

Band17	10	23780	25	#Mid	QAM16	20.71
Band17	10	23780	25	#Max	QAM16	20.31
Band17	10	23780	50	#0	QAM16	20.53
Band17	10	23790	1	#0	QPSK	22.84
Band17	10	23790	1	#Mid	QPSK	22.76
Band17	10	23790	1	#Max	QPSK	22.50
Band17	10	23790	25	#0	QPSK	21.52
Band17	10	23790	25	#Mid	QPSK	21.57
Band17	10	23790	25	#Max	QPSK	21.17
Band17	10	23790	50	#0	QPSK	21.37
Band17	10	23790	1	#0	QAM16	21.69
Band17	10	23790	1	#Mid	QAM16	21.38
Band17	10	23790	1	#Max	QAM16	21.26
Band17	10	23790	25	#0	QAM16	20.55
Band17	10	23790	25	#Mid	QAM16	20.57
Band17	10	23790	25	#Max	QAM16	20.23
Band17	10	23790	50	#0	QAM16	20.38
Band17	10	23800	1	#0	QPSK	22.79
Band17	10	23800	1	#Mid	QPSK	22.61
Band17	10	23800	1	#Max	QPSK	22.45
Band17	10	23800	25	#0	QPSK	21.58
Band17	10	23800	25	#Mid	QPSK	21.66
Band17	10	23800	25	#Max	QPSK	21.29
Band17	10	23800	50	#0	QPSK	21.48
Band17	10	23800	1	#0	QAM16	22.20
Band17	10	23800	1	#Mid	QAM16	21.92
Band17	10	23800	1	#Max	QAM16	21.87
Band17	10	23800	25	#0	QAM16	20.58
Band17	10	23800	25	#Mid	QAM16	20.67
Band17	10	23800	25	#Max	QAM16	20.33
Band17	10	23800	50	#0	QAM16	20.46

WIFI2.4G

Mode	Frequency (MHz)	Conducted Power (dBm)
b	2412	15.29
b	2437	15.61
b	2462	15.59
g	2412	14.03
g	2437	14.06
g	2462	13.76
n20	2412	12.62
n20	2437	12.77
n20	2462	12.54
n40	2422	11.86
n40	2437	12.02
n40	2452	12.02

Note: SAR is not required for the following 2.4 GHz OFDM conditions as the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

WIFI5.1G

Mode	Frequency (MHz)	Conducted Power (dBm)
a	5180	13.31
a	5200	13.13
a	5240	13.18
n20	5180	11.78
n20	5200	11.58
n20	5240	11.58
n40	5190	10.74
n40	5230	11.42
ac20	5180	11.52
ac20	5200	11.24
ac20	5240	11.57
ac40	5190	10.94
ac40	5230	11.27
ac80	5210	9.37

WIFI5.8G

Mode	Frequency (MHz)	Conducted Power (dBm)
a	5745	7.3
a	5785	6.58
a	5825	6.56
n20	5745	6.25
n20	5785	4.97
n20	5825	4.72
n40	5755	4.78
n40	5795	4.55
ac20	5745	5.74
ac20	5785	4.8
ac20	5825	4.82
ac40	5755	4.88
ac40	5795	4.17
ac80	5775	3.58

Bluetooth

Mode	Frequency (MHz)	Conducted Power (dBm)
1-DH1	2402	2.27
1-DH1	2441	2.4
1-DH1	2480	2.4
2-DH1	2402	1.37
2-DH1	2441	1.47
2-DH1	2480	1.49
3-DH1	2402	1.51
3-DH1	2441	1.56
3-DH1	2480	1.57

	Frequency	Maximum Conducted Output Power(PK)
	(MHz)	(dBm)
GFSK 1Mbps	2402	-4.1
	2440	-4.01
	2480	-4.22
GFSK 2Mbps	2402	-4.12
	2440	-4.1
	2480	-4.29

Per KDB 447498 D01v06, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$$\left[\frac{(\text{max. power of channel, including tune-up tolerance, mW})}{(\text{min. test separation distance, mm})} \right] \cdot \sqrt{f(\text{GHz})}$$

≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR

$f(\text{GHz})$ is the RF channel transmit frequency in GHz

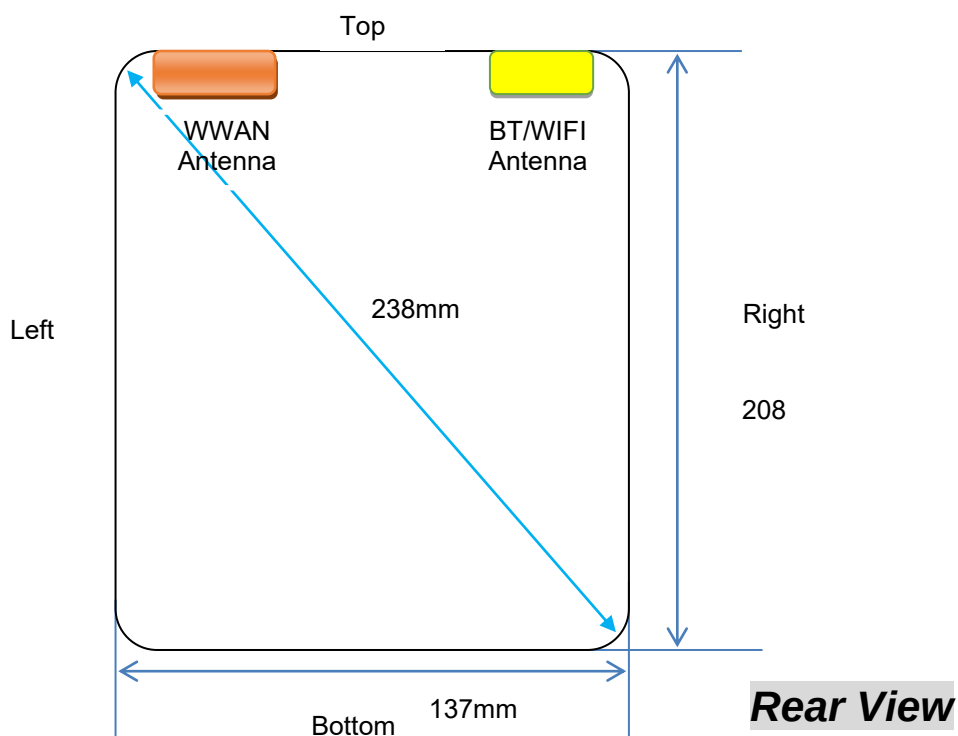
Power and distance are rounded to the nearest mW and mm before calculation

The result is rounded to one decimal place for comparison

Bluetooth Turn up Power (dBm)	Separation Distance (mm)	Frequency (GHz)	Exclusion Thresholds
2.5	5	2.45	0.6

Per KDB 447498 D01v06, when the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion. The test exclusion threshold is $0.6 < 3.0$, SAR testing is not required.

14.2 Transmit Antennas and SAR Measurement Position



Antenna information:

BT/WIFI Antenna	TX/RX
234G Antenna	TX/RX

Note:

- 1). Per KDB648474 D04, 10-g extremity SAR is not required when Body-Worn mode 1-g reported SAR < 1.2 W/Kg.
- 2). According to the KDB941225 D06 Hot Spot SAR v02, the edges with less than 25 mm distance to the antennas need to be tested for SAR.

Distance of The Antenna to the EUT surface and edge (mm)						
Antennas	Front	Back	Top Side	Bottom Side	Left Side	Right Side
BT	<5	<5	<5	187	105	<5
WWAN	<5	<5	<5	186	<5	107

Positions for SAR tests; Hotspot mode						
Antennas	Front	Back	Top Side	Bottom Side	Left Side	Right Side
BT	Yes	Yes	Yes	No	No	Yes
WWAN	Yes	Yes	Yes	No	Yes	No

General Note: Referring to KDB 941225 D06 v02, When the overall device length and width are 9cm*5cm, the test distance is 0mm, SAR must be measured for all sides and surfaces with a transmitting antenna located with 25mm from that surface or edge.

14.3 Test Results for Standalone SAR Test

The calculated SAR is obtained by the following formula:

$$\text{Reported SAR} = \text{Measured SAR} * 10(P_{\text{target}} - P_{\text{measured}}) / 10$$

$$\text{Scaling factor} = 10(P_{\text{target}} - P_{\text{measured}}) / 10$$

$$\text{Reported SAR} = \text{Measured SAR} * \text{Scaling factor}$$

Where

P_{target} is the power of manufacturing upper limit;

P_{measured} is the measured power;

Measured SAR is measured SAR at measured power which including power drift)

Reported SAR which including Power Drift and Scaling factor

Duty Cycle

Test Mode	Duty Cycle
GSM	4:8
UMTS	1:1
LTE	1:1
BT	1:1
WIFI	1:1

SAR Values [GSM 850]

Ch.	Freq. (MHz)	Time slots	Test Position	Conducte d Power (dBm)	Maximu m Allowed Power (dBm)	Powe r Drift (%)	Scalin g Factor	SAR1-g results(W/kg)		Graph Result s
								Measure d	Reporte d	
measured / reported SAR numbers - Body (hotspot open, distance 10mm)										
128	824.2	4Txslots	Front	28.66	29.00	N/A	1.081	0.400	0.433	
128	824.2	4Txslots	Rear	28.66	29.00	N/A	1.081	0.432	0.467	Plot 1
128	824.2	4Txslots	Right	28.66	29.00	N/A	1.081	0.374	0.404	
128	824.2	4Txslots	Top	28.66	29.00	N/A	1.081	0.321	0.347	

Remark:

1. The value with black color is the maximum SAR Value of each test band.

2. The frame average of GPRS (4Tx slots) higher than GSM and sample can support VoIP function, tested at GPRS (4Tx slots) mode for head.

3. Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is optional for such test configuration(s).

SAR Values [GSM 1900]

Ch.	Freq. (MHz)	Time slots	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift (%)	Scaling Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reported	
measured / reported SAR numbers - Body (hotspot open, distance 10mm)										
810	1909.8	4Txslots	Front	23.03	23.50	N/A	1.114	0.612	0.682	
810	1909.8	4Txslots	Rear	23.03	23.50	N/A	1.114	0.648	0.722	Plot 2
810	1909.8	4Txslots	Right	23.03	23.50	N/A	1.114	0.563	0.627	
810	1909.8	4Txslots	Top	23.03	23.50	N/A	1.114	0.510	0.568	

Remark:

1. The value with black color is the maximum SAR Value of each test band.

2. The frame average of GPRS (4Tx slots) higher than GSM and sample can support VoIP function, tested at GPRS (4Tx slots) mode for head.

3. Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is optional for such test configuration(s).

SAR Values [WCDMA Band II]

Ch.	Freq. (MHz)	Time slots	Test Position	Conducte d Power (dBm)	Maximu m Allowed Power (dBm)	Power Drift (%)	Scalin g Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reporte d	
measured / reported SAR numbers - Body (hotspot open, distance 10mm)										
9538	1907.6	RMC*	Front	18.97	19.00	N/A	1.007	0.512	0.516	
9538	1907.6	RMC*	Rear	18.97	19.00	N/A	1.007	0.598	0.602	Plot 3
9538	1907.6	RMC*	Right	18.97	19.00	N/A	1.007	0.503	0.506	
9538	1907.6	RMC*	Top	18.97	19.00	N/A	1.007	0.472	0.475	

Remark:

1. The value with black color is the maximum SAR Value of each test band.
2. Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is optional for such test configuration(s).
3. RMC* - RMC 12.2kbps mode;

SAR Values [WCDMA Band IV]

Ch.	Freq. (MHz)	Time slots	Test Position	Conducte d Power (dBm)	Maximu m Allowed Power (dBm)	Powe r Drift (%)	Scalin g Factor	SAR1-g results(W/kg)		Graph Result s
								Measured	Reported	
measured / reported SAR numbers - Body (hotspot open, distance 10mm)										
1312	1712.4	RMC*	Front	19.42	19.50	N/A	1.019	0.563	0.573	
1312	1712.4	RMC*	Rear	19.42	19.50	N/A	1.019	0.605	0.616	Plot 4
1312	1712.4	RMC*	Right	19.42	19.50	N/A	1.019	0.524	0.534	
1312	1712.4	RMC*	Top	19.42	19.50	N/A	1.019	0.482	0.491	

Remark:

1. The value with black color is the maximum SAR Value of each test band.
2. Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is optional for such test configuration(s).
3. RMC* - RMC 12.2kbps mode;

SAR Values [WCDMA Band V]

Ch.	Freq. (MHz)	Time slots	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift (%)	Scaling Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reported	
measured / reported SAR numbers - Body (hotspot open, distance 10mm)										
4132	826.4	RMC*	Front	21.85	22.00	N/A	1.035	0.412	0.426	
4132	826.4	RMC*	Rear	21.85	22.00	N/A	1.035	0.464	0.480	Plot 5
4132	826.4	RMC*	Right	21.85	22.00	N/A	1.035	0.366	0.379	
4132	826.4	RMC*	Top	21.85	22.00	N/A	1.035	0.320	0.331	

Remark:

1. The value with black color is the maximum SAR Value of each test band.
2. Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg then testing at the other channels is optional for such test configuration(s).
3. RMC* - RMC 12.2kbps mode;

SAR Values [LTE Band 2]

Ch.	Freq. (MHz)	Time slots	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift (%)	Scaling Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reported	
measured / reported SAR numbers - Body (hotspot open, distance 10mm)										
19100	1900	1RB	Front	23.28	23.50	N/A	1.052	0.500	0.526	Plot 6
19100	1900	1RB	Rear	23.28	23.50	N/A	1.052	0.548	0.576	
19100	1900	1RB	Right	23.28	23.50	N/A	1.052	0.475	0.500	
19100	1900	1RB	Top	23.28	23.50	N/A	1.052	0.442	0.465	
19100	1900	50%RB	Front	22.11	22.50	N/A	1.094	0.470	0.514	
19100	1900	50%RB	Rear	22.11	22.50	N/A	1.094	0.503	0.550	
19100	1900	50%RB	Right	22.11	22.50	N/A	1.094	0.450	0.492	
19100	1900	50%RB	Top	22.11	22.50	N/A	1.094	0.413	0.452	

SAR Values [LTE Band 4]

SAR values [LTE Band 4]										
Ch.	Freq. (MHz)	Time slots	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift (%)	Scaling Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reported	
measured / reported SAR numbers - Body (hotspot open, distance 10mm)										
20300	1745	1RB	Front	23.76	24.00	N/A	1.057	0.422	0.446	Plot 7
20300	1745	1RB	Rear	23.76	24.00	N/A	1.057	0.479	0.506	
20300	1745	1RB	Right	23.76	24.00	N/A	1.057	0.379	0.401	
20300	1745	1RB	Top	23.76	24.00	N/A	1.057	0.341	0.360	
20300	1745	50%RB	Front	22.65	23.00	N/A	1.084	0.401	0.435	
20300	1745	50%RB	Rear	22.65	23.00	N/A	1.084	0.441	0.478	
20300	1745	50%RB	Right	22.65	23.00	N/A	1.084	0.326	0.353	
20300	1745	50%RB	Top	22.65	23.00	1.99	1.084	0.302	0.327	

SAR Values [LTE Band 5]

SAR values [LTE Band 5]										
Ch.	Freq. (MHz)	Time slots	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift (%)	Scaling Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reported	
measured / reported SAR numbers - Body (hotspot open, distance 10mm)										
20450	836.5	1RB	Front	25.95	26.00	N/A	1.012	0.413	0.418	Plot 8
20450	836.5	1RB	Rear	25.95	26.00	N/A	1.012	0.451	0.456	
20450	836.5	1RB	Right	25.95	26.00	N/A	1.012	0.362	0.366	
20450	836.5	1RB	Top	25.95	26.00	N/A	1.012	0.327	0.331	
20450	836.5	50%RB	Front	24.90	25.00	N/A	1.023	0.366	0.375	
20450	836.5	50%RB	Rear	24.90	25.00	N/A	1.023	0.414	0.424	
20450	836.5	50%RB	Left	24.90	25.00	N/A	1.023	0.322	0.330	
20450	836.5	50%RB	Top	24.90	25.00	N/A	1.023	0.291	0.298	

SAR Values [LTE Band 7]

Ch.	Freq. (MHz)	Time slots	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift (%)	Scaling Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reported	
measured / reported SAR numbers - Body (hotspot open, distance 10mm)										
20850	2510	1RB	Front	23.26	23.50	N/A	1.057	0.480	0.507	
20850	2510	1RB	Rear	23.26	23.50	N/A	1.057	0.524	0.554	Plot 9

20850	2510	1RB	Right	23.26	23.50	N/A	1.057	0.431	0.455	
20850	2510	1RB	Top	23.26	23.50	N/A	1.057	0.393	0.415	
20850	2510	50%RB	Front	22.11	22.50	N/A	1.094	0.461	0.504	
20850	2510	50%RB	Rear	22.11	22.50	N/A	1.094	0.487	0.533	
20850	2510	50%RB	Right	22.11	22.50	N/A	1.094	0.393	0.430	
20850	2510	50%RB	Top	22.11	22.50	N/A	1.094	0.342	0.374	

SAR Values [LTE Band 12]

Ch.	Freq. (MHz)	Time slots	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift (%)	Scaling Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reported	
measured / reported SAR numbers - Body (hotspot open, distance 10mm)										
23060	704.0	1RB	Front	22.75	23.00	N/A	1.059	0.241	0.255	
23060	704.0	1RB	Rear	22.75	23.00	N/A	1.059	0.298	0.316	Plot 10
23060	704.0	1RB	Right	22.75	23.00	N/A	1.059	0.203	0.215	
23060	704.0	1RB	Top	22.75	23.00	N/A	1.059	0.165	0.175	
23060	704.0	50%RB	Front	22.01	22.50	N/A	1.119	0.200	0.224	
23060	704.0	50%RB	Rear	22.01	22.50	N/A	1.119	0.246	0.275	
23060	704.0	50%RB	Right	22.01	22.50	N/A	1.119	0.163	0.182	
23060	704.0	50%RB	Top	22.01	22.50	N/A	1.119	0.122	0.137	

SAR Values [LTE Band 17]

Ch.	Freq. (MHz)	Time slots	Test Position	Conduct ed Pow er (dBm)	Maximu m Allowed Power (dBm)	Powe r Drift (%)	Scalin g Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reporte d	
measured / reported SAR numbers - Body (hotspot open, distance 10mm)										
23780	709.0	1RB	Front	22.86	23.00	N/A	1.033	0.263	0.272	Plot 11
23780	709.0	1RB	Rear	22.86	23.00	N/A	1.033	0.309	0.319	
23780	709.0	1RB	Right	22.86	23.00	N/A	1.033	0.215	0.222	
23780	709.0	1RB	Top	22.86	23.00	N/A	1.033	0.164	0.169	
23780	709.0	50%RB	Front	21.69	22.00	N/A	1.074	0.213	0.229	
23780	709.0	50%RB	Rear	21.69	22.00	N/A	1.074	0.241	0.259	
23780	709.0	50%RB	Right	21.69	22.00	N/A	1.074	0.168	0.180	
23780	709.0	50%RB	Top	21.69	22.00	N/A	1.074	0.120	0.129	

SAR Values [BT]

Ch	Freq. (MHz)	Service	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift (%)	Scaling Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reported	
measured / reported SAR numbers - Body (hotspot open, distance 10mm)										
19	2441.0	GFSK	Front	2.40	2.50	N/A	1.023	0.089	0.091	
19	2441.0	GFSK	Rear	2.40	2.50	N/A	1.023	0.121	0.124	Plot 12
19	2441.0	GFSK	Left	2.40	2.50	N/A	1.023	0.074	0.076	
19	2441.0	GFSK	Top	2.40	2.50	N/A	1.023	0.060	0.061	

SAR Values [WIFI2.4G]

Ch.	Freq. (MHz)	Service	Test Position	Conducted Power	Maximum Allowed Power	Power Drift	Scaling Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reported	

				(dBm)	(dBm)	(%)				
measured / reported SAR numbers - Body (hotspot open, distance 10mm)										
6	2437	11b	Front	15.61	16.00	N/A	1.094	0.216	0.236	
6	2437	11b	Rear	15.61	16.00	N/A	1.094	0.267	0.292	Plot 13
6	2437	11b	Left	15.61	16.00	N/A	1.094	0.156	0.171	
6	2437	11b	Top	15.61	16.00	N/A	1.094	0.123	0.135	

SAR Values [WIFI5.1G]

Ch	Freq. (MHz)	Service	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift (%)	Scaling Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reported	
measured / reported SAR numbers - Body (hotspot open, distance 10mm)										
36	5180	11A	Front	13.31	13.50	N/A	1.045	0.365	0.381	
36	5180	11A	Rear	13.31	13.50	N/A	1.045	0.438	0.458	Plot 14
36	5180	11A	Left	13.31	13.50	N/A	1.045	0.302	0.316	
36	5180	11A	Top	13.31	13.50	N/A	1.045	0.256	0.267	

SAR Values [WIFI5.8G]

Ch.	Freq. (MHz)	Service	Test Position	Conducted Power (dBm)	Maximum Allowed Power (dBm)	Power Drift (%)	Scaling Factor	SAR1-g results(W/kg)		Graph Results
								Measured	Reported	
measured / reported SAR numbers - Body (hotspot open, distance 10mm)										
149	5745	11A	Front	7.30	7.50	N/A	1.047	0.302	0.316	
149	5745	11A	Rear	7.30	7.50	N/A	1.047	0.357	0.374	Plot 15
149	5745	11A	Left	7.30	7.50	N/A	1.047	0.274	0.287	
149	5745	11A	Top	7.30	7.50	N/A	1.047	0.216	0.226	

14.4 Standalone SAR Test Exclusion Considerations and Estimated SAR

Per KDB447498 requires when the standalone SAR test exclusion of section 4.3.1 is applied to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to the following to determine simultaneous transmission SAR test exclusion;

- (max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)/x] W/kg for test separation distances ≤ 50 mm; where x = 7.5 for 1-g SAR, and x = 18.75 for 10-g SAR.

- 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distances is > 50 mm

Per FCC KD B447498 D01, simultaneous transmission SAR test exclusion may be applied when the sum of the 1-g SAR for all the transmitting antenna in a specific a physical test configuration is ≤1.6 W/Kg. When the sum is greater than the SAR limit, SAR test exclusion is determined by the SAR to peak location separation ratio.

$$\text{Ratio} = \frac{(\text{SAR}_1 + \text{SAR}_2)^{1.5}}{(\text{peak location separation, mm})} < 0.04$$

Estimated stand alone SAR					
Communication system	Frequency (MHz)	Configuration	Maximum Power (dBm)	Separation Distance (mm)	Estimated SAR1-g (W/kg)
Bluetooth*	2450	Body-worn	N/A	5	N/A

Remark:

1. Bluetooth*- Including Lower power Bluetooth
2. Maximum average power including tune-up tolerance;
3. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion
4. Body as body use distance is 5mm from manufacturer declaration of user manual

14.5 Simultaneous TX SAR Considerations

Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneous transmitting antenna. The device has 1 antenna, WWAN main antenna.;

Application Simultaneous Transmission information:

Combination No.	Mode
1	WWAN+WIFI

The maximum value of simultaneous emission is 1.180W/kg.

14.6 SAR Measurement Variability

According to KDB865664, Repeated measurements are required only when the measured SAR is ≥ 0.80 W/kg. If the measured SAR value of the initial repeated measurement is < 1.45 W/kg with ≤ 20% variation, only one repeated measurement is required to reaffirm that the results are not expected to have substantial variations, which may introduce significant compliance concerns. A second repeated measurement is required only if the measured result for the initial repeated measurement is within 10% of the SAR limit and vary by more than 20%, which are often related to device and measurement setup difficulties. The following procedures are applied to determine if repeated measurements are required. The same procedures should be adapted for measurements according to extremity and occupational exposure limits

by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.19 The repeated measurement results must be clearly identified in the SAR report. All measured SAR, including the repeated results, must be considered to determine compliance and for reporting according to KDB 690783. Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.

- 1) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
- 2) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
- 3) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .
- 4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .

Frequency Band (MHz)	Air Interface	RF Exposure Configuration	Test Position	Repeated SAR (yes/no)	Highest Measured SAR1-g (W/Kg)	First Repeated	
						Measured SAR1-g (W/Kg)	Largest to Smallest SAR Ratio
750	LTE Band 12	Standalone	Body-Rear	no	0.298	n/a	n/a
	LTE Band 17	Standalone	Body-Rear	no	0.309	n/a	n/a
850	GSM 850	Standalone	Body-Rear	no	0.432	n/a	n/a
	WCDMA Band V	Standalone	Body-Rear	no	0.464	n/a	n/a
	LTE Band 5	Standalone	Body-Rear	no	0.451	n/a	n/a
1800	LTE Band 4	Standalone	Body-Rear	no	0.479	n/a	n/a
	WCDMA Band IV	Standalone	Head-Left	no	0.605	n/a	n/a
1900	GSM 1900	Standalone	Head-Left	no	0.648	n/a	n/a
	WCDMA Band II	Standalone	Body-Rear	no	0.598	n/a	n/a
	LTE Band 2	Standalone	Body-Rear	no	0.548	n/a	n/a
2440	BT	Standalone	Body-Rear	no	0.121	n/a	n/a
	WIFI2.4G	Standalone	Body-Rear	no	0.267	n/a	n/a
2600	LTE Band 7	Standalone	Body-Rear	no	0.524	n/a	n/a
5200	WIFI5.1G	Standalone	Body-Rear	no	0.438	n/a	n/a
5800	WIFI5.8G	Standalone	Body-Rear	no	0.357	n/a	n/a

Remark:

1. Second Repeated Measurement is not required since the ratio of the largest to smallest SAR for the original and first repeated measurement is not > 1.20 or 3 (1-g or 10-g respectively)

14.7 General description of test procedures

1. The DUT is tested using CMU 200 communications testers as controller unit to set test channels and maximum output power to the DUT, as well as for measuring the conducted peak power.
2. Test positions as described in the tables above are in accordance with the specified test standard.
3. Tests in body position were performed in that configuration, which generates the highest time based averaged output power (see conducted power results).
4. Tests in head position with GSM were performed in voice mode with 1 timeslot unless GPRS/EGPRS/DTM function allows parallel voice and data traffic on 2 or more timeslots.
5. UMTS was tested in RMC mode with 12.2 kbit/s and TPC bits set to 'all 1'.

6. WiFi was tested in 802.11b/g/n mode with 1 Mbit/s and 6 Mbit/s. According to KDB 248227 the SAR testing for 802.11g/n is not required since When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
7. Required WiFi test channels were selected according to KDB 248227
8. According to FCC KDB pub 248227 D01, When there are multiple test channels with the same measured maximum output power, the channel closest to mid-band frequency is selected for SAR measurement and when there are multiple test channels with the same measured maximum output power and equal separation from mid-band frequency; for example, high and low channels or two mid-band channels, the higher frequency (number) channel is selected for SAR measurement.
9. According to FCC KDB pub 941225 D06 this device has been tested with 10 mm distance to the phantom for operation in WiFi hot spot mode.
10. Per FCC KDB pub 941225 D06 the edges with antennas within 2.5 cm are required to be evaluated for SAR to cover WiFi hot spot function.
11. According to IEEE 1528 the SAR test shall be performed at middle channel. Testing of top and bottom channel is optional.
12. According to KDB 447498 D01 testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
 - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
 - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
13. IEEE 1528 require the middle channel to be tested first. This generally applies to wireless devices that are designed to operate in technologies with tight tolerances for maximum output power variations across channels in the band.
14. Per KDB648474 D04 require when the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is < 1.2 W/kg.
15. Per KDB648474 D04 require when the separation distance required for body-worn accessory testing is larger than or equal to that tested for hotspot mode, using the same wireless mode test configuration for voice and data, such as UMTS, LTE and Wi-Fi, and for the same surface of the phone, the hotspot mode SAR data may be used to support body-worn accessory SAR compliance for that particular configuration (surface)
16. 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g SAR > 1.2 W/kg.
17. Per KDB648474 D04 require for phablet SAR test considerations · For Smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.
18. 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g SAR > 1.2 W/kg.

15. Test Plots

15.1 System Performance Check

System check at 835 MHz

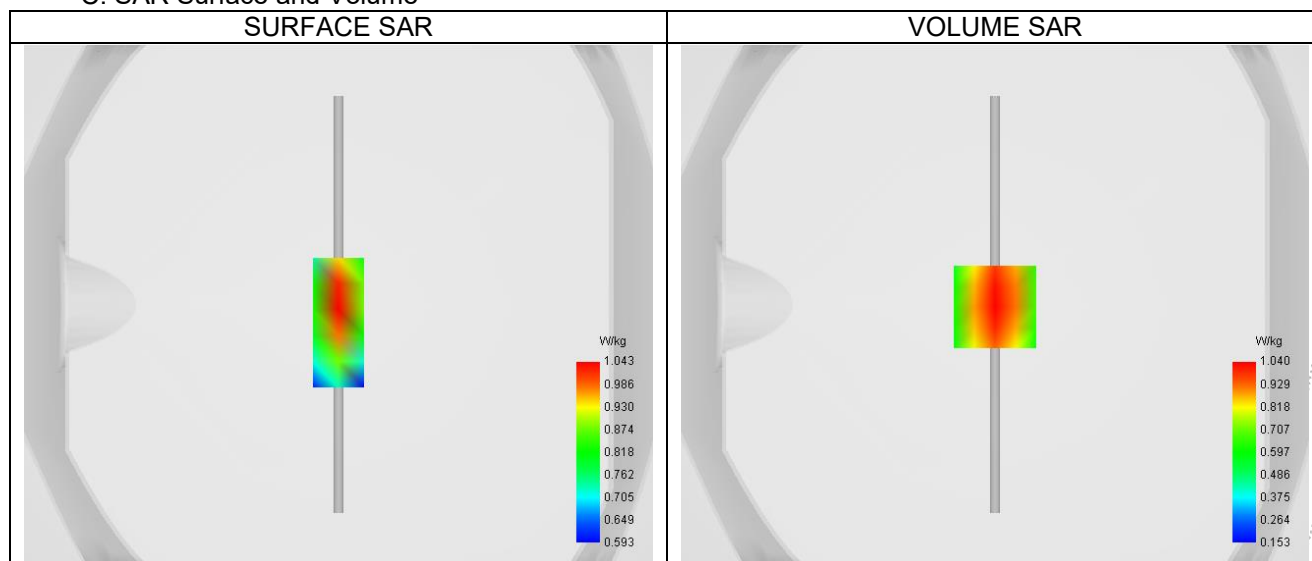
A. Experimental conditions.

Probe	SN EPG0373
ConvF	25.00
Area Scan	dx=10mm dy=10mm, Adaptive 2 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Very fast
Phantom	Validation plane
Device Position	Dipole
Band	CW835
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	835.000
Relative permittivity (real part)	40.830
Relative permittivity (imaginary part)	20.910
Conductivity (S/m)	0.970

C. SAR Surface and Volume



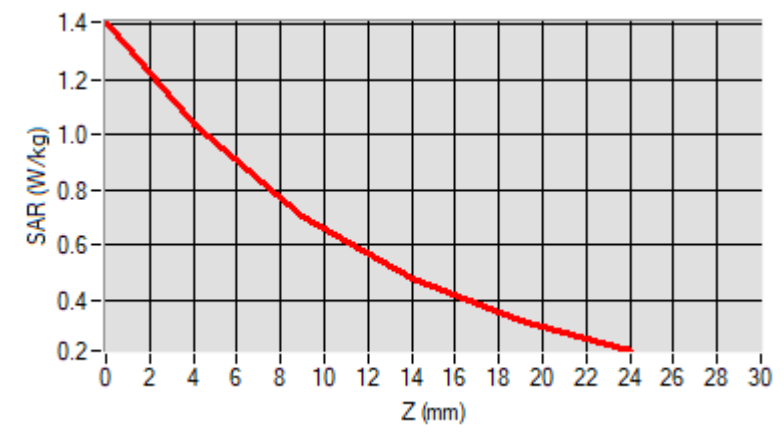
Maximum location: X=0.00, Y=-1.00 ; SAR Peak: 1.41 W/kg

D. SAR 1g & 10g

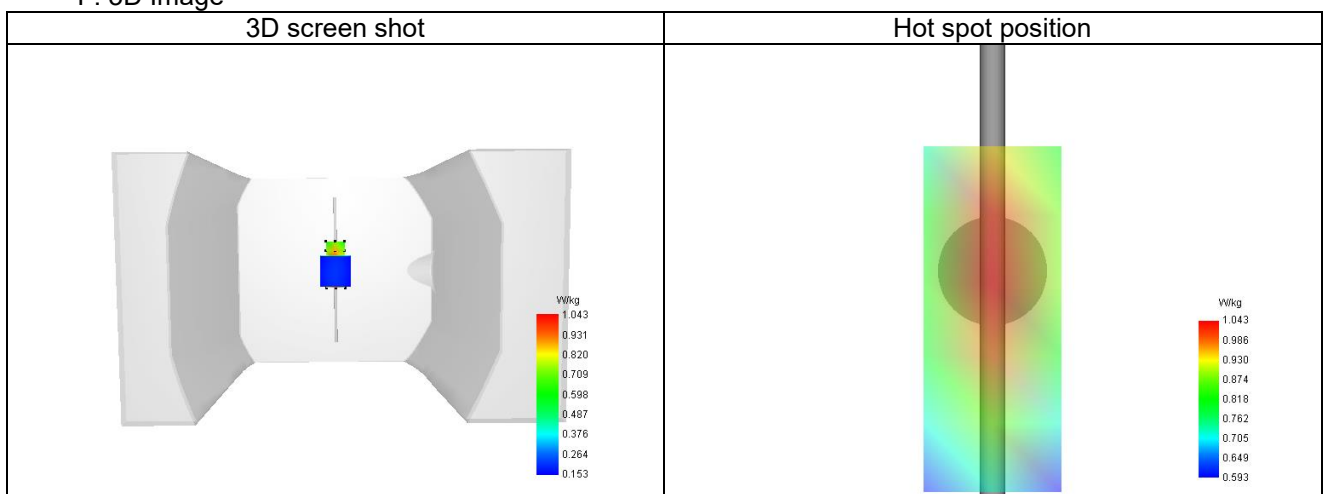
SAR 10g (W/Kg)	0.638
SAR 1g (W/Kg)	0.987
Variation (%)	-0.330
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.411	1.040	0.704	0.477	0.325



F. 3D Image



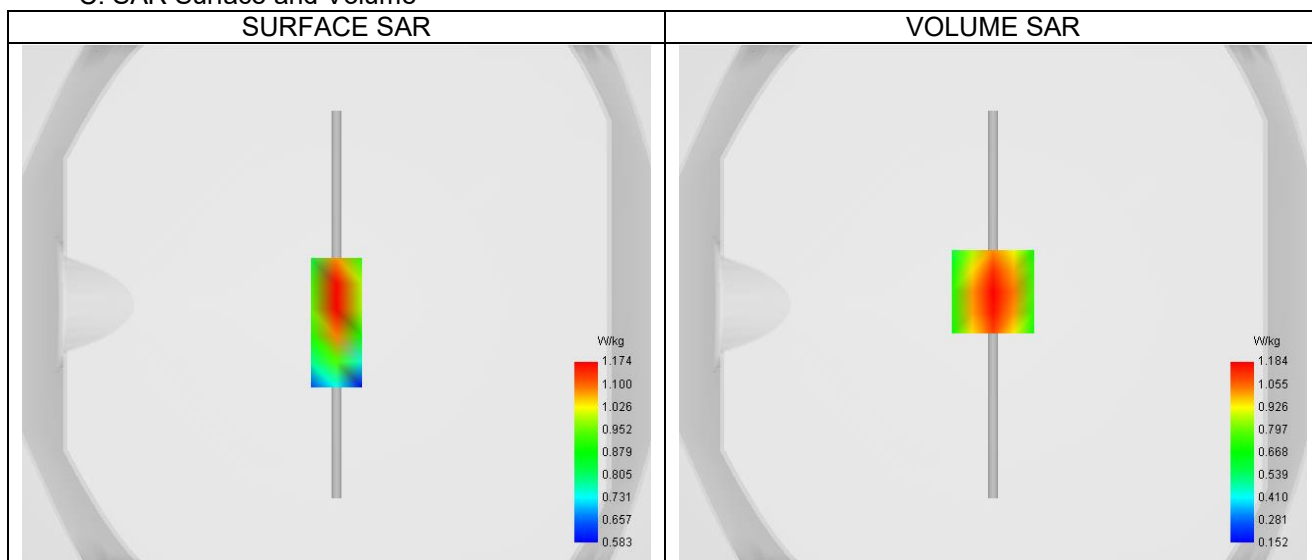
A. Experimental conditions.

Probe	SN EPG0373
ConvF	23.97
Area Scan	dx=10mm dy=10mm, Adaptive 2 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Very fast
Phantom	Validation plane
Device Position	Dipole
Band	CW900
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	900.000
Relative permittivity (real part)	40.900
Relative permittivity (imaginary part)	21.000
Conductivity (S/m)	1.050

C. SAR Surface and Volume

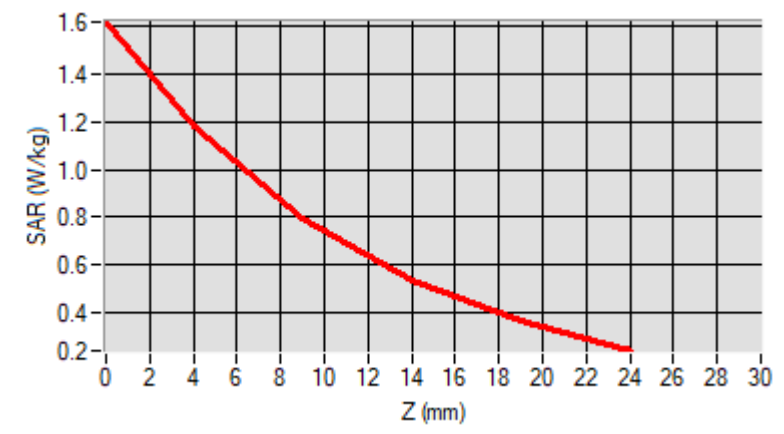


D. SAR 1g & 10g

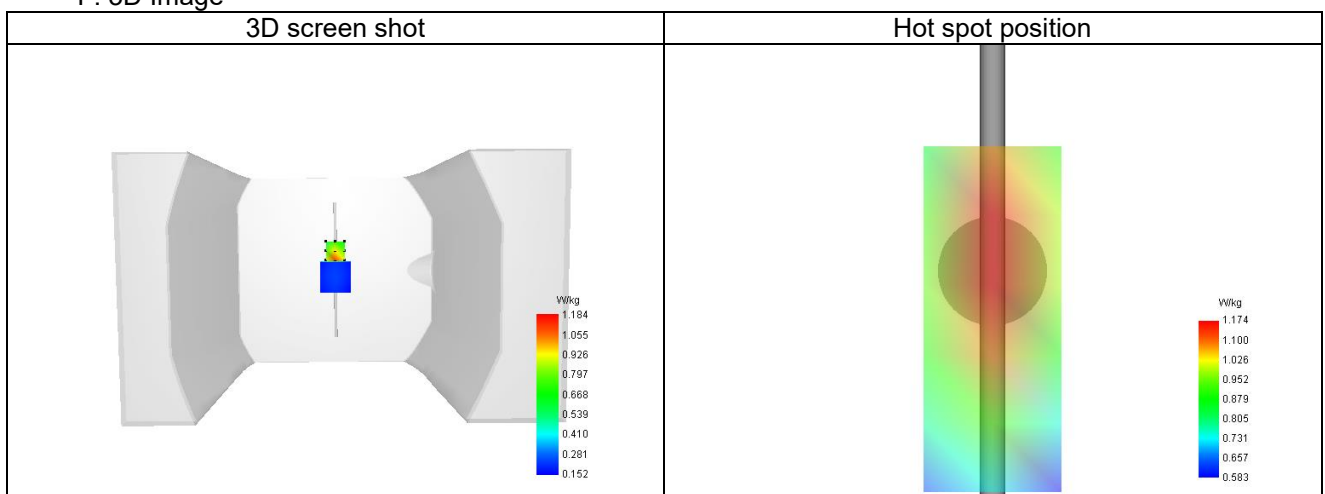
SAR 10g (W/Kg)	0.719
SAR 1g (W/Kg)	1.124
Variation (%)	-0.360
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.616	1.184	0.796	0.537	0.366



F. 3D Image



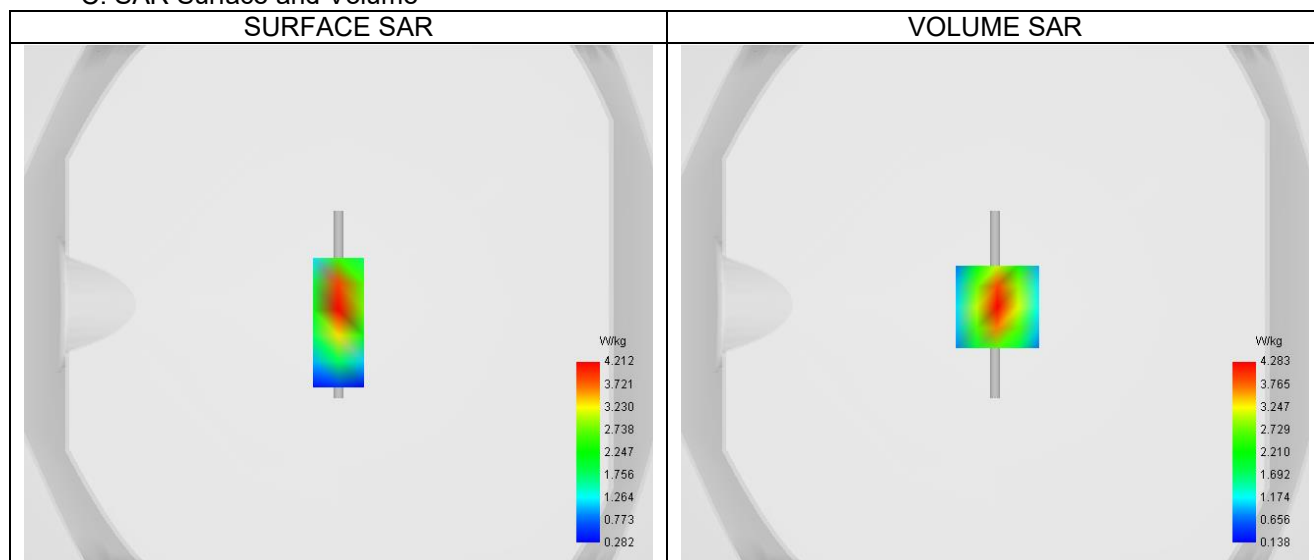
A. Experimental conditions.

Probe	SN EPG0373
ConvF	24.68
Area Scan	dx=10mm dy=10mm, Adaptive 2 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Very fast
Phantom	Validation plane
Device Position	Dipole
Band	CW1800
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	1800.000
Relative permittivity (real part)	39.200
Relative permittivity (imaginary part)	15.200
Conductivity (S/m)	1.520

C. SAR Surface and Volume



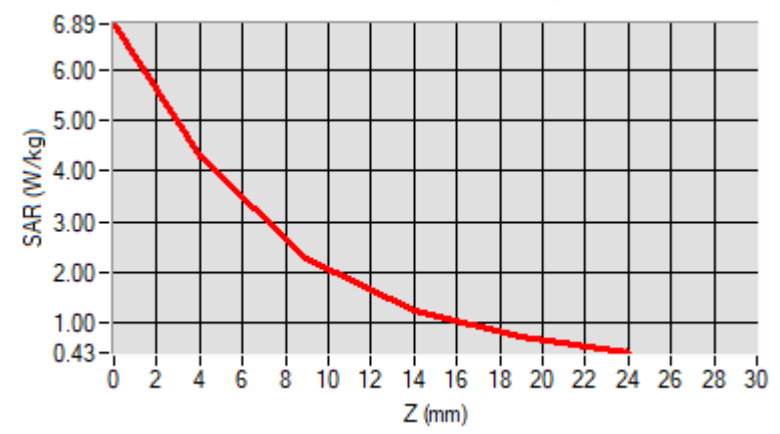
Maximum location: X=1.00, Y=-1.00 ; SAR Peak: 6.89 W/kg

D. SAR 1g & 10g

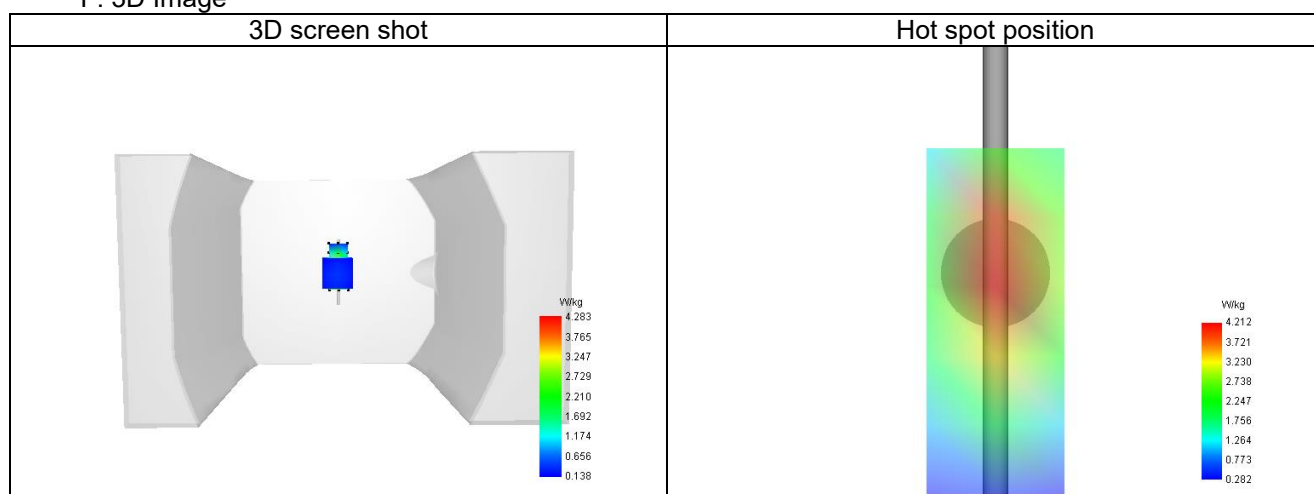
SAR 10g (W/Kg)	1.995
SAR 1g (W/Kg)	3.940
Variation (%)	0.070
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	6.889	4.283	2.298	1.249	0.726



F. 3D Image



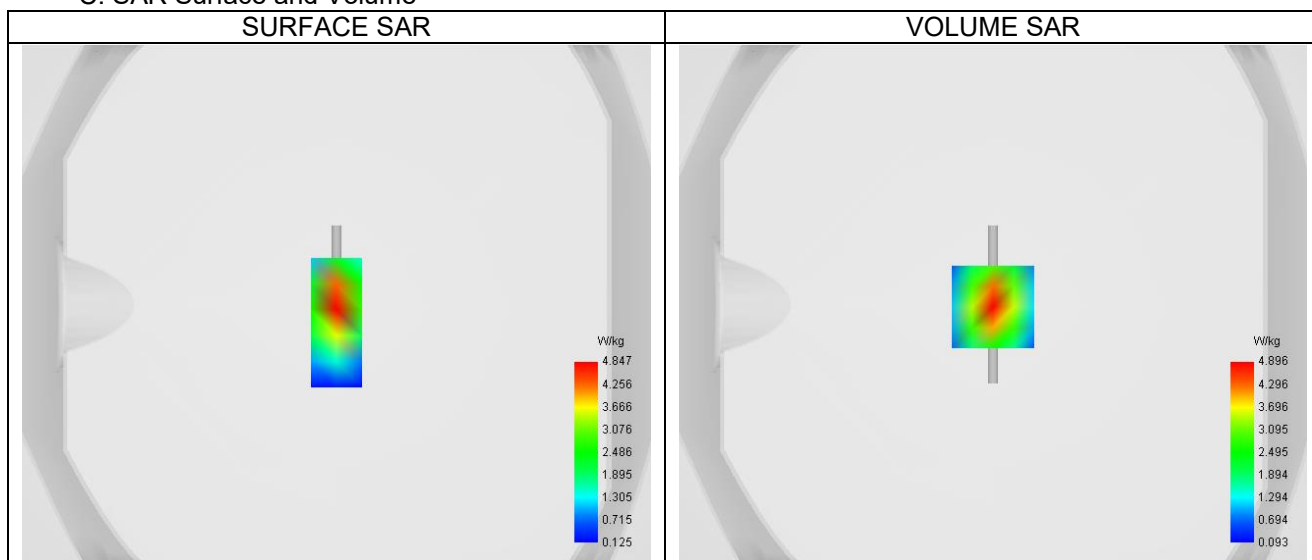
A. Experimental conditions.

Probe	SN EPG0373
ConvF	26.52
Area Scan	dx=10mm dy=10mm, Adaptive 2 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Very fast
Phantom	Validation plane
Device Position	Dipole
Band	CW2100
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	2100.000
Relative permittivity (real part)	38.521
Relative permittivity (imaginary part)	13.824
Conductivity (S/m)	1.613

C. SAR Surface and Volume



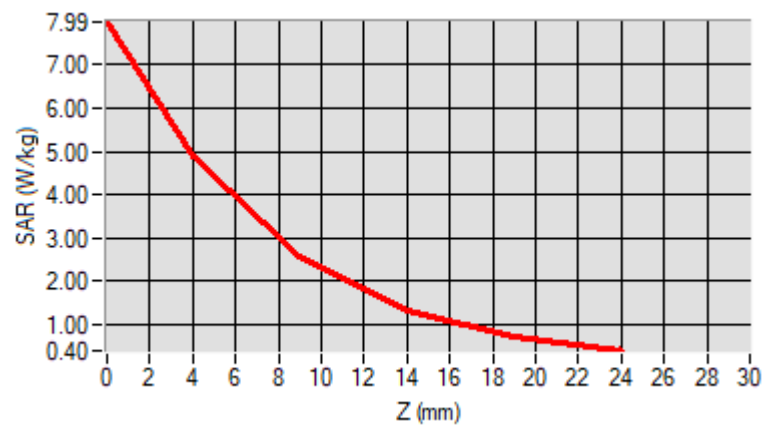
Maximum location: X=0.00, Y=-1.00 ; SAR Peak: 7.98 W/kg

D. SAR 1g & 10g

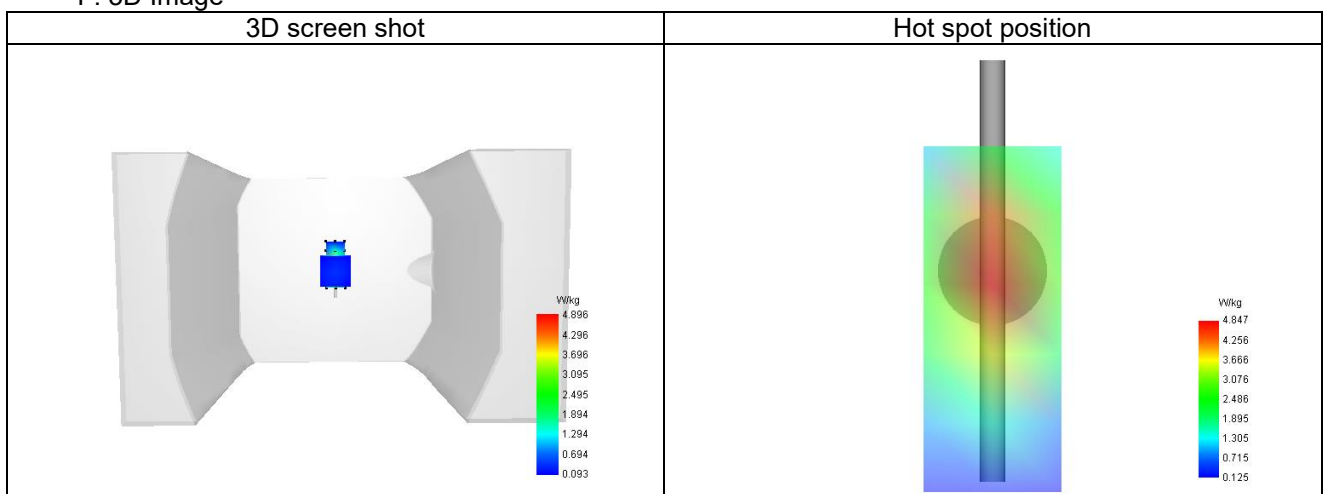
SAR 10g (W/Kg)	2.155
SAR 1g (W/Kg)	4.458
Variation (%)	0.100
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	7.987	4.896	2.558	1.335	0.733



F. 3D Image



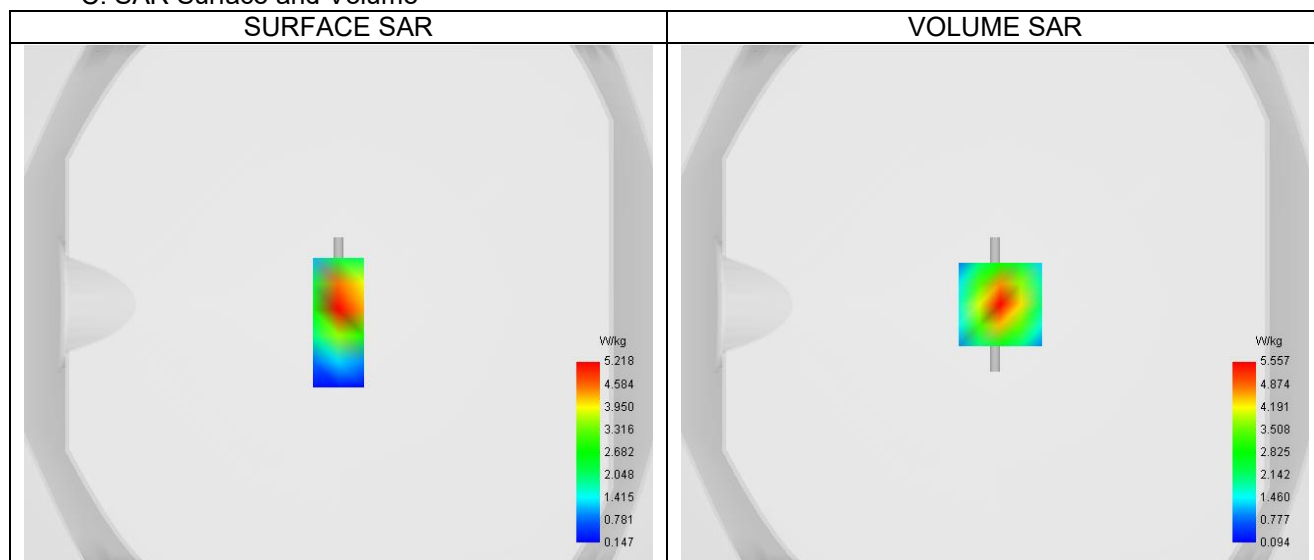
A. Experimental conditions.

Probe	SN EPG0373
ConvF	26.43
Area Scan	dx=10mm dy=10mm, Adaptive 2 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Very fast
Phantom	Validation plane
Device Position	Dipole
Band	CW2450
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	2450.000
Relative permittivity (real part)	38.600
Relative permittivity (imaginary part)	14.330
Conductivity (S/m)	1.950

C. SAR Surface and Volume



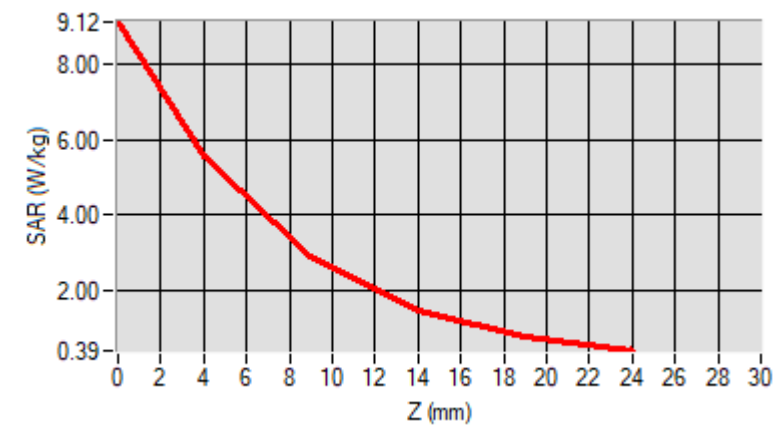
Maximum location: X=2.00, Y=0.00 ; SAR Peak: 9.11 W/kg

D. SAR 1g & 10g

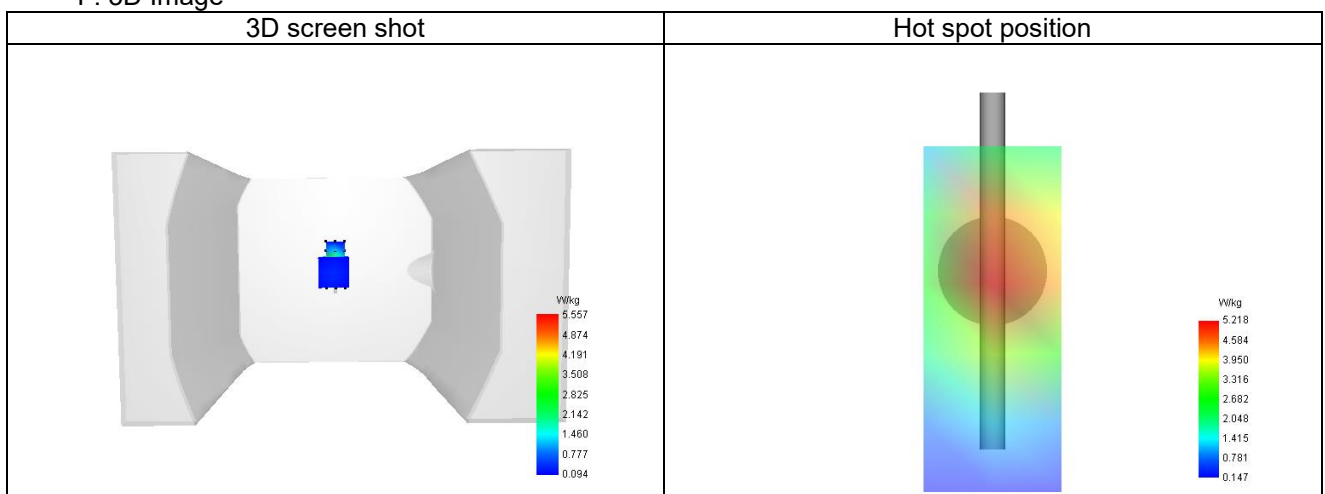
SAR 10g (W/Kg)	2.457
SAR 1g (W/Kg)	5.085
Variation (%)	0.360
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	9.121	5.557	2.866	1.459	0.770



F. 3D Image



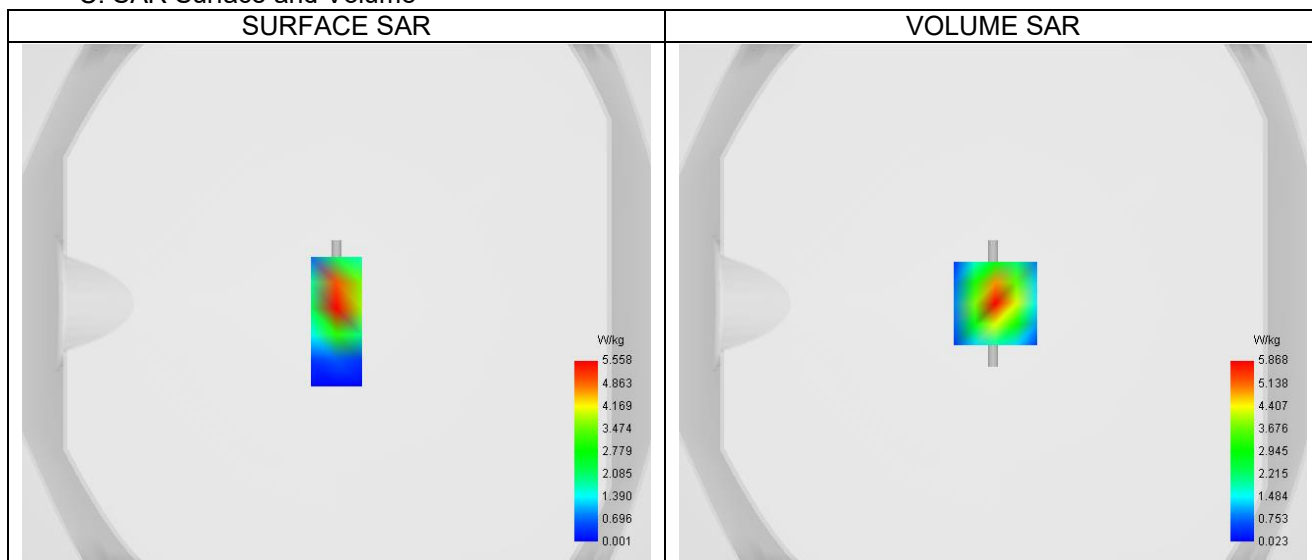
A. Experimental conditions.

Probe	SN EPG0373
ConvF	27.77
Area Scan	dx=10mm dy=10mm, Adaptive 2 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Very fast
Phantom	Validation plane
Device Position	Dipole
Band	CW2600
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	2600.000
Relative permittivity (real part)	52.509
Relative permittivity (imaginary part)	14.889
Conductivity (S/m)	2.151

C. SAR Surface and Volume

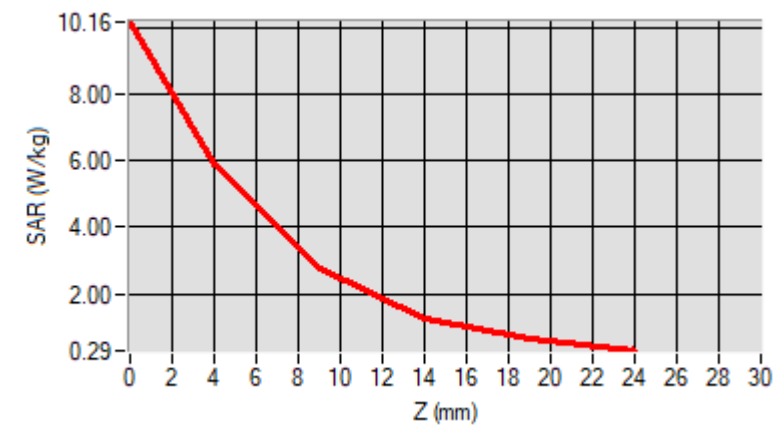


D. SAR 1g & 10g

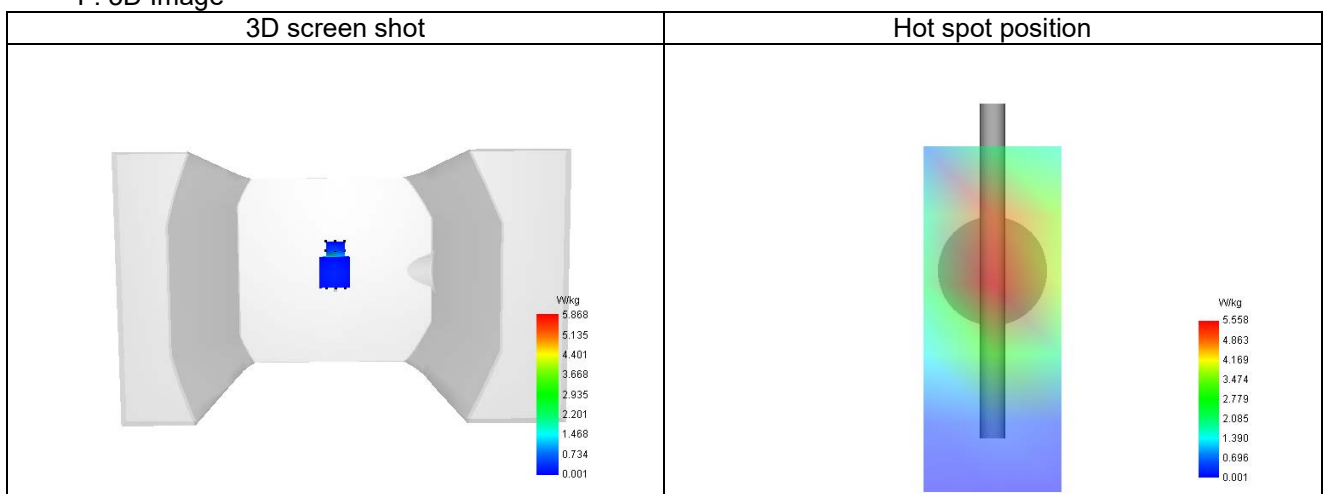
SAR 10g (W/Kg)	2.337
SAR 1g (W/Kg)	5.302
Variation (%)	0.230
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	10.164	5.868	2.777	1.281	0.618



F. 3D Image



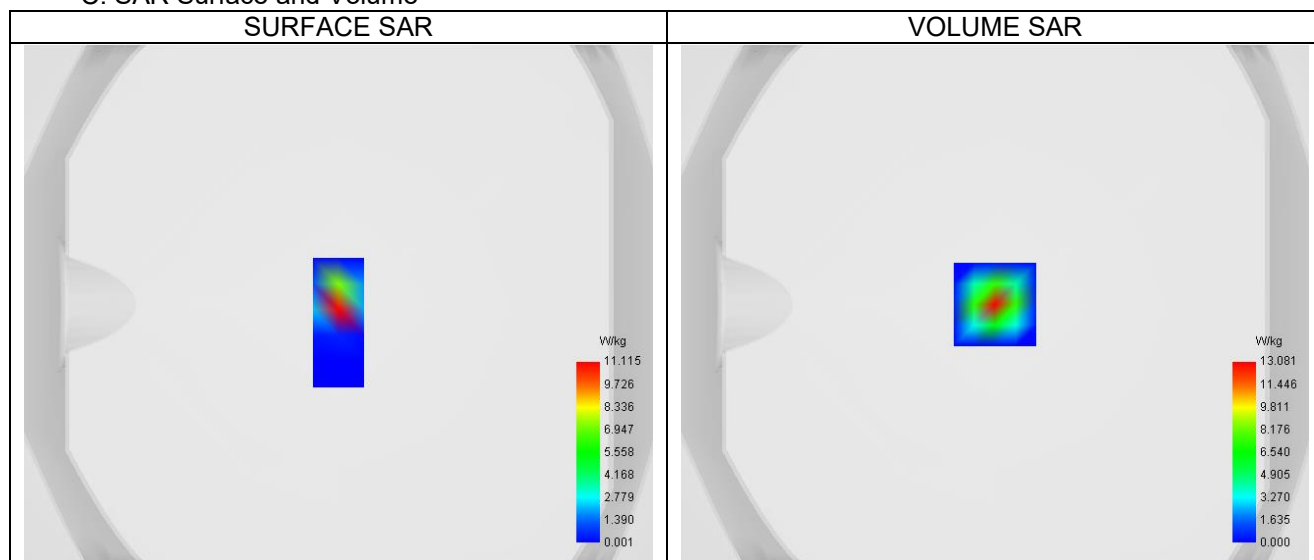
A. Experimental conditions.

Probe	SN EPG0373
ConvF	21.98
Area Scan	dx=10mm dy=10mm, Adaptive 2 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Very fast
Phantom	Validation plane
Device Position	Dipole
Band	CW5200
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	5200.000
Relative permittivity (real part)	49.014
Relative permittivity (imaginary part)	18.140
Conductivity (S/m)	5.240

C. SAR Surface and Volume



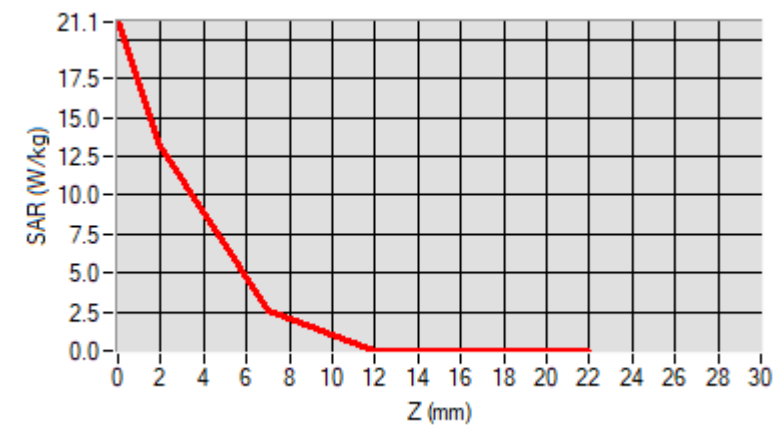
Maximum location: X=0.00, Y=0.00 ; SAR Peak: 22.28 W/kg

D. SAR 1g & 10g

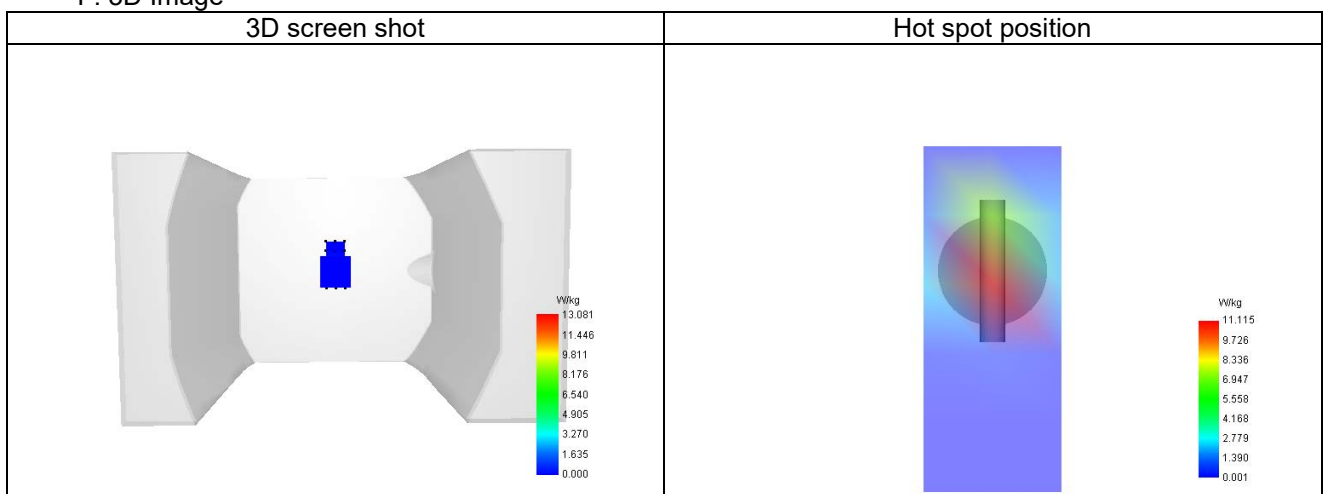
SAR 10g (W/Kg)	2.041
SAR 1g (W/Kg)	6.817
Variation (%)	0.430
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	7.00	12.00	17.00
SAR (W/Kg)	21.117	13.081	2.622	0.000	0.003



F. 3D Image



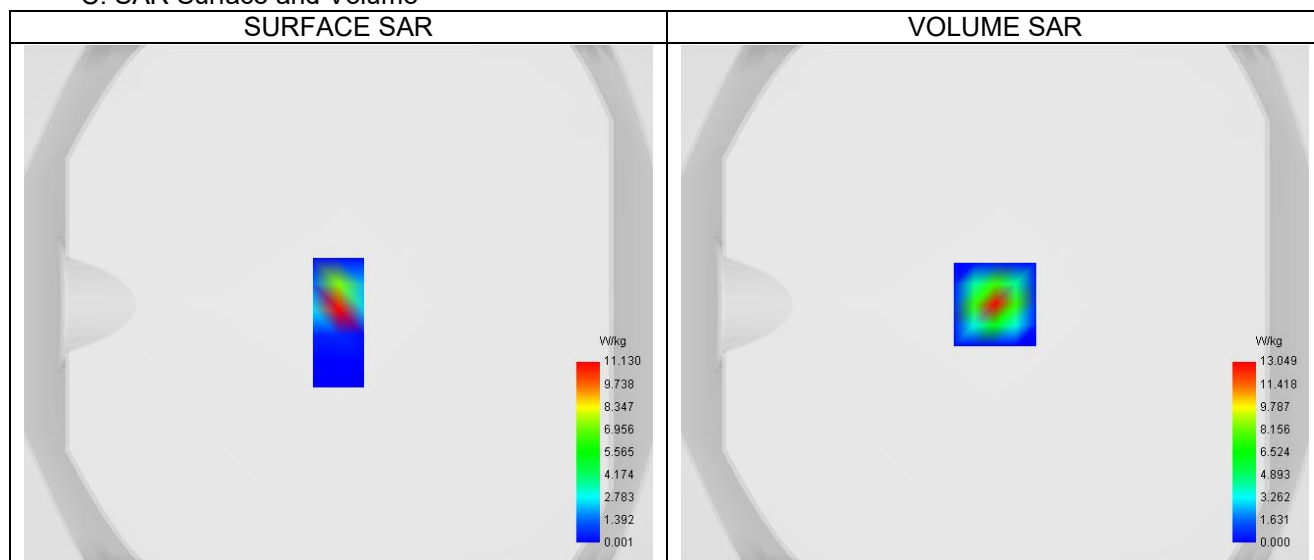
A. Experimental conditions.

Probe	SN EPG0373
ConvF	21.00
Area Scan	dx=10mm dy=10mm, Adaptive 2 max
Zoom Scan	5x5x7, dx=8mm dy=8mm dz=5mm, Very fast
Phantom	Validation plane
Device Position	Dipole
Band	CW5800
Channels	Middle
Signal	CW (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	5800.000
Relative permittivity (real part)	48.200
Relative permittivity (imaginary part)	18.620
Conductivity (S/m)	6.000

C. SAR Surface and Volume



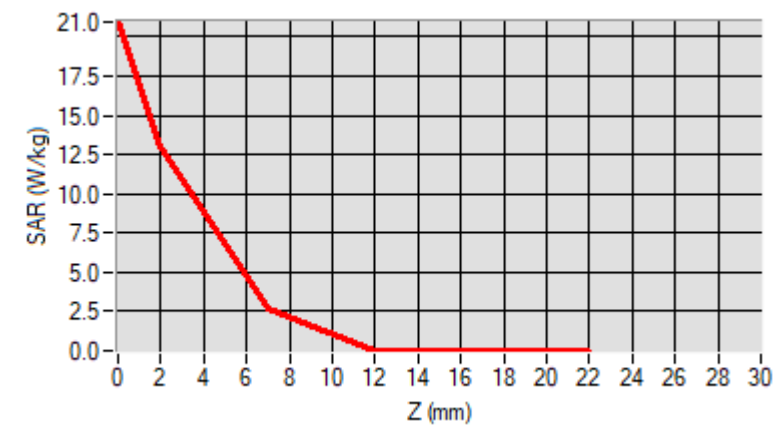
Maximum location: X=0.00, Y=0.00 ; SAR Peak: 22.11 W/kg

D. SAR 1g & 10g

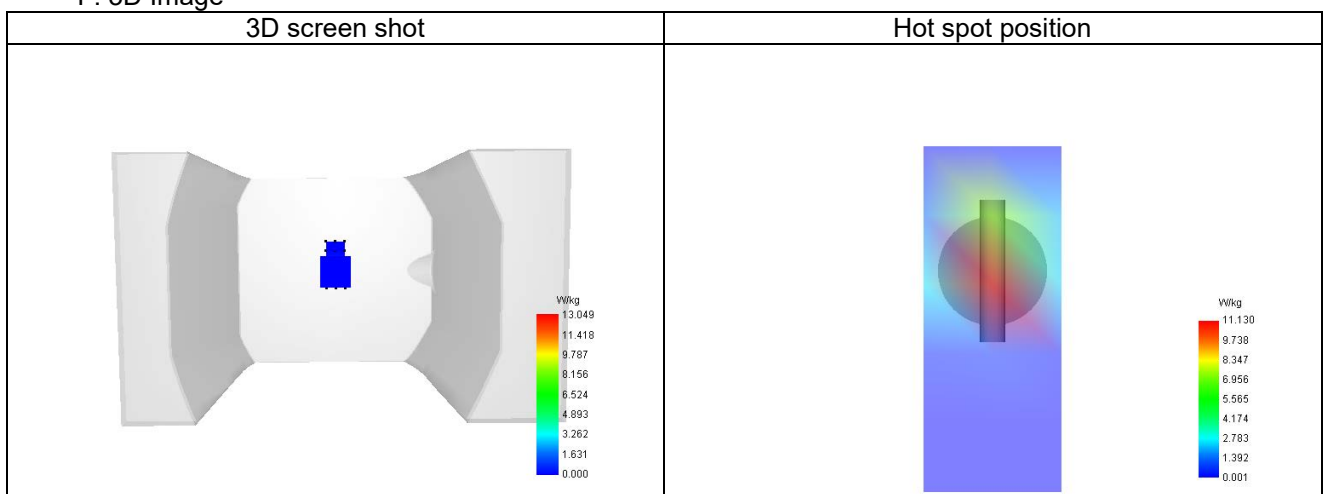
SAR 10g (W/Kg)	2.063
SAR 1g (W/Kg)	6.847
Variation (%)	0.430
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	7.00	12.00	17.00
SAR (W/Kg)	20.951	13.049	2.674	0.012	0.003



F. 3D Image



15.2 SAR Test Graph Results

SAR plots for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination according to FCC KDB 865664 D02

Plot 1

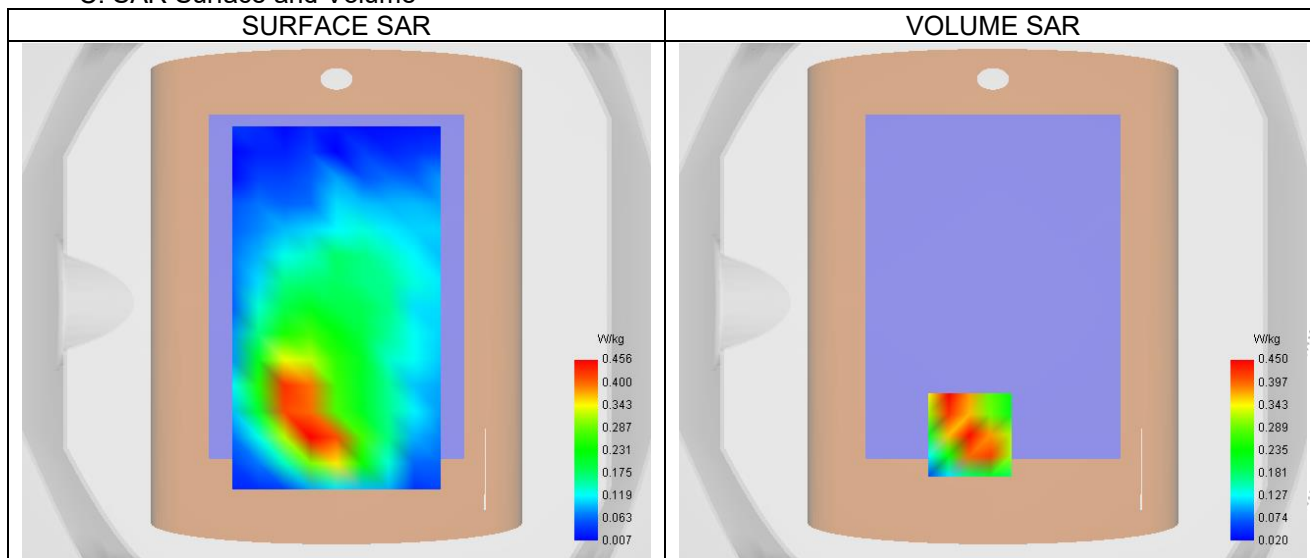
A. Experimental conditions.

Probe	SN 25/22 EPGO373
ConvF	3.01
Area Scan	surf sam plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	GSM850
Channels	Low (128)
Signal	TDMA (Crest factor: 8.0)

B. Permittivity

Frequency (MHz)	824.200
Relative permittivity (real part)	41.500
Relative permittivity (imaginary part)	19.400
Conductivity (S/m)	0.902

C. SAR Surface and Volume



Maximum location: X=-9.00, Y=-51.00 ; SAR Peak: 0.72 W/kg

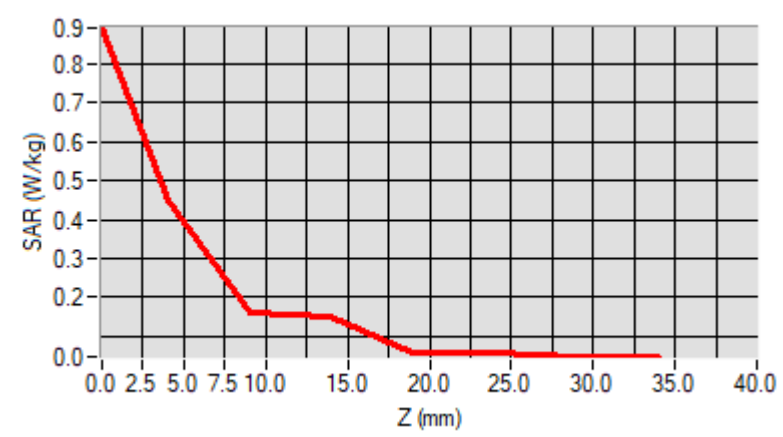
D. SAR 1g & 10g

SAR 10g (W/Kg)	0.242
SAR 1g (W/Kg)	0.432
Variation (%)	2.420
Horizontal validation criteria: minimum distance (mm)	17.888544
Vertical validation criteria: SAR ratio M2/M1 (%)	54.604241

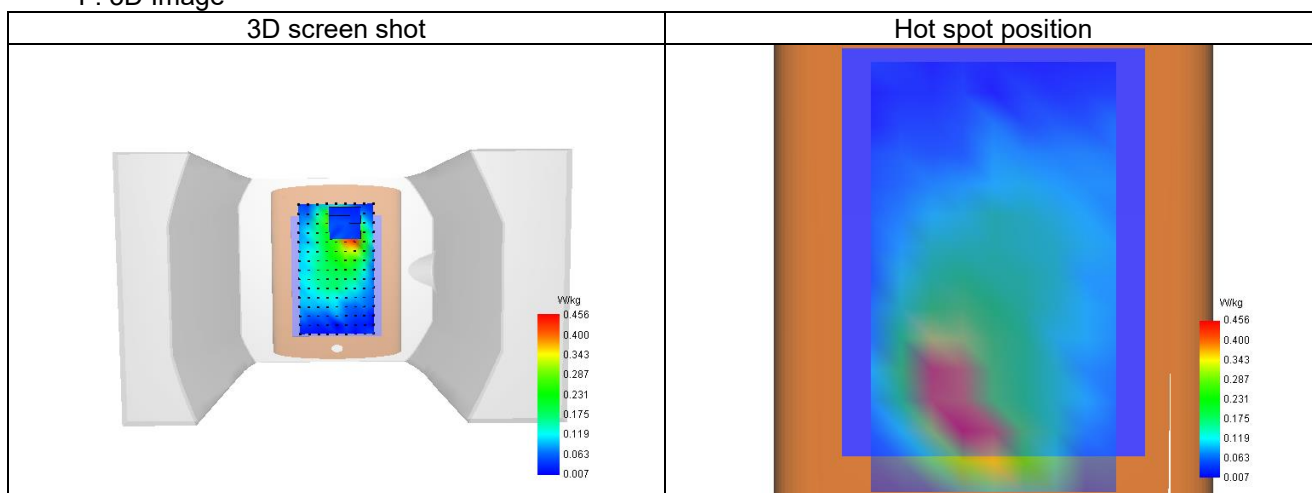
E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
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SAR (W/Kg)	0.893	0.450	0.159	0.152	0.059	0.060	0.047
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F. 3D Image



Plot 2

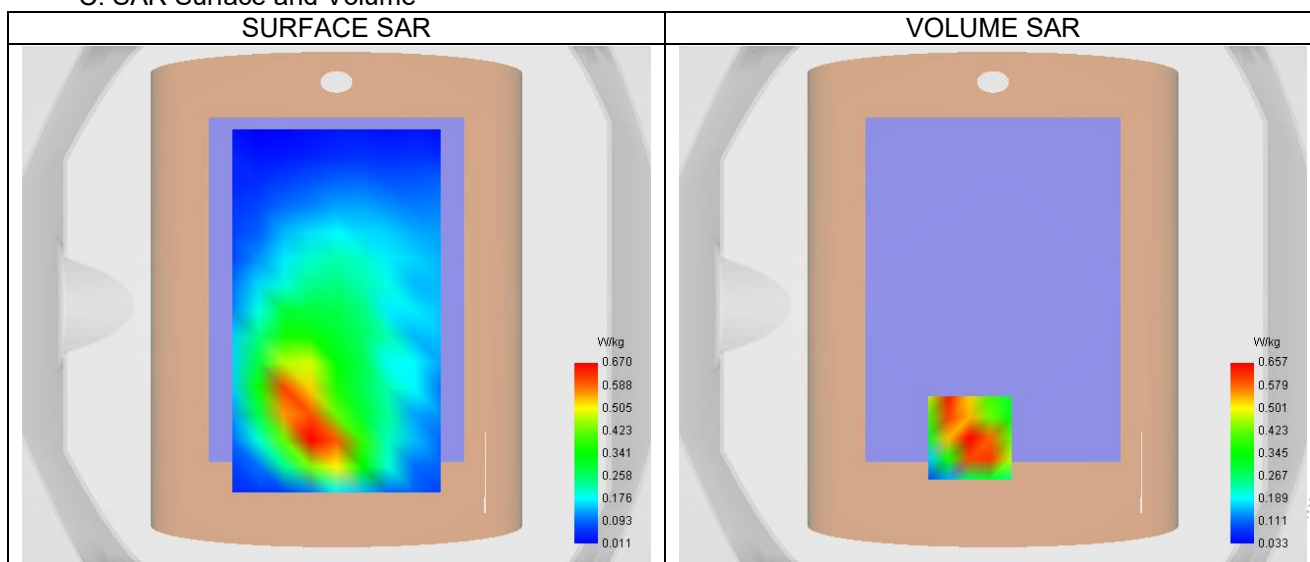
A. Experimental conditions.

Probe	SN 25/22 EPG0373
ConvF	3.27
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	GSM1900
Channels	High (810)
Signal	TDMA (Crest factor: 8.0)

B. Permittivity

Frequency (MHz)	1909.800
Relative permittivity (real part)	40.000
Relative permittivity (imaginary part)	13.408
Conductivity (S/m)	1.400

C. SAR Surface and Volume

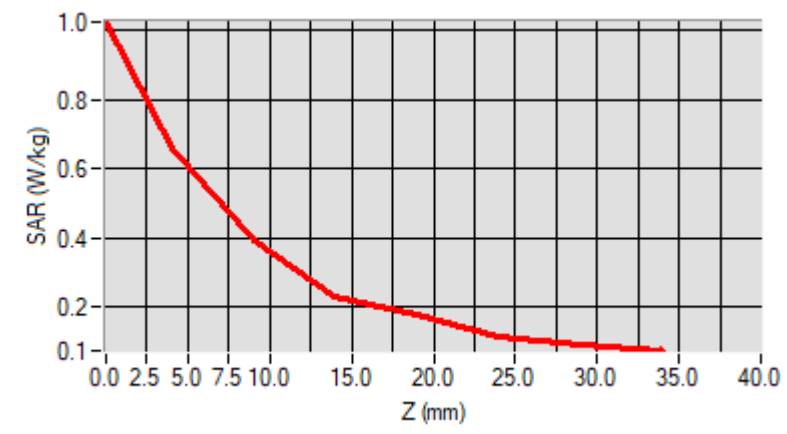


D. SAR 1g & 10g

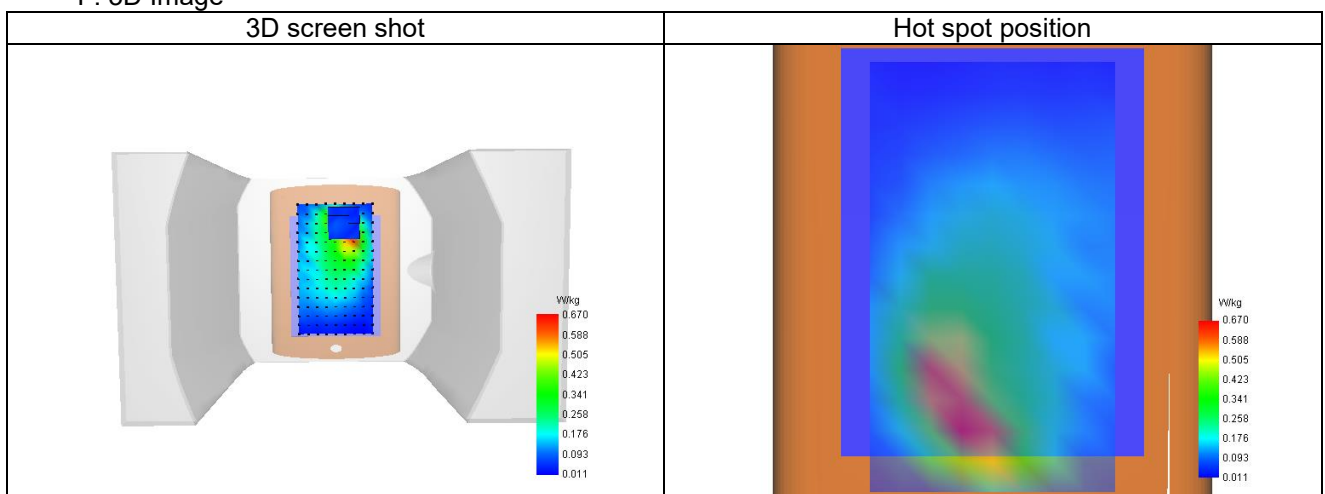
SAR 10g (W/Kg)	0.349
SAR 1g (W/Kg)	0.648
Variation (%)	-1.920
Horizontal validation criteria: minimum distance (mm)	16.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	59.345460

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.023	0.657	0.390	0.231	0.180	0.116	0.093



F. 3D Image



Plot 3

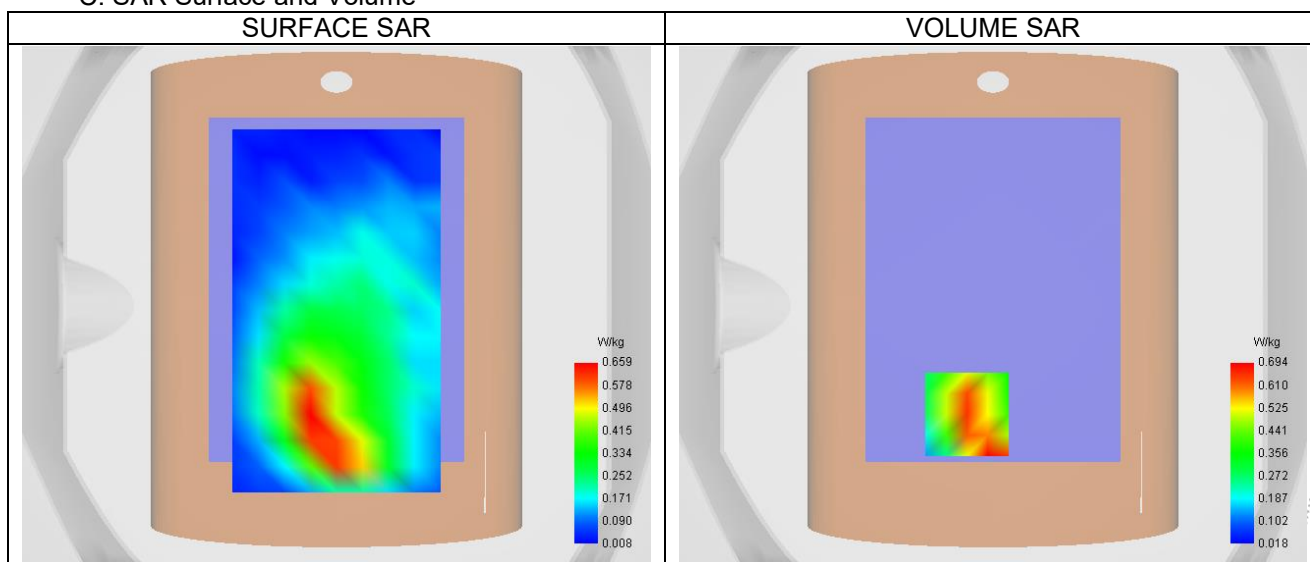
A. Experimental conditions.

Probe	SN 25/22 EPG0373
ConvF	3.27
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	Band2_WCDMA1900
Channels	High (9538)
Signal	WCDMA (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	1907.600
Relative permittivity (real part)	40.000
Relative permittivity (imaginary part)	13.408
Conductivity (S/m)	1.400

C. SAR Surface and Volume

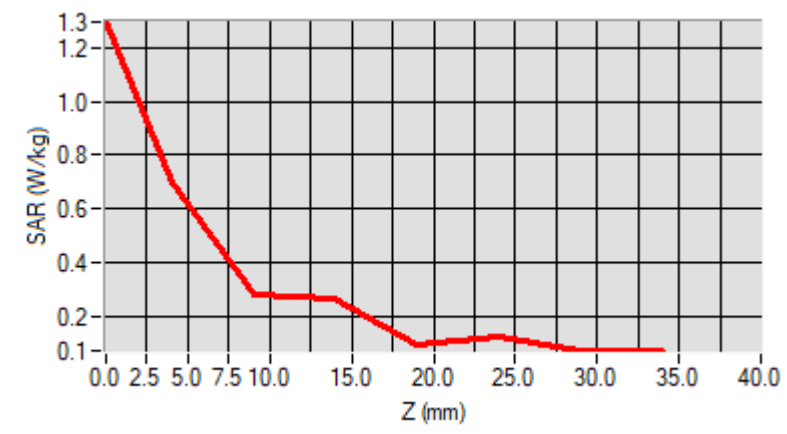


D. SAR 1g & 10g

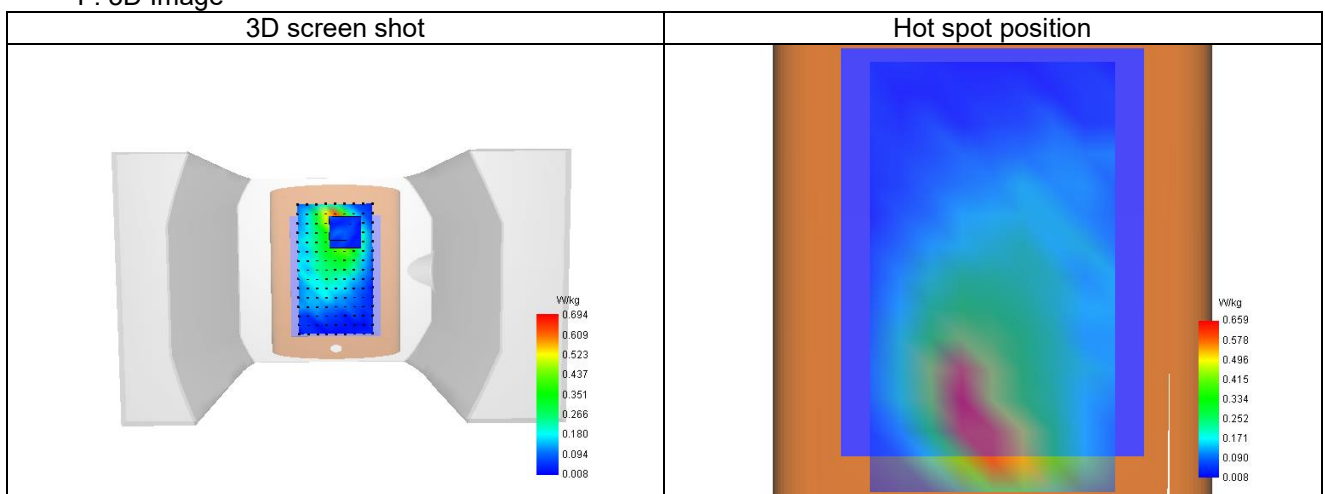
SAR 10g (W/Kg)	0.369
SAR 1g (W/Kg)	0.598
Variation (%)	0.170
Horizontal validation criteria: minimum distance (mm)	16.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	56.570484

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.295	0.694	0.282	0.263	0.095	0.119	0.070



F. 3D Image



Plot 4

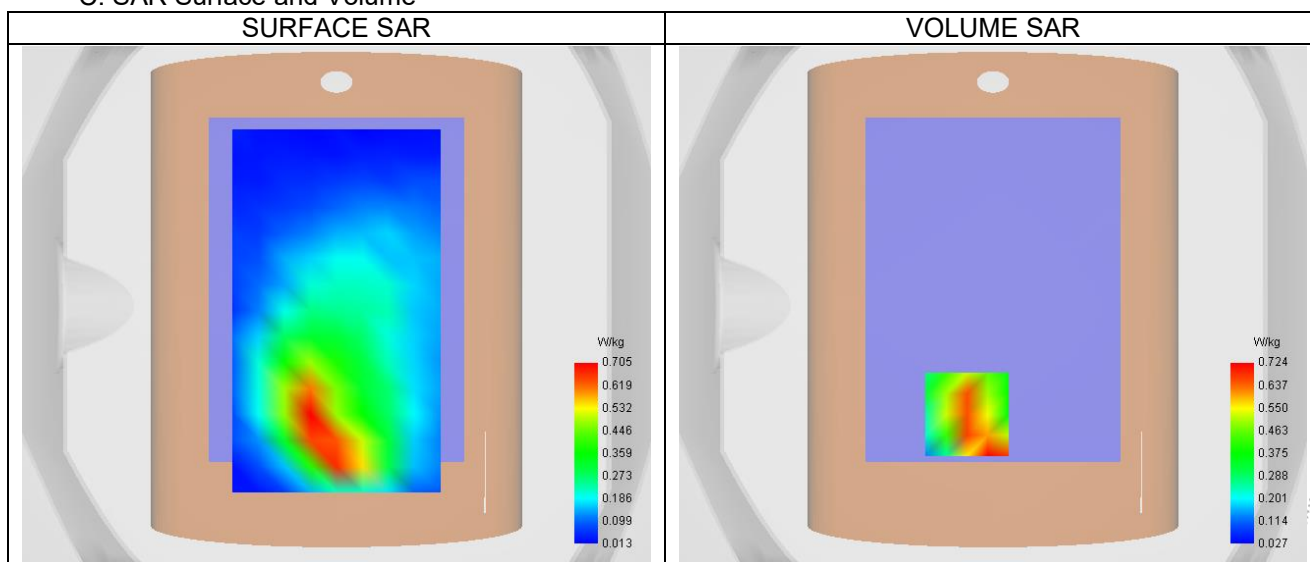
A. Experimental conditions.

Probe	SN 25/22 EPG0373
ConvF	3.35
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	Band4_WCDMA1700
Channels	Low (1312)
Signal	WCDMA (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	1712.400
Relative permittivity (real part)	40.116
Relative permittivity (imaginary part)	14.136
Conductivity (S/m)	1.361

C. SAR Surface and Volume



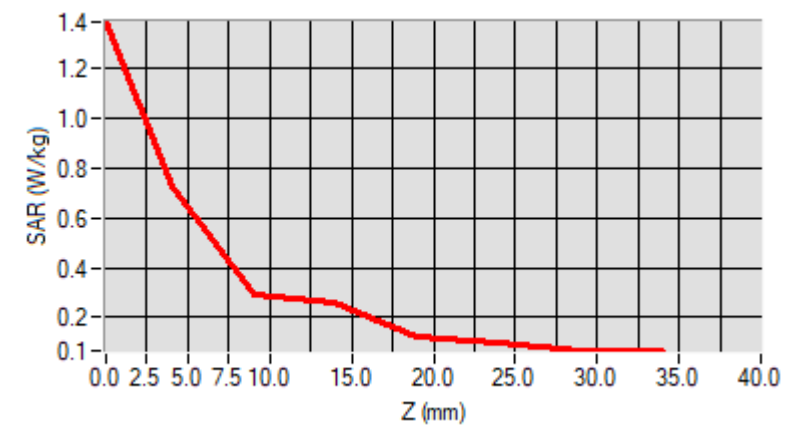
Maximum location: X=-10.00, Y=-42.00 ; SAR Peak: 1.09 W/kg

D. SAR 1g & 10g

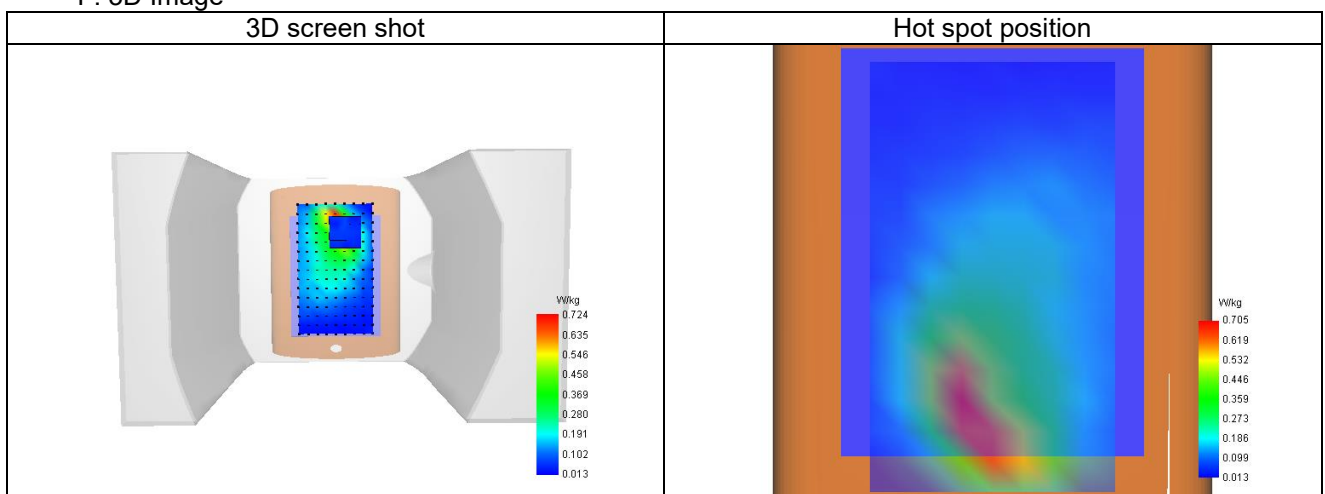
SAR 10g (W/Kg)	0.380
SAR 1g (W/Kg)	0.605
Variation (%)	-0.060
Horizontal validation criteria: minimum distance (mm)	16.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	58.602703

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.384	0.724	0.293	0.258	0.126	0.100	0.071



F. 3D Image



Plot 5

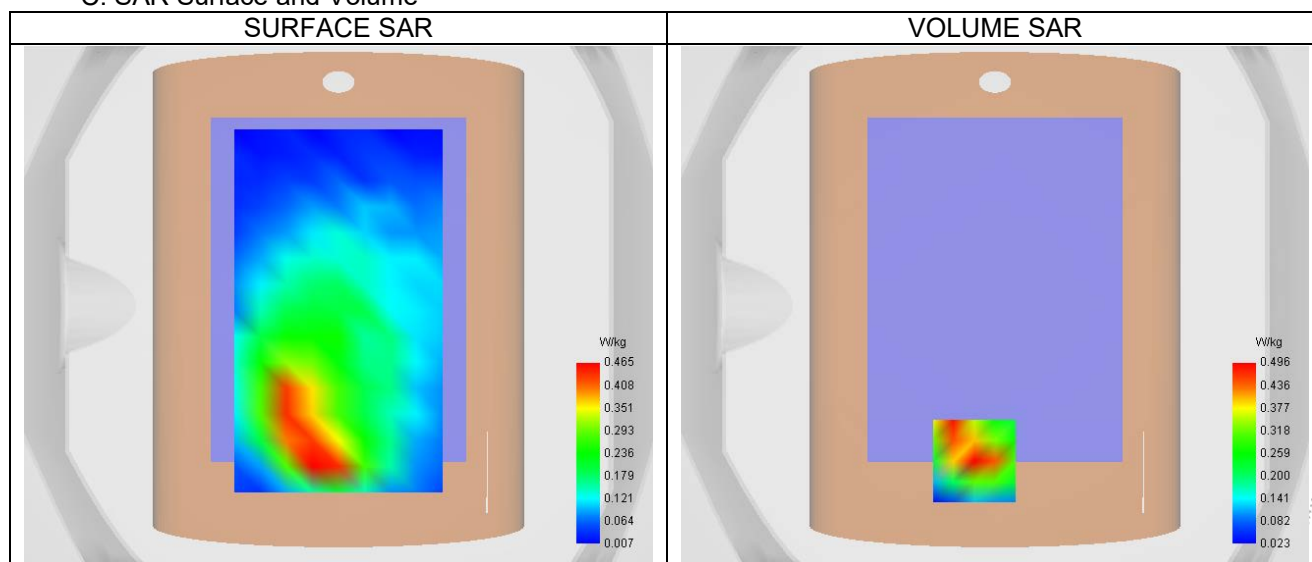
A. Experimental conditions.

Probe	SN 25/22 EPG0373
ConvF	3.01
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	Band5_WCDMA850
Channels	Middle (4182)
Signal	WCDMA (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	836.400
Relative permittivity (real part)	42.285
Relative permittivity (imaginary part)	20.226
Conductivity (S/m)	0.940

C. SAR Surface and Volume

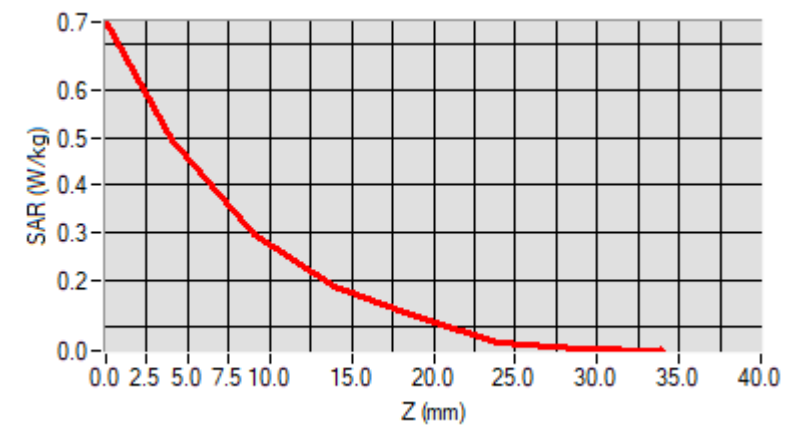


D. SAR 1g & 10g

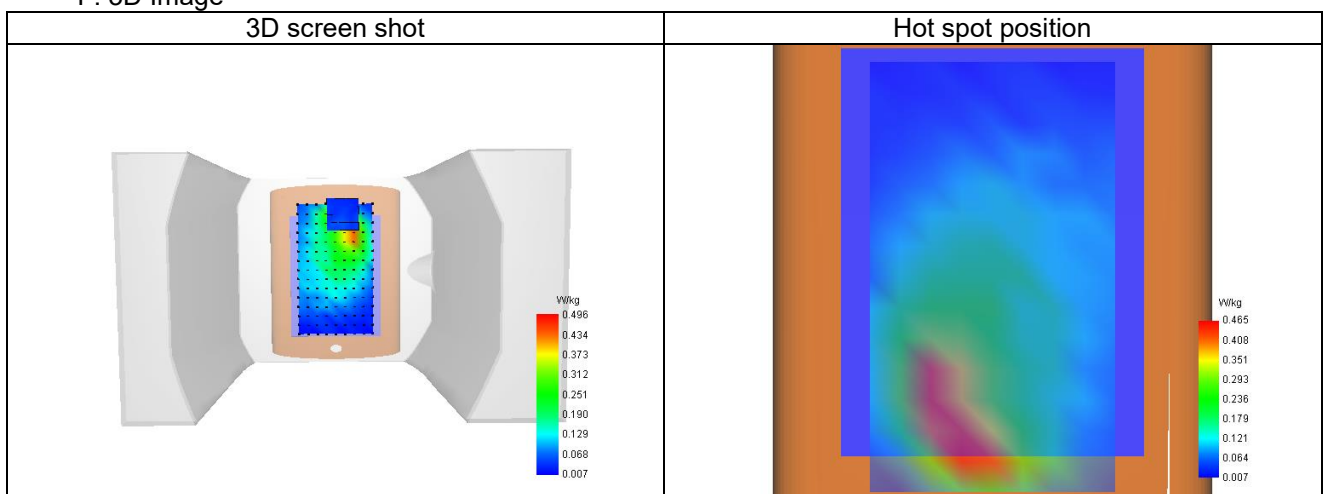
SAR 10g (W/Kg)	0.267
SAR 1g (W/Kg)	0.464
Variation (%)	-2.460
Horizontal validation criteria: minimum distance (mm)	11.313708
Vertical validation criteria: SAR ratio M2/M1 (%)	59.900697

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.745	0.496	0.297	0.188	0.123	0.068	0.055



F. 3D Image



Plot 6

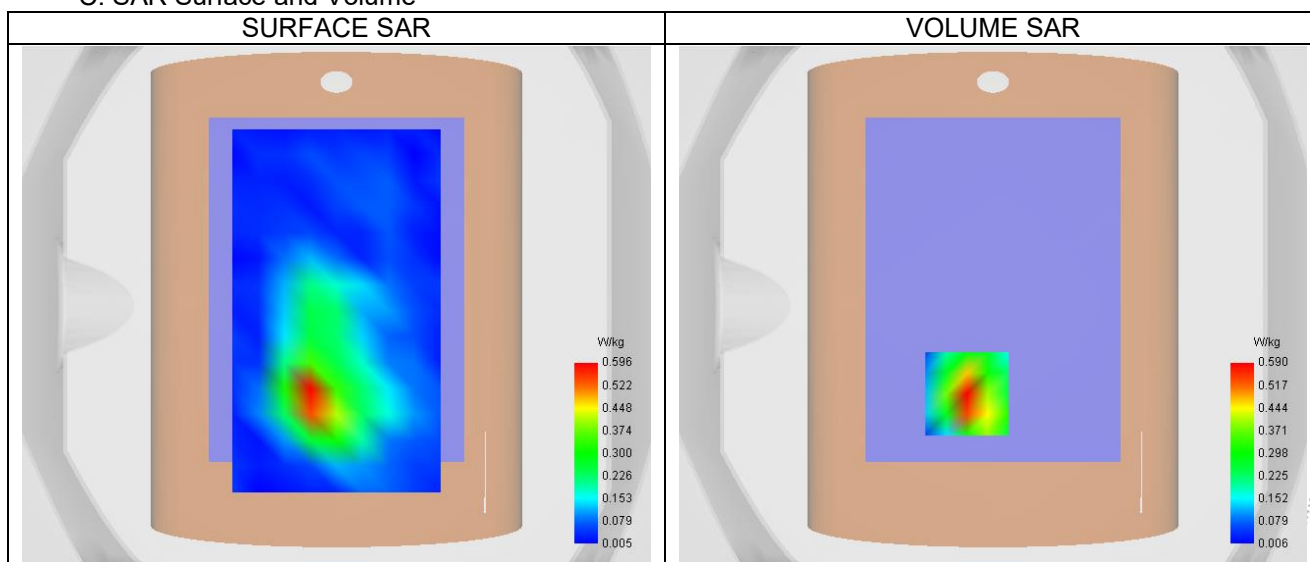
A. Experimental conditions.

Probe	SN 25/22 EPG0373
ConvF	3.27
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 2
Channels	High (19100)
Signal	LTE (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	1900.000
Relative permittivity (real part)	40.000
Relative permittivity (imaginary part)	13.408
Conductivity (S/m)	1.400

C. SAR Surface and Volume

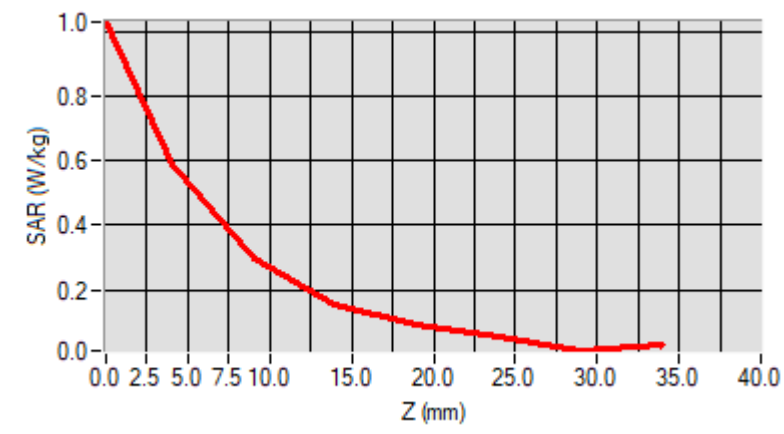


D. SAR 1g & 10g

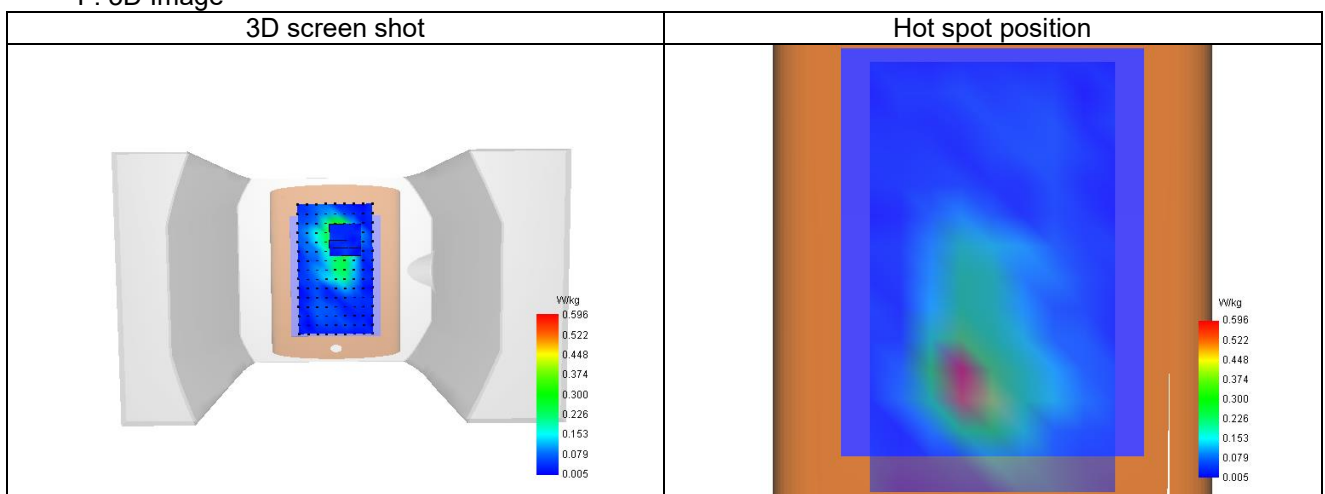
SAR 10g (W/Kg)	0.257
SAR 1g (W/Kg)	0.548
Variation (%)	-2.650
Horizontal validation criteria: minimum distance (mm)	11.313708
Vertical validation criteria: SAR ratio M2/M1 (%)	50.758390

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	1.030	0.590	0.299	0.150	0.090	0.056	0.011



F. 3D Image



Plot 7

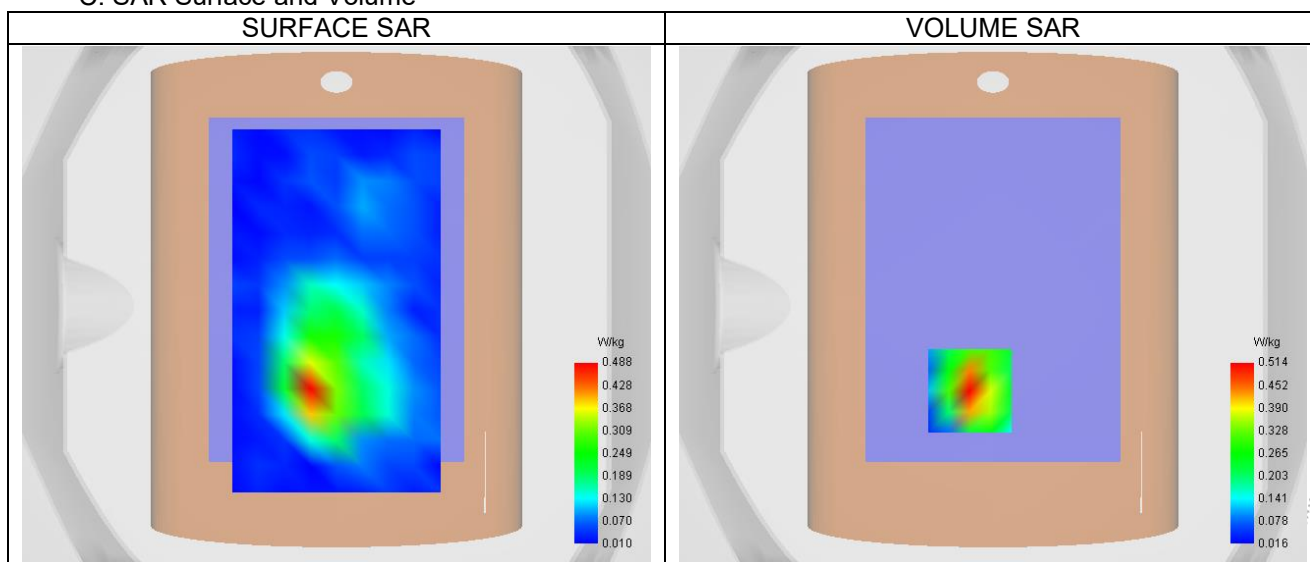
A. Experimental conditions.

Probe	SN 25/22 EPG0373
ConvF	3.35
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 4
Channels	High (20300)
Signal	LTE (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	1745.000
Relative permittivity (real part)	40.116
Relative permittivity (imaginary part)	14.136
Conductivity (S/m)	1.361

C. SAR Surface and Volume

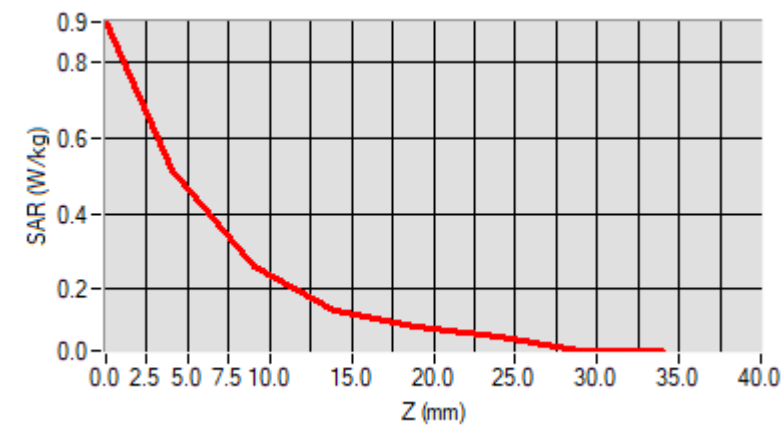


D. SAR 1g & 10g

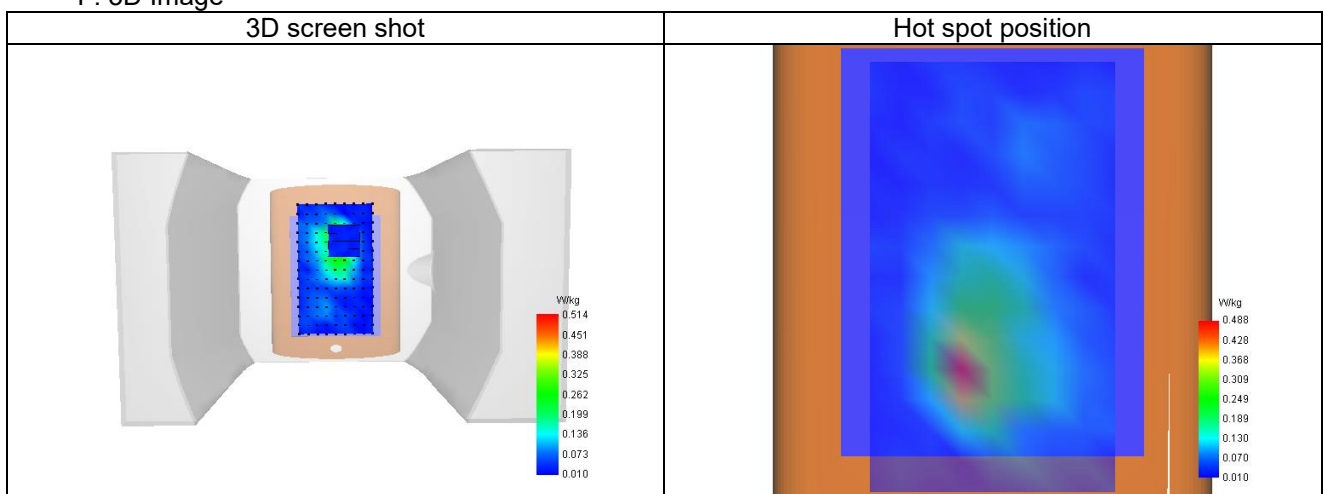
SAR 10g (W/Kg)	0.225
SAR 1g (W/Kg)	0.479
Variation (%)	2.540
Horizontal validation criteria: minimum distance (mm)	11.313708
Vertical validation criteria: SAR ratio M2/M1 (%)	50.553657

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.907	0.514	0.260	0.141	0.100	0.072	0.038



F. 3D Image



Plot 8

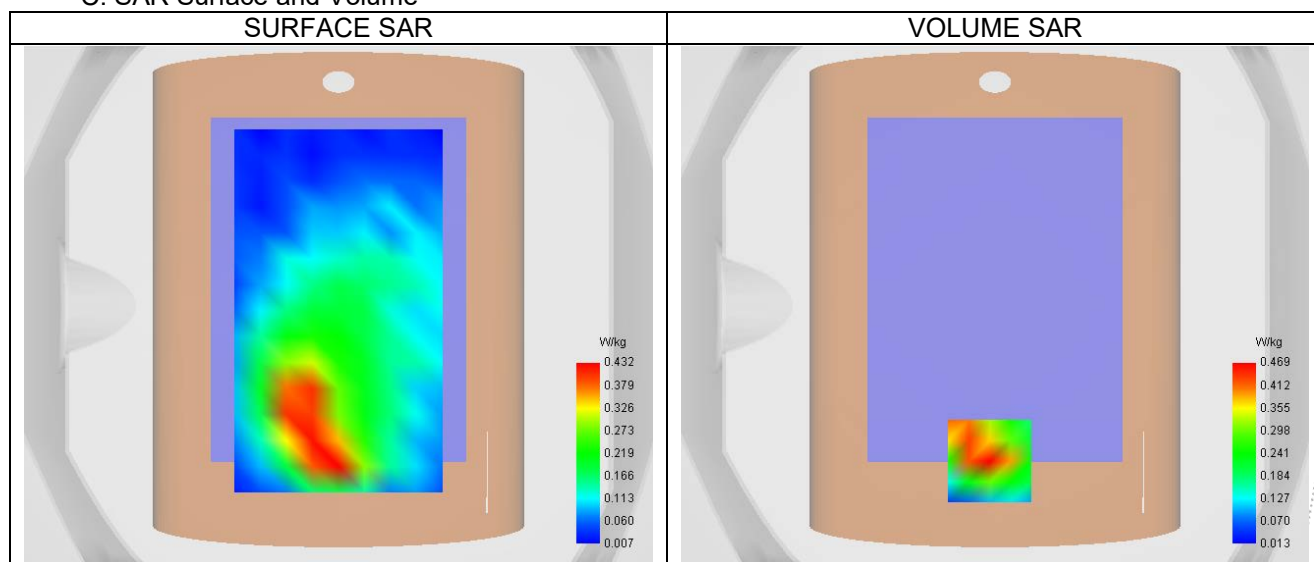
A. Experimental conditions.

Probe	SN 25/22 EPG0373
ConvF	3.01
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 5
Channels	Middle (20450)
Signal	LTE (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	836.500
Relative permittivity (real part)	42.285
Relative permittivity (imaginary part)	20.225
Conductivity (S/m)	0.940

C. SAR Surface and Volume

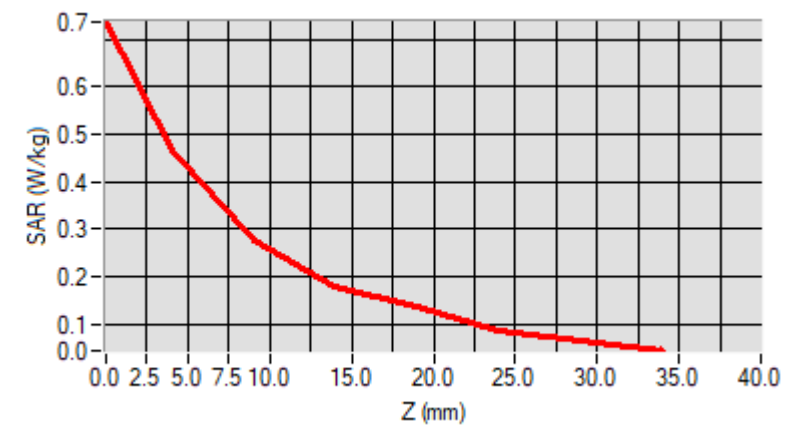


D. SAR 1g & 10g

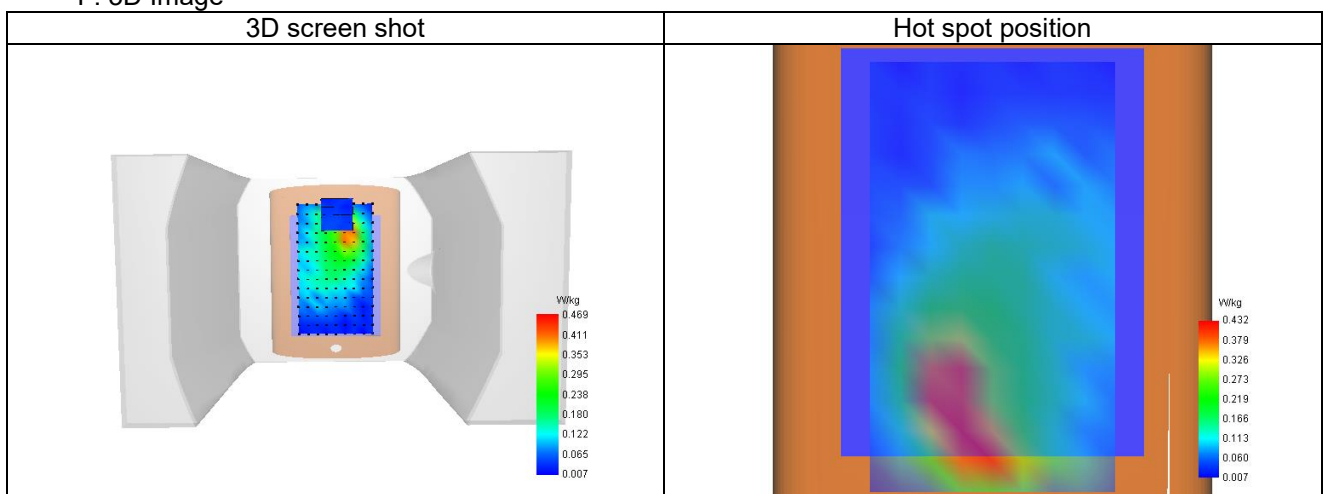
SAR 10g (W/Kg)	0.254
SAR 1g (W/Kg)	0.451
Variation (%)	-1.610
Horizontal validation criteria: minimum distance (mm)	11.313708
Vertical validation criteria: SAR ratio M2/M1 (%)	58.976070

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.736	0.469	0.276	0.182	0.139	0.085	0.068



F. 3D Image



Plot 9

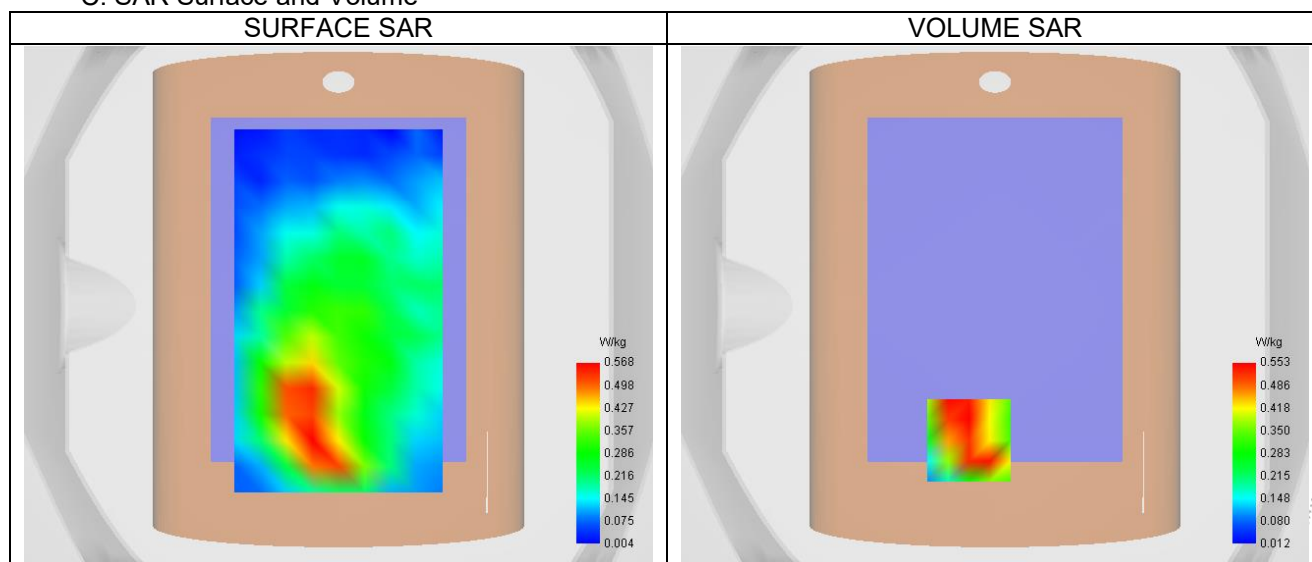
A. Experimental conditions.

Probe	SN 25/22 EPG0373
ConvF	3.63
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 7
Channels	Low (20850)
Signal	LTE (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	2510.000
Relative permittivity (real part)	39.087
Relative permittivity (imaginary part)	13.418
Conductivity (S/m)	1.890

C. SAR Surface and Volume

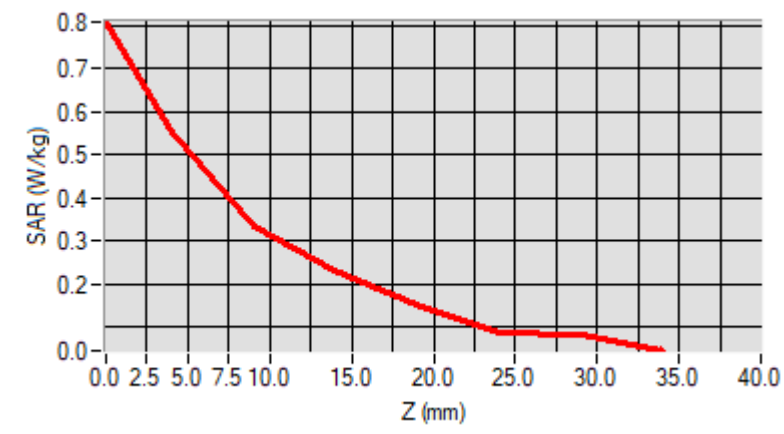


D. SAR 1g & 10g

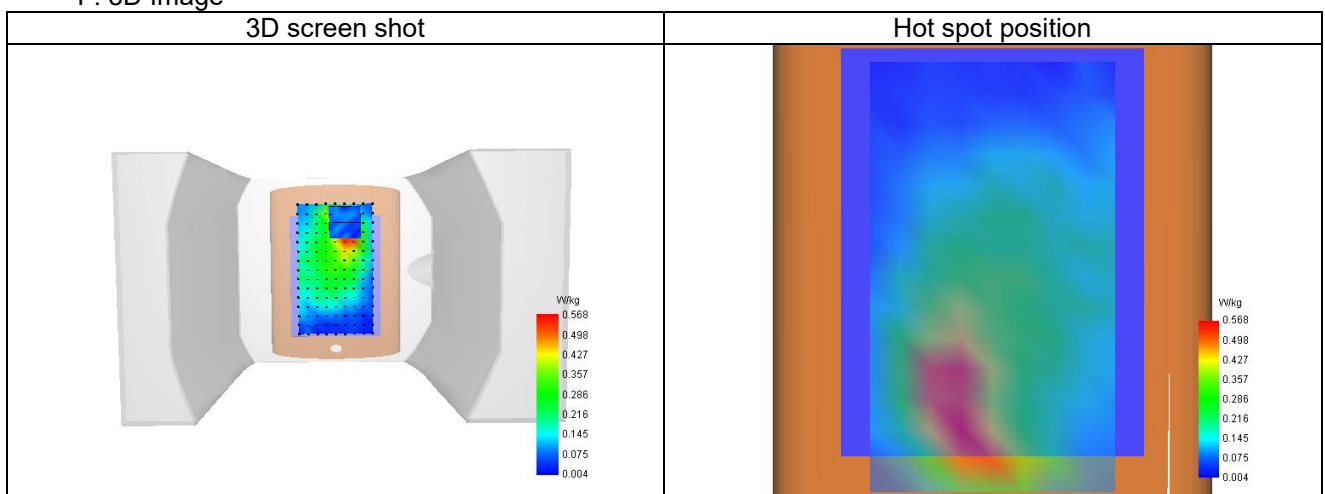
SAR 10g (W/Kg)	0.310
SAR 1g (W/Kg)	0.524
Variation (%)	-4.730
Horizontal validation criteria: minimum distance (mm)	17.888544
Vertical validation criteria: SAR ratio M2/M1 (%)	62.641982

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.808	0.553	0.333	0.230	0.149	0.087	0.081



F. 3D Image



Plot 10

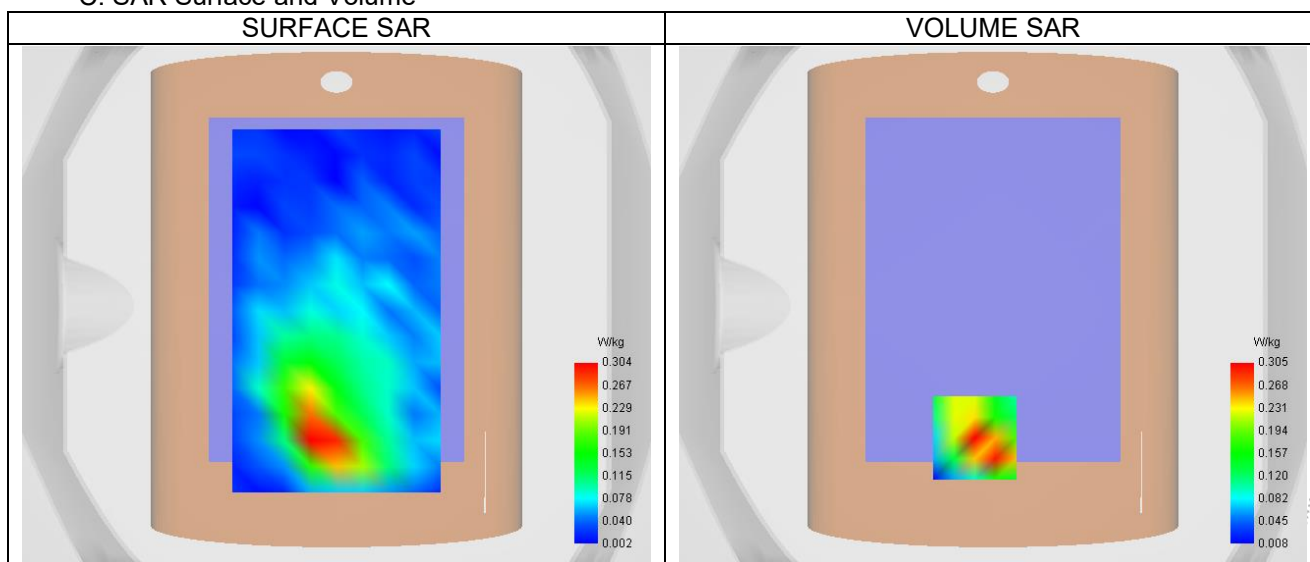
A. Experimental conditions.

Probe	SN 25/22 EPG0373
ConvF	2.96
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 12
Channels	Low (23060)
Signal	LTE (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	704.000
Relative permittivity (real part)	42.127
Relative permittivity (imaginary part)	23.264
Conductivity (S/m)	0.914

C. SAR Surface and Volume

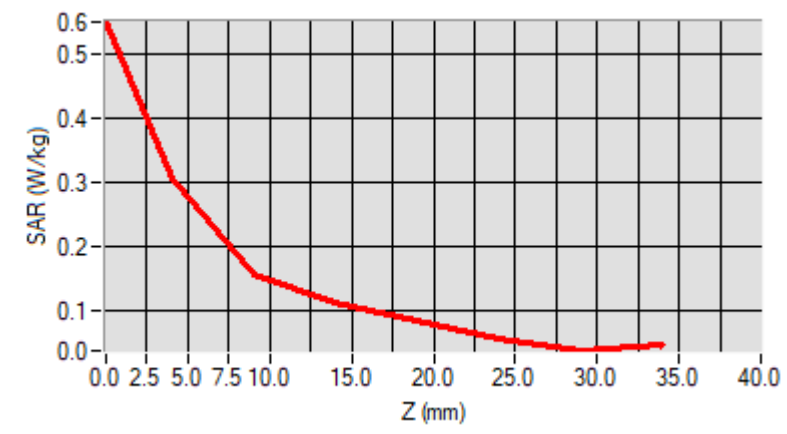


D. SAR 1g & 10g

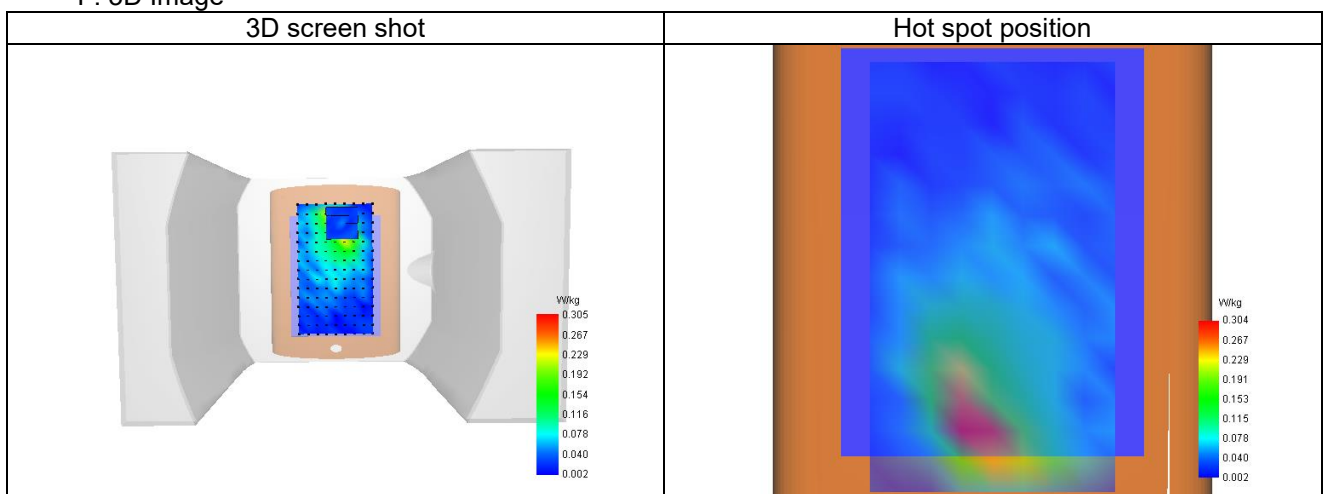
SAR 10g (W/Kg)	0.155
SAR 1g (W/Kg)	0.298
Variation (%)	-1.500
Horizontal validation criteria: minimum distance (mm)	11.313708
Vertical validation criteria: SAR ratio M2/M1 (%)	51.856253

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.550	0.305	0.158	0.113	0.086	0.057	0.038



F. 3D Image



Plot 11

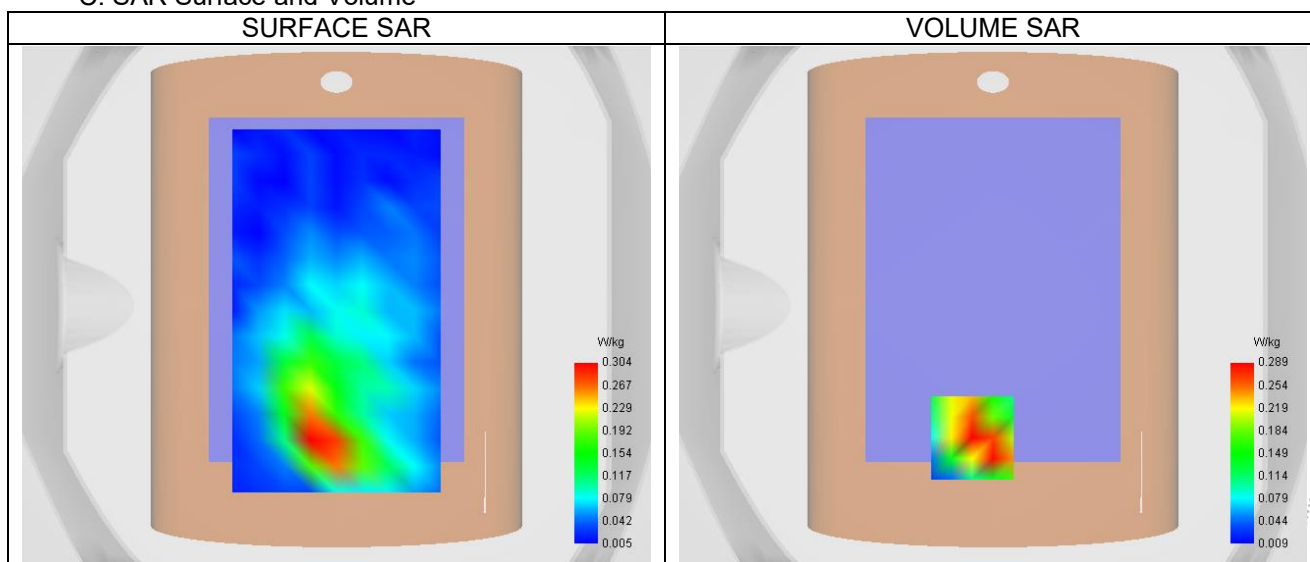
A. Experimental conditions.

Probe	SN 25/22 EPG0373
ConvF	2.96
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	LTE band 17
Channels	Low (23780)
Signal	LTE (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	709.000
Relative permittivity (real part)	42.113
Relative permittivity (imaginary part)	23.152
Conductivity (S/m)	0.913

C. SAR Surface and Volume

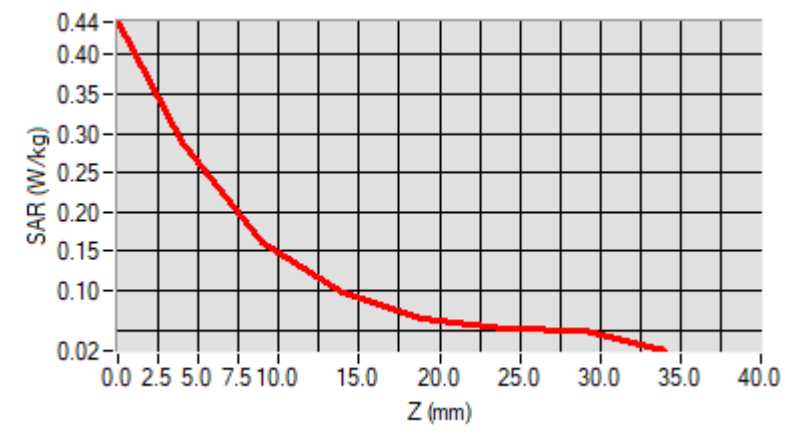


D. SAR 1g & 10g

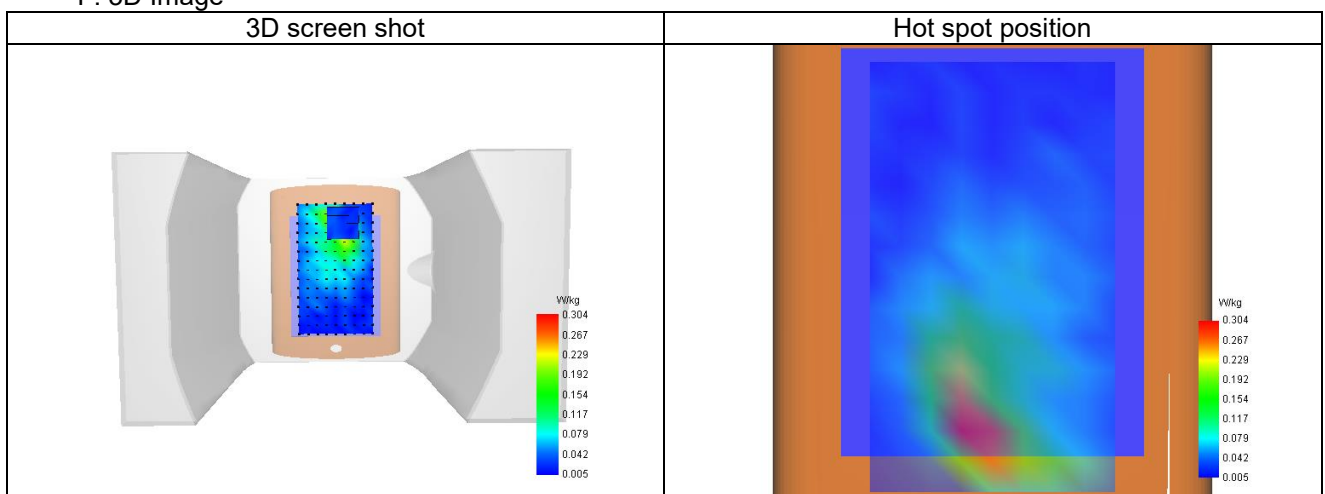
SAR 10g (W/Kg)	0.150
SAR 1g (W/Kg)	0.280
Variation (%)	0.020
Horizontal validation criteria: minimum distance (mm)	11.313708
Vertical validation criteria: SAR ratio M2/M1 (%)	56.102146

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.442	0.289	0.162	0.097	0.065	0.053	0.048



F. 3D Image



Plot 12

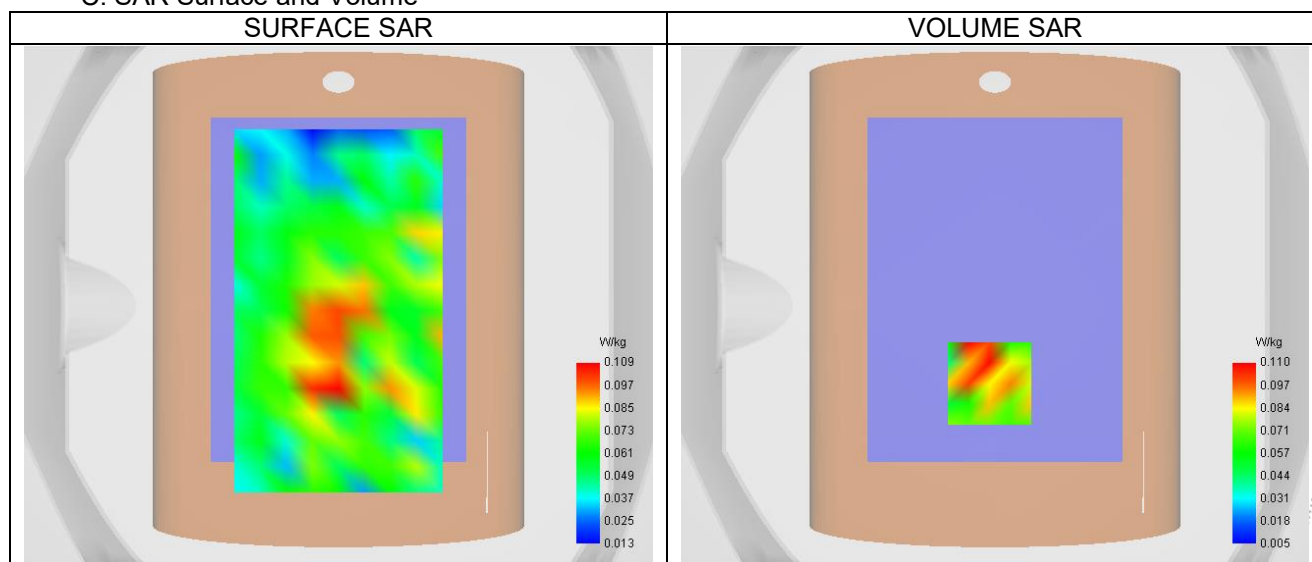
A. Experimental conditions.

Probe	SN 25/22 EPG0373
ConvF	3.96
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	Bluetooth
Channels	Middle (19)
Signal	Bluetooth (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	2441.000
Relative permittivity (real part)	39.202
Relative permittivity (imaginary part)	13.219
Conductivity (S/m)	1.799

C. SAR Surface and Volume

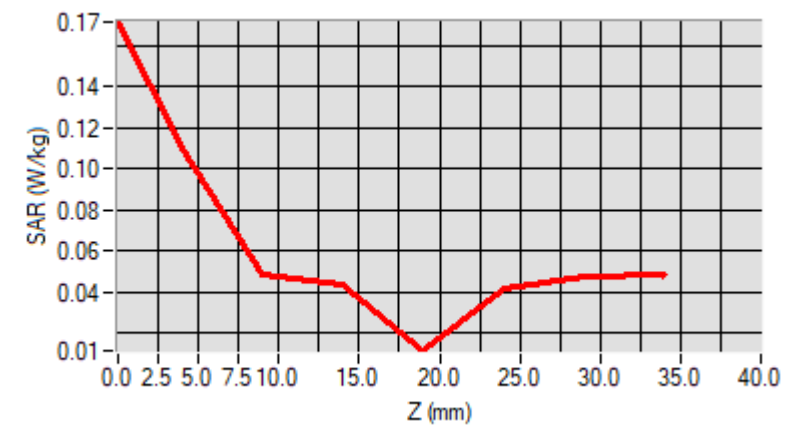


D. SAR 1g & 10g

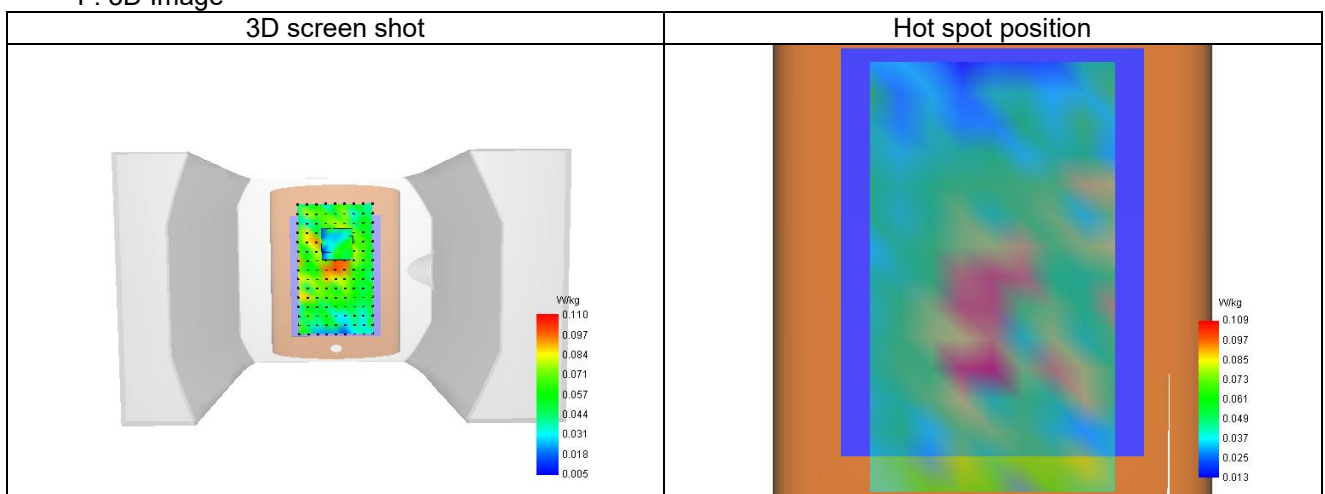
SAR 10g (W/Kg)	0.070
SAR 1g (W/Kg)	0.121
Variation (%)	2.480
Horizontal validation criteria: minimum distance (mm)	11.313708
Vertical validation criteria: SAR ratio M2/M1 (%)	40.375342

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.171	0.110	0.048	0.044	0.011	0.042	0.048



F. 3D Image



Plot 13

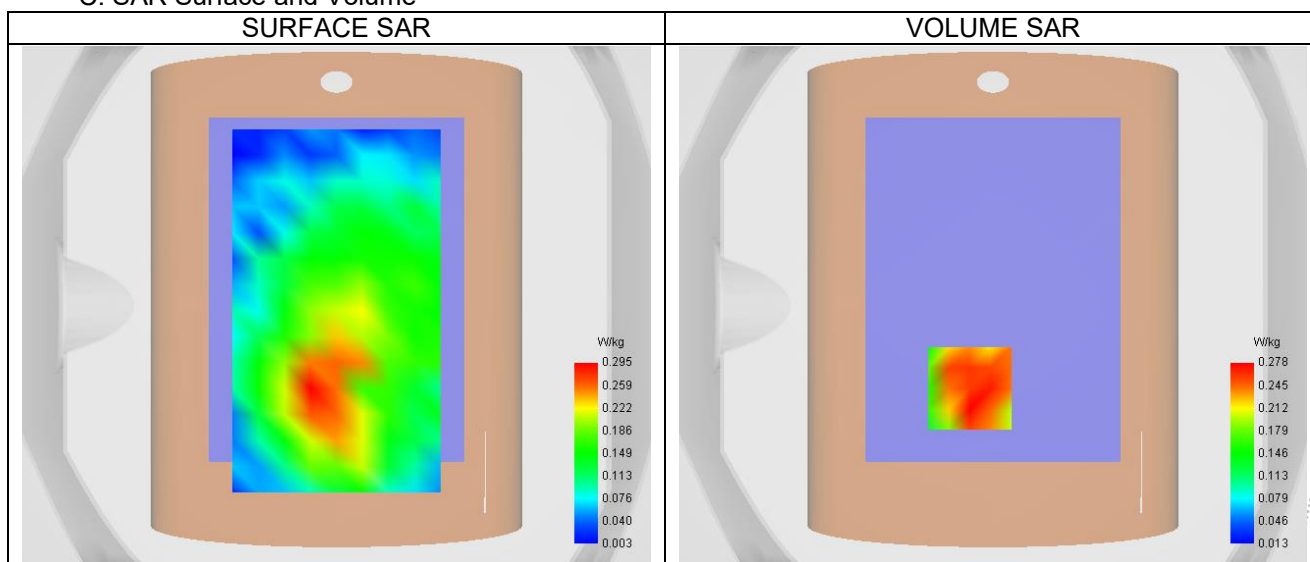
A. Experimental conditions.

Probe	SN 25/22 EPG0373
ConvF	3.96
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11b ISM
Channels	Middle (6)
Signal	IEEE802.b (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	2437.000
Relative permittivity (real part)	39.226
Relative permittivity (imaginary part)	13.207
Conductivity (S/m)	1.788

C. SAR Surface and Volume



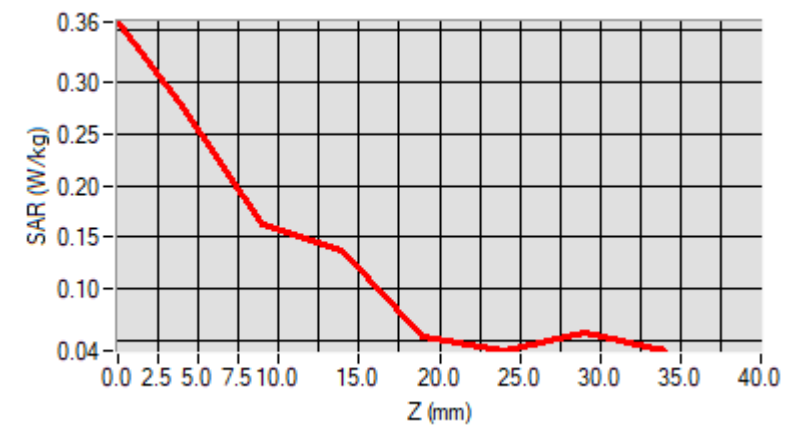
Maximum location: X=-9.00, Y=-32.00 ; SAR Peak: 0.42 W/kg

D. SAR 1g & 10g

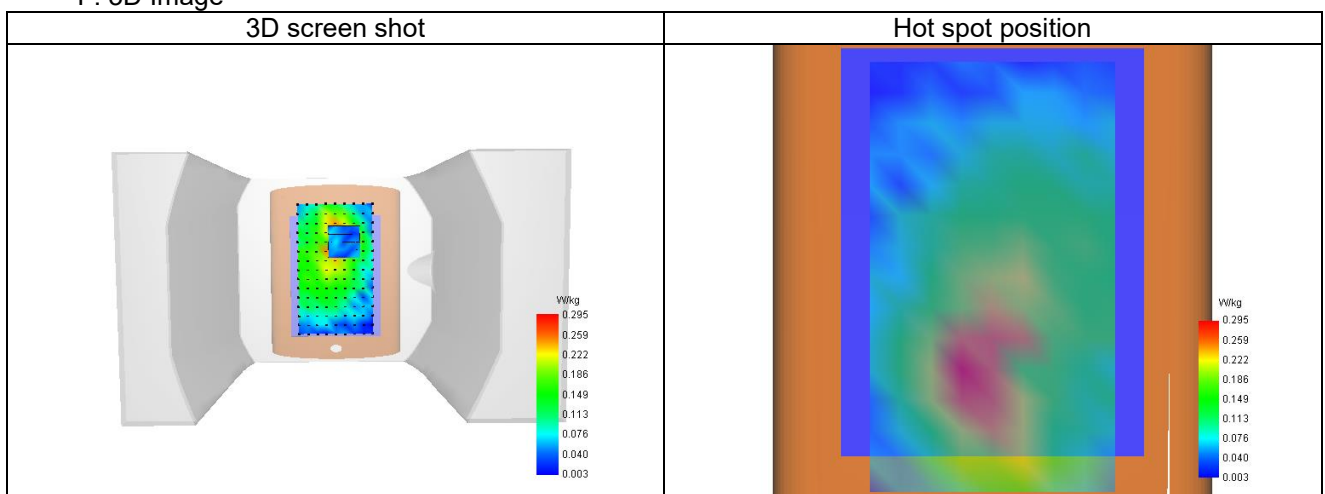
SAR 10g (W/Kg)	0.170
SAR 1g (W/Kg)	0.267
Variation (%)	-4.620
Horizontal validation criteria: minimum distance (mm)	17.888544
Vertical validation criteria: SAR ratio M2/M1 (%)	56.627688

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00	24.00	29.00
SAR (W/Kg)	0.358	0.278	0.161	0.138	0.054	0.040	0.057



F. 3D Image



Plot 14

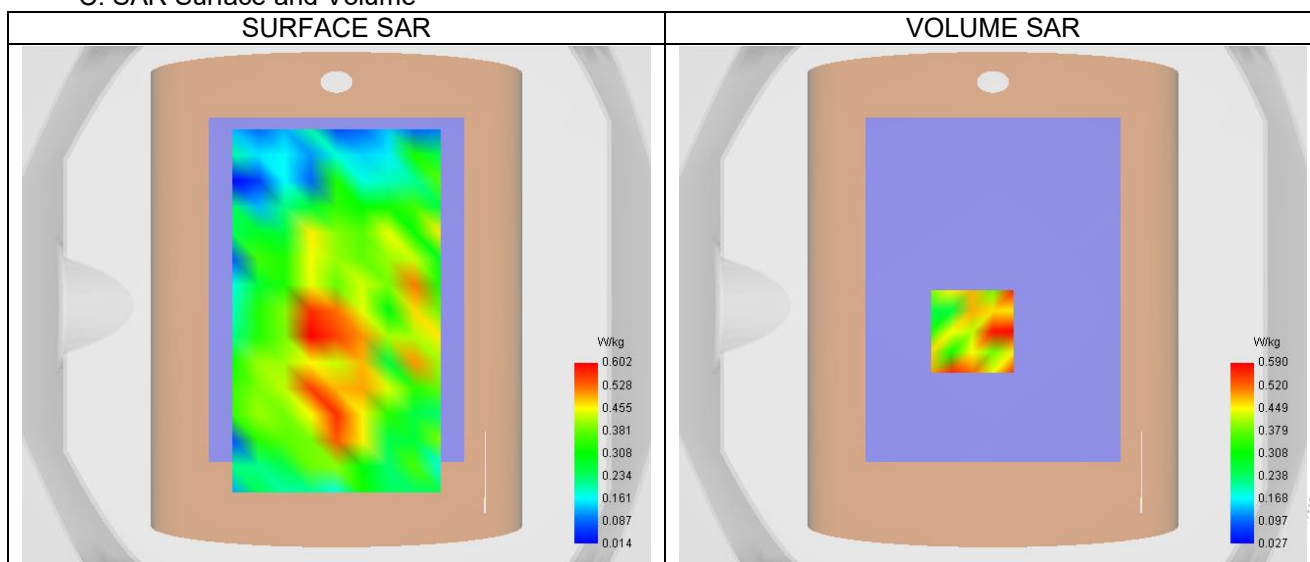
A. Experimental conditions.

Probe	SN 25/22 EPG0373
ConvF	2.92
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11a U-NII
Channels	Low (36)
Signal	IEEE802.a (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	5180.000
Relative permittivity (real part)	35.650
Relative permittivity (imaginary part)	16.250
Conductivity (S/m)	4.965

C. SAR Surface and Volume



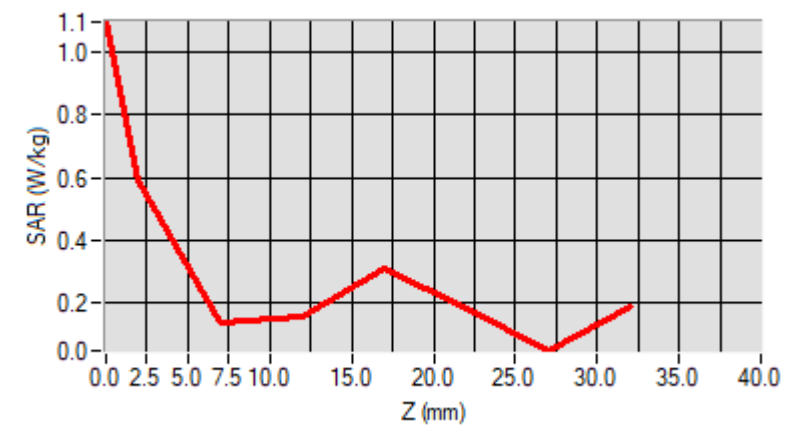
Maximum location: X=-8.00, Y=-10.00 ; SAR Peak: 0.92 W/kg

D. SAR 1g & 10g

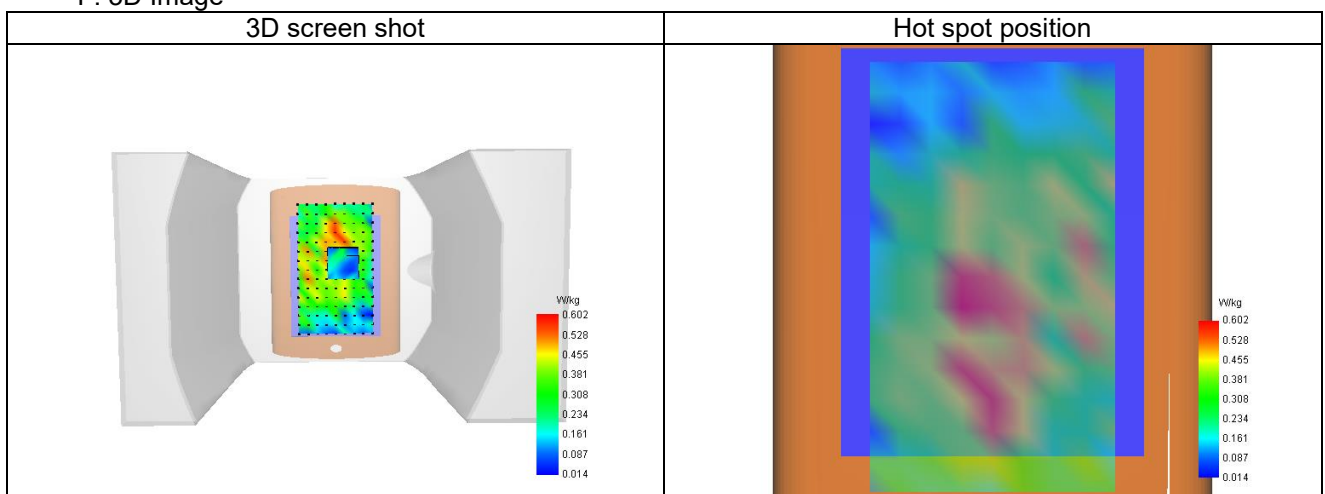
SAR 10g (W/Kg)	0.328
SAR 1g (W/Kg)	0.438
Variation (%)	-1.780
Horizontal validation criteria: minimum distance (mm)	25.298221
Vertical validation criteria: SAR ratio M2/M1 (%)	70.962413

E. Z Axis Scan

Z (mm)	0.00	2.00	7.00	12.00	17.00	22.00	27.00
SAR (W/Kg)	1.097	0.590	0.135	0.156	0.310	0.179	0.048



F. 3D Image



Plot 15

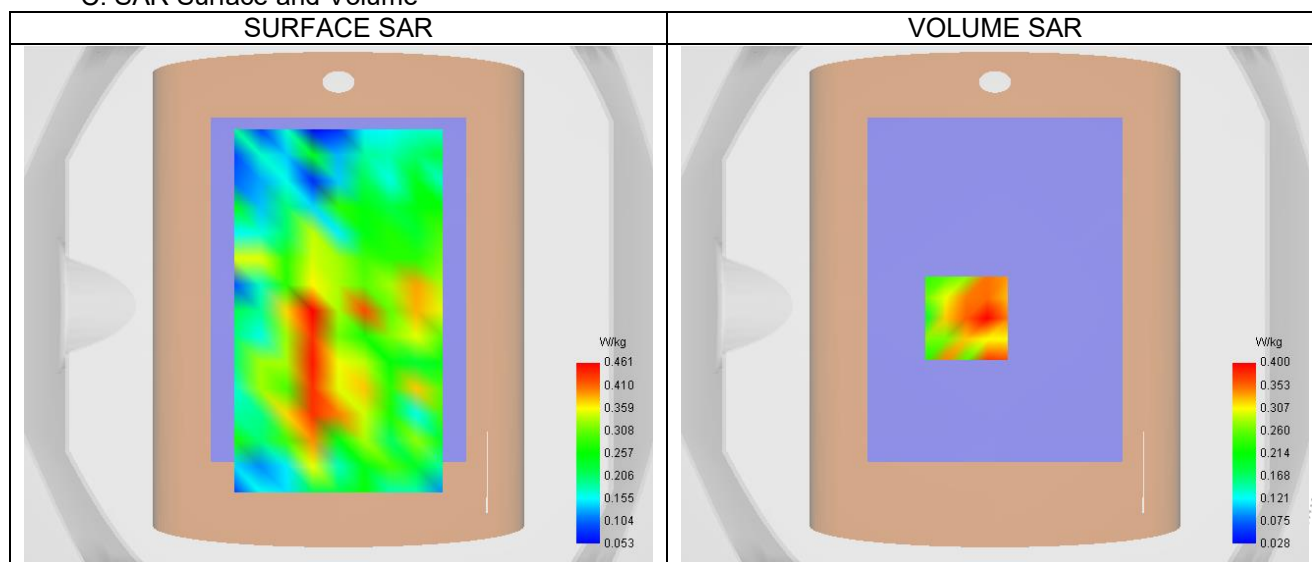
A. Experimental conditions.

Probe	SN 25/22 EPG0373
ConvF	2.92
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm,Complete
Phantom	Validation plane
Device Position	Body
Band	IEEE 802.11a U-NII
Channels	Low (149)
Signal	IEEE802.a (Crest factor: 1.0)

B. Permittivity

Frequency (MHz)	5745.000
Relative permittivity (real part)	35.650
Relative permittivity (imaginary part)	16.250
Conductivity (S/m)	4.965

C. SAR Surface and Volume

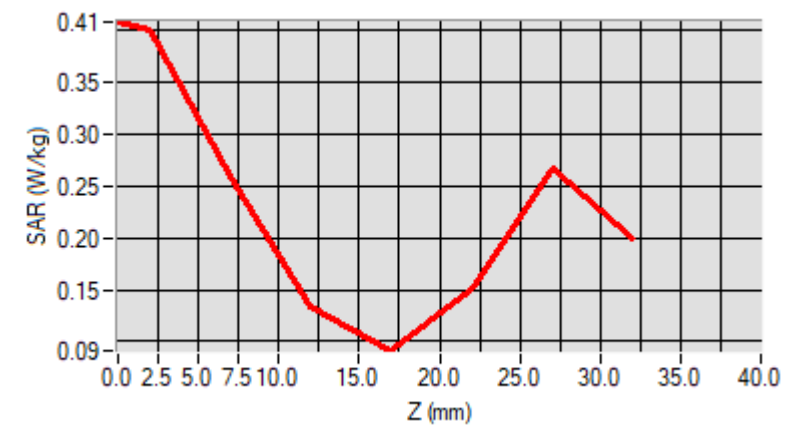


D. SAR 1g & 10g

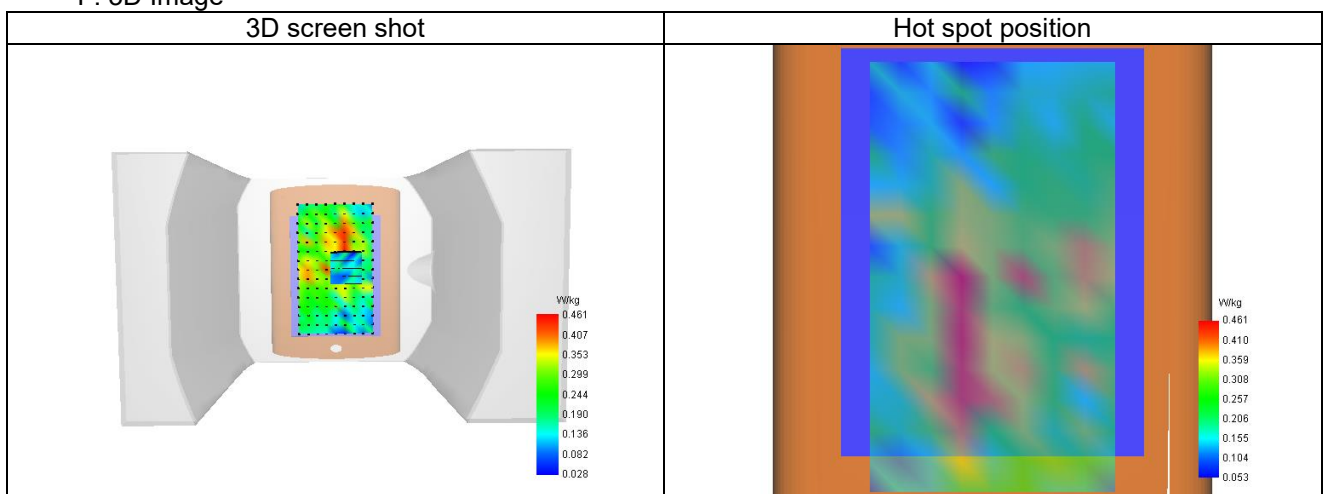
SAR 10g (W/Kg)	0.252
SAR 1g (W/Kg)	0.357
Variation (%)	-0.800
Horizontal validation criteria: minimum distance (mm)	24.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	66.189302

E. Z Axis Scan

Z (mm)	0.00	2.00	7.00	12.00	17.00	22.00	27.00
SAR (W/Kg)	0.408	0.400	0.259	0.134	0.091	0.151	0.267

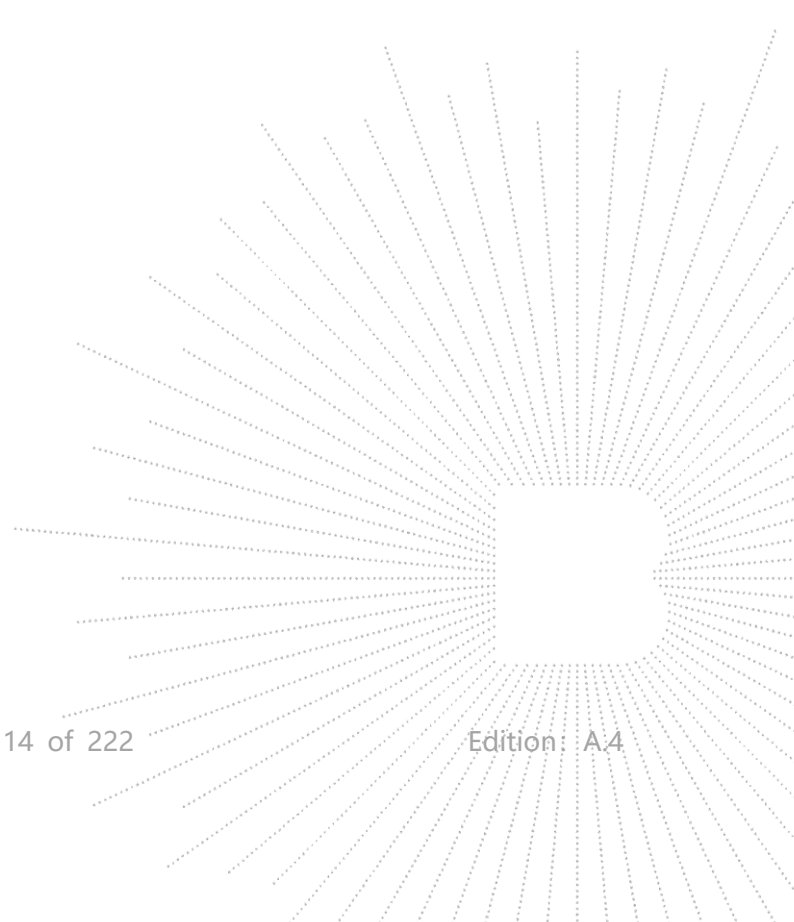


F. 3D Image



16. CALIBRATION CERTIFICATES

Probe-EPGO373 Calibration Certificate
SID835Dipole Calibration Certificate
SID900Dipole Calibration Certificate
SID1800Dipole Calibration Certificate
SID2100Dipole Calibration Certificate
SID2450Dipole Calibration Certificate
SID2600Dipole Calibration Certificate
SID5000Dipole Calibration Certificate



**COMOSAR E-Field Probe Calibration Report**

Ref : ACR.180.5.22.BES.A

SHENZHEN BCTC TECHNOLOGY CO., LTD.
1 ~2/ F, NO. B FACTORY BUILDING, PENGZHOU INDUSTRIAL
PARK, FUYUAN 1ST ROAD,
TANGWEI COMMUNITY, FUHAI STREET, BAO'AN DISTRICT,
SHENZHEN, GUANGDONG, CHINA
MVG COMOSAR DOSIMETRIC E-FIELD PROBE
SERIAL NO.: SN 25/22 EPG0373

Calibrated at MVG
Z.I. de la pointe du diable
Technopôle Brest Iroise – 295 avenue Alexis de Rochon
29280 PLOUZANE - FRANCE

Calibration date: 06/29/2022

Accreditations #2-6789
Scope available on www.cofrac.fr

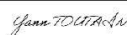
The use of the Cofrac brand and the accreditation references is prohibited from any reproduction.

Summary:

This document presents the method and results from an accredited COMOSAR Dosimetric E-Field Probe calibration performed at MVG, using the CALIPROBE test bench, for use with a MVG COMOSAR system only. The test results covered by accreditation are traceable to the International System of Units (SI).

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	<i>Name</i>	<i>Function</i>	<i>Date</i>	<i>Signature</i>
<i>Prepared by :</i>	Jérôme Le Gall	Measurement Responsible	6/30/2022	
<i>Checked & approved by:</i>	Jérôme Luc	Technical Manager	6/30/2022	
<i>Authorized by:</i>	Yann Toutain	Laboratory Director	6/30/2022	

2022.06.30

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	<i>Customer Name</i>
<i>Distribution :</i>	Shenzhen BCTC Technology Co., Ltd.

<i>Issue</i>	<i>Name</i>	<i>Date</i>	<i>Modifications</i>
A	Jérôme Le Gall	6/30/2022	Initial release



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