RF Exposure Evaluation Report

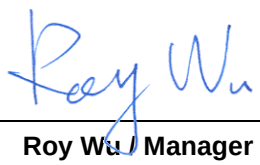
APPLICANT	**:**	**Getac Technology Corporation**
EQUIPMENT	**:**	**Notebook PC**
BRAND NAME	**:**	**Getac**
MODEL NAME	**:**	**S400**
FCC ID	**:**	**QLYS400**
FILING TYPE	**:**	**Certification**
STANDARD	**:**	**OET Bulletin 65 Supplement C (Edition 01-01)**

The product was integrated the WLAN Module (Brand Name: Intel / Model Name: 622ANHMW, FCC ID: PD9622ANH) during the test.

We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with FCC OET Bulletin 65 Supplement C (Edition 01-01).

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:



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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA081715-02B	Rev. 01	Initial issue of report	Sep. 16, 2010

1. RF Exposure Introduction

Requirements

Three different categories of transmitters are defined by the FCC in OET Bulletin 65. These categories are fixed installation, mobile and portable and are defined as follows:

▪ **Fixed installation:**

Fixed location means that the device, including its antenna, is physically secured at a permanent location and is not able to be easily moved to another location. Additionally, distance to humans form the antenna is maintained to at least 2 meters.

▪ **Mobile Devices:**

A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to be generally used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitters's radiating structures and the body of the user or nearby persons. Transmitters designed to be used by consumers or workers that can be easily re-located are considered mobile devices if they meet the 20 centimeter separation requirement. The FCC rules for evaluating mobile devices for RF compliance are found in 47 CFR 2.1091.

▪ **Portable Devices:**

A portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user. Portable device requirements are found in Section 2.1093 of the FCC's Rules (47 CFR 2.1093)

The FCC also categorizes the use of the device as based upon the user's awareness and ability to exercise control over his or her exposure. The two categories defined are Occupational/Controlled Exposure and General Population/Uncontrolled Exposure. These two categories are defined as follows:

▪ **Occupational/controlled Exposure:**

In general, occupational/controlled exposure limits are applicable to situation in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure. Awareness of the potential for RF exposure in a workplace or similar environment can be provided through specific training as part of a RF safety program. If appropriate, warning signs and labels can also be used to establish such awareness by providing prominent information on the risk of potential exposure and instructions on methods to minimize such exposure risks.

▪ **General Population/Uncontrolled Exposure:**

The general population / uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category and the general population/uncontrolled exposure limits apply to these devices.

2. Administration Data

2.1 Testing Laboratory

Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978

2.2 Applicant

Company Name	Getac Technology Corporation
Address	5F., Building A, No. 209, Sec. 1, Nangang Rd., Nangang Dist., Taipei City 11568, Taiwan, R.O.C.

2.3 Manufacturer

Company Name	GeTAC Technology(Kunshan)Co., LTD.
Address	No. 269, 2nd Road, Export Processing Zone, Changjiang South Road, Kunshan, Jiangsu, P.R.C.

3. General Information

3.1 Description of Device Under Test (DUT)

Product Feature & Specification	
DUT Type	Notebook PC
Brand Name	Getac
Model Name	S400
FCC ID	QLYS400
Tx Frequency	802.11b/g/n : 2400 MHz ~ 2483.5 MHz 802.11a/n : 5150 MHz ~ 5350 MHz; 5470 MHz ~ 5725 MHz; 5725 MHz ~ 5850 MHz
Rx Frequency	802.11b/g/n : 2400 MHz ~ 2483.5 MHz 802.11a/n : 5150 MHz ~ 5350 MHz; 5470 MHz ~ 5725 MHz; 5725 MHz ~ 5850 MHz
Antenna Type	PIFA Antenna
HW Version	R0B
SW Version	R005J
Type of Modulation	802.11b : DSSS 802.11a/g/n : OFDM
DUT Stage	Identical Prototype

Remark: The above DUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

4. RF Exposure Evaluation

4.1 Radio Frequency Radiation Exposure Evaluation

According to 1.1310 of the FCC rules, the power density limit for General Population/Uncontrolled Exposure is f/1500 mW/cm^2 for 300 MHz to 1500 MHz and 1.0 mW/cm^2 for 1500 MHz to 100000 MHz. As this is a mobile application the MPE shall be calculated at 20 cm to show compliance with the power density limit. The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna

For this device, the calculation is as follows:

Wireless LAN operated in IEEE 802.11b mode (Tx/Rx: 2400~2483.5MHz):

Channel Number	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated RF Exposure (mW/cm^2)	Limit (mW/cm^2)
1	2412	-3.80	0.42	16.02	39.99	0.003	1.00
6	2437	-3.80	0.42	16.14	41.11	0.003	1.00
11	2462	-3.80	0.42	15.96	39.45	0.003	1.00

Wireless LAN operated in IEEE 802.11g mode (Tx/Rx: 2400~2483.5MHz):

Channel Number	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated RF Exposure (mW/cm^2)	Limit (mW/cm^2)
1	2412	-3.80	0.42	14.69	29.44	0.002	1.00
6	2437	-3.80	0.42	16.11	40.83	0.003	1.00
11	2462	-3.80	0.42	13.97	24.95	0.002	1.00

Wireless LAN operated in IEEE 802.11n (BW 20MHz) mode (Tx/Rx: 2400~2483.5MHz):

Channel Number	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated RF Exposure (mW/cm^2)	Limit (mW/cm^2)
1	2412	-3.80	0.42	14.13	25.88	0.002	1.00
6	2437	-3.80	0.42	16.12	40.93	0.003	1.00
11	2462	-3.80	0.42	14.12	25.82	0.002	1.00

Wireless LAN operated in IEEE 802.11n (BW 40MHz) mode (Tx/Rx: 2400~2483.5MHz):

Channel Number	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated RF Exposure (mW/cm^2)	Limit (mW/cm^2)
3	2422	-3.80	0.42	11.74	14.93	0.001	1.00
6	2437	-3.80	0.42	15.97	39.54	0.003	1.00
9	2452	-3.80	0.42	11.67	14.69	0.001	1.00

Wireless LAN operated in IEEE 802.11a mode (Tx/Rx: 5150~5250MHz):

Channel Number	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated RF Exposure (mW/cm^2)	Limit (mW/cm^2)
36	5180	-4.00	0.40	15.84	38.37	0.003	1.00
48	5240	-4.00	0.40	15.60	36.31	0.003	1.00

Wireless LAN operated in IEEE 802.11n (BW 20MHz) mode (Tx/Rx: 5150~5250MHz):

Channel Number	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated RF Exposure (mW/cm^2)	Limit (mW/cm^2)
36	5180	-4.00	0.40	16.06	40.36	0.003	1.00
48	5240	-4.00	0.40	16.05	40.27	0.003	1.00

Wireless LAN operated in IEEE 802.11n (BW 40MHz) mode (Tx/Rx: 5150~5250MHz):

Channel Number	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated RF Exposure (mW/cm^2)	Limit (mW/cm^2)
38	5190	-4.00	0.40	16.11	40.83	0.003	1.00
46	5230	-4.00	0.40	15.89	38.82	0.003	1.00

Wireless LAN operated in IEEE 802.11a mode (Tx/Rx: 5250~5350MHz):

Channel Number	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated RF Exposure (mW/cm^2)	Limit (mW/cm^2)
52	5260	-4.00	0.40	15.82	38.19	0.003	1.00
64	5320	-4.00	0.40	15.93	39.17	0.003	1.00

Wireless LAN operated in IEEE 802.11n (BW 20MHz) mode (Tx/Rx: 5250~5350MHz):

Channel Number	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated RF Exposure (mW/cm^2)	Limit (mW/cm^2)
52	5260	-4.00	0.40	15.72	37.33	0.003	1.00
64	5320	-4.00	0.40	15.92	39.08	0.003	1.00

Wireless LAN operated in IEEE 802.11n (BW 40MHz) mode (Tx/Rx: 5250~5350MHz):

Channel Number	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated RF Exposure (mW/cm^2)	Limit (mW/cm^2)
54	5270	-4.00	0.40	15.72	37.33	0.003	1.00
62	5310	-4.00	0.40	15.95	39.36	0.003	1.00

Wireless LAN operated in IEEE 802.11a mode (Tx/Rx: 5470~5725MHz):

Channel Number	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated RF Exposure (mW/cm^2)	Limit (mW/cm^2)
100	5500	-4.00	0.40	16.08	40.55	0.003	1.00
120	5600	-4.00	0.40	15.96	39.45	0.003	1.00
140	5700	-4.00	0.40	15.61	36.39	0.003	1.00

Wireless LAN operated in IEEE 802.11n (BW 20MHz) mode (Tx/Rx: 5470~5725MHz):

Channel Number	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated RF Exposure (mW/cm^2)	Limit (mW/cm^2)
100	5500	-4.00	0.40	16.02	39.99	0.003	1.00
120	5600	-4.00	0.40	15.70	37.15	0.003	1.00
140	5700	-4.00	0.40	16.09	40.64	0.003	1.00

Wireless LAN operated in IEEE 802.11n (BW 40MHz) mode (Tx/Rx: 5470~5725MHz):

Channel Number	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated RF Exposure (mW/cm^2)	Limit (mW/cm^2)
102	5510	-4.00	0.40	16.17	41.40	0.003	1.00
118	5590	-4.00	0.40	16.01	39.90	0.003	1.00
134	5670	-4.00	0.40	16.02	39.99	0.003	1.00

Wireless LAN operated in IEEE 802.11a mode (Tx/Rx: 5745~5850MHz):

Channel Number	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated RF Exposure (mW/cm^2)	Limit (mW/cm^2)
149	5745	-4.00	0.40	15.28	33.73	0.003	1.00
157	5785	-4.00	0.40	16.08	40.55	0.003	1.00
165	5825	-4.00	0.40	16.28	42.46	0.003	1.00

Wireless LAN operated in IEEE 802.11n (BW 20MHz) mode (Tx/Rx: 5745~5850MHz):

Channel Number	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated RF Exposure (mW/cm^2)	Limit (mW/cm^2)
149	5745	-4.00	0.40	15.72	37.33	0.003	1.00
157	5785	-4.00	0.40	15.77	37.76	0.003	1.00
165	5825	-4.00	0.40	15.90	38.90	0.003	1.00

Wireless LAN operated in IEEE 802.11n (BW 40MHz) mode (Tx/Rx: 5745~5850MHz):

Channel Number	Frequency (MHz)	Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated RF Exposure (mW/cm^2)	Limit (mW/cm^2)
151	5755	-4.00	0.40	15.79	37.93	0.003	1.00
159	5795	-4.00	0.40	16.01	39.90	0.003	1.00

Based on the above calculation at 20 cm the Notebook PC is below the Power Density limit.