
	<u>Date(s) of Evaluation</u> Nov 6-21, 2013	<u>Test Report Serial No.</u> 110613ALH-1263	<u>Test Report Revision No.</u> Rev. 1.2	
	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

DECLARATION OF COMPLIANCE - SAR RF EXPOSURE EVALUATION (FCC/IC)

Test Lab Information	Name	CELLTECH LABS INC.			
	Address	21-364 Lougheed Road, Kelowna, B.C. V1X 7R8 Canada			
Test Lab Accreditation(s)	A2LA	ISO/IEC 17025:2005 (A2LA Test Lab Certificate No. 2470.01)			
Applicant Information	Name	KENWOOD USA CORPORATION			
	Address	3970 Johns Creek Court, Suite 100, Suwanee, GA 30024 United States			
Application Type(s)	FCC	TCB Certification	IC	CB Certification	
Standard(s) Applied	FCC	47 CFR §2.1093	IC	Health Canada Safety Code 6	
Procedure(s) Applied	FCC	KDB 447498 D01v05r01	FCC	KDB 643646 D01v01r01	
	FCC	KDB 865664 D01v01r02	IEEE	1528-2013	
	FCC	KDB 865664 D02v01r01	IEC	62209-2:2010	
	IC	RSS-102 Issue 4			
Device Classification(s)	FCC	Licensed Non-Broadcast Transmitter Held to Face (TNF) - FCC Part 90			
	IC	Land Mobile Radio Transmitter/Receiver (27.41-960 MHz) - RSS-119			
Device Identifier(s)	FCC ID:	ALH468800	IC	282D-468800	
Device Model(s)	TK-5410D-K2 (4-keypad); TK-5410D-K3 (16-keypad) (Models are electrically identical and differ only in number of buttons on keypad)				
Device Model(s) Tested	TK-5410D-K2 (s/n: B3790005); TK-5410D-K3 (s/n: B3790077)				
Test Sample Revision No.s	Hardware	4.0	Firmware	D1.00	
Date of Sample Receipt	November 6, 2013	Date(s) of SAR Evaluations		November 6,7,8,17,18,19,20 & 21, 2013	
Device Description	Portable FM UHF Push-To-Talk (PTT) Radio Transceiver				
Transmit Frequency Range	FCC	769-775 MHz	799-805 MHz	806-824 MHz	851-869 MHz
	IC	768-776 MHz	798-806 MHz	806-824 MHz	851-869 MHz
Manuf. Rated Output Power	3.0 W (Conducted)		Manuf. Tolerance Specification	+/- 0.5 W	
Antenna Type(s) Tested	See manufacturer's accessory listing (Section 5.0)				
Battery Type(s) Tested	See manufacturer's accessory listing (Section 5.0)				
Body-worn Accessories Tested	See manufacturer's accessory listing (Section 5.0)				
Audio Accessories Tested	See manufacturer's accessory listing (Section 5.0)				
Class II Permissive Change(s)	Add Antenna: KRA-36				
	Add Batteries: KNB-33L, KNB-49PL, KBP-6				
	Add Body-worn Accessories: KLH-8DS, KLH-6SW, KLH-133K3, KLH-134K2, KLH-134K3, KLH-137ST Add Audio Accessories: KMC-52W, KMC-42W, KEP-3, KEP-4, KCT-30, KHS-11BE, KHS-12BE, KHS-14, KHS-15-BH, KHS-15-OH, KMC-49				
Max. SAR Level(s) Evaluated	Face-held (FCC)	2.08 W/kg	1g	50% PTT duty cycle	Occupational / Controlled Exposure
	Face-held (IC)	2.13 W/kg			
	Body-worn (FCC)	4.44 W/kg			
	Body-worn (IC)	4.93 W/kg			
FCC Spatial Peak SAR Limit	Head/Body	8.0 W/kg	1g	50% PTT duty cycle	Occupational / Controlled Exposure

Celltech Labs Inc. declares under its sole responsibility that this wireless portable device has demonstrated compliance with the Specific Absorption Rate (SAR) RF exposure requirements specified in FCC 47 CFR §2.1093 and Health Canada Safety Code 6 for the Occupational / Controlled Exposure environment. The device was tested in accordance with the measurement procedures specified in FCC KDB 447498 D01v05r01, Industry Canada RSS-102 Issue 4 and IEC International Standard 62209-2:2010. All measurements were performed in accordance with the SAR system manufacturer recommendations.

I attest to the accuracy of data. All measurements were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.



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The results and statements contained in this report pertain only to the device(s) evaluated.

Test Report Approved By		Art Voss	Engineer	Celltech Labs Inc.
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Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

REVISION HISTORY			
REVISION NO.	DESCRIPTION	IMPLEMENTED BY	RELEASE DATE
1.0	Initial Release		

TEST REPORT SIGN-OFF			
DEVICE TESTED BY	REPORT PREPARED BY	QA REVIEW BY	REPORT APPROVED BY
Art Voss	Cheri Frangiadakis	Glen Westwell	Art Voss

Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

1.0 INTRODUCTION

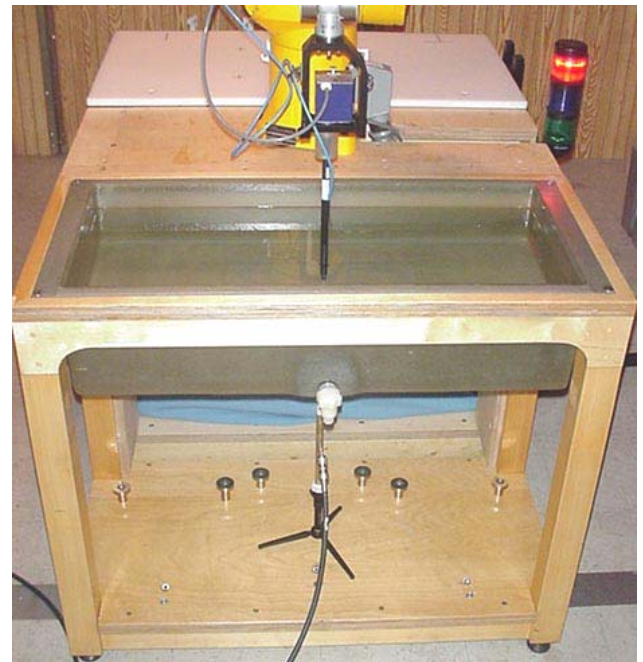
This measurement report demonstrates that the Kenwood USA Corporation Models: TK-5410D-K2 and TK-5410D-K3 Portable 700/800 PTT Radio Transceivers with the Class II Permissive Change(s) as described in this report comply with the SAR (Specific Absorption Rate) RF exposure requirements FCC 47 CFR §2.1093 (see reference [1]) and Health Canada's Safety Code 6 (see reference [2]) for the Occupational / Controlled Exposure environment. The measurement procedures described in FCC KDB 865664 (see reference [3]), IC RSS-102 Issue 4 (see reference [4]), IEEE Standard 1528-2013 (see reference [5]) and IEC Standard 62209-2:2010 (see reference [6]) were employed. A description of the device, operating configuration, detailed summary of the test results, methodology and procedures used in the evaluation, equipment used and the various provisions of the rules are included within this test report.

2.0 SAR MEASUREMENT SYSTEM

Celltech Labs Inc. SAR measurement facility utilizes the Dosimetric Assessment System (DASY™) manufactured by Schmid & Partner Engineering AG (SPEAG™) of Zurich, Switzerland. The DASY4 measurement system is comprised of the measurement server, robot controller, computer, near-field probe, probe alignment sensor, specific anthropomorphic mannequin (SAM) phantom, and various planar phantoms for head and/or body SAR evaluations. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF). A cell controller system contains the power supply, robot controller, teach pendant (joystick), and remote control is used to drive the robot motors. The Staubli robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the DASY4 measurement server. The DAE4 utilizes a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16-bit AD-converter and a command decoder and control logic unit. Transmission to the DASY4 measurement server is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe-mounting device includes two different sensor systems for frontal and sidewise probe contacts. The sensor systems are also used for mechanical surface detection and probe collision detection. The robot uses a controller with a built in VME-bus computer.





DASY4 SAR Measurement System with Side Planar Phantom



DASY4 Measurement System with Barski Planar Phantom

Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Date(s) of Evaluation</u> Nov 6-21, 2013	<u>Test Report Serial No.</u> 110613ALH-1263	<u>Test Report Revision No.</u> Rev. 1.2	
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3.0 RF CONDUCTED OUTPUT POWER MEASUREMENTS

MEASURED RF CONDUCTED OUTPUT POWER LEVELS						
Radio	Mode	Frequency Range	Test Freq.	Watts	dBm	Method
TK-5410D-K3	CW	768-776 MHz	769	2.7	34.3	Average Conducted
			775	2.8	34.4	
		798-806 MHz	799	2.8	34.4	
			805	2.7	34.3	
		806-824 MHz	806	2.9	34.6	
			824	3.0	34.8	
		851-869 MHz	851	3.0	34.7	
			869	3.0	34.7	
TK-5410D-K2	CW	768-776 MHz	769	2.8	34.5	Average Conducted
			775	2.8	34.5	
		798-806 MHz	799	2.8	34.5	
			805	2.8	34.5	
		806-824 MHz	806	3.0	34.7	
			824	3.1	34.9	
		851-869 MHz	851	3.1	34.9	
			869	3.1	34.9	
Notes						
1. The test channels were selected in accordance with the procedures specified in FCC KDB 447498 (see reference [8]).						
2. The RF conducted output power levels of the DUT were measured by Celltech Labs prior to the SAR evaluations using a Gigatronics 8652A Universal Power Meter at the external antenna connector of the radio in accordance with requirements of FCC 47 CFR §2.1046 (see reference [13]) and IC RSS-Gen (see reference [14]).						

4.0 NO. OF TEST CHANNELS (N_c)

Antenna Part No.	Antenna Freq. Range	Test Freq. Range	N_c	Test Frequencies (MHz)
1	KRA-32	768 - 869 MHz	8	769, 775, 799, 805, 806, 824, 851, 869
2	KRA-36	768 - 869 MHz	8	769, 775, 799, 805, 806, 824, 851, 869
Note: The number of test channels (N_c) were calculated in accordance with the procedures specified in FCC KDB 447498 (see reference [8]).				

Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Date(s) of Evaluation</u> Nov 6-21, 2013	<u>Test Report Serial No.</u> 110613ALH-1263	<u>Test Report Revision No.</u> Rev. 1.2	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

5.0 MANUFACTURER'S DISCLOSED ACCESSORY LISTING

Accessory ID # for Test Report	ACCESSORY CATEGORY: ANTENNA			SAR Evaluation
	Part Number	Description		
1	KRA-32	Detachable Whip (700/800 MHz)		Yes
2	KRA-36	Detachable Stubby (700/800 MHz)		Yes
Accessory ID # for Test Report	ACCESSORY CATEGORY: BATTERY			SAR Evaluation
	Part Number	Description		
a	KNB-54N	NiMH (7.2V, 2500mAh)		Yes
b	KNB-43L	Lithium Polymer (7.4V, 3300mAh)		Yes
c	KNB-33L	Li-ion Battery (2000 mAh)		Yes
d	KNB-49PL	Li-ion primary (not rechargeable)		Yes
e	KBP-6	Refillable Battery Pack AA		Yes
Accessory ID # for Test Report	ACCESSORY CATEGORY: BODY-WORN			SAR Evaluation
	Part Number	Description		
1	KBH-11	Belt-clip (contains metal)		Yes
2	KLH-133K2	Leather Case (similar to KLH-134K3)		No
3	KLH-8DS	Swivel with Leather Belt-loop		Yes
4	KLH-6SW	Leather Swivel Belt-loop & Detachable Swivel D-ring Back		Yes
5	KLH-133K3	Leather Case (similar to KLH-134K3)		No
6	KLH-134K2	Leather Case (similar to KLH-134K3)		No
7	KLH-134K3	Leather Case		Yes
8	KLH-137ST	Leather Shoulder Strap		Yes
Accessory ID # for Test Report	ACCESSORY CATEGORY: AUDIO			SAR Evaluation
	Part Number	Description	Audio Accessory Grouping	
G1a	KMC-51	Speaker-Mic	Group 1 (Speaker-mic)	Yes
G1b	KMC-41	Noise Cancelling Speaker-Mic		No ¹
G1c	KMC-52W	Speaker-Mic		No ¹
G1d	KMC-42W	Noise Cancelling Speaker-Mic		No ¹
G2	KEP-1	Heavy Duty Earphone	Group 2 (Earphone)	No ¹
G3a	KHS-11BL	2-Wire Palm Mic w/ Earphone	Group 3 (Palm-Mic)	No ¹
G3b	KHS-12BL	3-Wire Lapel Microphone w/ Earpiece		No ¹
G3c	KHS-11BE	2-wire Palm Microphone with Earphone		No ¹
G3d	KHS-12BE	3-wire mini lapel mic w/earphone		No ¹
G4a	KEP-3	30" Earphone Kit	Group 4 (Earphone)	No ¹
G4b	KEP-4	48" Earphone Kit		No ¹
G5a	KHS-14	Lightweight Single muff headset	Group 5 (Headset)	No ¹
G5b	KHS-15-BH	Heavy Duty Behind the head headset		No ¹
G5c	KHS-15-OH	Heavy Duty over the head headset		No ¹
G6	KMC-49	Speaker-Mic Antenna	Group 6	Yes
Accessory ID # for Test Report	ACCESSORY CATEGORY: OTHER			SAR Evaluation
	Part Number	Description		
n/a	KCT-51	6pin Hirose Adapter		No ²
n/a	KCT-30	Adapter for KEP-3/4		No ²

Manufacturer's disclosed accessory listing information provided by Kenwood USA Corporation

Notes:

1. Audio accessories not evaluated for SAR in accordance with the procedures and provisions of FCC KDB 643646 D01v01r01 Page 10 Section 1).
2. The Hirose adapter is not tested for SAR because it is a passive connector only and will not affect SAR on its own.

Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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6.0 FLUID DIELECTRIC PARAMETERS

FLUID DIELECTRIC PARAMETERS						
Date: 11/6&7&8,2013		Frequency: 835 MHz			Tissue: Head	
Freq	Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
0.735	43.06	0.8	41.5	0.9	3.76%	-11.11%
0.745	43.06	0.81	41.5	0.9	3.76%	-10.00%
0.755	42.76	0.83	41.5	0.9	3.04%	-7.78%
0.765	42.74	0.83	41.5	0.9	2.99%	-7.78%
0.775	42.55	0.86	41.5	0.9	2.53%	-4.44%
0.785	42.38	0.86	41.5	0.9	2.12%	-4.44%
0.795	42.09	0.86	41.5	0.9	1.42%	-4.44%
0.799*	42.1	0.864	41.5	0.9	1.45%	-4.00%
0.805	42.11	0.87	41.5	0.9	1.47%	-3.33%
0.815	42.06	0.89	41.5	0.9	1.35%	-1.11%
0.824*	42.2	0.899	41.5	0.9	1.69%	-0.11%
0.825	42.19	0.9	41.5	0.9	1.66%	0.00%
0.835	41.8	0.9	41.5	0.9	0.72%	0.00%
0.845	41.79	0.9	41.5	0.9	0.70%	0.00%
0.855	41.55	0.92	41.5	0.9	0.12%	2.22%
0.865	41.65	0.92	41.5	0.9	0.36%	2.22%
0.875	41	0.94	41.5	0.9	-1.20%	4.44%
0.885	41.29	0.95	41.5	0.9	-0.51%	5.56%
0.895	40.98	0.96	41.5	0.9	-1.25%	6.67%
0.905	40.72	0.97	41.5	0.9	-1.88%	7.78%
0.915	41.05	0.97	41.5	0.9	-1.08%	7.78%
0.925	40.7	0.98	41.5	0.9	-1.93%	8.89%
0.935	40.4	1.01	41.5	0.9	-2.65%	12.22%

*interpolated using DASY4 software

Test Date	Fluid Type	Ambient Temperature	Fluid Temperature	Fluid Depth	Atmospheric Pressure	Relative Humidity	ρ (Kg/m ³)
Nov 6	835 Head	24°C	21.6°C	≥ 15 cm	102.9 kPa	24%	1000
Nov 7	835 Head	22°C	21.6°C	≥ 15 cm	101.5 kPa	25%	1000
Nov 8	835 Head	23°C	21.6°C	≥ 15 cm	101.6 kPa	23%	1000

FLUID DIELECTRIC PARAMETERS						
Date: 11/17,18&19/2013		Frequency: 835 MHz			Tissue: Body	
Freq	Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
0.735	54.72	0.85	55.2	0.97	-0.87%	-12.37%
0.745	54.43	0.87	55.2	0.97	-1.39%	-10.31%
0.755	54.27	0.88	55.2	0.97	-1.68%	-9.28%
0.765	54.56	0.88	55.2	0.97	-1.16%	-9.28%
0.775	54.19	0.89	55.2	0.97	-1.83%	-8.25%
0.785	54.31	0.89	55.2	0.97	-1.61%	-8.25%
0.795	53.83	0.92	55.2	0.97	-2.48%	-5.15%
0.805	54.09	0.92	55.2	0.97	-2.01%	-5.15%
0.815	53.69	0.92	55.2	0.97	-2.74%	-5.15%
0.824*	53.8	0.939	55.2	0.97	-2.54%	-3.20%
0.825	53.77	0.94	55.2	0.97	-2.59%	-3.09%
0.835	53.62	0.95	55.2	0.97	-2.86%	-2.06%
0.845	53.64	0.97	55.2	0.97	-2.83%	0.00%
0.855	53.36	0.98	55.2	0.97	-3.33%	1.03%
0.865	53.2	1	55.2	0.97	-3.62%	3.09%
0.875	53.18	1.01	55.2	0.97	-3.66%	4.12%
0.885	53.18	1.02	55.2	0.97	-3.66%	5.15%
0.895	52.97	1.01	55.2	0.97	-4.04%	4.12%
0.905	52.83	1.04	55.2	0.97	-4.29%	7.22%
0.915	53.04	1.04	55.2	0.97	-3.91%	7.22%
0.925	52.79	1.05	55.2	0.97	-4.37%	8.25%
0.935	52.73	1.06	55.2	0.97	-4.47%	9.28%

*interpolated using DASY4 software

Test Date	Fluid Type	Ambient Temperature	Fluid Temperature	Fluid Depth	Atmospheric Pressure	Relative Humidity	ρ (Kg/m ³)
Nov 17	835 Body	23.0°C	21.8°C	≥ 15 cm	101.5 kPa	33%	1000
Nov 18	835 Body	22.0°C	21.4°C	≥ 15 cm	100.2 kPa	24%	1000
Nov 19	835 Body	22.0°C	21.4°C	≥ 15 cm	100.2 kPa	24%	1000

FLUID DIELECTRIC PARAMETERS						
Date: 11/20&21/2013		Frequency: 835 MHz			Tissue: Body	
Freq	Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
0.735	56.1	0.89	55.2	0.97	1.63%	-8.25%
0.745	56.21	0.9	55.2	0.97	1.83%	-7.22%
0.755	55.6	0.91	55.2	0.97	0.72%	-6.19%
0.765	55.64	0.92	55.2	0.97	0.80%	-5.15%
0.775	55.61	0.93	55.2	0.97	0.74%	-4.12%
0.785	55.47	0.93	55.2	0.97	0.49%	-4.12%
0.795	55.47	0.96	55.2	0.97	0.49%	-1.03%
0.805	55.27	0.95	55.2	0.97	0.13%	-2.06%
0.815	55.16	0.97	55.2	0.97	-0.07%	0.00%
0.824*	54.9	0.979	55.2	0.97	-0.54%	0.93%
0.825	54.93	0.98	55.2	0.97	-0.49%	1.03%
0.835	54.73	0.98	55.2	0.97	-0.85%	1.03%
0.845	55.08	1	55.2	0.97	-0.22%	3.09%
0.855	54.71	1	55.2	0.97	-0.89%	3.09%
0.865	54.21	1.01	55.2	0.97	-1.79%	4.12%
0.875	54.29	1.02	55.2	0.97	-1.65%	5.15%
0.885	54.28	1.05	55.2	0.97	-1.67%	8.25%
0.895	54.17	1.05	55.2	0.97	-1.87%	8.25%
0.905	54.12	1.05	55.2	0.97	-1.96%	8.25%
0.915	53.95	1.05	55.2	0.97	-2.26%	8.25%
0.925	53.94	1.06	55.2	0.97	-2.28%	9.28%
0.935	54.04	1.07	55.2	0.97	-2.10%	10.31%

*interpolated using DASY4 software

Test Date	Fluid Type	Ambient Temperature	Fluid Temperature	Fluid Depth	Atmospheric Pressure	Relative Humidity	ρ (Kg/m ³)
Nov 20	835 Body	25.0°C	22.0°C	≥ 15 cm	103.5 kPa	20%	1000
Nov 21	835 Body	26.0°C	21.8°C	≥ 15 cm	104.2 kPa	15%	1000

7.0 SAR MEASUREMENT SUMMARY

TABLE 1				FACE-HELD SAR EVALUATION RESULTS														
Device-Under-Test				TK-5410D														
Test Date(s)				November 6 & 7, 2013														
C				1	2	3	4	5	6	7	8	9	10					
R	Ant. ID #	Test Freq. (MHz)	Cond. Power Before Test (W)	SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g				
				Battery a (Additional) KNB-54N		Battery b (Default) KNB-43L		Battery c (Additional) KNB-33L		Battery d (Additional) KNB-49PL		Battery e (Default) KNP-6						
				100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	
				Drift (dB)	50%+droop	Drift (dB)	50%+droop	Drift dB	50%+droop	Drift dB	50%+droop	Drift dB	50%+droop	Drift dB	50%+droop	Drift dB	50%+droop	
Radio TK-5410D-K3																		
1	2	769	2.7	N/A		N/A		N/A		N/A		N/A		N/A				
2		775	2.8	N/A		N/A		N/A		N/A		N/A		N/A				
3		799	2.8	F3	3.04	1.52	F1	3.31	1.66	F4	3.06	1.53	F5	2.86	1.43	F6	1.91	0.955
4					-0.737	1.80		-0.151	1.71		-0.641	1.77		-0.563	1.63		-1.12	1.24
5		805	2.7	N/A		N/A		N/A		N/A		N/A		N/A				
6		806	2.9	N/A		N/A		N/A		N/A		N/A		N/A				
7		824	3.0		N/A		F2	3.15	1.58	N/A		N/A		N/A				
8					N/A			-0.711	1.86	N/A		N/A		N/A				
9		851	3.0	N/A		N/A		N/A		N/A		N/A		N/A				
10		869	3.0	N/A		N/A		N/A		N/A		N/A		N/A				
Radio TK-5410D-K2																		
11	2	799	2.8	N/A		F7	2.57	1.29	N/A		N/A		N/A					
12				N/A			-0.754	1.53	N/A		N/A		N/A					
SAR LIMITS				HEAD				SPATIAL PEAK				RF EXPOSURE CATEGORY						
FCC 47 CFR 2.1093		Health Canada Safety Code 6		8.0 W/kg				1 gram average				Occupational / Controlled						
Notes																		
C = Column; R = Row						Fx (F = Face) denotes the corresponding Face SAR Plot # as shown in Appendix A												
Test Mode = CW (Unmodulated Continuous Wave)						Phantom = Side Planar Phantom												
Front of DUT Distance to Planar Phantom (see Appendix D) (Front of DUT Parallel to Planar Phantom)						Shortest Antenna Distance to Planar Phantom (see Appendix D)												
						Antenna 1					Antenna 2							
2.5 cm						5.5 cm					5.5 cm							

TABLE 2				FACE-HELD SAR EVALUATION RESULTS															
Device-Under-Test				TK-5410D with Speaker-Microphone Antenna (KMC-49)															
Test Date(s)				November 8 th , 2013															
C				1	2	3	4	5	6	7	8	9	10						
R	Ant.. ID #	Test Freq. (MHz)	Cond. Power Before Test (W)	SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g							
				Battery a (Additional) KNB-54N		Battery b (Default) KNB-43L		Battery c (Additional) KNB-33L		Battery d (Additional) KNB-49PL		Battery e (Additional) KNP-6							
				100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f						
				Drift (dB)	50%+droop	Drift (dB)	50%+droop	Drift dB	50%+droop	Drift dB	50%+droop	Drift dB	50%+droop						
1	1	769	2.7	N/A		N/A		N/A		N/A		N/A							
2		775	2.8	N/A		N/A		N/A		N/A		N/A							
3		799	2.8	N/A	F8	1.25	0.625	N/A		N/A		N/A							
4						-0.883	0.766	N/A		N/A		N/A							
5		805	2.7	N/A		N/A		N/A		N/A		N/A							
6		806	2.9	N/A		N/A		N/A		N/A		N/A							
7		824	3.0	N/A	F9	2.23	1.12	N/A		N/A		N/A							
8						-0.365	1.21	N/A		N/A		N/A							
9		851	3.0	N/A		N/A		N/A		N/A		N/A							
10		869	3.0	N/A		N/A		N/A		N/A		N/A							
11	2	769	2.7	N/A		N/A		N/A		N/A		N/A							
12		775	2.8	N/A		N/A		N/A		N/A		N/A							
13		799	2.8	N/A	F10	1.07	0.535	N/A		N/A		N/A							
14						-0.281	0.571	N/A		N/A		N/A							
15		805	2.7	N/A		N/A		N/A		N/A		N/A							
16		806	2.9	N/A		N/A		N/A		N/A		N/A							
17		824	3.0	N/A	F11	0.636	0.318	N/A		N/A		N/A							
18						-0.615	0.366	N/A		N/A		N/A							
19		851	3.0	N/A		N/A		N/A		N/A		N/A							
20		869	3.0	N/A		N/A		N/A		N/A		N/A							
SAR LIMITS				HEAD				SPATIAL PEAK				RF EXPOSURE CATEGORY							
FCC 47 CFR 2.1093				Health Canada Safety Code 6				8.0 W/kg				1 gram average				Occupational / Controlled			
Notes																			
C = Column; R = Row						Fx (F = Face) denotes the corresponding Face SAR Plot # as shown in Appendix A													
Test Mode = CW (Unmodulated Continuous Wave)						Phantom = Side Planar Phantom													
Front of DUT Distance to Planar Phantom (see Appendix D) (Front of DUT Parallel to Planar Phantom)						Shortest Antenna Distance to Planar Phantom (see Appendix D)													
						Antenna 1			Antenna 2										
2.5 cm						5.5 cm			5.5 cm										

TABLE 3	BODY-WORN SAR EVALUATION RESULTS
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Device-Under-Test	TK-5410D-K3
Body-worn Accessory	1 (KBH-11)
Audio Accessory	G1a
Test Date(s)	November 18 & 19, 2013

C				1	2	3	4	5	6	7	8	9	10				
R	Ant. ID #	Test Freq. (MHz)	Cond. Power Before Test (W)	SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g					
				Battery a (Additional) KNB-54N		Battery b (Default) KNB-43L		Battery c (Additional) KNB-33L		Battery d (Additional) KNB-49PL		Battery e (Default) KNP-6					
				100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f				
				Drift (dB)	50%+droop	Drift (dB)	50%+droop	Drift (dB)	50%+droop	Drift (dB)	50%+droop	Drift (dB)	50%+droop				
1	2	769	2.7	N/A		N/A		N/A		N/A		N/A					
2		775	2.8	N/A		B3	2.54	1.27	B1	6.89	3.45	B4	2.62	1.31	B5	2.46	1.23
3				-0.387	1.39		-0.812	4.15		-0.423	1.44		-0.389	1.35			
4		799	2.8	N/A		N/A		N/A		N/A		N/A					
5		805	2.7	N/A		N/A		N/A		N/A		N/A					
6		806	2.9	N/A		N/A		N/A		N/A		N/A					
7		824	3.0	N/A		N/A		B2	5.83	2.92	N/A		N/A				
8				-1.17	3.82	N/A			N/A								
9		851	3.0	N/A		N/A		N/A		N/A		N/A					
10		869	3.0	N/A		N/A		N/A		N/A		N/A					

Additional Test in Worst-Case Position with Radio TK-5410D-K2														
11	2	775	2.8	N/A		N/A		B33	7.05	3.53	N/A		N/A	
12				-0.615	4.06	N/A			N/A					

SAR LIMITS				BODY				SPATIAL PEAK				RF EXPOSURE CATEGORY							
FCC 47 CFR 2.1093				Health Canada Safety Code 6				8.0 W/kg				1 gram average				Occupational / Controlled			

Notes													
Test Mode = CW (Unmodulated Continuous Wave)							Phantom = Side Planar Phantom						
Back of DUT Distance to Planar Phantom (see Appendix D)							Shortest Antenna Distance to Planar Phantom (see Appendix D)						
2.0 cm							Antenna 2						
							3.2 cm						

- C = Column; R = Row | B1-Bx (B = Body) denotes the corresponding Body SAR Plot # as shown in Appendix A
- When test reduction applies, the slots for such configurations are denoted with N/A (Not Applicable).
 - When the SAR of an antenna tested on the highest output power channel using the default battery is ≤ 3.5 W/kg (50% PTT duty factor), testing of all other required channels is not necessary.
 - When the SAR for all antennas tested using the default battery is ≤ 4.0 W/kg, test additional batteries using the antenna and channel configuration that resulted in the highest SAR.

TABLE 4				BODY-WORN SAR EVALUATION RESULTS													
Device-Under-Test				TK-5410D-K3													
Body-worn Accessory				7 (KLH-134K3)													
Audio Accessory				G1a													
Test Date(s)				November 18 & 19, 2013													
C				1	2	3	4	5	6	7	8	9	10				
R	Ant. ID #	Test Freq. (MHz)	Cond. Power Before Test (W)	SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g					
				Battery a (Additional) KNB-54N		Battery b (Default) KNB-43L		Battery c (Additional) KNB-33L		Battery d (Additional) KNB-49PL		Battery e (Default) KNB-6					
				100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f				
				Drift (dB)	50%+droop	Drift (dB)	50%+droop	Drift (dB)	50%+droop	Drift (dB)	50%+droop	Drift (dB)	50%+droop				
1	2	769	2.7	N/A		N/A		N/A		N/A		N/A					
2		775	2.8	N/A		B8	4.77	2.39	B6	1.73	0.865	B9	4.59	2.30	B10	2.59	1.30
3							-0.508	2.68		-0.433	0.956		-0.620	2.65		-2.22	2.16
4		799	2.8	N/A		N/A		N/A		N/A		N/A		N/A			
5		805	2.7	N/A		N/A		N/A		N/A		N/A		N/A			
6		806	2.9	N/A		N/A		N/A		N/A		N/A		N/A			
7		824	3.0	N/A		N/A		B7	3.82	1.91	N/A		N/A				
8																	
9		851	3.0	N/A		N/A		N/A		N/A		N/A		N/A			
10		869	3.0	N/A		N/A		N/A		N/A		N/A		N/A			
SAR LIMITS				BODY				SPATIAL PEAK				RF EXPOSURE CATEGORY					
FCC 47 CFR 2.1093		Health Canada Safety Code 6		8.0 W/kg				1 gram average				Occupational / Controlled					
Notes																	
Test Mode = CW (Unmodulated Continuous Wave)								Phantom = Side Planar Phantom									
Back of DUT Distance to Planar Phantom (see Appendix D)								Shortest Antenna Distance to Planar Phantom (see Appendix D)									
2.5 cm								Antenna 2									
2.5 cm								3.7 cm									
C = Column; R = Row B1-Bx (B = Body) denotes the corresponding Body SAR Plot # as shown in Appendix A																	
1. When test reduction applies, the slots for such configurations are denoted with N/A (Not Applicable).																	
2. When the SAR of an antenna tested on the highest output power channel using the default battery is ≤ 3.5 W/kg (50% PTT duty factor), testing of all other required channels is not necessary.																	
3. When the SAR for all antennas tested using the default battery is ≤ 4.0 W/kg, test additional batteries using the antenna and channel configuration that resulted in the highest SAR.																	

TABLE 5				BODY-WORN SAR EVALUATION RESULTS											
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Device-Under-Test	TK-5410D-K3											
Body-worn Accessory	3 (KBH-8DS)											
Audio Accessory	G1a											
Test Date(s)	November 19 & 20, 2013											

C				1	2	3	4	5	6	7	8	9	10					
R	Ant.. ID #	Test Freq. (MHz)	Cond. Power Before Test (W)	SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g						
				Battery a (Additional) KNB-54N		Battery b (Default) KNB-43L		Battery c (Additional) KNB-33L		Battery d (Additional) KNB-49PL		Battery e (Default) KNP-6						
				100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f					
				Drift (dB)	50%+droop	Drift (dB)	50%+droop	Drift (dB)	50%+droop	Drift (dB)	50%+droop	Drift (dB)	50%+droop					
1	1	769	2.7	N/A		N/A		N/A		N/A		N/A						
2		775	2.8	N/A		B17	1.06	0.530	N/A		N/A		N/A					
3				N/A			-1.31	0.717	N/A		N/A		N/A					
4		799	2.8	N/A		N/A		N/A		N/A		N/A						
5		805	2.7	N/A		N/A		N/A		N/A		N/A						
6		806	2.9	N/A		N/A		N/A		N/A		N/A						
7		824	3.0	N/A		B18	1.36	0.680	N/A		N/A		N/A					
8				N/A			-0.586	0.778	N/A		N/A		N/A					
9		851	3.0	N/A		N/A		N/A		N/A		N/A						
10		869	3.0	N/A		N/A		N/A		N/A		N/A						
11	2	769	2.7	N/A		N/A		N/A		N/A		N/A						
12		775	2.8	B13	1.53	0.765	B14	1.53	0.765	B11	1.51	0.755	B15	1.52	0.760	B16	1.01	0.505
13					-0.243	0.809		-0.255	0.811		-0.389	0.826		-0.209	0.797		-2.02	0.804
14		799	2.8	N/A		N/A		N/A		N/A		N/A						
15		805	2.7	N/A		N/A		N/A		N/A		N/A						
16		806	2.9	N/A		N/A		N/A		N/A		N/A						
17		824	3.0	N/A		N/A		B12	1.40	0.700	N/A		N/A					
18				N/A		N/A			-1.06	0.894	N/A		N/A					
19		851	3.0	N/A		N/A		N/A		N/A		N/A						
20		869	3.0	N/A		N/A		N/A		N/A		N/A						

SAR LIMITS				BODY				SPATIAL PEAK				RF EXPOSURE CATEGORY							
FCC 47 CFR 2.1093				Health Canada Safety Code 6				8.0 W/kg				1 gram average				Occupational / Controlled			

Notes											
Test Mode = CW (Unmodulated Continuous Wave)						Phantom = Side Planar Phantom					
Back of DUT Distance to Planar Phantom (see Appendix D)						Shortest Antenna Distance to Planar Phantom (see Appendix D)					
						Antenna 1			Antenna 1		
4.0 cm						5.2 cm			5.2 cm		
C = Column; R = Row B1-Bx (B = Body) denotes the corresponding Body SAR Plot # as shown in Appendix A											
1. When test reduction applies, the slots for such configurations are denoted with N/A (Not Applicable).											
2. When the SAR of an antenna tested on the highest output power channel using the default battery is ≤ 3.5 W/kg (50% PTT duty factor), testing of all other required channels is not necessary.											
3. When the SAR for all antennas tested using the default battery is ≤ 4.0 W/kg, test additional batteries using the antenna and channel configuration that resulted in the highest SAR.											

TABLE 6	BODY-WORN SAR EVALUATION RESULTS
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Device-Under-Test	TK-5410D-K3
Body-worn Accessory	4 (KLH-6SW)
Audio Accessory	G1a
Test Date(s)	November 20, 2013

C				1	2	3	4	5	6	7	8	9	10		
R	Ant. ID #	Test Freq. (MHz)	Cond. Power Before Test (W)	SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g			
				Battery a (Additional) KNB-54N		Battery b (Default) KNB-43L		Battery c (Additional) KNB-33L		Battery d (Additional) KNB-49PL		Battery e (Default) KNP-6			
				100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f		
				Drift (dB)	50%+droop	Drift (dB)	50%+droop	Drift dB	50%+droop	Drift dB	50%+droop	Drift dB	50%+droop		
1	1	769	2.7	N/A		N/A		N/A		N/A		N/A			
2		775	2.8	N/A		B24	0.987	0.494	N/A		N/A		N/A		
3				-1.17	0.646		N/A		N/A		N/A				
4		799	2.8	N/A		N/A		N/A		N/A		N/A			
5		805	2.7	N/A		N/A		N/A		N/A		N/A			
6		806	2.9	N/A		N/A		N/A		N/A		N/A			
7		824	3.0	N/A		B25	1.25	0.625	N/A		N/A		N/A		
8				-0.650	0.726		N/A		N/A		N/A				
9		851	3.0	N/A		N/A		N/A		N/A		N/A			
10		869	3.0	N/A		N/A		N/A		N/A		N/A			
11	2	769	2.7	N/A		N/A		N/A		N/A		N/A			
12		775	2.8	B22	1.39	0.695	B21	1.87	0.935	B19	1.41	0.705	B23	1.08	0.540
13					-0.705	0.817		-0.836	1.14		-0.581	0.806		-1.63	0.786
14		799	2.8	N/A		N/A		N/A		N/A		N/A			
15		805	2.7	N/A		N/A		N/A		N/A		N/A			
16		806	2.9	N/A		N/A		N/A		N/A		N/A			
17		824	3.0	N/A		N/A		B20	1.29	0.645	N/A		N/A		
18				-1.70	0.954	N/A			N/A		N/A				
19		851	3.0	N/A		N/A		N/A		N/A		N/A			
20		869	3.0	N/A		N/A		N/A		N/A		N/A			

SAR LIMITS	BODY	SPATIAL PEAK	RF EXPOSURE CATEGORY
FCC 47 CFR 2.1093	Health Canada Safety Code 6	8.0 W/kg	Occupational / Controlled

Notes	
Test Mode = CW (Unmodulated Continuous Wave)	Phantom = Side Planar Phantom
Back of DUT Distance to Planar Phantom (see Appendix D)	Shortest Antenna Distance to Planar Phantom (see Appendix D)
	Antenna 1 Antenna 1
5.0 cm	6.2 cm 6.2 cm



C = Column; R = Row B1-Bx (B = Body) denotes the corresponding Body SAR Plot # as shown in Appendix A

1. When test reduction applies, the slots for such configurations are denoted with N/A (Not Applicable).

2. When the SAR of an antenna tested on the highest output power channel using the default battery is ≤ 3.5 W/kg (50% PTT duty factor), testing of all other required channels is not necessary.

3. When the SAR for all antennas tested using the default battery is ≤ 4.0 W/kg, test additional batteries using the antenna and channel configuration that resulted in the highest SAR.

TABLE 7				BODY-WORN SAR EVALUATION RESULTS															
Device-Under-Test				TK-5410D-K3															
Body-worn Accessory				8 (KLH-137ST)															
Audio Accessory				G1a															
Test Date(s)				November 20 & 21, 2013															
C				1	2	3	4	5	6	7	8	9	10						
R	Ant. ID #	Test Freq. (MHz)	Cond. Power Before Test (W)	SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g		SAR W/kg 1g							
				Battery a (Additional) KNB-54N		Battery b (Default) KNB-43L		Battery c (Additional) KNB-33L		Battery d (Additional) KNB-49PL		Battery e (Default) KNP-6							
				100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f	100% ptt d/f	50% ptt d/f						
				Drift (dB)	50%+droop	Drift (dB)	50%+droop	Drift dB	50%+droop	Drift dB	50%+droop	Drift dB	50%+droop						
1	1	769	2.7	N/A		N/A		N/A		N/A		N/A							
2		775	2.8	N/A		N/A		B31	1.83	0.915	N/A		N/A						
3									-1.48	1.29									
4		799	2.8	N/A		N/A		N/A		N/A		N/A							
5		805	2.7	N/A		N/A		N/A		N/A		N/A							
6		806	2.9	N/A		N/A		N/A		N/A		N/A							
7		824	3.0	N/A		N/A		B32	2.55	1.28	N/A		N/A						
8									-0.362	1.39									
9		851	3.0	N/A		N/A		N/A		N/A		N/A							
10		869	3.0	N/A		N/A		N/A		N/A		N/A							
11	2	769	2.7	N/A		N/A		N/A		N/A		N/A							
12		775	2.8	N/A		N/A		B26	2.88	1.44	N/A		N/A						
13									-0.668	1.68									
14		799	2.8	N/A		N/A		N/A		N/A		N/A							
15		805	2.7	N/A		N/A		N/A		N/A		N/A							
6		806	2.9	N/A		N/A		N/A		N/A		N/A							
17		824	3.0	B29	3.50	1.75	B28	3.50	1.75	B27	3.82	1.91	N/A	B30	2.65	1.33			
18					-0.108	2.24		-0.848	2.13		-0.803	2.30			-2.68	2.46			
19		851	3.0	N/A		N/A		N/A		N/A		N/A							
20		869	3.0	N/A		N/A		N/A		N/A		N/A							
SAR LIMITS				BODY				SPATIAL PEAK				RF EXPOSURE CATEGORY							
FCC 47 CFR 2.1093				Health Canada Safety Code 6				8.0 W/kg				1 gram average				Occupational / Controlled			
Notes																			
Test Mode = CW (Unmodulated Continuous Wave)								Phantom = Side Planar Phantom											
Back of DUT Distance to Planar Phantom (see Appendix D)								Shortest Antenna Distance to Planar Phantom (see Appendix D)											
								Antenna 1				Antenna 1							
2.5 cm								3.7 cm				3.7 cm							
C = Column; R = Row B1-Bx (B = Body) denotes the corresponding Body SAR Plot # as shown in Appendix A																			
1. When test reduction applies, the slots for such configurations are denoted with N/A (Not Applicable).																			
2. When the SAR of an antenna tested on the highest output power channel using the default battery is ≤ 3.5 W/kg (50% PTT duty factor), testing of all other required channels is not necessary.																			
3. When the SAR for all antennas tested using the default battery is ≤ 4.0 W/kg, test additional batteries using the antenna and channel configuration that resulted in the highest SAR.																			

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8.0 SAR SCALING

SCALING OF MAXIMUM SAR LEVELS TO MANUFACTURER'S TUNE-UP TOLERANCE SPECIFICATION

Test Config.	Test Freq. (MHz)	Antenna	Battery	Body-worn Accessory ID #	Cond. Power	Drift	SAR Level 1g (50% PTT d/f)		Scaling up to Manuf. Upper Tol. Power Spec.	Scaled SAR (50% PTT d/f) 1g (W/kg)
					Watts	dB	W/kg	Plot #		
FCC (scaled without drift)										
Face-Held	799	2	b	n/a	2.8	-0.151	1.66	F1	+1.0 dB	2.08
Body-worn	775	2	c	1	2.8	-0.615	3.53	B33	+1.0 dB	4.44
IC (scaled with drift)										
Face-Held	824	2	b	n/a	3.0	-0.711	1.58	F2	+0.6 dB	2.13
Body-Worn	775	1	c	1	2.8	-0.812	3.25*	B1	+1.0 dB	4.93

Notes:

1. Only the highest SAR values for face and body per frequency band are scaled.
2. The resulting value is the reported SAR.
3. The scaled SAR levels are below the FCC/IC Occupational SAR Limit of 8.0 W/kg.
4. IC requires that the reported SAR also be scaled for the measured drift, therefore the above table calculates the SAR separately for IC.
5. *B1 had a fluid deviation of greater than 5%, therefore the measured SAR was corrected according to the procedures of IEC 62209-2:2010 as shown below.



SCALING OF SAR LEVELS FOR FLUID DEVIATION CORRECTION (IC Only)

Test Config.	Date	Test Freq. (GHz)	Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity	Measured SAR Level 50% d/f (W/kg)	Corrected SAR Level 50% d/f (W/kg)
Body	11/17	0.775	54.19	0.89	55.2	0.97	-1.83%	-8.25%	3.45	3.25

Correction Factor:

SAR Plot#	B10
Frequency (GHz)	0.775
Ce	-0.2186
Cσ	0.7585
Δ E	-1.83%
Δσ	-8.25%
ΔSAR	-5.86%

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DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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9.0 DETAILS OF SAR EVALUATION

1. The number of test frequencies and the test channels evaluated for SAR were selected in accordance with the procedures described in FCC KDB 447498 (see reference [8]).
2. Each SAR evaluation was performed with a fully charged battery. Due to radio heat-up the battery was replaced and the radio allowed to cool between the area and zoom scan evaluations.
3. The SAR drift of the DUT was measured by the DASY4 system for the duration of the SAR evaluations. The measured SAR drift was added to the measured SAR levels to report scaled SAR levels as shown in the SAR test data tables.
4. The fluid temperature was measured prior to and after the SAR evaluations. The fluid temperature remained within +/- 2°C during the SAR evaluations.
5. The dielectric parameters of the simulated tissue mixtures were measured prior to the SAR evaluations using a Dielectric Probe Kit and a Network Analyzer (see Appendix C).
6. The DUT was tested at the maximum conducted output power level preset by the manufacturer in unmodulated continuous transmit operation (Continuous Wave mode at 100% duty cycle) with the transmit key constantly depressed. For a push-to-talk device the 50% duty cycle compensation reported assumes a transmit/receive cycle of equal time base.
7. The DUT was evaluated for SAR in accordance with the procedures described in FCC KDB 643646 D01v01 (see reference [9]).
 - a. Audio accessory G1a was selected as the default audio accessory.
 - b. The K2 model variant was tested in the worst case face and body-worn configurations from the K3 model testing.
 - c. The KRA-36 antenna variant was selected as the default antenna.
 - d. The KRA-32 antenna was tested in the worst case face and body-worn configurations from the KRA-36 testing.

10.0 SAR EVALUATION PROCEDURES

- a. (i) The evaluation was performed in the applicable area of the phantom depending on the type of device being tested. For devices held to the ear during normal operation, both the left and right ear positions were evaluated using the SAM phantom.
(ii) For body-worn and face-held devices a planar phantom was used.
- b. The SAR was determined by a pre-defined procedure within the DASY4 software. Upon completion of a reference and optical surface check, the exposed region of the phantom was scanned near the inner surface with a grid spacing of 15mm x 15mm.
An area scan was determined as follows:
- c. Based on the defined area scan grid, a more detailed grid is created to increase the points by a factor of 10. The interpolation function then evaluates all field values between corresponding measurement points.
- d. A linear search is applied to find all the candidate maxima. Subsequently, all maxima are removed that are >2 dB from the global maximum. The remaining maxima are then used to position the cube scans.
A 1g and 10g spatial peak SAR was determined as follows:
- e. Extrapolation is used to find the points between the dipole center of the probe and the surface of the phantom. This data cannot be measured, since the center of the dipoles is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.4 mm (see probe calibration document in Appendix F). The extrapolation was based on trivariate quadratics computed from the previously calculated 3D interpolated points nearest the phantom surface.
- f. Interpolated data is used to calculate the average SAR over 1g and 10g cubes by spatially discretizing the entire measured cube. The volume used to determine the averaged SAR is a 1mm grid (42875 interpolated points).
- g. A zoom scan volume of 30 mm x 30 mm x 30 mm (5 x 5 x 7 points) centered at the peak SAR location determined from the area scan is used for all zoom scans for devices with a transmit frequency < 800 MHz. Zoom scans for frequencies ≥ 800 MHz are determined with a scan volume of 30 mm x 30 mm x 30 mm (7 x 7 x 7) to ensure complete capture of the peak spatial-average SAR.

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11.0 SYSTEM VERIFICATION

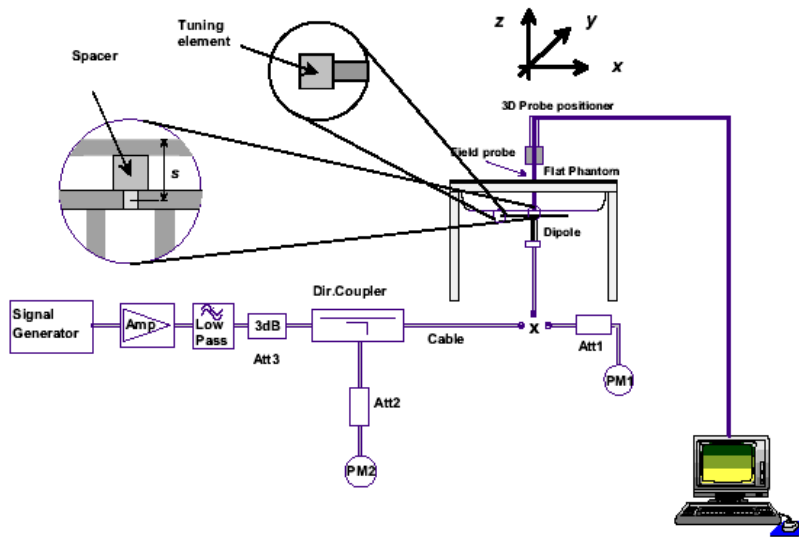
Prior to the SAR evaluations, system checks were performed with a planar phantom and SPEAG 835 MHz dipole (see Appendix B) in accordance with the procedures described in IEEE Standard 1528-2013 (see reference [5]) and IEC Standard 62209-2:2010 (see reference [6]). The dielectric parameters of the simulated tissue mixture were measured prior to the system performance check using a Dielectric Probe Kit and a Network Analyzer (see Appendix C). A forward power of 250 mW was applied to the dipole and the system was verified to a tolerance of $\pm 10\%$ from the SAR system manufacturer's dipole calibration target SAR value (see Appendix E).

SYSTEM PERFORMANCE CHECK EVALUATIONS

Test Date	Equiv. Tissue	SAR 1g (W/kg)			Dielectric Constant ϵ_r			Conductivity σ (mho/m)			ρ (Kg/m ³)	Amb. Temp. (°C)	Fluid Temp. (°C)	Fluid Depth (cm)	Humid. (%)	Barom. Press. (kPa)
		SPEAG Target	Meas.	Dev.	SPEAG Target	Meas.	Dev.	SPEAG Target	Meas.	Dev.						
Nov 6	Head 835	2.36 $\pm 10\%$	2.31	-2.1%	41.5 $\pm 5\%$	41.8	+0.7%	0.90 $\pm 5\%$	0.90	0.0%	1000	23	21.4	≥ 15	34	101.1
Nov 17	Body 835	2.47 $\pm 10\%$	2.34	-5.3%	55.2 $\pm 5\%$	53.6	-2.9%	0.97 $\pm 5\%$	0.95	-2.1%	1000	23	21.8	≥ 15	33	101.5
Nov 20	Body 835	2.47 $\pm 10\%$	2.31	-6.5%	55.2 $\pm 5\%$	54.7	-0.9%	0.97 $\pm 5\%$	0.98	+1.0%	1000	25	22.0	≥ 15	20	103.5

Notes

- The target SAR values are the measured values from the SAR system manufacturer's dipole calibration (see Appendix E).
- The target dielectric parameters are the nominal values from the SAR system manufacturer's dipole calibration (see Appendix E).
- The fluid temperature was measured prior to and after the system performance check evaluations. The fluid temperature remained within $\pm 2^\circ\text{C}$ during the system performance check evaluations.
- The dielectric parameters of the simulated tissue mixture were measured prior to the system performance check using a Dielectric Probe Kit and a Network Analyzer (see Appendix C).



System Performance Check Measurement Setup (IEEE Standard 1528-2013)



SPEAG 835 MHz Validation Dipole Setup



12.0 SIMULATED EQUIVALENT TISSUES

The simulated equivalent tissue recipes in the table below are derived from the SAR system manufacturer's suggested recipes in the DAS4 manual (see references [10] and [11]) in accordance with the procedures and requirements specified in IEEE Standard 1528-2013 (see reference [5]) and IEC Standard 62209-1:2005 (see reference [7]). The ingredient percentage may have been adjusted minimally in order to achieve the appropriate target dielectric parameters within the specified tolerance.

SIMULATED TISSUE MIXTURES					
INGREDIENT	Water	835 MHz Head Tissue Mixture	40.71 %	835 MHz Body Tissue Mixture	53.79 %
	Sugar		56.63 %		45.13 %
	Salt		1.48 %		0.98 %
	HEC		0.99 %		--
	Bactericide		0.19 %		0.10 %

13.0 SAR LIMITS



SAR RF EXPOSURE LIMITS			
FCC 47 CFR 2.1093	Health Canada Safety Code 6	(General Population / Uncontrolled Exposure)	(Occupational / Controlled Exposure)
Spatial Average (averaged over the whole body)		0.08 W/kg	0.4 W/kg
Spatial Peak (averaged over any 1 g of tissue)		1.6 W/kg	8.0 W/kg
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)		4.0 W/kg	20.0 W/kg
The Spatial Average value of the SAR averaged over the whole body.			
The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.			
The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.			
Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.			
Controlled environments are defined as locations where there is potential exposure of individuals who have knowledge of their potential exposure and can exercise control over their exposure.			

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14.0 ROBOT SYSTEM SPECIFICATIONS

<u>Specifications</u>	
Positioner	Stäubli Unimation Corp. Robot Model: RX60L
Repeatability	0.02 mm
No. of axis	6
<u>Data Acquisition Electronic (DAE) System</u>	
<u>Cell Controller</u>	
Processor	AMD Athlon XP 2400+
Clock Speed	2.0 GHz
Operating System	Windows XP Professional
<u>Data Converter</u>	
Features	Signal Amplifier, multiplexer, A/D converter, and control logic
Software	Measurement Software: DASY4, V4.7 Build 80
	Postprocessing Software: SEMCAD, V1.8 Build 186
Connecting Lines	Optical downlink for data and status info., Optical uplink for commands and clock
<u>DASY4 Measurement Server</u>	
Function	Real-time data evaluation for field measurements and surface detection
Hardware	PC/104 166MHz Pentium CPU; 32 MB chipdisk; 64 MB RAM
Connections	COM1, COM2, DAE, Robot, Ethernet, Service Interface
<u>E-Field Probe</u>	
Model	ET3DV6
Serial No.	1590
Construction	Triangular core fiber optic detection system
Frequency	10 MHz to 6 GHz
Linearity	±0.2 dB (30 MHz to 3 GHz)
<u>Phantom 1</u>	
Type	SAM V4.0C
Shell Material	Fiberglass
Thickness	2.0 ±0.1 mm
Volume	Approx. 25 liters
<u>Phantom 2</u>	
Type	Side Planar Phantom
Shell Material	Plexiglass
Bottom Thickness	2.0 mm ± 0.1 mm
Inner Dimensions	72.6 cm (L) x 20.3 cm (W) x 20.3 cm (H)
<u>Phantom 3</u>	
Type	Barski Planar Phantom
Shell Material	Fiberglass
Thickness	2.0 ±0.1 mm
Volume	Approx. 70 liters

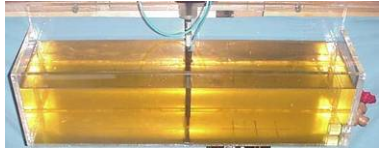


Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
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15.0 PROBE SPECIFICATION (ET3DV6)

<p>Construction: Symmetrical design with triangular core; Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, glycol)</p> <p>Calibration: In air from 10 MHz to 2.5 GHz In head simulating tissue at frequencies of 900 MHz and 1.8 GHz (accuracy $\pm 8\%$)</p> <p>Frequency: 10 MHz to > 6 GHz; Linearity: ± 0.2 dB (30 MHz to 3 GHz)</p> <p>Directivity: ± 0.2 dB in head tissue (rotation around probe axis) ± 0.4 dB in head tissue (rotation normal to probe axis)</p> <p>Dynamic Range: $5 \mu\text{W/g}$ to > 100 mW/g; Linearity: ± 0.2 dB</p> <p>Surface Detect: ± 0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces</p> <p>Dimensions: Overall length: 330 mm; Tip length: 16 mm; Body diameter: 12 mm; Tip diameter: 6.8 mm Distance from probe tip to dipole centers: 2.7 mm</p> <p>Application: General dosimetry up to 3 GHz; Compliance tests of mobile phone</p>	
ET3DV6 E-Field Probe	



16.0 PHANTOM

<p>The Side Planar Phantom is constructed of Plexiglas material with a 2.0 mm shell thickness for face-held and body-worn SAR evaluations of portable radio transceivers. The side planar phantom is mounted on the side of the DASY4 compact system table.</p>	
Plexiglas Side Planar Phantom	
<p>The Barski Planar Phantom is a fiberglass shell phantom with a 2.0 mm (+/- 0.2mm) thick device measurement area at the center of the phantom for SAR evaluations of devices with a larger surface area than the planar section of the SAM phantom. The planar phantom is integrated in a wooden table. The planar phantom is used for SAR evaluations and system performance check evaluations. See Appendix G for dimensions and specifications of the Barski planar phantom.</p>	
Barski Planar Phantom	
<p>The SAM Twin Phantom V4.0C is a fiberglass shell phantom with a 2.0 mm (+/- 0.2 mm) shell thickness for left and right head and flat planar area integrated in a wooden table. The shape of the fiberglass shell corresponds to the phantom defined by SCC34-SC2. The device holder positions are adjusted to the standard measurement positions in the three sections. See Appendix H for specifications of the SAM Twin Phantom V4.0C.</p>	
SAM Twin Phantom V4.0C	

17.0 DEVICE HOLDER

<p>The DASY4 device holder has two scales for device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of 65°. The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections.</p>	
Device Holder	




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18.0 TEST EQUIPMENT LIST

TEST EQUIPMENT		ASSET NO.	SERIAL NO.	DATE CALIBRATED	CALIBRATION INTERVAL
USED	DESCRIPTION				
x	Schmid & Partner DASY4 System	-	-	-	-
x	-DASY4 Measurement Server	00158	1078	CNR	CNR
x	-Robot	00046	599396-01	CNR	CNR
x	-DAE4	00019	353	19-Apr-12	Biennial
x	-ET3DV6 E-Field Probe	00017	1590	24-Apr-13	Annual
x	-D835V2 Validation Dipole	00217	4d075	20-Apr-12	Triennial
x	Side Planar Phantom	00156	161	CNR	CNR
	Barski Planar Phantom	00155	03-01	CNR	CNR
	SPEAG SAM Twin Phantom V4.0C	00154	1033	CNR	CNR
x	HP 85070C Dielectric Probe Kit	00033	none	CNR	CNR
x	Gigatronics 8652A Power Meter	00007	1835272	03-May-12	Biennial
x	Gigatronics 80701A Power Sensor	00014	1833542	03-May-12	Biennial
x	Gigatronics 80334A Power Sensor	-	1837001	03-May-12	Biennial
x	HP 8753ET Network Analyzer	00134	US39170292	26-Apr-12	Biennial
x	Rohde & Schwarz SMR20 Signal Generator	00006	100104	02-May-12	Biennial
x	Amplifier Research 5S1G4 Power Amplifier	00106	26235	CNR	CNR
Abbr.	CNR = Calibration Not Required				

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19.0 MEASUREMENT UNCERTAINTIES (IC)

UNCERTAINTY BUDGET FOR DEVICE EVALUATION (IEC 62209-2:2010)									
Source of Uncertainty	IEC 62209-2 Section	Tolerance / Uncertainty ±%	Probability Distribution	Divisor	ci 1g	ci 10g	Standard Uncertainty ±% (1g)	Standard Uncertainty ±% (10g)	V _i or V _{eff}
Measurement System									
Probe Calibration (835 MHz)	7.2.2.1	6.0	Normal	1	1	1	6.0	6.0	∞
Isotropy	7.2.2.2	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
Boundary Effect	7.2.2.6	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Linearity	7.2.2.3	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
Detection Limits	7.2.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Readout Electronics	7.2.2.7	0.3	Normal	1	1	1	0.3	0.3	∞
Response Time	7.2.2.8	0.8	Rectangular	1.732050808	1	1	0.5	0.5	∞
Integration Time	7.2.2.9	2.6	Rectangular	1.732050808	1	1	1.5	1.5	∞
RF Ambient Conditions	7.2.4.5	3	Rectangular	1.732050808	1	1	1.7	1.7	∞
Probe Positioner Mechanical Restrictions	7.2.3.1	0.4	Rectangular	1.732050808	1	1	0.2	0.2	∞
Probe Positioning wrt Phantom Shell	7.2.3.3	2.9	Rectangular	1.732050808	1	1	1.7	1.7	∞
Post-processing	7.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Test Sample Related									
Test Sample Positioning	7.2.3.4.3	2.9	Normal	1	1	1	2.9	2.9	12
Device Holder Uncertainty	7.2.3.4.2	3.6	Normal	1	1	1	3.6	3.6	8
Drift of Output Power (meas. SAR drift)	7.2.2.10	0	Rectangular	1.732050808	1	1	0.0	0.0	∞
Phantom and Tissue Parameters									
Phantom Uncertainty	7.2.3.2	4	Rectangular	1.732050808	1	1	2.3	2.3	∞
SAR Correction Algorithm for deviations in permittivity and conductivity	7.2.4.3	1.9	Normal	1	1	0.81	1.9	1.54	∞
Liquid Conductivity (measured)	7.2.4.3	7.78	Normal	1	0.78	0.71	6.1	5.5	∞
Liquid Permittivity (measured)	7.2.4.3	2.41	Normal	1	0.23	0.26	0.6	0.6	∞
Liquid Permittivity - temp. uncertainty	7.2.4.4	1	Rectangular	1.732050808	0.78	0.71	0.5	0.4	∞
Liquid Conductivity - temp. uncertainty	7.2.4.4	0.25	Rectangular	1.732050808	0.23	0.26	0.0	0.0	∞
Combined Standard Uncertainty	7.3.1		RSS				11.30	10.97	
Expanded Uncertainty (95% Confidence Interval)	7.3.2		k=2				22.61	21.94	

Measurement Uncertainty Table in accordance with International Standard IEC 62209-2:2010

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Date(s) of Evaluation</u> Nov 6-21, 2013	<u>Test Report Serial No.</u> 110613ALH-1263	<u>Test Report Revision No.</u> Rev. 1.2	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

20.0 REFERENCES



- [1] Federal Communications Commission - "Radiofrequency radiation exposure evaluation: portable devices", Rule Part 47 CFR §2.1093.
- [2] Health Canada - "Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz", Safety Code 6: 1999.
- [3] Federal Communications Commission, Office of Engineering and Technology - "SAR Measurement Requirements for 100 MHz to 6 GHz"; KDB 865664 D01v01r01: May 2013.
- [4] Industry Canada - "Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)", Radio Standards Specification RSS-102 Issue 4: March 2010.
- [5] IEEE Standard 1528-2013 - "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques": December 2003.
- [6] International Standard IEC 62209-2 Edition 1.0 2010-03 - "Human exposure to radio frequency fields from hand-held & body-mounted wireless communication devices - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)".
- [7] IEC International Standard 62209-1:2005 - "Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures."
- [8] Federal Communications Commission, Office of Engineering and Technology - "Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies"; KDB 447498 D01v05r01: May 2013.
- [9] Federal Communications Commission, Office of Engineering and Technology - "SAR Test Reduction Considerations for Occupational PTT Radios", KDB 643646 D01v01r01: April 2011.
- [10] Schmid & Partner Engineering AG - DASY4 Manual V4.6, Chapter 16 Application Note, Head Tissue Recipe: Sept. 2005.
- [11] Schmid & Partner Engineering AG - DASY4 Manual V4.6, Chapter 17 Application Note, Body Tissue Recipe: Sept. 2005.
- [12] ISO/IEC 17025 - "General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:2005)."
- [13] Federal Communications Commission - "Measurements Required: RF Power Output"; Rule Part 47 CFR §2.1046.
- [14] Industry Canada - "General Requirements and Information for the Certification of Radiocommunication Equipment", Radio Standards Specification RSS-Gen Issue 3: December 2010.

Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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APPENDIX A - SAR MEASUREMENT PLOTS

Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Face SAR - F1

Date Tested: 11/06/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 24C; Fluid Temp: 21.6C; Barometric Pressure: 102.9 kPa; Humidity: 24%

Procedure Notes:

Communication System: 700/800

Frequency: 799 MHz; Duty Cycle: 1:1

Medium: HSL835 Medium parameters used (interpolated): $f = 799 \text{ MHz}$; $\sigma = 0.864 \text{ mho/m}$; $\epsilon_r = 42.1$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.84, 6.84, 6.84); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Side Planar; Type: Plexiglass; Serial: 161
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

K3 - 799 - 43L/Area Scan (7x25x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 3.73 mW/g

K3 - 799 - 43L/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

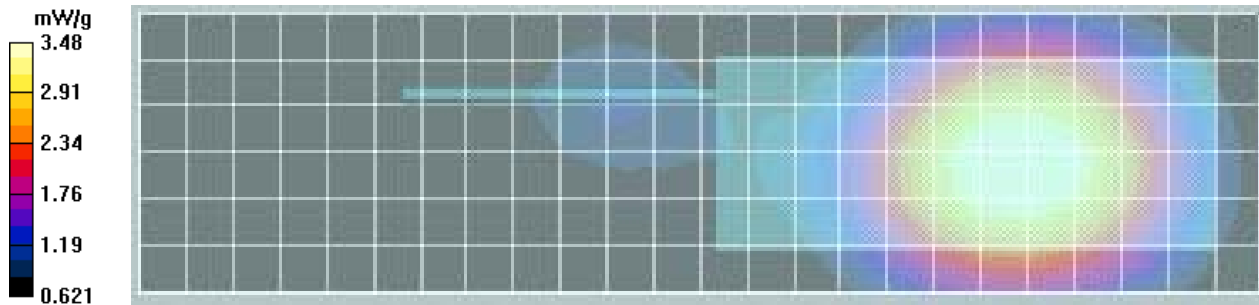
Reference Value = 31.1 V/m; Power Drift = -0.151 dB

Peak SAR (extrapolated) = 4.14 W/kg

SAR(1 g) = 3.31 mW/g; SAR(10 g) = 2.49 mW/g

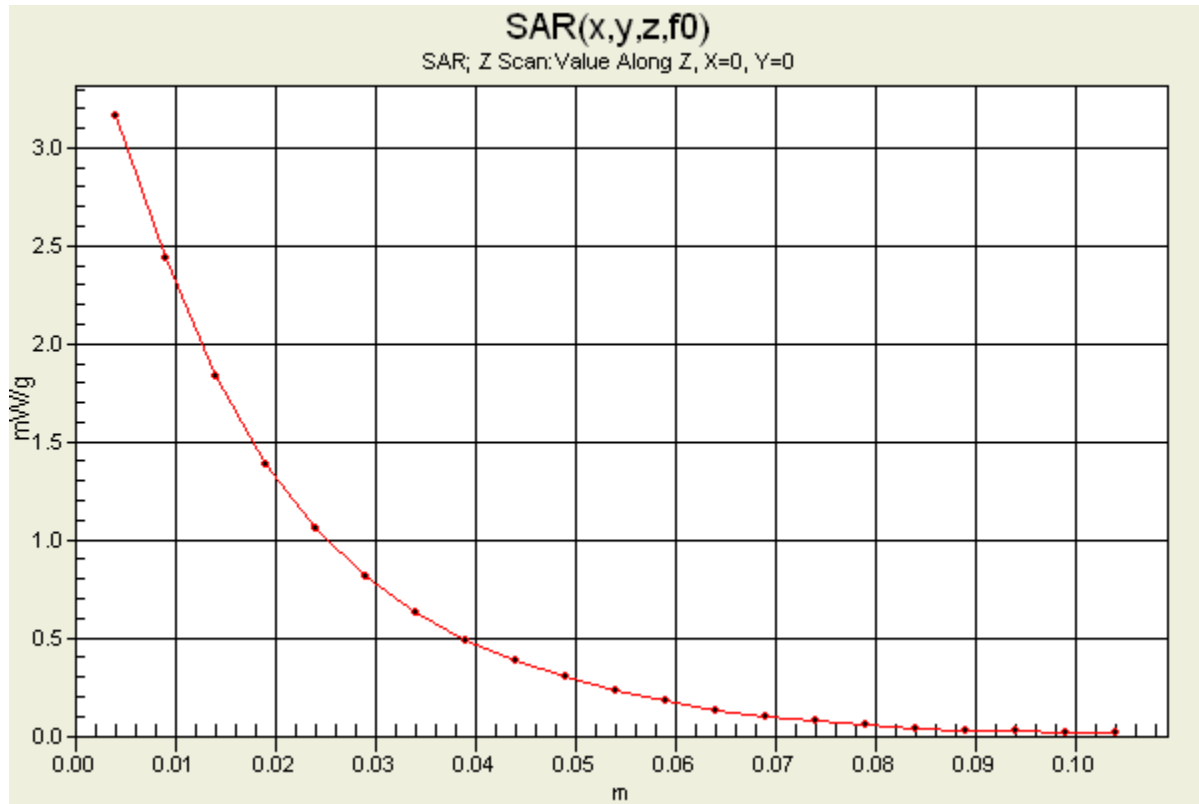
Info: Interpolated medium parameters used for SAR evaluation.



Maximum value of SAR (measured) = 3.48 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Z-Axis Scan



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Face SAR – F2

Date Tested: 11/06/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 24C; Fluid Temp: 21.6C; Barometric Pressure: 102.9 kPa; Humidity: 24%

Procedure Notes:

Communication System: 700/800

Frequency: 824 MHz; Duty Cycle: 1:1

Medium: HSL835 Medium parameters used (interpolated): $f = 824 \text{ MHz}$; $\sigma = 0.899 \text{ mho/m}$; $\epsilon_r = 42.2$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.84, 6.84, 6.84); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Side Planar; Type: Plexiglass; Serial: 161
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

K3 - 824 - 43L/Area Scan (7x25x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 3.52 mW/g

K3 - 824 - 43L/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

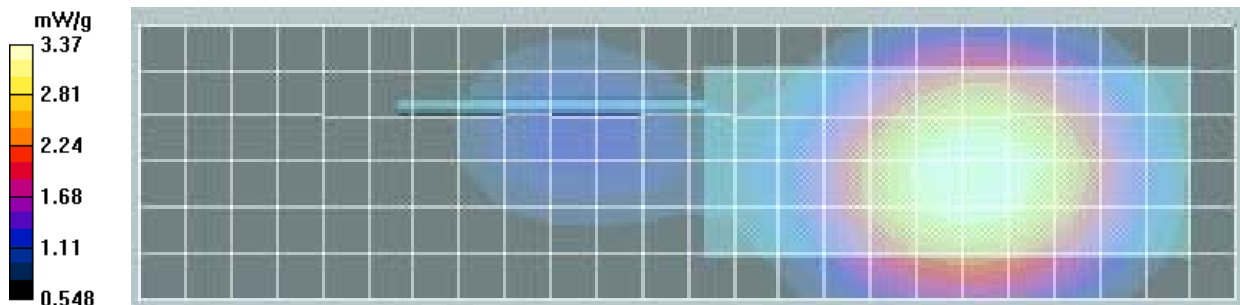
Reference Value = 33.8 V/m; Power Drift = -0.711 dB

Peak SAR (extrapolated) = 4.03 W/kg



SAR(1 g) = 3.15 mW/g; SAR(10 g) = 2.33 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 3.37 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Face SAR – F3

Date Tested: 11/07/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 21.6C; Barometric Pressure: 101.5 kPa; Humidity: 25%

Procedure Notes:

Communication System: 700/800

Frequency: 799 MHz; Duty Cycle: 1:1

Medium: HSL835 Medium parameters used (interpolated): $f = 799 \text{ MHz}$; $\sigma = 0.864 \text{ mho/m}$; $\epsilon_r = 42.1$; $\rho = 1000 \text{ kg/m}^3$

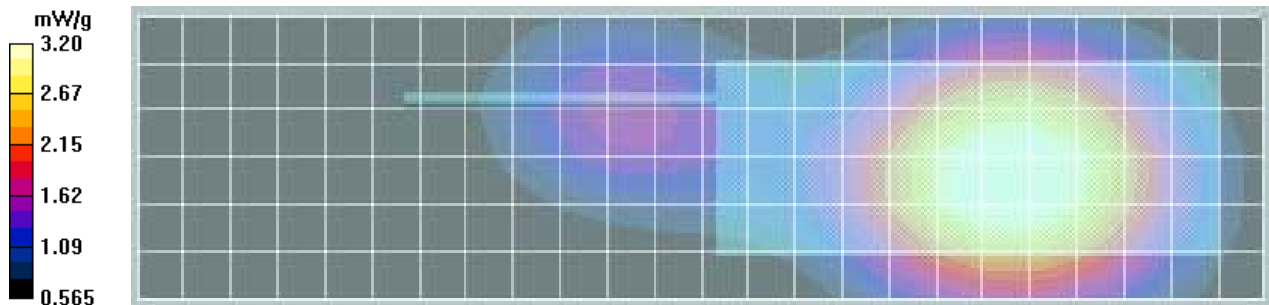
- Probe: ET3DV6 - SN1590; ConvF(6.84, 6.84, 6.84); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Side Planar; Type: Plexiglass; Serial: 161
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

K3 - 799 - 54N/Area Scan (7x25x1): Measurement grid: dx=15mm, dy=15mm



Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.40 mW/g

K3 - 799 - 54N/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 41.2 V/m; Power Drift = -0.737 dB
Peak SAR (extrapolated) = 3.80 W/kg
SAR(1 g) = 3.04 mW/g; SAR(10 g) = 2.28 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.20 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Face SAR – F4

Date Tested: 11/07/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 21.6C; Barometric Pressure: 101.5 kPa; Humidity: 25%

Procedure Notes:

Communication System: 700/800

Frequency: 799 MHz; Duty Cycle: 1:1

Medium: HSL835 Medium parameters used (interpolated): $f = 799 \text{ MHz}$; $\sigma = 0.864 \text{ mho/m}$; $\epsilon_r = 42.1$; $\rho = 1000 \text{ kg/m}^3$

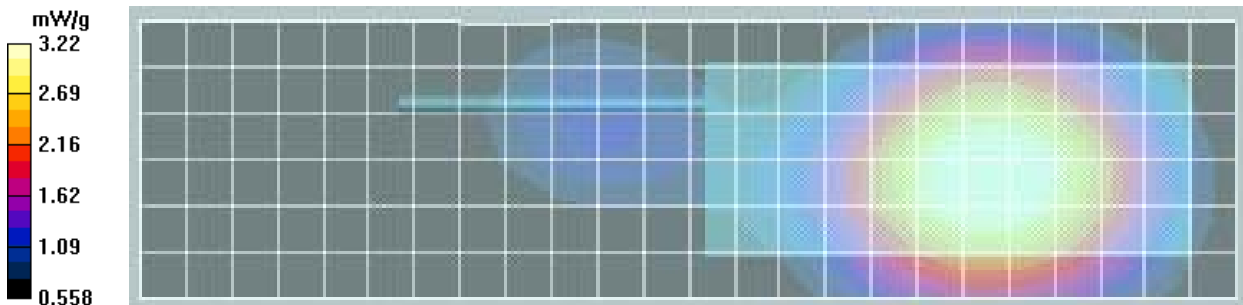
- Probe: ET3DV6 - SN1590; ConvF(6.84, 6.84, 6.84); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Side Planar; Type: Plexiglass; Serial: 161
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

K3 - 799 - 33L/Area Scan (7x25x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$



Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.44 mW/g

K3 - 799 - 33L/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$
Reference Value = 34.4 V/m; Power Drift = -0.641 dB
Peak SAR (extrapolated) = 3.82 W/kg
SAR(1 g) = 3.06 mW/g; SAR(10 g) = 2.3 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.22 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Face SAR – F5

Date Tested: 11/07/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 21.6C; Barometric Pressure: 101.5 kPa; Humidity: 25%

Procedure Notes:

Communication System: 700/800

Frequency: 799 MHz; Duty Cycle: 1:1

Medium: HSL835 Medium parameters used (interpolated): $f = 799 \text{ MHz}$; $\sigma = 0.864 \text{ mho/m}$; $\epsilon_r = 42.1$; $\rho = 1000 \text{ kg/m}^3$

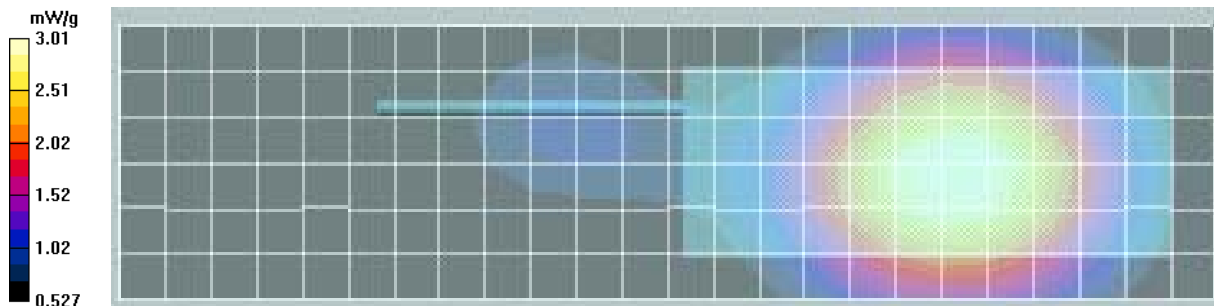
- Probe: ET3DV6 - SN1590; ConvF(6.84, 6.84, 6.84); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Side Planar; Type: Plexiglass; Serial: 161
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

K3 - 799 - 49PL/Area Scan (7x25x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.09 mW/g

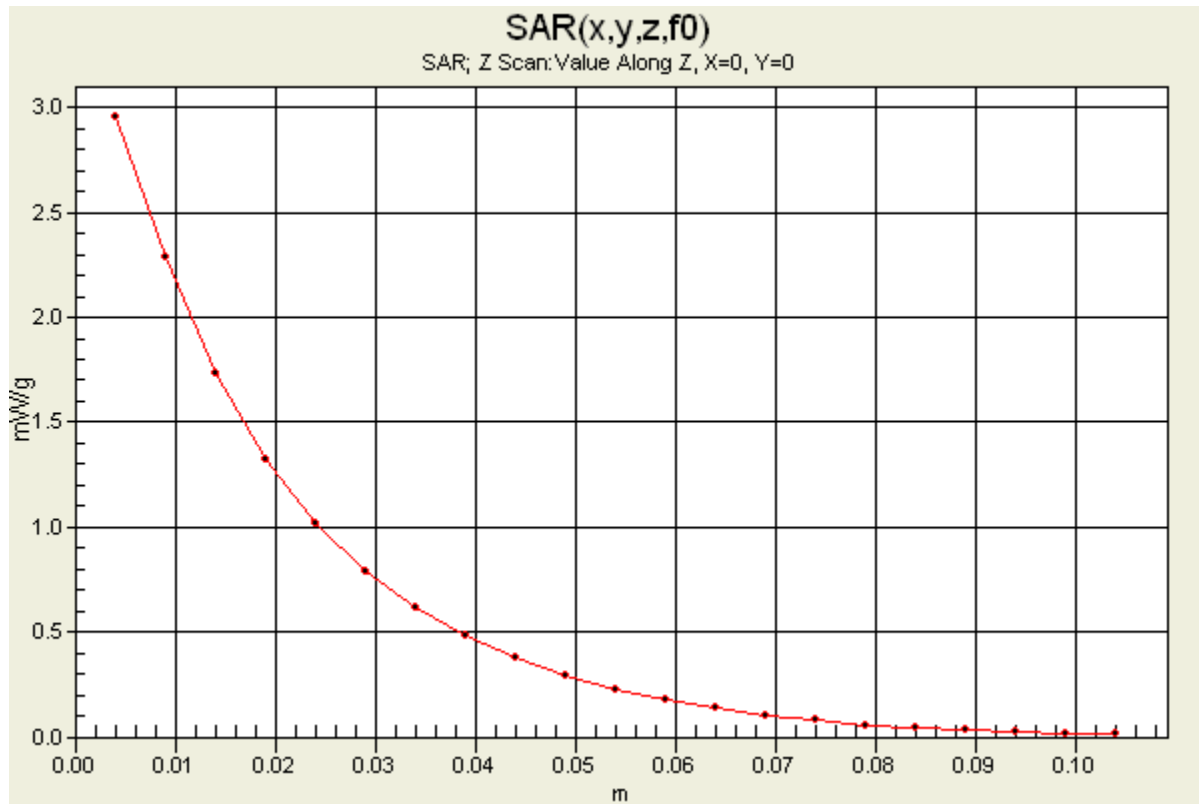
K3 - 799 - 49PL/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 32.7 V/m; Power Drift = -0.563 dB
Peak SAR (extrapolated) = 3.60 W/kg
SAR(1 g) = 2.86 mW/g; SAR(10 g) = 2.14 mW/g



Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.01 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Z-Axis Scan



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Face SAR – F6

Date Tested: 11/07/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 21.6C; Barometric Pressure: 101.5 kPa; Humidity: 25%

Procedure Notes:

Communication System: 700/800

Frequency: 799 MHz; Duty Cycle: 1:1

Medium: HSL835 Medium parameters used (interpolated): $f = 799 \text{ MHz}$; $\sigma = 0.864 \text{ mho/m}$; $\epsilon_r = 42.1$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.84, 6.84, 6.84); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Side Planar; Type: Plexiglass; Serial: 161
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

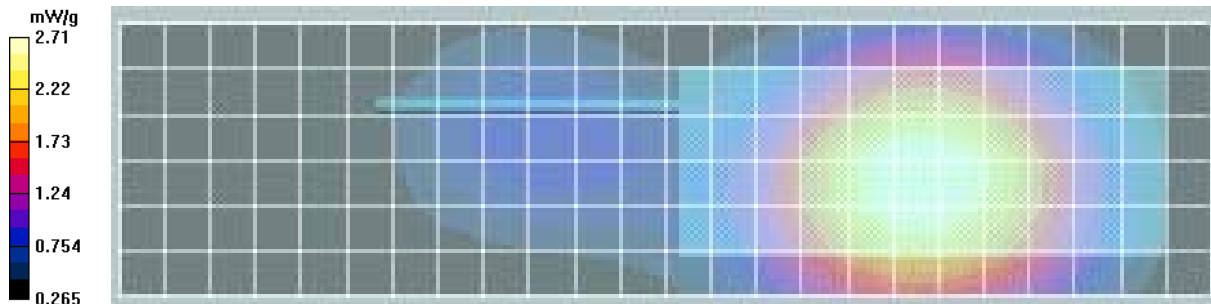
K3 - 799 - AA Pack/Area Scan (7x25x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.77 mW/g



K3 - 799 - AA Pack/Zoom Scan 2 2 (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$
Reference Value = 32.4 V/m; Power Drift = -1.12 dB
Peak SAR (extrapolated) = 4.97 W/kg
SAR(1 g) = 1.91 mW/g; SAR(10 g) = 1.26 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 2.71 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Face SAR – F7

Date Tested: 11/07/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 21.6C; Barometric Pressure: 101.5 kPa; Humidity: 25%

Procedure Notes:

Communication System: 700/800

Frequency: 799 MHz; Duty Cycle: 1:1

Medium: HSL835 Medium parameters used (interpolated): $f = 799 \text{ MHz}$; $\sigma = 0.864 \text{ mho/m}$; $\epsilon_r = 42.1$; $\rho = 1000 \text{ kg/m}^3$

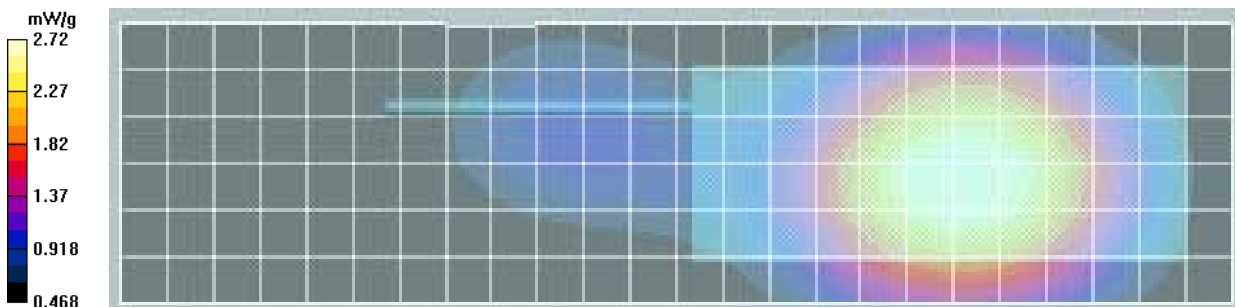
- Probe: ET3DV6 - SN1590; ConvF(6.84, 6.84, 6.84); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Side Planar; Type: Plexiglass; Serial: 161
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

K2 - 799 - 43L/Area Scan (7x25x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$



Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.86 mW/g

K2 - 799 - 43L/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$
Reference Value = 34.5 V/m; Power Drift = -0.754 dB
Peak SAR (extrapolated) = 3.24 W/kg
SAR(1 g) = 2.57 mW/g; SAR(10 g) = 1.93 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.72 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Face SAR – F8

Date Tested: 11/08/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 23C; Fluid Temp: 21.6C; Barometric Pressure: 101.6 kPa; Humidity: 23%

Procedure Notes:

Communication System: 700/800

Frequency: 799 MHz; Duty Cycle: 1:1

Medium: HSL835 Medium parameters used (interpolated): $f = 799$ MHz; $\sigma = 0.864$ mho/m; $\epsilon_r = 42.1$; $\rho = 1000$ kg/m³

- Probe: ET3DV6 - SN1590; ConvF(6.84, 6.84, 6.84); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Side Planar; Type: Plexiglass; Serial: 161
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

KMC (K2) - 799 MHz, 43L Batt, KR32 Ant 2/Area Scan KMC (6x19x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.40 mW/g

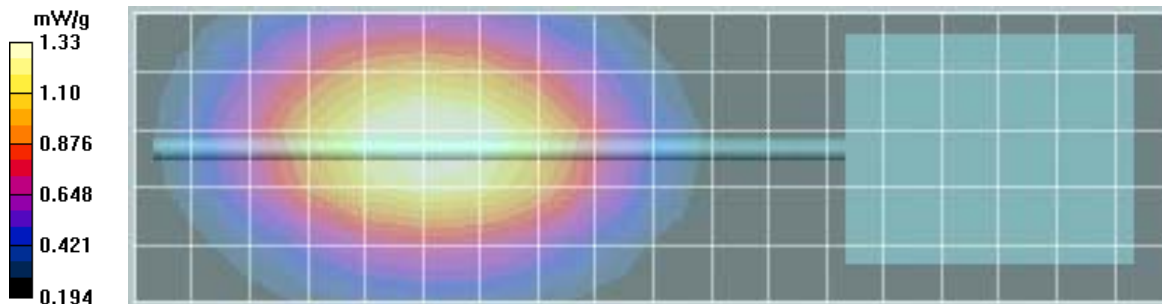
KMC (K2) - 799 MHz, 43L Batt, KR32 Ant 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 9.84 V/m; Power Drift = -0.883 dB



Peak SAR (extrapolated) = 1.61 W/kg

SAR(1 g) = 1.25 mW/g; SAR(10 g) = 0.909 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.33 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Date(s) of Evaluation</u> Nov 6-21, 2013	<u>Test Report Serial No.</u> 110613ALH-1263	<u>Test Report Revision No.</u> Rev. 1.2	
	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Face SAR – F9

Date Tested: 11/08/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 23C; Fluid Temp: 21.6C; Barometric Pressure: 101.6 kPa; Humidity: 23%

Procedure Notes:

Communication System: 700/800

Frequency: 824 MHz; Duty Cycle: 1:1

Medium: HSL835 Medium parameters used (interpolated): $f = 824 \text{ MHz}$; $\sigma = 0.899 \text{ mho/m}$; $\epsilon_r = 42.2$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.84, 6.84, 6.84); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Side Planar; Type: Plexiglass; Serial: 161
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

KMC (K2) - 824 MHz, 43L Batt, KR32 Ant/Area Scan KMC (6x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.48 mW/g

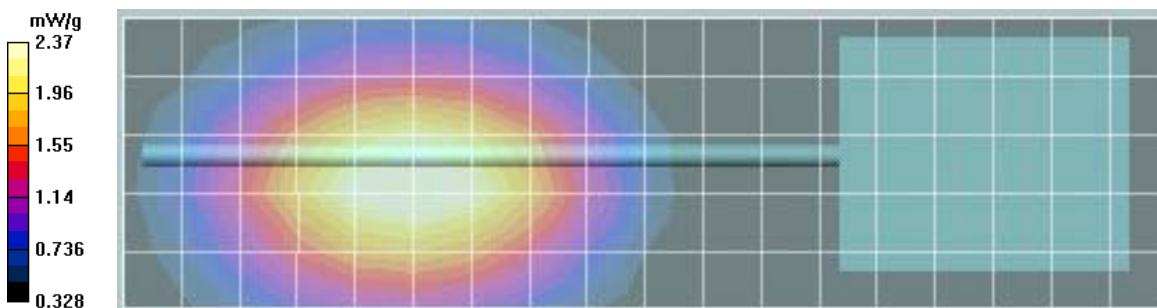
KMC (K2) - 824 MHz, 43L Batt, KR32 Ant/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 11.6 V/m; Power Drift = -0.365 dB

Peak SAR (extrapolated) = 2.89 W/kg

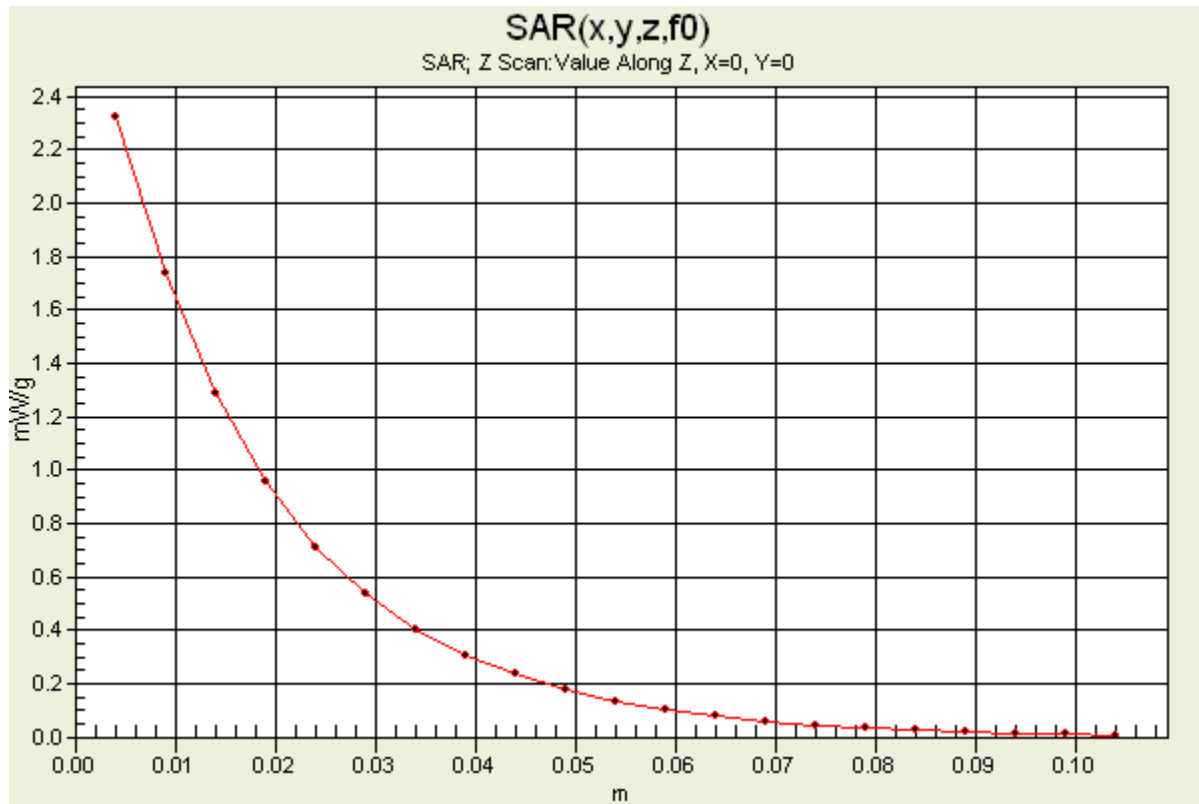
SAR(1 g) = 2.23 mW/g; SAR(10 g) = 1.62 mW/g



Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.37 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Z-Axis Scan



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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Face SAR - F10

Date Tested: 11/08/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 23C; Fluid Temp: 21.6C; Barometric Pressure: 101.6 kPa; Humidity: 23%

Procedure Notes:

Communication System: 700/800

Frequency: 799 MHz; Duty Cycle: 1:1

Medium: HSL835 Medium parameters used (interpolated): $f = 799 \text{ MHz}$; $\sigma = 0.864 \text{ mho/m}$; $\epsilon_r = 42.1$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.84, 6.84, 6.84); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Side Planar; Type: Plexiglass; Serial: 161
- Measurement SW: DAS4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

KMC (K3) - 799 MHz, 43L Batt, KR36 Ant/Area Scan KMC (6x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 1.12 mW/g

KMC (K3) - 799 MHz, 43L Batt, KR36 Ant/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

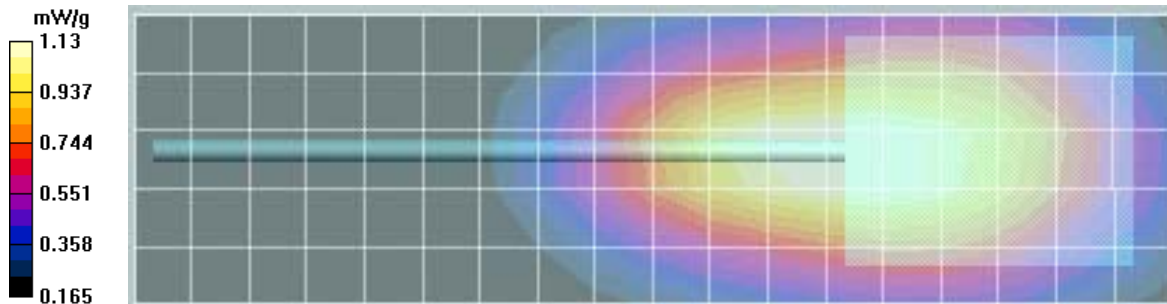
Reference Value = 38.5 V/m; Power Drift = -0.281 dB

Peak SAR (extrapolated) = 1.39 W/kg



SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.782 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 1.13 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Face SAR - F11

Date Tested: 11/08/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 23C; Fluid Temp: 21.6C; Barometric Pressure: 101.6 kPa; Humidity: 23%

Procedure Notes:

Communication System: 700/800

Frequency: 824 MHz; Duty Cycle: 1:1

Medium: HSL835 Medium parameters used (interpolated): $f = 824 \text{ MHz}$; $\sigma = 0.899 \text{ mho/m}$; $\epsilon_r = 42.2$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.84, 6.84, 6.84); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Side Planar; Type: Plexiglass; Serial: 161
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

KMC (K2) - 824 MHz, 43L Batt, KR36 Ant/Area Scan KMC (6x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.705 mW/g

KMC (K2) - 824 MHz, 43L Batt, KR36 Ant/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

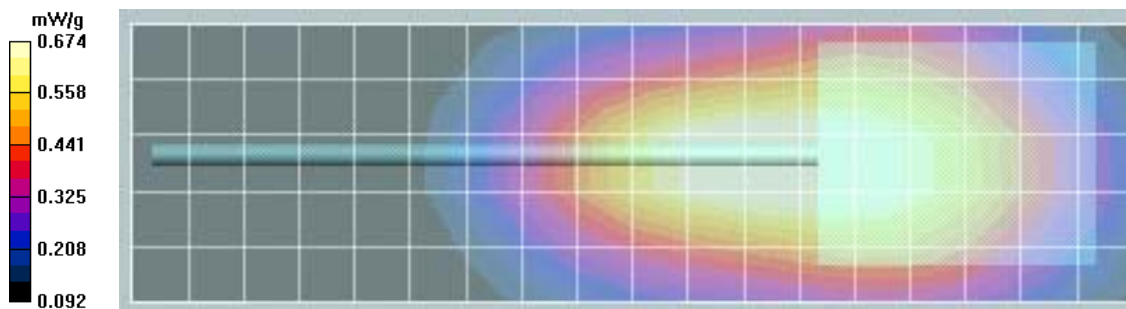
Reference Value = 29.7 V/m; Power Drift = -0.615 dB

Peak SAR (extrapolated) = 0.836 W/kg



SAR(1 g) = 0.636 mW/g; SAR(10 g) = 0.463 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.674 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR - B1

Date Tested: 11/18/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 21.4C; Barometric Pressure: 100.2 kPa; Humidity: 24%

Procedure Notes:

Communication System: 700/800

Frequency: 775 MHz; Duty Cycle: 1:1

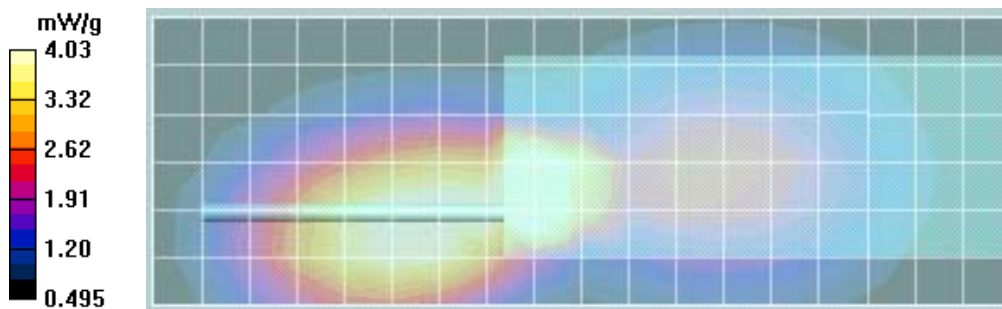
Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.89 \text{ mho/m}$; $\epsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

775 -KNB-33L,KRA-36,KBH-11,KMC-51/Area Scan (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 5.79 mW/g

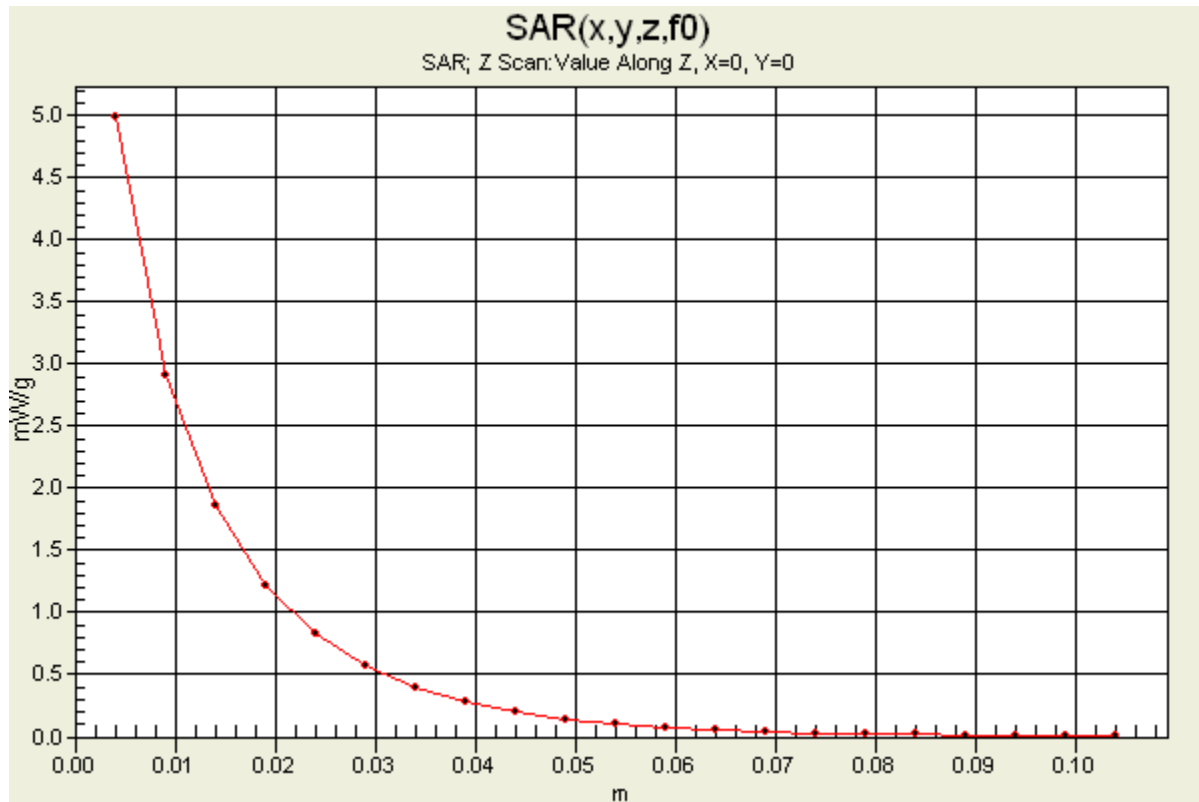
775 -KNB-33L,KRA-36,KBH-11,KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 59.2 V/m; Power Drift = -0.812 dB
Peak SAR (extrapolated) = 21.8 W/kg
SAR(1 g) = 6.89 mW/g; SAR(10 g) = 3.25 mW/g
Maximum value of SAR (measured) = 7.32 mW/g



775 -KNB-33L,KRA-36,KBH-11,KMC-51/Zoom Scan (7x7x7)/Cube 1: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 59.2 V/m; Power Drift = -0.812 dB
Peak SAR (extrapolated) = 4.89 W/kg
SAR(1 g) = 3.81 mW/g; SAR(10 g) = 2.79 mW/g
Maximum value of SAR (measured) = 4.03 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Z-Axis Scan



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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR – B2

Date Tested: 11/19/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 21.4C; Barometric Pressure: 100.2 kPa; Humidity: 24%

Procedure Notes:

Communication System: 700/800

Frequency: 824 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used (interpolated): $f = 824 \text{ MHz}$; $\sigma = 0.939 \text{ mho/m}$; $\epsilon_r = 53.8$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

824 -KNB33L, KRA-36, KBH-11, KMC-51/Area Scan (7x19x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 6.05 mW/g

824 -KNB33L, KRA-36, KBH-11, KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 65.1 V/m; Power Drift = -1.17 dB

Peak SAR (extrapolated) = 17.3 W/kg

SAR(1 g) = 5.83 mW/g; SAR(10 g) = 3.04 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 6.22 mW/g

824 -KNB33L, KRA-36, KBH-11, KMC-51/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

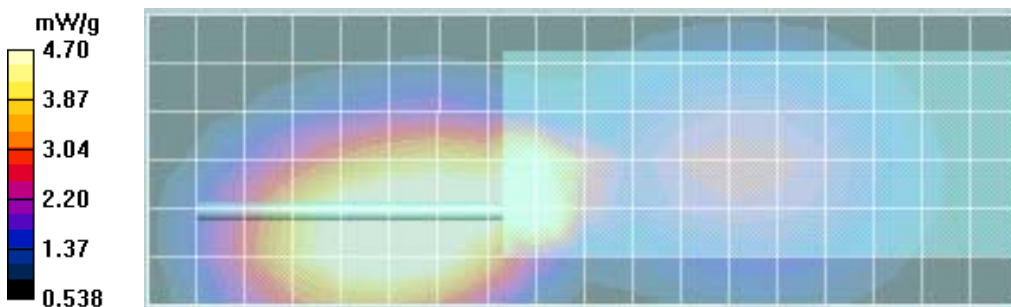
Reference Value = 65.1 V/m; Power Drift = -1.17 dB

Peak SAR (extrapolated) = 5.71 W/kg



SAR(1 g) = 4.43 mW/g; SAR(10 g) = 3.21 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 4.70 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Body-Worn SAR – B3

Date Tested: 11/19/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 21.4C; Barometric Pressure: 100.2 kPa; Humidity: 24%

Procedure Notes:

Communication System: 700/800

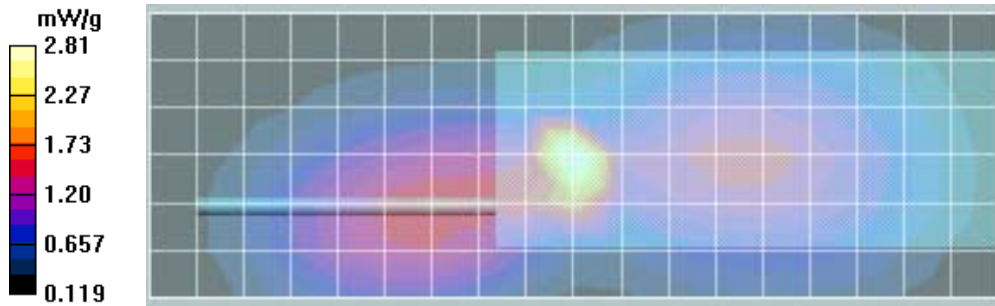
Frequency: 775 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.89 \text{ mho/m}$; $\epsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$



- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

775 -KNB-43L,KRA-36,KBH-11,KMC-51/Area Scan (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 3.25 mW/g

775 -KNB-43L,KRA-36,KBH-11,KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 37.5 V/m; Power Drift = -0.387 dB
Peak SAR (extrapolated) = 8.07 W/kg
SAR(1 g) = 2.54 mW/g; SAR(10 g) = 1.17 mW/g
Maximum value of SAR (measured) = 2.81 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Body-Worn SAR – B4

Date Tested: 11/19/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 21.4C; Barometric Pressure: 100.2 kPa; Humidity: 24%

Procedure Notes:

Communication System: 700/800

Frequency: 775 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.89 \text{ mho/m}$; $\epsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

775 -KNB-49PL,KRA-36,KBH-11,KMC-51 2/Area Scan (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 2.80 mW/g

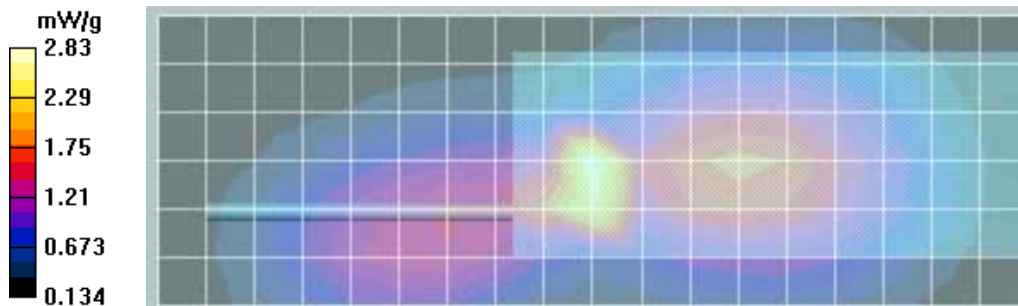
775 -KNB-49PL,KRA-36,KBH-11,KMC-51 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 34.0 V/m; Power Drift = -0.423 dB



Peak SAR (extrapolated) = 7.94 W/kg

SAR(1 g) = 2.62 mW/g; SAR(10 g) = 1.24 mW/g

Maximum value of SAR (measured) = 2.83 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Body-Worn SAR – B5

Date Tested: 11/19/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 21.4C; Barometric Pressure: 100.2 kPa; Humidity: 24%

Procedure Notes:

Communication System: 700/800

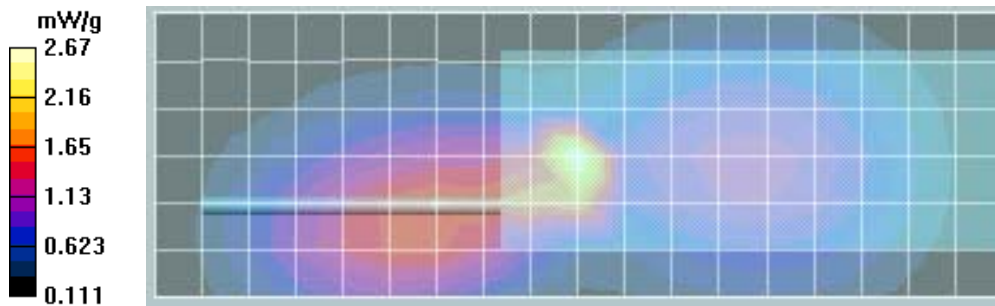
Frequency: 775 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.89 \text{ mho/m}$; $\epsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$



- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

775 -KBP-6,KRA-36,KBH-11,KMC-51/Area Scan (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 2.72 mW/g

775 -KBP-6,KRA-36,KBH-11,KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 36.8 V/m; Power Drift = -0.389 dB
Peak SAR (extrapolated) = 8.03 W/kg
SAR(1 g) = 2.46 mW/g; SAR(10 g) = 1.14 mW/g
Maximum value of SAR (measured) = 2.67 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR – B6

Date Tested: 11/19/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 21.4C; Barometric Pressure: 100.2 kPa; Humidity: 24%

Procedure Notes:

Communication System: 700/800

Frequency: 775 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.89 \text{ mho/m}$; $\epsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$

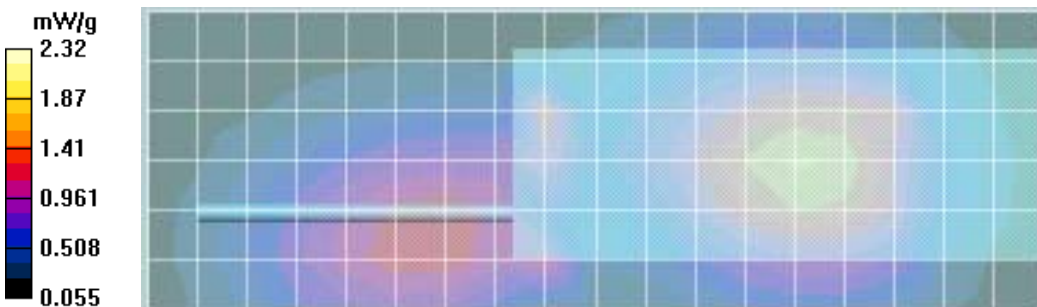
- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

775 -KNB-33L,KRA-36,KLH-132,KMC-51/Area Scan (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 1.61 mW/g



775 -KNB-33L,KRA-36,KLH-132,KMC-51/Zoom Scan (7x7x7)/Cube 1: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 31.4 V/m; Power Drift = -0.433 dB
Peak SAR (extrapolated) = 4.90 W/kg
SAR(1 g) = 1.73 mW/g; SAR(10 g) = 0.685 mW/g

Maximum value of SAR (measured) = 2.32 mW/g

775 -KNB-33L,KRA-36,KLH-132,KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 31.4 V/m; Power Drift = -0.433 dB
Peak SAR (extrapolated) = 1.79 W/kg
SAR(1 g) = 1.44 mW/g; SAR(10 g) = 1.09 mW/g
Maximum value of SAR (measured) = 1.51 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR – B7

Date Tested: 11/19/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 21.4C; Barometric Pressure: 100.2 kPa; Humidity: 24%

Procedure Notes:

Communication System: 700/800

Frequency: 824 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used (interpolated): $f = 824 \text{ MHz}$; $\sigma = 0.939 \text{ mho/m}$; $\epsilon_r = 53.8$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

824 -KNB33L, KRA-36, KLH-132, KMC-51 2/Area Scan (7x19x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 4.34 mW/g

824 -KNB33L, KRA-36, KLH-132, KMC-51 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 59.5 V/m; Power Drift = -1.28 dB

Peak SAR (extrapolated) = 4.90 W/kg

SAR(1 g) = 3.82 mW/g; SAR(10 g) = 2.78 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 4.06 mW/g

824 -KNB33L, KRA-36, KLH-132, KMC-51 2/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

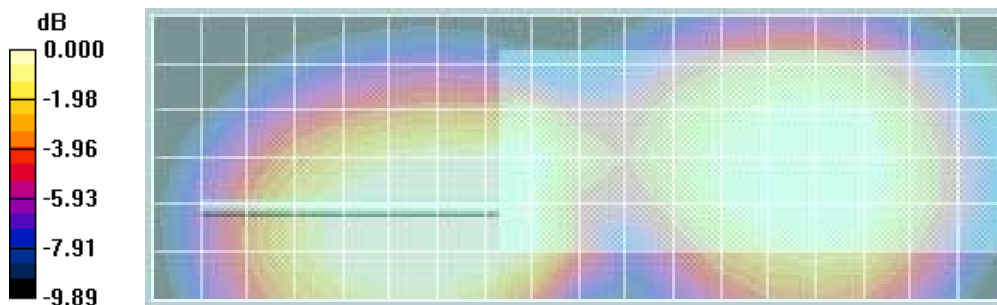
Reference Value = 59.5 V/m; Power Drift = -1.28 dB

Peak SAR (extrapolated) = 4.91 W/kg

SAR(1 g) = 3.28 mW/g; SAR(10 g) = 2.4 mW/g

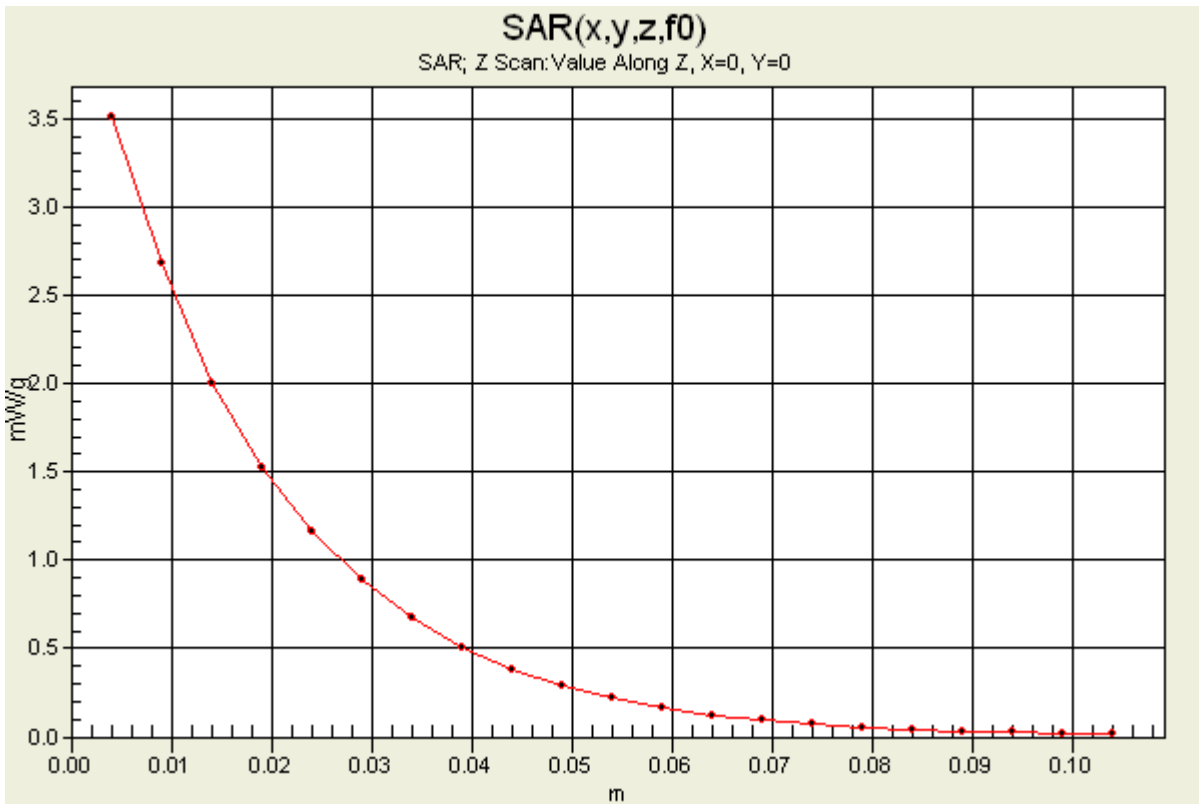
Info: Interpolated medium parameters used for SAR evaluation.



Maximum value of SAR (measured) = 3.47 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Z-Axis Scan



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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR – B8

Date Tested: 11/19/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 21.4C; Barometric Pressure: 100.2 kPa; Humidity: 24%

Procedure Notes:

Communication System: 700/800

Frequency: 775 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.89 \text{ mho/m}$; $\epsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

775 -KNB-43L,KRA-36,KLH-132K3,KMC-51/Area Scan (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 7.42 mW/g

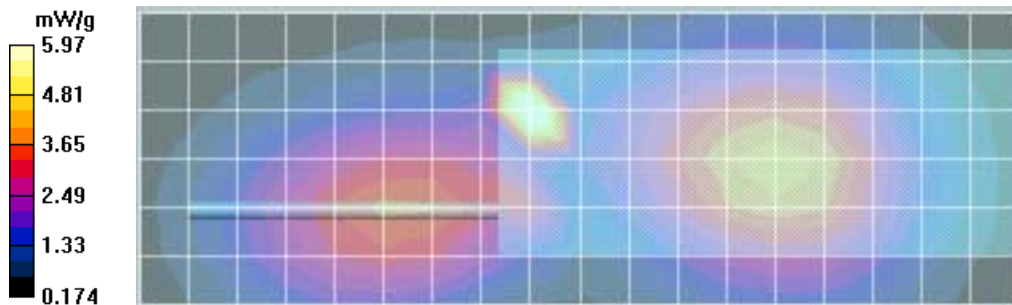
775 -KNB-43L,KRA-36,KLH-132K3,KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 56.8 V/m; Power Drift = -0.508 dB



Peak SAR (extrapolated) = 26.7 W/kg

SAR(1 g) = 4.77 mW/g; SAR(10 g) = 1.9 mW/g

Maximum value of SAR (measured) = 5.97 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR – B9

Date Tested: 11/19/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 21.4C; Barometric Pressure: 100.2 kPa; Humidity: 24%

Procedure Notes:

Communication System: 700/800

Frequency: 775 MHz; Duty Cycle: 1:1

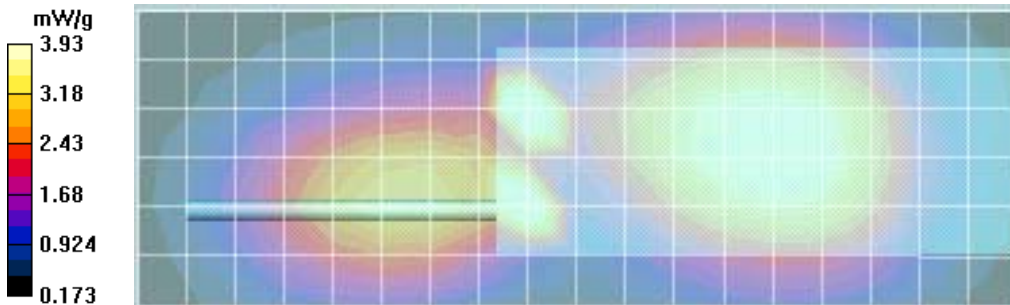
Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.89 \text{ mho/m}$; $\epsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186



775 -KNB-49PL,KRA-36,KLH-132K3,KMC-51/Area Scan (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 5.26 mW/g

775 -KNB-49PL,KRA-36,KLH-132K3,KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 59.2 V/m; Power Drift = -0.620 dB
Peak SAR (extrapolated) = 24.9 W/kg
SAR(1 g) = 4.59 mW/g; SAR(10 g) = 1.89 mW/g
Maximum value of SAR (measured) = 5.19 mW/g

775 -KNB-49PL,KRA-36,KLH-132K3,KMC-51/Zoom Scan (7x7x7)/Cube 1: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 59.2 V/m; Power Drift = -0.620 dB
Peak SAR (extrapolated) = 12.7 W/kg
SAR(1 g) = 3.3 mW/g; SAR(10 g) = 1.76 mW/g
Maximum value of SAR (measured) = 3.93 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Body-Worn SAR - B10

Date Tested: 11/19/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 21.4C; Barometric Pressure: 100.2 kPa; Humidity: 24%

Procedure Notes:

Communication System: 700/800

Frequency: 775 MHz; Duty Cycle: 1:1

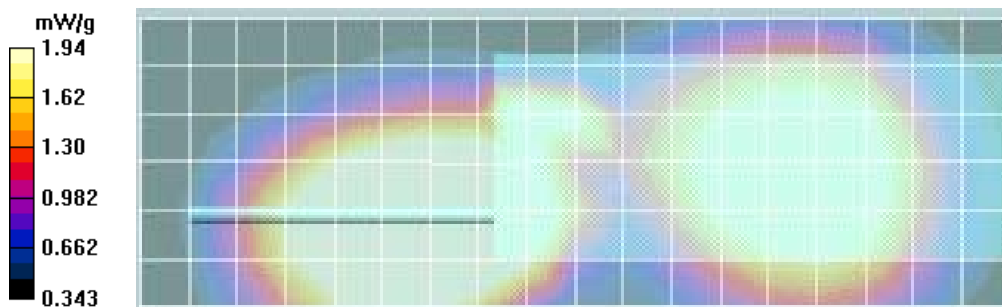
Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.89 \text{ mho/m}$; $\epsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186



775 -KBP-6,KRA-36,KLH-132K3,KMC-51/Area Scan (7x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 3.47 mW/g

775 -KBP-6,KRA-36,KLH-132K3,KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.7 V/m; Power Drift = -2.22 dB
Peak SAR (extrapolated) = 3.31 W/kg
SAR(1 g) = 2.59 mW/g; SAR(10 g) = 1.88 mW/g
Maximum value of SAR (measured) = 2.74 mW/g

775 -KBP-6,KRA-36,KLH-132K3,KMC-51/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.7 V/m; Power Drift = -2.22 dB
Peak SAR (extrapolated) = 2.27 W/kg
SAR(1 g) = 1.84 mW/g; SAR(10 g) = 1.4 mW/g
Maximum value of SAR (measured) = 1.94 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR - B11

Date Tested: 11/19/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 21.4C; Barometric Pressure: 100.2 kPa; Humidity: 24%

Procedure Notes:

Communication System: 700/800

Frequency: 775 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.89 \text{ mho/m}$; $\epsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

775 -KNB-33L,KRA-36,KBH-8DS,KMC-51/Area Scan (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (measured) = 1.67 mW/g

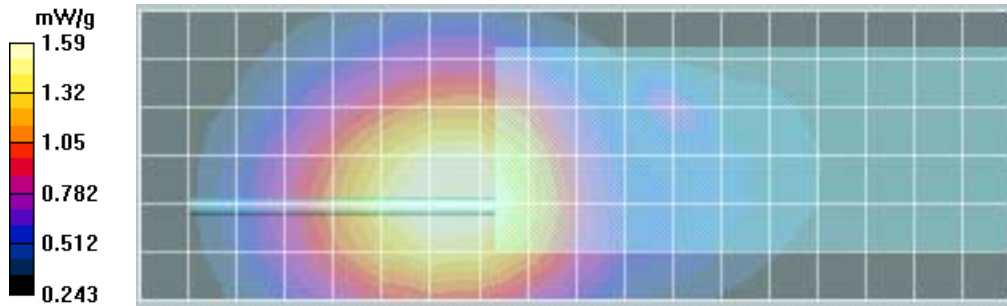
775 -KNB-33L,KRA-36,KBH-8DS,KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 42.2 V/m; Power Drift = -0.389 dB



Peak SAR (extrapolated) = 1.89 W/kg

SAR(1 g) = 1.51 mW/g; SAR(10 g) = 1.13 mW/g

Maximum value of SAR (measured) = 1.59 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR - B12

Date Tested: 11/19/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 21.4C; Barometric Pressure: 100.2 kPa; Humidity: 24%

Procedure Notes:

Communication System: 700/800

Frequency: 824 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used (interpolated): $f = 824 \text{ MHz}$; $\sigma = 0.939 \text{ mho/m}$; $\epsilon_r = 53.8$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

824 -KNB33L, KRA-36, KBH-8D, KMC-51/Area Scan (7x19x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 1.71 mW/g

824 -KNB33L, KRA-36, KBH-8D, KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

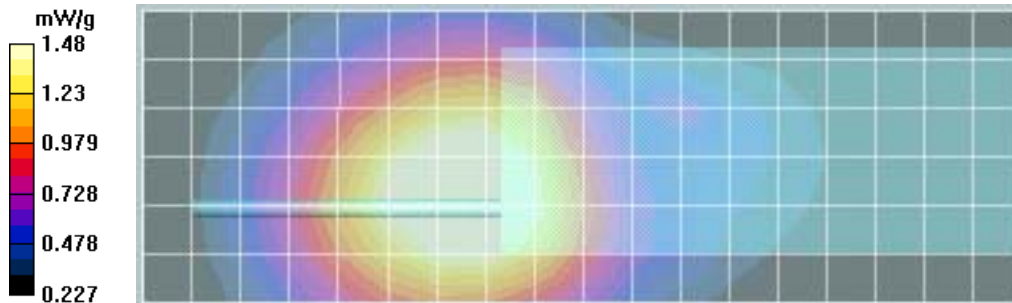
Reference Value = 43.4 V/m; Power Drift = -1.06 dB

Peak SAR (extrapolated) = 1.78 W/kg



SAR(1 g) = 1.4 mW/g; SAR(10 g) = 1.04 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 1.48 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR - B13

Date Tested: 11/19/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 21.4C; Barometric Pressure: 100.2 kPa; Humidity: 24%

Procedure Notes:

Communication System: 700/800

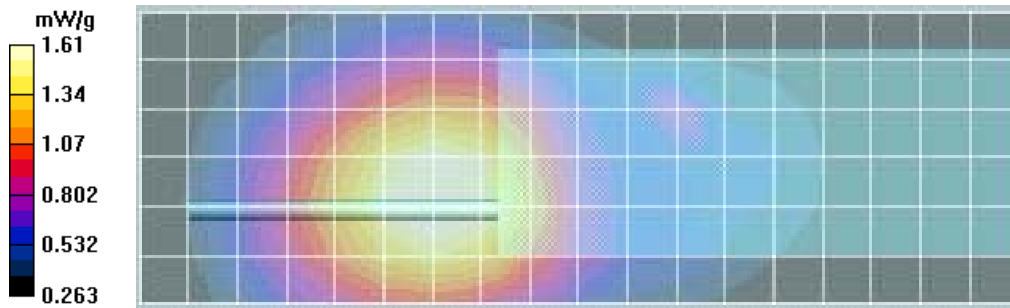
Frequency: 775 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.89 \text{ mho/m}$; $\epsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$



- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

775 -KNB-54N,KRA-36,KBH-8DS,KMC-51/Area Scan (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 1.71 mW/g

775 -KNB-54N,KRA-36,KBH-8DS,KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 42.0 V/m; Power Drift = -0.243 dB
Peak SAR (extrapolated) = 1.92 W/kg
SAR(1 g) = 1.53 mW/g; SAR(10 g) = 1.14 mW/g
Maximum value of SAR (measured) = 1.61 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR - B14

Date Tested: 11/19/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 21.4C; Barometric Pressure: 100.2 kPa; Humidity: 24%

Procedure Notes:

Communication System: 700/800

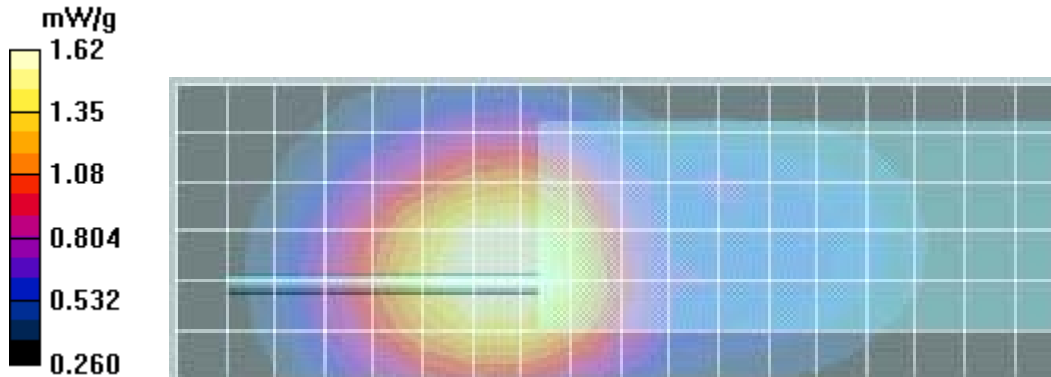
Frequency: 775 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.89 \text{ mho/m}$; $\epsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$



- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

775 -KNB-43L,KRA-36,KBH-8DS,KMC-51/Area Scan (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 1.67 mW/g

775 -KNB-43L,KRA-36,KBH-8DS,KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 42.9 V/m; Power Drift = -0.255 dB
Peak SAR (extrapolated) = 1.93 W/kg
SAR(1 g) = 1.53 mW/g; SAR(10 g) = 1.15 mW/g
Maximum value of SAR (measured) = 1.62 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR - B15

Date Tested: 11/19/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 21.4C; Barometric Pressure: 100.2 kPa; Humidity: 24%

Procedure Notes:

Communication System: 700/800

Frequency: 775 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.89 \text{ mho/m}$; $\epsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

775 -KNB-49PL,KRA-36,KBH-8DS,KMC-51/Area Scan (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 1.68 mW/g

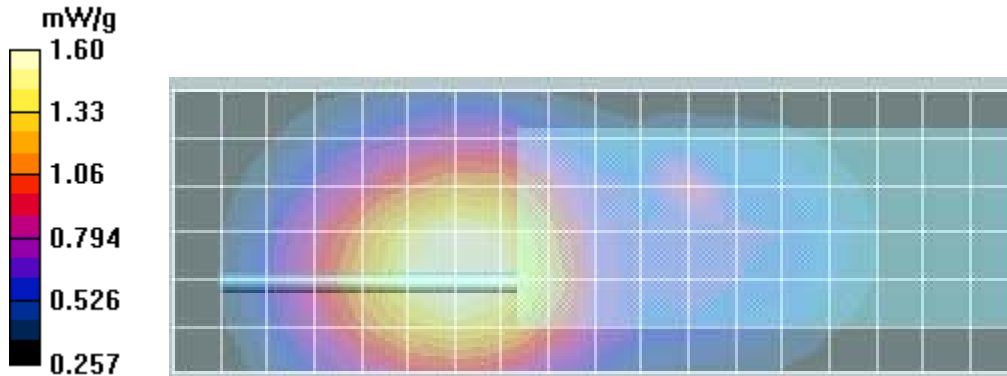
775 -KNB-49PL,KRA-36,KBH-8DS,KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 42.0 V/m; Power Drift = -0.209 dB



Peak SAR (extrapolated) = 1.91 W/kg

SAR(1 g) = 1.52 mW/g; SAR(10 g) = 1.13 mW/g

Maximum value of SAR (measured) = 1.60 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR - B16

Date Tested: 11/19/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 21.4C; Barometric Pressure: 100.2 kPa; Humidity: 24%

Procedure Notes:

Communication System: 700/800

Frequency: 775 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.89 \text{ mho/m}$; $\epsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

775 -KBP-6,KRA-36,KBH-8DS,KMC-51/Area Scan (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (measured) = 1.41 mW/g

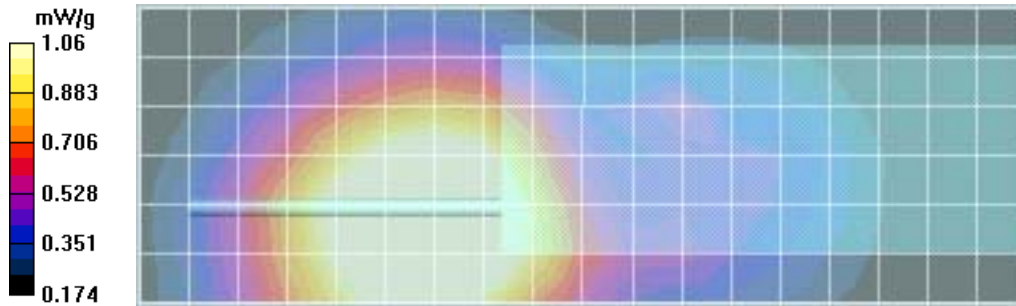
775 -KBP-6,KRA-36,KBH-8DS,KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 39.4 V/m; Power Drift = -2.02 dB

Peak SAR (extrapolated) = 1.26 W/kg

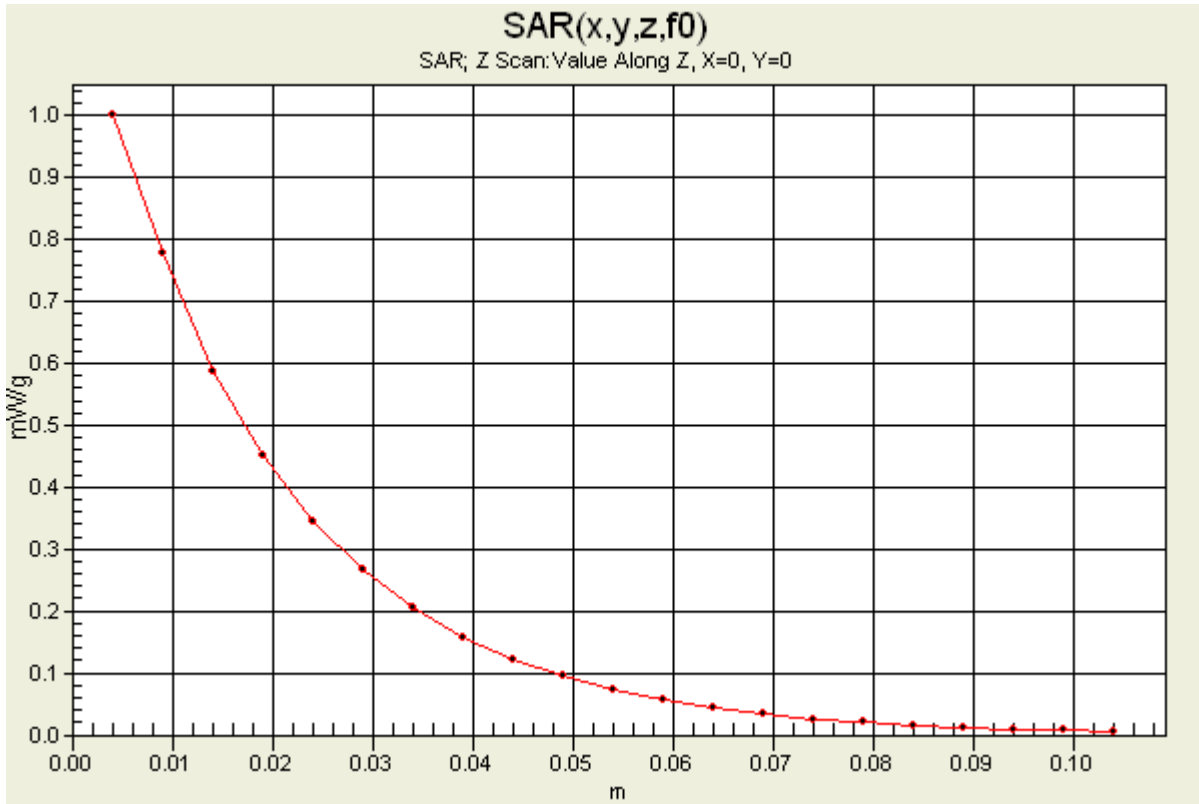
SAR(1 g) = 1.01 mW/g; SAR(10 g) = 0.756 mW/g



Maximum value of SAR (measured) = 1.06 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Z-Axis Scan



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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR - B17

Date Tested: 11/20/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 25C; Fluid Temp: 22.0C; Barometric Pressure: 103.5 kPa; Humidity: 20%

Procedure Notes:

Communication System: 700/800

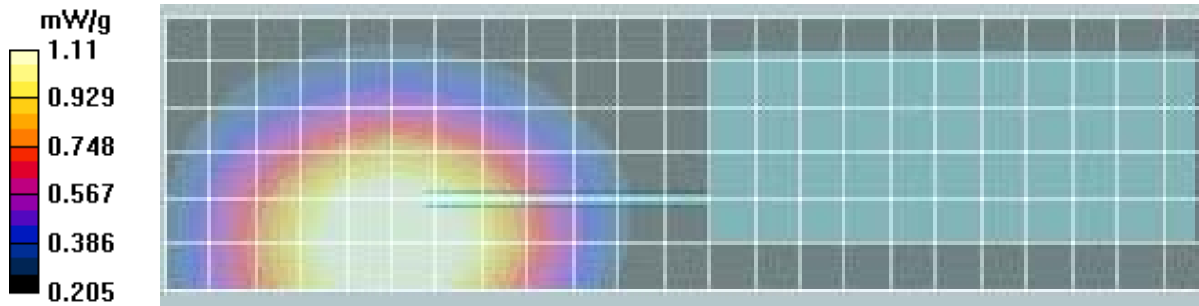
Frequency: 775 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.93 \text{ mho/m}$; $\epsilon_r = 55.6$; $\rho = 1000 \text{ kg/m}^3$



- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

775 -KNB-43L,KRA-32,KBH-8DS,KMC-51/Area Scan (7x24x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 1.27 mW/g

775 -KNB-43L,KRA-32,KBH-8DS,KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 13.4 V/m; Power Drift = -1.31 dB
Peak SAR (extrapolated) = 1.31 W/kg
SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.803 mW/g
Maximum value of SAR (measured) = 1.11 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Body-Worn SAR - B18

Date Tested: 11/20/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 25C; Fluid Temp: 22.0C; Barometric Pressure: 103.5 kPa; Humidity: 20%

Procedure Notes:

Communication System: 700/800

Frequency: 824 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used (interpolated): $f = 824 \text{ MHz}$; $\sigma = 0.979 \text{ mho/m}$; $\epsilon_r = 54.9$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

824 -KNB-43L, KRA-32, KBH-8DS, KMC-51/Area Scan KRA-32 (7x24x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.51 mW/g

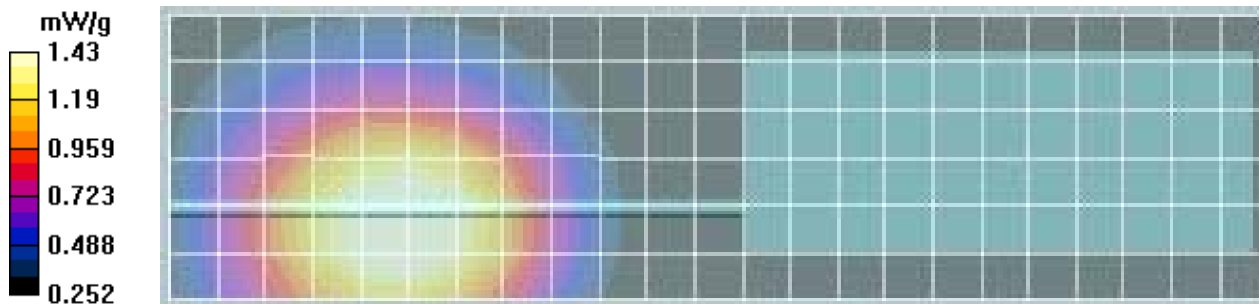
824 -KNB-43L, KRA-32, KBH-8DS, KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.2 V/m; Power Drift = -0.586 dB



Peak SAR (extrapolated) = 1.69 W/kg

SAR(1 g) = 1.36 mW/g; SAR(10 g) = 1.03 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.43 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR – B19

Date Tested: 11/20/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 25C; Fluid Temp: 22.0C; Barometric Pressure: 103.5 kPa; Humidity: 20%

Procedure Notes:

Communication System: 700/800

Frequency: 775 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.93 \text{ mho/m}$; $\epsilon_r = 55.6$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

775 -KNB-33L, KRA-36, KLH-6SW, KMC-51/Area Scan KRA-36 (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (measured) = 1.57 mW/g

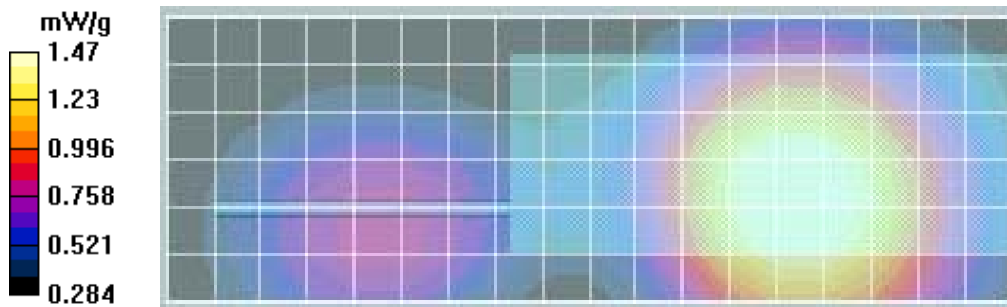
775 -KNB-33L, KRA-36, KLH-6SW, KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 25.6 V/m; Power Drift = -0.581 dB



Peak SAR (extrapolated) = 1.71 W/kg

SAR(1 g) = 1.41 mW/g; SAR(10 g) = 1.08 mW/g

Maximum value of SAR (measured) = 1.47 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR – B20

Date Tested: 11/20/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 25C; Fluid Temp: 22.0C; Barometric Pressure: 103.5 kPa; Humidity: 20%

Procedure Notes:

Communication System: 700/800

Frequency: 824 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used (interpolated): $f = 824 \text{ MHz}$; $\sigma = 0.979 \text{ mho/m}$; $\epsilon_r = 54.9$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

824 -KNB-33L, KRA-36,KLH-6SW, KMC-51/Area Scan KRA-36 (7x19x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.48 mW/g

824 -KNB-33L, KRA-36,KLH-6SW, KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 31.7 V/m; Power Drift = -1.70 dB

Peak SAR (extrapolated) = 1.59 W/kg

SAR(1 g) = 1.29 mW/g; SAR(10 g) = 0.982 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

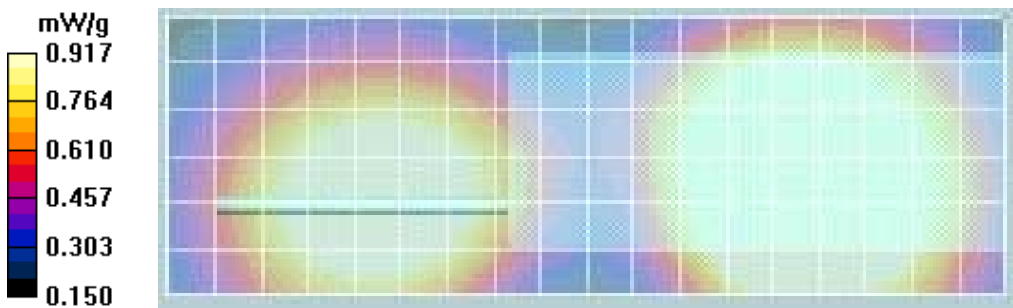
824 -KNB-33L, KRA-36,KLH-6SW, KMC-51/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 31.7 V/m; Power Drift = -1.70 dB



Peak SAR (extrapolated) = 1.09 W/kg

SAR(1 g) = 0.868 mW/g; SAR(10 g) = 0.650 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.917 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR – B21

Date Tested: 11/20/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 25C; Fluid Temp: 22.0C; Barometric Pressure: 103.5 kPa; Humidity: 20%

Procedure Notes:

Communication System: 700/800

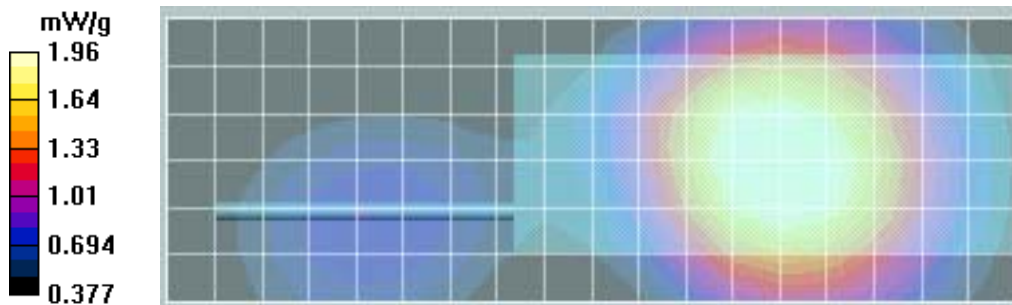
Frequency: 775 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.93 \text{ mho/m}$; $\epsilon_r = 55.6$; $\rho = 1000 \text{ kg/m}^3$



- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

775 -KNB-43L,KRA-36,KLH-6SW,KMC-51/Area Scan KRA-36 (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 2.17 mW/g

775 -KNB-43L,KRA-36,KLH-6SW,KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 26.0 V/m; Power Drift = -0.836 dB
Peak SAR (extrapolated) = 2.43 W/kg
SAR(1 g) = 1.87 mW/g; SAR(10 g) = 1.43 mW/g
Maximum value of SAR (measured) = 1.96 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Body-Worn SAR – B23

Date Tested: 11/20/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 25C; Fluid Temp: 22.0C; Barometric Pressure: 103.5 kPa; Humidity: 20%

Procedure Notes:

Communication System: 700/800

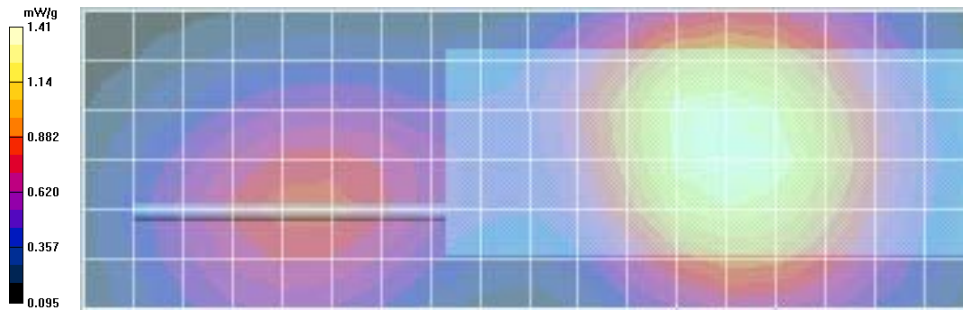
Frequency: 775 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.93 \text{ mho/m}$; $\epsilon_r = 55.6$; $\rho = 1000 \text{ kg/m}^3$



- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

775 -KBP-6,KRA-36,KLH-65SW,KMC-51/Area Scan KRA-36 (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 1.41 mW/g

775 -KBP-6,KRA-36,KLH-65SW,KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 27.8 V/m; Power Drift = -1.63 dB
Peak SAR (extrapolated) = 1.35 W/kg
SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.830 mW/g
Maximum value of SAR (measured) = 1.13 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Body-Worn SAR – B24

Date Tested: 11/20/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 25C; Fluid Temp: 22.0C; Barometric Pressure: 103.5 kPa; Humidity: 20%

Procedure Notes:

Communication System: 700/800

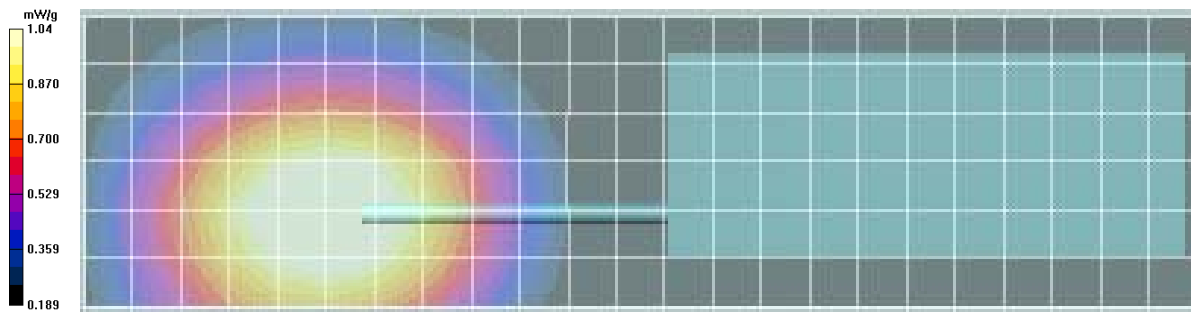
Frequency: 775 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.93 \text{ mho/m}$; $\epsilon_r = 55.6$; $\rho = 1000 \text{ kg/m}^3$



- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

775 -KNB-43L,KRA-32,KLH-6SW,KMC-51/Area Scan (7x24x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 1.19 mW/g

775 -KNB-43L,KRA-32,KLH-6SW,KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 11.0 V/m; Power Drift = -1.17 dB
Peak SAR (extrapolated) = 1.23 W/kg
SAR(1 g) = 0.987 mW/g; SAR(10 g) = 0.742 mW/g
Maximum value of SAR (measured) = 1.04 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR – B25

Date Tested: 11/20/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 25C; Fluid Temp: 22.0C; Barometric Pressure: 103.5 kPa; Humidity: 20%

Procedure Notes:

Communication System: 700/800

Frequency: 824 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used (interpolated): $f = 824 \text{ MHz}$; $\sigma = 0.979 \text{ mho/m}$; $\epsilon_r = 54.9$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

824 -KNB-43L, KRA-32, KLH-6SW, KMC-51/Area Scan KRA-32 (7x24x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 1.38 mW/g

824 -KNB-43L, KRA-32, KLH-6SW, KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

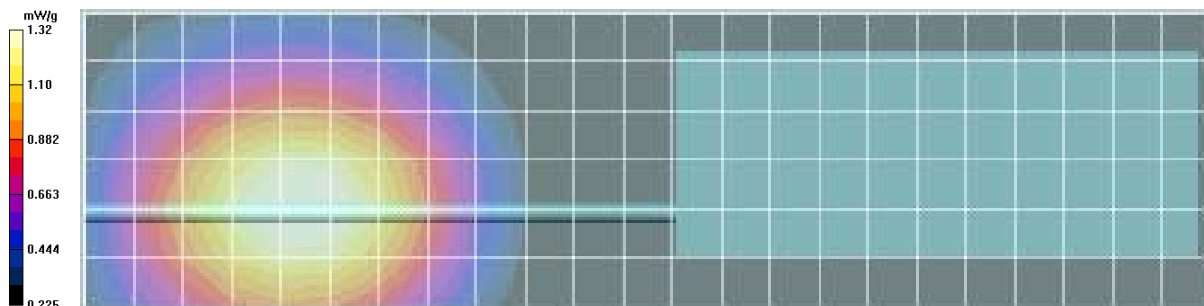
Reference Value = 7.25 V/m; Power Drift = -0.650 dB

Peak SAR (extrapolated) = 1.56 W/kg



SAR(1 g) = 1.25 mW/g; SAR(10 g) = 0.934 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 1.32 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR – B26

Date Tested: 11/20/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 25C; Fluid Temp: 22.0C; Barometric Pressure: 103.5 kPa; Humidity: 20%

Procedure Notes:

Communication System: 700/800

Frequency: 775 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.93 \text{ mho/m}$; $\epsilon_r = 55.6$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

775 -KNB-33L, KRA-36,KLH-137ST, KMC-51/Area Scan KRA-36 (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 3.11 mW/g

775 -KNB-33L, KRA-36,KLH-137ST, KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 47.9 V/m; Power Drift = -0.668 dB

Peak SAR (extrapolated) = 3.67 W/kg

SAR(1 g) = 2.88 mW/g; SAR(10 g) = 2.11 mW/g

Maximum value of SAR (measured) = 3.04 mW/g

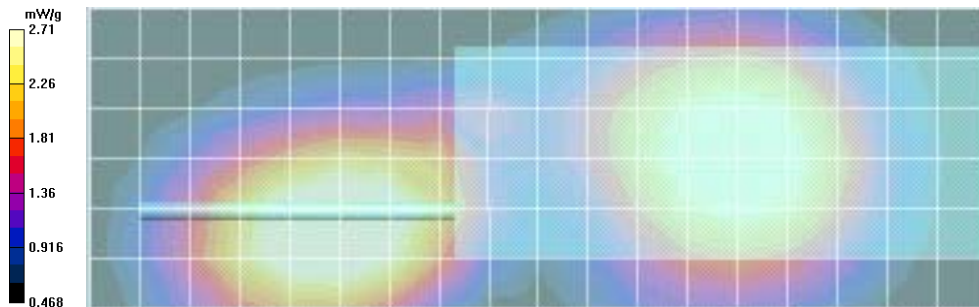
775 -KNB-33L, KRA-36,KLH-137ST, KMC-51/Zoom Scan (7x7x7)/Cube 1: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 47.9 V/m; Power Drift = -0.668 dB



Peak SAR (extrapolated) = 3.20 W/kg

SAR(1 g) = 2.59 mW/g; SAR(10 g) = 1.95 mW/g

Maximum value of SAR (measured) = 2.71 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR – B27

Date Tested: 11/20/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 25C; Fluid Temp: 22.0C; Barometric Pressure: 103.5 kPa; Humidity: 20%

Procedure Notes:

Communication System: 700/800

Frequency: 824 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used (interpolated): $f = 824 \text{ MHz}$; $\sigma = 0.979 \text{ mho/m}$; $\epsilon_r = 54.9$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

824 -KNB-33L, KRA-36,KLH-137ST, KMC-51/Area Scan KRA-36 (7x19x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 4.19 mW/g

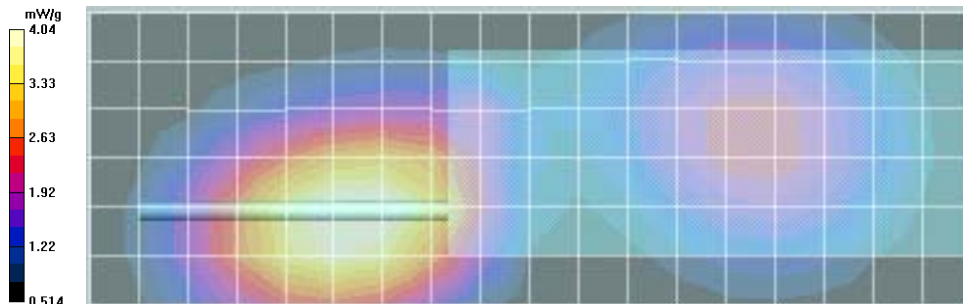
824 -KNB-33L, KRA-36,KLH-137ST, KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 57.8 V/m; Power Drift = -0.803 dB



Peak SAR (extrapolated) = 4.89 W/kg

SAR(1 g) = 3.82 mW/g; SAR(10 g) = 2.77 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 4.04 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Body-Worn SAR – B28

Date Tested: 11/20/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 25C; Fluid Temp: 22.0C; Barometric Pressure: 103.5 kPa; Humidity: 20%

Procedure Notes:

Communication System: 700/800

Frequency: 775 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.93 \text{ mho/m}$; $\epsilon_r = 55.6$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

824-KNB-43L,KRA-36,KLH-137ST,KMC-51/Area Scan KRA-36 (7x19x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 4.00 mW/g

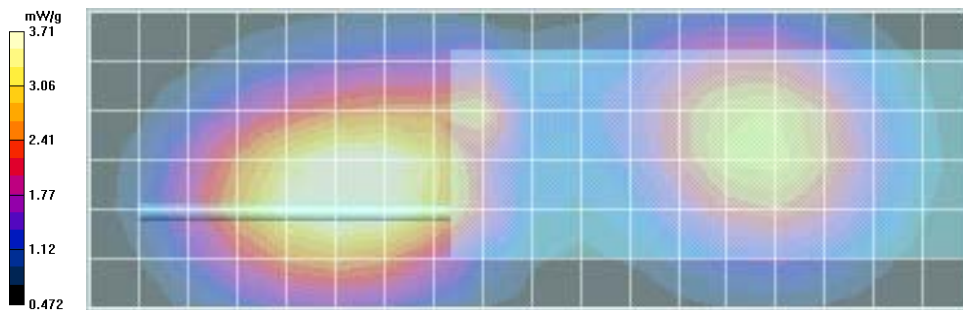
824-KNB-43L,KRA-36,KLH-137ST,KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 63.7 V/m; Power Drift = -0.848 dB

Peak SAR (extrapolated) = 4.52 W/kg

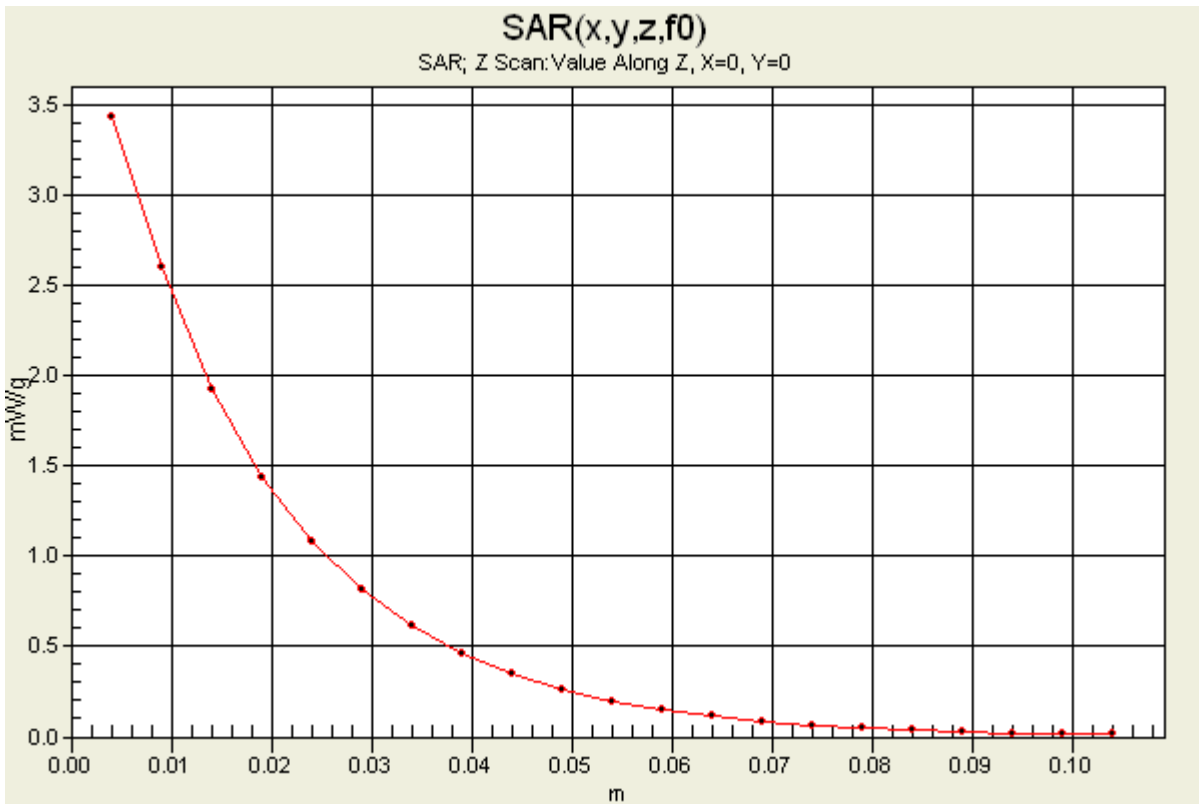
SAR(1 g) = 3.5 mW/g; SAR(10 g) = 2.55 mW/g



Maximum value of SAR (measured) = 3.71 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Z-Axis Scan



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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR – B29

Date Tested: 11/21/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 26C; Fluid Temp: 21.8.0C; Barometric Pressure: 104.2kPa; Humidity: 15%

Procedure Notes:

Communication System: 700/800

Frequency: 824 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used (interpolated): $f = 824 \text{ MHz}$; $\sigma = 0.979 \text{ mho/m}$; $\epsilon_r = 54.9$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

824 -KNB-54N, KRA-36,KLH-137ST, KMC-51/Area Scan KRA-36 (7x19x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.99 mW/g

824 -KNB-54N, KRA-36,KLH-137ST, KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 58.1 V/m; Power Drift = -1.08 dB

Peak SAR (extrapolated) = 4.47 W/kg

SAR(1 g) = 3.5 mW/g; SAR(10 g) = 2.55 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.69 mW/g

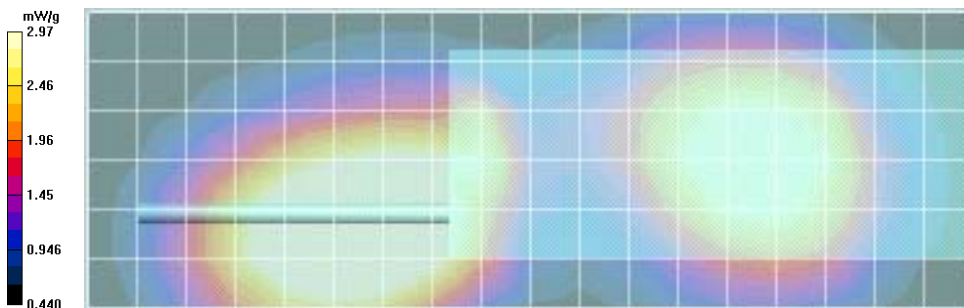
824 -KNB-54N, KRA-36,KLH-137ST, KMC-51/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 58.1 V/m; Power Drift = -1.08 dB



Peak SAR (extrapolated) = 3.51 W/kg

SAR(1 g) = 2.81 mW/g; SAR(10 g) = 2.1 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.97 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Body-Worn SAR – B30

Date Tested: 11/21/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 26C; Fluid Temp: 21.8.0C; Barometric Pressure: 104.2kPa; Humidity: 15%

Procedure Notes:

Communication System: 700/800

Frequency: 824 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used (interpolated): $f = 824 \text{ MHz}$; $\sigma = 0.979 \text{ mho/m}$; $\epsilon_r = 54.9$; $\rho = 1000 \text{ kg/m}^3$

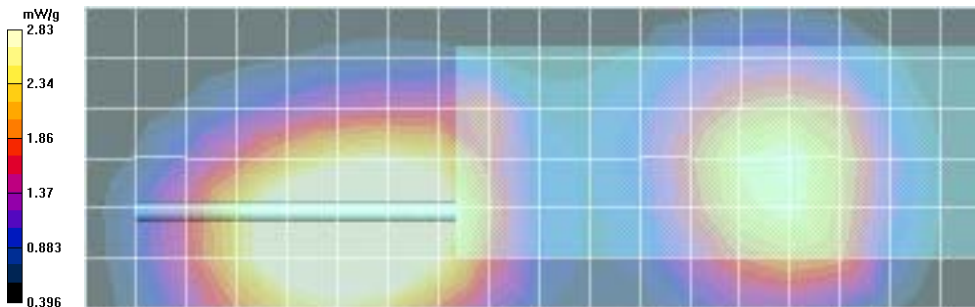
- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

824 -KBP-6, KRA-36,KLH-137ST, KMC-51/Area Scan KRA-36 (7x19x1): Measurement grid: dx=15mm, dy=15mm



Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.68 mW/g

824 -KBP-6, KRA-36,KLH-137ST, KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 59.3 V/m; Power Drift = -2.68 dB
Peak SAR (extrapolated) = 3.42 W/kg
SAR(1 g) = 2.65 mW/g; SAR(10 g) = 1.93 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.83 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Body-Worn SAR – B31

Date Tested: 11/21/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 26C; Fluid Temp: 21.8.0C; Barometric Pressure: 104.2kPa; Humidity: 15%

Procedure Notes:

Communication System: 700/800

Frequency: 775 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.93 \text{ mho/m}$; $\epsilon_r = 55.6$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

775 - KNB-33L, KRA-32, KLH-137ST, KMC-51/Area Scan KRA-32 (7x24x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 2.11 mW/g

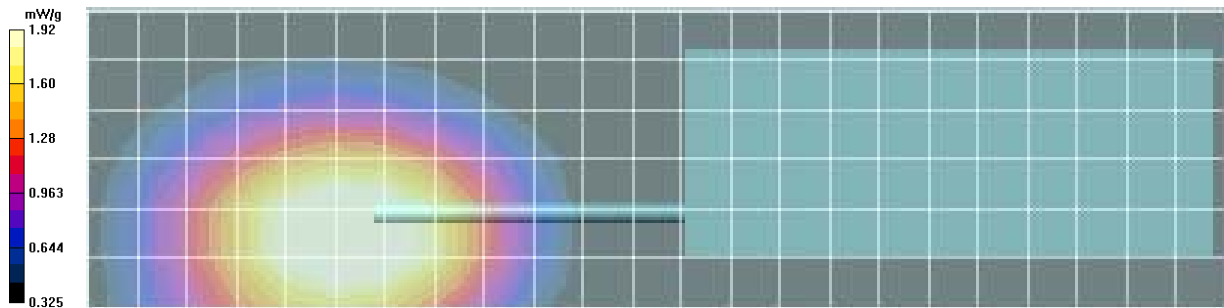
775 - KNB-33L, KRA-32, KLH-137ST, KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 12.4 V/m; Power Drift = -1.48 dB



Peak SAR (extrapolated) = 2.27 W/kg

SAR(1 g) = 1.83 mW/g; SAR(10 g) = 1.37 mW/g

Maximum value of SAR (measured) = 1.92 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR – B32

Date Tested: 11/21/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 26C; Fluid Temp: 21.8.0C; Barometric Pressure: 104.2kPa; Humidity: 15%

Procedure Notes:

Communication System: 700/800

Frequency: 824 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used (interpolated): $f = 824 \text{ MHz}$; $\sigma = 0.979 \text{ mho/m}$; $\epsilon_r = 54.9$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

824 -KNB-33L, KRA-32, KLH-137ST, KMC-51/Area Scan KRA-32 2 (7x24x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 2.93 mW/g

824 -KNB-33L, KRA-32, KLH-137ST, KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

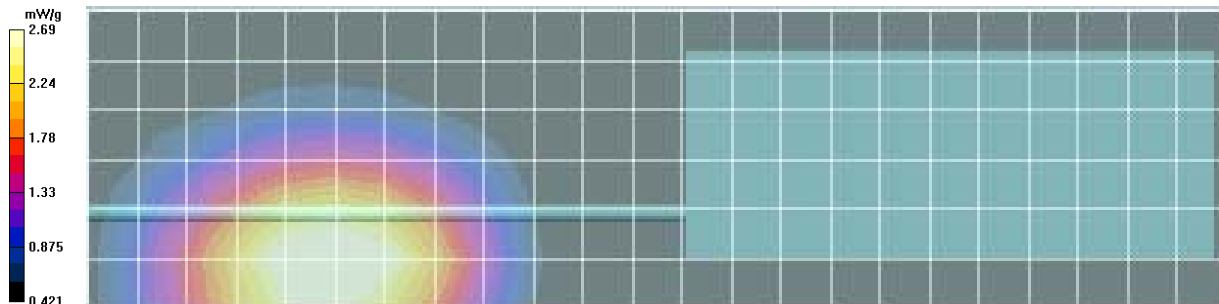
Reference Value = 8.85 V/m; Power Drift = -0.362 dB

Peak SAR (extrapolated) = 3.22 W/kg

SAR(1 g) = 2.55 mW/g; SAR(10 g) = 1.89 mW/g

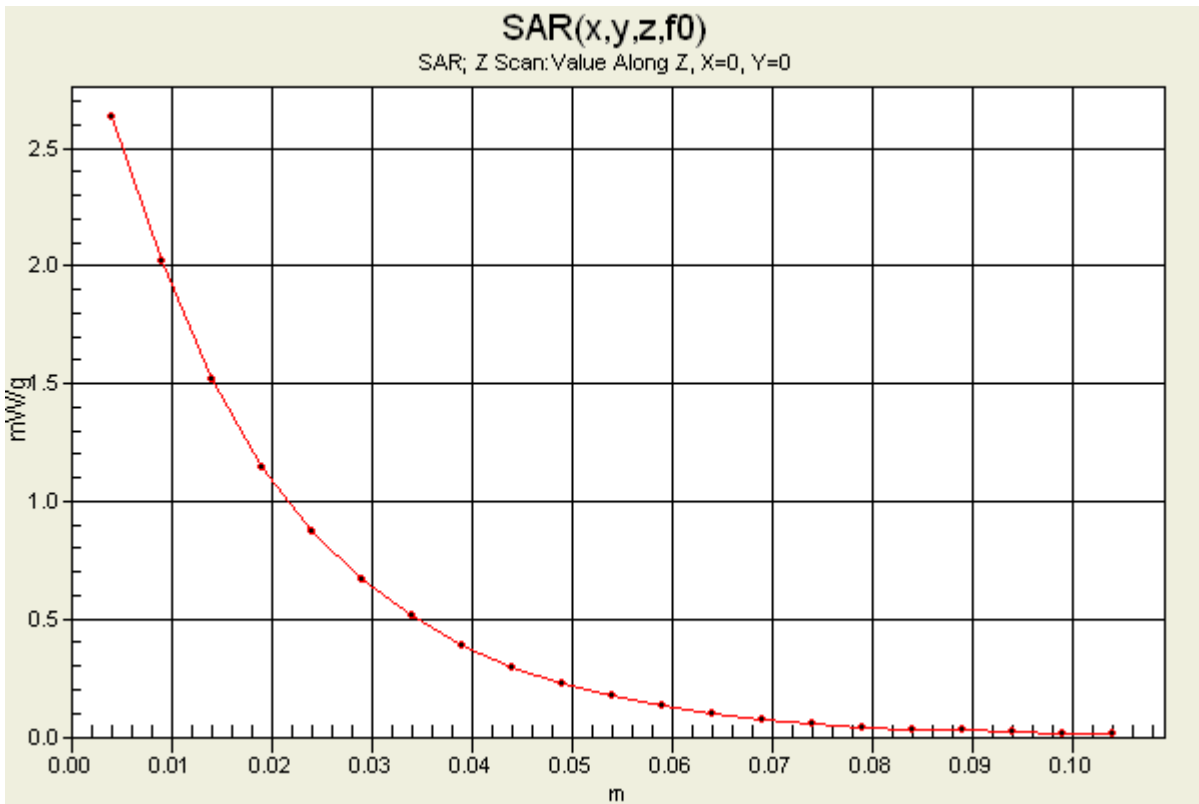
Info: Interpolated medium parameters used for SAR evaluation.



Maximum value of SAR (measured) = 2.69 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Z-Axis Scan



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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Body-Worn SAR – B33

Date Tested: 11/21/2013

DUT: Kenwood TK-5410D-K2/3; Type: 700/800 PTT Radio; Serial: Not Specified

Program Notes: Ambient Temp: 26C; Fluid Temp: 21.8.0C; Barometric Pressure: 104.2kPa; Humidity: 15%

Procedure Notes:

Communication System: 700/800

Frequency: 775 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used: $f = 775 \text{ MHz}$; $\sigma = 0.93 \text{ mho/m}$; $\epsilon_r = 55.6$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

K2 w/c 775 KNB-33PL, KRA-36, KBH-11, KMC-51/Area Scan KRA-36 (7x19x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (measured) = 5.84 mW/g

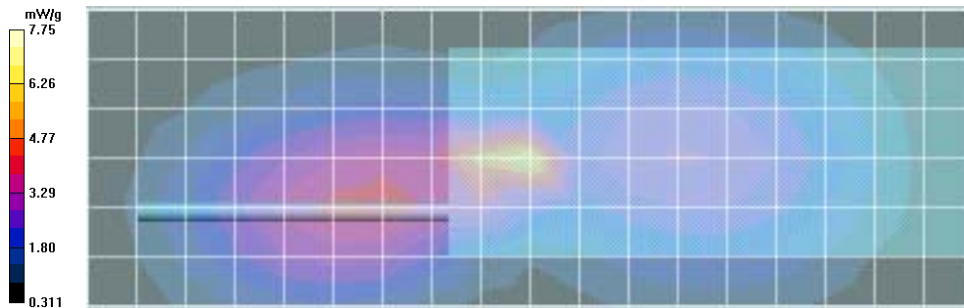
K2 w/c 775 KNB-33PL, KRA-36, KBH-11, KMC-51/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 64.0 V/m; Power Drift = -0.615 dB



Peak SAR (extrapolated) = 23.5 W/kg

SAR(1 g) = 7.05 mW/g; SAR(10 g) = 3.18 mW/g

Maximum value of SAR (measured) = 7.75 mW/g





Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Date(s) of Evaluation</u> Nov 6-21, 2013	<u>Test Report Serial No.</u> 110613ALH-1263	<u>Test Report Revision No.</u> Rev. 1.2	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

APPENDIX B - SYSTEM PERFORMANCE CHECK PLOTS

Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

System Performance Check - 835 MHz Head

Date Tested: 11/06/2013

SPC - 835 Head - Nov 6

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d075; Calibrated: 04/20/2012

Program Notes: Ambient Temp: 23C; Fluid Temp: 21.4C; Barometric Pressure: 101.1 kPa; Humidity: 34%

Procedure Notes:

Communication System: CW

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL835 Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.9 \text{ mho/m}$; $\epsilon_r = 41.8$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.84, 6.84, 6.84); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DAS4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Head d=15mm Pin=250mW/Area Scan (6x10x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 2.43 mW/g

Head d=15mm Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 54.4 V/m; Power Drift = -0.023 dB

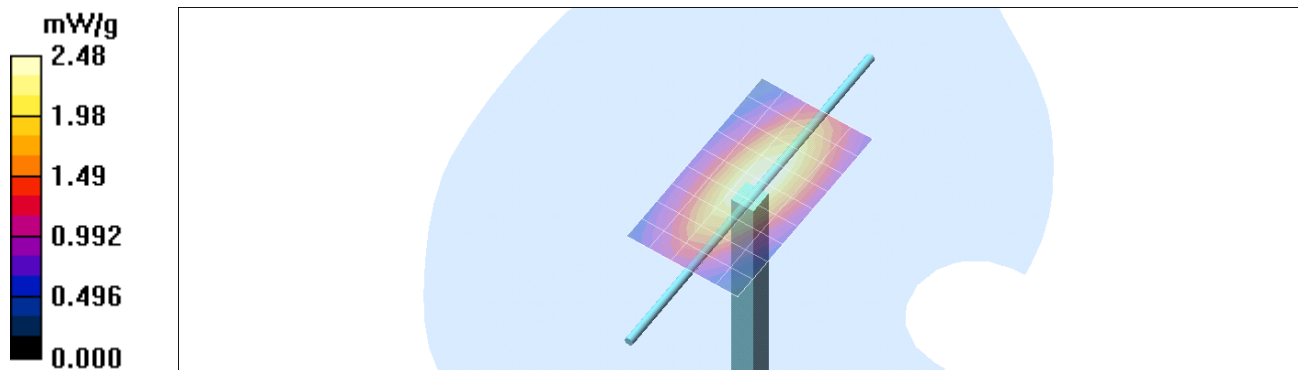
Peak SAR (extrapolated) = 3.37 W/kg

SAR(1 g) = 2.31 mW/g; SAR(10 g) = 1.51 mW/g

Maximum value of SAR (measured) = 2.49 mW/g

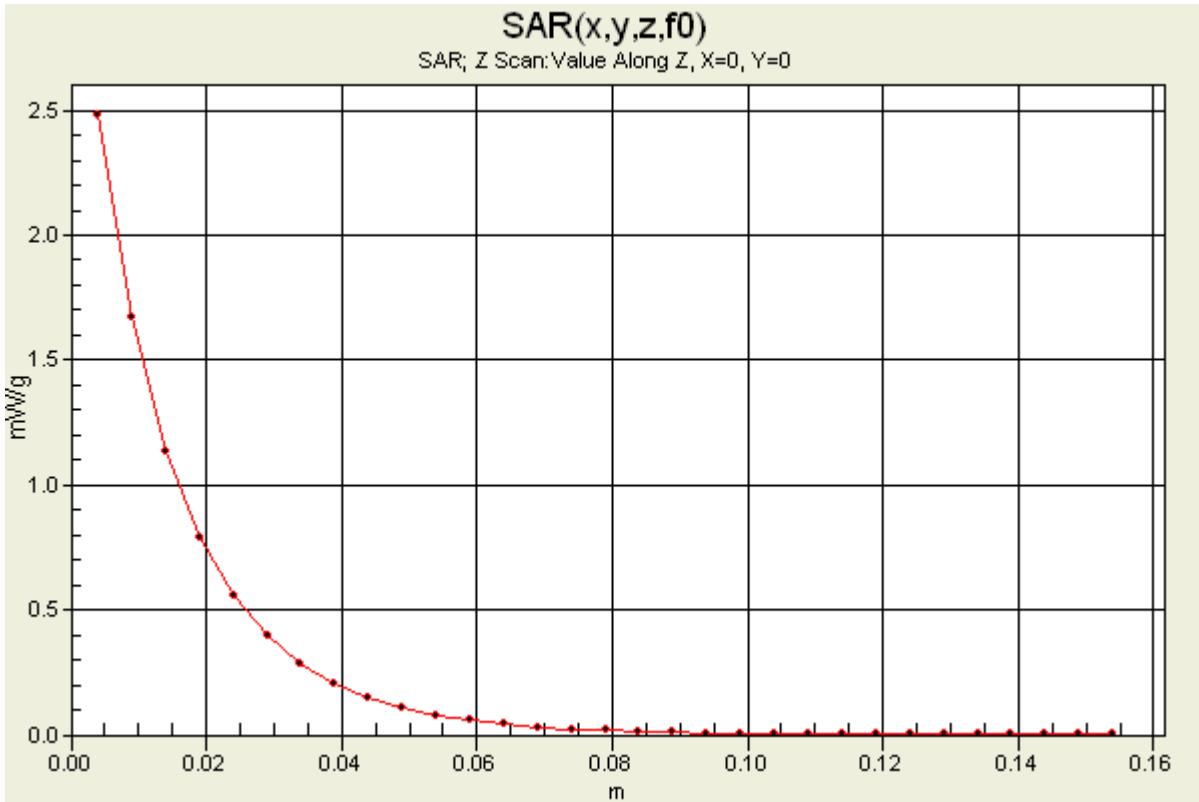
Head d=15mm Pin=250mW/Z Scan (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm



Maximum value of SAR (measured) = 2.48 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Z-Axis Scan



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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

System Performance Check - 835 MHz Body

Date Tested: 11/17/2013

SPC - 835 Body - Nov 17

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d075; Calibrated: 04/20/2012

Program Notes: Ambient Temp: 23C; Fluid Temp: 21.8C; Barometric Pressure: 101.5 kPa; Humidity: 33%

Procedure Notes:

Communication System: CW

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.95 \text{ mho/m}$; $\epsilon_r = 53.6$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body d=15mm Pin=250mW/Area Scan (6x10x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 2.49 mW/g

Body d=15mm Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 52.8 V/m; Power Drift = -0.018 dB

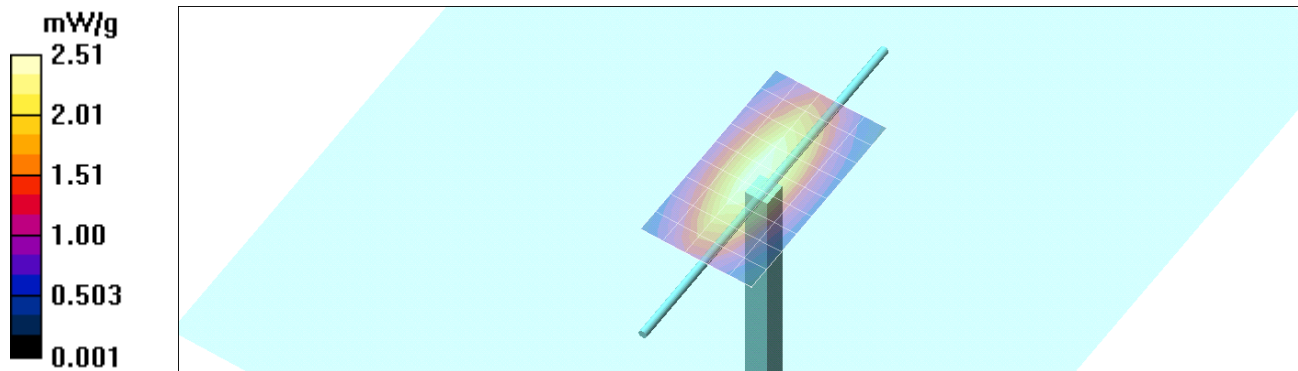
Peak SAR (extrapolated) = 3.41 W/kg

SAR(1 g) = 2.34 mW/g; SAR(10 g) = 1.54 mW/g

Maximum value of SAR (measured) = 2.53 mW/g

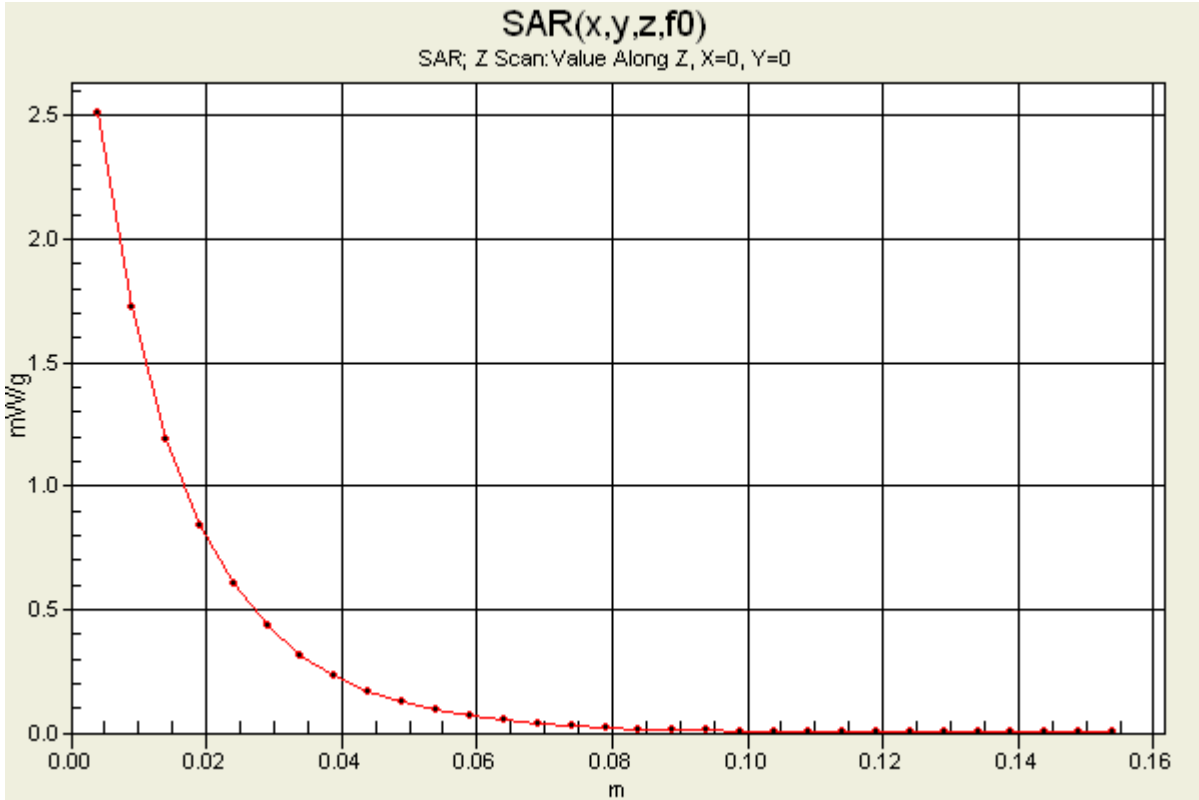
Body d=15mm Pin=250mW/Z Scan (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm



Maximum value of SAR (measured) = 2.51 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Z-Axis Scan



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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

System Performance Check - 835 MHz Body

Date Tested: 11/20/2013

SPC - 835 Body - Nov 20

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d075; Calibrated: 04/20/2012

Program Notes: Ambient Temp: 25C; Fluid Temp: 22.0C; Barometric Pressure: 103.5 kPa; Humidity: 20%

Procedure Notes:

Communication System: CW

Frequency: 835 MHz; Duty Cycle: 1:1

Medium: M835 Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.98 \text{ mho/m}$; $\epsilon_r = 54.7$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(6.67, 6.67, 6.67); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body d=15mm Pin=250mW/Area Scan (6x10x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 2.43 mW/g

Body d=15mm Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 52.0 V/m; Power Drift = -0.037 dB

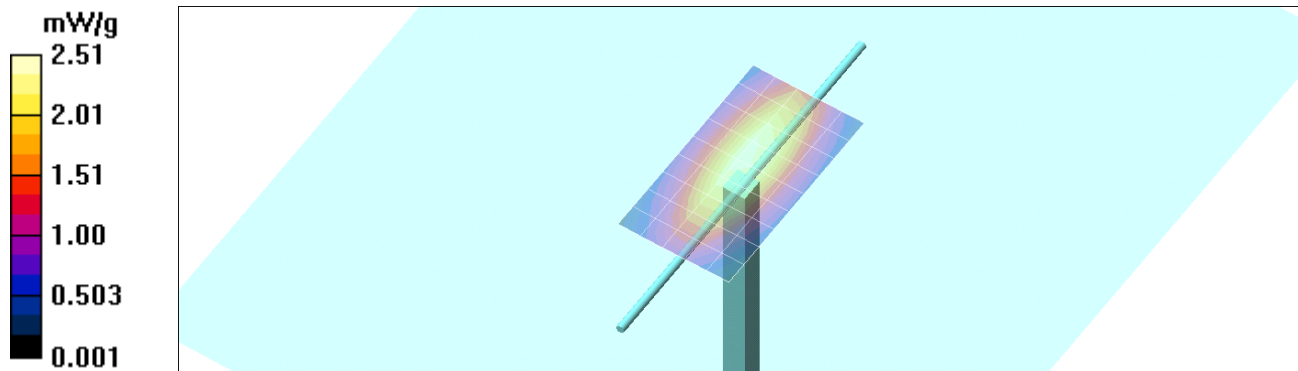
Peak SAR (extrapolated) = 3.37 W/kg

SAR(1 g) = 2.31 mW/g; SAR(10 g) = 1.52 mW/g

Maximum value of SAR (measured) = 2.52 mW/g

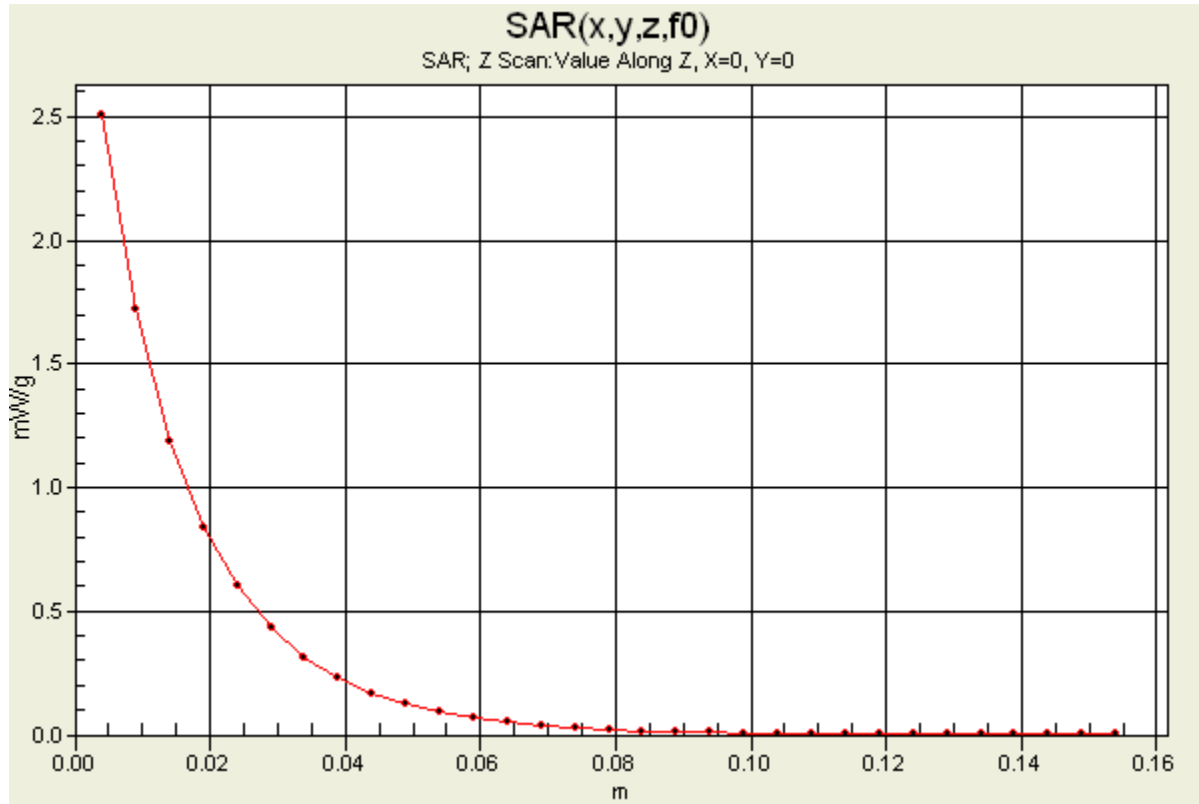
Body d=15mm Pin=250mW/Z Scan (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm



Maximum value of SAR (measured) = 2.51 mW/g



Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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Z-Axis Scan



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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

APPENDIX C - MEASURED FLUID DIELECTRIC PARAMETERS

Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

835 MHz Head

Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
06/Nov/2013
Frequency(GHz)
FCC_eHFCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
FCC_sHFCC OET 65 Supplement C (June 2001) Limits for Head Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM

Freq	FCC_eHFCC_sH	Test_e	Test_s
0.7350	42.02 0.89	43.06	0.80
0.7450	41.97 0.89	43.06	0.81
0.7550	41.92 0.89	42.76	0.83
0.7650	41.86 0.89	42.74	0.83
0.7750	41.81 0.90	42.55	0.86
0.7850	41.76 0.90	42.38	0.86
0.7950	41.71 0.90	42.09	0.86
0.8050	41.66 0.90	42.11	0.87
0.8150	41.60 0.90	42.06	0.89
0.8250	41.55 0.90	42.19	0.90
0.8350	41.50 0.90	41.80	0.90
0.8450	41.50 0.91	41.79	0.90
0.8550	41.50 0.92	41.55	0.92
0.8650	41.50 0.93	41.65	0.92
0.8750	41.50 0.94	41.00	0.94
0.8850	41.50 0.95	41.29	0.95
0.8950	41.50 0.96	40.98	0.96
0.9050	41.50 0.97	40.72	0.97
0.9150	41.50 0.98	41.05	0.97
0.9250	41.48 0.98	40.70	0.98
0.9350	41.46 0.99	40.40	1.01

Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

835 MHz Body

Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
17/Nov/2013
Frequency(GHz)
FCC_eB FCC Limits for Body Epsilon
FCC_sB FCC Limits for Body Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM

Freq	FCC_eB	FCC_sB	Test_e	Test_s
0.7350	55.59	0.96	54.72	0.85
0.7450	55.55	0.96	54.43	0.87
0.7550	55.51	0.96	54.27	0.88
0.7650	55.47	0.96	54.56	0.88
0.7750	55.43	0.97	54.19	0.89
0.7850	55.39	0.97	54.31	0.89
0.7950	55.36	0.97	53.83	0.92
0.8050	55.32	0.97	54.09	0.92
0.8150	55.28	0.97	53.69	0.92
0.8250	55.24	0.97	53.77	0.94
0.8350	55.20	0.97	53.62	0.95
0.8450	55.17	0.98	53.64	0.97
0.8550	55.14	0.99	53.36	0.98
0.8650	55.11	1.01	53.20	1.00
0.8750	55.08	1.02	53.18	1.01
0.8850	55.05	1.03	53.18	1.02
0.8950	55.02	1.04	52.97	1.01
0.9050	55.00	1.05	52.83	1.04
0.9150	55.00	1.06	53.04	1.04
0.9250	54.98	1.06	52.79	1.05
0.9350	54.96	1.07	52.73	1.06

Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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	<u>Test Report Issue Date</u> Dec 5, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

835 MHz Body

Celltech Labs Inc.
Test Result for UIM Dielectric Parameter
20/Nov/2013
Freq Frequency(GHz)
FCC_eB FCC Limits for Body Epsilon
FCC_sB FCC Limits for Body Sigma
Test_e Epsilon of UIM
Test_s Sigma of UIM

Freq	FCC_eB	FCC_sB	Test_e	Test_s
0.7350	55.59	0.96	56.10	0.89
0.7450	55.55	0.96	56.21	0.90
0.7550	55.51	0.96	55.60	0.91
0.7650	55.47	0.96	55.64	0.92
0.7750	55.43	0.97	55.61	0.93
0.7850	55.39	0.97	55.47	0.93
0.7950	55.36	0.97	55.47	0.96
0.8050	55.32	0.97	55.27	0.95
0.8150	55.28	0.97	55.16	0.97
0.8250	55.24	0.97	54.93	0.98
0.8350	55.20	0.97	54.73	0.98
0.8450	55.17	0.98	55.08	1.00
0.8550	55.14	0.99	54.71	1.00
0.8650	55.11	1.01	54.21	1.01
0.8750	55.08	1.02	54.29	1.02
0.8850	55.05	1.03	54.28	1.05
0.8950	55.02	1.04	54.17	1.05
0.9050	55.00	1.05	54.12	1.05
0.9150	55.00	1.06	53.95	1.05
0.9250	54.98	1.06	53.94	1.06
0.9350	54.96	1.07	54.04	1.07

Applicant:	Kenwood USA Corporation	FCC ID:	ALH468800	IC ID:	282D-468800	KENWOOD
DUT Type:	Portable 700/800 PTT Radio Transceiver	Models:	TK-5410D-K2/K3	768-869 MHz		
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