HAC TEST REPORT

Test Item: Summary Result HAC Category = M3

REPORT NO.: HA960503L06

MODEL NO.: IRIS100

RECEIVED: May 03, 2007

TESTED: May 15 ~ May 16, 2007

ISSUED: May 28, 2007

APPLICANT: High Tech Computer Corp.

ADDRESS: 23, Hsin-Hua Rd., Taoyuan, 330, Taiwan, R.O.C.

ISSUED BY: Advance Data Technology Corporation

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1. CERTIFICATION

PRODUCT : Smart Phone
MODEL NO. : IRIS100
APPLICANT : High Tech Computer Corp.
TESTED : May 15 ~ May 16, 2007
TEST SAMPLE : Engineering sample
STANDARDS : **FCC Part 20.19**
ANSI PC63.19 2006
TEST ITEM: RF emissions

The above equipment have been tested by **Advance Data Technology Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's characteristics under the conditions specified in this report.

PREPARED BY : _____ , **DATE:** May 28, 2007
Stephanie Hung

TECHNICAL ACCEPTANCE : _____ , **DATE:** May 28, 2007
RESPONSIBLE FOR RF
Stanely Hsu

APPROVED BY : _____ , **DATE:** May 28, 2007
Gary Chang / Supervisor

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Wireless 802.11b/g and Bluetooth channel frequencies are only documented to demonstrate compliance testing for composite functions in the CDMA 850 and 1900 bands.

PRODUCT	Smart Phone
MODEL NO.	IRIS100
FCC ID	NM8IRIS100
POWER SUPPLY	3.7Vdc from rechargeable lithium battery 5.0Vdc from power adapter or cradle 5.0Vdc from host equipment
CLASSIFICATION	Portable device, production unit
MODULATION TYPE	Mobile: QPSK, OQPSK, HPSK Wireless LAN: CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM Bluetooth: GFSK for FHSS
FREQUENCY RANGE	Mobile: Tx: 824.2 ~ 848.8MHz / Rx: 869.2 ~ 893.8MHz (CDMA850) Tx: 1850.2 ~ 1909.8MHz / Rx: 1930.2 ~ 1989.8MHz (CDMA1900) Wireless LAN: 2412.0 ~ 2462.0MHz Bluetooth: 2402.0 ~ 2480.0MHz
CHANNEL FREQUENCIES UNDER TEST AND ITS CONDUCTED OUTPUT POWER	Mobile: CDMA850: 24.29dBm / 824.70MHz for channel 1013 24.12dBm / 836.50MHz for channel 384 23.98dBm / 848.30MHz for channel 777 CDMA1900: 24.11dBm / 1851.25MHz for channel 25 24.01dBm / 1880.00MHz for channel 600 23.96dBm / 1908.75MHz for channel 1175
	Wireless LAN: 802.11b: 18.08dBm / 2412.00MHz for channel 1 18.02dBm / 2437.00MHz for channel 6 18.00dBm / 2462.00MHz for channel 11 802.11g: 18.60dBm / 2412.00MHz for channel 1 19.02dBm / 2437.00MHz for channel 6 19.01dBm / 2462.00MHz for channel 11
	Bluetooth: -2.070dBm / 2402.00MHz for channel 0 -1.120dBm / 2441.00MHz for channel 39 -0.780dBm / 2480.00MHz for channel 78

HAC RATE CATEGORY	M3
ANTENNA TYPE	Mobile: Monopole antenna with 0dBi gain Wireless LAN: PIFA antenna with 1dBi gain Bluetooth: PIFA antenna with 1dBi gain
DATA CABLE	1.8m USB shielded cable without core
I/O PORTS	Refer to user's manual
ACCESSORY DEVICES	Adapter*2, Battery*2, Headset (USB connector and another is Audio connector)(1.7m), Pouch

NOTE:

1. The EUT is a CDMA850/CDMA1900 (1XEVDO) Smart Phone with wireless LAN and bluetooth functions.
2. The communicated functions of EUT listed as below:

		850MHz	1900MHz	With 802.11b/g & bluetooth
3G	CDMA	√	√	
	EVDO	√	√	

3. The EUT has lithium batteries listed as below:

BATTERY A:	
BRAND:	Dynapack International Technology Corporation
MODEL:	IRIS160
RATING:	3.7Vdc, 1200mAh

BATTERY B:	
BRAND:	Simplo Technology Co., Ltd.
MODEL:	IRIS160
RATING:	3.7Vdc, 1200mAh

NOTE: After pre-tested both batteries, found battery A is worse, therefore all the test results came out from this.

4. The EUT was operated with following power adapters:

ADAPTER 1:	
BRAND:	DELTA ELECTRONIC, INC.
MODEL:	ADP-5FH B
INPUT:	100-240Vac, 0.2A, 50~60Hz
OUTPUT:	5Vdc, 1A
POWER LINE:	DC 1.8m non-shielded cable without core

ADAPTER 2:	
BRAND:	PHIHONG
MODEL:	PSAA05A-050
INPUT:	100~240Vac, 200mA, 50-60Hz
OUTPUT:	5.0Vdc, 1A
POWER LINE:	DC 1.8m non-shielded cable without core

5. Refer to following table for ESN no.:

ESN NO.
3694****

6. The EUT, operates in the 2.4GHz frequency range, lets you connect IEEE 802.11g or IEEE 802.11b devices to the network. With its high-speed data transmissions of up to 54Mbps.
7. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

2.2 DESCRIPTIONOF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
1	UNIVERSAL RADIO COMMUNICATION TESTER	R&S	CMU200	101372	Nov. 21, 2007

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA

NOTE: All power cords of the above support units are non shielded (1.8m).

2.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

According to the specifications of the manufacturer, this product must comply with the requirements of the following standards:

FCC Part 20.19

ANSI PC63.19 – 2006

All test items have been performed and recorded as per the above standards.

3. GENERAL INFORMATION OF THE DASY4 SYSTEM

3.1. GENERAL INFORMATION OF TEST EQUIPMENT

DASY4 (software 4.7 Build 53) consists of high precision robot, probe alignment sensor, phantom, robot controller, controlled measurement server and near-field probe. The robot includes six axes that can move to the precision position of the DASY4 software defined. The DASY4 software can define the area that is detected by the probe. The robot is connected to controlled box. Controlled measurement server is connected to the controlled robot box. The DAE includes amplifier, signal multiplexing, AD converter, offset measurement and surface detection. It is connected to the Electro-optical coupler (ECO). The ECO performs the conversion form the optical into digital electric signal of the DAE and transfers data to the PC.

ER3DV6 E-FIELD PROBE

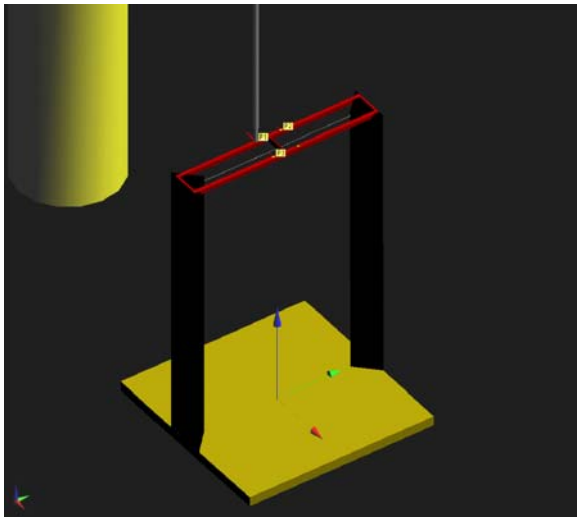
CONSTRUCTION	One dipole parallel, two dipoles normal to probe axis Built-in shielding against static charges
CALIBRATION	In air from 100MHz to 3.0GHz (absolute accuracy ± 6.0%, k = 2)
FREQUENCY	100MHz to > 6GHz; Linearity: ± 0.2dB (100MHz to 3GHz)
DIRECTIVITY	± 0.2dB in air (rotation around probe axis) ± 0.4dB in air (rotation normal to probe axis)
DYNAMIC RANGE	2V/m to > 1000V/m (M3 or better device readings fall well below diode compression point) Linearity: ± 0.2dB
DIMENSIONS	Overall length: 330mm (Tip: 16mm)
	Tip diameter: 8mm (Body: 12mm)
	Distance from probe tip to dipole centers: 2.5mm

H3DV6 H-FIELD PROBE

CONSTRUCTION	Three concentric loop sensors with 3.8mm loop diameters Resistively loaded detector diodes for linear response Built-in shielding against static charges
FREQUENCY	200MHz to 3GHz (absolute accuracy ± 6.0%, k = 2); Output linearized
DIRECTIVITY	± 0.25dB (spherical isotropy error)
DYNAMIC RANGE	10mA/m to 2A/m at 1GHz (M3 or better device readings fall well below diode compression point)
DIMENSIONS	Overall length: 330mm (Tip: 40mm)
	Tip diameter: 6mm (Body: 12mm)
	Distance from probe tip to dipole centers: 3mm
E-FIELD INTERFERENCE	< 10% at 3GHz (for plane wave)

NOTE: The Probe parameters have been calibrated by the SPEAG. Please reference “APPENDIX D” for the Calibration Certification Report.

HAC ARCH



DIMENSIONS 370 x 370 x 370mm

SYSTEM VALIDATION KITS:

CD835V3

Frequency Band: 800 ~ 960MHz (free space)
Return Loss: > 15dB
Calibrated at: 835MHz
Power Capability: 50W continuous
Length & Height: 166 x 330mm

CD1880V3

Frequency Band: 1710 ~ 2000MHz (free space)
Return Loss: > 18dB
Calibrated at: 1880MHz
Power Capability: 50W continuous
Length & Height: 80.8 x 330mm

CD2450V3

Frequency Band: 2250 ~ 2650MHz (free space)
Return Loss: > 18dB
Calibrated at: 2450MHz
Power Capability: 50W continuous
Length & Height: 60 x 330mm

DEVICE HOLDER

CONSTRUCTION Supports accurate and reliable positioning of any phone effect on near field <+/- 0.5dB

DATA ACQUISITION ELECTRONICS (DAE)

CONSTRUCTION

The data acquisition electronics (DAE3) consists of a highly sensitive electrometer grade preamplifier with auto-zeroing, a channel and gain-switching multiplex, a fast 16 bit AD converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock. The mechanical probe is mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection. The input impedance of the DAE3 box is 200MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80dB.

3.2. TEST EQUIPMENT LIST

ITEM	NAME	BAND	TYPE	SERIES NO.	CALIBRATED UNTIL
1	SAM Phantom	S & P	SD HAC P01 BA	1034	NA
2	Robot Positioner	Staubli Unimation	NA	NA	NA
3	Signal Generator	Agilent	E8257C	MY43320668	Dec. 28, 2007
4	E-Field Probe	Speag	ER3DV6	2293	Jan. 22, 2008
5	H-Field Probe	Speag	H3DV6	6124	Jan. 22, 2008
6	DAE	Speag	DAE3 V1	510	Sep. 06, 2007
7	Validation Dipole	Speag	CD835V3	1041	May 21, 2007
			CD1880V3	1032	Jul. 17, 2007
			CD2450V3	1033	Jul. 17, 2007

NOTE: Before starting the measurement, all test equipment shall be warmed up for 30min.

3.3. MEASUREMENT UNCERTAINTY

HAC UNCERTAINTY BUDGET ACCORDING TO ANSI C63.19[1]							
ERROR DESCRIPTION	**UNCERTAINTY VALUE**	**PROBABILITY DISTRIBUTION**	**DIVISOR**	**(Ci) E**	**(Ci) H**	**STD. UNC. E**	**STD. UNC. H**
MEASUREMENT SYSTEM							
Probe calibration	±5.1%	Normal	1	1	1	±5.1%	±5.1%
Axial isotropy	±4.7%	Rectangular	√3	1	1	±2.7%	±2.7%
Sensor Displacement	±16.5%	Rectangular	√3	1	0.145	±9.5%	±1.4%
Boundary Effects	±2.4%	Rectangular	√3	1	1	±1.4%	±1.4%
Linearity	±4.7%	Rectangular	√3	1	1	±2.7%	±2.7%
Scaling to Peak Envelope Power	±2.0%	Rectangular	√3	1	1	±1.2%	±1.2%
System Detection Limit	±1.0%	Rectangular	√3	1	1	±0.6%	±0.6%
Readout Electronics	±0.3%	Rectangular	√3	1	1	±0.3%	±0.3%
Response Time	±0.8%	Rectangular	√3	1	1	±0.5%	±0.5%
Integration Time	±2.6%	Rectangular	√3	1	1	±1.5%	±1.5%
RF Ambient Condition	±3.0%	Rectangular	√3	1	1	±1.7%	±1.7%
RF Reflections	±12.0%	Rectangular	√3	1	1	±6.9%	±6.9%
Probe Positioner	±1.2%	Rectangular	√3	1	0.67	±0.7%	±0.5%
Probe Positioning	±4.7%	Rectangular	√3	1	0.67	±2.7%	±1.8%
Extrap. And Interpolation	±1.0%	Rectangular	√3	1	1	±0.6%	±0.6%
TEST SAMPLE RELATED							
Device Positioning Vertical	±4.7%	Rectangular	√3	1	0.67	±2.7%	±1.8%
Device Positioning Lateral	±1.0%	Rectangular	√3	1	1	±0.6%	±0.6%
Device Holder and Phantom	±2.4%	Rectangular	√3	1	1	±1.4%	±1.4%
Power Drift	±5.0%	Rectangular	√3	1	1	±2.9%	±2.9%
PHANTOM AND SETUP RELATED							
Phantom Thickness	±2.4%	Rectangular	√3	1	0.67	±1.4%	±0.9%
COMBINED STD. UNCERTAINTY						±14.7%	±10.9%
EXPANDED STD. UNCERTAINTY ON POWER						±29.4%	±21.8%
EXPANDED STD. UNCERTAINTY ON FIELD						±14.7%	±10.9%

NOTE: Worst-case uncertainty budget for HAC free field assessment according to ANSI C63.19 [1]. The budget is valid for the frequency range 800MHz ~ 3GHz and represents a worst-case analysis. For specific tests and configurations, the uncertainty could be considerably smaller.

3.4. GENERAL DESCRIPTION OF THE HAC EVALUATION

The DASY4 post-processing software (SEMCAD) automatically executes the following procedures to calculate the field units from the micro-volt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	- Sensitivity	$Norm_i$, a_{i0}, a_{i1}, a_{i2}
	- Conversion factor	$ConvF_i$
	- Diode compression point	dcp_i
Device parameters:	- Frequency	F
	- Crest factor	Cf

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \bullet \frac{cf}{dcp_i}$$

V_i	= compensated signal of channel i	(i = x, y, z)
U_i	= input signal of channel I	(i = x, y, z)
Cf	= crest factor of exciting field	(DASY parameter)
dcp_i	= diode compression point	(DASY parameter)

From the compensated input signals the primary field data for each channel can be evaluated:

$$\textbf{\textit{E-field probes:}}\quad E_i = \sqrt{\frac{V_1}{Norm_i \cdot ConvF}}$$

$$\textbf{\textit{H-field probes:}}\quad H_i = \sqrt{V_i} \cdot \frac{a_{i0} + a_{i1} f + a_{i2} f^2}{f}$$

V_i = compensated signal of channel I (i = x, y, z)

$Norm_i$ = sensor sensitivity of channel i μV/(V/m)2 for E-field Probes (i = x, y, z)

ConvF = sensitivity enhancement in solution

a_{ij} = sensor sensitivity factors for H-field probes

F = carrier frequency [GHz]

E_i = electric field strength of channel i in V/m

H_i = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2}$$

The primary field data are used to calculate the derived field units.

E = field strength in V/m

E_{tot} = total field strength in V/m

NOTE: The signal response time is evaluated as the time required by the system to reach 90% of the expected final value after an on/off switch of the power source with an integration time of 500ms and a probe response time of < 5ms. In the current implementation, DASY4 waits longer than 100ms after having reached the grid point before starting a measurement, i.e., the response time uncertainty is negligible.

4. PERFORMANCE CATEGORIES

The ANSI Standard presents performance requirements for acceptable interoperability of hearing aids with wireless communications devices. When these parameters are met, a hearing aid operates acceptably in close proximity to a wireless communications device.

CATEGORY NEAR FIELD	TELEPHONE RF PARAMETERS < 960MHz				
	AWF	E-FIELD EMISSION CW (dBV/m)	E-FIELD EMISSION CW (V/m)	H-FIELD EMISSION CW (dBA/m)	H-FIELD EMISSION CW (A/m)
M1	0	56.0 to 61.0	631.0 to 1122.0	5.6 to 10.6	1.91 to 3.39
	-5	53.5 to 58.5	473.2 to 841.4	3.1 to 8.1	1.43 to 2.54
M2	0	51.0 to 56.0	354.8 to 631.0	0.6 to 5.6	1.07 to 1.91
	-5	48.5 to 53.5	266.1 to 473.2	-1.9 to 3.1	0.80 to 1.43
M3	0	46.0 to 51.0	199.5 to 354.8	-4.4 to 0.6	0.60 to 1.07
	-5	43.5 to 48.5	149.6 to 266.1	-6.9 to -1.9	0.45 to 0.80
M4	0	< 46.0	< 199.5	< -4.4	< 0.60
	-5	< 43.5	< 149.6	< -6.9	< 0.45

CATEGORY NEAR FIELD	TELEPHONE RF PARAMETERS > 960MHz				
	AWF	E-FIELD EMISSION CW (dBV/m)	E-FIELD EMISSION CW (V/m)	H-FIELD EMISSION CW (dBA/m)	H-FIELD EMISSION CW (A/m)
M1	0	46.0 to 51.0	199.5 to 354.8	-4.4 to 0.6	0.60 to 1.07
	-5	43.5 to 48.5	149.6 to 266.1	-6.9 to -1.9	0.45 to 0.80
M2	0	41.0 to 46.0	112.2 to 199.5	-9.4 to -4.4	0.34 to 0.60
	-5	48.5 to 53.5	84.1 to 149.6	-11.9 to -6.9	0.25 to 0.45
M3	0	36.0 to 41.0	63.1 to 112.2	-14.4 to -9.4	0.19 to 0.34
	-5	33.5 to 38.5	47.3 to 84.1	-16.9 to -11.9	0.14 to 0.25
M4	0	< 36.0	< 63.1	< -14.4	< 0.19
	-5	< 33.5	< 47.3	< -16.9	< 0.14

ARTICULATION WEIGHING FACTOR (AWF)

The following AWF factors shall be used for the standard transmission protocols:

STANDARD	TECHNOLOGY	AWF (dB)
TIA/EIA/IS-2000	CDMA	0
TIA/EIA-136	TDMA (50Hz)	0
iDENTM	TDMA (22 and 11Hz)	0
J-STD-007	GSM (217)	-5
T1/T1P1/3GPP	UMTS (WCDMA)	0

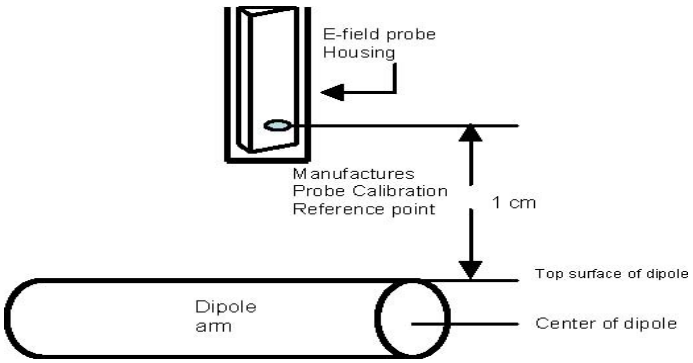
5. SYSTEM CHECK

The measured values (E-field and H-field) were compared with the values provided by the probe manufacturer and must within the allowed tolerance of **25%**.

5.1. VALIDATION STRUCTURE

The input signal was an un-modulated continuous wave. The following points were taken into consideration in performing this check:

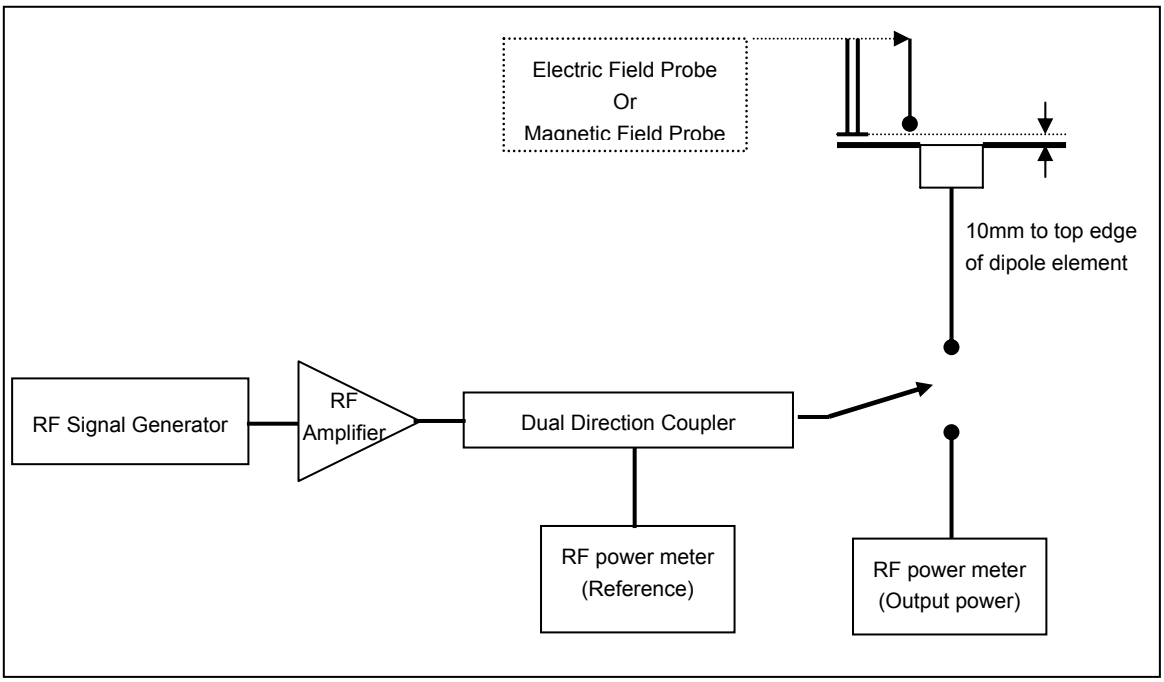
- Average Input Power P = 100mW RMS (20dBm RMS) after adjustment for return loss
- The test fixture must meet the 2 wavelength separation criterion
- The proper measurement of the 1cm probe to dipole separation, which is measured from top surface of the dipole to the calibration reference point of the sensor, defined by the probe manufacturer is shown in the following diagram:



5.2. SYSTEM CHECK PROCEDURE

1. Before you start the system performance check, need only to tell the system with which components (probe type, validation dipole and HAC arch) are performing the system performance check; the system will take care of all parameters.

The system check configuration is shown in the following figure:



2. The dipole was energized with a 20dBm unmodulated continuous-wave signal.
3. The length of the dipole was scanned with both E-field and H-field probes and the maximum values for each were recorded.

5.3. VALIDATION RESULTS

SYSTEM CHECK						
TEST FREQUENCY (MHz)	**BEGIN TEST SG POWER (mW)**	**REQUIRED E-FILED (V/m)**	**MEASURED E-FILED (V/m)**	**DEVIATION (%)**	**SEPARATION DISTANCE (mm)**	**TESTED DATE**
835	100.0	161.7	163.2	0.93	10	May 15, 2007
1880	100.0	137.4	143.7	4.59	10	May 15, 2007
2450	100.0	133.6	124.7	-6.66	10	May 15, 2007
TEST FREQUENCY (MHz)	**BEGIN TEST SG POWER (mW)**	**REQUIRED H-FILED (V/m)**	**MEASURED H-FILED (V/m)**	**DEVIATION (%)**	**SEPARATION DISTANCE (mm)**	**TESTED DATE**
835	100.0	0.457	0.452	-1.09	10	May 16, 2007
1880	100.0	0.454	0.429	-5.51	10	May 16, 2007
2450	100.0	0.465	0.452	-2.80	10	May 16, 2007
TESTED BY	Sam Onn					

NOTE: Please see Appendix for the system validation test data.

6. MODULATION FACTOR

A calibration was made of the modulation response of the probe and its instrumentation chain. This calibration was performed with the field probe, attached to its instrumentation. The response of the probe system to a CW field at the frequency of interest is compared to its response to a modulated signal with equal peak amplitude to that of a CW signal. The field level of the test signals are ensured to be more than 10dB above the ambient level and the noise floor of the instrumentation being used. The ratio of the CW reading to that taken with a modulated reading was applied to the DUT measurements.

This was done using the following procedure:

1. Fixing the probe in a set location relative to a field generating device, such as a reference dipole antenna, as illustrated in the system check procedure.
2. Illuminate the probe with a CW signal at the intended measurement frequency. Illuminate the probe using the wireless device connected to the reference dipole with a test signal at the intended measurement frequency, Ensure there is sufficient field coupling between the probe and the antenna so the resulting reading is greater than 10dB above the probe system noise floor but within the systems operating range.
3. Record the amplitude applied to the antenna during transmission and the field strength measured by the E-field probe located near the tip of the dipole antenna.
4. Replace the wireless device with an RF signal generator producing an unmodulated CW signal and set to the wireless device operating frequency.
5. Set the amplitude of the unmodulated signal to equal that recorded from the wireless device.
6. Record the reading of the probe measurement system of the unmodulated signal.
7. The RF signal generator producing an 80%AM signal and set to the wireless device operating frequency. Set the amplitude of the signal to equal that recorded from the wireless device.

8. Record the reading of the probe measurement system of the 80%AM signal.
9. The ratio, in linear units, of the probe reading in Step 6) or 8) to the reading in Step 3) is the E-field modulation factor.
10. Steps 1-9 were repeated at all frequency bands and for both E and H field probes.

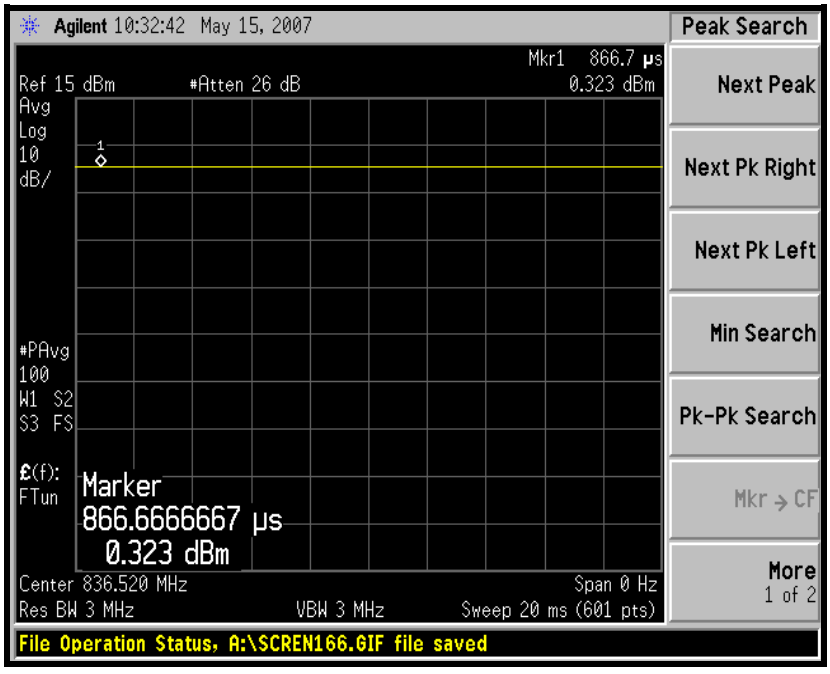
NOTE: The ratio of the CW to modulated signal reading is the modulation factor. The modulation factors obtained were applied to readings taken of the actual wireless device, in order to obtain an accurate peak field reading using the formula:

$$\mathbf{Peak = 20 \cdot log(Raw \cdot P}\text{robe}\mathbf{M}\text{odulation}\mathbf{F}\text{actor}\mathbf{)}$$

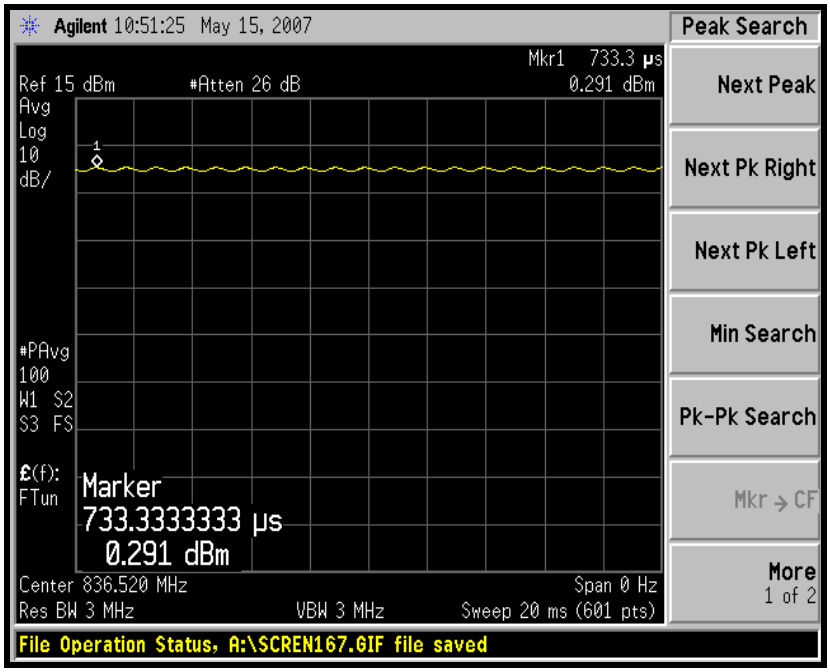
6.1 MODULATION FACTOR TEST RESULTS

TEST FREQUENCY (MHz)	PROTOCOL	REFERENCE LEVEL	MEASURED E-FILED (V/m)	E-FILED MODULATION FACTOR	TESTED DATE
836.5	CW	Refer to the next three plots	171.7	NA	May 15, 2007
	80% AM		155.1	1.11	
	CDMA		158.6	1.08	
TEST FREQUENCY (MHz)	**PROTOCOL**	**REFERENCE LEVEL**	**MEASURED H-FILED (A/m)**	**H-FILED MODULATION FACTOR**	**TESTED DATE**
836.5	CW	Refer to the next three plots	0.454	NA	May 16, 2007
	80% AM		0.405	1.12	
	CDMA		0.438	1.04	
TESTED BY	Sam Onn				

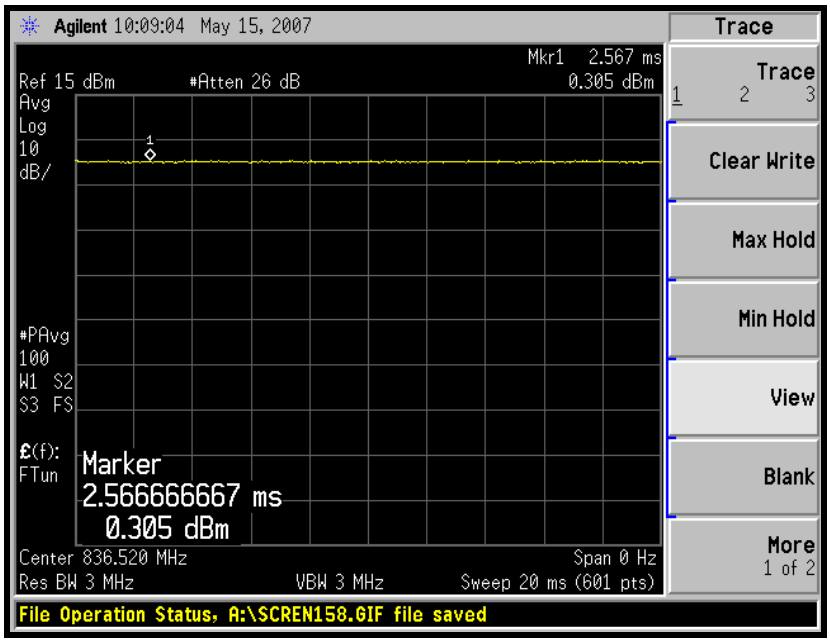
CW SIGNAL:



80% AM SIGNAL:

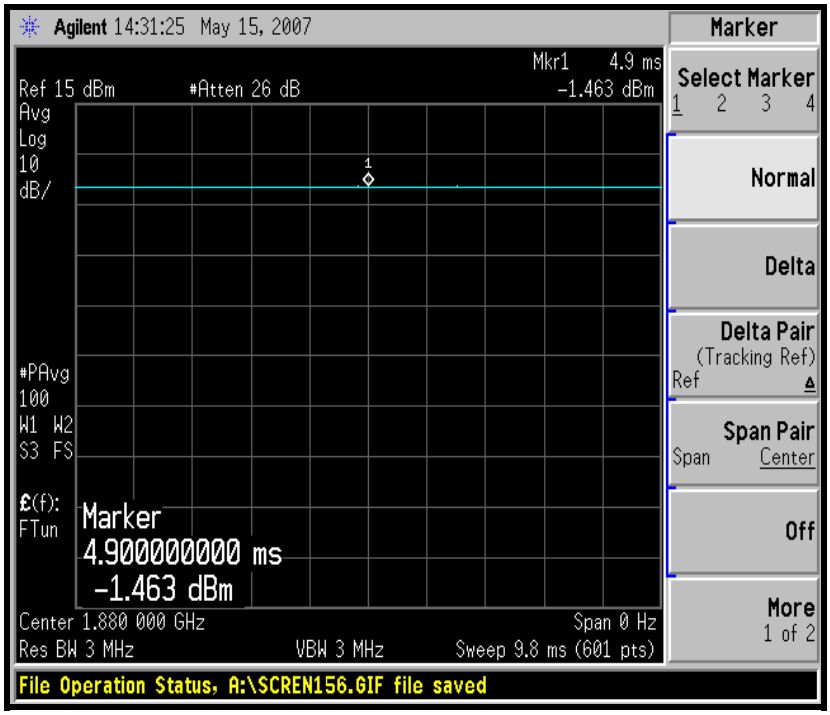


CDMA SIGNAL:

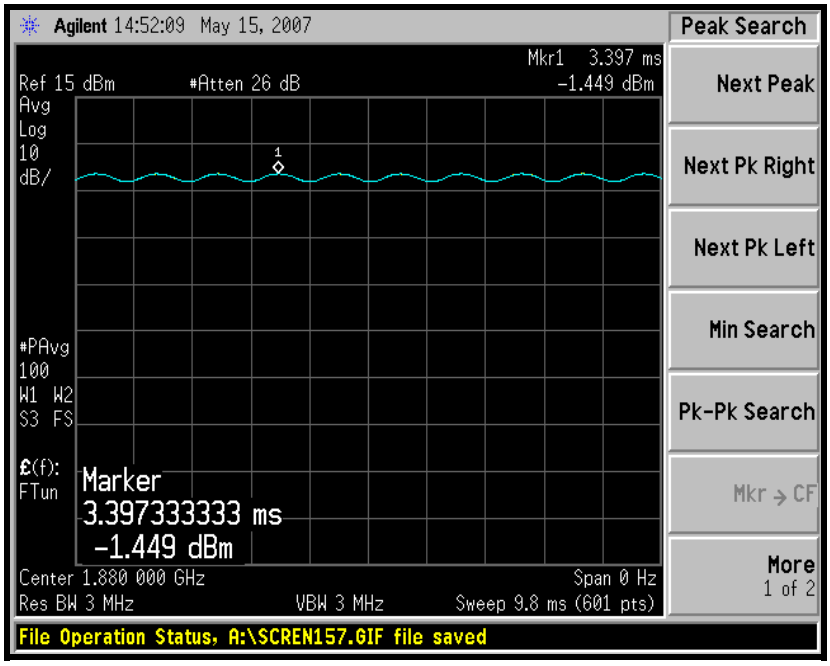


TEST FREQUENCY (MHz)	PROTOCOL	REFERENCE LEVEL	MEASURED E-FILED (V/m)	E-FILED MODULATION FACTOR	TESTED DATE
1880.0	CW	Refer to the next three plots	106.0	NA	May 15, 2007
	80% AM		103.8	1.02	
	CDMA		109.2	0.97	
TEST FREQUENCY (MHz)	**PROTOCOL**	**REFERENCE LEVEL**	**MEASURED H-FILED (A/m)**	**H-FILED MODULATION FACTOR**	**TESTED DATE**
1880.0	CW	Refer to the next three plots	0.326	NA	May 16, 2007
	80% AM		0.323	1.01	
	CDMA		0.311	1.05	
TESTED BY	Sam Onn				

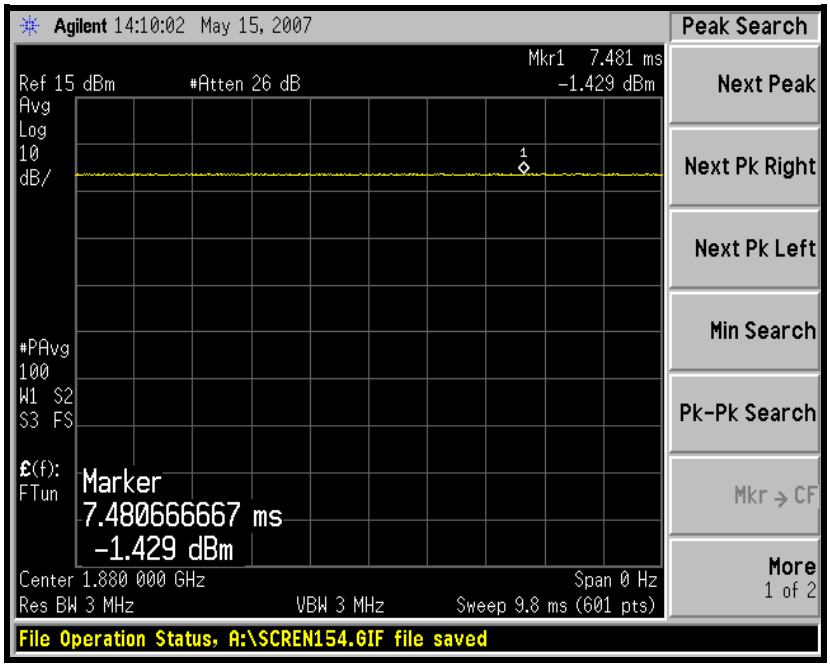
CW SIGNAL:



80% AM SIGNAL:



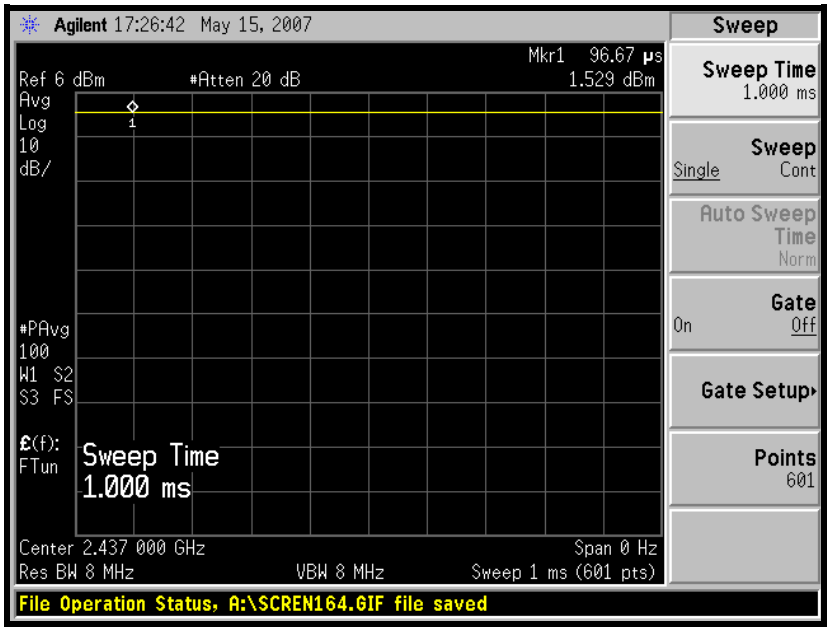
CDMA SIGNAL:



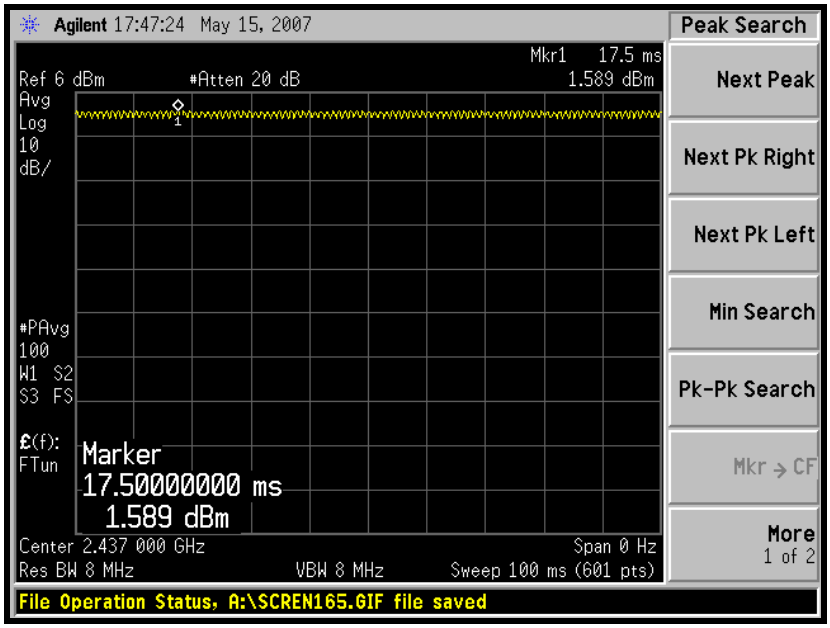
The following data is for reference only and not required for HAC compliance.

TEST FREQUENCY (MHz)	PROTOCOL	REFERENCE LEVEL	MEASURED E-FILED (V/m)	E-FILED MODULATION FACTOR	TESTED DATE
2437.0	CW	Refer to the next three plots	49.0	NA	May 15, 2007
	80% AM		45.9	1.07	
	802.11b		54.6	0.90	
TEST FREQUENCY (MHz)	**PROTOCOL**	**REFERENCE LEVEL**	**MEASURED H-FILED (A/m)**	**H-FILED MODULATION FACTOR**	**TESTED DATE**
2437.0	CW	Refer to the next three plots	0.189	NA	May 16, 2007
	80% AM		0.178	1.06	
	802.11b		0.197	0.96	
TESTED BY	Sam Onn				

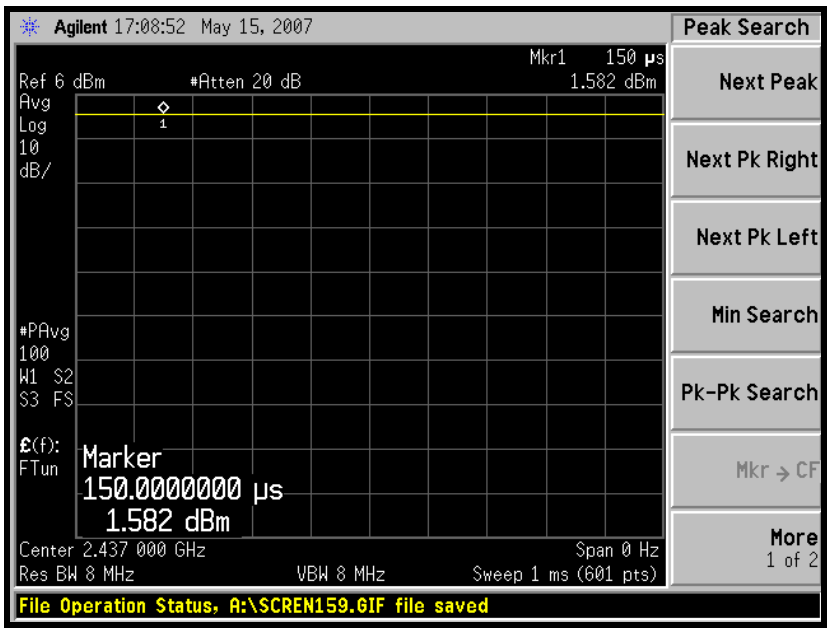
CW SIGNAL:



80% AM SIGNAL:



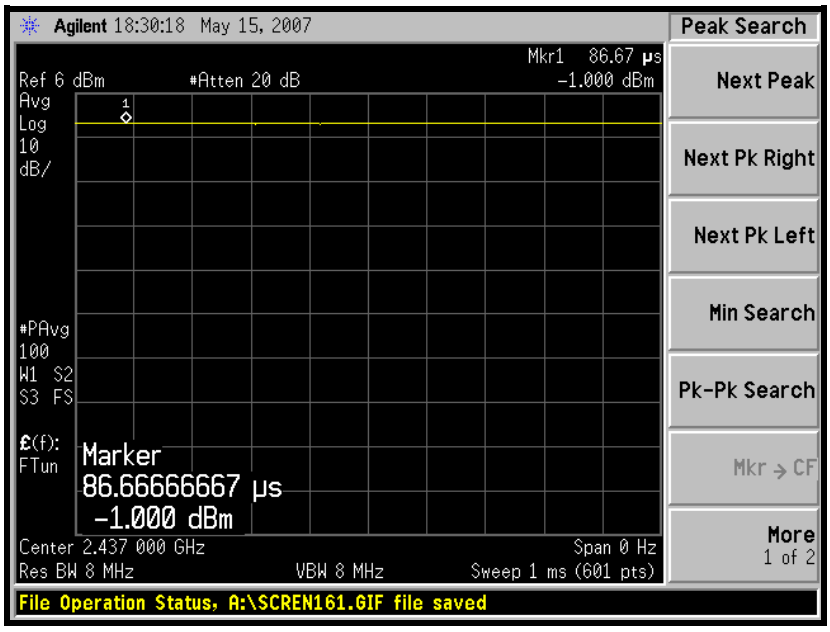
802.11b SIGNAL:



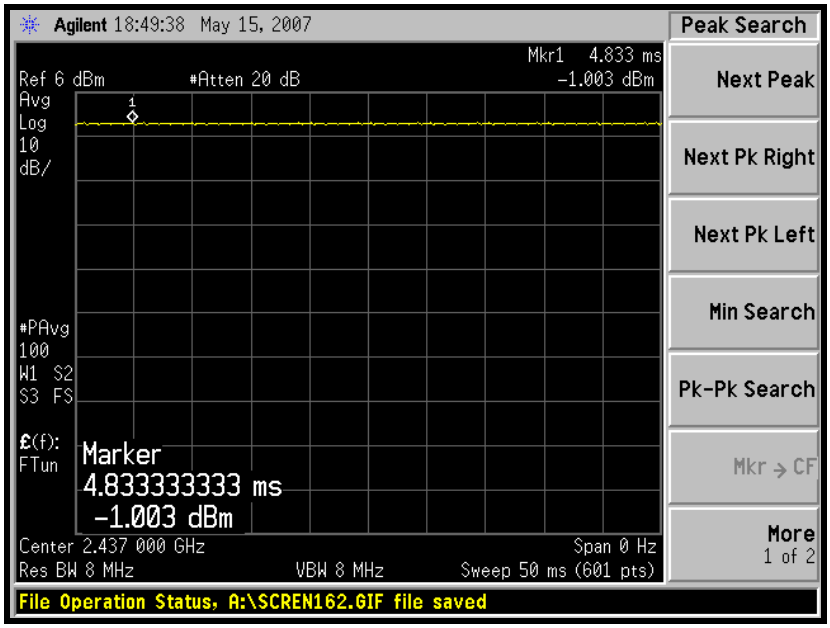
The following data is for reference only and not required for HAC compliance.

TEST FREQUENCY (MHz)	PROTOCOL	REFERENCE LEVEL	MEASURED E-FILED (V/m)	E-FILED MODULATION FACTOR	TESTED DATE
2437.0	CW	Refer to the next three plots	36.9	NA	May 15, 2007
	80% AM		36.0	1.03	
	802.11g		49.9	0.74	
TEST FREQUENCY (MHz)	**PROTOCOL**	**REFERENCE LEVEL**	**MEASURED H-FILED (A/m)**	**H-FILED MODULATION FACTOR**	**TESTED DATE**
2437.0	CW	Refer to the next three plots	0.141	NA	May 16, 2007
	80% AM		0.138	1.02	
	802.11g		0.188	0.75	
TESTED BY	Sam Onn				

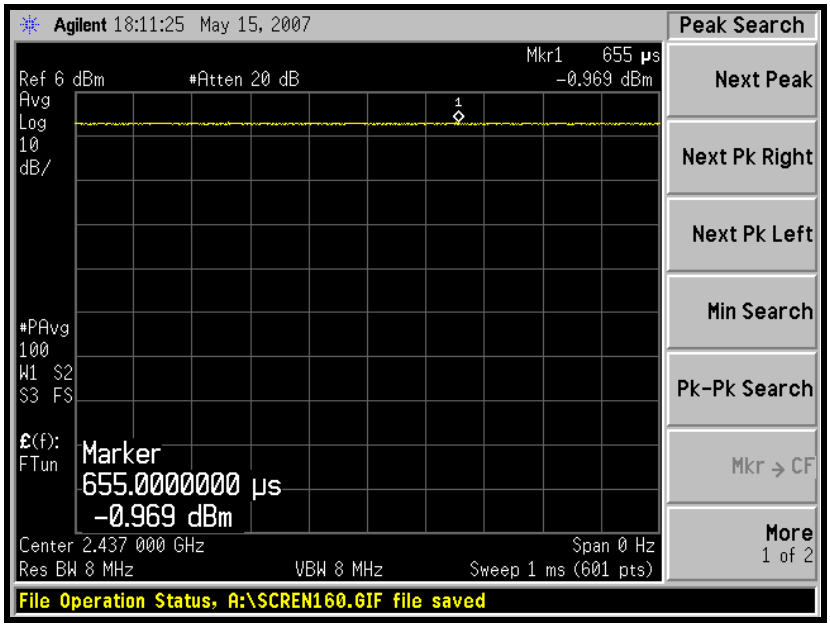
CW SIGNAL:



80% AM SIGNAL:

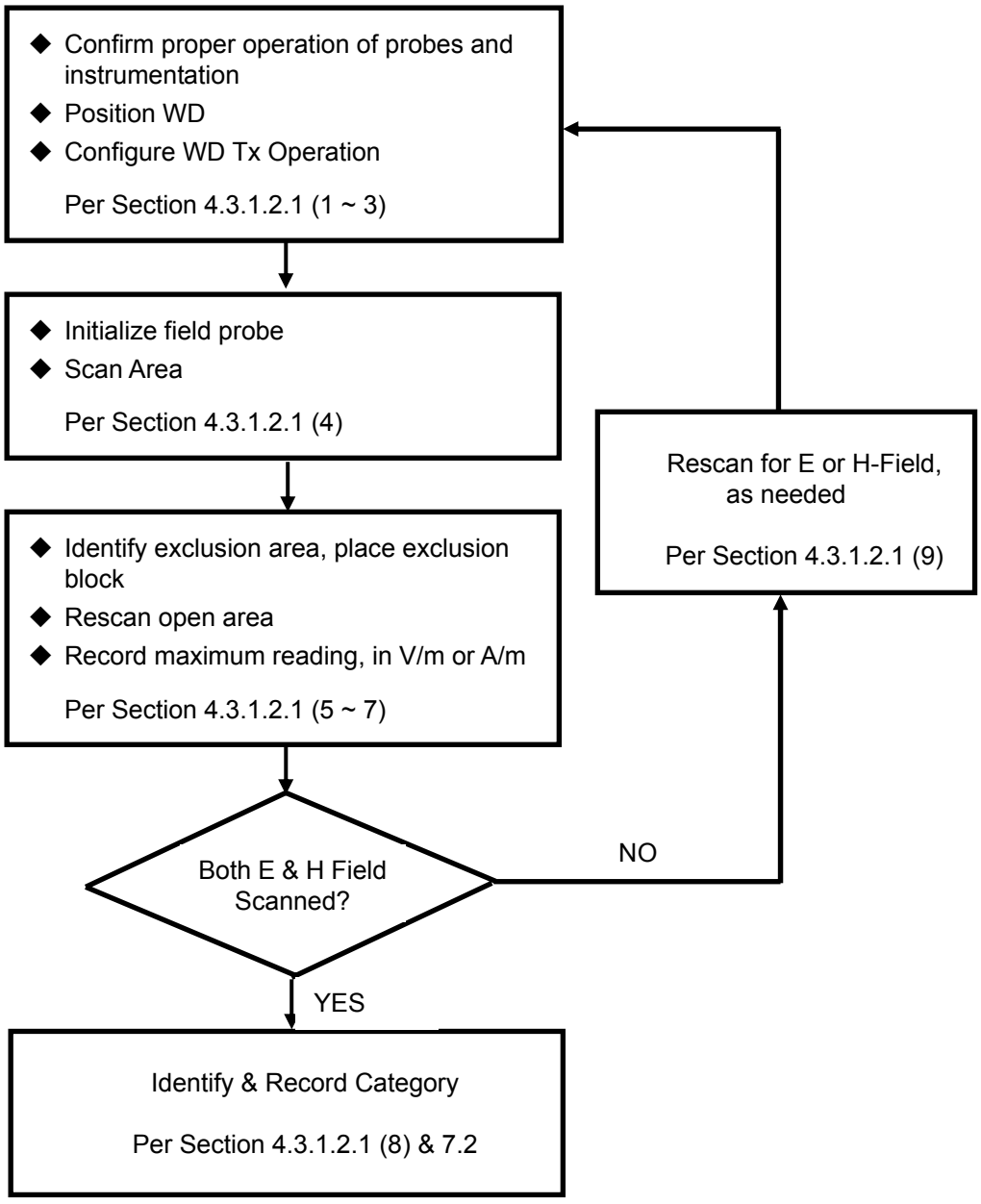


802.11g SIGNAL:



7. RF EMISSION TEST PROCEDURES

7.1. TEST INSTRUCTION



7.2. TEST PROCEDURES

The EUT (Smart Phone) makes a phone call to the GSM base station. Establish the simulation communication configuration rather the actual communication. Then the EUT could continuous the transmission mode. Adjust the PCL of the base station could controlled the EUT to transmitted the maximum output power. The base station also could control the transmission channel.

The recommended procedure for assessing the RF emission value consists of the following steps:

1. Proper operation of the field probe, probe measurement system, other instrumentation, and the positioning system was confirmed.
2. WD is positioned in its intended test position, acoustic output point of the device perpendicular to the field probe.
3. The center sub-grid was centered over the center of the acoustic output (also audio band magnetic output, if applicable). The WD audio output was positioned tangent (as physically possible) to the measurement plane.
4. A surface calibration was performed before each setup change to ensure repeatable spacing and proper maintenance of the measurement plane using the HAC arch.
5. The measurement system measured the field strength at the reference location.
6. Measurements at 2mm increments in the 5 x 5cm region were performed and recorded. A 360^{o} rotation about the azimuth axis at the maximum interpolated position was measured. For the worst-case condition, the peak reading from this rotation was used in re-evaluating the HAC category.
7. Steps 1-6 were done for both the E and H-Field measurements.

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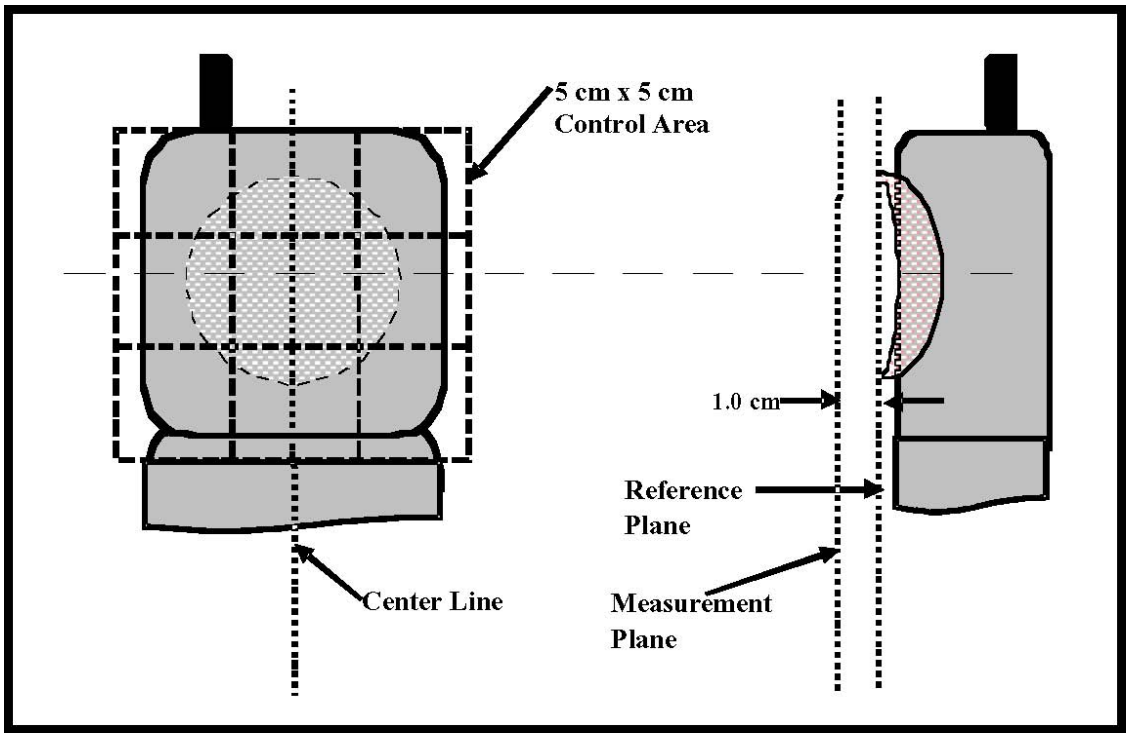
7.3. DESCRIPTION OF TEST POSITION AND CONFIGURATIONS



7.4. SUMMARY OF MEASURED HAC RESULTS

E-FIELD EMISSION

ENVIRONMENTAL CONDITION	Air Temperature：23°C, Humidity：55%RH		
TESTED BY	Sam Onn	DATE	May 15, 2007

FREQ. (MHz)	CHAN.	MODE	CONDUCTED POWER (dBm)	DRIFT (dB)	MEASURED PMF	EXCLUDED CELLS	PEAK FIELD (V/m)	RATING
824.70 (Low)	1013	CDMA850	24.29	-0.346	1.08	2.3.6	210.4	M3
836.50 (Mid.)	384	CDMA850	24.12	-0.014		2.3.6	202.0	M3
848.30 (High)	777	CDMA850	23.98	-0.084		2.3.6	206.8	M3
1851.25 (Low)	25	CDMA1900	24.11	-0.185	0.97	1.2.3	100.2	M3
1880.00 (Mid.)	600	CDMA1900	24.01	-0.045		1.2.3	96.9	M3
1908.75 (High)	1175	CDMA1900	23.96	-0.126		1.2.3	101.1	M3
1908.75 (High)	1175	CDMA1900 (Light off)	23.96	-0.088		1.2.3	99.2	M3
1908.75 (High)	1175	CDMA1900 (BAT. B)	23.96	-0.032		1.2.4	97.4	M3

NOTE:

1. The LCD back-light “ON” & battery A are the worst case for measurement.
2. Please see the Appendix A for the measured data and test plots.
3. The variation of the EUT conducted power measured before and after HAC testing should not over 5%.

The following data is for reference only not and required for HAC compliance.

ENVIRONMENTAL CONDITION	Air Temperature：23°C, Humidity：55%RH		
TESTED BY	Sam Onn	DATE	May 15, 2007

FREQ. (MHz)	CHAN.	MODE	CONDUCTED POWER (dBm)	DRIFT (dB)	MEASURED PMF	EXCLUDED CELLS	PEAK FIELD (V/m)	RATING
2412.00 (Low)	1	802.11b	18.08	-0.041	0.90	6.8.9	24.1	M4
2437.00 (Mid.)	6	802.11b	18.02	-0.070		6.8.9	18.3	M4
2462.00 (High)	11	802.11b	18.00	-0.072		6.8.9	14.5	M4
2412.00 (Low)	1	802.11g	18.60	-0.019	0.74	6.8.9	18.0	M4
2437.00 (Mid.)	6	802.11g	19.02	-0.207		6.8.9	14.6	M4
2462.00 (High)	11	802.11g	19.01	-0.138		6.8.9	11.5	M4

NOTE:

1. The LCD back-light “ON” & battery A are the worst case for measurement.
2. Please see the Appendix A for the measured data and test plots.
3. The variation of the EUT conducted power measured before and after HAC testing should not over 5%.

Wireless 802.11b/g and Bluetooth are tested with the CDMA 850 and 1900 bands since they are both operational when the phone is held to ear and connected on a cell call. For example, CDMA850 is used in connected on a cell call, at the same time, 802.11b/g or bluetooth could be used in data transmission.

ENVIRONMENTAL CONDITION	Air Temperature：23°C, Humidity：55%RH		
TESTED BY	Sam Onn	DATE	May 15, 2007

FREQ. (MHz)	CHAN.	MODE	CONDUCTED POWER (dBm)	DRIFT (dB)	MEASURED PMF	EXCLUDED CELLS	PEAK FIELD (V/m)	RATING
824.70 (Low)	1013	CDMA850 + 802.11b	24.29	-0.172	1.08	2.3.6	213.8	M3
836.50 (Mid.)	384	CDMA850 + 802.11b	24.12	-0.050		2.3.6	203.8	M3
848.30 (High)	777	CDMA850 + 802.11b	23.98	-0.005		2.3.6	213.8	M3
824.70 (Low)	1013	CDMA850 + 802.11g	24.29	-0.015	1.08	2.3.6	208.7	M3
836.50 (Mid.)	384	CDMA850 + 802.11g	24.12	-0.045		2.3.6	203.2	M3
848.30 (High)	777	CDMA850 + 802.11g	23.98	-0.028		2.3.6	209.2	M3
824.70 (Low)	1013	CDMA850 + Bluetooth	24.29	-0.114	1.08	2.3.6	215.1	M3
836.50 (Mid.)	384	CDMA850 + Bluetooth	24.12	-0.041		2.3.6	206.4	M3
848.30 (High)	777	CDMA850 + Bluetooth	23.98	-0.026		2.3.6	213.5	M3

NOTE:

1. The LCD back-light “ON” & battery A are the worst case for measurement.
2. Please see the Appendix A for the measured data and test plots.
3. The variation of the EUT conducted power measured before and after HAC testing should not over 5%.

Wireless 802.11b/g and Bluetooth are tested with the CDMA 850 and 1900 bands since they are both operational when the phone is held to ear and connected on a cell call. For example, CDMA850 is used in connected on a cell call, at the same time, 802.11b/g or bluetooth could be used in data transmission.

ENVIRONMENTAL CONDITION	Air Temperature：23°C, Humidity：55%RH		
TESTED BY	Sam Onn	DATE	May 15, 2007

FREQ. (MHz)	CHAN.	MODE	CONDUCTED POWER (dBm)	DRIFT (dB)	MEASURED PMF	EXCLUDED CELLS	PEAK FIELD (V/m)	RATING
1851.25 (Low)	25	CDMA1900 + 802.11b	24.11	-0.141	0.97	1.2.3	101.9	M3
1880.00 (Mid.)	600	CDMA1900 + 802.11b	24.01	-0.076		1.2.3	104.8	M3
1908.75 (High)	1175	CDMA1900 + 802.11b	23.96	-0.117		1.2.3	103.1	M3
1851.25 (Low)	25	CDMA1900 + 802.11g	24.11	-0.006	0.97	1.2.3	98.7	M3
1880.00 (Mid.)	600	CDMA1900 + 802.11g	24.01	-0.088		1.2.3	103.1	M3
1908.75 (High)	1175	CDMA1900 + 802.11g	23.96	-0.044		1.2.3	102.9	M3
1851.25 (Low)	25	CDMA1900 + Bluetooth	24.11	-0.188	0.97	1.2.3	100.5	M3
1880.00 (Mid.)	600	CDMA1900 + Bluetooth	24.01	-0.041		1.2.3	100.8	M3
1908.75 (High)	1175	CDMA1900 + Bluetooth	23.96	-0.108		1.2.3	96.8	M3

NOTE:

1. The LCD back-light “ON” & battery A are the worst case for measurement.
2. Please see the Appendix A for the measured data and test plots.
3. The variation of the EUT conducted power measured before and after HAC testing should not over 5%.

H-FIELD EMISSION

ENVIRONMENTAL CONDITION	Air Temperature：25°C, Humidity：57%RH		
TESTED BY	Sam Onn	DATE	May 16, 2007

FREQ. (MHz)	CHAN.	MODE	CONDUCTED POWER (dBm)	DRIFT (dB)	MEASURED PMF	EXCLUDED CELLS	PEAK FIELD (A/m)	RATING
824.70 (Low)	1013	CDMA850	24.29	-0.267	1.04	1.2.4	0.531	M4
836.50 (Mid.)	384	CDMA850	24.12	-0.019		1.2.4	0.516	M4
848.30 (High)	777	CDMA850	23.98	-0.093		1.2.4	0.559	M4
1851.25 (Low)	25	CDMA1900	24.11	-0.214	1.05	1.2.4	0.313	M3
1880.00 (Mid.)	600	CDMA1900	24.01	-0.016		1.2.4	0.315	M3
1908.75 (High)	1175	CDMA1900	23.96	-0.184		1.2.4	0.317	M3
1908.75 (High)	1175	CDMA1900 (Light off)	23.96	-0.182		1.2.4	0.310	M3
1908.75 (High)	1175	CDMA1900 (BAT. B)	23.96	-0.085		1.2.4	0.312	M3

NOTE:

1. The LCD back-light “ON” & battery A are the worst case for measurement.
2. Please see the Appendix A for the measured data and test plots.
3. The variation of the EUT conducted power measured before and after HAC testing should not over 5%.

The following data is for reference only not and required for HAC compliance.

ENVIRONMENTAL CONDITION	Air Temperature：25°C, Humidity：57%RH		
TESTED BY	Sam Onn	DATE	May 16, 2007

FREQ. (MHz)	CHAN.	MODE	CONDUCTED POWER (dBm)	DRIFT (dB)	MEASURED PMF	EXCLUDED CELLS	PEAK FIELD (A/m)	RATING
2412.00 (Low)	1	802.11b	18.08	-0.084	0.96	4.7.8	0.060	M4
2437.00 (Mid.)	6	802.11b	18.02	-0.016		4.7.8	0.045	M4
2462.00 (High)	11	802.11b	18.00	-0.206		4.7.8	0.034	M4
2412.00 (Low)	1	802.11g	18.60	-0.341	0.75	4.7.8	0.043	M4
2437.00 (Mid.)	6	802.11g	19.02	-0.072		4.7.8	0.033	M4
2462.00 (High)	11	802.11g	19.01	-0.246		4.7.8	0.024	M4

NOTE:

1. The LCD back-light “ON” & battery A are the worst case for measurement.
2. Please see the Appendix A for the measured data and test plots.
3. The variation of the EUT conducted power measured before and after HAC testing should not over 5%.

Wireless 802.11b/g and Bluetooth are tested with the CDMA 850 and 1900 bands since they are both operational when the phone is held to ear and connected on a cell call. For example, CDMA850 is used in connected on a cell call, at the same time, 802.11b/g or bluetooth could be used in data transmission.

ENVIRONMENTAL CONDITION	Air Temperature：25°C, Humidity：57%RH		
TESTED BY	Sam Onn	DATE	May 16, 2007

FREQ. (MHz)	CHAN.	MODE	CONDUCTED POWER (dBm)	DRIFT (dB)	MEASURED PMF	EXCLUDED CELLS	PEAK FIELD (A/m)	RATING
824.70 (Low)	1013	CDMA850 + 802.11b	24.29	-0.213	1.04	1.2.4	0.595	M4
836.50 (Mid.)	384	CDMA850 + 802.11b	24.12	-0.175		1.2.4	0.591	M4
848.30 (High)	777	CDMA850 + 802.11b	23.98	-0.167		1.2.4	0.628	M3
824.70 (Low)	1013	CDMA850 + 802.11g	24.29	-0.092	1.04	1.2.4	0.574	M4
836.50 (Mid.)	384	CDMA850 + 802.11g	24.12	-0.124		1.2.4	0.569	M4
848.30 (High)	777	CDMA850 + 802.11g	23.98	-0.083		1.2.4	0.603	M3
824.70 (Low)	1013	CDMA850 + Bluetooth	24.29	-0.042	1.04	1.2.4	0.541	M4
836.50 (Mid.)	384	CDMA850 + Bluetooth	24.12	-0.053		1.2.4	0.542	M4
848.30 (High)	777	CDMA850 + Bluetooth	23.98	-0.142		1.2.4	0.585	M4

NOTE:

1. The LCD back-light “ON” & battery A are the worst case for measurement.
2. Please see the Appendix A for the measured data and test plots.
3. The variation of the EUT conducted power measured before and after HAC testing should not over 5%.

Wireless 802.11b/g and Bluetooth are tested with the CDMA 850 and 1900 bands since they are both operational when the phone is held to ear and connected on a cell call. For example, CDMA850 is used in connected on a cell call, at the same time, 802.11b/g or bluetooth could be used in data transmission.

ENVIRONMENTAL CONDITION	Air Temperature：25°C, Humidity：57%RH		
TESTED BY	Sam Onn	DATE	May 16, 2007

FREQ. (MHz)	CHAN.	MODE	CONDUCTED POWER (dBm)	DRIFT (dB)	MEASURED PMF	EXCLUDED CELLS	PEAK FIELD (A/m)	RATING
1851.25 (Low)	25	CDMA1900 + 802.11b	24.11	-0.097	1.05	1.2.4	0.300	M3
1880.00 (Mid.)	600	CDMA1900 + 802.11b	24.01	-0.026		1.2.4	0.330	M3
1908.75 (High)	1175	CDMA1900 + 802.11b	23.96	-0.031		1.2.4	0.334	M3
1851.25 (Low)	25	CDMA1900 + 802.11g	24.11	-0.072	1.05	1.2.4	0.316	M3
1880.00 (Mid.)	600	CDMA1900 + 802.11g	24.01	-0.084		1.2.4	0.320	M3
1908.75 (High)	1175	CDMA1900 + 802.11g	23.96	-0.126		1.2.4	0.324	M3
1851.25 (Low)	25	CDMA1900 + Bluetooth	24.11	-0.124	1.05	1.2.4	0.286	M3
1880.00 (Mid.)	600	CDMA1900 + Bluetooth	24.01	-0.084		1.2.4	0.317	M3
1908.75 (High)	1175	CDMA1900 + Bluetooth	23.96	-0.089		1.2.4	0.312	M3

NOTE:

1. The LCD back-light “ON” & battery A are the worst case for measurement.
2. Please see the Appendix A for the measured data and test plots.
3. The variation of the EUT conducted power measured before and after HAC testing should not over 5%.

8. INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	FCC, UL, A2LA
GERMANY	TUV Rheinland
JAPAN	VCCI
NORWAY	NEMKO
CANADA	INDUSTRY CANADA , CSA
R.O.C.	CNLA, BSMI, NCC
NETHERLANDS	Telefication
SINGAPORE	PSB , GOST-ASIA (MOU)
RUSSIA	CERTIS (MOU)

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3185050

Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also.