

ICOM-406Q-SAR.docx

APPENDIX 1

SAR Measurement Data

ULTRATECH GROUP OF LABS

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Apr 10, 2015

- *All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)*

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EXHIBIT 1. HEAD SAR MEASUREMENT SUMMARY

Antenna	Power (W)	CH	CH. Freq	HEAD SAR1g (W/Kg)
				BP-282
			(MHz)	1500mAh
FA-SC59V 156mm 156-163 MHz	4.68	1	156.05	1.24
	4.64	16	156.8	0.987
	4.61	28	157.4	1.02

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TEST LABORATORY: ULTRATECH GROUP OF LABS
File Name: BP-282 SC59V 156mm 156.05MHz.da52:0

DUT: ICOM VHF Transceiver; Type: IC-M25; Serial: 00000022
Program Name: Body Back with FA-SC59V

Communication System: UID 0, CW; Frequency: 156.05 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 156.05$ MHz; $\sigma = 0.736$ S/m; $\epsilon_r = 53.007$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3208; ConvF(7.43, 7.43, 7.43); Calibrated: 1/23/2015;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn874; Calibrated: 10/9/2014
- Phantom: ELI 4.0; Type: QD OVA 001 BB; Serial: 1057
- ; SEMCAD X Version 14.6.10 (7331)

Configuration_Head_IC-M25/Front to Face, P=5W, d=25mm/Zoom Scan (5x5x7)

(5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 45.50 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 1.82 W/kg

SAR(1 g) = 1.24 W/kg; SAR(10 g) = 0.924 W/kg (SAR corrected for target medium)

[Info: Interpolated medium parameters used for SAR evaluation.](#)

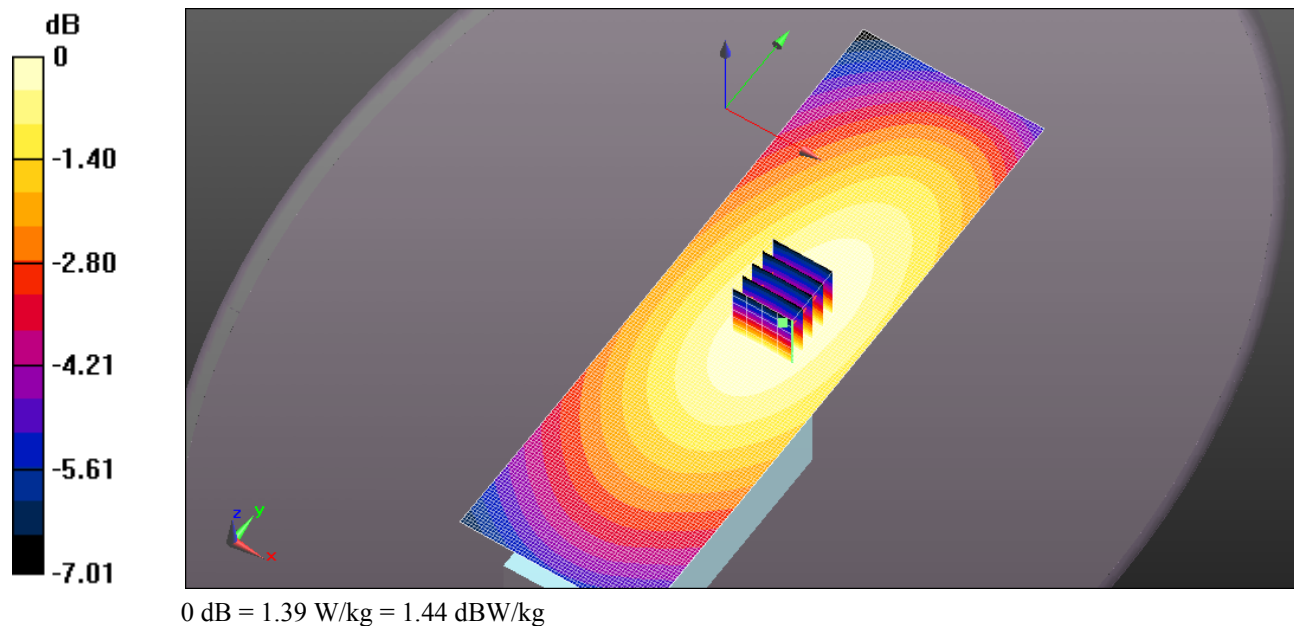
Maximum value of SAR (measured) = 1.39 W/kg

Configuration_Head_IC-M25/Front to Face, P=5W, d=25mm/Area Scan (61x201x1):

Interpolated grid: dx=1.500 mm, dy=1.500 mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 1.48 W/kg



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Test Laboratory: Ultratech Group of Labs
FILE NAME: BP-282 SC59V 156MM 157.4MHZ.DA52:0

DUT: ICOM VHF Transceiver; Type: IC-M25; Serial: 00000022
Program Name: Body Back with FA-SC59V

Communication System: UID 0, CW; Frequency: 157.4 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 158 \text{ MHz}$; $\sigma = 0.736 \text{ S/m}$; $\epsilon_r = 52.812$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3208; ConvF(7.43, 7.43, 7.43); Calibrated: 1/23/2015;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn874; Calibrated: 10/9/2014
- Phantom: ELI 4.0; Type: QD OVA 001 BB; Serial: 1057
- ; SEMCAD X Version 14.6.10 (7331)

Configuration_Head_IC-M25/Front to Face, P=5W, d=25mm/Zoom Scan (5x5x7)

(5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 45.16 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 1.47 W/kg

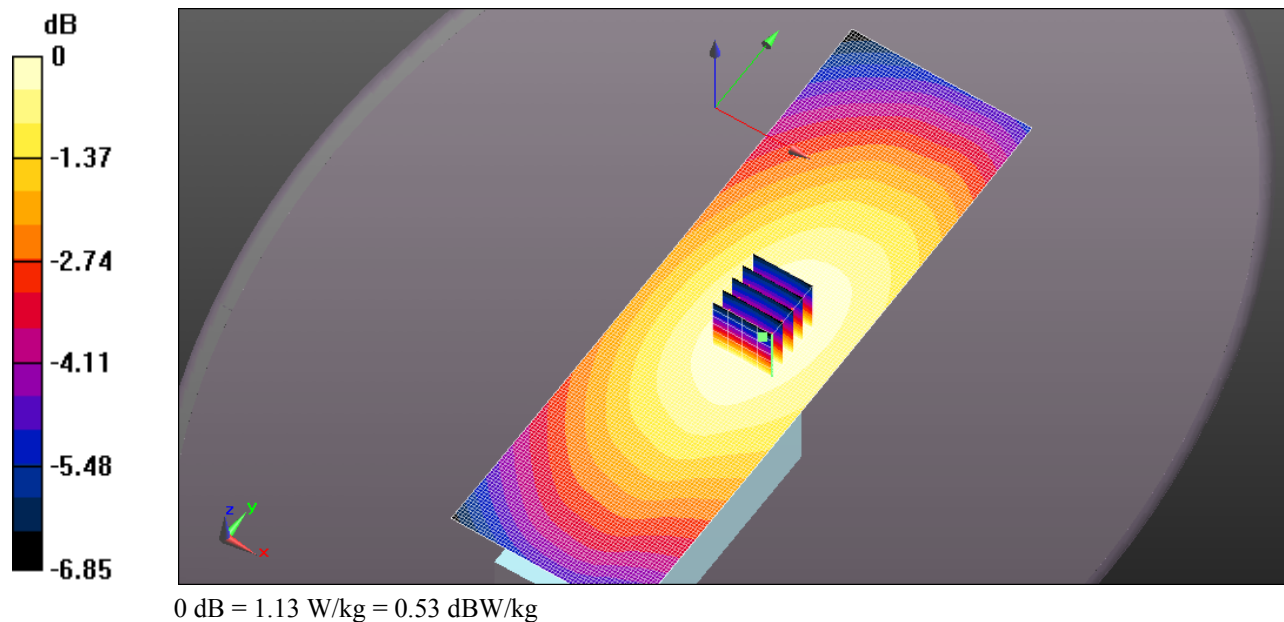
SAR(1 g) = 1.01 W/kg; SAR(10 g) = 0.759 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 1.13 W/kg

Configuration_Head_IC-M25/Front to Face, P=5W, d=25mm/Area Scan (61x201x1):

Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 1.23 W/kg



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Test Laboratory: Ultratech Group of Labs
FILE NAME: BP-282 SC59V 156MM 156.8MHZ .DA52:0

DUT: ICOM VHF Transceiver; Type: IC-M25; Serial: 00000022
Program Name: Body Back with FA-SC59V

Communication System: UID 0, CW; Frequency: 156.8 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 156.8$ MHz; $\sigma = 0.736$ S/m; $\epsilon_r = 52.932$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3208; ConvF(7.43, 7.43, 7.43); Calibrated: 1/23/2015;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn874; Calibrated: 10/9/2014
- Phantom: ELI 4.0; Type: QD OVA 001 BB; Serial: 1057
- ; SEMCAD X Version 14.6.10 (7331)

Configuration_Head_IC-M25/Front to Face, P=5W, d=25mm/Zoom Scan (5x5x7)

(5x5x7)/Cube 0: Measurement grid: $dx=7.5$ mm, $dy=7.5$ mm, $dz=5$ mm

Reference Value = 42.96 V/m; Power Drift = -1.34 dB

Peak SAR (extrapolated) = 1.42 W/kg

SAR(1 g) = 0.987 W/kg; SAR(10 g) = 0.750 W/kg (SAR corrected for target medium)

[Info: Interpolated medium parameters used for SAR evaluation.](#)

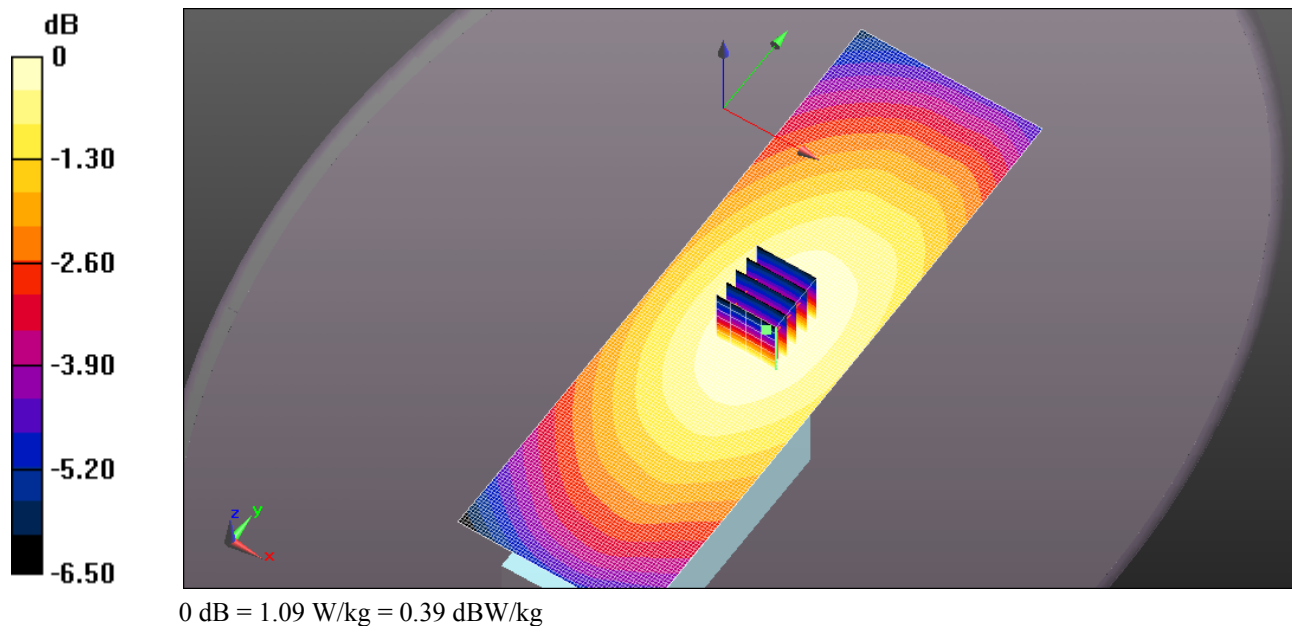
Maximum value of SAR (measured) = 1.09 W/kg

Configuration_Head_IC-M25/Front to Face, P=5W, d=25mm/Area Scan (61x201x1):

Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 1.17 W/kg



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Test Laboratory: Ultratech Group of Labs

FILE NAME: BP-282 SC59V 156MM 157.4MHZ A.DA52:0

DUT: ICOM VHF Transceiver; Type: IC-M25; Serial: 00000022

Program Name: Body Back with FA-SC59V

Communication System: UID 0, CW; Frequency: 157.4 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 158 \text{ MHz}$; $\sigma = 0.736 \text{ S/m}$; $\epsilon_r = 52.812$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3208; ConvF(7.43, 7.43, 7.43); Calibrated: 1/23/2015;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn874; Calibrated: 10/9/2014
- Phantom: ELI 4.0; Type: QD OVA 001 BB; Serial: 1057
- ; SEMCAD X Version 14.6.10 (7331)

Configuration_Head_IC-M25/Front to Face, P=5W, d=25mm/Zoom Scan (5x5x7)

(5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 43.69 V/m; Power Drift = -1.36 dB

Peak SAR (extrapolated) = 1.47 W/kg

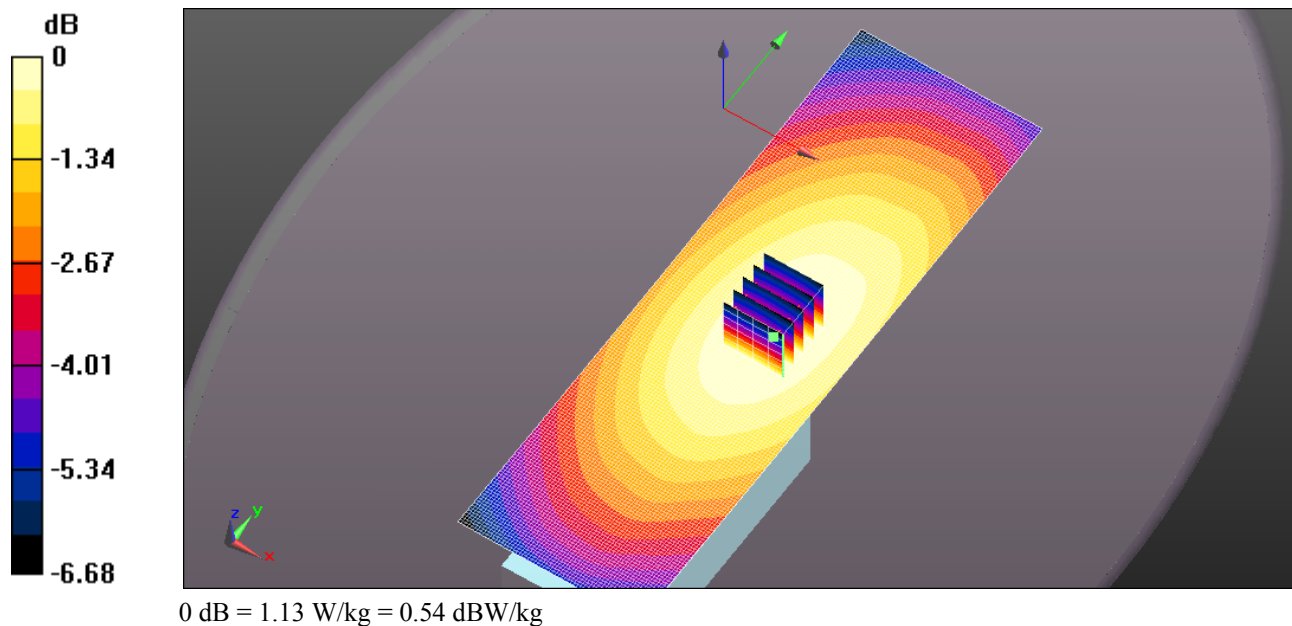
SAR(1 g) = 1.02 W/kg; SAR(10 g) = 0.770 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 1.13 W/kg

Configuration_Head_IC-M25/Front to Face, P=5W, d=25mm/Area Scan (61x201x1):

Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

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



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Test Laboratory: Ultratech Group of Labs

FILE NAME: BP-282 SC59V 156MM 157.425MHZ A.DA52:0

DUT: ICOM VHF Transceiver; Type: IC-M25; Serial: 00000022

Program Name: Body Back with FA-SC59V

Communication System: UID 0, CW; Frequency: 157.425 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 158 \text{ MHz}$; $\sigma = 0.736 \text{ S/m}$; $\epsilon_r = 52.812$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3208; ConvF(7.43, 7.43, 7.43); Calibrated: 1/23/2015;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn874; Calibrated: 10/9/2014
- Phantom: ELI 4.0; Type: QD OVA 001 BB; Serial: 1057
- ; SEMCAD X Version 14.6.10 (7331)

Configuration_Head_IC-M25/Front to Face, P=5W, d=25mm/Zoom Scan (5x5x7)

(5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 39.43 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 1.39 W/kg

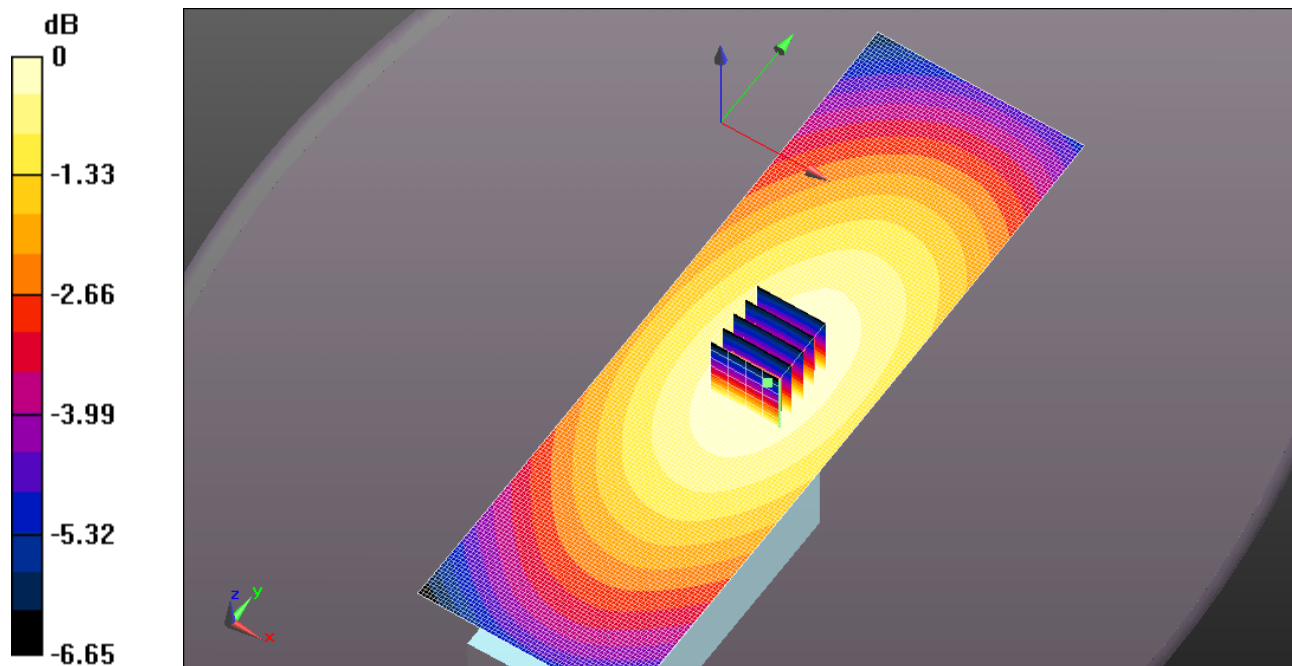
SAR(1 g) = 0.966 W/kg; SAR(10 g) = 0.728 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 1.08 W/kg

Configuration_Head_IC-M25/Front to Face, P=5W, d=25mm/Area Scan (61x201x1):

Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 1.14 W/kg



0 dB = 1.08 W/kg = 0.32 dBW/kg

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EXHIBIT 2. BODY SAR MEASUREMENT SUMMARY

Antenna	Power (W)	CH	CH. Freq	BODY SAR1g (W/Kg)	BODY SAR10g (W/Kg)
				BP-282	BP-282
			(MHz)	1500mAh	1500mAh
FA-SC59V 156mm 156-163 MHz	4.68	1	156.05	0.5	0.378
	4.64	16	156.8	0.426	0.351
	4.61	28	157.4	0.433	0.328

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Test Laboratory: Ultratech Group of Labs
FILE NAME: BP-282 SC59V 156MM 156.05MHZ.DA52:0

DUT: ICOM VHF Transceiver; Type: IC-M25; Serial: 00000022
Program Name: Body Back with FA-SC59V

Communication System: UID 0, CW; Frequency: 156.05 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 156.05 \text{ MHz}$; $\sigma = 0.766 \text{ S/m}$; $\epsilon_r = 61.889$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

DASY4 Configuration:

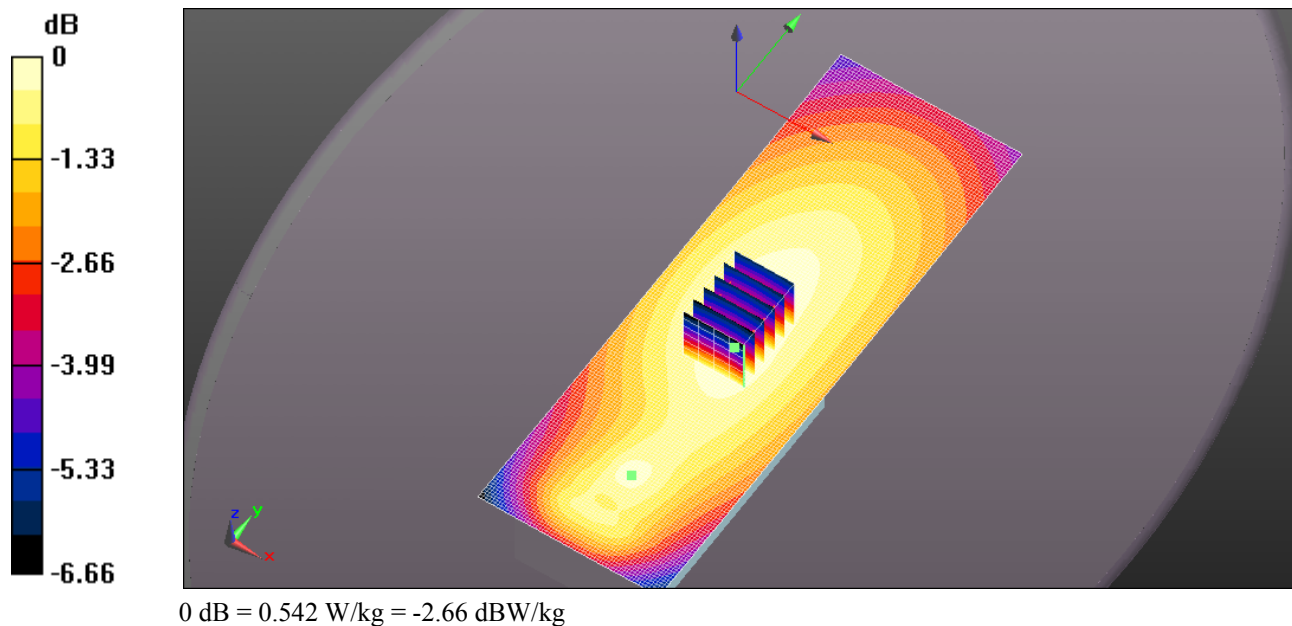
- Probe: ES3DV3 - SN3208; ConvF(6.93, 6.93, 6.93); Calibrated: 1/23/2015;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn874; Calibrated: 10/9/2014
- Phantom: ELI 4.0; Type: QD OVA 001 BB; Serial: 1057
- ; SEMCAD X Version 14.6.10 (7331)

Configuration_Body_IC-M25/Back to phantom, Belt Clip Touch, P=5W, d=0mm/Zoom Scan (5x5x7) (5x6x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$
Reference Value = 27.29 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.711 W/kg
SAR(1 g) = 0.500 W/kg; SAR(10 g) = 0.378 W/kg (SAR corrected for target medium)

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.542 W/kg

Configuration_Body_IC-M25/Back to phantom, Belt Clip Touch, P=5W, d=0mm/Area Scan (61x181x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.543 W/kg



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Test Laboratory: Ultratech Group of Labs
FILE NAME: BP-282 SC59V 156MM 157.4MHZ.DA52:0

DUT: ICOM VHF Transceiver; Type: IC-M25; Serial: 00000022
Program Name: Body Back with FA-SC59V

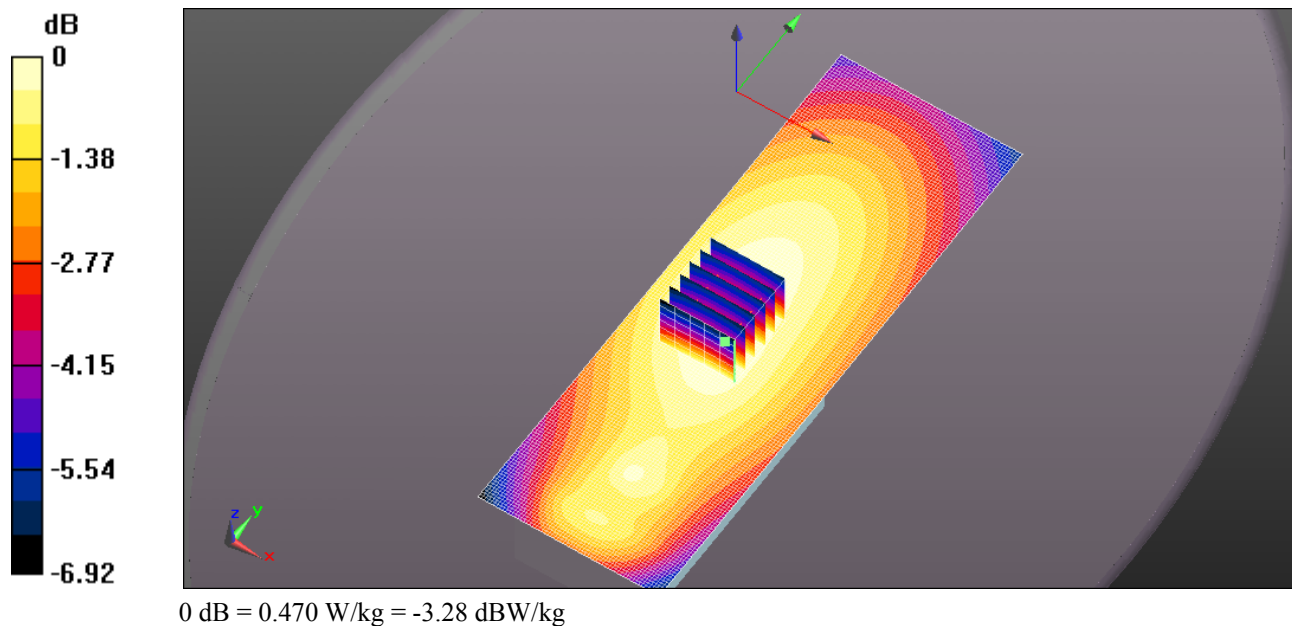
Communication System: UID 0, CW; Frequency: 157.4 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 158 \text{ MHz}$; $\sigma = 0.767 \text{ S/m}$; $\epsilon_r = 62.099$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3208; ConvF(6.93, 6.93, 6.93); Calibrated: 1/23/2015;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn874; Calibrated: 10/9/2014
- Phantom: ELI 4.0; Type: QD OVA 001 BB; Serial: 1057
- ; SEMCAD X Version 14.6.10 (7331)

Configuration_Body_IC-M25/Back to phantom, Belt Clip Touch, P=5W, d=0mm/Zoom Scan (5x5x7) (6x6x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$
Reference Value = 24.81 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.616 W/kg
SAR(1 g) = 0.433 W/kg; SAR(10 g) = 0.328 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 0.470 W/kg

Configuration_Body_IC-M25/Back to phantom, Belt Clip Touch, P=5W, d=0mm/Area Scan (61x181x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$
Maximum value of SAR (interpolated) = 0.469 W/kg



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Test Laboratory: Ultratech Group of Labs

FILE NAME: BP-282 SC59V 156MM 157.425MHZ.DA52:0

DUT: ICOM VHF Transceiver; Type: IC-M25; Serial: 00000022

Program Name: Body Back with FA-SC59V

Communication System: UID 0, CW; Frequency: 157.425 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 158 \text{ MHz}$; $\sigma = 0.767 \text{ S/m}$; $\epsilon_r = 62.099$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3208; ConvF(6.93, 6.93, 6.93); Calibrated: 1/23/2015;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn874; Calibrated: 10/9/2014
- Phantom: ELI 4.0; Type: QD OVA 001 BB; Serial: 1057
- ; SEMCAD X Version 14.6.10 (7331)

Configuration_Body_IC-M25/Back to phantom, Belt Clip Touch, P=5W, d=0mm/Zoom

Scan (5x5x7) (5x6x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 25.57 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.658 W/kg

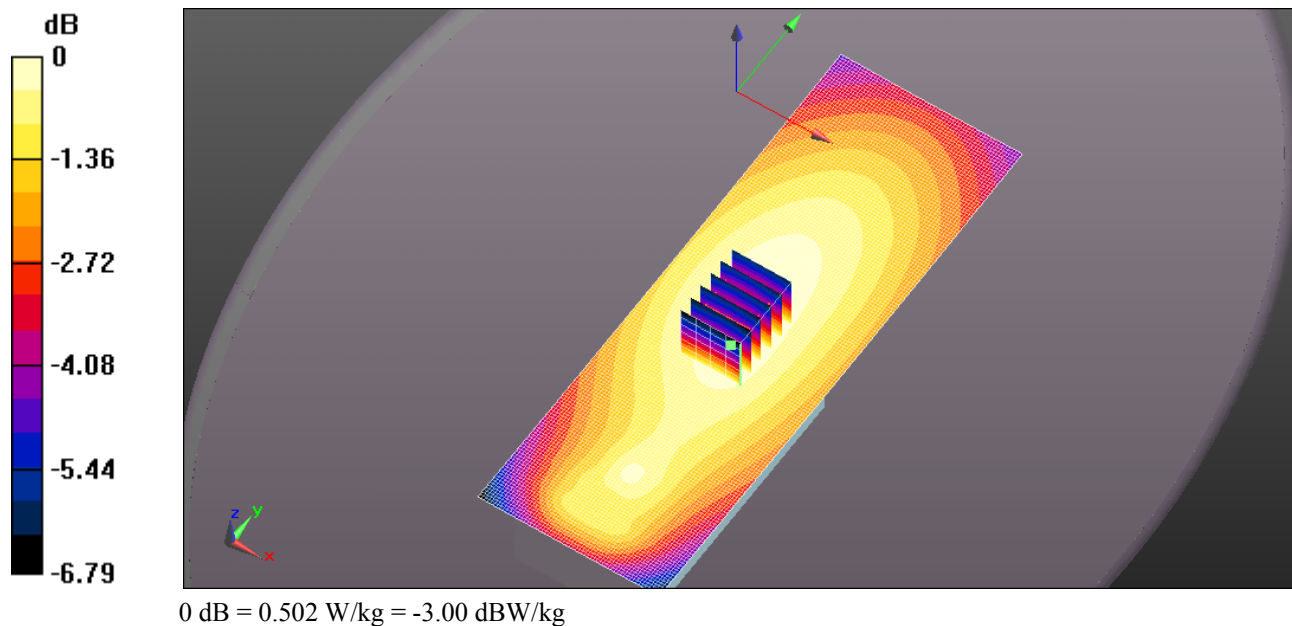
SAR(1 g) = 0.463 W/kg; SAR(10 g) = 0.351 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.502 W/kg

Configuration_Body_IC-M25/Back to phantom, Belt Clip Touch, P=5W, d=0mm/Area

Scan (61x181x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 0.492 W/kg



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