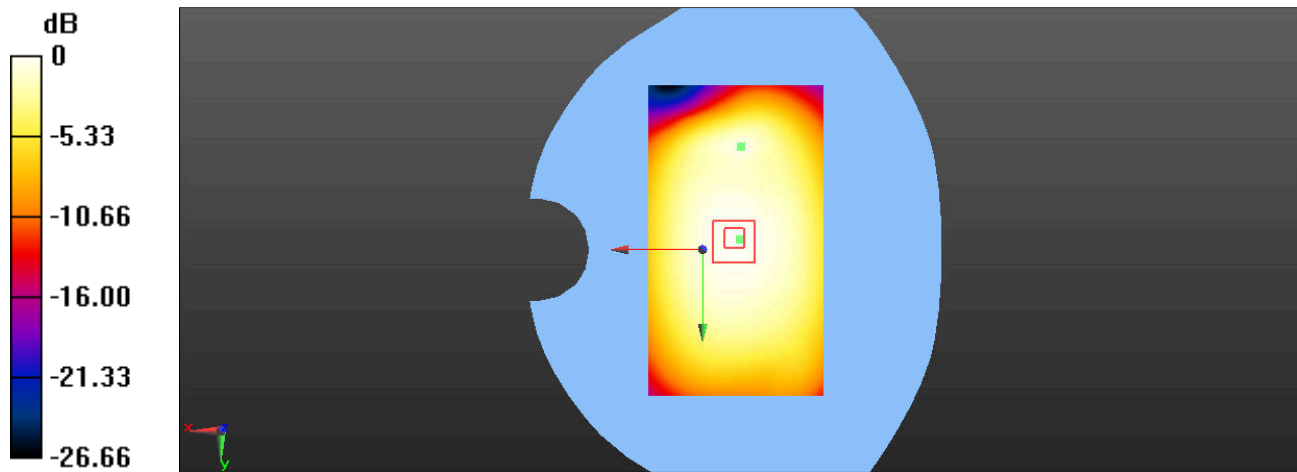
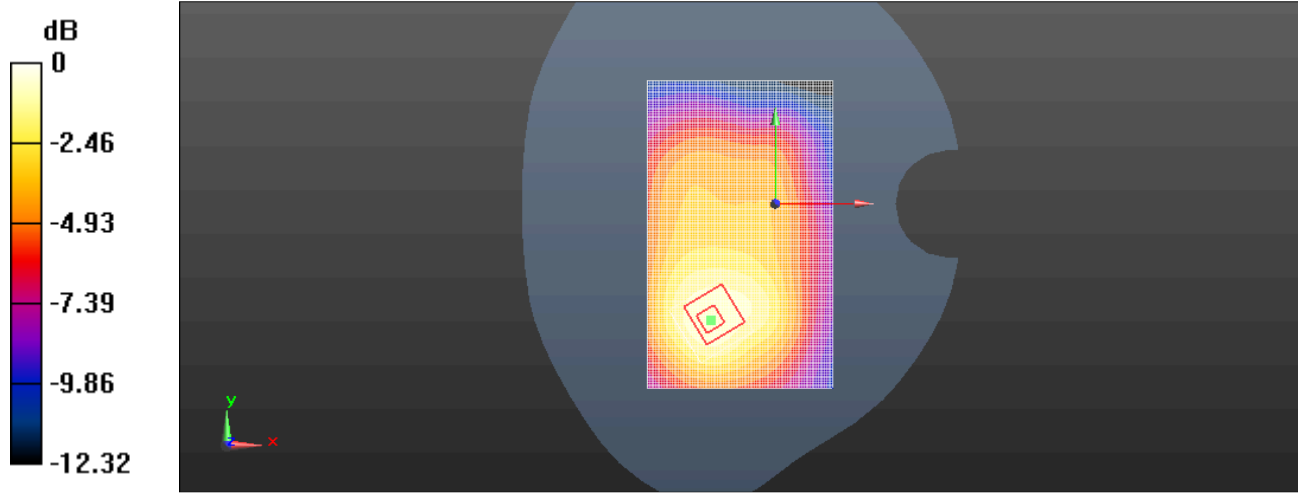
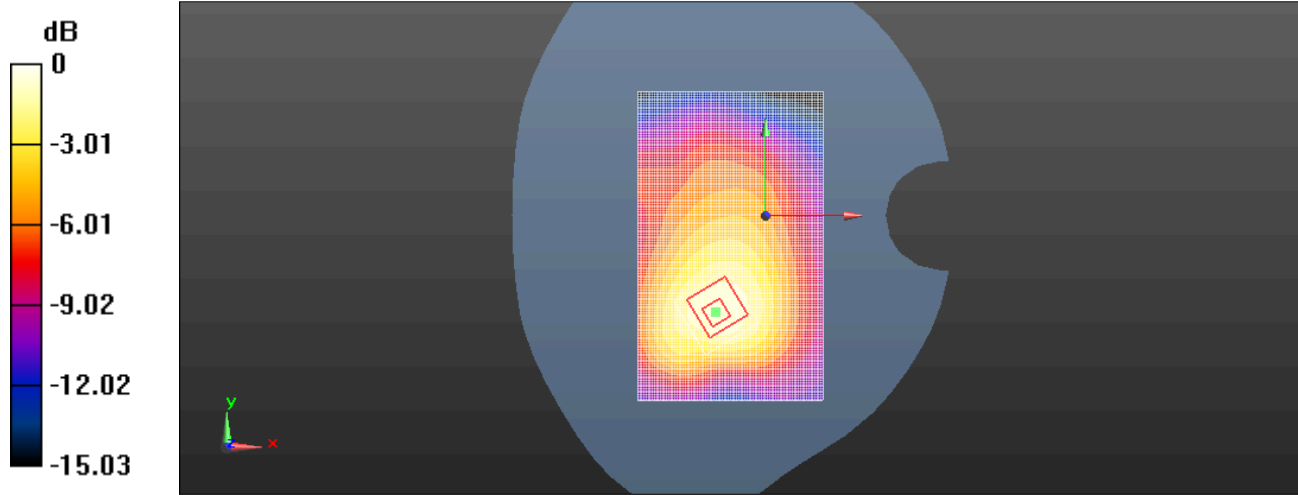
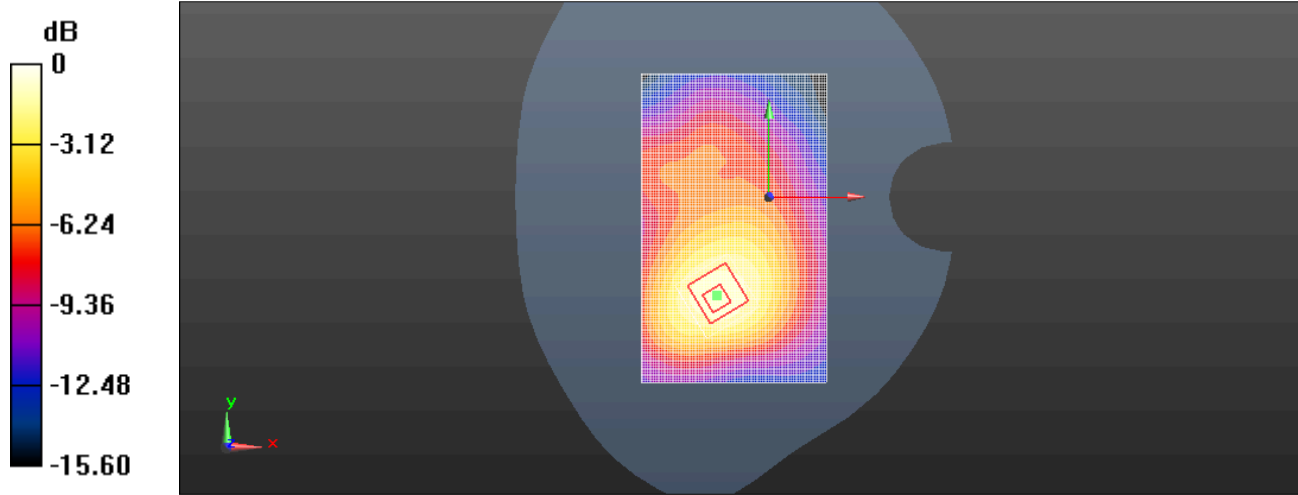


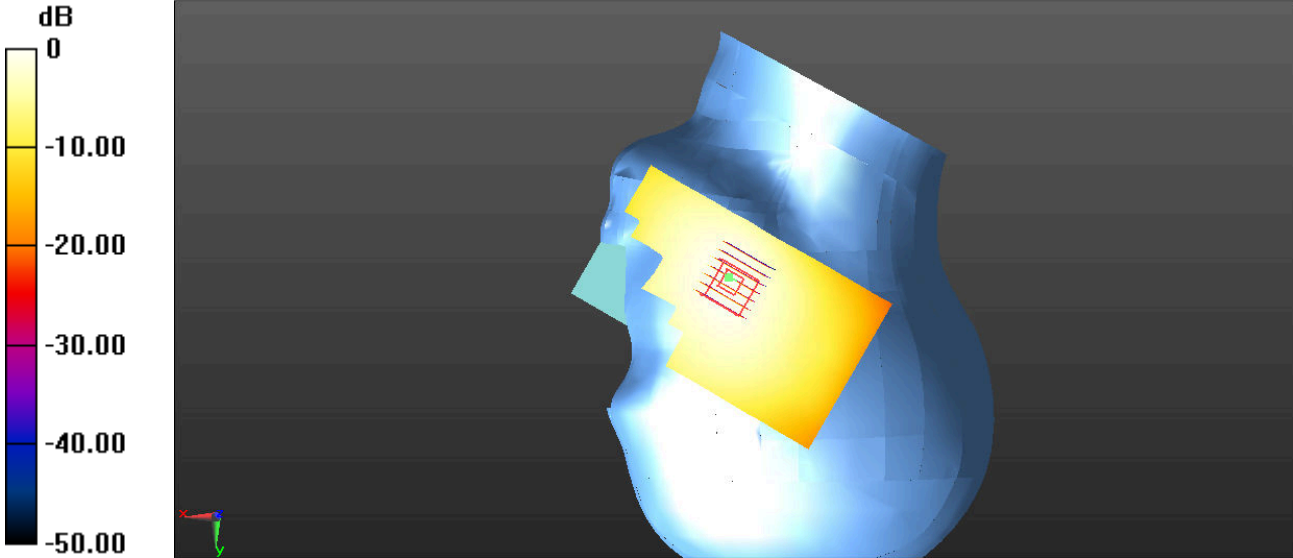
| FLAT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Towards ground |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_10M_1RB_low) (0); Communication System Band: BAND 5; Frequency: 836.5 MHz; Communication System PAR: 0 dB<br/>Medium parameters used (interpolated): <math>f = 836.5</math> MHz; <math>\sigma = 0.95</math> S/m; <math>\epsilon_r = 54.245</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/>Phantom section: Flat Section<br/>Measurement Standard: DASY5 (IEEE1528-2013)<br/>DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: ES3DV3 - SN3297; ConvF(6.08, 6.08, 6.08); Calibrated: 14/10/2016;</li> <li>Sensor-Surface: 3mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1226; Calibrated: 28/09/2016</li> <li>Phantom: SAM1; Type: SAM; Serial: TP1576</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>body/towards ground/Area Scan (91x161x1):</b> Interpolated grid: dx=1.000 mm, dy=1.000 mm<br/>Maximum value of SAR (interpolated) = 0.427 W/kg<br/><b>body/towards ground/Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: dx=5mm, dy=5mm, dz=5mm<br/>Reference Value = 21.49 V/m; Power Drift = -0.06 dB<br/>Peak SAR (extrapolated) = 0.494 W/kg<br/><b>SAR(1 g) = 0.386 W/kg; SAR(10 g) = 0.294 W/kg</b><br/>Maximum value of SAR (measured) = 0.427 W/kg</p> |                |
|  <p>0 dB = 0.427 W/kg = -3.70 dBW/kg</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                |

| FLAT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | EDGE2 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_10M_1RB_low) (0); Communication System Band: BAND 5; Frequency: 836.5 MHz; Communication System PAR: 0 dB<br/>Medium parameters used (interpolated): <math>f = 836.5</math> MHz; <math>\sigma = 0.95</math> S/m; <math>\epsilon_r = 54.245</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/>Phantom section: Flat Section<br/>Measurement Standard: DASYS (IEEE1528-2013)<br/>DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: ES3DV3 - SN3297; ConvF(6.08, 6.08, 6.08); Calibrated: 14/10/2016;</li> <li>Sensor-Surface: 3mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1226; Calibrated: 28/09/2016</li> <li>Phantom: SAM1; Type: SAM; Serial: TP1576</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>body/edge 2 mid/Area Scan (61x101x1):</b> Interpolated grid: dx=1.000 mm, dy=1.000 mm<br/>Maximum value of SAR (interpolated) = 0.0759 W/kg<br/><b>body/edge 2 mid/ Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: dx=5mm, dy=5mm, dz=5mm<br/>Reference Value = 7.374 V/m; Power Drift = 0.18 dB<br/>Peak SAR (extrapolated) = 0.126 W/kg<br/><b>SAR(1 g) = 0.0639 W/kg; SAR(10 g) = 0.0397 W/kg</b></p> <p>Maximum value of SAR (measured) = 0.0742 W/kg</p> |       |
|  <p>0 dB = 0.0759 W/kg = -11.20 dBW/kg</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |       |

| FLAT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | EDGE3 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_10M_1RB_low) (0); Communication System Band: BAND 5; Frequency: 836.5 MHz; Communication System PAR: 0 dB<br/>Medium parameters used (interpolated): <math>f = 836.5</math> MHz; <math>\sigma = 0.95</math> S/m; <math>\epsilon_r = 54.245</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/>Phantom section: Flat Section<br/>Measurement Standard: DASY5 (IEEE1528-2013)<br/>DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: ES3DV3 - SN3297; ConvF(6.08, 6.08, 6.08); Calibrated: 14/10/2016;</li> <li>Sensor-Surface: 3mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1226; Calibrated: 28/09/2016</li> <li>Phantom: SAM1; Type: SAM; Serial: TP1576</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>body2/edge3 mid/Area Scan (61x161x1):</b> Interpolated grid: dx=1.000 mm, dy=1.000 mm.<br/>Maximum value of SAR (interpolated) = 0.167 W/kg<br/><b>body2/edge3 mid/ Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: dx=5mm, dy=5mm, dz=5mm<br/>Reference Value = 13.52 V/m; Power Drift = 0.20 dB<br/>Peak SAR (extrapolated) = 0.213 W/kg<br/><b>SAR(1 g) = 0.146 W/kg; SAR(10 g) = 0.0989 W/kg</b></p> <p>Maximum value of SAR (measured) = 0.165 W/kg</p> |       |
|  <p>0 dB = 0.167 W/kg = -7.77 dBW/kg</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |       |

| FLAT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | EDGE4 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_10M_1RB_low) (0); Communication System Band: BAND 5; Frequency: 836.5 MHz;Communication System PAR: 0 dB<br/>Medium parameters used (interpolated): <math>f = 836.5</math> MHz; <math>\sigma = 0.95</math> S/m; <math>\epsilon_r = 54.245</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/>Phantom section: Flat Section<br/>Measurement Standard: DASYS (IEEE1528-2013)<br/>DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: ES3DV3 - SN3297; ConvF(6.08, 6.08, 6.08); Calibrated: 14/10/2016;</li> <li>Sensor-Surface: 3mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1226; Calibrated: 28/09/2016</li> <li>Phantom: SAM1; Type: SAM; Serial: TP1576</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>body2/edge4 mid/Area Scan (61x161x1):</b> Interpolated grid: dx=1.000 mm, dy=1.000 mm<br/>Maximum value of SAR (interpolated) = 0.263 W/kg<br/><b>body2/edge4 mid/ Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: dx=5mm, dy=5mm, dz=5mm<br/>Reference Value = 17.01 V/m; Power Drift = 0.10 dB<br/>Peak SAR (extrapolated) = 0.465 W/kg<br/><b>SAR(1 g) = 0.229 W/kg; SAR(10 g) = 0.155 W/kg</b><br/>Maximum value of SAR (measured) = 0.261 W/kg</p> |       |
|  <p>0 dB = 0.263 W/kg = -5.80 dBW/kg</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |

# LTE (Band 5 10BW-50%RB-Low /Head)

| Left Side                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Cheek |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_10M_25RB) (0); Communication System Band: BAND 5; Frequency: 836.5 MHz;Communication System PAR: 0 dB<br/> Medium parameters used : <math>f = 836.5 \text{ MHz}</math>; <math>\sigma = 0.883 \text{ S/m}</math>; <math>\epsilon_r = 41.293</math>; <math>\rho = 1000 \text{ kg/m}^3</math><br/> Phantom section: Left Section<br/> Measurement Standard: DASY5 (IEEE1528-2013)<br/> DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: ES3DV3 - SN3297; ConvF(6.18, 6.18, 6.18); Calibrated: 14/10/2016;</li> <li>Sensor-Surface: 3mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1226; Calibrated: 28/09/2016</li> <li>Phantom: SAM1; Type: SAM; Serial: TP1576</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> <li><b>left/touch mid 50%RB/Area Scan (91x161x1):</b> Interpolated grid: <math>dx=1.000 \text{ mm}</math>, <math>dy=1.000 \text{ mm}</math><br/> Maximum value of SAR = 0.165 W/kg<br/> <b>left/touch mid 50%RB/Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5\text{mm}</math>, <math>dy=5\text{mm}</math>, <math>dz=5\text{mm}</math><br/> Reference Value = 4.952 V/m; Power Drift = -0.16 dB<br/> Peak SAR (extrapolated) = 0.197 W/kg<br/> <b>SAR(1 g) = 0.151 W/kg; SAR(10 g) = 0.114 W/kg</b><br/> Maximum value of SAR (measured) = 0.168 W/kg</li> </ul> |       |
|  <p>0 dB = 0.165 W/kg = -7.83 dBW/kg</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |       |

| Left Side | Tilt |
|-----------|------|
|-----------|------|

Communication System: UID 0, FDD-LTE(QPSK\_10M\_25RB) (0); Communication System Band: BAND 5; Frequency: 836.5 MHz; Communication System PAR: 0 dB

Medium parameters used :  $f = 836.5$  MHz;  $\sigma = 0.883$  S/m;  $\epsilon_r = 41.293$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

Measurement Standard: DASY5 (IEEE1528-2013)

DASY5 Configuration:

- Probe: ES3DV3 - SN3297; ConvF(6.18, 6.18, 6.18); Calibrated: 14/10/2016;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1226; Calibrated: 28/09/2016
- Phantom: SAM1; Type: SAM; Serial: TP1576
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)
- **left/tilt mid 50%RB/Area Scan (91x161x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR = 0.0705 W/kg

**left/tilt mid 50%RB/ Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.947 V/m; Power Drift = 0.10 dB

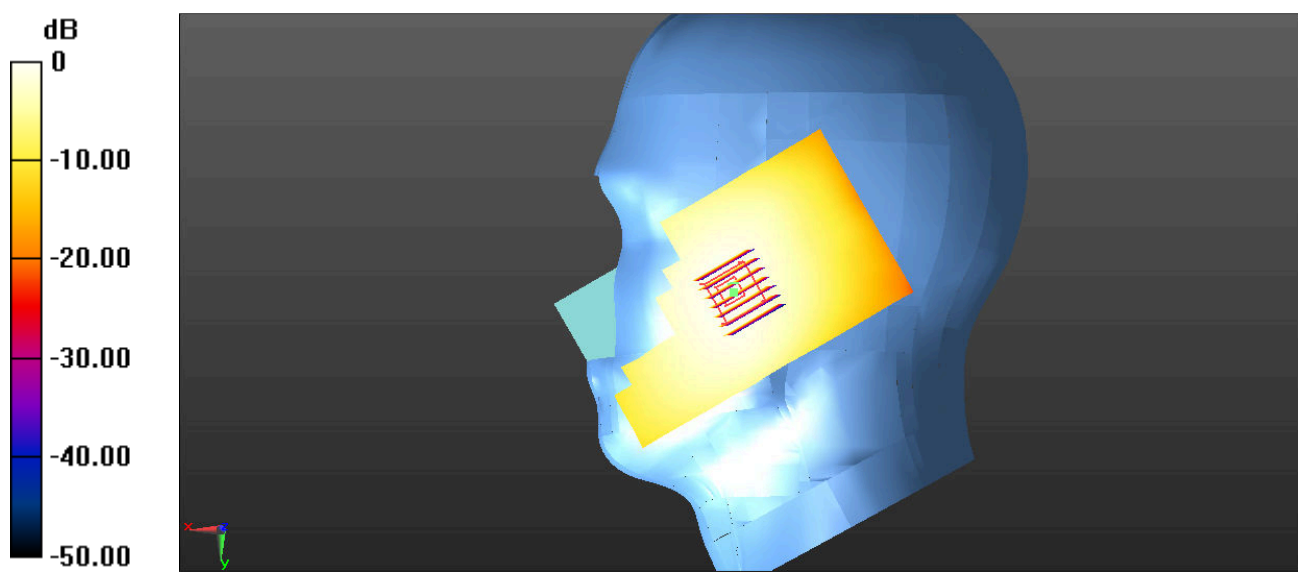
Peak SAR (extrapolated) = 0.101 W/kg

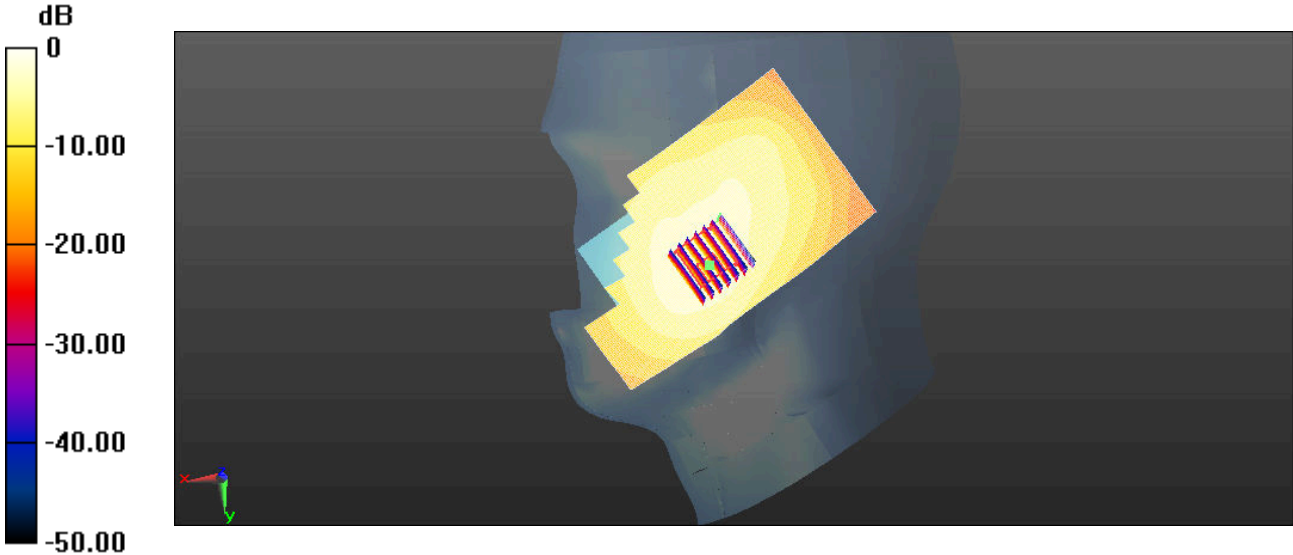
**SAR(1 g) = 0.0615 W/kg; SAR(10 g) = 0.0431 W/kg**

Maximum value of SAR (measured) = 0.0699 W/kg

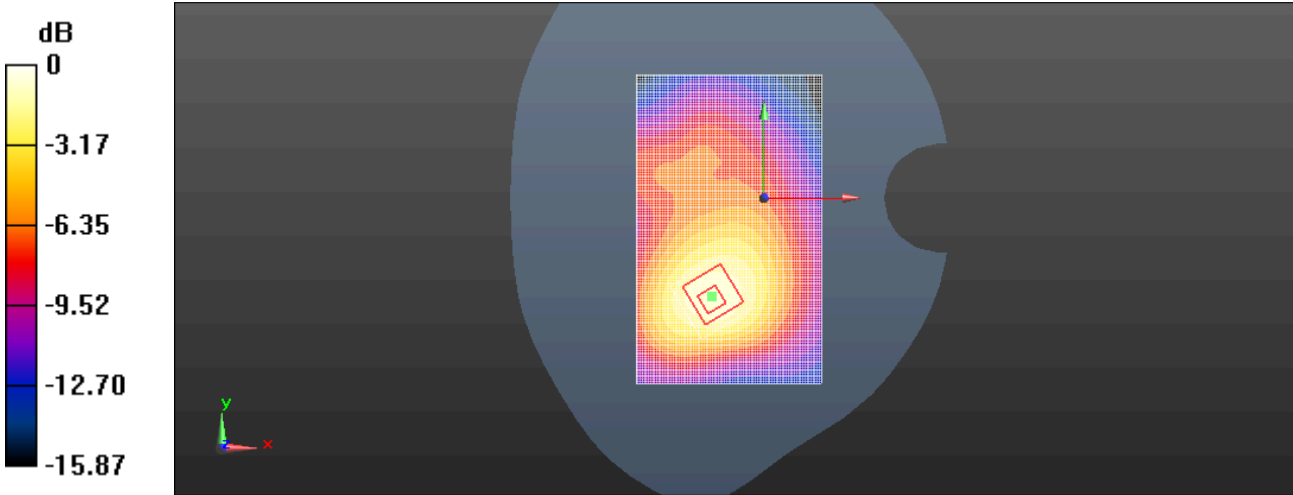


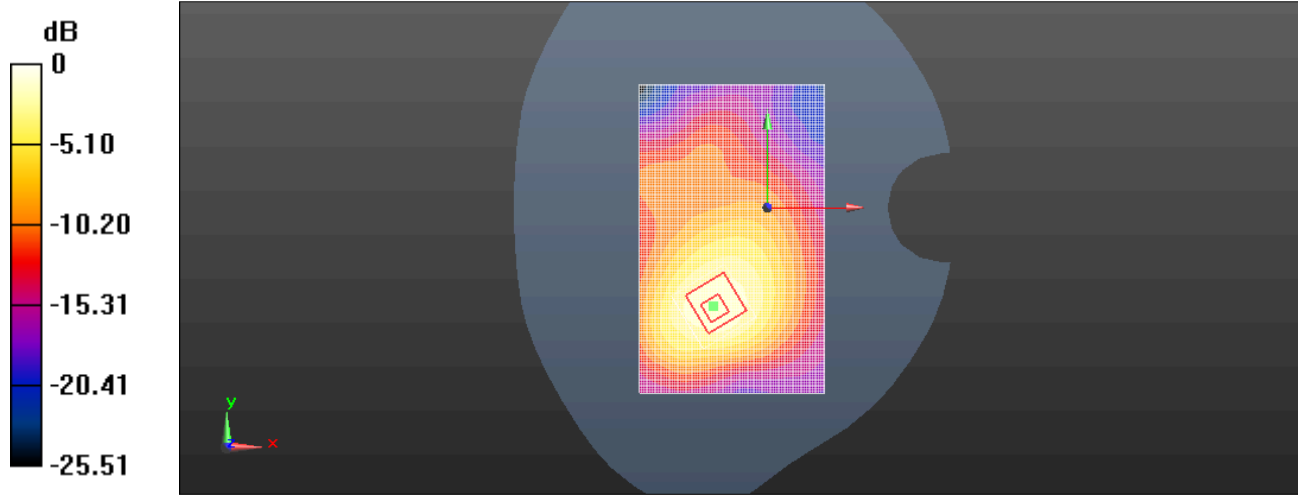
0 dB = 0.0705 W/kg = -11.52 dBW/kg

| Right Side                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Cheek |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_10M_25RB) (0); Communication System Band: BAND 5; Frequency: 836.5 MHz;Communication System PAR: 0 dB<br/>Medium parameters used : <math>f = 836.5 \text{ MHz}</math>; <math>\sigma = 0.883 \text{ S/m}</math>; <math>\epsilon_r = 41.293</math>; <math>\rho = 1000 \text{ kg/m}^3</math><br/>Phantom section: Right Section<br/>Measurement Standard: DASY5 (IEEE1528-2013)<br/>DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: ES3DV3 - SN3297; ConvF(6.18, 6.18, 6.18); Calibrated: 14/10/2016;</li> <li>Sensor-Surface: 3mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1226; Calibrated: 28/09/2016</li> <li>Phantom: SAM1; Type: SAM; Serial: TP1576</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> <li><b>right/touch mid 50%RB/Area Scan (91x161x1):</b> Interpolated grid: <math>dx=1.000 \text{ mm}</math>, <math>dy=1.000 \text{ mm}</math><br/>Maximum value of SAR = <math>0.150 \text{ W/kg}</math><br/><b>right/touch mid 50%RB/Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5\text{mm}</math>, <math>dy=5\text{mm}</math>, <math>dz=5\text{mm}</math><br/>Reference Value = <math>4.696 \text{ V/m}</math>; Power Drift = <math>0.18 \text{ dB}</math><br/>Peak SAR (extrapolated) = <math>0.169 \text{ W/kg}</math><br/><b>SAR(1 g) = <math>0.136 \text{ W/kg}</math>; SAR(10 g) = <math>0.105 \text{ W/kg}</math></b><br/>Maximum value of SAR (measured) = <math>0.149 \text{ W/kg}</math></li> </ul> |       |
|  <p>0 dB = <math>0.150 \text{ W/kg} = -8.24 \text{ dBW/kg}</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |       |

| Right Side                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Tilt |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_10M_25RB) (0); Communication System Band: BAND 5; Frequency: 836.5 MHz;Communication System PAR: 0 dB<br/>Medium parameters used : <math>f = 836.5 \text{ MHz}</math>; <math>\sigma = 0.883 \text{ S/m}</math>; <math>\epsilon_r = 41.293</math>; <math>\rho = 1000 \text{ kg/m}^3</math><br/>Phantom section: Right Section<br/>Measurement Standard: DASY5 (IEEE1528-2013)<br/>DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: ES3DV3 - SN3297; ConvF(6.18, 6.18, 6.18); Calibrated: 14/10/2016;</li> <li>Sensor-Surface: 3mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1226; Calibrated: 28/09/2016</li> <li>Phantom: SAM1; Type: SAM; Serial: TP1576</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>right/tilt mid 50%RB/Area Scan (91x161x1):</b> Interpolated grid: <math>dx=1.000 \text{ mm}</math>, <math>dy=1.000 \text{ mm}</math><br/>Maximum value of SAR = <math>0.0823 \text{ W/kg}</math><br/><b>right/tilt mid 50%RB/ Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5\text{mm}</math>, <math>dy=5\text{mm}</math>, <math>dz=5\text{mm}</math><br/>Reference Value = <math>7.355 \text{ V/m}</math>; Power Drift = <math>0.06 \text{ dB}</math><br/>Peak SAR (extrapolated) = <math>0.104 \text{ W/kg}</math><br/><b>SAR(1 g) = <math>0.0721 \text{ W/kg}</math>; SAR(10 g) = <math>0.0501 \text{ W/kg}</math></b></p> <p>Maximum value of SAR (measured) = <math>0.0819 \text{ W/kg}</math></p> <div>  <p>0 dB = <math>0.0823 \text{ W/kg} = -10.85 \text{ dBW/kg}</math></p> </div> |      |

# LTE (Band 5 10BW-50%RB-Low/Flat)

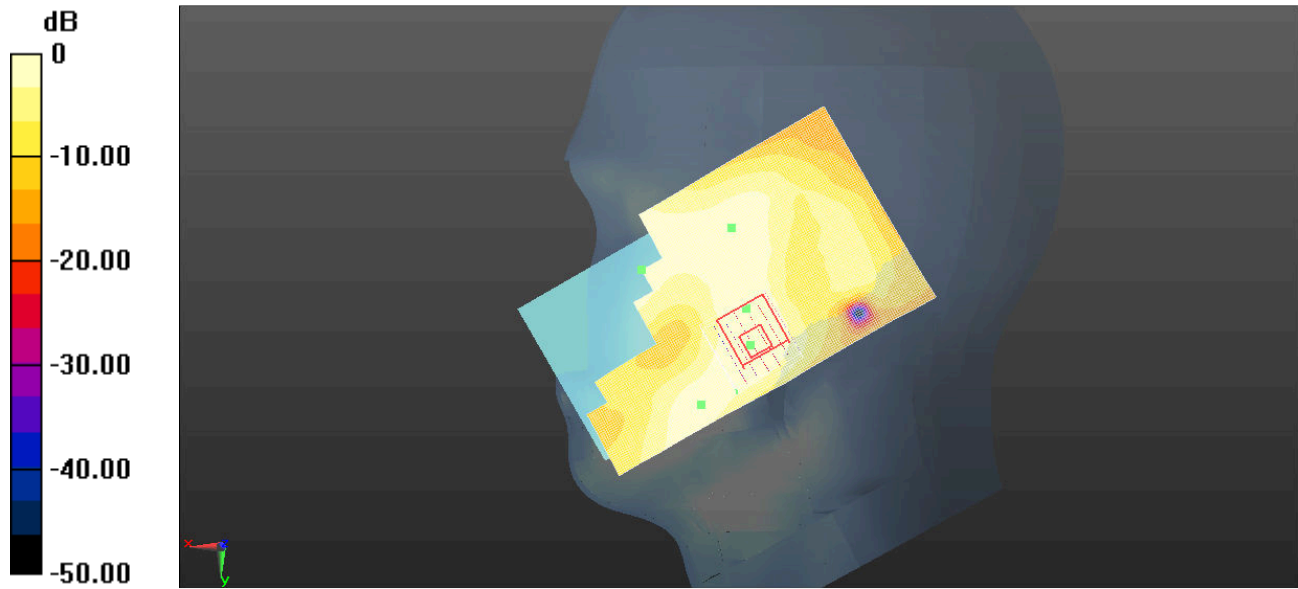
| FLAT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Towards phantom |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_10M_25RB) (0); Communication System Band: BAND 5; Frequency: 836.5 MHz;Communication System PAR: 0 dB<br/>Medium parameters used (interpolated): <math>f = 836.5</math> MHz; <math>\sigma = 0.95</math> S/m; <math>\epsilon_r = 54.245</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/>Phantom section: Flat Section<br/>Measurement Standard: DASY5 (IEEE1528-2013)<br/>DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: ES3DV3 - SN3297; ConvF(6.08, 6.08, 6.08); Calibrated: 14/10/2016;</li> <li>Sensor-Surface: 3mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1226; Calibrated: 28/09/2016</li> <li>Phantom: SAM1; Type: SAM; Serial: TP1576</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>body/towards phantom 50%RB/Area Scan (91x161x1):</b> Interpolated grid:<br/>dx=1.000 mm, dy=1.000 mm<br/>Maximum value of SAR (interpolated) = 0.166 W/kg<br/><b>body/towards phantom 50%RB/ Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid:<br/>dx=5mm, dy=5mm, dz=5mm<br/>Reference Value = 13.77 V/m; Power Drift = -0.10 dB<br/>Peak SAR (extrapolated) = 0.297 W/kg<br/><b>SAR(1 g) = 0.147 W/kg; SAR(10 g) = 0.105 W/kg</b></p> <p>Maximum value of SAR (measured) = 0.165 W/kg</p> |                 |
|  <p>0 dB = 0.166 W/kg = -7.80 dBW/kg</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                 |

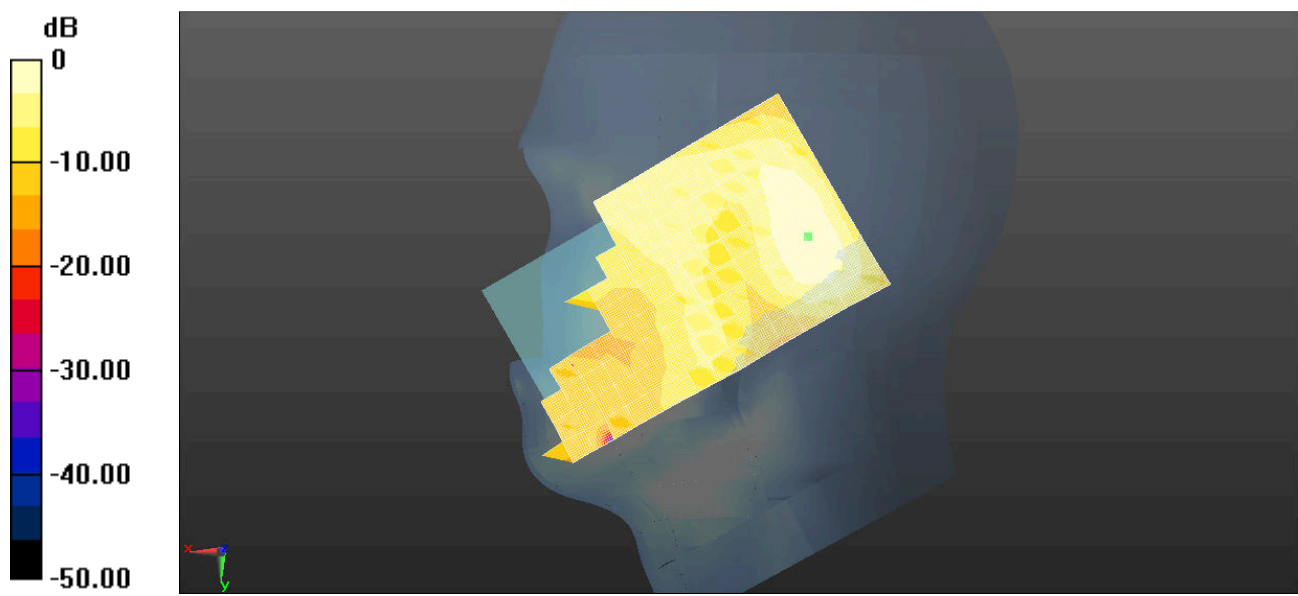
| FLAT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Towards ground |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_10M_25RB) (0); Communication System Band: BAND 5; Frequency: 836.5 MHz;Communication System PAR: 0 dB<br/> Medium parameters used (interpolated): <math>f = 836.5</math> MHz; <math>\sigma = 0.95</math> S/m; <math>\epsilon_r = 54.245</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/> Phantom section: Flat Section<br/> Measurement Standard: DASY5 (IEEE1528-2013)<br/> DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: ES3DV3 - SN3297; ConvF(6.08, 6.08, 6.08); Calibrated: 14/10/2016;</li> <li>Sensor-Surface: 3mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1226; Calibrated: 28/09/2016</li> <li>Phantom: SAM1; Type: SAM; Serial: TP1576</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>body/towards ground 50%RB/Area Scan (91x161x1):</b> Interpolated grid: dx=1.000 mm, dy=1.000 mm<br/> Maximum value of SAR (interpolated) = 0.339 W/kg<br/> <b>body/towards ground 50%RB/ Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: dx=5mm, dy=5mm, dz=5mm<br/> Reference Value = 19.46 V/m; Power Drift = -0.11 dB<br/> Peak SAR (extrapolated) = 0.465 W/kg<br/> <b>SAR(1 g) = 0.299W/kg; SAR(10 g) = 0.212 W/kg.</b><br/> Maximum value of SAR (measured) = 0.337 W/kg</p> |                |
|  <p>0 dB = 0.339 W/kg = -4.70 dBW/kg</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |

**LTE (Band 7 20BW-1RB-Low /Head)**

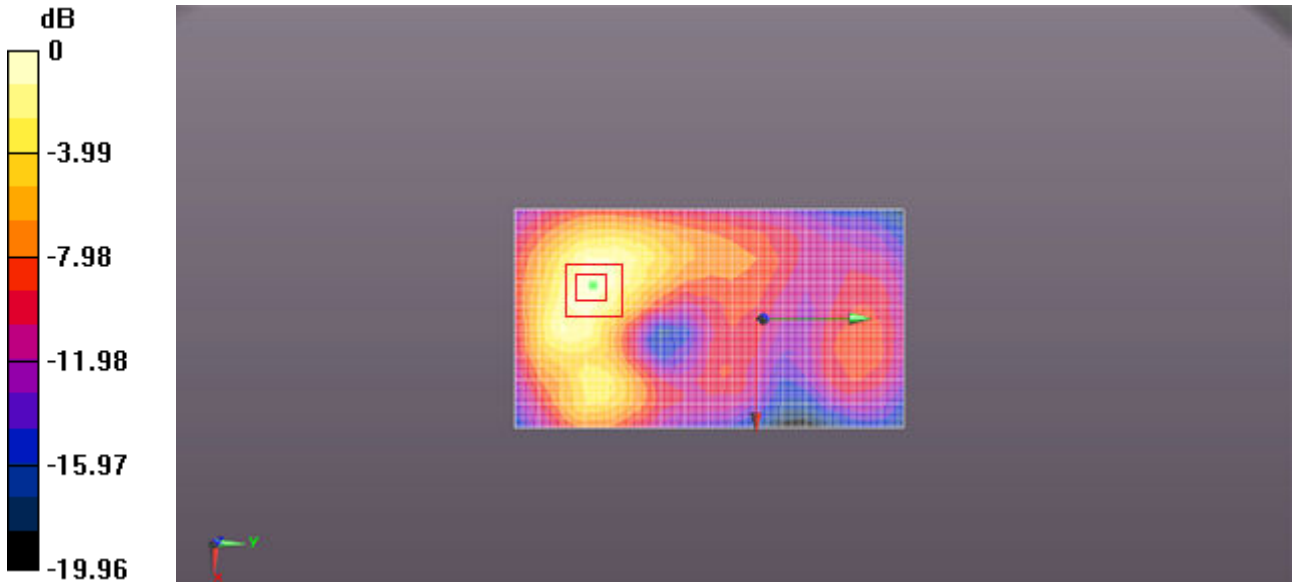
| Left Side                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Cheek |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_20M_1RB) (0); Communication System Band: BAND 7; Frequency: 2535 MHz;Communication System PAR: 0 dB<br/> Medium parameters used: <math>f = 2535 \text{ MHz}</math>; <math>\sigma = 1.961 \text{ S/m}</math>; <math>\epsilon_r = 39.2</math>; <math>\rho = 1000 \text{ kg/m}^3</math><br/> Phantom section: Left Section<br/> Measurement Standard: DASY5 (IEEE1528-2013)<br/> DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: EX3DV4 - SN3717; ConvF(6.96, 6.96, 6.96); Calibrated: 19/10/2016;</li> <li>Sensor-Surface: 1.4mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1327; Calibrated: 15/04/2016</li> <li>Phantom: SAM 1; Type: SAM; Serial: TP:1702</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>left/touch mid/Area Scan (91x161x1):</b> Interpolated grid: <math>dx=1.000 \text{ mm}</math>, <math>dy=1.000 \text{ mm}</math><br/> Maximum value of SAR (interpolated) = <math>0.363 \text{ W/kg}</math><br/> <b>left/touch mid/Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5\text{mm}</math>, <math>dy=5\text{mm}</math>, <math>dz=5\text{mm}</math><br/> Reference Value = <math>4.337 \text{ V/m}</math>; Power Drift = <math>0.13 \text{ dB}</math><br/> Peak SAR (extrapolated) = <math>0.427 \text{ W/kg}</math><br/> <b>SAR(1 g) = <math>0.229 \text{ W/kg}</math>; SAR(10 g) = <math>0.124 \text{ W/kg}</math></b><br/> Maximum value of SAR (measured) = <math>0.358 \text{ W/kg}</math></p> |       |
|  <p>0 dB = <math>0.363 \text{ W/kg}</math> = <math>-4.40 \text{ dBW/kg}</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |       |

| Left Side                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Tilt |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_20M_1RB) (0); Communication System Band: BAND 7; Frequency: 2535 MHz;Communication System PAR: 0 dB<br/> Medium parameters used: <math>f = 2535 \text{ MHz}</math>; <math>\sigma = 1.961 \text{ S/m}</math>; <math>\epsilon_r = 39.2</math>; <math>\rho = 1000 \text{ kg/m}^3</math><br/> Phantom section: Left Section<br/> Measurement Standard: DASY5 (IEEE1528-2013)<br/> DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: EX3DV4 - SN3717; ConvF(6.96, 6.96, 6.96); Calibrated: 19/10/2016;</li> <li>Sensor-Surface: 1.4mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1327; Calibrated: 15/04/2016</li> <li>Phantom: SAM 1; Type: SAM; Serial: TP:1702</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>left/tilt mid/Area Scan (91x161x1):</b> Interpolated grid: <math>dx=1.000 \text{ mm}</math>, <math>dy=1.000 \text{ mm}</math><br/> Maximum value of SAR (interpolated) = <math>0.202 \text{ W/kg}</math><br/> <b>left/tilt mid/Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5\text{mm}</math>, <math>dy=5\text{mm}</math>, <math>dz=5\text{mm}</math><br/> Reference Value = <math>7.480 \text{ V/m}</math>; Power Drift = <math>0.03 \text{ dB}</math><br/> Peak SAR (extrapolated) = <math>0.222 \text{ W/kg}</math><br/> <b>SAR(1 g) = <math>0.118 \text{ W/kg}</math>; SAR(10 g) = <math>0.058 \text{ W/kg}</math></b><br/> Maximum value of SAR (measured) = <math>0.180 \text{ W/kg}</math></p> |      |
|  <p>0 dB = <math>0.202 \text{ W/kg} = -6.95 \text{ dBW/kg}</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |      |

| Right Side                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Cheek |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_20M_1RB) (0); Communication System Band: BAND 7; Frequency: 2535 MHz; Communication System PAR: 0 dB<br/>Medium parameters used: <math>f = 2535</math> MHz; <math>\sigma = 1.961</math> S/m; <math>\epsilon_r = 39.2</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/>Phantom section: Right Section<br/>Measurement Standard: DASY5 (IEEE1528-2013)<br/>DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: EX3DV4 - SN3717; ConvF(6.96, 6.96, 6.96); Calibrated: 19/10/2016;</li> <li>Sensor-Surface: 1.4mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1327; Calibrated: 15/04/2016</li> <li>Phantom: SAM 1; Type: SAM; Serial: TP:1702</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>right/touch mid/Area Scan (91x161x1):</b> Interpolated grid: dx=1.000 mm, dy=1.000 mm<br/>Maximum value of SAR (interpolated) = 0.151 W/kg<br/><b>right/touch mid/Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: dx=5mm, dy=5mm, dz=5mm<br/>Reference Value = 4.708 V/m; Power Drift = 0.10 dB<br/>Peak SAR (extrapolated) = 0.181 W/kg<br/><b>SAR(1 g) = 0.104 W/kg; SAR(10 g) = 0.057 W/kg</b><br/>Maximum value of SAR (measured) = 0.154 W/kg</p> |       |
|  <p>0 dB = 0.151 W/kg = -8.22 dBW/kg</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |       |

| Right Side                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Tilt |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_20M_1RB) (0); Communication System Band: BAND 7; Frequency: 2535 MHz;Communication System PAR: 0 dB<br/>Medium parameters used: <math>f = 2535</math> MHz; <math>\sigma = 1.961</math> S/m; <math>\epsilon_r = 39.2</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/>Phantom section: Right Section<br/>Measurement Standard: DASY5 (IEEE1528-2013)<br/>DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: EX3DV4 - SN3717; ConvF(6.96, 6.96, 6.96); Calibrated: 19/10/2016;</li> <li>Sensor-Surface: 1.4mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1327; Calibrated: 15/04/2016</li> <li>Phantom: SAM 1; Type: SAM; Serial: TP:1702</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>right/tilt mid/Area Scan (91x161x1):</b> Interpolated grid: <math>dx=1.000</math> mm, <math>dy=1.000</math> mm<br/>Maximum value of SAR (interpolated) = 0.129 W/kg<br/><b>right/tilt mid/ Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5</math>mm, <math>dy=5</math>mm, <math>dz=5</math>mm</p> <ul style="list-style-type: none"> <li>Reference Value = 7.108 V/m; Power Drift = 0.03 dB<br/>Peak SAR (extrapolated) = 0.281 W/kg<br/><b>SAR(1 g) = 0.0826 W/kg; SAR(10 g) = 0.0430 W/kg</b><br/>Maximum value of SAR (measured) = 0.128 W/kg</li> </ul> |      |
|  <p>0 dB = 0.129 W/kg = -8.89 dBW/kg</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |      |

## LTE (Band 7 20BW-1RB-Low/Flat)

| FLAT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Towards phantom |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_20M_1RB) (0); Communication System Band: BAND 7; Frequency: 2535 MHz; Communication System PAR: 0 dB<br/> Medium parameters used: <math>f = 2535 \text{ MHz}</math>; <math>\sigma = 2.135 \text{ S/m}</math>; <math>\epsilon_r = 51.45</math>; <math>\rho = 1000 \text{ kg/m}^3</math><br/> Phantom section: Flat Section<br/> Measurement Standard: DASY5 (IEEE1528-2013)<br/> DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: EX3DV4 - SN3717; ConvF(7.04, 7.04, 7.04); Calibrated: 19/10/2016;</li> <li>Sensor-Surface: 1.4mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1327; Calibrated: 15/04/2016</li> <li>Phantom: ELI v4.0; Type: ELI4; Serial: TP:1086</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>body/towards phantom mid/Area Scan (91x161x1):</b> Interpolated grid: <math>dx=1.000 \text{ mm}</math>, <math>dy=1.000 \text{ mm}</math><br/> Maximum value of SAR (interpolated) = <math>0.724 \text{ W/kg}</math><br/> <b>body/towards phantom mid/ Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5\text{mm}</math>, <math>dy=5\text{mm}</math>, <math>dz=5\text{mm}</math></p> <ul style="list-style-type: none"> <li>Reference Value = <math>5.554 \text{ V/m}</math>; Power Drift = <math>-0.03 \text{ dB}</math><br/> Peak SAR (extrapolated) = <math>0.881 \text{ W/kg}</math><br/> <b>SAR(1 g) = <math>0.465 \text{ W/kg}</math>; SAR(10 g) = <math>0.242 \text{ W/kg}</math></b><br/> Maximum value of SAR (measured) = <math>0.715 \text{ W/kg}</math></li> </ul> |                 |
|  <p>0 dB = <math>0.724 \text{ W/kg}</math> = <math>-1.40 \text{ dBW/kg}</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                 |

| FLAT | Towards ground |
|------|----------------|
|------|----------------|

Communication System: UID 0, FDD-LTE(QPSK\_20M\_1RB) (0); Communication System Band: BAND 7; Frequency: 2535 MHz; Communication System PAR: 0 dB

Medium parameters used:  $f = 2535$  MHz;  $\sigma = 2.135$  S/m;  $\epsilon_r = 51.45$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE1528-2013)

DASY5 Configuration:

- Probe: EX3DV4 - SN3717; ConvF(7.04, 7.04, 7.04); Calibrated: 19/10/2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1327; Calibrated: 15/04/2016
- Phantom: ELI v4.0; Type: ELI4; Serial: TP:1086
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**body/towards ground mid/Area Scan (91x161x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.45 W/kg

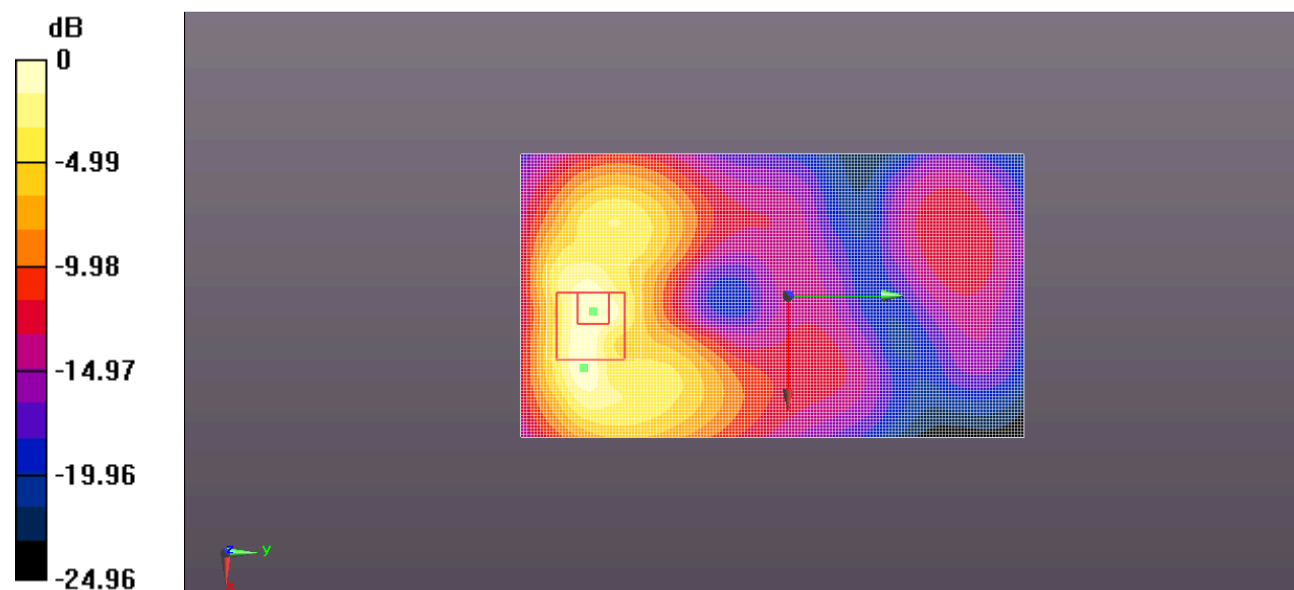
**body/towards ground mid/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.649 V/m; Power Drift = -0.18 dB

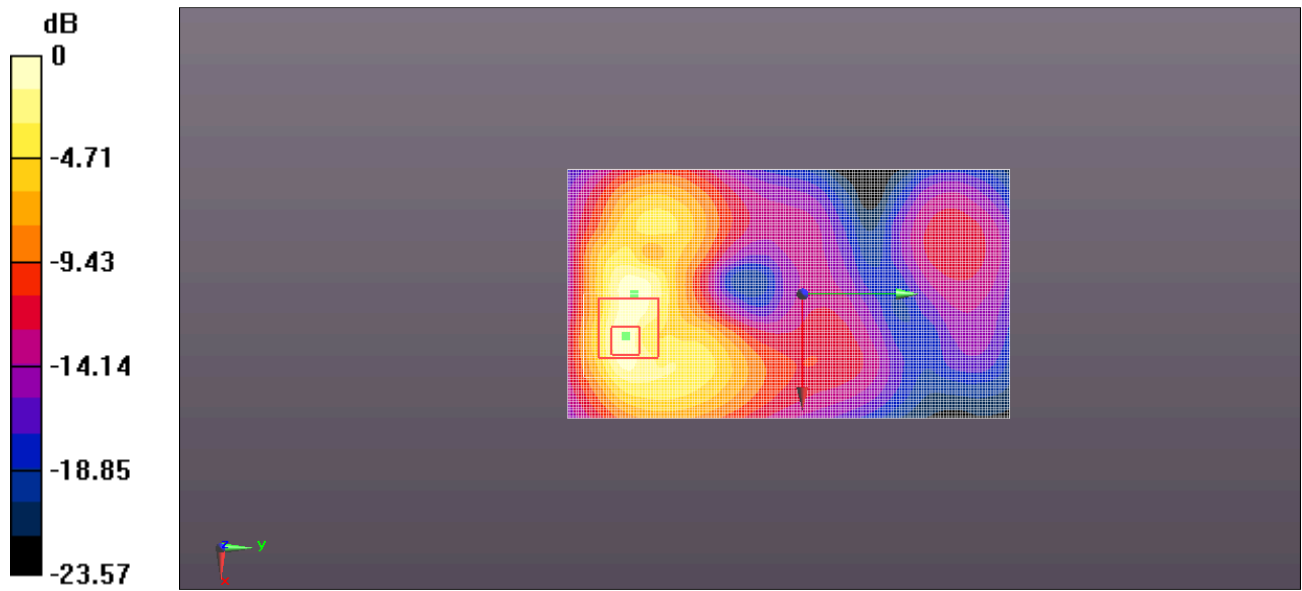
Peak SAR (extrapolated) = 2.00 W/kg

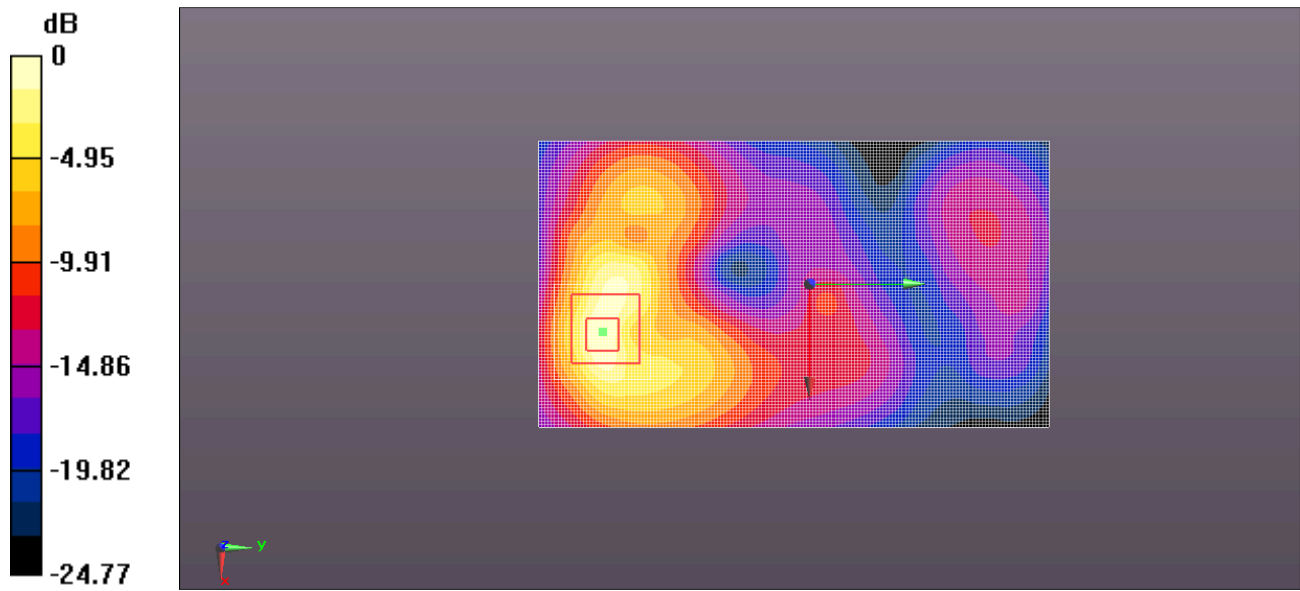
**SAR(1 g) = 0.922 W/kg; SAR(10 g) = 0.424 W/kg**

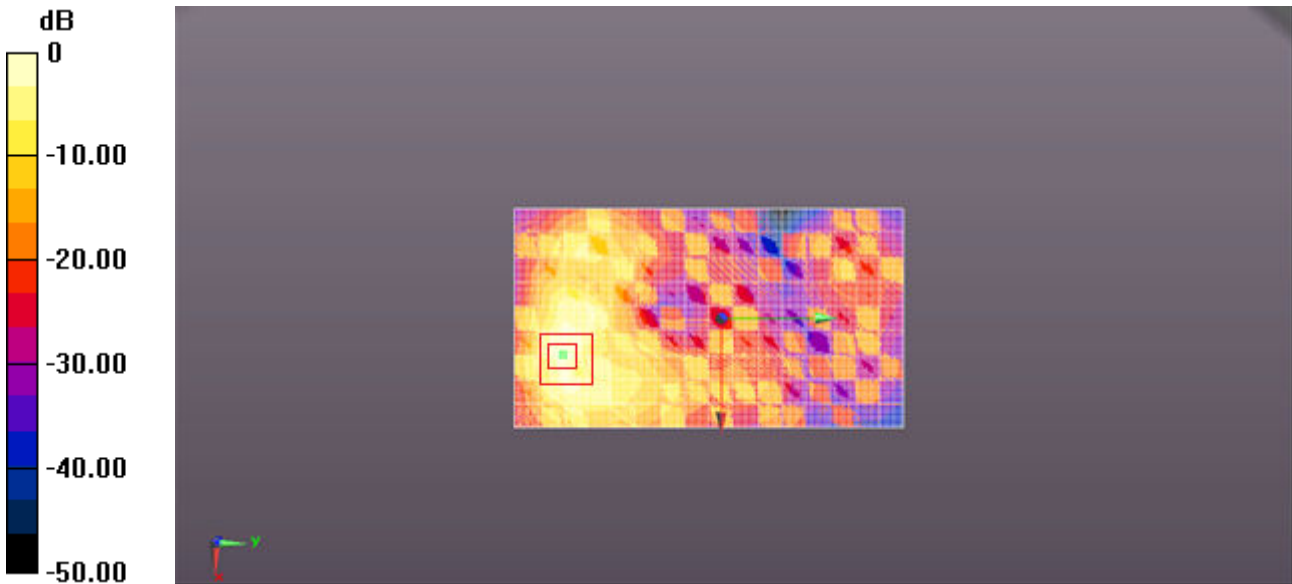
Maximum value of SAR (measured) = 1.54 W/kg

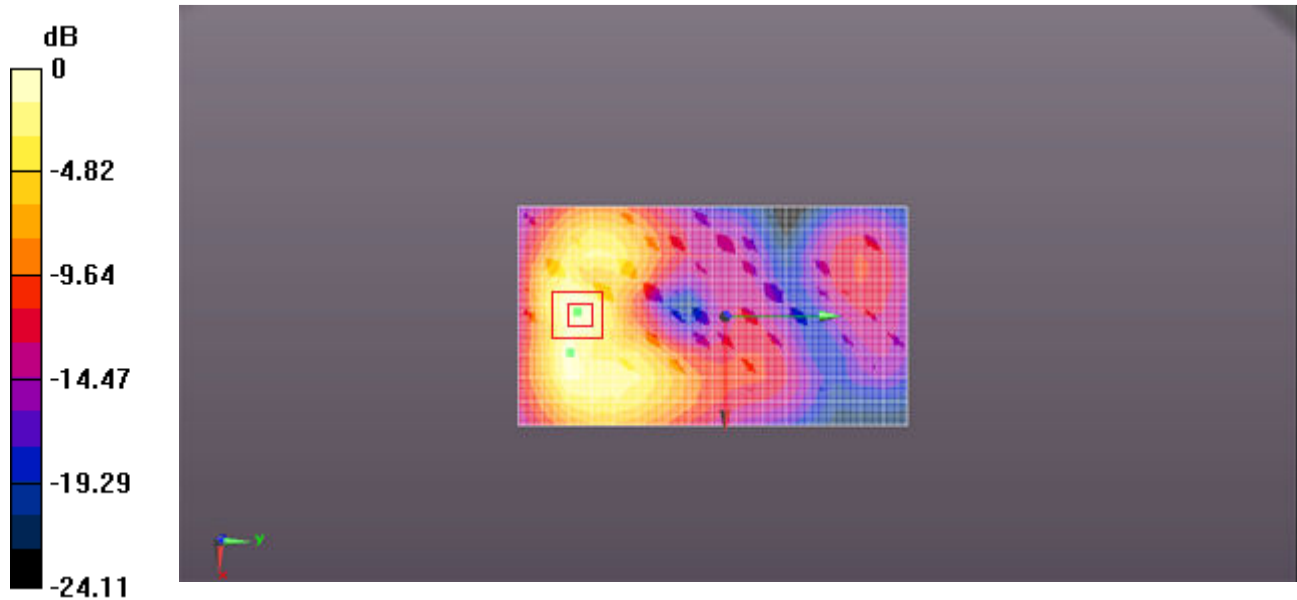


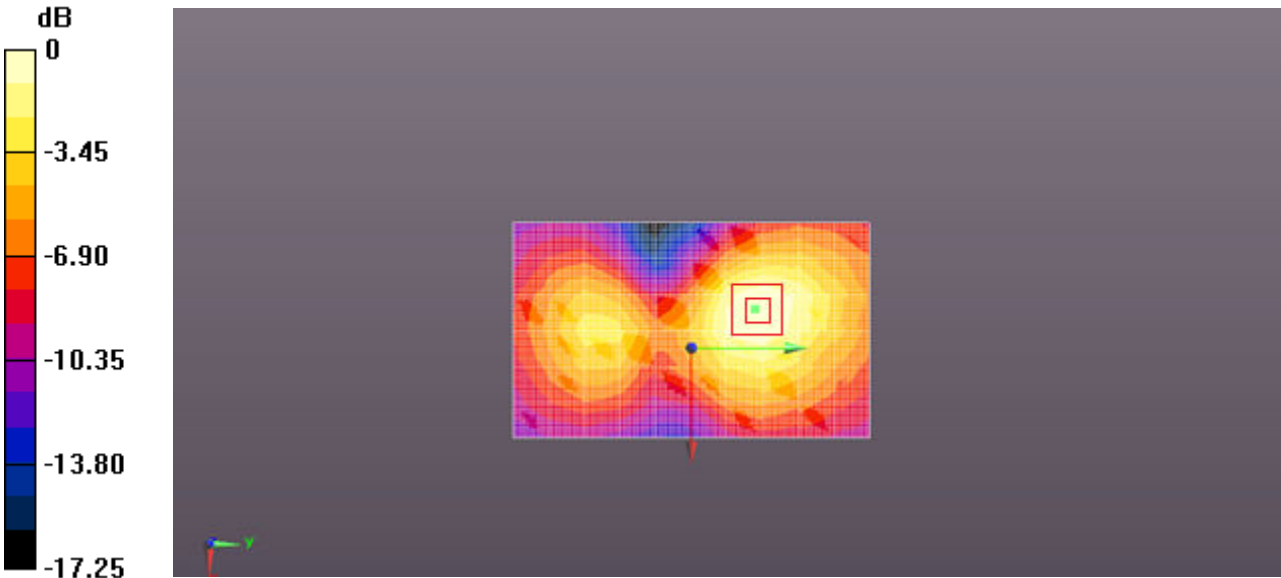
0 dB = 1.45 W/kg = 1.62 dBW/kg

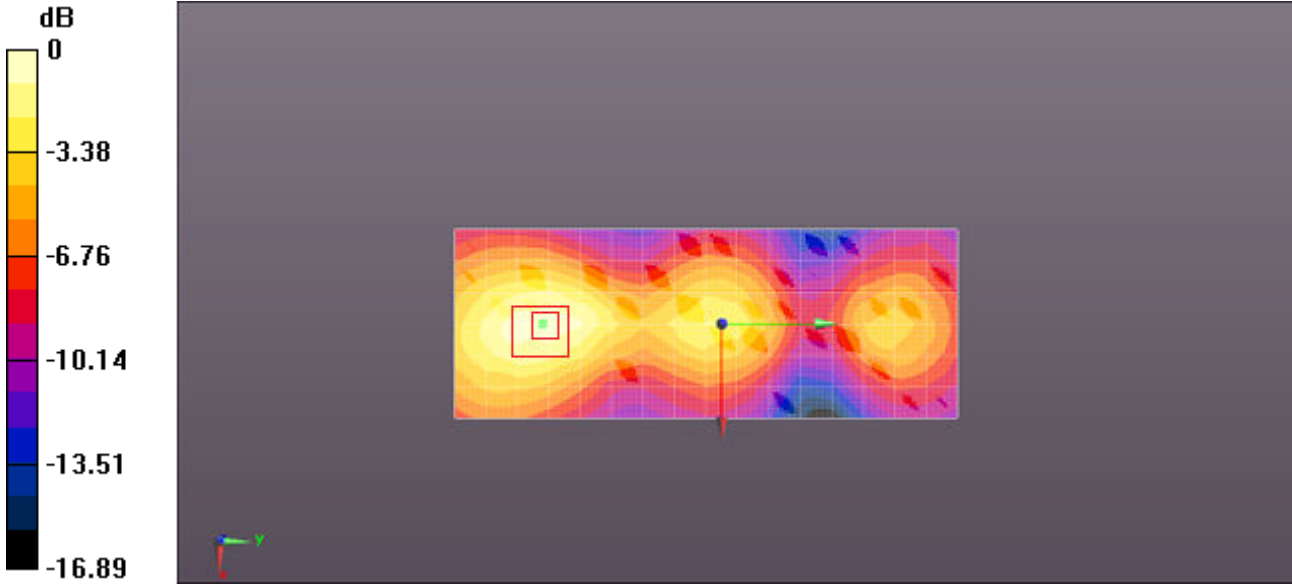
| FLAT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Towards ground |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_20M_1RB) (0); Communication System Band: BAND 7; Frequency: 2535 MHz; Communication System PAR: 0 dB<br/> Medium parameters used: <math>f = 2535 \text{ MHz}</math>; <math>\sigma = 2.135 \text{ S/m}</math>; <math>\epsilon_r = 51.45</math>; <math>\rho = 1000 \text{ kg/m}^3</math><br/> Phantom section: Flat Section<br/> Measurement Standard: DASYS (IEEE1528-2013)<br/> DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: EX3DV4 - SN3717; ConvF(7.04, 7.04, 7.04); Calibrated: 19/10/2016;</li> <li>Sensor-Surface: 1.4mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1327; Calibrated: 15/04/2016</li> <li>Phantom: ELI v4.0; Type: ELI4; Serial: TP:1086</li> <li>Measurement SW: DASYS2, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>body/towards ground mid spot check/Area Scan (91x161x1):</b> Interpolated grid:<br/> <math>dx=1.000 \text{ mm}</math>, <math>dy=1.000 \text{ mm}</math><br/> Maximum value of SAR (interpolated) = 1.42 W/kg<br/> <b>body/towards ground mid spot check/Zoom Scan (7x7x7)/Cube 0:</b> Measurement<br/> grid: <math>dx=5\text{mm}</math>, <math>dy=5\text{mm}</math>, <math>dz=5\text{mm}</math><br/> Reference Value = 5.101 V/m; Power Drift = -0.10 dB<br/> Peak SAR (extrapolated) = 1.76 W/kg<br/> <b>SAR(1 g) = 0.873 W/kg; SAR(10 g) = 0.410 W/kg</b><br/> Maximum value of SAR (measured) = 1.42 W/kg</p> |                |
|  <p>0 dB = 1.42 W/kg = 1.53 dBW/kg</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                |

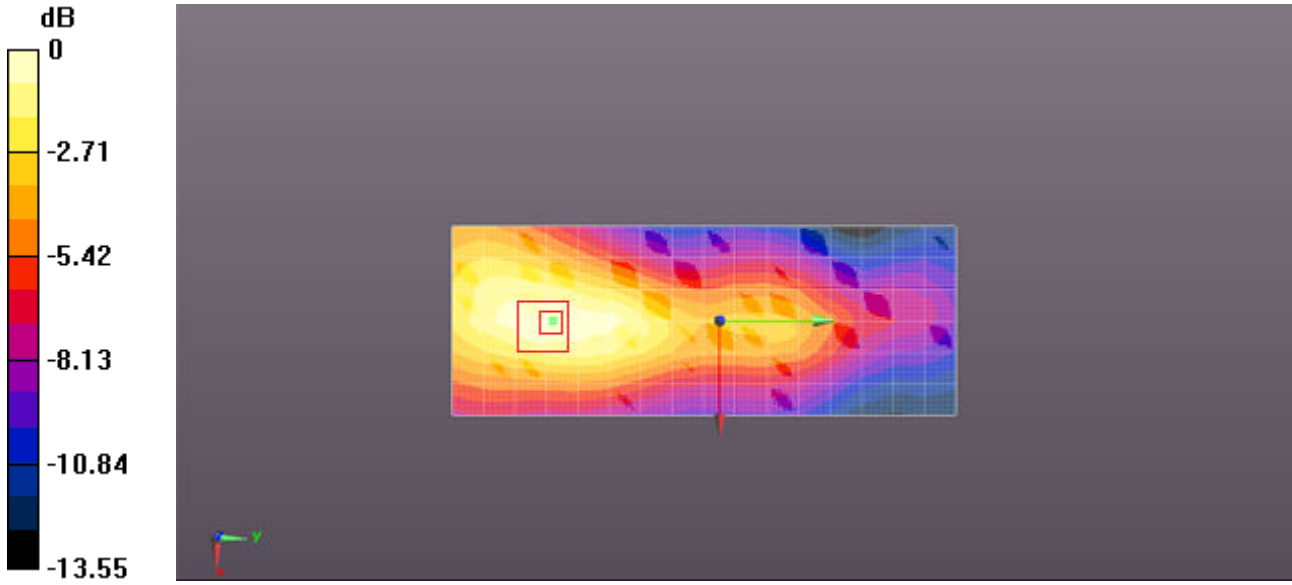
| FLAT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Towards ground |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_20M_1RB) (0); Communication System Band: BAND 7; Frequency: 2510 MHz; Communication System PAR: 0 dB<br/> Medium parameters used: <math>f = 2510</math> MHz; <math>\sigma = 2.095</math> S/m; <math>\epsilon_r = 51.424</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/> Phantom section: Flat Section<br/> Measurement Standard: DASY5 (IEEE1528-2013)<br/> DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: EX3DV4 - SN3717; ConvF(7.04, 7.04, 7.04); Calibrated: 19/10/2016;</li> <li>Sensor-Surface: 1.4mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1327; Calibrated: 15/04/2016</li> <li>Phantom: ELI v4.0; Type: ELI4; Serial: TP:1086</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>body/towards ground low/Area Scan (91x161x1):</b> Interpolated grid: dx=1.000 mm, dy=1.000 mm<br/> Maximum value of SAR (interpolated) = 1.93 W/kg<br/> <b>body/towards ground low/Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: dx=5mm, dy=5mm, dz=5mm<br/> Reference Value = 5.237 V/m; Power Drift = -0.16 dB<br/> Peak SAR (extrapolated) = 2.28 W/kg<br/> <b>SAR(1 g) = 1.16 W/kg; SAR(10 g) = 0.520 W/kg</b><br/> Maximum value of SAR (measured) = 1.87 W/kg</p> |                |
|  <p>0 dB = 1.93 W/kg = 2.86 dBW/kg</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                |

| FLAT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Towards ground |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_20M_1RB) (0); Communication System Band: BAND 7; Frequency: 2510 MHz; Communication System PAR: 0 dB<br/> Medium parameters used: <math>f = 2510</math> MHz; <math>\sigma = 2.095</math> S/m; <math>\epsilon_r = 51.424</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/> Phantom section: Flat Section<br/> Measurement Standard: DASYS (IEEE1528-2013)<br/> DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: EX3DV4 - SN3717; ConvF(7.04, 7.04, 7.04); Calibrated: 19/10/2016;</li> <li>Sensor-Surface: 1.4mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1327; Calibrated: 15/04/2016</li> <li>Phantom: ELI v4.0; Type: ELI4; Serial: TP:1086</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>body/towards ground low spot check/Area Scan (91x161x1):</b> Interpolated grid:<br/> dx=1.000 mm, dy=1.000 mm<br/> Maximum value of SAR (interpolated) = 1.91 W/kg</p> <p><b>body/towards ground low spot check/ Zoom Scan (7x7x7)/Cube 0:</b> Measurement<br/> grid: dx=5mm, dy=5mm, dz=5mm</p> <ul style="list-style-type: none"> <li>Reference Value = 5.142 V/m; Power Drift = 0.01 dB<br/> Peak SAR (extrapolated) = 2.071 W/kg<br/> <b>SAR(1 g) = 1.06 W/kg; SAR(10 g) = 0.475 W/kg</b><br/> Maximum value of SAR (measured) = 1.91 W/kg</li> </ul> |                |
|  <p>0 dB = 1.91 W/kg = 2.81 dBW/kg</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                |

| FLAT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Towards ground |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_20M_1RB) (0); Communication System Band: BAND 7; Frequency: 2560 MHz; Communication System PAR: 0 dB<br/> Medium parameters used: <math>f = 2560</math> MHz; <math>\sigma = 2.142</math> S/m; <math>\epsilon_r = 51.52</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/> Phantom section: Flat Section<br/> Measurement Standard: DASYS (IEEE1528-2013)<br/> DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: EX3DV4 - SN3717; ConvF(6.86, 6.86, 6.86); Calibrated: 19/10/2016;</li> <li>Sensor-Surface: 1.4mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1327; Calibrated: 15/04/2016</li> <li>Phantom: ELI v4.0; Type: ELI4; Serial: TP:1086</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>body/towards ground high/Area Scan (91x161x1):</b> Interpolated grid: dx=1.000 mm, dy=1.000 mm<br/> Maximum value of SAR (interpolated) = 1.26 W/kg<br/> <b>body/towards ground high/ Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: dx=5mm, dy=5mm, dz=5mm</p> <ul style="list-style-type: none"> <li>Reference Value = 4.733 V/m; Power Drift = -0.10 dB<br/> Peak SAR (extrapolated) = 1.142 W/kg<br/> <b>SAR(1 g) = 0.730 W/kg; SAR(10 g) = 0.341 W/kg</b><br/> Maximum value of SAR (measured) = 1.09 W/kg</li> </ul> |                |
|  <p>0 dB = 1.26 W/kg = 1.00 dBW/kg</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                |

| FLAT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | EDGE2 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_20M_1RB) (0); Communication System Band: BAND 7; Frequency: 2535 MHz; Communication System PAR: 0 dB<br/> Medium parameters used: <math>f = 2535 \text{ MHz}</math>; <math>\sigma = 2.135 \text{ S/m}</math>; <math>\epsilon_r = 51.45</math>; <math>\rho = 1000 \text{ kg/m}^3</math><br/> Phantom section: Flat Section<br/> Measurement Standard: DASY5 (IEEE1528-2013)<br/> DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: EX3DV4 - SN3717; ConvF(7.04, 7.04, 7.04); Calibrated: 19/10/2016;</li> <li>Sensor-Surface: 1.4mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1327; Calibrated: 15/04/2016</li> <li>Phantom: ELI v4.0; Type: ELI4; Serial: TP:1086</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>body/edge 2 mid/Area Scan (61x101x1):</b> Interpolated grid: <math>dx=1.000 \text{ mm}</math>, <math>dy=1.000 \text{ mm}</math><br/> Maximum value of SAR (interpolated) = <math>0.660 \text{ W/kg}</math><br/> <b>body/edge 2 mid/ Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5\text{mm}</math>, <math>dy=5\text{mm}</math>, <math>dz=5\text{mm}</math></p> <ul style="list-style-type: none"> <li>Reference Value = <math>8.784 \text{ V/m}</math>; Power Drift = <math>0.19 \text{ dB}</math><br/> Peak SAR (extrapolated) = <math>0.721 \text{ W/kg}</math><br/> <b>SAR(1 g) = <math>0.415 \text{ W/kg}</math>; SAR(10 g) = <math>0.208 \text{ W/kg}</math></b><br/> Maximum value of SAR (measured) = <math>0.582 \text{ W/kg}</math></li> </ul> |       |
|  <p>0 dB = <math>0.660 \text{ W/kg}</math> = <math>-1.80 \text{ dBW/kg}</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |       |

| FLAT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | EDGE3 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_20M_1RB) (0); Communication System Band: BAND 7; Frequency: 2535 MHz; Communication System PAR: 0 dB<br/> Medium parameters used: <math>f = 2535 \text{ MHz}</math>; <math>\sigma = 2.135 \text{ S/m}</math>; <math>\epsilon_r = 51.45</math>; <math>\rho = 1000 \text{ kg/m}^3</math><br/> Phantom section: Flat Section<br/> Measurement Standard: DASY5 (IEEE1528-2013)<br/> DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: EX3DV4 - SN3717; ConvF(7.04, 7.04, 7.04); Calibrated: 19/10/2016;</li> <li>Sensor-Surface: 1.4mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1327; Calibrated: 15/04/2016</li> <li>Phantom: ELI v4.0; Type: ELI4; Serial: TP:1086</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>body2/edge3 mid/Area Scan (61x161x1):</b> Interpolated grid: <math>dx=1.000 \text{ mm}</math>, <math>dy=1.000 \text{ mm}</math><br/> Maximum value of SAR (interpolated) = 0.231 W/kg<br/> <b>body2/edge3 mid/ Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5\text{mm}</math>, <math>dy=5\text{mm}</math>, <math>dz=5\text{mm}</math></p> <ul style="list-style-type: none"> <li>Reference Value = 7.499 V/m; Power Drift = -0.05 dB<br/> Peak SAR (extrapolated) = 0.421 W/kg<br/> <b>SAR(1 g) = 0.148 W/kg; SAR(10 g) = 0.0764 W/kg</b><br/> Maximum value of SAR (measured) = 0.228 W/kg</li> </ul> |       |
|  <p>0 dB = 0.231 W/kg = -6.37 dBW/kg</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |

| FLAT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | EDGE4 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_20M_1RB) (0); Communication System Band: BAND 7; Frequency: 2535 MHz; Communication System PAR: 0 dB<br/> Medium parameters used: <math>f = 2535</math> MHz; <math>\sigma = 2.135</math> S/m; <math>\epsilon_r = 51.45</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/> Phantom section: Flat Section<br/> Measurement Standard: DASY5 (IEEE1528-2013)<br/> DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: EX3DV4 - SN3717; ConvF(7.04, 7.04, 7.04); Calibrated: 19/10/2016;</li> <li>Sensor-Surface: 1.4mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1327; Calibrated: 15/04/2016</li> <li>Phantom: ELI v4.0; Type: ELI4; Serial: TP:1086</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>body2/edge4 mid/Area Scan (61x161x1):</b> Interpolated grid: dx=1.000 mm, dy=1.000 mm<br/> Maximum value of SAR (interpolated) = 0.317 W/kg<br/> <b>body2/edge4 mid/ Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: dx=5mm, dy=5mm, dz=5mm</p> <ul style="list-style-type: none"> <li>Reference Value = 7.537 V/m; Power Drift = 0.05 dB<br/> Peak SAR (extrapolated) = 0.521 W/kg<br/> <b>SAR(1 g) = 0.208 W/kg; SAR(10 g) = 0.113 W/kg</b><br/> Maximum value of SAR (measured) = 0.317 W/kg</li> </ul> |       |
|  <p>0 dB = 0.317 W/kg = -4.99 dBW/kg</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |       |

#### LTE (Band 7 20BW-50%RB-Low /Head)

| Left Side | Cheek |
|-----------|-------|
|-----------|-------|

Communication System: UID 0, FDD-LTE(QPSK\_20M\_50RB) (0); Communication System Band: BAND 7; Frequency: 2535 MHz; Communication System PAR: 0 dB

Medium parameters used:  $f = 2535$  MHz;  $\sigma = 1.961$  S/m;  $\epsilon_r = 39.2$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

Measurement Standard: DASYS (IEEE1528-2013)

DASY5 Configuration:

- Probe: EX3DV4 - SN3717; ConvF(6.96, 6.96, 6.96); Calibrated: 19/10/2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1327; Calibrated: 15/04/2016
- Phantom: SAM 1; Type: SAM; Serial: TP:1702
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**left/touch mid 50%RB/Area Scan (91x161x1):** Interpolated grid:  $dx=1.000$  mm,  $dy=1.000$  mm

Maximum value of SAR (interpolated) = 0.276 W/kg

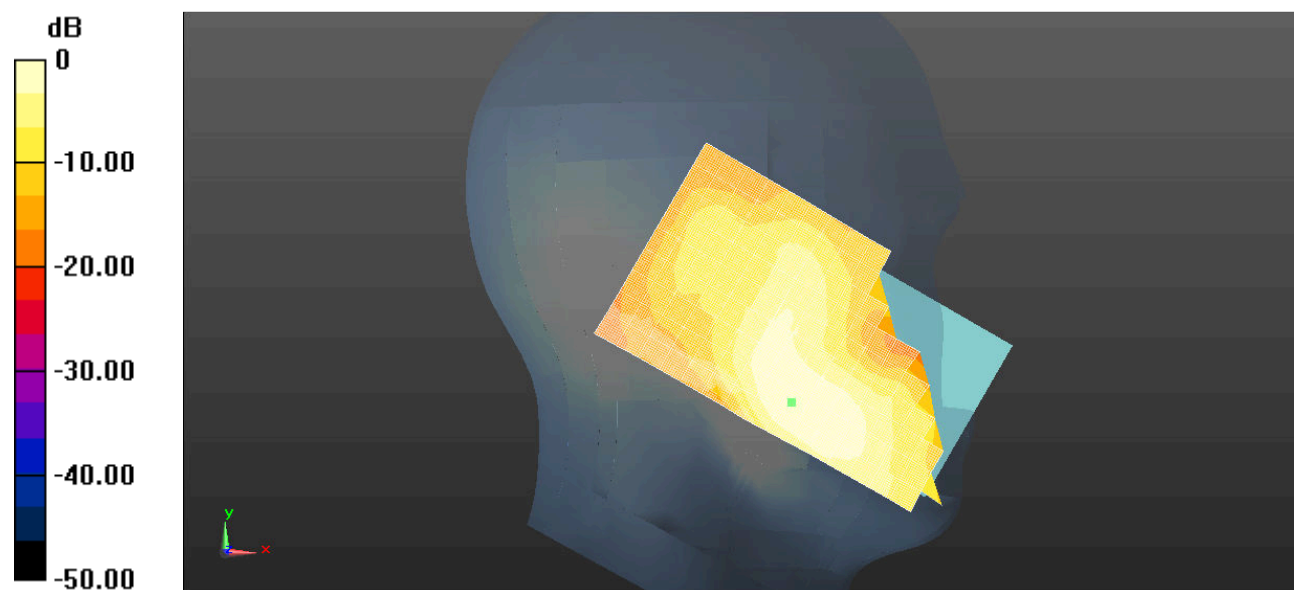
**left/touch mid 50%RB/ Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

- Reference Value = 3.480 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.322 W/kg

**SAR(1 g) = 0.171 W/kg; SAR(10 g) = 0.0919 W/kg**

Maximum value of SAR (measured) = 0.249 W/kg



0 dB = 0.276 W/kg = -5.59 dBW/kg

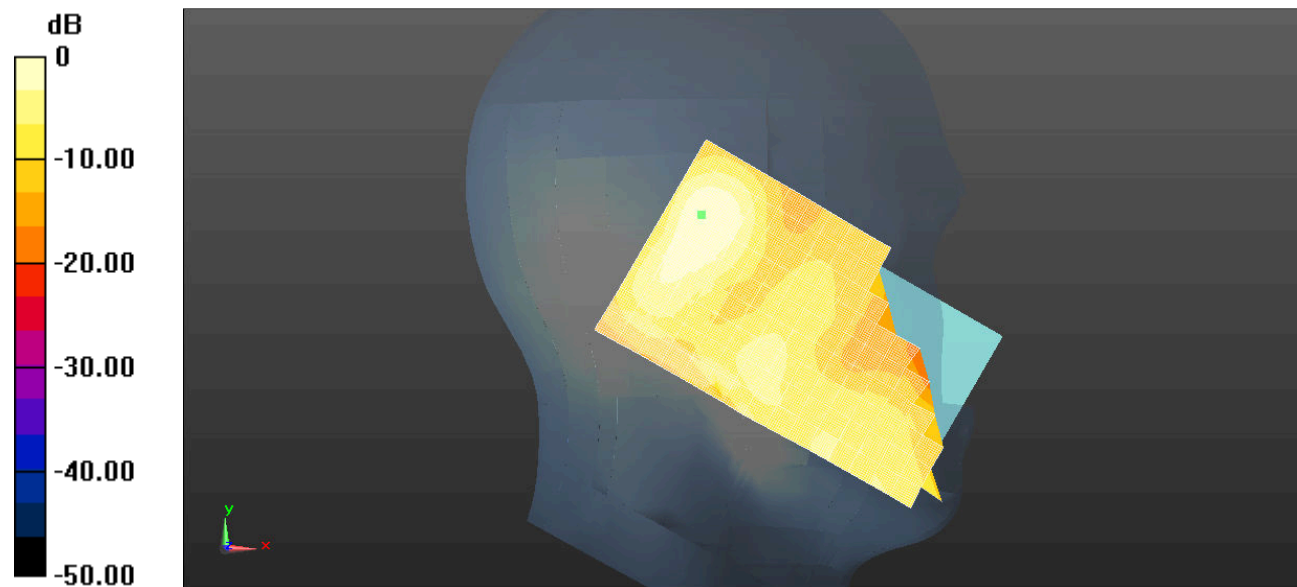
| Left Side                                                                                                                                       | Tilt |
|-------------------------------------------------------------------------------------------------------------------------------------------------|------|
| Communication System: UID 0, FDD-LTE(QPSK_20M_50RB) (0); Communication System Band: BAND 7; Frequency: 2535 MHz; Communication System PAR: 0 dB |      |
| Medium parameters used: $f = 2535$ MHz; $\sigma = 1.961$ S/m; $\epsilon_r = 39.2$ ; $\rho = 1000$ kg/m <sup>3</sup>                             |      |

Phantom section: Left Section

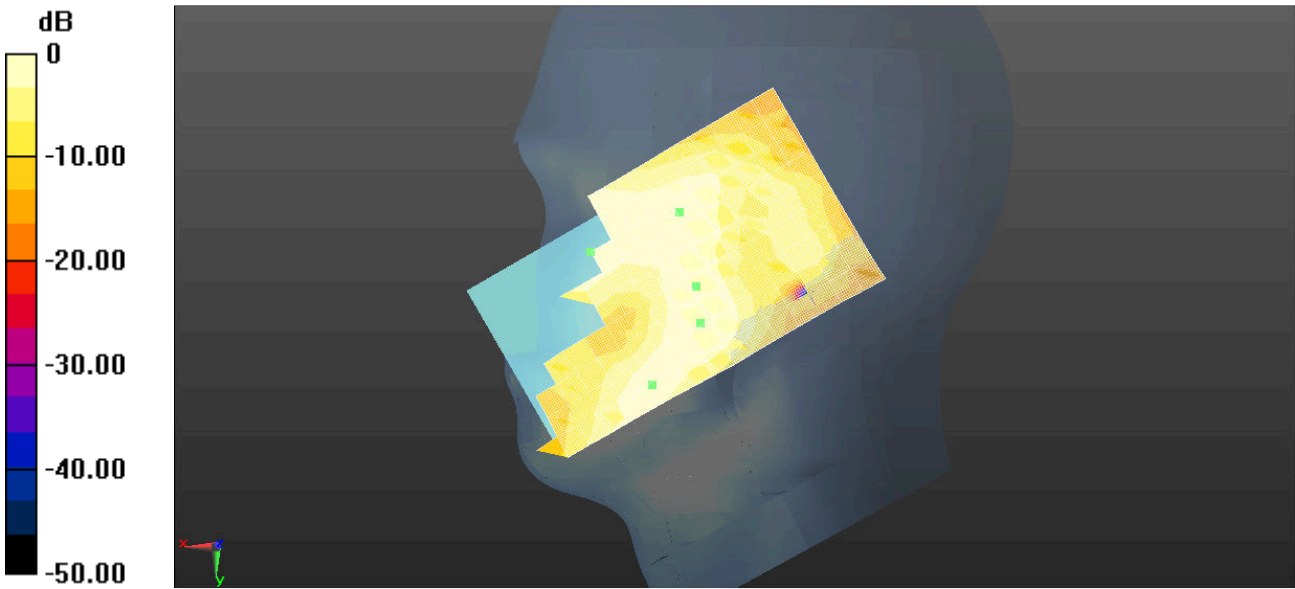
Measurement Standard: DASY5 (IEEE1528-2013)

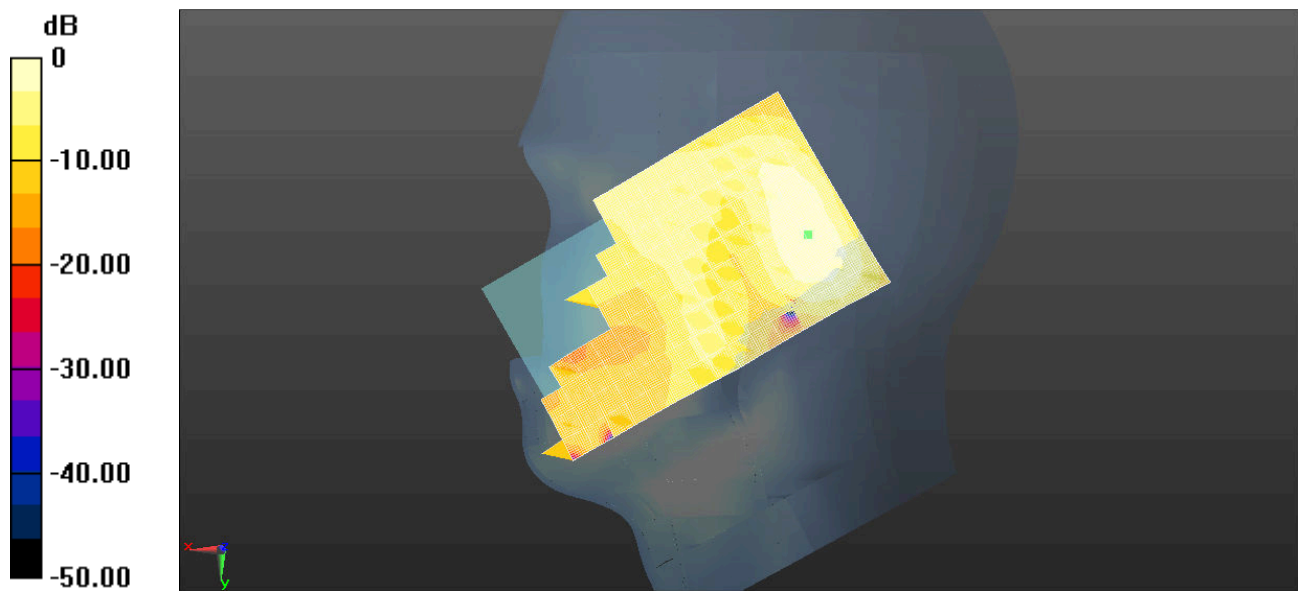
DASY5 Configuration:

- Probe: EX3DV4 - SN3717; ConvF(6.96, 6.96, 6.96); Calibrated: 19/10/2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1327; Calibrated: 15/04/2016
- Phantom: SAM 1; Type: SAM; Serial: TP:1702
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)  
**left/tilt mid 50%RB/Area Scan (91x161x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm  
Maximum value of SAR (interpolated) = 0.143 W/kg  
**left/tilt mid 50%RB/ Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
- Reference Value = 7.480 V/m; Power Drift = -0.06 dB  
Peak SAR (extrapolated) = 0.263 W/kg  
**SAR(1 g) = 0.0826 W/kg; SAR(10 g) = 0.0416 W/kg**  
Maximum value of SAR (measured) = 0.122 W/kg

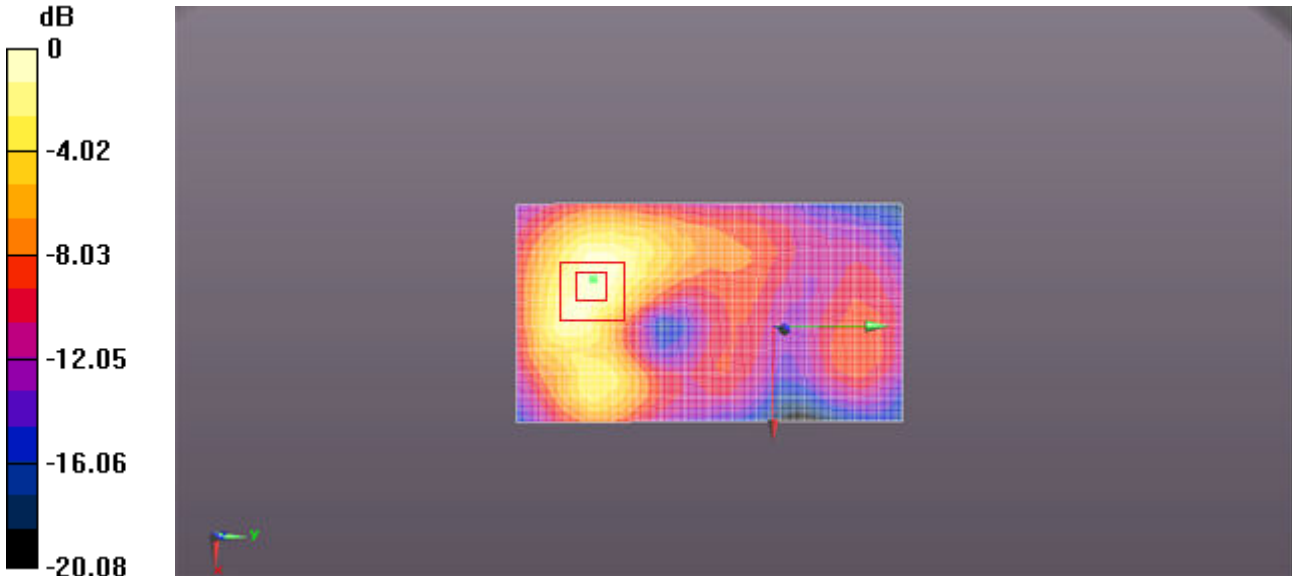


0 dB = 0.143 W/kg = -8.43 dBW/kg

| Right Side                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Cheek |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_20M_50RB) (0); Communication System Band: BAND 7; Frequency: 2535 MHz;Communication System PAR: 0 dB<br/>Medium parameters used: <math>f = 2535</math> MHz; <math>\sigma = 1.961</math> S/m; <math>\epsilon_r = 39.2</math>; <math>\rho = 1000</math> kg/m<sup>3</sup><br/>Phantom section: Right Section<br/>Measurement Standard: DASY5 (IEEE1528-2013)<br/>DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: EX3DV4 - SN3717; ConvF(6.96, 6.96, 6.96); Calibrated: 19/10/2016;</li> <li>Sensor-Surface: 1.4mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1327; Calibrated: 15/04/2016</li> <li>Phantom: SAM 1; Type: SAM; Serial: TP:1702</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>right/touch mid 50%RB/Area Scan (91x161x1):</b> Interpolated grid: dx=1.000 mm, dy=1.000 mm<br/>Maximum value of SAR (interpolated) = 0.115 W/kg</p> <p><b>right/touch mid 50%RB/ Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: dx=5mm, dy=5mm, dz=5mm</p> <ul style="list-style-type: none"> <li>Reference Value = 3.808 V/m; Power Drift = 0.05 dB<br/>Peak SAR (extrapolated) = 0.181 W/kg<br/><b>SAR(1 g) = 0.0736 W/kg; SAR(10 g) = 0.0393 W/kg</b><br/>Maximum value of SAR (measured) = 0.108 W/kg</li> </ul> |       |
|  <p>0 dB = 0.115 W/kg = -9.40 dBW/kg</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |       |

| Right Side                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Tilt |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_20M_50RB) (0); Communication System Band: BAND 7; Frequency: 2535 MHz; Communication System PAR: 0 dB<br/>Medium parameters used: <math>f = 2535 \text{ MHz}</math>; <math>\sigma = 1.961 \text{ S/m}</math>; <math>\epsilon_r = 39.2</math>; <math>\rho = 1000 \text{ kg/m}^3</math><br/>Phantom section: Right Section<br/>Measurement Standard: DASY5 (IEEE1528-2013)<br/>DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: EX3DV4 - SN3717; ConvF(6.96, 6.96, 6.96); Calibrated: 19/10/2016;</li> <li>Sensor-Surface: 1.4mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1327; Calibrated: 15/04/2016</li> <li>Phantom: SAM 1; Type: SAM; Serial: TP:1702</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>right/tilt mid 50%RB/Area Scan (91x161x1):</b> Interpolated grid: <math>dx=1.000 \text{ mm}</math>, <math>dy=1.000 \text{ mm}</math><br/>Maximum value of SAR (interpolated) = <math>0.0965 \text{ W/kg}</math></p> <p><b>right/tilt mid 50%RB/ Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5\text{mm}</math>, <math>dy=5\text{mm}</math>, <math>dz=5\text{mm}</math></p> <ul style="list-style-type: none"> <li>Reference Value = <math>6.334 \text{ V/m}</math>; Power Drift = <math>0.01 \text{ dB}</math><br/>Peak SAR (extrapolated) = <math>0.131 \text{ W/kg}</math><br/><b>SAR(1 g) = <math>0.0621 \text{ W/kg}</math>; SAR(10 g) = <math>0.0325 \text{ W/kg}</math></b><br/>Maximum value of SAR (measured) = <math>0.0959 \text{ W/kg}</math></li> </ul> |      |
|  <p>0 dB = <math>0.0965 \text{ W/kg}</math> = <math>-10.16 \text{ dBW/kg}</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |      |

## LTE (Band 5 10BW-50%RB-Low/Flat)

| FLAT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Towards phantom |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <p>Communication System: UID 0, FDD-LTE(QPSK_20M_50RB) (0); Communication System Band: BAND 7; Frequency: 2535 MHz; Communication System PAR: 0 dB<br/> Medium parameters used: <math>f = 2535 \text{ MHz}</math>; <math>\sigma = 2.135 \text{ S/m}</math>; <math>\epsilon_r = 51.45</math>; <math>\rho = 1000 \text{ kg/m}^3</math><br/> Phantom section: Flat Section<br/> Measurement Standard: DASY5 (IEEE1528-2013)<br/> DASY5 Configuration:</p> <ul style="list-style-type: none"> <li>Probe: EX3DV4 - SN3717; ConvF(7.04, 7.04, 7.04); Calibrated: 19/10/2016;</li> <li>Sensor-Surface: 1.4mm (Mechanical Surface Detection)</li> <li>Electronics: DAE4 Sn1327; Calibrated: 15/04/2016</li> <li>Phantom: ELI v4.0; Type: ELI4; Serial: TP:1086</li> <li>Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)</li> </ul> <p><b>body/towards phantom mid 50%RB/Area Scan (91x161x1):</b> Interpolated grid:<br/> <math>dx=1.000 \text{ mm}</math>, <math>dy=1.000 \text{ mm}</math><br/> Maximum value of SAR (interpolated) = <math>0.546 \text{ W/kg}</math><br/> <b>body/towards phantom mid 50%RB/ Zoom Scan (7x7x7)/Cube 0:</b> Measurement grid: <math>dx=5\text{mm}</math>, <math>dy=5\text{mm}</math>, <math>dz=5\text{mm}</math></p> <ul style="list-style-type: none"> <li>Reference Value = <math>4.929 \text{ V/m}</math>; Power Drift = <math>-0.12 \text{ dB}</math><br/> Peak SAR (extrapolated) = <math>0.679 \text{ W/kg}</math><br/> <b>SAR(1 g) = <math>0.352 \text{ W/kg}</math>; SAR(10 g) = <math>0.184 \text{ W/kg}</math></b><br/> Maximum value of SAR (measured) = <math>0.538 \text{ W/kg}</math></li> </ul> |                 |
|  <p>0 dB = <math>0.546 \text{ W/kg}</math> = <math>-2.62 \text{ dBW/kg}</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                 |

| FLAT | Towards ground |
|------|----------------|
|------|----------------|

Communication System: UID 0, FDD-LTE(QPSK\_20M\_50RB) (0); Communication System Band: BAND 7; Frequency: 2535 MHz; Communication System PAR: 0 dB

Medium parameters used:  $f = 2535$  MHz;  $\sigma = 2.135$  S/m;  $\epsilon_r = 51.45$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE1528-2013)

DASY5 Configuration:

- Probe: EX3DV4 - SN3717; ConvF(7.04, 7.04, 7.04); Calibrated: 19/10/2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1327; Calibrated: 15/04/2016
- Phantom: ELI v4.0; Type: ELI4; Serial: TP:1086
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**body/towards ground mid 50%RB/Area Scan (91x161x1):** Interpolated grid:  
 $dx=1.000$  mm,  $dy=1.000$  mm

Maximum value of SAR (interpolated) = 1.11 W/kg

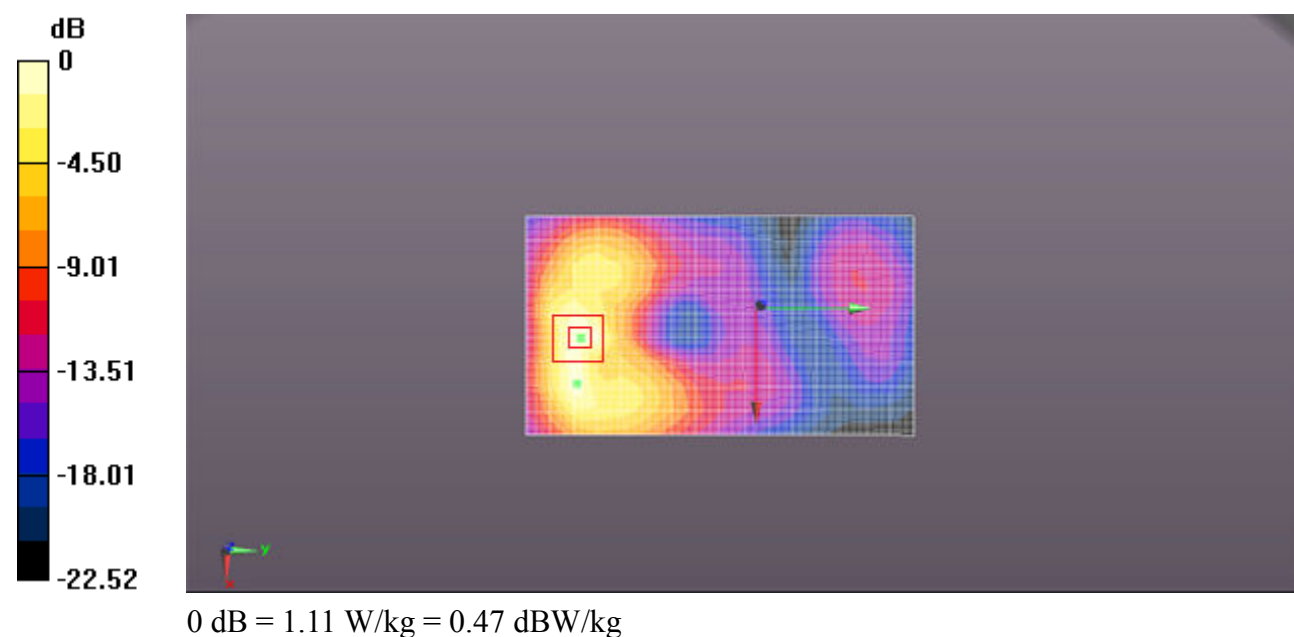
**body/towards ground mid 50%RB/ Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5$ mm,  $dy=5$ mm,  $dz=5$ mm

- Reference Value = 3.923 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 1.152 W/kg

**SAR(1 g) = 0.674 W/kg; SAR(10 g) = 0.309 W/kg**

Maximum value of SAR (measured) = 1.04 W/kg



## ANNEX B - RELEVANT PAGES FROM CALIBRATION REPORTS

### DAE4 Sn:1226

In Collaboration with  
**TTL** **s p e a g**  
CALIBRATION LABORATORY  
Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China  
Tel: 86-10-62094633-2218 Fax: 86-10-62094633-2209  
E-mail: cti@chinaetl.com http://www.chinaetl.cn

Client: Tejet Certificate No: Z16-97168

**CALIBRATION CERTIFICATE**

Object: DAE4 - SN: 1226

Calibration Procedure(s): FD-Z11-002-01  
Calibration Procedure for the Data Acquisition Electronics (DAEx)

Calibration date: September 28, 2016

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&E critical for calibration)

| Primary Standards      | ID #    | Cal Date(Calibrated by: Certificate No.) | Scheduled Calibration |
|------------------------|---------|------------------------------------------|-----------------------|
| Process Calibrator 753 | 1971018 | 27-June-16 (CTTL, No.J16X04778)          | June-17               |

Calibrated by: Name: Zhao Jing, Function: SAR Test Engineer, Signature: [Signature]

Reviewed by: Qi Danyuan, SAR Project Leader, Signature: [Signature]

Approved by: Lu Bingsong, Deputy Director of the laboratory, Signature: [Signature]

Issued: September 28, 2013

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

Certificate No: Z16-97168

Page 1 of 3

In Collaboration with  
**TTL** **s p e a g**  
CALIBRATION LABORATORY  
Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China  
Tel: 86-10-62094633-2218 Fax: 86-10-62094633-2209  
E-mail: cti@chinaetl.com http://www.chinaetl.cn

**Glossary:**  
DAE: data acquisition electronics  
Connector angle: information used in DASy system to align probe sensor X to the robot coordinate system.

**Methods Applied and Interpretation of Parameters:**

- DC Voltage Measurement:** Calibration Factor assessed for use in DASy system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- Connector angle:** The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The report provide only calibration results for DAE, it does not contain other performance test results.

Certificate No: Z16-97168

Page 2 of 3

In Collaboration with  
**TTL** **s p e a g**  
CALIBRATION LABORATORY  
Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China  
Tel: 86-10-62094633-2218 Fax: 86-10-62094633-2209  
E-mail: cti@chinaetl.com http://www.chinaetl.cn

**DC Voltage Measurement**  
A/D - Converter Resolution nominal  
High Range: 1LSB = 61µV full range = -100...+300 mV  
Low Range: 1LSB = 61nV full range = -1...+3mV  
DASy measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| Calibration Factors | X                     | Y                     | Z                     |
|---------------------|-----------------------|-----------------------|-----------------------|
| High Range          | 404.633 ± 0.15% (k=2) | 404.399 ± 0.15% (k=2) | 404.123 ± 0.15% (k=2) |
| Low Range           | 3.97867 ± 0.7% (k=2)  | 4.00359 ± 0.7% (k=2)  | 3.98540 ± 0.7% (k=2)  |

**Connector Angle**

| Connector Angle to be used in DASy system | 114° ± 1° |
|-------------------------------------------|-----------|
|-------------------------------------------|-----------|

Certificate No: Z16-97168

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## DAE4 Sn:1327

In Collaboration with  
**TTL** **S p e e d**  
CALIBRATION LABORATORY

Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-42304633-2218 Fax: +86-10-42304633-2209  
E-mail: cti@china.ttl.com <http://www.china.ttl.com>

Client: Tejet Certificate No: J16-97048

**CALIBRATION CERTIFICATE**

Object: DAE4-SN:1327

Calibration Procedure(s): FD-Z11-2-002-01  
Calibration Procedure for the Data Acquisition Electronics (DAEx)

Calibration date: April 15, 2016

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(Calibrated by, Certificate No.) | Scheduled Calibration |
|------------------------|---------|------------------------------------------|-----------------------|
| Process Calibrator 753 | 1971018 | 01-July-14 (CTTL, No.J14X02147)          | July-15               |

Calibrated by: Zhao Jing SAR Test Engineer

Reviewed by: Qi Dianyan SAR Project Leader

Approved by: Lu Bingcong Deputy Director of the laboratory

Issued: April 16, 2016

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

Certificate No: J16-97048

Page 1 of 3

In Collaboration with  
**TTL** **S p e e d**  
CALIBRATION LABORATORY

Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-42304633-2218 Fax: +86-10-42304633-2209  
E-mail: cti@china.ttl.com <http://www.china.ttl.com>

**Glossary:**

DAE: data acquisition electronics

Connector angle: information used in DASY system to align probe sensor X to the robot coordinate system.

**Methods Applied and Interpretation of Parameters:**

- DC Voltage Measurement:** Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- Connector angle:** The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The report provide only calibration results for DAE, it does not contain other performance test results.

Certificate No: J16-97048

Page 2 of 3

In Collaboration with  
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Tel: +86-10-42304633-2218 Fax: +86-10-42304633-2209  
E-mail: cti@china.ttl.com <http://www.china.ttl.com>

**DC Voltage Measurement**  
A/D Converter Resolution nominal

High Range: 1LSB = 0.1μV, full range = -100...+300 mV  
Low Range: 1LSB = 0.1mV, full range = -1...+3mV  
DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

| Calibration Factors | X                     | Y                     | Z                     |
|---------------------|-----------------------|-----------------------|-----------------------|
| High Range          | 404.880 ± 0.15% (k=2) | 404.737 ± 0.15% (k=2) | 404.934 ± 0.15% (k=2) |
| Low Range           | 3.99344 ± 0.7% (k=2)  | 3.99268 ± 0.7% (k=2)  | 3.99828 ± 0.7% (k=2)  |

**Connector Angle**

| Connector Angle to be used in DASY system | 180° ± 1° |
|-------------------------------------------|-----------|
|-------------------------------------------|-----------|

Certificate No: J16-97048

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## ES3DV3 Sn:3297

**TTL** In Collaboration with **speag** CALIBRATION LABORATORY  
Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62906633-2218 Fax: +86-10-62906633-2209  
E-mail: cti@chinaatl.com http://www.chinaatl.com

**中国认可 国际互认 校准**  
CNAS 15070

Client: Tejet Certificate No: Z16-97170

**CALIBRATION CERTIFICATE**

Object: ES3DV3 - SN:3297

Calibration Procedure(s): FD-Z11-004-01  
Calibration Procedures for Dosimetric E-field Probes

Calibration date: October 14, 2016

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&E critical for calibration)

| Primary Standards       | ID #        | Cal Date/Calibrated by, Certificate No. | Scheduled Calibration |
|-------------------------|-------------|-----------------------------------------|-----------------------|
| Power Meter NRP2        | 101919      | 27-Jun-16 (CTTL, No.J16X04777)          | Jun-17                |
| Power sensor NRP-Z91    | 101547      | 27-Jun-16 (CTTL, No.J16X04777)          | Jun-17                |
| Power sensor NRP-Z91    | 101548      | 27-Jun-16 (CTTL, No.J16X04777)          | Jun-17                |
| Reference10dBAttenuator | 18NS0W-10dB | 13-Mar-16(CTTL, No.J16X01547)           | Mar-18                |
| Reference20dBAttenuator | 18NS0W-20dB | 13-Mar-16(CTTL, No.J16X01548)           | Mar-18                |
| Reference Probe EX3DV4  | SN 7307     | 19-Feb-16(SPEAG, No.EX3-7307, Feb16)    | Feb-17                |
| DAE4                    | SN 1331     | 21-Jan-16(SPEAG, No.DAE4-1331, Jan16)   | Jan-17                |
| Secondary Standards     | ID #        | Cal Date/Calibrated by, Certificate No. | Scheduled Calibration |
| SignalGeneratorMG3700A  | 6201052605  | 27-Jun-16 (CTTL, No.J16X04776)          | Jun-17                |
| Network Analyzer E5071C | MY48110673  | 26-Jan-16 (CTTL, No.J16X00894)          | Jan-17                |

Calibrated by: Yu Zongying SAR Test Engineer

Reviewed by: Qi Dianyan SAR Project Leader

Approved by: Liu Wei Deputy Director of SEM Department

Issued: October 15, 2016

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Certificate No: Z16-97170

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E-mail: cti@chinaatl.com http://www.chinaatl.com

**Glossary:**

TSL: Tissue simulating liquid  
NORM<sub>x,y,z</sub>: sensitivity in free space  
ConvF: sensitivity in TSL / NORM<sub>x,y,z</sub>  
DCP: diode compression point  
CF: crest factor (1/6 duty cycle) of the RF signal  
A,B,C,D: modulation dependent linearization parameters  
Polarization Φ: Φ rotation around probe axis  
Polarization θ: θ rotation around an axis that is in the plane normal to probe axis (at measurement center), i  
θ=0 is normal to probe axis

Connector Angle: information used in DASY system to align probe sensor X to the robot coordinate system

**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 300MHz to 3GHz)", 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 86565A, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Methods Applied and Interpretation of Parameters:**

- NORM<sub>x,y,z</sub> Assessed for E-field polarization θ=0 (500MHz in TEM-cell; f>1800MHz: waveguide). NORM<sub>x,y,z</sub> are only intermediate values, i.e., the uncertainties of NORM<sub>x,y,z</sub> does not effect the E-field uncertainty inside TSL (see below ConvF)
- NORM<sub>0</sub>(<sub>x,y,z</sub>) = NORM<sub>x,y,z</sub> frequency response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF
- DCP<sub>x,y,z</sub>: DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A<sub>x,y,z</sub>; B<sub>x,y,z</sub>; C<sub>x,y,z</sub>; V<sub>R</sub>; V<sub>R</sub>: V<sub>R</sub> are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. V<sub>R</sub> is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters: Assessed in flat phantom using E-field (or Temperature Transfer Standard for f>800MHz) and inside waveguide using analytical field distributions based on power measurements for f>800MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty valued are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM<sub>x,y,z</sub> ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from 50MHz to 100MHz.
- Spherical isotropy (3D deviation from isotropy): in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle: The angle is assessed using the information gained by determining the NORM<sub>x,y,z</sub> (no uncertainty required).

Certificate No: Z16-97170

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# Probe ES3DV3

## SN: 3297

Calibrated: October 14, 2016

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

Certificate No: Z16-97170

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## DASY/EASY – Parameters of Probe: ES3DV3 - SN: 3297

### Basic Calibration Parameters

|                                           | Sensor X | Sensor Y | Sensor Z | Unc (k=2) |
|-------------------------------------------|----------|----------|----------|-----------|
| Norm(μV/(V/m) <sup>2</sup> ) <sup>A</sup> | 0.94     | 1.03     | 1.26     | ±10.8%    |
| DCP(mV) <sup>B</sup>                      | 103.8    | 103.8    | 102.4    |           |

### Modulation Calibration Parameters

| UID | Communication System Name | A dB  | B dB/μV | C   | D dB | VR mV | Unc <sup>C</sup> (k=2) |
|-----|---------------------------|-------|---------|-----|------|-------|------------------------|
| 0   | CW                        | X 0.0 | 0.0     | 1.0 | 0.00 | 230.2 | ±2.8%                  |
|     |                           | Y 0.0 | 0.0     | 1.0 |      | 242.0 |                        |
|     |                           | Z 0.0 | 0.0     | 1.0 |      | 271.4 |                        |

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%.

<sup>A</sup> The uncertainties of Norm X, Y, Z do not affect the E-field uncertainty inside TSL (see Page 5 and Page 6).  
<sup>B</sup> Numerical linearization parameter; uncertainty not required.  
<sup>C</sup> Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

Certificate No: Z16-97170

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## ES3DV3 Sn:3297



### DASY/EASY – Parameters of Probe: ES3DV3 - SN: 3297

#### Calibration Parameter Determined in Head Tissue Simulating Media

| f [MHz] <sup>c</sup> | Relative Permittivity <sup>f</sup> | Conductivity (S/m) <sup>f</sup> | ConvF X | ConvF Y | ConvF Z | Alpha <sup>g</sup> | Depth <sup>h</sup> (mm) | Unc <sup>i</sup> (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|--------------------|-------------------------|------------------------|
| 835                  | 41.5                               | 0.90                            | 6.18    | 6.18    | 6.18    | 0.43               | 1.45                    | ±12%                   |
| 900                  | 41.5                               | 0.97                            | 6.21    | 6.21    | 6.21    | 0.40               | 1.35                    | ±12%                   |
| 1750                 | 40.1                               | 1.37                            | 5.22    | 5.22    | 5.22    | 0.56               | 1.49                    | ±12%                   |
| 1900                 | 40.0                               | 1.40                            | 5.09    | 5.09    | 5.09    | 0.60               | 1.44                    | ±12%                   |
| 2000                 | 40.0                               | 1.40                            | 4.93    | 4.93    | 4.93    | 0.45               | 1.77                    | ±12%                   |
| 2450                 | 39.2                               | 1.80                            | 4.53    | 4.53    | 4.53    | 0.83               | 1.26                    | ±12%                   |

<sup>c</sup> Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

<sup>f</sup> At frequency below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ±5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>g</sup> Alpha/Depth are determined during calibration. SPEAQ warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

Certificate No: Z16-97170

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### DASY/EASY – Parameters of Probe: ES3DV3 - SN: 3297

#### Calibration Parameter Determined in Body Tissue Simulating Media

| f [MHz] <sup>c</sup> | Relative Permittivity <sup>f</sup> | Conductivity (S/m) <sup>f</sup> | ConvF X | ConvF Y | ConvF Z | Alpha <sup>g</sup> | Depth <sup>h</sup> (mm) | Unc <sup>i</sup> (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|--------------------|-------------------------|------------------------|
| 835                  | 55.2                               | 0.97                            | 6.08    | 6.08    | 6.08    | 0.43               | 1.56                    | ±12%                   |
| 900                  | 55.0                               | 1.05                            | 6.08    | 6.08    | 6.08    | 0.42               | 1.64                    | ±12%                   |
| 1750                 | 53.4                               | 1.49                            | 4.99    | 4.99    | 4.99    | 0.56               | 1.59                    | ±12%                   |
| 1900                 | 53.3                               | 1.52                            | 4.82    | 4.82    | 4.82    | 0.52               | 1.62                    | ±12%                   |
| 2000                 | 53.3                               | 1.52                            | 4.65    | 4.65    | 4.65    | 0.44               | 2.03                    | ±12%                   |
| 2450                 | 52.7                               | 1.95                            | 4.46    | 4.46    | 4.46    | 0.90               | 1.25                    | ±12%                   |

<sup>c</sup> Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

<sup>f</sup> At frequency below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ±5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

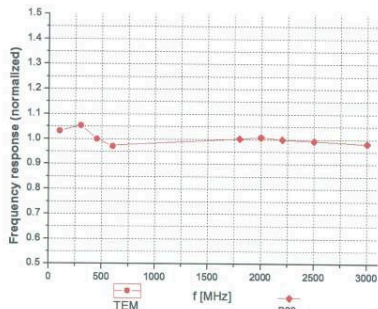
<sup>g</sup> Alpha/Depth are determined during calibration. SPEAQ warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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### Frequency Response of E-Field (TEM-Cell: if110 EXX, Waveguide: R22)



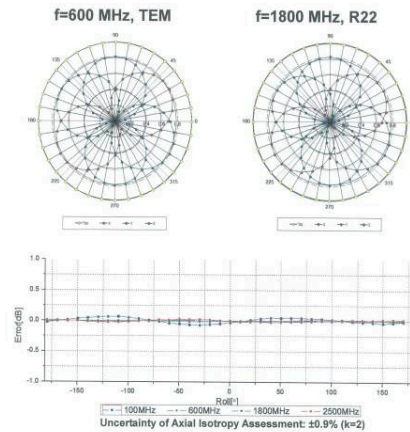
Uncertainty of Frequency Response of E-field: ±7.5% (k=2)

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### Receiving Pattern (Φ, θ=0°)



Uncertainty of Axial Isotropy Assessment: ±0.9% (k=2)

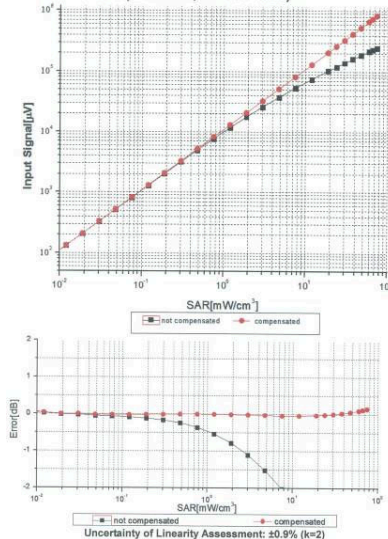
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## ES3DV3 Sn:3297



### Dynamic Range f(SAR<sub>head</sub>) (TEM cell, f = 900 MHz)

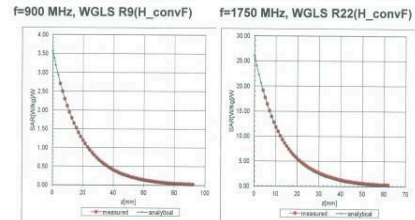


Certificate No: Z16-97170

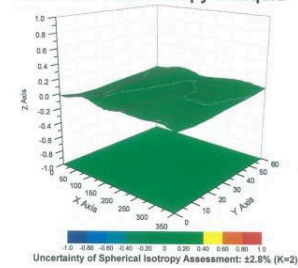
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### Conversion Factor Assessment



### Deviation from Isotropy in Liquid



Certificate No: Z16-97170

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### DASY/EASY – Parameters of Probe: ES3DV3 - SN: 3297

#### Other Probe Parameters

|                                               |            |
|-----------------------------------------------|------------|
| Sensor Arrangement                            | Triangular |
| Connector Angle (°)                           | 15.5       |
| Mechanical Surface Detection Mode             | enabled    |
| Optical Surface Detection Mode                | disable    |
| Probe Overall Length                          | 337mm      |
| Probe Body Diameter                           | 10mm       |
| Tip Length                                    | 10mm       |
| Tip Diameter                                  | 4mm        |
| Probe Tip to Sensor X Calibration Point       | 2mm        |
| Probe Tip to Sensor Y Calibration Point       | 2mm        |
| Probe Tip to Sensor Z Calibration Point       | 2mm        |
| Recommended Measurement Distance from Surface | 3mm        |

Certificate No: Z16-97170

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## EX3DV4 Sn.3717

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**TTL Calibration Laboratory**  
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校准  
CNAS L0570

Client: **TiJet** Certificate No: **Z16-97169**

**CALIBRATION CERTIFICATE**

Object: **EX3DV4 - SN.3717**

Calibration Procedure(s): **FD-Z11-004-01  
Calibration Procedures for Dosimetric E-field Probes**

Calibration date: **October 19, 2016**

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 (MATE critical for calibration)

| Primary Standards       | ID #        | Cal Date(Calibrated by, Certificate No.) | Scheduled Calibration |
|-------------------------|-------------|------------------------------------------|-----------------------|
| Power Meter NRP2        | 101919      | 27-Jun-16 (CTTL No.J16X04777)            | Jun-17                |
| Power sensor NRP-Z91    | 101547      | 27-Jun-16 (CTTL No.J16X04777)            | Jun-17                |
| Power sensor NRP-Z91    | 101548      | 27-Jun-16 (CTTL No.J16X04777)            | Jun-17                |
| Reference10dBAttenuator | 18N50W-10dB | 13-Mar-16(CTTL No.J16X01548)             | Mar-18                |
| Reference20dBAttenuator | 18N50W-20dB | 13-Mar-16(CTTL No.J16X01548)             | Mar-18                |
| Reference Probe EX3DV4  | SN 7307     | 19-Feb-16(SPEAG No EX3-7307_Feb16)       | Feb-17                |
| DAE4                    | SN 1331     | 21-Jan-16(SPEAG No DAE4-1331_Jan16)      | Jan-17                |

| Secondary Standards     | ID #       | Cal Date(Calibrated by, Certificate No.) | Scheduled Calibration |
|-------------------------|------------|------------------------------------------|-----------------------|
| SignalGeneratorMG3700A  | 6201052605 | 27-Jun-16 (CTTL No.J16X04776)            | Jun-17                |
| Network Analyzer E5071C | MY46110673 | 26-Jan-16 (CTTL No.J16X00894)            | Jan-17                |

Calibrated by: **Yu Zongying** SAR Test Engineer *[Signature]*

Reviewed by: **Qi Diaryuan** SAR Project Leader *[Signature]*

Approved by: **Liu Wei** Deputy Director of SEM Department *[Signature]*

Issued: October 21, 2016

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**TTL Calibration Laboratory**  
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Tel: +86-10-42304633-2218 Fax: +86-10-42304633-2209  
E-mail: cti@china.ttl.com http://www.china.ttl.com

**Glossary:**

TSL: tissue simulating liquid  
NORM<sub>Mx,y,z</sub>: sensitivity in free space  
ConvF: diode compression point  
DCP: crest factor (1/duty\_cycle) of the RF signal  
A,B,C,D: modulation dependent linearization parameters  
Polarization Φ: rotation around probe axis  
Polarization θ: rotation around an axis that is in the plane normal to probe axis (at measurement center).  
θ=0 is normal to probe axis  
Connector Angle: information used in DASY system to align probe sensor X to the robot coordinate system

**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 300MHz to 3GHz)", 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) KOB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

**Methods Applied and Interpretation of Parameters:**

- NORM<sub>Mx,y,z</sub>: Assessed for E-field polarization θ=0 (fs900MHz in TEM-cell; f>1800MHz: waveguide). NORM<sub>Mx,y,z</sub> are only intermediate values, i.e. the uncertainties of NORM<sub>Mx,y,z</sub> does not effect the E<sup>2</sup>-field uncertainty inside TSL (see below ConvF).
- NORM(f)<sub>Mx,y,z</sub> = NORM<sub>Mx,y,z</sub> \* frequency\_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCP<sub>Mx,y,z</sub>: DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics.
- A<sub>Mx,y,z</sub>, B<sub>Mx,y,z</sub>, C<sub>Mx,y,z</sub>, V<sub>R</sub><sub>Mx,y,z</sub>: A,B,C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. V<sub>R</sub> is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters: Assessed in flat phantom using E-field (or Temperature Transfer Standard for fs900MHz) and inside waveguide using analytical field distributions based on power measurements for f<800MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM<sub>Mx,y,z</sub> \* ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from 50MHz to 100MHz.
- Spherical isotropy (3D deviation from isotropy): in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle: The angle is assessed using the information gained by determining the NORM<sub>Mx</sub> (no uncertainty required).

Certificate No: Z16-97169

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## Probe EX3DV4

SN: 3717

Calibrated: October 19, 2016

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

Certificate No: Z16-97169

Page 3 of 11



## DASY/EASY – Parameters of Probe: EX3DV4 – SN: 3717

### Basic Calibration Parameters

|                                          | Sensor X | Sensor Y | Sensor Z | Unc (k=2) |
|------------------------------------------|----------|----------|----------|-----------|
| Norm(μV/V/m) <sup>1/2</sup> <sup>A</sup> | 0.50     | 0.48     | 0.55     | ±10.8%    |
| DCP(mV) <sup>B</sup>                     | 99.6     | 102.5    | 100.8    |           |

### Modulation Calibration Parameters

| UID | Communication System Name | A dB  | B dB-μV | C   | D dB | V <sub>R</sub> mV | Unc <sup>C</sup> (k=2) |
|-----|---------------------------|-------|---------|-----|------|-------------------|------------------------|
| 0   | CW                        | X 0.0 | 0.0     | 1.0 | 0.00 | 203.0             | ±2.2%                  |
|     |                           | Y 0.0 | 0.0     | 1.0 |      | 197.5             |                        |
|     |                           | Z 0.0 | 0.0     | 1.0 |      | 219.8             |                        |

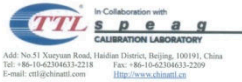
The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor k=2, which for a normal distribution Corresponds to a coverage probability of approximately 95%.

<sup>A</sup> The uncertainties of Norm X, Y, Z do not affect the E<sup>2</sup>-field uncertainty inside TSL (see Page 5 and Page 6).  
<sup>B</sup> Numerical linearization parameter: uncertainty not required.  
<sup>C</sup> Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

Certificate No: Z16-97169

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## EX3DV4 Sn.3717



### DASY/EASY – Parameters of Probe: EX3DV4 – SN: 3717

#### Calibration Parameter Determined in Head Tissue Simulating Media

| f [MHz] <sup>c</sup> | Relative Permittivity <sup>d</sup> | Conductivity (S/m) <sup>e</sup> | ConvF X | ConvF Y | ConvF Z | Alpha <sup>g</sup> (mm) | Depth <sup>h</sup> (mm) | Unc <sup>i</sup> (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|-------------------------|-------------------------|------------------------|
| 750                  | 41.9                               | 0.89                            | 9.27    | 9.27    | 9.27    | 0.30                    | 0.80                    | ±12%                   |
| 835                  | 41.5                               | 0.90                            | 8.93    | 8.93    | 8.93    | 0.14                    | 1.39                    | ±12%                   |
| 900                  | 41.5                               | 0.97                            | 8.94    | 8.94    | 8.94    | 0.12                    | 1.60                    | ±12%                   |
| 1750                 | 40.1                               | 1.37                            | 7.70    | 7.70    | 7.70    | 0.17                    | 1.61                    | ±12%                   |
| 1900                 | 40.0                               | 1.40                            | 7.65    | 7.65    | 7.65    | 0.20                    | 1.49                    | ±12%                   |
| 2300                 | 39.5                               | 1.97                            | 7.15    | 7.15    | 7.15    | 0.56                    | 0.70                    | ±12%                   |
| 2450                 | 39.2                               | 1.80                            | 6.96    | 6.96    | 6.96    | 0.40                    | 0.91                    | ±12%                   |
| 2600                 | 39.0                               | 1.96                            | 6.70    | 6.70    | 6.70    | 0.52                    | 0.80                    | ±12%                   |
| 5200                 | 36.0                               | 4.66                            | 5.25    | 5.25    | 5.25    | 0.40                    | 1.25                    | ±13%                   |
| 5300                 | 35.9                               | 4.76                            | 4.98    | 4.98    | 4.98    | 0.40                    | 1.25                    | ±13%                   |
| 5500                 | 35.6                               | 4.96                            | 4.80    | 4.80    | 4.80    | 0.40                    | 1.28                    | ±13%                   |
| 5600                 | 35.5                               | 5.07                            | 4.67    | 4.67    | 4.67    | 0.40                    | 1.45                    | ±13%                   |
| 5800                 | 35.3                               | 5.27                            | 4.57    | 4.57    | 4.57    | 0.44                    | 1.45                    | ±13%                   |

<sup>c</sup> Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ±10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ±110 MHz.

<sup>d</sup> At frequency below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ±5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

<sup>e</sup> Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ±1% for frequencies below 3 GHz and below ±2% for the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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### DASY/EASY – Parameters of Probe: EX3DV4 – SN: 3717

#### Calibration Parameter Determined in Body Tissue Simulating Media

| f [MHz] <sup>c</sup> | Relative Permittivity <sup>d</sup> | Conductivity (S/m) <sup>e</sup> | ConvF X | ConvF Y | ConvF Z | Alpha <sup>g</sup> (mm) | Depth <sup>h</sup> (mm) | Unc <sup>i</sup> (k=2) |
|----------------------|------------------------------------|---------------------------------|---------|---------|---------|-------------------------|-------------------------|------------------------|
| 750                  | 55.5                               | 0.96                            | 9.25    | 9.25    | 9.25    | 0.50                    | 0.82                    | ±12%                   |
| 835                  | 55.2                               | 0.97                            | 8.99    | 8.99    | 8.99    | 0.16                    | 1.54                    | ±12%                   |
| 900                  | 55.0                               | 1.05                            | 8.93    | 8.93    | 8.93    | 0.23                    | 1.12                    | ±12%                   |
| 1750                 | 53.4                               | 1.49                            | 7.63    | 7.63    | 7.63    | 0.17                    | 1.79                    | ±12%                   |
| 1900                 | 53.3                               | 1.52                            | 7.44    | 7.44    | 7.44    | 0.20                    | 1.71                    | ±12%                   |
| 2300                 | 52.9                               | 1.81                            | 7.06    | 7.06    | 7.06    | 0.55                    | 0.79                    | ±12%                   |
| 2450                 | 52.7                               | 1.95                            | 7.04    | 7.04    | 7.04    | 0.38                    | 1.12                    | ±12%                   |
| 2600                 | 52.5                               | 2.16                            | 6.86    | 6.86    | 6.86    | 0.37                    | 1.11                    | ±12%                   |
| 5200                 | 49.0                               | 5.30                            | 4.47    | 4.47    | 4.47    | 0.45                    | 1.50                    | ±13%                   |
| 5300                 | 48.9                               | 5.42                            | 4.19    | 4.19    | 4.19    | 0.45                    | 1.55                    | ±13%                   |
| 5500                 | 48.6                               | 5.65                            | 3.90    | 3.90    | 3.90    | 0.50                    | 1.50                    | ±13%                   |
| 5600                 | 48.5                               | 5.77                            | 3.68    | 3.68    | 3.68    | 0.50                    | 1.55                    | ±13%                   |
| 5800                 | 48.2                               | 6.00                            | 3.83    | 3.83    | 3.83    | 0.50                    | 1.70                    | ±13%                   |

<sup>c</sup> Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ±10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ±110 MHz.

<sup>d</sup> At frequency below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ±5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

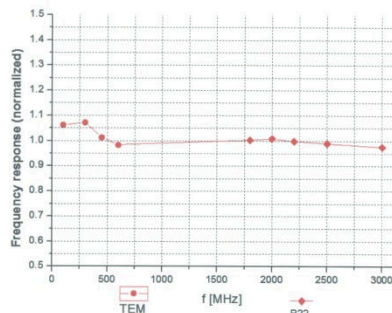
<sup>e</sup> Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ±1% for frequencies below 3 GHz and below ±2% for the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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### Frequency Response of E-Field (TEM-Cell: ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ±7.5% (k=2)

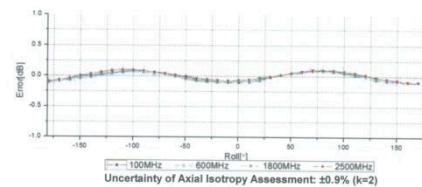
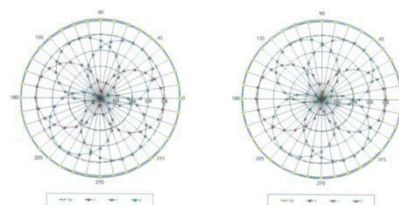
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### Receiving Pattern (Φ, θ=0°)

f=600 MHz, TEM      f=1800 MHz, R22

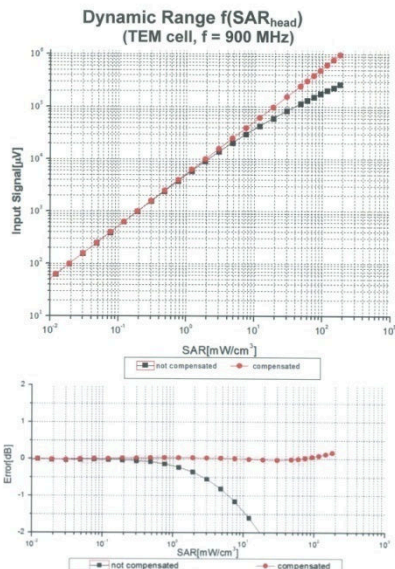


Uncertainty of Axial Isotropy Assessment: ±0.9% (k=2)

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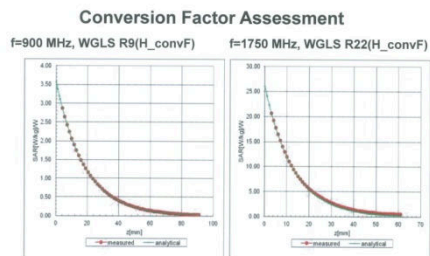
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## EX3DV4 Sn.3717

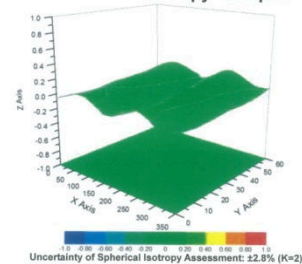


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### Deviation from Isotropy in Liquid



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### DASY/EASY – Parameters of Probe: EX3DV4 – SN: 3717

| Other Probe Parameters                        |            |
|-----------------------------------------------|------------|
| Sensor Arrangement                            | Triangular |
| Connector Angle (°)                           | 158.3      |
| Mechanical Surface Detection Mode             | enabled    |
| Optical Surface Detection Mode                | disable    |
| Probe Overall Length                          | 337mm      |
| Probe Body Diameter                           | 10mm       |
| Tip Length                                    | 9mm        |
| Tip Diameter                                  | 2.5mm      |
| Probe Tip to Sensor X Calibration Point       | 1mm        |
| Probe Tip to Sensor Y Calibration Point       | 1mm        |
| Probe Tip to Sensor Z Calibration Point       | 1mm        |
| Recommended Measurement Distance from Surface | 1.4mm      |

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# D835V2 Sn:4d100

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Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504  
E-mail: cti@china.ttl.com Http://www.china.ttl.com

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Client: **Tejet** Certificate No: **Z16-97171**

## CALIBRATION CERTIFICATE

Object: **D835V2 - SN: 4d100**

Calibration Procedure(s): **FD-Z11-003-01**  
Calibration Procedures for dipole validation kits

Calibration date: **October 10, 2016**

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(Calibrated by, Certificate No.) | Scheduled Calibration |
|------------------------|---------|------------------------------------------|-----------------------|
| Power Meter NRP2       | 101919  | 27-Jun-16 (CTTL, No.J16X04777)           | Jun-17                |
| Power sensor NRP-Z91   | 101547  | 27-Jun-16 (CTTL, No.J16X04777)           | Jun-17                |
| Reference Probe ES3DV3 | SN 3149 | 15-Apr-16(CTTL-SPEAG No.J16-97035)       | Apr-17                |
| DAE4                   | SN 777  | 22-Aug-16(CTTL-SPEAG No.Z16-97138)       | Aug-17                |

| Secondary Standards     | ID #       | Cal Date(Calibrated by, Certificate No.) | Scheduled Calibration |
|-------------------------|------------|------------------------------------------|-----------------------|
| Signal Generator E4438C | MY46071430 | 01-Feb-16 (CTTL, No.J16X00893)           | Jan-17                |
| Network Analyzer ES071C | MY46110673 | 26-Jan-16 (CTTL, No.J16X00894)           | Jan-17                |

Calibrated by: **Zhao Jing** SAR Test Engineer

Reviewed by: **Qi Diaryuan** SAR Project Leader

Approved by: **Liu Wei** Deputy Director of SEM Department

Issued: October 14, 2016

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

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## Glossary:

TSL tissue simulating liquid  
ConvF sensitivity in TSL / NORMx,y,z  
N/A not applicable or not measured

**Calibration is Performed According to the Following Standards:**

- 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
- 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 300MHz to 3GHz)", February 2005
- IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- KDB655664, 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%.

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## Measurement Conditions

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

| DASY Version                 | DASY52                   | 52.8.8.1258 |
|------------------------------|--------------------------|-------------|
| Extrapolation                | Advanced Extrapolation   |             |
| Phantom                      | Triple Flat Phantom 5.1C |             |
| Distance Dipole Center - TSL | 16 mm                    | with Spacer |
| Zoom Scan Resolution         | dx, dy, dz = 5 mm        |             |
| Frequency                    | 835 MHz ± 1 MHz          |             |

## Head TSL parameters

The following parameters and calculations were applied.

|                                         | Temperature     | Permittivity | Conductivity     |
|-----------------------------------------|-----------------|--------------|------------------|
| Nominal Head TSL parameters             | 22.0 °C         | 41.5         | 0.90 mho/m       |
| Measured Head TSL parameters            | (22.0 ± 0.2) °C | 41.3 ± 6 %   | 0.89 mho/m ± 6 % |
| Head TSL temperature change during test | <1.0 °C         | ---          | ---              |

## SAR result with Head TSL

| SAR averaged over 1 cm <sup>2</sup> (1 g) of Head TSL   | Condition          |                            |
|---------------------------------------------------------|--------------------|----------------------------|
| SAR measured                                            | 250 mW input power | 2.37 mW / g                |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 9.54 mW (g ± 20.8 % (k=2)) |
| SAR averaged over 10 cm <sup>2</sup> (10 g) of Head TSL | Condition          |                            |
| SAR measured                                            | 250 mW input power | 1.55 mW / g                |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 6.23 mW (g ± 20.4 % (k=2)) |

## Body TSL parameters

The following parameters and calculations were applied.

|                                         | Temperature     | Permittivity | Conductivity     |
|-----------------------------------------|-----------------|--------------|------------------|
| Nominal Body TSL parameters             | 22.0 °C         | 55.2         | 0.87 mho/m       |
| Measured Body TSL parameters            | (22.0 ± 0.2) °C | 55.4 ± 6 %   | 0.96 mho/m ± 6 % |
| Body TSL temperature change during test | <1.0 °C         | ---          | ---              |

## SAR result with Body TSL

| SAR averaged over 1 cm <sup>2</sup> (1 g) of Body TSL   | Condition          |                            |
|---------------------------------------------------------|--------------------|----------------------------|
| SAR measured                                            | 250 mW input power | 2.39 mW / g                |
| SAR for nominal Body TSL parameters                     | normalized to 1W   | 9.61 mW (g ± 20.8 % (k=2)) |
| SAR averaged over 10 cm <sup>2</sup> (10 g) of Body TSL | Condition          |                            |
| SAR measured                                            | 250 mW input power | 1.59 mW / g                |
| SAR for nominal Body TSL parameters                     | normalized to 1W   | 6.39 mW (g ± 20.4 % (k=2)) |

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## Appendix

### Antenna Parameters with Head TSL

|                                      |               |
|--------------------------------------|---------------|
| Impedance, transformed to feed point | 52.5G+ 1.37jΩ |
| Return Loss                          | -31.2dB       |

### Antenna Parameters with Body TSL

|                                      |               |
|--------------------------------------|---------------|
| Impedance, transformed to feed point | 47.5G- 1.58jΩ |
| Return Loss                          | -30.5dB       |

### General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.500 ns |
|----------------------------------|----------|

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

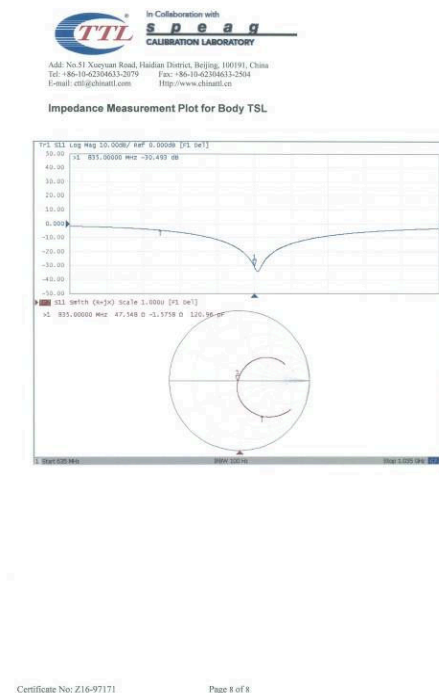
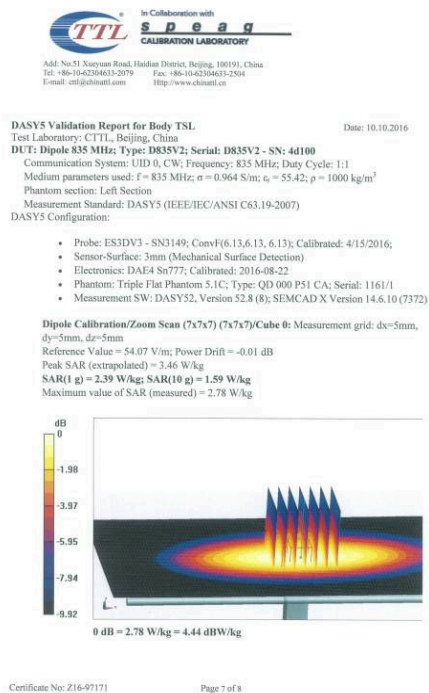
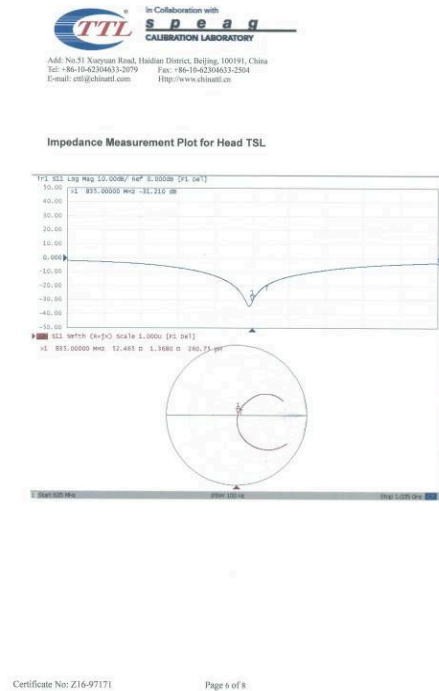
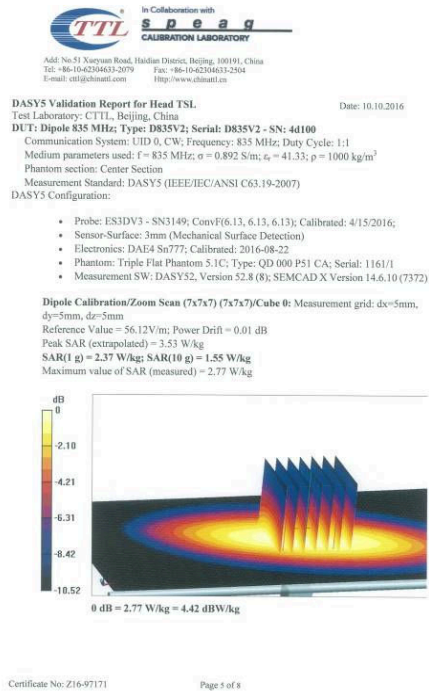
The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching 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 |
|-----------------|-------|

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## D835V2 Sn:4d100



## D1750V2 Sn:1034

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Client: **Tjjet** Certificate No: **Z16-97173**

### CALIBRATION CERTIFICATE

Object: **D1750V2 - SN: 1034**

Calibration Procedure(s): **FD-Z11-003-01**  
Calibration Procedures for dipole validation kits

Calibration date: **October 11, 2016**

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/Calibrated by, Certificate No. | Scheduled Calibration |
|--------------------------|---------|-----------------------------------------|-----------------------|
| Power Meter: NRP2        | 101919  | 27-Jun-16 (CTTL No.J16X04777)           | Jun-17                |
| Power sensor: NRP-291    | 101547  | 27-Jun-16 (CTTL No.J16X04777)           | Jun-17                |
| Reference Probe: E53D3V3 | SN 3149 | 15-Apr-16 (CTTL-SPEAG No.J16-97035)     | Apr-17                |
| DAE4                     | SN 777  | 22-Aug-16 (CTTL-SPEAG No.Z16-97138)     | Aug-17                |

| Secondary Standards      | ID #       | Cal Date/Calibrated by, Certificate No. | Scheduled Calibration |
|--------------------------|------------|-----------------------------------------|-----------------------|
| Signal Generator: E4438C | MY49071430 | 01-Feb-16 (CTTL No.J16X00893)           | Jan-17                |
| Network Analyzer: E5017C | MY46110673 | 26-Jan-16 (CTTL No.J16X00894)           | Jan-17                |

Calibrated by: **Zhao Jing** SAR Test Engineer

Reviewed by: **Qi Dianyan** SAR Project Leader

Approved by: **Liu Wei** Deputy Director of SEM Department

Issued: October 14, 2016

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E-mail: cti@china.ttl.com Http://www.china.ttl.com

### Glossary:

TSL: tissue simulating liquid  
ConvF: sensitivity in TSL / NORMx,y,z  
N/A: not applicable or not measured

**Calibration is Performed According to the Following Standards:**

- 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
- 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 300MHz to 3GHz)", February 2009
- IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- KDB895994, SAR Measurement Requirements for 100 MHz to 6 GHz

**Additional Documentation:**

- 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%.

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E-mail: cti@china.ttl.com Http://www.china.ttl.com

### Measurement Conditions

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

| DASY Version                 | DASY52                   | 52.8.8.1258 |
|------------------------------|--------------------------|-------------|
| Extrapolation                | Advanced Extrapolation   |             |
| Phantom                      | Triple Flat Phantom 5.1C |             |
| Distance Dipole Center - TSL | 10 mm                    | with Spacer |
| Zoom Scan Resolution         | dx, dy, dz = 5 mm        |             |
| Frequency                    | 1750 MHz ± 1 MHz         |             |

### Head TSL parameters

The following parameters and calculations were applied.

|                                         | Temperature     | Permittivity | Conductivity     |
|-----------------------------------------|-----------------|--------------|------------------|
| Nominal Head TSL parameters             | 22.0 °C         | 40.1         | 1.37 mho/m       |
| Measured Head TSL parameters            | (22.0 ± 0.2) °C | 40.2 ± 6 %   | 1.39 mho/m ± 6 % |
| Head TSL temperature change during test | <1.0 °C         | ---          | ---              |

### SAR result with Head TSL

| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL   | Condition          |                            |
|---------------------------------------------------------|--------------------|----------------------------|
| SAR measured                                            | 250 mW input power | 9.30 mW / g                |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 36.9 mW / g ± 20.8 % (k=2) |
| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | Condition          |                            |
| SAR measured                                            | 250 mW input power | 5.08 mW / g                |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 20.2 mW / g ± 20.4 % (k=2) |

### Body TSL parameters

The following parameters and calculations were applied.

|                                         | Temperature     | Permittivity | Conductivity     |
|-----------------------------------------|-----------------|--------------|------------------|
| Nominal Body TSL parameters             | 22.0 °C         | 53.4         | 1.48 mho/m       |
| Measured Body TSL parameters            | (22.0 ± 0.2) °C | 53.5 ± 6 %   | 1.50 mho/m ± 6 % |
| Body TSL temperature change during test | <1.0 °C         | ---          | ---              |

### SAR result with Body TSL

| SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL   | Condition          |                            |
|---------------------------------------------------------|--------------------|----------------------------|
| SAR measured                                            | 250 mW input power | 9.32 mW / g                |
| SAR for nominal Body TSL parameters                     | normalized to 1W   | 37.1 mW / g ± 20.8 % (k=2) |
| SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL | Condition          |                            |
| SAR measured                                            | 250 mW input power | 5.15 mW / g                |
| SAR for nominal Body TSL parameters                     | normalized to 1W   | 20.6 mW / g ± 20.4 % (k=2) |

Certificate No: Z16-97173

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### Appendix

#### Antenna Parameters with Head TSL

|                                      |               |
|--------------------------------------|---------------|
| Impedance, transformed to feed point | 48.0D- 0.90jΩ |
| Return Loss                          | - 37.3dB      |

#### Antenna Parameters with Body TSL

|                                      |               |
|--------------------------------------|---------------|
| Impedance, transformed to feed point | 46.3D+ 0.28jΩ |
| Return Loss                          | - 28.3dB      |

#### General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.318 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.

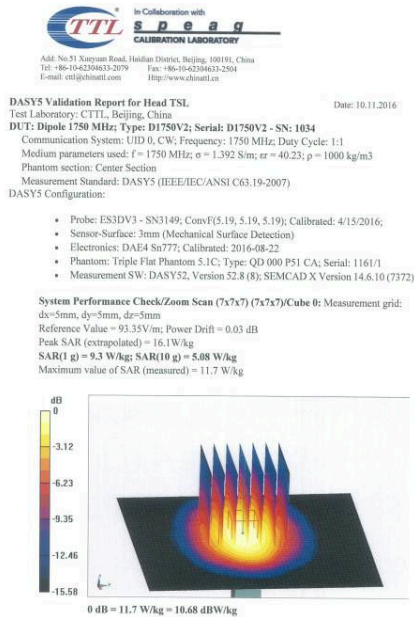
#### Additional EUT Data

|                 |       |
|-----------------|-------|
| Manufactured by | SPEAG |
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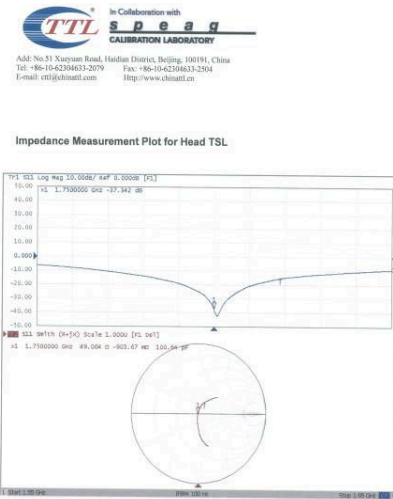
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## D1750V2 Sn:1034



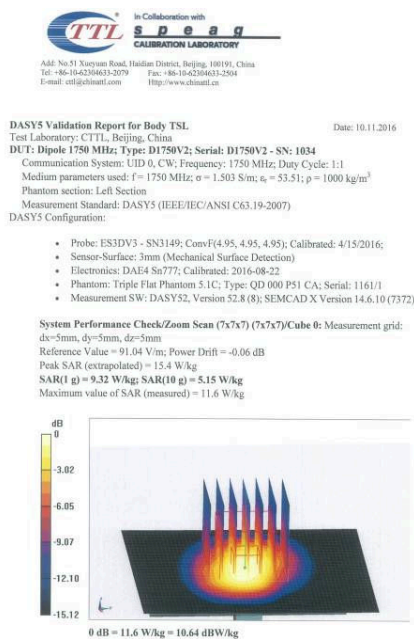
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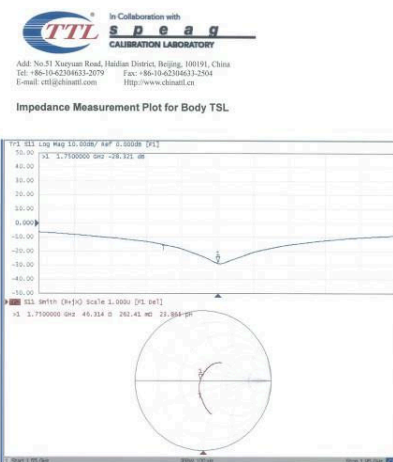
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Certificate No: Z16-97173

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Certificate No: Z16-97173

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# D1900V2 Sn:5d155

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CNAS L0570

Client: **Telcel** Certificate No: **Z16-97050**

## CALIBRATION CERTIFICATE

Object: **D1900V2 - SN: 5d155**

Calibration Procedure(s): **FD-Z11-2-003-01**  
Calibration Procedures for dipole validation kits

Calibration date: **April 14, 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/Calibrated by, Certificate No.) | Scheduled Calibration |
|------------------------|---------|------------------------------------------|-----------------------|
| Power Meter NRP2       | 101919  | 01-Jul-15 (CTTL No.J15X04256)            | Jun-16                |
| Power sensor NRP-Z91   | 101547  | 01-Jul-15 (CTTL No.J15X04256)            | Jun-16                |
| Reference Probe EX3DV4 | SN 3617 | 26-Aug-15(SPEAG No EX3-3617_Aug15)       | Aug-16                |
| DAEA                   | SN 1531 | 21-Jan-16(SPEAG No DAEA-1531_Jan16)      | Jan-17                |

| Secondary Standards     | ID #       | Cal Date/Calibrated by, Certificate No.) | Scheduled Calibration |
|-------------------------|------------|------------------------------------------|-----------------------|
| Signal Generator E4438C | MY49071430 | 01-Feb-16 (CTTL No.J16X00893)            | Jan-17                |
| Network Analyzer E5071C | MY46110673 | 26-Jan-16 (CTTL No.J16X00894)            | Jan-17                |

| Calibrated by: | Name        | Function                          | Signature |
|----------------|-------------|-----------------------------------|-----------|
|                | Zhao Jing   | SAR Test Engineer                 |           |
| Reviewed by:   | Qi Danyuan  | SAR Project Leader                |           |
| Approved by:   | Lu Bingsong | Deputy Director of the laboratory |           |

Issued: April 18, 2018

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## Glossary:

TSL: tissue simulating liquid  
Corr/F: sensitivity in TSL / NORMk,y,z  
N/A: not applicable or not measured

Calibration is Performed According to the Following Standards:

- 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
- 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 300MHz to 3GHz)", February 2005
- IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010
- KD886564, 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%.

Certificate No: Z16-97050

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## Measurement Conditions

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

| DASY Version                 | DASY52                   | 52.8.8.1258 |
|------------------------------|--------------------------|-------------|
| Extrapolation                | Advanced Extrapolation   |             |
| Phantom                      | Triple Flat Phantom 5.1C |             |
| Distance Dipole Center - TSL | 10 mm                    | with Spacer |
| Zoom Scan Resolution         | dx, dy, dz = 5 mm        |             |
| Frequency                    | 1900 MHz ± 1 MHz         |             |

## Head TSL parameters

The following parameters and calculations were applied:

|                                         | Temperature     | Permittivity | Conductivity     |
|-----------------------------------------|-----------------|--------------|------------------|
| Nominal Head TSL parameters             | 22.0 °C         | 40.0         | 1.40 mho/m       |
| Measured Head TSL parameters            | (22.0 ± 0.2) °C | 39.8 ± 6 %   | 1.39 mho/m ± 6 % |
| Head TSL temperature change during test | <1.0 °C         | ---          | ---              |

## SAR result with Head TSL

|                                                         | Condition          |                            |
|---------------------------------------------------------|--------------------|----------------------------|
| SAR averaged over 1 cm <sup>2</sup> (1 g) of Head TSL   | 250 mW input power | 10.2 mW / g                |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 41.0 mW / g ± 20.8 % (k=2) |
| SAR averaged over 10 cm <sup>2</sup> (10 g) of Head TSL | Condition          |                            |
| SAR measured                                            | 250 mW input power | 5.31 mW / g                |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 21.3 mW / g ± 20.4 % (k=2) |

## Body TSL parameters

The following parameters and calculations were applied:

|                                         | Temperature     | Permittivity | Conductivity     |
|-----------------------------------------|-----------------|--------------|------------------|
| Nominal Body TSL parameters             | 22.0 °C         | 53.3         | 1.52 mho/m       |
| Measured Body TSL parameters            | (22.0 ± 0.2) °C | 54.2 ± 6 %   | 1.50 mho/m ± 6 % |
| Body TSL temperature change during test | <1.0 °C         | ---          | ---              |

## SAR result with Body TSL

|                                                         | Condition          |                            |
|---------------------------------------------------------|--------------------|----------------------------|
| SAR averaged over 1 cm <sup>2</sup> (1 g) of Body TSL   | Condition          |                            |
| SAR measured                                            | 250 mW input power | 9.87 mW / g                |
| SAR for nominal Body TSL parameters                     | normalized to 1W   | 38.9 mW / g ± 20.8 % (k=2) |
| SAR averaged over 10 cm <sup>2</sup> (10 g) of Body TSL | Condition          |                            |
| SAR measured                                            | 250 mW input power | 5.21 mW / g                |
| SAR for nominal Body TSL parameters                     | normalized to 1W   | 21.0 mW / g ± 20.4 % (k=2) |

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## Appendix

### Antenna Parameters with Head TSL

| Impedance, transformed to feed point | 51.60 ± 6.24jΩ |
|--------------------------------------|----------------|
| Return Loss                          | -24.5dB        |

### Antenna Parameters with Body TSL

| Impedance, transformed to feed point | 49.60 ± 5.79jΩ |
|--------------------------------------|----------------|
| Return Loss                          | -24.7dB        |

### General Antenna Parameters and Design

| Electrical Delay (one direction) | 1.310 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.

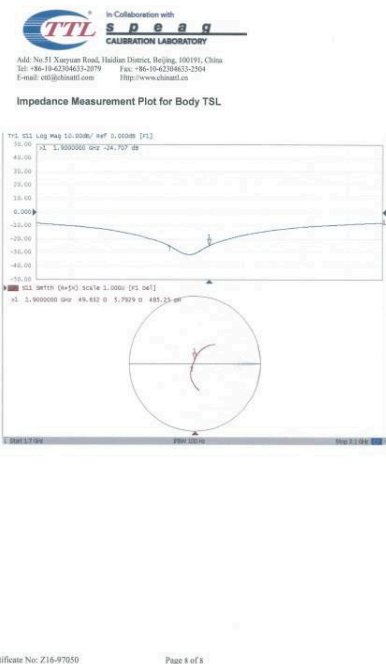
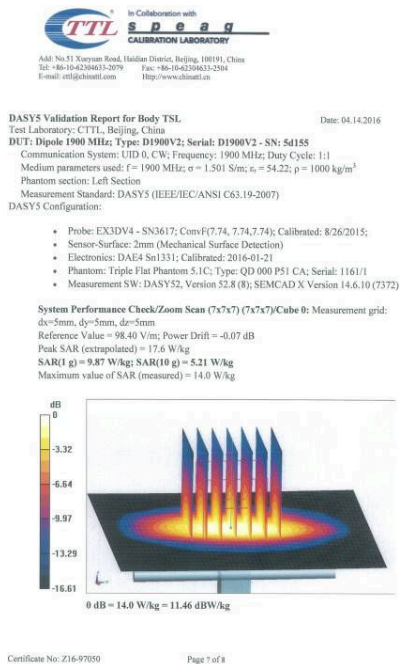
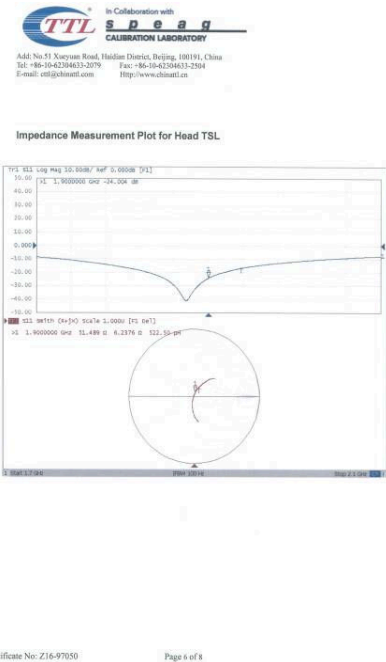
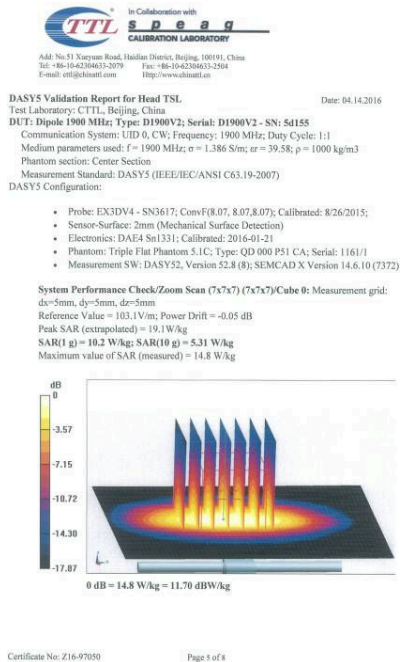
### Additional EUT Data

| Manufactured by | SPEAG |
|-----------------|-------|

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## D1900V2 Sn:5d155



## D2450V2 Sn:845

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CNAS L6570

Client: **Tejet** Certificate No: **Z16-97175**

**CALIBRATION CERTIFICATE**

Object: **D2450V2 - SN: 845**

Calibration Procedure(s): **FD-Z11-003-01**  
Calibration Procedures for dipole validation kits

Calibration date: **October 12, 2016**

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(23±3)°C and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards      | ID #    | Cal Date(Calibrated by, Certificate No.) | Scheduled Calibration |
|------------------------|---------|------------------------------------------|-----------------------|
| Power Meter NRP2       | 101919  | 27-Jun-16 (CTTL, No.J16X04777)           | Jun-17                |
| Power sensor NRP-Z91   | 101547  | 27-Jun-16 (CTTL, No.J16X04777)           | Jun-17                |
| Reference Probe ES3DV3 | SN 3149 | 15-Apr-16(CTTL-SPEAG.No.J16-87035)       | Apr-17                |
| DAE4                   | SN 777  | 22-Aug-16(CTTL-SPEAG.No.Z16-97138)       | Aug-17                |

| Secondary Standards     | ID #       | Cal Date(Calibrated by, Certificate No.) | Scheduled Calibration |
|-------------------------|------------|------------------------------------------|-----------------------|
| Signal Generator E4438C | MY49071430 | 01-Feb-16 (CTTL, No.J16X00893)           | Jan-17                |
| Network Analyzer E5071C | MY46110573 | 26-Jan-16 (CTTL, No.J16X00894)           | Jan-17                |

Calibrated by: **Zhao Jing** SAR Test Engineer

Reviewed by: **Qi Danyuan** SAR Project Leader

Approved by: **Liu Wei** Deputy Director of SEM Department

Issued: October 14, 2016

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Certificate No: Z16-97175

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**Glossary:**

TSL: tissue stimulating liquid  
Con/F: sensitivity in TSL/J NORMx.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 300MHz to 3GHz)", February 2006  
c) IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010  
d) KDB65684, 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%.

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**Measurement Conditions**

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

| DASY Version                 | DASY2                    | 52.8.8.1258 |
|------------------------------|--------------------------|-------------|
| Extrapolation                | Advanced Extrapolation   |             |
| Phantom                      | Triple Flat Phantom 5.1C |             |
| Distance Dipole Center - TSL | 10 mm                    | with Spacer |
| Zoom Scan Resolution         | dx, dy, dz = 5 mm        |             |
| Frequency                    | 2450 MHz ± 1 MHz         |             |

**Head TSL parameters**

The following parameters and calculations were applied:

|                                         | Temperature     | Permittivity | Conductivity     |
|-----------------------------------------|-----------------|--------------|------------------|
| Nominal Head TSL parameters             | 22.0 °C         | 39.2         | 1.80 mho/m       |
| Measured Head TSL parameters            | (22.0 ± 0.2) °C | 39.0 ± 6 %   | 1.78 mho/m ± 6 % |
| Head TSL temperature change during test | <1.0 °C         | ---          | ---              |

**SAR result with Head TSL**

| SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL                                | Condition          |                            |
|--------------------------------------------------------------------------------------|--------------------|----------------------------|
| SAR measured                                                                         | 250 mW input power | 13.0 mW / g                |
| SAR for nominal Head TSL parameters                                                  | normalized to 1W   | 52.3 mW (g ± 20.8 % (k=2)) |
| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL <th>Condition</th> <th></th> | Condition          |                            |
| SAR measured                                                                         | 250 mW input power | 6.09 mW / g                |
| SAR for nominal Head TSL parameters                                                  | normalized to 1W   | 24.4 mW (g ± 20.4 % (k=2)) |

**Body TSL parameters**

The following parameters and calculations were applied:

|                                         | Temperature     | Permittivity | Conductivity     |
|-----------------------------------------|-----------------|--------------|------------------|
| Nominal Body TSL parameters             | 22.0 °C         | 52.7         | 1.95 mho/m       |
| Measured Body TSL parameters            | (22.0 ± 0.2) °C | 52.9 ± 6 %   | 1.92 mho/m ± 6 % |
| Body TSL temperature change during test | <1.0 °C         | ---          | ---              |

**SAR result with Body TSL**

| SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL                                | Condition          |                            |
|--------------------------------------------------------------------------------------|--------------------|----------------------------|
| SAR measured                                                                         | 250 mW input power | 12.7 mW / g                |
| SAR for nominal Body TSL parameters                                                  | normalized to 1W   | 51.2 mW (g ± 20.8 % (k=2)) |
| SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL <th>Condition</th> <th></th> | Condition          |                            |
| SAR measured                                                                         | 250 mW input power | 5.99 mW / g                |
| SAR for nominal Body TSL parameters                                                  | normalized to 1W   | 24.1 mW (g ± 20.4 % (k=2)) |

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**Appendix**

**Antenna Parameters with Head TSL**

| Impedance, transformed to feed point | 51.90 + j 93.0 Ω |
|--------------------------------------|------------------|
| Return Loss                          | - 25.7 dB        |

**Antenna Parameters with Body TSL**

| Impedance, transformed to feed point | 50.50 + j 8.56 Ω |
|--------------------------------------|------------------|
| Return Loss                          | - 23.7 dB        |

**General Antenna Parameters and Design**

| Electrical Delay (one direction) | 1.270 ns |
|----------------------------------|----------|
|----------------------------------|----------|

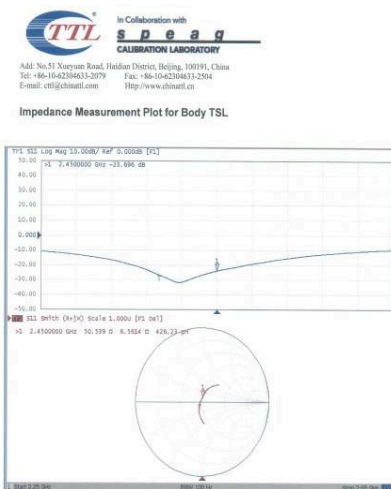
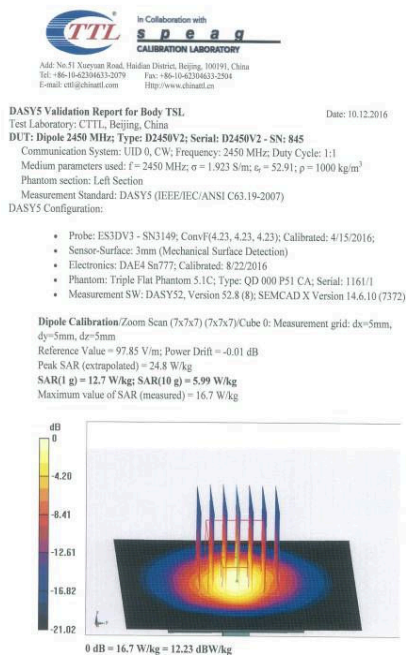
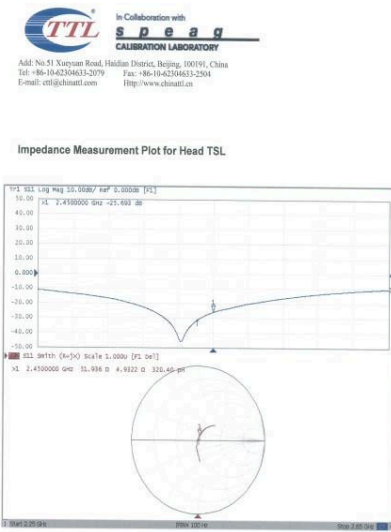
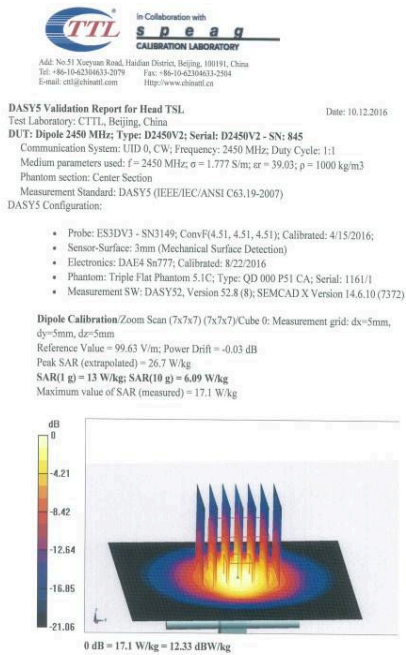
After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

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 |
|-----------------|-------|
|-----------------|-------|

## D2450V2 Sn:845



D2600V2 Sn:1059

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E-mail: cti@china.ttl.com Http://www.china.ttl.cn

Client: Tejet Certificate No: Z16-97051

**CALIBRATION CERTIFICATE**

Object: D2600V2 - SN: 1059

Calibration Procedure(s): FD-Z11-2-003-01  
Calibration Procedures for dipole validation kits

Calibration date: April 14, 2016

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℃ and humidity<70%.

Calibration Equipment used (MATE critical for calibration)

| Primary Standards      | ID #    | Cal Date/Calibrated by, Certificate No.) | Scheduled Calibration |
|------------------------|---------|------------------------------------------|-----------------------|
| Power Meter NRP2       | 101919  | 01-Jul-15 (CTTL No.J15X04256)            | Jun-16                |
| Power sensor NRP-Z91   | 101547  | 01-Jul-15 (CTTL No.J15X04256)            | Jun-16                |
| Reference Probe EX3DVA | SN 3617 | 25-Aug-15(SPEAG No.EX3-3617_Aug15)       | Aug-16                |
| DAE4                   | SN 1331 | 21-Jan-16(SPEAG No.DAE4-1331_Jan16)      | Jan-17                |

| Secondary Standards     | ID #       | Cal Date/Calibrated by, Certificate No.) | Scheduled Calibration |
|-------------------------|------------|------------------------------------------|-----------------------|
| Signal Generator E4438C | MY49071430 | 01-Feb-16 (CTTL No.J16X00893)            | Jan-17                |
| Network Analyzer E5071C | MY46110673 | 26-Jan-16 (CTTL No.J16X00894)            | Jan-17                |

Calibrated by: Zhao Jing SAR Test Engineer

Reviewed by: Qi Danyuan SAR Project Leader

Approved by: Lu Bingsong Deputy Director of the laboratory

Issued: April 15, 2016

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

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Address: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62368633-2079 Fax: +86-10-62368633-2504  
E-mail: cti@china.ttl.com Http://www.china.ttl.cn

**Glossary:**

TSL: tissue simulating liquid  
ConvF: sensitivity in TSL / NORMx,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 300MHz to 3GHz)", February 2005  
c) IEC 62209-2, "Procedure to measure the Specific Absorption Rate (SAR) For wireless communication devices used in close proximity to the human body (frequency range of 30MHz to 6GHz)", March 2010  
d) KDB965664, 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%.

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E-mail: cti@china.ttl.com Http://www.china.ttl.cn

**Measurement Conditions**

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

| DASY Version                 | DASY52                   | 52.8.8.1258 |
|------------------------------|--------------------------|-------------|
| Extrapolation                | Advanced Extrapolation   |             |
| Phantom                      | Triple Flat Phantom 5.1C |             |
| Distance Dipole Center - TSL | 10 mm                    | with Spacer |
| Zoom Scan Resolution         | dx, dy, dz = 5 mm        |             |
| Frequency                    | 2600 MHz ± 1 MHz         |             |

**Head TSL parameters**

The following parameters and calculations were applied:

|                                         | Temperature     | Permittivity | Conductivity     |
|-----------------------------------------|-----------------|--------------|------------------|
| Nominal Head TSL parameters             | 22.0 °C         | 39.0         | 1.98 mho/m       |
| Measured Head TSL parameters            | (22.0 ± 0.2) °C | 39.4 ± 6 %   | 1.94 mho/m ± 6 % |
| Head TSL temperature change during test | <1.0 °C         | ---          | ---              |

**SAR result with Head TSL**

| SAR averaged over 1 cm <sup>2</sup> (1 g) of Head TSL   | Condition          |                            |
|---------------------------------------------------------|--------------------|----------------------------|
| SAR measured                                            | 250 mW input power | 14.0 mW / g                |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 56.4 mW / g ± 20.8 % (k=2) |
| SAR averaged over 10 cm <sup>2</sup> (10 g) of Head TSL | Condition          |                            |
| SAR measured                                            | 250 mW input power | 6.28 mW / g                |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 25.2 mW / g ± 20.4 % (k=2) |

**Body TSL parameters**

The following parameters and calculations were applied:

|                                         | Temperature     | Permittivity | Conductivity     |
|-----------------------------------------|-----------------|--------------|------------------|
| Nominal Body TSL parameters             | 22.0 °C         | 52.5         | 2.16 mho/m       |
| Measured Body TSL parameters            | (22.0 ± 0.2) °C | 52.1 ± 6 %   | 2.16 mho/m ± 6 % |
| Body TSL temperature change during test | <1.0 °C         | ---          | ---              |

**SAR result with Body TSL**

| SAR averaged over 1 cm <sup>2</sup> (1 g) of Body TSL   | Condition          |                            |
|---------------------------------------------------------|--------------------|----------------------------|
| SAR measured                                            | 250 mW input power | 14.5 mW / g                |
| SAR for nominal Body TSL parameters                     | normalized to 1W   | 57.8 mW / g ± 20.8 % (k=2) |
| SAR averaged over 10 cm <sup>2</sup> (10 g) of Body TSL | Condition          |                            |
| SAR measured                                            | 250 mW input power | 6.52 mW / g                |
| SAR for nominal Body TSL parameters                     | normalized to 1W   | 26.0 mW / g ± 20.4 % (k=2) |

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**Appendix**

**Antenna Parameters with Head TSL**

| Impedance, transformed to feed point | 50.80 - 5.47jΩ |
|--------------------------------------|----------------|
| Return Loss                          | -25.2dB        |

**Antenna Parameters with Body TSL**

| Impedance, transformed to feed point | 47.90 - 3.75jΩ |
|--------------------------------------|----------------|
| Return Loss                          | -27.2dB        |

**General Antenna Parameters and Design**

| Electrical Delay (one direction) | 1.256 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.

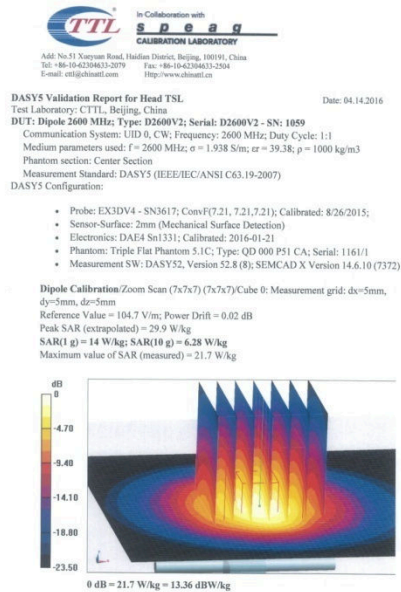
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

**Additional EUT Data**

| Manufactured by | SPEAG |
|-----------------|-------|
|-----------------|-------|

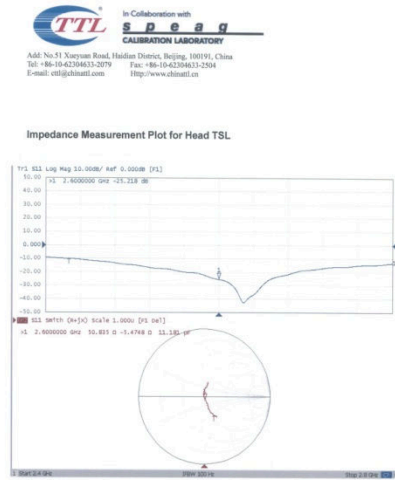
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## D2600V2 Sn:1059



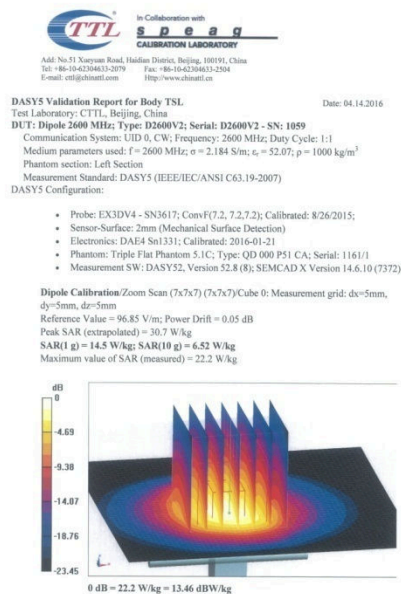
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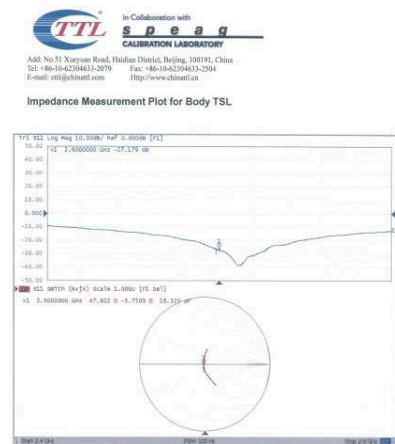
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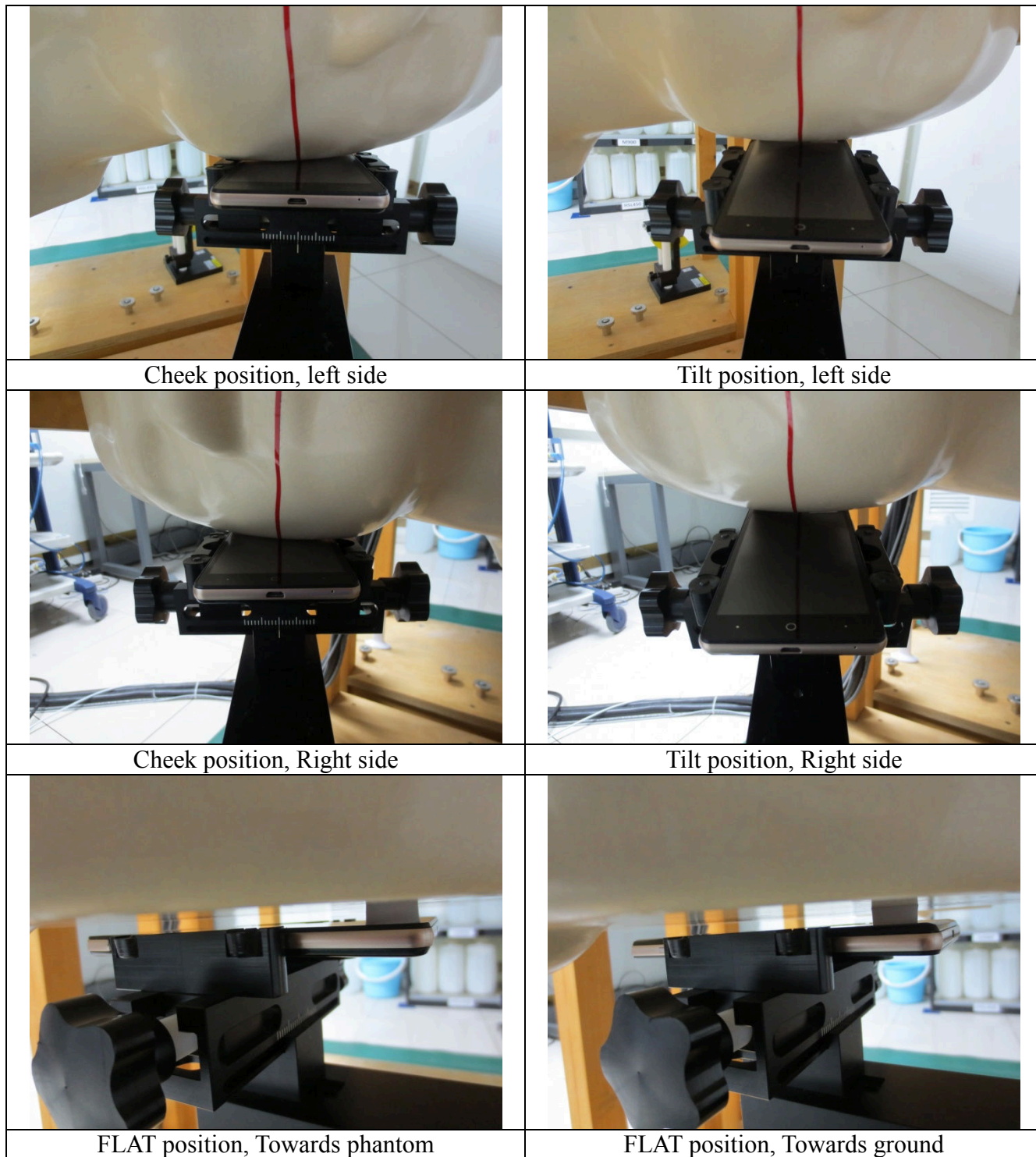
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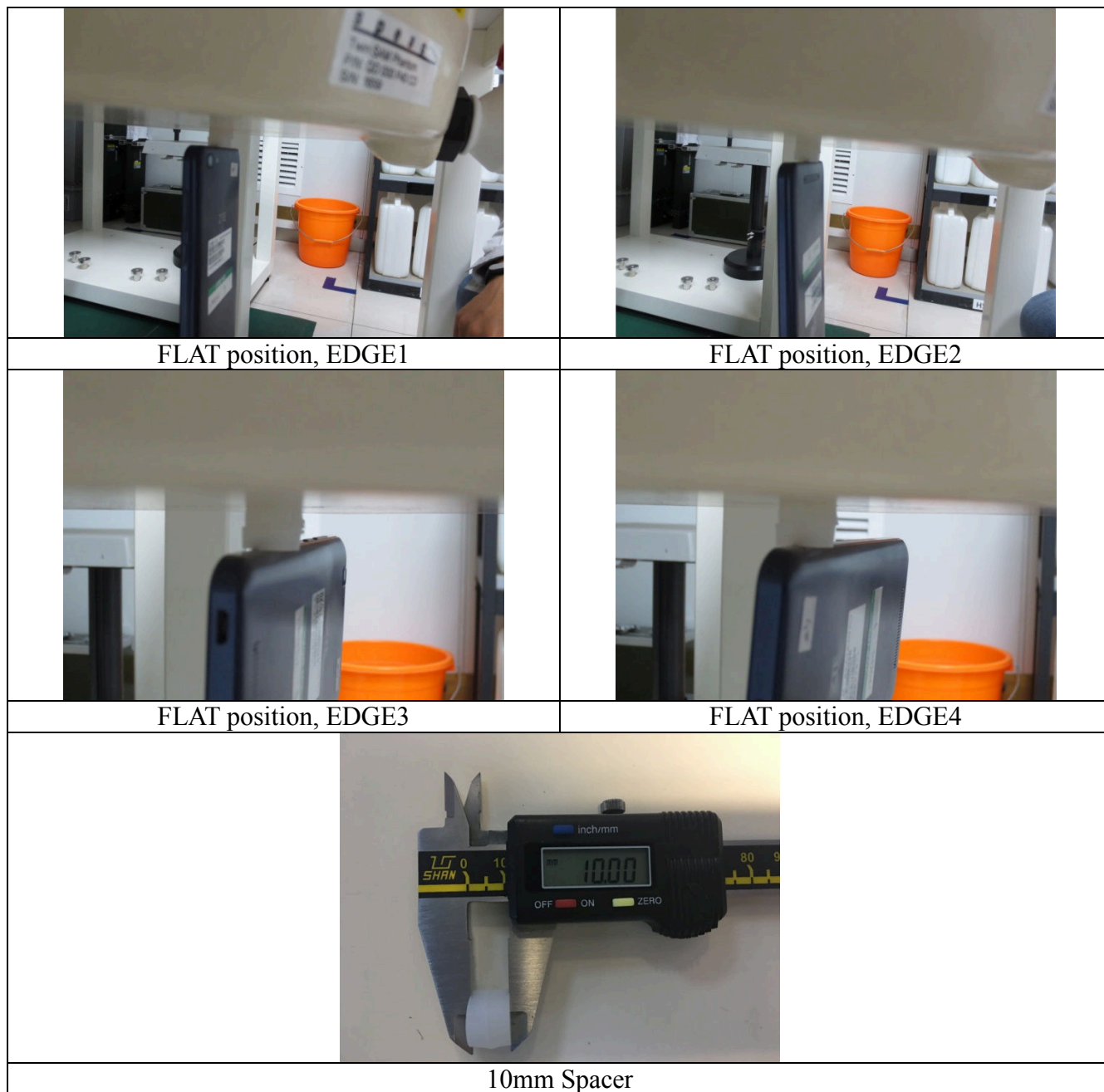
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## ANNEX C - PHOTOGRAPH







---End of Test Report---