EXHIBIT ONE

With reference to FCC form 442, Line 10 (a)

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

Program of Research and Experimentation

Lockheed Martin wishes to conduct a program of experimentation and research, using the 38.6 to 40.0 GHz range, to test and develop a product intended for highly reliable telecommunications service in short-haul, high-bandwidth applications. This goal is to obtain a design that would be FCC Certified under CFR Title 47, Parts 15, 21 and 101.

In order to achieve the desired results, the following milestones are identified:

(1) Conduct analysis and trade studies that guide the early process of equipment development. The objectives of these studies are to:

- Determine the most appropriate types of modulation for operating over various environments in the 38-40 GHz frequency range.

- Determine the most appropriate antenna polarization modes for operating over various environments in the 38-40 GHz frequency range.

(2) Produce a fully-functional demonstration prototype system inclusive of:

- Antenna
- MMW Full-duplex transceiver
- Control subsystem
- Instrumentation subsystem

(3) Perform on-the-air evaluations and demonstrations that generally support a product developmental path toward obtaining FCC certification of a fully-documented prototype, from early experimentation to an FCC type-accepted product. Steps in this path are:

- Obtain an experimental license under FCC Part 5 for field testing
- Evaluate early prototype performance vs candidate modulation types
- Evaluate early prototype performance vs candidate polarization modes
- Produce and document a final, FCC-Certifiable prototype
- Conduct FCC Certification testing under Parts 15, 21 and 101

Description of Experimental Equipment

The following is a specific description of the intended experimental equipment:

Compliance (Goals):

MMW Link Receivers and Signal Processors: US CFR Title 47, Part 15
MMW Link Transmitters: US CFR Title 47, Parts 21 and 101

FCC MMW Link Frequency pairs in accordance with US CFR Title 47, Part 101.147 (u)

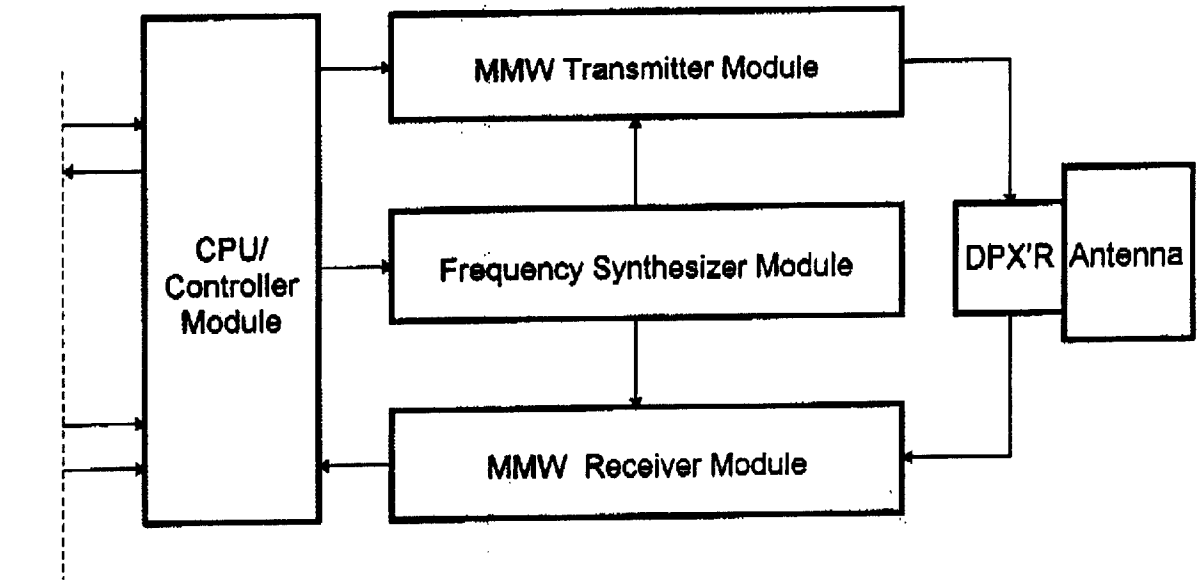
	Forward Path, GHz	Reverse Path, GHz
1st Segment	Group A	Group B
Chan 1	38.60 to 38.65	39.30 to 39.35
Chan 2	38.65 to 38.70	39.35 to 39.40
Chan 3	38.70 to 38.75	39.40 to 39.45
Chan 4	38.75 to 38.80	39.45 to 39.50
Chan 5	38.80 to 38.85	39.50 to 39.55
Chan 6	38.85 to 38.90	39.55 to 39.60
Chan 7	38.90 to 38.95	39.60 to 39.65
2nd Segment		
Chan 8	38.95 to 39.00	39.65 to 39.70
Chan 9	39.00 to 39.05	39.70 to 39.75
Chan 10	39.05 to 39.10	39.75 to 39.80
Chan 11	39.10 to 39.15	39.80 to 39.85
Chan 12	39.15 to 39.20	39.85 to 39.90
Chan 13	39.20 to 39.25	39.90 to 39.95
Chan 14	39.25 to 39.30	39.95 to 40.00

Link Transmitter:	
Channel Spacing	50 MHz
Transmitter RF Output	<10 Watts
Maximum EIRP, 12-inch diameter antenna	42 dBW
Maximum Occupied Bandwidth	40 MHz
Modulation	F7W
Link Receiver:	
Channel Spacing	50 MHz
Noise Figure at LNA	<10 dB
3 dB Bandwidth	40 MHz
Input Dynamic Range	-20 to -90 dBm
Link Payload Serial Bit Rate	30 to 100 Mbit/second
Link Frequency Stability	±0.25 PPM

Packaging:

The experimental MMW link shall be packaged in an environmentally resistant outdoor case and will operate over an ambient temperature range of -30 to +55 degrees Celsius.

Figure One
Block Diagram of Experimental RF Equipment
(One End Shown)



Theory of Operation

In the Frequency Synthesizer Module, a highly-stable and ultra-low phase noise oscillator generates a reference signal for a digitally-controlled frequency synthesizer. The outputs of the Frequency Synthesizer Module are MMW injection signals, having a very low spurious content, which are fed to the frequency converter stages in the transmitting and receiving modules.

The Receiver Module has an LNA (Low Noise Amplifier) which amplifies the received signal before it is downconverted to a convenient IF (Intermediate Frequency) stage where the demodulation process takes place. The demodulated signals are in a digital format as they are presented to the CPU/Controller Module.

The Transmitter Module converts the digital information, from the CPU/Controller Module, to an IF stage for upconversion and bandpass filtering processes. Cascaded stages of amplification and filtering are continued until a substantial MMW power level is obtained at the output port of the Transmitter Module.

The transmit signal is fed to the antenna via a duplexing device that functions to isolate the transmitter from the receiver. Signals received by the antenna are fed to the Receiver Module via the same duplexing device.

The CPU/Controller functions to assign frequencies to the transmitting and receiving modules. It also provides several ancillary functions such as fault-checking, mode setting and so on.

With reference to FCC form 442, Line 10 (b)

"The specific objectives sought to be accomplished."

Specific Objectives

The specific objectives, of the experimental program, are generally directed toward performing on-the-air tests and demonstrations of candidate design features. These tests would provide substantive information regarding the performance of short-haul, high-speed data links that operate in the 38.6 to 40.0 GHz band over a wide range of weather conditions. The intended result of the experimental program would be to produce a knowledge database that would enable well-informed choices in the design stages of these systems.

In the design phase, Lockheed Martin would benefit from having made the best possible choices for such features as modulation type and antenna polarization. These designs would support development of an FCC-Certified product having performance features that were, heretofore, unavailable. The chief features, which are the intended pursuits of this experimental program, are:

(1) Maximum Power Output, FCC Limit is 10 Watts

(2) A Very low Noise Figure LNA

(3) A modulation scheme that is optimized for the 38.6 to 40.0 GHz band intended for short-haul, highly-reliable, high-speed telecommunications.

(4) An optimized radiation polarization for maximum performance in rain or dense fog environments.

(5) A fully-documented prototype that captures the foregoing features and proves to be totally compliant with CFR Title 47, Sections 15, 21 and 101.

With reference to FCC form 442, Line 10 (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 a line not already investigated."

Promise of Contribution to the Radio Art

The experiments to be performed by Lockheed Martin would offer more than a reasonable promise of contribution to the utilization of the radio art. Generally, the program of experimentation strongly supports the desirable concept of Defense Technology Transfer to Commercial and Public applications. Specifically, the integration of emerging technologies of high-power MMIC components and Ultra-Low Noise Figure MMIC Devices, with developing technologies in the field of MMW Propagation and Modulation, would advance Commercial MMW Radio Art to a new level.

By incorporation of these technologies, short-haul, microwave links operating in the frequency range of 38.6 to 40.0 GHz, could better utilize the available spectrum. Further, extended use of the 38.6 to 40.0 GHz spectrum could relieve congestion of the lower frequency ranges.

As a result of the experimental program and the development program, advanced performance equipment, as described herein, could be made available for service under the FCC Rules described in Sections 15, 21 and 101.