



A Test Lab Techno Corp.

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MPE Report



Test Report No.	: 0902FS13
Applicant	: Applied Wireless Identifications Group Inc.
Manufacturer	: Applied Wireless Identifications Group Inc.
Model Name	: RFID Handheld Terminal
Trade Mark	: AWID
Model Number	: HH-6600
FCC ID	: OGSHH6600
Dates of Test	: Feb. 12, 2009
Test Specification	: 47 CFR § 2.1091 47 CFR §1.1310
Location of Test Lab.	: Chang-an Lab.

1. The test operations have to be performed with cautious behavior, the test results are as attached.
2. The test results are under chamber environment of A Test Lab Techno Corp. A Test Lab Techno Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples.
3. The measurement report has to be written approval of A Test Lab Techno Corp. It may only be reproduced or published in full.


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1. Description of Equipment Under Test (EUT)

Applicant :

Applied Wireless Identifications Group Inc.

18300 Sutter Blvd, Morgan Hill, CA 95037 USA

Manufacturer :	Applied Wireless Identifications Group Inc.
Manufacturer Address :	18300 Sutter Blvd, Morgan Hill, CA 95037 USA
Product Name :	RFID Handheld Terminal
Trade Mark :	AWID
Model Name :	HH-6600
Frequency Range :	WiFi : 2412 - 2460 MHz Bluetooth : 2402 - 2480 MHz RFID : 902.75 - 927.25 MHz
Transmit Power (Conducted) :	WiFi : 19.61 dBm (Peak) Bluetooth : -2.268 dBm (Peak) RFID : 28.08 dBm (Peak)
Modulation Technique :	WiFi (BPSK / QPSK) Bluetooth (FHSK) RFID
Antenna Specification :	WiFi : 0.0 dBi Bluetooth : 2.5 dBi RFID : 1.0 dBi
Antenna Designation :	Small circular polarized patch antenna
Temperature Range :	-30 ~ +70°C

The above equipment was tested by Compliance Certification Services Inc. For compliance with the requirements set forth in 47 CFR § 2.1091 & 47 CFR § 1.1310. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties



2. Human Exposure Assessment

Due to the design and installation of this product, it is not possible to conduct SAR evaluation. This is because client either manufactures or supplies the antenna(s) that will be used in the installation of this product. Therefore, this product will be evaluated as a mobile device per 47 CFR §1.1310 titled "Radiofrequency radiation exposure limits", generally referred to as MPE limits.

In 47 CFR § 2.1091, paragraph (b) defines a mobile device as "a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 cm is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. " This product is intended to be installed into a vehicle such that the unit is physically secured at one location. In the installation guide supplied with the product,

Client has made the following statement: "IMPORTANT: To meet the FCC's RF Exposure Guidelines, the antenna should be installed so there is at least 20 cm of separation between the body of the user and nearby persons and the antenna". Based on the installation of the transceiver and the antenna, the transmitters radiating structure is more than 20 cm from the user. Thus, this product is a "mobile device" as defined in section § 2.1091 paragraph (b).

Exposure evaluation

Equation from page 18 of OET Bulletin 65, Edition 97-01

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

Where

S: power density

P: power input to the antenna

G: power gain of the antenna in the direction of interest relative to an isotropic radiator.

R: distance to the center of radiation of the antenna.



2.1 Test Result

EUT parameter	
Max output power in Watt (TP)	WiFi : 0.091 W
Peak Detect	Bluetooth : 0.001 W
	RFID : 0.643 W
Antenna gain (G)	WiFi : 0.0 dBi
	Bluetooth : 2.5 dBi
	RFID : 1.0 dBi
This EUT's all transmitters (WiFi&RFID&BT) can be transmit simultaneously.	

WiFi

Frequency (MHz)	Limit (mw)	Distance (cm) [R]	Power (dBm) [P]	ANT Gain (dBi) [G]	Power+Ant Gain (W) [TP]	Power Density [S]	Min. distance (cm)
2412	1.000	20	19.61	0	0.091	0.018195	20
2437	1.000	20	19.11	0	0.081	0.016216	20
2462	1.000	20	18.73	0	0.075	0.014858	20

Bluetooth

Frequency (MHz)	Limit (mw)	Distance (cm) [R]	Power (dBm) [P]	ANT Gain (dBi) [G]	Power+Ant Gain (W) [TP]	Power Density [S]	Min. distance (cm)
2402	1.000	20	-2.268	2.5	0.001	0.000210	20
2441	1.000	20	-3.776	2.5	0.001	0.000148	20
2480	1.000	20	-5.664	2.5	0.000	0.000096	20

RFID

Frequency (MHz)	Limit (mw)	Distance (cm) [R]	Power (dBm) [P]	ANT Gain (dBi) [G]	Power+Ant Gain (W)	Power Density [S]	Min. distance (cm)
902.75	0.602	20	28.08	1	0.809	0.161	20
914.75	0.610	20	27.88	1	0.773	0.154	20
927.25	0.618	20	27.64	1	0.731	0.146	20



2.2 SAR Estimate Description

- Hand SAR is required when the output power is greater than $1000 \times [f \text{ (GHz)}]^{-0.5} \text{ mW}$ when the device is designed with hand operating closer than 5 cm from the antenna during normal use.
- Body SAR is required when the output power is greater than $300 \times [f \text{ (GHz)}]^{-0.5} \text{ mW}$ when the device (handheld, hand-operated, wrist, feet and ankle worn devices) is designed closer than 5 cm to the body.

The EUT hand operating closer than 5 cm from the antenna during normal use

F(GHz)	K	Output Power Limit (mW)	Output Power Limit (dBm)	RF Interface	Work Frequency (MHz)	Output Power (dBm)	SAR RF exposure
0.927	1000	1038.628255	30.16460133	UHF RFID	902.75~927.25	28.08(PEAK)	Hand SAR is not require
2.46	1000	637.5767131	28.04532446	WIFI	2412~2460	19.61(PEAK)	Hand SAR is not require
2.48	1000	635.000635	28.0277416	BT	2402~2480	-2.268(PEAK)	Hand SAR is not require

The EUT operate closer than 5 cm to the body

F(GHz)	K	Output Power Limit (mW)	Output Power Limit (dBm)	RF Interface	Work Frequency (MHz)	Output Power (dBm)	SAR RF exposure
0.927	300	311.5884764	24.93581388	UHF RFID	902.75~927.25	20.99(AVG)	Body SAR is not require
2.46	300	191.2730139	22.81653701	WIFI	2412~2460	19.61(PEAK)	Body SAR is not require
2.48	300	190.5001905	22.79895414	BT	2402~2480	-2.268(PEAK)	Body SAR is not require





