

DATE: 03 May 2009

I.T.L. (PRODUCT TESTING) LTD.

FCC Radio Test Report

for

Mobile Access Networks

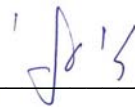
Equipment under test:

Mobile Telephone In-Building Distribution System

1200-AWS-AO

Written by: 
D. Shidlow, Documentation

Approved by: 
A. Sharabi, Test Engineer

Approved by: 
I. Raz, EMC Laboratory Manager

This report must not be reproduced, except in full, without the written
permission of I.T.L. (Product Testing) Ltd.

This report relates only to items tested.

Measurement/Technical Report for
Mobile Access Networks
Mobile Telephone In-Building Distribution System

1200-AWS-AO

FCC ID:OJFMA1200AWS

This report concerns:

Original Grant: X

Class II change:

Class I change:

Equipment type:

AWS Licensed Transceiver

Limits used:

47CFR Parts 2; 27

Measurement procedure used is ANSI C63.4-2003.

Substitution Method used as in ANSI/TIA-603-B: 2002

Application for Certification

Applicant for this device:

prepared by:

(different from "prepared by")

Ishaishou Raz

Steve Blum

ITL (Product Testing) Ltd.

Mobile Access Networks

Kfar Bin Nun

8391 Old Courthouse Rd., Suite #300

D.N. Shimshon 99780

Vienna, VA. 22182

Israel

U.S.A.

e-mail sraz@itl.co.il

Tel: +1-541-758-2880

Fax: +1-703-848-0260

e-mail: sblum@mobileaccess.com

TABLE OF CONTENTS

1.	GENERAL INFORMATION	4
1.1	Administrative Information	4
1.2	List of Accreditations	5
1.3	Product Description	6
1.4	Test Methodology	6
1.5	Test Facility	6
1.6	Measurement Uncertainty	6
2.	SYSTEM TEST CONFIGURATION	7
2.1	Justification	7
2.2	EUT Exercise Software	7
2.3	Special Accessories	7
2.4	Equipment Modifications	7
2.5	Configuration of Tested System	8
3.	RF POWER OUTPUT	9
3.1	Test Specification	9
3.2	Test procedure	9
3.3	Results table	12
3.4	Test Equipment Used	13
4.	OCCUPIED BANDWIDTH	14
4.1	Test Specification	14
4.2	Test Procedure	14
4.3	Results Table	20
4.4	Test Equipment Used	21
5.	SPURIOUS EMISSIONS AT ANTENNA TERMINALS	22
5.1	Test Specification	22
5.2	Test procedure	22
5.3	Results table	37
5.4	Test Equipment Used	38
6.	BAND EDGE SPECTRUM	39
6.1	Test Specification	39
6.2	Test procedure	39
6.3	Results table	41
6.4	Test Equipment Used	42
7.	SPURIOUS RADIATED EMISSION	43
7.1	Test Specification	43
7.2	Test Procedure	43
7.3	Test Results	44
7.4	Test Instrumentation Used, Radiated Measurements	45
8.	APPENDIX A - CORRECTION FACTORS	46
8.1	Correction factors for CABLE	46
8.2	Correction factors for CABLE	47
8.3	Correction factors for CABLE	48
8.4	Correction factors for LOG PERIODIC ANTENNA	49
8.5	Correction factors for Double-Ridged Waveguide Horn	50

1. General Information

1.1 Administrative Information

Manufacturer:	Mobile Access Networks
Manufacturer's Address:	8391 Old Courthouse Rd. Suite #300 Vienna, VA 22182 U.S.A. Tel: +1-541-758-2880 Fax: +1-703-848-0260
Manufacturer's Representative:	Steve Blum
Equipment Under Test (E.U.T):	Mobile Telephone In-Building Distribution System
Equipment Model No.:	1200-AWS-AO
Equipment Serial No.:	09084F8
Date of Receipt of E.U.T:	26.04.09
Start of Test:	26.04.09
End of Test:	28.04.09
Test Laboratory Location:	I.T.L (Product Testing) Ltd. Kfar Bin Nun, ISRAEL 99780
Test Specifications:	FCC Parts 2; 27

1.2 List of Accreditations

The EMC laboratory of I.T.L. is accredited by the following bodies:

1. The American Association for Laboratory Accreditation (A2LA) (U.S.A.), Certificate No. 1152.01.
2. The Federal Communications Commission (FCC) (U.S.A.), Registration No. 90715.
3. The Israel Ministry of the Environment (Israel), Registration No. 1104/01.
4. The Voluntary Control Council for Interference by Information Technology Equipment (VCCI) (Japan), Registration Numbers: C-1350, R-1285.
5. Industry Canada (Canada), IC File No.: 46405-4025; Site No. IC 4025B-1.
6. TUV Product Services, England, ASLLAS No. 97201.
7. Nemko (Norway), Authorization No. ELA 207.

I.T.L. Product Testing Ltd. is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this test report have been determined in accordance with I.T.L.'s terms of accreditation unless stated otherwise in the report.

1.3 *Product Description*

The MobileAccess AWS 1200 Add-on module is a high power module, supporting a single frequency band, 2110-2155 MHz in the Downlink mode and 1710-1755 MHz in the Uplink mode.

It is designed to be integrated with a host *RHU 1000* module. The RHU 1000 module provides the following functionality for both units:

- Optical interface (to the BU) and conversion
- RF interface (to antennas) and conversion
- Control signals

Emission Designators: IS-95 CDMA: F9W, W-CDMA: F9W

1.4 *Test Methodology*

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4: 2003. Radiated testing was performed at an antenna to EUT distance of 3 meters.

1.5 *Test Facility*

The radiated emissions tests were performed at I.T.L.'s testing facility at Kfar Bin-Nun, Israel. This site is a FCC listed test laboratory (FCC Registration No. 90715, date of listing 22 August 2006).

I.T.L.'s EMC Laboratory is also accredited by A2LA, certificate No. 1152.01.

1.6 *Measurement Uncertainty*

Radiated Emission

The Open Site complies with the ± 4 dB Normalized Site Attenuation requirements of ANSI C63.4-2003. In accordance with Paragraph 5.4.6.1 of this standard, this tolerance includes instrumentation calibration errors, measurement technique errors, and errors due to site anomalies.

2. System Test Configuration

2.1 Justification

The test setup was configured to closely resemble the standard installation.

2.2 EUT Exercise Software

The E.U.T is operated by the Embedded SW version 3.5 b00 and managed by the NMS SW version 22.05.01. The SW is used by the professional installers to operate, maintain and calibrate the unit. The main features are enabling and disabling transmission and adjusting unit output power per a given input signal.

2.3 Special Accessories

No special accessories were needed in order to achieve compliance.

2.4 Equipment Modifications

No modifications were necessary in order to achieve compliance.

2.5 Configuration of Tested System

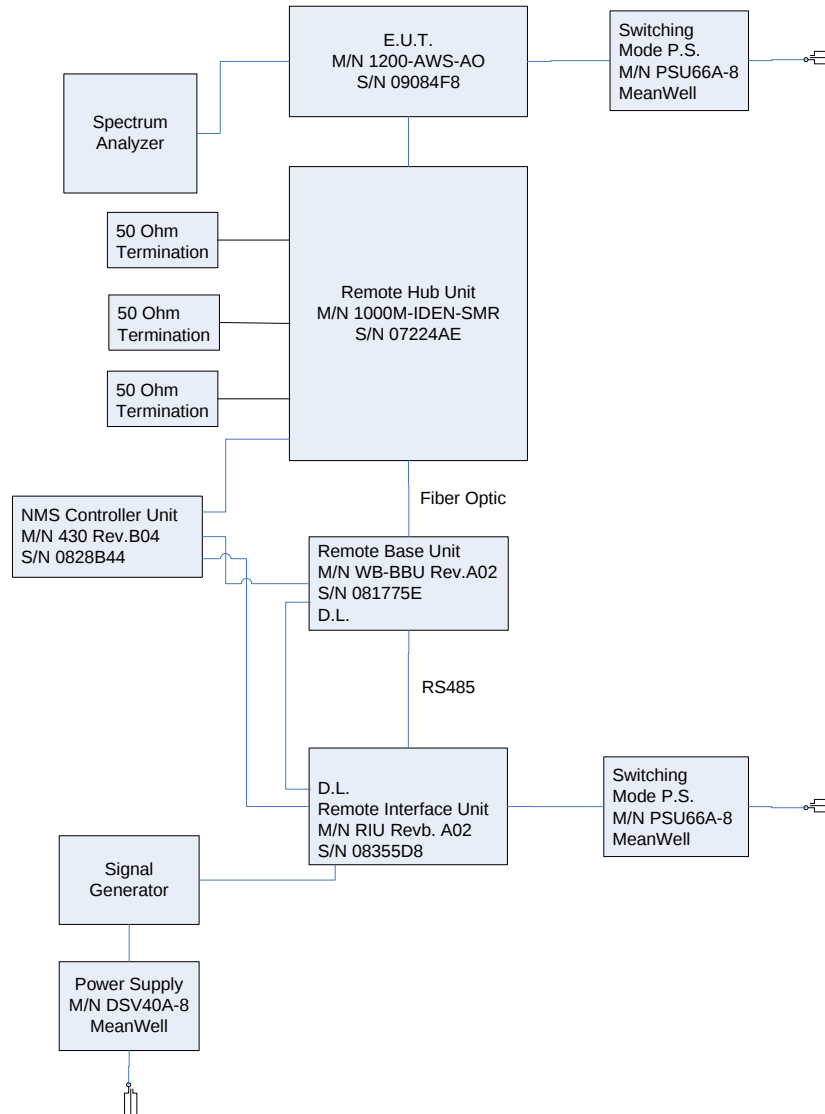


Figure 1. Test Set-up

3. RF Power Output

3.1 Test Specification

FCC Part 27, Sub-part C (27.50(d))

3.2 Test procedure

The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an external attenuator (20 dB) and an appropriate coaxial cable (1 dB). The E.U.T. RF output was CDMA and WCDMA modulated. Special attention was taken to prevent Spectrum Analyzer RF input overload. The Spectrum Analyzer was set to 1.0 MHz RBW.

Emission Designators: IS-95 CDMA: F9W, W-CDMA: F9W

	emission bandwidth of 1 MHz or less (EIRP)	emission bandwidth greater than 1 MHz (EIRP)
(d)(1) any county with population density of 100 or fewer persons per square mile	3280 watts	3280 watts/MHz
any geographic location other than that described in paragraph (d)(1)	1640 watts	1640 watts/MHz

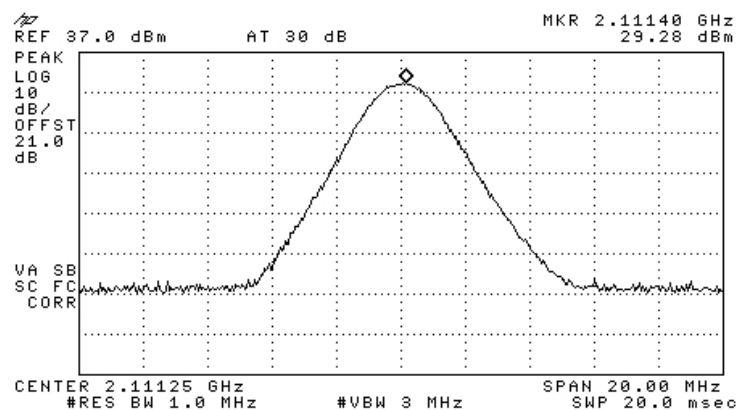


Figure 2.— CDMA

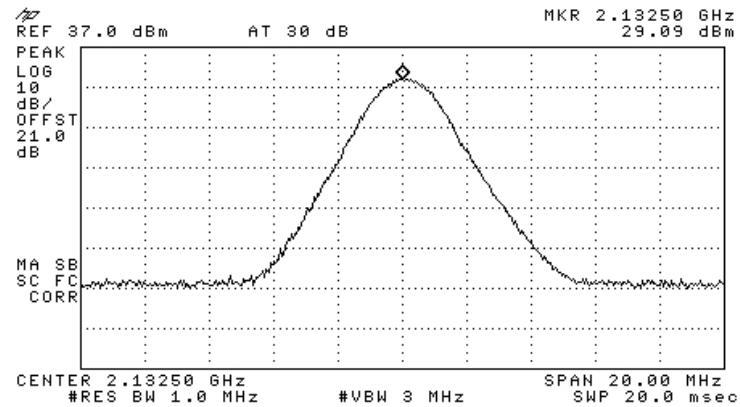


Figure 3.— CDMA

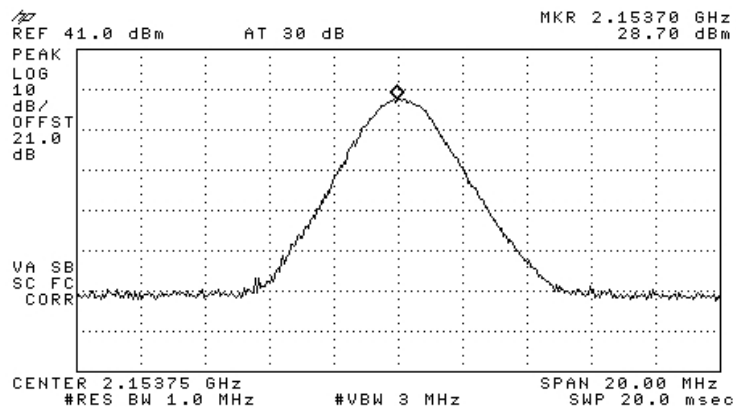


Figure 4.— CDMA

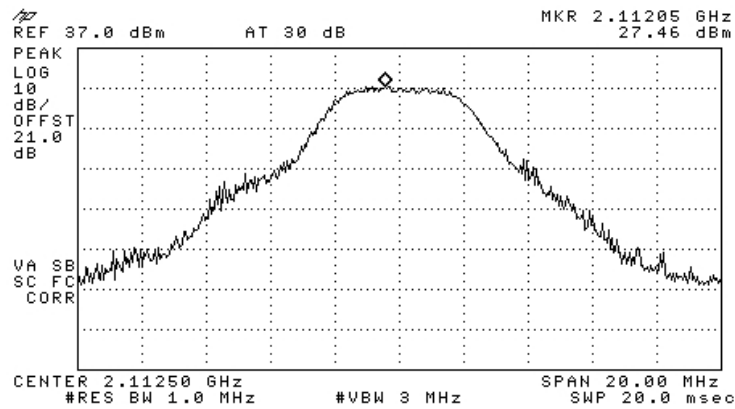


Figure 5.— WCDMA

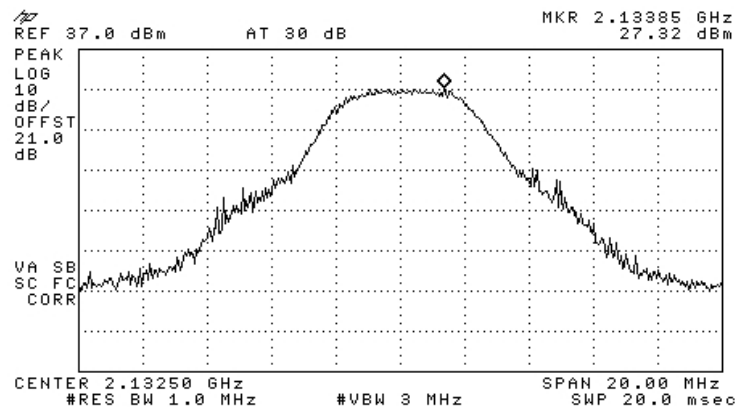


Figure 6.— WCDMA

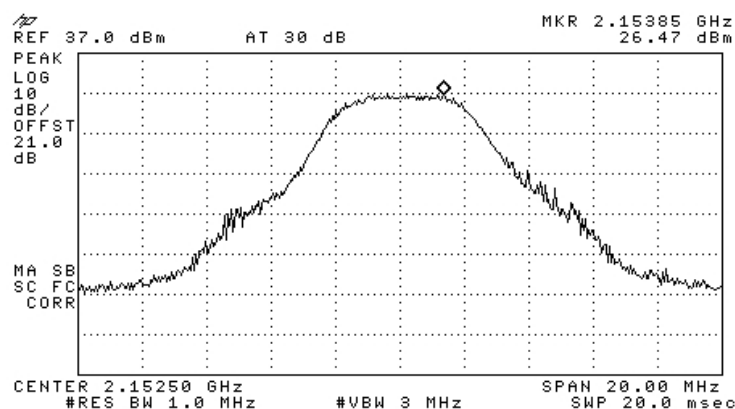


Figure 7.— WCDMA

3.3 Results table

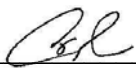
E.U.T. Description: Mobile Telephone In-Building Distribution System
Model No.: 1200-AWS-AO
Serial Number: 09084F8
Specification: FCC Part 27, Sub-part C, Section 27.50 (d)

Modulation	Operation Frequency (MHz)	Reading (dBm)	Reading (W)
CDMA	2111.25	29.28	0.8472
CDMA	2132.50	29.09	0.8109
CDMA	2153.75	28.70	0.7413
WCDMA	2112.50	27.46	0.5572
WCDMA	2132.50	27.32	0.5395
WCDMA	2152.50	26.47	0.4436

Figure 8 RF Power Output

JUDGEMENT: Passed by 1638.15 W

TEST PERSONNEL:

Tester Signature: 

Date: 03.05.09

Typed/Printed Name: A. Sharabi

3.4 Test Equipment Used.

RF Power Output

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibr.	Period
Spectrum Analyzer	HP	8529L	3826A01204	March 17, 2009	1 year
Signal Generator	HP	E4432B ESG-D	GB38450502	28 May 2008	1 year
Attenuator	HP	8491A	58267	30 June 2008	1 year
Cable	Rhophase	KPS-5000-KPS	A1674	23 April 2009	1 year

Figure 9 Test Equipment Used

4. Occupied Bandwidth

4.1 Test Specification

FCC Part 2, Section 1049

4.2 Test Procedure

The E.U.T. was set to the applicable test frequency with CDMA and WCDMA modulation. The E.U.T. antenna terminal was connected to the spectrum analyzer through an external attenuator (at the output test) and an appropriate coaxial cable. The spectrum analyzer was set to proper resolution B.W.

The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limit, the mean powers radiated are each equal to 0.5% of the total mean power radiated by a given emission.

Occupied bandwidth measured was repeated in the input terminal of the E.U.T.

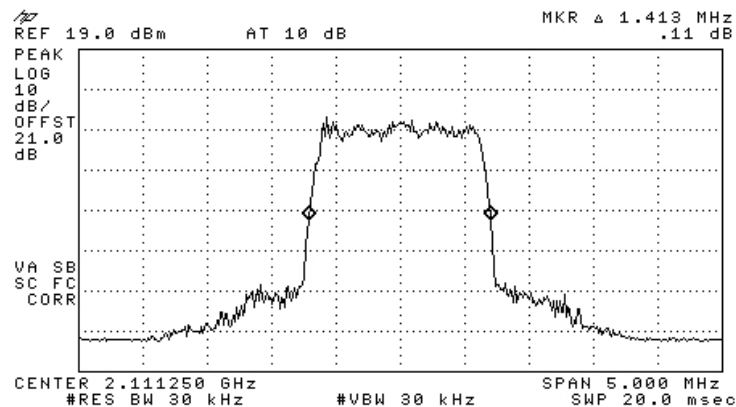


Figure 10.— CDMA IN

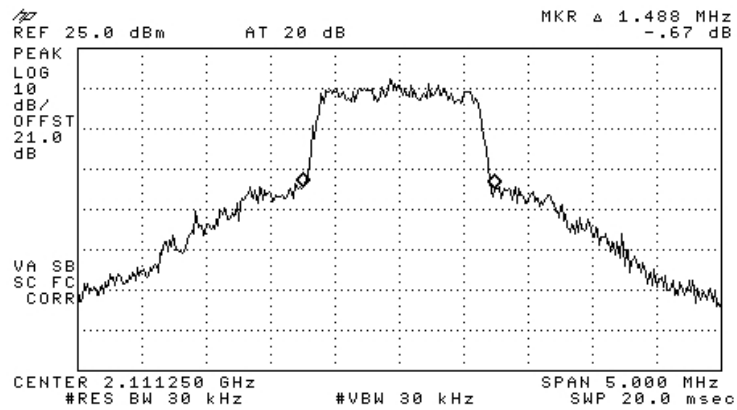


Figure 11.— CDMA OUT

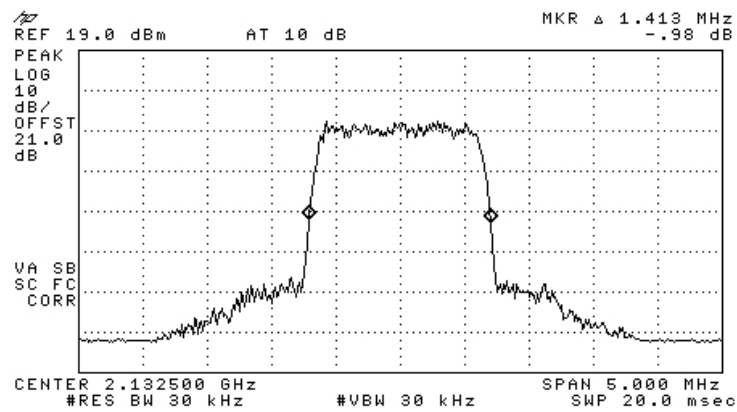


Figure 12.— CDMA IN

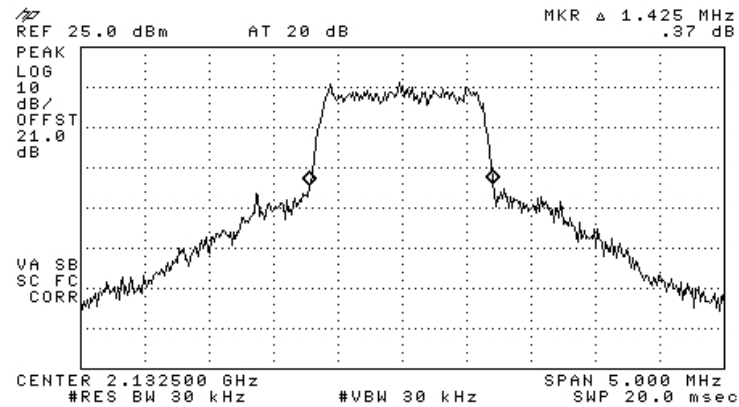


Figure 13.— CDMA OUT

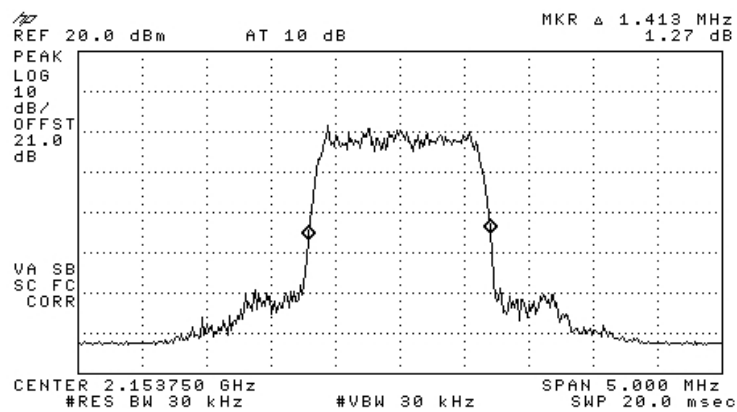


Figure 14.— CDMA IN

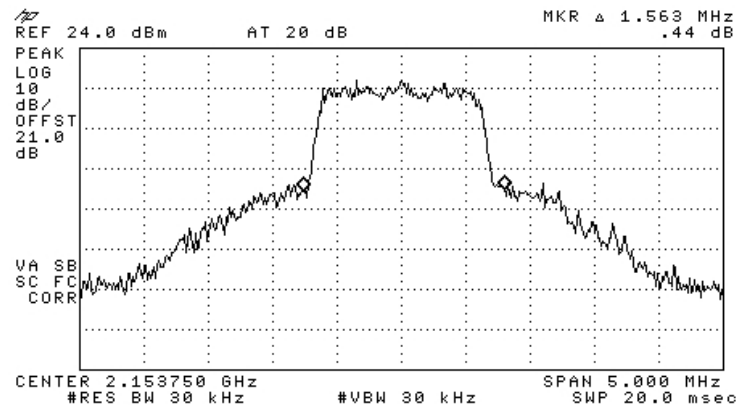


Figure 15.— CDMA OUT

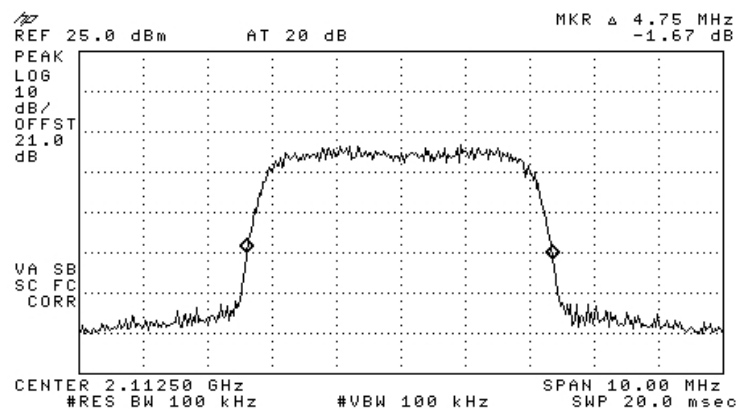


Figure 16.— WCDMA IN

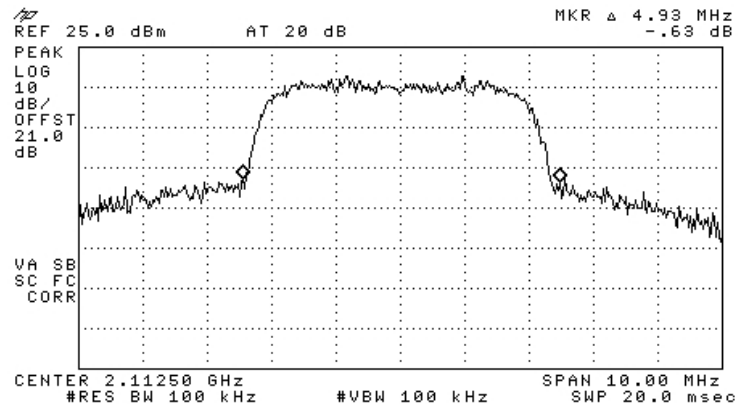


Figure 17.— WCDMA OUT

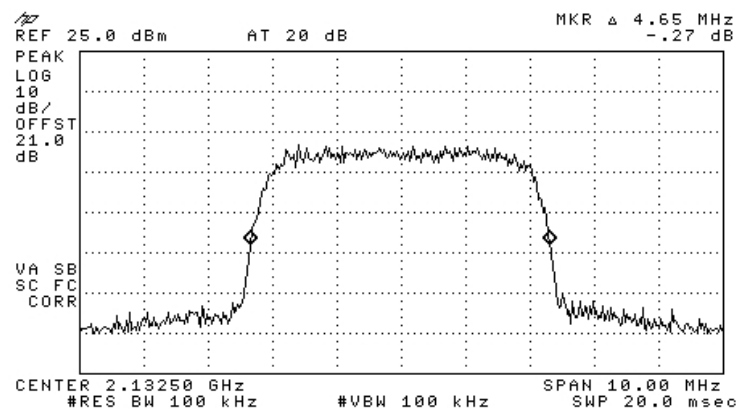


Figure 18.— WCDMA IN

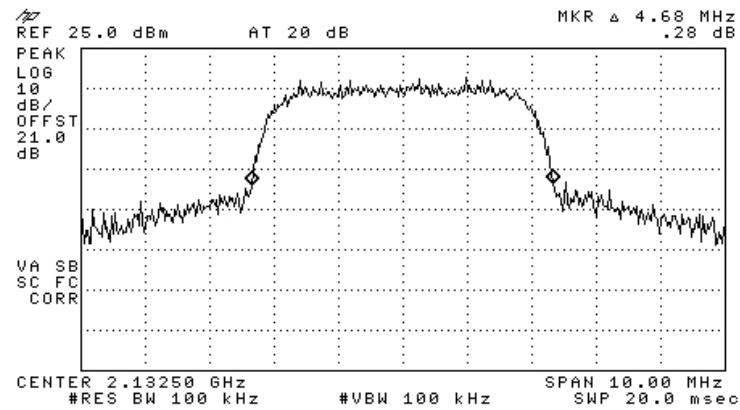


Figure 19.— WCDMA OUT

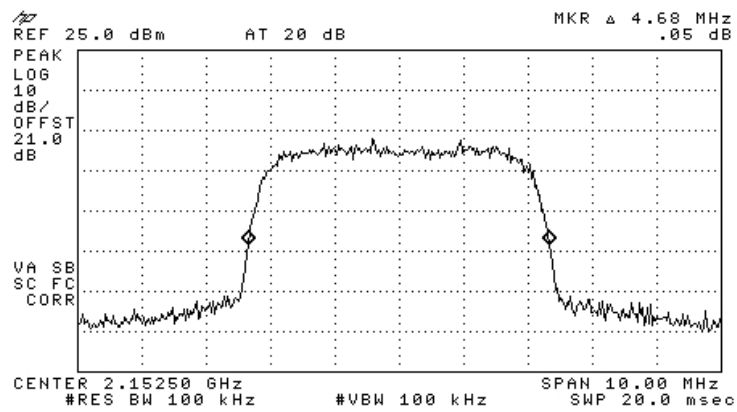


Figure 20.— WCDMA IN

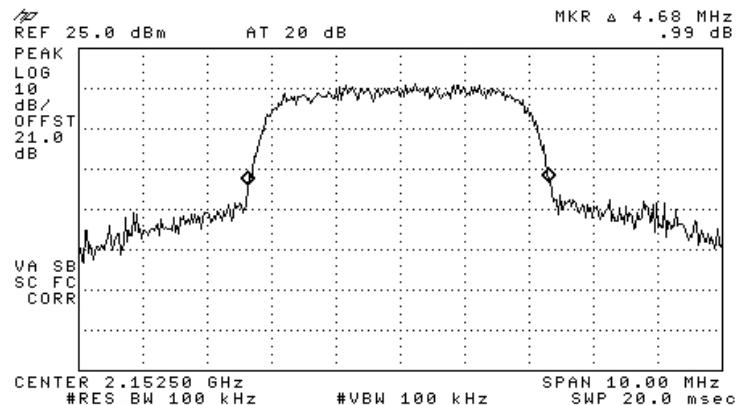


Figure 21.— WCDMA OUT

4.3 Results Table

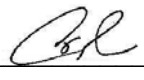
E.U.T. Description: Mobile Telephone In-Building Distribution System
Model No.: 1200-AWS-AO
Serial Number: 09084F8
Specification: FCC Part 2, Section 1049

Modulation		Operating Frequency (MHz)	Reading (26dBc) (MHz)
CDMA	Input	2111.25	1.413
	Output	2111.25	1.488
	Input	2132.50	1.413
	Output	2132.50	1.425
	Input	2153.75	1.413
	Output	2153.75	1.563
WCDMA	Input	2112.50	4.75
	Output	2112.50	4.93
	Input	2132.50	4.65
	Output	2132.50	4.68
	Input	2152.50	4.68
	Output	2152.50	4.68

Figure 22 Occupied Bandwidth

JUDGEMENT: Passed

TEST PERSONNEL:

Tester Signature: 

Date: 03.05.09

Typed/Printed Name: A. Sharabi

4.4 Test Equipment Used.

Occupied Bandwidth

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibr.	Period
Spectrum Analyzer	HP	8592L	3826A01204	March 17, 2009	1 year
Signal Generator	HP	E4432B ESG-D	GB38450502	28 May 2008	1 year
Attenuator	HP	8491A	58267	30 June 2008	1 year
Cable	Rhophase	KPS-5000-KPS	A1674	23 April 2009	1 year

Figure 23 Test Equipment Used

5. Spurious Emissions at Antenna Terminals

5.1 Test Specification

FCC Part 27, Sub-part C, Section 27.53 (g)

5.2 Test procedure

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + \log(P)$ dB, yielding -13 dBm.

The E.U.T. antenna terminal was connected to the spectrum analyzer through an external attenuator and an appropriate coaxial cable (21.0 dB).

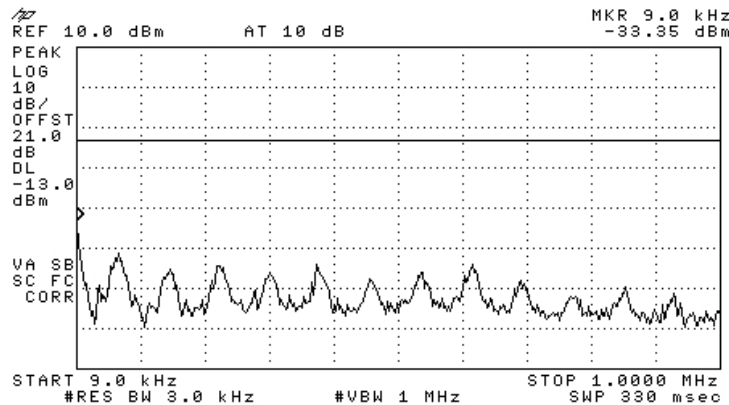


Figure 24.— 2111.25 MHz CDMA

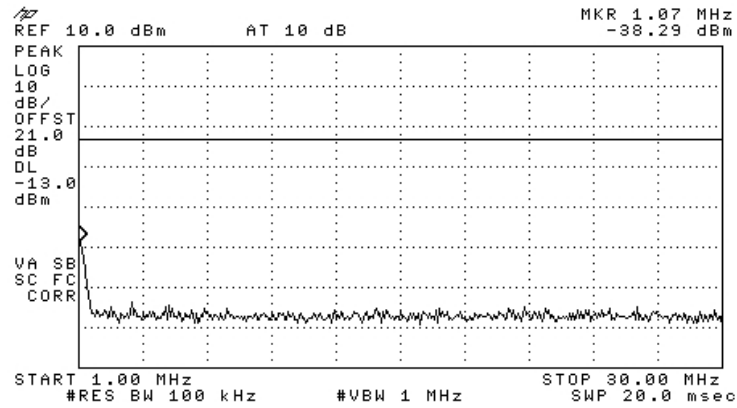


Figure 25.— 2111.25 MHz CDMA

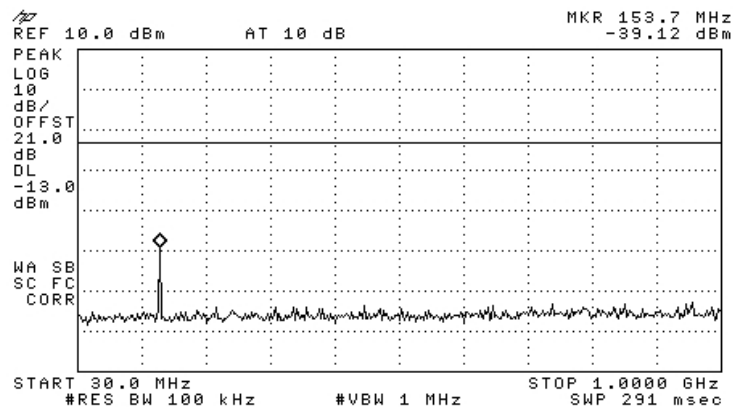


Figure 26.— 2111.25 MHz CDMA

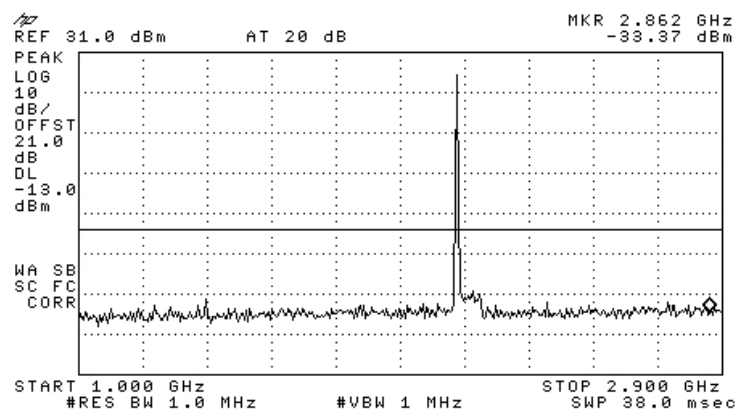


Figure 27.— 2111.25 MHz CDMA

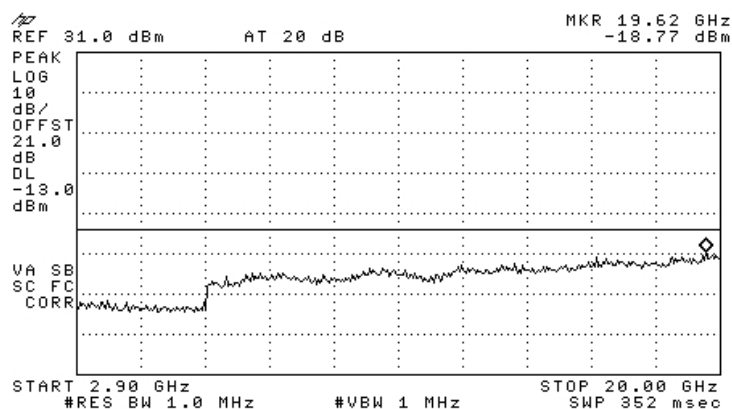


Figure 28.— 2111.25 MHz CDMA

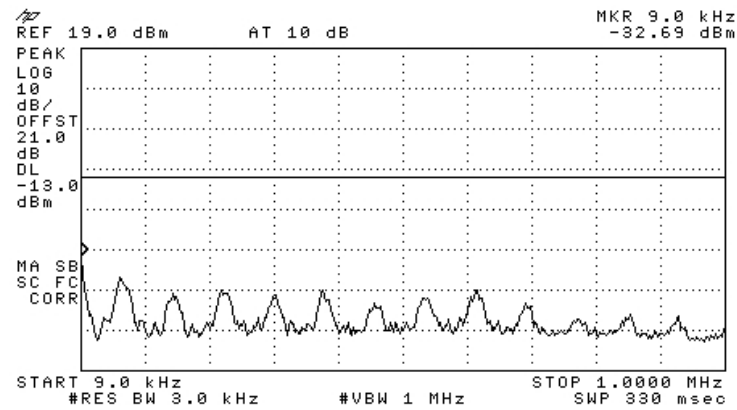


Figure 29.— 2132.50 MHz CDMA

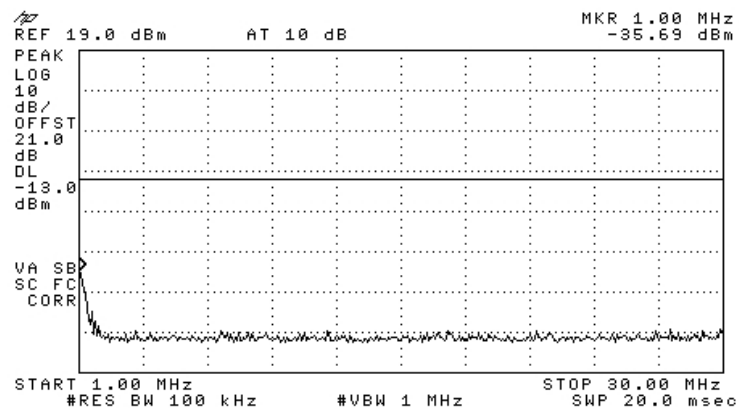


Figure 30.— 2132.50 MHz CDMA

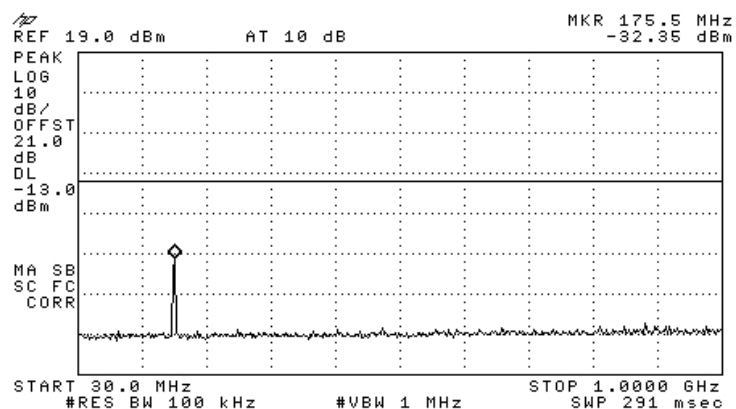


Figure 31.— 2132.50 MHz CDMA

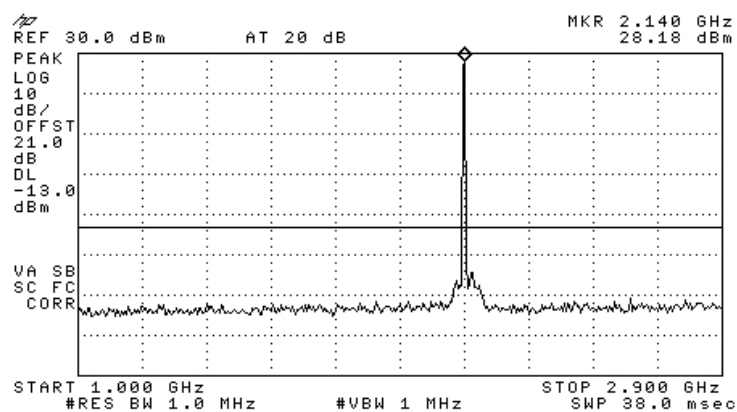


Figure 32.— 2132.50 MHz CDMA

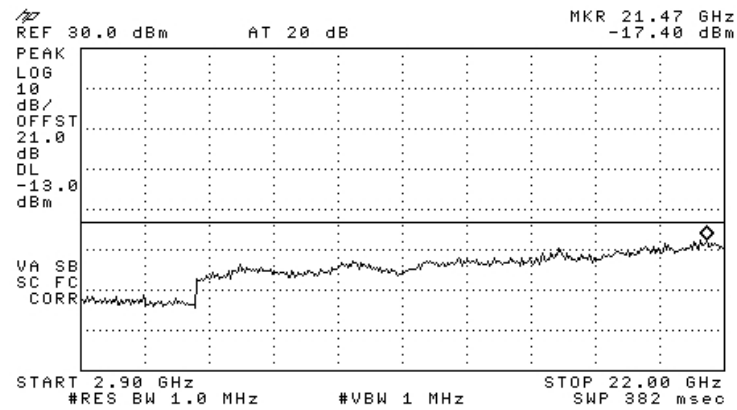


Figure 33.— 2132.50 MHz CDMA

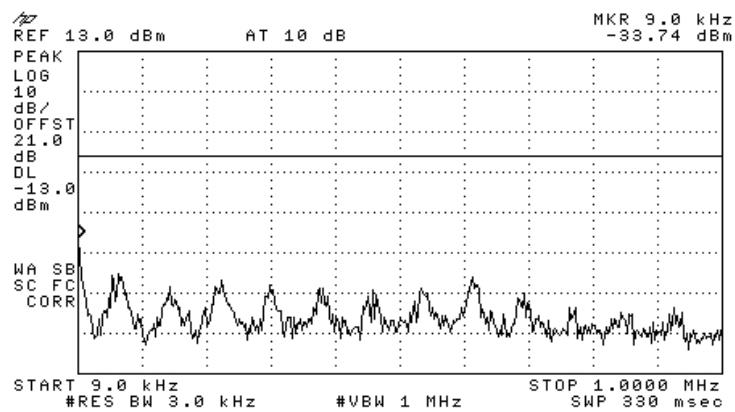


Figure 34.— 2153.75 MHz CDMA

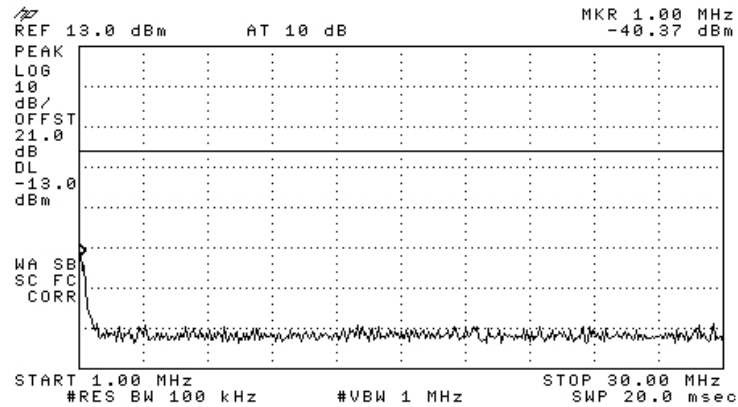


Figure 35.— 2153.75 MHz CDMA

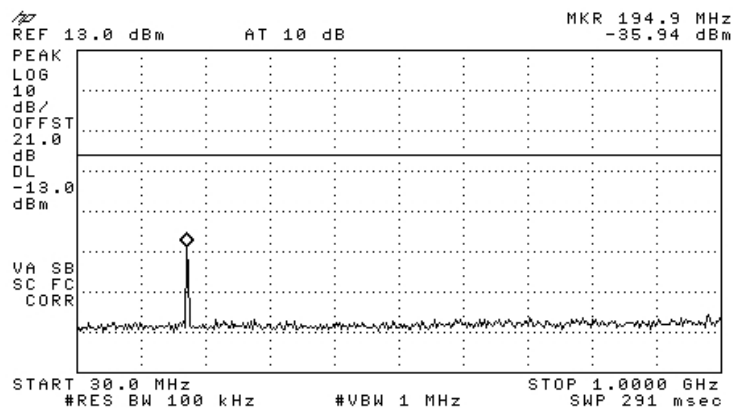


Figure 36.— 2153.75 MHz CDMA

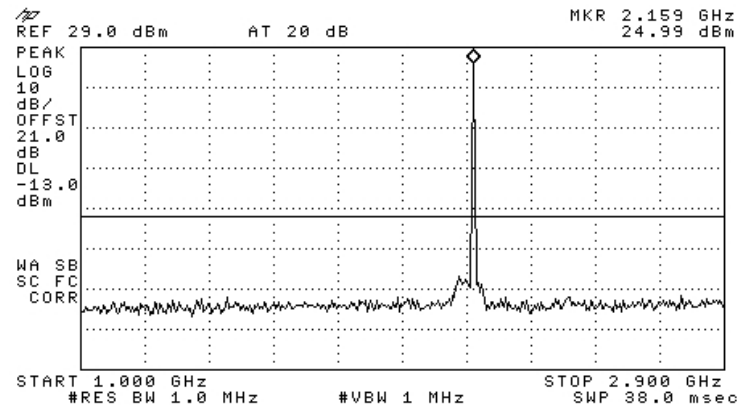


Figure 37.— 2153.75 MHz CDMA

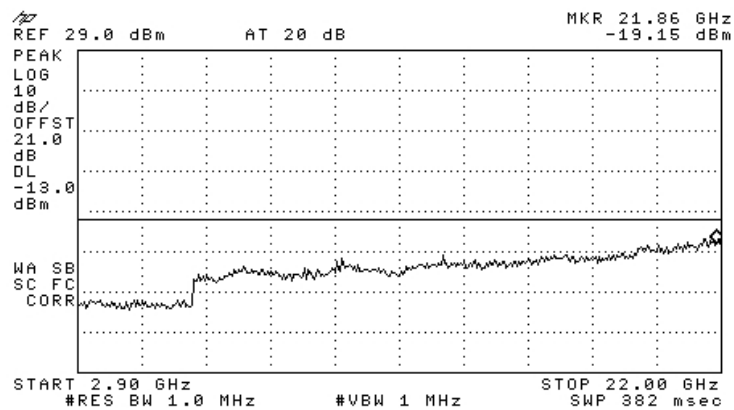


Figure 38.— 2153.75 MHz CDMA

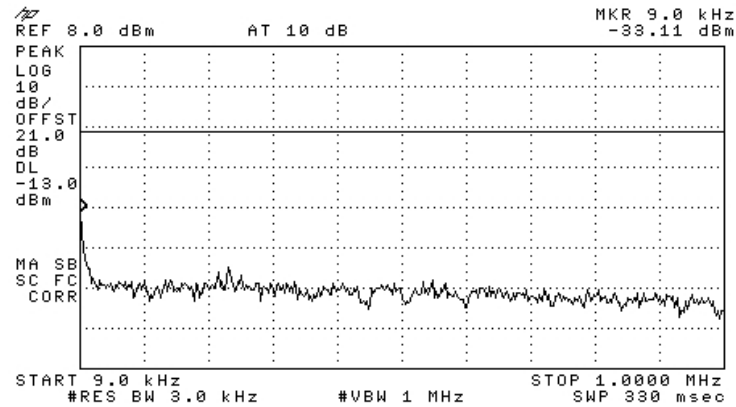


Figure 39.— 2112.50 MHz WCDMA

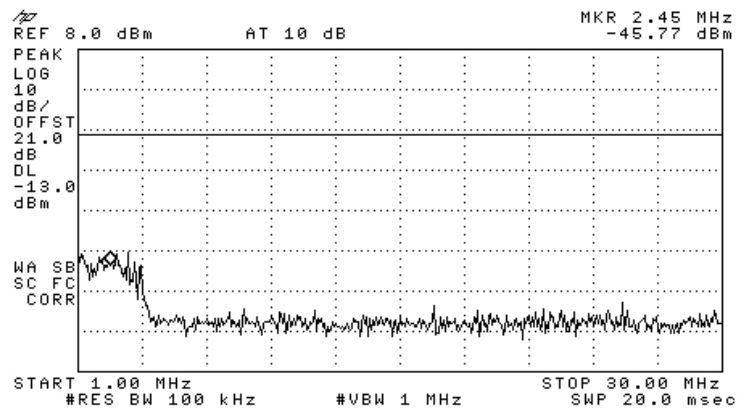


Figure 40.— 2112.50 MHz WCDMA

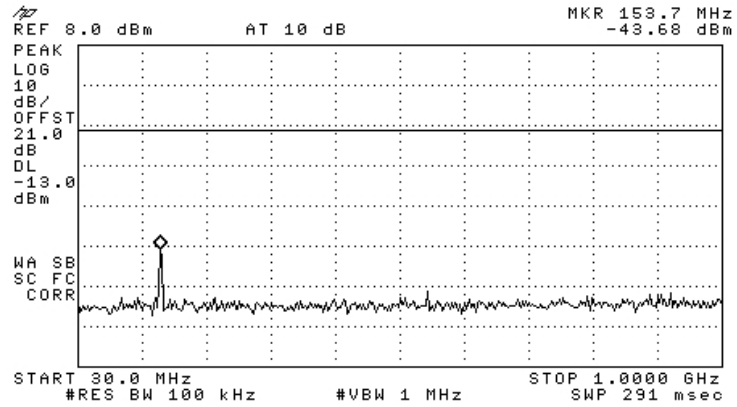


Figure 41.— 2112.50 MHz WCDMA

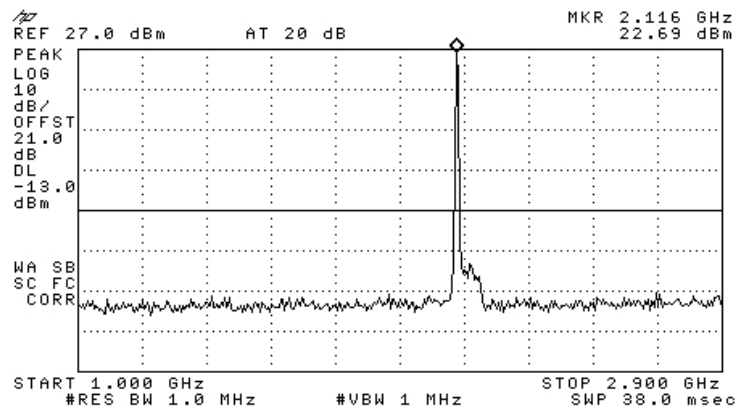


Figure 42.— 2112.50 MHz WCDMA

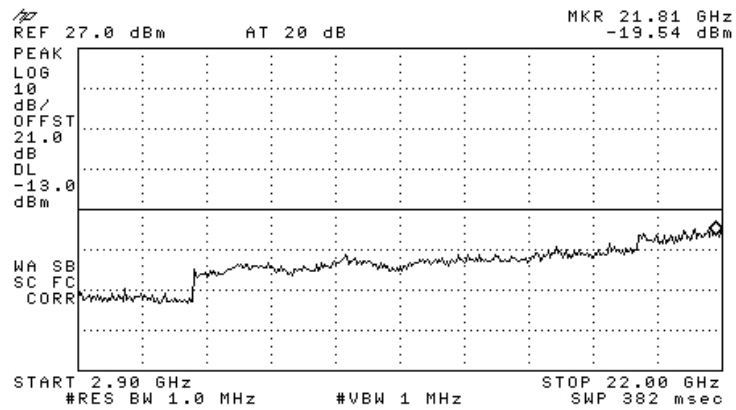


Figure 43.— 2112.50 MHz WCDMA

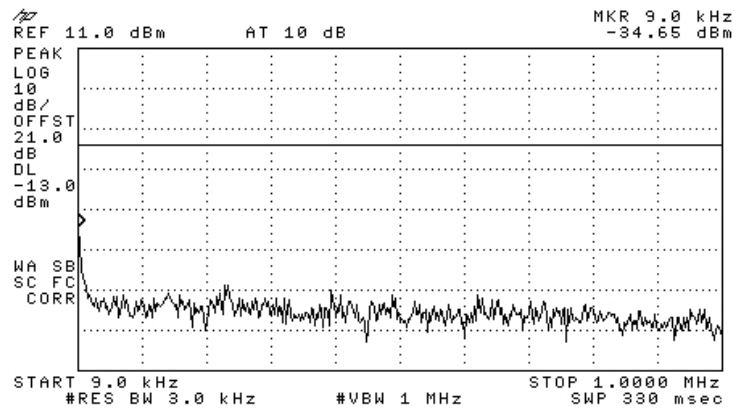


Figure 44.— 2132.50 MHz WCDMA

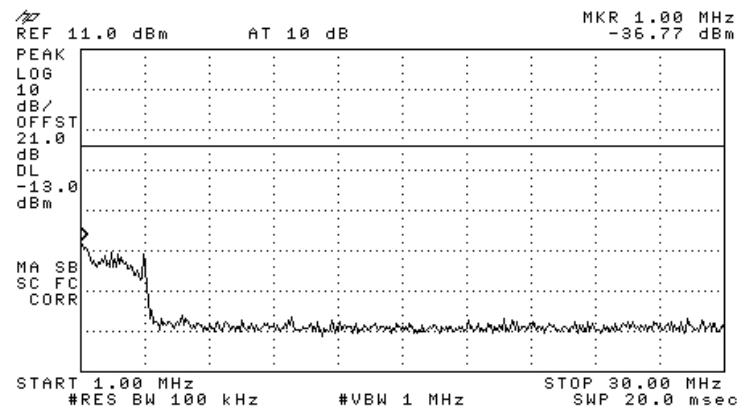


Figure 45.— 2132.50 MHz WCDMA

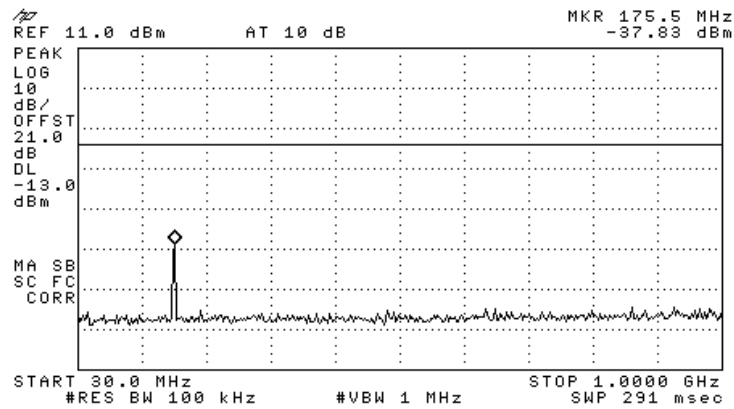


Figure 46.— 2132.50 MHz WCDMA

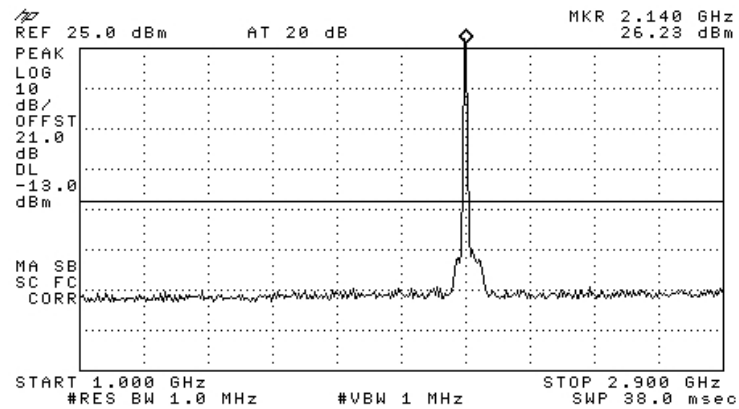


Figure 47.— 2132.50 MHz WCDMA

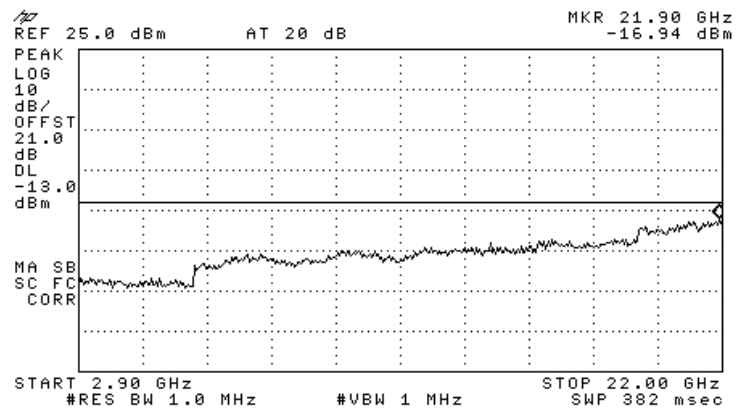


Figure 48.— 2132.50 MHz WCDMA

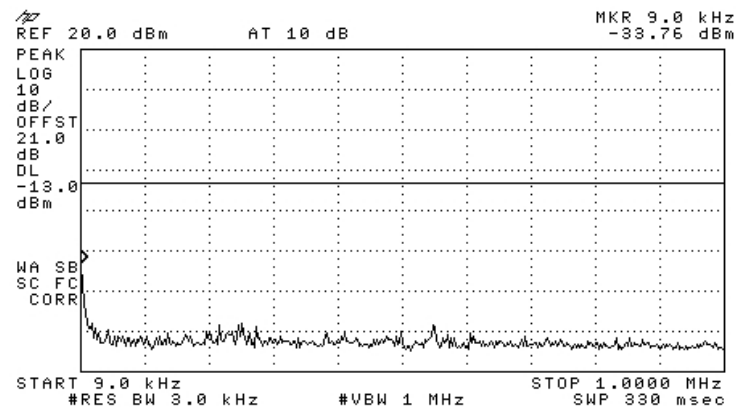


Figure 49.— 2152.50 MHz WCDMA

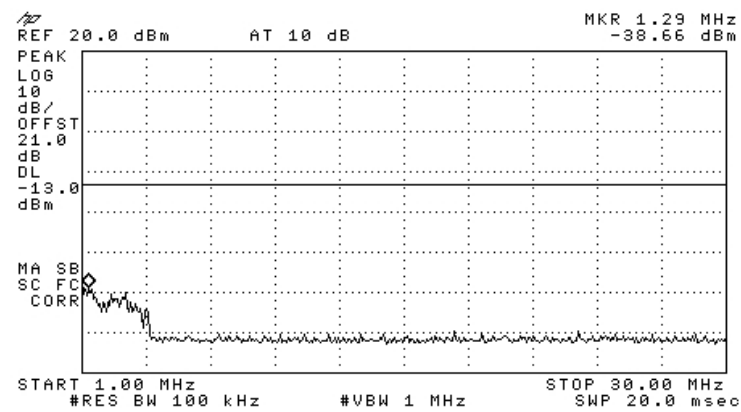


Figure 50.— 2152.50 MHz WCDMA

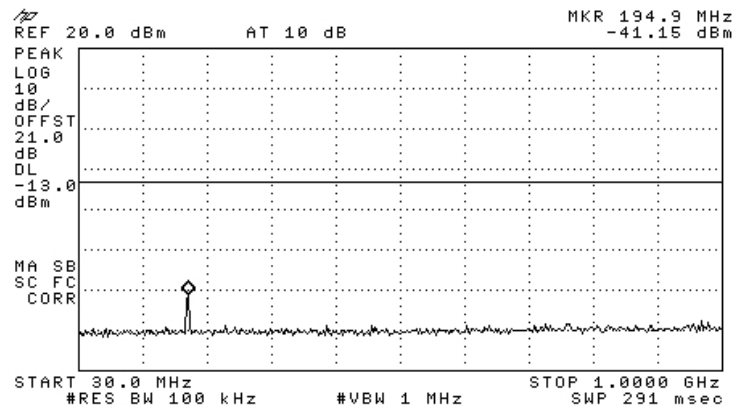


Figure 51.— 2152.50 MHz WCDMA

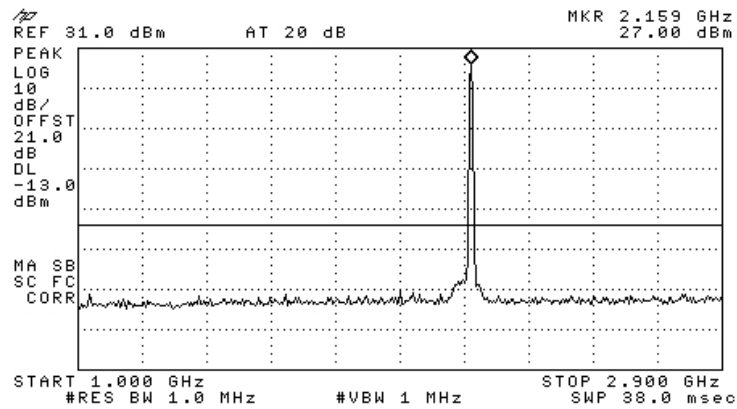


Figure 52.— 2152.50 MHz WCDMA

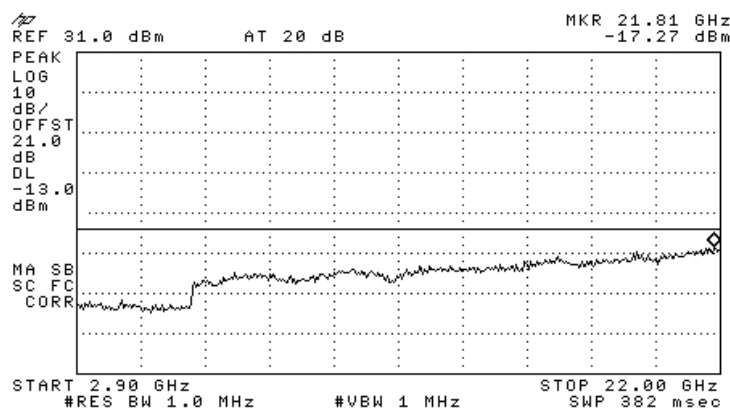


Figure 53.— 2152.50 MHz WCDMA

5.3 Results table

E.U.T. Description: Mobile Telephone In-Building Distribution System
Model No.: 1200-AWS-AO
Serial Number: 09084F8
Specification: FCC Part 27, Sub-part C, Section 27.53 (g)

	Operation Frequency (MHz)	Reading (dBm)	Specification (dBm)	Margin (dB)
CDMA	2111.25	-5.77	-13.0	-7.23
CDMA	2132.50	-4.40	-13.0	-8.60
CDMA	2153.75	-6.15	-13.0	-6.85
WCDMA	2112.50	-6.54	-13.0	-6.46
WCDMA	2132.50	-3.94	-13.0	-9.06
WCDMA	2152.50	-4.27	-13.0	-8.73

Figure 54 Spurious Emissions at Antenna Terminals Results

JUDGEMENT: Passed by 6.46 dB

TEST PERSONNEL:

Tester Signature: 

Date: 03.05.09

Typed/Printed Name: A. Sharabi

5.4 Test Equipment Used.

Spurious Emissions at Antenna Terminals

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibr.	Period
Spectrum Analyzer	HP	8592L	3826A01204	March 17, 2009	1 year
Signal Generator	HP	E4432B ESG-D	GB38450502	28 May 2008	1 year
Attenuator	HP	8491A	58267	30 June 2008	1 year
Cable	Rhophase	KPS-5000-KPS	A1675	23 April 2009	1 year

Figure 55 Test Equipment Used

6. Band Edge Spectrum

6.1 Test Specification

FCC Part 27, Sub-part C, Section 27.53 (m 4-6)

6.2 Test procedure

Enclosed are spectrum analyzer plots for the lowest operation frequency and the highest operation frequency in which the E.U.T. is planned to be used.

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + \log(P)$ dB, yielding -13dBm .

The E.U.T. antenna terminal was connected to the spectrum analyzer through an external attenuator and an appropriate coaxial cable (21.0 dB).

The spectrum analyzer was set to 30kHz R.B.W.

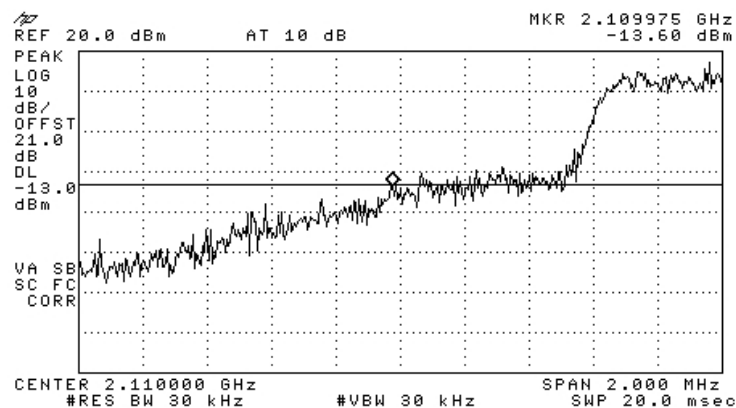


Figure 56.— CDMA

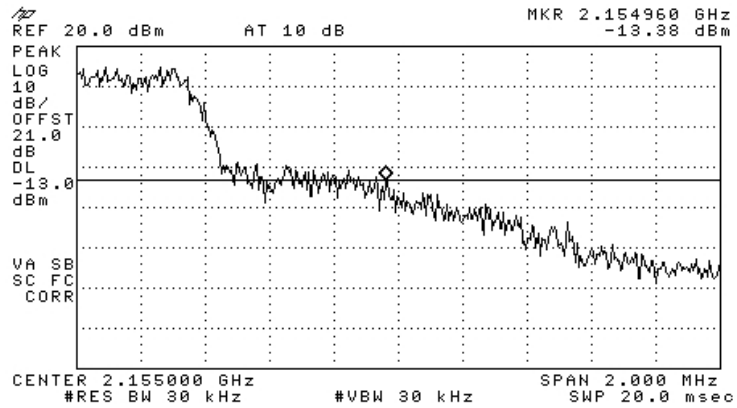


Figure 57.— CDMA

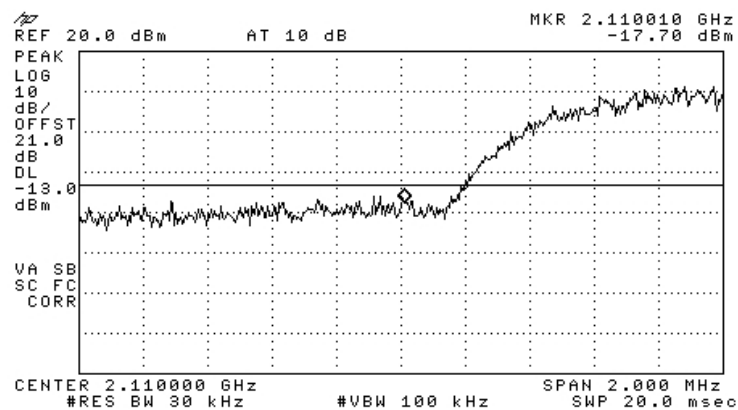


Figure 58.— WCDMA

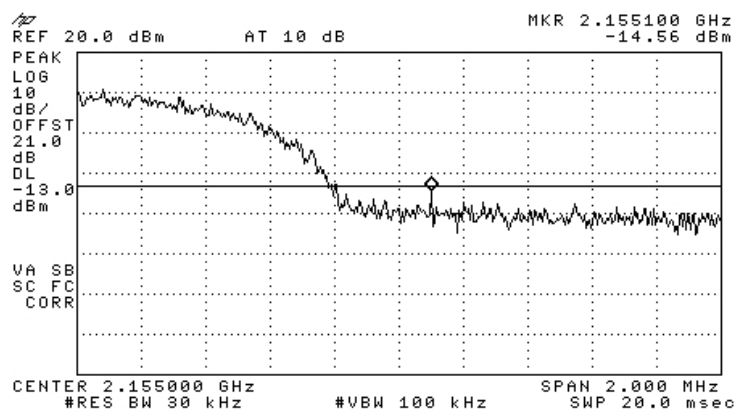


Figure 59.— WCDMA

6.3 Results table

E.U.T. Description: Mobile Telephone In-Building Distribution System
 Model No.: 1200-AWS-AO
 Serial Number: 09084F8
 Specification: FCC Part 27, Sub-part C, Section 27.53 (m 4-6)

Modulation	Operation Frequency (MHz)	Band Edge Frequency (MHz)	Reading (dBm)	Specification (dBm)
CDMA	2110.00	2109.975	-13.60	-13.0
CDMA	2155.00	2154.960	-13.38	-13.0
WCDMA	2110.00	2110.010	-17.70	-13.0
WCDMA	2155.00	2155.100	-14.56	-13.0

Figure 60 Band Edge Spectrum Results

JUDGEMENT: Passed

TEST PERSONNEL:

Tester Signature: 

Date: 03.05.09

Typed/Printed Name: A. Sharabi

6.4 Test Equipment Used.

Band Edge Spectrum

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibr.	Period
Spectrum Analyzer	HP	8592L	3826A01204	March 17, 2009	1 year
Signal Generator	HP	E4432B ESG-D	GB38450502	28 May 2008	1 year
Attenuator	HP	8491A	58267	30 June 2008	1 year
Cable	Rhophase	KPS-5000-KPS	A1674	23 April 2009	1 year

Figure 61 Test Equipment Used

7. Spurious Radiated Emission

7.1 Test Specification

FCC, Part 27, Sub-part C Section 27.53 (g)

7.2 Test Procedure

The test method was based on ANSI/TIA-603-B: 2002, Section 2.2.12

Unwanted Emissions: Radiated Spurious.

The power of any emission outside of the authorized operating frequency ranges (2110-2155 MHz) must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB, yielding -13dBm .

- (a) The E.U.T. operation mode and test set-up are as described in Section 3. A preliminary measurement to characterize the E.U.T was performed inside the shielded room at a distance of 3 meters, using peak detection mode and broadband antennas. The preliminary measurements produced a list of the highest emissions. The E.U.T was then transferred to the open site, and placed on a remote-controlled turntable. The E.U.T was placed on a non-metallic table, 0.8 meters above the ground. The configuration tested is shown in Figure 1.

The frequency range 9 kHz-20 GHz was scanned, and the list of the highest emissions was verified and updated accordingly.

The readings were maximized by adjusting the antenna height between 1-4 meters, the turntable azimuth between 0-360°, and the antenna polarization. The emissions were measured at a distance of 3 meters.

- (b) The E.U.T. was replaced by a substitution antenna (dipole 30MHz-1GHz, Horn Antenna above 1GHz) driven by a signal generator. The height was readjusted for maximum reading. The signal generator level was adjusted to obtain the same reading on the EMI receiver as in step (a).

The signals observed in step (a) were converted to radiated power using:

$$P_d(\text{dBm}) = P_g(\text{dBm}) - \text{Cable Loss (dB)} + \text{Substitution Antenna Gain (dB)}$$

P_d = Dipole equivalent power (result).

P_g = Signal generator output level.

The E.U.T. was operated at the frequency of 2111.25, 2132.50, 2153.75 MHz with CDMA and WCDMA modulations..

CDMA:

Carrier Channel (MHz)	Freq. (MHz)	Antenna Pol.	Maximum Peak Level (dB μ V/m)	Signal Generator RF Output (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Effective Radiated Power Level (dBm)	Spec. (dBm)	Margin (dB)
2111.25	4222.50	V	62.54	-35.0	9.9	9.9	-35.0	-13	-22.00
2111.25	4222.50	H	56.92	-40.5	9.9	9.9	-40.5	-13	-27.50
2132.50	4265.00	V	55.53	-41.5	9.9	9.9	-41.5	-13	-28.50
2132.50	4265.00	H	55.82	-41.5	9.9	9.9	-41.5	-13	-28.50
2153.75	4307.50	V	56.14	-40.5	9.9	9.9	-40.5	-13	-27.50
2153.75	4307.50	H	49.24	-46.5	9.9	9.9	-46.5	-13	-33.50

WCDMA

Carrier Channel (MHz)	Freq. (MHz)	Antenna Pol.	Maximum Peak Level (dB μ V/m)	Signal Generator RF Output (dBm)	Cable Loss (dB)	Antenna Gain (dBi)	Effective Radiated Power Level (dBm)	Spec. (dBm)	Margin (dB)
2111.25	4222.50	V	59.67	-37.5	9.9	9.9	-37.5	-13	-24.50
2111.25	4222.50	H	55.51	-41.5	9.9	9.9	-41.5	-13	-28.50
2132.50	4265.00	V	58.62	-38.5	9.9	9.9	-38.5	-13	-25.50
2132.50	4265.00	H	54.25	-42.5	9.9	9.9	-42.5	-13	-29.50
2153.75	4307.50	V	54.08	-42.5	9.9	9.9	-42.5	-13	-29.50
2153.75	4307.50	H	47.69	-47.5	9.9	9.9	-47.5	-13	-34.50

7.3 Test Results

JUDGEMENT: Passed by 22 dB

The E.U.T met the requirements of the FCC, Part 27, Sub-part C, Section 27.53 (g) specifications.

TEST PERSONNEL:

Tester Signature: 

Date: 03.05.09

Typed/Printed Name: A. Sharabi

7.4 Test Instrumentation Used, Radiated Measurements

Instrument	Manufacturer	Model	Serial Number	Calibration	Period
EMI Receiver	HP	85422E	3411A00102	November 17, 2008	1 year
RF Section	HP	85420E	3427A00103	November 16, 2008	1 year
Antenna Log Periodic	A.H. Systems	SAS-200/511	253	January 29, 2009	2 year
Antenna Mast	ARA	AAM-4A	1001	N/A	N/A
Turntable	ARA	ART-1001/4	1001	N/A	N/A
Mast & Table Controller	ARA	ACU-2/5	1001	N/A	N/A
Printer	HP	ThinkJet 2225	2738508357.0	N/A	N/A
Spectrum Analyzer	HP	8592L	3826A01204	March 17, 2009	1 year
Low Noise Amplifier	DBS MICROWAVE	LNA-DBS-0411N313	013	November 3, 2008	1 year
Low Noise Amplifier	Sophia Wireless	LNA 28-B	232	January 8, 2009	1 year
Signal Generator	HP	E4432B ESG-D	GB38450502	28 May 2008	1 year
Double Ridged Waveguide Horn Antenna	EMCO	3115	29845	March 16, 2008	2 year

8. APPENDIX A - CORRECTION FACTORS

8.1 Correction factors for

CABLE

from EMI receiver
to test antenna
at 3 meter range.

FREQUENCY (MHz)	CORRECTION FACTOR (dB)	FREQUENCY (MHz)	CORRECTION FACTOR (dB)
10.0	0.3	1200.0	7.3
20.0	0.6	1400.0	7.8
30.0	0.8	1600.0	8.4
40.0	0.9	1800.0	9.1
50.0	1.1	2000.0	9.9
60.0	1.2	2300.0	11.2
70.0	1.3	2600.0	12.2
80.0	1.4	2900.0	13.0
90.0	1.6		
100.0	1.7		
150.0	2.0		
200.0	2.3		
250.0	2.7		
300.0	3.1		
350.0	3.4		
400.0	3.7		
450.0	4.0		
500.0	4.3		
600.0	4.7		
700.0	5.3		
800.0	5.9		
900.0	6.3		
1000.0	6.7		

NOTES:

1. The cable type is RG-214.
2. The overall length of the cable is 27 meters.
3. The above data is located in file 27MO3MO.CBL on the disk marked "Radiated Emission Tests EMI Receiver".

8.2 Correction factors for

CABLE

from EMI receiver
to test antenna
at 3 meter range.

FREQUENCY (GHz)	CORRECTION FACTOR (dB)
1.0	1.2
2.0	1.6
3.0	2.0
4.0	2.4
5.0	3.0
6.0	3.4
7.0	3.8
8.0	4.2
9.0	4.6
10.0	5.0
12.0	5.8

NOTES:

1. The cable type is RG-8.
2. The overall length of the cable is 10 meters.

8.3 Correction factors for

CABLE

from spectrum analyzer
to test antenna above 2.9 GHz

FREQUENCY (GHz)	CORRECTION FACTOR (dB)	FREQUENCY (GHz)	CORRECTION FACTOR (dB)
1.0	1.9	14.0	9.1
2.0	2.7	15.0	9.5
3.0	3.5	16.0	9.9
4.0	4.2	17.0	10.2
5.0	4.9	18.0	10.4
6.0	5.5	19.0	10.7
7.0	6.0	20.0	10.9
8.0	6.5	21.0	11.2
9.0	7.0	22.0	11.6
10.0	7.5	23.0	11.9
11.0	7.9	24.0	12.3
12.0	8.3	25.0	12.6
13.0	8.7	26.0	13.0

NOTES:

1. The cable type is SUCOFLEX 104 E manufactured by SUHNER.
2. The cable is used for measurements above 2.9 GHz.
3. The overall length of the cable is 10 meters.

8.4 Correction factors for LOG PERIODIC ANTENNA

**Type SAS-200/511
at 3 meter range.**

FREQUENCY (GHz)	ANTENNA FACTOR (dB)
1.0	24.9
1.5	27.8
2.0	29.9
2.5	31.2
3.0	32.8
3.5	33.6
4.0	34.3
4.5	35.2
5.0	36.2
5.5	36.7
6.0	37.2
6.5	38.1

FREQUENCY (GHz)	ANTENNA FACTOR (dB)
7.0	38.6
7.5	39.2
8.0	39.9
8.5	40.4
9.0	40.8
9.5	41.1
10.0	41.7
10.5	42.4
11.0	42.5
11.5	43.1
12.0	43.4
12.5	44.4
13.0	44.6

NOTES:

1. Antenna serial number is 253.
2. The above lists are located in file number SAS3M0.ANT for a 3 meter range.
3. The files mentioned above are located on the disk marked "Antenna Factors".

8.5 Correction factors for Double-Ridged Waveguide Horn

**Model: 3115, S/N 29845
at 3 meter range.**

FREQUENCY	ANTENNA	ANTENN	FREQUENCY	ANTENNA	ANTENNA
(GHz)	FACTOR	A Gain	(GHz)	FACTOR	Gain
1.0	24.8	5.4	10.0	38.8	11.4
1.5	26.1	7.6	10.5	38.9	11.8
2.0	28.6	7.7	11.0	39.0	12.1
2.5	29.8	8.4	11.5	39.6	11.8
3.0	31.4	8.4	12.0	39.8	12.0
3.5	32.4	8.7	12.5	39.6	12.5
4.0	33.7	8.6	13.0	40.0	12.5
4.5	33.4	9.9	13.5	39.8	13.0
5.0	34.5	9.7	14.0	40.2	13.0
5.5	35.1	9.9	14.5	40.6	12.9
6.0	35.4	10.4	15.0	41.3	12.4
6.5	35.6	10.8	15.5	39.5	14.6
7.0	36.2	10.9	16.0	38.8	15.5
7.5	37.3	10.4	16.5	40.0	14.6
8.0	37.7	10.6	17.0	41.4	13.4
8.5	38.3	10.5	17.5	44.8	10.3
9.0	38.5	10.8	18.0	47.2	8.1
9.5	38.7	11.1			