4. CLIENT INFORMATION

Company Name Trio Datacom Pty Ltd (a wholly owned company of Schneider Electric)

Address 1 Acacia Place
Notting Hill
Victoria 3168

Country Australia

Contact Mr Ernest Fardin

5. TEST SAMPLE DESCRIPTION

Brand Name Trio Datacom

Model Number QR150

Product VHF Remote Station

Manufacturer Trio Datacom

Serial Number 800140

FCC I.D NI8QR150

Rated Transmitter Output Power

50 mW (+17.0 dBm) to 10 watts (+40 dBm)

Transmitter Certification Range

Part 90: 150 - 174 MHz

Test frequencies

Frequency (MHz)	Power (Watts)	Emission
155.000	10.0	F1D
160.000	10.0	F1D
173.375	10.0	F1D

Testing was initially carried out on 150.100 MHz which showed compliance however this frequency falls outside of the frequency range allowed for Part 90 certification.

Limited testing results have been provided on 155.000 MHz as testing on 160.000 and 173.375 MHz is indicative of the performance of the radio over the range of 150 - 174 MHz.

Exposure of humans to RF fields

As per FCC KDB 447498 D01 and Section 2.1091 radio frequency transmitters are required to be operated in a manner that ensures the public is not exposed to RF energy levels.

Calculations have been made using the General Public/Uncontrolled Exposure limits that are defined in Section 1.1310.

Minimum safe distances have been calculated below.

Power density, $mW/cm^2 = E^2/3770$

- General Population / Uncontrolled exposure is 0.2 mW/cm^2

As this radio can operate over the range of 150 - 174 MHz the lowest frequency of operation in the USA, which will give the worst case result, would be 150 MHz.

The minimum distance from the antenna at which the MPE is met is calculated from the equation relating field strength in V/m, transmit power in watts, transmit antenna gain, transmitter duty cycle and separation distance in metres:

Power Density = 0.2 $mW/cm^2 = E^2/3770$

$E = \sqrt{0.2*3770}$

E = 27.4 V/m

As the tune up procedure allows a power output of +40 dBm +/- 1 dB a maximum power of +41 dBm (12.6 watts) has been applied to the calculations below.

A duty cycle of 100% has been applied as the transmitter is a base station that could possibly be operated for long periods of time.

The client has declared that this transmitter can be operated using a range of antennas with various gains, from 0 to 16 dBd, as detailed in the table below.

Antenna Gains (dBd)	Max Gain (dBi)	Tx Power (dBm)	EiRP (dBm)	EiRP (Watts)	E Limit (V/m)	Safe Distance (Metres)
0 to 4	6.15	41.0	47.15	51.9	27.4	1.44
4 to 8	10.15	41.0	51.15	130.3	27.4	2.28
8 to 12	14.15	41.0	55.15	327.3	27.4	3.62
12 to 16	18.15	41.0	59.15	822.2	27.4	5.73

A sample calculation for the safe distance would be:

$d = \sqrt{(30 * P * G*DC) / E}$

$d = \sqrt{(30 * 822.2 * 1.0) / 27.4}$

d = 5.73 metres

Result: Complies if the safe distances defined above are applied.