

Measurement Conditions

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

DASY Version	DASY52	V52.10.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	38.3 $\pm$ 6 %	1.85 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.4 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	52.6 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.21 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.6 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	53.0 $\pm$ 6 %	2.01 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	12.5 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	49.3 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.93 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	23.6 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	$51.7 \Omega + 2.1 j\Omega$
Return Loss	- 31.6 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	$49.4 \Omega + 2.5 j\Omega$
Return Loss	- 31.8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.157 ns
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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: 07.12.2023

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:715

Communication System: UID 0 - CW; Frequency: 2450 MHz

Medium parameters used: $f = 2450$ MHz; $\sigma = 1.85$ S/m; $\epsilon_r = 38.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.96, 7.96, 7.96) @ 2450 MHz; Calibrated: 03.11.2023
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 03.10.2023
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 116.1 V/m; Power Drift = 0.03 dB

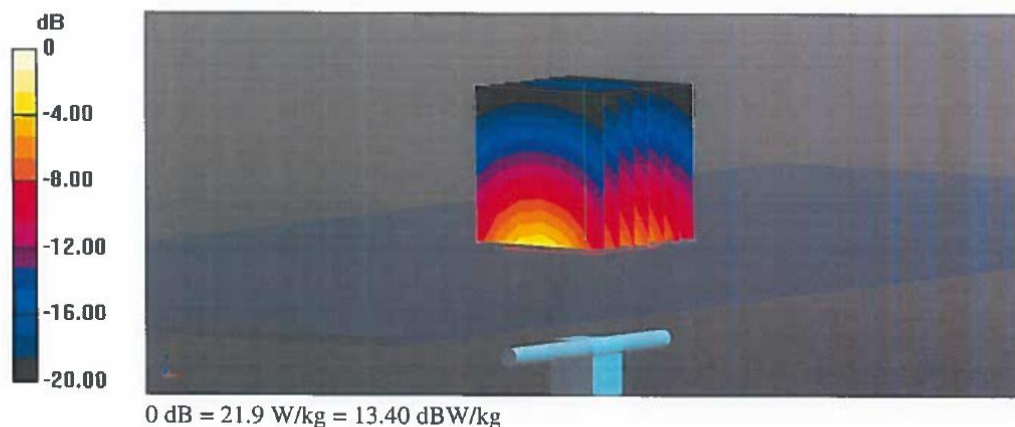
Peak SAR (extrapolated) = 26.5 W/kg

SAR(1 g) = 13.4 W/kg; SAR(10 g) = 6.21 W/kg

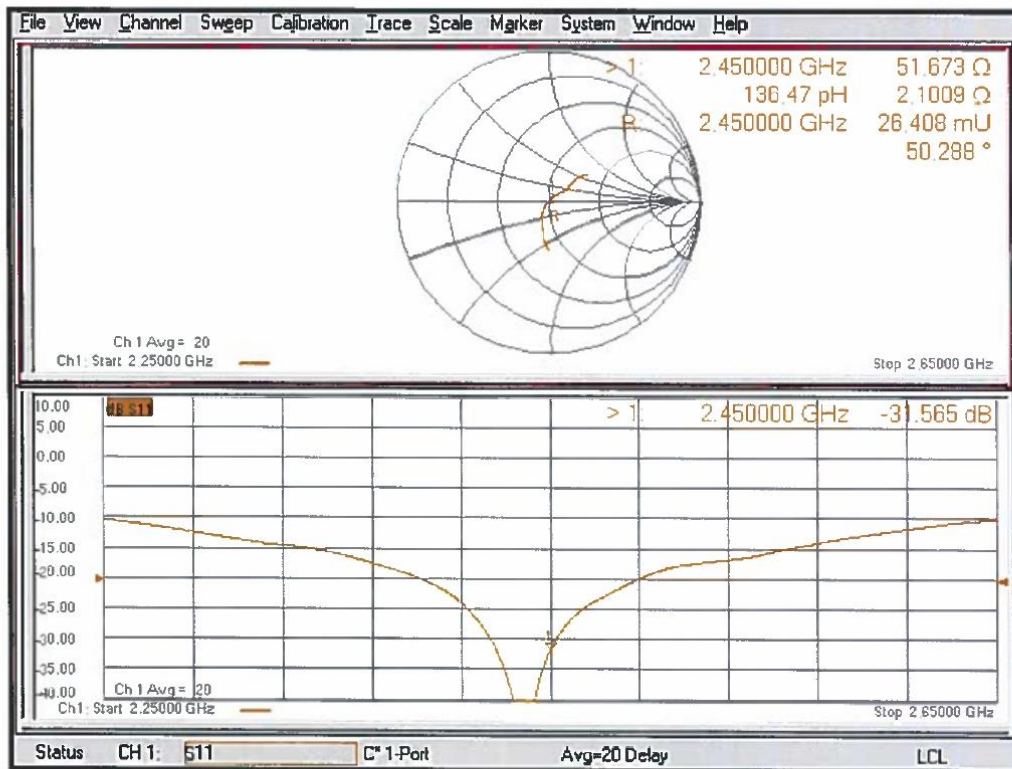
Smallest distance from peaks to all points 3 dB below = 9 mm

Ratio of SAR at M2 to SAR at M1 = 50.6%

Maximum value of SAR (measured) = 21.9 W/kg



Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 06.12.2023

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:715

Communication System: UID 0 - CW; Frequency: 2450 MHz

Medium parameters used: $f = 2450$ MHz; $\sigma = 2.01$ S/m; $\epsilon_r = 53$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.12, 8.12, 8.12) @ 2450 MHz; Calibrated: 03.11.2023
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 03.10.2023
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.4(1535); SEMCAD X 14.6.14(7501)

Dipole Calibration for Body Tissue/ $P_{in}=250$ mW, $d=10$ mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 107.3 V/m; Power Drift = 0.08 dB

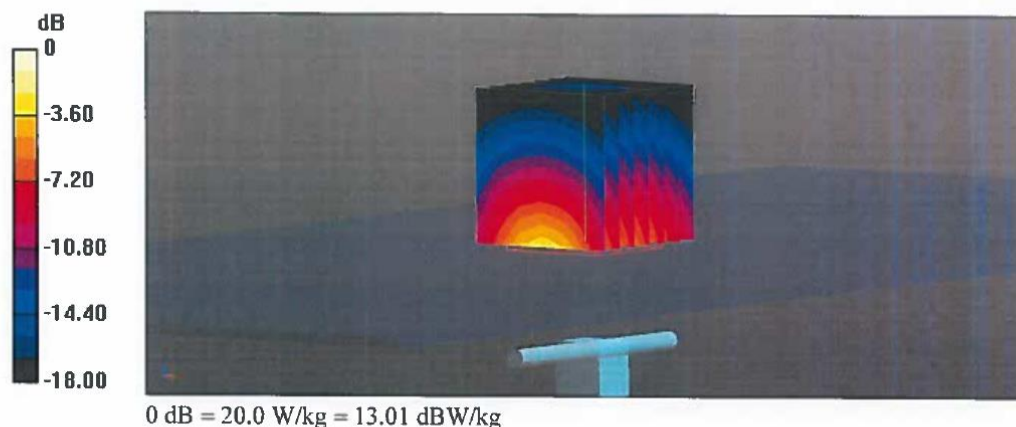
Peak SAR (extrapolated) = 23.3 W/kg

SAR(1 g) = 12.5 W/kg; SAR(10 g) = 5.93 W/kg

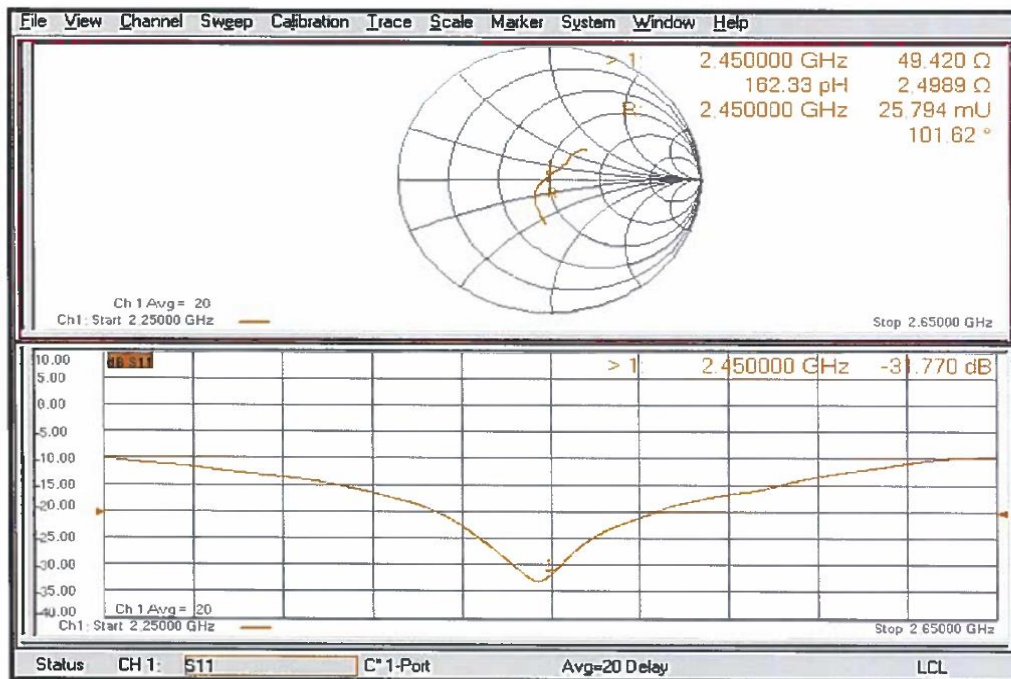
Smallest distance from peaks to all points 3 dB below = 8.9 mm

Ratio of SAR at M2 to SAR at M1 = 54.6%

Maximum value of SAR (measured) = 20.0 W/kg



Impedance Measurement Plot for Body TSL





ANNEX C

SAR TEST SETUP PHOTOGRAPHS

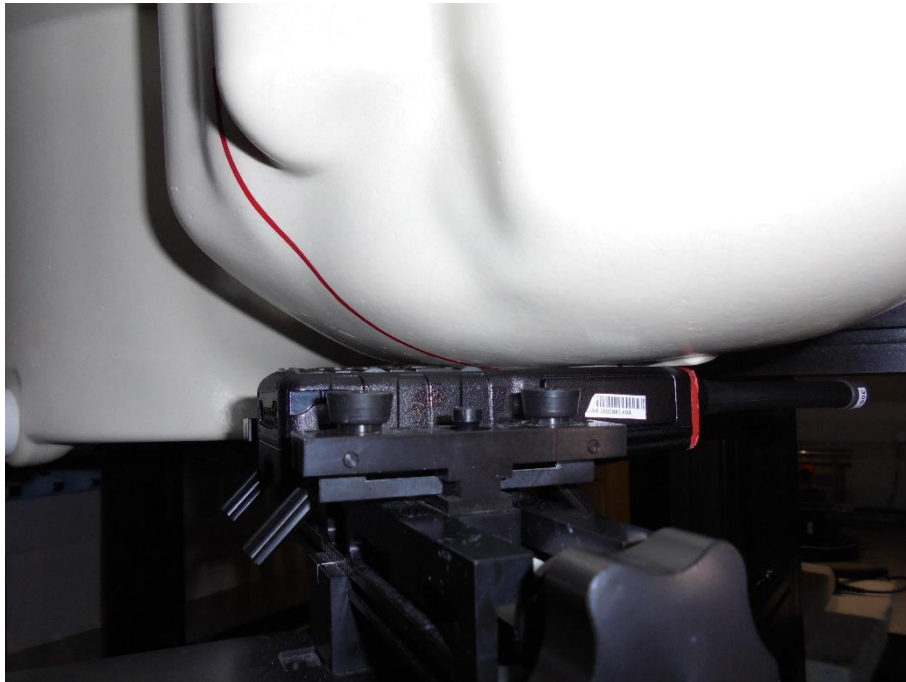


Figure C.1: DUT next to the right ear touch configuration.



Figure C.2: DUT next to the right ear tilt configuration.



Figure C.3: DUT next to the left ear touch configuration.



Figure C.4: DUT next to the left ear tilt configuration.

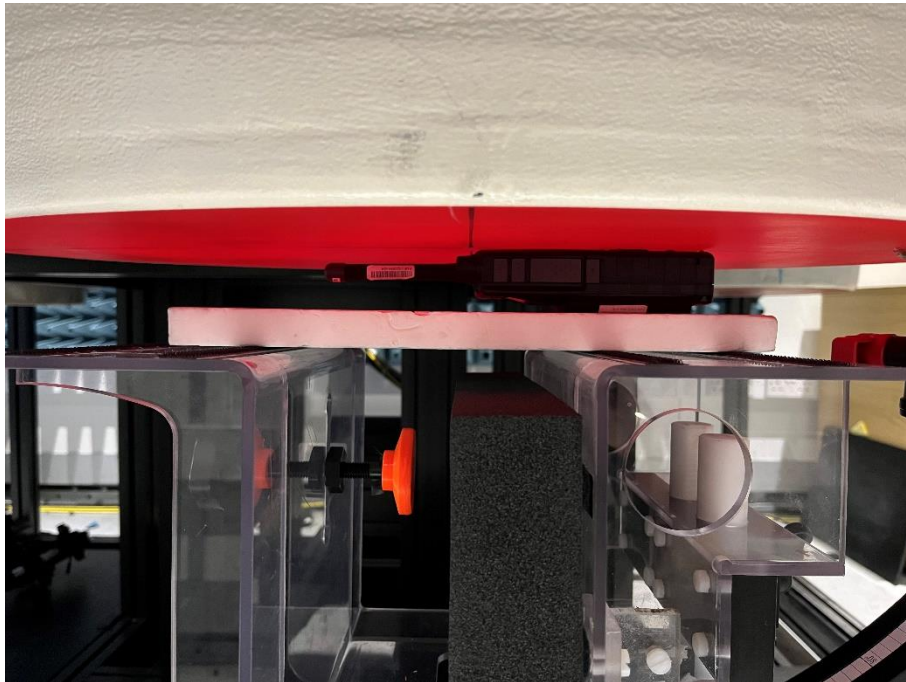


Figure C.5: DUT front surface touching the body 0mm gap configuration.

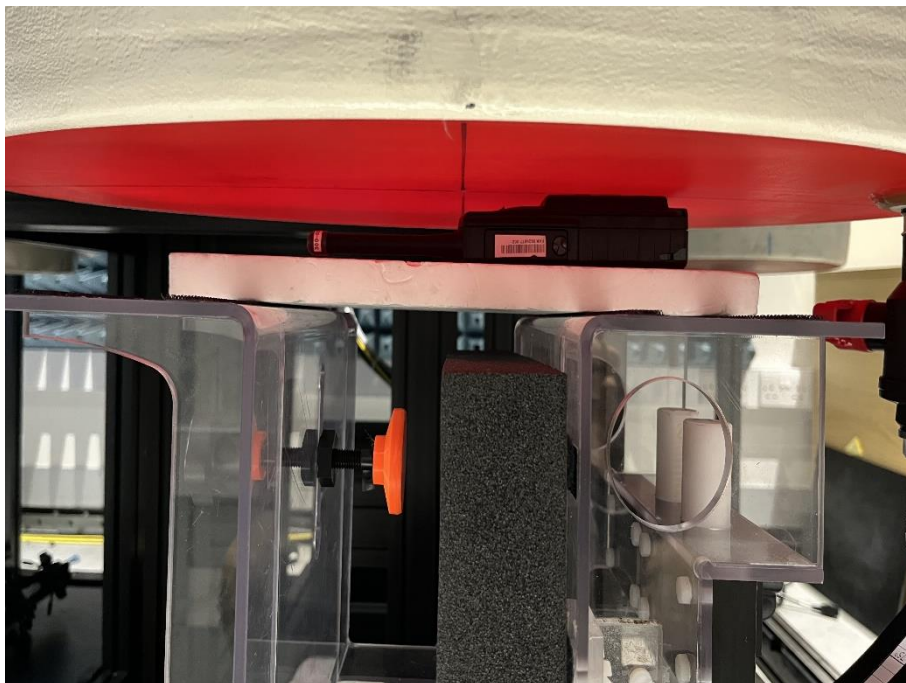


Figure C.6: DUT back surface touching the body 0mm gap configuration.

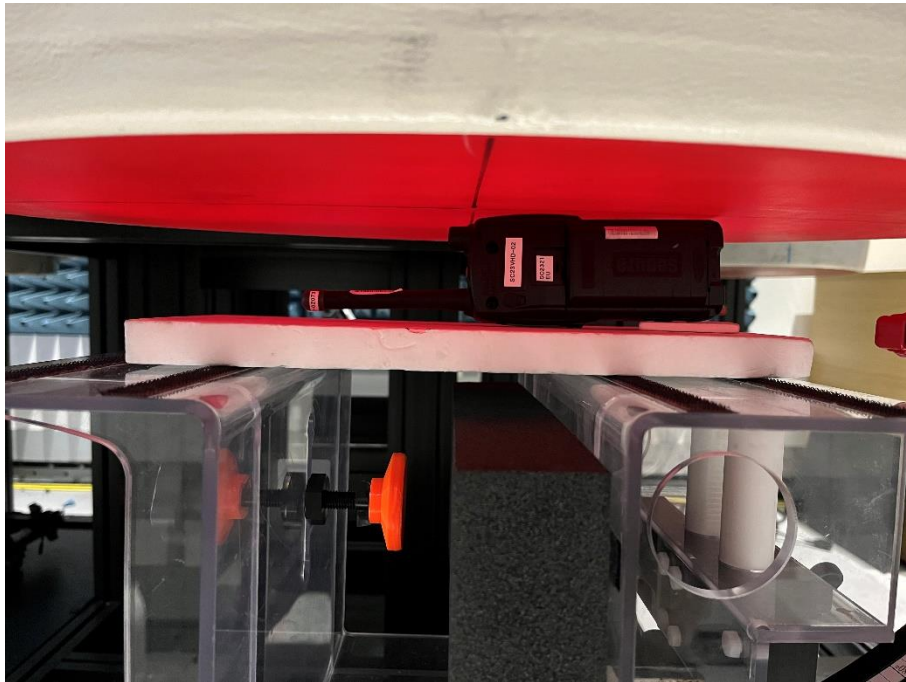


Figure C.7: DUT left edge surface touching the body 0mm gap configuration.



Figure C.8: DUT left right surface touching the body 0mm gap configuration.

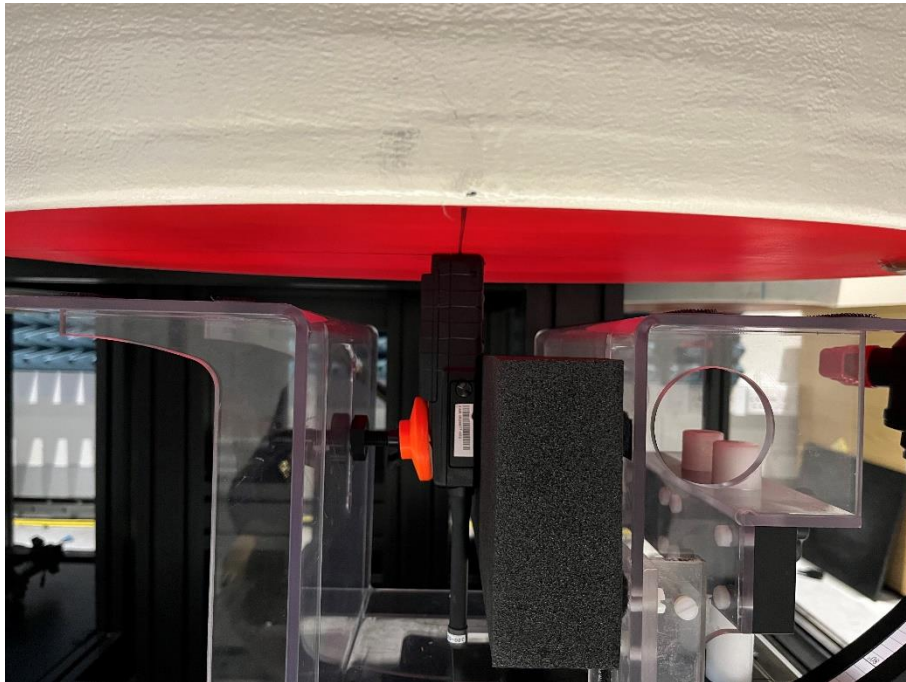
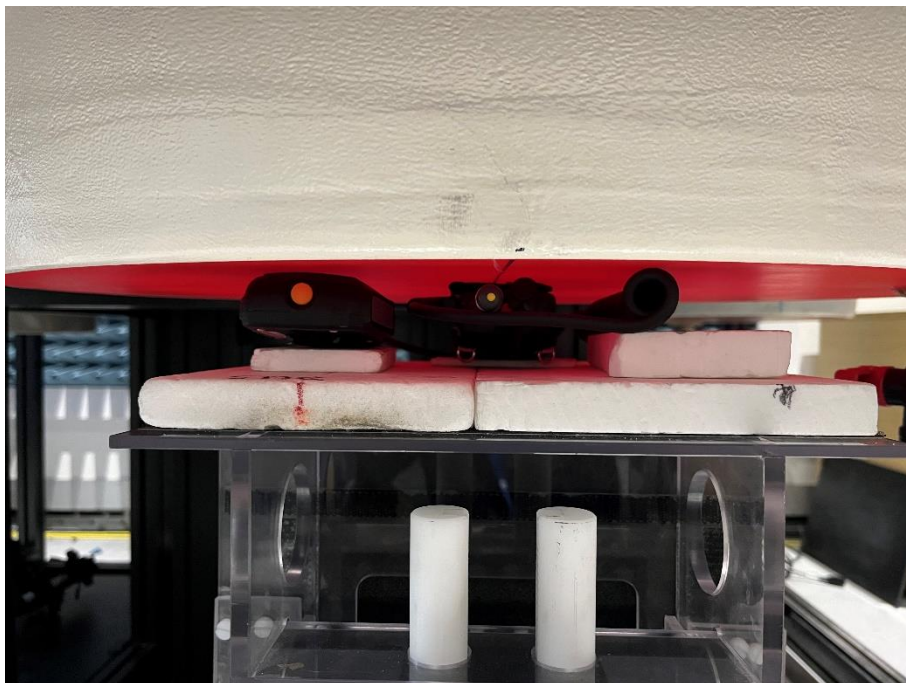


Figure C.9: DUT bottom edge surface touching the body 0mm gap configuration.



**Figure C.10: DUT with audio accessory D (300-01169) & body worn accessory L (300-01387)
Touching the body 0mm gap configuration**

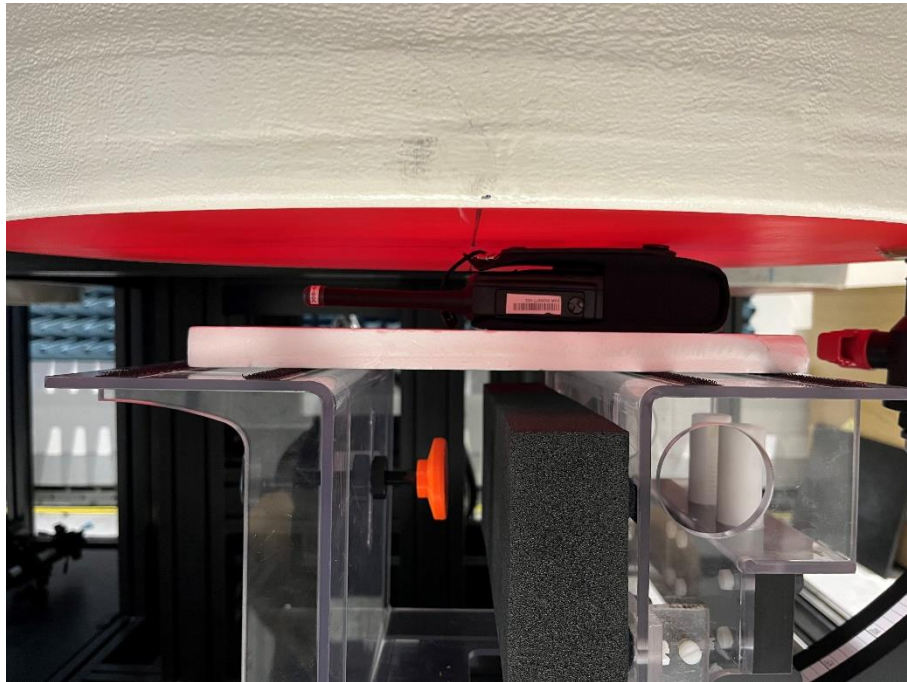


Figure C.11: DUT with body worn accessory L (300-01387)
Touching the body 0mm gap configuration.

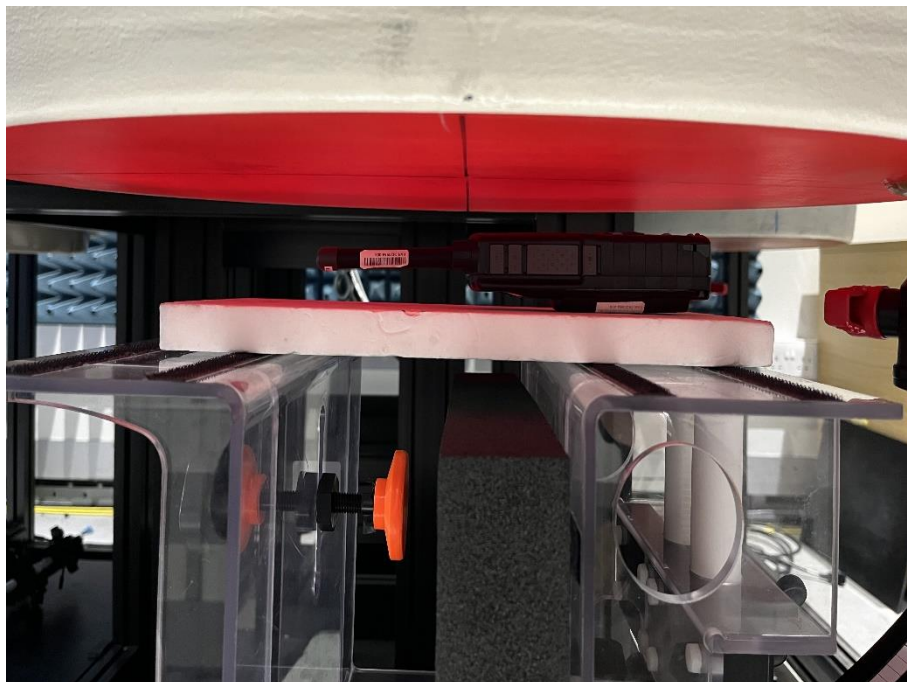


Figure C.12: DUT front of face 25mm gap configuration.



Figure C.13: Front face of SC2021 device.



Figure C.14: Back face of SC2021 device.



Figure C.15: Front face of SC2321 device.



Figure C.16: Back face of SC2321 device



Figure C.17: Antennas.



Figure C.18: Battery.



Figure C.19: Default body worn accessories.



ANNEX D

SC2021 MODEL-D SAR PLOTS



HEAD-SAR PLOTS

Measurement Report for SC2021, TILT, Custom Band, Pulse Waveform (200Hz, 20%), Channel 143000 (143.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Head Left, HSL	TILT, 0.00	Custom Band	CW, 10659-AAB	143.0, 143000	11.88	0.768	51.4

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V5.0 (30deg probe tilt) - 1617	HBBL4-250V3 DAK 12 Head 21.00 deg.C 2024-July-03 SYS3.prn, 2024-Jul-04	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-04, 13:23	2024-07-04, 13:34
psSAR1g [W/Kg]	2.25	2.43
psSAR10g [W/Kg]	1.58	1.41
Power Drift [dB]	-0.02	-0.05
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		59.3
Dist 3dB Peak [mm]		9.6

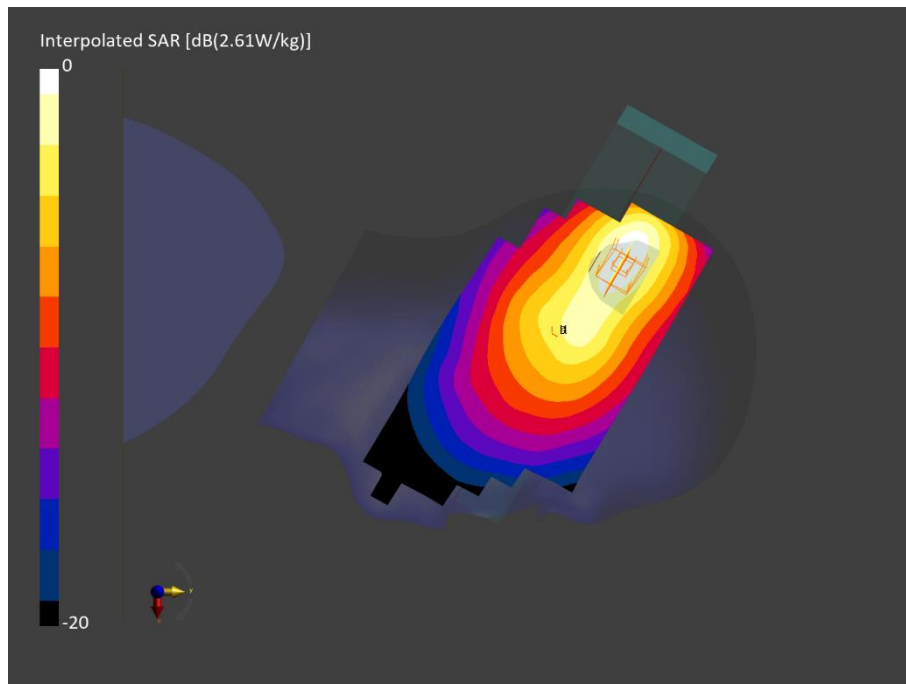


Figure D.01: Testing results for the SC2021 at 143MHz white antenna



Measurement Report for SC2021, TILT, Custom Band, Pulse Waveform (200Hz, 20%), Channel 143000 (143.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Head Left, HSL	TILT, 0.00	Custom Band	CW, 10659-AAB	143.0, 143000	11.88	0.768	51.4

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V5.0 (30deg probe tilt) - 1617	HBBL4-250V3 DAK 12 Head 21.00 deg.C 2024-July-03 SYS3.prn, 2024-Jul-04	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-05, 09:17	2024-07-05, 09:28
psSAR1g [W/Kg]	2.72	2.99
psSAR10g [W/Kg]	1.85	1.57
Power Drift [dB]	0.13	0.09
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		61.9
Dist 3dB Peak [mm]		9.5

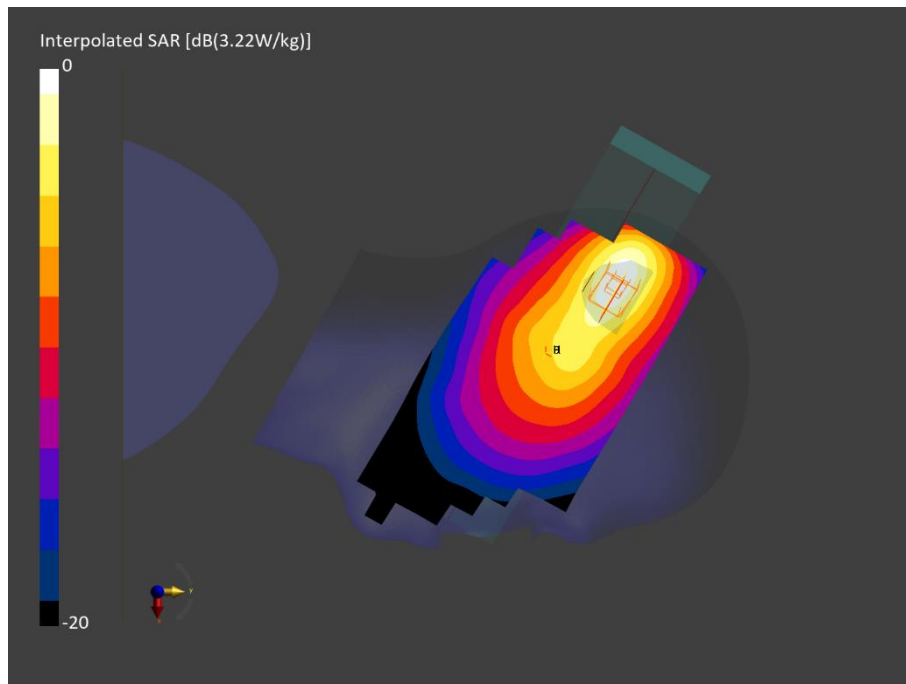


Figure D.02: Testing results for the SC2021 at 143MHz green antenna



Measurement Report for SC2021, TILT, Custom Band, Pulse Waveform (200Hz, 20%), Channel 157000 (157.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Head Left, HSL	TILT, 0.00	Custom Band	CW, 10659-AAB	157.0, 157000	11.88	0.772	51.4

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V5.0 (30deg probe tilt) - 1617	HBBL4-250V3 DAK 12 Head 21.00 deg.C 2024-July-03 SYS3.prn, 2024-Jul-04	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	5.3 x 5.3 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-04, 18:56	2024-07-04, 19:10
psSAR1g [W/Kg]	1.66	2.35
psSAR10g [W/Kg]	1.12	1.04
Power Drift [dB]	0.00	-0.05
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		53.5
Dist 3dB Peak [mm]		6.3

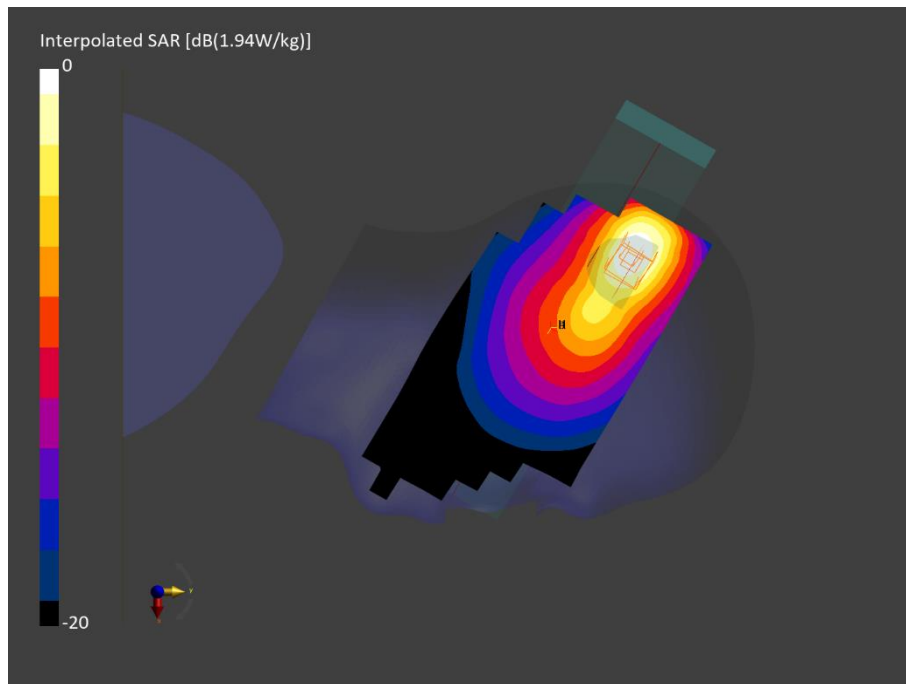


Figure D.03: Testing results for the SC2021 at 157MHz green antenna



Measurement Report for SC2021, TILT, Custom Band, Pulse Waveform (200Hz, 20%), Channel 157000 (157.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Head Left, HSL	TILT, 0.00	Custom Band	CW, 10659-AAB	157.0, 157000	11.88	0.772	51.4

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V5.0 (30deg probe tilt) - 1617	HBBL4-250V3 DAK 12 Head 21.00 deg.C 2024-July-03 SYS3.prn, 2024-Jul-04	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-05, 09:58	2024-07-05, 10:09
psSAR1g [W/Kg]	0.999	1.06
psSAR10g [W/Kg]	0.710	0.641
Power Drift [dB]	0.03	-0.08
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		65.5
Dist 3dB Peak [mm]		12.1

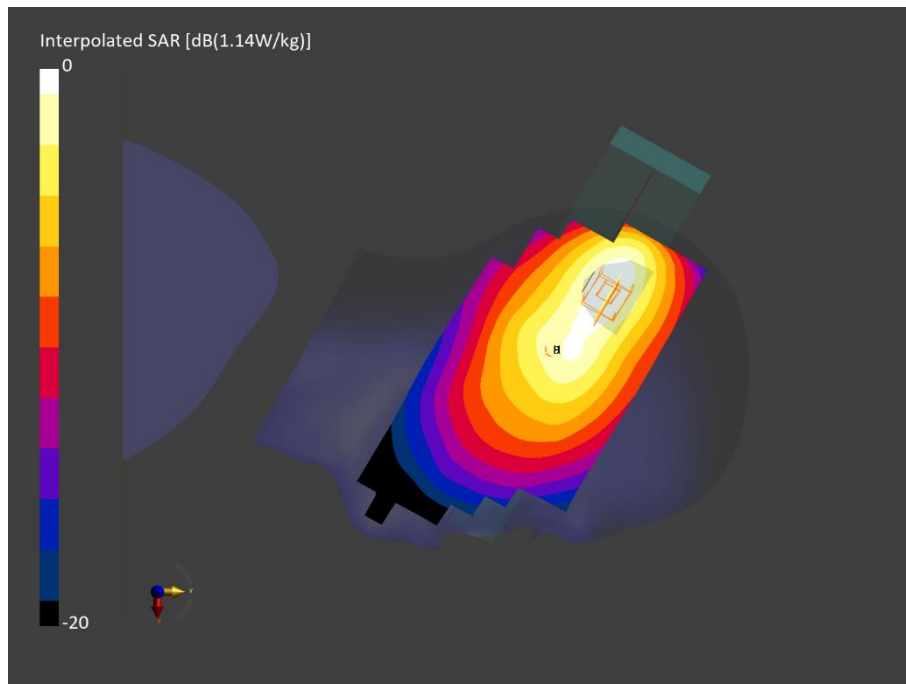


Figure D.04: Testing results for the SC2021 at 157MHz blue antenna



Measurement Report for SC2021, TILT, Custom Band, Pulse Waveform (200Hz, 20%), Channel 174000 (174.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Head Left, HSL	TILT, 0.00	Custom Band	CW, 10659-AAB	174.0, 174000	11.88	0.776	50.9

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V5.0 (30deg probe tilt) - 1617	HBBL4-250V3 DAK 12 Head 21.00 deg.C 2024-July-03 SYS3.prn, 2024-Jul-04	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-04, 22:41	2024-07-04, 22:58
psSAR1g [W/Kg]	1.45	1.65
psSAR10g [W/Kg]	0.988	0.889
Power Drift [dB]	-0.04	-0.07
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		62.4
Dist 3dB Peak [mm]		8.7

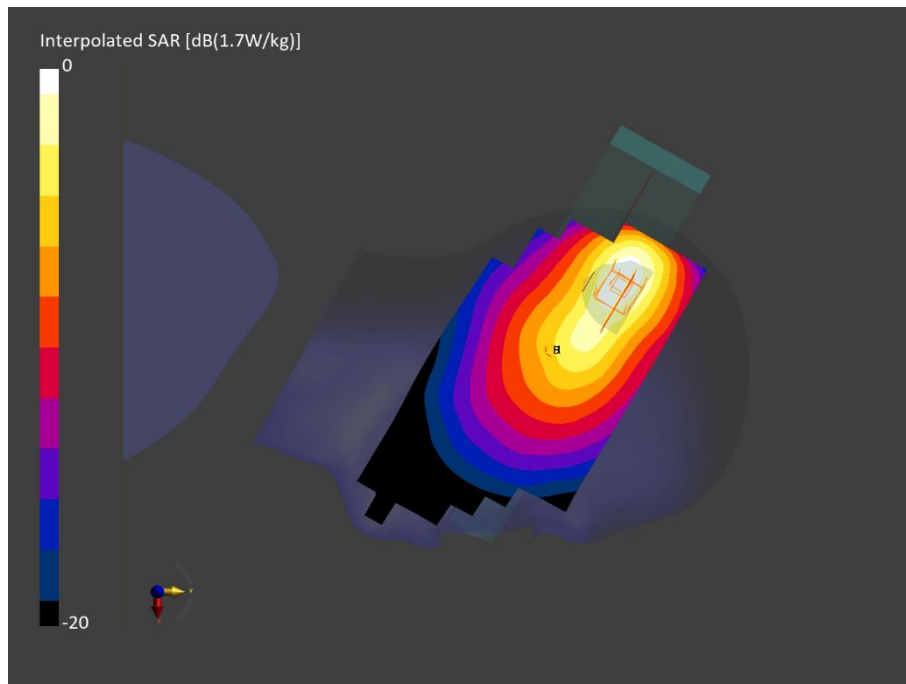


Figure D.05: Testing results for the SC2021 at 174MHz blue antenna



Measurement Report for SC2021, TILT, Custom Band, Pulse Waveform (200Hz, 20%), Channel 174000 (174.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Head Left, HSL	TILT, 0.00	Custom Band	CW, 10659-AAB	174.0, 174000	11.88	0.776	50.9

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V5.0 (30deg probe tilt) - 1617	HBBL4-250V3 DAK 12 Head 21.00 deg.C 2024-July-03 SYS3.prn, 2024-Jul-04	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-05, 13:43	2024-07-05, 13:54
psSAR1g [W/Kg]	3.44	3.99
psSAR10g [W/Kg]	2.37	2.10
Power Drift [dB]	-0.02	0.03
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		62.1
Dist 3dB Peak [mm]		9.5

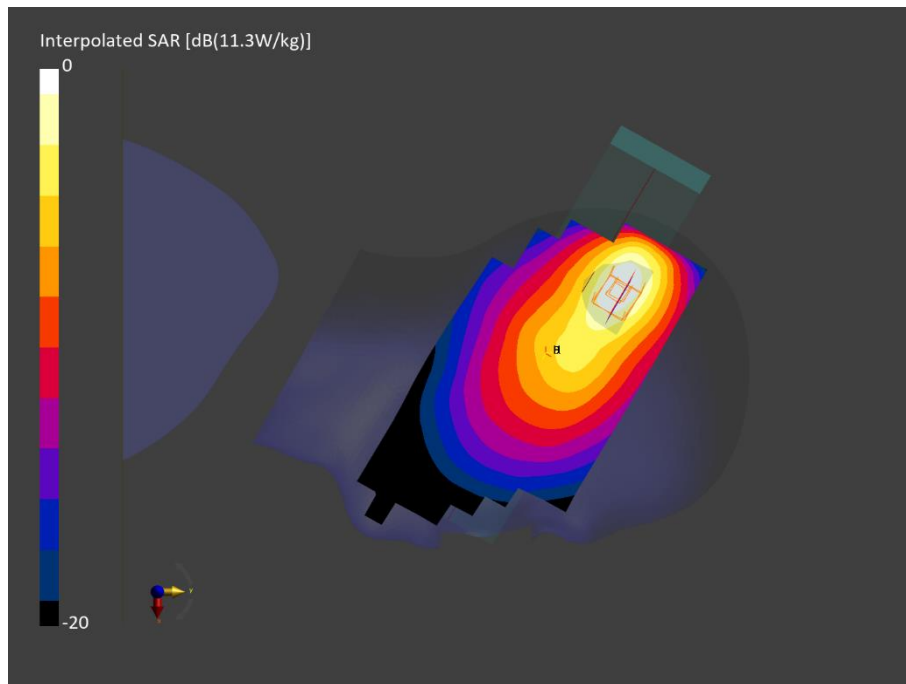


Figure D.06: Testing results for the SC2021 at 174MHz yellow antenna



BODY-SAR PLOTS

Measurement Report for SC2021, EDGE BOTTOM, Custom Band, CW, Channel 143000 (143.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	EDGE BOTTOM, 0.00	Custom Band	CW, 0--	143.0, 143000	11.88	0.754	51.3

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2102	HBBL4-250V3 DAK 12 Head 21.00 deg.C 2024-Jun-28 SYS3.prn, 2024-Jun-28	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	90.0 x 120.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-06-29, 20:03	2024-06-29, 20:14
psSAR1g [W/Kg]	0.751	0.935
psSAR10g [W/Kg]	0.513	0.430
Power Drift [dB]	-0.20	-0.14
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		54.0
Dist 3dB Peak [mm]		8.1

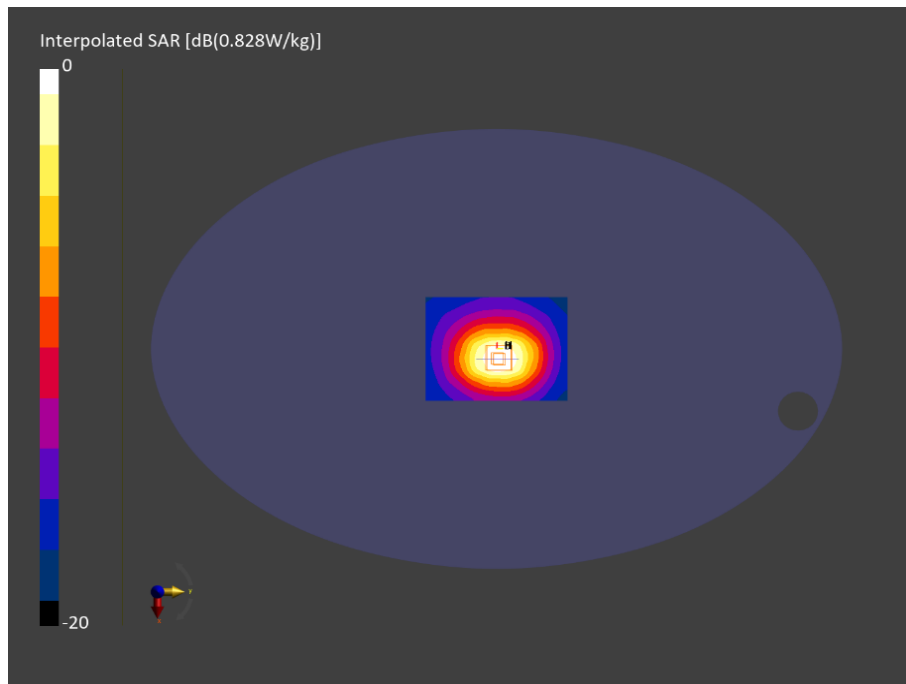


Figure D.07: Testing results for the SC2021 at 143MHz white antenna



Measurement Report for SC2021, EDGE RIGHT, Custom Band, Pulse Waveform (200Hz, 20%), Channel 143000 (143.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	EDGE RIGHT, 0.00	Custom Band	CW, 10659-AAB	143.0, 143000	11.88	0.765	51.5

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2102	HBBL4-250V3 DAK 12 Head 21.43 deg.C 2024-July-01 SYS3.prn, 2024-Jul-01	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	90.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-01, 12:31	2024-07-01, 12:41
psSAR1g [W/Kg]	1.72	1.93
psSAR10g [W/Kg]	1.23	1.10
Power Drift [dB]	-0.09	-0.18
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		54.7
Dist 3dB Peak [mm]		12.1

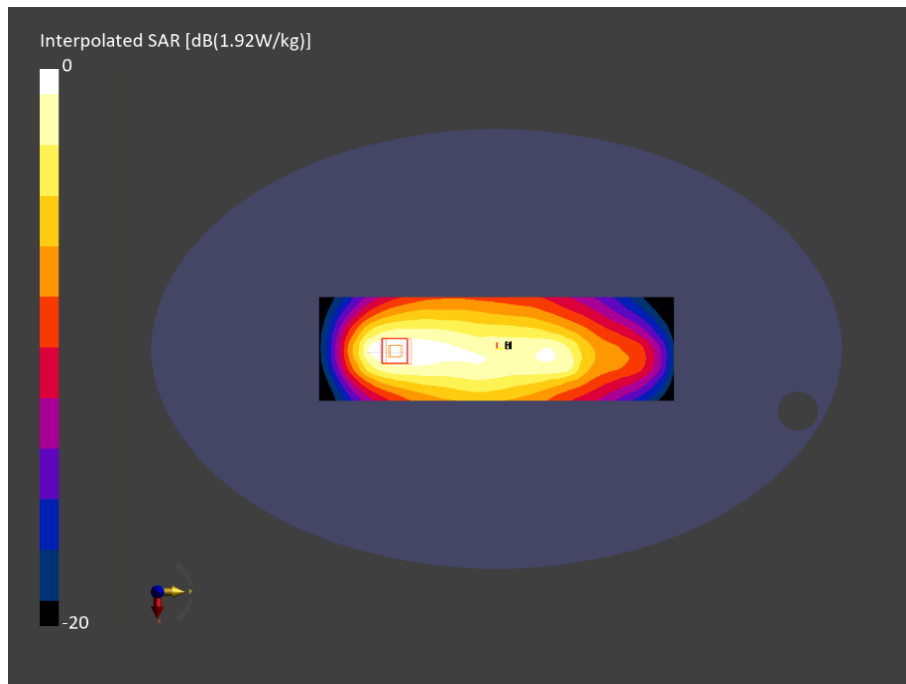


Figure D.08: Testing results for the SC2021 at 143MHz green antenna



Measurement Report for SC2021, EDGE BOTTOM, Custom Band, Pulse Waveform (200Hz, 20%), Channel 157000 (157.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	EDGE BOTTOM, 0.00	Custom Band	CW, 10659-AAB	157.0, 157000	11.88	0.768	51.6

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2102	HBBL4-250V3 DAK 12 Head 21.43 deg.C 2024-July-01 SYS3.prn, 2024-Jul-01	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	90.0 x 120.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-01, 14:57	2024-07-01, 15:06
psSAR1g [W/Kg]	1.07	1.55
psSAR10g [W/Kg]	0.719	0.639
Power Drift [dB]	-0.21	-0.12
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		45.9
Dist 3dB Peak [mm]		7.2

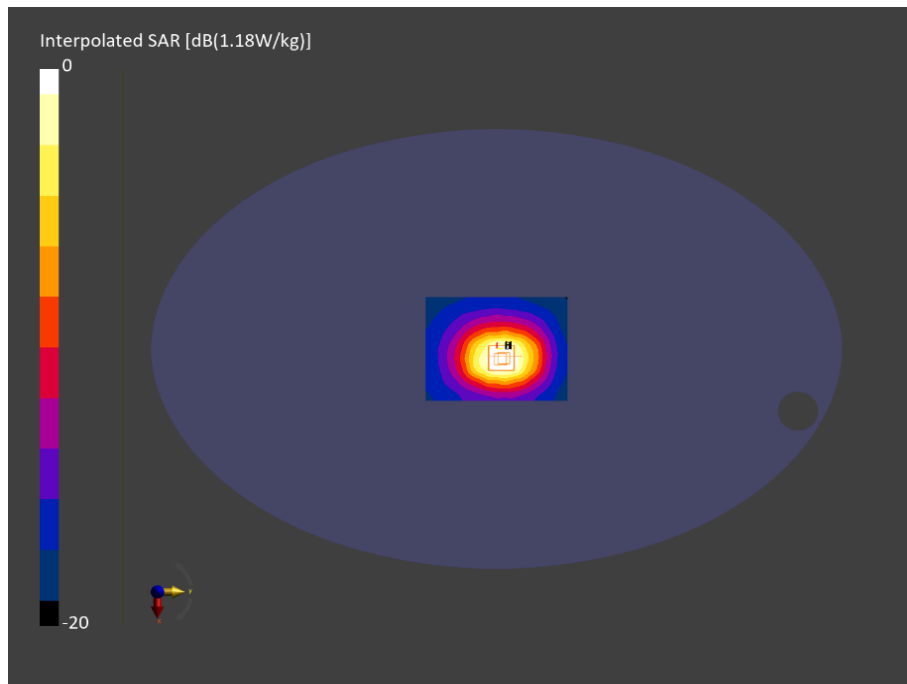


Figure D.09: Testing results for the SC2021 at 157MHz green antenna



Measurement Report for SC2021, EDGE RIGHT, Custom Band, Pulse Waveform (200Hz, 20%), Channel 157000 (157.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	EDGE RIGHT, 0.00	Custom Band	CW, 10659-AAB	157.0, 157000	11.88	0.768	51.6

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2102	HBBL4-250V3 DAK 12 Head 21.43 deg.C 2024-July-01 SYS3.prn, 2024-Jul-01	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	90.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-01, 16:27	2024-07-01, 16:37
psSAR1g [W/Kg]	1.95	2.15
psSAR10g [W/Kg]	1.39	1.24
Power Drift [dB]	0.05	-0.05
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		54.3
Dist 3dB Peak [mm]		12.1

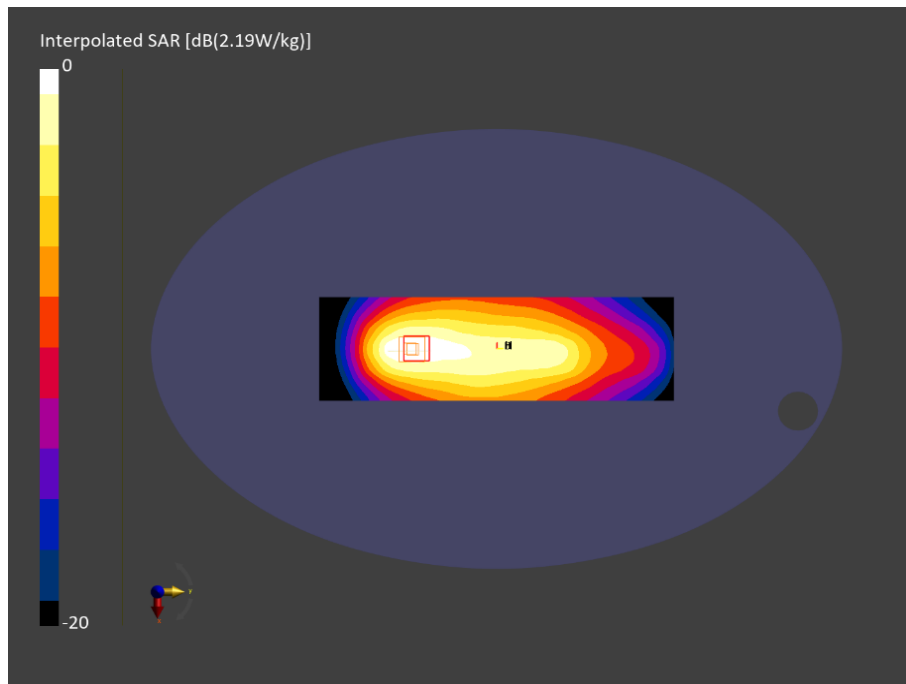


Figure D.10: Testing results for the SC2021 at 157MHz blue antenna.



Measurement Report for SC2021, EDGE BOTTOM, Custom Band, Pulse Waveform (200Hz, 20%), Channel 174000 (174.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	EDGE BOTTOM, 0.00	Custom Band	CW, 10659-AAB	174.0, 174000	11.88	0.772	51.0

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2102	HBBL4-250V3 DAK 12 Head 21.43 deg.C 2024-July-01 SYS3.prn, 2024-Jul-01	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	90.0 x 120.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	5.0 x 5.0 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.4
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-02, 14:19	2024-07-02, 14:31
psSAR1g [W/Kg]	1.53	2.11
psSAR10g [W/Kg]	1.01	0.872
Power Drift [dB]	-0.13	-0.39
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		47.1
Dist 3dB Peak [mm]		7.0

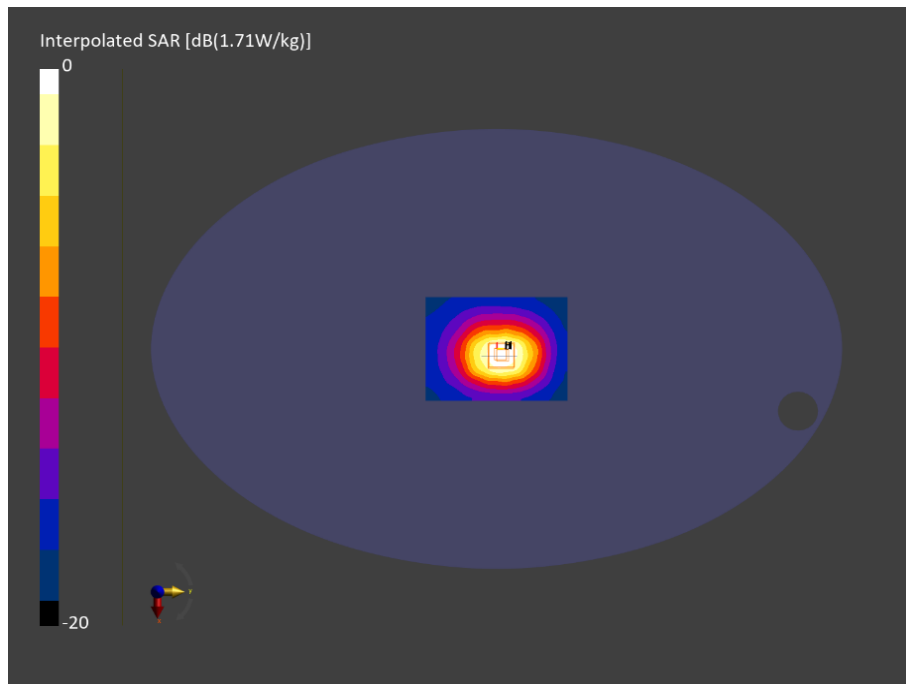


Figure D.11: Testing results for the SC2021 at 174MHz blue antenna.



Measurement Report for SC2021, FRONT, Custom Band, Pulse Waveform (200Hz, 20%), Channel 174000 (174.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 0.00	Custom Band	CW, 10659-AAB	174.0, 174000	11.88	0.772	51.0

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2102	HBBL4-250V3 DAK 12 Head 21.43 deg.C 2024-July-01 SYS3.prn, 2024-Jul-01	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-02, 12:17	2024-07-02, 12:28
psSAR1g [W/Kg]	2.49	2.99
psSAR10g [W/Kg]	1.62	1.41
Power Drift [dB]	0.06	-0.01
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		50.9
Dist 3dB Peak [mm]		8.7

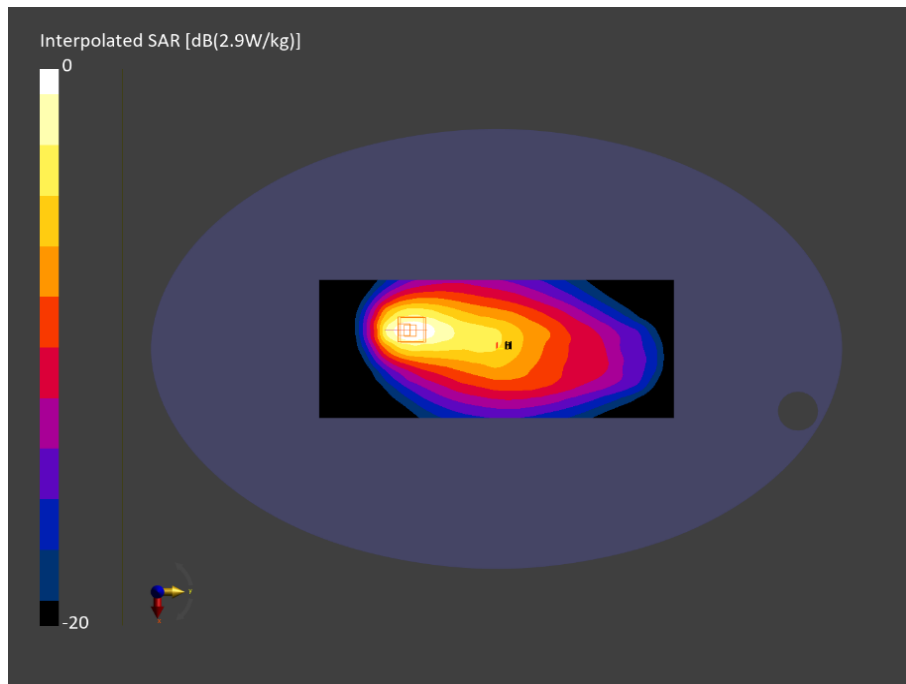


Figure D.12: Testing results for the SC2021 at 174MHz yellow antenna.



Measurement Report for SC2021, FRONT, Custom Band, Pulse Waveform (200Hz, 20%), Channel 174000 (174.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 0.00	Custom Band	CW, 10659-AAB	174.0, 174000	11.88	0.772	51.0

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2102	HBBL4-250V3 DAK 12 Head 21.43 deg.C 2024-July-01 SYS3.prn, 2024-Jul-03	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-03, 20:21	2024-07-03, 20:31
psSAR1g [W/Kg]	2.63	3.19
psSAR10g [W/Kg]	1.69	1.44
Power Drift [dB]	0.03	-0.12
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		48.0
Dist 3dB Peak [mm]		8.4

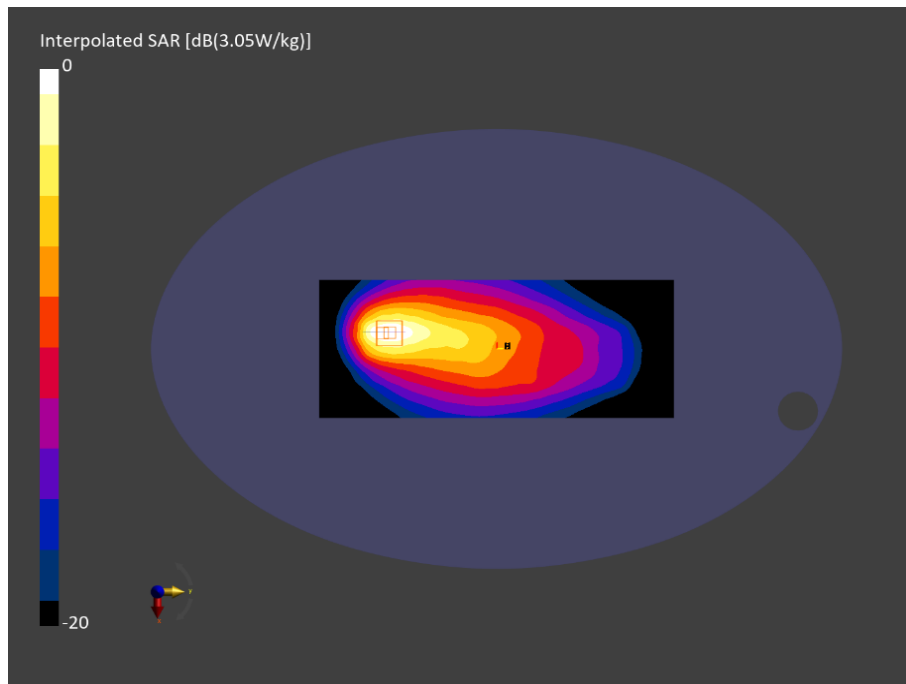


Figure D.13: Testing results for the SC2021 at 174MHz yellow antenna with battery B.



FRONT OF FACE-SAR PLOTS

Measurement Report for SC2021, FRONT, Custom Band, Pulse Waveform (200Hz, 20%), Channel 143000 (143.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 25.00	Custom Band	CW, 10659-AAB	143.0, 143000	11.88	0.765	51.5

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2102	HBBL4-250V3 DAK 12 Head 21.43 deg.C 2024-July-01 SYS3.prn, 2024-Jul-01	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-02, 15:41	2024-07-02, 15:50
psSAR1g [W/Kg]	0.316	0.323
psSAR10g [W/Kg]	0.243	0.246
Power Drift [dB]	-0.02	-0.01
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		81.7
Dist 3dB Peak [mm]		> 15.0

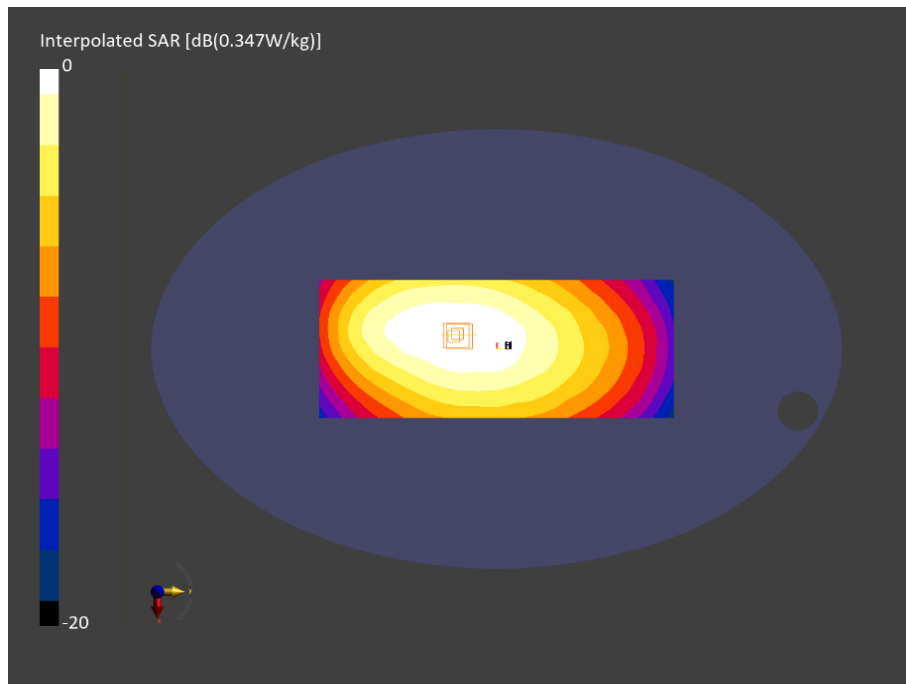


Figure D.14: Testing results for the SC2021 at 143MHz white antenna



Measurement Report for SC2021, FRONT, Custom Band, Pulse Waveform (200Hz, 20%), Channel 143000 (143.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 25.00	Custom Band	CW, 10659-AAB	143.0, 143000	11.88	0.765	51.5

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2102	HBBL4-250V3 DAK 12 Head 21.43 deg.C 2024-July-01 SYS3.prn, 2024-Jul-01	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	4.6 x 4.6 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.4
MAIA	Y	Y
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-02, 16:14	2024-07-02, 16:38
psSAR1g [W/Kg]	0.066	0.059
psSAR10g [W/Kg]	0.050	0.039
Power Drift [dB]	0.06	-0.09
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		80.3
Dist 3dB Peak [mm]		4.6

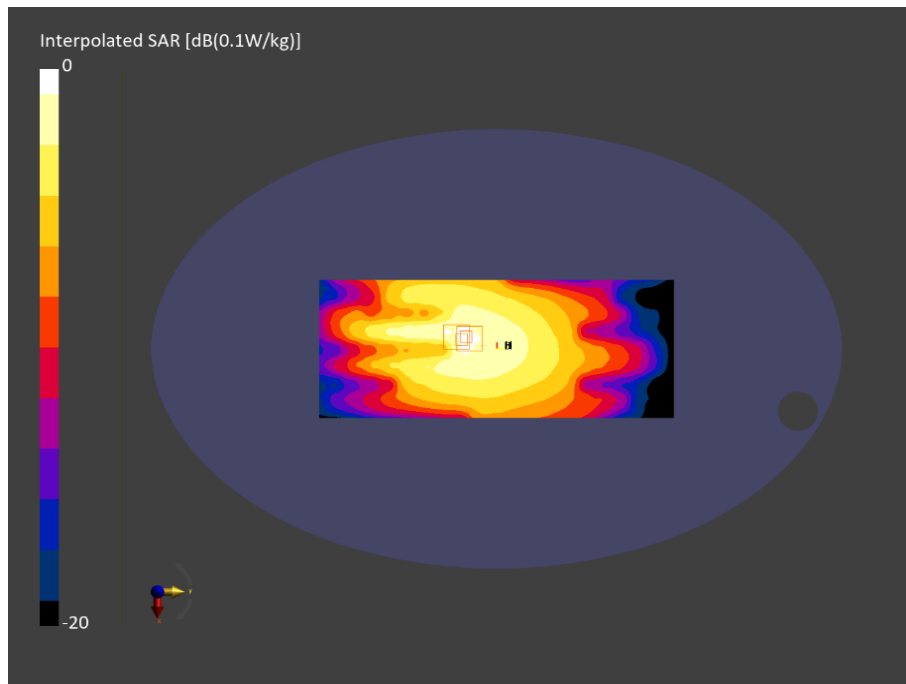


Figure D.15: Testing results for the SC2021 at 143MHz green antenna.



Measurement Report for SC2021, FRONT, Custom Band, Pulse Waveform (200Hz, 20%), Channel 157000 (157.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 25.00	Custom Band	CW, 10659-AAB	157.0, 157000	11.88	0.768	51.6

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) – 2102	HBBL4-250V3 DAK 12 Head 21.43 deg.C 2024-July-01 SYS3.prn, 2024-Jul-01	EX3DV4 – SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-02, 17:59	2024-07-02, 18:10
psSAR1g [W/Kg]	0.335	0.349
psSAR10g [W/Kg]	0.257	0.263
Power Drift [dB]	0.08	0.05
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		79.8
Dist 3dB Peak [mm]		> 15.0

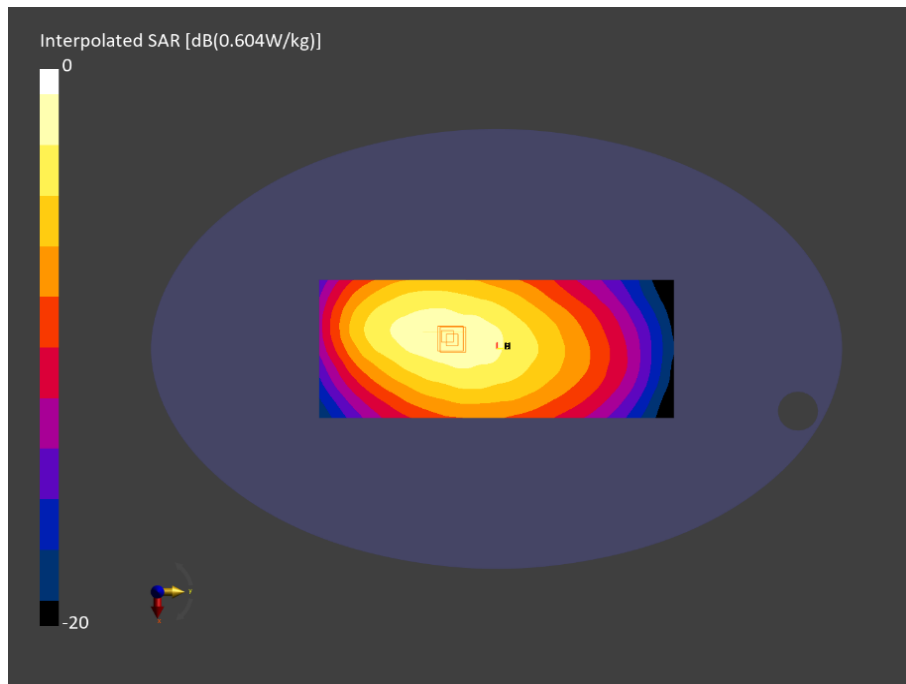


Figure D.16: Testing results for the SC2021 at 157MHz green antenna.



Measurement Report for SC2021, FRONT, Custom Band, Pulse Waveform (200Hz, 20%), Channel 157000 (157.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		Phone

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 25.00	Custom Band	CW, 10659-AAB	157.0, 157000	11.88	0.768	51.6

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2102	HBBL4-250V3 DAK 12 Head 21.43 deg.C 2024-July-01 SYS3.prn, 2024-Jul-01	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	Y	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-02, 19:03	2024-07-02, 19:14
psSAR1g [W/Kg]	0.088	0.093
psSAR10g [W/Kg]	0.067	0.070
Power Drift [dB]	0.01	0.09
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		76.9
Dist 3dB Peak [mm]		> 15.0

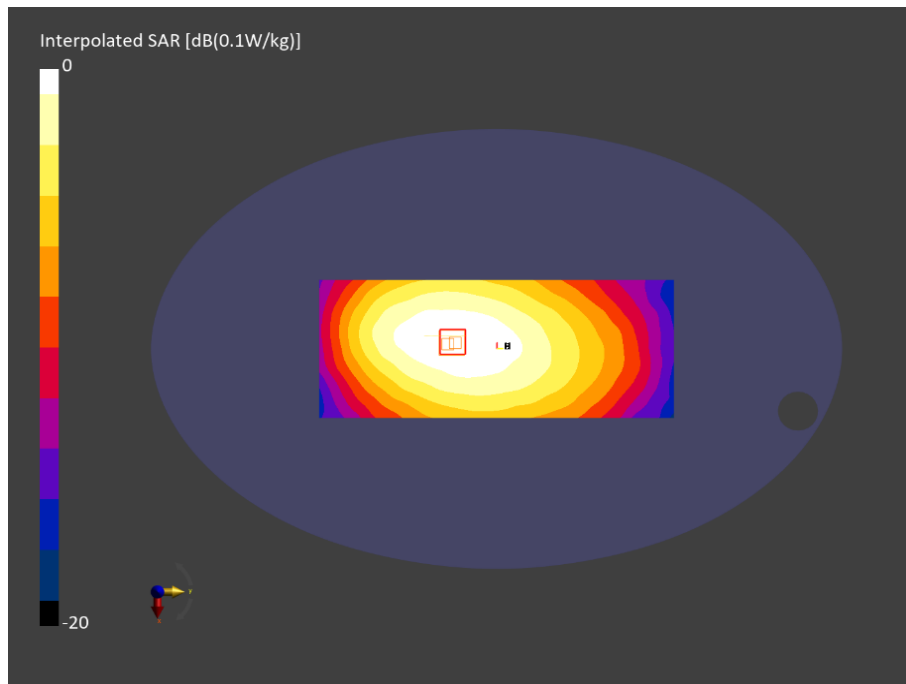


Figure D.17: Testing results for the SC2021 at 157MHz blue antenna.



Measurement Report for SC2021, FRONT, Custom Band, Pulse Waveform (200Hz, 20%), Channel 174000 (174.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 25.00	Custom Band	CW, 10659-AAB	174.0, 174000	11.88	0.772	51.0

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2102	HBBL4-250V3 DAK 12 Head 21.43 deg.C 2024-July-01 SYS3.prn, 2024-Jul-01	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-02, 19:24	2024-07-02, 19:35
psSAR1g [W/Kg]	0.489	0.514
psSAR10g [W/Kg]	0.374	0.387
Power Drift [dB]	-0.08	0.03
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		77.9
Dist 3dB Peak [mm]		> 15.0

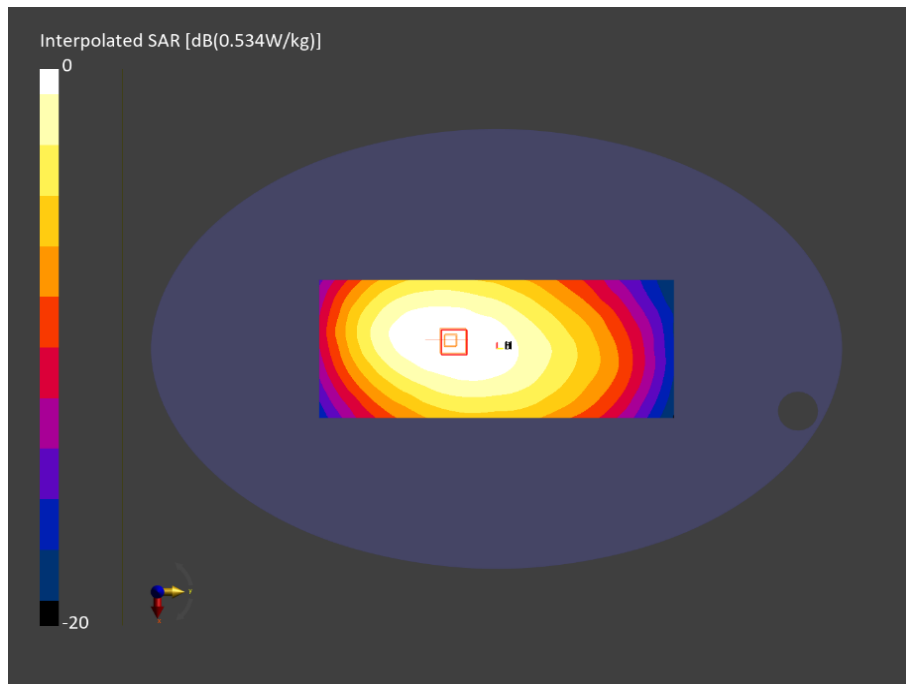


Figure D.18: Testing results for the SC2021 at 174MHz blue antenna.



Measurement Report for SC2021, FRONT, Custom Band, Pulse Waveform (200Hz, 20%), Channel 174000 (174.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 25.00	Custom Band	CW, 10659-AAB	174.0, 174000	11.88	0.772	51.0

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2102	HBBL4-250V3 DAK 12 Head 21.43 deg.C 2024-July-01 SYS3.prn, 2024-Jul-01	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	Y	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-02, 19:46	2024-07-02, 19:57
psSAR1g [W/Kg]	0.076	0.079
psSAR10g [W/Kg]	0.058	0.060
Power Drift [dB]	-0.13	-0.11
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		74.1
Dist 3dB Peak [mm]		> 15.0

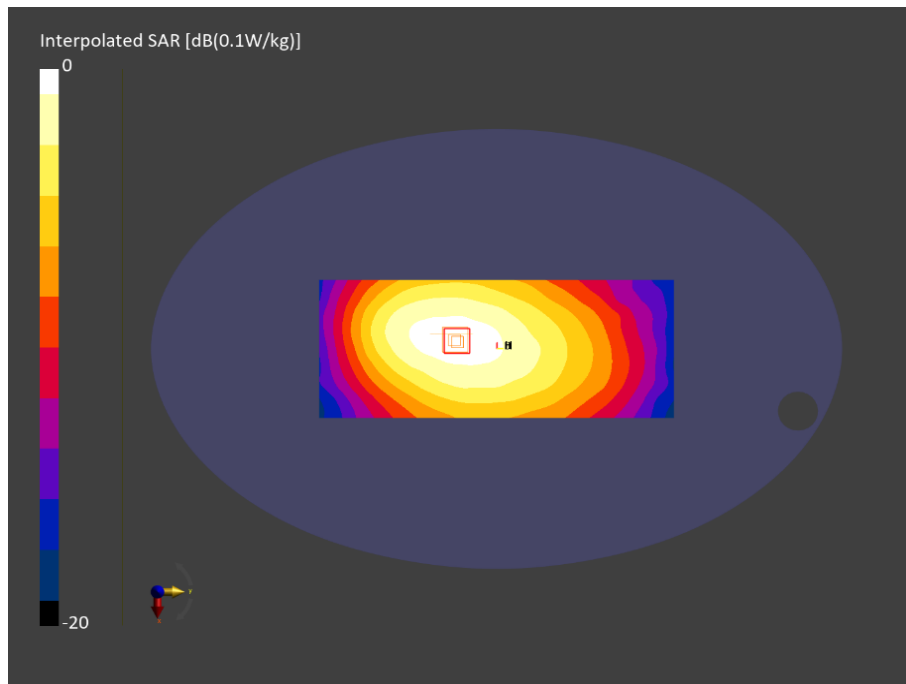


Figure D.19: Testing results for the SC2021 at 174MHz yellow antenna.



ANNEX E

SC2021 WLAN TEST REPORT



Sepura Limited confirmed that the SC2021 TETRA hand portable's user interfaces and accessories remain unchanged from the previously assessed SC2021 series TETRA hand portables. The updated SC2021 represented within this report is representative of the previous SC2021 and has the same WLAN module.

On the updated SC2021, one SAR spot check was done on the test configuration that resulted in the highest SAR in the previously assessed SC2021 WLAN DEKRA 73291RAN.003s SAR report. Referencing the previously assessed SC2021 DEKRA SAR test report supplied by the customer we carried out spot check measurements for Head, Body, and Front of Face positions and found that the results are within an acceptable measurement variation.

For SC2021 WLAN testing, Wireless-LAN modes, channels, tune-ups and conducted power measurements are given by the customer please refer down the Table 38 for these details.

For SC2021 WLAN test details and test equipment used, please refer to the sections 2 and 3 of this report and for EUT identification refer to section 1.3.

WLAN: Conducted Power Measurement

Technology	Band	Mode	Channel / Frequency (MHz)	Average Measured Power (dBm)	Tune-up (dBm)
WLAN	2.4GHz	802.11b	1 / 2412	16.16	17.00
			6 / 2437	16.21	17.00
			11 / 2462	16.20	17.00
		802.11g	1 / 2412	15.26	17.00
			6 / 2437	15.32	17.00
			11 / 2462	15.17	17.00
		802.11n	1 / 2412	15.23	17.00
			6 / 2437	15.41	17.00
			11 / 2462	15.10	17.00

Table 38

The following information was taken from the DEKRA report reference 73291RAN.003s.

Bluetooth: According to ISED RSS-102 Issue 6 (2023-12) – Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands), paragraph 6.3 Exemption Limits for Routine Evaluation – SAR Evaluation, if the device operates below the applicable output power level (adjusted for tune-up tolerance), for the specified separation distance defined in Table 11, SAR evaluation is not required. Output power level shall be the higher of the maximum conducted or equivalent isotropically radiated power (e.i.r.p.) source-based, time-averaged output power.

Output power level (e.i.r.p.) < Occupational Exemption limit at 2450MHz frequency, 5 mm distance.

The DUT has an antenna with a gain of 2.5 dBi, so the isotropically radiated power (e.i.r.p.) source-based, time averaged output power is 11.5 dBm $\diamond$ 14.12 mW:



Output power level (e.i.r.p.) = 14.12 mW

Occupational Exemption limit at 2450MHz frequency, 5 mm distance = 15.00 mW

$14.12 \text{ mW} < 15.00 \text{ mW}$

Therefore, SAR testing is not needed according to ISED RSS-102 Issue 6 (2023-12).

As the device supports simultaneous transmission using this technology, the estimate SAR value must be calculated according to Notice 2016-DRS001, based the following equation:

(maximum power level including tune-up tolerance for transmitter A / maximum power level of exemption at the same frequency and distance) * 0.4W/kg

Bluetooth Estimated SAR = $(14.12 \text{ mW} / 15.00 \text{ mW}) * 0.4 \text{ W/kg} = 0.376 \text{ W/kg}$



SC2021 WLAN - 2.4GHz - 802.11b/g/n SAR spot check test results:

Head SAR Results

WLAN – 2.4GHz – 802.11b/g/n:
Specific Absorption Rate (SAR) 1g Results

Technology	Test Position	Channel Number	Frequency (MHz)	Measured Average Power (dBm)	Tune Up (dBm)	Measured 1g SAR (W/kg)	Scaled 1g SAR (W/kg)	Scan Figure Number
802.11b	Cheek Left	1	2412	16.16	17.00	0.056	0.068	E.01
Limit for Occupational (Controlled Exposure) 8 W/kg (1g)								

Table 39

Body SAR Results

WLAN – 2.4GHz – 802.11b/g/n:
Specific Absorption Rate (SAR) 1g Results

Technology	Test Position	Channel Number	Frequency (MHz)	Measured Average Power (dBm)	Tune Up (dBm)	Measured 1g SAR (W/kg)	Scaled 1g SAR (W/kg)	Scan Figure Number
802.11b	Back 0mm	1	2412	16.16	17.00	0.611	0.741	E.02
Limit for Occupational (Controlled Exposure) 8 W/kg (1g)								

Table 40

Front of Face SAR Results

WLAN – 2.4GHz – 802.11b/g/n:
Specific Absorption Rate (SAR) 1g Results

Technology	Test Position	Channel Number	Frequency (MHz)	Measured Average Power (dBm)	Tune Up (dBm)	Measured 1g SAR (W/kg)	Scaled 1g SAR (W/kg)	Scan Figure Number
802.11b	25mm Front of Face	11	2462	16.20	17.00	0.007	0.008	E.03
Limit for Occupational (Controlled Exposure) 8 W/kg (1g)								

Table 41



Simultaneous Transmission.

Combinations of Simultaneous Transmission this EUT can achieve are the following:

- Head SAR TETRA + 2.4GHz WLAN

Technology	Band	Scaled 1g SAR (W/kg)	Summation of SAR (W/kg)	1g SAR limit (W/kg)
802.11b/g/n	2.4GHz	0.068	4.255	8.0
TETRA	162MHz-174MHz	4.187		
Bluetooth (Estimated)	2.4GHz	0.376	4.563	8.0
TETRA	162MHz-174MHz	4.187		

Table 42

- Body SAR TETRA + 2.4GHz WLAN

Technology	Band	Scaled 1g SAR (W/kg)	Summation of SAR (W/kg)	1g SAR limit (W/kg)
802.11b/g/n	2.4GHz	0.741	4.058	8.0
TETRA	162MHz-174MHz	3.317		
Bluetooth (Estimated)	2.4GHz	0.376	3.693	8.0
TETRA	162MHz-174MHz	3.317		

- Front of Face TETRA + 2.4GHz WLAN

Technology	Band	Scaled 1g SAR (W/kg)	Summation of SAR (W/kg)	1g SAR limit (W/kg)
802.11b/g/n	2.4GHz	0.008	0.542	8.0
TETRA	162MHz-174MHz	0.534		
Bluetooth (Estimated)	2.4GHz	0.376	0.910	8.0
TETRA	162MHz-174MHz	0.534		

Therefore, the worst-case simultaneous transmission produces a SAR of 4.563 W/kg.



HEAD-SAR PLOT

Measurement Report for SC2021, CHEEK, WLAN 2.4GHz, IEEE 802.11b Wi-Fi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle), Channel 1 (2412.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Head Left, HSL	CHEEK, 0.00	WLAN 2.4GHz	WLAN, 10415-AAA	2412.0, 1	7.48	1.78	39.6

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V5.0 (30deg probe tilt) - 1617	HBBL-600-10000 DAK 3.5 Head ELI 21.49 deg.C 2024-July-19 SYS3 B3.prn, 2024-Jul-19	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	10.0 x 10.0	5.0 x 5.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	Y	Y
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-19, 15:21	2024-07-19, 15:41
psSAR1g [W/Kg]	0.053	0.056
psSAR10g [W/Kg]	0.027	0.029
Power Drift [dB]	-0.03	-0.18
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		84.0
Dist 3dB Peak [mm]		7.7

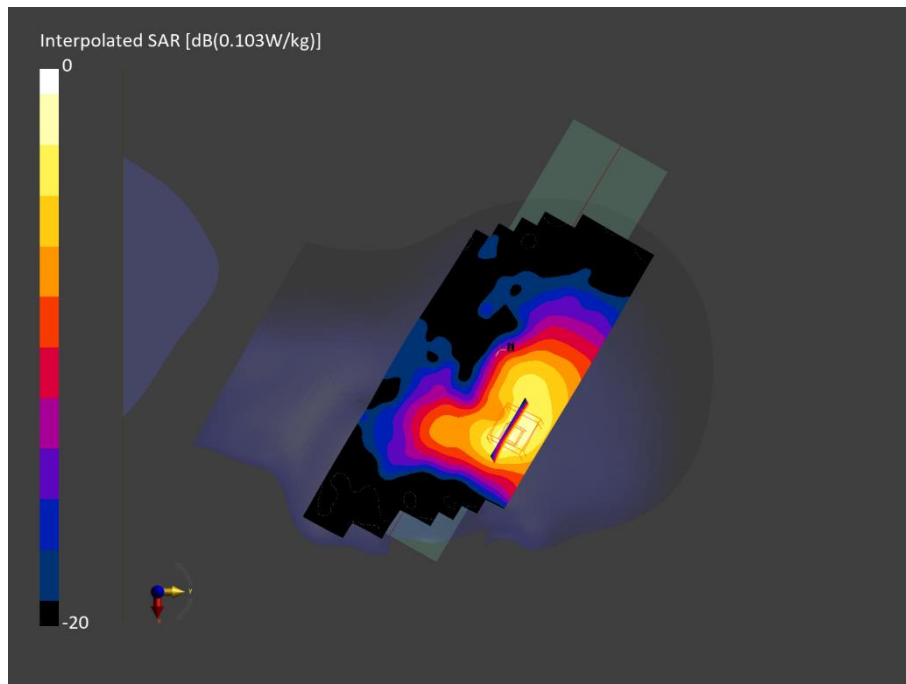


Figure E.01: Testing results for the SC2021 at 2412MHz



BODY-SAR PLOT

Measurement Report for SC2021, BACK, WLAN 2.4GHz, IEEE 802.11b Wi-Fi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle), Channel 1 (2412.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	BACK, 0.00	WLAN 2.4GHz	WLAN, 10415-AAA	2412.0, 1	7.48	1.78	39.6

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2102	HBBL-600-10000 DAK 3.5 Head ELI 21.49 deg.C 2024-July-19 SYS3 B3.prn, 2024-Jul-19	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	10.0 x 10.0	4.6 x 4.6 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-19, 10:35	2024-07-19, 10:49
psSAR1g [W/Kg]	0.631	0.611
psSAR10g [W/Kg]	0.252	0.230
Power Drift [dB]	-0.03	-0.03
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		71.7
Dist 3dB Peak [mm]		5.6

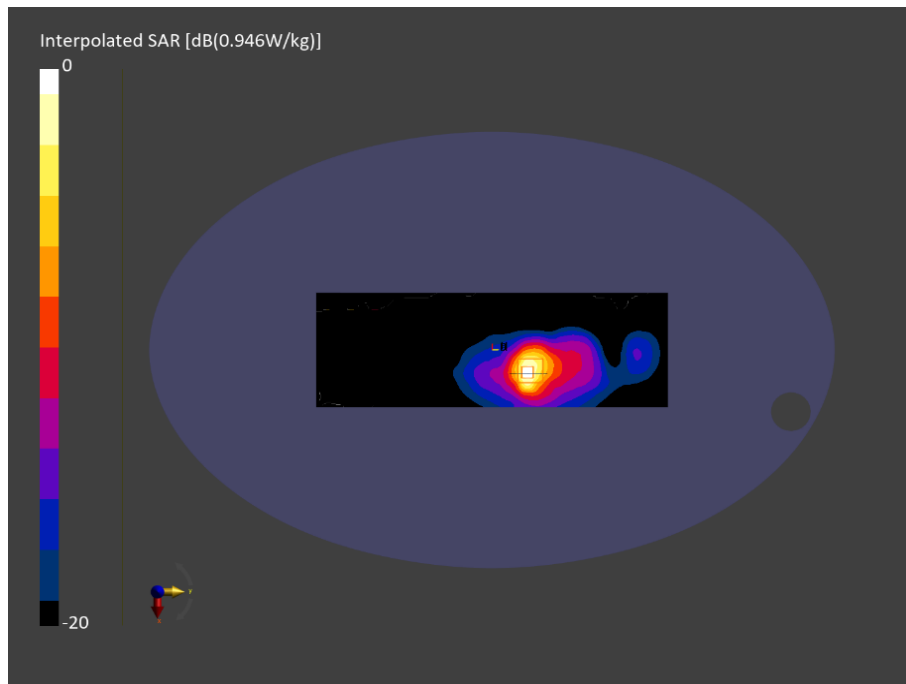


Figure E.02: Testing results for the SC2021 at 2412MHz



FRONT OF FACE-SAR PLOT

Measurement Report for SC2021, FRONT, WLAN 2.4GHz, IEEE 802.11b Wi-Fi 2.4 GHz (DSSS, 1 Mbps, 99pc duty cycle), Channel 11 (2462.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2021,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 25.00	WLAN 2.4GHz	WLAN, 10415-AAA	2462.0, 11	7.48	1.81	39.5

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2102	HBBL-600-10000 DAK 3.5 Head ELI 21.49 deg.C 2024-July-19 SYS3 B3.prn, 2024-Jul-19	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	100.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	10.0 x 10.0	5.0 x 5.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	Y	Y
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-19, 13:34	2024-07-19, 13:52
psSAR1g [W/Kg]	0.006	0.006
psSAR10g [W/Kg]	0.003	0.004
Power Drift [dB]	-0.36	0.73
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		94.7
Dist 3dB Peak [mm]		> 15.0

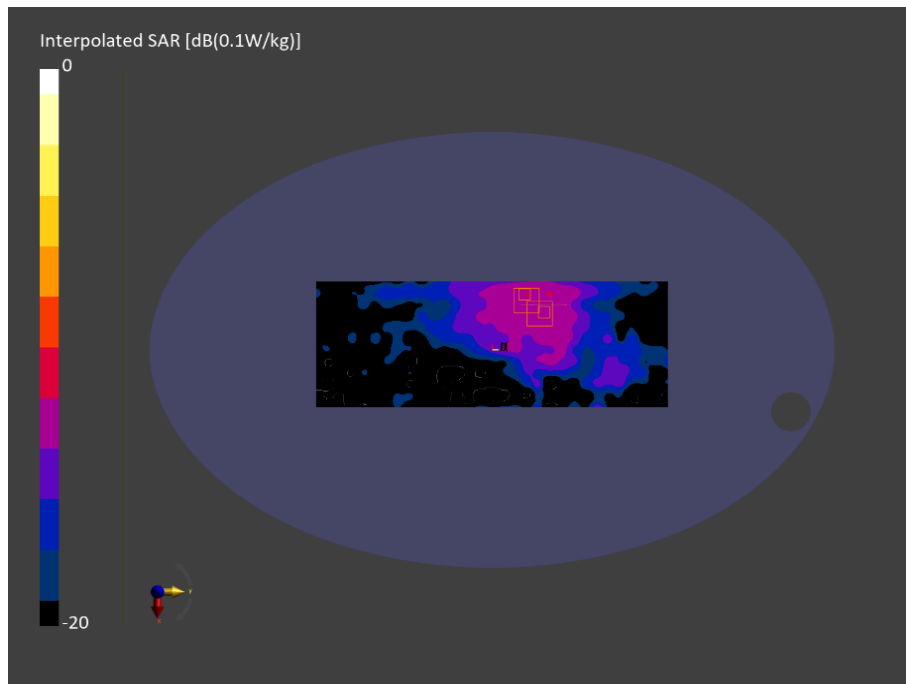


Figure E.03: Testing results for the SC2021 at 2462MHz



ANNEX F

SC2321 TEST REPORT



Sepura Limited. confirmed that the SC2321 TETRA hand portable radio is the same as the SC2021 series with a depopulated PCB that has TETRA only and without BT/WLAN and reduced keypad features.

On the SC2321, one SAR spot check on each antenna and band configuration that resulted in the highest SAR from this SC2021 SAR test report has been performed and found that SC2321 test results are within an acceptable measurement variation.

For SC2321 testing, tune-ups and conducted power measurements are taken from SC2021 model D tests, please refer to sections 1.6 and 1.7 of this report for these details.

For head, body, and front of face, one SAR spot check test was done on each antenna and band configuration, please refer to section 1.5 of this report for spot check selection.

For SC2321 test details and test equipment used, please refer to sections 2 and 3 of this report and for EUT identification refer to section 1.3.



SC2321 Head SAR results

TETRA - Head SAR Spot check for SC2321 by referencing SC2021 model D Head SAR results worst case in each band and antenna configuration.
Specific Absorption Rate (SAR) 1g Results

Antenna	Test Position	Channel Number	Frequency (MHz)	Measured Average Power (dBm)	Tune Up (dBm)	Measured 1g SAR (W/kg)	Scaled 1g SAR (W/kg)	Scan Figure Number
300-02070 (White)	Tilt Right	3	143.00	34.85	35.00	2.601	2.692	-
300-02071 (Green)	Tilt Left	3	143.00	34.85	35.00	2.680	2.774	-
300-02071 (Green)	Tilt Right	6	157.00	34.83	35.00	2.592	2.695	-
300-02072 (Blue)	Tilt Left	6	157.00	34.83	35.00	3.130	3.254	-
300-02072 (Blue)	Tilt Left	12	168.00	34.83	35.00	1.820	1.892	-
300-02073 (Yellow)	Tilt Left	12	168.00	34.83	35.00	4.120	4.283	F.01
Limit for Occupational (Controlled Exposure) 8 W/kg (1g)								

Table 43

SC2321 Body SAR results

TETRA - Body SAR Spot check for SC2321 by referencing SC2021 model D Head SAR results worst case in each band and antenna configuration.
Specific Absorption Rate (SAR) 1g Results

Antenna	Test Position	Channel Number	Frequency (MHz)	Measured Average Power (dBm)	Tune Up (dBm)	Measured 1g SAR (W/kg)	Scaled 1g SAR (W/kg)	Scan Figure Number
300-02070 (White)	Bottom Edge 0mm	3	143.00	34.85	35.00	1.780	1.842	-
300-02071 (Green)	Back 0mm	3	143.00	34.85	35.00	1.860	1.925	-
300-02071 (Green)	Bottom Edge 0mm	6	157.00	34.83	35.00	1.850	1.923	-
300-02072 (Blue)	Right Edge 0mm	6	157.00	34.83	35.00	2.570	2.672	-
300-02072 (Blue)	Right Edge 0mm	12	168.00	34.83	35.00	2.620	2.724	-
300-02073 (Yellow)	Front 0mm	12	168.00	34.83	35.00	3.920	4.076	F.02
Limit for Occupational (Controlled Exposure) 8 W/kg (1g)								

Table 44



SC2321 Front of Face SAR results.

TETRA - Fron SAR Spot check for SC2321 by referencing SC2021 model D Head SAR results worst case in each band and antenna configuration.
 Specific Absorption Rate (SAR) 1g Results

Antenna	Test Position	Channel Number	Frequency (MHz)	Measured Average Power (dBm)	Tune Up (dBm)	Measured 1g SAR (W/kg)	Scaled 1g SAR (W/kg)	Scan Figure Number
300-02070 (White)	25mm Front of Face	3	143.00	34.85	35.00	0.362	0.375	-
300-02071 (Green)	25mm Front of Face	3	143.00	34.85	35.00	0.077	0.080	-
300-02071 (Green)	25mm Front of Face	6	157.00	34.83	35.00	0.411	0.427	-
300-02072 (Blue)	25mm Front of Face	6	157.00	34.83	35.00	0.102	0.106	-
300-02072 (Blue)	25mm Front of Face	12	168.00	34.83	35.00	0.591	0.614	F.03
300-02073 (Yellow)	25mm Front of Face	12	168.00	34.83	35.00	0.092	0.096	-
Limit for Occupational (Controlled Exposure) 8 W/kg (1g)								

Table 45



HEAD-SAR PLOTS

Measurement Report for SC2321, TILT, Custom Band, Pulse Waveform (200Hz, 20%), Channel 174000 (174.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2321,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
LeftHead, HSL	TILT, 0.00	Custom Band	CW, 10659-AAB	174.0, 174000	11.88	0.794	51.8

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V5.0 (30deg probe tilt) - 1617	HBBL4-250V3 DAK 12 Head 21.40 deg.C 2024-July-15 SYS3.prn, 2024-Jul-15	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-17, 11:17	2024-07-17, 11:28
psSAR1g [W/Kg]	3.62	4.12
psSAR10g [W/Kg]	2.47	2.16
Power Drift [dB]	0.08	0.23
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		62.2
Dist 3dB Peak [mm]		8.4

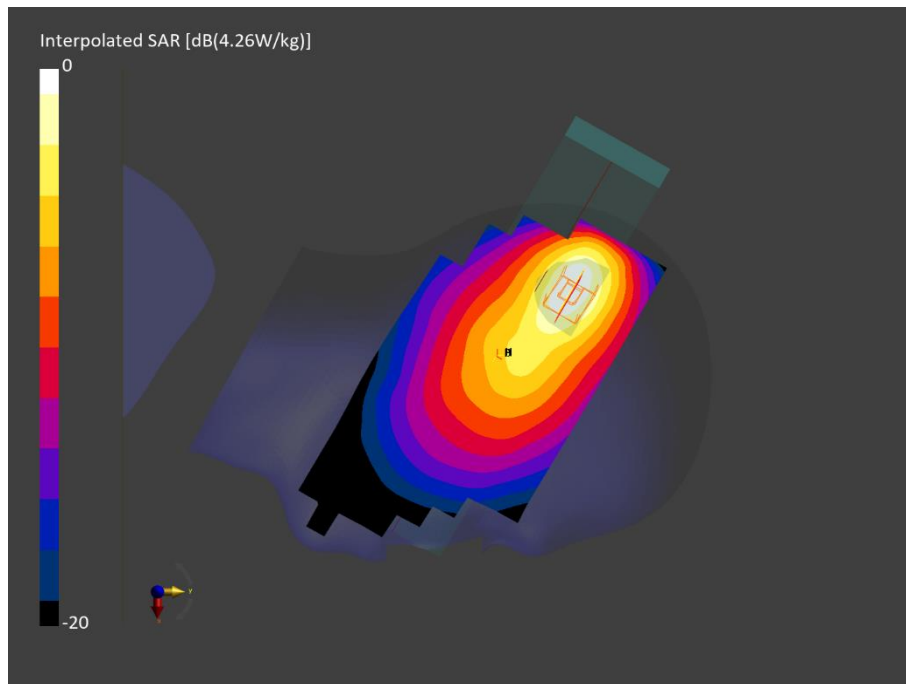


Figure F.01: Testing results for the SC2321 at 174MHz yellow antenna.



BODY-SAR PLOTS

Measurement Report for SC2321, FRONT, Custom Band, Pulse Waveform (200Hz, 20%), Channel 174000 (174.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2321,	264.0 x 62.0 x 39.0		PTT radio

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 0.00	Custom Band	CW, 10659-AAB	174.0, 174000	11.88	0.794	51.8

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2102	HBBL4-250V3 DAK 12 Head 21.40 deg.C 2024-July-15 SYS3.prn, 2024-Jul-15	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-15, 13:09	2024-07-15, 13:20
psSAR1g [W/Kg]	3.27	3.92
psSAR10g [W/Kg]	2.12	1.79
Power Drift [dB]	0.07	0.03
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		47.0
Dist 3dB Peak [mm]		7.2

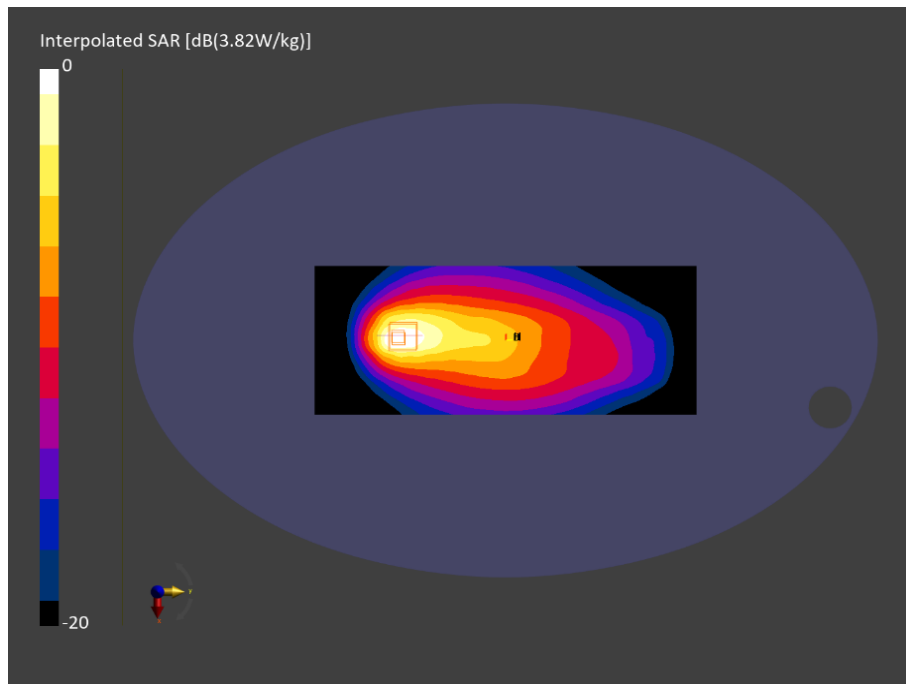


Figure F.02: Testing results for the SC2321 at 174MHz yellow antenna.



FRONT OF FACE-SAR PLOTS

Measurement Report for SC2321, FRONT, Custom Band, Pulse Waveform (200Hz, 20%), Channel 174000 (174.0 MHz)

Device Under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SC2321,	264.0 x 62.0 x 39.0		Phone

Exposure Conditions

Phantom Section, TSL	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor	TSL Conductivity [S/m]	TSL Permittivity
Flat, HSL	FRONT, 25.00	Custom Band	CW, 10659-AAB	174.0, 174000	11.88	0.794	51.8

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2102	HBBL4-250V3 DAK 12 Head 21.40 deg.C 2024-July-15 SYS3.prn, 2024-Jul-15	EX3DV4 - SN3759, 2023-12-14	DAE4ip Sn1786, 2023-04-03

Scans Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 300.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	n/a	Yes
Grading Ratio	n/a	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2024-07-15, 10:05	2024-07-15, 10:15
psSAR1g [W/Kg]	0.570	0.591
psSAR10g [W/Kg]	0.437	0.444
Power Drift [dB]	0.10	0.11
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	Positive only	Positive only
M2/M1 [%]		80.8
Dist 3dB Peak [mm]		> 15.0

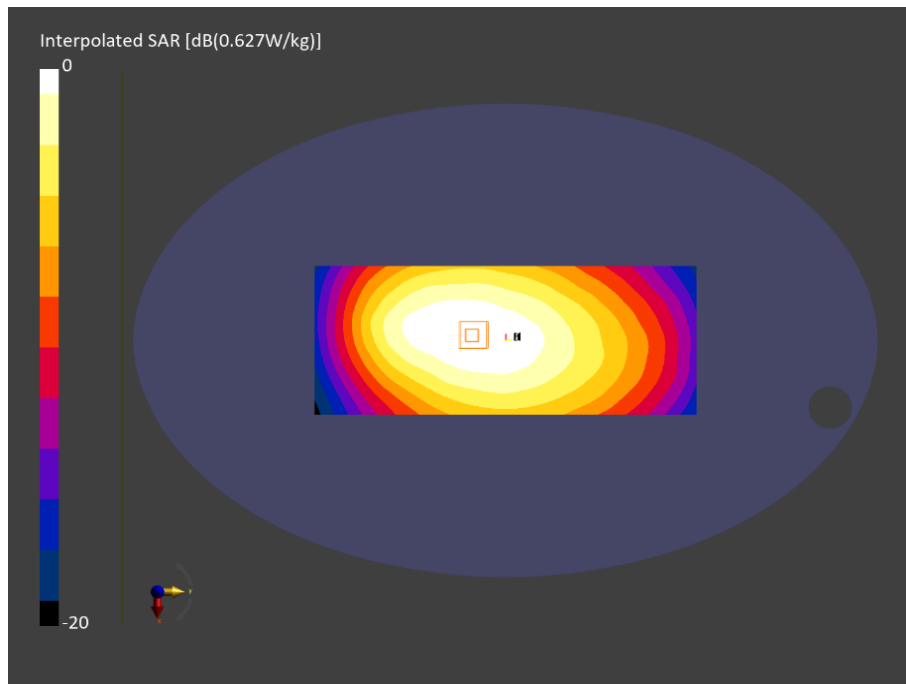


Figure F.03: Testing results for the SC2321 at 174MHz blue antenna.