QUALCOMM, Inc.
FCC Form 442
Exhibit 1

QUALCOMM, Incorporated (hereinafter referred to as QUALCOMM), founded in 1985, is one of the fastest growing Companies in the Communications business in the United States. QUALCOMM specializes in the design, development, manufacture, and service, of advanced telecommunications systems for a wide range of consumer, government, and industrial applications. QUALCOMM's headquarters is located in San Diego, California, which is one of the fastest growing technology areas in the United States. QUALCOMM has field offices in many parts of the United States, and also in several countries around the world. QUALCOMM's CDMA-based wireless technology is being considered for implementation in a growing list of countries around the world.

A. Applicant's Qualifications

QUALCOMM is a current FCC licensee for the OmniTRACS system, and is a Partner in the Loral QUALCOMM Licensee, Inc. (LQL) Partnership, which holds the FCC license for the construction and operation of the "Globalstar" low-earth orbit mobile satellite system operating at e L- and S-band frequencies. QUALCOMM is a pioneer in the area of wireless communications as well as other high technology fields. It has developed, licensed, and manufactured, a wide range of innovative communications systems and products, including fixed- and mobile- satellite communications systems, government telecommunications systems and services, commercial video applications, and VLSI components.

QUALCOMM pioneered OmniTRACS, the first two-way mobile satellite communications system designed to meet the service requirements of the trucking, marine, rail, and other businesses. OmniTRACS uses a hybrid spread spectrum technique based on frequency hopping, and direct sequence CDMA, in one of the largest commercial applications of spread spectrum technology. QUALCOMM is providing OmniTRACS service to approximately 200,000 vehicles in the United States. The OmniTRACS service is also being offered in many other countries and regions, including Europe (EUTELTRACS), Brazil, and Mexico.

Utilizing core contract support of the Defense Advanced Research Projects Agency (DARPA), and its own internal R&D funds, QUALCOMM has developed the video compression and signal processing systems. This technology, in conjunction with the electronic projector technology developed by the Electron Dynamics Division of Hughes Aircraft Company, forms the basis for the commercial electronic cinema product.

But the main thrust of QUALCOMM's efforts during the last few years have been focused on developing, testing and manufacturing the wireless infrastructure and subscriber products for use in terrestrial cellular, PCS, wireless local loop (WLL), and low-earth orbit mobile satellite services. The QUALCOMM technology, which has also been licensed to a very large and diverse group of manufacturers worldwide, is based on the application of CDMA technology to mobile environment with several innovative, patented, ideas, to achieve high capacity, and lower cost. The TIA has adopted its IS-95 digital cellular standard based on the QUALCOMM CDMA technology. The CDMA technologies developed by QUALCOMM for various wireless applications have been documented in the ITU literature. QUALCOMM's CDMA technology has been adopted by several major cellullar, PCS, and WLL service

providers around the world. Among those are AirTouch Communications, U.S. West, NYNEX, GTE, Bell Atlantic, Ameritech, Sprint Spectrum, PCS PrimeCo, and NextWave.

QUALCOMM joined with Loral Corporation, a major aerospace company, in developing "Globalstar ", a low-earth orbit mobile satellite system. QUALCOMM's CDMA technology is at the heart of the Globalstar system. The FCC granted a license for Globalstar in early 1994. The Globalstar strategic partners include such well known communications companies as AirTouch Communications, Vodafone, France Telecom, Alcatel, Hyundai, DACOM, Daimler Aerospace, Finmeccanica, and Space Systems/Loral. QUALCOMM is developing the ground system (gateways, subscriber equipment, network control center) for the Globalstar network.

B. The Globalstar CDMA System & Gateway Earth Station:

The Globalstar net work consists of a constellation of 48 low-earth orbit satellites (1400 Km altitude) in 6 orbital planes providing global coverage. Each satellite has 16 service beams, and the spectrum is fully reused among all beams. The system provides voice and data communications up to peak data rates of 9.6 Kb/s.

The Globalstar Air Interface uses a modified form of IS-95 (the U.S. terrestrial digital cellular standard) to support Code Division Multiple Access. CDMA was selected for Globalstar because it represents a proven technology that can provide a bandwidth efficient modulation scheme for satellite communications. It is relatively interference tolerant, both from the standpoint of generation of interference to other services and tolerating outside interference. There is a level of security inherent in the modulation scheme. CDMA is able to provide good voice quality while operating at relatively low RF power levels.

Path Diversity combats fades and blockage - Probably one of the most important aspects of CDMA is associated with the way Globalstar uses CDMA. Diversity combining is used to provide continuous communications even under conditions where a path to one satellite is totally blocked. The Globalstar system can operate with relatively low link margins and still provide a high link availability.

CDMA supports spectrum sharing - There are other useful and interesting aspects of CDMA. In CDMA two or more systems can occupy the same frequency-power space. Separation of the intelligence is accomplished by demodulating the PN spreading sequence. This supports band sharing by more than one system. There is another useful aspect of CDMA. Since CDMA is basically a system whose capacity is limited by self generated interference, the limit is a soft limit. Unlike bandwidth limited systems like Time Division Multiple Access (TDMA) or Frequency Division Multiple Access (FDMA), CDMA allows the predicted capacity limit to be exceeded with soft degradation occurring.

The Globalstar network connects users located anywhere in the coverage areas to any point in the terrestrial wireless or wireline networks via earth stations known as Gateways (also referred to as "feederlink earth stations"). Users are linked to the gateways via the Globalstar constellation. The Gateways are connected to the terrestrial wireline and wireless networks. Therefore, Gateways play a critical role in linking Globalstar users to the desired destination.

Gateways communicate with the Globalstar satellites utilizing the spectrum allocated for feederlinks at the WRC-95 Conference. The Globalstar Gateways operate at C-band frequencies as allocated at the WRC-95 Conference. The frequency bands are:

Earth-to-Space (Forward Link/Uplink): 5091-5250 MHz - (159 MHz)
Space-to-Earth (Return Link/Downlink): 6875-7055 MHz - (180 MHz)

Details of the Gateway frequency plan and RF parameters are given in Attachment # 1.

Major RF parameters are summarized below:

Frequency: TX: 5091-5250 MHz
RX: 6875-7055 MHz
(See Attachments # 1 & 2 for details of the frequency plan);

Maximum RF output power at the transmitter terminals: 20 dBWatts (134 W);

Maximum Effective Radiated Power from the antenna: 68 dBW

Emission: Multiple Direct Sequence Spread-Spectrum channels
(see Attachments # 1 & 2 for details)

Modulating Signal: 1.23 Mc/s-each CDMA channel
RF modulation: QPSK
(see Attachments # 1 for details)

Necessary Bandwidth: 159 MHz
Note: (see Attachment # 1 - Frequency Plan)

This is the total bandwidth required to accommodate eight 16.5 MHz sub-beam traffic at each of the two polarizations, and the telecommand signal; Each of the 16.5 MHz signal consists of a series of 1.25 MHz CDMA channels uniformly spaced.

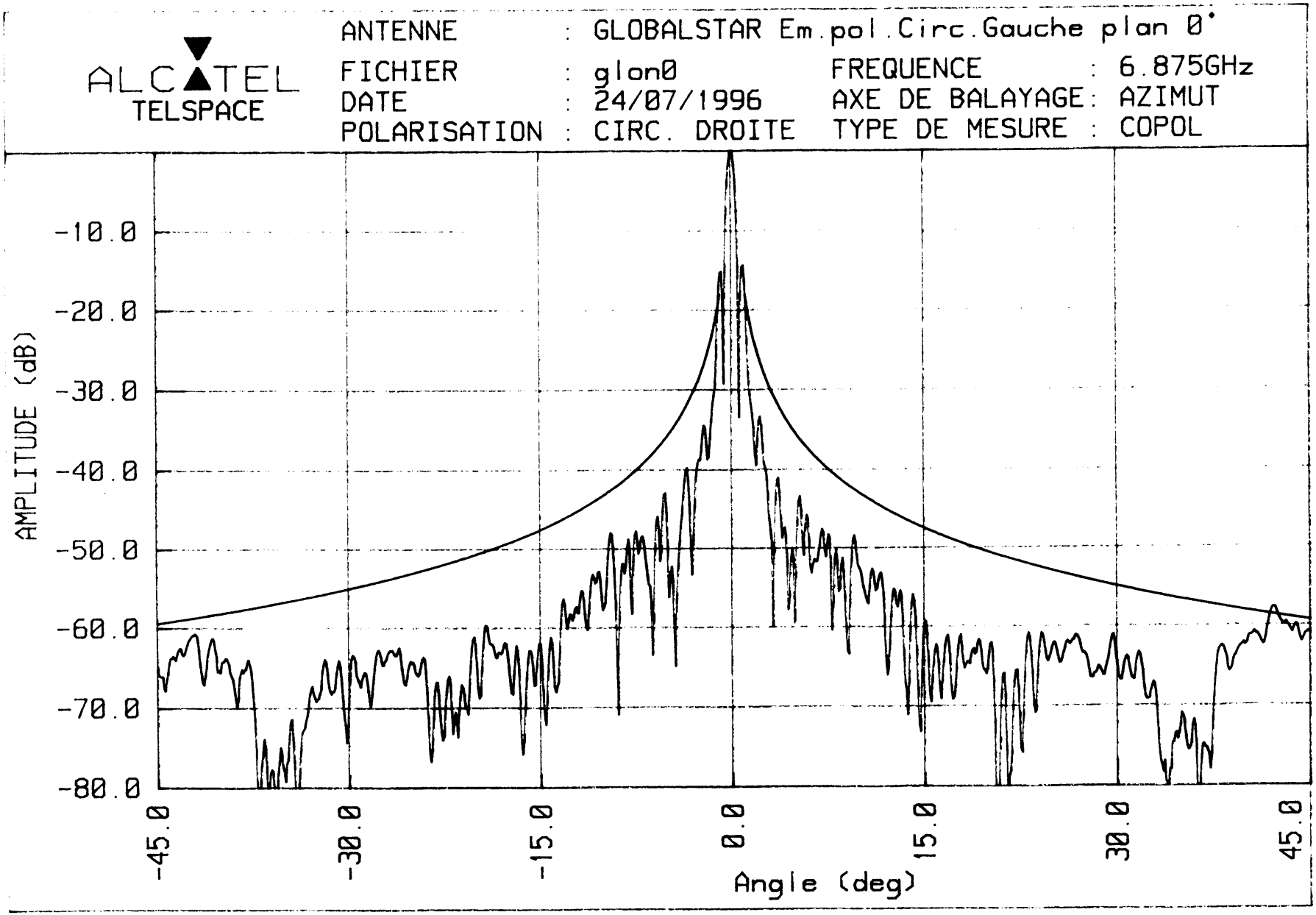
C. The Proposed Experiments:

The Globalstar constellation of satellites are planned for launch in 1998. Satellites and ground station facilities are currently being constructed. As part of the pre-operational program, the Gateway facility requires to be field tested to validate the performance parameters prior to the start of service. The San Diego experimental facility, to be constructed and operated under this authorization, will conduct a series of tests to validate the RF performance parameters that are described in detail in Attachment # 1. These tests are intended to validate:

- antenna performance characteristics
- tracking performance characteristics
- transmitter or uplink performance characteristics
- receiver or downlink performance characteristics
- radiating pattern characteristics
- reliability, maintainability, and availability

D. Conclusion:

Grant of this application will permit QUALCOMM to conduct thorough pre-operational validation and performance tests of the Globalstar Gateway system so that the Globalstar network operations can commence satisfactorily as authorized by the Commission in its grant of the Globalstar license to Loral QUALCOMM Licensee, Inc.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FICHIER : glon0
DATE : 24/07/1996
POLARISATION : CIRC. DROITE
FREQUENCE : 6.875GHz
AXE DE BALAYAGE : AZIMUT
TYPE DE MESURE : COPOL
AMPLITUDE (dB)
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
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-80.0
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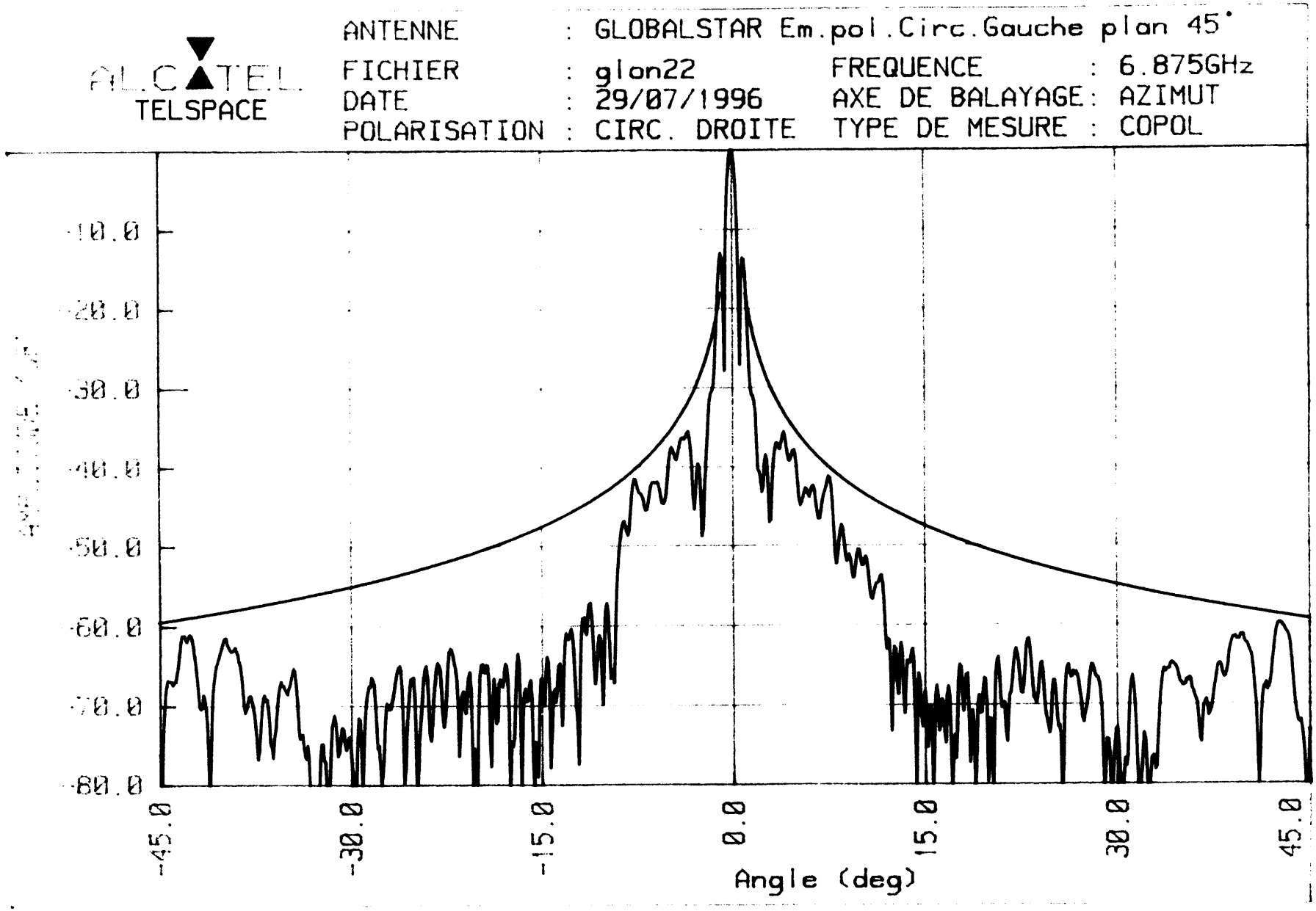
-30.0
-15.0
0.0
15.0
30.0
45.0
Angle (deg)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FREQUENCE : 6.875GHz
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TYPE DE MESURE : COPOL
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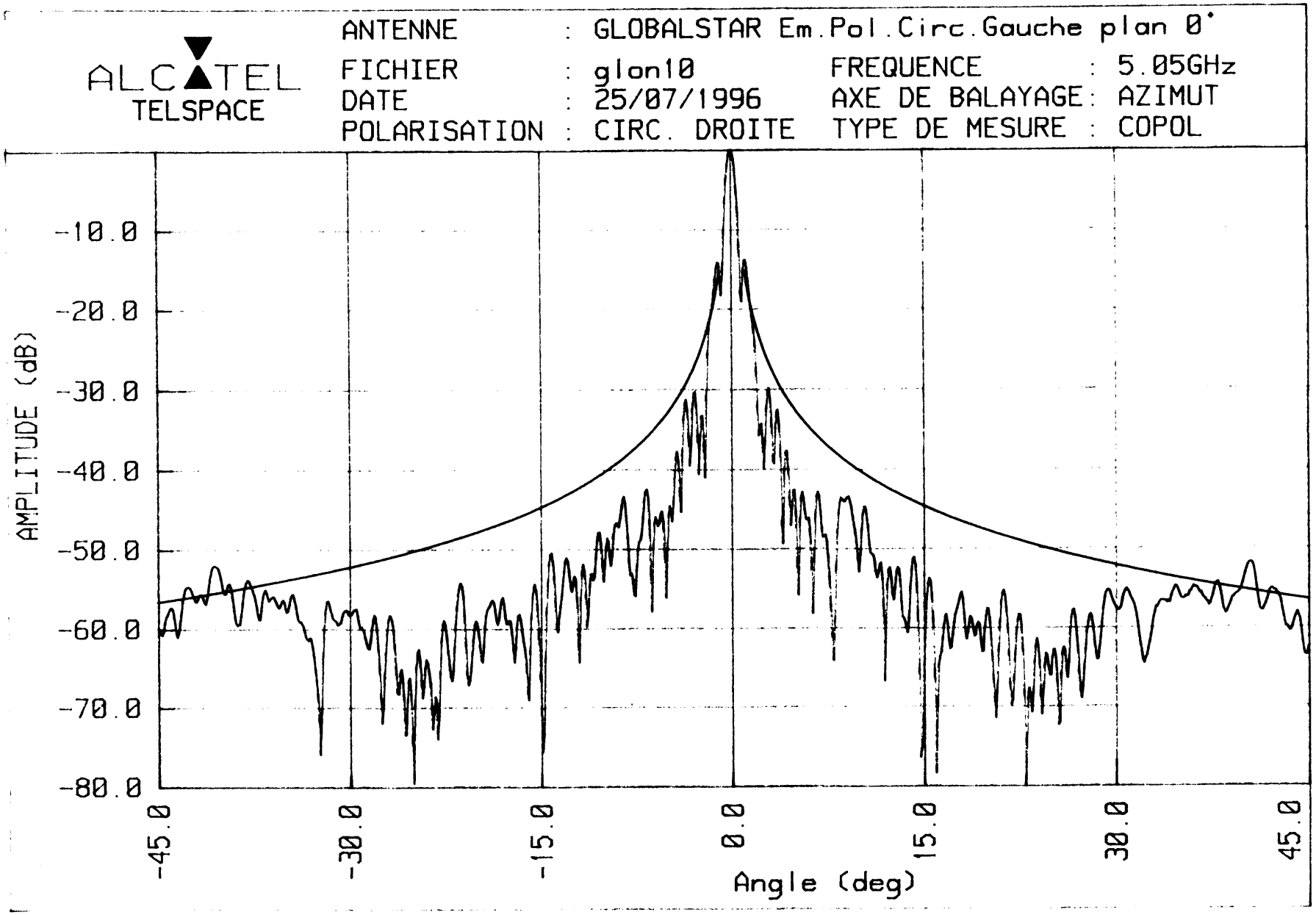
Angle (deg)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FREQUENCE : 5.05GHz
AXE DE BALAYAGE : AZIMUT
TYPE DE MESURE : COPOL
AMPLITUDE (dB)
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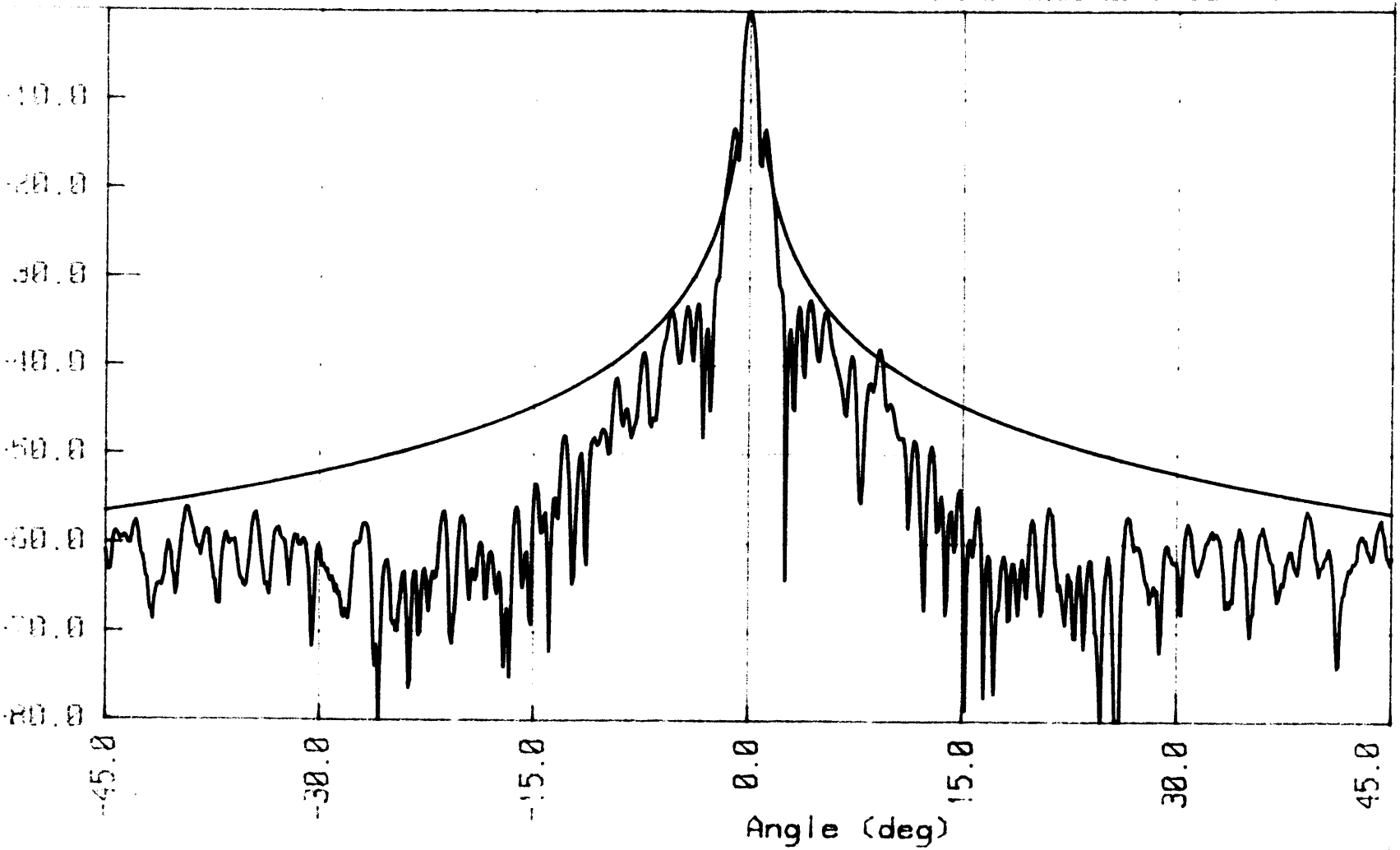
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-45.0
-30.0
-15.0
0.0
15.0
30.0
45.0
Angle (deg)

ALCATEL
TELSPACE

ANTENNE : GLOBALSTAR Em.pol.Circ.Gauche plan 45°
FICHIER : glon28 FREQUENCE : 5.05GHz
DATE : 29/07/1996 AXE DE BALAYAGE : AZIMUT
POLARISATION : CIRC. DROITE TYPE DE MESURE : COPOL



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412	ANT 2	270067.8814	708438.0638	27-01-15.5228	134-12-41.3945
717	ANT 3	269645.0115	707716.7121	27-01-10.2038	134-12-48.4098
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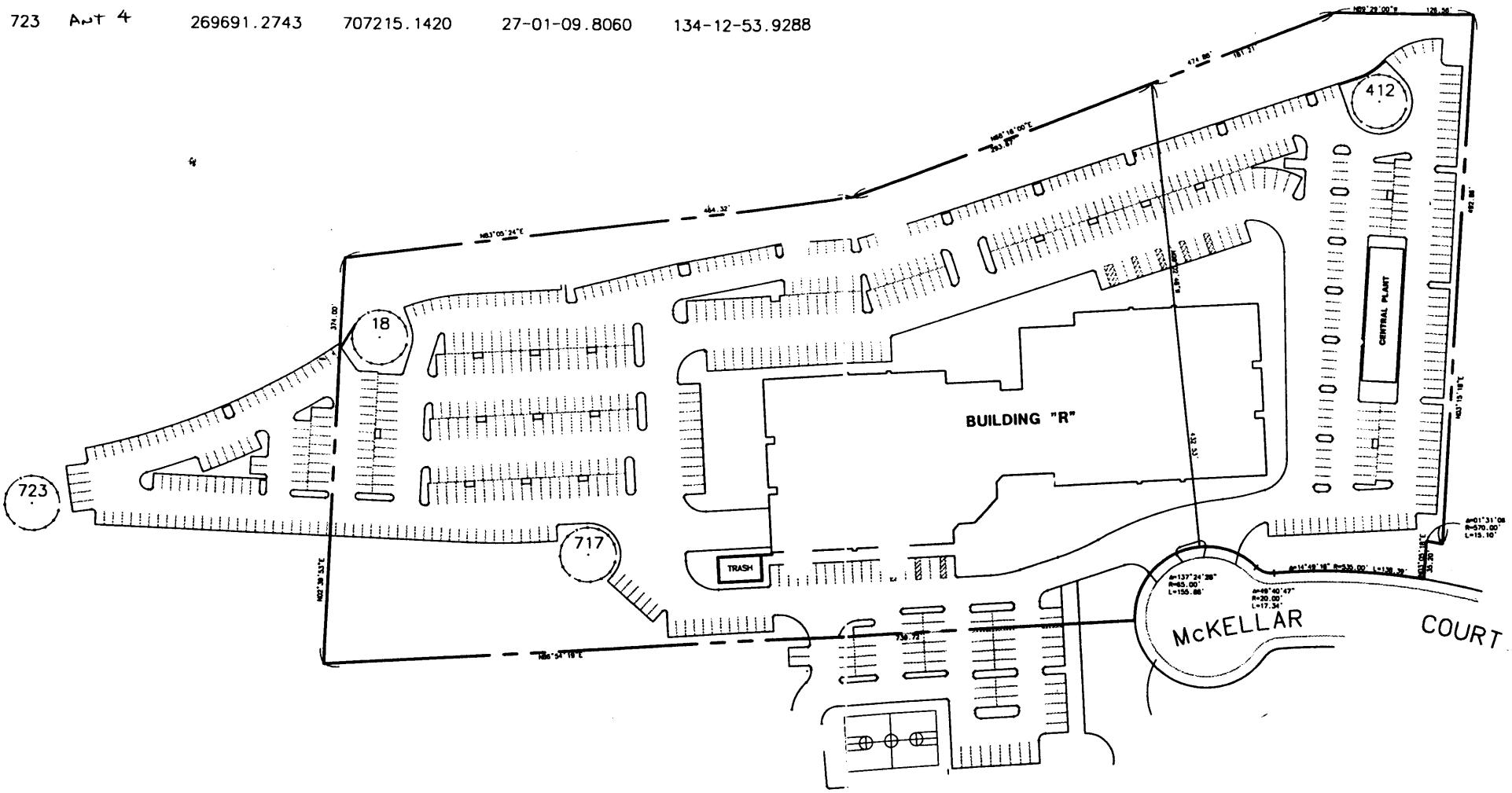

QUALCOMM RADOME LOCATION DRAWING

Jtc 501312
DRAWING: 1312E3D1
PLOT: 08-05-96

Robert Bein Will
PROFESSIONAL ENGINEER
9755 CLAIREMONT MESA
SAN DIEGO, CALIFORNIA

32-54-17 N

117-12-07 W

	LATITUDE	LONGITUDE
ANTENNA # 1 (913)	32-54-15.1743	117-12-13.9440
ANTENNA # 2 (858)	32-54-16.6448	117-12-10.3510
ANTENNA # 3 (891)	32-54-14.8467	117-12-08.1621
ANTENNA # 4 (912)	32-54-18.8708	117-11-59.7012