

Variant FCC Test Report

APPLICANT : Motorola Mobility, Inc.
EQUIPMENT : GSM / GPRS Mobile Phone
BRAND NAME : MOTOROLA
MODEL NAME : W409G
FCC ID : IHDP56LJ5
STANDARD : FCC 47 CFR FCC Part 15 Subpart B
CLASSIFICATION : Certification

This is a variant report which is only valid together with the original test report. The product was received on May 03, 2011 and completely tested on May 13, 2011. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:



Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.



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SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.109	7.2.3.2	Radiated Emission	< 15.109 limits or < RSS-Gen table 1 limits (Section 6)	PASS	Under limit 6.79 dB at 216.30 MHz

1. General Description

1.1. Applicant

Motorola Mobility, Inc.
8F, No. 9, Songgao Rd., Taipei 110, Taiwan, R.O.C.

1.2. Manufacturer

Arima Communications Corp
6F., No. 866, Jhongjheng Rd., Jhonghe Dist., New Taipei City 23586, Taiwan

1.3. Feature of Equipment Under Test

Product Feature & Specification	
Equipment	GSM / GPRS Mobile Phone
Brand Name	MOTOROLA
Model Name	W409G
FCC ID	IHDP56LJ5
Tx Frequency Range	GSM850 : 824 MHz ~ 849 MHz GSM1900 : 1850 MHz ~ 1910 MHz Bluetooth : 2400 MHz ~ 2483.5 MHz
Rx Frequency Range	GSM850 : 869 MHz ~ 894 MHz GSM1900 : 1930 MHz ~ 1990 MHz Bluetooth : 2400 MHz ~ 2483.5 MHz
Antenna Type	Fixed Internal Antenna
HW Version	P1
SW Version	FINCH_G_01_38.00RP
Type of Modulation	GSM / GPRS : GMSK Bluetooth (1Mbps) : GFSK Bluetooth EDR (2Mbps) : $\pi/4$ -DQPSK Bluetooth EDR (3Mbps) : 8-DPSK
EUT Stage	Production Unit

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4. Test Site

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	Sporton Site No.	FCC/IC Registration No.
	03CH07-HY	722060/4086B-1

1.5. Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC 47 CFR FCC Part 15 Subpart B
- ANSI C63.4-2003
- IC RSS-Gen Issue 3

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

1.6. Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A

2. Test Configuration of Equipment Under Test

2.1. Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Frequency range investigated: radiation (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

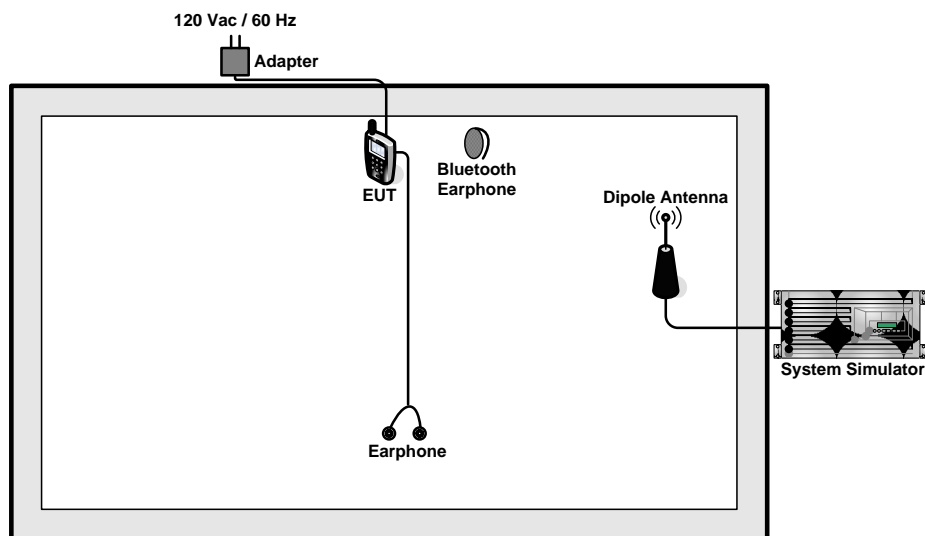
The following tables are showing the test modes as the worst cases and recorded in this report.

Item	EUT Configuration	Test Condition
		EMI RE
1.	Charging Mode (EUT with adapter)	☒

Abbreviations: EMI RE: EUT radiated emissions

Test Items	EUT Configure Mode	Function Type
Radiated Emissions	1	Mode 1: GSM850 Idle + Bluetooth Idle + Camera + Earphone + Adapter

2.2. Connection Diagram of Test System





2.3. Test Software

The EUT was in GSM idle mode during the testing. The EUT was synchronized to the BCCH, and is in continuous receiving mode by setting system simulator's paging reorganization. At the same time, the EUT turned on camera to capture images.



3. Test Result

3.1. Test of Radiated Emission Measurement

3.1.1. Limit of Radiated Emission

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

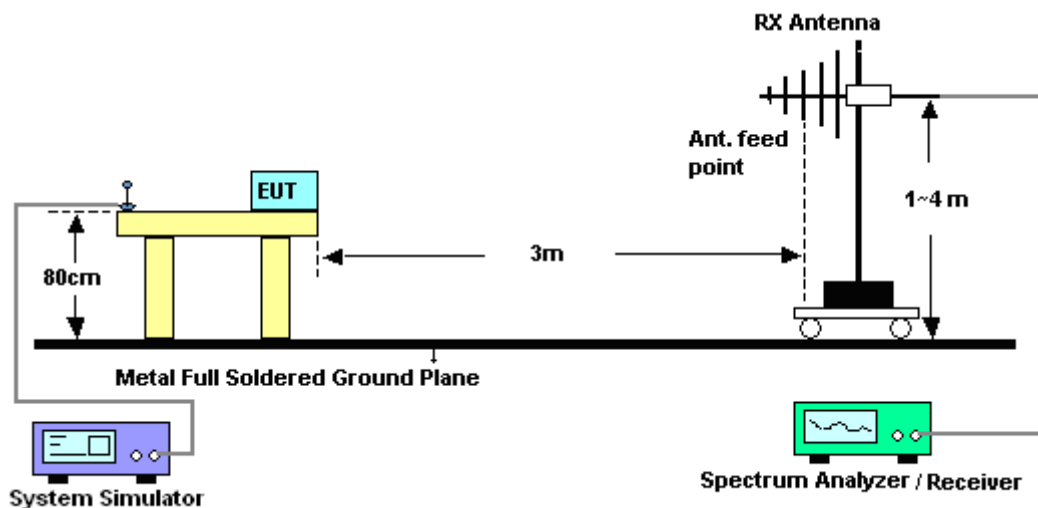
3.1.2. Measuring Instruments

See list of measuring instruments of this test report.

3.1.3. Test Procedures

1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a Bi-Log antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the quasi-peak method and reported
8. Emission level (dBuV/m) = 20 log Emission level (uV/m)
9. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

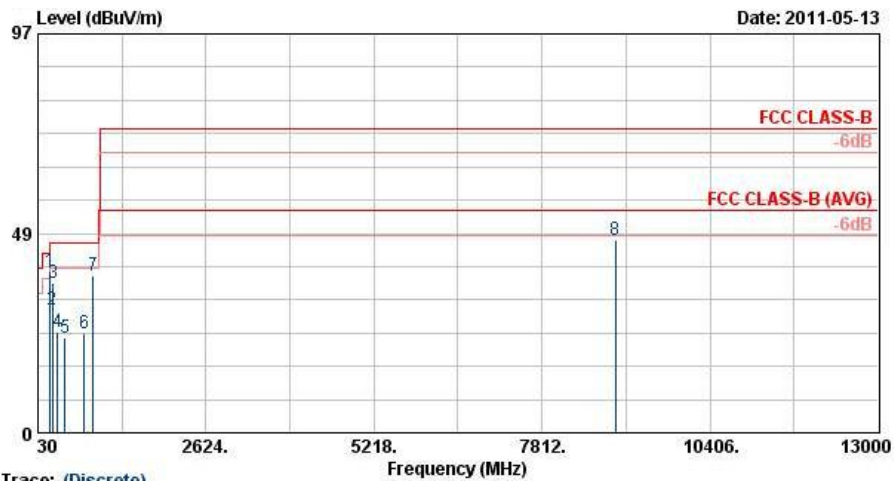
3.1.4. Test Setup of Radiated Emission





3.1.5. Test Result of Radiated Emission

Test Mode :	Mode 1	Temperature :	24~25°C
Test Engineer :	Ivan Chiang	Relative Humidity :	50~52%
Test Distance :	3m	Polarization :	Horizontal
Function Type :	GSM850 Idle + Bluetooth Idle + Camera + Earphone + Adapter		
Remark :	#7 is System Simulator Signal which can be ignored.		



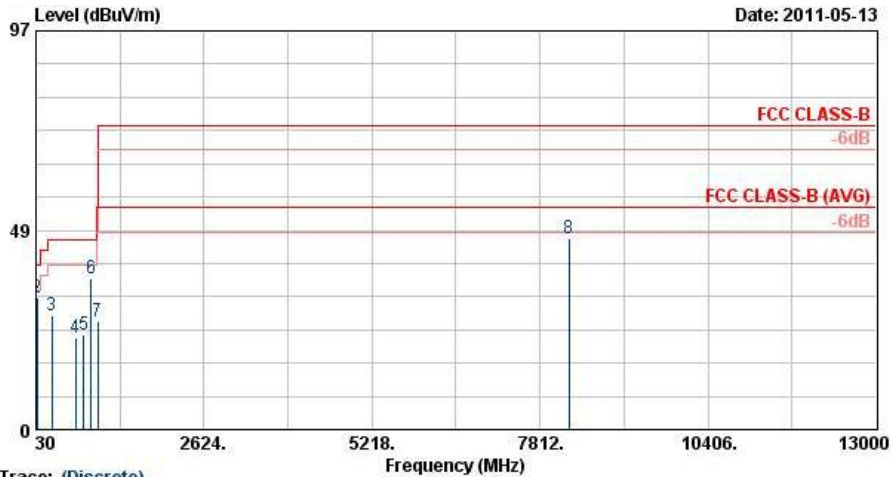
Site :
Condition :
Project :
Mode :

Trace: (Discrete)
: 03CH07-HY
: FCC CLASS-B HF_ANT_100824 HORIZONTAL
: FD 150324
: Mode 1

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	216.30	39.21	-6.79	46.00	59.01	10.27	1.40	31.46	106	252	Peak
2	251.94	29.82	-16.18	46.00	46.99	12.70	1.54	31.41	---	---	Peak
3	264.09	36.41	-9.59	46.00	53.32	12.89	1.61	31.40	---	---	Peak
4	337.80	24.42	-21.58	46.00	39.21	14.63	1.88	31.30	---	---	Peak
5	444.20	22.99	-23.01	46.00	34.52	17.30	2.29	31.11	---	---	Peak
6	741.00	24.10	-21.90	46.00	30.25	21.53	3.04	30.72	---	---	Peak
7	881.70	38.27	42.25	23.42	3.31	30.71	---	---	Peak
8	8942.00	46.75	-27.25	74.00	56.36	36.03	11.16	56.81	100	0	Peak



Test Mode :	Mode 1	Temperature :	24~25°C
Test Engineer :	Ivan Chiang	Relative Humidity :	50~52%
Test Distance :	3m	Polarization :	Vertical
Function Type :	GSM850 Idle + Bluetooth Idle + Camera + Earphone + Adapter		
Remark :	#6 is System Simulator Signal which can be ignored.		



Site
 Condition
 Project
 Mode

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	32.97	32.41	-7.59	40.00	47.52	15.80	0.56	31.47	100	141	Peak
2	42.69	31.95	-8.05	40.00	51.23	11.59	0.64	31.51	---	---	Peak
3	270.30	27.84	-18.16	46.00	44.58	13.00	1.64	31.37	---	---	Peak
4	637.40	22.27	-23.73	46.00	30.17	20.18	2.80	30.88	---	---	Peak
5	763.40	23.14	-22.86	46.00	28.87	21.89	3.08	30.69	---	---	Peak
6	881.70	36.77	---	---	40.75	23.42	3.31	30.71	---	---	Peak
7	982.50	26.35	-27.65	54.00	28.77	24.67	3.49	30.58	---	---	Peak
8	8262.00	46.68	-27.32	74.00	56.80	35.55	10.92	56.59	100	0	Peak

4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 31, 2010	Oct. 30, 2011	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9KHz ~ 30GHz	Dec. 03, 2010	Dec. 02, 2011	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 19, 2010	Aug. 18, 2011	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA917025 1	15GHz- 40GHz	Oct. 18, 2010	Oct. 17, 2011	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec. 06, 2010	Dec. 05, 2011	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32 dB.GAIN	Mar. 29, 2011	Mar. 28, 2012	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 kHz~30 MHz	Jul. 29, 2010	Jul. 28, 2011	Radiation (03CH07-HY)
System Simulator	R&S	CMU200	117591	N/A	Oct. 18, 2010	Oct. 17, 2011	Radiation (03CH07-HY)

5. Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.41	Normal (k=2)	0.21
Antenna Factor Calibration	0.83	Normal (k=2)	0.42
Cable Loss Calibration	0.25	Normal (k=2)	0.13
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14
RCV/SPA Specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site Imperfection	1.43	Rectangular	0.83
Mismatch	+0.39 / -0.41	U-Shape	0.28
Combined Standard Uncertainty $U_c(y)$	1.27		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.54		

Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	± 0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	± 1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	± 0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	± 2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	± 1.50	Rectangular	0.87	1	0.87
Site Imperfection	± 2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20\text{Log}(1-\Gamma_1*\Gamma_2)$	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty $U_c(y)$	2.36				
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.72				



Appendix A. Product Equality Declaration



Appendix B. Original Report

Please refer to CCS report number T100512103-D as below.