



MOTOROLA

Date: September 24, 2004

Subject: Request for additional information regarding FCC ID: IHDT56EA1 (Portable Cellular/PCS GSM/EDGE transceiver with embedded Bluetooth)

Reference:

Application Received:	08/12/2004
Correspondence Reference Number:	240923A.IHD
Confirmation Number:	TC4288 & TC4289
Date of Original Email:	09/23/2004

Prepared by:

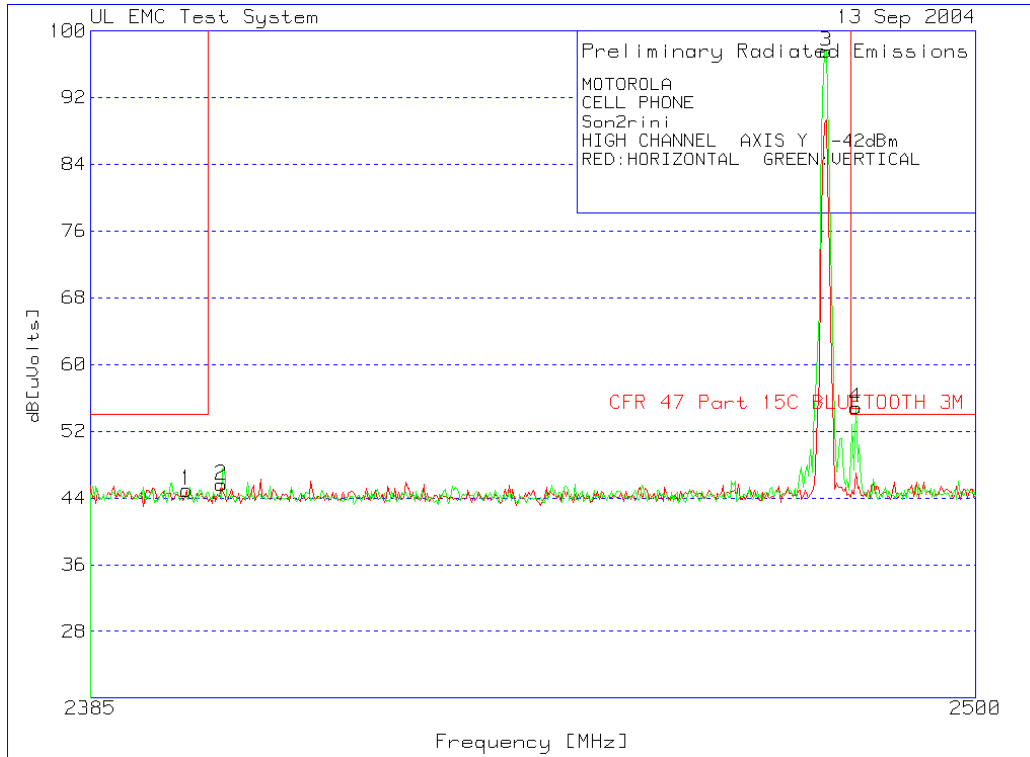
Andrew Bachler, Principal Staff Engineer
Motorola Personal Communications Sector
Libertyville, Illinois

Questions and responses follow:

Bluetooth Application:

1. Page 18 of the EMC report lists a radiated emission in the 2483.5-2500 MHz restricted band with a peak field strength that exceeds the average limit. Please provide the measured average level of this emission, so that compliance may be determined.

Response: Compliance is demonstrated by applying the measured average level as described below. This method provides 6.1 dB of margin.



Inband High Channel Y

MOTOROLA
CELL PHONE
San2rini
HIGH CHANNEL AXIS Y -42dBm
RED:HORIZONTAL GREEN:VERTICAL

Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts]	Limit 1	Margin 1[dB]	Height [cm]	Polarity
2 - 4GHz 2385 - 2500MHz										
1	2397.214	19.86 pk		3.3	21.8	44.96	54	-9.04	150	Horz
2	2401.593	20.49 pk		3.3	21.8	45.59	999	-953.41	150	Horz
2 - 4GHz 2385 - 2500MHz										
3	2480.18	72.23 pk		3.3	22	97.53	999	-901.47	100	Vert
4	2484.098	29.45 pk		3.3	22.1	54.85	54	0.85	100	Vert

LIMIT 1: CFR 47 Part 15C BLUETOOTH 3M
LIMIT 2: NONE
LIMIT 3: NONE
LIMIT 4: NONE
LIMIT 5: NONE
LIMIT 6: NONE

pk - Peak detector
qp - Quasi-Peak detector
av - Average detector
avlg - Average log detector
avem - EMI Average detector

MOTOROLA
CELL PHONE
San2rini
HIGH CHANNEL AXIS Y -42dBm
RED:HORIZONTAL GREEN:VERTICAL

Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts]	Limit 1	Margin 1[dB]	Azimuth [degs]	Height [cm]	Polarity
2 - 4GHz 2385 - 2500MHz										
2484	22.5 av		3.3	22.1	47.9	54	-6.1	340	100	Vert

LIMIT 1: CFR 47 Part 15C BLUETOOTH 3M
LIMIT 2: NONE

2. Please provide a technical description of the Bluetooth device.

Response: Please refer to the attached description.

3. The User's Manual does not contain the statement required by Section 15.19(a)(3). Please verify that this statement will be included prior to marketing.

Response: This information is located in the *Important Safety and Legal Information* booklet.. Please refer to exhibit 8A.

4. What is the gain of the antenna used by the BT device?

Response: The gain of the Bluetooth antenna is 0dBi.

Phone Application:

5. Please verify that the Bluetooth device was active during spurious radiated emission tests.

Response: The affect of the secondary (Bluetooth) transmitter on radiated emission tests is verified.

6. Please provide the missing SAR plots (LH touch, tilts plots)

Response: Please refer to the attached SAR plots.

7. The User's Manual does not contain a statement regarding the requirements for RFX compliance with respect to body-worn configurations. Please verify that this statement will be included prior to marketing.

Response: This information is located in the *Important Safety and Legal Information* booklet.. Please refer to exhibit 8A.

would be used when the software initiates a soft reset, but power supplies or the main RESETB signals are not asserted.

The Broadcom chipset requires two different frequency references, a lower frequency low power reference (32.768KHz), and a high frequency main reference (15.36 MHz, 26 MHz, etc.). The low power reference is a standard frequency available on the GSM phone whenever the phone is powered. As such, this reference is directly connected to CLK_32KHz, the buffered port from the oscillator on PCAP.

As this module will be primarily used on GSM platform, PLL components on the module were tuned for 26MHz.

This option would use a 2.5 x 3.2 mm discrete 26MHz crystal with two shunt capacitors (15pf). The XTAL circuit oscillator is contained on the BCM2035 and enables itself without any control from the host processor.

The host processor, though, must program a trim value to the Bluetooth module via an HCI command every time the Bluetooth module is POR. This trim value is programmed in the phone's SEEM at the time of factory phasing.

s/n: 4400007583659

Ch# 661 / Pwr Step: 0

Type of Modulation: 1900 GSM

DEVICE POSITION (cheek or rotated): CHEEK

Antenna Position: FIXED

Battery Model #: SNN5683A

R#1 TP-1154 GLYCOL SAM Expanded (Rev. 2)-9Jan03 Phantom; Left Hand Section; Position: (0°,0°); Frequency: 1880 MHz

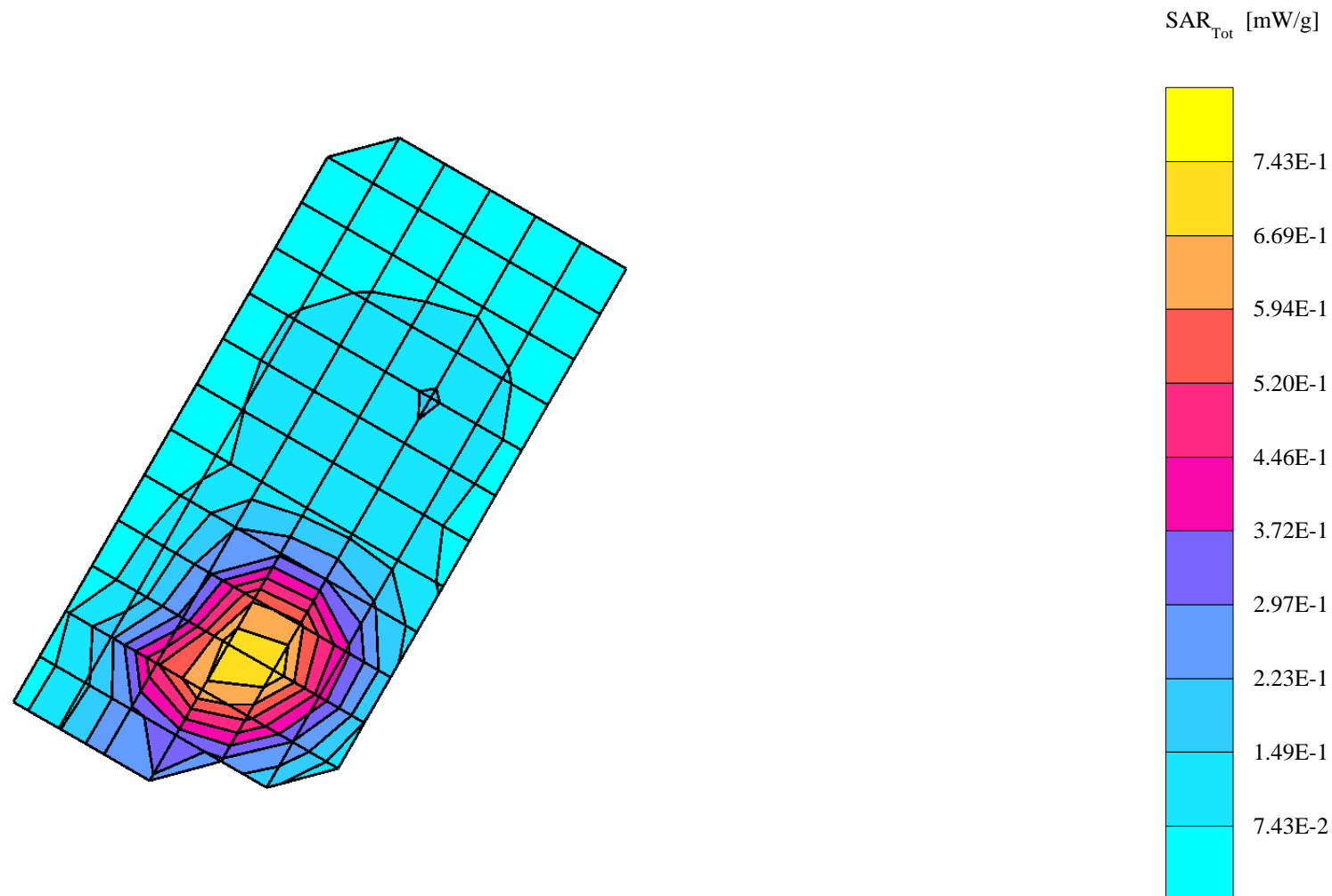
Probe: ES3DV3 - SN3037 - IEEE Head; ConvF(4.90,4.90,4.90); Crest factor: 8.0; 1880 MHz Head & Body: $\sigma = 1.46$ mho/m $\epsilon_r = 40.0$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.703 mW/g, SAR (10g): 0.402 mW/g, (Worst-case extrapolation)

Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0

Penetration depth: 10.7 (10.3, 11.1) [mm]

Powerdrift: -0.52 dB



s/n: 4400007583659

Ch# 251 / Pwr Step: 5 OTA
Type of Modulation: 850 GSM

Antenna Position: FIXED
Battery Model #: SNN5683A

DEVICE POSITION (cheek or rotated): CHEEK

R1 TP-1005 SUGAR SAM Expanded (Rev. 2)-9Jan03 Phantom; Left Hand Section; Position: (90°,180°); Frequency: 849 MHz

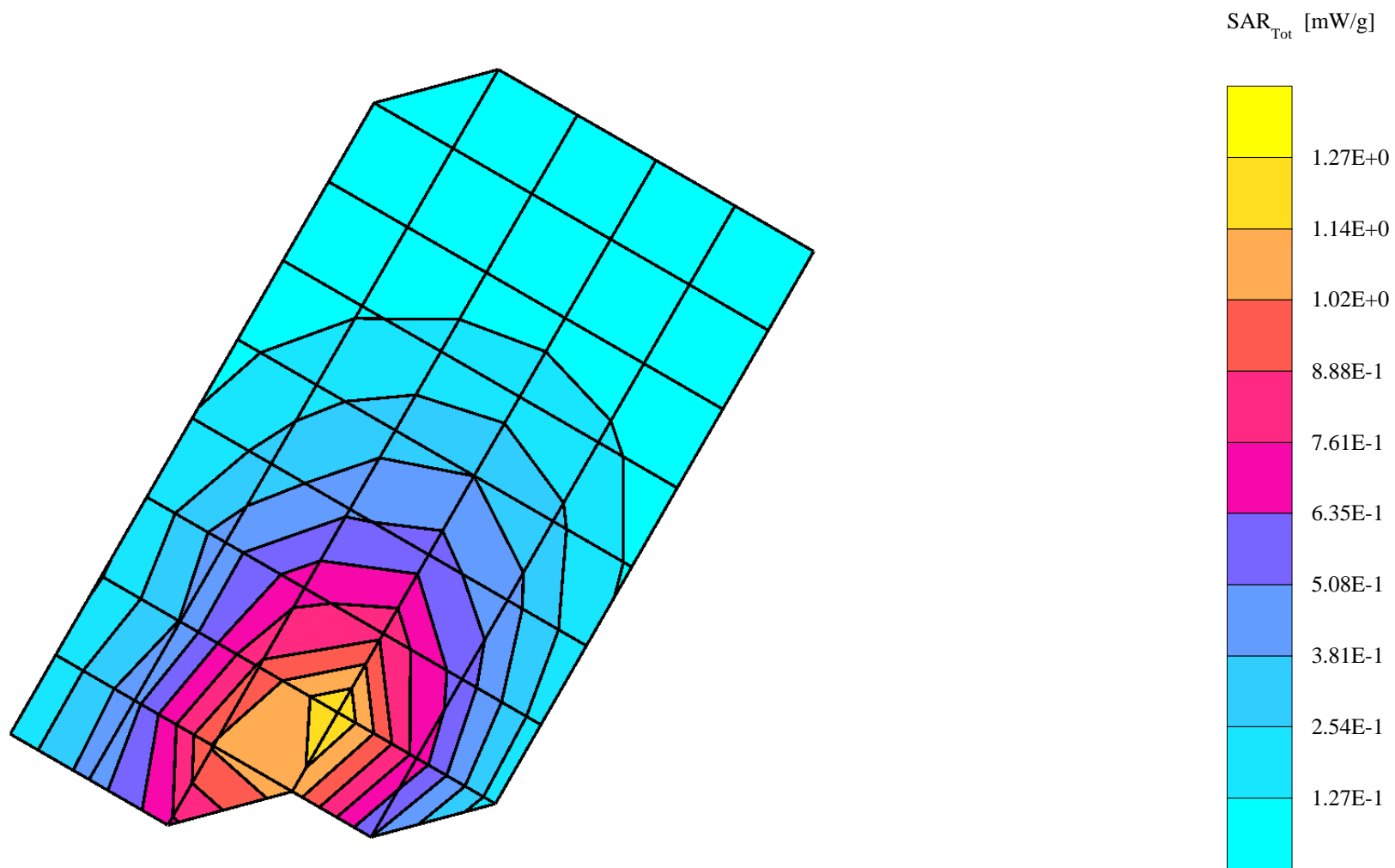
Probe: ES3DV3 - SN3037 - IEEE Head; ConvF(6.10,6.10,6.10); Crest factor: 8.0; 835 MHz Head & Body: $\sigma = 0.92$ mho/m $\epsilon_r = 42.8$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 1.19 mW/g, SAR (10g): 0.798 mW/g, (Worst-case extrapolation)

Coarse: Dx = 15.0, Dy = 15.0, Dz = 15.0

Penetration depth: 15.3 (13.0, 17.8) [mm]

Powerdrift: -0.28 dB



s/n: 4400007583659

Ch# 189 / Pwr Step: 5 OTA

Type of Modulation: 850 GSM

DEVICE POSITION (cheek or rotated): TILTED

Antenna Position: FIXED

Battery Model #: SNN5683A

R1 TP-1005 SUGAR SAM Expanded (Rev. 2)-9Jan03 Phantom; Left Hand Section; Position: (90°,180°); Frequency: 836 MHz

Probe: ES3DV3 - SN3037 - IEEE Head; ConvF(6.10,6.10,6.10); Crest factor: 8.0; 835 MHz Head & Body: $\sigma = 0.92$ mho/m $\epsilon_r = 42.8$ $\rho = 1.00$ g/cm³

Cube 7x7x7: SAR (1g): 0.297 mW/g, SAR (10g): 0.228 mW/g, (Worst-case extrapolation)

Coarse: Dx = 10.0, Dy = 10.0, Dz = 10.0

Penetration depth: 21.2 (20.6, 22.0) [mm]

Powerdrift: -0.08 dB

