

Table 14.1-15: SAR Values (LTE Band14- Head)

Frequency		Mode	Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz											
23330	793	1RB_Mid	Left	Touch	Fig.11	22.99	23	0.349	0.35	0.538	0.54	-0.18
23330	793	1RB_Mid	Left	Tilt	/	22.99	23	0.200	0.20	0.271	0.27	-0.08
23330	793	1RB_Mid	Right	Touch	/	22.99	23	0.394	0.39	0.591	0.59	0.02
23330	793	1RB_Mid	Right	Tilt	/	22.99	23	0.160	0.16	0.220	0.22	0.06
23330	793	25RB_Low	Left	Touch	/	21.99	22	0.281	0.28	0.435	0.44	0.05
23330	793	25RB_Low	Left	Tilt	/	21.99	22	0.159	0.16	0.214	0.21	0.12
23330	793	25RB_Low	Right	Touch	/	21.99	22	0.319	0.32	0.479	0.48	-0.01
23330	793	25RB_Low	Right	Tilt	/	21.99	22	0.133	0.13	0.183	0.18	-0.06

Note1: The LTE mode is QPSK_10MHz.

Table 14.1-16: SAR Values (LTE Band14 - Body)

Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
23330	793	1RB_Mid	Front	/	22.99	23	0.172	0.17	0.222	0.22	0.09
23330	793	1RB_Mid	Rear	Fig.16	22.99	23	0.381	0.38	0.533	0.53	0.13
23330	793	1RB_Mid	Rear unfold	/	22.99	23	0.227	0.23	0.320	0.32	0.02
23330	793	25RB_Low	Front	/	21.99	22	0.134	0.13	0.173	0.17	-0.14
23330	793	25RB_Low	Rear	/	21.99	22	0.316	0.32	0.442	0.44	0.08
23330	793	25RB_Low	Rear unfold	/	21.99	22	0.189	0.19	0.264	0.26	0.14

Note1: The distance between the EUT and the phantom bottom is 15mm.

Note2: The LTE mode is QPSK_10MHz.

14.2 SAR results for Standard procedure

There is zoom scan measurement to be added for the highest measured SAR in each exposure configuration/band.

Table 14.2-1: SAR Values (WCDMA 850 MHz Band - Head)

Frequency		Side	Test Position	Figure No./Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
		Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5 °C				
4183	836.4	Right	Touch	Fig.1	23.98	24	0.384	0.39	0.604	0.61	-0.19

Table 14.2-2: SAR Values (WCDMA 850 MHz Band - Body)

Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)	
Ch.	MHz										
		Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5 °C				
4233	846.6	Rear	Fig.2	23.95	24	0.379	0.38	0.515	0.52	0.09	

Note: The distance between the EUT and the phantom bottom is 15mm.

Table 14.2-3: SAR Values (WCDMA 1700 MHz Band - Head)

Frequency		Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
		Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5 °C				
1513	1752.6	Left	Touch	Fig.3	22.78	23	0.127	0.13	0.192	0.20	-0.06

Table 14.2-4: SAR Values (WCDMA 1700 MHz Band - Body)

Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)	
Ch.	MHz										
		Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5 °C				
1513	1752.6	Rear	Fig.4	22.78	23	0.581	0.61	0.979	1.03	-0.14	

Note1: The distance between the EUT and the phantom bottom is 15mm.

Table 14.2-5: SAR Values (WCDMA 1900 MHz Band - Head)

Frequency		Side	Test Position	Figure No./Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
		Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5 °C				
9538	1907.6	Left	Touch	Fig.5	22.88	23	0.175	0.18	0.271	0.28	-0.08

Table 14.2-6: SAR Values (WCDMA 1900 MHz Band - Body)

Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)	
Ch.	MHz										
		Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5 °C				
9262	1852.4	Rear	Fig.6	22.92	23	0.541	0.55	0.902	0.92	-0.10	

Note: The distance between the EUT and the phantom bottom is 15mm.

Table 14.2-7: SAR Values (LTE Band2 - Head)

Ambient Temperature: 22.9°C						Liquid Temperature: 22.5°C						
Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz											
18700	1860	1RB_Mid	Left	Touch	Fig.7	23.82	24	0.268	0.28	0.402	0.42	0.01

Note1: The LTE mode is QPSK_20MHz.

Table 14.2-8: SAR Values (LTE Band2 - Body)

Ambient Temperature: 22.9°C						Liquid Temperature: 22.5°C					
Frequency		Mode	Test Position	Figure No.	Conducted Power (dBm)	tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
18700	1860	1RB_Mid	Rear	Fig.8	23.82	24	0.621	0.65	1.030	1.07	-0.05

Note1: The distance between the EUT and the phantom bottom is 15mm. Note2: The LTE mode is QPSK_20MHz.

Table 14.2-9: SAR Values (LTE Band4 - Head)

Ambient Temperature: 22.9°C						Liquid Temperature: 22.5°C						
Frequency		Mode	Side	Test Position	Figure No./ Note	Conduct Power (dBm)	tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz											
20300	1745	1RB_High	Left	Touch	Fig.9	23.74	24	0.186	0.20	0.280	0.30	0.08

Note1: The LTE mode is QPSK_20MHz.

Table 14.2-10: SAR Values (LTE Band4 - Body)

Ambient Temperature: 22.9°C						Liquid Temperature: 22.5°C					
Frequency		Mode	Test Position	Figure No./ Note	Conduct Power (dBm)	tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
20300	1745	1RB_Mid	Rear	Fig.10	23.74	24	0.588	0.62	0.989	1.05	-0.04

Note1: The distance between the EUT and the phantom bottom is 15mm. Note2: The LTE mode is QPSK_20MHz.

Table 14.2-11: SAR Values (LTE Band5 - Head)

Ambient Temperature: 22.9°C						Liquid Temperature: 22.5°C						
Frequency		Mode	Side	Test Position	Figure No./ Note	Conducted Power (dBm)	tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz											
20425	829	1RB_Mid	Right	Touch	Fig.11	23.98	24	0.393	0.39	0.632	0.63	0.16

Note1: The LTE mode is QPSK_20MHz.

Table 14.2-12: SAR Values (LTE Band5 - Body)

Ambient Temperature: 22.9°C						Liquid Temperature: 22.5°C					
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
20425	829	1RB_Mid	Rear	Fig.12	23.98	24	0.376	0.38	0.520	0.52	-0.07

Note1: The distance between the EUT and the phantom bottom is 15mm. Note2: The LTE mode is QPSK_10MHz.

Table 14.2-13: SAR Values (LTE Band12 - Head)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C						
Frequency		Mode	Side	Test Position	Figure No./ Note	Conducted Power (dBm)	tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz											
23060	704	1RB_Mid	Right	Touch	Fig.13	23.98	24	0.240	0.24	0.380	0.38	0.02

Note1: The LTE mode is QPSK_10MHz.

Table 14.2-14: SAR Values (LTE Band12 - Body)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
23060	704	1RB_Mid	Rear	Fig.14	23.98	24	0.251	0.25	0.349	0.35	0.02

Note1: The distance between the EUT and the phantom bottom is 15mm. Note2: The LTE mode is QPSK_10MHz.

Table 14.2-15: SAR Values (LTE Band14 - Head)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C						
Frequency		Mode	Side	Test Position	Figure No./ Note	Conducted Power (dBm)	tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz											
23330	793	1RB_Mid	Left	Touch	Fig.15	22.99	23	0.349	0.35	0.538	0.54	-0.18

Note1: The LTE mode is QPSK_10MHz.

Table 14.2-16: SAR Values (LTE Band14 - Body)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz										
23330	793	1RB_Mid	Rear	Fig.16	22.99	23	0.381	0.38	0.533	0.53	0.13

Note1: The distance between the EUT and the phantom bottom is 15mm. Note2: The LTE mode is QPSK_10MHz.

14.3 WLAN Evaluation for 2.4G

According to the KDB248227 D01, SAR is measured for 2.4GHz 802.11b DSSS using the initial test position procedure.

Head Evaluation

Table 14.3-1: SAR Values (WLAN - Head)– 802.11b (Fast SAR)

Frequency		Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5 °C		Power Drift (dB)
Ch.	MHz						Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	
11	2462	Left	Touch	/	17.48	18	0.124	0.14	0.241	0.27	0.19
11	2462	Left	Tilt	/	17.48	18	0.064	0.07	0.218	0.25	0.15
11	2462	Right	Touch	/	17.48	18	0.039	0.04	0.106	0.12	0.16
11	2462	Right	Tilt	/	17.48	18	0.033	0.04	0.107	0.12	-0.11

As shown above table, the initial test position for head is “Left Touch”. So the head SAR of WLAN is presented as below:

Table 14.3-2: SAR Values (WLAN - Head)– 802.11b (Full SAR)

Frequency		Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5 °C		Power Drift (dB)
Ch.	MHz						Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	
11	2462	Left	Touch	Fig.17	18.44	19.00	0.139	0.16	0.259	0.29	0.09

Note1: When the reported SAR of the initial test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest estimated 1-g SAR conditions determined by area scans, on the highest maximum output power channel, until the reported SAR is \leq 0.8 W/kg.

Note2: For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel until the reported SAR is \leq 1.2 W/kg or all required channels are tested.

According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. The scaled reported SAR is presented as below.

Table 14.3-3: SAR Values (WLAN - Head) – 802.11b (Scaled Reported SAR)

Frequency		Side	Test Position	Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5 °C	
Ch.	MHz			Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
11	2462	Left	Touch	100%	100%	0.29	0.29

SAR is not required for OFDM because the 802.11b adjusted SAR \leq 1.2 W/kg.

Body Evaluation

Table 14.3-4: SAR Values (WLAN - Body)– 802.11b (Fast SAR)

Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9°C		Liquid Temperature: 22.5°C		Power Drift (dB)
Ch.	MHz					Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	
11	2462	Front	/	18.44	19	0.031	0.03	0.054	0.06	-0.12
11	2462	Rear	/	18.44	19	0.060	0.07	0.105	0.12	-0.03
11	2462	Rear unfold	/	18.44	19	0.106	0.12	0.186	0.21	0.02

As shown above table, the initial test position for body is “Rear”. So the body SAR of WLAN is presented as below:

Table 14.3-5: SAR Values (WLAN - Body)– 802.11b (Full SAR)

Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9°C		Liquid Temperature: 22.5°C		Power Drift (dB)
Ch.	MHz					Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	
11	2462	Rear unfold	Fig.18	18.44	19.00	0.104	0.12	0.181	0.21	0.02

Note1: When the reported SAR of the initial test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest estimated 1-g SAR conditions determined by area scans, on the highest maximum output power channel, until the reported SAR is \leq 0.8 W/kg.

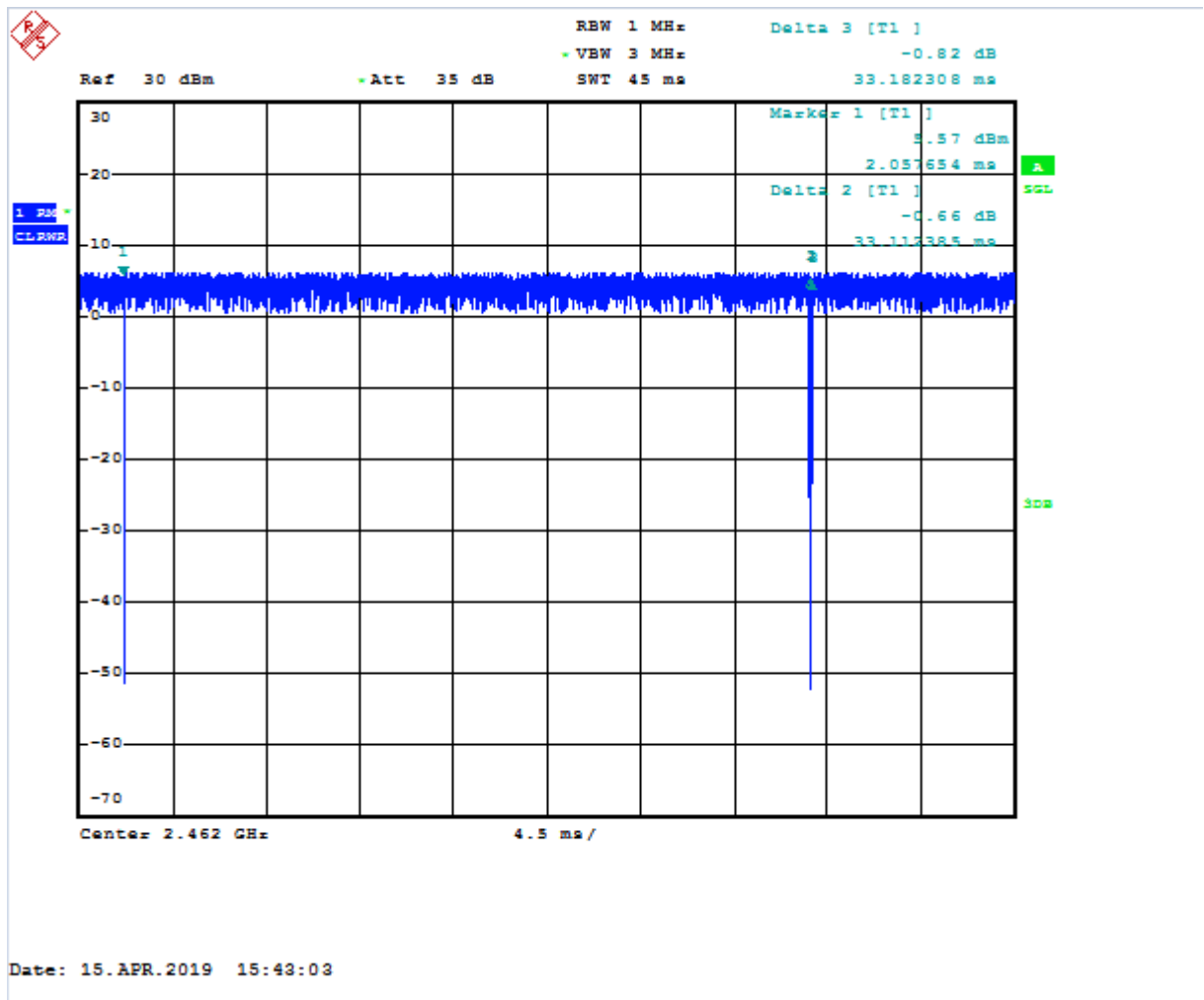
Note2: For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel until the reported SAR is \leq 1.2 W/kg or all required channels are tested.

According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. The scaled reported SAR is presented as below.

Table 14.3-6: SAR Values (WLAN - Body) – 802.11b (Scaled Reported SAR)

Frequency		Test Position	Ambient Temperature: 22.9°C		Liquid Temperature: 22.5°C	
Ch.	MHz		Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
2412	11	Rear	100%	100%	0.21	0.21

SAR is not required for OFDM because the 802.11b adjusted SAR \leq 1.2 W/kg.



Picture 14.1 Duty factor plot for CH1

15 SAR Measurement Variability

SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium.

The following procedures are applied to determine if repeated measurements are required.

- 1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
- 2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
- 3) 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 ($\sim 10\%$ from the 1-g SAR limit).
- 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 .

Table 15.1: SAR Measurement Variability for Body WCDMA1700 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
1513	1752.6	1RB_Mid	Rear	15	1.03	1.00	1.03	/

Table 15.2: SAR Measurement Variability for Body WCDMA1900 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
9400	1880	1RB_Mid	Rear	15	0.9	0.86	1.05	/

Table 15.3: SAR Measurement Variability for Body WCDMA1900 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
9262	1852.4	1RB_Mid	Rear	15	0.92	0.89	1.03	/

Table 15.4: SAR Measurement Variability for Body LTE B2 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
19100	1900	1RB_Mid	Rear	15	1.00	0.94	1.06	/

Table 15.5: SAR Measurement Variability for Body LTE B2 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
18700	1860	1RB_Mid	Rear	15	1.07	1.03	1.04	/

Table 15.6: SAR Measurement Variability for Body LTE B2 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
19100	1900	1RB_Mid	Rear	15	0.94	1.03	1.04	/

Table 15.7: SAR Measurement Variability for Body LTE B2 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
18900	1880	1RB_Mid	Rear	15	0.99	0.95	1.04	/

Table 15.8: SAR Measurement Variability for Body LTE B2 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
18700	1860	1RB_Mid	Rear	15	1.04	1.01	1.03	/

Table 15.9: SAR Measurement Variability for Body LTE B2 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
18900	1880	1RB_Mid	Rear	15	0.8	0.76	1.05	/

Table 15.10: SAR Measurement Variability for Body LTE B4 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
20300	1745	1RB_High	Rear	15	1.05	1.03	1.02	/

Table 15.10: SAR Measurement Variability for Body LTE B4 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
20175	1732.5	1RB_High	Rear	15	1.06	1.03	1.03	/

Table 15.11: SAR Measurement Variability for Body LTE B4 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
20050	1720	1RB_High	Rear	15	1.00	0.97	1.03	/

Table 15.12: SAR Measurement Variability for Body LTE B4 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
20300	1745	50RB_Low	Rear	15	0.88	0.84	1.05	/

Table 15.13: SAR Measurement Variability for Body LTE B4 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
20175	1732.5	50RB_Low	Rear	15	0.82	0.77	1.06	/

16 Measurement Uncertainty

16.1 Measurement Uncertainty for Normal SAR Tests (300MHz~3GHz)

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	6.0	N	1	1	1	6.0	6.0	∞
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	N	1	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	∞
10	RF ambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	∞
11	Probe positioned mech. restrictions	B	0.4	R	$\sqrt{3}$	1	1	0.2	0.2	∞
12	Probe positioning with respect to phantom shell	B	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	∞
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
Test sample related										
14	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
15	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
16	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up										
17	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
18	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
19	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
20	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
21	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521

Combined standard uncertainty	$u_c = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$					9.55	9.43	257
Expanded uncertainty (confidence interval of 95 %)	$u_e = 2u_c$					19.1	18.9	

16.2 Measurement Uncertainty for Normal SAR Tests (3~6GHz)

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	6.55	N	1	1	1	6.55	6.55	∞
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	2.0	R	$\sqrt{3}$	1	1	1.2	1.2	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	∞
10	RFambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	∞
11	Probe positioned mech. restrictions	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
12	Probe positioning with respect to phantom shell	B	6.7	R	$\sqrt{3}$	1	1	3.9	3.9	∞
13	Post-processing	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
Test sample related										
14	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
15	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
16	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up										
17	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
18	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
19	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
20	Liquid permittivity	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞

	(target)									
21	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521
Combined standard uncertainty		$u_c = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$						10.7	10.6	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						21.4	21.1	

16.3 Measurement Uncertainty for Fast SAR Tests (300MHz~3GHz)

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	6.0	N	1	1	1	6.0	6.0	∞
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	∞
10	RFambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	∞
11	Probe positioned mech. Restrictions	B	0.4	R	$\sqrt{3}$	1	1	0.2	0.2	∞
12	Probe positioning with respect to phantom shell	B	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	∞
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
14	Fast SAR z-Approximation	B	7.0	R	$\sqrt{3}$	1	1	4.0	4.0	∞
Test sample related										
15	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
16	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
17	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up										
18	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞

19	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
20	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
21	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
22	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521
Combined standard uncertainty		$u_c = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$						10.4	10.3	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						20.8	20.6	

16.4 Measurement Uncertainty for Fast SAR Tests (3~6GHz)

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	6.55	N	1	1	1	6.55	6.55	∞
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	2.0	R	$\sqrt{3}$	1	1	1.2	1.2	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	∞
10	RFambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	∞
11	Probe positioned mech. Restrictions	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
12	Probe positioning with respect to phantom shell	B	6.7	R	$\sqrt{3}$	1	1	3.9	3.9	∞
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
14	Fast SAR z-Approximation	B	14.0	R	$\sqrt{3}$	1	1	8.1	8.1	∞
Test sample related										
15	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	71
16	Device holder	A	3.4	N	1	1	1	3.4	3.4	5

	uncertainty									
17	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up										
18	Phantom uncertainty	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
19	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
20	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
21	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
22	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521
Combined standard uncertainty		$u_c = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$						13.5	13.4	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						27.0	26.8	

17 MAIN TEST INSTRUMENTS

Table 17.1: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	E5071C	MY46110673	January 24, 2019	One year
02	Power meter	NRVD	102083	October 24, 2018	One year
03	Power sensor	NRV-Z5	100542		
04	Signal Generator	E4438C	MY49071430	January 23, 2019	One Year
05	Amplifier	60S1G4	0331848	No Calibration Requested	
06	BTS	E5515C	MY50263375	January 17, 2019	One year
07	BTS	CMW500	159890	January 3, 2019	One year
08	E-field Probe	SPEAG EX3DV4	7514	August 27, 2018	One year
09	DAE	SPEAG DAE4	1525	September 18, 2018	One year
10	Dipole Validation Kit	SPEAG D750V3	1017	July 23, 2018	One year
11	Dipole Validation Kit	SPEAG D835V2	4d069	July 23, 2018	One year
12	Dipole Validation Kit	SPEAG D1750V2	1003	July 20, 2018	One year
13	Dipole Validation Kit	SPEAG D1900V2	5d101	July 24, 2018	One year
14	Dipole Validation Kit	SPEAG D2450V2	853	July 24, 2018	One year

END OF REPORT BODY

ANNEX A Graph Results

WCDMA850 Right Cheek Middle

Date: 2019-4-10

Electronics: DAE4 Sn1525

Medium: Head 835 MHz

Medium parameters used: $f = 848.8$ MHz; $\sigma = 0.893$ mho/m; $\epsilon_r = 40.71$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C

Communication System: WCDMA 850 Frequency: 848.8 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN7514 ConvF(9.09, 9.09, 9.09)

Area Scan (71x151x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.823 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 6.604 V/m; Power Drift = -0.19 dB

Peak SAR (extrapolated) = 1.06 W/kg

SAR(1 g) = 0.604 W/kg; SAR(10 g) = 0.384 W/kg

Maximum value of SAR (measured) = 0.876 W/kg

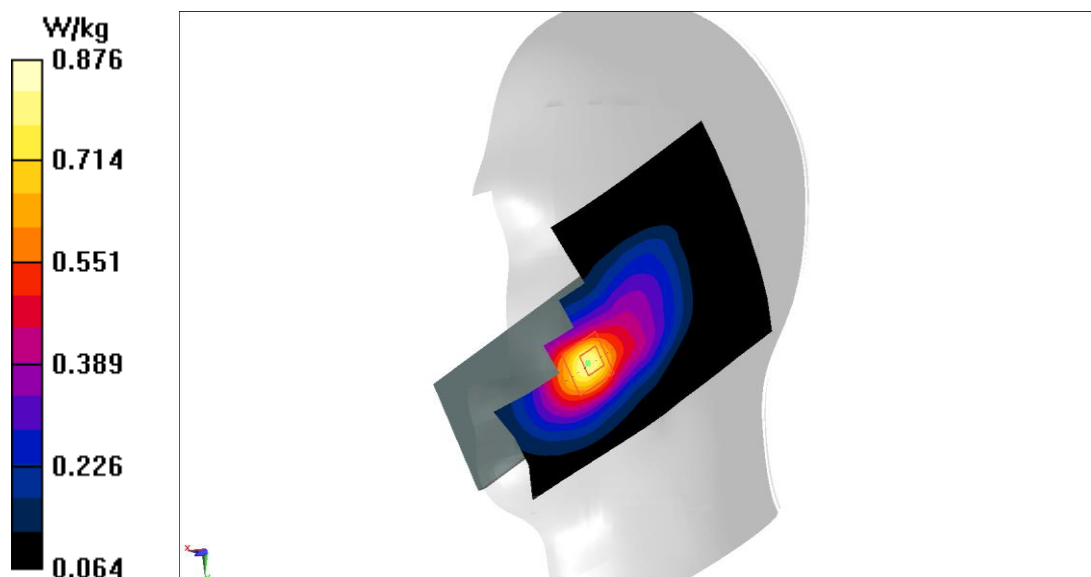


Fig.1 850MHz

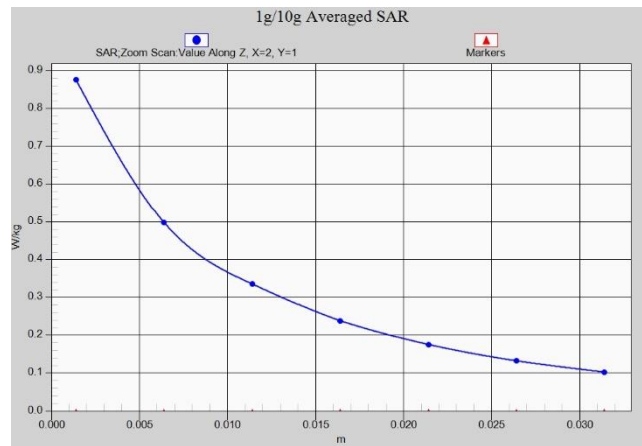


Fig. 1-1 Z-Scan at power reference point (850 MHz)

WCDMA850 Body Rear High

Date: 2019-4-10

Electronics: DAE4 Sn1525

Medium: Body 835 MHz

Medium parameters used: $f = 848.8$ MHz; $\sigma = 0.992$ mho/m; $\epsilon_r = 55.57$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C

Communication System: WCDMA 850 Frequency: 848.8 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN7514 ConvF(9.47, 9.47, 9.47)

Area Scan (91x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.567 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 23.54 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.684 W/kg

SAR(1 g) = 0.515 W/kg; SAR(10 g) = 0.379 W/kg

Maximum value of SAR (measured) = 0.604 W/kg

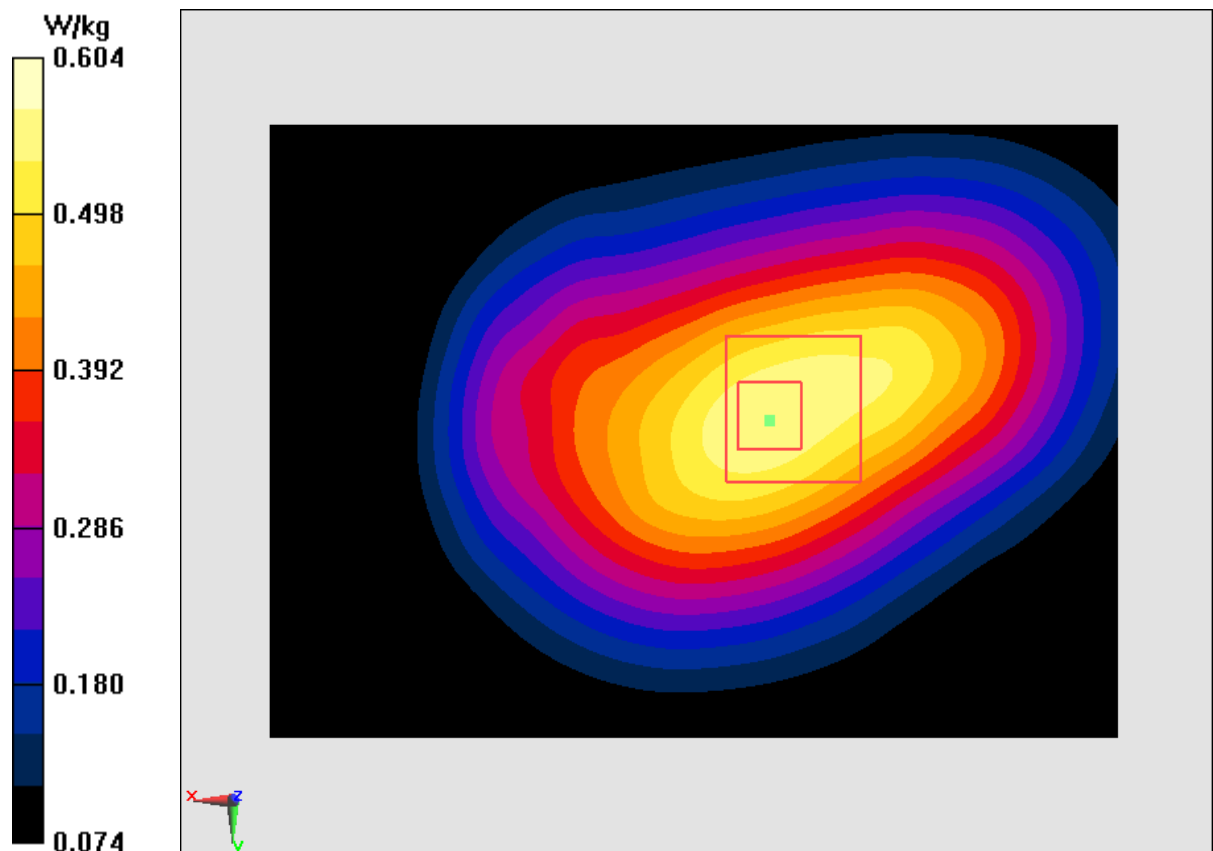


Fig.2 850 MHz

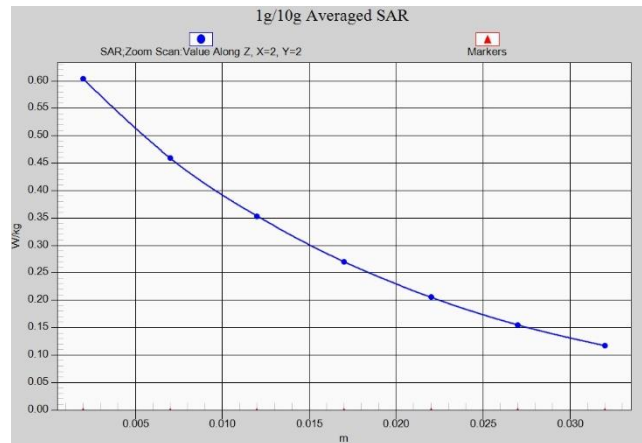


Fig. 2-1 Z-Scan at power reference point (850 MHz)

WCDMA 1700 Left Cheek High

Date: 2019-4-11

Electronics: DAE4 Sn1525

Medium: Head 1750 MHz

Medium parameters used (interpolated): $f = 1712.4$ MHz; $\sigma = 1.307$ mho/m; $\epsilon_r = 40.677$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C

Communication System: WCDMA 1700 Frequency: 1712.4 MHz Duty Cycle: 1:1

Probe: EX3DV4– SN7514 ConvF(8.10, 8.10, 8.10)

Area Scan (71x151x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.248 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.302 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.287 W/kg

SAR(1 g) = 0.192 W/kg; SAR(10 g) = 0.127 W/kg

Maximum value of SAR (measured) = 0.253 W/kg

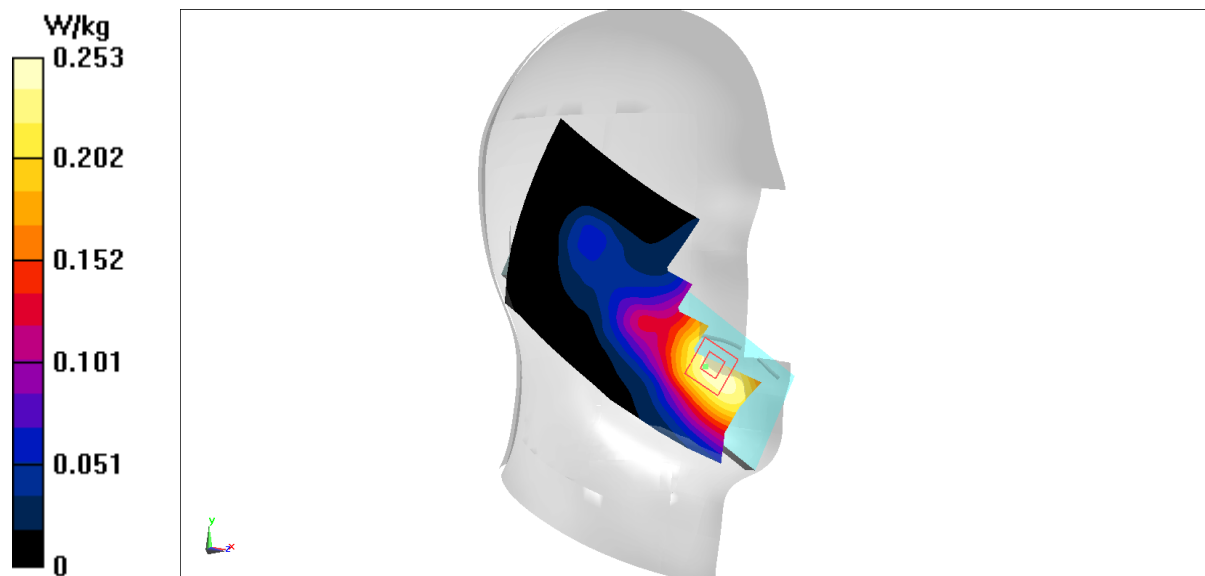


Fig.3 WCDMA1700

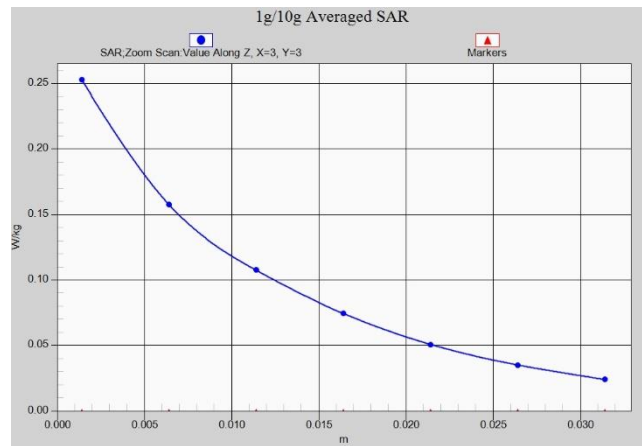


Fig. 3-1 Z-Scan at power reference point (WCDMA1700)

WCDMA 1700 Body Rear High

Date: 2019-4-11

Electronics: DAE4 Sn1525

Medium: Body 1750 MHz

Medium parameters used (interpolated): $f = 1752.6$ MHz; $\sigma = 1.509$ mho/m; $\epsilon_r = 53.718$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C

Communication System: WCDMA 1700 Frequency: 1752.6 MHz Duty Cycle: 1:1

Probe: EX3DV4- SN7514 ConvF(7.82,7.82, 7.82)

Area Scan (91x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.19 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.54 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 1.57 W/kg

SAR(1 g) = 0.979 W/kg; SAR(10 g) = 0.581 W/kg

Maximum value of SAR (measured) = 1.26 W/kg

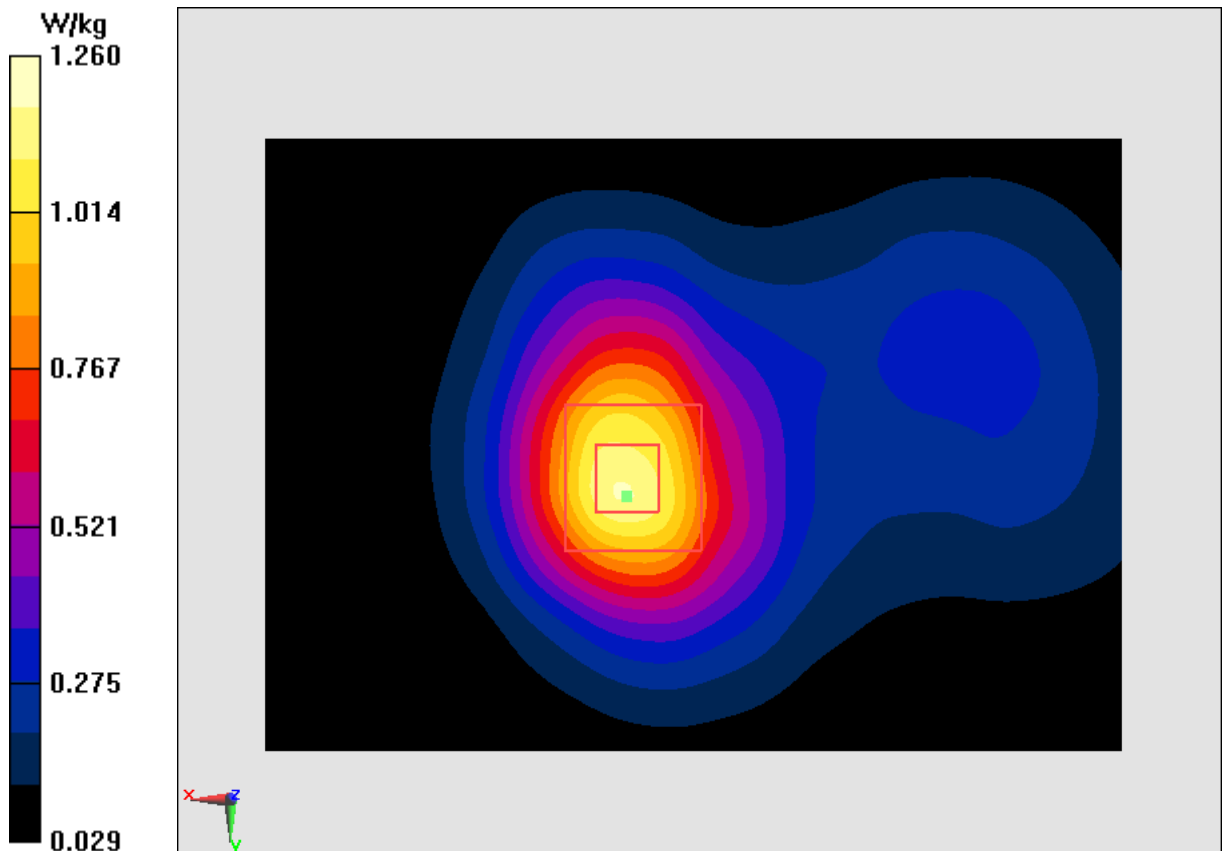


Fig.4 WCDMA1700

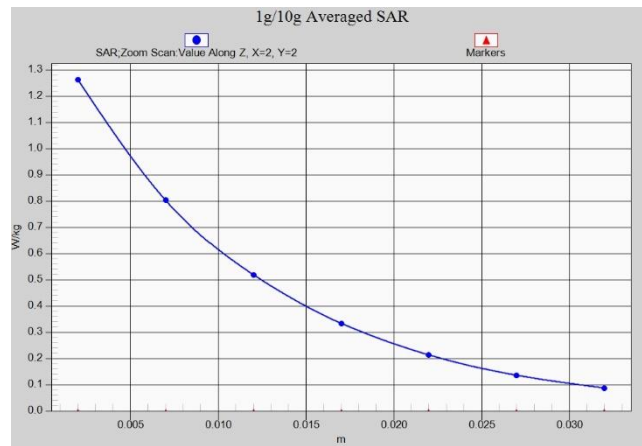


Fig. 4-1 Z-Scan at power reference point (WCDMA1700)

WCDMA1900 Left Cheek High

Date: 2019-4-12

Electronics: DAE4 Sn1525

Medium: Head 1900 MHz

Medium parameters used (interpolated): $f = 1909.8$ MHz; $\sigma = 1.462$ mho/m; $\epsilon_r = 40.13$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.9°C Liquid Temperature: 22.5°C

Communication System: WCDMA 1900MHz Frequency: 1909.8 MHz Duty Cycle: 1:1

Probe: EX3DV4– SN7514 ConvF(7.73, 7.73, 7.73)

Area Scan (71x151x1): Interpolated grid: $dx=1.000$ mm, $dy=1.000$ mm

Maximum value of SAR (interpolated) = 0.377 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 2.505 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.427 W/kg

SAR(1 g) = 0.271 W/kg; SAR(10 g) = 0.175 W/kg

Maximum value of SAR (measured) = 0.378 W/kg

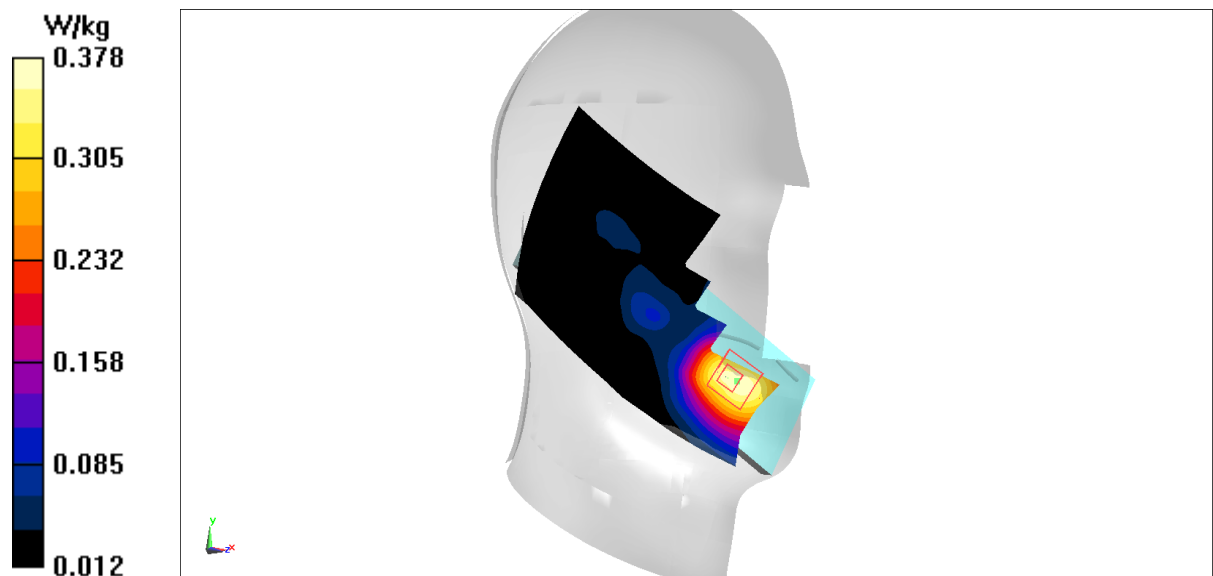


Fig.5 1900 MHz

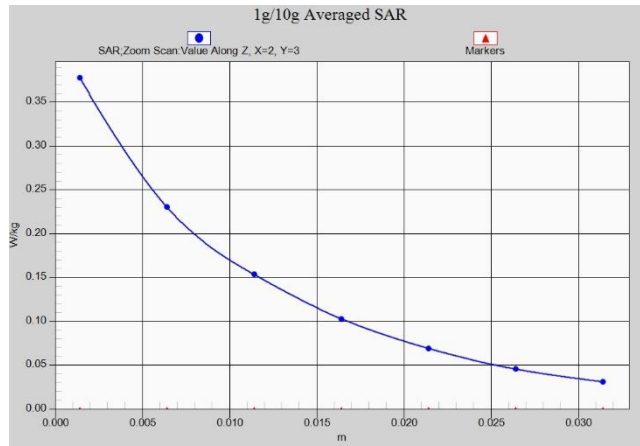


Fig. 5-1 Z-Scan at power reference point (1900 MHz)