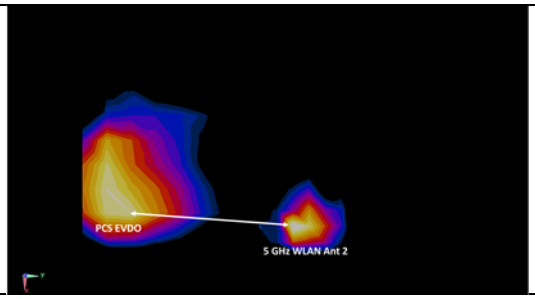
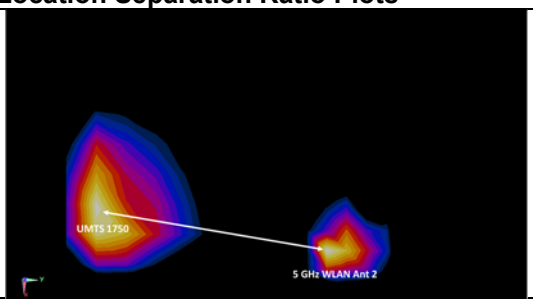
## Table 12-30
## Phablet Back Side SAR to Peak Location Separation Ratio Plots




1

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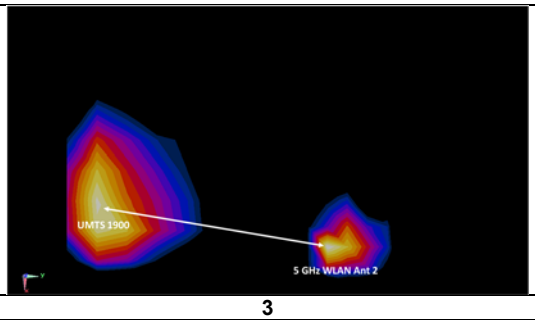


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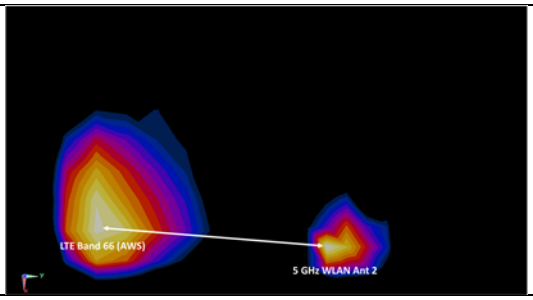


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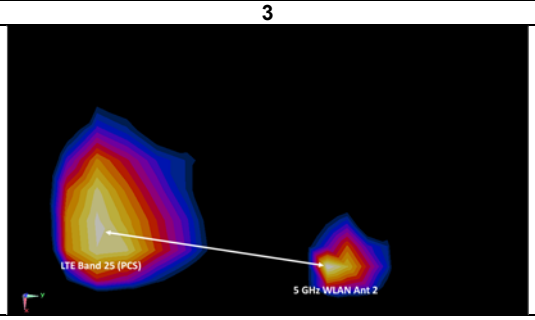


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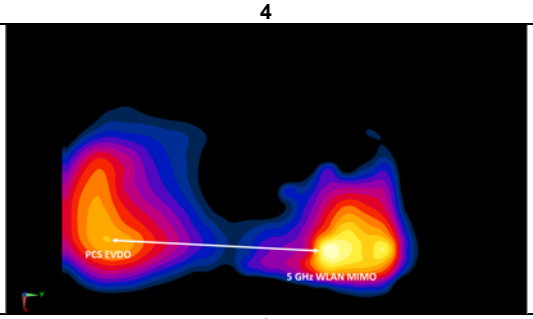
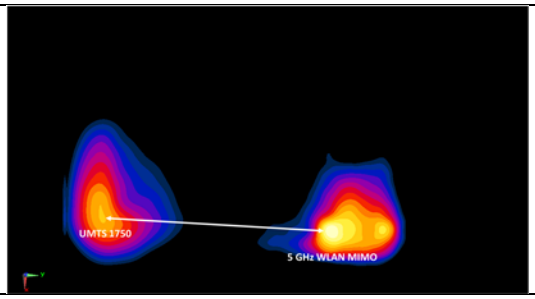
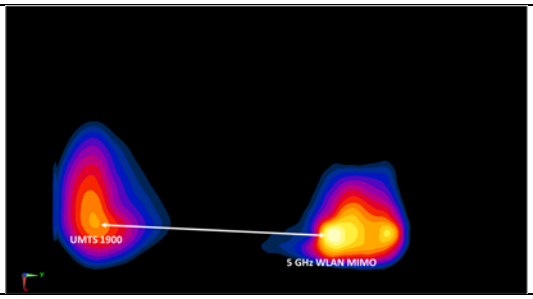


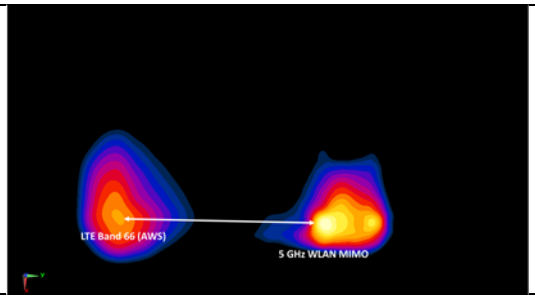

6



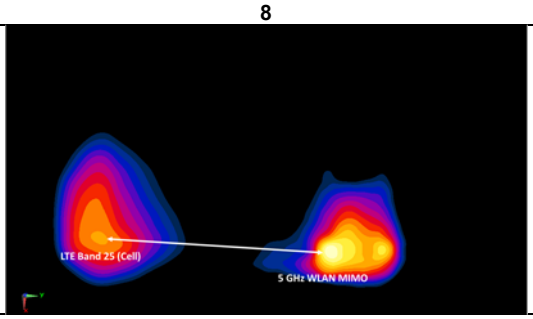

7




8




9

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## 12.8 Simultaneous Transmission Conclusion

The above numerical summed SAR results and SPLSR analysis are sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v06 and IEEE 1528- 2013 Section 6.3.4.1.




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# 13 SAR MEASUREMENT VARIABILITY

## 13.1 Measurement Variability

Per FCC KDB Publication 865664 D01v01r04, SAR measurement variability was assessed for each frequency band, which was determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media were required for SAR measurements in a frequency band, the variability measurement procedures were applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. These additional measurements were repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device was returned to ambient conditions (normal room temperature) with the battery fully charged before it was re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR Measurement Variability was assessed using the following procedures for each frequency band:

1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
2) A second repeated measurement was preformed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg (~ 10% from the 1g SAR limit).
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg
5) When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

**Table 13-1**
**Head SAR Measurement Variability Results**

| HEAD VARIABILITY RESULTS | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Band | FREQUENCY | | Mode/Band | Service | Side | Test Position | Data Rate (Mbps) | Measured SAR (1g) | 1st Repeated SAR (1g) | Ratio | 2nd Repeated SAR (1g) | Ratio | 3rd Repeated SAR (1g) | Ratio |
| | MHz | Ch. | | | | | | (W/kg) | (W/kg) | | (W/kg) | | (W/kg) | |
| 5750 | 5795.00 | 159 | 802.11n, 40 MHz Bandwidth | OFDM , ANT 1 | Right | Tilt | 13.5 | 1.150 | 1.070 | 1.07 | N/A | N/A | N/A | N/A |
| ANSI / IEEE C95.1 1992 - SAFETY LIMIT<br>Spatial Peak<br>Uncontrolled Exposure/General Population | | | | | Head<br>1.6 W/kg (mW/g)<br>averaged over 1 gram | | | | | | | | | |

**Table 13-2**
**Body SAR Measurement Variability Results**

| BODY VARIABILITY RESULTS | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Band | FREQUENCY | | Mode | Service | Side | Spacing | Measured SAR (1g) | 1st Repeated SAR (1g) | Ratio | 2nd Repeated SAR (1g) | Ratio | 3rd Repeated SAR (1g) | Ratio |
| | MHz | Ch. | | | | | (W/kg) | (W/kg) | | (W/kg) | | (W/kg) | |
| 835 | 848.31 | 777 | CDMA BC0 (§22H) | EVDO Rev. 0 | back | 10 mm | 1.010 | 1.010 | 1.00 | N/A | N/A | N/A | N/A |
| 1750 | 1770.00 | 132572 | LTE Band 66 (AWS), 20 MHz Bandwidth | QPSK, 1 RB, 0 RB Offset | bottom | 10 mm | 1.240 | 1.220 | 1.02 | N/A | N/A | N/A | N/A |
| 1900 | 1905.00 | 26590 | LTE Band 25 (PCS), 20 MHz Bandwidth | QPSK, 1 RB, 0 RB Offset | bottom | 10 mm | 1.200 | 1.150 | 1.04 | N/A | N/A | N/A | N/A |
| ANSI / IEEE C95.1 1992 - SAFETY LIMIT<br>Spatial Peak<br>Uncontrolled Exposure/General Population | | | | | Body<br>1.6 W/kg (mW/g)<br>averaged over 1 gram | | | | | | | | |




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**Table 13-3**
**Phablet SAR Measurement Variability Results**

| PHABLET VARIABILITY RESULTS | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Band | FREQUENCY | | Mode | Service | Data Rate (Mbps) | Side | Spacing | Measured SAR (10g) | 1st Repeated SAR (10g) | Ratio | 2nd Repeated SAR (10g) | Ratio | 3rd Repeated SAR (10g) | Ratio |
| | MHz | Ch. | | | | | | (W/kg) | (W/kg) | | (W/kg) | | (W/kg) | |
| 1750 | 1770.00 | 132572 | LTE Band 66 (AWS), 20 MHz Bandwidth | QPSK, 1 RB, 0 RB Offset | N/A | front | 0 mm | 2.880 | 2.680 | 1.07 | N/A | N/A | N/A | N/A |
| 1900 | 1905.00 | 26590 | LTE Band 25 (PCS), 20 MHz Bandwidth | QPSK, 50 RB, 50 RB Offset | N/A | bottom | 0 mm | 2.960 | 2.900 | 1.02 | N/A | N/A | N/A | N/A |
| 5600 | 5620.00 | 124 | 802.11a, 20 MHz Bandwidth | OFDM , MIMO | 6 | back | 0 mm | 2.330 | 2.310 | 1.01 | N/A | N/A | N/A | N/A |
| 5750 | 5720.00 | 144 | 802.11a, 20 MHz Bandwidth | OFDM , MIMO | 6 | back | 0 mm | 2.120 | 2.100 | 1.01 | N/A | N/A | N/A | N/A |
| ANSI / IEEE C95.1 1992 - SAFETY LIMIT<br>Spatial Peak<br>Uncontrolled Exposure/General Population | | | | | | | Phablet<br>4.0 W/kg (mW/g)<br>averaged over 10 grams | | | | | | | |

## 13.2 Measurement Uncertainty

The measured SAR was <1.5 W/kg for 1g and <3.75 W/kg for 10g for all frequency bands. Therefore, per KDB Publication 865664 D01v01r04, the extended measurement uncertainty analysis per IEEE 1528-2013 was not required.




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# 14 ADDITIONAL TESTING PER FCC GUIDANCE

## 14.1 LTE Band 41 Power Class 2 and Power Class 3 Linearity

This device supports Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operations is 43.3 % using UL-DL configuration 1. Per May 2017 TCB Workshop Notes based on the device behavior, all SAR tests were performed using Power Class 3. SAR with Power Class 2 at the highest power and available duty factor was additionally performed for the Power Class 3 configuration with the highest SAR for each exposure condition. The linearity between the Power Class 2 and Power Class 3 SAR results and the respective frame averaged powers was calculated to determine that the results were linear. Per May 2017 TCB Workshop, no additional SAR measurements were required since the linearity between power classes as < 10% and all reported SAR values were < 1.4 W/kg for 1g and < 3.5 W/kg for 10g.

LTE Band 41 SAR testing with power class 2 at the highest power and available duty factor was additionally performed for the power class 3 configuration with the highest SAR for each exposure condition.

**Table 14-1**
**LTE Band 41 Head Linearity Data**

| | LTE Band 41 PC3 | LTE Band 41 PC2 |
|---|---|---|
| Maximum Allowed Output Power (dBm) | 25.2 | 27.7 |
| Measured Output Power (dBm) | 25.15 | 27.49 |
| Measured SAR (W/kg) | 0.506 | 0.644 |
| Measured Power (mW) | 327.34 | 561.05 |
| Duty Cycle | 63.3% | 43.3% |
| Frame Averaged Output Power (mW) | 207.21 | 242.93 |
| % deviation from expected linearity | | 8.56% |

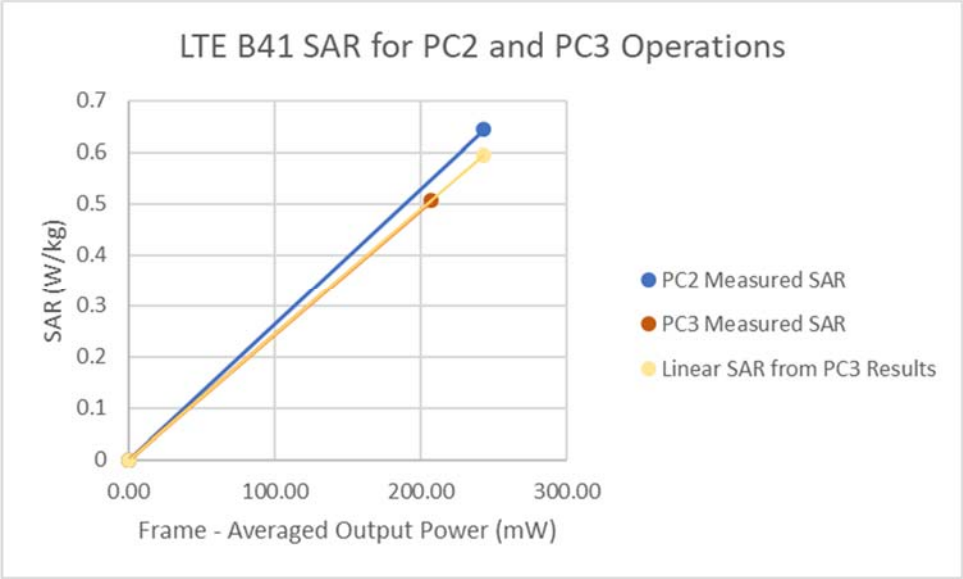


**Figure 14-1**
**LTE Band 41 Head Linearity**
**Table 14-2**
**LTE Band 41 Body-Worn Linearity Data**




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| | LTE Band 41 PC3 | LTE Band 41 PC2 |
|---|---|---|
| Maximum Allowed Output Power (dBm) | 25.2 | 27.7 |
| Measured Output Power (dBm) | 25.15 | 27.49 |
| Measured SAR (W/kg) | 0.517 | 0.611 |
| Measured Power (mW) | 327.34 | 561.05 |
| Duty Cycle | 63.3% | 43.3% |
| Frame Averaged Output Power (mW) | 207.21 | 242.93 |
| % deviation from expected linearity | | 0.80% |

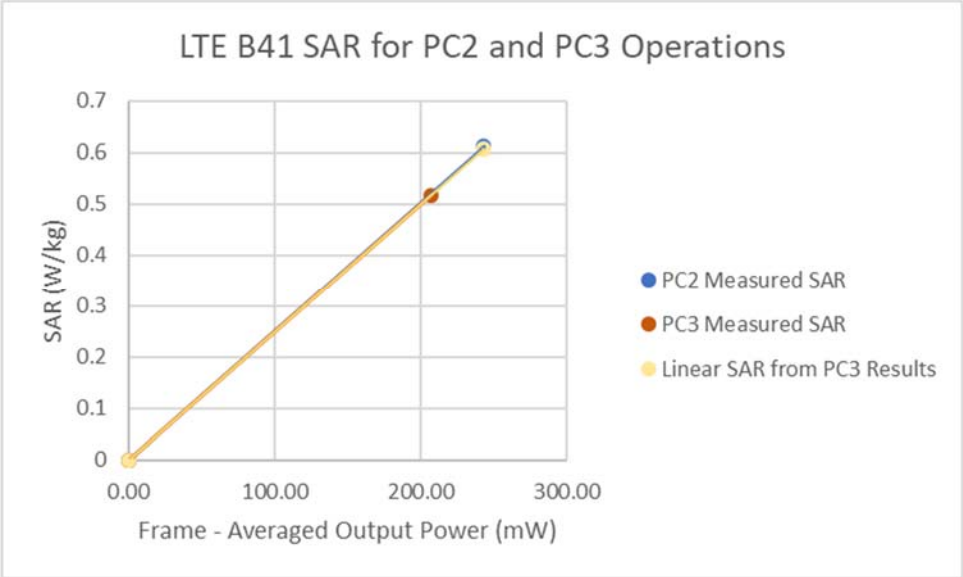


**Figure 14-2**
**LTE Band 41 Body-Worn Linearity**




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**Table 14-3**
**LTE Band 41 Hotspot Linearity Data**

| | LTE Band 41 PC3 | LTE Band 41 PC2 |
|---|---|---|
| Maximum Allowed Output Power (dBm) | 25.2 | 27.7 |
| Measured Output Power (dBm) | 25.15 | 27.49 |
| Measured SAR (W/kg) | 0.668 | 0.788 |
| Measured Power (mW) | 327.34 | 561.05 |
| Duty Cycle | 63.3% | 43.3% |
| Frame Averaged Output Power (mW) | 207.21 | 242.93 |
| % deviation from expected linearity | | 0.62% |

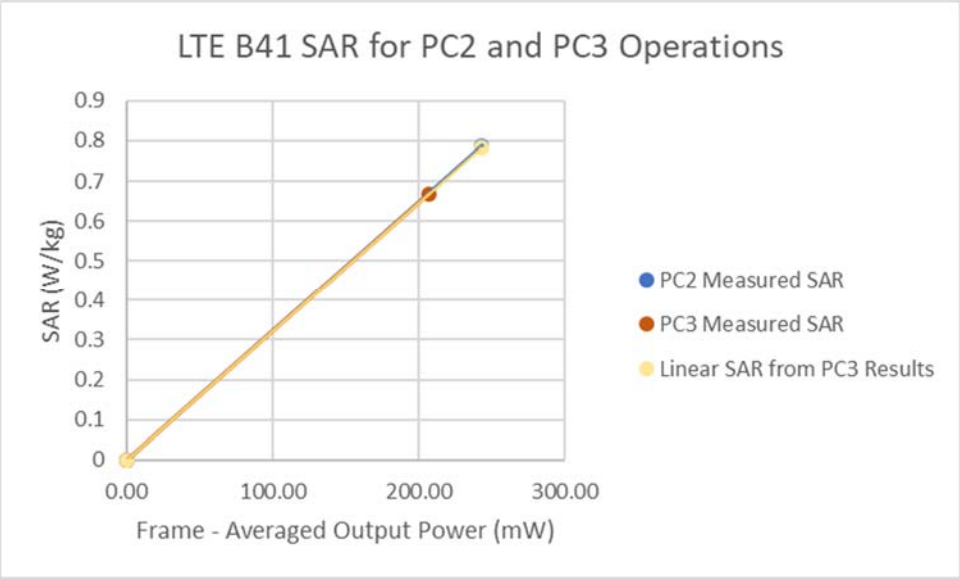


**Figure 14-3**
**LTE Band 41 Hotspot Linearity**




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# 15 EQUIPMENT LIST

| Manufacturer | Model | Description | Cal Date | Cal Interval | Cal Due | Serial Number |
|---|---|---|---|---|---|---|
| Agilent | 8594A | (9kHz-2.9GHz) Spectrum Analyzer | N/A | N/A | N/A | 3051A00187 |
| Agilent | 8753ES | S-Parameter Vector Network Analyzer | 8/17/2017 | Annual | 8/17/2018 | MY40003841 |
| Agilent | 8753ES | S-Parameter Network Analyzer | 2/8/2018 | Annual | 2/8/2019 | US39170122 |
| Agilent | E4438C | ESG Vector Signal Generator | 4/19/2018 | Annual | 4/19/2019 | MY47270002 |
| Agilent | E5515C | 8960 Series 10 Wireless Communications Test Set | 11/15/2017 | Annual | 11/15/2018 | GB42230325 |
| Agilent | E5515C | Wireless Communications Test Set | 1/24/2018 | Annual | 1/24/2019 | GB44400860 |
| Agilent | N4010A | Wireless Connectivity Test Set | N/A | N/A | N/A | GB44450273 |
| Agilent | N5182A | MXG Vector Signal Generator | 4/18/2018 | Annual | 4/18/2019 | MY47420800 |
| Agilent | N9020A | MXA Signal Analyzer | 1/24/2018 | Annual | 1/24/2019 | US46470561 |
| Amplifier Research | 15S1G6 | Amplifier | CBT | N/A | CBT | 433978 |
| Anritsu | MA24106A | USB Power Sensor | 6/5/2018 | Annual | 6/5/2019 | 1244515 |
| Anritsu | MA24106A | USB Power Sensor | 6/5/2018 | Annual | 6/5/2019 | 1248508 |
| Anritsu | MA2411B | Pulse Power Sensor | 3/2/2018 | Annual | 3/2/2019 | 1207364 |
| Anritsu | MA2411B | Pulse Power Sensor | 3/2/2018 | Annual | 3/2/2019 | 1339018 |
| Anritsu | ML2496A | Power Meter | 6/19/2018 | Annual | 6/19/2019 | 1306009 |
| Anritsu | MT8820C | Radio Communication Analyzer | 1/5/2018 | Annual | 1/5/2019 | 6201144418 |
| Control Company | 4040 | Therm./ Clock/ Humidity Monitor | 1/8/2018 | Annual | 1/8/2019 | 160473909 |
| Control Company | 4352 | Ultra Long Stem Thermometer | 5/2/2017 | Biennial | 5/2/2019 | 170330156 |
| Keysight | 772D | Dual Directional Coupler | CBT | N/A | CBT | MY52180215 |
| MCL | BW-N6W5+ | 6dB Attenuator | CBT | N/A | CBT | 1139 |
| MiniCircuits | SLP-2400+ | Low Pass Filter | CBT | N/A | CBT | R8979500903 |
| MiniCircuits | VLF-6000+ | Low Pass Filter | CBT | N/A | CBT | N/A |
| Mini-Circuits | BW-N20W5+ | DC to 18 GHz Precision Fixed 20 dB Attenuator | CBT | N/A | CBT | N/A |
| Mini-Circuits | NLP-1200+ | Low Pass Filter DC to 1000 MHz | CBT | N/A | CBT | N/A |
| Mini-Circuits | NLP-2950+ | Low Pass Filter DC to 2700 MHz | CBT | N/A | CBT | N/A |
| Mitutoyo | CD-6"CSX | Digital Caliper | 4/18/2018 | Biennial | 4/18/2020 | 13264165 |
| Narda | 4014C-6 | 4 - 8 GHz SMA 6 dB Directional Coupler | CBT | N/A | CBT | N/A |
| Narda | BW-S3W2 | Attenuator (3dB) | CBT | N/A | CBT | 120 |
| Pasternack | NC-100 | Torque Wrench | 4/18/2018 | Annual | 4/18/2019 | N/A |
| Pasternack | PE2209-10 | Bidirectional Coupler | CBT | N/A | CBT | N/A |
| Rohde & Schwarz | CMU200 | Base Station Simulator | 5/18/2018 | Annual | 5/18/2019 | 109892 |
| Rohde & Schwarz | CMW500 | Radio Communication Tester | 11/3/2017 | Annual | 11/3/2018 | 100976 |
| Rohde & Schwarz | CMW500 | Radio Communication Tester | 4/5/2018 | Annual | 4/5/2019 | 128633 |
| SPEAG | DAK-3.5 | Dielectric Assessment Kit | 9/12/2017 | Annual | 9/12/2018 | 1091 |
| SPEAG | D750V3 | 750 MHz SAR Dipole | 7/13/2016 | Triennial | 7/13/2019 | 1161 |
| SPEAG | D835V2 | 835 MHz SAR Dipole | 7/11/2017 | Biennial | 7/11/2019 | 4d133 |
| SPEAG | D1750V2 | 1750 MHz SAR Dipole | 5/9/2017 | Biennial | 5/9/2019 | 1148 |
| SPEAG | D1900V2 | 1900 MHz SAR Dipole | 7/11/2017 | Biennial | 7/11/2019 | 5d149 |
| SPEAG | D2300V2 | 2300 MHz SAR Dipole | 7/25/2016 | Biennial | 7/25/2018 | 1073 |
| SPEAG | D2450V2 | 2450 MHz SAR Dipole | 8/17/2017 | Biennial | 8/17/2019 | 719 |
| SPEAG | D2450V2 | 2450 MHz SAR Dipole | 9/11/2017 | Annual | 9/11/2018 | 797 |
| SPEAG | D2600V2 | 2600 MHz SAR Dipole | 9/13/2016 | Biennial | 9/13/2018 | 1071 |
| SPEAG | D5GHzV2 | 5 GHz SAR Dipole | 9/21/2016 | Biennial | 9/21/2018 | 1191 |
| SPEAG | D750V3 | 750 MHz Dipole | 3/7/2017 | Biennial | 3/7/2019 | 1054 |
| SPEAG | D835V2 | 835 MHz SAR Dipole | 1/15/2018 | Annual | 1/15/2019 | 4d132 |
| SPEAG | D1900V2 | 1900 MHz SAR Dipole | 4/12/2018 | Annual | 4/12/2019 | 5d141 |
| SPEAG | D5GHzV2 | 5 GHz SAR Dipole | 8/15/2017 | Annual | 8/15/2018 | 1237 |
| SPEAG | D1900V2 | 1900 MHz SAR Dipole | 7/8/2016 | Triennial | 7/8/2019 | 5d080 |
| SPEAG | ES3DV3 | SAR Probe | 2/13/2018 | Annual | 2/13/2019 | 3213 |
| SPEAG | EX3DV4 | SAR Probe | 6/25/2018 | Annual | 6/25/2019 | 7409 |
| SPEAG | ES3DV3 | SAR Probe | 8/14/2017 | Annual | 8/14/2018 | 3332 |
| SPEAG | ES3DV3 | SAR Probe | 3/27/2018 | Annual | 3/27/2019 | 3347 |
| SPEAG | EX3DV4 | SAR Probe | 5/22/2018 | Annual | 5/22/2019 | 7406 |
| SPEAG | ES3DV3 | SAR Probe | 3/13/2018 | Annual | 3/13/2019 | 3319 |
| SPEAG | EX3DV4 | SAR Probe | 4/18/2018 | Annual | 4/18/2019 | 7357 |
| SPEAG | DAE4 | Dasy Data Acquisition Electronics | 2/9/2018 | Annual | 2/9/2019 | 1272 |
| SPEAG | DAE4 | Dasy Data Acquisition Electronics | 6/18/2018 | Annual | 6/18/2019 | 1334 |
| SPEAG | DAE4 | Dasy Data Acquisition Electronics | 8/9/2017 | Annual | 8/9/2018 | 1323 |
| SPEAG | DAE4 | Dasy Data Acquisition Electronics | 11/9/2017 | Annual | 11/9/2018 | 1450 |
| SPEAG | DAE4 | Dasy Data Acquisition Electronics | 5/22/2018 | Annual | 5/22/2019 | 859 |
| SPEAG | DAE4 | Dasy Data Acquisition Electronics | 3/7/2018 | Annual | 3/7/2019 | 1368 |
| SPEAG | DAE4 | Dasy Data Acquisition Electronics | 4/11/2018 | Annual | 4/11/2019 | 1407 |

Note:

1. Each equipment item was used solely within its respective calibration period.
2. CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler or filter were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path. The power meter offset was then adjusted to compensate for the measurement system losses. This level offset is stored within the power meter before measurements are made. This calibration verification procedure applies to the system verification and output power measurements. The calibrated reading is then taken directly from the power meter after compensation of the losses for all final power measurements.




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# 16 MEASUREMENT UNCERTAINTIES

| a | c | d | e= f(d,k) | f | g | h = c x f/e | i = c x g/e | k |
|---|---|---|---|---|---|---|---|---|
| **Uncertainty Component** | **Tol. (± %)** | **Prob. Dist.** | **Div.** | **$c_i$ 1gm** | **$c_i$ 10 gms** | **1gm $u_i$ (± %)** | **10gms $u_i$ (± %)** | **$v_i$** |
| **Measurement System** | | | | | | | | |
| Probe Calibration | 6.55 | N | 1 | 1.0 | 1.0 | 6.6 | 6.6 | ∞ |
| Axial Isotropy | 0.25 | N | 1 | 0.7 | 0.7 | 0.2 | 0.2 | ∞ |
| Hemishperical Isotropy | 1.3 | N | 1 | 0.7 | 0.7 | 0.9 | 0.9 | ∞ |
| Boundary Effect | 2.0 | R | 1.73 | 1.0 | 1.0 | 1.2 | 1.2 | ∞ |
| Linearity | 0.3 | N | 1 | 1.0 | 1.0 | 0.3 | 0.3 | ∞ |
| System Detection Limits | 0.25 | R | 1.73 | 1.0 | 1.0 | 0.1 | 0.1 | ∞ |
| Readout Electronics | 0.3 | N | 1 | 1.0 | 1.0 | 0.3 | 0.3 | ∞ |
| Response Time | 0.8 | R | 1.73 | 1.0 | 1.0 | 0.5 | 0.5 | ∞ |
| Integration Time | 2.6 | R | 1.73 | 1.0 | 1.0 | 1.5 | 1.5 | ∞ |
| RF Ambient Conditions - Noise | 3.0 | R | 1.73 | 1.0 | 1.0 | 1.7 | 1.7 | ∞ |
| RF Ambient Conditions - Reflections | 3.0 | R | 1.73 | 1.0 | 1.0 | 1.7 | 1.7 | ∞ |
| Probe Positioner Mechanical Tolerance | 0.4 | R | 1.73 | 1.0 | 1.0 | 0.2 | 0.2 | ∞ |
| Probe Positioning w/ respect to Phantom | 6.7 | R | 1.73 | 1.0 | 1.0 | 3.9 | 3.9 | ∞ |
| Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation | 4.0 | R | 1.73 | 1.0 | 1.0 | 2.3 | 2.3 | ∞ |
| **Test Sample Related** | | | | | | | | |
| Test Sample Positioning | 2.7 | N | 1 | 1.0 | 1.0 | 2.7 | 2.7 | 35 |
| Device Holder Uncertainty | 1.67 | N | 1 | 1.0 | 1.0 | 1.7 | 1.7 | 5 |
| Output Power Variation - SAR drift measurement | 5.0 | R | 1.73 | 1.0 | 1.0 | 2.9 | 2.9 | ∞ |
| SAR Scaling | 0.0 | R | 1.73 | 1.0 | 1.0 | 0.0 | 0.0 | ∞ |
| **Phantom & Tissue Parameters** | | | | | | | | |
| Phantom Uncertainty (Shape & Thickness tolerances) | 7.6 | R | 1.73 | 1.0 | 1.0 | 4.4 | 4.4 | ∞ |
| Liquid Conductivity - measurement uncertainty | 4.2 | N | 1 | 0.78 | 0.71 | 3.3 | 3.0 | 10 |
| Liquid Permittivity - measurement uncertainty | 4.1 | N | 1 | 0.23 | 0.26 | 1.0 | 1.1 | 10 |
| Liquid Conductivity - Temperature Uncertainty | 3.4 | R | 1.73 | 0.78 | 0.71 | 1.5 | 1.4 | ∞ |
| Liquid Permittivity - Temperature Unceritainty | 0.6 | R | 1.73 | 0.23 | 0.26 | 0.1 | 0.1 | ∞ |
| Liquid Conductivity - deviation from target values | 5.0 | R | 1.73 | 0.64 | 0.43 | 1.8 | 1.2 | ∞ |
| Liquid Permittivity - deviation from target values | 5.0 | R | 1.73 | 0.60 | 0.49 | 1.7 | 1.4 | ∞ |
| **Combined Standard Uncertainty (k=1)** | | RSS | | | | 11.5 | 11.3 | 60 |
| **Expanded Uncertainty** (95% CONFIDENCE LEVEL) | | k=2 | | | | 23.0 | 22.6 | |




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# 17 CONCLUSION

## 17.1 Measurement Conclusion

The SAR evaluation indicates that the EUT complies with the RF radiation exposure limits of the FCC and Innovation, Science, and Economic Development Canada, with respect to all parameters subject to this test. These measurements were taken to simulate the RF effects of RF exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body are very complex phenomena that depend on the mass, shape, and size of the body, the orientation of the body with respect to the field vectors, and the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because various factors may interact with one another to vary the specific biological outcome of an exposure to electromagnetic fields, any protection guide should consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables. [3]




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# APPENDIX A: SAR TEST DATA

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# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06499**

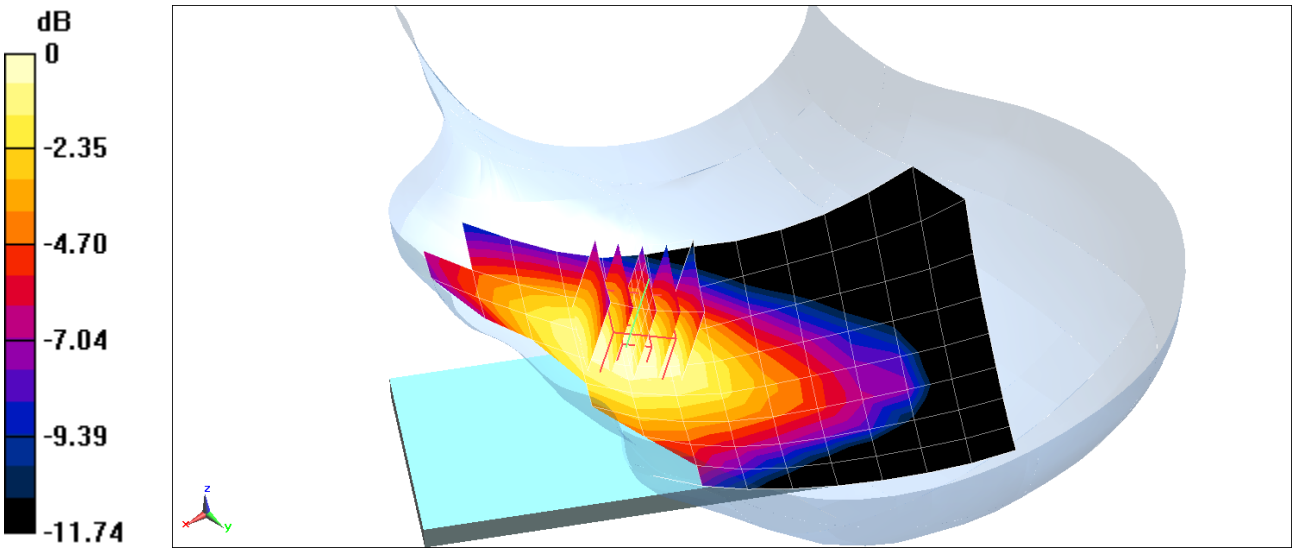
Communication System: UID 0, Cellular CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 820.1 MHz; $\sigma$ = 0.928 S/m; $\varepsilon_r$ = 41.161; $\rho$ = 1000 kg/m$^3$
Phantom section: Left Section

Test Date: 08-01-2018; Ambient Temp: 24.1°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: Cell. CDMA, Rule Part 90S, Left Head, Cheek, Mid.ch

**Area Scan (9x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.47 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.168 W/kg
**SAR(1 g) = 0.133 W/kg**




0 dB = 0.145 W/kg = -8.39 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06499**

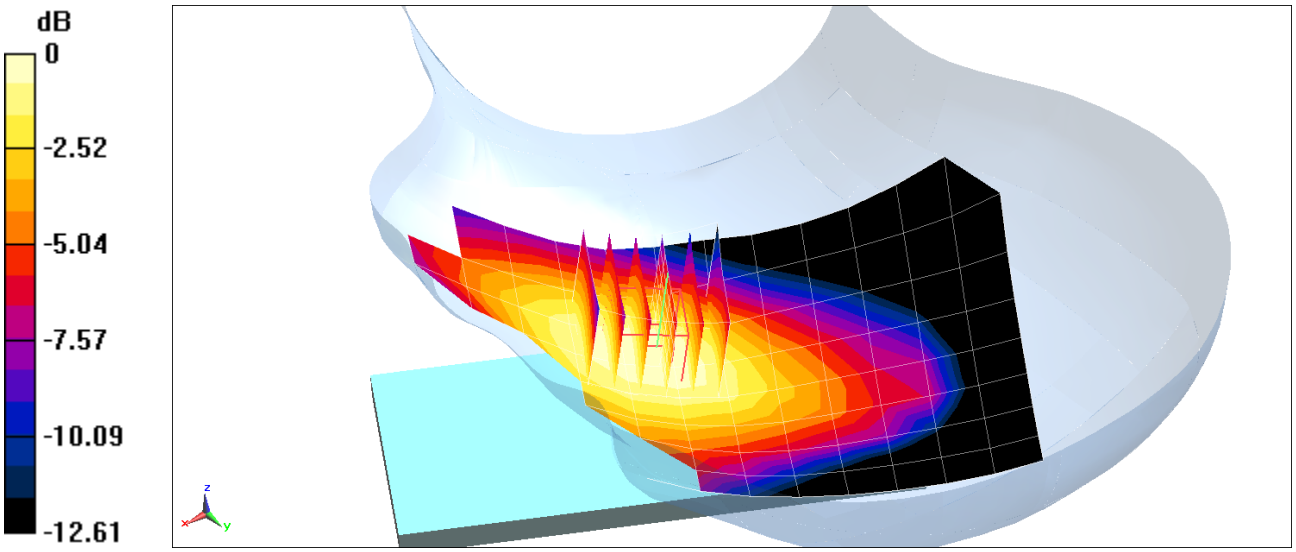
Communication System: UID 0, Cellular CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.52 MHz; $\sigma$ = 0.934 S/m; $\varepsilon_r$ = 41.119; $\rho$ = 1000 kg/m$^3$
Phantom section: Left Section

Test Date: 08-01-2018; Ambient Temp: 24.1°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: Cell. CDMA, Rule Part 22H, Left Head, Cheek, Mid.ch

**Area Scan (9x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (6x6x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.17 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.170 W/kg
**SAR(1 g) = 0.130 W/kg**




0 dB = 0.142 W/kg = -8.48 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06473**

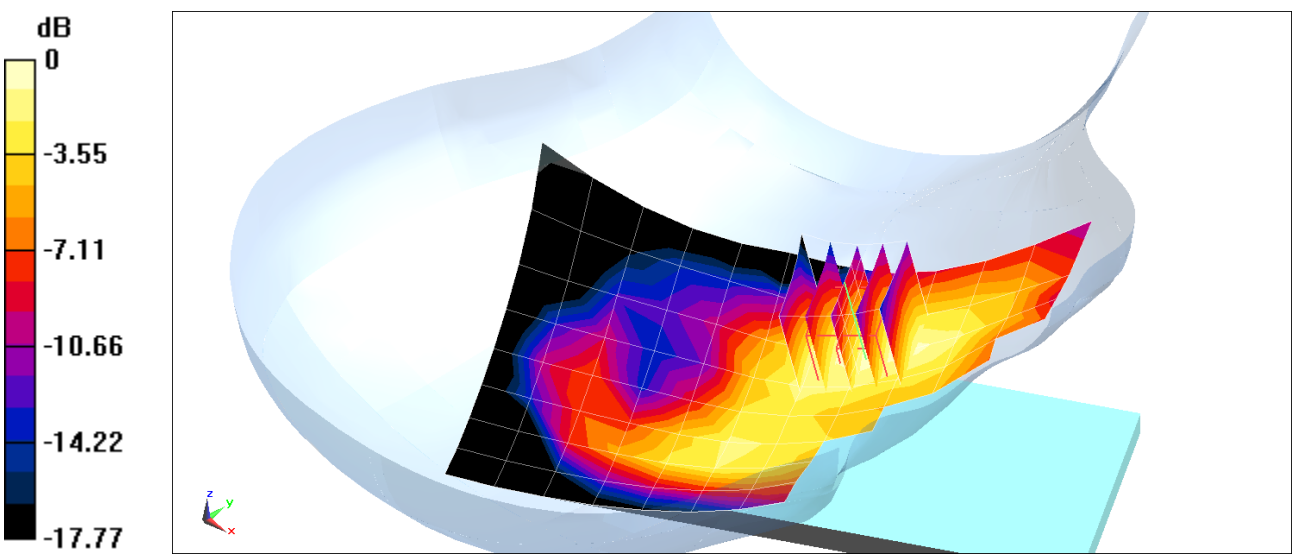
Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; $\sigma$ = 1.406 S/m; $\varepsilon_r$ = 39.154; $\rho$ = 1000 kg/m$^3$
Phantom section: Right Section

Test Date: 8-1-2018; Ambient Temp: 21.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3332; ConvF(5.33, 5.33, 5.33); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: PCS CDMA, Right Head, Cheek, Mid.ch

**Area Scan (9x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.35 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.197 W/kg
**SAR(1 g) = 0.134 W/kg**




0 dB = 0.153 W/kg = -8.15 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06481**

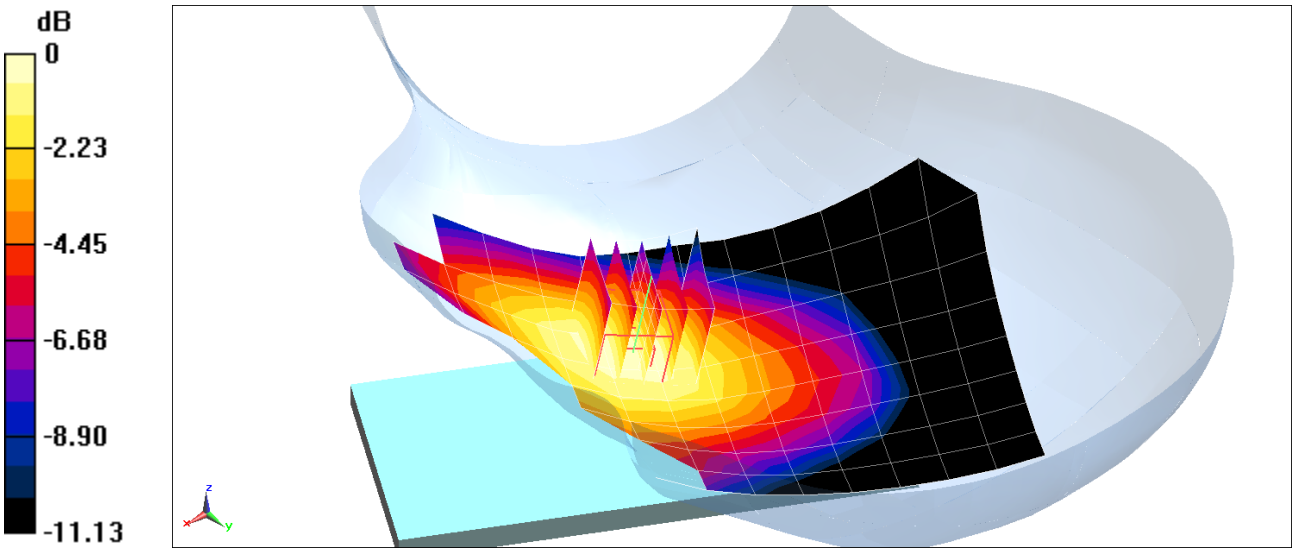
Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; $\sigma$ = 0.934 S/m; $\varepsilon_r$ = 41.119; $\rho$ = 1000 kg/m$^3$
Phantom section: Left Section

Test Date: 08-01-2018; Ambient Temp: 24.1°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: GSM 850, Left Head, Cheek, Mid.ch

**Area Scan (9x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.84 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.156 W/kg
**SAR(1 g) = 0.123 W/kg**




0 dB = 0.135 W/kg = -8.70 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06481**

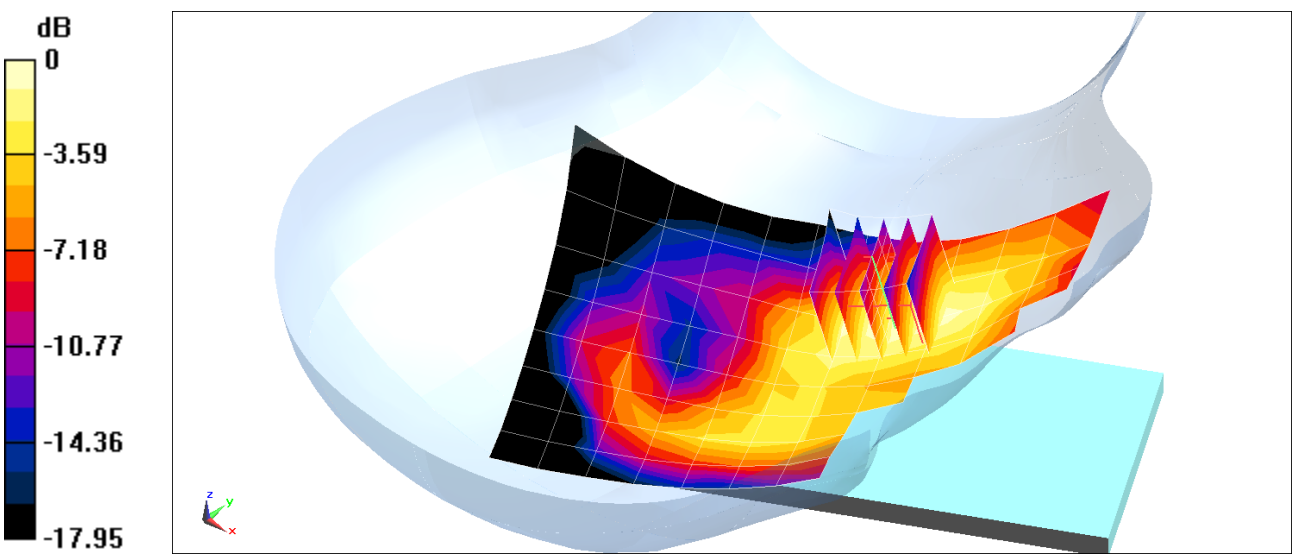
Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; $\sigma$ = 1.406 S/m; $\varepsilon_r$ = 39.154; $\rho$ = 1000 kg/m$^3$
Phantom section: Right Section

Test Date: 8-1-2018; Ambient Temp: 21.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3332; ConvF(5.33, 5.33, 5.33); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: GSM 1900, Right Head, Cheek, Mid.ch

**Area Scan (9x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.950 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.138 W/kg
**SAR(1 g) = 0.092 W/kg**




0 dB = 0.108 W/kg = -9.67 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06481**

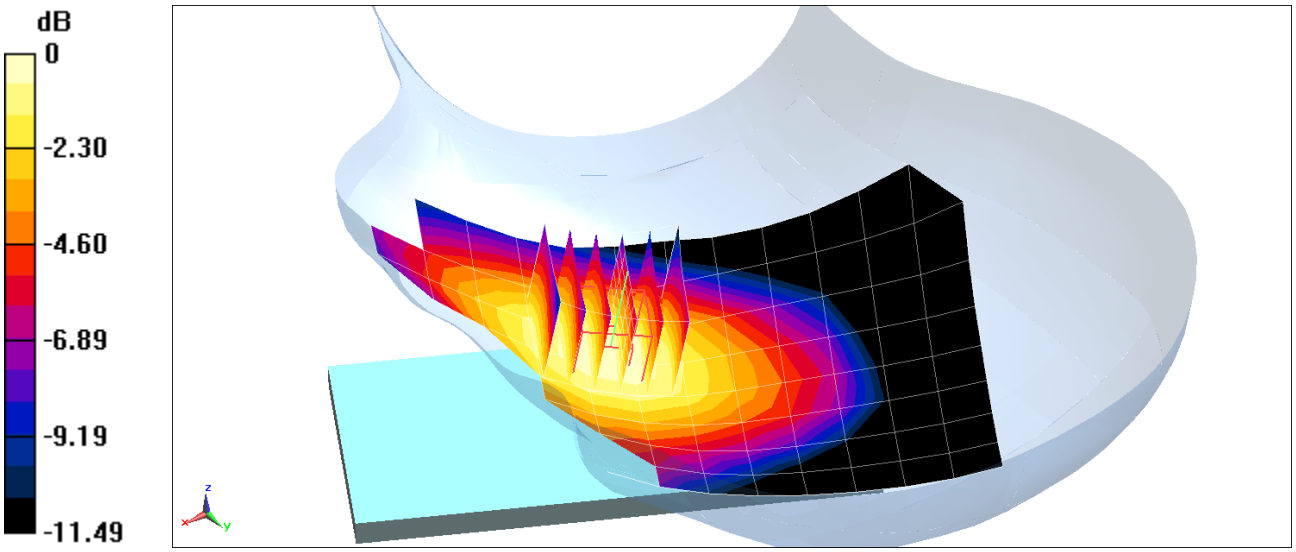
Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.6 MHz; $\sigma$ = 0.934 S/m; $\varepsilon_r$ = 41.119; $\rho$ = 1000 kg/m$^3$
Phantom section: Left Section

Test Date: 08-01-2018; Ambient Temp: 24.1°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: UMTS 850, Left Head, Cheek, Mid.ch

**Area Scan (9x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (6x6x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.60 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.177 W/kg
**SAR(1 g) = 0.138 W/kg**




0 dB = 0.150 W/kg = -8.24 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06481**

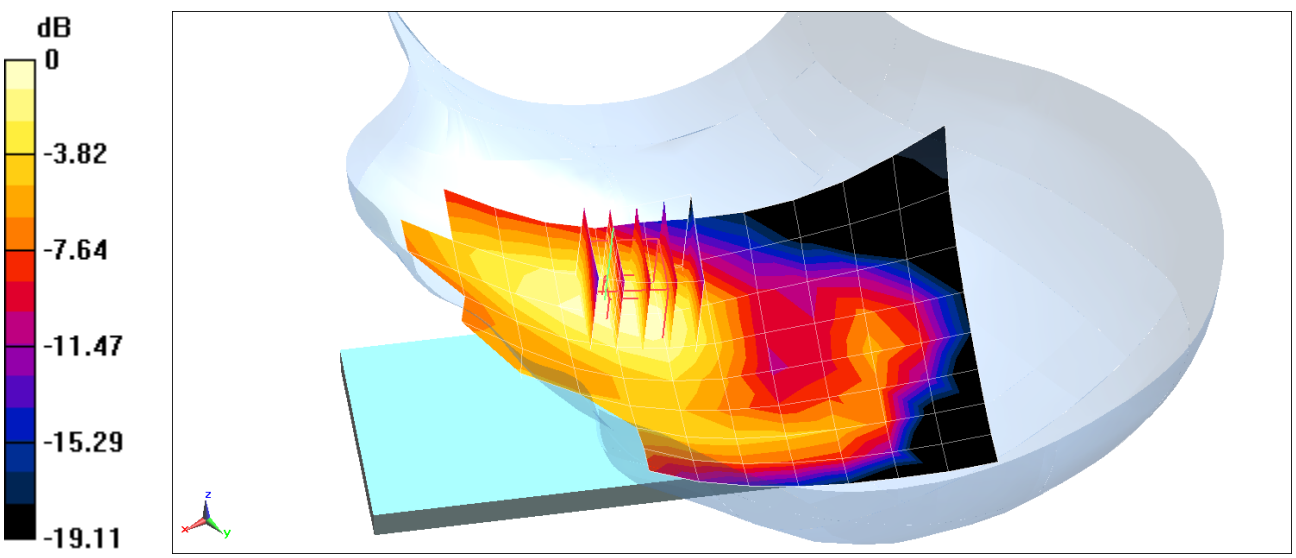
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used (interpolated):
f = 1732.4 MHz; $\sigma$ = 1.34 S/m; $\varepsilon_r$ = 40.093; $\rho$ = 1000 kg/m$^3$
Phantom section: Left Section

Test Date: 08-01-2018; Ambient Temp: 21.9°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7409; ConvF(8.43, 8.43, 8.43); Calibrated: 6/25/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: UMTS 1750, Left Head, Cheek, Mid.ch

**Area Scan (9x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.718 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 0.152 W/kg
**SAR(1 g) = 0.099 W/kg**




0 dB = 0.130 W/kg = -8.86 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06481**

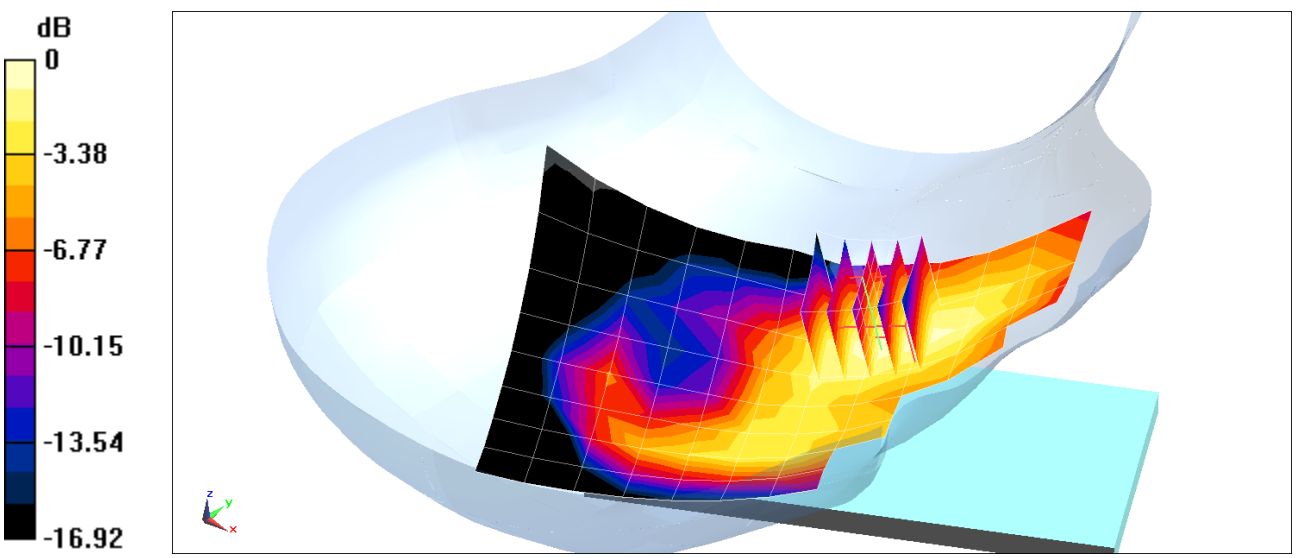
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used:
f = 1880 MHz; $\sigma$ = 1.406 S/m; $\varepsilon_r$ = 39.154; $\rho$ = 1000 kg/m$^3$
Phantom section: Right Section

Test Date: 8-1-2018; Ambient Temp: 21.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3332; ConvF(5.33, 5.33, 5.33); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: UMTS 1900, Right Head, Cheek, Mid.ch

**Area Scan (9x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 9.815 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.184 W/kg
**SAR(1 g) = 0.124 W/kg**




0 dB = 0.140 W/kg = -8.54 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06465**

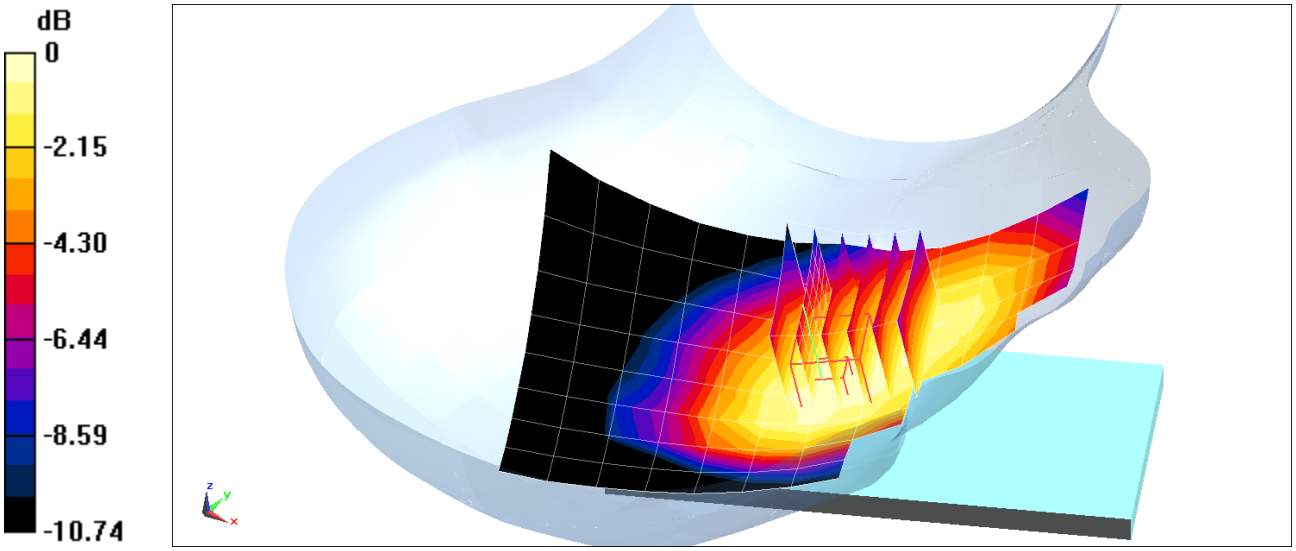
Communication System: UID 0, LTE Band 71; Frequency: 680.5 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 680.5 MHz; $\sigma$ = 0.866 S/m; $\varepsilon_r$ = 41.427; $\rho$ = 1000 kg/m$^3$
Phantom section: Right Section

Test Date: 07-31-2018; Ambient Temp: 20.7°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3213; ConvF(6.75, 6.75, 6.75); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: LTE Band 71, Right Head, Cheek, Mid.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

**Area Scan (9x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (7x6x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.28 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 0.121 W/kg
**SAR(1 g) = 0.100 W/kg**




0 dB = 0.109 W/kg = -9.63 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06465**

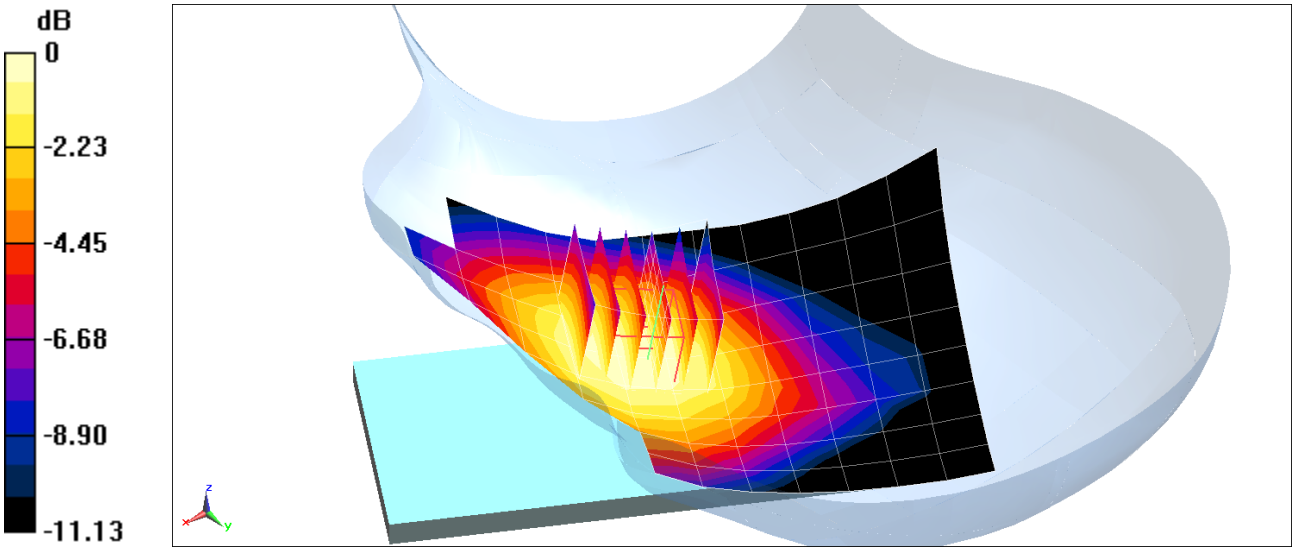
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 707.5 MHz; $\sigma$ = 0.875 S/m; $\varepsilon_r$ = 41.356; $\rho$ = 1000 kg/m$^3$
Phantom section: Left Section

Test Date: 07-31-2018; Ambient Temp: 20.7°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3213; ConvF(6.75, 6.75, 6.75); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 12, Left Head, Cheek, Mid.ch, QPSK,**
**10 MHz Bandwidth, 1 RB, 0 RB Offset**

**Area Scan (9x14x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (6x6x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.66 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.130 W/kg
**SAR(1 g) = 0.104 W/kg**




0 dB = 0.112 W/kg = -9.51 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06473**

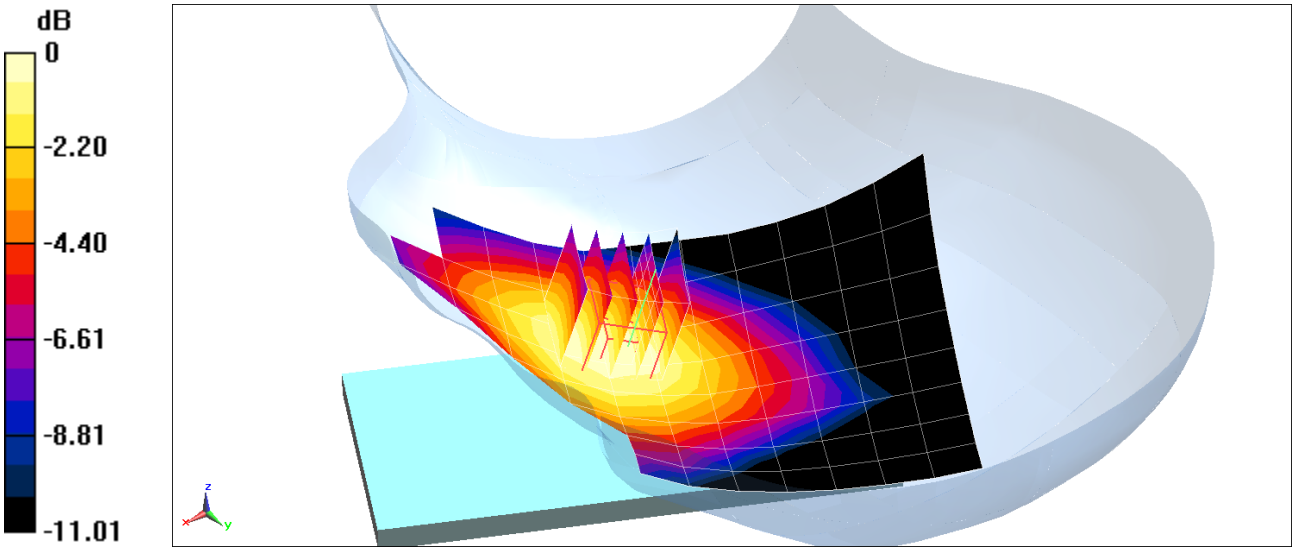
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 782 MHz; $\sigma$ = 0.901 S/m; $\varepsilon_r$ = 41.146; $\rho$ = 1000 kg/m$^3$
Phantom section: Left Section

Test Date: 07-31-2018; Ambient Temp: 20.7°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3213; ConvF(6.75, 6.75, 6.75); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 13, Left Head, Cheek, Mid.ch, QPSK,**
**10 MHz Bandwidth, 1 RB, 49 RB Offset**

**Area Scan (9x14x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.65 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.158 W/kg
**SAR(1 g) = 0.125 W/kg**




0 dB = 0.136 W/kg = -8.66 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06473**

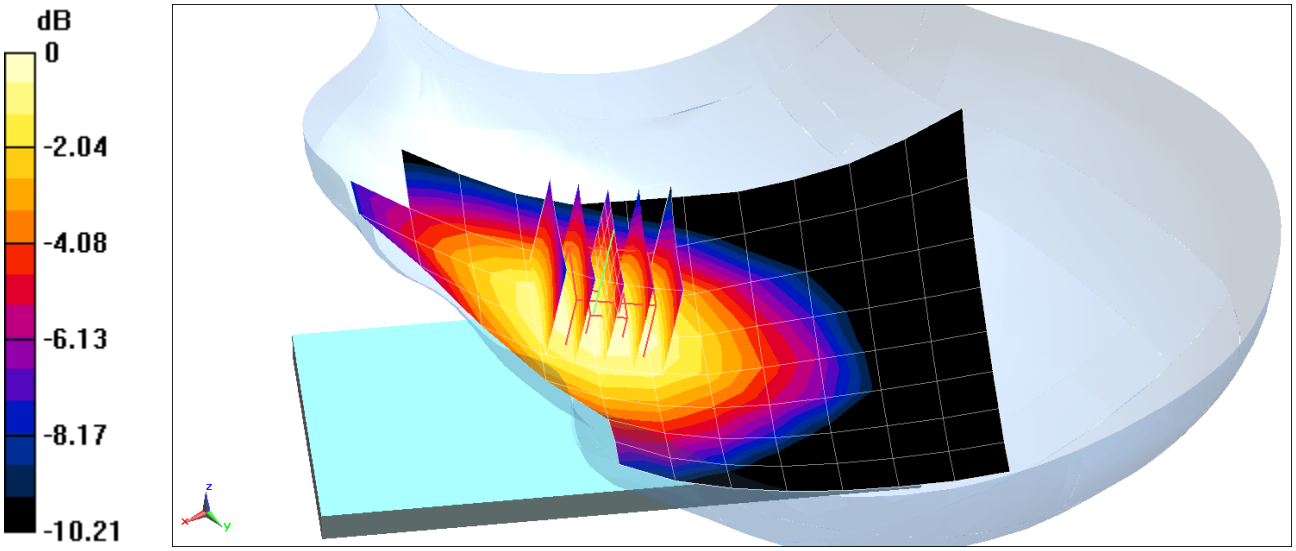
Communication System: UID 0, LTE Band 14; Frequency: 793 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 793 MHz; $\sigma$ = 0.905 S/m; $\varepsilon_r$ = 41.114; $\rho$ = 1000 kg/m$^3$
Phantom section: Left Section

Test Date: 07-31-2018; Ambient Temp: 20.7°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3213; ConvF(6.75, 6.75, 6.75); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 14, Left Head, Cheek, Mid.ch,**
**QPSK, 10 MHz Bandwidth, 1 RB, 25 RB Offset**

**Area Scan (9x14x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (6x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.70 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.182 W/kg
**SAR(1 g) = 0.146 W/kg**




0 dB = 0.158 W/kg = -8.01 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06440**

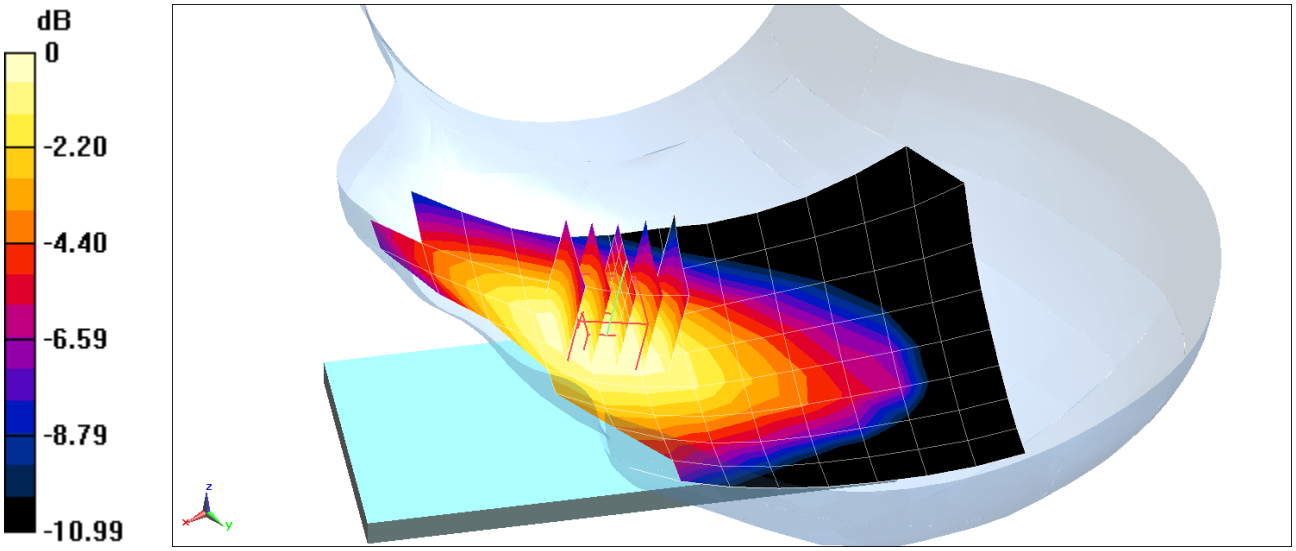
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 831.5 MHz; $\sigma$ = 0.932 S/m; $\varepsilon_r$ = 41.132; $\rho$ = 1000 kg/m$^3$
Phantom section: Left Section

Test Date: 08-01-2018; Ambient Temp: 24.1°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 26 (Cell.), Left Head, Cheek, Mid.ch, 15 MHz Bandwidth, QPSK, 1 RB, 36 RB Offset**

**Area Scan (9x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.92 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.141 W/kg
**SAR(1 g) = 0.114 W/kg**




0 dB = 0.123 W/kg = -9.10 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06440**

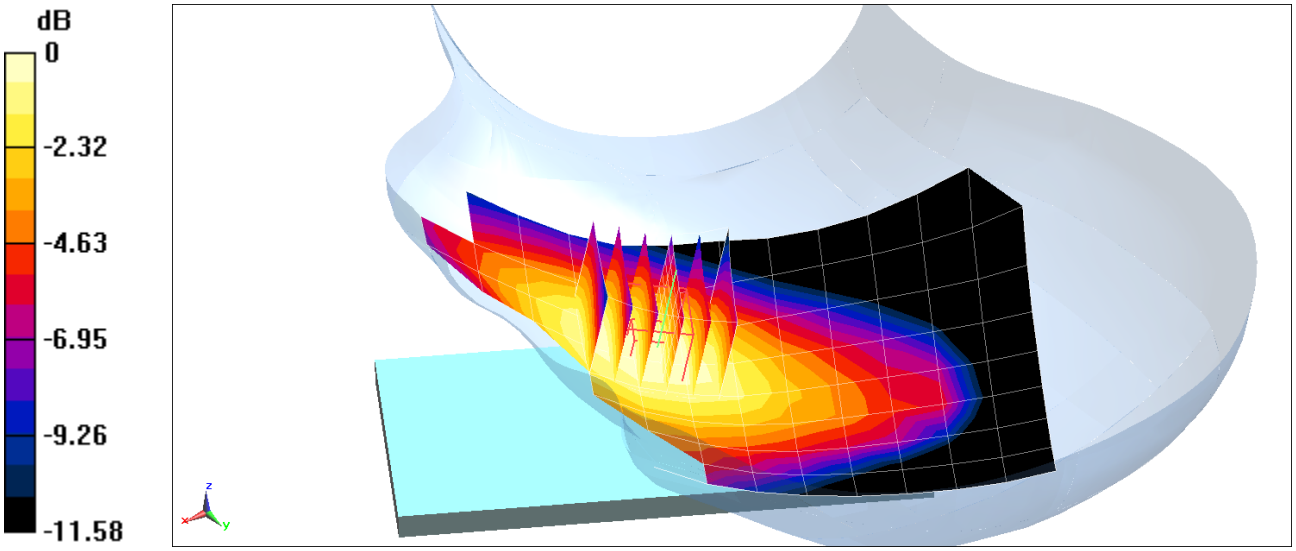
Communication System: UID 0, LTE Band 5 (Cell.); Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used (interpolated):
f = 836.5 MHz; $\sigma$ = 0.934 S/m; $\varepsilon_r$ = 41.119; $\rho$ = 1000 kg/m$^3$
Phantom section: Left Section

Test Date: 08-01-2018; Ambient Temp: 24.1°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 5 (Cell.), Left Head, Cheek, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

**Area Scan (9x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (6x6x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.66 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.142 W/kg
**SAR(1 g) = 0.111 W/kg**




0 dB = 0.121 W/kg = -9.17 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06440**

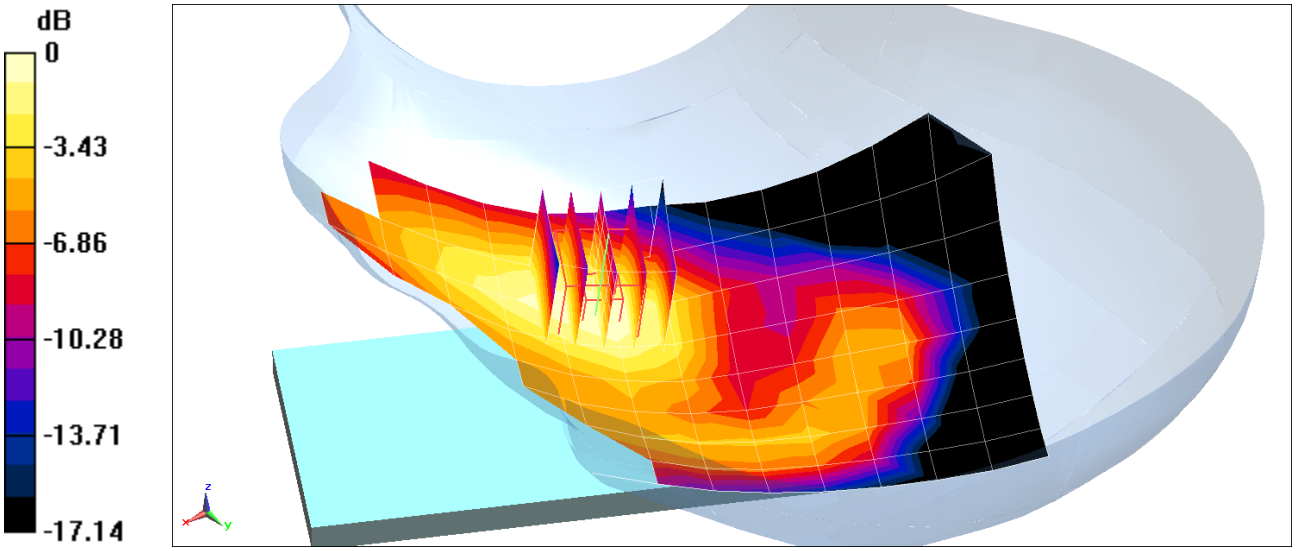
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1745 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used (interpolated):
f = 1745 MHz; $\sigma$ = 1.347 S/m; $\varepsilon_r$ = 40.072; $\rho$ = 1000 kg/m$^3$
Phantom section: Left Section

Test Date: 08-01-2018; Ambient Temp: 21.9°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7409; ConvF(8.43, 8.43, 8.43); Calibrated: 6/25/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 66 (AWS), Left Head, Cheek, Mid.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset**

**Area Scan (9x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.64 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.210 W/kg
**SAR(1 g) = 0.136 W/kg**




0 dB = 0.175 W/kg = -7.57 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06473**

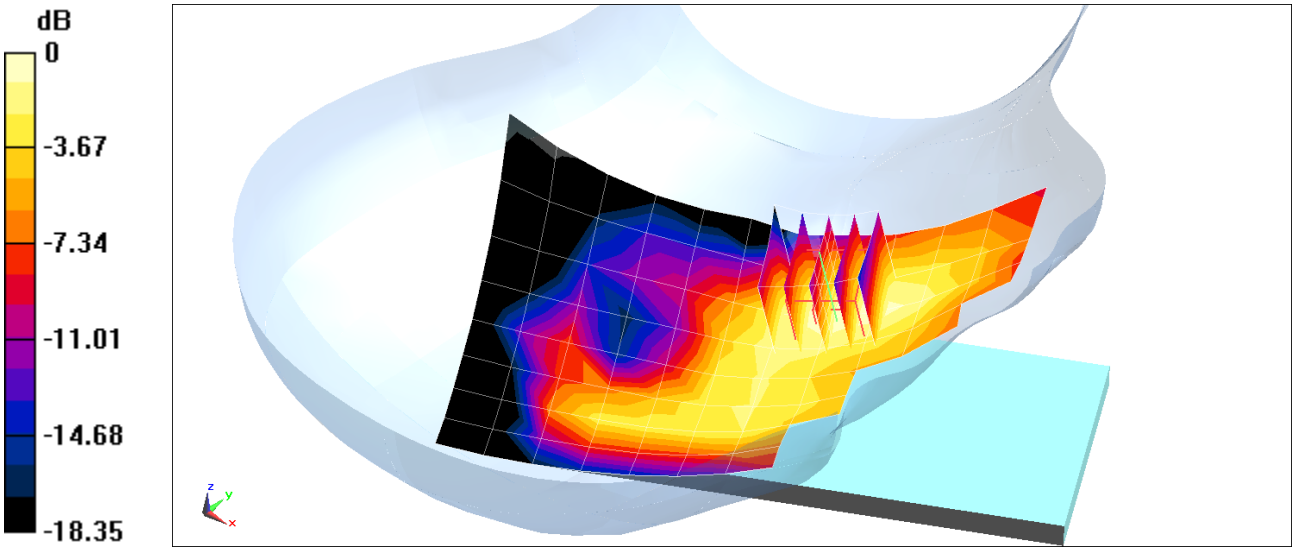
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1905 MHz; $\sigma$ = 1.432 S/m; $\varepsilon_r$ = 39.066; $\rho$ = 1000 kg/m$^3$
Phantom section: Right Section

Test Date: 8-1-2018; Ambient Temp: 21.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3332; ConvF(5.33, 5.33, 5.33); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: LTE Band 25 (PCS), Right Head, Cheek, High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

**Area Scan (9x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.23 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.218 W/kg
**SAR(1 g) = 0.148 W/kg**




0 dB = 0.165 W/kg = -7.83 dBW/kg

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06440**

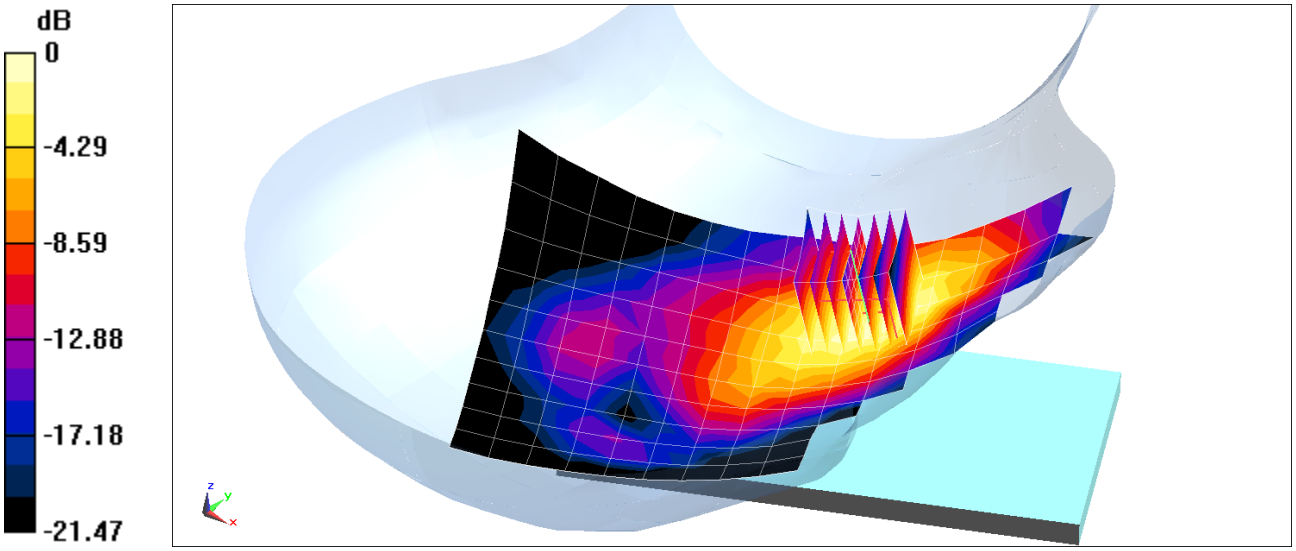
Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2310 MHz; $\sigma$ = 1.688 S/m; $\varepsilon_r$ = 39.841; $\rho$ = 1000 kg/m$^3$
Phantom section: Right Section

Test Date: 07-25-2018; Ambient Temp: 21.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3332; ConvF(4.99, 4.99, 4.99); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 30, Right Head, Cheek, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

**Area Scan (11x18x1):** Measurement grid: dx=12mm, dy=12mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.11 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.833 W/kg
**SAR(1 g) = 0.471 W/kg**




0 dB = 0.571 W/kg = -2.43 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06440**

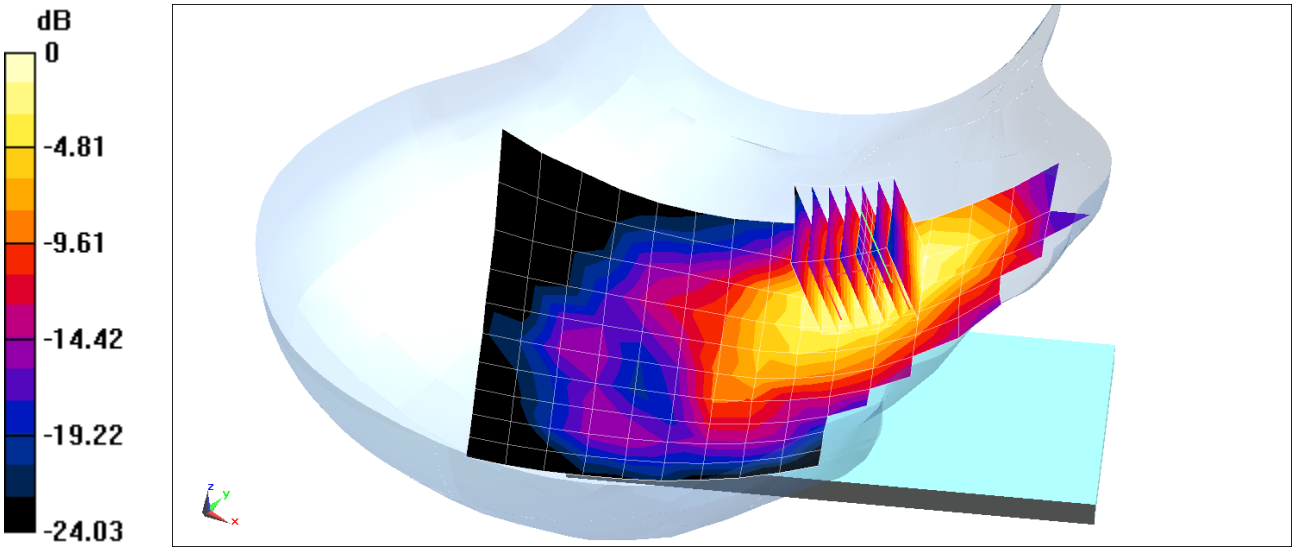
Communication System: UID 0, _LTE Band 7; Frequency: 2560 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used (interpolated):
f = 2560 MHz; $\sigma$ = 2.007 S/m; $\varepsilon_r$ = 38.349; $\rho$ = 1000 kg/m$^3$
Phantom section: Right Section

Test Date: 07-29-2018; Ambient Temp: 21.9°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3332; ConvF(4.56, 4.56, 4.56); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 7, Right Head, Cheek, High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

**Area Scan (11x18x1):** Measurement grid: dx=12mm, dy=12mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.59 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 0.659 W/kg
**SAR(1 g) = 0.332 W/kg**




0 dB = 0.414 W/kg = -3.83 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06465**

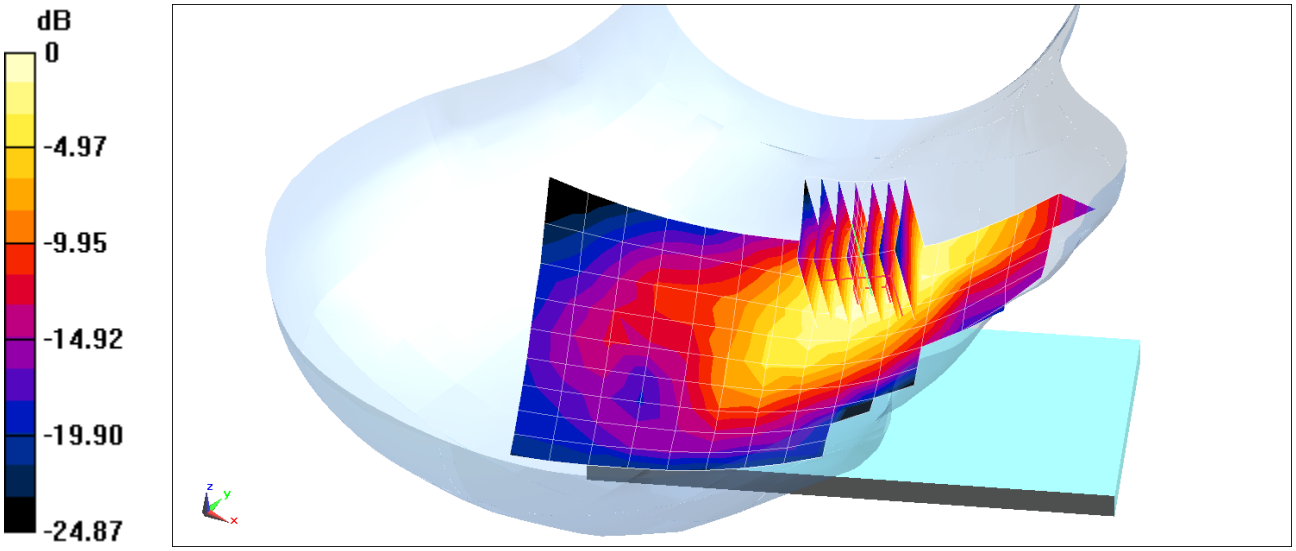
Communication System: UID 0, LTE Band 41 (Class 2); Frequency: 2680 MHz; Duty Cycle: 1:2.31
Medium: 2450 Head Medium parameters used (interpolated):
f = 2680 MHz; $\sigma$ = 2.112 S/m; $\varepsilon_r$ = 38.41; $\rho$ = 1000 kg/m$^3$
Phantom section: Right Section

Test Date: 07-25-2018; Ambient Temp: 21.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3332; ConvF(4.56, 4.56, 4.56); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: LTE Band 41 PC2, Right Head, Cheek, High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

**Area Scan (10x17x1):** Measurement grid: dx=12mm, dy=12mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.17 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.22 W/kg
**SAR(1 g) = 0.644 W/kg**




0 dB = 0.801 W/kg = -0.96 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06648**

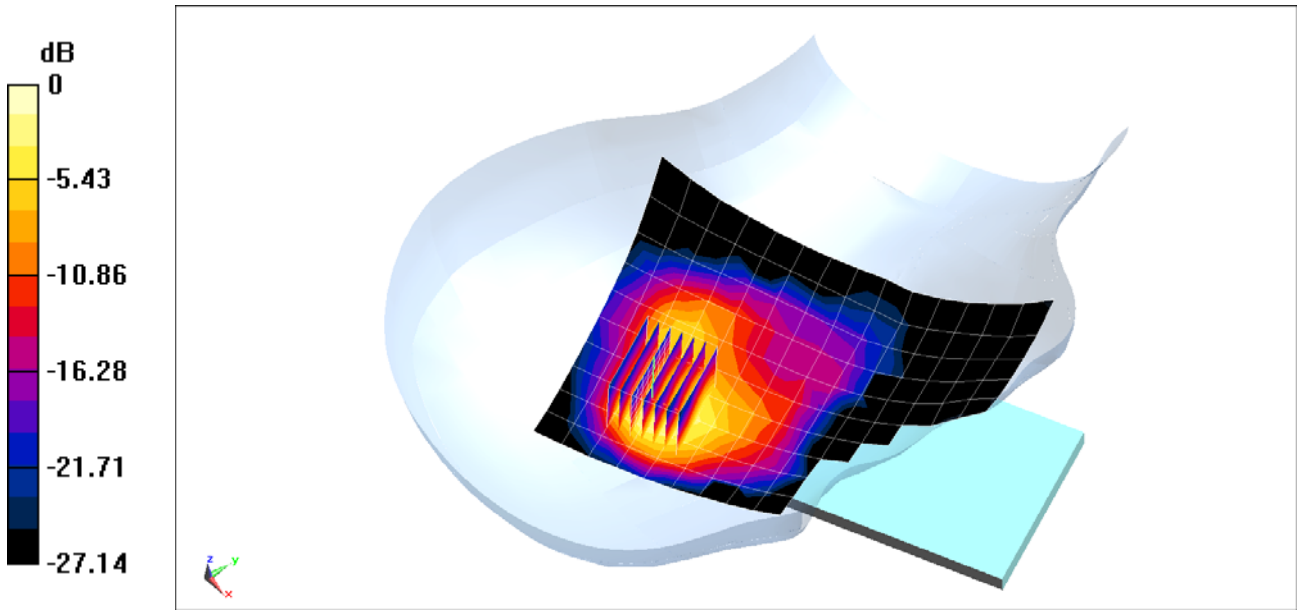
Communication System: UID 0, _IEEE 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used (interpolated):
f = 2462 MHz; $\sigma$ = 1.895 S/m; $\varepsilon_r$ = 38.711; $\rho$ = 1000 kg/m$^3$
Phantom section: Right Section

Test Date: 07-29-2018; Ambient Temp: 21.9°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3332; ConvF(4.68, 4.68, 4.68); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: IEEE 802.11b, Antenna 1, 22 MHz Bandwidth, Right Head, Cheek, Ch 11, 1 Mbps

**Area Scan (11x11x1):** Measurement grid: dx=12mm, dy=12mm
**Zoom Scan (8x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.188 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 1.11 W/kg
**SAR(1 g) = 0.439 W/kg**




0 dB = 0.571 W/kg = -2.43 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06630**

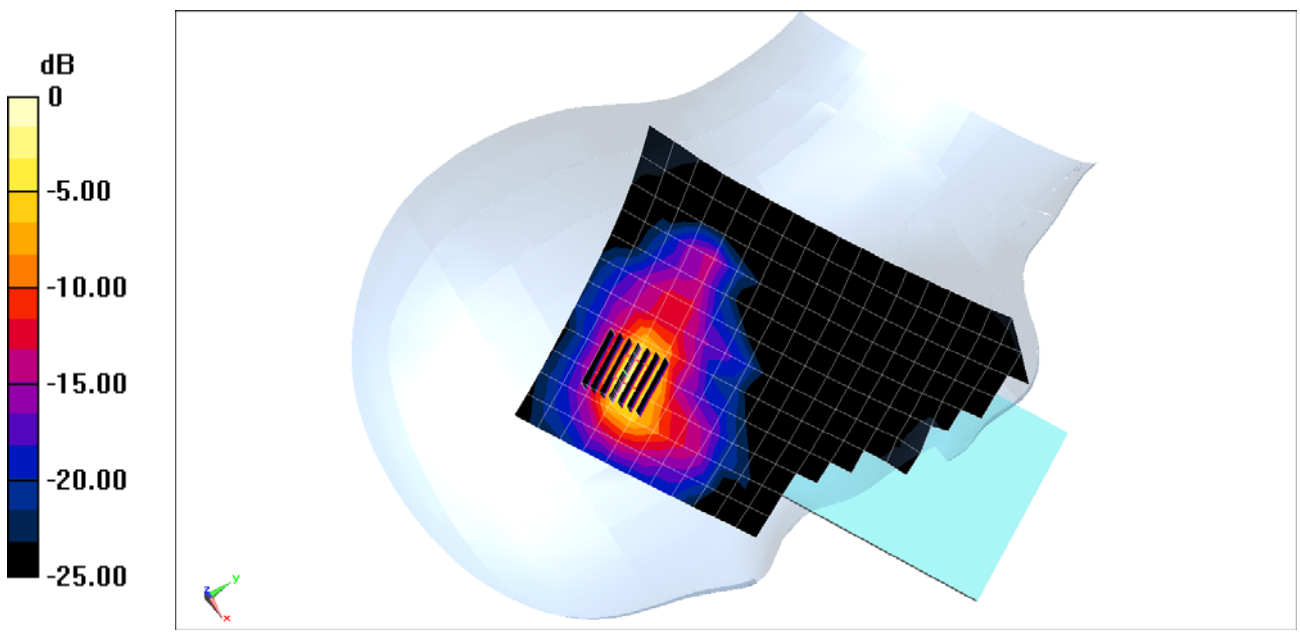
Communication System: UID 0, 802.11n 5.2-5.8 GHz Band; Frequency: 5795 MHz; Duty Cycle: 1:1
Medium: 5GHz Head Medium parameters used (interpolated):
f = 5795 MHz; $\sigma$ = 5.197 S/m; $\varepsilon_r$ = 34.406; $\rho$ = 1000 kg/m$^3$
Phantom section: Right Section

Test Date: 07-30-2018; Ambient Temp: 20.7°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN7409; ConvF(4.82, 4.82, 4.82); Calibrated: 6/25/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: IEEE 802.11n, Antenna 1, U-NII-3, 40 MHz Bandwidth, Right Head, Tilt, Ch 159, 13.5 Mbps

**Area Scan (13x13x1):** Measurement grid: dx=10mm, dy=10mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 6.445 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 6.51 W/kg
**SAR(1 g) = 1.15 W/kg**




0 dB = 3.27 W/kg = 5.15 dBW/kg

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06630**

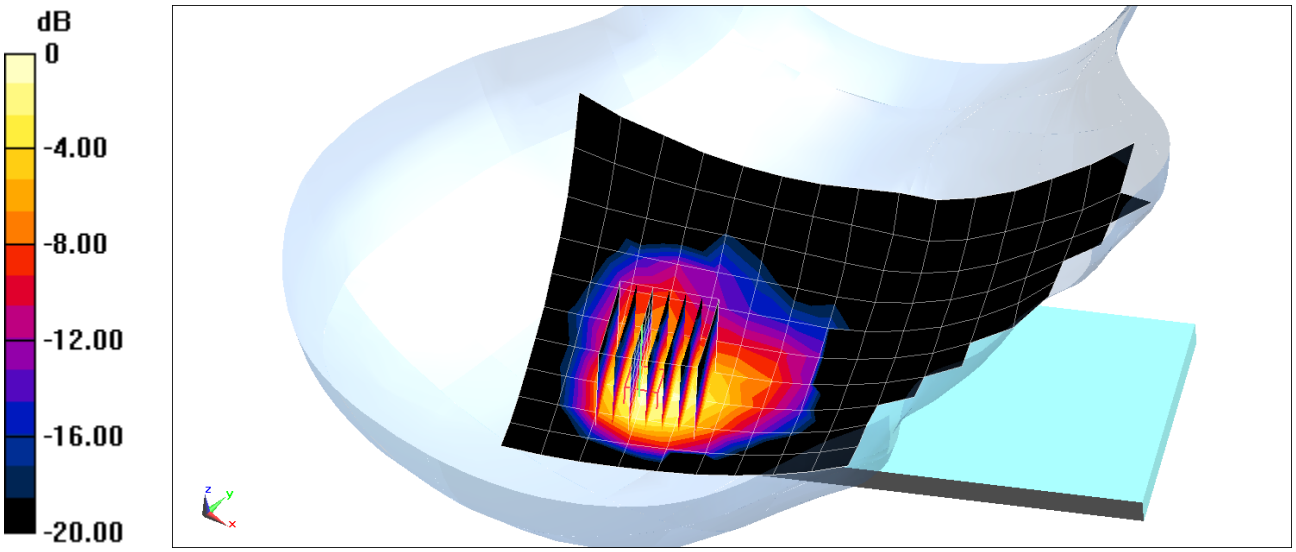
Communication System: UID 0, Bluetooth; Frequency: 2480 MHz; Duty Cycle: 1:1.294
Medium: 2450 Head Medium parameters used (interpolated):
f = 2480 MHz; $\sigma$ = 1.879 S/m; $\varepsilon_r$ = 39.203; $\rho$ = 1000 kg/m$^3$
Phantom section: Right Section

Test Date: 07-25-2018; Ambient Temp: 21.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3332; ConvF(4.68, 4.68, 4.68); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: Bluetooth, Right Head, Cheek, Ch 78, 1 Mbps

**Area Scan (11x19x1):** Measurement grid: dx=12mm, dy=12mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.811 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 0.327 W/kg
**SAR(1 g) = 0.134 W/kg**




0 dB = 0.181 W/kg = -7.42 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06499**

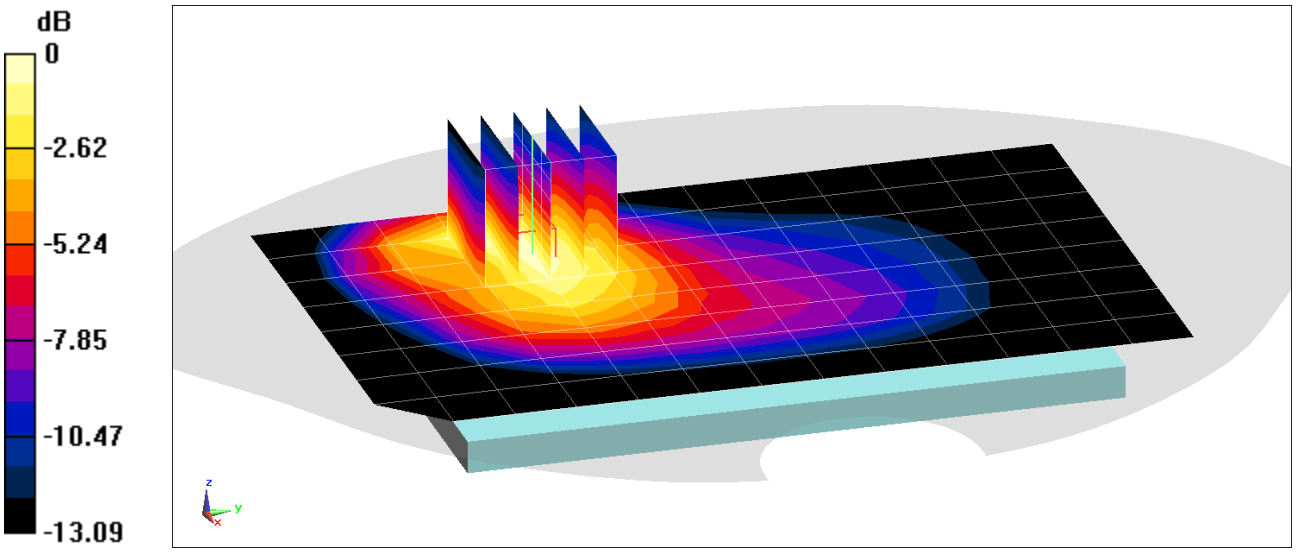
Communication System: UID 0, CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 820.1 MHz; $\sigma$ = 0.998 S/m; $\varepsilon_r$ = 53.404; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-31-2018; Ambient Temp: 21.0°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3347; ConvF(6.37, 6.37, 6.37); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**Mode: Cell. CDMA, Rule Part 90S, Body SAR, Back side, Mid.ch**

**Area Scan (9x14x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.78 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.29 W/kg
**SAR(1 g) = 0.746 W/kg**




0 dB = 0.903 W/kg = -0.44 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06499**

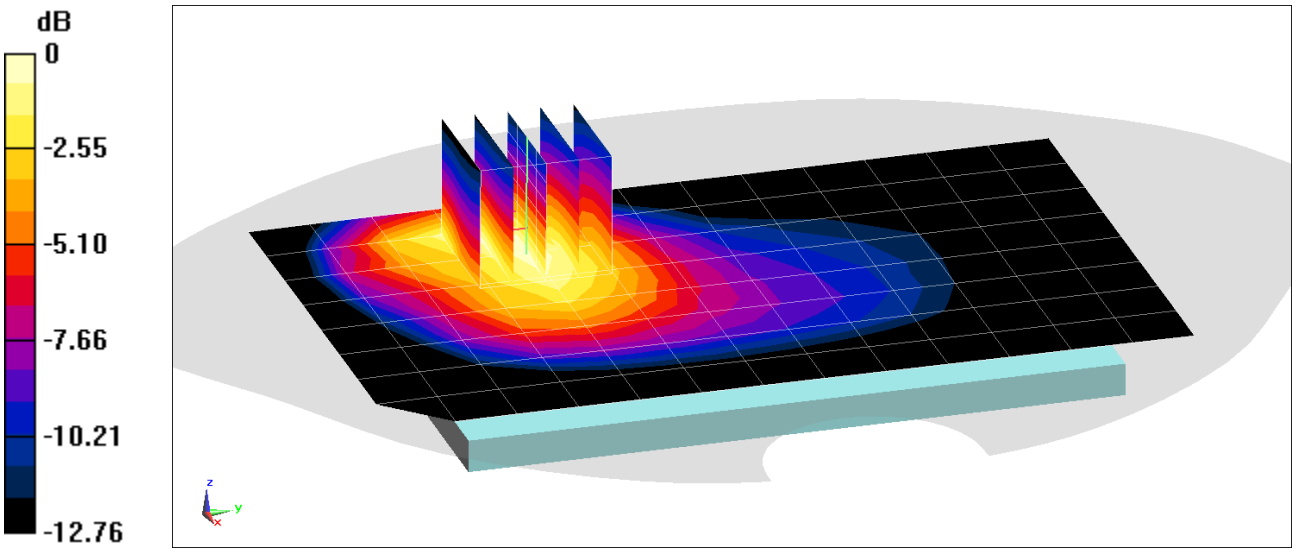
Communication System: UID 0, CDMA; Frequency: 820.1 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 820.1 MHz; $\sigma$ = 0.998 S/m; $\varepsilon_r$ = 53.404; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-31-2018; Ambient Temp: 21.0°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3347; ConvF(6.37, 6.37, 6.37); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**Mode: Cell. EVDO, Rule Part 90S, Body SAR, Back side, Mid.ch**

**Area Scan (9x14x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.10 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.34 W/kg
**SAR(1 g) = 0.778 W/kg**




0 dB = 0.924 W/kg = -0.34 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06499**

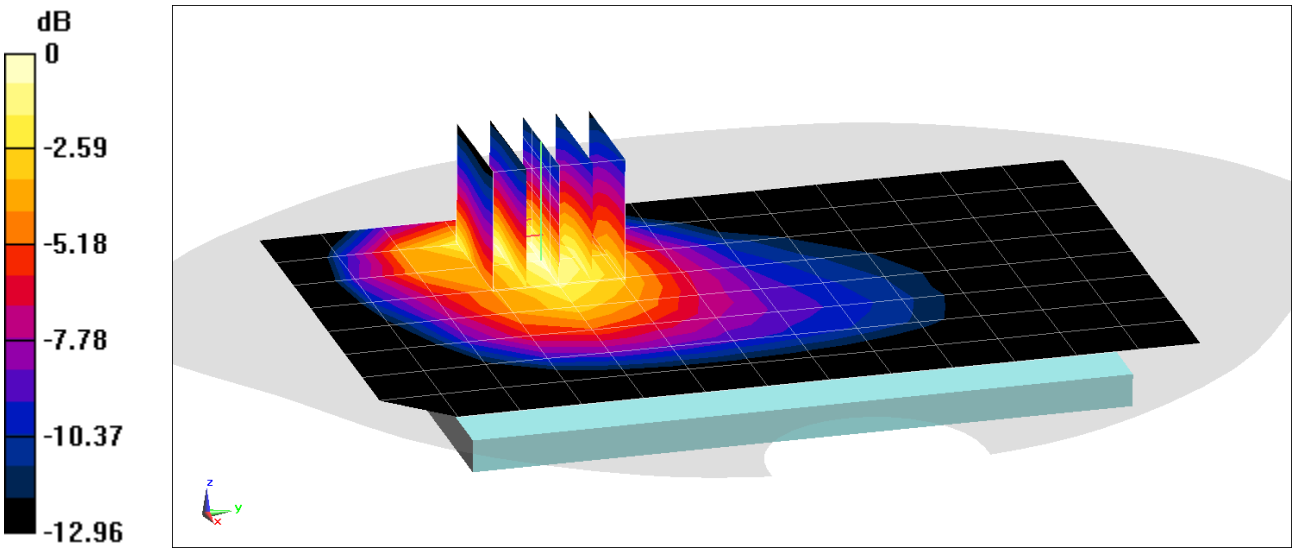
Communication System: UID 0, CDMA; Frequency: 848.31 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 848.31 MHz; $\sigma$ = 1.009 S/m; $\varepsilon_r$ = 53.332; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-31-2018; Ambient Temp: 21.0°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3347; ConvF(6.37, 6.37, 6.37); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: Cell. CDMA, Rule Part 22H, Body SAR, Back side, High.ch

**Area Scan (9x14x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 32.42 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.66 W/kg
**SAR(1 g) = 0.958 W/kg**




0 dB = 1.15 W/kg = 0.61 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06499**

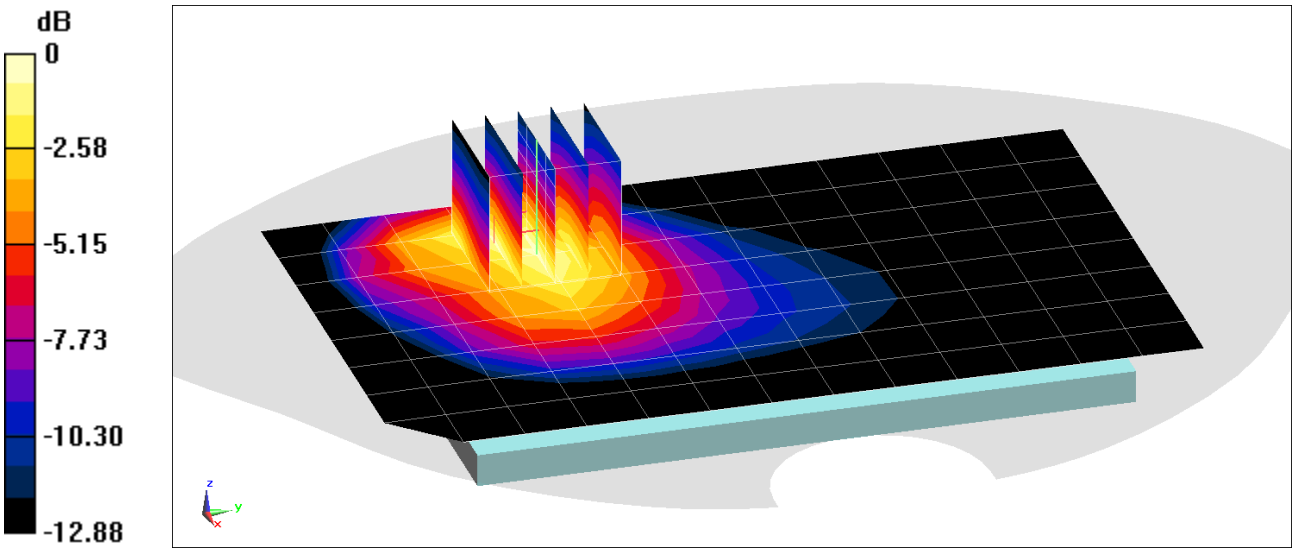
Communication System: UID 0, CDMA; Frequency: 848.31 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 848.31 MHz; $\sigma$ = 1.009 S/m; $\varepsilon_r$ = 53.332; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-31-2018; Ambient Temp: 21.0°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3347; ConvF(6.37, 6.37, 6.37); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: Cell. EVDO, Rule Part 22H, Body SAR, Back side, High.ch

**Area Scan (9x14x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 33.20 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.75 W/kg
**SAR(1 g) = 1.01 W/kg**




0 dB = 1.20 W/kg = 0.79 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06499**

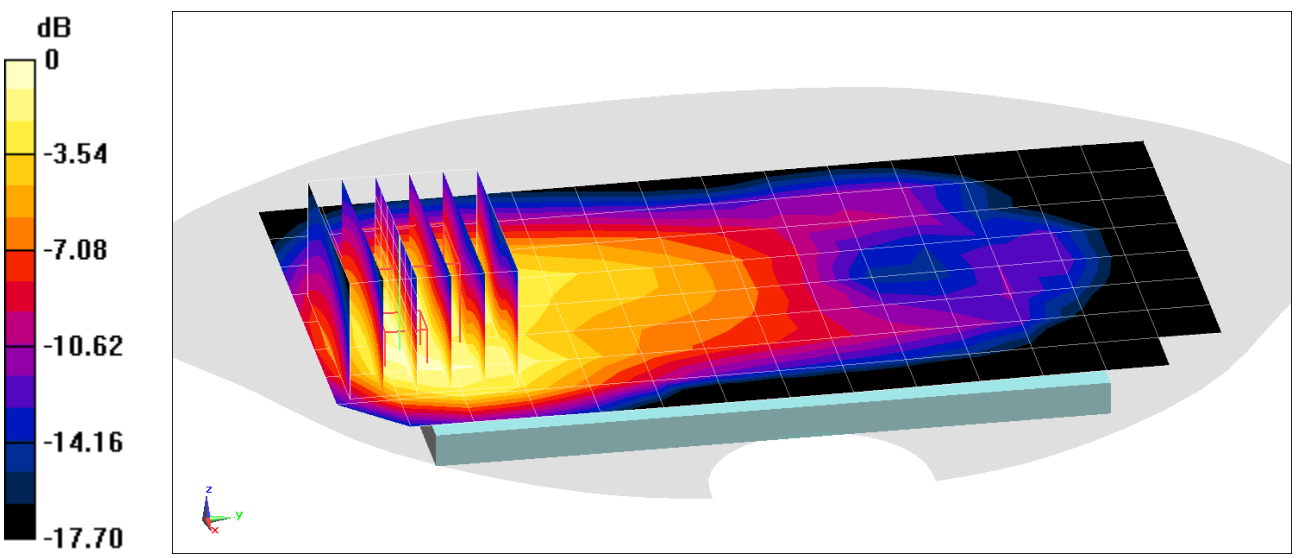
Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; $\sigma$ = 1.542 S/m; $\varepsilon_r$ = 52.278; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-23-2018; Ambient Temp: 21.8°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: PCS CDMA, Body SAR, Back side, Mid.ch

**Area Scan (9x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (8x6x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.93 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.971 W/kg
**SAR(1 g) = 0.555 W/kg**




0 dB = 0.816 W/kg = -0.88 dBW/kg

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06499**

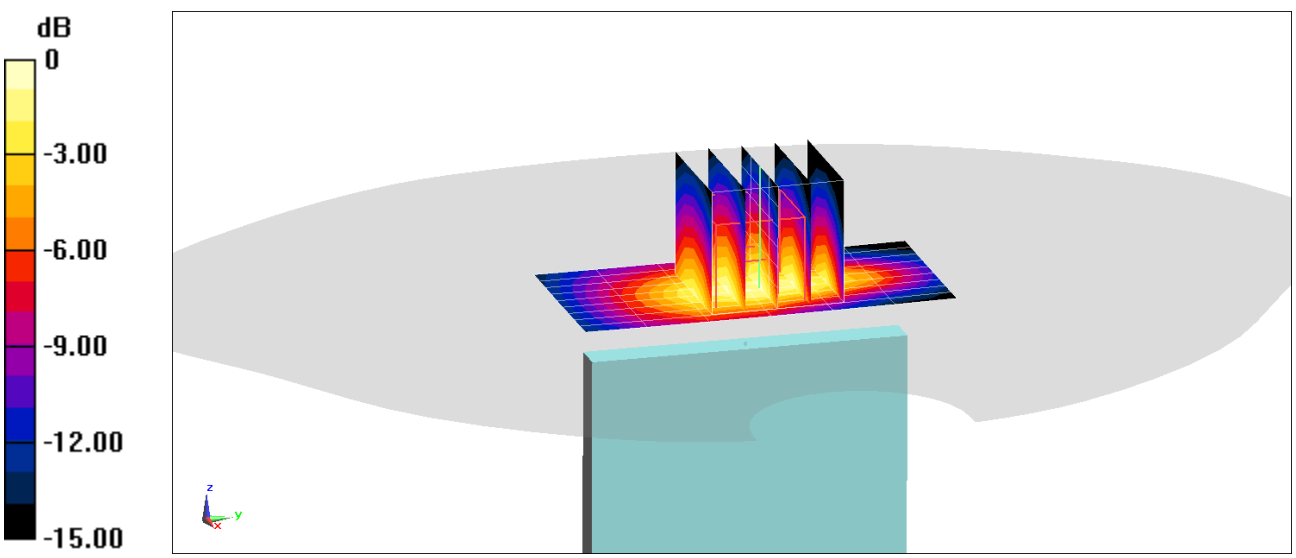
Communication System: UID 0, CDMA; Frequency: 1908.75 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1908.75 MHz; $\sigma$ = 1.574 S/m; $\varepsilon_r$ = 52.175; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-23-2018; Ambient Temp: 21.8°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: PCS EVDO, Body SAR, Bottom Edge, High.ch

**Area Scan (10x7x1):** Measurement grid: dx=5mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.09 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.87 W/kg
**SAR(1 g) = 1.06 W/kg**




0 dB = 1.58 W/kg = 1.99 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06481**

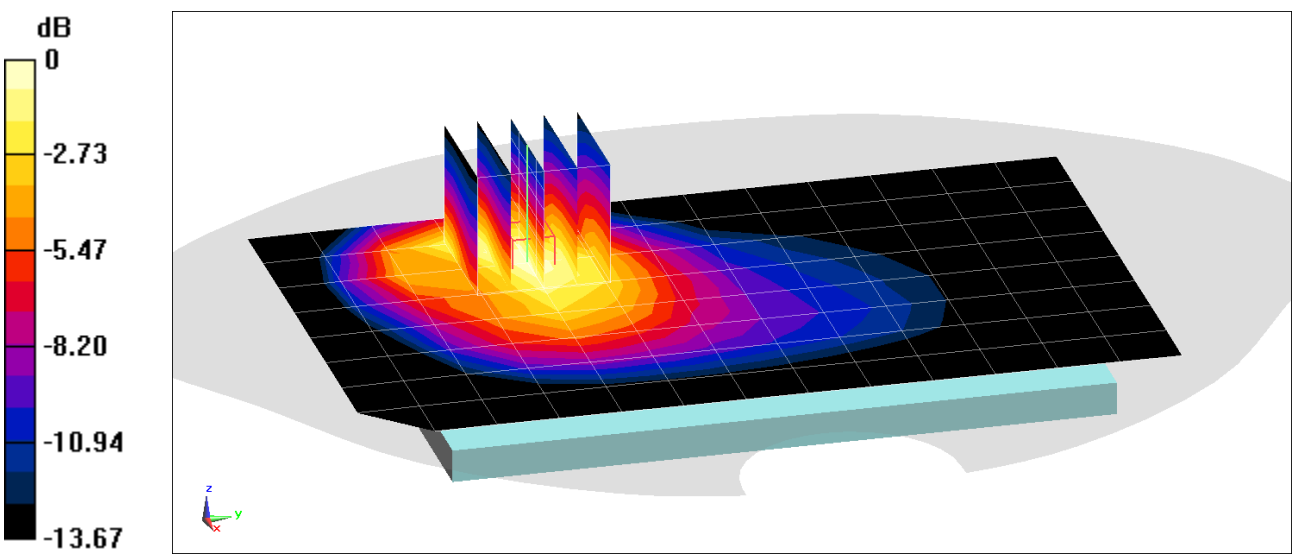
Communication System: UID 0, GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; $\sigma$ = 1.005 S/m; $\varepsilon_r$ = 53.36; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-31-2018; Ambient Temp: 21.0°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3347; ConvF(6.37, 6.37, 6.37); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: GSM 850, Body SAR, Back side, Mid.ch

**Area Scan (9x14x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.52 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.62 W/kg
**SAR(1 g) = 0.893 W/kg**




0 dB = 1.11 W/kg = 0.45 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06481**

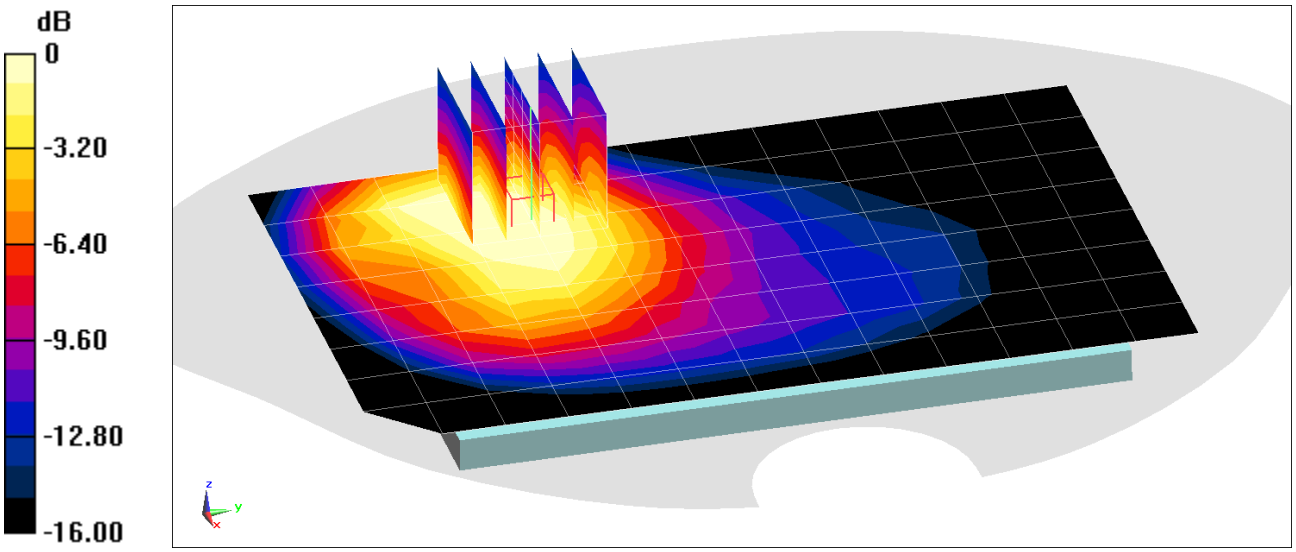
Communication System: UID 0, GSM GPRS; 1 Tx slot; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
Medium: 835 Body Medium parameters used (interpolated):
f = 836.6 MHz; $\sigma$ = 1.005 S/m; $\varepsilon_r$ = 53.36; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-31-2018; Ambient Temp: 21.0°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3347; ConvF(6.37, 6.37, 6.37); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: GPRS 850, Body SAR, Back side, Mid.ch, 1 Tx Slots

**Area Scan (9x14x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.26 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.51 W/kg
**SAR(1 g) = 0.854 W/kg**




0 dB = 0.300 W/kg = -5.23 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06481**

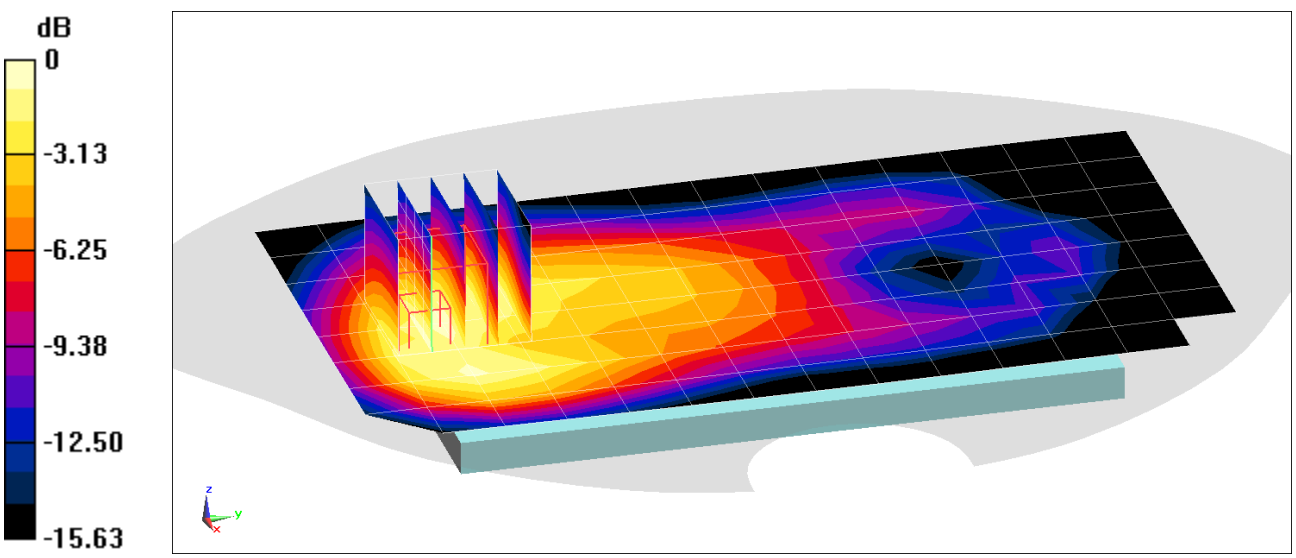
Communication System: UID 0, GSM; Frequency: 1880 MHz; Duty Cycle: 1:8.3
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; $\sigma$ = 1.542 S/m; $\varepsilon_r$ = 52.278; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-23-2018; Ambient Temp: 21.8°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: GSM 1900, Body SAR, Back side, Mid.ch

**Area Scan (9x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.03 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.603 W/kg
**SAR(1 g) = 0.358 W/kg**




0 dB = 0.516 W/kg = -2.87 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06481**

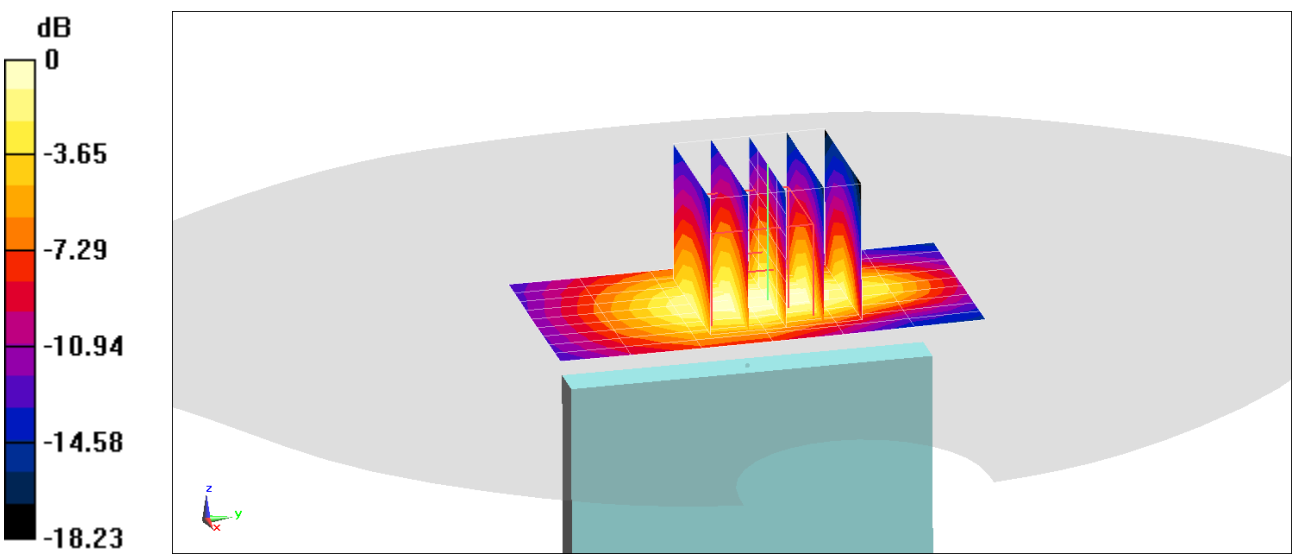
Communication System: UID 0, _GSM GPRS; 4 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:2.076
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; $\sigma$ = 1.542 S/m; $\varepsilon_r$ = 52.278; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-23-2018; Ambient Temp: 21.8°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: GPRS 1900, Body SAR, Bottom Edge, Mid.ch, 4 Tx Slots

**Area Scan (10x7x1):** Measurement grid: dx=5mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.11 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.721 W/kg
**SAR(1 g) = 0.413 W/kg**




0 dB = 0.608 W/kg = -2.16 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06481**

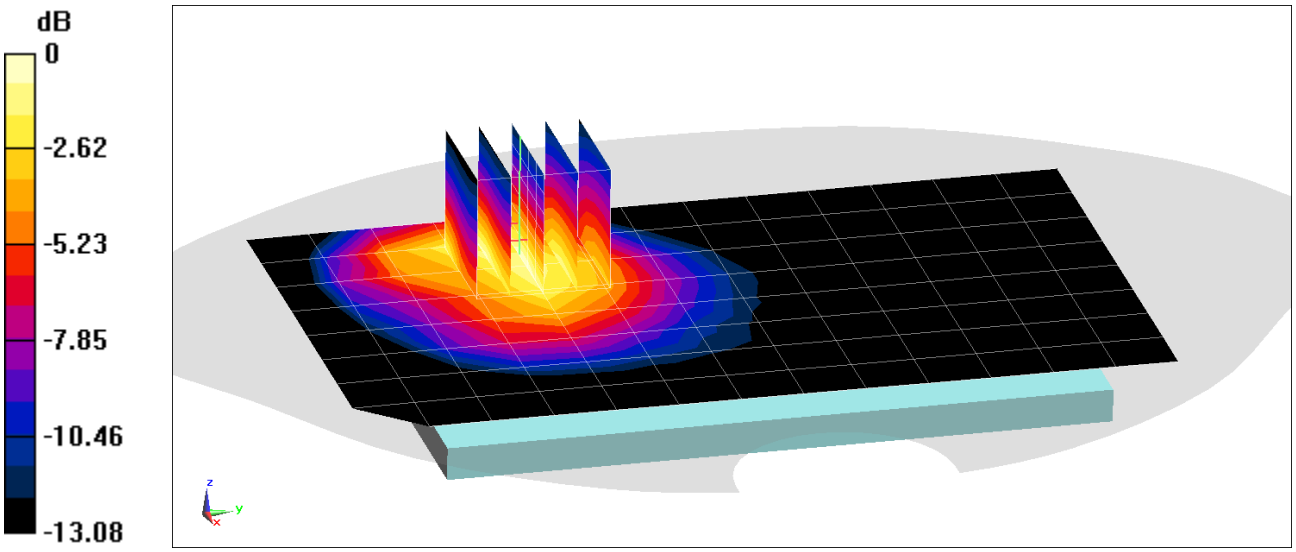
Communication System: UID 0, UMTS; Frequency: 846.6 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 846.6 MHz; $\sigma$ = 1.009 S/m; $\varepsilon_r$ = 53.336; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-31-2018; Ambient Temp: 21.0°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3347; ConvF(6.37, 6.37, 6.37); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: UMTS 850, Body SAR, Back side, High.ch

**Area Scan (9x14x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 32.33 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.70 W/kg
**SAR(1 g) = 0.968 W/kg**




0 dB = 1.16 W/kg = 0.64 dBW/kg

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06481**

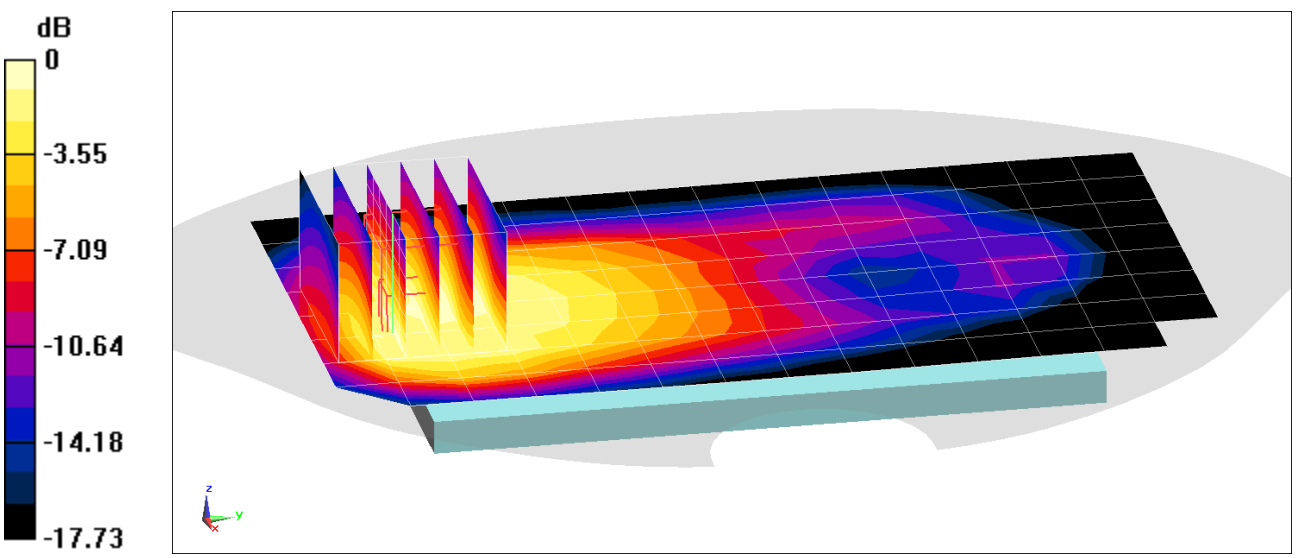
Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1732.4 MHz; $\sigma$ = 1.499 S/m; $\varepsilon_r$ = 52.757; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2018; Ambient Temp: 21.1°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7406; ConvF(8.04, 8.04, 8.04); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**Mode: UMTS 1750, Body SAR, Back side, Mid.ch**

**Area Scan (9x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (7x6x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.46 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.860 W/kg
**SAR(1 g) = 0.528 W/kg**




0 dB = 0.728 W/kg = -1.38 dBW/kg

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06481**

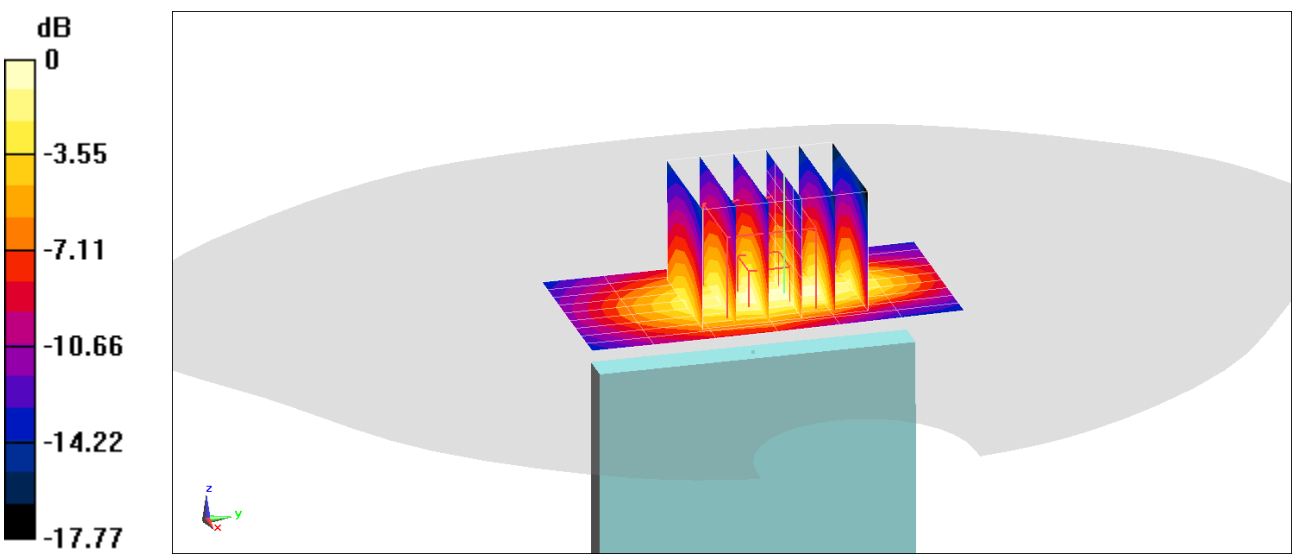
Communication System: UID 0, UMTS , Frequency: 1752.6 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1752.6 MHz; $\sigma$ = 1.521 S/m; $\varepsilon_r$ = 52.681; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2018; Ambient Temp: 21.1°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7406; ConvF(8.04, 8.04, 8.04); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: UMTS 1750, Body SAR, Bottom Edge, High.ch

**Area Scan (10x7x1):** Measurement grid: dx=5mm, dy=15mm
**Zoom Scan (5x6x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.02 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.39 W/kg
**SAR(1 g) = 0.812 W/kg**




0 dB = 1.17 W/kg = 0.68 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06481**

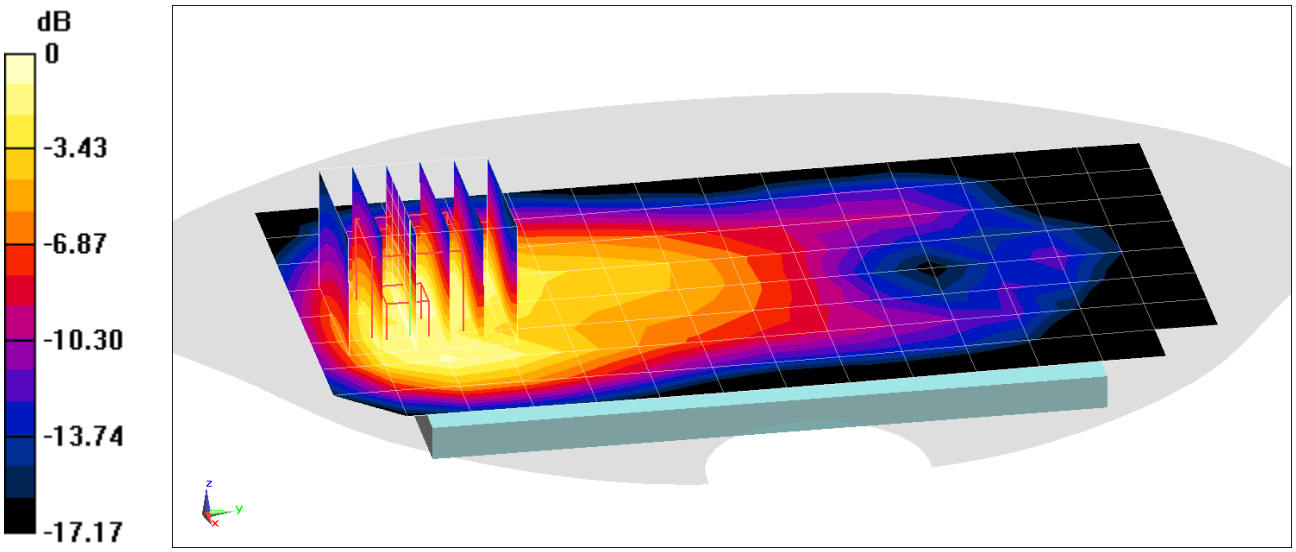
Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used:
f = 1880 MHz; $\sigma$ = 1.542 S/m; $\varepsilon_r$ = 52.278; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-23-2018; Ambient Temp: 21.8°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: UMTS 1900, Body SAR, Back side, Mid.ch

**Area Scan (9x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (6x6x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.35 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.06 W/kg
**SAR(1 g) = 0.616 W/kg**




0 dB = 0.921 W/kg = -0.36 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06481**

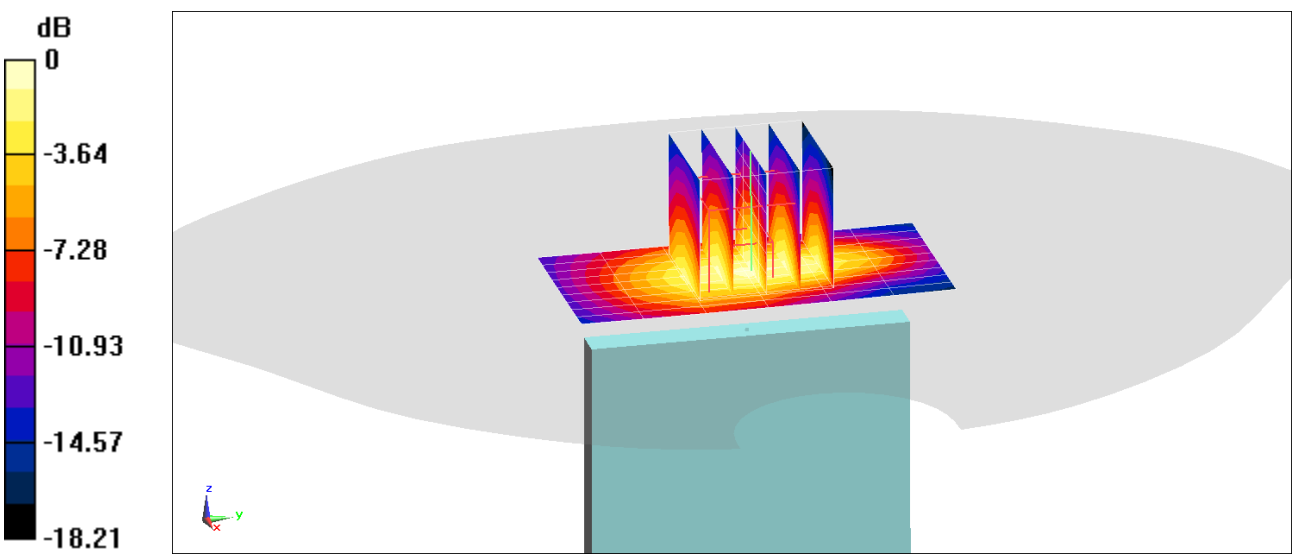
Communication System: UID 0, UMTS, Frequency: 1907.6 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1907.6 MHz; $\sigma$ = 1.572 S/m; $\varepsilon_r$ = 52.18; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-23-2018; Ambient Temp: 21.8°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: UMTS 1900, Body SAR, Bottom Edge, High.ch

**Area Scan (10x7x1):** Measurement grid: dx=5mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.42 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.74 W/kg
**SAR(1 g) = 1.000 W/kg**




0 dB = 1.48 W/kg = 1.70 dBW/kg

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06465**

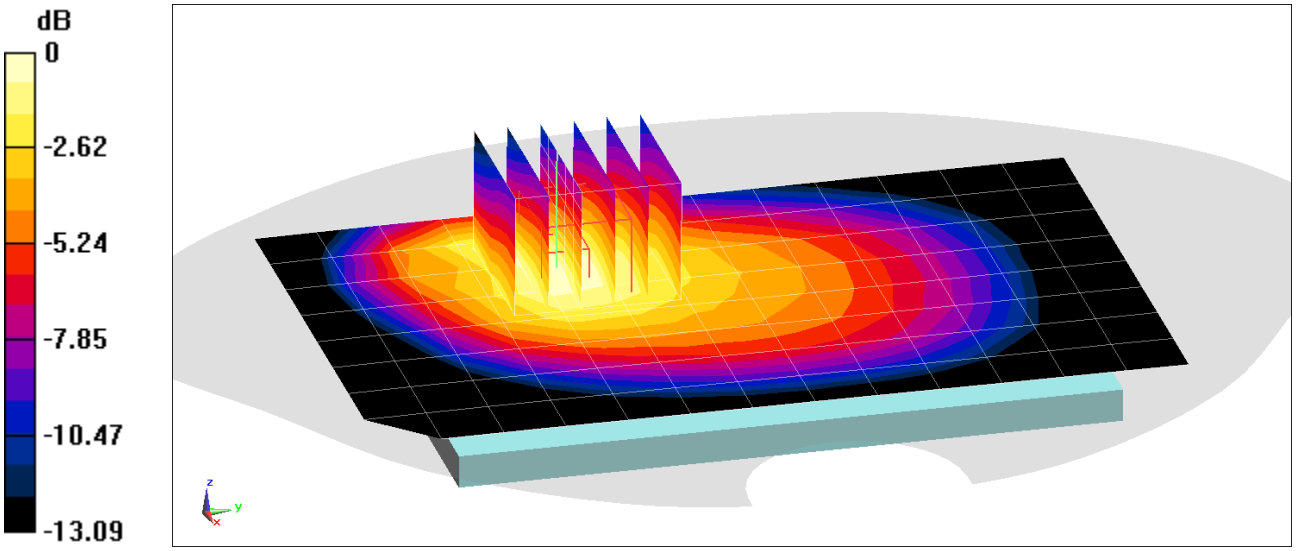
Communication System: UID 0, LTE Band 71; Frequency: 680.5 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 680.5 MHz; $\sigma$ = 0.922 S/m; $\varepsilon_r$ = 54.01; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2018; Ambient Temp: 20.5°C; Tissue Temp: 20.4°C

Probe: ES3DV3 - SN3347; ConvF(6.59, 6.59, 6.59); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 71, Body SAR, Back side, Mid.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset**

**Area Scan (9x14x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (6x6x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.05 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.716 W/kg
**SAR(1 g) = 0.485 W/kg**




0 dB = 0.562 W/kg = -2.50 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06457**

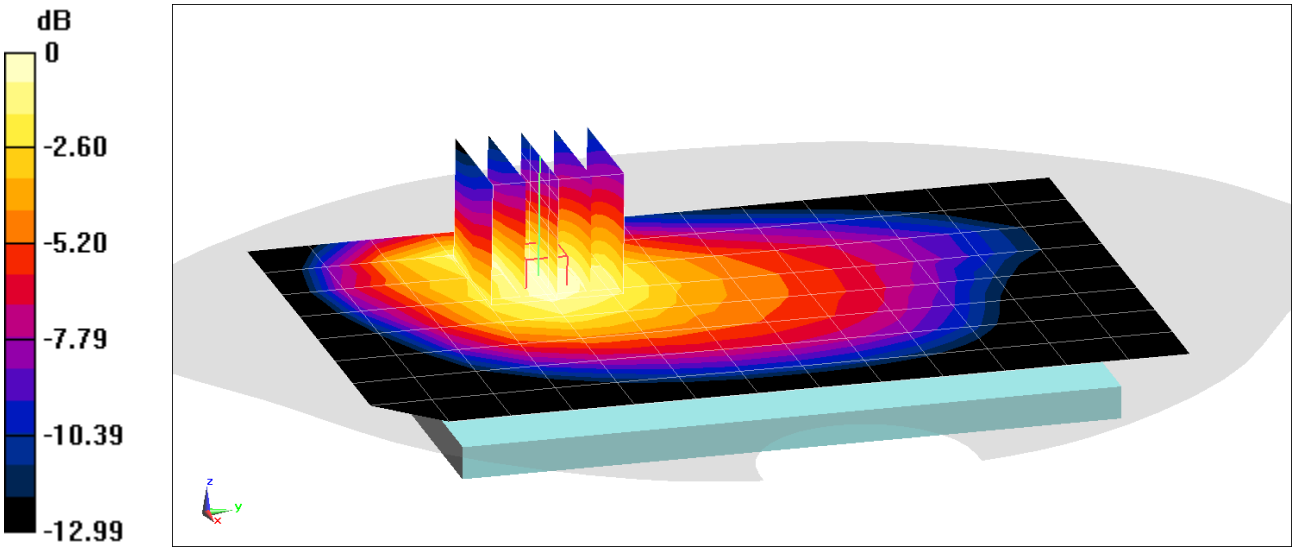
Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 707.5 MHz; $\sigma$ = 0.937 S/m; $\varepsilon_r$ = 54.216; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-03-2018; Ambient Temp: 20.3°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3347; ConvF(6.59, 6.59, 6.59); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 12, Body SAR, Back side, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

**Area Scan (9x14x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.26 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.759 W/kg
**SAR(1 g) = 0.501 W/kg**




0 dB = 0.584 W/kg = -2.34 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06457**

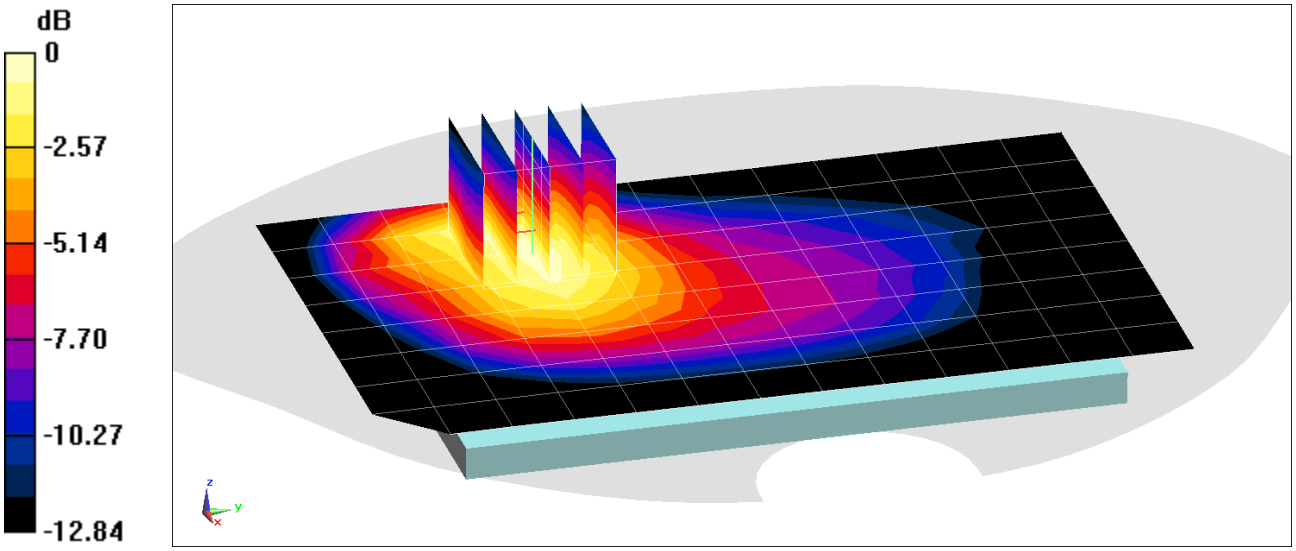
Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 782 MHz; $\sigma$ = 0.965 S/m; $\varepsilon_r$ = 54.053; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-03-2018; Ambient Temp: 20.3°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3347; ConvF(6.59, 6.59, 6.59); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 13, Body SAR, Back side, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset**

**Area Scan (9x14x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.98 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.05 W/kg
**SAR(1 g) = 0.635 W/kg**




0 dB = 0.752 W/kg = -1.24 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06465**

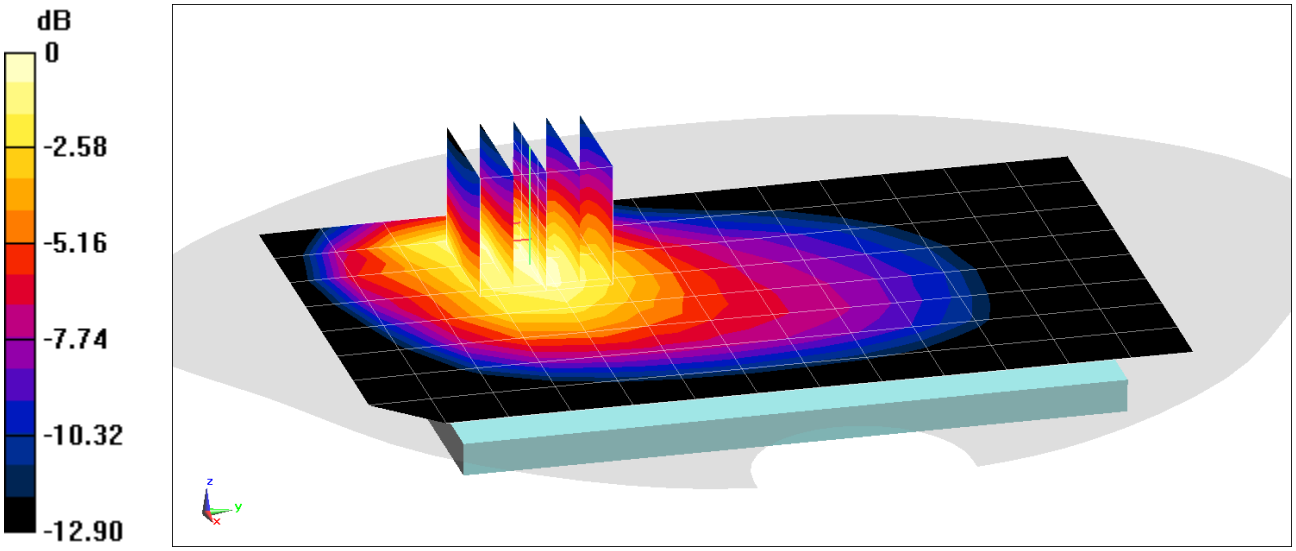
Communication System: UID 0, LTE Band 14; Frequency: 793 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 793 MHz; $\sigma$ = 0.965 S/m; $\varepsilon_r$ = 53.723; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2018; Ambient Temp: 20.5°C; Tissue Temp: 20.4°C

Probe: ES3DV3 - SN3347; ConvF(6.59, 6.59, 6.59); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 14, Body SAR, Back side, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset**

**Area Scan (9x14x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.02 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.13 W/kg
**SAR(1 g) = 0.684 W/kg**




0 dB = 0.803 W/kg = -0.95 dBW/kg

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06473**

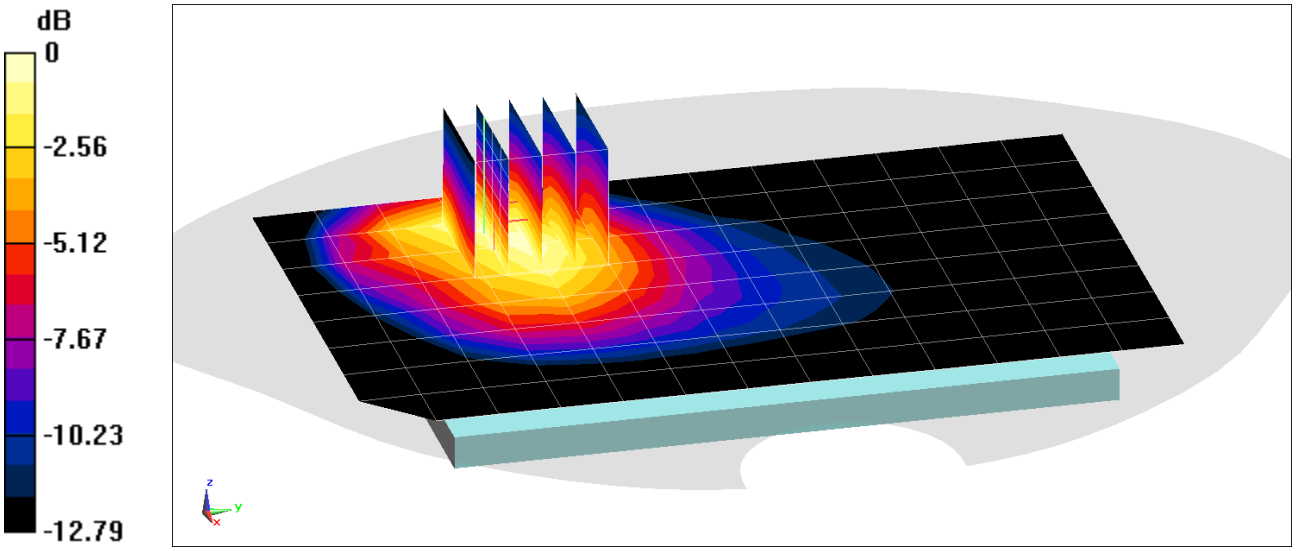
Communication System: UID 0, LTE Band 26; Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 831.5 MHz; $\sigma$ = 1.003 S/m; $\varepsilon_r$ = 53.373; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-31-2018; Ambient Temp: 21.0°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3347; ConvF(6.37, 6.37, 6.37); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**LTE Band 26 (Cell.), Body SAR, Back side, Mid.ch, 15 MHz Bandwidth, QPSK, 1 RB, 36 RB Offset**

**Area Scan (9x14x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.32 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.37 W/kg
**SAR(1 g) = 0.792 W/kg**




0 dB = 0.933 W/kg = -0.30 dBW/kg

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06473**

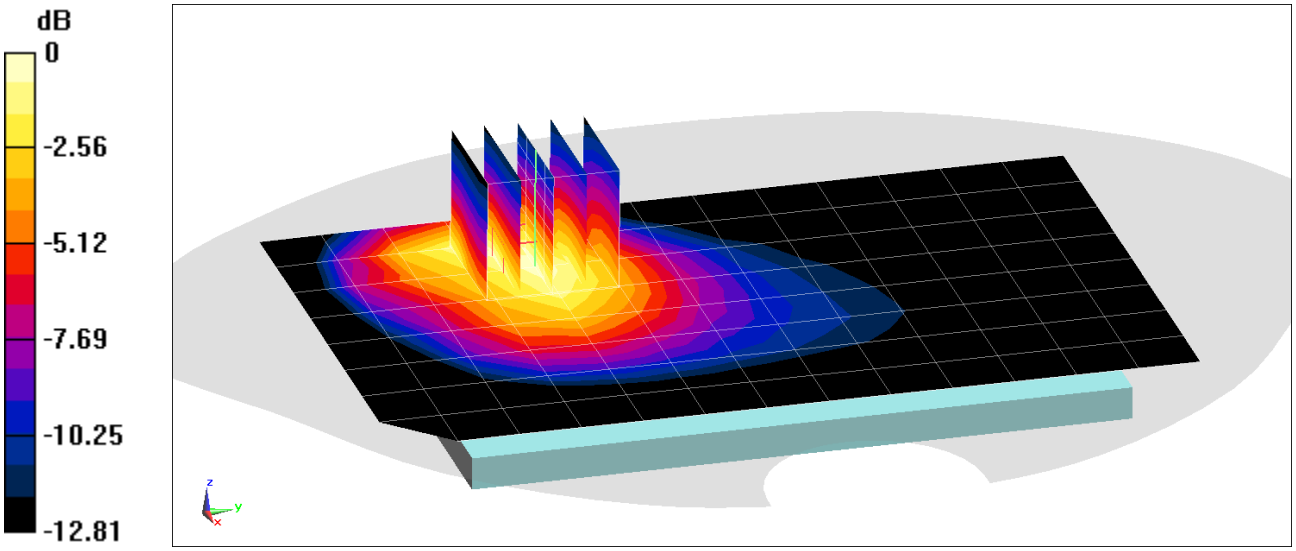
Communication System: UID 0, LTE Band 5; Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used (interpolated):
f = 836.5 MHz; $\sigma$ = 1.005 S/m; $\varepsilon_r$ = 53.36; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-31-2018; Ambient Temp: 21.0°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3347; ConvF(6.37, 6.37, 6.37); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**LTE Band 5 (Cell.), Body SAR, Back side, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

**Area Scan (9x14x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.60 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.37 W/kg
**SAR(1 g) = 0.796 W/kg**




0 dB = 0.944 W/kg = -0.25 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06457**

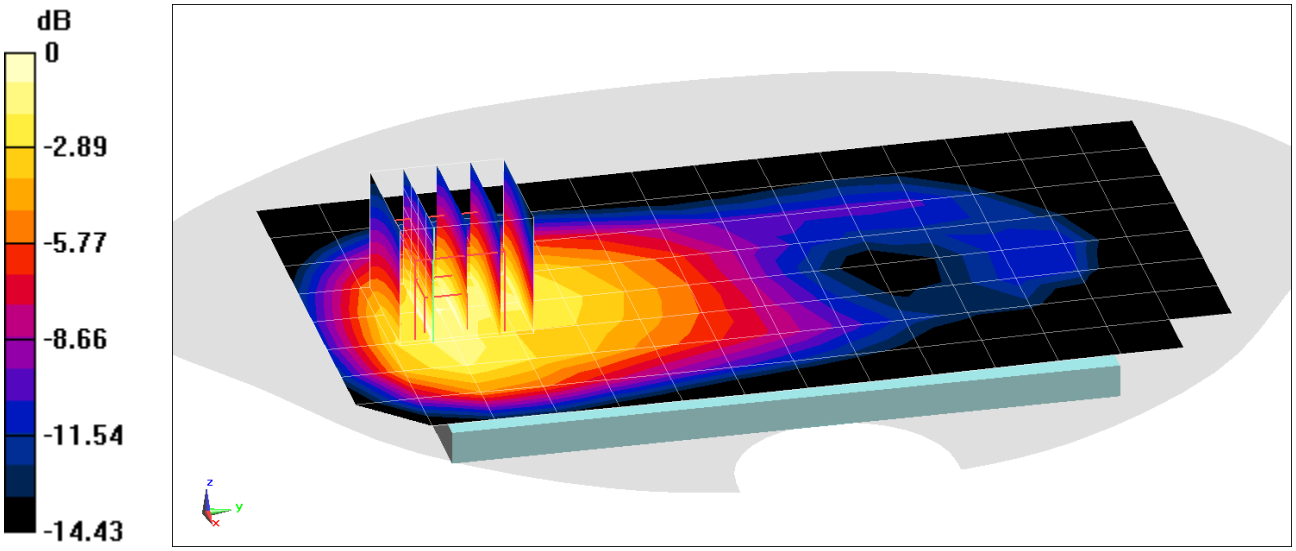
Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1770 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1770 MHz; $\sigma$ = 1.539 S/m; $\varepsilon_r$ = 52.617; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2018; Ambient Temp: 21.1°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7406; ConvF(8.04, 8.04, 8.04); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: LTE Band 66 (AWS), Body SAR, Back side, High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

**Area Scan (9x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.86 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.49 W/kg
**SAR(1 g) = 0.918 W/kg**




0 dB = 1.27 W/kg = 1.04 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06457**

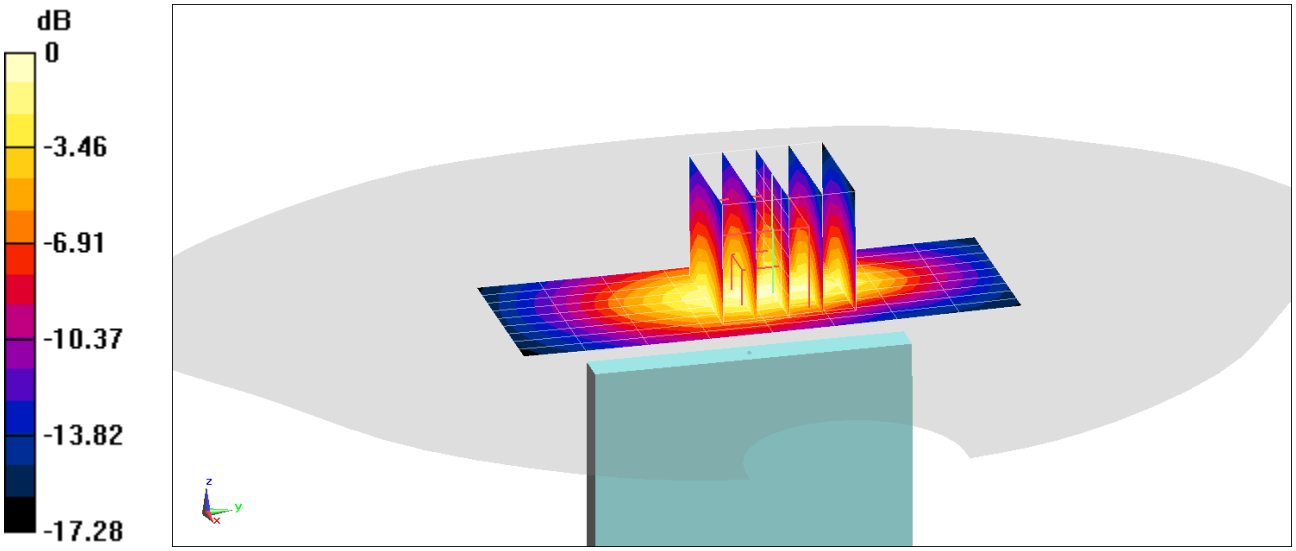
Communication System: UID 0, LTE Band 66 (AWS), Frequency: 1770 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1770 MHz; $\sigma$ = 1.539 S/m; $\varepsilon_r$ = 52.617; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2018; Ambient Temp: 21.1°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7406; ConvF(8.04, 8.04, 8.04); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: LTE Band 66 (AWS), Body SAR, Bottom Edge, High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

**Area Scan (10x9x1):** Measurement grid: dx=5mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.63 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 2.12 W/kg
**SAR(1 g) = 1.24 W/kg**




0 dB = 1.80 W/kg = 2.55 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06457**

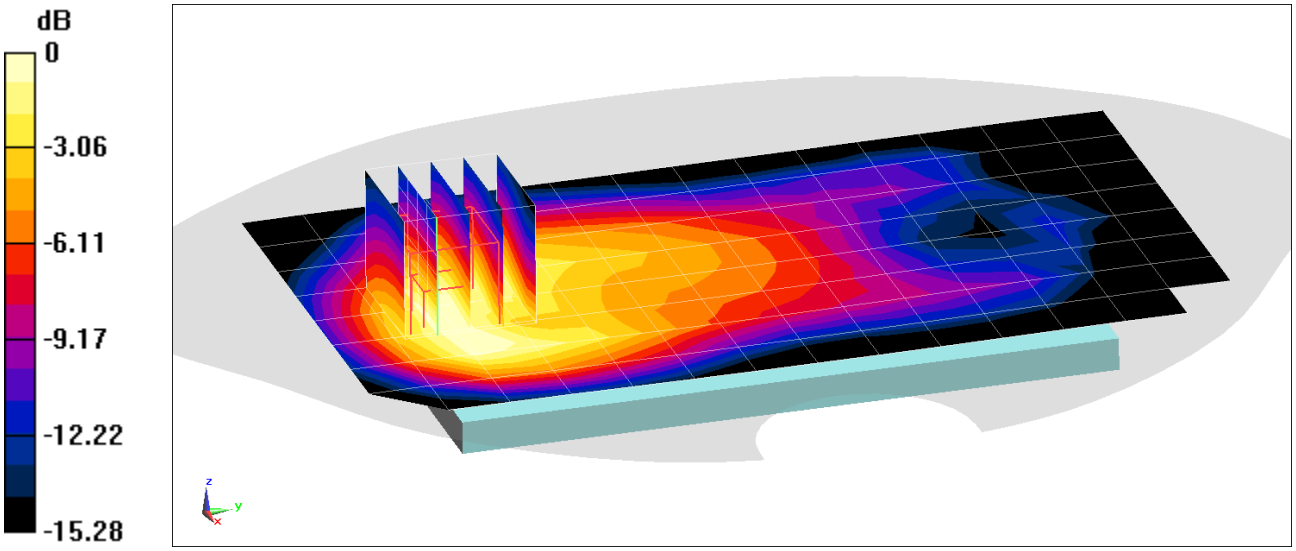
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1905 MHz; $\sigma$ = 1.57 S/m; $\varepsilon_r$ = 52.189; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-23-2018; Ambient Temp: 21.8°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 25 (PCS), Body SAR, Back side, High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

**Area Scan (9x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.39 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 1.29 W/kg
**SAR(1 g) = 0.755 W/kg**




0 dB = 1.06 W/kg = 0.25 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06457**

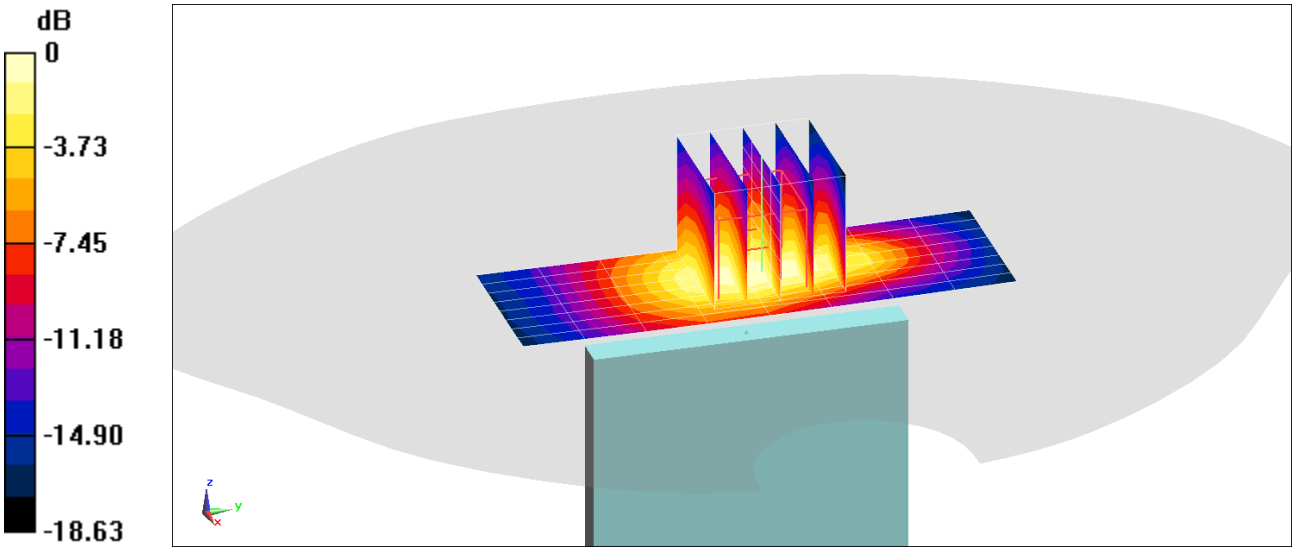
Communication System: UID 0, LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1905 MHz; $\sigma$ = 1.57 S/m; $\varepsilon_r$ = 52.189; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-23-2018; Ambient Temp: 21.8°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: LTE Band 25 (PCS), Body SAR, Bottom Edge, High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

**Area Scan (9x9x1):** Measurement grid: dx=5mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.89 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 2.09 W/kg
**SAR(1 g) = 1.2 W/kg**




0 dB = 1.77 W/kg = 2.48 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06440**

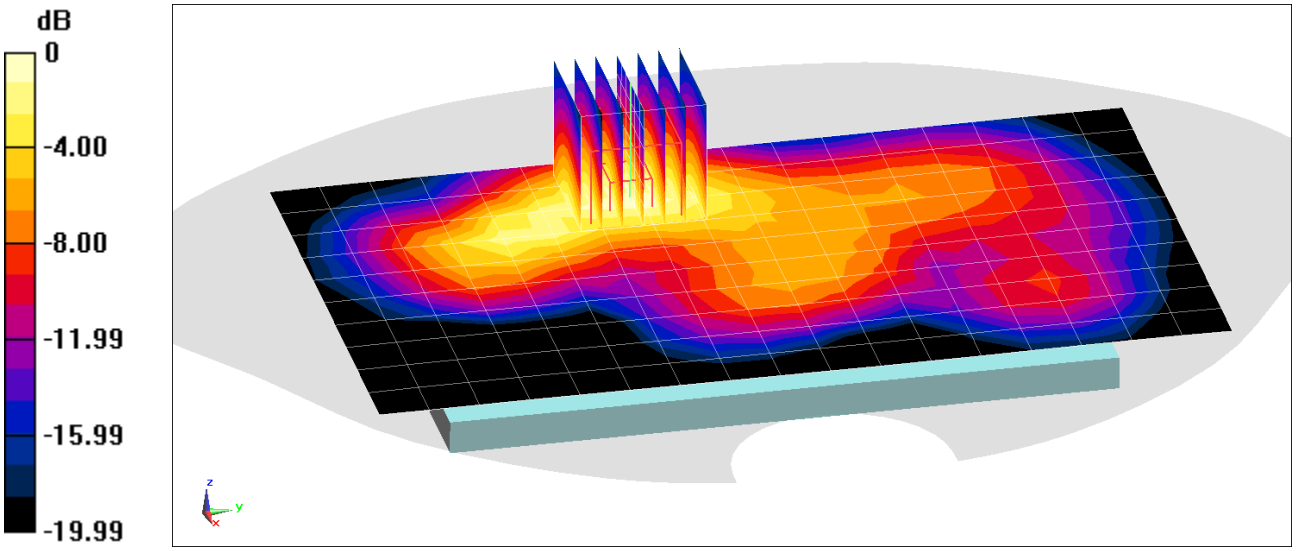
Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2310 MHz; $\sigma$ = 1.863 S/m; $\varepsilon_r$ = 51.685; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-25-2018; Ambient Temp: 22.8°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.63, 4.63, 4.63); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

**Mode: LTE Band 30, Body SAR, Back side, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB,0 RB Offset**

**Area Scan (11x18x1):** Measurement grid: dx=12mm, dy=12mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.21 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.871 W/kg
**SAR(1 g) = 0.469 W/kg**




0 dB = 0.596 W/kg = -2.25 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06440**

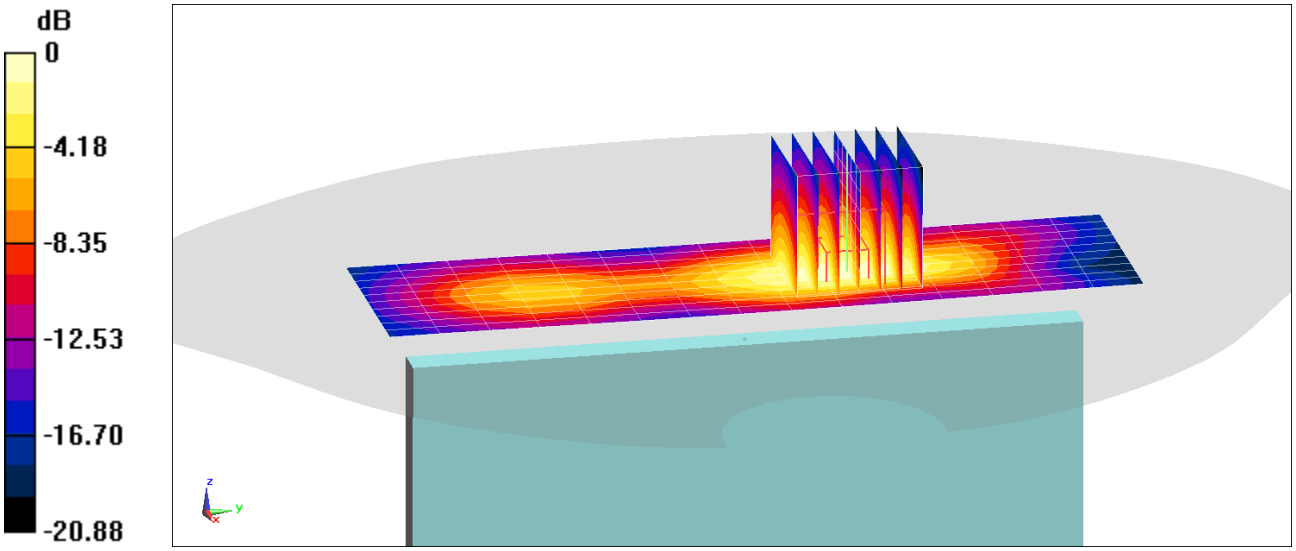
Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2310 MHz; $\sigma$ = 1.863 S/m; $\varepsilon_r$ = 51.685; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-25-2018; Ambient Temp: 22.8°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.63, 4.63, 4.63); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: LTE Band 30, Body SAR, Right Edge, Mid.ch, 10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

**Area Scan (11x16x1):** Measurement grid: dx=5mm, dy=12mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.19 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.52 W/kg
**SAR(1 g) = 0.767 W/kg**




0 dB = 1.00 W/kg = 0.00 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06440**

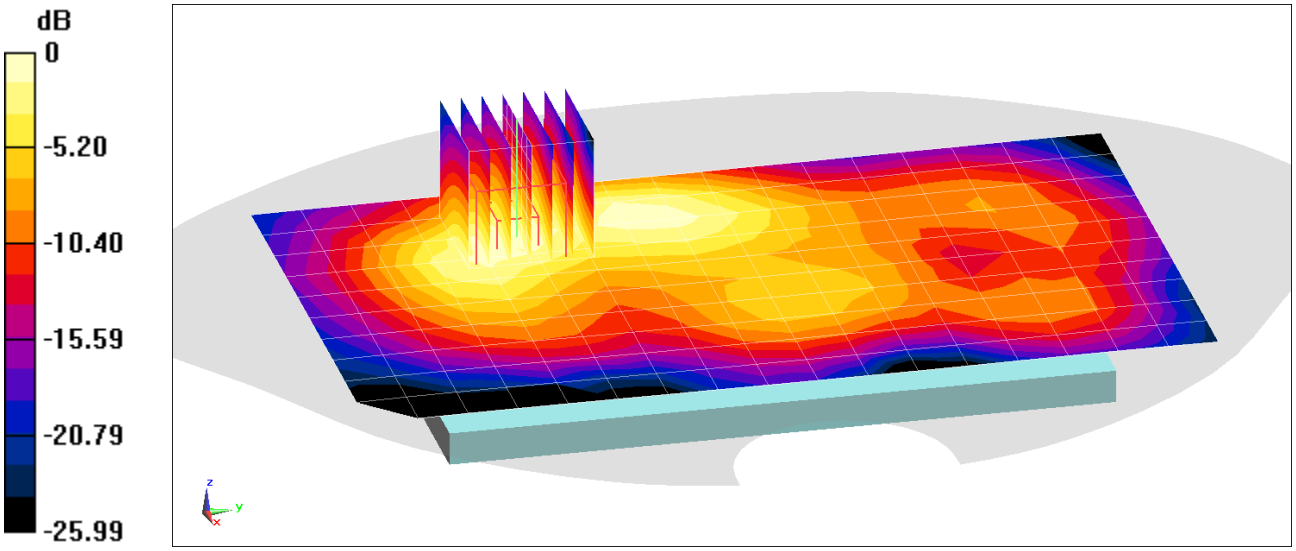
Communication System: UID 0, LTE Band 7; Frequency: 2560 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2560 MHz; $\sigma$ = 2.151 S/m; $\varepsilon_r$ = 50.98; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-25-2018; Ambient Temp: 22.8°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.33, 4.33, 4.33); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: LTE Band 7, Body SAR, Back side, High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

**Area Scan (11x18x1):** Measurement grid: dx=12mm, dy=12mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.38 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.962 W/kg
**SAR(1 g) = 0.498 W/kg**




0 dB = 0.629 W/kg = -2.01 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06440**

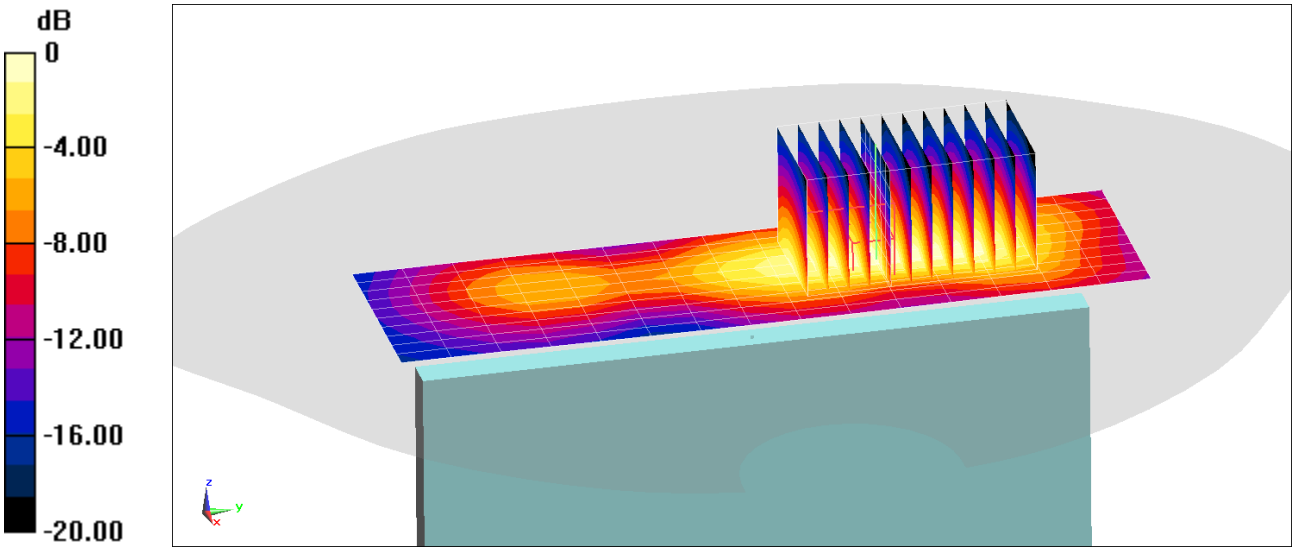
Communication System: UID 0, _LTE Band 7; Frequency: 2510 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2510 MHz; $\sigma$ = 2.093 S/m; $\varepsilon_r$ = 51.12; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-25-2018; Ambient Temp: 22.8°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.51, 4.51, 4.51); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: LTE Band 7, Body SAR, Right Edge, Low.ch, 20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset

**Area Scan (11x16x1):** Measurement grid: dx=5mm, dy=12mm
**Zoom Scan (7x12x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.84 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.38 W/kg
**SAR(1 g) = 0.661 W/kg**




0 dB = 0.858 W/kg = -0.67 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06440**

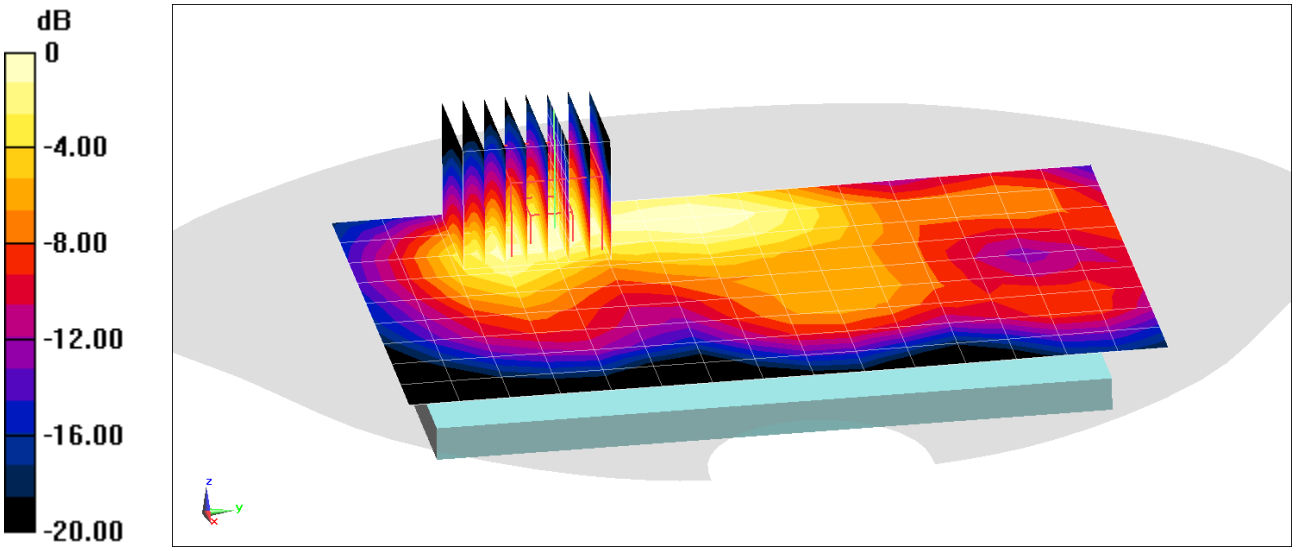
Communication System: UID 0, _LTE Band 41 (Class 2); Frequency: 2680 MHz; Duty Cycle: 1:2.31
Medium: 2450 Body Medium parameters used (interpolated):
f = 2680 MHz; $\sigma$ = 2.314 S/m; $\varepsilon_r$ = 50.354; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2018; Ambient Temp: 21.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3319; ConvF(4.33, 4.33, 4.33); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: LTE Band 41 PC2, Body SAR, Back side, High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

**Area Scan (10x16x1):** Measurement grid: dx=12mm, dy=12mm
**Zoom Scan (7x8x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.02 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 1.22 W/kg
**SAR(1 g) = 0.611 W/kg**




0 dB = 0.773 W/kg = -1.12 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06440**

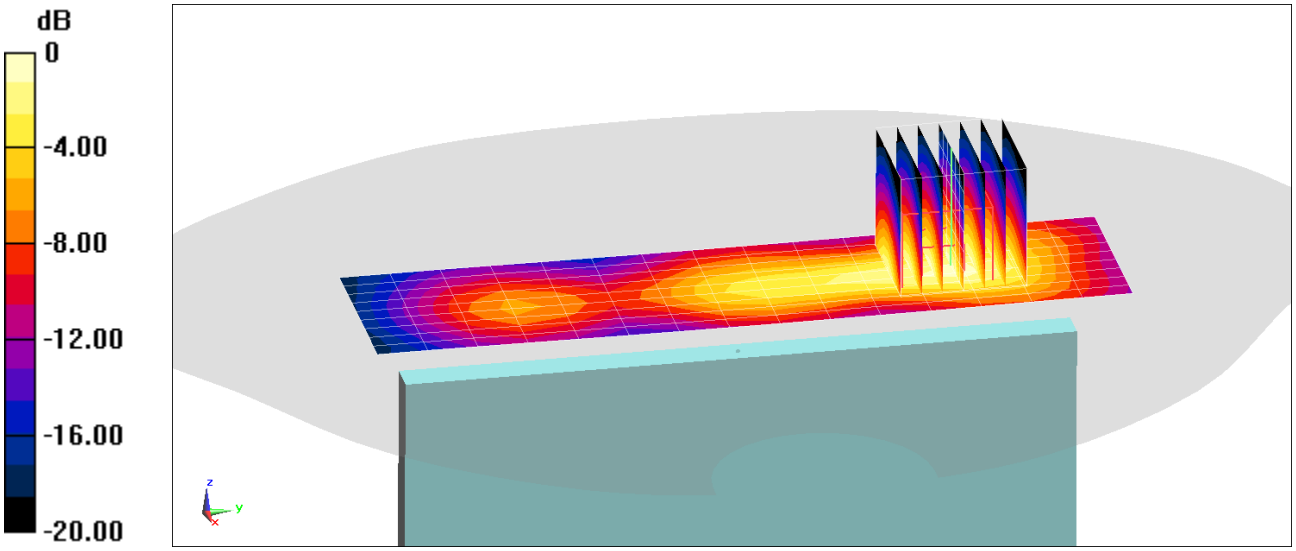
Communication System: UID 0, _LTE Band 41 (Class 2); Frequency: 2680 MHz; Duty Cycle: 1:2.31
Medium: 2450 Body Medium parameters used (interpolated):
f = 2680 MHz; $\sigma$ = 2.314 S/m; $\varepsilon_r$ = 50.354; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2018; Ambient Temp: 21.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3319; ConvF(4.33, 4.33, 4.33); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: LTE Band 41 PC2, Body SAR, Right Edge, High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

**Area Scan (10x16x1):** Measurement grid: dx=5mm, dy=12mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.73 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.63 W/kg
**SAR(1 g) = 0.788 W/kg**




0 dB = 1.01 W/kg = 0.04 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06630**

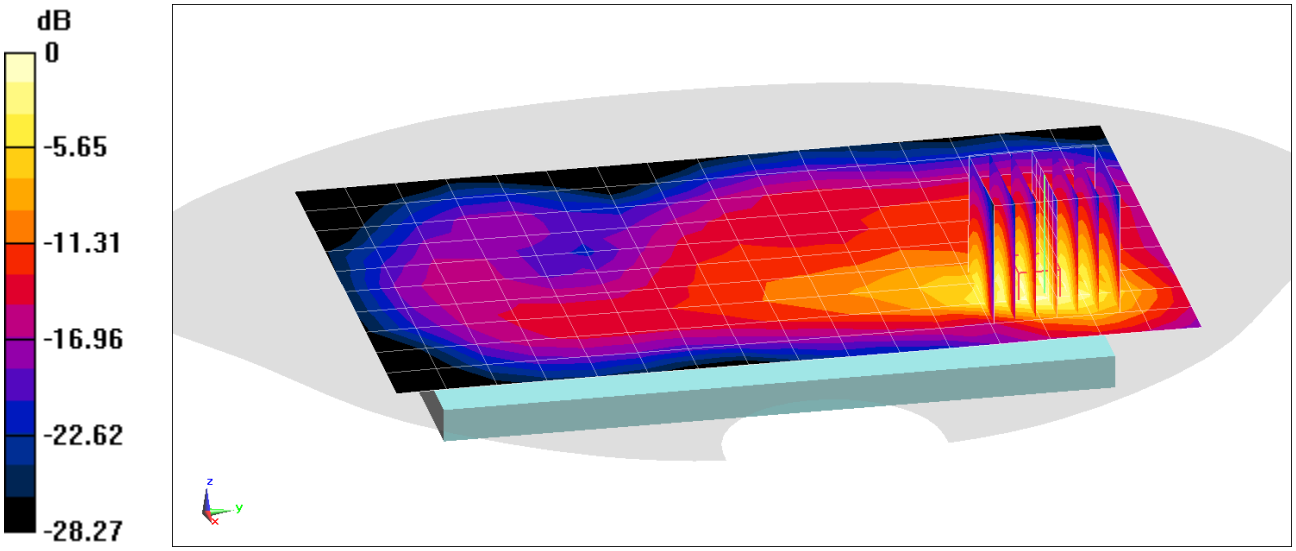
Communication System: UID 0, _IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used (interpolated):
f = 2437 MHz; $\sigma$ = 2.019 S/m; $\varepsilon_r$ = 51.104; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2018; Ambient Temp: 21.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3319; ConvF(4.51, 4.51, 4.51); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: IEEE 802.11b, Antenna 2, 22 MHz Bandwidth, Body SAR, Ch 6, 1 Mbps, Back Side

**Area Scan (11x17x1):** Measurement grid: dx=12mm, dy=12mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.63 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.61 W/kg
**SAR(1 g) = 0.715 W/kg**




0 dB = 0.954 W/kg = -0.20 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06648**

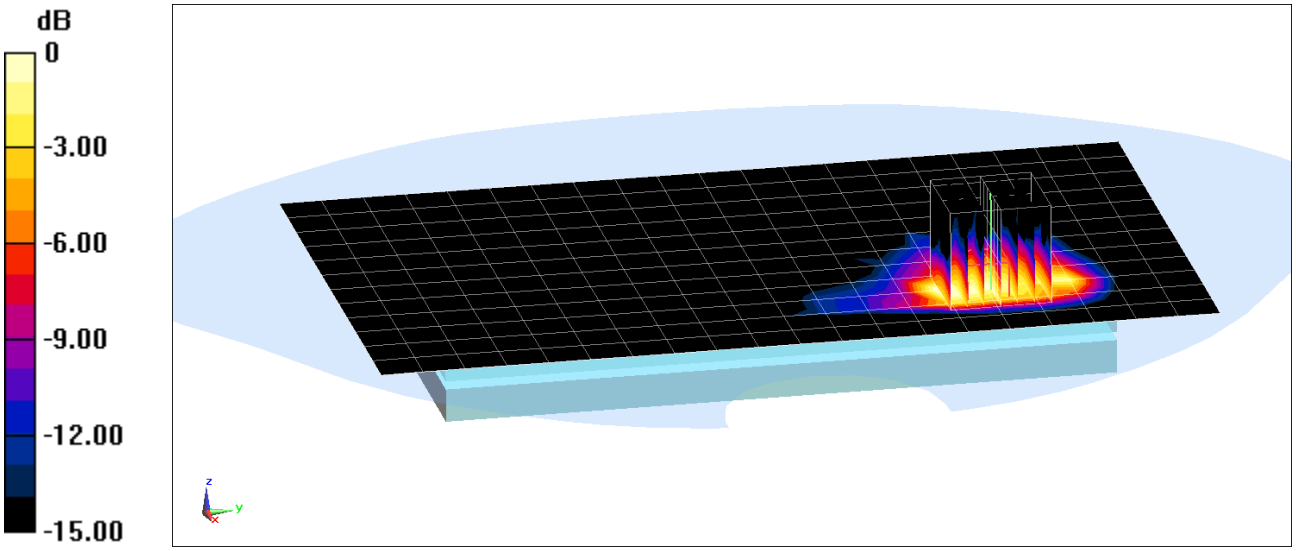
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5620 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5620 MHz; $\sigma$ = 5.985 S/m; $\varepsilon_r$ = 47.24; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-06-2018; Ambient Temp: 22.1°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7357; ConvF(4.2, 4.2, 4.2); Calibrated: 4/18/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: IEEE 802.11a, MIMO, U-NII-2C, 20 MHz Bandwidth, Body SAR, Ch 124, 6 Mbps, Back Side

**Area Scan (13x21x1):** Measurement grid: dx=10mm, dy=10mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 11.97 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 3.33 W/kg
**SAR(1 g) = 0.748 W/kg**




0 dB = 10.0 W/kg = 10.00 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06648**

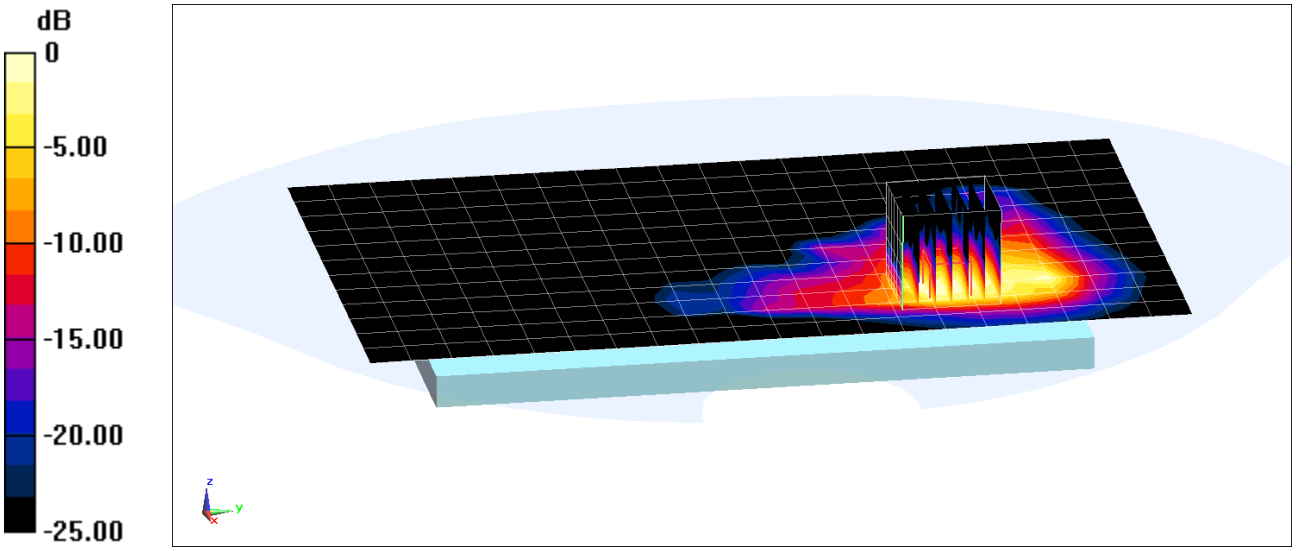
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5745 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5745 MHz; $\sigma$ = 6.154 S/m; $\varepsilon_r$ = 46.972; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2018; Ambient Temp: 22.3°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7357; ConvF(4.21, 4.21, 4.21); Calibrated: 4/18/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: IEEE 802.11a, MIMO, UNII-3, 20 MHz Bandwidth, Body SAR, Ch 149, 6 Mbps, Back Side

**Area Scan (13x21x1):** Measurement grid: dx=10mm, dy=10mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 11.92 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 3.36 W/kg
**SAR(1 g) = 0.737 W/kg**




0 dB = 10.0 W/kg = 10.00 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06630**

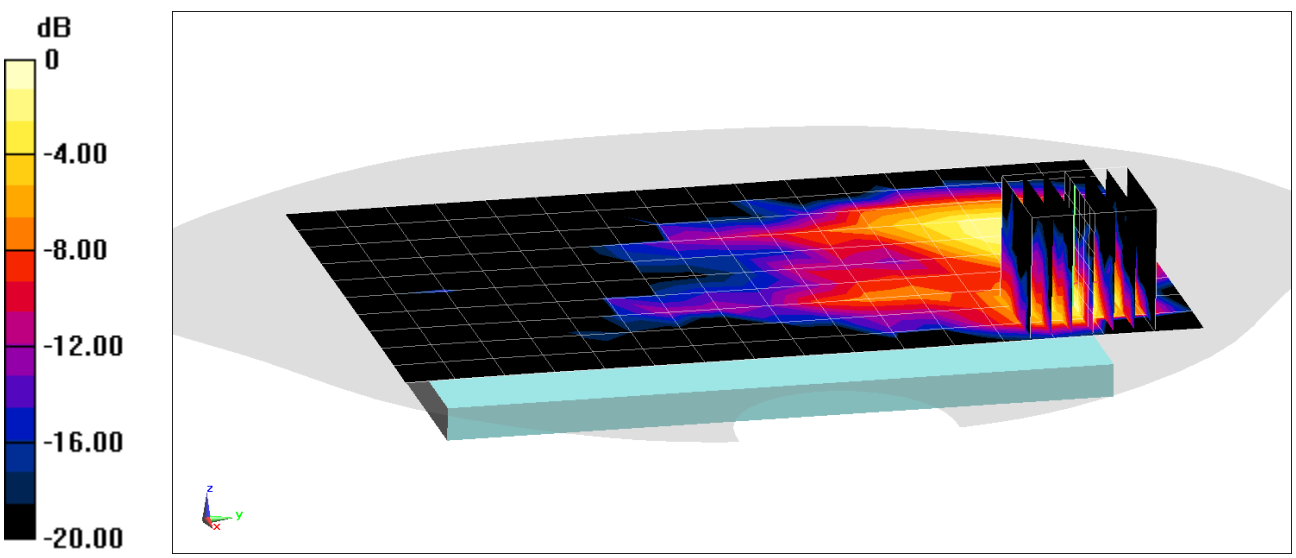
Communication System: UID 0, Bluetooth; Frequency: 2480 MHz; Duty Cycle: 1:1.294
Medium: 2450 Body Medium parameters used (interpolated):
f = 2480 MHz; $\sigma$ = 2.071 S/m; $\varepsilon_r$ = 50.981; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2018; Ambient Temp: 21.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3319; ConvF(4.51, 4.51, 4.51); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: Bluetooth, Body SAR, Ch 78, 1 Mbps, Back Side

**Area Scan (11x17x1):** Measurement grid: dx=12mm, dy=12mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.138 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.163 W/kg
**SAR(1 g) = 0.028 W/kg**




0 dB = 0.0411 W/kg = -13.86 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06630**

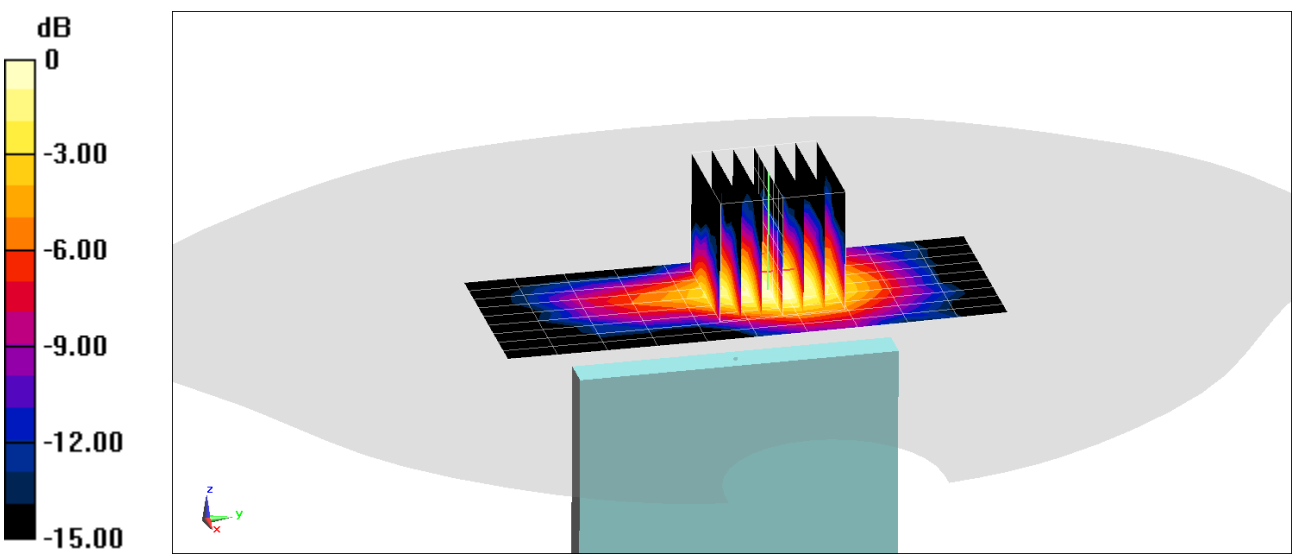
Communication System: UID 0, Bluetooth; Frequency: 2480 MHz; Duty Cycle: 1:1.294
Medium: 2450 Body Medium parameters used (interpolated):
f = 2480 MHz; $\sigma$ = 2.071 S/m; $\varepsilon_r$ = 50.981; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2018; Ambient Temp: 21.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3319; ConvF(4.51, 4.51, 4.51); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: Bluetooth, Body SAR, Ch 78, 1 Mbps, Top Edge

**Area Scan (10x11x1):** Measurement grid: dx=5mm, dy=12mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.032 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 0.0580 W/kg
**SAR(1 g) = 0.030 W/kg**




0 dB = 0.0386 W/kg = -14.13 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06499**

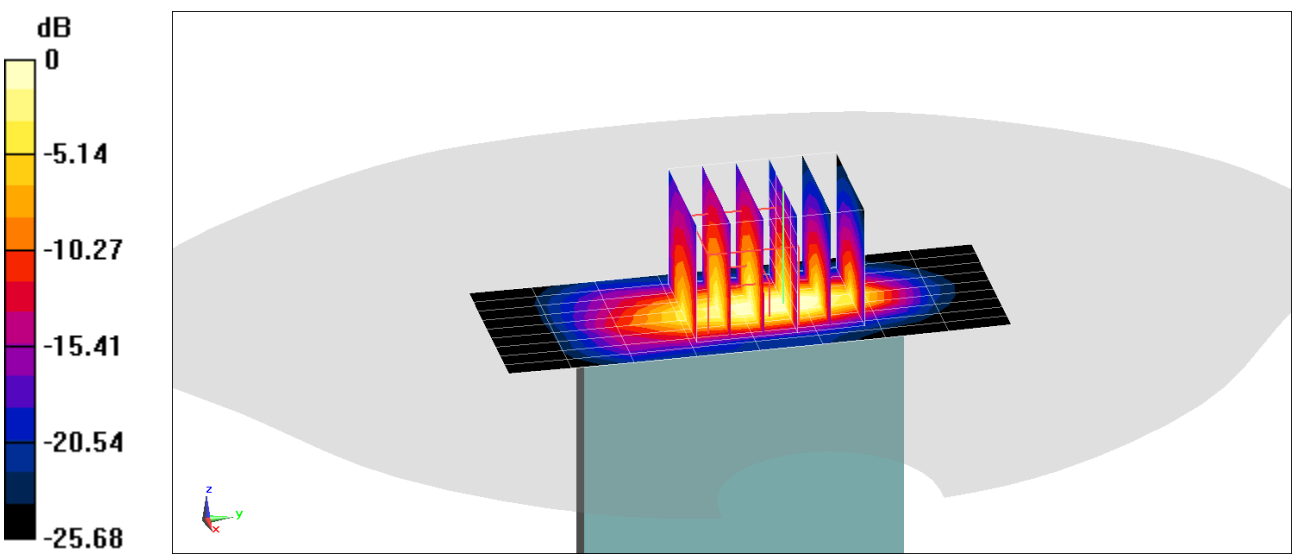
Communication System: UID 0, CDMA, Frequency: 1908.75 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1908.75 MHz; $\sigma$ = 1.585 S/m; $\varepsilon_r$ = 51.634; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-26-2018; Ambient Temp: 23.8°C; Tissue Temp: 21.9°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: PCS EVDO, Phablet SAR, Bottom Edge, High.ch

**Area Scan (10x9x1):** Measurement grid: dx=5mm, dy=15mm
**Zoom Scan (5x6x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 65.70 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 13.8 W/kg
**SAR(10 g) = 2.69 W/kg**




0 dB = 11.6 W/kg = 10.64 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06481**

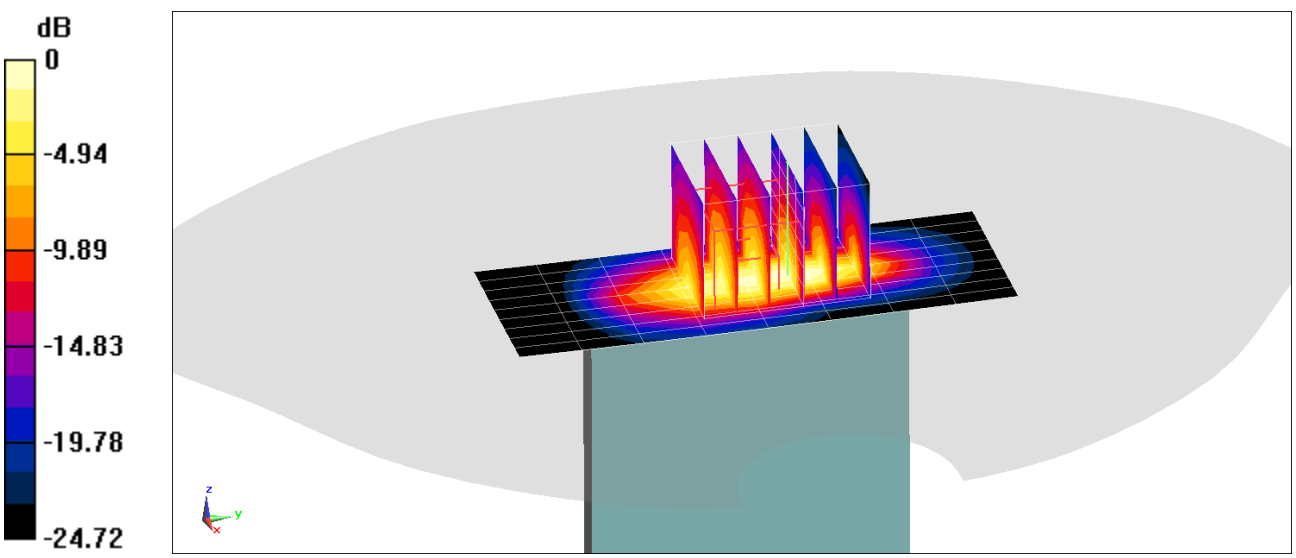
Communication System: UID 0, UMTS, Frequency: 1752.6 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1752.6 MHz; $\sigma$ = 1.521 S/m; $\varepsilon_r$ = 52.681; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-30-2018; Ambient Temp: 21.1°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7406; ConvF(8.04, 8.04, 8.04); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: UMTS 1750, Phablet SAR, Bottom Edge, High.ch

**Area Scan (10x9x1):** Measurement grid: dx=5mm, dy=15mm
**Zoom Scan (5x6x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 64.95 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 12.8 W/kg
**SAR(10 g) = 2.61 W/kg**




0 dB = 10.5 W/kg = 10.21 dBW/kg

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06481**

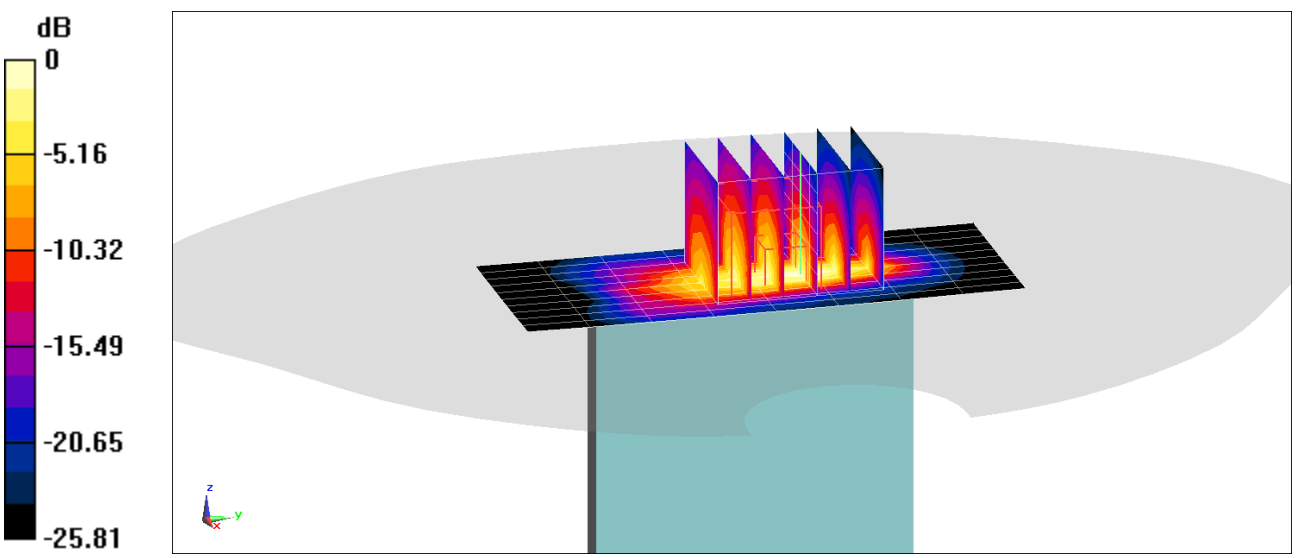
Communication System: UID 0, UMTS, Frequency: 1907.6 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1907.6 MHz; $\sigma$ = 1.572 S/m; $\varepsilon_r$ = 52.18; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-23-2018; Ambient Temp: 21.8°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: UMTS 1900, Phablet SAR, Bottom Edge, High.ch

**Area Scan (11x9x1):** Measurement grid: dx=5mm, dy=15mm
**Zoom Scan (5x6x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 66.46 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 15.0 W/kg
**SAR(10 g) = 2.53 W/kg**




0 dB = 12.3 W/kg = 10.90 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06457**

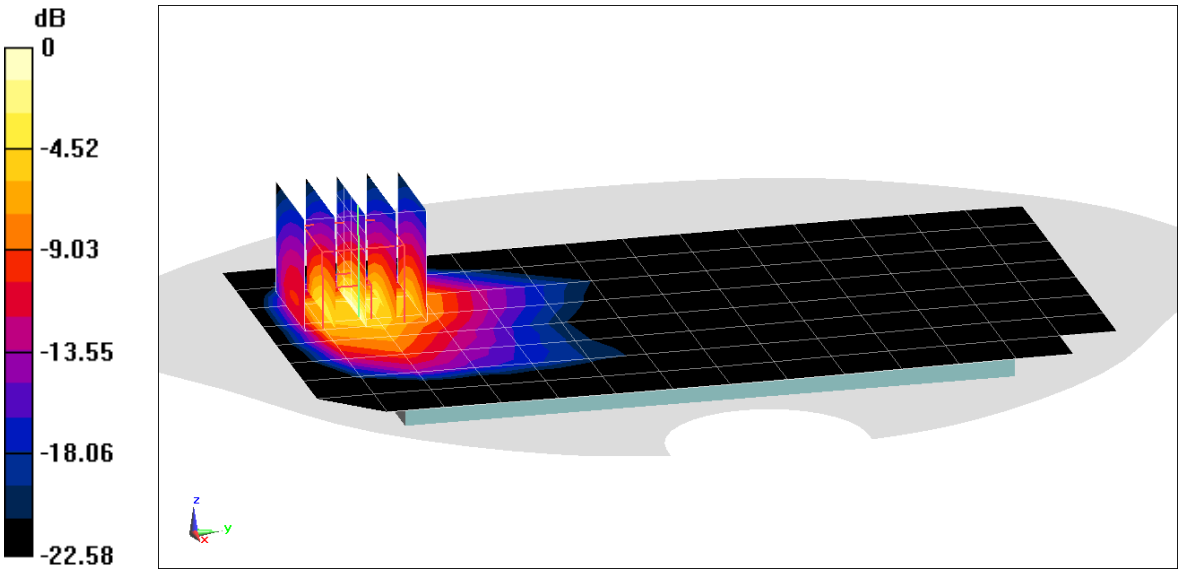
Communication System: UID 0, LTE Band 66 (AWS), Frequency: 1770 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used (interpolated):
f = 1770 MHz; $\sigma$ = 1.539 S/m; $\varepsilon_r$ = 52.617; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-30-2018; Ambient Temp: 21.1°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7406; ConvF(8.04, 8.04, 8.04); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: LTE Band 66 (AWS), Phablet SAR, Front side, High.ch, 20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

**Area Scan (9x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 67.09 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 16.2 W/kg
**SAR(10 g) = 2.88 W/kg**




0 dB = 12.5 W/kg = 10.97 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06457**

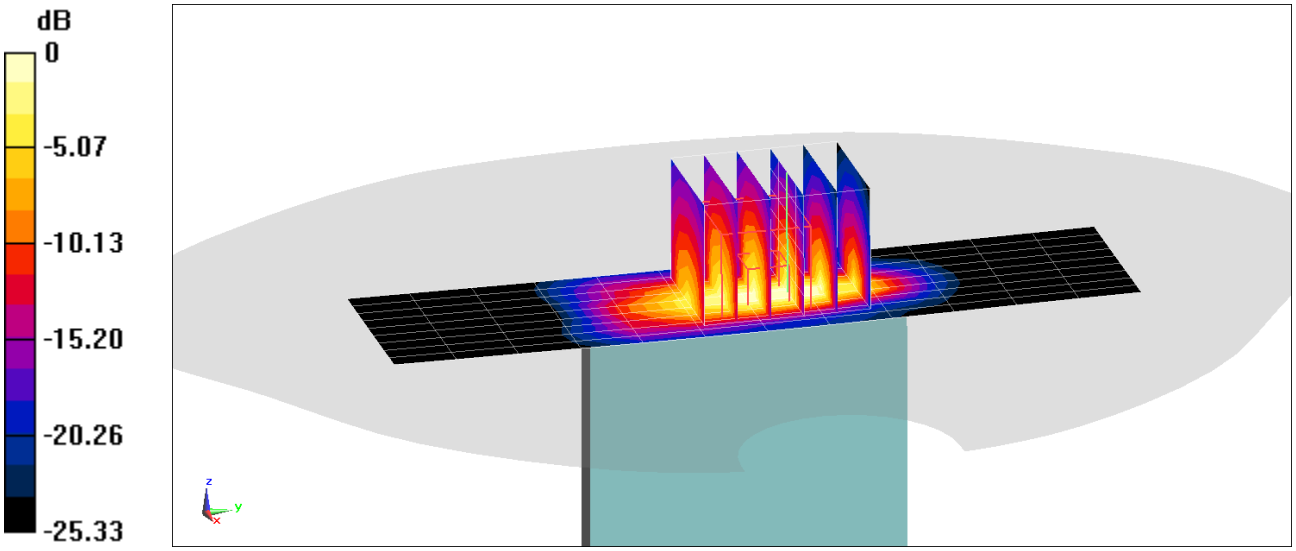
Communication System: UID 0, _LTE Band 25 (PCS); Frequency: 1905 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1905 MHz; $\sigma$ = 1.581 S/m; $\varepsilon_r$ = 51.643; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 07-26-2018; Ambient Temp: 23.8°C; Tissue Temp: 21.9°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: LTE Band 25 (PCS), Phablet SAR, Bottom Edge, High.ch, 20 MHz Bandwidth, QPSK, 50 RB, 50 RB Offset

**Area Scan (10x13x1):** Measurement grid: dx=5mm, dy=15mm
**Zoom Scan (5x6x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 70.58 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 16.1 W/kg
**SAR(10 g) = 2.96 W/kg**




0 dB = 13.1 W/kg = 11.17 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: ZNFV405UA; Type: Portable Handset; Serial: 06648**

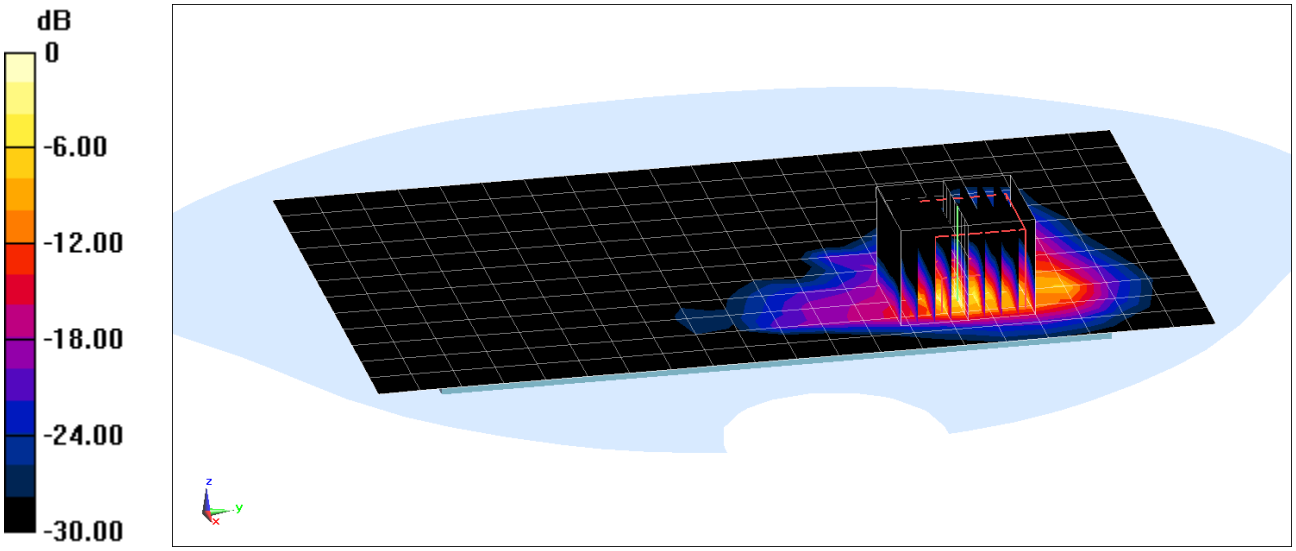
Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5620 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5620 MHz; $\sigma$ = 5.985 S/m; $\varepsilon_r$ = 47.24; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 0.0 cm

Test Date: 08-06-2018; Ambient Temp: 22.1°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7357; ConvF(4.2, 4.2, 4.2); Calibrated: 4/18/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## Mode: IEEE 802.11a, MIMO, U-NII-2C, 20 MHz Bandwidth, Phablet SAR, Ch 124, 6 Mbps, Back Side

**Area Scan (13x21x1):** Measurement grid: dx=10mm, dy=10mm,
**Zoom Scan (8x9x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Reference Value = 43.47 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 90.8 W/kg
**SAR(10 g) = 2.33 W/kg**




0 dB = 43.4 W/kg = 16.37 dBW/kg

# APPENDIX B: SYSTEM VERIFICATION

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# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 750 MHz; Type: D750V3; Serial: 1161**

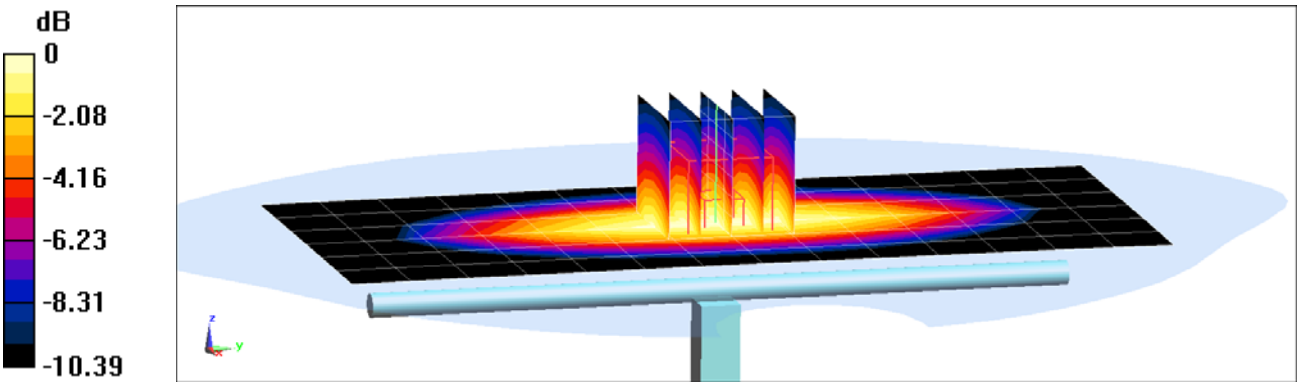
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Head Medium parameters used (interpolated):
f = 750 MHz; $\sigma$ = 0.89 S/m; $\varepsilon_r$ = 41.265; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-31-2018; Ambient Temp: 20.7°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3213; ConvF(6.75, 6.75, 6.75); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 750 MHz System Verification at 23.0 dBm (200 mW)

**Area Scan (7x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.30 W/kg
**SAR(1 g) = 1.55 W/kg**
Deviation(1 g) = -5.14%




0 dB = 1.81 W/kg = 2.58 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d133**

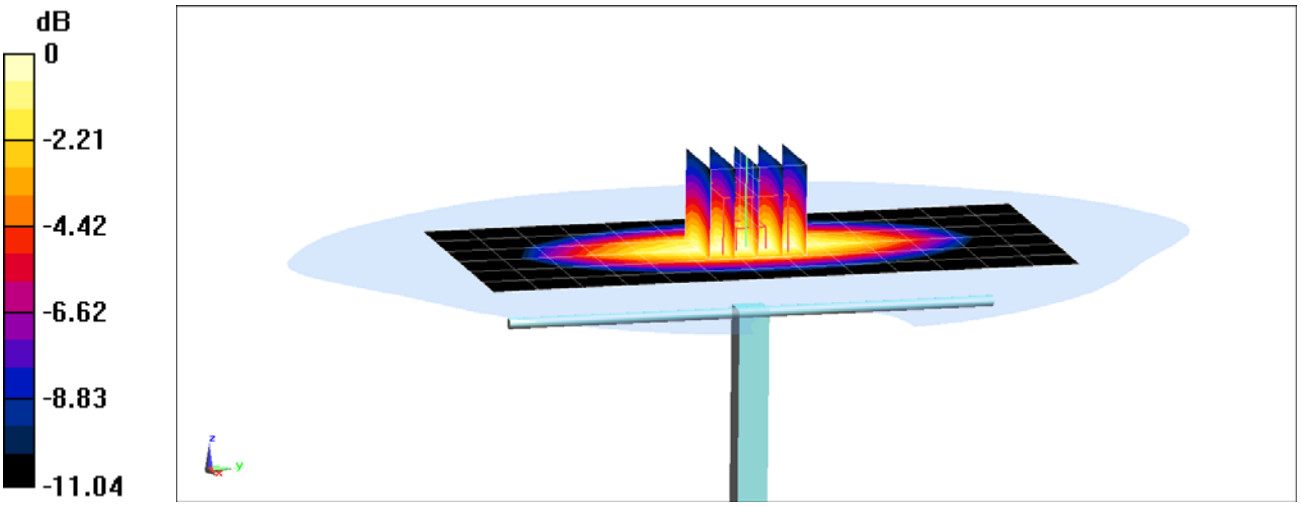
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Head Medium parameters used:
f = 835 MHz; $\sigma$ = 0.933 S/m; $\varepsilon_r$ = 41.123; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-01-2018; Ambient Temp: 24.1°C; Tissue Temp: 21.6°C

Probe: ES3DV3 - SN3213; ConvF(6.42, 6.42, 6.42); Calibrated: 2/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1272; Calibrated: 2/9/2018
Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 835 MHz System Verification at 23.0 dBm (200 mW)

**Area Scan (7x14x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 3.03 W/kg
**SAR(1 g) = 2.03 W/kg**
Deviation(1 g) = 6.62%




0 dB = 2.36 W/kg = 3.73 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1148**

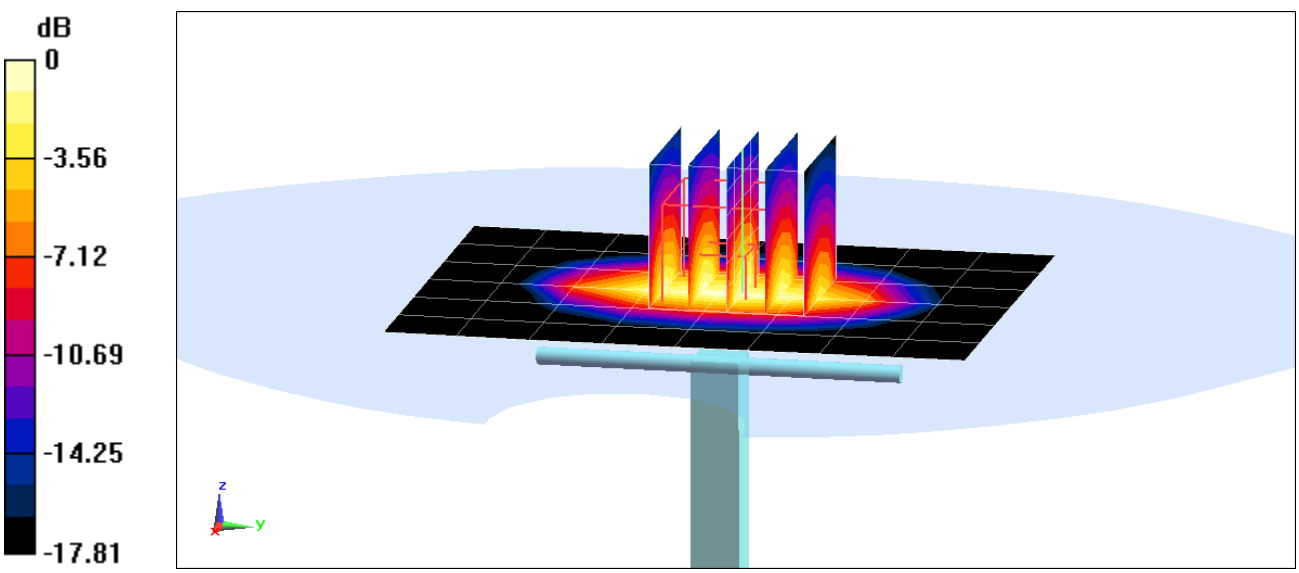
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Head Medium parameters used:
f = 1750 MHz; $\sigma$ = 1.35 S/m; $\varepsilon_r$ = 40.064; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-01-2018; Ambient Temp: 21.9°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7409; ConvF(8.43, 8.43, 8.43); Calibrated: 6/25/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 1750 MHz System Verification at 20.0 dBm (100 mW)

**Area Scan (7x9x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.59 W/kg
**SAR(1 g) = 3.52 W/kg**
Deviation(1 g) = -3.30%




0 dB = 5.40 W/kg = 7.32 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d149**

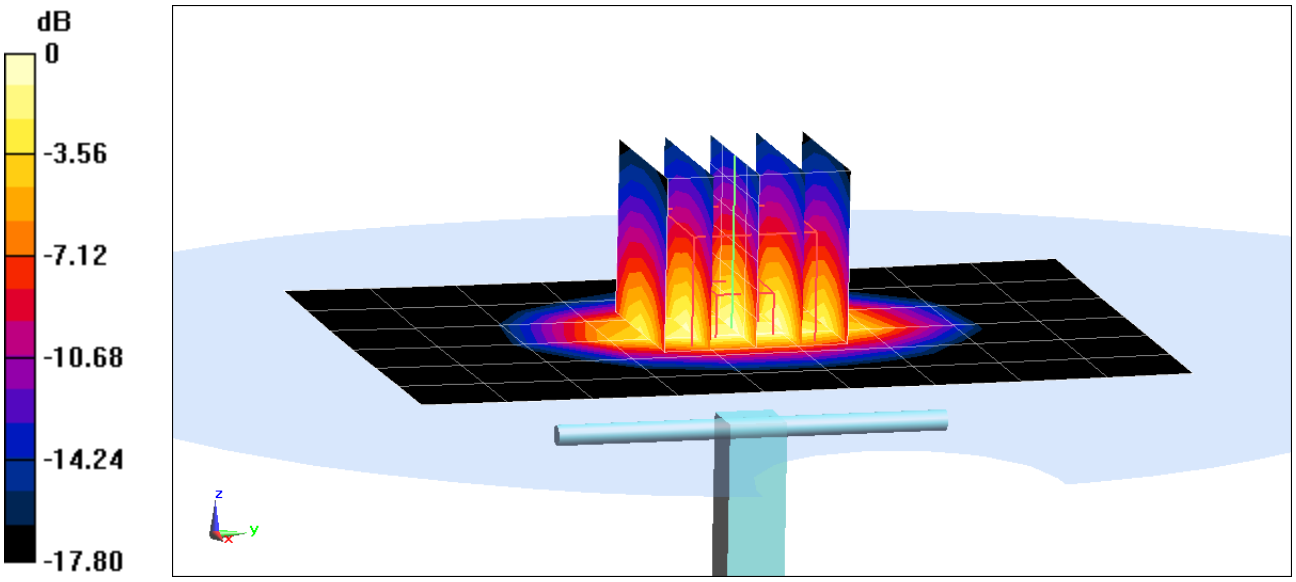
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Head Medium parameters used (interpolated):
f = 1900 MHz; $\sigma$ = 1.427 S/m; $\varepsilon_r$ = 39.083; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-01-2018; Ambient Temp: 21.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3332; ConvF(5.33, 5.33, 5.33); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Left; Type: QD000P40CA; Serial: TP:82355
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 1900 MHz System Verification at 20.0 dBm (100 mW)

**Area Scan (7x10x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.16 W/kg
**SAR(1 g) = 3.94 W/kg**
Deviation(1 g) = -0.51%;




0 dB = 5.02 W/kg = 7.01 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 2300 MHz; Type: D2300V2; Serial: 1073**

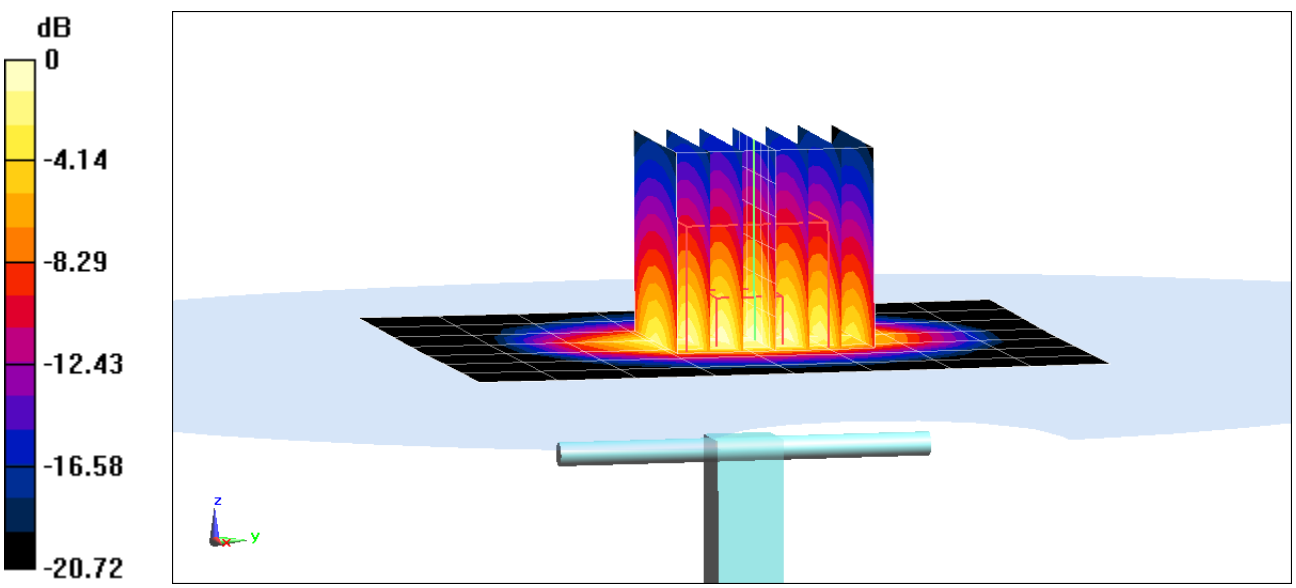
Communication System: UID 0, CW; Frequency: 2300 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2300 MHz; $\sigma$ = 1.676 S/m; $\varepsilon_r$ = 39.861; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-25-2018; Ambient Temp: 21.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3332; ConvF(4.99, 4.99, 4.99); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 2300 MHz System Verification at 20.0 dBm (100 mW)

**Area Scan (8x9x1):** Measurement grid: dx=12mm, dy=12mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 9.07 W/kg
**SAR(1 g) = 4.66 W/kg**
Deviation(1 g) = -4.12%




0 dB = 6.09 W/kg = 7.85 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 719**

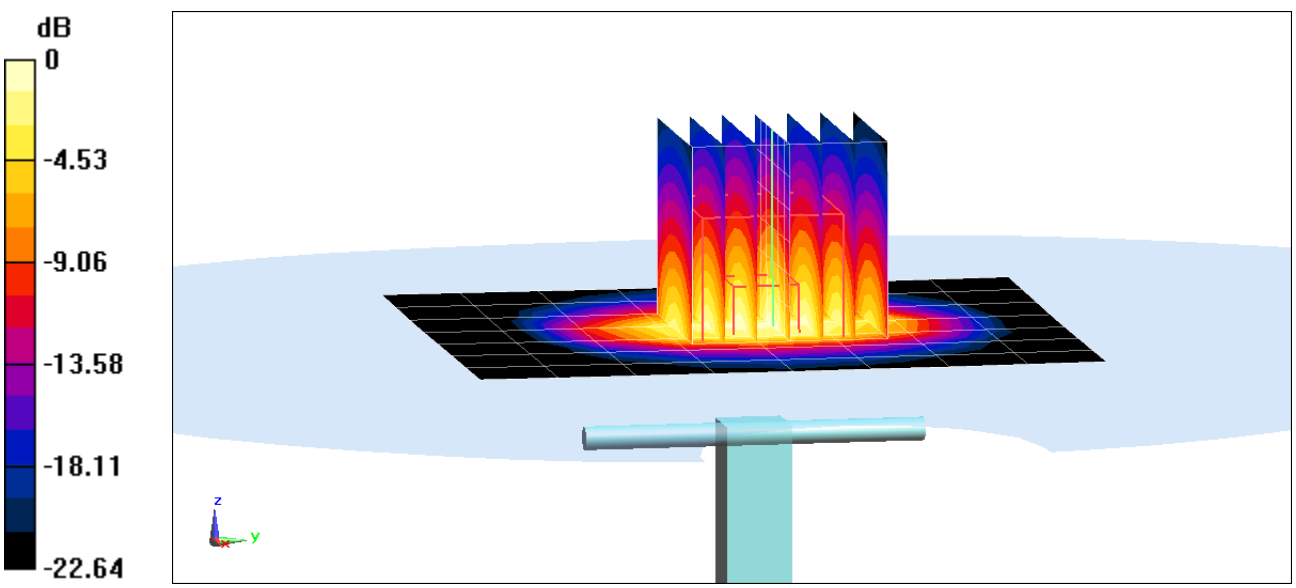
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2450 MHz; $\sigma$ = 1.849 S/m; $\varepsilon_r$ = 39.279; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-25-2018; Ambient Temp: 21.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3332; ConvF(4.68, 4.68, 4.68); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 2450 MHz System Verification at 20.0 dBm (100 mW)

**Area Scan (8x9x1):** Measurement grid: dx=12mm, dy=12mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 11.1 W/kg
**SAR(1 g) = 5.42 W/kg**
Deviation(1 g) = 4.43%




0 dB = 7.17 W/kg = 8.56 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797**

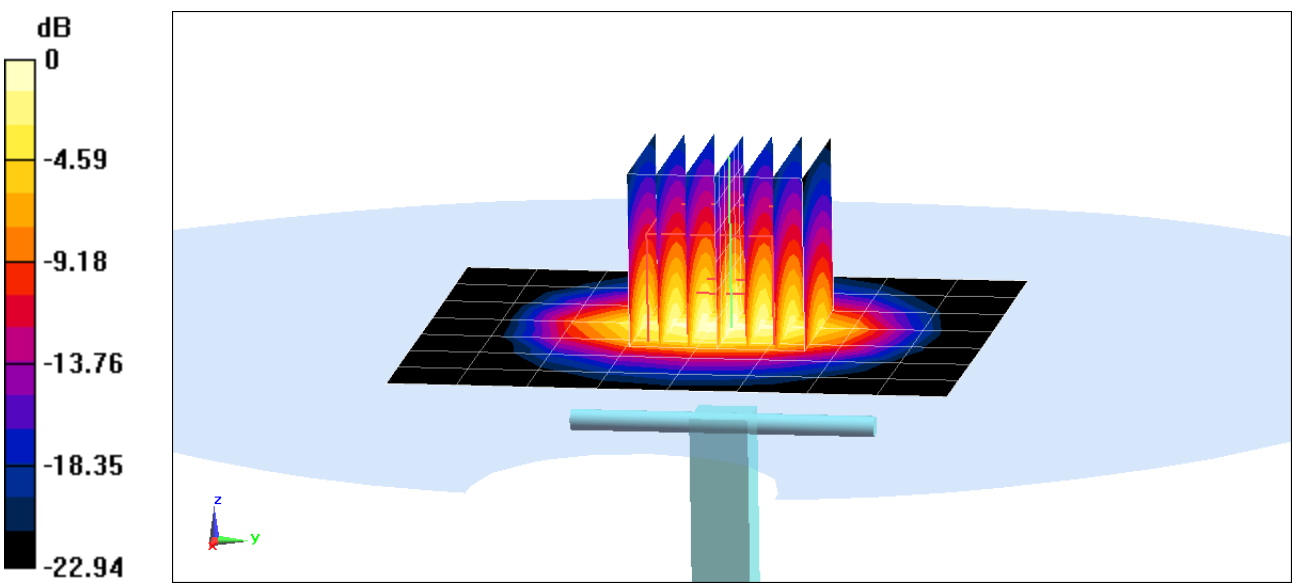
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2450 MHz; $\sigma$ = 1.882 S/m; $\varepsilon_r$ = 38.756; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-29-2018; Ambient Temp: 21.9°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3332; ConvF(4.68, 4.68, 4.68); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 2450 MHz System Verification at 20.0 dBm (100 mW)

**Area Scan (8x9x1):** Measurement grid: dx=12mm, dy=12mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 11.0 W/kg
**SAR(1 g) = 5.35 W/kg**
Deviation(1 g) = 1.52%




0 dB = 7.00 W/kg = 8.45 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1071**

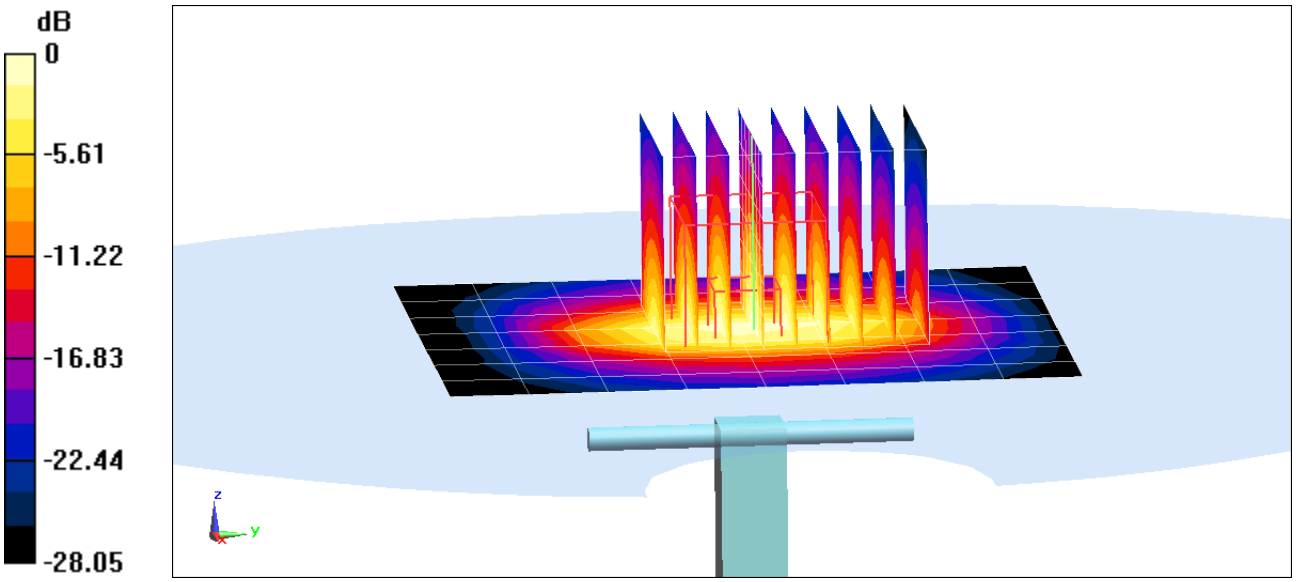
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2600 MHz; $\sigma$ = 2.015 S/m; $\varepsilon_r$ = 38.757; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-25-2018; Ambient Temp: 21.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3332; ConvF(4.56, 4.56, 4.56); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 2600 MHz System Verification at 20.0 dBm (100 mW)

**Area Scan (8x9x1):** Measurement grid: dx=12mm, dy=12mm
**Zoom Scan (8x9x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 11.5 W/kg
**SAR(1 g) = 5.28 W/kg**
Deviation(1 g) = -6.22%




0 dB = 6.97 W/kg = 8.43 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1071**

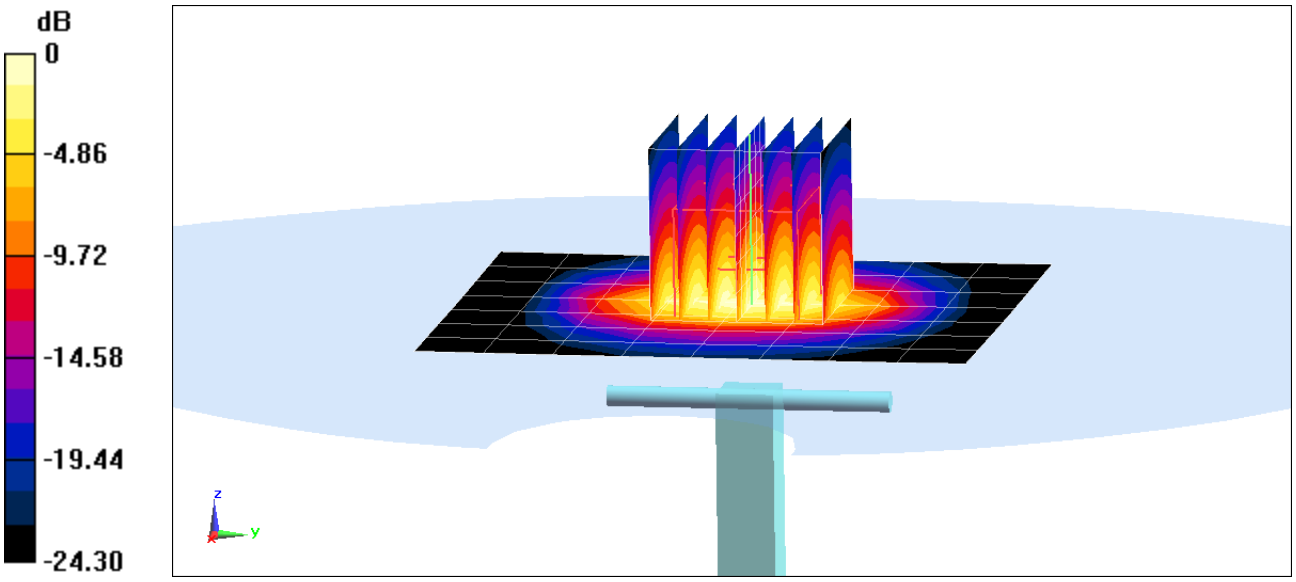
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2450 Head Medium parameters used:
f = 2600 MHz; $\sigma$ = 2.054 S/m; $\varepsilon_r$ = 38.182; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-29-2018; Ambient Temp: 21.9°C; Tissue Temp: 21.5°C

Probe: ES3DV3 - SN3332; ConvF(4.56, 4.56, 4.56); Calibrated: 8/14/2017;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1323; Calibrated: 8/9/2017
Phantom: SAM Front; Type: SAM; Serial: 1686
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 2600 MHz System Verification at 20.0 dBm (100 mW)

**Area Scan (8x9x1):** Measurement grid: dx=12mm, dy=12mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 12.8 W/kg
**SAR(1 g) = 5.71 W/kg**
Deviation(1 g) = 1.42%




0 dB = 7.60 W/kg = 8.81 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1191**

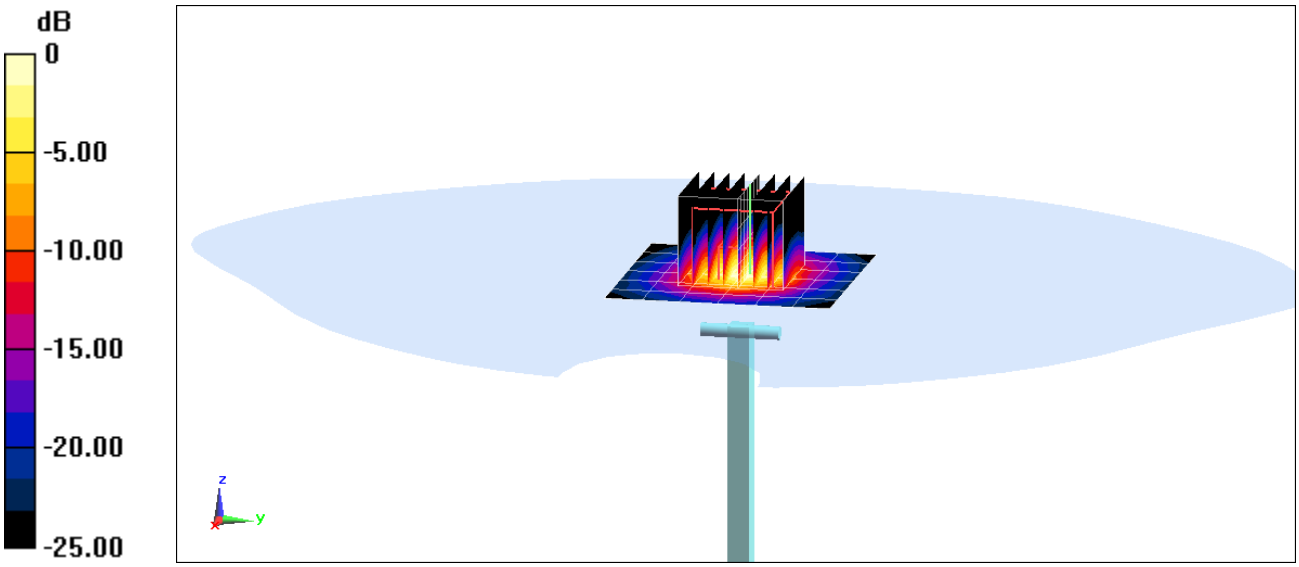
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5GHz Head Medium parameters used (interpolated):
f = 5250 MHz; $\sigma$ = 4.587 S/m; $\varepsilon_r$ = 35.371; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2018; Ambient Temp: 20.7°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN7409; ConvF(5.2, 5.2, 5.2); Calibrated: 6/25/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 5250 MHz System Verification at 17.0 dBm (50 mW)

**Area Scan (7x7x1):** Measurement grid: dx=10mm, dy=10mm
**Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 15.4 W/kg
**SAR(1 g) = 3.75 W/kg**
Deviation(1 g) = -4.94%




0 dB = 8.82 W/kg = 9.45 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1191**

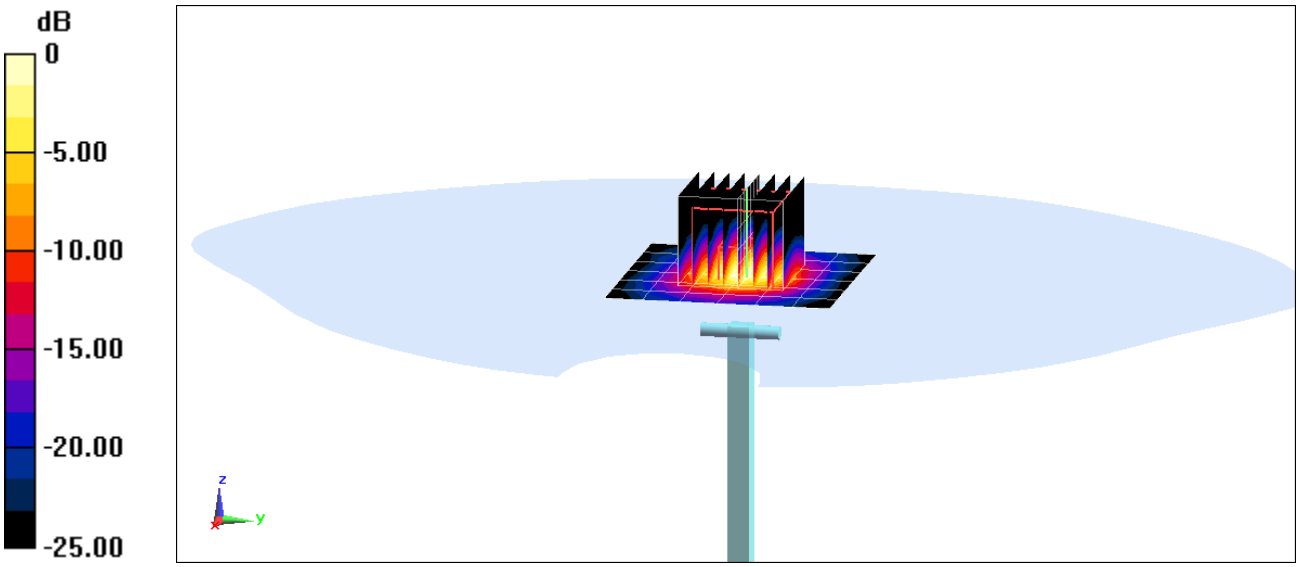
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5GHz Head Medium parameters used:
f = 5600 MHz; $\sigma$ = 4.972 S/m; $\varepsilon_r$ = 34.73; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2018; Ambient Temp: 20.7°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN7409; ConvF(4.77, 4.77, 4.77); Calibrated: 6/25/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 5600 MHz System Verification at 17.0 dBm (50 mW)

**Area Scan (7x7x1):** Measurement grid: dx=10mm, dy=10mm
**Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 18.0 W/kg
**SAR(1 g) = 3.97 W/kg**
Deviation(1 g) = -5.02%




0 dB = 9.67 W/kg = 9.85 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1191**

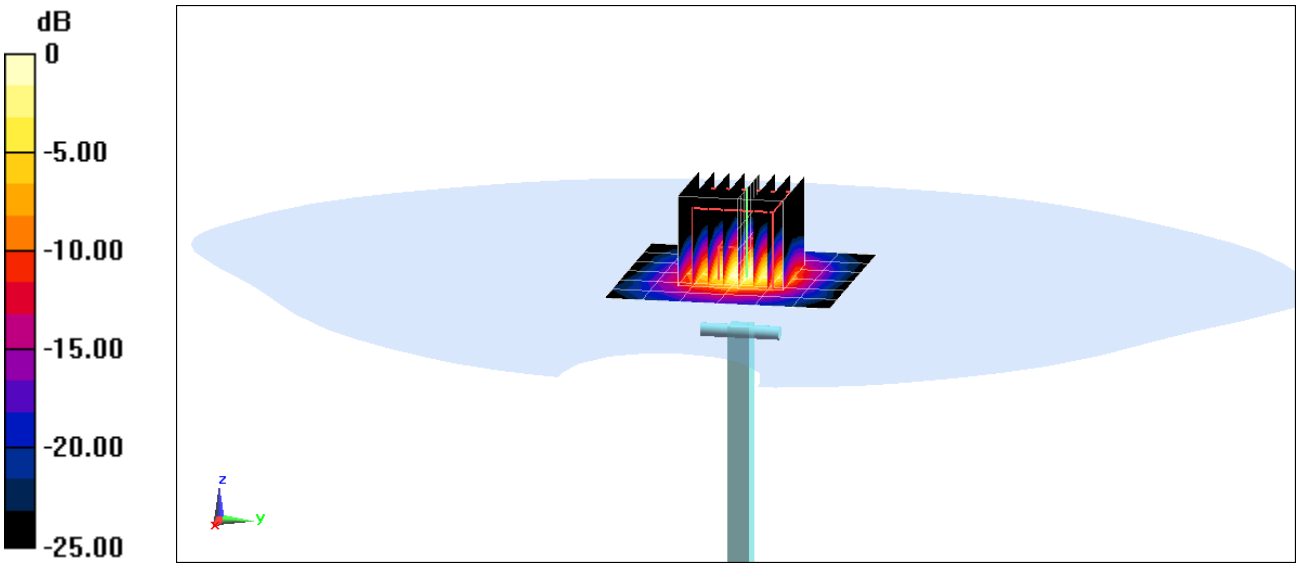
Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5GHz Head Medium parameters used (interpolated):
f = 5750 MHz; $\sigma$ = 5.144 S/m; $\varepsilon_r$ = 34.489; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2018; Ambient Temp: 20.7°C; Tissue Temp: 20.8°C

Probe: EX3DV4 - SN7409; ConvF(4.82, 4.82, 4.82); Calibrated: 6/25/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1334; Calibrated: 6/18/2018
Phantom: SAM with CRP (Left); Type: SAM; Serial: 1715
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 5750 MHz System Verification at 17.0 dBm (50 mW)

**Area Scan (7x7x1):** Measurement grid: dx=10mm, dy=10mm
**Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 17.3 W/kg
**SAR(1 g) = 3.69 W/kg**
Deviation(1 g) = -6.70%




0 dB = 9.03 W/kg = 9.56 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 750 MHz; Type: D750V3; Serial: 1054**

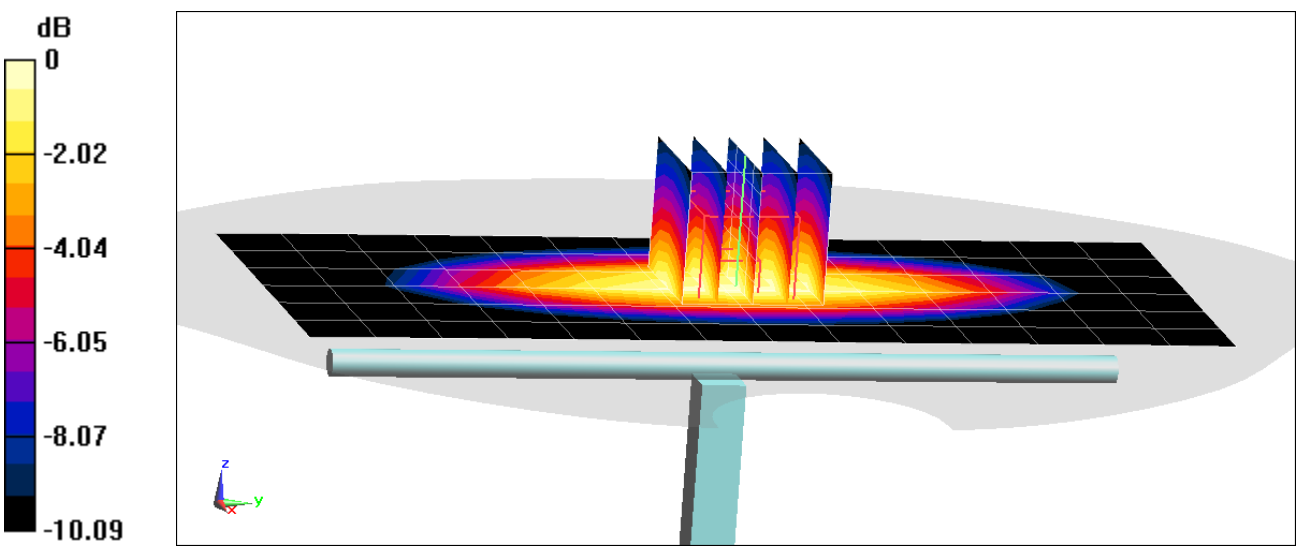
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 750 MHz; $\sigma$ = 0.948 S/m; $\varepsilon_r$ = 53.845; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 07-30-2018; Ambient Temp: 20.5°C; Tissue Temp: 20.4°C

Probe: ES3DV3 - SN3347; ConvF(6.59, 6.59, 6.59); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

## 750 MHz System Verification at 23.0 dBm (200 mW)

**Area Scan (7x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.51 W/kg
**SAR(1 g) = 1.72 W/kg**
Deviation(1 g) = -0.12%




0 dB = 2.00 W/kg = 3.01 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 750 MHz; Type: D750V3; Serial: 1054**

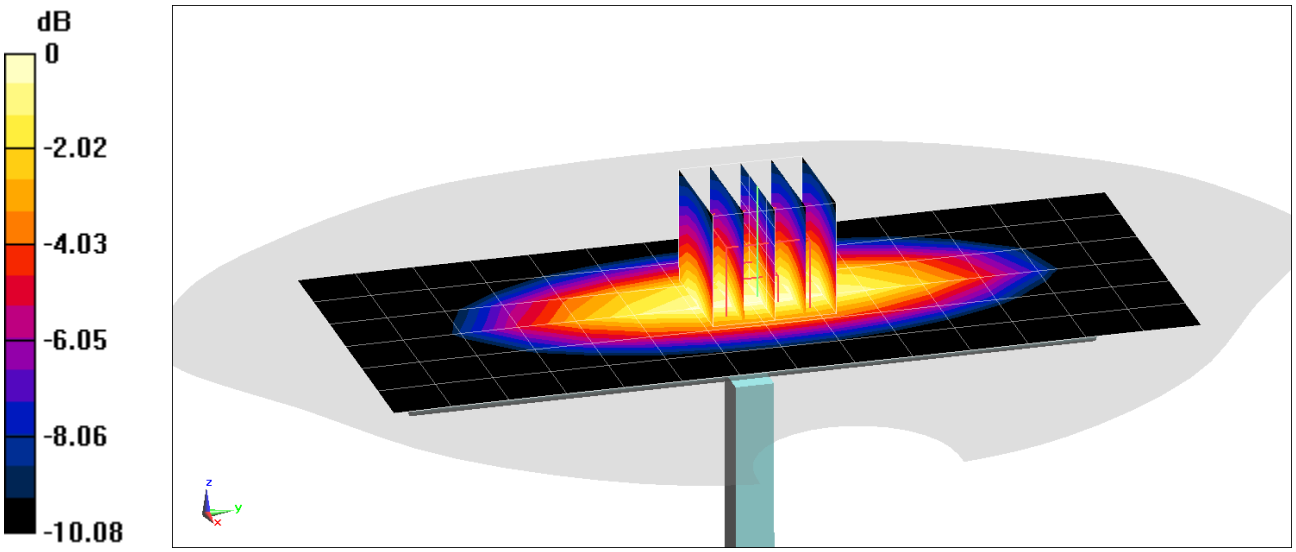
Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: 750 Body Medium parameters used (interpolated):
f = 750 MHz; $\sigma$ = 0.953 S/m; $\varepsilon_r$ = 54.151; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-03-2018; Ambient Temp: 20.3°C; Tissue Temp: 21.0°C

Probe: ES3DV3 - SN3347; ConvF(6.59, 6.59, 6.59); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 750 MHz System Verification at 23.0 dBm (200 mW)

**Area Scan (7x15x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 2.53 W/kg
**SAR(1 g) = 1.73 W/kg**
Deviation(1 g) = 0.46%




0 dB = 2.01 W/kg = 3.03 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d132**

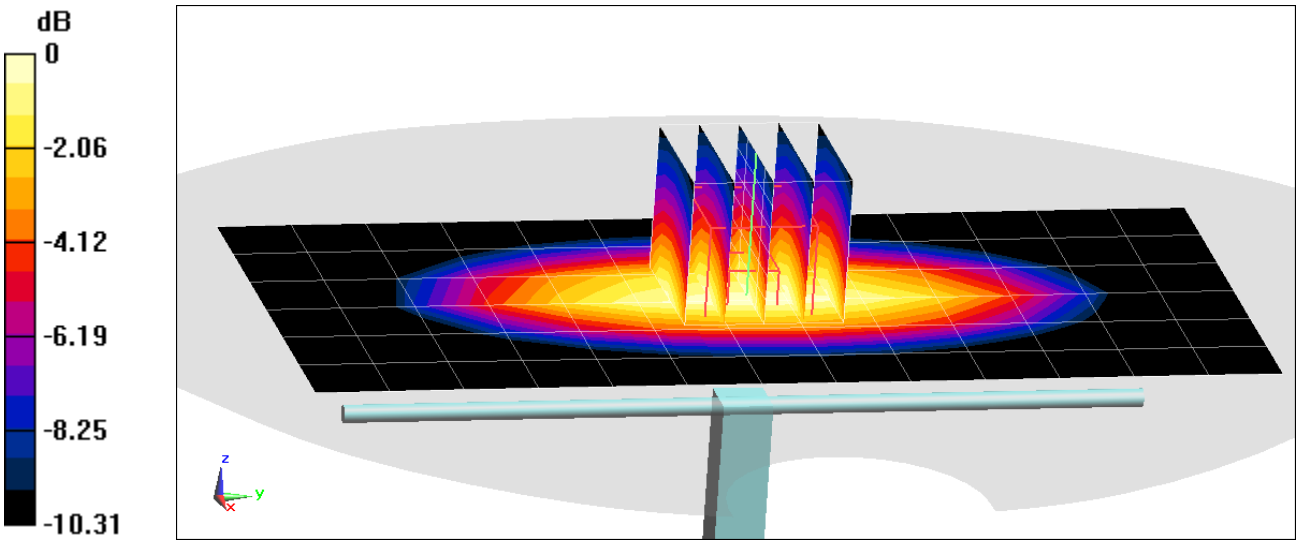
Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: 835 Body Medium parameters used:
f = 835 MHz; $\sigma$ = 1.011 S/m; $\varepsilon_r$ = 52.65; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.5 cm

Test Date: 08-03-2018; Ambient Temp: 20.3°C; Tissue Temp: 20.8°C

Probe: ES3DV3 - SN3347; ConvF(6.37, 6.37, 6.37); Calibrated: 3/27/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1450; Calibrated: 11/9/2017
Phantom: Twin-SAM V5.0 Right; Type: QD 000 P40 CD; Serial: 1800
Measurement SW: DASY52, Version 52.10; SEMCAD X Version 14.6.10 (7417)

## 835 MHz System Verification at 23.0 dBm (200 mW)

**Area Scan (7x14x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 3.02 W/kg
**SAR(1 g) = 2.06 W/kg**
Deviation(1 g) = 6.08%




0 dB = 2.40 W/kg = 3.80 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1148**

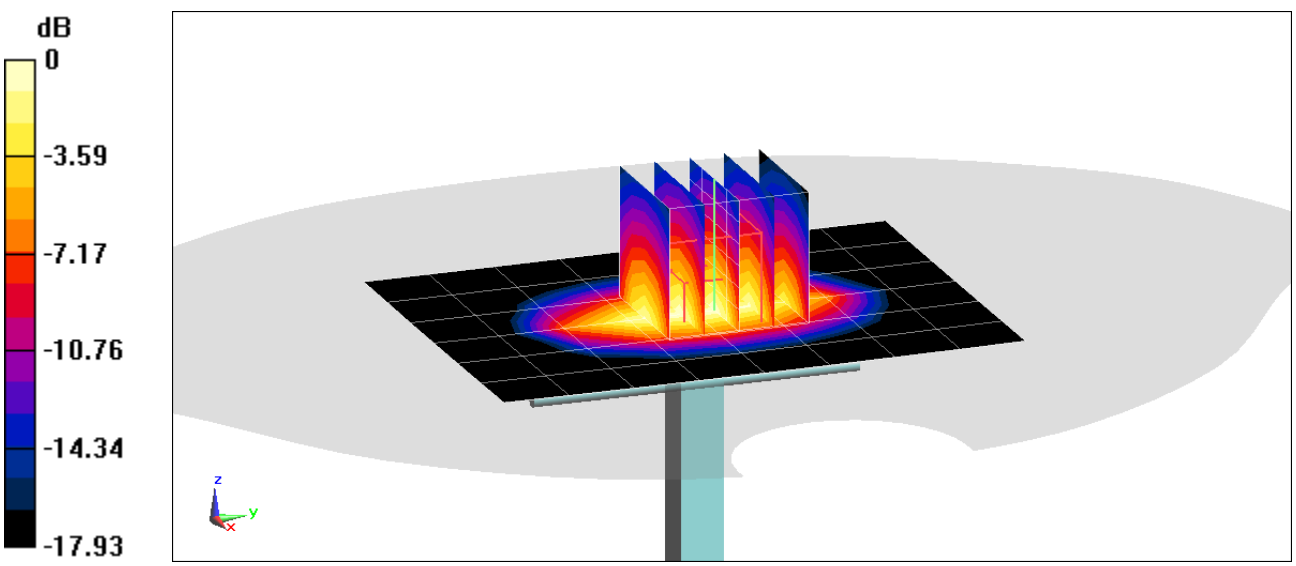
Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1750 Body Medium parameters used:
f = 1750 MHz; $\sigma$ = 1.518 S/m; $\varepsilon_r$ = 52.691; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2018; Ambient Temp: 21.1°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7406; ConvF(8.04, 8.04, 8.04); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 1750 MHz System Verification at 20.0 dBm (100 mW)

**Area Scan (7x9x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 6.51 W/kg
**SAR(1 g) = 3.57 W/kg; SAR(10 g) = 1.88 W/kg**
Deviation(1 g) = -3.51%; Deviation(10 g) = -5.05%




0 dB = 5.43 W/kg = 7.35 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d141**

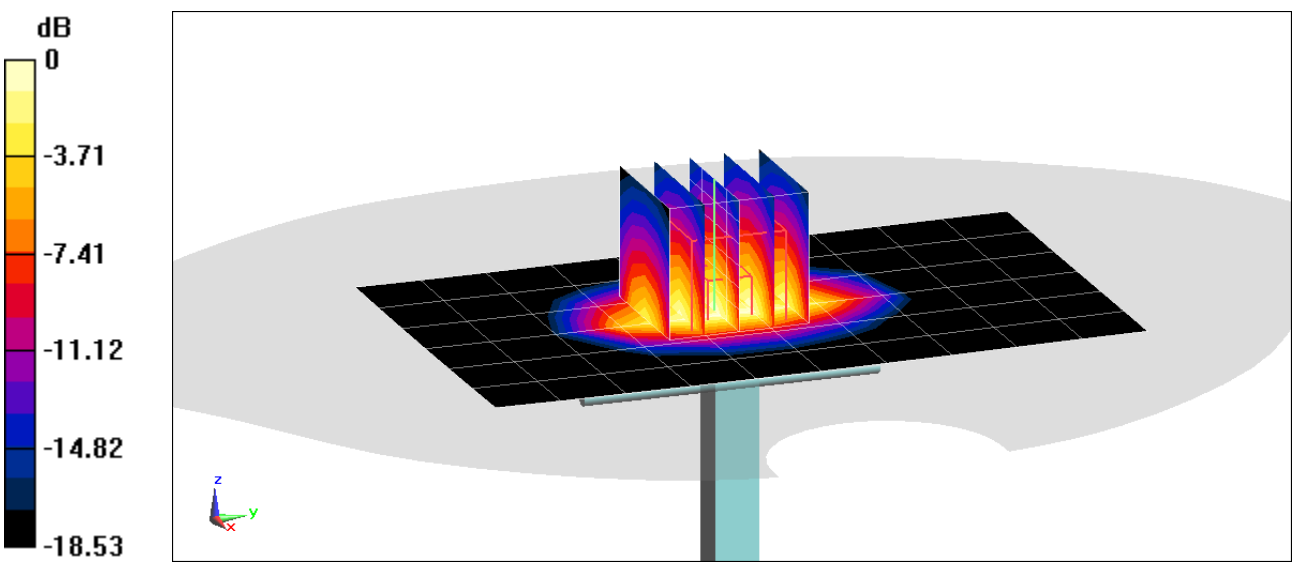
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; $\sigma$ = 1.564 S/m; $\varepsilon_r$ = 52.207; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-23-2018; Ambient Temp: 21.8°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 1900 MHz System Verification at 20.0 dBm (100 mW)

**Area Scan (7x11x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.71 W/kg
**SAR(1 g) = 4.14 W/kg; SAR(10 g) = 2.12 W/kg**
Deviation(1 g) = 3.50%; Deviation(10 g) = 0.00%




0 dB = 6.46 W/kg = 8.10 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080**

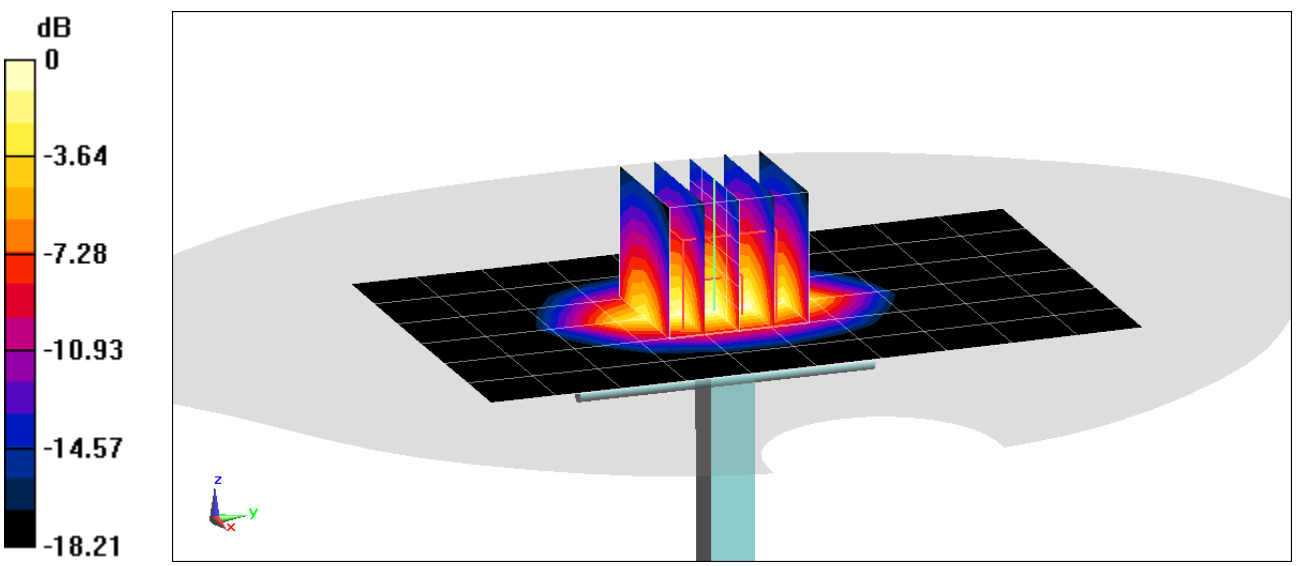
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; $\sigma$ = 1.556 S/m; $\varepsilon_r$ = 52.111; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-01-2018; Ambient Temp: 21.6°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1692
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 1900 MHz System Verification at 20.0 dBm (100 mW)

**Area Scan (7x11x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.76 W/kg
**SAR(1 g) = 4.22 W/kg; SAR(10 g) = 2.16 W/kg**
Deviation(1 g) = 7.93%; Deviation(10 g) = 4.35%




0 dB = 6.56 W/kg = 8.17 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 2300 MHz; Type: D2300V2; Serial: 1073**

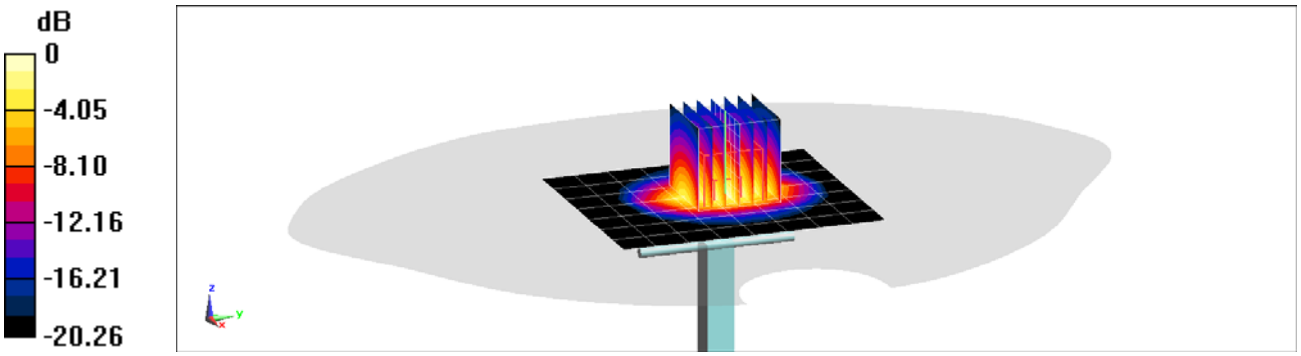
Communication System: UID 0, CW; Frequency: 2300 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2300 MHz; $\sigma$ = 1.852 S/m; $\varepsilon_r$ = 51.716; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-25-2018; Ambient Temp: 22.8°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.63, 4.63, 4.63); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 2300 MHz System Verification at 20.0 dBm (100 mW)

**Area Scan (8x9x1):** Measurement grid: dx=12mm, dy=12mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 9.72 W/kg
**SAR(1 g) = 4.99 W/kg**
Deviation(1 g) = 3.74%




0 dB = 6.52 W/kg = 8.14 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 719**

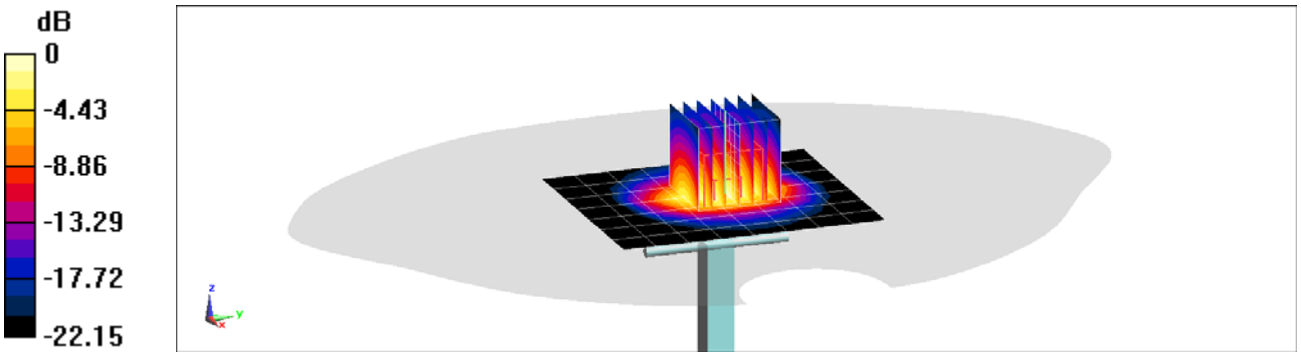
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2450 MHz; $\sigma$ = 2.022 S/m; $\varepsilon_r$ = 51.312; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-25-2018; Ambient Temp: 22.8°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.51, 4.51, 4.51); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 2450 MHz System Verification at 20.0 dBm (100 mW)

**Area Scan (8x9x1):** Measurement grid: dx=12mm, dy=12mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 11.0 W/kg
**SAR(1 g) = 5.33 W/kg**
Deviation(1 g) = 6.39%




0 dB = 7.05 W/kg = 8.48 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 797**

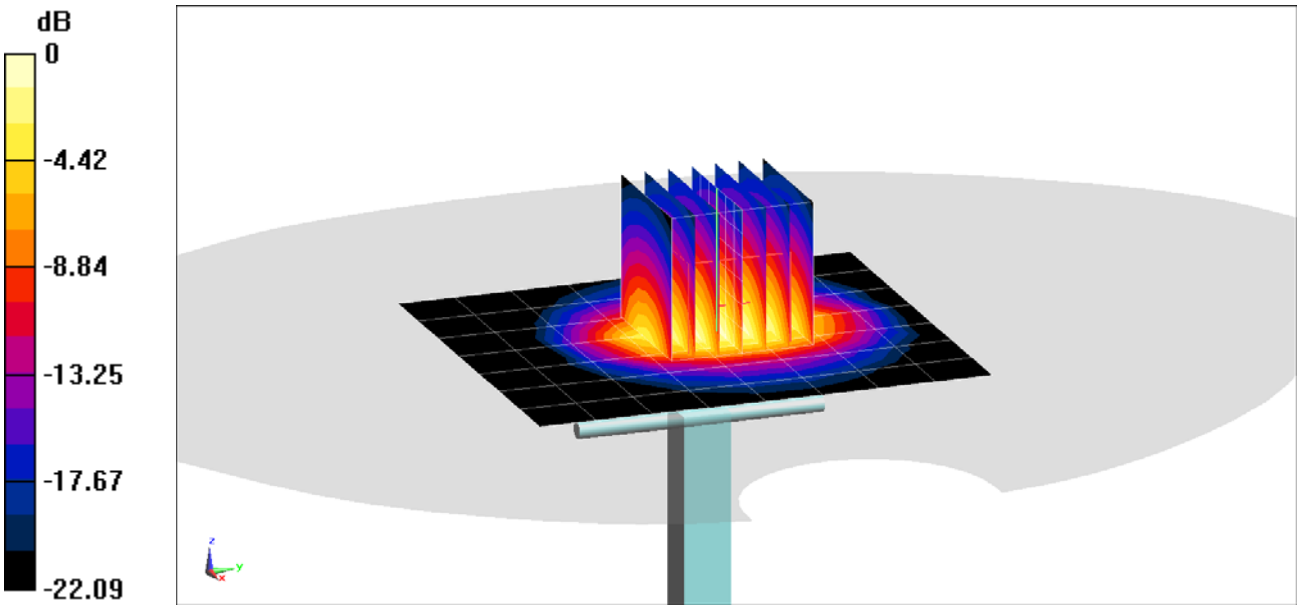
Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2450 MHz; $\sigma$ = 2.034 S/m; $\varepsilon_r$ = 51.069; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2018; Ambient Temp: 21.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3319; ConvF(4.51, 4.51, 4.51); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 2450 MHz System Verification at 20.0 dBm (100 mW)

**Area Scan (8x9x1):** Measurement grid: dx=12mm, dy=12mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 10.7 W/kg
**SAR(1 g) = 5.14 W/kg**
Deviation(1 g) = 0.59%




0 dB = 6.82 W/kg = 8.34 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1071**

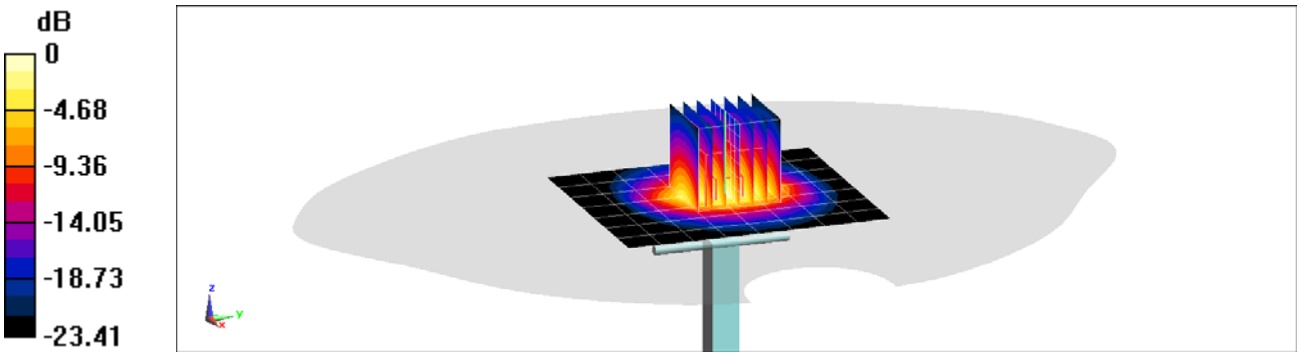
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2600 MHz; $\sigma$ = 2.2 S/m; $\varepsilon_r$ = 50.852; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-25-2018; Ambient Temp: 22.8°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3319; ConvF(4.33, 4.33, 4.33); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 2600 MHz System Verification at 20.0 dBm (100 mW)

**Area Scan (8x9x1):** Measurement grid: dx=12mm, dy=12mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 11.7 W/kg
**SAR(1 g) = 5.35 W/kg**
Deviation(1 g) = -1.29%




0 dB = 7.14 W/kg = 8.54 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1071**

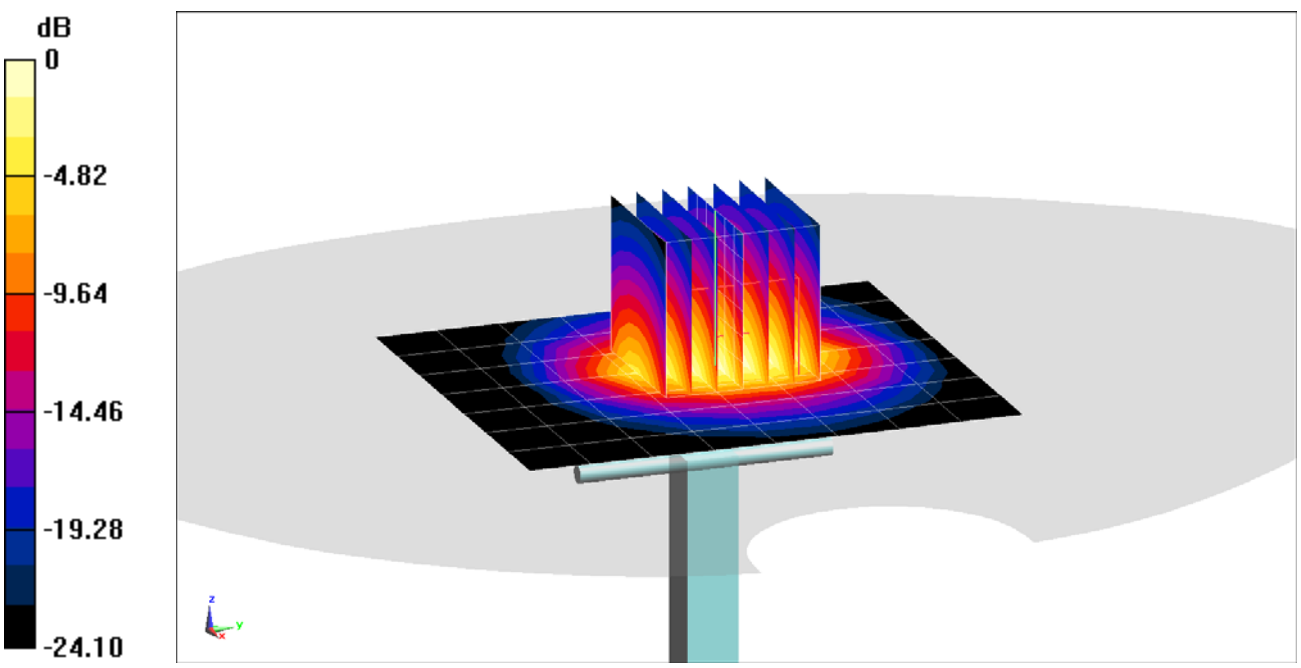
Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: 2450 Body Medium parameters used:
f = 2600 MHz; $\sigma$ = 2.216 S/m; $\varepsilon_r$ = 50.615; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2018; Ambient Temp: 21.9°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3319; ConvF(4.33, 4.33, 4.33); Calibrated: 3/13/2018;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1368; Calibrated: 3/7/2018
Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1375
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 2600 MHz System Verification at 20.0 dBm (100 mW)

**Area Scan (8x9x1):** Measurement grid: dx=12mm, dy=12mm
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 11.5 W/kg
**SAR(1 g) = 5.25 W/kg**
Deviation(1 g) = -3.14%




0 dB = 6.90 W/kg = 8.39 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237**

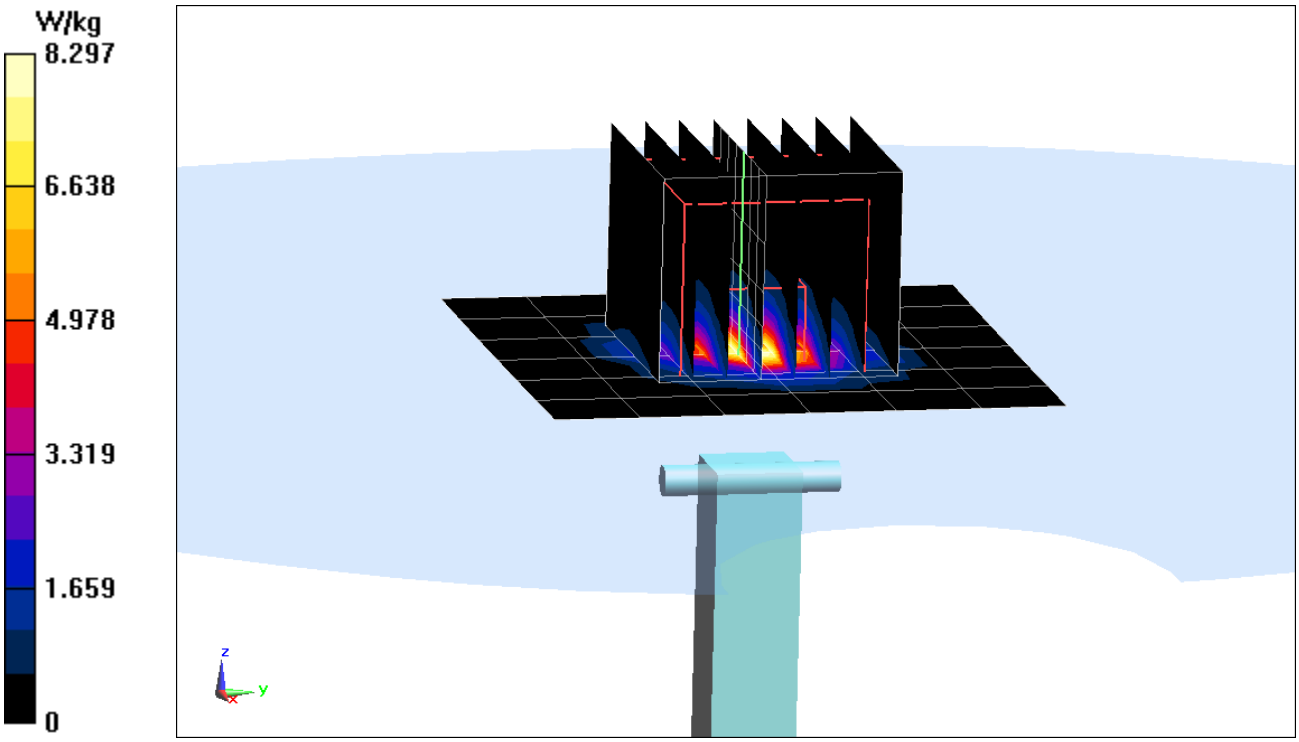
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used (interpolated):
f = 5250 MHz; $\sigma$ = 5.476 S/m; $\varepsilon_r$ = 47.799; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2018; Ambient Temp: 22.3°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7357; ConvF(4.78, 4.78, 4.78); Calibrated: 4/18/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 5250 MHz System Verification at 17.0 dBm (50 mW)

**Area Scan (7x7x1):** Measurement grid: dx=10mm, dy=10mm
**Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 14.4 W/kg
**SAR(1 g) = 3.57 W/kg**
Deviation(1 g) = -7.15%



# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237**

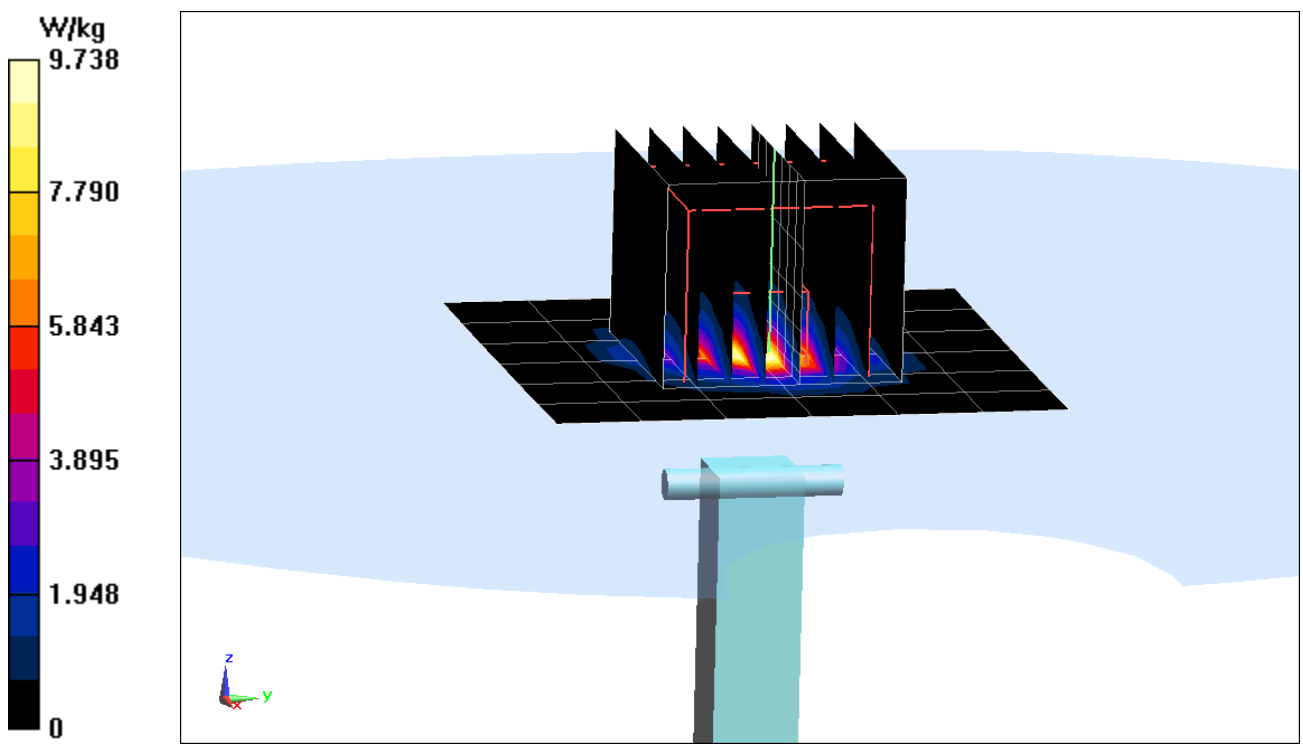
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5600 MHz; $\sigma$ = 5.937 S/m; $\varepsilon_r$ = 47.187; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2018; Ambient Temp: 22.3°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7357; ConvF(4.2, 4.2, 4.2); Calibrated: 4/18/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 5600 MHz System Verification at 17.0 dBm (50 mW)

**Area Scan (7x7x1):** Measurement grid: dx=10mm, dy=10mm
**Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 17.5 W/kg
**SAR(1 g) = 3.96 W/kg**
Deviation(1 g) = 0.89%



# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237**

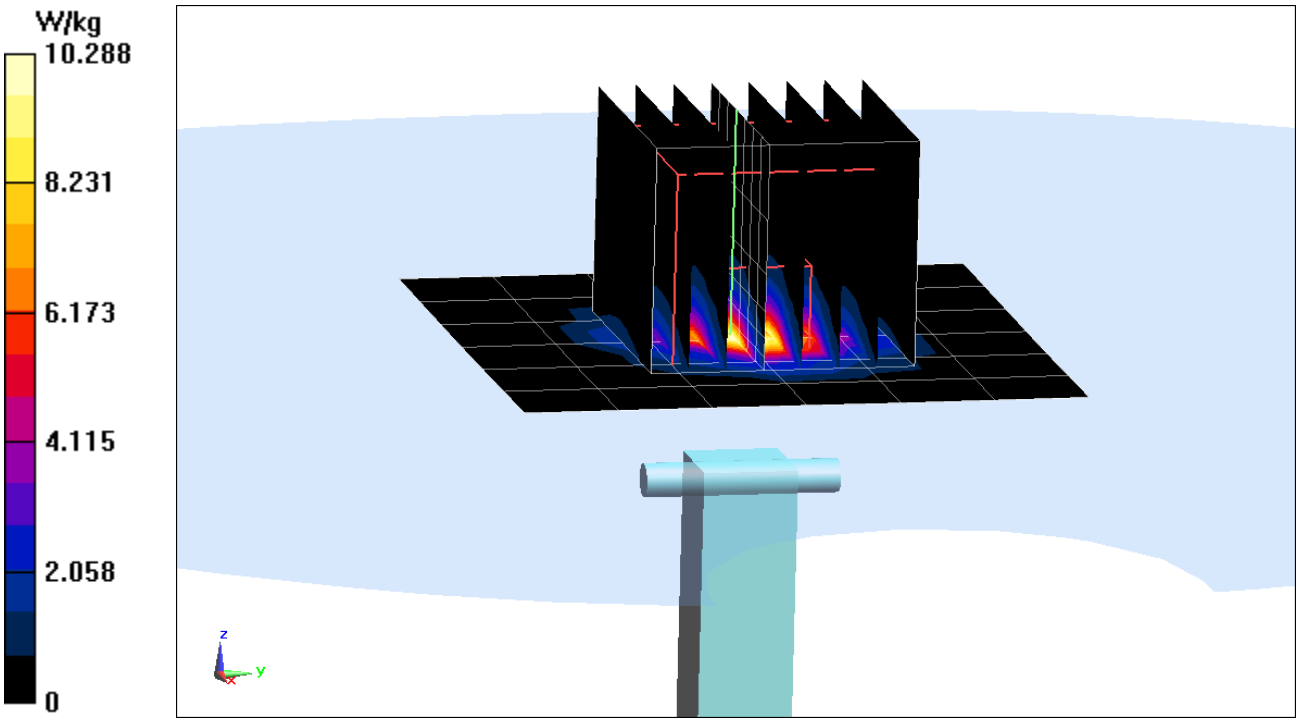
Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used:
f = 5600 MHz; $\sigma$ = 5.965 S/m; $\varepsilon_r$ = 47.257; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-06-2018; Ambient Temp: 22.1°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7357; ConvF(4.2, 4.2, 4.2); Calibrated: 4/18/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 5600 MHz System Verification at 17.0 dBm (50 mW)

**Area Scan (7x7x1):** Measurement grid: dx=10mm, dy=10mm
**Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 18.3 W/kg
**SAR(1 g) = 4.13 W/kg; SAR(10 g) = 1.14 W/kg**
Deviation(1 g) = 5.22%; Deviation(10 g) = 3.17%



# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237**

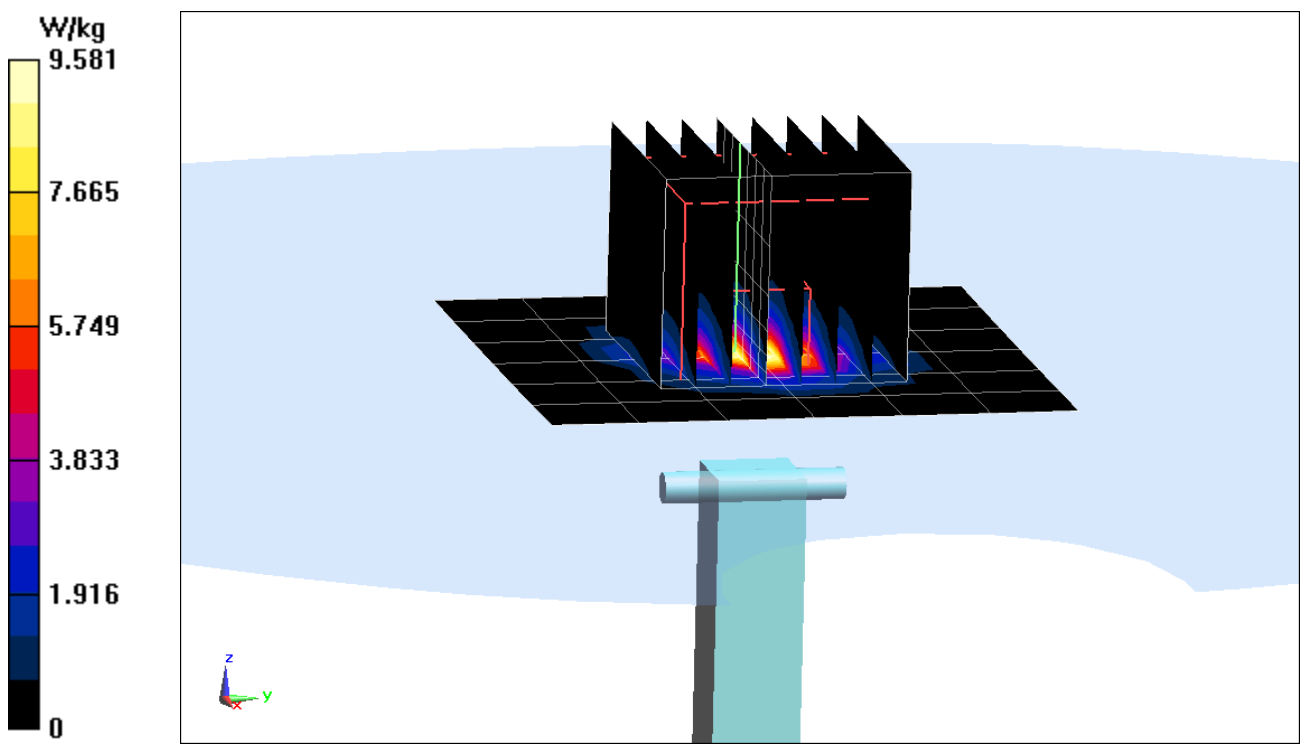
Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used (interpolated):
f = 5750 MHz; $\sigma$ = 6.159 S/m; $\varepsilon_r$ = 46.964; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-30-2018; Ambient Temp: 22.3°C; Tissue Temp: 21.3°C

Probe: EX3DV4 - SN7357; ConvF(4.21, 4.21, 4.21); Calibrated: 4/18/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 5750 MHz System Verification at 17.0 dBm (50 mW)

**Area Scan (7x7x1):** Measurement grid: dx=10mm, dy=10mm
**Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 17.8 W/kg
**SAR(1 g) = 3.83 W/kg**
Deviation(1 g) = -0.65%



# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080**

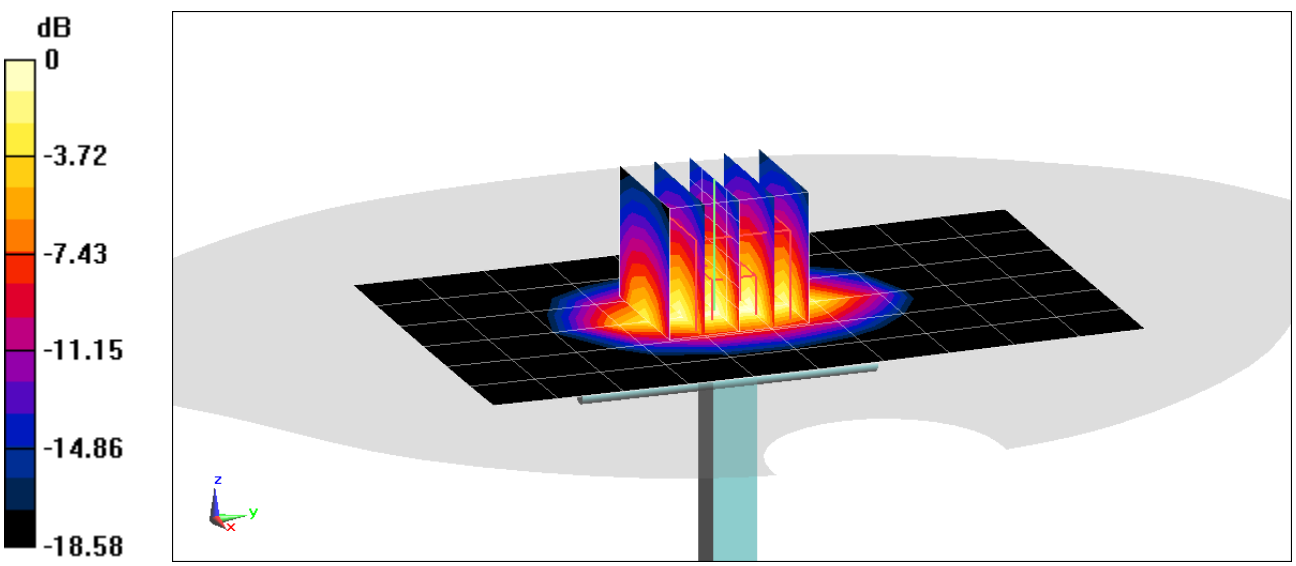
Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: 1900 Body Medium parameters used (interpolated):
f = 1900 MHz; $\sigma$ = 1.575 S/m; $\varepsilon_r$ = 51.655; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 07-26-2018; Ambient Temp: 23.8°C; Tissue Temp: 21.9°C

Probe: EX3DV4 - SN7406; ConvF(7.74, 7.74, 7.74); Calibrated: 5/22/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn859; Calibrated: 5/22/2018
Phantom: Twin-SAM V4.0; Type: QD 000 P40 CC; Serial: 1167
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 1900 MHz System Verification at 20.0 dBm (100 mW)

**Area Scan (7x11x1):** Measurement grid: dx=15mm, dy=15mm
**Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm
Peak SAR (extrapolated) = 7.85 W/kg
**SAR(10 g) = 2.16 W/kg**
Deviation(10 g) = 4.35%




0 dB = 6.53 W/kg = 8.15 dBW/kg

# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237**

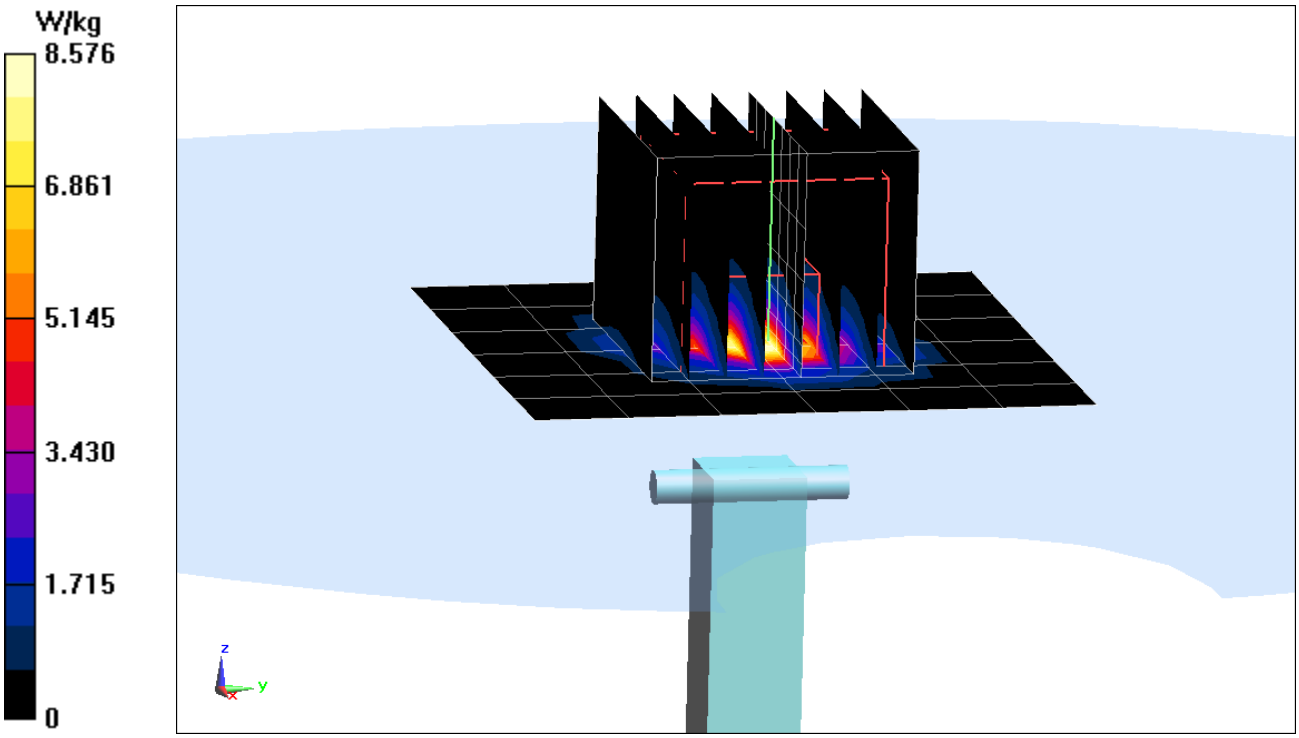
Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used (interpolated):
f = 5250 MHz; $\sigma$ = 5.499 S/m; $\varepsilon_r$ = 47.855; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-06-2018; Ambient Temp: 22.1°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7357; ConvF(4.78, 4.78, 4.78); Calibrated: 4/18/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 5250 MHz System Verification at 17.0 dBm (50 mW)

**Area Scan (7x7x1):** Measurement grid: dx=10mm, dy=10mm
**Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 14.3 W/kg
**SAR(10 g) = 1 W/kg**
Deviation(10 g) = -6.98%



# PCTEST ENGINEERING LABORATORY, INC.

**DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1237**

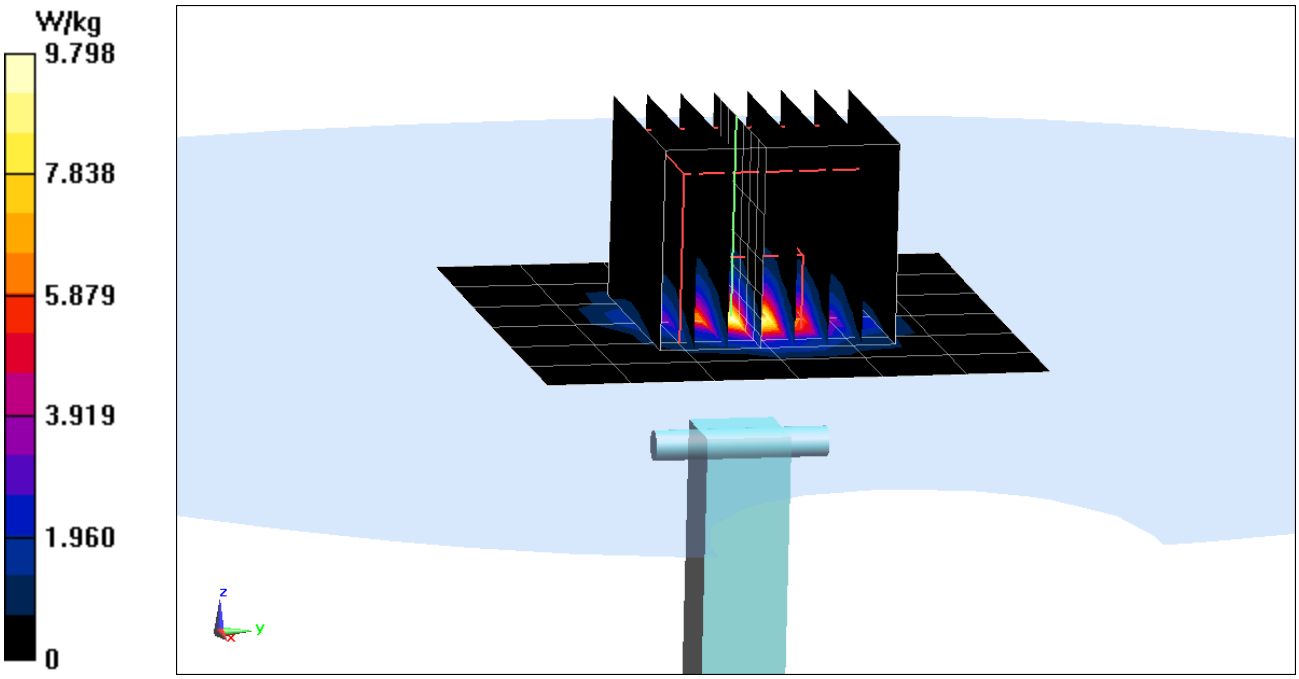
Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium: 5 GHz Body Medium parameters used (interpolated):
f = 5750 MHz; $\sigma$ = 6.191 S/m; $\varepsilon_r$ = 47.005; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section; Space: 1.0 cm

Test Date: 08-06-2018; Ambient Temp: 22.1°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7357; ConvF(4.21, 4.21, 4.21); Calibrated: 4/18/2018;
Sensor-Surface: 1.4mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1407; Calibrated: 4/11/2018
Phantom: SAM with CRP v5.0 Left; Type: QD000P40CD; Serial: 1687
Measurement SW: DASY52, Version 52.10;SEMCAD X Version 14.6.10 (7417)

## 5750 MHz System Verification at 17.0 dBm (50 mW)

**Area Scan (7x7x1):** Measurement grid: dx=10mm, dy=10mm
**Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4
Peak SAR (extrapolated) = 18.0 W/kg
**SAR(10 g) = 1.06 W/kg**
Deviation(10 g) = -0.93%



# APPENDIX C: PROBE CALIBRATION

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**Calibration Laboratory of**
Schmid & Partner
Engineering AG
**Zeughausstrasse 43, 8004 Zurich, Switzerland**

**S** Schweizerischer Kalibrierdienst
**C** Service suisse d'étalonnage
Servizio svizzero di taratura
**S** Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
**The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates**

**Accreditation No.: SCS 0108**

Client **PC Test**

**Certificate No: D750V3-1161_Jul16**

# CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | D750V3 - SN:1161 |
| Calibration procedure(s) | QA CAL-05.v9<br>Calibration procedure for dipole validation kits above 700 MHz |
| Calibration date: | July 13, 2016 |

√PN
8/9/16

Extended
BN
7/18/2018

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power meter NRP | SN: 104778 | 06-Apr-16 (No. 217-02288/02289) | Apr-17 |
| Power sensor NRP-Z91 | SN: 103244 | 06-Apr-16 (No. 217-02288) | Apr-17 |
| Power sensor NRP-Z91 | SN: 103245 | 06-Apr-16 (No. 217-02289) | Apr-17 |
| Reference 20 dB Attenuator | SN: 5058 (20k) | 05-Apr-16 (No. 217-02292) | Apr-17 |
| Type-N mismatch combination | SN: 5047.2 / 06327 | 05-Apr-16 (No. 217-02295) | Apr-17 |
| Reference Probe EX3DV4 | SN: 7349 | 15-Jun-16 (No. EX3-7349_Jun16) | Jun-17 |
| DAE4 | SN: 601 | 30-Dec-15 (No. DAE4-601_Dec15) | Dec-16 |

| Secondary Standards | ID # | Check Date (in house) | Scheduled Check |
|---|---|---|---|
| Power meter EPM-442A | SN: GB37480704 | 07-Oct-15 (No. 217-02222) | In house check: Oct-16 |
| Power sensor HP 8481A | SN: US37292783 | 07-Oct-15 (No. 217-02222) | In house check: Oct-16 |
| Power sensor HP 8481A | SN: MY41092317 | 07-Oct-15 (No. 217-02223) | In house check: Oct-16 |
| RF generator R&S SMT-06 | SN: 100972 | 15-Jun-15 (in house check Jun-15) | In house check: Oct-16 |
| Network Analyzer HP 8753E | SN: US37390585 | 18-Oct-01 (in house check Oct-15) | In house check: Oct-16 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Claudio Leubler | Laboratory Technician | |
| Approved by: | Katja Pokovic | Technical Manager | |

Issued: July 13, 2016

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

## Glossary:

| | |
|---|---|
| TSL | tissue simulating liquid |
| ConvF | sensitivity in TSL / NORM x,y,z |
| N/A | not applicable or not measured |

## Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "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)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

## Additional Documentation:

e) DASY4/5 System Handbook

## Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

## Measurement Conditions

DASY system configuration, as far as not given on page 1.

| | | |
|---|---|---|
| **DASY Version** | DASY5 | V52.8.8 |
| **Extrapolation** | Advanced Extrapolation | |
| **Phantom** | Modular Flat Phantom | |
| **Distance Dipole Center - TSL** | 15 mm | with Spacer |
| **Zoom Scan Resolution** | dx, dy, dz = 5 mm | |
| **Frequency** | 750 MHz ± 1 MHz | |

## Head TSL parameters

The following parameters and calculations were applied.

| | **Temperature** | **Permittivity** | **Conductivity** |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 41.9 | 0.89 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 40.9 ± 6 % | 0.91 mho/m ± 6 % |
| **Head TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Head TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 2.09 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **8.17 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 1.37 W/kg |
| SAR for nominal Head TSL parameters | normalized to 1W | **5.39 W/kg ± 16.5 % (k=2)** |

## Body TSL parameters

The following parameters and calculations were applied.

| | **Temperature** | **Permittivity** | **Conductivity** |
|---|---|---|---|
| **Nominal Body TSL parameters** | 22.0 °C | 55.5 | 0.96 mho/m |
| **Measured Body TSL parameters** | (22.0 ± 0.2) °C | 55.1 ± 6 % | 0.99 mho/m ± 6 % |
| **Body TSL temperature change during test** | < 0.5 °C | ---- | ---- |

## SAR result with Body TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Body TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 2.16 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **8.43 W/kg ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Body TSL** | condition | |
|---|---|---|
| SAR measured | 250 mW input power | 1.41 W/kg |
| SAR for nominal Body TSL parameters | normalized to 1W | **5.53 W/kg ± 16.5 % (k=2)** |

## Appendix (Additional assessments outside the scope of SCS 0108)

### Antenna Parameters with Head TSL

| | |
|---|---|
| Impedance, transformed to feed point | 55.6 Ω - 0.9 jΩ |
| Return Loss | - 25.4 dB |

### Antenna Parameters with Body TSL

| | |
|---|---|
| Impedance, transformed to feed point | 50.2 Ω - 4.0 jΩ |
| Return Loss | - 28.0 dB |

### General Antenna Parameters and Design

| | |
|---|---|
| Electrical Delay (one direction) | 1.033 ns |

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

| | |
|---|---|
| Manufactured by | SPEAG |
| Manufactured on | November 19, 2015 |

## DASY5 Validation Report for Head TSL

Date: 13.07.2016

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1161**

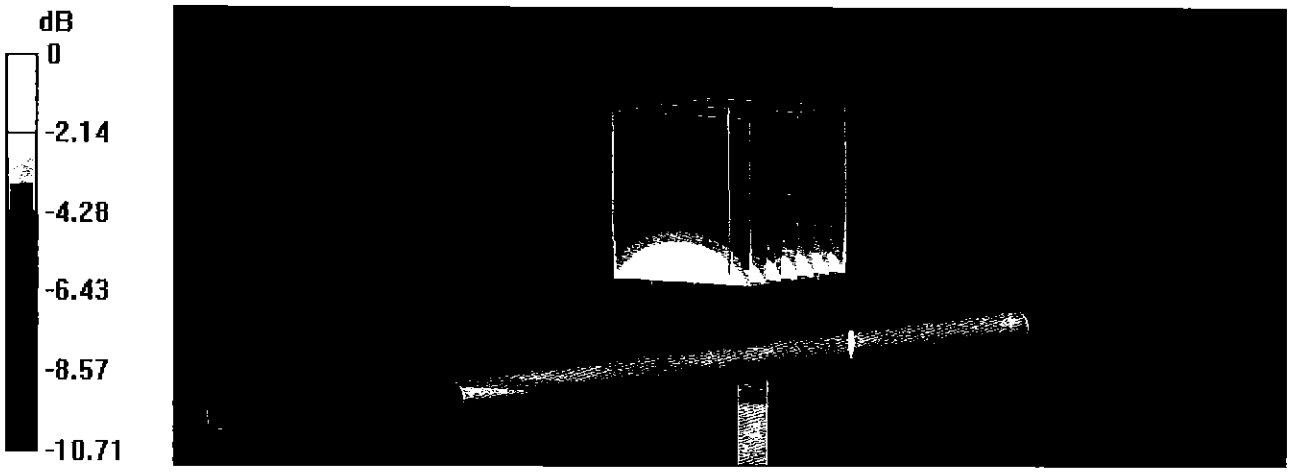
Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; $\sigma$ = 0.91 S/m; $\varepsilon_r$ = 40.9; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.07, 10.07, 10.07); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

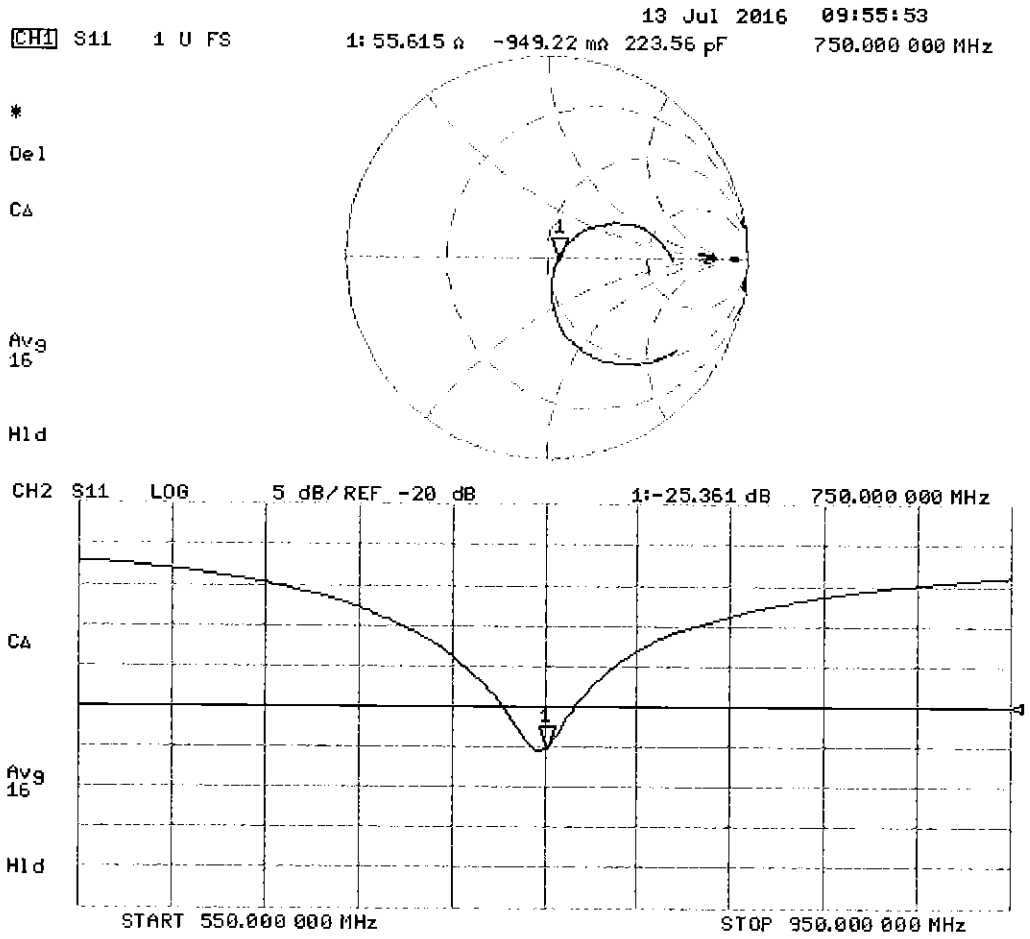
### Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 58.07 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 3.13 W/kg
**SAR(1 g) = 2.09 W/kg; SAR(10 g) = 1.37 W/kg**
Maximum value of SAR (measured) = 2.80 W/kg




0 dB = 2.80 W/kg = 4.47 dBW/kg

## Impedance Measurement Plot for Head TSL



## DASY5 Validation Report for Body TSL

Date: 13.07.2016

Test Laboratory: SPEAG, Zurich, Switzerland

**DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1161**

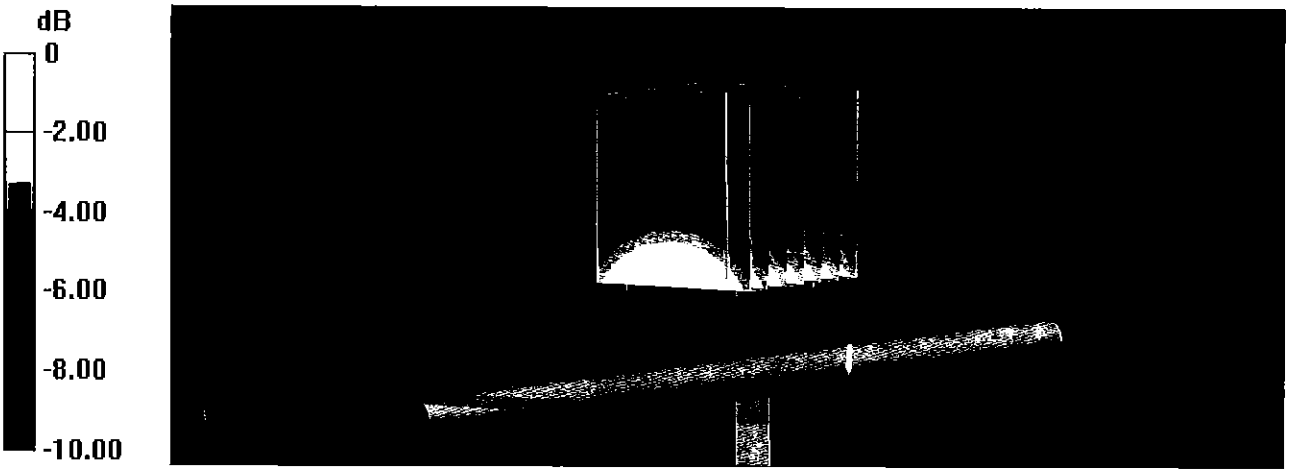
Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; $\sigma$ = 0.99 S/m; $\varepsilon_r$ = 55.1; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(9.99, 9.99, 9.99); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

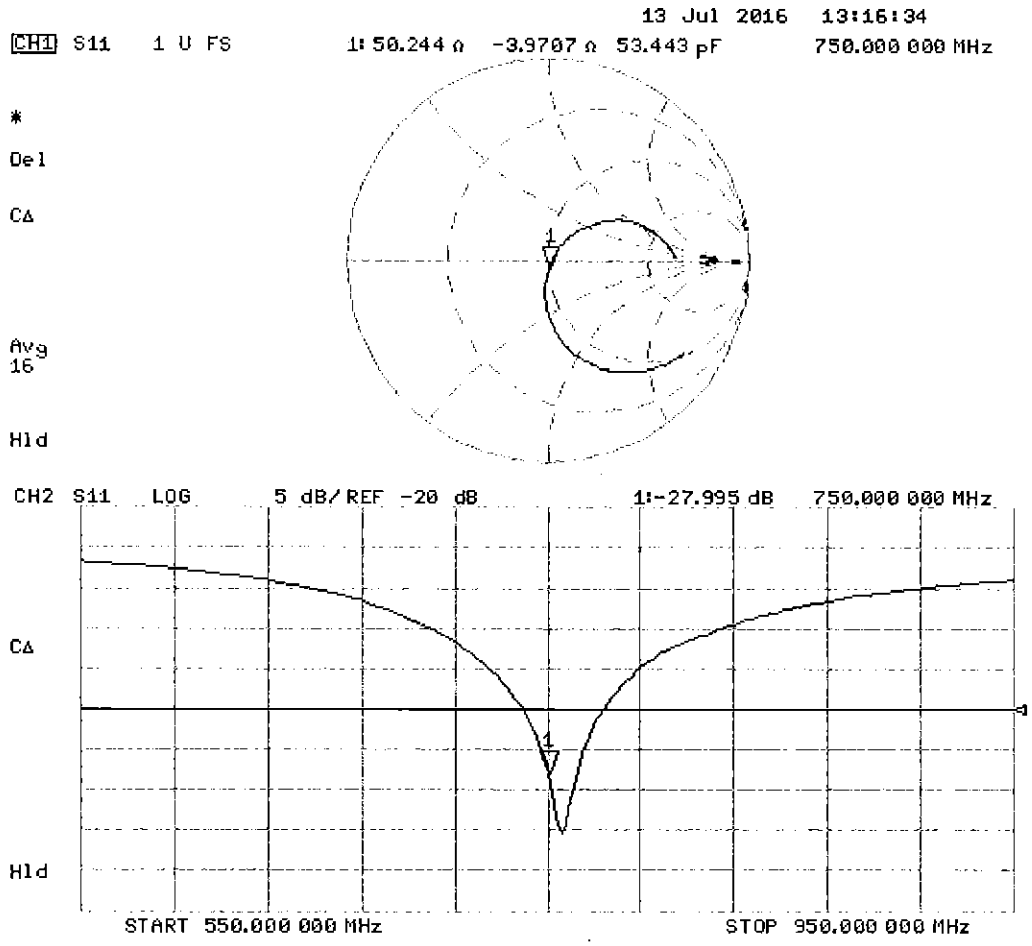
### Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.33 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 3.22 W/kg
**SAR(1 g) = 2.16 W/kg; SAR(10 g) = 1.41 W/kg**
Maximum value of SAR (measured) = 2.87 W/kg




0 dB = 2.87 W/kg = 4.58 dBW/kg

## Impedance Measurement Plot for Body TSL



# Certification of Calibration

Object D750V3 – SN: 1161

Calibration procedure(s) Procedure for Calibration Extension for SAR Dipoles.

Calibration date: July 12, 2017

Description: SAR Validation Dipole at 750 MHz.

Calibration Equipment used:

| Manufacturer | Model | Description | Cal Date | Cal Interval | Cal Due | Serial Number |
|---|---|---|---|---|---|---|
| Control Company | 4040 | Therm./Clock/Humidity Monitor | 3/31/2017 | Biennial | 3/31/2019 | 170232394 |
| Control Company | 4352 | Ultra Long Stem Thermometer | 5/2/2017 | Biennial | 5/2/2019 | 170330156 |
| Amplifier Research | 15S1G6 | Amplifier | CBT | N/A | CBT | 433971 |
| Narda | 4772-3 | Attenuator (3dB) | CBT | N/A | CBT | 9406 |
| Keysight Technologies | 85033E | Standard Mechanical Calibration Kit (DC to 9GHz, 3.5mm) | 6/1/2017 | Annual | 6/1/2018 | MY53401181 |
| Agilent | 8753ES | S-Parameter Network Analyzer | 10/26/2016 | Annual | 10/26/2017 | US39170118 |
| Mini-Circuits | BW-N20W5+ | DC to 18 GHz Precision Fixed 20 dB Attenuator | CBT | N/A | CBT | N/A |
| SPEAG | DAE4 | Dasy Data Acquisition Electronics | 3/8/2017 | Annual | 3/8/2018 | 1368 |
| SPEAG | DAE4 | Dasy Data Acquisition Electronics | 6/14/2017 | Annual | 6/14/2018 | 1334 |
| SPEAG | DAK-3.5 | Dielectric Assessment Kit | 5/10/2017 | Annual | 5/10/2018 | 1070 |
| SPEAG | ES3DV3 | SAR Probe | 11/15/2016 | Annual | 11/15/2017 | 3334 |
| SPEAG | ES3DV3 | SAR Probe | 3/14/2017 | Annual | 3/14/2018 | 3319 |
| Anritsu | MA2411B | Pulse Power Sensor | 2/10/2017 | Annual | 2/10/2018 | 1207364 |
| Anritsu | MA2411B | Pulse Power Sensor | 2/10/2017 | Annual | 2/10/2018 | 1339018 |
| Anritsu | ML2495A | Power Meter | 10/16/2015 | Biennial | 10/16/2017 | 941001 |
| Agilent | N5182A | MXG Vector Signal Generator | 2/28/2017 | Annual | 2/28/2018 | MY47420800 |
| Seekonk | NC-100 | Torque Wrench | 11/6/2015 | Biennial | 11/6/2017 | N/A |
| Mini-Circuits | NLP-2950+ | Low Pass Filter DC to 2700 MHz | CBT | N/A | CBT | N/A |
| Pasternack | PE2208-6 | Bidirectional Coupler | CBT | N/A | CBT | N/A |

Measurement Uncertainty = ±23% (k=2)

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated By: | Brodie Halbfoster | Test Engineer | BRODIE HALBFOSTER |
| Approved By: | Kaitlin O'Keefe | Senior Technical Manager | KOK |

# DIPOLE CALIBRATION EXTENSION

Per KDB 865664 D01, calibration intervals of up to three years may be considered for reference dipoles when it is demonstrated that the SAR target, impedance and return loss of a dipole have remained stable according to the following requirements:

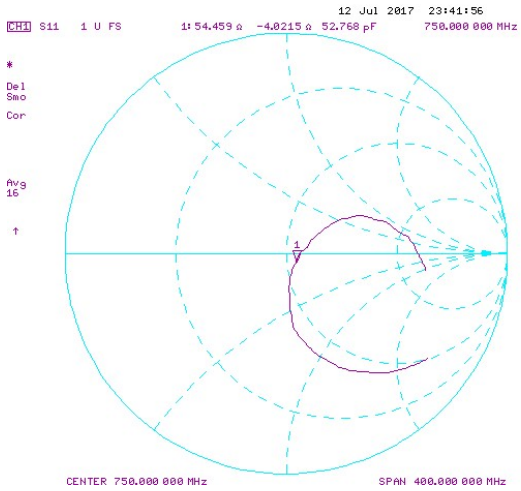
1. The measured SAR does not deviate more than 10% from the target on the calibration certificate.
2. The return-loss does not deviate more than 20% from the previous measurement and meets the required 20dB minimum return-loss requirement.
3. The measurement of real or imaginary parts of impedance does not deviate more than 5Ω from the previous measurement.

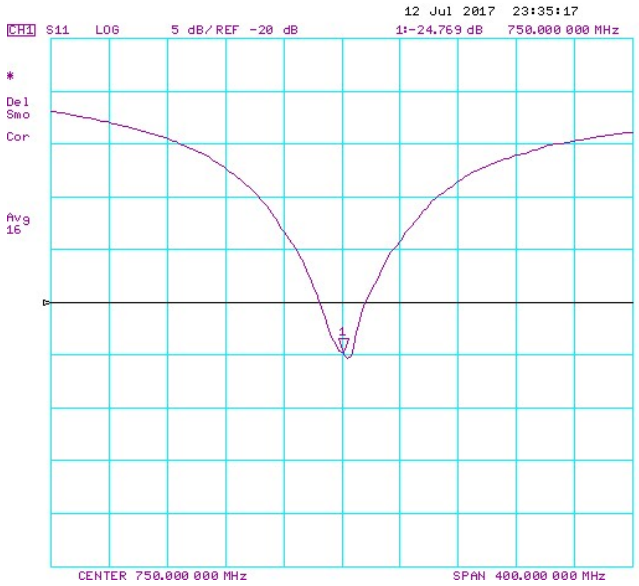
The following dipole was checked to pass the above 3 requirements to have 2-year calibration period from the calibration date:

| Calibration Date | Extension Date | Certificate Electrical Delay (ns) | Certificate SAR Target Head (1g) W/kg @ 23.0 dBm | Measured Head SAR (1g) W/kg @ 23.0 dBm | Deviation 1g (%) | Certificate SAR Target Head (10g) W/kg @ 23.0 dBm | Measured Head SAR (10g) W/kg @ 23.0 dBm | Deviation 10g (%) | Certificate Impedance Head (Ohm) Real | Measured Impedance Head (Ohm) Real | Difference (Ohm) Real | Certificate Impedance Head (Ohm) Imaginary | Measured Impedance Head (Ohm) Imaginary | Difference (Ohm) Imaginary | Certificate Return Loss Head (dB) | Measured Return Loss Head (dB) | Deviation (%) | PASS/FAIL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/13/2016 | 7/12/2017 | 1.033 | 1.63 | 1.65 | 0.98% | 1.08 | 1.09 | 1.11% | 55.6 | 54.5 | 1.1 | -0.9 | -4.0 | 3.1 | -25.4 | -24.8 | 2.40% | PASS |

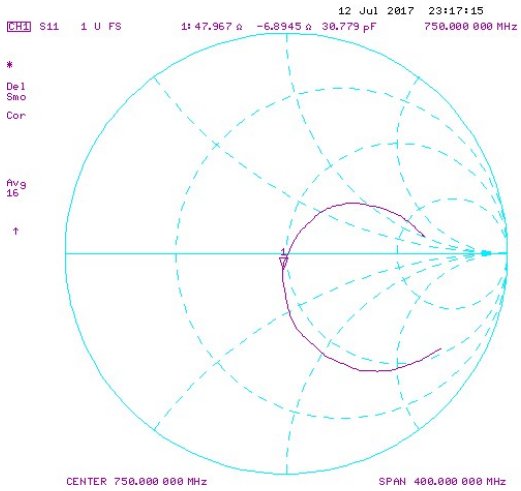
| Calibration Date | Extension Date | Certificate Electrical Delay (ns) | Certificate SAR Target Body (1g) W/kg @ 23.0 dBm | Measured Body SAR (1g) W/kg @ 23.0 dBm | Deviation 1g (%) | Certificate SAR Target Body (10g) W/kg @ 23.0 dBm | Measured Body SAR (10g) W/kg @ 23.0 dBm | Deviation 10g (%) | Certificate Impedance Body (Ohm) Real | Measured Impedance Body (Ohm) Real | Difference (Ohm) Real | Certificate Impedance Body (Ohm) Imaginary | Measured Impedance Body (Ohm) Imaginary | Difference (Ohm) Imaginary | Certificate Return Loss Body (dB) | Measured Return Loss Body (dB) | Deviation (%) | PASS/FAIL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/13/2016 | 7/12/2017 | 1.033 | 1.69 | 1.75 | 3.80% | 1.11 | 1.17 | 5.79% | 50.2 | 48.0 | 2.2 | -4.0 | -6.9 | 2.9 | -28.0 | -23.9 | 14.60% | PASS |

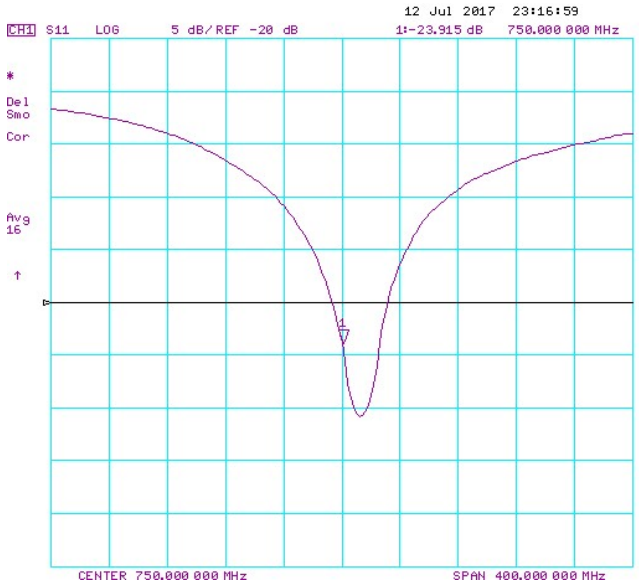
Impedance & Return-Loss Measurement Plot for Head TSL



Impedance & Return-Loss Measurement Plot for Body TSL



# Certification of Calibration

Object D750V3 – SN: 1161

Calibration procedure(s) Procedure for Calibration Extension for SAR Dipoles.

Extended Calibration date: 07/12/2018

Description: SAR Validation Dipole at 750 MHz.

Calibration Equipment used:

| Manufacturer | Model | Description | Cal Date | Cal Interval | Cal Due | Serial Number |
|---|---|---|---|---|---|---|
| Agilent | E4438C | ESG Vector Signal Generator | 3/24/2017 | Biennial | 3/24/2019 | MY42082385 |
| Agilent | 8753ES | S-Parameter Network Analyzer | 9/14/2017 | Annual | 9/14/2018 | US39170118 |
| Amplifier Research | 15S1G6 | Amplifier | CBT | N/A | CBT | 433971 |
| Anritsu | ML2495A | Power Meter | 11/28/2017 | Annual | 11/28/2018 | 1039008 |
| Anritsu | MA2411B | Pulse Power Sensor | 3/2/2018 | Annual | 3/2/2019 | 1207364 |
| Anritsu | MA2411B | Pulse Power Sensor | 11/15/2017 | Annual | 11/15/2018 | 1339007 |
| Control Company | 4040 | Therm./Clock/Humidity Monitor | 3/31/2017 | Biennial | 3/31/2019 | 170232394 |
| Control Company | 4352 | Ultra Long Stem Thermometer | 5/2/2017 | Biennial | 5/2/2019 | 170330156 |
| Keysight | 772D | Dual Directional Coupler | CBT | N/A | CBT | MY52180215 |
| Keysight Technologies | 85033E | Standard Mechanical Calibration Kit (DC to 9GHz, 3.5mm) | 6/4/2018 | Annual | 6/4/2019 | MY53401181 |
| Mini-Circuits | BW-N20W5+ | DC to 18 GHz Precision Fixed 20 dB Attenuator | CBT | N/A | CBT | N/A |
| Mini-Circuits | NLP-2950+ | Low Pass Filter DC to 2700 MHz | CBT | N/A | CBT | N/A |
| Narda | 4772-3 | Attenuator (3dB) | CBT | N/A | CBT | 9406 |
| Pasternack | PE2208-6 | Bidirectional Coupler | CBT | N/A | CBT | N/A |
| Pasternack | PE5011-1 | Torque Wrench | 7/19/2017 | Biennial | 7/19/2019 | N/A |
| SPEAG | DAE4 | Dasy Data Acquisition Electronics | 2/9/2018 | Annual | 2/9/2019 | 1272 |
| SPEAG | DAE4 | Dasy Data Acquisition Electronics | 6/18/2018 | Annual | 6/18/2019 | 1334 |
| SPEAG | DAK-3.5 | Dielectric Assessment Kit | 9/12/2017 | Annual | 9/12/2018 | 1091 |
| SPEAG | ES3DV3 | SAR Probe | 2/13/2018 | Annual | 2/13/2019 | 3213 |
| SPEAG | ES3DV3 | SAR Probe | 6/25/2018 | Annual | 6/25/2019 | 7409 |

Measurement Uncertainty = ±23% (k=2)

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated By: | Brodie Halbfoster | Test Engineer | BRODIE HALBFOSTER |
| Approved By: | Kaitlin O'Keefe | Senior Technical Manager | KOK |

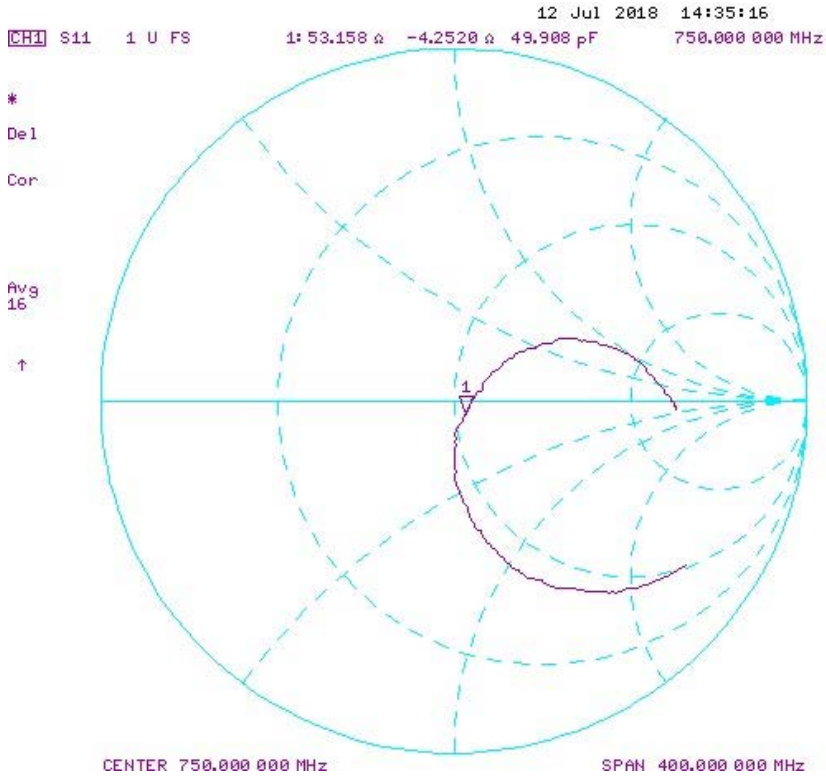
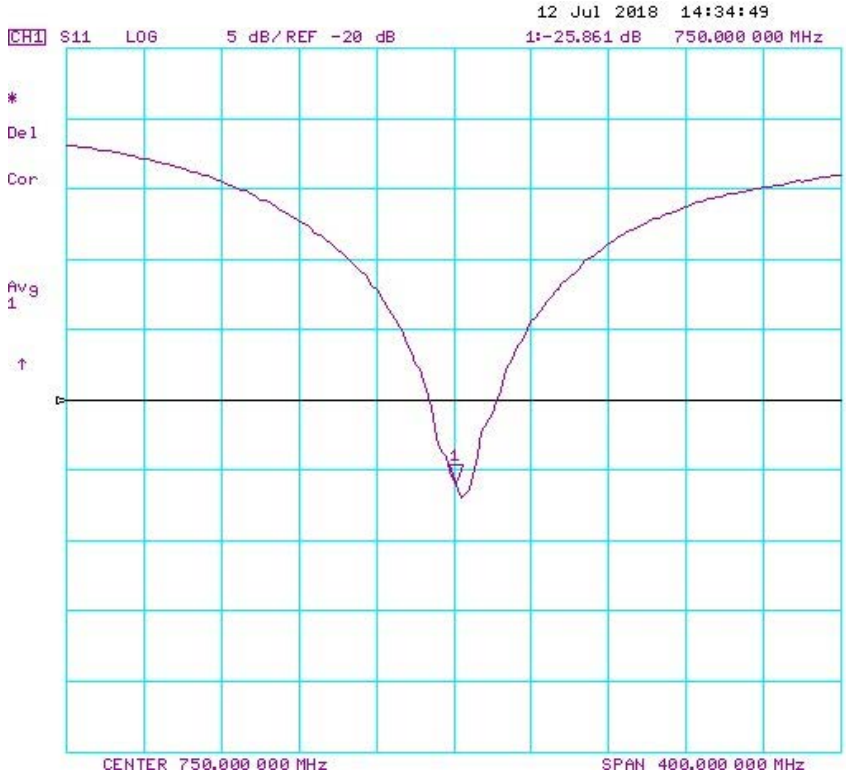
# DIPOLE CALIBRATION EXTENSION

Per KDB 865664 D01, calibration intervals of up to three years may be considered for reference dipoles when it is demonstrated that the SAR target, impedance and return loss of a dipole have remained stable according to the following requirements:

1. The measured SAR does not deviate more than 10% from the target on the calibration certificate.
2. The return-loss does not deviate more than 20% from the previous measurement and meets the required 20dB minimum return-loss requirement.
3. The measurement of real or imaginary parts of impedance does not deviate more than 5Ω from the previous measurement.

The following dipole was checked to pass the above 3 requirements to have 3-year calibration period from the calibration date:

| Calibration Date | Extension Date | Certificate Electrical Delay (ns) | Certificate SAR Target Head (1g) W/kg @ 23.0 dBm | Measured Head SAR (1g) W/kg @ 23.0 dBm | Deviation 1g (%) | Certificate SAR Target Head (10g) W/kg @ 23.0 dBm | Measured Head SAR (10g) W/kg @ 23.0 dBm | Deviation 10g (%) | Certificate Impedance Head (Ohm) Real | Measured Impedance Head (Ohm) Real | Difference (Ohm) Real | Certificate Impedance Head (Ohm) Imaginary | Measured Impedance Head (Ohm) Imaginary | Difference (Ohm) Imaginary | Certificate Return Loss Head (dB) | Measured Return Loss Head (dB) | Deviation (%) | PASS/FAIL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/13/2016 | 7/12/2018 | 1.033 | 1.63 | 1.58 | -3.30% | 1.08 | 1.03 | -4.45% | 55.6 | 53.2 | 2.4 | -0.9 | -4.3 | 3.4 | -25.4 | -25.9 | -2.00% | PASS |

| Calibration Date | Extension Date | Certificate Electrical Delay (ns) | Certificate SAR Target Body (1g) W/kg @ 23.0 dBm | Measured Body SAR (1g) W/kg @ 23.0 dBm | Deviation 1g (%) | Certificate SAR Target Body (10g) W/kg @ 23.0 dBm | Measured Body SAR (10g) W/kg @ 23.0 dBm | Deviation 10g (%) | Certificate Impedance Body (Ohm) Real | Measured Impedance Body (Ohm) Real | Difference (Ohm) Real | Certificate Impedance Body (Ohm) Imaginary | Measured Impedance Body (Ohm) Imaginary | Difference (Ohm) Imaginary | Certificate Return Loss Body (dB) | Measured Return Loss Body (dB) | Deviation (%) | PASS/FAIL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7/13/2016 | 7/12/2018 | 1.033 | 1.69 | 1.74 | 3.20% | 1.11 | 1.15 | 3.98% | 50.2 | 49.0 | 1.2 | -4.0 | -5.9 | 1.9 | -28.0 | -24.4 | 12.90% | PASS |

Impedance & Return-Loss Measurement Plot for Head TSL