

Produkte Products

Prüfbericht - Nr.: Seite 1 von 24 16015496 001 Page 1 of 24 Test Report no.: Nanhai Techsin Electronic Co., Ltd. Auftraggeber: Client: Julong Nan Industrial Area, Xiabei, Pingzhou, Nanhai, Guangdong P.R. China Gegenstand der Prüfung: Test item: Mist Maker Unit **DN-24** Bezeichnung: FCC ID: YV3DN-24 Identification: FCC ID: 173056335 Wareneingangs-Nr.: Eingangsdatum: 11.Aug.2010 Receipt no .: Date of receipt: Prüfort: TÜV Rheinland (Guangdong) Ltd. EMC Listed test laboratory according to FCC rules Testing location: Laboratory section 2.948 for Guangzhou Auto Market, Yuan Gang Section of measuring devices under Guangshan Road, Guangzhou 510650 Parts 18 P. R. China FCC Part 18: 2009-1-10 Prüfgrundlage: Test specification: Conduct Emissions with limits described at section 18.307 (a) Radiated Emissions with limits described at section 18.305 (b) Prüfergebnis: Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). Test result: The test item passed the test specification(s). Prüflaboratorium: TÜV Rheinland (Guangdong) Ltd. Testing laboratory: geprüft / tested by: kontrolliert/ reviewed by: Jeffery Xie Liangdong Xie 2010.11.08 2010.11. Project Engineer Project Manager Name/ Stellung Name/ Stellung Datum Unterschrift Datum Unterschrift Date Name/Position Signature Date Name/Position Signature Sonstiges/ Other aspects:

Abkürzungen:P(ass)=entspricht PrüfgrundlageAbbreviations:P(ass)=passedF(ail)=entspricht nicht PrüfgrundlageF(ail)=failedN/A=nicht anwendbarN/A=not applicableN/T=nicht getestetN/T=not tested

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.

This test report relates to the a.m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.





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TEST SUMMARY

5.1 CONDUCTED EMISSION FOR FCC PART 18 PER SECTION 18.307 (A)

RESULT:

Pass

5.2 RADIATED EMISSION FOR FCC PART 18 PER SECTION 18.305 (B)

RESULT:

Pass



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1 General Remarks	
1.1 Complementary Materials	
None.	
2 Test Sites	
2.1 Test Facilities	
1) TÜV Rheinland (Guangdong) Ltd. EMC Laboratory	
Guangzhou Auto Market, Yuan Gang Section of Guangshan Road Guangzhou 510650 P. R. China	



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2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Kind of Equipment	Туре	Manufacturer	S/N	Calibrated until					
TÜV Rheinland (Guangdong) Ltd. EMC Laboratory									
EMI Test Receiver	ESCI	Rohde & Schwarz	100216	16.03.2011					
EMI Test Receiver	ESIB 26	Rohde & Schwarz	100243	16.03.2011					
Trilog-Broadband Antenna	VULB9168	Schwarzbeck	210	16.03.2011					
Loop Antenna	HFH2-Z2	Rohde & Schwarz	100111	16.03.2011					
Band Reject Filter	BRM50702	Micro-Tronics	023	16.03.2011					
3m Semi-anechoic chamber		Albatross Projects		16.03.2011					
EMI Test Receiver	ESCS30	Rohde & Schwarz	100316	16.03.2011					
Noise generator	DM8899	DM	607014	16.03.2011					
Artificial Mains Network	ESH2-Z5	Rohde&Schwarz	100114	16.03.2011					
LISN	ESH3-Z5	Rohde&Schwarz	100308	16.03.2011					
Pulse Limiter	ESH3-Z2	Rohde&Schwarz	100701	16.03.2011					

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.



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2.5 Measurement Uncertainty

The estimated combined standard uncertainty for conducted emissions measurements is \pm 2.68 dB. The estimated combined standard uncertainty for radiated emissions measurements is \pm 4.94 dB.

2.6 Location of original data

The original copies of all test data taken during actual testing were attached on Page 14-17, 20-21 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.



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3 General Product Information

Brief description of the test sample:

The submitted sample is mist maker unit, which cannot connected to public low-voltage distribution system directly.

3.1 Product Function and Intended Use

For details, refer to Technical Documentation and the User Manual.

3.2 Ratings and System Details

Type Designation: DN-24 System input voltage: AC 24V

Frequency: 60Hz
Rated Power: 23W
Protection class: III

Refer to this report Technical Documentation for further information.





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3.3 Independent Operation Modes

The basic operation modes are:

On

Off

3.4 Submitted Documents

Block Diagram Circuit Diagram PCB Layout External Photo Internal Photo Label and Location User Manual



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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 AC/AC Adaptor:

Model : 57C.YL-28.8-24V

Manufactory : In-Li Industries Co., Ltd. Input : AC 120V, 60Hz 39W Output : AC 24V, Max 28.8VA

Protection class : II

4.4 Countermeasures to achieve EMC Compliance

No additional countermeasures to the submitted test sample(s) were employed to achieve compliance.



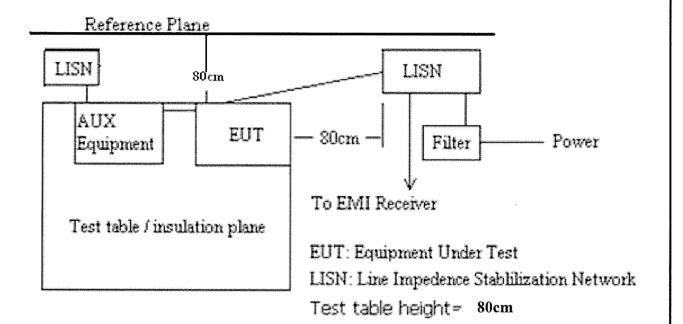
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4.5 Test set-up

Diagram 1 of Measurement Equipment Configuration for Testing Conducted Emission





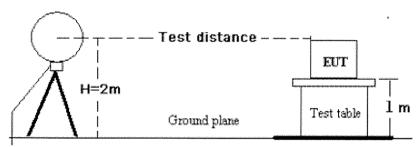
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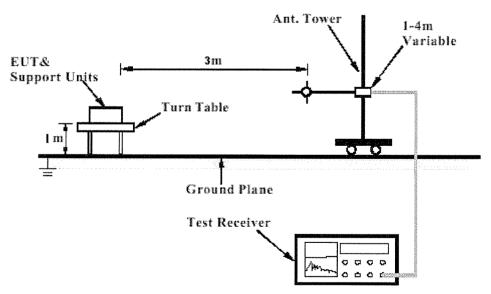
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Diagram 2 of Measurement Equipment Configuration for Testing Radiated Emission

Active loop antenna with pre-amplifier



10m Semi-anechoic chamber (for 9 kHz-30 MHz)



3m Semi-anechoic chamber (for 30 MHz-1 GHz)



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Diagram 3 of Equipment Configuration for Testing Conducted Emission

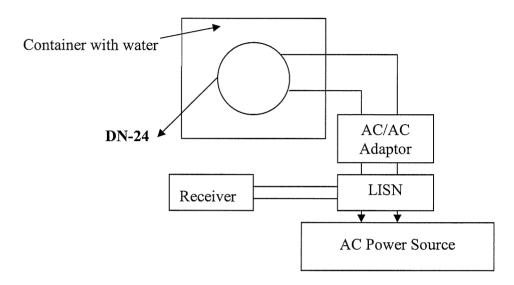
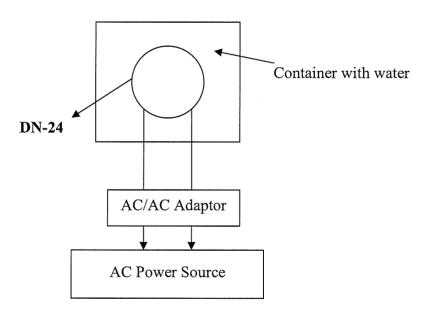


Diagram 4 of Equipment Configuration for Testing Radiated Emission





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5 Test Results EMISSION

5.1 Conducted Emission for FCC Part 18 per Section 18.307(a)

RESULT: Pass

Date of testing : 14.10.2010

Test specification : FCC Part 18 Per Section 18.307(a) Limits : FCC Part 18 Per Section 18.307(a)

Deviations from Standard Test

procedures : None

Test procedure Procedure specified in FCC/OST MP-5 were

followed

Kind of test site : Shielded room
Operation mode : A: On with water

Temperature : 23°C Humidity : 50%

Test procedure:

1. Place the EUT as specified in FCC/OST MP-5 Clause 7. 1

- 2. Plug the LISN to a correct power source (pay attention to: AC/DC, voltage, frequency).
- 3. Connect the EUT to LISN and choose N or L1 on the LISN.
- 4. Connect ESCI and LISN via a 50-ohm coaxial cable and a pulse limiter then begin exploratory measurement.
- 5. Make final measurement.
- 6. Switch to the other line on the LISN and repeat step 3 to 5.

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

Please refer to the following graphs. Disturbances are far below the limit.



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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

EMC Test Record (EMISSION)

Test Information

Manufacturer:

Techsin

Test Item:

Mist maker unit

Identification:

DN-24

Test Standard:

FCC Part 18

Test Detail: Operation Mode: Conducted Emission

Climate Condition:

101kPa.

Test Voltage/ Freq.:

23 ℃; AC 120 V/

50 %RH; 60 Hz

Port / Line:

AC Mains/N

Receipt No.:

173056335 300

Report No.: Result:

16015496 001

Comment:

Pass

Hardware Setup: Level Unit:

1phase LISN ESH3-Z5 to ESCI

dB ¤ V

Subrange 150kHz - 30MHz

Detectors Peak; Average IF Bandwidth

Step Size

Meas. Time

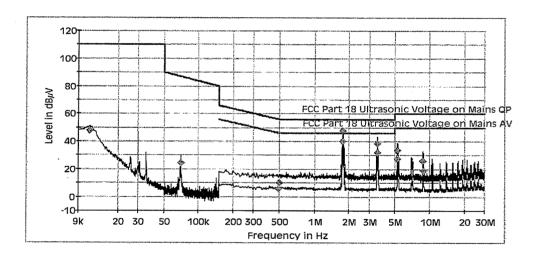
Receiver

9kHz

4.5kHz

10ms

ESCI 3









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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Final Measurement Detector 1

Frequency (MHz)	QuasiPeak (dB v V)	Meas. Time (ms)	Bandwidth	Line 7
0.011200	47.6	1000.000	0.200	N
0.069900	24.2	1000.000	0.200	N
0.505500	10.2	1000.000	9.000	Ν
1.765500	47.7	1000.000	9.000	N
3.525000	38.6	1000.000	9.000	N
5.275500	33.7	1000.000	9.000	N
8.790000	26.0	1000.000	9.000	Ν

(continuation of the "Final Measurement Detector 1" table from column 5 ...)

Frequency (MHz)	Corr. (dB)	Margin (dB)	Limit (dBirVi	Comment :
0.011200	10.2	62.4	110.0	1.
0.069900	10.2	62.8	87.0	
0.505500	10.1	45.8	56.0	
1.765500	10.1	8.3	56.0	
3.525000	10.2	17.4	56.0	
5.275500	10.2	26.3	60.0	
8.790000	10.4	34.0	60.0	

Final Measurement Detector 2

Frequency, (MHz)	. Average ≜ Γ(dB μV)	Meas: Time	Bandwidth (Line
0.496500	5.6	1000.000	9.000	N
1.765500	40.0	1000.000	9.000	N
3.520500	31.9	1000.000	9.000	N
5.284500	27.4	1000.000	9.000	N
8.794500	18.6	1000.000	9.000	N

(continuation of the "Final Measurement Detector 2" table from column 5 ...)

Frequency (MHz)	Corr.	Margin (dB)	Limit (dB u V)	Comment
0.496500	10.1	40.5	46.1	C SAME STORY OF THE SECOND
1.765500	10.1	6.0	46.0	
3.520500	10.2	14.1	46.0	
5.284500	10.2	22.6	50.0	
8.794500	10.4	31.4	50.0	







Meas Time

Receiver ESCI 3

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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

EMC Test Record (EMISSION)

Test Information

Manufacturer:

Techsin

Test Item:

Mist maker unit

Identification:

DN-24

Test Standard:

FCC Part 18

Test Detail:

Conducted Emission

Operation Mode:

50 %RH;

60 Hz

Climate Condition:

23 °C; AC 120 V/

101kPa.

Step Size

Test Voltage/ Freq.: Port / Line:

Receipt No.:

AC Mains/L1 173056335 300

Report No.:

Result:

Subrange

16015496 001 Pass

Comment: Hardware Setup:

1phase LISN ESH3-Z5 to ESCI

IF Bandwidth

Level Unit:

Detectors

Hz - :	30MF	łz		Peal	k; Av	егас	ge			9kH	z		-,,,		5kH:				0ms	s	1116
H.11111	120				***************************************			-		***************************************								**************************************	· 1	***	•
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Reviewed by:

10/14/2010, 10:26:12 AM



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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

Final Measurement Detector 1

Frequency	QuasiPeak	Meas: Time	Bandwidth	Line
(MHz)	(dB ν V)	(ms)	(kHz)	
0.011000	47.5	1000.000	0.200	L1
0.069900	25.1	1000.000	0.200	L1
0.501000	10.0	1000.000	9.000	L1
1.761000	50.0	1000.000	9.000	L1
3.525000	39.6	1000.000	9.000	L1
5.352000	29.5	1000.000	9.000	L1
8.794500	26.1	1000.000	9.000	L1

(continuation of the "Final Measurement Detector 1" table from column 5 ...)

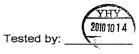
Frequency (MHz)	Corr. (dB)	Margin	Limit (dB μ V)	Comment
0.011000	10.6	62.5	110.0	
0.069900	10.2	61.9	87.0	
0.501000	10.0	46.0	56.0	
1.761000	10.1	6.0	56.0	
3.525000	10.2	16.4	56.0	
5.352000	10.1	30.5	60.0	
8.794500	10.4	33.9	60.0	

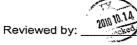
Final Measurement Detector 2

Frequency (MHz)	. Average (dB ⊭ V)	Meas. Jime (ms)	Bandwidth (KHz)	Line
0.501000	5.5	1000.000	9.000	L1
1.765500	43.5	1000.000	9.000	L1
3.520500	32.4	1000.000	9.000	L1
5.284500	27.4	1000.000	9.000	L1
8.799000	18.7	1000.000	9.000	L1

(continuation of the "Final Measurement Detector 2" table from column 5 ...)

Frequency (MHz)	Corr. (dB)	Margin (dB)	Limit C	omment.
0.501000	10.0	40.5	46.0	
1.765500	10.1	2.5	46.0	
3.520500	10.2	13.6	46.0	
5.284500	10.1	22.6	50.0	
8.799000	10.4	31.3	50.0	







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5.2 Radiated Emission for FCC Part 18 per Section 18.305(b)

RESULT: Pass

Date of testing 14.10.2010

Test specification FCC Part 18 Per Section 18.305(b) Limits FCC Part 18 Per Section 18.305(b)

Deviations from Standard Test

procedures None

Test procedure Procedure specified in FCC/OST MP-5 were

Kind of test site 10m Semi-anechoic chamber (for 9kHz-30MHz)

3m Semi-anechoic chamber (for 30MHz-1GHz)

Operation mode A: On with water

Temperature 23°C Humidity 50%

Test procedure:

9 kHz-30MHz *)

- 1. An initial pre-scan was performed in the 3m chamber using the spectrum analyzer in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by a 0.6m loop antenna.
- 2. The loop antenna was set to the vertical X, for each suspected emission frequency points the antenna was rotated 180 degrees and the maximum emission value was recorded.
- 3. Then the loop antenna was set to the horizontal Z axis, step 1 is repeated.
- 4. Final measurement was performed in the 10m chamber, step 2 and step 3 are repeated, for each suspected emission frequency point, the EUT was arranged to its worst case and the EUT was turned from 0 degrees to 360 degrees to read the maximum emission.

30MHz-1GHz

1. The EUT was turned on and placed on the top of a rotatable table 1 meter above the ground with 3-orthogonal XYZ direction and be kept close enough to the measurement receiving antenna (especially for the measurement frequency range above 30MHz). The table was then rotated 360 degrees to detect the suspected emission frequency points. The position of the worst radiation case with both horizontal and vertical receiving antenna polarization was then recorded together with the suspected emission frequency points above-mentioned.



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- 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 point 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.

The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200Hz for frequency 9kHz to 150kHz, 9kHz for frequency 150kHz to 30MHz and 120 kHz for frequency 30MHz to 1GHz.

Please refer to the following graphs.

*) According to Section 18.307(f) "For ultrasonic equipment, compliance with the conducted limits shall preclude the need to show compliance with the field strength limits below 30 MHz unless requested by the Commission."

Since the EUT complies with the conducted limits, no field strength measurement below 30MHz is required.



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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer:

Techsin

Test Item:

Mist Maker unit

Identification: Test Standard: DN-24

Test Detail:

FCC Part. 18 Ultrasonic

RE

Operation Mode:

On

Climate Condition: Test Voltage/ Freq:

23 50 %RH; AC120V / 60Hz 173056335 300

101 kPa.

Receipt No: Report No:

Pass

Result: Comment:

Test distance is 3m, Vertical

Subrange 1

Frequency Range:

30M-1GHz

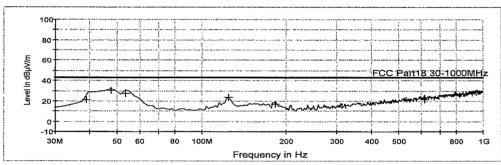
Receiver:

TUV ESIB 26

Transducer:

TUV SAC UVLB 9168/ TUV ESIB26-TUV SAC UVLB 9168





Limit and Margin QP

Date: 14/10/2010 - Time: 11:31:30

Frequency (MHz)	QuasiPeak (dΒμV/m)	Corr. (dB)	Margin (dB) (i	Limit dBµV/m)	Polarization
38.850000	21.1	14.7	22.4	43.5	V
47.500000	30.7	14.4	12.8	43.5	V
53.300000	27.7	14.1	15.8	43.5	V
125.250000	23.4	13.9	20.1	43.5	V
183.550000	17.2	12.9	26.3	43.5	V
619.000000	21.6	22.0	21.9	43.5	V

Tested by:

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Reviewed by:





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TUV Rheinland (Guangdong) Ltd.

EMC Test Service Hotline: +86-20-28391188

EMC Test Record (Emission)

Common Information

Manufacturer: Techsin
Test Item: Mist Maker unit

Identification: Identification: Identification:

Test Standard: FCC Part.18 vitasonic

Test Detail: RE Operation Mode: On

Climate Condition: 23 °C; 50 %RH; 101 kPa.

Test Voltage/ Freq: AC120V / 60Hz Receipt No: 173056335 300

Report No: Result: Pass

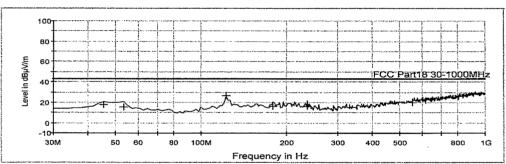
Comment: Test distance is 3m, Horizontal

Subrange 1

Frequency Range: 30M-1GHz Receiver: TUV ESIB 26

Transducer: TUV SAC UVLB 9168/ TUV ESIB26-TUV SAC UVLB 9168

Pre TUV 30M to 1GHz UVLB9168 Part 18



Limit and Margin QP

	QuasiPeak (dBµV/m)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Polarization
45.550000	17.8	14.4	25.7	43.5	Н
53.350000	15.2	14.1	28.3	43.5	Н
123.300000	26.5	13.8	17.0	43.5	Н
179.700000	15.8	13.4	27.7	43.5	Н
236.050000	16.3	13.3	27.2	43.5	Н
556.800000	20.1	20.6	23.4	43.5	H

Reviewed by:



Date: 14/10/2010 - Time: 11:43:29



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6 Photographs of the Test Set-Up

Photograph 1: Set-up for Conducted Emission



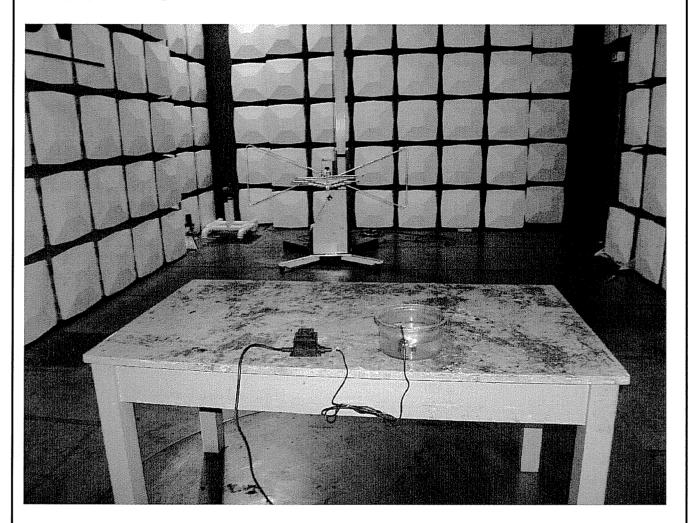


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Photograph 2: Set-up for Radiated Emission



30MHz - 1GHz (3m distance)



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