



Appendix A. System Check Plots

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Test Laboratory: HUAWEI SAR/HAC Lab

SystemPerformanceCheck-D750-EX-Body

DUT: Dipole 750 MHz D750V3; Type: D750V3; Serial: D750V3 - SN:1132

Communication System: UID 0, CW (0); Frequency: 750 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 750$ MHz; $\sigma = 0.982$ S/m; $\epsilon_r = 54.636$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- ε Probe: EX3DV4 - SN7505; ConvF(9.96, 9.96, 9.96) @ 750 MHz; Calibrated: 2018-6-12
- ε Sensor-Surface: 1.4mm (Mechanical Surface Detection), $z = 1.0, 31.0$
- ε Electronics: DAE4 Sn1235; Calibrated: 2017-11-16
- ε Phantom: SAM6; Type: SAM; Serial: 1892
- ε DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439)

Configuration/d=15mm, Pin=250mW/Area Scan (6x14x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (measured) = 2.67 W/kg

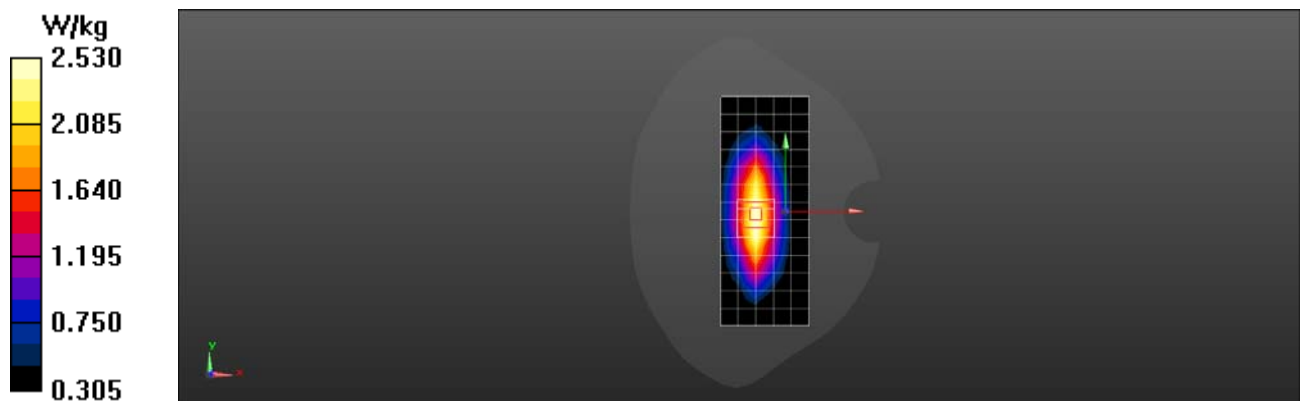
Configuration/d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 43.16 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 2.74 W/kg

SAR(1 g) = 2.03 W/kg; SAR(10 g) = 1.4 W/kg

Maximum value of SAR (measured) = 2.53 W/kg



Test Laboratory: HUAWEI SAR/HAC Lab

SystemPerformanceCheck-D835-EX-Body

DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:4d126

Communication System: UID 0, CW (0); Frequency: 835 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 835$ MHz; $\sigma = 1.01$ S/m; $\epsilon_r = 54.366$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- ε Probe: EX3DV4 - SN7505; ConvF(9.73, 9.73, 9.73) @ 835 MHz; Calibrated: 2018-6-12
- ε Sensor-Surface: 1.4mm (Mechanical Surface Detection), $z = 1.0, 31.0$
- ε Electronics: DAE4 Sn1235; Calibrated: 2017-11-16
- ε Phantom: SAM6; Type: SAM; Serial: 1892
- ε DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439)

Configuration/d=15mm, Pin=250mW/Area Scan (6x13x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (measured) = 3.18 W/kg

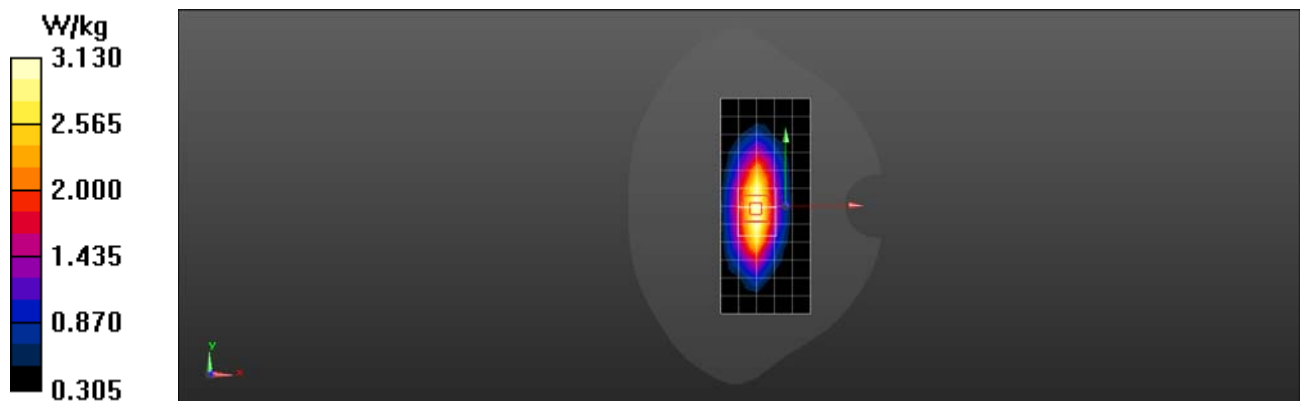
Configuration/d=15mm, Pin=250mW/Zoom Scan (5x6x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 52.60 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 3.40 W/kg

SAR(1 g) = 2.5 W/kg; SAR(10 g) = 1.71 W/kg

Maximum value of SAR (measured) = 3.13 W/kg



Test Laboratory: HUAWEI SAR/HAC Lab

SystemPerformanceCheck-D1900-EX-Body

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2; Serial: D1900V2 - SN:5d142

Communication System: UID 0, CW (0); Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.583$ S/m; $\epsilon_r = 52.609$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- ε Probe: EX3DV4 - SN7505; ConvF(7.87, 7.87, 7.87) @ 1900 MHz; Calibrated: 2018-6-12
- ε Sensor-Surface: 1.4mm (Mechanical Surface Detection), $z = 1.0, 31.0$
- ε Electronics: DAE4 Sn1235; Calibrated: 2017-11-16
- ε Phantom: SAM6; Type: SAM; Serial: 1892
- ε DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439)

Configuration/d=10mm pin=250mW/Area Scan (6x10x1): Measurement grid: $dx=15$ mm, $dy=15$ mm

Maximum value of SAR (measured) = 14.4 W/kg

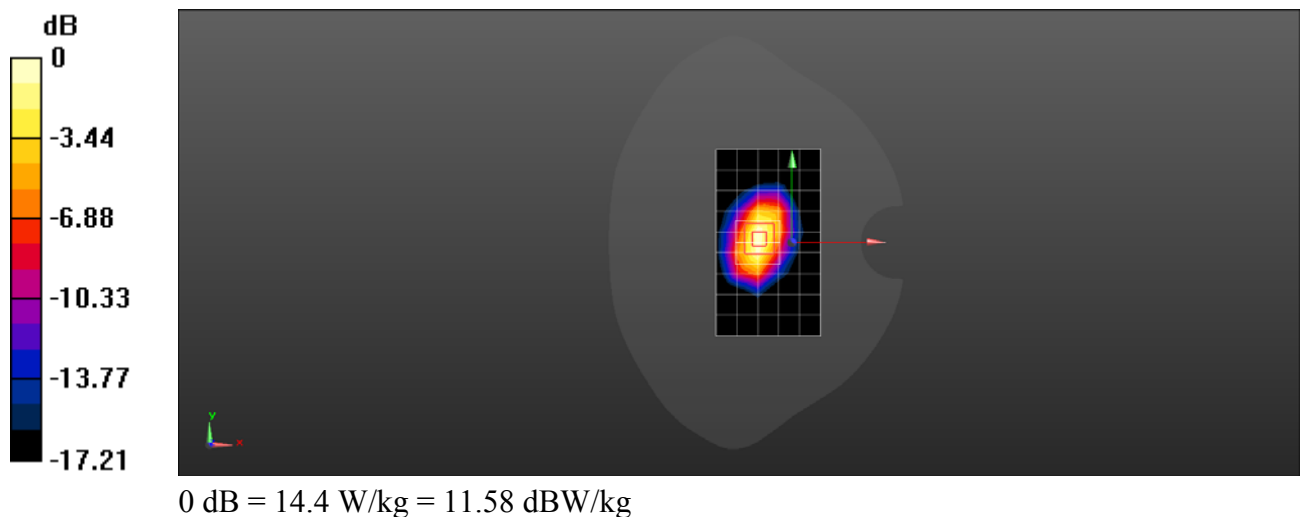
Configuration/d=10mm pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 82.53 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 16.4 W/kg

SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.52 W/kg

Maximum value of SAR (measured) = 14.4 W/kg



Test Laboratory: HUAWEI SAR/HAC Lab

SystemPerformanceCheck-D2450-EX-Body

DUT: Dipole 2450 MHz D2450V2; Type: D2450V2; Serial: D2450V2 -SN:978

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 2450$ MHz; $\sigma = 2.01$ S/m; $\epsilon_r = 53.519$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- ε Probe: EX3DV4 - SN7505; ConvF(7.28, 7.28, 7.28) @ 2450 MHz; Calibrated: 2018-6-12
- ε Sensor-Surface: 1.4mm (Mechanical Surface Detection), $z = 1.0, 31.0$
- ε Electronics: DAE4 Sn1235; Calibrated: 2017-11-16
- ε Phantom: SAM6; Type: SAM; Serial: 1892
- ε DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439)

Configuration/d=10mm, Pin=250mW/Area Scan (7x11x1): Measurement grid: $dx=12$ mm, $dy=12$ mm

Maximum value of SAR (measured) = 13.8 W/kg

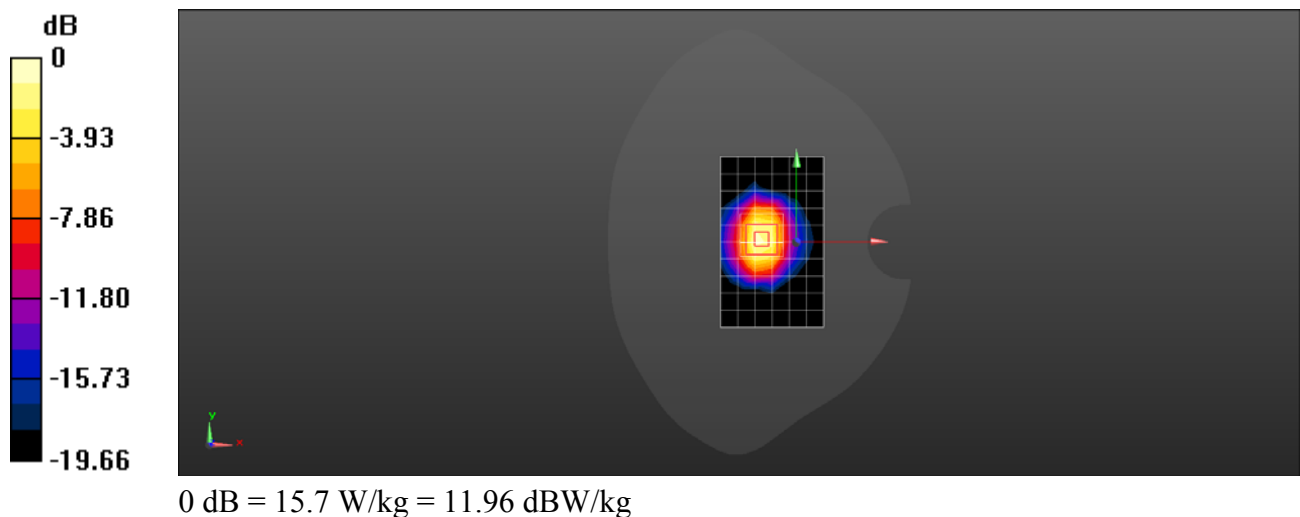
Configuration/d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 69.87 V/m; Power Drift = -0.19 dB

Peak SAR (extrapolated) = 22.7 W/kg

SAR(1 g) = 12.2 W/kg; SAR(10 g) = 5.92 W/kg

Maximum value of SAR (measured) = 15.7 W/kg





System Validation

Per FCC KDB 865664 D02, SAR system verification is required to confirm measurement accuracy. The SAR systems (including SAR probes, system components and software versions) used for this device were validated against its performance specifications prior to the SAR measurements. Reference dipoles are used with the required tissue-equivalent media for system validation, according to the procedures outlined in FCC KDB 865664 D01 and IEEE 1528-2013. Since SAR probe calibrations are frequency dependent, each probe calibration point must be validated at a frequency within the valid frequency range of the probe calibration point, using the system that normally operates with the probe for routine SAR measurements and according to the required tissue-equivalent media.

a tabulated summary of the system validation status, measurement frequencies, SAR probes, calibrated signal type(s) and tissue dielectric parameters has been included.



Table of SAR System validation summary:

FREQ.	DATE	PROBE SN	PROBE TYPE	PROBE CAL POINT		PERM	COND	CW VALIDATION			MOD.VALIDATION		
[Mhz]						(ϵ_r)	(σ)	SENSI-TIVITY	PROBE LINARITY	PROBE ISOTROPY	MOD. TYPE	DUTY. FACTORE	PAR
750	2018/7/11	7505	EX3DV4	750	Head	43.58	0.915	PASS	PASS	PASS	N/A	N/A	N/A
835	2018/7/11	7505	EX3DV4	835	Head	43.36	0.945	PASS	PASS	PASS	GMSK	PASS	N/A
900	2018/7/11	7505	EX3DV4	900	Head	43.19	0.970	PASS	PASS	PASS	GMSK	PASS	N/A
1750	2018/7/11	7505	EX3DV4	1750	Head	41.51	1.374	PASS	PASS	PASS	NA	NA	N/A
1900	2018/7/11	7505	EX3DV4	1900	Head	41.28	1.464	PASS	PASS	PASS	GMSK	PASS	N/A
2000	2018/7/11	7505	EX3DV4	2000	Head	41.11	1.517	PASS	PASS	PASS	N/A	N/A	N/A
2300	2018/7/11	7505	EX3DV4	2300	Head	40.75	1.732	PASS	PASS	PASS	N/A	N/A	N/A
2450	2018/7/11	7505	EX3DV4	2450	Head	40.49	1.843	PASS	PASS	PASS	OFDM/TDD	PASS	PASS
2600	2018/7/11	7505	EX3DV4	2600	Head	40.33	1.954	PASS	PASS	PASS	TDD	PASS	N/A
5250	2018/7/11	7505	EX3DV4	5250	Head	35.98	4.529	PASS	PASS	PASS	OFDM	PASS	N/A
5600	2018/7/11	7505	EX3DV4	5600	Head	35.29	4.941	PASS	PASS	PASS	OFDM	PASS	N/A
5750	2018/7/11	7505	EX3DV4	5750	Head	35.08	5.117	PASS	PASS	PASS	OFDM	PASS	N/A
750	2018/7/11	7505	EX3DV4	750	Body	54.84	0.957	PASS	PASS	PASS	N/A	N/A	N/A
835	2018/7/11	7505	EX3DV4	835	Body	54.68	0.991	PASS	PASS	PASS	GMSK	PASS	N/A
1750	2018/7/11	7505	EX3DV4	1750	Body	53.15	1.469	PASS	PASS	PASS	N/A	N/A	N/A
1900	2018/7/11	7505	EX3DV4	1900	Body	53.02	1.577	PASS	PASS	PASS	GMSK	PASS	N/A
2300	2018/7/11	7505	EX3DV4	2300	Body	52.53	1.880	PASS	PASS	PASS	N/A	N/A	N/A
2450	2018/7/11	7505	EX3DV4	2450	Body	52.32	2.025	PASS	PASS	PASS	OFDM/TDD	PASS	PASS
2600	2018/7/11	7505	EX3DV4	2600	Body	52.04	2.165	PASS	PASS	PASS	TDD	PASS	N/A
5250	2018/7/11	7505	EX3DV4	5250	Body	47.23	5.434	PASS	PASS	PASS	OFDM	PASS	N/A
5600	2018/7/11	7505	EX3DV4	5600	Body	46.60	5.922	PASS	PASS	PASS	OFDM	PASS	N/A
5750	2018/7/11	7505	EX3DV4	5750	Body	46.27	6.144	PASS	PASS	PASS	OFDM	PASS	N/A

NOTE: While the probes have been calibrated for both CW and modulated signals, all measurements were performed using communication systems calibrated for CW signals only. Modulations in the table above represent test configurations for which the measurement system has been validated per FCC KDB Publication 865664D01 for scenarios when CW probe calibrations are used with other signal types. SAR systems were validated for modulated signals with a periodic duty cycle, such as GMSK, or with a high peak to average ratio ($>5\text{dB}$), such as OFDM according to KDB865664.