

P90 WCDMA V_RMC12.2K_Front Face_0cm_Ch4132

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 11.0		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, -	FRONT, 0.00	Band 5	WCDMA, -	826,400, 4132	9.47	0.938	43.3

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2161	HSL835-2025-02-18	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

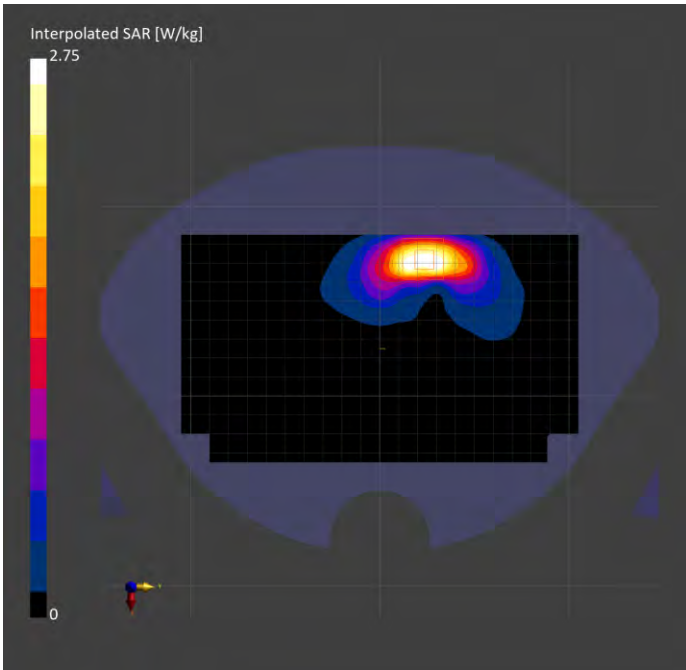
	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 210.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-02-18	2025-02-18
psSAR1g [W/kg]	2.33	2.25
psSAR10g [W/kg]	1.36	1.12
Power Drift [dB]	-0.00	0.01
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		47.6
Dist 3dB Peak [mm]		8.0

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



P91 LTE B2_QPSK20M_Top Side_0cm_Ch19100_100RB_OS0

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 11.0		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, -	EDGE TOP, 0.00	Band 2	LTE-FDD, -	1900.000, 19100	7.97	1.40	40.8

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2161	HSL1950-2025-02-21	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

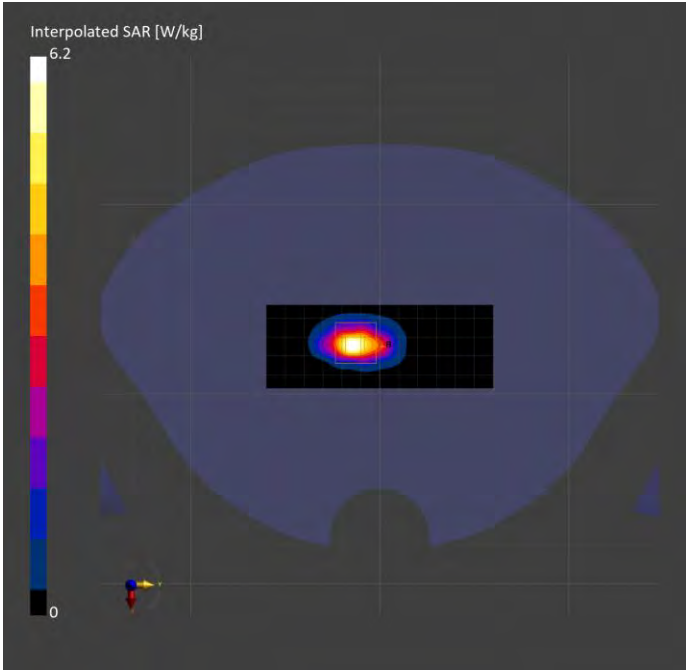
	Area Scan	Zoom Scan
Grid Extents [mm]	44.0 x 120.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	11.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.4
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-02-21	2025-02-21
psSAR1g [W/kg]	4.45	4.46
psSAR10g [W/kg]	1.87	1.75
Power Drift [dB]	0.02	-0.01
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		71.5
Dist 3dB Peak [mm]		5.4

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



P92 LTE B4_QPSK20M_Left Side_0cm_Ch20175_50RB_OS50

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 11.0		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, -	EDGE LEFT, 0.00	Band 4	LTE-FDD, -	1732.500, 20175	8.31	1.33	41.5

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2161	HSL1750-2025-02-17	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

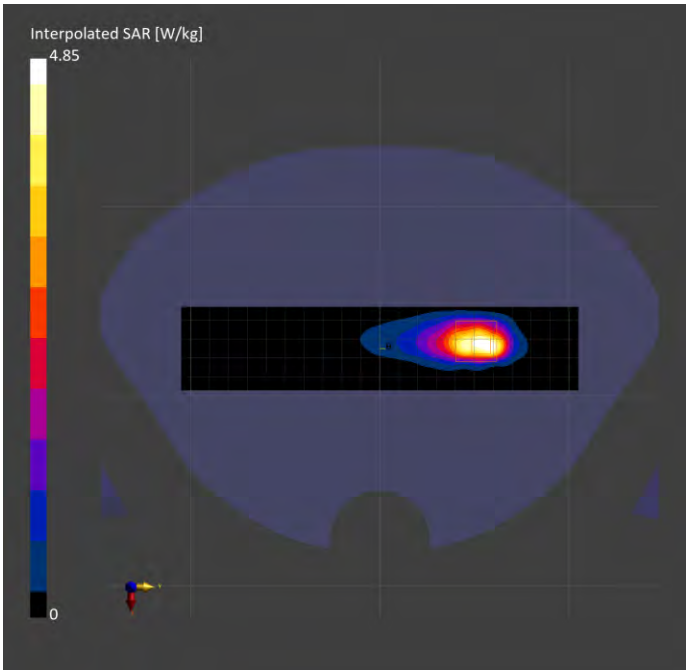
	Area Scan	Zoom Scan
Grid Extents [mm]	44.0 x 210.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	11.0 x 15.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-02-17	2025-02-17
psSAR1g [W/kg]	3.84	4.69
psSAR10g [W/kg]	1.82	1.84
Power Drift [dB]	-0.03	-0.03
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		35.8
Dist 3dB Peak [mm]		4.8

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



P93 LTE B5_QPSK10M_Front Face_0cm_Ch20450_25RB_OS12

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 11.0		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, -	FRONT, 0.00	Band 5	LTE-FDD, -	829.000, 20450	9.47	0.939	43.3

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2161	HSL835-2025-02-18	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

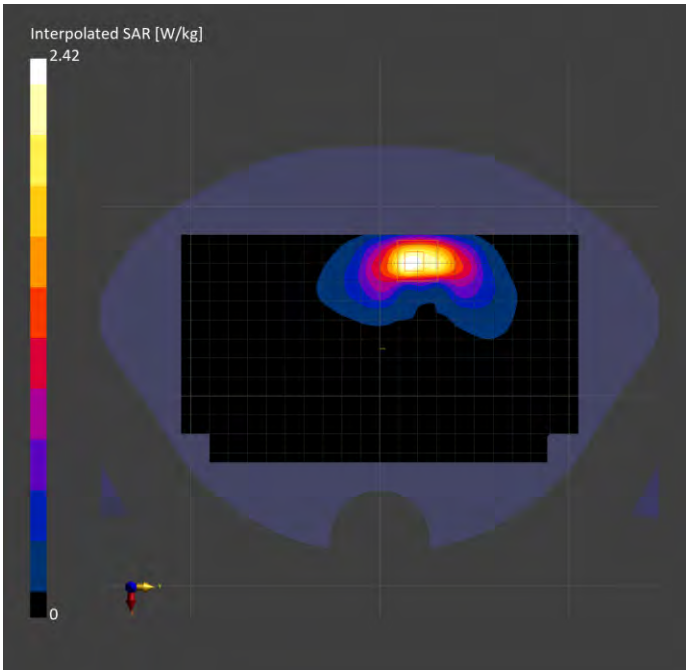
	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 210.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-02-18	2025-02-18
psSAR1g [W/kg]	1.96	1.90
psSAR10g [W/kg]	1.13	0.962
Power Drift [dB]	-0.00	-0.01
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		49.6
Dist 3dB Peak [mm]		9.4

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



P94 LTE B7_QPSK20M_Left Side_0cm_Ch20850_50RB_OSO

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 11.0		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, -	EDGE LEFT, 0.00	Band 7	LTE-FDD, -	2510.000, 20850	7.31	1.88	37.9

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2161	HSL2550-2025-02-22	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

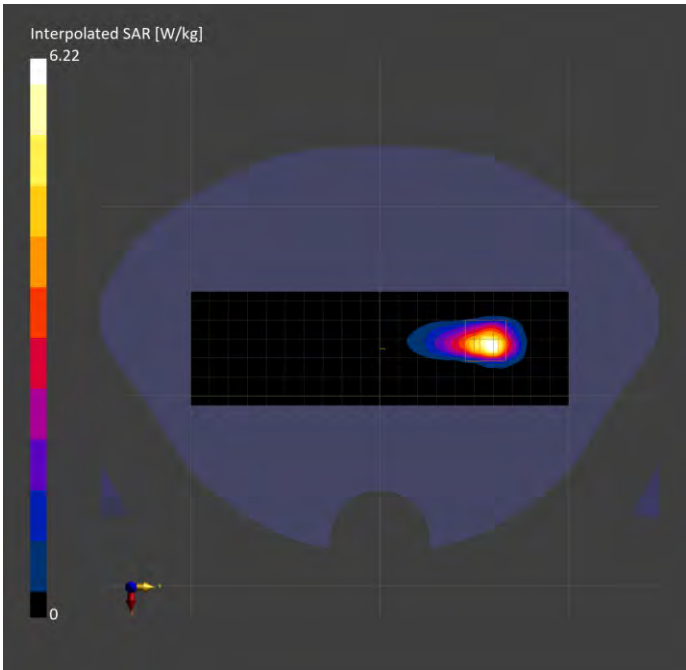
	Area Scan	Zoom Scan
Grid Extents [mm]	60.0 x 200.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	10.0 x 10.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-02-22	2025-02-22
psSAR1g [W/kg]	4.47	5.00
psSAR10g [W/kg]	1.77	1.78
Power Drift [dB]	0.02	0.01
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		28.8
Dist 3dB Peak [mm]		4.6

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



P95 LTE B26_QPSK15M_Rear Face_0cm_Ch26685_1RB_OS37

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 11.0		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, -	BACK, 0.00	Band 26	LTE-FDD, -	831.500, 26865	9.47	0.918	43.4

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2161	HSL835-2025-02-16	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

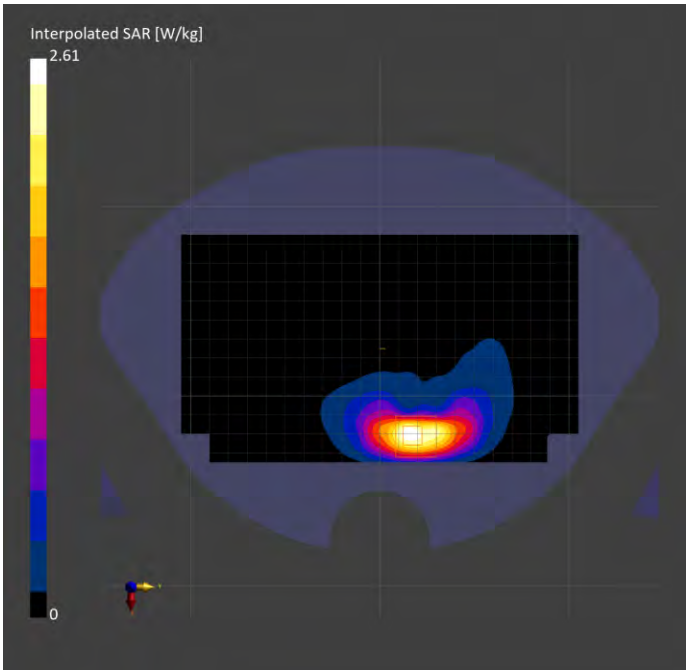
	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 210.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-02-16	2025-02-16
psSAR1g [W/kg]	2.11	2.20
psSAR10g [W/kg]	1.21	1.11
Power Drift [dB]	0.03	0.03
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		36.5
Dist 3dB Peak [mm]		6.4

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



P96 LTE B38_QPSK20M_Top Side_0.5cm_Ch38000_1RB_OS50

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 11.0		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, -	EDGE TOP, 5.00	Band 38	LTE-TDD, -	2595.000, 38000	7.31	1.94	37.7

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2161	HSL2550-2025-03-04	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

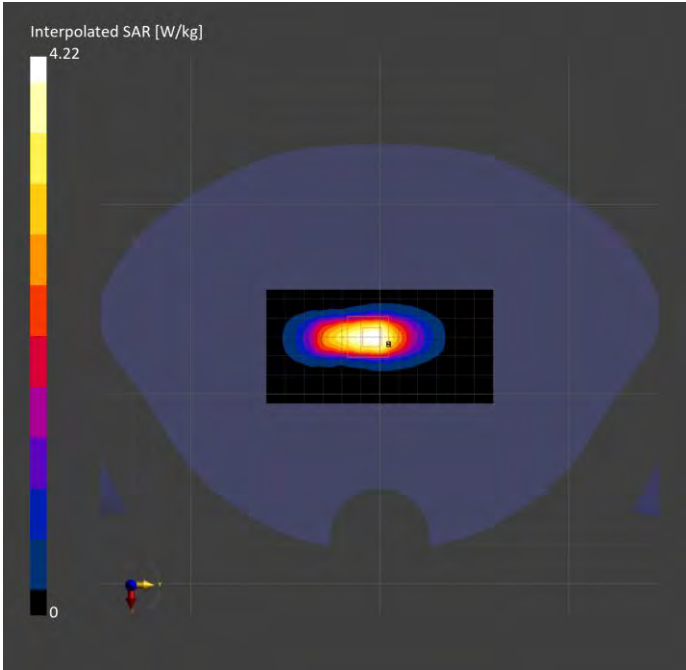
	Area Scan	Zoom Scan
Grid Extents [mm]	60.0 x 120.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	10.0 x 10.0	5.0 x 5.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-03-04	2025-03-04
psSAR1g [W/kg]	3.33	3.77
psSAR10g [W/kg]	1.56	1.62
Power Drift [dB]	0.02	0.01
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		44.9
Dist 3dB Peak [mm]		7.7

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



P97 LTE B41_QPSK20M_Left Side_0cm_Ch39750_50RB_OSO

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 11.0		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, -	EDGE LEFT, 0.00	Band 41	LTE-TDD, -	2506.000, 39750	7.31	1.88	37.8

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2135	HSL2550-2025-02-25	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

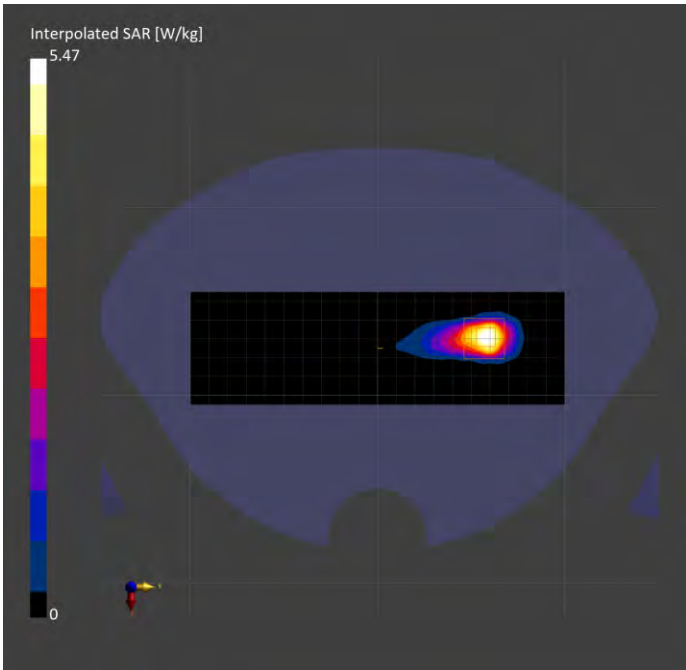
	Area Scan	Zoom Scan
Grid Extents [mm]	60.0 x 200.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	10.0 x 10.0	5.0 x 5.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.2
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-02-25	2025-02-25
psSAR1g [W/kg]	4.21	5.75
psSAR10g [W/kg]	1.73	1.83
Power Drift [dB]	0.03	0.03
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		65.6
Dist 3dB Peak [mm]		4.1

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



P98 LTE B42_QPSK20M_Rear Face_0cm_Ch43490_1RB_OS50

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 11.0		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, -	BACK, 0.00	Band 42	LTE-TDD, -	3590.000, 43490	6.71	2.92	37.0

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2161	HSL3500-2025-02-23	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

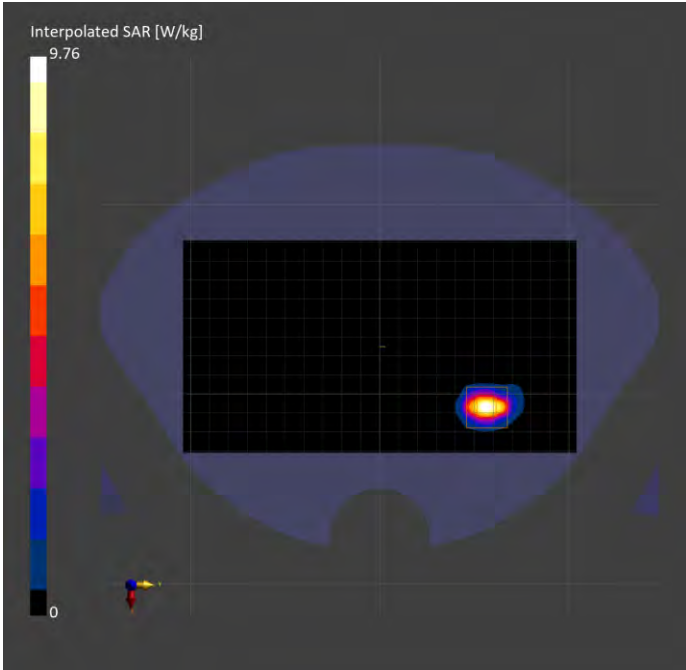
	Area Scan	Zoom Scan
Grid Extents [mm]	112.0 x 208.0	28.0 x 28.0 x 28.0
Grid Steps [mm]	8.0 x 8.0	5.0 x 5.0 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-02-23	2025-02-23
psSAR1g [W/kg]	6.26	6.74
psSAR10g [W/kg]	1.95	1.93
Power Drift [dB]	0.03	-0.02
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		66.2
Dist 3dB Peak [mm]		4.6

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



P99 LTE B48_QPSK20M_Rear Face_0cm_Ch55340_1RB_OS50

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 11.0		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, -	BACK, 0.00	Band 48	LTE-TDD, -	3560.000, 55340	6.71	2.84	37.2

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2161	HSL3500-2025-02-23	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

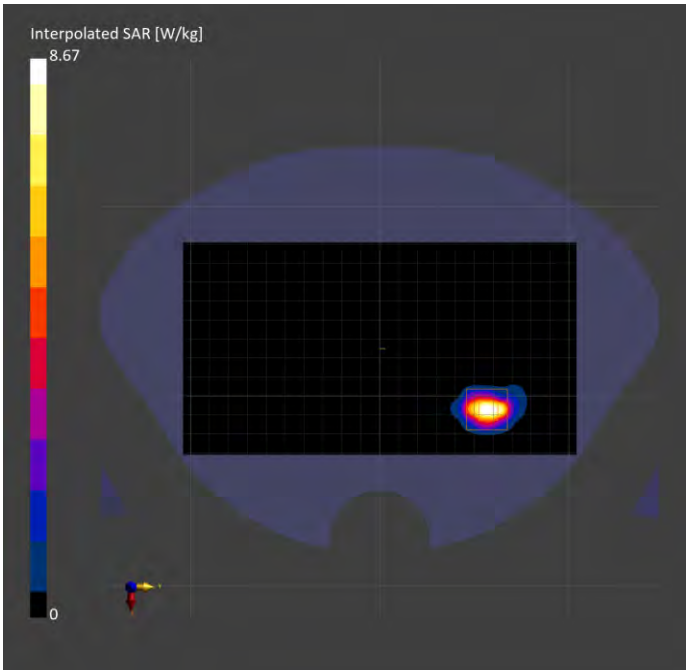
	Area Scan	Zoom Scan
Grid Extents [mm]	112.0 x 208.0	28.0 x 28.0 x 28.0
Grid Steps [mm]	8.0 x 8.0	5.0 x 5.0 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-02-23	2025-02-23
psSAR1g [W/kg]	5.86	6.02
psSAR10g [W/kg]	1.92	1.86
Power Drift [dB]	0.04	0.02
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		67.1
Dist 3dB Peak [mm]		4.8

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



P100 LTE B66_QPSK20M_Left Side_0cm_Ch132572_50RB_OS25

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 11.0		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, -	EDGE TOP, 0.00	Band 66	LTE-FDD, -	1770.000, 132572	8.31	1.42	39.2

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2161	HSL1750-2025-02-20	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

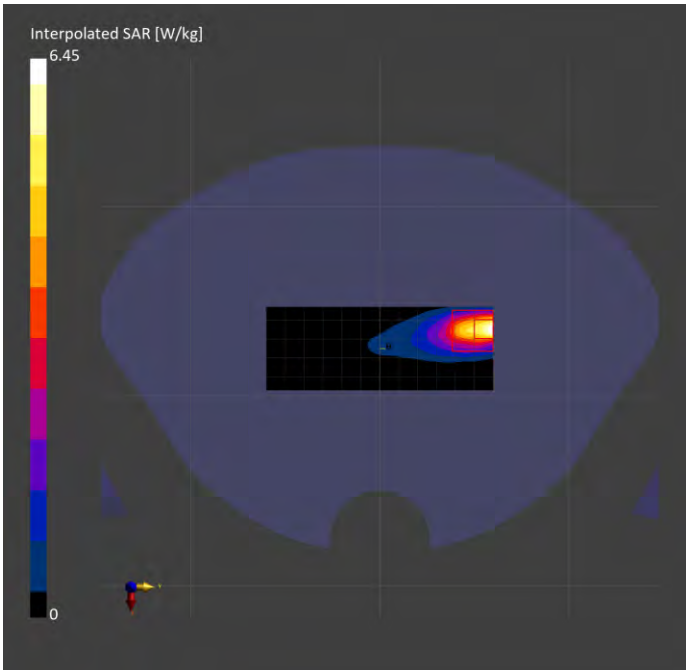
	Area Scan	Zoom Scan
Grid Extents [mm]	44.0 x 120.0	32.0 x 32.0 x 30.0
Grid Steps [mm]	11.0 x 15.0	8.0 x 8.0 x 5.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-02-20	2025-02-20
psSAR1g [W/kg]	4.51	5.22
psSAR10g [W/kg]	2.02	2.02
Power Drift [dB]	-0.00	0.01
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		34.3
Dist 3dB Peak [mm]		4.8

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



P101 FR N2_DFT-QPSK40M_Front Face_0cm_Ch376000_1RB_OS1

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 11.0		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, -	FRONT, 0.00	Band n2	5G NR FR1 FDD, -	1880.000, 376000	7.97	1.38	40.8

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2161	HSL1950-2025-02-21	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

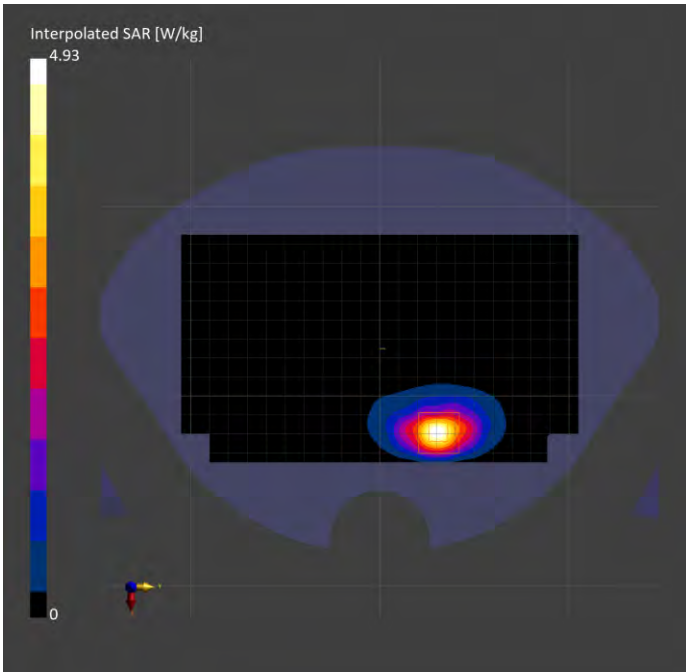
	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 210.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.4
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-02-21	2025-02-21
psSAR1g [W/kg]	3.62	3.45
psSAR10g [W/kg]	1.75	1.45
Power Drift [dB]	-0.02	0.01
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		70.1
Dist 3dB Peak [mm]		5.4

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



P102 FR N5_DFT-QPSK25M_Rear Face_0cm_Ch167300_1RB_OS1

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 11.0		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, -	BACK, 0.00	Band n5	5G NR FR1 FDD, -	836.500, 167300	9.47	0.942	43.3

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2161	HSL835-2025-02-18	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

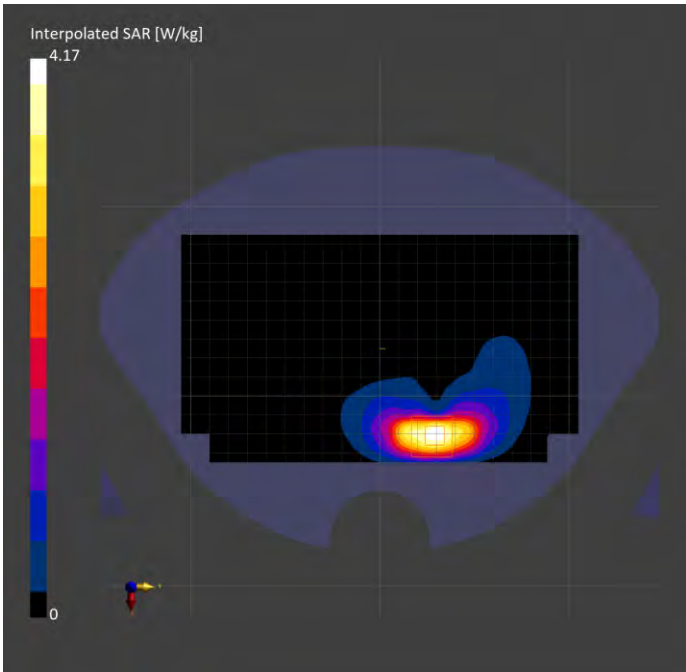
	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 210.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.4
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-02-18	2025-02-18
psSAR1g [W/kg]	3.38	3.98
psSAR10g [W/kg]	1.94	1.74
Power Drift [dB]	-0.01	0.02
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		54.2
Dist 3dB Peak [mm]		3.4

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



P103 NR N7_DFT-QPSK50M_Top Side_0.5cm_Ch505000_135RB_OS68

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 11.0		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, -	EDGE TOP, 5.00	Band n7	5G NR FR1 FDD, -	2525.000, 505000	7.31	1.89	37.9

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2161	HSL2550-2025-02-22	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

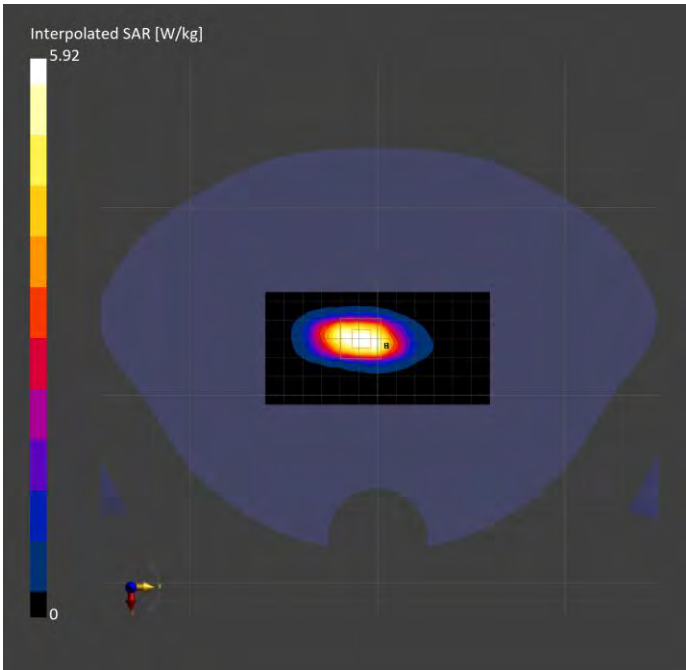
	Area Scan	Zoom Scan
Grid Extents [mm]	60.0 x 120.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	10.0 x 10.0	5.0 x 5.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MAIA	N/A	N/A
Surface Detection	All points	All points
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-02-22	2025-02-22
psSAR1g [W/kg]	4.73	4.87
psSAR10g [W/kg]	2.27	2.18
Power Drift [dB]	0.03	-0.08
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		75.4
Dist 3dB Peak [mm]		7.1

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



P104 FR N38_DFT-QPSK40M_Right Side_0cm_Ch519000_1RB_OS1

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 11.0		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, -	EDGE RIGHT, 0.00	Band n38	5G NR FR1 TDD, -	2595.000, 519000	7.31	1.94	37.7

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2161	HSL2550-2025-03-04	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

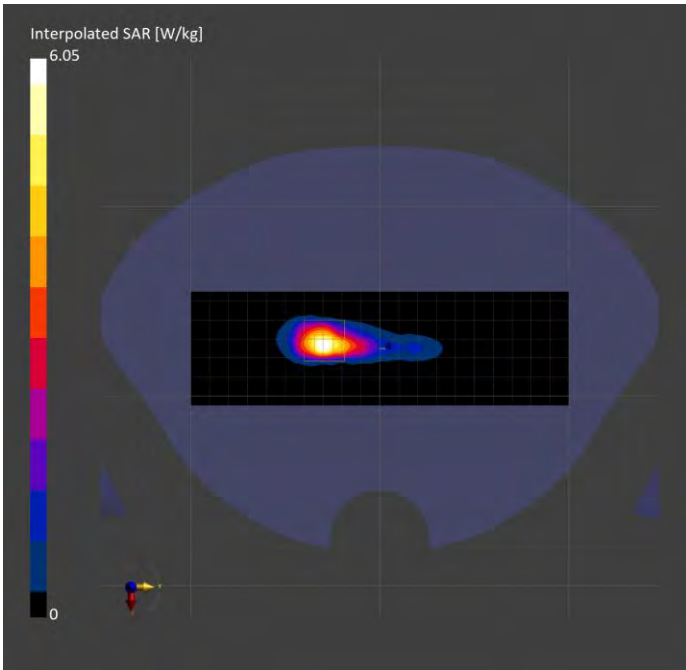
	Area Scan	Zoom Scan
Grid Extents [mm]	60.0 x 200.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	10.0 x 10.0	5.0 x 5.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-03-04	2025-03-04
psSAR1g [W/kg]	4.37	5.55
psSAR10g [W/kg]	1.72	1.82
Power Drift [dB]	0.01	0.01
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		68.3
Dist 3dB Peak [mm]		4.9

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



P105 FR N41_DFT-QPSK100M_Right Side_0cm_Ch518598_135RB_OS69

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 11.0		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, -	EDGE RIGHT, 0.00	Band n41	5G NR FR1 TDD, -	2592.990, 518598	7.31	1.94	37.7

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2161	HSL2550-2025-02-25	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

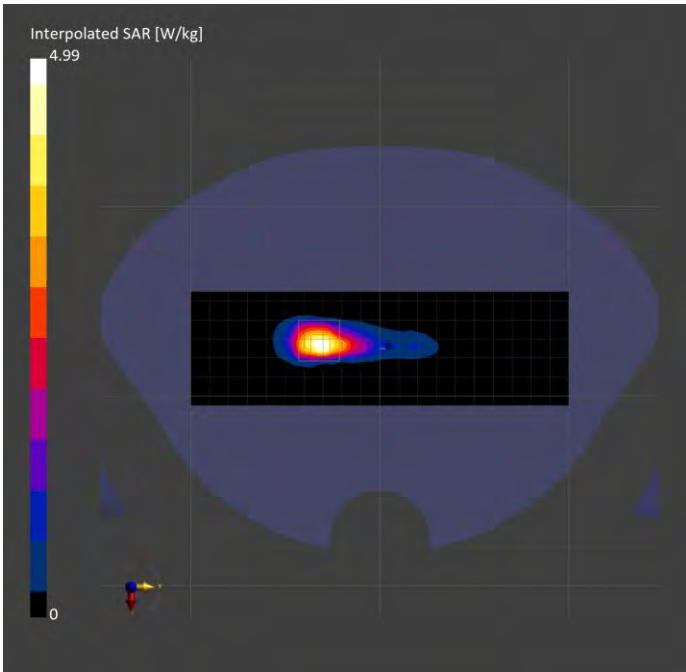
	Area Scan	Zoom Scan
Grid Extents [mm]	60.0 x 200.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	10.0 x 10.0	5.0 x 5.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-02-25	2025-02-25
psSAR1g [W/kg]	3.66	4.57
psSAR10g [W/kg]	1.47	1.56
Power Drift [dB]	0.04	0.04
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		72.7
Dist 3dB Peak [mm]		4.6

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



P106 FR N48_DFT-QPSK40M_Left Side_0cm_Ch638000_50RB_OS28

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 11.0		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, -	EDGE LEFT, 0.00	Band n48	5G NR FR1 TDD, -	3569.995, 638000	6.71	2.90	37.1

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2161	HSL3500-2025-02-23	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

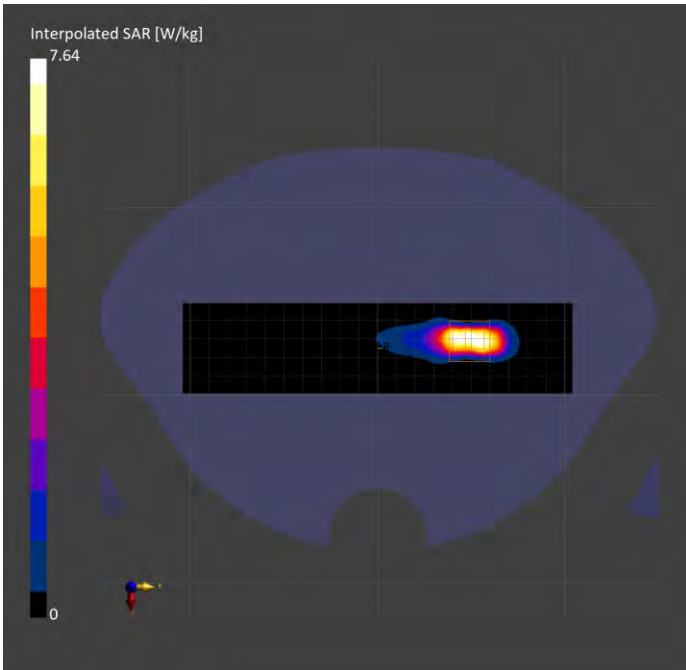
	Area Scan	Zoom Scan
Grid Extents [mm]	48.0 x 208.0	28.0 x 28.0 x 28.0
Grid Steps [mm]	8.0 x 8.0	5.0 x 5.0 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.2
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-02-23	2025-02-23
psSAR1g [W/kg]	5.51	5.83
psSAR10g [W/kg]	1.96	1.82
Power Drift [dB]	-0.07	0.03
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		63.7
Dist 3dB Peak [mm]		4.2

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



P107 FR N66_DFT-QPSK45M_Left Side_0cm_Ch351500_120RB_OS61

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 11.0		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, -	EDGE LEFT, 0.00	Band n66	5G NR FR1 FDD, -	1757.500, 351500	7.97	1.41	39.2

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2161	HSL1750-2025-02-20	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

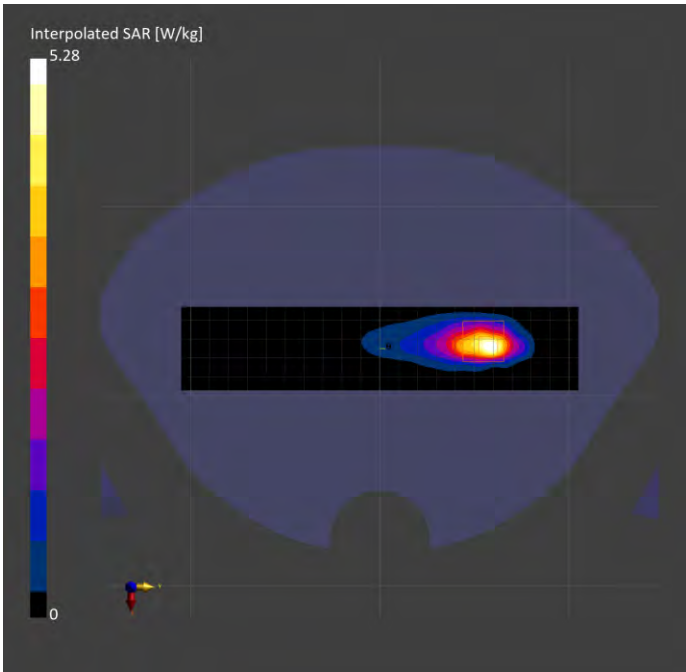
	Area Scan	Zoom Scan
Grid Extents [mm]	44.0 x 210.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	11.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.4
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-02-20	2025-02-20
psSAR1g [W/kg]	3.88	4.51
psSAR10g [W/kg]	1.74	1.73
Power Drift [dB]	0.00	-0.07
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		65.7
Dist 3dB Peak [mm]		4.9

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



P108 FR N77_DFT-QPSK100M_Right Side_0cm_Ch633334_1RB_OS1

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 11.0		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, -	EDGE RIGHT, 0.00	Band n77	5G NR FR1 TDD, -	3500.010, 633334	6.71	2.79	39.4

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2161	HSL3500-2025-03-06	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

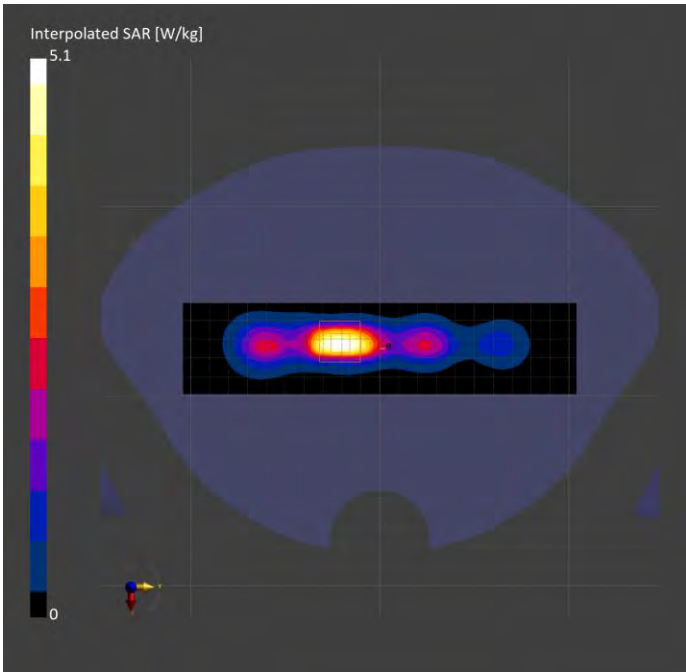
	Area Scan	Zoom Scan
Grid Extents [mm]	48.0 x 208.0	24.0 x 24.0 x 24.0
Grid Steps [mm]	8.0 x 8.0	4.0 x 4.0 x 2.0
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-03-06	2025-03-06
psSAR1g [W/kg]	3.75	5.62
psSAR10g [W/kg]	1.48	1.58
Power Drift [dB]	0.03	-0.02
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		65.5
Dist 3dB Peak [mm]		6.4

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



P109 FR N78_DFT-QPSK100M_Top Side_0.5cm_Ch633334_135RB_OS69

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 11.0		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, -	EDGE TOP, 5.00	Band n78	5G NR FR1 TDD, -	3500.010, 633334	6.71	2.83	39.0

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2161	HSL3500-2025-03-09	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

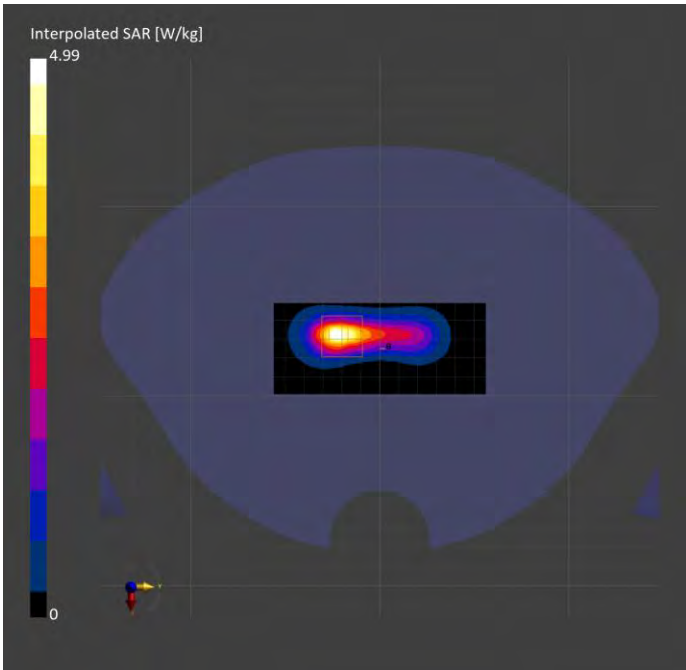
	Area Scan	Zoom Scan
Grid Extents [mm]	48.0 x 112.0	28.0 x 28.0 x 28.0
Grid Steps [mm]	8.0 x 8.0	5.0 x 5.0 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.5
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-03-09	2025-03-09
psSAR1g [W/kg]	3.36	3.50
psSAR10g [W/kg]	1.24	1.26
Power Drift [dB]	0.07	-0.02
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		74.2
Dist 3dB Peak [mm]		7.0

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



P110 WLAN5.2G_802.11ax HE20_Top Side_0cm_Ch64

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 10.0		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, -	EDGE TOP, 0.00	WLAN 5GHz	WLAN, -	5320.000, 64	5.16	4.76	35.6

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2135	HSL5G-2025-03-11	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

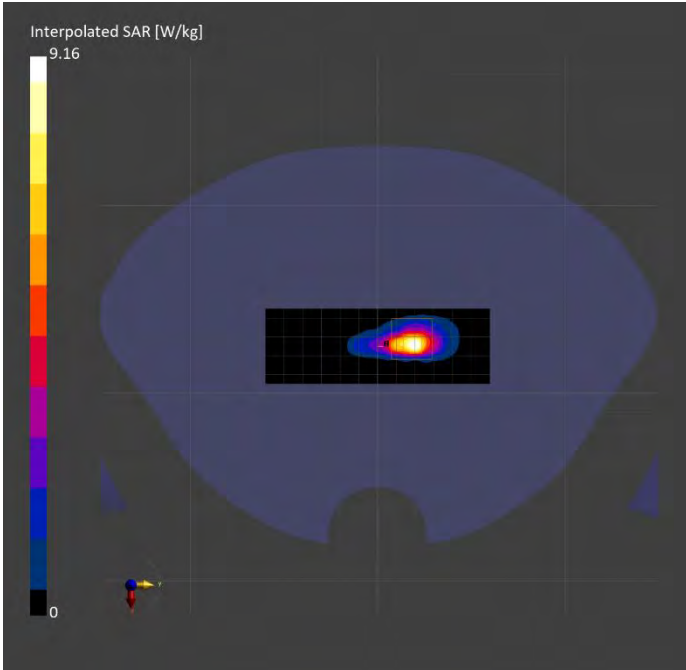
	Area Scan	Zoom Scan
Grid Extents [mm]	40.0 x 120.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.2
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-03-11	2025-03-11
psSAR1g [W/kg]	5.70	7.46
psSAR10g [W/kg]	1.61	1.83
Power Drift [dB]	0.10	-0.06
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		59.7
Dist 3dB Peak [mm]		4.2

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		



P111 WLAN5.5G_802.11n HT20_Top Side_0cm_Ch140

Device under Test Properties

Model, Manufacturer	Dimensions [mm]	IMEI	DUT Type
Device,	164.0 x 78.0 x 11.0		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, -	EDGE TOP, 0.00	WLAN 5GHz	WLAN, -	5700.000, 140	4.56	5.12	34.8

Hardware Setup

Phantom	TSL, Measured Date	Probe, Calibration Date	DAE, Calibration Date
Twin-SAM V8.0 (30deg probe tilt) - 2161	HSL5G-2025-03-12	EX3DV4 - SN3873, 2024-09-29	DAE4 Sn1389, 2024-11-11

Scan Setup

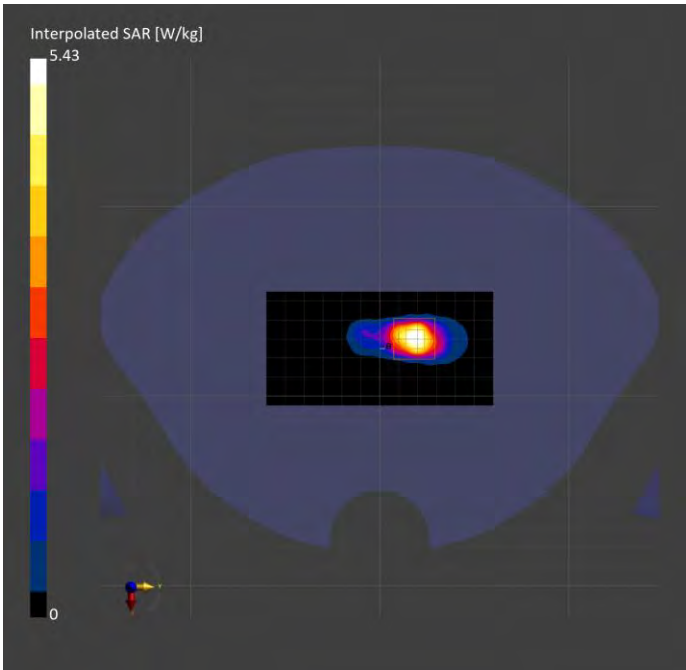
	Area Scan	Zoom Scan
Grid Extents [mm]	60.0 x 120.0	22.0 x 22.0 x 22.0
Grid Steps [mm]	10.0 x 10.0	4.0 x 4.0 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
Grading Ratio	N/A	1.2
MAIA	N/A	N/A
Surface Detection	VMS + 6p	VMS + 6p
Scan Method	Measured	Measured

Measurement Results

	Area Scan	Zoom Scan
Date	2025-03-12	2025-03-12
psSAR1g [W/kg]	4.01	6.45
psSAR10g [W/kg]	1.26	1.63
Power Drift [dB]	-0.02	-0.02
Power Scaling	Disabled	Disabled
Scaling Factor [dB]		
TSL Correction	No correction	No correction
M2/M1 [%]		64.6
Dist 3dB Peak [mm]		4.4

Warning(s) / Error(s)

Details	Area Scan	Zoom Scan
Warning(s)		
Error(s)		





Appendix C. Calibration Certificate for Probe and Dipole

The SPEAG calibration certificates are shown as follows.

Client : **B.V.ADT**

Certificate No: **24J02Z000881**

CALIBRATION CERTIFICATE

Object **DAE4 - SN: 1389**

Calibration Procedure(s) **FF-Z11-002-01**
Calibration Procedure for the Data Acquisition Electronics (DAEx)

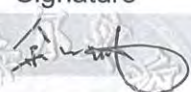
Calibration date: **November 11, 2024**

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature(22 ± 3) $^{\circ}\text{C}$ and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Process Calibrator 753	1971018	11-Jun-24 (CTTL, No.24J02X005147)	Jun-25

	Name	Function	Signature
Calibrated by:	Yu Zongying	SAR Test Engineer	
Reviewed by:	Lin Jun	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: November 13, 2024

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



In Collaboration with

s p e a g
CALIBRATION LABORATORY



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Glossary:

DAE data acquisition electronics
Connector angle information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters:

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle:* The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The report provide only calibration results for DAE, it does not contain other performance test results.



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DC Voltage Measurement

A/D - Converter Resolution nominal

High Range: 1LSB = $6.1\mu\text{V}$, full range = $-100\dots+300\text{ mV}$

Low Range: 1LSB = 61nV , full range = $-1\dots\dots+3\text{mV}$

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	$403.775 \pm 0.15\% (k=2)$	$403.739 \pm 0.15\% (k=2)$	$404.203 \pm 0.15\% (k=2)$
Low Range	$3.98142 \pm 0.7\% (k=2)$	$3.96476 \pm 0.7\% (k=2)$	$4.02443 \pm 0.7\% (k=2)$

Connector Angle

Connector Angle to be used in DASY system	$131^\circ \pm 1^\circ$
---	-------------------------

Client

ADT-SZ

Certificate No: 24J02Z000608

CALIBRATION CERTIFICATE

Object

EX3DV4 - SN : 3873

Calibration Procedure(s)

FF-Z11-004-02

Calibration Procedures for Dosimetric E-field Probes

Calibration date:

September 29, 2024

This calibration Certificate documents the traceability to national standards, which realize the physical units of measurements(SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature(22±3)°C and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	106277	19-Oct-23(CTTL, No.J23X11026)	Oct-24
Power sensor NRP8S	104291	19-Oct-23(CTTL, No.J23X11026)	Oct-24
Power sensor NRP8S	104292	19-Oct-23(CTTL, No.J23X11026)	Oct-24
Reference 10dBAttenuator	18N50W-10dB	19-Jan-23(CTTL, No.J23X00212)	Jan-25
Reference 20dBAttenuator	18N50W-20dB	19-Jan-23(CTTL, No.J23X00211)	Jan-25
Reference Probe EX3DV4	SN 7307	28-May-24(SPEAG, No.EX-7307_May24)	May-25
DAE4	SN 771	19-Jan-24(SPEAG, No.DAE4-771_Jan24)	Jan-25
Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
SignalGenerator MG3700A	6201052605	12-Jun-24(CTTL, No.24J02X005419)	Jun-25
SignalGenerator APSIN26G	181-33A6D0700-1959	26-Mar-24(CTTL, No.24J02X002468)	Mar-25
Network Analyzer E5071C	MY46110673	25-Dec-23(CTTL, No.J23X13425)	Dec-24
Reference 10dBAttenuator	BT0520	11-May-23(CTTL, No.J23X04061)	May-25
Reference 20dBAttenuator	BT0267	11-May-23(CTTL, No.J23X04062)	May-25
OCP DAK-3.5	SN 1040	22-Jan-24(SPEAG, No.OCP-DAK3.5-1040_Jan24)	Jan-25

	Name	Function	Signature
Calibrated by:	Yu Zongying	SAR Test Engineer	
Reviewed by:	Lin Jun	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: October 05, 2024

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.



Glossary:

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,y,z}
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A,B,C,D	modulation dependent linearization parameters
Polarization Φ	Φ rotation around probe axis
Polarization θ	θ rotation around an axis that is in the plane normal to probe axis (at measurement center), i $\theta=0$ is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\theta=0$ ($f \leq 900\text{MHz}$ in TEM-cell; $f > 1800\text{MHz}$: waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not effect the E^2 -field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z}** = NORM_{x,y,z} * frequency_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics.
- A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; VR_{x,y,z}; A,B,C** are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800\text{MHz}$) and inside waveguide using analytical field distributions based on power measurements for $f > 800\text{MHz}$. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty valued are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM_{x,y,z} * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from $\pm 50\text{MHz}$ to $\pm 100\text{MHz}$.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle**: The angle is assessed using the information gained by determining the NORM_x (no uncertainty required).

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DASY/EASY – Parameters of Probe: EX3DV4 – SN: 3873

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.38	0.46	0.49	±10.0%
DCP(mV) ^B	101.7	100.5	100.8	

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dB $\sqrt{\mu\text{V}}$	C	D dB	VR mV	Max Dev.	Max Unc ^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	145.7	±1.9%	±4.7%
		Y	0.0	0.0	1.0		163.2		
		Z	0.0	0.0	1.0		166.7		
10352-AAA	Pulse Waveform (200Hz, 10%)	X	8.17	78.52	15.33	10.00	60	±3.7%	±9.6%
		Y	4.26	71.20	12.59		60		
		Z	7.06	76.11	14.65		60		
10353-AAA	Pulse Waveform (200Hz, 20%)	X	20.00	86.77	16.46	6.99	80	±2.3%	±9.6%
		Y	3.94	71.75	11.79		80		
		Z	18.89	85.28	16.34		80		
10354-AAA	Pulse Waveform (200Hz, 40%)	X	20.00	84.46	13.98	3.98	95	±1.4%	±9.6%
		Y	1.52	66.22	8.57		95		
		Z	20.00	83.76	14.28		95		
10355-AAA	Pulse Waveform (200Hz, 60%)	X	0.31	60.00	4.60	2.22	120	±1.4%	±9.6%
		Y	0.39	60.18	4.80		120		
		Z	0.52	60.99	5.72		120		
10387-AAA	QPSK Waveform, 1 MHz	X	1.56	65.11	14.09	1.00	150	±2.3%	±9.6%
		Y	1.50	64.29	13.32		150		
		Z	1.51	64.02	13.40		150		
10388-AAA	QPSK Waveform, 10 MHz	X	2.14	67.53	15.04	0.00	150	±1.2%	±9.6%
		Y	2.05	66.50	14.33		150		
		Z	2.04	66.35	14.29		150		
10396-AAA	64-QAM Waveform, 100 kHz	X	3.30	73.51	20.73	3.01	150	±0.6%	±9.6%
		Y	2.72	69.25	18.47		150		
		Z	2.97	70.62	19.24		150		
10414-AAA	WLAN CCDF, 64-QAM, 40MHz	X	4.91	65.87	15.58	0.00	150	±3.6%	±9.6%
		Y	4.80	65.38	15.23		150		
		Z	4.90	65.61	15.39		150		

Note: For details on UID parameters see Appendix

The reported uncertainty of measurement is stated as the standard uncertainty of Measurement multiplied by the coverage factor $k=2$, which for a normal distribution Corresponds to a coverage probability of approximately 95%.

^A The uncertainties of Norm X, Y, Z do not affect the E^2 -field uncertainty inside TSL (see Page 5).

^B Numerical linearization parameter: uncertainty not required.

^E Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

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DASY/EASY – Parameters of Probe: EX3DV4 – SN: 3873

Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 $ms.V^{-2}$	T2 $ms.V^{-1}$	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
X	50.52	382.08	36.23	10.64	0.00	5.10	0.73	0.33	1.02
Y	47.84	364.98	36.61	13.54	0.00	5.08	0.00	0.43	1.02
Z	52.98	404.85	36.75	18.85	0.00	5.10	0.00	0.47	1.02

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	16.7
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disable
Probe Overall Length	337mm
Probe Body Diameter	10mm
Tip Length	9mm
Tip Diameter	2.5mm
Probe Tip to Sensor X Calibration Point	1mm
Probe Tip to Sensor Y Calibration Point	1mm
Probe Tip to Sensor Z Calibration Point	1mm
Recommended Measurement Distance from Surface	1.4mm

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DASY/EASY – Parameters of Probe: EX3DV4 – SN:3873

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz] ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Uct. (k=2)
750	41.9	0.89	9.87	9.87	9.87	0.12	1.29	± 12.7%
835	41.5	0.90	9.47	9.47	9.47	0.16	1.19	± 12.7%
900	41.5	0.97	9.42	9.42	9.42	0.19	1.12	± 12.7%
1750	40.1	1.37	8.31	8.31	8.31	0.18	1.19	± 12.7%
1900	40.0	1.40	7.97	7.97	7.97	0.19	1.11	± 12.7%
2300	39.5	1.67	7.71	7.71	7.71	0.39	0.77	± 12.7%
2450	39.2	1.80	7.46	7.46	7.46	0.40	0.78	± 12.7%
2600	39.0	1.96	7.31	7.31	7.31	0.48	0.71	± 12.7%
3300	38.2	2.71	6.90	6.90	6.90	0.40	0.95	± 13.9%
3500	37.9	2.91	6.71	6.71	6.71	0.40	1.01	± 13.9%
3700	37.7	3.12	6.50	6.50	6.50	0.38	1.04	± 13.9%
3900	37.5	3.32	6.40	6.40	6.40	0.30	1.50	± 13.9%
4100	37.2	3.53	6.30	6.30	6.30	0.30	1.40	± 13.9%
5250	35.9	4.71	5.16	5.16	5.16	0.35	1.65	± 13.9%
5600	35.5	5.07	4.56	4.56	4.56	0.40	1.52	± 13.9%
5800	35.3	5.27	4.62	4.62	4.62	0.40	1.52	± 13.9%

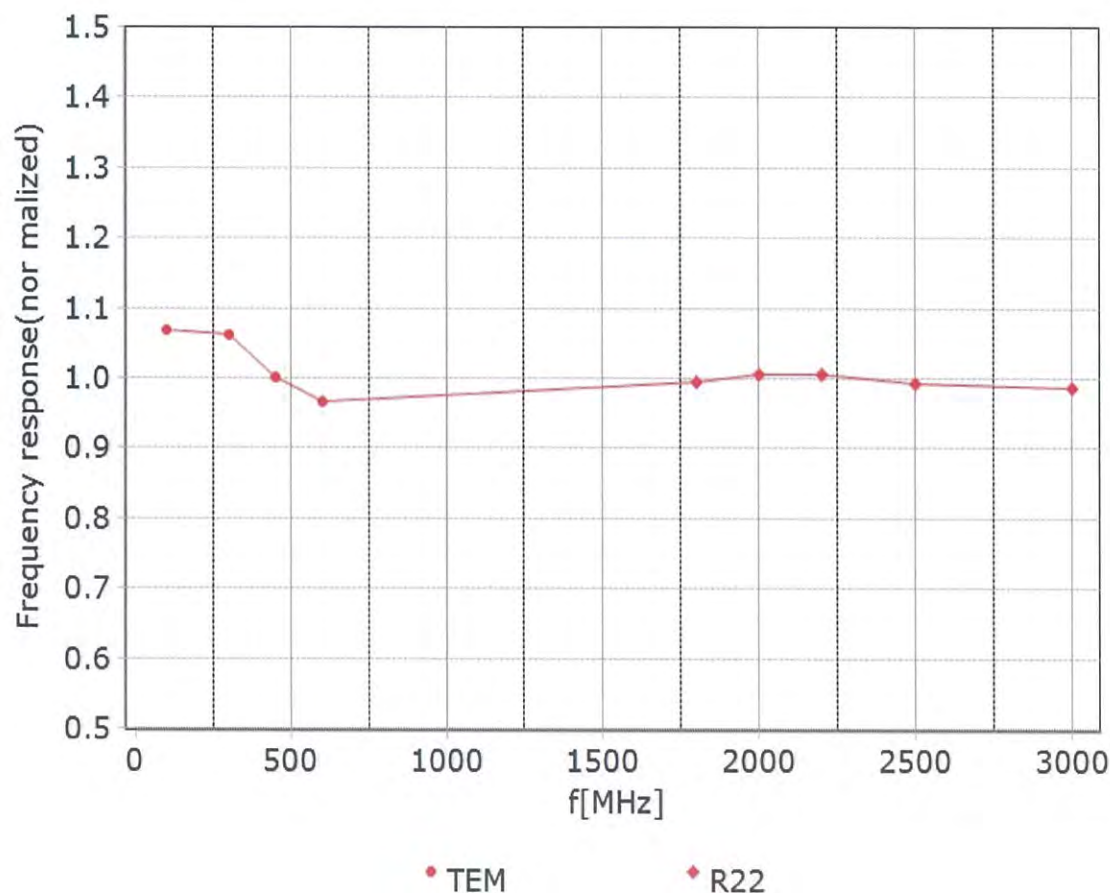
^C Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

^F At frequency up to 6 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ±10% if liquid compensation formula is applied to measured SAR values. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^G Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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Frequency Response of E-Field (TEM-Cell: ifi110 EXX, Waveguide: R22)

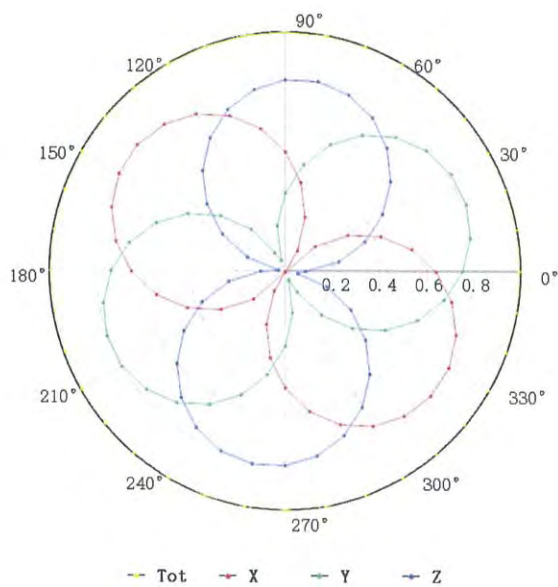


Uncertainty of Frequency Response of E-field: $\pm 7.4\%$ ($k=2$)

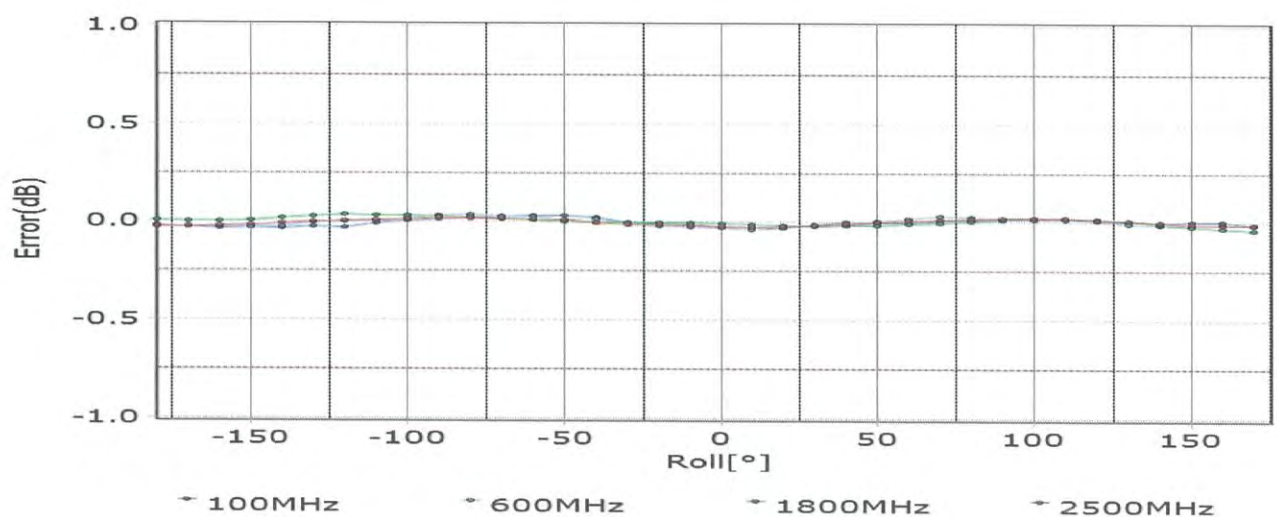
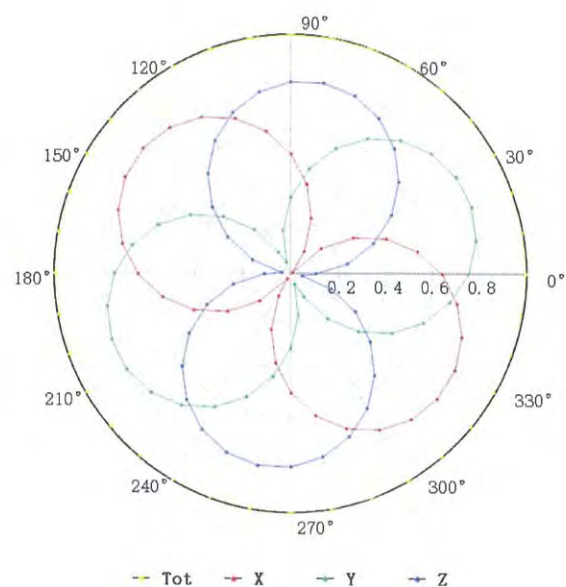
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Receiving Pattern (Φ), $\theta=0^\circ$

f=600 MHz, TEM



f=1800 MHz, R22



Uncertainty of Axial Isotropy Assessment: $\pm 1.2\%$ ($k=2$)

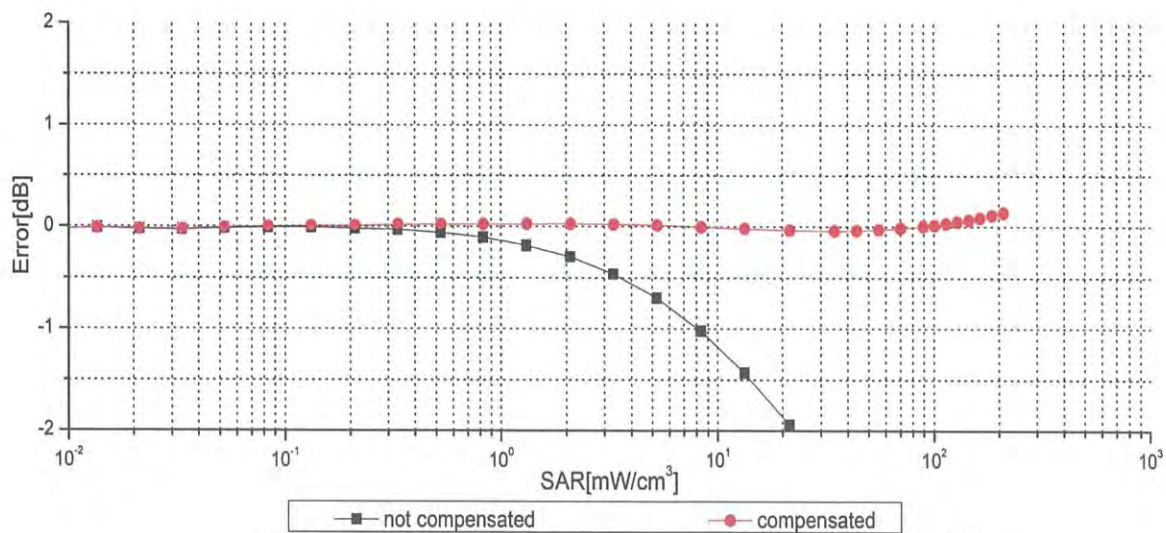
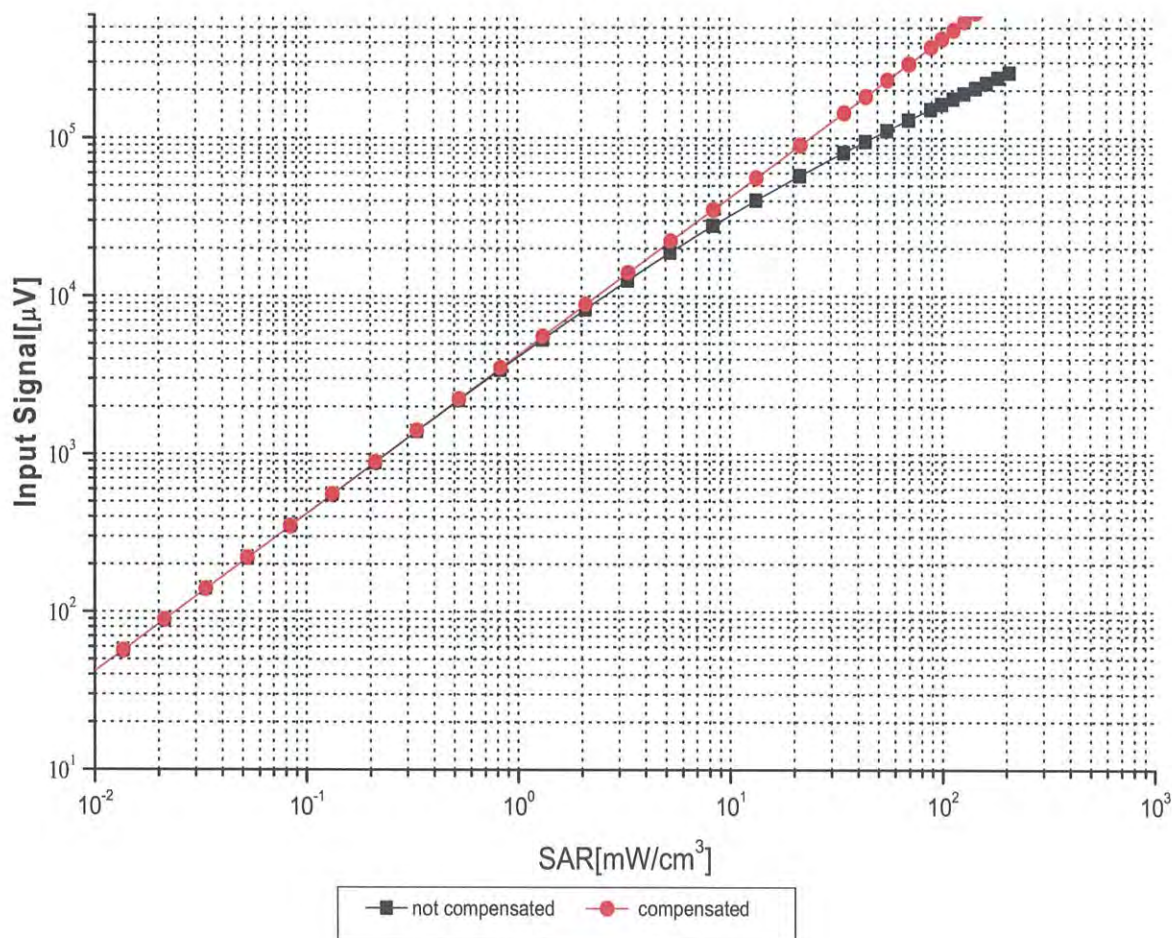
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Dynamic Range $f(\text{SAR}_{\text{head}})$ (TEM cell, $f = 900 \text{ MHz}$)



Uncertainty of Linearity Assessment: $\pm 0.9\%$ ($k=2$)

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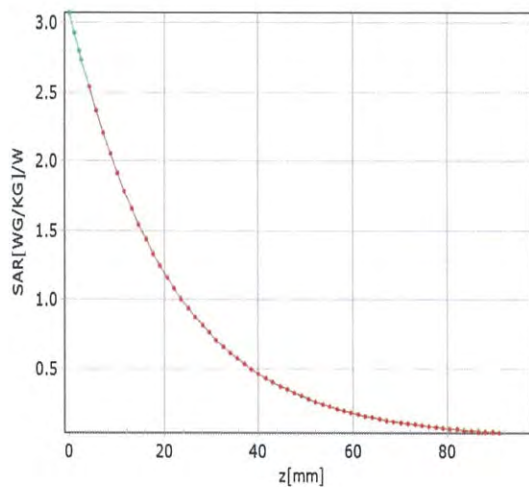
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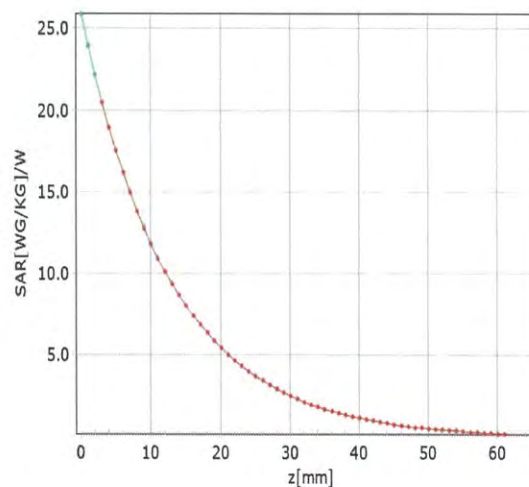
Conversion Factor Assessment

f=750 MHz,WGLS R9(H_convF)

f=1750 MHz,WGLS R22(H_convF)

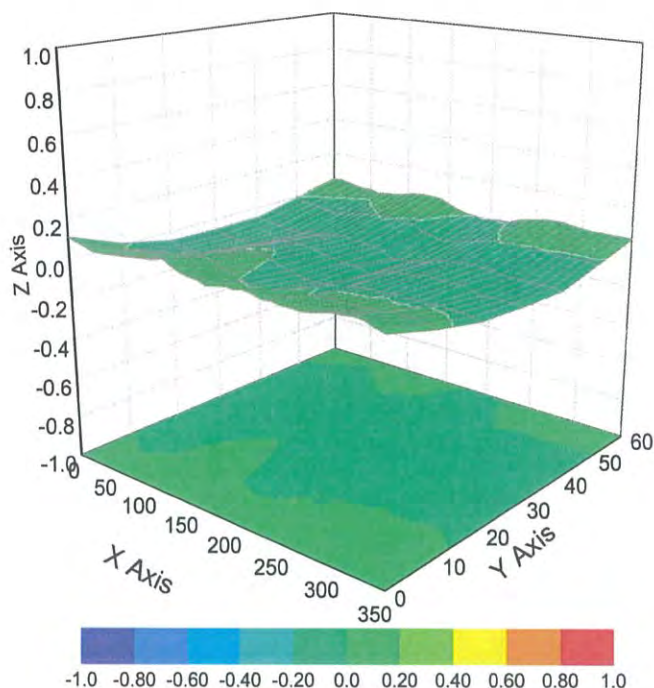


* analytical * measured



* analytical * measured

Deviation from Isotropy in Liquid



Uncertainty of Spherical Isotropy Assessment: $\pm 3.2\%$ ($k=2$)