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<i>Test Report No.:</i>		<i>Page 1 of 21</i>	
Auftraggeber: <i>Client:</i>	Zhongshan K-mate General Elec. Co., Ltd. Fuwan Industrial Zone, Fuwan South Road, Sunwen East Road, East District, Zhongshan, Guangdong, P.R. China		
Gegenstand der Prüfung: <i>Test item:</i>	FM Transmitter		
Bezeichnung: <i>Identification:</i>	AT1900	FCC ID: <i>FCC ID</i>	WAD-AT1900
Wareneingangs-Nr.: <i>Receipt No.:</i>	173050874	Eingangsdatum: <i>Date of receipt:</i>	Feb 08, 2010
Prüfört: <i>Testing location:</i>	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: <i>Test specification:</i>	ANSI C63.4: 2003 FCC Part 15: July 10, 2008 Subpart C section 15.207 and 15.239		
Prüfergebnis: <i>Test Result:</i>	Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). <i>The test item passed the test specification(s).</i>		
Prüflaboratorium: <i>Testing Laboratory:</i>	TÜV Rheinland (Guangdong) Ltd.		
geprüft/ tested by:	kontrolliert/ reviewed by:		
<i>16. Mar. 2010</i>	Ricky Liu Project Manager	<i>16. Mar. 2010</i>	Liangdong Xie Project Manager
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Unterschrift <i>Signature</i>
Sonstiges/ Other Aspects:			
Abkürzungen:	P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet	Abbreviations:	P(ass) = passed F(ail) = failed N/A = not applicable N/T = not tested
<p>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. <i>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.</i></p>			

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Test Summary

FCC Rules		Test items	Result
Paragraph	Released Date		
Part 15 Per Section 15.207(a)	July 10, 2008	Conducted Emission	Pass
Part 15 Per Section 15.239(c)	July 10, 2008	Radiated Spurious Emission	Pass
Part 15 Per Section 15.239(b)	July 10, 2008	Inband Radiated Emission	Pass
Part 15 Per Section 15.239(a)	July 10, 2008	26dB Bandwidth	Pass

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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	16.Mar.2010	1 year
Spectrum Analyzer	FSP30	Rohde & Schwarz	100286	16.Mar.2010	1 year
Trilog-Broadband Antenna	VULB9168 (30MHz-1GHz)	SCHWARZBECK MESSELEKTRONIK	209	21.Aug.2011	2 years
Double-Ridged Waveguide Horn Antenna	HF906 (1-18GHz)	Rohde & Schwarz	100385	24.Aug.2011	2 years
Pre-amplifier	AFS42-00101800-25-S-42	MITEQ	1101599	31.Jul.2009	2 years
Band Reject Filter	BRM50702	Micro-Tronics	023	14.Mar.2010	2 years
Standard Gain Horn Antenna	3160-09 (18-26.5GHz)	EMCO	21642	26.Jun.2014	5 years
Pre-amplifier	AFS33-18002650-30-8P-44	MITEQ	1108282	16.Mar.2010	2 years
3m Anechoic Chamber	N/A	Albatross Project GmbH	N/A	10.Feb.2011	1 year
Loop Antenna	HFH2-Z2 (<30MHz)	Rohde & Schwarz	100111	25-Nov-2011	2 years
EMI Test Receiver	ESCS30	Rohde & Schwarz	100316	16.Mar.2010	1 year
Two-Line V-Network	ESH3-Z5	Rohde & Schwarz	100308	16.Mar.2010	1 year
Pulse Limiter	ESH3-Z2	Rohde & Schwarz	100701	16.Mar.2010	1 year

2.3 Traceability

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

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2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications.

2.5 Measurement Uncertainty

Uncertainty for conducted emissions measurements is $\pm 2.68\text{dB}$.

Uncertainty for radiated emissions measurements is $\pm 4.94\text{dB}$ (30M-1GHz) and $\pm 4.88\text{dB}$ ($> 1\text{GHz}$)

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 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 TÜV Rheinland (Guangdong) 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 a FM transmitter powered by iPod.
Audio Stream from the iPod is modulated to FM radio signal and transmitted to FM receiver.

3.1 Product Function and Intended Use

Refer to the Technical Documentation and user manual.

3.2 Ratings and System Details

Frequency range	:	88.1 MHz -107.9 MHz
Number of channels	:	199
Channel Bandwidth	:	200kHz
Type of antenna	:	Integral antenna
Power supply	:	3.7V from iPod battery
Ports	:	Audio input (Ipod music port) +5V USB Charge port. (to iPod battery while connected)
RF Power level	:	<50nW
Protection Class	:	III

Refer to the Technical Documentation for further information

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3.3 Independent Operation Modes

1. FM: RF Transmitting

For further information refer to User Manual

3.4 Submitted Documents

Block Diagram
Schematics
Operation Description
Components List
FCC label and location
User Manual
Internal Photos
External Photos
Application form

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 products have been tested together with the following device:

Device	Manufacture	Model	Serial no./ Version
Laptop notebook	IBM R40e	2684	99-CYY55

4.4 Countermeasures to achieve EMC Compliance

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

4.5 Test set-up

Diagram 1 of Configuration for Testing Radiated Emission

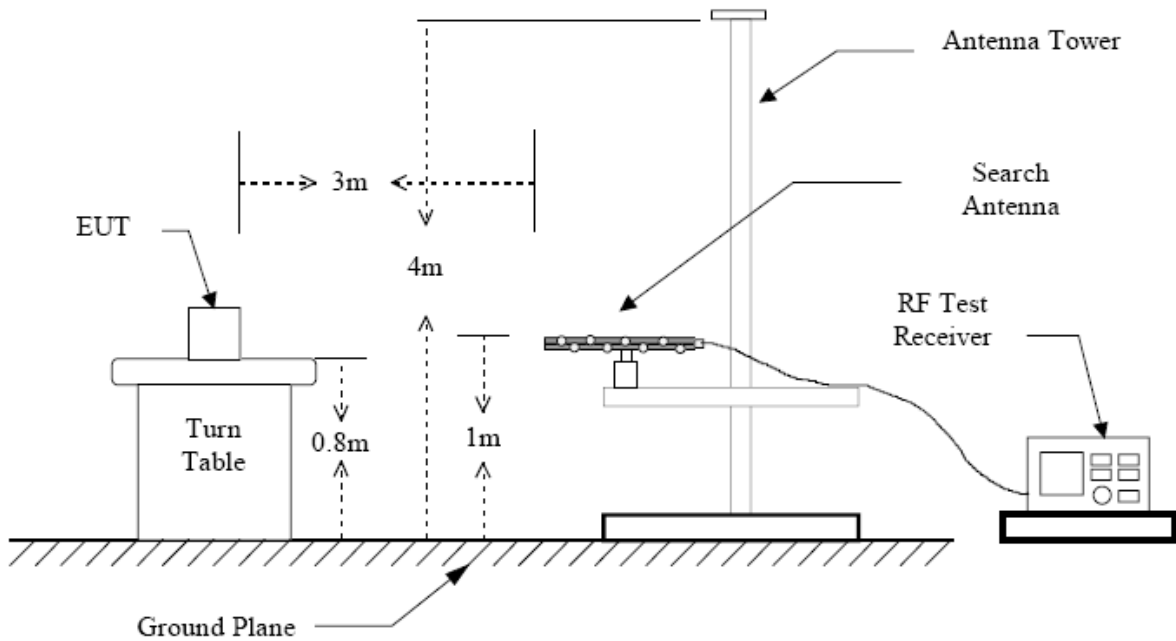
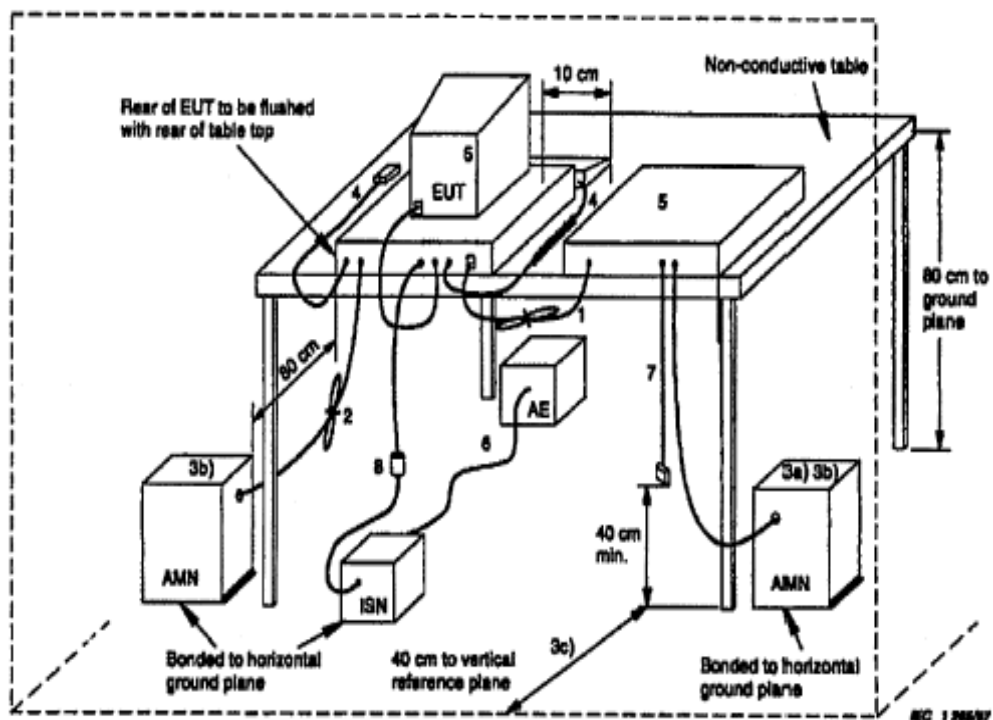


Diagram 2 of Configuration for Testing Conducted Emission



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5 Test Results EMISSION

5.1 Conducted Emission

RESULT:

Pass

Date of testing	:	Mar.03.2010
Test specification	:	FCC Part 15 Per Section 15.207(a)(c)
Limits	:	FCC Part 15 Per Section 15.207(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	:	On with charging
Power supply	:	AC 110V/60Hz to the AC/DC adaptor of the USB host computer
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 port under test to LISN and choose N or L1 on the LISN.
5. Connect measurement receiver and LISN with 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.

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Table 2: Disturbance Voltage on AC Mains

Frequency [MHz]	Line L/N	QP [dB μ V]	AV [dB μ V]	Quasi Peak Limit [dB μ V]	Average Limit [dB μ V]
0.204	L	49.1	/	63.4	/
3.147	L	35.6	/	56.0	/
3.287	L	35.6	/	56.0	/
3.354	L	36.4	/	56.0	/
3.421	L	38.4	/	56.0	/
3.624	L	36.8	/	56.0	/
0.204	N	/	40.0	/	53.4
0.479	N	/	30.0	/	46.4
4.772	N	/	30.3	/	46.0
4.790	N	/	29.9	/	46.0
4.929	N	/	29.4	/	46.0
4.997	N	/	30.6	/	46.0
*)					

*) Measurement is made from 150 kHz to 30 MHz. Disturbances other than those mentioned above are small or not detectable.

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

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5.2 Radiated Spurious Emission

RESULT:**Pass**

Date of testing	:	Feb. 21, 2010
Test specification	:	FCC Part 15 Per Section 15.239(c)
Limits	:	FCC Part 15 Per Section 15.209(a)
Test procedure	:	Procedure specified in ANSI C63.4
Deviations from Standard Test procedures	:	None
Kind of test site	:	3m Semi-anechoic chamber
Operation mode	:	FM RF transmitting at fix channel (High, Low, Mid)
Power supply	:	DC 5V from the iPod
Temperature	:	22°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.

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Table 3: Radiated Spurious Emission (Transmitting at channel low)

Frequency	QP	AV	PK	Polarity	Limit		
					QP	AV	PK
[MHz]	[dB μ V/m]			(H/V)	[dB μ V/m]		
55.2	10.3	N/A	N/A	H	40.0	N/A	N/A
139.9	11.1	N/A	N/A	H	43.5	N/A	N/A
176.2	10.5	N/A	N/A	H	43.5	N/A	N/A
264.3	10.2	N/A	N/A	H	46.0	N/A	N/A
783.8	21.7	N/A	N/A	H	46.0	N/A	N/A
62.8	16.1	N/A	N/A	V	40.0	N/A	N/A
134.3	16.9	N/A	N/A	V	43.5	N/A	N/A
176.2	20.5	N/A	N/A	V	43.5	N/A	N/A
264.3	12.6	N/A	N/A	V	46.0	N/A	N/A
752.2	21.0	N/A	N/A	V	46.0	N/A	N/A
*)---							

Table 4: Radiated Spurious Emission (Transmitting at channel mid)

Frequency	QP	AV	PK	Polarity	Limit		
					QP	AV	PK
[MHz]	[dB μ V/m]			(H/V)	[dB μ V/m]		
39.7	10.2	N/A	N/A	H	40.0	N/A	N/A
156.7	12.4	N/A	N/A	H	43.5	N/A	N/A
192.6	20.6	N/A	N/A	H	43.5	N/A	N/A
294.3	23.4	N/A	N/A	H	46.0	N/A	N/A
812.5	22.0	N/A	N/A	H	46.0	N/A	N/A
63.8	16.0	N/A	N/A	V	40.0	N/A	N/A
121.9	15.5	N/A	N/A	V	43.5	N/A	N/A
137.5	17.2	N/A	N/A	V	43.5	N/A	N/A
196.2	26.0	N/A	N/A	V	43.5	N/A	N/A
865.8	22.5	N/A	N/A	V	46.0	N/A	N/A
*)---							

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Table 5: Radiated Spurious Emission (Transmitting at channel high)

Frequency	QP	AV	PK	Polarity	Limit		
					QP	AV	PK
[MHz]	[dB μ V/m]			(H/V)	[dB μ V/m]		
55.6	10.0	N/A	N/A	H	40.0	N/A	N/A
160.0	16.1	N/A	N/A	H	43.5	N/A	N/A
215.8	9.0	N/A	N/A	H	43.5	N/A	N/A
323.7	12.2	N/A	N/A	H	46.0	N/A	N/A
673.4	20.3	N/A	N/A	H	46.0	N/A	N/A
63.2	15.7	N/A	N/A	V	40.0	N/A	N/A
142.7	17.0	N/A	N/A	V	43.5	N/A	N/A
215.8	11.0	N/A	N/A	V	43.5	N/A	N/A
323.7	12.1	N/A	N/A	V	46.0	N/A	N/A
698.5	20.5	N/A	N/A	V	46.0	N/A	N/A
*)---							

*) Note: Measurement is made from 9 kHz to 1080 MHz with following resolution bandwidth. Disturbances other than those mentioned above are small or not detectable.

	Bandwidth
Frequencies up to 150 kHz:	200 Hz
Frequencies from 150 kHz to 30 MHz:	9 kHz
Frequencies from 30 MHz to 1 GHz:	120 kHz
Frequencies above 1GHz:	1 MHz

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5.3 Inband Radiated Emission

RESULT:

Pass

Date of testing	:	Feb. 24, 2010
Test specification	:	FCC Part 15 Per Section 15.239(b)
Limits	:	FCC Part 15 Per Section 15.239(b)
Test procedure	:	Procedure specified in ANSI C63.4
Deviations from Standard Test procedures	:	None
Kind of test site	:	3m Semi-anechoic chamber
Operation mode	:	FM RF transmitting at fix channel (High, Low, Mid)
Power supply	:	DC 5V from the iPod
Temperature	:	22°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.

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Table 6: Radiated Inband Emission (Transmitting at channel low)

Frequency	QP	AV	PK	Polarity	Limit		
					QP	AV	PK
[MHz]	[dB μ V/m]			(H/V)	[dB μ V/m]		
88.100	N/A	32.0	33.6	V	N/A	48	68
88.100	N/A	35.5	36.1	H	N/A	48	68
*)---							

Table 7: Radiated Inband Emission (Transmitting at channel mid)

Frequency	QP	AV	PK	Polarity	Limit		
					QP	AV	PK
[MHz]	[dB μ V/m]			(H/V)	[dB μ V/m]		
98.100	N/A	32.2	33.5	V	N/A	48	68
98.100	N/A	35.6	36.4	H	N/A	48	68
*)---							

Table 8: Radiated Inband Emission (Transmitting at channel high)

Frequency	QP	AV	PK	Polarity	Limit		
					QP	AV	PK
[MHz]	[dB μ V/m]			(H/V)	[dB μ V/m]		
107.900	N/A	38.2	39.3	V	N/A	48	68
107.900	N/A	37.8	38.6	H	N/A	48	68
*)---							

*) Note:

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

Measurement is made from carrier frequency-100 kHz to carrier frequency+100 kHz and maximum reading among the range is listed.

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5.4 26dB Bandwidth

RESULT:

Pass

Date of testing : Feb. 1425 2010
 Test specification : FCC Part 15 Per Section 15.239(a)
 Limits : 200kHz, FCC Part 15 Per Section 15.239(a)
 Deviations from Standard Test procedures : None
 Test procedure : Procedure specified in ANSI C63.4
 Operation mode : FM continuously transmitting on the measured channel with maximum volume specified by the applicant.
 Kind of test site : Shielded room
 Power supply : DC 5V from the iPod
 Temperature : 22°C
 Humidity : 50%

Test procedure:

1. Set the EUT to proper test channel.
2. Spectrum analyzer setting: Centered Frequency= measured channel, RBW=10kHz, VBW=30kHz.
3. Mark the peak power frequency point and the -26dB upper and lower frequency points.
4. Read the frequency delta value between the -26dB upper and lower frequency points.
5. Repeat step 1 to 4 until all the channels required are finished.

Table 9: 26dB Bandwidth

Channel	Lowest Frequency (MHz)	Highest Frequency (MHz)	Test Result (kHz)
Lowest 88.100MHz	88.017	88.186	169
Middle 98.100MHz	98.005	98.185	180
Highest 107.900MHz	107.807	107.987	180

Please refer to Appendix 1 for measurement data.

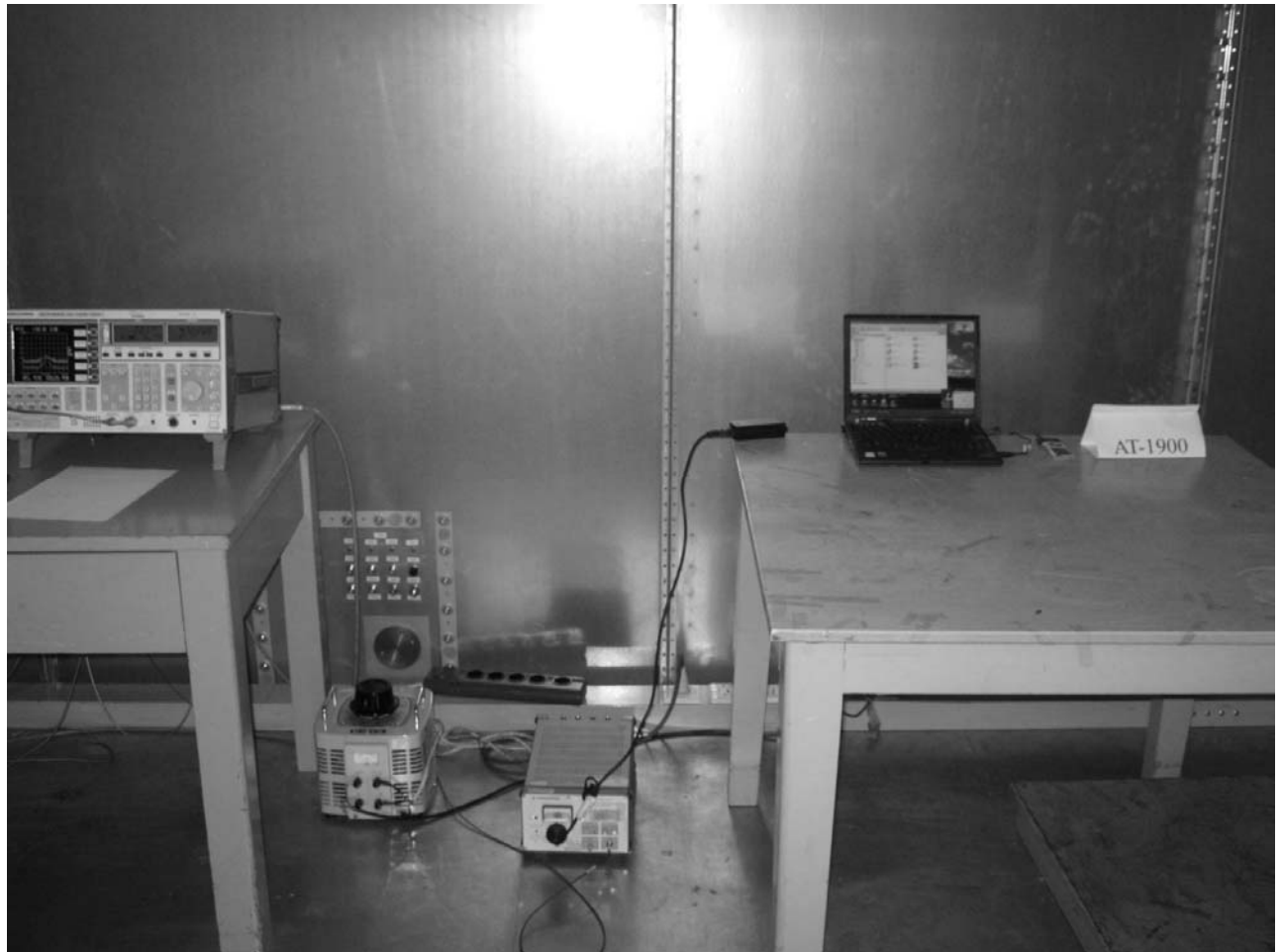
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6 Photographs of the Test Set-Up

Photograph 1: Set-up for Conducted Emission

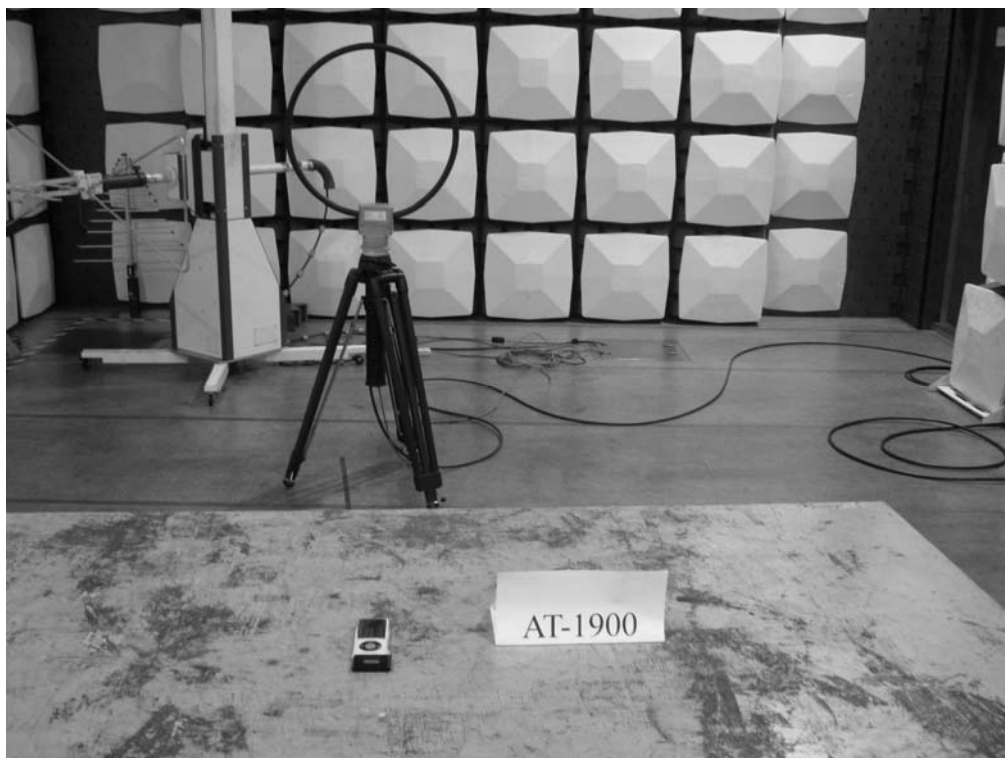
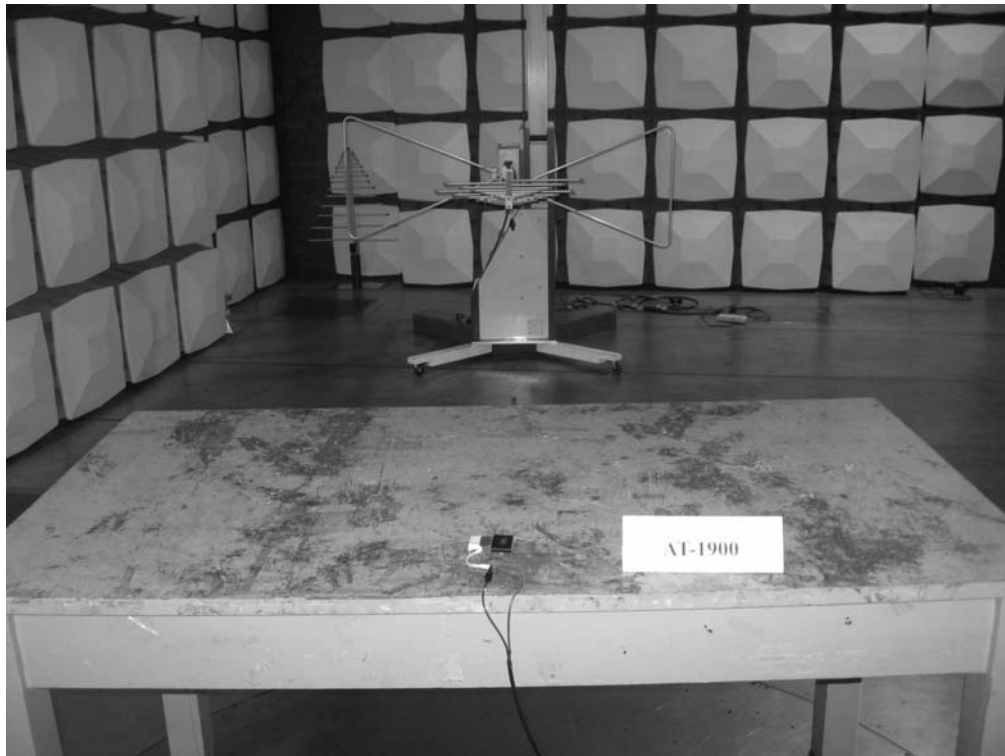


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Photograph 2: Set-up for Radiated Emission



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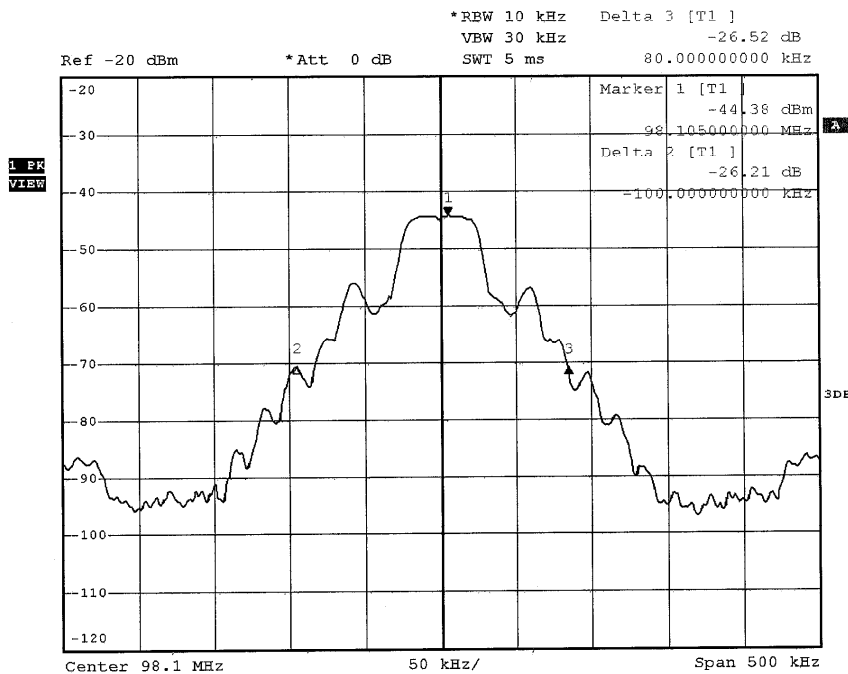
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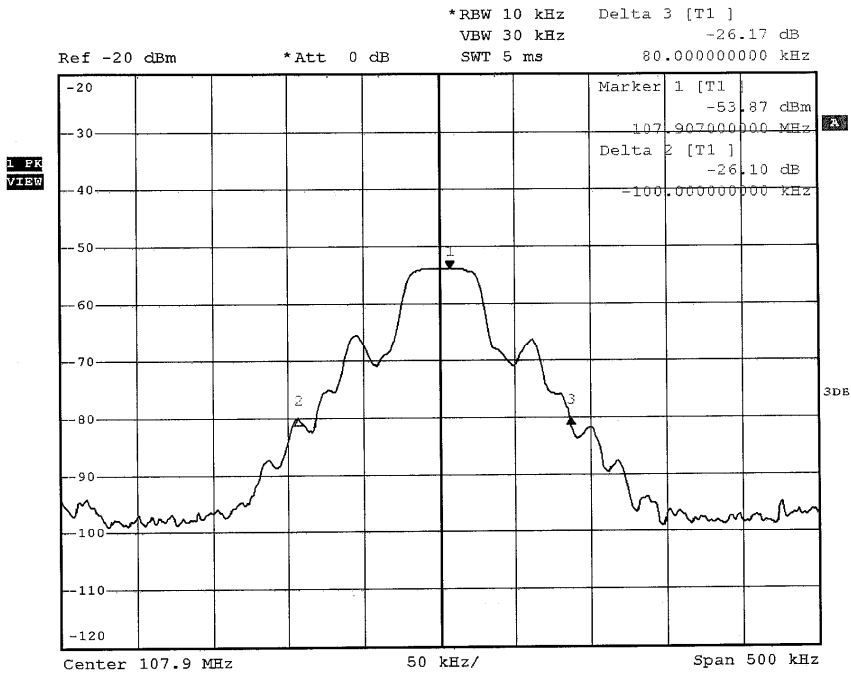
Date: 25.FEB.2010 22:43:11



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