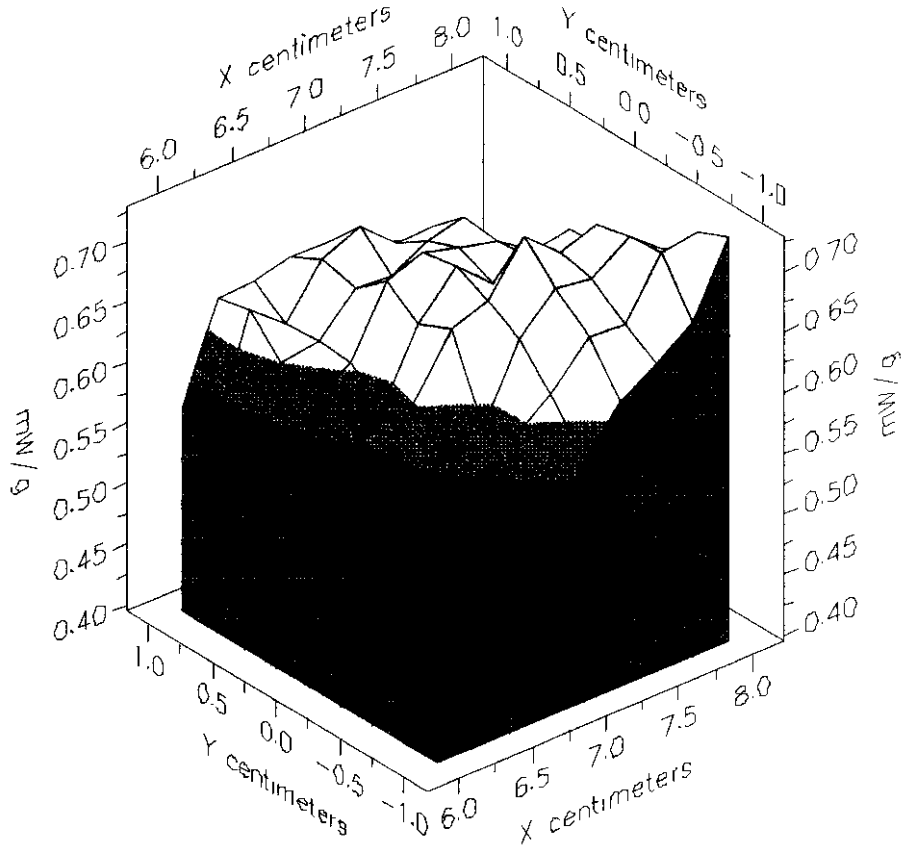
File : 98051805_ZOOM
Start : 18-May-98 10:27:19 am End : 18-May-98 10:34:14 am
QUALCOMM/QPHONE/0005;824.04MHz;W;Helical/Internal;
Head/Left Ear;ZOOM/SAR;PCTEST/E Field/0 DegreesBrain/43.400/0.900



0.729
0.692
0.655
0.618
0.581
0.544
0.507
0.469
0.432
0.395

Qualcomm J9CRJS1 5/14/1.
Class II Permissive Change

(1) previous SAR measurement for CDMA mode @ 200 mW = 0.37 W/kg ± 17.9%, where 17.9% uncertainty specified by test lab performing the SAR tests.

If there are no hardware changes and the only modification is increasing the CDMA mode output power from 200 mW to 360 mW, new SAR results for CDMA mode @ 360 mW should be around 0.67 ± 17.9% W/kg.

Note - typical measurement uncertainty for most SAR systems is around 20 - 25%

(2) The SAR data for CDMA mode @ 360 mW is 1.156 W/kg ± 17.9%. This translates to 1.93 W/kg ± 17.9% for AMPS modes @ 600 mW, which would exceed the 1.6 W/kg SAR limit. However, previous SAR data for AMPS mode @ 600 mW had 1.1 W/kg ± 17.9%. The discrepancy is much greater than the uncertainty limit specified

PCTEST®
ENGINEERING LABORATORY INC.

6660-B Dobbin Road
Columbia, MD 21045 USA
Tel. 410.290.6652
Fax. 410.290.6654
http://www.pctestlab.com

May 18, 1998

Federal Communications Commission
Application Processing Branch
7435 Oakland Mills Road
Columbia, MD 21046
Attn: Joe Dichoso / Kwok Chan

In re: Qualcomm, Inc.
FCC ID: J9CRJS1
Part 22 Type Acceptance / SAR
Dual Mode Cellular Phone (AMPS/CDMA)
Class II Permissive Change - Amendment

Gentlemen:

Attached is an amendment to the above-referenced Part 22 Type Acceptance application, to provide additional SAR measurement data taken from a production sample of the subject device, as requested by Mr. Kwok Chan.

Attached is the test data with maximum output power of 0.6W analog mode, and 0.36W CDMA mode.

If you have further questions regarding this matter, please do not hesitate to contact us.

Sincerely,

Randy Ortanez
President
PCTEST Lab

cc: Mr. Jay Moulton
Director of Engineering
Qualcomm, Inc.

OK per KWOK CHAN
5/18/98
replaces 5/8/98 data.

Attachment(s)

NVLAP®

11.1 TEST DATA SUMMARY

Ambient TEMPERATURE (°C)	23.8
Relative HUMIDITY (%)	59.5
Atmospheric PRESSURE (kPa)	97.0

Mixture Type: Brain

Dielectric Constant: 43.40

Conductivity: 0.90 S/m

Closest Distance (between E-Probe & Phone Antenna): 2.2 cm

FREQUENCY MHz	FREQUENCY Ch.	Modulation	POWER (W)	EAR Position	Antenna Position	SAR (W/kg)
824.04	991	CDMA	0.36	Left	Internal	0.6319
824.04	991	AMPS	0.60	Left	Internal	1.1067
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak (Brain) Uncontrolled Exposure/General Population				**1.6 W/kg (mW/g)**		

NOTES:

1. The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. All modes of operation were investigated and the worst-case are reported.
2. Battery condition is fully charged for all readings.
3. Power Measured: ☒ Conducted ☐ ERP

Randy Ortanez
President & Chief Engineer

PCTEST SEAL

File : c:/idx3/SYSTEM/SARMEAS3/data/Normal/98051805_ZOOM.VLT
Start : 18-May-98 10:27:19 am End : 18-May-98 10:34:14 am

Radio Type : QUALCOMM
Model Number : QPHONE
Serial Number : 0005
Frequency : 824.04 MHz
Peak Trans. Pwr : 0.360 W
Start Trans. Pwr: 0.360 W
Antenna Type : Helical
Antenna Posn. : Internal
Phantom Type : Head
Phantom Posn. : Left Ear
Scan Type : ZOOM/SAR
Probe Name : PCTEST
Field Type : E Field
Orientation : 0 Degrees

Mixture Type = Brain
Mixture Dielectric Constant = 43.400
Mixture Conductivity = 0.900

Comment :
CHAN 991 PHONE
CDMA MODE
PCTEST SAR Measurement Laboratory

Robot : PCTEST

Probe Offset = 0.25 cm
Sensor Factor = 0.0108
Conversion Factor = 0.790

PCTEST Amplifier Channel Settings : 0.168 0.136 0.132

Diode Coefficients:
Channel 1 An=-10.851 Bn=86.223 Cn=38.593 Dn=-0.016 Mn=0.026 Yn=0.000
Channel 2 An=-21.618 Bn=92.335 Cn=34.909 Dn=-0.019 Mn=0.029 Yn=0.000
Channel 3 An=-11.171 Bn=50.619 Cn=19.002 Dn=-0.025 Mn=0.052 Yn=0.001

Max Location : X = 8.000, Y = -1.000, Z = 0.000 (cm) Value = 9.973

Measured Values (volts) =
9.462E-003 4.748E-003 2.207E-003 4.242E-004 -6.264E-004 -9.299E-004
-1.227E-003 -1.267E-003 -1.263E-003 -1.255E-003 -1.267E-003

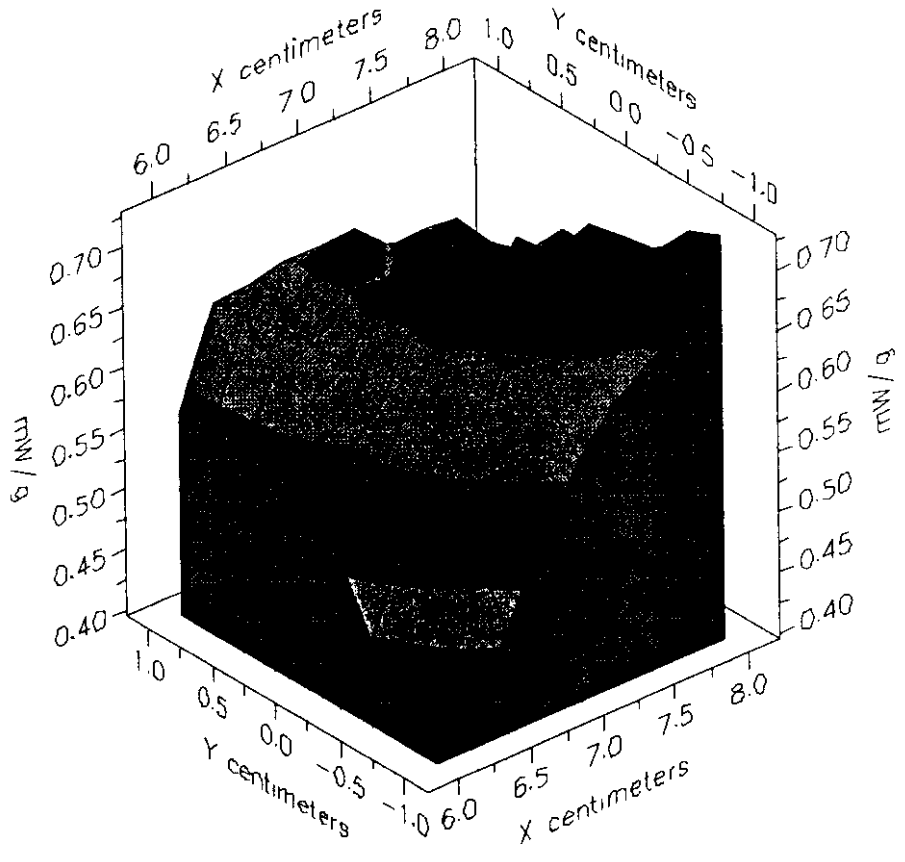
Calc. Voltage @ Surface (Vs) = 0.0114

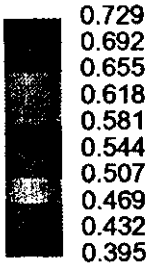
Voltage @ 1.00 cm (Vt) = 0.0059

Ave. Voltage (Vs+Vt)/2 = 0.008

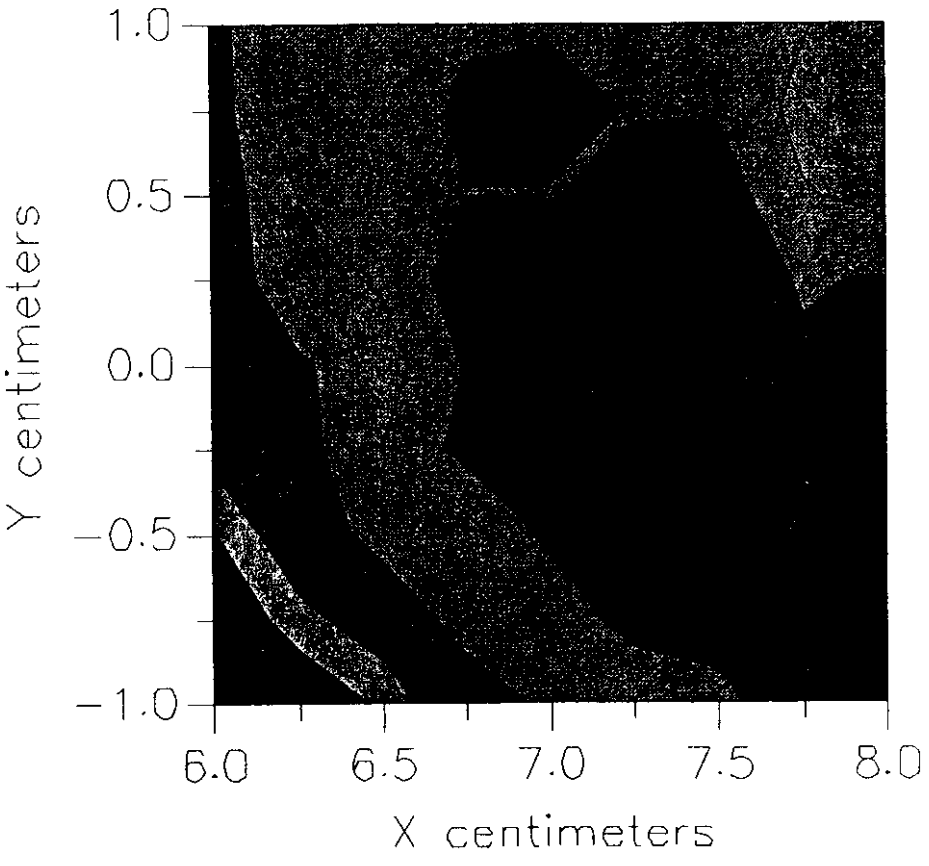
Ave. SAR over 1 g (mW/g) = 0.631

File : 98051805_ZOOM
Start : 18-May-98 10:27:19 am End : 18-May-98 10:34:14 am
QUALCOMM/QPHONE/0005;824.04MHz;W;Helical/Internal;
Head/Left Ear;ZOOM/SAR;PCTEST/E Field/0 DegreesBrain/43.400/0.900





File : 98051805_ZOOM
Start : 18-May-98 10:27:19 am End : 18-May-98 10:34:14 am
QUALCOMM/QPHONE/0005;824.04MHz;W;Helical/Internal;
Head/Left Ear;ZOOM/SAR;PCTEST/E Field/0 DegreesBrain/43.400/0.900



File : c:/idx3/SYSTEM/SARMEAS3/data/Normal/98051803_ZOOM.VLT
Start : 18-May-98 09:52:16 am End : 18-May-98 09:59:11 am

Radio Type : QUALCOMM
Model Number : QPHONE
Serial Number : 0005
Frequency : 824.04 MHz
Peak Trans. Pwr : 0.600 W
Start Trans. Pwr: 0.600 W
Antenna Type : Helical
Antenna Posn. : Internal
Phantom Type : Head
Phantom Posn. : Left Ear
Scan Type : ZOOM/SAR
Probe Name : PCTEST
Field Type : E Field
Orientation : 0 Degrees

Mixture Type = Brain
Mixture Dielectric Constant = 43.400
Mixture Conductivity = 0.900

Comment :
CHAN 991 PHONE
FM MODE
PCTEST SAR Measurement Laboratory

Robot : PCTEST

Probe Offset = 0.25 cm
Sensor Factor = 0.0108
Conversion Factor = 0.790

PCTEST Amplifier Channel Settings : 0.168 0.136 0.132

Diode Coefficients:
Channel 1 An=-10.851 Bn=86.223 Cn=38.593 Dn=-0.016 Mn=0.026 Yn=0.000
Channel 2 An=-21.618 Bn=92.335 Cn=34.909 Dn=-0.019 Mn=0.029 Yn=0.000
Channel 3 An=-11.171 Bn=50.619 Cn=19.002 Dn=-0.025 Mn=0.052 Yn=0.001

Max Location : X = 7.250, Y = -0.500, Z = 0.000 (cm) Value = 17.650

Measured Values (volts) =
1.698E-002 7.642E-003 4.132E-003 1.600E-003 5.409E-005 -4.462E-004
-1.087E-003 -1.212E-003 -1.238E-003 -1.197E-003 -1.249E-003

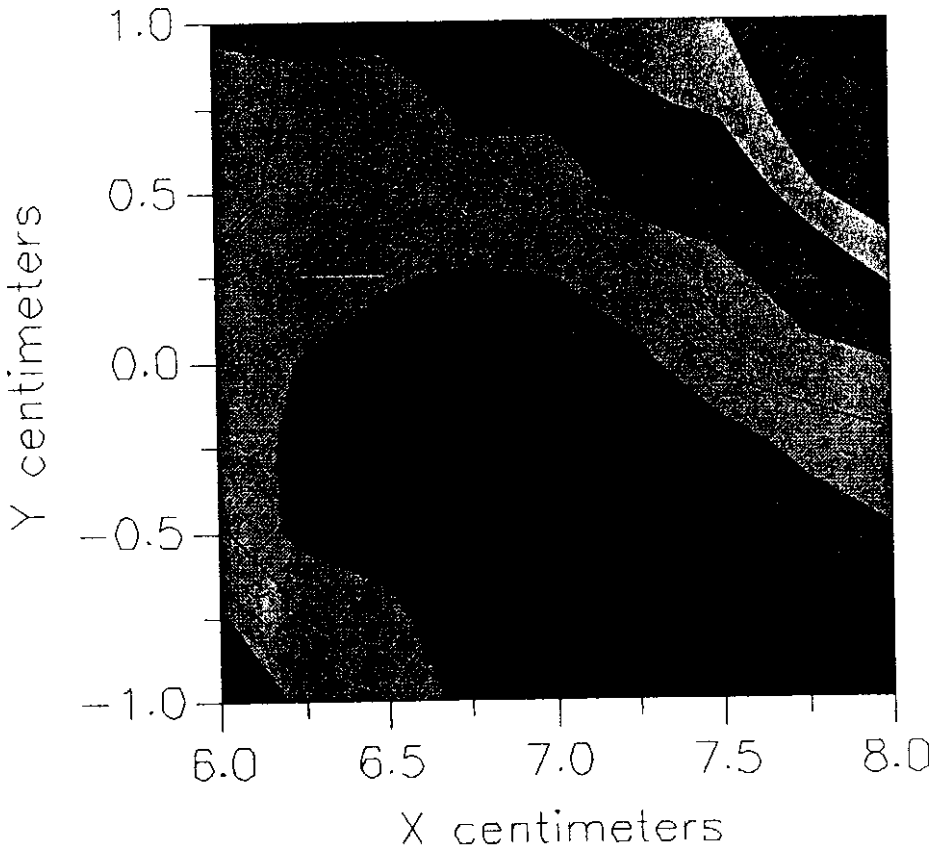
Calc. Voltage @ Surface (Vs) = 0.0203

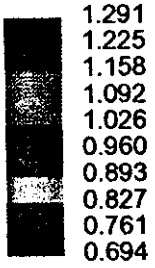
Voltage @ 1.00 cm (Vt) = 0.0100

Ave. Voltage (Vs+Vt)/2 = 0.0151

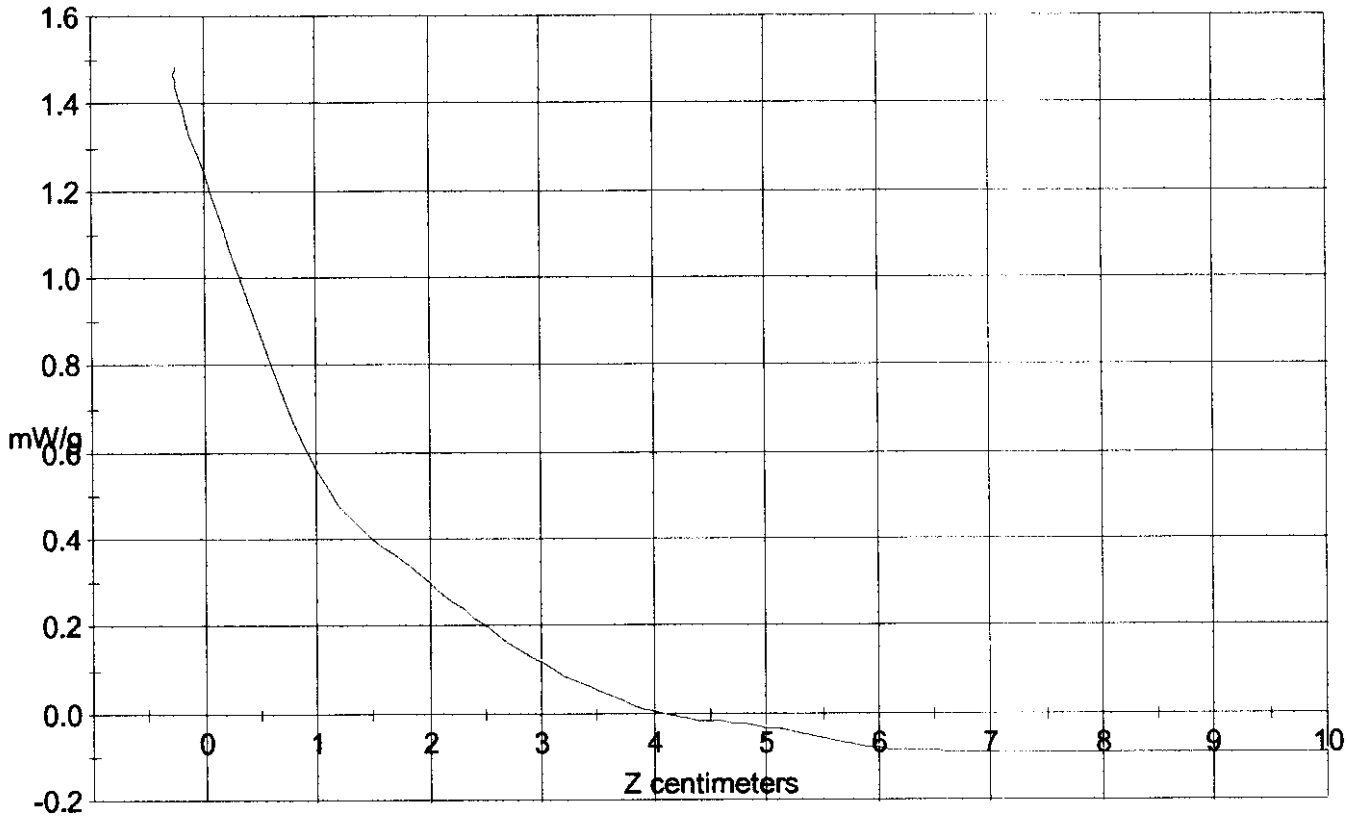
Ave. SAR over 1 g (mW/g) = 1.1067

File : 98051803_ZOOM
Start : 18-May-98 09:52:16 am End : 18-May-98 09:59:11 am
QUALCOMM/QPHONE/0005;824.04MHz;W;Helical/Internal;
Head/Left Ear;ZOOM/SAR;PCTEST/E Field/0 DegreesBrain/43.400/0.900





SAR Scan
File : 98051803 ZOOM
Start : 18-May-98 09:52:16 am End : 18-May-98 09:59:11 am
QUALCOMM/QPHONE/0005;824.04MHz;W;Helical/Internal;
Head/Left Ear;ZOOM/SAR;PCTEST/E Field/0 DegreesBrain/43.400/0.900



File : 98051803_ZOOM
Start : 18-May-98 09:52:16 am End : 18-May-98 09:59:11 am
QUALCOMM/QPHONE/0005;824.04MHz;W;Helical/Internal;
Head/Left Ear;ZOOM/SAR;PCTEST/E Field/0 DegreesBrain/43.400/0.900