



## MAXIMUM PEAK OUTPUT POWER

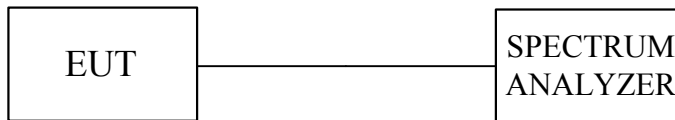
### Test Equipments

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Calibration Period
ROHDE & SCHWARZ SPECTRUM ANALYZER	FSEK30	835253/002	September 06, 2004	1 Year
ANRITSU Peak Power Meter	ML2487A MAL2491A	6K00001783 030982	February 10, 2004	1 Year

Note :

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

### Test Setup



### Limits of Maximum Peak Output Power

The Maximum Peak Output Power Measurement is 30dBm.

### Test Procedure

1. The spectrum shall be set as follows :  
Span : 1.5 times channel integration bandwidth.  
RBW : 1MHz  
VBW : 3MHz  
Detector : Peak  
Sweep : Single trace
2. Compute the combined power of all signal responses contained in the trace by covering all the data points.
3. For 99% occupied BW, place the markers at the frequency at which 0.5% of the power lies to the right of the right marker and 0.5% of the power lies to the left of the left marker.
4. The peak output power is the channel power integrated over 99% bandwidth.



### Uncertainty of Conducted Emission

The uncertainty of conducted emission is  $\pm 1.82\text{dB}$ .

### Test Results

<b>Company</b>	GIGA-BYTE TECHNOLOGY CO., LTD.	<b>Test Date</b>	2004/12/16
<b>Product Name</b>	PCI Wireless LAN Card	<b>Test By</b>	Ken Tu
<b>Model Name</b>	GN-WPMG	<b>TEMP &amp; Humidity</b>	23.2°C, 71%

Channel	Channel Frequency (MHz)	Peak Power Output (dBm)	Peak Power Limit (dBm)	Pass / Fail
1	2412	21.40	30	PASS
6	2437	21.34	30	PASS
11	2462	21.79	30	PASS

Note :

1. For 802.11b mode.
2. At final test to get the worst-case emission at 11Mbps.
3. Cable loss = 1.55dB, Attenuator = 10dB.
4. The results are calculated as the following equation :  
Peak Power Output = Peak Power Reading + Cable loss

Channel	Channel Frequency (MHz)	Peak Power Output (dBm)	Peak Power Limit (dBm)	Pass / Fail
1	2412	17.23	30	PASS
6	2437	17.67	30	PASS
11	2462	17.32	30	PASS

Note :

1. For 802.11g mode.
2. At final test to get the worst-case emission at 54Mbps.
3. Cable loss = 1.55dB, Attenuator = 10dB.
4. The results are calculated as the following equation :  
Peak Power Output = Peak Power Reading + Cable loss

### Photo of Maximum Peak Output Power Measurement



## RF EXPOSURE EVALUATION

According to FCC 1.1310 : The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time
(A) Limits for Occupational / Control Exposures				
300-1,500	--	--	F/300	6
1,500-100,000	--	--	5	6
(B) Limits for General Population / Uncontrol Exposures				
300-1,500	--	--	F/1500	6
1,500-100,000	--	--	1	30

### Friis Formula

Friis transmission formula :  $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$P_i$  = 3.1416

r = distance between observation point and center of the radiator in cm

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance “r” where the MPE limit is reached.

### EUT Operating Condition

A software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.



### Test Result of RF Exposure Evaluation

Test Item : RF Exposure Evaluation Data  
Test Mode : Normal Operation

#### Antenna Gain

Antenna Gain : The maximum Gain measured in fully anechoic chamber is 1.8dBi linear scale.

#### Output Power into Antenna & RF Exposure Evaluation Distance

Channel	Channel Frequency (MHz)	Output Peak Power to Antenna (dBm)	Antenna Gain	Power Density at 20cm (mW/cm <sup>2</sup> )	LIMITS (mW/cm <sup>2</sup> )
CH1	2412.00	23.20	1.8	0.041565	1
CH6	2437.00	23.14	1.8	0.040995	1
CH11	2462.00	23.59	1.8	0.045471	1

Note :

1. For 802.11b mode (11Mbps).
2. The power density Pd (4th column) at a distance of 20cm calculated from the friis transmission formula is far below the limit of 1 mW/cm<sup>2</sup> . The EUT is classified as mobile product. So, RF exposure limit warning or SAR test are not required.

Channel	Channel Frequency (MHz)	Output Peak Power to Antenna (dBm)	Antenna Gain	Power Density at 20cm (mW/cm <sup>2</sup> )	LIMITS (mW/cm <sup>2</sup> )
CH1	2412.00	19.03	1.8	0.015912	1
CH6	2437.00	19.47	1.8	0.017609	1
CH11	2462.00	19.12	1.8	0.016245	1

Note :

1. For 802.11g mode (54Mbps).
2. The power density Pd (4th column) at a distance of 20cm calculated from the friis transmission formula is far below the limit of 1 mW/cm<sup>2</sup> . The EUT is classified as mobile product. So, RF exposure limit warning or SAR test are not required.