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Testing Appendix

Appendix A. Plots of SAR and Power Density System Verification

The plots for system verification are shown as follows.

Measurement Report

System Check_H2450_231020

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SPEAG	n/a x n/a x n/a		Dipole

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		CW		2450.0	7.63	1.85	38.5

Hardware Setup

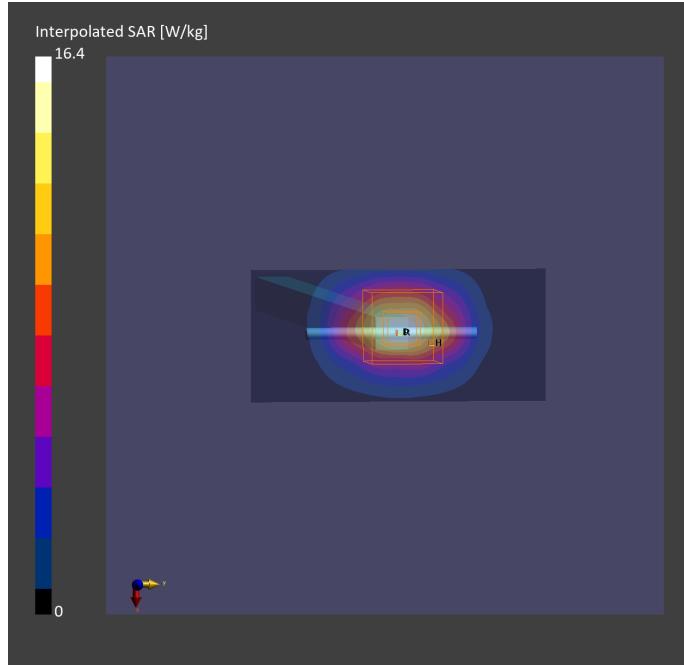
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2185	H2450, 2023-Oct-20	EX3DV4 - SN7300, 2023-05-25	DAE4 Sn1397, 2023-04-26

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 90.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	10.0 x 15.0	5.0 x 5.0 x 1.5
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2023-10-20, 10:03	2023-10-20, 10:09
psSAR1g [W/kg]	12.6	13.1
psSAR10g [W/kg]	5.93	6.29
Power Drift [dB]	0.02	0.00
M2/M1 [%]		82.9
Dist 3dB Peak [mm]		9.0



Measurement Report

System Check_H5300_231020

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SPEAG	n/a x n/a x n/a		Dipole

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		CW		5300.0	5.36	4.78	35.7

Hardware Setup

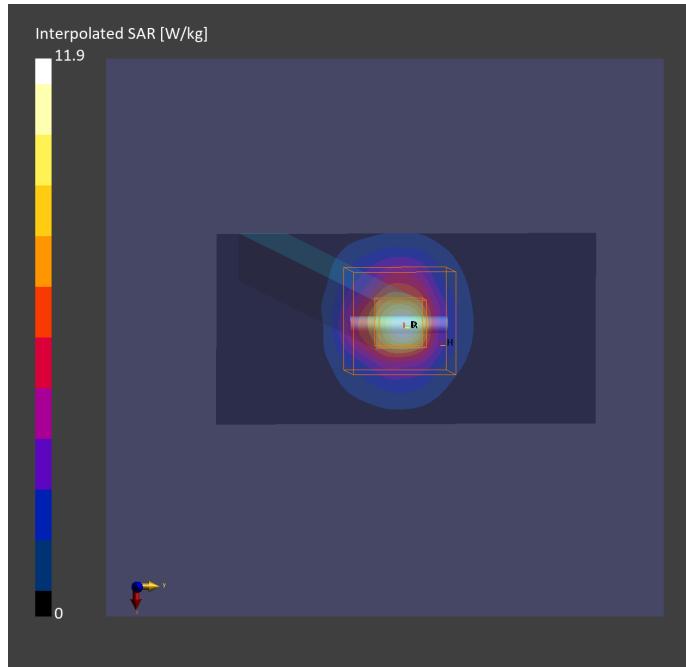
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2184	H5G, 2023-Oct-20	EX3DV4 - SN7762, 2023-07-13	DAE4 Sn1748, 2023-07-07

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 80.0	24.0 x 22.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 1.4
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2023-10-20, 12:13	2023-10-20, 12:19
psSAR1g [W/kg]	7.54	8.37
psSAR10g [W/kg]	2.21	2.39
Power Drift [dB]	0.00	-0.01
M2/M1 [%]		64.5
Dist 3dB Peak [mm]		7.3



Measurement Report

System Check_H5300_231023

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SPEAG	n/a x n/a x n/a		Dipole

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		CW		5300.0	5.36	4.87	35.4

Hardware Setup

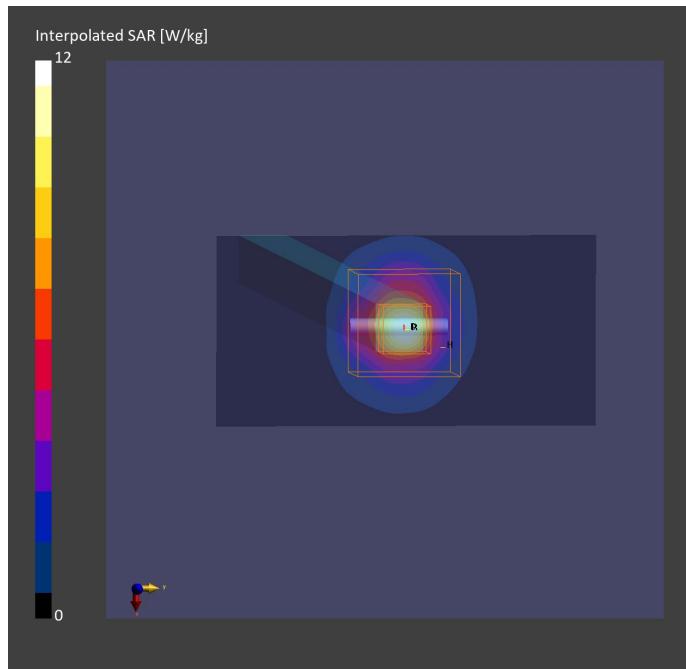
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2184	H5G, 2023-Oct-23	EX3DV4 - SN7762, 2023-07-13	DAE4 Sn1748, 2023-07-07

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 80.0	24.0 x 22.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 1.4
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2023-10-23, 14:41	2023-10-23, 14:47
psSAR1g [W/kg]	7.42	7.98
psSAR10g [W/kg]	2.13	2.28
Power Drift [dB]	-0.02	-0.06
M2/M1 [%]		64.7
Dist 3dB Peak [mm]		7.2



Measurement Report

System Check_H5600_231020

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SPEAG	n/a x n/a x n/a		Dipole

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		CW		5600.0	4.76	5.10	35.1

Hardware Setup

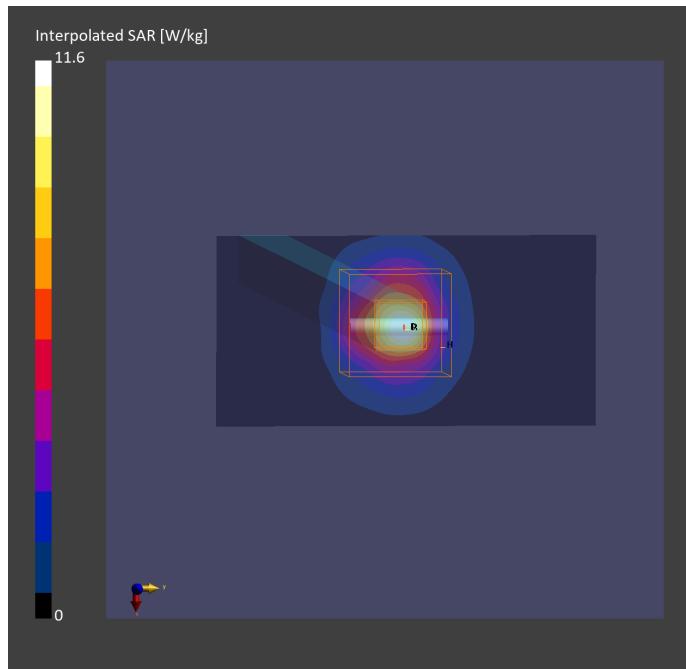
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2184	H5G, 2023-Oct-20	EX3DV4 - SN7762, 2023-07-13	DAE4 Sn1748, 2023-07-07

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 80.0	24.0 x 22.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 1.4
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2023-10-20, 12:40	2023-10-20, 12:46
psSAR1g [W/kg]	7.51	8.33
psSAR10g [W/kg]	2.22	2.39
Power Drift [dB]	-0.01	-0.03
M2/M1 [%]		62.1
Dist 3dB Peak [mm]		7.4



Measurement Report

System Check_H5800_231020

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SPEAG	n/a x n/a x n/a		Dipole

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		CW		5800.0	4.93	5.31	34.7

Hardware Setup

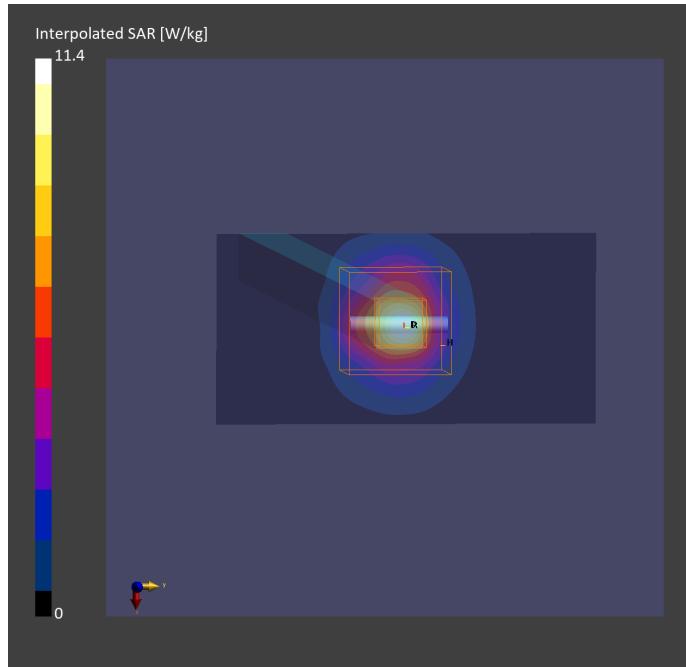
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2184	H5G, 2023-Oct-20	EX3DV4 - SN7762, 2023-07-13	DAE4 Sn1748, 2023-07-07

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 80.0	24.0 x 22.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 1.4
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2023-10-20, 12:53	2023-10-20, 12:59
psSAR1g [W/kg]	7.41	8.22
psSAR10g [W/kg]	2.19	2.36
Power Drift [dB]	-0.02	-0.02
M2/M1 [%]		60.4
Dist 3dB Peak [mm]		7.6



Measurement Report

System Check_H6500_231019

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SPEAG	n/a x n/a x n/a		Dipole

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			CW	6500.0	5.85	6.12	34.6

Hardware Setup

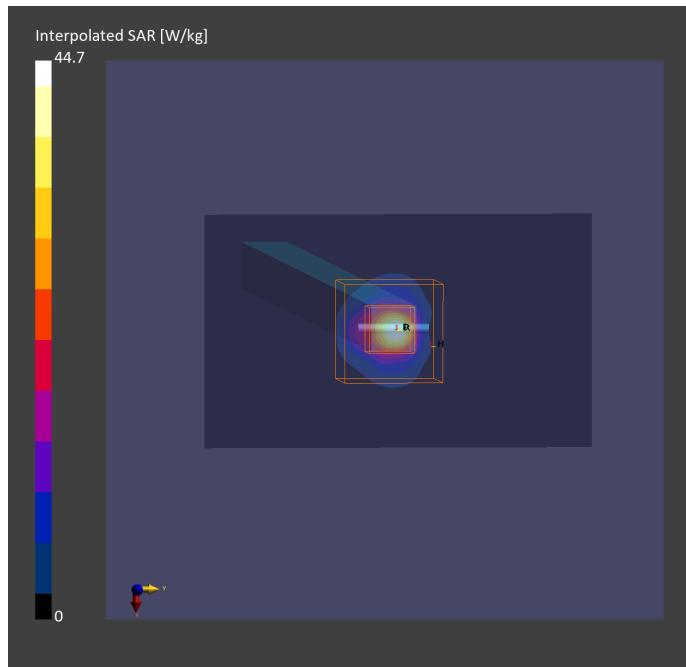
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2185	H6500, 2023-Oct-19	EX3DV4 - SN7300, 2023-05-25	DAE4 Sn1397, 2023-04-26

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	51.0 x 85.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	8.5 x 8.5	3.4 x 3.4 x 1.4
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2023-10-19, 10:30	2023-10-19, 10:44
psSAR1g [W/kg]	24.1	28.9
psSAR10g [W/kg]	4.88	5.40
psAPD (1.0cm ² , sq) [W/m ²]		289
psAPD (4.0cm ² , sq) [W/m ²]		131
Power Drift [dB]	0.03	-0.04
M2/M1 [%]		52.0
Dist 3dB Peak [mm]		4.6



Measurement Report

System Check_10GHz_231026

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SPEAG	100.0 x 100.0 x 172.0		Verification Source 10 GHz

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
5G Air	Front, 10.00	Validation band	CW	10000.0, 10000	1.0

Hardware Setup

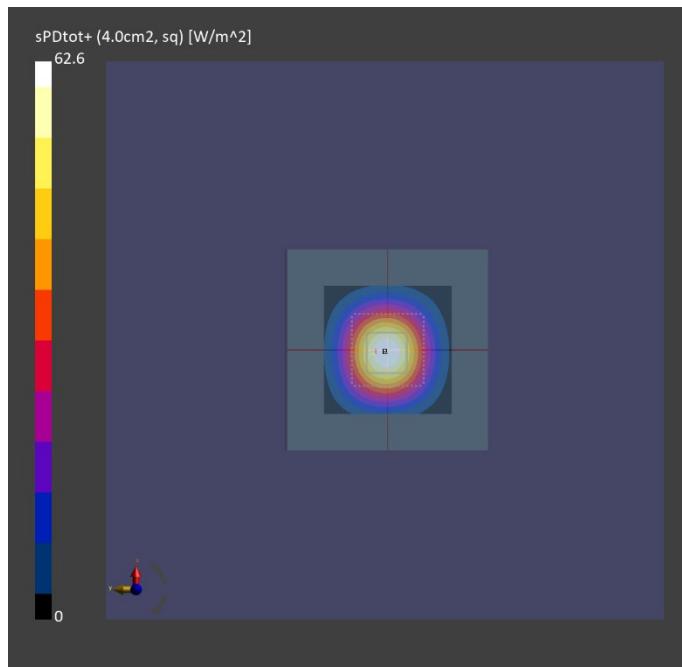
Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave	Air	EUmmWV4 - SN9671_F1-55GHz, 2023-07-05	DAE4 Sn1748, 2023-07-07

Scan Setup

5G Scan	
Grid Extents [mm]	60.0 x 60.0
Grid Steps [lambda]	0.125 x 0.125
Sensor Surface [mm]	10.0
MAIA	N/A

Measurement Results

5G Scan
Date
Avg. Area [cm ²]
psPDn+ [W/m ²]
psPDTot+ [W/m ²]
psPDMod+ [W/m ²]
E _{max} [V/m]
Power Drift [dB]



Measurement Report

System Check_10GHz_231027

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SPEAG	100.0 x 100.0 x 172.0		Verification Source 10 GHz

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
5G Air	Front, 10.00	Validation band	CW	10000.0, 10000	1.0

Hardware Setup

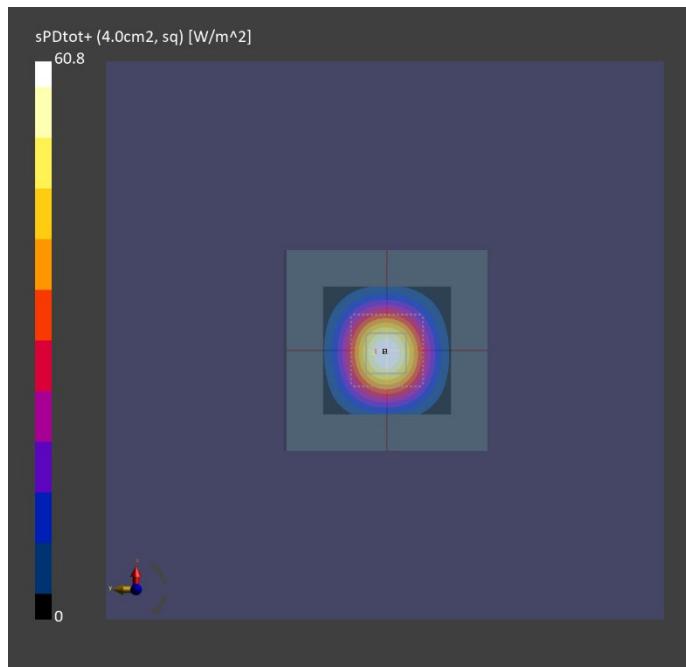
Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave	Air	EUmmWV4 - SN9671_F1-55GHz, 2023-07-05	DAE4 Sn1748, 2023-07-07

Scan Setup

	5G Scan
Grid Extents [mm]	60.0 x 60.0
Grid Steps [lambda]	0.125 x 0.125
Sensor Surface [mm]	10.0
MAIA	N/A

Measurement Results

	5G Scan
Date	2023-10-27, 09:37
Avg. Area [cm ²]	4.00
psPDn+ [W/m ²]	60.5
psPDto+ [W/m ²]	60.8
psPDmod+ [W/m ²]	61.2
E _{max} [V/m]	158
Power Drift [dB]	-0.03



Measurement Report

System Check_10GHz_231030

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
SPEAG	100.0 x 100.0 x 172.0		Verification Source 10 GHz

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
5G Air	Front, 10.00	Validation band	CW	10000.0, 10000	1.0

Hardware Setup

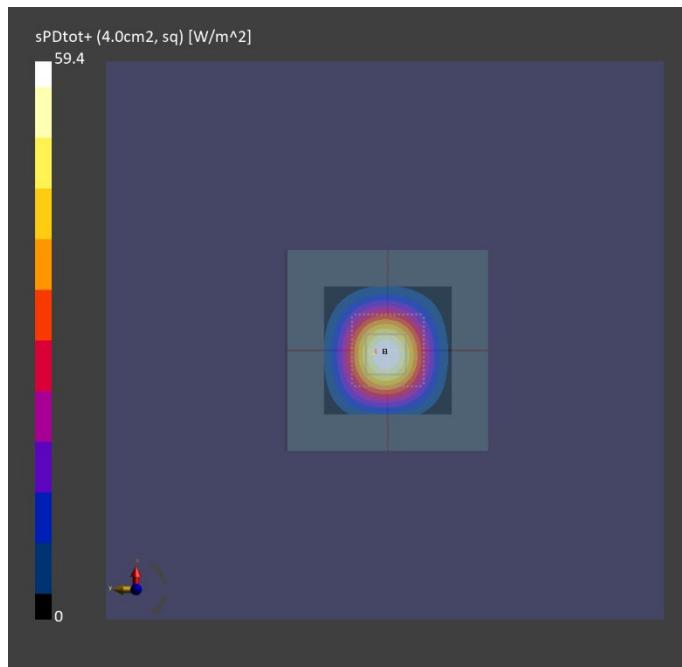
Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave	Air	EUmmWV4 - SN9671_F1-55GHz, 2023-07-05	DAE4 Sn1748, 2023-07-07

Scan Setup

	5G Scan
Grid Extents [mm]	60.0 x 60.0
Grid Steps [lambda]	0.125 x 0.125
Sensor Surface [mm]	10.0
MAIA	N/A

Measurement Results

	5G Scan
Date	2023-10-30, 10:55
Avg. Area [cm ²]	4.00
psPDn+ [W/m ²]	59.1
psPDto+ [W/m ²]	59.4
psPDmod+ [W/m ²]	59.8
E _{max} [V/m]	155
Power Drift [dB]	-0.10





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Testing Appendix

Appendix B. Plots of SAR and Power Density Measurement

The SAR plots for highest measured SAR and Power Density in each exposure configuration, wireless mode and frequency band combination are shown as follows.

Measurement Report

P1851 WLAN 2.4G_Bottom_0cm_CH12_Ant 2

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
NP960XGL	357.0 x 251.0 x 15.0		Laptop

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	Bottom, 0.00	WLAN 2.4GHz	WLAN, 10012-CAB	2467.0, 12	7.63	1.87	38.4

Hardware Setup

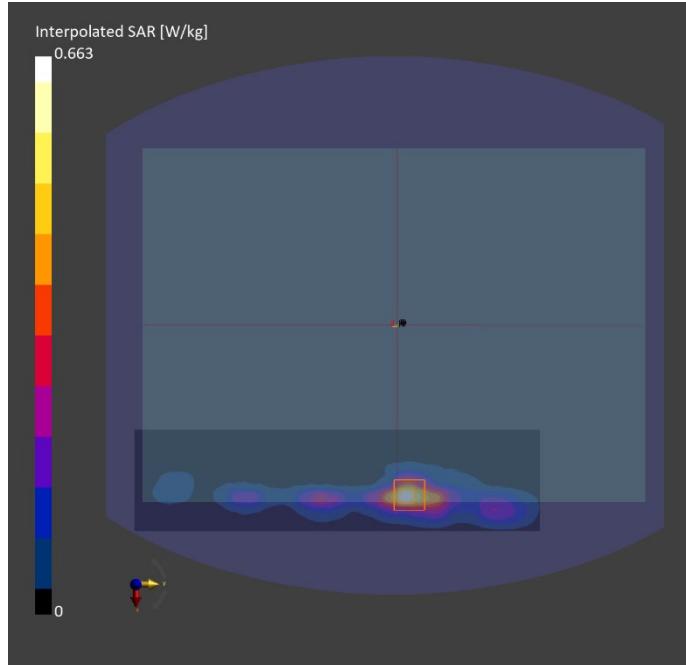
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2185	H2450, 2023-Oct-20	EX3DV4 - SN7300, 2023-05-25	DAE4 Sn1397, 2023-04-26

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	72.0 x 288.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	12.0 x 12.0	5.0 x 5.0 x 1.5
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2023-10-20, 13:55	2023-10-20, 14:02
psSAR1g [W/kg]	0.494	0.525
psSAR10g [W/kg]	0.225	0.227
Power Drift [dB]	-0.00	-0.01
M2/M1 [%]		78.3
Dist 3dB Peak [mm]		8.0



Measurement Report

P2001 WLAN 5.3G_Bottom_0cm_CH58_Ant 2

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
NP960XGL	357.0 x 251.0 x 15.0		Laptop

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	Bottom, 0.00	WLAN 5GHz	WLAN, 10731-AAC	5290.0, 58	5.36	4.77	35.7

Hardware Setup

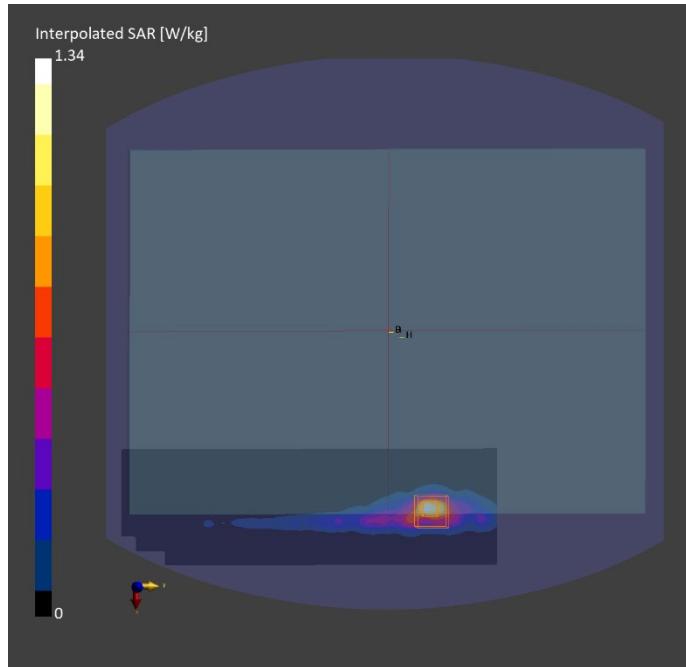
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2184	H5G, 2023-Oct-20	EX3DV4 - SN7762, 2023-07-13	DAE4 Sn1748, 2023-07-07

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	80.0 x 260.0	24.0 x 22.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 1.4
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2023-10-20, 14:56	2023-10-20, 15:06
psSAR1g [W/kg]	0.885	0.929
psSAR10g [W/kg]	0.299	0.305
Power Drift [dB]	0.03	-0.19
M2/M1 [%]		64.3
Dist 3dB Peak [mm]		5.9



Measurement Report

P2200 WLAN 5.6G_Bottom_0cm_CH114_Ant 1

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
NP960XGL	357.0 x 251.0 x 15.0		Laptop

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	Bottom, 0.00	WLAN 5GHz	WLAN, 10755-AAC	5570.0, 114	4.76	5.06	35.1

Hardware Setup

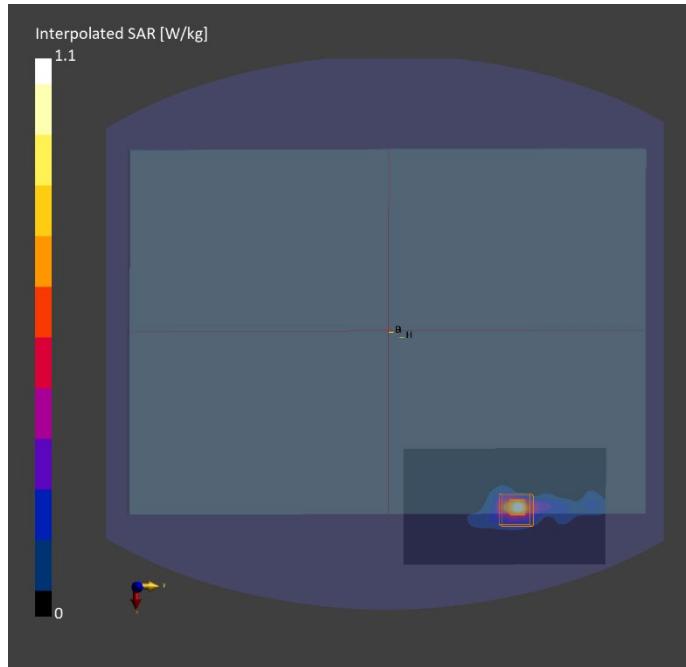
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2184	H5G, 2023-Oct-20	EX3DV4 - SN7762, 2023-07-13	DAE4 Sn1748, 2023-07-07

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	80.0 x 140.0	24.0 x 22.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 1.4
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2023-10-20, 15:51	2023-10-20, 16:00
psSAR1g [W/kg]	0.673	0.740
psSAR10g [W/kg]	0.190	0.210
Power Drift [dB]	0.11	-0.01
M2/M1 [%]		63.0
Dist 3dB Peak [mm]		5.6



Measurement Report

P2300 WLAN 5.8G_Bottom_0cm_CH155_Ant 1

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
NP960XGL	357.0 x 251.0 x 15.0		Laptop

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	Bottom, 0.00	WLAN 5GHz	WLAN, 10731-AAC	5775.0, 155	4.93	5.28	34.8

Hardware Setup

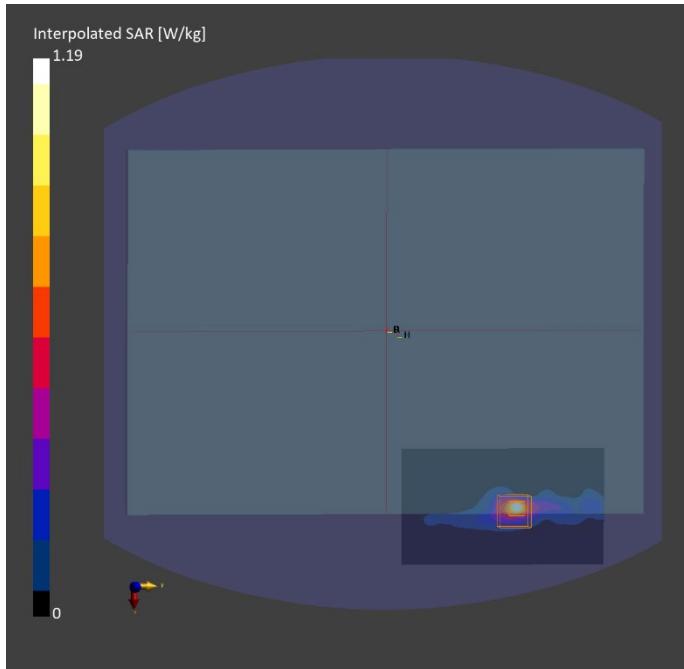
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2184	H5G, 2023-Oct-20	EX3DV4 - SN7762, 2023-07-13	DAE4 Sn1748, 2023-07-07

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	80.0 x 140.0	24.0 x 22.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 1.4
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2023-10-20, 16:41	2023-10-20, 16:50
psSAR1g [W/kg]	0.716	0.788
psSAR10g [W/kg]	0.203	0.224
Power Drift [dB]	0.08	-0.03
M2/M1 [%]		61.6
Dist 3dB Peak [mm]		5.6



Measurement Report

P2450 BT_BDR_Bottom_0cm_CH78_Ant 1

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
NP960XGL	357.0 x 251.0 x 15.0		Laptop

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	Bottom, 0.00	ISM 2.4 GHz Band	Bluetooth, 10032-CAA	2480.0, 78	7.63	1.88	38.4

Hardware Setup

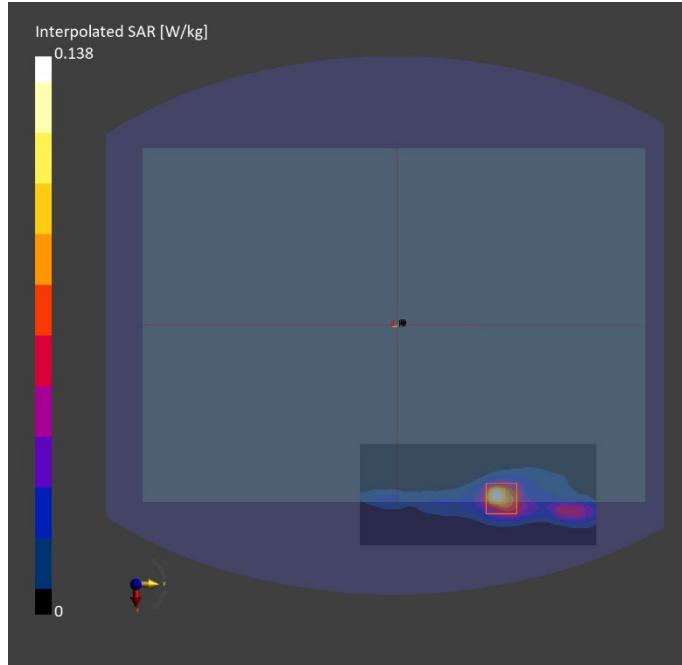
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2185	H2450, 2023-Oct-20	EX3DV4 - SN7300, 2023-05-25	DAE4 Sn1397, 2023-04-26

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	72.0 x 168.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	12.0 x 12.0	5.0 x 5.0 x 1.5
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2023-10-20, 16:37	2023-10-20, 16:48
psSAR1g [W/kg]	0.097	0.102
psSAR10g [W/kg]	0.043	0.041
Power Drift [dB]	0.04	-0.13
M2/M1 [%]		76.8
Dist 3dB Peak [mm]		8.0



Measurement Report

P2607 WLAN 6.5G_Bottom_0cm_CH175_Ant 1

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
NP960XGL	357.0 x 251.0 x 15.0		Laptop

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	Bottom, 0.00	U-NII-7	WLAN, 10755-AAC	6825.0, 175	5.85	6.49	34.0

Hardware Setup

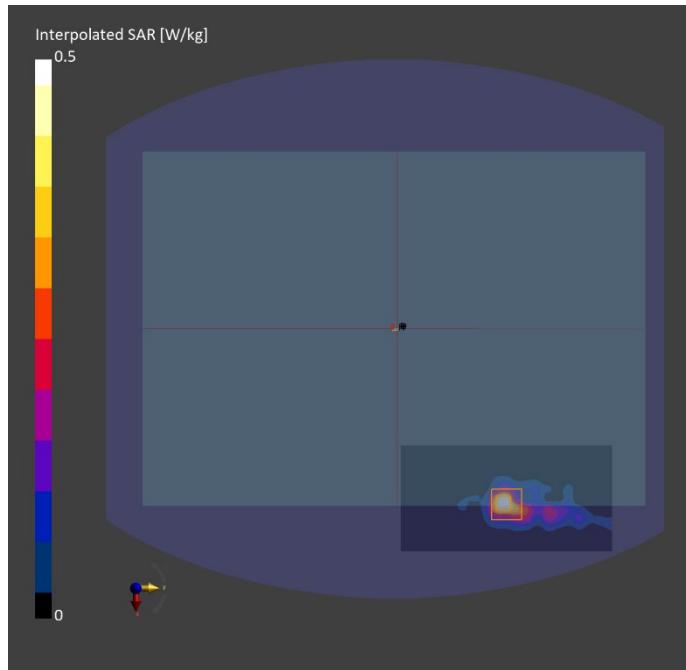
Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
ELI V8.0 (20deg probe tilt) - 2185	H6500, 2023-Oct-19	EX3DV4 - SN7300, 2023-05-25	DAE4 Sn1397, 2023-04-26

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	75.0 x 150.0	27.2 x 27.2 x 22.0
Grid Steps [mm]	7.5 x 7.5	3.4 x 3.4 x 1.4
Sensor Surface [mm]	3.0	1.4

Measurement Results

	Area Scan	Zoom Scan
Date	2023-10-19, 16:39	2023-10-19, 16:54
psSAR1g [W/kg]	0.391	0.439
psSAR10g [W/kg]	0.120	0.132
psAPD (1.0cm ² , sq) [W/m ²]		4.39
psAPD (4.0cm ² , sq) [W/m ²]		3.01
Power Drift [dB]	-0.15	0.08
M2/M1 [%]		51.1
Dist 3dB Peak [mm]		7.1



Measurement Report

P2800 WLAN 6.5G_Bottom_CH15_Ant 1

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
NP960XGL	357.0 x 251.0 x 15.0		Laptop

Exposure Conditions

Phantom Section	Position, Test Distance [mm]	Band	Group, UID	Frequency [MHz], Channel Number	Conversion Factor
5G Air	Bottom, 2.00	U-NII-5	WLAN, 10755-AAC	6025.0, 15	1.0

Hardware Setup

Phantom	Medium	Probe, Calibration Date	DAE, Calibration Date
mmWave	Air	EUmmWV4 - SN9671_F1-55GHz, 2023-07-05	DAE4 Sn1748, 2023-07-07

Scan Setup

	5G Scan
Grid Extents [mm]	100.0 x 100.0
Grid Steps [lambda]	0.0502 x 0.0502
Sensor Surface [mm]	2.0
MAIA	Y

Measurement Results

	5G Scan
Date	2023-10-26, 15:35
Avg. Area [cm ²]	4.00
psPDn+ [W/m ²]	1.48
psPDto+ [W/m ²]	4.66
psPDmod+ [W/m ²]	6.95
E _{max} [V/m]	66.3
Power Drift [dB]	-0.09

