



MOTOROLA

Date: September 15, 2003

Subject: Request for additional information regarding FCC ID: IHDT6DQ1 (GSM 1900 phone with embedded Bluetooth)

Reference:

Application Received: 8/21/2003
Correspondence Reference Number: 230911A.IHD
Confirmation Number: TC3214
Date of Original Email: 9/11/2003

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Part 24E Application:

1. Page 8 of Exhibit 6 states that the maximum EIRP measured is 1.28 W (31.07 dBm), but p.2 of the Operational Description states that the maximum EIRP is 1.95 W (32.89 dBm). Please address this discrepancy.

Response: The value in the operational description is incorrect. The correct value is 31.07 dBm, as reported in Exhibit 6.

2. Was the "occupied bandwidth" function of the spectrum analyzer used to make that measurement? The markers appear to only be about 15 dBc.

Response: No. The 26 dB Bandwidth markers reference the peak power measured with resolution bandwidth set to 300 kHz. The actions taken to measure the occupied bandwidth are as follows:

1. The spectrum analyzer reference level is adjusted to match the peak power measured during the reference power/plot measurement.
2. The resolution bandwidth is adjusted to 3 kHz.
3. The marker function is activated and placed on the rising edge of the signal 26 dB down from the reference power measured above.
4. The delta marker is activated and moved to trailing edge of the signal such that there is minimal (approaching zero) amplitude delta to its reference marker.
5. The frequency delta yields the occupied bandwidth for the GSM product.

3. What analyzer settings (i.e., RBW, VBW, detector function) were used to make spurious conducted emission measurements?

Response: Please refer to the following table 1.

Table 1. Analyzer Settings.

Test	Technology	FCC Part	RBW (MHz)	VBW (MHz)	Detector	Trace	Sweep
Conducted Spurs	GSM 1900	24	1	Auto, \geq RBW	Peak	Max Hold	Auto - Cal
Radiated Spurs	GSM 1900	24	1	Auto, \geq RBW	Peak	Max Hold	Auto - Cal
Radiated Spurs	GSM 1900	15.109	0.12, 1 *	Auto, \geq RBW	Peak, QP, Ave **	Max Hold	Auto - Cal
Radiated Spurs	Bluetooth 2400	15.247	0.12, 1 *	Auto, \geq RBW	Peak, QP, Ave **	Max Hold	Auto - Cal

Notes:

* Resolution bandwidth adjusted based on emission frequency:
 120 kHz RBW used for emissions from 30 MHz - 1 GHz
 1 MHz RBW used for emission greater than 1GHz.

** The detector used was adjusted based on emission frequency (Prelim sweeps made with peak detector):
 QP used for emissions from 30 MHz - 1 GHz
 Average used for emission greater than 1GHz.

4. What analyzer settings (i.e., RBW, VBW, detector function) were used to make spurious radiated emission measurements?

Response: Please refer to the previous table 1.

5. The spurious radiated emission data appears to be in terms of ERP, but Part 24E deals in terms of EIRP. Please address.

Response: Spurious radiated emissions (CFR 47 Part 24.238 Emission limits) were measured using the standard measurement procedure in section 8 of ANSI 63.4-2001. The EIRP measurement referred to in Part 24.232 is measured at the fundamental transmit frequencies only.

6. FYI: the measured occupied bandwidth is 260 kHz. The FCC prefers that this value be used in the emission designator (i.e., 260KGXW).

Response: Agreed.

Part 15.247 application:

7. Please address the various requirements of Section 15.247(a)(1): is the list of hopping frequencies pseudorandom? Does the receiver input bandwidth approximately equal the hopping channel bandwidth? Does the receiver have the capability to hop in synchronization with the associated transmitter? (see #11, below)

Response: Bluetooth implementation is accomplished with the Broadcom Blutionium BCM2035 single chip solution. This device is a standalone baseband processor with an integrated 2.4 GHz transceiver. It is completely compliant with the Bluetooth 1.1 specification and Part 15.247.

8. Please address Sections 15.247(g) and 15.247(h).

Response: Bluetooth implementation is accomplished with the Broadcom Blutionium BCM2035 single chip solution. This device is a standalone baseband processor with an integrated 2.4 GHz transceiver. It is completely compliant with the Bluetooth 1.1 specification and Part 15.247. In

addition, this device is compliant with Bluetooth specification 1.2 and it is designed to help avoid interference with WLANs by implementing adaptive frequency hopping and other techniques.

(g) Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. However, the system, consisting of both the transmitter and the receiver, must be designed to comply with all of the regulations in this section should the transmitter be presented with a continuous data (or information) stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its transmissions over the minimum number of hopping channels specified in this section.

(h) The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hopsets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

9. What analyzer settings (i.e., RBW, VBW, detector function) were used to make spurious radiated emission measurements? Please provide the data in tabular form.

Response: Please refer to table 1.

10. It appears that the spurious conducted emission measurements at the lower bandedge were not made with the EUT tuned to the lowest available channel (i.e., 2401 MHz), but rather at 2402 MHz. Please submit plots demonstrating compliance with the bandedge requirements with the EUT tuned to the lowest available channel.

Response: The Bluetooth frequency range is 2402.0 to 2480.0 MHz.

11. Please provide an Operational Description of the 15.247 (Bluetooth) device. It may include the response to #7, above.

Response: Please refer to exhibit 12D (DQ-Ex12D).

12. Because of the presence of the Bluetooth device in the EUT, the User's Manual must include the statement required by Section 15.21. Please confirm that it will be included in the manual.

Response: Yes, the final user's manual will comply with the following:

§15.21 Information to user. The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Typical language follows:

Caution: Changes or modifications made in the radio phone, not expressly approved by Motorola, will void the user's authority to operate the equipment.

SAR report:

13. Please verify that the Bluetooth transceiver was active during SAR testing.

Response: Please refer to the supplemental SAR report (DQ-EX11A).

14. The cal due date for the network analyzer, on p.4, is 6/18/2003, nearly 3 months ago. Please address.

Response: Please refer to the supplemental SAR report (DQ-EX11A).

15. The cal due date for the E filed probe, on p.4, is listed as 3/21/2003 (expired). However, this appears to be a typo, as the probe calibration documents indicate that the due date is 3/21/2004. If so, please correct.

Response: Please refer to the supplemental SAR report (DQ-EX11A).

16. It appears that different tissue parameter values are used in the validation test (1.36, 39.9) and in the SAR tests (1.45, 39.5) taken the same day. Please explain.

Response: Please refer to the supplemental SAR report (DQ-EX11A).