

This experiment consists of transmitting a narrowband chirp from a transmit location:

- MITRE

202 Burlington Rd.

Bedford Ma. 01730

North 42 30 19 West 71 14 5

Towards a receive location at:

- 4th Cliff

Scituate Ma. 02050

42° 9'43.67"N 70°42'22.99"W

The transmit waveform consists of a 1 MHz wide chirp at an 80% duty cycle centered at 10.625 GHz with a 3 kHz PRF. The ERP of the transmitter will be 562kW using the Dish detailed in Exhibit 1, with up to 3.0° 3dB beam Vertical and Horizontal

Exhibit 1: Dish

- Picture of transmit antenna "Dish" that will be used with all specifications shown in photo.

- Relevant specs: 37.5dBi maximum gain at this frequency. Transmitter power fed into Dish is 100W.

Exhibit 2: Transmit Path

- Map overlay of the origin point of the transmitter, and the direction in which it will be pointed, as well as the intended location of the receiver.

Exhibit 3: Spectral Shape

- This is the shape of the transmit waveform in the spectral domain (at reduced power). The waveform consists of a 1 MHz wide chirp at an 80% duty cycle at 10.625 GHz with a 3 kHz PRF.

Exhibit 4: Dish Located on Building

- This is a picture of the building which the transmitter is mounted to. The approximate mounting location is circled in red. This building is located at:

- MITRE

202 Burlington Rd.

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Exhibit 5: Detailed Experiment Diagram

- Summary of experiment with all relevant details shown in picture

7. If all the answers to Items 4, 5, 6 are "NO", include as an exhibit a narrative statement describing in detail the following items:

- a. The complete program of research and experimentation proposed including description of equipment and theory of operation.

An experimental chirp type waveform will be transmitted to verify performance of an antenna array receiver in terms of improved receiver reception.

- b. The specific objectives sought to be accomplished.

This is a proof of concept experiment in the field of troposcatter transmit/receive

- c. How the program of experimentation has a reasonable promise of contribution to the development, extension, expansion or utilization of the radio art, or is along line not already investigated.

While troposcatter data links have been proven effective, there has not been any progress in reducing the size of antennas which can be facilitated by using multi-array systems.