

To: fcoperic@fcc.gov
From: Bill Moyer x8-3542 <wmoyer@qualcomm.com>
Subject: Requested Information FCC ID J9CGSCK1, EA94778 Filing
Cc: pguckian, jmoulton, kstambau, mcarosel
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 that we will have a record of what was submitted. My responses to your specific questions and comments are interleaved below in blue italics, so that they may be more readily discerned.

>Date: Fri, 17 Sep 1999 08:40:22 -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 J9CGSCK1
>Applicant: Qualcomm Incorporated
>Correspondence Reference Number: 9660
>731 Confirmation Number: EA94778
>Date of Original E-Mail: 09/17/1999
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>1.) There is no supporting information for the proposed 35 cm separation distance indicated in the installation note included in this filing for this car kit. This note also needs to be revised to indicate that this is an installation requirement, since listing all the regulations and the separation distance without explaining what the exact installation requirement is to fulfill regulations is insufficient.

Justification for the 35 cm separation distance constraint was provided in the Car Kit MPE Analysis, submitted as file E.7 Car Kit MPE Analysis.pdf, with File Description label: E 7 CK MPE Analysis, Exhibit Type declaration: Schematics (which was an error, it was intended to be submitted as RF Exposure Info).

The errata sheet for the Car Kit Installation/User Guide did not explicitly state that adherence to the 35 cm separation distance was an installation requirement. However the last paragraph of the section on Exposure to Radio Frequency Signals in that errata sheet (repeated below) did state the reasoning behind the restriction:

"The phone and this Car kit are designed to comply with established ANSI, FCC, and international safety standards for safe levels of human exposure to RF energy. Nonetheless, RF field intensity at the surface of the transmitting car kit antenna is fairly high. Maintaining a minimum line-of-sight separation distance of 35 cm (14 inches) between the transmitting antenna and all personnel will ensure that the General Population / Uncontrolled Exposure maximum permissible exposure (MPE) limits are not exceeded. This satisfies the MPE limits mandated by the FCC in 47 CFR Ch. 1 (10-1-98 Edition), Part 1, §1.1310 and defined in the ANSI/IEEE C95.1-1992 standard, and also satisfies the slightly more-stringent European and international exposure limit recommendations of IRPA (1991) and ICNIRP (1996)."

Per your request the draft errata sheet has been revised to add the following statement to the section on Mounting the ODU:

"Caution

As discussed in the earlier section on exposure to radio frequency signals, when the ODU is transmitting it is necessary that at least a 35 cm (14 inch) line-of-sight separation distance be maintained between the ODU antenna and the people within or near the vehicle. Mounting the ODU at least 35 cm from the edge of the vehicle roof will satisfy that requirement under normal use conditions."

A copy of the revised draft errata sheet has been uploaded to the electronic filing Webpage as file: [E.11b CK MPE Restrict.pdf](#), with File Description label: E 11b CK MPE Restrict and Exhibit Type declaration: Users Manual.

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>2.) The final output of the ODU/antenna will be dependent on the input device or phone. Please indicate what phones are this car kit for or what input restrictions are there to ensure the output for this car kit will be within the limits of those proposed.

The Car Kit supports operation with the Tri-Mode UT (TMP UT, FCC ID: J9CGSTM1, EA94735) and the Single-Mode UT (SMP UT, FCC ID: J9CGSSM1, EA94445).

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>3.) For the cellular antenna option provided by this car kit, categorical exclusion from MPE evaluation is dependent on the antenna gain and output of the individual phone. Please clarify the type of antennas to be used that are appropriate for categorical exclusion from routine MPE evaluation or otherwise MPE evaluation is needed. For mobile operations, a minimum of 20 cm separation or more is needed which should be included as part of the installation instructions to ensure compliance.

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.

Other forms of omnidirectional antenna suitable for cellular transmissions, including a short dipole, half-wave dipole, monopole on a small ground planes, and a small loop antenna, will have a lower gain than that of a quarter wave monopole over a large ground plane, and hence a lower ERP value. Directional narrowbeam antennas would have substantially higher antenna gains and ERP within their main beam, but are not suitable for terrestrial cellular operations.

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>4.) We need supporting information for the requested 4.0 W EIRP.

MPE analysis, submitted as discussed in the response to Item 1 above, evaluated Car Kit emissions on the basis of a very conservative 38 dBm EIRP (including 1 dB calibration error tolerance), 6.3 W EIRP.

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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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