6.7 Dwell Time

6.7.1 Test Procedure

1. Connect EUT antenna terminal to the spectrum analyzer with a low loss cable.
   Equipment mode: Spectrum analyzer
   RBW: 1MHz
   VBW: 1MHz
   SPAN: Zero Span

2. Adjust the center frequency of spectrum analyzer on any frequency be measured.
3. Measure the Dwell Time by spectrum analyzer Marker function.
4. Repeat above procedures until all frequencies measured were complete.

6.7.2 Test Setup

6.7.3 Test Data

Dwell Time

Temperature (℃):25

Test Engineer:Jerry Chiou Humidity (%):55

Mode	Frequency (MHz)	Spectrum Reading (μs)	Test Result (ms)	Limit (ms)		Pass/Fail
DH1	**2402**	416	266.24	<	400	Pass
DH3	**2402**	1668	355.84	<	400	Pass
DH5	**2402**	2904	371.71	<	400	Pass

Mode	Frequency (MHz)	Spectrum Reading (μs)	Test Result (ms)	Limit (ms)		Pass/Fail
DH1	**2441**	416	266.24	<	400	Pass
DH3	**2441**	1672	356.69	<	400	Pass
DH5	**2441**	2912	372.74	<	400	Pass

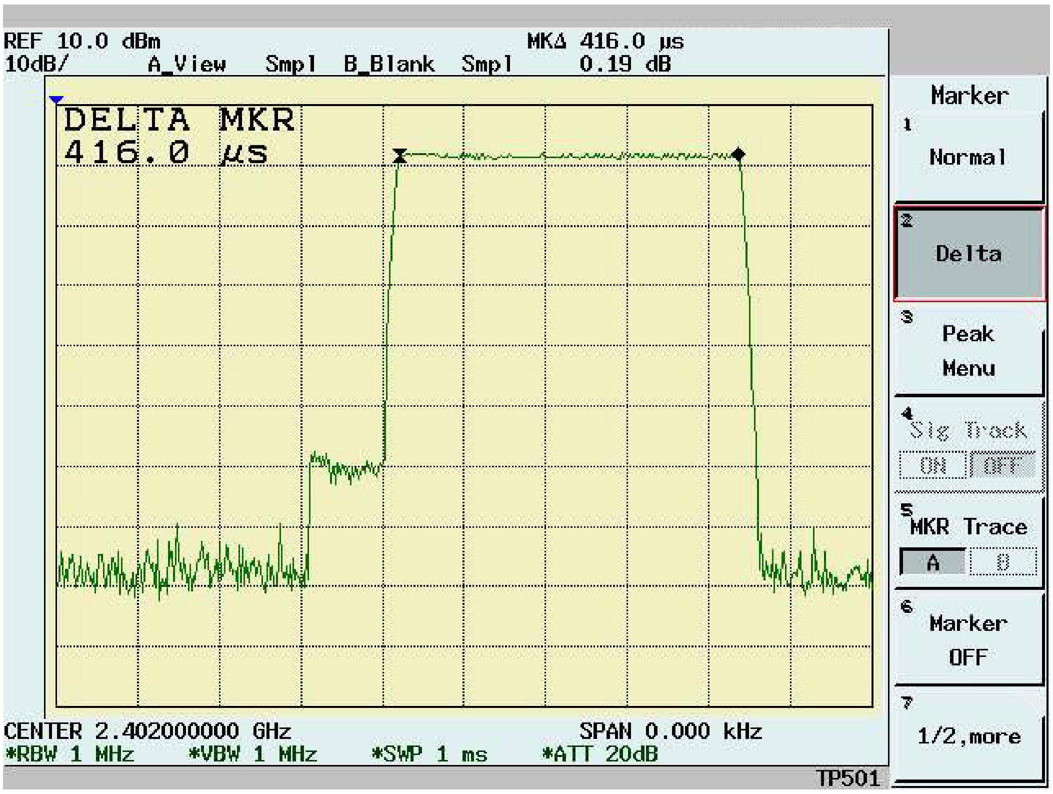
Mode	Frequency (MHz)	Spectrum Reading (μs)	Test Result (ms)	Limit (ms)		Pass/Fail
DH1	**2480**	418	267.52	<	400	Pass
DH3	**2480**	1668	355.84	<	400	Pass
DH5	**2480**	2904	371.71	<	400	Pass

Note:

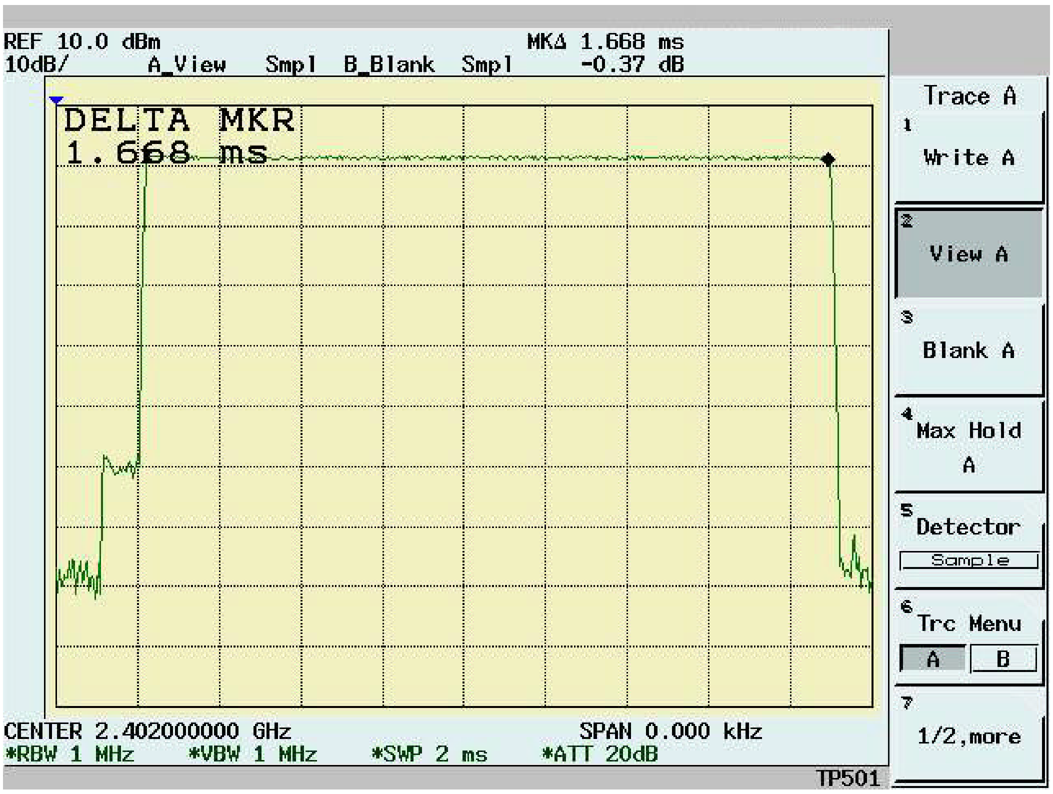
A period time=79x0.4(s)=31.6(s)

CH00	DH1 time slot=	416 (μs)*(1600/(1*79))*31.6=	266.24 (ms)
	DH3 time slot=	1668 (μs)*(1600/(3*79))*31.6=	355.84 (ms)
	DH5 time slot=	2904 (μs)*(1600/(5*79))*31.6=	371.71 (ms)
CH39	DH1 time slot=	416 (μs)*(1600/(1*79))*31.6=	266.24 (ms)
	DH3 time slot=	1672 (μs)*(1600/(3*79))*31.6=	356.69 (ms)
	DH5 time slot=	2912 (μs)*(1600/(5*79))*31.6=	372.74 (ms)
CH78	DH1 time slot=	418 (μs)*(1600/(1*79))*31.6=	267.52 (ms)
	DH3 time slot=	1668 (μs)*(1600/(3*79))*31.6=	355.84 (ms)
	DH5 time slot=	2904 (μs)*(1600/(5*79))*31.6=	371.71 (ms)

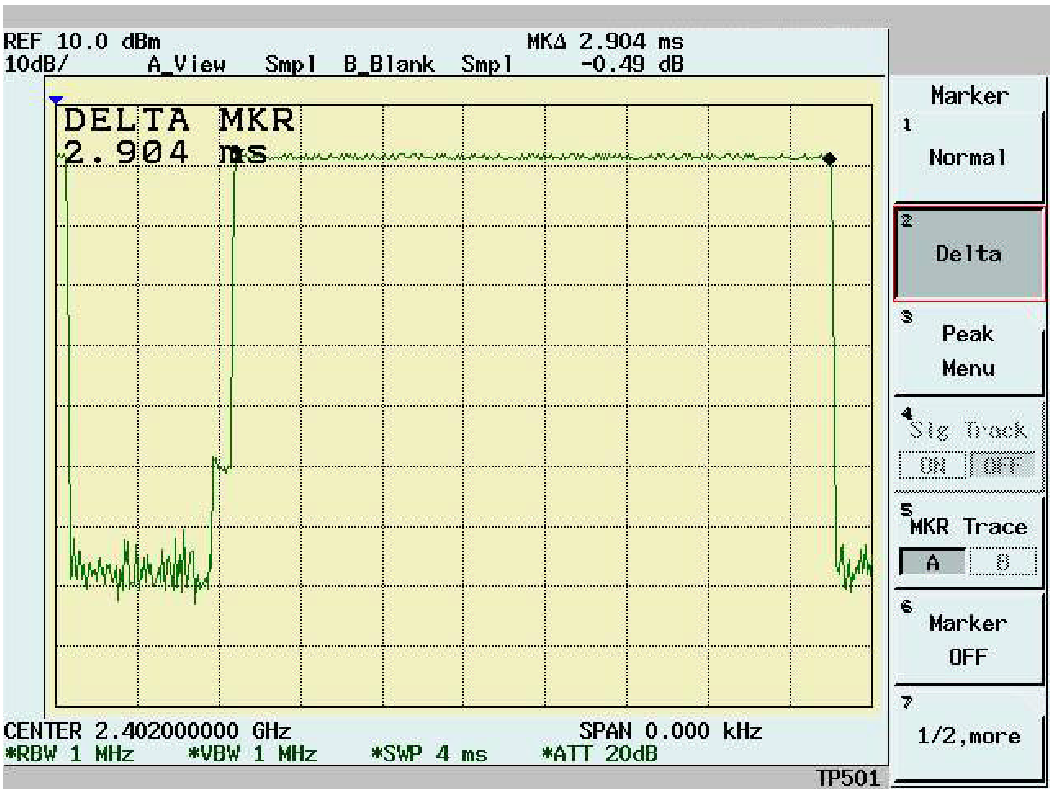
Channel 00 DH1:



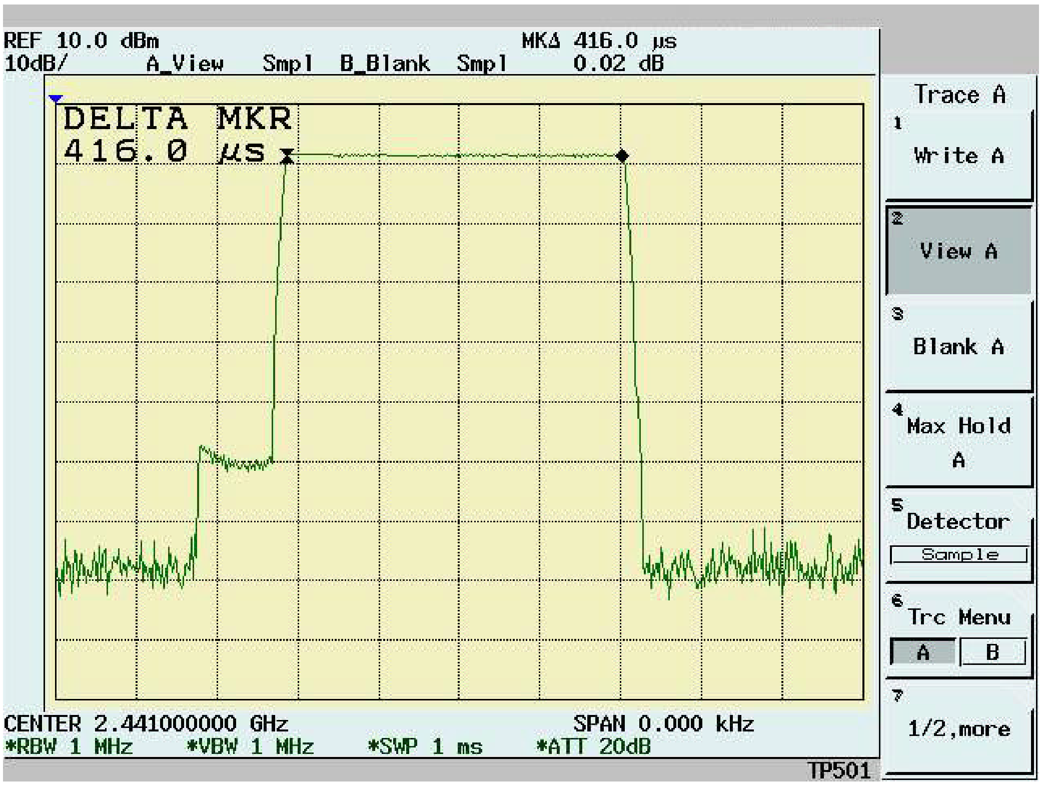
Channel 00 DH3:



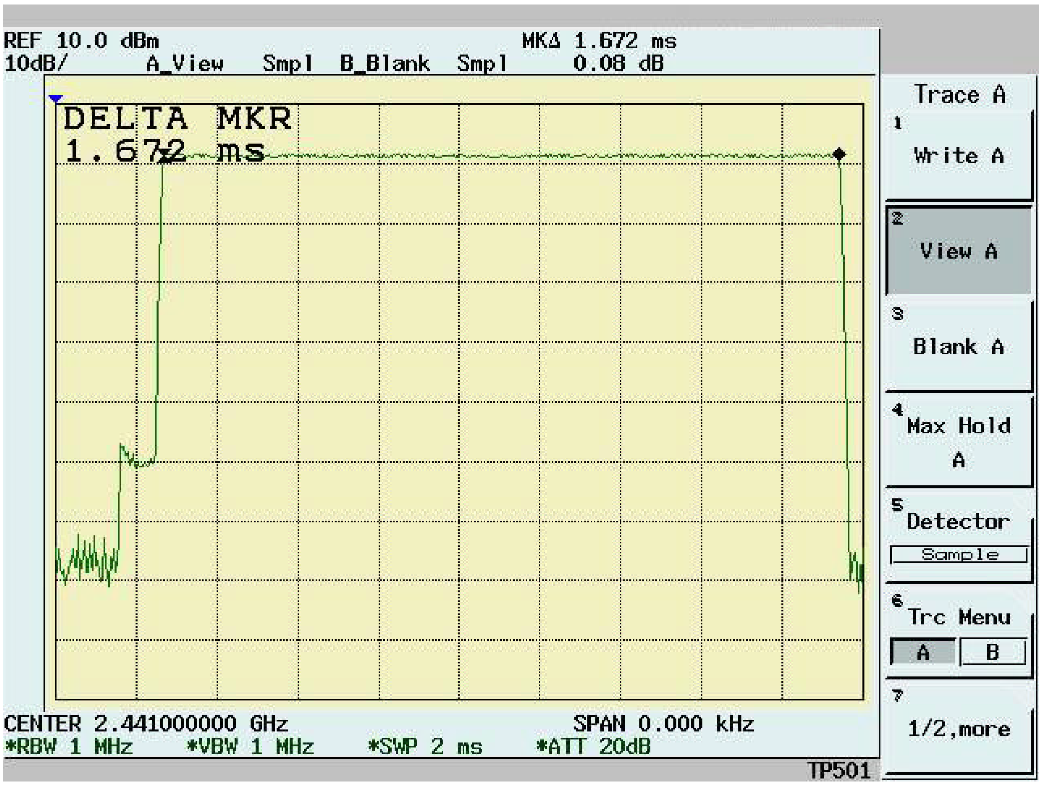
Channel 00 DH5:



Channel 39 DH1:



Channel 39 DH3:



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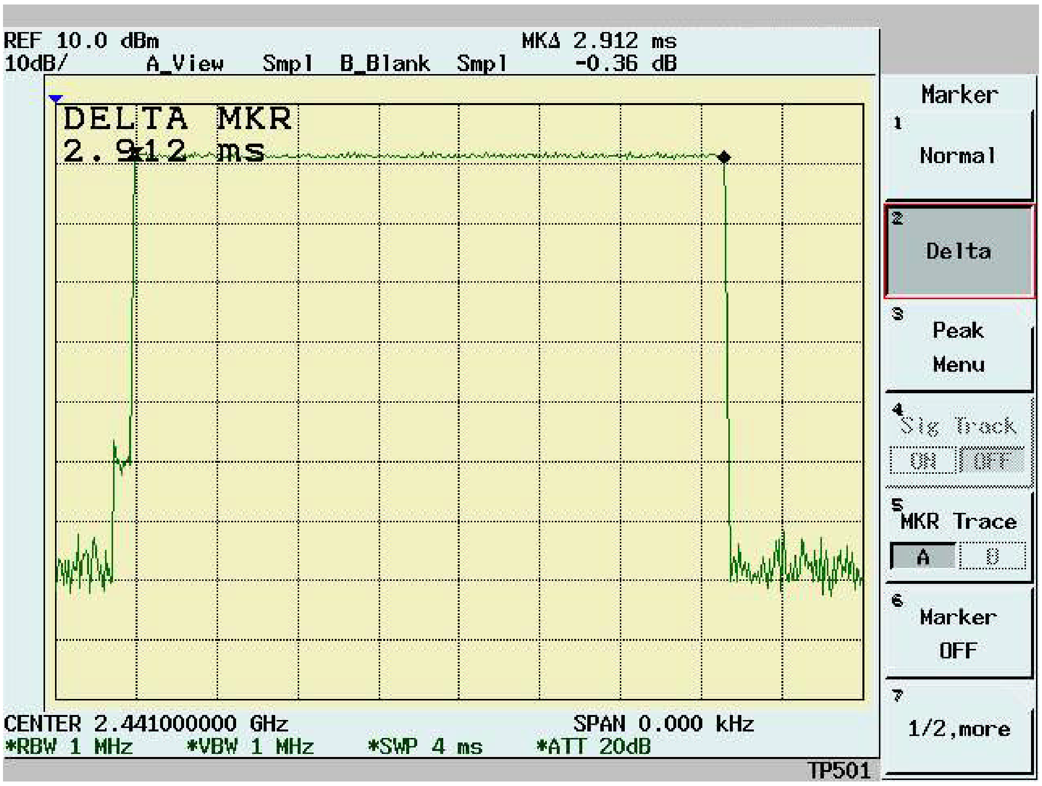
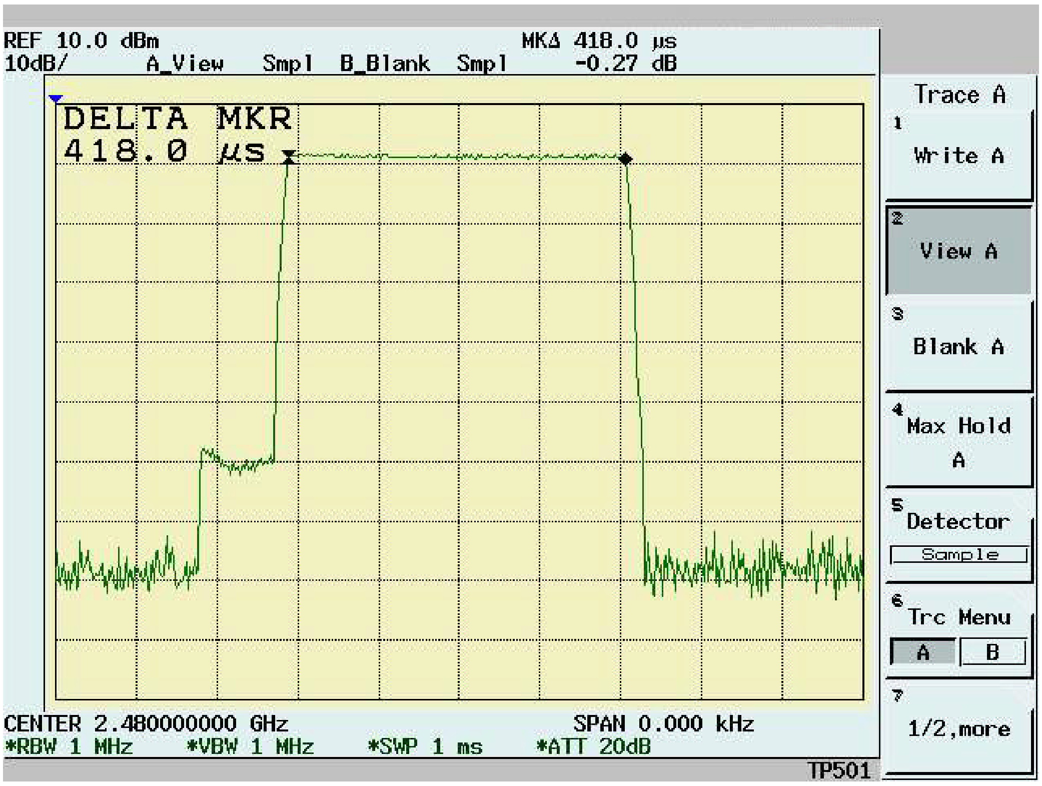


Channel 78 DH1:



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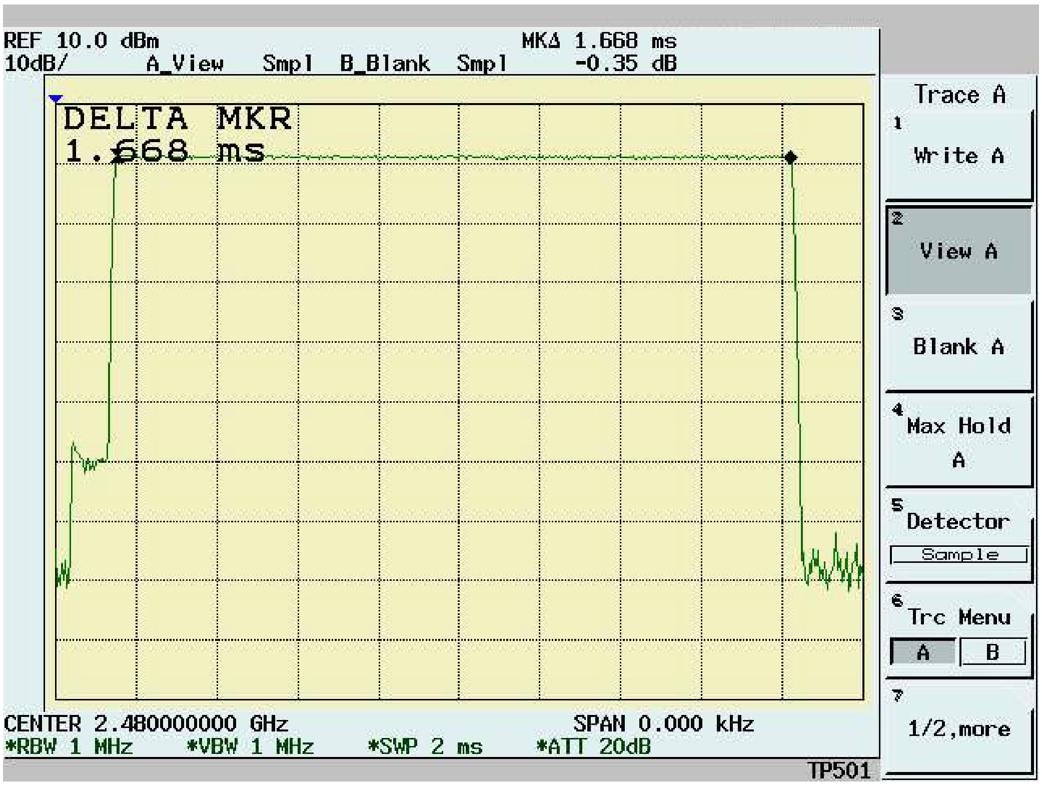
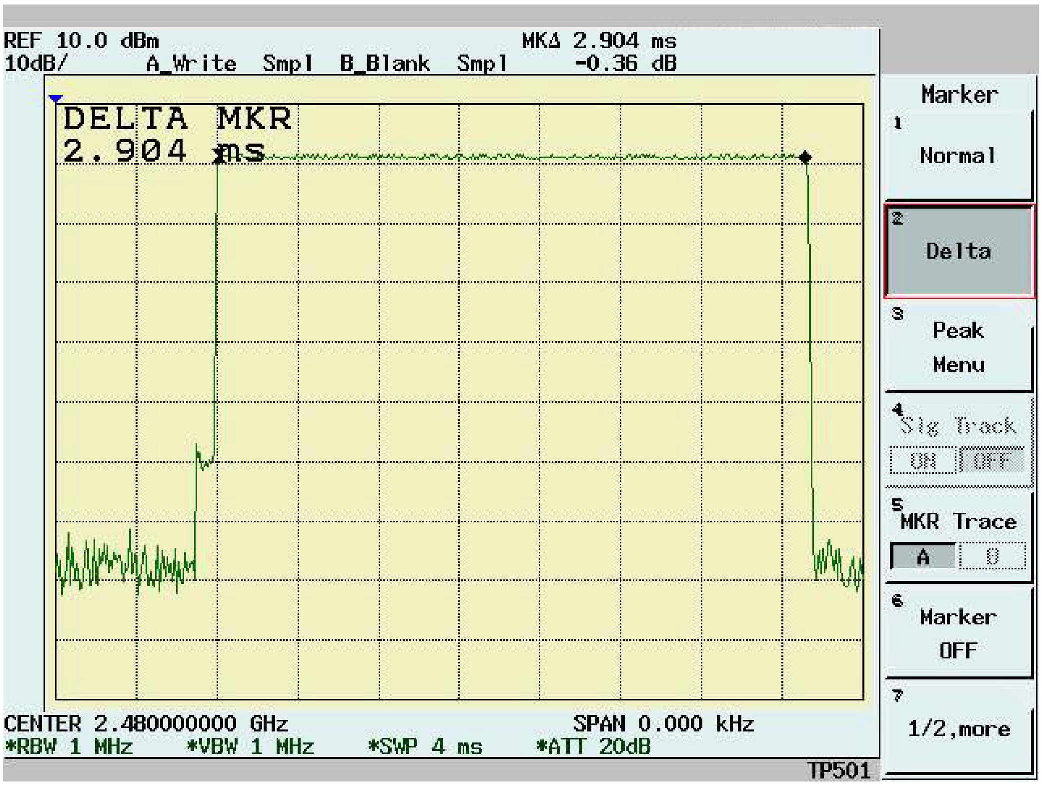


Channel 78 DH5:



7. Appendix

7.1 Appendix A: Measurement Procedure for Power line Conducted Emissions

The measurements are performed in a 3.5m x 3.4m x 2.5m shielded room, which referred as Conduction 01 test site, or a 3m x 3m x 2.3m test site, which referred as Conduction 02 test site. The EUT was placed on non-conduction 1.0m x 1.5m table, which is 0.8 meters above an earth-grounded.

Power to the EUT was provided through the LISN which has the Impedance (50ohm/50uH) vs. Frequency Characteristic in accordance with the required standard. Power to the LISNs were filtered to eliminate ambient signal interference and these filters were bonded to the ground plane. Peripheral equipment required to provide a functional system (support equipment) for EUT testing was powered from the second LISN through a ganged, metal power outlet box which is bonded to the ground plane at the LISN.

If the EUT is supplied with a flexible power cord, the power cord length in excess of the distance separating the EUT from the LISN shall be folded back and forth at the center of the lead so as to form a bundle not exceeding 40cm in length. If the EUT is provided with a permanently coiled power cord, bundling of the cord is not required. If the EUT is supplied without a power cord, the EUT shall be connected to the LISN by a power cord of the type specified by the manufacturer which shall not be longer than 1 meter. The excess power cord shall be bundled as described above. If a non-flexible power cord is provided with the EUT, it shall be cut to the length necessary to attach the EUT to the LISN and shall not be bundled.

The interconnecting cables were arranged and moved to get the maximum emission. Both the line of power cord, hot and neutral, were measured.

The highest emissions were analyzed in details by operating the spectrum analyzer in fixed tuned mode to determine the nature of the emissions and to provide information which could be useful in reducing their amplitude.

7.2 Appendix B: Test Procedure for Radiated Emissions

Preliminary Measurements in the Anechoic Chamber

The radiated emissions are initially measured in the anechoic chamber at a measurement distance of 3 meters. Desktop EUT are placed on a wooden stand 0.8 meter in height. The measurement antenna is 3 meters from the EUT. The test setup in anechoic chamber is the same as open site. The turntable rotated 360°C. The antenna height is varied from 1-2.5m. The primary objective of the radiated measurements in the anechoic chamber is to identify the frequency spectrum in the absence of the electromagnetic environment existing on the open test site. The frequencies can then be pre-selected on the open test site to obtain the corresponding amplitude. The initial scan is made with the spectrum analyzer in automatic sweep mode. The spectrum peaks are then measured manually to determine the exact frequencies.

Measurements on the Open Site or 10m EMC Chamber

The radiated emissions test will then be repeated on the open site or 10m EMC chamber to measure the amplitudes accurately and without the multiple reflections existing in the shielded room. The EUT and support equipment are set up on the turntable of one of the 3 or 10 meter open field sites. Desktop EUT are set up on a wooden stand 0.8 meter above the ground.

For the initial measurements, the receiving antenna is varied from 1-4 meter height and is changed in the vertical plane from vertical to horizontal polarization at each frequency. Both reading are recorded with the quasi-peak detector with 120KHz bandwidth. For frequency between 30 MHz and 1000MHz, the reading is recorded with peak detector or quasi-peak detector. For frequency above 1 GHz, the reading is recorded with peak detector or average detector with 1 MHz bandwidth.

At the highest amplitudes observed, the EUT is rotated in the horizontal plane while changing the antenna polarization in the vertical plane to maximize the reading. The interconnecting cables were arranged and moved to get the maximum emission. Once the maximum reading is obtained, the antenna elevation and polarization will be varied between specified limits to maximize the readings.

7.3 Appendix C: Test Equipment

7.3.1 Test Equipment List

Location	Equipment Name	Brand	Model	S/N	Last Cal. Date	Next Cal. Date
Conduction	Coaxial Cable 1F-C2	Harbourindustries	RG400	1F-C2	07/15/2006	07/15/2007
Conduction	Digital Hygro-Thermometer Conduct	MicroLife	HT-2126G	ISL-Conduction02	11/30/2006	11/30/2007
Conduction	EMI Receiver 07	Schwarzbeck Mess-Elektronik	FCKL 1528	1528-201	09/01/2007	09/01/2008
Conduction	LISN 04	EMCO	3810/2	9604-1429	12/30/2006	12/30/2007
Conduction	LISN 06	R&S	ESH3-Z5	828874/009	12/13/2006	12/13/2007
Radiation	BILOG Antenna 08	Schaffner	CBL6112B	2756	06/12/2006	06/12/2007
Radiation	Coaxial Cable Chmb 02-10M	Belden	RG-8/U	Chmb 02-10M	07/12/2006	07/12/2007
Radiation	Digital Hygro-Thermometer Chmb 02	MicroLife	HT-2126G	Chmb 02	11/30/2006	12/30/2007
Radiation	EMI Receiver 03	HP	85460A	3448A00183	04/10/2006	04/10/2007
Radiation	Spectrum Analyzer 13	Advantest	R3132	121200411	02/17/2007	02/17/2008
Radiation	Horn Antenna 02	Com-Power	AH-118	10088	12/28/2006	12/27/2007
Radiation	Horn Antenna 04	Com-Power	AH-826	081-001	03/24/2007	03/23/2008
Radiation	Horn Antenna 05	Com-Power	AH-640	100A	11/16/2006	11/15/2007
Radiation	Microwave Cable RF SK-01	HUBER+SUHNERAG.	Sucoflex 102	22139 /2	11/09/2006	11/09/2007
Radiation	Preamplifier 09	MITEQ	AFS44-00102650-40-10P-44	858687	04/02/2006	04/02/2007
Radiation	Preamplifier 10	MITEQ	JS-26004000-27-5A	818471	12/28/2006	12/27/2007
Radiation	High Pass Filter 01	HEWLETT-PACKARD	84300-80038	001	N/A	N/A
Radiation	High Pass Filter 02	HEWLETT-PACKARD	84300-80039	005	N/A	N/A
Radiation	Spectrum Analyzer 14	Advantest	R3182	140600028	11/21/2006	11/21/2007

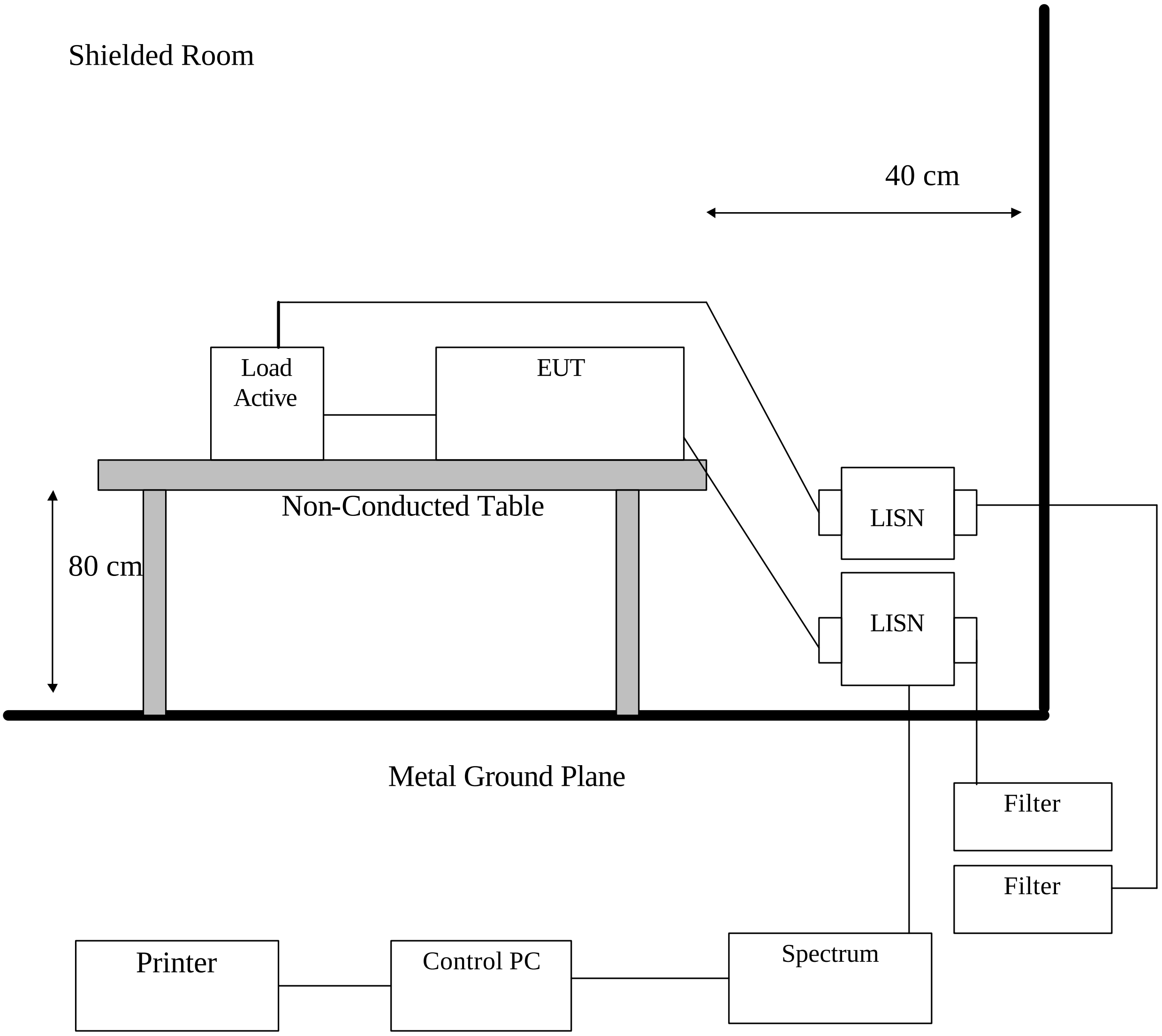
Note: Calibration is traceable to NIST or national or international standards.

7.3.2 Software for Controlling Spectrum/Receiver and Calculating Test Data

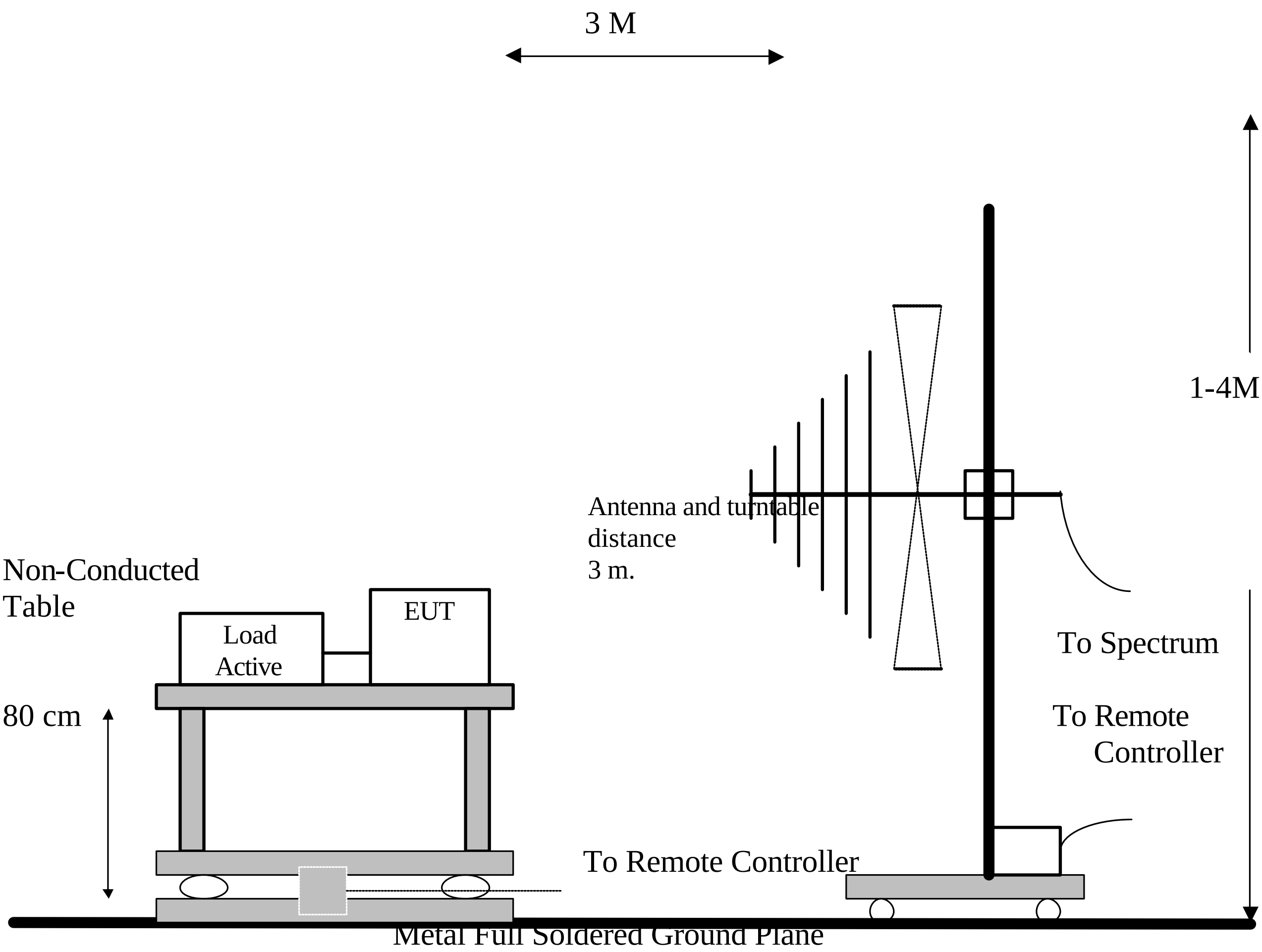
Radiation/Conduction	Filename	Version	Issued Date
Conduction	Tile.exe	1.12E	7/7/2000
Radiation	Tile.exe	1.12C	6/16/2000

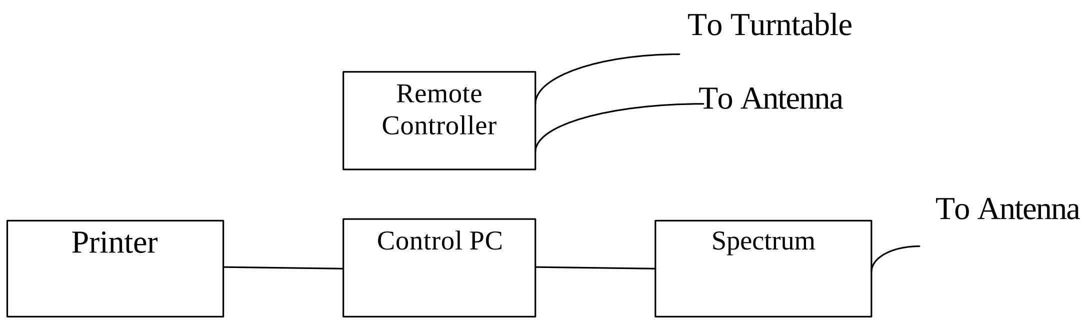
7.4 Appendix D: Layout of EUT and Support Equipment

7.4.1 General Conducted Test Configuration



7.4.2 General Radiation Test Configuration





7.5 Appendix E: Description of Support Equipment

7.5.1 Description of Support Equipment

Description:	FORTUNE GRAND EARPHONE
Model Number:	FG-E8020
Serial Number:	N/A
Power Supply Type:	N/A
Power Cord:	N/A
FCC ID:	N/A

7.5.2 Software for Controlling Support Unit

Test programs exercising various part of EUT were used. The programs were executed as follows:

A. Read and write to the disk drives.
B. The RF software makes the transmitter continuously sending RF signals
C. Repeat the above steps.

	Filename	Issued Date
WLAN	cTxRx.exe	2004/08/13
Bluetooth	WIN.exe	2006/11/22

7.5.3 I/O Cable Condition of EUT and Support Units

Description	Path	Cable Length	Cable Type	Connector Type
AC Power Cord	110V (~240V) to AC Power Cord Inlet (3-pin)	1.8M	Nonshielded, Detachable	Plastic Head

7.6 Appendix F: Accuracy of Measurement

Test Site: Conduction 02

Item	Source of Uncertainty	Probability Distribution	Total Uncertainties (dB)		Standard Uncertainty (dB)	
1	Systematic Effects: (Assessment from 20 repeat observation; 1 reading on EUT)	Normal	k=2	0.104	k=1	0.052
2	Random Effects: (Assessment from 20 random observations; 1 reading on EUT)	Normal	k=2	0.330	k=1	0.165
3	Receiver Calibration	Rectangular	k=1.73	1.000	k=1	0.577
4	LISN Factor Calibration	Normal	k=2	1.200	k=1	0.600
5	Cable Loss Calibration	Normal	k=2	1.000	k=1	0.500
6	Combined Standard Uncertainty Uc(y)	Normal			k=1	0.850
7	**Total Uncertainty @95% mim. Confidence Level**	**Normal**	**k=2**	**1.701**		

Measurement Uncertainty Calculations:

$Uc(y) = \text{square root} (u_1 (y)^2 + u_2 (y)^2 + ...+u_n (y)^2)$

$U = 2 * Uc(y)$

Note: The measurement Uncertainties mentioned above also refer to NIS 81-1994 of NAMAS : The treatment of Uncertainty in EMC Measurement.

Test Site: Chamber 02-3M

Item	Source of Uncertainty	Probability Distribution	Total Uncertainties (dB)		Standard Uncertainty (dB)	
1	Systematic Effects: (Assessment from 20 repeat observation; 1 reading on EUT)	Normal	k=2	0.067	k=1	0.034
2	Random Effects: (Assessment from 20 random observations; 1 reading on EUT)	Normal	k=2	0.103	k=1	0.052
3	Receiver Calibration	Rectangular	k=1.73	1.000	k=1	0.577
4	Antenna Factor Calibration	Normal	k=2	1.700	k=1	0.850
5	Cable Loss Calibration	Normal	k=2	1.000	k=1	0.500
6	Combined Standard Uncertainty Uc(y)	Normal			k=1	1.029
7	**Total Uncertainty @95% mim. Confidence Level**	**Normal**	**k=2**	**2.059**		

Measurement Uncertainty Calculations:

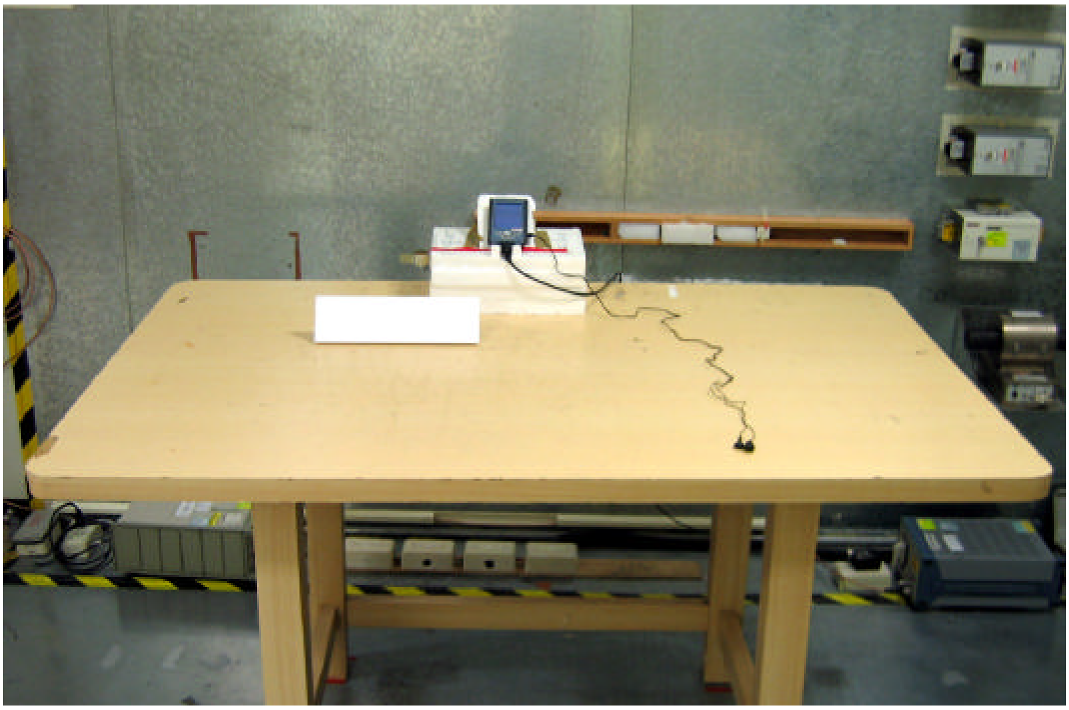
$Uc\ (y) = \text{square root}\ (\ u_1\ (y)^2\ + u_2\ (y)^2 + \ldots\ldots\ldots\ldots + u_n\ (y)^2\ )$

$U = 2 * Uc\ (y)$

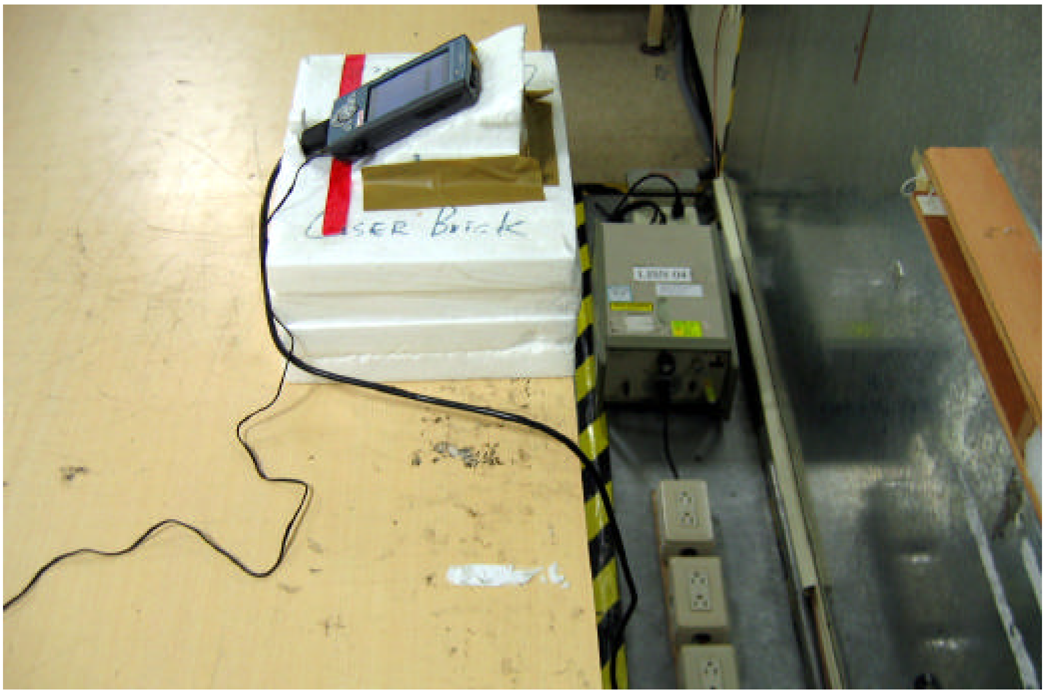
Note: The measurement Uncertainties mentioned above also refer to NIS 81-1994 of NAMAS : The treatment of Uncertainty in EMC Measurement.

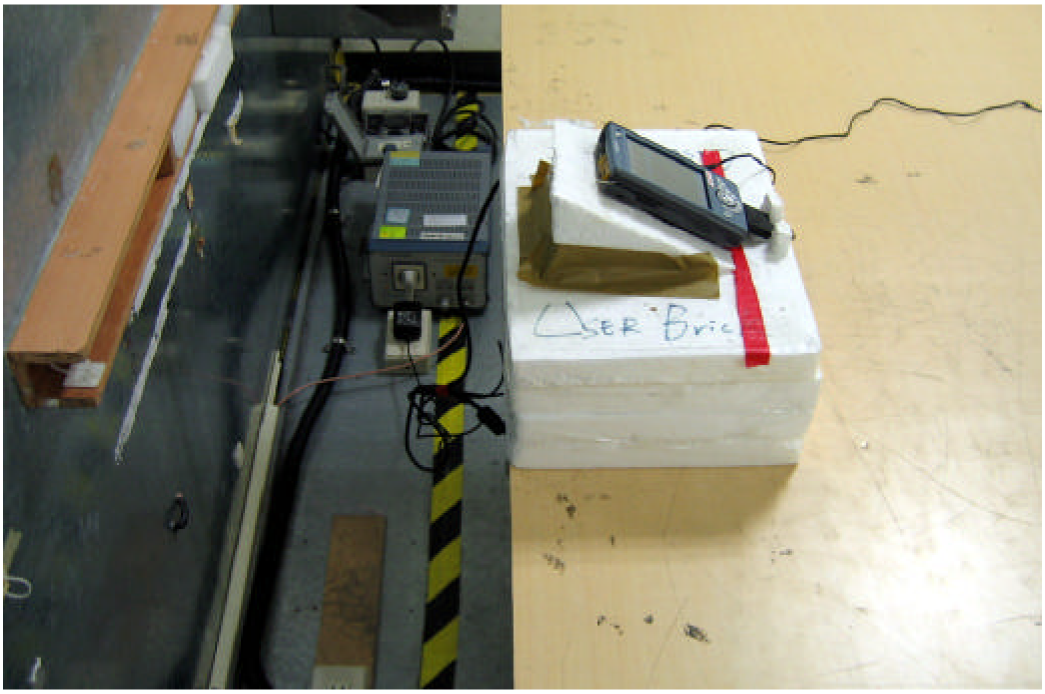
7.7 Appendix G: Photographs of EUT Configuration Test Set Up

The Front View of Highest Conducted Set-up For EUT

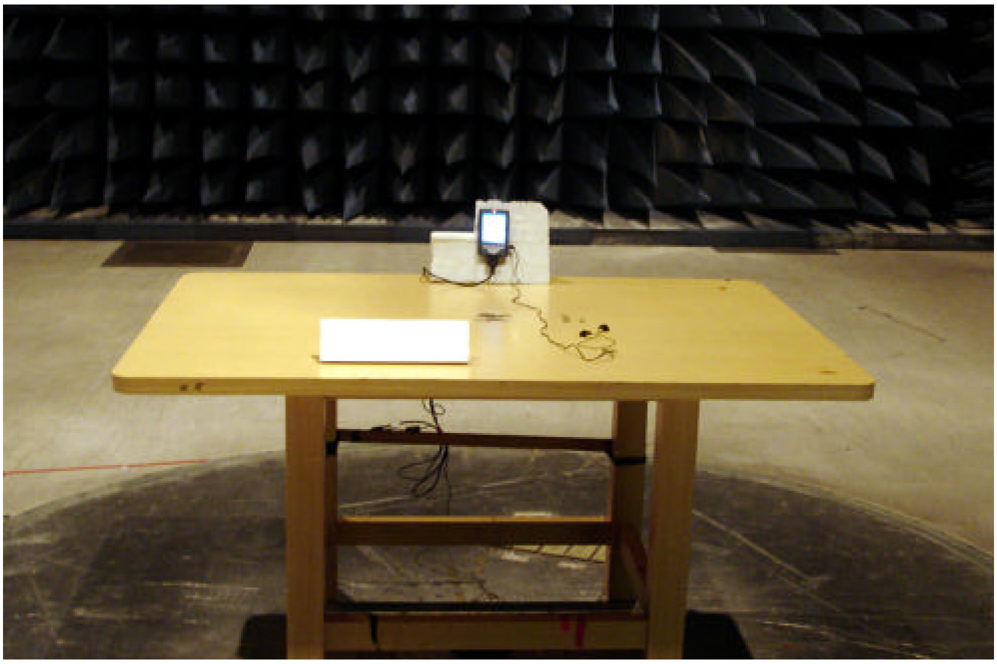


The Back View of Highest Conducted Set-up For EUT

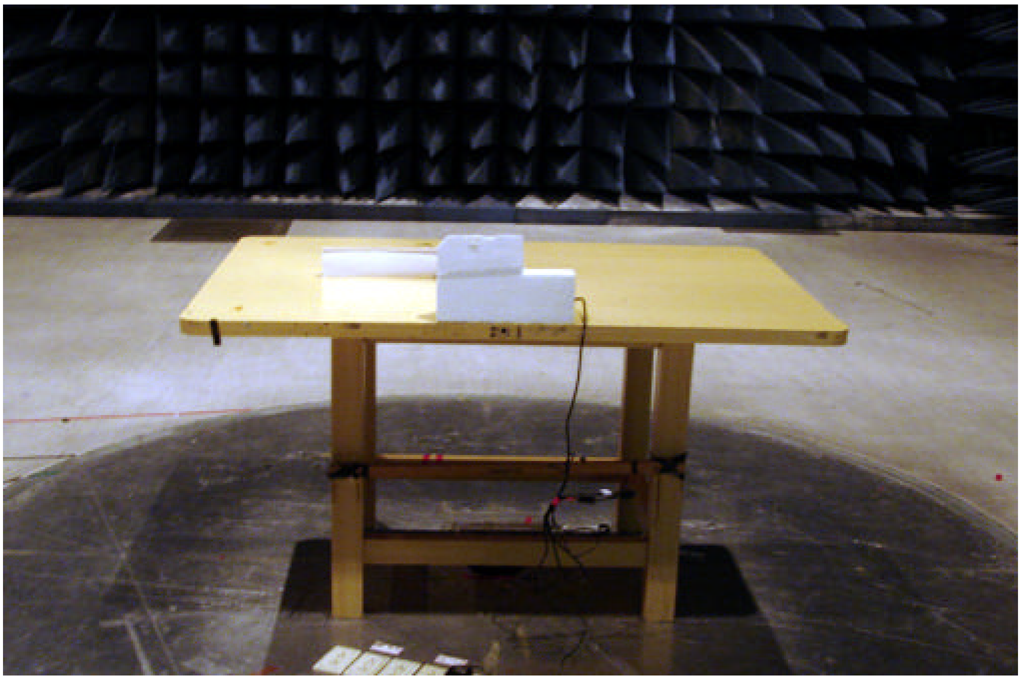




The Front View of Highest Radiated Set-up For EUT



The Back View of Highest Radiated Set-up For EUT



7.8 Appendix H: Antenna Spec.

Please refer to the attached file.