
REPORT ON

Limited FCC CFR 47: Parts 22 and 24
and Industry Canada RSS-GEN, RSS-132 and RSS-133 Testing
of an Ericsson AB Fixed Wireless Terminal

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Doc Number 75900844 Report 01 Issue 1

April 2007



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REPORT ON

Limited FCC CFR 47: Parts 22 and 24 and Industry Canada
RSS-GEN, RSS-132 and RSS-133 Testing of an Ericsson AB Fixed
Wireless Terminal

FCC ID: P5L-FWTG30
Industry Canada ID: 287X-FWTG30

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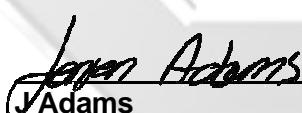
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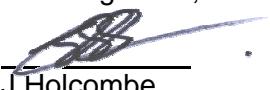
DATED

19th April 2007

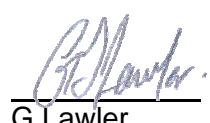
ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47: Parts 22 and 24 and RSS-GEN, RSS-132 and RSS-133. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineers:


J Holcombe


A Hubbard


G Lawler





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SECTION 1

REPORT SUMMARY

Limited FCC CFR 47: Parts 22 and 24
and Industry Canada RSS-Gen, RSS-132 and 133 Testing
of a SGS Telecommunications Europe Ltd Fixed Wireless Terminal



1.1 STATUS

Equipment Under Test	Fixed Wireless Terminal
Objective	To undertake measurements to determine the Equipment Under Test's (EUT's) compliance with the specification.
Name and Address of Client	SGS Telecommunications Europe Ltd Melbourn Science Park Cambridge Road Melbourn Herts SG8 6HB
Manufacturer	Ericsson AB
Model Number	G30a
Part Number	DPY 901 560/0
Serial Number	TU8A115166 and IMEI 358211-00-033312-1
Build Status	Pilot
Software Version	R1N (38430704)
Declared Variants	None
Test Specification/Issue/Date	FCC CFR 47: Part 22, Subpart H: 2004 FCC CFR 47: Part 24, Subpart D: 2004 RSS-Gen: Issue 1: 2005 RSS-132: Issue 1: 2002 RSS-133: Issue 3: 2005
Number of Items Tested	One
Security Classification of EUT	Commercial-in-Confidence
Incoming Release Date	Declaration of Build Status 19 th March 2007
Disposal	Held pending disposal
Order Number	092/149170
Date	28 th February 2007
Start of Test	2 nd April 2007
Finish of Test	14 th April 2007
Related Documents	ANSI C63.4: 2001 RSS-212, Issue 1: 1999

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1.2 INTRODUCTION

The information contained within this report is intended to show limited verification of compliance of the SGS Telecommunications Europe Ltd Fixed Wireless Terminal to the requirements of FCC Specification Parts 22 and 24 and Industry Canada Radio Specifications RSS-132 and RSS-133.

Testing has been performed under the following site accreditations

FCC Accreditation
90987 Octagon House, Fareham Test Laboratory.

Industry Canada Accreditation
IC5208 Octagon House, Fareham Test Laboratory

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1.2 INTRODUCTION

1.2.1 Declaration of Build Status

MAIN EUT	
MANUFACTURING DESCRIPTION	Fixed Wireless Terminal
MANUFACTURER	Ericsson AB
MODEL NUMBER	G30a
PART NUMBER	DPY 901 560-0
SERIAL NUMBER	TUBA115166
HARDWARE VERSION	Not Stated
SOFTWARE VERSION	R1N (38430704)
COUNTRY OF ORIGIN	Poland
FCC ID	P5L-FWTG30
INDUSTRY CANADA ID	287X-FWTG30
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	Provides fixed voice, data and fax services to areas with no fixed infrastructure in a cost effective way, utilizing an existing GSM interface

Signature

A handwritten signature in black ink, appearing to read "B. K. G. S." followed by a stylized surname.

Date

19th March 2007

D of B S Serial No

75900844 Report 01

TUV Product Service Limited formally certifies that the manufacturer's declaration as reproduced in this report is a true and accurate record of the original received from the applicant.



1.3 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out is shown below.

FCC CFR 47: Part 22, Subpart H and RSS-132

Section	Spec Clause		Test Description	Result	Comments
	FCC	Industry Canada			
	Part 2.1046, Part 22.913 (a)	RSS-132, 4.4	Effective Radiated Power – Conducted	N/A	
2.1	Part 2.1046 Part 22.913 (a)	RSS-132, 4.4	Effective Radiated Power –Radiated	Pass	
	Part 2.1047(d)	RSS-132, 4.2	Modulation Characteristics	N/A	
	Part 2.1049, Part 22.917 (b)	RSS-132, 4.5	Occupied Bandwidth	N/A	
	Part 2.1051, Part 22.905 Part 22.917	RSS-132, 4.5	Spurious Emissions at Antenna Terminals (+/- 1MHz)	N/A	
2.2	Part 2.1053, Part 22.917	RSS-132, 4.5	Radiated Spurious Emissions Block Edge	Pass	
	Part 2.1051, Part 22.917(a)	RSS-132, 4.5	Conducted Spurious Emissions	N/A	
	Part 2.1055, Part 22.355	RSS-132, 4.3	Frequency Stability Under Temperature Variations	N/A	
	Part 2.1055, Part 22.355	RSS-132, 4.3	Frequency Stability Under Voltage Variations	N/A	



1.3 BRIEF SUMMARY OF RESULTS

FCC CFR 47: Part 24, Subpart E and RSS-133

Section	Spec Clause		Test Description	Result	Comments
	FCC	Industry Canada			
2.3	Part 22.1046 Part 24.232 (b)	RSS-133, 4.3/6.4	Maximum Peak Output Power - Radiated	Pass	
	Part 2.1046 Part 24.232	RSS-133, 4.3/6.4	Maximum Peak Output Power - Conducted	N/A	
	Part 2.1047(d)	RSS-133, 6.2	Modulation Characteristics	N/A	
	Part 2.1049, Part 24.238 (b)	RSS-133, 2.6/6.5 RSS-Gen, 4.4	Occupied Bandwidth	N/A	
	Part 2.1051, Part 24.229 Part 24.238	RSS-133, 4.4/6.5	Spurious Emissions at Antenna Terminals (+/- 1MHz)	N/A	
2.4	Part 22.1053, Part 24.238	RSS-133, 4.4/6.5	Radiated Spurious Emissions	Pass	Middle Channel Only
	Part 2.1051, Part 24.238 (a)	RSS-133, 4.4/6.5	Conducted Spurious Emissions	N/A	
	Part 2.1055, Part 24.235	RSS-133, 4.2/6.3	Frequency Stability Under Temperature Variations	N/A	
	Part 2.1055, Part 24.235	RSS-133, 4.2/6.3	Frequency Stability Under Voltage Variations	N/A	

N/A – Not Applicable



1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was an Ericsson Fixed Wireless Terminal which provides fixed voice, data and fax services to areas with no fixed infrastructure in a cost effective way, utilising an existing GSM interface.

1.4.2 Modes of Operation

Modes of operation of the EUT during testing were as given in section 1.4.3:

Applicable testing was carried out with the EUT transmitting at maximum power or receiving as detailed in section 1.4.3.

1.4.3 Test Configuration

Test Configuration – GSM 850 Mode

850MHz transmitting on the following channels and frequencies;
Bottom Channel 128: 824.20MHz
Middle Channel 190: 836.60MHz
Top Channel 251: 848.8MHz

Test Configuration – GSM 1900 Mode

1900MHz transmitting on the following channels and frequencies;
Bottom Channel 512: 1850.2MHz
Middle Channel 660: 1879.8MHz
Top Channel 810: 1909.8MHz



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1.5 TEST CONDITIONS

The EUT was set-up simulating a typical user installation at the Test Laboratory, as listed in Section 1.2 and tested in accordance with the applicable specification.

For all tests, the SGS Telecommunications Europe Ltd Fixed Wireless Terminal was powered via a 110 V, 60 Hz AC power supply.

1.6 DEVIATIONS FROM THE STANDARD

Not Applicable

1.7 MODIFICATION RECORD

Not Applicable

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SECTION 2

TEST RESULTS

Limited FCC CFR 47: Parts 22 and 24
and Industry Canada RSS-Gen, RSS-132 and 133 Testing
of an Ericsson Fixed Wireless Terminal



2.1 EFFECTIVE RADIATED POWER (RADIATED)

2.1.1 Specification Reference

FCC CFR 47: Part 22 Subpart H, Section 22.913(a) and Industry Canada RSS-132, 4.4

2.1.2 Equipment Under Test

Fixed Wireless Terminal

2.1.3 Date of Test

2nd and 4th April 2007

2.1.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.5 Test Procedure

Using a spectrum analyser and attenuator(s), the output power of the EUT was measured at the antenna terminals. The EUT supports GSM.

The spectrum analyser RBW and VBW were set to 1MHz and the path loss measured and entered as a reference level offset.

2.1.6 Test Results

Maximum Power – GSM 850 Mode

Frequency MHz	Result dBm	Limit dBm	Result W	Limit W
824.20	26.85	38.45	0.48	7.00
836.40	26.68	38.45	0.47	7.00
848.80	30.80	38.45	1.20	7.00



2.2 RADIATED SPURIOUS EMISSIONS

2.2.1 Equipment Reference

FCC CFR 47: Part 22 Subpart H, Sections 2.1053, 22.917 and Industry Canada RSS-132, 4.5

2.2.2 Equipment Under Test

Fixed Wireless Terminal

2.2.3 Date of Test

4th April 2007

2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.5 Test Procedure

Test Performed in accordance with ANSI C63.4.

In order to determine the Radiated Emission Limits, measurements of transmitter power (P) were first carried out on the top, middle and bottom channels using a peak detector, and the results are shown in the following table.

A preliminary profile of the Spurious Radiated Emissions was obtained by operating the EUT on a remotely controlled turntable within the Anechoic Chamber. Measurements of emissions from the EUT were obtained with the Measurement Antenna in both Horizontal and Vertical Polarisations. The profiling produced a list of the worst-case emissions together with the EUT azimuth and antenna polarisation.

Using the information from the preliminary profiling of the EUT. The list of emissions was then confirmed or updated in the Anechoic Chamber (3 metres). Emission levels were maximised by adjusting the antenna height, antenna polarisation and turntable azimuth.

Emissions were only measured within $\pm 1\text{MHz}$ of the Block Edge. Therefore all emissions were below 1GHz. The measurements were then formally measured using a Peak detector.

The measurements were performed at a 3m distance unless otherwise stated.



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2.2 RADIATED SPURIOUS EMISSIONS

2.2.6 Test Results

30MHz – 1GHz Frequency Range

Equipment Designation: Intentional Radiator.

The EUT met the requirements of FCC CFR 47: Part 22, Subpart H 2.1049, 22.917 and Industry Canada RSS-132, 4.5 for Radiated Emissions (30MHz – 1GHz).

Measurements were made with the EUT in GSM 850 Mode.

EUT Transmitting on Bottom Channel (824.20MHz)

Frequency	Resolution Bandwidth	Video Bandwidth	Antenna Polarisation	Height	Azimuth	Peak Result	Peak Limit
MHz	kHz	kHz		cm	degree	dBm	dBm
824.0	5	30	Vertical	156	323	-16.16	-13.00

EUT Transmitting on Top Channel (848.80MHz)

Frequency	Resolution Bandwidth	Video Bandwidth	Antenna Polarisation	Height	Azimuth	Peak Result	Peak Limit
MHz	kHz	kHz		cm	degree	dBm	dBm
849.0	5	30	Vertical	100	326	-16.52	-13.00



2.3 MAXIMUM PEAK OUTPUT POWER (RADIATED)

2.3.1 Specification Reference

FCC CFR 47: Part 24 Subpart E, Section 24.232(b) and Industry Canada RSS-133, 4.3 and 6.4

2.3.2 Equipment Under Test

Fixed Wireless Terminal

2.3.3 Date of Test

5th April 2007

2.3.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.3.5 Test Procedure

Using a spectrum analyser and attenuator(s), the output power of the EUT was measured at the antenna terminals. The EUT supports GSM.

The spectrum analyser RBW and VBW were set to 1MHz and the path loss measured and entered as a reference level offset.

2.3.6 Test Results

Maximum Power – GSM 1900 Mode

Frequency MHz	Result dBm	Limit dBm	Result W	Limit W
1910.0	31.39	33.00	1.37	2.00
1880.0	31.77	33.00	1.50	2.00
1850.0	29.26	33.00	0.84	2.00



2.4 RADIATED SPURIOUS EMISSIONS

2.4.1 Specification Reference

FCC CFR 47: Part 24 Subpart E, Section 24.238, 2.1053 and Industry Canada RSS-133, 4.4/6.5

2.4.2 Equipment Under Test

Fixed Wireless Terminal

2.4.3 Date of Test

5th April 2007

2.4.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.4.5 Test Procedure

Test Performed in accordance with ANSI C63.4.

A preliminary profile of the Spurious Radiated Emissions was obtained by operating the EUT on a remotely controlled turntable within a semi-anechoic chamber. Measurements of emissions from the EUT were obtained with the Measurement Antenna in both Horizontal and Vertical Polarisations. The profiling produced a list of the worst-case emissions together with the EUT azimuth and antenna polarisation.

Using the information from the preliminary profiling of the EUT, the list of emissions was then confirmed or updated under Anechoic Chamber alternative open area test site conditions. Emission levels were maximised by adjusting the antenna height, antenna polarisation and turntable azimuth.

Emissions identified within the range 30MHz – 1GHz were then formally measured using a CISPR Quasi-Peak detector.

Emissions identified within the range 1GHz – 20GHz were then formally measured using Peak and Average Detectors, as appropriate.

The measurements were performed at a 3m distance unless otherwise stated.



2.4 RADIATED SPURIOUS EMISSIONS

2.4.6 Test Results - continued

30MHz – 1GHz Frequency Range

Equipment Designation: Intentional Radiator.

The EUT met the requirements of FCC Part 24.238, 2.1053 and Industry Canada RSS-133, 4.4/6.5 for Radiated Emissions (30MHz – 1GHz).

Measurements were made with the EUT in GSM 1900 Mode

EUT Transmitting on Top Channel (1909.8MHz)

Frequency	Resolution Bandwidth	Video Bandwidth	Antenna Polarisation	Height	Azimuth	Peak Result	Peak Limit
MHz	MHz	MHz		cm	degree	dBm	dBm
5.729	1	1	Horizontal	100	225	-38.3	-13.0
62.02	1	1	Vertical	100	045	-61.2	-13.0

1GHz – 20GHz Frequency Range

Equipment Designation: Intentional Radiator.

The EUT met the requirements of FCC Part 24.238, 2.1053 and Industry Canada RSS-133, 4.4/6.5 for Radiated Emissions (1GHz - 20GHz).

Measurements were made with the EUT in PCS 1900 Mode

EUT Transmitting on Top Channel (1909.8MHz)

No emissions were detected above the measurement noise floor, which is at least 20dB below the specification limit. Therefore no results table is presented.

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SECTION 3

TEST EQUIPMENT



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3.1 TEST EQUIPMENT

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No	TE Number	Calibration Due
Sections 2.1, 2.2, 2.3 and 2.4 EMC - Radiated Emissions				
Spectrum Analyser	Hewlett Packard	8542E	18	09/02/2008
Antenna (Double Ridge Guide)	Link Microtek Ltd	AM180HA-K-TU2	230	22/06/2008
Amplifier	Miteq Corp	AMF-3D-001080-18-13P	231	TU
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	29/06/2007
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	235	29/06/2007
Amplifier (Low Noise, 18GHz-40GHz)	Narda	NARDA DB02-0447	240	15/06/2007
Antenna (Bilog)	Schaffner	CBL6143	287	13/01/2008
Dual Power Supply Unit	Thurlby	PL320	288	TU
Communications Tester	Rohde & Schwarz	CMU 200	442	11/05/2007
Antenna (Dipole, 300MHz-1000MHz)	Schwarzbeck	UHAP	447	08/09/2007
Filter (High Pass, 3GHz)	RLC Electronics	F100-3000-5-R	565	19/05/2007
Test Receiver	Rohde & Schwarz	ESIB40	1006	07/04/2007
Screened Room (5)	Rainford	Rainford	1545	01/03/2008
Mast Controller	Inn-Co GmbH	CO 1000	1606	TU
Turntable/Mast Controller	EMCO	2090	1607	TU
Test Receiver	Rohde & Schwarz	ESIB26	2085	10/11/2007
SMA-SMA Cable (2m)	Reynolds	262-0248-2000	2399	27/07/2007
2m SMA(m) - SMA(m) Cable	Reynolds	262-0248-2000	2401	27/07/2007
3m N(m) - N(m) RF Cable	Reynolds	269-0088-3000	2412	27/07/2007
Multimeter	Iso-tech	Iso Tech IDM101	2417	08/08/2007

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3.1 TEST EQUIPMENT

Instrument	Manufacturer	Type No	TE Number	Calibration Due
Sections 2.1, 2.2, 2.3 and 2.4 EMC - Radiated Emissions				
5kVA AC Power Source	Schaffner	NSG1007	2765	13/07/2007
Amplifier (8GHz-18GHz)	Avantec	AWT-18036	2821	13/11/2007
Filter, High Pass	RLC Electronics	RLC-F100-1500-S-R	2843	31/10/2007
Bilog Antenna	Chase	CBL6143	2904	10/11/2007
Comb Generator	Schaffner	RSG1000	3034	TU
Radio Communications Test Set	Rohde & Schwarz	CMU 200	3035	11/04/2007
Signal Generator: 10MHz to 40GHz	Rohde & Schwarz	SMR40	3171	29/06/2007

TU Traceability Unscheduled



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3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	Frequency / Parameter	MU
Radiated Emissions, Bilog Antenna, AOATS	30MHz to 1GHz Amplitude	5.1dB*
Radiated Emissions, Horn Antenna, AOATS	1GHz to 40GHz Amplitude	6.3dB*

Worst case error for both Time and Frequency measurement 12 parts in 10^6 .

* In accordance with CISPR 16-4

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SECTION 4

PHOTOGRAPHS

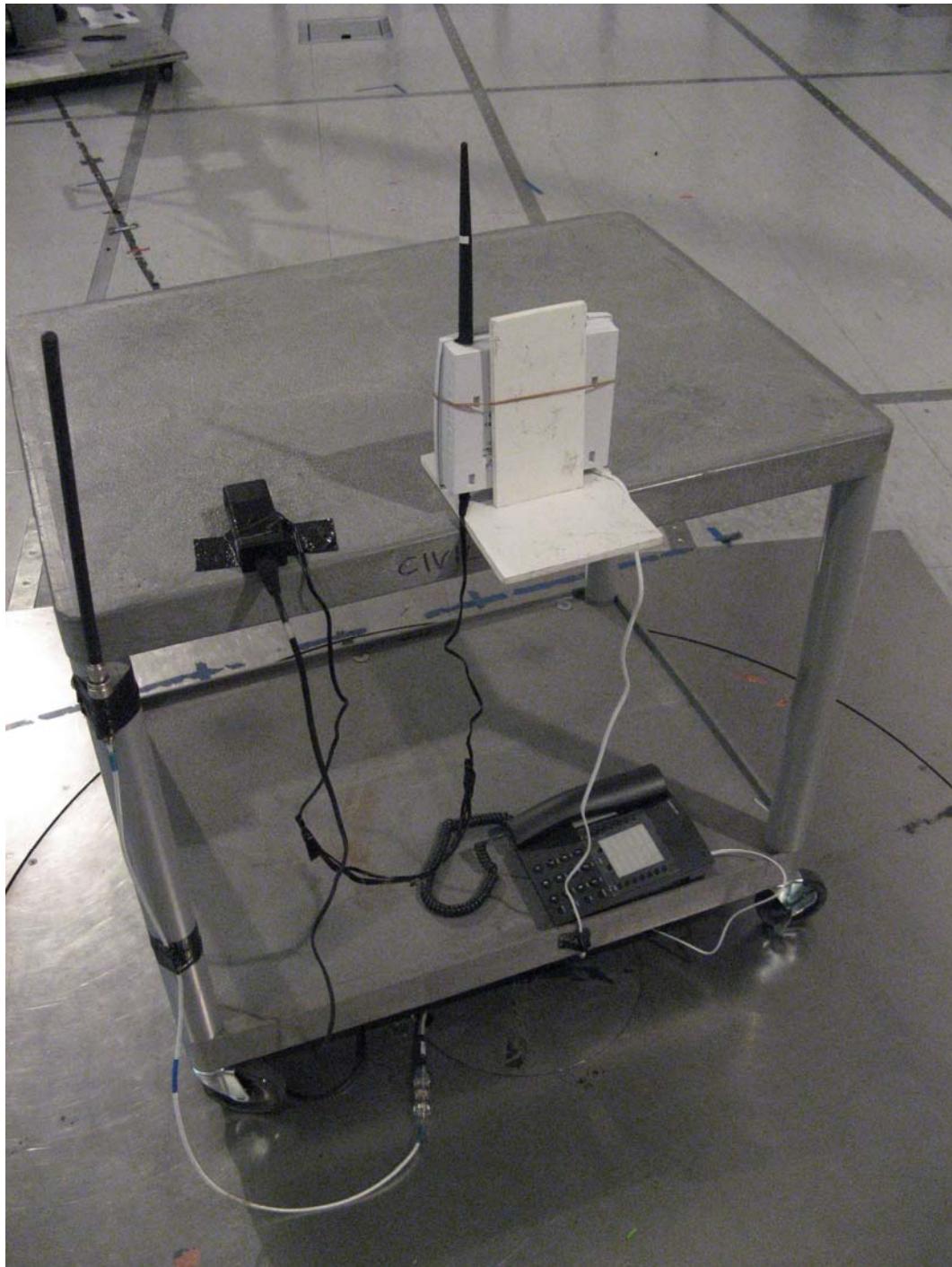
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4.1 PHOTOGRAPHS OF TEST EQUIPMENT



Radiated Emissions Test Setup

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ACCREDITATION, DISCLAIMERS AND COPYRIGHT

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