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TEST REPORT

Report Number: **103177090LEX-018**
Project Number: **G103177090**

Report Issue Date: **12/27/2017**

Product Name: **Wireless Pillbox**

Standards: **FCC Part 2.1093**
RSS-102 Issue 5

Tested by:

Intertek Testing Services NA, Inc.
731 Enterprise Drive
Lexington, KY 40510

Client:

TowerView Health, Inc.
STE 2500, 2001 Market Street
Philadelphia, PA 19103

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1.0 INTRODUCTION

At the request of TowerView Health, Inc. the Wireless Pillbox was evaluated for SAR in accordance with the requirements for FCC Part 2.1093 and RSS-102 Issue 5. Testing was performed in accordance with IEEE Std 1528:2013, IEC62209-2:2010, and the Office of Engineering and Technology KDB 447498. Testing was performed at the Intertek facility in Lexington, Kentucky.

For the evaluation, the dosimetric assessment system DASY52 was used. The total uncertainty for the evaluation of the spatial peak SAR values averaged over a cube of 1g tissue mass had been assessed for this system to be ±22.3%.

The Wireless Pillbox was tested at the maximum output power measured by Intertek. Maximum output power measurements are tabulated under Section 7.0 Test Results. The maximum spatial peak SAR value for the sample device averaged over 1g (for body worn mode) and 10g (for hand held mode) is shown below.

Based on the worst-case data presented above, the Wireless Pillbox was found to be **compliant** with the 1.6 W/kg and 4W/kg requirements for general population / uncontrolled exposure.

Table 1: Worst Case Reported SAR per Transmit Mode

Appendix Number	Transmit Mode	Device Position	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Reported SAR_{1g} – Body Mode (W/kg)	Limit (W/kg)
APPENDIX B – Worst Case Bluetooth SAR Plot	BTLE	Top Side	2442MHz	12dBm	0.0311W/kg	1.6W/kg
APPENDIX C – Worst Case WiFi SAR Plot	2.4GHz WiFi (DSSS)	Top Side	2437MHz	15dBm	0.442W/kg	1.6W/kg
APPENDIX D – worst Case LTE Band 4 SAR Plot	LTE Band 4 (QPSK)	Back Side	1732.5MHz	25dBm	0.6937W/kg	1.6W/kg
APPENDIX E – Worst case LTE Band 13 SAR Plot	LTE Band 13 (QPSK)	Back Side	782MHz	25dBm	0.3128W/kg	1.6W/kg

Note: According to the manufacturer this device does not support simultaneous transmission for any of the radios listed above.

2.0 TEST SITE DESCRIPTION

The SAR test site located at 731 Enterprise Drive, Lexington KY 40510 is comprised of the SPEAG model DASY 5.2 automated near-field scanning system, which is a package, optimized for dosimetric evaluation of mobile radios [3]. This system is installed in an ambient-free shielded chamber. The ambient temperature is controlled to 22.0 +2OC. During the SAR evaluations, the RF ambient conditions are monitored continuously for signals that might interfere with the test results. The tissue simulating liquid is also stored in this area in order to keep it at the same constant ambient temperature as the room.

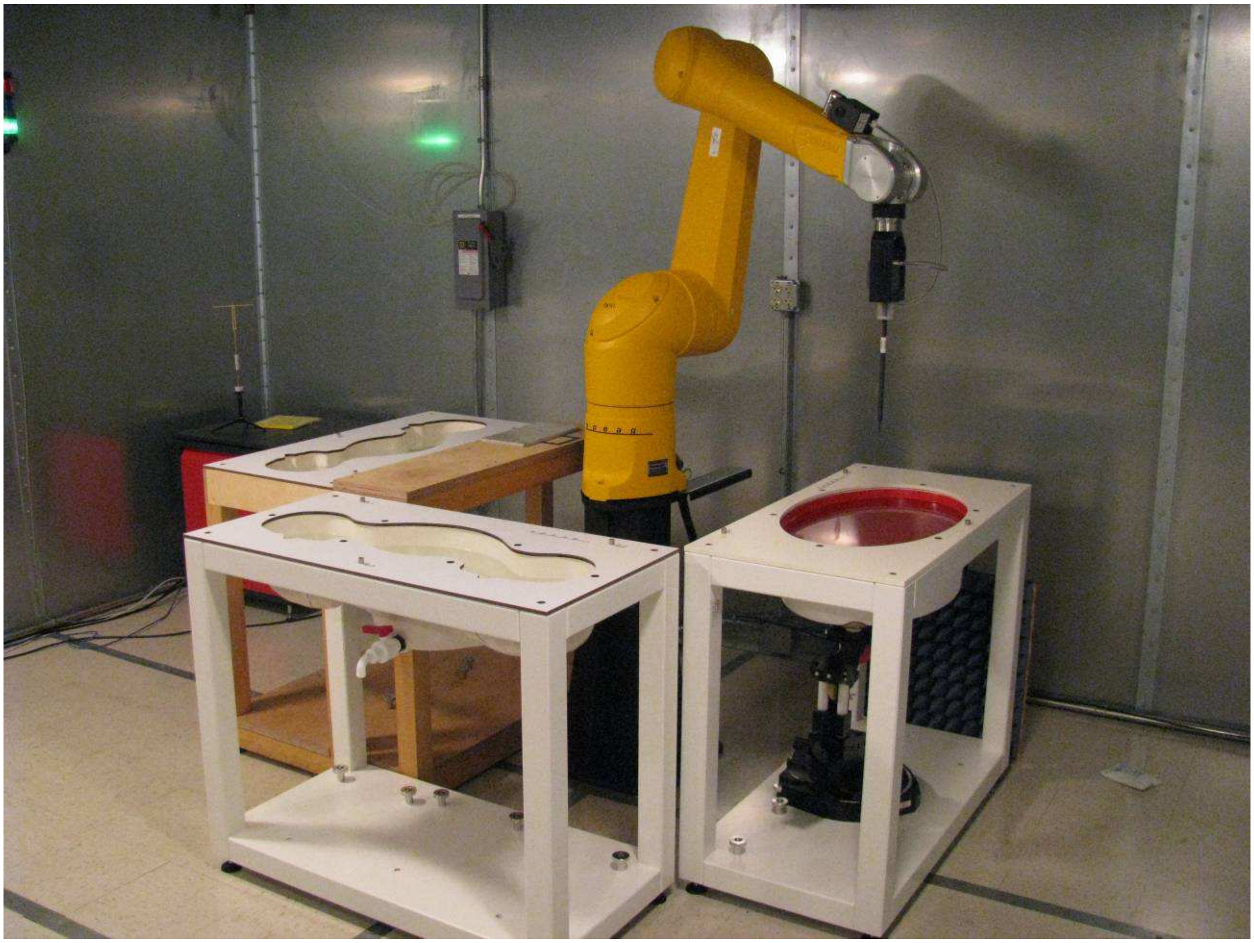

Figure 1: Intertek SAR Test Site

1.1 Measurement Equipment

The following major equipment/components were used for the SAR evaluation:

Table 2: Test Equipment Used for SAR Evaluation

Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
SAR Probe	3516	Speag	EXDV3	11/15/2017	11/15/2018
System Verification Dipole	13	Speag	D750V3	11/9/2017	11/9/2018
System Verification Dipole	224	Speag	D1800V2	11/8/2017	11/8/2018
System Verification Dipole	718	Speag	D2450V2	11/7/2017	11/7/2018
DAE	358	Speag	DAE4	11/7/2017	11/7/2018
Vector Signal Generator	257708	Rohde & Schwarz	SMBV100A	9/20/2017	9/20/2018
Network Analyzer	US39173983	Agilent	8753ES	3/14/2017	3/14/2018
USB Power Sensor	100155	Rohde & Schwarz	NRP-Z81	9/20/2017	9/20/2018
USB Power Sensor	100705	Rohde & Schwarz	NRP-Z51	9/20/2017	9/20/2018
Dielectric Probe Kit	1111	Speag	DAK-3.5	NCR	NCR
Spectrum Analyzer	3099	Rohde & Schwarz	FSP7	10/18/2017	10/18/2018
Base Station Simulator	3917	Rohde & Schwarz	CMW5090	9/22/2017	9/22/2018
SAM Twin Phantom	1663	Speag	QD 000 P40 C	NCR	NCR
Oval Flat Phantom ELI 5.0	1108	Speag	QD OVA 002 A	NCR	NCR
6-axis robot	F11/5H1YA/A/01	Staubli	RX-90	NCR	NCR
Thermometer	3181	Fluke	53II	3/6/2017	3/6/2018

**NCR – No Calibration Required*

1.2 Measurement Uncertainty

The Table below includes the uncertainty budget suggested by the IEEE Std 1528-2013 and determined by SPEAG for the DASY5 measurement System.

Error Description	Uncertainty Value	Prob. Dist.	Div.	c_i (1g)	c_i (10g)	Std.Unc. (1g)	Std.Unc. (10g)	(v_i) v_{eff}
Measurement System								
Probe Calibration	±6.0%	N	1	1	1	±6.0%	±6.0%	∞
Axial Isotropy	±4.7%	R	√3	0.7	0.7	±1.9%	±1.9%	∞
Hemispherical Isotropy	±9.6%	R	√3	0.7	0.7	±3.9%	±3.9%	∞
Boundary Effect	±1.0%	R	√3	1	1	±0.6%	±0.6%	∞
Linearity	±4.7%	R	√3	1	1	±2.7%	±2.7%	∞
System Detection Limits	±1.0%	R	√3	1	1	±0.6%	±0.6%	∞
Modulation Response	±2.4%	R	√3	1	1	±1.4%	±1.4%	∞
Readout Electronics	±0.3%	N	1	1	1	±0.3%	±0.3%	∞
Response Time	±0.8%	R	√3	1	1	±0.5%	±0.5%	∞
Integration Time	±2.6%	R	√3	1	1	±1.5%	±1.5%	∞
RF Ambient Noise	±3.0%	R	√3	1	1	±1.7%	±1.7%	∞
RF Ambient Reflections	±3.0%	R	√3	1	1	±1.7%	±1.7%	∞
Probe Positioner	±0.4%	R	√3	1	1	±0.2%	±0.2%	∞
Probe Positioning	±2.9%	R	√3	1	1	±1.7%	±1.7%	∞
Max. SAR Eval.	±2.0%	R	√3	1	1	±1.2%	±1.2%	∞
Test sample Related								
Device Positioning	±2.9%	N	1	1	1	±2.9%	±2.9%	145
Device Holder	±3.6%	N	1	1	1	±3.6%	±3.6%	5
Power Drift	±5.0%	R	√3	1	1	±2.9%	±2.9%	∞
Power Scaling	±0.0%	R	√3	1	1	±0%	±0%	∞
Phantom and Setup								
Phantom Uncertainty	±6.1%	R	√3	1	1	±3.5%	±3.5%	∞
SAR Correction	±1.9%	R	√3	1	0.84	±1.1%	±0.9%	∞
Liquid Conductivity (mea.)	±2.5%	R	√3	0.78	0.71	±1.1%	±1.0%	∞
Liquid Permittivity(mea.)	±2.5%	R	√3	0.26	0.26	±0.3%	±0.4%	∞
Temp unc. - Conductivity	±3.4%	R	√3	0.78	0.71	±1.5%	±1.4%	∞
Temp unc. - Permittivity	±0.4%	R	√3	0.23	0.26	±0.1%	±0.1%	∞
Combined Standard Uncertainty						±11.2%	±11.1%	361
Expanded STD Uncertainty						±22.3%	±22.2%	

Notes.

1. Worst Case uncertainty budget for DASY5 assessed according to IEEE 1528-2013. The budget is valid for the frequency range 300 MHz – 3 GHz and represents a worst-case analysis. For specific tests and configurations, the uncertainty could be considerably smaller.

Error Description	Uncertainty Value	Prob. Dist.	Div.	c_i (1g)	c_i (10g)	Std.Unc. (1g)	Std.Unc. (10g)	(v_i) v_{eff}
Measurement System								
Probe Calibration	±6.55%	N	1	1	1	±6.55%	±6.55%	∞
Axial Isotropy	±4.7%	R	√3	0.7	0.7	±1.9%	±1.9%	∞
Hemispherical Isotropy	±9.6%	R	√3	0.7	0.7	±3.9%	±3.9%	∞
Boundary Effect	±2.0%	R	√3	1	1	±1.2%	±1.2%	∞
Linearity	±4.7%	R	√3	1	1	±2.7%	±2.7%	∞
System Detection Limits	±1.0%	R	√3	1	1	±0.6%	±0.6%	∞
Modulation Response	±2.4%	R	√3	1	1	±1.4%	±1.4%	∞
Readout Electronics	±0.3%	N	1	1	1	±0.3%	±0.3%	∞
Response Time	±0.8%	R	√3	1	1	±0.5%	±0.5%	∞
Integration Time	±2.6%	R	√3	1	1	±1.5%	±1.5%	∞
RF Ambient Noise	±3.0%	R	√3	1	1	±1.7%	±1.7%	∞
RF Ambient Reflections	±3.0%	R	√3	1	1	±1.7%	±1.7%	∞
Probe Positioner	±0.8%	R	√3	1	1	±0.5%	±0.5%	∞
Probe Positioning	±6.7%	R	√3	1	1	±3.9%	±3.9%	∞
Max. SAR Eval.	±4.0%	R	√3	1	1	±2.3%	±2.3%	∞
Test sample Related								
Device Positioning	±2.9%	N	1	1	1	±2.9%	±2.9%	145
Device Holder	±3.6%	N	1	1	1	±3.6%	±3.6%	5
Power Drift	±5.0%	R	√3	1	1	±2.9%	±2.9%	∞
Power Scaling	±0.0%	R	√3	1	1	±0%	±0%	∞
Phantom and Setup								
Phantom Uncertainty	±6.6%	R	√3	1	1	±3.8%	±3.8%	∞
SAR Correction	±1.9%	R	√3	1	0.84	±1.1%	±0.9%	∞
Liquid Conductivity (mea.)	±2.5%	R	√3	0.78	0.71	±1.1%	±1.0%	∞
Liquid Permittivity(mea.)	±2.5%	R	√3	0.26	0.26	±0.3%	±0.4%	∞
Temp unc. - Conductivity	±3.4%	R	√3	0.78	0.71	±1.5%	±1.4%	∞
Temp unc. - Permittivity	±0.4%	R	√3	0.23	0.26	±0.1%	±0.1%	∞
Combined Standard Uncertainty						±12.3%	±12.2%	748
Expanded STD Uncertainty						±24.6%	±24.5%	

Notes.
Worst Case uncertainty budget for DASY5 assessed according to IEEE 1528-2013. The budget is valid for the frequency range 3 GHz – 6 GHz and represents a worst-case analysis. Probe calibration error reflects uncertainty of the EX3D probe. For specific tests and configurations, the uncertainty could be considerably smaller.

3.0 JOB DESCRIPTION

At the request of TowerView Health, Inc., SAR testing was performed on the Wireless Pillbox v2.5. The Wireless Pillbox was a wireless pill box which reminds the user when it is time to take their medications.

Table 3: Product Information

Test Sample Information	
Manufacturer	TowerView Health, Inc.
Product Name	Wireless Pillbox (Model:v2.5)
Serial Number	Test Sample 1
Receive Date	11/12/2017
Device Received Condition	Good
Test Dates	12/7/2017 to 12/12/1019
Device Category	Portable
RF Exposure Category	General Population/Uncontrolled Environment
Antenna Type	Internal
Test sample Accessories	
Accessory	None

Table 4: Operating Bands

Operating Bands	Frequency Range (MHz)	Modulation	Max Output Power (dBm)	Duty Cycle
LTE Band 4	1710 – 1755MHz	QPSK, 16QAM	25dBm	1:1
LTE Band 13	777 – 787MHz	QPSK, 16QAM	25dBm	1:1
2.4GHz WiFi	2412 – 2462MHz	GFSK, Pi/4-DQPSK, 8DPSK	15dBm	1:1
Bluetooth (FHSS)	2402 – 2480MHz	BPSK, QPSK, 16QAM, 64QAM	12dBm	1:1

4.0 SYSTEM VERIFICATION

System Validation

Prior to the assessment, the system was verified to be within ±10% of the specifications by using the system validation kit. The system validation procedure tests the system against reference SAR values and the performance of probe, readout electronics and software. The test setup utilizes a phantom and reference dipole.

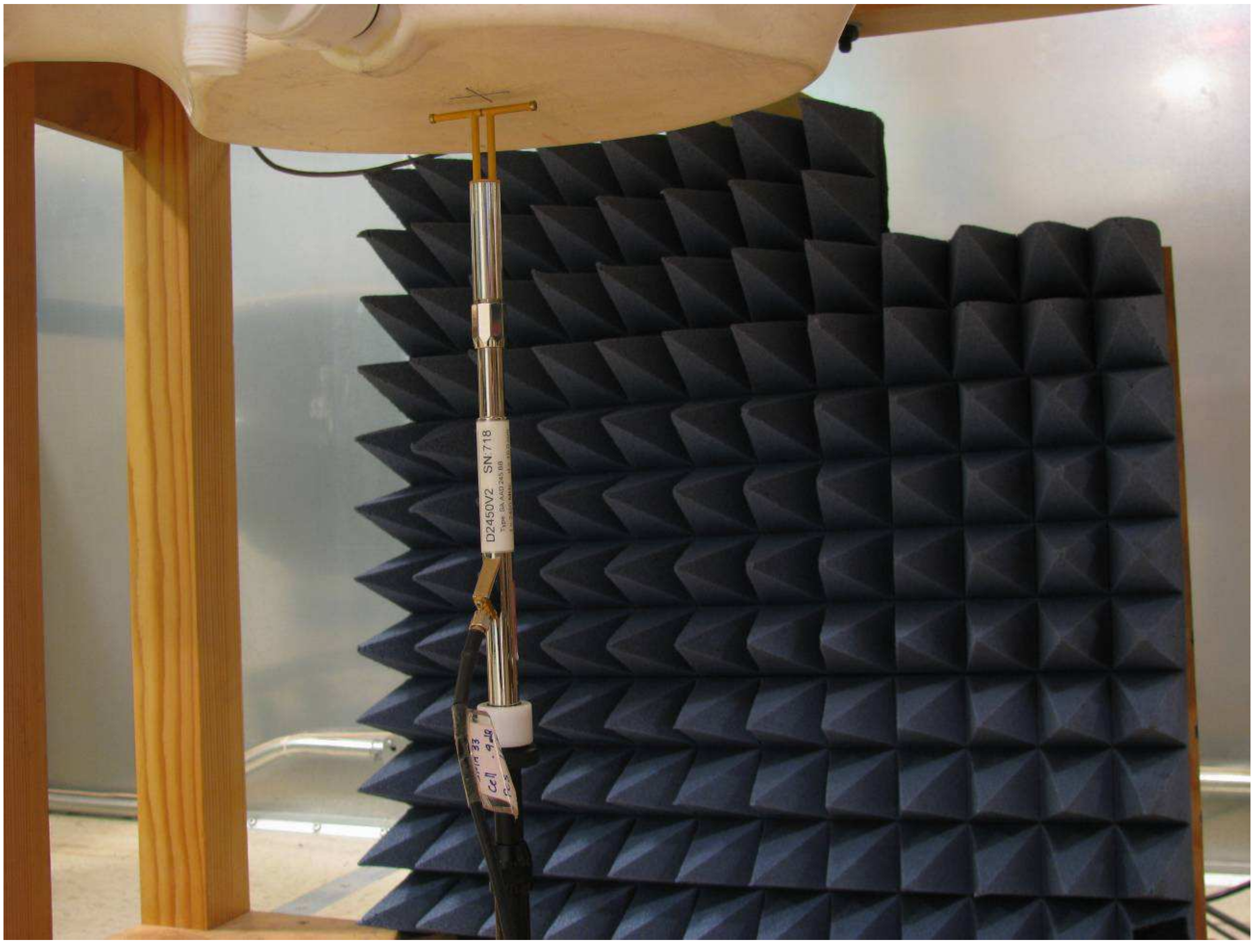

Figure 2: System Verification Setup

Table 5: Dipole Validations (1g)

Reference Dipole Validation									
Ambient Temp (ºC)	Fluid Temp (ºC)	Frequency (MHz)	Dipole	Fluid Type	Dipole Power Input	Cal. Lab SAR (1g)	Measured SAR (1g)	% Error SAR (1g)	Date
23.2	23.1	1800	D1800V2	MSL1800	1W	38.4	35.6	7.29	12/7/2017
23.2	23.1	750	D750V3	MSL750	1W	8.46	7.91	6.50	12/8/2017
23.2	23.1	2450	D2450V2	MSL2450	1W	51.3	50.4	1.75	12/11/2017
23.2	23.1	2450	D2450V2	MSL2450	1W	51.3	51.8	0.97	12/12/2017

Table 6: Dipole Validations (10g)

Reference Dipole Validation									
Ambient Temp (ºC)	Fluid Temp (ºC)	Frequency (MHz)	Dipole	Fluid Type	Dipole Power Input	Cal. Lab SAR (10g)	Measured SAR (10g)	% Error SAR (10g)	Date
23.2	23.1	1800	D1800V2	MSL1800	1W	20.2	18.9	6.44	12/7/2017
23.2	23.1	750	D750V3	MSL750	1W	5.59	5.31	5.01	12/8/2017
23.2	23.1	2450	D2450V2	MSL2450	1W	24.1	23.5	2.49	12/11/2017
23.2	23.1	2450	D2450V2	MSL2450	1W	24.1	23.7	1.66	12/12/2017

Measurement Uncertainty for System Validation

Source of Uncertainty	Value(dB)	Probability Distribution	Divisor	c_i	$u_i(y)$	$(u_i(y))$^2
Measurement System						
Probe Calibration	5.50	n1	1	1	5.50	30.250
Axial Isotropy	4.70	r	1.732	0.7	2.71	7.364
Hemispherical Isotropy	9.60	r	1.732	0.7	5.54	30.722
Boundary Effect	1.00	r	1.732	1	0.58	0.333
Linearity	4.70	r	1.732	1	2.71	7.364
System Detection Limits	1.00	r	1.732	1	0.58	0.333
Readout Electronics	0.30	n1	1	1	0.30	0.090
Response Time	0.80	r	1.732	1	0.46	0.213
Integration Time	2.60	r	1.732	1	1.50	2.253
RF Ambient Noise	3.00	r	1.732	1	1.73	3.000
RF Ambient Reflections	3.00	r	1.732	1	1.73	3.000
Probe Positioner	0.40	r	1.732	1	0.23	0.053
Probe Positioning	2.90	r	1.732	1	1.67	2.803
Max. SAR Eval.	1.00	r	1.732	1	0.58	0.333
Dipole / Generator / Power Meter Related						
Dipole positioning	2.90	n1	1	1	2.90	8.410
Dipole Calibration Uncertainty	0.68	r	1.732	1	0.39	0.154
Power Meter 1 Uncertainty (+20C to +25C)	0.13	n1	1	2	0.13	0.017
Power Meter 2 Uncertainty (+20C to +25C)	0.04	n1	1	3	0.04	0.002
Sig Gen VSWR Mismatch Error	1.80	n1	1	5	1.80	3.240
Sig Gen Resolution Error	0.01	n1	1	6	0.01	0.000
Sig Gen Level Error	0.90	n1	1	1	0.90	0.810
Phantom and Setup						
Phantom Uncertainty	4.00	r	1.732	1	2.31	5.334
Liquid Conductivity (target)	5.00	r	1.732	0.43	2.89	8.334
Liquid Conductivity (meas.)	2.50	n1	1	0.43	2.50	6.250
Liquid Permittivity (target)	5.00	r	1.732	0.49	2.89	8.334
Liquid Permittivity (meas.)	2.50	n1	1	0.49	2.50	6.250
Combined Standard Uncertainty		N1	1	1	11.63	135.247
Expanded Uncertainty		Normal k=	2		23.26	
Expanded Uncertainty	is	23.3	for	Normal	k=	2

Tissue Simulating Liquid Description and Validation

The dielectric parameters were verified to be within 5% of the target values prior to assessment. The dielectric parameters (**ε_r, σ**) are shown in Table 7. A recipe for the tissue simulating fluid used is shown in Table 8.

Table 7: Dielectric Parameter Validations

Measured Tissue Properties									
Tissue Type	Frequency Measure (MHz)	Dielectric Constant Target	Conductivity Target	Dielectric Constant Measure	Imaginary Part	Conductivity Measure	Dielectric % Deviation	Conductivity % Deviation	Date
1750 MSL	1710	53.53	1.46	53.12	15.7	1.49	0.77	2.23	12/7/2017
	1732	53.5	1.48	53.08	15.6	1.5022	0.79	1.50	12/7/2017
	1755	53.43	1.49	53.01	15.5	1.5123	0.79	1.50	12/7/2017

Measured Tissue Properties									
Tissue Type	Frequency Measure (MHz)	Dielectric Constant Target	Conductivity Target	Dielectric Constant Measure	Imaginary Part	Conductivity Measure	Dielectric % Deviation	Conductivity % Deviation	Date
750MSL	777	56	0.95	55.3	21.4	0.92	1.25	2.69	12/8/2017
	780	56	0.95	55.2	21.6	0.9367	1.43	1.40	12/8/2017
	787	56	0.95	55	21.5	0.9407	1.79	0.98	12/8/2017

Tissue Type	Frequency Measure (MHz)	Dielectric Constant Target	Conductivity Target	Dielectric Constant Measure	Imaginary Part	Conductivity Measure	Dielectric % Deviation	Conductivity % Deviation	Date
2450MSL	2400	52.77	1.95	51.8	14.2	1.89	1.84	2.84	12/11/2017
	2450	52.7	1.95	51.5	14.6	1.9887	2.28	1.98	12/11/2017
	2480	52.66	1.95	51.4	14.8	2.0406	2.39	4.65	12/11/2017

Tissue Type	Frequency Measure (MHz)	Dielectric Constant Target	Conductivity Target	Dielectric Constant Measure	Imaginary Part	Conductivity Measure	Dielectric % Deviation	Conductivity % Deviation	Date
2450MSL	2400	52.77	1.95	51.7	14.1	1.88	2.03	3.52	12/12/2017
	2450	52.7	1.95	51.7	14.2	1.9342	1.90	0.81	12/12/2017
	2480	52.66	1.95	51.6	14.5	1.9992	2.01	2.52	12/12/2017

Table 8: Tissue Simulating Fluid Recipe

Composition of Ingredients for Liquid Tissue Phantoms (450MHz to 2450 MHz data only)												
Ingredient (% by weight)	**f (MHz)**											
	450		**835**		**915**		**1900**		**2450**		**5500**	
Tissue Type	**Head**	**Body**	**Head**	**Body**	**Head**	**Body**	**Head**	**Body**	**Head**	**Body**	**Head**	**Body**
Water	38.56	51.16	41.45	52.4	41.05	56	54.9	70.45	62.7	68.64	65.53	78.67
Salt (NaCl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.36	0.5	0	0	0
Sugar	56.32	46.78	56	45	56.5	41.76	0	0	0	0	0	0
HEC	0.98	0.52	1	1	1	1.21	0	0	0	0	0	0
Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0	0	0	0	0	0
Triton X-100	0	0	0	0	0	0	0	0	36.8	0	17.235	10.665
DGBE	0	0	0	0	0	0	44.92	29.18	0	31.37	0	0
DGHE	0	0	0	0	0	0	0	0	0	0	17.235	10.665
Dielectric Constant	43.42	58	42.54	56.1	42	56.8	39.9	53.3	39.8	52.7		
Conductivity (S/m)	0.85	0.83	0.91	0.95	1	1.07	1.42	1.52	1.88	1.95		

Tissue Simulating Liquid for 5GHz, MBBL3500-5800V5 Manufactured by SPEAG (proprietary mixture)

Ingredients	**(% by weight)**
Water	78
Mineral oil	11
Emulsifiers	9
Additives and Salt	2

5.0 EVALUATION PROCEDURES

Prior to any testing, the appropriate fluid was used to fill the phantom to a depth of 15 cm ±0.2cm. The fluid parameters were verified and the dipole validation was performed as described in the previous sections.

Test Positions:

The Device was positioned against the SAM and flat phantom using the exact procedure described in IEEE Std 1528:2013, IEC62209-2:2010, and the Office of Engineering and Technology KDB 447498.

Reference Power Measurement:

The measurement probe was positioned at a fixed location above the reference point. A power measurement was made with the probe above this reference position so it could used for the assessing the power drift later in the test procedure.

Area Scan:

A coarse area scan was performed in order to find the approximate location of the peak SAR value. This scan was performed with the measurement probe at a constant height in the simulating fluid. A two dimensional spline interpolation algorithm was then used to determine the peaks and gradients within the scanned area. The area scan resolution conformed to the requirements of KDB 865664 as shown in Table 9.

Zoom Scan:

A zoom scan was performed around the approximate location of the peak SAR as determined from the area scan. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure. The zoom scan resolution conformed to the requirements of KDB 865664 as shown in Table 9.

Table 9: SAR Area and Zoom Scan Resolutions

<table>
<tr><td colspan="3"></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5 ± 1 mm</td><td>½·δ·ln(2) ± 0.5 mm</td></tr>
<tr><td colspan="3">Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30° ± 1°</td><td>20° ± 1°</td></tr>
<tr><td colspan="3" rowspan="2">Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}</td><td>≤ 2 GHz: ≤ 15 mm
2 – 3 GHz: ≤ 12 mm</td><td>3 – 4 GHz: ≤ 12 mm
4 – 6 GHz: ≤ 10 mm</td></tr>
<tr><td colspan="2">When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>≤ 2 GHz: ≤ 8 mm
2 – 3 GHz: ≤ 5 mm*</td><td>3 – 4 GHz: ≤ 5 mm*
4 – 6 GHz: ≤ 4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{Zoom}(n)$</td><td>≤ 5 mm</td><td>3 – 4 GHz: ≤ 4 mm
4 – 5 GHz: ≤ 3 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>≤ 4 mm</td><td>3 – 4 GHz: ≤ 3 mm
4 – 5 GHz: ≤ 2.5 mm
5 – 6 GHz: ≤ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">≤ 1.5·$\Delta z_{Zoom}(n-1)$</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>≥ 30 mm</td><td>3 – 4 GHz: ≥ 28 mm
4 – 5 GHz: ≥ 25 mm
5 – 6 GHz: ≥ 22 mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
* When zoom scan is required and the <u>reported</u> SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

Interpolation, Extrapolation and Detection of Maxima:

The probe is calibrated at the center of the dipole sensors which is located 1 to 2.7 mm away from the probe tip. During measurements, the probe stops shortly above the phantom surface, depending on the probe and the surface detecting system. Both distances are included as parameters in the probe configuration file. The software always knows exactly how far away the measured point is from the surface. As the probe cannot directly measure at the surface, the values between the deepest measured point and the surface must be extrapolated.

In DASY5, the choice of the coordinate system defining the location of the measurement points has no influence on the uncertainty of the interpolation, Maxima Search and extrapolation routines. The interpolation, extrapolation and maximum search routines are all based on the modified Quadratic Shepard's method.

Thereby, the interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation. The DASY5 routines construct a once-continuously differentiable function that interpolates the measurement values as follows:

- For each measurement point a trivariate (3-D) / bivariate (2-D) quadratic is computed. It interpolates the measurement values at the data point and forms a least-square fit to neighboring measurement values.
- The spatial location of the quadratic with respect to the measurement values is attenuated by an inverse distance weighting. This is performed since the calculated quadratic will fit measurement values at nearby points more accurate than at points located further away.
- After the quadratics are calculated for at all measurement points, the interpolating function is calculated as a weighted average of the quadratics.

There are two control parameters that govern the behavior of the interpolation method. One specifies the number of measurement points to be used in computing the least-square fits for the local quadratics. These measurement points are the ones nearest the input point for which the quadratic is being computed. The second parameter specifies the number of measurement points that will be used in calculating the weights for the quadratics to produce the final function. The input data points used there are the ones nearest the point at which the interpolation is desired. Appropriate defaults are chosen for each of the control parameters.

The trivariate quadratics that have been previously computed for the 3-D interpolation and whose input data are at the closest distance from the phantom surface, are used in order to extrapolate the fields to the surface of the phantom.

In order to determine all the field maxima in 2-D (Area Scan) and 3-D (Zoom Scan), the measurement grid is refined by a default factor of 10 and the interpolation function is used to evaluate all field values between corresponding measurement points. Subsequently, a linear search is applied to find all the candidate maxima. In a last step, non-physical maxima are removed and only those maxima which are within 2 dB of the global maximum value are retained.

Averaging and Determination of Spatial Peak SAR

The interpolated data is used to average the SAR over the 1g and 10g cubes by spatially discretizing the entire measured volume. The resolution of this spatial grid used to calculate the averaged SAR is 1mm or about 42875 interpolated points. The resulting volumes are defined as cubical volumes containing the appropriate tissue parameters that are centered at the location. The location is defined as the center of the incremental volume.

The spatial-peak SAR must be evaluated in cubical volumes containing a mass that is within 5% of the required mass. The cubical volume centered at each location, as defined above, should be expanded in all directions until the desired value for the mass is reached, with no surface boundaries of the averaging volume extending beyond the outermost surface of the considered region. In addition, the cubical volume should not consist of more than 10% of air. If these conditions are not satisfied then the center of the averaging volume is moved to the next location. Otherwise, the exact size of the final sampling cube is found using an inverse polynomial approximation algorithm, leading to results with improved accuracy. If one boundary of the averaging volume reaches the boundary of the measured volume during its expansion, it will not be evaluated at all. Reference is kept of all locations used and those not used for averaging the SAR. All average SAR values are finally assigned to the centered location in each valid averaging volume.

All locations included in an averaging volume are marked to indicate that they have been used at least once. If a location has been marked as used, but has never been assigned to the center of a cube, the highest averaged SAR value of all other cubical volumes which have used this location for averaging is assigned to this location. Only those locations that are not part of any valid averaging volume should be marked as unused. For the case of an unused location, a new averaging volume must be constructed which will have the unused location centered at one surface of the cube. The remaining five surfaces are expanded evenly in all directions until the required mass is enclosed, regardless of the amount of included air. Of the six possible cubes with one surface centered on the unused location, the smallest cube is used, which still contains the required mass.

If the final cube containing the highest averaged SAR touches the surface of the measured volume, an appropriate warning is issued within the post processing engine.

Power Drift Measurement:

The probe was positioned at precisely the same reference point and the reference power measurement was repeated. The difference between the initial reference power and the final one is referred to as the power drift. This value should not exceed 5%. The power drift measurement was used to assess the output power stability of the test sample throughout the SAR scan.

RF Ambient Activity:

During the entire SAR evaluation, the RF ambient activity was monitored using a spectrum analyzer with an antenna connected to it. The spectrum analyzer was tuned to the frequency of measurement and with one trace set to max hold mode. In this way, it was possible to determine if at any point during the SAR measurement there was an interfering ambient signal. If an ambient signal was detected, then the SAR measurement was repeated.

Criteria

The following FCC limits for SAR apply to portable devices operating in the General Population/Uncontrolled Exposure environment:

Exposure **(General Population/Uncontrolled Exposure environment)**	**SAR** **(W/kg)**
Average over the whole body	0.08
Spatial Peak (1g)	1.60
Spatial Peak for hands, wrists, feet and ankles (10g)	4.00

6.0 TEST CONFIGURATION

The Wireless Pillbox could be in a backpack, suitcase, or purse when transmitting. These devices provide an undetermined separation distance to the user. Therefore it was tested for body mode exposure with 0mm spacing to the SAR phantom in an effort to simulate the worst case body exposure condition likely to occur in this exposure situation.

The Wireless Pillbox could also be used whilst being held in the hand of the user. Therefore the 10g SAR was also measured and compared to the extremity limits for hands, feet, wrists, and ankles.

The device was evaluated according to the specific requirements found in the following KDBs and Standards:

- FCC KDB 447498D01 v06, General RF Exposure Guidance
- FCC KDB 865664D01 v01r04, SAR Measurement Requirements for 100MHz to 6GHz
- FCC KDB 248227D01 v02r02, SAR Guidance for 802.11 (WiFi) Transmitters
- FCC KDB 941225D05 v02r05, SAR Evaluation Considerations for LTE Devices
- RSS-102 Issue 5, Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)

The worst case 1-g SAR value was less than the 1.6W/kg limit. The worst case 10-g SAR value was less than the 4.0W/kg limit for extremities.

According to the manufacturer, it is not possible for any of the radios onboard to simultaneously transmit. Therefore no simultaneous transmission conditions were considered.

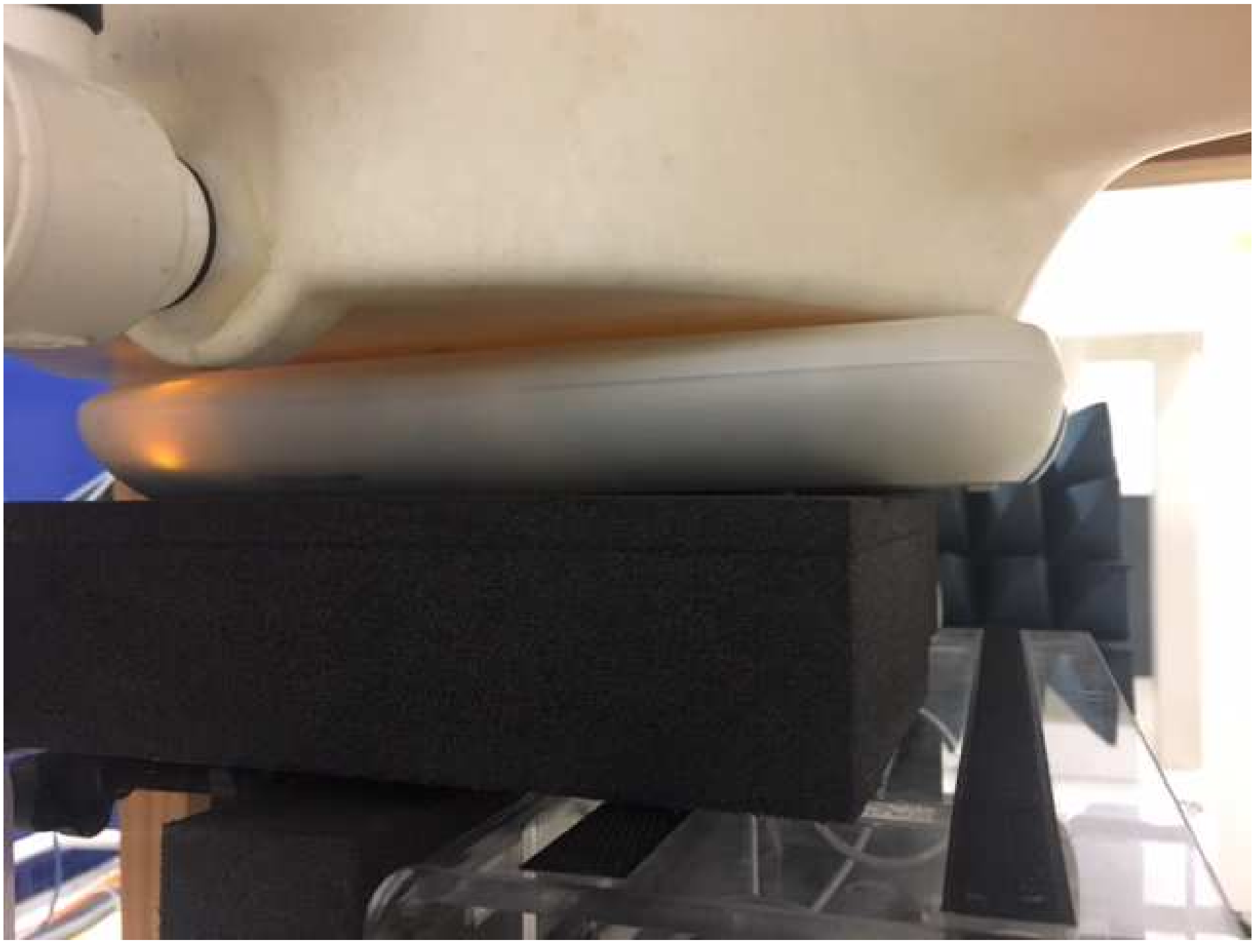

Figure 3: Test Setup (Direct Contact)

Figure 4: Test Setup (Direct Contact, Edge)

7.0 TEST RESULTS

The results on the following page(s) were obtained when the device was transmitting at maximum output power. Detailed measurement data and plots, which reveal information about the location of the maximum SAR with respect to the device, are referenced are shown in separate exhibits presented with this application. The measured conducted output power was compared to the power declared by the manufacturer and used for scaling the measured SAR values.

Table 10: WiFi Conducted Output Power

Mode	Data Rate	Channel	Freq. (MHz)	Average Power (dBm)
802.11b	1Mbps	1	2412	14.01
		6	2437	14.55
		11	2463	10.56
802.11g	6Mbps	1	2412	14.38
		6	2437	13.56
		11	2463	10.07
802.11n20	0MCS	1	2412	14.12
		6	2437	12.64
		11	2463	10.21
802.11n40	0MCS	3	2422	14.02
		6	2437	12.11
		9	2452	10.31

Table 11: Bluetooth Conducted Output Power

Mode	Data Rate	Channel	Freq. (MHz)	Average Power (dBm)
BT	GFSK	0	2402	10.02
		39	2441	10.13
		78	2480	10.14
BT	Pi/4-DQPSK	0	2402	11.57
		39	2441	11.87
		78	2480	12.01
BT	8DPSK	0	2402	12.03
		39	2441	12.44
		78	2480	12.18
BTLE	GFSK	0	2402	12.35
		19	2442	13.48
		39	2480	13.36

Table 12: LTE Conducted Output Power, LTE Band 4 (1.4MHz)

Channel	Modulation	RB No.	RB Offset	MPR	Max Power
					(dBm)
19957	QPSK	1	#0	0	23.42
		1	#Mid	0	23.43
		1	#Max	0	23.40
		50%	#0	0	23.44
		50%	#Mid	0	**23.46**
		50%	#Max	0	23.44
		100%	--	1	22.47
	16QAM	1	#0	1	**22.81**
		1	#Mid	1	22.80
		1	#Max	1	22.67
		50%	#0	1	22.55
		50%	#Mid	1	22.54
		50%	#Max	1	22.51
		100%	--	2	21.41
20175	QPSK	1	#0	0	23.64
		1	#Mid	0	23.57
		1	#Max	0	23.65
		50%	#0	0	23.68
		50%	#Mid	0	**23.70**
		50%	#Max	0	23.67
		100%	--	1	22.71
	16QAM	1	#0	1	**22.96**
		1	#Mid	1	22.90
		1	#Max	1	22.84
		50%	#0	1	22.79
		50%	#Mid	1	22.82
		50%	#Max	1	22.79
		100%	--	2	21.66
20393	QPSK	1	#0	0	**23.82**
		1	#Mid	0	23.76
		1	#Max	0	23.76
		50%	#0	0	23.82
		50%	#Mid	0	23.81
		50%	#Max	0	23.79
		100%	--	1	22.80
	16QAM	1	#0	1	**23.01**
		1	#Mid	1	22.93
		1	#Max	1	22.93
		50%	#0	1	22.98
		50%	#Mid	1	22.98
		50%	#Max	1	23.00
		100%	--	2	21.86

Table 13: LTE Conducted Output Power, LTE Band 4 (3MHz)

Channel	Modulation	RB No.	RB Offset	MPR	Max Power
19965	QPSK	1	#0	0	23.41
		1	#Mid	0	**23.44**
		1	#Max	0	23.34
		50%	#0	1	22.45
		50%	#Mid	1	22.42
		50%	#Max	1	22.43
		100%	--	1	22.47
	16QAM	1	#0	1	22.84
		1	#Mid	1	**22.90**
		1	#Max	1	22.82
		50%	#0	2	21.50
		50%	#Mid	2	21.45
		50%	#Max	2	21.47
		100%	--	2	21.51
20175	QPSK	1	#0	0	**23.65**
		1	#Mid	0	23.62
		1	#Max	0	23.59
		50%	#0	1	22.79
		50%	#Mid	1	22.80
		50%	#Max	1	22.75
		100%	--	1	22.77
	16QAM	1	#0	1	23.10
		1	#Mid	1	**23.12**
		1	#Max	1	23.02
		50%	#0	2	21.69
		50%	#Mid	2	21.67
		50%	#Max	2	21.64
		100%	--	2	21.67
20385	QPSK	1	#0	0	**23.80**
		1	#Mid	0	23.73
		1	#Max	0	23.68
		50%	#0	1	22.88
		50%	#Mid	1	22.87
		50%	#Max	1	22.82
		100%	--	1	22.87
	16QAM	1	#0	1	**23.14**
		1	#Mid	1	23.05
		1	#Max	1	22.98
		50%	#0	2	21.91
		50%	#Mid	2	21.84
		50%	#Max	2	21.86
		100%	--	2	21.88

Table 14: LTE Conducted Output Power, LTE Band 4 (5MHz)

Channel	Modulation	RB No.	RB Offset	MPR	Max Power
19965	QPSK	1	#0	0	**23.37**
		1	#Mid	0	23.35
		1	#Max	0	23.30
		50%	#0	1	22.55
		50%	#Mid	1	22.47
		50%	#Max	1	22.44
		100%	--	1	22.47
	16QAM	1	#0	1	22.80
		1	#Mid	1	**22.86**
		1	#Max	1	22.67
		50%	#0	2	21.55
		50%	#Mid	2	21.45
		50%	#Max	2	21.40
		100%	--	2	21.44
20175	QPSK	1	#0	0	**23.74**
		1	#Mid	0	23.67
		1	#Max	0	23.66
		50%	#0	1	22.79
		50%	#Mid	1	22.78
		50%	#Max	1	22.74
		100%	--	1	22.76
	16QAM	1	#0	1	**23.06**
		1	#Mid	1	23.06
		1	#Max	1	22.97
		50%	#0	2	21.73
		50%	#Mid	2	21.67
		50%	#Max	2	21.60
		100%	--	2	21.70
20385	QPSK	1	#0	0	**23.93**
		1	#Mid	0	23.84
		1	#Max	0	23.68
		50%	#0	1	22.97
		50%	#Mid	1	22.93
		50%	#Max	1	22.87
		100%	--	1	22.87
	16QAM	1	#0	1	**23.30**
		1	#Mid	1	23.13
		1	#Max	1	23.11
		50%	#0	2	21.93
		50%	#Mid	2	21.88
		50%	#Max	2	21.83
		100%	--	2	21.82

Table 15: LTE Conducted Output Power, LTE Band 4 (10MHz)

Channel	Modulation	RB No.	RB Offset	MPR	Max Power
20000	QPSK	1	#0	0	**23.63**
		1	#Mid	0	23.43
		1	#Max	0	23.39
		50%	#0	1	22.62
		50%	#Mid	1	22.54
		50%	#Max	1	22.45
		100%	--	1	22.66
	16QAM	1	#0	1	**23.02**
		1	#Mid	1	22.87
		1	#Max	1	22.57
		50%	#0	2	21.62
		50%	#Mid	2	21.44
		50%	#Max	2	21.45
		100%	--	2	21.57
20175	QPSK	1	#0	0	**23.81**
		1	#Mid	0	23.68
		1	#Max	0	23.54
		50%	#0	1	22.82
		50%	#Mid	1	22.72
		50%	#Max	1	22.67
		100%	--	1	22.75
	16QAM	1	#0	1	**22.87**
		1	#Mid	1	22.72
		1	#Max	1	22.78
		50%	#0	2	21.78
		50%	#Mid	2	21.70
		50%	#Max	2	21.69
		100%	--	2	21.75
20350	QPSK	1	#0	0	**24.11**
		1	#Mid	0	23.80
		1	#Max	0	23.72
		50%	#0	1	23.04
		50%	#Mid	1	22.92
		50%	#Max	1	22.84
		100%	--	1	22.96
	16QAM	1	#0	1	**23.38**
		1	#Mid	1	23.02
		1	#Max	1	23.05
		50%	#0	2	22.07
		50%	#Mid	2	21.93
		50%	#Max	2	21.84
		100%	--	2	21.90

Table 16: LTE Conducted Output Power, LTE Band 4 (15MHz)

Channel	Modulation	RB No.	RB Offset	MPR	Max Power
20025	QPSK	1	#0	0	**23.68**
		1	#Mid	0	23.48
		1	#Max	0	23.35
		50%	#0	1	22.69
		50%	#Mid	1	22.56
		50%	#Max	1	22.51
		100%	--	1	22.60
	16QAM	1	#0	1	**23.07**
		1	#Mid	1	22.86
		1	#Max	1	22.68
		50%	#0	2	21.69
		50%	#Mid	2	21.55
		50%	#Max	2	21.49
		100%	--	2	21.54
20175	QPSK	1	#0	0	**24.03**
		1	#Mid	0	23.78
		1	#Max	0	23.74
		50%	#0	1	22.96
		50%	#Mid	1	22.83
		50%	#Max	1	22.84
		100%	--	1	22.91
	16QAM	1	#0	1	**23.42**
		1	#Mid	1	23.11
		1	#Max	1	23.21
		50%	#0	2	21.93
		50%	#Mid	2	21.78
		50%	#Max	2	21.72
		100%	--	2	21.84
20325	QPSK	1	#0	0	**24.27**
		1	#Mid	0	23.84
		1	#Max	0	23.73
		50%	#0	1	23.14
		50%	#Mid	1	22.92
		50%	#Max	1	22.83
		100%	--	1	23.01
	16QAM	1	#0	1	**23.61**
		1	#Mid	1	23.19
		1	#Max	1	23.18
		50%	#0	2	22.18
		50%	#Mid	2	21.94
		50%	#Max	2	21.93
		100%	--	2	22.00

Table 17: LTE Conducted Output Power, LTE Band 4 (20MHz)

Channel	Modulation	RB No.	RB Offset	MPR	Max Power
20050	QPSK	1	#0	0	**23.79**
		1	#Mid	0	23.43
		1	#Max	0	23.25
		50%	#0	1	22.74
		50%	#Mid	1	22.53
		50%	#Max	1	22.47
		100%	--	1	22.63
	16QAM	1	#0	1	**22.95**
		1	#Mid	1	22.62
		1	#Max	1	22.38
		50%	#0	2	21.59
		50%	#Mid	2	21.42
		50%	#Max	2	21.44
		100%	--	2	21.51
20175	QPSK	1	#0	0	**24.31**
		1	#Mid	0	23.58
		1	#Max	0	23.29
		50%	#0	1	23.15
		50%	#Mid	1	22.68
		50%	#Max	1	22.56
		100%	--	1	22.74
	16QAM	1	#0	1	**23.04**
		1	#Mid	1	22.85
		1	#Max	1	22.51
		50%	#0	2	21.86
		50%	#Mid	2	21.63
		50%	#Max	2	21.57
		100%	--	2	21.75
20300	QPSK	1	#0	0	**24.27**
		1	#Mid	0	23.71
		1	#Max	0	23.36
		50%	#0	1	23.08
		50%	#Mid	1	22.85
		50%	#Max	1	22.77
		100%	--	1	22.90
	16QAM	1	#0	1	**23.18**
		1	#Mid	1	23.14
		1	#Max	1	22.64
		50%	#0	2	22.10
		50%	#Mid	2	21.85
		50%	#Max	2	21.74
		100%	--	2	21.95

Table 18: LTE Conducted Output Power, LTE Band 13 (5MHz)

Channel	Modulation	RB No.	RB Offset	MPR	Max Power
23205	QPSK	1	#0	0	23.05
		1	#Mid	0	**23.20**
		1	#Max	0	23.09
		50%	#0	1	22.18
		50%	#Mid	1	22.17
		50%	#Max	1	22.17
		100%	--	1	22.12
	16QAM	1	#0	1	22.27
		1	#Mid	1	**22.53**
		1	#Max	1	22.32
		50%	#0	2	21.25
		50%	#Mid	2	21.18
		50%	#Max	2	21.19
		100%	--	2	21.19
23230	QPSK	1	#0	0	**23.14**
		1	#Mid	0	23.14
		1	#Max	0	23.01
		50%	#0	1	22.23
		50%	#Mid	1	22.20
		50%	#Max	1	22.15
		100%	--	1	22.20
	16QAM	1	#0	1	**22.42**
		1	#Mid	1	22.32
		1	#Max	1	22.25
		50%	#0	2	21.26
		50%	#Mid	2	21.28
		50%	#Max	2	21.19
		100%	--	2	21.21
23255	QPSK	1	#0	0	**23.15**
		1	#Mid	0	23.11
		1	#Max	0	22.97
		50%	#0	1	22.23
		50%	#Mid	1	22.20
		50%	#Max	1	22.13
		100%	--	1	22.21
	16QAM	1	#0	1	**22.45**
		1	#Mid	1	22.43
		1	#Max	1	22.23
		50%	#0	2	21.30
		50%	#Mid	2	21.22
		50%	#Max	2	21.16
		100%	--	2	21.09

Table 19: LTE Conducted Output Power, LTE Band 13 (10MHz)

Channel	Modulation	RB No.	RB Offset	MPR	Max Power
23230	QPSK	1	#0	0	**24.13**
		1	#Mid	0	23.67
		1	#Max	0	22.58
		50%	#0	1	23.67
		50%	#Mid	1	22.15
		50%	#Max	1	22.10
		100%	--	1	22.18
	16QAM	1	#0	1	**22.43**
		1	#Mid	1	22.21
		1	#Max	1	21.90
		50%	#0	2	21.29
		50%	#Mid	2	21.24
		50%	#Max	2	21.15
		100%	--	2	21.22

LTE Band 4 SAR Results:

LTE SAR reduction was applied per KDB941225D05. Start with the largest channel bandwidth then measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle, and lower edge of each required test channel. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

Table 20: Body Worn SAR Results, LTE Band 4

	US / Canada Body SAR Results Using 1750MHz MSL									
Date	TX Mode	Spacing	Position	RB	RB Offset	Power Drift (dB)	Measured SAR 1g (W/kg)	Reported SAR 1g (W/kg)	Measured Conducted Output Power (dBm)	Maximum Conducted Output Power (dBm)
12/7/2017	LTE, Band 4, QPSK, Channel 20175	0mm	Back	1	0	0.10	0.5810	**0.6937**	24.23	25.00
			Back	50	0	-0.05	0.4200	0.6431	23.15	25.00
			Top	1	0	0.08	0.2240	0.2675	24.23	25.00
			Top	50	0	0.02	0.2190	0.3353	23.15	25.00
			Front	1	0	0.08	0.2870	0.3427	24.23	25.00
			Front	50	0	-0.04	0.2240	0.3430	23.15	25.00
1g SAR Limit (Head & Body) = 1.6W/kg										

Table 21: Extremity SAR Results, LTE Band 4

	US / Canada Extremity SAR Results Using 1750MHz MSL									
Date	TX Mode	Spacing	Position	RB	RB Offset	Power Drift (dB)	Measured SAR 10g (W/kg)	Reported SAR 10g (W/kg)	Measured Conducted Output Power (dBm)	Maximum Conducted Output Power (dBm)
12/7/2017	LTE, Band 4, QPSK, Channel 20175	0mm	Back	1	0	0.01	0.4530	**0.5409**	24.23	25.00
			Back	50	0	-0.08	0.3430	0.5252	23.15	25.00
			Top	1	0	-0.03	0.1450	0.1731	24.23	25.00
			Top	50	0	-0.11	0.1330	0.2036	23.15	25.00
			Front	1	0	-0.17	0.2840	0.3391	24.23	25.00
			Front	50	0	-0.04	0.1880	0.2878	23.15	25.00
10g SAR Limit (Extremity) = 4W/kg										

LTE Band 13 SAR Results:

LTE SAR reduction was applied per KDB941225D05. Start with the largest channel bandwidth then measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle, and lower edge of each required test channel. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

Table 22: Body Worn SAR Results, LTE Band 13

	US / Canada Body SAR Results Using 750MHz MSL									
Date	TX Mode	Spacing	Position	RB	RB Offset	Power Drift (dB)	Measured SAR 1g (W/kg)	Reported SAR 1g (W/kg)	Measured Conducted Output Power (dBm)	Maximum Conducted Output Power (dBm)
12/8/2017	LTE Band 13, QPSK, Channel 23230	0mm	Back	1	0	0.06	0.2560	**0.3128**	24.13	25.00
			Back	50	0	-0.02	0.1800	0.2445	23.67	25.00
			Top	1	0	-0.04	0.0681	0.0832	24.13	25.00
			Top	50	0	-0.13	0.0550	0.0747	23.67	25.00
			Front	1	0	-0.01	0.1500	0.1833	24.13	25.00
			Front	50	0	0.20	0.1240	0.1684	23.67	25.00
1g SAR Limit (Head & Body) = 1.6W/kg										

Table 23: Extremity SAR Results, LTE Band 13

	US / Canada Extremity SAR Results Using 750MHz MSL									
Date	TX Mode	Spacing	Position	RB	RB Offset	Power Drift (dB)	Measured SAR 10g (W/kg)	Reported SAR 10g (W/kg)	Measured Conducted Output Power (dBm)	Maximum Conducted Output Power (dBm)
12/8/2017	LTE Band 13, QPSK, Channel 23230	0mm	Back	1	0	-0.02	0.2230	**0.2725**	24.13	25.00
			Back	50	0	0.04	0.1300	0.1766	23.67	25.00
			Top	1	0	-0.02	0.0680	0.0831	24.13	25.00
			Top	50	0	-0.04	0.0550	0.0747	23.67	25.00
			Front	1	0	0.04	0.1360	0.1662	24.13	25.00
			Front	50	0	-0.12	0.1140	0.1548	23.67	25.00
10g SAR Limit (Extremity) = 4W/kg										

2.4GHz WiFi SAR Results:

WiFi SAR reduction was applied per KDB 248227D01. DSSS SAR was first measured at the highest output power channel. When the reported SAR is ≤ 0.4W/kg, SAR is not required for the remaining test configuration. When the reported SAR is >0.4W/kg, test the next highest configuration until the SAR value is ≤ 0.8W/kg. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤1.2W/kg, SAR is not required for OFDM in that configuration.

Table 24: Body Worn SAR Results, 802.11b (DSSS)

	US / Canada Body SAR Results Using 2450MHz MSL							
Date	TX Mode	Spacing	Position	Power Drift (dB)	Measured SAR 1g (W/kg)	Reported SAR 1g (W/kg)	Measured Conducted Output Power (dBm)	Maximum Conducted Output Power (dBm)
12/12/2017	802.11b Ch 6	0mm	Back	-0.09	0.1260	0.1398	14.55	15.00
12/12/2017	802.11b Ch 6	0mm	Top	-0.06	0.4420	**0.4903**	14.55	15.00
12/12/2017	802.11b Ch 6	0mm	USB Side	0.02	0.1020	0.1131	14.55	15.00
1g SAR Limit (Head & Body) = 1.6W/kg								

Table 25: Extremity SAR Results, 802.11b (DSSS)

	US / Canada Extremity SAR Results Using 2450MHz MSL							
Date	TX Mode	Spacing	Position	Power Drift (dB)	Measured SAR 10g (W/kg)	Reported SAR 10g (W/kg)	Measured Conducted Output Power (dBm)	Maximum Conducted Output Power (dBm)
12/12/2017	802.11b Ch 6	0mm	Back	-0.09	0.0640	0.0710	14.55	15.00
12/12/2017	802.11b Ch 6	0mm	Top	-0.06	0.1910	**0.2119**	14.55	15.00
12/12/2017	802.11b Ch 6	0mm	USB Side	0.02	0.0490	0.0543	14.55	15.00
10g SAR Limit (Extremity) = 4W/kg								

Bluetooth SAR Results:

Bluetooth SAR reduction was applied per KDB 447498D01. SAR was first measured at the highest output channel. Testing of other required channels within the operating mode of a frequency band is not required when the reported 1g or 10g SAR for the mid-band or highest output power channel is <u><</u>o.8W/kg or 2.0W/kg (for 1g or 10g respectively, when the transmission band is <u><</u>100MHz.

Table 26: Body Worn SAR Results, Bluetooth

	US / Canada Body SAR Results Using 2450MHz MSL							
Date	TX Mode	Spacing	Position	Power Drift (dB)	Measured SAR 10g (W/kg)	Reported SAR 10g (W/kg)	Measured Conducted Output Power (dBm)	Maximum Conducted Output Power (dBm)
12/11/2017	BTLE, Ch 19	0mm	Back	0.06	0.0105	0.0105	13.48	12.00
12/11/2017	BTLE, Ch 19	0mm	Top	-0.09	0.0155	**0.0155**	13.48	12.00
12/11/2017	BTLE, Ch 19	0mm	USB Side	0.03	0.0022	0.0022	13.48	12.00
10g SAR Limit (Extremity) = 4.0W/kg								

Table 27: Extremity SAR Results, Bluetooth

	US / Canada Body SAR Results Using 2450MHz MSL							
Date	TX Mode	Spacing	Position	Power Drift (dB)	Measured SAR 1g (W/kg)	Reported SAR 1g (W/kg)	Measured Conducted Output Power (dBm)	Maximum Conducted Output Power (dBm)
12/11/2017	BTLE, Ch 19	0mm	Back	0.06	0.0148	0.0148	13.48	12.00
12/11/2017	BTLE, Ch 19	0mm	Top	-0.09	0.0311	**0.0311**	13.48	12.00
12/11/2017	BTLE, Ch 19	0mm	USB Side	0.03	0.0044	0.0044	13.48	12.00
1g SAR Limit (Head & Body) = 1.6W/kg								

8.0 REFERENCES

[1] ANSI, ANSI/IEEE C95.1-1991: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3kHz to 300 GHz, The Institute of electrical and Electronics Engineers, Inc., New York, NY 10017, 1992

[2] Federal Communications Commission, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields”, Supplement C (Edition 01-01) to OET Bulletin 65 (Edition 97-01), FCC, Washington, D.C. 20554, 1997

[3] Thomas Schmid, Oliver Egger, and Niels Kuster, “Automated E-field scanning system for dosimetric assessments”, *IEEE Transaction on Microwave Theory and Techniques*, vol. 44, pp. 105-113, Jan. 1996.

[4] Niels Kuster, Ralph Kastle, and Thomas Schmid, “Dosimetic evaluation of mobile communications equipment with know precision”, IEICE Transactions on Communications, vol. E80-B, no. 5, pp.645-652, May 1997.

[5] NIS81, NAMAS, “The treatment of uncertainty in EMC measurement”, Tech. Rep., NAMAS Executive, National Physical Laboratory, Teddinton, Middlesex, England, 1994.

[6] Barry N. Tayor and Chris E. Kuyatt, “Guidelines for evaluating and expressing the uncertainty of NIST measurement results”, Tech. Rep., National Institute of Standards and Technology, 1994.

[7] Federal Communications Commission, KDG 248227 - “SAR Measurement Procedures for 802.11 a/b/g Transmitters”

[8] Federal Communications Commission, KDB 648474 – “SAR Evaluation Considerations for Handsets with Multiple Transmitters and Antennas”.

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[10] Federal Communications Commission, KDB 616217 – “SAR Evaluation Considerations for Laptop Computers with Antennas Built-in on Display Screens”.

[11] Federal Communications Commission, KDB 450824 – “SAR Probe Calibration and System Verification Considerations for Measurements at 150MHz – 3GHz”.

[12] Federal Communications Commission, KDB 865664 – “SAR Measurement Requirements for 3-6GHz”.

[13] Federal Communications Commission, KDB 941225 – “SAR Measurement Procedures for 3G Devices”.

[14] ANSI, ANSI/IEEE C63.10-2009: American National Standard for Testing Unlicensed Wireless Devices.

APPENDIX A – SYSTEM VALIDATION SUMMARY

Per FCC KDB 865664, a tabulated summary of the system validation status including the validation date(s), measurement frequencies, SAR probes and tissue dielectric parameters have been included in the summary table below. The validation was performed with reference dipoles using the required tissue equivalent media for system validation according to KDB 865664. Each probe calibration point was validated at a frequency within the valid frequency range of the probe calibration point. All measurements were performed using probes calibrated for CW signals. Modulations in the table above represent test configurations for which the SAR system has been validated. The SAR system was also validated with modulated signals per KDB 865664.

				Probe Calibration Point		Dielectric Properties		CW Validation			Modulation Validation		
Frequency (MHz)	Date	Probe (SN#)	Probe (Model #)	Frequency (MHz)	Fluid Type	σ	ϵ_r	Sensitivity	Probe Linearity	Probe Isotropy	Mod. Type	Duty Factor	PAR
2450	1/13/2017	3516	EX3DV3	2450	Body	50.65	2.02	Pass	Pass	Pass	OFDM	N/A	Pass
5200	1/13/2017	3516	EX3DV3	5200	Body	48.71	5.54	Pass	Pass	Pass	OFDM	N/A	Pass
5500	1/13/2017	3516	EX3DV3	5500	Body	47.68	6.29	Pass	Pass	Pass	OFDM	N/A	Pass
5800	1/13/2017	3516	EX3DV3	5800	Body	48.71	5.54	Pass	Pass	Pass	OFDM	N/A	Pass

				Probe Calibration Point		Dielectric Properties		CW Validation			Modulation Validation		
Frequency (MHz)	Date	Probe (SN#)	Probe (Model #)	Frequency (MHz)	Fluid Type	σ	ϵ_r	Sensitivity	Probe Linearity	Probe Isotropy	Mod. Type	Duty Factor	PAR
835	1/14/2017	3516	EX3DV3	835	Body	54.2	0.98	Pass	Pass	Pass	GMSK	Pass	N/A
900	1/14/2017	3516	EX3DV3	900	Body	54	1.02	Pass	Pass	Pass	GMSK	Pass	N/A
1750	1/14/2017	3516	EX3DV3	1800	Body	52.9	1.41	Pass	Pass	Pass	GMSK	Pass	N/A
1900	1/14/2017	3516	EX3DV3	1900	Body	52.7	1.48	Pass	Pass	Pass	GMSK	Pass	N/A

Table 28: SAR System Validation Summary

APPENDIX B – WORST CASE BLUETOOTH SAR PLOT

Date/Time: 12/11/2017 3:02:26 PM

Test Laboratory: Intertek
File Name: SAR_Bluetooth.da52:4

1.2.1 SAR_Bluetooth

Procedure Notes:

DUT: Towerview Pill Box;

Communication System: UID 0, Generic Bluetooth (0); Communication System Band: 2.4Ghz ISM; Frequency: 2442 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 2442 MHz; σ = 2.02 S/m; ε_r = 50.719; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

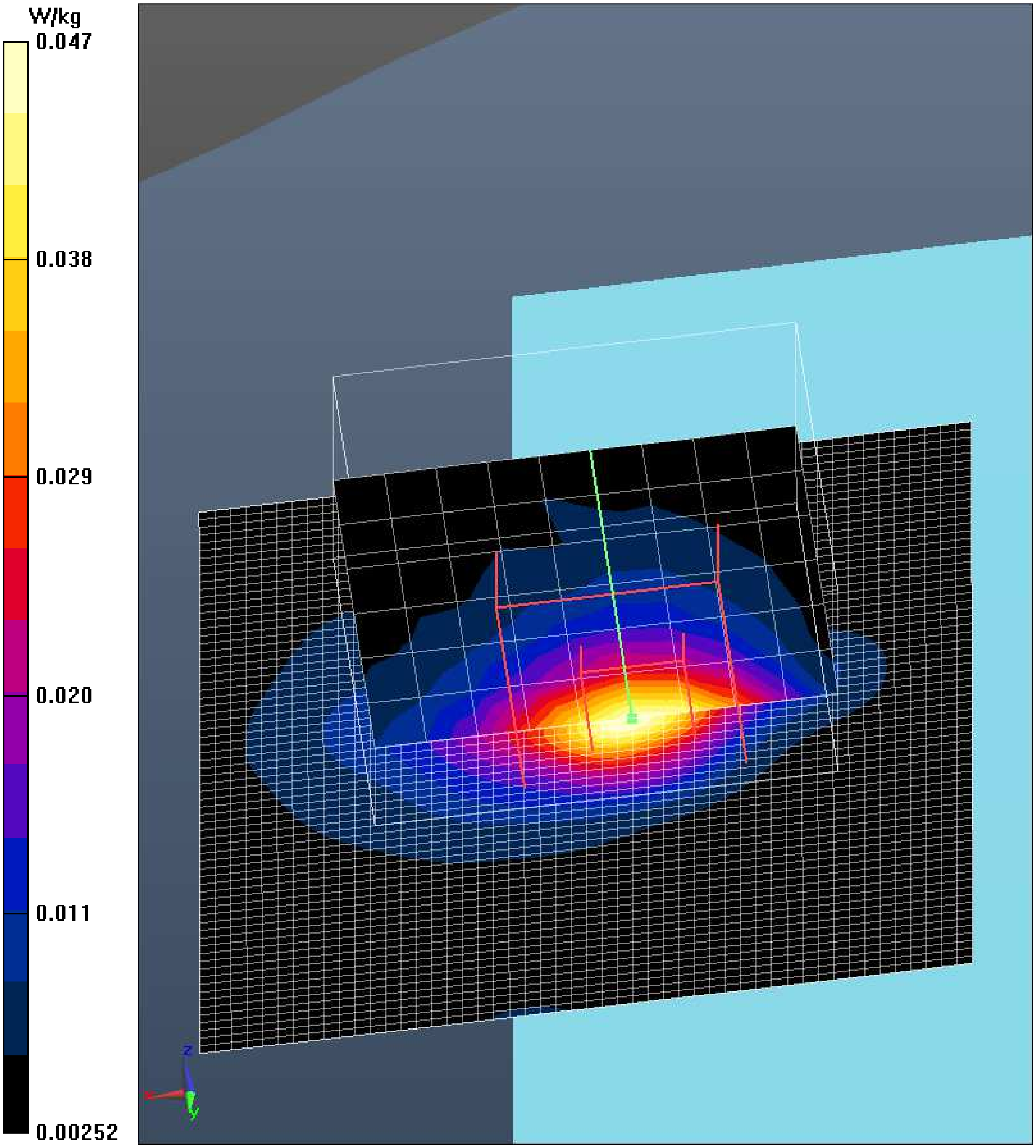
- Probe: EX3DV3 - SN3516; ConvF(8.43, 8.43, 8.43); Calibrated: 11/15/2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn358; Calibrated: 11/7/2017
- Phantom: SAM 2 with CRP v5.0; Type: QD000P40CD; Serial: TP:1663
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

WWAN Flat-Section MSL Testing/Bluetooth Mid Channel, Direct Contact, Top Side/Area Scan 2 (51x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.0467 W/kg

WWAN Flat-Section MSL Testing/Bluetooth Mid Channel, Direct Contact, Top Side/Zoom Scan (10x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.614 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.0620 W/kg
SAR(1 g) = 0.031 W/kg; SAR(10 g) = 0.016 W/kg

Maximum value of SAR (measured) = 0.0506 W/kg


W/kg
0.047
0.038
0.029
0.020
0.011
0.00252

APPENDIX C – WORST CASE WIFI SAR PLOT

Date/Time: 12/12/2017 9:53:36 AM

Test Laboratory: Intertek
File Name: SAR_DSSS.da52:4

1.2.2 SAR_DSSS

Procedure Notes:

DUT: Towerview Pill Box;

Communication System: UID 0, Generic 802.11b/g/n (0); Communication System Band: 2.4 GHz Band; Frequency: 2437 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 2437 MHz; σ = 1.968 S/m; ε_r = 50.861; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

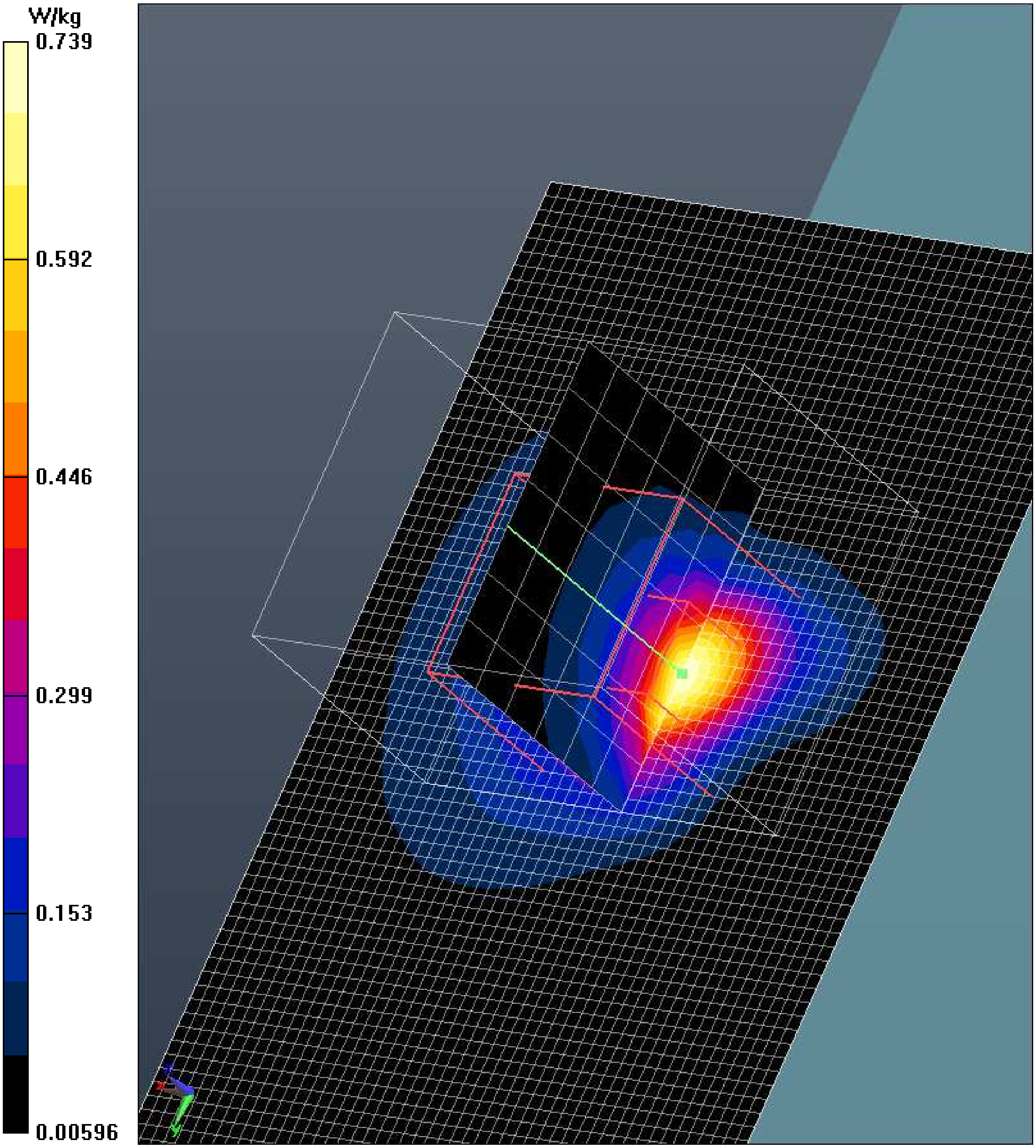
- Probe: EX3DV3 - SN3516; ConvF(8.43, 8.43, 8.43); Calibrated: 11/15/2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn358; Calibrated: 11/7/2017
- Phantom: SAM 2 with CRP v5.0; Type: QD000P40CD; Serial: TP:1663
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

WWAN Flat-Section MSL Testing/DSSS Mid Channel, Direct Contact, Top Side/Area Scan 2 (51x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.739 W/kg

WWAN Flat-Section MSL Testing/DSSS Mid Channel, Direct Contact, Top Side/Zoom Scan (10x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.854 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.935 W/kg
SAR(1 g) = 0.442 W/kg; SAR(10 g) = 0.191 W/kg

Maximum value of SAR (measured) = 0.745 W/kg


W/kg
0.739
0.592
0.446
0.299
0.153
0.00596

APPENDIX D – WORST CASE LTE BAND 4 SAR PLOT

Date/Time: 12/7/2017 2:23:56 PM

Test Laboratory: Intertek
File Name: SAR_LTE Band 4.da52:4

1.2.3 SAR_LTE Band 4

Procedure Notes:

DUT: Towerview Pill Box;

Communication System: UID 0, Generic LTE 20 MHz Bandwidth (0); Communication System Band: Band 4; Frequency: 1732.5 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.459 S/m; ε_r = 53.239; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

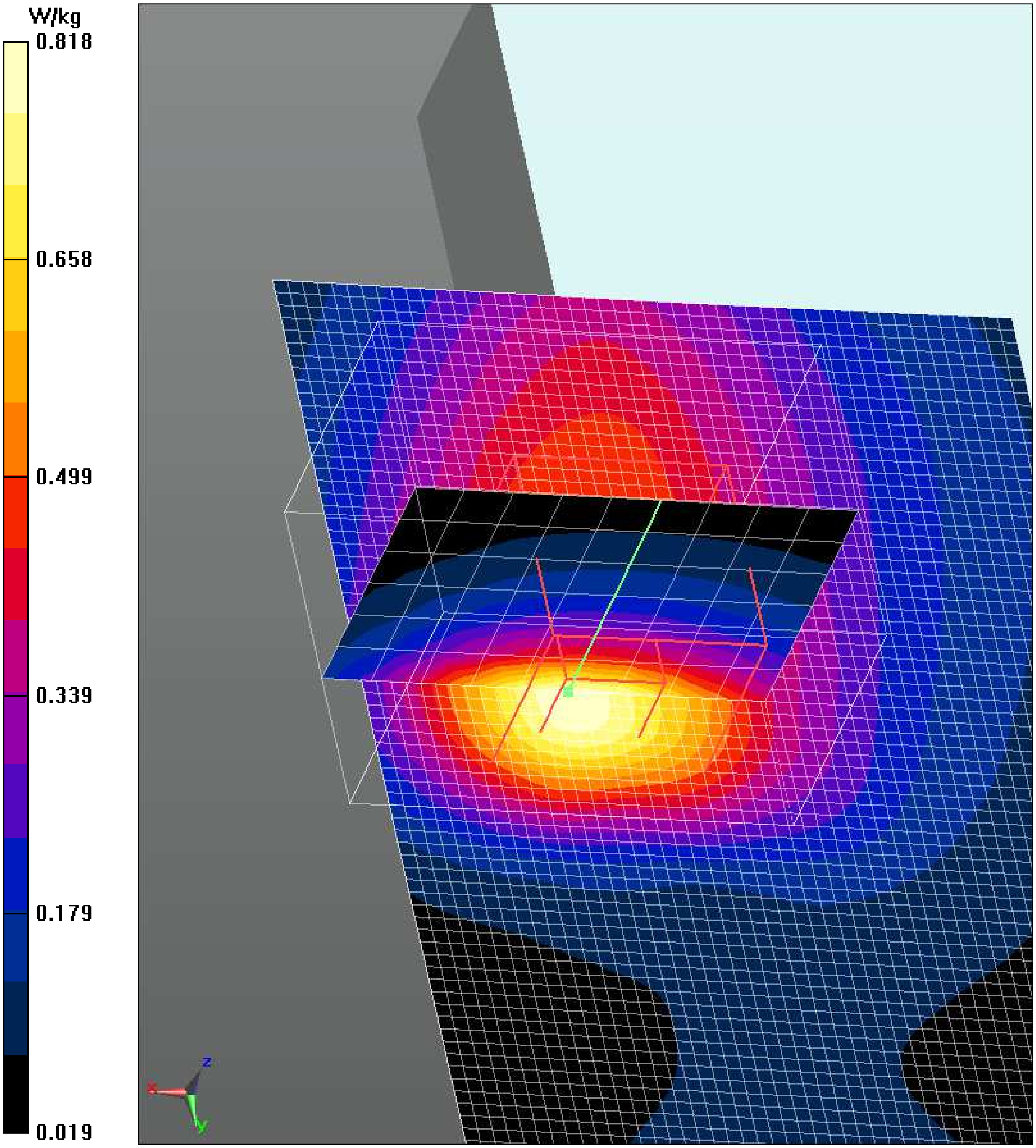
- Probe: EX3DV3 - SN3516; ConvF(9.21, 9.21, 9.21); Calibrated: 11/15/2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn358; Calibrated: 11/7/2017
- Phantom: SAM 1 with CRP v5.0; Type: QD000P40CD; Serial: TP: 1243
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

WWAN Flat-Section MSL Testing/LTE Band 4 Mid Channel, Back Side, Direct Contact, /Area Scan 2 (51x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.818 W/kg

WWAN Flat-Section MSL Testing/LTE Band 4 Mid Channel, Back Side, Direct Contact, /Zoom Scan (10x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.572 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.01 W/kg
SAR(1 g) = 0.581 W/kg; SAR(10 g) = 0.453 W/kg

Maximum value of SAR (measured) = 0.854 W/kg


W/kg
0.818
0.658
0.499
0.339
0.179
0.019

APPENDIX E – WORST CASE LTE BAND 13 SAR PLOT

Date/Time: 12/8/2017 2:58:13 PM

Test Laboratory: Intertek
File Name: SAR_LTE Band 13.da52:4

1.2.4 SAR_LTE Band 13

Procedure Notes:

DUT: Towerview Pill Box;

Communication System: UID 0, Generic LTE 10 MHz Bandwidth (0); Communication System Band: Band 13; Frequency: 782 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 782 MHz; σ = 0.926 S/m; ε_r = 41.412; ρ = 1000 kg/m^3

Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

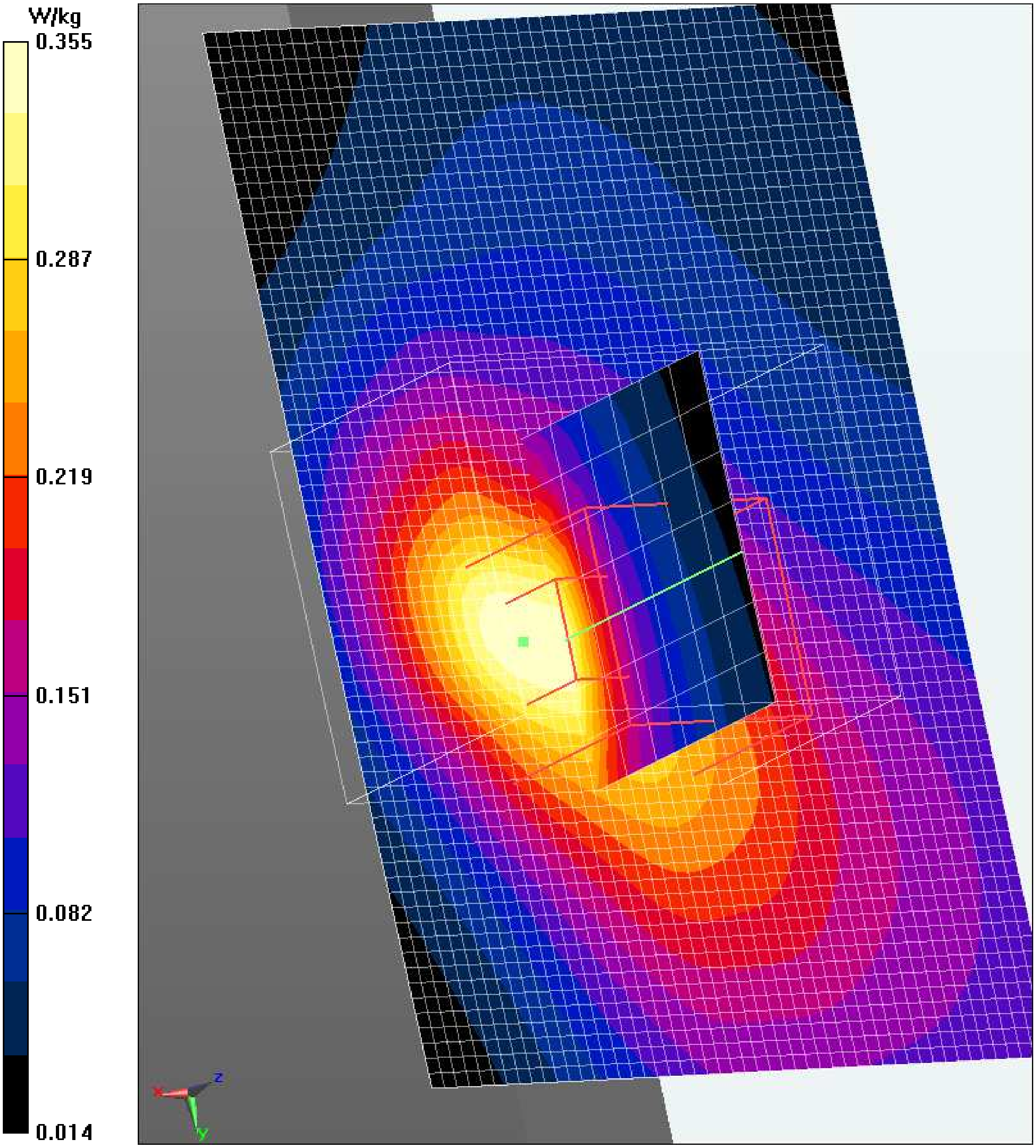
- Probe: EX3DV3 - SN3516; ConvF(11.21, 11.21, 11.21); Calibrated: 11/15/2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn358; Calibrated: 11/7/2017
- Phantom: SAM 1 with CRP v5.0; Type: QD000P40CD; Serial: TP: 1243
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

WWAN Flat-Section MSL Testing/LTE Band 13 Mid Channel, Back Side, Direct Contact, /Area Scan 2 (51x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.355 W/kg

WWAN Flat-Section MSL Testing/LTE Band 13 Mid Channel, Back Side, Direct Contact, /Zoom Scan (10x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.092 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.433 W/kg
SAR(1 g) = 0.256 W/kg; SAR(10 g) = 0.223 W/kg

Maximum value of SAR (measured) = 0.364 W/kg


W/kg
0.355
0.287
0.219
0.151
0.082
0.014

APPENDIX F – DIPOLE VALIDATION SAR PLOTS

Date/Time: 12/7/2017 11:35:09 AM

Test Laboratory: Intertek
File Name: dipole_1800.da52:0

dipole_1800

Procedure Notes: Ambient Temp: 22.8C, Fluid Temp: 22.2C

DUT: Dipole 1800 MHz D1800V2; Serial: D1800V2 - SN:xxx

Communication System: UID 0, CW (0); Communication System Band: D1800 (1800.0 MHz); Frequency: 1800 MHz;Duty Cycle: 1:1

Medium parameters used: f = 1800 MHz; σ = 1.48 S/m; ε_r = 51.39; ρ = 1000 kg/m^3

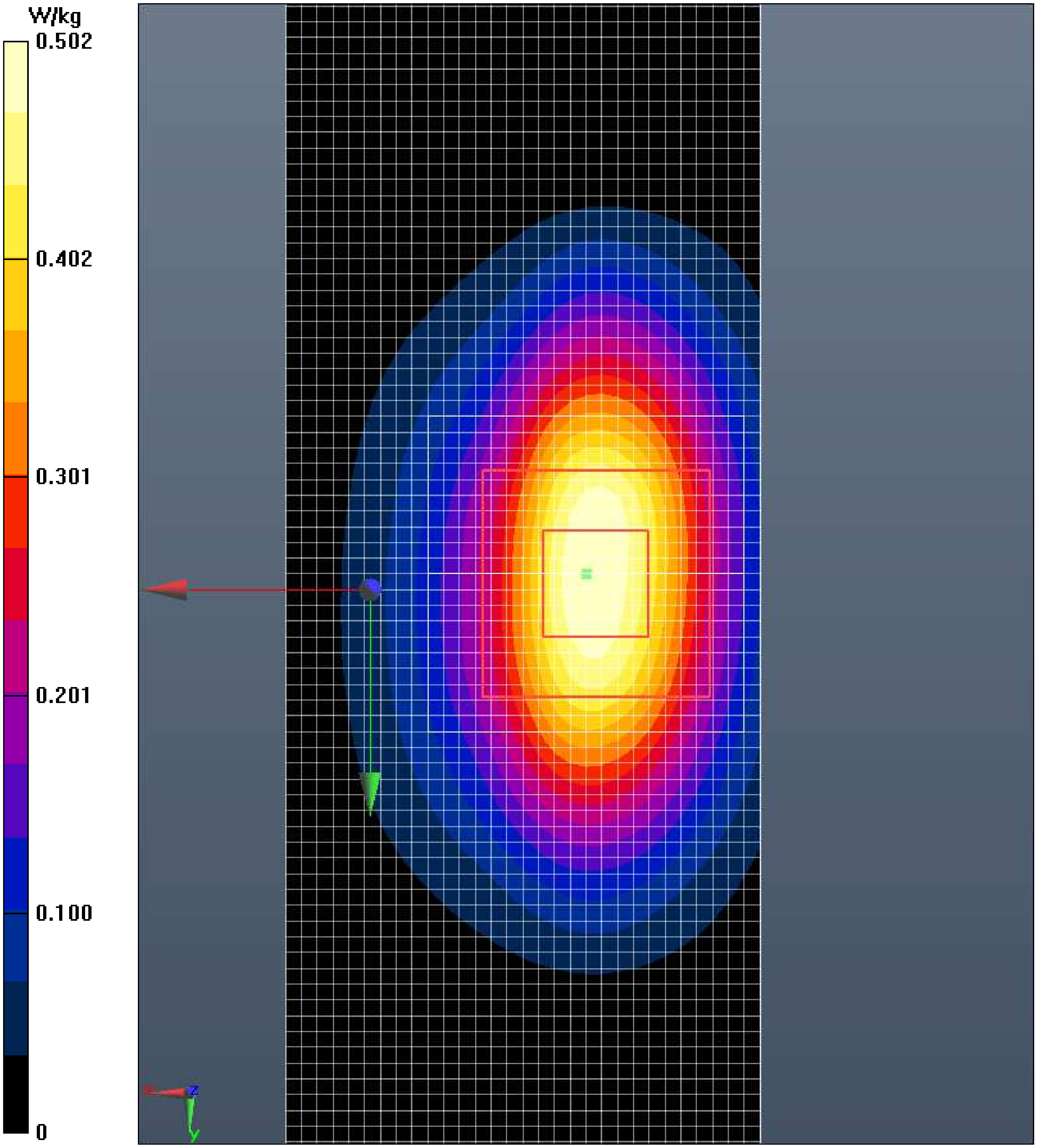
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV3 - SN3516; ConvF(9.21, 9.21, 9.21); Calibrated: 11/15/2017;
- Sensor-Surface: 2mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn358; Calibrated: 11/7/2017
- Phantom: SAM 1 with CRP v5.0; Type: QD000P40CD; Serial: TP: 1243
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

System Performance Check at Frequencies below 1 GHz/d=10mm, Pin=100 mW, dist=2.0mm (EX-Probe)/Area Scan (31x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.502 W/kg

System Performance Check at Frequencies below 1 GHz/d=10mm, Pin=100 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.607 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 64.2 W/kg
SAR(1 g) = 35.6 W/kg; SAR(10 g) = 18.9 W/kg
Normalized to target power = 1 W and actual power = 0.01 W
Maximum value of SAR (measured) = 40.2 W/kg


W/kg
0.502
0.402
0.301
0.201
0.100
0

Date/Time: 12/8/2017 12:25:36 PM

Test Laboratory: Intertek
File Name: dipole_750mhz.da52:0

1.2.5 dipole_750mhz

Procedure Notes: Ambient Temp: 22.8C, Fluid Temp: 22.2C

DUT: Dipole 750 MHz D750V3; Serial: D750V3 - SN:xxx

Communication System: UID 0, CW (0); Communication System Band: D750 (750.0 MHz); Frequency: 750 MHz;Duty Cycle: 1:1

Medium parameters used: f = 750 MHz; σ = 0.9 S/m; ε_r = 41.86; ρ = 1000 kg/m^3

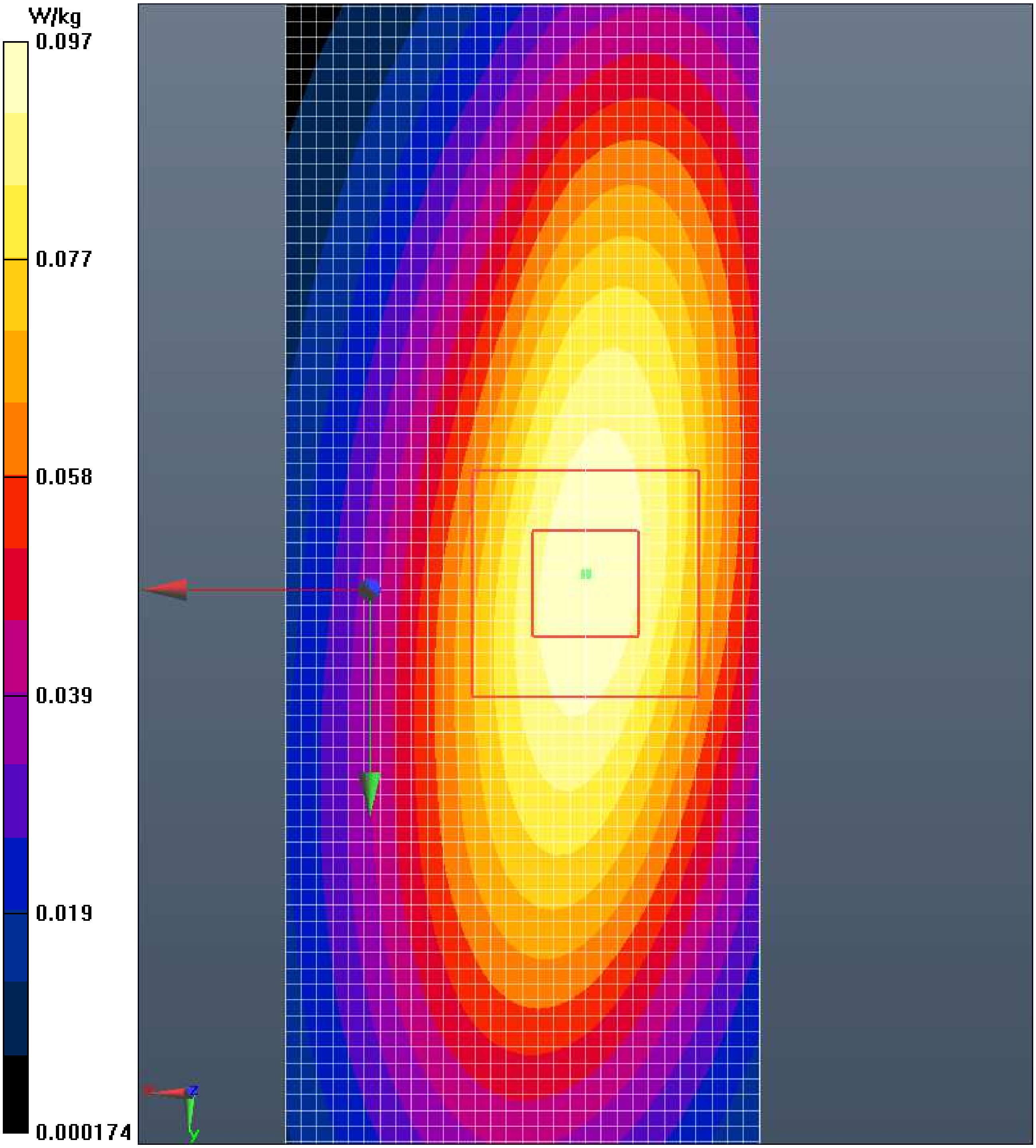
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV3 - SN3516; ConvF(11.21, 11.21, 11.21); Calibrated: 11/15/2017;
- Sensor-Surface: 2mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn358; Calibrated: 10/19/2016
- Phantom: SAM 1 with CRP v5.0; Type: QD000P40CD; Serial: TP: 1243
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

System Performance Check at Frequencies below 1 GHz/d=10mm, Pin=100 mW, dist=2.0mm (EX-Probe)/Area Scan (31x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.0968 W/kg

System Performance Check at Frequencies below 1 GHz/d=10mm, Pin=100 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.430 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.16 W/kg
SAR(1 g) = 0.791 W/kg; SAR(10 g) = 0.531 W/kg
Normalized to target power = 1 W and actual power = 0.097 W
Maximum value of SAR (measured) = 0.852 W/kg


W/kg
0.097
0.077
0.058
0.039
0.019
0.000174

Date/Time: 12/11/2017 11:16:32 AM

Test Laboratory: Intertek
File Name: dipole_2450.da52:0

1.2.6 dipole_2450

Procedure Notes: Ambient Temp: 22.8C, Fluid Temp: 22.2C

DUT: Dipole 2450 MHz D2450V2; Serial: D2450V2 - SN:xxx

Communication System: UID 0, CW (0); Communication System Band: D2450 (2450.0 MHz); Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2450 MHz; σ = 2.02 S/m; ε_r = 50.71; ρ = 1000 kg/m^3

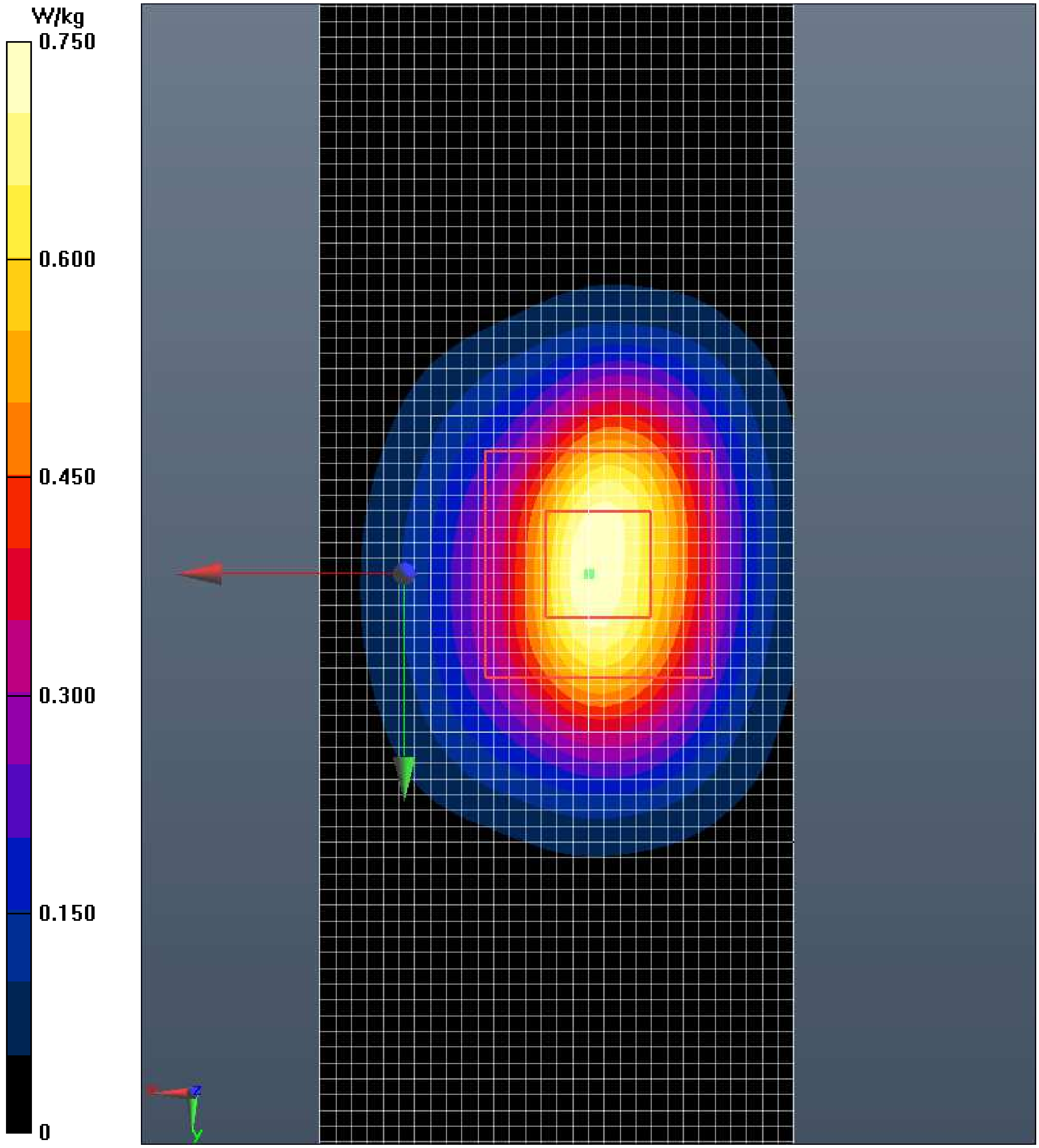
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV3 - SN3516; ConvF(8.43, 8.43, 8.43); Calibrated: 11/15/2017;
- Sensor-Surface: 2mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn358; Calibrated: 11/7/2017
- Phantom: SAM 2 with CRP v5.0; Type: QD000P40CD; Serial: TP:1663
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

System Performance Check at Frequencies below 1 GHz/d=10mm, Pin=100 mW, dist=2.0mm (EX-Probe)/Area Scan (31x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.750 W/kg

System Performance Check at Frequencies below 1 GHz/d=10mm, Pin=100 mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.621 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 102 W/kg
SAR(1 g) = 50.4 W/kg; SAR(10 g) = 23.5 W/kg
Normalized to target power = 1 W and actual power = 0.01 W
Maximum value of SAR (measured) = 57.8 W/kg


W/kg
0.750
0.600
0.450
0.300
0.150
0

Date/Time: 12/12/2017 2:52:18 PM

Test Laboratory: Intertek
File Name: dipole_2450.da52:0

1.2.7 dipole_2450

Procedure Notes: Ambient Temp: 22.8C, Fluid Temp: 22.2C

DUT: Dipole 2450 MHz D2450V2; Serial: D2450V2 - SN:xxx

Communication System: UID 0, CW (0); Communication System Band: D2450 (2450.0 MHz); Frequency: 2450 MHz;Duty Cycle: 1:1

Medium parameters used: f = 2450 MHz; σ = 2.02 S/m; ε_r = 50.71; ρ = 1000 kg/m^3

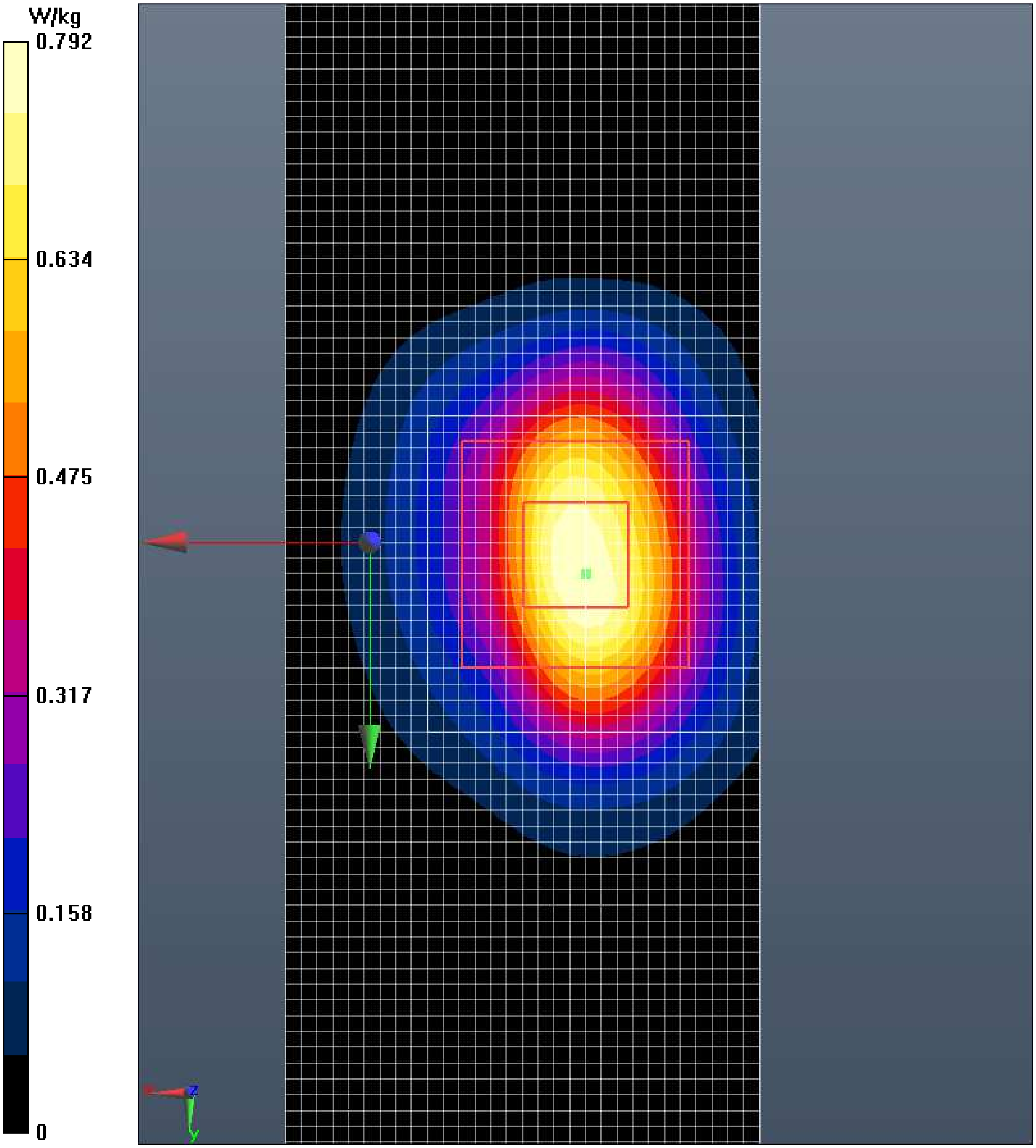
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV3 - SN3516; ConvF(8.43, 8.43, 8.43); Calibrated: 11/15/2017;
- Sensor-Surface: 2mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn358; Calibrated: 11/7/2017
- Phantom: SAM 2 with CRP v5.0; Type: QD000P40CD; Serial: TP:1663
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

System Performance Check at Frequencies below 1 GHz/d=10mm, Pin=100 mW, dist=2.0mm (EX-Probe) 2/Area Scan (31x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.792 W/kg

System Performance Check at Frequencies below 1 GHz/d=10mm, Pin=100 mW, dist=2.0mm (EX-Probe) 2/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.463 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 108 W/kg
SAR(1 g) = 51.8 W/kg; SAR(10 g) = 23.7 W/kg
Normalized to target power = 1 W and actual power = 0.01 W
Maximum value of SAR (measured) = 58.8 W/kg


W/kg
0.792
0.634
0.475
0.317
0.158
0