

To: fcoperic@fcc.gov
From: Bill Moyer x8-3542 <wmoyer@qualcomm.com>
Subject: Requested Information for FCC ID J9CGSTM1, EA94735 Filing
Cc:
Bcc:
X-Attachments:

Frank Coperich:

This e-mail will be printed to disk using PDFWriter and submitted as an attachment pdf file via the filing submissions webpage. It is also being sent to you directly in parallel so we will have a record of what was submitted, that being something the Webpage does not always provide due to time-out problems. My responses to your specific questions and comments are interleaved below in blue italics so they may be more readily discerned.

>Date: Thu, 19 Aug 1999 15:37:39 -0400
>From: oetech@fccsun07w.fcc.gov (OET)
>To: wmoyer
>Subject:
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>To: William Moyer, Qualcomm Incorporated
>From: Frank Coperich
> fcoperic@fcc.gov
> FCC Application Processing Branch
>
>Re: FCC ID J9CGSTM1
>Applicant: Qualcomm Incorporated
>Correspondence Reference Number: 9295
>731 Confirmation Number: EA94735
>Date of Original E-Mail: 08/19/1999
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>1. Qualcomm is requesting 0.8 W for Part 25, probably ERP. It needs to be clarified if this is conducted, ERP or EIRP. SAR report has 28 dBm plus 3 dBi antenna gain = 31 dBm EIRP. Not sure what is reported in the EMC portion for Part 25. Other information in the filing is indicating 1.0 W EIRP with 0.4 W EIRP being typical (section 3.5 of description).

The following table should clarify what the rated power levels are. While Globalstar GAI and Part 25 limits and power levels are generally defined as EIRP values, CDMA Cellular and AMPS mode values are generally defined as ERP values. For consistency in the Tri-Mode UT online Form 731, ERP values were used for all 3 modes. In Exhibit 1, Section 3.5, EIRP values are given for Globalstar mode transmissions, while ERP values are given for CDMA cellular and AMPS mode transmissions.

Globalstar UT Emissions Designators and Data:

*Globalstar Transmissions: Ref. Des. 1M25G1W
1610-1621.35 MHz, 10 ppm freq. tolerance*

Rated RF Power:

Portable UT's:

*1.0 W, 0.0 dBW EIRP max. (0.4 W, -4.0 dBW EIRP typ.)
0.8 W, -1.1 dBW ERP max. (0.3 W, -5.9 dBW ERP typ.)*

*Mobile (Car Kit) and Fixed UT's**4.0 W, 6.0 dBW EIRP max. (2.0 W, 3.0 dBW EIRP typ.)**2.5 W, 3.9 dBW ERP max. (1.2 W, 0.9 dBW ERP typ.)**CDMA Cellular Transmissions: Ref. Des. 1M25F9W**824.02-848.98 MHz, 10 ppm freq. tolerance**Rated RF Power: 0.6 W, -2.2 dBW ERP max.**FM AMPS Transmissions: Ref. Des. 40K0F8W**40K0F1D**824.02-848.98 MHz, 0.00025% freq. tolerance**Rated RF Power: 0.6 W, -2.2 dBW ERP max.*

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>2. The device has two battery options, a standard and an extended battery. Which one of these batteries was used during the SAR test? Highest SAR for AMPS mode is 1.47 W/kg. Please clarify if the two battery options will result in SAR variations higher than those reported for the worst case in AMPS mode?

While it was planned to offer two battery options, a standard battery and a more bulky extended battery, that has changed. Qualcomm will now offer only one battery, a new polymer battery with the same form factor as the old standard battery and greater energy storage capacity than the old extended battery. A copy of the revised User Guide, with language reflecting this change, will be uploaded as attachment file E.15a 80-98153-1EN Rev-A.PDF.

The SAR performance has been verified in this configuration and accurately

reflects the data contained in the TMP UT SAR Report, submitted as file E.13 TMP SAR TR.pdf. Note please that for conservatism the AMPS power level tested was deliberately greater than the worst case which will be encountered in the field, having been specially adjusted to provide a level somewhat above the maximum rated radiated power (0.6 W ERP, 28 dBW ERP) + 2 dB error tolerance.

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>3. The users manual indicates there are optional accessories such as leather case, privacy headset, handset and adapter cable etc. Please clarify if these optional items will allow body-worn operations for this device. For example, does the leather case has a belt-clip that will allow body-worn operation through a headset and adapter cable for normal use; or are these items limited to other operating configurations. If body-worn conditions is allowed, worst case SAR needs to be addressed for the allowable operating modes.

The privacy handset and headset are optional Car Kit accessories which cannot be plugged directly into the phone. No accessories support body worn operation.

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>4. Please clarify if all three operating modes, Satellite, AMPS and CDMA always co-exist in all models of this phone. If not, please address if differences in hardware combinations will affect SAR, that is, SAR for phones without AMPS or CDMA sections etc.

Qualcomm offers only two models of Globalstar Portable UT's: the Tri-Mode

phone (FCC ID: J9CGSTM1, filing EA94735) which supports all 3 modes of operation, and the Single-Mode phone (FCC ID: J9CGSSM1, filing EA94445) which operates only in Globalstar Mode.

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>5. Please identify the locations of peak SAR for the Satellite mode, is it at the top of the head? The SAR contour plots appear to indicate higher SAR is possible along side wall sections of the phantom, please clarify. We do not expect SAR to exceed limit for the Satellite mode according to the test setup and operating configurations, but should revise procedures for future tests. FYI - DASY systems has new procedures for measuring SAR along side walls. Please also identify the locations of peak SAR with respect to the phone and phantom for the AMPS and CDMA modes, or re-submit the worst case AMPS mode SAR plot with an outline of the phone and phantom indicated/sketched on it.

Peak Globalstar mode SAR is across the upper forehead side (the Globalstar phone antenna detent positions result in a forward-tilting Globalstar antenna when positioning the phone on the phantom per the procedure outlined in the SAR Test Report). Unlike terrestrial cellular phones with monopole antennas tightly coupled to the body of the phone (resulting in substantial induction region emissions from the body of the phone and the antenna feedpoint), the Globalstar antenna is an extensible balanced quadrafilar helix substantially decoupled from the body of the phone and with the radiating antenna elements' feed point well up the antenna stalk, above the top of the head. The transmit antenna is stacked above the receive antenna, the base of which is by design even with the top of an adult's head.

The worst case terrestrial mode hot spots are located just above the left ear and above and a bit behind the right ear, opposite the whip antenna feedpoint in the top of the body of the phone, depending on whether the phone is used on the left or right side of the head.

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>6. The operators manual indicates there is an optional cellular antenna (item #11), please clarify. The equipment description (section 2.0 of technical description?) describes a separately tested car kit with externally mounted antenna for vehicle use. Please provide information to determine if MPE evaluation can be categorically excluded for this external option for the different operating modes (Satellite, AMPS and CDMA) or if MPE should be addressed.

The Car Kit provides a coaxial interface cable to connect to a 3rd party coax cable and externally-mounted cellular antenna. The resultant radiated terrestrial-mode transmit power is not known, but will be less than 1.5 W ERP at a distance greater than 20 cm from the body, meeting the MPE low-power categorical exclusion criterion of §2.1091 (c).

That conclusion is supported by consideration of the worst-case maximum ERP output of the phone with its built-in 4.1 dBi whip antenna (30 dBm, including 2 dB error tolerance), the maximum credible additional gain which could be provided by a 3rd party cellular antenna, 1.1 dB (5.2 dB - 4.1 dB) for a quarter-wave monopole with a large ground plane, and the probable cable loss for the greater length of coaxial cable between the phone PA and the antenna (0.5 to 1.0 dB). Together that yields a worst-case maximum predicted transmit power of 30.1 to 30.6 dBm ERP, 1.02 to 1.15 W ERP.

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>7. Please also submit the 900 MHz and 1800 MHz validation plots performed before the SAR measurements to support system accuracy.

The validation plots will be uploaded as attachment file E.13 Ap. A SAR Val.pdf.

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>8. EMC report has 26.4 dBm (437 mW) for AMPS mode and 25.1 dBm (324 mW) for CDMA mode in conducted spurious emissions and 600 mW ERP for both modes. SAR was performed at 28.9 dBm ERP for Satellite mode, 30.4 dBm ERP for AMPS mode and 28.4 dBm ERP for CDMA mode; separate grant comments will be incorporated to identify AMPS mode SAR test output. Please provide or indicate the equivalent conducted output used for AMPS mode during the SAR tests (not to exceed 2 dB above 600 mW ERP).

Conducted power output of SAR test phone in AMPS mode was 28 dBm. (With a measured radiated power of 30.4 dBm ERP, 32.5 dBm EIRP, the calculated whip antenna gain is 4.1 dBi, which is the value used in Response 6 above.)

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>The items indicated above must be submitted before processing can continue on the above referenced application. Failure to provide the requested information within 60 days of the original e-mail date may result in application dismissal pursuant to Section 2.917 (c) and forfeiture of the filing fee pursuant to section 1.1108.

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>DO NOT reply to this e-mail by using the Reply button. In order for your response to be processed expeditiously, you must upload your response via the Internet at www.fcc.gov, Electronic Filing, OET Equipment Authorization Electronic Filing. If the response is submitted through Add Attachments, in order to expedite processing, a message which informs the processing staff that a new exhibit has been submitted must also be submitted via Submit Correspondence. Also, please note that partial responses increase processing time and should not be submitted.

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>Any questions about the content of this correspondence should be directed to the e-mail address listed below the name of the sender.

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