



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

SIERRA EV-DO MODULE

MODEL NUMBER: MC5725

FCC ID: N7N-MC5725-F

REPORT NUMBER: 08U11599-1

ISSUE DATE: FEBRUARY 05, 2008

*Prepared for*

**FUJITSU AUSTRALIA PTY LTD  
1230 NEPEAN HIGHWAY  
CHELTENHAM VIC 3192**

*Prepared by*

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**NVLAP**<sup>®</sup>

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
---	02/05/2008	Initial Issue	T. Chan

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## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** FUJITSU AUSTRALIA PTE LTD.  
1230 NEPEAN HIGHWAY  
CHELTENHAM VIC 3192

**EUT DESCRIPTION:** SIERRA EV-DO MODULE T2010 TABLET COMPUTERS WITH  
WWAN MC5725 AND INTEL OR ATHEROS WLAN MODULES

**MODEL:** MC5725

**SERIAL NUMBER:** N/A

**DATE TESTED:** FEBRUARY 04, 2008

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 22 SUBPART H	No Non-Compliance Noted
FCC PART 24 SUBPART E	No Non-Compliance Noted

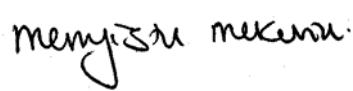
Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**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:



Tested By:



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THU CHAN  
EMC SUPERVISOR  
COMPLIANCE CERTIFICATION SERVICES

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MENGISTU MEKURIA  
EMC ENGINEER  
COMPLIANCE CERTIFICATION SERVICES

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA/EIA 603C, FCC CFR 47 Part 2, and FCC CFR 47 Part 22.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

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

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. 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.

### 4.2. 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%.

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

The EUT is a Sierra EV-DO module installed inside Fujitsu swivel notebook/ tablet convertible PC Model T2010 with Intel/ Kedron 4965AGN or Atheros / AR5BXB6WLAN modules. The Laptop is manufactured by Fujitsu.

### 5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum ERP & EIRP output powers as follows:

824 to 849 MHz Authorized Band

Frequency Range (MHz)	Modulation	ERP Peak Power (dBm)	ERP Peak Power (mW)
Low CH - 824.7	1xEV-DO. REV A.	27.7	588.84
Mid CH - 836.5		29.1	812.83
High CH - 848.3		27.5	562.34

1850 to 1910 MHz Authorized Band

Frequency Range (MHz)	Modulation	EIRP Peak Power (dBm)	EIRP Peak Power (mW)
Low CH - 1851.25	1xEV-DO. REV A.	27.6	575.44
Mid CH - 1880		27.6	575.44
High CH - 1908.75		25.7	371.54

NOTE: RBW=VBW=8MHz

### 5.3. SOFTWARE AND FIRMWARE

The EUT is linked with Agilent Communication Test Set.

### 5.4. WORST-CASE CONFIGURATION AND MODE

Pre-scan was performed on RF conducted port to determine the worst-case scenario, and the X, Y, Z, and mobile positions examine to determine the worst orientation of the EUT. Based on

the above two investigations the worst EUT position was mobile, and the procedure to establish link for worst-case configuration is as follow:

## PROCEDURE USED TO ESTABLISH TEST SIGNAL

3G-CDMA2000 1xEV-DO Revision A (Rev A)

**This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.**

## Application Rev, License

1xEV-DO Terminal Test A.06.06, L

RETAP

- Call Setup > Shift & Preset
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > RETAP
- F-Traffic Format > 4 (1024, 2,128) Canonical (307.2k, QPSK)
- R-Data Pkt Size > 4096 (for PCS band), 12288 (for Cellular band)
- Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2

## > PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)

- Access Network Info > Cell Parameters > Sector ID > 00000000 > Subnet Mask > 0
- Generator Info > Termination Parameters > Max Forward Packet Duration >16 Slots > ACK R-Data After > Subpacket 0 (All ACK)
- Rvs Power Ctrl > All Up bits (to get the maximum power)

## 5.5. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Fujitsu	CP340545-01-DS	2101	DoC
AC/DC	Fujitsu	FMV-AC317D	07903402A	DoC

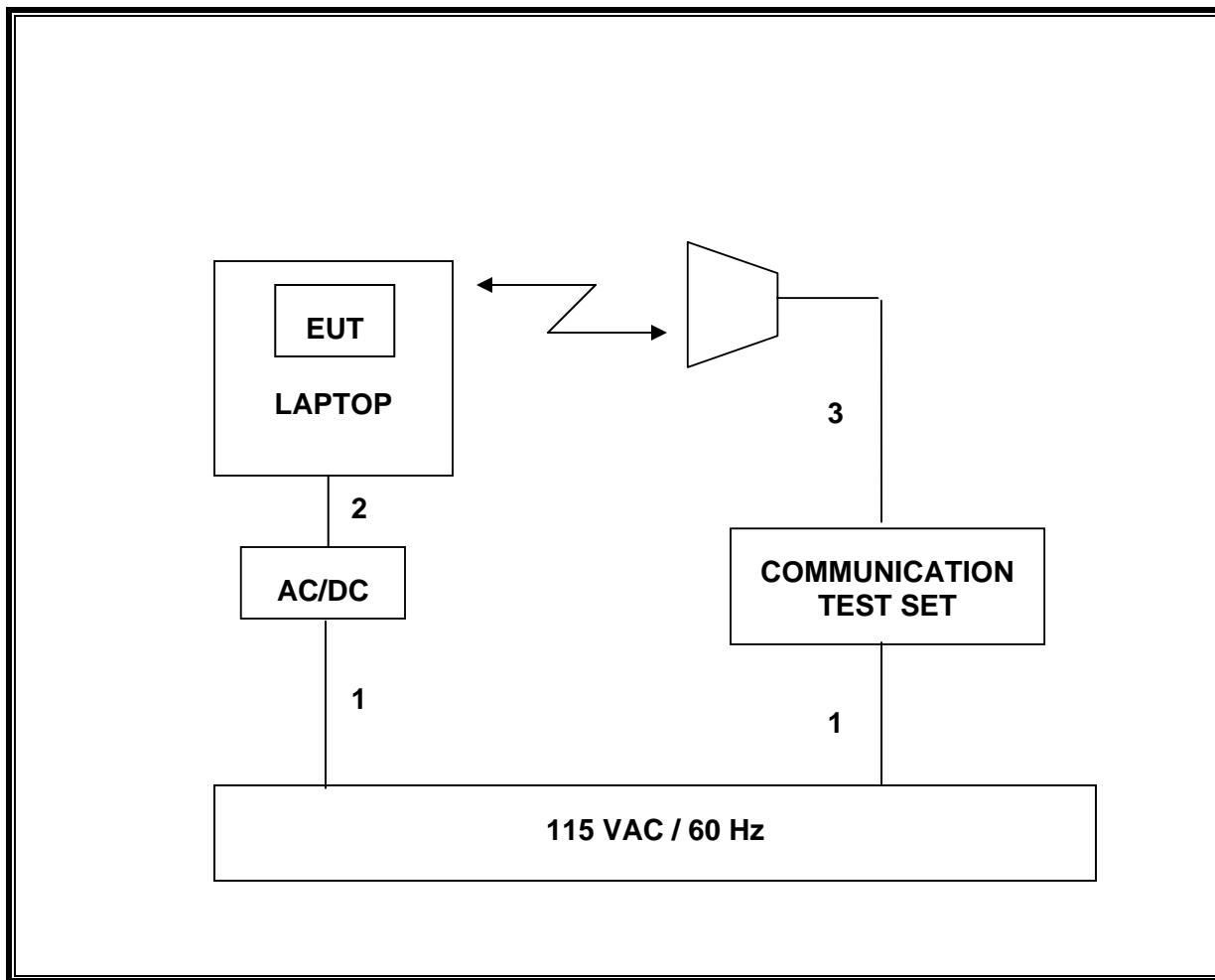
### I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	2	AC	Un-shielded	2.0 m	NA
2	DC	1	DC	Un-shielded	2.0 m	NA
3	RF IN/OUT	1	SMA	Un-shielded	2.0 m	NA

### TEST SETUP

The EUT card is an EV-DO module that inserted inside Fujitsu laptop. The Wireless Communication test set exercised the EUT.

**SETUP DIAGRAM FOR TESTS**



## 5.6. 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	Asset	Cal Date	Cal Due
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	10/03/07	09/27/08
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	09/15/07	09/30/08
Antenna, Horn, 18 GHz	EMCO	3115	C00945	04/15/07	04/15/08
Antenna, Horn, 18 GHz	ETS	3117	C01005	04/15/07	04/15/08
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02689	CNR	CNR
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02687	CNR	CNR
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	12/14/07	12/18/08
Communications Test Set	Agilent / HP	E5515C	C01086	06/29/07	06/29/08
Dipole	ETS	3121C-DB2	22435	06/08/07	06/08/08

### 5.6.1. OUTPUT POWER

#### LIMITS

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.

1xEV-DO. REV A. CELL Output Power (ERP)

High Frequency Substitution Measurement Compliance Certification Services, Fremont 5m B-Chamber																		
Company:	SIERRA WIRELESS INC.																	
Project #:	08U11599																	
Date:	02/04/2008																	
Test Engineer:	MENGSI TU MEKU																	
Configuration:	EUT ALONE																	
Mode:	TX 1xEV-DO. REV A. CELL MODE																	
<u>Test Equipment:</u>																		
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									
824.70	101.8	V	28.2	0.5	0.0	27.7	38.5	-10.8										
824.70	98.4	H	23.1	0.5	0.0	22.6	38.5	-15.9										
836.52	102.7	V	29.7	0.6	0.0	29.1	38.5	-9.3										
836.52	99.4	H	26.4	0.6	0.0	25.8	38.5	-12.6										
848.31	101.4	V	28.2	0.7	0.0	27.5	38.5	-11.0										
848.31	98.9	H	23.4	0.7	0.0	22.7	38.5	-15.8										
Rev. 1.24.7																		

**1xEV-DO, REV A, PCS Output Power (EIRP)**

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

Company: SIERRA WIRELESS INC.  
Project #: 08U11599  
Date: 02/04/2008  
Test Engineer: MENGSIITU MEKURIA  
Configuration: EUT ALONE  
Mode: TX 1xEV-DO, REV A, PCS MODE

**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
1.851	84.9	V	17.4	0.9	8.3	24.8	33.0	-8.2	
1.851	89.5	H	20.2	0.9	8.3	27.6	33.0	-5.4	
1.880	84.6	V	17.1	0.9	8.3	24.5	33.0	-8.5	
1.880	89.1	H	20.2	0.9	8.3	27.6	33.0	-5.4	
1.909	84.0	V	16.4	0.9	8.4	23.9	33.0	-9.2	
1.909	86.9	H	18.2	0.9	8.4	25.7	33.0	-7.3	

Rev. 1.24.7

## 5.6.2. 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.

§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 (b), FCC 24.238 (b)

### RESULTS

**1xEV-DO. REV A. CELL Spurious & Harmonic (ERP)**

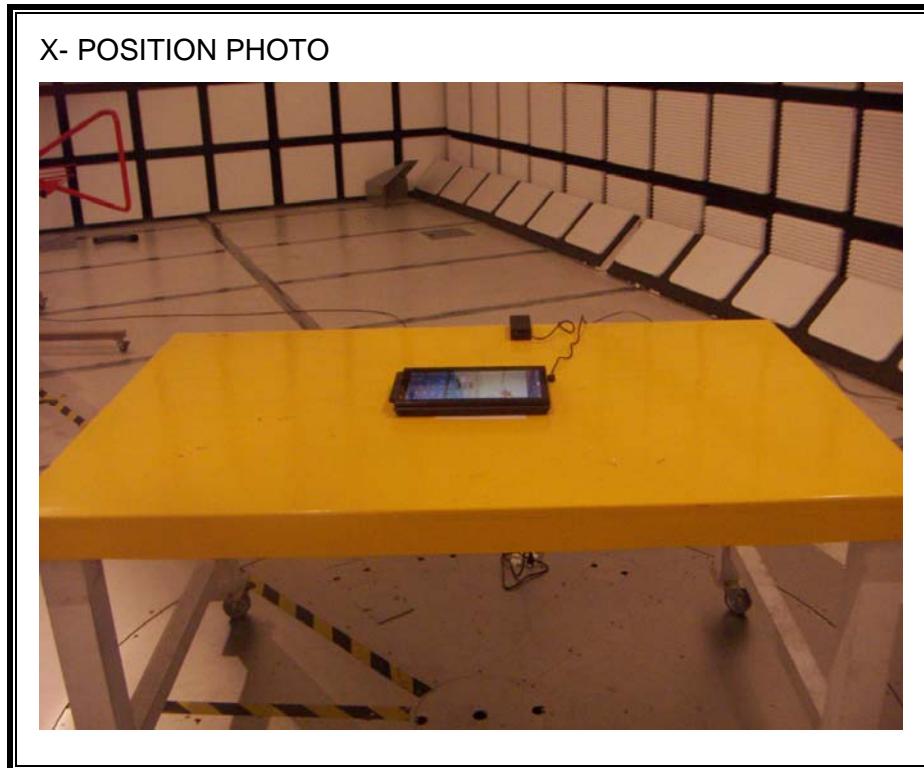
High Frequency Substitution Measurement Compliance Certification Services, Fremont 5m B-Chamber										
Company: SIERRA WIRELESS INC. Project #: 08U11599 Date: 02/04/2008 Test Engineer: MENGSITU MEKURIA Configuration: EUT ALONE Mode: TX 1xEV-DO. REV A. CELL MODE										
<u>Test Equipment:</u>										
EMCO Horn 1-18GHz			Horn > 18GHz			Limit			<input checked="" type="checkbox"/> High Pass Filter	
T73; S/N: 6717 @3m						ETSI 300 328 Tx				
Hi Frequency Cables										
<input type="checkbox"/> (2 ft)			<input type="checkbox"/> (2 ~ 3 ft)			<input type="checkbox"/> (4 ~ 6 ft)			<input checked="" type="checkbox"/> (12 ft)	
Pre-amplifier 1-26GHz			T145 Agilent 3008A			Pre-amplifier 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. (824.7 MHz)										
1.597	47.6	V	-58.6	3.8	7.9	5.7	-56.7	-13.0	-43.7	
1.649	43.6	V	-62.4	3.8	8.0	5.8	-60.4	-13.0	-47.4	Noise Floor
1.597	46.1	H	-59.5	3.8	7.9	5.7	-57.5	-13.0	-44.5	
1.649	44.5	H	-60.8	3.8	8.0	5.8	-58.8	-13.0	-45.8	Noise Floor
Mid Ch (836.52 MHz)										
1.673	43.7	V	-62.2	3.9	8.0	5.9	-60.2	-13.0	-47.2	Noise Floor
1.673	43.9	H	-61.2	3.9	8.0	5.9	-59.2	-13.0	-46.2	Noise Floor
Hi Ch. (848.31 MHz)										
1.697	43.6	V	-62.2	3.9	8.1	5.9	-60.1	-13.0	-47.1	Noise Floor
1.697	43.5	H	-61.6	3.9	8.1	5.9	-59.6	-13.0	-46.6	Noise Floor
Rev. 4.12.7										

**1xEV-DO. REV A. PCS Spurious & Harmonic (EIRP):**

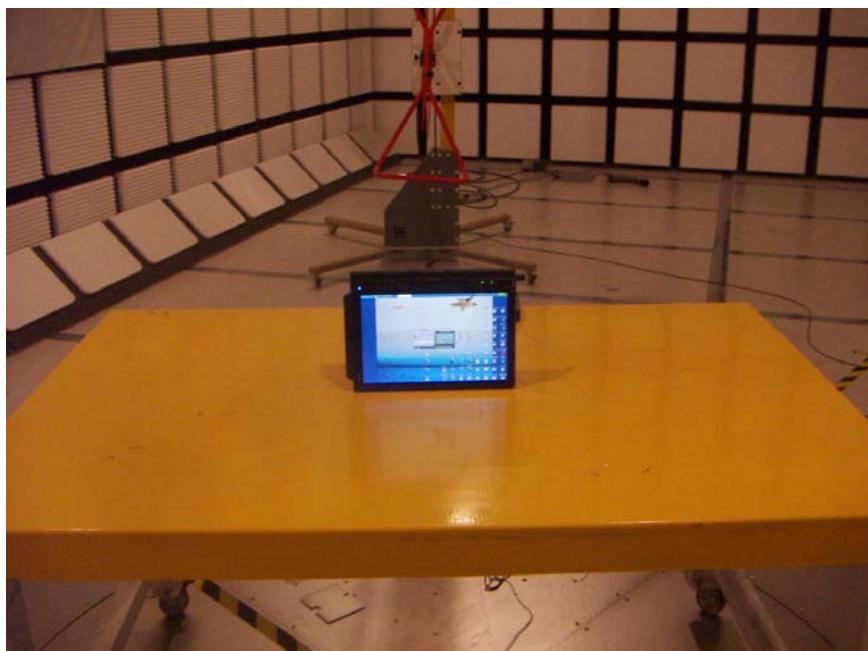
High Frequency Substitution Measurement Compliance Certification Services, Fremont 5m B-Chamber										
Company:	SIERRA WIRELESS INC.									
Project #:	08U11599									
Date:	02/04/2008									
Test Engineer:	MENGSIITU MEKURIA									
Configuration:	EUT ALONE									
Mode:	TX 1xEV-DO. REV A. PCS MODE									
<u>Test Equipment:</u>										
EMCO Horn 1-18GHz		Horn > 18GHz		Limit		<input checked="" type="checkbox"/> High Pass Filter				
T73; S/N: 6717 @3m				ETSI 300 328 Tx						
Hi Frequency Cables										
<input type="checkbox"/> (2 ft)		<input type="checkbox"/> (2 ~ 3 ft)		<input type="checkbox"/> (4 ~ 6 ft)		<input checked="" type="checkbox"/> (12 ft)		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz
T145 Agilent 3008A										
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. (1851.25 MHz)										
3.703	49.0	V	-48.0	5.9	9.7	7.6	-46.4	-13.0	-33.4	
7.405	51.7	V	-38.6	8.3	12.6	10.4	-36.4	-13.0	-23.4	
3.703	48.7	H	-48.2	5.9	9.7	7.6	-46.5	-13.0	-33.5	
7.405	50.2	H	-39.2	8.3	12.6	10.4	-37.1	-13.0	-24.1	
Mid Ch (1880 MHz)										
3.760	56.2	V	-40.5	6.0	9.7	7.6	-39.0	-13.0	-26.0	
7.520	53.4	V	-36.7	8.3	12.6	10.5	-34.6	-13.0	-21.6	
3.760	58.3	H	-38.3	6.0	9.7	7.6	-36.8	-13.0	-23.8	
7.520	54.7	H	-34.6	8.3	12.6	10.5	-32.5	-13.0	-19.5	
Hi Ch. (1908.75 MHz)										
3.818	66.2	V	-30.2	6.0	9.7	7.5	-28.7	-13.0	-15.7	
7.635	49.5	V	-40.5	8.4	12.7	10.5	-38.3	-13.0	-25.3	
3.818	67.8	H	-28.5	6.0	9.7	7.5	-27.0	-13.0	-14.0	
7.635	48.1	H	-41.1	8.4	12.7	10.5	-38.9	-13.0	-25.9	
Rev. 4.12.7										

## 6. SETUP PHOTOS

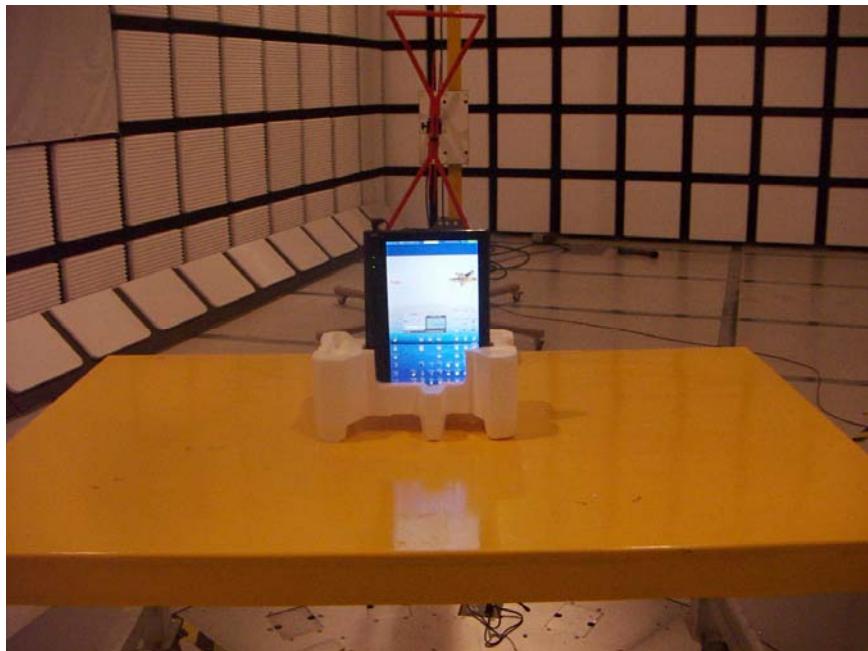
### RADIATED RF MEASUREMENT SETUP FOR PORTABLE CONFIGURATION



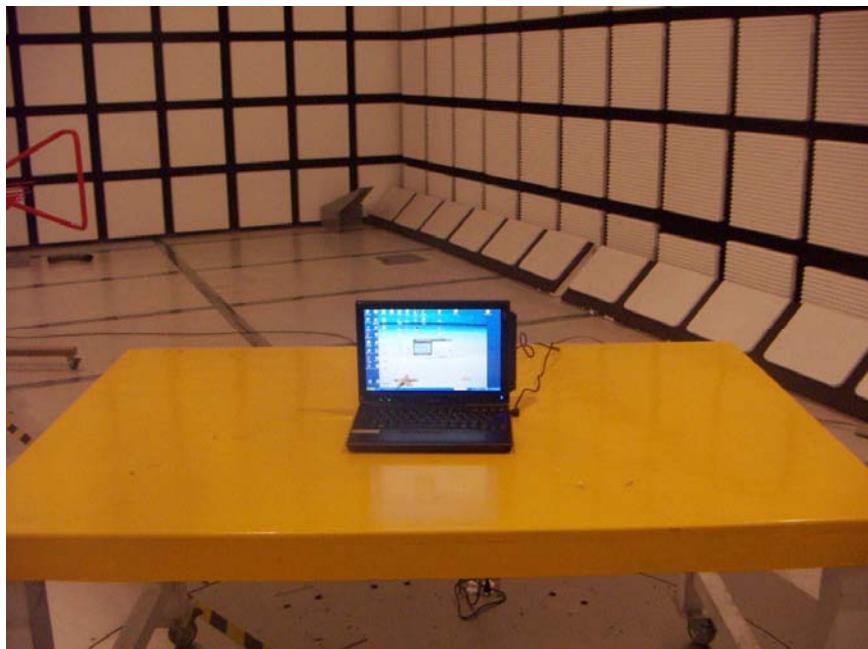
Y- POSITION PHOTO



Z- POSITION PHOTO



MOBILE POSITION PHOTO



**END OF REPORT**