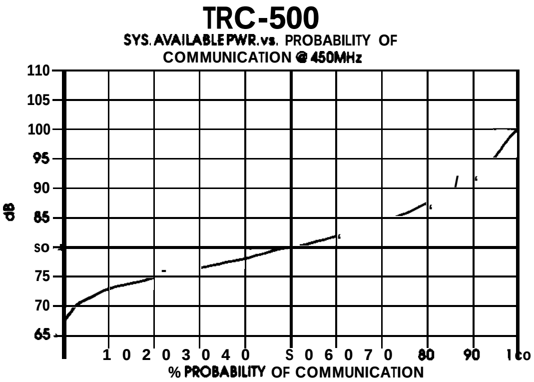


The basis for the design of a communication system is the probability of successful communications.

The median coupling loss is the 50'% probability of communication value. The basis for the design of a communication system is the probability of successful communications, For a radiating cable system this depends primarily on the percentage of desired coverage area which has a signal level which is greater or equal to the receiver sensitivity. A radiating cable produces a distribution of signal levels along its length that is a function of the cable construction, the environment that it is installed in and the power level of the signal in the cable. The probability of communications depend on how the signal level along the cable compares to the receiver sensitivity.

To use the probability of communication graphs, first subtract the sum of the passive component losses in the system from the transmitter power. This gives the power level in the cable. Subtracting the receiver sensitivity gives the system available power, Thus:

SAP = XMT - RCV - PSV

where:

SAP = System Available Power

XMT = Transmitter Power

RCV = Receiver Sensitivity

PSV = All Passive Component Losses except for coupling loss (splitters, insertion loss of feeder cable, insertion loss of radiating cable, body loss, etc...)

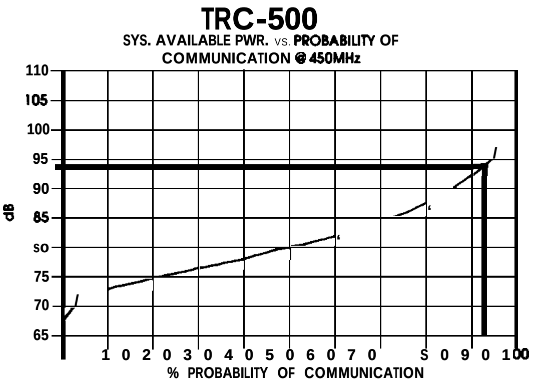
Typically an additional 6 dB signal loss will occur for a receiver carried at belt level, depending on orientation relative to the transmitting antenna. When the radio is raised to head level for talking, this additional loss will be eliminated, Therefore, an additional allowance should be added for calculating the talk out path to a portable, body mounted radio.

Once the system available power is known, the probability of successful communication can be found on the Probability Of Communication graph for the applicable cable and frequency. Because these graphs are based on data collected from our testing facility, which is a near worst case environment, they form a good basis for a conservative system design in other practical environments.

This process should be repeated with different cables, until the smallest cable which provides acceptable coverage is determined.

If an appropriate size is not included in this brochure, contact Times Microwave Systems for availability - other sizes can be produced,

System Design - *Continued*



EXAMPLE:

Using 1200’ of nu-TRAC TRC-500 and 200’ of FM-8 feeder cable at 450 MHz

TRANSMITTER POWER= 30 dBm (1 WATT)

RECEIVER SENSITIVITY = 1 µV (-107 dBm)

POWER SPLITTER LOSS = 2 Splitters x 3 dB/Splitter = 6 dB

FEEDER CABLE LOSS = 200 ft x 3,9 dB/100 ft = 7,8 dB

RADIATING CABLE LOSS = 1200 ft x 2 dB/100 ft = 24 dB

OTHER LOSS = 6 dB Body Loss for belt mounted portable radio,

PSV = 6 + 7.8 + 24 + 6 = 43.8 dB

SAP= XMT - PSV - RCV = 30-438-(-107)= 93,2 dB

Reading off the 450 MHz Probability of Communication graph for the nu-TRAC TRC-500 cable, the system probability of communication is 93%. If this is sufficient, then use this cable, Otherwise, repeat the process for larger cable sizes,

Installation

Installation accessories are available from Times or standard hardware may be used,

nu-TRAC cable can be installed directly on conductive or concrete surfaces without performance degradation, The orientation of the slot internal to nu-TRAC cable cannot be fixed in any one plane due to the natural spiral created in the manufacturing process, Testing has also shown that the slot orientation has no effect on nu-TRAC cable performance, It is therefore not a concern to the installer or the designer,

Worksheet

POWER SPLITTER LOSS . . . . ________ +

FEEDER CABLE INSERTION LOSS

#OF FEET .... dB / 100’

________ x ________ / 100 = ________ +

RADIATING CABLE INSERTION LOSS

OF FEET .... dB / 100’

________ x ________ / 100 = ________ +

OTHER LOSS . . . . ________ +

TOTAL . . . . PSV = ________

TRANSMITTER POWER . . . . XMT= ________

RECEIVER POWER . . . . RCV = ________

SAP = XMT - RCV - Psv

________ = ________ ________ ________ = ________