



AlliedSignal Inc.
Electronic & Avionics Systems
One Technology Center
23500 W. 105th Street
Olathe, KS 66061

913 782 0400

CC 99-425

June 3, 1999

FAA
Spectrum Engineering Division (AES-500)
800 Independence Avenue SW
Washington, DC 20591

Dear Sir,

AlliedSignal Inc. has developed an Airborne Satellite Communications System that will work with the IRIDIUM Satellite Constellation. The system will be called Airsat 1 and will consist of a Satellite Transceiver, an antenna and a handset unit. The transceiver portion of the system is called the ITU 100 and we will be requesting a FCC Type Certification on it. The ITU 100 contains a L-Band Transceiver, a Subscriber Identity Module and a Passive Filter to limit the emissions on either side of the operating band. The L-Band Transceiver is a derivative of Motorola's ISU Handheld Satellite Telephone and both the Transceiver and the ISU have been FCC Type Certificated with FCC-IDs of IHDT6NE1 and IHDT6ND1, respectively.

Much of the transmitter information with respect to the L-Band Transceiver, is Motorola Proprietary and thus not available to us. Allied Signal and Motorola will send representatives to the FCC -OET in Columbia, Maryland at the same time when our Application for Type Certification on the ITU arrives at that location. There, under the eyes of the FCC, we will exchange the information between their application and our request. If the descriptions of the Frequency Tuning methods and Frequency Stability enclosed with this letter are not sufficient for your purposes, we would be pleased to have a representative from your office join us during our exchange of information at the OET.

As required by CFR Title 47, Subpart D, Paragraph 87.147 (d), AlliedSignal hereby submits notification of FCC Type Acceptance application for the ITU Satellite Communication Transceiver. Equipment characteristics are as follows:

Equipment Description:	ITU 100 Satellite Communication Transceiver PN 064-01083-0101
Manufacturer's Identification:	AlliedSignal Inc. FCC ID: ASYITU100
Antenna Characteristics:	Omnidirectional above 8 degrees elevation, circular polarization
Rated Output Power:	6.24 Watts at transmitter, 15.6 Watts EIRP from antenna
Emission Type:	41K7Q7W
Emission Characteristics:	DE-QPSK with FDMA/TDMA/TDD, modified protocol
Frequency:	1616 Mhz - 1626.5 Mhz with necessary bandwidth of 33.5Khz
Essential receiver characteristics protection	No Protection Required

If there are any questions concerning the data in this submittal, please contact me at AlliedSignal Inc. in Olathe, Kansas (913) -712-2487. Thank you for your prompt attention in this manner.

Sincerely,

Art Ercolani
Senior DER Staff Engineer
AlliedSignal Inc.
Pho (913) 712-2487
Fax (913) 712-2951

Enclosures:

ITU 100 Technical Data
Description of Frequency Range
Method of Tuning for the transmitter
Frequency Stability of the Transmitter
ITU 100 Serial Tag
Spectral Emission Plots from the FCC Testing Facility

ITU 100 Technical Data

Method of Frequency Tuning:

The ITU 100 contains a Motorola L-Band transceiver that is tuned via communication with the Iridium satellite constellation. There are sixty-six satellites in the constellation, and each one operates on multiple assigned channels in the 1616 to 1626.5 MHz band. As the satellites move across the sky in low earth orbit (LEO), the ITU 100, together with the satellite controller, determines the transmit frequency based on which satellite provides the strongest signal. A frequency synthesizer implemented via digital signal processing (DSP) generates an intermediate frequency of 215 MHz and is QPSK (quadrature phase shift keying) modulated. This signal is then translated to the operating frequency band of 1616.0 - 1626 MHz through a mixing operation with a microprocessor controlled frequency synthesizer that operates between 1401-1416 MHz in 41.67 kHz steps.

Transmitter Frequency Stability:

The reference oscillator that drives the two frequency synthesizers has a tolerance of 1.5 ppm from -15C to +55C.

Emissions Bandwidth:

The occupied bandwidth (99.5% of total mean power) is 41.667 kHz when the transmitter is modulated with pseudo random data. This data is taken from exhibit 9B of the Motorola FCC type acceptance report for the L-Band transceiver, FCC ID IHDT6ND1, dated May 18, 1998.

September 21, 1998

CONFIDENTIALITY REQUEST CONTAINED WITHIN

Federal Communications Commission
Authorization and Evaluation Division
7435 Oakland Mills Road
Columbia, Maryland 21046

Re: Application for Portable Satellite Transceiver Type Acceptance

Gentlemen:

Motorola, Inc., Cellular Subscriber Sector, 600 N. U.S. Highway 45, Libertyville, Illinois 60048-5343 herein submits "Electronic" Application for Equipment Authorization (to be followed by submission of Check Number 120-661955 in the amount of \$610.00 along with Form 159) for Certification of a Mobile Satellite Transceiver under FCC Rule Part 25, FCC ID: IHDT6NE1. Motorola is also the manufacturer of this equipment.

This application is submitted in accordance with the Interim Provisions for Equipment Authorization (Certification) of GMPCS equipment specified in FCC GEN Docket No. 98-68; adopted May 14, 1998, released May 18, 1998 and published in the Federal Register June 10, 1998.

In addition to confidentiality for the entire application prior to grant (per 47CFR0.457(d)(1)(ii)), Motorola requests, pursuant to 47CFR0.459, post-grant confidentiality for portions of the material contained in this application such that the identified material will be withheld from public inspection following the grant of this authorization. This material, as indicated by request for confidentiality of the items during the electronic submission process and further identified by their listing in RED on the List of Exhibits attached hereto, includes:

- Motorola Exhibit 4, Radio Semiconductor List (submitted as 'Parts List/Tune Up Info,' EAS Exhibit #10);
- Motorola Exhibit 5, Circuit Diagrams (consisting of and submitted as **two** parts, one as Exhibit 5ABC, 'Block Diagrams,' EAS Exhibit #4, and the other as Exhibit 5D, 'Schematics,' EAS Exhibit #5); and
- Motorola Exhibit 6, Circuit Descriptions (submitted as 'Operational Description,' EAS Exhibit #12).

Specifically, these exhibits contain information relating to circuit function and complexity that could be of benefit to competitors. This material contains Motorola's trade secrets and confidential information that Motorola does not customarily release to the public and which is otherwise not generally available to the public.