FCC CFR47 CERTIFICATION

PART 22H and 24E

TEST REPORT

FOR

LAPTOP WITH BULIT-IN 850MHZ/1900MHZ DUAL BAND GSM CARD

MODEL: IX260

FCC ID: KBCIX260MPIA755BT

REPORT NUMBER: 03U2244-1

ISSUE DATE: SEPTEMBER. 30, 2003

Prepared for

ITRONIX CORPORATION
SOUTH 801 STEVENS STREET, PO BOX 179
SPOKANE, WA 99210-0179

Prepared by

COMPLIANCE CERTIFICATION SERVICES
561F MONTEREY ROAD, ROUTE 2
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TABLE OF CONTENT

COMPLIANCE CERTIFICATION SERVICES DOCUMENT NO: CCSUP4031A
561F MONTEREY ROAD, MORGAN HILL, CA 95037 USA TEL: (408) 463-0885 FAX: (408) 463-0888

1. TEST RESULT CERTIFICATION

COMPANY NAME: ITRONIX CORPORATION
SOUTH 801 STEVEN STREET PO BOX 179
SPOKAN, WA. 999210-0179

EUT DESCRIPTION: LAPTOP WITH BULIT-IN 850MHZ/1900MHZ DUAL BAND GSM CARD

MODEL NAME: IX260

DATE TESTED: SEPTEMBER 22, 03 TO SEPTEMBER 24, 2003

TYPE OF EQUIPMENT	INTENTIONAL RADIATOR
EQUIPMENT TYPE	LICENSED TX MODULE IN MOBILE APPLICATION
MEASUREMENT PROCEDURE	ANSI 63.4 / 2001, TIA/EIA 603
PROCEDURE	CERTIFICATION
FCC RULE	CFR 47 PART 22 SUBPART H AND PART 24 SUBPART E

Compliance Certification Services, Inc. tested the above equipment for compliance with the requirement set forth in CFR 47, PART 22 Subpart H and PART 24 subpart E Cellular Radiotelephone Service. The equipment in the configuration described in this report, shows the measured emission levels emanating from the equipment do not exceed the specified limit.

Note : This document reports conditions under which testing was conducted and results of tests performed. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document.

Tested By:

VIEN TRAN
EMC TECHNICIAN
COMPLIANCE CERTIFICATION SERVICES

Released For CCS By:

THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

2. EUT DESCRIPTION

The laptop system approval with built-in 850MHz/1900Mz Dual band GSM Card can operate (transmit) at two different frequency bands.

The 800MHz band has:
- an output power 33.7dBm (2.344W_ERP)
- a permanent attached antenna , 0dBi gain
- and the transmitting of frequency range 824 ~ 849MHz

And the 1900MHz band has:
- an output power 31.6dBm (1.445W_EIRP)
- a permanent attached antenna , 0dBi gain
- and the transmitting of frequency range 1850 ~ 1910MHz

3. TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures documented on chapter 13 of ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057.

4. TEST FACILITY

The open area test sites and conducted measurement facilities used to collect the radiated data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5. ACCREDITATION AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code: 200065-0 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government. In addition, the test facilities are listed with Federal Communications Commission (reference no: 31040/SIT (1300B3) and 31040/SIT (1300F2))

6. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

7. TEST SETUP, PROCEDURE AND RESULT

7.1. SECTION 2.1046: RF POWER OUTPUT

INSTRUMENTS LIST

TEST EQUIPMENT LIST				
Name of Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Due Date**
LISN, 10 kHz ~ 30 MHz	**FCC**	**50/250-25-2**	**114**	**9/6/2004**
Line Filter	**Lindgren**	**LMF-3489**	**497**	**CNR**
LISN, 10 kHz ~ 30 MHz	**Solar**	**8012-50-R-24-BNC**	**837990**	**9/6/2004**
EMI Test Receiver	**R & S**	**ESHS 20**	**827129/006**	**4/17/2004**
Antenna, Horn 1 ~ 18 GHz	**EMCO**	**3115**	**2238**	**2/4/2004**
Quasi-Peak Adaptor	**HP**	**85650A**	**2811A01155**	**5/16/2004**
SA RF Section, 1.5 GHz	**HP**	**85680B**	**2732A03661**	**5/16/2004**
Preamplifier, 1300 MHz	**HP**	**8447D**	**2944A06589**	**8/22/2004**
Antenna, Bilog	**Chase**	**CBL6112B**	**2586**	**3/6/2004**
SA Display Section 2	**HP**	**85662A**	**2816A16696**	**5/16/2004**
Spectrum Analyzer	**HP**	**E4446A**	**US42070220**	**1/13/2004**
Dipole Antenna	**ETS**	**DB-4**	**1629**	**5/15/2004**
Antenna, Horn 1 ~ 18 GHz	**EMCO**	**3115**	**9001-3245**	**2/4/2004**

MEASUREMENT PROCEDURE

1). On a test site, the EUT shall be placed on a turntable, and in the position closest to the normal use as declared by the user.

2). The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the frequency of the transmitter.

3). The output of the test antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.

4). The transmitter shall be switched on, if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.

5). The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.

6). The transmitter shall than be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.

7). The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.

8). The maximum signal level detected by the measuring receiver shall be noted.

9). The transmitter shall be replaced by a tuned dipole (substitution antenna).

10). The substitution antenna shall be oriented for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.

11). The substitution antenna shall be connected to a calibrated signal generator.

12). If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.

13). The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.

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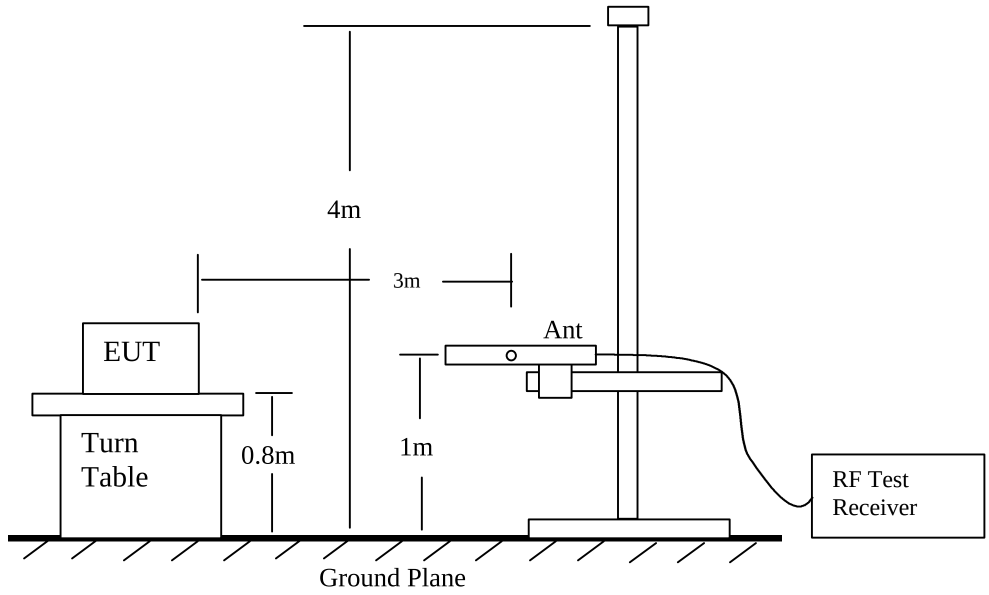
14). The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.

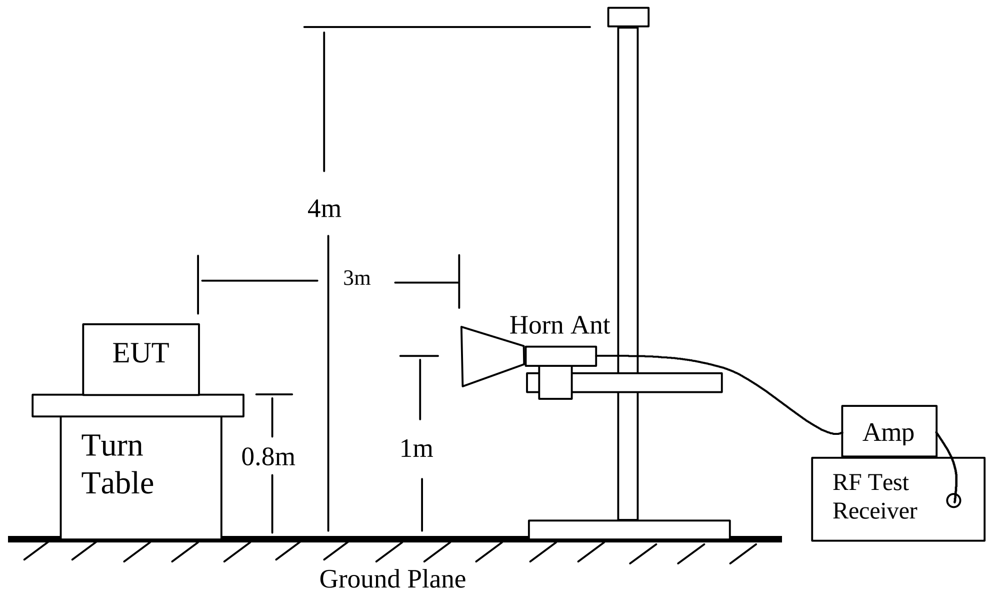
15). The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.

16). The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.

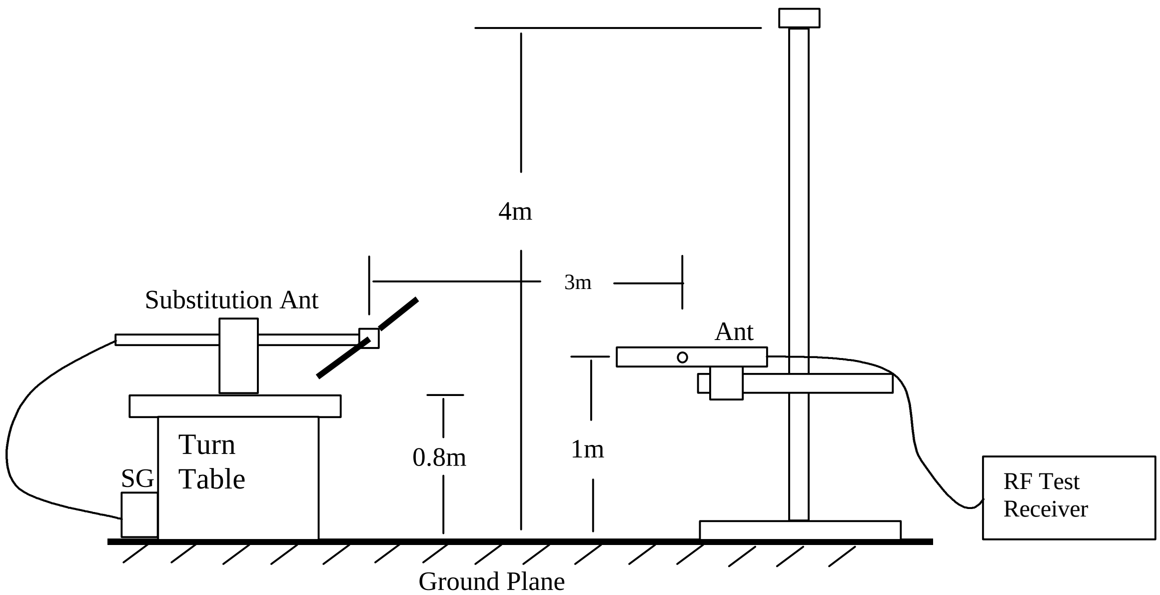
17). The measure of the effective radiated power is the larger of the two levels recorded, at the input to the substitution antenna, corrected for the gain of the substitution antenna if necessary.



Radiated Emission Measurement 30 to 1000 MHz



Radiated Emission Above 1000 MHz



Radiated Emission – Substitution Method Set-up

MEASUREMENT RESULT:

800MHz and 1900MHz Output Power Measurement:

800 MHz	FREQUENCY (MHz)	ERP PEAK (dBm)
LOW	824.2	32.70
MID	836.5	33.70
HI	848.8	32.60

THE ANTENNA GAIN IS 0dBi

1900 MHz	FREQUENCY (MHz)	EIRP PEAK (dBm)
LOW	1850.2	31.20
MID	1880.0	31.60
HI	1909.8	31.50

THE ANTENNA GAIN IS 0dBi

Radiated Emissions

800MHZ FREQUENCY BAND: The antenna of EUT at Y worst-case position
Front view

Back view

1900MHZ FREQUENCY BAND: The antenna of EUT at X worst-case position
Front view

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Back view

Output Power (ERP), 800MHZ - Low / Mid / High Channels:

9/22/2003 Compliance Certification Services, Morgan Hill Open Field Site

Test Engineer: VIEN TRAN
Project #: 03U2244
Company: ITRONIX CORP.
EUT Description: LAPTOP SYSTEM W/ 800/1900MHz DUAL BAND GSM CARD
EUT M/N: IX260
Test Target: PART 22 (800MHz)
Mode Operation: Tx- FUNDAMENTAL _ SUBSTITUTION _ LOW, MID, HI CHANNELS

Test Equipment:

EMCO Horn 1-18GHz | Pre-amplifier 1-26GHz | Spectrum Analyzer | Horn > 18GHz | Limit: ERP

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

Peak Measurements:

Fundamental:
RBW>99% or 26dB Emissions BW
VBW=RBW=3MHZ

Bandedge:
RBW=>1% Emissions BW
VBW=> 3*RBW

Spurious
RBW=1MHz
VBW=1MHz

f GHz	SA reading (dBuV)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
LOW CH									
0.824	105.1	32.9	0.2	0.0	0.0	32.7	38.5	-5.8	V
0.824	104.7	31.3	0.2	0.0	0.0	31.1	38.5	-7.4	H
MID CH									
0.837	105.7	33.9	0.2	0.0	0.0	33.7	38.5	-4.8	V
0.837	105.6	32.4	0.2	0.0	0.0	32.2	38.5	-6.3	H
HI CH									
0.849	105.0	32.8	0.2	0.0	0.0	32.6	38.5	-5.9	V
0.849	105.3	31.8	0.2	0.0	0.0	31.6	38.5	-6.9	H
VBW=RBW=3MHz									

Output Power (EIRP), 1900MHz - Low / Mid / High Channels

9/22/2003 **Compliance Certification Services, Morgan Hill Open Field Site**

Test Engineer: VIEN TRAN
Project #: 03U2244
Company: ITRONIX CORP.
EUT Description: LAPTOP SYSTEM W/ 800/1900MHz DUAL BAND GSM CARD
EUT M/N: IX260
Test Target: PART 24 (1900MHz)
Mode Operation: Tx- FUNDAMENTAL _ SUBSTITUTION _ LOW, MID, HI CHANNELS

Test Equipment:

EMCO Horn 1-18GHz	Pre-amplifer 1-26GHz	Spectrum Analyzer	Horn > 18GHz	Limit
T73; S/N: 6717 @3m		Agilent E4446A Analyzer		EIRP

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

Peak Measurements:
Fundamental: RBW>99% or 26dB Emissions BW, VBW=RBW
Bandedge: RBW=>1% Emissions BW, VBW=> 3*RBW
Spurious: RBW=1MHz, VBW=1MHz

f GHz	SA reading (dBuV)	SG reading (dBuV)	CL (dB)	Gain (dBi)	Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
LOW CH									
1.850	92.1	16.0	0.4	7.8	0.0	23.4	33.0	-9.6	V
1.850	101.9	23.8	0.4	7.8	0.0	31.2	33.0	-1.8	H
MID CH									
1.880	92.5	16.4	0.4	7.9	0.0	23.8	33.0	-9.2	V
1.880	102.1	24.2	0.4	7.9	0.0	31.6	33.0	-1.4	H
HI CH									
1.910	91.9	15.8	0.4	7.9	0.0	23.3	33.0	-9.7	V
1.910	101.8	24.0	0.4	7.9	0.0	31.5	33.0	-1.5	H

RBW=VBW=3MHz

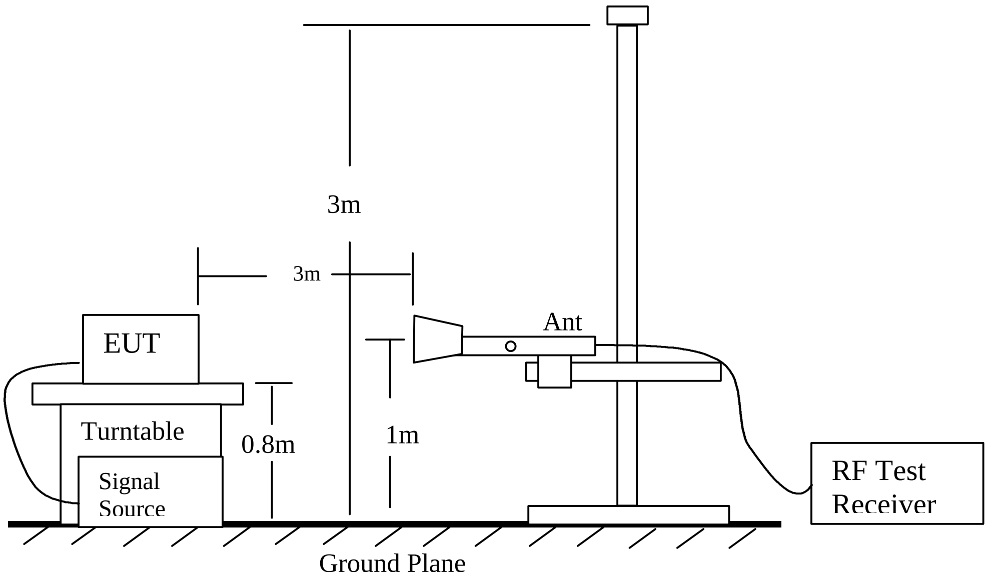
7.2. SECTION 2.1053: FIELD STRENGTH OF SPURIOUS RADIATION

INSTRUMENTS LIST

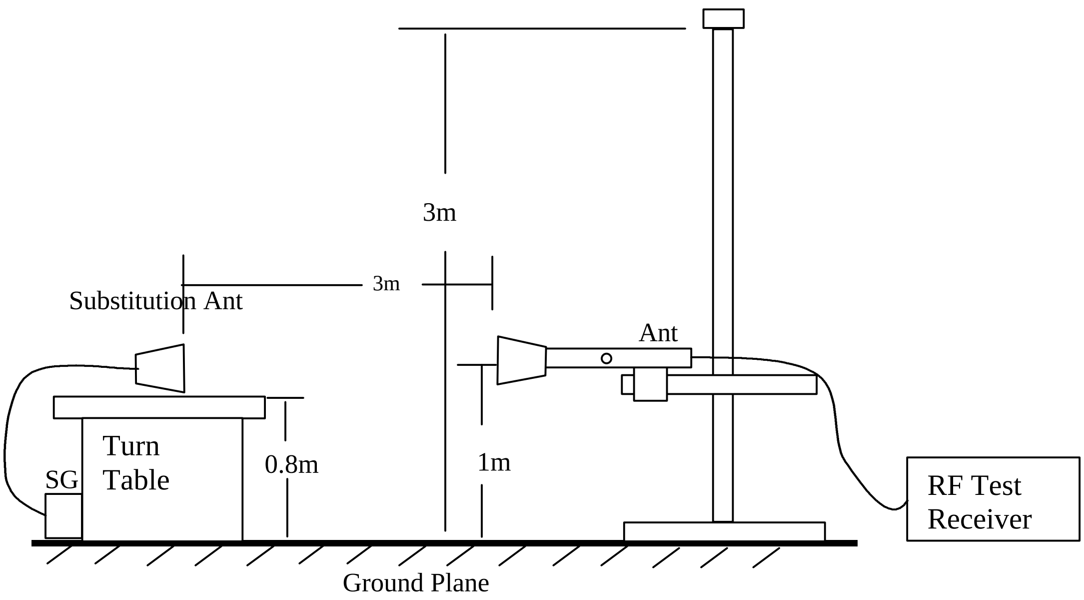
TEST EQUIPMENT LIST				
Name of Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Due Date**
LISN, 10 kHz ~ 30 MHz	FCC	50/250-25-2	114	9/6/2004
Line Filter	Lindgren	LMF-3489	497	CNR
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	837990	9/6/2004
EMI Test Receiver	R & S	ESHS 20	827129/006	4/17/2004
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	2238	2/4/2004
Quasi-Peak Adaptor	HP	85650A	2811A01155	5/16/2004
SA RF Section, 1.5 GHz	HP	85680B	2732A03661	5/16/2004
Preamplifier, 1300 MHz	HP	8447D	2944A06589	8/22/2004
Antenna, Bilog	Chase	CBL6112B	2586	3/6/2004
SA Display Section 2	HP	85662A	2816A16696	5/16/2004
Spectrum Analyzer	HP	E4446A	US42070220	1/13/2004
Dipole Antenna	ETS	DB-4	1629	5/15/2004
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	9001-3245	2/4/2004

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Above 1000	☒ Peak ☐ Average	☒ 1 MHz ☐ 1 MHz	☒ 1 MHz ☐ 10 Hz



Radiated Emission Measurement



Radiated Emission – Substitution Method set-up

TEST PROCEDURE

1). On a test site, the EUT shall be placed on a turntable, and in the position closest to the normal use as declared by the user.
2). The test antenna shall be oriented initially for vertical polarization located 1m from the EUT to correspond to the frequency of the transmitter.
3). The output of the test antenna shall be connected to the measuring receiver and either a peak or average detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
4). The transmitter shall be switched on, if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
5). The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
6). The transmitter shall than be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
7). The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
8). The maximum signal level detected by the measuring receiver shall be noted.
9). The transmitter shall be replaced by a substitution antenna.
10). The substitution antenna shall be oriented for vertical polarization.
11). The substitution antenna shall be connected to a calibrated signal generator.
12). If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
13). The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.
14). The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
15). The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
16). The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.
17). The measure of the effective radiated power is the larger of the two levels recorded, at the input to the substitution antenna, corrected for the gain of the substitution antenna if necessary.

MEASUREMENT RESULT

No non-compliance noted, as shown below

COMPLIANCE CERTIFICATION SERVICES DOCUMENT NO: CCSUP4031A
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800MHz Band - Harmonics / Spurious and Substitution Emissions, Low / Mid / High Channels:

9/23/2003 **Compliance Certification Services, Morgan Hill Open Field Site**

Test Engineer: VIEN TRAN
Project #: 03U2244
Company: ITRONIX CORP.
EUT Description: LAPTOP SYSTEM W/ 800/1900MHz DUAL BAND GSM CARD
EUT M/N: IX260
Test Target: PART 22 (800MHz)
Mode Operation: Tx_800MHz_ HARMONIC & SPUR _SUBSTITUTION_ LOW, MID, HI CHANNELS

Test Equipment:

EMCO Horn 1-18GHz	Pre-amplifer 1-26GHz	Spectrum Analyzer	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T63 Miteq 646456	Agilent E4446A Analyzer		ERP

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

Peak Measurements:
Fundamental: RBW>99% or 26dB Emissions BW; VBW=RBW
Bandedge: RBW=>1% Emissions BW; VBW=> 3*RBW
Spurious: RBW=1MHz; VBW=1MHz

f GHz	SA reading (dBuV)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
LOW CH=824MHz									
1.648	68.9	-42.9	1.4	7.5	5.4	-38.9	-13.0	-25.9	V
2.473	66.9	-46.6	2.1	8.6	6.4	-42.3	-13.0	-29.3	V
3.297	46.0	-60.5	2.7	9.3	7.2	-56.1	-13.0	-43.1	V, NOISE FLOOR
1.648	66.5	-47.2	1.4	7.5	5.4	-43.2	-13.0	-30.2	H
2.473	60.0	-41.1	2.1	8.6	6.4	-36.8	-13.0	-23.8	H
3.297	45.4	-59.0	2.7	9.3	7.2	-54.6	-13.0	-41.6	H, NOISE FLOOR
MID CH=836MHz									
1.673	69.6	-43.3	1.4	7.6	5.4	-39.3	-13.0	-26.3	V
2.510	64.3	-46.0	2.2	8.6	6.4	-41.7	-13.0	-28.7	V
3.346	50.0	-56.7	2.8	9.3	7.2	-52.3	-13.0	-39.3	V, NOISE FLOOR
1.673	66.5	-46.5	1.4	7.6	5.4	-42.5	-13.0	-29.5	H
2.510	65.0	-48.0	2.2	8.6	6.4	-43.7	-13.0	-30.7	H
3.346	46.0	-59.0	2.8	9.3	7.2	-54.6	-13.0	-41.6	H, NOISE FLOOR
HI CH=848MHz									
1.698	69.1	-43.1	1.5	7.6	5.5	-39.1	-13.0	-26.1	V
2.547	62.0	-51.2	2.2	8.6	6.5	-46.9	-13.0	-33.9	V
3.396	52.3	-61.0	2.8	9.4	7.2	-56.6	-13.0	-43.6	V, NOISE FLOOR
1.698	68.8	-43.9	1.5	7.6	5.5	-39.9	-13.0	-26.9	H
2.547	62.0	-46.8	2.2	8.6	6.5	-42.5	-13.0	-29.5	H
3.396	48.6	-62.5	2.8	9.4	7.2	-58.1	-13.0	-45.1	H, NOISE FLOOR

Note: Completed Scan from 30MHz to 10^{th} Harmonic.

1900MHz Band- Harmonics / Spurious and Substitution Emissions, Low / Mid / High Channels:

9/23/2003 **Compliance Certification Services, Morgan Hill Open Field Site**

Test Engineer: VIEN TRAN
Project #: 03U2244
Company: ITRONIX CORP.
EUT Description: LAPTOP SYSTEM W/ 800/1900MHz DUAL BAND GSM CARD
EUT M/N: IX260
Test Target: PART 24 1900MHz
Mode Operation: Tx_1900MHz_ HARMONIC & SPUR _SUBSTITUTION_ LOW, MID, HI CHANNELS

Test Equipment:

EMCO Horn 1-18GHz	Pre-amplifer 1-26GHz	Spectrum Analyzer	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T63 Miteq 646456	Agilent E4446A Analyzer		EIRP

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

Peak Measurements:
Fundamental: RBW>99% or 26dB Emissions BW, VBW=RBW
Bandedge: RBW=>1% Emissions BW, VBW=> 3*RBW
Spurious: RBW=1MHz, VBW=1MHz

f GHz	SA reading (dBuV)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
LOW CH=1850MHz									
3.700	46.6	-58.8	2.9	9.6	7.4	-52.2	-13.0	-39.2	V
5.550	48.6	-57.9	3.7	11.1	9.0	-50.5	-13.0	-37.5	V, NOISE FLOOR
3.700	45.5	-59.4	2.9	9.6	7.4	-52.8	-13.0	-39.8	H
5.550	46.0	-57.5	3.7	11.1	9.0	-50.1	-13.0	-37.1	H, NOISE FLOOR
MID CH=1880MHz									
3.820	48.7	-56.0	3.0	9.6	7.5	-49.3	-13.0	-36.3	V
5.730	48.0	-57.4	3.8	11.3	9.1	-50.0	-13.0	-37.0	V, NOISE FLOOR
3.820	48.0	-57.0	3.0	9.6	7.5	-50.3	-13.0	-37.3	H
5.730	49.0	-54.2	3.8	11.3	9.1	-46.8	-13.0	-33.8	H, NOISE FLOOR
HI CH=1910MHz									
3.760	45.6	-59.2	2.9	9.6	7.4	-52.5	-13.0	-39.5	V
5.640	48.0	-57.0	3.8	11.2	9.0	-49.6	-13.0	-36.6	V, NOISE FLOOR
3.760	45.6	-59.6	2.9	9.6	7.4	-52.9	-13.0	-39.9	H
5.640	46.8	-57.3	3.8	11.2	9.0	-49.9	-13.0	-36.9	H, NOISE FLOOR

Note: Completed Scan from 30MHz to 10th Harmonic.

7.3. CO-LOCATED RADIATED EMISSIONS

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The dominant transmitter is set to the worst case channel. The spurious emissions performance of the dominant transmitter is investigated as the settings of the non-dominant transmitter are varied. Worst case results are reported.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

RESULTS

No non-compliance noted:

NOTES: Dominant Sierra Wireless Air Card 755 is transmitted at mid channel with non-dominant Bluetooth Transmitter Module and Cisco MPI-350 Mini-PCI DSSS WLAN Card.

800MHz BAND – MID CH (WORST-CASE) – CO-LOCATION -FUNDAMENTAL EMISSIONS

9/22/2003 Compliance Certification Services, Morgan Hill Open Field Site

Test Engineer: VIEN TRAN
Project #: 03U2244
Company: ITRONIX CORP.
EUT Description: LAPTOP SYSTEM W/ 800/1900MHz DUAL BAND GSM CARD
EUT M/N: IX260
Test Target: PART 22 (800MHz)_CO-LOCATION WITH BLUE TOOTH & CISCO CARDS
Mode Operation: Tx- FUNDAMENTAL _MID CHANNEL CO-LOCATION SUBSTITUTION

Test Equipment:

EMCO Horn 1-18GHz | Pre-amplifier 1-26GHz | Spectrum Analyzer | Horn > 18GHz | Limit: ERP

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

Peak Measurements:
Fundamental: RBW>99% or 26dB Emissions BW, VBW=RBW=3MHZ
Bandedge: RBW=>1% Emissions BW, VBW=> 3*RBW
Spurious: RBW=1MHz, VBW=1MHz

f GHz	SA reading (dBuV)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
MID CH									
0.837	105.8	33.0	0.2	0.0	0.0	32.8	38.5	-5.7	V
0.837	105.5	32.1	0.2	0.0	0.0	31.9	38.5	-6.6	H

RBW=VBW=3MHz

NOTES: Dominant Sierra Wireless Air Card 755 is transmitted at mid channel with non-dominant Bluetooth Transmitter Module and Cisco MPI-350 Mini-PCI DSSS WLAN Card.

800MHz BAND – MID CH (WORST-CASE) – CO-LOCATION-HARMONIC AND SPUR EMISSIONS

9/23/2003 Compliance Certification Services, Morgan Hill Open Field Site

Test Engineer: VIEN TRAN
Project #: 03U2244
Company: ITRONIX CORP.
EUT Description: LAPTOP SYSTEM W/ 800/1900MHz DUAL BAND GSM CARD
EUT M/N: IX260
Test Target: PART 22 (800MHz)_CO-LOCATION WITH BLUE TOOTH & CISCO CARDS
Mode Operation: Tx_800MHz_MID CHANNEL CO-LOCATION - HARMONIC & SPUR _SUBSTITUTION

Test Equipment:

EMCO Horn 1-18GHz	Pre-amplifer 1-26GHz	Spectrum Analyzer	Horn > 18GHz	Limit
T73; S/N: 6717 @3n	T63 Miteq 646456	Agilent E4446A Analyzer		ERP

Hi Frequency Cables

☐ (2 ft) ☐ (2 ~ 3 ft) ☑ (4 ~ 6 ft) ☐ (12 ft)

Peak Measurements:

Fundamental:	Bandedge:	Spurious
RBW>99% or 26dB Emissions BW	RBW=>1% Emissions BW	RBW=1MHz
VBW=RBW	VBW=> 3*RBW	VBW=1MHz

f GHz	SA reading (dBuV)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
MID CH=836.5MHz									
1.673	70.0	-43.7	0.4	7.6	5.4	-38.6	-13.0	-25.6	V
2.510	64.7	-46.4	0.6	8.6	6.4	-40.5	-13.0	-27.5	V
3.346	50.4	-57.1	0.8	9.3	7.2	-50.7	-13.0	-37.7	V, NOISE FLOOR
		-0.4							
1.673	66.9	-46.9	0.4	7.6	5.4	-41.9	-13.0	-28.9	H
2.510	65.4	-48.4	0.6	8.6	6.4	-42.5	-13.0	-29.5	H
3.346	46.4	-59.4	0.8	9.3	7.2	-53.0	-13.0	-40.0	H, NOISE FLOOR

NOTES: Dominant Sierra Wireless Air Card 755 is transmitted at mid channel with non-dominant Bluetooth Transmitter Module and Cisco MPI-350 Mini-PCI DSSS WLAN Card.

1900MHz BAND –MID CH (WORST-CASE)-CO LOCATION- FUNDAMENTAL EMISSIONS

9/22/2003 Compliance Certification Services, Morgan Hill Open Field Site

Test Engineer: VIEN TRAN
Project #: 03U2244
Company: ITRONIX CORP.
EUT Description: LAPTOP SYSTEM W/ 800/1900MHz DUAL BAND GSM CARD
EUT M/N: IX260
Test Target: PART 24 (1900MHz)
Mode Operation: Tx- FUNDAMENTAL _MID CHANNEL _CO-LOCATION WITH BLUE TOOTH & CISCO CARDS

Test Equipment:

EMCO Horn 1-18GHz	Pre-amplifer 1-26GHz	Spectrum Analyzer	Horn > 18GHz	Limit
T73; S/N: 6717 @3m		Agilent E4446A Analyzer		EIRP

Hi Frequency Cables

☐ (2 ft) ☐ (2 ~ 3 ft) ☑ (4 ~ 6 ft) ☐ (12 ft)

Peak Measurements:

Fundamental:
RBW>99% or 26dB Emissions BW
VBW=RBW

Bandedge:
RBW=>1% Emissions BW
VBW=> 3*RBW

Spurious
RBW=1MHz
VBW=1MHz

f GHz	SA reading (dBuV)	SG reading (dBuV)	CL (dB)	Gain (dBi)	Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
MID CH									
1.880	92.7	16.1	0.4	7.9	0.0	23.5	33.0	-9.5	V
1.880	101.9	24.4	0.4	7.9	0.0	31.8	33.0	-1.2	H

RBW=VBW=3MHz

NOTES: Dominant Sierra Wireless Air Card 755 is transmitted at mid channel with non-dominant Bluetooth Transmitter Module and Cisco MPI-350 Mini-PCI DSSS WLAN Card.

1900MHz BAND –MID CH (WORST-CASE)-CO LOCATION – HARMONIC AND SPUR EMISSIONS

9/23/2003 **Compliance Certification Services, Morgan Hill Open Field Site**

Test Engineer: VIEN TRAN
Project #: 03U2244
Company: ITRONIX CORP.
EUT Description: LAPTOP SYSTEM W/ 800/1900MHz DUAL BAND GSM CARD
EUT M/N: IX260
Test Target: PART 24 (1900MHz)
Mode Operation: Tx-MID CHANNEL _HARMONIC & SPUR_CO-LOCATION WITH BLUE TOOTH & CISCO CARDS

Test Equipment:

EMCO Horn 1-18GHz	Pre-amplifer 1-26GHz	Spectrum Analyzer	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T63 Miteq 646456	Agilent E4446A Analyzer		EIRP

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

Peak Measurements:
Fundamental: RBW>99% or 26dB Emissions BW, VBW=RBW
Bandedge: RBW=>1% Emissions BW, VBW=> 3*RBW
Spurious: RBW=1MHz, VBW=1MHz

f GHz	SA reading (dBuV)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
MID CH=1880MHz									
3.820	48.7	-56.0	0.8	9.6	7.5	-47.2	-13.0	-34.2	V
5.730	48.0	-57.4	1.0	11.3	9.1	-47.2	-13.0	-34.2	V, NOISE FLOOR
3.820	48.0	-57.0	0.8	9.6	7.5	-48.2	-13.0	-35.2	H
5.730	49.0	-54.2	1.0	11.3	9.1	-44.0	-13.0	-31.0	H, NOISE FLOOR

NOTES: Dominant Sierra Wireless Air Card 755 is transmitted at mid channel with non-dominant Bluetooth Transmitter Module and Cisco MPI-350 Mini-PCI DSSS WLAN Card.

7.4. RADIATED EMISSION

TEST EQUIPMENT LIST				
Name of Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Due Date**
LISN, 10 kHz ~ 30 MHz	FCC	50/250-25-2	114	9/6/2004
Line Filter	Lindgren	LMF-3489	497	CNR
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	837990	9/6/2004
EMI Test Receiver	R & S	ESHS 20	827129/006	4/17/2004
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	2238	2/4/2004
Quasi-Peak Adaptor	HP	85650A	2811A01155	5/16/2004
SA RF Section, 1.5 GHz	HP	85680B	2732A03661	5/16/2004
Preamplifier, 1300 MHz	HP	8447D	2944A06589	8/22/2004
Antenna, Bilog	Chase	CBL6112B	2586	3/6/2004
SA Display Section 2	HP	85662A	2816A16696	5/16/2004
Spectrum Analyzer	HP	E4446A	US42070220	1/13/2004
Dipole Antenna	ETS	DB-4	1629	5/15/2004
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	9001-3245	2/4/2004

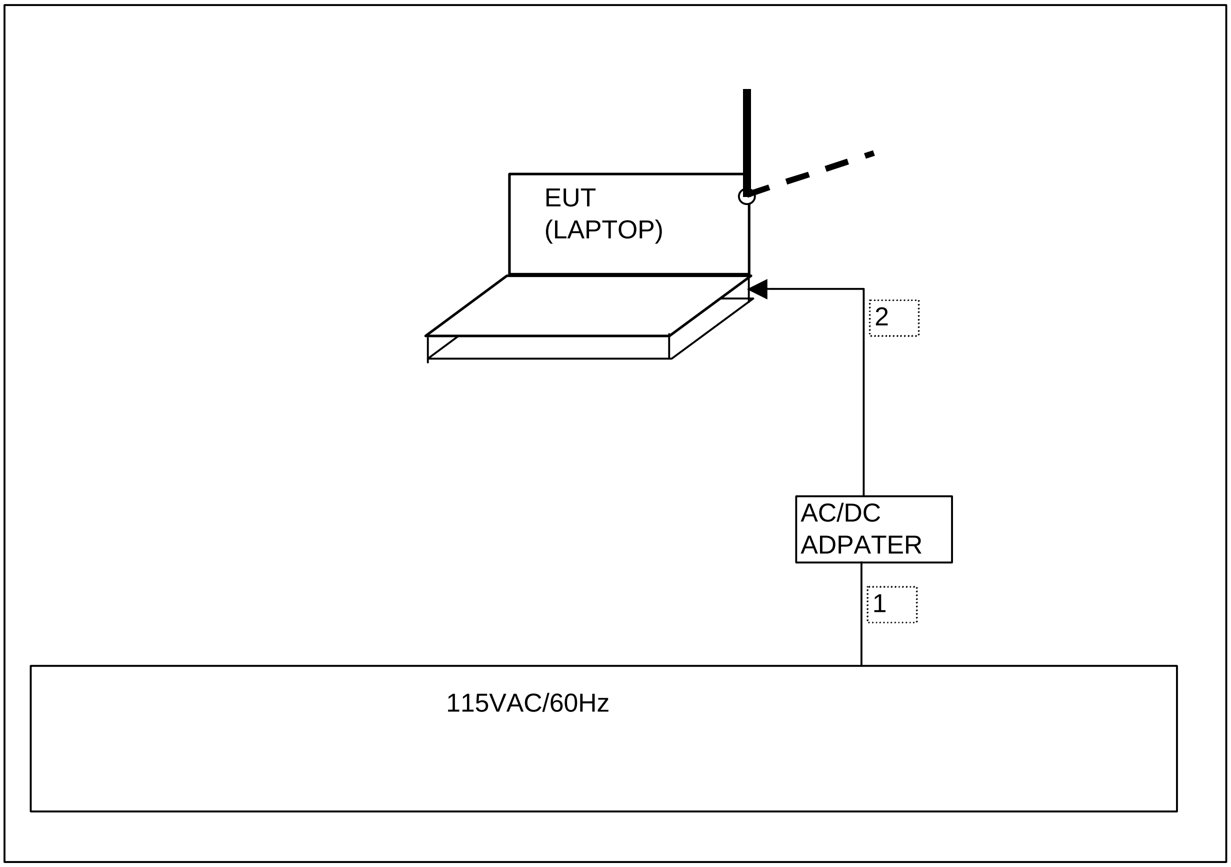
TEST PERIPHERALS				
Device Type	**Manufacturer**	**Model Number**	**Serial Number**	**FCC ID**
AC ADAPTER	DELTA ELECTRONIC	ADP-75FB B	UCT0330010749	DOC

TEST I / O CABLES								
Cable No	**I/O Port**	**# of I/O Port**	**Connector Type**	**Type of Cable**	**Cable Length**	**Data Traffic**	**Bundled**	**Remark**
1	AC	2	US115V	SHIELED	2m	NO	NO	
2	DC	2	DC	SHIELED	2m	NO	NO	

Detector Setting of Spectrum Analyzer

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	☒ Peak ☒ Quasi Peak	☒ 100 KHz ☒ 1 MHz	☒ 100 KHz ☒ 1 MHz

TEST SETUP



TEST PROCEDURE

1. The EUT was placed on the turn table 0.8 meter above ground inside 3 meter Anechoic Chamber.
2. Set the resolution bandwidth to 120KHz in the test receiver and select Peak function to scan the frequency below 1 GHz.
3. Shift the interference-receiving antenna located in antenna tower upwards and downwards between 1 and 4 meters above ground and find out the local peak emission on frequency domain.
4. Locate the interference-receiving antenna at the position where the local peak reach the maximum emission.
5. Rotate the turn table and stop at the angle where the measurement device has maximum reading
6. Shift the interference-receiving antenna again to detect the maximum emission of the local peak
7. If the reading of the local peak under Peak function is lower than limit by 6dB, then Quasi Peak detection is not needed and this reading should be recorded. And if it is higher than Peak limit, then the test is fail. Others, switch the receiver to Quasi Peak function, set the resolution bandwidth to 100kHz and repeat the procedures (3)~(6). If the reading is lower than limit, this reading should be recorded, otherwise, the test is fail.

MEASUREMENT RESULT

No non-compliance noted, as shown below.

COMPLIANCE CERTIFICATION SERVICES DOCUMENT NO: CCSUP4031A
561F MONTEREY ROAD, MORGAN HILL, CA 95037 USA TEL: (408) 463-0885 FAX: (408) 463-0888

IDLING - 800MHz AND 1900MHz BANDS FROM 30MHz TO 1000MHz

COMPLIANCE
Certification Services

FCC, VCCI, CISPR, CE, AUSTEL, NZ
UL, CSA, TUV, BSMI, DHHS, NVLAP

561F MONTEREY ROAD, SAN JOSE, CA 95037-9001
PHONE: (408) 463-0885 FAX: (408) 463-0888

Project #: 03U2244-1
Report #: 030925B2
Date& Time: 09/25/03 11:10 AM
Test Engr: Chin Pang

Company: ITRONIX CORP
EUT Description: LAPTOP W/BUILT-IN 850/1900MHz DUAL BAND GSM CARD
Test Configuration : LAPTOP
Type of Test: FCC CLASS B
Mode of Operation: Idling Mode

<< Main Sheet

Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (P/Q/A)
796.35	39.50	20.11	7.29	28.60	38.30	46.00	-7.70	3mH	0.00	2.00	P
432.00	45.70	16.32	5.17	28.99	38.21	46.00	-7.79	3mV	0.00	1.50	P
796.35	39.40	20.11	7.29	28.60	38.20	46.00	-7.80	3mV	0.00	1.50	P
830.72	38.60	20.34	7.47	28.48	37.93	46.00	-8.07	3mV	0.00	1.00	P
432.00	45.00	16.32	5.17	28.99	37.51	46.00	-8.49	3mH	0.00	2.00	P
631.50	40.00	19.05	6.39	29.05	36.39	46.00	-9.61	3mH	0.00	1.50	P
6 Worst Data											

Radiated Emission photos

Front view

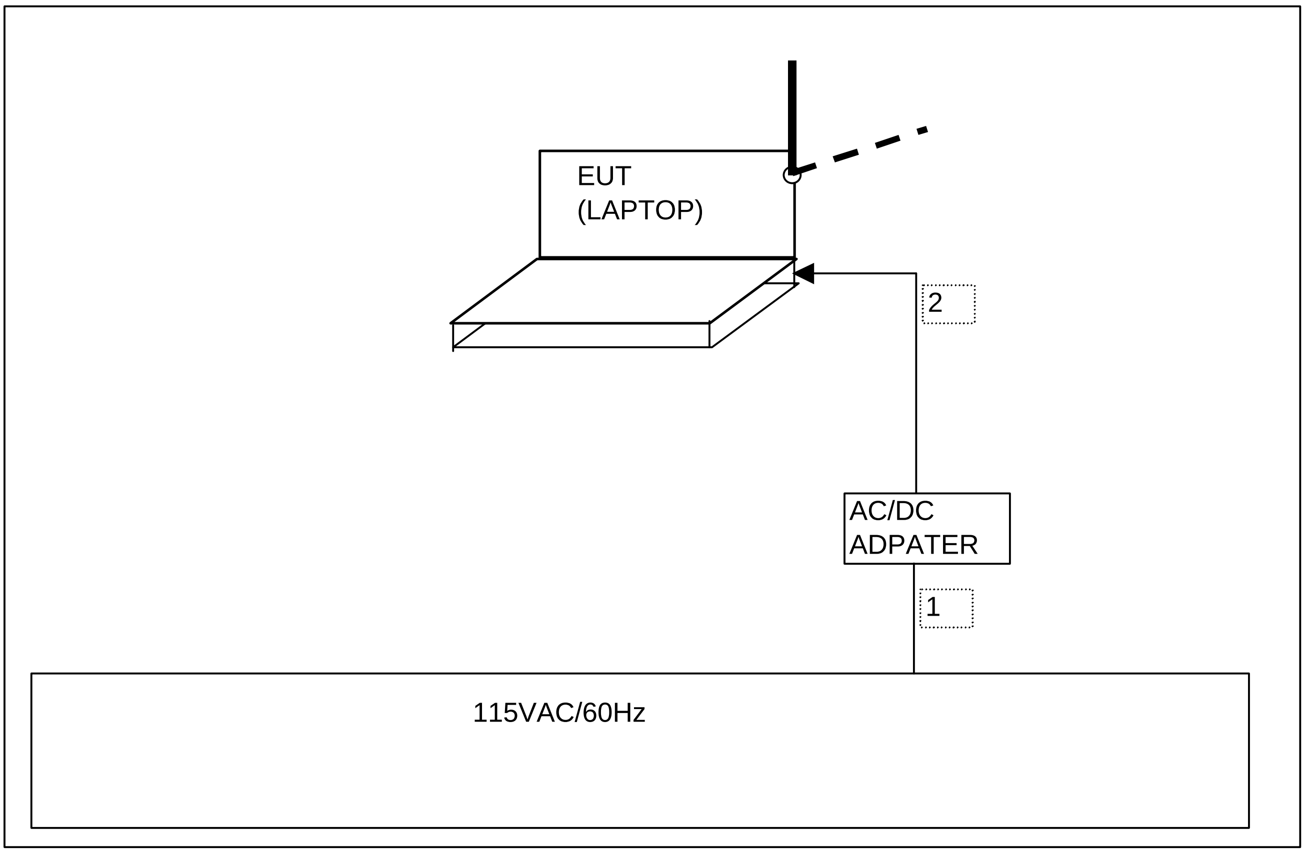
Back view

7.5. POWERLINE CONDUCTED EMISSION

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
150 KHz to 30 MHz	☒ Peak ☐ CISPR Quasi Peak	☒ 9 KHz	☒ 9 KHz

TEST SETUP



TEST PROCEDURE

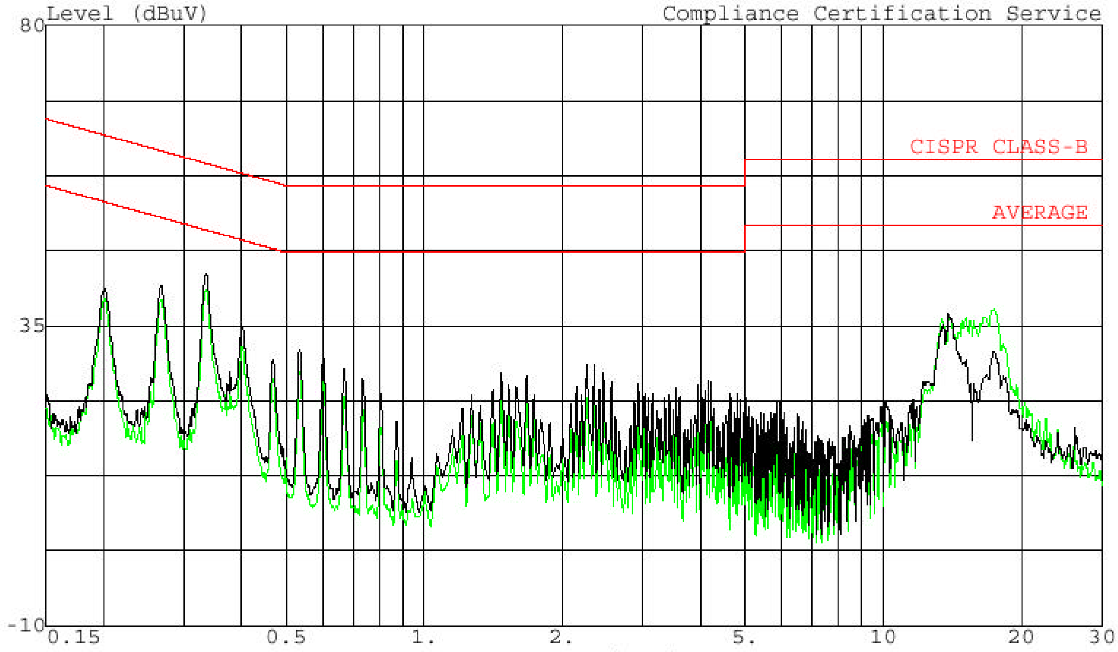
1. The EUT was placed on a wooden table 40 cm from a vertical ground plane and approximately 80 cm above the horizontal ground plane on the floor. The EUT was set to transmit in a continuous mode.

2. Line conducted data was recorded for both NEUTRAL and HOT lines.

MEASUREMENT RESULT (FOR BOTH 800MHz AND 1900MHz BANDS)

COMPLIANCE Engineering Services, Inc.
561F Monterey Road,
San Jose, CA 95037 USA
Tel: (408) 463-0885
Fax: (408) 463-0888

Data#: 7 File#: LC1.EMI Date: 09-24-2003 Time: 17:00:59



Trace: 3 Ref Trace:

```
Project #         : 03u2244
Test Operator     : VIEN TRAN
Company           : ITRONIX CORP.
EUT               : Laptop sys. w/ built-in 850/1900MHz Dual
                  : GSM Card
Model             : IX260
S/N               : N/A
Configuration     : EUT and Basic Peripheral
Mode of Operation: EMC test SW,Pinging,Modem,Video,printing
Target of Test    : FCC CLASS B
Voltage           : 115Vac, 60Hz
                  : L1: Peak ( Black ), L2: Peak(Green)
```

LINE CONDUCTION DATA (FOR BOTH 800MHz AND 1900MHz BANDS)

CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	**Reading**			**Closs**	**Limit**	**EN_B**	**Margin**		**Remark**
(MHz)	**PK (dBuV)**	**QP (dBuV)**	**AV (dBuV)**	**(dB)**	**QP**	**AV**	**QP (dB)**	**AV (dB)**	**L1 / L2**
0.33	39.80	--	--	0.00	60.86	50.86	-21.06	-11.06	L1
17.38	38.34	--	--	0.00	60.00	50.00	-21.66	-11.66	L1
13.91	35.86	--	--	0.00	60.00	50.00	-24.14	-14.14	L1
0.33	42.24	--	--	0.00	60.86	50.86	-18.62	-8.62	L2
0.27	40.75	--	--	0.00	62.69	52.69	-21.94	-11.94	L2
13.91	37.06	--	--	0.00	60.00	50.00	-22.94	-12.94	L2
6 Worst Data									

LINE CONDUCTION - FRONT

LINE CONDUCTION - BACK

8. APENDIX

8.1. EXTERNAL & INTERNAL PHOTOS

8.2. SCHEMATICS

8.3. BLOCK DIAGRAM

8.4. USER MANUAL

END OF REPORT

COMPLIANCE CERTIFICATION SERVICES DOCUMENT NO: CCSUP4031A
561F MONTEREY ROAD, MORGAN HILL, CA 95037 USA TEL: (408) 463-0885 FAX: (408) 463-0888