



Appendix A. System Check Plots

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System Performance Check
System validation

Place of testing: HUAWEI SAR/HAC Lab

SystemPerformanceCheck-D2450-EX

DUT: Dipole; Type: D2450V2; Serial: 860

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

Medium parameters used (interpolated): $f = 2450$ MHz; $\sigma = 1.846$ S/m; $\epsilon_r = 40.195$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN7381; ConvF(8, 8, 8) @ 2450 MHz; Calibrated: 2021-11-24
- Sensor-Surface: 1.4mm (Mechanical Surface Detection), $z = 1.0, 31.0$
- Electronics: DAE4 Sn1235; Calibrated: 2021-11-22
- Phantom: SAM7; Type: SAM; Serial: 1594
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Configuration/d=10mm, Pin=250mW/Area Scan (6x6x1): Measurement grid: $dx=12$ mm, $dy=12$ mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 18.1 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 = 78.14 V/m; Power Drift = 0.20 dB

Peak SAR (extrapolated) = 25.9 W/kg

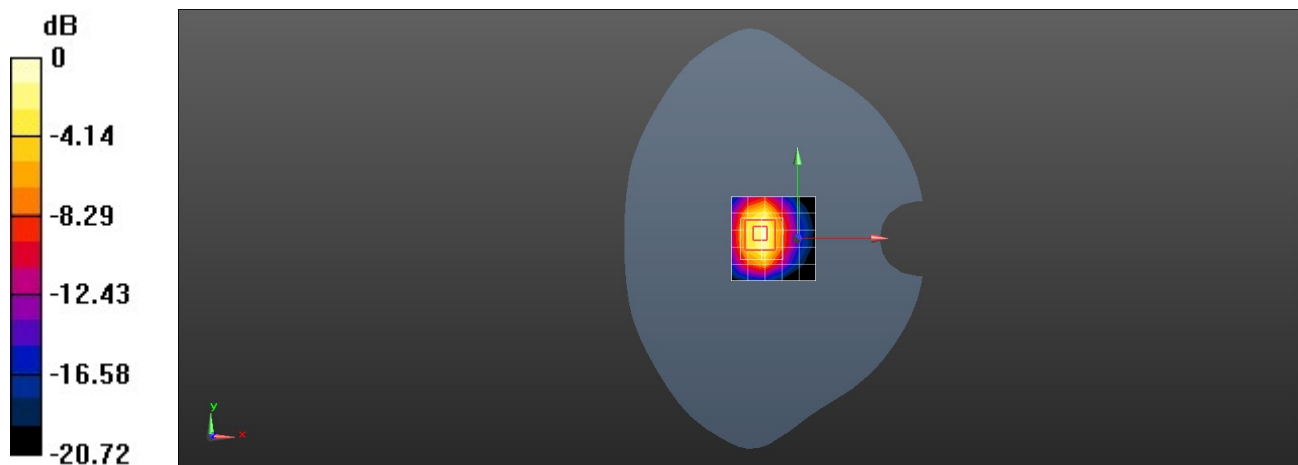
SAR(1 g) = 13.6 W/kg; SAR(10 g) = 6.6 W/kg

Smallest distance from peaks to all points 3 dB below = 9 mm

Ratio of SAR at M2 to SAR at M1 = 53.6%

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 21.5 W/kg



0 dB = 21.5 W/kg = 13.32 dBW/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.

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	2021-01-06	7381	EX3DV4	750	Head	43.34	0.903	PASS	PASS	PASS	N/A	N/A	N/A
835	2021-01-06	7381	EX3DV4	850	Head	43.08	0.933	PASS	PASS	PASS	GMSK	PASS	N/A
1750	2021-01-06	7381	EX3DV4	1750	Head	42.90	0.956	PASS	PASS	PASS	NA	NA	N/A
1800	2021-01-06	7381	EX3DV4	1750	Head	42.07	1.367	PASS	PASS	PASS	NA	NA	N/A
1900	2021-01-06	7381	EX3DV4	1900	Head	41.97	1.401	PASS	PASS	PASS	GMSK	PASS	N/A
2000	2021-01-06	7381	EX3DV4	2000	Head	41.76	1.455	PASS	PASS	PASS	N/A	N/A	N/A
2300	2021-01-06	7381	EX3DV4	2300	Head	39.46	1.463	PASS	PASS	PASS	TDD	PASS	N/A
2450	2021-01-06	7381	EX3DV4	2450	Head	39.14	1.619	PASS	PASS	PASS	OFDM/TDD	PASS	PASS
2600	2021-01-06	7381	EX3DV4	2600	Head	40.37	1.829	PASS	PASS	PASS	TDD	PASS	N/A
3300	2021-01-07	7381	EX3DV4	3300	Head	38.42	1.974	PASS	PASS	PASS	TDD	PASS	N/A
3500	2021-01-07	7381	EX3DV4	3500	Head	38.94	2.716	PASS	PASS	PASS	TDD	PASS	N/A
3700	2021-01-07	7381	EX3DV4	3700	Head	38.49	2.888	PASS	PASS	PASS	TDD	PASS	N/A
3900	2021-01-07	7381	EX3DV4	3900	Head	38.12	3.067	PASS	PASS	PASS	TDD	PASS	N/A
4100	2021-01-07	7381	EX3DV4	4100	Head	37.79	3.261	PASS	PASS	PASS	TDD	PASS	N/A
4500	2021-01-07	7381	EX3DV4	4400	Head	37.38	3.445	PASS	PASS	PASS	TDD	PASS	N/A
4700	2021-01-07	7381	EX3DV4	4600	Head	36.62	3.845	PASS	PASS	PASS	TDD	PASS	N/A
4900	2021-01-07	7381	EX3DV4	4950	Head	36.21	4.037	PASS	PASS	PASS	TDD	PASS	N/A
5250	2021-01-07	7381	EX3DV4	5250	Head	35.83	4.237	PASS	PASS	PASS	OFDM/TDD	PASS	N/A
5600	2021-01-07	7381	EX3DV4	5600	Head	35.13	4.629	PASS	PASS	PASS	OFDM/TDD	PASS	N/A
5750	2021-01-07	7381	EX3DV4	5750	Head	34.26	4.996	PASS	PASS	PASS	OFDM/TDD	PASS	N/A

Table of SAR System validation summary:

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 KDB 865664.