SAR Data Summary – 835 MHz Body - WCDMA

MEASUREMENT RESULTS										
Gap	Plot	Frequency		Modulation	Position	End Power	RMC	Test Set Up	Measured SAR	Reported SAR
		MHz	Ch.			(dBm)			(W/kg)	(W/kg)
10 mm	1	836.6	4183	WCDMA	Side A	23.98	12.2 kbps	Test Loop 1	0.679	0.68
	----	836.6	4183	WCDMA	Side B	23.98	12.2 kbps	Test Loop 1	0.325	0.33
	----	836.6	4183	WCDMA	Side C	23.98	12.2 kbps	Test Loop 1	0.437	0.44
	----	836.6	4183	WCDMA	Side D	23.98	12.2 kbps	Test Loop 1	0.180	0.18
	----	836.6	4183	WCDMA	Side E	23.98	12.2 kbps	Test Loop 1	0.128	0.13
						Body 1.6 W/kg (mW/g) averaged over 1 gram				

1. SAR Measurement
   Phantom Configuration ☐Left Head ☒Eli4 ☐Right Head
   SAR Configuration ☐Head ☒Body
2. Test Signal Call Mode ☐Test Code ☒Base Station Simulator
3. Test Configuration ☐With Belt Clip ☐Without Belt Clip ☒N/A
4. Tissue Depth is at least 15.0 cm

SAR Data Summary – 835 MHz Body - GPRS

MEASUREMENT RESULTS										
Gap	Plot	Frequency		Rev Level/ Modulation	Position	End Power	TX Level	Multislot Configuration	Measured SAR (W/kg)	Reported SAR (W/kg)
		MHz	Ch.			(dBm)				
10 mm	2	836.6	190	GMSK	Side A	32.45	5	1 Slot	0.697	0.79
	----	836.6	190	GMSK	Side B	32.45	5	1 Slot	0.289	0.33
	----	836.6	190	GMSK	Side C	32.45	5	1 Slot	0.307	0.35
	----	836.6	190	GMSK	Side D	32.45	5	1 Slot	0.114	0.13
	----	836.6	190	GMSK	Side E	32.45	5	1 Slot	0.098	0.11
						Body 1.6 W/kg (mW/g) averaged over 1 gram				

1. SAR Measurement
   Phantom Configuration ☐Left Head ☒Eli4 ☐Right Head
   SAR Configuration ☐Head ☒Body
2. Test Signal Call Mode ☐Test Code ☒Base Station Simulator
3. Test Configuration ☐With Belt Clip ☐Without Belt Clip ☒N/A
4. Tissue Depth is at least 15.0 cm

SAR Data Summary – 835 MHz Body – LTE Band 5

MEASUREMENT RESULTS											
Gap	Plot	Position	Frequency		BW/ Modulation	RB Size	RB Offset	MPR Target	End Power	Measured SAR	Reported SAR
			MHz	Ch.					(dBm)	(W/kg)	(W/kg)
10 mm	3	Side A	836.5	20525	10 MHz/QPSK	1	0	0	22.97	0.391	0.50
	-----		836.5	20525	10 MHz/QPSK	25	0	1	22.05	0.309	0.39
	-----	Side B	836.5	20525	10 MHz/QPSK	1	0	0	22.97	0.247	0.31
	-----		836.5	20525	10 MHz/QPSK	25	0	1	22.05	0.187	0.23
	-----	Side C	836.5	20525	10 MHz/QPSK	1	0	0	22.97	0.379	0.48
	-----		836.5	20525	10 MHz/QPSK	25	0	1	22.05	0.304	0.38
	-----	Side D	836.5	20525	10 MHz/QPSK	1	0	0	22.97	0.196	0.25
	-----		836.5	20525	10 MHz/QPSK	25	0	1	22.05	0.156	0.19
	-----	Side E	836.5	20525	10 MHz/QPSK	1	0	0	22.97	0.0582	0.07
	-----		836.5	20525	10 MHz/QPSK	25	0	1	22.05	0.0474	0.06

Body 1.6 W/kg (mW/g) averaged over 1 gram

1. SAR Measurement
   Phantom Configuration ☐Left Head ☒Eli4 ☐Right Head
   SAR Configuration ☐Head ☒Body
2. Test Signal Call Mode ☐Test Code ☒Base Station Simulator
3. Test Configuration ☐With Belt Clip ☐Without Belt Clip ☒N/A
4. Tissue Depth is at least 15.0 cm

SAR Data Summary – 1900 MHz Body - WCDMA

MEASUREMENT RESULTS										
Gap	Plot	Frequency		Rev Level/ Modulation	Position	End Power	RMC	Test Set Up	Measured SAR	Reported SAR
		MHz	Ch.			(dBm)			(W/kg)	(W/kg)
10 mm	----	1852.4	9262	WCDMA	Side A	23.88	12.2 kbps	Test Loop 1	1.07	1.10
	----	1880.0	9400	WCDMA		23.90	12.2 kbps	Test Loop 1	0.852	0.87
	----	1907.6	9538	WCDMA		23.95	12.2 kbps	Test Loop 1	0.621	0.63
	----	1852.4	9262	WCDMA	Side B	23.88	12.2 kbps	Test Loop 1	0.114	0.12
	4	1852.4	9262	WCDMA	Side C	23.88	12.2 kbps	Test Loop 1	1.35	1.39
	----	1880.0	9400	WCDMA		23.90	12.2 kbps	Test Loop 1	1.13	1.16
	----	1907.6	9538	WCDMA		23.95	12.2 kbps	Test Loop 1	0.952	0.96
	----	1852.4	9262	WCDMA	Side D	23.88	12.2 kbps	Test Loop 1	0.128	0.13
	----	1852.4	9262	WCDMA	Side E	23.88	12.2 kbps	Test Loop 1	0.562	0.58
						Body 1.6 W/kg (mW/g) averaged over 1 gram				

1. SAR Measurement
   Phantom Configuration ☐Left Head ☒Eli4 ☐Right Head
   SAR Configuration ☐Head ☒Body
2. Test Signal Call Mode ☐Test Code ☒Base Station Simulator
3. Test Configuration ☐With Belt Clip ☐Without Belt Clip ☒N/A
4. Tissue Depth is at least 15.0 cm

SAR Data Summary – 1900 MHz Body - GPRS

MEASUREMENT RESULTS

Gap	Plot	Frequency		Rev Level/ Modulation	Position	End Power	TX Level	Multislot Configuration	Measured SAR (W/kg)	Reported SAR (W/kg)
		MHz	Ch.			(dBm)				
10 mm	----	1880.0	661	GMSK	Side A	29.20	0	1 Slot	0.317	0.38
	----	1880.0	661	GMSK	Side B	29.20	0	1 Slot	0.0397	0.05
	5	1880.0	661	GMSK	Side C	29.20	0	1 Slot	0.415	0.50
	----	1880.0	661	GMSK	Side D	29.20	0	1 Slot	0.0462	0.06
	----	1880.0	661	GMSK	Side E	29.20	0	1 Slot	0.179	0.22
						Body 1.6 W/kg (mW/g) averaged over 1 gram				

1. SAR Measurement
   Phantom Configuration ☐Left Head ☒Eli4 ☐Right Head
   SAR Configuration ☐Head ☒Body
2. Test Signal Call Mode ☐Test Code ☒Base Station Simulator
3. Test Configuration ☐With Belt Clip ☐Without Belt Clip ☒N/A
4. Tissue Depth is at least 15.0 cm

SAR Data Summary – 1900 MHz Body – LTE Band 2

MEASUREMENT RESULTS											
Gap	Plot	Position	Frequency		BW/ Modulation	RB Size	RB Offset	MPR Target	End Power	Measured SAR	Reported SAR
			MHz	Ch.					(dBm)	(W/kg)	(W/kg)
10 mm	-----	Side A	1860.0	18700	20 MHz/QPSK	1	0	0	23.48	1.11	1.25
	-----		1880.0	18900	20 MHz/QPSK	1	0	0	23.50	0.867	0.97
	-----		1900.0	19100	20 MHz/QPSK	1	0	0	23.34	0.773	0.90
	-----		1860.0	18700	20 MHz/QPSK	50	0	1	22.39	0.795	0.92
	-----		1880.0	18900	20 MHz/QPSK	50	0	1	22.61	0.689	0.75
	-----		1900.0	19100	20 MHz/QPSK	50	0	1	22.22	0.572	0.69
	-----	Side B	1860.0	18700	20 MHz/QPSK	1	0	0	23.48	0.142	0.16
	-----		1860.0	18700	20 MHz/QPSK	50	0	1	22.39	0.104	0.12
	-----	Side C	1860.0	18700	20 MHz/QPSK	1	0	0	23.48	1.14	1.29
	6		1880.0	18900	20 MHz/QPSK	1	0	0	23.50	1.27	1.43
	-----		1900.0	19100	20 MHz/QPSK	1	0	0	23.34	0.84	0.98
	-----		1860.0	18700	20 MHz/QPSK	50	0	1	22.39	0.96	1.11
	-----		1880.0	18900	20 MHz/QPSK	50	0	1	22.61	0.811	0.89
	-----		1900.0	19100	20 MHz/QPSK	50	0	1	22.22	0.658	0.79
	-----	Side D	1860.0	18700	20 MHz/QPSK	1	0	0	23.48	0.149	0.17
	-----		1860.0	18700	20 MHz/QPSK	50	0	1	22.39	0.112	0.13
	-----	Side E	1860.0	18700	20 MHz/QPSK	1	0	0	23.48	0.919	1.04
	-----		1880.0	18900	20 MHz/QPSK	1	0	0	23.50	0.705	0.79
	-----		1900.0	19100	20 MHz/QPSK	1	0	0	23.34	0.624	0.73
	-----		1860.0	18700	20 MHz/QPSK	50	0	1	22.39	0.635	0.73

Body 1.6 W/kg (mW/g) averaged over 1 gram

5. SAR Measurement
   Phantom Configuration ☐Left Head ☒Eli4 ☐Right Head
   SAR Configuration ☐Head ☒Body
6. Test Signal Call Mode ☐Test Code ☒Base Station Simulator
7. Test Configuration ☐With Belt Clip ☐Without Belt Clip ☒N/A
8. Tissue Depth is at least 15.0 cm

SAR Data Summary – 1735 MHz Body – LTE Band 4

MEASUREMENT RESULTS

Gap	Plot	Position	Frequency		BW/ Modulation	RB Size	RB Offset	MPR Target	End Power (dBm)	Measured SAR (W/kg)	Reported SAR (W/kg)
			MHz	Ch.							
10 mm	-----	Side A	1720.0	20050	20 MHz/QPSK	1	0	0	24.00	1.41	1.41
	-----		1732.5	20175	20 MHz/QPSK	1	0	0	23.10	1.07	1.32
	-----		1745.0	20300	20 MHz/QPSK	1	0	0	23.98	1.26	1.27
	-----		1720.0	20050	20 MHz/QPSK	50	0	1	22.21	0.914	1.10
	-----		1732.5	20175	20 MHz/QPSK	50	0	1	23.00	0.896	0.90
	-----		1745.0	20300	20 MHz//QPSK	50	0	1	22.61	0.947	1.04
	-----	Side B	1720.0	20050	20 MHz/QPSK	1	0	0	24.00	0.177	0.18
	-----		1720.0	20050	20 MHz/QPSK	50	0	1	22.21	0.113	0.14
	-----	Side C	1720.0	20050	20 MHz/QPSK	1	0	0	24.00	1.42	1.42
	7		1732.5	20175	20 MHz/QPSK	1	0	0	23.10	1.17	1.44
	-----		1745.0	20300	20 MHz/QPSK	1	0	0	23.98	1.26	1.27
	-----		1720.0	20050	20 MHz/QPSK	50	0	1	22.21	0.895	1.07
	-----		1732.5	20175	20 MHz/QPSK	50	0	1	23.00	0.886	0.89
	-----		1745.0	20300	20 MHz//QPSK	50	0	1	22.61	0.952	1.04
	-----	Side D	1720.0	20050	20 MHz/QPSK	1	0	0	24.00	0.0778	0.08
	-----		1720.0	20050	20 MHz/QPSK	50	0	1	22.21	0.0466	0.06
	-----	Side E	1720.0	20050	20 MHz/QPSK	1	0	0	24.00	1.05	1.05
	-----		1732.5	20175	20 MHz/QPSK	1	0	0	23.10	0.779	0.96
	-----		1745.0	20300	20 MHz/QPSK	1	0	0	23.98	0.924	0.93
	-----		1720.0	20050	20 MHz/QPSK	50	0	1	22.21	0.635	0.76

Body
1.6 W/kg (mW/g)
averaged over 1 gram

1. SAR Measurement
   Phantom Configuration ☐Left Head ☒Eli4 ☐Right Head
   SAR Configuration ☐Head ☒Body
2. Test Signal Call Mode ☐Test Code ☒Base Station Simulator
3. Test Configuration ☐With Belt Clip ☐Without Belt Clip ☒N/A
4. Tissue Depth is at least 15.0 cm

SAR Data Summary – 750 MHz Body – LTE Band 12

MEASUREMENT RESULTS											
Gap	Plot	Position	Frequency		BW/ Modulation	RB Size	RB Offset	MPR Target	End Power (dBm)	Measured SAR (W/kg)	Reported SAR (W/kg)
			MHz	Ch.							
10 mm	8	Side A	707.5	23095	10 MHz/QPSK	1	0	0	23.13	0.440	0.54
	-----		707.5	23095	10 MHz/QPSK	25	0	1	22.19	0.354	0.43
	-----	Side B	707.5	23095	10 MHz/QPSK	1	0	0	23.13	0.208	0.25
	-----		707.5	23095	10 MHz/QPSK	25	0	1	22.19	0.164	0.20
	-----	Side C	707.5	23095	10 MHz/QPSK	1	0	0	23.13	0.309	0.38
	-----		707.5	23095	10 MHz/QPSK	25	0	1	22.19	0.246	0.30
	-----	Side D	707.5	23095	10 MHz/QPSK	1	0	0	23.13	0.0798	0.10
	-----		707.5	23095	10 MHz/QPSK	25	0	1	22.19	0.0624	0.08
	-----	Side E	707.5	23095	10 MHz/QPSK	1	0	0	23.13	0.0744	0.09
	-----		707.5	23095	10 MHz/QPSK	25	0	1	22.19	0.0587	0.07
									Body 1.6 W/kg (mW/g) averaged over 1 gram		

1. SAR Measurement
   Phantom Configuration ☐Left Head ☒Eli4 ☐Right Head
   SAR Configuration ☐Head ☒Body
2. Test Signal Call Mode ☐Test Code ☒Base Station Simulator
3. Test Configuration ☐With Belt Clip ☐Without Belt Clip ☒N/A
4. Tissue Depth is at least 15.0 cm

SAR Data Summary – 2450 MHz Body 802.11b/g

MEASUREMENT RESULTS									
Gap	Plot	Position	Frequency		Modulation	Antenna	End Power	Measured SAR	Reported SAR
			MHz	Ch.			(dBm)	(W/kg)	(W/kg)
10 mm	-----	Side A	2437	6	DSSS	Chain 0	17.58	0.079	0.09
	9	Side B	2437	6	DSSS		17.58	0.278	0.31
	-----	Side C	2437	6	DSSS		17.58	0.136	0.15
	-----	Side D	2437	6	DSSS		17.58	0.0056	0.01
	-----	Side E	2437	6	DSSS		17.58	0.0013	0.01
	-----	Side A	2437	6	OFDM	Chain 1	3.81	0.040	0.04
	-----	Side B	2437	6	OFDM		3.81	0.057	0.06
	-----	Side C	2437	6	OFDM		3.81	0.014	0.01
	-----	Side D	2437	6	OFDM		3.81	0.0037	0.01
	-----	Side E	2437	6	OFDM		3.81	0.001	0.01
						Body 1.6 W/kg (mW/g) averaged over 1 gram			

1. SAR Measurement
   Phantom Configuration ☐Left Head ☒Eli4 ☐Right Head
   SAR Configuration ☐Head ☒Body
2. Test Signal Call Mode ☒Test Code ☐Base Station Simulator
3. Test Configuration ☐With Belt Clip ☐Without Belt Clip ☒N/A
4. Tissue Depth is at least 15.0 cm

SAR Data Summary – 5200 MHz Body 802.11a

MEASUREMENT RESULTS									
Gap	Plot	Position	Frequency		Modulation	Antenna	End Power	Measured SAR	Reported SAR
			MHz	Ch.			(dBm)	(W/kg)	(W/kg)
10 mm	-----	Side A	5220	44	OFDM	Chain 0	7.98	0.0186	0.02
	-----	Side B	5220	44	OFDM		7.98	0.0341	0.03
	10	Side C	5220	44	OFDM		7.98	0.0671	0.07
	-----	Side D	5220	44	OFDM		7.98	0.0015	0.01
	-----	Side E	5220	44	OFDM		7.98	0.0006	0.01
	-----	Side A	5220	44	OFDM	Chain 1	7.98	0.0193	0.02
	-----	Side B	5220	44	OFDM		7.98	0.0385	0.04
	-----	Side C	5220	44	OFDM		7.98	0.0597	0.06
	-----	Side D	5220	44	OFDM		7.98	0.0013	0.01
	-----	Side E	5220	44	OFDM		7.98	0.0006	0.01
						Body 1.6 W/kg (mW/g) averaged over 1 gram			

1. SAR Measurement
   Phantom Configuration ☐Left Head ☒Eli4 ☐Right Head
   SAR Configuration ☐Head ☒Body
2. Test Signal Call Mode ☒Test Code ☐Base Station Simulator
3. Test Configuration ☐With Belt Clip ☐Without Belt Clip ☒N/A
4. Tissue Depth is at least 15.0 cm

SAR Data Summary – 5800 MHz Body 802.11a

MEASUREMENT RESULTS

Gap	Plot	Position	Frequency		Modulation	Antenna	End Power	Measured SAR	Reported SAR
			MHz	Ch.			(dBm)	(W/kg)	(W/kg)
10 mm	-----	Side A	5785	157	OFDM	Chain 0	7.96	0.0204	0.02
	-----	Side B	5785	157	OFDM		7.96	0.0326	0.03
	11	Side C	5785	157	OFDM		7.96	0.0633	0.06
	-----	Side D	5785	157	OFDM		7.96	0.0013	0.01
	-----	Side E	5785	157	OFDM		7.96	0.0005	0.01
	-----	Side A	5785	157	OFDM	Chain 1	7.96	0.0157	0.02
	-----	Side B	5785	157	OFDM		7.96	0.0374	0.04
	-----	Side C	5785	157	OFDM		7.96	0.0547	0.06
	-----	Side D	5785	157	OFDM		7.96	0.0011	0.01
	-----	Side E	5785	157	OFDM		7.96	0.0003	0.01

Body
1.6 W/kg (mW/g)
averaged over 1 gram

1. SAR Measurement
   Phantom Configuration ☐Left Head ☒Eli4 ☐Right Head
   SAR Configuration ☐Head ☒Body
2. Test Signal Call Mode ☒Test Code ☐Base Station Simulator
3. Test Configuration ☐With Belt Clip ☐Without Belt Clip ☒N/A
4. Tissue Depth is at least 15.0 cm

SAR Data Summary – Simultaneous Transmit (WLAN SISO)

MEASUREMENT RESULTS									
Plot	Position	Frequency (WLAN)		Frequency (WWAN)		WWAN Technology	SAR (W/kg) WLAN	SAR (W/kg) WWAN	Total SAR (W/kg)
		MHz	Ch.	MHz	Ch.				
-----	Side A	2437	6	1720.0	20050	LTE Band 4	0.09	1.41	1.50
-----	Side B	2437	6	836.5	20525	LTE Band 5	0.31	0.31	0.62
-----	Side C	2437	6	1732.5	20175	LTE Band 4	0.15	1.44	1.59
-----	Side D	2437	6	836.5	20525	LTE Band 5	0.01	0.25	0.26
-----	Side E	2437	6	1720.0	2005	LTE Band 4	0.01	1.05	1.06
						Body 1.6 W/kg (mW/g) averaged over 1 gram			

Note: The WWAN and WLAN antennas can transmit simultaneously. Therefore, the SAR is calculated by summing the individual SAR values on each side. The highest SAR value of all bands was used to determine each sides compliance.

SAR Data Summary – Simultaneous Transmit (WLAN MIMO)

MEASUREMENT RESULTS									
Plot	Position	Frequency (WLAN)		Frequency (WWAN)		WWAN Technology	SAR (W/kg) WLAN	SAR (W/kg) WWAN	Total SAR (W/kg)
		MHz	Ch.	MHz	Ch.				
-----	Side A	2437	6	1720.0	20050	LTE Band 4	0.09 + 0.04	1.41	1.54
-----	Side B	2437	6	836.5	20525	LTE Band 5	0.31 + 0.06	0.31	0.68
-----	Side C	2437	6	1732.5	20175	LTE Band 4	0.15 + 0.01	1.44	1.60
-----	Side D	2437	6	836.5	20525	LTE Band 5	0.01 + 0.01	0.25	0.27
-----	Side E	2437	6	1720.0	2005	LTE Band 4	0.01 + 0.01	1.05	1.07
						Body 1.6 W/kg (mW/g) averaged over 1 gram			

Note: The WWAN and WLAN antennas can transmit simultaneously. Therefore, the SAR is calculated by summing the individual SAR values on each side. The highest SAR value of all bands was used to determine each sides compliance.

The sum of all simultaneous transmitters is less than the limit of 1.6 W/kg. Therefore, the simultaneous transmission meets the requirements.

11. Test Equipment List

Table 11.1 Equipment Specifications

Type	Calibration Due Date	Calibration Done Date	Serial Number
Staubli Robot TX60L	N/A	N/A	F07/55M6A1/A/01
Measurement Controller CS8c	N/A	N/A	1012
ELI4 Flat Phantom	N/A	N/A	1065
Device Holder	N/A	N/A	N/A
Data Acquisition Electronics 4	08/15/2014	08/15/2013	759
Data Acquisition Electronics 4	01/13/2015	01/13/2014	1416
Data Acquisition Electronics 4	08/12/2015	08/12/2014	759
SPEAG E-Field Probe EX3DV4	08/27/2014	08/27/2013	3693
SPEAG E-Field Probe EX3DV4	04/15/2015	04/15/2014	3662
Speag Validation Dipole D750V2	12/04/2015	12/03/2012	1016
Speag Validation Dipole D835V2	12/04/2015	12/03/2012	4d089
Speag Validation Dipole D1750V2	12/05/2015	12/05/2012	1018
Speag Validation Dipole D1900V2	12/06/2015	12/06/2012	5d116
Speag Validation Dipole D2450V2	12/04/2015	12/04/2012	829
Speag Validation Dipole D5GHzV2	12/11/2015	12/11/2012	1085
Agilent N1911A Power Meter	03/24/2015	03/24/2014	GB45100254
Agilent N1922A Power Sensor	06/25/2014	06/25/2013	MY45240464
Advantest R3261A Spectrum Analyzer	03/24/2015	03/24/2014	31720068
Agilent (HP) 8350B Signal Generator	03/24/2015	03/24/2014	2749A10226
Agilent (HP) 83525A RF Plug-In	03/24/2015	03/24/2014	2647A01172
Agilent (HP) 8753C Vector Network Analyzer	03/25/2015	03/25/2014	3135A01724
Agilent (HP) 85047A S-Parameter Test Set	03/25/2015	03/25/2014	2904A00595
Agilent (HP) 8960 Base Station Sim.	10/19/2016	10/19/2014	MY48360364
Anritsu MT8820C	07/29/2015	07/29/2014	6201176199
Aprel Dielectric Probe Assembly	N/A	N/A	0011
Body Equivalent Matter (750 MHz)	N/A	N/A	N/A
Body Equivalent Matter (835 MHz)	N/A	N/A	N/A
Body Equivalent Matter (1750 MHz)	N/A	N/A	N/A
Body Equivalent Matter (1900 MHz)	N/A	N/A	N/A
Body Equivalent Matter (2450 MHz)	N/A	N/A	N/A
Body Equivalent Matter (5 Ghz)	N/A	N/A	N/A

12. Conclusion

The SAR measurement indicates that the EUT complies with the RF radiation exposure limits of the FCC/IC. These measurements are taken to simulate the RF effects exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The tested device complies with the requirements in respect to all parameters subject to the test. The test results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body is a very complex phenomena that depends on the mass, shape, and size of the body; the orientation of the body with respect to the field vectors; and, the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because innumerable factors may interact to determine the specific biological outcome of an exposure to electromagnetic fields, any protection guide shall consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables.

13. References

[1] Federal Communications Commission, ET Docket 93-62, Guidelines for Evaluating the Environmental Effects of Radio Frequency Radiation, August 1996

[2] ANSI/IEEE C95.1 – 1992, American National Standard Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300kHz to 100GHz, New York: IEEE, 1992.

[3] ANSI/IEEE C95.3 – 1992, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields – RF and Microwave, New York: IEEE, 1992.

[4] IEEE Standard 1528 – 2003, IEEE Recommended Practice for Determining the Peak-Spatial Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communication Devices: Measurement Techniques, October 2003.

[5] Industry Canada, RSS – 102e, Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands), March 2010.

[6] Health Canada, Safety Code 6, Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3kHz to 300 GHz, 2009.

Appendix A – System Validation Plots and Data

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************************************************************
Test Result for UIM Dielectric Parameter
Thu 18/Dec/2014
Freq   Frequency(GHz)
FCC_eH Limits for Head Epsilon
FCC_sH Limits for Head Sigma
FCC_eB Limits for Body Epsilon
FCC_sB Limits for Body Sigma
Test_e Epsilon  of  UIM
Test_s Sigma of UIM
************************************************************
Freq         FCC_eB FCC_sB Test_e Test_s
0.7000       55.73  0.96   55.46  0.95
0.7040       55.714 0.96   55.444 0.95*
0.7075       55.70  0.96   55.43  0.95*
0.7100       55.69  0.96   55.42  0.95
0.7110       55.686 0.96   55.415 0.951*
0.7200       55.65  0.96   55.37  0.96
0.7300       55.61  0.96   55.33  0.96
0.7400       55.57  0.96   55.29  0.97
0.7500       55.53  0.96   55.24  0.97
0.7600       55.49  0.96   55.20  0.98
0.7700       55.45  0.96   55.16  0.99
0.7800       55.41  0.97   55.11  0.99
0.7900       55.38  0.97   55.07  1.00
0.8000       55.34  0.97   55.02  1.00

* value interpolated


************************************************************
Test Result for UIM Dielectric Parameter
Sat 24/May/2014
Freq   Frequency(GHz)
FCC_eH FCC Bulletin 65 Supplement C ( June 2001) Limits for Head Epsilon
FCC_sH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma
FCC_eB FCC Limits for Body Epsilon
FCC_sB FCC Limits for Body Sigma
Test_e Epsilon  of  UIM
Test_s Sigma of UIM
************************************************************
Freq         FCC_eB FCC_sB Test_e Test_s
0.8050       55.32  0.97   54.24  0.94
0.8150       55.28  0.97   54.28  0.95
0.8250       55.24  0.97   54.33  0.96
0.8350       55.20  0.97   54.37  0.98
0.8366       55.195 0.972  54.375 0.982*
0.8450       55.17  0.98   54.40  0.99
0.8550       55.14  0.99   54.44  1.02
0.8650       55.11  1.01   54.48  1.04

* value interpolated
```

```
************************************************************
Test Result for UIM Dielectric Parameter
Thu 18/Dec/2014
Freq   Frequency(GHz)
FCC_eH Limits for Head Epsilon
FCC_sH Limits for Head Sigma
FCC_eB Limits for Body Epsilon
FCC_sB Limits for Body Sigma
Test_e Epsilon  of  UIM
Test_s Sigma of UIM
************************************************************
Freq         FCC_eB FCC_sB Test_e Test_s
0.8050       55.32  0.97   55.07  0.96
0.8150       55.28  0.97   55.02  0.97
0.8250       55.24  0.97   54.98  0.98
0.8290       55.224 0.97   54.96  0.984*
0.8350       55.20  0.97   54.93  0.99
0.8365       55.196 0.972  54.924 0.992*
0.8440       55.173 0.979  54.894 0.999*
0.8450       55.17  0.98   54.89  1.00
0.8550       55.14  0.99   54.86  1.02
0.8650       55.11  1.01   54.83  1.03

* value interpolated


************************************************************
Test Result for UIM Dielectric Parameter
Fri 23/May/2014
Freq   Frequency(GHz)
FCC_eH FCC Bulletin 65 Supplement C ( June 2001) Limits for Head Epsilon
FCC_sH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma
FCC_eB FCC Limits for Body Epsilon
FCC_sB FCC Limits for Body Sigma
Test_e Epsilon  of  UIM
Test_s Sigma of UIM
************************************************************
Freq         FCC_eB FCC_sB Test_e Test_s
1.6900       53.59  1.45   52.89  1.51
1.7000       53.56  1.46   52.85  1.52
1.7100       53.54  1.46   52.81  1.53
1.7200       53.51  1.47   52.78  1.54
1.7300       53.48  1.48   52.74  1.55
1.7325       53.475 1.48   52.73  1.55*
1.7400       53.46  1.48   52.70  1.55
1.7450       53.445 1.485  52.69  1.555*
1.7500       53.43  1.49   52.68  1.56
1.7600       53.41  1.49   52.66  1.56
1.7700       53.38  1.50   52.65  1.57
1.7800       53.35  1.51   52.61  1.58
1.7900       53.33  1.51   52.58  1.59

* value interpolated
```

```
************************************************************
Test Result for UIM Dielectric Parameter
Thu 22/May/2014
Freq   Frequency(GHz)
FCC_eH FCC Bulletin 65 Supplement C ( June 2001) Limits for Head Epsilon
FCC_sH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma
FCC_eB FCC Limits for Body Epsilon
FCC_sB FCC Limits for Body Sigma
Test_e Epsilon  of  UIM
Test_s Sigma of UIM
************************************************************
Freq         FCC_eB FCC_sB Test_e Test_s
1.8500       53.30  1.52   53.27  1.49
1.8502       53.30  1.52   53.27  1.49*
1.8513       53.30  1.52   53.267 1.491*
1.8524       53.30  1.52   53.265 1.492*
1.8525       53.30  1.52   53.265 1.493*
1.8600       53.30  1.52   53.25  1.50
1.8700       53.30  1.52   53.23  1.51
1.8800       53.30  1.52   53.21  1.52
1.8900       53.30  1.52   53.19  1.53
1.9000       53.30  1.52   53.17  1.54
1.9075       53.30  1.52   53.155 1.548*
1.9076       53.30  1.52   53.155 1.548*
1.9088       53.30  1.52   53.152 1.549*
1.9098       53.30  1.52   53.15  1.55*
1.9100       53.30  1.52   53.15  1.55
1.9200       53.30  1.52   53.14  1.57
1.9300       53.30  1.52   53.12  1.58

* value interpolated


************************************************************
Test Result for UIM Dielectric Parameter
Tue 17/Feb/2015
Freq   Frequency(GHz)
FCC_eH Limits for Head Epsilon
FCC_sH Limits for Head Sigma
FCC_eB Limits for Body Epsilon
FCC_sB Limits for Body Sigma
Test_e Epsilon  of  UIM
Test_s Sigma of UIM
************************************************************
Freq         FCC_eB FCC_sB Test_e Test_s
2.4100       52.75  1.91   52.61  1.92
2.4120       52.748 1.912  52.606 1.922*
2.4200       52.74  1.92   52.59  1.93
2.4300       52.73  1.93   52.57  1.94
2.4370       52.716 1.937  52.556 1.947*
2.4400       52.71  1.94   52.55  1.95
2.4500       52.70  1.95   52.53  1.96
2.4600       52.69  1.96   52.51  1.98
2.4620       52.686 1.964  52.508 1.982*
2.4700       52.67  1.98   52.50  1.99
2.4800       52.66  1.99   52.48  2.00

* value interpolated
```

```
**********************************************************
Test Result for UIM Dielectric Parameter
Sat 31/May/2014
Freq   Frequency(GHz)
FCC_eH FCC Bulletin 65 Supplement C ( June 2001) Limits for Head Epsilon
FCC_sH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma
FCC_eB FCC Limits for Body Epsilon
FCC_sB FCC Limits for Body Sigma
Test_e Epsilon  of  UIM
Test_s Sigma of UIM
**********************************************************
```

Freq	FCC_eB	FCC_sB	Test_e	Test_s
5.1000	49.15	5.18	49.22	5.10
5.1200	49.12	5.21	49.19	5.12
5.1400	49.10	5.23	49.16	5.14
5.1600	49.07	5.25	49.13	5.16
5.1800	49.04	5.28	49.10	5.19
5.2000	49.01	5.30	49.07	5.21
5.2200	48.99	5.32	49.04	5.23
5.2400	48.96	5.35	49.01	5.25
5.2600	48.93	5.37	48.98	5.28
5.2800	48.91	5.39	48.95	5.31
5.7200	48.31	5.91	48.29	5.89
5.7400	48.28	5.93	48.26	5.91
5.7450	48.273	5.935	48.253	5.918*
5.7600	48.25	5.95	48.23	5.94
5.7800	48.23	5.98	48.20	5.97
5.7850	48.223	5.985	48.193	5.975*
5.8000	48.20	6.00	48.17	5.99
5.8200	48.17	6.02	48.14	6.02
5.8250	48.165	6.028	48.133	6.025*
5.8400	48.15	6.05	48.11	6.04

* value interpolated

RF Exposure Lab

Plot 1

DUT: Dipole 750 MHz D750V3; Type: D750V3; Serial: D750V3 - SN:1016

Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: MSL750; Medium parameters used: f = 750 MHz; σ = 0.94 S/m; ε_r = 54.69; ρ = 1000 kg/m^3
Phantom section: Flat Section

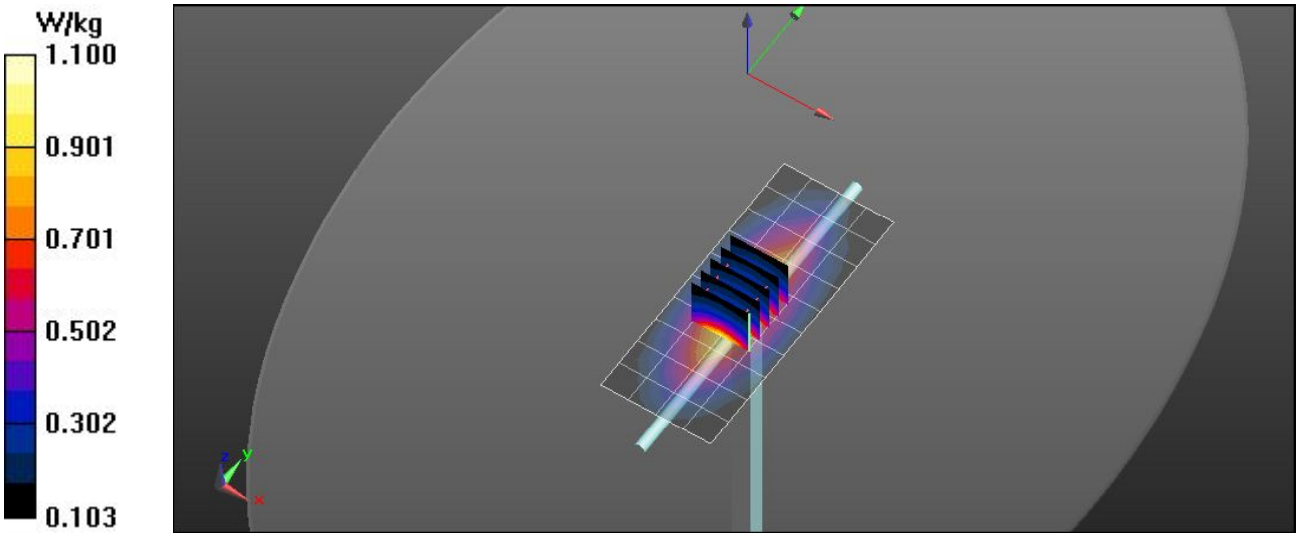
Test Date: Date: 5/27/2014; Ambient Temp: 23 °C; Tissue Temp: 21 °C

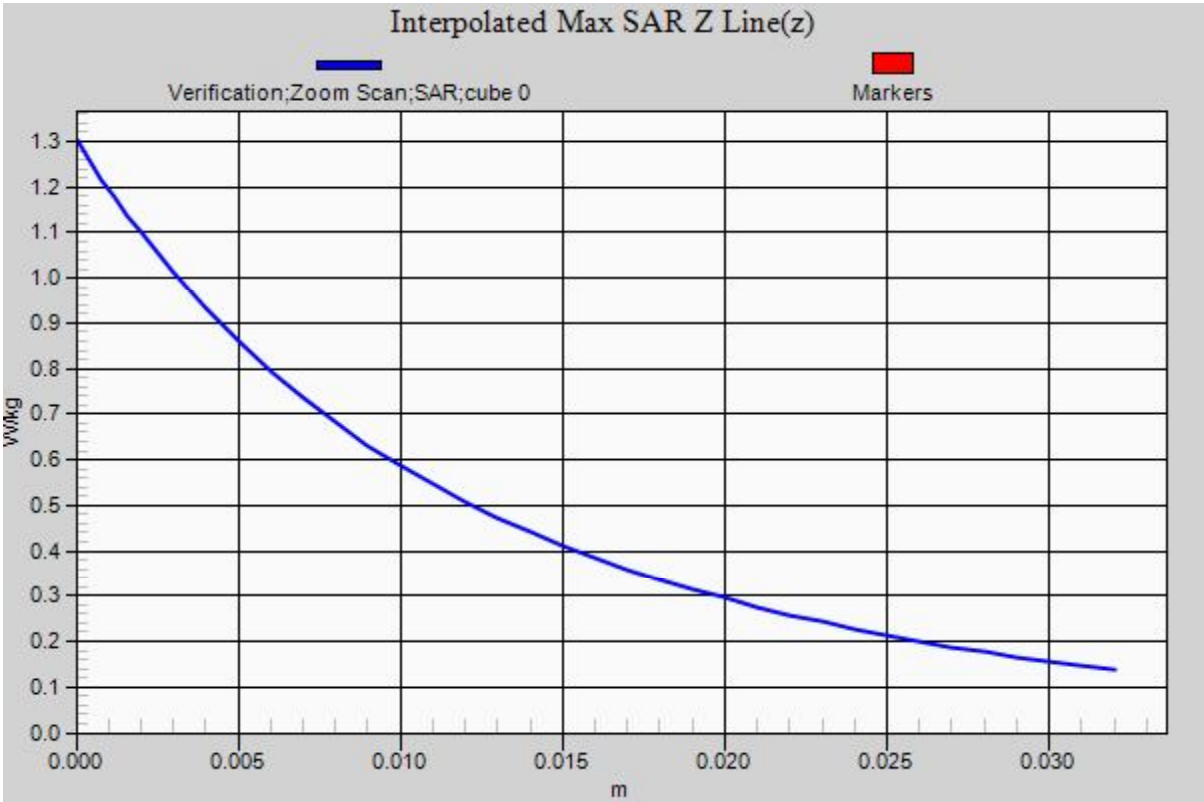
Probe: EX3DV4 - SN3693; ConvF(8.67, 8.67, 8.67); Calibrated: 8/27/2013;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn759; Calibrated: 8/15/2013
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1065
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Procedure Notes:

750 MHz/Verification/Area Scan (5x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.08 W/kg

750 MHz/Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.227 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.30 W/kg
SAR(1 g) = 0.865 W/kg; SAR(10 g) = 0.569 W/kg
Maximum value of SAR (measured) = 1.10 W/kg





RF Exposure Lab

Plot 2

DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:4d089

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: MSL835; Medium parameters used: f = 835 MHz; σ = 0.98 S/m; ε_r = 54.37; ρ = 1000 kg/m^3
Phantom section: Flat Section

Test Date: Date: 5/24/2014; Ambient Temp: 23 °C; Tissue Temp: 21 °C

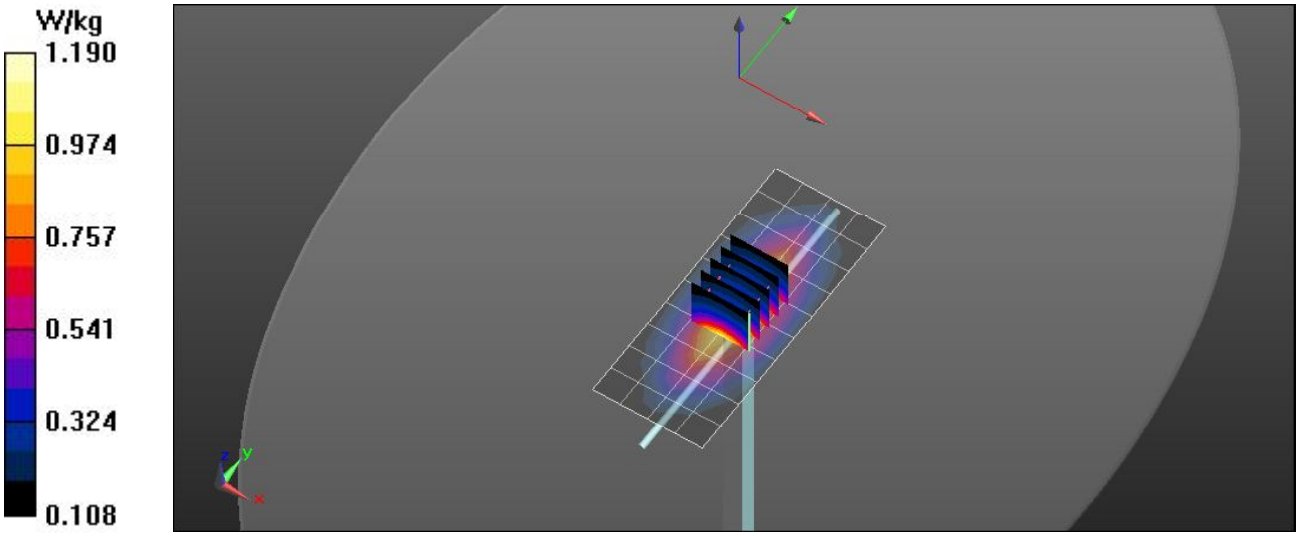
Probe: EX3DV4 - SN3693; ConvF(8.66, 8.66, 8.66); Calibrated: 8/27/2013;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn759; Calibrated: 8/15/2013
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1065
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

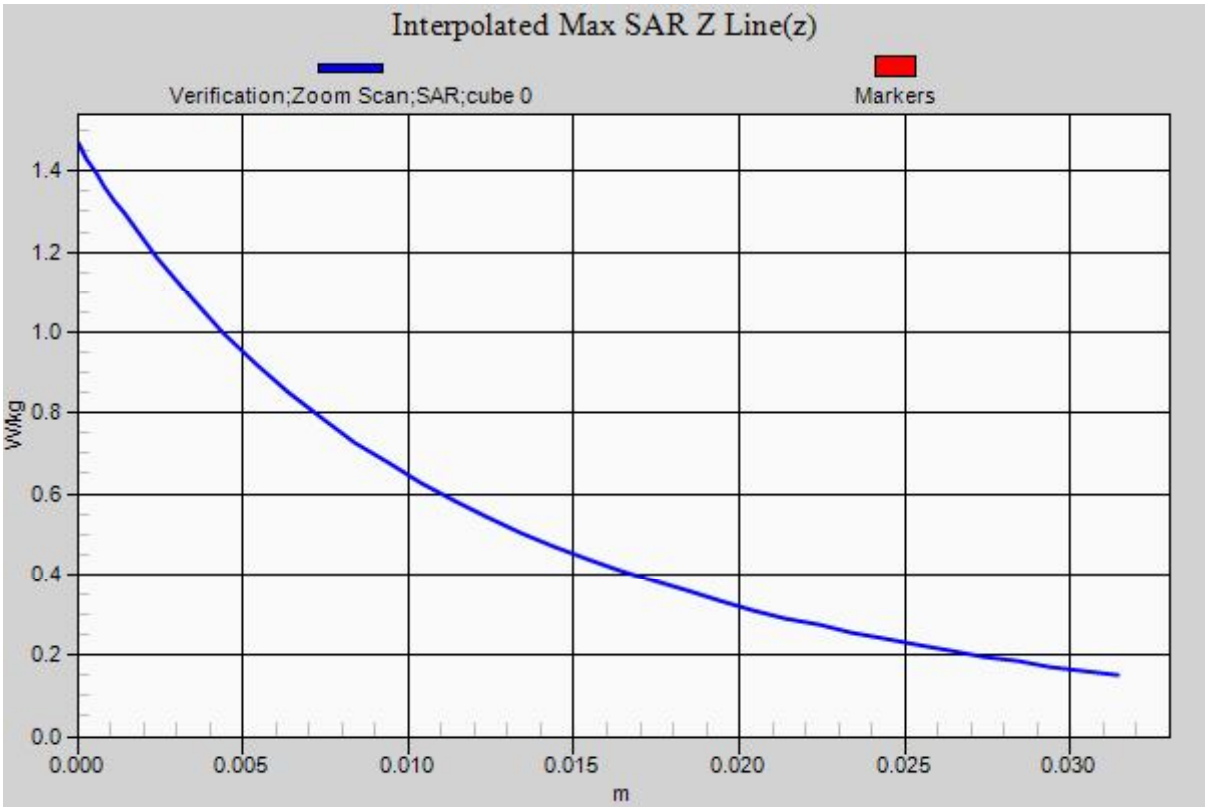
Procedure Notes:

835 MHz/Verification/Area Scan (5x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.18 W/kg

835 MHz/Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.227 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.47 W/kg
SAR(1 g) = 0.943 W/kg; SAR(10 g) = 0.619 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.19 W/kg





RF Exposure Lab

Plot 3

DUT: Dipole 1750 MHz D1750V2; Type: D1750V2; Serial: D1750V2 - SN:1018

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: MSL1750; Medium parameters used: f = 1750 MHz; σ = 1.56 S/m; ε_r = 52.68; ρ = 1000 kg/m^3
Phantom section: Flat Section

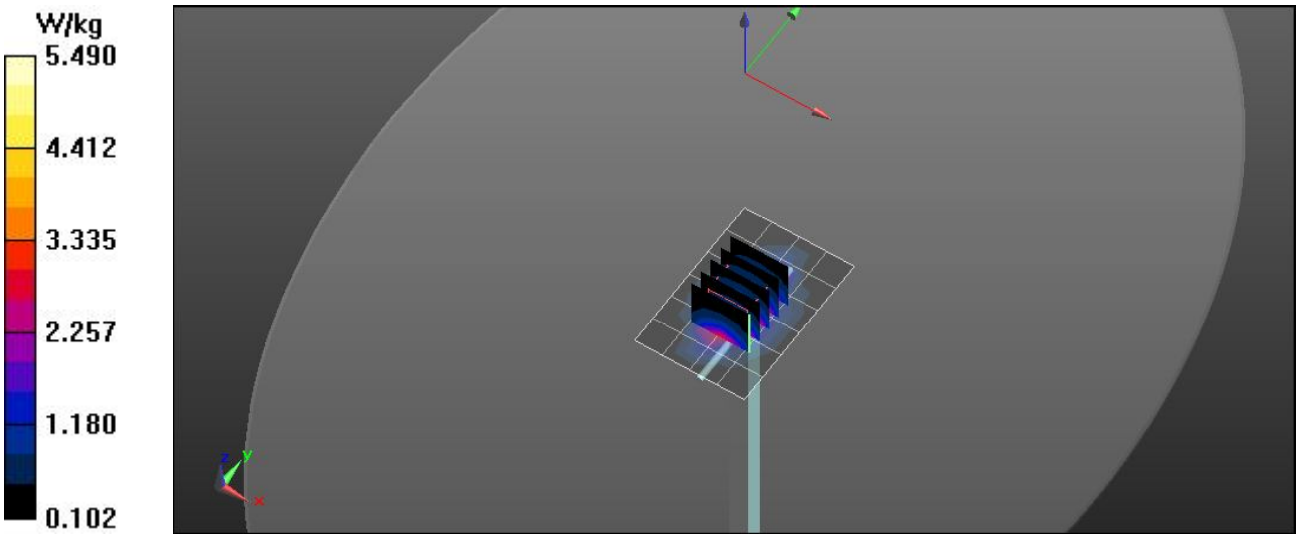
Test Date: Date: 5/23/2014; Ambient Temp: 23 °C; Tissue Temp: 21 °C

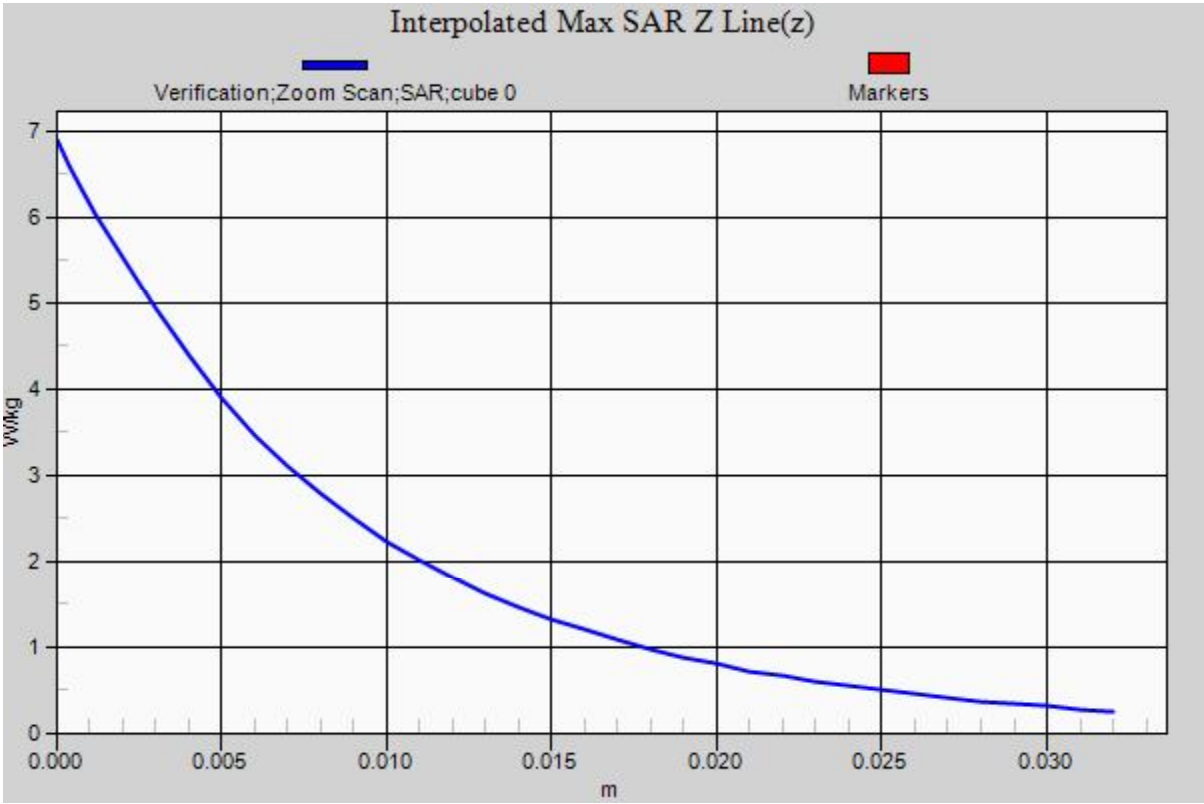
Probe: EX3DV4 - SN3693; ConvF(7.35, 7.35, 7.35); Calibrated: 8/27/2013;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn759; Calibrated: 8/15/2013
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1065
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Procedure Notes:

1750 MHz/Verification/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 5.33 W/kg

1750 MHz/Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.227 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 6.89 W/kg
SAR(1 g) = 3.85 W/kg; SAR(10 g) = 2.03 W/kg
Maximum value of SAR (measured) = 5.49 W/kg





RF Exposure Lab

Plot 4

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2; Serial: D1900V2 - SN:5d116

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: MSL1900; Medium parameters used: f = 1900 MHz; σ = 1.54 S/m; ε_r = 53.17; ρ = 1000 kg/m^3
Phantom section: Flat Section

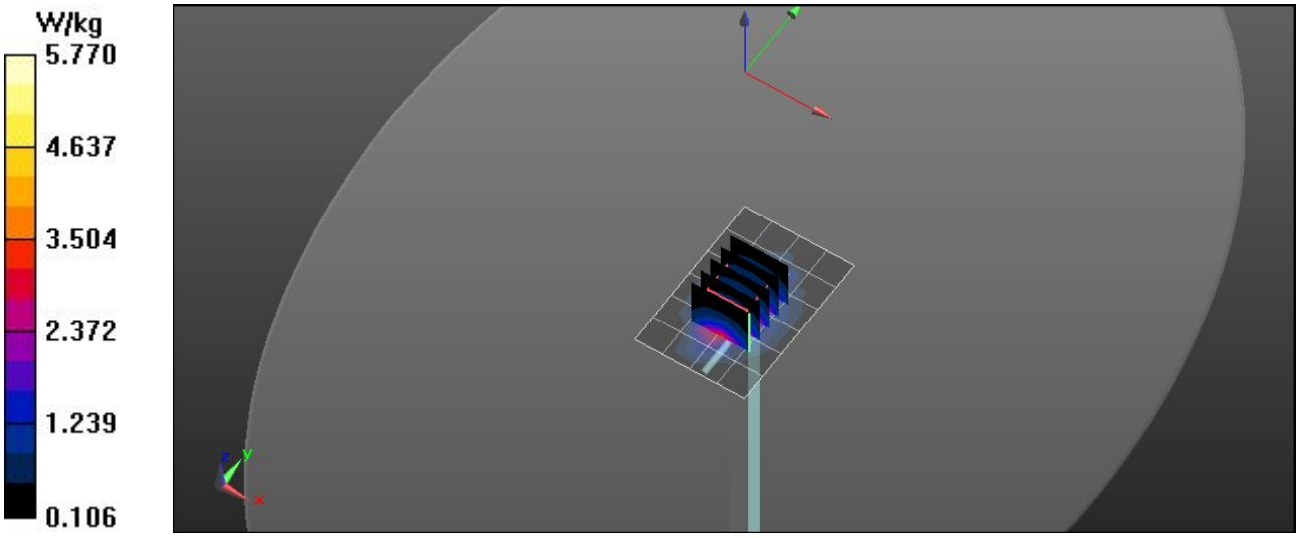
Test Date: Date: 5/25/2014; Ambient Temp: 23 °C; Tissue Temp: 21 °C

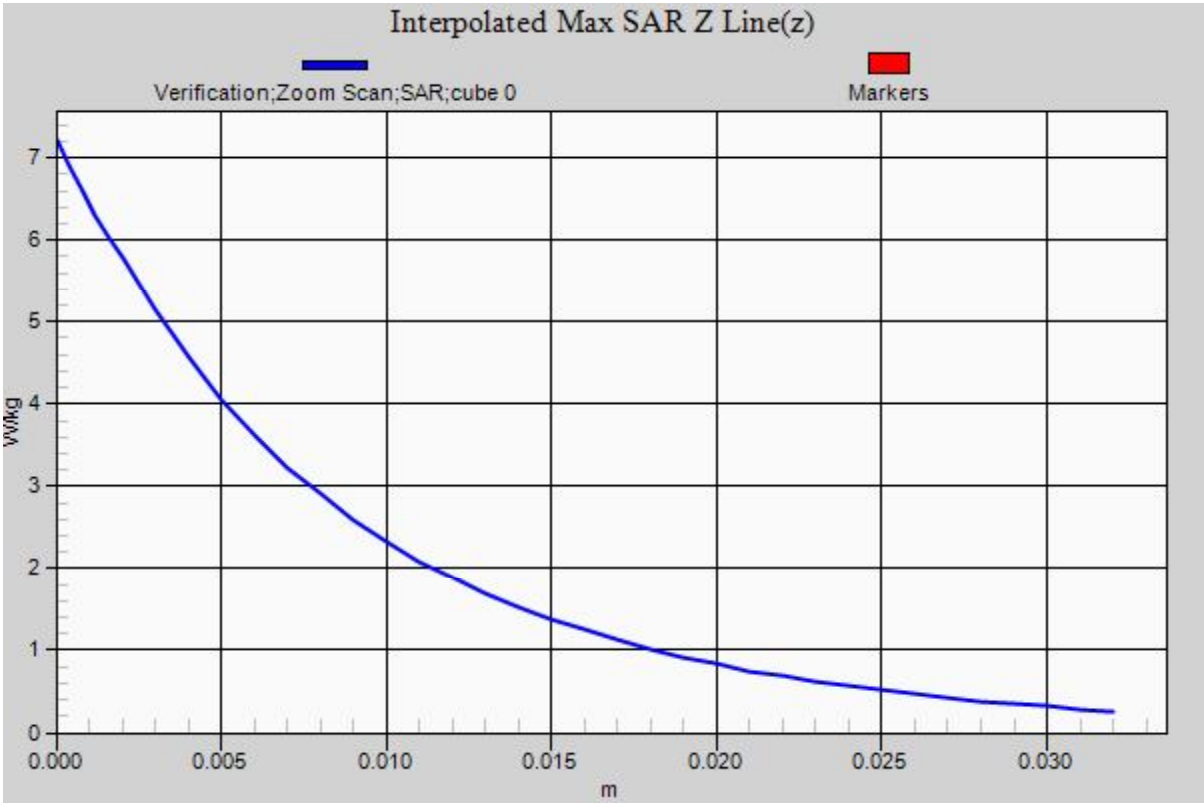
Probe: EX3DV4 - SN3693; ConvF(7.1, 7.1, 7.1); Calibrated: 8/27/2013;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn759; Calibrated: 8/15/2013
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1065
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Procedure Notes:

1900 MHz/Verification/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 5.44 W/kg

1900 MHz/Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.227 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 7.22 W/kg
SAR(1 g) = 4.02 W/kg; SAR(10 g) = 2.1 W/kg
Maximum value of SAR (measured) = 5.77 W/kg





RF Exposure Lab

Plot 5

DUT: Dipole 2450 MHz D2450V2; Type: D2450V2; Serial: D2450V2 - SN: 829

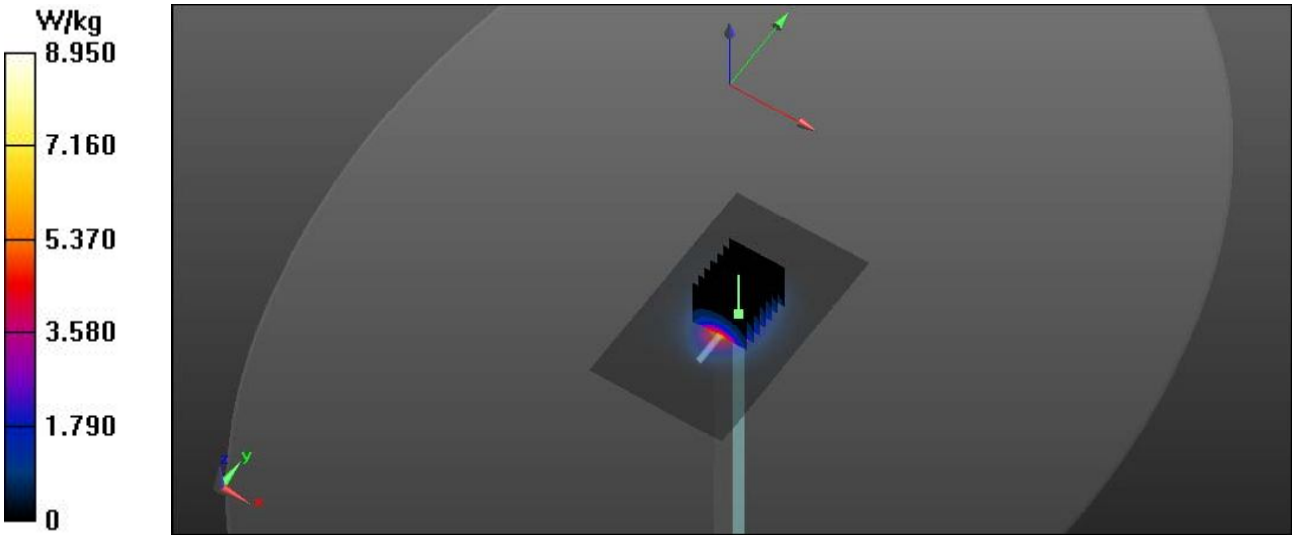
Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: MSL2450; Medium parameters used: f = 2450 MHz; σ = 1.96 S/m; ε_r = 52.53; ρ = 1000 kg/m^3
Phantom section: Flat Section

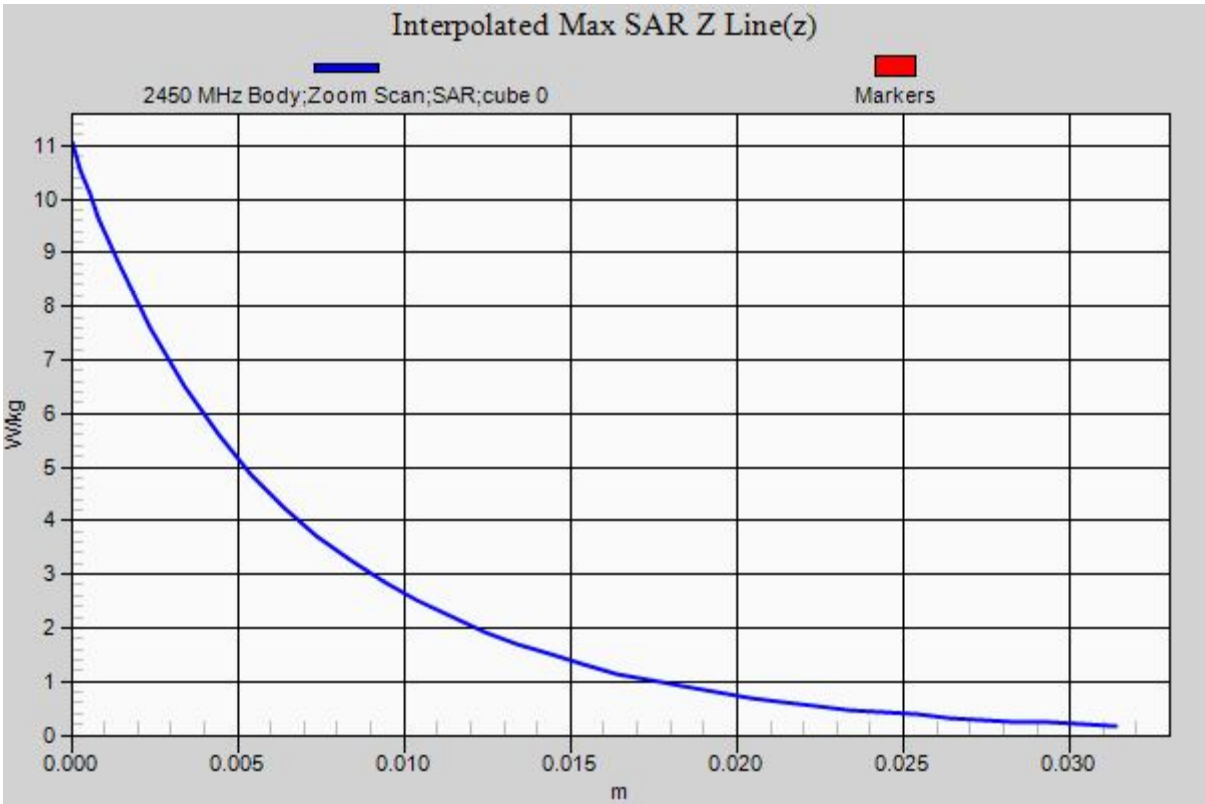
Test Date: Date: 2/17/2015; Ambient Temp: 23 °C; Tissue Temp: 21 °C
Probe: EX3DV4 - SN3662; ConvF(7.12, 7.12, 7.12); Calibrated: 4/15/2014;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn759; Calibrated: 8/12/2014
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: 1251
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Procedure Notes:

Body Verification/2450 MHz/Area Scan (61x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 8.95 W/kg

Body Verification/2450 MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.597 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 11.18 W/kg
P_{in}= 100 mW
SAR(1 g) = 5.22 W/kg; SAR(10 g) = 2.4 W/kg
Maximum value of SAR (measured) = 8.71 W/kg





RF Exposure Lab

Plot 6

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1085

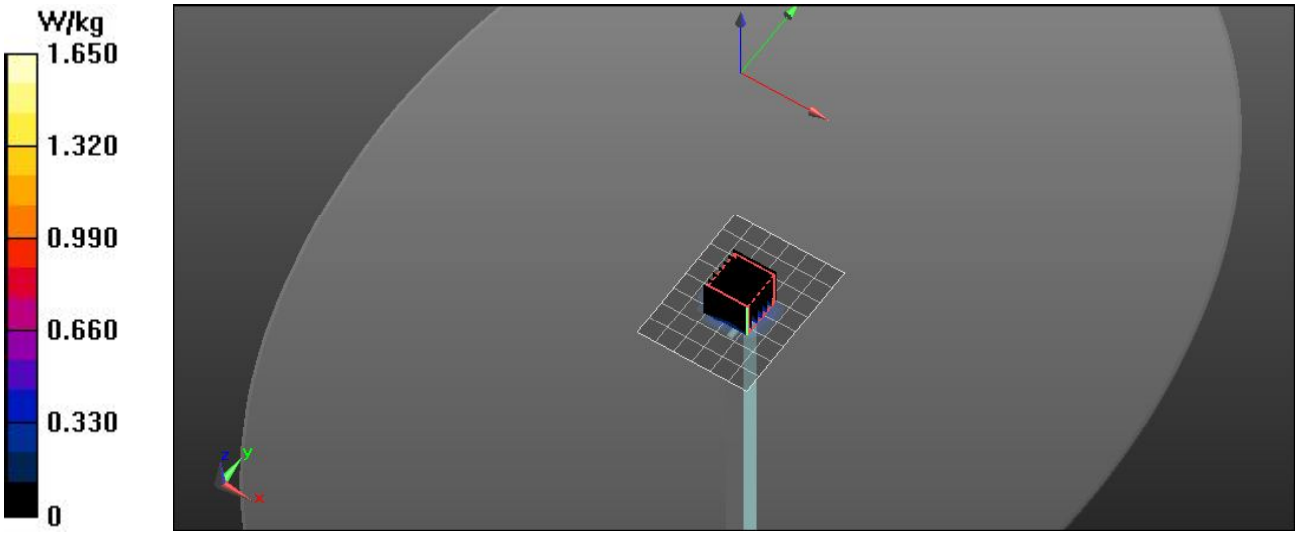
Communication System: CW; Frequency: 5200 MHz; Duty Cycle: 1:1
Medium: MSL 3-6 GHz; Medium parameters used: f = 5200 MHz; σ = 5.21 S/m; ε_r = 49.07; ρ = 1000 kg/m^3
Phantom section: Flat Section

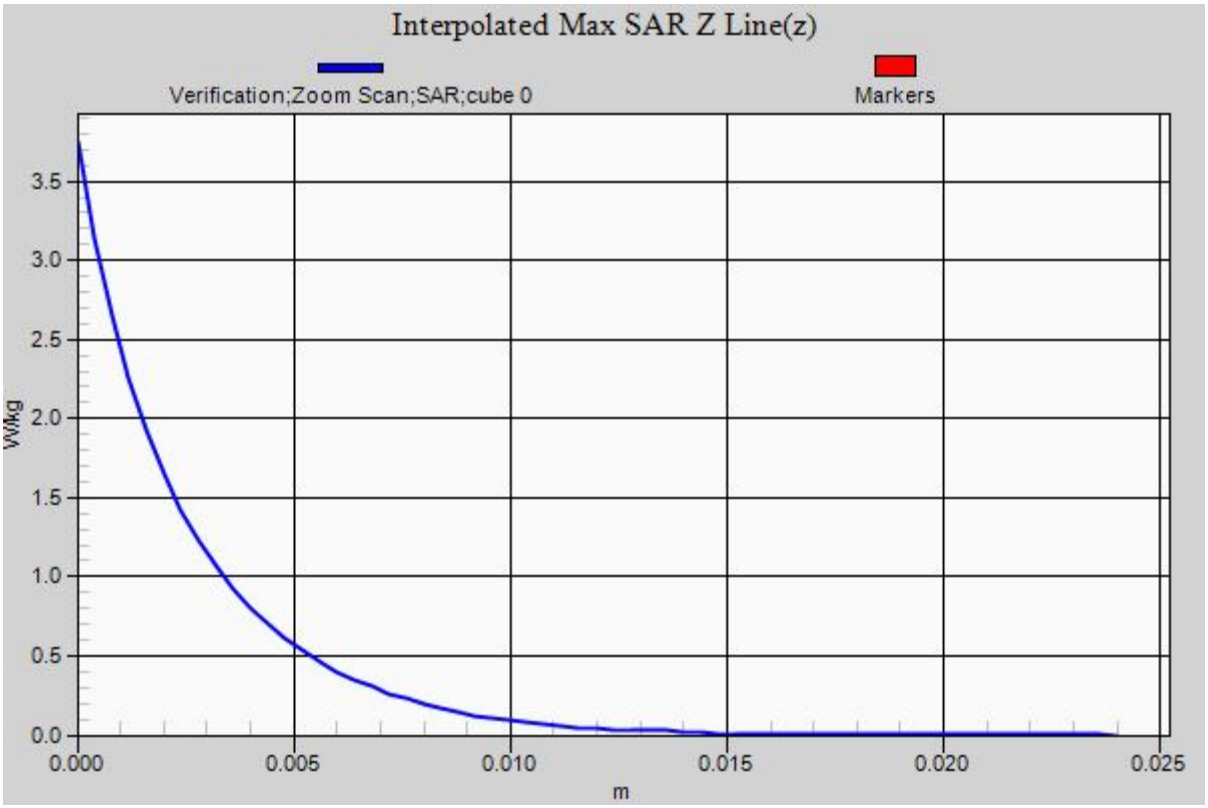
Test Date: Date: 5/31/2014; Ambient Temp: 23 °C; Tissue Temp: 21 °C
Probe: EX3DV4 - SN3693; ConvF(4.39, 4.39, 4.39); Calibrated: 8/27/2013;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn759; Calibrated: 8/15/2013
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1065
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Procedure Notes:

5200 MHz Body/Verification/Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.58 W/kg

5200 MHz Body/Verification/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 11.705 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.75 W/kg
SAR(1 g) = 0.763 W/kg; SAR(10 g) = 0.211 W/kg
Maximum value of SAR (measured) = 1.65 W/kg





RF Exposure Lab

Plot 7

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1085

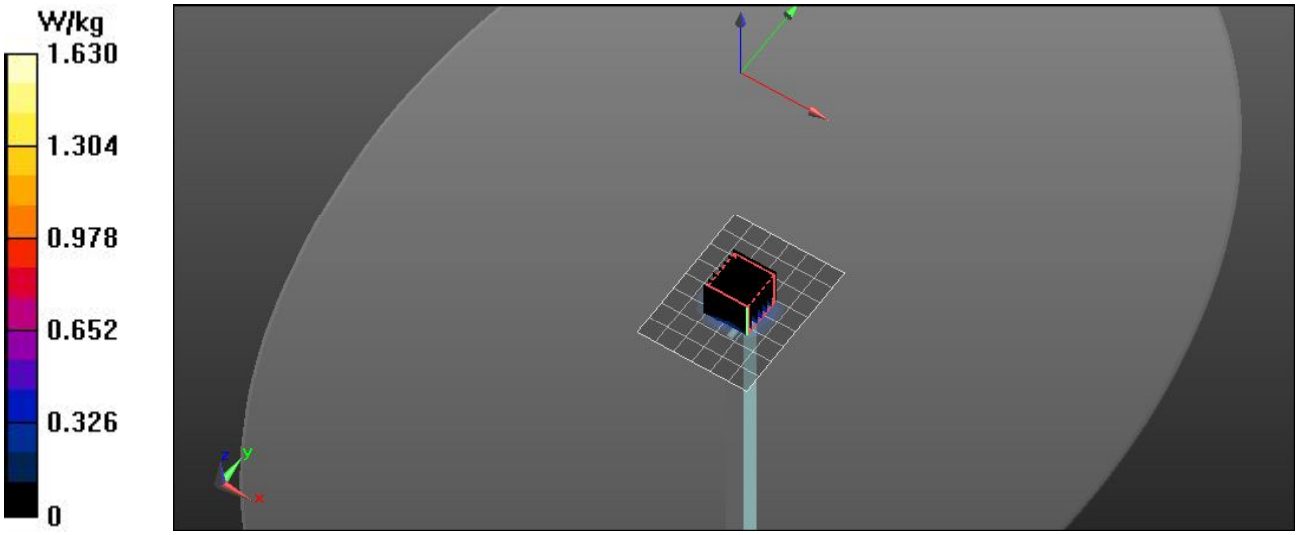
Communication System: CW; Frequency: 5800 MHz; Duty Cycle: 1:1
Medium: MSL 3-6 GHz; Medium parameters used: f = 5800 MHz; σ = 5.99 S/m; ε_r = 48.17; ρ = 1000 kg/m^3
Phantom section: Flat Section

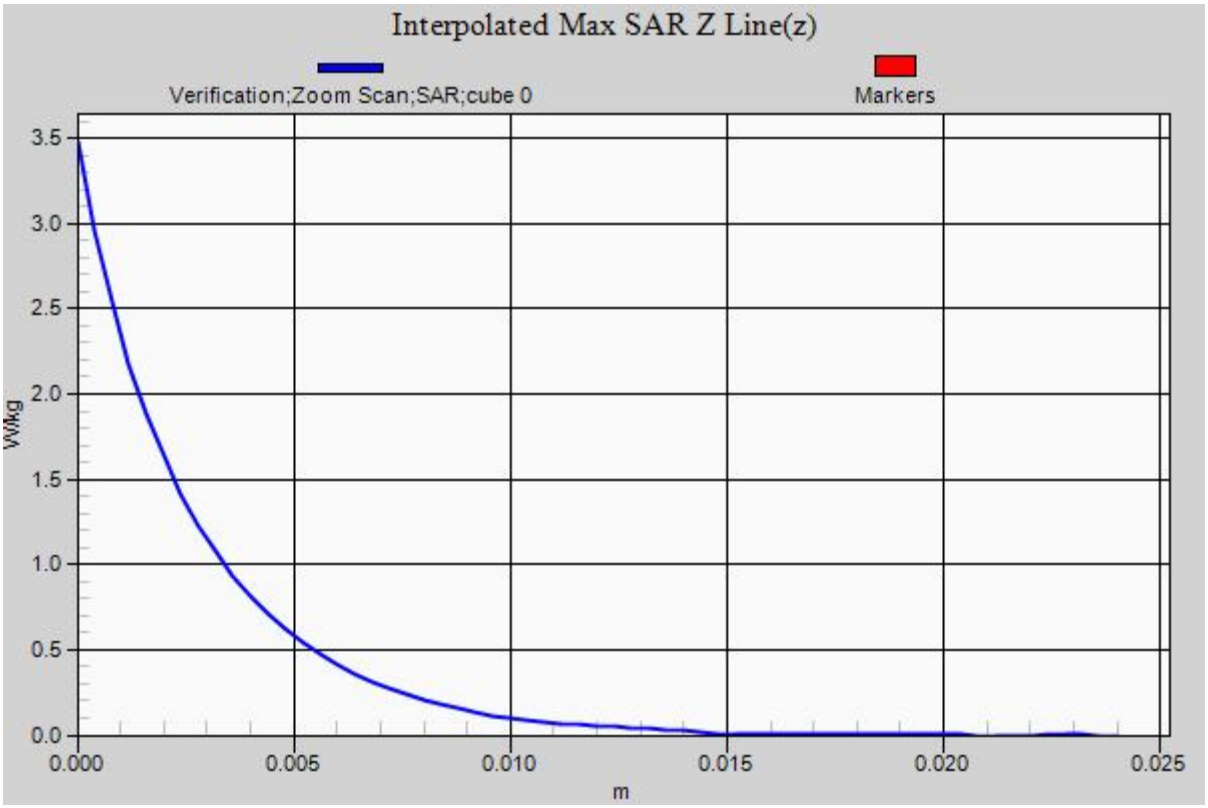
Test Date: Date: 5/31/2014; Ambient Temp: 23 °C; Tissue Temp: 21 °C
Probe: EX3DV4 - SN3693; ConvF(4.04, 4.04, 4.04); Calibrated: 8/27/2013;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn759; Calibrated: 8/15/2013
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1065
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Procedure Notes:

5800 MHz Body/Verification/Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 1.56 W/kg

5800 MHz Body/Verification/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 11.621 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 3.47 W/kg
SAR(1 g) = 0.749 W/kg; SAR(10 g) = 0.208 W/kg
Maximum value of SAR (measured) = 1.63 W/kg





RF Exposure Lab

Plot 8

DUT: Dipole 750 MHz D750V3; Type: D750V3; Serial: D750V3 - SN:1016

Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: MSL750; Medium parameters used: f = 750 MHz; σ = 0.97 S/m; ε_r = 55.24; ρ = 1000 kg/m^3
Phantom section: Flat Section

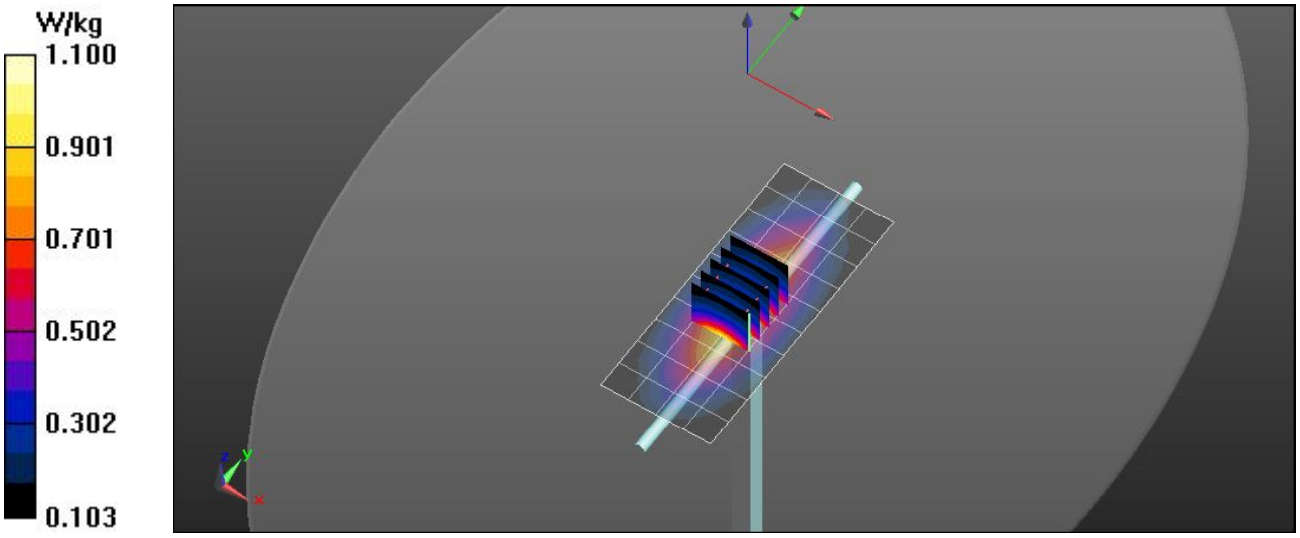
Test Date: Date: 12/18/2014; Ambient Temp: 23 °C; Tissue Temp: 21 °C

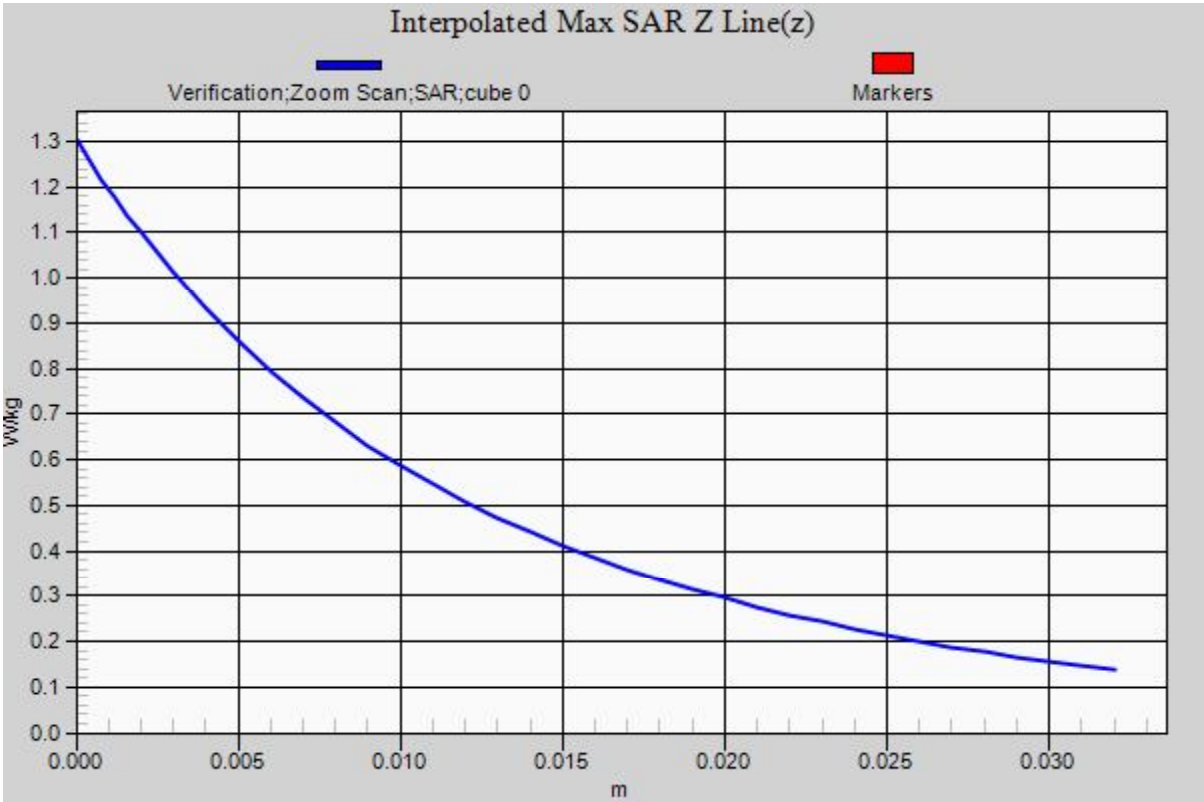
Probe: EX3DV4 - SN3662; ConvF(9.42, 9.42, 9.42); Calibrated: 4/15/2014;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1416; Calibrated: 1/13/2014
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: 1065
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

Procedure Notes:

750 MHz/Verification/Area Scan (5x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.13 W/kg

750 MHz/Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 32.026 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.32 W/kg
SAR(1 g) = 0.881 W/kg; SAR(10 g) = 0.583 W/kg
Maximum value of SAR (measured) = 1.11 W/kg





RF Exposure Lab

Plot 9

DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:4d089

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: MSL835; Medium parameters used: f = 835 MHz; σ = 0.99 S/m; ε_r = 54.93; ρ = 1000 kg/m^3
Phantom section: Flat Section

Test Date: Date: 12/18/2014; Ambient Temp: 23 °C; Tissue Temp: 21 °C

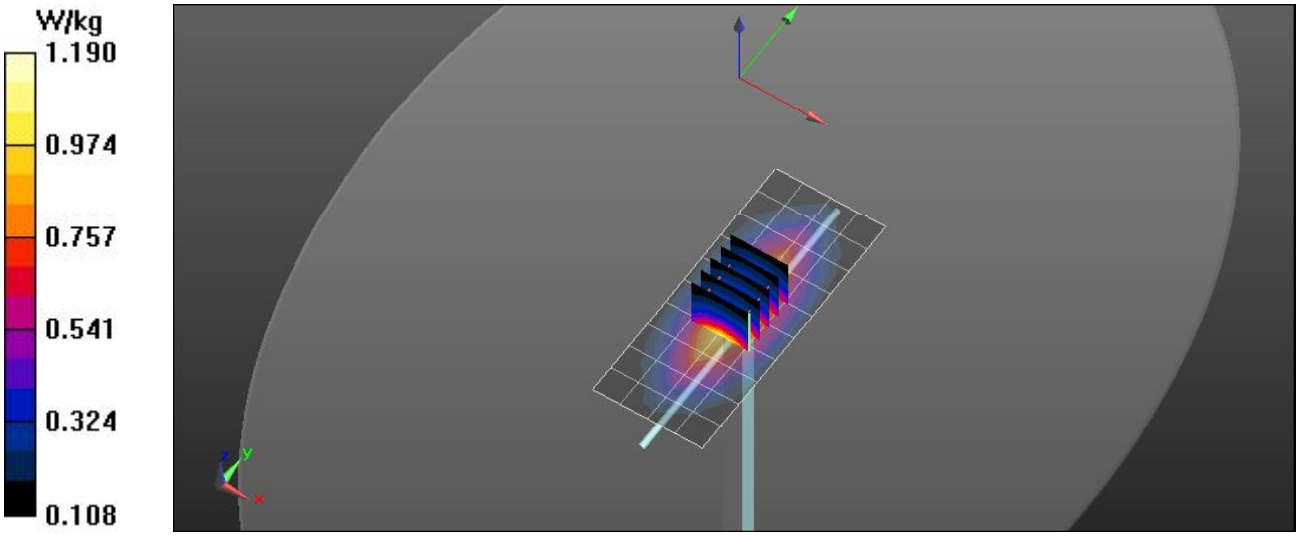
Probe: EX3DV4 - SN3662; ConvF(9.3, 9.3, 9.3); Calibrated: 4/15/2014;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1416; Calibrated: 1/13/2014
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: 1065
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

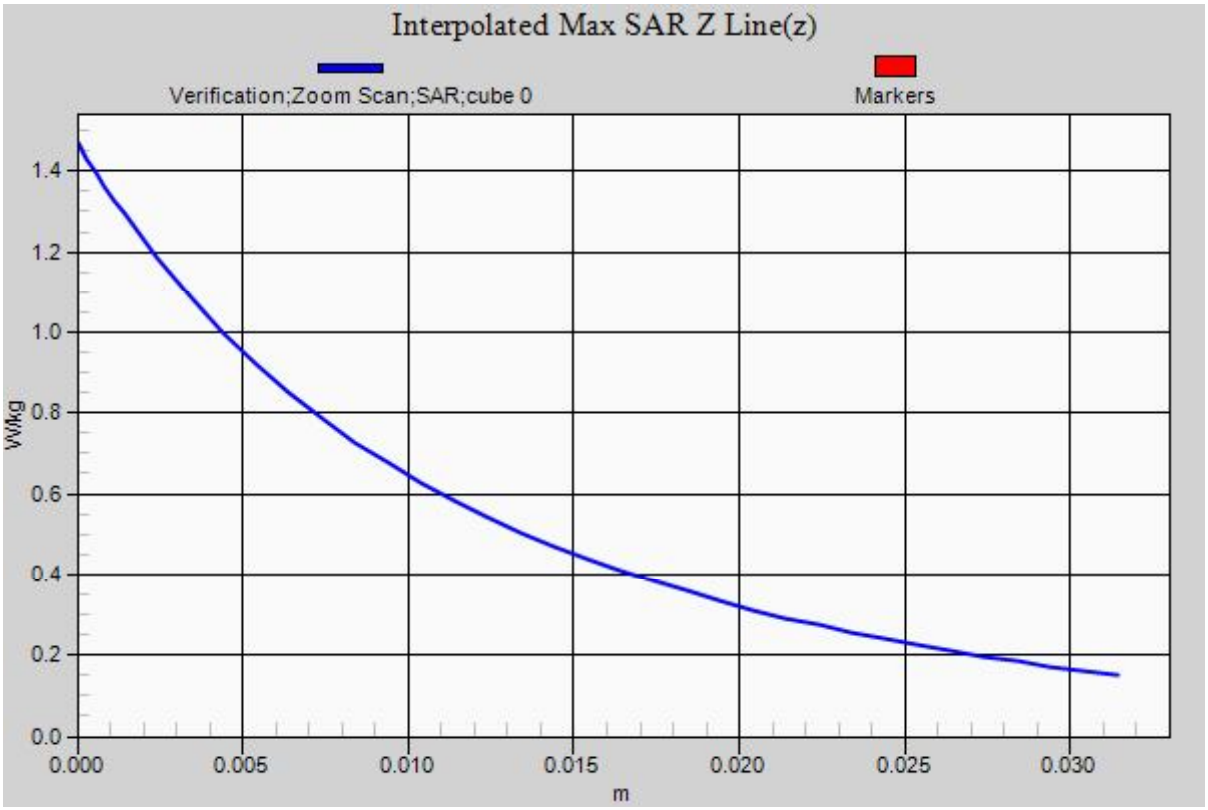
Procedure Notes:

835 MHz/Verification/Area Scan (5x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.19 W/kg

835 MHz/Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.468 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.48 W/kg
SAR(1 g) = 0.951 W/kg; SAR(10 g) = 0.625 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.20 W/kg





Appendix B – SAR Test Data Plots

RF Exposure Lab

Plot 1

DUT: MiFi 6620; Type: Hotspot; Serial: SS220414800535

Communication System: UMTS (WCDMA); Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium: MSL835; Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.982 S/m; ε_r = 54.375; ρ = 1000 kg/m^3
Phantom section: Flat Section

Test Date: Date: 5/24/2014; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(8.66, 8.66, 8.66); Calibrated: 8/27/2013;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn759; Calibrated: 8/15/2013
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1065
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

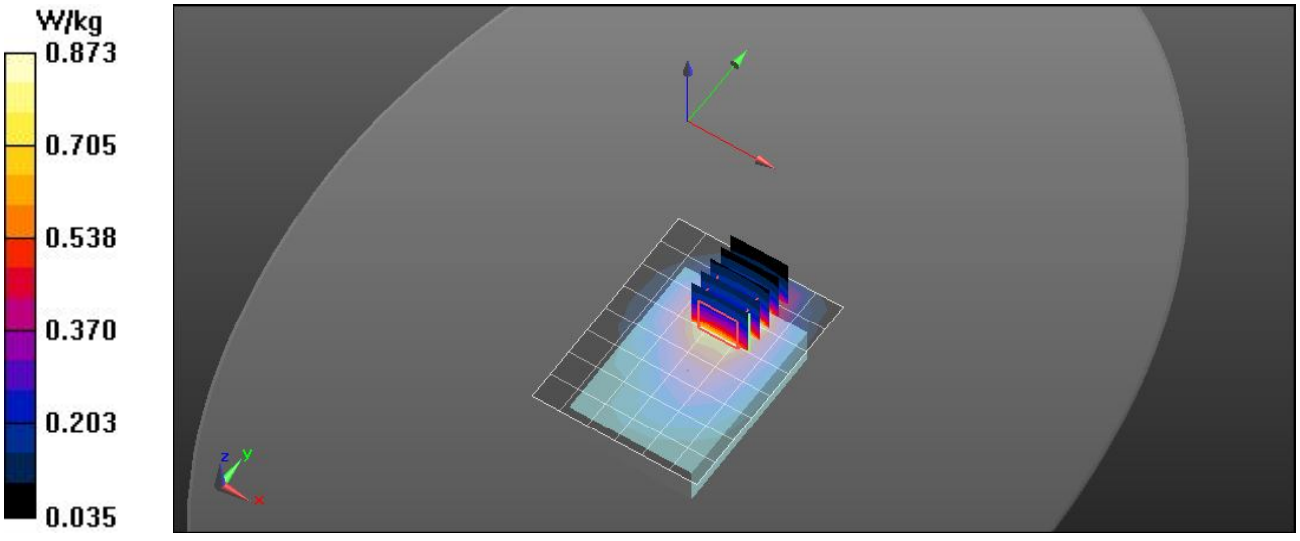
Procedure Notes:

835 MHz WCDMA/Top Mid/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.810 W/kg

835 MHz WCDMA/Top Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.489 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.07 W/kg
SAR(1 g) = 0.679 W/kg; SAR(10 g) = 0.447 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.873 W/kg



RF Exposure Lab

Plot 2

DUT: MiFi 6620; Type: Hotspot; Serial: SS220414800535

Communication System: GPRS 1-Slot (GMSK); Frequency: 836.6 MHz; Duty Cycle: 1:8.30042
Medium: MSL835; Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.982 S/m; ε_r = 54.375; ρ = 1000 kg/m^3
Phantom section: Flat Section

Test Date: Date: 5/25/2014; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(8.66, 8.66, 8.66); Calibrated: 8/27/2013;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn759; Calibrated: 8/15/2013
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1065
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

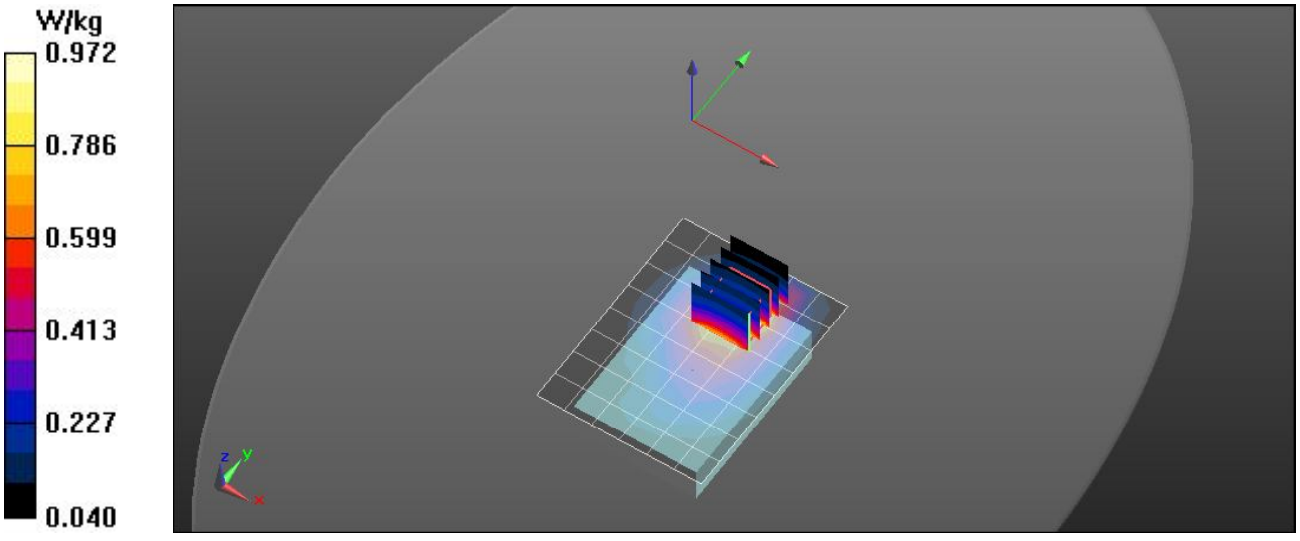
Procedure Notes:

835 MHz GSM/Top Mid/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.898 W/kg

835 MHz GSM/Top Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 21.489 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.23 W/kg
SAR(1 g) = 0.697 W/kg; SAR(10 g) = 0.421 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.972 W/kg



RF Exposure Lab

Plot 3

DUT: MiFi6630; Type: Hotspot; Serial: SH181114900016

Communication System: LTE (SC-FDMA, 1 RB, 10 MHz, QPSK); Frequency: 836.5 MHz; Duty Cycle: 1:1
Medium: MSL835; Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.992 S/m; ε_r = 54.924; ρ = 1000 kg/m^3
Phantom section: Flat Section

Test Date: Date: 12/18/2014; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3662; ConvF(9.3, 9.3, 9.3); Calibrated: 4/15/2014;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1416; Calibrated: 1/13/2014
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1065
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

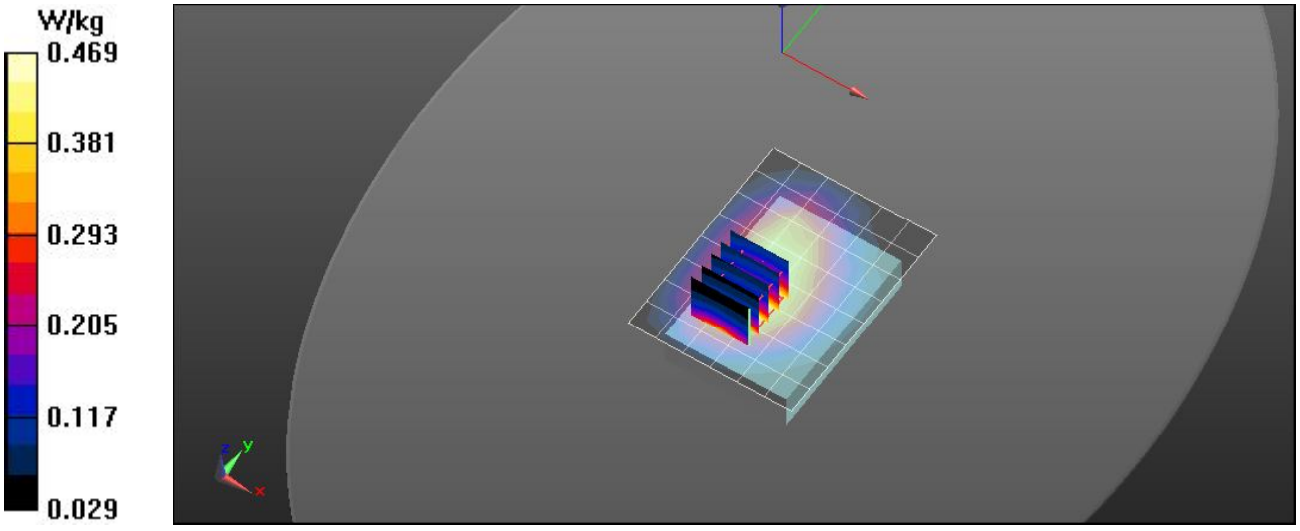
Procedure Notes:

835 MHz LTE/Top Mid 1RB 0 Offset/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.454 W/kg

835 MHz LTE/Top Mid 1RB 0 Offset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 20.19 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.549 W/kg
SAR(1 g) = 0.391 W/kg; SAR(10 g) = 0.274 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.469 W/kg



RF Exposure Lab

Plot 4

DUT: MiFi 6620; Type: Hotspot; Serial: SS220414800535

Communication System: UMTS (WCDMA); Frequency: 1852.4 MHz; Duty Cycle: 1:1
Medium: MSL1900; Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.492 S/m; ε_r = 53.265; ρ = 1000 kg/m^3
Phantom section: Flat Section

Test Date: Date: 5/25/2014; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(7.1, 7.1, 7.1); Calibrated: 8/27/2013;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn759; Calibrated: 8/15/2013
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1065
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

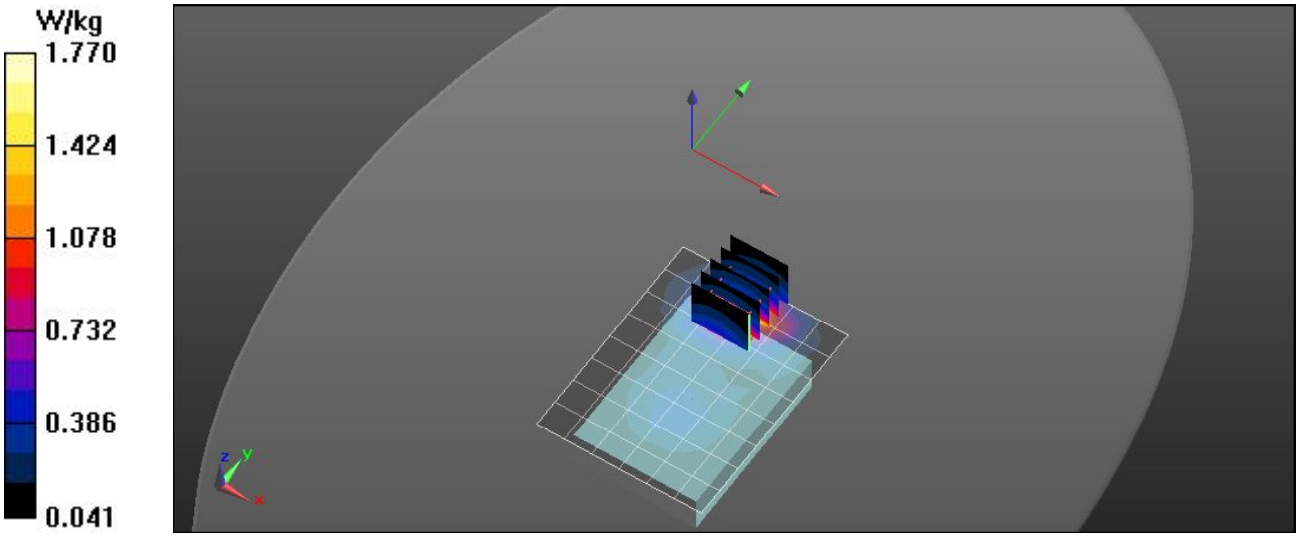
Procedure Notes:

1900 MHz WCDMA/Bottom Low/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.80 W/kg

1900 MHz WCDMA/Bottom Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.241 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 2.12 W/kg
SAR(1 g) = 1.35 W/kg; SAR(10 g) = 0.779 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.77 W/kg



RF Exposure Lab

Plot 5

DUT: MiFi 6620; Type: Hotspot; Serial: SS220414800535

Communication System: GPRS 1-Slot (GMSK); Frequency: 1880 MHz; Duty Cycle: 1:8.30042
Medium: MSL1900; Medium parameters used: f = 1880 MHz; σ = 1.52 S/m; ε_r = 53.21; ρ = 1000 kg/m^3
Phantom section: Flat Section

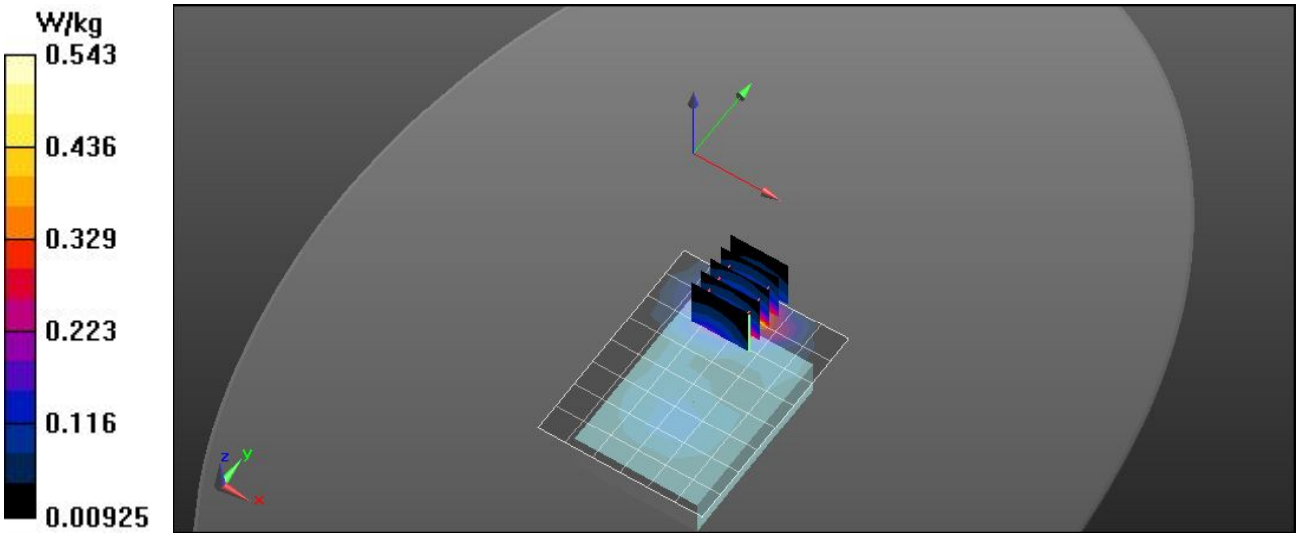
Test Date: Date: 5/26/2014; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(7.1, 7.1, 7.1); Calibrated: 8/27/2013;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn759; Calibrated: 8/15/2013
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1065
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Procedure Notes:

1900 MHz GSM/Bottom Mid/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.549 W/kg

1900 MHz GSM/Bottom Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.812 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 0.653 W/kg
SAR(1 g) = 0.415 W/kg; SAR(10 g) = 0.234 W/kg
Maximum value of SAR (measured) = 0.543 W/kg



RF Exposure Lab

Plot 6

DUT: MiFi 6620; Type: Hotspot; Serial: SS220414800535

Communication System: LTE (SC-FDMA, 1 RB, 20 MHz, QPSK); Frequency: 1860 MHz; Duty Cycle: 1:1
Medium: MSL1900; Medium parameters used: f = 1860 MHz; σ = 1.5 S/m; ε_r = 53.25; ρ = 1000 kg/m^3
Phantom section: Flat Section

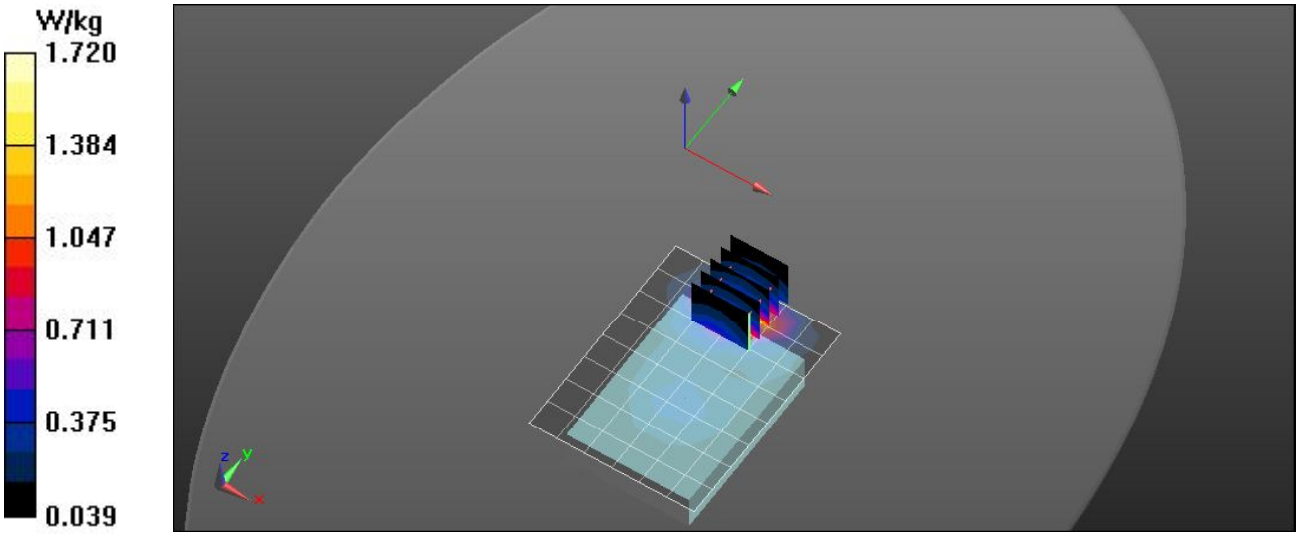
Test Date: Date: 5/26/2014; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(7.1, 7.1, 7.1); Calibrated: 8/27/2013;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn759; Calibrated: 8/15/2013
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1065
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Procedure Notes:

1900 MHz LTE/Bottom Low 1RB 0 Offset/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.75 W/kg

1900 MHz LTE/Bottom Low 1RB 0 Offset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.943 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 2.07 W/kg
SAR(1 g) = 1.27 W/kg; SAR(10 g) = 0.733 W/kg
Maximum value of SAR (measured) = 1.72 W/kg



RF Exposure Lab

Plot 7

DUT: MiFi 6620; Type: Hotspot; Serial: SS220414800535

Communication System: LTE (SC-FDMA, 1 RB, 20 MHz, QPSK); Frequency: 1720 MHz; Duty Cycle: 1:1
Medium: MSL1750; Medium parameters used: f = 1720 MHz; σ = 1.54 S/m; ε_r = 52.78; ρ = 1000 kg/m^3
Phantom section: Flat Section

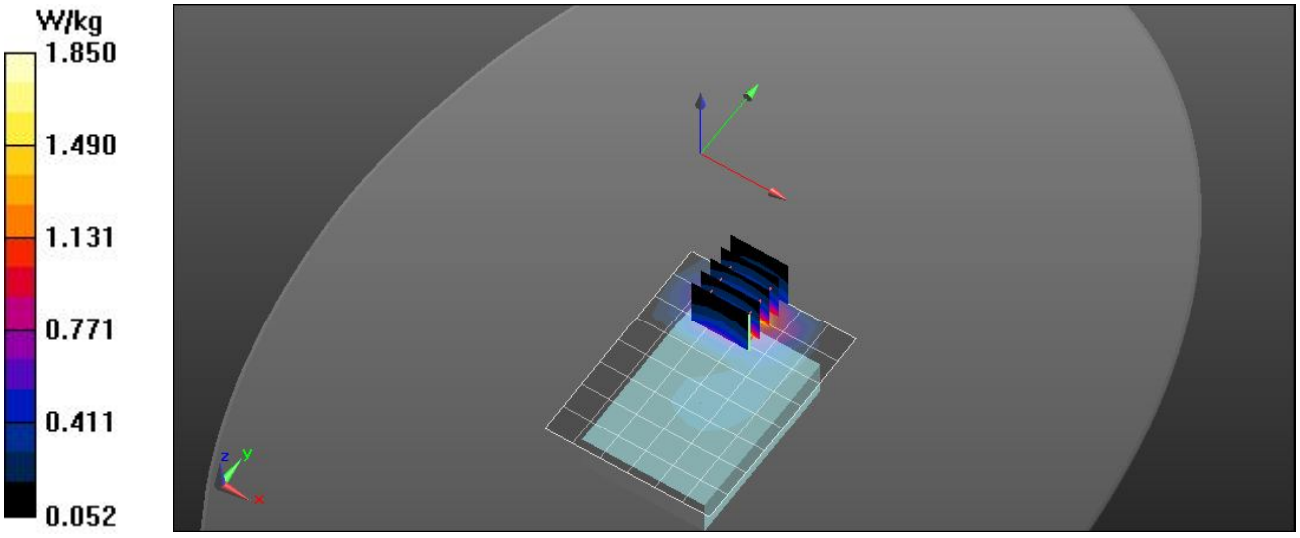
Test Date: Date: 5/23/2014; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(7.35, 7.35, 7.35); Calibrated: 8/27/2013;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn759; Calibrated: 8/15/2013
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1065
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Procedure Notes:

1750 MHz LTE/Bottom Low 1RB 0 Offset/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.64 W/kg

1750 MHz LTE/Bottom Low 1RB 0 Offset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.943 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 2.22 W/kg
SAR(1 g) = 1.42 W/kg; SAR(10 g) = 0.807 W/kg
Maximum value of SAR (measured) = 1.85 W/kg



RF Exposure Lab

Plot 8

DUT: MiFi6630; Type: Hotspot; Serial: SH181114900016

Communication System: LTE (SC-FDMA, 1 RB, 10 MHz, QPSK); Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: MSL750; Medium parameters used (interpolated): f = 707.5 MHz; σ = 0.95 S/m; ε_r = 55.43; ρ = 1000 kg/m^3
Phantom section: Flat Section

Test Date: Date: 12/18/2014; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3662; ConvF(9.42, 9.42, 9.42); Calibrated: 4/15/2014;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1416; Calibrated: 1/13/2014
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1065
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

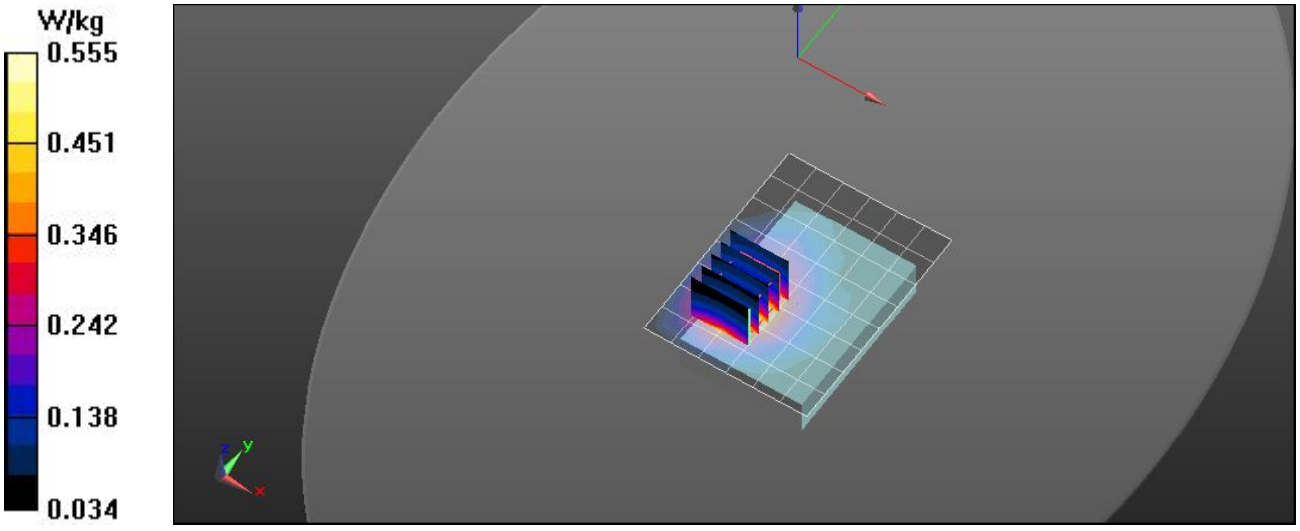
Procedure Notes:

750 MHz LTE/Top Mid 1RB 0 Offset/Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.548 W/kg

750 MHz LTE/Top Mid 1RB 0 Offset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.14 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.655 W/kg
SAR(1 g) = 0.440 W/kg; SAR(10 g) = 0.294 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.555 W/kg



RF Exposure Lab

Plot 9

DUT: MiFi 6620; Type: Hotspot; Serial: SS220414800535

Communication System: WiFi 802.11b (DSSS, 1 Mbps); Frequency: 2437 MHz; Duty Cycle: 1:1
Medium: MSL2450; Medium parameters used (interpolated): f = 2437 MHz; σ = 1.947 S/m; ε_r = 52.556; ρ = 1000 kg/m^3
Phantom section: Flat Section

Test Date: Date: 2/17/2015; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3662; ConvF(7.12, 7.12, 7.12); Calibrated: 4/15/2014;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn759; Calibrated: 8/12/2014
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: 1251
Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

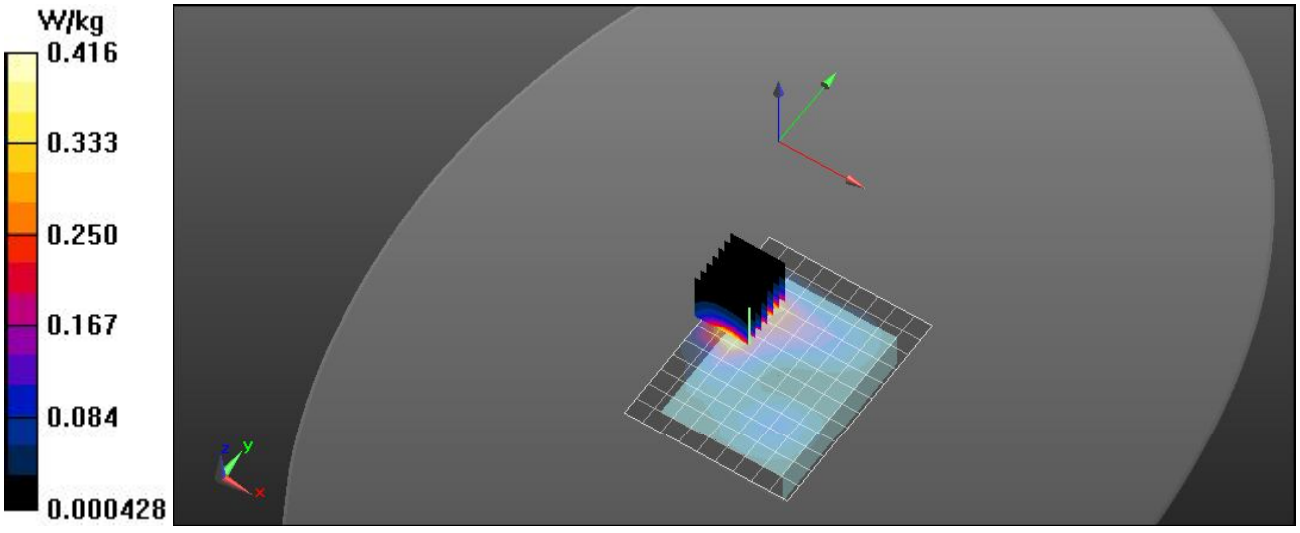
Procedure Notes:

2.4 GHz/Chain 0 Top 6/Area Scan (10x13x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.420 W/kg

2.4 GHz/Chain 0 Top 6/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.727 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.551 W/kg
SAR(1 g) = 0.278 W/kg; SAR(10 g) = 0.138 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.416 W/kg



RF Exposure Lab

Plot 10

DUT: MiFi 6620; Type: Hotspot; Serial: SS220414800535

Communication System: WiFi 802.11a (OFDM, 6 Mbps); Frequency: 5220 MHz; Duty Cycle: 1:1
Medium: MSL 3-6 GHz; Medium parameters used: f = 5220 MHz; σ = 5.23 S/m; ε_r = 49.04; ρ = 1000 kg/m^3
Phantom section: Flat Section

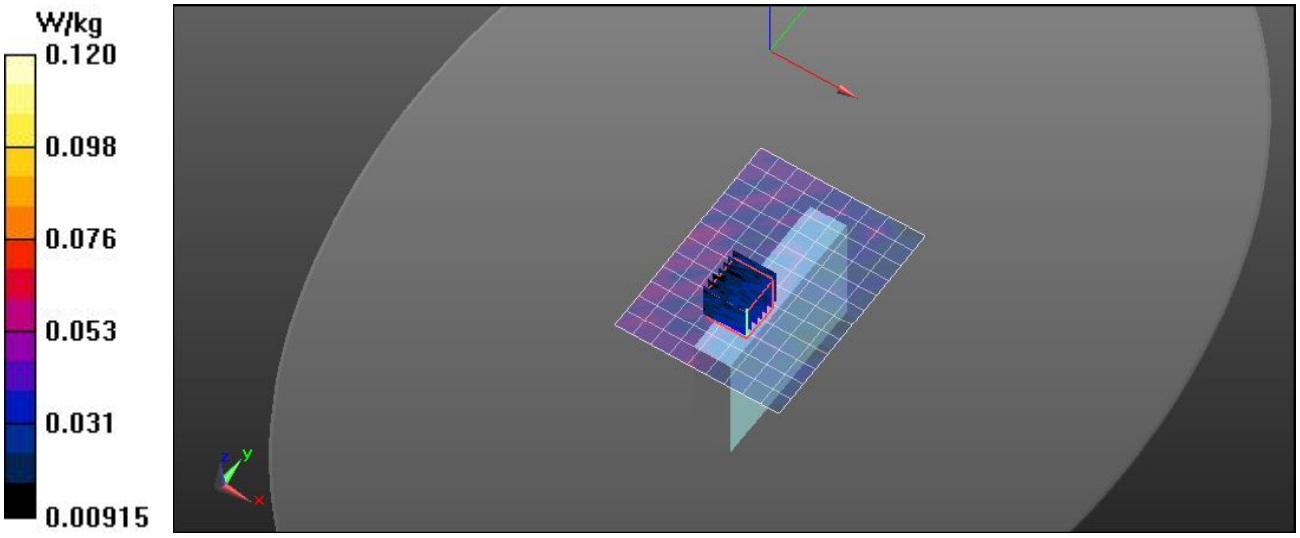
Test Date: Date: 5/31/2014; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(4.39, 4.39, 4.39); Calibrated: 8/27/2013;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn759; Calibrated: 8/15/2013
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1065
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Procedure Notes:

5.2 GHz/Chain 0 Right 44/Area Scan (10x13x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (measured) = 0.0863 W/kg

5.2 GHz/Chain 0 Right 44/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.901 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.246 W/kg
SAR(1 g) = 0.067 W/kg; SAR(10 g) = 0.033 W/kg
Maximum value of SAR (measured) = 0.120 W/kg



RF Exposure Lab

Plot 11

DUT: MiFi 6620; Type: Hotspot; Serial: SS220414800535

Communication System: WiFi 802.11a (OFDM, 6 Mbps); Frequency: 5785 MHz; Duty Cycle: 1:1
Medium: MSL 3-6 GHz; Medium parameters used (interpolated): f = 5785 MHz; σ = 5.975 S/m; ε_r = 48.193; ρ = 1000 kg/m^3
Phantom section: Flat Section

Test Date: Date: 6/1/2014; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(4.04, 4.04, 4.04); Calibrated: 8/27/2013;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn759; Calibrated: 8/15/2013
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1065
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

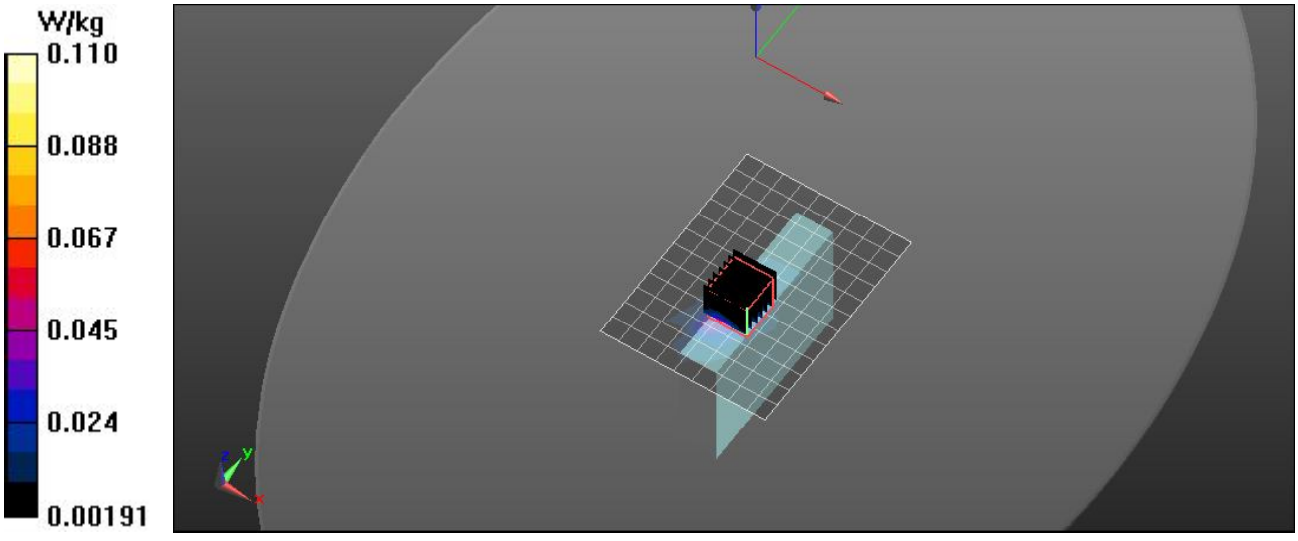
Procedure Notes:

5.8 GHz/Chain 0 Right 157/Area Scan (10x13x1): Measurement grid: dx=10mm, dy=10mm

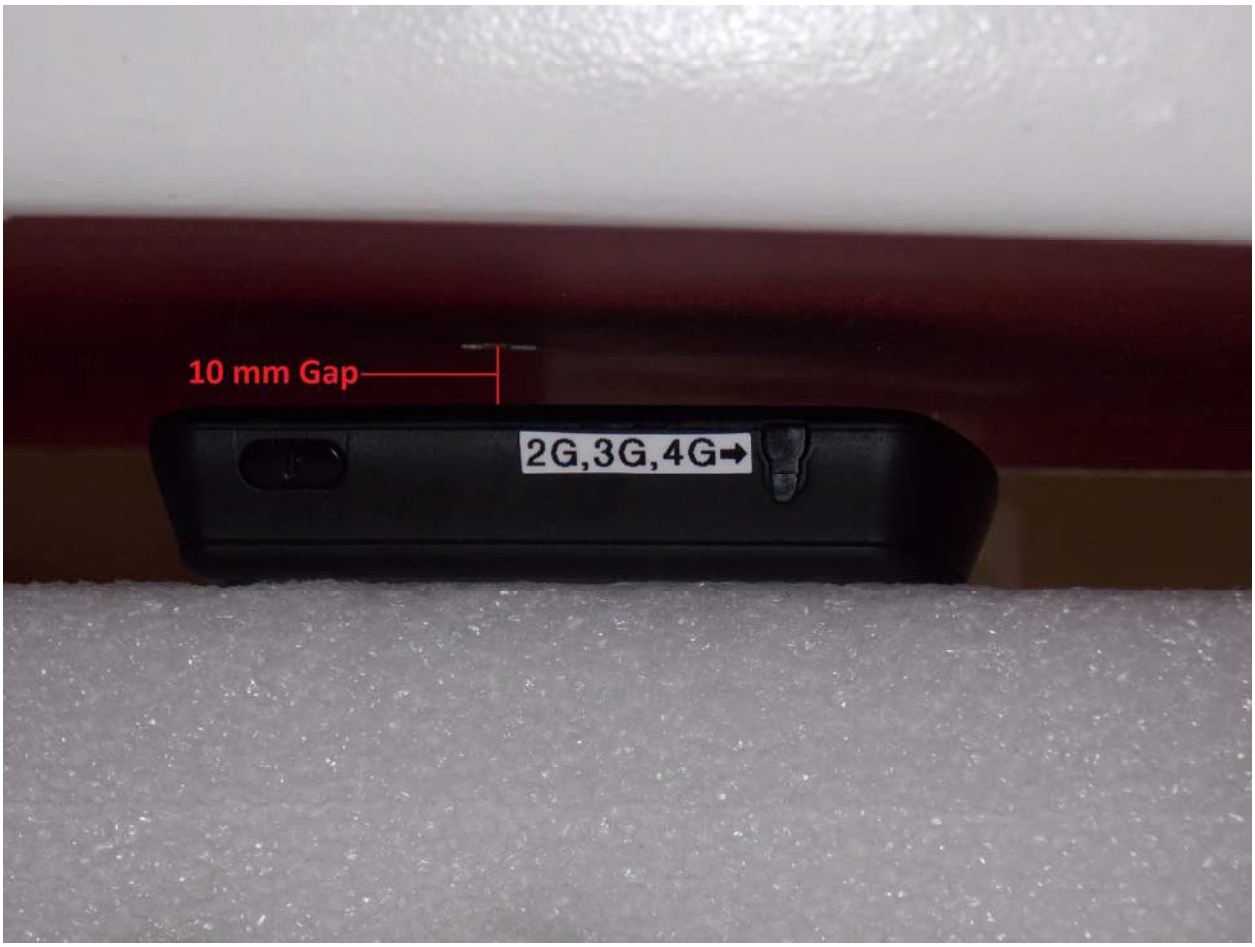
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.112 W/kg

5.8 GHz/Chain 0 Right 157/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 1.956 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.401 W/kg
SAR(1 g) = 0.066 W/kg; SAR(10 g) = 0.037 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.110 W/kg

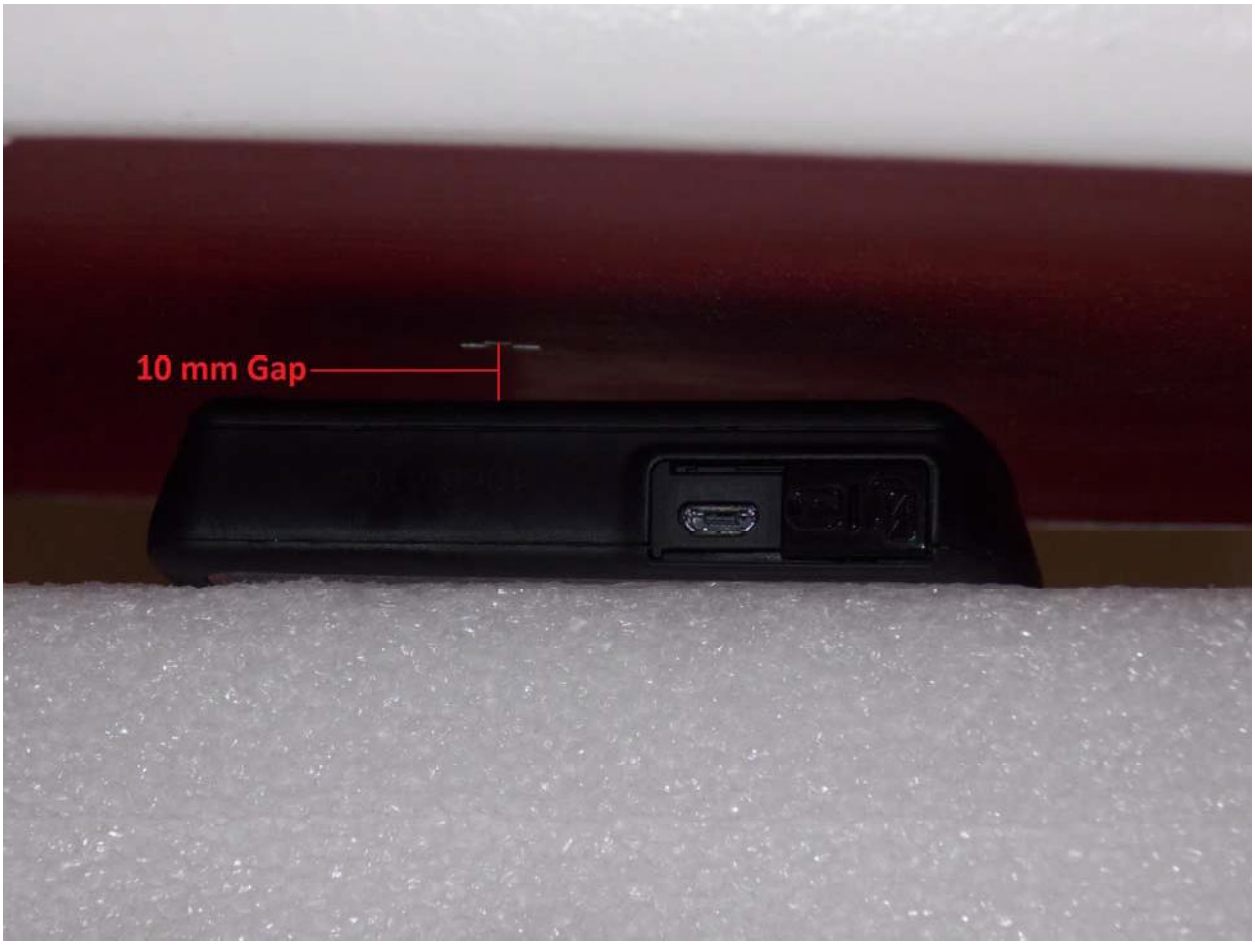


Appendix C – SAR Test Setup Photos

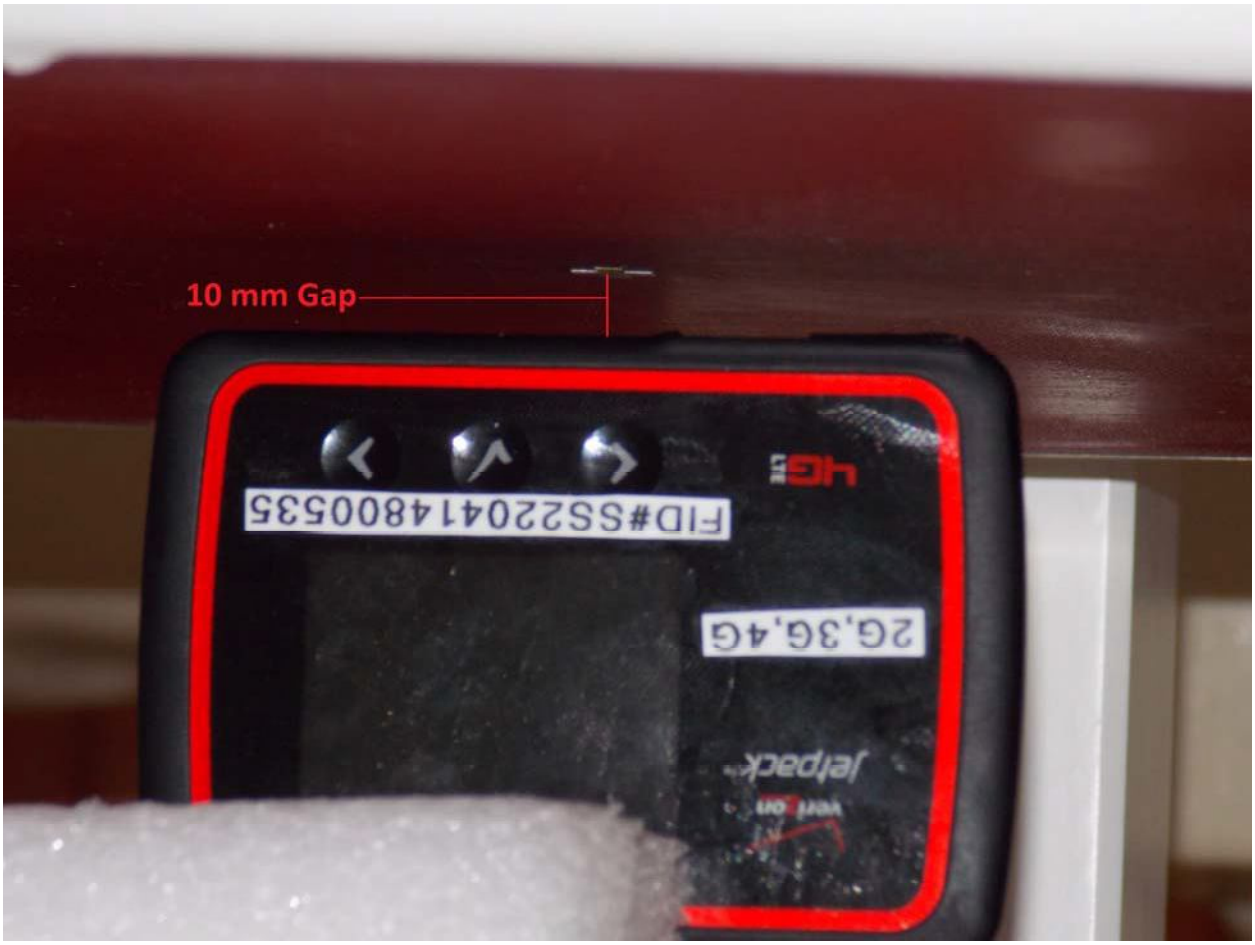


Test Position Side A 10 mm Gap

Test Position Side B 10 mm Gap



Test Position Side C 10 mm Gap



Test Position Side D 10 mm Gap

Test Position Side E 10 mm Gap

Test and Antenna Locations

Front of Device

Back of Device

Appendix D – Probe Calibration Data Sheets

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client **RF Exposure lab**

Certificate No: EX3-3693_Aug13

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3693

Calibration procedure(s): QA CAL-01.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6
Calibration procedure for dosimetric E-field probes

Calibration date: August 27, 2013

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	04-Apr-13 (No. 217-01733)	Apr-14
Power sensor E4412A	MY41498087	04-Apr-13 (No. 217-01733)	Apr-14
Reference 3 dB Attenuator	SN: S5054 (3c)	04-Apr-13 (No. 217-01737)	Apr-14
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-13 (No. 217-01735)	Apr-14
Reference 30 dB Attenuator	SN: S5129 (30b)	04-Apr-13 (No. 217-01738)	Apr-14
Reference Probe ES3DV2	SN: 3013	28-Dec-12 (No. ES3-3013_Dec12)	Dec-13
DAE4	SN: 660	31-Jan-13 (No. DAE4-660_Jan13)	Jan-14
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-13)	In house check: Apr-15
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 29, 2013

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z: A, B, C, D* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy):* in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset:* The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe EX3DV4

SN:3693

Manufactured: April 22, 2009
Calibrated: August 27, 2013

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3693

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.49	0.48	0.46	± 10.1 %
DCP (mV)[B]	97.4	101.0	102.0	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[F] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	166.1	±3.0 %
		Y	0.0	0.0	1.0		162.2	
		Z	0.0	0.0	1.0		163.1	

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

[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required
[F] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3693

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	41.9	0.89	9.00	9.00	9.00	0.21	1.28	± 12.0 %
835	41.5	0.90	8.84	8.84	8.84	0.80	0.60	± 12.0 %
900	41.5	0.97	8.61	8.61	8.61	0.39	0.89	± 12.0 %
1750	40.1	1.37	7.69	7.69	7.69	0.41	0.75	± 12.0 %
1900	40.0	1.40	7.49	7.49	7.49	0.53	0.68	± 12.0 %
2450	39.2	1.80	6.79	6.79	6.79	0.30	0.92	± 12.0 %
2550	39.1	1.91	6.64	6.64	6.64	0.30	0.96	± 12.0 %
2600	39.0	1.96	6.66	6.66	6.66	0.26	1.07	± 12.0 %
5200	36.0	4.66	4.93	4.93	4.93	0.40	1.80	± 13.1 %
5300	35.9	4.76	4.59	4.59	4.59	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.34	4.34	4.34	0.40	1.80	± 13.1 %
5800	35.3	5.27	4.25	4.25	4.25	0.45	1.80	± 13.1 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3693

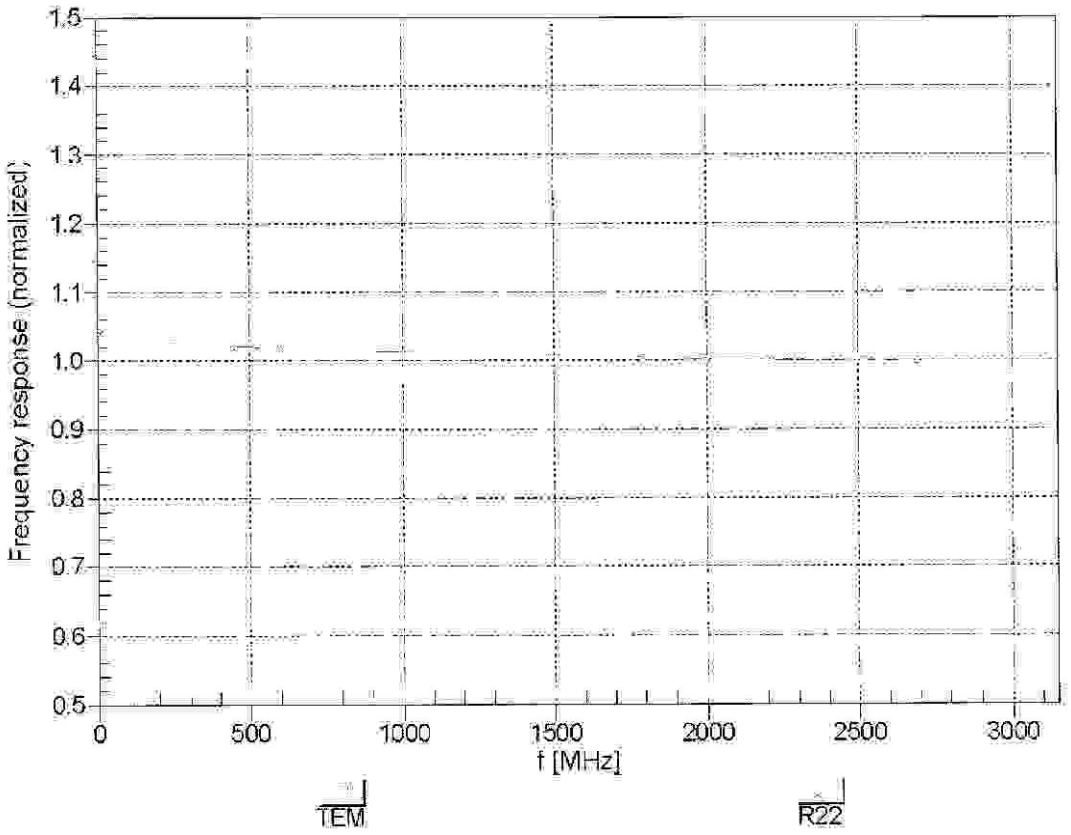
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	55.5	0.96	8.67	8.67	8.67	0.55	0.76	± 12.0 %
835	55.2	0.97	8.66	8.66	8.66	0.31	1.03	± 12.0 %
900	55.0	1.05	8.46	8.46	8.46	0.24	1.34	± 12.0 %
1750	53.4	1.49	7.35	7.35	7.35	0.33	0.97	± 12.0 %
1900	53.3	1.52	7.10	7.10	7.10	0.27	1.01	± 12.0 %
2450	52.7	1.95	6.70	6.70	6.70	0.72	0.60	± 12.0 %
2550	52.6	2.09	6.79	6.79	6.79	0.74	0.62	± 12.0 %
2600	52.5	2.16	6.61	6.61	6.61	0.77	0.55	± 12.0 %
5200	49.0	5.30	4.39	4.39	4.39	0.40	1.90	± 13.1 %
5300	48.9	5.42	4.10	4.10	4.10	0.45	1.90	± 13.1 %
5600	48.5	5.77	3.63	3.63	3.63	0.50	1.90	± 13.1 %
5800	48.2	6.00	4.04	4.04	4.04	0.50	1.90	± 13.1 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band

[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters

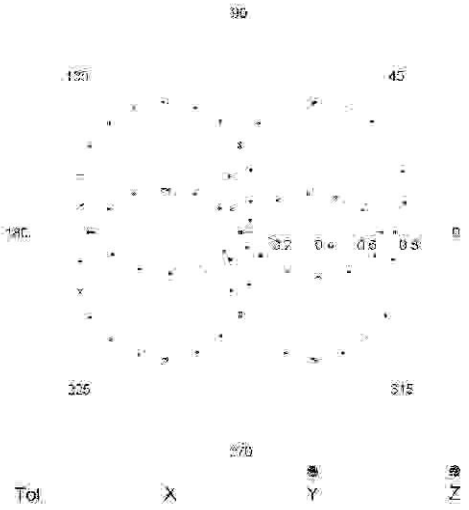
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



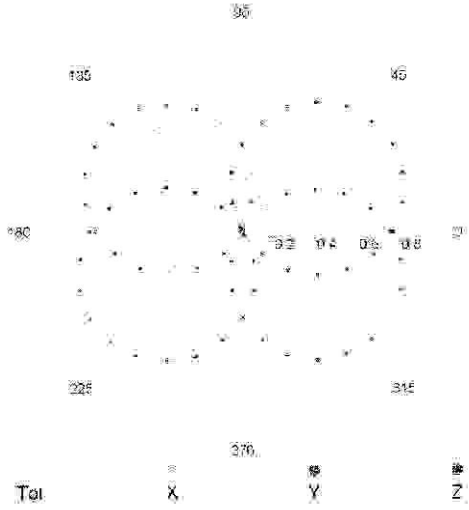
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

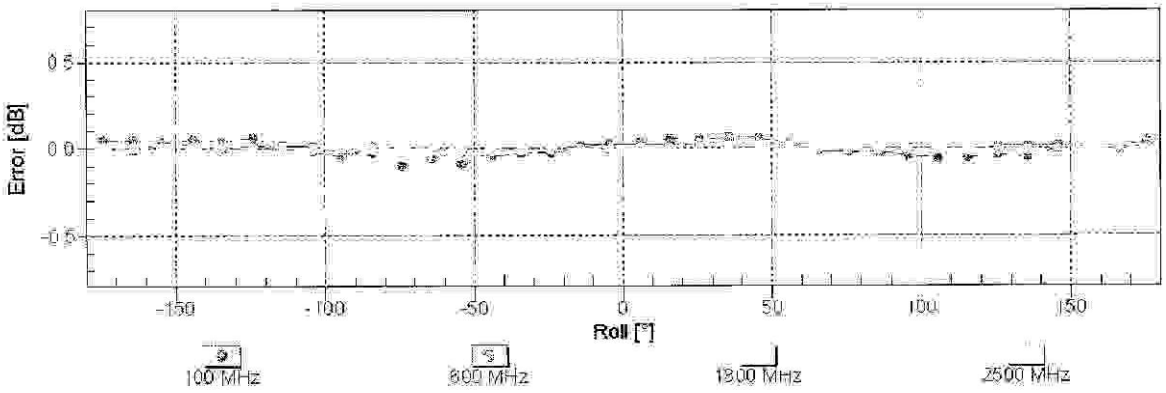
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



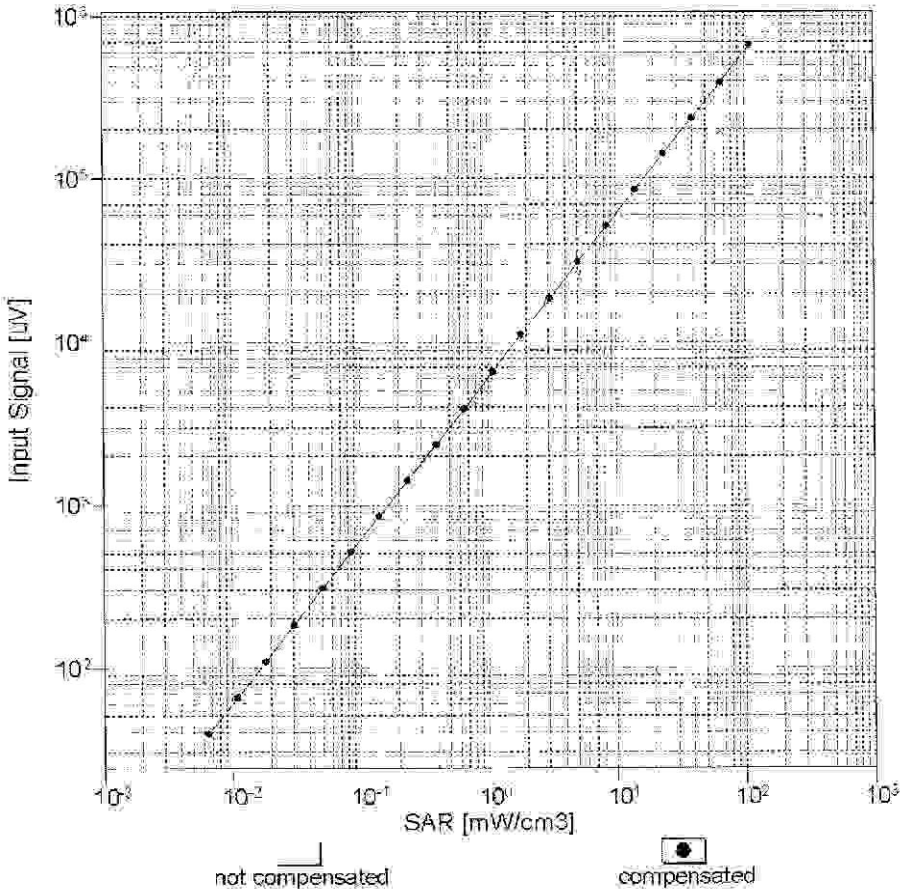
f=1800 MHz,R22

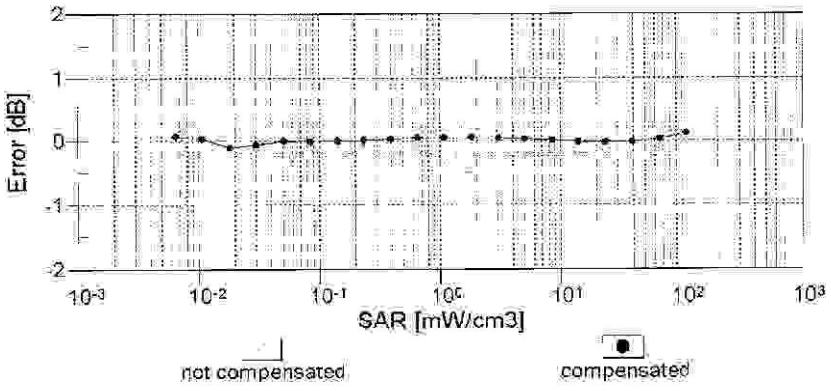




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})
(TEM cell , f = 900 MHz)

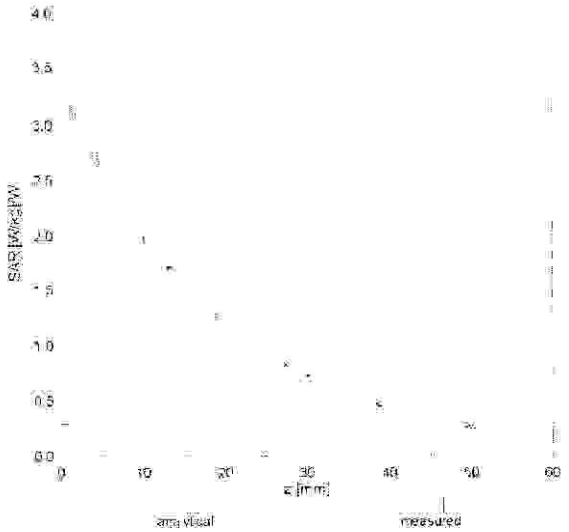




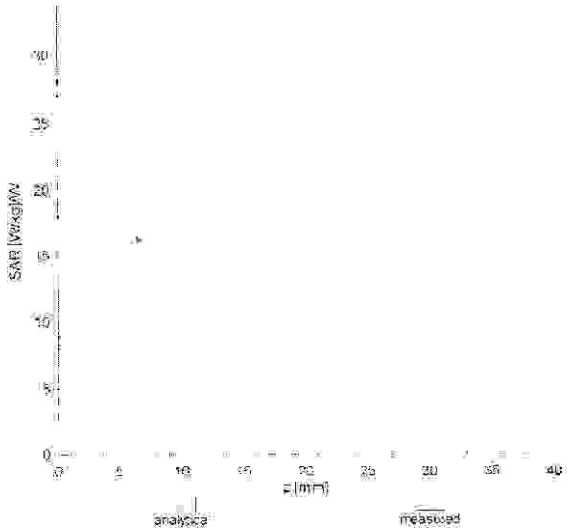
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

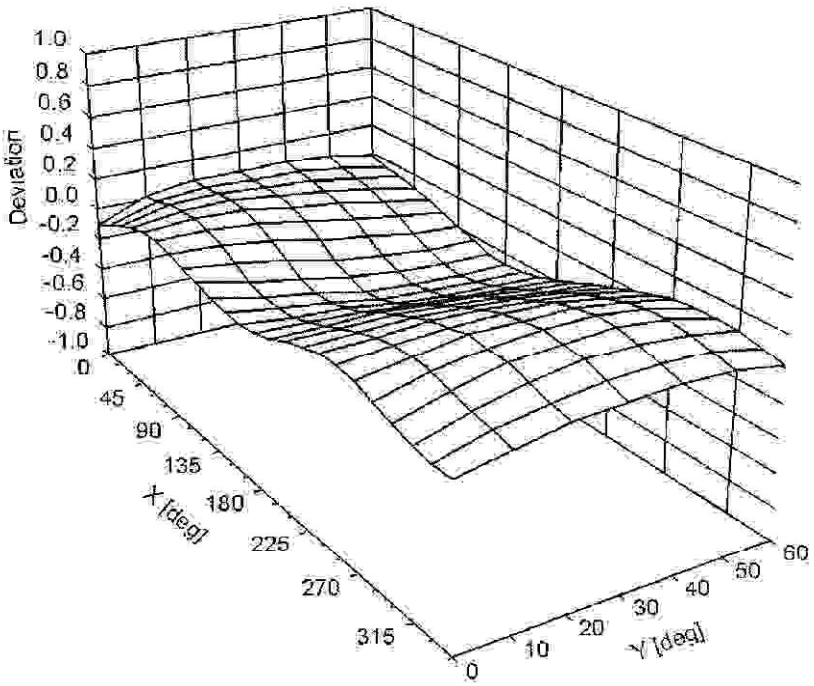


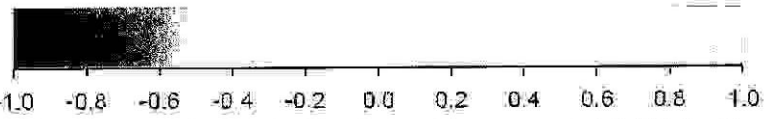
f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz





Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)