

EXHIBIT No. 1

FCC Form 442
Motorola, Inc.

(4) Frequency Band

This application is for a test Local Multi-point Distribution System (LMDS) that implements two way connectivity. The test system will consist of four hub transceivers and 15 customer premise transceivers which provide the connecting link between data modems normally used in two way cable television data systems. Transmit frequencies for each are intended to be dynamically assigned depending upon interference and other to be determined factors. Each hub transmitter will be limited to the frequency band from 27,662 MHz to 28,350 MHz. Each customer premise transceiver will be limited to the frequency band from 29,455 MHz to 29,492 MHz. Detailed operating parameters for each transmitter type follows:

Hub Transmitters (Quantity 4)

- (A) Frequency Range: 27,662 MHz to 28,350 MHz
(B) Maximum RF Power: +13 dBm (20 milliwatt)
(C) Maximum EIRP: +28 dBm (631 milliwatt)
(D) Peak/Mean: All power levels are MEAN
(E) Emission: ~~D78~~ ~~6M00A1D~~ 12M0D7W
(F) Modulating Signal: 30 Megabit per Second digital data using 64 QAM format
(G) Necessary Bandwidth: Each transmit channel will occupy 6,000 kHz of bandwidth based on the normal channelization of the ourbound signal from a cable modem. The total frequency bandwidth requested provides channelization for all of the possible cable modem frequencies so that all possible operating parameters may be investigated.

Customer Premise Transmitters (Quantity 15)

- (A) Frequency Range: 29,455 MHz to 29,492 MHz
(B) Maximum RF Power: +13 dBm (20 milliwatt)
(C) Maximum EIRP: +49 dBm (7.943 Watt)
(D) Peak/Mean: All power levels are MEAN
(E) Emission: ~~D78~~ ~~600A1D~~ 1M20D7W
(F) Modulating Signal: 3.072 Megabits per second using 16 QAM format
(G) Necessary Bandwidth: Each transmit channel will occupy 600 KHz of bandwidth based on the normal channelization of the inbound signal from a cable modem. The total frequency bandwidth requested provides channelization for all of the possible cable modem frequencies so that all possible operating parameters may be investigated.

1.336 Mbps

Per Bob Skalk
3-11-99
relayed to
Nancy Hey (FC
via phone
File # 0037 EXPL P
R. Stone

EXHIBIT No. 2

FCC Form 442

Motorola, Inc.

(5b) Location

All hub transmitters and 10 of the 15 customer premise transmitters will be located on the Motorola campus bounded on the North by McDowell Road, on the South by Roosevelt Road, on the West by Hayden Road and on the East by Granite Reef Road in Scottsdale, Arizona.

Two of the hub transmitters will be located on the 6th floor roof of the building complex off of McDowell Road with the other two being located on the 2nd floor roof of the building complex off of Roosevelt Road.

The 10 customer premise transmitters will be distributed on the roofs of the Motorola buildings on the campus.

The remaining 5 customer premise transmitter will be located on roofs of employee's residences within a 5 kilometer radius of the center of the Motorola campus previously described. The exact location of those transmitters has not been determined at this time.

FROM : MOTOROLA DTP

PHONE NO. : 6024417138

May. 20 1998 08:15PM P8

AUG 20 '99 08:57 FR MOTOROLA SAT COMM GP 480 732 5240 TO 912024181918 P.03/06

EXHIBIT No. 3

**FCC Form 442
Motorola, Inc.**

(6) Antennas

Both the hub and customer premise equipment use directional antennas.

Hub Antennas

Beam Width: 90 Degrees

McDowell Road Building

Antenna 1 Orientation: 000 Degree True, 0 Degree Elevation

Antenna 2 Orientation: 180 Degree True, 0 Degree Elevation

Roosevelt Road Building

Antenna 1 Orientation: 270 Degree True, 0 Degree Elevation

Antenna 2 Orientation: 090 Degree True, 0 Degree Elevation

Customer Premise Antennas

Beam Width: 2.3 Degrees

Each customer premise transmit antennas will be pointed directly at one of the hub transceiver sites with a 0 degree elevation angle. This is the case for customer premise equipment both on the Motorola campus and off the Motorola campus.

FROM : MOTOROLA DTP

PHONE NO. : 6824417138

MAY. 20 1998 08:15PM P9

AUG 20 '99 08:57 FR MOTOROLA SAT COMM GP 480 732 5240 TO 912024181918 P.04/06

EXHIBIT No. 4

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(10) Test Program

Test Objective

The objective of this test setup is to explore the feasibility of providing wideband data connectivity to very large numbers of individual subscribers using wireless interfaces operating in the 30 GHz frequency range. The continued growth in demand for data connectivity, specifically internet connectivity, will exceed the current limited capacity of telephone modems. Cable television systems which already have a large base of connected customers are beginning to use those systems to provide data connections at much higher speeds than telephone modems with good success. Telephone companies are also exploring new methods of using their existing wire to provide wideband data service. A natural competitor to the wired system is the wireless system where connectivity is provided by an RF link. Frequency allocations in the vicinity of 30 GHz for this wireless service have already been made in anticipation of its viability. The requested license will allow Motorola to establish a test system for the purpose of investigating wideband data connectivity for thousands of consumers using wireless 30 GHz links. As a result of this investigation, we expect to establish the requirements for modems, transceivers, system layout and system operating parameters. We also expect to establish performance expectations and limits for the system. This information will be used in the development of equipment that will be sold to the commercial market for the purpose of providing a competing solution for wideband data connectivity.

Equipment Description

The equipment for which this license is requested will duplicate to a maximum extent the same configuration as is used in a cable data system. Data modems and system protocols are already established for those systems, thus they are a natural starting point for a wireless system investigation. By treating the cable modem's cable interface as the IF interface to a transceiver operating in the vicinity of 30 GHz a system that significantly emulates that of a cable system can be quickly achieved. That is the approach to be undertaken by the proposed system for which a test license is being sought.

The test system will implement a limited wireless network encompassing a maximum of 15 users who are linked to one of two central sites or hubs. One of the hubs is the 'head end' which provides the gateway to the Internet. The other hub is connected to the head end initially by a cable connection and eventually by a wireless link operating in the same frequency band as the user links. The connectivity must provide each user with full time access to the Internet gateway.

The headend equipment is Motorola's cable router configured to provide at least one downstream channel and a minimum of four upstream channels. The downstream

channel is the 30 Mbps channel from the headend to the customer premise equipment. It is timeshared among all of the users assigned to that channel. In this case all 15 users will be assigned to that channel. The upstream channel is the link from the customer equipment back to the hub site. This channel is also time shared among a few users. In the test system, each of the four hub transceivers will support the common outbound channel and its unique inbound channel.

The headend equipment sets up and manages the network. It generates the downstream channel that provides network synchronization and performance parameters to the customer equipment. Each customer equipment modem responds to its specific instructions in the downstream channel regarding its specific inbound channel, when to transmit, and how much data is expected. In this manner, the headend equipment can dynamically change channel assignments, transmit levels, and control data flow to most efficiently manage the network connections.

The interfaces to the headend equipment are 100 base T, FDDI, or ATM for interface to the Internet gateway and cable frequency IF interfaces to the transceiver equipment. The cable interface frequencies are 65 MHz to 750 MHz for the downstream interface and 6 MHz to 42 MHz for the upstream. The cable IF interfaces connect directly to the hub transmitters and receivers. Since the downstream channel is common to all hubs, the IF signal from the headend is split into four paths, one for each transmitter. With each hub receiver assigned a unique upstream channel, the received IF signals from the remote hub will be combined into a single cable back to the headend equipment.

Hub transmitters are provided by Millitech. They provide a fixed upconversion from the downstream cable IF frequency band to the 27.662 - 28.350 GHz band.