

Date(s) of Evaluation  
Jul. 24-29, 2013Test Report Serial No.  
0722132AAYT-1241STest Report Revision No.  
Rev. 1.1Test Report Issue Date  
Feb 3, 2014Description of Test(s)  
Specific Absorption RateRF Exposure Category  
Gen. Pop. / Uncontrolled

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)		ISO 17025	A2LA Test Lab Certificate No. 2470.01			
Applicant Information		Name	FUNKWERK SECURITY COMMUNICATIONS GMBH			
		Address	John-F.-Kennedy-Straße 43-53, D-38228 Salzgitter, Germany			
Standard(s) Applied		FCC	47 CFR §2.1093			
		IC	Health Canada Safety Code 6			
Procedure(s) Applied		FCC	KDB 447498 D01v05r01	IEEE	1528-2003	
		IC	RSS-102 Issue 4	IEC	62209-1:2005; 62209-2:2010	
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:	2AAYTFT41C	IC:	11389A-FT41C	
Date of Sample Receipt		Jul. 22, 2013				
Dates of Evaluation		Jul. 24-29, 2013				
Device Description		Portable Tetra Radio Transceiver				
Device Model(s)		Model: FT4 S_1c ig	P/N: 5010931103	Normal Variant		
		Model: FT4 S Ex_1c C ig	P/N: 5010941103	Intrinsically Safe Variant		
		Note: Manufacturer states that model variants are mechanically similar and RF circuitry is identical. Intrinsically safe model includes circuitry to disable power in the event of a fault.				
Test Sample Serial No.(s)		FT4 S_1c ig - S/N: 0211T01552		FT4 S Ex_1c C ig - S/N: 0302T00208		
Test Sample Revision No.s		Hardware	5010931103-a / -b	Firmware	FT4-0.1.52	
Transmit Frequency Range(s)		FCC 450 - 470MHz, IC 410 - 430MHz, 450-470MHz				
Manufacturer's Rated Output Power		29.2 dBm (peak); 22.8 dBm (1 slot, ~23% duty cycle); max duty cycle = 1 slot = 23%				
Co-located Transmitter(s)		None				
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)				
Max. SAR Level(s) Evaluated		Held-to-Ear	1.25 W/kg	1g	50% PTT duty factor	Occupational / Controlled Exposure
		Face-Held	0.263 W/kg	1g	50% PTT duty factor	Occupational / Controlled Exposure
		Body-worn	0.378 W/kg	1g	50% PTT duty factor	Occupational / Controlled Exposure
FCC/IC Spatial Peak SAR Limit		Head/Body	8.0 W/kg	1g	50% PTT duty factor	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 OET KDB 865664, Industry Canada RSS-102 Issue 4, IEEE Standard 1528-2003 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.						
This test report shall not be reproduced partially, or in full, without the prior written approval of Celltech Labs Inc.						
The results and statements contained in this report pertain only to the device(s) evaluated.						
Test Report Approved By		Mike Meaker		Engineering Technologist		Celltech Labs Inc.

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver		DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig				
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	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

### REVISION HISTORY

REVISION NO.	DESCRIPTION	IMPLEMENTED BY	RELEASE DATE
1.1	Changed FCC, IC Freq. Range	Art Voss	Feb 3, 2014

### TEST REPORT SIGN-OFF

DEVICE TESTED BY	REPORT PREPARED BY	QA REVIEW BY	REPORT APPROVED BY
Mike Meaker	Mike Meaker	Glen Westwell	Mike Meaker

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C					
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig							
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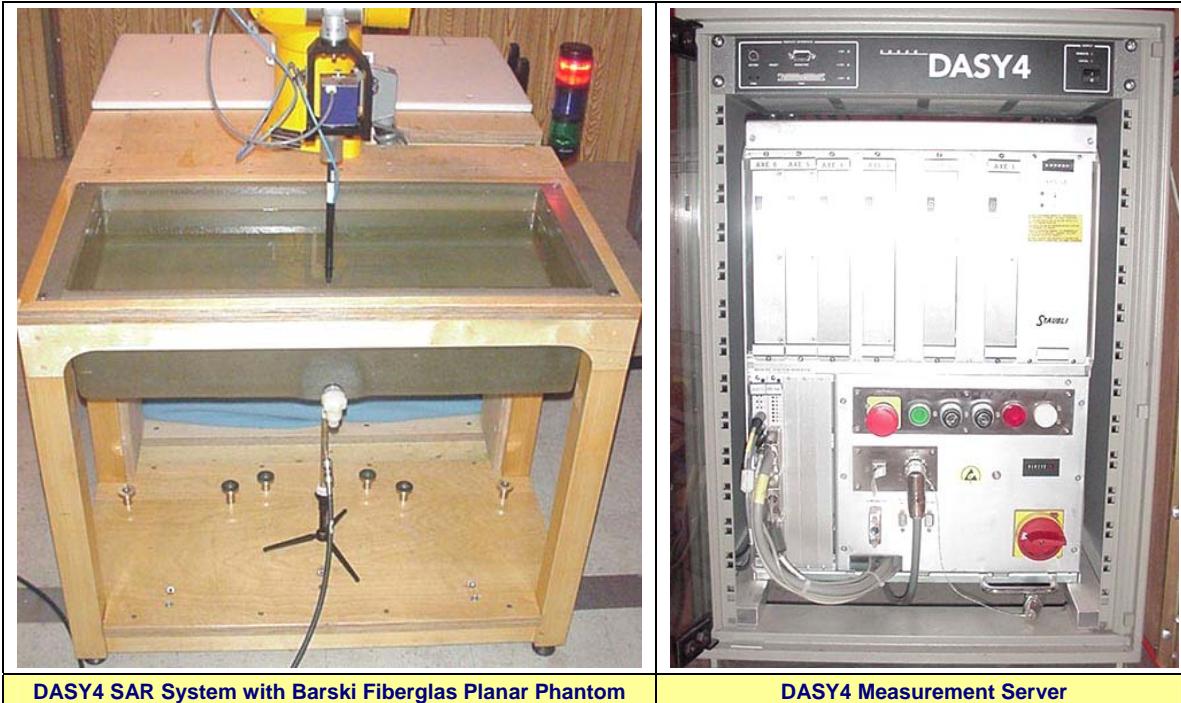
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## 1.0 INTRODUCTION

This measurement report demonstrates that the Funkwerk Security Communications Models: FT4 S\_1c ig and FT4 S Ex\_1c C ig Portable TETRA Radio Transceivers comply with the SAR (Specific Absorption Rate) RF exposure requirements specified in 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 1528-2003 (see reference [5]) and IEC 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.



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DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig				
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### 3.0 RF CONDUCTED OUTPUT POWER MEASUREMENTS

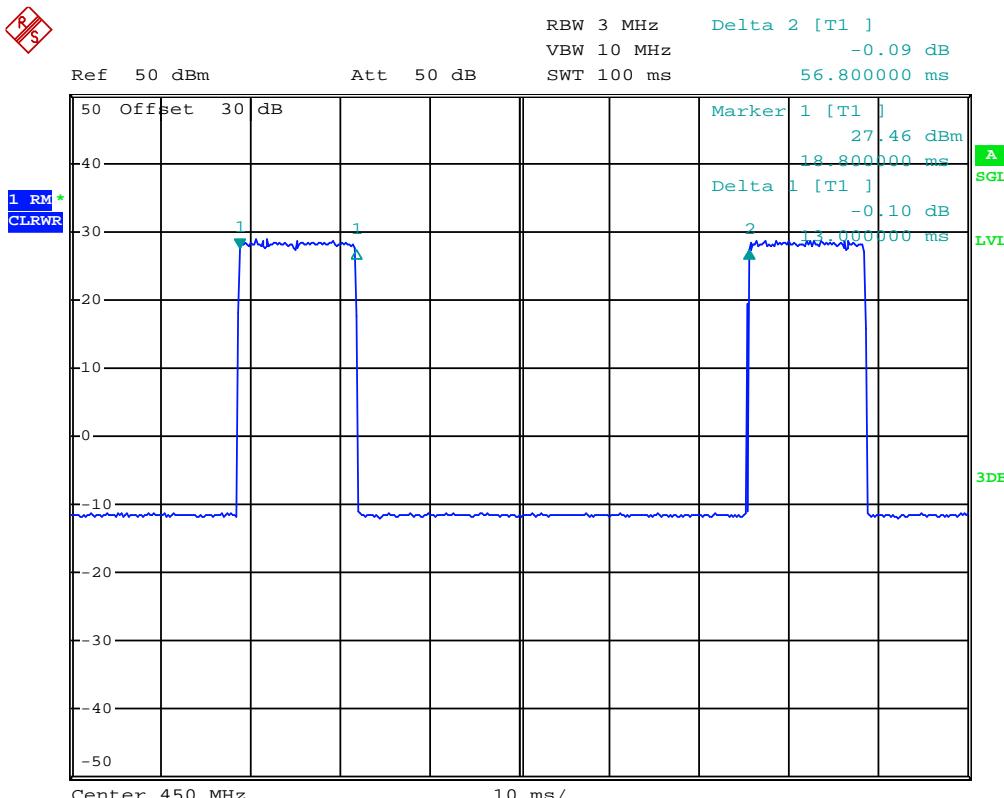
#### MEASURED RF CONDUCTED OUTPUT POWER LEVELS

Test Freq.	Mode	FT4 S_1c ig		FT4 S Ex_1c C ig		Method
		mW	dBm	mW	dBm	
410	TETRA 1 slot 23% d/c	190	22.8	173	22.4	Average Conducted
420		190	22.8	173	22.4	
425		190	22.8	173	22.4	
430		190	22.8	173	22.4	
440		190	22.8	175	22.4	
455		187	22.7	175	22.4	
470		186	22.7	175	22.4	

**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 [12]) and IC RSS-Gen (see reference [13]).



Max duty cycle measurement: 1 time slot = 23%

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## 4.0 NO. OF TEST CHANNELS ( $N_c$ )

Antenna Part No.	Antenna Type	Antenna Freq. Range	$N_c$	Test Frequencies (MHz)
1	Stub	410 - 430 MHz	3	410, 420, 430
2	Whip	410 - 470 MHz	5	410, 425, 440, 455, 470

Note: The number of test channels ( $N_c$ ) were calculated in accordance with the procedures specified in FCC KDB 447498 (see reference [8]).

## 5.0 MANUFACTURER'S DISCLOSED ACCESSORY LISTING

Accessory ID # for Test Report	ACCESSORY CATEGORY: ANTENNA		
	Part Number	Description	SAR Evaluation
1	5900102839	Stub (410-430 MHz)	Yes
2	5900103739	Whip (410-470 MHz)	Yes
Accessory ID # for Test Report			
Accessory ID # for Test Report	ACCESSORY CATEGORY: BATTERY		
	Part Number	Description	SAR Evaluation
a	5010984070	Li-Poly battery, 2900mAh (For FT4 S_1c ig)	Yes
b	5010984020	Li-Poly battery, 1700mAh (For FT4 S Ex_1c C ig)	Yes
Accessory ID # for Test Report	ACCESSORY CATEGORY: BODY-WORN		
	Part Number	Description	SAR Evaluation
1	5010910030	Belt-Clip (Contains metal)	Yes
2	5010988010	Open Leather Case (Contains metal)	Yes
3	5010988030	Leather Case with Klick-fast clip (Contains metal)	Yes
4	5010988020	Leather Case without audio accessory access	No <sup>1</sup>
5	5010988090	Chest Harness (For use with 5010988020)	No <sup>1</sup>
Accessory ID # for Test Report	ACCESSORY CATEGORY: AUDIO		
	Part Number	Description	SAR Evaluation
1	K500732-10F1100	Speaker-mic - SAVOX C-C500/FT4 Ex #A	Yes
2	K43732	PTT Com Control - SAVOX 400AV/FT4 Ex #B VTT 10 ATEX 048C, Ex ib IIC T4	No <sup>2</sup>
3	L53010	Helmut Com - SAVOX HC-2 ATEX IIC T4 #C (For use with audio accessory 1 or 2)	No <sup>2</sup>

Note:

- 1) These body-worn accessories do not support audio accessories, therefore body-worn SAR is not applicable.
- 2) Additional audio accessories were not tested because the audio accessory is not expected to impact SAR and the highest measured body-worn SAR was <0.8W/kg.

Manufacturer's disclosed accessory listing information provided by Funkwerk.

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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## 6.0 FLUID DIELECTRIC PARAMETERS

FLUID DIELECTRIC PARAMETERS						
Date: 07/23-25/2013		Frequency: 450 MHz			Tissue: Head	
Freq	Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
0.350	44.88	0.79	43.5	0.87	3.17%	-9.20%
0.360	44.83	0.79	43.5	0.87	3.06%	-9.20%
0.370	43.6	0.8	43.5	0.87	0.23%	-8.05%
0.380	44.26	0.81	43.5	0.87	1.75%	-6.90%
0.390	44.33	0.82	43.5	0.87	1.91%	-5.75%
0.400	44.01	0.85	43.5	0.87	1.17%	-2.30%
0.410	43.74	0.85	43.5	0.87	0.55%	-2.30%
0.420	43.94	0.85	43.5	0.87	1.01%	-2.30%
0.425*	43.8	0.855	43.5	0.87	0.69%	-1.72%
0.430	43.66	0.86	43.5	0.87	0.37%	-1.15%
0.440	43.37	0.88	43.5	0.87	-0.30%	1.15%
0.450	43.12	0.86	43.5	0.87	-0.87%	-1.15%
0.455*	43.1	0.87	43.5	0.87	-0.92%	0.00%
0.460	43.02	0.88	43.5	0.87	-1.10%	1.15%
0.470	42.57	0.9	43.5	0.87	-2.14%	3.45%
0.480	42.45	0.9	43.5	0.87	-2.41%	3.45%
0.490	42.19	0.9	43.5	0.87	-3.01%	3.45%
0.500	42.02	0.92	43.5	0.87	-3.40%	5.75%
0.510	41.97	0.92	43.5	0.87	-3.52%	5.75%
0.520	41.6	0.94	43.5	0.87	-4.37%	8.05%
0.530	41.65	0.95	43.5	0.87	-4.25%	9.20%
0.540	41.69	0.96	43.5	0.87	-4.16%	10.34%
0.550	41.29	0.97	43.5	0.87	-5.08%	11.49%

\*interpolated using DASY4 software

Test Date	Fluid Type	Ambient Temperature	Fluid Temperature	Fluid Depth	Atmospheric Pressure	Relative Humidity	$\rho$ (Kg/m <sup>3</sup> )
Jul 23	450 Head	24°C	23.3°C	≥ 15 cm	101.7 kPa	34%	1000
Jul 24	450 Head	24°C	23.3°C	≥ 15 cm	101.7 kPa	34%	1000
Jul 25	450 Head	24°C	23.4°C	≥ 15 cm	101.7 kPa	31%	1000

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FLUID DIELECTRIC PARAMETERS						
Date: 07/29/2013		Frequency: 450 MHz			Tissue: Body	
Freq	Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
0.350	57.68	0.88	56.7	0.94	1.73%	-6.38%
0.360	58.37	0.9	56.7	0.94	2.95%	-4.26%
0.370	56.82	0.89	56.7	0.94	0.21%	-5.32%
0.380	56.26	0.89	56.7	0.94	-0.78%	-5.32%
0.390	56.89	0.9	56.7	0.94	0.34%	-4.26%
0.400	56.34	0.92	56.7	0.94	-0.63%	-2.13%
0.410	56.53	0.92	56.7	0.94	-0.30%	-2.13%
0.420	56.97	0.94	56.7	0.94	0.48%	0.00%
0.430	56.63	0.95	56.7	0.94	-0.12%	1.06%
0.440	56.59	0.95	56.7	0.94	-0.19%	1.06%
0.450	56.32	0.97	56.7	0.94	-0.67%	3.19%
0.460	56.18	0.98	56.7	0.94	-0.92%	4.26%
0.470	56.33	0.98	56.7	0.94	-0.65%	4.26%
0.480	55.83	0.98	56.7	0.94	-1.53%	4.26%
0.490	55.54	0.98	56.7	0.94	-2.05%	4.26%
0.500	55.16	1.01	56.7	0.94	-2.72%	7.45%
0.510	55.12	1.01	56.7	0.94	-2.79%	7.45%
0.520	55.07	1.01	56.7	0.94	-2.87%	7.45%
0.530	54.87	1.02	56.7	0.94	-3.23%	8.51%
0.540	55.14	1.04	56.7	0.94	-2.75%	10.64%
0.550	54.91	1.03	56.7	0.94	-3.16%	9.57%

\*interpolated using DASY4 software

Test Date	Fluid Type	Ambient Temperature	Fluid Temperature	Fluid Depth	Atmospheric Pressure	Relative Humidity	$\rho$ (Kg/m <sup>3</sup> )
Jul 29	450 Body	23°C	23.4°C	≥ 15 cm	101.5 kPa	32%	1000

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## 7.0 SAR MEASUREMENT SUMMARY

Table 1		SAR EVALUATION RESULTS													
Test Config.	Plot #	Model Variant	Test Freq.	Battery	Antenna	Position	DUT Power Before Test (ERP)	Measured SAR	SAR Drift During Test						
			MHz				dBm	1g (W/kg)	dB						
EAR	E1	FT4 S	440	a	2	Left Ear Touch	22.8	0.714	-0.157						
	E2	FT4 S	440	a	2	Left Ear Tilt	22.8	0.921	0.252						
	E3	FT4 S	440	a	2	Right Ear Touch	22.8	0.593	-0.077						
	E4	FT4 S	440	a	2	Right Ear Tilt	22.8	0.723	0.389						
	E5	FT4 S	420	a	1	Left Ear Touch	22.8	0.812	0.151						
	E6	FT4 S	420	a	1	Left Ear Tilt	22.8	0.982	0.332						
	E7	FT4 S	420	a	1	Right Ear Touch	22.8	0.735	-0.014						
	E8	FT4 S	420	a	1	Right Ear Tilt	22.8	0.769	0.004						
	E9	FT4 S	410	a	1	Left Ear Tilt	22.8	1.17	0.166						
	E10	FT4 S	430	a	1	Left Ear Tilt	22.8	0.954	0.000						
	E11	FT4 S	410	a	2	Left Ear Tilt	22.8	0.782	-0.012						
	E12	FT4 S	425	a	2	Left Ear Tilt	22.8	0.844	0.012						
	E13	FT4 S	455	a	2	Left Ear Tilt	22.7	0.934	-0.199						
	E14	FT4 S	470	a	2	Left Ear Tilt	22.7	0.870	-0.271						
	E15	FT4 S Ex	410	b	1	Left Ear Tilt	22.4	1.14	0.359						
EAR Repeatability	E16	FT4 S	410	a	1	Left Ear Tilt	22.8	1.13	0.276						
SAR LIMIT(S)				HEAD / BODY		SPATIAL PEAK		RF EXPOSURE CATEGORY							
FCC 47 CFR 2.1093 / Health Canada Safety Code 6				1.6 W/kg		averaged over 1 gram		General Population / Uncontrolled							
Notes															
1.	Detailed measurement plots showing the maximum SAR location of the DUT are reported in Appendix A.														
2.	The DUT was tested at the maximum duty cycle of 1 time slot (~23%).														
3.	The FT4 S Ex model variant was tested in the worst case configuration.														
4.	One repeatability test was required because the SAR was >0.8W/kg (KDB 447498 reference [8]).														

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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Table 2		SAR EVALUATION RESULTS																		
Test Config.	Plot #	Model Variant	Test Freq. MHz	Battery	Antenna	Accessories		Distance to Phantom		DUT Power Before Test (ERP)	Measured SAR	SAR Drift During Test								
						Body	Audio	DUT	Ant.											
FACE	F1	FT4 S	440	a	2	-	-	2.5 cm	2.9 cm	22.8	0.261	0.026								
	F2	FT4 S	420	a	1	-	-	2.5 cm	2.9 cm	22.8	0.263	0.307								
BODY	B1	FT4 S	440	a	2	1	1	0.3 cm	2.8 cm	22.8	0.378	0.154								
	B2	FT4 S	420	a	1	1	1	0.3 cm	2.8 cm	22.8	0.323	-0.009								
	B3	FT4 S	440	a	2	2	1	1.5 cm	4.0 cm	22.8	0.236	-0.060								
	B4	FT4 S	420	a	1	2	1	1.5 cm	4.0 cm	22.8	0.195	-0.115								
	B5	FT4 S	440	a	2	3	1	2.0 cm	4.1 cm	22.8	0.193	0.298								
	B6	FT4 S	420	a	1	3	1	2.0 cm	4.1 cm	22.8	0.178	-0.016								
	B7	FT4 S Ex	440	a	2	1	1	0.3 cm	2.8 cm	22.4	0.306	0.039								
SAR LIMIT(S)					HEAD / BODY		SPATIAL PEAK			RF EXPOSURE CATEGORY										
FCC 47 CFR 2.1093 / Health Canada Safety Code 6					1.6 W/kg		averaged over 1 gram			General Population / Uncontrolled										
Notes																				
1.	Detailed measurement plots showing the maximum SAR location of the DUT are reported in Appendix A.																			
2.	The DUT was tested at the maximum duty cycle of 1 time slot (~23%).																			
3.	The FT4 S Ex model variant was tested in the worst case body-worn configuration.																			

## 8.0 SAR SCALING (TUNE-UP TOLERANCE)

SCALING OF MAXIMUM SAR LEVELS TO MANUFACTURER'S TUNE-UP TOLERANCE SPECIFICATION							
Test Config.	Test Freq. (MHz)	Plot	Model	Cond. Power	SAR Level 1g	Scaling up to Manuf. Upper Tol. Power Spec. (22.8 dBm)	Scaled SAR 1g (W/kg)
				dBm	W/kg		
EAR	410	E15	FT4 S Ex	22.4	1.14	+0.4 dB	1.25
BODY	440	B7	FT4 S Ex	22.4	0.306	+0.4 dB	0.336

Notes:

- Only the highest SAR values for face and body are scaled.
- The resulting value is the reported SAR.
- The scaled SAR levels are below the FCC/IC SAR Limit of 1.6 W/kg.

Applicant:	Funkwerk	FCC ID:	2AA YTFT41C	IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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## 9.0 DETAILS OF SAR EVALUATION

1. The number of test frequencies and the test channels selected for the SAR evaluations are in accordance with the procedures described in FCC KDB 447498 (see reference [8]).
2. The FT4 S\_1c ig was selected as the worst case model variant due to the larger capacity battery. The FT4 S Ex\_1c C ig model variant was evaluated for the worst case configuration only.
3. Battery a is for the FT4 S\_1c ig model variant only and battey b is for the FT4 S Ex\_1c C ig model variant only.
4. The SAR evaluations were performed with a fully charged battery.
5. The SAR drift of the DUT was measured by the DASY4 system for the duration of the SAR evaluations.
6. The fluid temperature remained within +/-2°C from the fluid dielectric parameter measurement to the completion of the SAR evaluation.
7. 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).
8. The DUT utilized a software test mode to transmit at the desired frequency and the maximum power and duty cycle.
9. This push-to-talk radio supports modes that do not require the mechanical PTT button to transmit; therefore a 100% PTT duty-cycle was used.

## 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.

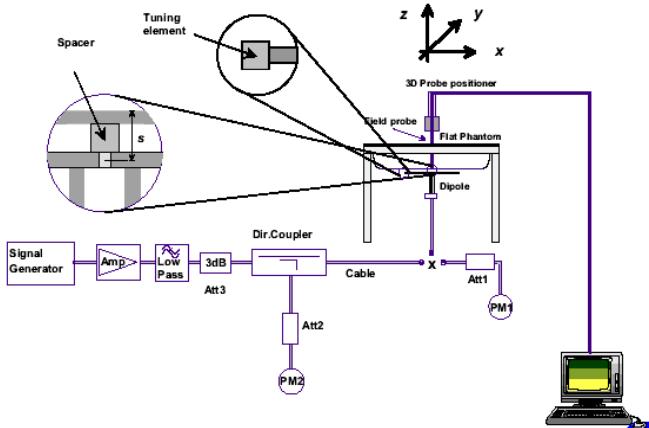
Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig				

## 11.0 SYSTEM VERIFICATION

Prior to the SAR evaluations, system checks were performed with a planar phantom and an 450 MHz SPEAG validation dipole (see Appendix B) in accordance with the procedures described in IEEE Standard 1528-2003 (see reference [5]). 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 398 mW was applied to the dipole and the system was verified to a tolerance of  $\pm 10\%$  from the system manufacturer's dipole calibration target SAR value (see Appendix E for system manufacturer's dipole calibration procedures).

### SYSTEM PERFORMANCE CHECK EVALUATIONS

Test Date	Equiv. Tissue	SAR 1g (W/kg)			Dielectric Constant $\epsilon_r$			Conductivity $\sigma$ (mho/m)			$\rho$ (Kg/m <sup>3</sup> )	Amb. Temp. (°C)	Fluid Temp. (°C)	Fluid Depth (cm)	Humid. (%)	Barom. Press. (kPa)
		Freq. (MHz)	SPEAG Target	Meas.	Dev.	SPEAG Target	Meas.	Dev.	SPEAG Target	Meas.	Dev.					
Jul 23	Head 450	1.87 $\pm 10\%$	1.90	+1.6%	43.5 $\pm 5\%$	43.1	-0.9%	0.87 $\pm 5\%$	0.86	-1.1%	1000	24.0	23.3	$\geq 15$	34	101.7
Jun 6	Body 450	1.81 $\pm 10\%$	1.95	+7.7%	56.7 $\pm 5\%$	56.3	-0.7%	0.94 $\pm 5\%$	0.97	+3.2%	1000	23.0	23.4	$\geq 15$	32	101.5
Notes	1.	The target SAR values are the measured values from the SAR system manufacturer's dipole calibration (see Appendix E).														
	2.	The target dielectric parameters are the nominal values from the SAR system manufacturer's dipole calibration (see Appendix E).														
	3.	The fluid temperature was measured prior to and after the system performance check evaluations. The fluid temperature remained within +/- 2°C during the system performance check evaluations.														
	4.	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 1528-2003)

SPEAG 450 MHz Validation Dipole Setup

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
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## 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 DASY4 manual (see references [9] and [10]) in accordance with the procedures and requirements specified in IEEE Standard 1528-2003 (see reference [5]). 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	450 MHz HEAD	450 MHz BODY
Water	38.56 %	52.00 %
Sugar	56.32 %	45.65 %
Salt	3.95 %	1.75 %
HEC	0.98 %	0.50 %
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	Occupational
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.			

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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## 14.0 ROBOT SYSTEM SPECIFICATIONS

Specifications	
Positioner	Stäubli Unimation Corp. Robot Model: RX60L
Repeatability	0.02 mm
No. of axis	6
Data Acquisition Electronic (DAE) System	
Cell Controller	
Processor	AMD Athlon XP 2400+
Clock Speed	2.0 GHz
Operating System	Windows XP Professional
Data Converter	
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
DASY4 Measurement Server	
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
E-Field Probe	
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)
Phantom 1	
Type	Barski Planar Phantom
Shell Material	Fiberglass
Thickness	2.0 ±0.1 mm
Volume	Approx. 70 liters
Phantom 2	
Type	SAM V4.0C
Shell Material	Fiberglass
Thickness	2.0 ±0.1 mm
Volume	Approx. 25 liters

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			

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## 15.0 PROBE SPECIFICATION (ET3DV6)

Construction:	Symmetrical design with triangular core; Built-in shielding against static charges	
Calibration:	PEEK enclosure material (resistant to organic solvents, glycol)	
	In air from 10 MHz to 2.5 GHz	
	In head simulating tissue at frequencies of 900 MHz and 1.8 GHz (accuracy ± 8%)	
Frequency:	10 MHz to > 6 GHz; Linearity: ± 0.2 dB (30 MHz to 3 GHz)	
Directivity:	± 0.2 dB in head tissue (rotation around probe axis) ± 0.4 dB in head tissue (rotation normal to probe axis)	
Dynamic Range:	5 μW/g to > 100 mW/g; Linearity: ± 0.2 dB	
Surface Detect:	± 0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces	
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	
Application:	General dosimetry up to 3 GHz; Compliance tests of mobile phone	

ET3DV6 E-Field Probe

## 16.0 PHANTOM(S)

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 was used for the DUT SAR evaluations and the system performance check evaluations. See Appendix G for dimensions and specifications of the Barski planar phantom.	
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Barski Planar Phantom

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 G for specifications of the SAM Twin Phantom V4.0C).	
--	---

SAM Twin Phantom V4.0C

## 17.0 DEVICE HOLDER

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.	
---	---

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	-D450V3 Validation Dipole	00221	1068	27-Apr-12	Triennial
x	-Barski Planar Phantom	00155	03-01	CNR	CNR
x	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

### 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 $V_{eff}$
<b>Measurement System</b>									
Probe Calibration (450 MHz)	7.2.2.1	6.7	Normal	1	1	1	6.7	6.7	$\infty$
Isotropy	7.2.2.2	4.7	Rectangular	1.732050808	1	1	2.7	2.7	$\infty$
Boundary Effect	7.2.2.6	1	Rectangular	1.732050808	1	1	0.6	0.6	$\infty$
Linearity	7.2.2.3	4.7	Rectangular	1.732050808	1	1	2.7	2.7	$\infty$
Detection Limits	7.2.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	$\infty$
Readout Electronics	7.2.2.7	0.3	Normal	1	1	1	0.3	0.3	$\infty$
Response Time	7.2.2.8	0.8	Rectangular	1.732050808	1	1	0.5	0.5	$\infty$
Integration Time	7.2.2.9	2.6	Rectangular	1.732050808	1	1	1.5	1.5	$\infty$
RF Ambient Conditions	7.2.4.5	3	Rectangular	1.732050808	1	1	1.7	1.7	$\infty$
Probe Positioner Mechanical Restrictions	7.2.3.1	0.4	Rectangular	1.732050808	1	1	0.2	0.2	$\infty$
Probe Positioning wrt Phantom Shell	7.2.3.3	2.9	Rectangular	1.732050808	1	1	1.7	1.7	$\infty$
Post-processing	7.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	$\infty$
<b>Test Sample Related</b>									
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	5	Rectangular	1.732050808	1	1	2.9	2.9	$\infty$
<b>Phantom and Tissue Parameters</b>									
Phantom Uncertainty	7.2.3.2	4	Rectangular	1.732050808	1	1	2.3	2.3	$\infty$
SAR Correction Algorithm for deviations in permittivity and conductivity	7.2.4.3	1.2	Normal	1	1	0.81	1.2	0.97	$\infty$
Liquid Conductivity (measured)	7.2.4.3	3.45	Normal	1	0.78	0.71	2.7	2.4	$\infty$
Liquid Permittivity (measured)	7.2.4.3	2.14	Normal	1	0.23	0.26	0.5	0.6	$\infty$
Liquid Permittivity - temp. uncertainty	7.2.4.4	0.27	Rectangular	1.732050808	0.78	0.71	0.1	0.1	$\infty$
Liquid Conductivity - temp. uncertainty	7.2.4.4	0.84	Rectangular	1.732050808	0.23	0.26	0.1	0.1	$\infty$
<b>Combined Standard Uncertainty</b>		7.3.1	RSS				10.63	10.55	
<b>Expanded Uncertainty (95% Confidence Interval)</b>		7.3.2	k=2				21.26	21.10	

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

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## 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 1528-2003 - "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] Schmid & Partner Engineering AG - DASY4 Manual V4.6, Chapter 16 Application Note, Head Tissue Recipe: Sept. 2005.
- [10] Schmid & Partner Engineering AG - DASY4 Manual V4.6, Chapter 17 Application Note, Body Tissue Recipe: Sept. 2005.
- [11] ISO/IEC 17025 - "General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:2005)."
- [12] Federal Communications Commission - "Measurements Required: RF Power Output"; Rule Part 47 CFR §2.1046.
- [13] Industry Canada - "General Requirements and Information for the Certification of Radiocommunication Equipment", Radio Standards Specification RSS-Gen Issue 3: December 2010.

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<b>DUT Type:</b>	Portable TETRA Radio Transceiver		DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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 Celltech Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> Jul. 24-29, 2013	<u>Test Report Serial No.</u> 0722132AAYT-1241S	<u>Test Report Revision No.</u> Rev. 1.1
	<u>Test Report Issue Date</u> Feb 3, 2014	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled



Test Lab Certificate No. 2470.01

## APPENDIX A - SAR MEASUREMENT PLOTS

<b>Applicant:</b>	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
<b>DUT Type:</b>	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			

 Testing and Engineering Services Lab	Date(s) of Evaluation Jul. 24-29, 2013	Test Report Serial No. 0722132AAYT-1241S	Test Report Revision No. Rev. 1.1	  Test Lab Certificate No. 2470.01
	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot E1

Date/Time: 24/07/2013 11:36:52 AM

left Ear Held 450MHz Jul24 2013

DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified

Program Notes: Ambient Temp: 24.0C; Fluid Temp: 23.3C; Barometric Pressure: 101.7 kPa; Humidity: 34%

Procedure Notes:

Communication System: TETRA

Frequency: 440 MHz; Duty Cycle: 1:4

Medium: HSL450 Medium parameters used:  $f = 440$  MHz;  $\sigma = 0.88$  mho/m;  $\epsilon_r = 43.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: ET3DV6 - SN1590; ConvF(7.53, 7.53, 7.53); 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: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Left Touch - 440MHz - 3739/Area Scan (7x16x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.731 mW/g

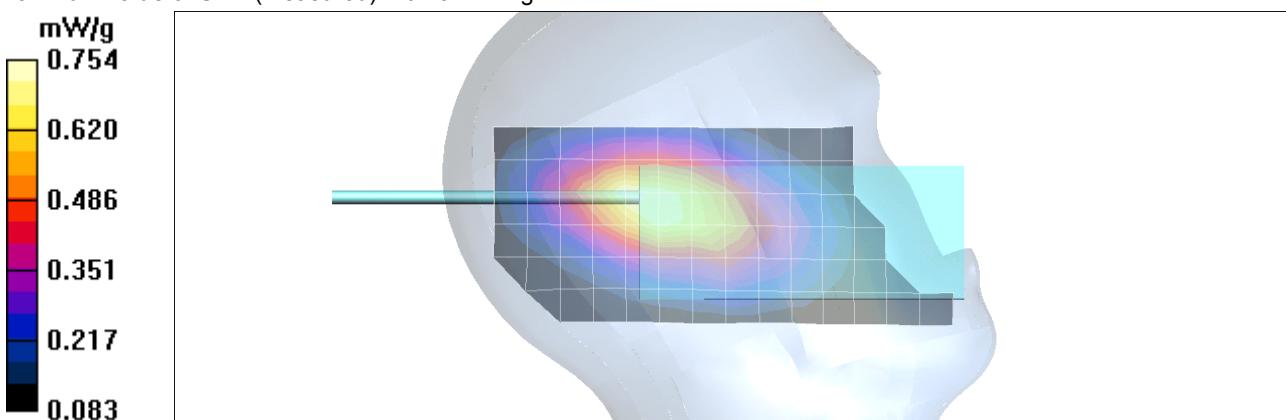
**Left Touch - 440MHz - 3739/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 27.1 V/m; Power Drift = -0.157 dB

Peak SAR (extrapolated) = 1.04 W/kg

**SAR(1 g) = 0.714 mW/g; SAR(10 g) = 0.488 mW/g**

Maximum value of SAR (measured) = 0.754 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver		DUT:		FT4 S_1c ig, FT4 S Ex_1c C ig		

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	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot E2

Date/Time: 24/07/2013 11:58:00 AM

left Ear Held 450MHz Jul24 2013

DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified

Program Notes: Ambient Temp: 24.0C; Fluid Temp: 23.3C; Barometric Pressure: 101.7 kPa; Humidity: 34%

Procedure Notes:

Communication System: TETRA

Frequency: 440 MHz; Duty Cycle: 1:4

Medium: HSL450 Medium parameters used:  $f = 440$  MHz;  $\sigma = 0.88$  mho/m;  $\epsilon_r = 43.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: ET3DV6 - SN1590; ConvF(7.53, 7.53, 7.53); 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: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Left Tilt - 440MHz - 3739/Area Scan (7x16x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.955 mW/g

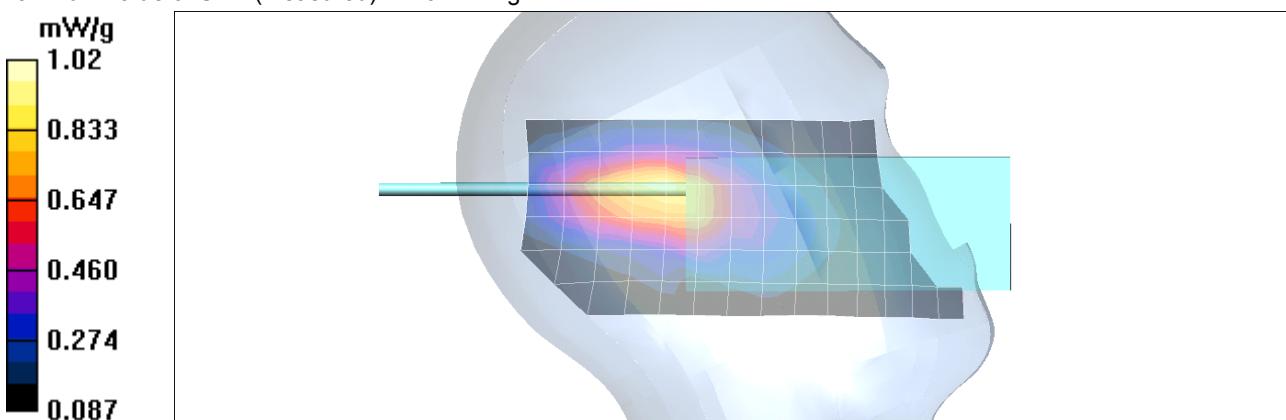
**Left Tilt - 440MHz - 3739/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 26.9 V/m; Power Drift = 0.252 dB

Peak SAR (extrapolated) = 1.59 W/kg

**SAR(1 g) = 0.921 mW/g; SAR(10 g) = 0.585 mW/g**

Maximum value of SAR (measured) = 1.02 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot E3

Date/Time: 24/07/2013 1:10:05 PM

right Ear Held 450MHz Jul24 2013

DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified

Program Notes: Ambient Temp: 24.0C; Fluid Temp: 23.3C; Barometric Pressure: 101.7 kPa; Humidity: 34%

Procedure Notes:

Communication System: TETRA

Frequency: 440 MHz; Duty Cycle: 1:4

Medium: HSL450 Medium parameters used:  $f = 440$  MHz;  $\sigma = 0.88$  mho/m;  $\epsilon_r = 43.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: ET3DV6 - SN1590; ConvF(7.53, 7.53, 7.53); 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: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Right Touch - 440MHz - 3739/Area Scan (7x16x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.624 mW/g

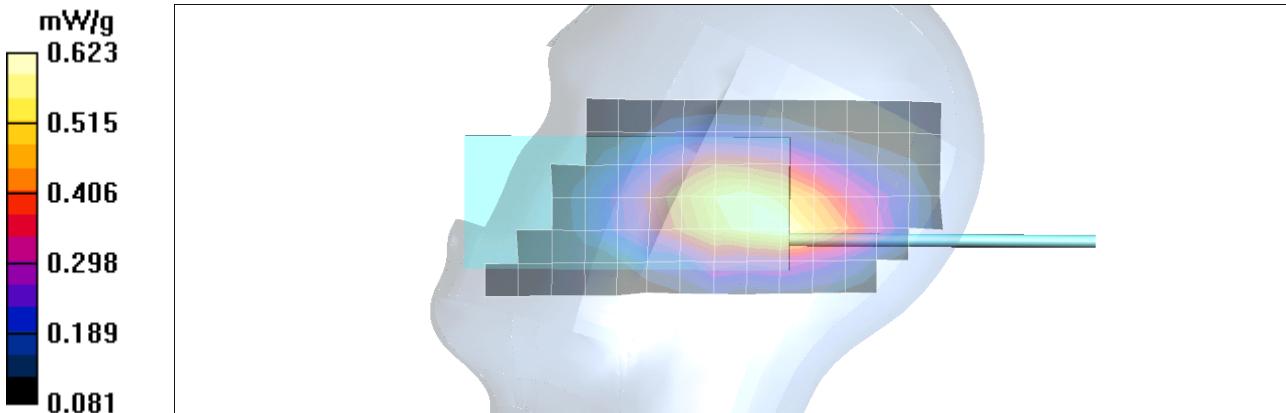
**Right Touch - 440MHz - 3739/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 26.6 V/m; Power Drift = -0.077 dB

Peak SAR (extrapolated) = 0.947 W/kg

**SAR(1 g) = 0.593 mW/g; SAR(10 g) = 0.416 mW/g**

Maximum value of SAR (measured) = 0.623 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot E4

Date/Time: 24/07/2013 1:31:21 PM

right Ear Held 450MHz Jul24 2013

DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified

Program Notes: Ambient Temp: 24.0C; Fluid Temp: 23.3C; Barometric Pressure: 101.7 kPa; Humidity: 34%

Procedure Notes:

Communication System: TETRA

Frequency: 440 MHz; Duty Cycle: 1:4

Medium: HSL450 Medium parameters used:  $f = 440$  MHz;  $\sigma = 0.88$  mho/m;  $\epsilon_r = 43.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: ET3DV6 - SN1590; ConvF(7.53, 7.53, 7.53); 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: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Right Tilt - 440MHz - 3739/Area Scan (7x16x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.785 mW/g

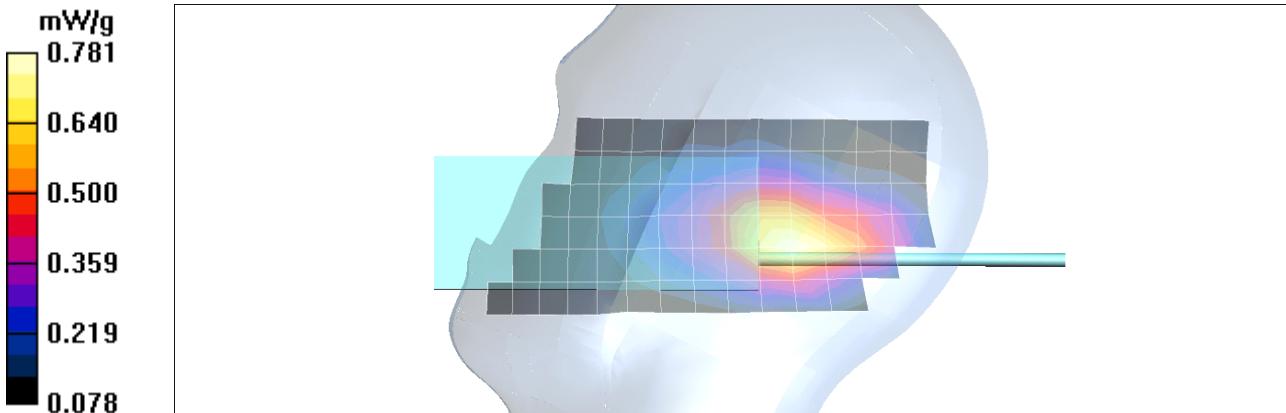
**Right Tilt - 440MHz - 3739/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 23.9 V/m; Power Drift = 0.389 dB

Peak SAR (extrapolated) = 1.15 W/kg

**SAR(1 g) = 0.723 mW/g; SAR(10 g) = 0.484 mW/g**

Maximum value of SAR (measured) = 0.781 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot E5

Date/Time: 24/07/2013 12:46:18 PM

left Ear Held 450MHz Jul24 2013

DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified

Program Notes: Ambient Temp: 24.0C; Fluid Temp: 23.3C; Barometric Pressure: 101.7 kPa; Humidity: 34%

Procedure Notes:

Communication System: TETRA

Frequency: 420 MHz; Duty Cycle: 1:4

Medium: HSL450 Medium parameters used:  $f = 420 \text{ MHz}$ ;  $\sigma = 0.85 \text{ mho/m}$ ;  $\epsilon_r = 43.9$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(7.53, 7.53, 7.53); 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: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Left Touch - 420MHz - 2839/Area Scan (7x16x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.824 mW/g

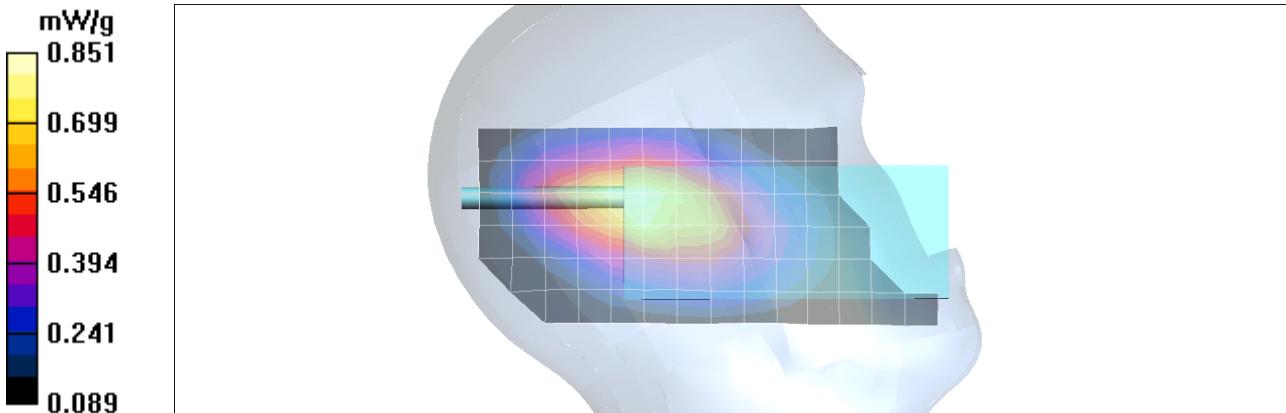
**Left Touch - 420MHz - 2839/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 28.4 V/m; Power Drift = 0.151 dB

Peak SAR (extrapolated) = 1.36 W/kg

**SAR(1 g) = 0.812 mW/g; SAR(10 g) = 0.553 mW/g**

Maximum value of SAR (measured) = 0.851 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C					
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig							
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	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot E6

Date/Time: 24/07/2013 2:37:32 PM

left Ear Held 450MHz Jul24 2013

DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified

Program Notes: Ambient Temp: 24.0C; Fluid Temp: 23.3C; Barometric Pressure: 101.7 kPa; Humidity: 34%

Procedure Notes:

Communication System: TETRA

Frequency: 420 MHz; Duty Cycle: 1:4

Medium: HSL450 Medium parameters used:  $f = 420$  MHz;  $\sigma = 0.85$  mho/m;  $\epsilon_r = 43.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: ET3DV6 - SN1590; ConvF(7.53, 7.53, 7.53); 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: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Left Tilt - 420MHz - 2839/Area Scan (7x16x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.876 mW/g

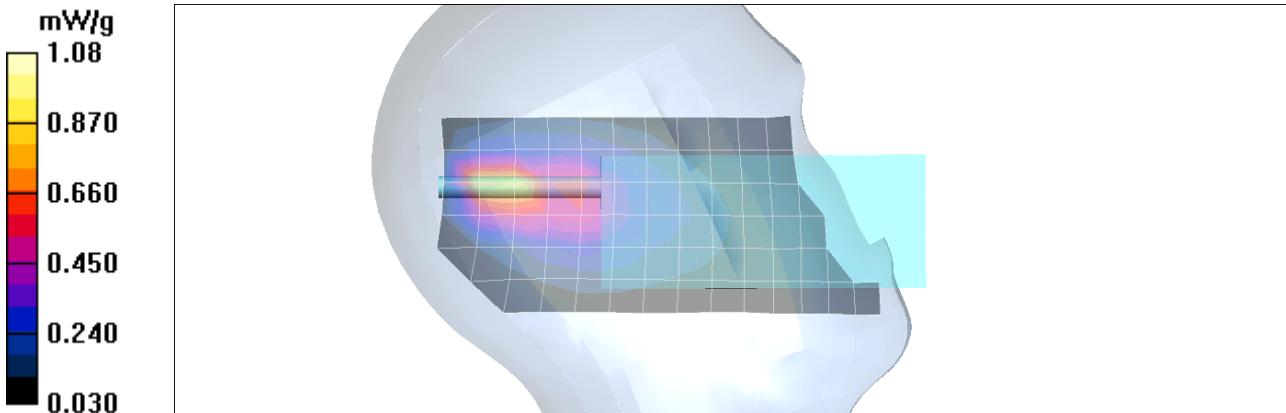
**Left Tilt - 420MHz - 2839/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 19.5 V/m; Power Drift = 0.332 dB

Peak SAR (extrapolated) = 3.42 W/kg

**SAR(1 g) = 0.982 mW/g; SAR(10 g) = 0.485 mW/g**

Maximum value of SAR (measured) = 1.08 mW/g

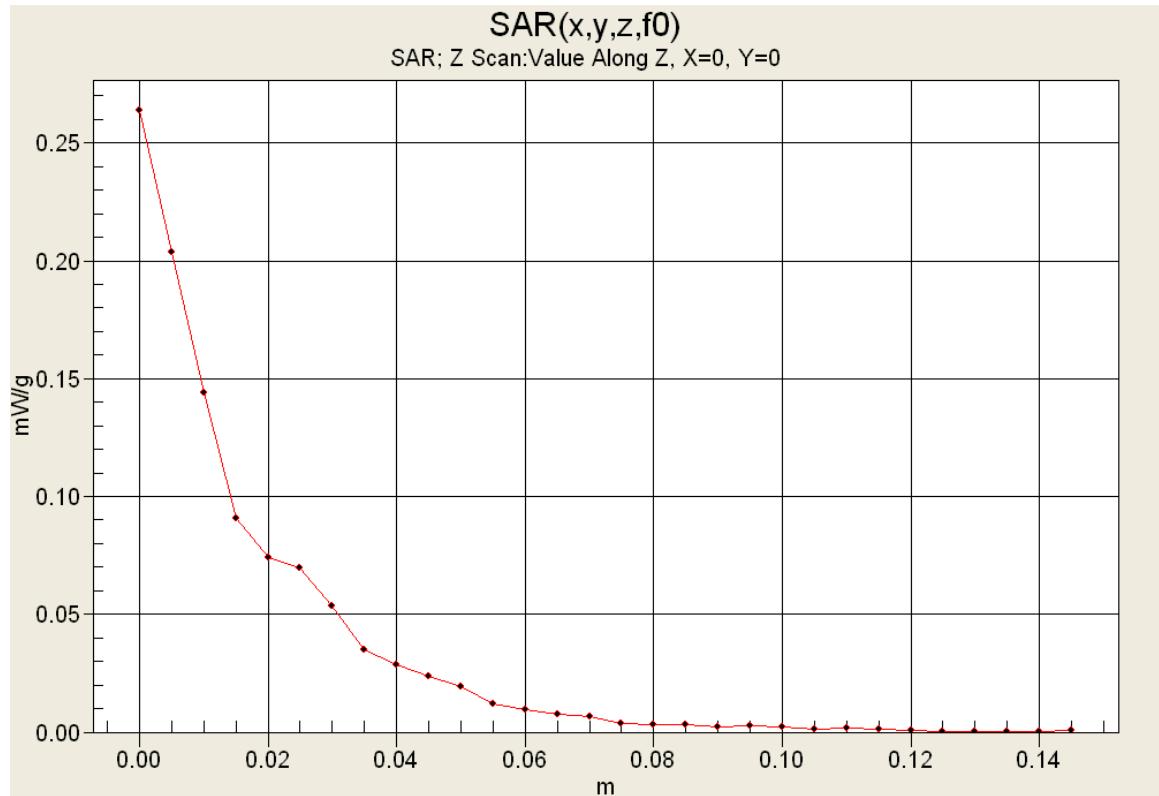


Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

Test Lab Certificate No. 2470.01

## Z-Axis Scan



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C					
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig							
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	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot E7

Date/Time: 24/07/2013 1:52:50 PM

right Ear Held 450MHz Jul24 2013

DUT: FT4 1c | Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified

Program Notes: Ambient Temp: 24.0C; Fluid Temp: 23.3C; Barometric Pressure: 101.7 kPa; Humidity: 34%

Procedure Notes:

Communication System: TETRA

Frequency: 420 MHz; Duty Cycle: 1:4

Medium: HSL450 Medium parameters used:  $f = 420$  MHz;  $\sigma = 0.85$  mho/m;  $\epsilon_r = 43.9$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: ET3DV6 - SN1590; ConvF(7.53, 7.53, 7.53); 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: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Right Touch - 420MHz - 2839/Area Scan (7x16x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.756 mW/g

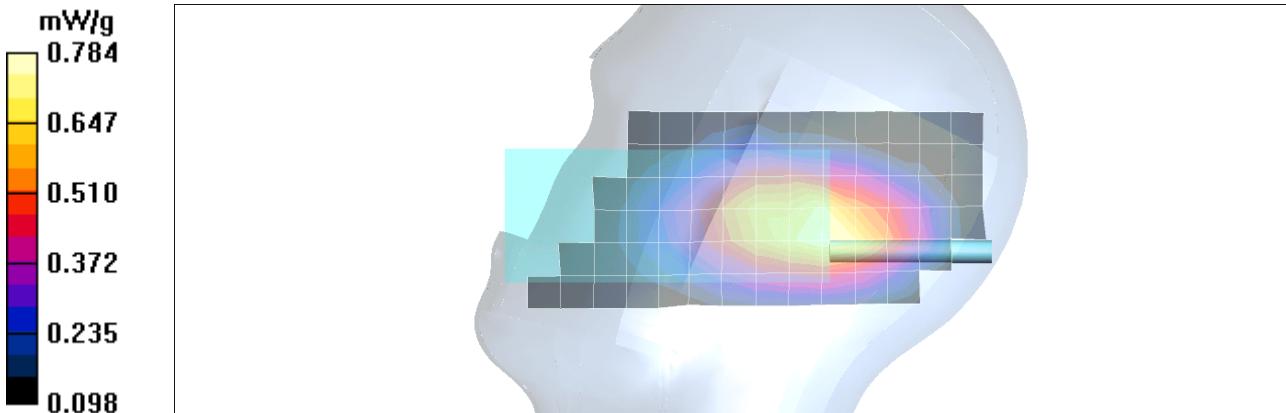
**Right Touch - 420MHz - 2839/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 29.7 V/m; Power Drift = -0.013 dB

Peak SAR (extrapolated) = 1.08 W/kg

**SAR(1 g) = 0.735 mW/g; SAR(10 g) = 0.511 mW/g**

Maximum value of SAR (measured) = 0.784 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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 Testing and Engineering Services Lab	Date(s) of Evaluation Jul. 24-29, 2013	Test Report Serial No. 0722132AAYT-1241S	Test Report Revision No. Rev. 1.1	 Test Lab Certificate No. 2470.01
	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot E8

Date/Time: 24/07/2013 2:14:16 PM  
right Ear Held 450MHz Jul24 2013

DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified

Program Notes: Ambient Temp: 24.0C; Fluid Temp: 23.3C; Barometric Pressure: 101.7 kPa; Humidity: 34%

Procedure Notes:

Communication System: TETRA

Frequency: 420 MHz; Duty Cycle: 1:4

Medium: HSL450 Medium parameters used:  $f = 420 \text{ MHz}$ ;  $\sigma = 0.85 \text{ mho/m}$ ;  $\epsilon_r = 43.9$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(7.53, 7.53, 7.53); 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: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

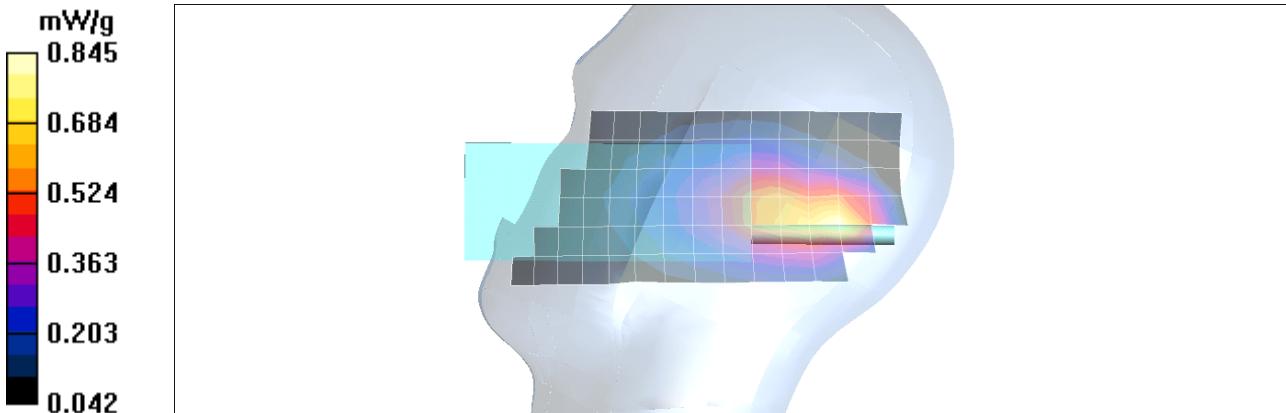
**Right Tilt - 420MHz - 2839/Area Scan (7x16x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 0.833 mW/g

**Right Tilt - 420MHz - 2839/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm  
Reference Value = 24.1 V/m; Power Drift = 0.004 dB

Peak SAR (extrapolated) = 1.63 W/kg

**SAR(1 g) = 0.769 mW/g; SAR(10 g) = 0.465 mW/g**

Maximum value of SAR (measured) = 0.845 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver		DUT:		FT4 S_1c ig, FT4 S Ex_1c C ig		

 Testing and Engineering Services Lab	Date(s) of Evaluation Jul. 24-29, 2013	Test Report Serial No. 0722132AAYT-1241S	Test Report Revision No. Rev. 1.1	 Test Lab Certificate No. 2470.01
	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot E9

Date/Time: 25/07/2013 9:29:58 AM

left Ear Held 450MHz Jul25 2013

DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified

Program Notes: Ambient Temp: 24.0C; Fluid Temp: 23.4C; Barometric Pressure: 101.7 kPa; Humidity: 31%

Procedure Notes:

Communication System: TETRA

Frequency: 410 MHz; Duty Cycle: 1:4

Medium: HSL450 Medium parameters used:  $f = 410 \text{ MHz}$ ;  $\sigma = 0.85 \text{ mho/m}$ ;  $\epsilon_r = 43.7$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(7.53, 7.53, 7.53); 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: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Left Tilt - 410MHz - 2839/Area Scan (7x16x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.08 mW/g

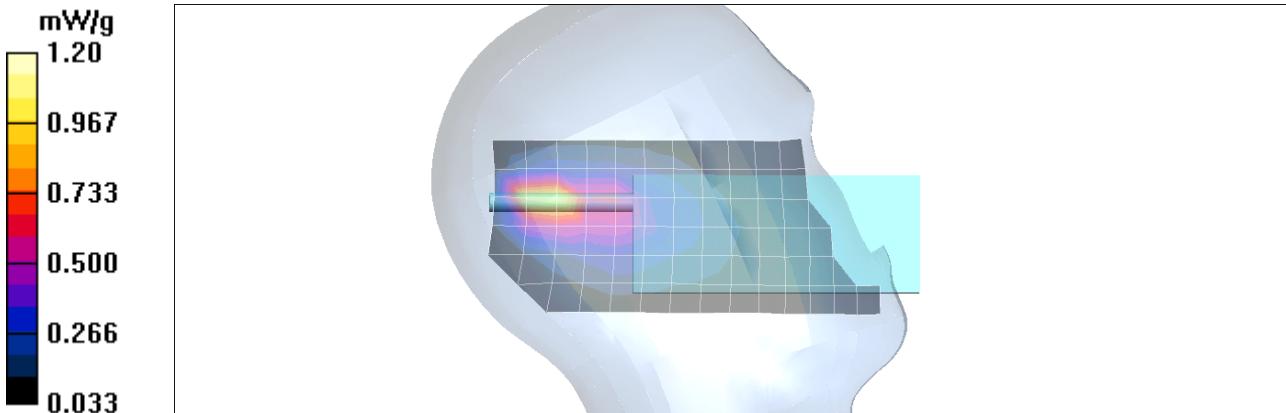
**Left Tilt - 410MHz - 2839/Zoom Scan 2 (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 20.3 V/m; Power Drift = 0.166 dB

Peak SAR (extrapolated) = 3.41 W/kg

**SAR(1 g) = 1.17 mW/g; SAR(10 g) = 0.565 mW/g**

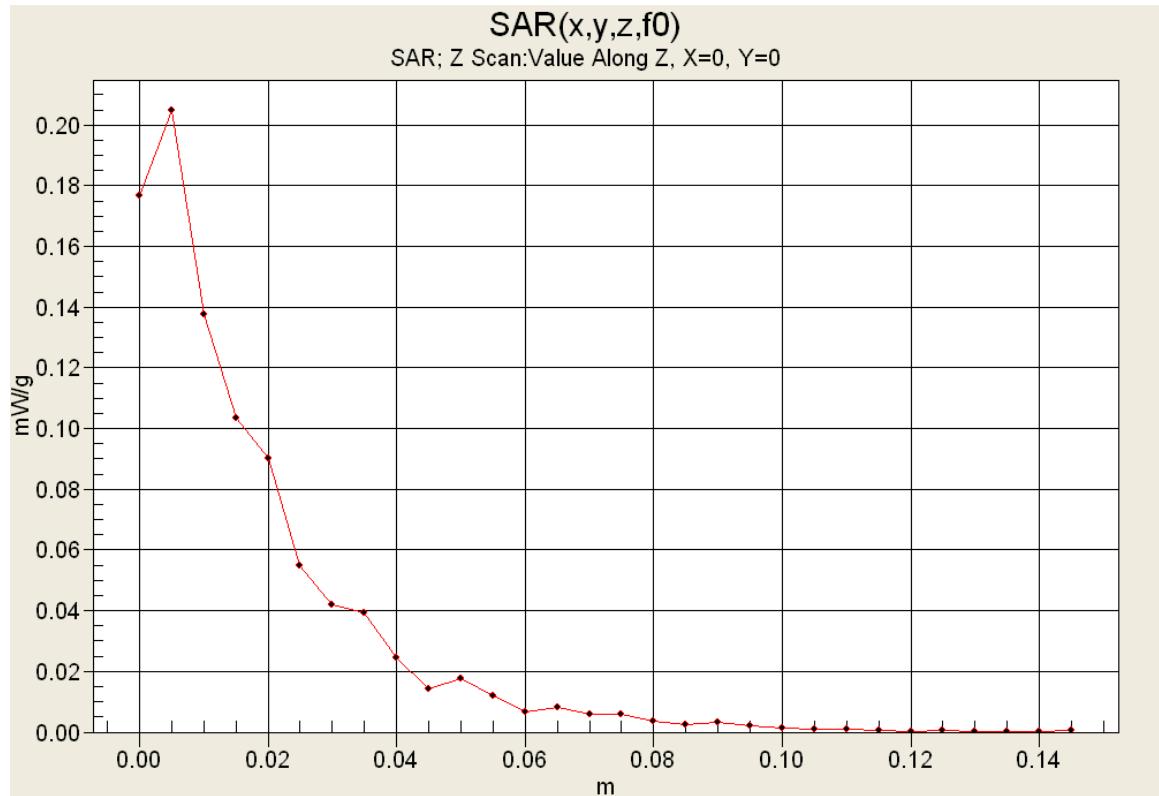
Maximum value of SAR (measured) = 1.20 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C					
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig							
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<b>Celltech</b> Testing and Engineering Services Lab	Date(s) of Evaluation Jul. 24-29, 2013	Test Report Serial No. 0722132AAYT-1241S	Test Report Revision No. Rev. 1.1	IAC-MRA ACCREDITED Test Lab Certificate No. 2470.01
	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Z-Axis Scan



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver		DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			

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 Testing and Engineering Services Lab	Date(s) of Evaluation Jul. 24-29, 2013	Test Report Serial No. 0722132AAYT-1241S	Test Report Revision No. Rev. 1.1	 Test Lab Certificate No. 2470.01
	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot E10

Date/Time: 25/07/2013 9:52:26 AM

left Ear Held 450MHz Jul25 2013

DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified

Program Notes: Ambient Temp: 24.0C; Fluid Temp: 23.4C; Barometric Pressure: 101.7 kPa; Humidity: 31%

Procedure Notes:

Communication System: TETRA

Frequency: 430 MHz; Duty Cycle: 1:4

Medium: HSL450 Medium parameters used:  $f = 430$  MHz;  $\sigma = 0.86$  mho/m;  $\epsilon_r = 43.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: ET3DV6 - SN1590; ConvF(7.53, 7.53, 7.53); 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: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Left Tilt - 430MHz - 2839/Area Scan (7x16x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.815 mW/g

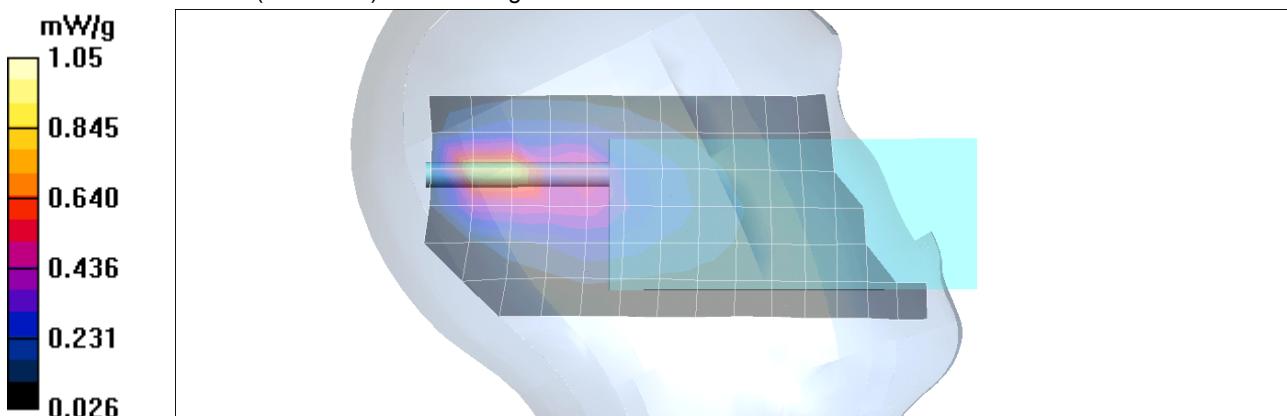
**Left Tilt - 430MHz - 2839/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 17.9 V/m; Power Drift = 0.000 dB

Peak SAR (extrapolated) = 2.68 W/kg

**SAR(1 g) = 0.954 mW/g; SAR(10 g) = 0.447 mW/g**

Maximum value of SAR (measured) = 1.05 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C					
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig							
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 Testing and Engineering Services Lab	Date(s) of Evaluation Jul. 24-29, 2013	Test Report Serial No. 0722132AAYT-1241S	Test Report Revision No. Rev. 1.1	  Test Lab Certificate No. 2470.01
	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot E11

Date/Time: 25/07/2013 10:23:08 AM

left Ear Held 450MHz Jul25 2013

DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified

Program Notes: Ambient Temp: 24.0C; Fluid Temp: 23.4C; Barometric Pressure: 101.7 kPa; Humidity: 31%

Procedure Notes:

Communication System: TETRA

Frequency: 410 MHz; Duty Cycle: 1:4

Medium: HSL450 Medium parameters used:  $f = 410$  MHz;  $\sigma = 0.85$  mho/m;  $\epsilon_r = 43.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: ET3DV6 - SN1590; ConvF(7.53, 7.53, 7.53); 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: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Left Tilt - 410MHz - 3739/Area Scan (7x16x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.834 mW/g

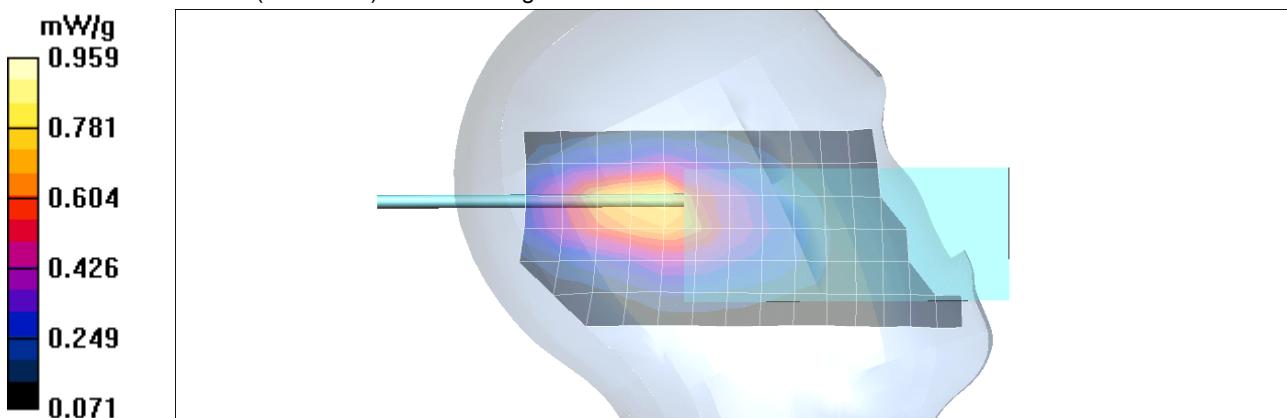
**Left Tilt - 410MHz - 3739/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 25.6 V/m; Power Drift = -0.012 dB

Peak SAR (extrapolated) = 1.41 W/kg

**SAR(1 g) = 0.782 mW/g; SAR(10 g) = 0.491 mW/g**

Maximum value of SAR (measured) = 0.959 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig				

 Testing and Engineering Services Lab	Date(s) of Evaluation Jul. 24-29, 2013	Test Report Serial No. 0722132AAYT-1241S	Test Report Revision No. Rev. 1.1	  Test Lab Certificate No. 2470.01
	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot E12

Date/Time: 25/07/2013 10:38:50 AM

left Ear Held 450MHz Jul25 2013

DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified

Program Notes: Ambient Temp: 24.0C; Fluid Temp: 23.4C; Barometric Pressure: 101.7 kPa; Humidity: 31%

Procedure Notes:

Communication System: TETRA

Frequency: 425 MHz; Duty Cycle: 1:4

Medium: HSL450 Medium parameters used (interpolated):  $f = 425$  MHz;  $\sigma = 0.855$  mho/m;  $\epsilon_r = 43.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: ET3DV6 - SN1590; ConvF(7.53, 7.53, 7.53); 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: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Left Tilt - 425MHz - 3739/Area Scan (7x16x1):** Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.863 mW/g

**Left Tilt - 425MHz - 3739/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

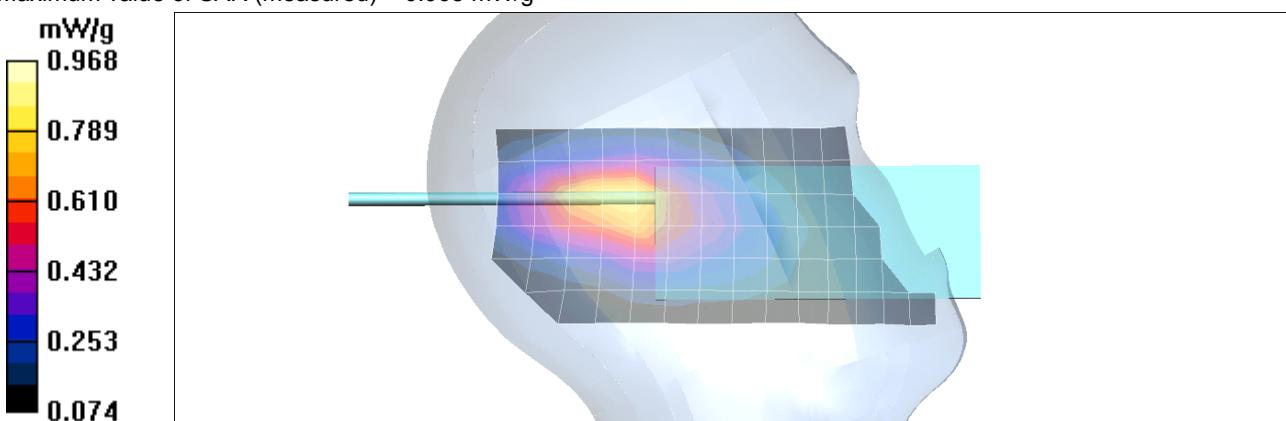
Reference Value = 25.5 V/m; Power Drift = 0.012 dB

Peak SAR (extrapolated) = 1.37 W/kg

**SAR(1 g) = 0.844 mW/g; SAR(10 g) = 0.536 mW/g**

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.968 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver		DUT:		FT4 S_1c ig, FT4 S Ex_1c C ig		

 Testing and Engineering Services Lab	Date(s) of Evaluation Jul. 24-29, 2013	Test Report Serial No. 0722132AAYT-1241S	Test Report Revision No. Rev. 1.1	  Test Lab Certificate No. 2470.01
	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot E13

Date/Time: 25/07/2013 10:55:59 AM

left Ear Held 450MHz Jul25 2013

DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified

Program Notes: Ambient Temp: 24.0C; Fluid Temp: 23.4C; Barometric Pressure: 101.7 kPa; Humidity: 31%

Procedure Notes:

Communication System: TETRA

Frequency: 455 MHz; Duty Cycle: 1:4

Medium: HSL450 Medium parameters used (interpolated):  $f = 455$  MHz;  $\sigma = 0.87$  mho/m;  $\epsilon_r = 43.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: ET3DV6 - SN1590; ConvF(7.53, 7.53, 7.53); 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: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Left Tilt - 455MHz - 3739/Area Scan (7x16x1):** Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 1.00 mW/g

**Left Tilt - 455MHz - 3739/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

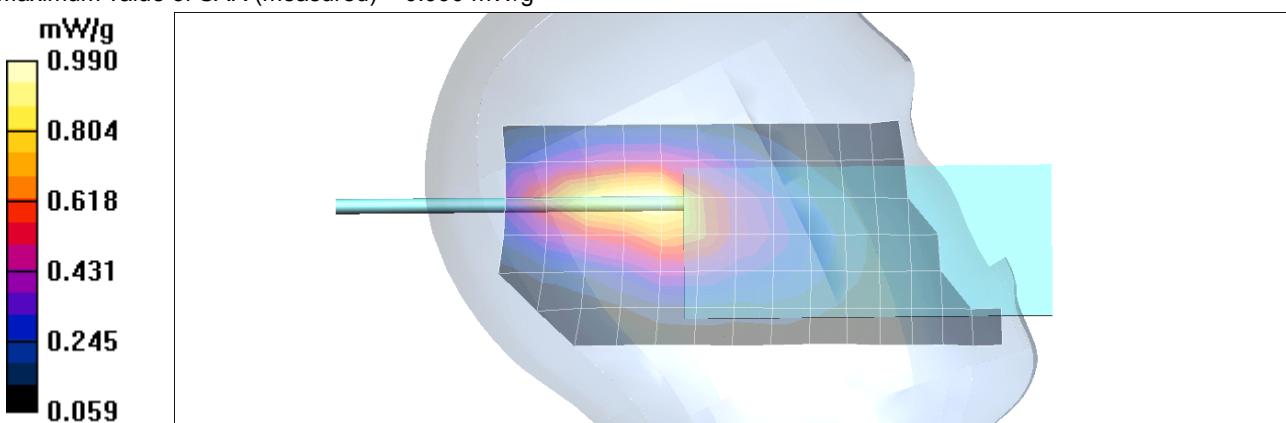
Reference Value = 25.7 V/m; Power Drift = -0.199 dB

Peak SAR (extrapolated) = 1.83 W/kg

**SAR(1 g) = 0.934 mW/g; SAR(10 g) = 0.571 mW/g**

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.990 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig				

 Testing and Engineering Services Lab	Date(s) of Evaluation Jul. 24-29, 2013	Test Report Serial No. 0722132AAYT-1241S	Test Report Revision No. Rev. 1.1	 Test Lab Certificate No. 2470.01
	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot E14

Date/Time: 25/07/2013 11:12:12 AM

left Ear Held 450MHz Jul25 2013

DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified

Program Notes: Ambient Temp: 24.0C; Fluid Temp: 23.4C; Barometric Pressure: 101.7 kPa; Humidity: 31%

Procedure Notes:

Communication System: TETRA

Frequency: 470 MHz; Duty Cycle: 1:4

Medium: HSL450 Medium parameters used:  $f = 470$  MHz;  $\sigma = 0.9$  mho/m;  $\epsilon_r = 42.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: ET3DV6 - SN1590; ConvF(7.53, 7.53, 7.53); 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: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Left Tilt - 470MHz - 3739/Area Scan (7x16x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.972 mW/g

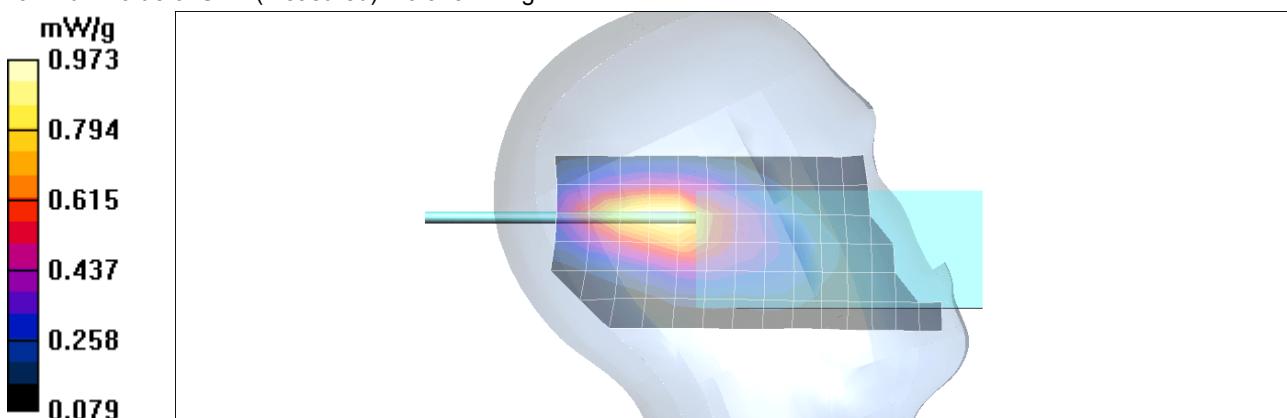
**Left Tilt - 470MHz - 3739/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 25.4 V/m; Power Drift = -0.271 dB

Peak SAR (extrapolated) = 1.66 W/kg

**SAR(1 g) = 0.870 mW/g; SAR(10 g) = 0.536 mW/g**

Maximum value of SAR (measured) = 0.973 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver		DUT:		FT4 S_1c ig, FT4 S Ex_1c C ig		

 Testing and Engineering Services Lab	Date(s) of Evaluation Jul. 24-29, 2013	Test Report Serial No. 0722132AAYT-1241S	Test Report Revision No. Rev. 1.1	  Test Lab Certificate No. 2470.01
	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot E15

Date/Time: 25/07/2013 11:41:59 AM

left Ear Held 450MHz Jul25 2013

DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified

Program Notes: Ambient Temp: 24.0C; Fluid Temp: 23.4C; Barometric Pressure: 101.7 kPa; Humidity: 31%

Procedure Notes:

Communication System: TETRA

Frequency: 410 MHz; Duty Cycle: 1:4

Medium: HSL450 Medium parameters used:  $f = 410$  MHz;  $\sigma = 0.85$  mho/m;  $\epsilon_r = 43.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: ET3DV6 - SN1590; ConvF(7.53, 7.53, 7.53); 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: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**1c\_Ex - Left Tilt - 410MHz - 2839/Area Scan (7x16x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.08 mW/g

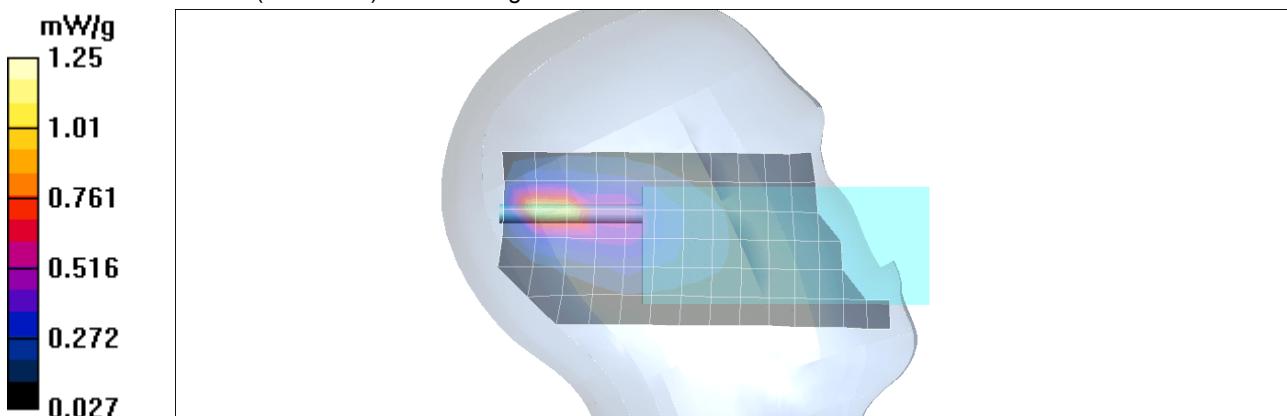
**1c\_Ex - Left Tilt - 410MHz - 2839/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 17.1 V/m; Power Drift = 0.359 dB

Peak SAR (extrapolated) = 3.59 W/kg

**SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.507 mW/g**

Maximum value of SAR (measured) = 1.25 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig				

 Testing and Engineering Services Lab	Date(s) of Evaluation Jul. 24-29, 2013	Test Report Serial No. 0722132AAYT-1241S	Test Report Revision No. Rev. 1.1	 Test Lab Certificate No. 2470.01
	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot E16

Date/Time: 25/07/2013 11:59:34 AM

left Ear Held 450MHz Jul25 2013

DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified

Program Notes: Ambient Temp: 24.0C; Fluid Temp: 23.4C; Barometric Pressure: 101.7 kPa; Humidity: 31%

Procedure Notes:

Communication System: TETRA

Frequency: 410 MHz; Duty Cycle: 1:4

Medium: HSL450 Medium parameters used:  $f = 410$  MHz;  $\sigma = 0.85$  mho/m;  $\epsilon_r = 43.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: ET3DV6 - SN1590; ConvF(7.53, 7.53, 7.53); 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: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Repeat - Left Tilt - 410MHz - 2839/Area Scan (7x16x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.19 mW/g

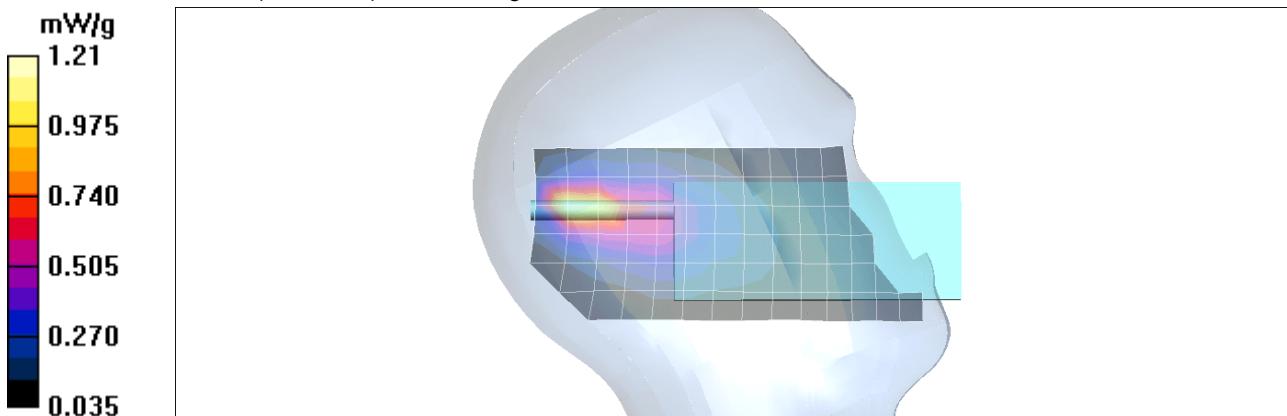
**Repeat - Left Tilt - 410MHz - 2839/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 19.5 V/m; Power Drift = 0.276 dB

Peak SAR (extrapolated) = 3.17 W/kg

**SAR(1 g) = 1.13 mW/g; SAR(10 g) = 0.554 mW/g**

Maximum value of SAR (measured) = 1.21 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver		DUT:		FT4 S_1c ig, FT4 S Ex_1c C ig		

 Testing and Engineering Services Lab	Date(s) of Evaluation Jul. 24-29, 2013	Test Report Serial No. 0722132AAYT-1241S	Test Report Revision No. Rev. 1.1	 Test Lab Certificate No. 2470.01
	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot F1

Date/Time: 25/07/2013 12:59:23 PM

Face Held 450MHz Jul25 2013

DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified

Program Notes: Ambient Temp: 24.0C; Fluid Temp: 23.4C; Barometric Pressure: 101.7 kPa; Humidity: 31%

Procedure Notes:

Communication System: TETRA

Frequency: 440 MHz; Duty Cycle: 1:4

Medium: HSL450 Medium parameters used:  $f = 440$  MHz;  $\sigma = 0.88$  mho/m;  $\epsilon_r = 43.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: ET3DV6 - SN1590; ConvF(7.53, 7.53, 7.53); 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: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Face - 440MHz - 3739/Area Scan (7x20x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.276 mW/g

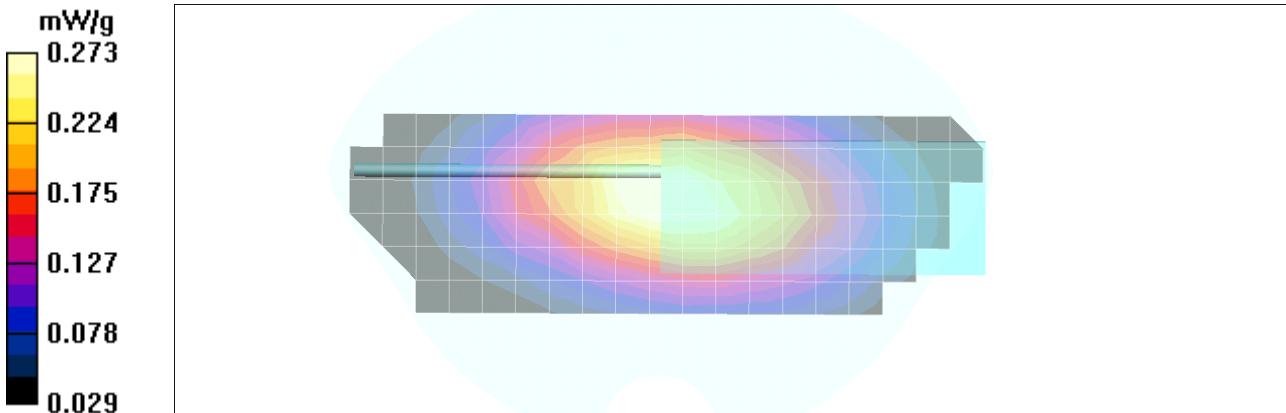
**Face - 440MHz - 3739/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 18.1 V/m; Power Drift = 0.026 dB

Peak SAR (extrapolated) = 0.438 W/kg

**SAR(1 g) = 0.261 mW/g; SAR(10 g) = 0.192 mW/g**

Maximum value of SAR (measured) = 0.273 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C					
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig							
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	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot F2

Date/Time: 25/07/2013 1:31:35 PM

Face Held 450MHz Jul25 2013

DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified

Program Notes: Ambient Temp: 24.0C; Fluid Temp: 23.4C; Barometric Pressure: 101.7 kPa; Humidity: 31%

Procedure Notes:

Communication System: TETRA

Frequency: 420 MHz; Duty Cycle: 1:4

Medium: HSL450 Medium parameters used:  $f = 420 \text{ MHz}$ ;  $\sigma = 0.85 \text{ mho/m}$ ;  $\epsilon_r = 43.9$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(7.53, 7.53, 7.53); 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: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Face - 420MHz - 2839/Area Scan (7x17x1):** Measurement grid:  $dx=15\text{mm}$ ,  $dy=15\text{mm}$

Maximum value of SAR (measured) = 0.273 mW/g

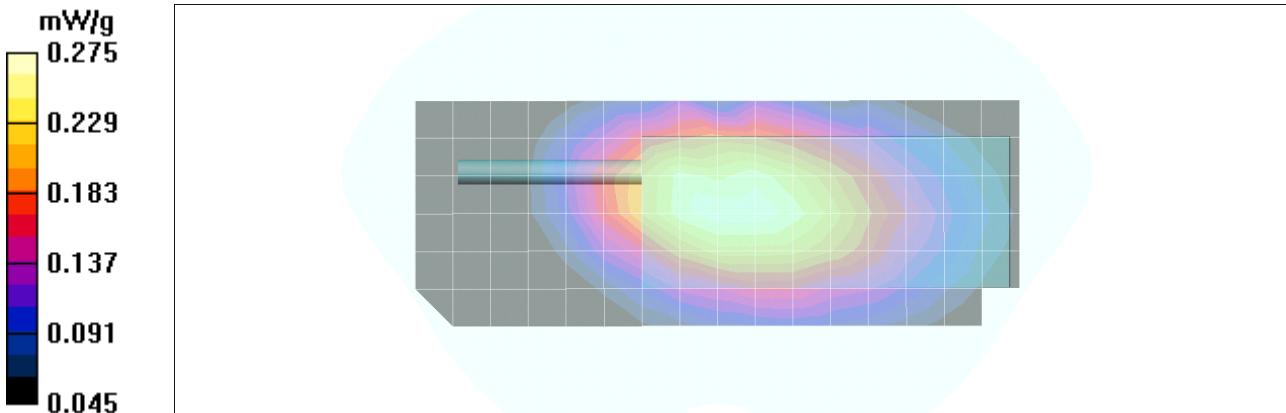
**Face - 420MHz - 2839/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=7.5\text{mm}$ ,  $dy=7.5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 17.5 V/m; Power Drift = 0.307 dB

Peak SAR (extrapolated) = 0.417 W/kg

**SAR(1 g) = 0.263 mW/g; SAR(10 g) = 0.192 mW/g**

Maximum value of SAR (measured) = 0.275 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot B1

Date/Time: 29/07/2013 11:05:43 AM

**Body-worn 450MHz Jul29 2013**

**DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified**

Program Notes: Ambient Temp: 23C; Fluid Temp: 23.4C; Barometric Pressure: 101.5 kPa; Humidity: 32%

Procedure Notes:

Communication System: TETRA

Frequency: 440 MHz; Duty Cycle: 1:4

Medium: M450 Medium parameters used:  $f = 440$  MHz;  $\sigma = 0.95$  mho/m;  $\epsilon_r = 56.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: ET3DV6 - SN1590; ConvF(7.98, 7.98, 7.98); 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

**Clip - 440MHz - 3739/Area Scan (7x21x1):** Measurement grid: dx=15mm, dy=15mm

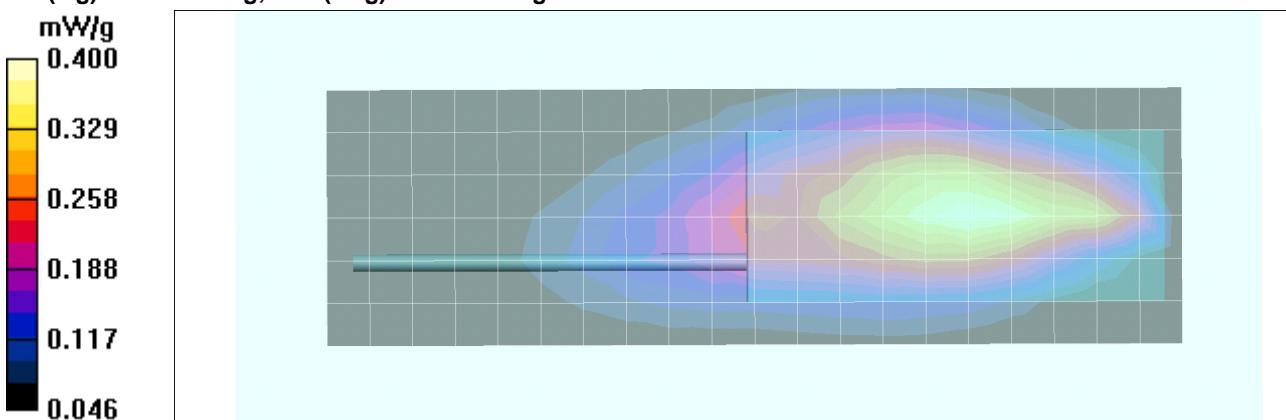
Maximum value of SAR (measured) = 0.400 mW/g

**Clip - 440MHz - 3739/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 15.6 V/m; Power Drift = 0.154 dB

Peak SAR (extrapolated) = 0.577 W/kg

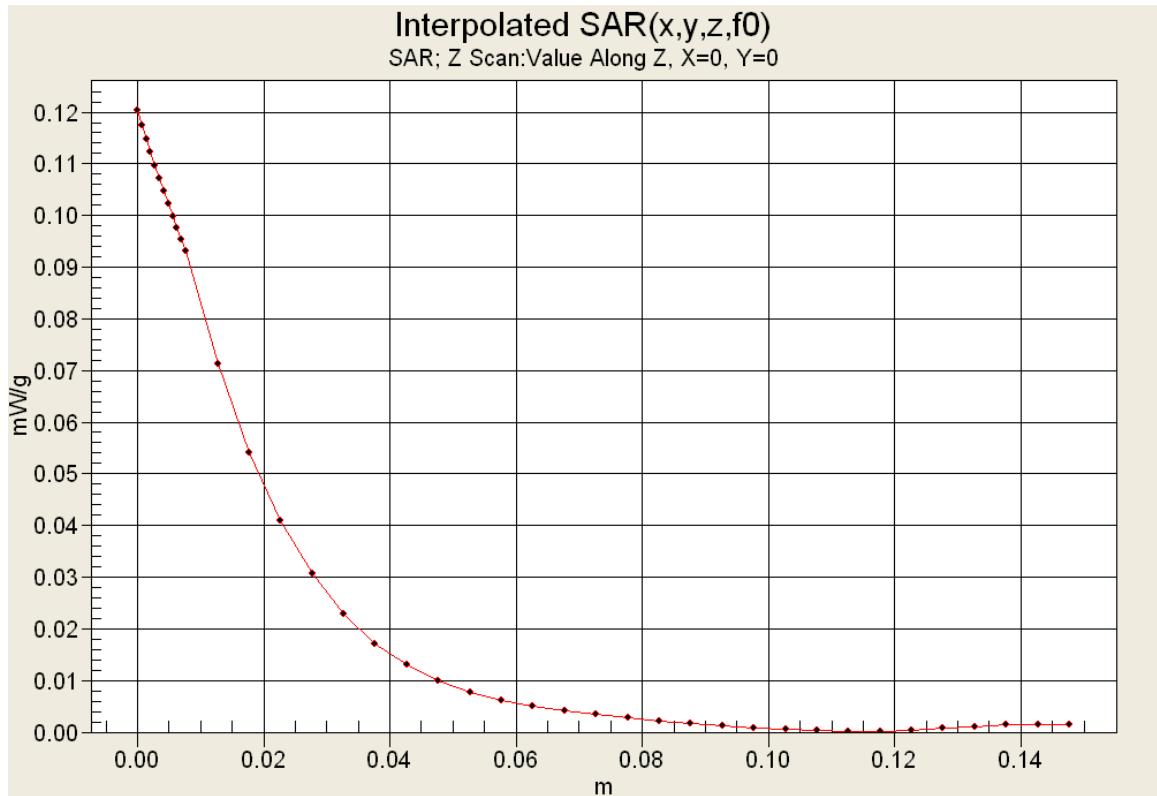
**SAR(1 g) = 0.378 mW/g; SAR(10 g) = 0.259 mW/g**



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C					
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig							
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 Testing and Engineering Services Lab	Date(s) of Evaluation Jul. 24-29, 2013	Test Report Serial No. 0722132AAYT-1241S	Test Report Revision No. Rev. 1.1	 Test Lab Certificate No. 2470.01
	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Z-Axis Scan



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C					
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig							
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 Testing and Engineering Services Lab	Date(s) of Evaluation Jul. 24-29, 2013	Test Report Serial No. 0722132AAYT-1241S	Test Report Revision No. Rev. 1.1	  Test Lab Certificate No. 2470.01
	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot B2

Date/Time: 29/07/2013 11:38:30 AM

**Body-worn 450MHz Jul29 2013**

**DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified**

Program Notes: Ambient Temp: 23C; Fluid Temp: 23.4C; Barometric Pressure: 101.5 kPa; Humidity: 32%

Procedure Notes:

Communication System: TETRA

Frequency: 420 MHz; Duty Cycle: 1:4

Medium: M450 Medium parameters used:  $f = 420 \text{ MHz}$ ;  $\sigma = 0.94 \text{ mho/m}$ ;  $\epsilon_r = 57$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(7.98, 7.98, 7.98); 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

**Clip - 420MHz - 3839/Area Scan (7x17x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.321 mW/g

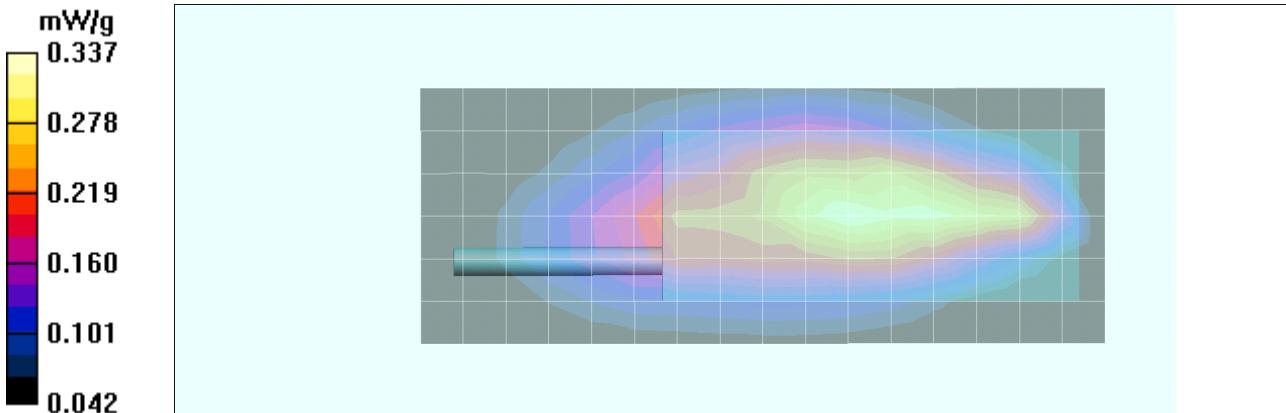
**Clip - 420MHz - 3839/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 15.1 V/m; Power Drift = -0.009 dB

Peak SAR (extrapolated) = 0.551 W/kg

**SAR(1 g) = 0.323 mW/g; SAR(10 g) = 0.221 mW/g**

Maximum value of SAR (measured) = 0.337 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C					
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig							
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	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot B3

Date/Time: 29/07/2013 12:12:04 PM

**Body-worn 450MHz Jul29 2013**

**DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified**

Program Notes: Ambient Temp: 23C; Fluid Temp: 23.4C; Barometric Pressure: 101.5 kPa; Humidity: 32%

Procedure Notes:

Communication System: TETRA

Frequency: 440 MHz; Duty Cycle: 1:4

Medium: M450 Medium parameters used:  $f = 440$  MHz;  $\sigma = 0.95$  mho/m;  $\epsilon_r = 56.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: ET3DV6 - SN1590; ConvF(7.98, 7.98, 7.98); 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

**8010 - 440MHz - 3739/Area Scan (7x21x1):** Measurement grid: dx=15mm, dy=15mm

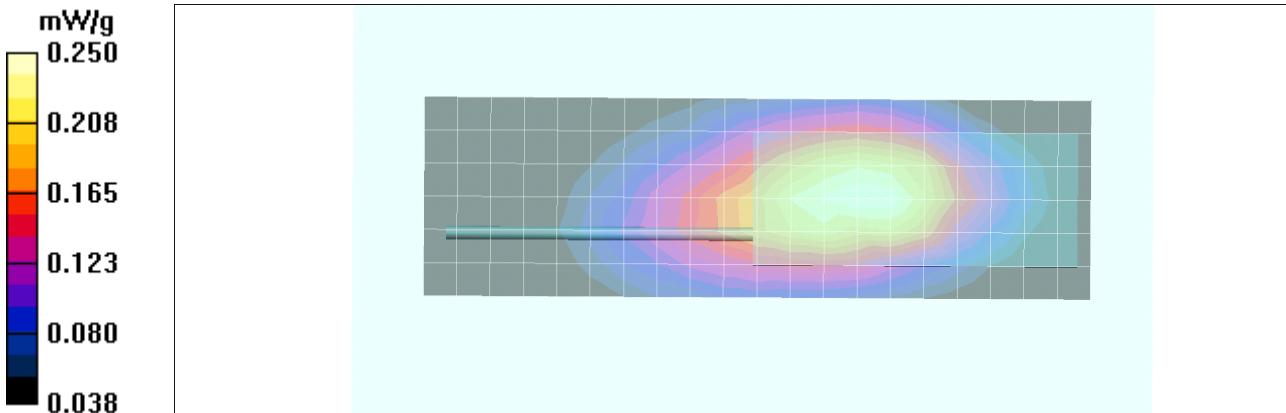
Maximum value of SAR (measured) = 0.250 mW/g

**8010 - 440MHz - 3739/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 14.6 V/m; Power Drift = -0.060 dB

Peak SAR (extrapolated) = 0.368 W/kg

**SAR(1 g) = 0.236 mW/g; SAR(10 g) = 0.174 mW/g**



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C				
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig						
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	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot B4

Date/Time: 29/07/2013 12:43:48 PM

**Body-worn 450MHz Jul29 2013**

**DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified**

Program Notes: Ambient Temp: 23C; Fluid Temp: 23.4C; Barometric Pressure: 101.5 kPa; Humidity: 32%

Procedure Notes:

Communication System: TETRA

Frequency: 420 MHz; Duty Cycle: 1:4

Medium: M450 Medium parameters used:  $f = 420 \text{ MHz}$ ;  $\sigma = 0.94 \text{ mho/m}$ ;  $\epsilon_r = 57$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(7.98, 7.98, 7.98); 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

**8010 - 420MHz - 3839/Area Scan (7x17x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.206 mW/g

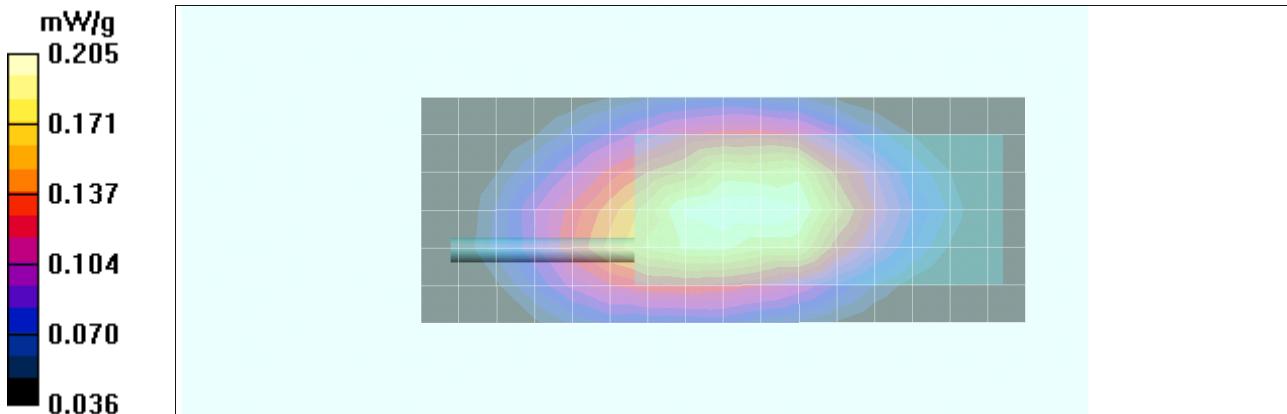
**8010 - 420MHz - 3839/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 13.8 V/m; Power Drift = -0.115 dB

Peak SAR (extrapolated) = 0.281 W/kg

**SAR(1 g) = 0.195 mW/g; SAR(10 g) = 0.144 mW/g**

Maximum value of SAR (measured) = 0.205 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver		DUT:		FT4 S_1c ig, FT4 S Ex_1c C ig		

 Testing and Engineering Services Lab	Date(s) of Evaluation Jul. 24-29, 2013	Test Report Serial No. 0722132AAYT-1241S	Test Report Revision No. Rev. 1.1	  Test Lab Certificate No. 2470.01
	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot B5

Date/Time: 29/07/2013 1:08:42 PM

**Body-worn 450MHz Jul29 2013**

**DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified**

Program Notes: Ambient Temp: 23C; Fluid Temp: 23.4C; Barometric Pressure: 101.5 kPa; Humidity: 32%

Procedure Notes:

Communication System: TETRA

Frequency: 440 MHz; Duty Cycle: 1:4

Medium: M450 Medium parameters used:  $f = 440$  MHz;  $\sigma = 0.95$  mho/m;  $\epsilon_r = 56.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: ET3DV6 - SN1590; ConvF(7.98, 7.98, 7.98); 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

**8030 - 440MHz - 3739/Area Scan (7x21x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.218 mW/g

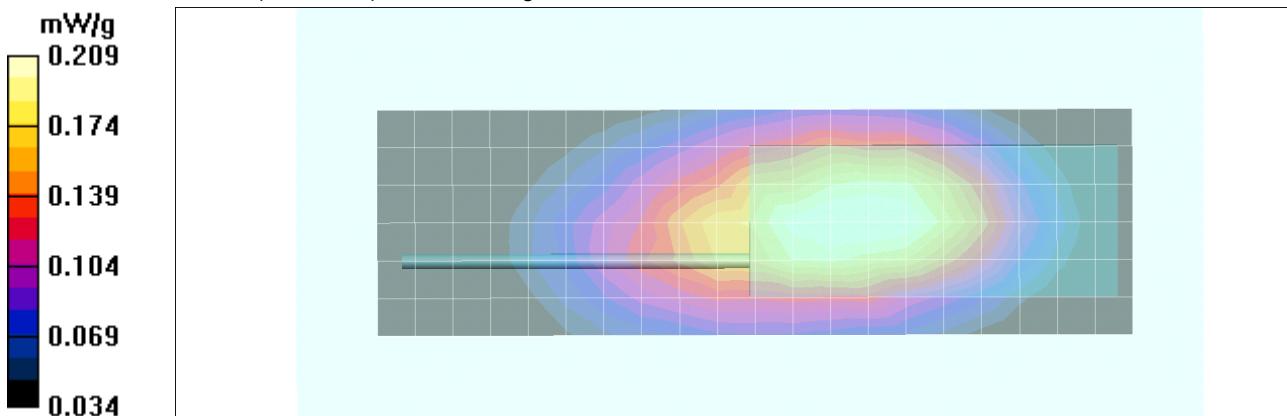
**8030 - 440MHz - 3739/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 13.6 V/m; Power Drift = 0.298 dB

Peak SAR (extrapolated) = 0.510 W/kg

**SAR(1 g) = 0.193 mW/g; SAR(10 g) = 0.140 mW/g**

Maximum value of SAR (measured) = 0.209 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver		DUT:		FT4 S_1c ig, FT4 S Ex_1c C ig		

 Testing and Engineering Services Lab	Date(s) of Evaluation Jul. 24-29, 2013	Test Report Serial No. 0722132AAYT-1241S	Test Report Revision No. Rev. 1.1	  Test Lab Certificate No. 2470.01
	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Plot B6

Date/Time: 29/07/2013 1:36:00 PM

**Body-worn 450MHz Jul29 2013**

**DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified**

Program Notes: Ambient Temp: 23C; Fluid Temp: 23.4C; Barometric Pressure: 101.5 kPa; Humidity: 32%

Procedure Notes:

Communication System: TETRA

Frequency: 420 MHz; Duty Cycle: 1:4

Medium: M450 Medium parameters used:  $f = 420 \text{ MHz}$ ;  $\sigma = 0.94 \text{ mho/m}$ ;  $\epsilon_r = 57$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(7.98, 7.98, 7.98); 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

**8030 - 420MHz - 3839/Area Scan (7x17x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.203 mW/g

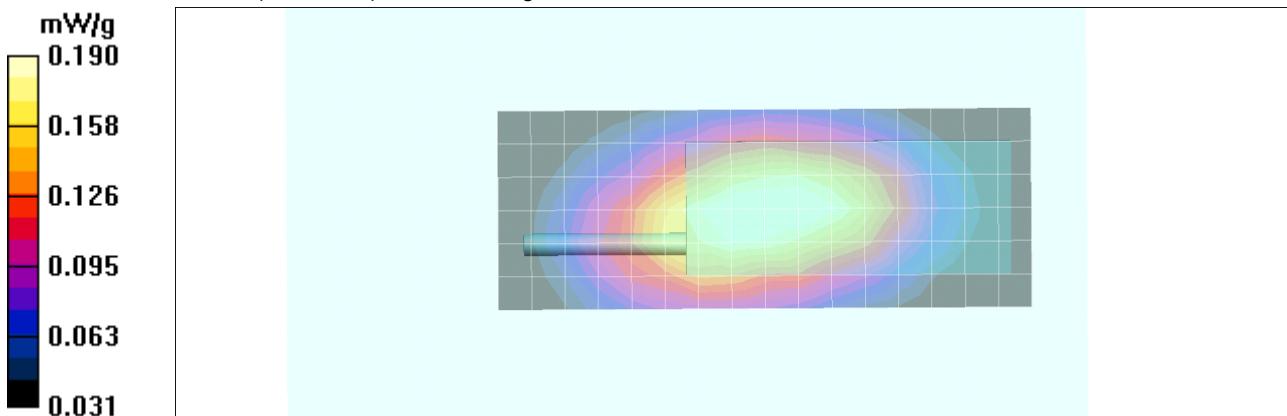
**8030 - 420MHz - 3839/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 13.4 V/m; Power Drift = -0.016 dB

Peak SAR (extrapolated) = 0.261 W/kg

**SAR(1 g) = 0.178 mW/g; SAR(10 g) = 0.133 mW/g**

Maximum value of SAR (measured) = 0.190 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C					
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig							
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	<u>Test Report Issue Date</u> Feb 3, 2014	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## Plot B7

Date/Time: 29/07/2013 2:02:50 PM

**Body-worn 450MHz Jul29 2013**

**DUT: FT4 1c / Ex\_1c; Type: 450MHz TETRA Radio; Serial: Not Specified**

Program Notes: Ambient Temp: 23C; Fluid Temp: 23.4C; Barometric Pressure: 101.5 kPa; Humidity: 32%

Procedure Notes:

Communication System: TETRA

Frequency: 440 MHz; Duty Cycle: 1:4

Medium: M450 Medium parameters used:  $f = 440$  MHz;  $\sigma = 0.95$  mho/m;  $\epsilon_r = 56.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: ET3DV6 - SN1590; ConvF(7.98, 7.98, 7.98); 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

**Ex\_1c - Clip - 440MHz - 3739/Area Scan (7x21x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.319 mW/g

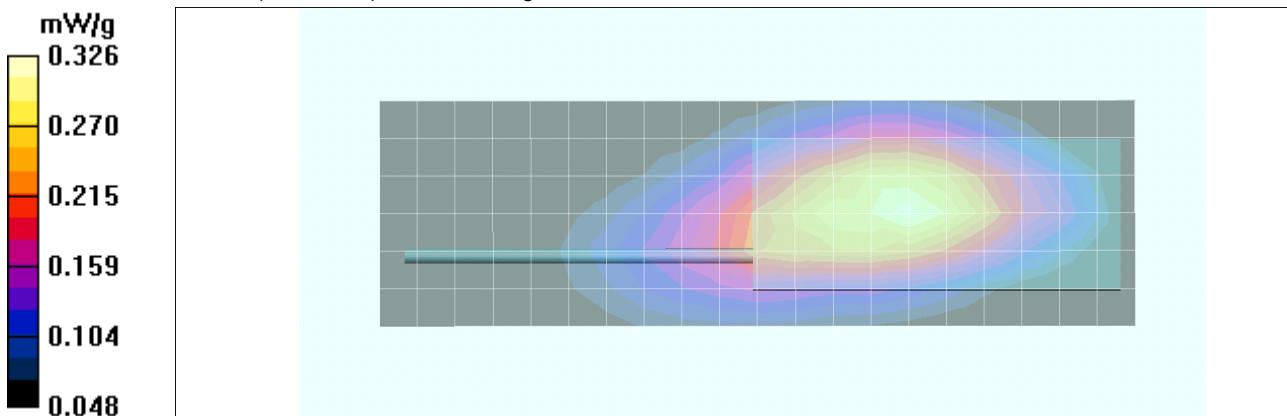
**Ex\_1c - Clip - 440MHz - 3739/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 16.0 V/m; Power Drift = 0.039 dB

Peak SAR (extrapolated) = 0.435 W/kg

**SAR(1 g) = 0.306 mW/g; SAR(10 g) = 0.222 mW/g**

Maximum value of SAR (measured) = 0.326 mW/g



<b>Applicant:</b>	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
<b>DUT Type:</b>	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig				

 Celltech Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> Jul. 24-29, 2013	<u>Test Report Serial No.</u> 0722132AAYT-1241S	<u>Test Report Revision No.</u> Rev. 1.1
	<u>Test Report Issue Date</u> Feb 3, 2014	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled



Test Lab Certificate No. 2470.01

## APPENDIX B - SYSTEM PERFORMANCE CHECK PLOTS

<b>Applicant:</b>	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
<b>DUT Type:</b>	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			

 Testing and Engineering Services Lab	Date(s) of Evaluation Jul. 24-29, 2013	Test Report Serial No. 0722132AAYT-1241S	Test Report Revision No. Rev. 1.1	 Test Lab Certificate No. 2470.01
	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

Date Tested: 07/23/2013

## System Performance Check - 450 MHz Dipole - Head

DUT: Dipole 450 MHz; Type: D450V3; Serial: 1068; Calibrated: 04/27/2012

Program Notes: Ambient Temp: 24.0C; Fluid Temp: 23.3C; Barometric Pressure: 101.7 kPa; Humidity: 34%

Procedure Notes:

Communication System: CW

Frequency: 450 MHz; Duty Cycle: 1:1

Medium: HSL450 Medium parameters used:  $f = 450 \text{ MHz}$ ;  $\sigma = 0.86 \text{ mho/m}$ ;  $\epsilon_r = 43.1$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(7.53, 7.53, 7.53); 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: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

**Head d=15mm Pin=398mW/Area Scan (6x11x1):** Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 1.87 mW/g

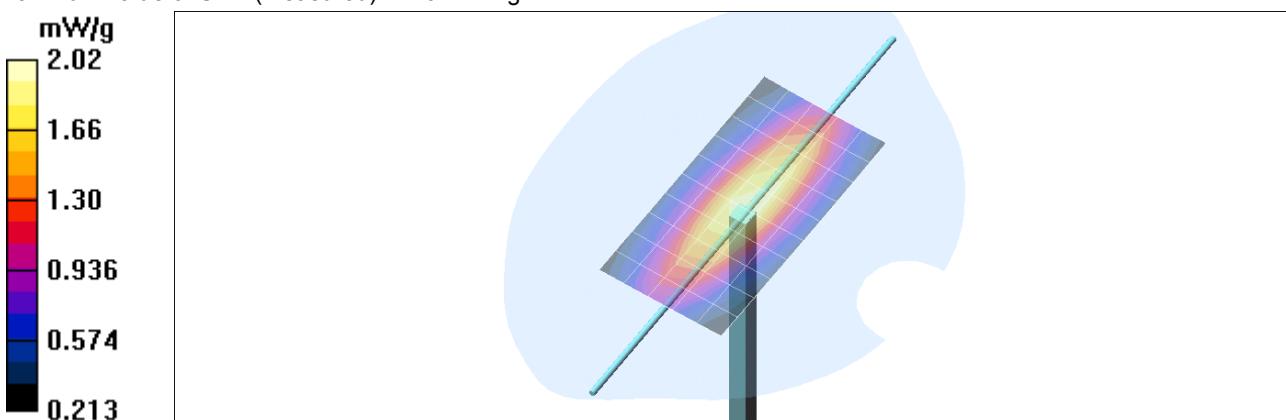
**Head d=15mm Pin=398mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 49.8 V/m; Power Drift = -0.048 dB

Peak SAR (extrapolated) = 2.93 W/kg

**SAR(1 g) = 1.9 mW/g; SAR(10 g) = 1.26 mW/g**

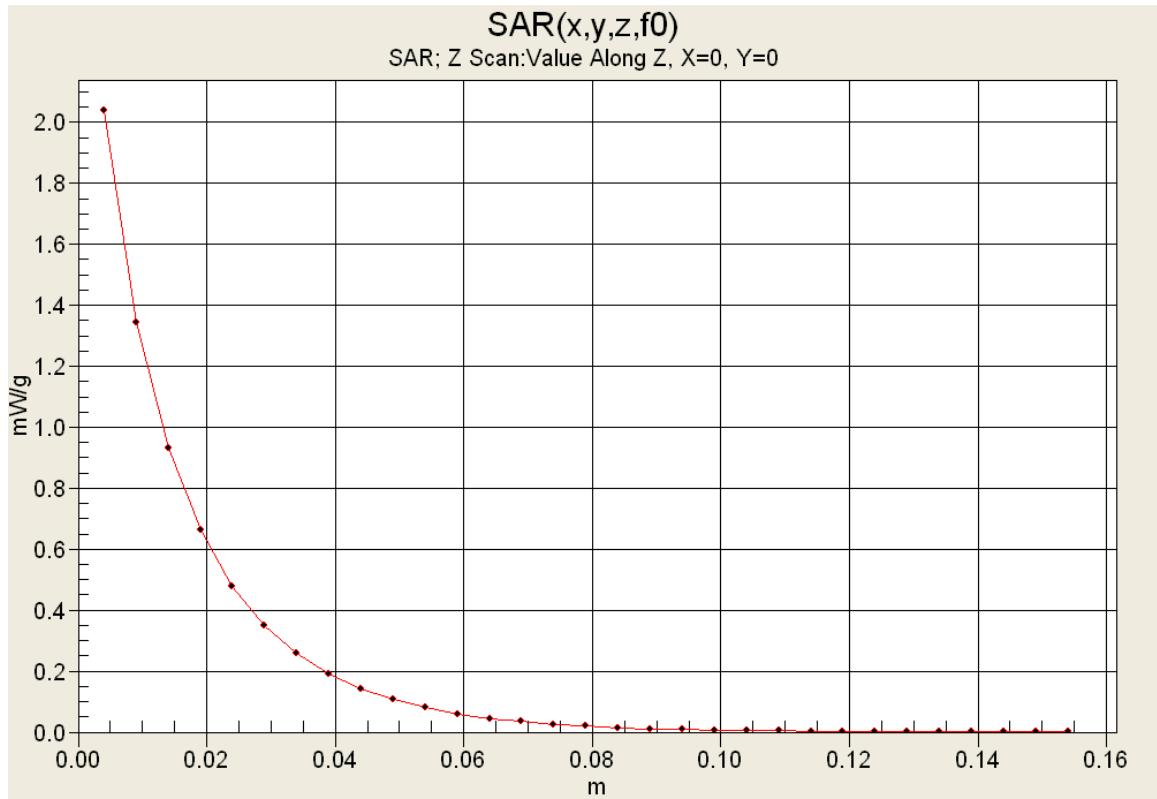
Maximum value of SAR (measured) = 2.02 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver		DUT:		FT4 S_1c ig, FT4 S Ex_1c C ig		

 Celltech Testing and Engineering Services Lab	Date(s) of Evaluation Jul. 24-29, 2013	Test Report Serial No. 0722132AAYT-1241S	Test Report Revision No. Rev. 1.1	 IAC-MRA ACCREDITED
	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Z-Axis Scan



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C					
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig							
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	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

Date Tested: 07/29/2013

## System Performance Check - 450 MHz Dipole – Body

**DUT: Dipole 450 MHz; Type: D450V3; Serial: 1068; Calibrated: 04/27/2012**

Program Notes: Ambient Temp: 23C; Fluid Temp: 23.4C; Barometric Pressure: 101.5 kPa; Humidity: 32%

Procedure Notes:

Communication System: CW

Frequency: 450 MHz; Duty Cycle: 1:1

Medium: M450 Medium parameters used:  $f = 450 \text{ MHz}$ ;  $\sigma = 0.97 \text{ mho/m}$ ;  $\epsilon_r = 56.3$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(7.98, 7.98, 7.98); 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

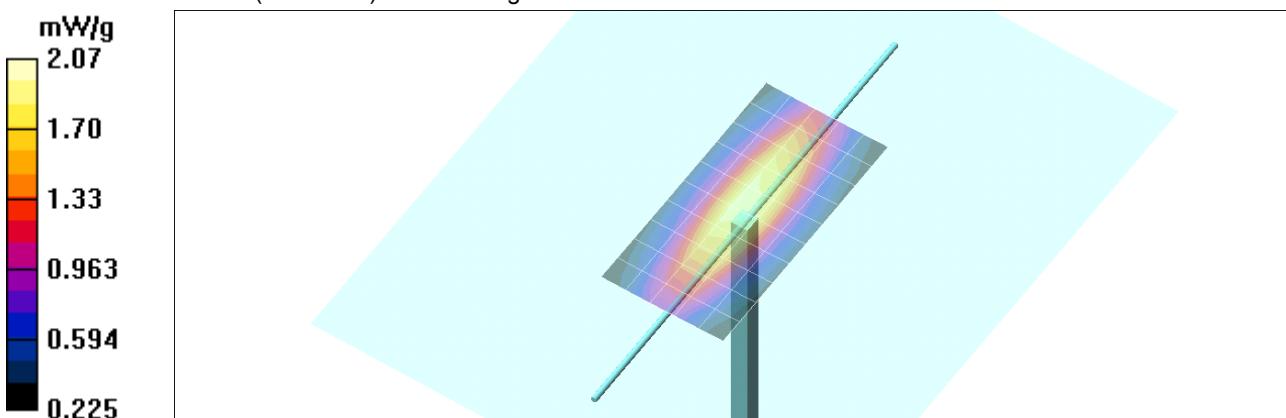
**Body d=15mm Pin=398mW/Area Scan (6x11x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 1.93 mW/g

**Body d=15mm Pin=398mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm  
Reference Value = 46.7 V/m; Power Drift = -0.082 dB

Peak SAR (extrapolated) = 3.15 W/kg

**SAR(1 g) = 1.95 mW/g; SAR(10 g) = 1.29 mW/g**

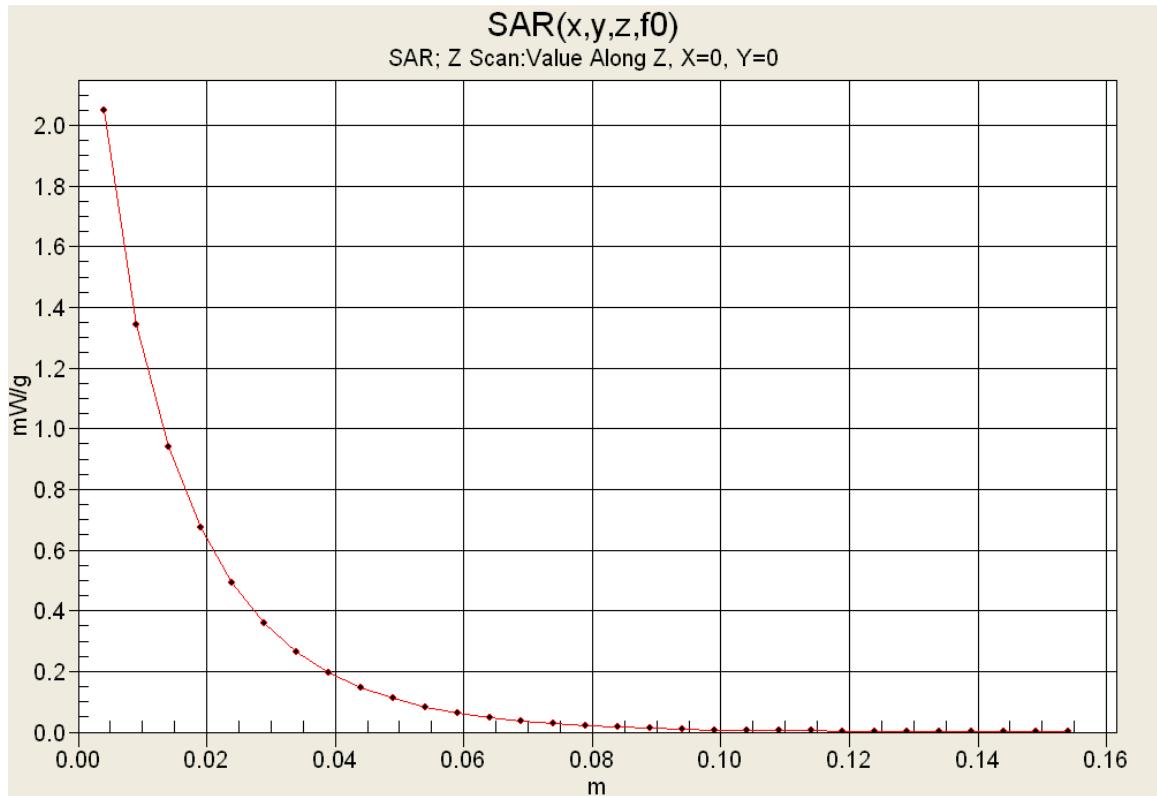
Maximum value of SAR (measured) = 2.07 mW/g



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig				

 Celltech Testing and Engineering Services Lab	Date(s) of Evaluation Jul. 24-29, 2013	Test Report Serial No. 0722132AAYT-1241S	Test Report Revision No. Rev. 1.1	 ILAC-MRA ACCREDITED
	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## Z-Axis Scan



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C					
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig							
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	<u>Test Report Issue Date</u> Feb 3, 2014	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## APPENDIX C - MEASURED FLUID DIELECTRIC PARAMETERS

<b>Applicant:</b>	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
<b>DUT Type:</b>	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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 Celltech Testing and Engineering Services Lab	Date(s) of Evaluation Jul. 24-29, 2013	Test Report Serial No. 0722132AAYT-1241S	Test Report Revision No. Rev. 1.1	 Test Lab Certificate No. 2470.01
	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## 450 MHz Head

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Celltech Labs

Test Result for UIM Dielectric Parameter

23/Jul/2013

Freq Frequency(GHz)

FCC\_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon

FCC\_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma

Test\_e Epsilon of UIM

Test\_s Sigma of UIM

---

Freq	FCC_eHF	CCC_sH	Test_e	Test_s
0.3500	44.70	0.87	44.88	0.79
0.3600	44.58	0.87	44.83	0.79
0.3700	44.46	0.87	43.60	0.80
0.3800	44.34	0.87	44.26	0.81
0.3900	44.22	0.87	44.33	0.82
0.4000	44.10	0.87	44.01	0.85
0.4100	43.98	0.87	43.74	0.85
0.4200	43.86	0.87	43.94	0.85
0.4300	43.74	0.87	43.66	0.86
0.4400	43.62	0.87	43.37	0.88
0.4500	43.50	0.87	43.12	0.86
0.4600	43.45	0.87	43.02	0.88
0.4700	43.40	0.87	42.57	0.90
0.4800	43.34	0.87	42.45	0.90
0.4900	43.29	0.87	42.19	0.90
0.5000	43.24	0.87	42.02	0.92
0.5100	43.19	0.87	41.97	0.92
0.5200	43.14	0.88	41.60	0.94
0.5300	43.08	0.88	41.65	0.95
0.5400	43.03	0.88	41.69	0.96
0.5500	42.98	0.88	41.29	0.97

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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 Celltech Testing and Engineering Services Lab	Date(s) of Evaluation Jul. 24-29, 2013	Test Report Serial No. 0722132AAYT-1241S	Test Report Revision No. Rev. 1.1	 IAC-MRA ACCREDITED Test Lab Certificate No. 2470.01
	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## 450 MHz Body

---

Celltech Labs  
Test Result for UIM Dielectric Parameter

29/Jul/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
0.3500	57.70	0.93	57.68	0.88
0.3600	57.60	0.93	58.37	0.90
0.3700	57.50	0.93	56.82	0.89
0.3800	57.40	0.93	56.26	0.89
0.3900	57.30	0.93	56.89	0.90
0.4000	57.20	0.93	56.34	0.92
0.4100	57.10	0.93	56.53	0.92
0.4200	57.00	0.94	56.97	0.94
0.4300	56.90	0.94	56.63	0.95
0.4400	56.80	0.94	56.59	0.95
0.4500	56.70	0.94	56.32	0.97
0.4600	56.66	0.94	56.18	0.98
0.4700	56.62	0.94	56.33	0.98
0.4800	56.58	0.94	55.83	0.98
0.4900	56.54	0.94	55.54	0.98
0.5000	56.51	0.94	55.16	1.01
0.5100	56.47	0.94	55.12	1.01
0.5200	56.43	0.95	55.07	1.01
0.5300	56.39	0.95	54.87	1.02
0.5400	56.35	0.95	55.14	1.04
0.5500	56.31	0.95	54.91	1.03

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig				
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 Celltech Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> Jul. 24-29, 2013	<u>Test Report Serial No.</u> 0722132AAYT-1241S	<u>Test Report Revision No.</u> Rev. 1.1
	<u>Test Report Issue Date</u> Feb 3, 2014	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled



Test Lab Certificate No. 2470.01

## APPENDIX D - SAR TEST SETUP & DUT PHOTOGRAPHS

<b>Applicant:</b>	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
<b>DUT Type:</b>	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			



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Description of Test(s)  
Specific Absorption Rate

RF Exposure Category  
Gen. Pop. / Uncontrolled

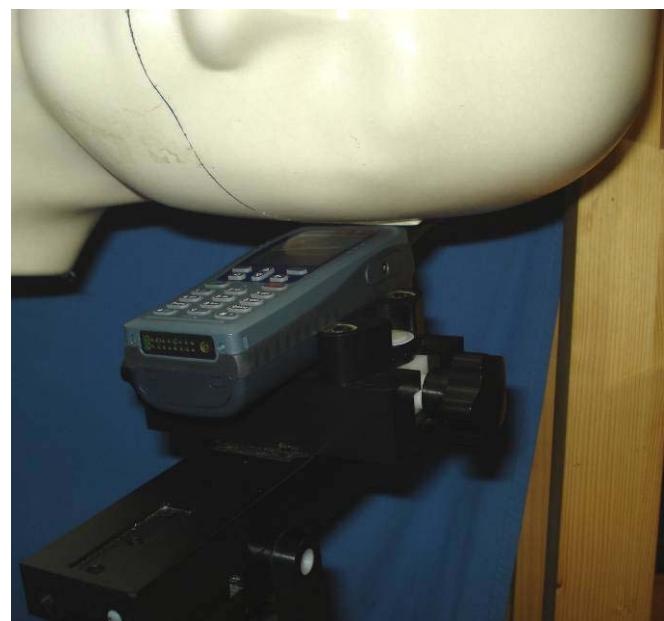


Test Lab Certificate No. 2470.01

## TEST SETUP PHOTOGRAPHS



Held-to-Ear Test Setup – FT4 S\_1c ig, Antenna 2, Left ear touch position



Held-to-Ear Test Setup – FT4 S\_1c ig, Antenna 2, Left ear tilt position

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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Test Report Issue Date  
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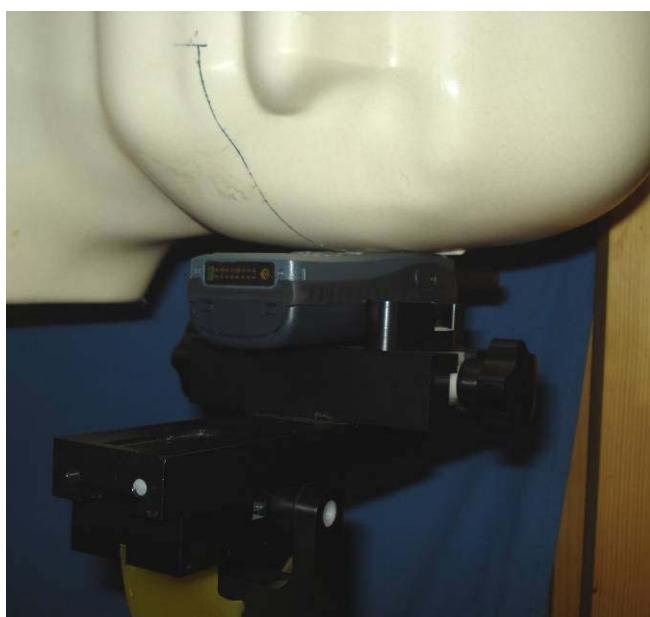
Description of Test(s)  
Specific Absorption Rate

RF Exposure Category  
Gen. Pop. / Uncontrolled



Test Lab Certificate No. 2470.01

## TEST SETUP PHOTOGRAPHS



Held-to-Ear Test Setup – FT4 S\_1c ig, Antenna 1, Left ear touch position



Held-to-Ear Test Setup – FT4 S\_1c ig, Antenna 1, Left ear tilt position

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig				



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Jul. 24-29, 2013

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Rev. 1.1

Test Report Issue Date  
Feb 3, 2014

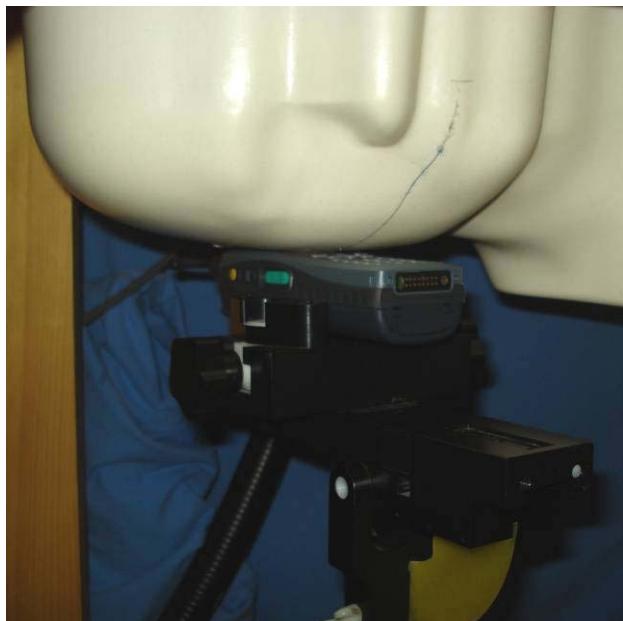
Description of Test(s)  
Specific Absorption Rate

RF Exposure Category  
Gen. Pop. / Uncontrolled

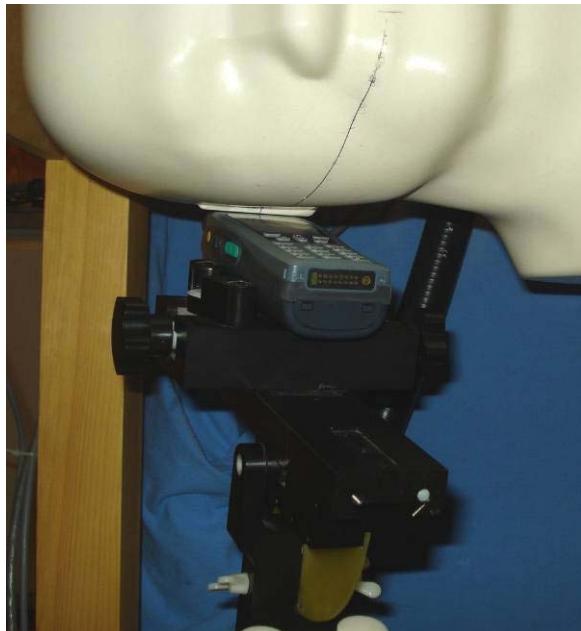


Test Lab Certificate No. 2470.01

## TEST SETUP PHOTOGRAPHS



Held-to-Ear Test Setup – FT4 S\_1c ig, Antenna 2, Right ear touch position



Held-to-Ear Test Setup – FT4 S\_1c ig, Antenna 2, Right ear tilt position

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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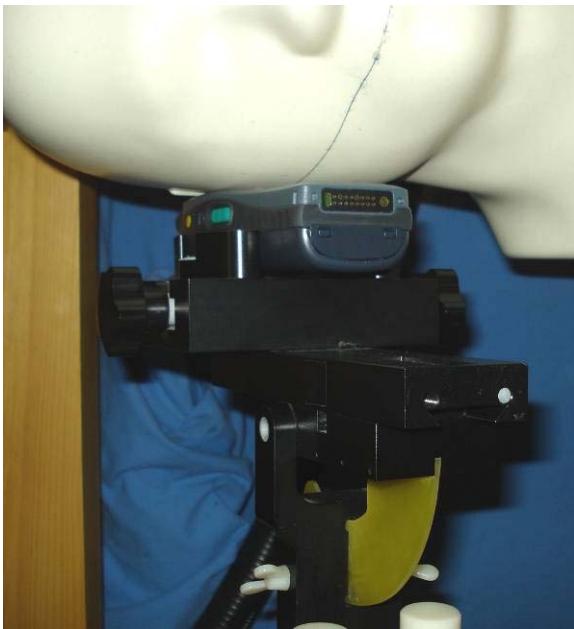
Description of Test(s)  
Specific Absorption Rate

RF Exposure Category  
Gen. Pop. / Uncontrolled

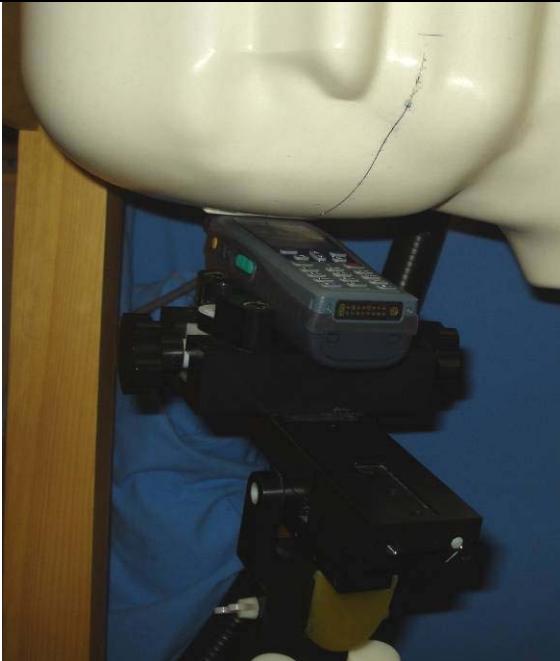


Test Lab Certificate No. 2470.01

## TEST SETUP PHOTOGRAPHS



Held-to-Ear Test Setup – FT4 S\_1c ig, Antenna 1, Right ear touch position



Held-to-Ear Test Setup – FT4 S\_1c ig, Antenna 1, Right ear tilt position

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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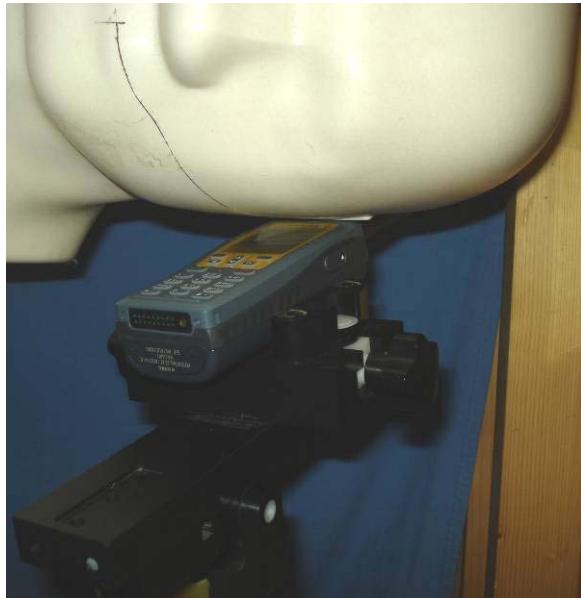
Description of Test(s)  
Specific Absorption Rate

RF Exposure Category  
Gen. Pop. / Uncontrolled



Test Lab Certificate No. 2470.01

## TEST SETUP PHOTOGRAPHS



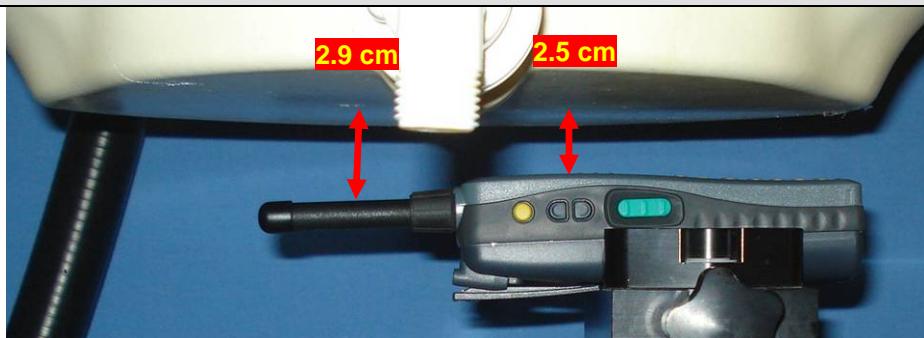
Held-to-Ear Test Setup – FT4 S Ex\_1c C ig, Antenna 1, Left ear tilt position

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig				

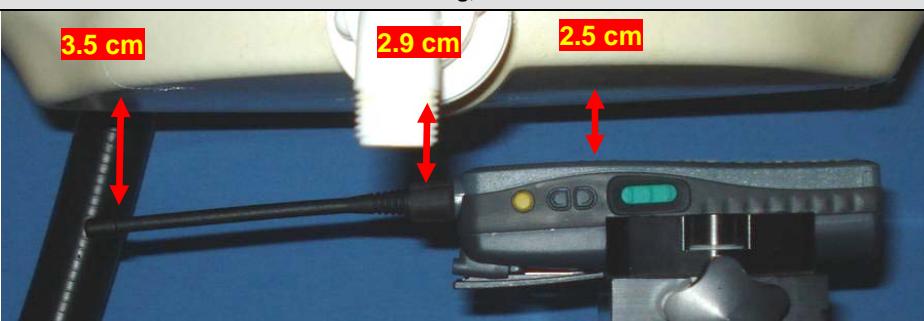
## TEST SETUP PHOTOGRAPHS



Face-Held Test Setup



FT4 S\_1c ig, Antenna 1



FT4 S\_1c ig, Antenna 2

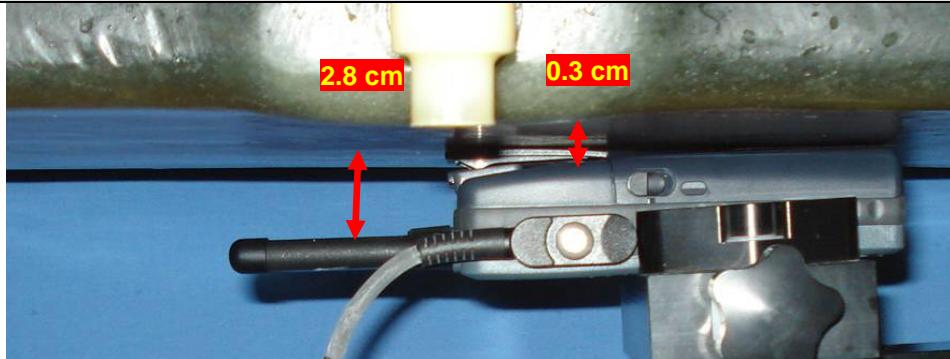
Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver		DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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 <b>Celltech</b> Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> Jul. 24-29, 2013	<u>Test Report Serial No.</u> 0722132AAYT-1241S	<u>Test Report Revision No.</u> Rev. 1.1	 <b>ILAC-MRA</b> ACCREDITED
	<u>Test Report Issue Date</u> Feb 3, 2014	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	Test Lab Certificate No. 2470.01

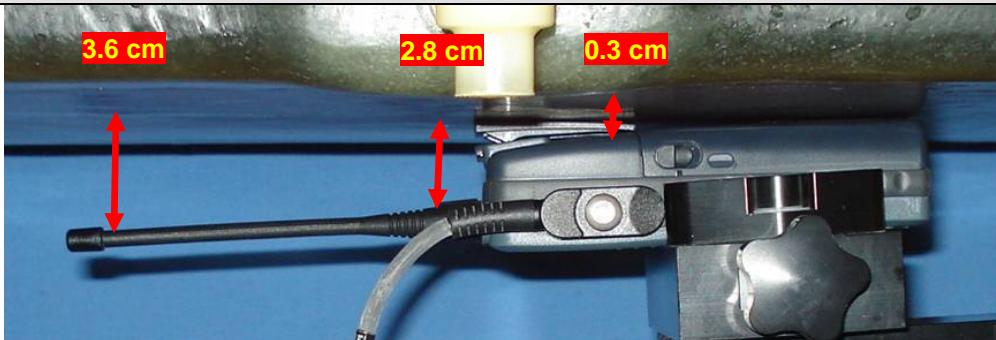
## TEST SETUP PHOTOGRAPHS



## **Body-worn Test Setup - Accessory 1**



**FT4 S\_1c ig, Antenna 1, Audio Acc. 1**



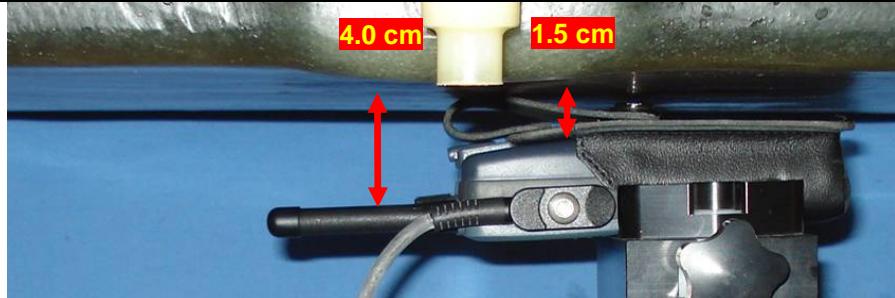
FT4 S\_1c ig, Antenna 2, Audio Acc. 1

<b>Applicant:</b>	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
<b>DUT Type:</b>	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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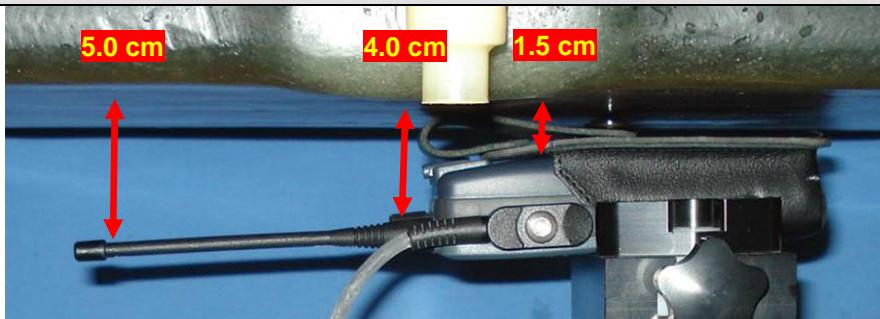
## TEST SETUP PHOTOGRAPHS



Body-worn Test Setup - Accessory 2



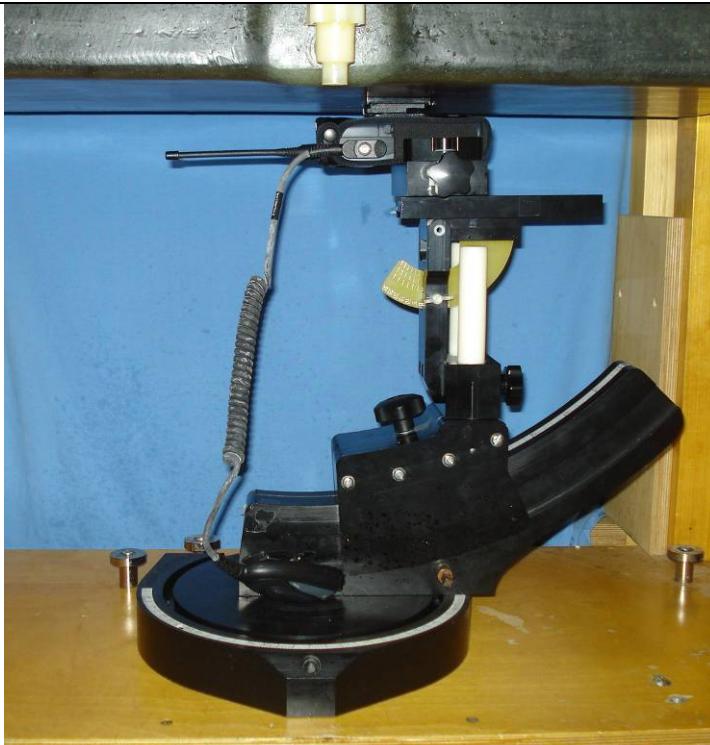
FT4 S\_1c ig, Antenna 1, Audio Acc. 1



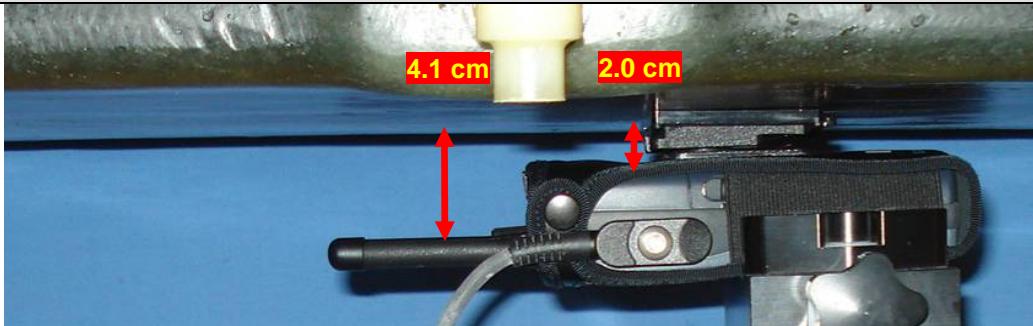
FT4 S\_1c ig, Antenna 2, Audio Acc. 1

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver		DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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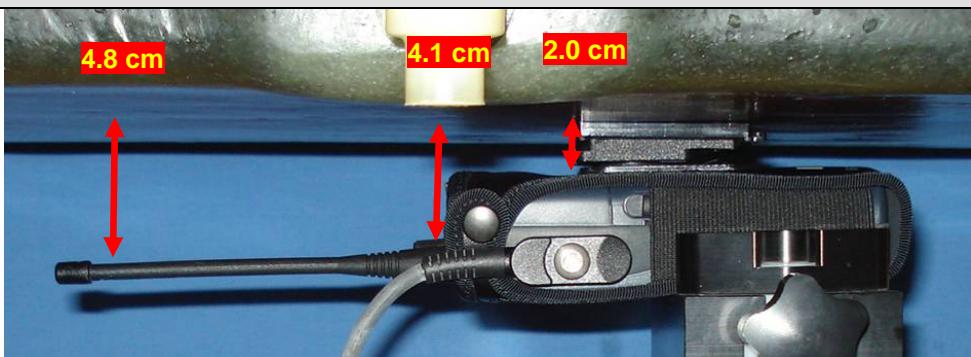
## TEST SETUP PHOTOGRAPHS



Body-worn Test Setup - Accessory 3



FT4 S\_1c ig, Antenna 1, Audio Acc. 1



FT4 S\_1c ig, Antenna 2, Audio Acc. 1

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver		DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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Test Lab Certificate No. 2470.01

## DUT PHOTOGRAPHS

Radio Front	Radio Left Side	Radio Back	Radio Right Side
Radio Top	FT4 S_1c ig (Normal Variant)		Radio Bottom

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C					
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig							
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Specific Absorption Rate

RF Exposure Category  
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Test Lab Certificate No. 2470.01

## DUT PHOTOGRAPHS



Radio Front

Radio Left Side

Radio Back

Radio Right Side



Radio Top

Radio Bottom

FT4 S Ex\_1c C ig (Intrinsically Safe variant)

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig				



Date(s) of Evaluation  
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Description of Test(s)  
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RF Exposure Category  
Gen. Pop. / Uncontrolled



## DUT PHOTOGRAPHS



Back of FT4 S\_1c ig (Normal Variant) without battery



Back of FT4 S Ex\_1c C ig (Intrinsically Safe variant) without battery



Back of FT4 S\_1c ig (Normal Variant) without Belt-clip

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig				



Date(s) of Evaluation  
Jul. 24-29, 2013

Test Report Serial No.  
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Test Report Revision No.  
Rev. 1.1

Test Report Issue Date  
Feb 3, 2014

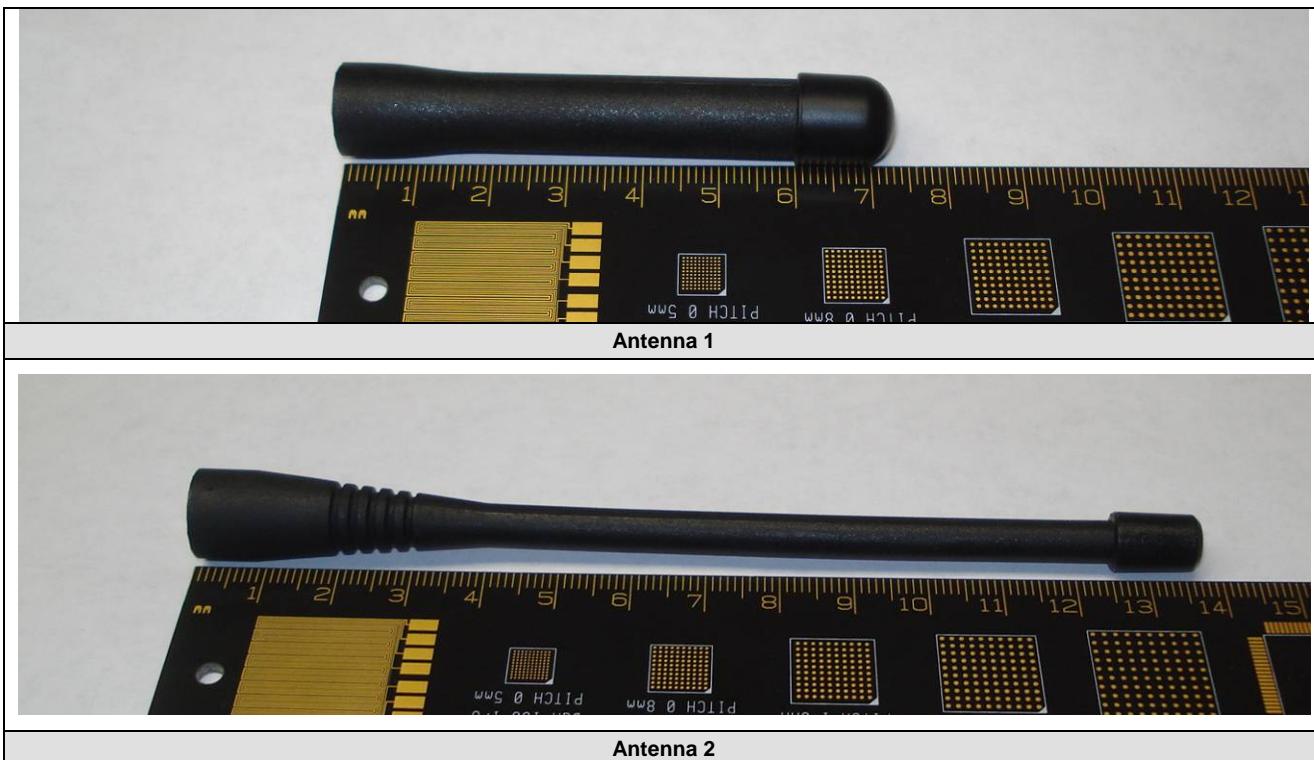
Description of Test(s)  
Specific Absorption Rate

RF Exposure Category  
Gen. Pop. / Uncontrolled



Test Lab Certificate No. 2470.01

## DUT PHOTOGRAPHS



Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver		DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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Test Lab Certificate No. 2470.01

## DUT PHOTOGRAPHS



Battery a - Front



Battery a - Back



Battery b - Front



Battery b - Back

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C		IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig				



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RF Exposure Category  
Gen. Pop. / Uncontrolled



Test Lab Certificate No. 2470.01

## DUT PHOTOGRAPHS



Body-worn Accessory 1



Body-worn Accessory 2

Body-worn Accessory 3

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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	Test Report Issue Date Feb 3, 2014	Description of Test(s) Specific Absorption Rate	RF Exposure Category Gen. Pop. / Uncontrolled	

## DUT PHOTOGRAPHS



Body-worn Accessory 4



Body-worn Accessory 5

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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Description of Test(s)  
Specific Absorption Rate

RF Exposure Category  
Gen. Pop. / Uncontrolled



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## DUT PHOTOGRAPHS



Audio Accessory 1



Audio Accessory 2



Audio Accessory 3

Applicant:	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
DUT Type:	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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 Celltech Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> Jul. 24-29, 2013	<u>Test Report Serial No.</u> 0722132AAYT-1241S	<u>Test Report Revision No.</u> Rev. 1.1
	<u>Test Report Issue Date</u> Feb 3, 2014	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled



Test Lab Certificate No. 2470.01

## APPENDIX E - DIPOLE CALIBRATION

<b>Applicant:</b>	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
<b>DUT Type:</b>	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			

 Celltech Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> Jul. 24-29, 2013	<u>Test Report Serial No.</u> 0722132AAYT-1241S	<u>Test Report Revision No.</u> Rev. 1.1
	<u>Test Report Issue Date</u> Feb 3, 2014	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled



Test Lab Certificate No. 2470.01

## APPENDIX F - PROBE CALIBRATION

<b>Applicant:</b>	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
<b>DUT Type:</b>	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			

 Celltech Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> Jul. 24-29, 2013	<u>Test Report Serial No.</u> 0722132AAYT-1241S	<u>Test Report Revision No.</u> Rev. 1.1	  Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> Feb 3, 2014	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

## APPENDIX G - PHANTOM CERTIFICATE OF CONFORMITY

<b>Applicant:</b>	Funkwerk	FCC ID:	2AAYTFT41C	IC:	11389A-FT41C	
<b>DUT Type:</b>	Portable TETRA Radio Transceiver	DUT:	FT4 S_1c ig, FT4 S Ex_1c C ig			
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