

## VRS (TWIG) Installation Manual

### 1. VRS (TWIG) module with (single or dual) internally mounted antenna

- a) Connect one end of a 200mm UMCC cable (TE Connectivity Model #2015357-4 200mm UMCC plug-UMCC plug) to a Nelson dipole antenna.
- b) Slide ferrite bead (Laird-Signal Integrity Products #28B0275-00) over the UMCC cable. Secure ferrite bead to antenna PCB.
- c) Connect the opposite end of the UMCC cable to J1 of the LSR module.
- d) Repeat steps a) and b) for dual antenna model. Connect the opposite end of the UMCC cable to J2 of the LSR module.
- e) Mount VRS (TWIG) PCB and antennas on plastic subassembly frame as shown in figure1 below.

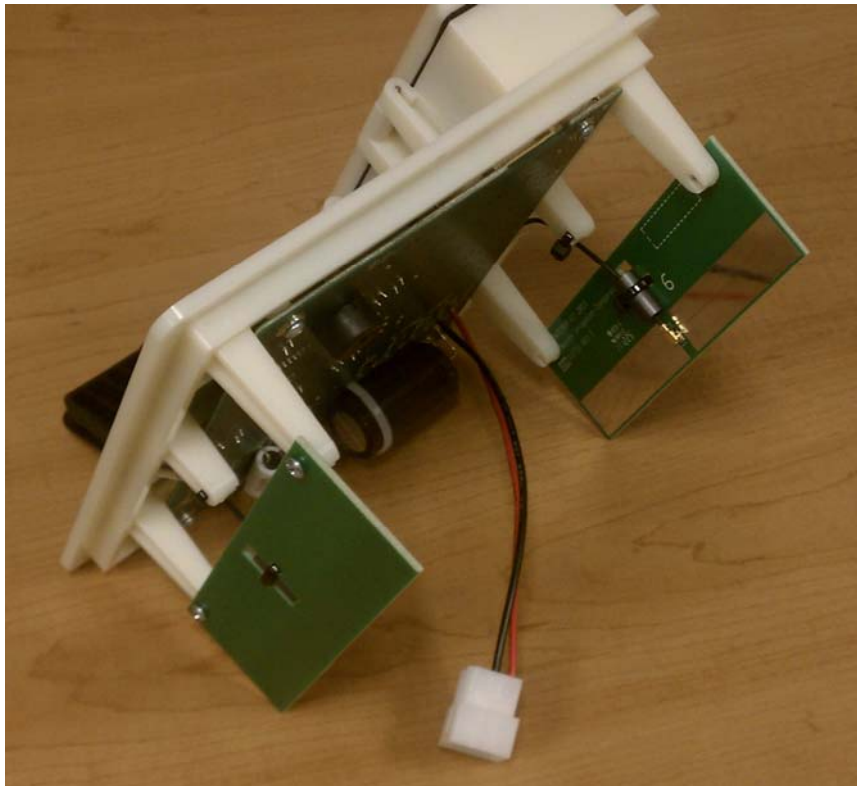


Figure 1

## **2. VRS (TWIG) module with externally mounted antenna**

- a) Connect U.FL. end of 200mm U.FL to RPSMA cable (L-Com Model #CA-UFLRSBQC20 U.FL to RP-SMA Cable, 20cm 1.13 Series Mini Coax (50 ohm)) to LSR module.
- b) Fasten RPSMA bulkhead end to VRS(TWIG) module housing
- c) Connect at least three feet of LRM-195 coax cable with RPSMA connector to the RPSMA bulkhead and the opposite end to an N-type male connector
- d) Connect the N-type male connector to either an L-Com Model #HGV-906V Omni having 6dBi gain or a Comtelco Model #Y3387 Yagi having 10.2dBd gain.

## **3. VRS (TWIG) gateway with externally mounted antenna**

- a) Connect U.FL. end of 200mm U.FL to RPSMA cable (L-Com Model #CA-UFLRSBQC20 U.FL to RP-SMA Cable, 20cm 1.13 Series Mini Coax (50 ohm)) to LSR module.
- b) Fasten RPSMA bulkhead end to the gateway enclosure.
- c) Connect at least three feet of LRM-195 coax cable with RPSMA connector to the RPSMA bulkhead and the opposite end to an N-type male connector
- d) Connect the N-type male connector to either an L-Com Model #HGV-906V Omni having 6dBi gain or a Comtelco Model #Y3387 Yagi having 10.2dBd gain.

## Federal Communication Commission Interference Statement

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.

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

## INDUSTRY CANADA STATEMENTS

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that permitted for successful communication. This device has been designed to operate with the antennas listed below, and having a maximum gain of 10.2 dBd. Antennas not included in this list or having a gain greater than 10.2 dBd are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

Approved antenna list:

- Nelson VRS PCB dipole antenna
- L-Com Model #HGV-906V Omni 6dBi gain
- Comtelco Model #Y3387 Yagi 10.2dBd gain.

"To comply with FCC and Industry Canada RF radiation exposure limits for general population, the antenna(s) used for this transmitter must be installed such that a minimum separation distance of 20cm is maintained between the radiator (antenna) and all persons at all times and must not be co-located or operating in conjunction with any other antenna or transmitter."

"Contains Transmitter Module FCC ID: TFB-SIFLEX2HP IC: 5969A-SIFLEX2HP"