ V/m	Field Strength μ V/m	Limit @3m μ V/m	E-Field Polarity
2422.8	26.1	28.0	54.1	507.0	50,000	Horizontal
* 4845.4	0.9	32.8	33.7	48.4	500	Horizontal
* 7268.5	-0.1	37.2	37.1	71.6	500	Vertical
9691.2	Emissions detected are more than 20 dB below the FCC Limits				500	Vertical
12114.0					500	Vertical
14536.8					500	Vertical
16959.6					500	Vertical
* 19382.4					500	Vertical
21805.2					500	Vertical
24228.0					500	Vertical

Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

*: Denotes restricted band of operation.
Measurements were made using a peak detector. Any emission less than 1000 MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Calculated measurement uncertainty : 30MHz to 1GHz 4.9dB
1GHz to 6GHz 4.02dB
6GHz to 18GHz 4.03dB

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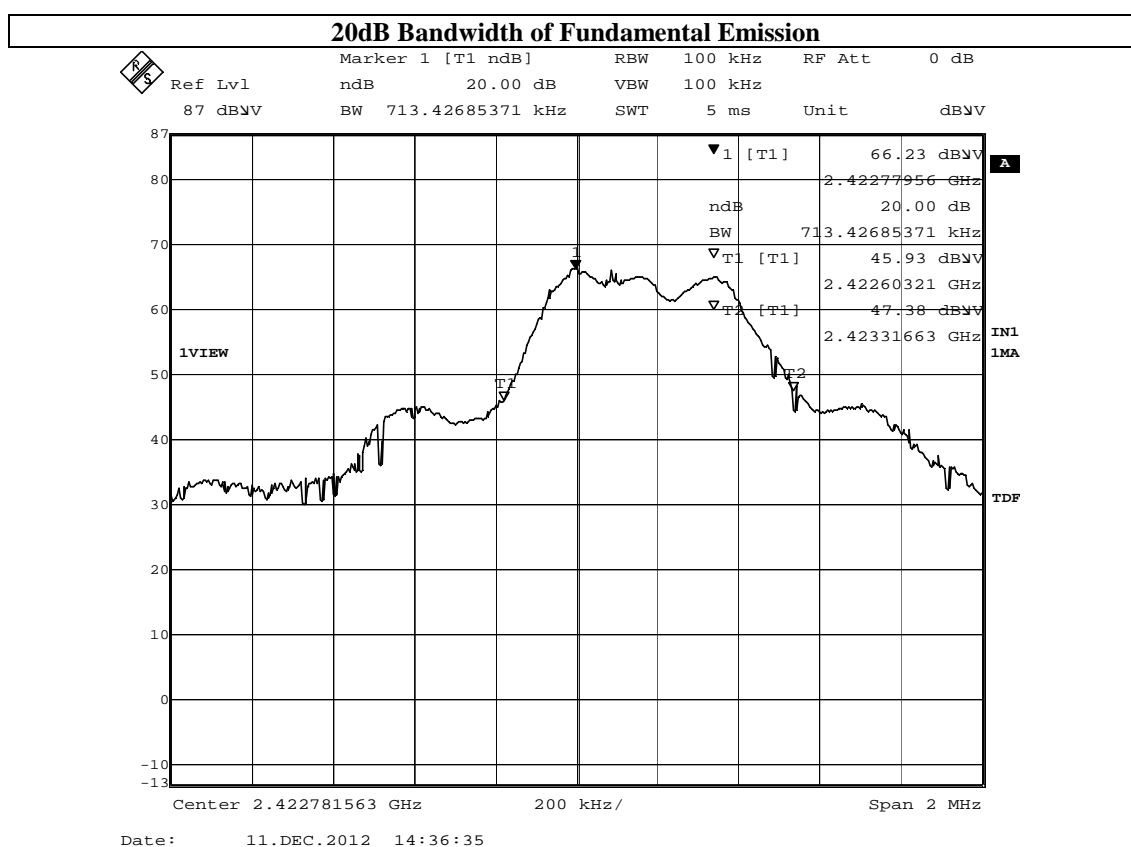
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Limits for 20dB Bandwidth of Fundamental Emission:

Frequency Range [MHz]	20dB Bandwidth [kHz]
2422.8	733.4



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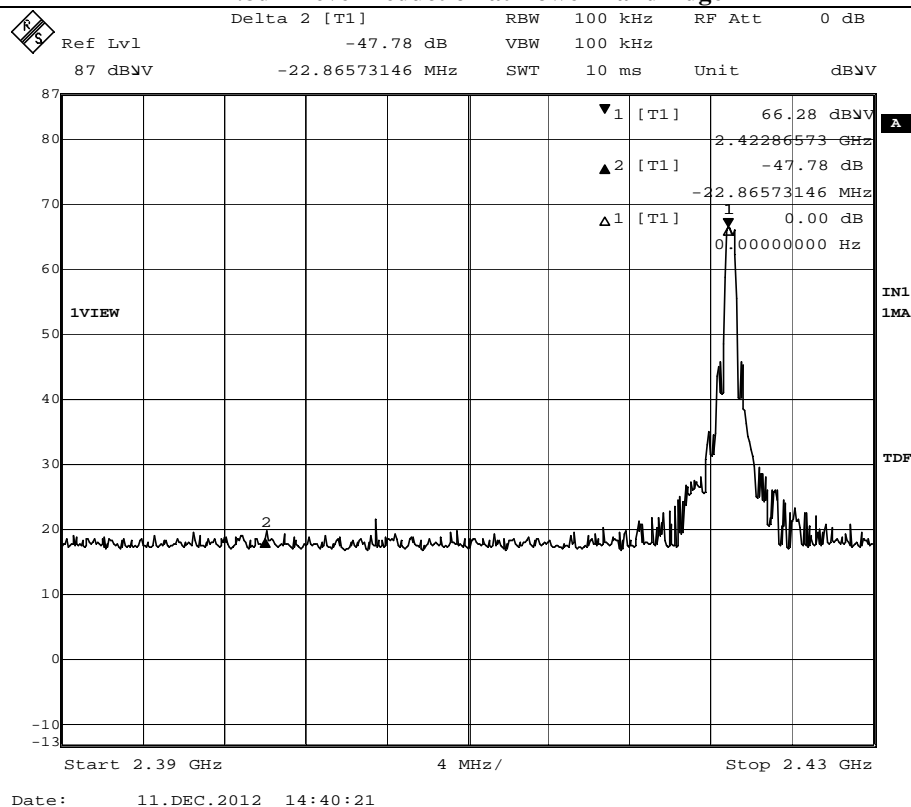
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Band Edge Measurement:

Frequency Range	Radiated Emission Attenuated below the Fundamental
[MHz]	[dB]
2422.8 – Lowest Fundamental	47.8

47.8dB Level Reduction at Lower Band Edge



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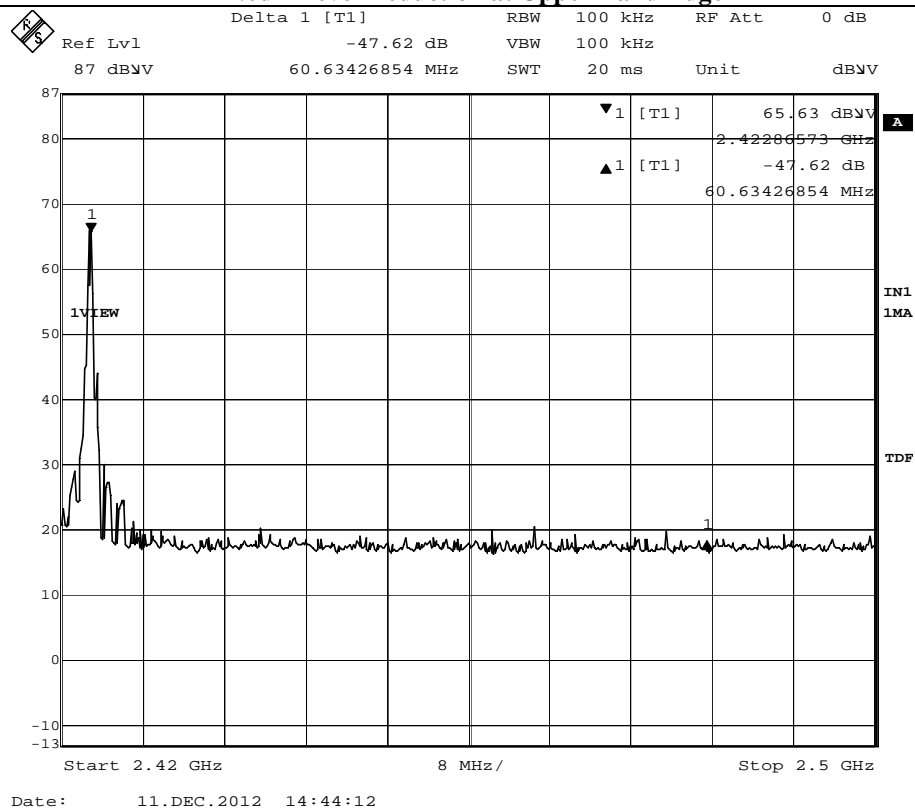
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Band Edge Measurement:

Frequency Range	Radiated Emission Attenuated below the Fundamental
[MHz]	[dB]
7268.56 – Highest Fundamental	47.6

47.6dB Level Reduction at Upper Band Edge



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Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range [MHz]	Quasi-Peak Limits [μV/m]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Results of On Mode (9kHz – 30MHz): PASS

Emissions detected are more than 20 dB below the FCC Limits

Results of On Mode (30MHz – 25GHz): PASS

Emissions detected are more than 20 dB below the FCC Limits

Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty	:	30MHz to 1GHz	4.9dB
		1GHz to 6GHz	4.02dB
		6GHz to 18GHz	4.03dB

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Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

Frequency Range [MHz]	Quasi-Peak Limits [μV/m]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Result of Rx Mode (9kHz – 30GHz): PASS

Emissions detected are more than 20 dB below the FCC Limits

Results of Rx mode (30MHz – 25GHz): PASS

Emissions detected are more than 20 dB below the FCC Limits

Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz
Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty	: 30MHz to 1GHz	4.9dB
	1GHz to 6GHz	4.02dB
	6GHz to 18GHz	4.03dB

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Appendix A

Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM299	DOUBLE-RIDGED WAVEGUIDE HORN ANTENNA	ETS-LINDGREN	3115	00114120	2012/01/25	2014/01/25
EM215	MULTIDEVICE CONTROLLER	EMCO	2090	00024676	N/A	N/A
EM216	MINI MAST SYSTEM	EMCO	2075	00026842	N/A	N/A
EM217	ELECTRIC POWERED TURNTABLE	EMCO	2088	00029144	N/A	N/A
EM218	ANECHOIC CHAMBER	ETS-LINDGREN	FACT-3	--	2012/10/25	2013/10/25
EM174	BICONILOG ANTENNA	EMCO	3142B	1671	2012/05/31	2014/05/31
EM229	EMI TEST RECEIVER	R&S	ESIB40	100248	2012/05/03	2013/05/03
EM022	LOOP ANTENNA	EMCO	6502	1189-2424	2011/09/14	2013/09/14
EM300	PYRAMIDAL STANDARD GAIN HORN ANTENNA	ETS-LINDGREN	3160-09	00130130	2012/01/24	2014/01/24

Remarks:

CM Corrective Maintenance
N/A Not Applicable or Not Available
TBD To Be Determined

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Appendix B

Photographs of EUT

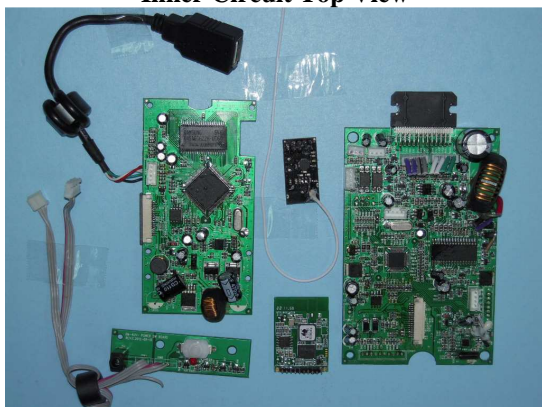
Front View of the product



Rear View of the product



Inner Circuit Top View



Inner Circuit Bottom View



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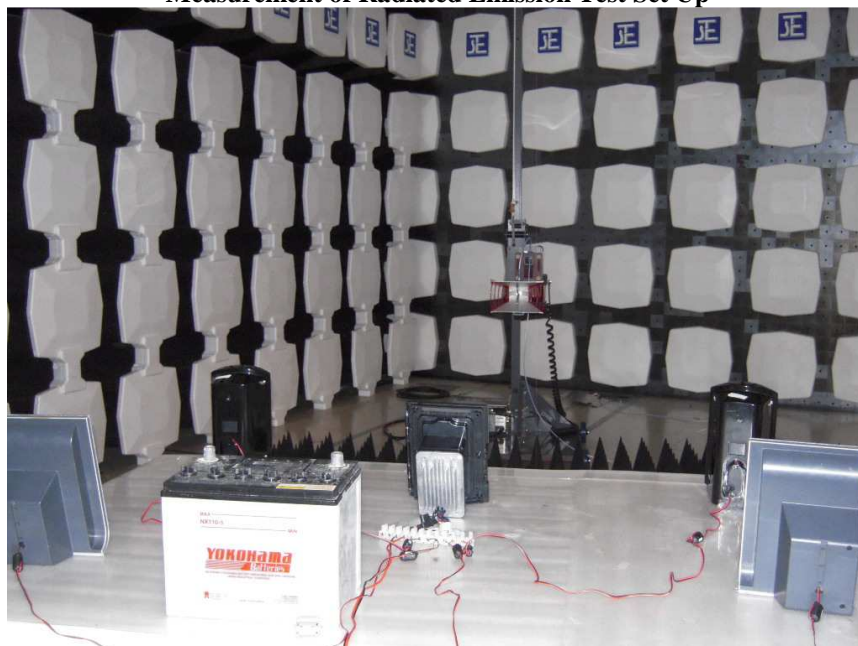
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Photographs of EUT

Measurement of Radiated Emission Test Set Up



Measurement of Radiated Emission Test Set Up



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