

RADIO TEST REPORT

ETSI EN301 489-1 V1.5.1 (11-2004)

ETSI EN301 489-17 V1.2.1 (08-2002)

Product: *Wireless-AG Network Mini PCI Adapter*
Applicant: *Compex Systems Pte Ltd.*
Trade Name: *Compex*
Model: *IWAVEPORT WLM54AG*
Sample Received Date: *08/03/2005*
Report No.: *MLT0508EMC001-02*

Prepared by : Jesse Tien Approved by : Roger Chen
Jesse Tien Roger Chen

Test By

Max Light Technology Co.,Ltd.

Room 5, 8F, No.125, Section 3 Roosevelt Road,
Taipei, Taiwan., R.O.C.

Tel: 886-2-2363-2447 Fax: 886-2-2363-2597

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I. General of EUT

1.1 Identification of EUT

Equipment : Wireless-AG Network Mini PCI Adapter

Applicant : Compex Systems Pte Ltd.
135 Joo Seng Road, #08-01 PM Industrial Building
Singapore 368363

Manufacturer : Compex Systems Pte Ltd.
135 Joo Seng Road, #08-01 PM Industrial Building
Singapore 368363

Model No : IWAVEPORT WLM54AG

1.2 Technical data of EUT

Type of Modulation : Direct Sequence Spread Spectrum

Type of Antenna : 1/4 DIOPLE Antenna

Antenna Gain (dBi) : 2.0 dBi

Frequency of Channel : 13CH

Operating Frequency : 2412MHz~2472MHz

Output Power : 20dBm

Input Rating : Powered By PC (Desktop)

1.3 Standard Test Conditions

Temperature : +22°C ~ +28 *Degrees Celsius*

Relative Humidity : 60% ~ 85%

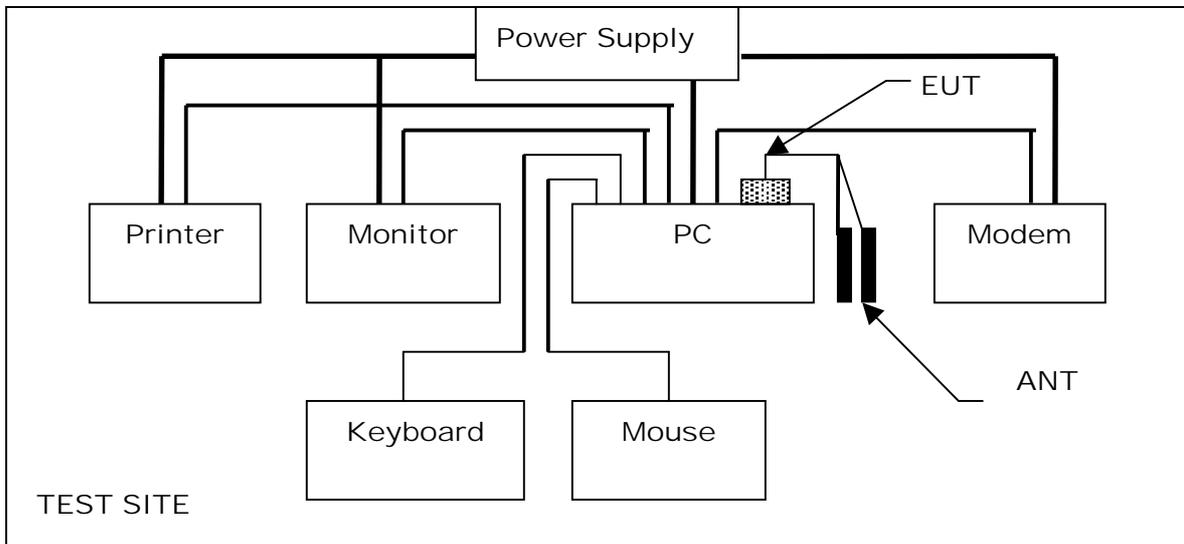
Supply Voltage : 230VAC

1.4 Configuration of EUT

This Wireless-AG Network Mini PCI Adapter of

<i>Item</i>	<i>Component</i>	<i>Manufacturer</i>	<i>Model</i>
1.	Computer	IBM	16W
2.	Monitor	IBM	10L6145 030
3.	Keyboard	IBM	KB-9930
4.	Mouse	IBM	0180-05N
5.	Modem	ASKEY	WS1414SV
6.	Printer	PANASONIC	KX-P1080I

1.5 Configuration of System Under Test



During testing the EUT (Wireless Adapter) 's Mini PCI interface via a PCMCIA to mini-PCI extender connected to the Desktop PC, and the monitor/modem/keyboard/mouse/printer connected to desktop's PC I/O port.

II. Evaluation

2.1 Summary Of Tests

ETSI EN 301 489-1(08-2000) & 301 489-17 (09-2000)			
According to	Results	Remarks	
EN 55022: 1998 3 RD Radiated Emission (Class B)	Pass	(2)	
EN 55022: 1998 3 RD Conducted Emission (Class B)	Pass		
EN61000-3-2 : 2000 Harmonic Current Emission	Pass	(3)	
EN61000-3-3 : 1995 +A1:2001 Voltage Fluctuations & Flick	Pass	(3)	
EN61000-4-2 : 1995 RF Electromagnetic Field	Pass	(1)	
EN61000-4-3 : 1996 Electrostatic Discharge	Pass	(1)	
EN61000-4-4 : 1995 Fast Transients Command Mode	Pass	(1)	
EN61000-4-5 : 1995 Surge Immunity Test	Pass	(1)	
EN61000-4-6 : 1996 RF Command Mode	Pass	(1)	
EN61000-4-11 : 1994 Voltage Dips & Interruptions	Pass	(1)	
Classification of EUT	<input type="checkbox"/> Transmitter	<input type="checkbox"/> Receiver	<input checked="" type="checkbox"/> Transceiver
	<input checked="" type="checkbox"/> Base Station Equipment		
	<input type="checkbox"/> Mobile Equipment for Vehicular Use		
	<input type="checkbox"/> Hand-held Portable Equipment		
	<input type="checkbox"/> Plug-In radio device With Host System		

ETSI EN 301 489-1 V.1.5.1 (11-2004)

Electromagnetic Compatibility and Radio Spectrum Matters (ERM);
Electromagnetic Compatibility (EMC) and Radio equipment and Services;
Part1 : Common Technical Requirements

ETSI EN 301 489-17 V.1.2.1 (08-2002)

Electromagnetic Compatibility and Radio Spectrum Matters (ERM);
Electromagnetic Compatibility (EMC) and Radio radio equipment and Services;
Part17 : Specific Conditions for Wideband Data and HIPERLAN equipment

Remark : The test results only relate to the submitted test sample specified above.

2.2 Performance Criteria

Performance Table (ETSI 301 489-17)		
Criteria	During Test	After Test
A	Shall operate as intended May show degradation of performance (note 1) Shall be no loss of function Shall be no unintentional transmissions	Shall operate as intended Shall be no degradation of performance (note 2) Shall be no loss of function Shall be no loss of stored data or user programmable functions
B	May show loss of function (one or more) May show degradation of performance (note 1) No unintentional transmissions	Functions shall be self-recoverable Shall operate as intended after recovering Shall be no degradation of performance (note 2) Shall be no loss of stored data or user programmable functions
C	May be loss of function (one or more)	Functions shall be recoverable by the operator Shall operate as intended after recovering Shall be no degradation of performance (note 2)
<p>NOTE 1: Degradation of performance during the test is understood as a degradation to a level not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.</p> <p>NOTE 2: No degradation of performance after the test is understood as no degradation below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. After the test no change of actual operating data or user retrievable data is allowed. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.</p>		

Performance Criteria for Continuous Phenomena Applied to Transmitters(CT)
 The Performance Criteria A shall.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur.

In system using acknowledgement signals, it is recognized that an ACKnowledgement (ACK) or NotACKnowledgement (NACK) transmission may occur, and step should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.



Performance criteria for Transient phenomena applied to Transmitters (TT)
The Performance Criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5 000 ms duration, for which performance criteria C shall apply.

Tests shall be repeated with the EUT in standby mode (if applicable) to ensure that unintentional transmission does not occur. In systems using acknowledgement signals, it is recognized that an acknowledgement (ACK) or not-acknowledgement (NACK) transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

Performance criteria for Continuous phenomena applied to Receivers (CR)
The Performance Criteria A shall apply.

Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. It should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps

Performance criteria for Transient phenomena applied to Receivers (TR)
The Performance Criteria B shall apply, except for voltage dips of 100 ms and voltage interruptions of 5 000 ms duration for which performance criteria C shall apply.

Where the EUT is a transceiver, under no circumstances, shall the transmitter operate unintentionally during the test. In systems using acknowledgement signals, it is recognized that an ACK or NACK transmission may occur, and steps should be taken to ensure that any transmission resulting from the application of the test is correctly interpreted.

2.3 Applicability Overview Table

2.3.1 Applicability Overview Table (Emission)

ETSI EN 301 489					
Phenomenon	Application	Equipment Test Requirement			Reference Subclause In the Present Document
		Radio and Ancillary Equipment for Fixed Use (Base Station Equipment)	Radio and Ancillary Equipment for Vehicular use (Mobile Equipment)	Radio and Ancillary Equipment for Portable use (Portable Equipment)	
Radiated Emission	Enclosure of Ancillary Equipment	Applicable for Stand Alone Equipment	Applicable for Stand Alone Equipment	Applicable for Stand Alone Equipment	8.2
Conducted Emission	DC Power input/output Port	Applicable	Applicable	Not Applicable	8.3
Conducted Emission	AC Mains input/output Port	Applicable	Not Applicable	Not Applicable	8.4
Harmonic Current Emission	AC Mains Input Port	Applicable	Not Applicable	Not Applicable	8.5
Voltage Fluctuation and Flicker	AC Mains Input Port	Applicable	Not Applicable	Not Applicable	8.6

2.3.2 Applicability Overview Table (Immunity)

ETSI EN 301 489					
Phenomenon	Application	Equipment Test Requirement			Reference Subclause In the Present Document
		Radio and Ancillary Equipment for Fixed Use (Base Station Equipment)	Radio and Ancillary Equipment for Vehicular use (Mobile Equipment)	Radio and Ancillary Equipment for Portable use (Portable Equipment)	
RF Electromagnetic Field 80MHz~1GHz	Enclosure	Applicable	Applicable	Applicable	9.2
Electrostatic Discharge	Enclosure	Applicable	Applicable	Applicable	9.3
Fast Transients Common Mode	Signal, Tele. Port and Control Port DC and AC Power Port	Applicable	Not Applicable	Not Applicable	9.4
RF Common Mode 0.15~80 MHz	Signal, Tele. Port and Control Port DC and AC Power Port	Applicable	Applicable	Not Applicable	9.5
Transients and Surges	DC power Input Port	Not Applicable	Applicable	Not Applicable	9.6
Voltage Dips And Interruption	AC Mains Input Port	Applicable	Not Applicable	Not Applicable	9.7
Surges Line to Line Line to GND	AC Mains Input Port, Tele. Port	Applicable	Not Applicable	Not Applicable	9.8

III. Conducted/Radiated Emissions Requirements

3.1 General:

The conducted emissions test from 150KHz to 30MHz is employed to the power line through a LISN(Line Impedance Stabilization Network). The limits are 66-56dBuV(QP) / 56-46dBuV(Average), decreases linearly with the logarithm for 0.15-0.50MHz; 56dBuV(QP)/ 46dBuV(Average) for 0.50MHz-5MHz; 60dBuV(QP) / 50dBuV(Average) for 5-30MHz.

The conducted emissions test from 150KHz to 30MHz is employed to the telecommunication port through a ISN(Impedance Stabilization Network) or Current Probe . The Voltage limits are 84-74dBuV(QP) / 74-64dBuV(Average), decreases linearly with the logarithm for 0.15-0.50MHz; 74dBuV(QP)/ 64dBuV(Average) for 0.50MHz-30MHz; Current limits are 40-30dBuV(QP) / 30-20dBuV(Average), decreases linearly with the logarithm for 0.15-0.50MHz; 30dBuV(QP)/ 20dBuV(Average) for 0.50MHz-30MHz;

The radiated emissions test is made at a 10 meter open site from 30MHz to 1000MHz. The object of this test is to investigate the emissions from the EUT in order to suppress interference to the environment. The limits are 30dBuV(QP) for 30-230MHz; 37dBuV(QP) for 230-1000MHz.

3.2 Test Specifications:

<i>Requirement</i>	<i>Comment</i>	<i>Result (Pass/Fail)</i>
EN 55022 Class B	Conducted Emission 0.15-30 MHz (Main Power Port)	Pass
EN 55022 Class B	Radiated Emission 30-1000 MHz	Pass

3.3 Setup:

The EUT is placed on a support of non-metallic, the height of which is 0.8m above the ground. For the conducted test, a LISN is used as a matching network to the measuring receiver. The EUT is rotated and the antenna's height vary between 1m and 4m for horizontal and vertical polarization to obtain the maximum reading during the radiated test.

3.4 Test Equipment List:

- A. EMCO 3825/2 LISN (S/N:2654)
- B. EMCO 3825/2 LISN (S/N:2658)
- C. Schaffner T411 ISN (S/N:A432)
- D. HP 8591EM 9KHZ-1.8GHz Spectrum Analyzer (S/N:73412A00110)
- E. Shielded Room (MLT-SR1)
- F. HP 8591EM 9KHz-1.8GHz Spectrum Analyzer (S/N:73412A00230)
- G. HP 8447D Pre Amplifier (S/N:2944A08954)
- H. EMCO 3142 Biconilog Antenna (S/N:1184)
- I. HP 9872B Plotter (S/N:20447A03436)
- J. R&S ESH3 Test Receiver (S/N:892108/025)
- K. R&S ESVP Test Receiver (S/N:881121/01)

3.5 Test condition:

EUT tested in accordance with the specifications given by the manufacturer , and exercised in the most unfavorable manner.

3.6 Conducted Emissions Limits (Mains ports) :

<i>Frequency range (MHz)</i>	<i>Limits (dBuV)</i>	
	<i>Quasi-peak</i>	<i>Average</i>
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5.0	56	46
5.0 to 30	60	50

3.7 Radiated Emissions Limits:

<i>Frequency range (MHz)</i>	<i>Quasi-peak(dBuV)</i>
30 to 230	30
230 to 1000	37

3.8 Measurement Data Of Conducted Emissions:

3.8.1 Conducted Emissions (Mains Power)

The following table show a summary of the highest emissions of power line conducted emissions to the HOT and NATURAL conductor of the EUT power.

Applicant : *Compex Systems Pte Ltd.*
 Model No : *IWAVEPORT WLM54AG*
 EUT : *Wireless-AG Network Mini PCI Adapter*
 Test Mode : *11b (CH01)*
 Test Date : *09/22/2005*

The following table lists worst case data from transmissions / Reception with various bitrates on various channels.

Power Line Conducted Emissions (Class B)					
Conductor	Frequency (MHz)	Quasi-Peak (dBuV)	Limits	Average (dBuV)	Limits
L1	0.21	54.02	63.18	43.69	53.18
	0.63	45.00	56	--	46
	1.07	45.46	56	38.79	46
	1.51	45.31	56	39.06	46
	1.95	45.66	56	39.43	46
	2.64	45.23	56	38.99	46
	8.28	47.78	60	--	50
L2	0.21	53.39	63.18	45.41	53.18
	0.63	44.73	56	--	46
	1.07	45.15	56	38.78	46
	1.51	45.65	56	39.16	46
	1.95	45.59	56	39.47	46
	2.64	44.73	56	--	46
	8.28	47.20	60	--	50

- Notes :
- 1.L1: One end & Ground L1: The other end & Ground
 - 2.Height of table on which the EUT was placed : 0.8 m.
 - 3.The Quasi-Peak Value have already met the Average Value Limit showed on above limits.
 - 4.The above test results are obtained under the normal condition.

3.8.2 Conducted Emissions (Mains Power)

The following table show a summary of the highest emissions of power line conducted emissions to the HOT and NATURAL conductor of the EUT power.

Applicant : *Complex Systems Pte Ltd.*
Model No : *IWAVEPORT WLM54AG*
EUT : *Wireless-AG Network Mini PCI Adapter*
Test Mode : *11b (CH07)*
Test Date : *09/22/2005*

The following table lists worst case data from transmissions / Reception with various bitrates on various channels.

Power Line Conducted Emissions (Class B)					
Conductor	Frequency (MHz)	Quasi-Peak (dBuV)	Limits	Average (dBuV)	Limits
L1	0.20	54.10	63.27	44.87	53.27
	0.63	45.08	56	39.87	46
	1.07	45.63	56	39.46	46
	1.51	45.73	56	39.99	46
	1.96	45.82	56	40.73	46
	2.74	44.75	56	--	46
	8.37	48.32	60	--	50
L2	0.21	53.97	63.18	45.68	53.18
	0.63	45.12	56	39.11	46
	1.07	45.40	56	40.01	46
	1.51	45.73	56	39.56	46
	1.96	45.39	56	39.77	46
	2.64	44.68	56	--	46
	8.28	48.12	60	--	50

- Notes :
- 1.L1: One end & Ground L1: The other end & Ground
 - 2.Height of table on which the EUT was placed : 0.8 m.
 - 3.The Quasi-Peak Value have already met the Average Value Limit showed on above limits.
 - 4.The above test results are obtained under the normal condition.

3.8.3 Conducted Emissions (Mains Power)

The following table show a summary of the highest emissions of power line conducted emissions to the HOT and NATURAL conductor of the EUT power.

Applicant : *Complex Systems Pte Ltd.*
Model No : *IWAVEPORT WLM54AG*
EUT : *Wireless-AG Network Mini PCI Adapter*
Test Mode : *11b (CH10)*
Test Date : *09/22/2005*

The following table lists worst case data from transmissions / Reception with various bitrates on various channels.

Power Line Conducted Emissions (Class B)					
Conductor	Frequency (MHz)	Quasi-Peak (dBuV)	Limits	Average (dBuV)	Limits
L1	0.21	53.66	63.01	46.52	53.01
	0.63	45.00	56	--	46
	1.07	45.30	56	39.69	46
	1.51	45.48	56	38.97	46
	1.95	45.52	56	39.58	46
	2.74	44.94	56	--	46
	8.37	47.43	60	--	50
L2	0.21	52.91	63.18	44.78	53.18
	0.63	44.95	56	--	46
	1.07	45.26	56	39.28	46
	1.51	45.37	56	39.16	46
	1.95	45.20	56	39.48	46
	2.32	44.99	56	--	46
	8.37	47.24	60	--	50

- Notes :
- 1.L1: One end & Ground L1: The other end & Ground
 - 2.Height of table on which the EUT was placed : 0.8 m.
 - 3.The Quasi-Peak Value have already met the Average Value Limit showed on above limits.
 - 4.The above test results are obtained under the normal condition.

3.8.4 Conducted Emissions (Mains Power)

The following table show a summary of the highest emissions of power line conducted emissions to the HOT and NATURAL conductor of the EUT power.

Applicant : *Complex Systems Pte Ltd.*
Model No : *IWAVEPORT WLM54AG*
EUT : *Wireless-AG Network Mini PCI Adapter*
Test Mode : *11b (CH13)*
Test Date : *09/22/2005*

The following table lists worst case data from transmissions / Reception with various bitrates on various channels.

Power Line Conducted Emissions (Class B)					
Conductor	Frequency (MHz)	Quasi-Peak (dBuV)	Limits	Average (dBuV)	Limits
L1	0.20	54.21	63.27	43.83	53.27
	0.63	45.08	56	38.63	46
	1.07	45.21	56	39.72	46
	1.51	45.29	56	39.43	46
	1.96	45.57	56	39.77	46
	2.64	44.70	56	--	46
	8.37	47.57	60	--	50
L2	0.21	53.50	63.18	44.25	53.18
	0.52	43.76	56	--	46
	0.63	45.12	56	39.74	46
	1.07	45.35	56	39.61	46
	1.51	45.59	56	38.66	46
	1.95	45.25	56	40.12	46
	2.64	44.84	56	--	46

- Notes :
- 1.L1: One end & Ground L1: The other end & Ground
 - 2.Height of table on which the EUT was placed : 0.8 m.
 - 3.The Quasi-Peak Value have already met the Average Value Limit showed on above limits.
 - 4.The above test results are obtained under the normal condition.

3.8.5 Conducted Emissions (Mains Power)

The following table show a summary of the highest emissions of power line conducted emissions to the HOT and NATURAL conductor of the EUT power.

Applicant : *Complex Systems Pte Ltd.*
Model No : *IWAVEPORT WLM54AG*
EUT : *Wireless-AG Network Mini PCI Adapter*
Test Mode : *11g (CH01)*
Test Date : *09/22/2005*

The following table lists worst case data from transmissions / Reception with various bitrates on various channels.

Power Line Conducted Emissions (Class B)					
Conductor	Frequency (MHz)	Quasi-Peak (dBuV)	Limits	Average (dBuV)	Limits
L1	0.20	53.80	63.27	46.28	53.27
	0.30	48.06	59.97	--	49.97
	0.63	45.11	56	38.27	46
	1.07	45.46	56	38.66	46
	1.51	45.34	56	39.42	46
	1.96	45.57	56	37.68	46
	2.74	45.11	56	39.64	46
L2	0.21	53.94	63.18	44.38	53.18
	0.63	45.12	56	37.57	46
	1.08	45.32	56	38.49	46
	1.51	45.79	56	39.41	46
	1.95	45.45	56	38.64	46
	2.32	45.21	56	39.55	46
	2.64	44.79	56	--	46

- Notes :*
- 1.L1: One end & Ground L1: The other end & Ground
 - 2.Height of table on which the EUT was placed : 0.8 m.
 - 3.The Quasi-Peak Value have already met the Average Value Limit showed on above limits.
 - 4.The above test results are obtained under the normal condition.

3.8.6 Conducted Emissions (Mains Power)

The following table show a summary of the highest emissions of power line conducted emissions to the HOT and NATURAL conductor of the EUT power.

Applicant : *Complex Systems Pte Ltd.*
Model No : *IWAVEPORT WLM54AG*
EUT : *Wireless-AG Network Mini PCI Adapter*
Test Mode : *811g (CH07)*
Test Date : *09/22/2005*

The following table lists worst case data from transmissions / Reception with various bitrates on various channels.

Power Line Conducted Emissions (Class B)					
Conductor	Frequency (MHz)	Quasi-Peak (dBuV)	Limits	Average (dBuV)	Limits
L1	0.21	54.27	63.18	43.23	53.18
	0.31	47.67	59.93	--	49.93
	0.63	45.25	56	38.72	46
	1.08	45.35	56	39.66	46
	1.51	45.29	56	37.08	46
	1.96	45.94	56	38.09	46
	2.32	45.07	56	37.51	46
L2	0.21	53.44	63.18	46.19	53.18
	0.63	45.06	56	38.59	46
	1.07	45.32	56	39.73	46
	1.51	45.54	56	39.48	46
	1.96	45.59	56	38.28	46
	2.84	44.44	56	--	46
	8.37	47.46	60	--	50

- Notes :*
- 1.L1: One end & Ground L1: The other end & Ground
 - 2.Height of table on which the EUT was placed : 0.8 m.
 - 3.The Quasi-Peak Value have already met the Average Value Limit showed on above limits.
 - 4.The above test results are obtained under the normal condition.

3.8.7 Conducted Emissions (Mains Power)

The following table show a summary of the highest emissions of power line conducted emissions to the HOT and NATURAL conductor of the EUT power.

Applicant : *Compex Systems Pte Ltd.*
Model No : *IWAVEPORT WLM54AG*
EUT : *Wireless-AG Network Mini PCI Adapter*
Test Mode : *11g (CH10)*
Test Date : *09/22/2005*

The following table lists worst case data from transmissions / Reception with various bitrates on various channels.

Power Line Conducted Emissions (Class B)					
Conductor	Frequency (MHz)	Quasi-Peak (dBuV)	Limits	Average (dBuV)	Limits
L1	0.20	54.41	63.27	41.76	53.27
	0.31	47.92	59.93	--	49.93
	0.63	45.25	56	39.94	46
	1.08	45.30	56	38.57	46
	1.51	45.51	56	39.44	46
	1.96	45.69	56	37.47	46
	2.74	44.89	56	39.97	46
L2	0.20	53.36	63.27	45.28	53.27
	0.63	44.87	56	37.65	46
	1.07	45.43	56	38.77	46
	1.51	45.93	56	38.49	46
	1.96	45.47	56	39.94	46
	2.74	45.07	56	38.59	46
	8.28	47.40	60	--	50

- Notes :*
- 1.L1: One end & Ground L1: The other end & Ground
 - 2.Height of table on which the EUT was placed : 0.8 m.
 - 3.The Quasi-Peak Value have already met the Average Value Limit showed on above limits.
 - 4.The above test results are obtained under the normal condition.

3.8.8 Conducted Emissions (Mains Power)

The following table show a summary of the highest emissions of power line conducted emissions to the HOT and NATURAL conductor of the EUT power.

Applicant : *Complex Systems Pte Ltd.*
Model No : *IWAVEPORT WLM54AG*
EUT : *Wireless-AG Network Mini PCI Adapter*
Test Mode : *11g (CH13)*
Test Date : *04/28/2005*

The following table lists worst case data from transmissions / Reception with various bitrates on various channels.

Power Line Conducted Emissions (Class B)					
Conductor	Frequency (MHz)	Quasi-Peak (dBuV)	Limits	Average (dBuV)	Limits
L1	0.20	53.27	63.27	45.84	53.27
	0.31	47.40	59.75	--	49.75
	0.63	44.89	56	39.79	46
	1.07	45.16	56	38.66	46
	1.51	45.42	56	39.94	46
	1.96	45.57	56	38.66	46
	2.41	45.15	56	39.16	46
L2	0.21	54.00	63.18	43.87	53.18
	0.63	44.89	56	39.65	46
	1.07	45.46	56	38.19	46
	1.51	45.70	56	39.368	46
	2.05	45.39	56	37.54	46
	2.84	44.63	56	39.79	46
	8.37	47.41	60	--	50

- Notes :*
- 1.L1: One end & Ground L1: The other end & Ground
 - 2.Height of table on which the EUT was placed : 0.8 m.
 - 3.The Quasi-Peak Value have already met the Average Value Limit showed on above limits.
 - 4.The above test results are obtained under the normal condition.

3.9 Measurement Data Of Radiated Emissions:

3.9.1 Open Field Radiated Emissions (HORIZONTAL)

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation , etc. are recorded on the following.

Applicant : *Compex Systems Pte Ltd.*
Model No : *IWAVEPORT WLM54AG*
EUT : *Wireless-AG Network Mini PCI Adapter*
Test Mode : *Run "Ping" Command*
Test Date : *09/21/2005*

The following table lists worst case data from transmissions / Reception with various bitrates on various channels.

Radiated Emissions (HORIZONTAL)			
Frequency (MHz)	Amplitude (dBuV/m)	Limits(Class B) (dBuV/m)	Margin (dB)
166.54	27.08	30	-2.92
199.82	25.11	30	-4.89
213.87	24.62	30	-5.38
233.19	32.83	37	-4.17
499.30	33.88	37	-3.12
643.00	32.42	37	-4.58
699.61	34.60	37	-2.40
720.00	32.98	37	-4.02
815.10	32.49	37	-4.51

Notes :

- 1.Margin= Amplitude - Limits
- 2.Distance of Measurement : 10 Meter (30-1000MHz)
- 3.Height of table for EUT placed: 0.8 Meter.
- 4.Amplitude= Reading Amplitude -Amplifier gain+Cable loss +Antenna factor
(Auto calculate in spectrum analyzer)

3.9.2 Open Field Radiated Emissions (VERTICAL)

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation , etc. are recorded on the following.

Applicant : *Compex Systems Pte Ltd..*
 Model No : *IWAVEPORT WLM54AG*
 EUT : *Wireless-AG Network Mini PCI Adapter*
 Test Mode : *Run "Ping" Command*
 Test Date : *09/21/2005*

The following table lists worst case data from transmissions / Reception with various bitrates on various channels.

Radiated Emissions (VERTICAL)			
Frequency (MHz)	Amplitude (dBuV/m)	Limits(Class B) (dBuV/m)	Margin (dB)
99.88	26.11	30	-3.89
109.81	26.77	30	-3.23
165.95	28.95	30	-1.05
199.87	28.91	30	-1.09
233.19	32.93	37	-4.07
493.25	34.06	37	-2.94
625.73	34.79	37	-2.21
701.77	32.80	37	-4.20
755.78	32.60	37	-5.48

Notes :

- 1.Margin= Amplitude - Limits
- 2.Distance of Measurement : 10 Meter (30-1000MHz)
- 3.Height of table for EUT placed: 0.8 Meter.
- 4.Amplitude= Reading Amplitude -Amplifier gain+Cable loss +Antenna factor
(Auto calculate in spectrum analyzer)

IV. Harmonics/Voltage Fluctuation and Flicker Test

4.1 General:

This standard is applicable to electrical and electronic equipment for household and similar use, intended to be connected to low-voltage a.c distribution system of the following types:

- nominal voltages up to 240V, single-phase, two or three wire;
- nominal voltages up to 415V, three-phase, three or four wire;
- nominal frequency 50 Hz or 60Hz

Examples of electrical equipment to which this standard applies are appliances for cooking and heating, motor-operated or magnetically driven appliance, portable tools, light dimmers and radio and television receivers.

This standard is not applicable to :

- equipment subject to notification to or consent by the supply authority before connection to the system;
- equipment intended exclusively for professional purposes.

4.2 Test Specifications:

<i>Requirement</i>	<i>Comment</i>	<i>Results (Pass/Fail)</i>
EN 61000-3-2	Harmonic 0-2 KHz	PASS
EN 61000-3-3	Flicker	PASS

4.3 Setup:

Whether the equipment operates with automatic, mixed or manual control, the measurements shall be made under normal load, or conditions for adequate heat discharge, and under normal operating conditions.



User's operation controls or automatic programmer shall be set to produce the maximum harmonic components, for each successive harmonic component in turn.

A definition of the normal load or of the conditions for adequate heat discharge can usually be found in the EN publication corresponding to the equipment under test.

Equipment may have several separately controlled circuits. Each circuit is considered as a single piece of equipment if it can be operated independently and separately from the other circuits.

4.4 Test Equipment List:

EMC-Partner HAR1000-1P Power Harmonics Analyzers (S/N:076)

4.5 Test condition:

EUT tested in accordance with the specifications given by the manufacturer , and exercised in the most unfavorable manner.

4.6 Measurement Data Of Harmonic:

Applicant : *Complex Systems Pte Ltd.*
Model No : *IWAVEPORT WLM54AG*
EUT : *Wireless-AG Network Mini PCI Adapter*
Test Mode : *Run "PING" command*
Test Date : *09/26/2005*
Input Voltage : *230.3V*
Rms Amp : *0.366A*
Real Power : *39.64W*
Peak Amp : *2.014A*
Apparent Power : *84.34VA*
Power Factor : *0.470*
Limits Multiplied by 1.00



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Measurement Data

<i>Harmonic Order</i>	<i>Limits</i>	<i>Magnitude</i>	<i>Results (Pass/Fail)</i>
2	1.080A	0.0024A	Pass
3	2.300A	0.1685A	Pass
4	0.430A	0.0024A	Pass
5	1.140A	0.1575A	Pass
6	0.300A	0.0024A	Pass
7	0.770A	0.1416A	Pass
8	0.230A	0.0024A	Pass
9	0.400A	0.1224A	Pass
10	0.184A	0.0021A	Pass
11	0.330A	0.1010A	Pass
12	0.153A	0.0021A	Pass
13	0.210A	0.0797A	Pass
14	0.131A	0.0021A	Pass
15	0.150A	0.0592A	Pass
16	0.115A	0.0018A	Pass
17	0.132A	0.0415A	Pass
18	0.102A	0.0015A	Pass
19	0.118A	0.0266A	Pass
20	0.092A	0.0015A	Pass
21	0.107A	0.0153A	Pass
22	0.084A	0.0012A	Pass
23	0.098A	0.0070A	Pass
24	0.077A	0.0009A	Pass
25	0.090A	0.0031A	Pass
26	0.071A	0.0006A	Pass
27	0.083A	0.0040A	Pass
28	0.066A	0.0003A	Pass
29	0.078A	0.0043A	Pass
30	0.061A	0.0003A	Pass
31	0.073A	0.0043A	Pass
32	0.058A	0.0003A	Pass
33	0.068A	0.0040A	Pass
34	0.054A	0.0000A	Pass
35	0.064A	0.0037A	Pass
36	0.051A	0.0000A	Pass
37	0.061A	0.0037A	Pass
38	0.048A	0.0000A	Pass
39	0.058A	0.0034A	Pass
40	0.046A	0.0000A	Pass



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4.7 Measurement Result Of Flicker:

Applicant : *Compex Systems Pte Ltd.*
Model No : *IWAVEPORT WLM54AG*
EUT : *Wireless-AG Network Mini PCI Adapter*
Test Mode : *Run "PING" command*
Test Date : *09/26/2005*
Input Voltage : *230.3V*
Rms Amp : *0.366A*
Real Power : *39.64W*
Peak Amp : *2.014A*
Apparent Power : *84.34VA*
Power Factor : *0.470*
Limits Multiplied by 1.00

<i>Test Equipment Setting</i>	
<i>Line Voltage</i>	<i>229.9V/AC</i>
<i>Line Frequency</i>	<i>50Hz</i>
<i>Test Limit Overrides</i>	<i>None</i>
<i>Total Number Of Failures</i>	<i>Pst: (0), Plt: (0), Dc: (0), Dmax (0)m Dt (0)</i>
<i>Total Number Of Errors</i>	<i>None</i>

V. Electrostatic Discharge Requirements(ESD)

5.1 General:

This requirement relates to the EUT may be involved static electricity discharges owing to environmental and installation conditions. A transfer of electrostatic charge between objects of different electrostatic potential may cause harmful to the EUT. A performance criteria is classified as A, B, C, D, the recommendation is criteria B.

5.2 Test Specifications:

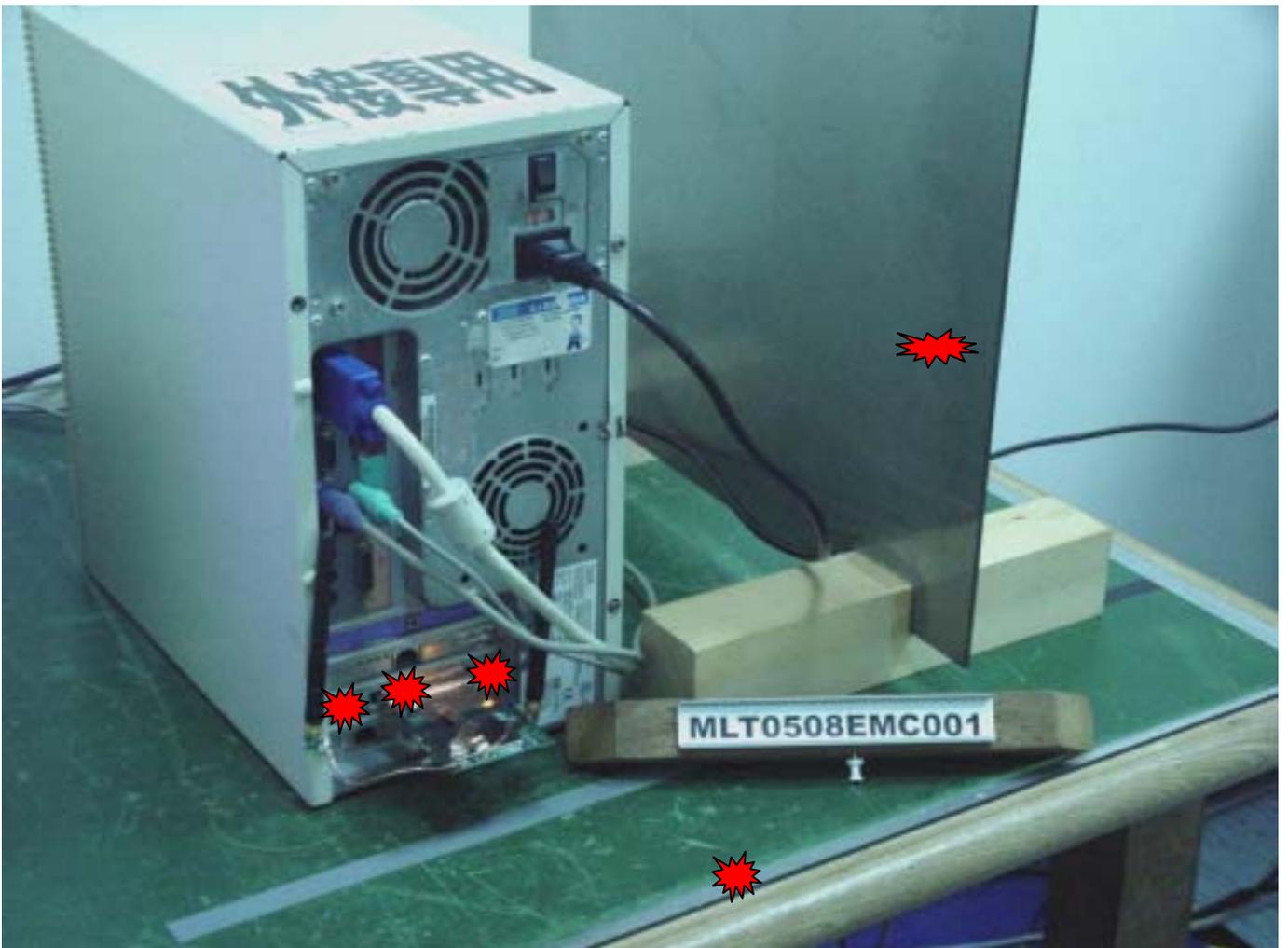
<i>Requirement</i>	<i>Basic Standard</i>	<i>Performance Criteria</i>
ETSI EN 301 489	EN 61000-4-2: 1995+A2:2001	TT for Transmitters TR for Receivers

<i>Criteria</i>	<i>During Test</i>	<i>After Test</i>
A	Shall operate as intended May show degradation of performance (note 1) Shall be no loss of function Shall be no unintentional transmissions	Shall operate as intended Shall be no degradation of performance (note 2) Shall be no loss of function Shall be no loss of stored data or user programmable functions
B	May show loss of function (one or more) May show degradation of performance (note 1) No unintentional transmissions	Functions shall be self-recoverable Shall operate as intended after recovering Shall be no degradation of performance (note 2) Shall be no loss of stored data or user programmable functions
C	May be loss of function (one or more)	Functions shall be recoverable by the operator Shall operate as intended after recovering Shall be no degradation of performance (note 2)

5.3 Setup:

This requirement relates to the EUT may be involved static electricity discharges owing to environmental and installation conditions. A transfer of electrostatic charge between objects of different electrostatic potential may cause harmful to the EUT. A performance criteria is classified as A, B, C, D, the recommendation is criteria B.

ESD selected testing point.



ESD selected testing point.



VI. Radiated Electromagnetic Field Requirements (RS)

6.1 General:

Most electronic product is in some manner affected by environmental electromagnetic radiation, the performance will be degraded or totally unfunction. The object of this part is to evaluate the susceptibility of the EUT whether it can operate properly in the electromagnetic environment, A performance criteria is classified as A, B, C, D, the recommendation is criteria A.

6.2 Test Specifications:

<i>Requirement</i>	<i>Basic Standard</i>	<i>Performance Criteria</i>
ETSI EN 301 489	EN 61000-4-3: 2003	CT for Transmitters CR for Receivers

Criteria	During Test	After Test
A	Shall operate as intended May show degradation of performance (note 1) Shall be no loss of function Shall be no unintentional transmissions	Shall operate as intended Shall be no degradation of performance (note 2) Shall be no loss of function Shall be no loss of stored data or user programmable functions
B	May show loss of function (one or more) May show degradation of performance (note 1) No unintentional transmissions	Functions shall be self-recoverable Shall operate as intended after recovering Shall be no degradation of performance (note 2) Shall be no loss of stored data or user programmable functions
C	May be loss of function (one or more)	Functions shall be recoverable by the operator Shall operate as intended after recovering Shall be no degradation of performance (note 2)

6.3 Setup:

Before testing, the intensity of the established field strength is checked by the field sensor for calibration. After that, the EUT is placed in the center of the enclosure on a wooden table. The equipment is then connected to power and signal leads according to pertinent installation instructions. The frequency range is swept from 80MHz to 1000MHz, without modulation, severity level of 3V/m, pausing to adjust the R.F. signal level or switch oscillators and antenna.

The rate of sweep is in the order of 1.5×10^{-3} decades/s with the EUT in its most sensitive orientation. Where the frequency range is swept incrementally, the step size is 1% of fundamental with linear interpolation between calibrated points.

6.4 Test Equipment List:

- A. Frankonia FLH-100 WID-EBAND AMPLIFIER(25-1000MHz) (S/N:0017)
- B. HP 8657J SIGNAL GENERATOR (S/N:3235A00122)
- C. EMCO 3142 Biconilog Antenna (S/N:1184)
- D. NARDA PROBE EMR-300(S/N:22441)

6.5 Test condition:

EUT tested in accordance with the specifications given by the manufacturer , and exercised in the most unfavorable manner.

6.6 RS Test :

Requirements.....: 3V/m(80~1000MHz)
Performance Criteria.....: CT for Transmitters
CR for Receivers
Temperature.....: 20-35 Degrees Celsius
Relative Humidity.....: 45-70 %
Step.....: 1%
Step time.....: 3 Second



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6.7 Test Result:

Applicant : *Compex Systems Pte Ltd.*
Model No : *IWAVEPORT WLM54AG*
EUT : *Wireless-AG Network Mini PCI Adapter*
Test Mode : *Run "Ping" Command (11b(CH01)&11g(CH06))*
Test Date : *09/20 /2005*

<i>Range</i>	<i>Field</i>	<i>Modulation</i>	<i>Results</i>
80-200 MHz	>3 V/m	80% AM(1KHz)	PASS
200-1000 MHz	>3 V/m	80% AM(1KHz)	PASS

VII. Electrical Fast Transient/Burst Requirements(EFT)

7.1 General:

The test is intended to show the immunity of the EUT when subjected to types of transient interference such as originating from switching transients. Bursts consisting of a number of fast transients are employed, coupled into power supply, control and signal inputs of EUT. The transients must be the short rise-time, the repetition rate and the low energy. A performance criteria is classified as A, B, C, D, the recommendation is criteria B.

7.2 Test Specifications:

<i>Requirement</i>	<i>Basic Standard</i>	<i>Performance Criteria</i>
ETSI EN 301 489	EN 61000-4-4: 2004	TT for Transmitters TR for Receivers

<i>Criteria</i>	<i>During Test</i>	<i>After Test</i>
A	Shall operate as intended May show degradation of performance (note 1) Shall be no loss of function Shall be no unintentional transmissions	Shall operate as intended Shall be no degradation of performance (note 2) Shall be no loss of function Shall be no loss of stored data or user programmable functions
B	May show loss of function (one or more) May show degradation of performance (note 1) No unintentional transmissions	Functions shall be self-recoverable Shall operate as intended after recovering Shall be no degradation of performance (note 2) Shall be no loss of stored data or user programmable functions
C	May be loss of function (one or more)	Functions shall be recoverable by the operator Shall operate as intended after recovering Shall be no degradation of performance (note 2)

7.3 Setup:

The EUT is arranged and connected according to its normal installation requirements. The length of the signal and power lines between the coupling device(clamp) and the EUT is 1m or less. If a non-detachable cable more than 1m long with the equipment, the excess length of this cable is gathered into a flat coil with 0.4m diameter and situated at a distance of 0.1m above the ground reference plane.



Bursts of 5ns/50ns pulses at a repetition rate of 5kHz with a duration of 15ms and period of 300ms, applied in both polarities between power supply terminals(including the protective earth) and a reference ground plane, or via a capacitance coupling clamp onto I/O circuits and communication lines for 3 minutes. The test level is 1kV on power supply, 0.5kV on I/O signal, data and control lines. The 0.5kV is applicable only to ports interfacing with cables whose total length according to the manufacturer's functional specification may exceed 3m.

7.4 Test Equipment List:

- A. EMC-PARTNER TRANSIENT-2000IN4 EMC TESTER (S/N: 506)
- B. NoiseKen 15-00001A CAPACITOR CLAMP (S/N: 0928S201)

7.5 Test condition:

EUT tested in accordance with the specifications given by the manufacturer , and exercised in the most unfavorable manner.

7.6 EFT Test :

Requirements.....: 1KV (Power Supply)
500V(Control and Signal Inputs)
Performance Criteria.....: TT for Transmitters
TR for Receivers
Temperature.....: 20-35 Degrees Celsius
Relative Humidity.....: 45-70 %



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7.7 Test Result:

Applicant : *Compex Systems Pte Ltd.*
Model No : *IWAVEPORT WLM54AG*
EUT : *Wireless-AG Network Mini PCI Adapter*
Test Mode : *Run "Ping" Command (11b(CH01)&11g(CH06))*
Test Date : *09/18/2005*

<i>Connected</i>	<i>Voltage</i>	<i>Duration</i>	<i>Results</i>
PC Power Line (L)	+1000V	3 Minutes	PASS
PC Power Line (L)	-1000V	3 Minutes	PASS
PC Power Line (N)	+1000V	3 Minutes	PASS
PC Power Line (N)	-1000V	3 Minutes	PASS
PC Power Line (L+N)	+1000V	3 Minutes	PASS
PC Power Line (L+N)	-1000V	3 Minutes	PASS
PC Power Line (L+N+PE)	+1000V	3 Minutes	PASS
PC Power Line (L+N+PE)	-1000V	3 Minutes	PASS

VIII. Surge Requirements

8.1 General:

The object of this section to establish a common reference for evaluating the performance of equipment when subjected to high-energy disturbances on the power and interconnection lines. The test is to find the reaction of the EUT under specified operational conditions caused by surge voltages from switching and lightning effects at certain threat levels. A performance criteria is classified as A, B, C, D, the recommendation is criteria B.

8.2 Test Specifications:

<i>Requirement</i>	<i>Basic Standard</i>	<i>Performance Criteria</i>
ETSI EN 301 489	EN 61000-4-5: 1995+A1:2001	TT for Transmitters TR for Receivers

<i>Criteria</i>	<i>During Test</i>	<i>After Test</i>
A	Shall operate as intended May show degradation of performance (note 1) Shall be no loss of function Shall be no unintentional transmissions	Shall operate as intended Shall be no degradation of performance (note 2) Shall be no loss of function Shall be no loss of stored data or user programmable functions
B	May show loss of function (one or more) May show degradation of performance (note 1) No unintentional transmissions	Functions shall be self-recoverable Shall operate as intended after recovering Shall be no degradation of performance (note 2) Shall be no loss of stored data or user programmable functions
C	May be loss of function (one or more)	Functions shall be recoverable by the operator Shall operate as intended after recovering Shall be no degradation of performance (note 2)

8.3 Setup:

8.3.2 Power Supply

The surge is to be applied to the EUT power supply terminals via the capacitate coupling network. Decoupling networks are required in order to avoid possible adverse effects on equipment not under test. If not otherwise specified the power cord between the EUT and the coupling / decoupling network shall be 2m in length (or shorter).

8.3.2 Unshielded unsymmetrically operated interconnection lines

The coupling / decoupling network shall not influence the specified functional conditions of the circuits to be tested. Selection shall be made depending on the capacitive load with respect to transmission frequency. If not otherwise specified the power cord between the EUT and the coupling / decoupling network shall be 2m in length (or shorter).

8.3.3 Unshielded symmetrically operated interconnection/ telecommunication lines

For balanced interconnection/telecommunication circuits, the capacitive coupling method can normally not be used. In this case, the coupling is performed via gas arrestors(CCITT Recommendation K.17). If not otherwise specified the power cord between the EUT and the coupling / decoupling network shall be 2m in length (or shorter).

8.3.4 Shielded lines

In the case of shielded lines coupling / decoupling network may not be applicable. For decoupling the connected safety earthwire a safety isolating transformer shall be used. Normally, the maximum length of the specified shield cable shall be used. With respect to the frequency spectrum of the surge 20 m length of the specified shielded cable shall be used in non-inductively bundled configuration for physical reasons.

8.4 Test Equipment List:

- A. EMC-PARTNER TRANSIENT-2000IN4 EMC TESTER (S/N: 506)
- B. EMC-PARTNER CDN-KIT1000T Coupling Network (S/N: 031)

8.5 Test condition:

EUT tested in accordance with the specifications given by the manufacturer , and exercised in the most unfavorable manner.



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MEASUREMENT REPORT

8.6 Surge Test :

Requirements.....: +-1KV or +-0.5KV(AC Power Port)
 +-0.5KV (Control and Signal Inputs)
 +-0.5KV (DC Power Port)

Performance Criteria.....: TT for Transmitters
 TR for Receivers

Temperature.....: 20-35 °C

Relative Humidity.....: 45-70 %

8.7 Test Result:

Applicant : *Compex Systems Pte Ltd.*

Model No : *IWAVEPORT WLM54AG*

EUT : *Wireless-AG Network Mini PCI Adapter*

Test Mode : *Run "Ping" Command (11b(CH01)&11g(CH06))*

Test Date : *09/19/2005*

<i>Connected</i>	<i>Voltage</i>	<i>Duration</i>	<i>Results</i>
Power Port (L-G)	+500V	1/Min(5times)	PASS
Power Port (L-G)	-500V	1/Min(5times)	PASS
Power Port (N-G)	+500V	1/Min(5times)	PASS
Power Port (N-G)	-500V	1/Min(5times)	PASS
Power Port (L-N)	+1000V	1/Min(5times)	PASS
Power Port (L-N)	-1000V	1/Min(5times)	PASS

IX. Immunity to Conducted Disturbances, Induced by Frequency Field Requirements

9.1 General:

The Source of disturbance covered by this section of IEC 1000-4 is basically an electromagnetic field, coming from intended RF transmitters, that may act on the whole length of cables connected to an installed equipment. The dimensions of the disturbed equipment, mostly a sub-part of a larger system, are assumed to be small compared with the wavelengths involved. The test is to find the reaction of the EUT under specified operational conditions caused by surge voltages from switching and lightning effects at certain threat levels. A performance criteria is classified as A, B, C, D, the recommendation is criteria A.

9.2 Test Specifications:

<i>Requirement</i>	<i>Basic Standard</i>	<i>Performance Criteria</i>
ETSI EN 301 489	EN 61000-4-6: 1996+A1:2001	CT for Transmitters CR for Receivers

<i>Criteria</i>	<i>During Test</i>	<i>After Test</i>
A	Shall operate as intended May show degradation of performance (note 1) Shall be no loss of function Shall be no unintentional transmissions	Shall operate as intended Shall be no degradation of performance (note 2) Shall be no loss of function Shall be no loss of stored data or user programmable functions
B	May show loss of function (one or more) May show degradation of performance (note 1) No unintentional transmissions	Functions shall be self-recoverable Shall operate as intended after recovering Shall be no degradation of performance (note 2) Shall be no loss of stored data or user programmable functions
C	May be loss of function (one or more)	Functions shall be recoverable by the operator Shall operate as intended after recovering Shall be no degradation of performance (note 2)

9.3 Setup:

Local interference regulations shall be adhered to with respect to the radiation from the test set-up. If the radiated energy exceeds the permitted level, a shielded enclosure shall be used.



The test shall be performed with the test generator connected to each of the coupling and decoupling devices in turn while the other non-excited RF input port of the coupling devices are terminated by 50 Ω load resistor.

Filters shall be used to prevent (higher order or sub-) harmonics from disturbing the EUT. A 100KHz high-pass filter (HPF), may be required after the test generator. The band stop characteristics of the low-pass filters (LPF) shall be sufficient to suppress the harmonics so that they do not affect the result. These filters shall be inserted after the test generator before setting the test level.

The frequency range is swept from 150KHz to 80MHz, using the signal levels established during the setting process, and with the disturbance signal 80% amplitude modulated with a 1 KHz sine wave, pausing to adjust RF signal level or to switch coupling devices as necessary. The rate of sweep shall not exceed 1.5×10^{-3} decades/s, Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.

9.4 Test Equipment List:

- A. Frankonia CIT-10/75 (EN61000-4-6) Test System (S/N: 102C3111)
- B. Frankonia 6Db Attenuator
- C. Frankonia CDN (M2+M3) (SN: A3003027 & A3011013)
- D. Frankonia CDN (RJ11C) (SN: A3017002)
- E. SCHAFFNER CDN (T4) (SN: 15998)
- F. Frankonia Coupling Clamper (KEMZ-801) (SN: A230919)

9.5 Test condition:

EUT tested in accordance with the specifications given by the manufacturer , and exercised in the most unfavorable manner.

X. Voltage Dips , Short Interruptions and Voltage Variations Requirements

10.1 General:

The Section of IEC 1000-4 defines the immunity test methods and range of preferred test levels for electrical and electronic equipment connected to low-voltage power supply networks for voltage dips. Short interruptions, and voltage variations. The standard applies to electrical and electronic equipment having a rated input current not exceeding 16A per phase. It does not apply to electrical and electronic equipment for connection to D.C networks or 400Hz A.C networks. Test for these networks will be covered by future IEC standard . A performance criteria is classified as A, B, C, D, the recommendation is criteria A or B.

10.2 Test Specifications:

<i>Requirement</i>	<i>Basic Standard</i>	<i>Performance Criteria</i>
ETSI EN 301 489	EN 61000-4-8: 1993+A1:2001	Level 30% CT for Transmitters CR for Receivers
ETSI EN 301 489	EN 61000-4-8: 1993+A1:2001	Level 60% CT for Transmitters CR for Receivers
ETSI EN 301 489	EN 61000-4-8: 1993+A1:2001	Level >95% TT for Transmitters TR for Receivers

<i>Criteria</i>	<i>During Test</i>	<i>After Test</i>
A	Shall operate as intended May show degradation of performance (note 1) Shall be no loss of function Shall be no unintentional transmissions	Shall operate as intended Shall be no degradation of performance (note 2) Shall be no loss of function Shall be no loss of stored data or user programmable functions
B	May show loss of function (one or more) May show degradation of performance (note 1) No unintentional transmissions	Functions shall be self-recoverable Shall operate as intended after recovering Shall be no degradation of performance (note 2) Shall be no loss of stored data or user programmable functions
C	May be loss of function (one or more)	Functions shall be recoverable by the operator Shall operate as intended after recovering Shall be no degradation of performance (note 2)

10.3 Setup:

The test shall be performed with the EUT connected to the test generator with the shortest power supply cable as specified by EUT manufacturer. If no cable length is specified, it shall be the shortest possible length suitable to the application of the EUT.

The test set-up for the two types of phenomena described in this standard are:

- Voltage dips and short interruptions;
- Voltage variations with gradual transition between the rated voltage and the changed voltage (Option)

Both tests may be implemented with these set-up. Test on the three-phase EUT are accomplished by using three set of equipment mutually synchronized.

The EUT shall be tested for each selected combination of test level and duration with a sequence of three Dip / interruption with intervals of 10 s minimum (between each test event). Each representative mode of operation shall be tested.

10.4 Test Equipment List:

EMC-PARTNER TRANSIENT-2000IN4 EMC TESTER (S/N: 506)

10.5 Test condition:

EUT tested in accordance with the specifications given by the manufacturer , and exercised in the most unfavorable manner.



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10.6 Voltage DIP and Variations Test :

Requirements.....: Level 60% Reduction UT
(Duration 10ms)

Performance Criteria.....: CT for Transmitters
CR for Receivers

Requirements.....: Level 30% Reduction UT
(Duration 100ms)

Performance Criteria.....: CT for Transmitters
CR for Receivers

Requirements.....: Level >95% Reduction UT
(Duration 500ms)

Performance Criteria.....: TT for Transmitters
TR for Receivers

Temperature.....: 20-35 Degrees Celsius

Relative Humidity.....: 45-70 %

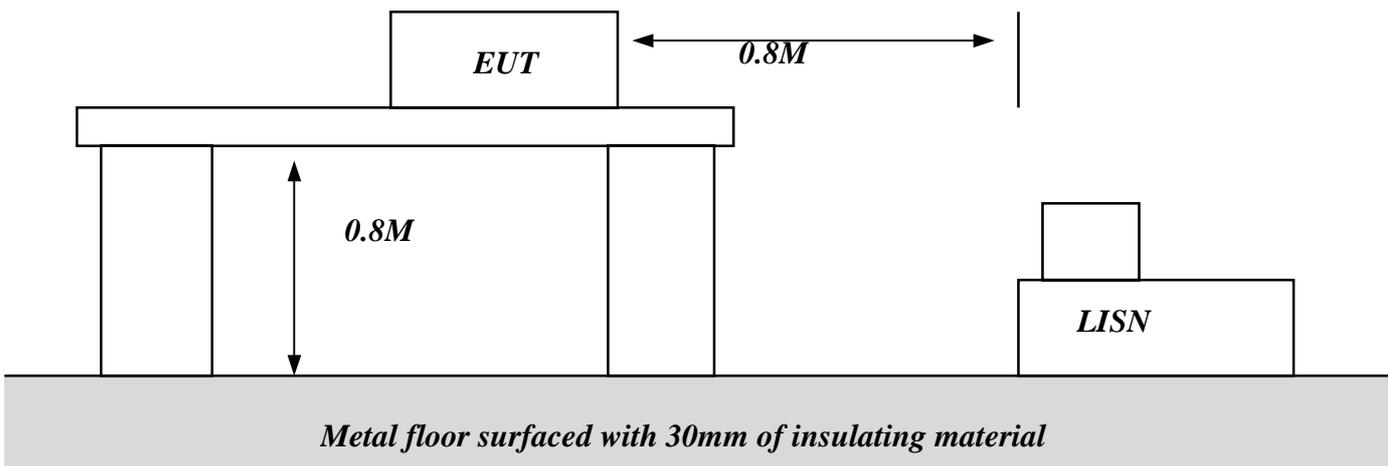
10.7 Test Result:

Applicant : Compex Systems Pte Ltd.
Model No : IWAVEPORT WLM54AG
EUT : Wireless-AG Network Mini PCI Adapter
Test Mode : Run "Ping" Command (11b(CH01)&11g(CH06))
Test Date : 09/19/2005

Level	Duration Time	Connected	Results
60%	10ms	Power Port	PASS
30%	100ms	Power Port	PASS
>95%	500ms	Power Port	PASS

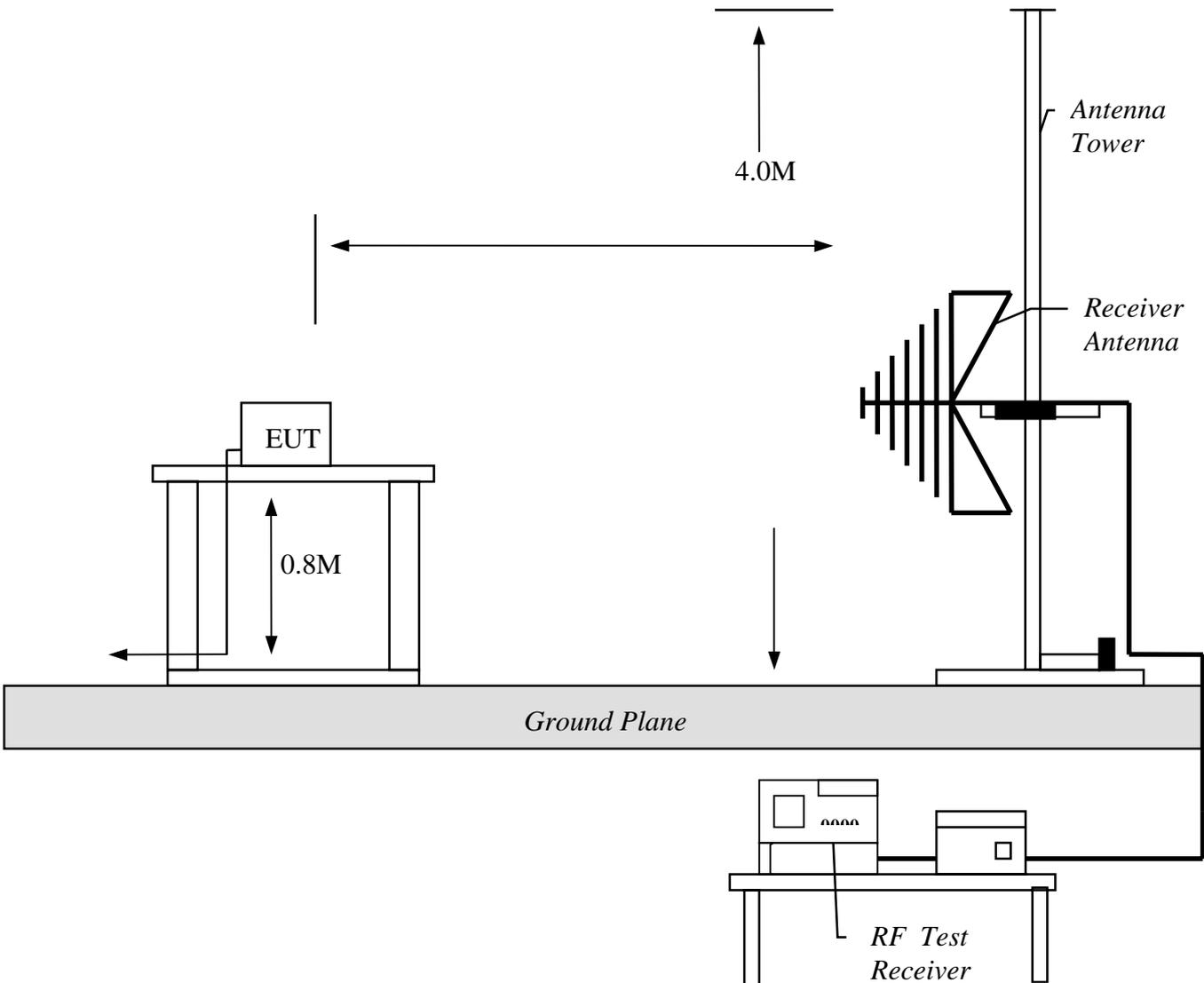
Appendix I- EUT Test SETUP

MEASUREMENT OF POWER LINE CONDUCTED RFI VOLTAGE



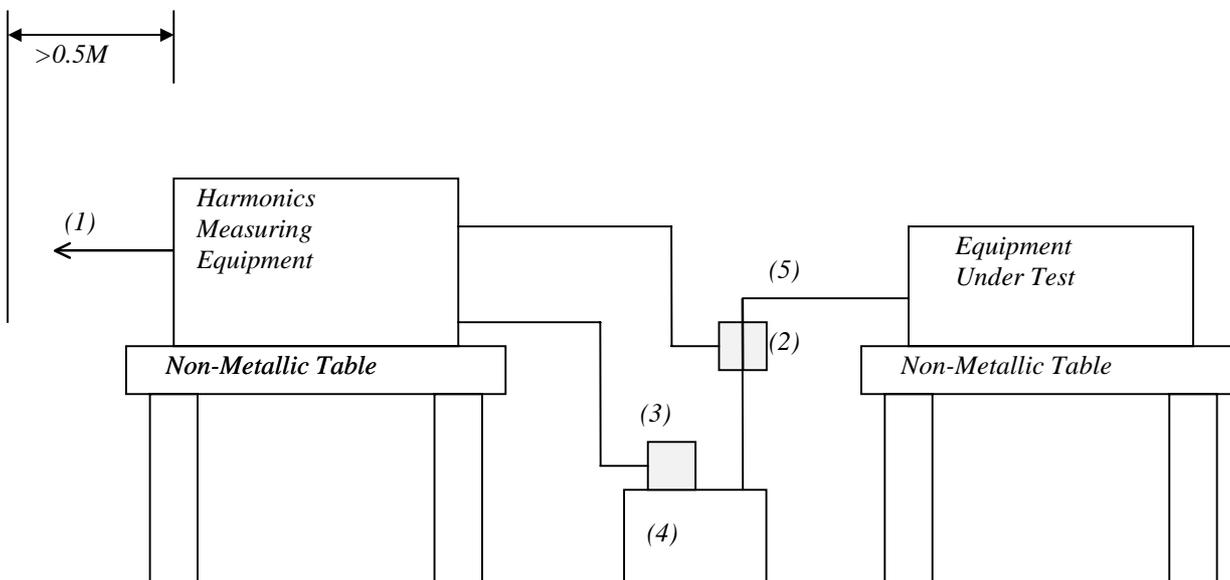
Appendix I- EUT Test SETUP

MEASUREMENT OF RADIATED EMISSION



Appendix I- EUT Test SETUP

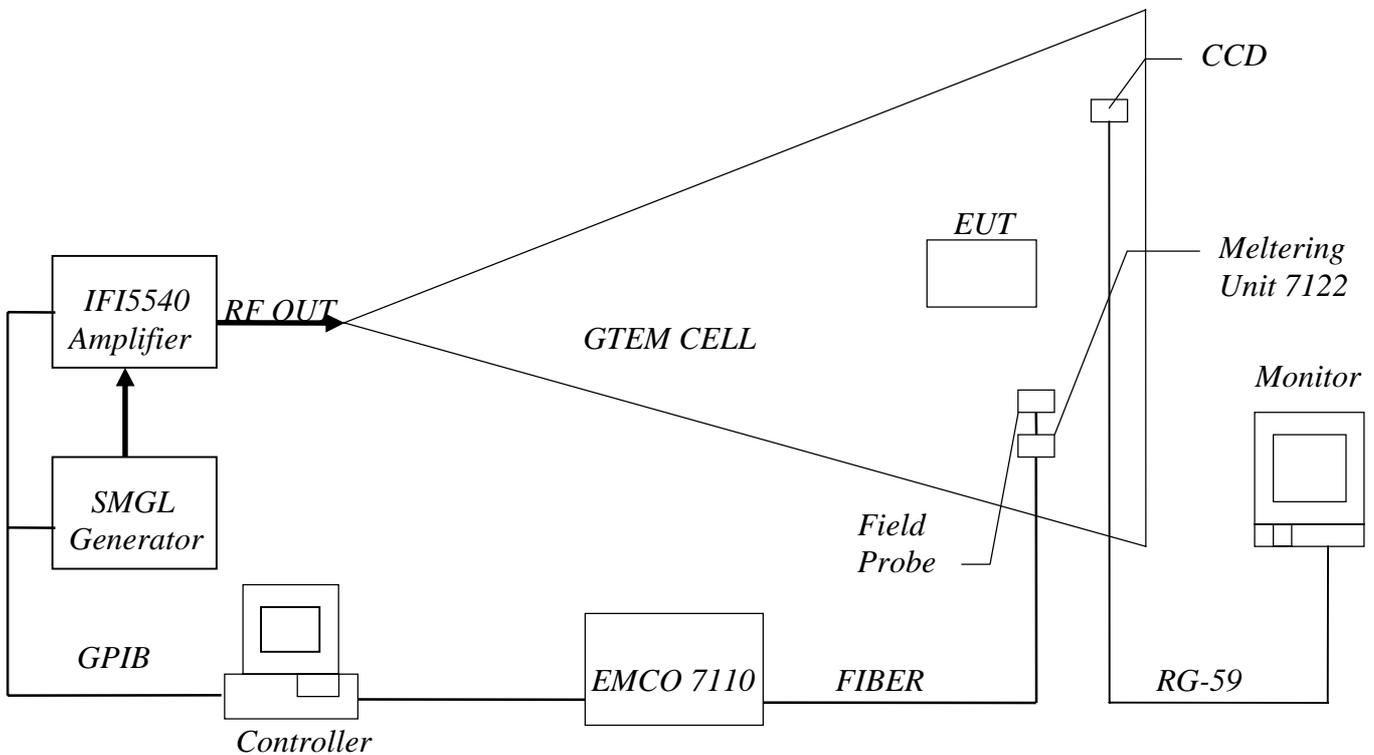
MEASUREMENT OF POWER HARMONICS



- (1) Connected to mains supply system.
- (2) Current Probe.
- (3) Voltage Probe.
- (4) Power Supply Line of EUT.

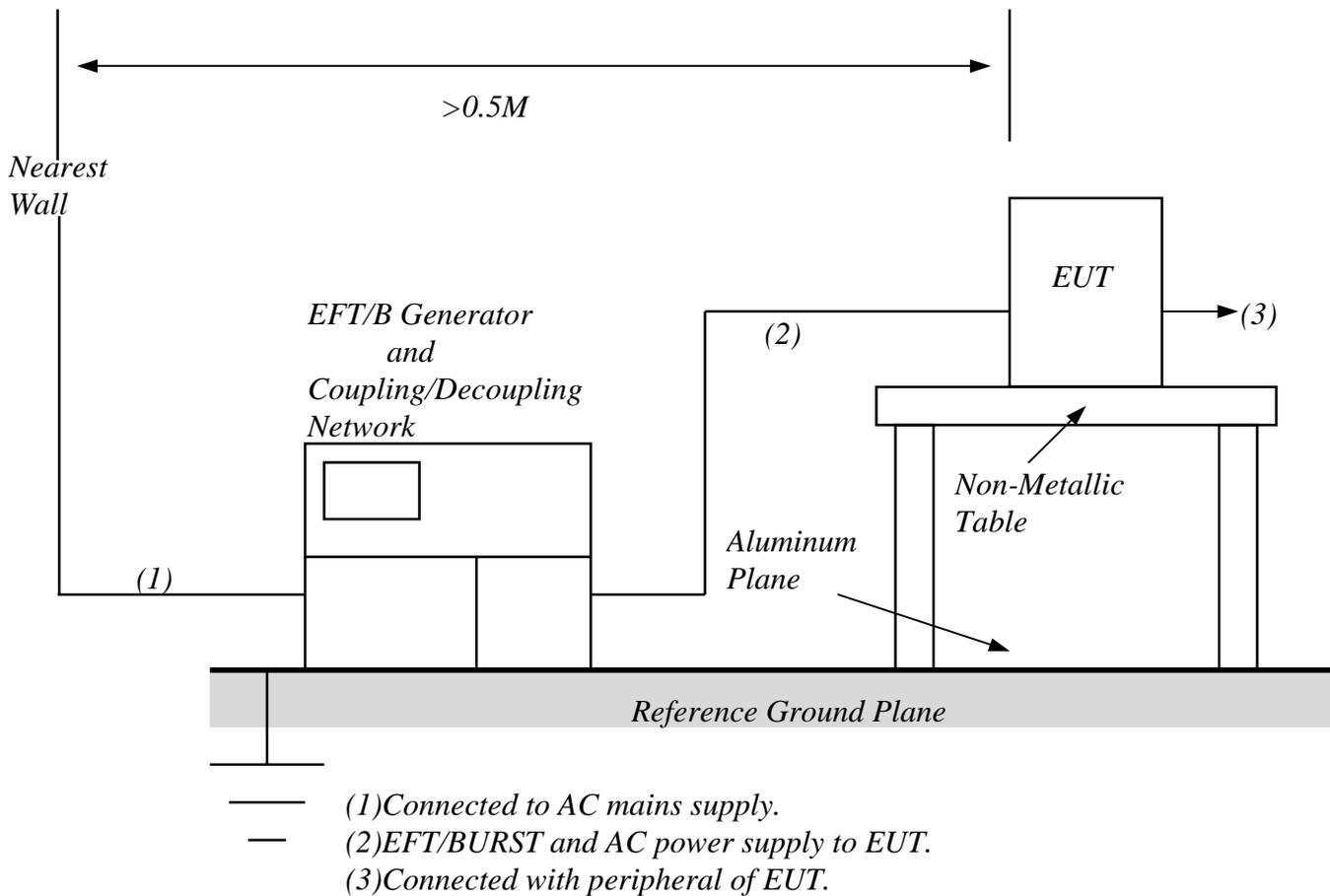
Appendix I- EUT Test SETUP

MEASUREMENT OF RADIATED ELECTROMAGNETIC FIELD



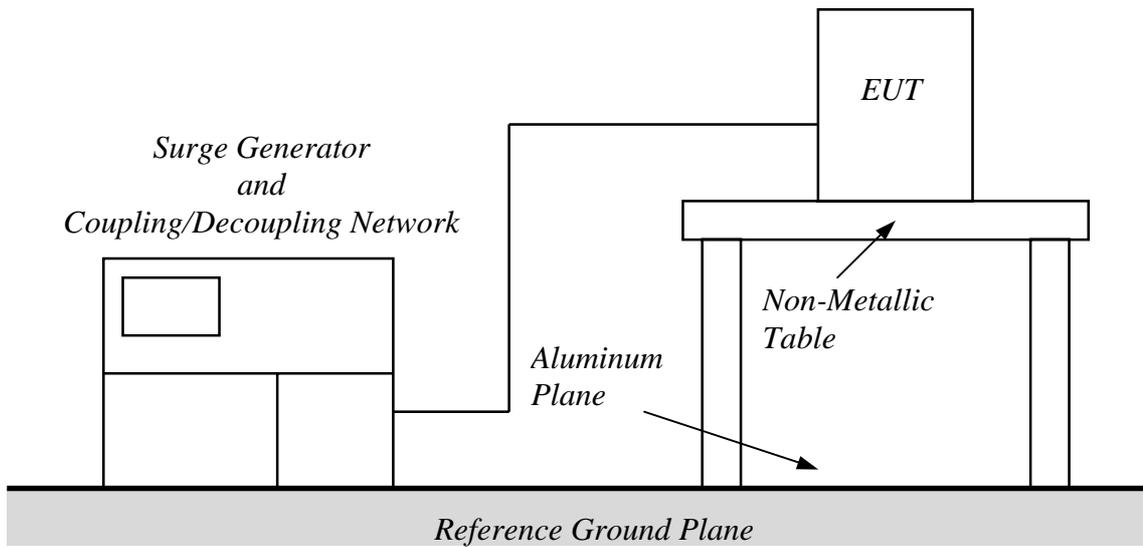
Appendix I- EUT Test SETUP

MEASUREMENT OF FAST TRANSIENTS/BURST



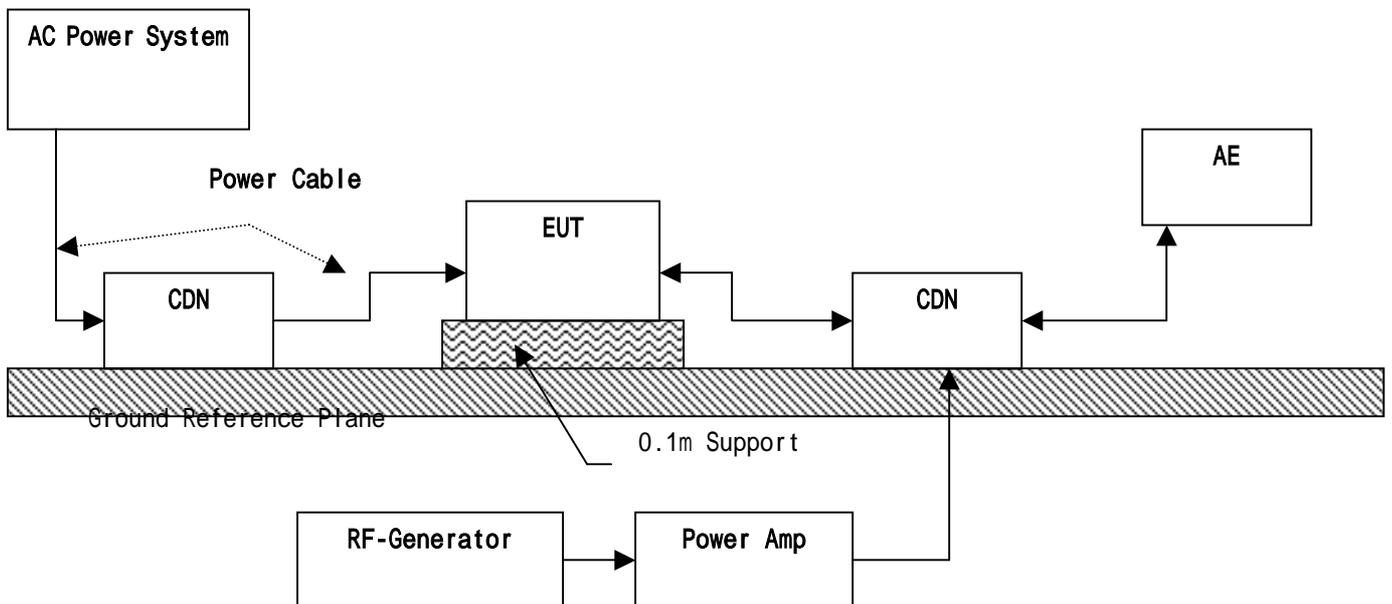
Appendix I- EUT Test SETUP

MEASUREMENT OF SURGE



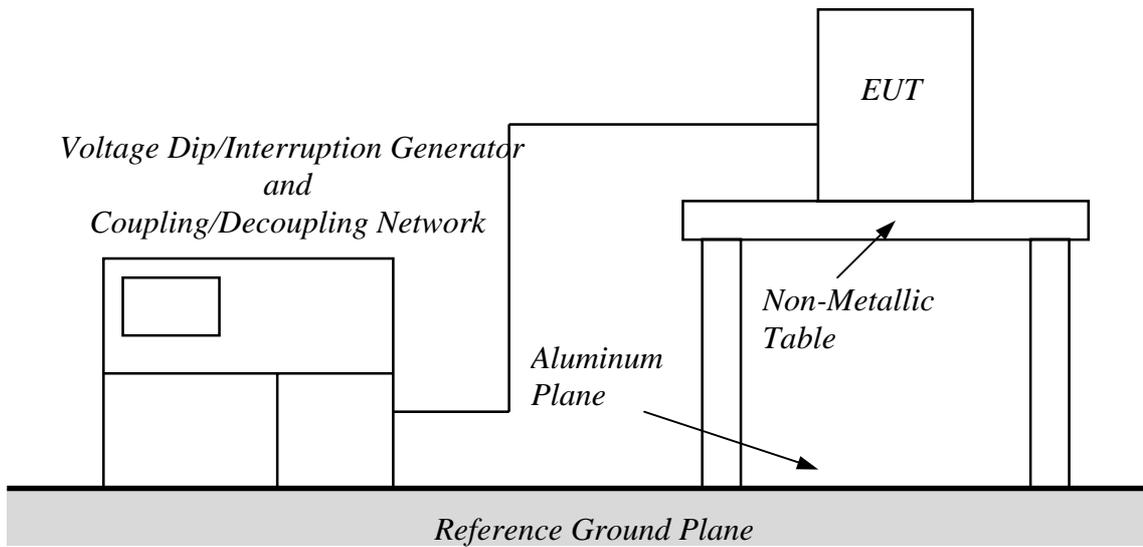
Appendix I- EUT Test SETUP

Immunity to Conducted Disturbances, Induced by Frequency Field



Appendix I- EUT Test SETUP

Voltage Dips, Short Interruptions and Voltage Variations





Appendix II- Block Diagram

See Next Page



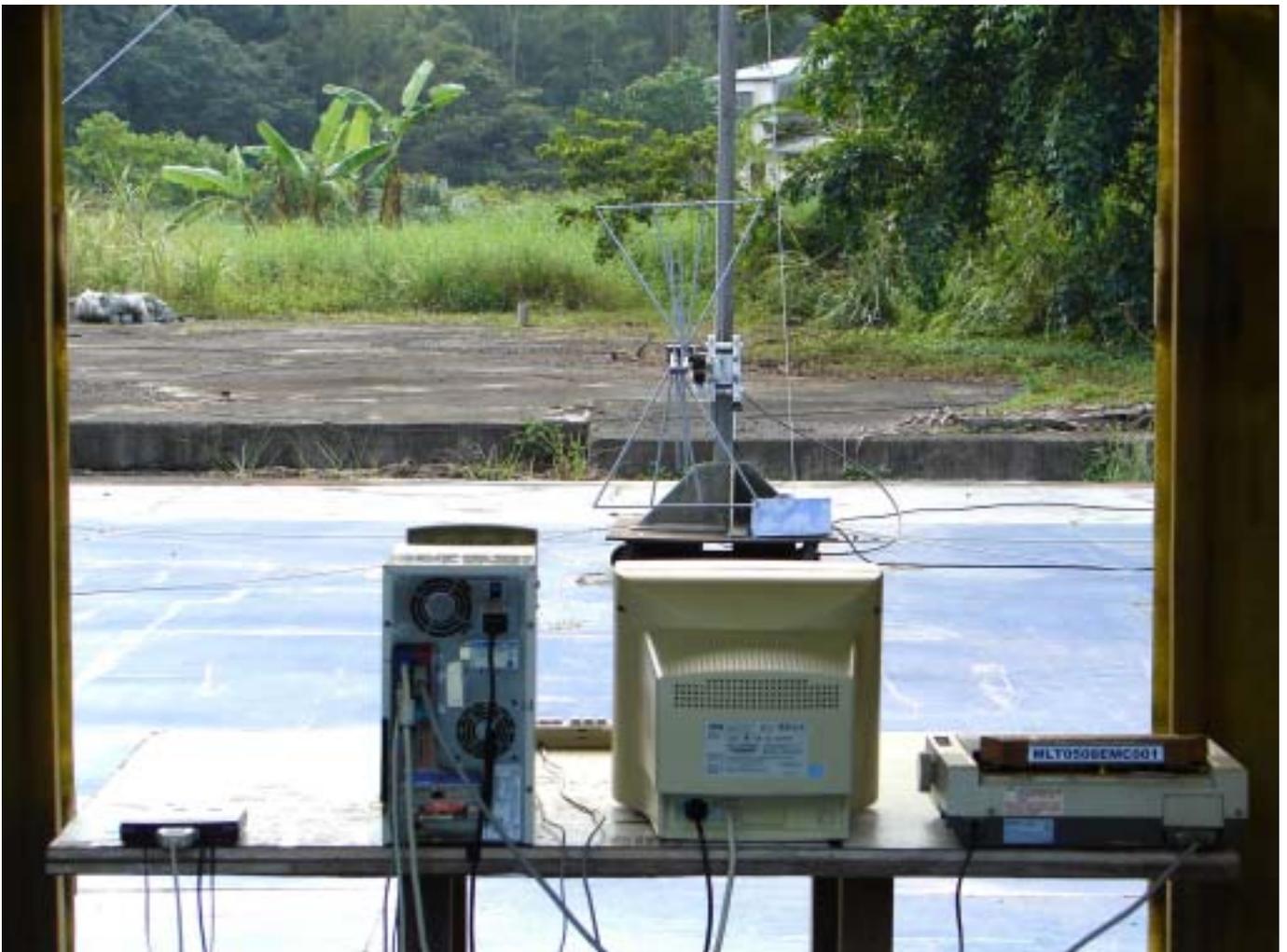
Appendix III- & Users Manual

See Next Page

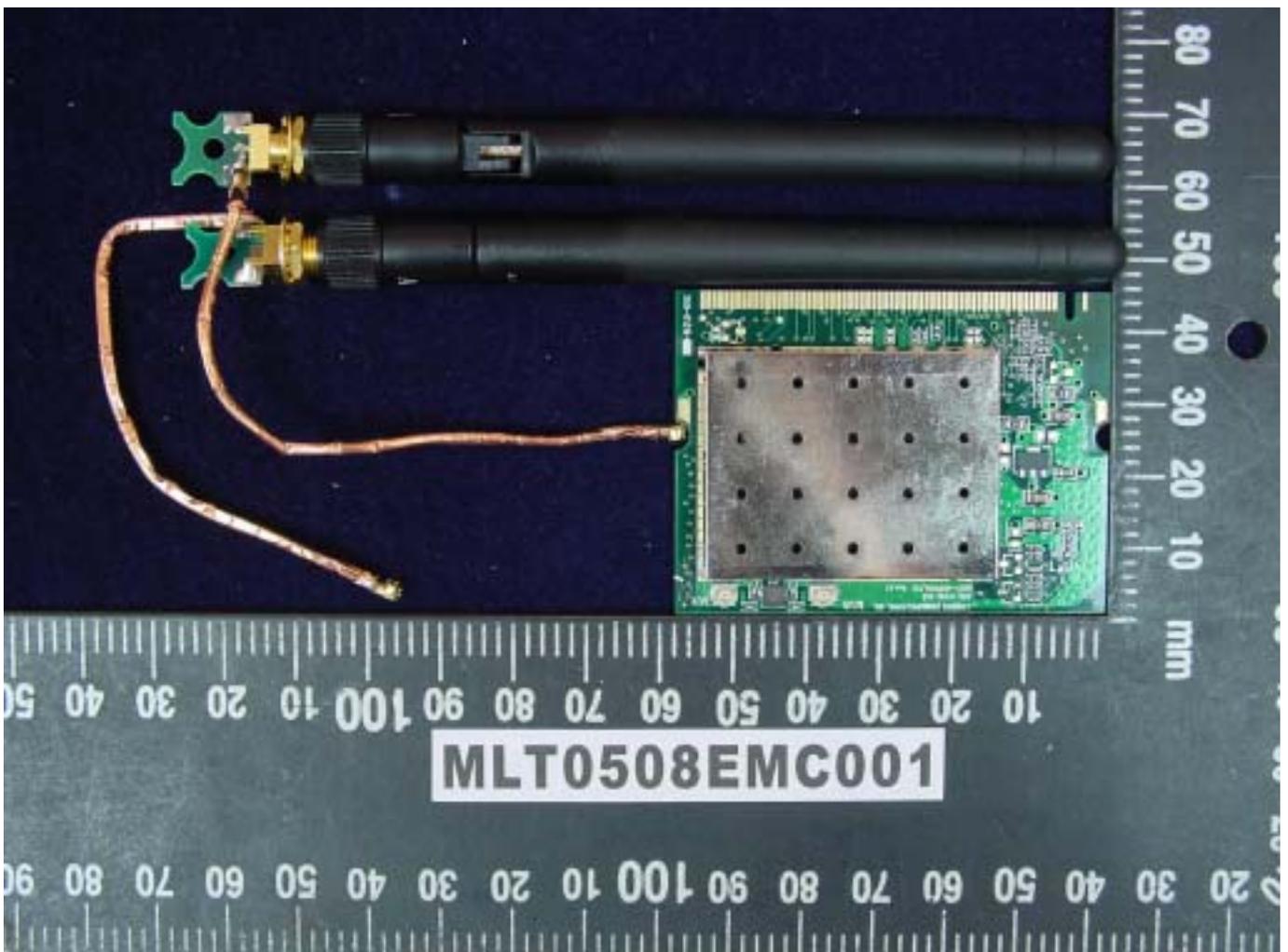
Appendix IV- EUT Photographs



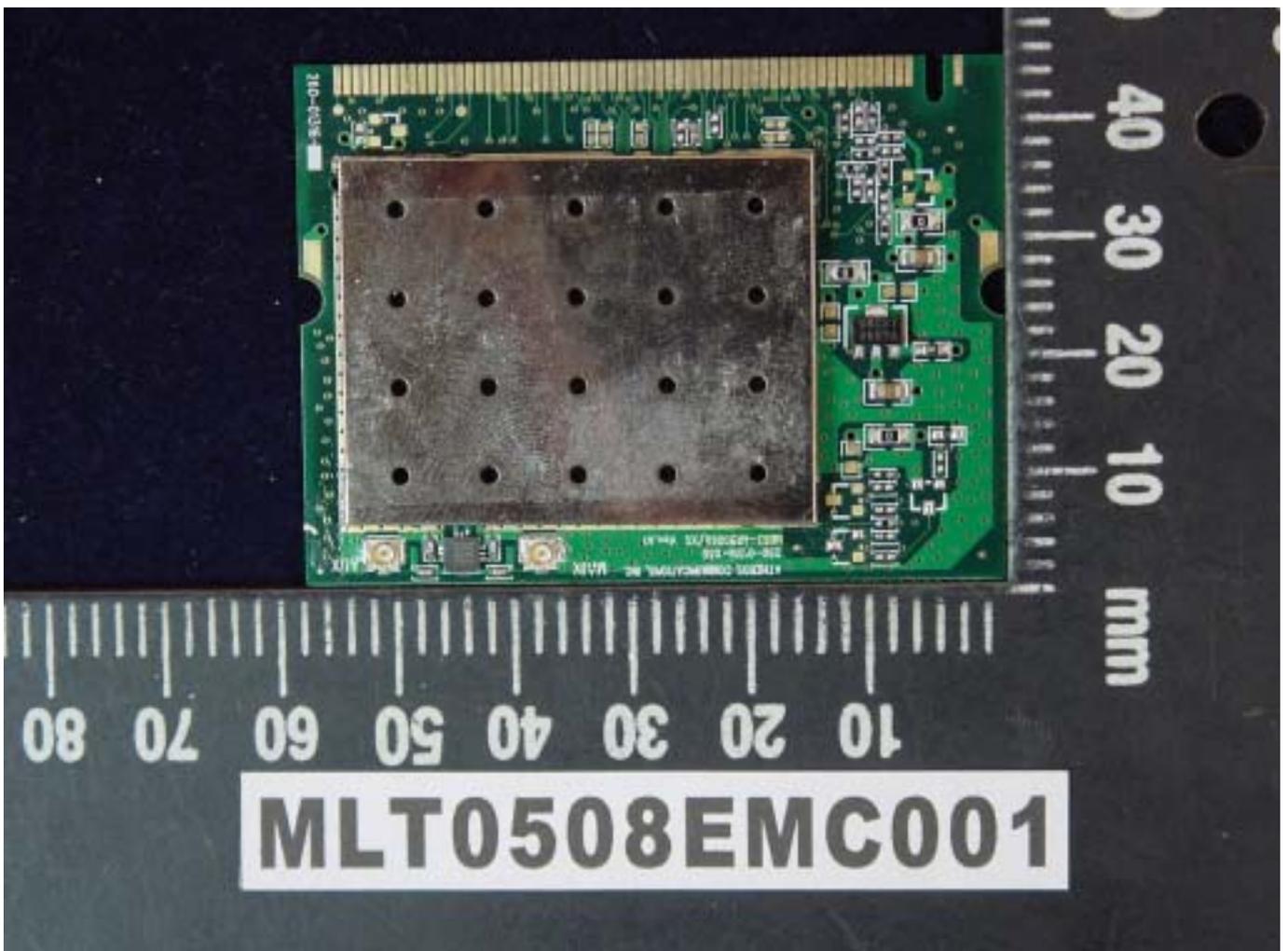
Appendix IV- EUT Photographs



Appendix IV- EUT Photographs (IWAVEPORT WLM54AG)



Appendix IV- EUT Photographs (IWAVEPORT WLM54AG)



Appendix IV- EUT Photographs (IWAVEPORT WLM54AG)



Appendix IV- EUT Photographs

