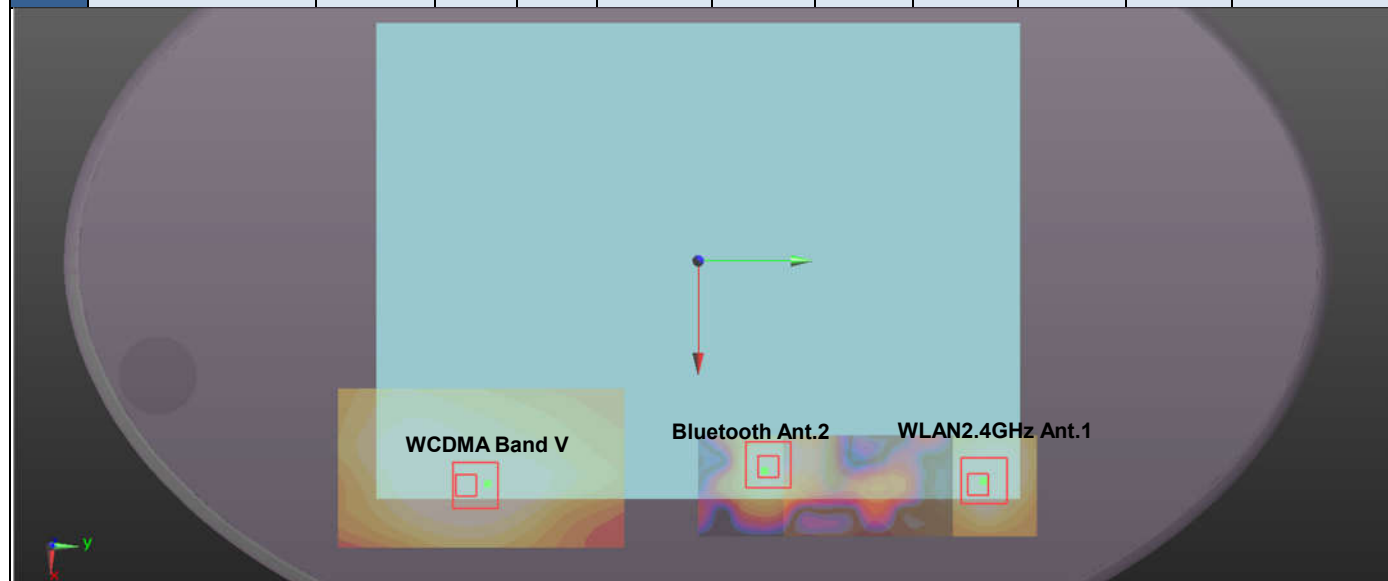
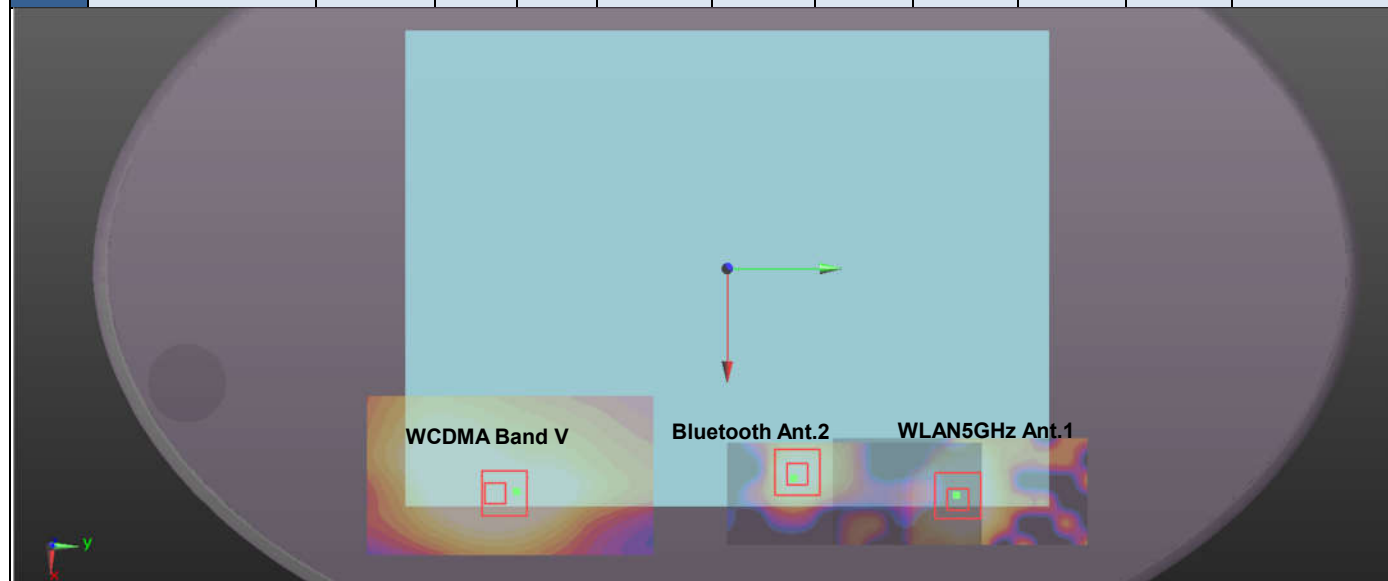


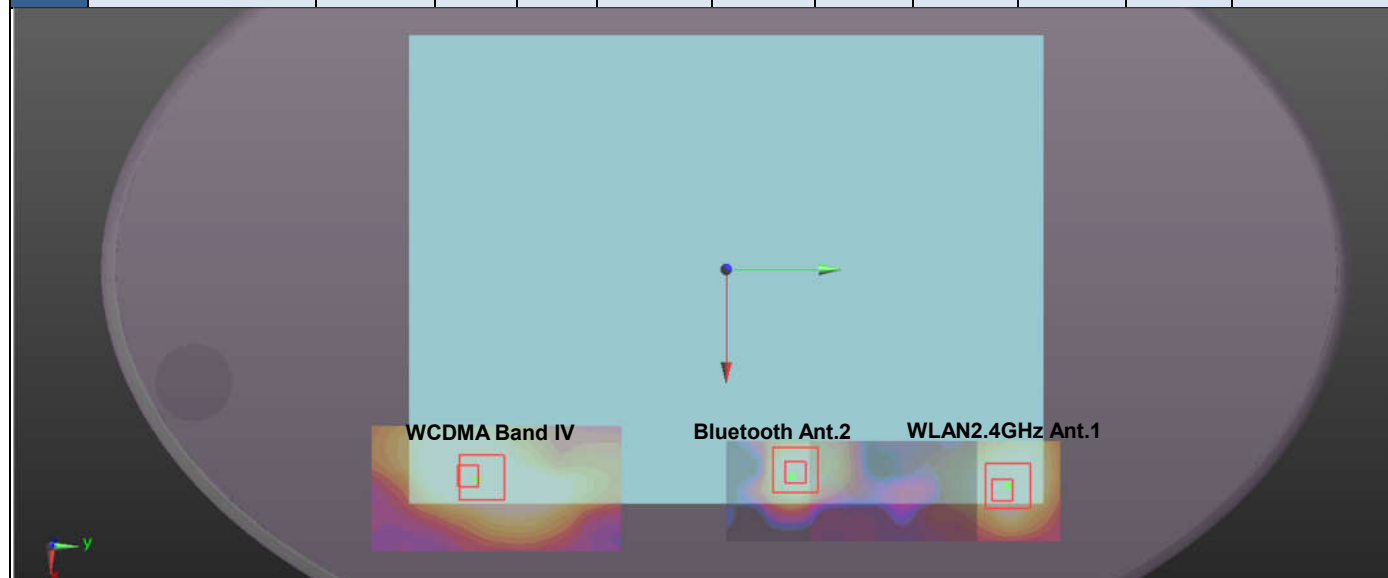
| Case #62 | Band             | Position    | SAR (W/kg) | Gap (mm) | SAR peak location (m) |        |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|------------------|-------------|------------|----------|-----------------------|--------|--------|------------------|-------------------|---------------|------------------|
|          |                  |             |            |          | X                     | Y      | Z      |                  |                   |               |                  |
| Case #62 | WCDMA Band V     | Bottom Face | 1.100      | 0        | 0.105                 | -0.108 | -0.18  | 238.08           | 1.99              | 0.01          | Not required     |
|          | WLAN2.4GHz Ant.1 |             | 0.888      | 0        | 0.104                 | 0.13   | -0.174 |                  |                   |               |                  |
|          | WCDMA Band V     |             | 1.100      | 0        | 0.105                 | -0.108 | -0.18  | 139.43           | 1.39              | 0.01          | Not required     |
|          | Bluetooth Ant.2  |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |
|          | WLAN2.4GHz Ant.1 |             | 0.888      | 0        | 0.104                 | 0.13   | -0.174 | 98.94            | 1.18              | 0.01          | Not required     |
|          | Bluetooth Ant.2  |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |



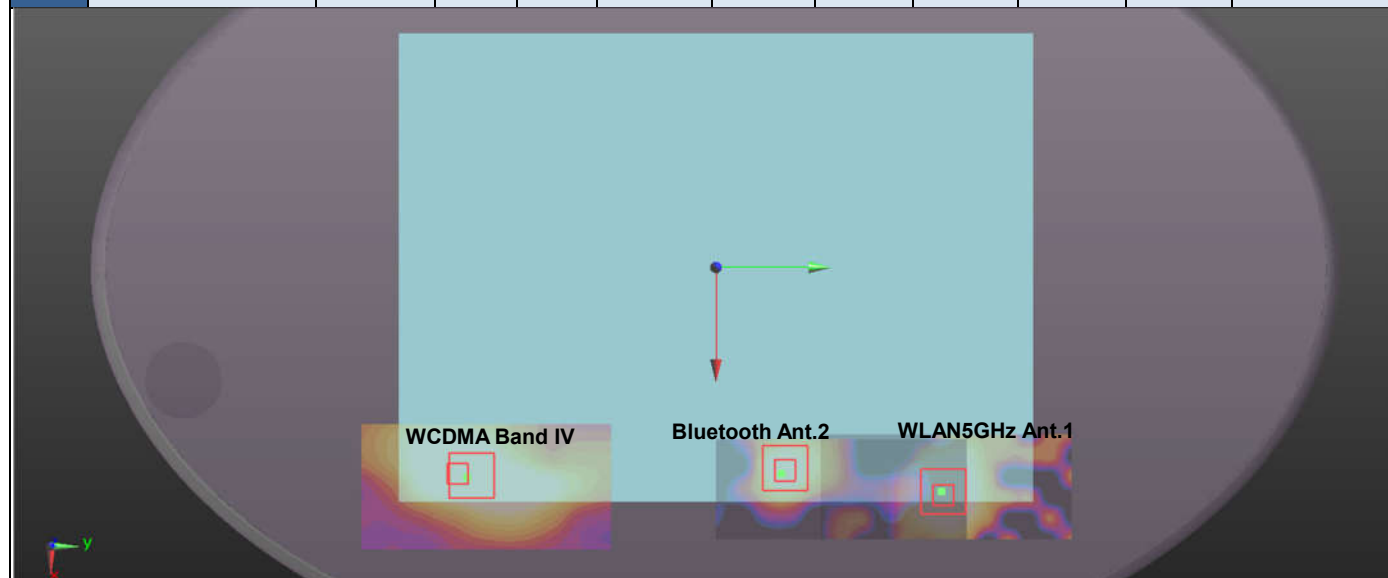
| Case #63 | Band            | Position    | SAR (W/kg) | Gap (mm) | SAR peak location (m) |        |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|-----------------|-------------|------------|----------|-----------------------|--------|--------|------------------|-------------------|---------------|------------------|
|          |                 |             |            |          | X                     | Y      | Z      |                  |                   |               |                  |
| Case #63 | WCDMA Band V    | Bottom Face | 1.100      | 0        | 0.105                 | -0.108 | -0.18  | 216.09           | 2.01              | 0.01          | Not required     |
|          | WLAN5GHz Ant.1  |             | 0.912      | 0        | 0.107                 | 0.108  | -0.174 |                  |                   |               |                  |
|          | WCDMA Band V    |             | 1.100      | 0        | 0.105                 | -0.108 | -0.18  | 139.43           | 1.39              | 0.01          | Not required     |
|          | Bluetooth Ant.2 |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |
|          | WLAN5GHz Ant.1  |             | 0.912      | 0        | 0.107                 | 0.108  | -0.174 | 77.24            | 1.20              | 0.02          | Not required     |
|          | Bluetooth Ant.2 |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |



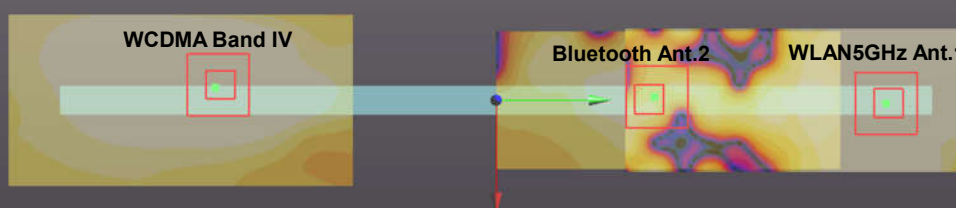
| Case #64 | Band             | Position    | SAR (W/kg) | Gap (mm) | SAR peak location (m) |        |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|------------------|-------------|------------|----------|-----------------------|--------|--------|------------------|-------------------|---------------|------------------|
|          |                  |             |            |          | X                     | Y      | Z      |                  |                   |               |                  |
| Case #64 | WCDMA Band IV    | Bottom Face | 1.156      | 0        | 0.101                 | -0.127 | -0.179 | 257.07           | 2.04              | 0.01          | Not required     |
|          | WLAN2.4GHz Ant.1 |             | 0.888      | 0        | 0.104                 | 0.13   | -0.174 |                  |                   |               |                  |
|          | WCDMA Band IV    |             | 1.156      | 0        | 0.101                 | -0.127 | -0.179 | 158.27           | 1.45              | 0.01          | Not required     |
|          | Bluetooth Ant.2  |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |
|          | WLAN2.4GHz Ant.1 |             | 0.888      | 0        | 0.104                 | 0.13   | -0.174 | 98.94            | 1.18              | 0.01          | Not required     |
|          | Bluetooth Ant.2  |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |



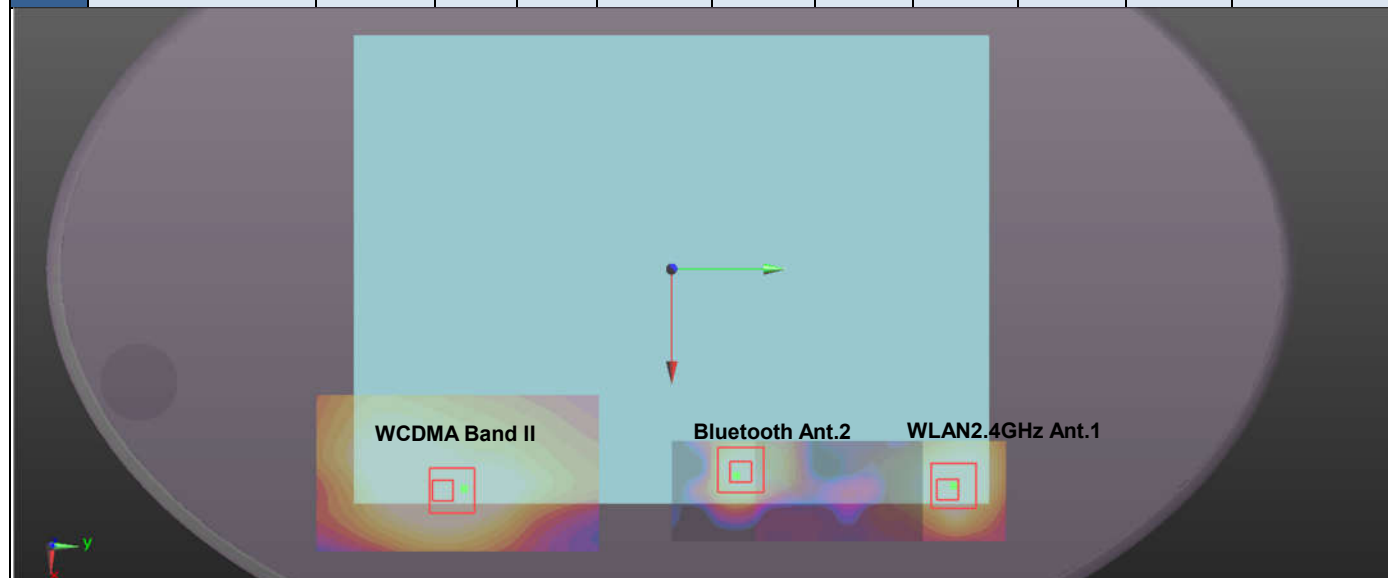
| Case #65 | Band            | Position    | SAR (W/kg) | Gap (mm) | SAR peak location (m) |        |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|-----------------|-------------|------------|----------|-----------------------|--------|--------|------------------|-------------------|---------------|------------------|
|          |                 |             |            |          | X                     | Y      | Z      |                  |                   |               |                  |
| Case #65 | WCDMA Band IV   | Bottom Face | 1.156      | 0        | 0.101                 | -0.127 | -0.179 | 235.13           | 2.07              | 0.01          | Not required     |
|          | WLAN5GHz Ant.1  |             | 0.912      | 0        | 0.107                 | 0.108  | -0.174 | 158.27           | 1.45              | 0.01          | Not required     |
|          | WCDMA Band IV   |             | 1.156      | 0        | 0.101                 | -0.127 | -0.179 |                  |                   |               |                  |
|          | Bluetooth Ant.2 |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 | 77.24            | 1.20              | 0.02          | Not required     |
|          | WLAN5GHz Ant.1  |             | 0.912      | 0        | 0.107                 | 0.108  | -0.174 |                  |                   |               |                  |
|          | Bluetooth Ant.2 |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |



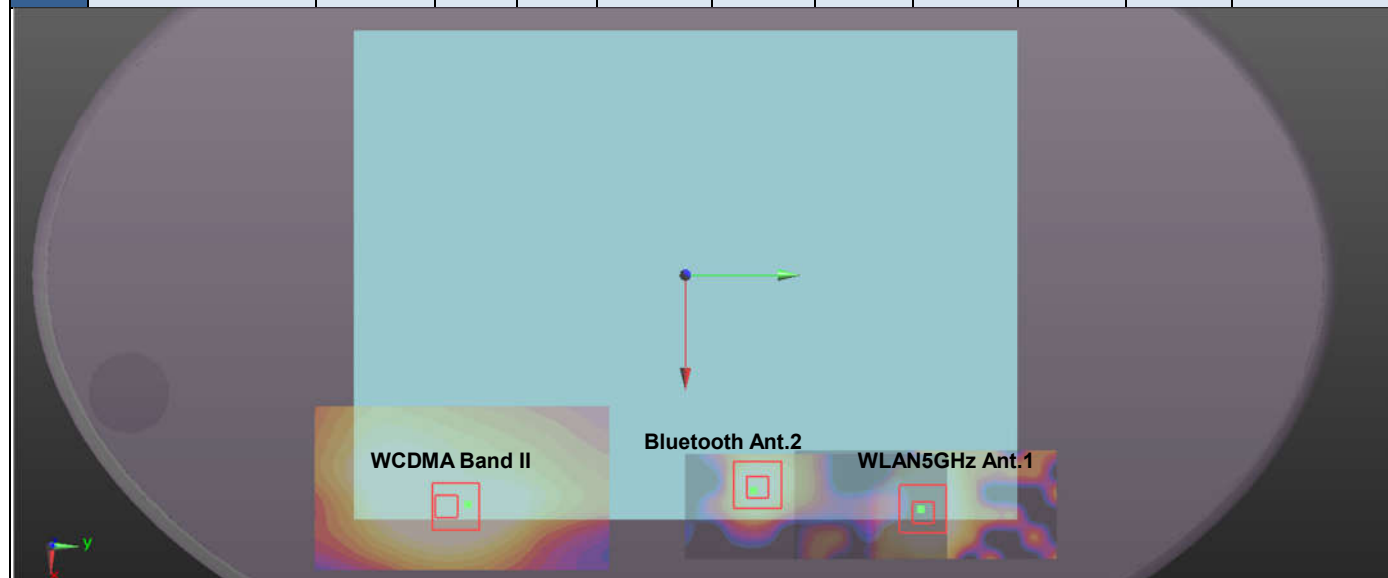
| Case #66 | Band            | Position | SAR (W/kg) | Gap (mm) | SAR peak location (m) |        |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|-----------------|----------|------------|----------|-----------------------|--------|--------|------------------|-------------------|---------------|------------------|
|          |                 |          |            |          | X                     | Y      | Z      |                  |                   |               |                  |
|          | WCDMA Band IV   | Edge 1   | 1.039      | 0        | -0.0045               | -0.098 | -0.181 | 234.12           | 2.04              | 0.01          | Not required     |
|          | WLAN5GHz Ant.1  |          | 0.999      | 0        | 0.001                 | 0.136  | -0.176 |                  |                   |               |                  |
|          | WCDMA Band IV   |          | 1.039      | 0        | -0.0045               | -0.098 | -0.181 | 148.32           | 1.10              | 0.01          | Not required     |
|          | Bluetooth Ant.2 |          | 0.058      | 0        | -0.0012               | 0.0502 | -0.176 |                  |                   |               |                  |
|          | WLAN5GHz Ant.1  |          | 0.999      | 0        | 0.001                 | 0.136  | -0.176 | 85.83            | 1.06              | 0.01          | Not required     |
|          | Bluetooth Ant.2 |          | 0.058      | 0        | -0.0012               | 0.0502 | -0.176 |                  |                   |               |                  |



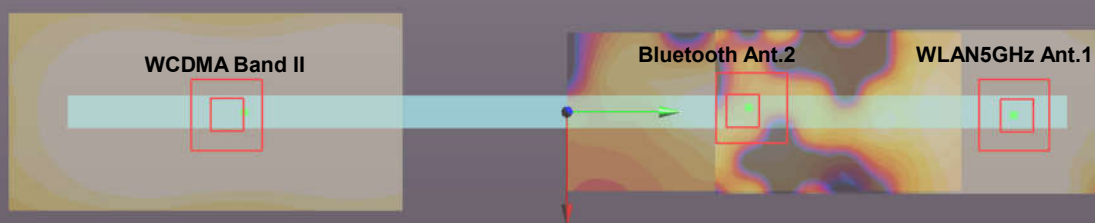
| Case #67 | Band             | Position    | SAR (W/kg) | Gap (mm) | SAR peak location (m) |        |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|------------------|-------------|------------|----------|-----------------------|--------|--------|------------------|-------------------|---------------|------------------|
|          |                  |             |            |          | X                     | Y      | Z      |                  |                   |               |                  |
|          | WCDMA Band II    | Bottom Face | 1.094      | 0        | 0.099                 | -0.127 | -0.179 | 257.10           | 1.98              | 0.01          | Not required     |
|          | WLAN2.4GHz Ant.1 |             | 0.888      | 0        | 0.104                 | 0.13   | -0.174 |                  |                   |               |                  |
|          | WCDMA Band II    |             | 1.094      | 0        | 0.099                 | -0.127 | -0.179 | 158.25           | 1.39              | 0.01          | Not required     |
|          | Bluetooth Ant.2  |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |
|          | WLAN2.4GHz Ant.1 |             | 0.888      | 0        | 0.104                 | 0.13   | -0.174 | 98.94            | 1.18              | 0.01          | Not required     |
|          | Bluetooth Ant.2  |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |



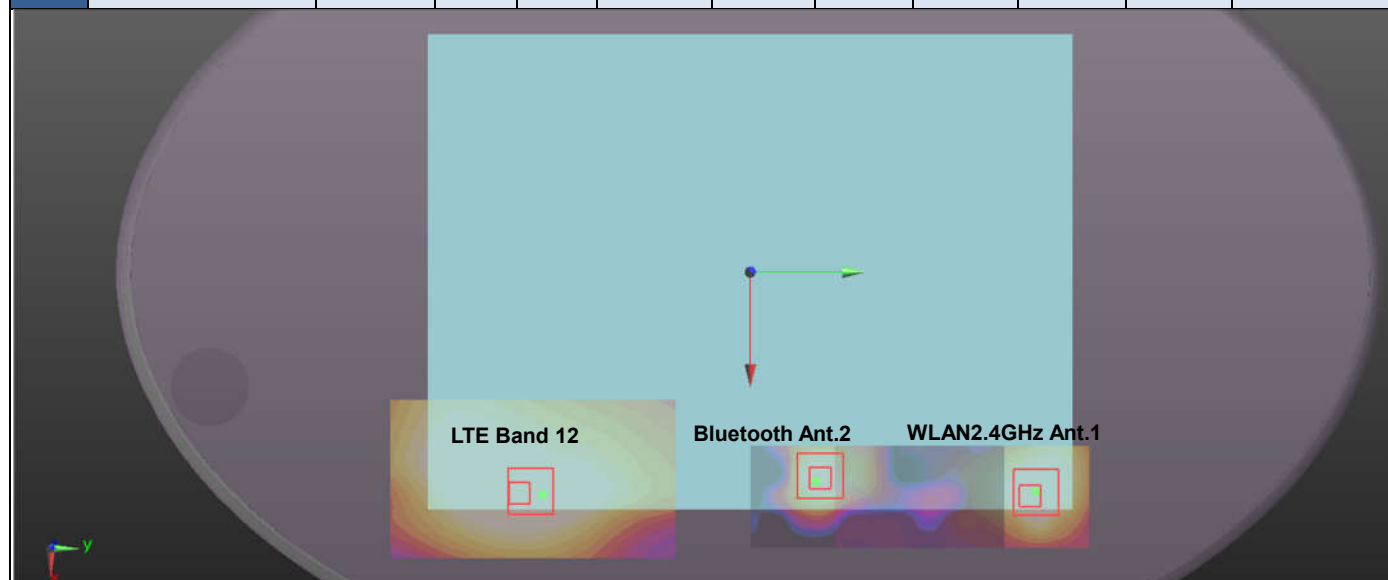
| Case #68 | Band            | Position    | SAR (W/kg) | Gap (mm) | SAR peak location (m) |        |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|-----------------|-------------|------------|----------|-----------------------|--------|--------|------------------|-------------------|---------------|------------------|
|          |                 |             |            |          | X                     | Y      | Z      |                  |                   |               |                  |
|          | WCDMA Band II   | Bottom Face | 1.094      | 0        | 0.099                 | -0.127 | -0.179 | 235.19           | 2.01              | 0.01          | Not required     |
|          | WLAN5GHz Ant.1  |             | 0.912      | 0        | 0.107                 | 0.108  | -0.174 |                  |                   |               |                  |
|          | WCDMA Band II   |             | 1.094      | 0        | 0.099                 | -0.127 | -0.179 | 158.25           | 1.39              | 0.01          | Not required     |
|          | Bluetooth Ant.2 |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |
|          | WLAN5GHz Ant.1  |             | 0.912      | 0        | 0.107                 | 0.108  | -0.174 | 77.24            | 1.20              | 0.02          | Not required     |
|          | Bluetooth Ant.2 |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |



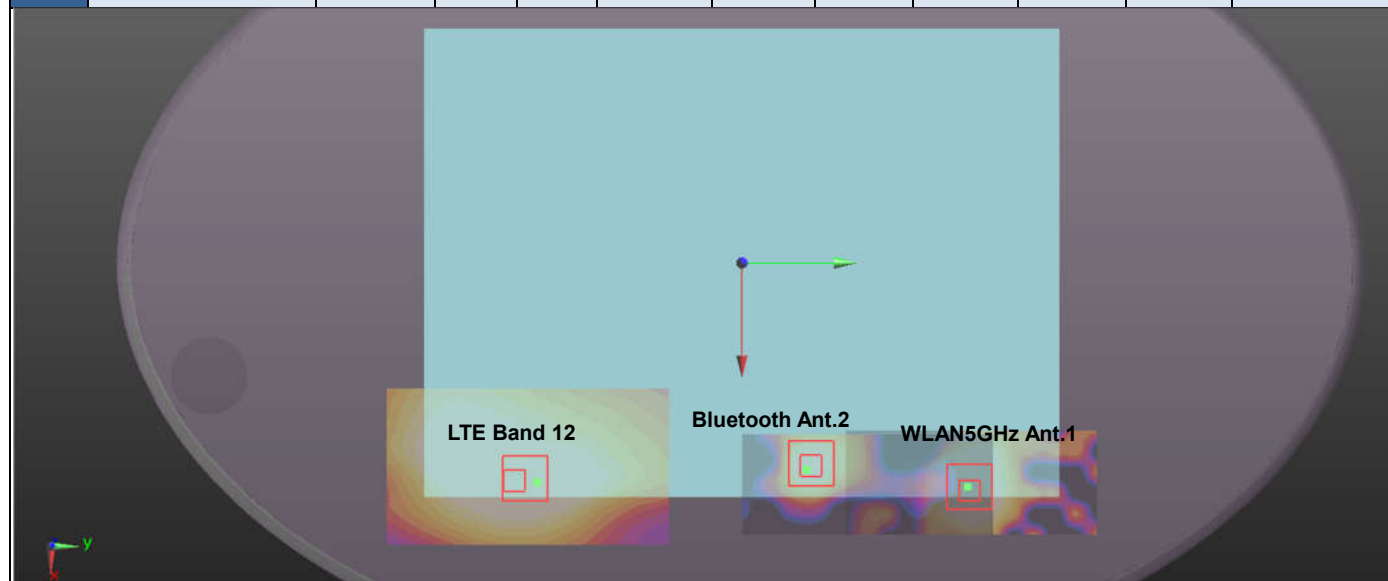
| Case #69 | Band            | Position | SAR (W/kg) | Gap (mm) | SAR peak location (m) |        |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|-----------------|----------|------------|----------|-----------------------|--------|--------|------------------|-------------------|---------------|------------------|
|          |                 |          |            |          | X                     | Y      | Z      |                  |                   |               |                  |
|          | WCDMA Band II   | Edge 1   | 1.107      | 0        | -0.0045               | -0.098 | -0.181 | 234.12           | 2.11              | 0.01          | Not required     |
|          | WLAN5GHz Ant.1  |          | 0.999      | 0        | 0.001                 | 0.136  | -0.176 |                  |                   |               |                  |
|          | WCDMA Band II   |          | 1.107      | 0        | -0.0045               | -0.098 | -0.181 | 148.32           | 1.17              | 0.01          | Not required     |
|          | Bluetooth Ant.2 |          | 0.058      | 0        | -0.0012               | 0.0502 | -0.176 |                  |                   |               |                  |
|          | WLAN5GHz Ant.1  |          | 0.999      | 0        | 0.001                 | 0.136  | -0.176 | 85.83            | 1.06              | 0.01          | Not required     |
|          | Bluetooth Ant.2 |          | 0.058      | 0        | -0.0012               | 0.0502 | -0.176 |                  |                   |               |                  |



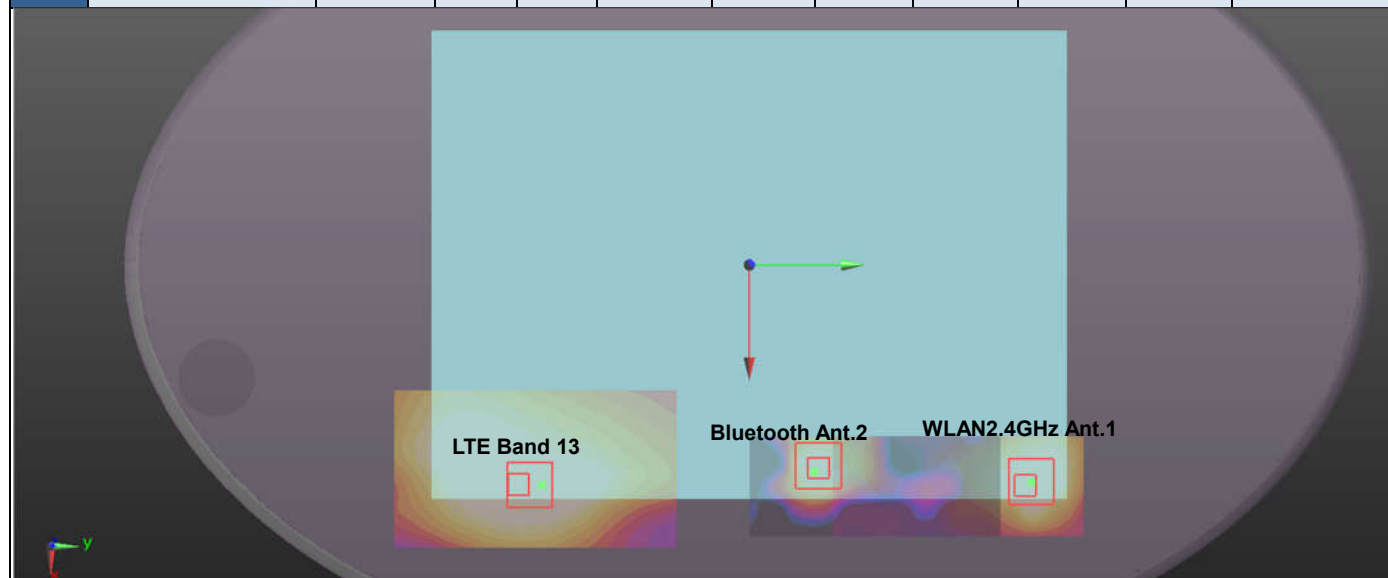
| Case #70 | Band             | Position    | SAR (W/kg) | Gap (mm) | SAR peak location (m) |        |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|------------------|-------------|------------|----------|-----------------------|--------|--------|------------------|-------------------|---------------|------------------|
|          |                  |             |            |          | X                     | Y      | Z      |                  |                   |               |                  |
| Case #70 | LTE Band 12      | Bottom Face | 1.141      | 0        | 0.105                 | -0.098 | -0.18  | 228.08           | 2.03              | 0.01          | Not required     |
|          | WLAN2.4GHz Ant.1 |             | 0.888      | 0        | 0.104                 | 0.13   | -0.174 |                  |                   |               |                  |
|          | LTE Band 12      |             | 1.141      | 0        | 0.105                 | -0.098 | -0.18  | 129.45           | 1.43              | 0.01          | Not required     |
|          | Bluetooth Ant.2  |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |
|          | WLAN2.4GHz Ant.1 |             | 0.888      | 0        | 0.104                 | 0.13   | -0.174 | 98.94            | 1.18              | 0.01          | Not required     |
|          | Bluetooth Ant.2  |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |



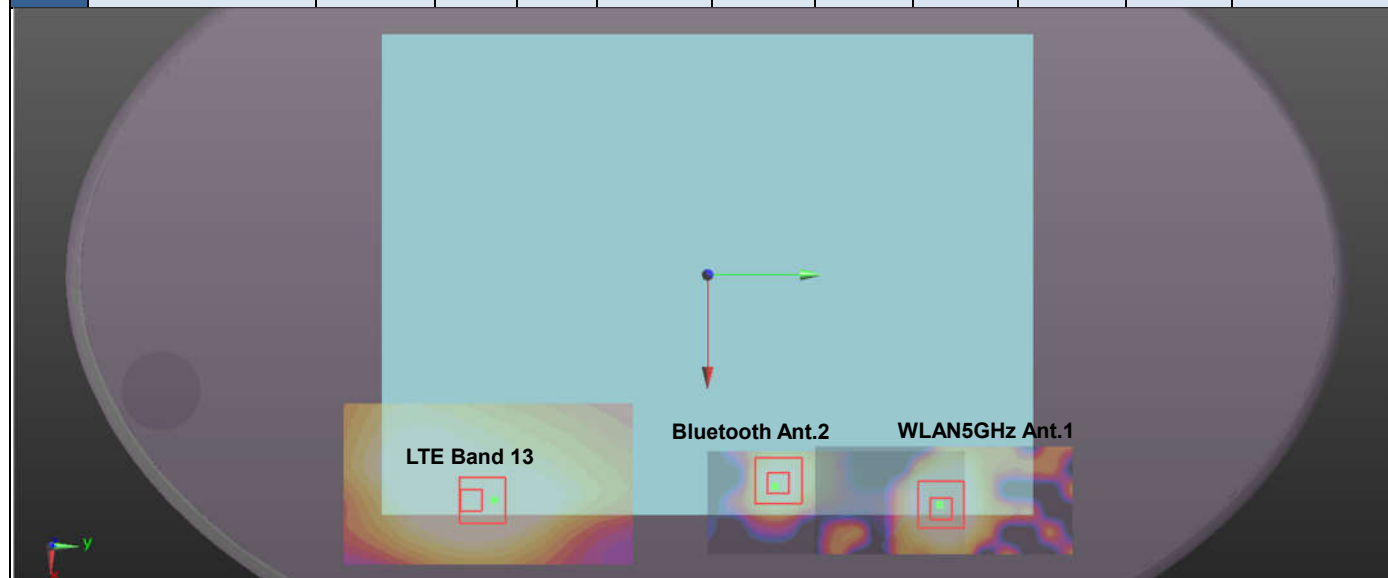
| Case #71 | Band            | Position    | SAR (W/kg) | Gap (mm) | SAR peak location (m) |        |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|-----------------|-------------|------------|----------|-----------------------|--------|--------|------------------|-------------------|---------------|------------------|
|          |                 |             |            |          | X                     | Y      | Z      |                  |                   |               |                  |
| Case #71 | LTE Band 12     | Bottom Face | 1.141      | 0        | 0.105                 | -0.098 | -0.18  | 206.10           | 2.05              | 0.01          | Not required     |
|          | WLAN5GHz Ant.1  |             | 0.912      | 0        | 0.107                 | 0.108  | -0.174 |                  |                   |               |                  |
|          | LTE Band 12     |             | 1.141      | 0        | 0.105                 | -0.098 | -0.18  | 129.45           | 1.43              | 0.01          | Not required     |
|          | Bluetooth Ant.2 |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |
|          | WLAN5GHz Ant.1  |             | 0.912      | 0        | 0.107                 | 0.108  | -0.174 | 77.24            | 1.20              | 0.02          | Not required     |
|          | Bluetooth Ant.2 |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |



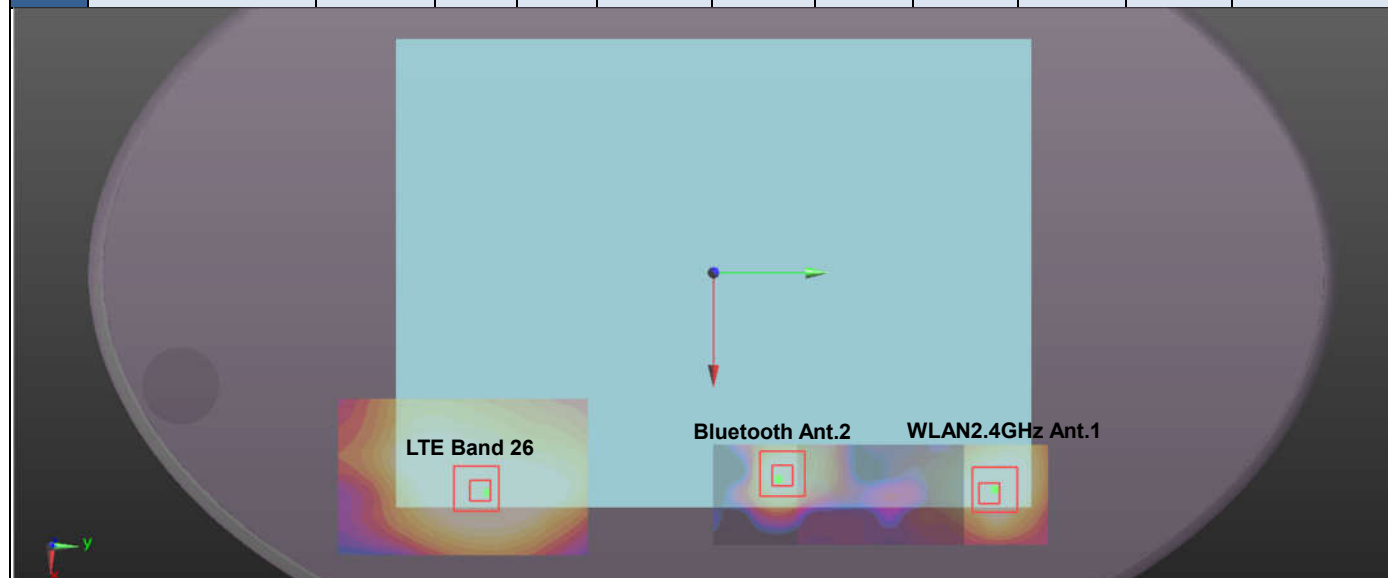
| Case #72 | Band             | Position    | SAR (W/kg) | Gap (mm) | SAR peak location (m) |        |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|------------------|-------------|------------|----------|-----------------------|--------|--------|------------------|-------------------|---------------|------------------|
|          |                  |             |            |          | X                     | Y      | Z      |                  |                   |               |                  |
| Case #72 | LTE Band 13      | Bottom Face | 1.230      | 0        | 0.105                 | -0.108 | -0.18  | 238.08           | 2.12              | 0.01          | Not required     |
|          | WLAN2.4GHz Ant.1 |             | 0.888      | 0        | 0.104                 | 0.13   | -0.174 |                  |                   |               |                  |
|          | LTE Band 13      |             | 1.230      | 0        | 0.105                 | -0.108 | -0.18  | 139.43           | 1.52              | 0.01          | Not required     |
|          | Bluetooth Ant.2  |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |
|          | WLAN2.4GHz Ant.1 |             | 0.888      | 0        | 0.104                 | 0.13   | -0.174 | 98.94            | 1.18              | 0.01          | Not required     |
|          | Bluetooth Ant.2  |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |



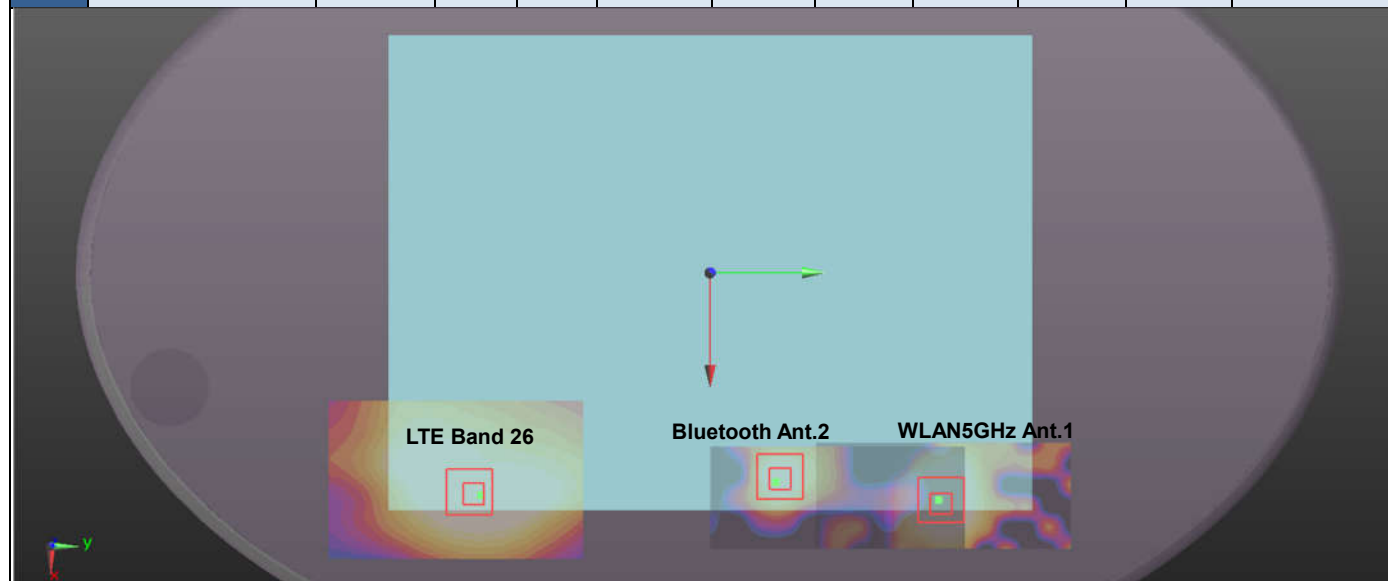
| Case #73 | Band            | Position    | SAR (W/kg) | Gap (mm) | SAR peak location (m) |        |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|-----------------|-------------|------------|----------|-----------------------|--------|--------|------------------|-------------------|---------------|------------------|
|          |                 |             |            |          | X                     | Y      | Z      |                  |                   |               |                  |
| Case #73 | LTE Band 13     | Bottom Face | 1.230      | 0        | 0.105                 | -0.108 | -0.18  | 216.09           | 2.14              | 0.01          | Not required     |
|          | WLAN5GHz Ant.1  |             | 0.912      | 0        | 0.107                 | 0.108  | -0.174 |                  |                   |               |                  |
|          | LTE Band 13     |             | 1.230      | 0        | 0.105                 | -0.108 | -0.18  | 139.43           | 1.52              | 0.01          | Not required     |
|          | Bluetooth Ant.2 |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |
|          | WLAN5GHz Ant.1  |             | 0.912      | 0        | 0.107                 | 0.108  | -0.174 | 77.24            | 1.20              | 0.02          | Not required     |
|          | Bluetooth Ant.2 |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |



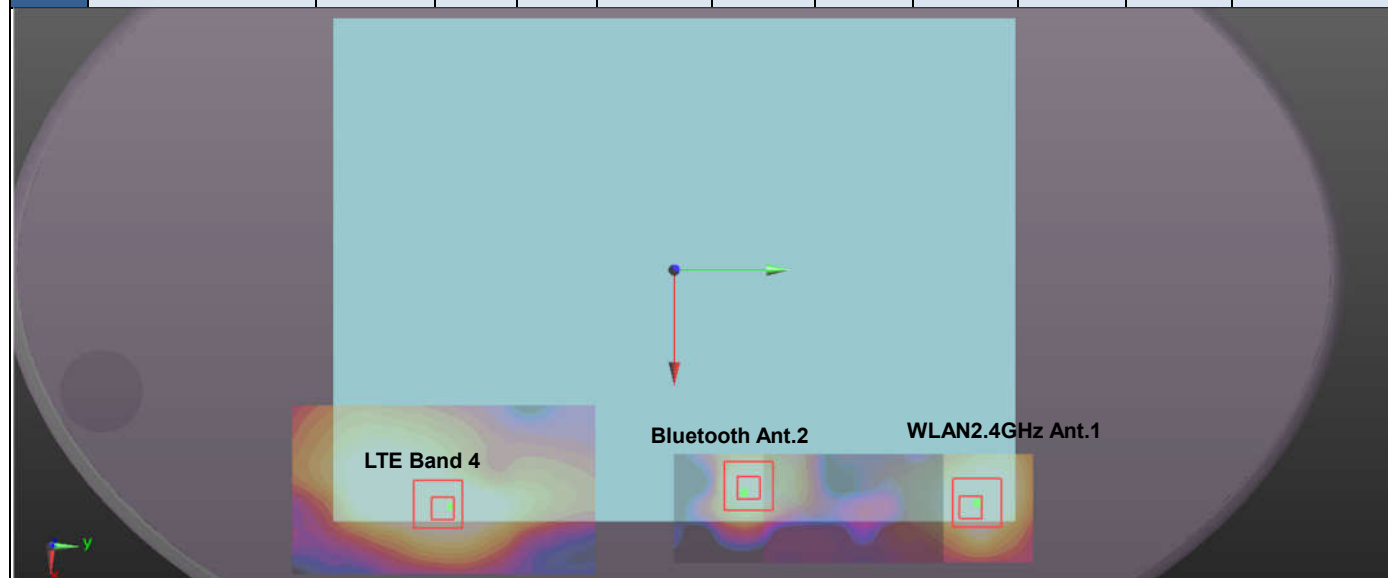
| Case #74 | Band             | Position    | SAR (W/kg) | Gap (mm) | SAR peak location (m) |        |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|------------------|-------------|------------|----------|-----------------------|--------|--------|------------------|-------------------|---------------|------------------|
|          |                  |             |            |          | X                     | Y      | Z      |                  |                   |               |                  |
| Case #74 | LTE Band 26      | Bottom Face | 1.028      | 0        | 0.105                 | -0.108 | -0.18  | 238.08           | 1.92              | 0.01          | Not required     |
|          | WLAN2.4GHz Ant.1 |             | 0.888      | 0        | 0.104                 | 0.13   | -0.174 |                  |                   |               |                  |
|          | LTE Band 26      |             | 1.028      | 0        | 0.105                 | -0.108 | -0.18  | 139.43           | 1.32              | 0.01          | Not required     |
|          | Bluetooth Ant.2  |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |
|          | WLAN2.4GHz Ant.1 |             | 0.888      | 0        | 0.104                 | 0.13   | -0.174 | 98.94            | 1.18              | 0.01          | Not required     |
|          | Bluetooth Ant.2  |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |



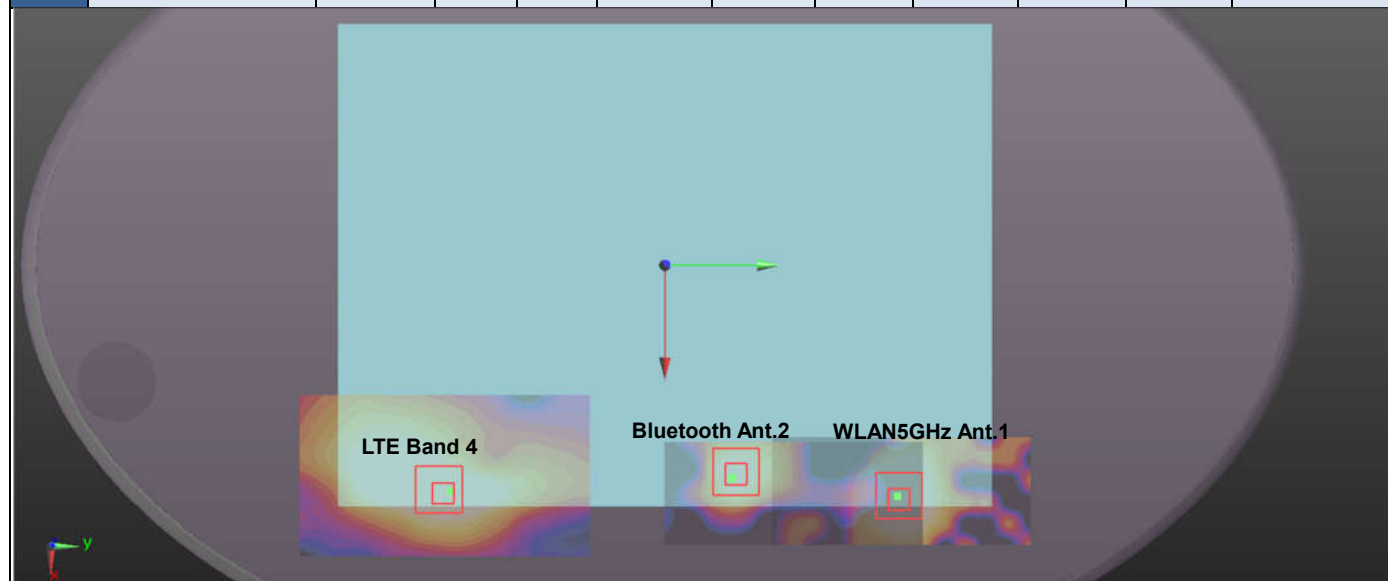
| Case #75 | Band            | Position    | SAR (W/kg) | Gap (mm) | SAR peak location (m) |        |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|-----------------|-------------|------------|----------|-----------------------|--------|--------|------------------|-------------------|---------------|------------------|
|          |                 |             |            |          | X                     | Y      | Z      |                  |                   |               |                  |
| Case #75 | LTE Band 26     | Bottom Face | 1.028      | 0        | 0.105                 | -0.108 | -0.18  | 216.09           | 1.94              | 0.01          | Not required     |
|          | WLAN5GHz Ant.1  |             | 0.912      | 0        | 0.107                 | 0.108  | -0.174 |                  |                   |               |                  |
|          | LTE Band 26     |             | 1.028      | 0        | 0.105                 | -0.108 | -0.18  | 139.43           | 1.32              | 0.01          | Not required     |
|          | Bluetooth Ant.2 |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |
|          | WLAN5GHz Ant.1  |             | 0.912      | 0        | 0.107                 | 0.108  | -0.174 | 77.24            | 1.20              | 0.02          | Not required     |
|          | Bluetooth Ant.2 |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |



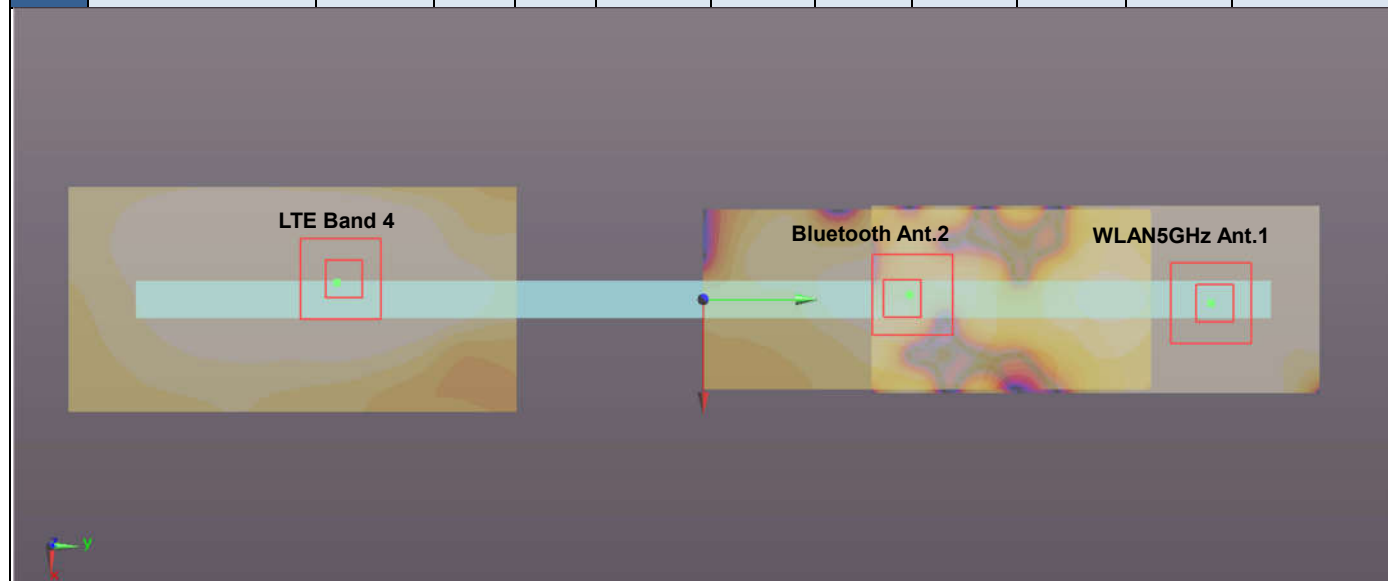
| Case #76 | Band             | Position    | SAR (W/kg) | Gap (mm) | SAR peak location (m) |         |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|------------------|-------------|------------|----------|-----------------------|---------|--------|------------------|-------------------|---------------|------------------|
|          |                  |             |            |          | X                     | Y       | Z      |                  |                   |               |                  |
| Case #76 | LTE Band 4       | Bottom Face | 1.089      | 0        | 0.105                 | -0.0995 | -0.179 | 229.56           | 1.98              | 0.01          | Not required     |
|          | WLAN2.4GHz Ant.1 |             | 0.888      | 0        | 0.104                 | 0.13    | -0.174 |                  |                   |               |                  |
|          | LTE Band 4       |             | 1.089      | 0        | 0.105                 | -0.0995 | -0.179 | 160.43           | 1.38              | 0.01          | Not required     |
|          | Bluetooth Ant.2  |             | 0.292      | 0        | 0.0988                | 0.0312  | -0.175 |                  |                   |               |                  |
|          | WLAN2.4GHz Ant.1 |             | 0.888      | 0        | 0.104                 | 0.13    | -0.174 | 98.94            | 1.18              | 0.01          | Not required     |
|          | Bluetooth Ant.2  |             | 0.292      | 0        | 0.0988                | 0.0312  | -0.175 |                  |                   |               |                  |



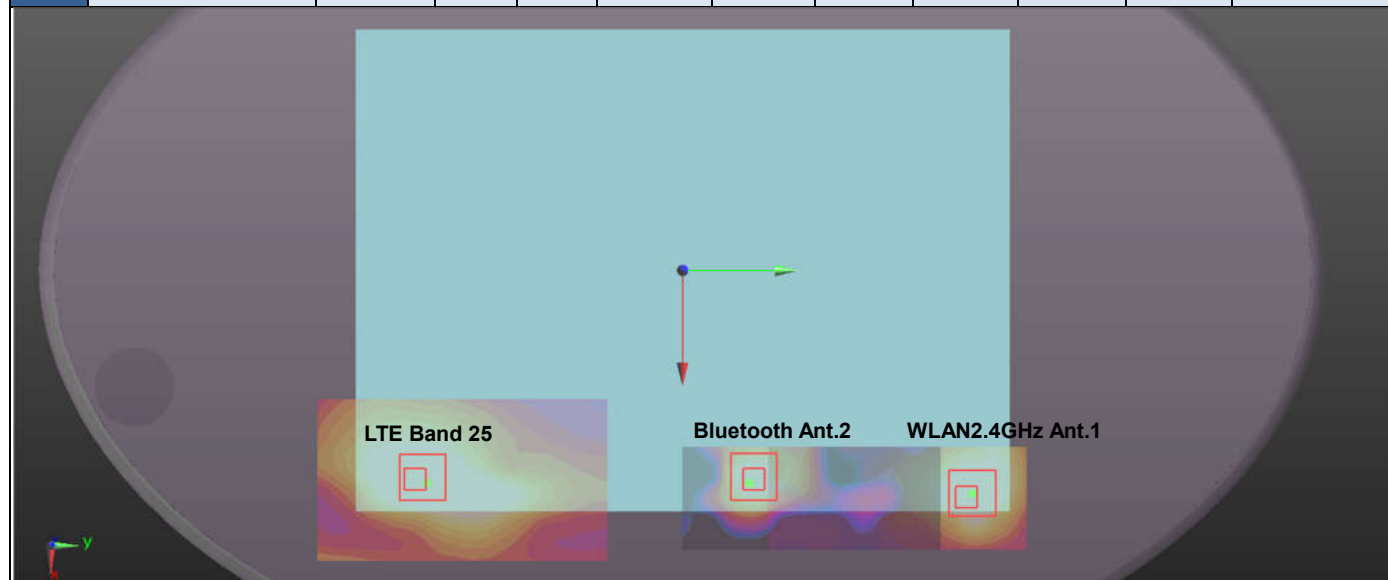
| Case #77 | Band            | Position    | SAR (W/kg) | Gap (mm) | SAR peak location (m) |         |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|-----------------|-------------|------------|----------|-----------------------|---------|--------|------------------|-------------------|---------------|------------------|
|          |                 |             |            |          | X                     | Y       | Z      |                  |                   |               |                  |
| Case #77 | LTE Band 4      | Bottom Face | 1.089      | 0        | 0.105                 | -0.0995 | -0.179 | 207.57           | 2.00              | 0.01          | Not required     |
|          | WLAN5GHz Ant.1  |             | 0.912      | 0        | 0.107                 | 0.108   | -0.174 |                  |                   |               |                  |
|          | LTE Band 4      |             | 1.089      | 0        | 0.105                 | -0.0995 | -0.179 | 130.91           | 1.38              | 0.01          | Not required     |
|          | Bluetooth Ant.2 |             | 0.292      | 0        | 0.0988                | 0.0312  | -0.175 |                  |                   |               |                  |
|          | WLAN5GHz Ant.1  |             | 0.912      | 0        | 0.107                 | 0.108   | -0.174 | 77.24            | 1.20              | 0.02          | Not required     |
|          | Bluetooth Ant.2 |             | 0.292      | 0        | 0.0988                | 0.0312  | -0.175 |                  |                   |               |                  |



| Case #78 | Band            | Position | SAR (W/kg) | Gap (mm) | SAR peak location (m) |        |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|-----------------|----------|------------|----------|-----------------------|--------|--------|------------------|-------------------|---------------|------------------|
|          |                 |          |            |          | X                     | Y      | Z      |                  |                   |               |                  |
|          | LTE Band 4      | Edge 1   | 1.000      | 0        | -0.0045               | -0.098 | -0.181 | 234.12           | 2.00              | 0.01          | Not required     |
|          | WLAN5GHz Ant.1  |          | 0.999      | 0        | 0.001                 | 0.136  | -0.176 |                  |                   |               |                  |
|          | LTE Band 4      |          | 1.000      | 0        | -0.0045               | -0.098 | -0.181 | 148.32           | 1.06              | 0.01          | Not required     |
|          | Bluetooth Ant.2 |          | 0.058      | 0        | -0.0012               | 0.0502 | -0.176 |                  |                   |               |                  |
|          | WLAN5GHz Ant.1  |          | 0.999      | 0        | 0.001                 | 0.136  | -0.176 | 85.83            | 1.06              | 0.01          | Not required     |
|          | Bluetooth Ant.2 |          | 0.058      | 0        | -0.0012               | 0.0502 | -0.176 |                  |                   |               |                  |



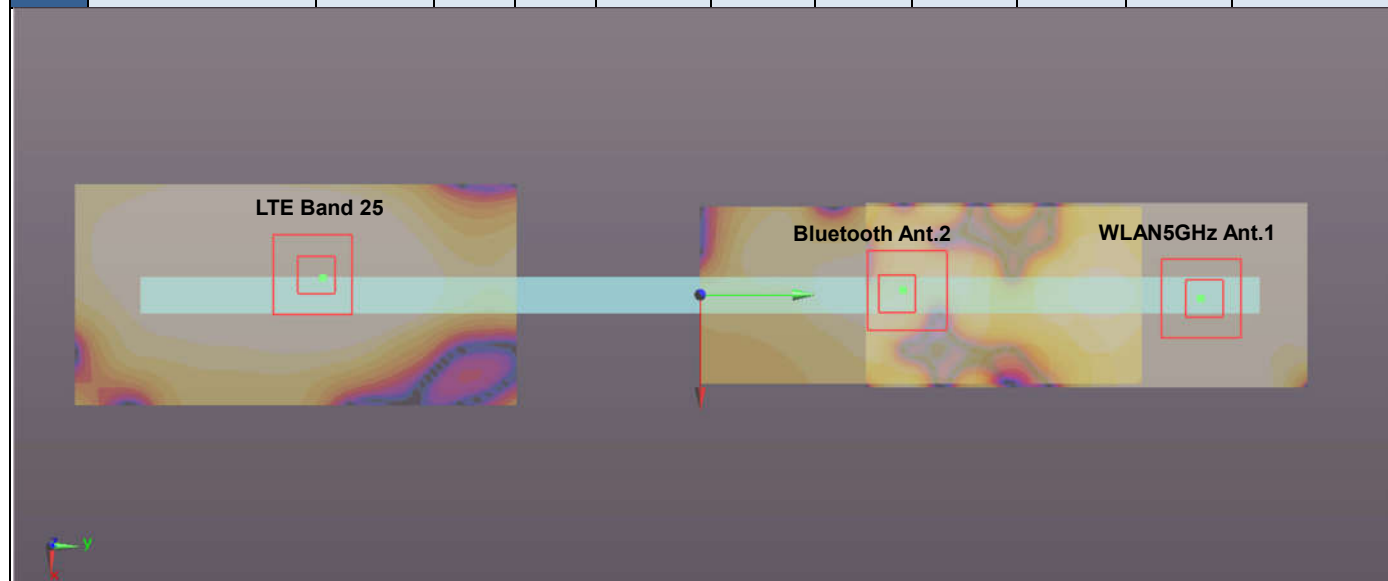
| Case #79 | Band             | Position    | SAR (W/kg) | Gap (mm) | SAR peak location (m) |        |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|------------------|-------------|------------|----------|-----------------------|--------|--------|------------------|-------------------|---------------|------------------|
|          |                  |             |            |          | X                     | Y      | Z      |                  |                   |               |                  |
|          | LTE Band 25      | Bottom Face | 1.012      | 0        | 0.099                 | -0.127 | -0.179 | 257.10           | 1.90              | 0.01          | Not required     |
|          | WLAN2.4GHz Ant.1 |             | 0.888      | 0        | 0.104                 | 0.13   | -0.174 |                  |                   |               |                  |
|          | LTE Band 25      |             | 1.012      | 0        | 0.099                 | -0.127 | -0.179 | 158.25           | 1.30              | 0.01          | Not required     |
|          | Bluetooth Ant.2  |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |
|          | WLAN2.4GHz Ant.1 |             | 0.888      | 0        | 0.104                 | 0.13   | -0.174 | 98.94            | 1.18              | 0.01          | Not required     |
|          | Bluetooth Ant.2  |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |



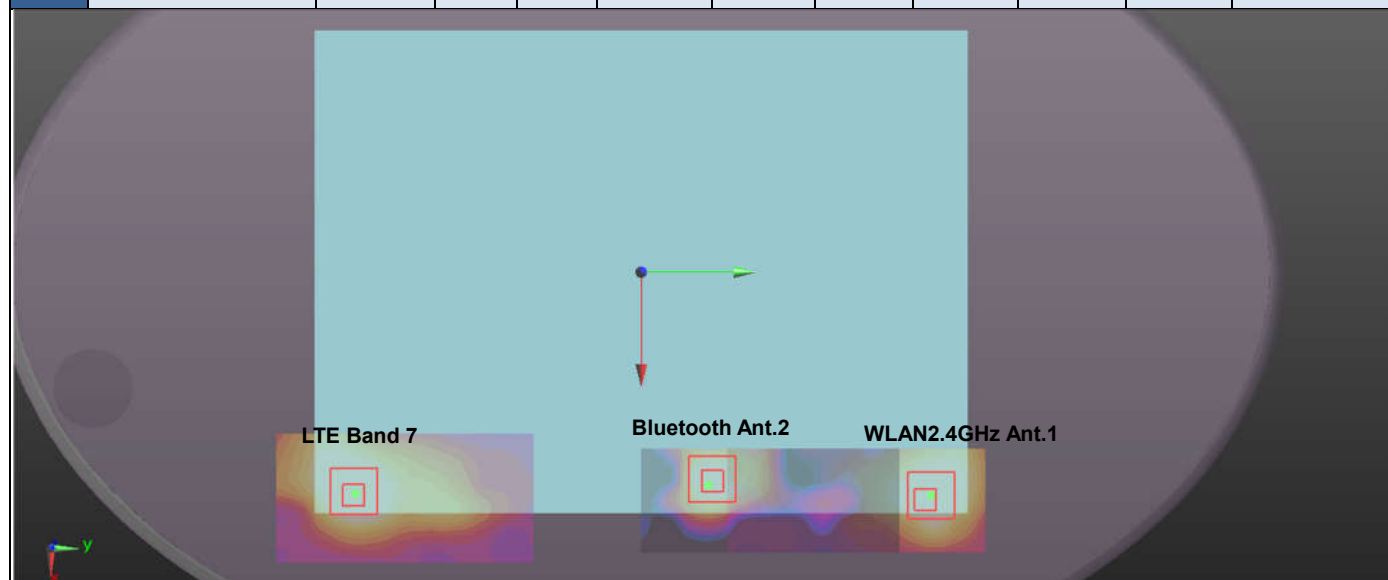
|          | Band            | Position    | SAR (W/kg) | Gap (mm) | SAR peak location (m) |        |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|-----------------|-------------|------------|----------|-----------------------|--------|--------|------------------|-------------------|---------------|------------------|
|          |                 |             |            |          | X                     | Y      | Z      |                  |                   |               |                  |
| Case #80 | LTE Band 25     | Bottom Face | 1.012      | 0        | 0.099                 | -0.127 | -0.179 | 235.19           | 1.92              | 0.01          | Not required     |
|          | WLAN5GHz Ant.1  |             | 0.912      | 0        | 0.107                 | 0.108  | -0.174 |                  |                   |               |                  |
|          | LTE Band 25     |             | 1.012      | 0        | 0.099                 | -0.127 | -0.179 | 158.25           | 1.30              | 0.01          | Not required     |
|          | Bluetooth Ant.2 |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |
|          | WLAN5GHz Ant.1  |             | 0.912      | 0        | 0.107                 | 0.108  | -0.174 | 77.24            | 1.20              | 0.02          | Not required     |
|          | Bluetooth Ant.2 |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |



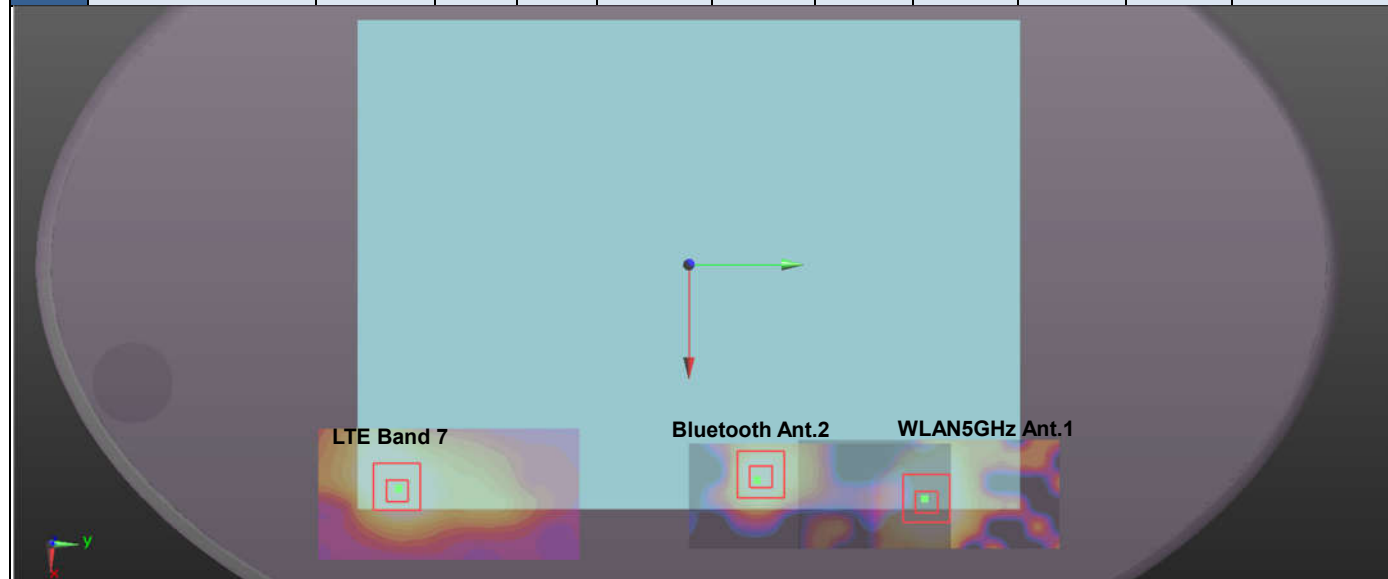
| Case #81 | Band            | Position | SAR (W/kg) | Gap (mm) | SAR peak location (m) |        |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|-----------------|----------|------------|----------|-----------------------|--------|--------|------------------|-------------------|---------------|------------------|
|          |                 |          |            |          | X                     | Y      | Z      |                  |                   |               |                  |
| Case #81 | LTE Band 25     | Edge 1   | 0.931      | 0        | -0.0045               | -0.103 | -0.181 | 239.12           | 1.93              | 0.01          | Not required     |
|          | WLAN5GHz Ant.1  |          | 0.999      | 0        | 0.001                 | 0.136  | -0.176 |                  |                   |               |                  |
|          | LTE Band 25     |          | 0.931      | 0        | -0.0045               | -0.103 | -0.181 | 153.32           | 0.99              | 0.01          | Not required     |
|          | Bluetooth Ant.2 |          | 0.058      | 0        | -0.0012               | 0.0502 | -0.176 |                  |                   |               |                  |
|          | WLAN5GHz Ant.1  |          | 0.999      | 0        | 0.001                 | 0.136  | -0.176 | 85.83            | 1.06              | 0.01          | Not required     |
|          | Bluetooth Ant.2 |          | 0.058      | 0        | -0.0012               | 0.0502 | -0.176 |                  |                   |               |                  |



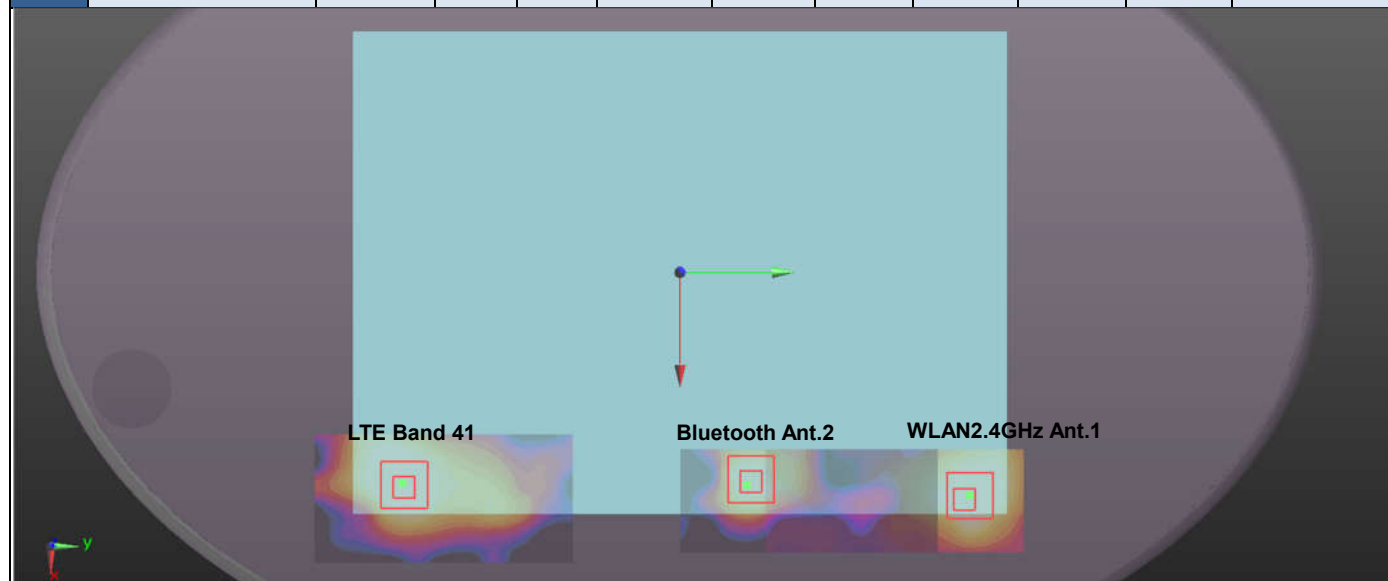
| Case #82 | Band             | Position    | SAR (W/kg) | Gap (mm) | SAR peak location (m) |        |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|------------------|-------------|------------|----------|-----------------------|--------|--------|------------------|-------------------|---------------|------------------|
|          |                  |             |            |          | X                     | Y      | Z      |                  |                   |               |                  |
| Case #82 | LTE Band 7       | Bottom Face | 1.233      | 0        | 0.103                 | -0.133 | -0.179 | 263.05           | 2.12              | 0.01          | Not required     |
|          | WLAN2.4GHz Ant.1 |             | 0.888      | 0        | 0.104                 | 0.13   | -0.174 |                  |                   |               |                  |
|          | LTE Band 7       |             | 1.233      | 0        | 0.103                 | -0.133 | -0.179 | 164.30           | 1.53              | 0.01          | Not required     |
|          | Bluetooth Ant.2  |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |
|          | WLAN2.4GHz Ant.1 |             | 0.888      | 0        | 0.104                 | 0.13   | -0.174 | 98.94            | 1.18              | 0.01          | Not required     |
|          | Bluetooth Ant.2  |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |



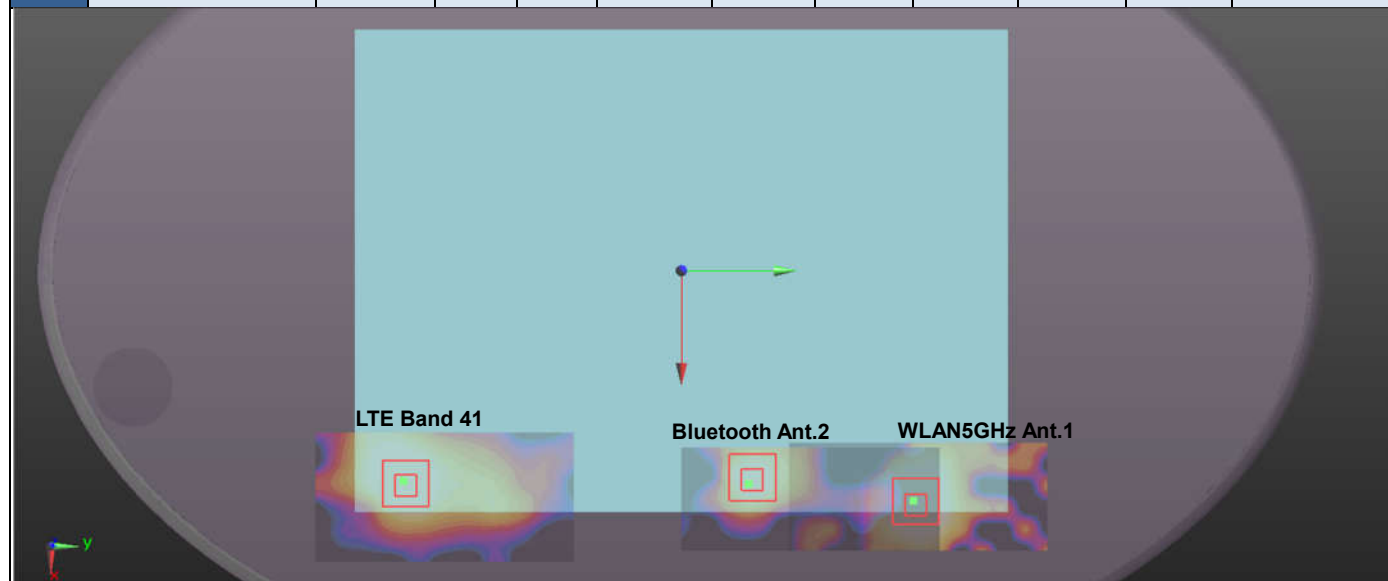
| Case #83 | Band            | Position    | SAR (W/kg) | Gap (mm) | SAR peak location (m) |        |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|-----------------|-------------|------------|----------|-----------------------|--------|--------|------------------|-------------------|---------------|------------------|
|          |                 |             |            |          | X                     | Y      | Z      |                  |                   |               |                  |
| Case #83 | LTE Band 7      | Bottom Face | 1.233      | 0        | 0.103                 | -0.133 | -0.179 | 241.09           | 2.15              | 0.01          | Not required     |
|          | WLAN5GHz Ant.1  |             | 0.912      | 0        | 0.107                 | 0.108  | -0.174 | 164.30           | 1.53              | 0.01          | Not required     |
|          | LTE Band 7      |             | 1.233      | 0        | 0.103                 | -0.133 | -0.179 |                  |                   |               |                  |
|          | Bluetooth Ant.2 |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 | 77.24            | 1.20              | 0.02          | Not required     |
|          | WLAN5GHz Ant.1  |             | 0.912      | 0        | 0.107                 | 0.108  | -0.174 |                  |                   |               |                  |
|          | Bluetooth Ant.2 |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |



| Case #84 | Band             | Position    | SAR (W/kg) | Gap (mm) | SAR peak location (m) |        |        | 3D distance (mm) | Summed SAR (W/kg) | SPLSR Results | Simultaneous SAR |
|----------|------------------|-------------|------------|----------|-----------------------|--------|--------|------------------|-------------------|---------------|------------------|
|          |                  |             |            |          | X                     | Y      | Z      |                  |                   |               |                  |
| Case #84 | LTE Band 41      | Bottom Face | 1.256      | 0        | 0.0978                | -0.129 | -0.18  | 259.14           | 2.14              | 0.01          | Not required     |
|          | WLAN2.4GHz Ant.1 |             | 0.888      | 0        | 0.104                 | 0.13   | -0.174 |                  |                   |               |                  |
|          | LTE Band 41      |             | 1.256      | 0        | 0.0978                | -0.129 | -0.18  | 160.28           | 1.55              | 0.01          | Not required     |
|          | Bluetooth Ant.2  |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |
|          | WLAN2.4GHz Ant.1 |             | 0.888      | 0        | 0.104                 | 0.13   | -0.174 | 98.94            | 1.18              | 0.01          | Not required     |
|          | Bluetooth Ant.2  |             | 0.292      | 0        | 0.0988                | 0.0312 | -0.175 |                  |                   |               |                  |



|          | Band            | Position    | SAR<br>(W/kg) | Gap<br>(mm) | SAR peak location (m) |        |        | 3D<br>distance<br>(mm) | Summed<br>SAR<br>(W/kg) | SPLSR<br>Results | Simultaneous<br>SAR |
|----------|-----------------|-------------|---------------|-------------|-----------------------|--------|--------|------------------------|-------------------------|------------------|---------------------|
|          |                 |             |               |             | X                     | Y      | Z      |                        |                         |                  |                     |
| Case #85 | LTE Band 41     | Bottom Face | 1.256         | 0           | 0.0978                | -0.129 | -0.18  | 237.25                 | 2.17                    | 0.01             | Not required        |
|          | WLAN5GHz Ant.1  |             | 0.912         | 0           | 0.107                 | 0.108  | -0.174 |                        |                         |                  |                     |
|          | LTE Band 41     |             | 1.256         | 0           | 0.0978                | -0.129 | -0.18  | 160.28                 | 1.55                    | 0.01             | Not required        |
|          | Bluetooth Ant.2 |             | 0.292         | 0           | 0.0988                | 0.0312 | -0.175 |                        |                         |                  |                     |
|          | WLAN5GHz Ant.1  |             | 0.912         | 0           | 0.107                 | 0.108  | -0.174 | 77.24                  | 1.20                    | 0.02             | Not required        |
|          | Bluetooth Ant.2 |             | 0.292         | 0           | 0.0988                | 0.0312 | -0.175 |                        |                         |                  |                     |



**Test Engineer :** Nick Hu

## 17. Uncertainty Assessment

The component of uncertainty may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainty by the statistical analysis of a series of observations is termed a Type A evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

| Uncertainty Distributions          | Normal      | Rectangular  | Triangular   | U-Shape      |
|------------------------------------|-------------|--------------|--------------|--------------|
| Multi-plying Factor <sup>(a)</sup> | $1/k^{(b)}$ | $1/\sqrt{3}$ | $1/\sqrt{6}$ | $1/\sqrt{2}$ |

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b)  $k$  is the coverage factor

**Table 17.1. Standard Uncertainty for Assumed Distribution**

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

| Error Description                 | Uncertainty Value (±%) | Probability | Divisor | (Ci) 1g | (Ci) 10g | Standard Uncertainty (1g) (±%) | Standard Uncertainty (10g) (±%) |
|-----------------------------------|------------------------|-------------|---------|---------|----------|--------------------------------|---------------------------------|
| <b>Measurement System</b>         |                        |             |         |         |          |                                |                                 |
| Probe Calibration                 | 6.0                    | N           | 1       | 1       | 1        | 6.0                            | 6.0                             |
| Axial Isotropy                    | 4.7                    | R           | 1.732   | 0.7     | 0.7      | 1.9                            | 1.9                             |
| Hemispherical Isotropy            | 9.6                    | R           | 1.732   | 0.7     | 0.7      | 3.9                            | 3.9                             |
| Boundary Effects                  | 1.0                    | R           | 1.732   | 1       | 1        | 0.6                            | 0.6                             |
| Linearity                         | 4.7                    | R           | 1.732   | 1       | 1        | 2.7                            | 2.7                             |
| System Detection Limits           | 1.0                    | R           | 1.732   | 1       | 1        | 0.6                            | 0.6                             |
| Modulation Response               | 3.2                    | R           | 1.732   | 1       | 1        | 1.8                            | 1.8                             |
| Readout Electronics               | 0.3                    | N           | 1       | 1       | 1        | 0.3                            | 0.3                             |
| Response Time                     | 0.0                    | R           | 1.732   | 1       | 1        | 0.0                            | 0.0                             |
| Integration Time                  | 2.6                    | R           | 1.732   | 1       | 1        | 1.5                            | 1.5                             |
| RF Ambient Noise                  | 3.0                    | R           | 1.732   | 1       | 1        | 1.7                            | 1.7                             |
| RF Ambient Reflections            | 3.0                    | R           | 1.732   | 1       | 1        | 1.7                            | 1.7                             |
| Probe Positioner                  | 0.4                    | R           | 1.732   | 1       | 1        | 0.2                            | 0.2                             |
| Probe Positioning                 | 2.9                    | R           | 1.732   | 1       | 1        | 1.7                            | 1.7                             |
| Max. SAR Eval.                    | 2.0                    | R           | 1.732   | 1       | 1        | 1.2                            | 1.2                             |
| <b>Test Sample Related</b>        |                        |             |         |         |          |                                |                                 |
| Device Positioning                | 3.0                    | N           | 1       | 1       | 1        | 3.0                            | 3.0                             |
| Device Holder                     | 3.6                    | N           | 1       | 1       | 1        | 3.6                            | 3.6                             |
| Power Drift                       | 5.0                    | R           | 1.732   | 1       | 1        | 2.9                            | 2.9                             |
| Power Scaling                     | 0.0                    | R           | 1.732   | 1       | 1        | 0.0                            | 0.0                             |
| <b>Phantom and Setup</b>          |                        |             |         |         |          |                                |                                 |
| Phantom Uncertainty               | 6.1                    | R           | 1.732   | 1       | 1        | 3.5                            | 3.5                             |
| SAR correction                    | 0.0                    | R           | 1.732   | 1       | 0.84     | 0.0                            | 0.0                             |
| Liquid Conductivity Repeatability | 0.2                    | N           | 1       | 0.78    | 0.71     | 0.1                            | 0.1                             |
| Liquid Conductivity (target)      | 5.0                    | R           | 1.732   | 0.78    | 0.71     | 2.3                            | 2.0                             |
| Liquid Conductivity (mea.)        | 2.5                    | R           | 1.732   | 0.78    | 0.71     | 1.1                            | 1.0                             |
| Temp. unc. - Conductivity         | 3.4                    | R           | 1.732   | 0.78    | 0.71     | 1.5                            | 1.4                             |
| Liquid Permittivity Repeatability | 0.15                   | N           | 1       | 0.23    | 0.26     | 0.0                            | 0.0                             |
| Liquid Permittivity (target)      | 5.0                    | R           | 1.732   | 0.23    | 0.26     | 0.7                            | 0.8                             |
| Liquid Permittivity (mea.)        | 2.5                    | R           | 1.732   | 0.23    | 0.26     | 0.3                            | 0.4                             |
| Temp. unc. - Permittivity         | 0.83                   | R           | 1.732   | 0.23    | 0.26     | 0.1                            | 0.1                             |
| <b>Combined Std. Uncertainty</b>  |                        |             |         |         |          | 11.4%                          | 11.4%                           |
| <b>Coverage Factor for 95 %</b>   |                        |             |         |         |          | K=2                            | K=2                             |
| <b>Expanded STD Uncertainty</b>   |                        |             |         |         |          | 22.9%                          | 22.7%                           |

**Table 17.2. Uncertainty Budget for frequency range 300 MHz to 3 GHz**

| Error Description                 | Uncertainty Value (±%) | Probability | Divisor | (Ci) 1g | (Ci) 10g | Standard Uncertainty (1g) (±%) | Standard Uncertainty (10g) (±%) |
|-----------------------------------|------------------------|-------------|---------|---------|----------|--------------------------------|---------------------------------|
| <b>Measurement System</b>         |                        |             |         |         |          |                                |                                 |
| Probe Calibration                 | 6.55                   | N           | 1       | 1       | 1        | 6.6                            | 6.6                             |
| Axial Isotropy                    | 4.7                    | R           | 1.732   | 0.7     | 0.7      | 1.9                            | 1.9                             |
| Hemispherical Isotropy            | 9.6                    | R           | 1.732   | 0.7     | 0.7      | 3.9                            | 3.9                             |
| Boundary Effects                  | 2.0                    | R           | 1.732   | 1       | 1        | 1.2                            | 1.2                             |
| Linearity                         | 4.7                    | R           | 1.732   | 1       | 1        | 2.7                            | 2.7                             |
| System Detection Limits           | 1.0                    | R           | 1.732   | 1       | 1        | 0.6                            | 0.6                             |
| Modulation Response               | 3.2                    | R           | 1.732   | 1       | 1        | 1.8                            | 1.8                             |
| Readout Electronics               | 0.3                    | N           | 1       | 1       | 1        | 0.3                            | 0.3                             |
| Response Time                     | 0.0                    | R           | 1.732   | 1       | 1        | 0.0                            | 0.0                             |
| Integration Time                  | 2.6                    | R           | 1.732   | 1       | 1        | 1.5                            | 1.5                             |
| RF Ambient Noise                  | 3.0                    | R           | 1.732   | 1       | 1        | 1.7                            | 1.7                             |
| RF Ambient Reflections            | 3.0                    | R           | 1.732   | 1       | 1        | 1.7                            | 1.7                             |
| Probe Positioner                  | 0.4                    | R           | 1.732   | 1       | 1        | 0.2                            | 0.2                             |
| Probe Positioning                 | 6.7                    | R           | 1.732   | 1       | 1        | 3.9                            | 3.9                             |
| Max. SAR Eval.                    | 4.0                    | R           | 1.732   | 1       | 1        | 2.3                            | 2.3                             |
| <b>Test Sample Related</b>        |                        |             |         |         |          |                                |                                 |
| Device Positioning                | 3.0                    | N           | 1       | 1       | 1        | 3.0                            | 3.0                             |
| Device Holder                     | 3.6                    | N           | 1       | 1       | 1        | 3.6                            | 3.6                             |
| Power Drift                       | 5.0                    | R           | 1.732   | 1       | 1        | 2.9                            | 2.9                             |
| Power Scaling                     | 0.0                    | R           | 1.732   | 1       | 1        | 0.0                            | 0.0                             |
| <b>Phantom and Setup</b>          |                        |             |         |         |          |                                |                                 |
| Phantom Uncertainty               | 6.6                    | R           | 1.732   | 1       | 1        | 3.8                            | 3.8                             |
| SAR correction                    | 0.0                    | R           | 1.732   | 1       | 0.84     | 0.0                            | 0.0                             |
| Liquid Conductivity Repeatability | 0.2                    | N           | 1       | 0.78    | 0.71     | 0.1                            | 0.1                             |
| Liquid Conductivity (target)      | 5.0                    | R           | 1.732   | 0.78    | 0.71     | 2.3                            | 2.0                             |
| Liquid Conductivity (mea.)        | 2.5                    | R           | 1.732   | 0.78    | 0.71     | 1.1                            | 1.0                             |
| Temp. unc. - Conductivity         | 3.4                    | R           | 1.732   | 0.78    | 0.71     | 1.5                            | 1.4                             |
| Liquid Permittivity Repeatability | 0.15                   | N           | 1       | 0.23    | 0.26     | 0.0                            | 0.0                             |
| Liquid Permittivity (target)      | 5.0                    | R           | 1.732   | 0.23    | 0.26     | 0.7                            | 0.8                             |
| Liquid Permittivity (mea.)        | 2.5                    | R           | 1.732   | 0.23    | 0.26     | 0.3                            | 0.4                             |
| Temp. unc. - Permittivity         | 0.83                   | R           | 1.732   | 0.23    | 0.26     | 0.1                            | 0.1                             |
| <b>Combined Std. Uncertainty</b>  |                        |             |         |         |          | 12.5%                          | 12.5%                           |
| <b>Coverage Factor for 95 %</b>   |                        |             |         |         |          | K=2                            | K=2                             |
| <b>Expanded STD Uncertainty</b>   |                        |             |         |         |          | 25.1%                          | 25.0%                           |

**Table 17.3. Uncertainty Budget for frequency range 3 GHz to 6 GHz**

## 18. References

- [1] FCC 47 CFR Part 2 "Frequency Allocations and Radio Treaty Matters; General Rules and Regulations"
- [2] ANSI/IEEE Std. C95.1-1992, "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz", September 1992
- [3] IEEE Std. 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", Sep 2013
- [4] SPEAG DASY System Handbook
- [5] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.
- [6] FCC KDB 865664 D02 v01r02, "RF Exposure Compliance Reporting and Documentation Considerations" Oct 2015.
- [7] FCC KDB 447498 D01 v06, "Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies", Oct 2015
- [8] FCC KDB 248227 D01 v02r02, "SAR Guidance for IEEE 802.11 (WiFi) Transmitters", Oct 2015.
- [9] FCC KDB 616217 D04 v01r02, "SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers", Oct 2015
- [10] FCC KDB 941225 D01 v03r01, "3G SAR MEAUREMENT PROCEDURES", Oct 2015
- [11] FCC KDB 941225 D05 v02r05, "SAR Evaluation Considerations for LTE Devices", Dec 2015
- [12] FCC KDB 941225 D05A v01r02, "Rel. 10 LTE SAR Test Guidance and KDB Inquiries", Oct 2015



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## **Appendix A.     Plots of System Performance Check**

The plots are shown as follows.

**System Check\_Body\_750MHz****DUT: D750V3 - SN:1065**

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: MSL\_750 Medium parameters used:  $f = 750 \text{ MHz}$ ;  $\sigma = 0.96 \text{ S/m}$ ;  $\epsilon_r = 56.111$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature :  $23.5^\circ\text{C}$ ; Liquid Temperature :  $22.8^\circ\text{C}$

**DASY5 Configuration:**

- Probe: EX3DV4 - SN3857; ConvF(9.72, 9.72, 9.72); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Pin=250mW/Area Scan (61x61x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) =  $2.70 \text{ W/kg}$

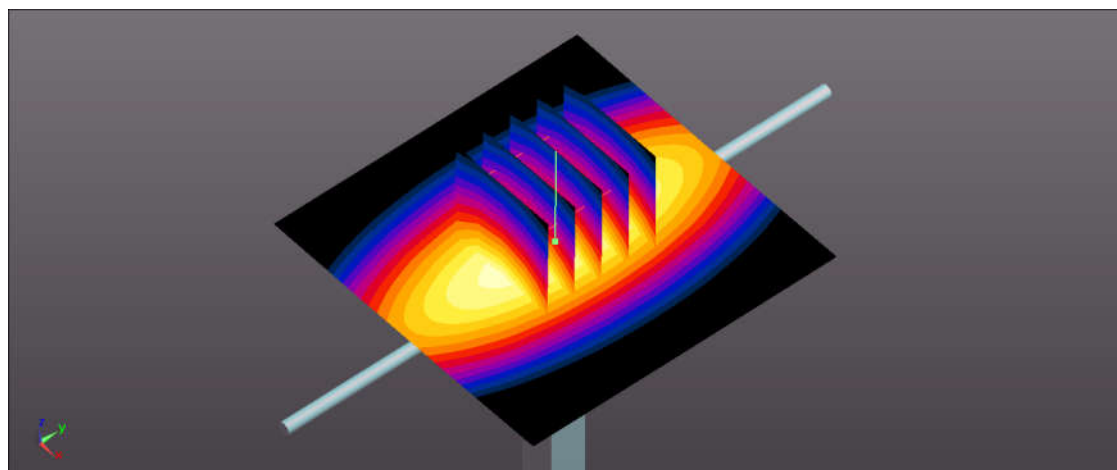
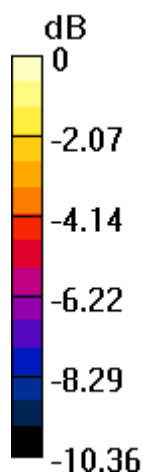
**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $49.78 \text{ V/m}$ ; Power Drift =  $0.05 \text{ dB}$

Peak SAR (extrapolated) =  $3.13 \text{ W/kg}$

**SAR(1 g) =  $2.18 \text{ W/kg}$ ; SAR(10 g) =  $1.46 \text{ W/kg}$**

Maximum value of SAR (measured) =  $2.71 \text{ W/kg}$



0 dB =  $2.71 \text{ W/kg}$  =  $4.33 \text{ dBW/kg}$

**System Check\_Body\_835MHz****DUT: D835V2 - SN:4d091**

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: MSL\_835 Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.965 \text{ S/m}$ ;  $\epsilon_r = 55.211$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature :  $23.5^\circ\text{C}$  ; Liquid Temperature :  $22.8^\circ\text{C}$

**DASY5 Configuration:**

- Probe: EX3DV4 - SN3857; ConvF(9.72, 9.72, 9.72); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Pin=250mW/Area Scan (61x61x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) =  $2.93 \text{ W/kg}$

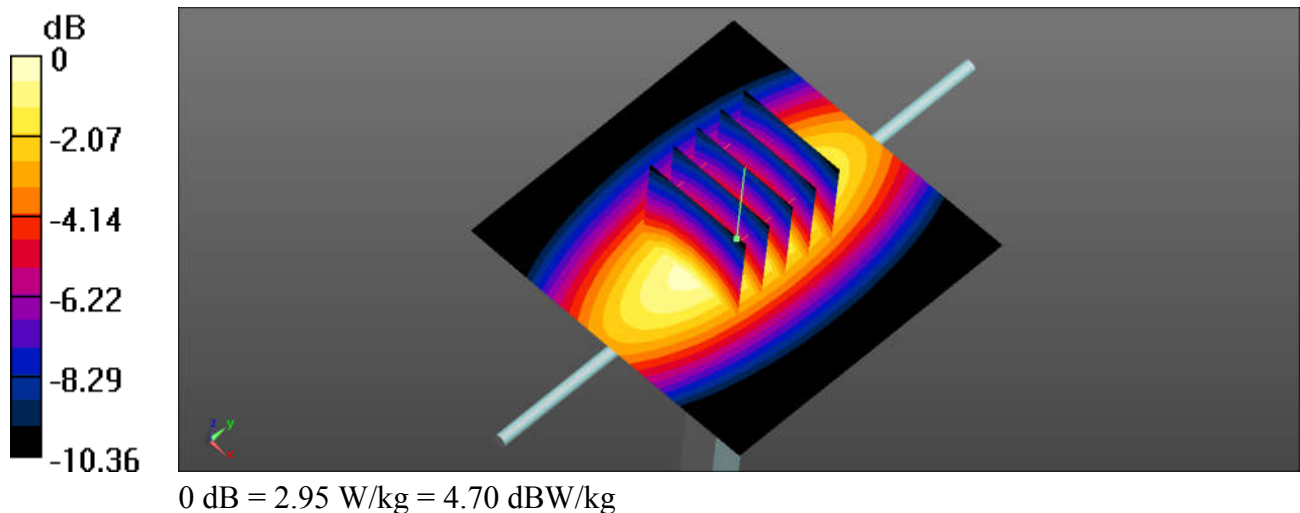
**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $50.78 \text{ V/m}$ ; Power Drift =  $0.05 \text{ dB}$

Peak SAR (extrapolated) =  $3.45 \text{ W/kg}$

**SAR(1 g) =  $2.34 \text{ W/kg}$ ; SAR(10 g) =  $1.54 \text{ W/kg}$**

Maximum value of SAR (measured) =  $2.95 \text{ W/kg}$



**System Check\_Body\_1750MHz****DUT: D1750V2 - SN:1069**

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: MSL\_1750 Medium parameters used:  $f = 1750$  MHz;  $\sigma = 1.475$  S/m;  $\epsilon_r = 53.957$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.4 °C ; Liquid Temperature : 22.7 °C

**DASY5 Configuration:**

- Probe: EX3DV4 - SN3857; ConvF(8.29, 8.29, 8.29); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Pin=250mW/Area Scan (61x61x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 13.5 W/kg

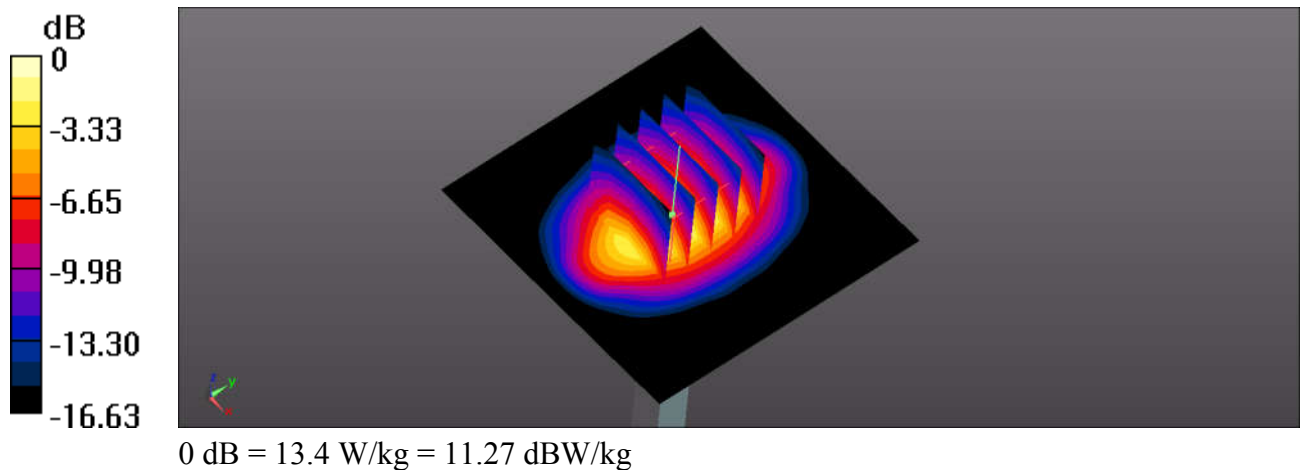
**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 85.73 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 16.6 W/kg

**SAR(1 g) = 9.55 W/kg; SAR(10 g) = 5.09 W/kg**

Maximum value of SAR (measured) = 13.4 W/kg



**System Check\_Body\_1900MHz****DUT: D1900V2 - SN:5d118**

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: MSL\_1900 Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.547$  S/m;  $\epsilon_r = 52.476$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.4 °C ; Liquid Temperature : 22.7 °C

**DASY5 Configuration:**

- Probe: EX3DV4 - SN3857; ConvF(8.08, 8.08, 8.08); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Pin=250mW/Area Scan (61x61x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 14.7 W/kg

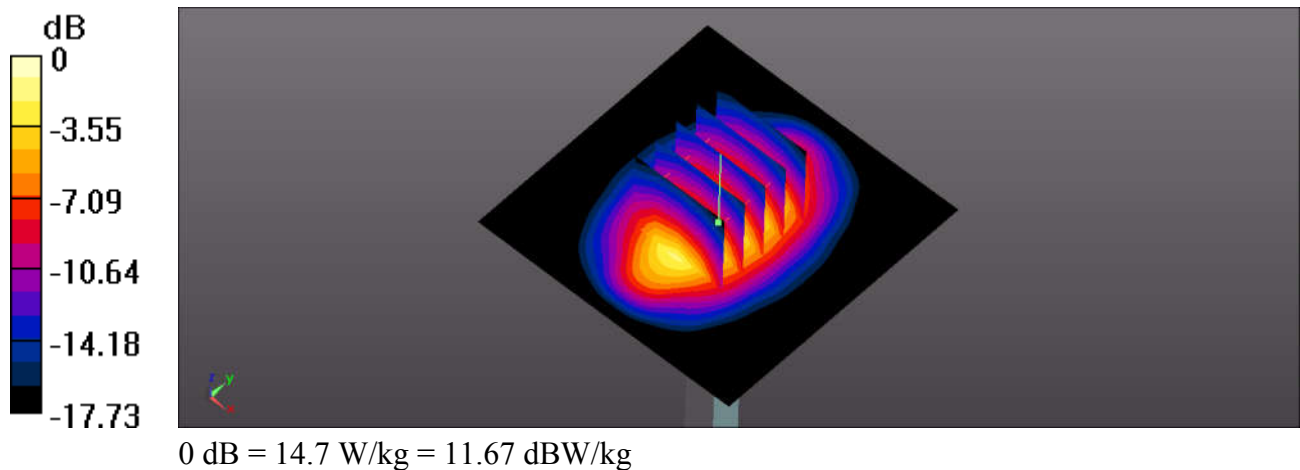
**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 86.47 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 18.4 W/kg

**SAR(1 g) = 10.3 W/kg; SAR(10 g) = 5.34 W/kg**

Maximum value of SAR (measured) = 14.7 W/kg



**System Check\_Body\_2450MHz****DUT: D2450V2 - SN:840**

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: MSL\_2450 Medium parameters used:  $f = 2450$  MHz;  $\sigma = 2.037$  S/m;  $\epsilon_r = 53.175$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.3 °C ; Liquid Temperature : 22.7 °C

**DASY5 Configuration:**

- Probe: EX3DV4 - SN3857; ConvF(7.7, 7.7, 7.7); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Pin=250mW/Area Scan (81x81x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 18.7 W/kg

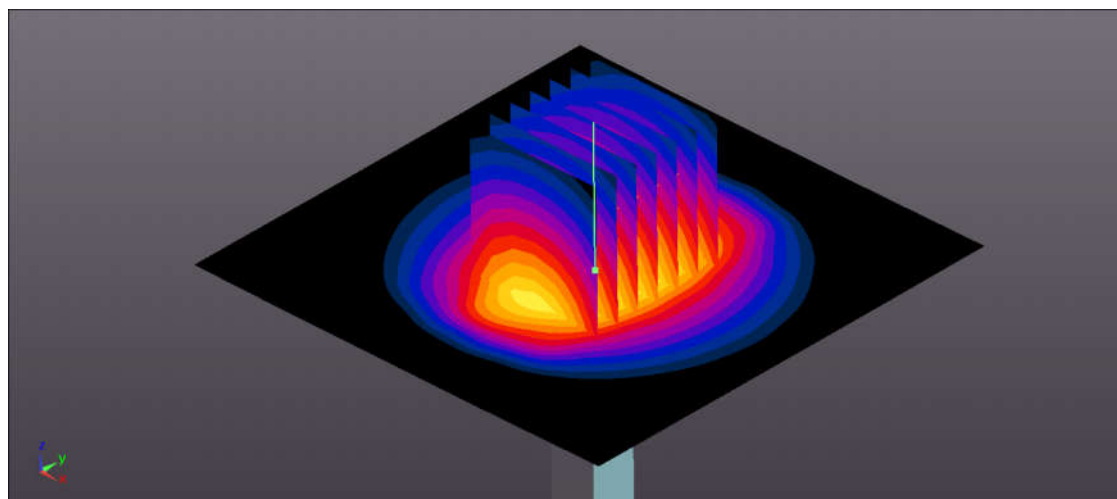
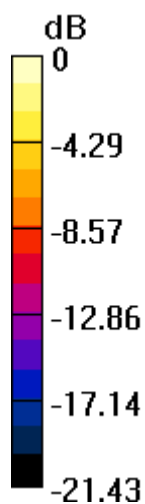
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 84.30 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 25.0 W/kg

**SAR(1 g) = 12.5 W/kg; SAR(10 g) = 5.89 W/kg**

Maximum value of SAR (measured) = 18.9 W/kg



0 dB = 18.9 W/kg = 12.76 dBW/kg

**System Check\_Body\_2600MHz****DUT: D2600V2 - SN:1061**

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: MSL\_2600 Medium parameters used:  $f = 2600$  MHz;  $\sigma = 2.197$  S/m;  $\epsilon_r = 50.896$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.3 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3857; ConvF(7.59, 7.59, 7.59); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Pin=250mW/Area Scan (81x81x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 20.6 W/kg

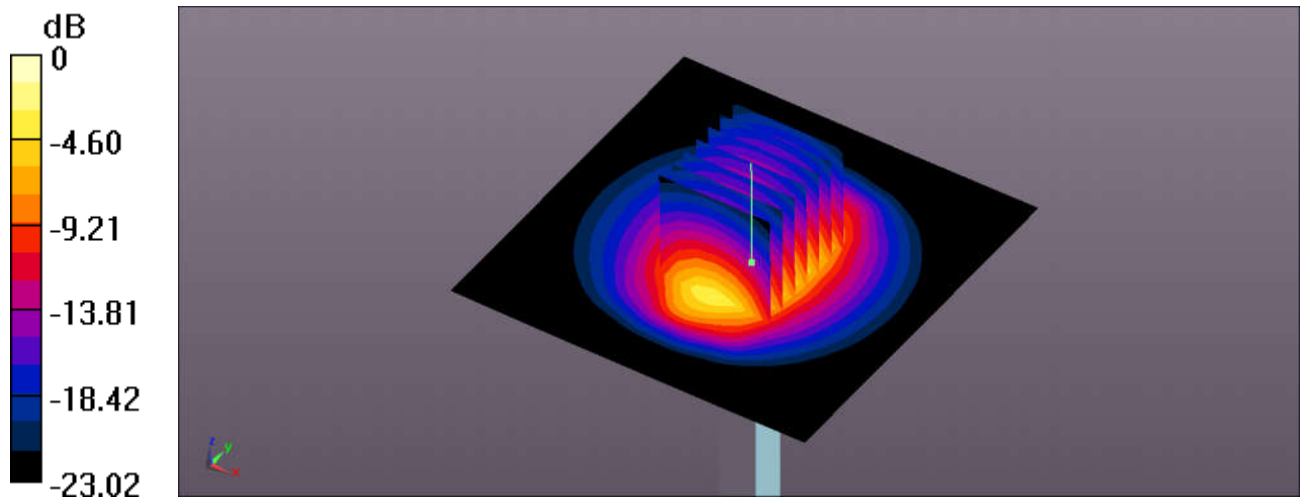
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 84.89 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 28.4 W/kg

**SAR(1 g) = 13.8 W/kg; SAR(10 g) = 6.31 W/kg**

Maximum value of SAR (measured) = 21.1 W/kg



0 dB = 21.1 W/kg = 13.24 dBW/kg

**System Check\_Body\_5250MHz****DUT: D5GHzV2-SN:1113**

Communication System: UID 0, CW (0); Frequency: 5250 MHz; Duty Cycle: 1:1

Medium: MSL\_5000 Medium parameters used:  $f = 5250$  MHz;  $\sigma = 5.354$  S/m;  $\epsilon_r = 48.459$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.8 °C

**DASY5 Configuration:**

- Probe: EX3DV4 - SN3857; ConvF(4.72, 4.72, 4.72); Calibrated: 2017.5.26;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Pin=100mW/Area Scan (71x71x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 18.5 W/kg

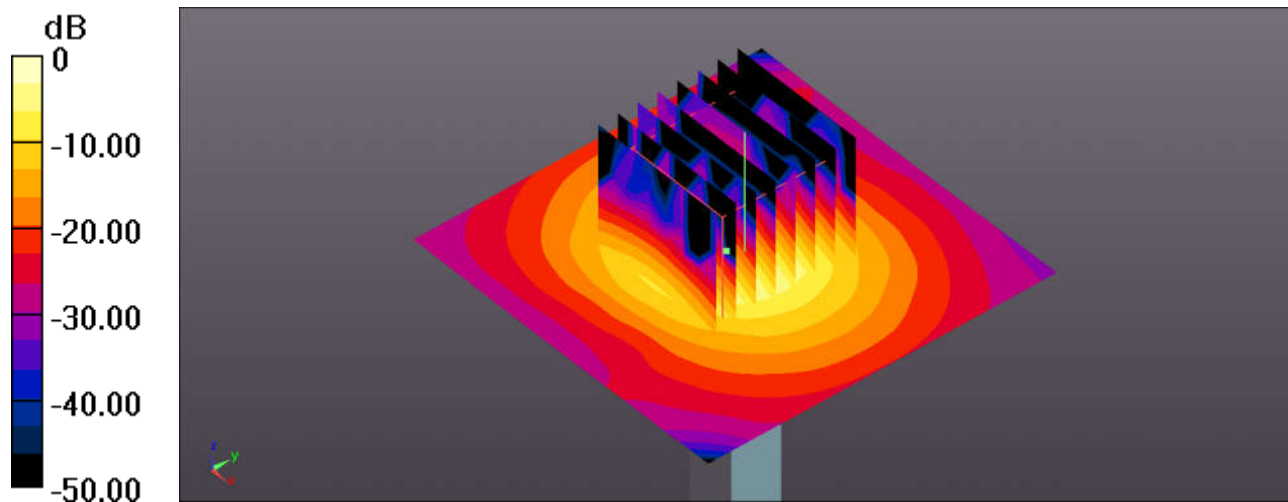
**Pin=100mW/Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 41.12 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 33.8 W/kg

**SAR(1 g) = 7.85 W/kg; SAR(10 g) = 2.18 W/kg**

Maximum value of SAR (measured) = 18.7 W/kg



0 dB = 18.7 W/kg = 12.94 dBW/kg

**System Check\_Body\_5600MHz****DUT: D5GHzV2-SN:1113**

Communication System: UID 0, CW (0); Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: MSL\_5000 Medium parameters used:  $f = 5600$  MHz;  $\sigma = 5.849$  S/m;  $\epsilon_r = 47.666$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.4 °C ; Liquid Temperature : 22.6 °C

**DASY5 Configuration:**

- Probe: EX3DV4 - SN3857; ConvF(4.01, 4.01, 4.01); Calibrated: 2017.5.26;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Pin=100mW/Area Scan (71x71x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 19.6 W/kg

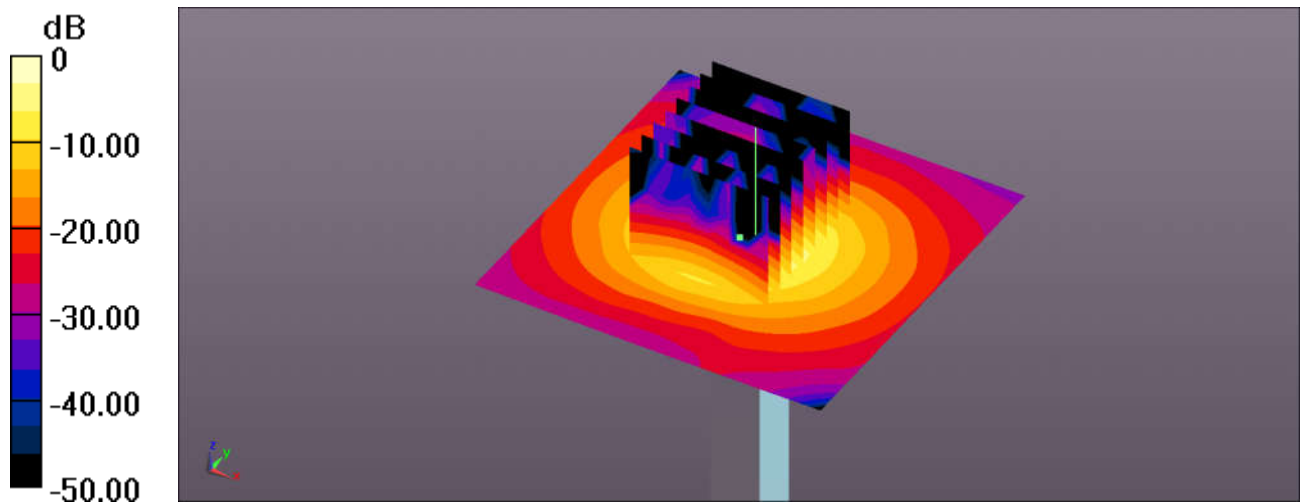
**Pin=100mW/Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 40.13 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 34.7 W/kg

**SAR(1 g) = 8 W/kg; SAR(10 g) = 2.24 W/kg**

Maximum value of SAR (measured) = 19.7 W/kg



0 dB = 19.7 W/kg = 12.94 dBW/kg

**System Check\_Body\_5750MHz****DUT: D5GHzV2-SN:1113**

Communication System: UID 0, CW (0); Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: MSL\_5000 Medium parameters used:  $f = 5750$  MHz;  $\sigma = 6.058$  S/m;  $\epsilon_r = 47.348$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.4 °C ; Liquid Temperature : 22.6 °C

**DASY5 Configuration:**

- Probe: EX3DV4 - SN3857; ConvF(4.31, 4.31, 4.31); Calibrated: 2017.5.26;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Pin=100mW/Area Scan (71x71x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 18.8 W/kg

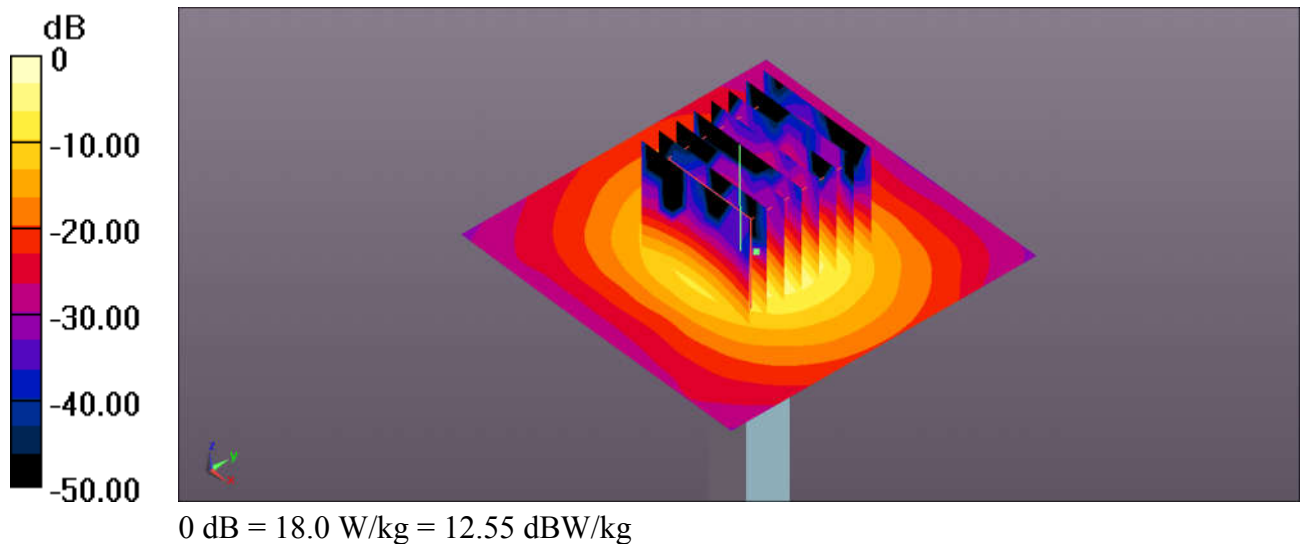
**Pin=100mW/Zoom Scan (8x8x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 37.01 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 33.4 W/kg

**SAR(1 g) = 7.39 W/kg; SAR(10 g) = 2.08 W/kg**

Maximum value of SAR (measured) = 18.0 W/kg





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**Appendix B. Plots of High SAR Measurement**

The plots are shown as follows.

**01\_WCDMA Band V\_RMC12.2Kbps\_Bottom Face\_0mm\_Ch4233**

Communication System: UID 0, UMTS (0); Frequency: 846.6 MHz; Duty Cycle: 1:1

Medium: MSL\_850 Medium parameters used:  $f = 846.6$  MHz;  $\sigma = 0.978$  S/m;  $\epsilon_r = 55.083$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.5 °C; Liquid Temperature : 22.8 °C

**DASY5 Configuration:**

- Probe: EX3DV4 - SN3857; ConvF(9.72, 9.72, 9.72); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch4233/Area Scan (51x91x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.41 W/kg

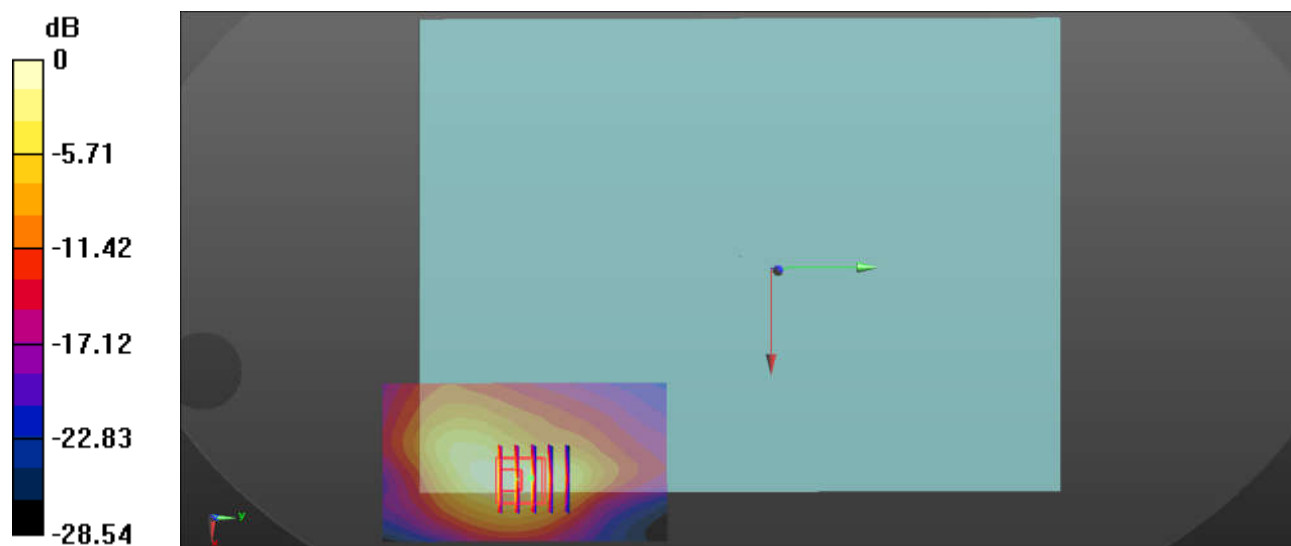
**Ch4233/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.006 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 1.48 W/kg

**SAR(1 g) = 0.921 W/kg; SAR(10 g) = 0.525 W/kg**

Maximum value of SAR (measured) = 1.30 W/kg



0 dB = 1.41 W/kg = 1.49 dBW/kg

**02\_WCDMA Band IV\_RMC12.2Kbps\_Bottom Face\_12mm\_Ch1413**

Communication System: UID 0, UMTS (0); Frequency: 1732.6 MHz; Duty Cycle: 1:1

Medium: MSL\_1750 Medium parameters used:  $f = 1732.6$  MHz;  $\sigma = 1.455$  S/m;  $\epsilon_r = 54.009$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.4 °C ; Liquid Temperature : 22.7 °C

**DASY5 Configuration:**

- Probe: EX3DV4 - SN3857; ConvF(8.29, 8.29, 8.29); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch1413/Area Scan (41x81x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.46 W/kg

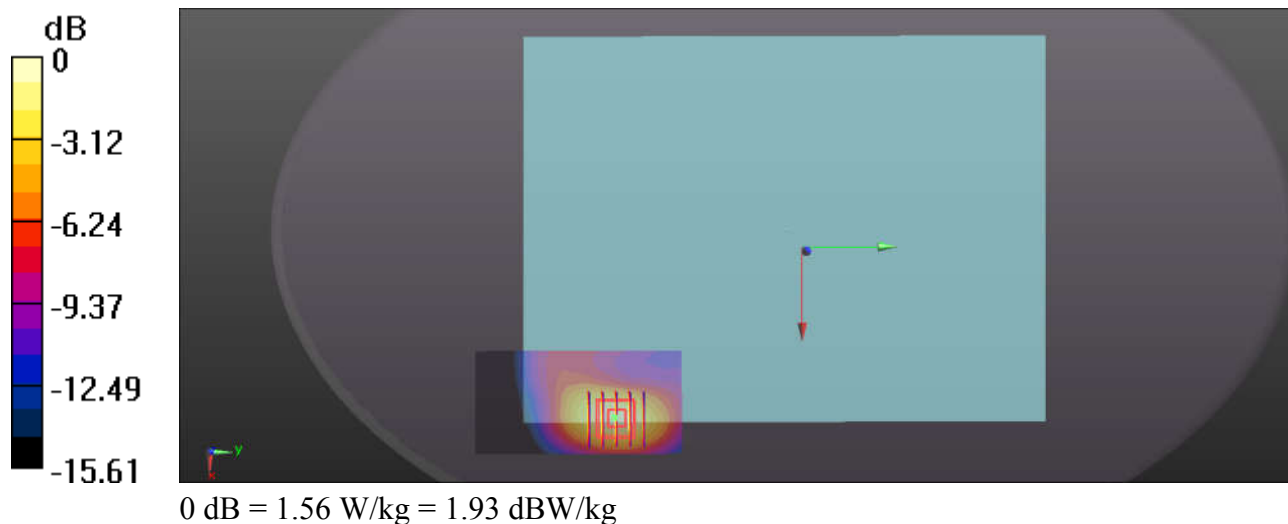
**Ch1413/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.173 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 1.86 W/kg

**SAR(1 g) = 1.1 W/kg; SAR(10 g) = 0.655 W/kg**

Maximum value of SAR (measured) = 1.56 W/kg



**03\_WCDMA Band II\_RMC12.2Kbps\_Edge4\_0mm\_Ch9262**

Communication System: UID 0, UMTS (0); Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium: MSL\_1900 Medium parameters used:  $f = 1852.4$  MHz;  $\sigma = 1.495$  S/m;  $\epsilon_r = 52.624$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.4 °C ; Liquid Temperature : 22.7 °C

**DASY5 Configuration:**

- Probe: EX3DV4 - SN3857; ConvF(8.08, 8.08, 8.08); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch9262/Area Scan (41x81x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.92 W/kg

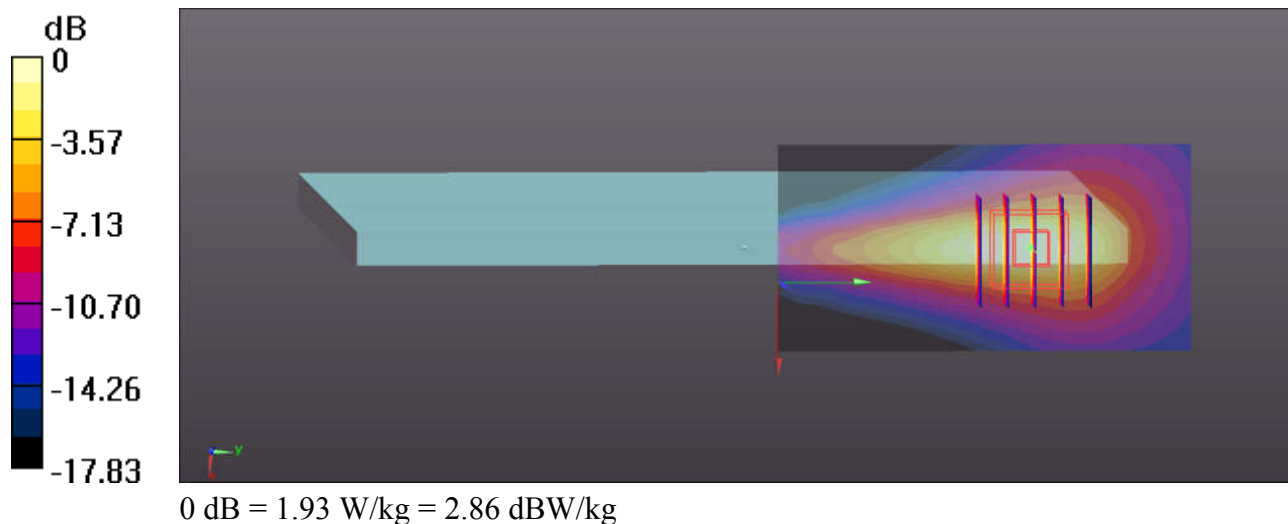
**Ch9262/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.463 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 2.44 W/kg

**SAR(1 g) = 1.29 W/kg; SAR(10 g) = 0.662 W/kg**

Maximum value of SAR (measured) = 1.93 W/kg



**04\_LTE Band 12\_10M\_QPSK\_1RB\_0Offset\_Bottom Face\_0mm\_Ch23095**

Communication System: UID 0, FDD\_LTE (0); Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium: MSL\_750 Medium parameters used:  $f = 707.5$  MHz;  $\sigma = 0.919$  S/m;  $\epsilon_r = 56.547$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.5 °C ; Liquid Temperature : 22.8 °C

**DASY5 Configuration:**

- Probe: EX3DV4 - SN3857; ConvF(9.72, 9.72, 9.72); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch23095/Area Scan (51x91x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.67 W/kg

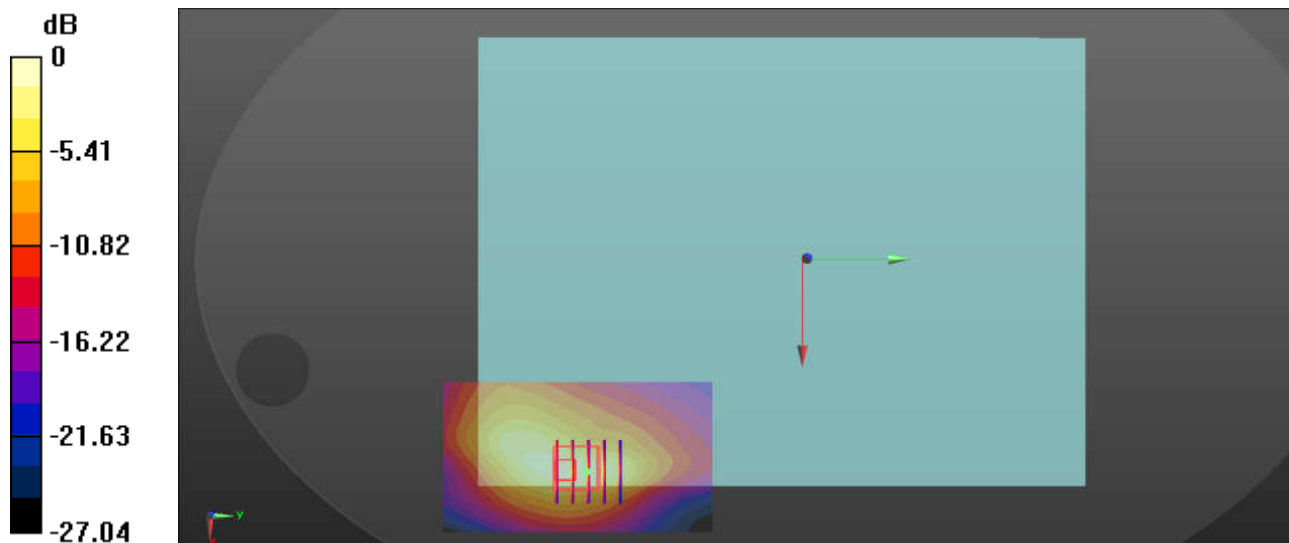
**Ch23095/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.726 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 1.69 W/kg

**SAR(1 g) = 0.982 W/kg; SAR(10 g) = 0.572 W/kg**

Maximum value of SAR (measured) = 1.43 W/kg



0 dB = 1.67 W/kg = 2.23 dBW/kg

**05\_LTE Band 13\_10M\_QPSK\_1RB\_0Offset\_Bottom Face\_0mm\_Ch23230**

Communication System: UID 0, FDD\_LTE (0); Frequency: 782 MHz; Duty Cycle: 1:1

Medium: MSL\_850 Medium parameters used:  $f = 782 \text{ MHz}$ ;  $\sigma = 0.913 \text{ S/m}$ ;  $\epsilon_r = 55.659$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature :  $23.5^\circ\text{C}$ ; Liquid Temperature :  $22.8^\circ\text{C}$

**DASY5 Configuration:**

- Probe: EX3DV4 - SN3857; ConvF(9.72, 9.72, 9.72); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch23230/Area Scan (51x91x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) =  $1.63 \text{ W/kg}$

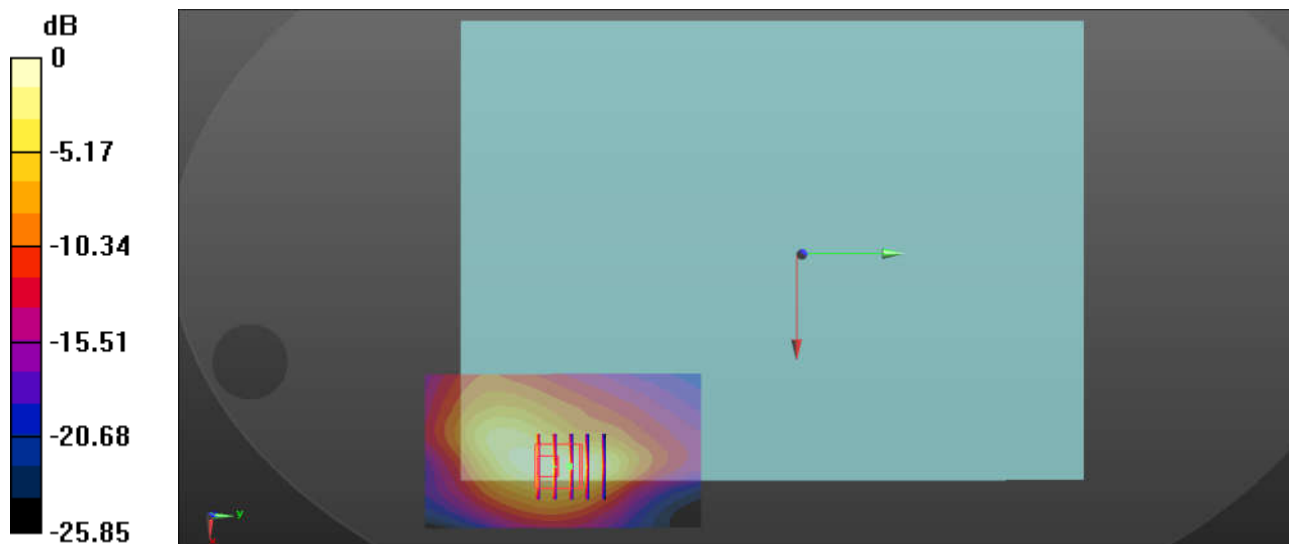
**Ch23230/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $4.542 \text{ V/m}$ ; Power Drift =  $-0.03 \text{ dB}$

Peak SAR (extrapolated) =  $1.67 \text{ W/kg}$

**SAR(1 g) =  $1.03 \text{ W/kg}$ ; SAR(10 g) =  $0.597 \text{ W/kg}$**

Maximum value of SAR (measured) =  $1.46 \text{ W/kg}$



0 dB =  $1.63 \text{ W/kg} = 2.12 \text{ dBW/kg}$

**06\_LTE Band26\_15M\_QPSK\_36RB\_0Offset\_Bottom Face\_0mm\_Ch26865**

Communication System: UID 0, FDD\_LTE (0); Frequency: 831.5 MHz; Duty Cycle: 1:1

Medium: MSL\_850 Medium parameters used:  $f = 831.5$  MHz;  $\sigma = 0.961$  S/m;  $\epsilon_r = 55.247$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.5 °C; Liquid Temperature : 22.8 °C

**DASY5 Configuration:**

- Probe: EX3DV4 - SN3857; ConvF(9.72, 9.72, 9.72); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch26865/Area Scan (51x81x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.30 W/kg

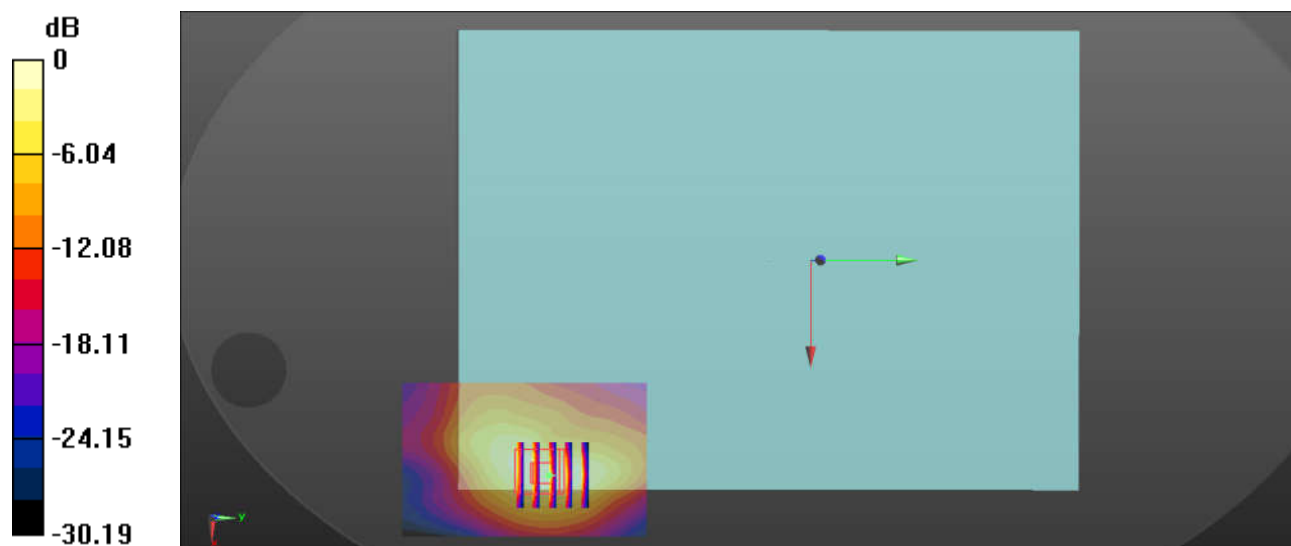
**Ch26865/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.387 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 1.44 W/kg

**SAR(1 g) = 0.857 W/kg; SAR(10 g) = 0.507 W/kg**

Maximum value of SAR (measured) = 1.21 W/kg



0 dB = 1.30 W/kg = 1.14 dBW/kg

**07\_LTE Band 4\_20M\_QOSK\_1RB\_0Offset\_Bottom Face\_0mm\_Ch20175**

Communication System: UID 0, FDD\_LTE (0); Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: MSL\_1750 Medium parameters used:  $f = 1732.5$  MHz;  $\sigma = 1.454$  S/m;  $\epsilon_r = 54.011$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.4 °C; Liquid Temperature : 22.7 °C

**DASY5 Configuration:**

- Probe: EX3DV4 - SN3857; ConvF(8.29, 8.29, 8.29); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch20175/Area Scan (51x91x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.55 W/kg

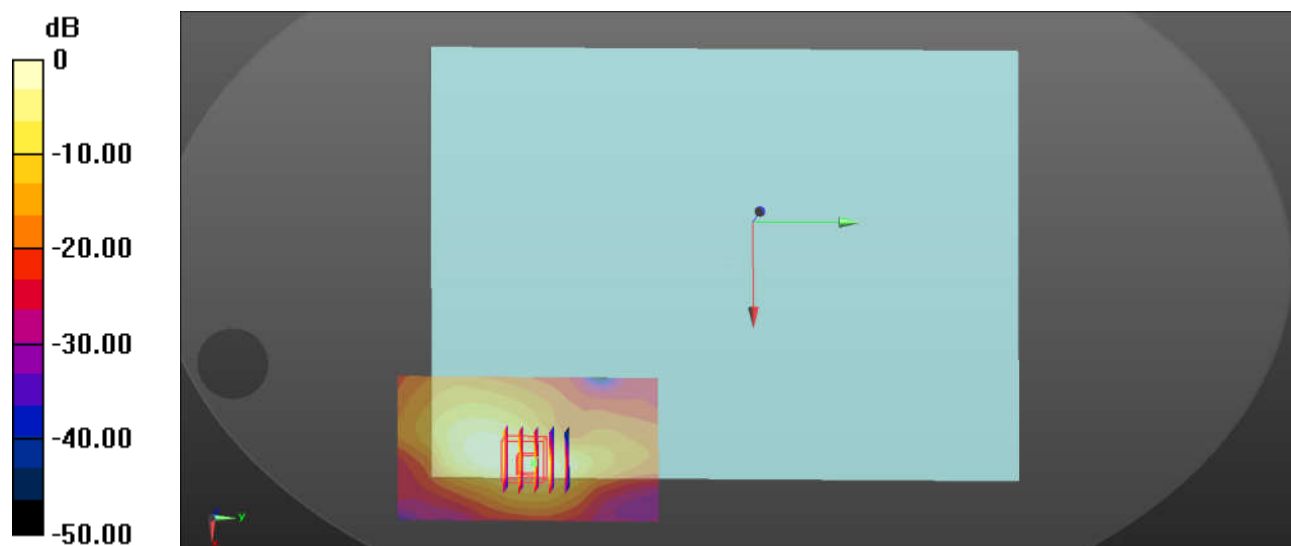
**Ch20175/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.058 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 1.65 W/kg

**SAR(1 g) = 0.944 W/kg; SAR(10 g) = 0.495 W/kg**

Maximum value of SAR (measured) = 1.39 W/kg



0 dB = 1.55 W/kg = 1.90 dBW/kg

**08\_LTE Band25\_20M\_QPSK\_1RB\_0Offset\_Edge4\_0mm\_Ch26590**

Communication System: UID 0, FDD\_LTE (0); Frequency: 1905 MHz; Duty Cycle: 1:1  
Medium: MSL\_1900 Medium parameters used:  $f = 1905$  MHz;  $\sigma = 1.553$  S/m;  $\epsilon_r = 52.455$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Ambient Temperature : 23.4 °C ; Liquid Temperature : 22.7 °C

**DASY5 Configuration:**

- Probe: EX3DV4 - SN3857; ConvF(8.08, 8.08, 8.08); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch26590/Area Scan (41x81x1):** Interpolated grid:  $dx=1.500$  mm,  $dy=1.500$  mm

Maximum value of SAR (interpolated) = 1.74 W/kg

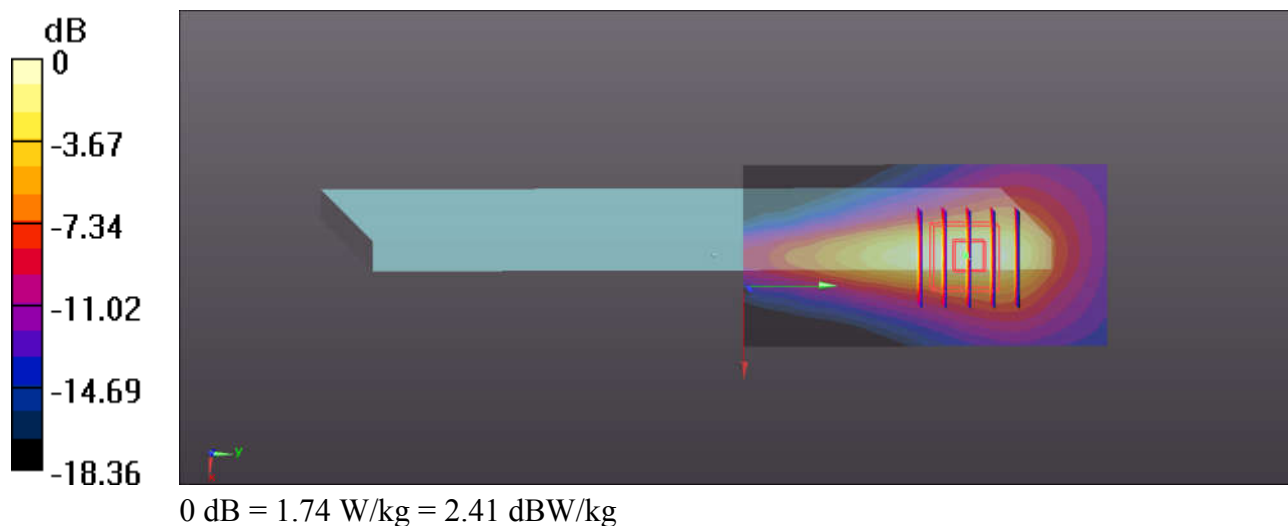
**Ch26590/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8$ mm,  $dy=8$ mm,  $dz=5$ mm

Reference Value = 9.000 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 2.22 W/kg

**SAR(1 g) = 1.17 W/kg; SAR(10 g) = 0.592 W/kg**

Maximum value of SAR (measured) = 1.74 W/kg



**09\_LTE Band 7\_20M\_QPSK\_50RB\_0Offset\_Edge4\_0mm\_Ch21350**

Communication System: UID 0, FDD\_LTE (0); Frequency: 2560 MHz; Duty Cycle: 1:1  
Medium: MSL\_2600 Medium parameters used:  $f = 2560$  MHz;  $\sigma = 2.138$  S/m;  $\epsilon_r = 51.043$ ;  $\rho = 1000$  kg/m<sup>3</sup>  
Ambient Temperature : 23.3 °C ; Liquid Temperature : 22.8 °C

**DASY5 Configuration:**

- Probe: EX3DV4 - SN3857; ConvF(7.59, 7.59, 7.59); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch21350/Area Scan (51x101x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 1.64 W/kg

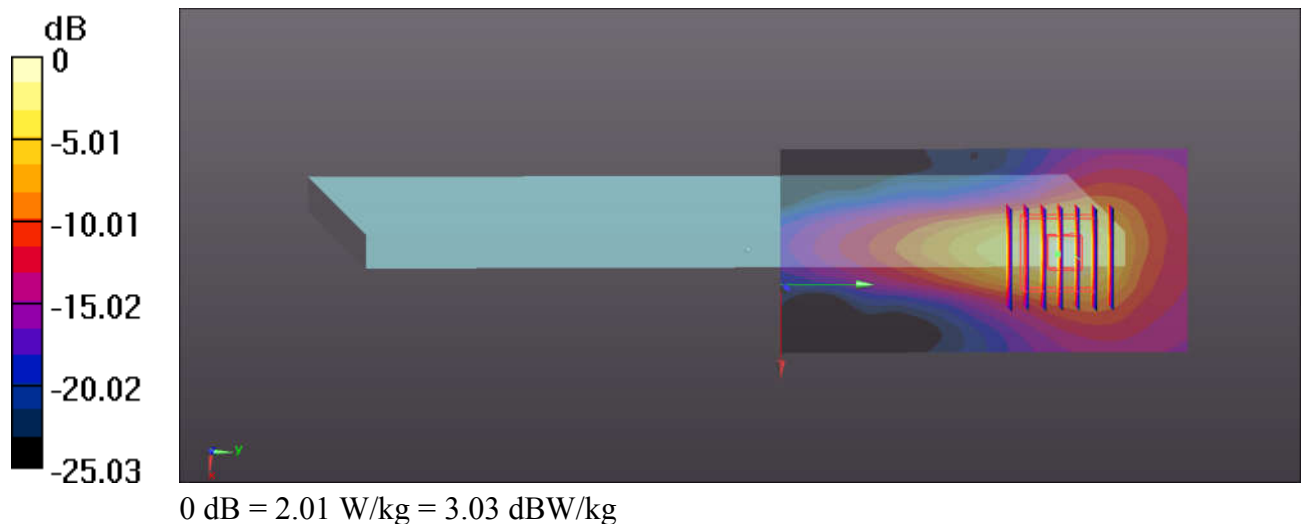
**Ch21350/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.514 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 2.99 W/kg

**SAR(1 g) = 1.16 W/kg; SAR(10 g) = 0.456 W/kg**

Maximum value of SAR (measured) = 2.01 W/kg



**10\_LTE Band41\_20M\_QPSK\_1RB\_0Offset\_Edge4\_0mm\_Ch41490**

Communication System: UID 0, TDD\_LTE (0); Frequency: 2680 MHz; Duty Cycle: 1:1.59

Medium: MSL\_2600 Medium parameters used:  $f = 2680$  MHz;  $\sigma = 2.308$  S/m;  $\epsilon_r = 50.565$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.3 °C ; Liquid Temperature : 22.8 °C

**DASY5 Configuration:**

- Probe: EX3DV4 - SN3857; ConvF(7.59, 7.59, 7.59); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch41490/Area Scan (51x101x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 1.97 W/kg

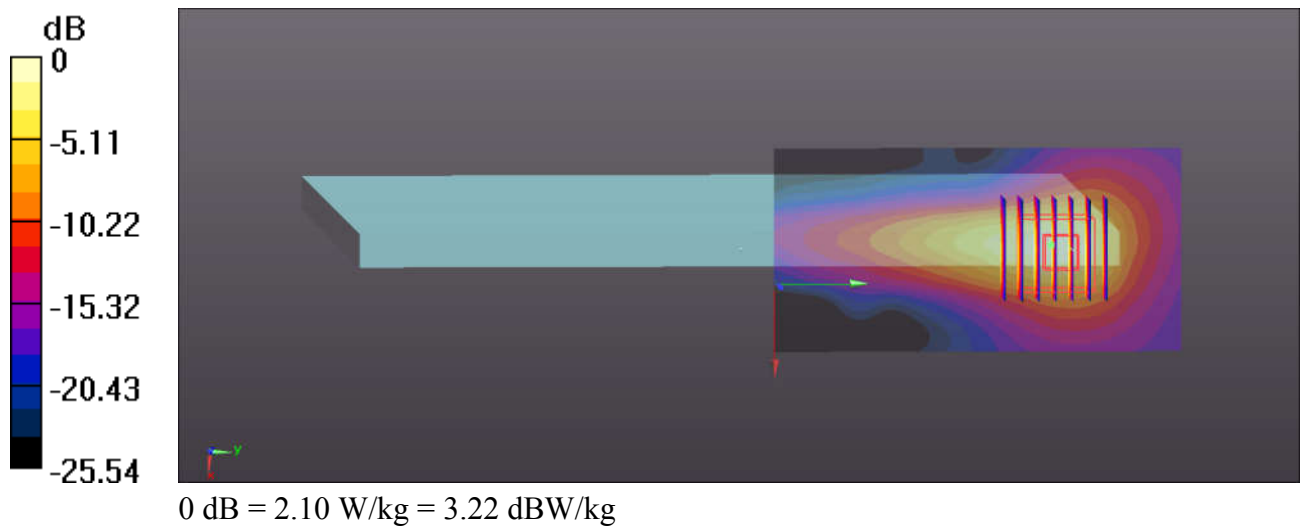
**Ch41490/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.775 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 3.42 W/kg

**SAR(1 g) = 1.33 W/kg; SAR(10 g) = 0.521 W/kg**

Maximum value of SAR (measured) = 2.10 W/kg



**11\_WLAN2.4GHz\_802.11b 1Mbps\_Bottom Face \_0mm\_Ch1\_Ant 1**

Communication System: UID 0, WIFI (0); Frequency: 2412 MHz; Duty Cycle: 1:1

Medium: MSL\_2450 Medium parameters used:  $f = 2412$  MHz;  $\sigma = 1.983$  S/m;  $\epsilon_r = 53.344$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.3 °C ; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3857; ConvF(7.7, 7.7, 7.7); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch1/Area Scan (41x101x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 1.19 W/kg

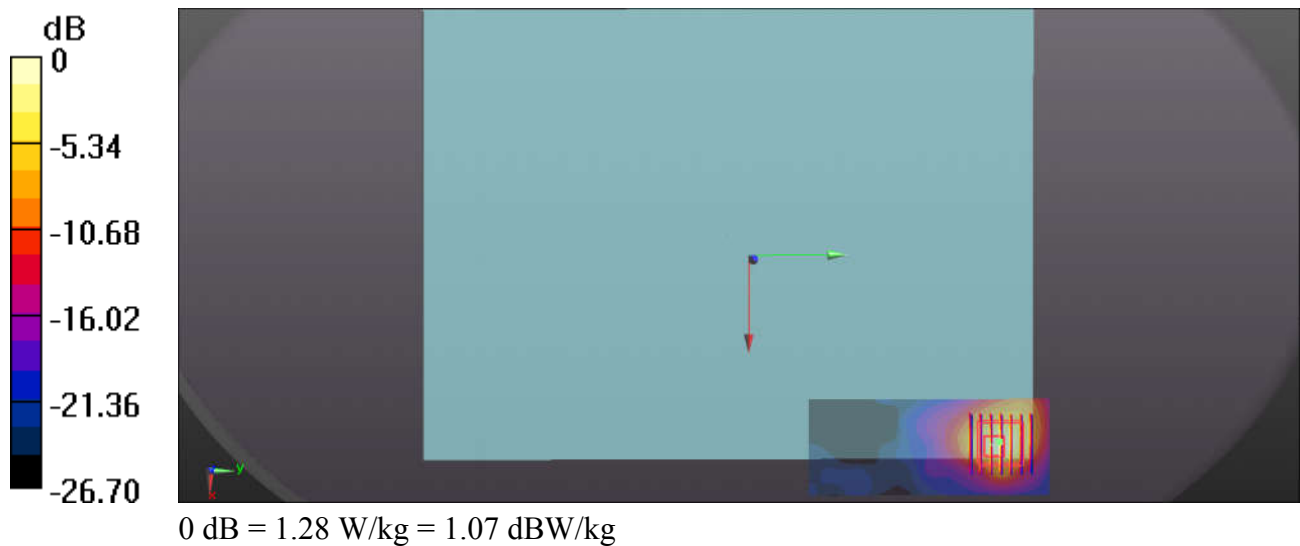
**Ch1/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.268 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 2.00 W/kg

**SAR(1 g) = 0.784 W/kg; SAR(10 g) = 0.286 W/kg**

Maximum value of SAR (measured) = 1.28 W/kg



**12\_WLAN2.4GHz\_802.11b 1Mbps\_Bottom Face \_0mm\_Ch6\_Ant 2**

Communication System: UID 0, WIFI (0); Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: MSL\_2450 Medium parameters used:  $f = 2437$  MHz;  $\sigma = 2.019$  S/m;  $\epsilon_r = 53.231$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.3 °C ; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3857; ConvF(7.7, 7.7, 7.7); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch6/Area Scan (41x101x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 1.49 W/kg

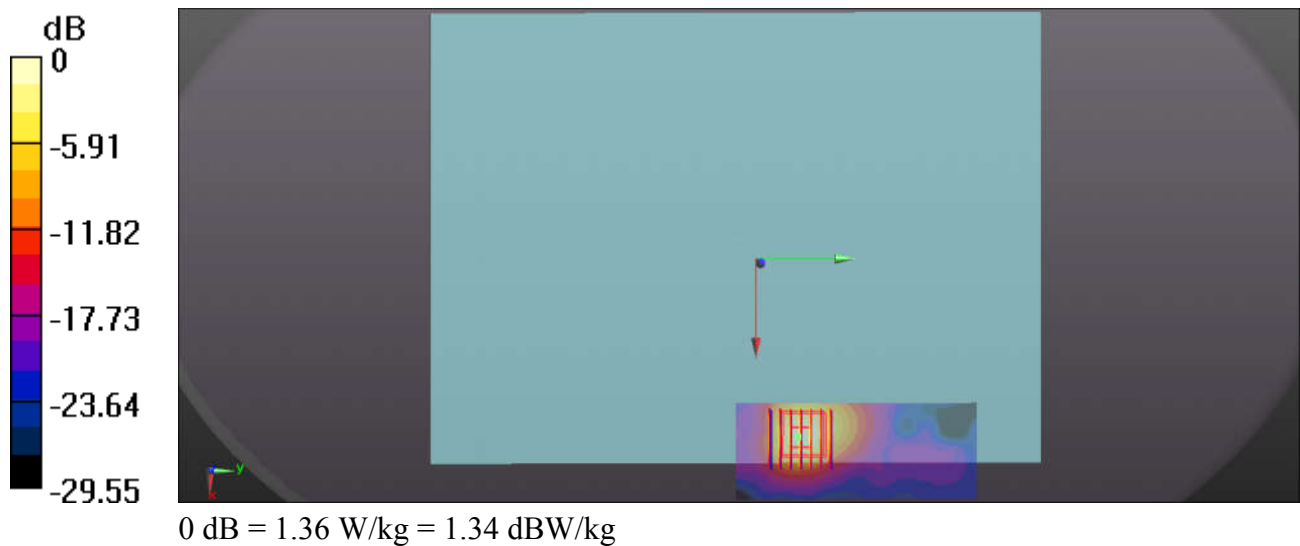
**Ch6/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.325 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 1.88 W/kg

**SAR(1 g) = 0.846 W/kg; SAR(10 g) = 0.347 W/kg**

Maximum value of SAR (measured) = 1.36 W/kg



**13\_WLAN5.3GHz\_802.11a 6Mbps\_Edge1\_0mm\_Ch52\_Ant 1**

Communication System: UID 0, WIFI (0); Frequency: 5260 MHz; Duty Cycle: 1:1.057

Medium: MSL\_5000 Medium parameters used:  $f = 5260$  MHz;  $\sigma = 5.367$  S/m;  $\epsilon_r = 48.431$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.8 °C

**DASY5 Configuration:**

- Probe: EX3DV4 - SN3857; ConvF(4.72, 4.72, 4.72); Calibrated: 2017.5.26;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch52/Area Scan (51x151x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.39 W/kg

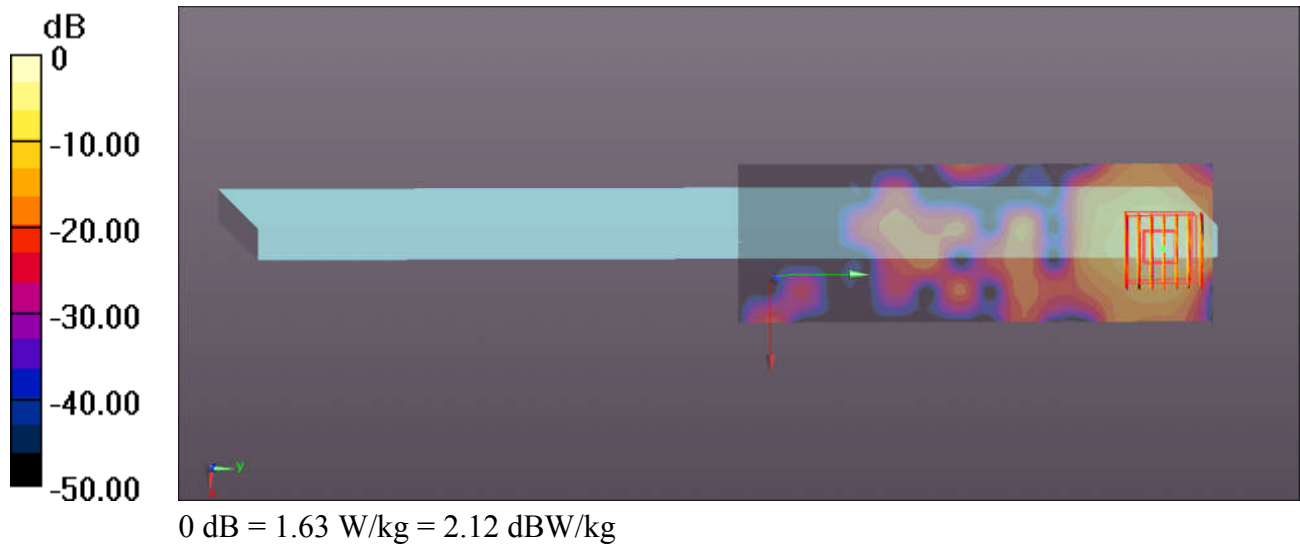
**Ch52/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 0.6560 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 2.77 W/kg

**SAR(1 g) = 0.595 W/kg; SAR(10 g) = 0.151 W/kg**

Maximum value of SAR (measured) = 1.63 W/kg



**14\_WLAN5.3GHz\_802.11a 6Mbps Bottom Face \_0mm\_Ch60\_Ant 2**

Communication System: UID 0, WIFI (0); Frequency: 5300 MHz; Duty Cycle: 1:1.056

Medium: MSL\_5000 Medium parameters used:  $f = 5300$  MHz;  $\sigma = 5.418$  S/m;  $\epsilon_r = 48.319$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.2 °C ; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3857; ConvF(4.72, 4.72, 4.72); Calibrated: 2017.5.26;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch60/Area Scan (51x121x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.86 W/kg

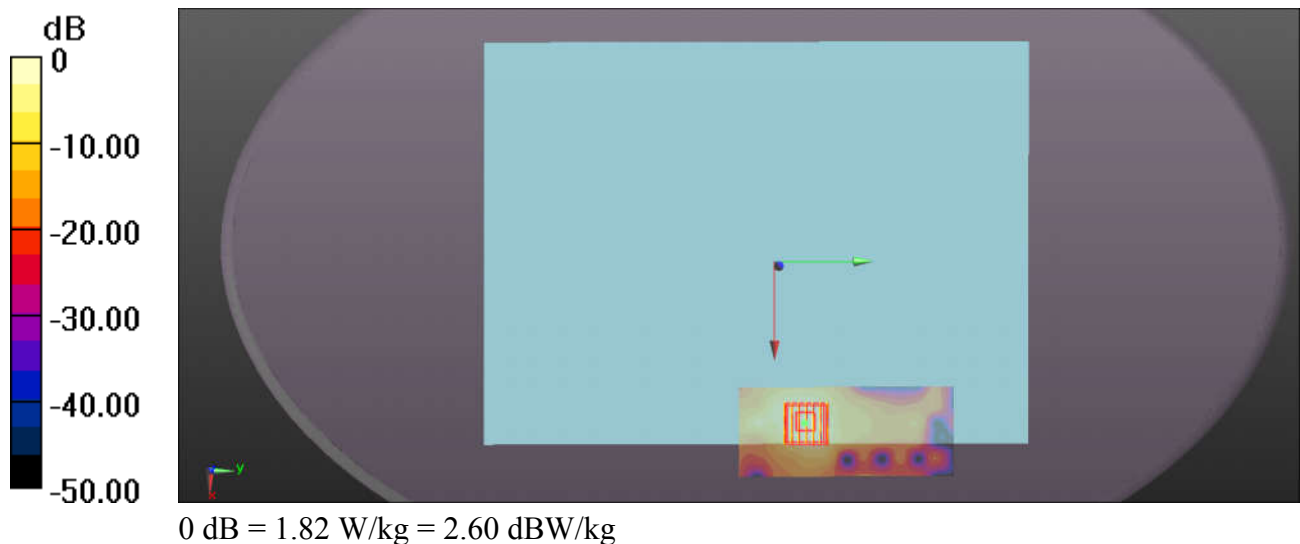
**Ch60/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 1.701 V/m; Power Drift = -0.18 dB

Peak SAR (extrapolated) = 4.22 W/kg

**SAR(1 g) = 0.956 W/kg; SAR(10 g) = 0.319 W/kg**

Maximum value of SAR (measured) = 1.82 W/kg



**15\_WLAN5.5GHz\_802.11a 6Mbps\_Edge1\_0mm\_Ch144\_Ant 1**

Communication System: UID 0, WIFI (0); Frequency: 5720 MHz; Duty Cycle: 1:1.057

Medium: MSL\_5000 Medium parameters used:  $f = 5720$  MHz;  $\sigma = 6.02$  S/m;  $\epsilon_r = 47.405$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.4 °C ; Liquid Temperature : 22.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3857; ConvF(4.31, 4.31, 4.31); Calibrated: 2017.5.26;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch144/Area Scan (51x121x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 2.11 W/kg

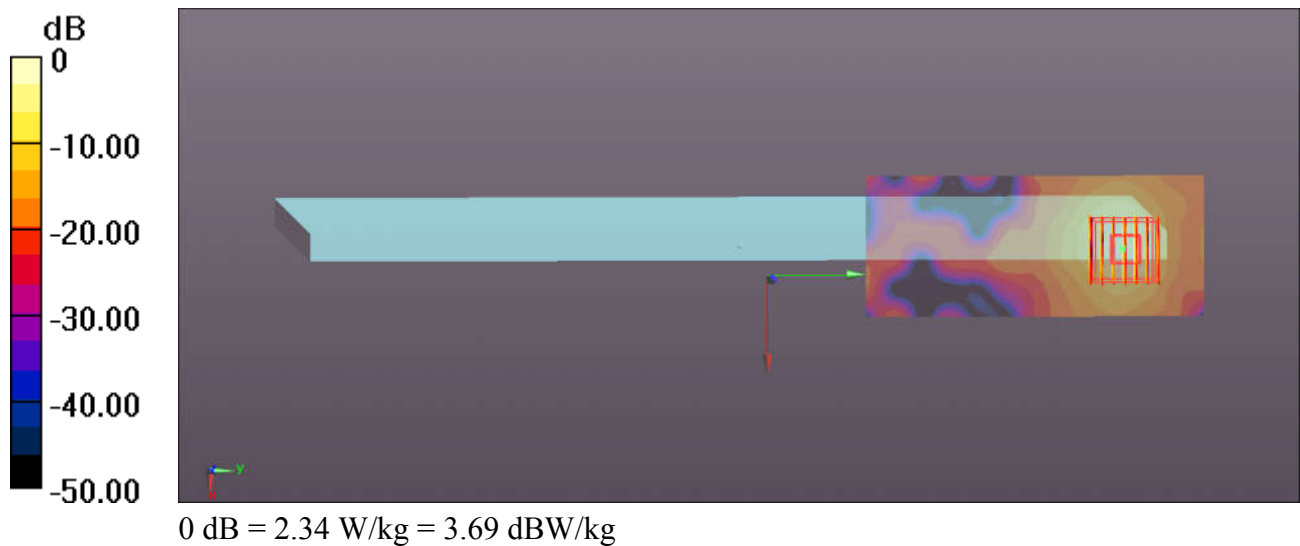
**Ch144/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 0.6870 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 5.16 W/kg

**SAR(1 g) = 0.835 W/kg; SAR(10 g) = 0.228 W/kg**

Maximum value of SAR (measured) = 2.34 W/kg



**16\_WLAN5.5GHz\_802.11a 6Mbps\_Bottom Face\_0mm\_Ch100\_Ant 2**

Communication System: UID 0, WIFI (0); Frequency: 5500 MHz; Duty Cycle: 1:1.056

Medium: MSL\_5000 Medium parameters used:  $f = 5500$  MHz;  $\sigma = 5.717$  S/m;  $\epsilon_r = 47.955$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.4 °C ; Liquid Temperature : 22.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3857; ConvF(4.01, 4.01, 4.01); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch100/Area Scan (51x111x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.70 W/kg

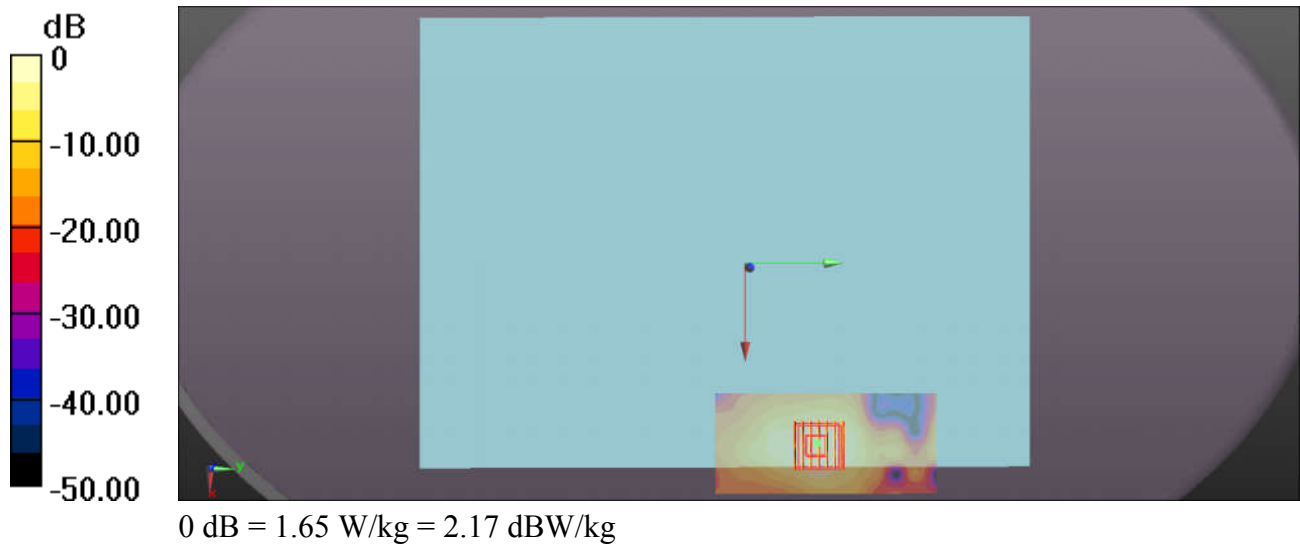
**Ch100/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 0.8910 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 3.82 W/kg

**SAR(1 g) = 0.819 W/kg; SAR(10 g) = 0.278 W/kg**

Maximum value of SAR (measured) = 1.65 W/kg



**17\_WLAN5.8GHz\_802.11a 6Mbps\_Edge1\_0mm\_Ch149\_Ant 1**

Communication System: UID 0, WIFI (0); Frequency: 5745 MHz; Duty Cycle: 1:1.057

Medium: MSL\_5000 Medium parameters used:  $f = 5745$  MHz;  $\sigma = 6.051$  S/m;  $\epsilon_r = 47.358$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.4 °C ; Liquid Temperature : 22.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3857; ConvF(4.31, 4.31, 4.31); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch149/Area Scan (51x121x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.53 W/kg

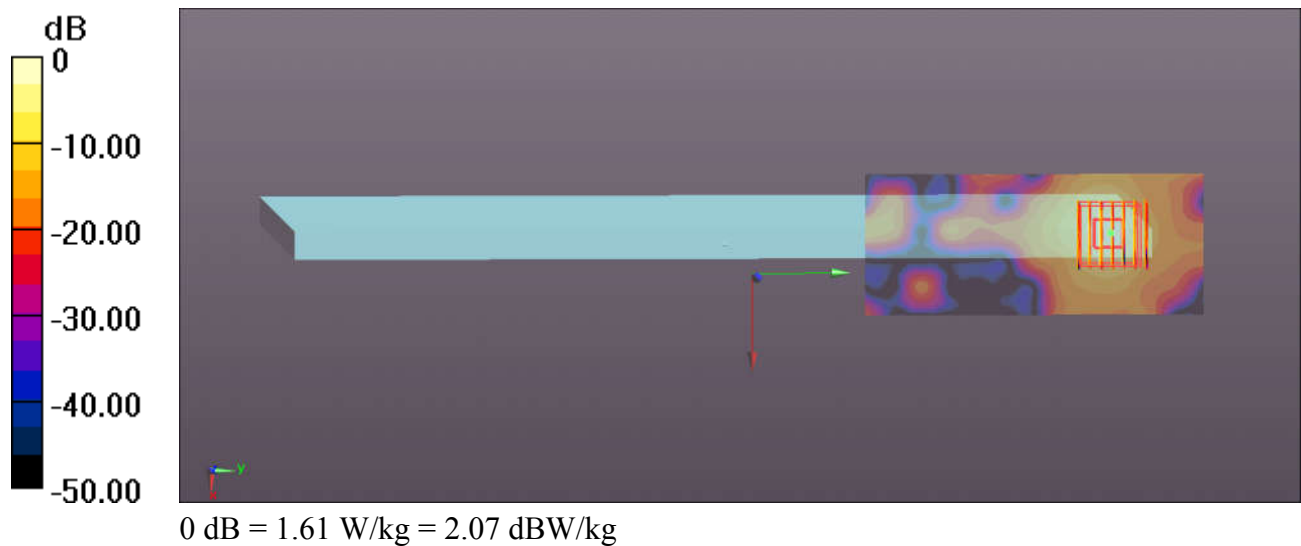
**Ch149/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 1.168 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 3.10 W/kg

**SAR(1 g) = 0.719 W/kg; SAR(10 g) = 0.194 W/kg**

Maximum value of SAR (measured) = 1.61 W/kg



**18\_WLAN5.8GHz\_802.11a 6Mbps\_Bottom Face\_0mm\_Ch157\_Ant 2**

Communication System: UID 0, WIFI (0); Frequency: 5785 MHz; Duty Cycle: 1:1.056

Medium: MSL\_5000 Medium parameters used:  $f = 5785$  MHz;  $\sigma = 6.096$  S/m;  $\epsilon_r = 47.214$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.4 °C ; Liquid Temperature : 22.6 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3857; ConvF(4.31, 4.31, 4.31); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch157/Area Scan (51x111x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.02 W/kg

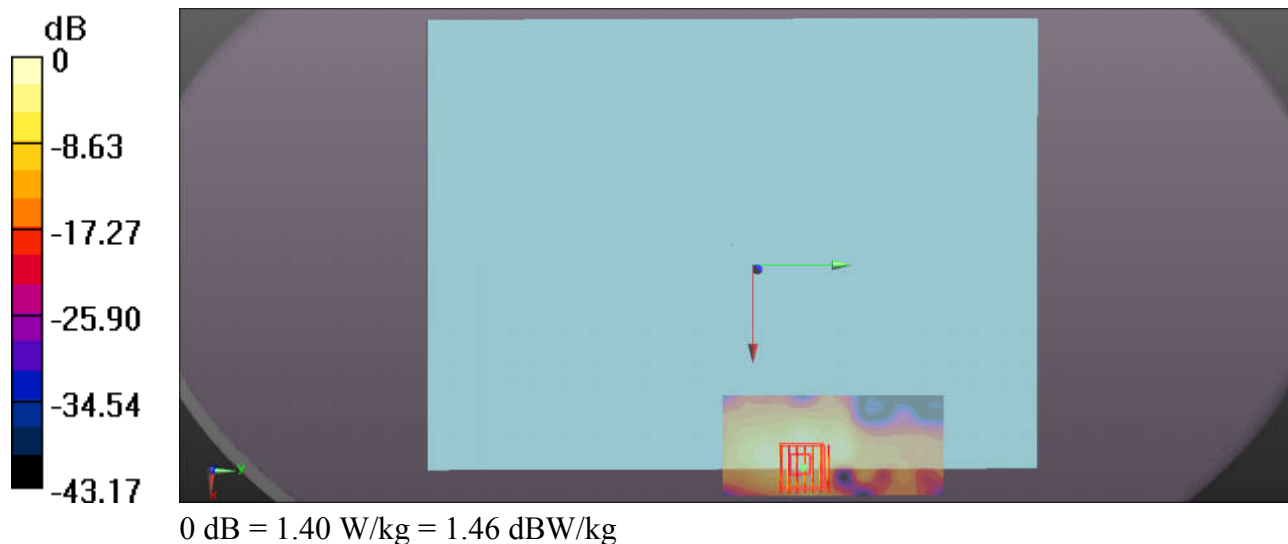
**Ch157/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 0.9490 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 3.49 W/kg

**SAR(1 g) = 0.653 W/kg; SAR(10 g) = 0.178 W/kg**

Maximum value of SAR (measured) = 1.40 W/kg



**19\_ Bluetooth\_1Mbps\_Bottom Face \_0mm\_Ch39**

Communication System: UID 0, Bluetooth (0); Frequency: 2441 MHz; Duty Cycle: 1:1.3

Medium: MSL\_2450 Medium parameters used:  $f = 2441$  MHz;  $\sigma = 2.025$  S/m;  $\epsilon_r = 53.215$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.3 °C ; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3857; ConvF(7.7, 7.7, 7.7); Calibrated: 2017.5.26;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1210; Calibrated: 2017.5.25
- Phantom: SAM4; Type: SAM; Serial: TP-1127
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

**Ch39/Area Scan (41x101x1):** Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.446 W/kg

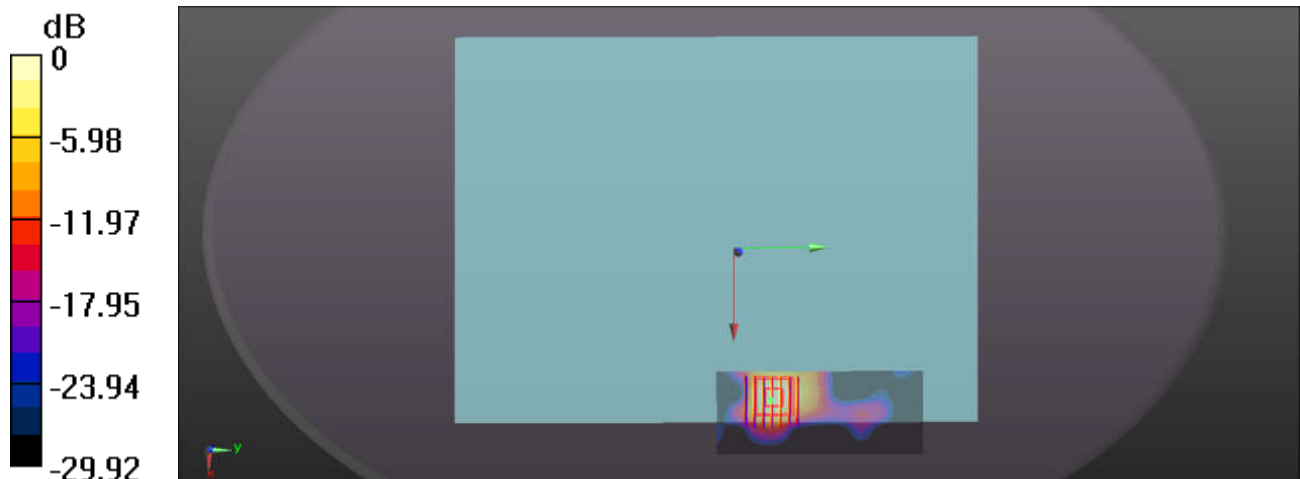
**Ch39/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 0.6140 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.537 W/kg

**SAR(1 g) = 0.240 W/kg; SAR(10 g) = 0.099 W/kg**

Maximum value of SAR (measured) = 0.374 W/kg



0 dB = 0.374 W/kg = -4.27 dBW/kg



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**Appendix C.     DASY Calibration Certificate**

The DASY calibration certificates are shown as follows.



In Collaboration with  
**s p e a g**  
CALIBRATION LABORATORY



中国认可  
国际互认  
校准  
CALIBRATION  
CNAS L0570

Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China  
Tel: +86-10-62304633-2079 Fax: +86-10-62304633-2504  
E-mail: cttl@chinattl.com [Http://www.chinattl.cn](http://www.chinattl.cn)

Client

**Sporton-CN**

Certificate No: **Z16-97221**

## CALIBRATION CERTIFICATE

Object **D750V3 - SN: 1065**

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

Calibration date: **November 21, 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 (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.J16X04771)           | Jun-17                |
| Power sensor NRP-Z91    | 101547     | 27-Jun-16 (CTTL, No.J16X04771)           | Jun-17                |
| Reference Probe EX3DV4  | SN 7433    | 26-Sep-16(SPEAG,No.EX3-7433_Sep16)       | Sep-17                |
| DAE4                    | SN 771     | 02-Feb-16(CTTL-SPEAG,No.Z16-97011)       | Feb-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                |

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

Issued: November 26, 2016

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#### **Glossary:**

|       |                                            |
|-------|--------------------------------------------|
| TSL   | tissue simulating liquid                   |
| ConvF | sensitivity in TSL / NORM <sub>x,y,z</sub> |
| 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) KDB865664, 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 | 15 mm                    | with Spacer |
| Zoom Scan Resolution         | dx, dy, dz = 5 mm        |             |
| Frequency                    | 750 MHz $\pm$ 1 MHz      |             |

## Head TSL parameters

The following parameters and calculations were applied.

|                                         | Temperature         | Permittivity   | Conductivity         |
|-----------------------------------------|---------------------|----------------|----------------------|
| Nominal Head TSL parameters             | 22.0 °C             | 41.9           | 0.89 mho/m           |
| Measured Head TSL parameters            | (22.0 $\pm$ 0.2) °C | 41.8 $\pm$ 6 % | 0.91 mho/m $\pm$ 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 | 2.11 mW / g                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 8.32 mW / g $\pm$ 20.8 % (k=2) |
| SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL | Condition          |                                |
| SAR measured                                            | 250 mW input power | 1.41 mW / g                    |
| SAR for nominal Head TSL parameters                     | normalized to 1W   | 5.58 mW / g $\pm$ 20.4 % (k=2) |

## Body TSL parameters

The following parameters and calculations were applied.

|                                         | Temperature         | Permittivity   | Conductivity         |
|-----------------------------------------|---------------------|----------------|----------------------|
| Nominal Body TSL parameters             | 22.0 °C             | 55.5           | 0.96 mho/m           |
| Measured Body TSL parameters            | (22.0 $\pm$ 0.2) °C | 54.5 $\pm$ 6 % | 0.95 mho/m $\pm$ 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 | 2.16 mW / g                    |
| SAR for nominal Body TSL parameters                     | normalized to 1W   | 8.71 mW / g $\pm$ 20.8 % (k=2) |
| SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL | Condition          |                                |
| SAR measured                                            | 250 mW input power | 1.46 mW / g                    |
| SAR for nominal Body TSL parameters                     | normalized to 1W   | 5.88 mW / g $\pm$ 20.4 % (k=2) |



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## Appendix

### Antenna Parameters with Head TSL

|                                      |               |
|--------------------------------------|---------------|
| Impedance, transformed to feed point | 51.7Ω- 3.08jΩ |
| Return Loss                          | - 29.3dB      |

### Antenna Parameters with Body TSL

|                                      |               |
|--------------------------------------|---------------|
| Impedance, transformed to feed point | 48.9Ω- 2.07jΩ |
| Return Loss                          | - 32.5dB      |

### General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.021 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 |
|-----------------|-------|

**DASY5 Validation Report for Head TSL**

Date: 11.21.2016

Test Laboratory: CTTL, Beijing, China

**DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1065**

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 750 \text{ MHz}$ ;  $\sigma = 0.906 \text{ S/m}$ ;  $\epsilon_r = 41.82$ ;  $\rho = 1000 \text{ kg/m}^3$ 

Phantom section: Center Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7433; ConvF(10.01, 10.01, 10.01); Calibrated: 9/26/2016;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn771; Calibrated: 2/2/2016
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA; Serial: 1161/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7372)

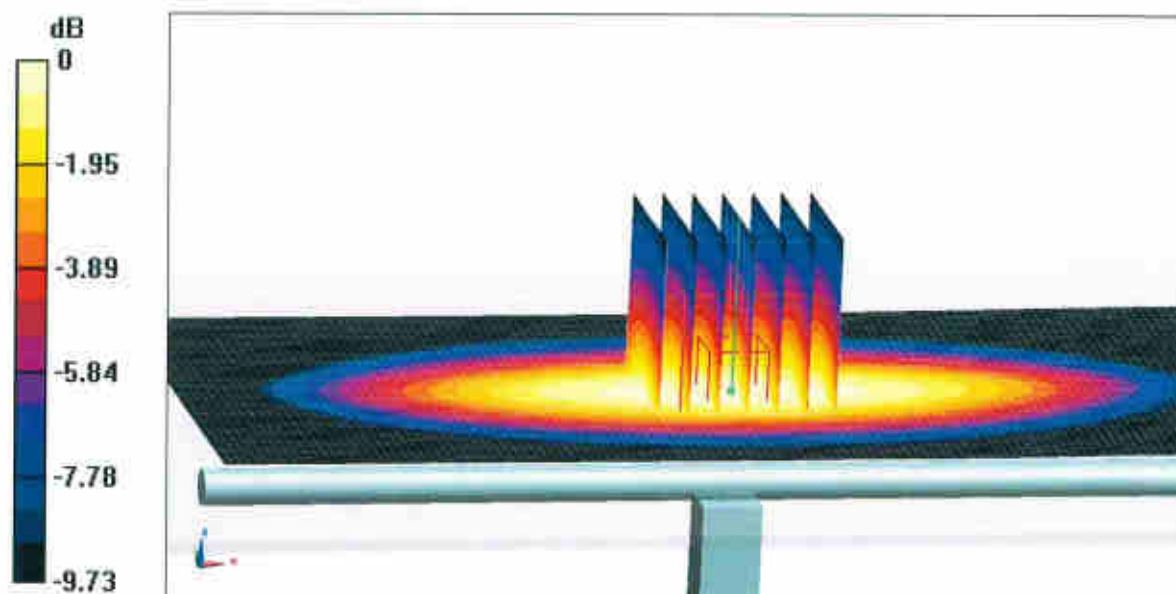
**Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$ 

Reference Value = 55.09 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 3.09 W/kg

**SAR(1 g) = 2.11 W/kg; SAR(10 g) = 1.41 W/kg**

Maximum value of SAR (measured) = 2.65 W/kg


**0 dB = 2.65 W/kg = 4.23 dBW/kg**



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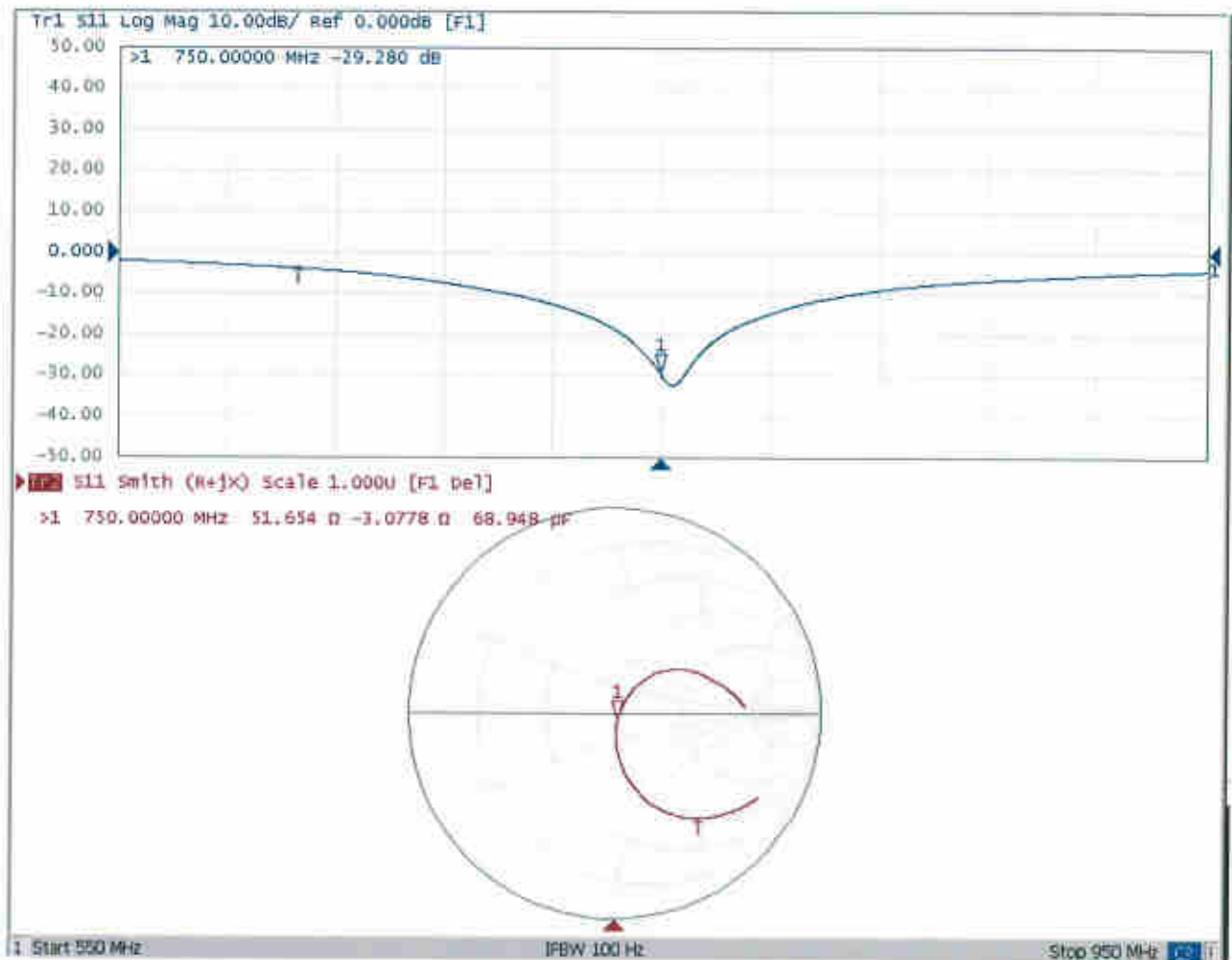
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## Impedance Measurement Plot for Head TSL





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## DASY5 Validation Report for Body TSL

Date: 11.21.2016

Test Laboratory: CTTL, Beijing, China

**DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1065**

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 750$  MHz;  $\sigma = 0.945$  S/m;  $\epsilon_r = 54.47$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Left Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7433; ConvF(9.83, 9.83, 9.83); Calibrated: 9/26/2016;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn771; Calibrated: 2/2/2016
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA; Serial: 1161/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7372)

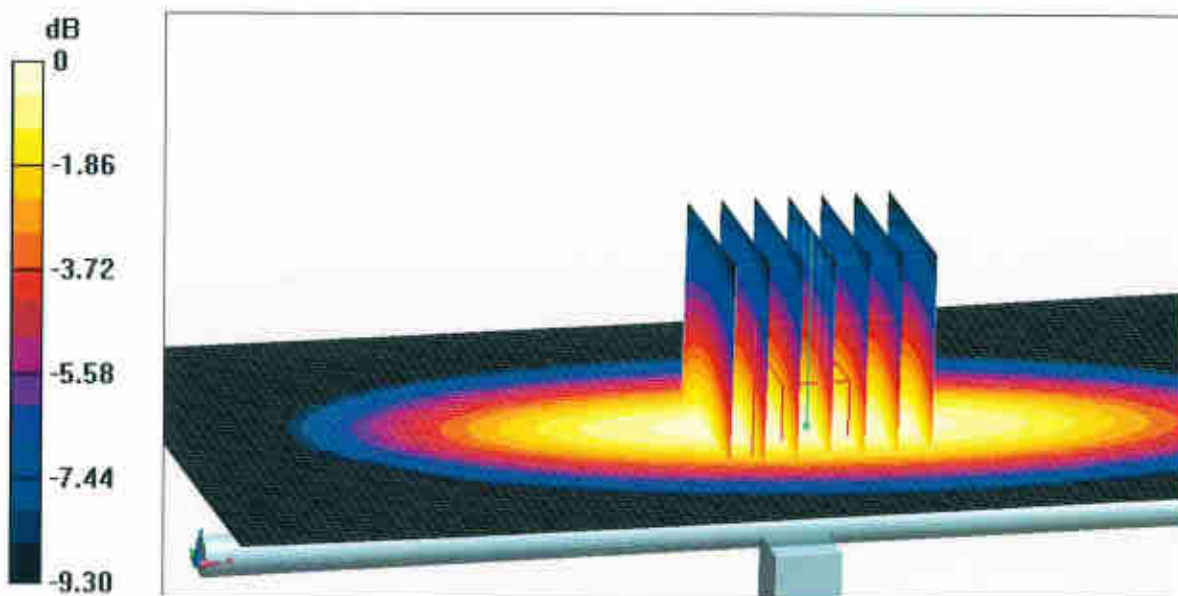
**Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 53.84 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 3.09 W/kg

**SAR(1 g) = 2.16 W/kg; SAR(10 g) = 1.46 W/kg**

Maximum value of SAR (measured) = 2.68 W/kg



0 dB = 2.68 W/kg = 4.28 dBW/kg



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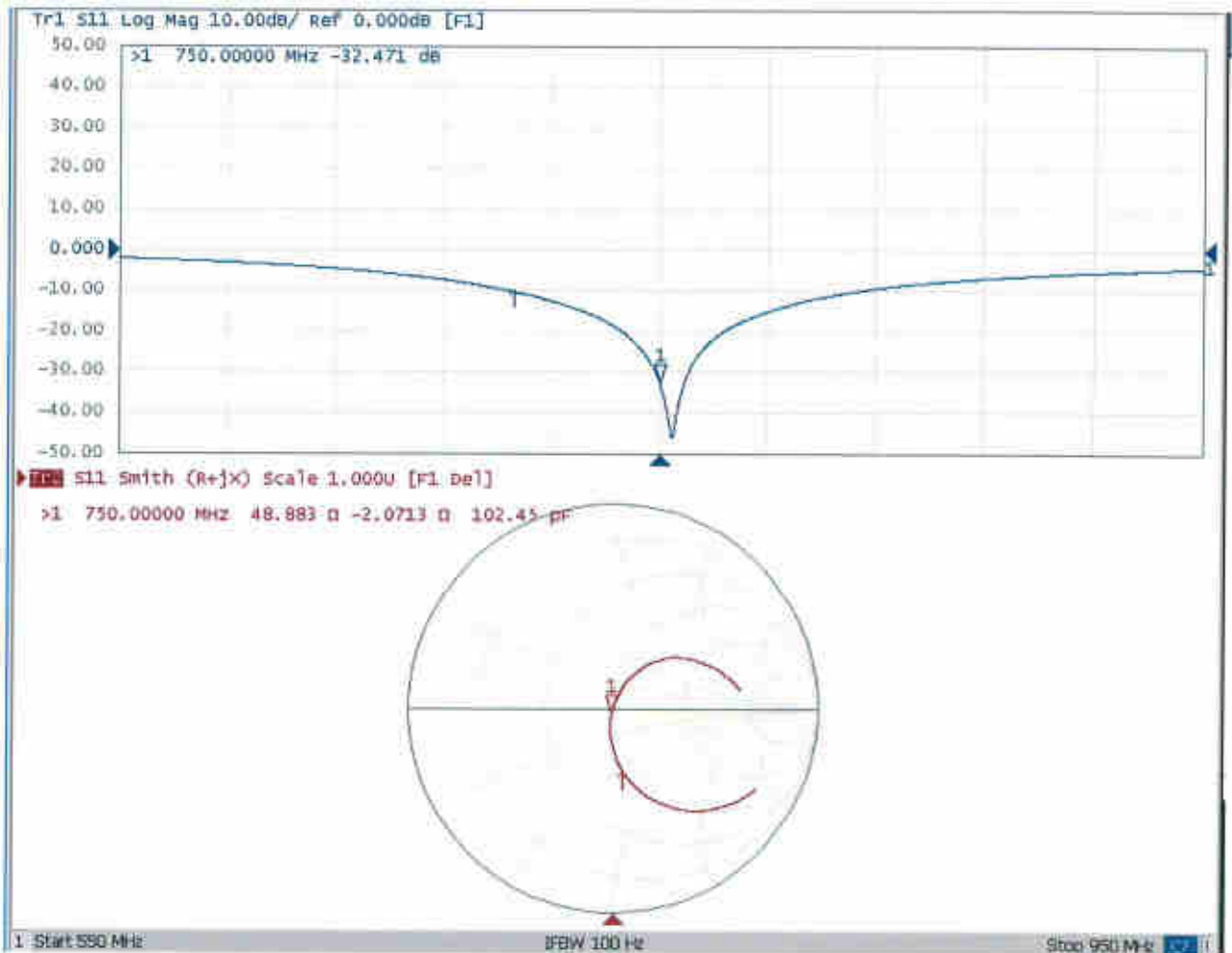
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## Impedance Measurement Plot for Body TSL





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Client

**Sporton-CN**

**Certificate No: Z16-97223**

## CALIBRATION CERTIFICATE

Object **D835V2 - SN: 4d091**

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

Calibration date: **November 22, 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( $22\pm 3$ ) $^{\circ}\text{C}$  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 EX3DV4  | SN 7433    | 26-Sep-16(SPEAG,No.EX3-7433_Sep16)       | Sep-17                |
| DAE4                    | SN 771     | 02-Feb-16(CTTL-SPEAG,No.Z16-97011)       | Feb-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                |

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

Issued: November 26, 2016

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### Glossary:

|       |                                            |
|-------|--------------------------------------------|
| TSL   | tissue simulating liquid                   |
| ConvF | sensitivity in TSL / NORM <sub>x,y,z</sub> |
| 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
- KDB865664, 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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**Measurement Conditions**

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

|                                     |                          |             |
|-------------------------------------|--------------------------|-------------|
| <b>DASY Version</b>                 | DASY52                   | 52.8.8.1258 |
| <b>Extrapolation</b>                | Advanced Extrapolation   |             |
| <b>Phantom</b>                      | Triple Flat Phantom 5.1C |             |
| <b>Distance Dipole Center - TSL</b> | 15 mm                    | with Spacer |
| <b>Zoom Scan Resolution</b>         | dx, dy, dz = 5 mm        |             |
| <b>Frequency</b>                    | 835 MHz $\pm$ 1 MHz      |             |

**Head TSL parameters**

The following parameters and calculations were applied.

|                                                | Temperature         | Permittivity   | Conductivity         |
|------------------------------------------------|---------------------|----------------|----------------------|
| <b>Nominal Head TSL parameters</b>             | 22.0 °C             | 41.5           | 0.90 mho/m           |
| <b>Measured Head TSL parameters</b>            | (22.0 $\pm$ 0.2) °C | 41.4 $\pm$ 6 % | 0.92 mho/m $\pm$ 6 % |
| <b>Head TSL temperature change during test</b> | <1.0 °C             | ----           | ----                 |

**SAR result with Head TSL**

|                                                               |                    |                                                  |
|---------------------------------------------------------------|--------------------|--------------------------------------------------|
| <b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Head TSL</b>   | Condition          |                                                  |
| SAR measured                                                  | 250 mW input power | 2.36 mW / g                                      |
| SAR for nominal Head TSL parameters                           | normalized to 1W   | <b>9.31 mW / g <math>\pm</math> 20.8 % (k=2)</b> |
| <b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Head TSL</b> | Condition          |                                                  |
| SAR measured                                                  | 250 mW input power | 1.54 mW / g                                      |
| SAR for nominal Head TSL parameters                           | normalized to 1W   | <b>6.09 mW / g <math>\pm</math> 20.4 % (k=2)</b> |

**Body TSL parameters**

The following parameters and calculations were applied.

|                                                | Temperature         | Permittivity   | Conductivity         |
|------------------------------------------------|---------------------|----------------|----------------------|
| <b>Nominal Body TSL parameters</b>             | 22.0 °C             | 55.2           | 0.97 mho/m           |
| <b>Measured Body TSL parameters</b>            | (22.0 $\pm$ 0.2) °C | 54.2 $\pm$ 6 % | 0.95 mho/m $\pm$ 6 % |
| <b>Body TSL temperature change during test</b> | <1.0 °C             | ----           | ----                 |

**SAR result with Body TSL**

|                                                               |                    |                                                  |
|---------------------------------------------------------------|--------------------|--------------------------------------------------|
| <b>SAR averaged over 1 cm<sup>3</sup> (1 g) of Body TSL</b>   | Condition          |                                                  |
| SAR measured                                                  | 250 mW input power | 2.40 mW / g                                      |
| SAR for nominal Body TSL parameters                           | normalized to 1W   | <b>9.68 mW / g <math>\pm</math> 20.8 % (k=2)</b> |
| <b>SAR averaged over 10 cm<sup>3</sup> (10 g) of Body TSL</b> | Condition          |                                                  |
| SAR measured                                                  | 250 mW input power | 1.60 mW / g                                      |
| SAR for nominal Body TSL parameters                           | normalized to 1W   | <b>6.45 mW / g <math>\pm</math> 20.4 % (k=2)</b> |



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## Appendix

### Antenna Parameters with Head TSL

|                                      |               |
|--------------------------------------|---------------|
| Impedance, transformed to feed point | 50.0Ω- 3.20jΩ |
| Return Loss                          | - 29.9dB      |

### Antenna Parameters with Body TSL

|                                      |               |
|--------------------------------------|---------------|
| Impedance, transformed to feed point | 46.8Ω- 1.59jΩ |
| Return Loss                          | - 28.7dB      |

### General Antenna Parameters and Design

|                                  |          |
|----------------------------------|----------|
| Electrical Delay (one direction) | 1.282 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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## DASY5 Validation Report for Head TSL

Date: 11.21.2016

Test Laboratory: CTTL, Beijing, China

**DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d091**

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.916 \text{ S/m}$ ;  $\epsilon_r = 41.41$ ;  $\rho = 1000 \text{ kg/m}^3$

Phantom section: Center Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN7433; ConvF(9.82, 9.82, 9.82); Calibrated: 9/26/2016;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn771; Calibrated: 2/2/2016
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA; Serial: 1161/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7372)

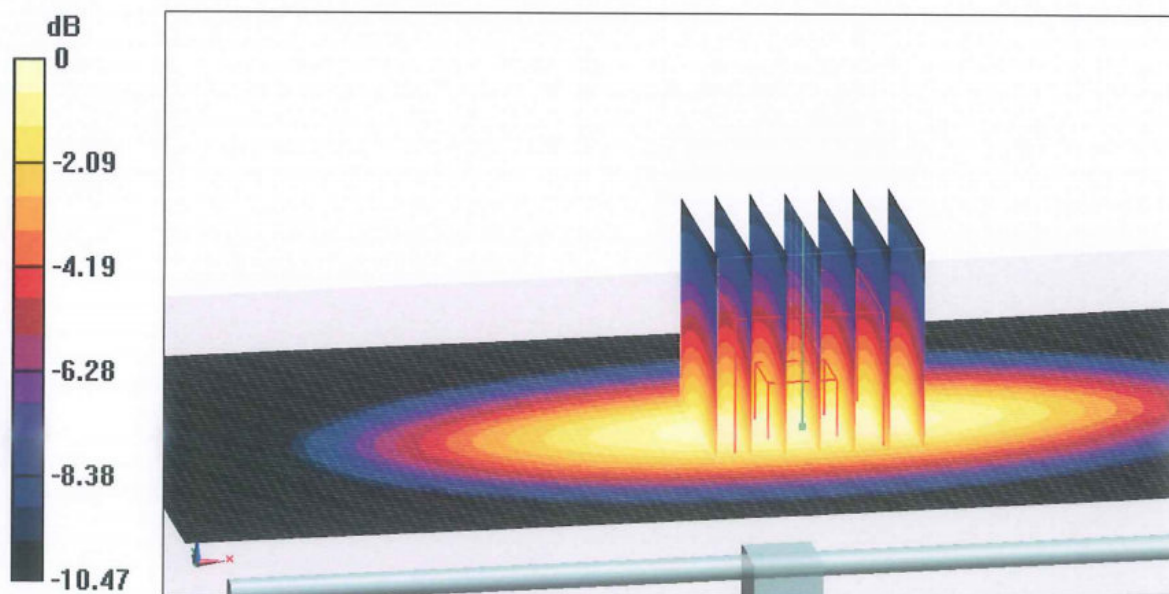
**Dipole Calibration/Zoom Scan (7x7x7) (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $58.29\text{V/m}$ ; Power Drift =  $-0.02 \text{ dB}$

Peak SAR (extrapolated) =  $3.54 \text{ W/kg}$

**SAR(1 g) =  $2.36 \text{ W/kg}$ ; SAR(10 g) =  $1.54 \text{ W/kg}$**

Maximum value of SAR (measured) =  $3.01 \text{ W/kg}$



**0 dB =  $3.01 \text{ W/kg}$  =  $4.79 \text{ dBW/kg}$**