

FCC TEST REPORT REPORT NO.: RF920922R01 MODEL NO.: WLI2-PCI-G54 ACCORDING: FCC Guidelines for Human Exposure IEEE C95.1

APPLICANT: MELCO INC.

ADDRESS: 1704 4-Chome, Shimard Tempaku-ku, Nagoya City, Aichi Prefecture, Japan

- **ISSUED BY:** Advance Data Technology Corporation
- **LAB LOCATION:** 47 14th Lin, Chiapau Tsun, Linko, Taipei, Taiwan, R.O.C.





RF Exposure Measurement (Mobile Device)

1. Introduction

In this document, we try to prove the safety of radiation harmfulness to the human body for our product. The limit for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 is followed. The Gain of the antenna used in this product is measured in a Fully Anechoic Chamber (FAC) calibrated for antenna measurement in ADT, and also the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.

Although the Friis transmission formula is a far field assumption, the calculated result of that is an over-prediction for near field power density. We will take that as the worst case to specify the safety range.

2. Classification

The modular is installed in the laptop PC with antennas mounted around LCD panel, under normal use condition, is at least 20cm away from the body of the user. Warning statement for keeping 20cm separation distance and the prohibition of operating next to a person has been printed on the user's manual. So, this product is classified as the **Mobile Device**.

3. RF Exposure Limit

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

FCC ID: FDI-04600043-0



LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency	Electric Field	Magnetic Field	Power Density	Average Time			
Range	Strength (V/m)	Strength (A/m)	(mW/cm ²)	(minutes)			
(MHz)							
(A)Limits For Occupational / Control Exposures							
30-300	61.4	0.163	1.0	6			
300-1500			F/300	6			
1500-100,000			5	6			
(B)Limits For General Population / Uncontrolled Exposure							
30-300	27.5	0.073	0.2	30			
300-1500			F/1500	30			
1500-100,000			1.0	30			

F = Frequency in MHz

4. Friis Formula

Friis transmission formula : $Pd = (Pout^{*}G) / (4^{*}pi^{*}r^{2})$

where

Pd = power density in mW/cm^2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

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

Pd is the limit of MPE, 1 mW/cm². 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.

Ref. : David K. Cheng, *Field and Wave Electromagnetics*, Second Edition, Page 640, Eq. (11-133).

5. EUT Operating condition

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



6. Test Results

6.1 Antenna Gain

The maximum Gain measured in Fully Anechoic Chamber are 1.8dBi or 1.514 (numeric) .

6.2 Output Power Into Antenna & RF Exposure Distance :

Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density (mW/cm²)	Limit of Power Density (mW/cm ²)
1	2412	33.420	0.01	1
6	2437	34.672	0.01	1
11	2462	32.810	0.01	1

For Part 802.11b (CCK technique):

For Part 802.11g (OFDM technique):

Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density (mW/cm²)	Limit of Power Density (mW/cm ²)
1	2412	31.623	0.01	1
6	2437	32.509	0.01	1
11	2462	31.550	0.01	1