

# Appendix G – E-Field Plots

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## 10.DETERMINING WORST CASE SCENARIO

### 10.2. Free-space measurements for various unobstructed distances between WPT Client and WPT Source within the charging zone

#### 10.2.2. Unobstructed Case, 1m

##### 1m Unobstructed, Horizontal Plane between Source and Client

Test Laboratory: UL Verification Services Inc. SAR Lab 8

Date/Time: 12/5/2018 12:28:15 PM

### 2450MHz CW

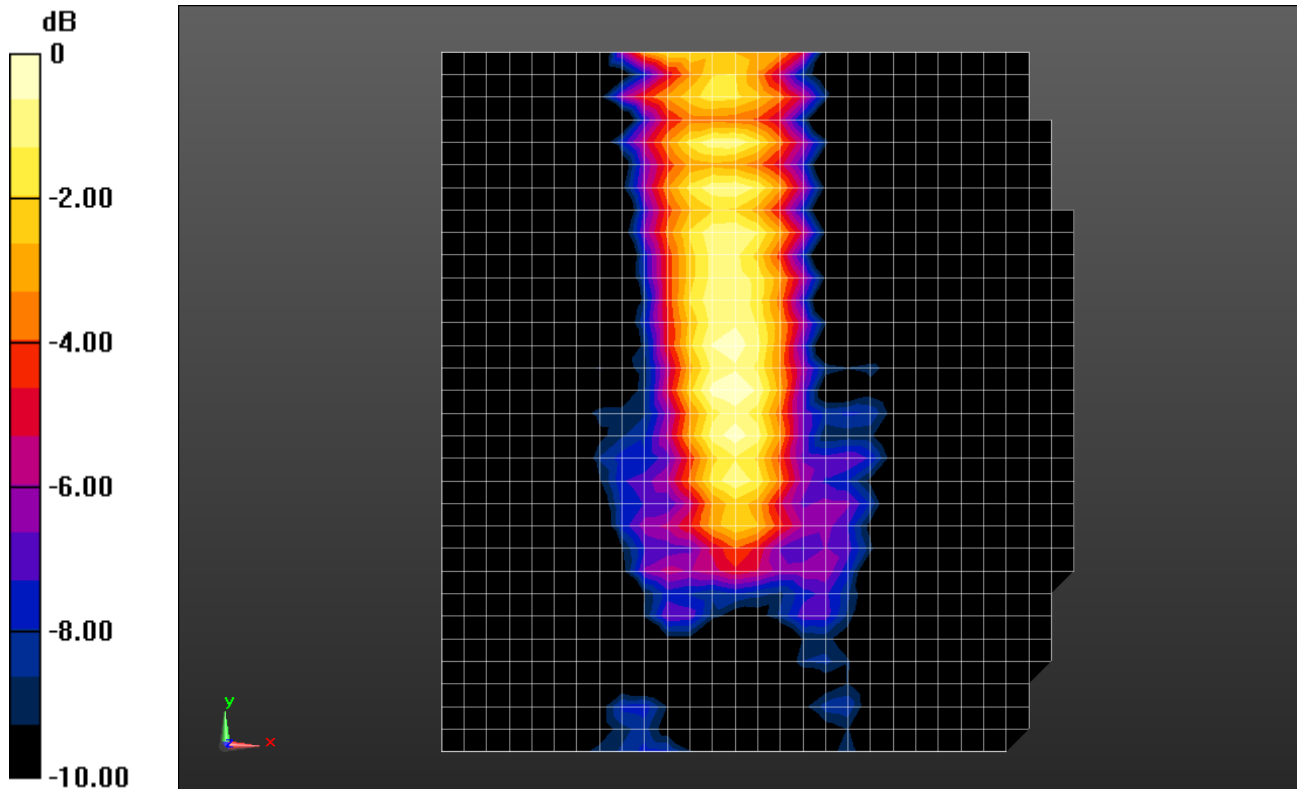
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field/2450MHz CW \_1m distance/86.5cm height/5cm Transmitter Horizontal Plane Boresight Repeated/Full (34x32x1): Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 188.9 V/m



0 dB = 188.9 V/m = 45.52 dBV/m

### 1m Unobstructed, Horizontal Plane Behind Client (Actual)

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
PM

Date/Time: 12/5/2018 3:49:36

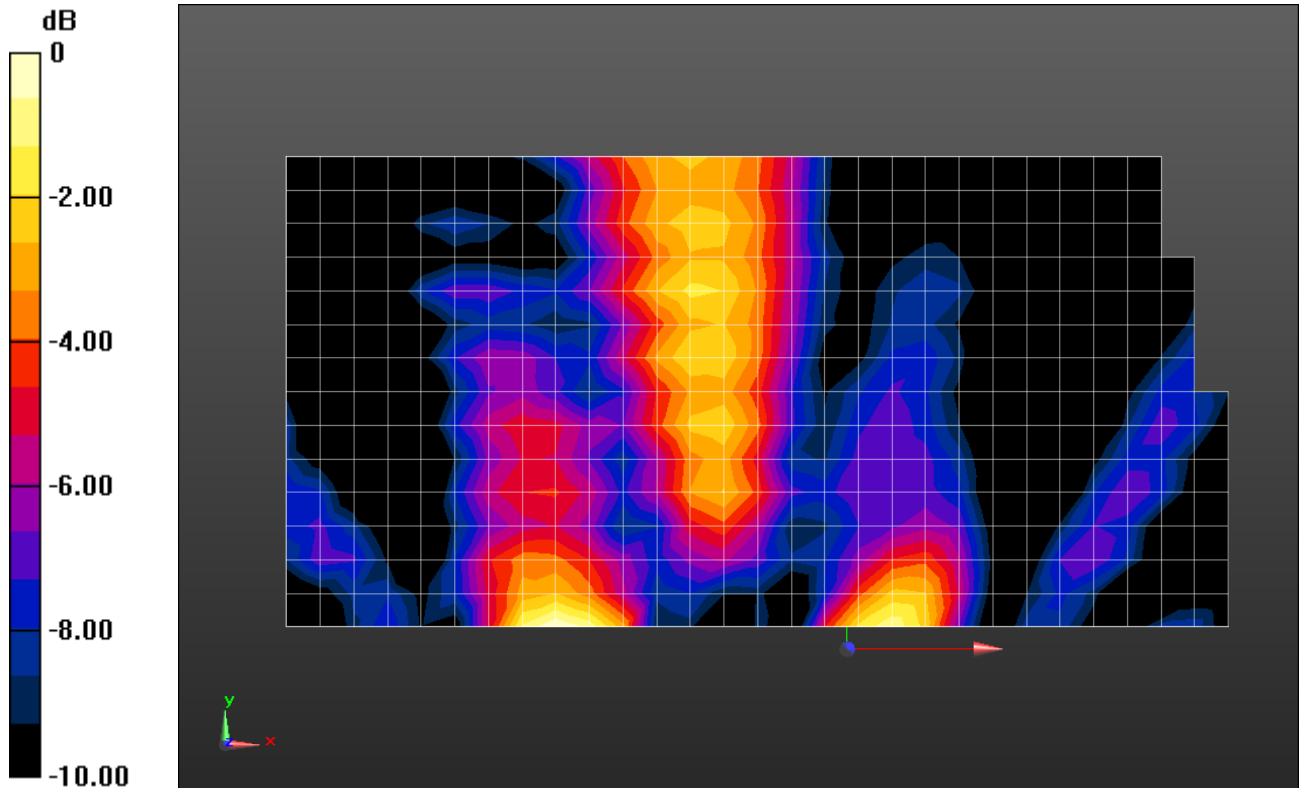
### 2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1m distance/86.5cm height/5cm Transmitter Horizontal Plane/Behind Client/Full (34x15x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 84.86 V/m



0 dB = 84.86 V/m = 38.57 dBV/m

## 1m Unobstructed, Horizontal Plane Behind Client (Normalized)

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
PM

Date/Time: 12/5/2018 3:49:36

### 2450MHz CW

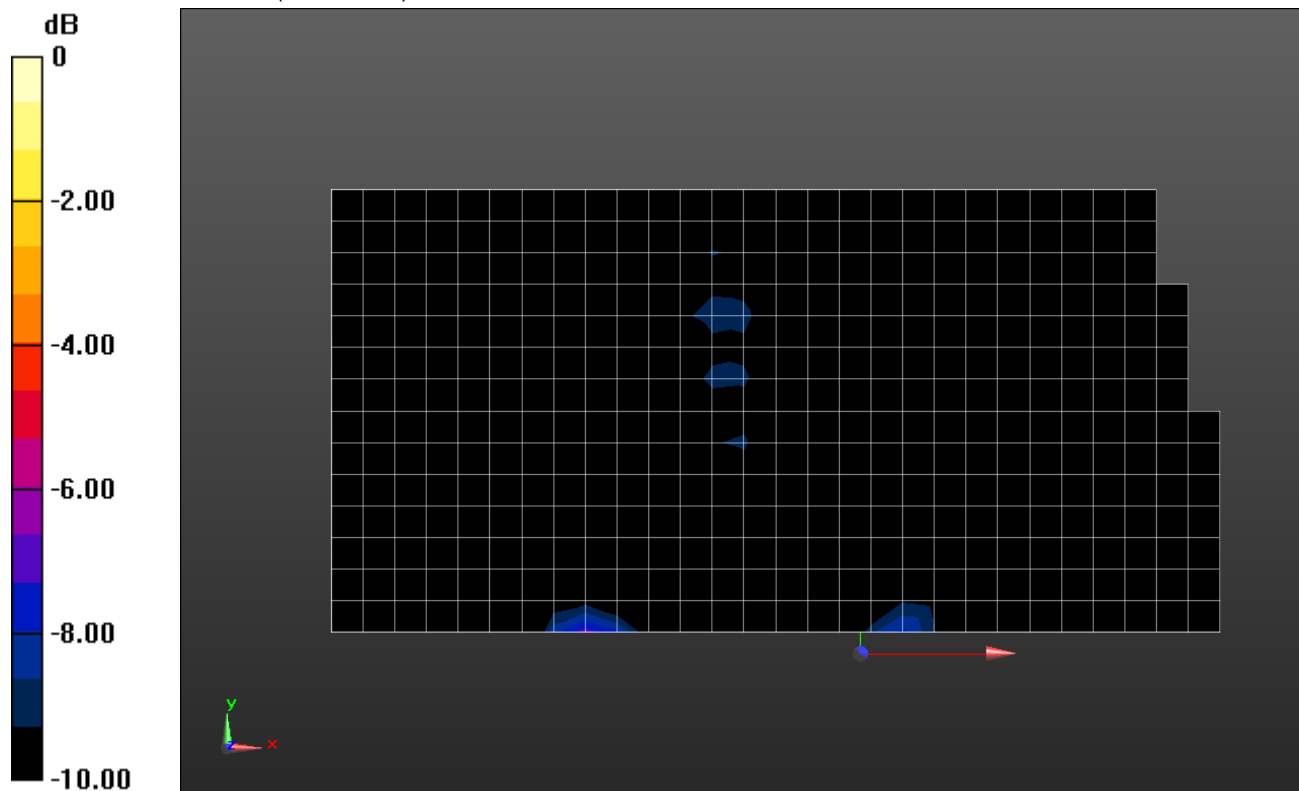
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field/2450MHz CW \_1m distance/86.5cm height/5cm Transmitter Horizontal Plane/Behind Client/Full (34x15x1): Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 84.86 V/m



0 dB = 188.9 V/m = 45.52 dBV/m

## 1m Unobstructed, Vertical Plane between Source and Client

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
PM

Date/Time: 12/18/2018 2:12:16

### 2450MHz CW

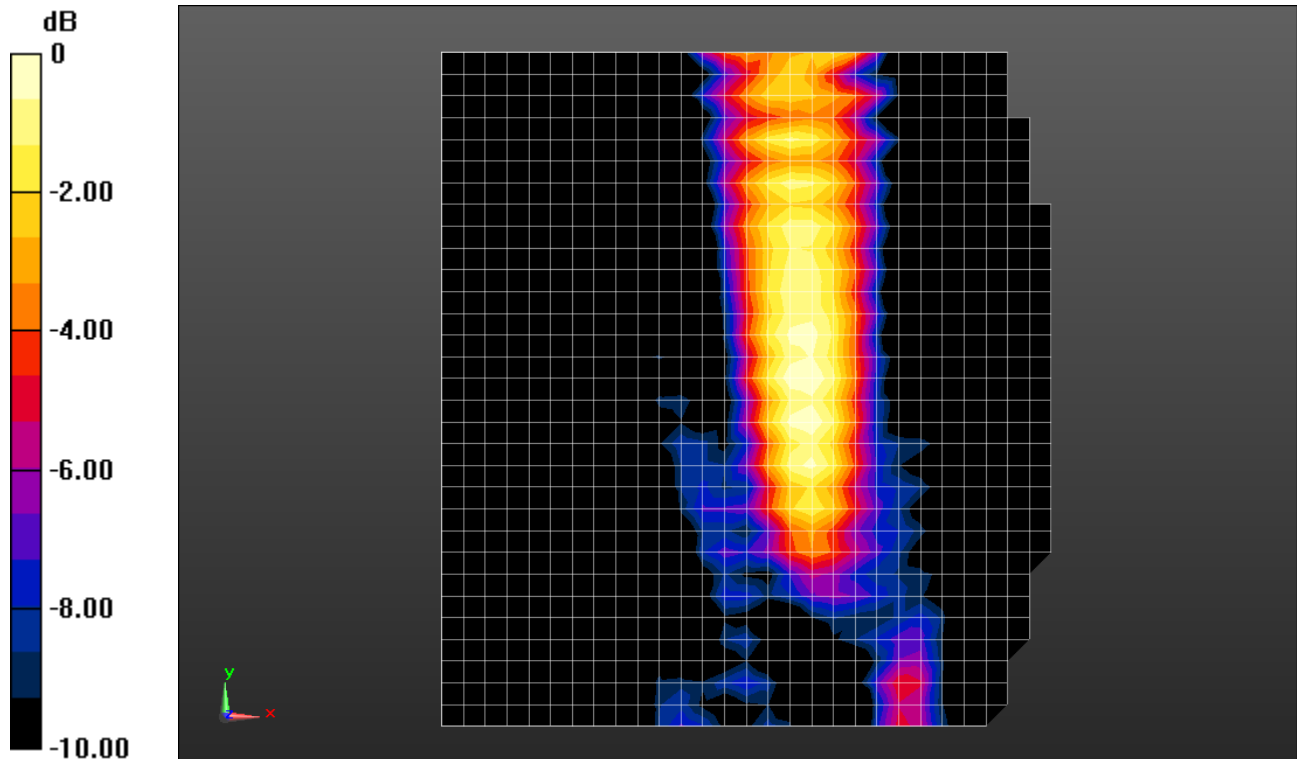
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field/2450MHz CW \_1m distance/86.5cm height/5cm Transmitter Vertical Plane Boresight/Full (34x32x1): Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 195.4 V/m



0 dB = 195.4 V/m = 45.82 dBV/m

## 1m Unobstructed, Vertical Plane Behind Client (Actual)

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
PM

Date/Time: 12/18/2018 4:28:55

### 2450MHz CW

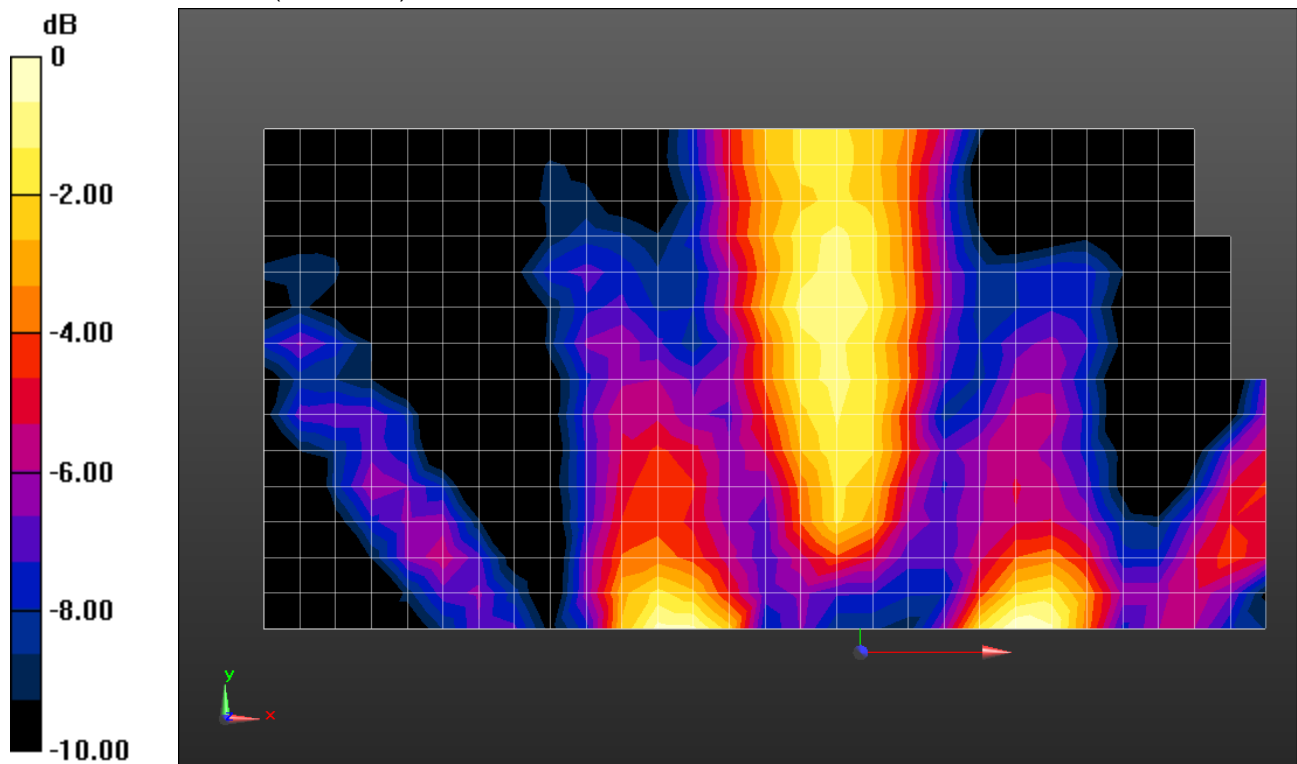
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field/2450MHz CW \_1m distance/86.5cm height/5cm Transmitter Vertical Plane/ Behind Client/Full (34x15x1):

Measurement grid: dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 72.15 V/m



0 dB = 72.15 V/m = 37.16 dBV/m

Distance from Client to Probe is 2.5cm

## 1m Unobstructed, Vertical Plane Behind Client (Normalized)

Test Laboratory: UL Verification Services Inc. SAR Lab 8 PM

Date/Time: 12/18/2018 4:28:55

### 2450MHz CW

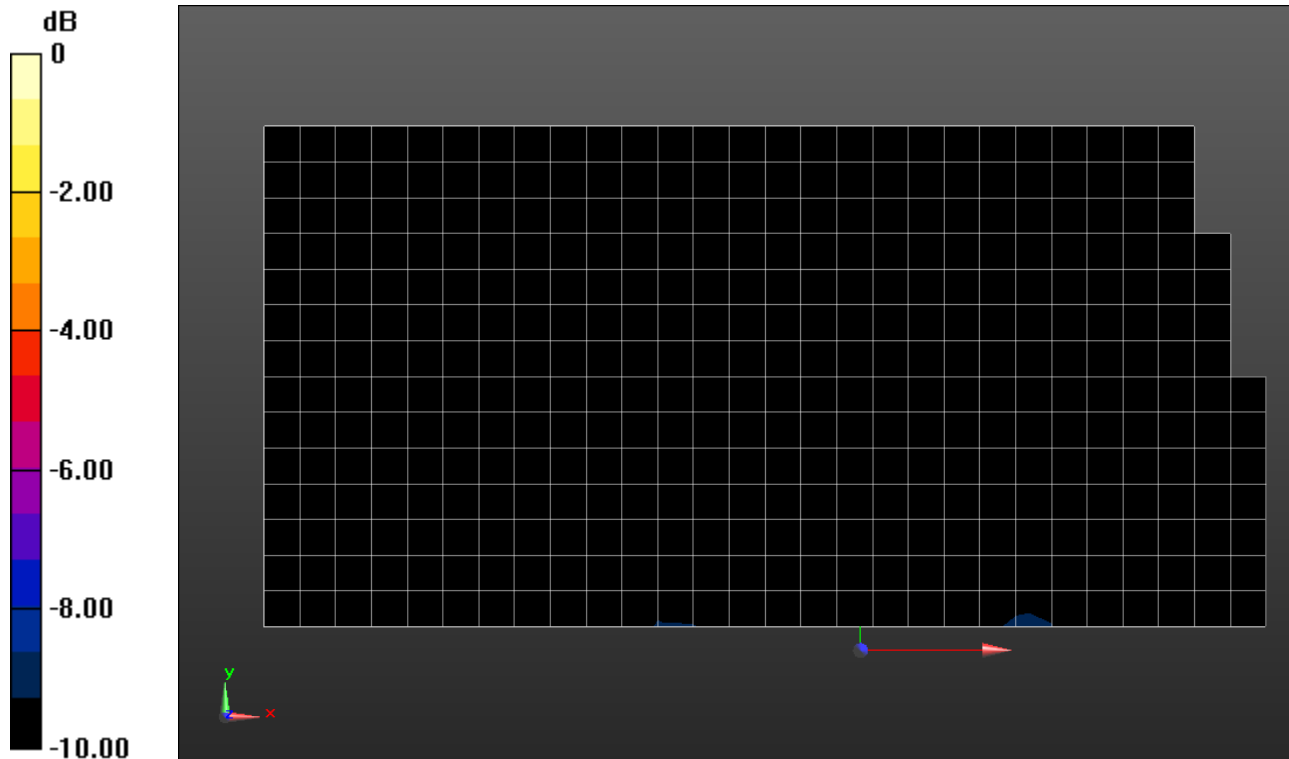
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field/2450MHz CW \_1m distance/86.5cm height/5cm Transmitter Vertical Plane/ Behind Client/Full (34x15x1): Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 72.15 V/m



0 dB = 195.4 V/m = 45.82 dBV/m

Normalized to 195.4 V/m

Distance from Client to Probe is 2.5cm

### 10.2.3. Unobstructed Case, 75cm

#### 75cm Unobstructed, Horizontal Plane between Source and Client

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
PM

Date/Time: 12/5/2018 1:43:50

#### 2450MHz CW

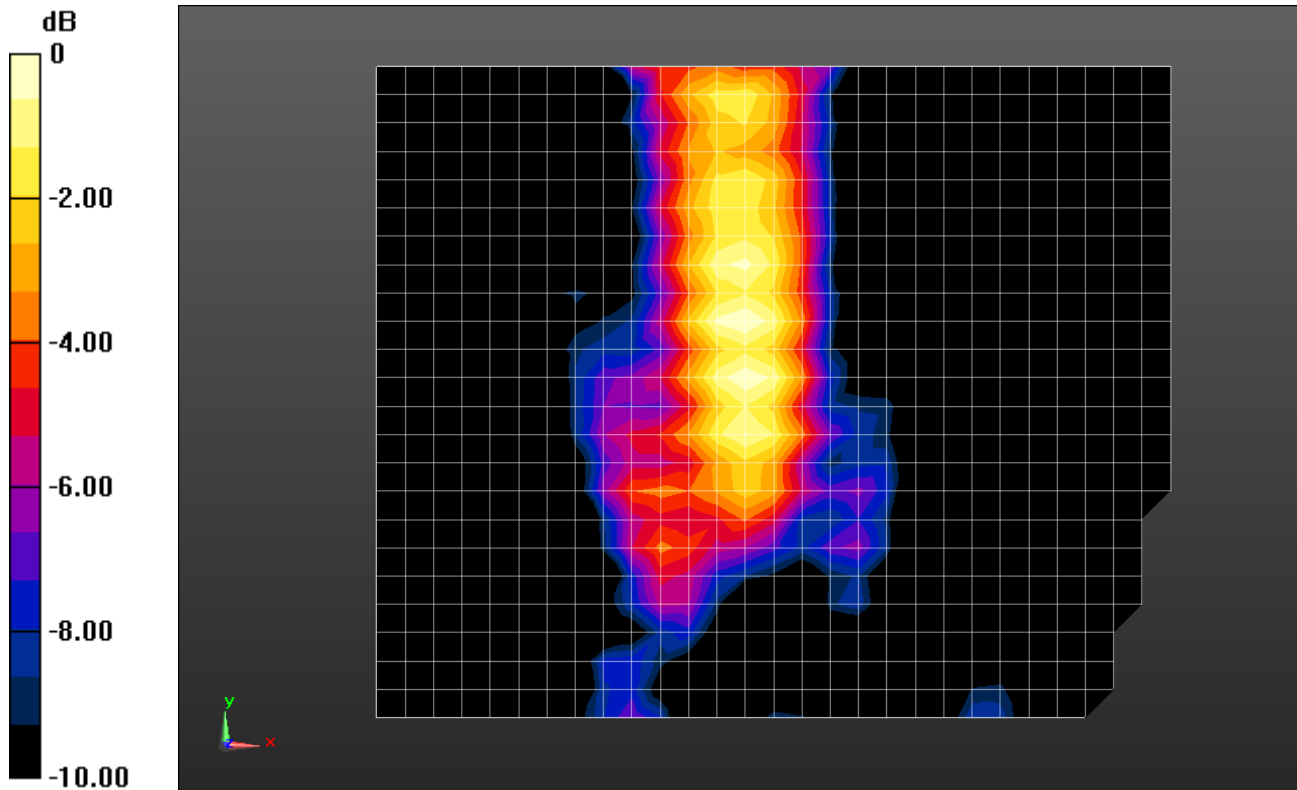
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_0.75m distance/86.5cm height/5cm Transmitter  
Horizontal Plane Boresight Repeated/Full (34x24x1):** Measurement grid: dx=30mm,  
dy=30mm, dz=1mm

Maximum value of Total (measured) = 196.9 V/m



0 dB = 196.9 V/m = 45.88 dBV/m



## 75cm Unobstructed, Horizontal Plane Behind Client (Actual)

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
PM

Date/Time: 12/5/2018 3:27:59

### 2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

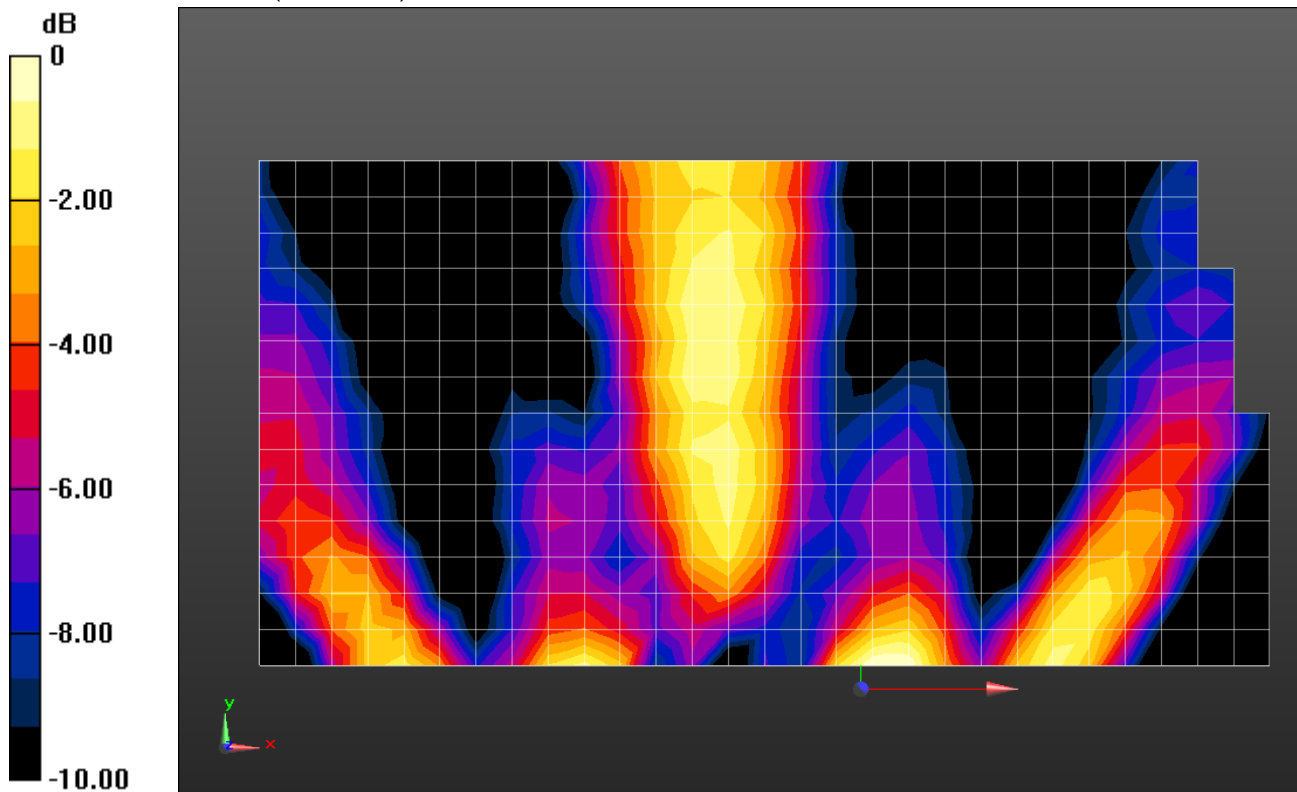
DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field/2450MHz CW \_0.75m distance/86.5cm height/5cm Transmitter

**Horizontal Plane/Behind Client/Full (34x15x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 66.88 V/m



0 dB = 66.88 V/m = 36.51 dBV/m

## 75cm Unobstructed, Horizontal Plane Behind Client (Normalized)

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
PM

Date/Time: 12/5/2018 3:27:59

### 2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

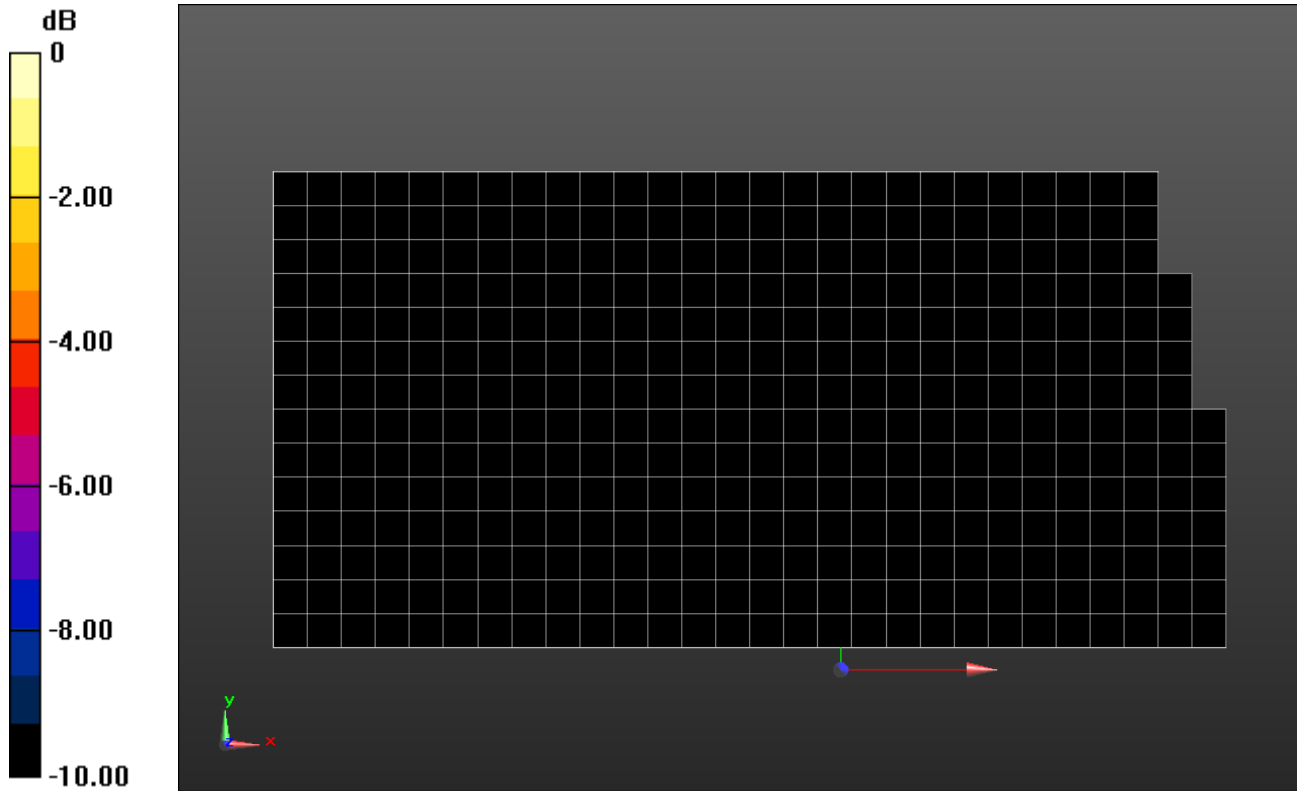
DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field/2450MHz CW \_0.75m distance/86.5cm height/5cm Transmitter

**Horizontal Plane/Behind Client/Full (34x15x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 66.88 V/m



0 dB = 196.9 V/m = 45.88 dBV/m

## 75cm Unobstructed, Vertical Plane between Source and Client

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
PM

Date/Time: 12/18/2018 2:52:55

### 2450MHz CW

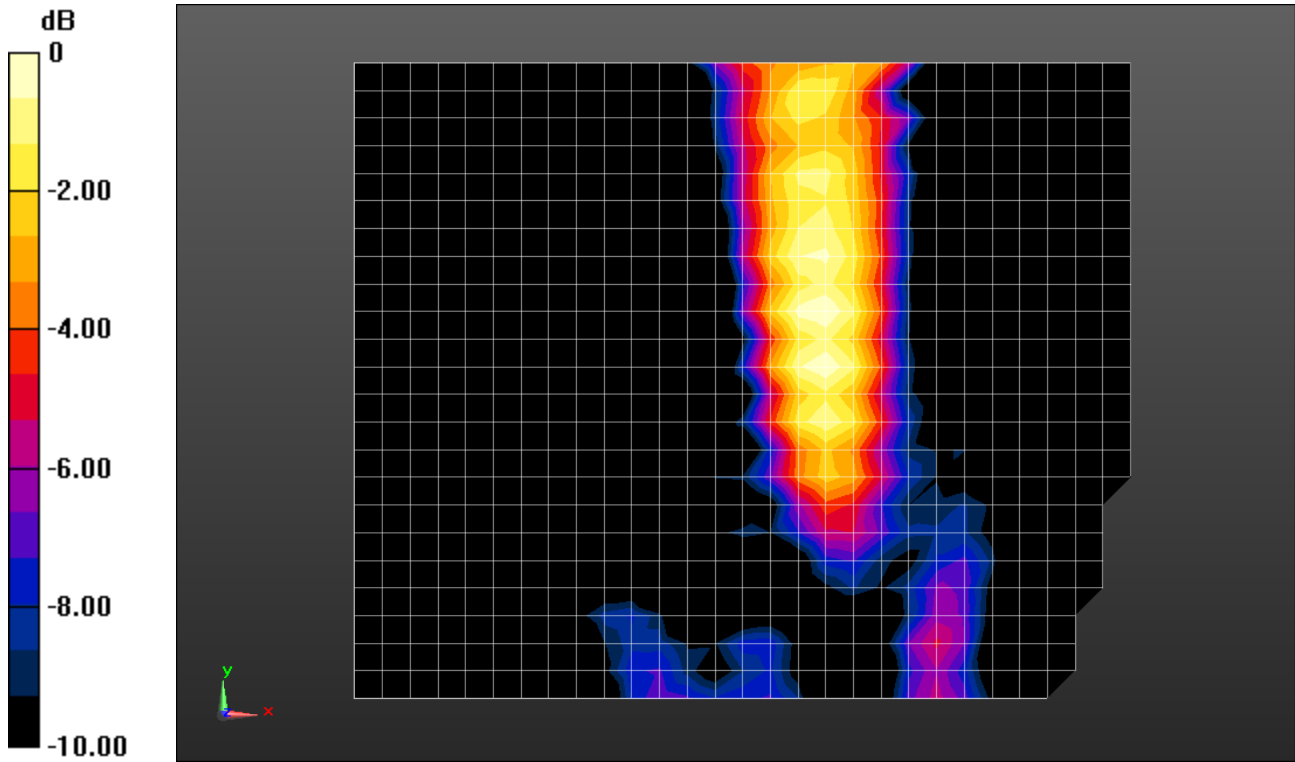
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field/2450MHz CW \_0.75m distance/86.5cm height/5cm Transmitter Vertical Plane Boresight/Full (34x24x1):

Measurement grid: dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 202.6 V/m



## 75cm Unobstructed, Vertical Plane Behind Client (Actual)

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
PM

Date/Time: 12/18/2018 4:10:36

### 2450MHz CW

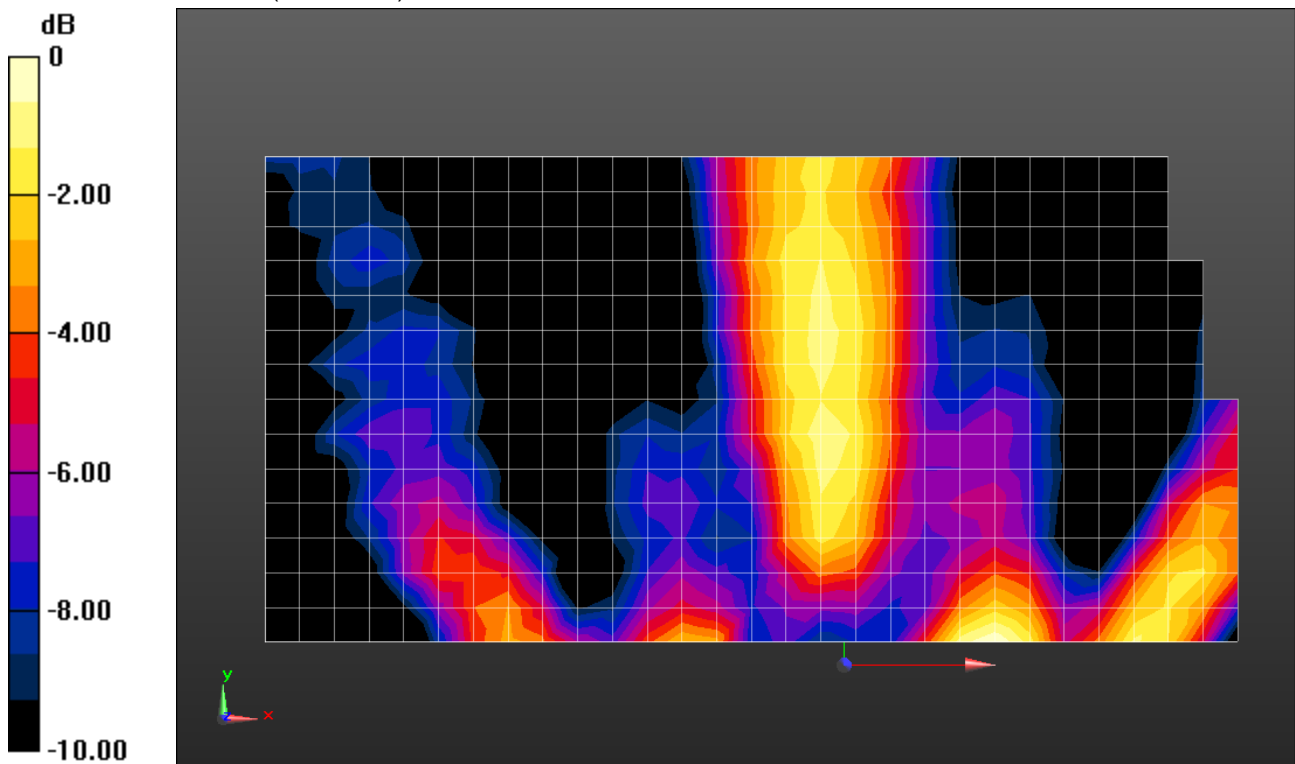
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field/2450MHz CW \_0.75m distance/86.5cm height/5cm Transmitter Vertical Plane/ Behind Client/Full (34x15x1): Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 68.61 V/m



0 dB = 68.61 V/m = 36.73 dBV/m

Distance from Client to Probe is 2.5cm

## 75cm Unobstructed, Vertical Plane Behind Client (Normalized)

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
PM

Date/Time: 12/18/2018 4:10:36

### 2450MHz CW

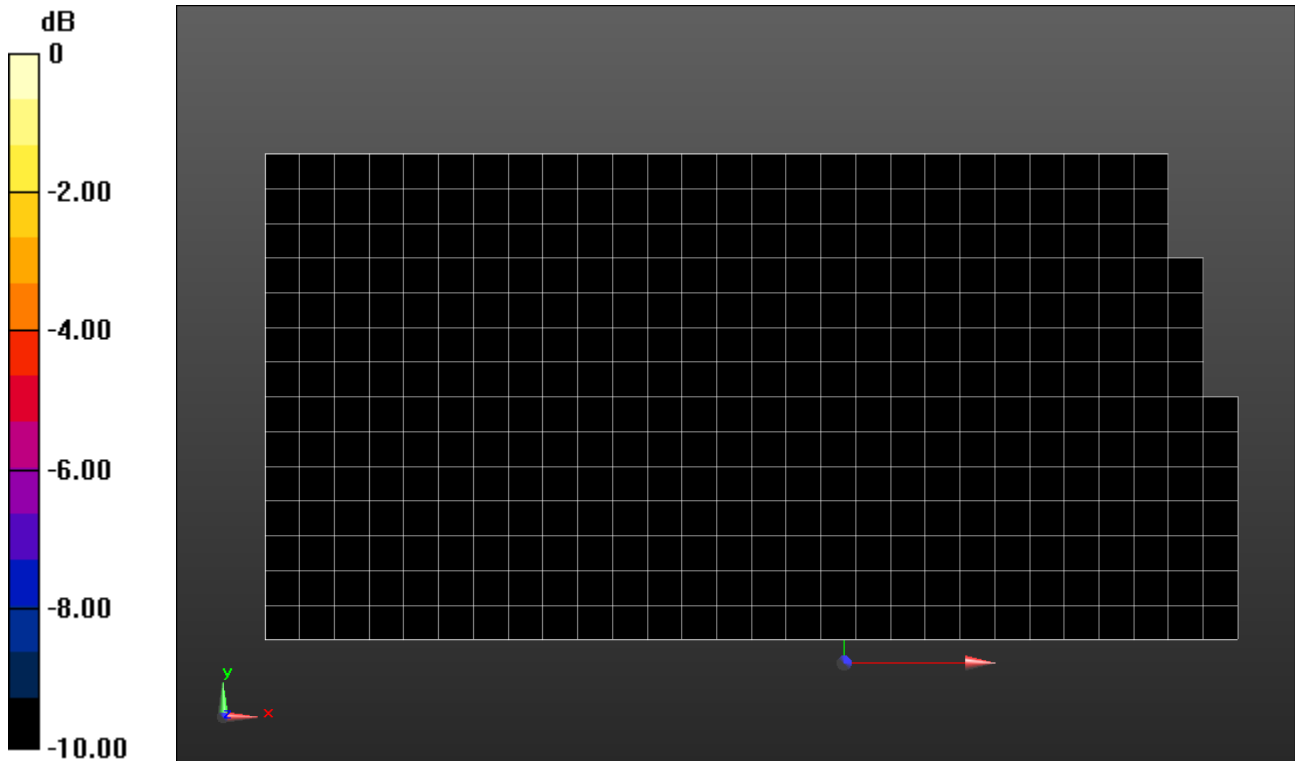
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field/2450MHz CW \_0.75m distance/86.5cm height/5cm Transmitter Vertical Plane/ Behind Client/Full (34x15x1):

Measurement grid: dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 68.61 V/m



0 dB = 202.6 V/m = 46.13 dBV/m

Normalized to 202.6 V/m

Distance from Client to Probe is 2.5cm

## 10.2.4. Unobstructed Case, 50cm

### 50cm Unobstructed, Horizontal Plane between Source and Client

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
PM

Date/Time: 12/5/2018 2:28:31

### 2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

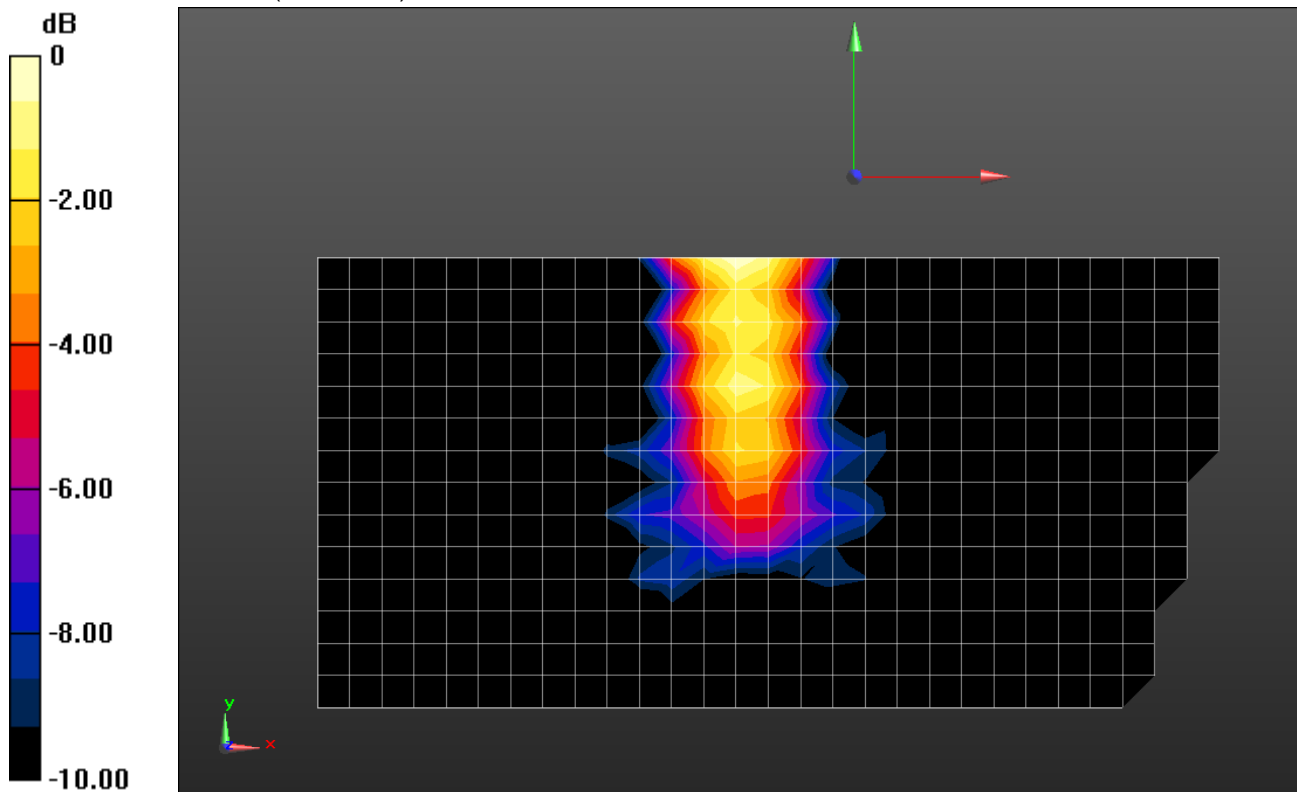
DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field/2450MHz CW \_0.5m distance/86.5cm height/5cm Transmitter

**Horizontal Plane Boresight/Full (34x15x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 299.1 V/m



## 50cm Unobstructed, Horizontal Plane Behind Client (Actual)

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
PM

Date/Time: 12/5/2018 2:56:20

### 2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

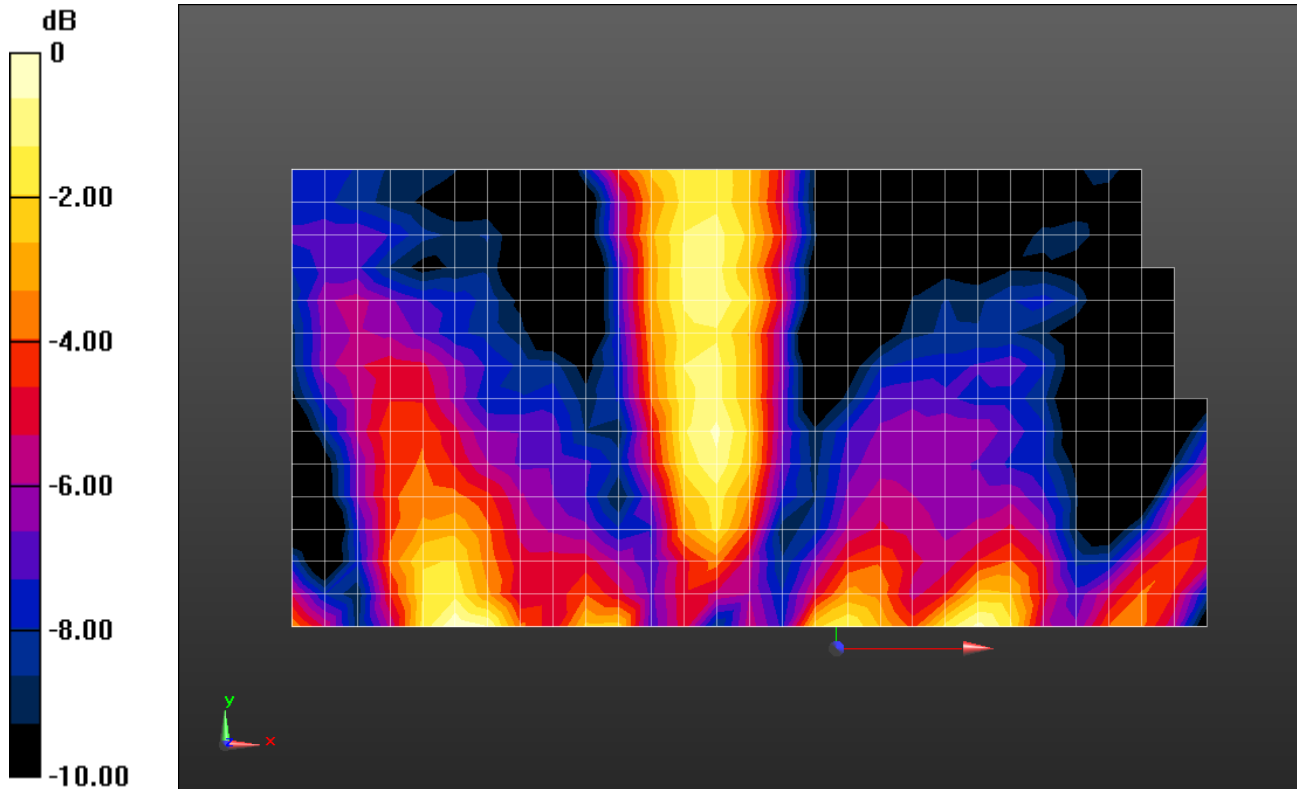
DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field/2450MHz CW \_0.5m distance/86.5cm height/5cm Transmitter

**Horizontal Plane/Behind Client/Full (34x15x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 52.73 V/m



0 dB = 52.73 V/m = 34.44 dBV/m

## 50cm Unobstructed, Horizontal Plane Behind Client (Normalized)

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
PM

Date/Time: 12/5/2018 2:56:20

### 2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field/2450MHz CW \_0.5m distance/86.5cm height/5cm Transmitter

**Horizontal Plane/Behind Client/Full (34x15x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 52.73 V/m



0 dB = 299.3 V/m = 49.52 dBV/m

Normalized



## 50cm Unobstructed, Vertical Plane between Source and Client

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
PM

Date/Time: 12/18/2018 3:25:37

### 2450MHz CW

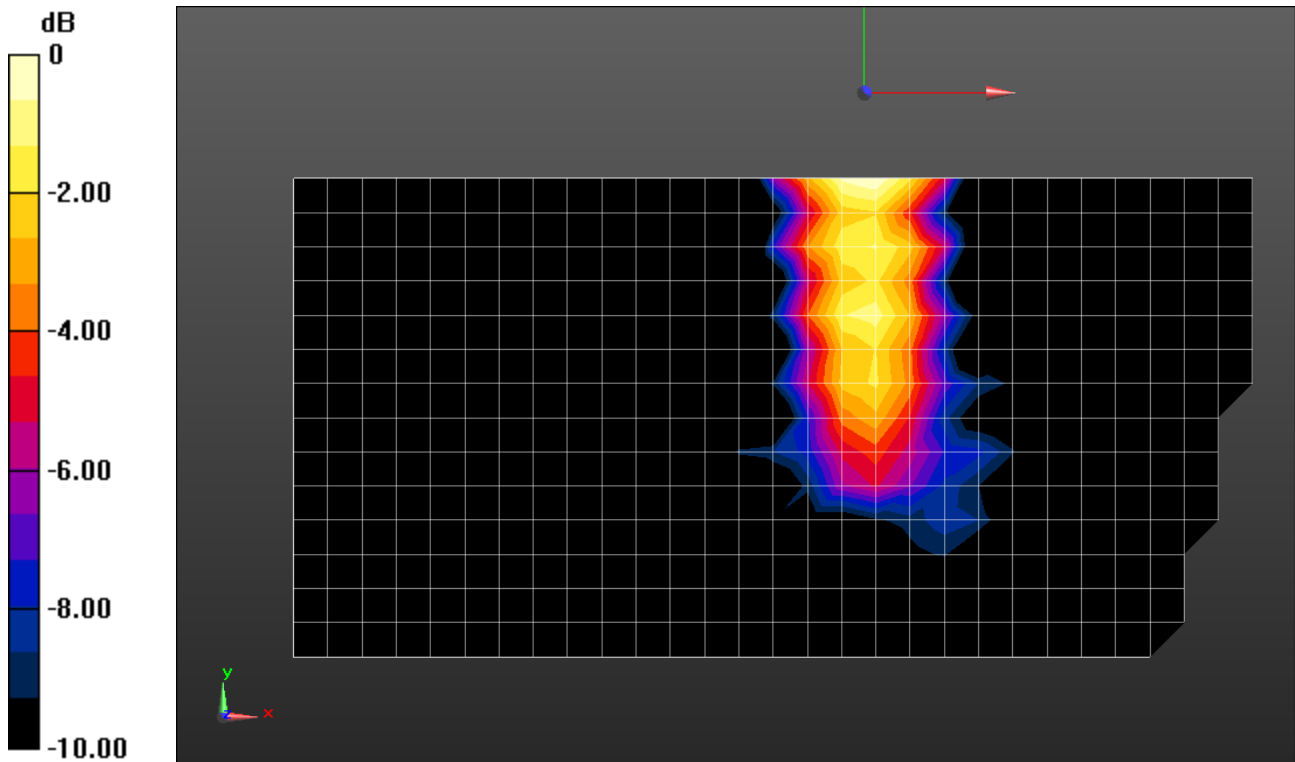
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field/2450MHz CW \_0.5m distance/86.5cm height/5cm Transmitter Vertical Plane Boresight/Full (34x15x1): Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 307.3 V/m



0 dB = 307.3 V/m = 49.75 dBV/m

## 50cm Unobstructed, Vertical Plane Behind Client (Actual)

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
PM

Date/Time: 12/18/2018 3:49:37

### 2450MHz CW

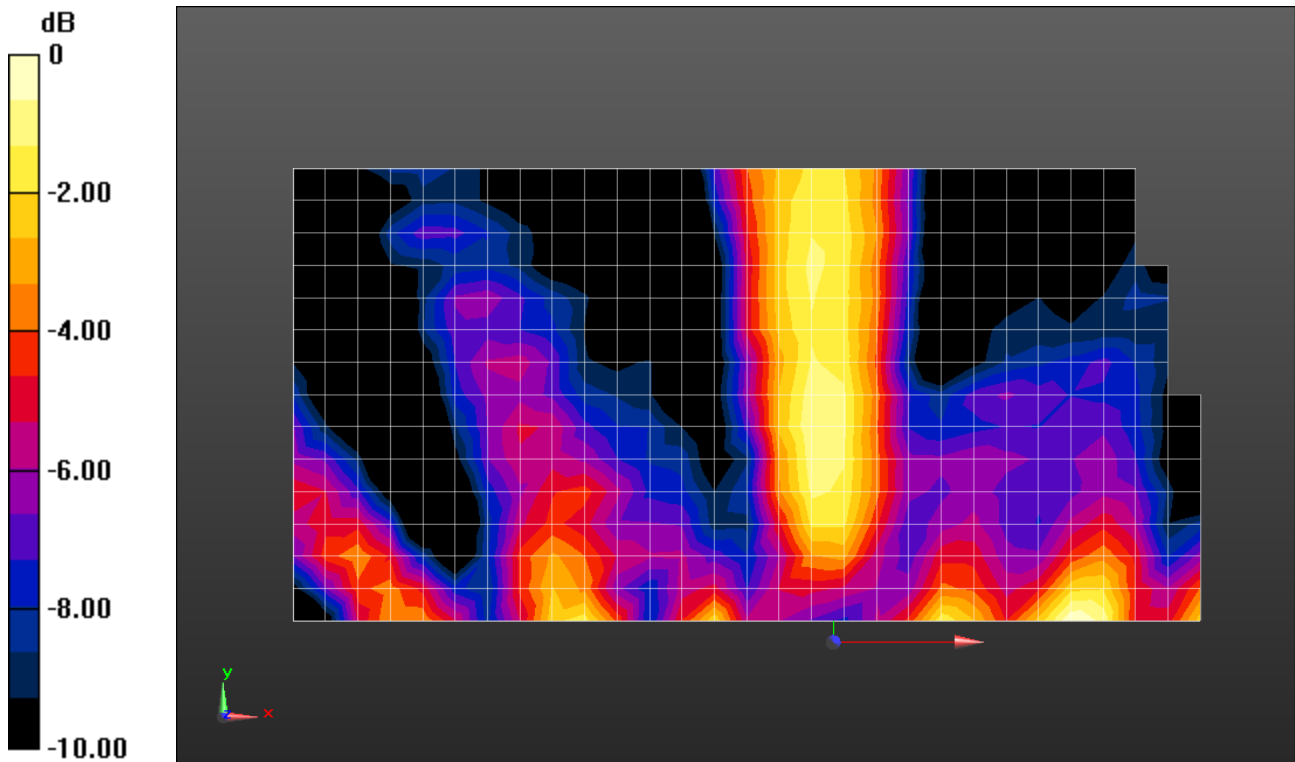
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field/2450MHz CW \_0.5m distance/86.5cm height/5cm Transmitter Vertical Plane/ Behind Client/Full (34x15x1): Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 48.19 V/m



0 dB = 48.19 V/m = 33.66 dBV/m

Distance from Client to Probe is 2.5cm

## 50cm Unobstructed, Vertical Plane Behind Client (Normalized)

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
PM

Date/Time: 12/18/2018 3:49:37

### 2450MHz CW

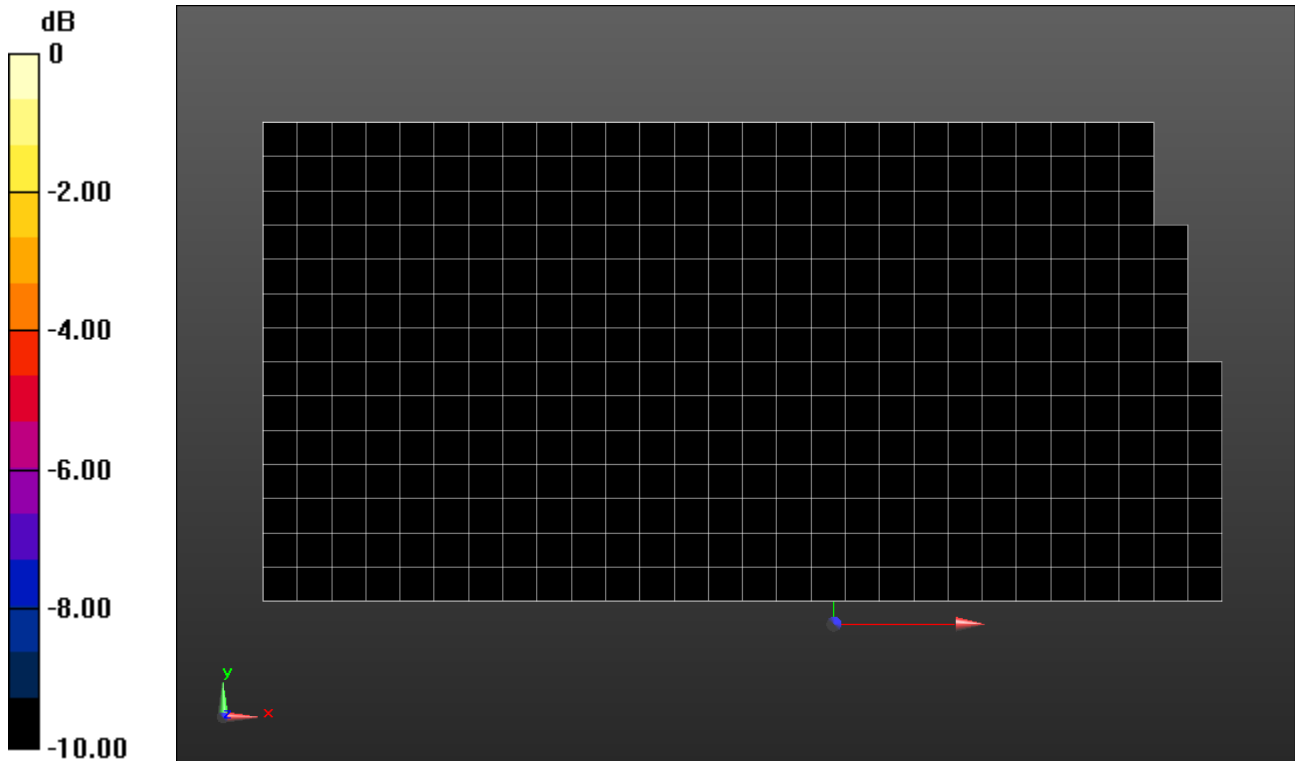
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field/2450MHz CW \_0.5m distance/86.5cm height/5cm Transmitter Vertical Plane/ Behind Client/Full (34x15x1): Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 48.19 V/m



0 dB = 307.3 V/m = 49.75 dBV/m

Normalized to 307.3 V/m

Distance from Client to Probe is 2.5cm

### 10.3. Identifying the WPT Client angle relative to the WPT Source yielding the highest field strength measured by the probe

#### 10.3.1. Power source angled 45°

Test Laboratory: UL Verification Services Inc. SAR Lab 5  
AM

Date/Time: 3/13/2019 8:58:41

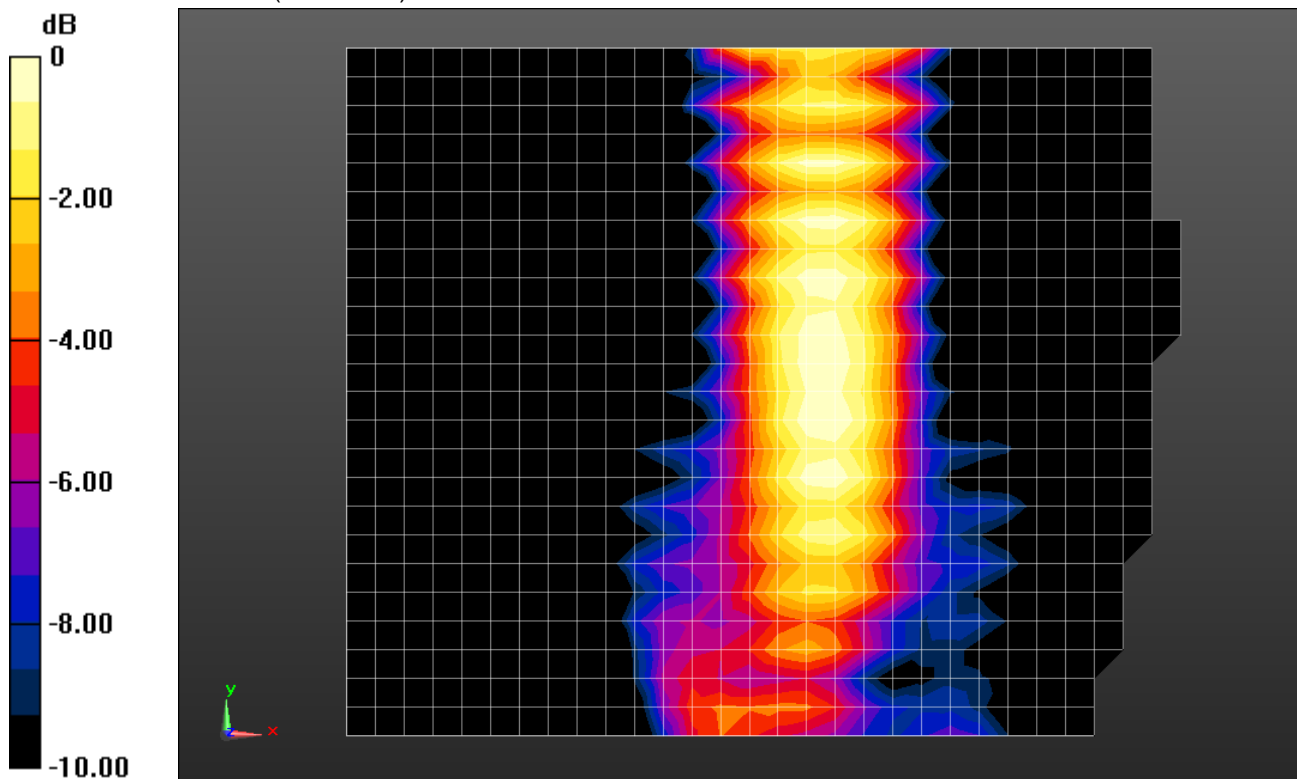
2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1 m distance/84cm height/5cm Transmitter Vertical +45/  
2 cm to Client 0/Full (34x25x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 152.3 V/m



0 dB = 152.3 V/m = 43.65 dBV/m

2450MHz CW

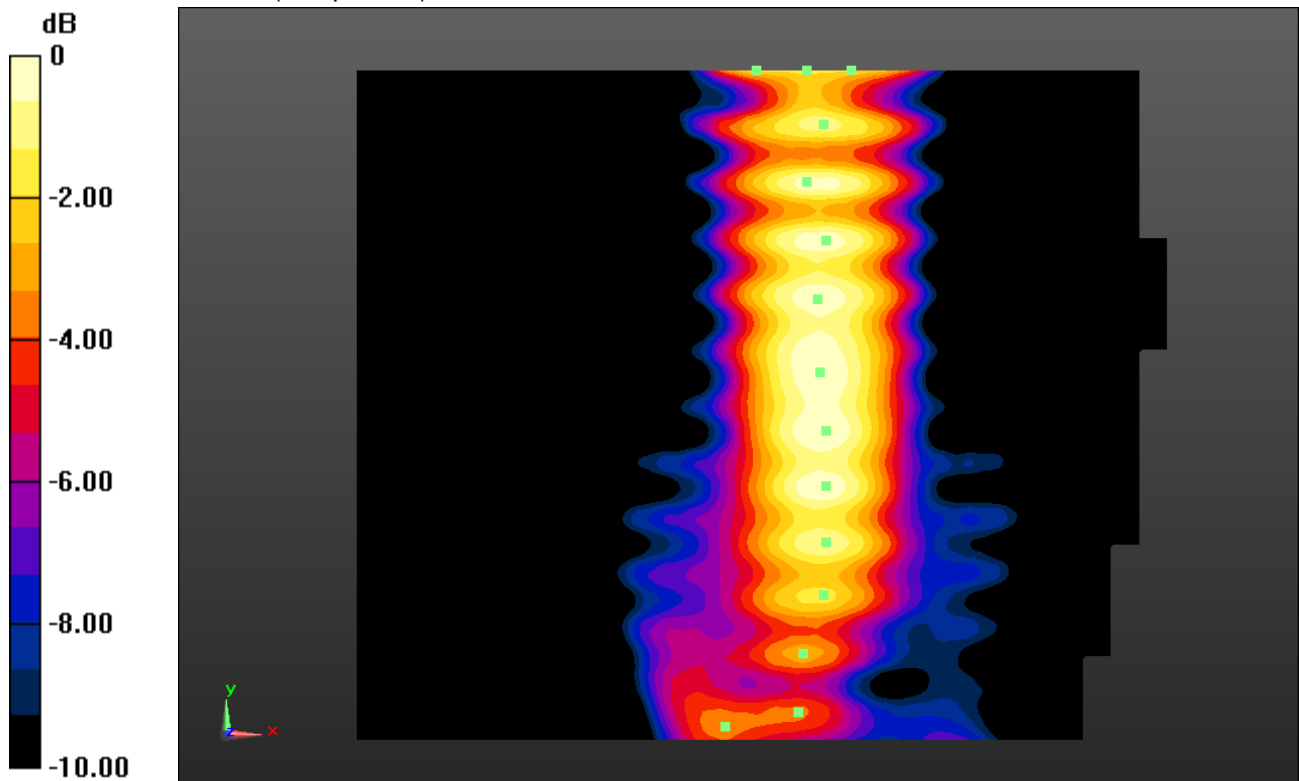
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1 m distance/84cm height/5cm Transmitter Vertical +45/  
2 cm to Client 0/Full (331x241x1):** Interpolated grid: dx=3.000 mm, dy=3.000 mm, dz=1.000 mm

Maximum value of Total (interpolated) = 153.5 V/m



0 dB = 153.5 V/m = 43.72 dBV/m

2450MHz CW

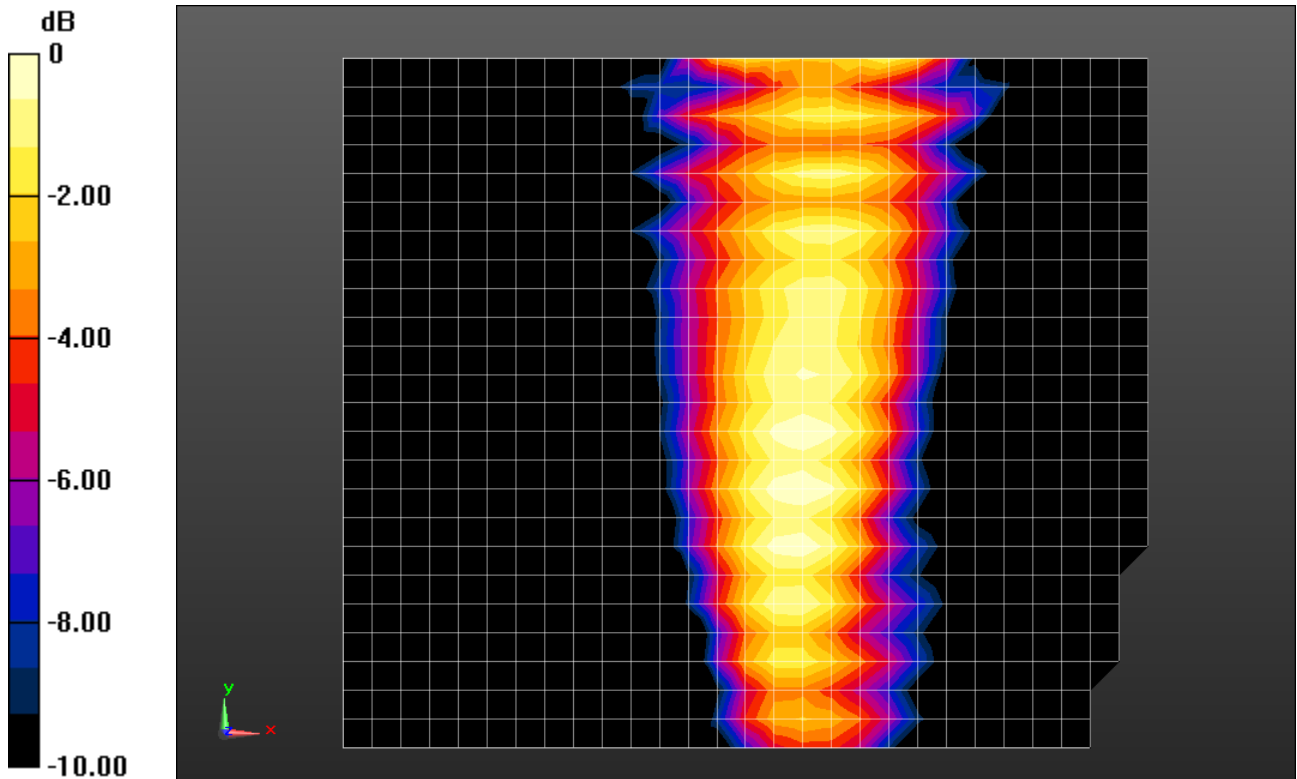
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1 m distance/84cm height/5cm Transmitter Horizontal +45/ 1.5 cm to Client 0/Full (34x25x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 165.6 V/m



0 dB = 165.6 V/m = 44.38 dBV/m

2450MHz CW

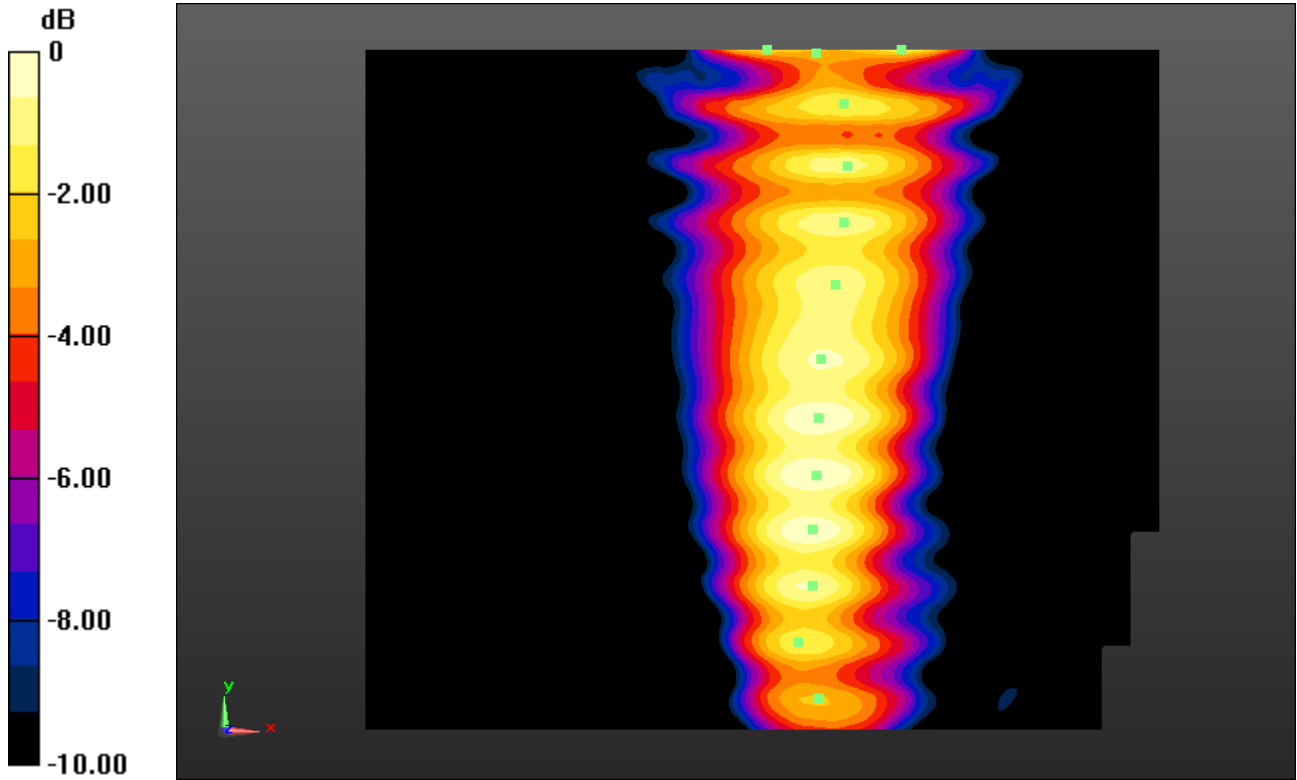
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1 m distance/84cm height/5cm Transmitter Horizontal +45/ 1.5 cm to Client 0/Full (331x241x1):** Interpolated grid: dx=3.000 mm, dy=3.000 mm, dz=1.000 mm

Maximum value of Total (interpolated) = 165.8 V/m



0 dB = 165.8 V/m = 44.39 dBV/m

### 10.3.2. Power client angled 45°

Test Laboratory: UL Verification Services Inc. SAR Lab 5  
PM

Date/Time: 3/12/2019 1:32:55

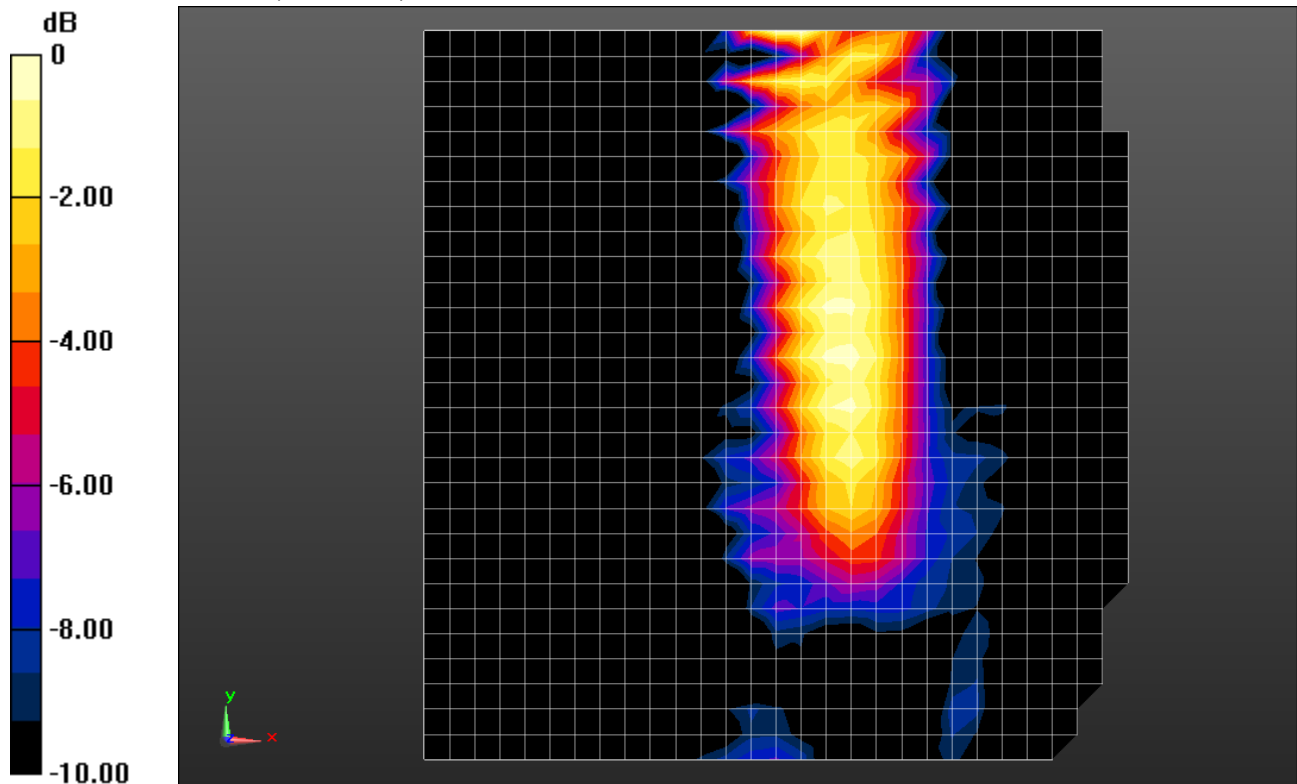
2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1 m distance/84cm height/5cm Transmitter Horizontal/  
2cm to Client Rotate +45/Full (34x30x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 195.4 V/m





2450MHz CW

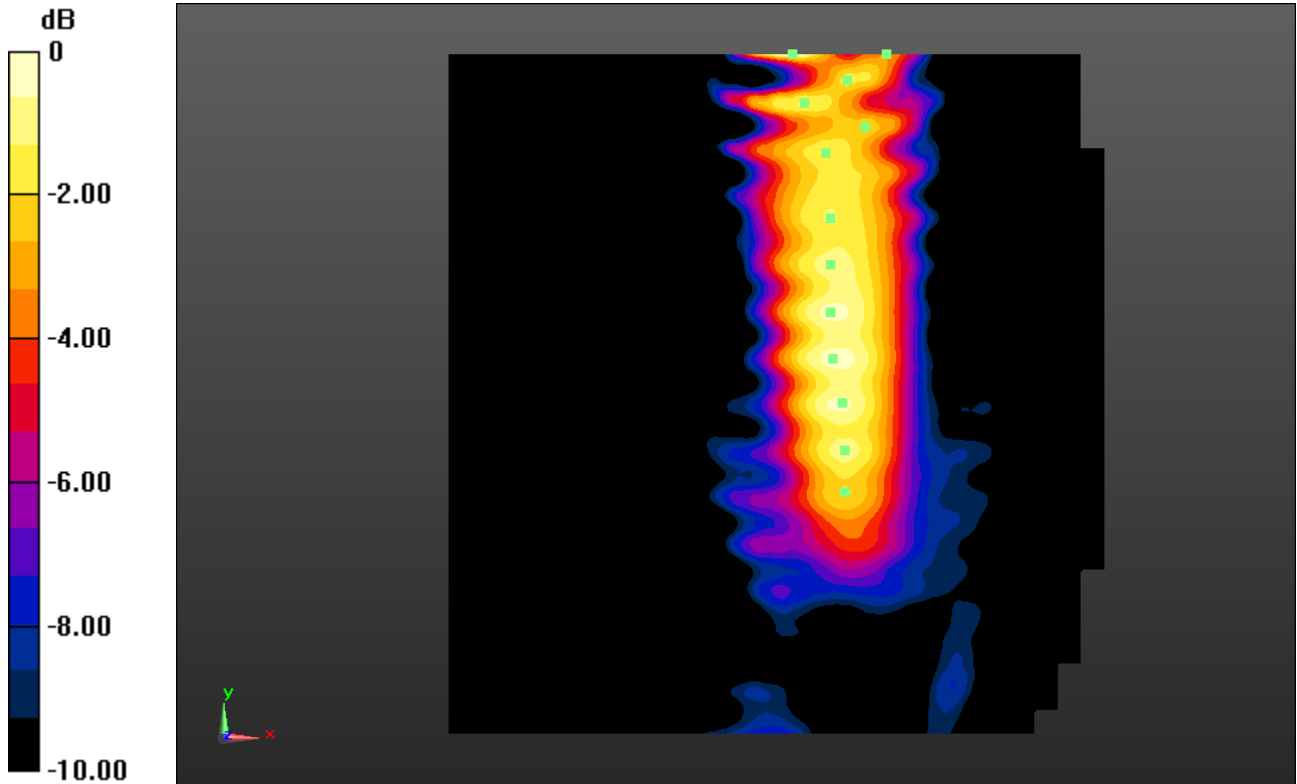
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1 m distance/84cm height/5cm Transmitter Horizontal/  
2cm to Client Rotate +45/Full (331x291x1):** Interpolated grid: dx=3.000 mm, dy=3.000 mm,  
dz=1.000 mm

Maximum value of Total (interpolated) = 198.1 V/m



0 dB = 198.1 V/m = 45.94 dBV/m

2450MHz CW

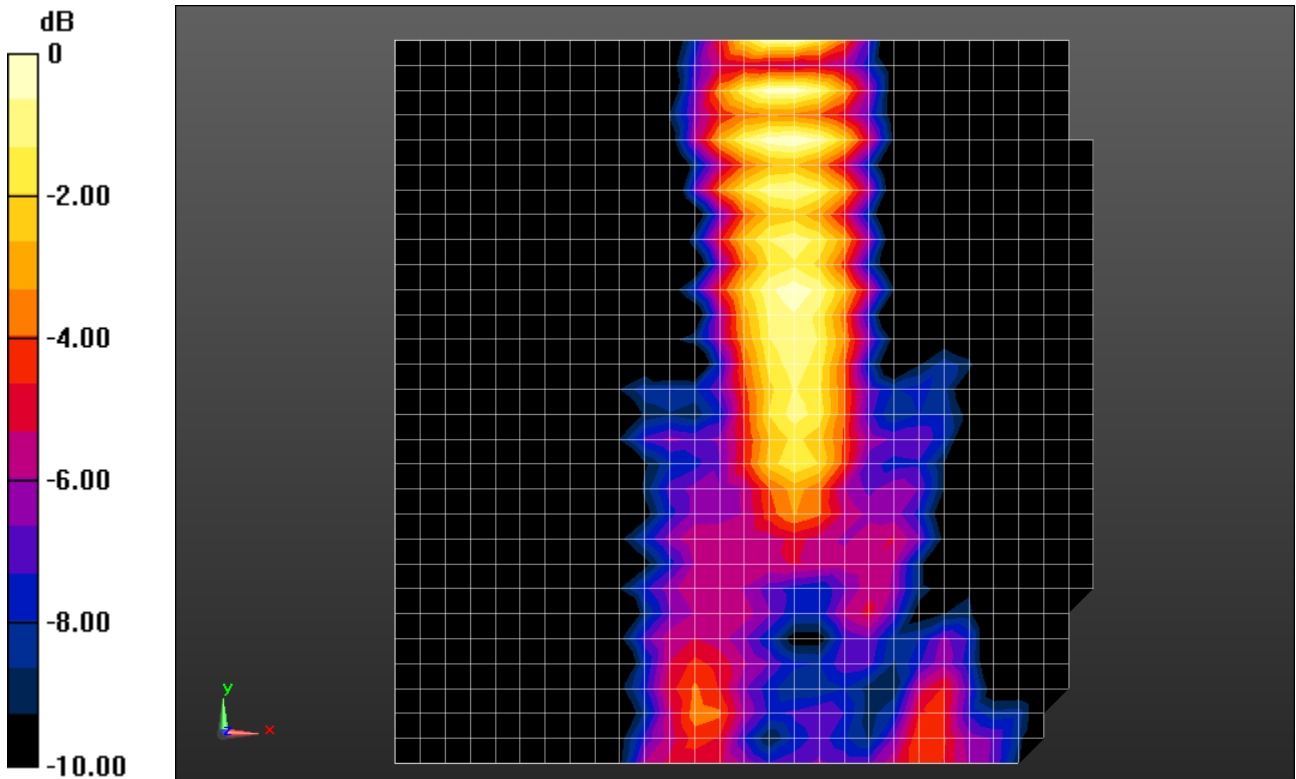
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1 m distance/84cm height/5cm Transmitter Vertical/  
2.5cm to Client +45/Full (34x30x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 142.8 V/m



0 dB = 142.8 V/m = 43.09 dBV/m

2450MHz CW

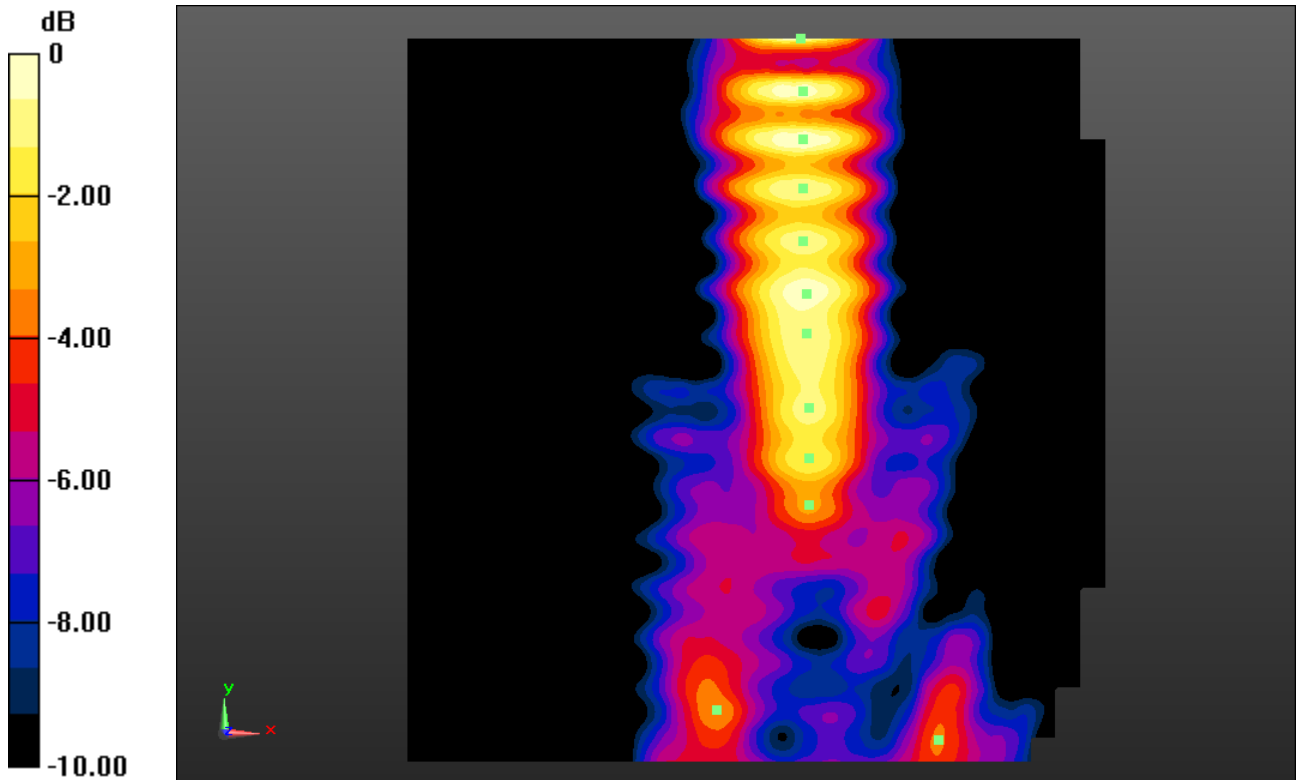
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1 m distance/84cm height/5cm Transmitter Vertical/  
2.5cm to Client +45/Full (331x291x1):** Interpolated grid: dx=3.000 mm, dy=3.000 mm, dz=1.000 mm

Maximum value of Total (interpolated) = 142.9 V/m



0 dB = 142.9 V/m = 43.10 dBV/m

### 10.3.3. Power Source angled 45°, Power Client angled -45°

Test Laboratory: UL Verification Services Inc. SAR Lab 5  
AM

Date/Time: 3/13/2019 10:40:45

2450MHz CW

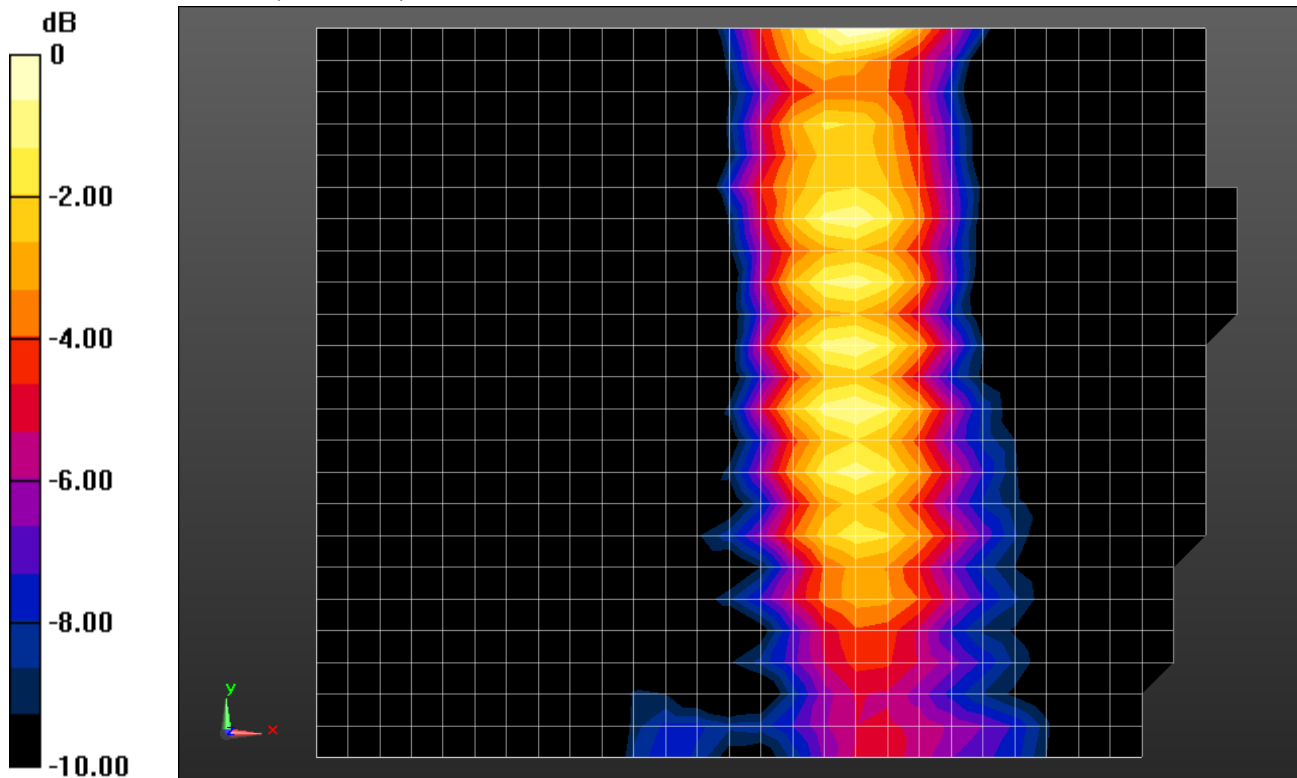
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1 m distance/84cm height/5cm Transmitter Vertical +45/  
2 cm to Client -45/Full (34x24x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 141.3 V/m



0 dB = 141.3 V/m = 43.00 dBV/m

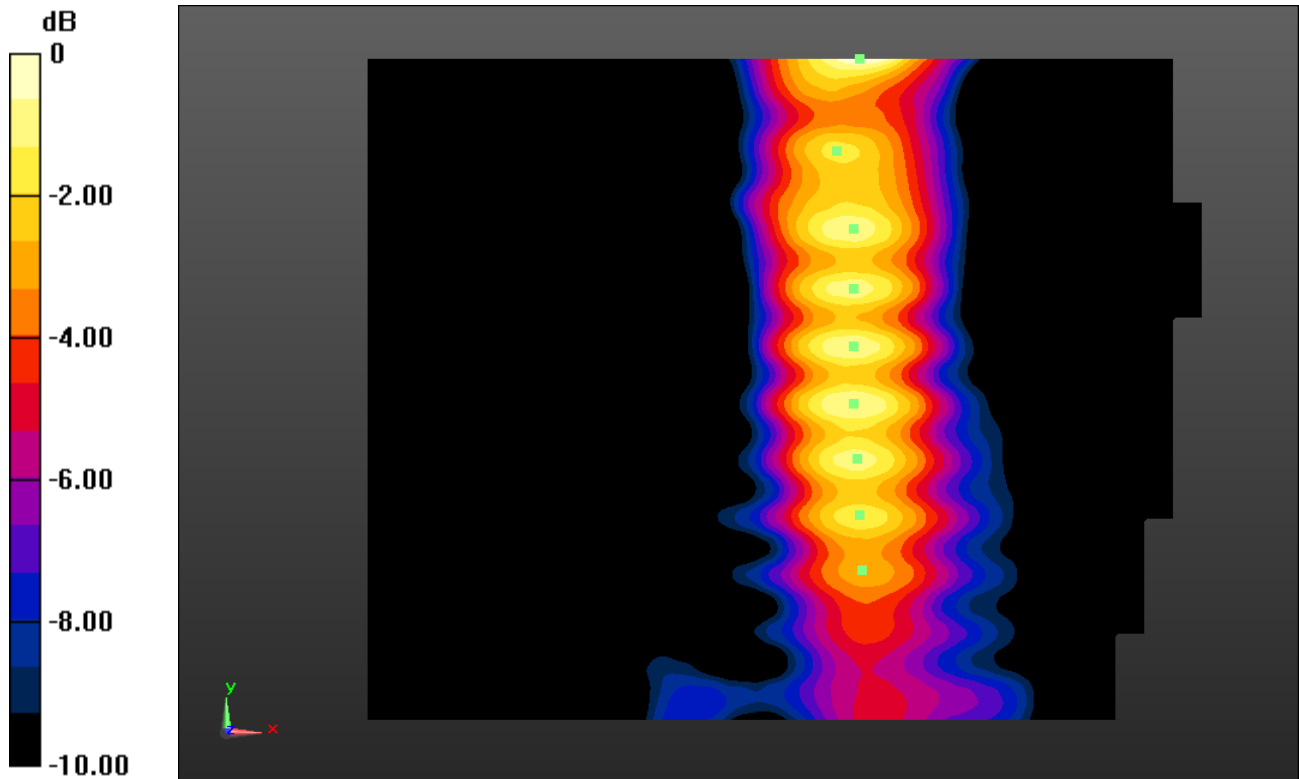
2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1 m distance/84cm height/5cm Transmitter Vertical +45/  
2 cm to Client -45/Full (331x231x1):** Interpolated grid: dx=3.000 mm, dy=3.000 mm, dz=1.000 mm  
Maximum value of Total (interpolated) = 141.5 V/m



0 dB = 141.5 V/m = 43.02 dBV/m

2450MHz CW

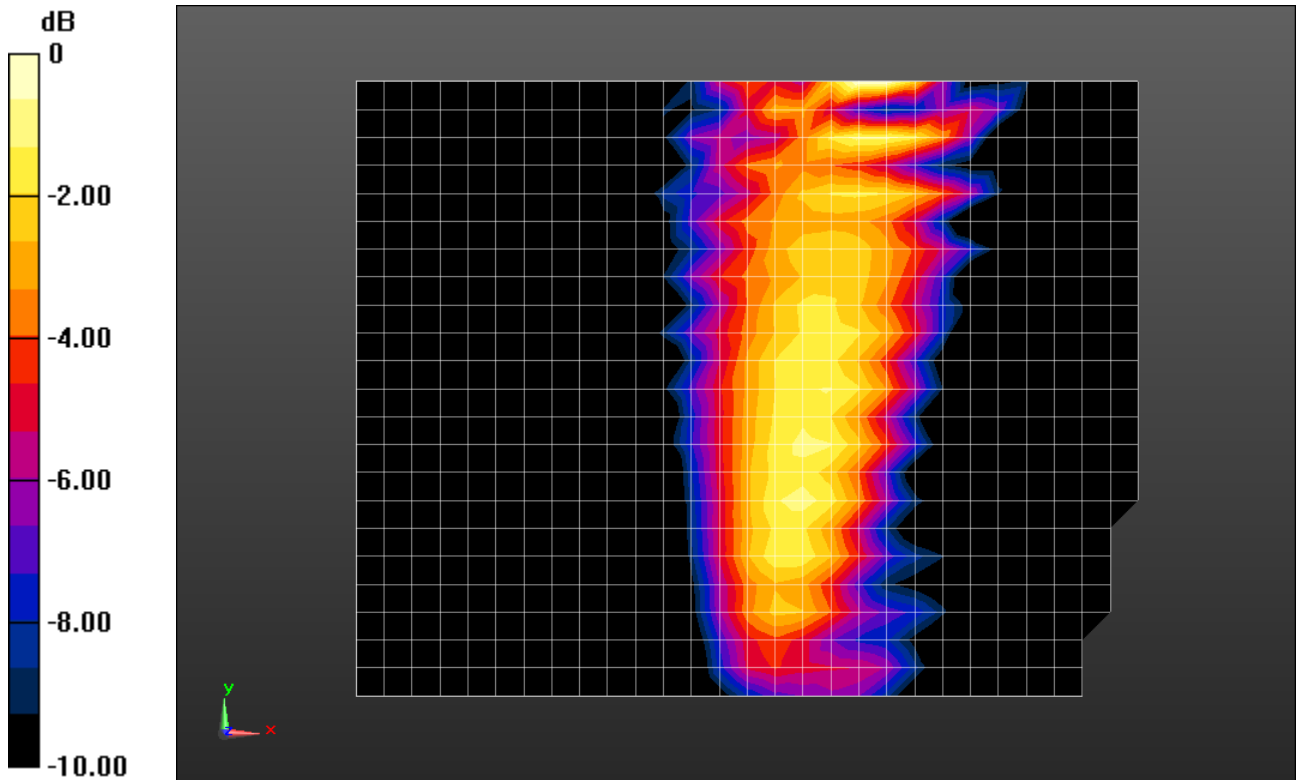
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1 m distance/84cm height/5cm Transmitter Horizontal +45/ 2.5 cm to Client -45/Full (34x23x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 168.4 V/m



0 dB = 168.4 V/m = 44.53 dBV/m

2450MHz CW

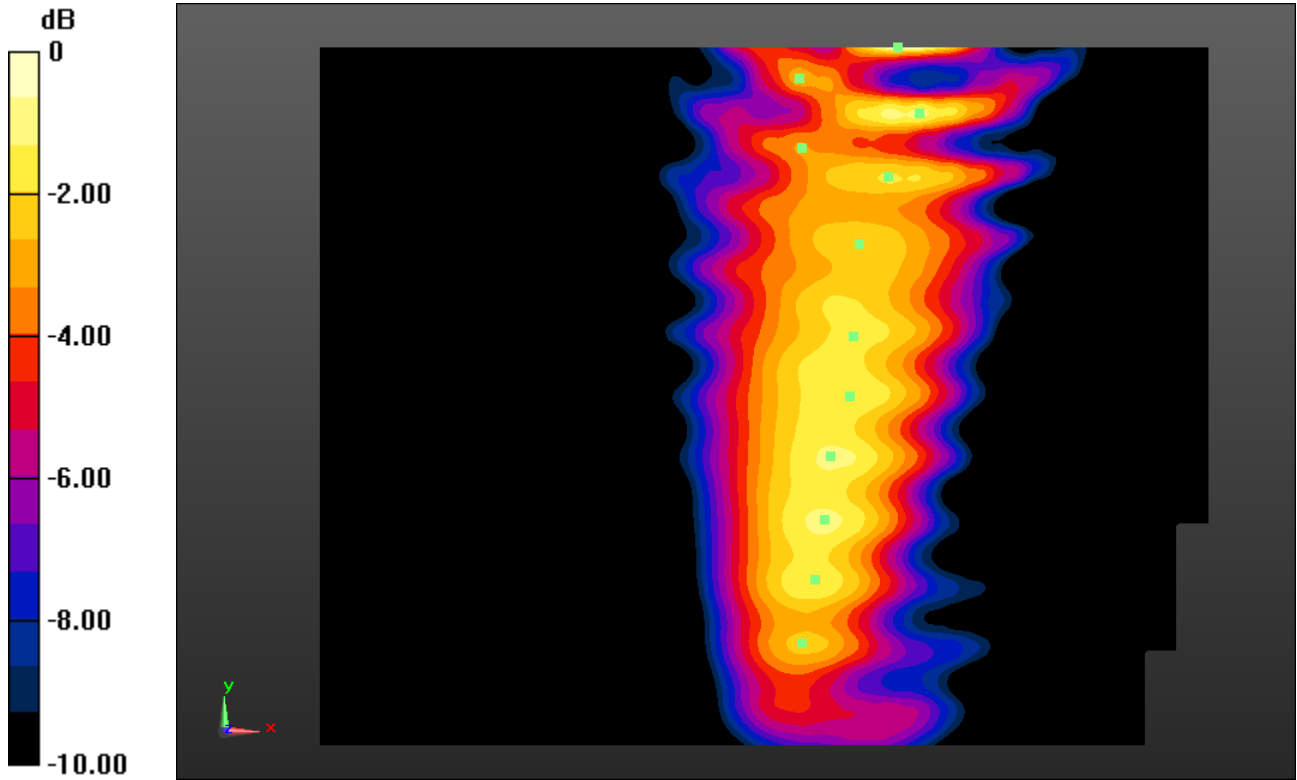
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1 m distance/84cm height/5cm Transmitter Horizontal +45/ 2.5 cm to Client -45/Full (331x221x1):** Interpolated grid: dx=3.000 mm, dy=3.000 mm, dz=1.000 mm

Maximum value of Total (interpolated) = 170.7 V/m



0 dB = 170.7 V/m = 44.64 dBV/m

### 10.3.4. Power Source, Client angled 45°

Test Laboratory: UL Verification Services Inc. SAR Lab 5  
AM

Date/Time: 3/13/2019 9:59:47

2450MHz CW

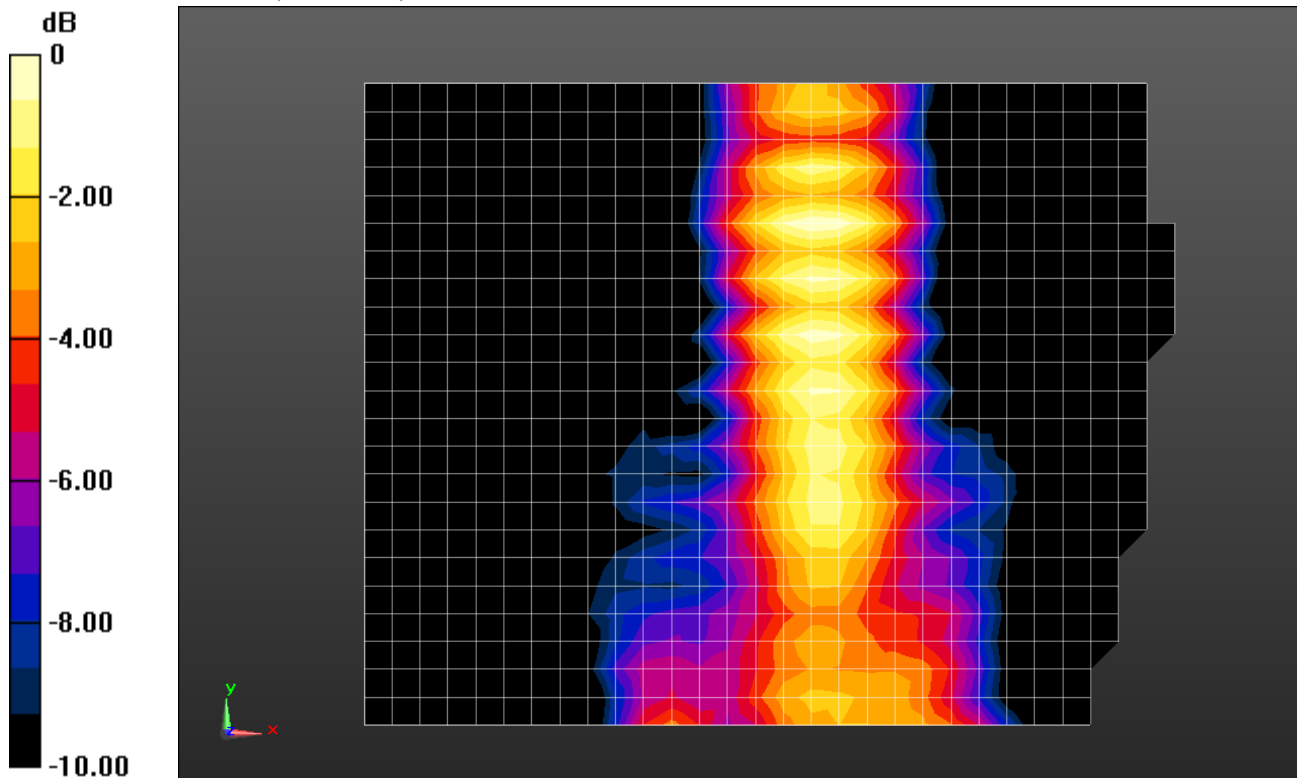
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1 m distance/84cm height/5cm Transmitter Vertical +45/  
0.5 cm to Client +45/Full (34x24x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 122.8 V/m



0 dB = 122.8 V/m = 41.78 dBV/m



2450MHz CW

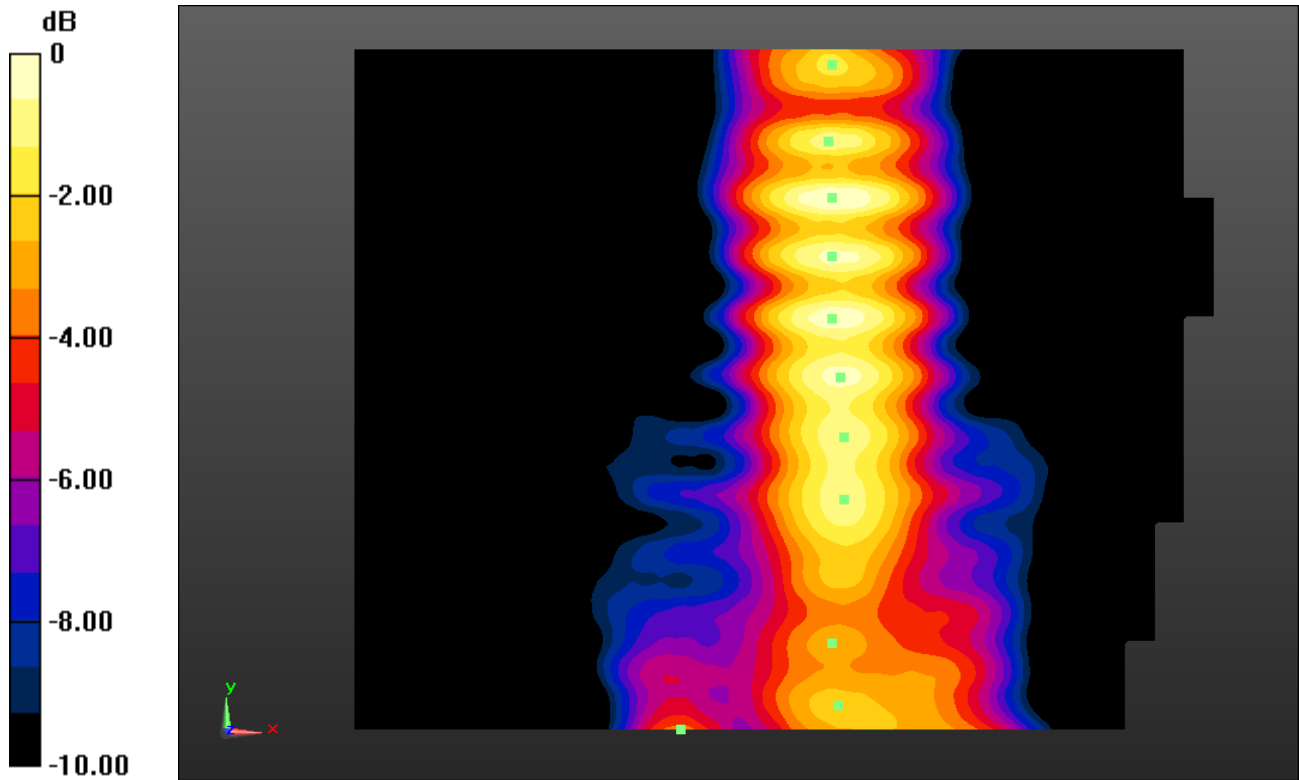
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1 m distance/84cm height/5cm Transmitter Vertical +45/  
0.5 cm to Client +45/Full (331x231x1):** Interpolated grid: dx=3.000 mm, dy=3.000 mm, dz=1.000 mm

Maximum value of Total (interpolated) = 122.8 V/m



0 dB = 122.8 V/m = 41.78 dBV/m

2450MHz CW

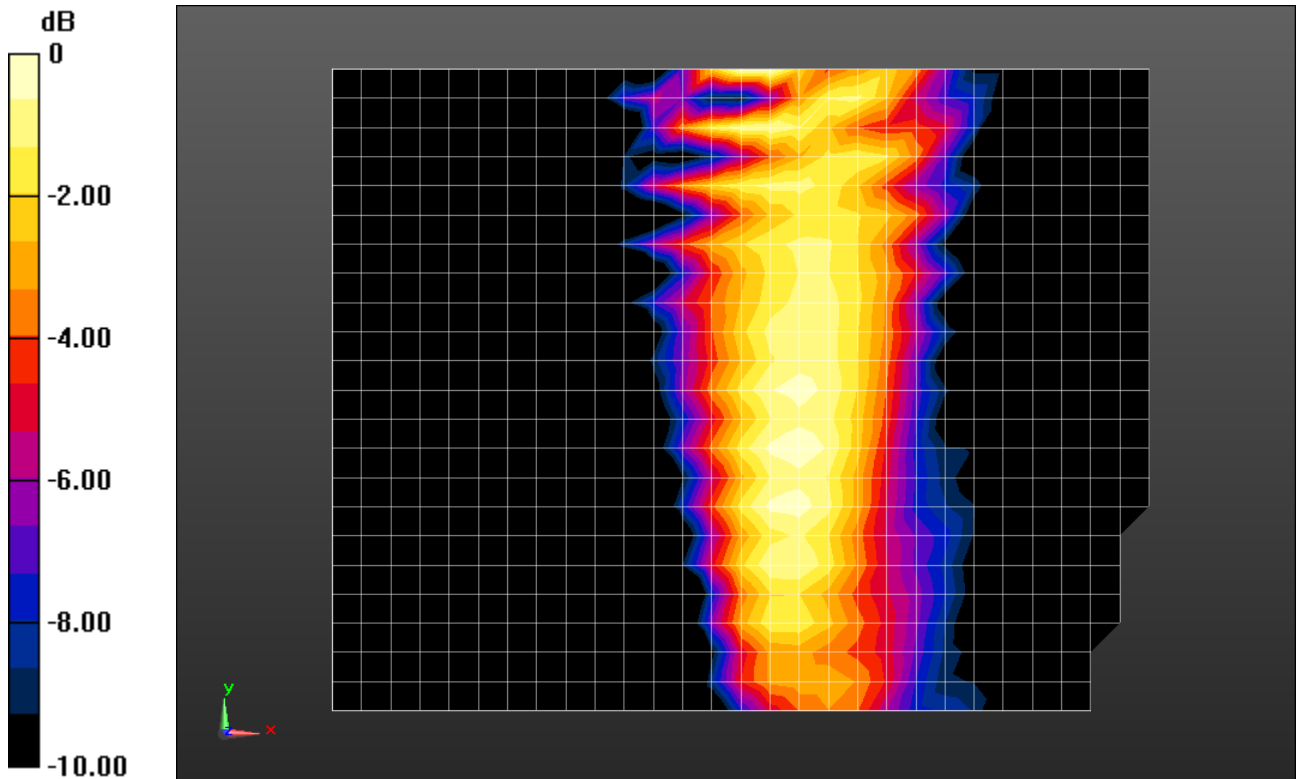
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1 m distance/84cm height/5cm Transmitter Horizontal +45/ 2.5 cm to Client +45/Full (34x23x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 163.2 V/m



0 dB = 163.2 V/m = 44.25 dBV/m

2450MHz CW

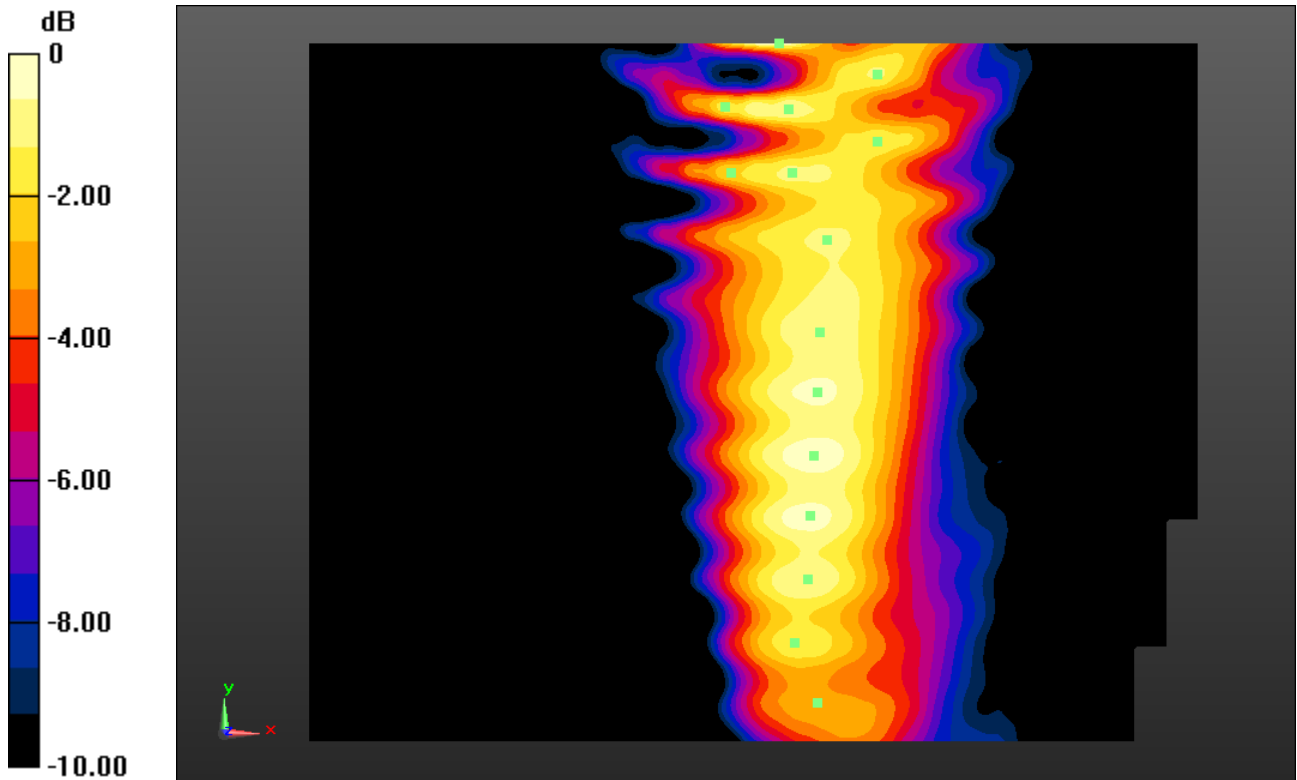
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1 m distance/84cm height/5cm Transmitter Horizontal +45/ 2.5 cm to Client +45/Full (331x221x1):** Interpolated grid: dx=3.000 mm, dy=3.000 mm, dz=1.000 mm

Maximum value of Total (interpolated) = 164.9 V/m



0 dB = 164.9 V/m = 44.34 dBV/m

## 10.4. Metallic Plate

### 10.4.1. Metal Plate behind WPT Client

Test Laboratory: UL Verification Services Inc. SAR Lab 5  
AM

Date/Time: 3/13/2019 11:47:07

2450MHz CW

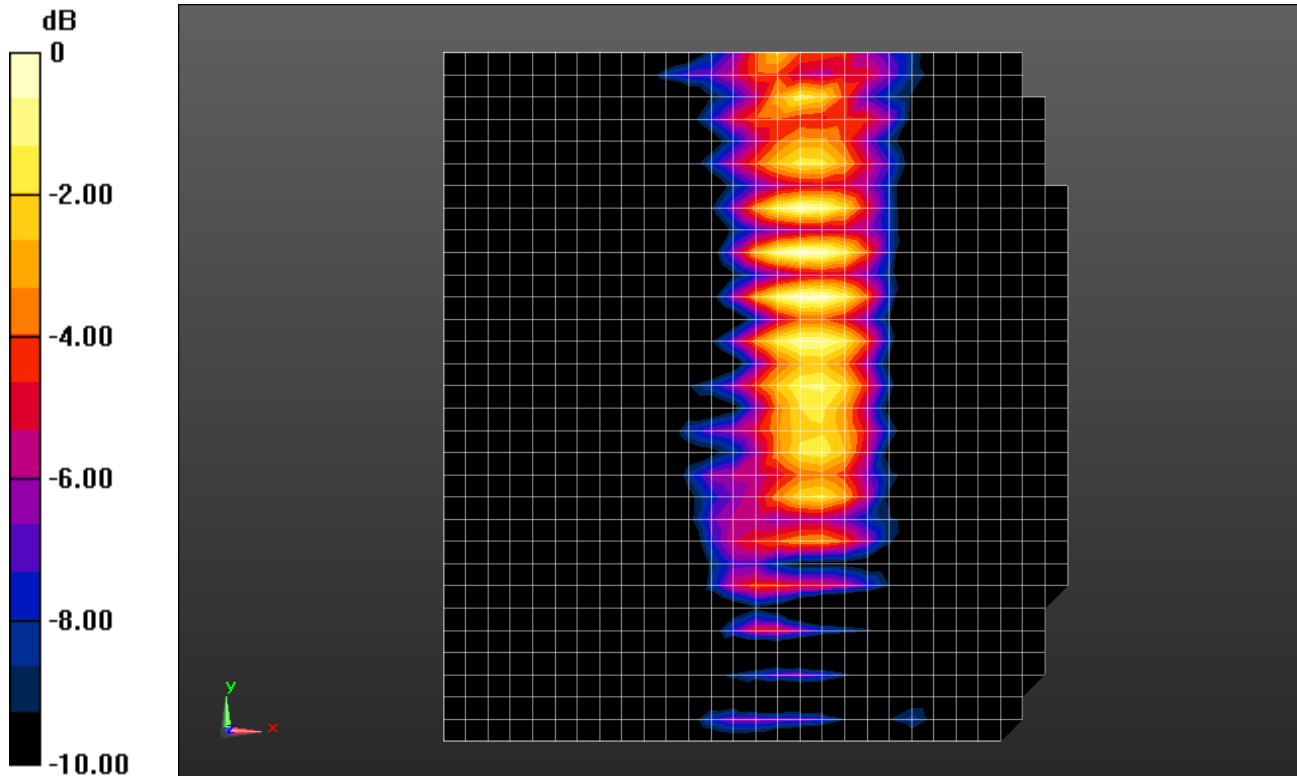
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C

Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1 m distance/84cm height/5cm Transmitter Horizontal/  
0.5 cm to Client/ Metal Plate/Full (34x32x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 212.1 V/m



0 dB = 212.1 V/m = 46.53 dBV/m

2450MHz CW

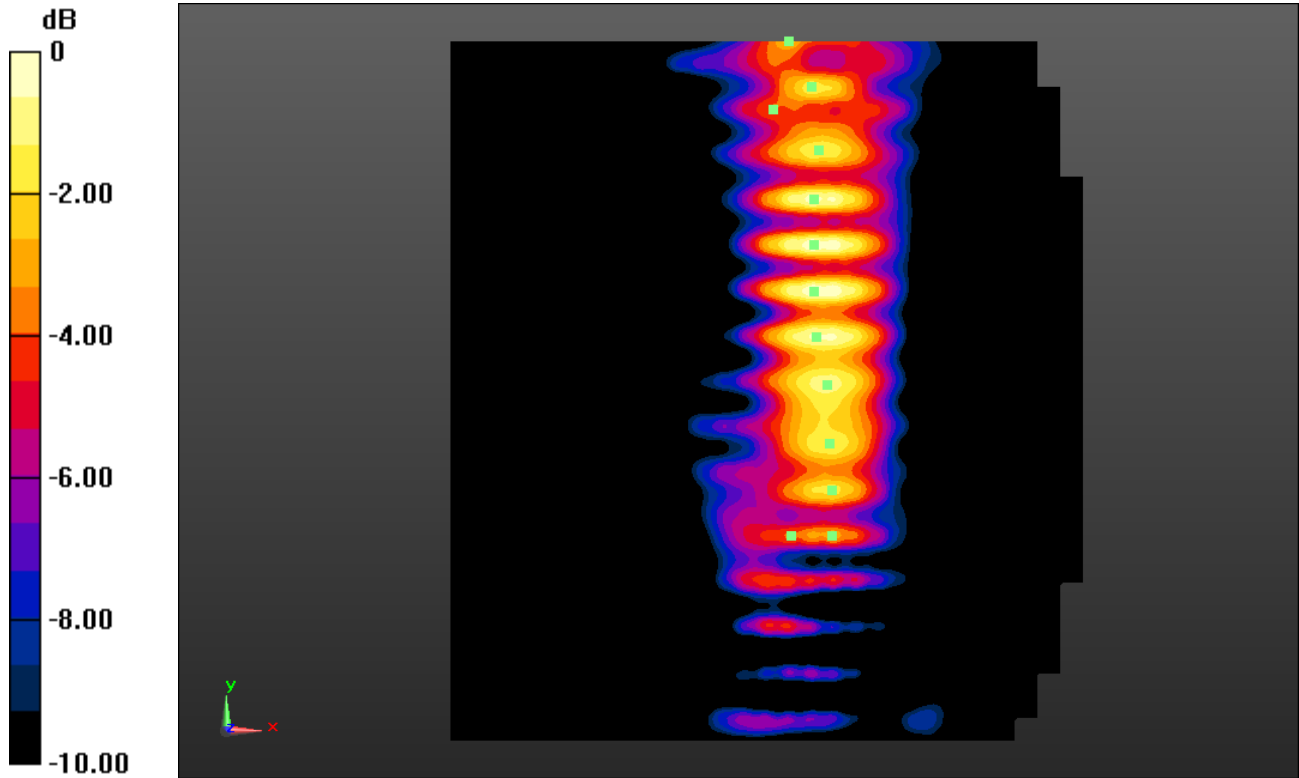
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1 m distance/84cm height/5cm Transmitter Horizontal/  
0.5 cm to Client/ Metal Plate/Full (331x311x1):** Interpolated grid: dx=3.000 mm, dy=3.000 mm, dz=1.000 mm

Maximum value of Total (interpolated) = 212.2 V/m



0 dB = 212.2 V/m = 46.53 dBV/m

## 10.4.2. Metal Plate Behind WPT Source

Test Laboratory: UL Verification Services Inc. SAR Lab 5  
PM

Date/Time: 4/8/2019 5:26:16

2450MHz CW

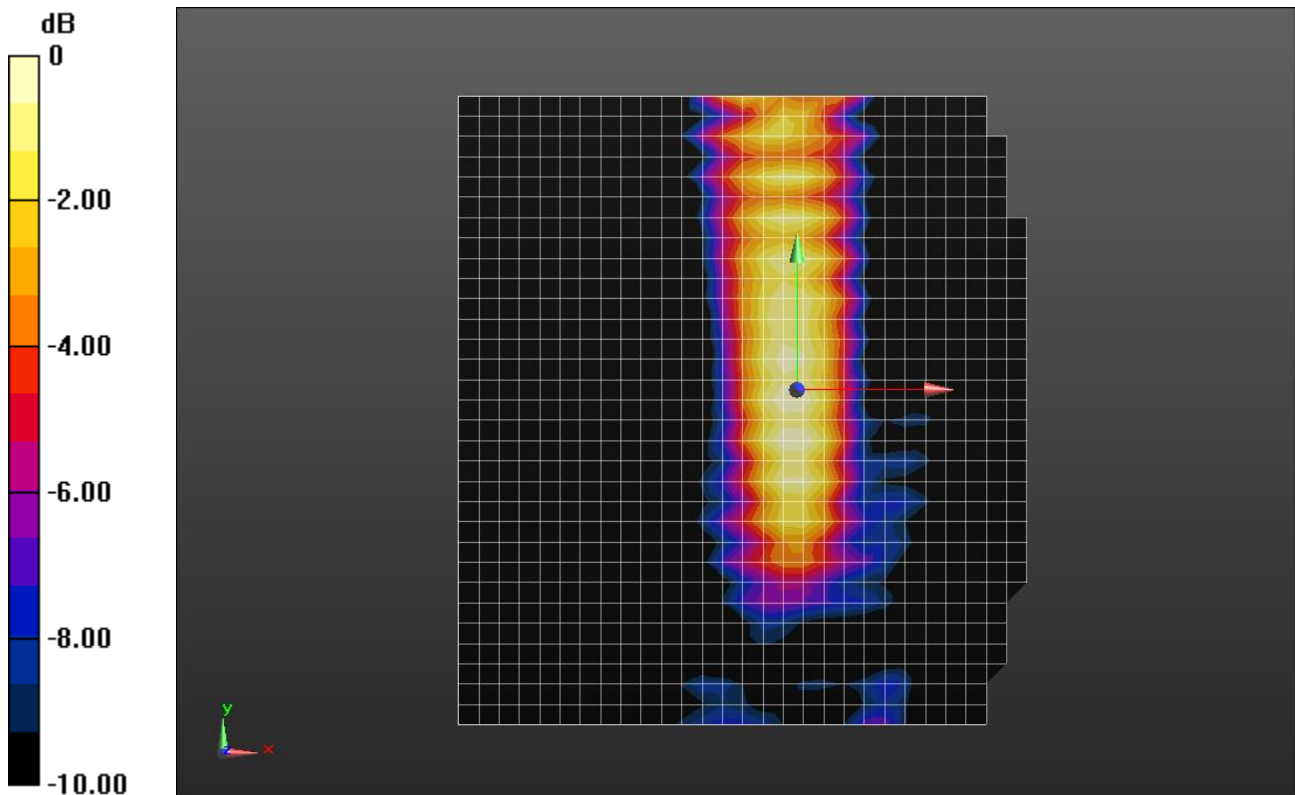
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field/Boresight Client 339\_MCNPS\_2450MHz CW\_88 cm distance/ Tile 0

**Degrees/ Client 0 Degrees/Full (34x32x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 196.5 V/m



0 dB = 196.5 V/m = 45.87 dBV/m

2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

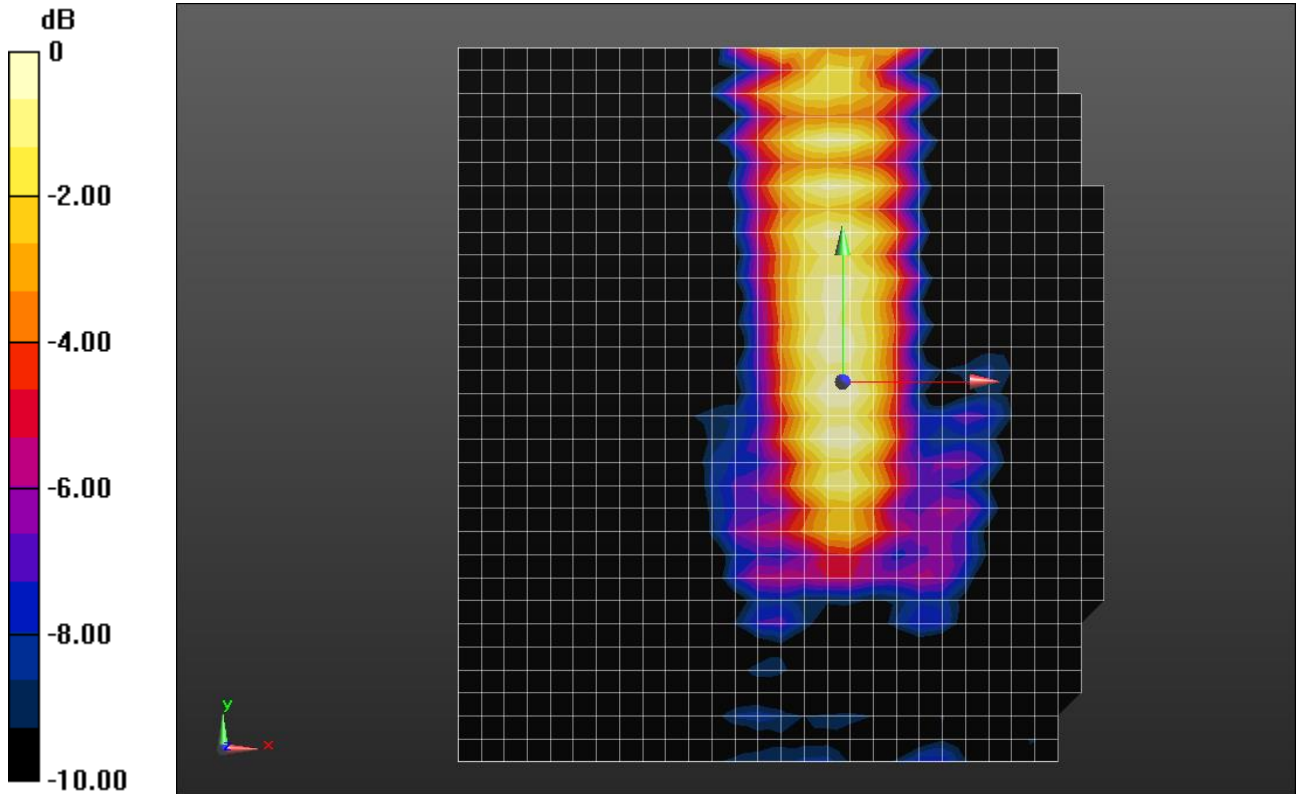
DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/Boresight Client 339\_MCNPS\_2450MHz CW\_88 cm distance/ Tile 0  
Degrees/ Client 0 Degrees w/Metal Plate 9cm/Full (34x32x1):** Measurement grid:

dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 192.0 V/m



0 dB = 192.0 V/m = 45.67 dBV/m

### 10.4.3. Metallic Obstruction

Test Laboratory: UL Verification Services Inc. SAR Lab 5  
PM

Date/Time: 5/13/2019 3:38:12

#### 2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid  
Temperature: 23.0°C

Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1472; Calibrated: 3/21/2019
- Probe: EF3DV3 - SN4041; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 3/22/2019
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field w\_ Obstruction/2450MHz CW \_1m distance/83.5cm height/5cm Transmitter Horizontal/  
Metal Obstruction Offset 18cmEdge 1 (34x11x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 112.6 V/m

**E Field w\_ Obstruction/2450MHz CW \_1m distance/83.5cm height/5cm Transmitter Horizontal/  
Metal Obstruction Offset 18cmEdge 2 (34x4x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 114.8 V/m

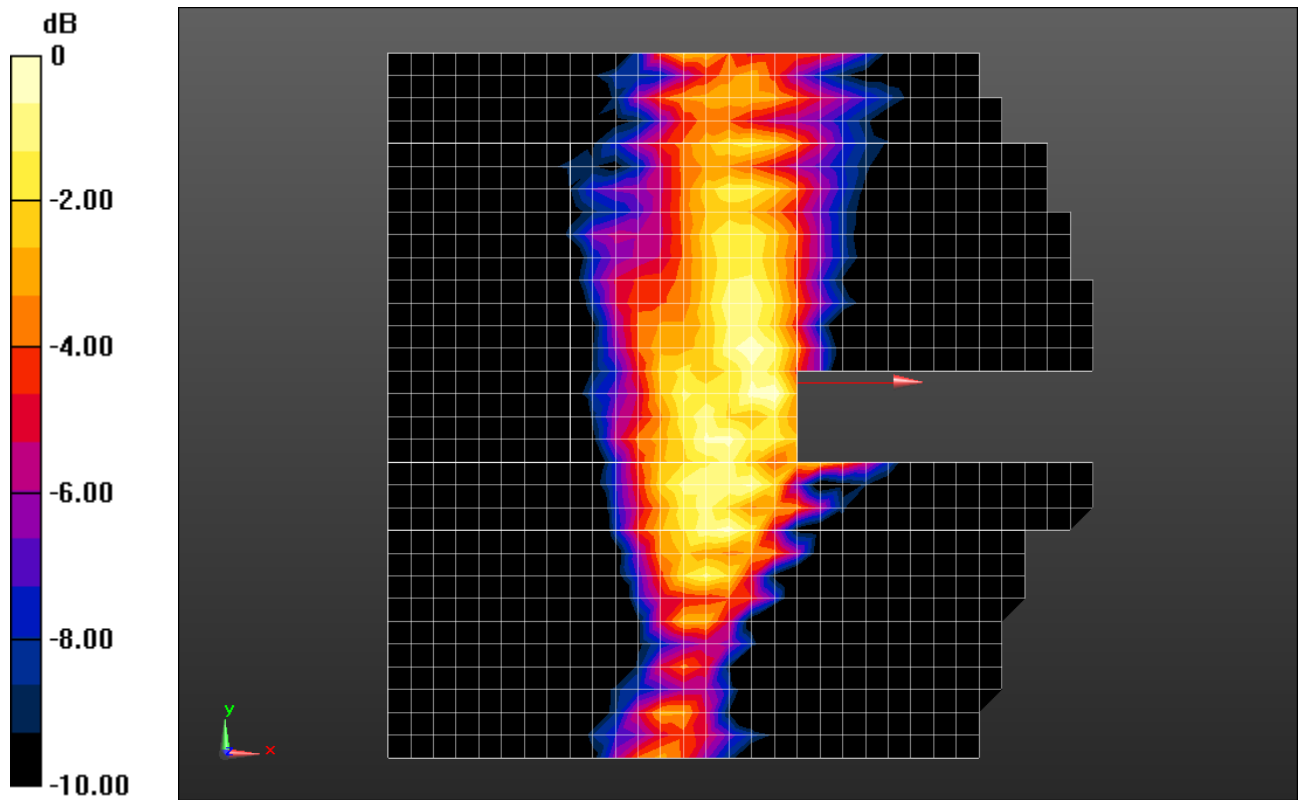
**E Field w\_ Obstruction/2450MHz CW \_1m distance/83.5cm height/5cm Transmitter Horizontal/  
Metal Obstruction Offset 18cmEdge 3 (9x15x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 43.95 V/m

**E Field w\_ Obstruction/2450MHz CW \_1m distance/83.5cm height/5cm Transmitter Horizontal/  
Metal Obstruction Offset 18cmEdge 4 (11x15x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 119.2 V/m

**E Field w\_ Obstruction/2450MHz CW \_1m distance/83.5cm height/5cm Transmitter Horizontal/  
Metal Obstruction Offset 18cmEdge 5 (16x11x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 81.39 V/m

**E Field w\_ Obstruction/2450MHz CW \_1m distance/83.5cm height/5cm Transmitter Horizontal/  
Metal Obstruction Offset 18cmEdge 6 (34x5x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 96.32 V/m





0 dB = 119.2 V/m = 41.52 dBV/m

### 2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

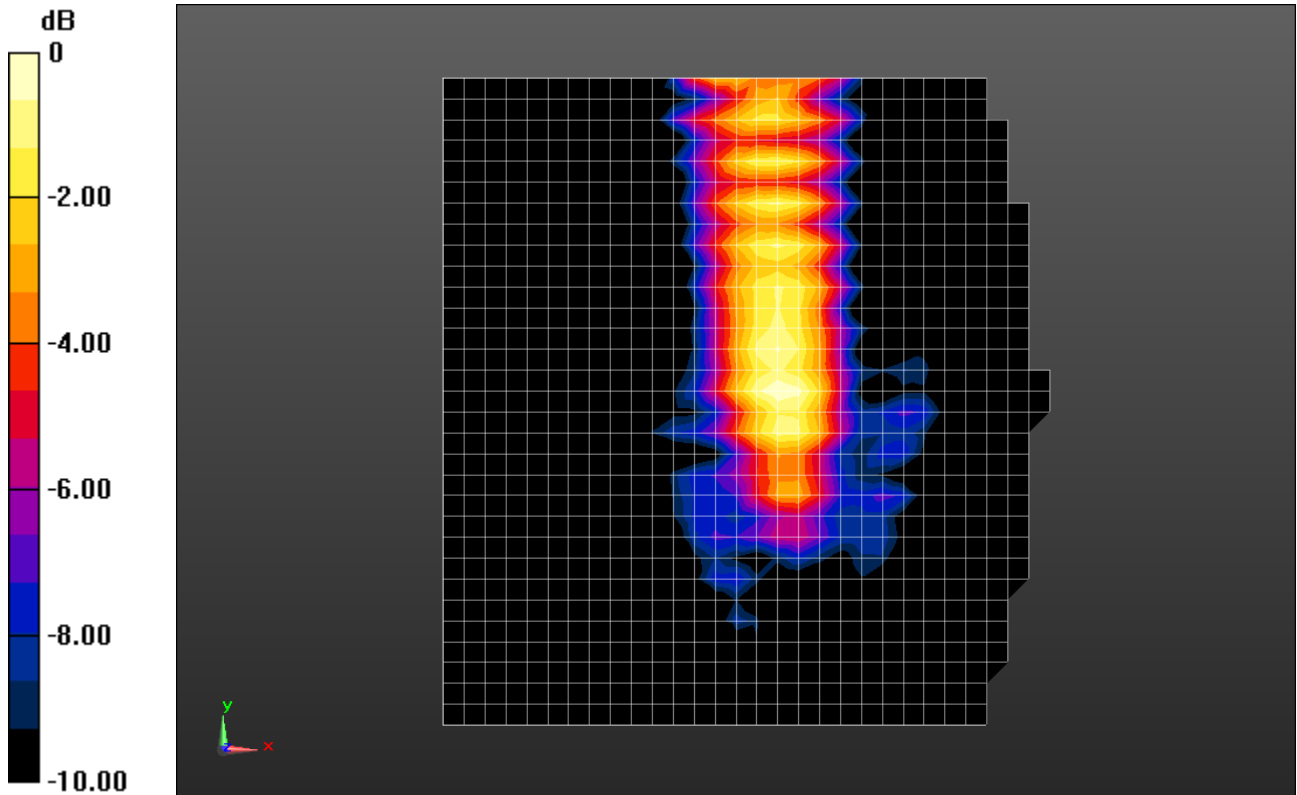
DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1472; Calibrated: 3/21/2019
- Probe: EF3DV3 - SN4041; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 3/22/2019
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field w\_ Obstruction/2450MHz CW \_1m distance/83.5cm height/5cm Transmitter Vertical/ Metal Obstruction Offset 18cm/Full (34x32x1): Measurement

grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 91.82 V/m



0 dB = 91.82 V/m = 39.26 dBV/m

## 10.5. Identifying the worst-case scenario with phantom (single phantom cases)

### 10.5.2. Obstructed Case with WPT Source/Client distance of 1m

#### 10.5.2.1. Field Strength, Vertical Orientation (1m)

##### 10.5.2.1.1. 15cm offset

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
10:56:34 AM

Date/Time: 12/20/2018

### 2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg

- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018

- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;

- Sensor-Surface: 0mm (Fix Surface)

- Phantom: Freespace RF; ;

#### **E Field w\_ Obstruction/2450MHz CW \_1m distance/86.5cm height/5cm**

**Transmitter Horizontal 20cm to Client/ Offset 15cm/Edge 1 (34x9x1):** Measurement

grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 76.93 V/m

#### **E Field w\_ Obstruction/2450MHz CW \_1m distance/86.5cm height/5cm**

**Transmitter Horizontal 20cm to Client/ Offset 15cm/Edge 2 (34x7x1):** Measurement

grid: dx=30mm, dy=30mm, dz=1mm 1.8 cm to Phantom

Maximum value of Total (measured) = 86.93 V/m

#### **E Field w\_ Obstruction/2450MHz CW \_1m distance/86.5cm height/5cm**

**Transmitter Horizontal 20cm to Client/ Offset 15cm/Edge 3 (8x12x1):** Measurement

grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 59.21 V/m

#### **E Field w\_ Obstruction/2450MHz CW \_1m distance/86.5cm height/5cm**

**Transmitter Horizontal 20cm to Client/ Offset 15cm/Edge 4 (10x12x1):**

Measurement grid: dx=30mm, dy=30mm, dz=1mm 1.4 cm to Phantom

Maximum value of Total (measured) = 85.21 V/m

#### **E Field w\_ Obstruction/2450MHz CW \_1m distance/86.5cm height/5cm**

**Transmitter Horizontal 20cm to Client/ Offset 15cm/Edge 5 (34x3x1):** Measurement

grid: dx=30mm, dy=30mm, dz=1mm 1.5 cm to Phantom

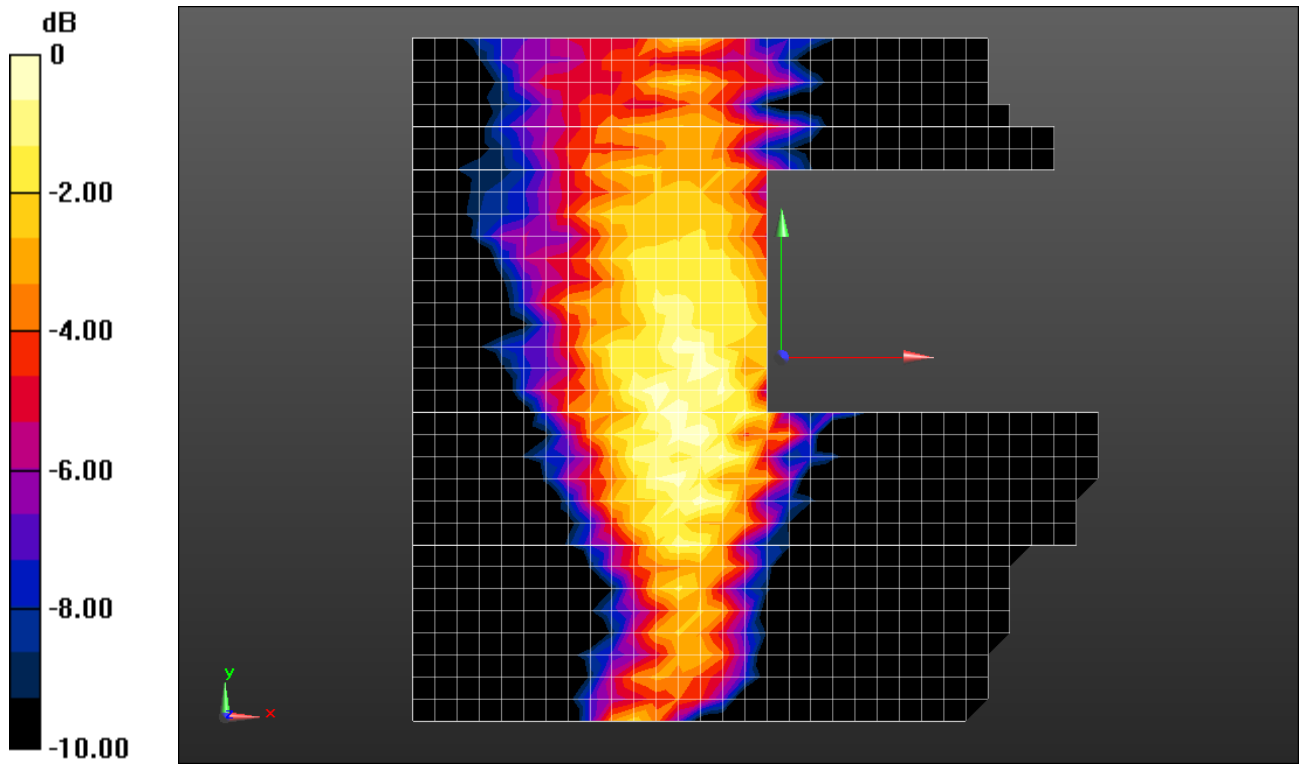
Maximum value of Total (measured) = 66.93 V/m

#### **E Field w\_ Obstruction/2450MHz CW \_1m distance/86.5cm height/5cm**

**Transmitter Horizontal 20cm to Client/ Offset 15cm/Edge 6 (34x5x1):** Measurement

grid: dx=30mm, dy=30mm, dz=1mm 1.5 cm to Client

Maximum value of Total (measured) = 68.18 V/m



0 dB = 86.93 V/m = 38.78 dBV/m

#### 10.5.2.1.2. 22.5cm offset

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
PM

Date/Time: 12/20/2018 2:04:45

### 2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

#### **E Field w\_ Obstruction/2450MHz CW \_1m distance/86.5cm height/5cm Transmitter Horizontal 20cm to Client/ Offset 22.5cm/Edge 1 (34x9x1):**

Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 82.72 V/m

#### **E Field w\_ Obstruction/2450MHz CW \_1m distance/86.5cm height/5cm Transmitter Horizontal 20cm to Client/ Offset 22.5cm/Edge 2 (34x7x1):**

Measurement grid: dx=30mm, dy=30mm, dz=1mm [2.8cm to Phantom](#)

Maximum value of Total (measured) = 112.3 V/m

#### **E Field w\_ Obstruction/2450MHz CW \_1m distance/86.5cm height/5cm Transmitter Horizontal 20cm to Client/ Offset 22.5cm/Edge 3 (8x12x1):**

Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 34.78 V/m

#### **E Field w\_ Obstruction/2450MHz CW \_1m distance/86.5cm height/5cm Transmitter Horizontal 20cm to Client/ Offset 22.5cm/Edge 4 (12x12x1):**

Measurement grid: dx=30mm, dy=30mm, dz=1mm [0.5 cm to Phantom](#)

Maximum value of Total (measured) = 111.9 V/m

#### **E Field w\_ Obstruction/2450MHz CW \_1m distance/86.5cm height/5cm Transmitter Horizontal 20cm to Client/ Offset 22.5cm/Edge 5 (34x3x1):**

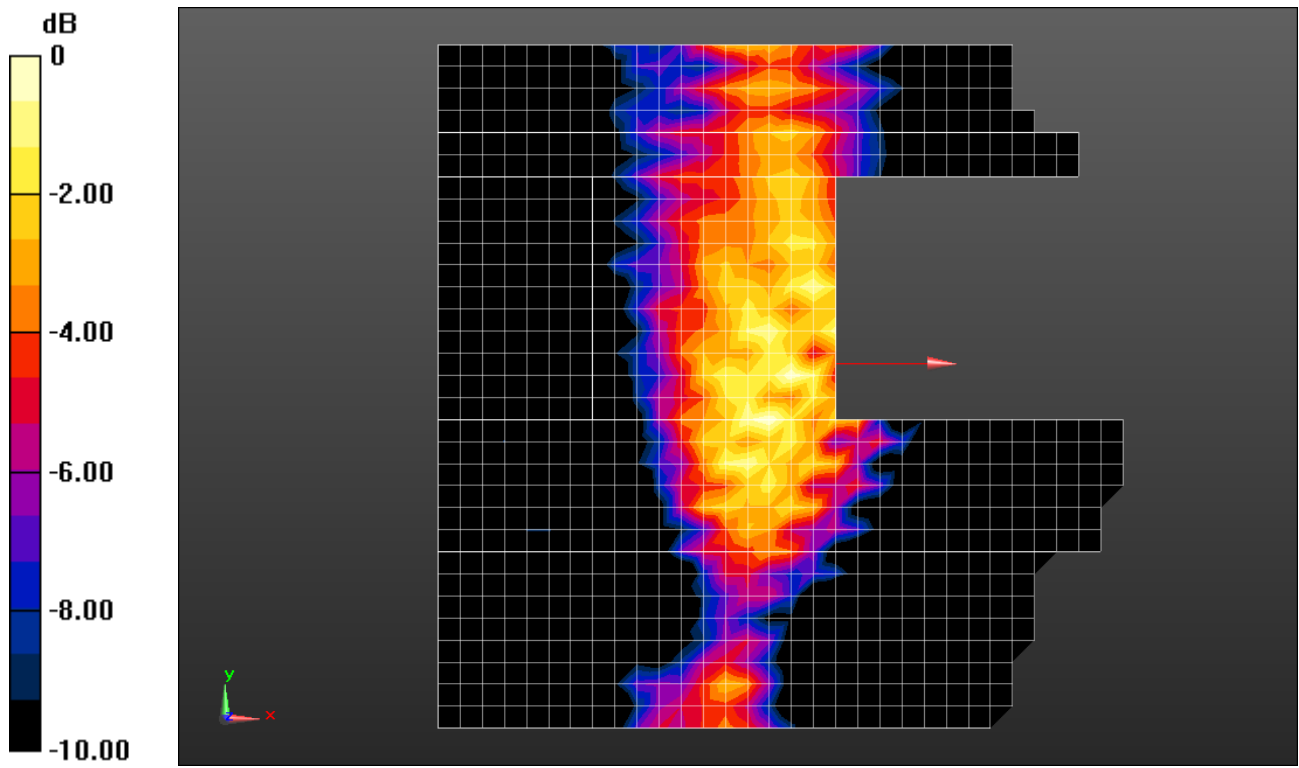
Measurement grid: dx=30mm, dy=30mm, dz=1mm [0.2 cm to Phantom](#)

Maximum value of Total (measured) = 86.17 V/m

#### **E Field w\_ Obstruction/2450MHz CW \_1m distance/86.5cm height/5cm Transmitter Horizontal 20cm to Client/ Offset 22.5cm/Edge 6 (34x5x1):**

Measurement grid: dx=30mm, dy=30mm, dz=1mm [1.5 cm to Client](#)

Maximum value of Total (measured) = 86.88 V/m



0 dB = 112.3 V/m = 41.01 dBV/m

## 10.5.2.2. Field Strength, Transverse Orientation (1m)

### 10.5.2.2.1. 15cm offset

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
11:35:40 AM

Date/Time: 12/19/2018

### 2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

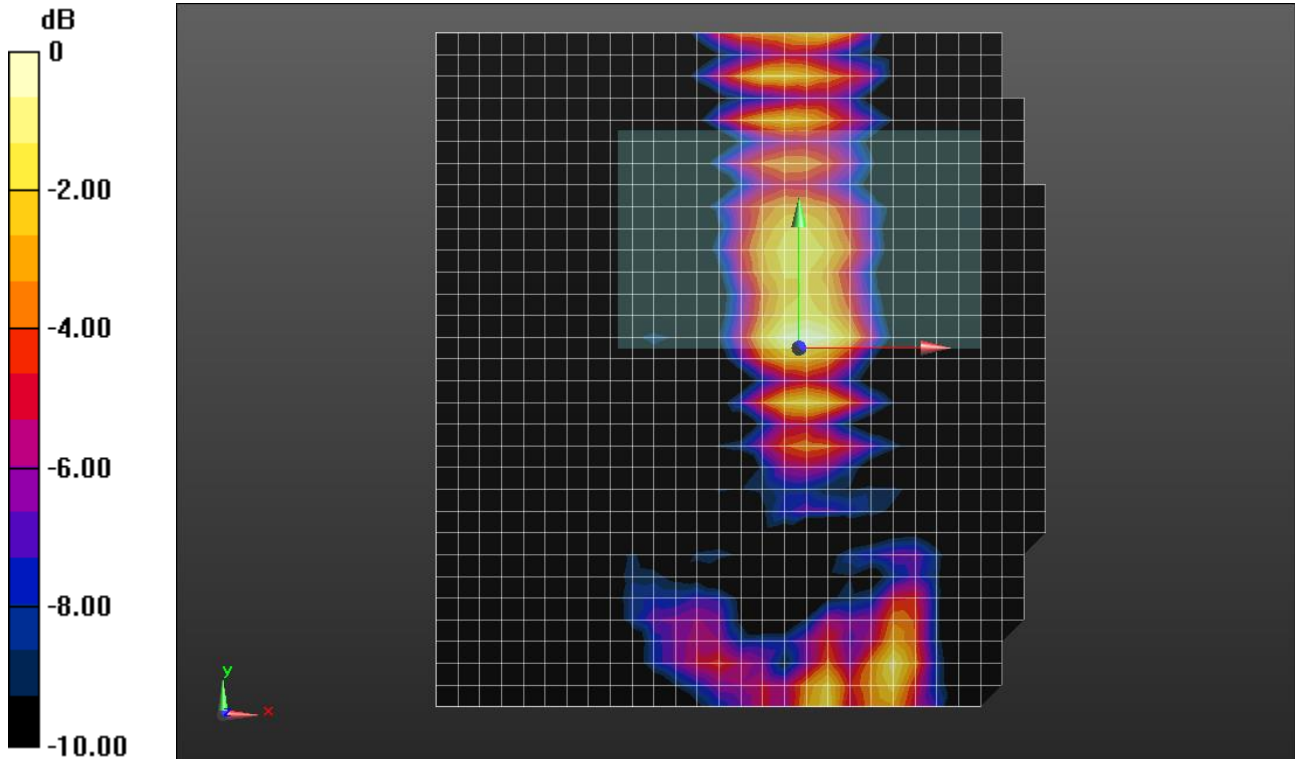
DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field w\_ Obstruction/2450MHz CW \_1m distance/86.5cm height/5cm Transmitter 20cm to Client/ Vertical Plane Offset 15cm/Full (34x32x1):

Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 59.83 V/m



0 dB = 59.83 V/m = 35.54 dBV/m

Closest point from tip of probe to Phantom 0.5cm

### 10.5.2.2.2. 22.5cm offset

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
12:39:22 PM

Date/Time: 12/19/2018

### 2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

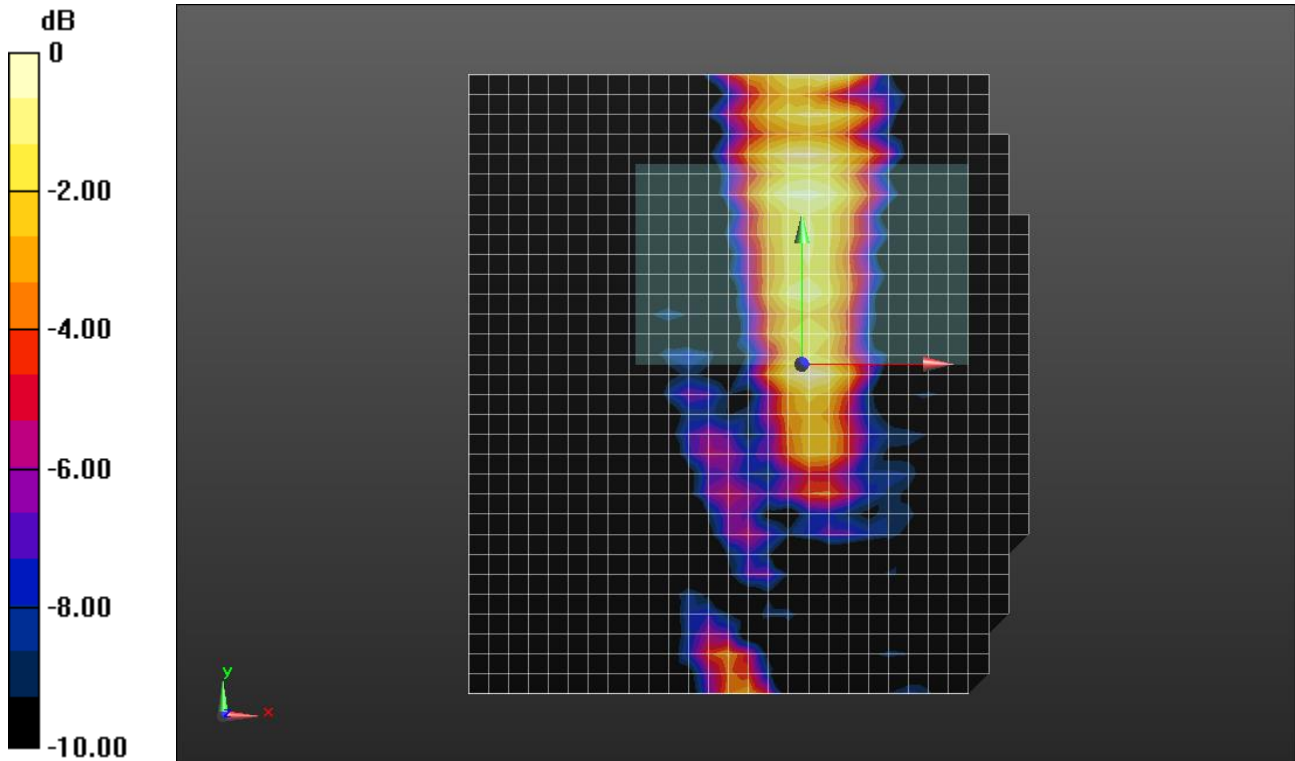
DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field w\_ Obstruction/2450MHz CW \_1m distance/86.5cm height/5cm Transmitter 20cm to Client/ Vertical Plane Offset 22.5cm/Full (34x32x1):

Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 94.75 V/m



0 dB = 94.75 V/m = 39.53 dBV/m



### 10.5.2.3. Field Strength, Longitudinal Orientation, Horizontal Plane (1m), 22.5cm offset

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
AM

Date/Time: 1/16/2019 10:05:59

#### 2450MHz CW

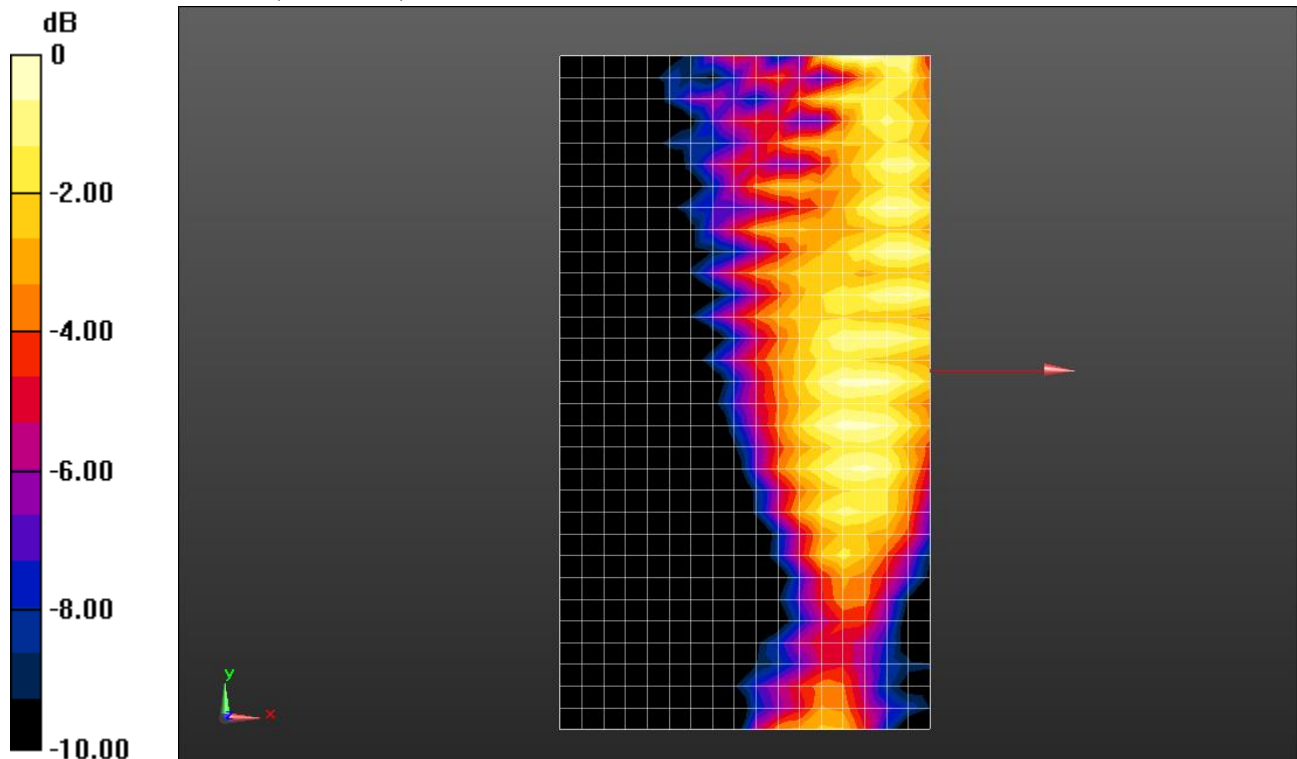
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1m distance/84cm height/5cm Transmitter 5cm to Client/22.5cm Offset/Longitudinal/Full (18x32x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 88.00 V/m



0 dB = 88.00 V/m = 38.89 dBV/m

Right Edge of Measurement Field is 4.5cm to Phantom

Top Edge of Measurement is 1cm to Client

Bottom Edge is 5cm to Transmitter

#### 10.5.2.4. Field Strength, Longitudinal Orientation, Vertical Plane (1m), 22.5cm offset

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
PM

Date/Time: 1/16/2019 1:43:59

### 2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

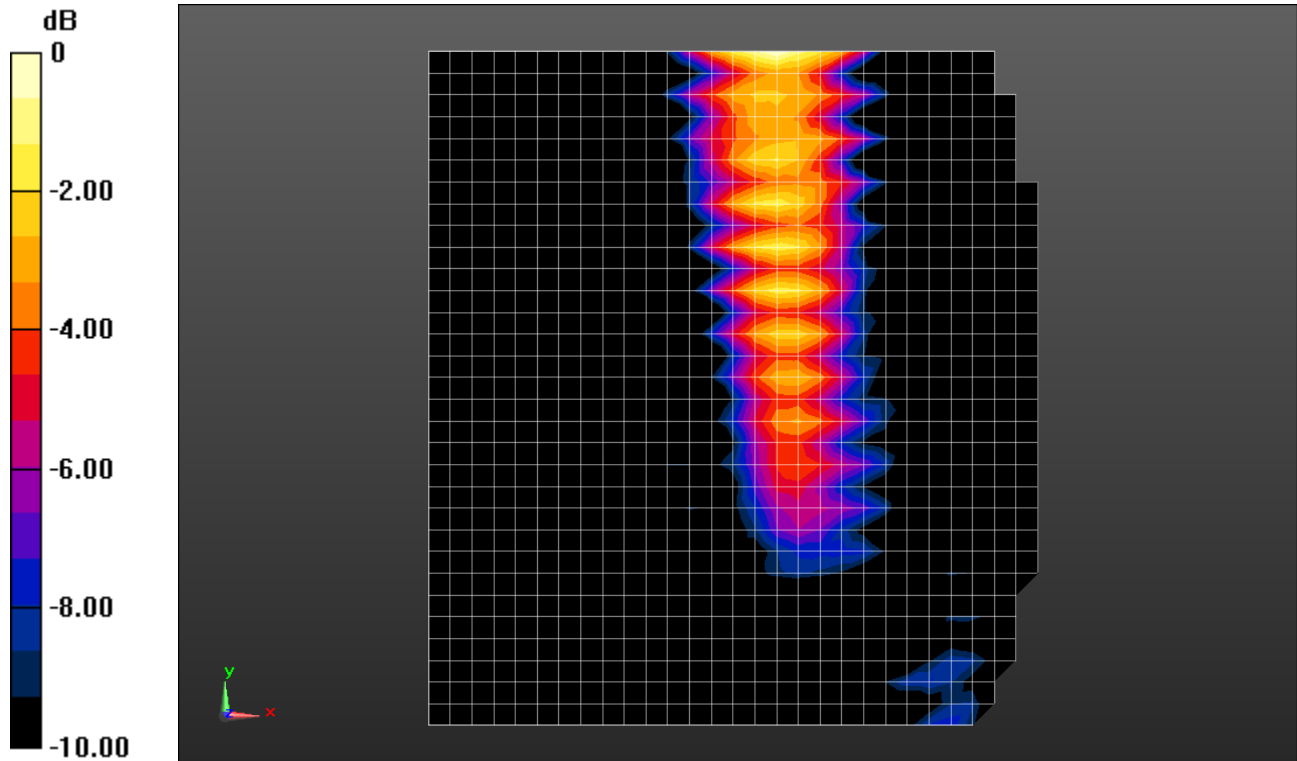
- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field w\_ Obstruction/2450MHz CW \_1 m distance/84cm height/15cm

**Transmitter Vertical/ Offset 22.5cm/Longitudinal (34x32x1):** Measurement grid:

dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 99.57 V/m



0 dB = 99.57 V/m = 39.96 dBV/m

### 10.5.3. Obstructed Case with WPT Source/Client distance of 75cm

#### 10.5.3.1. Field Strength, Vertical Orientation (75cm), 15cm offset

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
AM

Date/Time: 1/17/2019 9:55:37

#### 2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

#### E Field w\_ Obstruction/2450MHz CW \_0.75m distance/84cm height/25cm

**Transmitter 20cm to Client/ Offset 15cm/Edge 1 (34x5x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 89.25 V/m

#### E Field w\_ Obstruction/2450MHz CW \_0.75m distance/84cm height/25cm

**Transmitter 20cm to Client/ Offset 15cm/Edge 2 (34x3x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 97.41 V/m [2cm to Phantom](#)

#### E Field w\_ Obstruction/2450MHz CW \_0.75m distance/84cm height/25cm

**Transmitter 20cm to Client/ Offset 15cm/Edge 3 (8x13x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 50.35 V/m

#### E Field w\_ Obstruction/2450MHz CW \_0.75m distance/84cm height/25cm

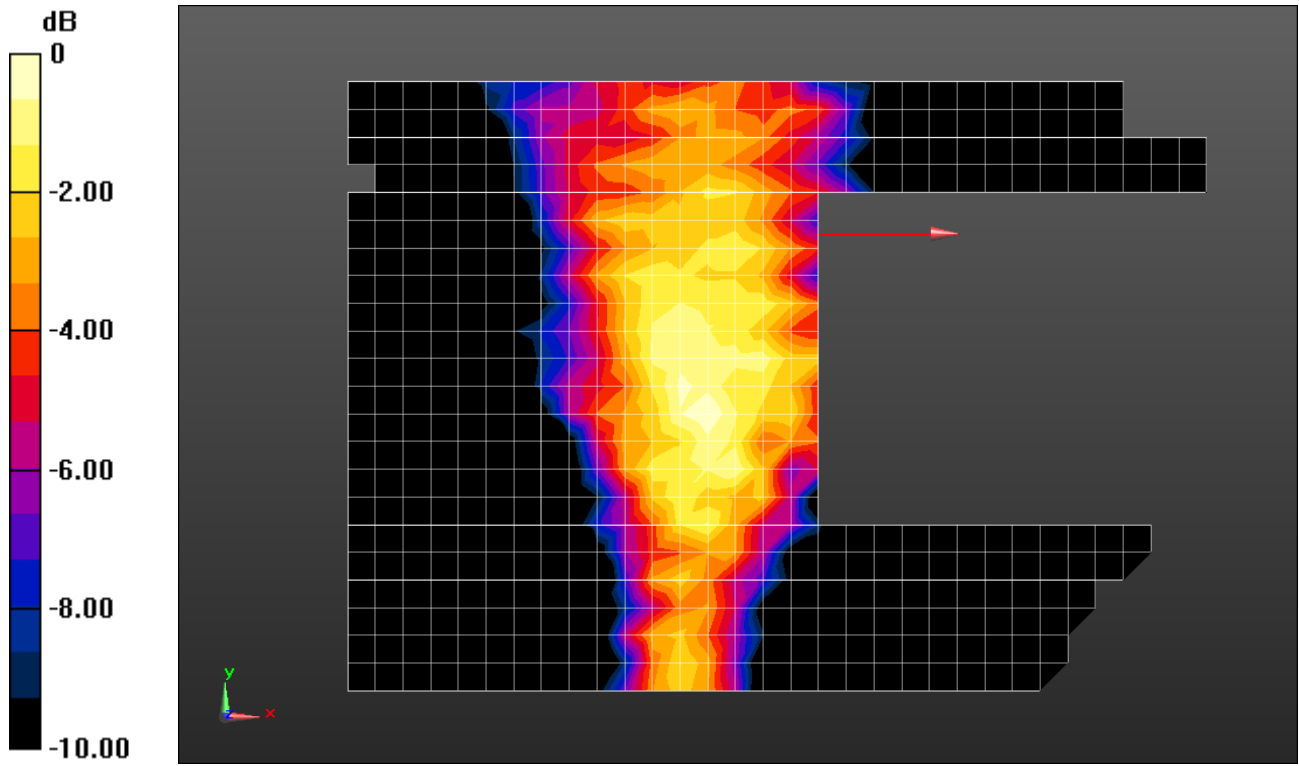
**Transmitter 20cm to Client/ Offset 15cm/Edge 4 (11x13x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 111.9 V/m [0.1cm to Phantom](#)

#### E Field w\_ Obstruction/2450MHz CW \_0.75m distance/84cm height/25cm

**Transmitter 20cm to Client/ Offset 15cm/Edge 5 (34x3x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 91.75 V/m [0.5cm to Phantom](#)

#### E Field w\_ Obstruction/2450MHz CW \_0.75m distance/84cm height/25cm

**Transmitter 20cm to Client/ Offset 15cm/Edge 6 (34x3x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 83.06 V/m [3.5cm to client](#)



$$0 \text{ dB} = 111.9 \text{ V/m} = 40.98 \text{ dBV/m}$$

### 10.5.3.2. Field Strength, Vertical Orientation (75cm), 22.5cm offset

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
PM

Date/Time: 1/14/2019 4:12:55

#### 2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0 \text{ S/m}$ ,  $\epsilon_r = 1$ ;  $\rho = 0 \text{ kg/m}^3$

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field w\_ Obstruction/2450MHz CW \_0.75m distance/84cm height/25cm Transmitter 20cm to Client/ Offset 22.5cm/Edge 1 (34x5x1):** Measurement grid:  
dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 105.3 V/m

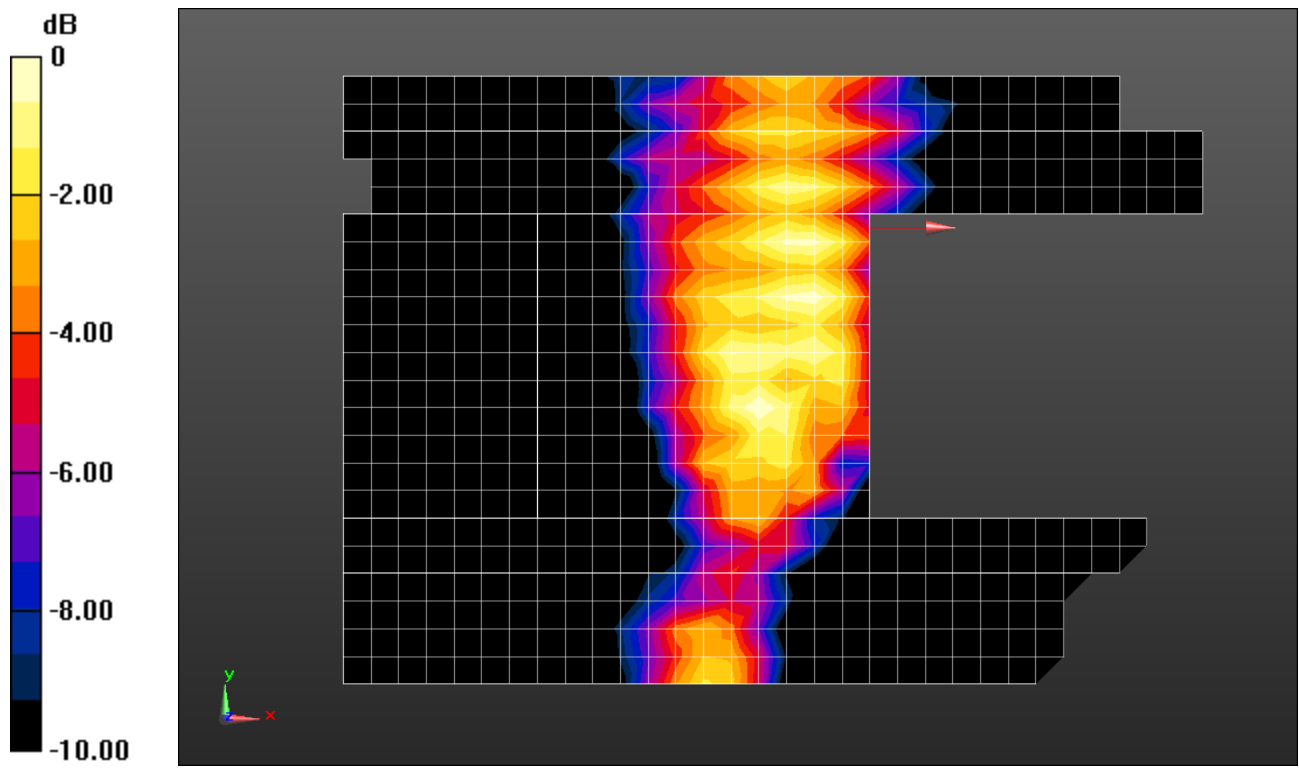
**E Field w\_ Obstruction/2450MHz CW \_0.75m distance/84cm height/25cm Transmitter 20cm to Client/ Offset 22.5cm/Edge 2 (34x3x1):** Measurement grid:  
dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 97.22 V/m [1.5 cm to phantom](#)

**E Field w\_ Obstruction/2450MHz CW \_0.75m distance/84cm height/25cm Transmitter 20cm to Client/ Offset 22.5cm/Edge 3 (8x12x1):** Measurement grid:  
dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 41.74 V/m

**E Field w\_ Obstruction/2450MHz CW \_0.75m distance/84cm height/25cm Transmitter 20cm to Client/ Offset 22.5cm/Edge 4 (13x12x1):** Measurement grid:  
dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 130.2 V/m [1.5 cm to phantom](#)

**E Field w\_ Obstruction/2450MHz CW \_0.75m distance/84cm height/25cm Transmitter 20cm to Client/ Offset 22.5cm/Edge 5 (34x4x1):** Measurement grid:  
dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 118.6 V/m [1.5 cm to phantom](#)

**E Field w\_ Obstruction/2450MHz CW \_0.75m distance/84cm height/25cm Transmitter 20cm to Client/ Offset 22.5cm/Edge 6 (34x3x1):** Measurement grid:  
dx=30mm, dy=30mm, dz=1mm  
Maximum value of Total (measured) = 103.5 V/m [3.5 cm to client](#)



0 dB = 130.2 V/m = 42.29 dBV/m

### 10.5.3.3. Field Strength, Transverse Orientation (75cm)

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
PM

Date/Time: 1/16/2019 3:31:47

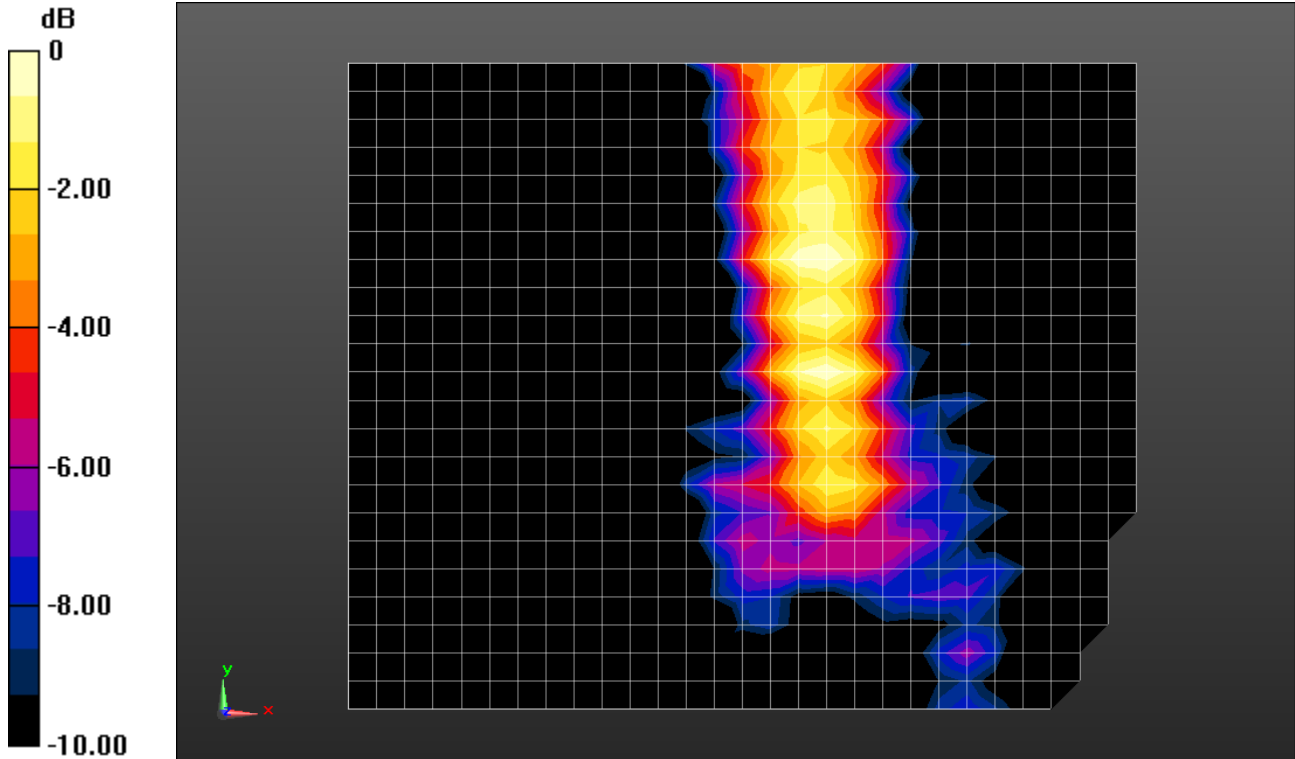
#### 2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field w\_ Obstruction/2450MHz CW \_0.75m distance/84cm height/25cm  
Transmitter Transverse / Offset 22.5cm/Full (34x24x1):** Measurement grid: dx=30mm,  
dy=30mm, dz=1mm  
Maximum value of Total (measured) = 127.5 V/m



0 dB = 127.5 V/m = 42.11 dBV/m

## 10.5.4. Obstructed Case with WPT Source/Client distance of 50cm

### 10.5.4.1. Field Strength, Vertical Orientation (50cm), 22.5cm offset

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
AM

Date/Time: 1/15/2019 10:38:52

#### 2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

#### **E Field w\_ Obstruction/2450MHz CW \_0.5m distance/84cm height/20cm Transmitter 0cm to Client/ Offset 22.5cm/Edge 1 (34x3x1):** Measurement grid:

dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 95.15 V/m

#### **E Field w\_ Obstruction/2450MHz CW \_0.5m distance/84cm height/20cm Transmitter 0cm to Client/ Offset 22.5cm/Edge 2 (34x3x1):** Measurement grid:

dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 106.0 V/m [3 cm to phantom](#)

#### **E Field w\_ Obstruction/2450MHz CW \_0.5m distance/84cm height/20cm Transmitter 0cm to Client/ Offset 22.5cm/Edge 3 (8x11x1):** Measurement grid:

dx=30mm, dy=30mm, dz=1mm

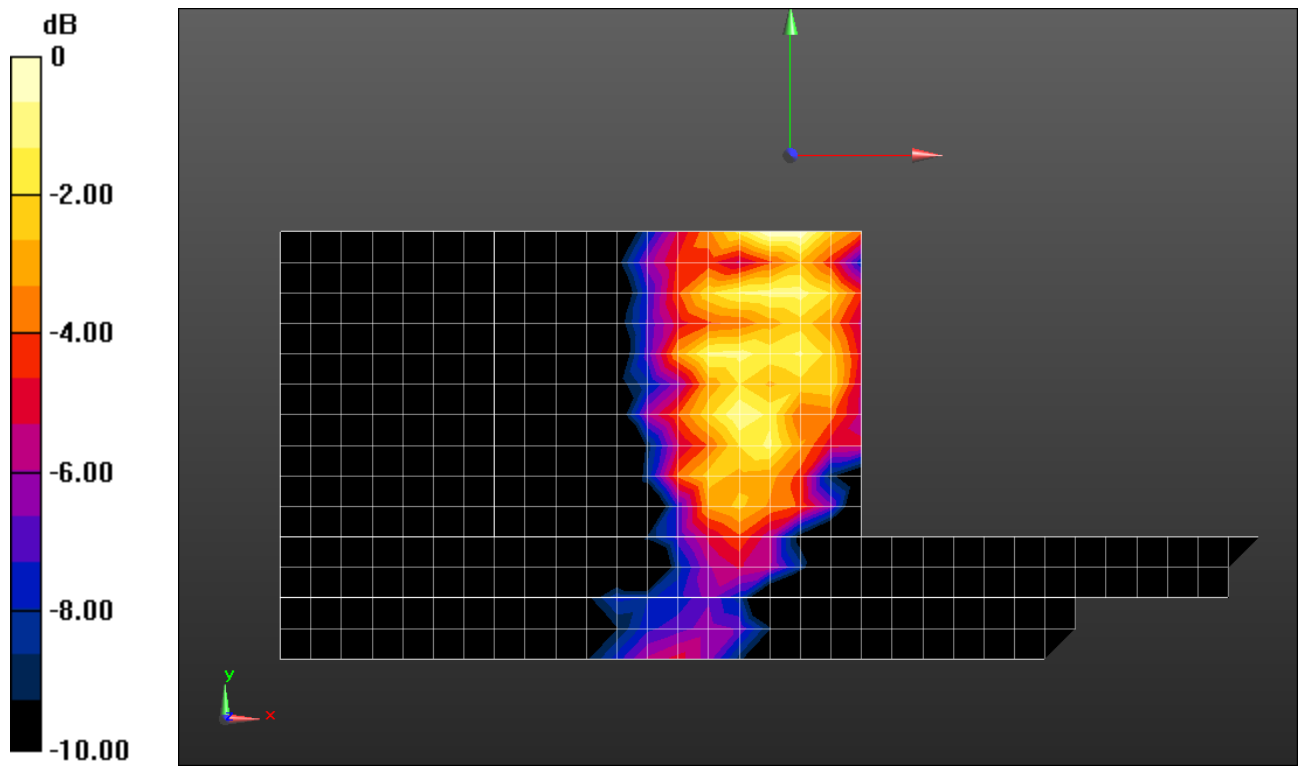
Maximum value of Total (measured) = 41.64 V/m

#### **E Field w\_ Obstruction/2450MHz CW \_0.5m distance/84cm height/20cm Transmitter 0cm to Client/ Offset 22.5cm/Edge 4 (13x11x1):** Measurement grid:

dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 169.6 V/m [0.5 cm to phantom](#) / [3 cm to client](#)





0 dB = 169.6 V/m = 44.59 dBV/m

### 10.5.4.2. Field Strength, Transverse Orientation (50cm), 22.5cm offset

Test Laboratory: UL Verification Services Inc. SAR Lab 8  
PM

Date/Time: 1/16/2019 2:45:29

#### 2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

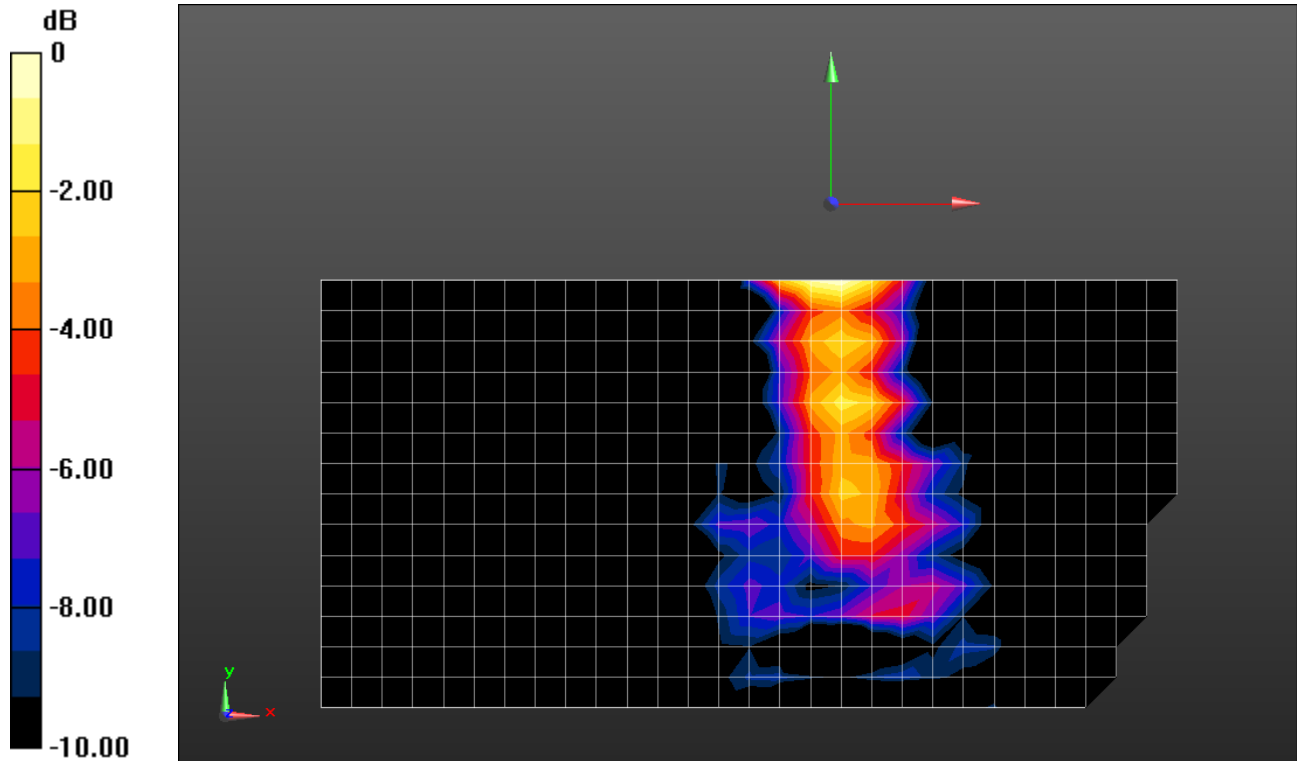
DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1); Calibrated: 7/13/2018;
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

#### E Field w\_ Obstruction/2450MHz CW \_0.5 m distance/84cm height/20cm

Transmitter Transverse/ Offset 22.5cm/Edge 1 (34x15x1): Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 175.2 V/m



0 dB = 175.2 V/m = 44.87 dBV/m

## 10.6. Phantom behind client

Test Laboratory: UL Verification Services Inc. SAR Lab 5  
PM

Date/Time: 3/13/2019 1:39:18

2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C

Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg

- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018

- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018

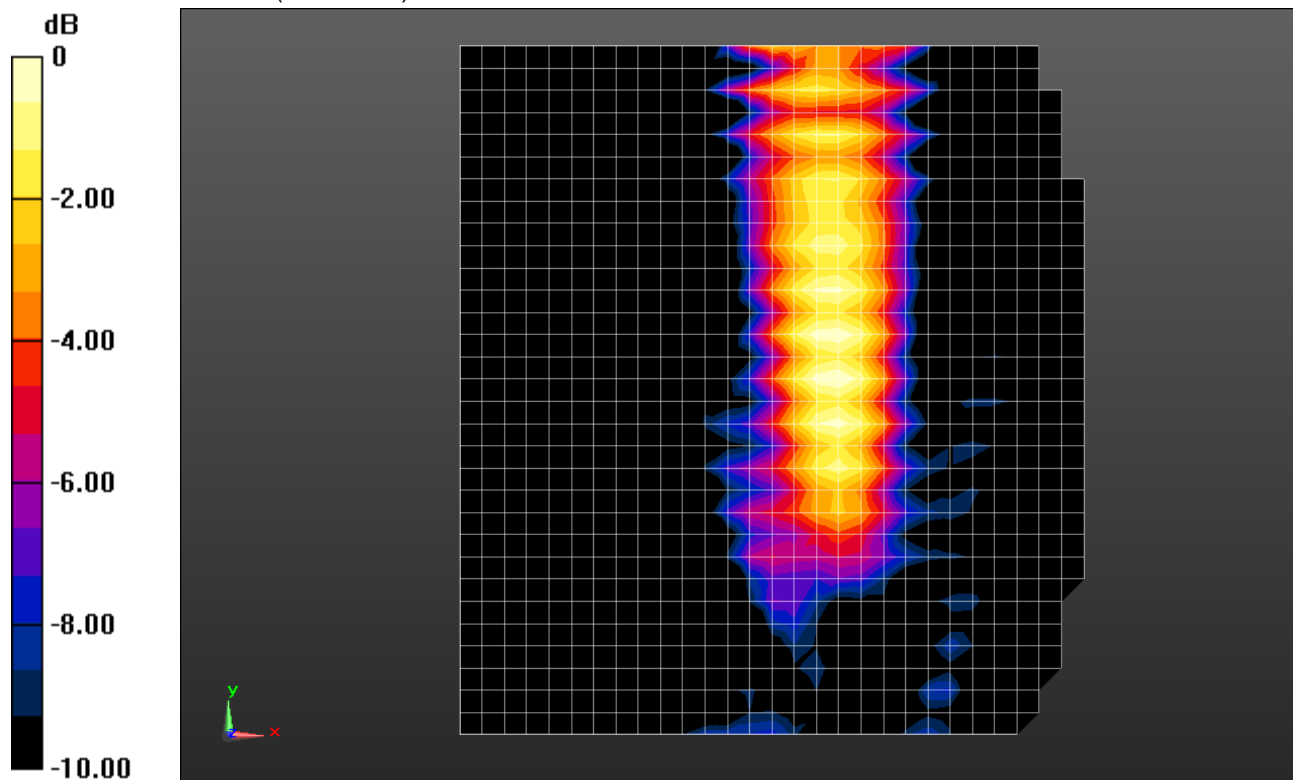
- Sensor-Surface: 0mm (Fix Surface)

- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1 m distance/84cm height/5cm Transmitter Horizontal/  
0.5 cm to Client/ Phantom Behind Client/Full (34x32x1):** Measurement grid: dx=30mm,

dy=30mm, dz=1mm

Maximum value of Total (measured) = 191.3 V/m



0 dB = 191.3 V/m = 45.63 dBV/m

2450MHz CW

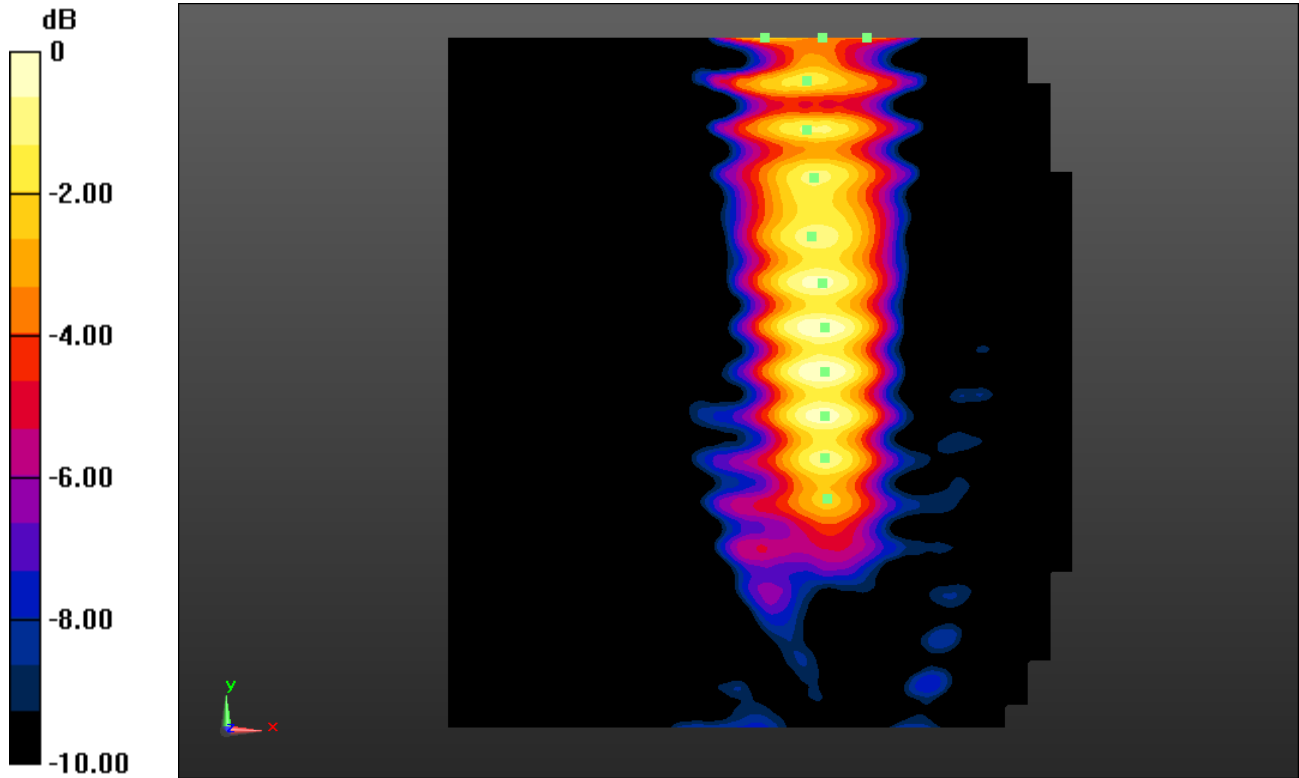
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1 m distance/84cm height/5cm Transmitter Horizontal/  
0.5 cm to Client/ Phantom Behind Client/Full (331x311x1):** Interpolated grid: dx=3.000  
mm, dy=3.000 mm, dz=1.000 mm

Maximum value of Total (interpolated) = 191.7 V/m



0 dB = 191.7 V/m = 45.65 dBV/m

## 10.7. Double Phantom

### 10.7.1. Validation of manual testing

Test Laboratory: UL Verification Services Inc. SAR Lab 5  
AM

Date/Time: 3/12/2019 10:27:09

2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

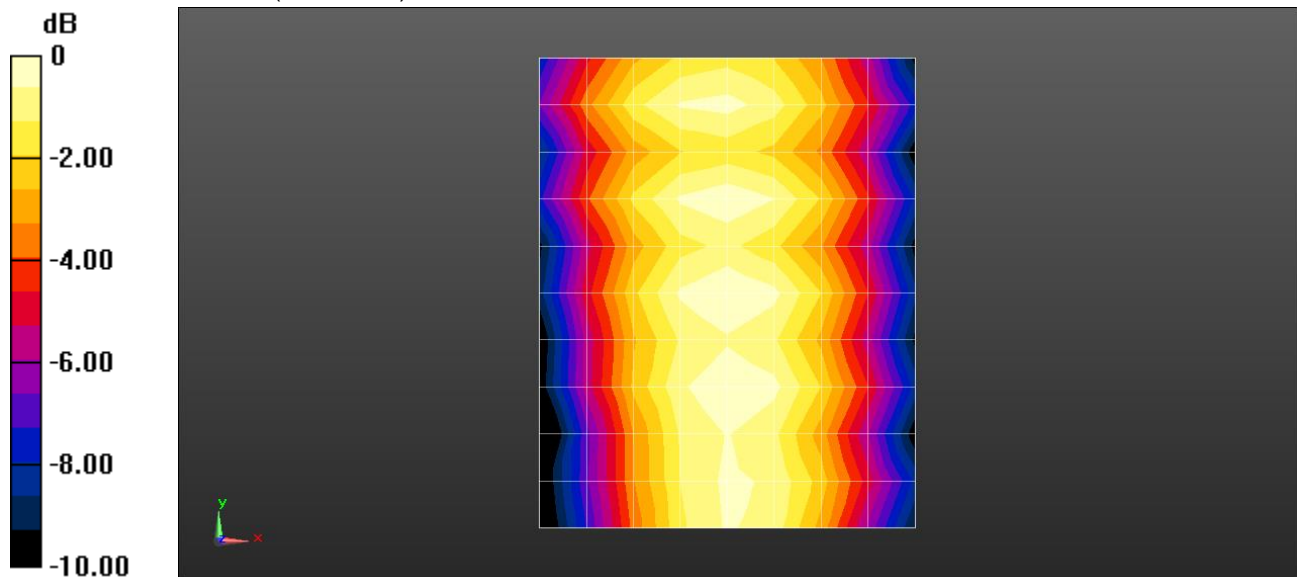
DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

### E Field/2450MHz CW \_1m distance\_ Manual vs Automated Singlepoint/Full

(9x11x1): Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 184.5 V/m



0 dB = 184.5 V/m = 45.32 dBV/m

## Plot from Auto vs Man

2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

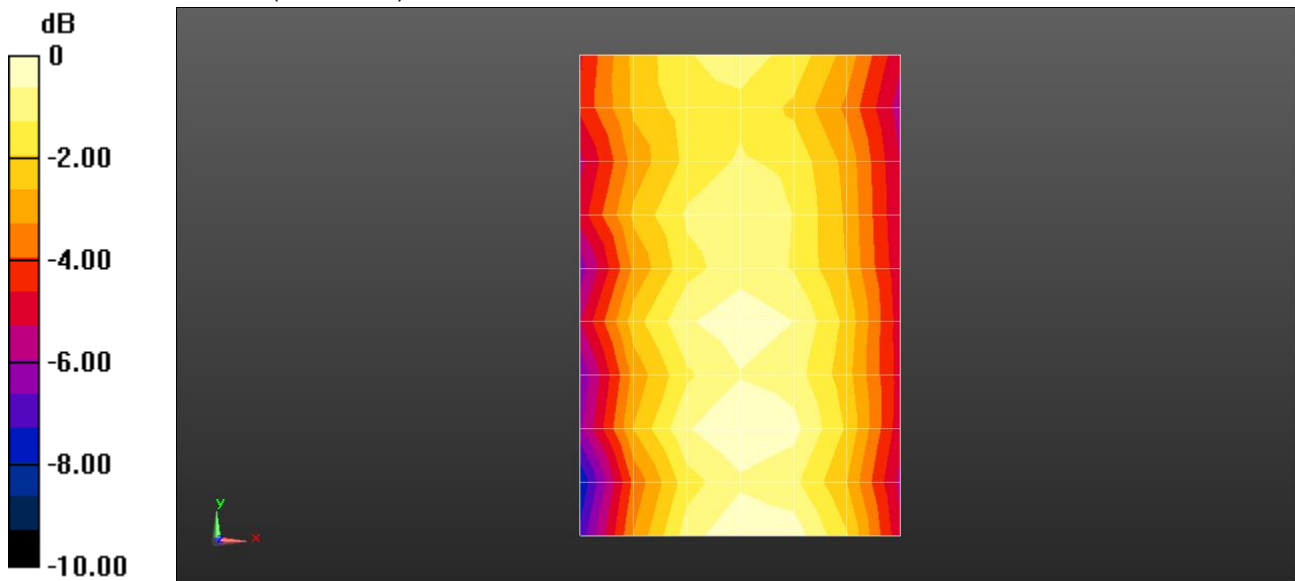
DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1m distance\_ Manual vs Automated Singlepoint/Full 2**

**(7x10x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 156.8 V/m



0 dB = 156.8 V/m = 43.91 dBV/m

**Plot from Auto vs Man (2)**

2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

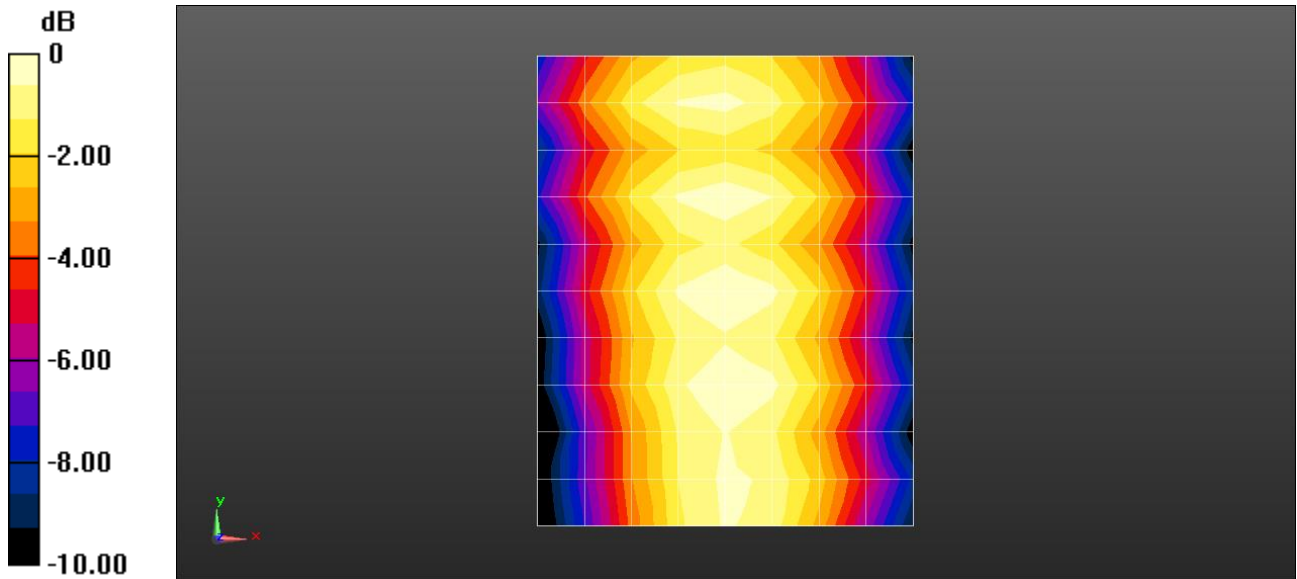
DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1m distance\_ Manual vs Automated Singlepoint/Full**

**(9x11x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 184.5 V/m



0 dB = 184.5 V/m = 45.32 dBV/m

**Plot from Auto vs Man**

2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $\sigma = 0$  S/m,  $\epsilon_r = 1$ ;  $\rho = 0$  kg/m<sup>3</sup>

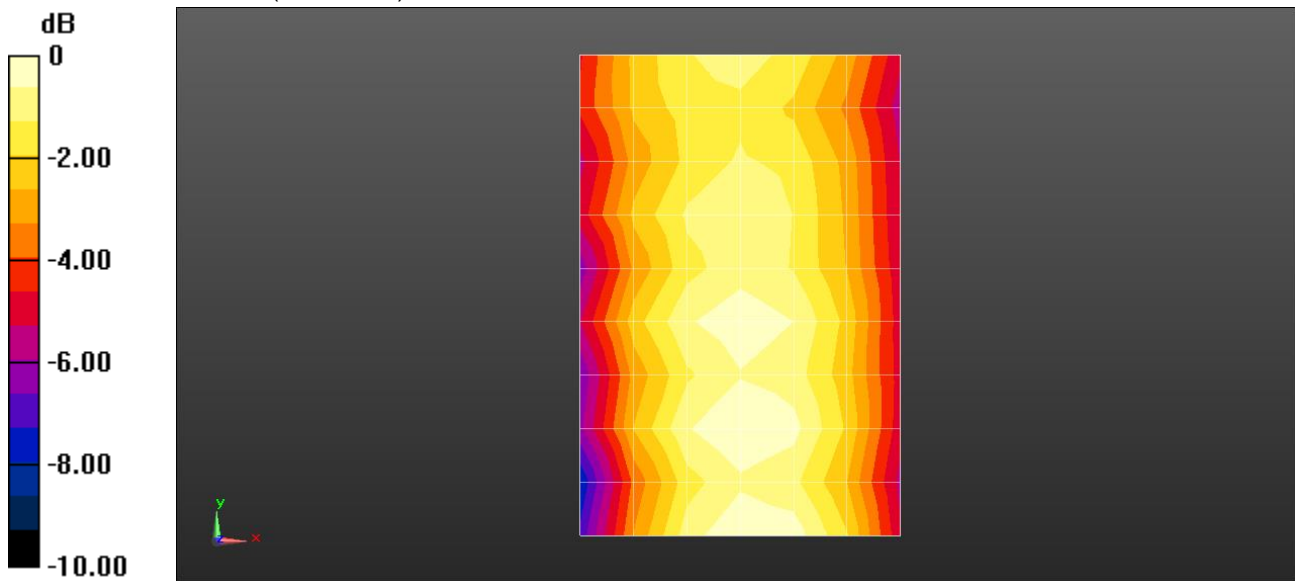
DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EF3DV3 - SN4028; ConvF(1, 1, 1) @ 2450 MHz; Calibrated: 7/13/2018
- Sensor-Surface: 0mm (Fix Surface)
- Phantom: Freespace RF; ;

**E Field/2450MHz CW \_1m distance\_ Manual vs Automated Singlepoint/Full 2**

**(7x10x1):** Measurement grid: dx=30mm, dy=30mm, dz=1mm

Maximum value of Total (measured) = 156.8 V/m



0 dB = 156.8 V/m = 43.91 dBV/m

**Plot from Auto vs Man (2)**



# 11. CONDUCTING THE 1G-AVERAGE SAR AND WHOLE-BODY AVERAGE SAR FOR THE WORST-CASE SCENARIO

## 11.1. Partial obstruction

Test Laboratory: UL Verification Services Inc. SAR Lab 8

Date/Time: 1/17/2019 5:56:30 PM

2450MHz CW

Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $f = 2450 \text{ MHz}$ ;  $\sigma = 1.993 \text{ S/m}$ ;  $\epsilon_r = 50.48$ ;  $\rho = 1000 \text{ kg/m}^3$

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EX3DV4 - SN7501; ConvF(7.83, 7.83, 7.83); Calibrated: 5/4/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Phantom: Childish Phantom; ;

### SAR/2450MHz CW \_0.5m distance/50cm to Client/ Offset 22.5cm/Area (22x83x1):

Measurement grid:  $dx=12\text{mm}$ ,  $dy=12\text{mm}$

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

### SAR/2450MHz CW \_0.5m distance/50cm to Client/ Offset 22.5cm/Zoom Scan

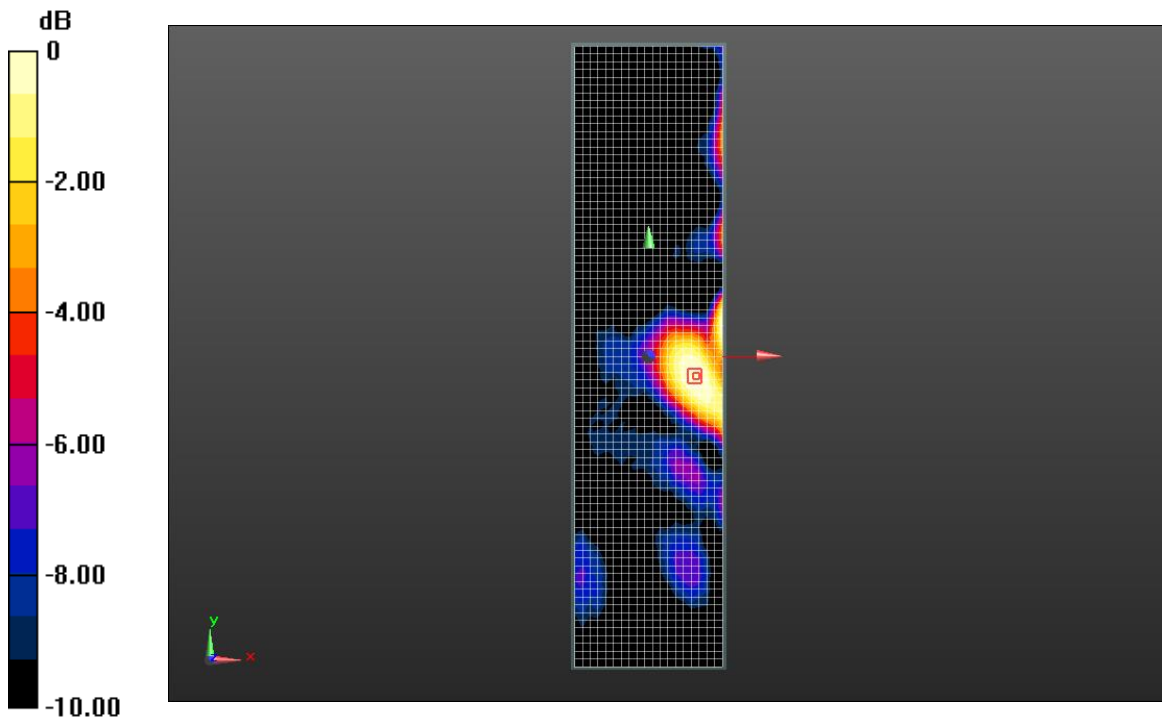
(7x7x7)/Cube 0: Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 10.33 V/m; Power Drift = -0.17 dB

Peak SAR (extrapolated) = 0.274 W/kg

**SAR(1 g) = 0.153 W/kg; SAR(10 g) = 0.091 W/kg**

Maximum value of SAR (measured) = 0.227 W/kg



0 dB = 0.227 W/kg = -6.44 dBW/kg

2450MHz CW

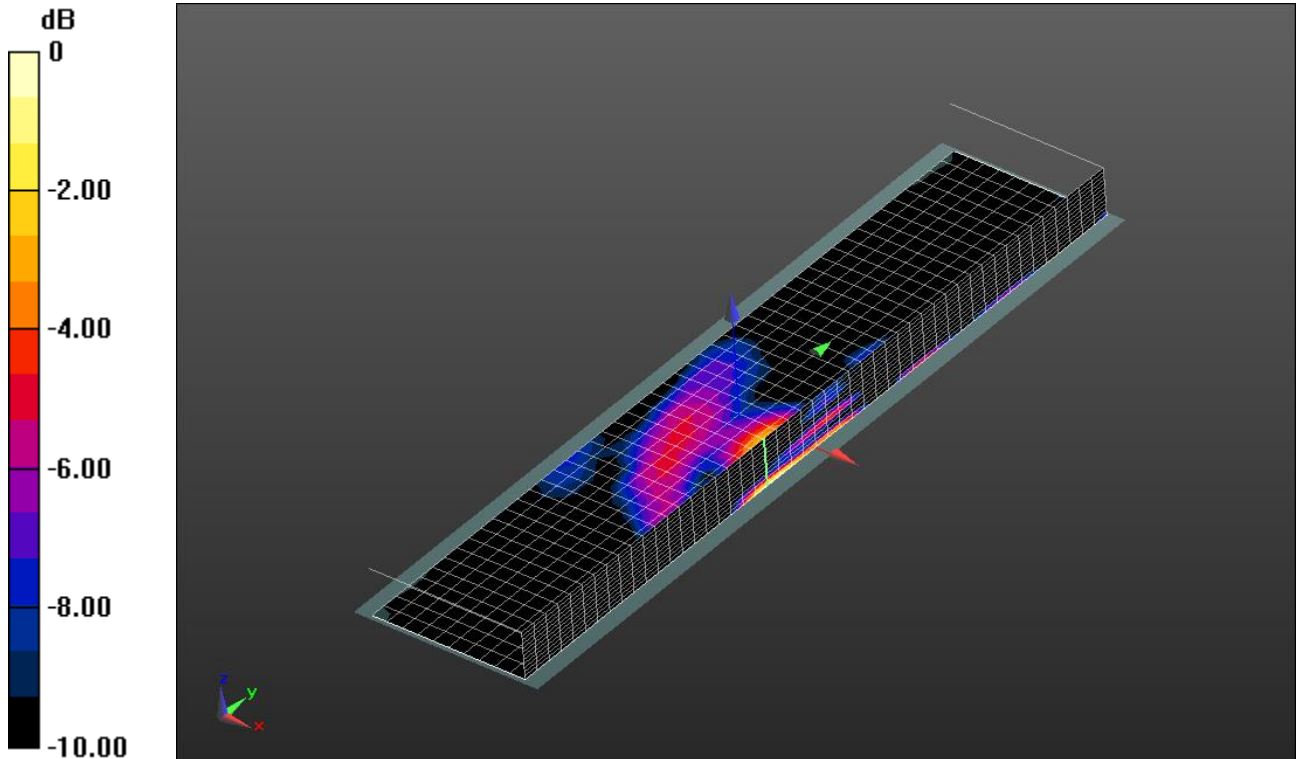
Frequency: 2450 MHz; Duty Cycle: 1:1; Room Ambient Temperature: 24.0°C; Liquid Temperature: 23.0°C  
Medium parameters used:  $f = 2450 \text{ MHz}$ ;  $\sigma = 1.993 \text{ S/m}$ ;  $\epsilon_r = 50.48$ ;  $\rho = 1000 \text{ kg/m}^3$

DASY5 Configuration:

- Area Scan Setting: Find Secondary Maximum Within: 2.0 dB and with a peak SAR value greater than 0.0012W/kg
- Electronics: DAE4 Sn1258; Calibrated: 5/22/2018
- Probe: EX3DV4 - SN7501; ConvF(7.83, 7.83, 7.83); Calibrated: 5/4/2018;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Phantom: Childish Phantom; ;

**Volume Scan/2450MHz CW \_0.5m distance/50cm to Client/ Offset 22.5cm/Area (13x49x1):** Measurement grid:  $dx=20\text{mm}$ ,  $dy=20\text{mm}$   
Maximum value of SAR (measured) = 0.170 W/kg

**Volume Scan/2450MHz CW \_0.5m distance/50cm to Client/ Offset 22.5cm/Volume Scan (13x49x13):** Measurement grid:  $dx=20\text{mm}$ ,  $dy=20\text{mm}$ ,  $dz=5\text{mm}$   
Reference Value = 8.755 V/m; Power Drift = -0.11 dB  
Peak SAR (extrapolated) = 0.221 W/kg  
**SAR(1 g) = 0.122 W/kg; SAR(10 g) = 0.072 W/kg**  
Total Absorbed Power = 0.0367 W  
Maximum value of SAR (measured) = 0.176 W/kg



0 dB = 0.176 W/kg = -7.54 dBW/kg