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FCC PART 22H AND PART 24E INDUSTRY CANADA RSS-131 SPURIOUS EMISSIONS TEST REPORT

Applicant	Mobile Communications Inc. 230 Earl Stewart Drive Aurora, Ontario L4G 6V8 Canada
FCC ID	S4RBRM120
IC Label	IC: 3585A-BRM120
Model Number	BRM120
Product Description	Dual-Band Single Directional Wireless Amplifier
Date Sample Received	June 4, 2009
Date Tested	June 5, 2009
Tested By	Richard Block
Approved By	Mario de Aranzeta
Report No.	1230AUT9TestReport.pdf
Test Results	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL
WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.



Test Certificate #0955-01



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ATTESTATION STATEMENT

Summary

The device under test does:

- fulfill the general approval requirements as identified in this test report
- not fulfill the general approval requirements as identified in this test report

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report. All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025:2005 requirements.



Certificate # 0955-01

I attest that the necessary measurements were made, under my supervision, at TIMCO ENGINEERING, INC. located at 849 N.W. State Road 45, Newberry, Florida 32669.

Authorized Signatory Name: Mario de Aranzeta



Signature:

Function: Engineer

Date: 6/10/2009

REPORT SUMMARY

Disclaimer	The test results relate only to the items tested.
Report Purpose	To demonstrate the DUT comply with FCC Part 22H and Pt 24 and Industry Canada RS-131 radiated emission requirements for a dual band signal amplifier.
Applicable Rule Part(s)	Pt 22, Pt 24, RSS-131
Test Procedure(s)	ANSI/TIA-603-C: 2004

TEST ENVIRONMENT

Test Facilities	All required tests were performed by Timco Engineering Inc. that is located at 849 NW State Road 45 Newberry, FL 32669.
Test Conditions	Temperature: 26°C Relative Humidity: 50%

TEST SETUP

Deviation to the rules	There was no deviation from the test standards.
Modification to the DUT	No modification was made to the DUT.
Test Exercise (e.g. software description, test signal, etc.)	The DUT was placed in continuous transmit mode of operation.

DEVICE UNDER TEST INFORMATION

Manufactured by	Mobile Communications Inc.
DUT Description	Dual-Band Single-directional Wireless Amplifier
FCC ID	S4RBRM120
IC Label	IC: 3585A-BRM120
Model Name	BRM120
Operating Frequency	Downlink 869.2 ~ 893.8 MHz Downlink 1930.2 ~ 1989.8 MHz
Emission Designators	F9W, F1D, GXW, G7W
Modulation(s)	CDMA IS95, CDMA 1X, CDMA2000, CDMA EVDO, W-CDMA, GSM, EDGE GPRS, UMTS, HSPA
User Power Range & Control	There are NO user power controls
Test Item	Pre-Production
DC Voltage and Current into final amplifier	Power Input (downlink) Vcc= 3.5 Vdc @ 49mA
Type of Equipment	Fixed and Mobile



EQUIPMENT LIST

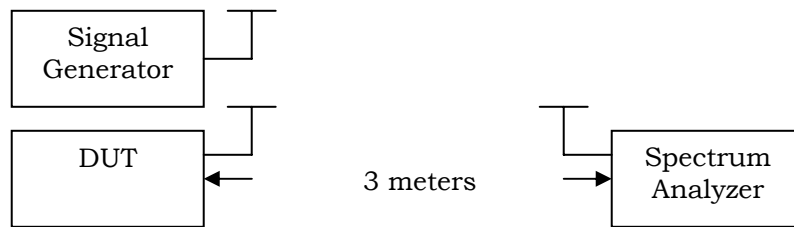
Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
3/10-Meter OATS	TEI	N/A	N/A	Listed 3/20/07	3/19/10
3-Meter OATS	TEI	N/A	N/A	Listed 1/11/06	1/10/09
3-Meter Semi-Anechoic Chamber	Panashield	N/A	N/A	Listed 5/11/07	5/11/10
AC Voltmeter	HP	400FL	2213A14499	CAL 12/29/08	12/29/10
Analyzer Tan Tower Quasi-Peak Adapter	HP	85650A	3303A01690	CAL 11/30/07	11/30/09
Analyzer Tan Tower RF Preselector	HP	85685A	3221A01400	CAL 11/30/07	11/30/09
Analyzer Tan Tower Spectrum Analyzer	HP	8566B Opt 462	3138A07786 3144A20661	CAL 11/30/07	11/30/09
Analyzer Tan Tower Preamplifier	HP	8449B-H02	3008A00372	CAL 11/30/07	11/30/09
Coaxial Cable #64	Semflex Inc.	60637	Timco #64	CHAR 3/30/07	3/30/09
Antenna: Dipole Kit	Electro-Metrics	TDA-30/1-4	152	CAL 3/3/06	3/3/09
Antenna: Dipole Kit	Electro-Metrics	TDA-30/1-4	153	CHAR 4/5/06	4/5/09
Frequency Counter	HP	5385A	2730A03025	CAL 7/6/07	7/6/09
Hygro-Thermometer	Extech	445703	0602	CAL 11/15/07	11/15/09
Antenna: Log-Periodic	Electro-Metrics	LPA-25	1122	CAL 12/1/08	12/1/10
Measuring Tape-7.5M	Kraftixx	7.5M PROFI		CHAR 11/13/07	11/13/09
Modulation Analyzer	HP	8901A	3435A06868	CAL 5/9/07	5/9/09
Digital Multimeter	Fluke	FLUKE-77-3	79510405	CAL 5/14/07	5/14/09
System One	Audio Precision	System One	SYS1-45868	CHAR 2/27/08	2/27/10
Temperature Chamber	Tenney Engineering	TTRC	11717-7	CHAR 4/25/08	4/25/10

TEST PROCEDURE

Radiated Spurious Emissions

The spectrum was scanned from 30 MHz to at least the tenth harmonic of the fundamental. The CW signal was used to perform this test. This test was conducted per ANSI/TIA-603-C: 2004 using the substitution method.

Radiated Spurious Emissions Test Setup Diagram



Equipment placed 80 cm above ground on a rotating table platform.

FIELD STRENGTH OF SPURIOUS EMISSIONS

Rule Parts No.: Pt 2.1053

Requirements: Emissions must be $43 + 10\log(P_o)$ dB below the mean power output of the amplifier:

$$43 + 10\log(0.01) = 23 \text{ dB}$$

$$43 + 10\log(0.005) = 20 \text{ dB}$$

Test Result: The test data indicates the DUT meets the requirements

Test Data Table 1 – Radiated Emissions - CW

Emission Frequency (MHz)	Ant. Polarity (V/H)	Corrected DUT Signal Reading	Coax Loss (dB)	Substitution Antenna (dBd)	dB Below Carrier (dBc)
869.200		0.00			0
1738.400	V	-57.40	1.0892	5.094	63.40
2607.600	H	-62.90	1.2358	6.938	67.20
3476.800	V	-61.10	1.3825	7.538	64.94
4346.000	H	-59.40	1.5292	8.11	62.82
5215.200	V	-57.60	1.6759	8.014	61.26
6084.400	H	-54.10	1.8226	8.996	56.93
6953.600	V	-56.00	1.9693	7.462	60.51
7822.800	V	-55.80	2.1159	7.826	60.09
8692.000	V	-55.70	2.2626	8.65	59.31

[Continued]

Test Data Table 2 – Radiated Emissions - CW

Emission Frequency (MHz)	Ant. Polarity (V/H)	Corrected DUT Signal Reading	Coax Loss (dB)	Substitution Antenna (dBd)	dB Below Carrier (dBc)
880.00	0	0.00	0	0	0.00
1760.00	V	-58.20	1.089	5.094	64.20
2640.00	V	-60.70	1.236	6.938	65.00
3520.00	V	-60.80	1.383	7.538	64.64
4400.00	H	-59.30	1.529	8.11	62.72
5280.00	V	-58.80	1.676	8.014	62.46
6160.00	V	-54.30	1.823	8.996	57.13
7040.00	V	-56.70	1.969	7.462	61.21
7920.00	H	-54.80	2.116	7.826	59.09
8800.00	H	-54.30	2.263	8.65	57.91

Notes: *No other emissions were found up to the 10th harmonics - NOISE FLOOR

Test Data Table 3 – Radiated Emissions - CW

Emission Frequency (MHz)	Ant. Polarity (V/H)	Corrected DUT Signal Reading	Coax Loss (dB)	Substitution Antenna (dBd)	dB Below Carrier (dBc)
893.80	0	0.00	0	0	0.00
1787.60	V	-52.70	1.098	5.1252	58.67
2681.40	V	-63.70	1.249	7.0004	67.95
3575.20	H	-63.40	1.4	7.55	67.25
4469.00	V	-60.60	1.551	8.318	63.83
5362.80	H	-56.70	1.702	8.2012	60.20
6256.60	V	-61.10	1.853	8.8868	64.07
7150.40	H	-57.10	2.004	7.8204	61.28
8044.20	H	-55.80	2.155	7.5164	60.44
8938.00	H	-54.50	2.306	8.65	58.16

[Continued]

Test Data Table 4 – Radiated Emissions – CW

Emission Frequency (MHz)	Ant. Polarity (V/H)	Corrected DUT Signal Reading	Coax Loss (dB)	Substitution Antenna (dBd)	dB Below Carrier (dBc)
1930.20	0	0.00	0	0	0.00
3860.40	H	-64.60	1.446	7.55	65.50
5790.60	V	-59.40	1.771	8.75	59.42
7720.80	H	-54.60	2.096	8.15	55.55
9651.00	V	-53.60	2.421	9.55	53.47
11581.20	V	-49.70	2.747	7.83	51.62

Test Data Table 5 – Radiated Emissions – CW

Emission Frequency (MHz)	Ant. Polarity (V/H)	Corrected DUT Signal Reading	Coax Loss (dB)	Substitution Antenna (dBd)	dB Below Carrier (dBc)
1960.00	0	0.00	0	0	0.00
3920.00	V	-57.10	1.457	7.55	58.01
5880.00	V	-58.40	1.787	8.88	58.31
7840.00	V	-57.80	2.118	7.8	59.12
9800.00	H	-49.70	2.448	9.33	49.82
11760.00	H	-48.90	2.779	8.33	50.35

Test Data Table 6 – Radiated Emissions – CW

Emission Frequency (MHz)	Ant. Polarity (V/H)	Corrected DUT Signal Reading	Coax Loss (dB)	Substitution Antenna (dBd)	dB Below Carrier (dBc)
1989.80	0	0.00	0	0	0.00
3979.60	H	-58.10	1.457	7.55	59.01
5969.40	H	-60.70	1.787	8.88	60.61
7959.20	H	-57.60	2.118	7.8	58.92
9949.00	H	-50.80	2.448	9.33	50.92
11938.80	V	-50.70	2.779	8.33	52.15

Notes: *No other emissions were found up to the 10th harmonics - NOISE FLOOR