FCC CFR47 PART 22 SUBPART H
AND PART 24 SUBPART E
CERTIFICATION TEST REPORT

FOR

DUAL BAND CDMA 1XRTT / 1XEVDO PC CARD

MODEL NUMBER: KPC680

FCC ID: OVFKWC-KPC680

REPORT NUMBER: 07U10840-1

ISSUE DATE: FEBRUARY 15, 2007

Prepared for
KYOCERA WIRELESS
10300 CAMPUS POINT DRIVE
SAN DIEGO, CA 92121, U.S.A.

Prepared by
COMPLIANCE CERTIFICATION SERVICES
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
TEL: (510) 771-1000
FAX: (510) 661-0888

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	02/15/07	Initial Issue	T. C.

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS 4

2. TEST METHODOLOGY 5

3. CROSS REFERENCE TO OTHER REPORT ON THIS PRODUCT 5

4. FACILITIES AND ACCREDITATION 5

5. CALIBRATION AND UNCERTAINTY 5

5.1. MEASURING INSTRUMENT CALIBRATION 5

5.2. MEASUREMENT UNCERTAINTY 5

6. EQUIPMENT UNDER TEST 6

6.1. DESCRIPTION OF EUT 6

6.2. MAXIMUM OUTPUT POWER 6

6.3. DESCRIPTION OF AVAILABLE ANTENNAS 6

6.4. SOFTWARE AND FIRMWARE 6

6.5. WORST-CASE CONFIGURATION AND MODE 7

6.6. DESCRIPTION OF TEST SETUP 7

7. TEST AND MEASUREMENT EQUIPMENT 9

8. LIMITS AND RESULTS 10

8.1. RADIATED RF POWER OUTPUT 10

8.2. FIELD STRENGTH OF SPURIOUS RADIATION 13

9. SETUP PHOTOS 16

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: KYOCERA WIRELESS
10300 CAMPUS POINT DRIVE
SAN DIEGO, CA 92121, U.S.A

EUT DESCRIPTION: DUAL BAND CDMA 1XRTT / 1XEVDO PC CARD

MODEL: KPC680

SERIAL NUMBER: 19010581245

DATE TESTED: FEBRUARY 7-9, 2007

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 22 SUBPART H	NO NON-COMPLIANCE NOTED
FCC PART 24 SUBPART E	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

Tested By:

YU-CHIEN HO
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA/EIA 603C (2004), ANSI C63.4-2003, FCC CFR 47 Part 2, FCC CFR 47 Part 15 and FCC CFR 47 Part 22H and 24E.

3. CROSS REFERENCE TO OTHER REPORT ON THIS PRODUCT

Other report "EMI Test Configuration for PC-Card_01-23-07.pdf" is applicable to this product for RF Conducted Measurement.

4. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

5. CALIBRATION AND UNCERTAINTY

5.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

5.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

Uncertainty figures are valid to a confidence level of 95%.

6. EQUIPMENT UNDER TEST

6.1. DESCRIPTION OF EUT

The EUT is a Dual Band CDMA 1xRTT/1xEVDO PC Card.

The radio module is manufactured by Kyocera Wireless Corp

6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

824 to 849 MHz Authorized Band

Frequency Range (MHz)	Modulation	Conducted Average Power (dBm)	Conducted Average Power (mW)	Conducted Peak Power (dBm)	Conducted Peak Power (mW)
Low CH - 824.7	1 x EVDO, Rev 0, FTAP	24.23	264.85	28.6	724.44
Mid CH - 836.5		24.31	269.77	28.33	680.77
High CH - 848.3		24.23	264.85	27.91	618.02

1850 to 1910 MHz Authorized Band

Frequency Range (MHz)	Modulation	Conducted Average Power (dBm)	Conducted Average Power (mW)	Conducted Peak Power (dBm)	Conducted Peak Power (mW)
Low CH - 1851.25	1 x EVDO, Rev 0, FTAP	23.43	220.29	27.34	542.00
Mid CH - 1880		23.59	228.56	27.81	603.95
High CH - 1908.75		24.01	251.77	27.32	539.51

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an monopole type antenna with a maximum gain of 2.5 dBi for Cell band and 2.0 dBi for PCS band.

6.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was Chameleon – Service Programming Version 2.0.0. Build 517. Build Date December 21, 06. @ Copyright 2003-2006 Kyocera Wireless. The EUT is linked with Agilent Communication Test Set.

6.5. WORST-CASE CONFIGURATION AND MODE

Based on the conducted results from the different modulations, EV-DO, REV 0 Protocol FTAP is the worst-case scenario for all measurements.

The worst-case channel is determined as the channel with the highest output power. The highest measured output power was at high channel for CELL band and low channel for PCS band.

The worst-case configuration has been evaluated on EUT with antenna @ X-position for 850MHz and @ Y position for 1900MHz bands by comparing the fundamental ERP / EIRP output power.

6.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US115V	Un-shielded	1.5m	N/A
2	DC	1	DC	Un-shielded	1.5m	Ferrite on Laptop End
3	RF In/Out	1	N-Type	Shielded	1m	N/A

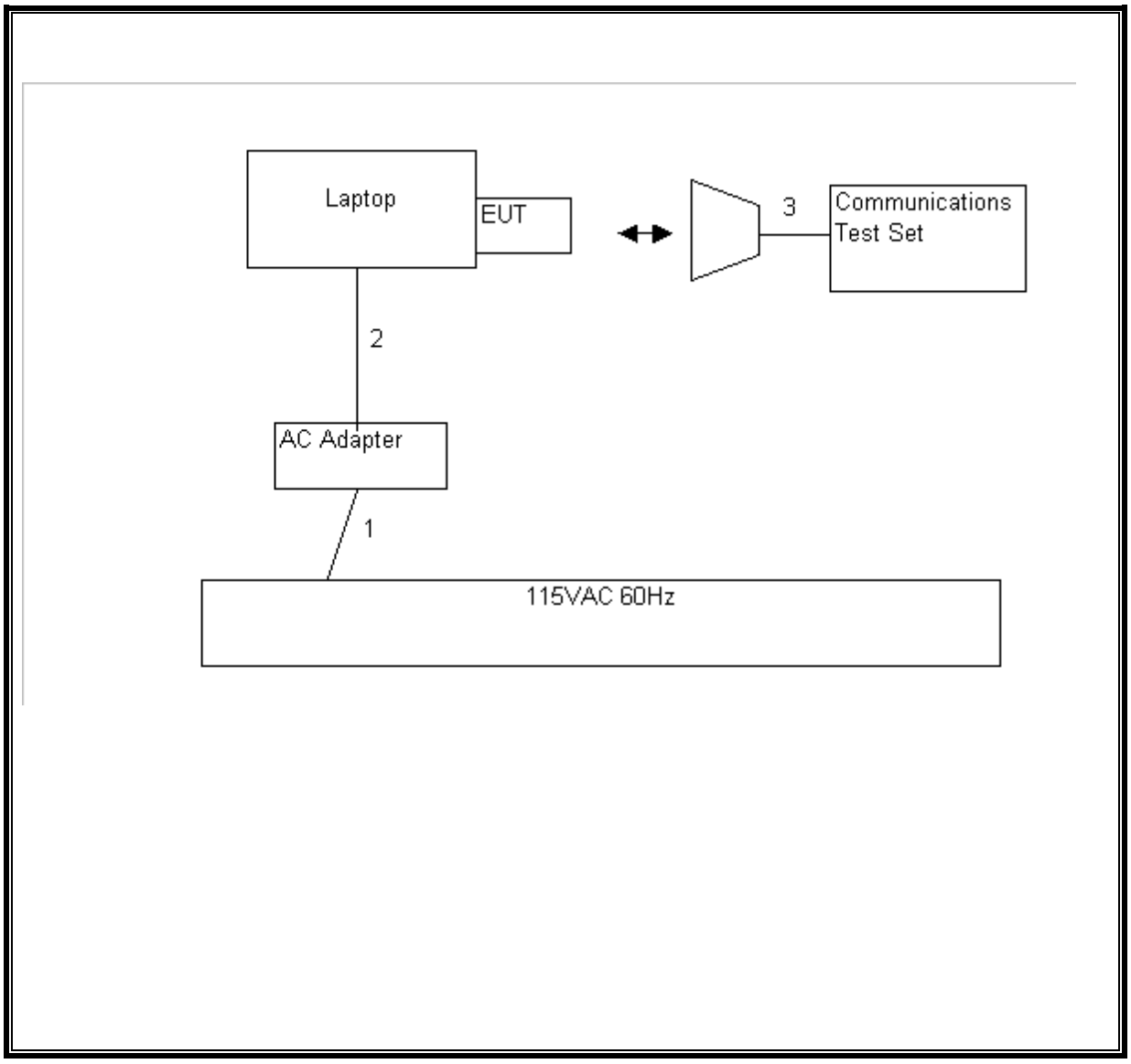
I/O CABLES

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop Computer	IBM	2623-D6U	L3-D5546 06/08	MCLJ07H081
AC Adapter	Lenovo	PA-1900-17I	11S92P1109Z1ZBTZ68FB6P	DoC

TEST SETUP

The EUT is installed into a laptop computer system during the tests. Test software exercised the radio card.

SETUP DIAGRAM FOR TESTS



7. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**Cal Due**
Spectrum Analyzer, 1.8 GHz	Agilent / HP	8591A	3009A00791	10/12/07
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A121003	08/13/07
Preamplifier, 1300 MHz	Agilent / HP	8447D	1937A02062	01/23/08
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent / HP	E4446A	US42070220	11/26/07
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	3008A00369	08/01/07
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	04/22/07
2.7GHz HPF	MicroTronic	HPM13194	2	CNR
1.5GHz HPF	MicroTronic	HPM13195	1	CNR
Communication Test Set	Agilent	E5515C	91936	04/08/07
Signal Generator 2 -40 GHz	R & S	SMP04	DE 34210	06/02/07
Signal Generator 1024 MHz	R & S	SMY01	DE 12311	05/11/07
Dipole	EMCO	3121C-DB2	22435	05/07/07
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	04/22/07

8. LIMITS AND RESULTS

8.1. RADIATED RF POWER OUTPUT

LIMIT

22.913(a) The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.
24.232(b) Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

TEST PROCEDURE

ANSI / TIA / EIA 603 Clause 2.2.17

RESULTS

No non-compliance noted.

850 MHz 1 x EVDO, Rev 0, FTAP Mode

Channel	Frequency (MHz)	ERP Peak Power (dBm)	ERP Peak Power (mW)
Low	824.7	26.90	489.78
Middle	836.5	27.90	616.60
High	848.3	28.10	645.65

1900 MHz 1 x EVDO, Rev 0, FTAP Mode

Channel	Frequency (MHz)	EIRP Peak Power (dBm)	EIRP Peak Power (mW)
Low	1851.25	29.60	912.01
Middle	1880.00	27.60	575.44
High	1908.75	27.50	562.34

CDMA Output Power (ERP)

High Frequency Substitution Measurement
Compliance Certification Services, Fremont 5m Chamber B

Company: Kyocera Wireless
Project #: 07U10840
Date: 2/7/07
Test Engineer: Yu-Chien Ho
Configuration: Modem with laptop.
Mode: US CELL, FTAP, 1xEV-D0.

Test Equipment:
Receiving: Sunol T122, and 5m Chamber N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, and 4ft SMA Cable Warehouse S/N: 177081002

f MHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
X-Axis, Low Channel									
824.70	96.3	V	22.7	0.5	0.0	22.2	38.5	-16.2	
824.70	102.7	H	27.4	0.5	0.0	26.9	38.5	-11.6	
X-Axis, Mid Channel									
836.50	97.5	V	24.5	0.6	0.0	23.9	38.5	-14.6	
836.50	103.6	H	28.5	0.6	0.0	27.9	38.5	-10.6	
X-Axis, High Channel									
848.31	98.7	V	25.5	0.7	0.0	24.8	38.5	-13.6	
848.31	104.3	H	28.8	0.7	0.0	28.1	38.5	-10.4	

Rev. 1.24.7

CDMA Output Power (EIRP)

High Frequency Fundamental Measurement
Compliance Certification Services, Fremont 5m Chamber B

Company: Kyocera Wireless
Project #: 07U10840
Date: 2/7/07
Test Engineer: Yu-Chien Ho
Configuration: Modem with laptop.
Mode: US PCS, FTAP, 1xEV-D0.

Test Equipment:
Receiving: Horn T73, and 12ft S/N: 197209005 (Setup this one for testing EUT)
Substitution: Horn T60 Substitution, 4ft SMA Cable Warehouse S/N: 177081002

f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Y-Axis, Mid Channel									
1.880	95.5	V	22.1	0.9	8.3	29.6	33.0	-3.5	
1.880	89.7	H	15.8	0.9	8.3	23.2	33.0	-9.8	
Y-Axis, Low Channel									
1.851	94.5	V	20.2	0.9	8.3	27.6	33.0	-5.4	
1.851	88.9	H	14.1	0.9	8.3	21.5	33.0	-11.5	
Y-Axis, High Channel									
1.909	93.3	V	20.0	0.9	8.4	27.5	33.0	-5.5	
1.909	89.6	H	16.8	0.9	8.4	24.3	33.0	-8.8	

Rev. 1.24.7

8.2. FIELD STRENGTH OF SPURIOUS RADIATION

LIMIT

§22.917 (e) and §24.238 (a) Out of band emissions. 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 + 10 log (P) dB.

TEST PROCEDURE

ANSI / TIA / EIA 603 Clause 3.2.12, FCC 22.917 (h), & FCC 24.238 (b)

RESULTS

No non-compliance noted.

Note: No emissions were found within 30-1000MHz & after the third harmonic of 20dB below the system noise.

CDMA Spurious & Harmonic (ERP)

High Frequency Substitution Measurement
Compliance Certification Services, B- 5m Chamber Fremont Site

Company: Kyocera Wireless
Project #: 07U10840
Date: 2/7/07
Test Engineer: Yu-Chien Ho
Configuration: Modem with laptop.
Mode: US CELL, FTAP, 1xEV-D0.

Test Equipment:

EMCO Horn 1-18GHz: T73; S/N: 6717 @3m
Horn > 18GHz:
Limit: FCC 22
☑ High Pass Filter
Hi Frequency Cables: ☐ (2 ft) ☑ (2 ~ 3 ft) ☐ (4 ~ 6 ft) ☑ (12 ft)
Pre-amplifer 1-26GHz: T34 HP 8449B
Pre-amplifer 26-40GHz:

f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch, X-Axis.										
1.649	59.6	V	-47.5	4.2	8.0	5.8	-45.8	-13.0	-32.8	
2.474	49.3	V	-53.6	5.2	9.5	7.4	-51.4	-13.0	-38.4	
3.298	48.9	V	-49.8	6.0	9.8	7.6	-48.2	-13.0	-35.2	
1.649	57.0	H	-49.3	4.2	8.0	5.8	-47.6	-13.0	-34.6	
2.474	49.2	H	-53.6	5.2	9.5	7.4	-51.4	-13.0	-38.4	
3.298	48.3	H	-50.3	6.0	9.8	7.6	-48.7	-13.0	-35.7	
Mid Ch, X-Axis.										
1.673	57.8	V	-49.1	4.2	8.0	5.9	-47.4	-13.0	-34.4	
2.510	48.7	V	-54.1	5.2	9.6	7.4	-51.9	-13.0	-38.9	
3.346	48.8	V	-49.6	6.0	9.8	7.6	-48.1	-13.0	-35.1	
1.673	59.7	H	-46.5	4.2	8.0	5.9	-44.9	-13.0	-31.9	
2.510	48.6	H	-54.0	5.2	9.6	7.4	-51.8	-13.0	-38.8	
3.346	48.2	H	-50.1	6.0	9.8	7.6	-48.6	-13.0	-35.6	
High Ch, X-Axis.										
1.697	60.3	V	-46.5	4.2	8.1	5.9	-44.8	-13.0	-31.8	
2.545	50.3	V	-52.3	5.3	9.6	7.4	-50.1	-13.0	-37.1	
3.393	48.4	V	-49.9	6.1	9.7	7.6	-48.3	-13.0	-35.3	
1.697	61.2	H	-44.9	4.2	8.1	5.9	-43.2	-13.0	-30.2	
2.545	49.5	H	-52.9	5.3	9.6	7.4	-50.7	-13.0	-37.7	
3.393	48.9	H	-49.2	6.1	9.7	7.6	-47.7	-13.0	-34.7	

Rev. 1.24.7

CDMA Spurious & Harmonic (EIRP)

High Frequency Substitution Measurement
Compliance Certification Services, B- 5m Chamber Fremont Site

Company: Kyocera Wireless
Project #: 07U10840
Date: 2/7/07
Test Engineer: Yu-Chien Ho
Configuration: Modem with laptop.
Mode: US PCS, FTAP, 1xEV-D0.

Test Equipment:

EMCO Horn 1-18GHz: T73; S/N: 6717 @3m
Horn > 18GHz:
Limit: FCC 24
☑ High Pass Filter
Hi Frequency Cables: ☐ (2 ft) ☑ (2 ~ 3 ft) ☐ (4 ~ 6 ft) ☑ (12 ft)
Pre-amplifer 1-26GHz: T34 HP 8449B
Pre-amplifer 26-40GHz:

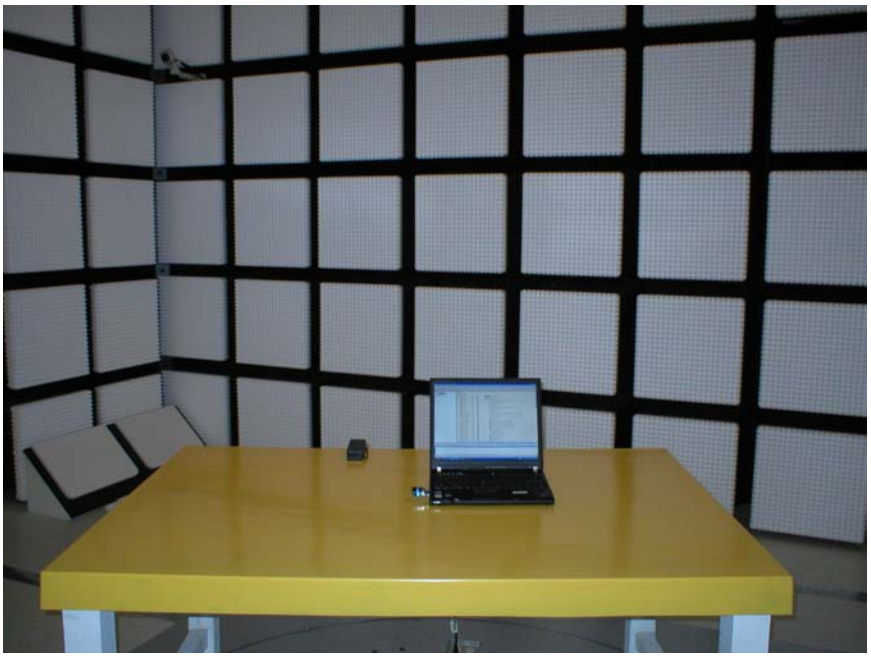
f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch, Y-Axis.										
3.703	62.3	V	-34.2	6.4	9.7	7.6	-30.9	-13.0	-17.9	
5.554	46.4	V	-44.7	8.0	11.3	9.1	-41.4	-13.0	-28.4	
7.405	48.4	V	-39.8	9.0	12.6	10.4	-36.3	-13.0	-23.3	
9.256	47.3	V	-39.0	10.1	13.0	10.8	-36.2	-13.0	-23.2	
3.703	55.0	H	-41.5	6.4	9.7	7.6	-38.2	-13.0	-25.2	
5.554	46.6	H	-43.5	8.0	11.3	9.1	-40.2	-13.0	-27.2	
7.405	48.8	H	-38.6	9.0	12.6	10.4	-35.0	-13.0	-22.0	
9.256	48.1	V	-38.2	10.1	13.0	10.8	-35.4	-13.0	-22.4	
Mid Ch, Y-Axis.										
3.760	60.6	V	-35.7	6.4	9.7	7.6	-32.4	-13.0	-19.4	
5.640	46.9	V	-44.4	8.1	11.5	9.3	-41.0	-13.0	-28.0	
7.520	48.1	V	-40.0	9.1	12.6	10.5	-36.5	-13.0	-23.5	
9.400	49.4	H	-36.3	10.3	13.0	10.9	-33.5	-13.0	-20.5	
3.760	54.8	H	-41.3	6.4	9.7	7.6	-38.1	-13.0	-25.1	
5.640	46.8	H	-43.5	8.1	11.5	9.3	-40.1	-13.0	-27.1	
7.520	49.4	H	-37.9	9.1	12.6	10.5	-34.3	-13.0	-21.3	
9.400	49.2	H	-36.5	10.3	13.0	10.9	-33.7	-13.0	-20.7	
High Ch, Y-Axis.										
3.820	70.6	V	-25.3	6.5	9.7	7.5	-22.1	-13.0	-9.1	
5.726	48.3	V	-43.2	8.1	11.6	9.5	-39.6	-13.0	-26.6	
7.635	49.2	V	-38.7	9.1	12.7	10.5	-35.2	-13.0	-22.2	
9.544	48.8	V	-36.2	10.5	13.1	11.0	-33.6	-13.0	-20.6	
3.820	65.9	H	-29.9	6.5	9.7	7.5	-26.7	-13.0	-13.7	
5.726	47.5	H	-43.1	8.1	11.6	9.5	-39.5	-13.0	-26.5	
7.635	48.9	H	-38.2	9.1	12.7	10.5	-34.7	-13.0	-21.7	
9.544	47.3	H	-37.7	10.5	13.1	11.0	-35.0	-13.0	-22.0	

Rev. 1.24.7

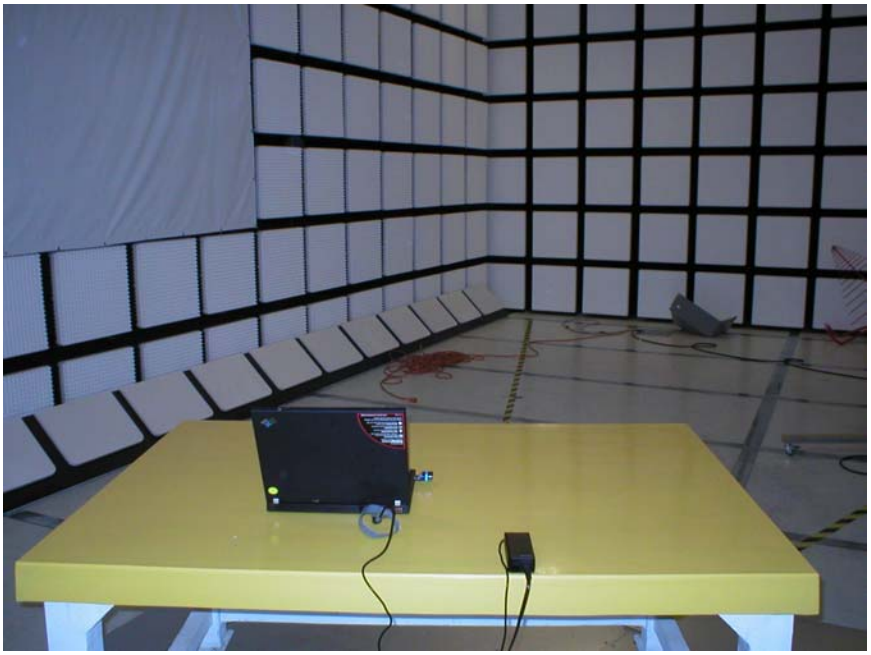
9. SETUP PHOTOS

RADIATED RF MEASUREMENT SETUP FOR PORTABLE CONFIGURATION

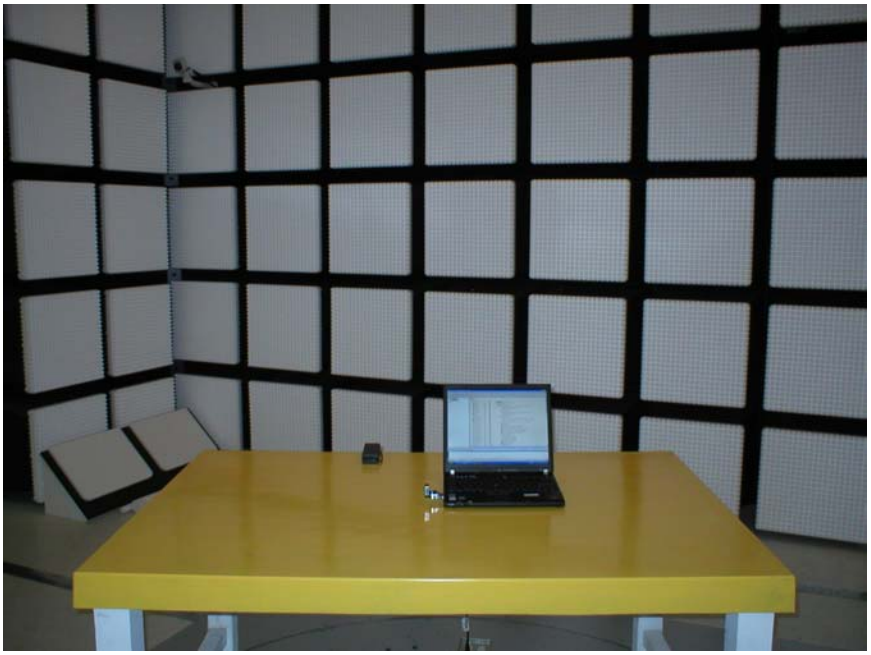
X-AXIS FRONT PHOTO



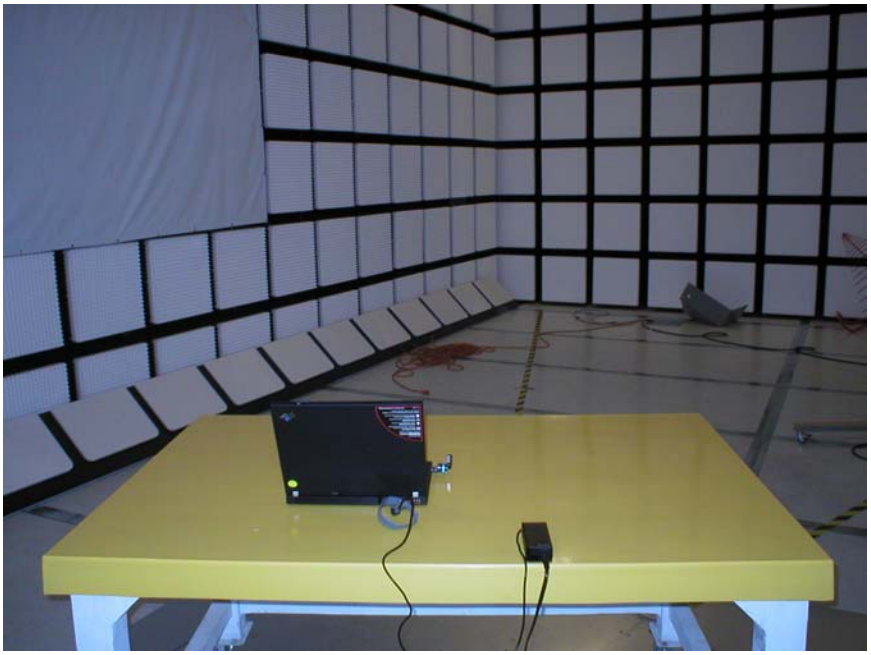
X-AXIS BACK PHOTO



Y-AXIS FRONT PHOTO



Y-AXIS BACK PHOTO



ZOOM-IN X-AXIS PHOTO

ZOOM-IN Y-AXIS PHOTO

END OF REPORT