


	<u>Date(s) of Evaluation</u> June 13, 2007	<u>Test Report Serial No.</u> 061207ALH-T836-S90U	<u>Report Revision No.</u> Revision 1.0	
	<u>Test Report Issue Date</u> June 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

APPENDIX A - SAR MEASUREMENT DATA

Company:	Kenwood USA Corporation	Model(s):	TK-3230-K	FCC ID:	ALH383200	KENWOOD
DUT Type:	Portable FM UHF PTT Radio Transceiver	Transmit Frequency Range:		460 - 470 MHz		
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	<u>Date(s) of Evaluation</u> June 13, 2007	<u>Test Report Serial No.</u> 061207ALH-T836-S90U	<u>Report Revision No.</u> Revision 1.0	
	<u>Test Report Issue Date</u> June 20, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Date Tested: 06/13/2007

Face-Held SAR - Low Channel - 460.25 MHz

DUT: Kenwood Model: TK-3230-K; Type: Portable FM UHF PTT Radio Transceiver; Serial: None

Ambient Temp: 24.0°C; Fluid Temp: 21.9°C; Barometric Pressure: 96.9 kPa; Humidity: 31%

Communication System: FM UHF
 Li-ion Battery Pack (P/N: KNB-46L)
 RF Output Power: 33.6 dBm (ERP)
 Frequency: 460.25 MHz; Duty Cycle: 1:1
 Medium: HSL450 Medium parameters used: $f = 460.25 \text{ MHz}$; $\sigma = 0.91 \text{ mho/m}$; $\epsilon_r = 44.5$; $\rho = 1000 \text{ kg/m}^3$

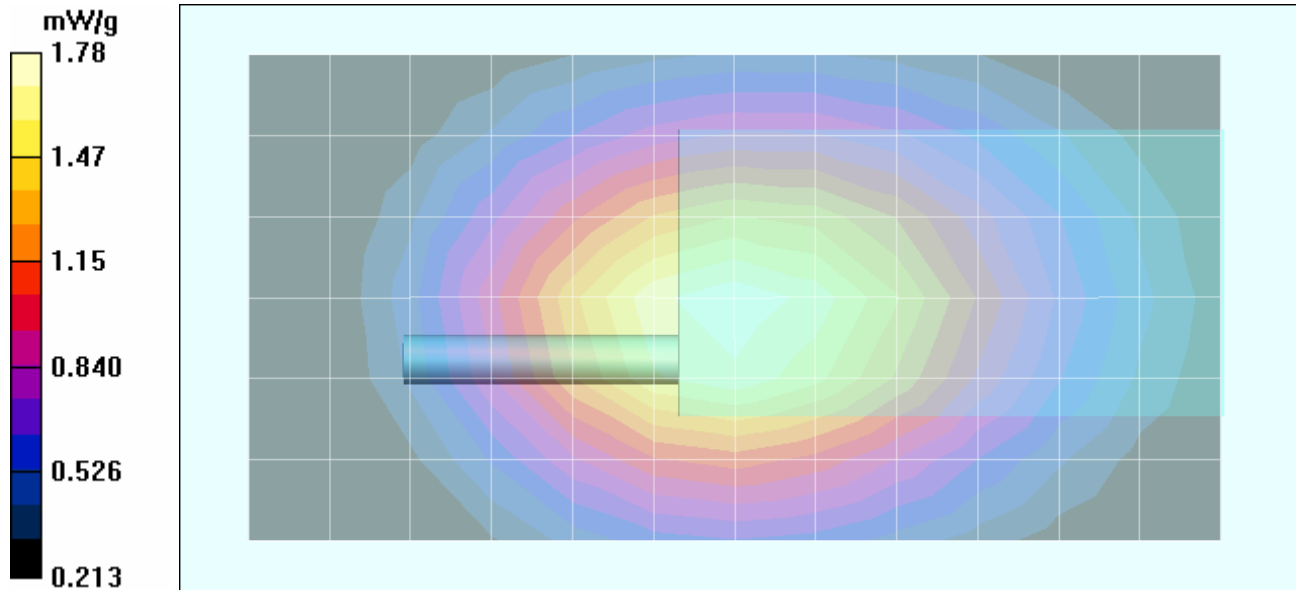
- Probe: ET3DV6 - SN1387; ConvF(7, 7, 7); Calibrated: 16/03/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASy4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171


Face-Held SAR - 2.5 cm Spacing from Front of DUT to Planar Phantom - Low Channel



Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (measured) = 1.76 mW/g

Face-Held SAR - 2.5 cm Spacing from Front of DUT to Planar Phantom - Low Channel

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 45.6 V/m; Power Drift = -0.910 dB
 Peak SAR (extrapolated) = 2.76 W/kg
SAR(1 g) = 1.71 mW/g; SAR(10 g) = 1.18 mW/g
 Maximum value of SAR (measured) = 1.78 mW/g



Company:	Kenwood USA Corporation	Model(s):	TK-3230-K	FCC ID:	ALH383200	
DUT Type:	Portable FM UHF PTT Radio Transceiver	Transmit Frequency Range:	460 - 470 MHz			
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Date Tested: 06/13/2007

Face-Held SAR - Mid Channel - 465.25 MHz

DUT: Kenwood Model: TK-3230-K; Type: Portable FM UHF PTT Radio Transceiver; Serial: None

Ambient Temp: 24.0°C; Fluid Temp: 21.9°C; Barometric Pressure: 96.9 kPa; Humidity: 31%

Communication System: FM UHF

Li-ion Battery Pack (P/N: KNB-46L)

RF Output Power: 33.6 dBm (ERP)

Frequency: 465.25 MHz; Duty Cycle: 1:1

Medium: HSL450 Medium parameters used: $f = 465.25 \text{ MHz}$; $\sigma = 0.91 \text{ mho/m}$; $\epsilon_r = 44.5$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1387; ConvF(7, 7, 7); Calibrated: 16/03/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Face-Held SAR - 2.5 cm Spacing from Front of DUT to Planar Phantom - Mid Channel

Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (measured) = 1.88 mW/g

Face-Held SAR - 2.5 cm Spacing from Front of DUT to Planar Phantom - Mid Channel

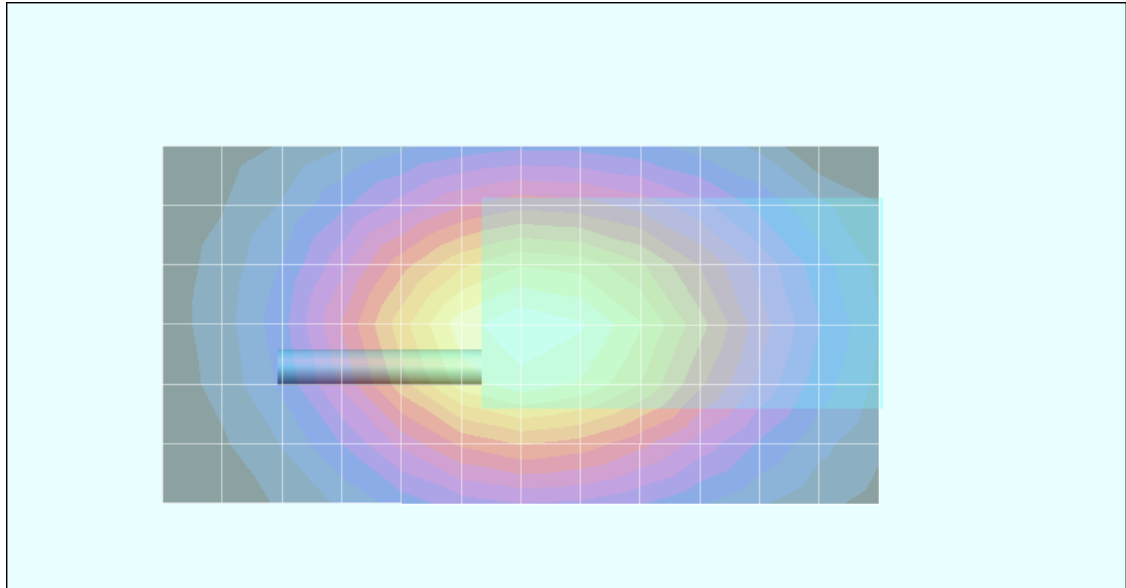
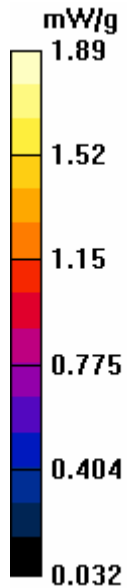
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$


Reference Value = 45.1 V/m; Power Drift = -0.920 dB

Peak SAR (extrapolated) = 3.60 W/kg

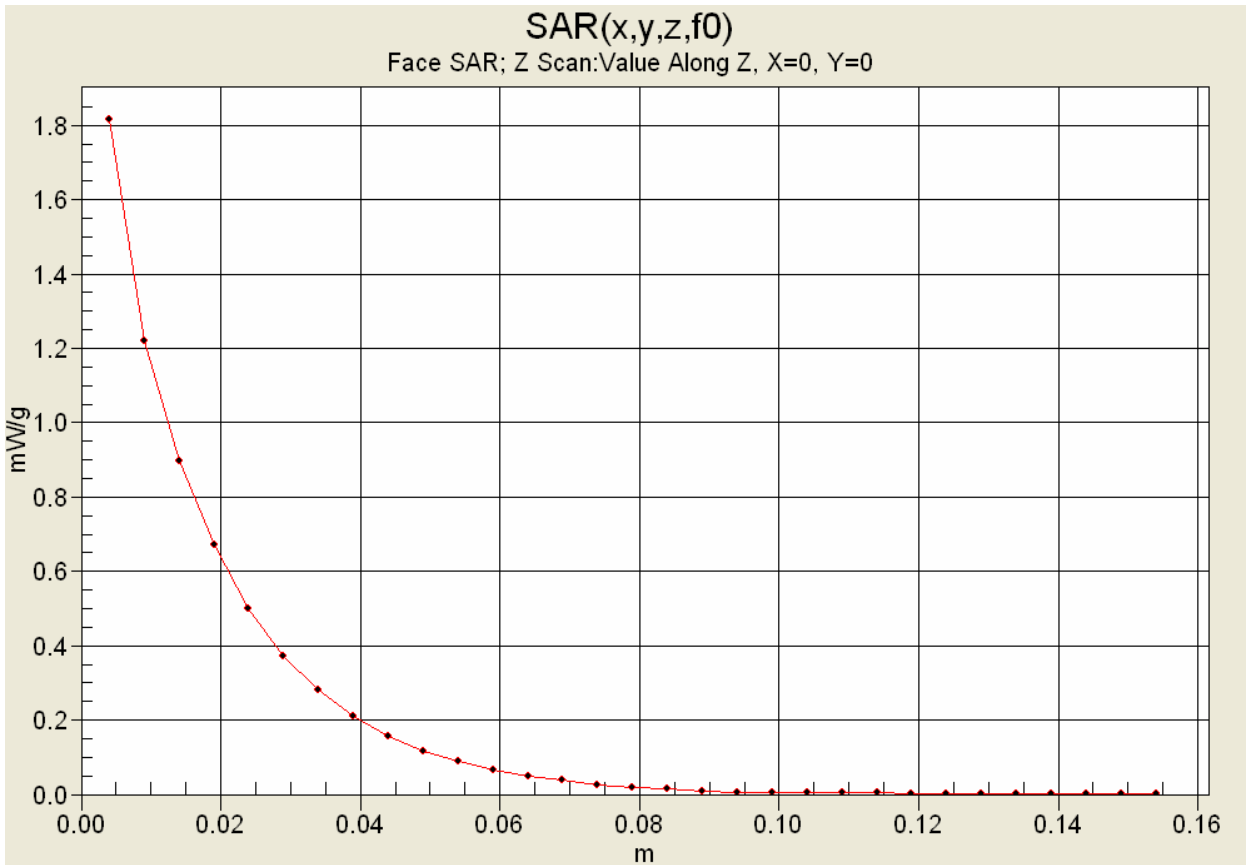
SAR(1 g) = 1.89 mW/g; SAR(10 g) = 1.28 mW/g



Maximum value of SAR (measured) = 1.89 mW/g



Company:	Kenwood USA Corporation	Model(s):	TK-3230-K	FCC ID:	ALH383200	
DUT Type:	Portable FM UHF PTT Radio Transceiver	Transmit Frequency Range:		460 - 470 MHz		
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Z-Axis Scan



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Date Tested: 06/13/2007

Face-Held SAR - High Channel - 469.75 MHz

DUT: Kenwood Model: TK-3230-K; Type: Portable FM UHF PTT Radio Transceiver; Serial: None

Ambient Temp: 24.0°C; Fluid Temp: 21.9°C; Barometric Pressure: 96.9 kPa; Humidity: 31%

Communication System: FM UHF
 Li-ion Battery Pack (P/N: KNB-46L)
 RF Output Power: 33.5 dBm (ERP)
 Frequency: 469.75 MHz; Duty Cycle: 1:1
 Medium: HSL450 Medium parameters used: $f = 469.75 \text{ MHz}$; $\sigma = 0.91 \text{ mho/m}$; $\epsilon_r = 44.5$; $\rho = 1000 \text{ kg/m}^3$

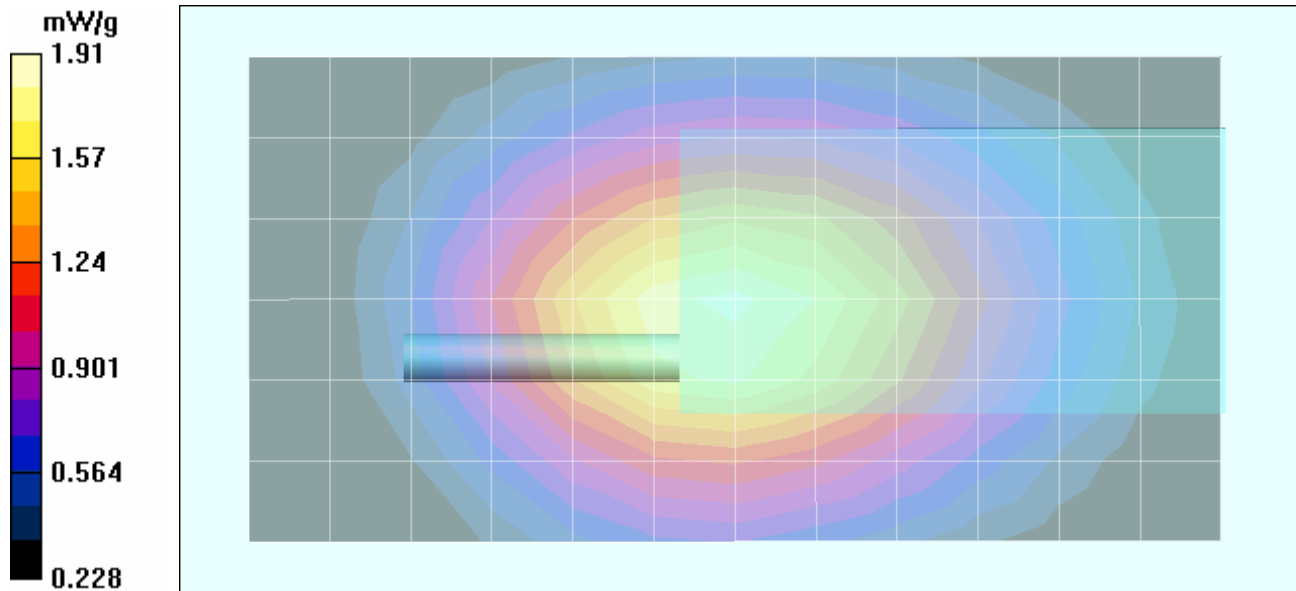
- Probe: ET3DV6 - SN1387; ConvF(7, 7, 7); Calibrated: 16/03/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171


Face-Held SAR - 2.5 cm Spacing from Front of DUT to Planar Phantom - High Channel



Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (measured) = 1.84 mW/g

Face-Held SAR - 2.5 cm Spacing from Front of DUT to Planar Phantom - High Channel

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 46.3 V/m; Power Drift = -0.464 dB
 Peak SAR (extrapolated) = 2.92 W/kg
SAR(1 g) = 1.81 mW/g; SAR(10 g) = 1.26 mW/g
 Maximum value of SAR (measured) = 1.91 mW/g



Company:	Kenwood USA Corporation	Model(s):	TK-3230-K	FCC ID:	ALH383200	
DUT Type:	Portable FM UHF PTT Radio Transceiver	Transmit Frequency Range:		460 - 470 MHz		
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Date Tested: 06/13/2007

Body-Worn SAR - Mid Channel - 465.25 MHz

DUT: Kenwood Model: TK-3230-K; Type: Portable FM UHF PTT Radio Transceiver; Serial: None

Body-Worn Accessory: Belt-Clip (P/N: J29-0736-XX); Audio Accessory: Speaker-Microphone (P/N: KMC-17)

Ambient Temp: 24.4°C; Fluid Temp: 21.9°C; Barometric Pressure: 96.7 kPa; Humidity: 30%

Communication System: FM UHF

Li-ion Battery Pack (P/N: KNB-46L)

RF Output Power: 33.6 dBm (ERP)

Frequency: 465.25 MHz; Duty Cycle: 1:1

Medium: M450 Medium parameters used: $f = 465.25$ MHz; $\sigma = 0.93$ mho/m; $\epsilon_r = 56.6$; $\rho = 1000$ kg/m³

- Probe: ET3DV6 - SN1387; ConvF(6.9, 6.9, 6.9); Calibrated: 16/03/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

Body-Worn SAR - 1.5 cm Belt-Clip Spacing from Back of DUT to Planar Phantom - Mid Channel

Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 2.42 mW/g

Body-Worn SAR - 1.5 cm Belt-Clip Spacing from Back of DUT to Planar Phantom - Mid Channel

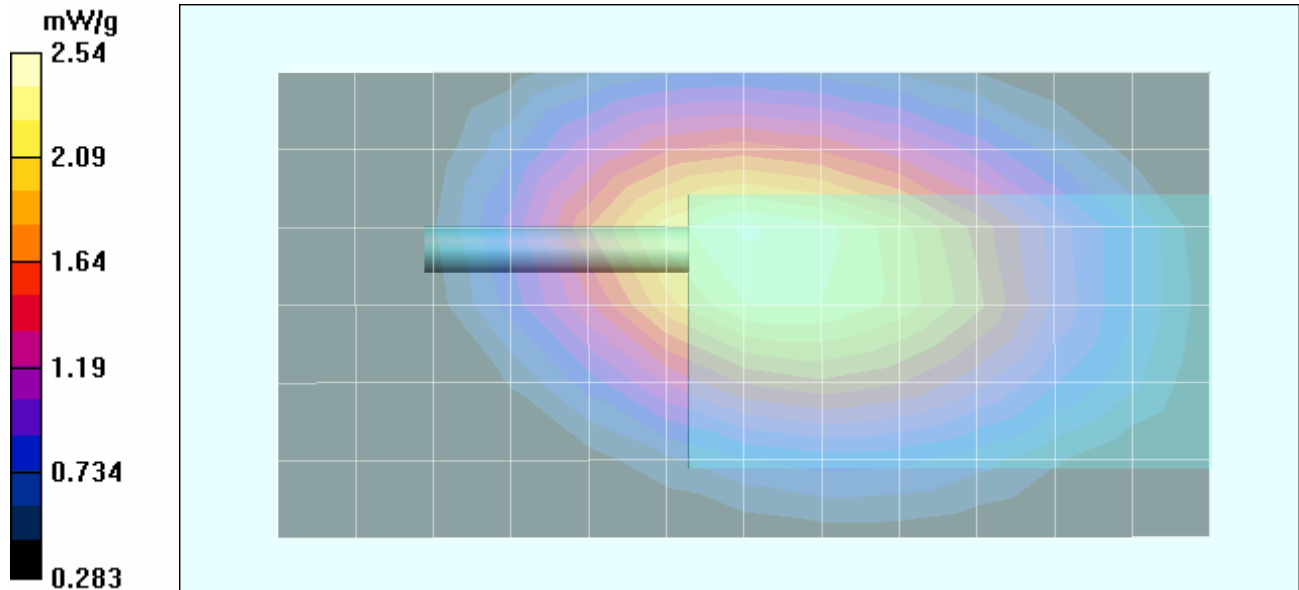
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm


Reference Value = 45.1 V/m; Power Drift = 0.119 dB



Peak SAR (extrapolated) = 3.78 W/kg

SAR(1 g) = 2.38 mW/g; SAR(10 g) = 1.64 mW/g

Maximum value of SAR (measured) = 2.54 mW/g



Company:	Kenwood USA Corporation	Model(s):	TK-3230-K	FCC ID:	ALH383200	
DUT Type:	Portable FM UHF PTT Radio Transceiver	Transmit Frequency Range:		460 - 470 MHz		
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Date Tested: 06/13/2007

Body-Worn SAR - Mid Channel - 465.25 MHz

DUT: Kenwood Model: TK-3230-K; Type: Portable FM UHF PTT Radio Transceiver; Serial: None

Body-Worn Accessory: Belt-Pouch (P/N: KLH-113); Audio Accessory: Speaker-Microphone (P/N: KMC-17)

Ambient Temp: 24.4°C; Fluid Temp: 21.9°C; Barometric Pressure: 96.7 kPa; Humidity: 30%

Communication System: FM UHF
 Li-ion Battery Pack (P/N: KNB-46L)
 RF Output Power: 36.6 dBm (ERP)
 Frequency: 465.25 MHz; Duty Cycle: 1:1
 Medium: M450 Medium parameters used: $f = 465.25 \text{ MHz}$; $\sigma = 0.93 \text{ mho/m}$; $\epsilon_r = 56.6$; $\rho = 1000 \text{ kg/m}^3$

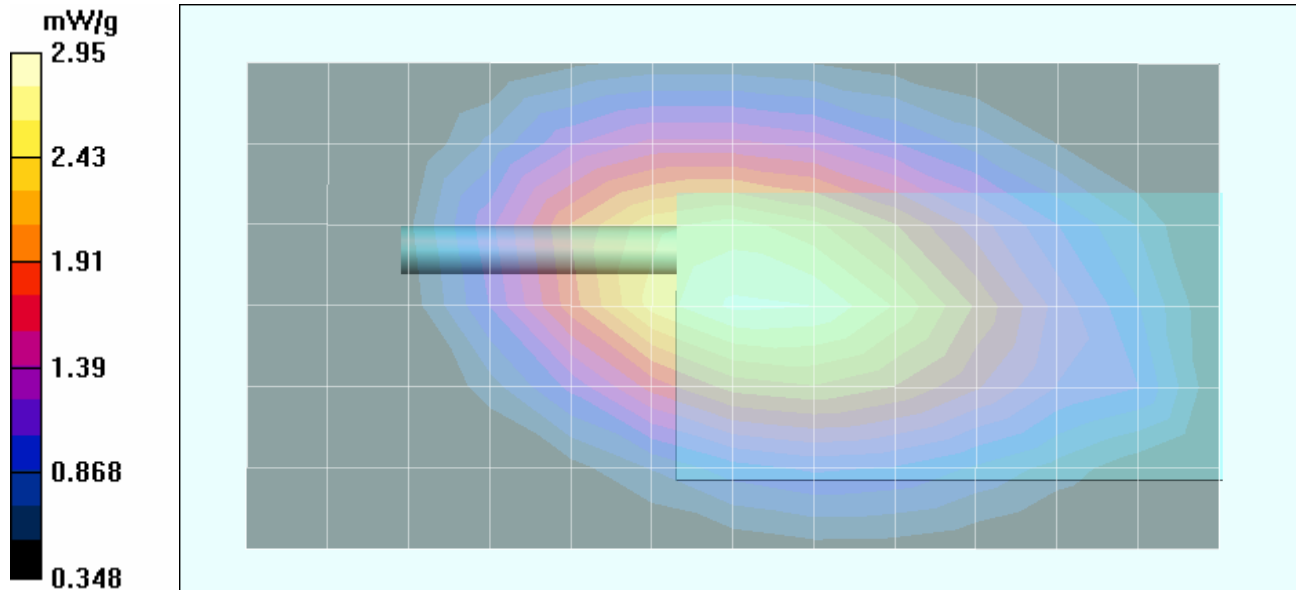
- Probe: ET3DV6 - SN1387; ConvF(6.9, 6.9, 6.9); Calibrated: 16/03/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171


Body-Worn SAR - 0.5 cm Belt-Pouch Spacing from Back of DUT to Planar Phantom - Mid Channel

Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (measured) = 2.82 mW/g

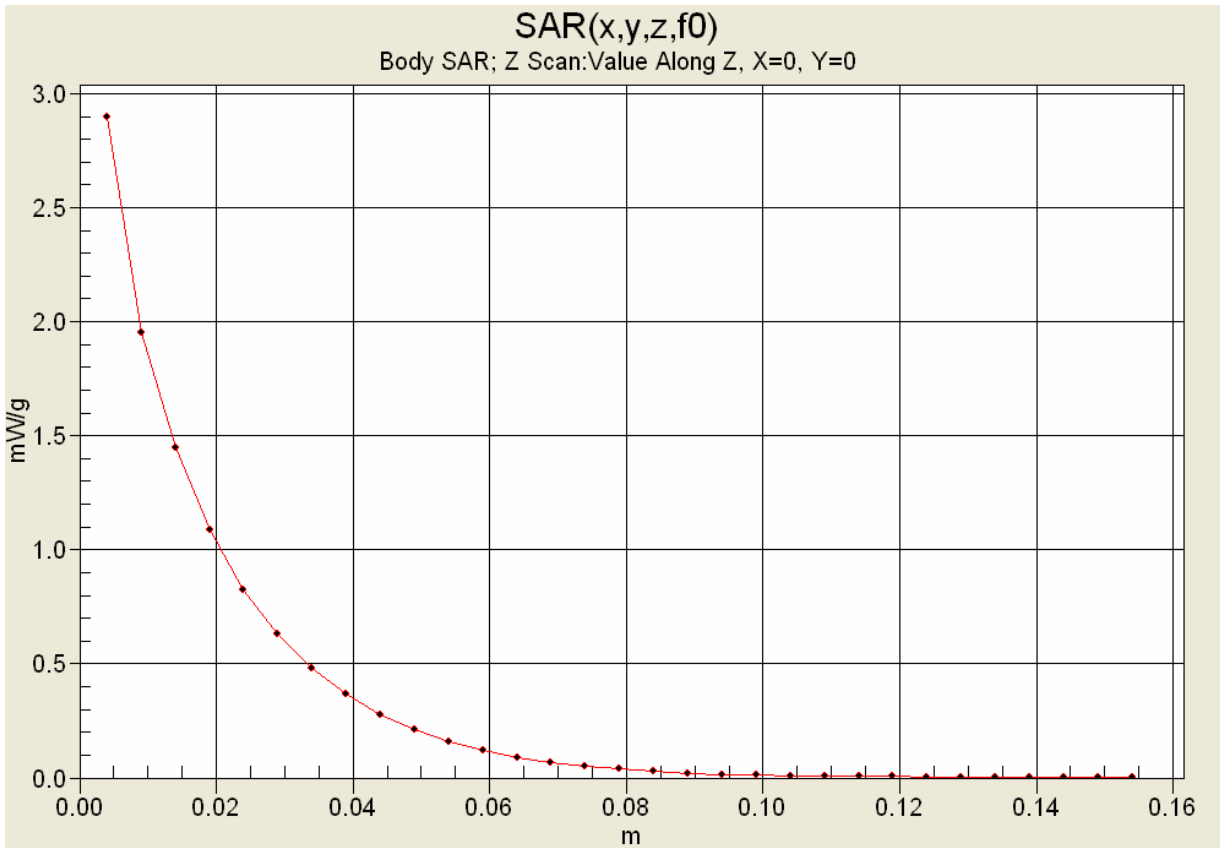
Body-Worn SAR - 0.5 cm Belt-Pouch Spacing from Back of DUT to Planar Phantom - Mid Channel



Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 50.5 V/m; Power Drift = -0.0544 dB
 Peak SAR (extrapolated) = 4.49 W/kg
SAR(1 g) = 2.79 mW/g; SAR(10 g) = 1.9 mW/g
 Maximum value of SAR (measured) = 2.95 mW/g



Company:	Kenwood USA Corporation	Model(s):	TK-3230-K	FCC ID:	ALH383200	
DUT Type:	Portable FM UHF PTT Radio Transceiver	Transmit Frequency Range:		460 - 470 MHz		
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Z-Axis Scan



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Date Tested: 06/13/2007

Body-Worn SAR - Low Channel - 460.25 MHz

DUT: Kenwood Model: TK-3230-K; Type: Portable FM UHF PTT Radio Transceiver; Serial: None

Body-Worn Accessory: Belt-Pouch (P/N: KLH-113); Audio Accessory: Speaker-Microphone (P/N: KMC-17)

Ambient Temp: 24.4°C; Fluid Temp: 21.9°C; Barometric Pressure: 96.7 kPa; Humidity: 30%

Communication System: FM UHF
 Li-ion Battery Pack (P/N: KNB-46L)
 RF Output Power: 33.6 dBm (ERP)
 Frequency: 460.25 MHz; Duty Cycle: 1:1
 Medium: M450 Medium parameters used: $f = 460.25 \text{ MHz}$; $\sigma = 0.93 \text{ mho/m}$; $\epsilon_r = 56.6$; $\rho = 1000 \text{ kg/m}^3$

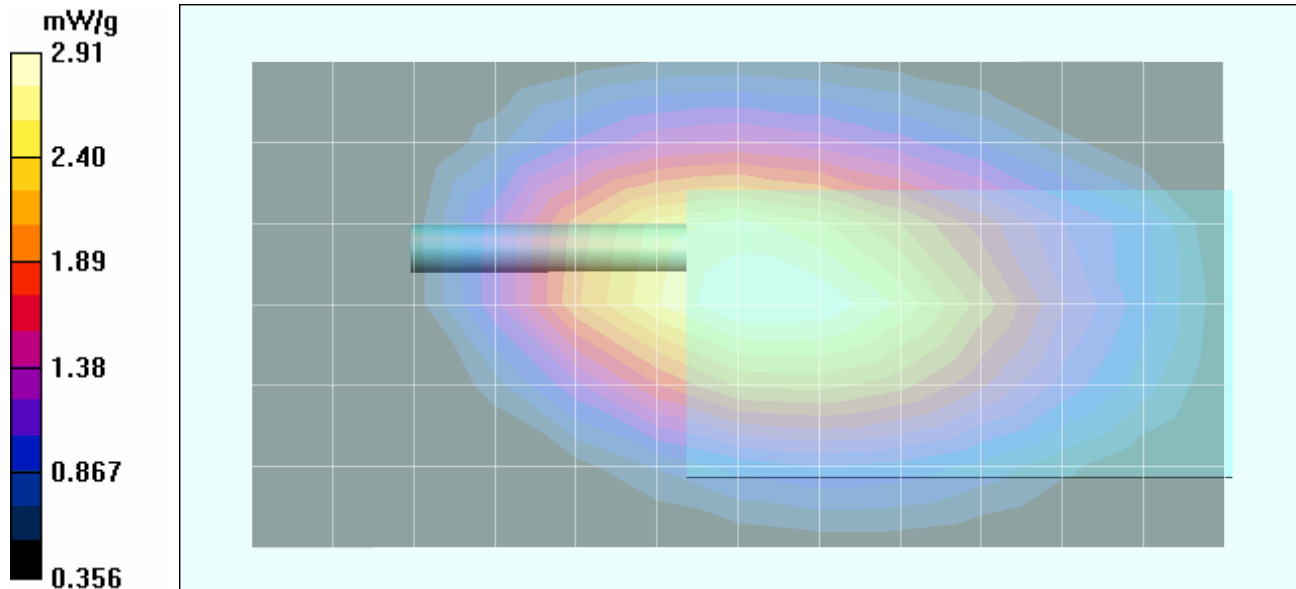
- Probe: ET3DV6 - SN1387; ConvF(6.9, 6.9, 6.9); Calibrated: 16/03/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171


Body-Worn SAR - 0.5 cm Belt-Pouch Spacing from Back of DUT to Planar Phantom - Low Channel



Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (measured) = 2.92 mW/g

Body-Worn SAR - 0.5 cm Belt-Pouch Spacing from Back of DUT to Planar Phantom - Low Channel

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$
 Reference Value = 52.3 V/m; Power Drift = -0.449 dB
 Peak SAR (extrapolated) = 4.46 W/kg
SAR(1 g) = 2.77 mW/g; SAR(10 g) = 1.9 mW/g
 Maximum value of SAR (measured) = 2.91 mW/g



Company:	Kenwood USA Corporation	Model(s):	TK-3230-K	FCC ID:	ALH383200	
DUT Type:	Portable FM UHF PTT Radio Transceiver	Transmit Frequency Range:		460 - 470 MHz		
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Date Tested: 06/13/2007

Body-Worn SAR - High Channel - 469.75 MHz

DUT: Kenwood Model: TK-3230-K; Type: Portable FM UHF PTT Radio Transceiver; Serial: None

Body-Worn Accessory: Belt-Pouch (P/N: KLH-113); Audio Accessory: Speaker-Microphone (P/N: KMC-17)

Ambient Temp: 24.4°C; Fluid Temp: 21.9°C; Barometric Pressure: 96.7 kPa; Humidity: 30%

Communication System: FM UHF
 Li-ion Battery Pack (P/N: KNB-46L)
 RF Output Power: 33.5 dBm (ERP)
 Frequency: 469.75 MHz; Duty Cycle: 1:1
 Medium: M450 Medium parameters used: $f = 469.75$ MHz; $\sigma = 0.93$ mho/m; $\epsilon_r = 56.6$; $\rho = 1000$ kg/m³

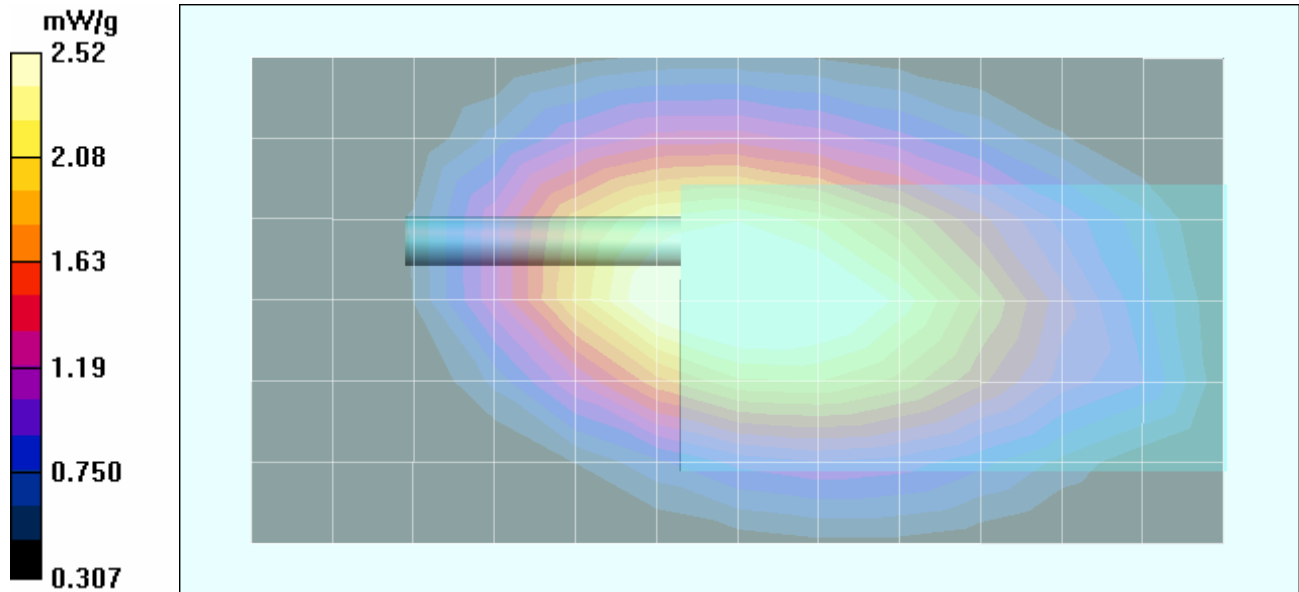
- Probe: ET3DV6 - SN1387; ConvF(6.9, 6.9, 6.9); Calibrated: 16/03/2007
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: Side Planar; Type: Plexiglas; Serial: 161
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171


Body-Worn SAR - 0.5 cm Belt-Pouch Spacing from Back of DUT to Planar Phantom - High Channel

Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (measured) = 2.83 mW/g

Body-Worn SAR - 0.5 cm Belt-Pouch Spacing from Back of DUT to Planar Phantom - High Channel

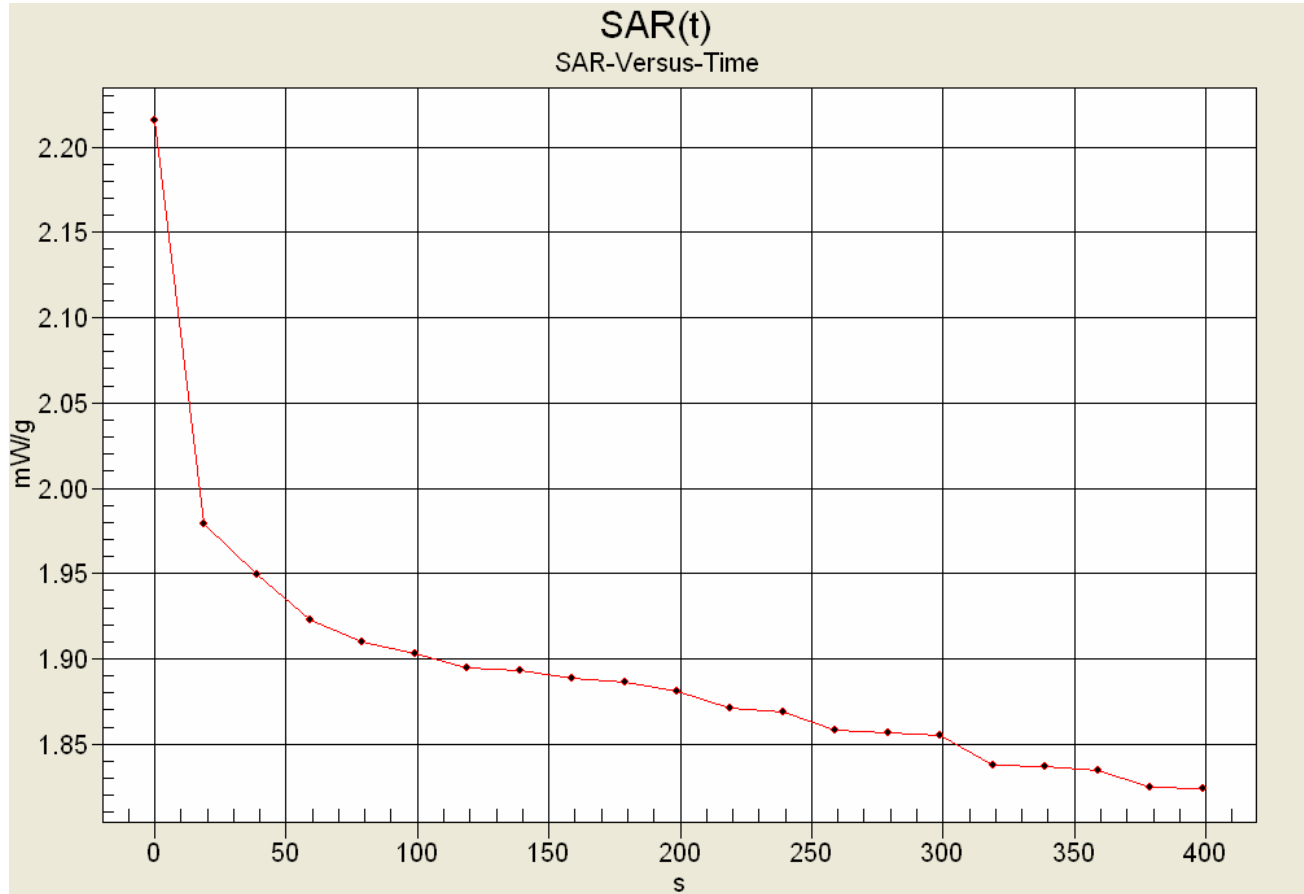
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
 Reference Value = 50.1 V/m; Power Drift = -0.943 dB
 Peak SAR (extrapolated) = 3.88 W/kg
SAR(1 g) = 2.38 mW/g; SAR(10 g) = 1.62 mW/g
 Maximum value of SAR (measured) = 2.52 mW/g



Company:	Kenwood USA Corporation	Model(s):	TK-3230-K	FCC ID:	ALH383200	
DUT Type:	Portable FM UHF PTT Radio Transceiver	Transmit Frequency Range:		460 - 470 MHz		
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SAR- versus-Time Power Droop Evaluation

Body-Worn Configuration - DUT with Nylon Belt-Pouch
 High Channel - 469.95 MHz



Max SAR: 2.216 mW/g
Low SAR: 1.824 mW/g (-0.845 dB)
SAR after 340s: 1.837 mW/g (-0.815 dB)
 (340s = Zoom Scan Duration)
 (400s = Area Scan Duration)