
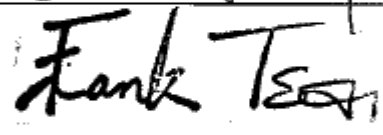


Test Report

1/15

Report No.	K0715045
FCC ID	GV319422UP
Specifications	FCC Part 15, Class B
Test Method	ANSI C63.4 1992
Applicant	ACCO Brand, Inc.
Applicant address	2855 Campus Drive San Mateo, CA 94403, U.S.A.
Product name	ValuMouse Wireless
Model No.	19422 (Sample # K07044)
Frequency Range	26.96MHz to 27.28MHz
Results	Compliance (As detailed within this report)
Date	11/27/2002 (month / day / year)(Sample received) 12/16/2002 (month / day / year)(Tested)
Prepared by	 Project Engineer
Authorized by	 General Manager (Frank Tsai)
Issue date	March 6, 2003 (month / day / year)
Modifications	None
Tested by	Training Research Co., Ltd. (Accredited by NVLAP)
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- *This test report shall not be reproduced except in full, without written approval of TRC. And the test result contained within this report only relate to the sample submitted for testing.*
- *The test data in this test report are following the procedures in accordance with the terms of accreditation.*
- *This test report and measurements made by TRC are traceable to the NIST only Conducted and Radiated Method (TRC is accredited by NVLAP, code No.: 200174-0).*
- *The device has been tested is fully complied with the requirements the Directive FCC Part 15.*

Report No.: K0715045**Training Research Co., Ltd., TEL: 886-2-26461146, Fax: 886-2-26461778**

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Chapter 1 Introduction

Description of EUT:

EUT : Wireless Mouse and Receiver
Model No. : 19422
Product name : ValuMouse Wireless
Frequency Range : 26.96 – 27.28 MHz
Power Type : Transmitter: Powered by two 1.5VDC AA batteries
Receiver: Powered by PC

*This EUT has two channels (each with 256 IDs):

1. 27.0450 MHz
2. 27.0950 MHz

Test method:

Pretest was found that the emission of operating mode is worse than standby mode. So, The final test is made at the operating mode.

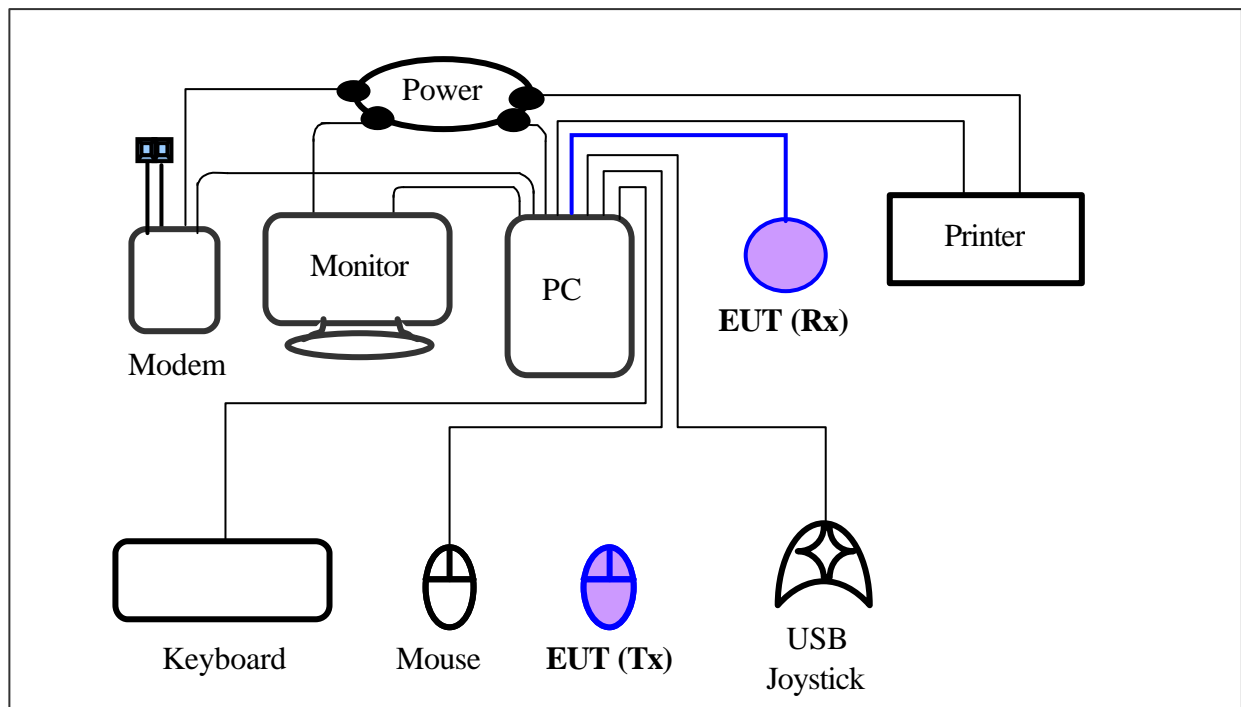
During the measurement, there are two modes with different channels tested: “USB Interface CH-1”, “USB Interface CH-2”, “PS/2 Interface CH-1” and “USB Interface CH-2” modes. During testing, the EUT was operated at “transmitting”, “receiving” mode simultaneously. The test voltage is 230Vac / 50Hz. The radiation test was found out the testing mode: “USB Interface CH-1” was the worst case and we only recorded worse cases in this report.

While testing, the EUT was made to transmit continuously and adjusted at a position, which transmitted the maximum emission.

The test placement as the photographs showed is the worst emission placed. (If the emission is close to the ambient, the resolution BW and view resolution will be reduced and the data will be recorded by detection of maximum hold peak mode.)

The testing configuration of test setup is showing in the next page.

Configuration of Test Setup (Test Mode: USB Interface)



Connections:

PC:

- *Serial Port --- via a 110cm shielded RS-232 cable to an external modem.
 - *Monitor Port --- a monitor with 1.5m length data cable.
 - *Keyboard port --- via a 0.30m long shielded data cable to the receiver.
 - *Mouse port --- a mouse with 1.8m long of data cable.
 - *USB port --- to EUT(Rx).
- (Each port on PC is connected with suitable device)

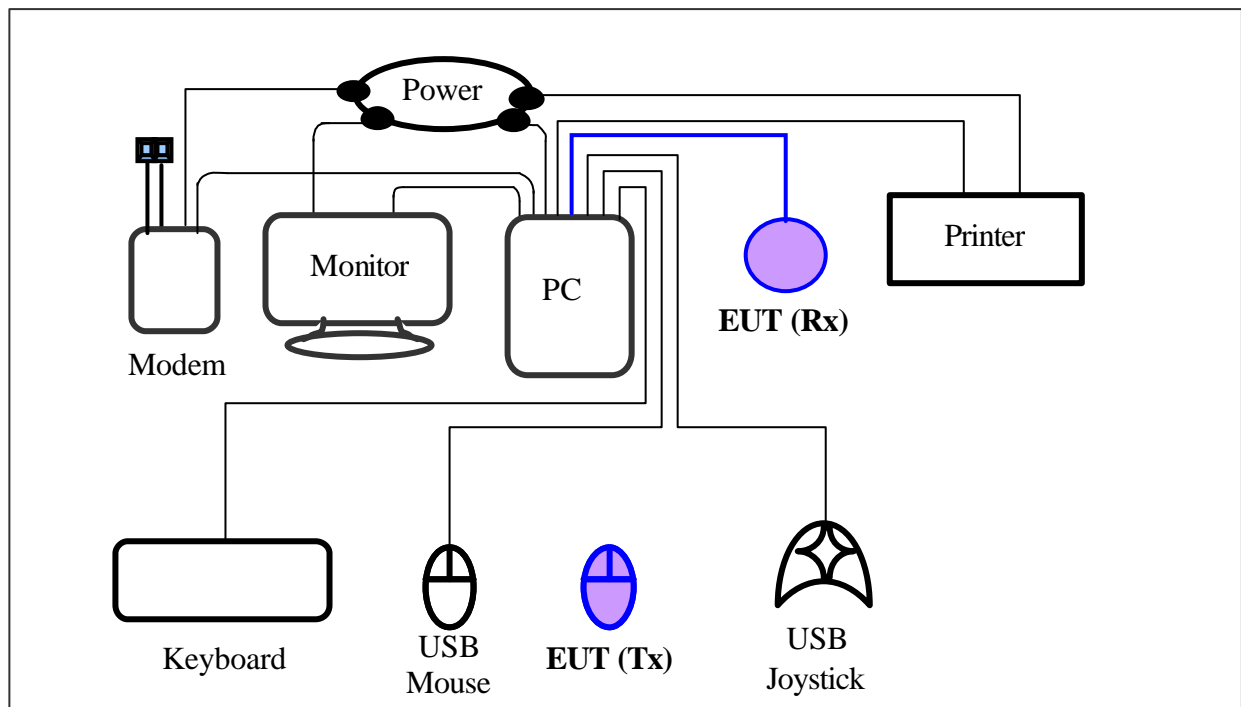
EUT(Tx):

- *Put two AA size, 1.5V battery into the battery cell of EUT, powers the subject device.
- The EUT does not be connected with any product.

EUT(Rx):

- *USB Jack --- with a 140cm long USB cable to the USB port of PC.

Configuration of Test Setup (Test Mode: PS/2 Interface)



Connections:

PC:

- *Serial Port --- via a 110cm shielded RS-232 cable to an external modem.
 - *Monitor Port --- a monitor with 1.5m length data cable.
 - *Keyboard port --- via a 0.30m long shielded data cable to the receiver.
 - *Mouse port --- to EUT(Rx).
 - *USB port --- a mouse with 1.8m long of data cable.
- (Each port on PC is connected with suitable device)

$EUT(Tx):$

- *Put two AA size, 1.5V battery into the battery cell of EUT, powers the subject device.
The EUT does not be connected with any product.

EUT(Rx):

- *USB Jack --- with a 140cm long USB cable via a USB to PS/2 adaptor to the Mouse port of PC.

List of Support Equipment

Conducted (Radiated) test:

PC : HP Brio 85xx 6/350

Model No. : D6928A

Serial No. : SG91801443

FCC ID : Doc Approved

Power type : 100 ~ 230VAC / 50 ~ 60Hz, 5A, Switching

Power cord : Non-shielded, 2.33m long, Plastic, No ferrite core

Monitor : HP pavilion mx70

Model No. : P1283A

Serial No. : THTBR00257

FCC ID : DOC Approved

Power type : 100 ~ 240V AC 15A 50/60Hz

Power cord : Shielded, 1.83m long, No ferrite core

Data cable : Shielded, 1.46m (1.80m) long, with two ferrite cores (no ferrite core)

Printer : HP

Model No. : C2642A

Serial No. : SG69A196GV

FCC ID : B94C2642X

Power type : 230 VAC, 50Hz

Power cord : Non-shielded, 2m long, no ferrite core

Data cable : Shielded, 1.84m long, no ferrite core

Modem : ACEEX

Model No. : DM-1414V

FCC ID : IFAXDM1414

Power type : 120VAC, 60Hz/ 9VAC, 1A

Power cord : Non-shielded, 1.9m long, no ferrite cord

Data cable : RS232, Shielded, 1.2m long, no ferrite core

RJ11C x 2, 7' long non-shielded, no ferrite core

Mouse : HP

Model No. : M-S34

Serial No. : LZB90714106

FCC ID : DZL211029

Power type : By PC

Power cord : Non-shielded, 1.88m long, No ferrite core

USB Joystick : Rockfire

Model No. : QF-337uv

Serial No. : 10600545

FCC ID : CE Approval

Power type : Powered by PC

Power cable : Shielded, 1.8m long, No ferrite bead data cable

USB Mouse : Logitech Wheel Mouse

Model No. : M-BJ-58

Serial No. : LN20901985

FCC ID : Doc Approved

Power type : By PC

Power cord : Non-shielded, 1.88m long, No ferrite core

Chapter 2 Conducted Emission Test

Test Condition and Setup:

All the equipment is placed and setup according to the ANSI C63.4 – 1992. The EUT is assembled on a wooden table that is 80 cm high, is placed 40 cm from the back-wall that is a vertical conducting plane. One LISN is for EUT, the other LISN is for support equipment. They are all placed on the conductive ground. The EUT's LISN connect a line switch box for selecting L1 or L2, then connect to a preamplifier and Spectrum.

The spectrum measured from 150KHz to 30MHz. Conducted emission levels are detected at max. peak mode. But if the max. peak mode failed or over average limit, it will be measured by QP and average detection mode using the Receiver.

While testing, there is the worst-emission plot printed at peak detection mode, and there are more than 6 highest emissions relative to limit recorded. The plot is kept as the original data, not included in test report.

List of test Instrument :

<u>Instrument Name</u>	<u>Model No.</u>	<u>Brand</u>	<u>Serial No.</u>	<u>Calibration Date</u>	
				<u>Last time</u>	<u>Next time</u>
Receiver	SCR3102	SCHAFFNER	012	03/29/02	03/28/03
LISN (EUT)	3825/2	EMCO	9411-2284	06/17/02	06/16/03
LISN (Support E.)	3825/2	EMCO	9210-2007	05/31/02	05/31/03
Preamplifier	EQ3-006	TRC	- - - - -	05/15/02	05/15/03
Line switch box	EQ3-007	TRC	- - - - -	05/15/02	05/15/03

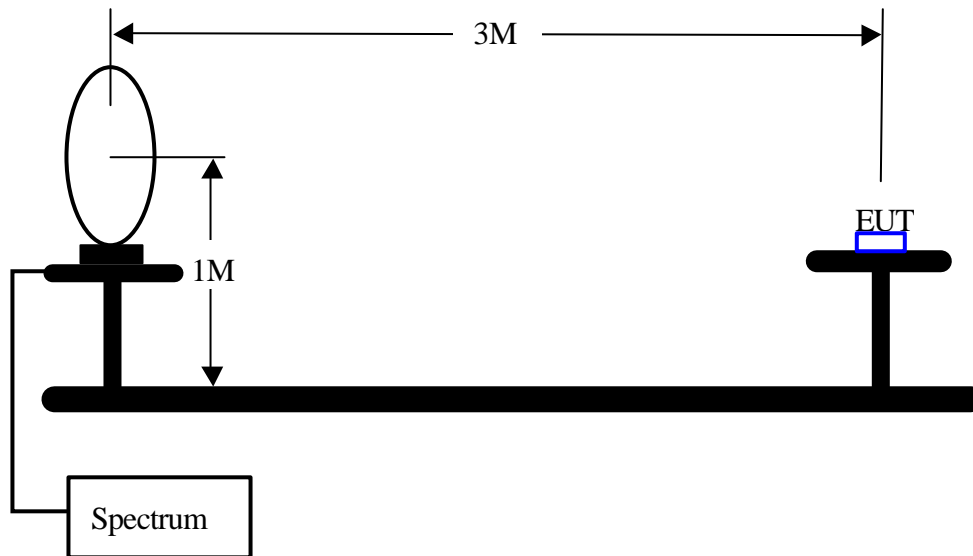
The level of confidence of 95% , the uncertainty of measurement of conducted emission is ± 2.02 dB .

Test Result: N/A

Chapter 2 Peak Power Measurement (Frequency Band: 26.96 ~ 27.28)

Test Setup:

1. Test Setup:



2. Test Procedure:

- The EUT was setup in the anechoic chamber as shown above.
- The loop antenna was located upon its plane vertical, 3-meter distance from the EUT. The center of the loop is 1-meter above the ground plane.
- In order to find the maximum radiation, the EUT was rotated 360°. The measuring antenna was rotated about its axis at each azimuth about the EUT.

List of test Instrument :

Instrument Name	Model No.	Brand	Serial No.	Calibration Date	
				Last time	Next time
Receiver	SCR3102	SCHAFFNER	012	03/29/02	03/28/03
Control Box	TWR95-4	TRC	C9001-2	12/01/02	12/01/03
Antenna	6502	EMCO	9206-2777	06/10/02	06/09/03
Open test side (Antenna, Amplify, cable calibrated together)				05/15/02	05/15/03

The level of confidence of 95% , the uncertainty of measurement of radiated emission is ± 3.44 dB .

Test Result : Appendix A

Chapter 4 Radiated Emission Test

Test Condition and Setup:

Pretest : Prior to the final test ,the EUT is placed in an anechoic chamber, and scan from 30MHz to 1GHz. The devices rotated through three orthogonal axes to determine which attitude and configuration produces the highest emission relative to the limit. This is done to ensure the radiation exactly emits form the EUT.

Final test: Final radiation measurements is made on a **3 – meter** open-field test site. The EUT's maximum emission of radiation is placed on a nonconductive table, which is 0.8m height, the top surface is 1.0 x 1.5 meter. All placement is according to ANSI C63.4 - 1992.

The emissions was examined from 30 MHz to 1000 MHz measured by receiver.

The whole range Antenna is used to measure frequency from 30 MHz to 1 GHz. The final test is used the receiver.

Measure more than six top marked frequencies generated form pretest by computer step by step at each frequency. The EUT is rotated 360 degrees, and antenna is raised and lowered from 1 to 4 meters to find the maximum emission levels. The antenna is used with both horizontal and vertical polarization.

Appropriated preamplifier, which is made by TRC is used for improving sensitivity and precautions is taken to avoid overloading. The spectrum analyzer' s 6dB bandwidth is set to 120 KHz, and the EUT is measured at quasi-peak mode.

If the emission is close to the frequency band of ambient, the tester will recheck the data and the corrected data will be written in the test data sheet. If the emission is just within the ambient, the data from shield room will be taken as the final data.

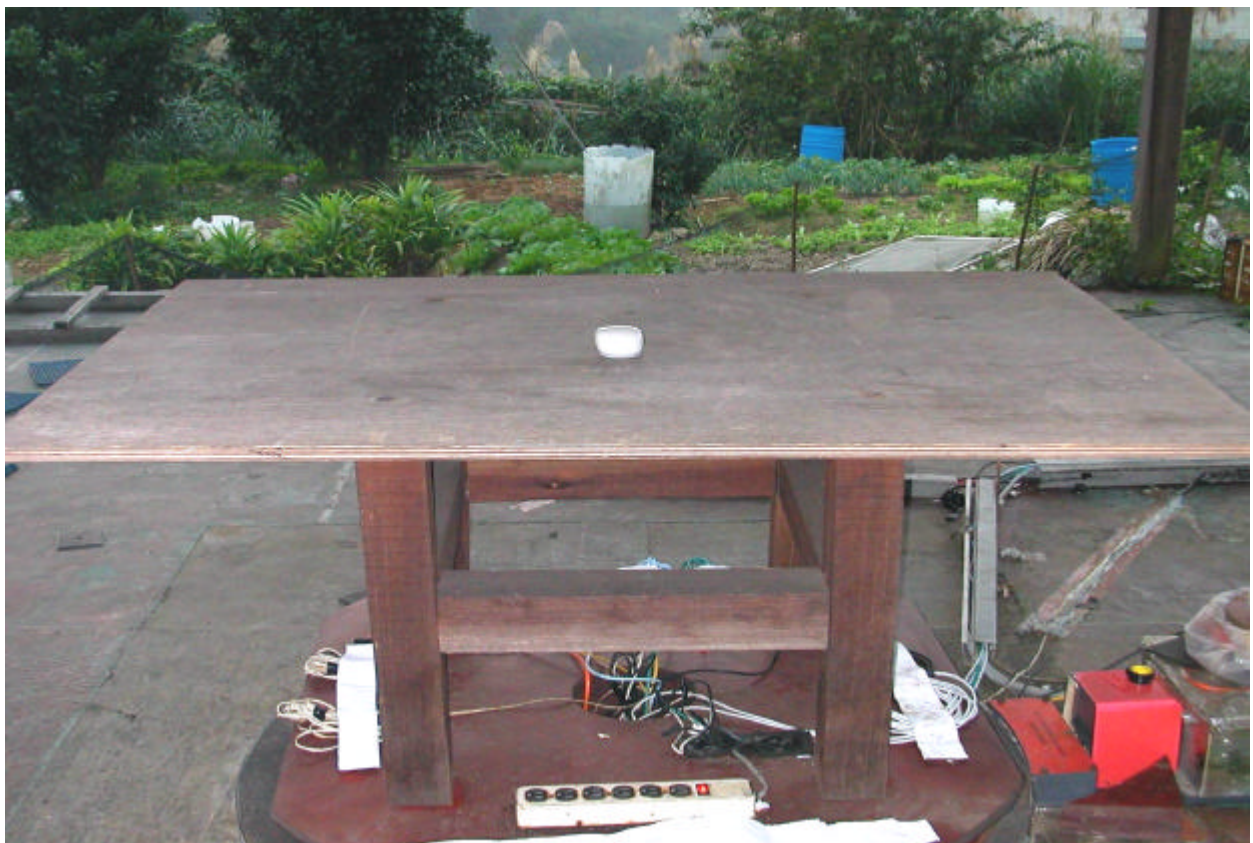
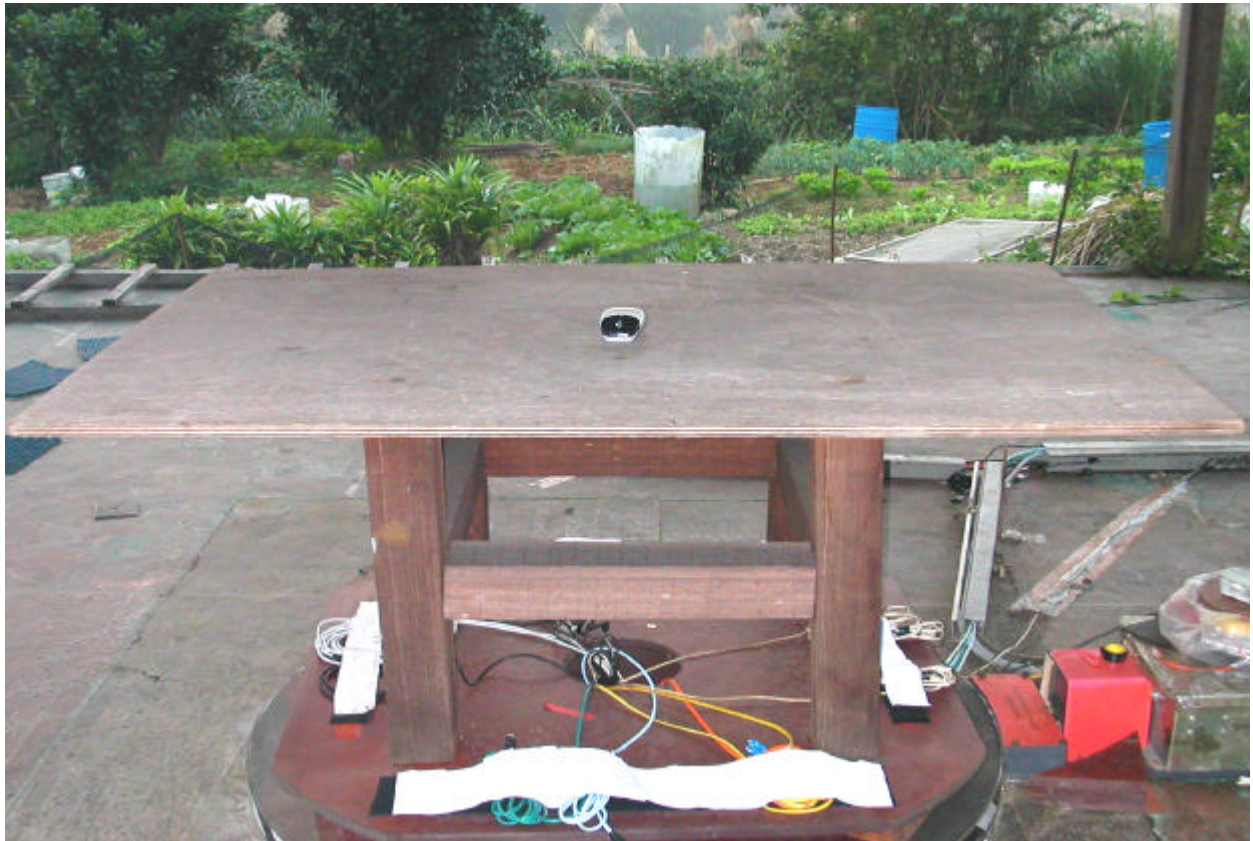
List of test Instrument :

Instrument Name	Model No.	Brand	Serial No.	<u>Calibration Date</u>	
				Last time	Next time
Receiver	SCR3102	SCHAFFNER	012	03/29/02	03/28/03
Control Box	TWR95-4	TRC	C9001-2	N/A	N/A
Antenna	CBL6141A	SCHAFFNER	4188	11/29/02	11/28/03
Open test side (Antenna, Amplify, cable calibrated together)				05/15/02	05/15/03

The level of confidence of 95% , the uncertainty of measurement of radiated emission is ± 3.44 dB .

Test Result : Pass (Appendix A)

Radiated Test Placement: (Photographs)



Appendix A

Peak Power Test Result: (Horizontal)

Frequency	Reading Amplitude	Correction Factors	Corrected Amplitude	Limit	Margin
MHz	dBμV/m	dB	dBμV/m	dBμV/m	dB
27.1013	57.00	-8.30	48.70	80.00	-31.30

Radiated Emission Test Result: (Horizontal)

Test Conditions:

Testing site : Temperature : 25 ° C Humidity : 73 % RH

Frequency	Reading Amplitude	Ant. Height	Table	Correction Factors	Corrected Amplitude	Class B Limit	Margin
MHz	dBμV/m	m	degree	dB	dBμV/m	dBμV/m	dB
54.1950	34.09	2.51	34	-6.25	27.84	40.00	-12.16
80.8662	39.45	3.99	98	-9.92	29.53	40.00	-10.47
108.3975	36.24	1.00	358	-6.34	29.90	43.52	-13.62
135.1038	30.71	3.99	145	-4.40	26.31	43.52	-17.21
162.0000	32.11	3.99	104	-5.58	26.53	43.52	-16.99
189.6571	37.03	2.51	10	-4.62	32.41	43.52	-11.11

Note:

1. Margin = Amplitude – limit, *if margin is minus means under limit.*
2. Corrected Amplitude = Reading Amplitude – Correction Factors
3. Correction factor = Antenna factor + (Cable Loss – Amplitude gain)
(For example : 30MHz correction factor = 15.5 + (–15.26) = 0.24 dB/m)

Peak Power Test Result: (Vertical)

Frequency	Reading Amplitude	Correction Factors	Corrected Amplitude	Limit	Margin
MHz	dB μ V/m	dB/m	dB μ V	dB μ V/m	dB
27.0963	48.90	-8.30	40.60	80.00	-39.40

Radiated Emission Test Result: (Vertical)

Test Conditions:

Testing site : Temperature : 25 ° C Humidity : 73 % RH

Frequency	Reading Amplitude	Ant. Height	Table	Correction Factors	Corrected Amplitude	Class B Limit	Margin
MHz	dB μ V/m	m	degree	dB	dB μ V/m	dB μ V/m	dB
54.0888	29.41	3.99	360	-6.21	23.20	40.00	-16.80
80.8324	41.52	3.99	244	-9.93	31.59	40.00	-8.41
107.9025	44.93	3.99	320	-6.41	38.52	43.52	-5.00
135.6875	26.61	2.50	285	-4.40	22.21	43.52	-21.31
162.0000	25.30	3.99	283	-5.58	19.72	43.52	-23.80
188.8532	24.02	3.99	36	-4.67	29.35	43.52	-24.17

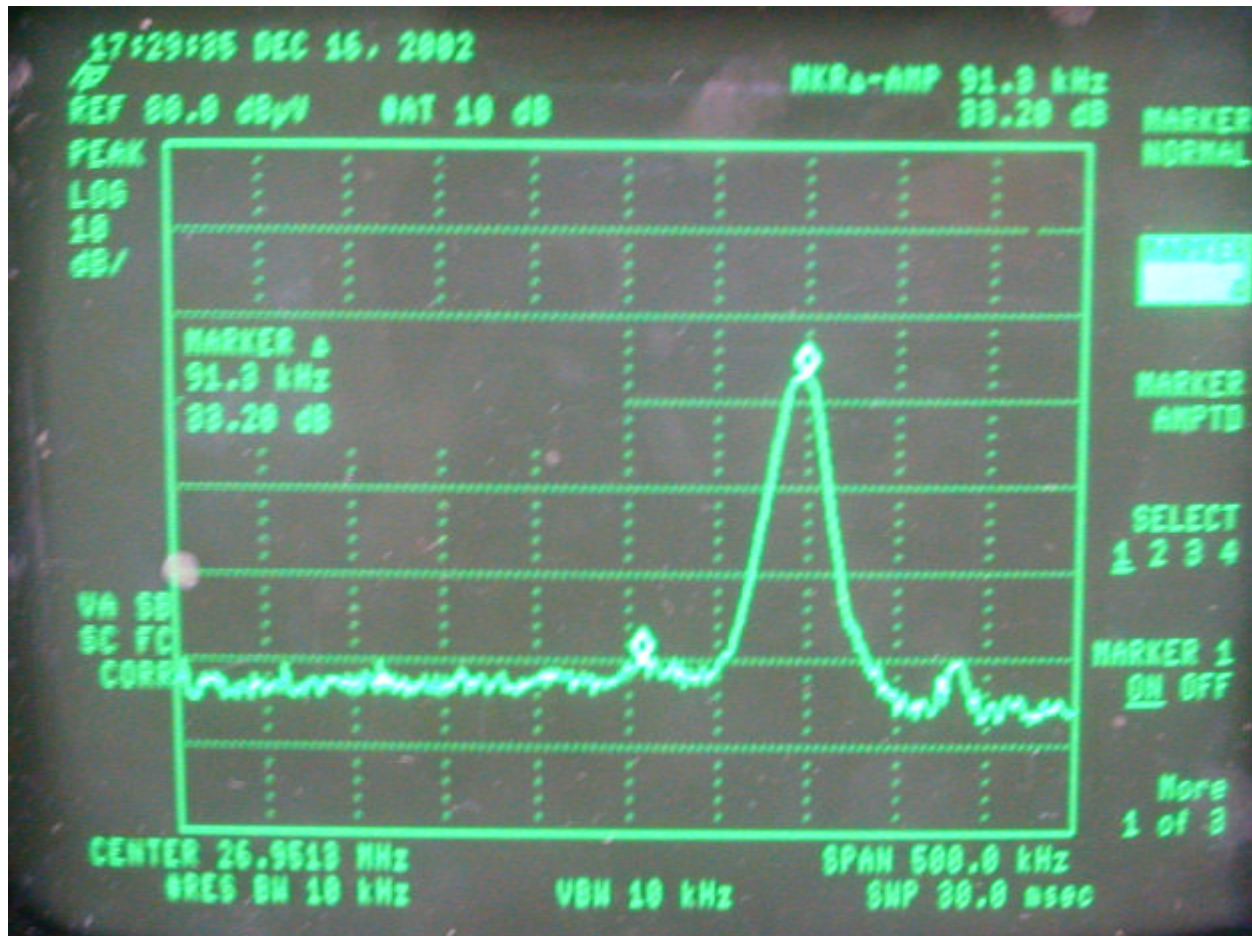
Note:

1. Margin = Amplitude – limit, *if margin is minus means under limit.*
2. Corrected Amplitude = Reading Amplitude – Correction Factors
3. Correction factor = Antenna factor + (Cable Loss – Amplitude gain)
(For example : 30MHz correction factor = 15.5 + (–15.26) = 0.24 dB/m)

Appendix B

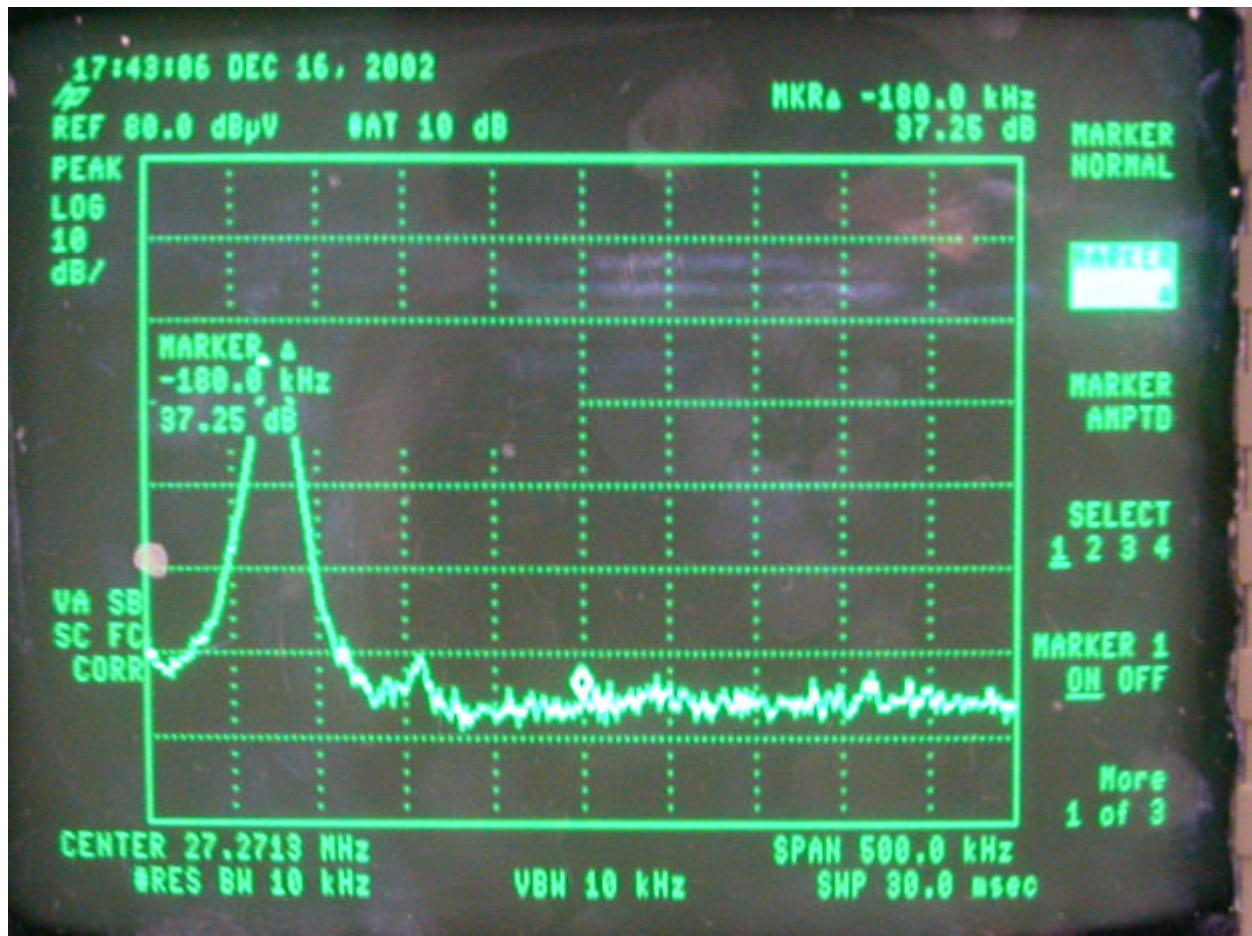
Band Edge of Measurement: (Frequency Band: 26.96 ~ 27.28)

Lower channel



26.96MHz << Class B Limit.

Upper channel:



27.28 MHz >> Class B Limit.