IEM6270 Regulatory User Manual and Host Guidelines

80-H7163-9 Rev. A

July 9, 2011

Submit technical questions at:
regulatory.support@qualcomm.com

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QUALCOMM Incorporated
5775 Morehouse Drive
San Diego, CA 92121-1714
U.S.A.

Revision history

Revision	Date	Description
A	July 2011	Initial release

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Tables

1 Introduction

This document provides

- IEM6270 safety information
- IEM6270 Host Requirements allowing leverage of the IEM6270 limited modular approval.

1.1 Host Device Summary Authorized under Limited Modular Approval

The IEM6270 can be installed into a host product without further certification requirements for the following device configurations:

a. Fixed-mount or mobile host devices[†] where a minimum of 20 cm separation distance is provided between the transmitting antenna and the end user that can be installed without a Class I or Class II Permissive Change process.

b. Collocated with fixed or mobile host devices within the technical requirements defined in Section 3.1 of his document

Other host installations are available through a Class II change or new system certification.

Installation into a "portable" host device where <20cm between the transmission antenna and end user is not authorized as a Class I permissive change. Portable host devices require a new certification or Class II permissive change where RF safety is addressed through a Specific Absorption Rate ("SAR") Report.

The IEM6270 is not intended for installation into notebook computers as described in KDB Publication 616217[**] and associated supplemental procedures.

For equipment in which the RF exposure classification is unclear (see CFR 47 §2.1091(d)(4)), consult with the module OEM and/or the FCC for guidance. Any collocated transmitter or antenna that does not meet the technical requirements defined in this document requires a Class II permissive change to authorize simultaneous transmission.

[†] Mobile equipment, as defined in CFR 47 §2.1091(b). Fixed-mount hosts are non-mobile equipment that are either fixed in place or large equipment that is not easily moved.

[**] KDB 616217 is the FCC procedure *SAR Evaluation Considerations for Laptop Computers with Antennas Built-in on Display Screens*.

2 Safety Information

The following safety warnings and usage considerations are applicable to the IEM6270 module itself and integrated host products. User manual documentation for host products must also include these warning statements.

2.1 Safety Warnings for Stand Alone Module and/or Host Products

The following safety warnings and usage considerations are applicable to the IEM6270 module

Do not operate the IEM6270 platform in the following environments:

- In active blasting areas
- In potentially explosive environments such as refueling points, fuel depots, or chemical plants
- Near medical equipment, especially life support equipment that might be susceptible to radio interference
- In an aircraft as follows:
  - IEM6270 platform transmissions could interfere with aircraft electrical and communication systems. Like cell phones, using the IEM6270 platform in an aircraft is illegal in some jurisdictions.
- If cell phone usage is permitted while the aircraft is on the ground, normal IEM6270 device operation is also permitted.

Persons with implantable medical devices should observe the following precautions:

- Always keep the mobile device more than 20 cm (8 inches) from the implantable medical device when the mobile device is turned on.
- Do not carry the mobile device in the breast pocket.
- Use the ear opposite the implantable medical device to minimize the potential interference.
- Turn off the mobile device immediately if you have any reason to suspect that interference is taking place.
- Read and follow the directions from the manufacturer of your implantable medical device. If you have any questions about using your medical device with your implantable medical device, consult your healthcare provider.

2.2 Radio Frequency Emissions

Your wireless device, which contains a radio transmitter and receiver, emits radio frequency energy during use. The following consumer information addresses commonly asked questions

about the health effects of wireless devices.

2.2.1 Safety and Wireless Devices

Scientific research on wireless devices and radio frequency ("RF") energy has been conducted worldwide for many years, and continues. In the United States, the Food and Drug Administration ("FDA") and the Federal Communications Commission ("FCC") set policies and procedures for wireless devices. The FDA issued a website publication on health issues related to usage of cell phones where it states, "The scientific community at large believes that the weight of the scientific evidence does not show an association between exposure to RF from cell phones and adverse health outcomes." Still the scientific community does recommend conducting additional research to address gaps in knowledge. That research is being conducted around the world and the FDA continues to monitor developments in this field. You can access the FDA website at http://www.fda.gov (Under "C" in the subject index, select Cell Phones > Research.). You can also contact the FDA toll free at (888) 463-6332 or (888) INFO-FDA. The FCC issued its own website publication stating that "there is no scientific evidence that proves that wireless telephone usage can lead to cancer or other problems, including headaches, dizziness, or memory loss." The publication is available at http://www.fcc.gov/cgb/cellular.html or through the FCC at (888) 225-5322 or (888) CALL-FCC. The National Cancer Institute ("NCI") states that concerns about the potential health effects of using cellular phones – "and specifically the suggestion that using a cell phone may increase a person's risk of developing brain cancer – are not supported by a growing body of research on the subject." You can access NCI's review of the research at http://www.cancer.gov/aboutnci/ncicancerbulletin/archive/2008/092308/page7.

2.2.2 Can I minimize my RF exposure?

If you are concerned about RF, there are several simple steps you can take to minimize your RF exposure. You can, minimize usage of the device near the body. You can also place more distance between your body and the source of the RF, as the exposure level drops off dramatically with distance.

Wireless devices marketed in the United States are required to meet safety requirements regardless of whether they are used against the head or against the body. All IEM6270 host devices must comply with the FCC RF exposure limit.

Where can I obtain further information?

For further information, see the following additional resources (need to make sure all of these are still operational)

- U.S. Food and Drug Administration
  FDA Consumer Magazine
  November-December, 2000
  1-888-INFO-FDA
  http://www.fda.gov
  Under "C" in the subject index, select Cell Phones > Research
- American National Standards Institute
  1819 L Street, N.W. Suite 600
  Washington D.C., 20036

1-202-293-8020
www.ansi.org

2.3 FCC Part 15

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician to help.

2.4 Industry Canada

This Class A digital apparatus complies with Canadian ICES-003. The term IC before the equipment certification number only signifies that the Industry Canada technical specifications were met.

Cet appareil numerique de la classe A est conforme a la norme NMB-003 du Canada. Le terme IC avant le numero d'homologation ne signifie seulement queles normes d'Industrie Canada ont ete respectees.

This device complies with Part 15 of the FCC Rules and with Industry Canada licence-exempt

RSS standard(s).

Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le onctionnement.

3 Host Installation Guidelines

This section defines host installation limitations for mobile hosts with supporting RF exposure information.

3.1 Host Installation Guidelines

3.1.1 Label Requirements

The FCC and Industry Canada IDs must be permanently affixed on the exterior of the host device or readily accessible under a panel or battery pack of the host device that cannot be separated from the host device itself.

3.1.2 Fixed-mount and Mobile Hosts (WWAN-to-user separation distance ≥ 20cm)

The IEM6270 can be installed for use in any authenticated fixed-mount or mobile host device. The maximum WWAN conducted power and antenna gain is listed in Table 1. Any antenna type is acceptable for use as long as the conditions for peak gain are met. The integrator must consult with the module OEM and/or the FCC for equipment or application in which the 20 cm antenna-to-user separation distance is unclear (see CFR 47 §2.1091(d)(4)).

Table 3-1 Maximum WWAN Conducted Power and Antenna Gain

Technology	Frequency (MHz)	Maximum Conducted Power (dBm)	Conducted Power (W)	Maximum Antenna Gain (dBi)	Peak EIRP (dBm)	Peak EIRP (W)	ERP (W)
GPRS 2 UL	824	33.0	2.00	5.00	38.00	6.31	3.82
UMTS	824	24.0	0.25	5.00	29.00	0.79	0.48
GPRS 2 UL	1850	30.0	1.00	3.00	33.00	2.00	1.21
UMTS	1850	24.00	0.25	3.00	27.00	0.50	0.30

Antenna-to-antenna separation requirements – According to KDB 447498, collocated antennas are permitted without test as long as the antenna-to-antenna separation distance is at least 20 cm. Smaller separation distances are permitted without test as long as specific conditions are met in which combined MPE values are under the FCC's limits. These conditions are described in the calculations in section 3.1.5 *Simultaneous RF Exposure Evaluation Guidelines for Collocated Transmitters Allowable through a Class I Permissive Change.*

3.1.3 Portable Hosts (WWAN to user separation distance <20cm)

The IEM6720 can only be installed in portable hosts under a Class II Permissive Change, in accordance with KDB Publication 447498, or under a new FCC certification.

3.1.4 End User Installation

End user installation into a product with pre-installed antennas is prohibited per KDB Publication 996369 D01[††] unless a two-way authentication scheme is enabled to ensure that only approved module/host combinations can be used together. A supporting Class II permissive change with appropriate documentation is also required to support this end user installation option and to document the authentication scheme.

3.1.5 Simultaneous RF Exposure Evaluation Guidelines for Collocated Transmitters Allowable through a Class I Permissive change (Mobile/Fixed Hosts only)

This section defines conditions in which the IEM6270 may be integrated into a host with simultaneously transmitting antennas operating <20cm apart without further test, pursuant to KDB 447498, 8)a)ii).

- The power density calculations for each transmitter at an exposure separation distance of 20 cm are shown Table 3-2 with the declared transmit power and maximum allowable antenna gain values. The calculations are based on a cable loss of 0 dB. The collocated transmitter values represent worst-case transmit power and antenna gains allowable for use with the IEM6270.
- Collocated transmitters must operate within the maximum EIRP parameters defined in Table 3-3 and Table 3-4.
- For frequency dependent limits, the lowest transmitter frequency was used to represent the lowest MPE limit (e.g. 824MHz = 0.549 mW/cm2). The WLAN power levels listed represent the worst-case values for the corresponding frequency ranges.
- Per OET 65, when RF sources have different frequencies, the fraction of the FCC power density limit shall be determined and the sum of all fractional components shall be less than 1.

[††] KDB 996369 is *Transmitter Module Equipment Authorization Guide*

Table 3-2 WWAN and Collocated Device Standalone MPE Calculations

Technology	Frequency (MHz)	Maximum Conducted Power (dBm)	Conducted Power (W)	Maximum Antenna Gain (dBi)	Duty Cycle	Average EIRP (dBm)	Average EIRP (W)	Power Density @ 20cm (mW/cm^2)	FCC MPE Limit (mW/cm^2)
GPRS 2 UL	824	33.0	2.00	5.00	0.25	31.98	1.58	0.314	0.549
UMTS	824	24.0	0.25	5.00	1.00	29.00	0.79	0.158	0.549
GPRS 2 UL	1850	30.0	1.00	3.00	0.25	26.98	0.50	0.099	1.000
UMTS	1850	24.00	0.25	3.00	1.00	27.00	0.50	0.100	1.000
Any	400-800					27.00	0.50	0.100	0.267
Any	800-1000					30.00	0.79	0.158	0.533
Any	>1GHz					33.00	2.00	0.397	1.000

Table 3-3 WWAN 850 MHz Collocation Power Density

WLAN Band	WLAN Pd (mW/cm^2)	FCC MPE Limit (mW/cm^2)	(WLAN Pd) / (MPE Limit)	850 MHz WWAN Pd (mW/cm^2)	FCC MPE Limit (mW/cm^2)	(WWAN 850 MHz) / MPE Limit)	(850 MHz WWAN fraction) + (WLAN fraction)	Limit	Pass/Fail
400 to 800 MHz	0.100	0.267	0.374	0.314	0.549	0.571	0.945	1	Pass
800 to 1000 MHz	0.158	0.533	0.296	0.314	0.549	0.571	0.868	1	Pass
>1GHz	0.397	1.000	0.397	0.314	0.549	0.571	0.968	1	Pass

Table 3-4 WWAN 1900 MHz Collocation Power Density

Band	WLAN Pd (mW/cm^2)	FCC MPE Limit (mW/cm^2)	(WLAN Pd) / (MPE Limit)	1900 MHz Pd (mW/cm^2)	FCC MPE Limit (mW/cm^2)	(WWAN 1900 MHz) / MPE Limit)	(1900 MHz WWAN fraction) + (WLAN fraction)	Limit	Pass/Fail
400 to 800 MHz	0.100	0.267	0.374	0.100	1.000	0.100	0.474	1	Pass
800 to 1000 MHz	0.158	0.533	0.296	0.100	1.000	0.100	0.396	1	Pass
>1GHz	0.397	1.000	0.397	0.100	1.000	0.100	0.497	1	Pass