L-3 Communications, CS-W
Experimental License Form 442 Attachment
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This work is being done in collaboration with the US Air Force STRATCOM under the project Wideband UHF Demonstration. The contract number is NRO00-11-C-0458.

Application Background:

The purpose of this request is to characterize various communication techniques and waveforms within the UHF band. Tests include varying data rates, waveforms, distances, and power.

Concept of Operations:

The test is comprised of an aircraft and up to three ground based mobile communications equipment within a defined region. The aircraft will perform communications tests operating on the ground prior to takeoff and at altitudes 18000 to 30000 ft Mean Sea Level. The aircraft will fly in circular or racetrack orbits and will also fly a distance away from the ground systems to determine distance performance. Up to three ground based or ground mobile communications equipment terminals will communicate with the aircraft simultaneously.

Spectrum Requirements:

Two frequency allocations are required within the 225-470 MHz band. One for the transmit channel and one for the receive channel. The 3 communications paths will all use the same transmit and receiver frequency assignment. Communication between each of the air and ground terminals will be such that only one ground terminal will talk to the air terminal at a time. One of the following four emission designators will be used to transmit and receive: 495KG1D, 989KG1D, 30M0G1D, and 58M0G1D. The 495KG1D and 989KG1D emission designators are OQPSK modulation, convolutionally encoded R=3/4, Reed-Solomon(219, 201) FEC and root raised-cosine filtered (alpha=0.33). The 30M0G1D and 58M0G1D emission designators are direct sequence spread spectrum signals BPSK modulated with convolutional R=1/2 encoding. The frequency allocation in the 225-470 MHz frequency range needs to be wide enough to accommodate a 58 MHz transmit channel and a 58 MHz receive channel, separated by at least 10 MHz (guard band).

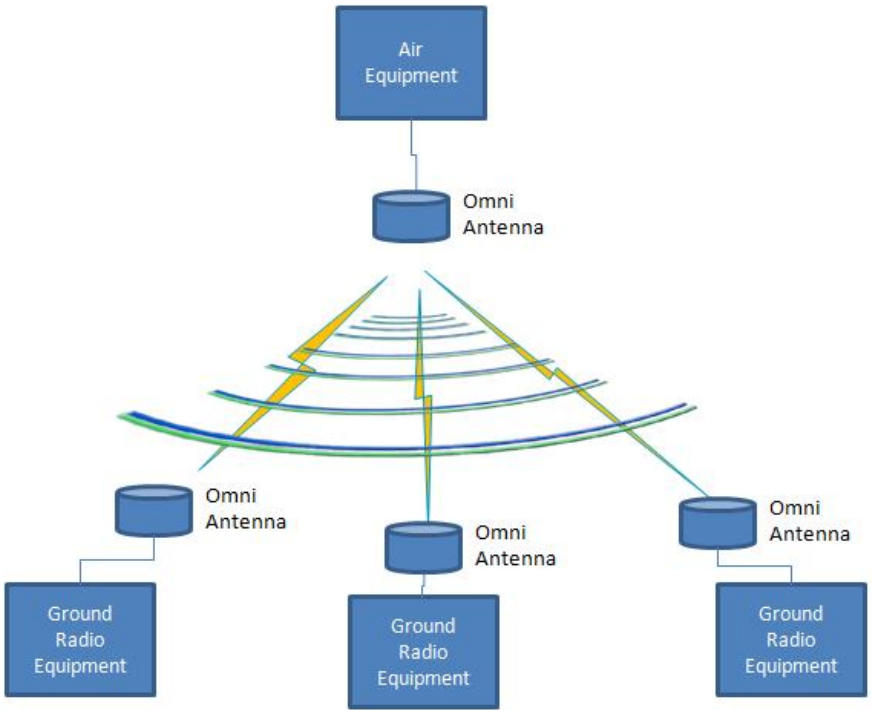

Figure 1 Concept of Operations

Locations of Testing:

Multiple locations for testing are requested to facilitate the allocation of the requested spectrum. We request authorization for each location. In each case, the 3 ground stations will be operating at the indicated locations with the aircraft inside a 185 km radius of the ground terminals location. The following locations are provided in order of importance:

City	State	Latitude	Longitude
Offutt AFB, Omaha	Nebraska	N41°7'24.08"	W95°54'53.85"
Lincoln Airport	Nebraska	N40°51.05'	W96°45.55'
Nebraska City Municipal Airport	Nebraska	N40°36.39'	W95°52.00'
Andrews AFB	Wash, DC	N38°48'56.03"	W76°51'59.89"
Patuxent River Naval Air Station (NAS)	Maryland	N38°17'9.05"	W76°24'30.89"
Salt Lake City Airport	Utah	N40°47.30'	W111°58.67'
Kauai (Lihue Airport)	Hawaii	N21°58'46.21"	W159°20'30.55"