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June 3, 2008

DATE STAMP & RETURN

BY MESSENGER

Marlene H. Dortch
Secretary
Federal Communications Commission
445-12th Street SW
Washington, DC 20036

Re: Comtech Mobile Datacom Corporation
Modification of Blanket License to Operate Data Terminals in the L-Band
File No. SES-AMD-20070907-01251, E990143

Dear Ms. Dortch:

Comtech Mobile Datacom Corporation ("CMDC"), by its attorney, submits the attached revised Exhibit B to address FCC staff's request for additional information and clarification.

If you have any questions regarding this matter, please contact the undersigned counsel. Please date-stamp the duplicate copy of this letter and return it to the bearer.

DC01/GRIFJ/340062.1

Sincerely,

COMTECH MOBILE DATACOM CORPORATION

By: _____
Joan M. Griffin
Its Attorney

cc: Sylvia Lam
Andrea Kelly
Scott Kotler

Request for Waivers – Question 35

Comtech Mobile Datacom Corporation ("CMDC") requests a waiver of footnotes US308 and US315 to the U.S. Table of Frequency Allocations and Section 25.136(d) of the Commission's Rules. These provisions are intended to protect from interference maritime mobile-satellite service distress and safety communications in the lower L-band and aeronautical mobile-satellite service distress and safety communications in the upper L-band.

As discussed below, CMDC's terminals (all half-duplex) comply with the requirements listed in Section 25.136(d) of the Commission's Rules for the protection of maritime mobile-satellite service distress and safety communications in the lower L-band, and the equivalent requirements for the protection of aeronautical mobile-satellite service distress and safety communications in the upper L-band as set forth in the *NTIA/FAA Letter*.[1] However, CMDC's terminals do not comply with the National Telecommunications and Information Administration's ("NTIA's") interpretation of footnotes US308 and US315. NTIA has indicated that if a terminal meets certain minimum requirements and is capable of ceasing transmissions and inhibiting further transmissions within one second, that terminal would be considered to meet the real time access and priority preemption requirements in footnotes US308 and US315.[2] CMDC's terminals, being half-duplex, are unable to cease transmissions within one second. Nonetheless, CMDC demonstrates below that there is good cause for granting a waiver of footnotes US308 and US315 (as well as Section 25.136(d) and any other rules or footnotes that may apply here, in the Commission's view).

Description of CMDC System

CMDC provides wireless packet data services from mobile terminals throughout the United States and overseas. CMDC terminals typically are placed on land vehicles or at remote, fixed site locations. Either data collection devices or keyboard/displays, or both, may be attached to the terminals depending on the customers' needs in that location or at that time.

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1 *See Amendment of Part 87 of the Commission's Rules to Establish Technical Standards and Licensing Procedures for Aircraft Earth Stations,* 8 FCC Rcd 3156, ¶ 5, n. 22 (1993), *citing* Letter from Richard D. Parlow, Associate Administrator, Office of Spectrum Management, NTIA, and Gerald Markey, Manager, Spectrum Engineering Division, FAA to Cheryl Tritt, Chief, Common Carrier Bureau, FCC, dated January 14, 1993 *("NTIA/FAA Letter").*

2 *See Amtech Systems, LLC,* 22 FCC Rcd 977, 978 (2007) ("*Amtech*"), *citing Establishing Rules and Policies for the Use of Spectrum for Mobile Satellite Service in the Upper and Lower L-Band,* Report and Order, IB Docket No. 96-132, 17 FCC Rcd 2704, 2742 (¶ 41) (2002) and Letter from William T. Hatch, Associate Administrator, NTIA, to Donald Abelson, Chief, International Bureau, FCC, filed Aug. 25, 2000; *Richtec Inc.*, 18 FCC Rcd 3295, 3298 (2003) ("*Richtec*").

The terminals transmit and receive data packets via dedicated channels in the L-band, which for the U.S.-based transceivers is provided by MSAT-1 or MSAT-2. The packets can be routed over any of several terrestrial data networks, or to other mobile transceivers in the CMDC network. Use of the satellite relay is as a "bent pipe," meaning that only bandwidth and power are purchased from the satellite relay operator. Network management is provided by CMDC-owned and operated gateway sites.

The wireless packet data network is bi-directional, and transmission can be asynchronous in both directions. When powered on, terminals are either listening for packets addressed to them - individually or in groups - from a gateway station, or are transmitting packets in short bursts to a gateway station. Other modes of operation are possible, including periodic reporting from a terminal to a customer's operation center, via a gateway, and polled queries to the terminals by either the gateway or operation center.

The mobile transceivers transmit and receive direct sequence spread spectrum bursts. In the contiguous U.S. ("CONUS"), the typical burst duration is less than 100 milliseconds, while the maximum burst duration is about 400 milliseconds. In Alaska and Hawaii, a reduced data rate service is employed that results in a maximum burst duration of 1.6 seconds. Bursts from any individual transceiver are usually a minimum of several minutes apart. This means that the maximum interval during which a transceiver will not be listening to the outbound channel is less than 0.4 seconds (1.6 seconds in Alaska and Hawaii), and represents only a small fraction of one percent of its operating time.

In normal operation, a packet of information sent by a mobile terminal will be received by the CMDC gateway station, then routed to the designated recipient via the Internet, dedicated links, or the CMDC network outbound channel. There are no constraints on the routing of packets, though mobile-to-mobile, mobile-to-operation center, and operation center-to-mobile represent the majority of the traffic.

The mobile terminals can be tuned to transmit and receive across the entire L-band. This is to facilitate access to available bandwidth on the satellite relays, since the satellites operate many beams, and any one frequency may not be available across all beams. The outbound beams broadcast their identity in the form of network management packets from which the mobile terminal can determine what transmission frequencies are available for use. The operating frequencies may be changed by command from the gateway stations. Also, a mobile terminal can only transmit when its receiver is locked onto a CMDC forward link.

The network management function of the CMDC network is provided by CMDC's 24/7 Network Operations Center in Germantown, MD. This function includes monitoring traffic, setting and adjusting operating frequencies, and activating a system wide shut-down capability for individual or multiple service regions as required. The shut-down can be accomplished by either CMDC personnel, locally or remotely, as well as by the satellite operator.

Compliance with Section 25.136(d)

The following paragraphs explain CMDC's compliance with Section 25.136(d) of the Commission's Rules, which address the protection of maritime mobile-satellite service distress and safety communications in the lower L-band.

Section 25.136(d)(1). All MES transmissions shall have a priority assigned to them that preserves the priority and preemptive access given to maritime distress and safety communications sharing the band.

Section 25.136(d)(2). Each MES with a requirement to handle maritime distress and safety data communications shall be capable of either: (i) recognizing message and call priority identification when transmitted from its associated LES or (ii) accepting message and call priority identification embedded in the message or call when transmitted from its associated LES and passing the identification to shipboard data message processing equipment.

CMDC's terminals contain a priority field built into the CMDC message protocol used between the MES and its associated LES. This priority field could be used to determine how the message should be handled within the CMDC network. Since CDMC terminals are not used for maritime distress services and do not share a channel with transceivers used for that purpose, there is no requirement for the network to process this priority field at this time. By putting the field in the transceiver firmware, however, CMDC has the "hooks" in place to deploy a network priority scheme should the need arise.

Section 25.136(d)(3). Each MES shall be assigned a unique terminal identification number that will be transmitted upon any attempt to gain access to a system.

CMDC's terminals comply with this requirement. Each CMDC MES is part of a virtual private network with a distinct identity.

Section 25.136(d)(4). After an MES has gained access to a system, the mobile terminal shall be under control of a LES and shall obtain all channel assignments from it.

CMDC's terminals comply with this requirement. After connecting to an associated LES system, the CMDC MESs obtain control and frequency tuning commands over the communication channel only from that LES.

Section 25.136(d)(5). All MESs that do not continuously monitor a separate signalling channel or signalling within the communications channel shall monitor the signalling channel at the end of each transmission.

CMDC's terminals comply with this requirement. The CMDC MESs are a half-duplex RF system operating on dedicated channels and when not transmitting are continuously monitoring the LES for command signals.

Section 25.136(d)(6). Each MES shall automatically inhibit its transmissions if it is not correctly receiving separate signalling channel or signalling within the communications channel from its associated LES.

CMDC's terminals comply with this requirement. As noted previously, a CMDC MES will not transmit unless it is properly receiving and locked onto the incoming RF signal from its associated LES.

Section 25.136(d)(7). Each MES shall automatically inhibit its transmissions on any or all channels upon receiving a channel-shut-off command on a signalling or communications channel it is receiving from its associated LES.

CMDC's terminals comply with this requirement. A CMDC MES will not transmit if it has been disabled by a control signal from the associated LES.

Section 25.136(d)(8). Each MES with a requirement to handle maritime distress and safety communications shall have the capability within the station to automatically preempt lower precedence traffic.

As noted previously, there is no requirement for CMDC's MESs to handle maritime distress and safety communications, but the "hooks" are in the transceiver firmware and thus a priority function can be easily added if the need should arise.

Compliance with *NTIA/FAA Letter* Requirements

The following paragraphs explain CMDC's compliance with the requirements set forth in the enclosure to the *NTIA/FAA Letter*. These requirements address the protection of aeronautical mobile-satellite service distress and safety communications in the upper L-band.

1. All MES transmissions shall have a priority assigned to them that preserves the priority and preemptive access given to aeronautical distress and safety communications sharing the band.

2. Each MES with a requirement to handle distress and safety data communications shall be capable of recognizing message and call priority identification when transmitted from its associated LES.

CMDC's terminals contain a priority field built into the CMDC message protocol used between the MES and its associated LES. This priority field could be used to determine how the message should be handled within the CMDC network. Since CDMC terminals are not used for

aeronautical distress services and do not share a channel with transceivers used for that purpose, there is no requirement for the network to process this priority field at this time. By putting the field in the transceiver firmware, however, CMDC has the "hooks" in place to deploy a network priority scheme should the need arise.

3. Each MES shall be assigned a unique terminal identification number that will be transmitted upon any attempt to gain access to a system.

CMDC's terminals comply with this requirement. Each CMDC MES is part of a virtual private network with a distinct identity.

4. After an MES has gained access to a system, the mobile terminal shall be under control of an LES and shall obtain all channel assignments from it.

CMDC's terminals comply with this requirement. After connecting to an associated LES system, the CMDC MESs obtain control and frequency tuning commands over the communication channel only from that LES.

5. All MESs that do not continuously monitor a separate signalling channel shall have provision for signalling within the communications channel.

CMDC's terminals comply with this requirement. The CMDC MESs are a half-duplex RF system operating on dedicated channels and when not transmitting are continuously monitoring the LES for command signals.

6. Each MES shall automatically inhibit its transmissions if it is not correctly receiving a separate signalling channel or signalling within the communications channel from its associated LES.

CMDC's terminals comply with this requirement. As noted previously, a CMDC MES will not transmit unless it is properly receiving and locked onto the incoming RF signal from its associated LES.

7. Each MES shall automatically inhibit its transmissions on any or all channels upon receiving a channel-shut-off command on a signalling or communications channel it is receiving from its associated LES.

CMDC's terminals comply with this requirement. A CMDC MES will not transmit if it has been disabled by a control signal from the associated LES.

8. Each MES with a requirement to handle distress and safety-related communications shall have the capability within the station to automatically preempt lower precedence traffic.

As noted previously, there is no requirement for CMDC's MESs to handle aeronautical distress and safety communications, but the "hooks" are in the transceiver firmware and thus a priority function can be easily added if the need should arise.

Compliance with NTIA interpretation regarding real time access and priority preemption

As noted previously, NTIA has indicated that it will consider a terminal to satisfy the real time access and priority preemption requirements in footnotes US308 and US315 if the terminal is capable of, among other things, ceasing transmissions and inhibiting further transmissions within one second. CMDC interprets this benchmark as meaning that each MES for all of its operating modes must, within one second of receiving a shutdown command, stop all ongoing RF transmissions and prevent any new RF transmissions.

The CMDC MES is an extremely low duty cycle (0.03 percent on average) DSSS system having an RF transmission duration, at the maximum message length (128 bytes) and data rate of 400 milliseconds. The message length of a typical transmission is roughly 50 bytes, having an RF transmission duration at the full data rate of approximately 152 milliseconds.

The data rate at which a MES transmits is set by CMDC's signal set and not by the individual operating the terminal. All MESs that are used in CONUS, which constitute the vast majority of CMDC MESs in the U.S., operate at the full data rate. A small number of CMDC's terminals that operate in Alaska and Hawaii are programmed to operate at ¼ data rate. Operation at a slower data rate is necessary in Alaska and Hawaii to compensate for the reduced availability of satellite bandwidth for Alaska and Hawaii. At ¼ data rate, the transmission duration of a typical transmission (50 bytes) increases to 607 milliseconds, and the transmission duration for a full length message increases to 1.6 seconds.

The timeout parameter on CMDC's MESs is set at 2 seconds. This means that when a MES detects a loss of forward link, the MES will continue to monitor the forward link for an additional 2 seconds to confirm that the carrier is down before disabling the transmitter.

Adding the 2 second timeout period to the transmission duration provides the total time required by CMDC's MESs to stop all ongoing transmissions and prevent any new transmissions, as follows. The information provided in the following table applies to each model of MES for which CMDC seeks authority in this Application.

Length of Message	Data Rate	Seconds
128 bytes	Maximum	2.4
50 bytes	Maximum	2.2
128 bytes	¼	3.6
50 bytes	¼	2.6

Waiver Request

Section 1.3 of the Commission's Rules authorizes the Commission to waive its rules for "good cause shown."[3] In general, the Commission will grant a waiver of its rules if the relief requested would not undermine the policy objective of the rule in question and would otherwise serve the public interest.[4] In considering requests for non-conforming spectrum uses, the Commission has indicated that it will generally grant such waivers when there is little potential for interference into any services authorized under the Table of Allocations and when the non-conforming operator accepts any interference from authorized services.[5]

CMDC submits that all of the Commission's requirements for grant of a waiver are satisfied here. It is unlikely that the preemptive capability of CMDC's terminals will adversely affect maritime safety for the following reasons. *First*, as noted previously, CMDC's terminals operate on dedicated channels rather than channels that are shared with distress communications or transceivers used for such communications. The Commission and NTIA have previously recognized that operation of MESs on dedicated channels makes it unlikely that such operation will affect the real time access and priority preemption for maritime distress services.[6]

Second, even under the worst-case scenario – a terminal transmitting a full-length message at ¼ rate – the terminal will cease transmitting in only 3.6 seconds, since CMDC's MESs transmit only short bursts of data. The Commission has previously granted waivers to other systems that require considerably longer than 3.6 seconds to cease transmission, recognizing that these systems are unlikely to adversely impact maritime safety.[7]

Third, the worse-case scenario rarely occurs, because CMDC's terminals operate at ¼ rate only in Alaska and Hawaii, and CMDC's system is an extremely low duty cycle system. CMDC has analyzed data from its operations in the U.S. over an 8-month period, and has

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3 47 CFR § 1.3.

4 *Geologic Solutions, Inc.,* Order and Authorization, DA 06-1179, rel. May 31, 2006, at ¶ 5 ("*Geologic Solutions*") (citations omitted).

5 *Id.*

6 *See Richtec* at ¶ 11.

7 *See, e.g., Amtech* at ¶ 6 (maximum shutdown time is 15 seconds and average shutdown time is 7 seconds); *Geologic Solutions* at ¶ 7 (maximum time necessary for preemption is 10.34 seconds).

determined that only an average of 2900 packets per month had a transmission duration of 1 second or longer.

Finally, CMDC notes that it has never received any indication that its operations in the lower L-band have interfered with any marine broadcasts.

For essentially the same reasons — use of dedicated channels not shared with aeronautical distress services or transceivers used for aeronautical distress communications, and extremely short maximum shutdown time that would rarely be triggered due to the short bursty nature of CMDC's service -- it is unlikely that the preemptive capability of CMDC's terminals will adversely affect aeronautical safety.

At the same time, grant of this waiver request will serve the public interest. CMDC is the sole supplier of hardware and services for the U.S. Army Logistics Command's Movement Tracking System ("MTS"). MTS is used by U.S. forces in Iraq and around the world for near real-time messaging and location tracking of mobile assets. CMDC's technology and services are also integrated into the U.S. Army's Force XXI Battle Command, Brigade and Below ("FBCB2") command and control systems, also known as Blue Force Tracking ("BFT"). The U.S. Army uses this MTS system as a key part of its overseas deployment training, as well as for logistics tracking in the US. The National Guard has recently adopted the MTS to support its tracking and messaging requirements during disaster and recovery operations at the local, state and national levels due to the MTS's superior performance and widespread Army use. CMDC's system is also used by commercial entities operating in remote areas, particularly in the field of energy development. Grant of this waiver request will enable CMDC to continue to provide these critical services to the U.S. Army, National Guard, and energy companies.

It is CMDC's understanding that the Commission has not previously granted waivers of the real time access and priority preemption requirements as they apply to aeronautical services. That fact should not provide a basis for the Commission denying an upper L-band waiver to CMDC. As shown herein, it is unlikely that the preemptive capability of CMDC's terminals will adversely affect aeronautical safety. Furthermore, it would not serve the public interest to restrict CMDC's operations to the lower L-band. CMDC has requested an upper L-band waiver as well as a lower L-band waiver because it needs the ability to operate in both segments of the band in order to compete successfully in the U.S. telecommunications market. It is the satellite operator, not CMDC, who controls the availability and assignment of L-band space segment capacity. CMDC can ask for lower L-band capacity when requesting a new channel, but there is no guarantee such capacity will be available for assignment. As such, without a upper L-band waiver, CMDC's inability to obtain a lower L-band channel would likely prevent CMDC from providing a potential client with contracted-for services.

Regardless of the actual availability of lower L-band capacity, restricting CMDC to lower L-band operations could place CMDC at a competitive disadvantage. If a satellite operator is aware of the fact that CMDC's license limits CMDC solely to use of the lower L-band, the operator could use this information as the means to assert a purported scarcity of L-band capacity, and as such justify charging higher rates to CMDC for satellite channels. Furthermore,

a competitor who is aware of the restrictions on CMDC's license could use this information to its competitive advantage. If CMDC is limited to providing service only in the lower L-band, the competitor could present a compelling argument that the lesser availability of L-band capacity could prevent CMDC from providing service, or force CMDC to charge higher rates than the competitor, thereby potentially enticing CMDC's existing or prospective customers to purchase service from the competitor rather than from CMDC. CMDC is not aware of any other L-band service provider whose operations have been restricted by the Commission to one band segment despite the operator's request to operate in the entire band.

In light of these facts, it is clear that there is good cause for grant of CMDC's waiver request. CMDC respectfully asks that the Commission grant this request.