

Plots of System Verification

Annex A. Plots of System Verification

The plots for system verification are shown as follows.

Plots of System Verification

Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab

Date: 2022/03/30

S01 System Check_H5750_220330

DUT: Dipole 5 GHz; Type: D5GHzV2; SN: 1019

Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: H34T60N1_0330 Medium parameters used: $f = 5750$ MHz; $\sigma = 5.276$ S/m; $\epsilon_r = 34.369$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C ; Liquid Temperature : 23.2 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3971; ConvF(4.85, 4.85, 4.85) @ 5750 MHz; Calibrated: 2022/01/25
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1590; Calibrated: 2021/9/20
- Phantom: ELI Phantom_1204; Type: QD OVA 002 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 10.0 W/kg

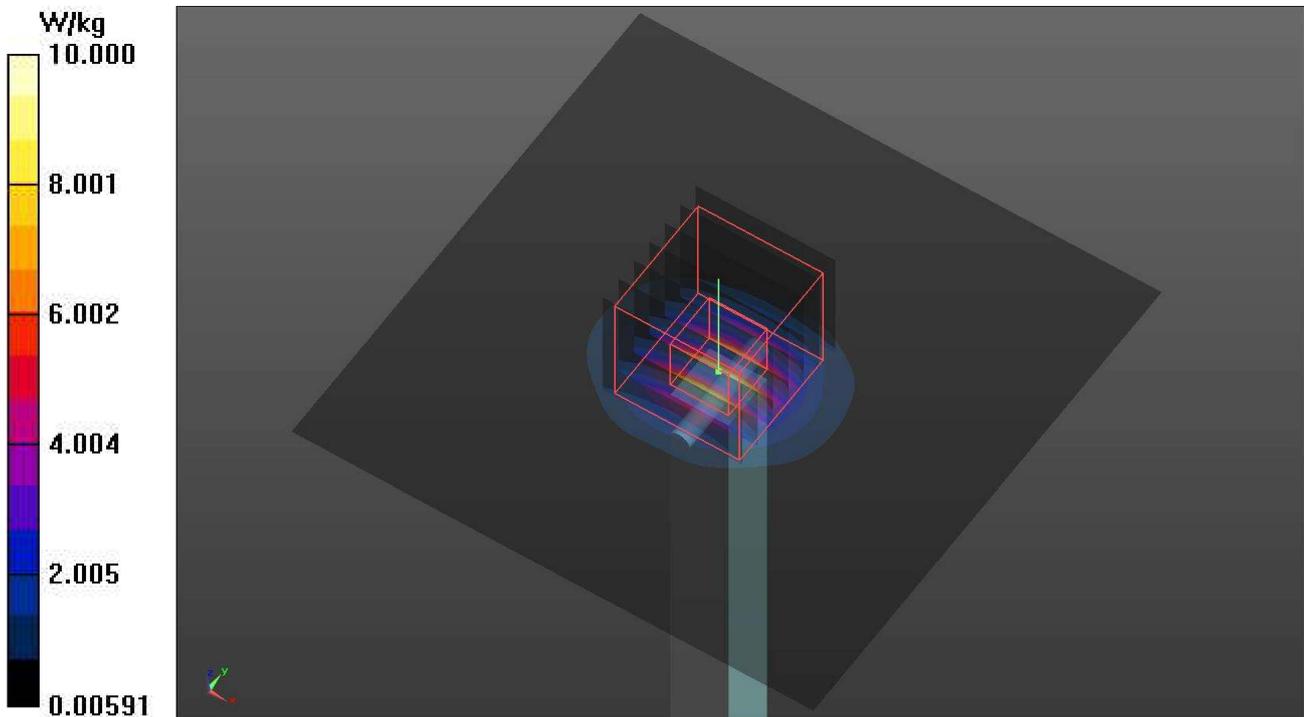
Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 48.86 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 18.7 W/kg

SAR(1 g) = 4.09 W/kg; SAR(10 g) = 1.16 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 10.8 W/kg



Plots of System Verification

Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab

Date: 2022/03/30

S02 System Check_H5750_220330

DUT: Dipole 5 GHz; Type: D5GHzV2; SN: 1019

Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: H34T60N1_0330 Medium parameters used: $f = 5750$ MHz; $\sigma = 5.276$ S/m; $\epsilon_r = 34.369$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C ; Liquid Temperature : 23.2 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3971; ConvF(4.85, 4.85, 4.85) @ 5750 MHz; Calibrated: 2022/01/25
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1590; Calibrated: 2021/9/20
- Phantom: ELI Phantom_1204; Type: QD OVA 002 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 10.0 W/kg

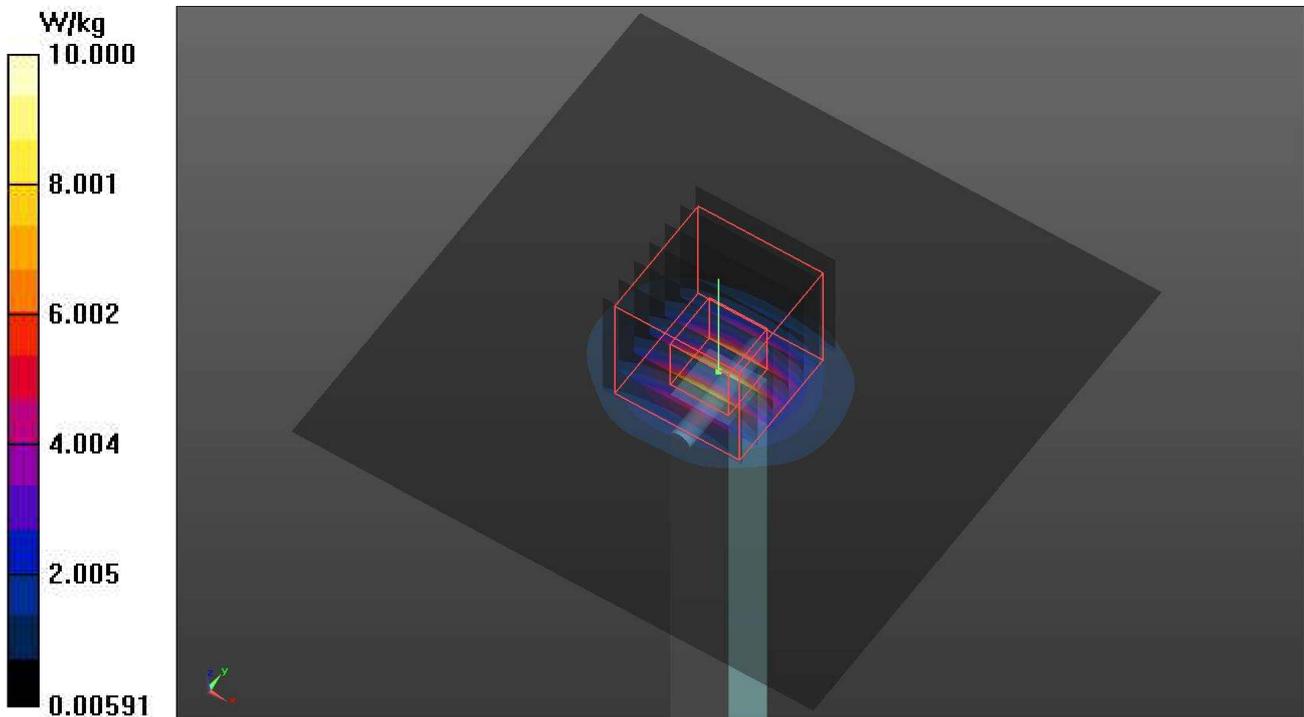
Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 48.86 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 18.7 W/kg

SAR(1 g) = 4.09 W/kg; SAR(10 g) = 1.16 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 10.8 W/kg



Plots of System Verification

Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab

Date: 2022/7/15

S03 System Check_H5750_220715

DUT: Dipole 5 GHz; Type: D5GHzV2; SN: 1019

Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: H34T60N1_0715 Medium parameters used: $f = 5750$ MHz; $\sigma = 5.039$ S/m; $\epsilon_r = 34.36$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C ; Liquid Temperature : 23.3 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7736; ConvF(5.05, 5.05, 5.05) @ 5750 MHz; Calibrated: 2022/5/30
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2022/6/1
- Phantom: ELI Phantom_1204; Type: QD OVA 002 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 9.56 W/kg

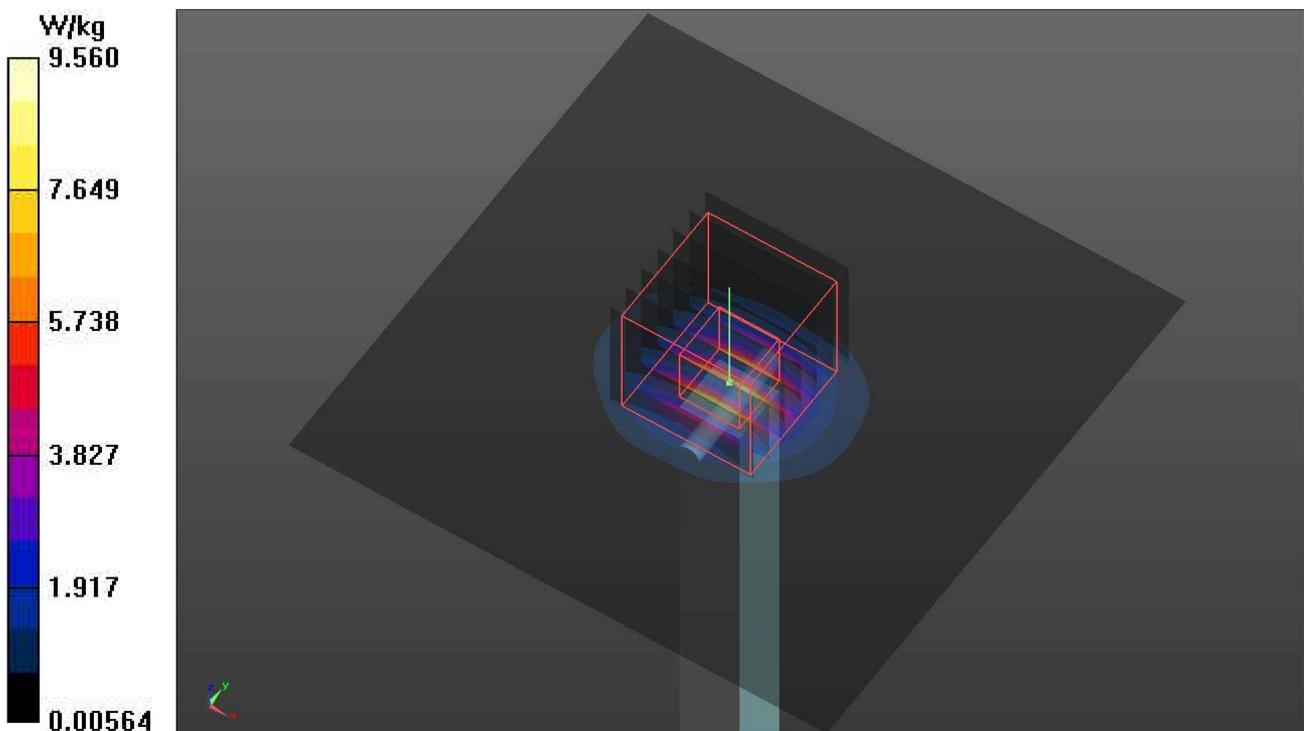
Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 48.87 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 17.8 W/kg

SAR(1 g) = 3.9 W/kg; SAR(10 g) = 1.11 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 10.3 W/kg



Plots of System Verification

Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab

Date: 2022/7/14

S04 System Check_H5750_220714

DUT: Dipole 5 GHz; Type: D5GHzV2; SN: 1019

Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: H34T60N1_0714 Medium parameters used: $f = 5750$ MHz; $\sigma = 5.305$ S/m; $\epsilon_r = 34.336$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.3 °C ; Liquid Temperature : 23.2 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7736; ConvF(5.05, 5.05, 5.05) @ 5750 MHz; Calibrated: 2022/5/30
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2022/6/1
- Phantom: ELI Phantom_1204; Type: QD OVA 002 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 10.3 W/kg

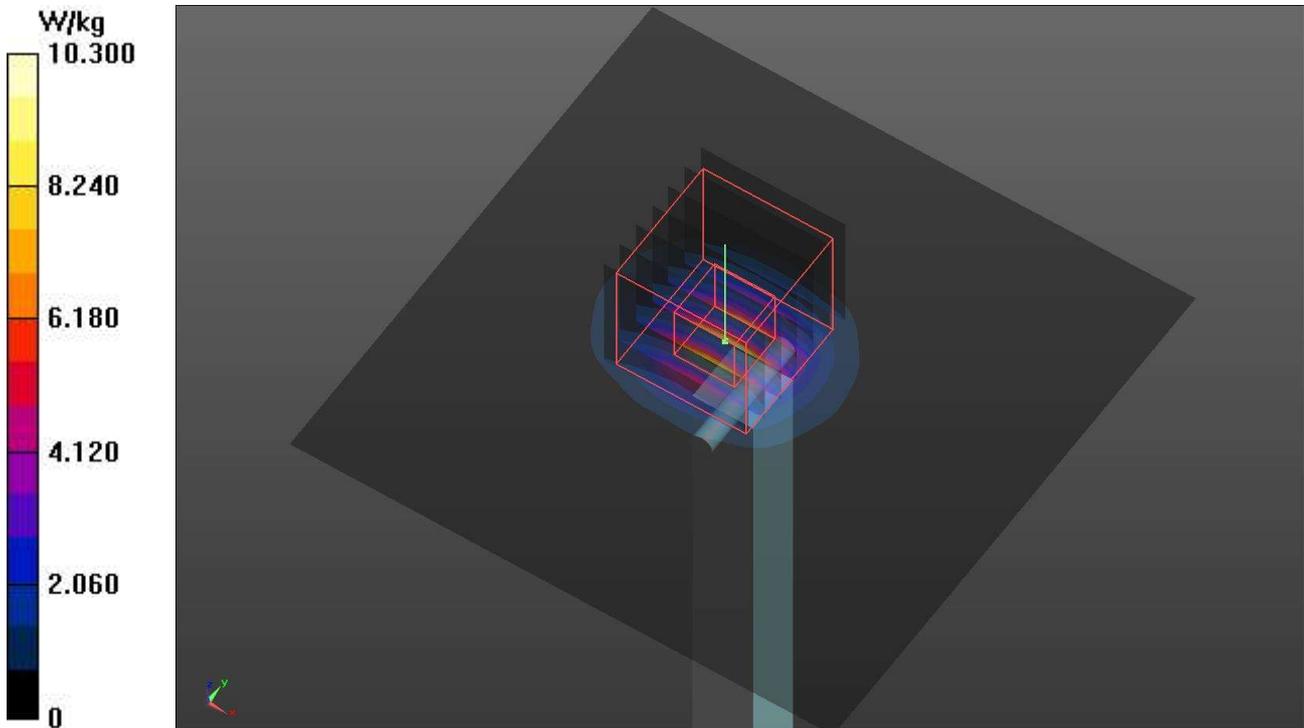
Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 40.67 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 18.1 W/kg

SAR(1 g) = 4.02 W/kg; SAR(10 g) = 1.18 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 10.5 W/kg



Annex B. Plots of Measurement

The SAR plots for highest measured SAR in each exposure configuration, wireless mode and frequency band combination are shown as follows.

Plots of Measurement

Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab

Date: 2022/3/30

P01 WLAN5.9G_802.11ac VHT80_Bottom Side_5mm_Ch171_PIFA_SKU 1_Ant 0

DUT: BBUI-WTW-P21040655

Communication System: UID 10544 - AAC, IEEE 802.11ac WiFi (80MHz, MCS0); Frequency: 5855 MHz; Duty Cycle: 1:1

Medium: H34T60N1_0330 Medium parameters used: $f = 5855$ MHz; $\sigma = 5.389$ S/m; $\epsilon_r = 34.208$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C ; Liquid Temperature : 23.2 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3971; ConvF(4.85, 4.85, 4.85) @ 5855 MHz; Calibrated: 2022/01/25
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1590; Calibrated: 2021/9/20
- Phantom: ELI Phantom_1204; Type: QD OVA 002 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (81x161x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.07 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 15.16 V/m; Power Drift = -0.14 dB

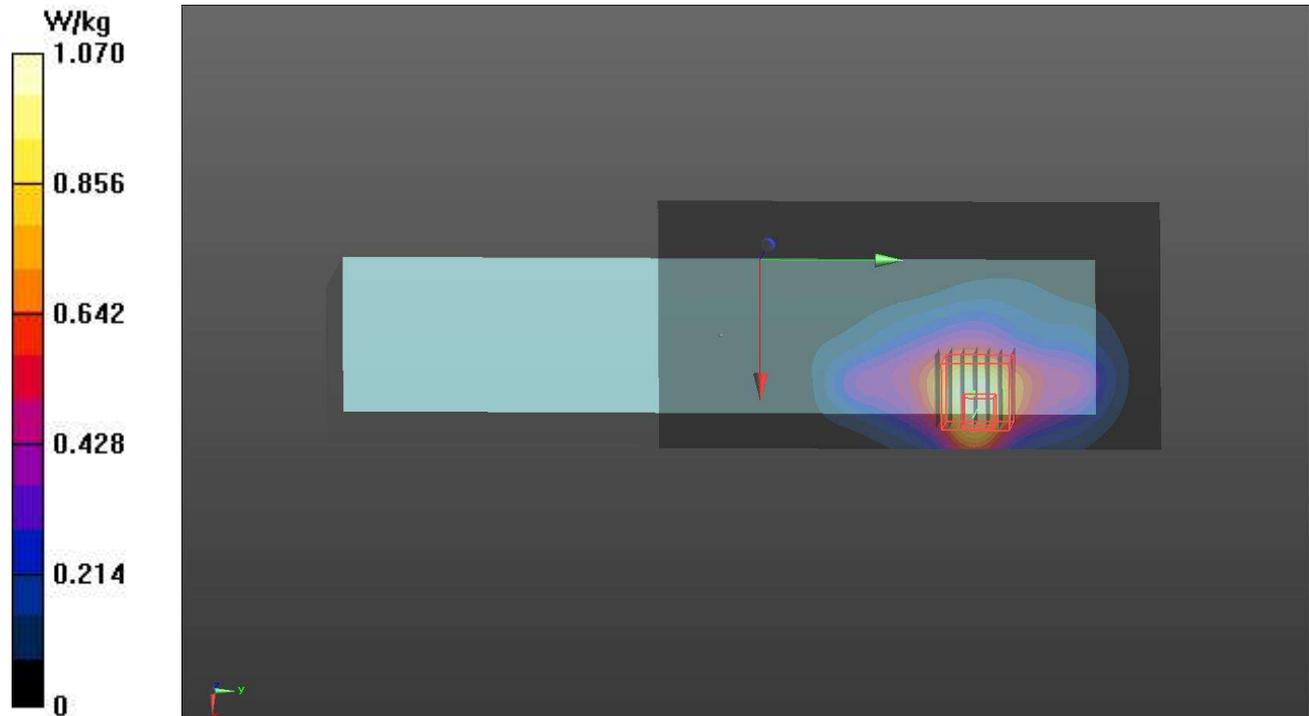
Peak SAR (extrapolated) = 3.52 W/kg

SAR(1 g) = 0.718 W/kg; SAR(10 g) = 0.240 W/kg (SAR corrected for target medium)

Smallest distance from peaks to all points 3 dB below = 8.7 mm

Ratio of SAR at M2 to SAR at M1 = 57.3%

Maximum value of SAR (measured) = 1.80 W/kg



Plots of Measurement

Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab

Date: 2022/3/30

P02 WLAN5.9G_802.11ac VHT80_Bottom Side_5mm_Ch171_PIFA_SKU 2_Ant 0+1

DUT: BBUI-WTW-P21040655

Communication System: UID 10544 - AAC, IEEE 802.11ac WiFi (80MHz, MCS0); Frequency: 5855 MHz; Duty Cycle: 1:1

Medium: H34T60N1_0330 Medium parameters used: $f = 5855$ MHz; $\sigma = 5.389$ S/m; $\epsilon_r = 34.208$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C ; Liquid Temperature : 23.2 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3971; ConvF(4.85, 4.85, 4.85) @ 5855 MHz; Calibrated: 2022/01/25
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1590; Calibrated: 2021/9/20
- Phantom: ELI Phantom_1204; Type: QD OVA 002 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (81x281x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.06 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 14.03 V/m; Power Drift = -0.04 dB

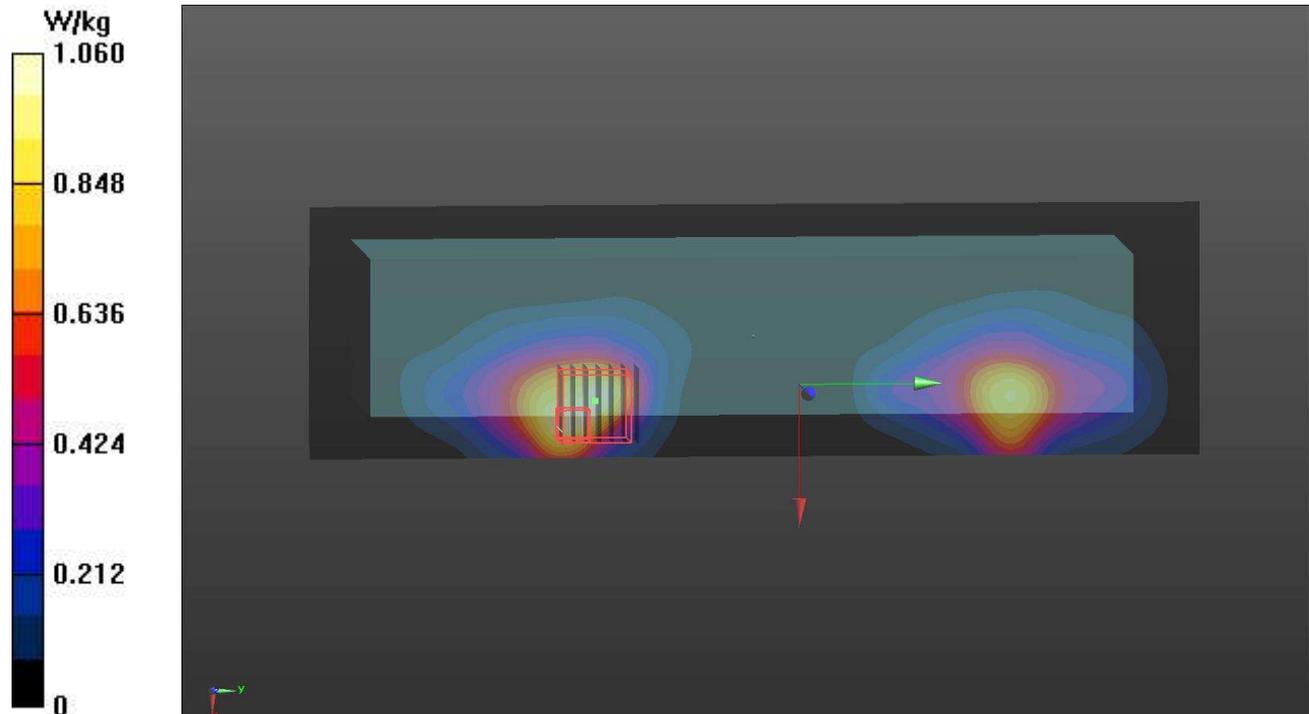
Peak SAR (extrapolated) = 3.67 W/kg

SAR(1 g) = 0.659 W/kg; SAR(10 g) = 0.189 W/kg (SAR corrected for target medium)

Smallest distance from peaks to all points 3 dB below = 8.2 mm

Ratio of SAR at M2 to SAR at M1 = 56.6%

Maximum value of SAR (measured) = 1.90 W/kg



Plots of Measurement

Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab

Date: 2022/7/15

P03 WLAN5.9G_802.11ac VHT80_Left Side_5mm_Ch171_Monopole_SKU 1_Ant 0

DUT: BBUI-WTW-P21040655

Communication System: UID 10544 - AAC, IEEE 802.11ac WiFi (80MHz, MCS0); Frequency: 5855 MHz; Duty Cycle: 1:1

Medium: H34T60N1_0715 Medium parameters used: $f = 5855$ MHz; $\sigma = 5.136$ S/m; $\epsilon_r = 34.242$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.4 °C ; Liquid Temperature : 23.3 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7736; ConvF(5.05, 5.05, 5.05) @ 5855 MHz; Calibrated: 2022/5/30
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2022/6/1
- Phantom: ELI Phantom_1204; Type: QD OVA 002 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (111x211x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.374 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 8.741 V/m; Power Drift = 0.02 dB

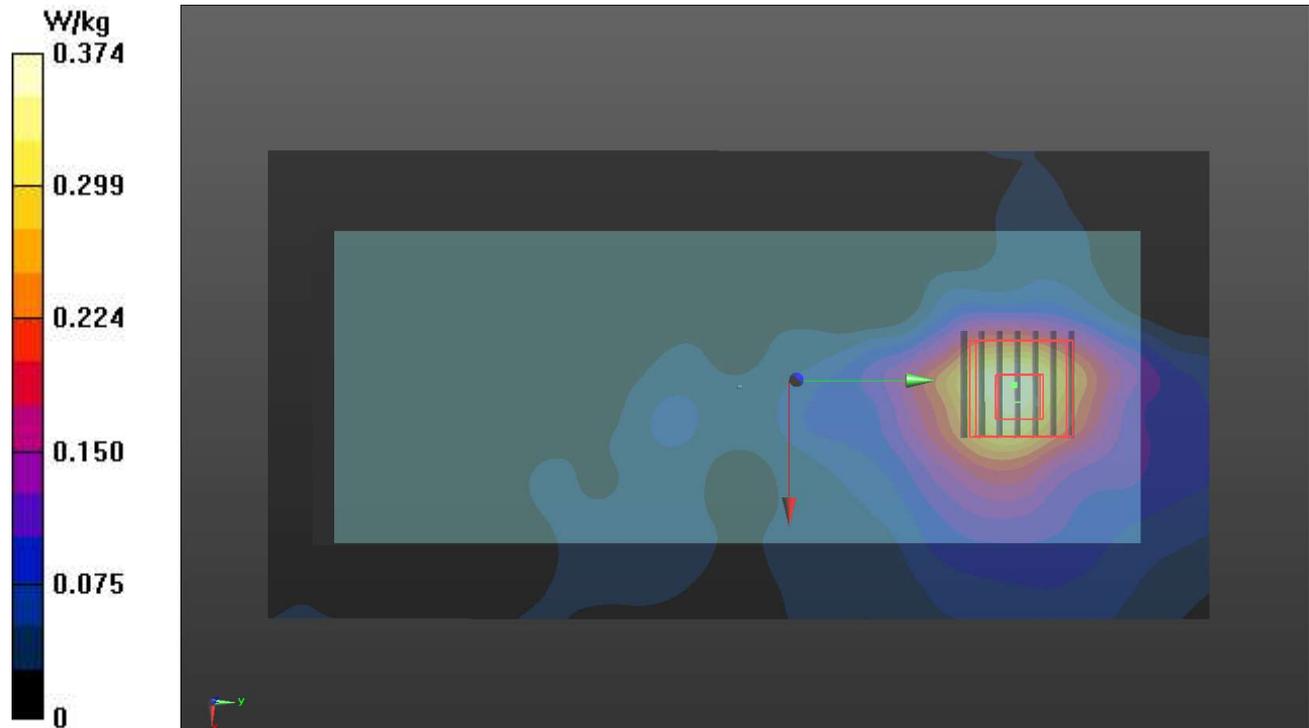
Peak SAR (extrapolated) = 0.753 W/kg

SAR(1 g) = 0.169 W/kg; SAR(10 g) = 0.074 W/kg (SAR corrected for target medium)

Smallest distance from peaks to all points 3 dB below = 15.2 mm

Ratio of SAR at M2 to SAR at M1 = 57.9%

Maximum value of SAR (measured) = 0.369 W/kg



Plots of Measurement

Test Laboratory: Bureau Veritas ADT SAR/HAC Testing Lab

Date: 2022/7/14

P04 WLAN5.9G_802.11ac VHT80_Left Side_5mm_Ch171_SKU 2_Ant 0+1

DUT: BBUI-WTW-P21040655

Communication System: UID 10544 - AAC, IEEE 802.11ac WiFi (80MHz, MCS0); Frequency: 5855 MHz; Duty Cycle: 1:1

Medium: H34T60N1_0714 Medium parameters used: $f = 5855$ MHz; $\sigma = 5.433$ S/m; $\epsilon_r = 34.238$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.3 °C ; Liquid Temperature : 23.2 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN7736; ConvF(5.05, 5.05, 5.05) @ 5855 MHz; Calibrated: 2022/5/30
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn579; Calibrated: 2022/6/1
- Phantom: ELI Phantom_1204; Type: QD OVA 002 Ax;
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (111x211x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.443 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 8.990 V/m; Power Drift = 0.10 dB

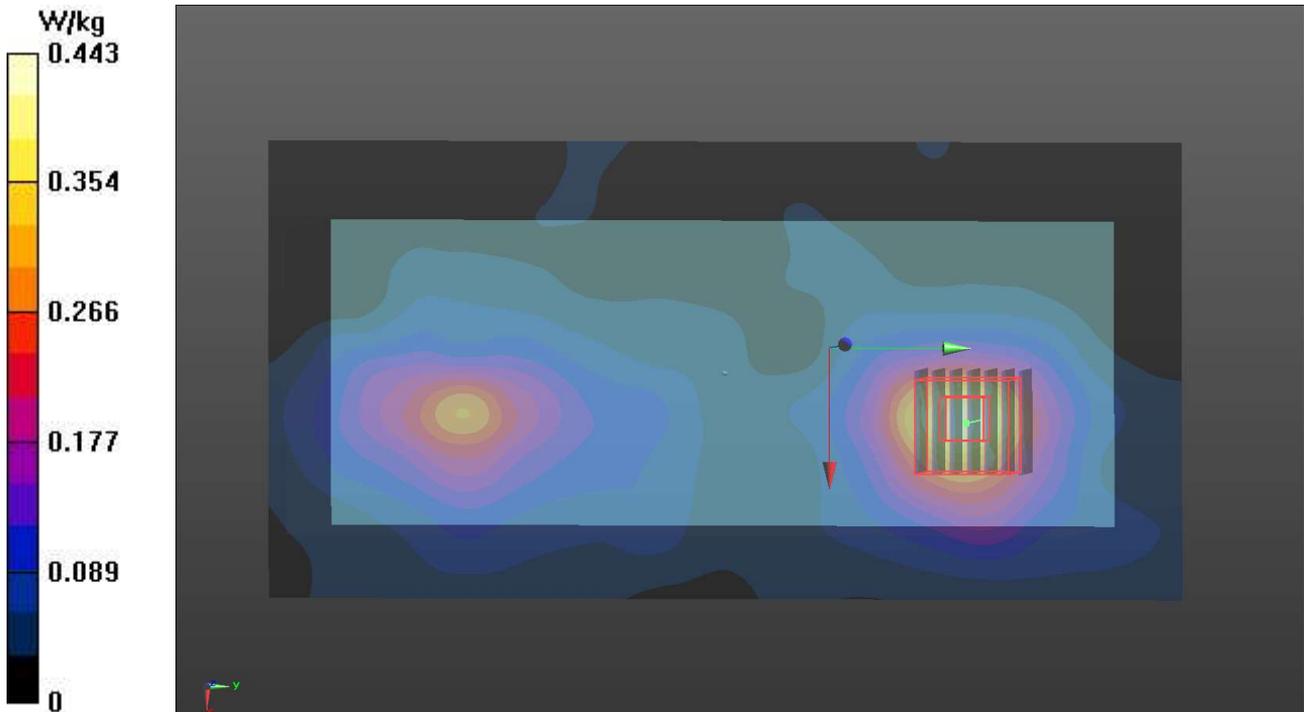
Peak SAR (extrapolated) = 0.763 W/kg

SAR(1 g) = 0.188 W/kg; SAR(10 g) = 0.085 W/kg (SAR corrected for target medium)

Smallest distance from peaks to all points 3 dB below = 16.4 mm

Ratio of SAR at M2 to SAR at M1 = 64.7%

Maximum value of SAR (measured) = 0.409 W/kg



Annex C. Tissue & System Verification

The measuring results for tissue simulating liquid and system check are shown as below.

Note:

1. For Section 4.3, the dielectric properties of the tissue simulating liquid have been measured within 24 hours before the SAR testing and within ± 10 % of the target values. Liquid temperature during the SAR testing has kept within ± 2 °C.
2. For Section 4.4, The SAR measurement system was validated according to procedures in KDB 865664 D01. The validation status in tabulated summary is as below.
3. For Section 4.5, Comparing to the reference SAR value provided by SPEAG in dipole calibration certificate, the deviation of system check results is within its specification of 10 %. The result indicates the system check can meet the variation criterion and the plots please refer to Annex A of this report.

Plot No.	Tissue Verification			Validation for CW			Validation for Modulation			System Validation				Note										
	Frequency (MHz)	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ε _r)	Targeted Conductivity (σ)	Targeted Permittivity (ε _r)	Deviation Conductivity (σ)	Deviation Permittivity (ε _r)	Sensitivity Range	Probe Linearity	Probe Isotropy	Modulation Type	Duty Factor	PAR	Date	Frequency (MHz)	Targeted Log SAR (W/kg)	Measured Log SAR (W/kg)	Normalized Log SAR (W/kg)	Deviation (%)	Dipole S/N	Probe S/N	DAE S/N	Output Power (dB)
S01	5750	23.2	5.276	34.369	5.22	35.4	1.07	-2.91	Pass	Pass	Pass	OFDM	N/A	Pass	Mar. 30, 2022	5750	79.40	4.09	81.61	2.78	1019	3971	1590	17
S02	5750	23.2	5.276	34.369	5.22	35.4	1.07	-2.91	Pass	Pass	Pass	OFDM	N/A	Pass	Mar. 30, 2022	5750	79.40	4.09	81.61	2.78	1019	3971	1590	17
S05	5750	23.3	5.039	34.36	5.22	35.4	-3.47	-2.94	Pass	Pass	Pass	OFDM	N/A	Pass	Jul. 15, 2022	5750	79.40	3.9	77.82	-2.00	1019	7736	579	17
S12	5750	23.2	5.305	34.336	5.22	35.4	1.63	-3.01	Pass	Pass	Pass	OFDM	N/A	Pass	Jul. 14, 2022	5750	79.40	4.02	80.21	1.02	1019	7736	579	17

Annex D. Maximum Target Conducted Power

The maximum conducted average power (Unit: dBm) including tune-up tolerance is shown as below.

Tune-up Power in dBm - SKU 1			
WLAN 5.9GHz			
Mode	Channel	Frequency	Max Tune up
802.11a	169	5845	13.5
	173	5865	13.5
	177	5885	13.5
802.11ac VHT20	169	5845	13.5
	173	5865	13.5
	177	5885	13.5
802.11ac VHT40	167	5835	13.5
	175	5875	13.5
802.11ac VHT80	171	5855	13.5
802.11ax HE20	169	5845	13.5
	173	5865	13.5
	177	5885	13.5
802.11ax HE40	167	5835	13.5
	175	5875	13.5
802.11ax HE80	171	5855	13.5

Tune-up Power in dBm - SKU 2 & 3							
WLAN 5.9GHz							
Mode	Channel	Frequency	SISO Ant 0 Max Tune up	SISO Ant 1 Max Tune up	MIMO Ant 0 Tune up	MIMO Ant 1 Tune up	MIMO Ant 0+1 Tune up
802.11a	169	5845	13.5	13.5	13.5	13.5	16.5
	173	5865	13.5	13.5	13.5	13.5	16.5
	177	5885	13.5	13.5	13.5	13.5	16.5
802.11ac VHT20	169	5845	13.5	13.5	13.5	13.5	16.5
	173	5865	13.5	13.5	13.5	13.5	16.5
	177	5885	13.5	13.5	13.5	13.5	16.5
802.11ac VHT40	167	5835	13.5	13.5	13.5	13.5	16.5
	175	5875	13.5	13.5	13.5	13.5	16.5
802.11ac VHT80	171	5855	13.5	13.5	13.5	13.5	16.5
802.11ax HE20	169	5845	13.5	13.5	13.5	13.5	16.5
	173	5865	13.5	13.5	13.5	13.5	16.5
	177	5885	13.5	13.5	13.5	13.5	16.5
802.11ax HE40	167	5835	13.5	13.5	13.5	13.5	16.5
	175	5875	13.5	13.5	13.5	13.5	16.5
802.11ax HE80	171	5855	13.5	13.5	13.5	13.5	16.5

Annex E. Measured Conducted Power Result

The measuring conducted power (Unit: dBm) are shown as below.

Conducted Power - SKU1

WLAN 5.9GHz Ant 0

Mode	Channel	Frequency	Avg. Power with PIFA Antenna	Avg. Power with Monopole Antenna
802.11a	149	5745	13.35	13.14
	157	5785	13.33	13.28
	165	5825	13.45	13.15
802.11ac VHT20	169	5845	13.39	13.26
	173	5865	13.44	13.24
	177	5885	13.43	13.21
802.11ac VHT40	167	5835	13.37	13.08
	175	5875	13.34	13.24
802.11ac VHT80	171	5855	13.47	13.41
802.11ax HE20	169	5845	13.41	13.31
	173	5865	13.45	13.11
	177	5885	13.39	13.28
802.11ax HE40	167	5835	13.35	13.24
	175	5875	13.44	13.11
802.11ax HE80	171	5855	13.36	13.24

Conducted Power - SKU2&3

WLAN 5.9GHz Ant 0

Mode	Channel	Frequency	Avg. Power with PIFA Antenna	Avg. Power with Monopole Antenna
802.11a	149	5745	13.38	13.16
	157	5785	13.29	13.35
	165	5825	13.35	13.15
802.11ac VHT20	169	5845	13.45	13.33
	173	5865	13.41	13.26
	177	5885	13.35	13.24
802.11ac VHT40	167	5835	13.38	13.2
	175	5875	13.32	13.29
802.11ac VHT80	171	5855	13.46	13.43
802.11ax HE20	169	5845	13.38	13.35
	173	5865	13.27	13.16
	177	5885	13.34	13.33
802.11ax HE40	167	5835	13.41	13.3
	175	5875	13.25	13.15
802.11ax HE80	171	5855	13.31	13.29

Conducted Power - SKU 2&3

WLAN 5.9GHz Ant 1

Mode	Channel	Frequency	Avg. Power with PIFA Antenna	Avg. Power with Monopole Antenna
802.11a	149	5745	13.39	13.17
	157	5785	13.42	13.22
	165	5825	13.35	13.23
802.11ac VHT20	169	5845	13.38	13.18
	173	5865	13.41	13.15
	177	5885	13.36	13.15
802.11ac VHT40	167	5835	13.41	13.34
	175	5875	13.38	13.23
802.11ac VHT80	171	5855	13.49	13.46
802.11ax HE20	169	5845	13.29	13.3
	173	5865	13.31	13.32
	177	5885	13.39	13.27
802.11ax HE40	167	5835	13.48	13.31
	175	5875	13.44	13.28
802.11ax HE80	171	5855	13.42	13.27

Conducted Power - SKU 2&3								
WLAN 5.9GHz Ant 0+1								
Mode	Channel	Frequency	Avg. Power with PIFA Antenna			Avg. Power with Monopole Antenna		
			MIMO Ant 0 Avg. Power	MIMO Ant 1 Avg. Power	MIMO Ant 0+1 Avg. Power	MIMO Ant 0 Avg. Power	MIMO Ant 1 Avg. Power	MIMO Ant 0+1 Avg. Power
802.11a	169	5845	13.31	13.48	16.41	13.3	13.22	16.27
	173	5865	13.28	13.39	16.35	13.26	13.22	16.25
	177	5885	13.25	13.41	16.34	13.16	13.35	16.27
802.11ac VHT20	169	5845	13.29	13.42	16.37	13.22	13.26	16.25
	173	5865	13.24	13.35	16.31	13.32	13.32	16.33
	177	5885	13.27	13.34	16.32	13.23	13.34	16.3
802.11ac VHT40	167	5835	13.32	13.45	16.4	13.31	13.15	16.24
	175	5875	13.31	13.38	16.36	13.23	13.29	16.27
802.11ac VHT80	171	5855	13.37	13.49	16.44	13.39	13.41	16.41
802.11ax HE20	169	5845	13.27	13.45	16.37	13.33	13.26	16.31
	173	5865	13.21	13.48	16.36	13.28	13.15	16.23
	177	5885	13.25	13.44	16.36	13.25	13.24	16.26
802.11ax HE40	167	5835	13.29	13.46	16.39	13.33	13.35	16.35
	175	5875	13.33	13.39	16.37	13.23	13.35	16.3
802.11ax HE80	171	5855	13.28	13.42	16.36	13.31	13.27	16.3

Annex F. SAR Test Result

SAR Results for Body Exposure Condition.

Note:

1. SAR testing for WLAN was performed on the maximum power mode.

Body SAR Test Result

System & Position										DUT & Accessory						SAR					
Plot No.	Band	Mode	Test Position	Separation Distance (mm)	Channel	Antenna Type	SKU	Ant Status	Duty Cycle	Crest Factor	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)					
	WLAN5.9G	802.11ac VHT80	Front Face	5	171	PIFA	SKU 1	Ant 0	100.00	1.00	13.50	13.41	1.02	0.15	0.516	0.53					
	WLAN5.9G	802.11ac VHT80	Rear Face	5	171	PIFA	SKU 1	Ant 0	100.00	1.00	13.50	13.41	1.02	-0.16	0.136	0.14					
	WLAN5.9G	802.11ac VHT80	Left Side	5	171	PIFA	SKU 1	Ant 0	100.00	1.00	13.50	13.41	1.02	-0.02	0.206	0.21					
	WLAN5.9G	802.11ac VHT80	Right Side	5	171	PIFA	SKU 1	Ant 0	100.00	1.00	13.50	13.41	1.02	0.07	0.108	0.11					
	WLAN5.9G	802.11ac VHT80	Top Side	5	171	PIFA	SKU 1	Ant 0	100.00	1.00	13.50	13.41	1.02	0.04	0.703	0.72					
1	WLAN5.9G	802.11ac VHT80	Bottom Side	5	171	PIFA	SKU 1	Ant 0	100.00	1.00	13.50	13.41	1.02	-0.14	0.718	0.73					
	WLAN5.9G	802.11ac VHT80	Front Face	5	171	PIFA	SKU 2	Ant 0	100.00	1.00	13.50	13.46	1.01	-0.02	0.384	0.39					
	WLAN5.9G	802.11ac VHT80	Rear Face	5	171	PIFA	SKU 2	Ant 0	100.00	1.00	13.50	13.46	1.01	0.17	0.232	0.23					
	WLAN5.9G	802.11ac VHT80	Left Side	5	171	PIFA	SKU 2	Ant 0	100.00	1.00	13.50	13.46	1.01	-0.13	0.488	0.49					
	WLAN5.9G	802.11ac VHT80	Right Side	5	171	PIFA	SKU 2	Ant 0	100.00	1.00	13.50	13.46	1.01	0.07	0.542	0.55					
	WLAN5.9G	802.11ac VHT80	Top Side	5	171	PIFA	SKU 2	Ant 0	100.00	1.00	13.50	13.46	1.01	0.01	0.58	0.59					
	WLAN5.9G	802.11ac VHT80	Bottom Side	5	171	PIFA	SKU 2	Ant 0	100.00	1.00	13.50	13.46	1.01	0.01	0.635	0.64					
	WLAN5.9G	802.11ac VHT80	Front Face	5	171	PIFA	SKU 2	Ant 1	100.00	1.00	13.50	13.49	1.00	-0.01	0.239	0.24					
	WLAN5.9G	802.11ac VHT80	Rear Face	5	171	PIFA	SKU 2	Ant 1	100.00	1.00	13.50	13.49	1.00	0.17	0.165	0.17					
	WLAN5.9G	802.11ac VHT80	Left Side	5	171	PIFA	SKU 2	Ant 1	100.00	1.00	13.50	13.49	1.00	-0.1	0.395	0.40					
	WLAN5.9G	802.11ac VHT80	Right Side	5	171	PIFA	SKU 2	Ant 1	100.00	1.00	13.50	13.49	1.00	0.19	0.456	0.46					
	WLAN5.9G	802.11ac VHT80	Top Side	5	171	PIFA	SKU 2	Ant 1	100.00	1.00	13.50	13.49	1.00	-0.07	0.493	0.49					
	WLAN5.9G	802.11ac VHT80	Bottom Side	5	171	PIFA	SKU 2	Ant 1	100.00	1.00	13.50	13.49	1.00	0.03	0.647	0.65					
	WLAN5.9G	802.11ac VHT80	Front Face	5	171	PIFA	SKU 2	Ant 0+1	100.00	1.00	16.50	16.44	1.01	-0.14	0.381	0.38					
	WLAN5.9G	802.11ac VHT80	Rear Face	5	171	PIFA	SKU 2	Ant 0+1	100.00	1.00	16.50	16.44	1.01	0.04	0.228	0.23					
	WLAN5.9G	802.11ac VHT80	Left Side	5	171	PIFA	SKU 2	Ant 0+1	100.00	1.00	16.50	16.44	1.01	-0.08	0.48	0.48					
	WLAN5.9G	802.11ac VHT80	Right Side	5	171	PIFA	SKU 2	Ant 0+1	100.00	1.00	16.50	16.44	1.01	0.12	0.529	0.53					
	WLAN5.9G	802.11ac VHT80	Top Side	5	171	PIFA	SKU 2	Ant 0+1	100.00	1.00	16.50	16.44	1.01	0.05	0.563	0.57					
2	WLAN5.9G	802.11ac VHT80	Bottom Side	5	171	PIFA	SKU 2	Ant 0+1	100.00	1.00	16.50	16.44	1.01	-0.04	0.659	0.67					
	WLAN5.9G	802.11ac VHT80	Bottom Side	5	171	PIFA	SKU 3	Ant 0+1	100.00	1.00	16.50	16.44	1.01	0.01	0.631	0.64					

Body SAR Test Result

System & Position										DUT & Accessory						SAR					
Plot No.	Band	Mode	Test Position	Separation Distance (mm)	Channel	Antenna Type	SKU	Ant Status	Duty Cycle	Crest Factor	Max. Tune-up Power (dBm)	Measured Conducted Power (dBm)	Scaling Factor	Power Drift (dB)	Measured SAR-1g (W/kg)	Scaled SAR-1g (W/kg)					
	WLAN5.9G	802.11ac VHT80	Front Face	5	171	Monopole	SKU 1	Ant 0	100.00	1.00	13.50	13.41	1.02	0.15	0.082	0.08					
	WLAN5.9G	802.11ac VHT80	Rear Face	5	171	Monopole	SKU 1	Ant 0	100.00	1.00	13.50	13.41	1.02	-0.11	0.127	0.13					
3	WLAN5.9G	802.11ac VHT80	Left Side	5	171	Monopole	SKU 1	Ant 0	100.00	1.00	13.50	13.41	1.02	0.02	0.169	0.17					
	WLAN5.9G	802.11ac VHT80	Right Side	5	171	Monopole	SKU 1	Ant 0	100.00	1.00	13.50	13.41	1.02	0.13	0.143	0.15					
	WLAN5.9G	802.11ac VHT80	Top Side	5	171	Monopole	SKU 1	Ant 0	100.00	1.00	13.50	13.41	1.02	0.08	0.085	0.09					
	WLAN5.9G	802.11ac VHT80	Bottom Side	5	171	Monopole	SKU 1	Ant 0	100.00	1.00	13.50	13.41	1.02	0.03	0.092	0.09					
	WLAN5.9G	802.11ac VHT80	Front Face	5	171	Monopole	SKU 2	Ant 0	100.00	1.00	13.50	13.43	1.02	-0.17	0.085	0.09					
	WLAN5.9G	802.11ac VHT80	Rear Face	5	171	Monopole	SKU 2	Ant 0	100.00	1.00	13.50	13.43	1.02	-0.02	0.132	0.13					
	WLAN5.9G	802.11ac VHT80	Left Side	5	171	Monopole	SKU 2	Ant 0	100.00	1.00	13.50	13.43	1.02	-0.14	0.175	0.18					
	WLAN5.9G	802.11ac VHT80	Right Side	5	171	Monopole	SKU 2	Ant 0	100.00	1.00	13.50	13.43	1.02	0.1	0.149	0.15					
	WLAN5.9G	802.11ac VHT80	Top Side	5	171	Monopole	SKU 2	Ant 0	100.00	1.00	13.50	13.43	1.02	0.08	0.088	0.09					
	WLAN5.9G	802.11ac VHT80	Bottom Side	5	171	Monopole	SKU 2	Ant 0	100.00	1.00	13.50	13.43	1.02	-0.03	0.096	0.10					
	WLAN5.9G	802.11ac VHT80	Front Face	5	171	Monopole	SKU 2	Ant 1	100.00	1.00	13.50	13.46	1.01	0.18	0.081	0.08					
	WLAN5.9G	802.11ac VHT80	Rear Face	5	171	Monopole	SKU 2	Ant 1	100.00	1.00	13.50	13.46	1.01	0.12	0.131	0.13					
	WLAN5.9G	802.11ac VHT80	Left Side	5	171	Monopole	SKU 2	Ant 1	100.00	1.00	13.50	13.46	1.01	0.07	0.171	0.17					
	WLAN5.9G	802.11ac VHT80	Right Side	5	171	Monopole	SKU 2	Ant 1	100.00	1.00	13.50	13.46	1.01	0.06	0.146	0.15					
	WLAN5.9G	802.11ac VHT80	Top Side	5	171	Monopole	SKU 2	Ant 1	100.00	1.00	13.50	13.46	1.01	0.15	0.085	0.09					
	WLAN5.9G	802.11ac VHT80	Bottom Side	5	171	Monopole	SKU 2	Ant 1	100.00	1.00	13.50	13.46	1.01	-0.02	0.099	0.10					
	WLAN5.9G	802.11ac VHT80	Front Face	5	171	Monopole	SKU 2	Ant 0+1	100.00	1.00	16.50	16.41	1.02	-0.05	0.088	0.09					
	WLAN5.9G	802.11ac VHT80	Rear Face	5	171	Monopole	SKU 2	Ant 0+1	100.00	1.00	16.50	16.41	1.02	-0.06	0.138	0.14					
4	WLAN5.9G	802.11ac VHT80	Left Side	5	171	Monopole	SKU 2	Ant 0+1	100.00	1.00	16.50	16.41	1.02	0.1	0.188	0.19					
	WLAN5.9G	802.11ac VHT80	Right Side	5	171	Monopole	SKU 2	Ant 0+1	100.00	1.00	16.50	16.41	1.02	-0.02	0.15	0.15					
	WLAN5.9G	802.11ac VHT80	Top Side	5	171	Monopole	SKU 2	Ant 0+1	100.00	1.00	16.50	16.41	1.02	0.12	0.091	0.09					
	WLAN5.9G	802.11ac VHT80	Bottom Side	5	171	Monopole	SKU 2	Ant 0+1	100.00	1.00	16.50	16.41	1.02	-0.07	0.101	0.10					
	WLAN5.9G	802.11ac VHT80	Left Side	5	171	Monopole	SKU 3	Ant 0+1	100.00	1.00	16.50	16.41	1.02	0.01	0.179	0.18					

Annex G. SAR Measurement Variability

Since all the measured SAR1g are less than 0.8 W/kg, the repeated measurement is not required.

Annex H. Analysis of Simultaneous Transmission SAR.

The analysis of simultaneous transmission SAR are shown as below.

<Possibilities of Simultaneous Transmission>

The simultaneous transmission possibilities for this device are listed as below.

Simultaneous TX Combination	Capable Transmit Configurations	Body Exposure Condition
A	WLAN 5.9G + BT	Yes

Notes

1. The WLAN 2.4G and WLAN 5G cannot transmit simultaneously.
2. The BT SAR value referred to the original test report to evaluate the simultaneous transmission with WLAN 5.9G.

Simultaneous Transmission SAR Evaluation - [SKU 2 & 3 with PIFA Antenna](#)

Position	1	2	3	1 + 2	1 + 3
	Max WLAN 5.9 GHz	Max BT for higher power	Max BT for lower power	Summing result 1g SAR W/kg	Summing result 1g SAR W/kg
	1g SAR W/kg	1g SAR W/kg	1g SAR W/kg		
Front Face	0.39	0.18	0.02	0.57	0.41
Rear Face	0.23	0.11	0.01	0.34	0.24
Left Side	0.49	0.23	0.03	0.72	0.52
Right Side	0.55	0.26	0.03	0.81	0.58
Top Side	0.59	0.27	0.03	0.86	0.62
Bottom Side	0.67	0.30	0.04	0.97	0.71

Simultaneous Transmission SAR Evaluation - SKU 1 with PIFA Antenna

Position	1	2	3	1 + 2	1 + 3
	Max WLAN 5.9 GHz	Max BT for higher power	Max BT for lower power	Summing result 1g SAR W/kg	Summing result 1g SAR W/kg
	1g SAR W/kg	1g SAR W/kg	1g SAR W/kg		
Front Face	0.52	0.17	0.02	0.69	0.54
Rear Face	0.14	0.10	0.01	0.24	0.15
Left Side	0.21	0.21	0.03	0.42	0.24
Right Side	0.11	0.24	0.03	0.35	0.14
Top Side	0.71	0.25	0.03	0.96	0.74
Bottom Side	0.73	0.28	0.04	1.01	0.77

Simultaneous Transmission SAR Evaluation - SKU 1 with Monopole Antenna

Position	1	2	3	1 + 2	1 + 3
	Max WLAN 5.9 GHz	Max BT for higher power	Max BT for lower power	Summing result 1g SAR W/kg	Summing result 1g SAR W/kg
	1g SAR W/kg	1g SAR W/kg	1g SAR W/kg		
Front Face	0.08	0.04	0.01	0.12	0.09
Rear Face	0.13	0.05	0.01	0.18	0.14
Left Side	0.17	0.08	0.01	0.25	0.18
Right Side	0.15	0.04	0.01	0.19	0.16
Top Side	0.09	0.09	0.01	0.18	0.10
Bottom Side	0.09	0.04	0.01	0.13	0.10

Simultaneous Transmission SAR Evaluation - [SKU 2 & 3 with Monopole Antenna](#)

Position	1	2	3	1 + 2	1 + 3
	Max WLAN 5.9 GHz	Max BT for higher power	Max BT for lower power	Summing result 1g SAR W/kg	Summing result 1g SAR W/kg
	1g SAR W/kg	1g SAR W/kg	1g SAR W/kg		
Front Face	0.09	0.03	0.01	0.12	0.10
Rear Face	0.14	0.04	0.01	0.18	0.15
Left Side	0.19	0.07	0.01	0.26	0.20
Right Side	0.15	0.04	0.01	0.19	0.16
Top Side	0.09	0.08	0.01	0.17	0.10
Bottom Side	0.10	0.03	0.01	0.13	0.11

Annex I. SAR to Peak Location Separation Ratio Analysis.

Since sum of simultaneous transmission SAR is less than the SAR limit for Body : SAR_{1g} 1.6 W/kg . There is no requirement for SAR to Peak Location Separation Ratio Analysis.

Annex J. Calibration of Test Equipment List

Calibration of Test Equipment List are shown as below.

Equipment for SAR Test					
Equipment	Manufacturer	Model	SN	Cal. Date	Cal. Interval
System Validation Dipole	SPEAG	D5GHzV2	1019	Mar. 19, 2021	2 Year
Dosimetric E-Field Probe	SPEAG	EX3DV4	7736	May. 30, 2022	1 Year
Dosimetric E-Field Probe	SPEAG	EX3DV4	3971	Jan. 25, 2022	1 Year
Data Acquisition Electronics	SPEAG	DAE3	579	Jun. 01, 2022	1 Year
Data Acquisition Electronics	SPEAG	DAE4	1590	Sep. 20, 2021	1 Year
Spectrum Analyzer	R&S	FSL6	102006	Apr. 06, 2021	1 Year
Spectrum Analyzer	R&S	FSL6	102006	Apr. 12, 2022	1 Year
Universal Wireless Test Set	Anritsu	MT8870A	6201699387	Sep. 22, 2021	1 Year
Thermometer	YFE	YF-160A	120702365	Aug. 06, 2021	1 Year
Thermometer	YFE	YF-160A	150601219	Apr. 15, 2022	1 Year
Dielectric Assessment Kit	SPEAG	DAKS-3.5	1092	May. 23, 2022	1 Year
Dielectric Assessment Kit	SPEAG	DAKS_VNA R140	0010917	May. 23, 2022	1 Year
Dielectric Assessment Kit	SPEAG	DAKS-3.5	1151	Jul. 14, 2021	1 Year
Powersource1	SPEAG	SE_UMS_160 BA	4010	Jul. 13, 2021	1 Year
Powersource1	SPEAG	SE_UMS_160 BA	4260	Jan. 13, 2022	1 Year

Annex K. Considerations Related to Bluetooth for Setup and Testing

This device has installed Bluetooth engineering testing software which can provide continuous transmitting RF signal. During Bluetooth SAR testing, this device was operated to transmit continuously at the maximum transmission duty with specified transmission mode, operating frequency, lowest data rate, and maximum output power.

The Bluetooth call box has been used during SAR measurement and the EUT was set to DH5 mode at the maximum output power. Its duty factor was calculated as below and the measured SAR for Bluetooth would be scaled to the 100% transmission duty factor to determine compliance.

The duty factor of Bluetooth signal are shown as below.

<Time-domain plot for Bluetooth transmission signal>



The duty factor of Bluetooth signal has been calculated as following.
 Duty Factor = Pulse Width / Total Period = 100%