

EMC TEST REPORT

Report No. : EME-031077

Model No. : 11-133

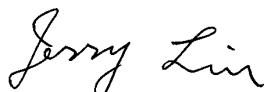
Issued Date : Oct. 24, 2003

Applicant : Teletronics International Inc.
1803 Research Blvd., Suite 404, Rockville,
MD 20850-3155, U.S.A.

Test By : Intertek Testing Services Taiwan Ltd.
No. 11, Lane 275, Ko-Nan 1 Street, Chia-Tung Li,
Shiang-Shan District, Hsinchu City, Taiwan

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Project Engineer



Jerry Liu

Reviewed By



Elton Chen

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Summary of Tests**11Mbps Wireless LAN Card -Model: 11-133**
FCC ID: MFM-11-133

Test	Reference	Results
Power Line Conducted Emission test	15.207	Complies

1. General information

1.1 Identification of the EUT

Applicant	: Teletronics International Inc.
Product	: 11Mbps Wireless LAN Card
Model No.	: 11-133
FCC ID.	: MFM-11-133
Frequency Range	: 2412MHz to 2462MHz
Channel Number	: 11 channels
Frequency of Each Channel	: 2412MHz, 2417MHz, 2422MHz, 2427MHz, 2432MHz, 2437MHz, 2442MHz, 2447MHz, 2452MHz, 2457MHz, 2462MHz
Type of Modulation	: CCK (11Mps, 5.5Mbps), DQPSK (2Mbps), DBPSK (1Mbps)
Rated Power	: 3.3/5Vdc
Power Cord	: N/A
Sample Received	: Oct. 24, 2003
Test Date(s)	: Oct. 24, 2003

1.2 Additional information about the EUT

The EUT is an IEEE802.11/802.11b-compliant PCMCIA Type II DSSS wireless LAN PC card. It fully supports wireless networking under Windows 95/98, and NT 4.0, it can be operated in Ad-Hoc and Infrastructure network configurations.

This device has not been modified, but only been tested to show compliance with the new FCC limits for Conducted Emission Test, and recorded in this report.

For more detail features, please refer to User's manual as file name "Installation guide.pdf"

1.3 Antenna description

The antenna is affixed to the EUT using a unique connector, which allows for replacement of a broken antenna, but DOES NOT use a standard antenna jack or electrical connector.

Antenna Gain : 0dBi max

Antenna Type : Patch antenna

Connector Type : N/A

1.4 Peripherals equipment

Peripherals	Manufacturer	Product No.	Serial No.	FCC ID
PC	IBM	634588V	BN3R1VC	FCC DoC Approved
Key Board	IBM	37L2548	0095996	FCC DoC Approved
Monitor	IBM	6331-0LN	23-NW855	ARSCM560S
Mouse	Logitech	850693-0001	LAZ82706831	FCC DoC Approved
Printer	HP	C2642A	TH86K1N2ZB	FCC DoC Approved
Modem	Dynalink	V1456VQE	00V230A00051494	FCC DoC Approved

2. Test specifications

2.1 Test standard

The EUT was performed according to the procedures in FCC Part 15 Subpart C Section § 15.205 、 § 15.207 、 § 15.209 、 § 15.247 and ANSI C63.4/2001.

The test of radiated measurements according to FCC Part15 Section 15.33(a) had been conducted and the field strength of this frequency band were all meet limit requirement, thus we evaluate the EUT pass the specified test.

2.2 Operation mode

Plug the EUT into PC Via a PCI to PCMCIA interface card and turn on the power of PC then run the test program “FRF.EXE”.

The EUT was transmitted continuously during the test.

After verifying the maximum output power, we found the maximum output power was occurred at 11Mbps data rate. The final test was executed under this condition and recorded in this report individually.

2.3 Test equipment

Equipment	Brand	Frequency range	Model No.	Series No.	Last Cal.Date
EMI Test Receiver	Rohde & Schwarz	9kHz~2.75GHz	ESCS 30	825788/014	Feb. 18, 2003
EMI Test Receiver	Rohde & Schwarz	20Hz~26.5GHz	ESMI	825428/005	June 10, 2003
Spectrum Analyzer	Rohde & Schwarz	9kHz~30GHz	FSP 30	100137	July 10, 2003
Horn Antenna	EMCO	1GHz~18GHz	3115	9906-5890	Sep. 19, 2003
Horn Antenna	SCHWARZBECK	14GHz~40GHz	BBHA 9170	159	June 21, 2003
Bilog Antenna	SCHWARZBECK	25MHz~1.7GHz	VULB 9160	3133	Feb. 21, 2003
Turn Table	HDGmbH	N/A	DS 420S	420/669/01	N/A
Antenna Tower	HDGmbH	N/A	MA 240	240/573	N/A
Microwave Amplifier	Agilent	2GHz~26.5GHz	8348A	3111A00567	Dec. 20, 2002
Crystal Detector	Agilent	10MHz~18GHz	8472B	MY42240243	N/A
Signal Generator	Rohde & Schwarz	20MHz~27GHz	SMR27	100036	Aug. 15, 2003
Two Channel Digital Storage Oscilloscope	Tektronix	N/A	TDS1012	C031679	Aug. 16, 2003

Note:

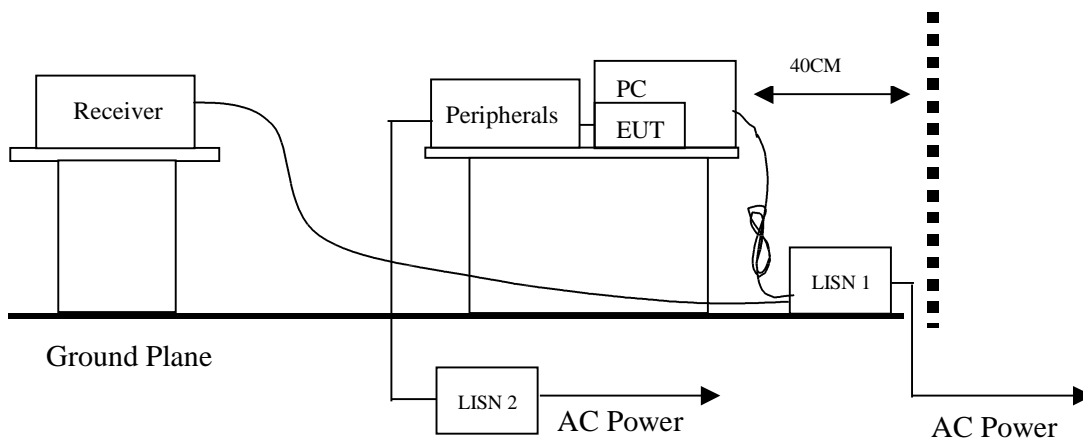
1. The calibration interval of the above instruments is 12 months.

3. Power Line Conducted Emission test §FCC 15.207

3.1 Operating environment

Temperature: 22 °C
Relative Humidity: 60 %
Atmospheric Pressure 1023 hPa

3.2 Test setup & procedure



The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a 50 ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination.

Both sides (Line and Neutral) of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4/1992 on conducted measurement. The AC power conducted emissions was investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz. (15.207 paragraph)

The EUT configuration please refer to the “Conducted set-up photo.pdf”.

Please see the plot below.

Emission Limit

Freq. (MHz)	Conducted Limit (dBuV)	
	Q.P.	Ave.
0.15~0.50	66 – 56*	56 – 46*
0.50~5.00	56	46
5.00~30.0	60	50

*Decreases with the logarithm of the frequency.

3.3 Power Line Conducted Emission test data

(1) Line

EUT : 11-133

Worst Case Condition : Tx at low channel

Freq. (MHz)	Reading (dB μ V) QP	Limit (dB μ V) QP	Reading (dB μ V) AV	Limit (dB μ V) AV	Margin (dB)	
					QP	AV
0.18200	39.9	64.40	35.7	54.40	-24.50	-18.70
0.23800	29.4	62.17	28.9	52.17	-32.77	-23.27
0.27800	32.8	60.88	29.8	50.88	-28.08	-21.08
0.46200	30.0	56.66	27.2	46.66	-26.66	-19.46
0.64600	23.5	56.00	21.4	46.00	-32.50	-24.60
0.74200	24.5	56.00	22.9	46.00	-31.50	-23.10

(2) Neutral

EUT : 11-133

Worst Case Condition : Tx at low channel

Freq. (MHz)	Reading (dB μ V) QP	Limit (dB μ V) QP	Reading (dB μ V) AV	Limit (dB μ V) AV	Margin (dB)	
					QP	AV
0.18200	38.4	64.40	34.5	54.40	-26.00	-19.90
0.23800	29.1	62.17	28.9	52.17	-33.07	-23.27
0.27800	31.2	60.88	26.2	50.88	-29.68	-24.68
0.46200	28.7	56.66	25.8	46.66	-27.96	-20.86
0.74200	26.8	56.00	25.4	46.00	-29.20	-20.60
0.92600	23.7	56.00	20.5	46.00	-32.30	-25.50

Remark:

1. The reading value included cable loss and LISN factor.
2. Uncertainty was calculated in accordance with NAMAS NIS 81.
Expanded uncertainty (k=2) of conducted emission measurement is ± 2.6 dB.

