GNSS Receiver - R62
User Manual

Shanghai Allynav Navigation Technology Co., Ltd.

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Preface

information about the hardware features, performance indicators and usage of the Adaptive Navigation R62 receiver.

Target audience

This User Manual is intended for technicians who have a certain understanding of the Android system and G NSS receivers.

Document structure

This User Manual includes the following chapters:

1 Product Overview: Overview of product functions and features

2 Technical Features: Overview of receiver technical features

3 Product appearance: Provide appearance model and size

4 Technical parameters: Provide technical indicators related to the equipment

5 Instructions for use: Briefly introduce how to use the device

Table of contents

1 Product Overview

The R62 GNSS receiver is an Android platform high-performance receiver designed for unmanned agricultural machinery solutions. It has built-in high-precision dual-antenna positioning and directional board, attitude sensor, digital radio module, 4G, etc. The main control chip is an octa-core processor with a maximum frequency of 2.0GHz , pre-installed with unmanned control intelligent software, and the Android platform facilitates secondary development for customers to meet the various needs of different customers.

The high-precision positioning and orientation functions meet many application scenarios such as precision agriculture, digital engineering, intelligent driving, and unmanned driving. The IP67 protection level of the whole machine can adapt to harsh working environments.

2 Technical Features

a) Adopting BDS/GPS/GLONASS/Galileo/QZSS full-system full-frequency high-precision RTK positioning module, it can ensure positioning accuracy in a variety of complex environments;

b) Compatible with a variety of high-precision positioning and orientation boards, and can realize single GNSS solution;

c) Built-in digital radio communication module, supports receiving TRIMATLK, TRIMMARK3, TRANSEOT, joint adaptation protocol, CSS protocol, etc.

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d) Wide voltage power supply, voltage range 12V DC, with positive and negative reverse polarity protection;

e) Android system platform supports remote diagnosis and remote settings, which is convenient for users to perform maintenance operations on the system remotely and reduce user maintenance costs;

f) Supports multiple screen projection methods (network remote projection, USB projection and W IFI projection), and operation and debugging are visualized, convenient and faster;

g) Built-in high-precision gyroscope to achieve high-precision attitude measurement , and the accuracy can be guaranteed in all terrains ;

3. Product Appearance

3.1 Product Appearance

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Figure 1 Schematic diagram of R62

3.2 Product size

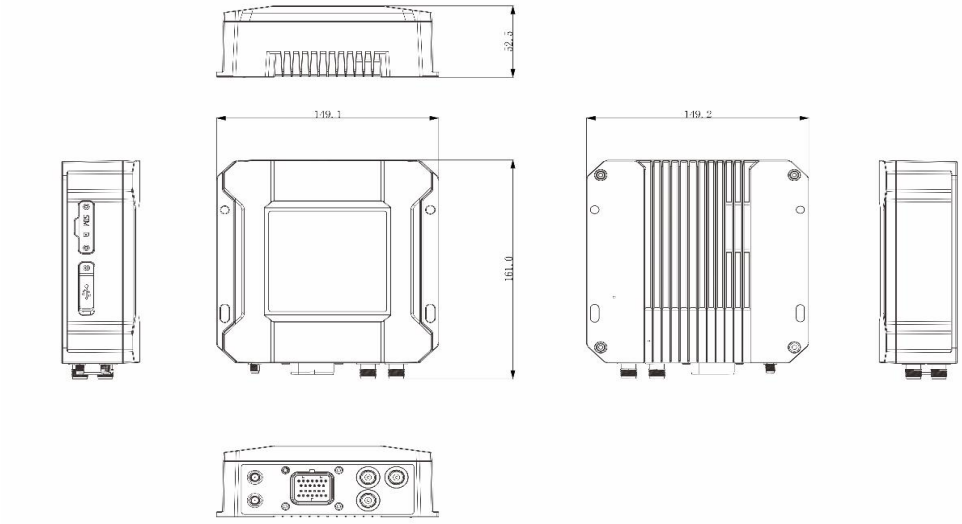

Figure 2 R62 Dimensions

3.3 Product components

Serial number	Part Name	color	quantity	model	Remark

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1	Host	black	1	R 62	
2	Product Tags	/	1	/	Mark the SN number, product model, etc.
3	Indicator Lights	/	3	/	
4	Mounting holes	/	4	/	Adapt to M5 screws
5	SIM card slot	/	1	Standard SIM	
6	USB socket	/	1	USB 2.0	
7	T NC hole	/	3		G NSS/RADIO
8	S MA hole	/	2		4G /WIFI

3.4 Connectors

3.4.1 Appearance of connector

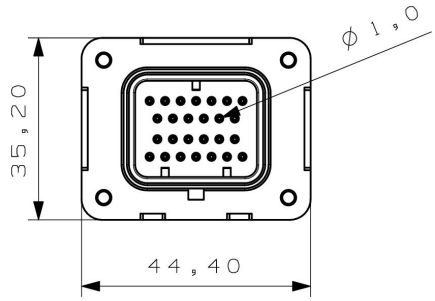

Figure 3 Schematic diagram of connector appearance

3.4.2 Connector Definition

Signal Definition	Pin Definition	Remark
B +	1	Power positive
B -	2	Negative power supply
ACC	3	
CAN_1-H	4	
CAN_1-L	5	
12V-OUTPUT	6	
CAMERA-CVBS_3	7	
GND	8	Signal Ground

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RS485-A	9
RS485-B	1 0
CAN_2-H	1 1
CAN_2-L	1 2
CAMERA-CVBS_2	1 3
RS232_1-TX	1 4
/	1 5
CAMERA-CVBS_1	1 6
RS232_2-RX	1 7
/	1 8
/	1 9
RS232_1-RX	2 0
/	twenty one
CAMERA-CVBS_0	twenty two
CAMERA-12V	twenty three
RS232_2-TX	twenty four
RS232_2-RXCAMERA	2 5
RS232_2-TXCAMERA	2 6

3.5 Definition of indicator lights

Serial number	name	color	Indicator light identification	Status Definition
1	POW	red	Power supply status	Off: No power supply Steady on: Power supply is normal
2	S A	red	RTK Status	Always off: Not fixed Steady on: Fixed solution
3	L INK	red	Software Status	Support software customization

4 Technical parameters

Project Name	illustrate	
System Parameters	system	Android 1 0
	CPU	M T8768

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	Memory	2GB+32GB (maximum support 6GB +128GB)
power supply	Operating voltage	12V with reverse voltage and overvoltage protection
	Working current	＜1A（12V DC） Reference value: 0.5 A (12V DC)
communication	Network frequency band	LTE:B2/B4/B5/B12/B41
	BT	BT5.0 backward compatible, supports BLE
	WIFI	2.4G dual-band supports 802.11a/b/g/n/ac
Satellite positioning	aisle	1408 channels, based on NebulasIV
	Signal	BDS B1I,B2I,B3I,B1C*,B2b* GPS L1C/A,L2C,L2P(Y),L5 GLONASS G1,G2 Galileo E1,E5a,E5b,E6* QZSS L1C/A,L2C,L5
	Cold Start	<3 0 s
	initialization	＜5s（Typical value）
	Recapture	< 1s
	Data update frequency	1 ~20 Hz
Accuracy index	Single point positioning	Plane: 1.5m Elevation: 2.5m
	RTK positioning accuracy	Plane: ±(8+1.0×10 $^{-6}$ ×D) mm [Note 1] Elevation: ± (15 + 1.0 × 10 $^{-6}$ × D) mm
	D GPS (RMS)	Plane: 0.4 m Elevation: 0.8m
	P PP(RMS)	Flat surface: 5 cm Elevation : 10cm
	Time accuracy (RMS)	20 ns
	Speed accuracy	0.03m/s
	I MU and G NSS fusion roll/pitch accuracy	0.4°
	I MU and G NSS fusion	0.5°

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	heading accuracy	
	Angular velocity measurement range	± 500 °/s
	Acceleration range	± 6 g
Physical parameters	Protection level	I P67
	Antenna interface	G NSS directional antenna interface* 1 RADIO antenna interface * 1
	Internal antenna	G NSS , WIFI/BT , 4G
	Physical Interface	A MP-26Pin*1 USB2.0*1
	Shell size	1 81.4mm × 181.1mm × 70.4mm
	Operating temperature	-20 ℃ ～ + 60 ℃
	Storage temperature	-40 ℃ ～+85℃

5 Instructions

5.1 Desktop Screen Mirroring

Method 1: Network screen projection

Device: R 62+ Android phone

Software: R DP+RDPService

How to use: Install R DPS er vice on the R 62 end and switch to the background after software authorization. Use an Android phone to install R DP software and project the screen to the R 62 system desktop through network transmission for remote operation.

Note: You need to install a 4G antenna, otherwise the network signal will be poor and the speed will be slow;

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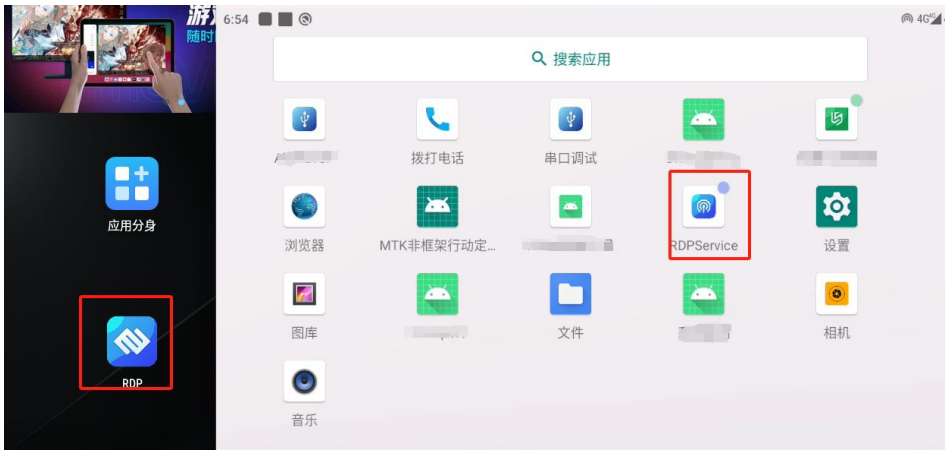

Method 2: W IFI screen projection

Device: R 62+ Android phone

Software: SinkControl (need to open WIFI and positioning function)

How to use: Power on the R 62 receiver normally, use an Android phone to install the Sink Control software, turn on the phone's WIFI and positioning switches, enter the software refresh, find the column corresponding to the receiver's SN number and click it, and the R 62 system desktop will be loaded ;

Note: You need to install a WiFi antenna , otherwise the WiFi signal will be weak and the screen projection will not be smooth;

Method 3: PC screen projection

Equipment: R 62 + Windows computer, USB-A to A port cable

Software: scrcpy

crcpy software package on the computer , connect the computer to the R62 receiver using a cable , and when the computer recognizes the storage disk of the receiver, click the s crcpy software to enter the R 62 system desktop;

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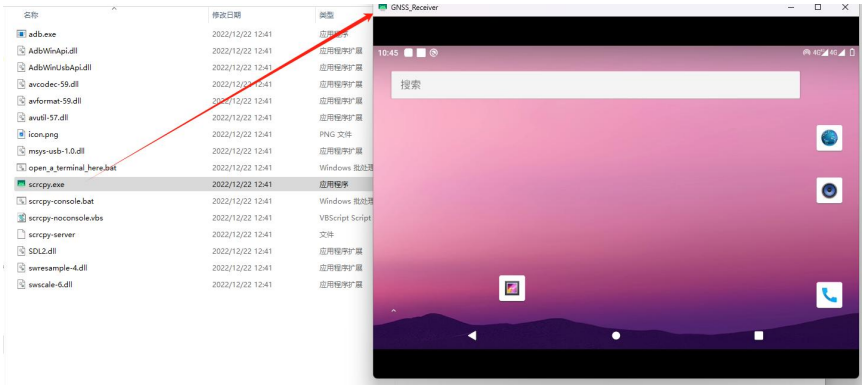

5.2 Software Installation

Method 1: USB flash drive

Copy the software to be installed to a USB flash drive, insert it into the R62 receiver, and install it via wireless or network projection.

Method 2: Computer copy

R62 receiver to the computer via a USB -A to A port cable . The computer will automatically read the receiver's memory drive letter and copy the software package to be installed to the drive letter. You can directly use the s crcpy software to cast the screen on the computer for installation.

Method 3: Browser link

You can package the software package to generate an online download link, enter the R 62 receiver desktop and find the browser to download and install (pay attention to whether the SIM card is a directional card and whether the link not in the whitelist is available);

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5.3 Serial port node

To view serial port data from inside the receiver, you need to use serial port debugging software. The node description is as follows:

t ty SWKA0 → GNSS module (baud rate 1 15200)

t ty SWKA1 → External interface RS232-1

t ty SWKA2 → External interface RS232-2

t ty SWKA3 → IMU module (baud rate 1 15200)

t ty SWKB0 → Radio module (baud rate 3 8400)

t ty SWKB1 →Not used yet

t ty SWKB2 → External interface RS485

To view serial port data from the serial port software on the computer, you need to start the forwarding software inside the receiver before you can see the data from the serial port on the computer;

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First, select which serial port data you want to view and which external interface you want to transfer from. After selecting, click the punch button of the corresponding serial port. Once the external serial port is connected to the computer, you can read the data.

5.4 System firmware upgrade

5.4.1 Wired Upgrade

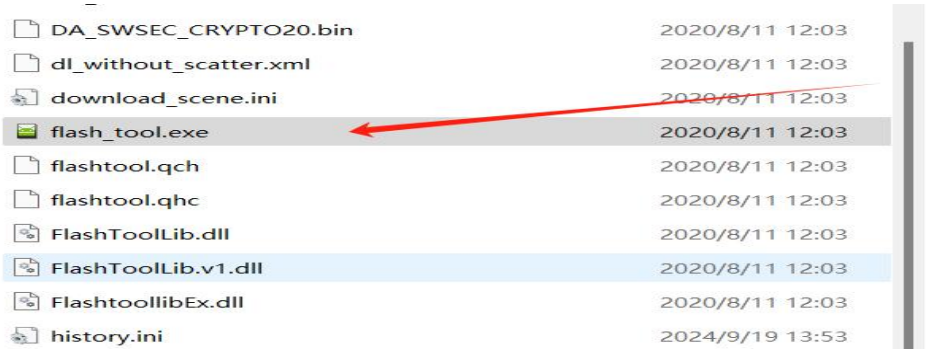
Hardware: PC + R62 receiver + USB-A to A cable

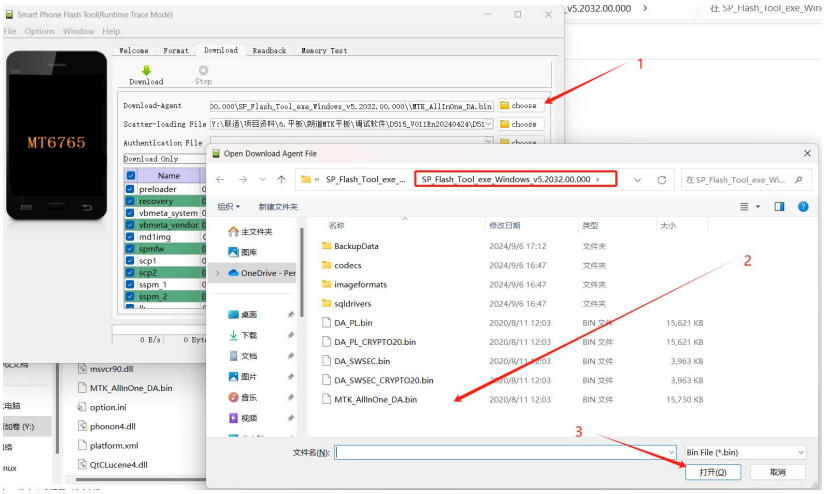
Software: SP_F la sh_Tool_exe_Windows software + system upgrade firmware package

Steps:

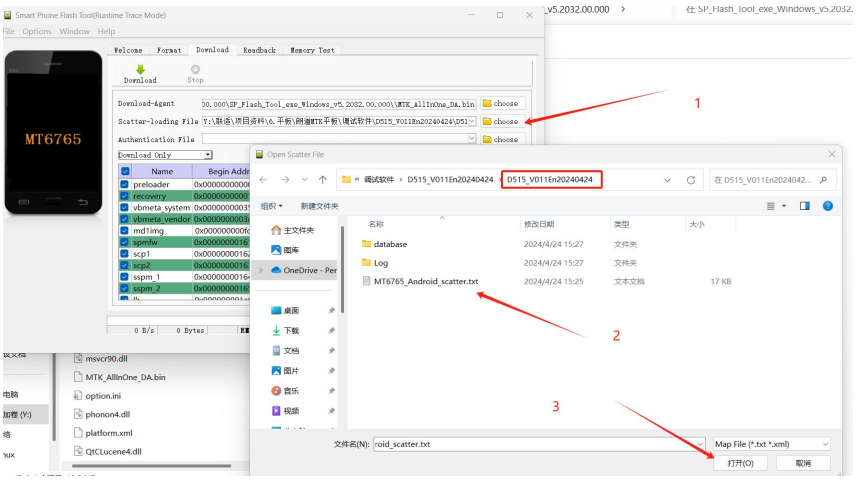
2. Copy the software and system firmware package to the computer, and connect the receiver to the computer using an adapter cable after the receiver is powered by 12V .
3. To upgrade the software, you need to select the corresponding file, as follows:

a) Open the software and select the bin file ;





b) Select the system software package that needs to be flashed;



c) The download mode needs to select Firmware Upgrade. Note: Selecting for mat ALL+Download and Download Only will clear the basic information;

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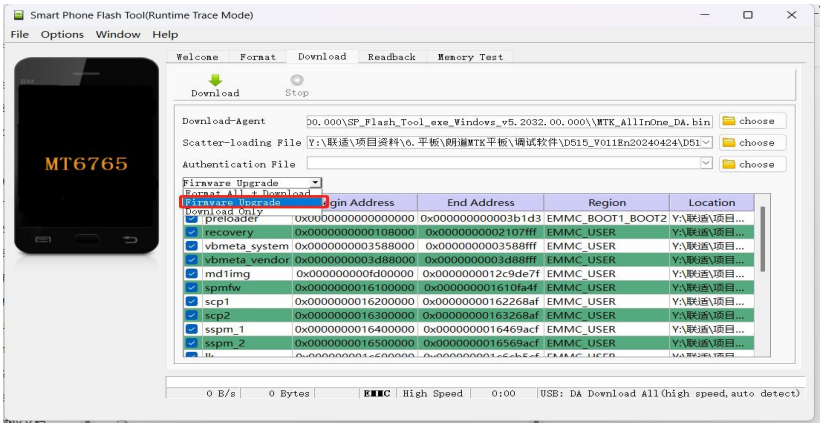
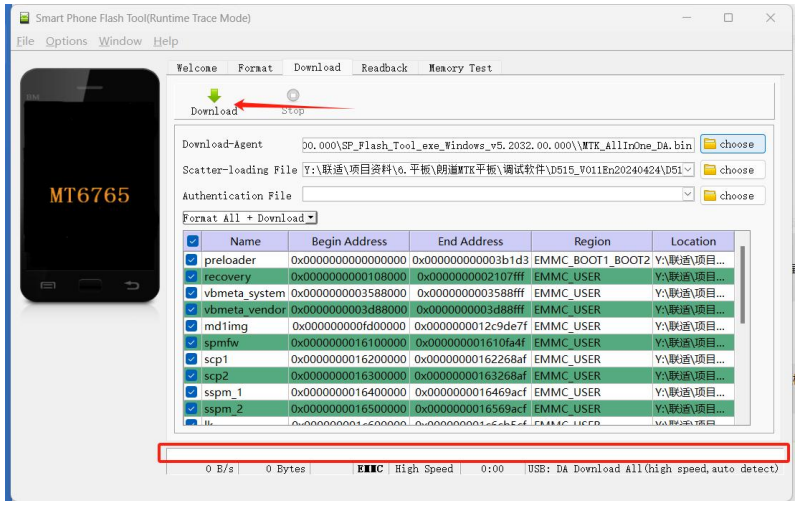


d) clicking Download , the receiver's 12V power supply needs to be disconnected and then powered on (USB does not need to be disconnected). If the progress bar starts to move, it means the power off is effective and the system firmware upgrade has begun;



can try installing the Driver.exe driver or moving the software to the desktop for use.

5.4.2 OTA Upgrade

Upgrade method: full package upgrade, differential package upgrade (special versions are required for different versions)

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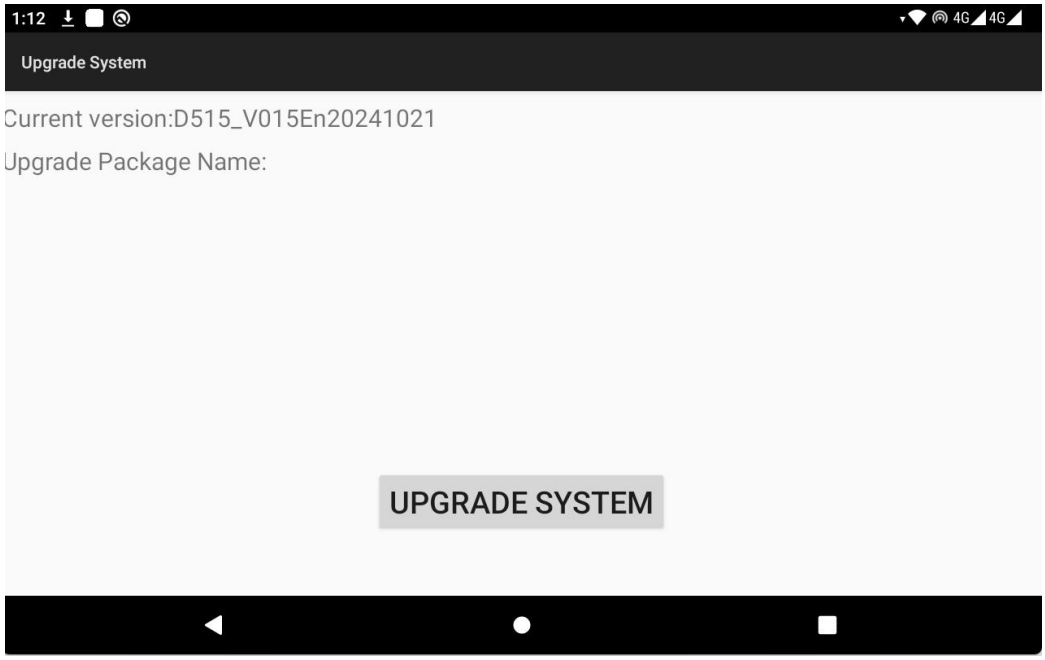
Steps:

a) the OTA firmware upgrade package to the receiver's internal storage, and use the screen projection to enter the receiver's desktop to perform the upgrade.

b) You need to create a new folder "O ta " in the root directory and move the firmware package to this folder;

c) System Settings → About Tablet → OTA Upgrade, click Upgrade after detecting the firmware package;



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FCC compliance statement:
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.

Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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 or more 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 RF Radiation Exposure Statement
To comply with FCC RF exposure compliance requirements, this grant is applicable to only Mobile Configurations. The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.