



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

**FOR**

**T5010 TABLET COMPUTERS WITH WWAN MC5727 AND INTEL OR Atheros  
WLAN MODULES**

**MODEL: MC5727**

**FCC ID: N7N-MC5725-F**

**REPORT NUMBER: 08U12094-1B**

**ISSUE DATE: OCTOBER 21, 2008**

*Prepared for*

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

*Prepared by*

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**NVLAP LAB CODE 200065-0**

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Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
--	October 14, 2008	Initial issue	--
A	October 16, 2008	Corrected some typos and added description in section 5.1	Sunny Shih
B	October 16, 2008	Updated description in section 5.1	Sunny Shih

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# 1. ATTESTATION OF TEST RESULTS

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

**EUT DESCRIPTION:** T5010 TABLET COMPUTERS WITH WWAN MC5727 AND  
INTEL OR ATHEROS WLAN MODULES

**FCC ID:** N7N-MC5725-F

**MODEL NAMES:** MC5727

**DATE TESTED:** OCTOBER 09, 2008

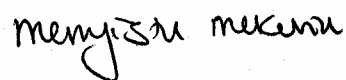
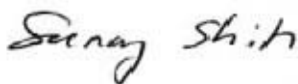
APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 22H and 24E	PASS

Compliance Certification Services, Inc. (CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All expressions of Pass/Fail in this report are opinions expressed by CCS based on interpretations of the test results. 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:



SUNNY SHIH  
EMC SUPERVISOR  
COMPLIANCE CERTIFICATION SERVICES

MENGISTU MEKURIA  
EMC ENGINEER  
COMPLIANCE CERTIFICATION SERVICES

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with RSS-GEN, RSS132, RSS133, ANSI C63.4-2003, and TIA/EIA 603C (2004).

## 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

T5010 Tablet PC with WWAN MC5727 and Intel or Atheros WLAN modules.

The WWAN MC5727 module with CDMA2000 1xRTT, 1xEv-DO Rel 0 and Rev A

The host tablet PC system has following FCC Grants:

- T5010 tablet PC with Intel WLAN: FCC ID: EJE-WB0058
- T5010 tablet PC with Atheros WLAN: FCC ID: EJE-WB0059

### 5.2. MAXIMUM OUTPUT POWER

The maximum radiated peak output powers as follows:

Frequency Range (MHz)	Modulation	ERP Peak Power (dBm)	ERP Peak Power (mW)
Low CH - 824.70	EV-DO, Rev A	26.80	478.63
Mid CH - 836.52		27.60	575.44
High CH - 848.31		26.90	489.78

1850 to 1910 MHz Authorized Band

Frequency Range (MHz)	Modulation	EIRP Peak Power (dBm)	EIRP Peak Power (mW)
Low CH - 1851.25	EV-DO, Rev A	30.80	1202.26
Mid CH - 1880.00		30.90	1230.27
High CH - 1908.75		31.00	1258.93

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

### 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.

<u>Application</u>	<u>Rev, License</u>
1xEV-DO Terminal Test	A.06.06, L

#### EVDO Release A – RETAP

- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > RETAP
- R-Data Pkt Size > 4096
- 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)

#### EVDO Release A - FETAP

- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > FETAP
- F-Traffic Format > 4 (1024, 2,128) Canonical (307.2k, QPSK)
- 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)

### ENGINEERING RATIONAL IN DETERMINING WORST CASE

The X, Y, Z, and Mobile orientations of the EUT were examined to determine the worst-position, EUT with highest radiated power. Subsequently, the Z and Y orientations determined to be the worst-case for Cell and Pcs bands respectively.

## 5.5. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST			
Description	Manufacturer	Model	Serial Number
Laptop	Fujitsu-Siemens	Lifebook	N/A
Laptop AC Adapter	Fujitsu	PTW1931N	04508972A

### I/O CABLES

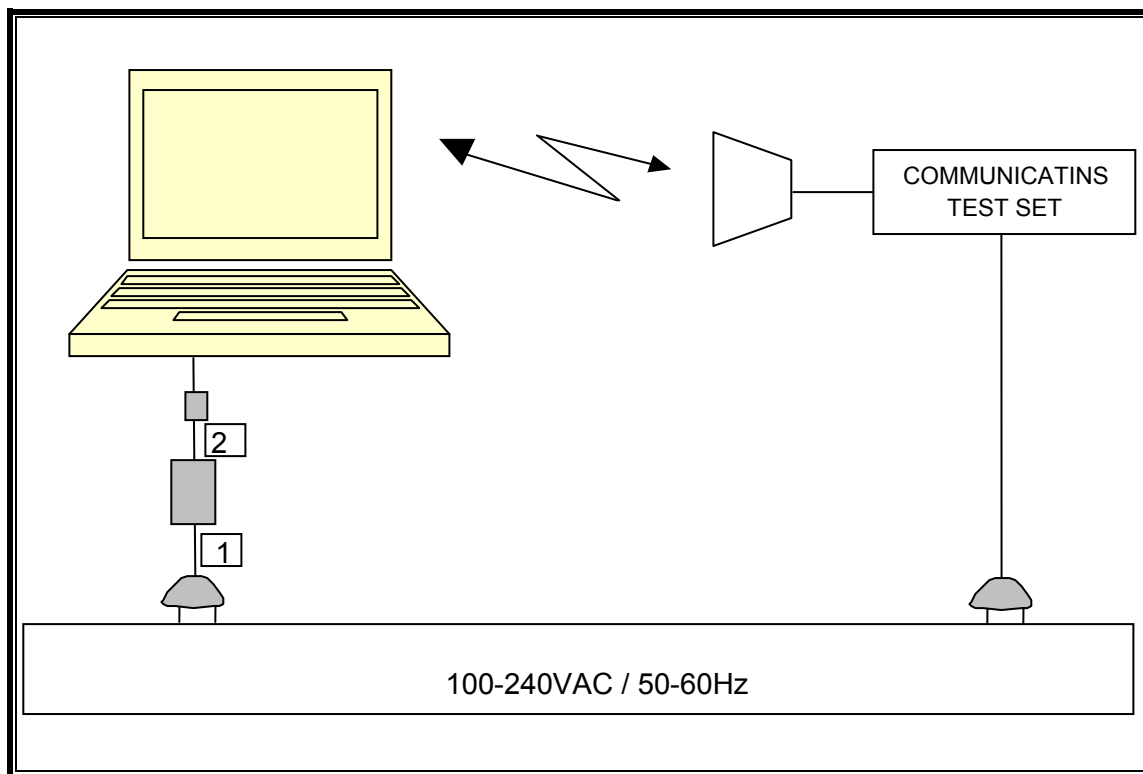
I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC Input	1	2-Prong	Un-Shielded	2.0 m	N/A
2	DC Input	1	Mini-Jack	Un-Shielded	2.0 m	N/A

### TEST SETUP

The EUT installed inside the laptop during the tests. The Wireless Communication test set exercised the EUT.



**SETUP DIAGRAM FOR RADIATED TESTS**



## 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	Serial Number	Cal Due
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A0022704	10/25/08
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	2238	04/22/09
Antenna, Horn, 18 GHz	ETS	3117	29301	04/22/09
Preamplifier, 26.5 GHz	Agilent / HP	8449B	3008A00931	08/05/09
Wireless Communications Test Set	Agilent	E5515C	10092	06/16/09
2.7GHz HPF	MicroTronic	HPM13194	2	CNR
1.5GHz HPF	MicroTronic	HPM13195	1	CNR
Signal Generator 2 -40 GHz	R & S	SMP04	DE 34210	02/16/09
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	MY43360112	03/03/09
Dipole	ETS	3121C-DB2	22435	06/08/09

## 7. LIMITS AND RESULTS

### 7.1. RF POWER OUTPUT

#### LIMIT

22.913(a) The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(b) & RSS133 § 6.4 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.

RSS-132 § 4.4 The maximum ERP shall be 6.3 Watts for mobile stations.

#### TEST PROCEDURE

RSS-132, RSS-133, & ANSI / TIA / EIA 603C Clause 2.2.17

**CELL, EV-DO Rev A, CDMA OUTPUT POWER (ERP)**

High Frequency Substitution Measurement									
Compliance Certification Services, Fremont 5m Chamber A									
Company:		FUJITSU							
Project #:		08U12094							
Date:		10/9/2008							
Test Engineer:		MENGISTU MEKURIA							
Configuration:		EUT INSTOLLED INSIDE LAPTOP PC							
Mode:		TX CELL, EV-DO REV. A							
<b>Test Equipment:</b>									
Receiving: Sunol T130, and 5m Chamber N-type Cable (Setup this one for testing EUT)									
Substitution: Dipole S/N: 00022117, and 6ft SMA Cable Warehouse S/N: 187208002.									
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	98.2	V	22.3	0.5	0.0	21.8	38.5	-16.6	
824.70	104.3	H	27.3	0.5	0.0	26.8	38.5	-11.7	
836.52	99.1	V	22.9	0.6	0.0	22.3	38.5	-16.2	
836.52	104.9	H	28.2	0.6	0.0	27.6	38.5	-10.9	
848.31	98.5	V	21.9	0.7	0.0	21.2	38.5	-17.2	
848.31	104.3	H	27.6	0.7	0.0	26.9	38.5	-11.6	
Rev. 1.247									

**PCS, EV-DO Rev A, CDMA OUTPUT POWER (EIRP)**

High Frequency Fundamental Measurement									
Compliance Certification Services, Fremont 5m Chamber A									
Company:		FUJITSU							
Project #:		08U12094							
Date:		10/9/2008							
Test Engineer:		MENGISTU MEKURIA							
Configuration:		EUT INSTOLLED INSIDE LAPTOP PC							
Mode:		TX PCS, EV-DO REV. A							
<b>Test Equipment:</b>									
Receiving: Horn T60, and 12ft S/N: 197209005 (Setup this one for testing EUT)									
Substitution: Horn T73 Substitution, 6ft SMA Cable Warehouse									
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	92.0	V	20.1	0.7	9.1	28.5	33.0	-4.5	
1.851	94.8	H	22.4	0.7	9.1	30.8	33.0	-2.3	
1.880	91.6	V	19.6	0.7	9.1	28.0	33.0	-5.1	
1.880	95.0	H	22.6	0.7	9.1	30.9	33.0	-2.1	
1.909	92.1	V	20.0	0.7	9.1	28.4	33.0	-4.6	
1.909	94.6	H	22.6	0.7	9.1	31.0	33.0	-2.0	
Rev. 1.24.7									

## **7.2. SPURIOUS EMISSION AT ANTENNA TERMINAL**

### **LIMIT**

§22.917 (e) and §24.238 (a), RSS-132 § 4.5.1, & RSS-133 § 6.5.1 (a) (i) & (b): 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 603C Clause 2.2.12, FCC 22.917 (h), FCC 24.238 (b), RSS-132, & RSS-133

### **RESULTS**

**CELL, EV-DO Rev A, CDMA MODULATION SPURIOUS & HARMONIC (ERP)**

**High Frequency Substitution Measurement**  
 Compliance Certification Services, Fremont 5m A-Chamber

Company: FUJITSU  
 Project #: 08U12094  
 Date: 10/9/2008  
 Test Engineer: MENGISTU MEKURIA  
 Configuration: EUT INSTALLED INSIDE LAPTOP PC  
 Mode: TX CELL, EV-DO REV. A

**Test Equipment:**

EMCO Horn 1-18GHz

T60; S/N: 2238 @3m

Horn > 18GHz

Limit

FCC 22

High Pass Filter

Hi Frequency Cables

(2 ft)

(2~3 ft)

(4~6 ft)

(12 ft)

Pre-amplifier 1-26GHz

T144 Miteq 3008A00

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
<b>LOW CH. (824.7 MHz)</b>										
1.649	58.0	H	-48.4	3.8	7.1	4.9	-47.3	-13.0	-34.3	
2.474	59.2	H	-44.9	4.9	9.3	7.1	-42.6	-13.0	-29.6	
3.299	46.3	H	-54.1	5.6	9.4	7.3	-52.4	-13.0	-39.4	
1.649	55.7	V	-51.3	3.8	7.1	4.9	-50.3	-13.0	-37.3	
2.474	56.8	V	-47.4	4.9	9.3	7.1	-45.2	-13.0	-32.2	
3.299	47.4	V	-53.1	5.6	9.4	7.3	-51.4	-13.0	-38.4	
<b>MID CH. (836.52 MHz)</b>										
1.673	56.3	H	-50.0	3.9	7.2	5.0	-48.9	-13.0	-35.9	
2.510	58.1	H	-45.7	4.9	9.3	7.1	-43.5	-13.0	-30.5	
3.346	48.0	H	-52.1	5.6	9.5	7.3	-50.5	-13.0	-37.5	
1.673	55.9	V	-51.2	3.9	7.2	5.0	-50.0	-13.0	-37.0	
2.510	57.7	V	-46.4	4.9	9.3	7.1	-44.1	-13.0	-31.1	
3.346	49.0	V	-51.3	5.6	9.5	7.3	-49.6	-13.0	-36.6	
<b>HI CH. (848.31 MHz)</b>										
1.697	57.5	H	-48.8	3.9	7.2	5.1	-47.6	-13.0	-34.6	
2.545	59.6	H	-44.1	4.9	9.3	7.1	-41.9	-13.0	-28.9	
3.393	49.6	H	-50.4	5.7	9.5	7.3	-48.7	-13.0	-35.7	
1.697	57.1	V	-49.8	3.9	7.2	5.1	-48.6	-13.0	-35.6	
2.545	56.7	V	-47.2	4.9	9.3	7.1	-45.0	-13.0	-32.0	
3.393	46.9	V	-53.2	5.7	9.5	7.3	-51.5	-13.0	-38.5	

Rev. 4.12.7

**PCS, EV-DO Rev A, CDMA MODULATION SPURIOUS & HARMONIC (EIRP)**

**High Frequency Substitution Measurement**  
 Compliance Certification Services, Fremont 5m A-Chamber

Company: FUJITSU  
 Project #: 08U12094  
 Date: 10/9/2008  
 Test Engineer: MENGISTU MEKURIA  
 Configuration: EUT INSTALLED INSIDE LAPTOP PC  
 Mode: TX PCS, EV-DO REV. A

**Test Equipment:**

EMCO Horn 1-18GHz  
T60; S/N: 2238 @3m

Horn > 18GHz

Limit  
FCC 24

High Pass Filter

Hi Frequency Cables  
 (2 ft)    (2~3 ft)    (4~6 ft)    (12 ft)

Pre-amplifier 1-26GHz  
T144 Miteq 3008A01

Pre-amplifier 26-40GHz

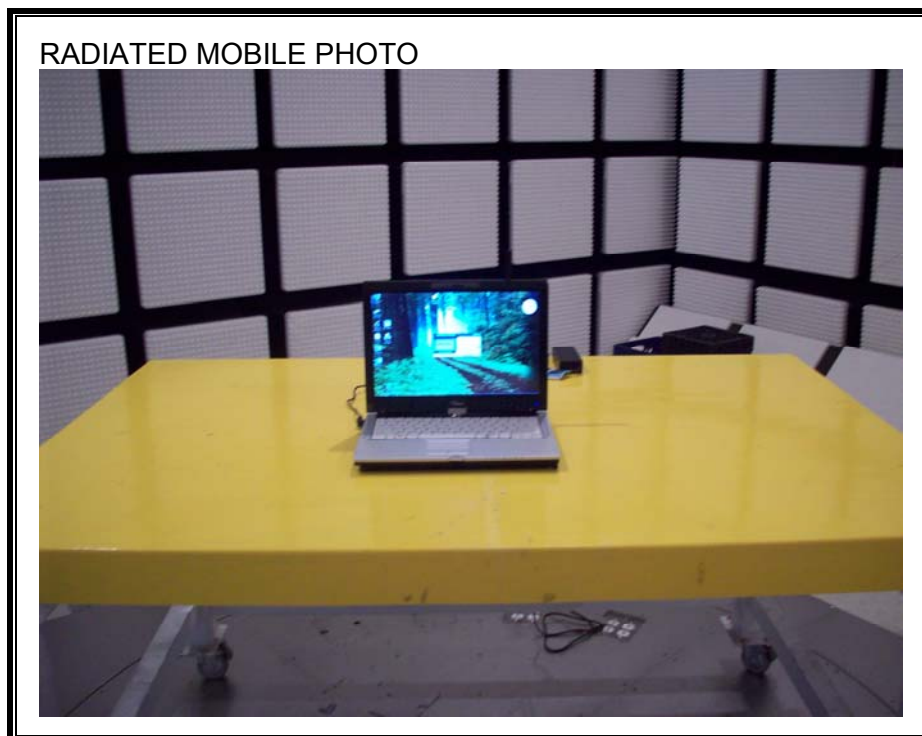
f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ETRP (dBm)	Limit (dBm)	Margin (dB)	Notes
<b>LOW CH. (1851.25 MHz)</b>										
3.705	48.8	H	-50.0	5.9	9.7	7.5	-46.3	-13.0	-33.3	
7.405	49.6	H	-40.4	8.3	12.0	9.8	-36.7	-13.0	-23.7	
9.256	45.6	H	-44.1	9.3	12.7	10.6	-40.7	-13.0	-27.7	
3.705	49.6	V	-49.3	5.9	9.7	7.5	-45.6	-13.0	-32.6	
7.405	52.3	V	-38.4	8.3	12.0	9.8	-34.7	-13.0	-21.7	
9.256	47.6	V	-42.1	9.3	12.7	10.6	-38.7	-13.0	-25.7	
<b>MID CH. (1860 MHz)</b>										
3.760	59.4	H	-39.2	6.0	9.7	7.5	-35.5	-13.0	-22.5	
7.520	55.3	H	-34.4	8.3	12.0	9.8	-30.7	-13.0	-17.7	
9.400	45.2	H	-44.3	9.4	12.7	10.6	-41.0	-13.0	-28.0	
3.760	59.5	V	-39.2	6.0	9.7	7.5	-35.5	-13.0	-22.5	
7.520	57.3	V	-33.2	8.3	12.0	9.8	-29.6	-13.0	-16.6	
9.400	51.1	V	-38.3	9.4	12.7	10.6	-35.0	-13.0	-22.0	
<b>HI CH. (1908.75 MHz)</b>										
3.818	67.7	H	-30.7	6.0	9.7	7.6	-27.0	-13.0	-14.0	
7.635	55.7	H	-33.7	8.4	12.0	9.8	-30.1	-13.0	-17.1	
9.544	46.0	H	-43.1	9.6	12.7	10.6	-39.9	-13.0	-26.9	
3.818	65.3	V	-33.2	6.0	9.7	7.6	-29.5	-13.0	-16.5	
7.635	54.6	V	-35.6	8.4	12.0	9.8	-32.0	-13.0	-19.0	
9.544	51.4	V	-37.7	9.6	12.7	10.6	-34.5	-13.0	-21.5	

Rev. 4127



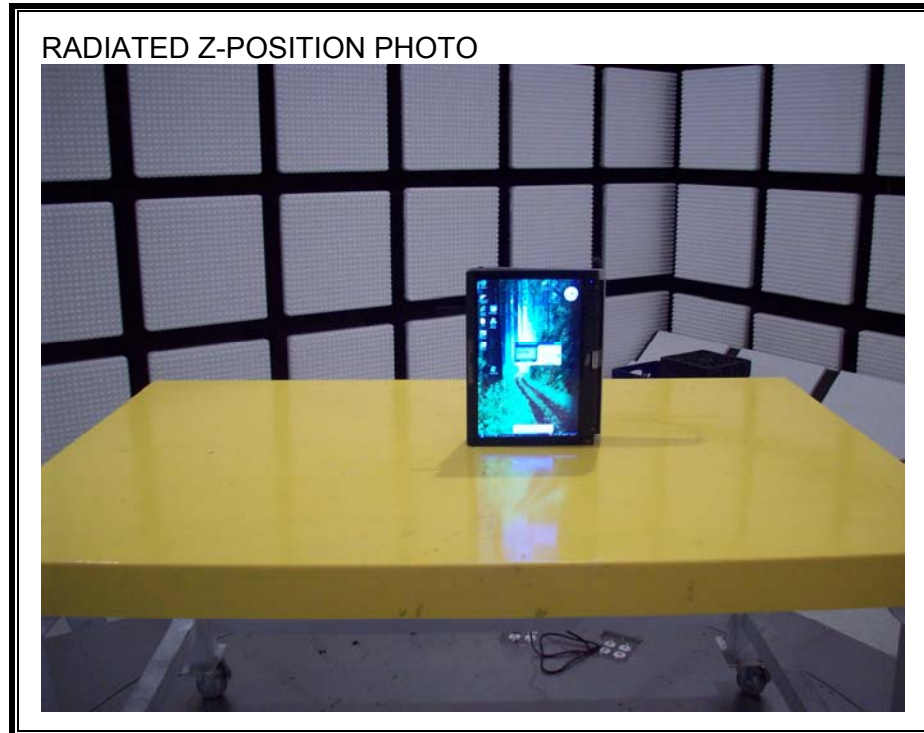
## 8. SETUP PHOTOS

### RADIATED RF MEASUREMENT SETUP









**END OF REPORT**