



IP9J1W antenna

The antenna is constructed with a piece of RG-174 coax with the shield and jacket removed from the cable. The total length of the antenna is 18 inches long, mated with a 50 ohm connector at one end.

The unit was tested at 3 frequencies:

Freq.	Power @3m	Power in 50 ohms	
150 MHz	+9.7 dBm	800mW	+29.03 dBm
162 MHz	+15 dBm	865mW	+29.37 dBm
174 MHz	+13.4 dBm	825mW	+29.16 dBm

The IP9J1W maximum radiated power @ 3 meters was at 162 MHz. The measured value was +5.0 dBm by adding .5 dBm for the rx cable loss and 9.5 dBm for the rx antenna correction factor the final power into the spectrum analyzer was +15.0 dBm. Using the antenna substitution method a dipole antenna cut at 162 MHz was used to replace the IP9J1W. A RF signal generator was connected to the dipole with a tx cable that had .5 dBm loss at 162Mhz. The RF generator was set at +.5dBm and the power to the dipole was 0 dBm. The same rx antenna was raised and lower to get the maximum reading on the spectrum analyzer. That value was -24.2 dBm by adding the .5 dBm cable loss and 9.5 dBm for the antenna correction factor the power was -14.2 dBm (path loss). To reproduce the same output power, the RF generator would be +15 dBm + -14.2 dBm = +29.2 dBm or 831 mw (ERP).

The EIRP = ERP x (antenna gain)

EIRP = 835 x 1.64

EIRP = 1364 mW

The general population/uncontrolled exposure power density limit (S) for this device is .2 mW/cm².

The formula for safe distance of the transmitter is:

$r = \sqrt{(EIRP/(4\lambda S))}$

r = 23.3 cm

This device complies with Part 90 and Part 15 (Class B digital device) of the FCC Rules.

FCCID: IP9J1W

This above calculation calculates the safe distance to be maintained for this transmitter to meet mobile RF exposure limits in the FCC rules...

The antenna used for this transmitter must not be collocated or operating in conjunction with any other antenna or transmitter. The antenna must be installed to provide a separation distance of at least 23.3 cm from all persons.

Operations is subject to the following two conditions:

1. this device may not cause harmful interference,
2. this device must accept any interference received, including interference that may cause undesired operation