

TRANSPARENT TECHNOLOGIES



**R2 Utility Mobile Transceiver
*Operations Manual***

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Version

R2 Version RevGc

November 2007



R2

Utility
Mobile
Transceiver

*Operations
Manual*

OVERVIEW 1

INSTALLATION & CABLING 2

ANTENNA 3

OPERATION 4

APPENDIX 5



OVERVIEW

R2 *Utility Radio Transmitter*

The R2 Utility Mobile Transceiver is a compact, powerful transceiver used within the G2 AMR System.

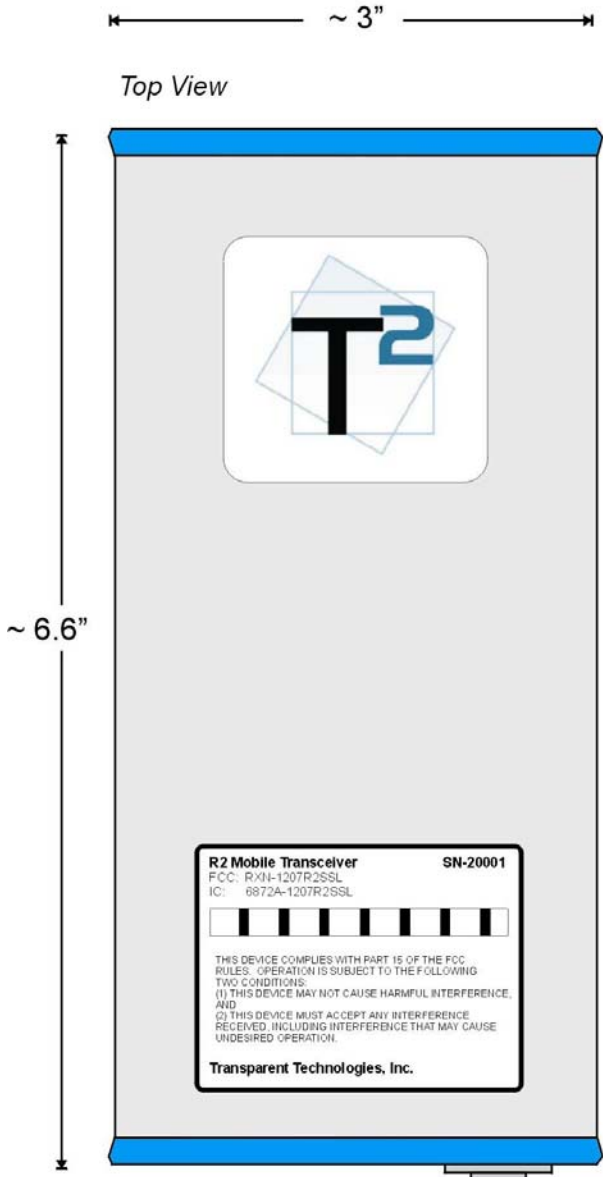
The R2 unit provides the ability for high-performance meter reading of the M2 endpoint radios.

The R2 unit also provides the two-way capability for remote mobile configuration and datalogging of the M2 endpoint radios.



Basic Specifications

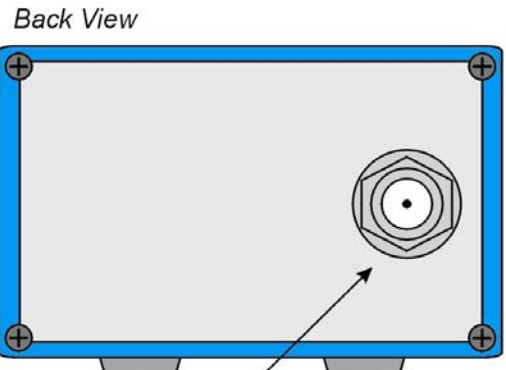
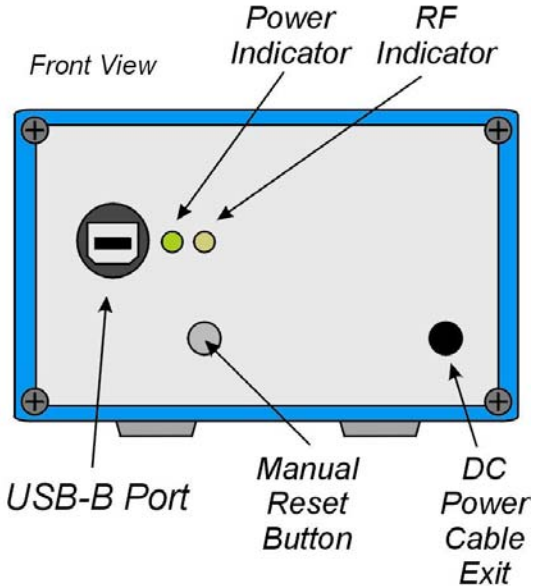
Transmission:	Spread Spectrum	Housing:	Anodized Aluminum
Regulatory:	FCC 15.247	Interface:	USB 2.0 port
Temperature:	-40°F to 158°F (-40°C to +70°C)	Power:	Std Vehicle 12Vdc
Submersion:	Splash-proof	Antenna:	Omni-directional Magnetic-mount



R2 Mobile Transceiver SN-20001
FCC: R31-1207R2SSL
IC: 6872A-1207R2SSL

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 UNDESIRE OPERATION.

Transparent Technologies, Inc.





INSTALLATION & CABLING

Installation

R2 Installation

The R2 is designed to be temporarily or permanently mounted within a utility vehicle for the meter reading and customer service functions.

The unit is small (roughly 6"x3") and can be installed easily in a utility vehicle.

Recommended placement for the R2 is in the vehicle console or on protected location on floorboard.

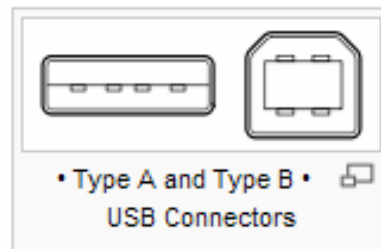
Note: Avoid installing the R2 unit on the dashboard or other position of direct sunlight. Excessive heat from direct sunlight can cause decreased performance.

Power Cable

The R2 unit will have connection for the vehicle power supply. This connection is a DC power plug that is designed for a vehicle lighter outlet or DC outlet. The power cable is fused with a 1A slow-blow fuse. The cable is coiled allowing for extension up to 3 feet.

USB Cable to Laptop

The R2 connects to the G2 laptop via a standard USB cable (type A connector at the laptop, type B at the R2).



The laptop will require the correct USB serial driver installed before operation. Check with T2 Customer Service for assistance.

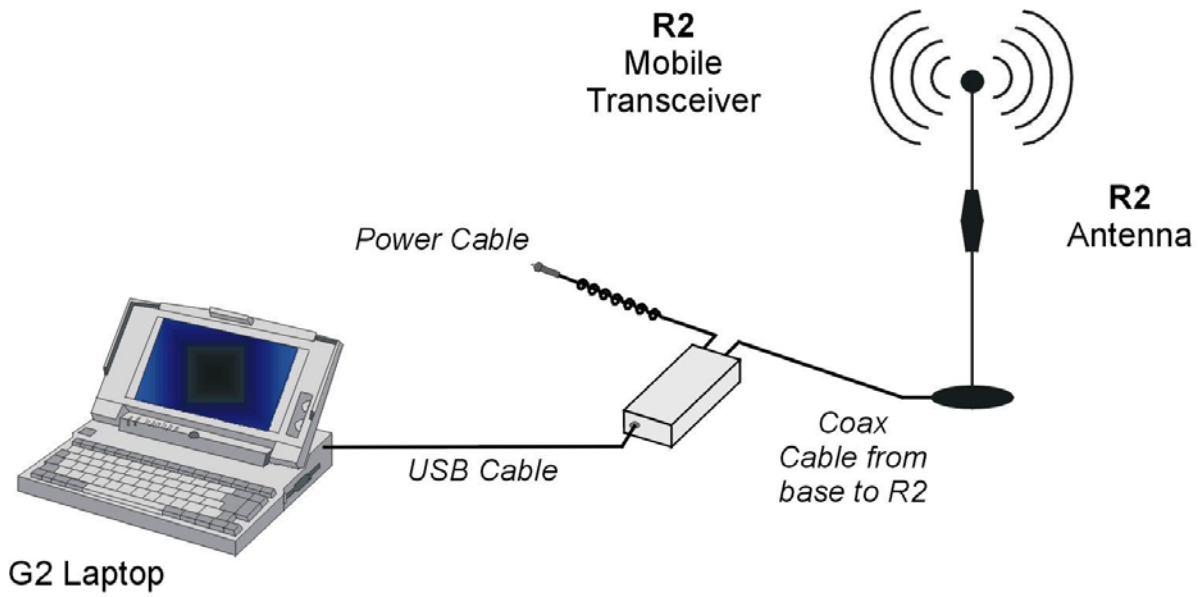
Antenna Installation

The R2's antenna is a omni-directional whip antenna with a magnetic mount base. The antenna connects to the base via a standard N-type connector. The base connects to the R2 via an RP-TNC (threaded) connector.

The antenna's cable and connection is critical to the performance of the system. The user should always take care to ensure the cable is not crimped, bent or damaged at the point of exit from the vehicle. Also, the user should take care in threading the antenna onto the base and the base into the R2 unit.



Connection Diagram





ANTENNA

Antenna

The antenna supplied by Transparent Technologies is an FCC-approved model. The user should always utilize this authorized antenna with the R2 Utility Mobile Transceiver.

The connections between the antenna and the base (N-type connector) and the base and the R2 unit (RP-TNC connector) must be clean and fully seated for optimum performance. The coax cable from the base to the R2 unit must also be maintained in good condition. The user should refrain from kinking this cable in the vehicle door or window.

Contact T2 immediately if the antenna or base is damaged to arrange a replacement.

T2 can also provide permanent-mount antenna bases.



*Magnetic Antenna Base
With RP-TNC connector*



OPERATIONS

The R2 does not require any user interaction to operate. Applying power to the R2 unit will initiate its operations.

Basic Indicators

The R2 unit has two basic physical indicators which are LEDs on the front panel of the R2 unit.

Power Indicator

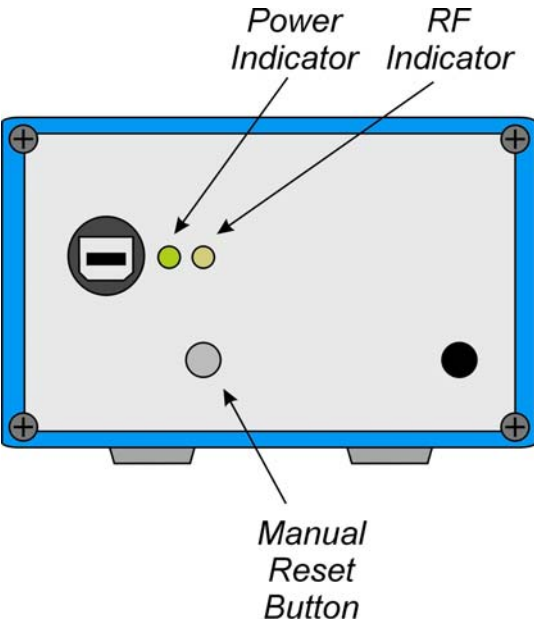
This LED should be a constant GREEN when power is supplied to the R2 unit. The first step in any troubleshooting of the R2 should be to check this indicator.

RF Traffic

This amber LED should flicker on/off when the R2 is in proximity to any M2 endpoint radios. This LED shows the RF traffic and will indicate if there is a problem with the antenna/base or if there is a frequency configuration problem.

Manual Reset Button

The R2 unit has a manual reset button which cycles power and resets the R2 microcontroller. This is not a normal operation and should only be performed when directed by T2 Customer Service.





G2 Laptop Interaction

The R2 is linked to the G2 laptop system with the USB cable. This connection provides the path for the serial data coming from the R2 into the G2 software.

Transceiver Status

In addition to the data, the R2 also provides a “heartbeat” (a consistent data indicator) to the G2 software.

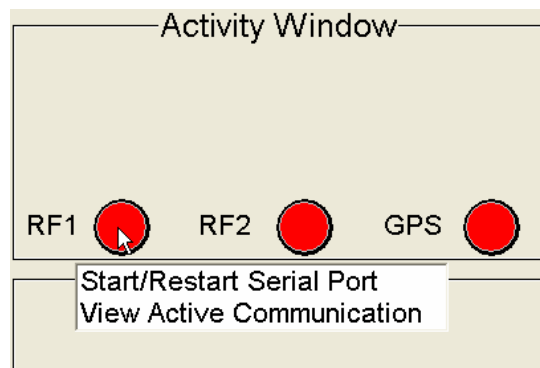
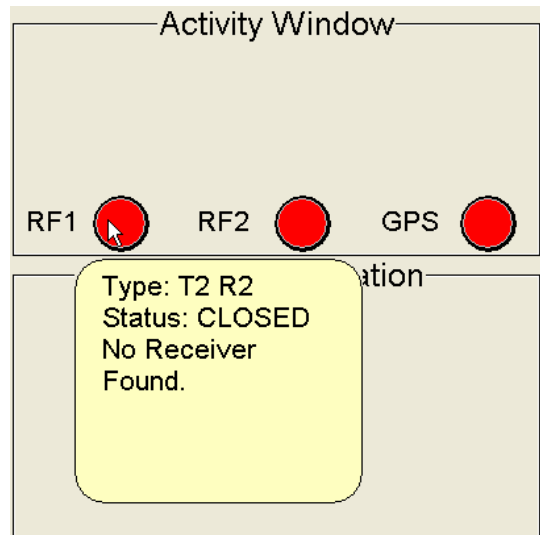
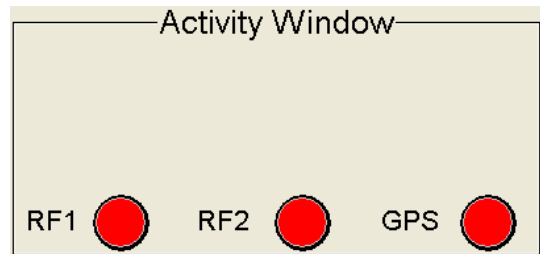
This heartbeat notifies the G2 software that the R2 is operational. The G2 software indicates this status on the Activity Window. GREEN indicates the R2 is operational, while RED indicates a data or power problem

Software Reset

If the R2 status indicator shows RED, the user should first check the power and USB cables. The user can also place the windows cursor directly over the indicator to see a more detailed status.

If the user clicks on the indicator, a command box will appear allowing the user to Restart the serial port or to view the active communication.

When performing these commands, the user should be aware that the restart could take a few minutes to complete and that this could cause the Windows OS to lock up if there is a physical or driver problem with the USB port.





APPENDIX – FCC INFORMATION

FCC Information

Information to user. - The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Special accessories.

(a) Equipment marketed to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors, are required to enable an unintentional or intentional radiator to comply with the emission limits in this part, the equipment must be marketed with, i.e., shipped and sold with, those special accessories. However, in lieu of shipping or packaging the special accessories with the unintentional or intentional radiator, the responsible party may employ other methods of ensuring that the special accessories are provided to the consumer, without additional charge, at the time of purchase. Information detailing any alternative method used to supply the special accessories shall be included in the application for a grant of equipment authorization or retained in the verification records, as appropriate.

The party responsible for the equipment, as detailed in §2.909 of this chapter, shall ensure that these special accessories are provided with the equipment. The instruction manual for such devices shall include appropriate instructions on the first page of the text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment. (b) If a device requiring special accessories is installed by or under the supervision of the party marketing the device, it is the responsibility of that party to install the equipment using the special accessories. For equipment requiring professional installation, it is not necessary for the responsible party to market the special accessories with the equipment. However, the need to use the special accessories must be detailed in the instruction manual, and it is the responsibility of the installer to provide and to install the required accessories.

(c) Accessory items that can be readily obtained from multiple retail outlets are not considered to be special accessories and are not required to be marketed with the equipment. The manual included with the equipment must specify what additional components or accessories are required to be used in order to ensure compliance with this part, and it is the responsibility of the user to provide and use those components and accessories.

(d) The resulting system, including any accessories or components marketed with the equipment, must comply with the regulations.



FCC Definitions

Class A digital device. A digital device that is marketed for use in a commercial, industrial or business environment, exclusive of a device which is marketed for use by the general public or is intended to be used in the home.

Class B digital device. A digital device that is marketed for use in a residential environment notwithstanding use in commercial, business and industrial environments. Examples of such devices include, but are not limited to, personal computers, calculators, and similar electronic devices that are marketed for use by the general public.

NOTE: The responsible party may also qualify a device intended to be marketed in a commercial, business or industrial environment as a Class B device, and in fact is encouraged to do so, provided the device complies with the technical specifications for a Class B digital device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a digital device as a Class B digital device, regardless of its intended use.

For a Class A digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

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.

The provisions of paragraphs (a) and (b) of this section do not apply to digital devices exempted from the technical standards under the provisions of §15.103.