

Mobile POS XPDA-S PCI

Technical Manual

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Version History

Version	Date	Description of Changes	Author
V0.92E	April 28, 2010	2 nd Draft	K Han
V1.0E	April 29, 2010	3 rd Draft	K Han
V1.1E	April 30, 2010	4 th Draft	K Han
V1.2E	August 19, 2010	Janus V2.0 Specification	K Han
V1.3E	July 13, 2011	Added CDMA Modem ports description	K Han
V2.0E	January 16, 2012	CPU type, RFID, Modem and Cradle specification have been changed	K Han

1 Overview

XPDA-S PCI is a secure all-in-one mobile computer that satisfies PCI PED security standard and EMV. Based on Windows CE.net 5.0, XPDA-S PCI has integrated printer, barcode scanner, and secure PIN-PAD with smart card reader and magnetic stripe reader. Complex business applications that need to collect data and perform real-time communication is easy and fast with XPDA-S PCI. In addition, PCI PED certified PIN PAD will allow you process credit card securely and effortlessly. As, printer, barcode scanner, GSM and PIN PADs are all integrated in to a single device, there is no need to purchase additional accessories or device to handle printing or payment.

2 Overall Features



PCI PED 2.0

3 *Device*

3.1 *Hardware Description*

3.1.1 *Platform*

Characteristics	XPDA-S PCI
CPU	Marvell Xscale 806Mhz PXA320
Memory Flash	512MB (1GB optional)
Memory RAM	256MB
External Memory	Micro SD(T-Flash) up to 32GB
USIP	Innova Card secure module



MAXIM secure chip provides a secure logic for XPDA-S PCI. It means that XPDA-S PCI can protect customer's precious information and data within XPDA-S PCI using MAXIM secure module.

3.1.2 *Operating System*

Operating System	WinCE.net 5.0 Professional
------------------	----------------------------

WinCE 5.0 is used and spread out all over the world. It is compatible with various applications and development languages.

3.1.3 Display

Characteristics	XPDA-S PCI
Type	TFT Transmissive color (QVGA)
Screen Size	3.5 inch(89 mm)
Display Area	53.28(W) X 71.04(H)
Number of Colors	262K(262,000 Colors)
Touch Screen	Analog Resistance Type
Resolution(W X H)	240 X 320
Viewing Direction	12 o'clock
Backlight	White LED



The XPDA-S PCI's Transmissive LCD can be used by a finger and a stylus pen as well. Also, Transmissive LCD is brighter than Transflective LCD under sunlight.

3.1.4 Keypad

Characteristics	XPDA-S PCI
Number of Keys	-12 Numeric Keys -3 Programmable keys(F1,F2 and F3) -TAB, ESC and Enter -Power -Backspace
Triggers	-1 programmable Trigger(set TAB as default) -2 Scanner Triggers(left and right)
Type	Plastic hard keys
Backlit	No
Braille bumps	Point on 5

The XPDA-S PCI numeric key pads are PIN Entry key pad for PIN when it needs to be encrypted.



3.1.5 Magnetic Card Reader

Characteristics	XPDA-S PCI
Reader Type	Manual
Tracks	ISO Track 1,2 and 3
Card format accepted	ISO7811
Read Direction	Bi-directional
Reading Method	F2F(FM)
Card Thickness	Plastic 0.76±0.08mm
Jitter Card	Less than 18%
Card Swiping Speed	20 to 120cm/sec



For more MSR information,

Track used	Track 1(ISO 1 IATA)	Track2(ISO2 ABA)	Track3 ISO3(MINTS)
Reading Density	210 BPI	75 BPI	210 BPI
Reading Capacity	79 Characters	40 Characters	107 Characters
Reading Bits	7-bit code	5-bit code	5-bit code

3.1.6 Printer

Characteristics	XPDA-S PCI
Type of Print	Thermal
Color	Black and white
Length of Print	58mm
Loading and Opening System	Easy loading and Easy opening system
Printing Speed	70 mm/sec
Printing Column	-English Alphabet/Number: 32 Column - Asian Character: 16 Column
Resolution	203dpi/8dots per mm
Maximum roll size	-Paper Width: 58mm -Max roll Diameter: 24mm -Max roll length: 6~7meter
Fonts	-English Characters -Chinese simplified
Character Size	-ASCII 12X24(as a default setting) -Chinese Simplified 24X24(as a default setting)
Dot Matrix Buffer	5000 dot lines -Keep printing about 200 lines of 24X24 Chinese characters once.
Barcodes	-1D barcode types will be supported soon
Images	YES(up to 384 dots)
Black Mark Detection	YES
Paper Detection	YES
Life Span	30Km

Every basic font can be programmed to double the size in height and width, underline, margined in the center, right and left, and bold at the same time. For more information, please refer to the API document.



- Pull up the cover to open the lid of printer.
- Load the paper roll with correct direction.

3.1.7 Smart Card Reader

Characteristics	XPDA-S PCI
ISO Standard	ISO 7816 EMV level 1 certified
Contact Principle	Friction Technology
Switch	Blade contact, Normal open
Durability	Up to 100,000 inserted Rate of 600 inserts per hour
Material	-Data Contact: Copper alloy -Insulation: Thermoplastic, UL94V-0
Card Insertion Force	15N Maximum
Card Withdraw Force	1n Minimum
Normal Contact Force	0.2N ~ 0.6N
Contact Retention Force	0.3Kg Minimum

The smart card reader is located on the right side of XPDA-S PCI as shown below. The card needs to be inserted with the card facing up.



3.1.8 USIM

Characteristics	XPDA-S PCI
Number of Slot	1



SIM Slot is located under Battery pack. The SIM slot is Unlocked when SIM Slot cover is shifted to the left.

3.1.9 SAMS

Characteristics	XPDA-S PCI
Number of Slot	2



SAM Slots are located under Battery pack. The SAM1 slot is unlocked when SAM1 Slot cover is shifted to the left. Reversely, The SAM2 slot is unlocked when SAM2 Slot cover is shifted to the right.

3.1.10 Expansion Slot

Characteristics	XPDA-S PCI
Micro SD (T-Flash)	Up to 32GB



Micro SD slot is located under the battery pack. First, Open slot first then insert a Micro SD in the slot and vice versa for locking the slot.


3.1.11 Audio

Characteristics	XPDA-S PCI
Type	Mono Audio speaker
Audio-in	Built in microphone
Audio-out	Earpiece



Audio is located on the back side of XPDA-S PCI

3.1.12 Battery

Characteristics	XPDA-S PCI
Type of Battery	7.4V 1900mAh Li-Ion Rechargeable battery
Package Type	Replaceable battery hard pack
Nominal Capacity	1,900mAh
Minimum Capacity	1850mAh
Nominal Voltage	7.4V
Cells	2 Cells of 3.7V
Standard Charge	Constant Current(CC) and Constant Voltage(CV)
MAX Charge Current	2775mA
Standard Discharge	Constant Current(CC) -Current: 370mA -End Voltage: 6.0V
Weight	81g
Operating Temperature	-Charge: 0 to 45°C -Discharge: -20 to 60°C
Storage Temperature	-1month: -20 to 60°C -3month: -20 to 45°C -1 year: -20 to 20°C
Backup Battery	YES, Li-polymer 190mA
Lifespan	Depending on user usage
Picture	

Charging

Use direct port located on the left of the device. Charging indicator is located in the front of the device.



Charging Port

-Charging (Red)



-Fully Charged (Green)



Push the lock upward to release the battery.

3.1.13 Barcode Scanner(Optional)

Characteristics	XPDA-S PCI
Type	Laser type barcode scan engine Or 2D CMOS Imager
Type of Barcode	-General 1D barcodes can be read (Laser Option) -General 1D and 2D barcodes can be read (COMS Imager Option)



Barcode scanner is located at the top of XPDA-S PCI. (Same as the camera location)

Also, there are two scanner triggers on the left and right side.

3.1.14 GPS(Optional)

Characteristics	XPDA-S PCI
Module	MTK3318F
Channels	32 channels



GPS is located on the back side of XPDA-S PCI. GPS is foldable. Unfold the GPS in use for GPS connectivity. GPS maps are not provided.

3.2 General Description

3.2.1 Dimension

Characteristics	XPDA-S PCI
A	75mm
B	205mm
C (if GPS featured)	47mm
D	31mm



3.2.2 Weight

Characteristics	XPDA-S PCI
Weight	500g
Including Battery Pack and Printer roll	560g

3.2.3 Operating Temperature

Characteristics	XPDA-S PCI
Operating Temperature	-5°C ~ 40°C
Storage Temperature	-20°C ~ 60°C
Operating Humidity	90% RH

4 **Communication**

4.1 **Modem**

Characteristics	XPDA-S PCI
Frequency	WCDMA Dual band 850/1900Mhz GSM/GPRS/EDGE 850/900/1800/1900Mhz
Data Transfer	GSM CS: UL 9.6kbps/DL 9.6kbps GPRS/EDGE: Multi-slot Class 12, Class B WCDMA CS: UL 64kbps/DL 64kbps WCDMA PS: UL 384kbps/DL 384kbps HSDPA: DL 3.6Mbps

USB Driver is supported. Please see the table below.

Port	Type	Speed	Functions
COM 1	Serial	Up to 115200bps	Serial Communication
COM 8	USB	Depends on the network provider	AT only
COM 9	USB	Depends on the network provider	Data Communication
COM 10 (invisible)	USB	Depends on the network provider	Diagnostics

* Some of network providers disconnect the data connection by force if there is no packet transmission between the device and the provider for 30 minutes.

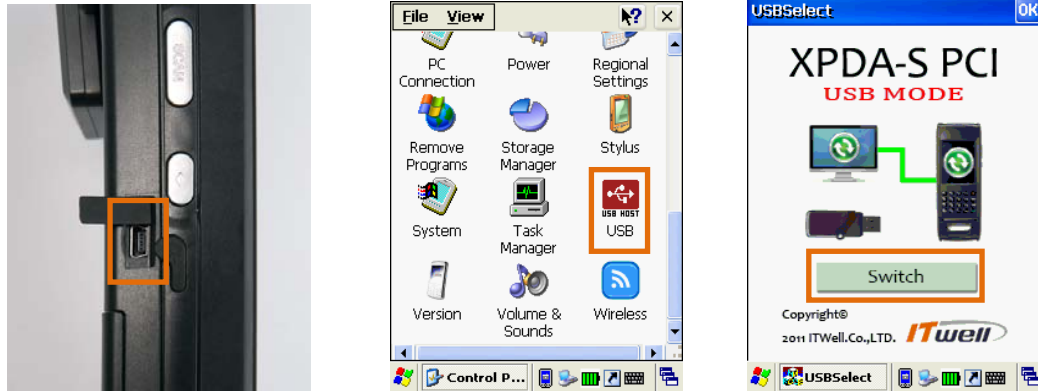
* COM 1 can be used with both data and voice. However, data and voice can't be used concurrently.

Ex) if there is an incoming call during data transmission, the data transmission will be held during the call.

4.2 USB

Characteristics	XPDA-S PCI
USB Host & Client	Supported (Switching available by software)

Host and Client mode can be switched by software placed in the control panel.



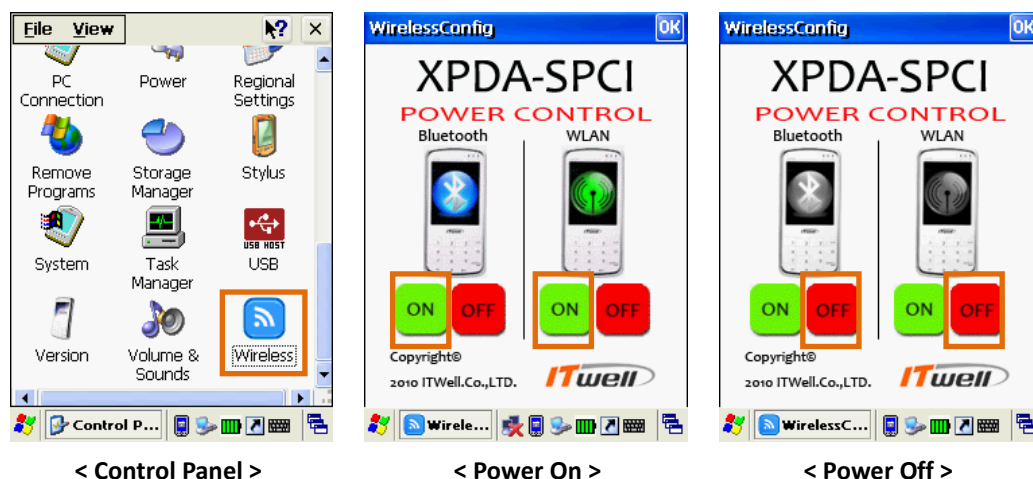
4.3 WiFi

Characteristics	XPDA-S PCI
Standard	IEEE WiFi 802.11 b/g/n
Radio link encryption	WEP, TKIP, AES
Security type	WEP, WPA, WPA2
Band	2.4Ghz

4.4 Bluetooth

Characteristics	XPDA-S PCI
Standard compliance	Bluetooth V2.1+EDR Class 2
Bluetooth Manager	Adeneo licensed manager provided

WiFi and Bluetooth Power control program is supported on the control panel



4.5 RFID



Landing zone of UM-100F

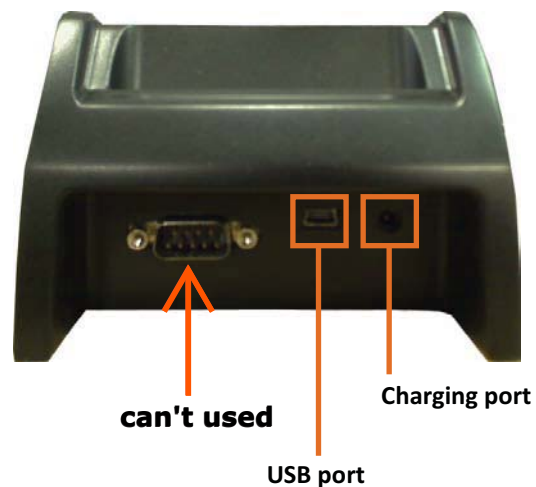
Characteristics	XPDA-S
Frequency	13.56MHz
Cards Accepted	Mastercard PayPass Visa PayWave 14443 A/B type Near Field Communication supports
Landing Zone	ITWell Contactless reader named UM-100F is attached on the back of XPDA-S PCI
Certification	EMV Contactless L1 approved Mastercard PayPass L2 approved Visa PayWave L2 approved Mastercard TQM approved

5 Accessories

5.1 Optional Accessories

5.1.1 Cradle

Characteristics	XPDA-S PCI
USB Connector	Mini type B USB port
Charging Slot	1 Extra battery Charging slot at the bottom
AC Power	10V, 3A input
Charging Indicators	Device and Extra battery
Maximum Charging Time	5 Hours
Dimension	180mm X 103mm X 73mm (L X W X H)



5.1.2 AC Power Adapter

Characteristics	XPDA-S PCI
Input Voltage	100 to 250V AC -10% +10%
Output Voltage	10V 3.0A
Operating Temperature	0 to 40°C
Storage Temperature	-30 to 85°C
Weight	7 ounces, 198g
Dimension	3.74 X 2.13 X 1.26 inch (L X W X H) 95 X 54 X 32 mm (L X W X H)
Cord Length	1.8m + 1.8m
Safety Approval	UL60950-1 EN60950-1 TUV/IEC EN55022/55024/61000 EMC K60950-1





5.1.3 Battery Pack



Please refer to Section 3.1.12 for more information.

5.2 Included Accessories

5.2.1 Others

Characteristics	XPDA-S PCI
Stylus	Stylus pen for touching the screen. 
Paper Roll	Thermal Printer roll
USB cable	USB cable for ActiveSync 
CD	CD includes applications for users

6 Support

6.1 SDK and APIs

We are supporting VPOS312DLL.dll for USIP control. Also, we provide XPDANET.dll for device control. Printer, MSR and Smartcard are controlled by USIP and VPOS312DLL.dll.

Various sample source codes will be provided to the customers in C# and C++.

6.2 Testers

FunctionTester.exe, a testing program for the XPDA-S PCI shows you how to operate the XPDA-S PCI. It contains various testing sections for Keypad, Scanner, Printer, WiFi, Speaker, Modem, MSR and Smart Card. Furthermore, IO control program will be supported and provided in eVC++.

6.3 Maintenance

Characteristics	ITWell
Technical Support	Hot-line Support
Sales Support	Hot-line Support

6.4 Quick Starting



Step 1

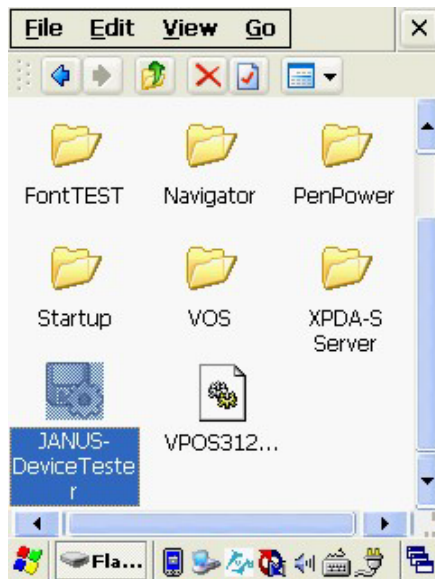
There is a backup battery switch on the back of the XPDA-S PCI. To turn the backup battery on, push the switch right aside with the stylus pen.

Then, install the main battery pack until you hear the lock sound.



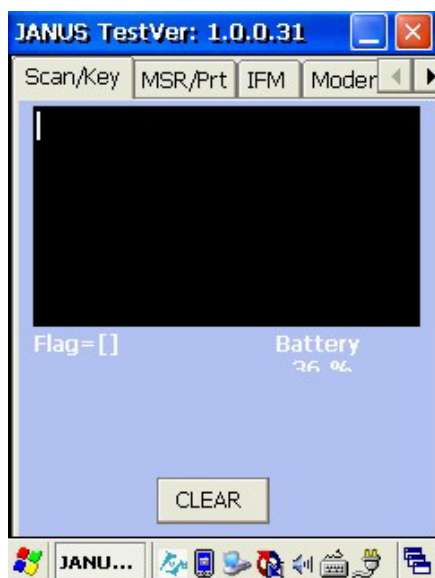
Step 2

Press the reset hole on the right side of the device to boot the XPDA-S PCI for a second.

**Step 3**

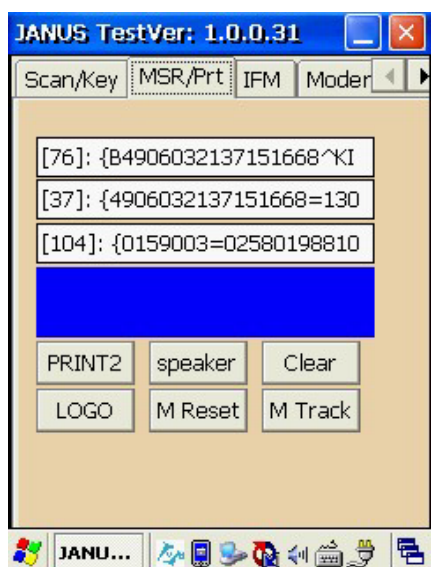
After the startup procedure is done, Double click the Flash disk icon to go into the Flash Disk.

Then, press JANUS-DeviceTester.exe to run the test application.

**Step 4**

1st Tab – Scan/Key tab

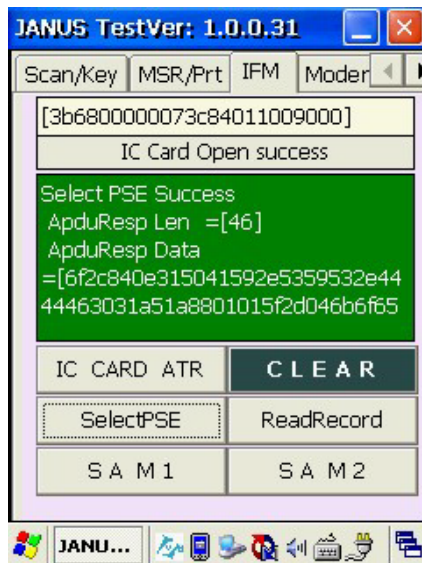
Press any buttons on the keypad to start testing. You can also see the battery level on the right bottom side of the black square blank.

**Step 5**

2nd Tab – MSR/Printer tab

By swiping the test card, you can see the data of the card. In addition you can print the data by pressing the "Printer" button.

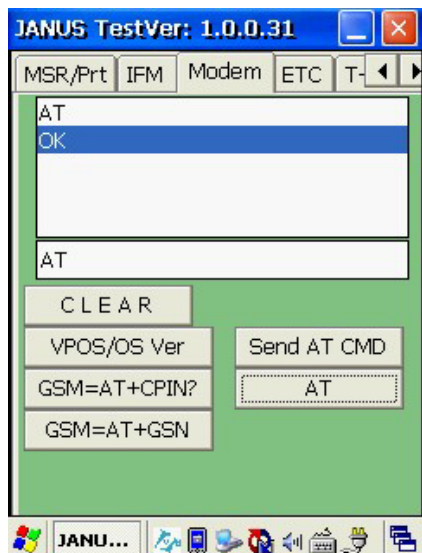
***Bi-Directional Magnetic Stripe Reader is located on the top of the device.**

**Step 6****3rd Tab – IFM (Interface Module)**

Insert the Test card into Smart card reader.

Then, Press “IC Card ATR” button, “Select PSE” button and press “Read Record” button to read the data from the card.

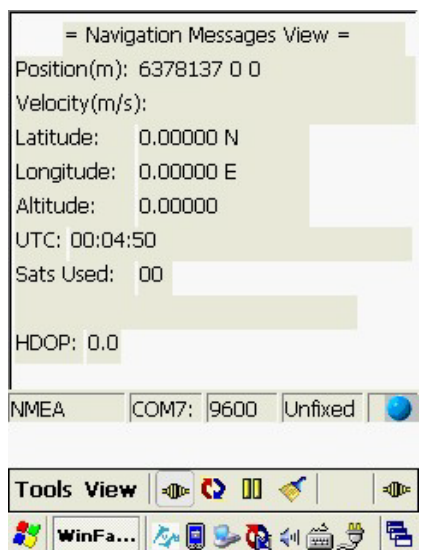
***Smart Card Reader is located on the right side of the device.**

**Step 7****4th Tab – Modem (EDGE)**

Press AT button to test AT Command “AT”.

For other AT command Testing, please input an AT command you would like to test then press “Send AT CMD button”

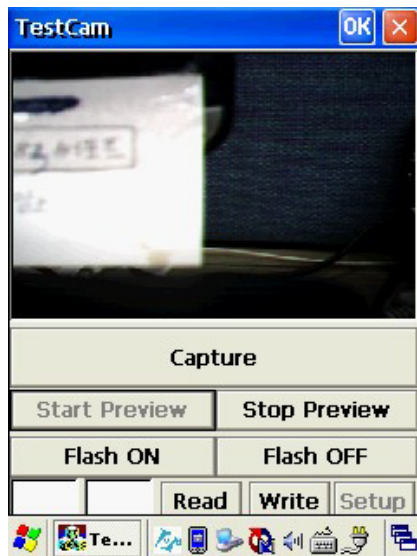
Also, you can get WinCE OS version through pressing “VPOS/OS Ver” button.

**Step 8****5th Tab – GPS**

Exit Janus-Tester (press X button on the top-right side of the application.)

Go into Navigator folder and Run Navigator.exe
Then, press connect button which is right by “View”

You will see GPS data.

**Step 9**

6th Tab – Camera

Exit Navigator (press Tools menu and exit)

Go into Camera folder and Run Camera.exe
Press Start Preview to see preview. Also, you can turn on the Flash by pressing the “Flash On” button.

Exit the application.

**Step 10**

Press and hold the reset button for 5 seconds to turn off the XPDA-S PCI completely.

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FCC NOTE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

FCC RF Exposure Compliance:

This device is approved as a mobile device. This device should be installed and operated with a minimum distance of 20 cm between the antenna and all persons. This device shall not be held to the face.