# KWC-2255

# Confirmation of compliance

# Body-Worn

# SPECIFIC ABSORPTION RATE (SAR)

# Content

# 1 PURPOSE

At the time we submitted our initial application, Kyocera Wireless Corp. (KWC) did not have any accessories for a body-worn application. Therefore, the compliance test for Specific Absorption Rate for a body worn use was performed with 22.5mm separation, and the test results were reported in the initial application.

Per customer desires, KWC has designed its own leather case with a belt clip for model 2255 hand free application. This test report shows the compliance of the KWC-2255 for Specific Absorption Rate when using the KWC designed body-worn accessory.

# 2 SAR TEST FACILITY

SAR tests were performed in the same KWC SAR Test Facility located at the following address:

Kyocera Wireless Corp.
Building AA
10300 Campus Point Drive
San Diego, CA92131

The description of KWC SAR test facility was stated in the original SAR report that was submitted under FCC ID: OVFKWC-2255.

# 3 APPLICABLE REGULATIONS

The KWC-2255 is designed to comply with the specific absorption rate SAR limits for distances within 20 cm of the transmitting elements of the MES, and with general public uncontrolled environment Maximum Permissible Exposure (MPE) limits at distances greater than 20 cm from the transmitting elements of the device, as required by Sections 1.1307 through 1.1310, 2.1093 of the 47 C.F.R. (1998). This test report pertains specifically to the following limit from the Code of Federal Regulations 47 "Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4

W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube)."

# 4 KWC DESIGNED BODY-WORN ACCESSORY

Originally, KWC did not have any accessories available for a body-worn application. See page 80 in the original User's Guide submitted under FCC ID: OVFKWC-2255. (This page has been attached to the report in Appendix C.)

Per the customer desires, KWC have designed an accessory for a body-worn application. This body-worn accessory consists of a leather case and a belt clip. The following are the photos of the accessory.

# 2255 in KWC Leather Case

Front

Side 1

Side 2

Back

# 5 TEST SAMPLE OPERATION

The same phone tested for the initial submittal was used for this test. The test sample (S/N: 1S2X0115810873) was made to transmit maximum power controlled by a phone_t software, a KWC phone control software. The DASY 3 system checks E fields strength at a fixed location before and after each scan, and checks for drift due to draining of the battery or some other effect. This shows up as "drift" on the report and if it is too high the test is repeated.

*Maximum output power* --

In order to keep the consistency, the phone 2255 was set to the same maximum conducted power level as that in the initial Type Acceptance Application under FCC ID: OVFKWC-2255. The maximum conducted output power levels are re-listed in the tables below.

**Conducted power used for SAR test - Cellular** (same as the initial SAR report Table 3)

| | | RF output power (W or dBm) - Cellular | |
|---|---|---|---|
| | | Measured | |
| Carrier Frequency (MHz) | Channel | FM | CDMA |
| 824.04 | 991 | 0.398 W / 26.0 dBm | |
| 824.7 | 1013 | | 0.309 W / 24.9 dBm |
| 836.49 | 383 | 0.403 W / 26.05 dBm | 0.316 W / 25.0 dBm |
| 848.31 | 777 | | 0.306 W / 24.86 dBm |
| 848.97 | 799 | 0.398 W / 26 dBm | |
| Maximum Power over Band | | **26.05 dBm** | **25.0dBm** |

**Conducted power used for SAR test - PCS** (same as the initial SAR report Table 4)

| | | RF output power (W or dBm) - PCS |
|---|---|---|
| Carrier Frequency (MHz) | Channel | CDMA |
| | | measured |
| 1851.25 | 25 | 0.209 W / 23.2 dBm |
| 1880 | 600 | 0.219 W / 23.4 dBm |
| 1908.75 | 1175 | 0.205 W / 23.12 dBm |
| Maximum Power over Band | | **23.4 dBm** |

The ERP/EIRP remained the same levels as what was reported in the initial SAR report, Table 5 and Table 6.

# 6 TISSUE PARAMENTS

The table below shows the parameters of muscle tissue used for SAR tests reported in this report.

**PARAMETERS OF MUSCLE TISSUE**

| | | **Tissues Used in the Test** | | **Tissues Specified in FCC Supplemental C** | |
|---|---|---|---|---|---|
| | **Frequency** | **Permittivity** | **Conductivity (S/m)** | **Permittivity** | **Conductivity (S/m)** |
| Muscle | 835 MHz | 55.1 | 0.96 | 55.2 | 0.97 |
| | | | | | |
| Muscle | 1800 MHz | 54.3 | 1.56 | 53.3 | 1.52 |

HP85070B dielectric measurement system was used to calibrate muscle tissues. The dielectric data sheets of muscle tissue are attached in Appendix B.

# 7 SAR TEST RESULTS

KWC-2255 has been tested SAR for a hand free configuration by using KWC body-worn accessory described in Section 4. All normal antenna operating positions were incorporated, with the device transmitting maximum power of the low, high, and mid-band frequencies of the KWC-2255. The KWC-2255 has been shown to be capable of compliance for localised SAR limits specified in ANSI/IEEE std. C95.3-1992 and OET Bulletin 65.

The setup photos were attached in the following pages.

The table below lists the 1gram average SAR values measured on the KWC-2255 while using KWC body-worn accessory. The SAR Plots are attached in Appendix A.

***Body-Worn SAR Measurement Results*** ***(with KWC leather case and belt clip)***

| FREQ. MHZ | CH.# | SERIAL NUMBER | MODULATION | CONDUCTED POWER *BEFORE* TEST | ANTENNA POSITION | 1 GRAM AVG.SAR (MW/G) | CONDUCTED POWER *AFTER* TEST |
|---|---|---|---|---|---|---|---|
| 824 | 991 | 1S2X0115810873 | ANALOG | | Ext | 0.337 | |
| 824 | 991 | 1S2X0115810873 | ANALOG | 25.95 dBm | Ret | 0.393 | 25.97 dBm |
| 836.5 | 383 | 1S2X0115810873 | ANALOG | | Ext | 0.304 | |
| 836.5 | 383 | 1S2X0115810873 | ANALOG | 25.93 dBm | Ret | 0.436 | 25.98 dBm |
| 849 | 799 | 1S2X0115810873 | ANALOG | | Ext | 0.302 | |
| 849 | 799 | 1S2X0115810873 | ANALOG | 25.94 dBm | Ret | 0.410 | 26.0 dBm |
| 824.7 | 383 | 1S2X0115810873 | Cellular CDMA | | Ext | 0.260 | |
| 824.7 | 383 | 1S2X0115810873 | Cellular CDMA | 24.92 dBm | Ret | 0.347 | 25.23 dBm |
| 1851.25 | 25 | 1S2X0115810873 | PCS CDMA | | Ext | 0.232 | |
| 1851.25 | 25 | 1S2X0115810873 | PCS CDMA | 23.18 dBm | Ret | 0.260 | 23.22 dBm |
| 1880 | 600 | 1S2X0115810873 | PCS CDMA | | Ext | 0.237 | |
| 1880 | 600 | 1S2X0115810873 | PCS CDMA | 23.24 dBm | Ret | 0.254 | 23.17 dBm |
| 1908.75 | 1175 | 1S2X0115810873 | PCS CDMA | | Ext | 0.231 | |
| 1908.75 | 1175 | 1S2X0115810873 | PCS CDMA | 23.20 dBm | Ret | 0.238 | 23.20 dBm |

With KWC leather case and belt clip, the highest body-worn SAR is 0.436 mW/g.

Note: the previous User's Guide has been revised to include the KWC body-worn accessory tested above for a hand free application. The related pages in both previous User's Guide and revised User's Guide have been submitted with this Class II Permissive change application. See Appendix C.

# 8 MEASUREMENT UNCERTANTY

Below is the uncertainty budget determined for the DASY3 measurement system by Schmid and Partners and the test device by KWC, according to the NIS81 and the NIST1297 document.

| Uncertainty Description | Error | Distrib. | Weight | Std. Dev. |
|---|---|---|---|---|
| **Probe Uncertainty** | | | | |
| axial isotropy | +/- 0.2dB | U-shape | 0.5 | +/- 2.4% |
| spherical isotropy | +/- 0.4dB | U-shape | 0.5 | +/- 4.8% |
| isotropy from gradient | +/- 0.5dB | U-shape | 0 | |
| spatial resolution | +/- 0.5% | normal | 1 | +/- 0.5% |
| linearity error | +/- 0.2dB | rectang. | 1 | +/- 2.7% |
| caliabration error | +/- 3.3% | normal | 1 | +/- 3.3% |
| **SAR Evaluation Uncertainty** | | | | |
| data acquisition error | +/- 1% | rectang. | 1 | +/- 0.6% |
| ELF and RF disturbances | +/- 0.25% | normal | 1 | +/- 0.25% |
| conductivity assessment | +/- 10% | rectang. | 1 | +/- 5.8% |
| **Spatial Peak SAR Evaluation Uncertainty** | | | | |
| extrapol boundary effect | +/- 3% | normal | 1 | +/- 3% |
| probe positioning error | +/- 0.1mm | normal | 1 | +/- 1% |
| integrat. And cube orient | +/- 3% | normal | 1 | +/- 3% |
| cube shape inaccuracies | +/- 2% | rectang. | 1 | +/- 1.2% |
| devices positioning | +/- 6% | normal | 1 | +/- 6% |
| **RF Source Error (test device)** | +/- 2% | normal | 1 | +/- 2% |
| **Combined Uncertainties** | | | | +/- 11.9% |

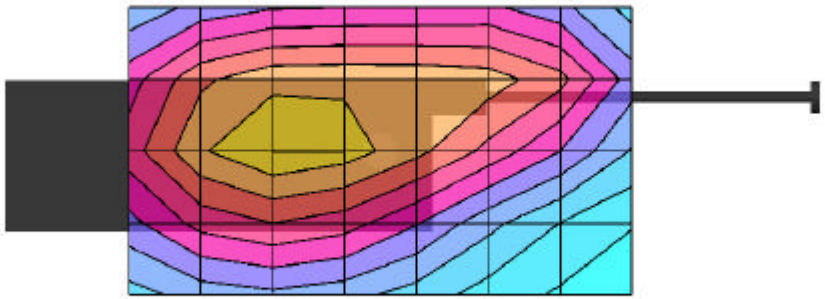
The extended uncertainty (K=2) was assessed to be +/- 23.8%.

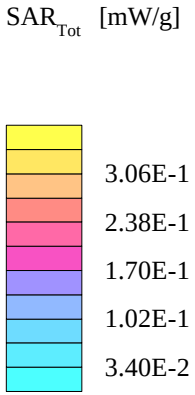
Taking it into account, the maximum SAR value in the body-worn application for model 2255 with KWC leather case and belt clip was 0.436mW/g +/- 23.8%, which is in compliance with FCC requirements even if the worst case uncertainty of the system has to be added to the assessed value.

# 9 APPENDIX A -- SAR PLOTS

# KWC 2255, #0873, FM ch991, With leather case and belt clip

SAR (1g): 0.337 [mW/g] ± 0.01 dB, SAR (10g): 0.252 [mW/g] ± 0.01 dB
Cubes (2) (Worst-case extrapolation)
Generic Twin Phantom; Flat Section
Probe: ET3DV5 - SN1353; ConvF(5.36,5.36,5.36)
Muscle 835MHz: $\sigma$ = 0.96 [mho/m] $\varepsilon_r$ = 55.1 $\rho$ = 1.00 [g/cm$^3$]
File Name: KWC-2255 #0873, FM ch991, conducted power=25.9dBm, muscle with bc1.DA3
Operator: DWS
Powerdrift: -0.03 dB





# KWC 2255, #0873, FM ch991, With leather case and belt clip

SAR (1g): 0.393 [mW/g] ± 0.02 dB, SAR (10g): 0.293 [mW/g] ± 0.01 dB
Cubes (2) (Worst-case extrapolation)
Generic Twin Phantom; Flat Section
Probe: ET3DV5 - SN1353; ConvF(5.36,5.36,5.36)
Muscle 835MHz: $\sigma = 0.96$ [mho/m] $\varepsilon_r = 55.1$ $\rho = 1.00$ [g/cm$^3$]
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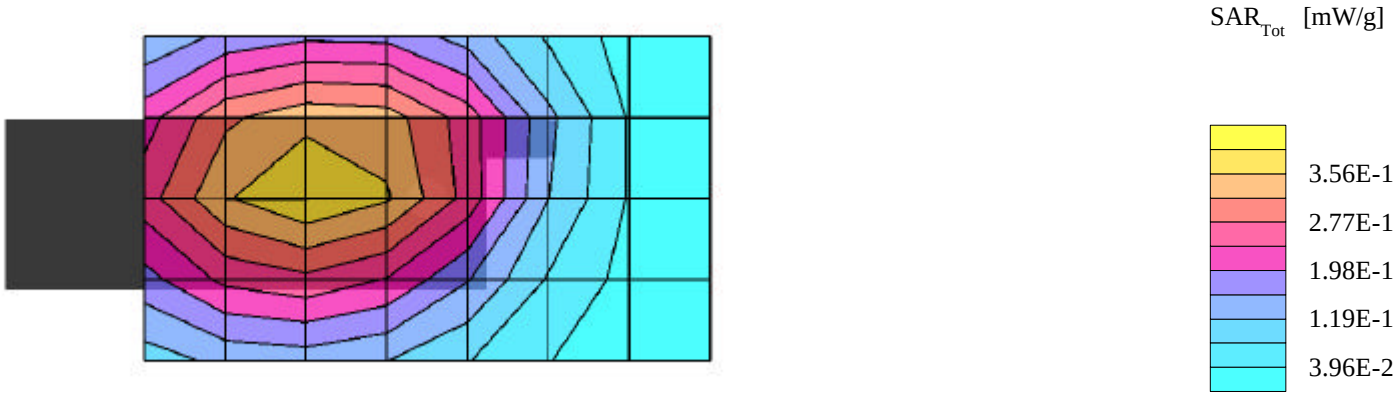
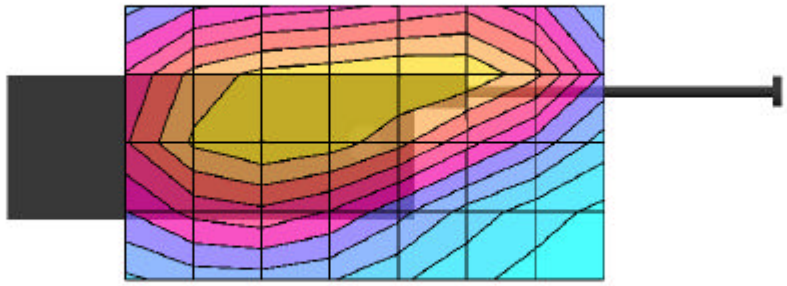
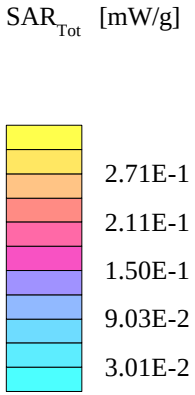
Operator: DWS
Powerdrift: -0.14 dB



# KWC 2255, #0873, FM ch383, With leather case and belt clip

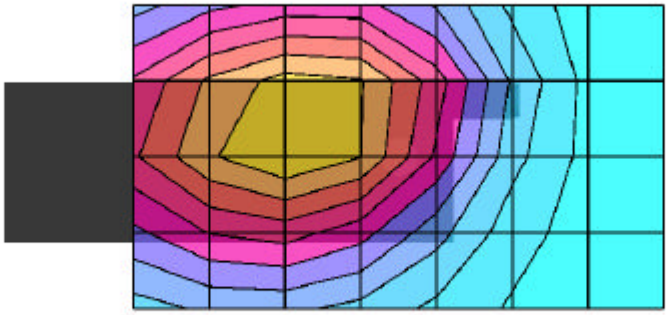
SAR (1g): 0.304 [mW/g] ± 0.01 dB, SAR (10g): 0.225 [mW/g] ± 0.01 dB
Cubes (2) (Worst-case extrapolation)
Generic Twin Phantom; Flat Section
Probe: ET3DV5 - SN1353; ConvF(5.36,5.36,5.36)
Muscle 835MHz: $\sigma$ = 0.96 [mho/m] $\varepsilon_r$ = 55.1 $\rho$ = 1.00 [g/cm$^3$]
File Name: KWC-2255 #0873, FM ch383, conducted power=25.9dBm, muscle with bc1.DA3
Operator: DWS
Powerdrift: -0.04 dB

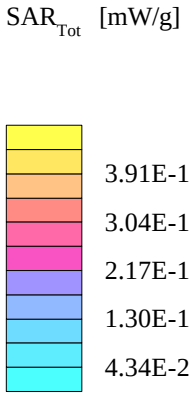




# KWC 2255, #0873, FM ch383, With leather case and belt clip

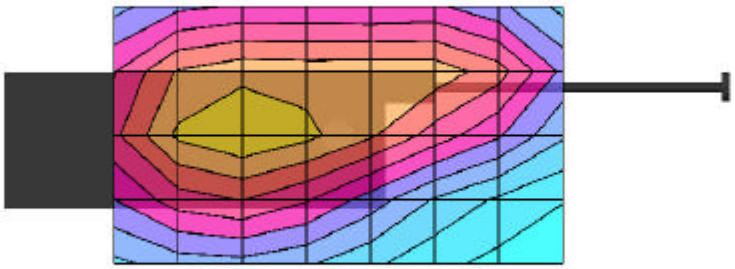
SAR (1g): 0.436 [mW/g] ± 0.04 dB, SAR (10g): 0.323 [mW/g] ± 0.05 dB
Cubes (2) (Worst-case extrapolation)
Generic Twin Phantom; Flat Section
Probe: ET3DV5 - SN1353; ConvF(5.36,5.36,5.36)
Muscle 835MHz: $\sigma$ = 0.96 [mho/m] $\varepsilon_r$ = 55.1 $\rho$ = 1.00 [g/cm$^3$]
File Name: KWC-2255 #0873, FM ch383, conducted power=25.9dBm, muscle with bc1.DA3
Operator: DWS
Powerdrift: -0.01 dB

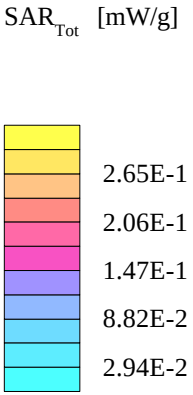




# KWC 2255, #0873, FM ch799, With leather case and belt clip

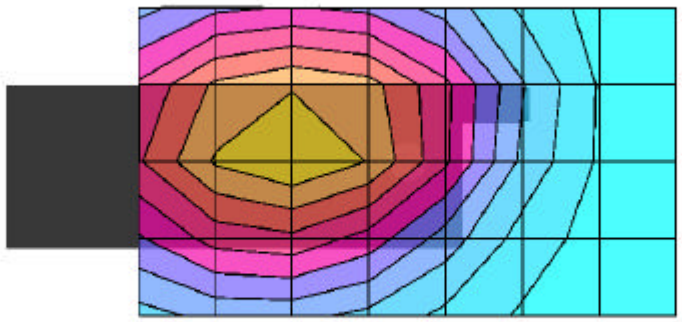
SAR (1g): 0.302 [mW/g] ± 0.01 dB, SAR (10g): 0.224 [mW/g] ± 0.01 dB
Cubes (2) (Worst-case extrapolation)
Generic Twin Phantom; Flat Section
Probe: ET3DV5 - SN1353; ConvF(5.36,5.36,5.36)
Muscle 835MHz: $\sigma = 0.96$ [mho/m] $\varepsilon_r = 55.1$ $\rho = 1.00$ [g/cm$^3$]
File Name: KWC-2255 #0873, FM ch799, conducted power=25.9dBm, muscle with bc1.DA3
Operator: DWS
Powerdrift: -0.08 dB

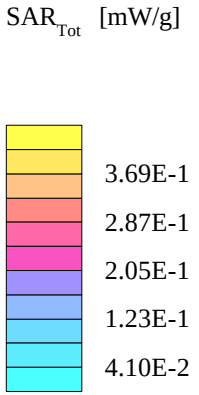




# KWC 2255, #0873, FM ch799, With leather case and belt clip

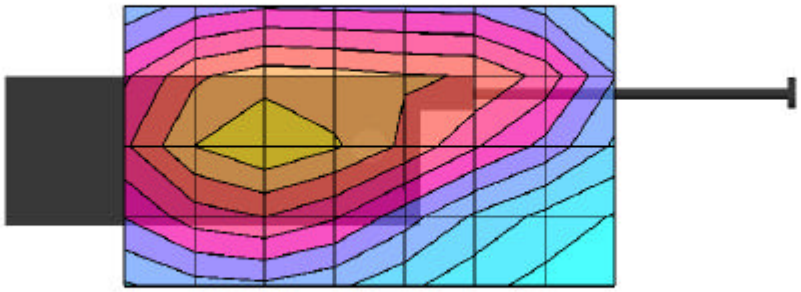
SAR (1g): 0.410 [mW/g] ± 0.01 dB, SAR (10g): 0.303 [mW/g] ± 0.01 dB
Cubes (2) (Worst-case extrapolation)
Generic Twin Phantom; Flat Section
Probe: ET3DV5 - SN1353; ConvF(5.36,5.36,5.36)
Muscle 835MHz: $\sigma = 0.96$ [mho/m] $\varepsilon_r = 55.1$ $\rho = 1.00$ [g/cm$^3$]
File Name: KWC-2255 #0873, FM ch799, conducted power=25.9dBm, muscle with bc1.DA3
Operator: DWS
Powerdrift: 0.08 dB

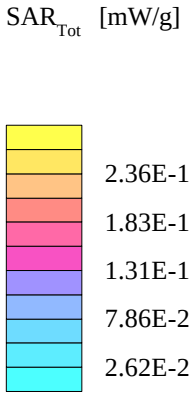




# KWC 2255, #0873, CDMA ch383, With leather case and belt clip

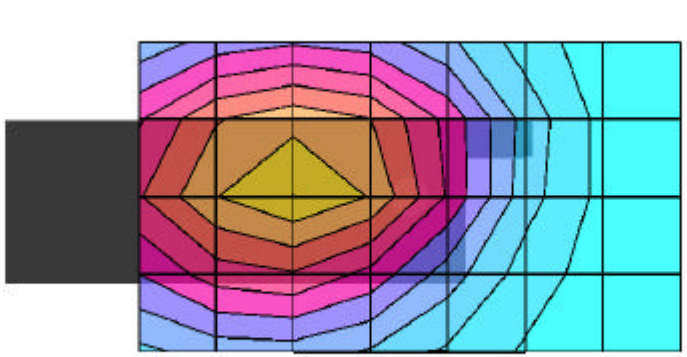
SAR (1g): 0.260 [mW/g] ± 0.00 dB, SAR (10g): 0.194 [mW/g] ± 0.00 dB
Cubes (2) (Worst-case extrapolation)
Generic Twin Phantom; Flat Section
Probe: ET3DV5 - SN1353; ConvF(5.36,5.36,5.36)
Muscle 835MHz: $\sigma = 0.96$ [mho/m] $\varepsilon_r = 55.1$ $\rho = 1.00$ [g/cm$^3$]
File Name: KWC-2255 #0873, CDMA ch383, conducted power=24.9dBm, muscle with bc1.DA3
Operator: DWS
Powerdrift: 0.10 dB

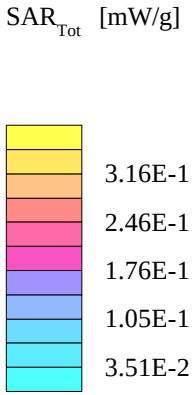




# KWC 2255, #0873, CDMA ch383, With leather case and belt clip

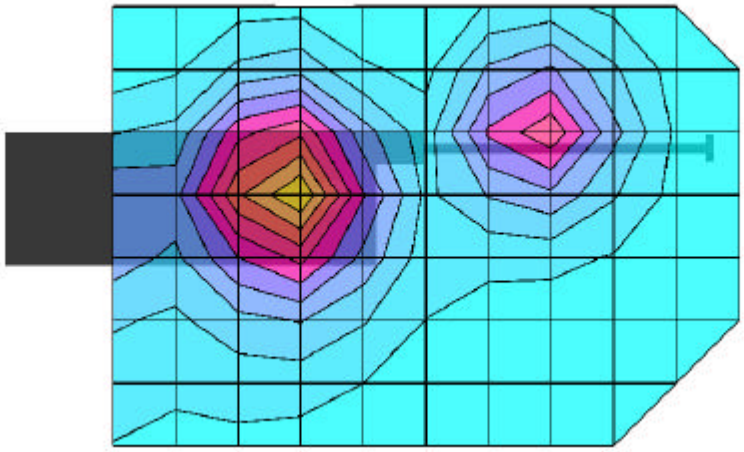
SAR (1g): 0.347 [mW/g] ± 0.02 dB, SAR (10g): 0.258 [mW/g] ± 0.01 dB
Cubes (2) (Worst-case extrapolation)
Generic Twin Phantom; Flat Section
Probe: ET3DV5 - SN1353; ConvF(5.36,5.36,5.36)
Muscle 835MHz: $\sigma$ = 0.96 [mho/m] $\varepsilon_r$ = 55.1 $\rho$ = 1.00 [g/cm$^3$]
File Name: KWC-2255 #0873, CDMA ch383, conducted power=24.9dBm, muscle with bc1.DA3
Operator: DWS
Powerdrift: -0.05 dB

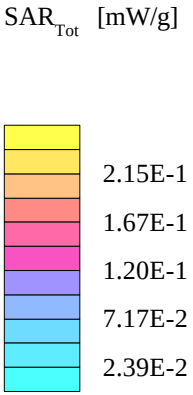




# KWC 2255, #0873, PCS ch25, With leather case and belt clip

SAR (1g): 0.232 [mW/g] ± 0.08 dB, SAR (10g): 0.142 [mW/g] ± 0.07 dB
Cubes (2) (Worst-case extrapolation)
Generic Twin Phantom; Flat Section
Probe: ET3DV5 - SN1353; ConvF(4.50,4.50,4.50)
Muscle 1800MHz: $\sigma$ = 1.56 [mho/m] $\varepsilon_r$ = 54.3 $\rho$ = 1.00 [g/cm$^3$]
File Name: S1 #0873, PCS ch25, conducted power=23.20dBm, muscle with leather, 11-29-01.DA3
Operator: DWS
Powerdrift: 0.03 dB





# KWC 2255, #0873, PCS ch25, With leather case and belt clip

SAR (1g): 0.260 [mW/g] ± 0.06 dB, SAR (10g): 0.159 [mW/g] ± 0.06 dB
Cubes (2) (Worst-case extrapolation)
Generic Twin Phantom; Flat Section
Probe: ET3DV5 - SN1353; ConvF(4.50,4.50,4.50)
Muscle 1800MHz: $\sigma$ = 1.56 [mho/m] $\varepsilon_r$ = 54.3 $\rho$ = 1.00 [g/cm$^3$]
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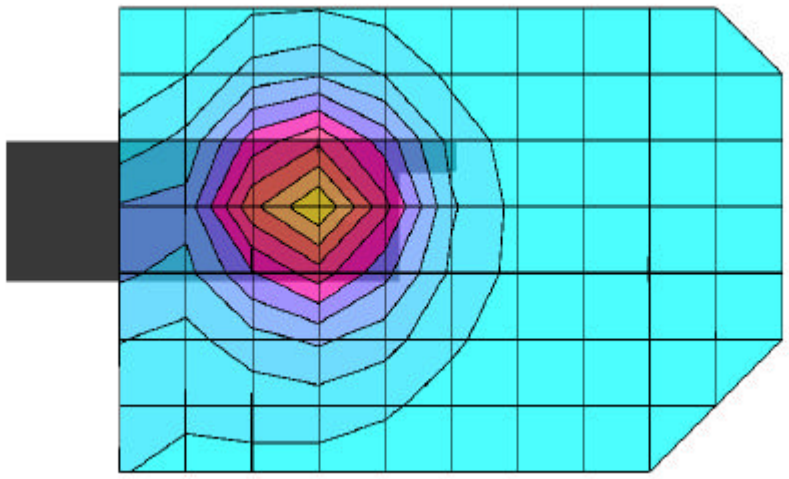
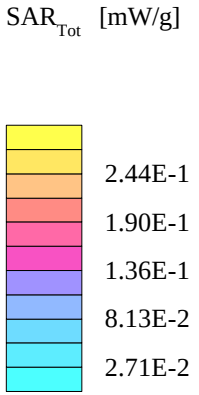
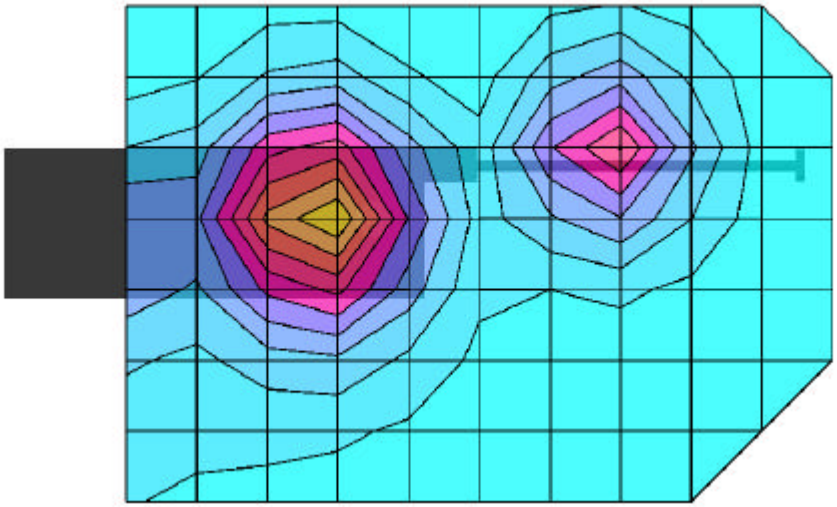
Operator: DWS
Powerdrift: -0.15 dB

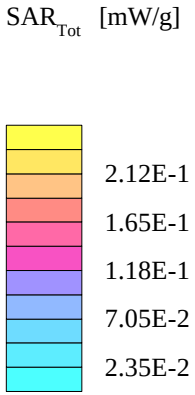




# KWC 2255, #0873, PCS ch600, With leather case and belt clip

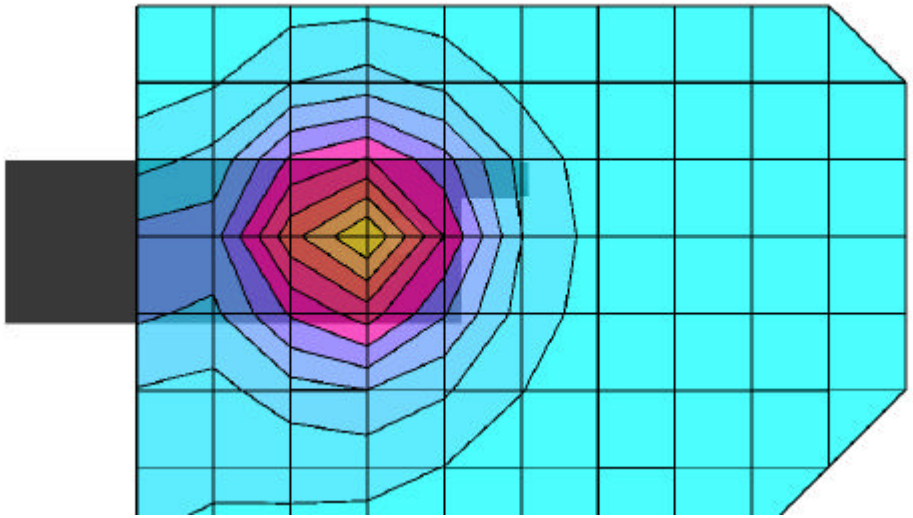
SAR (1g): 0.237 [mW/g] ± 0.03 dB, SAR (10g): 0.144 [mW/g] ± 0.02 dB
Cubes (2) (Worst-case extrapolation)
Generic Twin Phantom; Flat Section
Probe: ET3DV5 - SN1353; ConvF(4.50,4.50,4.50)
Muscle 1800MHz: $\sigma = 1.56$ [mho/m] $\varepsilon_r = 54.3$ $\rho = 1.00$ [g/cm$^3$]
File Name: S1 #0873, PCS ch600, conducted power=23.20dBm, muscle with leather, 11-29-01.DA3
Operator: DWS
Powerdrift: 0.07 dB

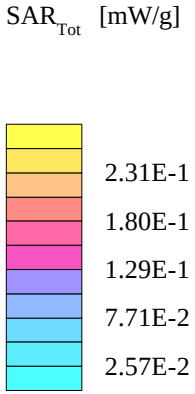




# KWC 2255, #0873, PCS ch600, With leather case and belt clip

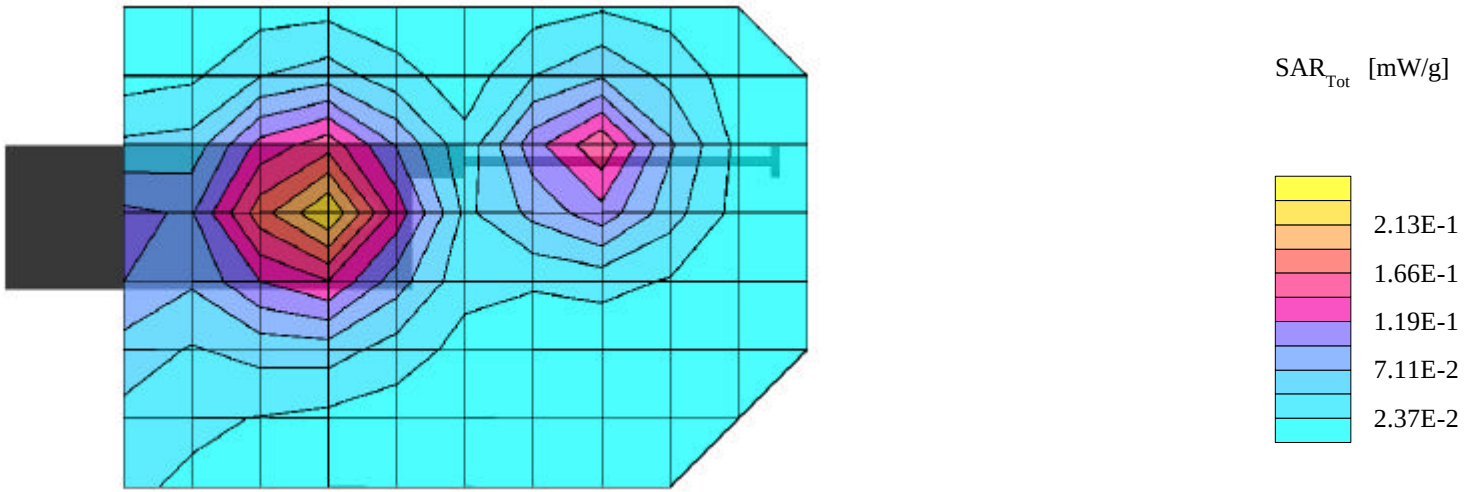
SAR (1g): 0.254 [mW/g] ± 0.03 dB, SAR (10g): 0.154 [mW/g] ± 0.01 dB
Cubes (2) (Worst-case extrapolation)
Generic Twin Phantom; Flat Section
Probe: ET3DV5 - SN1353; ConvF(4.50,4.50,4.50)
Muscle 1800MHz: $\sigma$ = 1.56 [mho/m] $\varepsilon_r$ = 54.3 $\rho$ = 1.00 [g/cm$^3$]
File Name: S1 #0873, PCS ch600, conducted power=23.20dBm, muscle with leather, 11-29-01.DA3
Operator: DWS
Powerdrift: 0.05 dB





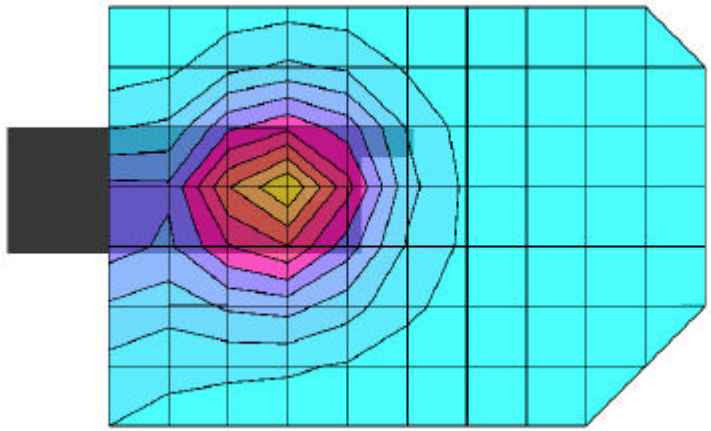
# KWC 2255, #0873, PCS ch1175, With leather case and belt clip

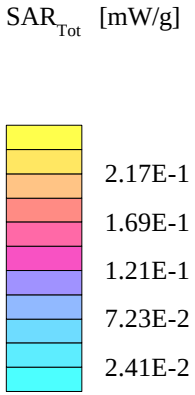
SAR (1g): 0.231 [mW/g] ± 0.01 dB, SAR (10g): 0.139 [mW/g] ± 0.03 dB
Cubes (2) (Worst-case extrapolation)
Generic Twin Phantom; Flat Section
Probe: ET3DV5 - SN1353; ConvF(4.50,4.50,4.50)
Muscle 1800MHz: $\sigma$ = 1.56 [mho/m] $\varepsilon_r$ = 54.3 $\rho$ = 1.00 [g/cm$^3$]
File Name: S1 #0873, PCS ch1175, conducted power=23.20dBm, muscle with leather, 11-29-01.DA3
Operator: DWS
Powerdrift: 0.03 dB



# KWC 2255, #0873, PCS ch1175, With leather case and belt clip

SAR (1g): 0.238 [mW/g] ± 0.11 dB, SAR (10g): 0.144 [mW/g] ± 0.08 dB
Cubes (2) (Worst-case extrapolation)
Generic Twin Phantom; Flat Section
Probe: ET3DV5 - SN1353; ConvF(4.50,4.50,4.50)
Muscle 1800MHz: $\sigma$ = 1.56 [mho/m] $\varepsilon_r$ = 54.3 $\rho$ = 1.00 [g/cm$^3$]
File Name: S1 #0873, PCS ch1175, conducted power=23.20dBm, muscle with leather, 11-29-01.DA3
Operator: DWS
Powerdrift: 0.05 dB





# 10 APPENDIX B -- DIELECTRIC DATA SHEETS

Reference math : OFF  Title: 11-28-01  Cellular Muscle

| Pt# | Frequency (GHz) | Data real | Data imag |
|---|---|---|---|
| 1 | 0.000100000 | 2196.87 | -148.48 |
| 2 | 0.015099500 | 117.46 | 344.06 |
| 3 | 0.030099000 | 80.62 | 175.59 |
| 4 | 0.045098500 | 72.65 | 118.58 |
| 5 | 0.060098000 | 69.59 | 90.05 |
| 6 | 0.075097500 | 67.82 | 73.90 |
| 7 | 0.090097000 | 66.96 | 62.45 |
| 8 | 0.105096500 | 65.87 | 54.40 |
| 9 | 0.120096000 | 65.35 | 48.94 |
| 10 | 0.135095500 | 64.71 | 44.25 |
| 11 | 0.150095000 | 64.49 | 40.68 |
| 12 | 0.165094500 | 64.04 | 37.77 |
| 13 | 0.180094000 | 63.65 | 35.48 |
| 14 | 0.195093500 | 63.23 | 33.47 |
| 15 | 0.210093000 | 62.96 | 31.75 |
| 16 | 0.225092500 | 62.66 | 30.34 |
| 17 | 0.240092000 | 62.38 | 29.12 |
| 18 | 0.255091500 | 62.14 | 28.08 |
| 19 | 0.270091000 | 61.82 | 27.11 |
| 20 | 0.285090500 | 61.61 | 26.22 |
| 21 | 0.300090000 | 61.43 | 25.56 |
| 22 | 0.315089500 | 61.15 | 24.89 |
| 23 | 0.330089000 | 60.92 | 24.34 |
| 24 | 0.345088500 | 60.73 | 23.86 |
| 25 | 0.360088000 | 60.52 | 23.31 |
| 26 | 0.375087500 | 60.29 | 22.90 |
| 27 | 0.390087000 | 60.14 | 22.54 |
| 28 | 0.405086500 | 59.83 | 22.23 |
| 29 | 0.420086000 | 59.71 | 21.99 |
| 30 | 0.435085500 | 59.51 | 21.63 |
| 31 | 0.450085000 | 59.33 | 21.43 |
| 32 | 0.465084500 | 59.20 | 21.16 |
| 33 | 0.480084000 | 58.88 | 21.00 |
| 34 | 0.495083500 | 58.80 | 20.83 |
| 35 | 0.510083000 | 58.65 | 20.60 |
| 36 | 0.525082500 | 58.47 | 20.51 |
| 37 | 0.540082000 | 58.28 | 20.32 |
| 38 | 0.555081500 | 58.16 | 20.24 |
| 39 | 0.570081000 | 57.93 | 20.08 |
| 40 | 0.585080500 | 57.75 | 19.98 |
| 41 | 0.600080000 | 57.60 | 19.88 |
| 42 | 0.615079500 | 57.41 | 19.85 |
| 43 | 0.630079000 | 57.29 | 19.75 |
| 44 | 0.645078500 | 57.11 | 19.70 |
| 45 | 0.660078000 | 56.93 | 19.64 |
| 46 | 0.675077500 | 56.77 | 19.58 |
| 47 | 0.690077000 | 56.63 | 19.53 |
| 48 | 0.705076500 | 56.47 | 19.44 |
| 49 | 0.720076000 | 56.28 | 19.42 |
| 50 | 0.735075500 | 56.13 | 19.44 |
| 51 | 0.750075000 | 56.01 | 19.37 |
| 52 | 0.765074500 | 55.84 | 19.32 |
| 53 | 0.780074000 | 55.68 | 19.29 |
| 54 | 0.795073500 | 55.50 | 19.25 |
| 55 | 0.810073000 | 55.37 | 19.28 |
| 56 | 0.825072500 | 55.24 | 19.24 |
| 57 | 0.840072000 | 55.10 | 19.26 |
| 58 | 0.855071500 | 54.98 | 19.22 |
| 59 | 0.870071000 | 54.79 | 19.19 |
| 60 | 0.885070500 | 54.63 | 19.17 |
| 61 | 0.900070000 | 54.54 | 19.19 |
| 62 | 0.915069500 | 54.43 | 19.19 |
| 63 | 0.930069000 | 54.28 | 19.19 |
| 64 | 0.945068500 | 54.10 | 19.20 |
| 65 | 0.960068000 | 53.95 | 19.22 |
| 66 | 0.975067500 | 53.81 | 19.21 |
| 67 | 0.990067000 | 53.68 | 19.25 |
| 68 | 1.005066500 | 53.56 | 19.25 |
| 69 | 1.020066000 | 53.41 | 19.23 |
| 70 | 1.035065500 | 53.26 | 19.23 |

$\sigma = 0.96$ S/m

| | | | |
|---|---|---|---|
| 71 | 1.050065000 | 53.12 | 19.24 |
| 72 | 1.065064500 | 52.95 | 19.25 |
| 73 | 1.080064000 | 52.80 | 19.25 |
| 74 | 1.095063500 | 52.68 | 19.25 |
| 75 | 1.110063000 | 52.56 | 19.23 |
| 76 | 1.125062500 | 52.47 | 19.22 |
| 77 | 1.140062000 | 52.36 | 19.24 |
| 78 | 1.155061500 | 52.23 | 19.27 |
| 79 | 1.170061000 | 52.12 | 19.31 |
| 80 | 1.185060500 | 51.99 | 19.32 |
| 81 | 1.200060000 | 51.86 | 19.35 |
| 82 | 1.215059500 | 51.73 | 19.40 |
| 83 | 1.230059000 | 51.60 | 19.44 |
| 84 | 1.245058500 | 51.47 | 19.44 |
| 85 | 1.260058000 | 51.34 | 19.46 |
| 86 | 1.275057500 | 51.19 | 19.47 |
| 87 | 1.290057000 | 51.06 | 19.50 |
| 88 | 1.305056500 | 50.92 | 19.50 |
| 89 | 1.320056000 | 50.76 | 19.53 |
| 90 | 1.335055500 | 50.68 | 19.55 |
| 91 | 1.350055000 | 50.54 | 19.55 |
| 92 | 1.365054500 | 50.40 | 19.56 |
| 93 | 1.380054000 | 50.27 | 19.56 |
| 94 | 1.395053500 | 50.13 | 19.57 |
| 95 | 1.410053000 | 50.01 | 19.61 |
| 96 | 1.425052500 | 49.90 | 19.63 |
| 97 | 1.440052000 | 49.79 | 19.62 |
| 98 | 1.455051500 | 49.67 | 19.62 |
| 99 | 1.470051000 | 49.56 | 19.64 |
| 100 | 1.485050500 | 49.41 | 19.65 |
| 101 | 1.500050000 | 49.32 | 19.67 |
| 102 | 1.515049500 | 49.21 | 19.68 |
| 103 | 1.530049000 | 49.09 | 19.70 |
| 104 | 1.545048500 | 49.00 | 19.70 |
| 105 | 1.560048000 | 48.86 | 19.72 |
| 106 | 1.575047500 | 48.74 | 19.74 |
| 107 | 1.590047000 | 48.62 | 19.75 |
| 108 | 1.605046500 | 48.50 | 19.77 |
| 109 | 1.620046000 | 48.40 | 19.76 |
| 110 | 1.635045500 | 48.28 | 19.78 |
| 111 | 1.650045000 | 48.17 | 19.78 |
| 112 | 1.665044500 | 48.05 | 19.77 |
| 113 | 1.680044000 | 47.94 | 19.78 |
| 114 | 1.695043500 | 47.84 | 19.78 |
| 115 | 1.710043000 | 47.75 | 19.79 |
| 116 | 1.725042500 | 47.66 | 19.77 |
| 117 | 1.740042000 | 47.54 | 19.77 |
| 118 | 1.755041500 | 47.47 | 19.77 |
| 119 | 1.770041000 | 47.38 | 19.80 |
| 120 | 1.785040500 | 47.27 | 19.82 |
| 121 | 1.800040000 | 47.20 | 19.84 |
| 122 | 1.815039500 | 47.11 | 19.85 |
| 123 | 1.830039000 | 47.00 | 19.86 |
| 124 | 1.845038500 | 46.89 | 19.87 |
| 125 | 1.860038000 | 46.79 | 19.89 |
| 126 | 1.875037500 | 46.71 | 19.93 |
| 127 | 1.890037000 | 46.61 | 19.94 |
| 128 | 1.905036500 | 46.52 | 19.95 |
| 129 | 1.920036000 | 46.41 | 19.98 |
| 130 | 1.935035500 | 46.31 | 20.01 |
| 131 | 1.950035000 | 46.20 | 20.00 |
| 132 | 1.965034500 | 46.09 | 20.00 |
| 133 | 1.980034000 | 45.99 | 20.02 |
| 134 | 1.995033500 | 45.90 | 20.02 |
| 135 | 2.010033000 | 45.81 | 20.05 |
| 136 | 2.025032500 | 45.74 | 20.05 |
| 137 | 2.040032000 | 45.64 | 20.06 |
| 138 | 2.055031500 | 45.55 | 20.05 |
| 139 | 2.070031000 | 45.47 | 20.06 |
| 140 | 2.085030500 | 45.36 | 20.07 |
| 141 | 2.100030000 | 45.27 | 20.09 |
| 142 | 2.115029500 | 45.19 | 20.10 |
| 143 | 2.130029000 | 45.10 | 20.12 |
| 144 | 2.145028500 | 45.01 | 20.14 |

Reference math : OFF  Title: 11-29-01 PCS MUSCLE

| Pt# | Frequency (GHz) | Data real | Data imag |
|---|---|---|---|
| 1 | 0.000100000 | 512.70 | 73.13 |
| 2 | 0.015099500 | 64.76 | 11.24 |
| 3 | 0.030099000 | 66.30 | 6.51 |
| 4 | 0.045098500 | 66.89 | 5.50 |
| 5 | 0.060098000 | 66.58 | 4.38 |
| 6 | 0.075097500 | 66.38 | 4.34 |
| 7 | 0.090097000 | 66.59 | 4.45 |
| 8 | 0.105096500 | 66.31 | 4.51 |
| 9 | 0.120096000 | 65.97 | 4.37 |
| 10 | 0.135095500 | 65.91 | 4.63 |
| 11 | 0.150095000 | 65.77 | 4.65 |
| 12 | 0.165094500 | 65.63 | 4.80 |
| 13 | 0.180094000 | 65.48 | 4.89 |
| 14 | 0.195093500 | 65.30 | 4.97 |
| 15 | 0.210093000 | 65.14 | 5.29 |
| 16 | 0.225092500 | 65.08 | 5.38 |
| 17 | 0.240092000 | 64.89 | 5.51 |
| 18 | 0.255091500 | 64.76 | 5.66 |
| 19 | 0.270091000 | 64.64 | 5.77 |
| 20 | 0.285090500 | 64.55 | 5.82 |
| 21 | 0.300090000 | 64.38 | 6.04 |
| 22 | 0.315089500 | 64.31 | 6.16 |
| 23 | 0.330089000 | 64.15 | 6.30 |
| 24 | 0.345088500 | 63.99 | 6.50 |
| 25 | 0.360088000 | 63.94 | 6.70 |
| 26 | 0.375087500 | 63.86 | 6.79 |
| 27 | 0.390087000 | 63.71 | 6.96 |
| 28 | 0.405086500 | 63.57 | 7.01 |
| 29 | 0.420086000 | 63.37 | 7.23 |
| 30 | 0.435085500 | 63.34 | 7.39 |
| 31 | 0.450085000 | 63.21 | 7.49 |
| 32 | 0.465084500 | 63.12 | 7.64 |
| 33 | 0.480084000 | 62.98 | 7.70 |
| 34 | 0.495083500 | 62.86 | 7.90 |
| 35 | 0.510083000 | 62.83 | 8.04 |
| 36 | 0.525082500 | 62.69 | 8.20 |
| 37 | 0.540082000 | 62.57 | 8.33 |
| 38 | 0.555081500 | 62.42 | 8.46 |
| 39 | 0.570081000 | 62.35 | 8.60 |
| 40 | 0.585080500 | 62.28 | 8.68 |
| 41 | 0.600080000 | 62.17 | 8.83 |
| 42 | 0.615079500 | 62.05 | 8.95 |
| 43 | 0.630079000 | 61.95 | 9.04 |
| 44 | 0.645078500 | 61.77 | 9.21 |
| 45 | 0.660078000 | 61.69 | 9.35 |
| 46 | 0.675077500 | 61.58 | 9.47 |
| 47 | 0.690077000 | 61.49 | 9.59 |
| 48 | 0.705076500 | 61.41 | 9.68 |
| 49 | 0.720076000 | 61.24 | 9.80 |
| 50 | 0.735075500 | 61.14 | 9.93 |
| 51 | 0.750075000 | 61.07 | 10.06 |
| 52 | 0.765074500 | 60.96 | 10.16 |
| 53 | 0.780074000 | 60.84 | 10.23 |
| 54 | 0.795073500 | 60.69 | 10.35 |
| 55 | 0.810073000 | 60.62 | 10.51 |
| 56 | 0.825072500 | 60.56 | 10.60 |
| 57 | 0.840072000 | 60.41 | 10.70 |
| 58 | 0.855071500 | 60.34 | 10.80 |
| 59 | 0.870071000 | 60.22 | 10.87 |
| 60 | 0.885070500 | 60.08 | 10.99 |
| 61 | 0.900070000 | 60.02 | 11.09 |
| 62 | 0.915069500 | 59.91 | 11.19 |
| 63 | 0.930069000 | 59.77 | 11.34 |
| 64 | 0.945068500 | 59.72 | 11.41 |
| 65 | 0.960068000 | 59.59 | 11.51 |
| 66 | 0.975067500 | 59.48 | 11.59 |
| 67 | 0.990067000 | 59.40 | 11.68 |
| 68 | 1.005066500 | 59.31 | 11.77 |
| 69 | 1.020066000 | 59.19 | 11.89 |
| 70 | 1.035065500 | 59.06 | 12.00 |

| | | | |
|---|---|---|---|
| 71 | 1.050065000 | 58.99 | 12.08 |
| 72 | 1.065064500 | 58.88 | 12.16 |
| 73 | 1.080064000 | 58.76 | 12.25 |
| 74 | 1.095063500 | 58.66 | 12.30 |
| 75 | 1.110063000 | 58.56 | 12.38 |
| 76 | 1.125062500 | 58.51 | 12.46 |
| 77 | 1.140062000 | 58.42 | 12.58 |
| 78 | 1.155061500 | 58.32 | 12.70 |
| 79 | 1.170061000 | 58.24 | 12.79 |
| 80 | 1.185060500 | 58.15 | 12.86 |
| 81 | 1.200060000 | 58.02 | 12.97 |
| 82 | 1.215059500 | 57.92 | 13.06 |
| 83 | 1.230059000 | 57.79 | 13.16 |
| 84 | 1.245058500 | 57.70 | 13.26 |
| 85 | 1.260058000 | 57.61 | 13.30 |
| 86 | 1.275057500 | 57.49 | 13.40 |
| 87 | 1.290057000 | 57.36 | 13.47 |
| 88 | 1.305056500 | 57.27 | 13.53 |
| 89 | 1.320056000 | 57.15 | 13.64 |
| 90 | 1.335055500 | 57.12 | 13.69 |
| 91 | 1.350055000 | 56.99 | 13.74 |
| 92 | 1.365054500 | 56.89 | 13.80 |
| 93 | 1.380054000 | 56.79 | 13.86 |
| 94 | 1.395053500 | 56.72 | 13.96 |
| 95 | 1.410053000 | 56.62 | 14.03 |
| 96 | 1.425052500 | 56.54 | 14.12 |
| 97 | 1.440052000 | 56.44 | 14.17 |
| 98 | 1.455051500 | 56.36 | 14.26 |
| 99 | 1.470051000 | 56.24 | 14.33 |
| 100 | 1.485050500 | 56.12 | 14.42 |
| 101 | 1.500050000 | 56.04 | 14.47 |
| 102 | 1.515049500 | 55.94 | 14.53 |
| 103 | 1.530049000 | 55.83 | 14.60 |
| 104 | 1.545048500 | 55.74 | 14.64 |
| 105 | 1.560048000 | 55.64 | 14.70 |
| 106 | 1.575047500 | 55.55 | 14.77 |
| 107 | 1.590047000 | 55.45 | 14.81 |
| 108 | 1.605046500 | 55.35 | 14.87 |
| 109 | 1.620046000 | 55.29 | 14.92 |
| 110 | 1.635045500 | 55.20 | 14.99 |
| 111 | 1.650045000 | 55.11 | 15.03 |
| 112 | 1.665044500 | 55.01 | 15.09 |
| 113 | 1.680044000 | 54.93 | 15.13 |
| 114 | 1.695043500 | 54.85 | 15.20 |
| 115 | 1.710043000 | 54.76 | 15.25 |
| 116 | 1.725042500 | 54.69 | 15.33 |
| 117 | 1.740042000 | 54.60 | 15.38 |
| 118 | 1.755041500 | 54.52 | 15.44 |
| 119 | 1.770041000 | 54.46 | 15.50 |
| 120 | 1.785040500 | 54.37 | 15.55 |
| 121 | 1.800040000 | 54.29 | 15.62 |
| 122 | 1.815039500 | 54.21 | 15.67 |
| 123 | 1.830039000 | 54.11 | 15.70 |
| 124 | 1.845038500 | 54.01 | 15.76 |
| 125 | 1.860038000 | 53.91 | 15.83 |
| 126 | 1.875037500 | 53.84 | 15.88 |
| 127 | 1.890037000 | 53.76 | 15.92 |
| 128 | 1.905036500 | 53.67 | 15.98 |
| 129 | 1.920036000 | 53.60 | 16.00 |
| 130 | 1.935035500 | 53.50 | 16.05 |
| 131 | 1.950035000 | 53.44 | 16.09 |
| 132 | 1.965034500 | 53.37 | 16.13 |
| 133 | 1.980034000 | 53.30 | 16.20 |
| 134 | 1.995033500 | 53.25 | 16.25 |
| 135 | 2.010033000 | 53.18 | 16.30 |
| 136 | 2.025032500 | 53.10 | 16.36 |
| 137 | 2.040032000 | 53.03 | 16.40 |
| 138 | 2.055031500 | 52.95 | 16.48 |
| 139 | 2.070031000 | 52.88 | 16.52 |
| 140 | 2.085030500 | 52.79 | 16.56 |
| 141 | 2.100030000 | 52.71 | 16.60 |
| 142 | 2.115029500 | 52.65 | 16.64 |
| 143 | 2.130029000 | 52.57 | 16.70 |
| 144 | 2.145028500 | 52.50 | 16.74 |

$\sigma = 1.56$ S/m

# 11 APPENDIX C -- USER'S GUIDE

Vehicles using liquefied petroleum gas (such as propane or butane) must comply with the National Fire Protection Standard (NFPA-58). For a copy of this standard, contact the National Fire Protection Association, One Batterymarch Park, Quincy, MA 02269, Attn: Publication Sales Division.

## Cautions

Any changes or modifications to your phone not expressly approved in this document could void your warranty for this equipment and void your authority to operate this equipment. Only use approved batteries, antennas and chargers. The use of any unauthorized accessories may be dangerous and voids the phone warranty if said accessories cause damage or a defect to the phone.

Although your phone is quite sturdy, it is a complex piece of equipment and can be broken. Avoid dropping, hitting, bending or sitting on it.

## Body-Worn Operation

To comply with FCC radiation exposure requirements, use of this device for body-worn operational configurations is limited to accessories tested and approved by Kyocera Wireless Corp. KWC does not provide a belt clip or leather case. Accessories used with KWC-2255 for body-worn operations must not contain any metallic components and must provide at least 22.5mm separation distance including the antenna and the user's body. Other accessories that have not been tested for body-worn SAR may not comply with FCC radiation exposure limits and should be avoided.

For more information about RF exposure, please visit the FCC website at www.fcc.gov.

## Specific Absorption Rate (SAR) for Wireless Phones

THIS MODEL PHONE MEETS THE GOVERNMENT'S REQUIREMENTS FOR EXPOSURE TO RADIO WAVES.

Your wireless phone is a radio transmitter and receiver. It is designed and manufactured not to exceed the emission limits for exposure to radiofrequency (RF) energy set by the Federal Communications Commission of the U.S. Government. These limits are part of comprehensive guidelines and establish permitted levels of RF energy for the general population. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies.

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- Don't store the battery in high temperature areas for long periods of time. It's best to follow these storage rules:
  - Less than one month: 4° F to 140° F (-20° C to 60° C)
  - More than one month: 4° F to 113° F (-20° C to 45° C)

**Disposal of Lithium Ion (LiIon) Batteries.** For safe disposal options of your LiIon batteries, contact your nearest Sprint PCS-authorized service center.

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**Special Note:** Be sure to dispose of your battery properly. In some areas, the disposal of batteries in household or business trash may be prohibited.

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**Note:** For safety, do not handle a damaged of leaking LiIon battery.

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## Acknowledging Special Precautions and the FCC Notice

**FCC Notice.** The phone may cause TV or radio interference if used in close proximity to receiving equipment. The FCC can require you to stop using the phone if such interference cannot be eliminated.

Vehicles using liquefied petroleum gas (such as propane or butane) must comply with the National Fire Protection Standard (NFPA-58). For a copy of this standard, contact the National Fire Protection Association, One Batterymarch Park, Quincy, MA 02269, Attn: Publication Sales Division.

**Cautions.** Any changes or modifications to your phone not expressly approved in this document could void your warranty for this equipment and void your authority to operate this equipment. Only use approved batteries, antennas and chargers. The use of any unauthorized accessories may be dangerous and voids the phone warranty if said accessories cause damage or a defect to the phone.

Although your phone is quite sturdy, it is a complex piece of equipment and can be broken. Avoid dropping, hitting, bending or sitting on it.

**Body-Worn Operation.** To comply with FCC RF exposure guidelines, use of this device for body-worn operational configurations is limited to accessories tested and approved by Kyocera Wireless Corp. Accessories used with the Kyocera 2255 for body-worn operations must not contain any metallic components and must provide at least 22.5mm separation distance including the antenna and the user's body. Other

accessories that have not been tested for body-worn SAR may not comply with FCC radiation exposure limits and should be avoided.

**Note:** Use of non-Sprint PCS approved accessories may violate FCC RF exposure guidelines.

For more information about RF exposure, please visit the FCC website at **http://www.fcc.gov/oet/fccid**.

**Specific Absorption Rate (SAR) for Wireless Phones.** The SAR is a value that corresponds to the relative amount of RF energy absorbed in the head of a user of a wireless handset.

The SAR value of a phone is the result of an extensive testing, measuring and calculation process. It does not represent how much RF the phone emits. All phone models are tested at their highest value in strict laboratory settings. But when in operation, the SAR of a phone can be substantially less that the level reported to the FCC. This is because of a variety of factors including its proximity to a base station antenna, phone design and other factors. What is important to remember is that each phone meets strict federal guidelines. Variations in SARs do not represent a variation in safety.

All phones must meet the federal standard, which incorporates a substantial margin of safety. As stated above, variations in SAR values between different model phones do not mean variations in safety. SAR values at or below the federal standard of 1.6 mW/g are considered safe for use by the public.

The highest reported SAR values of Kyocera 2255 are:

AMPS mode (Part 22) - Head: 1.11 mW/g; Body-worn: 0.562 mW/g with 22.5mm separation, and 0.429 mW/g for KWC's TXLCC10001 leather case with belt clip.

PCS mode (Part 24) - Head: 1.47 mW/g; Body-worn: 0.400 mW/g with 22.5mm separation, and 0.271 mW/g for KWC's TXLCC10001 leather case with belt clip.

## FCC Radio Frequency Emission

This phone meets the FCC Radio Frequency Emission Guidelines, FCC ID number: OVFKWC-2255. More information of the phone's SAR can be found from the following FCC website: **http://www.fcc.gov/oet/fccid**.