Band66	5	132322	25	#0	16QAM	19.36	-2.6	16.76	PASS
Band66	5	132647	1	#0	QPSK	20.46	-2.6	17.86	PASS
Band66	5	132647	1	#Mid	QPSK	20.50	-2.6	17.90	PASS
Band66	5	132647	1	#Max	QPSK	20.47	-2.6	17.87	PASS
Band66	5	132647	12	#0	QPSK	20.04	-2.6	17.44	PASS
Band66	5	132647	12	#Mid	QPSK	19.99	-2.6	17.39	PASS
Band66	5	132647	12	#Max	QPSK	19.90	-2.6	17.30	PASS
Band66	5	132647	25	#0	QPSK	20.01	-2.6	17.41	PASS
Band66	5	132647	1	#0	16QAM	19.84	-2.6	17.24	PASS
Band66	5	132647	1	#Mid	16QAM	19.85	-2.6	17.25	PASS
Band66	5	132647	1	#Max	16QAM	19.83	-2.6	17.23	PASS
Band66	5	132647	12	#0	16QAM	19.03	-2.6	16.43	PASS
Band66	5	132647	12	#Mid	16QAM	18.98	-2.6	16.38	PASS
Band66	5	132647	12	#Max	16QAM	18.95	-2.6	16.35	PASS
Band66	5	132647	25	#0	16QAM	18.96	-2.6	16.36	PASS
Band66	10	132022	1	#0	QPSK	21.04	-2.6	18.44	PASS
Band66	10	132022	1	#Mid	QPSK	21.12	-2.6	18.52	PASS
Band66	10	132022	1	#Max	QPSK	21.06	-2.6	18.46	PASS
Band66	10	132022	25	#0	QPSK	20.63	-2.6	18.03	PASS
Band66	10	132022	25	#Mid	QPSK	20.55	-2.6	17.95	PASS
Band66	10	132022	25	#Max	QPSK	20.48	-2.6	17.88	PASS
Band66	10	132022	50	#0	QPSK	20.56	-2.6	17.96	PASS
Band66	10	132022	1	#0	16QAM	20.46	-2.6	17.86	PASS
Band66	10	132022	1	#Mid	16QAM	20.51	-2.6	17.91	PASS
Band66	10	132022	1	#Max	16QAM	20.41	-2.6	17.81	PASS
Band66	10	132022	25	#0	16QAM	19.63	-2.6	17.03	PASS
Band66	10	132022	25	#Mid	16QAM	19.54	-2.6	16.94	PASS
Band66	10	132022	25	#Max	16QAM	19.47	-2.6	16.87	PASS
Band66	10	132022	50	#0	16QAM	19.57	-2.6	16.97	PASS
Band66	10	132322	1	#0	QPSK	20.78	-2.6	18.18	PASS
Band66	10	132322	1	#Mid	QPSK	20.87	-2.6	18.27	PASS
Band66	10	132322	1	#Max	QPSK	20.87	-2.6	18.27	PASS
Band66	10	132322	25	#0	QPSK	20.24	-2.6	17.64	PASS
Band66	10	132322	25	#Mid	QPSK	20.35	-2.6	17.75	PASS
Band66	10	132322	25	#Max	QPSK	20.43	-2.6	17.83	PASS
Band66	10	132322	50	#0	QPSK	20.37	-2.6	17.77	PASS
Band66	10	132322	1	#0	16QAM	19.97	-2.6	17.37	PASS
Band66	10	132322	1	#Mid	16QAM	20.09	-2.6	17.49	PASS
Band66	10	132322	1	#Max	16QAM	20.10	-2.6	17.50	PASS
Band66	10	132322	25	#0	16QAM	19.27	-2.6	16.67	PASS
Band66	10	132322	25	#Mid	16QAM	19.38	-2.6	16.78	PASS
Band66	10	132322	25	#Max	16QAM	19.47	-2.6	16.87	PASS
Band66	10	132322	50	#0	16QAM	19.37	-2.6	16.77	PASS
Band66	10	132622	1	#0	QPSK	20.61	-2.6	18.01	PASS
Band66	10	132622	1	#Mid	QPSK	20.61	-2.6	18.01	PASS
Band66	10	132622	1	#Max	QPSK	20.50	-2.6	17.90	PASS
Band66	10	132622	25	#0	QPSK	20.08	-2.6	17.48	PASS
Band66	10	132622	25	#Mid	QPSK	19.99	-2.6	17.39	PASS
Band66	10	132622	25	#Max	QPSK	19.96	-2.6	17.36	PASS
Band66	10	132622	50	#0	QPSK	19.99	-2.6	17.39	PASS
Band66	10	132622	1	#0	16QAM	19.47	-2.6	16.87	PASS
Band66	10	132622	1	#Mid	16QAM	19.45	-2.6	16.85	PASS
Band66	10	132622	1	#Max	16QAM	19.35	-2.6	16.75	PASS
Band66	10	132622	25	#0	16QAM	19.14	-2.6	16.54	PASS
Band66	10	132622	25	#Mid	16QAM	19.02	-2.6	16.42	PASS
Band66	10	132622	25	#Max	16QAM	18.94	-2.6	16.34	PASS
Band66	10	132622	50	#0	16QAM	18.98	-2.6	16.38	PASS

Band66	15	132047	1	#0	QPSK	20.97	-2.6	18.37	PASS
Band66	15	132047	1	#Mid	QPSK	21.05	-2.6	18.45	PASS
Band66	15	132047	1	#Max	QPSK	20.88	-2.6	18.28	PASS
Band66	15	132047	36	#0	QPSK	20.55	-2.6	17.95	PASS
Band66	15	132047	36	#Mid	QPSK	20.47	-2.6	17.87	PASS
Band66	15	132047	36	#Max	QPSK	20.36	-2.6	17.76	PASS
Band66	15	132047	75	#0	QPSK	20.49	-2.6	17.89	PASS
Band66	15	132047	1	#0	16QAM	20.41	-2.6	17.81	PASS
Band66	15	132047	1	#Mid	16QAM	20.45	-2.6	17.85	PASS
Band66	15	132047	1	#Max	16QAM	20.30	-2.6	17.70	PASS
Band66	15	132047	36	#0	16QAM	19.61	-2.6	17.01	PASS
Band66	15	132047	36	#Mid	16QAM	19.52	-2.6	16.92	PASS
Band66	15	132047	36	#Max	16QAM	19.43	-2.6	16.83	PASS
Band66	15	132047	75	#0	16QAM	19.49	-2.6	16.89	PASS
Band66	15	132322	1	#0	QPSK	20.75	-2.6	18.15	PASS
Band66	15	132322	1	#Mid	QPSK	20.81	-2.6	18.21	PASS
Band66	15	132322	1	#Max	QPSK	20.77	-2.6	18.17	PASS
Band66	15	132322	36	#0	QPSK	20.22	-2.6	17.62	PASS
Band66	15	132322	36	#Mid	QPSK	20.33	-2.6	17.73	PASS
Band66	15	132322	36	#Max	QPSK	20.39	-2.6	17.79	PASS
Band66	15	132322	75	#0	QPSK	20.32	-2.6	17.72	PASS
Band66	15	132322	1	#0	16QAM	19.96	-2.6	17.36	PASS
Band66	15	132322	1	#Mid	16QAM	20.05	-2.6	17.45	PASS
Band66	15	132322	1	#Max	16QAM	20.01	-2.6	17.41	PASS
Band66	15	132322	36	#0	16QAM	19.27	-2.6	16.67	PASS
Band66	15	132322	36	#Mid	16QAM	19.39	-2.6	16.79	PASS
Band66	15	132322	36	#Max	16QAM	19.48	-2.6	16.88	PASS
Band66	15	132322	75	#0	16QAM	19.26	-2.6	16.66	PASS
Band66	15	132597	1	#0	QPSK	20.68	-2.6	18.08	PASS
Band66	15	132597	1	#Mid	QPSK	20.61	-2.6	18.01	PASS
Band66	15	132597	1	#Max	QPSK	20.44	-2.6	17.84	PASS
Band66	15	132597	36	#0	QPSK	20.10	-2.6	17.50	PASS
Band66	15	132597	36	#Mid	QPSK	20.05	-2.6	17.45	PASS
Band66	15	132597	36	#Max	QPSK	19.96	-2.6	17.36	PASS
Band66	15	132597	75	#0	QPSK	20.01	-2.6	17.41	PASS
Band66	15	132597	1	#0	16QAM	19.74	-2.6	17.14	PASS
Band66	15	132597	1	#Mid	16QAM	19.74	-2.6	17.14	PASS
Band66	15	132597	1	#Max	16QAM	19.52	-2.6	16.92	PASS
Band66	15	132597	36	#0	16QAM	19.09	-2.6	16.49	PASS
Band66	15	132597	36	#Mid	16QAM	18.98	-2.6	16.38	PASS
Band66	15	132597	36	#Max	16QAM	18.91	-2.6	16.31	PASS
Band66	15	132597	75	#0	16QAM	19.06	-2.6	16.46	PASS
Band66	20	132072	1	#0	QPSK	20.98	-2.6	18.38	PASS
Band66	20	132072	1	#Mid	QPSK	21.05	-2.6	18.45	PASS
Band66	20	132072	1	#Max	QPSK	20.81	-2.6	18.21	PASS
Band66	20	132072	50	#0	QPSK	20.71	-2.6	18.11	PASS
Band66	20	132072	50	#Mid	QPSK	20.52	-2.6	17.92	PASS
Band66	20	132072	50	#Max	QPSK	20.37	-2.6	17.77	PASS
Band66	20	132072	100	#0	QPSK	20.56	-2.6	17.96	PASS
Band66	20	132072	1	#0	16QAM	20.33	-2.6	17.73	PASS
Band66	20	132072	1	#Mid	16QAM	20.43	-2.6	17.83	PASS
Band66	20	132072	1	#Max	16QAM	20.18	-2.6	17.58	PASS
Band66	20	132072	50	#0	16QAM	19.72	-2.6	17.12	PASS
Band66	20	132072	50	#Mid	16QAM	19.53	-2.6	16.93	PASS
Band66	20	132072	50	#Max	16QAM	19.38	-2.6	16.78	PASS
Band66	20	132072	100	#0	16QAM	19.53	-2.6	16.93	PASS
Band66	20	132322	1	#0	QPSK	20.70	-2.6	18.10	PASS

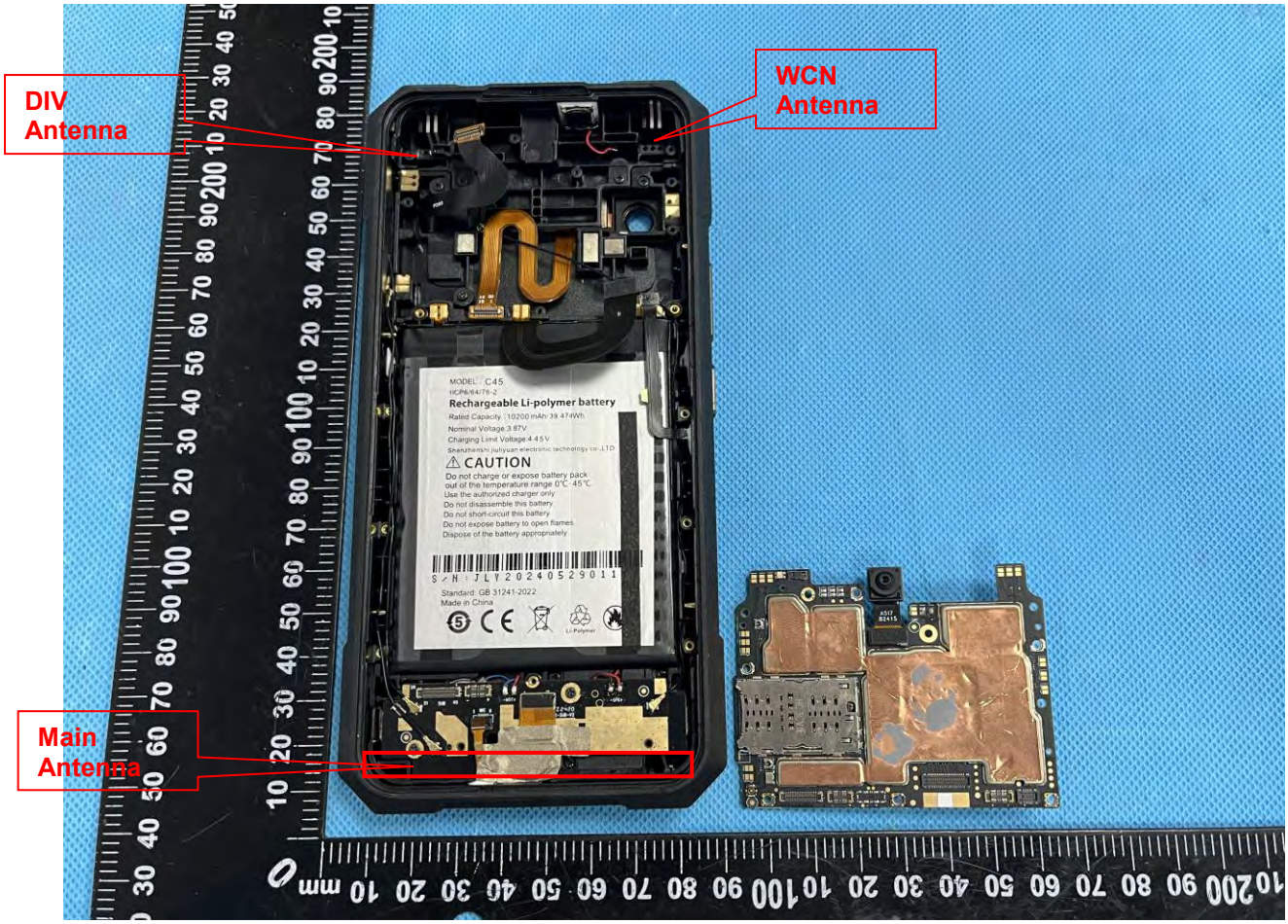
Band66	20	132322	1	#Mid	QPSK	20.91	-2.6	18.31	PASS
Band66	20	132322	1	#Max	QPSK	20.83	-2.6	18.23	PASS
Band66	20	132322	50	#0	QPSK	20.15	-2.6	17.55	PASS
Band66	20	132322	50	#Mid	QPSK	20.37	-2.6	17.77	PASS
Band66	20	132322	50	#Max	QPSK	20.49	-2.6	17.89	PASS
Band66	20	132322	100	#0	QPSK	20.29	-2.6	17.69	PASS
Band66	20	132322	1	#0	16QAM	19.91	-2.6	17.31	PASS
Band66	20	132322	1	#Mid	16QAM	20.10	-2.6	17.50	PASS
Band66	20	132322	1	#Max	16QAM	20.06	-2.6	17.46	PASS
Band66	20	132322	50	#0	16QAM	19.10	-2.6	16.50	PASS
Band66	20	132322	50	#Mid	16QAM	19.30	-2.6	16.70	PASS
Band66	20	132322	50	#Max	16QAM	19.44	-2.6	16.84	PASS
Band66	20	132322	100	#0	16QAM	19.31	-2.6	16.71	PASS
Band66	20	132572	1	#0	QPSK	20.61	-2.6	18.01	PASS
Band66	20	132572	1	#Mid	QPSK	20.58	-2.6	17.98	PASS
Band66	20	132572	1	#Max	QPSK	20.35	-2.6	17.75	PASS
Band66	20	132572	50	#0	QPSK	20.27	-2.6	17.67	PASS
Band66	20	132572	50	#Mid	QPSK	20.11	-2.6	17.51	PASS
Band66	20	132572	50	#Max	QPSK	19.91	-2.6	17.31	PASS
Band66	20	132572	100	#0	QPSK	20.05	-2.6	17.45	PASS
Band66	20	132572	1	#0	16QAM	19.97	-2.6	17.37	PASS
Band66	20	132572	1	#Mid	16QAM	19.84	-2.6	17.24	PASS
Band66	20	132572	1	#Max	16QAM	19.60	-2.6	17.00	PASS
Band66	20	132572	50	#0	16QAM	19.28	-2.6	16.68	PASS
Band66	20	132572	50	#Mid	16QAM	19.12	-2.6	16.52	PASS
Band66	20	132572	50	#Max	16QAM	18.89	-2.6	16.29	PASS
Band66	20	132572	100	#0	16QAM	19.06	-2.6	16.46	PASS

NFC								
Modulation	Frequency (MHz)	Output Power (dBuV/m)	Output Power (dBm)	Max. Tune up Power (dBm)	Max. Tune up Power (mW)	Test distance (mm)	Result	exclusion thresholds for 1-g SAR
ASK	13.56	51.96	-47.394	-47.00	0.00002	5	0.00001	3.0

Note:
Below 1GHz: dBm=dBuV/m-95.2-4.7
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.
According to the calculation results in the table above, NFC SAR does not need to be tested.

14.2 Transmit Antennas and SAR Measurement Position

EUT Antenna Location:



Antennas	Support Band
Main	GSM 850/1900 + WCDMA Band 2/4/5 + LTE Band 2/4/5/7/12/17/66 TX
DIV	GSM 850/1900 + WCDMA Band 2/4/5 + LTE Band 2/4/5/7/12/17/66 RX
WCN	Bluetooth + WIFI

Distance of The Antenna to the EUT surface and edge (mm)						
Antennas	Front	Back	Top Side	Bottom Side	Left Side	Right Side
Main	<25	<25	145	<25	<25	<25
WCN	<25	<25	<25	150	58	<25

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

14.3 Measured and Reported (Scaled) SAR Results

The calculated SAR is obtained by the following formula:
1. Reported SAR for WWAN=Measured SAR * Tune-up Scaling factor
2. Reported SAR for WLAN and Bluetooth=Measured SAR * Tune-up Scaling factor * Duty Cycle Scaling factor
3. Duty Cycle Scaling factor=1/ Duty Cycle (%)

KDB 447498 D01 General RF Exposure Guidance:
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

KDB 648474 D04 Handset SAR v01r03:
1. When the *reported* SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest *reported* SAR configuration for that wireless mode and frequency band should be repeated for the body-worn accessory with a headset attached to the handset.
2. 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)
3. 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.

KDB 941225 D01 3G SAR Procedures:
When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤1/4dB higher than the primary mode (RMC12.2kbps) or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

KDB 941225 D05 SAR for LTE Devices:
1. Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB, and 50% RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel.
2. When the reported SAR is > 0.8 W/kg, testing for other Channels is performed at the highest output power level for 1RB, and 50% RB configuration for that channel.
3. Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are > 0.8 W/kg. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg.
4. SAR measurement is not required for the 16QAM and 64QAM. When the highest maximum output power for 16QAM and 64QAM is ≤ ½ dB higher than the QPSK or when the reported SAR for the QPSK configuration is ≤ 1.45 W/kg.
5. Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.

WIFI 2.4G									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Output Power (dBm)			SAR1g (W/kg)		Plot No.
				Meas.	Turn-up	Scaling Factor	Meas.	Scaled	
Head (0mm)	b	Left Cheek	2462	12.49	12.5	1.002	0.177	0.177	
		Left Tilt	2462	12.49	12.5	1.002	0.101	0.101	
		Right Cheek	2462	12.49	12.5	1.002	0.142	0.142	
		Right Tilt	2462	12.49	12.5	1.002	0.150	0.150	
Body (10mm)	b	Front Face	2462	12.49	12.5	1.002	0.180	**0.180**	1
		Back Face	2462	12.49	12.5	1.002	0.175	0.175	
Hotspot (10mm)	b	Right Side	2462	12.49	12.5	1.002	0.123	0.123	
		Top Side	2462	12.49	12.5	1.002	0.161	0.161	

WIFI 5.1G									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Output Power (dBm)			SAR1g (W/kg)		Plot No.
				Meas.	Turn-up	Scaling Factor	Meas.	Scaled	
Head (0mm)	a	Left Cheek	5200	10.92	11.0	1.019	0.405	0.413	
		Left Tilt	5200	10.92	11.0	1.019	1.021	**1.040**	2
		Right Cheek	5200	10.92	11.0	1.019	0.591	0.602	
		Right Tilt	5200	10.92	11.0	1.019	0.351	0.358	
		Left Tilt	5180	10.66	11.0	1.081	0.889	0.961	
		Left Tilt	5240	10.68	11.0	1.076	0.749	0.806	
Body (10mm)	a	Front Face	5200	10.92	11.0	1.019	0.335	0.341	
		Back Face	5200	10.92	11.0	1.019	0.217	0.221	
Hotspot (10mm)	a	Right Side	5200	10.92	11.0	1.019	0.387	0.394	
		Top Side	5200	10.92	11.0	1.019	0.654	0.666	

WIFI 5.8G									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Output Power (dBm)			SAR1g (W/kg)		Plot No.
				Meas.	Turn-up	Scaling Factor	Meas.	Scaled	
Head (0mm)	a	Left Cheek	5745	10.12	10.5	1.091	0.609	0.665	
		Left Tilt	5745	10.12	10.5	1.091	0.425	0.464	
		Right Cheek	5745	10.12	10.5	1.091	0.787	**0.859**	3
		Right Tilt	5745	10.12	10.5	1.091	0.436	0.476	
Body (10mm)	a	Front Face	5745	10.12	10.5	1.091	0.586	0.640	
		Back Face	5745	10.12	10.5	1.091	0.478	0.522	
Hotspot (10mm)	a	Right Side	5745	10.12	10.5	1.091	0.397	0.433	
		Top Side	5745	10.12	10.5	1.091	0.491	0.536	

Remark:
1. The value with the bold 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 SAR tests are not necessary.

GSM 850									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Output Power (dBm)			SAR1g (W/kg)		Plot No.
				Meas.	Turn-up	Scaling Factor	Meas.	Scaled	
Head (0mm)	GSM	Left Cheek	824.2	32.79	33.0	1.050	0.104	0.109	
		Left Tilt	824.2	32.79	33.0	1.050	0.177	0.186	
		Right Cheek	824.2	32.79	33.0	1.050	0.106	0.111	
		Right Tilt	824.2	32.79	33.0	1.050	0.135	0.142	
Body (10mm)	GSM	Front Face	824.2	32.79	33.0	1.050	0.255	0.268	
		Back Face	824.2	32.79	33.0	1.050	0.586	0.615	
	GPRS Slot-4	Front Face	836.6	28.87	29.0	1.030	0.443	0.456	
		Back Face	836.6	28.87	29.0	1.030	0.697	**0.718**	4
Hotspot (10mm)	GPRS Slot-4	Left Side	836.6	28.87	29.0	1.030	0.151	0.156	
		Right Side	836.6	28.87	29.0	1.030	0.432	0.445	
		Bottom Side	836.6	28.87	29.0	1.030	0.473	0.487	

GSM 1900									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Output Power (dBm)			SAR1g (W/kg)		Plot No.
				Meas.	Turn-up	Scaling Factor	Meas.	Scaled	
Head (0mm)	GSM	Left Cheek	1880	29.80	30.0	1.047	0.129	0.135	
		Left Tilt	1880	29.80	30.0	1.047	0.116	0.121	
		Right Cheek	1880	29.80	30.0	1.047	0.081	0.085	
		Right Tilt	1880	29.80	30.0	1.047	0.098	0.103	
Body (10mm)	GSM	Front Face	1880	29.80	30.0	1.047	0.244	0.255	
		Back Face	1880	29.80	30.0	1.047	0.285	0.298	
	GPRS Slot-4	Front Face	1880	26.26	26.5	1.057	0.549	0.580	
		Back Face	1880	26.26	26.5	1.057	0.535	0.565	
Hotspot (10mm)	GPRS Slot-4	Left Side	1880	26.26	26.5	1.057	0.577	**0.610**	5
		Right Side	1880	26.26	26.5	1.057	0.178	0.188	
		Bottom Side	1880	26.26	26.5	1.057	0.560	0.592	

Remark:
1. The value with the bold 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 SAR tests are not necessary.

WCDMA Band II									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Output Power (dBm)			SAR1g (W/kg)		Plot No.
				Meas.	Turn-up	Scaling Factor	Meas.	Scaled	
Head (0mm)	RMC	Left Cheek	1907.6	20.50	21.0	1.122	0.120	0.135	
		Left Tilt	1907.6	20.50	21.0	1.122	0.123	0.138	
		Right Cheek	1907.6	20.50	21.0	1.122	0.143	0.160	
		Right Tilt	1907.6	20.50	21.0	1.122	0.121	0.136	
Body (10mm)	RMC	Front Face	1907.6	20.50	21.0	1.122	0.247	0.277	
		Back Face	1907.6	20.50	21.0	1.122	0.710	**0.797**	6
Hotspot (10mm)	RMC	Left Side	1907.6	20.50	21.0	1.122	0.206	0.231	
		Right Side	1907.6	20.50	21.0	1.122	0.137	0.154	
		Bottom Side	1907.6	20.50	21.0	1.122	0.478	0.536	

WCDMA Band IV									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Output Power (dBm)			SAR1g (W/kg)		Plot No.
				Meas.	Turn-up	Scaling Factor	Meas.	Scaled	
Head (0mm)	RMC	Left Cheek	1712.4	21.46	21.5	1.009	0.085	0.086	
		Left Tilt	1712.4	21.46	21.5	1.009	0.153	0.154	
		Right Cheek	1712.4	21.46	21.5	1.009	0.146	0.147	
		Right Tilt	1712.4	21.46	21.5	1.009	0.093	0.094	
Body (10mm)	RMC	Front Face	1712.4	21.46	21.5	1.009	0.100	0.101	
		Back Face	1712.4	21.46	21.5	1.009	0.656	**0.662**	7
Hotspot (10mm)	RMC	Left Side	1712.4	21.46	21.5	1.009	0.099	0.100	
		Right Side	1712.4	21.46	21.5	1.009	0.037	0.037	
		Bottom Side	1712.4	21.46	21.5	1.009	0.250	0.252	

WCDMA Band IV									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Output Power (dBm)			SAR1g (W/kg)		Plot No.
				Meas.	Turn-up	Scaling Factor	Meas.	Scaled	
Head (0mm)	RMC	Left Cheek	826.4	23.05	23.5	1.109	0.265	0.294	
		Left Tilt	826.4	23.05	23.5	1.109	0.161	0.179	
		Right Cheek	826.4	23.05	23.5	1.109	0.121	0.134	
		Right Tilt	826.4	23.05	23.5	1.109	0.103	0.114	
Body (10mm)	RMC	Front Face	826.4	23.05	23.5	1.109	0.155	0.172	
		Back Face	826.4	23.05	23.5	1.109	0.715	**0.793**	8
Hotspot (10mm)	RMC	Left Side	826.4	23.05	23.5	1.109	0.185	0.205	
		Right Side	826.4	23.05	23.5	1.109	0.385	0.427	
		Bottom Side	826.4	23.05	23.5	1.109	0.703	0.780	

Remark:
1. The value with the bold 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 channel SAR tests are not necessary.

LTE Band 2 (20MHz Bandwidth)									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Output Power (dBm)			SAR1g (W/kg)		Plot No.
				Meas.	Turn-up	Scaling Factor	Meas.	Scaled	
Head (0mm)	1RB	Left Cheek	1900	20.36	20.5	1.033	0.096	0.099	
		Left Tilt	1900	20.36	20.5	1.033	0.125	0.129	
		Right Cheek	1900	20.36	20.5	1.033	0.116	0.120	
		Right Tilt	1900	20.36	20.5	1.033	0.231	0.239	
	50%RB	Left Cheek	1900	19.82	20.0	1.042	0.133	0.139	
		Left Tilt	1900	19.82	20.0	1.042	0.122	0.127	
		Right Cheek	1900	19.82	20.0	1.042	0.105	0.109	
		Right Tilt	1900	19.82	20.0	1.042	0.176	0.183	
Body (10mm)	1RB	Front Face	1900	20.36	20.5	1.033	0.219	0.226	
		Back Face	1900	20.36	20.5	1.033	0.424	0.438	
	50%RB	Front Face	1900	19.82	20.0	1.042	0.207	0.216	
		Back Face	1900	19.82	20.0	1.042	0.339	0.353	
Hotspot (10mm)	1RB	Left Side	1900	20.36	20.5	1.033	0.493	**0.509**	9
		Right Side	1900	20.36	20.5	1.033	0.114	0.118	
		Bottom Side	1900	20.36	20.5	1.033	0.467	0.482	
	50%RB	Left Side	1900	19.82	20.0	1.042	0.304	0.317	
		Right Side	1900	19.82	20.0	1.042	0.083	0.087	
		Bottom Side	1900	19.82	20.0	1.042	0.440	0.459	

LTE Band 4 (20MHz Bandwidth)									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Output Power (dBm)			SAR1g (W/kg)		Plot No.
				Meas.	Turn-up	Scaling Factor	Meas.	Scaled	
Head (0mm)	1RB	Left Cheek	1720	20.97	21.0	1.007	0.126	0.127	
		Left Tilt	1720	20.97	21.0	1.007	0.105	0.106	
		Right Cheek	1720	20.97	21.0	1.007	0.094	0.095	
		Right Tilt	1720	20.97	21.0	1.007	0.107	0.108	
	50%RB	Left Cheek	1720	20.63	21.0	1.089	0.099	0.108	
		Left Tilt	1720	20.63	21.0	1.089	0.115	0.125	
		Right Cheek	1720	20.63	21.0	1.089	0.088	0.096	
		Right Tilt	1720	20.63	21.0	1.089	0.109	0.119	
Body (10mm)	1RB	Front Face	1720	20.97	21.0	1.007	0.126	0.127	
		Back Face	1720	20.97	21.0	1.007	0.282	0.284	
	50%RB	Front Face	1720	20.63	21.0	1.089	0.092	0.100	
		Back Face	1720	20.63	21.0	1.089	0.208	0.226	
Hotspot (10mm)	1RB	Left Side	1720	20.97	21.0	1.007	0.130	0.131	
		Right Side	1720	20.97	21.0	1.007	0.088	0.089	
		Bottom Side	1720	20.97	21.0	1.007	0.296	0.298	
	50%RB	Left Side	1720	20.63	21.0	1.089	0.112	0.122	
		Right Side	1720	20.63	21.0	1.089	0.067	0.073	
		Bottom Side	1720	20.63	21.0	1.089	0.279	**0.304**	10

LTE Band 5 (10MHz Bandwidth)									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Output Power (dBm)			SAR1g (W/kg)		Plot No.
				Meas.	Turn-up	Scaling Factor	Meas.	Scaled	
Head (0mm)	1RB	Left Cheek	829	23.02	23.5	1.117	0.197	0.220	
		Left Tilt	829	23.02	23.5	1.117	0.141	0.157	
		Right Cheek	829	23.02	23.5	1.117	0.106	0.118	
		Right Tilt	829	23.02	23.5	1.117	0.134	0.150	
	50%RB	Left Cheek	844	22.00	22.5	1.122	0.103	0.116	
		Left Tilt	844	22.00	22.5	1.122	0.125	0.140	
		Right Cheek	844	22.00	22.5	1.122	0.166	0.186	
		Right Tilt	844	22.00	22.5	1.122	0.111	0.125	
Body (10mm)	1RB	Front Face	829	23.02	23.5	1.117	0.346	0.386	
		Back Face	829	23.02	23.5	1.117	0.772	**0.862**	11
	50%RB	Front Face	844	22.00	22.5	1.122	0.193	0.217	
		Back Face	844	22.00	22.5	1.122	0.593	0.665	
Hotspot (10mm)	1RB	Left Side	829	23.02	23.5	1.117	0.150	0.168	
		Right Side	829	23.02	23.5	1.117	0.437	0.488	
		Bottom Side	829	23.02	23.5	1.117	0.409	0.457	
	50%RB	Left Side	844	22.00	22.5	1.122	0.145	0.163	
		Right Side	844	22.00	22.5	1.122	0.368	0.413	
		Bottom Side	844	22.00	22.5	1.122	0.222	0.249	

LTE Band 7 (20MHz Bandwidth)									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Output Power (dBm)			SAR1g (W/kg)		Plot No.
				Meas.	Turn-up	Scaling Factor	Meas.	Scaled	
Head (0mm)	1RB	Left Cheek	2510	20.71	21.0	1.069	0.121	0.129	
		Left Tilt	2510	20.71	21.0	1.069	0.172	0.184	
		Right Cheek	2510	20.71	21.0	1.069	0.138	0.148	
		Right Tilt	2510	20.71	21.0	1.069	0.203	0.217	
	50%RB	Left Cheek	2510	20.21	20.5	1.069	0.181	0.193	
		Left Tilt	2510	20.21	20.5	1.069	0.180	0.192	
		Right Cheek	2510	20.21	20.5	1.069	0.205	0.219	
		Right Tilt	2510	20.21	20.5	1.069	0.183	0.196	
Body (10mm)	1RB	Front Face	2510	20.71	21.0	1.069	0.293	0.313	
		Back Face	2510	20.71	21.0	1.069	0.545	0.583	
	50%RB	Front Face	2510	20.21	20.5	1.069	0.267	0.285	
		Back Face	2510	20.21	20.5	1.069	0.308	0.329	
Hotspot (10mm)	1RB	Left Side	2510	20.71	21.0	1.069	0.751	**0.803**	12
		Right Side	2510	20.71	21.0	1.069	0.530	0.567	
		Bottom Side	2510	20.71	21.0	1.069	0.550	0.588	
	50%RB	Left Side	2510	20.21	20.5	1.069	0.571	0.610	
		Right Side	2510	20.21	20.5	1.069	0.288	0.308	
		Bottom Side	2510	20.21	20.5	1.069	0.483	0.516	

LTE Band 12 (10MHz Bandwidth)									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Output Power (dBm)			SAR1g (W/kg)		Plot No.
				Meas.	Turn-up	Scaling Factor	Meas.	Scaled	
Head (0mm)	1RB	Left Cheek	711	22.67	23.0	1.079	0.221	0.238	
		Left Tilt	711	22.67	23.0	1.079	0.135	0.624	
		Right Cheek	711	22.67	23.0	1.079	0.119	0.166	
		Right Tilt	711	22.67	23.0	1.079	0.115	0.242	
	50%RB	Left Cheek	704	22.15	22.5	1.084	0.147	0.159	
		Left Tilt	704	22.15	22.5	1.084	0.106	0.115	
		Right Cheek	704	22.15	22.5	1.084	0.120	0.130	
		Right Tilt	704	22.15	22.5	1.084	0.098	0.106	
Body (10mm)	1RB	Front Face	711	22.67	23.0	1.079	0.241	0.260	
		Back Face	711	22.67	23.0	1.079	0.578	**0.624**	13
	50%RB	Front Face	704	22.15	22.5	1.084	0.215	0.233	
		Back Face	704	22.15	22.5	1.084	0.504	0.546	
Hotspot (10mm)	1RB	Left Side	711	22.67	23.0	1.079	0.154	0.166	
		Right Side	711	22.67	23.0	1.079	0.224	0.242	
		Bottom Side	711	22.67	23.0	1.079	0.219	0.236	
	50%RB	Left Side	704	22.15	22.5	1.084	0.137	0.148	
		Right Side	704	22.15	22.5	1.084	0.137	0.148	
		Bottom Side	704	22.15	22.5	1.084	0.194	0.210	

LTE Band 17 (10MHz Bandwidth)									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Output Power (dBm)			SAR1g (W/kg)		Plot No.
				Meas.	Turn-up	Scaling Factor	Meas.	Scaled	
Head (0mm)	1RB	Left Cheek	709	22.67	23.0	1.079	0.127	0.137	
		Left Tilt	709	22.67	23.0	1.079	0.153	0.165	
		Right Cheek	709	22.67	23.0	1.079	0.105	0.113	
		Right Tilt	709	22.67	23.0	1.079	0.129	0.139	
	50%RB	Left Cheek	709	21.99	22.0	1.002	0.081	0.081	
		Left Tilt	709	21.99	22.0	1.002	0.129	0.129	
		Right Cheek	709	21.99	22.0	1.002	0.157	0.157	
		Right Tilt	709	21.99	22.0	1.002	0.127	0.127	
Body (10mm)	1RB	Front Face	709	22.67	23.0	1.079	0.261	0.282	
		Back Face	709	22.67	23.0	1.079	0.285	**0.307**	14
	50%RB	Front Face	709	21.99	22.0	1.002	0.250	0.251	
		Back Face	709	21.99	22.0	1.002	0.279	0.280	
Hotspot (10mm)	1RB	Left Side	709	22.67	23.0	1.079	0.176	0.190	
		Right Side	709	22.67	23.0	1.079	0.249	0.269	
		Bottom Side	709	22.67	23.0	1.079	0.219	0.236	
	50%RB	Left Side	709	21.99	22.0	1.002	0.167	0.167	
		Right Side	709	21.99	22.0	1.002	0.223	0.224	
		Bottom Side	709	21.99	22.0	1.002	0.161	0.161	

LTE Band 66 (20MHz Bandwidth)									
RF Exposure Conditions	Mode	Test Position	Freq. (MHz)	Output Power (dBm)			SAR1g (W/kg)		Plot No.
				Meas.	Turn-up	Scaling Factor	Meas.	Scaled	
Head (0mm)	1RB	Left Cheek	1720	21.05	21.5	1.109	0.123	0.136	
		Left Tilt	1720	21.05	21.5	1.109	0.104	0.115	
		Right Cheek	1720	21.05	21.5	1.109	0.121	0.134	
		Right Tilt	1720	21.05	21.5	1.109	0.180	0.200	
	50%RB	Left Cheek	1720	20.71	21.0	1.069	0.113	0.121	
		Left Tilt	1720	20.71	21.0	1.069	0.117	0.125	
		Right Cheek	1720	20.71	21.0	1.069	0.081	0.087	
		Right Tilt	1720	20.71	21.0	1.069	0.147	0.157	
Body (10mm)	1RB	Front Face	1720	21.05	21.5	1.109	0.144	0.160	
		Back Face	1720	21.05	21.5	1.109	0.303	0.336	
	50%RB	Front Face	1720	20.71	21.0	1.069	0.089	0.095	
		Back Face	1720	20.71	21.0	1.069	0.221	0.236	
Hotspot (10mm)	1RB	Left Side	1720	21.05	21.5	1.109	0.146	0.162	
		Right Side	1720	21.05	21.5	1.109	0.118	0.131	
		Bottom Side	1720	21.05	21.5	1.109	0.317	**0.352**	15
	50%RB	Left Side	1720	20.71	21.0	1.069	0.143	0.153	
		Right Side	1720	20.71	21.0	1.069	0.107	0.114	
		Bottom Side	1720	20.71	21.0	1.069	0.213	0.228	

14.4 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

Test Mode	Frequency Band (MHz)	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
WIFI 5.1G	5200	Head	Left Tilt	yes	1.021	0.987	1.034
WIFI 5.1G	5180	Head	Left Tilt	yes	0.889	0.817	1.088

14.5 Simultaneous Transmission Evaluation

Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneous transmiting antenna.

Application Simultaneous Transmission information:

No.	Configurations	Head SAR	Body SAR	Hotspot SAR
1	WWAN+WIFI	Yes	Yes	Yes
2	WWAN+Bluetooth	Yes	Yes	Yes
3	WIFI+Bluetooth	No	No	No

Remark:
1. WWAN cannot transmit simultaneously.
2. Bluetooth and WIFI share the same antenna and cannot transmit data at the same time.
3. According to the KDB 447498 D01 v06, when standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:
● (max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[$\sqrt{}$ 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

Estimated stand alone SAR						
Mode	Frequency (MHz)	Maximum Power (dBm)	Maximum Power (mW)	Separation Distance (mm)	X	Estimated SAR1-g (W/kg)
Bluetooth	2480	5.0	3.16	5	3	0.133
Bluetooth	2480	5.0	3.16	10	7.5	0.053

Note:
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. 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.

$$\text{Ratio}=\frac{(SAR_1+SAR_2)^{1.5}}{(\text{peak location separation,mm})}<0.04$$

5. Simultaneous transmission of maximum SAR sum calculation.

RF Exposure Conditions	Test Position	WWAN	WCN	Summed SAR (W/kg)	SAR1-g Limit (W/kg)
		Scaled SAR (W/kg)	Scaled SAR (W/kg)		
Head	Left Cheek	0.294	0.665	0.959	1.6
	Left Tilt	0.186	1.040	**1.226**	1.6
	Right Cheek	0.219	0.859	1.078	1.6
	Right Tilt	0.239	0.476	0.715	1.6
Body	Front Face	0.580	0.640	1.220	1.6
	Back Face	0.862	0.522	**1.384**	1.6
Hotspot	Left Side	0.803	/	0.803	1.6
	Right Side	0.567	0.433	**1.000**	1.6
	Top Side	/	0.666	0.666	1.6
	Bottom Side	0.780	/	0.780	1.6

15. Test Plots

15.1 System Performance Check

System check at 750 MHz
Date of measurement: 11/10/2024

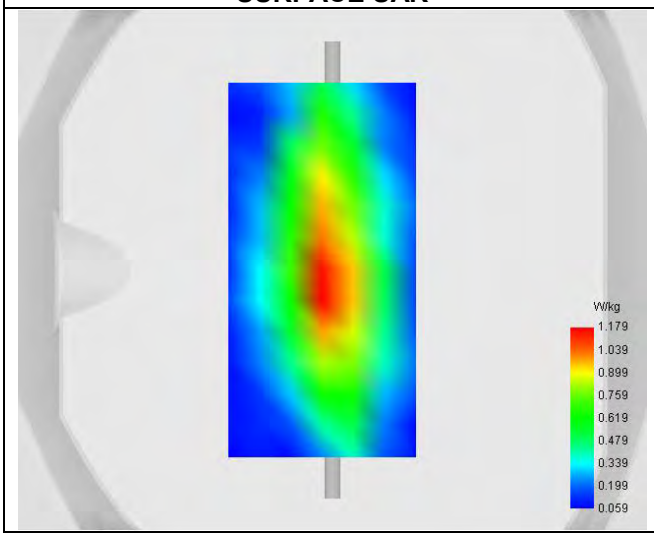
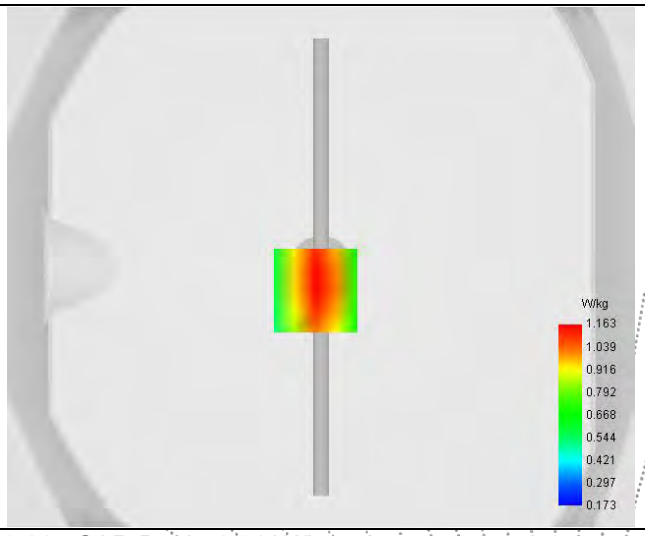
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.87
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW750
Signal	CW

B. Permitivity

Frequency (MHz)	750.000
Relative permitivity (real part)	42.787
Relative permitivity (imaginary part)	24.595
Conductivity (S/m)	0.921

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

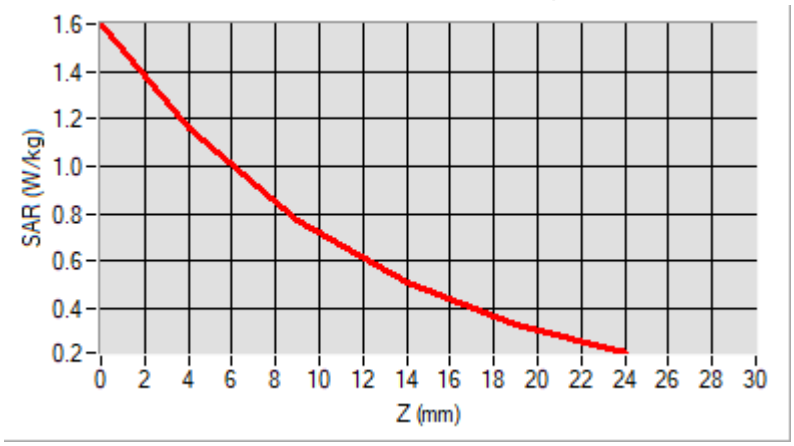
Maximum location: X=-2.00, Y=-9.00 ; SAR Peak: 1.61 W/kg

D. SAR 1g & 10g

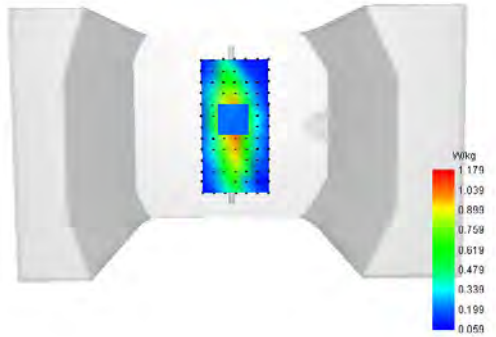
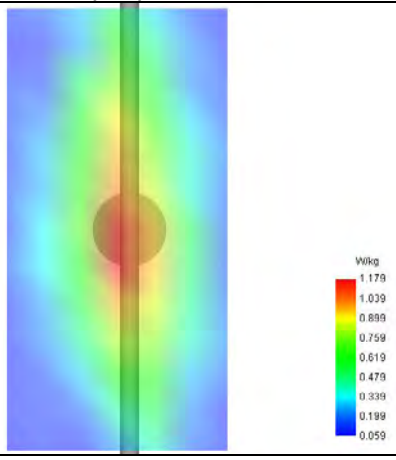
SAR 10g (W/Kg)	0.962
SAR 1g (W/Kg)	2.039
Variation (%)	-1.534
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.603	1.163	0.769	0.506	0.333



F. 3D Image

3D screen shot	Hot spot position
	

System check at 835 MHz

Date of measurement: 12/10/2024

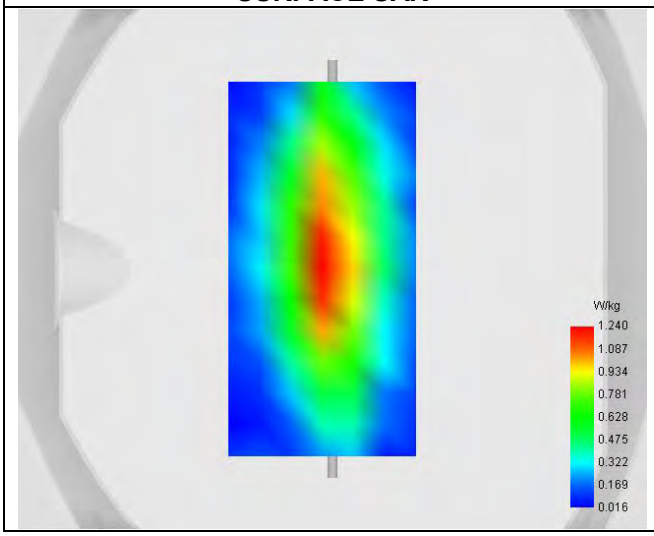
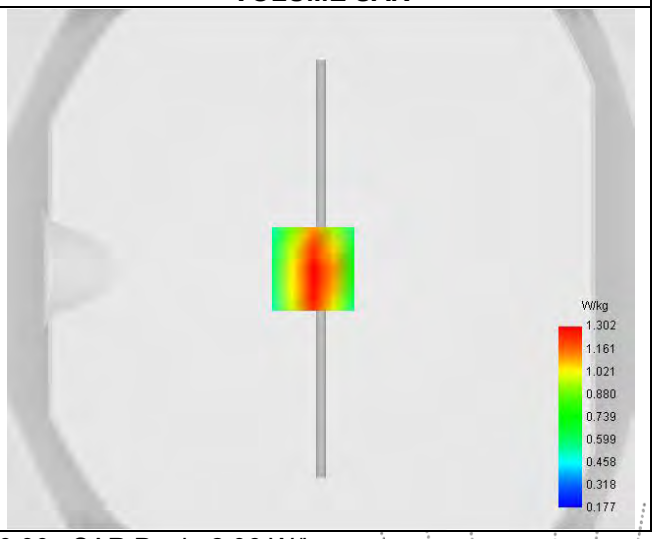
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.80
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW835
Signal	CW

B. Permitivity

Frequency (MHz)	835.000
Relative permitivity (real part)	42.101
Relative permitivity (imaginary part)	20.910
Conductivity (S/m)	0.870

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

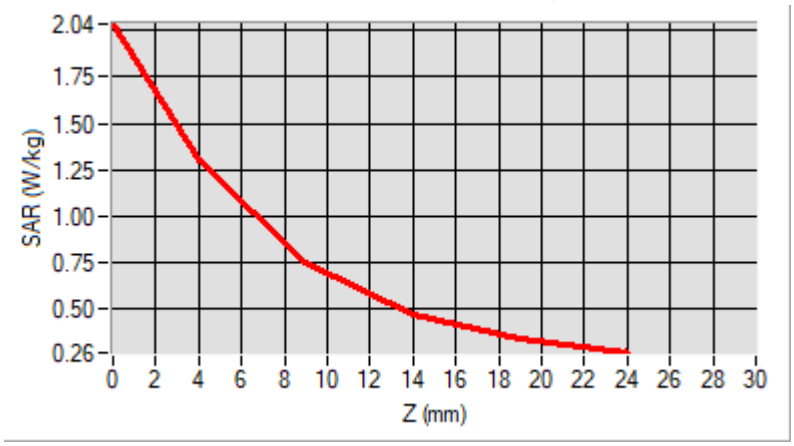
Maximum location: X=-3.00, Y=0.00 ; SAR Peak: 2.06 W/kg

D. SAR 1g & 10g

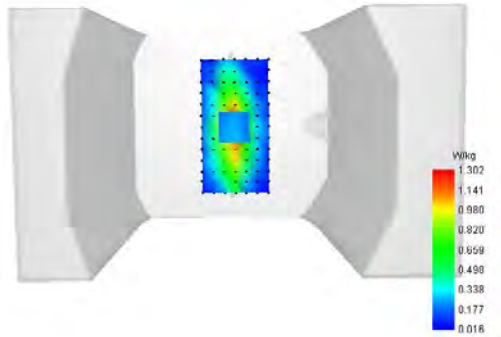
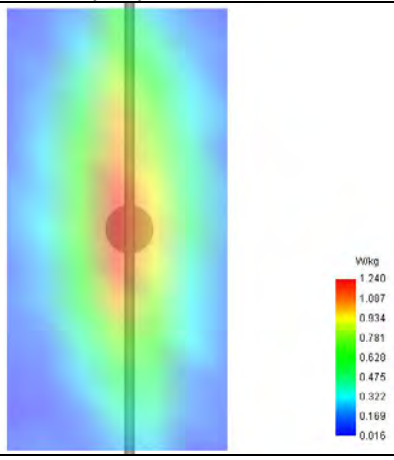
SAR 10g (W/Kg)	0.564
SAR 1g (W/Kg)	2.394
Variation (%)	-1.989
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	2.036	1.302	0.747	0.462	0.331



F. 3D Image

3D screen shot	Hot spot position
	

System check at 1800 MHz

Date of measurement: 18/10/2024

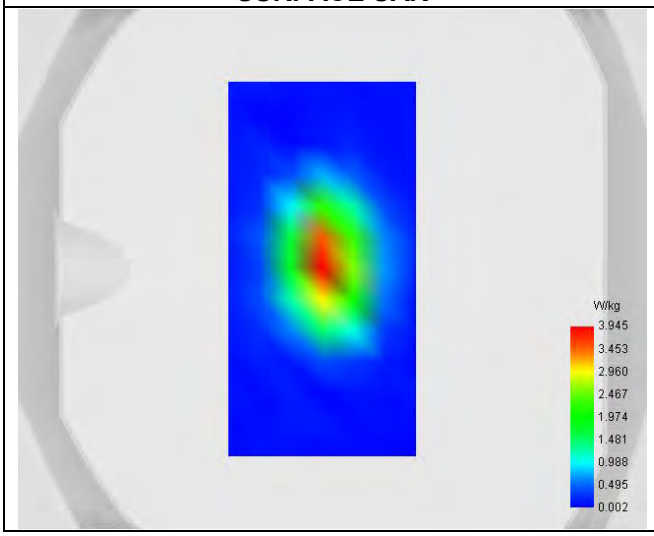
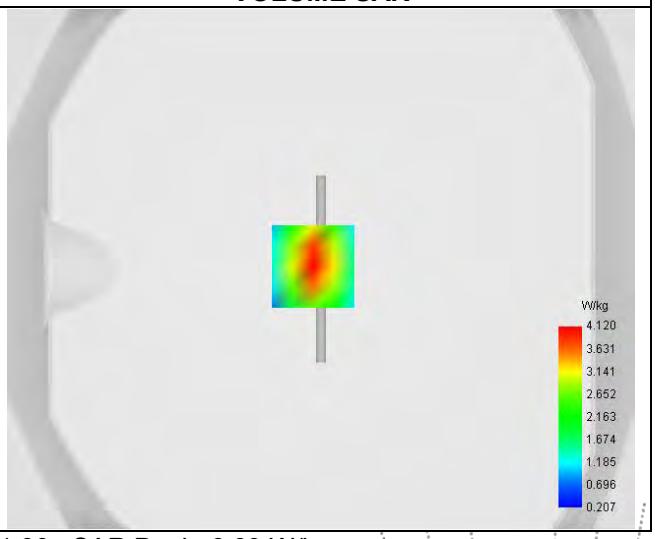
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.01
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW1800
Signal	CW

B. Permitivity

Frequency (MHz)	1800.000
Relative permitivity (real part)	39.598
Relative permitivity (imaginary part)	15.200
Conductivity (S/m)	1.366

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

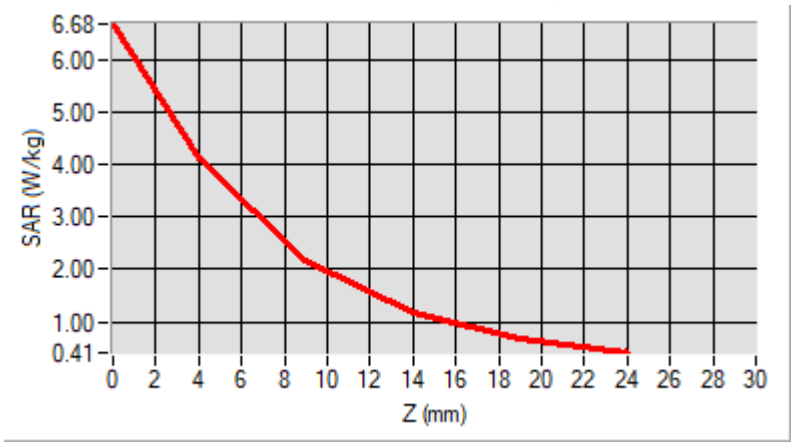
Maximum location: X=-3.00, Y=1.00 ; SAR Peak: 6.69 W/kg

D. SAR 1g & 10g

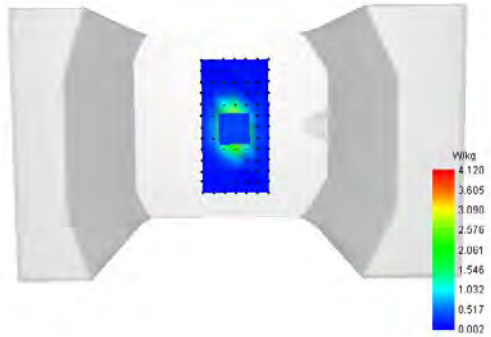
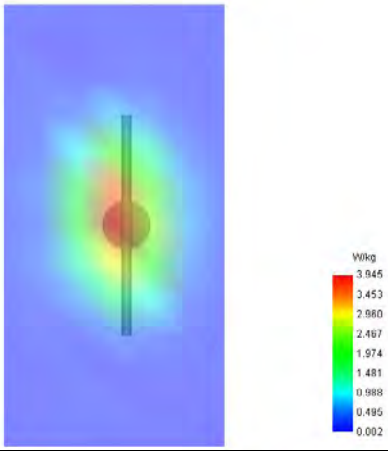
SAR 10g (W/Kg)	4.017
SAR 1g (W/Kg)	9.985
Variation (%)	-0.830
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	6.684	4.120	2.184	1.177	0.685



F. 3D Image

3D screen shot	Hot spot position
	

System check at 1900 MHz
Date of measurement: 19/10/2024

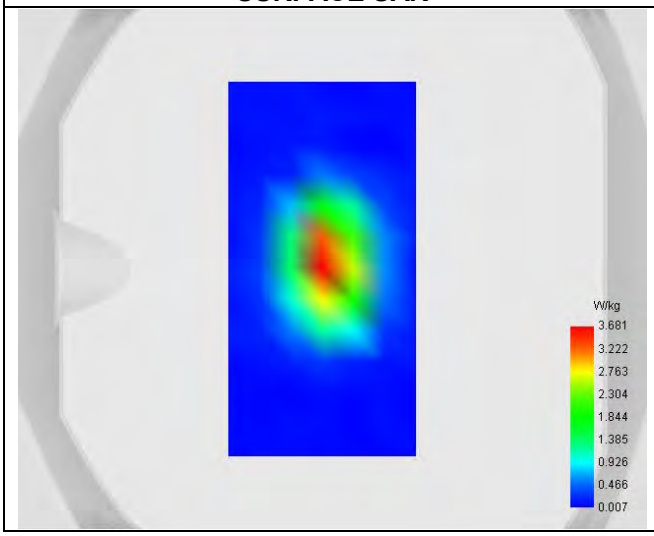
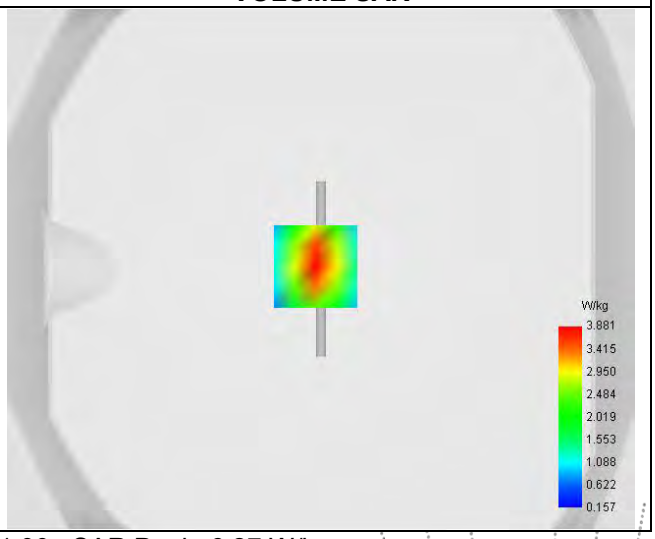
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.11
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW1900
Signal	CW

B. Permitivity

Frequency (MHz)	1900.000
Relative permitivity (real part)	38.663
Relative permitivity (imaginary part)	14.400
Conductivity (S/m)	1.400

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

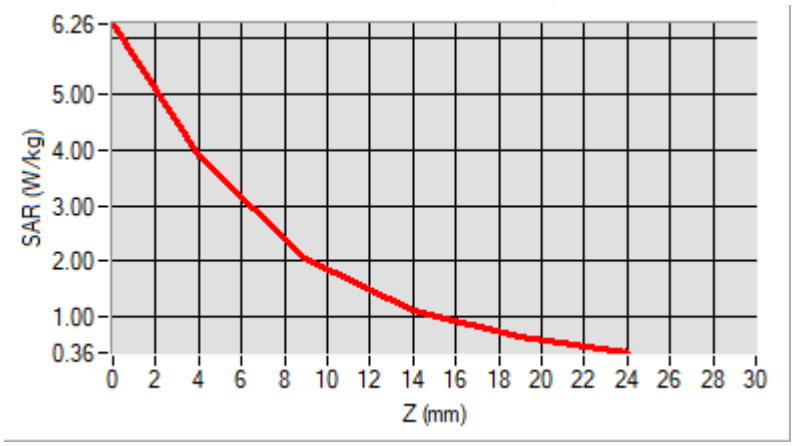
Maximum location: X=-2.00, Y=1.00 ; SAR Peak: 6.27 W/kg

D. SAR 1g & 10g

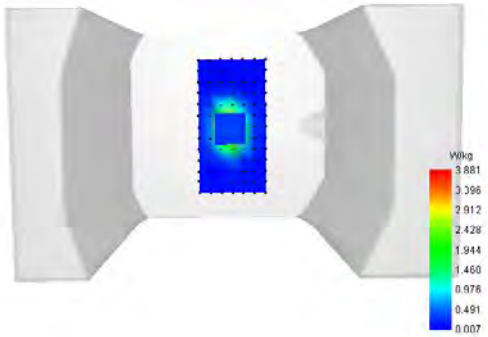
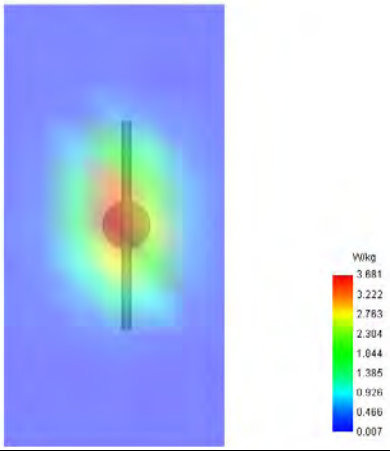
SAR 10g (W/Kg)	5.074
SAR 1g (W/Kg)	10.253
Variation (%)	2.003
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	6.259	3.881	2.069	1.111	0.634



F. 3D Image

3D screen shot	Hot spot position
	

System check at 2450 MHz

Date of measurement: 21/10/2024

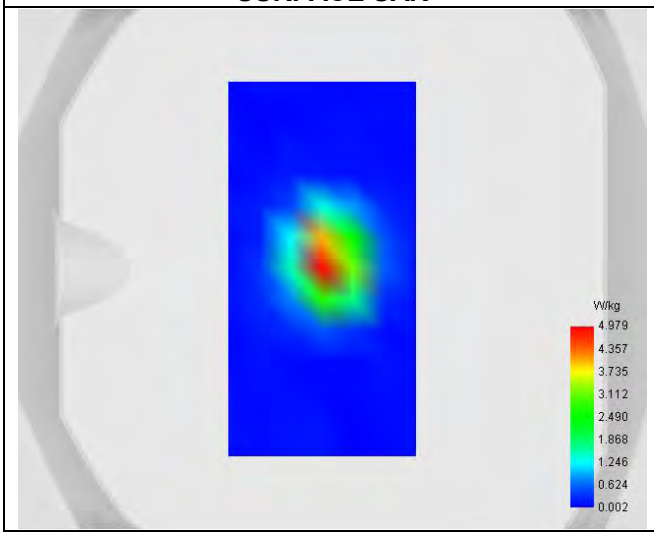
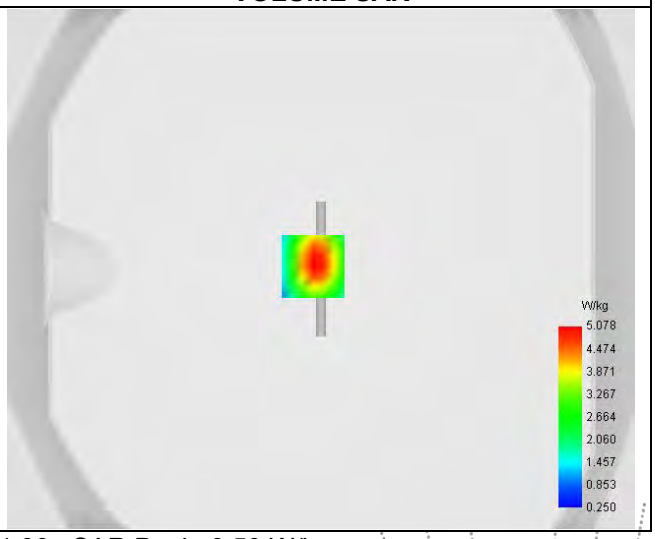
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.32
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW2450
Signal	CW

B. Permitivity

Frequency (MHz)	2450.000
Relative permitivity (real part)	39.847
Relative permitivity (imaginary part)	14.330
Conductivity (S/m)	1.783

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

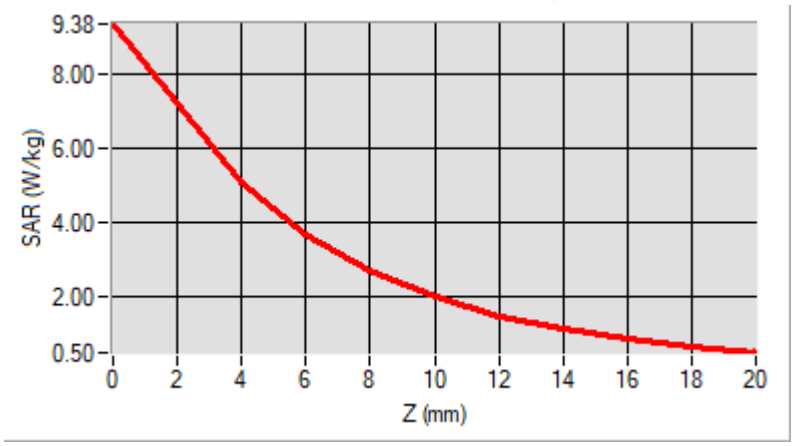
Maximum location: X=-3.00, Y=1.00 ; SAR Peak: 9.50 W/kg

D. SAR 1g & 10g

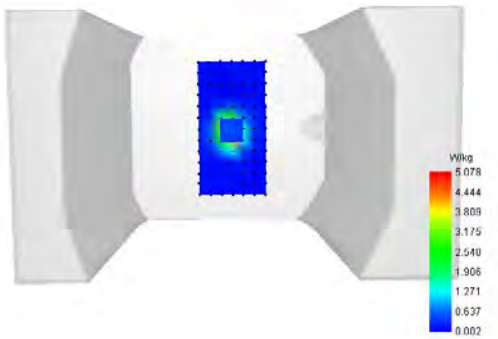
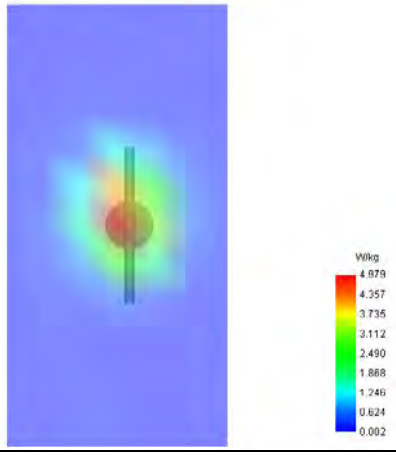
SAR 10g (W/Kg)	6.584
SAR 1g (W/Kg)	13.799
Variation (%)	1.347
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00
SAR (W/Kg)	9.380	5.078	3.712	2.709	2.001	1.499	1.138	0.871	0.667



F. 3D Image

3D screen shot	Hot spot position
	

System check at 2600 MHz
Date of measurement: 11/10/2024

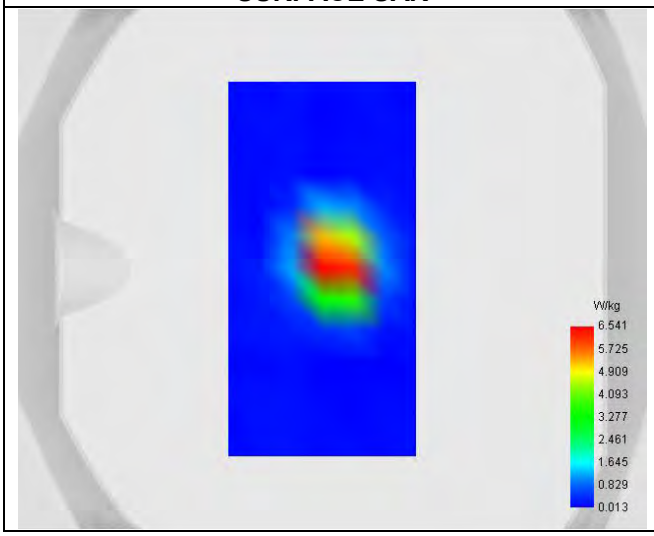
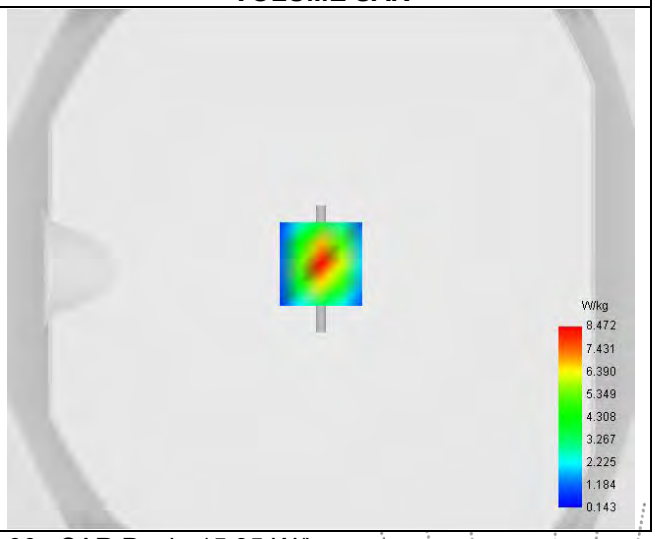
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.19
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5mm
Phantom	Validation plane
Device Position	Dipole
Band	CW2600
Signal	CW

B. Permitivity

Frequency (MHz)	2600.000
Relative permitivity (real part)	39.706
Relative permitivity (imaginary part)	14.889
Conductivity (S/m)	1.974

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

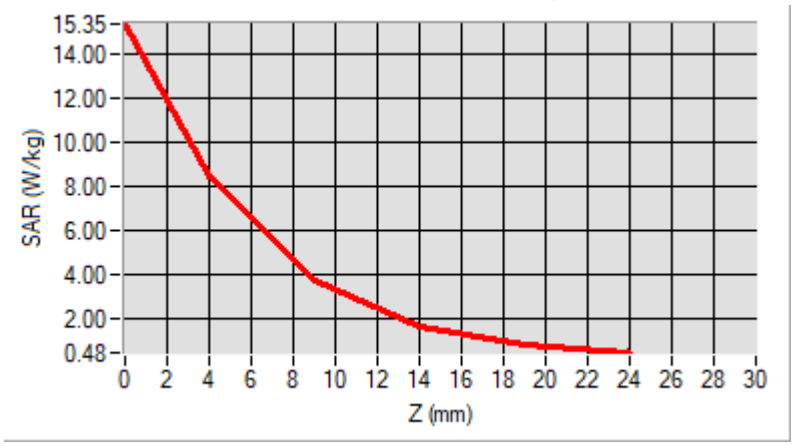
Maximum location: X=0.00, Y=2.00 ; SAR Peak: 15.35 W/kg

D. SAR 1g & 10g

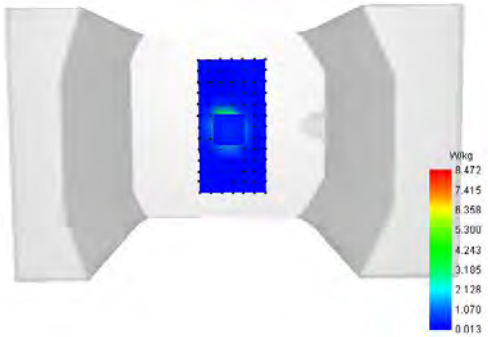
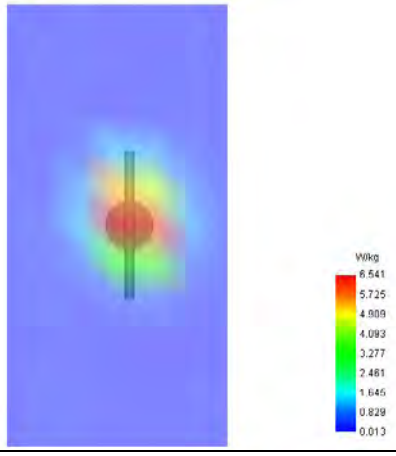
SAR 10g (W/Kg)	6.100
SAR 1g (W/Kg)	14.660
Variation (%)	1.525
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	15.347	8.472	3.768	1.677	0.856



F. 3D Image

3D screen shot	Hot spot position
	

System check at 5200 MHz
Date of measurement: 21/10/2024

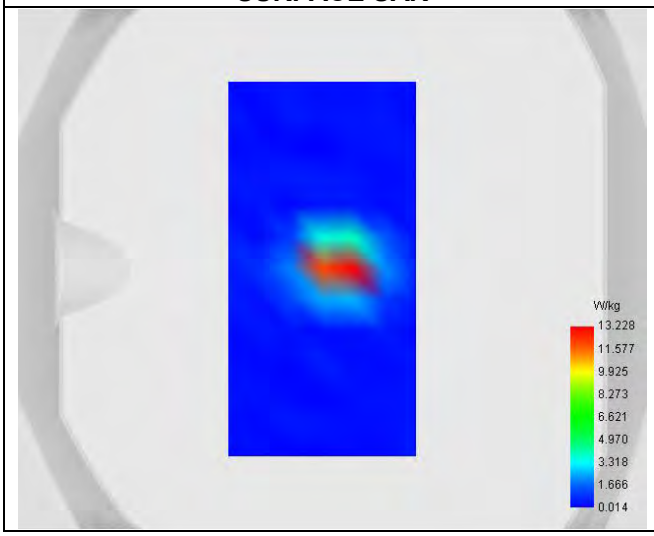
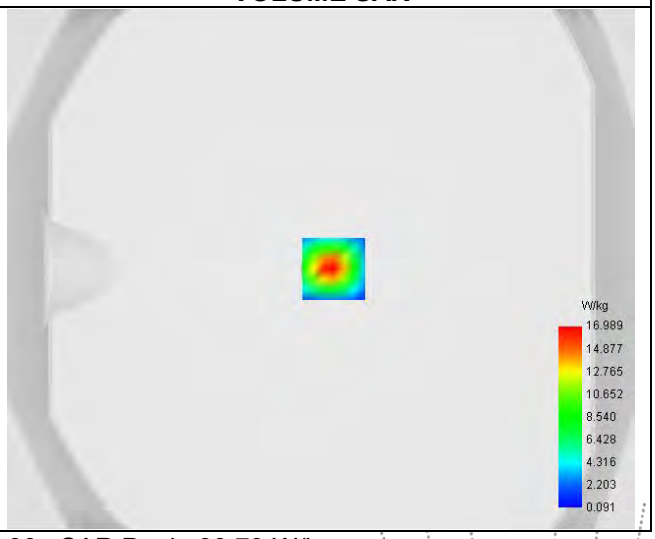
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.97
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Dipole
Band	CW5200
Signal	CW

B. Permitivity

Frequency (MHz)	5200.000
Relative permitivity (real part)	36.781
Relative permitivity (imaginary part)	18.140
Conductivity (S/m)	4.744

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

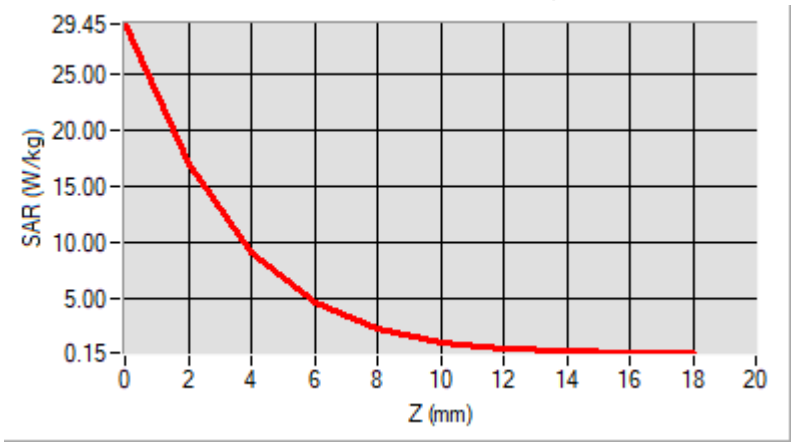
Maximum location: X=5.00, Y=0.00 ; SAR Peak: 30.79 W/kg

D. SAR 1g & 10g

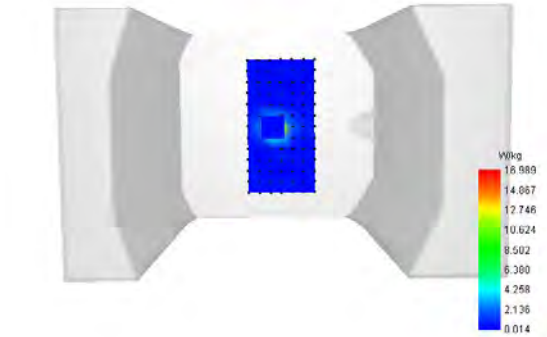
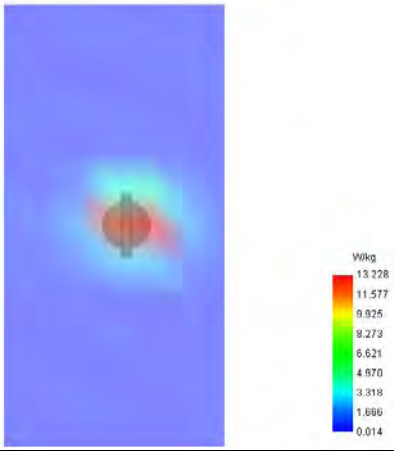
SAR 10g (W/Kg)	8.460
SAR 1g (W/Kg)	18.207
Variation (%)	-1.302
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
SAR (W/Kg)	29.452	16.989	9.130	4.585	2.232	1.083	0.552	0.315	0.209



F. 3D Image

3D screen shot	Hot spot position
	

System check at 5800 MHz

Date of measurement: 21/10/2024

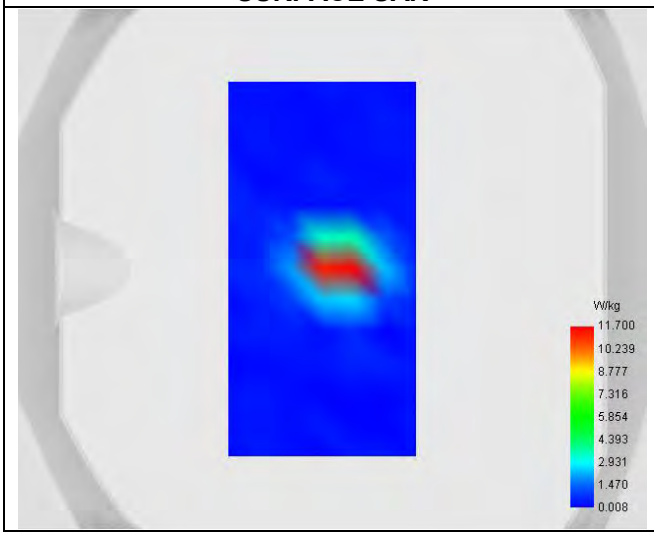
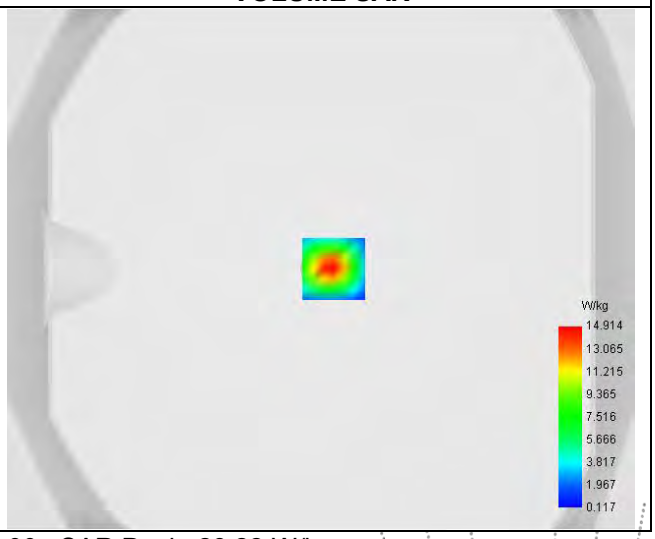
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.05
Area Scan	surf_sam_plan.txt
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Validation plane
Device Position	Dipole
Band	CW5800
Signal	CW

B. Permitivity

Frequency (MHz)	5800.000
Relative permitivity (real part)	36.608
Relative permitivity (imaginary part)	18.620
Conductivity (S/m)	5.362

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

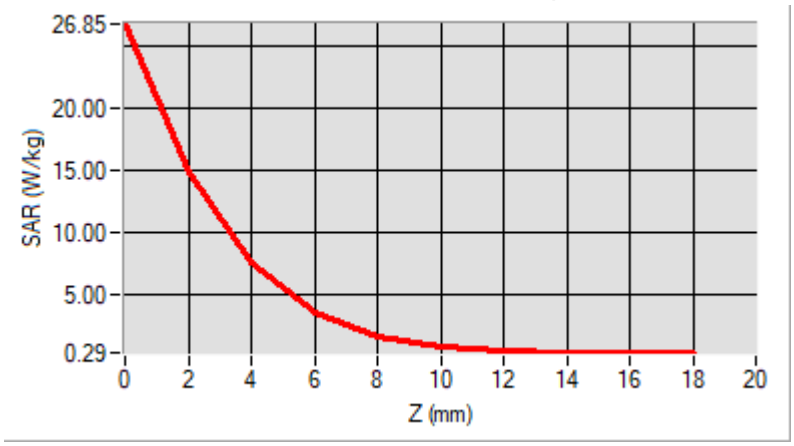
Maximum location: X=5.00, Y=0.00 ; SAR Peak: 28.22 W/kg

D. SAR 1g & 10g

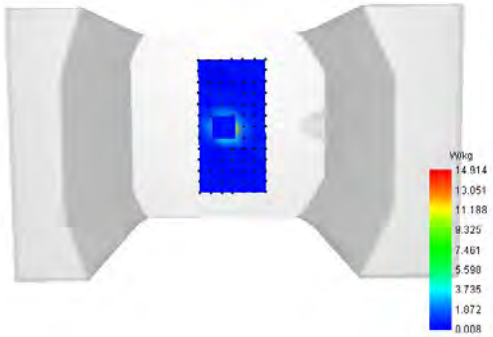
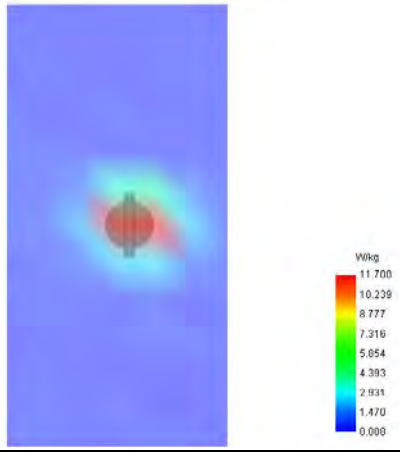
SAR 10g (W/Kg)	8.245
SAR 1g (W/Kg)	18.871
Variation (%)	-0.220
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
SAR (W/Kg)	26.852	14.914	7.581	3.559	1.627	0.770	0.423	0.303	0.288



F. 3D Image

3D screen shot	Hot spot position
	

15.2 SAR Test Graph Results

Plot 1
Date of measurement: 21/10/2024

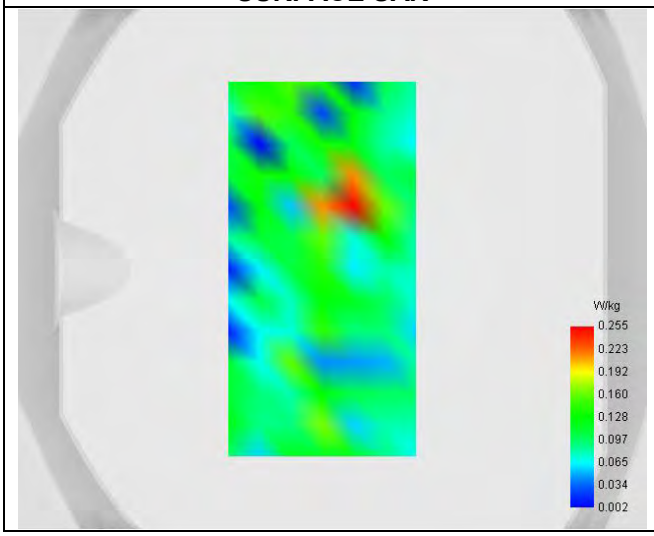
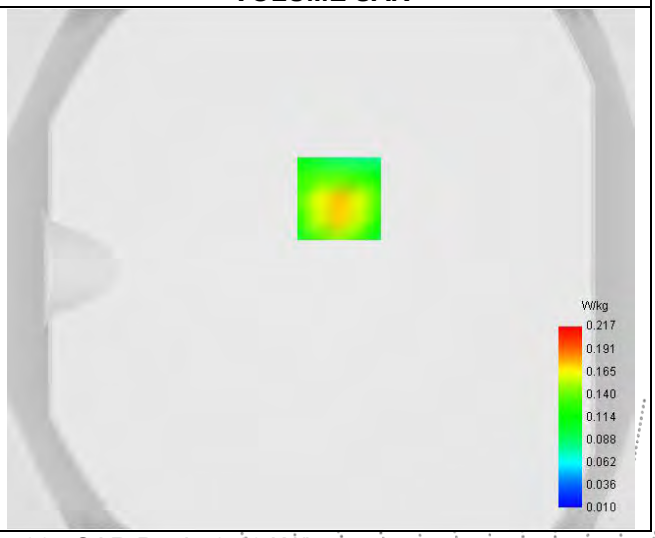
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.11
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	ISM
Signal	IEEE 802.11 b

B. Permitivity

Frequency (MHz)	2462.000
Relative permitivity (real part)	39.847
Relative permitivity (imaginary part)	13.207
Conductivity (S/m)	1.783

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

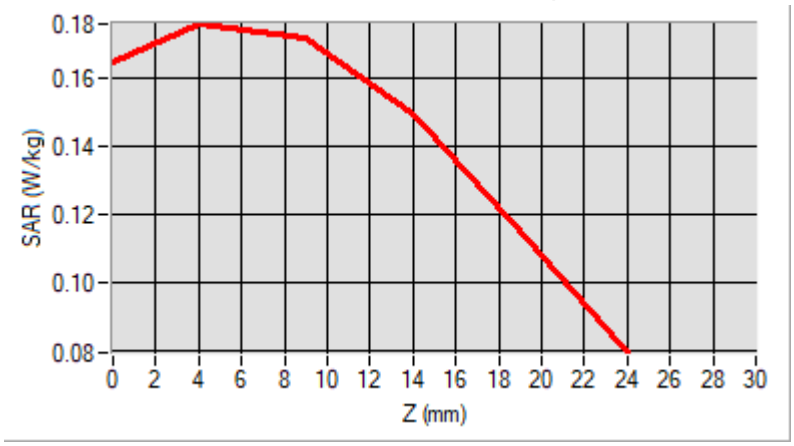
Maximum location: X=7.00, Y=27.00 ; SAR Peak: 0.18 W/kg

D. SAR 1g & 10g

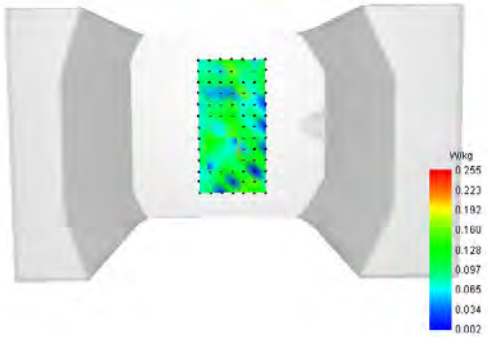
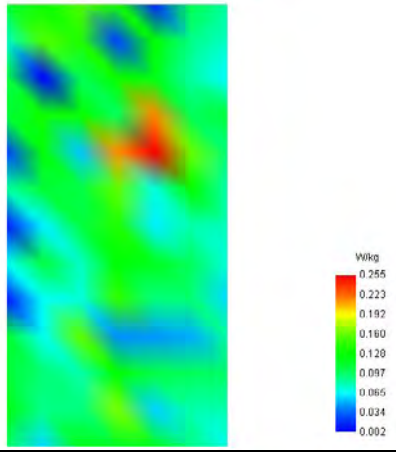
SAR 10g (W/Kg)	0.124
SAR 1g (W/Kg)	0.180
Variation (%)	-1.530
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.165	0.176	0.172	0.150	0.115



F. 3D Image

3D screen shot	Hot spot position
	

Plot 2

Date of measurement: 21/10/2024

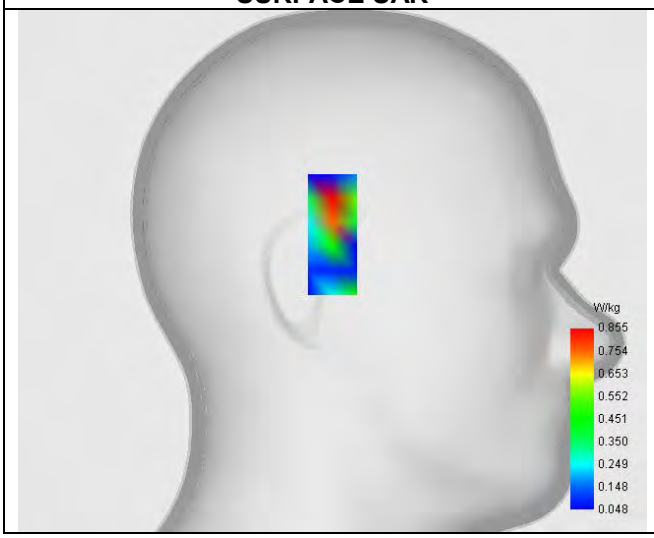
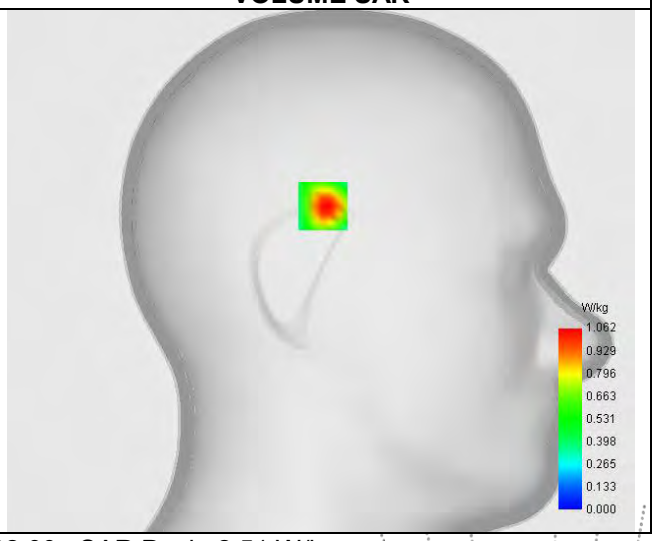
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.18
Area Scan	dx=12mm dy=12mm, Adaptative 1 max
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Left head
Device Position	Tilt
Band	5200
Signal	--

B. Permitivity

Frequency (MHz)	5180.000
Relative permitivity (real part)	36.781
Relative permitivity (imaginary part)	16.130
Conductivity (S/m)	4.744

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

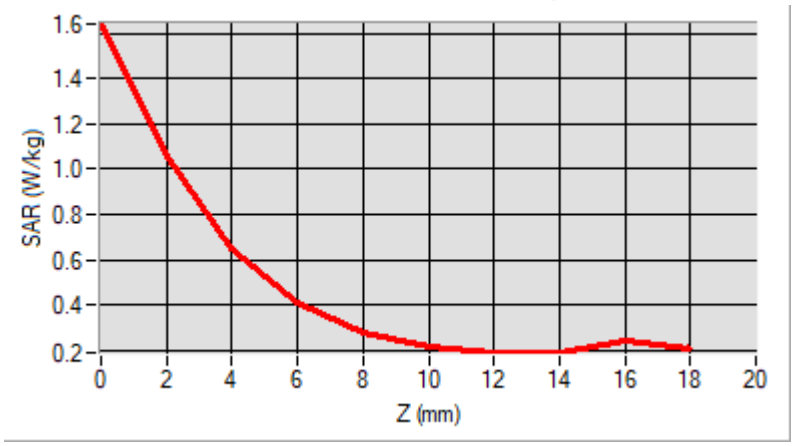
Maximum location: X=-1.00, Y=32.00 ; SAR Peak: 2.51 W/kg

D. SAR 1g & 10g

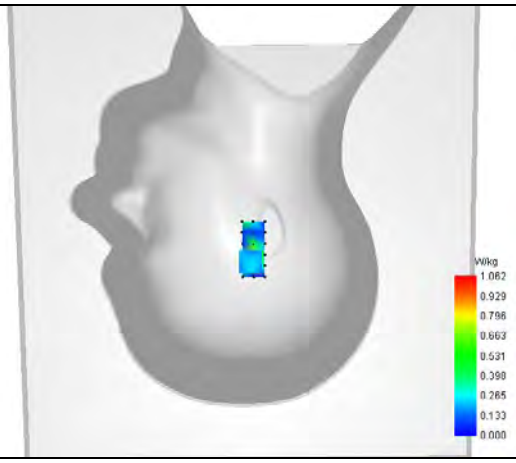
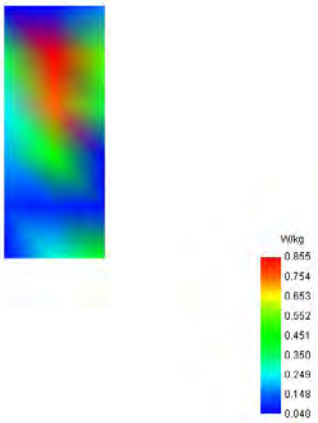
SAR 10g (W/Kg)	0.430
SAR 1g (W/Kg)	1.021
Variation (%)	-1.380
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
SAR (W/Kg)	1.643	1.062	0.651	0.407	0.276	0.212	0.187	0.188	0.237



F. 3D Image

3D screen shot	Hot spot position
	

Plot 3

Date of measurement: 21/10/2024

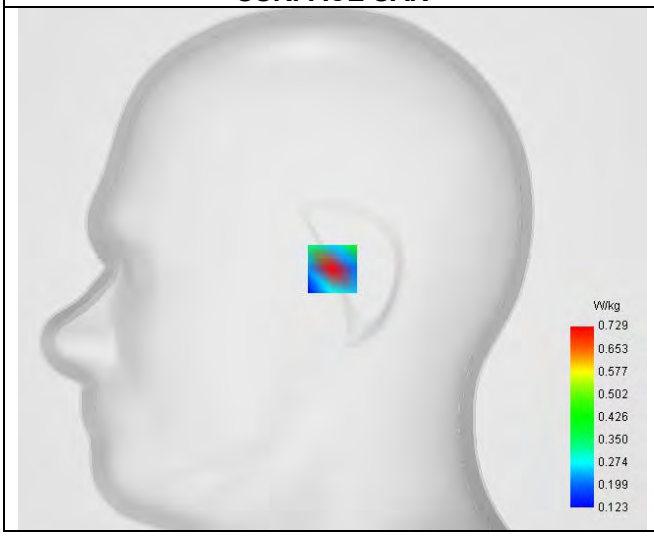
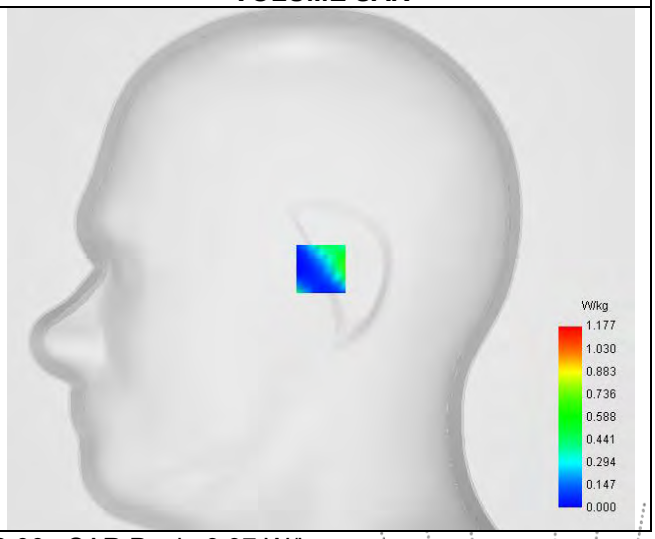
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.15
Area Scan	dx=12mm dy=12mm, Adaptative 1 max
Zoom Scan	7x7x12,dx=4mm dy=4mm dz=2mm
Phantom	Right head
Device Position	Cheek
Band	5800
Signal	--

B. Permitivity

Frequency (MHz)	5745.000
Relative permitivity (real part)	36.608
Relative permitivity (imaginary part)	16.355
Conductivity (S/m)	5.362

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

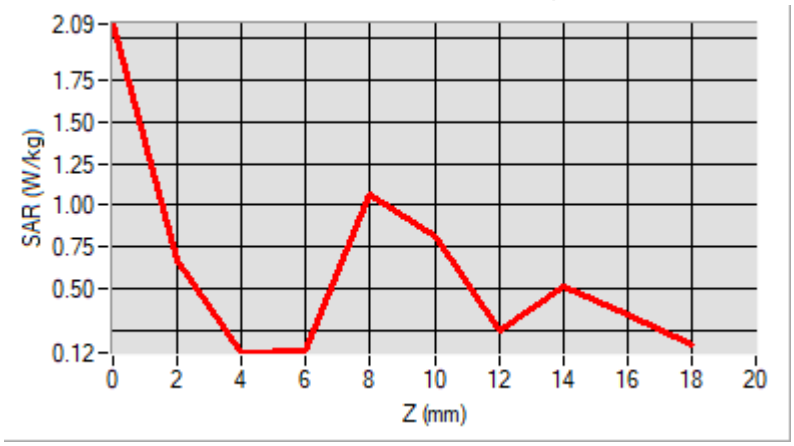
Maximum location: X=0.00, Y=0.00 ; SAR Peak: 3.97 W/kg

D. SAR 1g & 10g

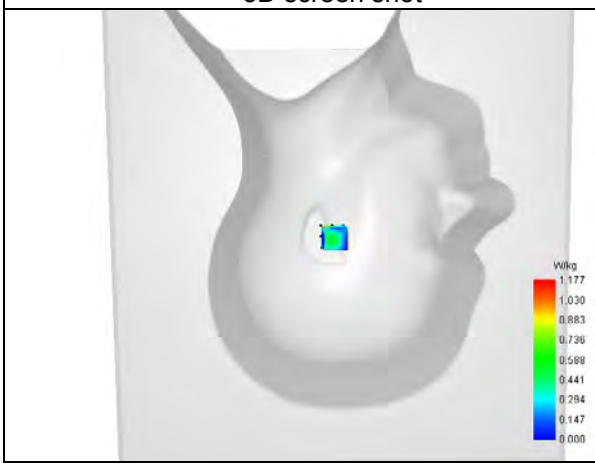
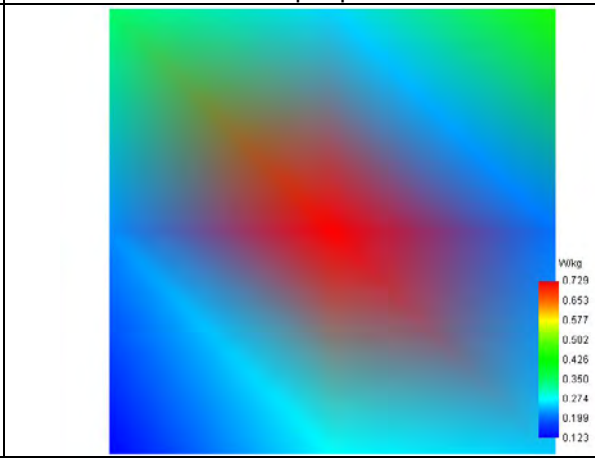
SAR 10g (W/Kg)	0.446
SAR 1g (W/Kg)	0.787
Variation (%)	-3.460
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
SAR (W/Kg)	2.086	0.664	0.118	0.125	1.067	0.813	0.246	0.509	0.348



F. 3D Image

3D screen shot	Hot spot position
	

Plot 4
Date of measurement: 12/10/2024

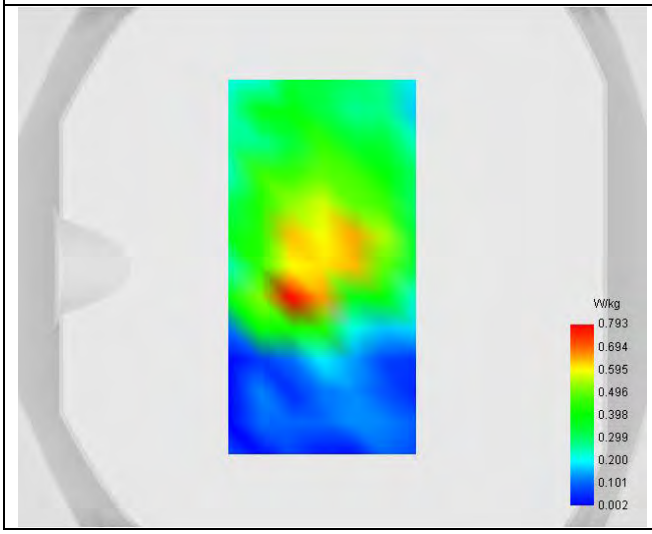
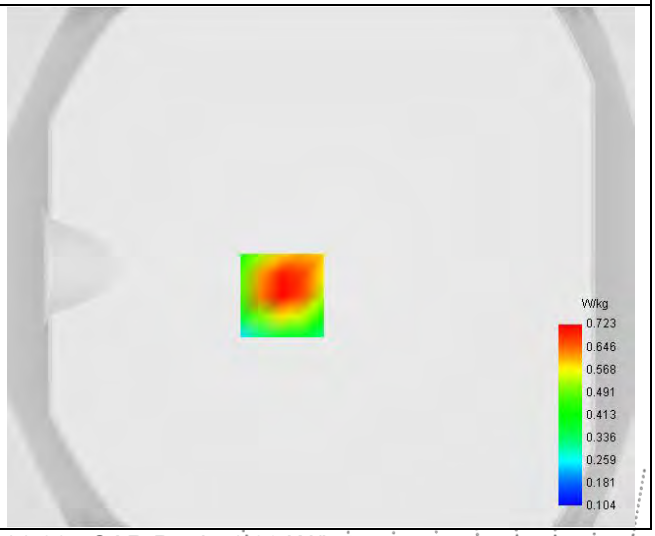
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.81
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	GPRS850
Signal	TDMA (GPRS)
Modulation	GMSK (CS-1)

B. Permitivity

Frequency (MHz)	836.600
Relative permitivity (real part)	42.101
Relative permitivity (imaginary part)	19.400
Conductivity (S/m)	0.870

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

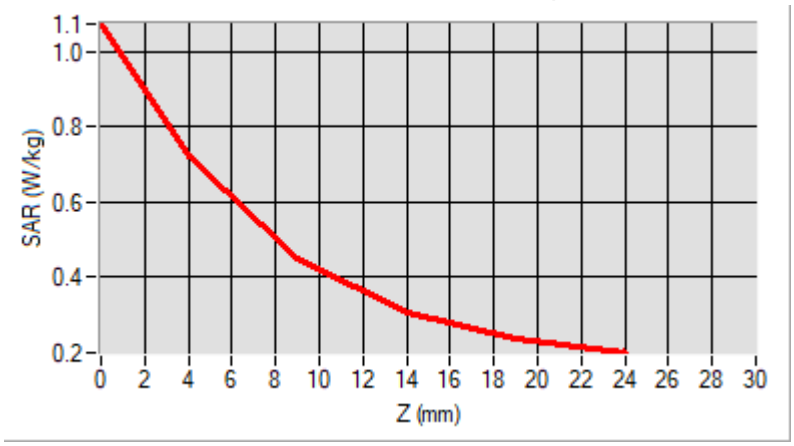
Maximum location: X=-15.00, Y=-11.00 ; SAR Peak: 1.09 W/kg

D. SAR 1g & 10g

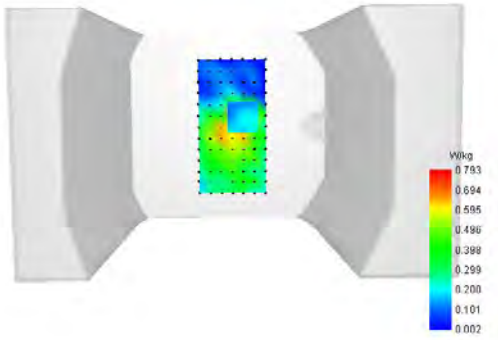
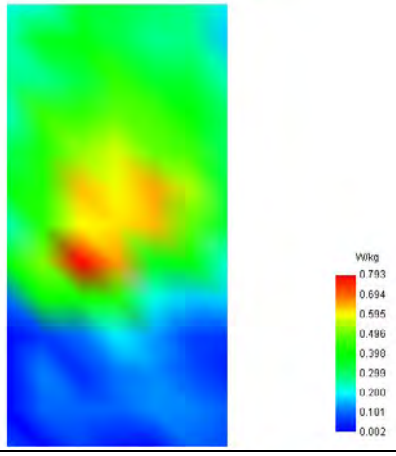
SAR 10g (W/Kg)	0.404
SAR 1g (W/Kg)	0.697
Variation (%)	1.120
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.074	0.723	0.450	0.304	0.235



F. 3D Image

3D screen shot	Hot spot position
	

Plot 5

Date of measurement: 19/10/2024

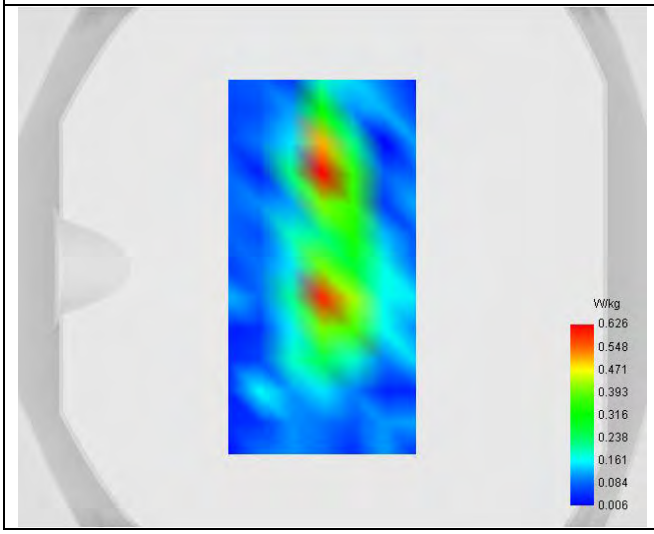
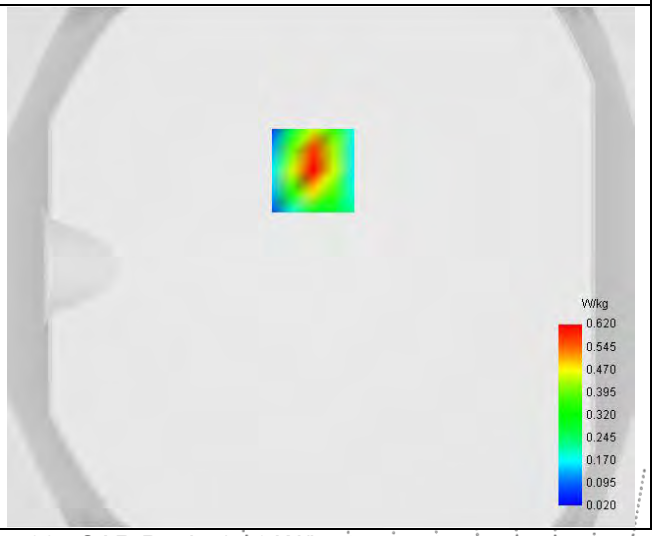
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.04
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	GPRS1900
Signal	TDMA (GPRS)
Modulation	GMSK (CS-1)

B. Permitivity

Frequency (MHz)	1880.000
Relative permitivity (real part)	38.663
Relative permitivity (imaginary part)	13.408
Conductivity (S/m)	1.400

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

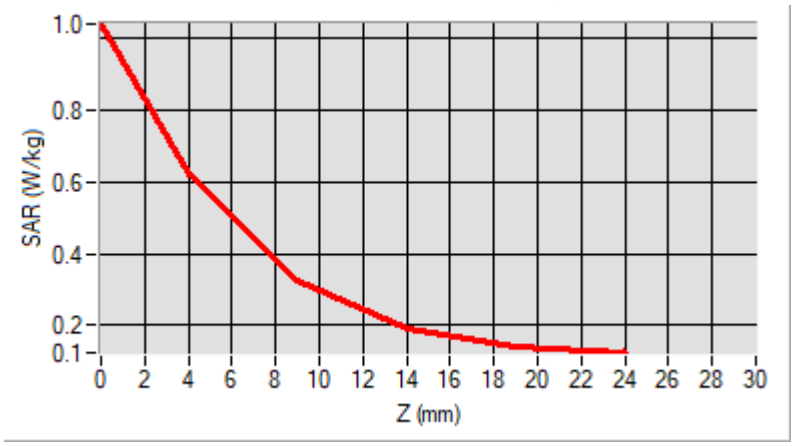
Maximum location: X=-3.00, Y=37.00 ; SAR Peak: 1.06 W/kg

D. SAR 1g & 10g

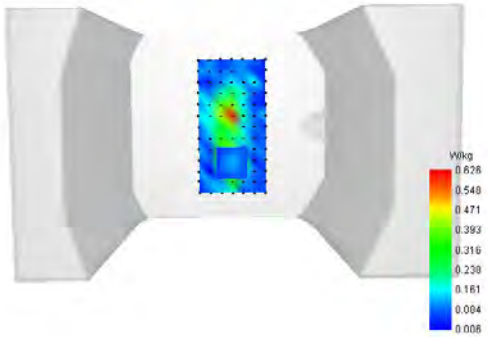
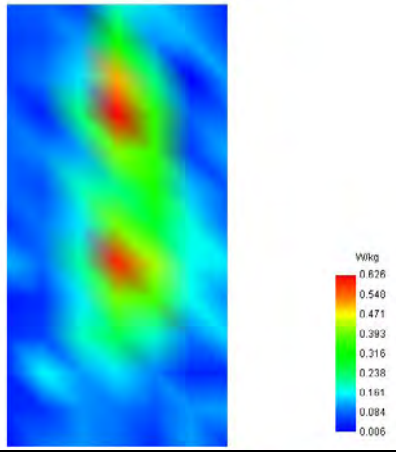
SAR 10g (W/Kg)	0.301
SAR 1g (W/Kg)	0.577
Variation (%)	-3.400
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.042	0.620	0.324	0.190	0.141



F. 3D Image

3D screen shot	Hot spot position
	

Plot 6

Date of measurement: 19/10/2024

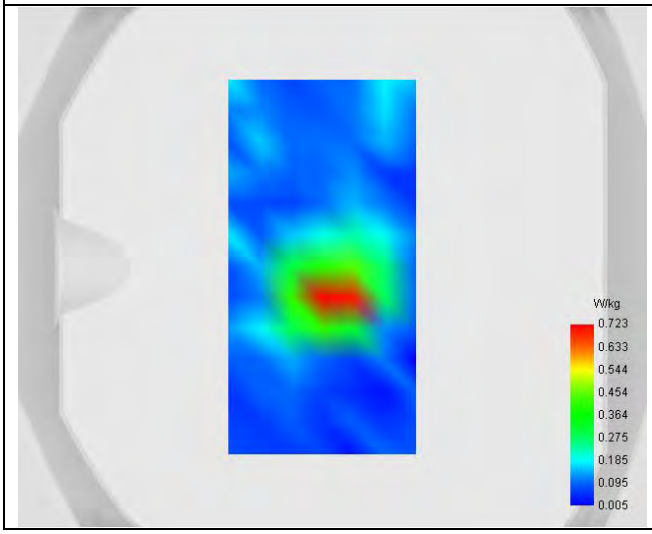
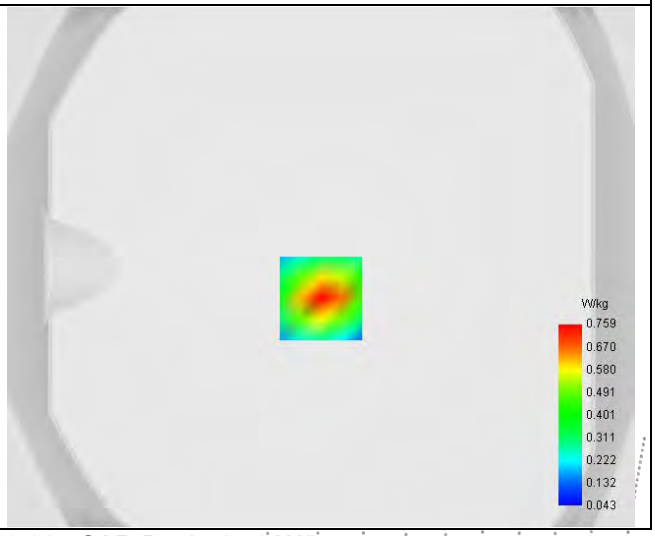
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.04
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	Band 2 (1900)
Signal	WCDMA
Mode	Release 99
Connection Type	RMC, 12.2 kbps

B. Permitivity

Frequency (MHz)	1907.600
Relative permitivity (real part)	38.663
Relative permitivity (imaginary part)	13.408
Conductivity (S/m)	1.400

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

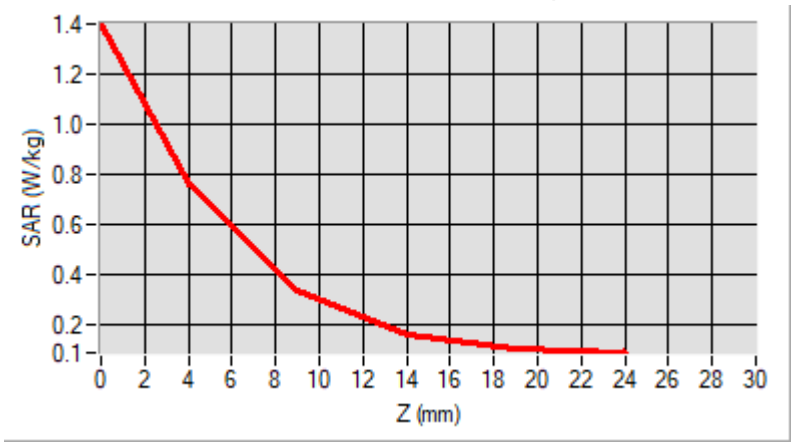
Maximum location: X=0.00, Y=-12.00 ; SAR Peak: 1.40 W/kg

D. SAR 1g & 10g

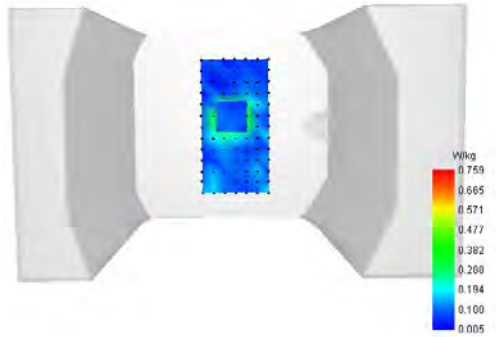
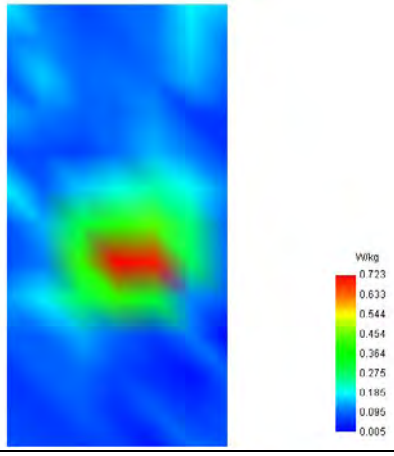
SAR 10g (W/Kg)	0.331
SAR 1g (W/Kg)	0.710
Variation (%)	-1.020
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.399	0.759	0.338	0.164	0.108



F. 3D Image

3D screen shot	Hot spot position
	

Plot 7
Date of measurement: 18/10/2024

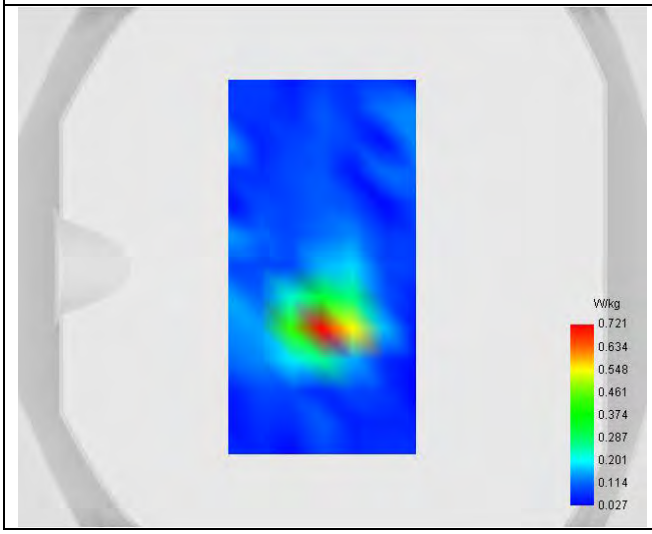
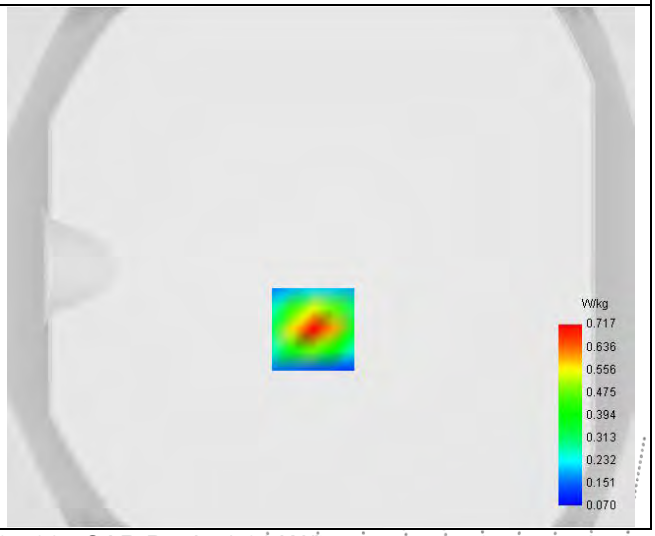
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.96
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	Band 4 (1700)
Signal	WCDMA
Mode	Release 99
Connection Type	RMC, 12.2 kbps

B. Permitivity

Frequency (MHz)	1712.400
Relative permitivity (real part)	39.598
Relative permitivity (imaginary part)	14.136
Conductivity (S/m)	1.366

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

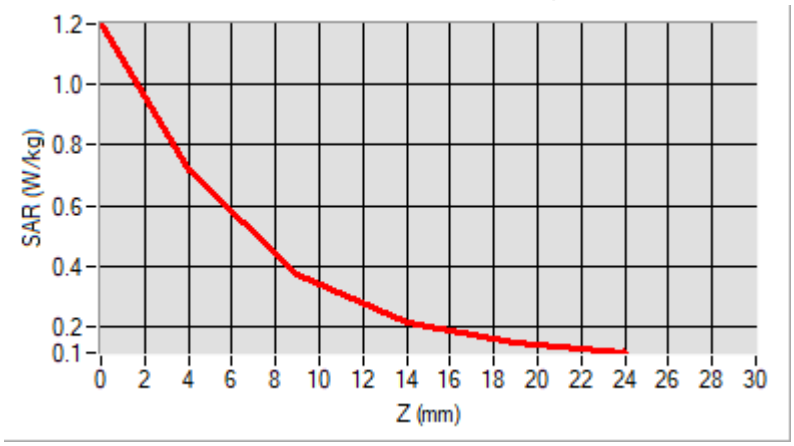
Maximum location: X=-3.00, Y=-24.00 ; SAR Peak: 1.20 W/kg

D. SAR 1g & 10g

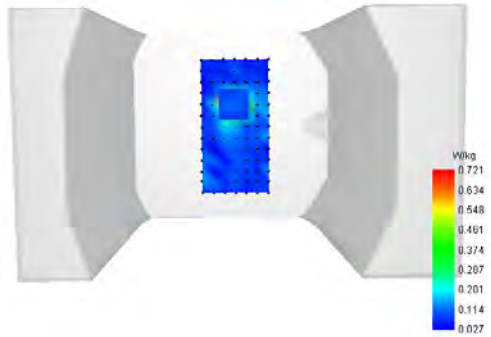
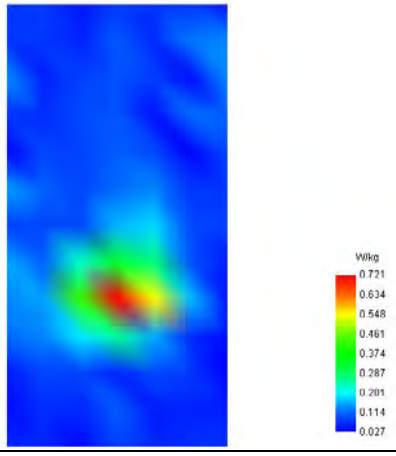
SAR 10g (W/Kg)	0.332
SAR 1g (W/Kg)	0.656
Variation (%)	3.040
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.196	0.717	0.374	0.213	0.147



F. 3D Image

3D screen shot	Hot spot position
	

Plot 8

Date of measurement: 12/10/2024

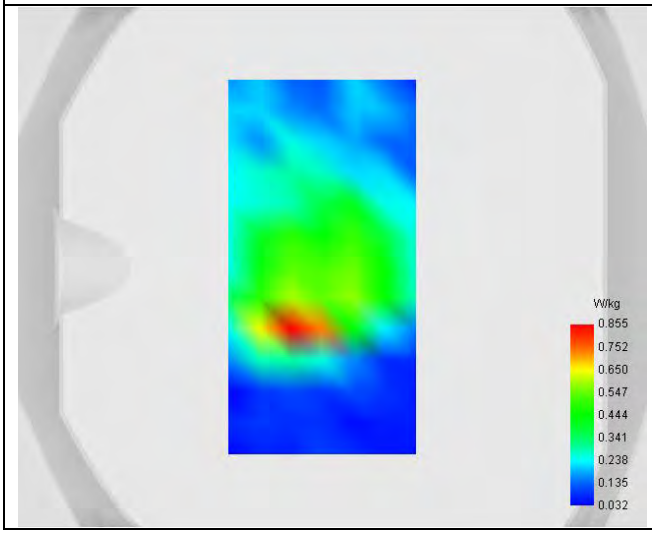
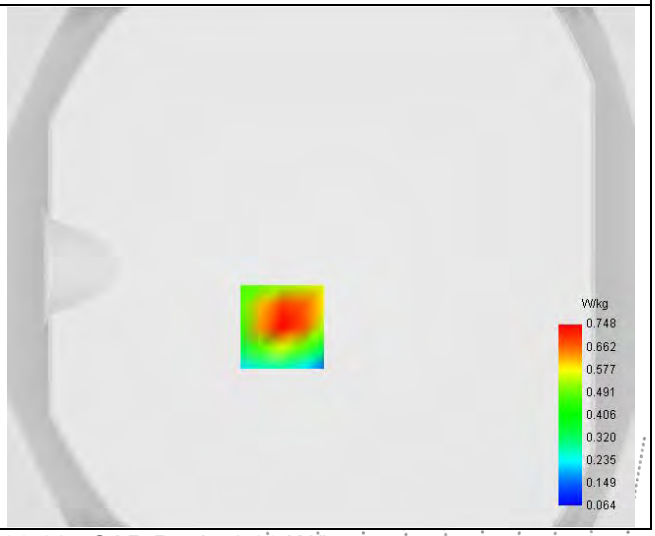
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.81
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	Band 5 (850)
Signal	WCDMA
Mode	Release 99
Connection Type	RMC, 12.2 kbps

B. Permitivity

Frequency (MHz)	826.400
Relative permitivity (real part)	42.101
Relative permitivity (imaginary part)	19.400
Conductivity (S/m)	0.870

C. SAR Surface and Volume

SURFACE SAR	**VOLUME SAR**
	

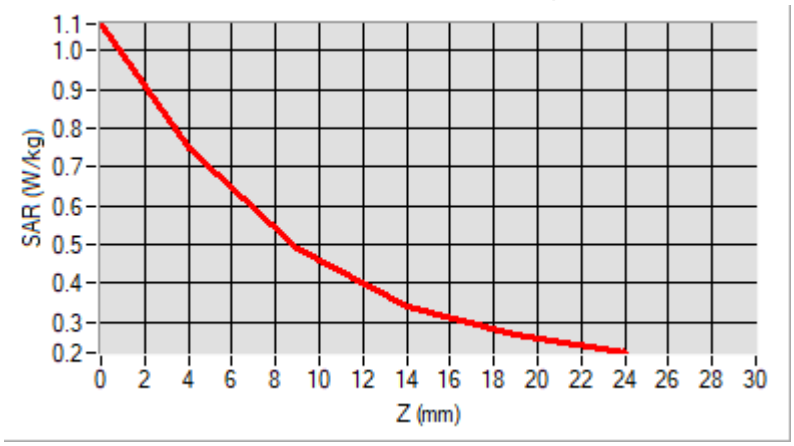
Maximum location: X=-15.00, Y=-23.00 ; SAR Peak: 1.09 W/kg

D. SAR 1g & 10g

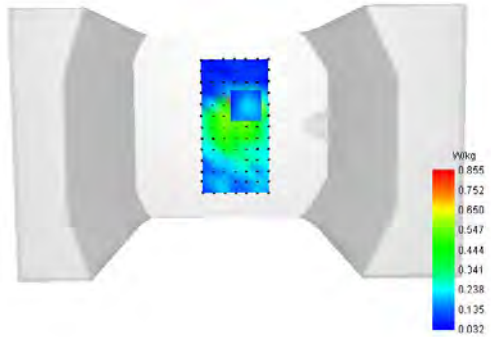
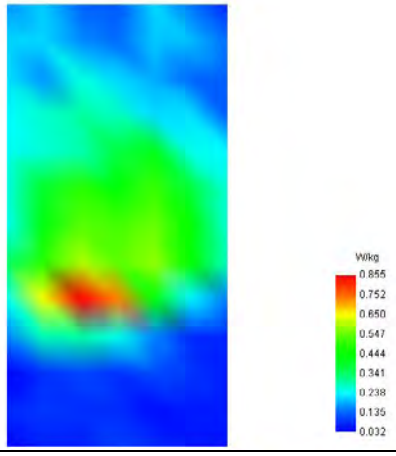
SAR 10g (W/Kg)	0.448
SAR 1g (W/Kg)	0.715
Variation (%)	-3.090
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.069	0.748	0.488	0.342	0.267



F. 3D Image

3D screen shot	Hot spot position
	

Plot 9

Date of measurement: 19/10/2024

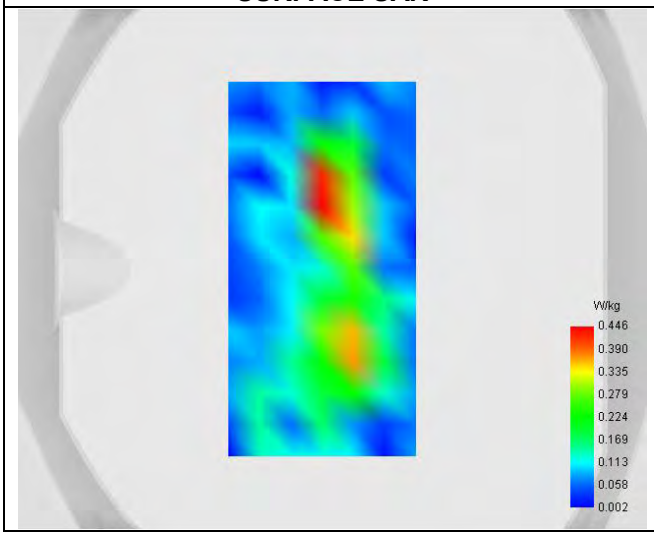
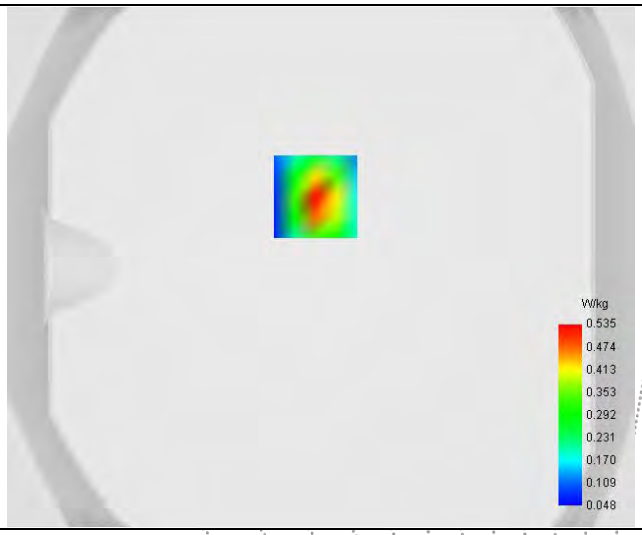
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.04
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 2
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	5
RB size	20

B. Permitivity

Frequency (MHz)	1900.000
Relative permitivity (real part)	38.663
Relative permitivity (imaginary part)	13.455
Conductivity (S/m)	1.400

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

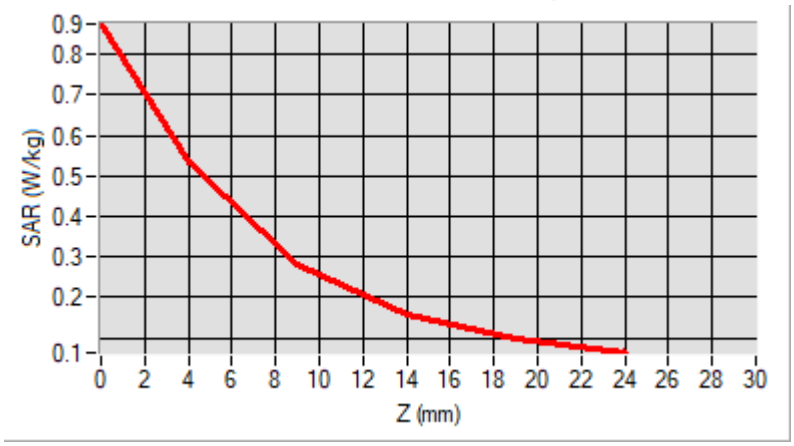
Maximum location: X=-2.00, Y=27.00 ; SAR Peak: 0.89 W/kg

D. SAR 1g & 10g

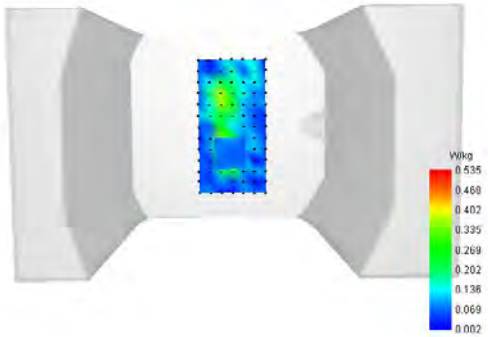
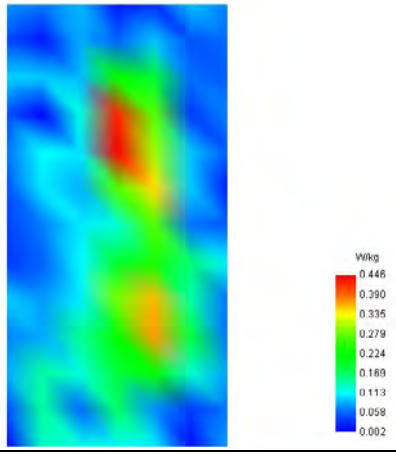
SAR 10g (W/Kg)	0.246
SAR 1g (W/Kg)	0.493
Variation (%)	-4.040
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.875	0.535	0.283	0.155	0.096



F. 3D Image

3D screen shot	Hot spot position
	

Plot 10
Date of measurement: 18/10/2024

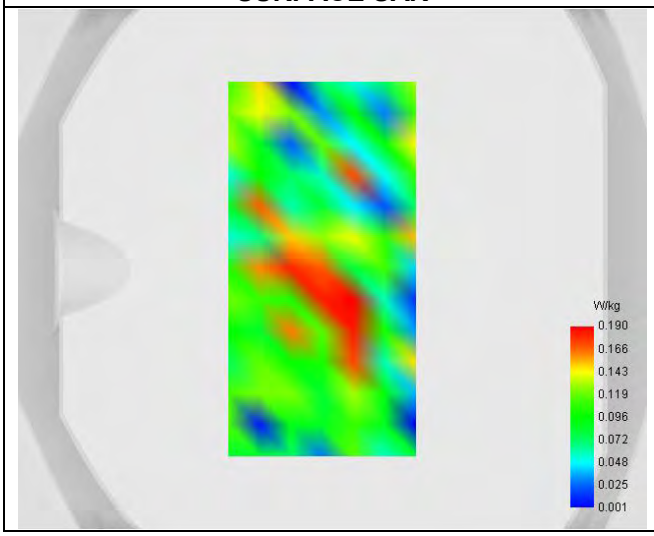
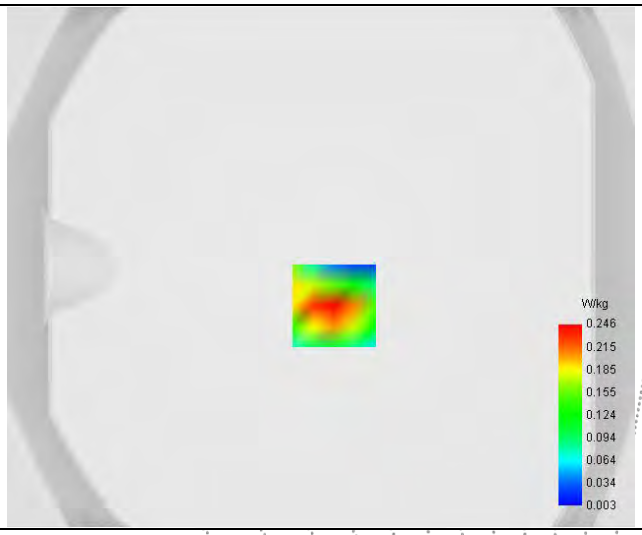
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.96
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 4
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	5
RB size	20

B. Permitivity

Frequency (MHz)	1720.000
Relative permitivity (real part)	39.598
Relative permitivity (imaginary part)	14.153
Conductivity (S/m)	1.366

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

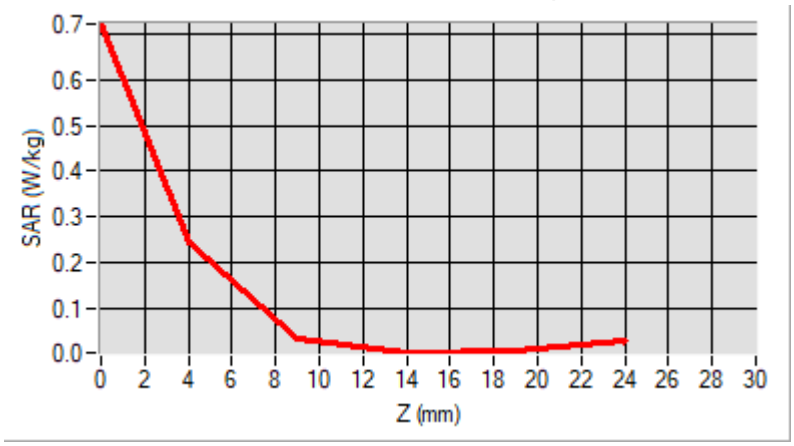
Maximum location: X=5.00, Y=-15.00 ; SAR Peak: 0.73 W/kg

D. SAR 1g & 10g

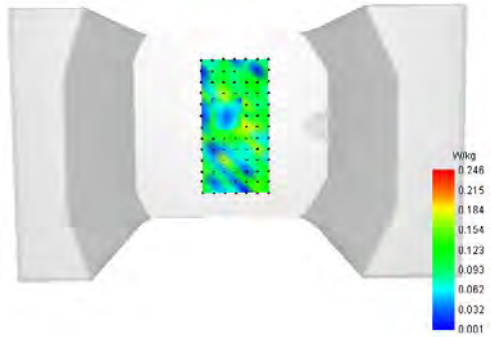
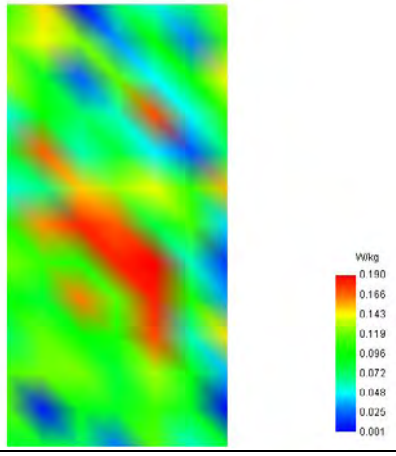
SAR 10g (W/Kg)	0.114
SAR 1g (W/Kg)	0.279
Variation (%)	-0.690
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.722	0.246	0.035	0.003	0.006



F. 3D Image

3D screen shot	Hot spot position
	

Plot 11
Date of measurement: 12/10/2024

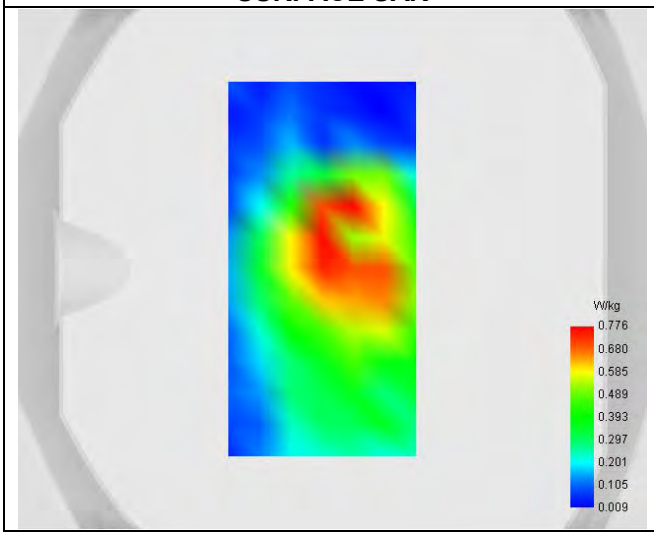
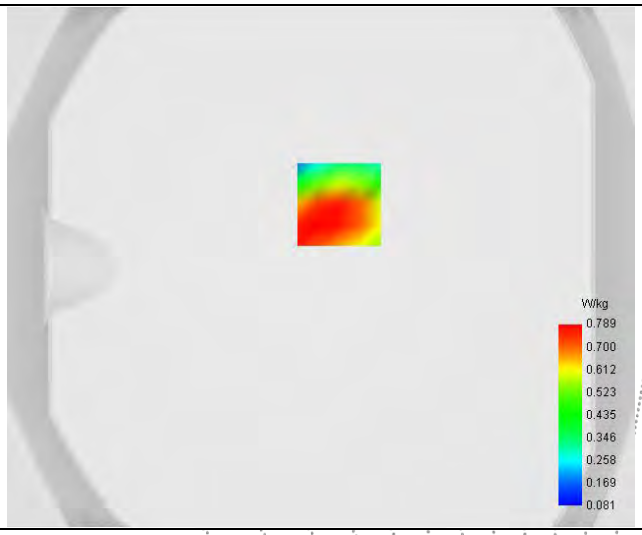
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.81
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 5
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	5
RB size	20

B. Permitivity

Frequency (MHz)	829.000
Relative permitivity (real part)	42.101
Relative permitivity (imaginary part)	19.407
Conductivity (S/m)	0.870

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

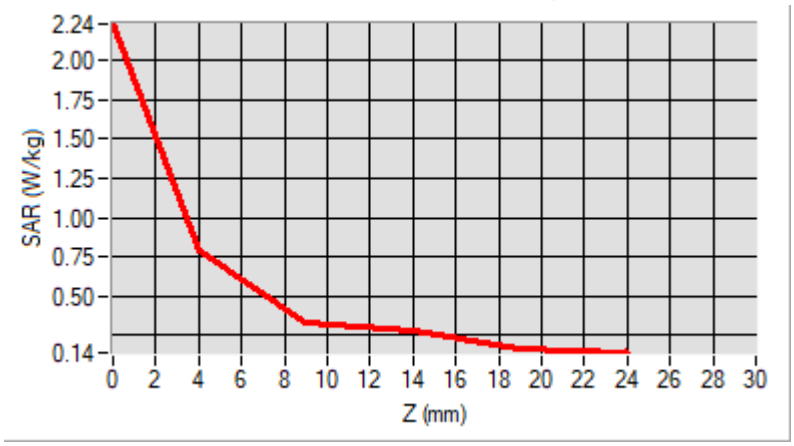
Maximum location: X=7.00, Y=24.00 ; SAR Peak: 1.29 W/kg

D. SAR 1g & 10g

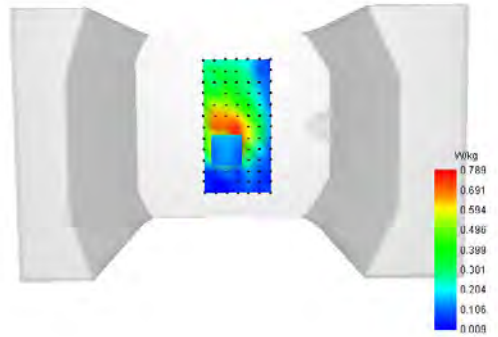
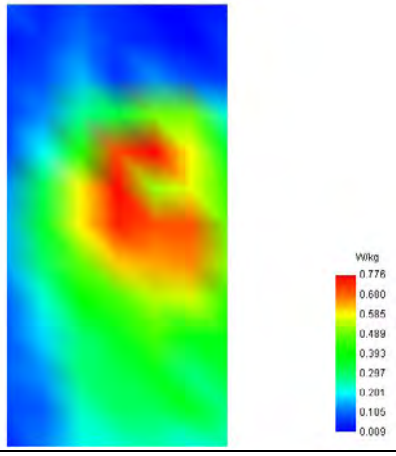
SAR 10g (W/Kg)	0.370
SAR 1g (W/Kg)	0.772
Variation (%)	-1.760
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	2.235	0.789	0.322	0.278	0.157



F. 3D Image

3D screen shot	Hot spot position
	

Plot 12
Date of measurement: 11/10/2024

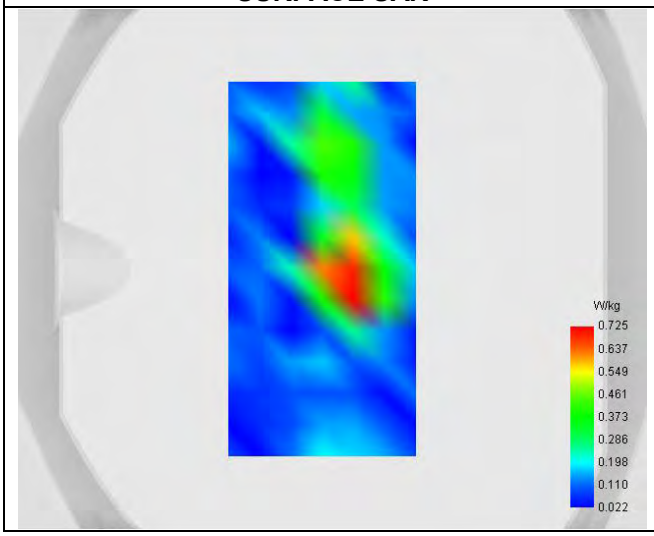
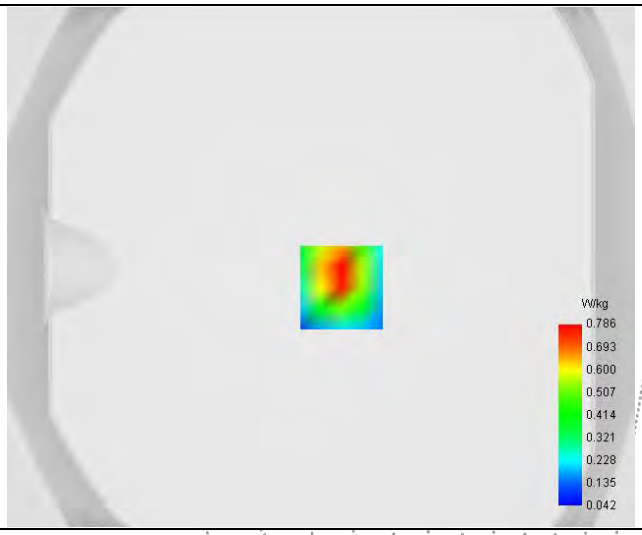
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	1.03
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 7
Signal	LTE FDD
Cell Bandwidth	20 Mhz
Modulation	SC-OFDM - QPSK
RB offset	5
RB size	20

B. Permitivity

Frequency (MHz)	2510.000
Relative permitivity (real part)	39.706
Relative permitivity (imaginary part)	13.404
Conductivity (S/m)	1.974

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

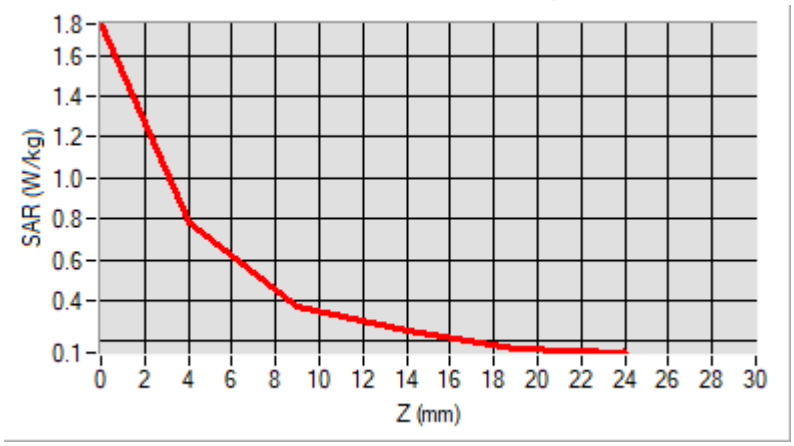
Maximum location: X=8.00, Y=-8.00 ; SAR Peak: 1.27 W/kg

D. SAR 1g & 10g

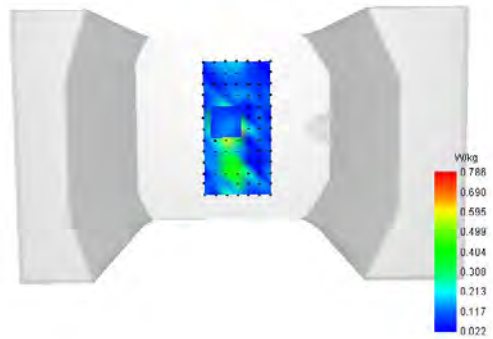
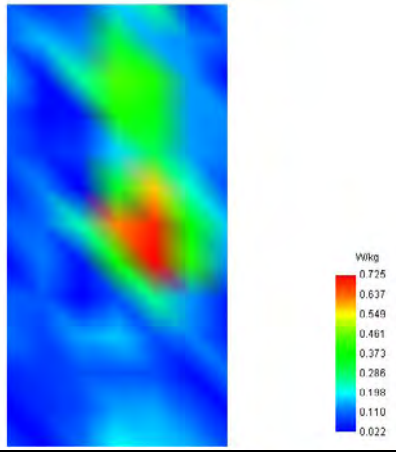
SAR 10g (W/Kg)	0.412
SAR 1g (W/Kg)	0.751
Variation (%)	-0.550
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	1.754	0.786	0.366	0.257	0.168



F. 3D Image

3D screen shot	Hot spot position
	

Plot 13
Date of measurement: 11/10/2024

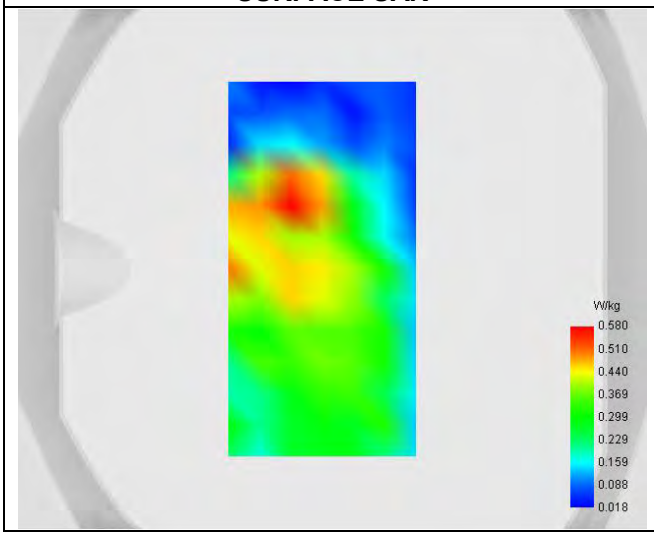
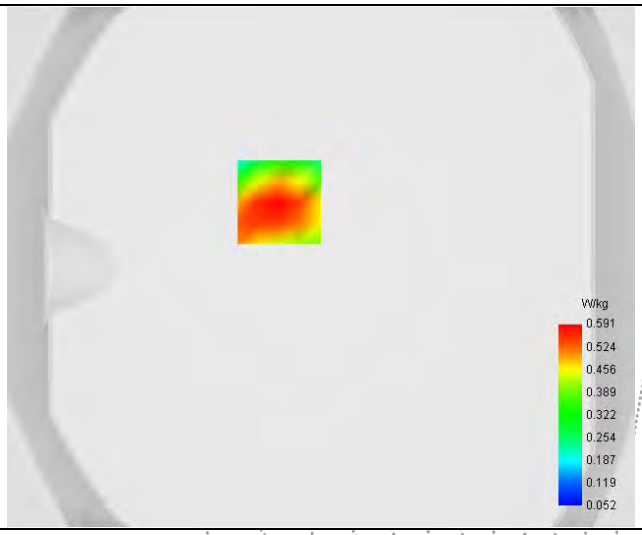
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.80
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 12
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	5
RB size	20

B. Permitivity

Frequency (MHz)	711.000
Relative permitivity (real part)	42.787
Relative permitivity (imaginary part)	23.345
Conductivity (S/m)	0.921

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

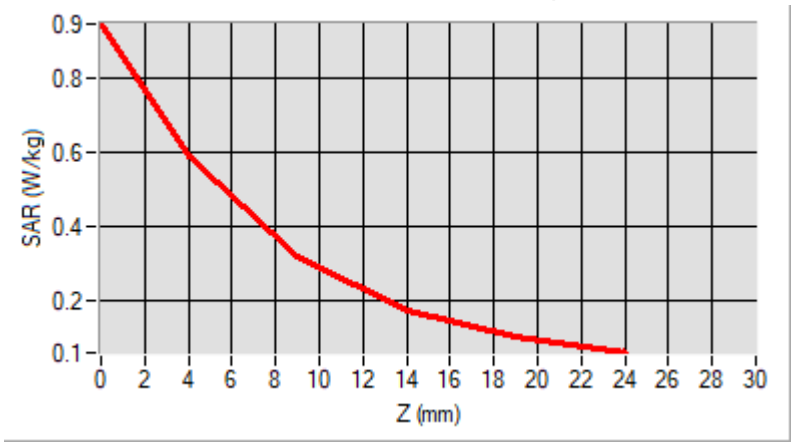
Maximum location: X=-16.00, Y=25.00 ; SAR Peak: 0.95 W/kg

D. SAR 1g & 10g

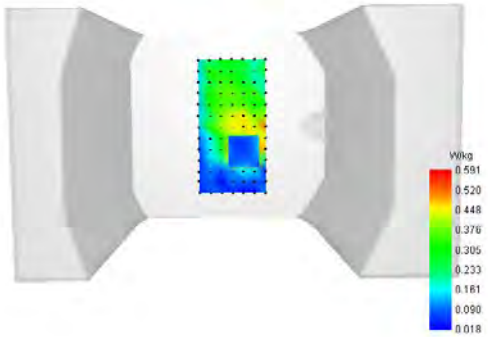
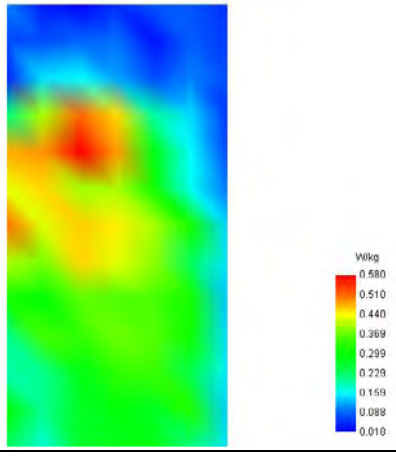
SAR 10g (W/Kg)	0.296
SAR 1g (W/Kg)	0.578
Variation (%)	-3.910
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.944	0.591	0.321	0.176	0.104



F. 3D Image

3D screen shot	Hot spot position
	

Plot 14
Date of measurement: 11/10/2024

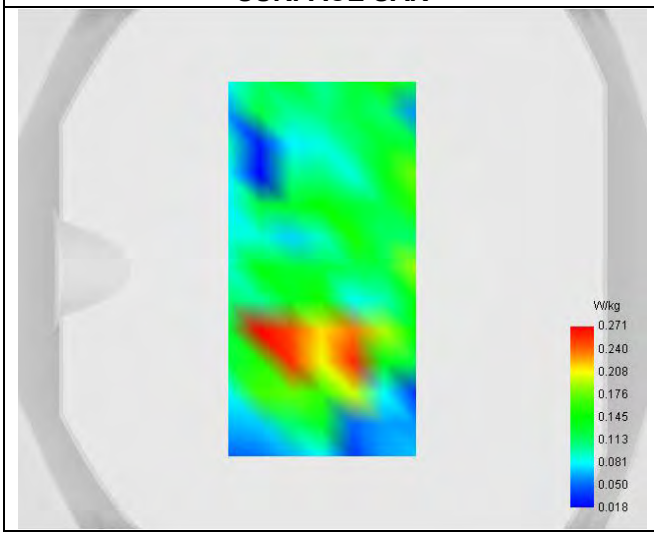
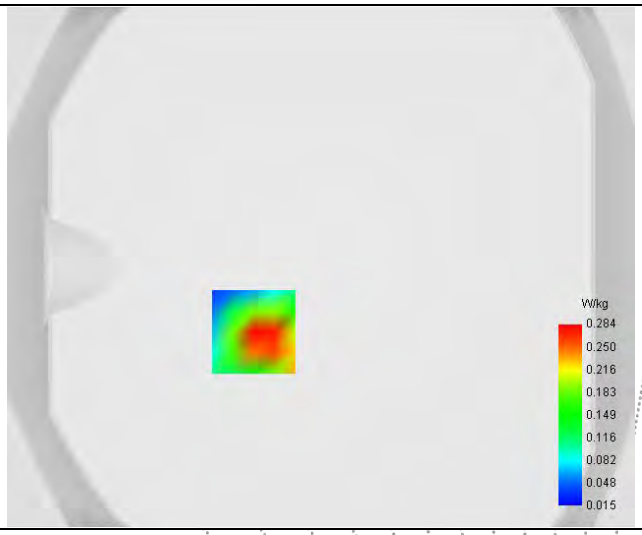
A. Experimental conditions.

Probe	SN 26/23 EPGO420
ConvF	0.80
Area Scan	surf_sam_plan.txt
Zoom Scan	5x5x7,dx=8mm dy=8mm dz=5.0mm
Phantom	Validation plane
Device Position	Body
Band	LTE band 17
Signal	LTE FDD
Cell Bandwidth	10 Mhz
Modulation	SC-OFDM - QPSK
RB offset	5
RB size	20

B. Permitivity

Frequency (MHz)	708.200
Relative permitivity (real part)	42.787
Relative permitivity (imaginary part)	23.233
Conductivity (S/m)	0.921

C. SAR Surface and Volume

SURFACE SAR	VOLUME SAR
	

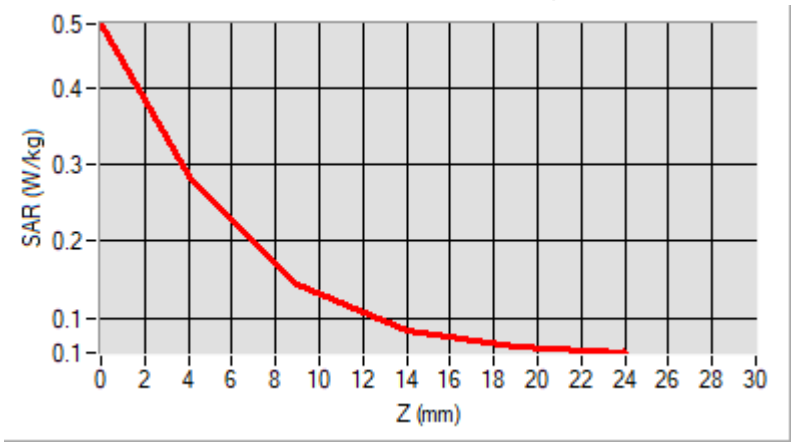
Maximum location: X=-26.00, Y=-25.00 ; SAR Peak: 0.50 W/kg

D. SAR 1g & 10g

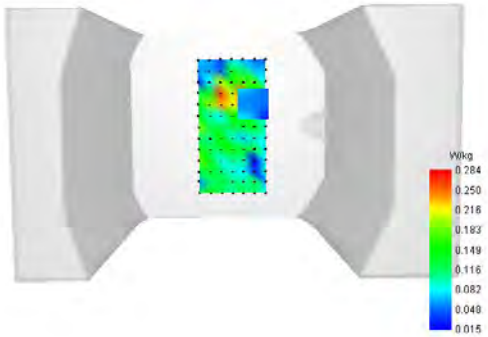
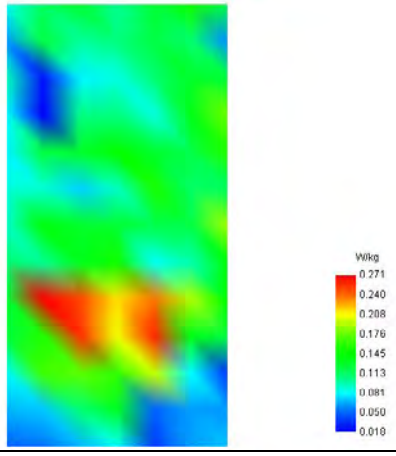
SAR 10g (W/Kg)	0.145
SAR 1g (W/Kg)	0.285
Variation (%)	2.440
Horizontal validation criteria: minimum distance (mm)	0.000000
Vertical validation criteria: SAR ratio M2/M1 (%)	0.000000

E. Z Axis Scan

Z (mm)	0.00	4.00	9.00	14.00	19.00
SAR (W/Kg)	0.482	0.284	0.145	0.084	0.063



F. 3D Image

3D screen shot	Hot spot position
	

16. CALIBRATION CERTIFICATES

Probe-EPGO420 Calibration Certificate
SID750Dipole Calibration Ceriticate
SID835Dipole Calibration Ceriticate
SID1800Dipole Calibration Ceriticate
SID1900Dipole Calibration Ceriticate
SID2450Dipole Calibration Ceriticate
SID2600Dipole Calibration Ceriticate
SID5000Dipole Calibration Ceriticate

COMOSAR E-Field Probe Calibration Report

Ref : ACR.199.1.23.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.: 2623-EPGO-420

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

Calibration date: 7/18/2023

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

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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COMOSAR E-FIELD PROBE CALIBRATION REPORT

Ref: ACR.199.1.23.BES.A

	Name	*Function*	*Date*	*Signature*
Prepared by :	Cyrille ONNEE	Measurement Responsible	7/18/2023	
Checked & approved by:	Jérôme Luc	Technical Manager	7/18/2023	
Authorized by:	Yann Toutain	Laboratory Director	7/18/2023	

Yann Toutain ID Signature numérique de Yann Toutain ID Date : 2023.07.18 10:38:49 +02'00'

	Customer Name
Distribution :	Shenzhen BCTC Technology Co., Ltd.

Issue	*Name*	*Date*	*Modifications*
A	Cyrille ONNEE	7/18/2023	Initial release

TABLE OF CONTENTS

1 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR DOSIMETRIC E FIELD PROBE
Manufacturer	MVG
Model	SSE2
Serial Number	2623-EPGO-420
Product Condition (new / used)	New
Frequency Range of Probe	0.15 GHz-7.5GHz
Resistance of Three Dipoles at Connector	Dipole 1: R1=0.228 MΩ Dipole 2: R2=0.238 MΩ Dipole 3: R3=0.230 MΩ

2 PRODUCT DESCRIPTION

2.1 GENERAL INFORMATION

MVG's COMOSAR E field Probes are built in accordance to the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards.

Figure 1 – *MVG COMOSAR Dosimetric E field Probe*

Probe Length	330 mm
Length of Individual Dipoles	24.5 mm
Maximum external diameter	8 mm
Probe Tip External Diameter	2.55 mm
Distance between dipoles / probe extremity	12.7 mm

3 MEASUREMENT METHOD

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards provide recommended practices for the probe calibrations, including the performance characteristics of interest and methods by which to assess their effect. All calibrations / measurements performed meet the fore-mentioned standards.

3.1 SENSITIVITY

The sensitivity factors of the three dipoles were determined using a two step calibration method (air and tissue simulating liquid) using waveguides as outlined in the standards for frequency range 600-7500MHz and using the calorimeter cell method (transfer method) as outlined in the standards for frequency 150-450 MHz.

3.2 LINEARITY

The evaluation of the linearity was done in free space using the waveguide, performing a power sweep to cover the SAR range 0.01W/kg to 100W/kg.

3.3 ISOTROPY

The axial isotropy was evaluated by exposing the probe to a reference wave from a standard dipole with the dipole mounted under the flat phantom in the test configuration suggested for system validations and checks. The probe was rotated along its main axis from 0 to 360 degrees in 15-degree steps. The hemispherical isotropy is determined by inserting the probe in a thin plastic box filled with tissue-equivalent liquid, with the plastic box illuminated with the fields from a half wave dipole. The dipole is rotated about its axis (0°–180°) in 15° increments. At each step the probe is rotated about its axis (0°–360°).

3.4 BOUNDARY EFFECT

The boundary effect is defined as the deviation between the SAR measured data and the expected exponential decay in the liquid when the probe is oriented normal to the interface. To evaluate this effect, the liquid filled flat phantom is exposed to fields from either a reference dipole or waveguide. With the probe normal to the phantom surface, the peak spatial average SAR is measured and compared to the analytical value at the surface.

The boundary effect uncertainty can be estimated according to the following uncertainty approximation formula based on linear and exponential extrapolations between the surface and $d_{be} + d_{step}$ along lines that are approximately normal to the surface:

$$SAR_{uncertainty}[\%] = \delta SAR_{be} \frac{(d_{be} + d_{step})^2}{2d_{step}} \frac{\left(e^{-d_{be}/(\delta/2)}\right)}{\delta/2} \quad \text{for } (d_{be} + d_{step}) < 10 \text{ mm}$$

where

$SAR_{uncertainty}$	is the uncertainty in percent of the probe boundary effect
d_{be}	is the distance between the surface and the closest *zoom-scan* measurement point, in millimetre
Δ_{step}	is the separation distance between the first and second measurement points that are closest to the phantom surface, in millimetre, assuming the boundary effect at the second location is negligible
δ	is the minimum penetration depth in millimetres of the head tissue-equivalent liquids defined in this standard, i.e., $\delta \approx 14$ mm at 3 GHz;
ΔSAR_{be}	in percent of SAR is the deviation between the measured SAR value, at the distance d_{be} from the boundary, and the analytical SAR value.

The measured worst case boundary effect SARuncertainty[%] for scanning distances larger than 4mm is 1.0% Limit ,2%).

4 MEASUREMENT UNCERTAINTY

The guidelines outlined in the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards were followed to generate the measurement uncertainty associated with a SAR probe calibration using the waveguide or calorimetric cell technique depending on the frequency.

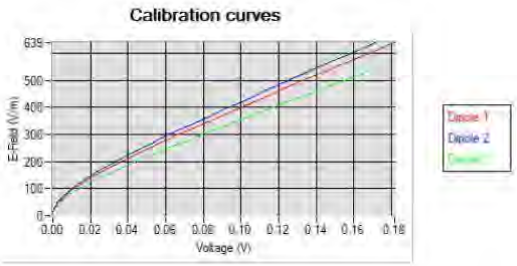
The estimated expanded uncertainty (k=2) in calibration for SAR (W/kg) is +/-11% for the frequency range 150-450MHz.
The estimated expanded uncertainty (k=2) in calibration for SAR (W/kg) is +/-14% for the frequency range 600-7500MHz.

5 CALIBRATION RESULTS

Ambient condition	
Liquid Temperature	20 +/- 1 °C
Lab Temperature	20 +/- 1 °C
Lab Humidity	30-70 %

5.1 CALIBRATION IN AIR

The following curve represents the measurement in waveguide of the voltage picked up by the probe toward the E-field generated inside the waveguide.



From this curve, the sensitivity in air is calculated using the below formula.

$$E^2 = \sum_{i=1}^{3} \frac{V_i \left(1 + {}^{V_i}/_{DCP_i}\right)}{Norm_i}$$

where
Vi=voltage readings on the 3 channels of the probe
DCPi=diode compression point given below for the 3 channels of the probe
Normi=dipole sensitivity given below for the 3 channels of the probe

Normx dipole 1 (μV/(V/m)²)	Normy dipole 2 (μV/(V/m)²)	Normz dipole 3 (μV/(V/m)²)
1.21	1.09	1.56

DCP dipole 1 (mV)	DCP dipole 2 (mV)	DCP dipole 3 (mV)
106	109	103

5.2 CALIBRATION IN LIQUID

The calorimeter cell or the waveguide is used to determine the calibration in liquid using the formula below.

$$ConvF = \frac{E^2_{liquid}}{E^2_{air}}$$

The E-field in the liquid is determined from the SAR measurement according to the below formula.

$$E^2_{liquid} = \frac{\rho\, SAR}{\sigma}$$

where
σ=the conductivity of the liquid
ρ=the volumetric density of the liquid
SAR=the SAR measured from the formula that depends on the setup used. The SAR formulas are given below

For the calorimeter cell (150-450 MHz), the formula is:

$$SAR = c\frac{dT}{dt}$$

where
c=the specific heat for the liquid
dT/dt=the temperature rises over the time

For the waveguide setup (600-75000 MHz), the formula is:

$$SAR = \frac{4Pw}{ab\delta} e^{\frac{-2z}{\delta}}$$

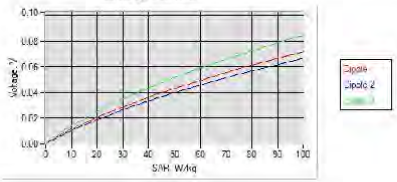
where
a=the larger cross-sectional of the waveguide
b=the smaller cross-sectional of the waveguide
δ=the skin depth for the liquid in the waveguide
Pw=the power delivered to the liquid

The below table summarize the ConvF for the calibrated liquid. The curves give examples for the measured SAR depending on the voltage in some liquid.

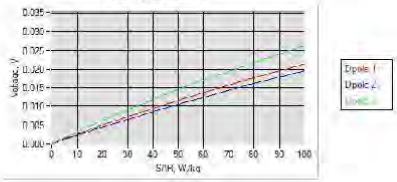
Liquid	Frequency (MHz*)	ConvF
HL450	450	0.86
BL450	450	0.78
HL750	750	0.80
BL750	750	0.87
HL850	835	0.81
BL850	835	0.80
HL900	900	0.76
BL900	900	0.87
HL1800	1800	0.96
BL1800	1800	1.01
HL1900	1900	1.04
BL1900	1900	1.11
HL2100	2100	1.00
BL2100	2100	1.16
HL2300	2300	1.11
BL2300	2300	1.23
HL2450	2450	1.11
BL2450	2450	1.32
HL2600	2600	1.03
BL2600	2600	1.19
HL5200	5200	1.18
BL5200	5200	0.97
HL5400	5400	1.17
BL5400	5400	1.00
HL5600	5600	1.20
BL5600	5600	0.95
HL5800	5800	1.15
BL5800	5800	1.05

(*) Frequency validity is +/-50MHz below 600MHz, +/-100MHz from 600MHz to 6GHz and +/-700MHz above 6GHz

SAR @ HL450

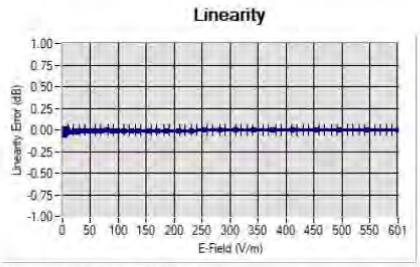


SAR @ HL5800

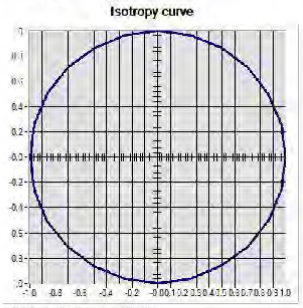


6 VERIFICATION RESULTS

The figures below represent the measured linearity and axial isotropy for this probe. The probe specification is +/-0.2 dB for linearity and +/-0.15 dB for axial isotropy.



Linearity +/-1.48% (+/-0.06dB)



Isotropy +/-0.25% (+/-0.01dB)

7 LIST OF EQUIPMENT

Equipment Summary Sheet				
Equipment Description	**Manufacturer / Model**	**Identification No.**	**Current Calibration Date**	**Next Calibration Date**
CALIPROBE Test Bench	Version 2	NA	Validated. No cal required.	Validated. No cal required.
Network Analyzer	Rohde & Schwarz ZVM	100203	08/2021	08/2024
Network Analyzer	Agilent 8753ES	MY40003210	10/2019	10/2023
Network Analyzer – Calibration kit	HP 85033D	3423A08186	06/2021	06/2027
Network Analyzer – Calibration kit	Rohde & Schwarz ZV-Z235	101223	07/2022	07/2025
Multimeter	Keithley 2000	4013982	02/2023	02/2026
Signal Generator	Rohde & Schwarz SMB	106589	03/2022	03/2025
Amplifier	MVG	MODU-023-C-0002	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Power Meter	NI-USB 5680	170100013	06/2021	06/2024
Power Meter	Keysight U2000A	SN: MY62340002	10/2022	10/2025
Directional Coupler	Krytar 158020	131467	Characterized prior to test. No cal required.	Characterized prior to test. No cal required.
Fluoroptic Thermometer	LumaSense Luxtron 812	94264	09/2022	09/2025
Coaxial cell	MVG	SN 32/16 COAXCELL_1	Validated. No cal required.	Validated. No cal required.
Waveguide	MVG	SN 32/16 WG2_1	Validated. No cal required.	Validated. No cal required.
Liquid transition	MVG	SN 32/16 WGLIQ_0G600_1	Validated. No cal required.	Validated. No cal required.
Waveguide	MVG	SN 32/16 WG4_1	Validated. No cal required.	Validated. No cal required.
Liquid transition	MVG	SN 32/16 WGLIQ_0G900_1	Validated. No cal required.	Validated. No cal required.
Waveguide	MVG	SN 32/16 WG6_1	Validated. No cal required.	Validated. No cal required.
Liquid transition	MVG	SN 32/16 WGLIQ_1G500_1	Validated. No cal required.	Validated. No cal required.
Waveguide	MVG	SN 32/16 WG8_1	Validated. No cal required.	Validated. No cal required.

Liquid transition	MVG	SN 32/16 WGLIQ_1G800B_1	Validated. No cal required.	Validated. No cal required.
Liquid transition	MVG	SN 32/16 WGLIQ_1G800H_1	Validated. No cal required.	Validated. No cal required.
Waveguide	MVG	SN 32/16 WG10_1	Validated. No cal required.	Validated. No cal required.
Liquid transition	MVG	SN 32/16 WGLIQ_3G500_1	Validated. No cal required.	Validated. No cal required.
Waveguide	MVG	SN 32/16 WG12_1	Validated. No cal required.	Validated. No cal required.
Liquid transition	MVG	SN 32/16 WGLIQ_5G000_1	Validated. No cal required.	Validated. No cal required.
Waveguide	MVG	SN 32/16 WG14_1	Validated. No cal required.	Validated. No cal required.
Liquid transition	MVG	SN 32/16 WGLIQ_7G000_1	Validated. No cal required.	Validated. No cal required.
Temperature / Humidity Sensor	Testo 184 H1	44225320	06/2021	06/2024

SAR Reference Dipole Calibration Report

Ref : ACR.329.8.21.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 REFERENCE DIPOLE
FREQUENCY: 750 MHZ
SERIAL NO.: SN 47/21 DIP 0G750-620

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

Calibration date: 11/25/2021

Accreditations #2-6789 and #2-6814
Scope available on www.cofrac.fr

Summary:

This document presents the method and results from an accredited SAR reference dipole calibration performed in MVG using the COMOSAR test bench. All calibration results are traceable to national metrology institutions.

Page: 1/13

SAR REFERENCE DIPOLE CALIBRATION REPORT

Ref: ACR.329.8.21.BES.A

	Name	*Function*	*Date*	*Signature*
Prepared by :	Jérôme Luc	Technical Manager	11/25/2021	
Checked by :	Jérôme Luc	Technical Manager	11/25/2021	
Approved by :	Yann Toutain	Laboratory Director	11/25/2021	Yann TOUTAIN 2021.11.25 11:51:55 +01'00'

	Customer Name
Distribution :	Shenzhen BCTC Technology Co., Ltd.

Issue	*Name*	*Date*	*Modifications*
A	Jérôme Luc	11/25/2021	Initial release

TABLE OF CONTENTS

1 INTRODUCTION

This document contains a summary of the requirements set forth by the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards for reference dipoles used for SAR measurement system validations and the measurements that were performed to verify that the product complies with the fore mentioned standards.

2 DEVICE UNDER TEST

Device Under Test	
Device Type	COMOSAR 750 MHz REFERENCE DIPOLE
Manufacturer	MVG
Model	SID750
Serial Number	SN 47/21 DIP 0G750-620
Product Condition (new / used)	New

3 PRODUCT DESCRIPTION

3.1 GENERAL INFORMATION

MVG's COMOSAR Validation Dipoles are built in accordance to the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards. The product is designed for use with the COMOSAR test bench only.

Figure 1 – *MVG COMOSAR Validation Dipole*

4 MEASUREMENT METHOD

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards provide requirements for reference dipoles used for system validation measurements. The following measurements were performed to verify that the product complies with the fore mentioned standards.

4.1 RETURN LOSS REQUIREMENTS

The dipole used for SAR system validation measurements and checks must have a return loss of -20 dB or better. The return loss measurement shall be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. A direct method is used with a network analyser and its calibration kit, both with a valid ISO17025 calibration.

4.2 MECHANICAL REQUIREMENTS

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards specify the mechanical components and dimensions of the validation dipoles, with the dimension's frequency and phantom shell thickness dependent. The COMOSAR test bench employs a 2 mm phantom shell thickness therefore the dipoles sold for use with the COMOSAR test bench comply with the requirements set forth for a 2 mm phantom shell thickness. A direct method is used with a ISO17025 calibrated caliper.

5 MEASUREMENT UNCERTAINTY

All uncertainties listed below represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2, traceable to the Internationally Accepted Guides to Measurement Uncertainty.

5.1 RETURN LOSS

The following uncertainties apply to the return loss measurement:

Frequency band	Expanded Uncertainty on Return Loss
400-6000MHz	0.08 LIN

5.2 DIMENSION MEASUREMENT

The following uncertainties apply to the dimension measurements:

Length (mm)	Expanded Uncertainty on Length
0 - 300	0.20 mm
300 - 450	0.44 mm

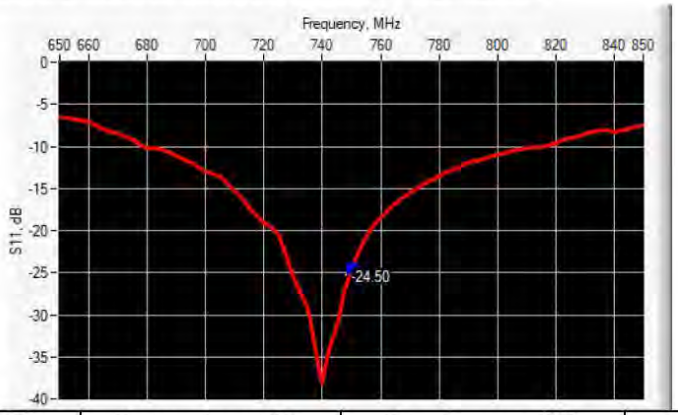
5.3 VALIDATION MEASUREMENT

The guidelines outlined in the IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards were followed to generate the measurement uncertainty for validation measurements.

Scan Volume	Expanded Uncertainty
1 g	19 % (SAR)
10 g	19 % (SAR)

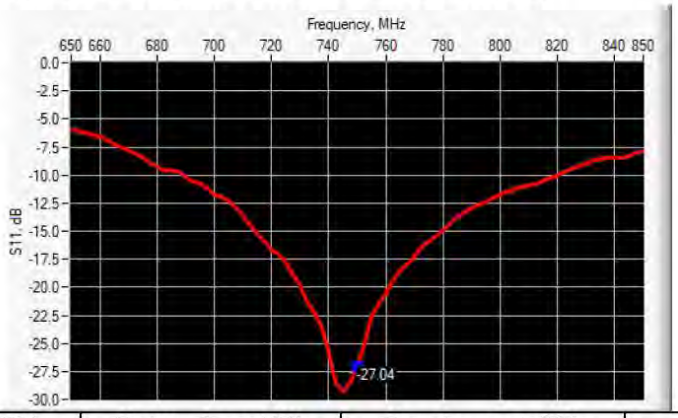
6 CALIBRATION MEASUREMENT RESULTS

6.1 RETURN LOSS AND IMPEDANCE IN HEAD LIQUID



Frequency (MHz)	Return Loss (dB)	Requirement (dB)	Impedance
750	-24.50	-20	55.7 Ω - 1.7 jΩ

6.2 RETURN LOSS AND IMPEDANCE IN BODY LIQUID



Frequency (MHz)	Return Loss (dB)	Requirement (dB)	Impedance
750	-27.04	-20	53.8 Ω + 2.3 jΩ

6.3 MECHANICAL DIMENSIONS

Frequency MHz	L mm		h mm		d mm	
	required	measured	required	measured	required	measured
300	420.0 ±1 %.		250.0 ±1 %.		6.35 ±1 %.	
450	290.0 ±1 %.		166.7 ±1 %.		6.35 ±1 %.	
750	176.0 ±1 %.	177.28	100.0 ±1 %.	99.79	6.35 ±1 %.	6.35
835	161.0 ±1 %.		89.8 ±1 %.		3.6 ±1 %.	
900	149.0 ±1 %.		83.3 ±1 %.		3.6 ±1 %.	
1450	89.1 ±1 %.		51.7 ±1 %.		3.6 ±1 %.	
1500	86.2 ±1 %.		50.0 ±1 %.		3.6 ±1 %.	
1640	79.0 ±1 %.		45.7 ±1 %.		3.6 ±1 %.	
1750	75.2 ±1 %.		42.9 ±1 %.		3.6 ±1 %.	
1800	72.0 ±1 %.		41.7 ±1 %.		3.6 ±1 %.	
1900	68.0 ±1 %.		39.5 ±1 %.		3.6 ±1 %.	
1950	66.3 ±1 %.		38.5 ±1 %.		3.6 ±1 %.	
2000	64.5 ±1 %.		37.5 ±1 %.		3.6 ±1 %.	
2100	61.0 ±1 %.		35.7 ±1 %.		3.6 ±1 %.	
2300	55.5 ±1 %.		32.6 ±1 %.		3.6 ±1 %.	
2450	51.5 ±1 %.		30.4 ±1 %.		3.6 ±1 %.	
2600	48.5 ±1 %.		28.8 ±1 %.		3.6 ±1 %.	
3000	41.5 ±1 %.		25.0 ±1 %.		3.6 ±1 %.	
3300	-		-		-	
3500	37.0±1 %.		26.4 ±1 %.		3.6 ±1 %.	
3700	34.7±1 %.		26.4 ±1 %.		3.6 ±1 %.	
3900	-		-		-	
4200	-		-		-	
4600	-		-		-	
4900	-		-		-	

7 VALIDATION MEASUREMENT

The IEC/IEEE 62209-1528 and FCC KDB865664 D01 standards state that the system validation measurements must be performed using a reference dipole meeting the fore mentioned return loss and mechanical dimension requirements. The validation measurement must be performed against a liquid filled flat phantom, with the phantom constructed as outlined in the fore mentioned standards. Per the standards, the dipole shall be positioned below the bottom of the phantom, with the dipole length centered and parallel to the longest dimension of the flat phantom, with the top surface of the dipole at the described distance from the bottom surface of the phantom.