Prepared (also subject responsible if other)		No.		
EWU/PR/HD Keith A. Goshia				
Approved	Checked	Date	Rev	Reference
EWU/PR/H Thomas J. Funk		2006-10-26	C	TA8AKRC161134-4

FCC Part 27 Report

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EWU/PR/HD Keith A. Goshia				
Approved	Checked	Date	Rev	Reference
EWU/PR/H Thomas J. Funk		2006-10-26	C	TA8AKRC161134-4

Sub-part 2.1033 (c): CFR-27 Subpart L

Equipment Identification

FCC ID: TA8AKRC161134-4

Date of Report

Thursday, 26 October 2006

Prepared (also subject responsible if other)		No.		
EWU/PR/HD Keith A. Goshia				
Approved	Checked	Date	Rev	Reference
EWU/PR/H Thomas J. Funk		2006-10-26	C	TA8AKRC161134-4

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List of General Information Required for Type Acceptance

In Accordance with FCC Rules and Regulations,
Volume II, Part 2 and to
Part 27 sub-part L

Sub-part

2.1033 (c)(1) Name and Address of Applicant:

Ericsson Wireless Communications
6210 Spine Rd.
Boulder, CO 80301

Vendor:

Applicant

2.1033(c)(2): FCC ID: TA8AKRC161134-4

2.924 Model No RRU22 $21_{IV}40$

Technical Description:

2.1033(c)(4): Type of Emission: 4M17F9W

2.1033(c)(5) Frequency Range, MHz: 2112.4-2152.6MHz

2.1033(c)(6) Power Rating, Watts: 40

Switchable _____ Adjustable x N/A _____

2.1033(c)(7) Maximum Power Rating, Watts: 40

2.1033(c)(8) Voltages & Currents in all Elements in Final R.F. Stage,
Including Final Transistor or Solid State Device:
Collector Voltage, VDC: –48 = per manual

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Open Exhibits

2.1033 Cover Letter:
Please see Attached Exhibit 1

2.1033 Cover Letter Confidentiality:
Please see Attached Exhibit 2

2.1033 Cover Letter Temperature Range:
Please see Attached Exhibit 3

2.1033 External Photo's:
Please see Attached Exhibits 5

2.1033 Photo FCC ID:
Please see Attached Exhibit 6

2.1033 Tune-Up Procedure:
Please see Attached Exhibit 7

2.1033 FCC Form 731: Including Fee Processing Form

2.1033 Test Report:
Please see Attached Exhibit 9

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Confidential Exhibits

2.1033 Internal Photo's:
Please see Attached Exhibit 10

2.1033 System Block Diagram:
Please see Attached Exhibit 11

2.1033 Schematics:
Please see Attached Exhibit 12

2.1033 Technical Description:
Please see Attached Exhibit 13

2.1033 Installation Instruction:
Please see Attached Exhibit 14

2.1033 Parts List:
Please see Attached Exhibit 15

2.1033 Technical Circuit Description:
Please see Attached Exhibit 16

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2.1033(c)(14) & 27 Sub part L **Test Report:**

Test Report Follows

Prepared (also subject responsible if other)		No.		
EWU/PR/HD Keith A. Goshia				
Approved	Checked	Date	Rev	Reference
EWU/PR/H Thomas J. Funk		2006-10-26	C	TA8AKRC161134-4

Sub-part
2.1033 (c) : Test and Measurement Data

All tests and measurement data shown were performed in accordance with FCC Rules and Regulations, Volume II; Part 2, Sub-part J, Sections 2.1046, 2.1049, 2.1051, 2.1053, 2.1055 and the following individual Parts:

21	Domestic Public Radio Services	___
24	Personal Communications Services	___
27	Miscellaneous Wireless Communication Services	X
22E	Broadband PCS	___
27.5	Special Provisions for Alternative Cellular Technologies and and Auxiliary Services	X
23	International Fixed Public Radio Communications Service	___
74	Experimental, Auxiliary & Special Broadcast and Other Program Distribution Services	___
74H	Low Power Auxiliary Stations	___
80	Stations in the Maritime Service	___
80.209 (5)(I)	Transmitter Frequency Tolerances, 156–162 MHz, Coast Stations	___
80K	Private Coast Stations & Marine Utility Stations	___
80S	Compulsory R/T Installations for Small Passenger Boats	___
80T	Radio Telegraph Installation Required for Vessels on the Great Lakes	___
80U	Radio Telegraph Installation Required by the Bridge–to–Bridge Act	___
87	Aviation Services	___
90	Private Land Mobile Radio Services	___

94 Private Operational–Fixed microwave Services ___

95 General Mobile Radio Service ___

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EWU/PR/H Thomas J. Funk		2006-10-26	C	TA8AKRC161134-4

General Information

1. Spurious radiation was measured at three (3) meters.

2. The normal modes of modulation are:

   (a) Voice ____

   (b) Wideband Data ____

   (c) SAT ____

   (d) ST ____

   (e) SAT + Voice ____

   (f) SAT + DTMF ____

   (g) 16QAM or QPSK WCDMA X

   (h) Pi/4 DQPSK ____

   (i) NAMPS Voice ____

   (j) NAMPS DSAT ____

   (k) NAMPS ST ____

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Standard Test Conditions and Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing:

Room Temperature	= 25 ± 5° C
Room Humidity	= 20–50%
Supply Voltage	- 48VDC

Prior to testing, the E.U.T. was tuned up in accordance with the manufacturer's alignment procedures. All external gain controls were maintained at the position of maximum and/or optimum gain throughout the testing.

Measurement results, unless otherwise noted, are worst-case measurements.

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EWU/PR/H Thomas J. Funk		2006-10-26	C	TA8AKRC161134-4

Name of Test: R.F. Power Output & Occupied Bandwidth

Paragraph: 47 CFR 27.50(d), 2.1046 & 2.1049

Guide: EIA Standard RS 152B, Paragraph 3.3

Test Methodologies: TIA 603

Test Condition: Standard Temperature & Humidity

Test Equipment: As per Attached Appendix J

Measurement Procedures

1. The E.U.T. was connected to a directional coupler and a resistive coaxial attenuator of normal load impedance, and the modulated output power was measured by means of an R.F. power meter for reference. The actual RF data was recorded by the means of a Spectrum Analyzer. Spectrum analyzer bandwidth was set to the 3GPP standard test mode that was developed by Rhode & Schwarz and is the default settings which measure the total RF power using a 30kHz bandwidth.

2. Measurement accuracy is ±3%.

Measurement Results

Nominal, MHz	Channel Num.	Band	R.F. Power Output, dBm	
			High Power QPSK	High Power 16 QAM
2112.4Mhz	1537	Class 4	46.28	45.98
2132.5Mhz	1987	Class 4	46.17	45.96
2152.6Mhz	1738	Class 4	46.41	45.92

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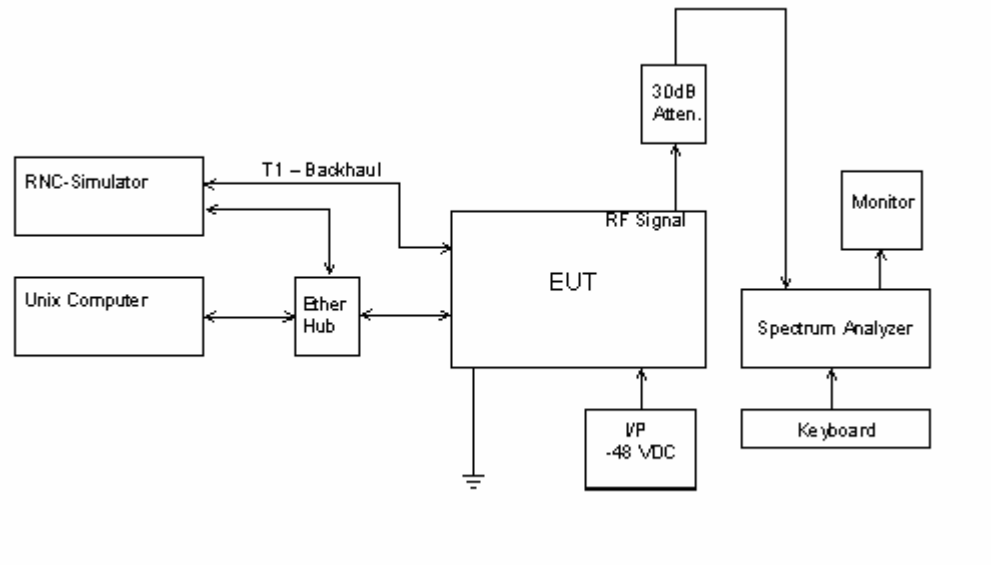

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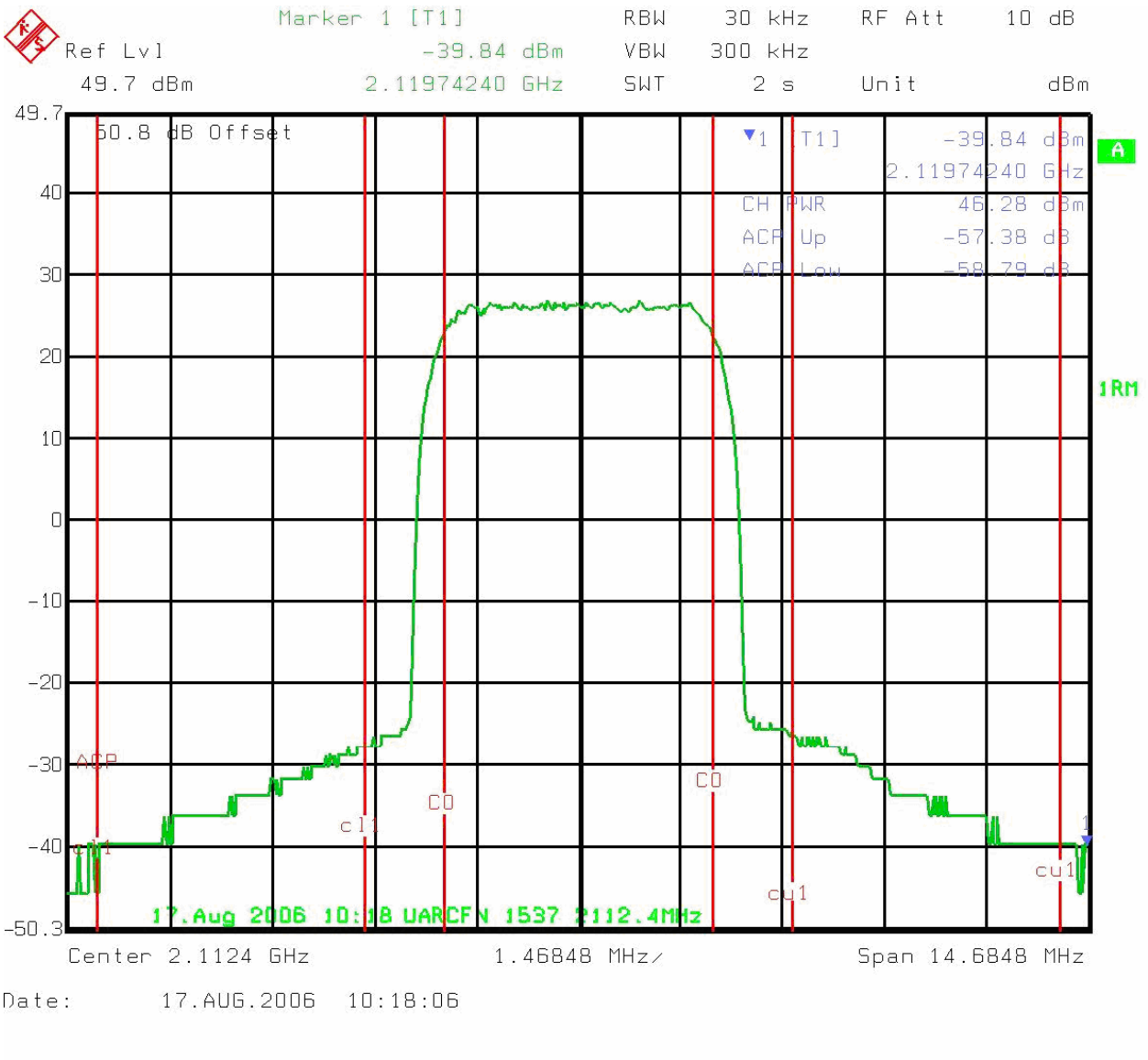

Test Result for QPSK on 2112.4MHz

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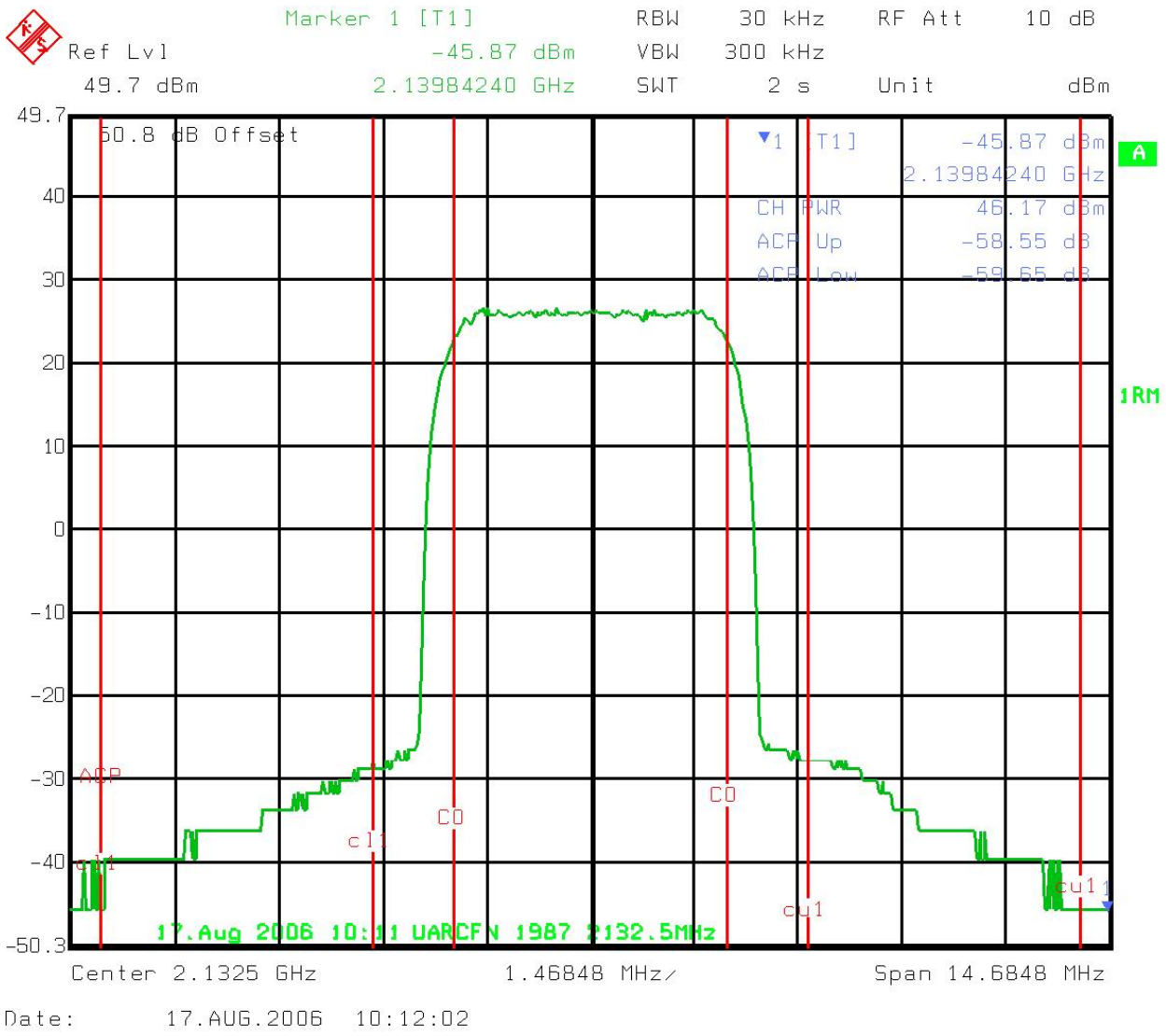
EWU/PR/HD Keith A. Goshia				
Approved	Checked	Date	Rev	Reference
EWU/PR/H Thomas J. Funk		2006-10-26	C	TA8AKRC161134-4



Test Result for QPSK on 2132.5MHz

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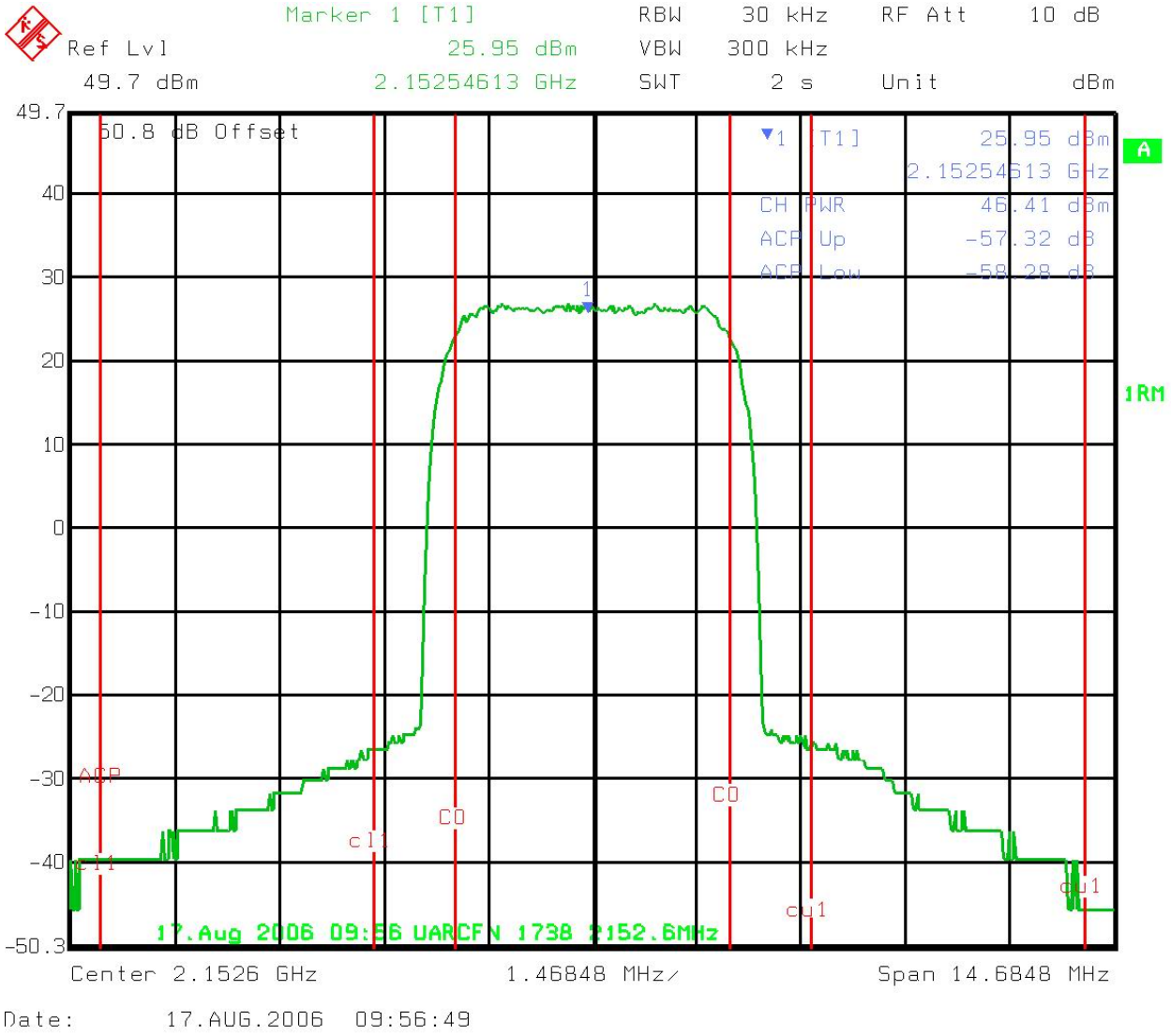
Approved	Checked	Date	Rev	Reference
EWU/PR/H Thomas J. Funk		2006-10-26	C	TA8AKRC161134-4



Test Result for QPSK on 2152.6MHz

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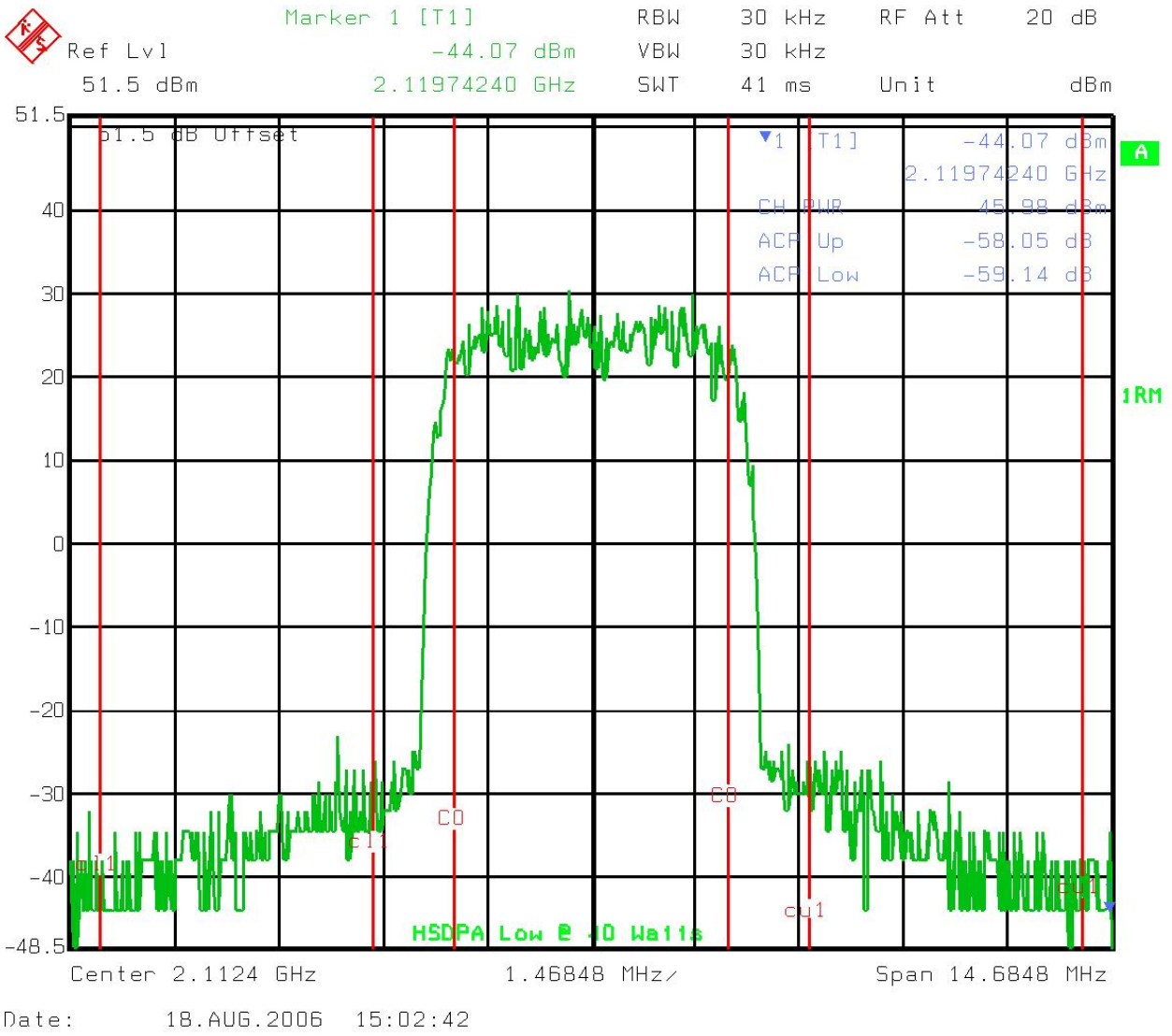
Approved	Checked	Date	Rev	Reference
EWU/PR/H Thomas J. Funk		2006-10-26	C	TA8AKRC161134-4



Test Result for 16 QAM on 2112.4MHz

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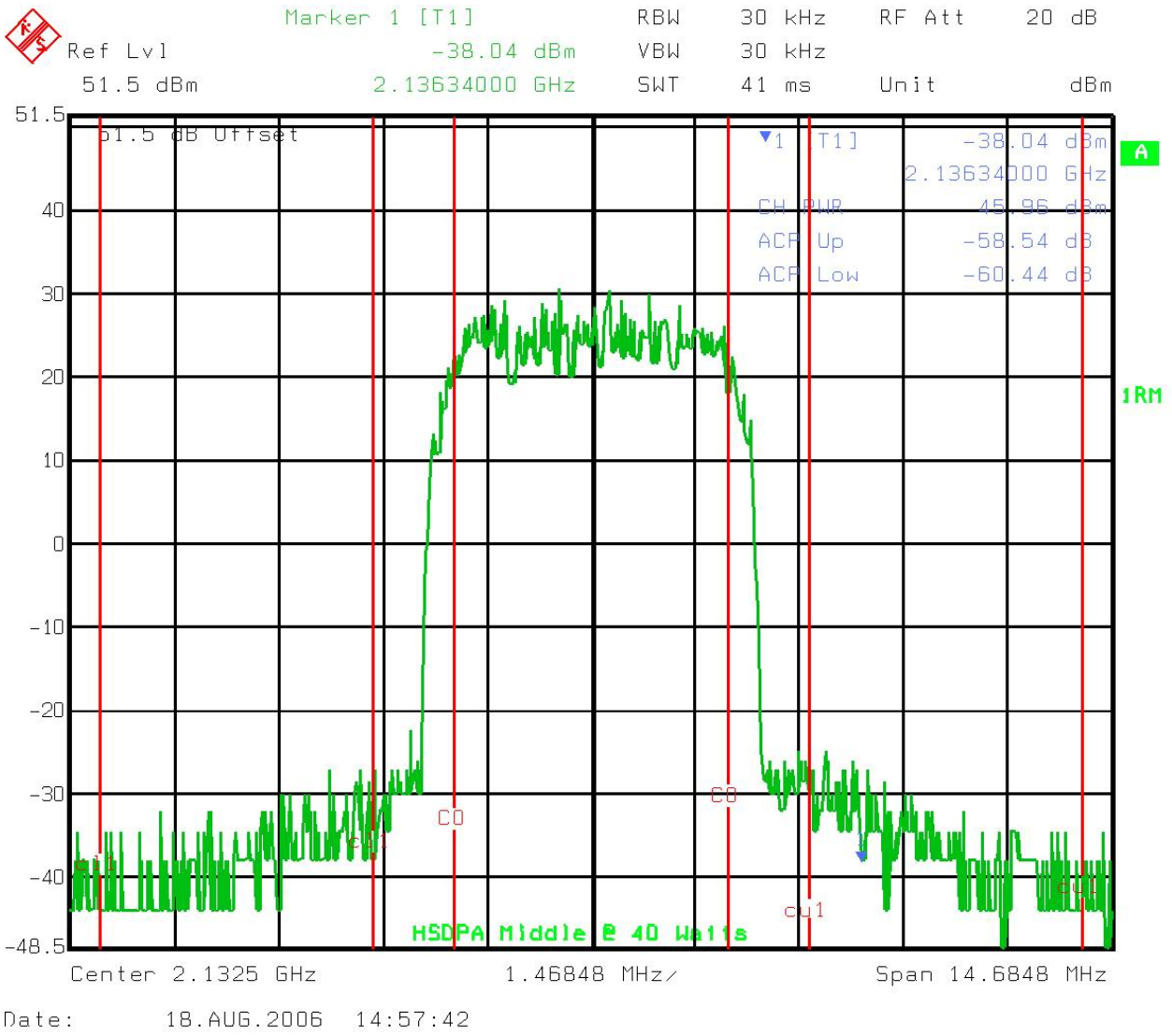
Approved	Checked	Date	Rev	Reference
EWU/PR/H Thomas J. Funk		2006-10-26	C	TA8AKRC161134-4



Test Result for 16 QAM on 2132.5MHz

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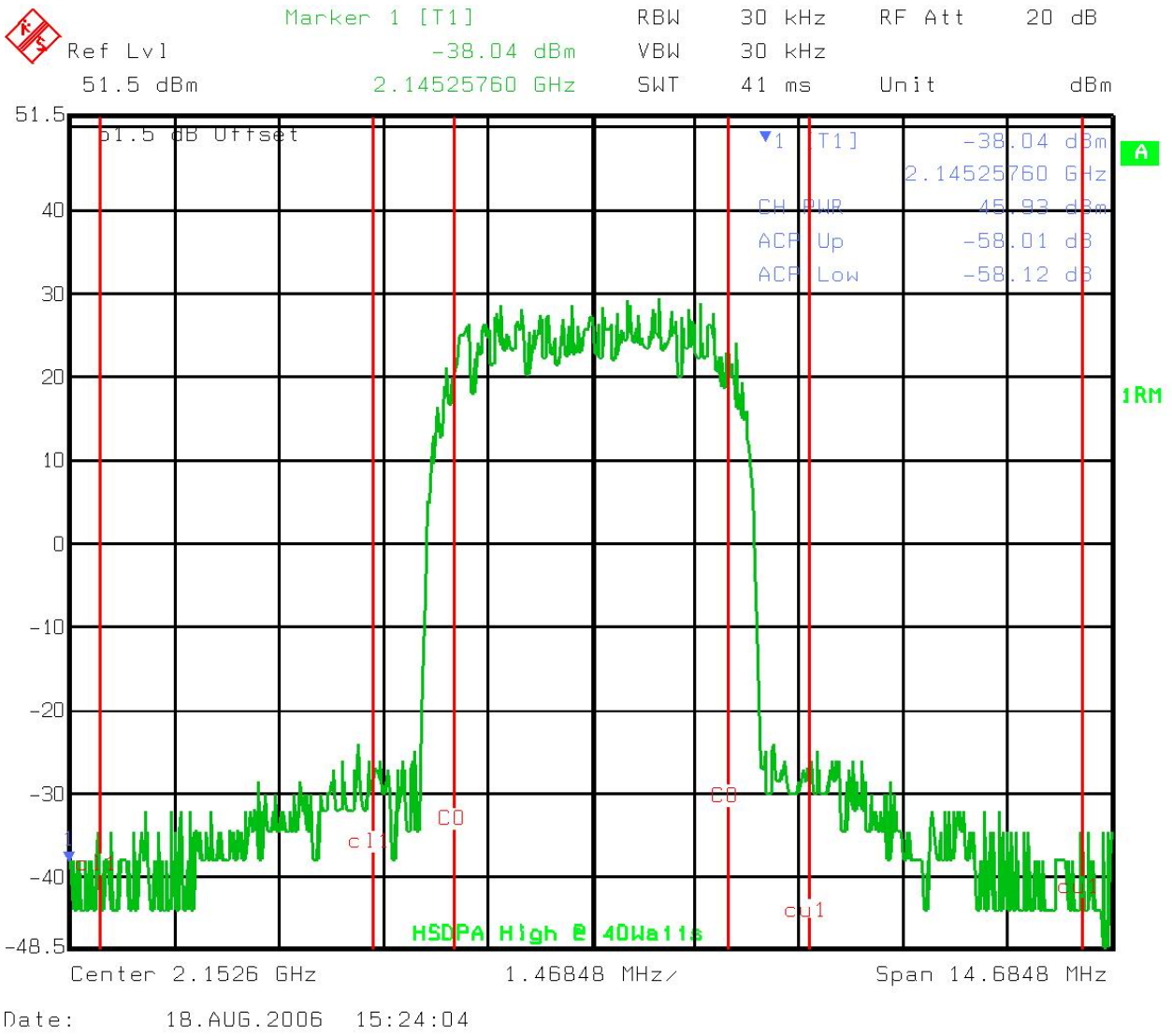
EWU/PR/HD Keith A. Goshia				
Approved	Checked	Date	Rev	Reference
EWU/PR/H Thomas J. Funk		2006-10-26	C	TA8AKRC161134-4



Test Result for 16 QAM on 2152.6MHz

Prepared (also subject responsible if other)		No.		
EWU/PR/HD Keith A. Goshia				
Approved	Checked	Date	Rev	Reference
EWU/PR/H Thomas J. Funk		2006-10-26	C	TA8AKRC161134-4

Name of Test: Spurious Emissions at Antenna Terminals

Paragraph: 47 CFR 27.53(g)

Guide: EIA Standard RS 152B, Paragraph 17

Test Methodologies: TIA 603

Test Condition: Standard Temperature & Humidity

Test Equipment: As per Attached Appendix J

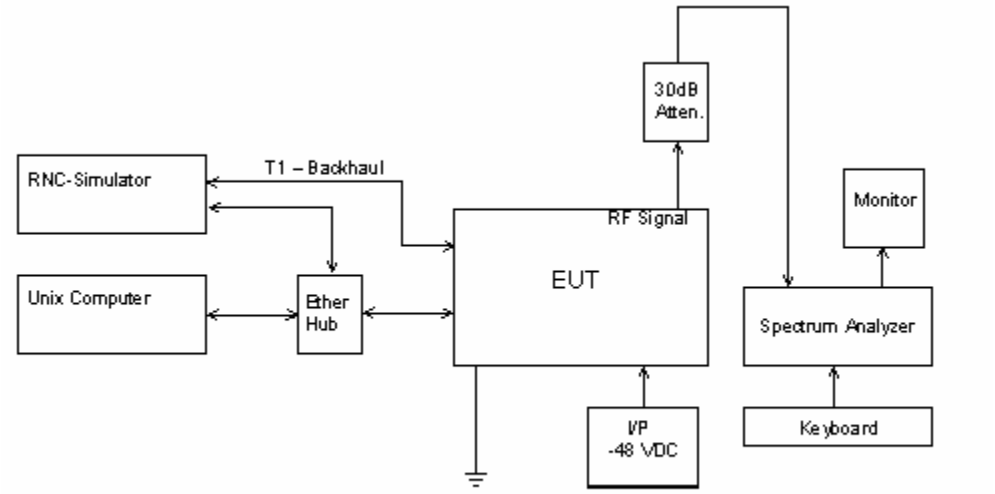
Measurement Procedures

1. The E.U.T. was connected, through a directional coupler, a 50 dB coaxial attenuator then to a Rohde & Schwarz Spectrum Analyzer.
2. Measurements were made over the range from 1GHz to 20 GHz for the worst case modulation at the highest R.F. power settings.
3. All other emissions were 20 dB or more below the limit.
4. Spectrum analyzer bandwidth was set to the 3GPP standard test mode that was developed by Rhode & Schwarz and is the default settings.
5. Measurement Results**: *All emissions are 30dB below and more and no plots where provided. All measurement where recorded and found to be in the noise floor. The 30 data plots are available upon request. The file size is 8MB.***

Frequency	2112.4MHz	2132.5MHz	2152.6MHz
1st Harmonic	Noise floor -35dB	Noise floor -37dB	Noise floor -33dB
2nd Harmonic	Noise floor -33dB	Noise floor -32dB	Noise floor -34dB
3rd Harmonic	Noise floor -35dB	Noise floor -35dB	Noise floor -34dB

Spurious Emissions at Antenna Terminals

Test 1: Spurious Emissions at Antenna Terminals



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EWU/PR/H Thomas J. Funk		2006-10-26	C	TA8AKRC161134-4

Name of Test: Field Strength of Spurious Radiation

Paragraph: 47 CFR 27.53(g)

Guide: See Measurement Procedure Below

Test Methodologies: TIA 603

Test Condition: Standard Temperature & Humidity

Test Equipment: As per Attached Appendix J

Measurement Procedures

1. A description of the measurement facilities was filed with the F.C.C. and was found to be in compliance with the requirements of Section 15.38, by letter from the F.C.C. The test facility used was Elliott Laboratories in Sunnyvale CA

2. In the field, the test sample was placed on a turntable at three meters away from the search antenna. The test sample was connected to an R.F. wattmeter and a 50 ohm dummy load, and adjusted to its maximum rated output.

   In order to obtain the maximum response at each spurious frequency, the turntable was rotated. Also, the Search Antennas were raised and lowered vertically, and all cables were oriented. Excess power lead was coiled above the system.

3. Measurement Results:

Spurious emission bandwidth settings per 27.53 (g).

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EMC Test Data

Client:	Ericsson Wireless	Job Number:	J65655
Model:	RRU22 21IV40	T-Log Number:	T65875
		Account Manager:	-
Contact:	Keith Goshia		
Standard:	FCC part 27	Class:	N/A

Radiated Spurious Emissions, Part 27

Test Specific Details

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test:	10/25/2006 8:26	Config. Used:	1
Test Engineer:	David Bare	Config Change:	None
Test Location:	SVOATS #2	EUT Voltage:	-48Vdc

General Test Configuration

The EUT and all local support equipment were located on the turntable for radiated spurious emissions testing. All remote support equipment was located approximately 30 meters from the EUT with all I/O connections running on top of the groundplane or routed in overhead in the GR-1089 test configuration.

The measurement antenna was located 3 meters from the EUT.

Ambient Conditions:

Temperature:	20.5	°C
Rel. Humidity:	23	%

Summary of Results

Run #	Test Performed	Limit	Pass / Fail	Result / Margin
2	Spurious Emissions Transmit Mode, 30 - 22000 MHz	-13dBm	Pass	-30.6dBm @ 4244.77MHz (-17.6dB)

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.

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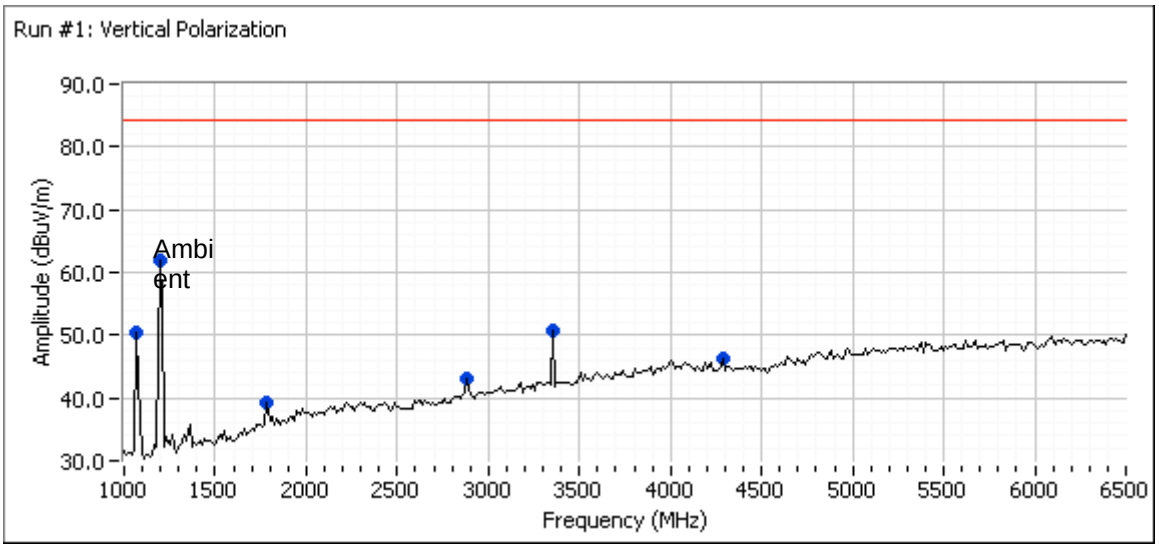
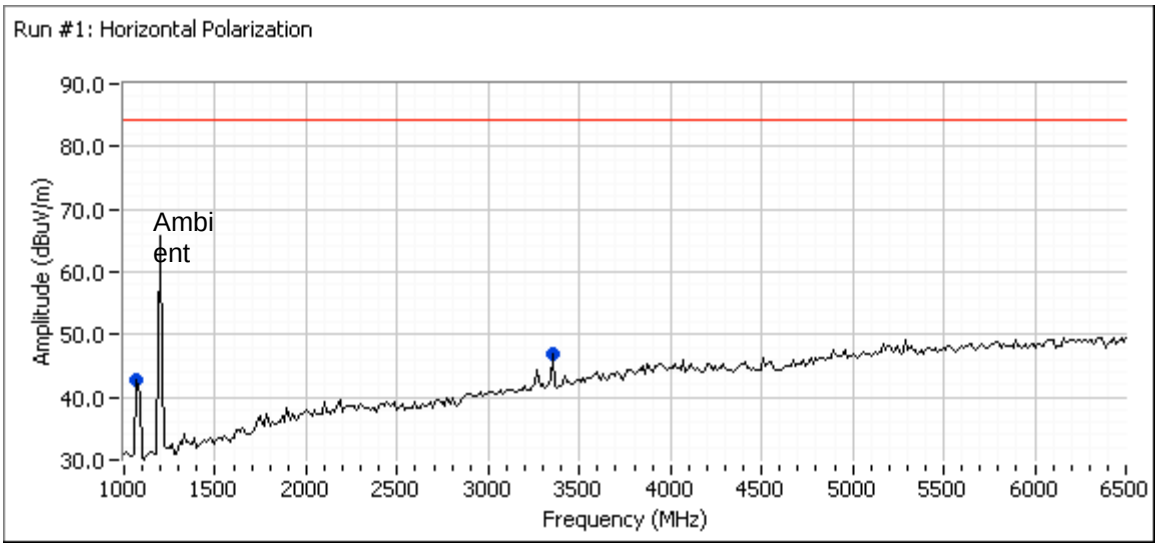
Run #1: Radiated Spurious Emissions, Transmit Mode, 1000 - 22000 MHz
Measurements made at 3m
Run #1a: EUT @ 2112.4 MHz





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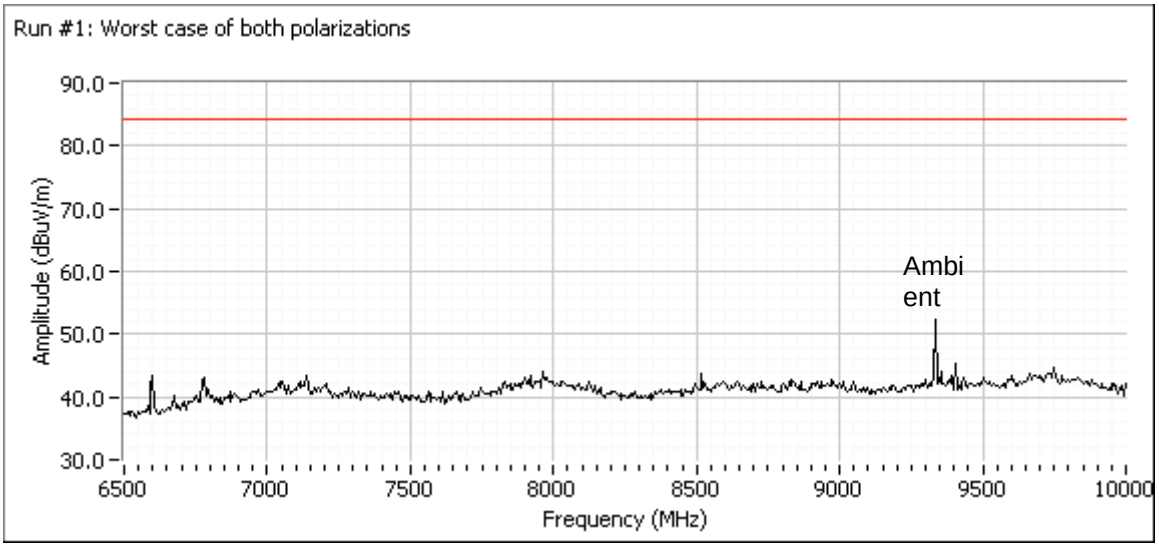

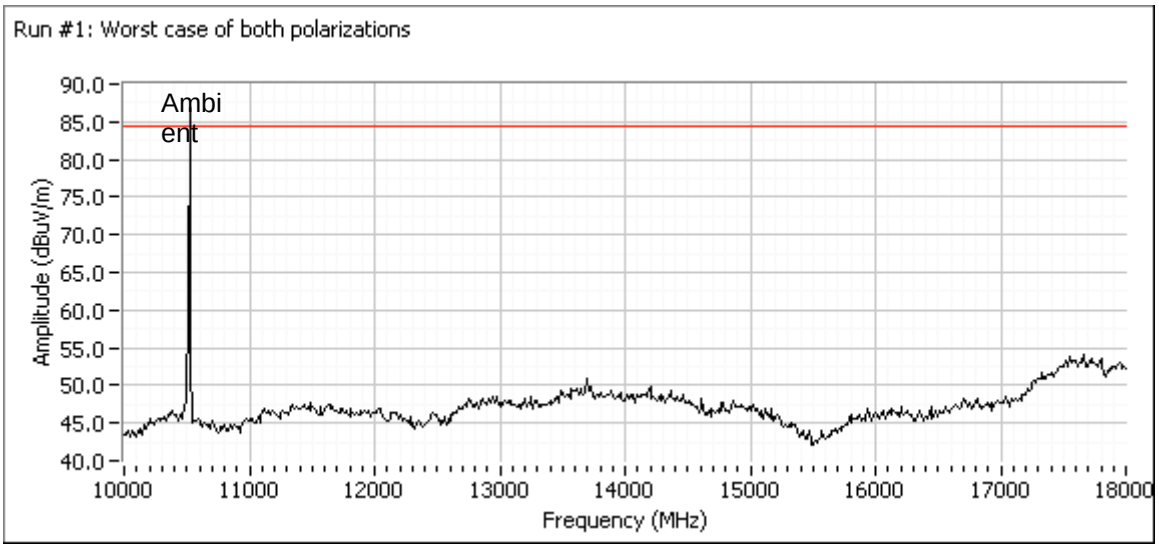

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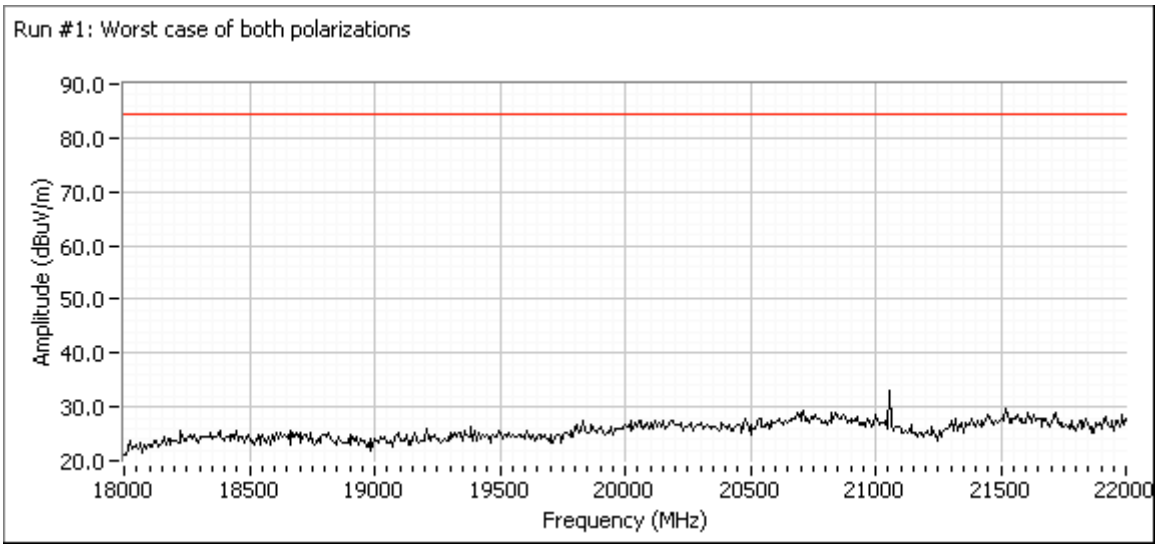

Run #1a: EUT @ 2112.4 MHz

Frequency	Level	Pol	Part 27 Note 1		Detector	Azimuth	Height	Comments
MHz	dBmV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2113.100	91.0	V	-	N/A	PK	268	1.0	For reference only
4224.770	69.5	V	84.4	-14.9	PK	263	1.2	
1088.710	63.4	V	84.4	-21.0	PK	243	1.5	
4224.770	63.1	H	84.4	-21.3	PK	284	1.3	
1088.710	59.9	H	84.4	-24.5	PK	264	1.8	

Note 1:	The field strength limit in the tables above was calculated from the eirp limit detailed in the standard using the free space propagation equation: E=√(30PG)/d. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 10dB of margin relative to this field strength limit is determined using substitution measurements.

Run #1b: EUT @ 2132.5 MHz

Frequency	Level	Pol	Part 27 Note 1		Detector	Azimuth	Height	Comments
MHz	dBmV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2133.220	91.1	V	-	N/A	PK	270	1.3	For reference only
4265.080	66.4	V	84.4	-18.0	PK	260	1.2	

1088.642	63.3	V	84.4	-21.1	PK	242	1.2	
4265.080	61.5	H	84.4	-22.9	PK	284	1.3	
1088.655	58.6	H	84.4	-25.8	PK	264	1.0	

Note 1:	The field strength limit in the tables above was calculated from the eirp limit detailed in the standard using the free space propagation equation: E=√(30PG)/d. This limit is conservative - it does not consider the presence of the ground plane and, for erp limits, the dipole gain (2.2dBi) has not been included. The erp or eirp for all signals with less than 10dB of margin relative to this field strength limit is determined using substitution measurements.

Run #1c: EUT @ 2153.4 MHz

Frequency	Level	Pol	Part 27 Note 1		Detector	Azimuth	Height	Comments
MHz	dBmV/m	v/h	Limit	Margin	Pk/QP/Avg	degrees	meters	
2153.000	84.1	V	-	N/A	PK	61	1.0	For reference only
4306.000	64.8	V	84.4	-19.6	PK	284	1.0	
4306.000	61.3	H	84.4	-23.1	PK	279	1.8	
1088.653	60.3	H	84.4	-24.1	PK	280	1.7	
1088.666	58.8	V	84.4	-25.6	PK	53	1.0	
3329.650	48.9	V	84.4	-35.5	PK	0	1.0	
3331.460	47.8	H	84.4	-36.6	PK	350	1.0	
1785.590	44.4	V	84.4	-40.0	PK	110	1.0	

Note 1:	The field strength limit in the tables above was calculated from the eirp limit detailed in the standard using the free space propagation equation: E=√(30PG)/d. This limit is conservative - it does not consider the presence of the ground plane. The eirp for all signals with less than 20dB of margin relative to this field strength limit is determined using substitution measurements.

Run #2: Radiated Spurious Emissions, Transmit Mode: Final Substitution Measurements

Vertical

Frequency	Substitution measurements			Site	EUT measurements			eirp Limit	erp Limit	Margin
MHz	Pin[1]	Gain[2]	FS[3]	Factor[4]	FS[5]	eirp (dBm)	erp (dBm)	dBm	dBm	dB
4224.770	-30.0	10.1	80.2	100.1	69.5	-30.6		-13.0		-17.6
4265.080	-29.2	10.1	81.0	100.1	66.4	-33.7		-13.0		-20.7
4306.000	-28.8	10.2	80.8	99.4	64.8	-34.6		-13.0		-21.6

Note 1:	Pin is the input power (dBm) to the substitution antenna
Note 2:	Gain is the gain (dBi) for the substitution antenna. A dipole has a gain of 2.2dBi. Horn antenna (Asset 487) used.
Note 3:	FS is the field strength (dBuV/m) measured from the substitution antenna.
Note 4:	Site Factor - this is the site factor to convert from a field strength in dBuV/m to an eirp in dBm.
Note 5:	EUT field strength as measured during initial run.

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Name of Test: Frequency Stability – Temperature and Voltage Variation

Paragraph: 47 CFR 27.54, 2.1055

Guide: EIA Standard RS 152B, Paragraph 10

Test Condition: Standard

TEMPERATURE	FREQUENCY @ 2112.4MHz	Δ Hz 12.47		FREQUENCY @ 2132.5MHz	Δ Hz 18.35	FREQUENCY @ 2152.6MHz	Δ Hz 12.84
-33ºC	**2112399997.10**	-2.9		**2132500003.32**	3.32	**2152599995.56**	-4.44
-30ºC	**2112400006.14**	6.14		**2132499991.87**	-8.13	**2152600002.69**	2.69
-20ºC	**2112399993.67**	-6.33		**2132500008.98**	8.98	**2152600002.93**	2.93
-10ºC	**2112399996.88**	-3.12		**2132500007.52**	7.52	**2152600005.17**	5.17
0ºC	**2112400003.09**	3.09		**2132500010.22**	10.22	**2152599992.33**	-7.67
10ºC	**2112399995.36**	-4.64		**2132500003.09**	3.09	**2152600004.03**	4.03
20ºC	**2112399997.43**	-2.57		**2132499997.37**	-2.63	**2152600001.57**	1.57
30ºC	**2112400005.36**	5.36		**2132500004.36**	4.36	**2152599994.62**	-5.38
40ºC	**2112400005.86**	5.86		**2132500009.00**	9	**2152600001.64**	1.64
50ºC	**2112400004.19**	4.19		**2132500001.87**	1.87	**2152599995.84**	-4.16

Prepared (also subject responsible if other)		No.		
EWU/PR/HD Keith A. Goshia				
Approved	Checked	Date	Rev	Reference
EWU/PR/H Thomas J. Funk		2006-10-26	C	TA8AKRC161134-4

Name of Test: Necessary Bandwidth and Emission Bandwidth

Paragraph: 47 CFR 2.202 (g)

Modulation = WCDMA (F9W)

Emission Bandwidth Calculation:

Necessary Bandwidth, kHz = 4,170.00

Justification for WCDMA bandwidth of 4.17 MHz.

Reference: 3GPP TS 25.141.

Chip rate is 3.840MHz per the 3GPP standard. At the 3dB down point, the bandwidth is 4.2MHz. Channel spacing is normally set to 5.0MHz from centre frequency to centre frequency.

Prepared (also subject responsible if other)		No.		
EWU/PR/HD Keith A. Goshia				
Approved	Checked	Date	Rev	Reference
EWU/PR/H Thomas J. Funk		2006-10-26	C	TA8AKRC161134-4

Testimonial and Statement of Certification

This is to certify:

1. That the application was prepared either by, or under the direct supervision of, the undersigned.

2. That the technical data supplies with the application were taken under my direction and supervision.

3. That the data was obtained on representative units, randomly selected.

4. That, to the best of my knowledge and belief, the facts set forth in the application and accompanying technical data are true and correct.

Prepared (also subject responsible if other)		No.		
EWU/PR/HD Keith A. Goshia				
Approved	Checked	Date	Rev	Reference
EWU/PR/H Thomas J. Funk		2006-10-26	C	TA8AKRC161134-4

Certifying Engineer:

Prepared (also subject responsible if other)		No.		
EWU/PR/HD Keith A. Goshia				
Approved	Checked	Date	Rev	Reference
EWU/PR/H Thomas J. Funk		2006-10-26	C	TA8AKRC161134-4

Radio Frequency Radiation Exposure Limits

The device is installed in a permanent location. It is not operator accessible, and is contained in a secured environment that is accessible by field service engineers or installation engineers only. The ERP of the device is less than 1000 Watts. The Antenna's used on this device are a typical 18dB gain antenna, with this configuration and the maximum RF output of the device set to 40 Watts the exposure limit is less than 1000 Watts.

Prepared (also subject responsible if other)		No.		
EWU/PR/HD Keith A. Goshia				
Approved	Checked	Date	Rev	Reference
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Appendix J

Test Instrumentation List

All equipment calibrated within last 180 days

Power Meter
HP 8901A
HP 437B

Power Sensor
HP 8481B

Spectrum Analyzer
Rhode & Schwarz FSEM