SAR REPORT

The following samples were submit TEST ted and identified on behalf of the client as:

Product Name	Notebook Computer
Brand Name	acer
Model No.	N22Q13
Applicant	Acer Incorporated 8F., No. 88, Sec. 1, Xintai 5th Rd., Xizhi, New Taipei City 22181, Taiwan (R.O.C)
Standards	IEEE/ANSI C95.1-1992, IEEE 1528-2013
FCC ID	HLZRTL8852AE
Date of Receipt	Apr. 06, 2022
Date of Test(s)	May 31, 2022 ~ Jun. 03, 2022
Date of Issue	Jun. 14, 2022

In the configuration tested, the EUT complied with the standards specified above.

Remarks:

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS Taiwan Ltd. Central RF Lab or testing done by SGS Taiwan Ltd. Central RF Lab in connection with distribution or use of the product described in this report must be approved by SGS Taiwan Ltd. Central RF Lab in writing.

Signed on behalf of SGS

Clerk / Kimmy Chiou	PM / Tom Chiang	Asst. Manager / John Yeh
Kimmy Chiou	Tom Chiang	John Yeh

Date: Jun. 14, 2022

Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
TESA2204000062E5	Rev.00	Initial creation of document	Jun. 14, 2022	Kimmy Chiou	

Note:

1. The mark " * " is the revised version of the report due to comments submitted by the certification.

0. Guidance applied

The SAR testing method and procedure for this device is in accordance with the following standards:
IEEE/ANSI C95.1-1992
IEEE 1528-2013
KDB248227D01v02r02
KDB865664D01v01r04
KDB865664D02v01r02
KDB447498D01v06
KDB616217D04v01r02

Contents

1. General Information

1.1 Testing Laboratory

Laboratory	Test Site Address	Test Site Name	FCC Designation number	IC CAB identifier
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	1F, No. 8, Alley 15, Lane 120, Sec. 1, NeiHu Road, Neihu District, Taipei City, 11493, Taiwan.	SAR 2	TW0029	TW3702
		SAR 6		
	No. 2, Keji 1st Rd., Guishan Township, Taoyuan County, 33383, Taiwan	SAR 1	TW0028	
		SAR 4		
	No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan	SAR 3	TW0027	
		SAR 7		
Note: Test site name is remarked on the equipment list in each section of this report as an indication where measurements occurred in specific test site and address.				

1.2 Details of Applicant

Company Name	Acer Incorporated
Company Address	8F., No. 88, Sec. 1, Xintai 5th Rd., Xizhi, New Taipei City 22181, Taiwan (R.O.C)

1.3 Description of EUT

Product Name	Notebook Computer	
Brand Name	acer	
Model No.	N22Q13	
FCC ID	HLZRTL8852AE	
Integrated Module	Brand Name: REALTEK Model Name: RTL8852AE	
Mode of Operation	☒WLAN802.11 ☒Bluetooth	
Duty Cycle	WLAN802.11	Refer to page 29-31
	Bluetooth	77.6%
Operating Frequency	WLAN 2.4GHz	2.412 ~ 2.472GHz
	WLAN 5GHz	5.18 ~ 5.32GHz, 5.50 ~ 5.72GHz, 5.745 ~ 5.825GHz
	BT-EDR & BT-LE	2.402 ~ 2.480GHz

Summary of Maximum SAR Value:

Summary of Maximum SAR Value	
Mode	Highest SAR 1g Body (W/kg)
Bluetooth(GFSK)	0.27
2.4G WLAN	1.11
5G WLAN	1.19

Conducted power table:

Notebook mode

Ant Main						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
2.45GHz	802.11b	1	2412	1Mbps	18.00	17.61
		6	2437		21.25	21.05
		11	2462		17.09	16.82
	802.11g	1	2412	6Mbps	17.23	16.52
		6	2437		21.25	21.24
		11	2462		17.03	16.33
	802.11n20-HT0	1	2412	MCS0	17.23	16.47
		6	2437		21.25	20.52
		11	2462		17.03	16.28
	802.11ac20-VHT0	1	2412	MCS0	16.38	15.80
		6	2437		21.05	20.40
		11	2462		16.03	15.34
	802.11ax20-HE0	1	2412	MCS0	16.60	16.01
		6	2437		21.24	20.49
		11	2462		16.21	15.48
	802.11n40-HT0	3	2422	MCS0	14.43	13.72
		6	2437		15.76	15.16
		9	2452		13.65	13.06
	802.11ac40-VHT0	3	2422	MCS0	13.50	13.36
		6	2437		15.76	15.02
		9	2452		13.65	13.00
	802.11ax40-HE0	3	2422	MCS0	13.50	13.45
		6	2437		15.95	15.21
		9	2452		12.50	12.48

Ant Main						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.15-5.25 GHz	802.11a	36	5180	6Mbps	17.00	16.90
		40	5200		17.00	16.34
		44	5220		17.00	16.48
		48	5240		17.00	16.37
	802.11n20-HT0	36	5180	MCS0	17.00	16.24
		40	5200		17.00	16.18
		44	5220		17.00	16.31
		48	5240		17.00	16.26
	802.11ac20-VHT0	36	5180	MCS0	17.00	16.19
		40	5200		17.00	16.18
		44	5220		17.00	16.36
		48	5240		17.00	16.37
	802.11ax20-HE0	36	5180	MCS0	17.00	16.22
		40	5200		17.00	16.24
		44	5220		17.00	16.18
		48	5240		17.00	16.24
	802.11n40-HT0	38	5190	MCS0	16.13	15.47
		46	5230		17.00	16.43
	802.11ac40-VHT0	38	5190	MCS0	16.13	15.48
		46	5230		17.00	16.32
	802.11ax40-HE0	38	5190	MCS0	14.50	14.25
		46	5230		17.00	16.26
	802.11ac80-VHT0	42	5210	MCS0	15.00	14.57
	802.11ax80-HE0	42	5210	MCS0	13.00	12.81

Ant Main						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.25-5.35 GHz	802.11a	52	5260	6Mbps	17.00	16.36
		56	5280		17.00	16.49
		60	5300		17.00	16.33
		64	5320		17.00	16.46
	802.11n20-HT0	52	5260	MCS0	17.00	16.23
		56	5280		17.00	16.21
		60	5300		17.00	16.14
		64	5320		17.00	16.32
	802.11ac20-VHT0	52	5260	MCS0	17.00	16.27
		56	5280		17.00	16.25
		60	5300		17.00	16.13
		64	5320		17.00	16.22
	802.11ax20-HE0	52	5260	MCS0	17.00	16.22
		56	5280		17.00	16.17
		60	5300		17.00	16.25
		64	5320		17.00	16.14
	802.11n40-HT0	54	5270	MCS0	17.00	16.35
		62	5310		15.87	15.23
	802.11ac40-VHT0	54	5270	MCS0	17.00	16.31
		62	5310		15.00	14.67
	802.11ax40-HE0	54	5270	MCS0	17.00	16.32
		62	5310		15.00	14.84
	802.11ac80-VHT0	58	5290	MCS0	14.00	13.50
	802.11ax80-HE0	58	5290	MCS0	14.50	14.23

Ant Main						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.6GHz	802.11a	100	5500	6Mbps	16.50	15.73
		120	5600		16.50	15.80
		140	5700		16.50	15.84
		144	5720		16.27	15.54
	802.11n20-HT0	100	5500	MCS0	16.50	15.72
		120	5600		16.50	15.75
		140	5700		16.50	15.90
		144	5720		16.27	15.62
	802.11ac20-VHT0	100	5500	MCS0	16.50	15.88
		120	5600		16.50	15.82
		140	5700		16.50	15.86
		144	5720		16.48	15.71
	802.11ax20-HE0	100	5500	MCS0	16.50	15.78
		120	5600		16.50	15.73
		140	5700		15.50	15.36
		144	5720		16.50	15.82
	802.11n40-HT0	102	5510	MCS0	15.49	14.84
		118	5590		16.50	16.13
		134	5670		16.50	15.73
		142	5710		16.50	15.78
	802.11ac40-VHT0	102	5510	MCS0	15.49	14.78
		118	5590		16.50	15.81
		134	5670		16.50	15.89
		142	5710		16.50	15.88
	802.11ax40-HE0	102	5510	MCS0	12.50	12.32
		118	5590		16.50	15.90
		134	5670		16.00	15.74
		142	5710		16.50	15.84
	802.11ac80-VHT0	106	5530	MCS0	13.00	12.59
		122	5610		16.50	16.08
		138	5690		16.30	15.60
	802.11ax80-HE0	106	5530	MCS0	13.50	13.34
		122	5610		15.50	15.22
		138	5690		16.18	15.43

Ant Main						
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.8GHz	802.11a	149	5745	6Mbps	18.00	17.25
		157	5785		18.00	17.35
		165	5825		18.00	17.39
	802.11n20-HT0	149	5745	MCS0	18.00	17.41
		157	5785		18.00	17.35
		165	5825		18.00	17.24
	802.11ac20-VHT0	149	5745	MCS0	18.00	17.38
		157	5785		18.00	17.33
		165	5825		18.00	17.30
	802.11ax20-HE0	149	5745	MCS0	18.00	17.36
		157	5785		18.00	17.34
		165	5825		18.00	17.26
	802.11n40-HT0	151	5755	MCS0	18.00	17.78
		159	5795		18.00	17.91
	802.11ac40-VHT0	151	5755	MCS0	18.00	17.40
		159	5795		18.00	17.39
	802.11ax40-HE0	151	5755	MCS0	18.00	17.24
		159	5795		18.00	17.29
	802.11ac80-VHT0	155	5775	MCS0	17.00	16.57
	802.11ax80-HE0	155	5775	MCS0	16.50	16.26

Ant Aux						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
2.45GHz	802.11b	1	2412	1Mbps	17.50	17.27
		6	2437		21.41	20.81
		11	2462		17.13	16.86
	802.11g	1	2412	6Mbps	17.30	16.72
		6	2437		21.41	21.14
		11	2462		17.16	16.45
	802.11n20-HT0	1	2412	MCS0	17.30	16.72
		6	2437		21.41	20.64
		11	2462		17.16	16.45
	802.11ac20-VHT0	1	2412	MCS0	16.56	15.94
		6	2437		21.41	20.72
		11	2462		16.08	15.41
	802.11ax20-HE0	1	2412	MCS0	16.74	16.13
		6	2437		21.41	20.74
		11	2462		16.27	15.57
	802.11n40-HT0	3	2422	MCS0	14.68	13.95
		6	2437		16.65	15.98
		9	2452		14.16	13.42
	802.11ac40-VHT0	3	2422	MCS0	13.00	12.97
		6	2437		16.65	15.81
		9	2452		14.16	13.45
	802.11ax40-HE0	3	2422	MCS0	13.50	13.18
		6	2437		16.88	15.94
		9	2452		12.50	12.25

Ant Aux						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.15-5.25 GHz	802.11a	36	5180	6Mbps	18.00	17.71
		40	5200		18.00	17.69
		44	5220		18.00	17.76
		48	5240		18.00	17.86
	802.11n20-HT0	36	5180	MCS0	18.00	17.65
		40	5200		18.00	17.56
		44	5220		18.00	17.60
		48	5240		18.00	17.54
	802.11ac20-VHT0	36	5180	MCS0	18.00	17.61
		40	5200		18.00	17.62
		44	5220		18.00	17.52
		48	5240		18.00	17.55
	802.11ax20-HE0	36	5180	MCS0	18.00	17.54
		40	5200		18.00	17.68
		44	5220		18.00	17.61
		48	5240		18.00	17.50
	802.11n40-HT0	38	5190	MCS0	16.23	15.57
		46	5230		18.00	17.82
	802.11ac40-VHT0	38	5190	MCS0	16.23	15.62
		46	5230		18.00	17.61
	802.11ax40-HE0	38	5190	MCS0	14.50	14.04
		46	5230		18.00	17.55
	802.11ac80-VHT0	42	5210	MCS0	14.50	14.41
	802.11ax80-HE0	42	5210	MCS0	13.00	12.62

Ant Aux						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.25-5.35 GHz	802.11a	52	5260	6Mbps	18.00	17.38
		56	5280		18.00	17.47
		60	5300		18.00	17.42
		64	5320		18.00	17.40
	802.11n20-HT0	52	5260	MCS0	18.00	17.20
		56	5280		18.00	17.30
		60	5300		18.00	17.33
		64	5320		18.00	17.35
	802.11ac20-VHT0	52	5260	MCS0	18.00	17.26
		56	5280		18.00	17.32
		60	5300		18.00	17.54
		64	5320		18.00	17.31
	802.11ax20-HE0	52	5260	MCS0	18.00	17.36
		56	5280		18.00	17.32
		60	5300		18.00	17.26
		64	5320		18.00	17.21
	802.11n40-HT0	54	5270	MCS0	18.00	17.49
		62	5310		16.19	15.47
	802.11ac40-VHT0	54	5270	MCS0	18.00	17.18
		62	5310		15.00	14.52
	802.11ax40-HE0	54	5270	MCS0	18.00	17.21
		62	5310		15.00	14.56
	802.11ac80-VHT0	58	5290	MCS0	13.50	13.28
	802.11ax80-HE0	58	5290	MCS0	15.00	14.98

Ant Aux						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.6GHz	802.11a	100	5500	6Mbps	16.50	16.31
		120	5600		18.00	17.37
		140	5700		16.00	15.57
		144	5720		16.85	16.20
	802.11n20-HT0	100	5500	MCS0	18.00	17.37
		120	5600		18.00	17.45
		140	5700		18.00	17.37
		144	5720		16.85	16.27
	802.11ac20-VHT0	100	5500	MCS0	16.50	16.36
		120	5600		18.00	17.47
		140	5700		16.50	16.23
		144	5720		16.06	15.50
	802.11ax20-HE0	100	5500	MCS0	18.00	17.42
		120	5600		18.00	17.43
		140	5700		15.50	15.14
		144	5720		16.50	15.90
	802.11n40-HT0	102	5510	MCS0	15.74	15.16
		118	5590		18.00	17.89
		134	5670		18.00	17.77
		142	5710		18.00	17.76
	802.11ac40-VHT0	102	5510	MCS0	15.74	15.05
		118	5590		18.00	17.38
		134	5670		17.00	16.75
		142	5710		18.00	17.46
	802.11ax40-HE0	102	5510	MCS0	12.50	12.14
		118	5590		18.00	17.32
		134	5670		16.50	16.47
		142	5710		18.00	17.30
	802.11ac80-VHT0	106	5530	MCS0	12.50	12.42
		122	5610		16.00	15.91
		138	5690		16.37	15.76
	802.11ax80-HE0	106	5530	MCS0	13.50	13.13
		122	5610		16.00	15.96
		138	5690		16.49	15.82

Ant Aux						
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.8GHz	802.11a	149	5745	6Mbps	19.00	18.37
		157	5785		19.00	18.33
		165	5825		19.00	18.33
	802.11n20-HT0	149	5745	MCS0	19.00	18.31
		157	5785		19.00	18.23
		165	5825		19.00	18.25
	802.11ac20-VHT0	149	5745	MCS0	19.00	18.30
		157	5785		19.00	18.38
		165	5825		19.00	18.18
	802.11ax20-HE0	149	5745	MCS0	19.00	18.34
		157	5785		19.00	18.30
		165	5825		19.00	18.19
	802.11n40-HT0	151	5755	MCS0	19.00	18.69
		159	5795		19.00	18.67
	802.11ac40-VHT0	151	5755	MCS0	19.00	18.25
		159	5795		19.00	18.30
	802.11ax40-HE0	151	5755	MCS0	19.00	18.34
		159	5795		19.00	18.35
	802.11ac80-VHT0	155	5775	MCS0	16.50	16.35
	802.11ax80-HE0	155	5775	MCS0	16.50	16.04

Tablet mode

Ant Main						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
2.45GHz	802.11b	1	2412	1Mbps	14.00	13.81
		6	2437		14.00	13.62
		11	2462		14.00	13.79
	802.11g	1	2412	6Mbps	14.00	13.29
		6	2437		14.00	13.45
		11	2462		14.00	13.42
	802.11n20-HT0	1	2412	MCS0	14.00	13.38
		6	2437		14.00	13.27
		11	2462		14.00	13.26
	802.11ac20-VHT0	1	2412	MCS0	14.00	13.27
		6	2437		14.00	13.43
		11	2462		14.00	13.33
	802.11ax20-HE0	1	2412	MCS0	14.00	13.26
		6	2437		14.00	13.45
		11	2462		14.00	13.25
	802.11n40-HT0	3	2422	MCS0	14.00	13.33
		6	2437		14.00	13.41
		9	2452		13.65	12.95
	802.11ac40-VHT0	3	2422	MCS0	14.00	13.26
		6	2437		14.00	13.27
		9	2452		13.65	13.01
	802.11ax40-HE0	3	2422	MCS0	14.00	13.30
		6	2437		14.00	13.43
		9	2452		13.78	13.21

Ant Main						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.15-5.25 GHz	802.11a	36	5180	6Mbps	12.00	11.36
		40	5200		12.00	11.28
		44	5220		12.00	11.25
		48	5240		12.00	11.30
	802.11n20-HT0	36	5180	MCS0	12.00	11.28
		40	5200		12.00	11.26
		44	5220		12.00	11.41
		48	5240		12.00	11.37
	802.11ac20-VHT0	36	5180	MCS0	12.00	11.44
		40	5200		12.00	11.38
		44	5220		12.00	11.30
		48	5240		12.00	11.37
	802.11ax20-HE0	36	5180	MCS0	12.00	11.42
		40	5200		12.00	11.39
		44	5220		12.00	11.41
		48	5240		12.00	11.30
	802.11n40-HT0	38	5190	MCS0	12.00	11.76
		46	5230		12.00	11.91
	802.11ac40-VHT0	38	5190	MCS0	12.00	11.35
		46	5230		12.00	11.36
	802.11ax40-HE0	38	5190	MCS0	12.00	11.37
		46	5230		12.00	11.43
	802.11ac80-VHT0	42	5210	MCS0	12.00	11.98
	802.11ax80-HE0	42	5210	MCS0	12.00	11.33

Ant Main						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.25-5.35 GHz	802.11a	52	5260	6Mbps	12.00	11.33
		56	5280		12.00	11.44
		60	5300		12.00	11.39
		64	5320		12.00	11.40
	802.11n20-HT0	52	5260	MCS0	12.00	11.31
		56	5280		12.00	11.27
		60	5300		12.00	11.30
		64	5320		12.00	11.28
	802.11ac20-VHT0	52	5260	MCS0	12.00	11.30
		56	5280		12.00	11.32
		60	5300		12.00	11.40
		64	5320		12.00	11.45
	802.11ax20-HE0	52	5260	MCS0	12.00	11.36
		56	5280		12.00	11.39
		60	5300		12.00	11.34
		64	5320		12.00	11.28
	802.11n40-HT0	54	5270	MCS0	12.00	11.57
		62	5310		12.00	11.74
	802.11ac40-VHT0	54	5270	MCS0	12.00	11.33
		62	5310		12.00	11.41
	802.11ax40-HE0	54	5270	MCS0	12.00	11.32
		62	5310		12.00	11.43
	802.11ac80-VHT0	58	5290	MCS0	12.00	11.85
	802.11ax80-HE0	58	5290	MCS0	12.00	11.30

Ant Main						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.6GHz	802.11a	100	5500	6Mbps	11.50	10.82
		120	5600		11.50	10.75
		140	5700		11.50	10.87
		144	5720		11.50	10.92
	802.11n20-HT0	100	5500	MCS0	11.50	10.76
		120	5600		11.50	10.93
		140	5700		11.50	10.80
		144	5720		11.50	10.94
	802.11ac20-VHT0	100	5500	MCS0	11.50	10.84
		120	5600		11.50	10.78
		140	5700		11.50	10.81
		144	5720		11.50	10.76
	802.11ax20-HE0	100	5500	MCS0	11.50	10.83
		120	5600		11.50	10.88
		140	5700		11.50	10.82
		144	5720		11.50	10.95
	802.11n40-HT0	102	5510	MCS0	11.50	10.76
		118	5590		11.50	10.76
		134	5670		11.50	10.86
		142	5710		11.50	10.90
	802.11ac40-VHT0	102	5510	MCS0	11.50	10.94
		118	5590		11.50	10.94
		134	5670		11.50	10.83
		142	5710		11.50	10.89
	802.11ax40-HE0	102	5510	MCS0	11.50	10.93
		118	5590		11.50	10.93
		134	5670		11.50	10.80
		142	5710		11.50	10.85
	802.11ac80-VHT0	106	5530	MCS0	11.50	11.40
		122	5610		11.50	11.22
		138	5690		11.50	11.23
	802.11ax80-HE0	106	5530	MCS0	11.50	10.88
		122	5610		11.50	10.77
		138	5690		11.50	10.86

Ant Main						
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.8GHz	802.11a	149	5745	6Mbps	11.50	10.85
		157	5785		11.50	10.81
		165	5825		11.50	10.90
	802.11n20-HT0	149	5745	MCS0	11.50	10.93
		157	5785		11.50	10.88
		165	5825		11.50	10.87
	802.11ac20-VHT0	149	5745	MCS0	11.50	10.79
		157	5785		11.50	10.89
		165	5825		11.50	10.78
	802.11ax20-HE0	149	5745	MCS0	11.50	10.91
		157	5785		11.50	10.81
		165	5825		11.50	10.90
	802.11n40-HT0	151	5755	MCS0	11.50	11.12
		159	5795		11.50	11.21
	802.11ac40-VHT0	151	5755	MCS0	11.50	10.77
		159	5795		11.50	10.85
	802.11ax40-HE0	151	5755	MCS0	11.50	10.93
		159	5795		11.50	10.79
	802.11ac80-VHT0	155	5775	MCS0	11.50	11.49
	802.11ax80-HE0	155	5775	MCS0	11.50	10.80

Ant Aux						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
2.45GHz	802.11b	1	2412	1Mbps	14.00	13.96
		6	2437		14.00	13.75
		11	2462		14.00	13.99
	802.11g	1	2412	6Mbps	14.00	13.55
		6	2437		14.00	13.53
		11	2462		14.00	13.55
	802.11n20-HT0	1	2412	MCS0	14.00	13.43
		6	2437		14.00	13.52
		11	2462		14.00	13.52
	802.11ac20-VHT0	1	2412	MCS0	14.00	13.55
		6	2437		14.00	13.38
		11	2462		14.00	13.57
	802.11ax20-HE0	1	2412	MCS0	14.00	13.41
		6	2437		14.00	13.38
		11	2462		14.00	13.57
	802.11n40-HT0	3	2422	MCS0	14.00	13.41
		6	2437		14.00	13.54
		9	2452		14.00	13.52
	802.11ac40-VHT0	3	2422	MCS0	14.00	12.97
		6	2437		14.00	13.50
		9	2452		14.00	13.38
	802.11ax40-HE0	3	2422	MCS0	14.00	13.18
		6	2437		14.00	13.53
		9	2452		14.00	12.25

Ant Aux						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.15-5.25 GHz	802.11a	36	5180	6Mbps	15.00	14.46
		40	5200		15.00	14.47
		44	5220		15.00	14.40
		48	5240		15.00	14.55
	802.11n20-HT0	36	5180	MCS0	15.00	14.39
		40	5200		15.00	14.53
		44	5220		15.00	14.52
		48	5240		15.00	14.47
	802.11ac20-VHT0	36	5180	MCS0	15.00	14.55
		40	5200		15.00	14.54
		44	5220		15.00	14.46
		48	5240		15.00	14.58
	802.11ax20-HE0	36	5180	MCS0	15.00	14.38
		40	5200		15.00	14.50
		44	5220		15.00	14.49
		48	5240		15.00	14.51
	802.11n40-HT0	38	5190	MCS0	15.00	14.89
		46	5230		15.00	14.61
	802.11ac40-VHT0	38	5190	MCS0	15.00	14.48
		46	5230		15.00	14.43
	802.11ax40-HE0	38	5190	MCS0	14.50	14.04
		46	5230		15.00	14.50
	802.11ac80-VHT0	42	5210	MCS0	14.50	14.41
	802.11ax80-HE0	42	5210	MCS0	13.00	12.62

Ant Aux						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.25-5.35 GHz	802.11a	52	5260	6Mbps	14.50	14.01
		56	5280		14.50	13.88
		60	5300		14.50	14.08
		64	5320		14.50	14.05
	802.11n20-HT0	52	5260	MCS0	14.50	14.04
		56	5280		14.50	13.93
		60	5300		14.50	14.05
		64	5320		14.50	14.07
	802.11ac20-VHT0	52	5260	MCS0	14.50	13.98
		56	5280		14.50	13.90
		60	5300		14.50	14.01
		64	5320		14.50	13.96
	802.11ax20-HE0	52	5260	MCS0	14.50	13.95
		56	5280		14.50	13.99
		60	5300		14.50	13.92
		64	5320		14.50	13.99
	802.11n40-HT0	54	5270	MCS0	14.50	14.16
		62	5310		14.50	14.23
	802.11ac40-VHT0	54	5270	MCS0	14.50	14.04
		62	5310		14.50	13.94
	802.11ax40-HE0	54	5270	MCS0	14.50	13.91
		62	5310		14.50	14.07
	802.11ac80-VHT0	58	5290	MCS0	13.50	13.28
	802.11ax80-HE0	58	5290	MCS0	14.50	14.45

Ant Aux						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.6GHz	802.11a	100	5500	6Mbps	13.50	13.02
		120	5600		13.50	12.92
		140	5700		13.50	13.06
		144	5720		13.50	12.98
	802.11n20-HT0	100	5500	MCS0	13.50	12.98
		120	5600		13.50	12.91
		140	5700		13.50	12.95
		144	5720		13.50	13.03
	802.11ac20-VHT0	100	5500	MCS0	13.50	12.92
		120	5600		13.50	13.06
		140	5700		13.50	13.00
		144	5720		13.50	13.02
	802.11ax20-HE0	100	5500	MCS0	13.50	12.91
		120	5600		13.50	13.04
		140	5700		13.50	13.07
		144	5720		13.50	13.02
	802.11n40-HT0	102	5510	MCS0	13.50	12.99
		118	5590		13.50	13.01
		134	5670		13.50	13.06
		142	5710		13.50	13.00
	802.11ac40-VHT0	102	5510	MCS0	13.50	12.90
		118	5590		13.50	12.91
		134	5670		13.50	12.88
		142	5710		13.50	12.98
	802.11ax40-HE0	102	5510	MCS0	12.50	12.14
		118	5590		13.50	13.06
		134	5670		13.50	12.89
		142	5710		13.50	12.96
	802.11ac80-VHT0	106	5530	MCS0	12.50	12.42
		122	5610		13.50	13.36
		138	5690		13.50	13.38
	802.11ax80-HE0	106	5530	MCS0	13.50	12.94
		122	5610		13.50	12.95
		138	5690		13.50	12.92

Ant Aux						
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
5.8GHz	802.11a	149	5745	6Mbps	13.00	12.51
		157	5785		13.00	12.44
		165	5825		13.00	12.54
	802.11n20-HT0	149	5745	MCS0	13.00	12.56
		157	5785		13.00	12.42
		165	5825		13.00	12.56
	802.11ac20-VHT0	149	5745	MCS0	13.00	12.49
		157	5785		13.00	12.52
		165	5825		13.00	12.47
	802.11ax20-HE0	149	5745	MCS0	13.00	12.40
		157	5785		13.00	12.41
		165	5825		13.00	12.48
	802.11n40-HT0	151	5755	MCS0	13.00	12.97
		159	5795		13.00	12.99
	802.11ac40-VHT0	151	5755	MCS0	13.00	12.51
		159	5795		13.00	12.49
	802.11ax40-HE0	151	5755	MCS0	13.00	12.43
		159	5795		13.00	12.52
	802.11ac80-VHT0	155	5775	MCS0	13.00	12.87
	802.11ax80-HE0	155	5775	MCS0	13.00	12.40

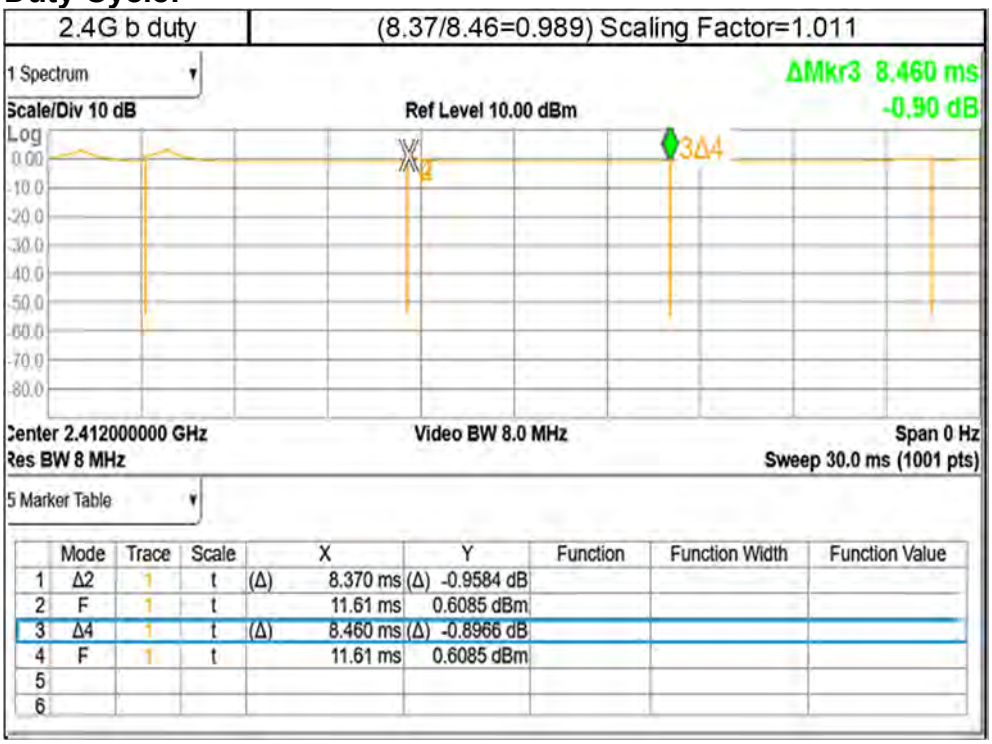
Bluetooth conducted power table:

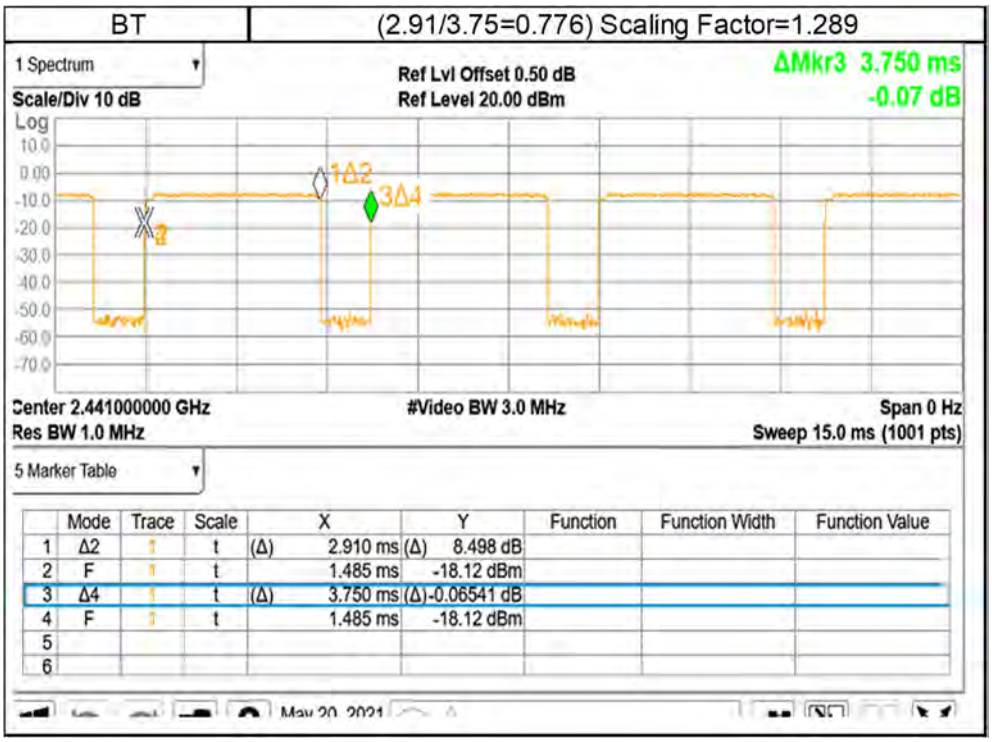
Mode	Channel	Frequency (MHz)	1Mbps		2Mbps		3Mbps	
			Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
BR/EDR	CH 00	2402	12.19	12.16	9.88	9.34	9.88	9.31
	CH 39	2441	12.40	12.27	9.60	9.55	9.60	9.52
	CH 78	2480	12.31	12.22	9.86	9.49	9.86	9.46

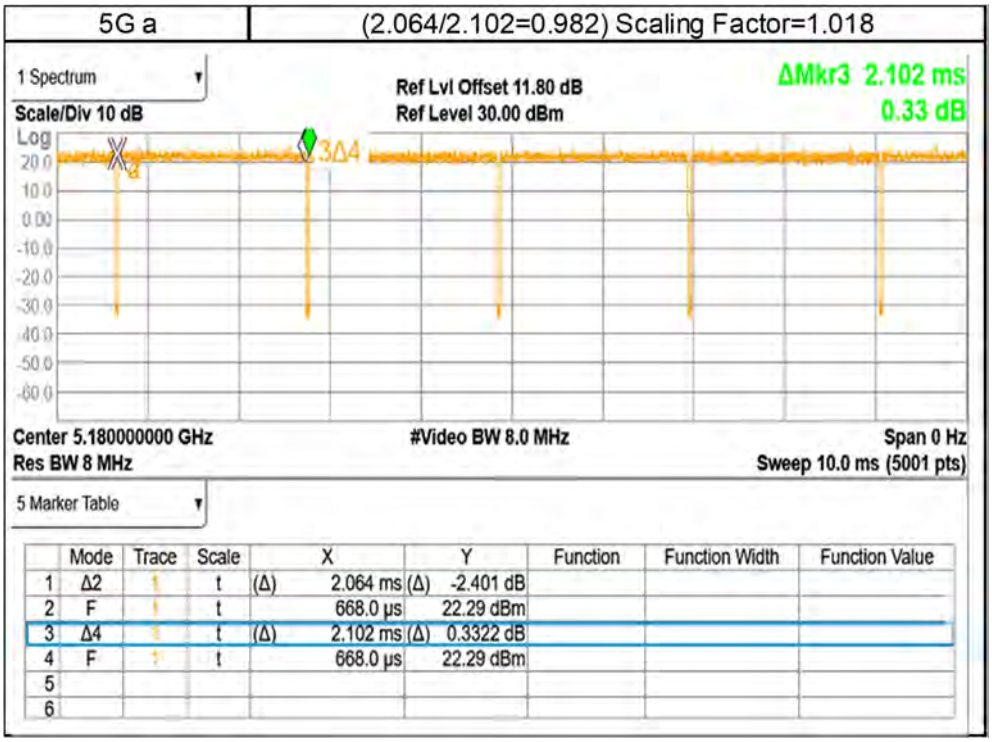
Mode	Channel	Frequency (MHz)	GFSK	
			Max. Rated Avg.Power + Max. Tolerance (dBm)	Average Output Power (dBm)
BLE_1M	CH 00	2402	6.18	6.13
	CH 19	2440	6.45	6.25
	CH 39	2480	6.40	6.18

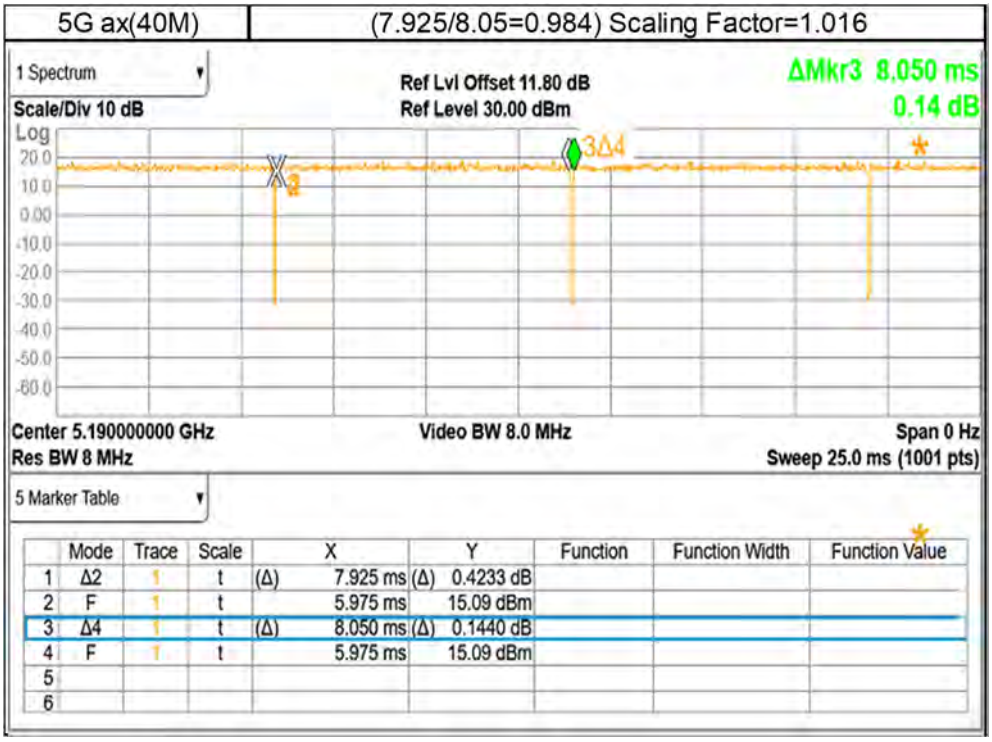
Mode	Channel	Frequency (MHz)	GFSK	
			Max. Rated Avg.Power + Max. Tolerance (dBm)	Average Output Power (dBm)
BLE_2M	CH 00	2402	6.13	6.06
	CH 19	2440	6.40	6.19
	CH 39	2480	6.25	6.11

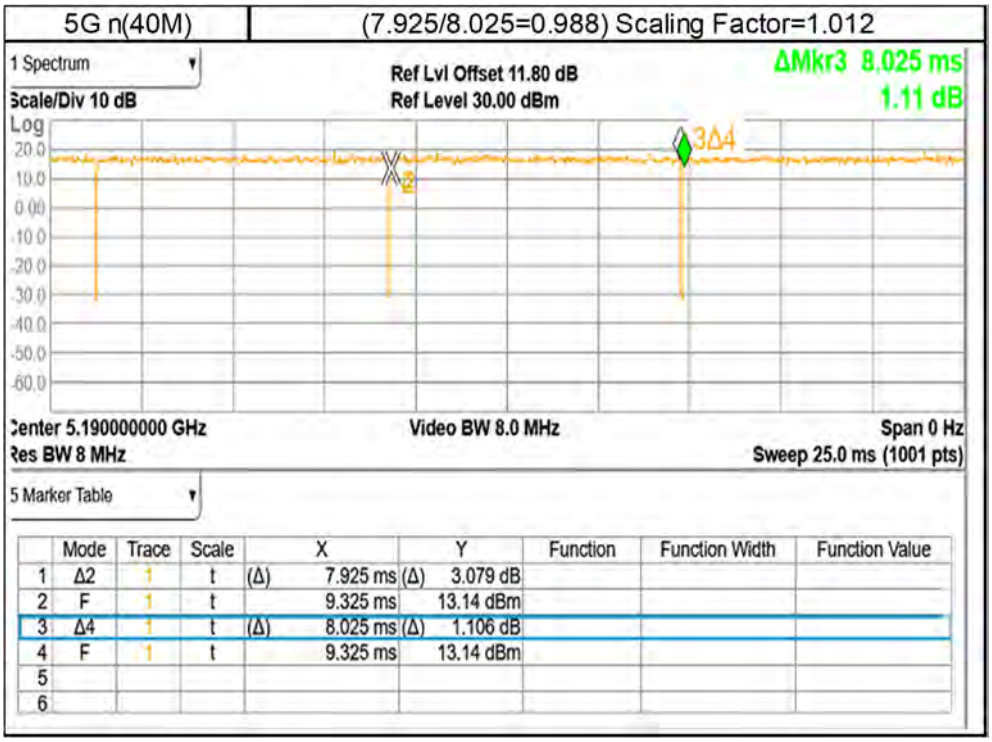
Duty Cycle:

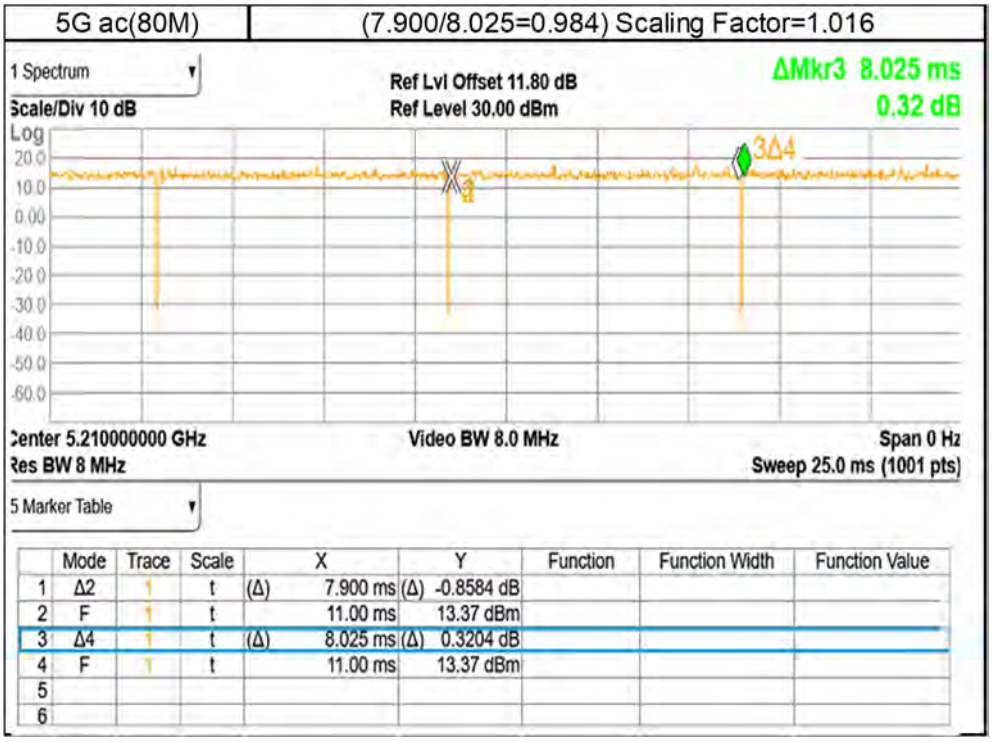












1.4 Test Environment

Ambient Temperature: 22±2° C
Tissue Simulating Liquid: 22±2° C

1.5 Operation Description

Use chipset specific software to control the EUT, and makes it transmit in maximum power. Measurements are performed respectively on the lowest, middle and highest channels of the operating band(s). The EUT is set to maximum power level during all tests, and at the beginning of each test the battery is fully charged.

Laptop mode

SAR is measured with display screen open at 90 degree and bottom side of keyboard touch against the flat phantom.

Tablet mode

SAR is measured with back/edges touch against the flat phantom.

Note:

802.11b DSSS SAR Test Requirements:

1. SAR is measured for 2.4 GHz 802.11b DSSS mode using the highest measured maximum output power channel, when the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.

2. When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

802.11g/n OFDM SAR Test Exclusion Requirements:

3. SAR is not required for 802.11g/n since the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

Initial Test Configuration:

4. An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band.

5. SAR is measured using the highest measured maximum output power channel. When the reported SAR of the initial test configuration is > 0.8 W/kg, SAR measurement is required for the subsequent next highest measured output power channel(s) in the initial test configuration until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

6. Since the highest reported SAR for the initial test configuration is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for subsequent test configuration.

7. According to KDB447498 D01, testing of other required channels is not required when the reported 1-g SAR for the highest output channel is ≤ 0.8 W/kg, when the transmission band is ≤ 100 MHz.

8. According to KDB865664 D01, SAR measurement variability must be assessed for each frequency band. When the original highest measured SAR is ≥ 0.8 W/kg, repeated that measurement once. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~10% from the 1-g SAR limit)

1.6 Operating modes validation by power measurement

The device is a convertible laptop computer with predefined single fixed power to each device modes.
For the operating modes validation, the measured conducted output power is monitored qualitatively to identify the triggering characteristics and recorded quantitatively.

DUT operating mode	Lid Angle description	WLAN TX state
Lid-close	0° ≤ Lid angle < 30°	No TX transmission
Notebook	30° ≤ Lid angle < 200°	Full Power Level
Tablet	200° ≤ Lid angle ≤ 360°	Reduced Power Level

1.6.1 Results and conclusion

The measured output power versus lid angle is tabulated in the following table based on the guidance from 2019-11 TCB workshop, and the triggering verification complies with the device mode / power level declared by the manufacturer.

Operating mode validation by power measurement

Antenna	Operation mode	Lid angle	802.11b	802.11a 5.2G	802.11n(40M) 5.2G	802.11ac(80M) 5.2G	802.11a 5.3G	802.11n(40M) 5.3G	802.11ac(80M) 5.3G	802.11n(40M) 5.6G	802.11ac(80M) 5.6G	802.11n(40M) 5.8G	802.11ac(80M) 5.8G
Main	Lid close	0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		10°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		20°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Laptop	30°	21.04	16.90	16.37	14.50	16.45	16.25	13.41	16.03	16.05	17.83	16.54
	Lid close	25°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		26°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		27°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		28°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		29°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Laptop	30°	21.04	16.87	16.43	14.52	16.46	16.29	13.47	16.10	16.03	17.89	16.47
		31°	20.99	16.87	16.35	14.55	16.40	16.33	13.46	16.13	16.07	17.90	16.49
		32°	20.99	16.85	16.41	14.52	16.40	16.33	13.40	16.09	16.00	17.91	16.51
		33°	21.04	16.81	16.42	14.55	16.44	16.29	13.40	16.13	16.00	17.81	16.57
		34°	20.99	16.89	16.40	14.49	16.43	16.34	13.50	16.04	16.08	17.91	16.50
		35°	20.99	16.89	16.36	14.52	16.43	16.35	13.50	16.06	16.05	17.91	16.55
		45°	21.01	16.82	16.43	14.55	16.49	16.34	13.42	16.07	16.01	17.87	16.52
		55°	21.03	16.81	16.40	14.51	16.44	16.27	13.42	16.07	16.08	17.91	16.48
		65°	20.99	16.83	16.37	14.49	16.46	16.34	13.40	16.10	16.00	17.83	16.54
		75°	20.99	16.81	16.35	14.57	16.41	16.29	13.46	16.04	16.08	17.87	16.47
		85°	21.03	16.81	16.33	14.54	16.45	16.32	13.41	16.03	16.05	17.91	16.57
		95°	20.95	16.90	16.41	14.49	16.41	16.33	13.45	16.13	16.06	17.85	16.57
		105°	21.02	16.87	16.40	14.54	16.42	16.26	13.41	16.05	15.99	17.84	16.49
		115°	20.97	16.83	16.41	14.57	16.47	16.25	13.50	16.10	16.07	17.87	16.54
		125°	21.02	16.82	16.42	14.49	16.46	16.31	13.49	16.09	15.98	17.81	16.56
		135°	21.01	16.83	16.39	14.50	16.49	16.31	13.47	16.07	16.08	17.87	16.57
		145°	20.99	16.81	16.33	14.52	16.40	16.34	13.45	16.08	16.01	17.89	16.56
		155°	20.98	16.85	16.36	14.52	16.39	16.30	13.44	16.03	16.04	17.81	16.52
		165°	21.05	16.80	16.42	14.48	16.47	16.25	13.47	16.05	16.06	17.86	16.54
		175°	20.95	16.81	16.39	14.49	16.40	16.30	13.44	16.13	16.08	17.90	16.54
		185°	21.00	16.82	16.43	14.51	16.47	16.33	13.45	16.11	16.00	17.83	16.56
		195°	21.01	16.90	16.41	14.47	16.42	16.31	13.50	16.12	15.99	17.86	16.51
	Tablet	205°	13.78	11.33	11.86	11.94	11.36	11.53	11.79	10.80	11.30	11.10	11.39
		200°	13.75	11.33	11.90	11.98	11.35	11.55	11.85	10.81	11.36	11.11	11.47
	Laptop	195°	20.95	16.84	16.37	14.53	16.48	16.35	13.50	16.10	16.05	17.90	16.55
		196°	20.96	16.82	16.38	14.54	16.45	16.34	13.41	16.10	16.00	17.88	16.53
		197°	21.02	16.84	16.33	14.51	16.40	16.35	13.40	16.04	16.05	17.91	16.52
		198°	20.97	16.86	16.35	14.54	16.43	16.32	13.42	16.04	16.06	17.89	16.55
		199°	20.95	16.86	16.36	14.54	16.42	16.32	13.47	16.03	16.04	17.88	16.47
	Tablet	200°	13.71	11.33	11.81	11.90	11.36	11.50	11.77	10.86	11.37	11.02	11.44
		201°	13.71	11.35	11.91	11.92	11.41	11.49	11.76	10.89	11.35	11.10	11.42
		202°	13.80	11.30	11.83	11.97	11.43	11.55	11.83	10.89	11.38	11.04	11.49
		203°	13.72	11.36	11.88	11.93	11.40	11.54	11.76	10.86	11.30	11.05	11.43
		204°	13.71	11.32	11.91	11.89	11.39	11.48	11.76	10.81	11.36	11.07	11.43
		205°	13.80	11.31	11.85	11.90	11.41	11.52	11.83	10.81	11.33	11.10	11.48
		215°	13.76	11.32	11.89	11.94	11.36	11.52	11.77	10.80	11.30	11.04	11.39
		225°	13.81	11.34	11.81	11.98	11.37	11.50	11.82	10.90	11.30	11.04	11.44
		235°	13.74	11.36	11.85	11.98	11.43	11.57	11.78	10.86	11.30	11.05	11.49
		245°	13.73	11.30	11.89	11.98	11.39	11.56	11.77	10.90	11.37	11.12	11.49
		255°	13.79	11.26	11.89	11.97	11.43	11.55	11.83	10.89	11.36	11.11	11.41
		265°	13.76	11.33	11.86	11.89	11.37	11.54	11.84	10.85	11.34	11.04	11.48
		275°	13.80	11.29	11.83	11.89	11.35	11.53	11.83	10.84	11.38	11.04	11.45
		285°	13.78	11.27	11.89	11.97	11.39	11.50	11.84	10.83	11.34	11.12	11.49
		295°	13.72	11.28	11.83	11.95	11.40	11.57	11.75	10.88	11.40	11.12	11.43
		305°	13.72	11.33	11.82	11.95	11.41	11.51	11.77	10.88	11.36	11.12	11.47
		315°	13.74	11.29	11.85	11.89	11.37	11.52	11.75	10.88	11.36	11.02	11.43
		325°	13.71	11.32	11.88	11.98	11.43	11.50	11.85	10.82	11.37	11.11	11.46
		335°	13.77	11.31	11.82	11.94	11.41	11.48	11.83	10.82	11.31	11.05	11.49
		345°	13.77	11.31	11.86	11.94	11.34	11.52	11.82	10.89	11.33	11.10	11.46
		355°	13.80	11.33	11.81	11.92	11.38	11.57	11.77	10.84	11.35	11.12	11.47
		360°	13.75	11.32	11.89	11.95	11.37	11.48	11.75	10.80	11.35	11.07	11.45
	Tablet	350°	13.79	11.30	11.87	11.89	11.37	11.55	11.78	10.86	11.34	11.05	11.43
		340°	13.81	11.26	11.87	11.90	11.38	11.50	11.76	10.83	11.30	11.04	11.41
		330°	13.74	11.28	11.89	11.97	11.41	11.50	11.84	10.88	11.36	11.07	11.45
		320°	13.76	11.35	11.84	11.96	11.41	11.47	11.85	10.88	11.36	11.12	11.41
		310°	13.81	11.29	11.89	11.96	11.38	11.50	11.81	10.82	11.34	11.02	11.42
		300°	13.75	11.26	11.87	11.93	11.43	11.56	11.84	10.88	11.32	11.10	11.42
		290°	13.79	11.29	11.91	11.89	11.40	11.54	11.78	10.88	11.37	11.08	11.41
		280°	13.77	11.33	11.90	11.96	11.38	11.57	11.75	10.82	11.31	11.09	11.40
		270°	13.74	11.28	11.85	11.93	11.40	11.55	11.82	10.80	11.31	11.06	11.47
		260°	13.77	11.28	11.87	11.92	11.38	11.48	11.78	10.90	11.32	11.10	11.39
		250°	13.76	11.34	11.88	11.93	11.37	11.52	11.77	10.90	11.31	11.04	11.42
		240°	13.80	11.27	11.86	11.93	11.37	11.56	11.77	10.80	11.32	11.05	11.41
		230°	13.80	11.36	11.86	11.91	11.37	11.52	11.78	10.90	11.34	11.11	11.42
		220°	13.79	11.31	11.89	11.95	11.41	11.48	11.78	10.89	11.32	11.09	11.39
		210°	13.81	11.28	11.83	11.95	11.39	11.50	11.78	10.81	11.40	11.10	11.44
		200°	13.72	11.34	11.83	11.95	11.35	11.51	11.81	10.84	11.40	11.03	11.43
	Laptop	190°	20.99	16.80	16.38	14.56	16.42	16.33	13.40	16.11	16.04	17.81	16.54
		195°	21.01	16.90	16.37	14.51	16.43	16.31	13.44	16.10	16.01	17.82	16.48
	Tablet	200°	13.75	11.28	11.91	11.92	11.38	11.48	11.76	10.87	11.32	11.12	11.43
	Laptop	199°	21.04	16.84	16.41	14.47	16.42	16.25	13.40	16.09	15.98	17.82	16.53
		198°	21.03	16.82	16.35	14.50	16.46	16.26	13.42	16.10	16.07	17.90	16.49
		197°	20.96	16.83	16.42	14.51	16.42	16.26	13.48	16.07	16.00	17.84	16.54
		196°	21.03	16.81	16.33	14.52	16.48	16.33	13.44	16.08	16.08	17.86	16.54
		195°	20.96	16.87	16.41	14.52	16.46	16.27	13.44	16.13	16.02	17.91	16.55
		194°	20.99	16.84	16.42	14.57	16.39	16.31	13.40	16.13	15.99	17.83	16.51
		193°	20.98	16.88	16.35	14.54	16.39	16.28	13.44	16.07	16.00	17.82	16.47
		192°	21.02	16.84	16.40	14.49	16.44	16.32	13.47	16.11	16.06	17.90	16.49
		191°	21.03	16.84	16.35	14.53	16.46	16.34	13.48	16.04	16.06	17.82	16.53
		190°	21.04	16.88	16.39	14.51	16.45	16.28	13.40	16.12	15.98	17.90	16.49
		180°	21.00	16.80	16.43	14.47	16.43	16.28	13.44	16.09	16.04	17.89	16.48
		170°	20.99	16.83	16.40	14.56	16.39	16.31	13.44	16.04	15.98	17.82	16.49
		160°	21.04	16.88	16.39	14.54	16.48	16.33	13.49	16.08	15.99	17.82	16.49
		150°	21.02	16.81	16.34	14.49	16.48	16.30	13.46	16.13	16.06	17.83	16.55
		140°	20.98	16.82	16.43	14.53	16.44	16.25	13.50	16.11	16.02	17.88	16.56
		130°	21.02	16.90	16.40	14.52	16.41	16.27	13.45	16.10	16.05	17.84	16.47
		120°	21.02	16.81	16.34	14.57	16.39	16.31	13.42	16.07	16.03	17.89	16.57
		110°	20.97	16.83	16.34	14.55	16.47	16.35	13.43	16.09	16.04	17.91	16.56
		100°	20.96	16.82	16.43	14.54	16.48	16.25	13.47	16.07	16.03	17.84	16.52
		90°	21.05	16.87	16.35	14.55	16.43	16.30	13.41	16.10	16.03	17.91	16.52
		80°	21.00	16.86	16.35	14.54	16.45	16.29	13.49	16.10	15.98	17.85	16.52
		70°	20.99	16.82	16.37	14.47	16.47	16.34	13.49	16.07	16.07	17.84	16.54
		60°	21.00	16.81	16.43	14.48	16.45	16.31	13.46	16.05	15.98	17.83	16.57
		50°	21.05	16.80	16.40	14.57	16.46	16.25	13.44	16.09	16.06	17.81	16.54
		40°	20.97	16.81	16.41	14.47	16.39	16.30	13.44	16.05	16.05	17.84	16.53
		30°	21.00	16.88	16.42	14.49	16.48	16.31	13.42	16.10	16.01	17.83	16.52
	Lid close	20°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		25°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Laptop	30°	21.03	16.80	16.38	14.51	16.44	16.32	13.47	16.12	16.06	17.90	16.48
	Lid close	29°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		28°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		27°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		26°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		25°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		24°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		23°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		22°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		21°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		20°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		10°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Antenna	Operation mode	Lid angle	802.11b	802.11a 5.2G	802.11n(40M) 5.2G	802.11a 5.3G	802.11n(40M) 5.3G	802.11ac(80M) 5.3G	802.11n(40M) 5.6G	802.11ac(80M) 5.6G	802.11n(40M) 5.8G	802.11ac(80M) 5.8G
Aux	Lid close	0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		10°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		20°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Laptop	30°	20.81	17.86	17.82	17.47	17.49	13.28	17.89	15.91	18.69	16.35
	Lid close	25°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		26°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		27°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		28°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		29°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Laptop	30°	20.77	17.86	17.74	17.42	17.46	13.23	17.89	15.83	18.62	16.25
		31°	20.73	17.82	17.75	17.44	17.46	13.23	17.87	15.86	18.59	16.33
		32°	20.79	17.81	17.82	17.41	17.45	13.23	17.86	15.90	18.60	16.31
		33°	20.77	17.76	17.72	17.43	17.41	13.21	17.86	15.90	18.63	16.25
		34°	20.71	17.77	17.77	17.46	17.44	13.25	17.84	15.89	18.66	16.33
		35°	20.74	17.85	17.75	17.44	17.44	13.22	17.80	15.89	18.67	16.29
		45°	20.76	17.86	17.75	17.38	17.46	13.22	17.89	15.85	18.60	16.31
		55°	20.80	17.82	17.72	17.41	17.48	13.28	17.80	15.86	18.61	16.25
		65°	20.81	17.79	17.76	17.40	17.49	13.23	17.89	15.87	18.59	16.30
		75°	20.75	17.79	17.73	17.40	17.49	13.24	17.81	15.84	18.69	16.34
		85°	20.78	17.86	17.75	17.40	17.42	13.28	17.82	15.85	18.65	16.29
		95°	20.72	17.84	17.77	17.38	17.44	13.28	17.81	15.87	18.61	16.27
		105°	20.73	17.82	17.80	17.40	17.47	13.26	17.84	15.89	18.68	16.30
		115°	20.78	17.78	17.72	17.40	17.42	13.27	17.80	15.88	18.60	16.33
		125°	20.71	17.86	17.77	17.46	17.43	13.27	17.81	15.89	18.62	16.27
		135°	20.71	17.78	17.78	17.39	17.43	13.21	17.84	15.90	18.69	16.28
		145°	20.81	17.85	17.74	17.43	17.48	13.23	17.82	15.86	18.59	16.35
		155°	20.72	17.81	17.82	17.46	17.43	13.18	17.80	15.85	18.68	16.34
		165°	20.80	17.78	17.77	17.43	17.44	13.25	17.85	15.81	18.64	16.29
		175°	20.80	17.85	17.80	17.43	17.45	13.23	17.79	15.89	18.66	16.31
		185°	20.75	17.76	17.80	17.43	17.41	13.27	17.83	15.87	18.65	16.25
		195°	20.76	17.78	17.82	17.44	17.47	13.20	17.80	15.87	18.69	16.27
	Tablet	205°	13.92	14.54	14.87	14.08	14.13	14.43	12.96	13.36	12.89	12.83
		200°	13.90	14.45	14.83	14.06	14.14	14.44	13.04	13.37	12.99	12.87
	Laptop	195°	20.71	17.80	17.77	17.39	17.46	13.22	17.89	15.86	18.59	16.34
		196°	20.78	17.80	17.79	17.40	17.47	13.28	17.79	15.81	18.60	16.31
		197°	20.73	17.83	17.78	17.46	17.41	13.23	17.82	15.91	18.66	16.27
		198°	20.72	17.79	17.81	17.41	17.43	13.23	17.86	15.89	18.62	16.27
		199°	20.75	17.80	17.79	17.41	17.44	13.22	17.88	15.82	18.69	16.32
	Tablet	200°	13.90	14.45	14.86	14.00	14.14	14.40	12.97	13.34	12.94	12.79
		201°	13.94	14.47	14.83	14.08	14.16	14.42	13.06	13.36	12.97	12.83
		202°	13.89	14.46	14.86	14.06	14.13	14.43	13.03	13.38	12.99	12.87
		203°	13.94	14.47	14.88	14.00	14.14	14.41	12.99	13.30	12.96	12.80
		204°	13.89	14.54	14.81	13.98	14.19	14.41	13.04	13.36	12.89	12.80
		205°	13.89	14.48	14.87	14.05	14.23	14.36	13.04	13.30	12.92	12.78
		215°	13.93	14.54	14.85	14.04	14.17	14.36	12.96	13.30	12.91	12.85
		225°	13.95	14.46	14.89	14.08	14.17	14.35	12.97	13.38	12.92	12.82
		235°	13.91	14.47	14.89	14.05	14.15	14.43	12.99	13.36	12.92	12.78
		245°	13.99	14.54	14.82	14.08	14.20	14.38	13.01	13.38	12.99	12.81
		255°	13.95	14.48	14.85	13.99	14.17	14.45	12.97	13.36	12.96	12.82
		265°	13.95	14.46	14.89	14.01	14.16	14.45	13.05	13.30	12.93	12.86
		275°	13.99	14.51	14.81	14.06	14.19	14.41	12.97	13.34	12.99	12.87
		285°	13.94	14.54	14.89	14.08	14.19	14.40	12.98	13.33	12.92	12.84
		295°	13.96	14.53	14.81	14.02	14.14	14.37	12.98	13.33	12.91	12.77
		305°	13.99	14.55	14.83	14.00	14.19	14.38	12.98	13.35	12.90	12.82
		315°	13.97	14.50	14.86	13.98	14.19	14.43	12.97	13.37	12.99	12.78
		325°	13.90	14.46	14.89	14.07	14.14	14.39	13.05	13.36	12.90	12.81
		335°	13.97	14.46	14.79	14.01	14.14	14.43	13.03	13.33	12.93	12.87
		345°	13.90	14.48	14.83	14.03	14.16	14.39	12.98	13.32	12.97	12.85
		355°	13.99	14.55	14.86	14.04	14.13	14.36	13.06	13.31	12.97	12.77
		360°	13.89	14.47	14.84	14.04	14.22	14.44	12.96	13.38	12.90	12.77
	Tablet	350°	13.92	14.54	14.83	14.08	14.16	14.40	12.98	13.37	12.99	12.85
		340°	13.94	14.49	14.82	14.08	14.21	14.37	12.99	13.35	12.91	12.77
		330°	13.93	14.53	14.85	13.98	14.17	14.43	13.04	13.30	12.95	12.77
		320°	13.95	14.53	14.85	14.07	14.14	14.38	13.02	13.32	12.94	12.80
		310°	13.94	14.46	14.82	13.98	14.22	14.42	13.06	13.28	12.97	12.83
		300°	13.97	14.52	14.88	13.98	14.21	14.42	13.03	13.37	12.97	12.82
		290°	13.94	14.49	14.79	14.00	14.22	14.42	12.97	13.38	12.99	12.81
		280°	13.92	14.52	14.79	14.04	14.21	14.35	12.98	13.35	12.89	12.81
		270°	13.98	14.48	14.86	13.98	14.17	14.40	13.01	13.32	12.95	12.83
		260°	13.93	14.51	14.80	13.99	14.20	14.45	12.96	13.35	12.95	12.80
		250°	13.95	14.48	14.88	13.98	14.20	14.39	12.99	13.32	12.98	12.85
		240°	13.92	14.47	14.89	14.04	14.18	14.43	12.99	13.35	12.93	12.77
		230°	13.90	14.45	14.80	14.03	14.22	14.36	13.01	13.38	12.94	12.86
		220°	13.92	14.46	14.85	14.04	14.16	14.40	13.00	13.37	12.95	12.82
		210°	13.98	14.49	14.87	14.02	14.17	14.42	13.02	13.36	12.99	12.81
		200°	13.98	14.51	14.80	14.01	14.17	14.45	12.96	13.34	12.90	12.85
	Laptop	190°	20.73	17.79	17.82	17.37	17.43	13.18	17.83	15.81	18.66	16.32
		195°	20.77	17.80	17.76	17.44	17.45	13.24	17.80	15.85	18.69	16.31
	Tablet	200°	13.90	14.51	14.89	14.06	14.14	14.45	13.04	13.34	12.99	12.83
	Laptop	199°	20.74	17.76	17.77	17.46	17.40	13.28	17.82	15.90	18.59	16.25
		198°	20.81	17.76	17.78	17.41	17.41	13.24	17.84	15.83	18.60	16.31
		197°	20.80	17.84	17.74	17.47	17.42	13.28	17.89	15.90	18.62	16.27
		196°	20.79	17.77	17.80	17.42	17.39	13.18	17.82	15.90	18.61	16.25
		195°	20.78	17.77	17.72	17.42	17.45	13.25	17.83	15.84	18.64	16.32
		194°	20.71	17.76	17.76	17.38	17.46	13.18	17.82	15.81	18.64	16.26
		193°	20.81	17.80	17.81	17.42	17.41	13.25	17.87	15.81	18.63	16.35
		192°	20.72	17.76	17.76	17.40	17.43	13.27	17.81	15.90	18.63	16.26
		191°	20.78	17.77	17.76	17.47	17.41	13.27	17.88	15.83	18.62	16.32
		190°	20.73	17.76	17.72	17.40	17.44	13.23	17.89	15.82	18.65	16.28
		180°	20.78	17.77	17.75	17.43	17.48	13.21	17.81	15.81	18.61	16.30
		170°	20.81	17.79	17.81	17.45	17.43	13.27	17.80	15.88	18.59	16.28
		160°	20.74	17.76	17.72	17.43	17.42	13.25	17.89	15.84	18.68	16.29
		150°	20.74	17.82	17.76	17.38	17.40	13.20	17.82	15.86	18.63	16.32
		140°	20.73	17.84	17.82	17.42	17.41	13.21	17.85	15.82	18.62	16.26
		130°	20.77	17.84	17.76	17.45	17.47	13.24	17.85	15.88	18.67	16.27
		120°	20.76	17.80	17.78	17.43	17.41	13.24	17.87	15.87	18.69	16.33
		110°	20.77	17.81	17.82	17.45	17.47	13.18	17.82	15.85	18.69	16.30
		100°	20.72	17.80	17.81	17.45	17.49	13.25	17.89	15.86	18.62	16.27
		90°	20.75	17.86	17.78	17.45	17.47	13.25	17.87	15.87	18.62	16.28
		80°	20.71	17.82	17.76	17.37	17.47	13.19	17.85	15.82	18.62	16.26
		70°	20.71	17.84	17.76	17.40	17.42	13.18	17.79	15.91	18.67	16.29
		60°	20.76	17.84	17.74	17.39	17.43	13.28	17.79	15.91	18.64	16.25
		50°	20.81	17.77	17.74	17.45	17.46	13.21	17.81	15.85	18.69	16.30
		40°	20.81	17.85	17.81	17.39	17.43	13.24	17.80	15.87	18.67	16.30
		30°	20.74	17.78	17.78	17.40	17.41	13.25	17.89	15.90	18.61	16.33
	Lid close	20°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		25°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Laptop	30°	20.78	17.76	17.78	17.38	17.48	13.19	17.88	15.87	18.62	16.28
	Lid close	29°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		28°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		27°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		26°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		25°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		24°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		23°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		22°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		21°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		20°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		10°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0°	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

1.7 The SAR Measurement System

A block diagram of the SAR measurement System is given in Fig. a. This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (SPEAG DASY 5 professional system). The model EX3DV4 field probe is used to determine the internal electric fields. The SAR can be obtained from the equation SAR= σ ($|Ei|^2$)/ ρ where σ and ρ are the conductivity and mass density of the tissue-simulant.

The DASY 5 system for performing compliance tests consists of the following items:

1. A standard high precision 6-axis robot (Staubli RX family) with controller, teach pendant and software. An arm extension is for accommodating the data acquisition electronics (DAE).
2. A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage intissue simulating liquid. The probe is equipped with an optical surface detector system.
3. A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.

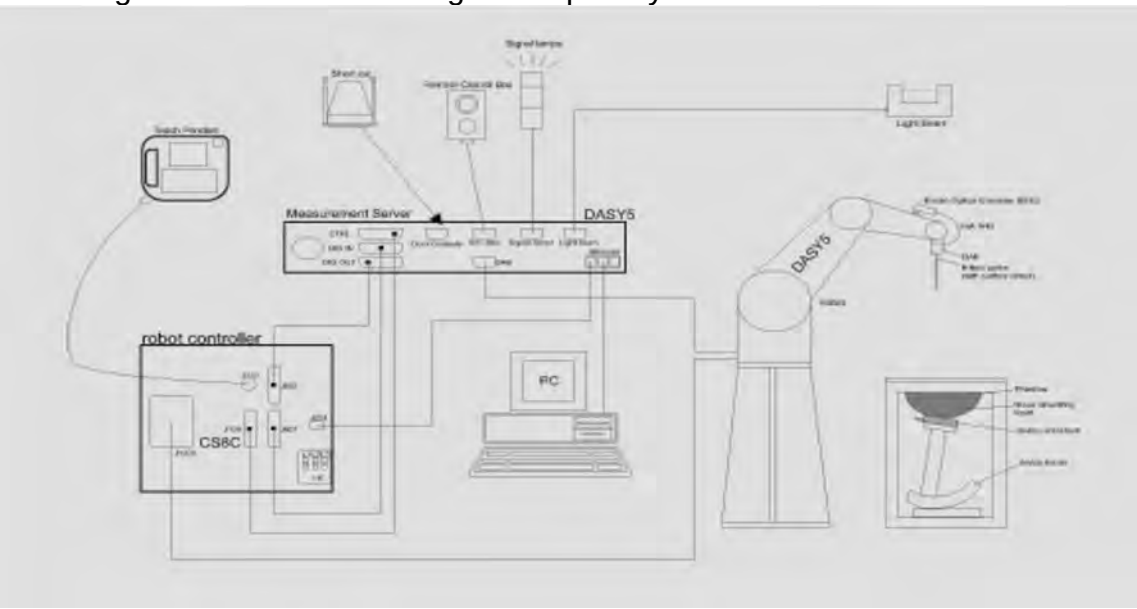


Fig. a The block diagram of SAR system

4. The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.
5. The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
6. A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
7. A computer operating Windows 7.
8. DASY 5 software.
9. Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
10. Tissue simulating liquid mixed according to the given recipes.
11. Validation dipole kits allowing to validate the proper functioning of the system.

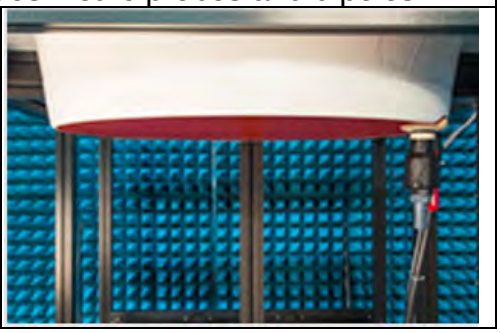
1.8 System Components

EX3DV4 E-Field Probe

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	Basic Broad Band Calibration in air Conversion Factors (CF) for HSL 2450/5250/5600/5750 MHz Additional CF for other liquids and frequencies upon request
Frequency	10 MHz to > 6 GHz
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)
Dynamic Range	10 µW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)
Dimensions	Tip diameter: 2.5 mm
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.

PHANTOM

Model	ELI
Construction	The ELI phantom is used for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.
Shell Thickness	2 ± 0.2 mm
Filling Volume	Approx. 30 liters
Dimensions	Major axis: 600 mm Minor axis: 400 mm



DEVICE HOLDER

Construction	The device holder (Supporter) for Notebook is made by POM (polyoxymethylene resin) , which is non-metal and non-conductive. The height can be adjusted to fit varies kind of notebooks.

Device Holder

1.9 SAR System Verification

The microwave circuit arrangement for system verification is sketched in Fig. b. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% from the target SAR values. These tests were done at 2450/5250/5600/5750 MHz. The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed in the table 1 (SAR values are normalized to 1W forward power delivered to the dipole). During the tests, the liquid depth above the ear reference points was above 15 cm in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.

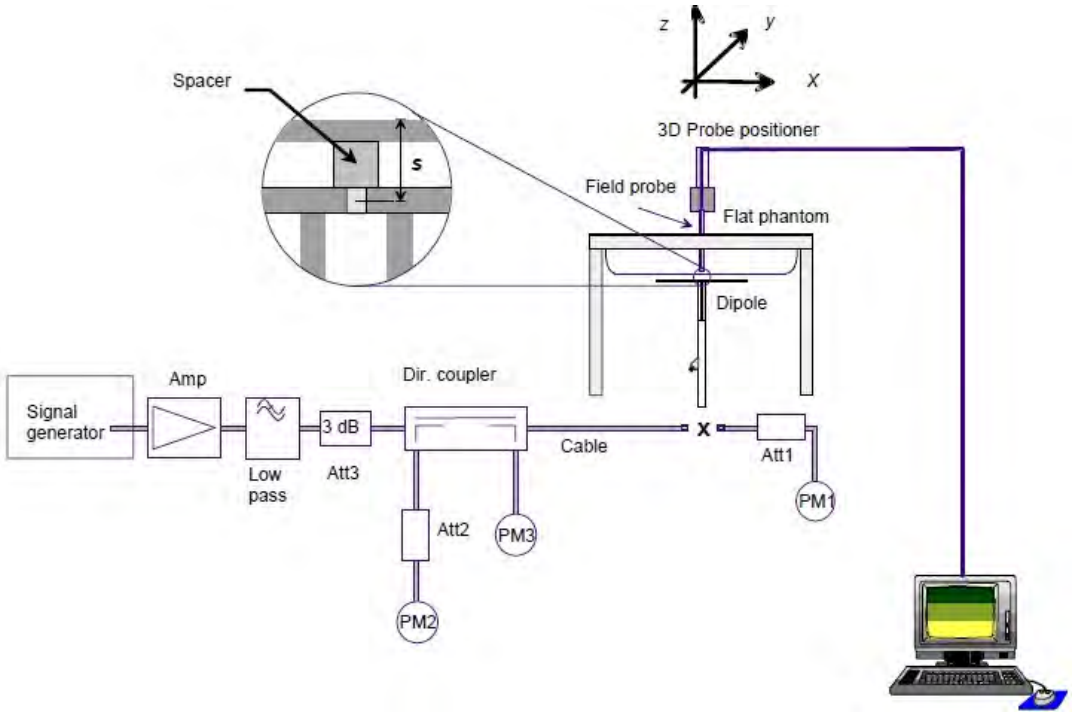


Fig. b The block diagram of system verification

Validation Kit	S/N	Frequency (MHz)	1W Target 1g-SAR (W/kg)	pin=250mW Measured 1g-SAR (W/kg)	Normalized to 1W 1g-SAR (W/kg)	Deviation (%)	Limit	Measurement Date
D2450V2	727	2450	52.8	13.6	54.4	3.03	± 10%	May.31,2022
Validation Kit	S/N	Frequency (MHz)	1W Target 1g-SAR (W/kg)	pin=100mW Measured 1g-SAR (W/kg)	Normalized to 1W 1g-SAR (W/kg)	Deviation (%)	Limit	Measurement Date
D5GHzV2	1023	5250	81	8.27	82.7	2.10	± 10%	Jun.01,2022
D5GHzV2	1023	5250	81	7.91	79.1	-2.35	± 10%	Jun.02,2022
D5GHzV2	1023	5600	84.4	8.73	87.3	3.44	± 10%	Jun.03,2022
D5GHzV2	1023	5750	81	8.06	80.6	-0.49	± 10%	Jun.03,2022

Table 1. Results of system validation

1.10 Tissue Simulant Fluid for the Frequency Band

The dielectric properties for this Head-simulant fluid were measured by using the SPEAG Dielectric Assessment Kit (DAKS-3.5)
All dielectric parameters of tissue simulates were measured within 24 hours of SAR measurements. The measured conductivity and permittivity are all within ± 5% of the target values.
The depth of the tissue simulant in the flat section of the phantom was ≥ 15 cm ± 5 mm during all tests. (Fig. 2)

Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev εr	% dev σ
Head	May. 31, 2022	2402	39.285	1.757	39.435	1.773	0.38%	0.88%
		2412	39.268	1.766	39.418	1.781	0.38%	0.86%
		2437	39.223	1.788	39.373	1.803	0.38%	0.81%
		2441	39.216	1.792	39.366	1.806	0.38%	0.80%
		2450	39.200	1.800	39.350	1.814	0.38%	0.78%
		2462	39.185	1.813	39.335	1.825	0.38%	0.64%
		2480	39.162	1.827	39.312	1.841	0.38%	0.77%
	Jun. 01, 2022	5180	36.009	4.635	36.159	4.649	0.42%	0.31%
		5190	35.997	4.645	36.147	4.659	0.42%	0.31%
		5200	35.986	4.655	36.136	4.669	0.42%	0.31%
		5210	35.974	4.665	36.124	4.680	0.42%	0.31%
		5220	35.963	4.676	36.113	4.690	0.42%	0.31%
		5230	35.951	4.686	36.101	4.700	0.42%	0.31%
		5240	35.940	4.696	36.090	4.710	0.42%	0.31%
		5250	35.929	4.706	36.079	4.721	0.42%	0.31%
	Jun. 02, 2022	5250	35.929	4.706	36.166	4.732	0.66%	0.54%
		5260	35.917	4.717	36.154	4.742	0.66%	0.54%
		5270	35.906	4.727	36.143	4.752	0.66%	0.54%
		5280	35.894	4.737	36.131	4.763	0.66%	0.54%
		5290	35.883	4.747	36.120	4.773	0.66%	0.54%
		5300	35.871	4.758	36.108	4.783	0.66%	0.54%
		5310	35.860	4.768	36.097	4.794	0.66%	0.54%
		5320	35.849	4.778	36.086	4.804	0.66%	0.55%
	Jun. 03, 2022	5510	35.631	4.973	35.781	4.990	0.42%	0.34%
		5530	35.609	4.993	35.759	5.010	0.42%	0.33%
		5590	35.540	5.055	35.690	5.071	0.42%	0.32%
		5600	35.529	5.065	35.679	5.081	0.42%	0.32%
		5610	35.517	5.075	35.667	5.092	0.42%	0.32%
		5670	35.449	5.137	35.599	5.153	0.42%	0.32%
		5690	35.426	5.157	35.576	5.174	0.42%	0.32%
		5710	35.403	5.178	35.553	5.194	0.42%	0.31%
		5750	35.357	5.218	35.507	5.235	0.42%	0.34%
		5755	35.351	5.224	35.501	5.240	0.42%	0.31%
		5775	35.329	5.244	35.479	5.261	0.42%	0.31%
		5795	35.306	5.265	35.456	5.281	0.42%	0.31%

Table 2. Dielectric Parameters of Tissue Simulant Fluid

The composition of the brain tissue simulating liquid is:

Simulating Liquids for 600 MHz -10 GHz, Manufactured by SPEAG:

Broad-band head tissue simulating liquids	SPEAG Product	Frequency range (MHz)	Main Ingredients
	HBBL600-10000V6	600 - 10000	Water, Oil

Table 3. Recipes for tissue simulating liquid

1.11 Evaluation Procedures

The entire evaluation of the spatial peak values is performed within the Post-processing engine (SEMCAD). The system always gives the maximum values for the 1 g and 10 g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

1. The extraction of the measured data (grid and values) from the Zoom Scan.
2. The calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
3. The generation of a high-resolution mesh within the measured volume
4. The interpolation of all measured values from the measurement grid to the high-resolution grid
5. The extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
6. The calculation of the averaged SAR within masses of 1g and 10g.

The probe is calibrated at the center of the dipole sensors that is located 1 to 2.7mm away from the probe tip. During measurements, the probe stops shortly above the phantom surface, depending on the probe and the surface detecting system. Both distances are included as parameters in the probe configuration file. The software always knows exactly how far away the measured point is from the surface. As the probe cannot directly measure at the surface, the values between the deepest measured point and the surface must be extrapolated. The angle between the probe axis and the surface normal line is less than 30 degree.

In the Area Scan, the gradient of the interpolation function is evaluated to find all the extreme of the SAR distribution. The uncertainty on the locations of the extreme is less than 1/20 of the grid size. Only local maximum within –2 dB of the global maximum are searched and passed for the Cube Scan measurement. In the Cube Scan, the interpolation function is used to extrapolate the Peak SAR from the lowest measurement points to the inner phantom surface (the extrapolation distance). The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5mm.

The maximum search is automatically performed after each area scan measurement. It is based on splines in two or three dimensions. The procedure can find the maximum for most SAR distributions even with relatively large grid spacing. After the area scanning measurement, the probe is automatically moved to a position at the interpolated maximum. The following scan can directly use this position for reference, e.g., for a finer resolution grid or the cube evaluations. The 1g and 10g peak evaluations are only available for the predefined cube 7x7x7 scans. The routines are verified and optimized for the grid dimensions used in these cube measurements.

The measured volume of 30x30x30mm contains about 30g of tissue.

The first procedure is an extrapolation (incl. Boundary correction) to get the points between the lowest measured plane and the surface. The next step uses 3D

interpolation to get all points within the measured volume. In the last step, a 1g cube is placed numerically into the volume and its averaged SAR is calculated. This cube is the moved around until the highest averaged SAR is found. If the highest SAR is found at the edge of the measured volume, the system will issue a warning: higher SAR values might be found outside of the measured volume. In that case the cube measurement can be repeated, using the new interpolated maximum as the center.

1.12 Probe Calibration Procedures

For the calibration of E-field probes in lossy liquids, an electric field with an accurately known field strength must be produced within the measured liquid. For standardization purposes it would be desirable if all measurements which are necessary to assess the correct field strength would be traceable to standardized measurement procedures. In the following two different calibration techniques are summarized:

1.12.1 Transfer Calibration with Temperature Probes

In lossy liquids the specific absorption rate (SAR) is related both to the electric field (E) and the temperature gradient ($\delta T / \delta t$) in the liquid.

$$SAR = C \frac{\delta T}{\delta t},$$

whereby σ is the conductivity, ρ the density and c the heat capacity of the liquid.

Hence, the electric field in lossy liquid can be measured indirectly by measuring the temperature gradient in the liquid. Non-disturbing temperature probes (optical probes or thermistor probes with resistive lines) with high spatial resolution (<1-2 mm) and fast reaction time (<1 s) are available and can be easily calibrated with high precision [1]. The setup and the exciting source have no influence on the calibration; only the relative positioning uncertainties of the standard temperature probe and the E-field probe to be calibrated must be considered. However, several problems limit the available accuracy of probe calibrations with temperature probes:

- The temperature gradient is not directly measurable but must be evaluated from temperature measurements at different time steps. Special precaution is necessary to avoid measurement errors caused by temperature gradients due to energy equalizing effects or convection currents in the liquid. Such effects cannot be completely avoided, as the measured field itself destroys the thermal equilibrium in the liquid. With a careful setup these errors can be kept small.
- The measured volume around the temperature probe is not well defined. It is difficult to calculate the energy transfer from a surrounding gradient temperature field into the probe. These effects must be considered, since temperature probes are calibrated in liquid with homogeneous temperatures. There is no traceable standard for temperature rise measurements.
- The calibration depends on the assessment of the specific density, the heat capacity and the conductivity of the medium. While the specific density and heat capacity can be measured accurately with standardized procedures (~ 2% for c; much better for ρ) , there is no standard for the measurement of the conductivity. Depending on the method and liquid, the error can well exceed ±5%.
- Temperature rise measurements are not very sensitive and therefore are often performed at a higher power level than the E-field measurements. The nonlinearities in the system (e.g., power measurements, different components, etc.) must be considered.

Considering these problems, the possible accuracy of the calibration of E-field probes with temperature gradient measurements in a carefully designed setup is about ±10% (RSS) [2]. Recently, a setup which is a combination of the waveguide techniques and the thermal measurements was presented in [3]. The estimated uncertainty of the setup is ±5% (RSS) when the same liquid is used for the calibration and for actual measurements and ±7-9% (RSS) when not, which is in good agreement with the estimates given in [2].

1.12.2 Calibration with Analytical Fields

In this method a technical setup is used in which the field can be calculated analytically from measurements of other physical magnitudes (e.g., input power). This corresponds to the standard field method for probe calibration in air; however, there is no standard defined for fields in lossy liquids.
When using calculated fields in lossy liquids for probe calibration, several points must be considered in the assessment of the uncertainty:

- The setup must enable accurate determination of the incident power.
- The accuracy of the calculated field strength will depend on the assessment of the dielectric parameters of the liquid.
- Due to the small wavelength in liquids with high permittivity, even small

setups might be above the resonant cutoff frequencies. The field distribution in the setup must be carefully checked for conformity with the theoretical field distribution.

References

1. N. Kuster, Q. Balzano, and J.C. Lin, Eds., *Mobile Communications Safety*, Chapman & Hall, London, 1997.
2. K. Meier, M. Burkhardt, T. Schmid, and N. Kuster, \Broadband calibration of E-field probes in lossy media", *IEEE Transactions on Microwave Theory and Techniques*, vol. 44, no. 10, pp. 1954{1962, Oct. 1996.
3. K. Jokela, P. Hyysalo, and L. Puranen, \Calibration of specific absorption rate (SAR) probes in waveguide at 900 MHz", *IEEE Transactions on Instrumentation and Measurements*, vol. 47, no. 2, pp. 432{438, Apr. 1998.

1.13 Test Standards and Limits

According to FCC 47CFR §2.1093(d) The limits to be used for evaluation are based generally on criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (‘‘SAR’’) in Section 4.2 of ‘‘IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,’’ ANSI/IEEE C95.1, By the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017. These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in ‘‘Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields,’’ NCRP Report No. 86, Section 17.4.5. Copyright NCRP, 1986, Bethesda, Maryland 20814. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards. The criteria to be used are specified in paragraphs (d)(1) and (d)(2) of this section and shall apply for portable devices transmitting in the frequency range from 100 kHz to 6 GHz. Portable devices that transmit at frequencies above 6 GHz are to be evaluated in terms of the MPE limits specified in § 1.1310 of this chapter. Measurements and calculations to demonstrate compliance with MPE field strength or power density limits for devices operating above 6 GHz should be made at a minimum distance of 5 cm from the radiating source.

(1) Limits for Occupational/Controlled exposure: 0.4 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 8 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 20 W/kg, as averaged over an 10 grams of tissue (defined as a tissue volume in the shape of a cube).

(2) Occupational/Controlled limits apply when persons are exposed as a consequence of their employment provided these persons are fully aware of and exercise control over their exposure. Awareness of exposure can be accomplished by use of warning labels or by specific training or education through appropriate means, such as an RF safety program in a work environment.

(3) Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). General Population/Uncontrolled limits apply when the general public may be exposed, or when persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or do not

exercise control over their exposure. Warning labels placed on consumer devices such as cellular telephones will not be sufficient reason to allow these devices to be evaluated subject to limits for occupational/controlled exposure in paragraph (d)(1) of this section. (Table 4.)

Human Exposure	Uncontrolled Environment General Population	Controlled Environment Occupational
Spatial Peak SAR (Brain)	1.60 W/kg	8.00 W/kg
Spatial Average SAR (Whole Body)	0.08 W/kg	0.40 W/kg
Spatial Peak SAR (Hands/Feet/Ankle/Wrist)	4.00 W/kg	20.00 W/kg

Table 4. RF exposure limits

Notes:

1. Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.
2. Controlled environments are defined as locations where there is potential exposure of individuals who have knowledge of their potential exposure and can exercise control over their exposure.

2. Summary of Results

2.1 Decision rules

Reported measurement data comply with IEEE 1528-2013:
Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.2 Summary of Results

Notebook mode

Ant Main

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
WLAN 802.11b	Bottom Surface	0	1	2412	18.00	17.61	1.011	109.40%	0.218	0.241	-
WLAN 802.11b	Bottom Surface	0	6	2437	21.25	21.05	1.011	104.71%	0.479	0.507	001
WLAN 802.11b	Bottom Surface	0	11	2462	17.09	16.82	1.011	106.41%	0.194	0.209	-

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
WLAN 802.11a 5.2G	Bottom Surface	0	36	5180	17.00	16.90	1.018	102.33%	0.848	0.883	-
WLAN 802.11a 5.2G	Bottom Surface	0	44	5220	17.00	16.48	1.018	112.72%	0.899	1.032	002
WLAN 802.11n(40M) 5.2G	Bottom Surface	0	46	5230	17.00	16.43	1.012	114.02%	0.786	0.907	003

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
WLAN 802.11a 5.3G	Bottom Surface	0	56	5280	17.00	16.49	1.018	112.46%	0.937	1.073	004
WLAN 802.11a 5.3G	Bottom Surface	0	64	5320	17.00	16.46	1.018	113.24%	0.927	1.069	-
WLAN 802.11n(40M) 5.3G	Bottom Surface	0	54	5270	17.00	16.35	1.012	116.14%	0.873	1.026	005

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
WLAN 802.11n(40M) 5.6G	Bottom Surface	0	118	5590	16.50	16.13	1.012	108.89%	0.740	0.815	006
WLAN 802.11n(40M) 5.6G	Bottom Surface	0	142	5710	16.50	15.78	1.012	118.03%	0.241	0.288	-
WLAN 802.11ac(80M) 5.6G	Bottom Surface	0	122	5610	16.50	16.08	1.016	110.15%	0.748	0.837	007

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
WLAN 802.11n(40M) 5.8G	Bottom Surface	0	159	5795	18.00	17.91	1.012	102.09%	0.435	0.449	008

Ant Aux

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
WLAN 802.11b	Bottom Surface	0	6	2437	21.41	20.81	1.011	114.82%	0.462	0.536	009

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
Bluetooth(GFSK)	Bottom Surface	0	39	2441	12.19	12.27	1.289	98.17%	0.004	0.005	010

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
WLAN 802.11a 5.2G	Bottom Surface	0	44	5220	18.00	17.76	1.018	105.68%	0.926	0.996	-
WLAN 802.11a 5.2G	Bottom Surface	0	48	5240	18.00	17.86	1.018	103.28%	0.956	1.005	011
WLAN 802.11n(40M)5.2G	Bottom Surface	0	46	5230	18.00	17.82	1.012	104.23%	1.070	1.129	012
WLAN 802.11n(40M)5.2G	Bottom Surface*	0	46	5230	18.00	17.82	1.012	104.23%	1.050	1.108	-

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
WLAN 802.11a 5.3G	Bottom Surface	0	56	5280	18.00	17.47	1.018	112.98%	0.963	1.108	-
WLAN 802.11a 5.3G	Bottom Surface	0	60	5300	18.00	17.42	1.018	114.29%	0.972	1.131	013
WLAN 802.11n(40M) 5.3G	Bottom Surface	0	54	5270	18.00	17.49	1.012	112.46%	1.030	1.172	014
WLAN 802.11n(40M) 5.3G	Bottom Surface*	0	54	5270	18.00	17.49	1.012	112.46%	1.000	1.138	-

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
WLAN 802.11n(40M) 5.6G	Bottom Surface	0	118	5590	18.00	17.89	1.012	102.57%	0.951	0.987	-
WLAN 802.11n(40M) 5.6G	Bottom Surface	0	134	5670	18.00	17.77	1.012	105.44%	0.979	1.045	015
WLAN 802.11n(40M) 5.6G	Bottom Surface*	0	134	5670	18.00	17.77	1.012	105.44%	0.963	1.028	-

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
WLAN 802.11n(40M) 5.8G	Bottom Surface	0	151	5755	19.00	18.69	1.012	107.40%	1.080	1.174	016
WLAN 802.11n(40M) 5.8G	Bottom Surface*	0	151	5755	19.00	18.69	1.012	107.40%	1.030	1.119	-
WLAN 802.11n(40M) 5.8G	Bottom Surface	0	159	5795	19.00	18.67	1.012	107.89%	1.030	1.125	-

* - repeated at the highest SAR measurement according to the KDB 865664 D01

Tablet mode

Ant Main

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
WLAN 802.11b	Back Surface	0	1	2412	14.00	13.81	1.011	104.47%	0.647	0.683	-
WLAN 802.11b	Back Surface	0	11	2462	14.00	13.79	1.011	104.95%	0.898	0.953	017
WLAN 802.11b	Top Edge	0	1	2412	14.00	13.81	1.011	104.47%	0.001	0.001	-
WLAN 802.11b	Bottom Edge	0	1	2412	14.00	13.81	1.011	104.47%	0.001	0.001	-
WLAN 802.11b	Left Edge	0	1	2412	14.00	13.81	1.011	104.47%	0.233	0.246	-
WLAN 802.11b	Right Edge	0	1	2412	14.00	13.81	1.011	104.47%	0.001	0.001	-

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
WLAN 802.11n(40M) 5.2G	Back Surface	0	46	5230	12.00	11.91	1.012	102.09%	0.640	0.661	018
WLAN 802.11ac(80M) 5.2G	Back Surface	0	42	5210	12.00	11.98	1.016	100.46%	0.935	0.954	019
WLAN 802.11ac(80M) 5.2G	Top Edge	0	42	5210	12.00	11.98	1.016	100.46%	0.093	0.095	-
WLAN 802.11ac(80M) 5.2G	Bottom Edge	0	42	5210	12.00	11.98	1.016	100.46%	0.001	0.001	-
WLAN 802.11ac(80M) 5.2G	Left Edge	0	42	5210	12.00	11.98	1.016	100.46%	0.143	0.146	-
WLAN 802.11ac(80M) 5.2G	Right Edge	0	42	5210	12.00	11.98	1.016	100.46%	0.001	0.001	-

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
WLAN 802.11n(40M) 5.3G	Back Surface	0	54	5270	12.00	11.57	1.012	110.41%	0.805	0.899	-
WLAN 802.11n(40M) 5.3G	Back Surface	0	62	5310	12.00	11.74	1.012	106.17%	1.100	1.182	020
WLAN 802.11ac(80M) 5.3G	Back Surface	0	58	5290	12.00	11.85	1.016	103.51%	0.850	0.894	021
WLAN 802.11ac(80M) 5.3G	Top Edge	0	58	5290	12.00	11.85	1.016	103.51%	0.111	0.117	-
WLAN 802.11ac(80M) 5.3G	Bottom Edge	0	58	5290	12.00	11.85	1.016	103.51%	0.001	0.001	-
WLAN 802.11ac(80M) 5.3G	Left Edge	0	58	5290	12.00	11.85	1.016	103.51%	0.194	0.204	-
WLAN 802.11ac(80M) 5.3G	Right Edge	0	58	5290	12.00	11.85	1.016	103.51%	0.001	0.001	-

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
WLAN 802.11ac(80M) 5.6G	Back Surface	0	106	5530	11.50	11.40	1.016	102.33%	1.100	1.144	-
WLAN 802.11ac(80M) 5.6G	Back Surface	0	138	5690	11.50	11.23	1.016	106.41%	1.100	1.189	022
WLAN 802.11ac(80M) 5.6G	Bottom Surface*	0	138	5690	11.50	11.23	1.016	106.41%	1.060	1.146	-
WLAN 802.11ac(80M) 5.6G	Top Edge	0	106	5530	11.50	11.40	1.016	102.33%	0.083	0.086	-
WLAN 802.11ac(80M) 5.6G	Bottom Edge	0	106	5530	11.50	11.40	1.016	102.33%	0.001	0.001	-
WLAN 802.11ac(80M) 5.6G	Left Edge	0	106	5530	11.50	11.40	1.016	102.33%	0.265	0.276	-
WLAN 802.11ac(80M) 5.6G	Right Edge	0	106	5530	11.50	11.40	1.016	102.33%	0.001	0.001	-

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
WLAN 802.11n(40M) 5.8G	Back Surface	0	151	5755	11.50	11.12	1.012	109.14%	1.050	1.160	023
WLAN 802.11n(40M) 5.8G	Bottom Surface*	0	151	5755	11.50	11.12	1.012	109.14%	1.010	1.116	-
WLAN 802.11n(40M) 5.8G	Back Surface	0	159	5795	11.50	11.21	1.012	106.91%	0.855	0.925	-
WLAN 802.11ac(80M) 5.8G	Back Surface	0	155	5775	11.50	11.49	1.016	100.23%	1.040	1.059	024
WLAN 802.11ac(80M) 5.8G	Top Edge	0	155	5775	11.50	11.49	1.016	100.23%	0.052	0.053	-
WLAN 802.11ac(80M) 5.8G	Bottom Edge	0	155	5775	11.50	11.49	1.016	100.23%	0.001	0.001	-
WLAN 802.11ac(80M) 5.8G	Left Edge	0	155	5775	11.50	11.49	1.016	100.23%	0.193	0.197	-
WLAN 802.11ac(80M) 5.8G	Right Edge	0	155	5775	11.50	11.49	1.016	100.23%	0.001	0.001	-

* - repeated at the highest SAR measurement according to the KDB 865664 D01

Ant Aux

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
WLAN 802.11b	Back Surface	0	1	2412	14.00	13.96	1.011	100.93%	0.948	0.967	-
WLAN 802.11b	Back Surface	0	6	2437	14.00	13.75	1.011	105.93%	0.680	0.728	-
WLAN 802.11b	Back Surface	0	11	2462	14.00	13.99	1.011	100.23%	1.090	1.105	025
WLAN 802.11b	Bottom Surface*	0	11	2462	14.00	13.99	1.011	100.23%	1.050	1.064	-
WLAN 802.11b	Top Edge	0	11	2462	14.00	13.99	1.011	100.23%	0.001	0.001	-
WLAN 802.11b	Bottom Edge	0	11	2462	14.00	13.99	1.011	100.23%	0.001	0.001	-
WLAN 802.11b	Left Edge	0	11	2462	14.00	13.99	1.011	100.23%	0.172	0.174	-
WLAN 802.11b	Right Edge	0	11	2462	14.00	13.99	1.011	100.23%	0.001	0.001	-

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
Bluetooth(GFSK)	Back Surface	0	39	2441	12.40	12.27	1.289	103.04%	0.203	0.270	026
Bluetooth(GFSK)	Top Edge	0	39	2441	12.40	12.27	1.289	103.04%	0.001	0.001	-
Bluetooth(GFSK)	Bottom Edge	0	39	2441	12.40	12.27	1.289	103.04%	0.001	0.001	-
Bluetooth(GFSK)	Left Edge	0	39	2441	12.40	12.27	1.289	103.04%	0.120	0.159	-
Bluetooth(GFSK)	Right Edge	0	39	2441	12.40	12.27	1.289	103.04%	0.001	0.001	-

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
WLAN 802.11n(40M)5.2G	Back Surface	0	38	5190	15.00	14.89	1.012	102.57%	1.120	1.163	027
WLAN 802.11n(40M)5.2G	Bottom Surface*	0	38	5190	15.00	14.89	1.012	102.57%	1.050	1.090	-
WLAN 802.11n(40M)5.2G	Back Surface	0	46	5230	15.00	14.61	1.012	109.40%	1.060	1.174	-
WLAN 802.11n(40M)5.2G	Top Edge	0	38	5190	15.00	14.89	1.012	102.57%	0.138	0.143	-
WLAN 802.11n(40M)5.2G	Bottom Edge	0	38	5190	15.00	14.89	1.012	102.57%	0.001	0.001	-
WLAN 802.11n(40M)5.2G	Left Edge	0	38	5190	15.00	14.89	1.012	102.57%	0.001	0.001	-
WLAN 802.11n(40M)5.2G	Right Edge	0	38	5190	15.00	14.89	1.012	102.57%	0.216	0.224	-

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
WLAN 802.11n(40M) 5.3G	Back Surface	0	54	5270	14.50	14.16	1.012	108.14%	1.070	1.171	028
WLAN 802.11n(40M) 5.3G	Back Surface	0	62	5310	14.50	14.23	1.012	106.41%	1.060	1.142	-
WLAN 802.11ax(80M) 5.3G	Back Surface	0	58	5290	14.50	14.45	1.000	101.16%	1.130	1.143	029
WLAN 802.11ax(80M) 5.3G	Bottom Surface*	0	58	5290	14.50	14.45	1.000	101.16%	1.090	1.103	-
WLAN 802.11ax(80M) 5.3G	Top Edge	0	58	5290	14.50	14.45	1.000	101.16%	0.149	0.151	-
WLAN 802.11ax(80M) 5.3G	Bottom Edge	0	58	5290	14.50	14.45	1.000	101.16%	0.001	0.001	-
WLAN 802.11ax(80M) 5.3G	Left Edge	0	58	5290	14.50	14.45	1.000	101.16%	0.001	0.001	-
WLAN 802.11ax(80M) 5.3G	Right Edge	0	58	5290	14.50	14.45	1.000	101.16%	0.172	0.174	-

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
WLAN 802.11ac(80M) 5.6G	Back Surface	0	106	5530	12.50	12.42	1.016	101.86%	0.995	1.030	-
WLAN 802.11ac(80M) 5.6G	Back Surface	0	138	5690	13.50	13.38	1.016	102.80%	0.996	1.040	030
WLAN 802.11ac(80M) 5.6G	Top Edge	0	106	5530	12.50	12.42	1.016	101.86%	0.152	0.157	-
WLAN 802.11ac(80M) 5.6G	Bottom Edge	0	106	5530	12.50	12.42	1.016	101.86%	0.001	0.001	-
WLAN 802.11ac(80M) 5.6G	Left Edge	0	106	5530	12.50	12.42	1.016	101.86%	0.001	0.001	-
WLAN 802.11ac(80M) 5.6G	Right Edge	0	106	5530	12.50	12.42	1.016	101.86%	0.226	0.234	-

Mode	Position	Distance (mm)	CH	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Duty cycle scaling	Power scaling	Averaged SAR over 1g (W/kg)		ID
									Measured	Reported	
WLAN 802.11n(40M) 5.8G	Back Surface	0	151	5755	13.00	12.97	1.012	100.69%	0.734	0.748	-
WLAN 802.11n(40M) 5.8G	Back Surface	0	159	5795	13.00	12.99	1.012	100.23%	0.929	0.942	031
WLAN 802.11ac(80M) 5.8G	Back Surface	0	155	5775	13.00	12.87	1.016	103.04%	1.000	1.047	032
WLAN 802.11ac(80M) 5.8G	Top Edge	0	155	5775	13.00	12.87	1.016	103.04%	0.151	0.158	-
WLAN 802.11ac(80M) 5.8G	Bottom Edge	0	155	5775	13.00	12.87	1.016	103.04%	0.001	0.001	-
WLAN 802.11ac(80M) 5.8G	Left Edge	0	155	5775	13.00	12.87	1.016	103.04%	0.001	0.001	-
WLAN 802.11ac(80M) 5.8G	Right Edge	0	155	5775	13.00	12.87	1.016	103.04%	0.205	0.215	-

* - repeated at the highest SAR measurement according to the KDB 865664 D01

Note:

Scaling = $\frac{\text{reported SAR}}{\text{measured SAR}} = \frac{\text{P2(mW)}}{\text{P1(mW)}} = 10^{\left(\frac{\text{P2}-\text{P1}}{10}\right)(\text{dBm})}$

Reported SAR = measured SAR * (scaling)

Where P2 is maximum specified power, P1 is measured conducted power

2.3 Reporting statements of conformity

The conformity statement in this report is based solely on the test results, measurement uncertainty is excluded.

3. Simultaneous Transmission Analysis

Simultaneous Transmission Scenarios:

Simultaneous Transmit Configurations	Body
WLAN 2.4GHz Main + BT Aux	Yes
WLAN 2.4GHz Main + WLAN 2.4GHz Aux	Yes
WLAN 5GHz Main + BT Aux	Yes
WLAN 5GHz Main + WLAN 5GHz Aux	Yes
WLAN 5GHz Main + WLAN 5GHz Aux + BT Aux	Yes

3.1 Estimated SAR calculation

According to KDB447498 D01v06 – When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

$$\text{Estimated SAR} = \frac{\text{Max. tune up power (mW)}}{\text{Min. test separation distance(mm)}} \times \frac{\sqrt{\text{f(GHz)}}}{7.5}$$

If the minimum test separation distance is < 5mm, a distance of 5mm is used for estimated SAR calculation. When the test separation distance is >50mm, the 0.4W/kg is used for SAR-1g.

3.2 SPLSR evaluation and analysis

Per KDB447498D01, when the sum of SAR is larger than the limit, SAR test exclusion is determined by the SAR sum to peak location separation ratio(SPLSR).

The simultaneous transmitting antennas in each operating mode and exposure condition combination must be considered one pair at a time to determine the SAR to peak location separation ratio to qualify for test exclusion.

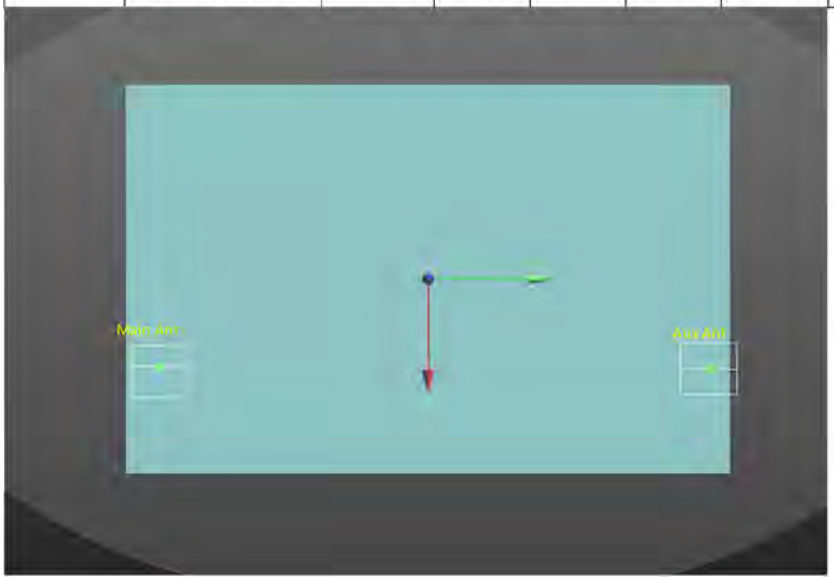
The ratio is determined by **(SAR1 + SAR2)^1.5/Ri**, rounded to two decimal digits, and must be **≤ 0.04** for all antenna pairs in the configuration to qualify for 1-g SAR test exclusion.

SAR1 and SAR2 are the highest reported or estimated SAR for each antenna in the pair, and Ri is the separation distance between the peak SAR locations for the antenna pair in mm.

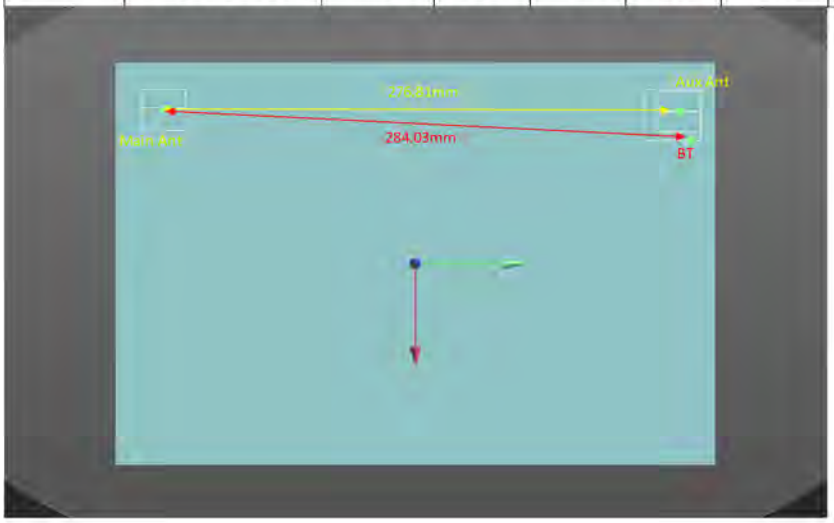
When standalone test exclusion applies, SAR is estimated; the peak location is assumed to be at the feed-point or geometric center of the antenna.

		Reported SAR					Scenario1	Scenario2	Scenario3	Scenario4	Scenario5
Exposure Position		2 2.4GHz WLAN Ant Main 1g SAR (W/kg)	3 2.4GHz WLAN Ant Aux 1g SAR (W/kg)	4 5GHz WLAN Ant Main 1g SAR (W/kg)	5 5GHz WLAN Ant Aux 1g SAR (W/kg)	7 Bluetooth Ant Aux 1g SAR (W/kg)	2+3 Summed 1g SAR (W/kg)	2+7 Summed 1g SAR (W/kg)	4+5 Summed 1g SAR (W/kg)	4+7 Summed 1g SAR (W/kg)	4+5+7 Summed 1g SAR (W/kg)
Bottom Surface	0	0.507	0.536	1.073	1.174	0.005	1.043	0.512	2.247	1.078	2.252
Back Surface	0	0.953	1.105	1.189	1.174	0.270	2.058	1.223	2.363	1.459	2.633
Top Edge	0	0.001	0.001	0.117	0.158	0.001	0.002	0.002	0.275	0.118	0.276
Bottom Edge	0	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.003
Left Edge	0	0.246	0.174	0.276	0.001	0.159	0.420	0.405	0.277	0.435	0.436
Right Edge	0	0.001	0.001	0.001	0.234	0.001	0.002	0.002	0.235	0.002	0.236

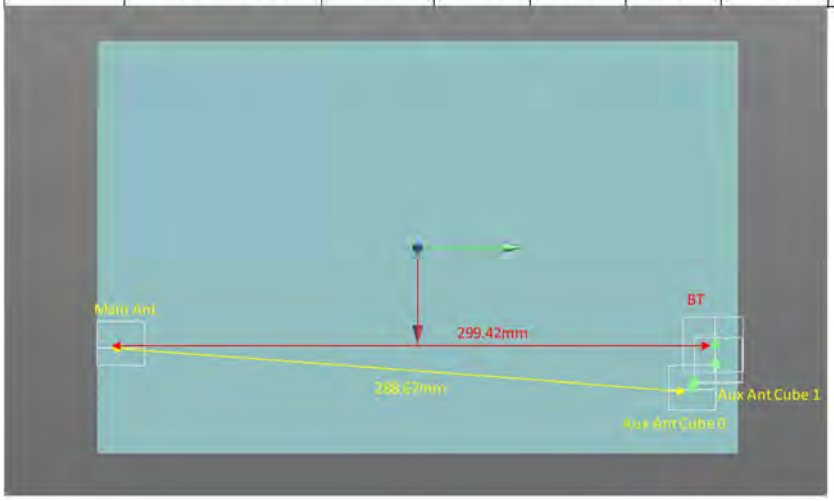
2.4GHz WLAN Main+2.4GHz WLAN Aux									
Position	Conditions	SAR Value (W/kg)	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
			x	y	z				
Back Surface	WLAN 2.4G Main	0.953	5.10	-14.32	0.55	-	-	-	-
	WLAN 2.4G Aux	1.105	5.25	15.08	0.59	2.058	294.02	0.010	SPLSR ≤ 0.04, Not required



5GHz WLAN Main+5GHz WLAN Aux+Bluetooth									
Position	Conditions	SAR Value (W/kg)	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
			x	y	z				
Bottom Surface	WLAN 5G Main	1.073	-9.08	-13.50	0.64	-	-	-	-
	WLAN 5G Aux + BT Aux	1.179	-8.90	14.18	0.62	2.252	276.81	0.012	SPLSR ≤ 0.04, Not required



5GHz WLAN Main+5GHz WLAN Aux+Bluetooth									
Position	Conditions	SAR Value (W/kg)	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
			x	y	z				
Back Surface	WLAN 5G Main	1.189	5.54	-14.98	0.56	-	-	-	-
	WLAN 5G Aux + BT Aux	1.444	7.78	13.80	0.59	2.633	288.67	0.015	SPLSR ≤ 0.04, Not required



4. Instruments List

SAR Test Site: SAR_1					
Manufacturer	**Device**	**Type**	**Serial number**	**Date of last calibration**	**Date of next calibration**
SPEAG	Dosimetric E-Field Probe	EX3DV4	3938	Jan/25/2022	Jan/24/2023
SPEAG	System Validation Dipole	D2450V2	727	Apr/25/2022	Apr/24/2023
SPEAG	System Validation Dipole	D5GHzV2	1023	Jan/27/2022	Jan/26/2023
SPEAG	Data acquisition Electronics	DAE4	547	Mar/23/2022	Mar/22/2023
SPEAG	Dielectric Assessment Kit	DAKS-3.5	1053	Feb/28/2022	Feb/27/2023
LKM	Digital thermometer	DTM3000	EC14010603	Nov/09/2021	Nov/08/2022
TECPEL	Digital thermometer	DTM-303A	TP130075	Oct/28/2021	Oct/27/2022
SPEAG	Software	DASY 52 V52.10.4	N/A	Calibration not required	Calibration not required
SPEAG	Phantom	ELI	N/A	Calibration not required	Calibration not required
EMCI	Amplifier	ZHL-42	980189	Calibration not required	Calibration not required
EMCI	Amplifier	ZVE-8G	980190	Calibration not required	Calibration not required
Agilent	Dual-directional coupler	778D	MY48220468	Aug/16/2021	Aug/15/2022
Agilent	Dual-directional coupler	772D	MY46151242	Aug/16/2021	Aug/15/2022
Agilent	MXG Analog Signal Generator	N5181A	MY50145142	Dec/23/2021	Dec/22/2022
Anritsu	Power Meter	ML2496A	1337004	Oct/08/2021	Oct/07/2022
Anritsu	Power Sensor	MA2411B	1306052	Oct/08/2021	Oct/07/2022
R&S	Power Sensor	NRP18S	101973	Jan/22/2022	Jan/21/2023

5. Measurements

Date: 2022/5/31

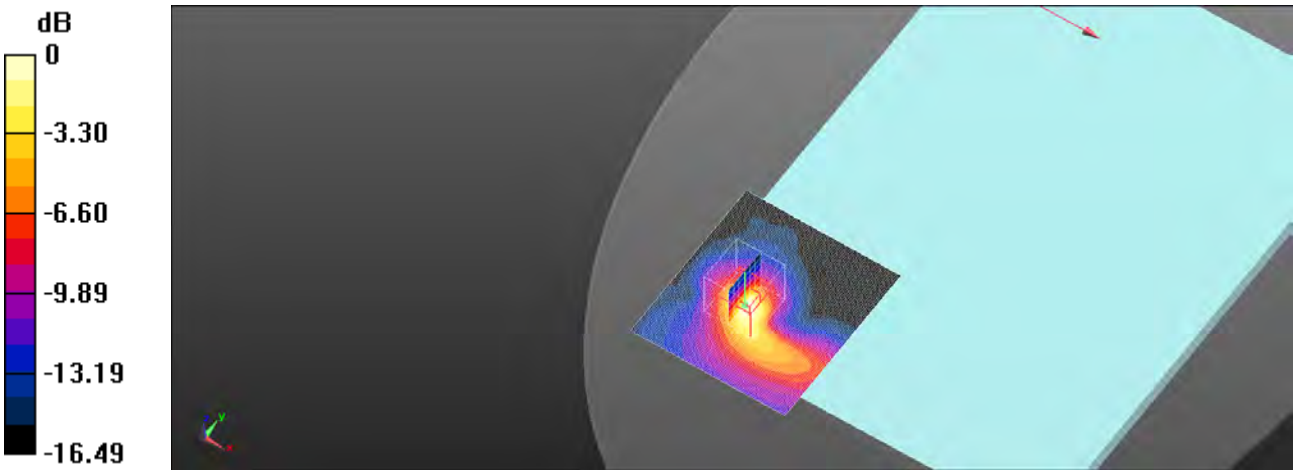
ID: 001
Report No. : TESA2204000062E5
WLAN 802.11b_Body_Bottom Surface_CH 6_0mm_Main
Communication System: WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1.011
Medium parameters used: f = 2437 MHz; σ = 1.803 S/m; ε_r = 39.373; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.5°C; Liquid temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.39, 7.39, 7.39); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x91x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.796 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.071 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.08 W/kg
SAR(1 g) = 0.479 W/kg; SAR(10 g) = 0.202 W/kg
Smallest distance from peaks to all points 3 dB below = 6.8 mm
Ratio of SAR at M2 to SAR at M1 = 51.2%
Maximum value of SAR (measured) = 0.745 W/kg



0 dB = 0.745 W/kg = -1.28 dBW/kg

Date: 2022/6/1

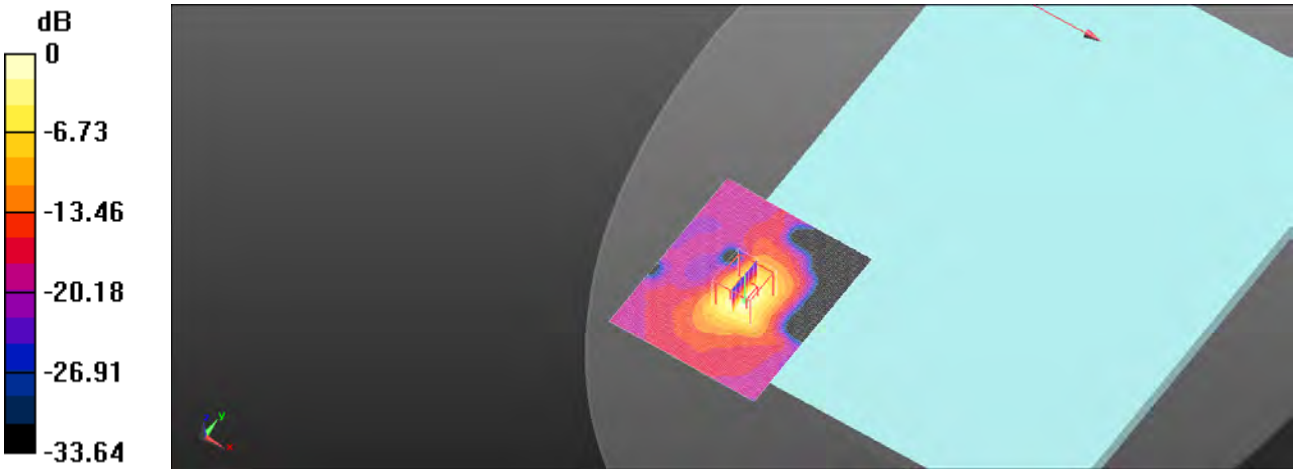
ID: 002
Report No. : TESA2204000062E5
WLAN 802.11a 5.2G_Body_Bottom Surface_CH 44_0mm_Main
Communication System: WLAN; Frequency: 5220 MHz; Duty Cycle: 1:1.018
Medium parameters used: f = 5220 MHz; σ = 4.69 S/m; ε_r = 36.113; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 21.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(5.05, 5.05, 5.05); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.82 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 7.63 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.87 W/kg
SAR(1 g) = 0.899 W/kg; SAR(10 g) = 0.262 W/kg
Smallest distance from peaks to all points 3 dB below = 5.1 mm
Ratio of SAR at M2 to SAR at M1 = 54.8%
Maximum value of SAR (measured) = 1.87 W/kg



0 dB = 1.87 W/kg = 2.73 dBW/kg

Date: 2022/6/1

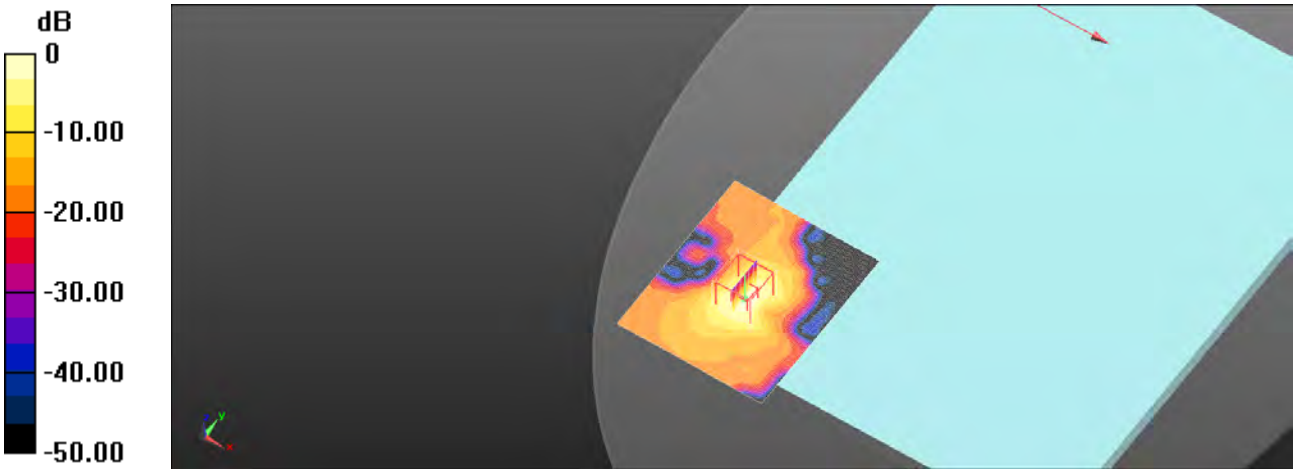
ID: 003
Report No. : TESA2204000062E5
WLAN 802.11n(40M) 5.2G_Body_Bottom Surface_CH 46_0mm_Main
Communication System: WLAN; Frequency: 5230 MHz; Duty Cycle: 1:1.012
Medium parameters used: f = 5230 MHz; σ = 4.7 S/m; ε_r = 36.101; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 21.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(5.05, 5.05, 5.05); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.56 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 9.65 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 3.38 W/kg
SAR(1 g) = 0.786 W/kg; SAR(10 g) = 0.227 W/kg
Smallest distance from peaks to all points 3 dB below = 5.4 mm
Ratio of SAR at M2 to SAR at M1 = 55.2%
Maximum value of SAR (measured) = 1.70 W/kg



0 dB = 1.70 W/kg = 2.30 dBW/kg

Date: 2022/6/2

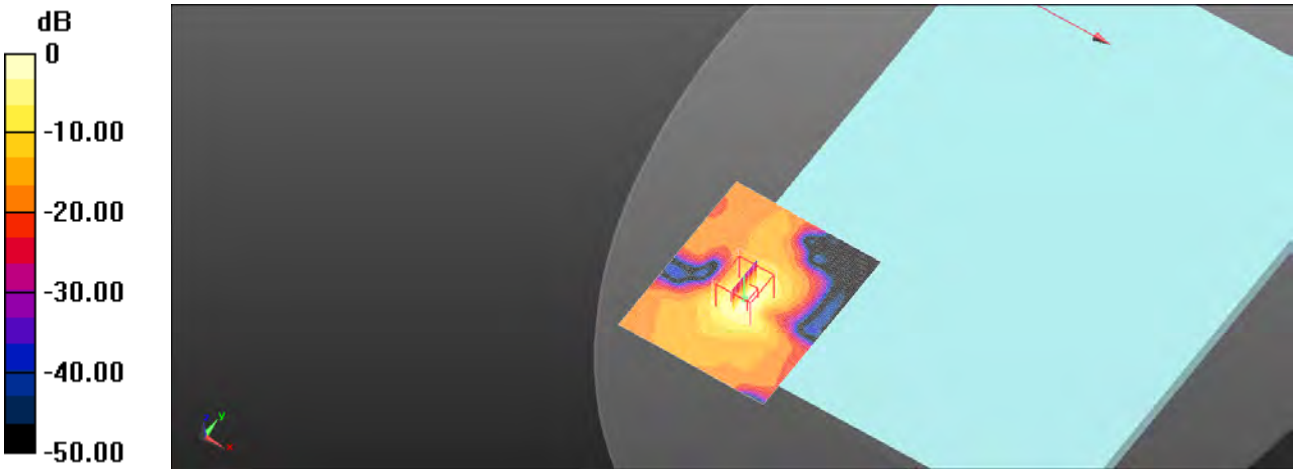
ID: 004
Report No. : TESA2204000062E5
WLAN 802.11a 5.3G_Body_Bottom Surface_CH 56_0mm_Main
Communication System: WLAN; Frequency: 5280 MHz; Duty Cycle: 1:1.018
Medium parameters used: f = 5280 MHz; σ = 4.763 S/m; ε_r = 36.131; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.3°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(5.05, 5.05, 5.05); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.85 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 8.84 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.98 W/kg
SAR(1 g) = 0.937 W/kg; SAR(10 g) = 0.276 W/kg
Smallest distance from peaks to all points 3 dB below = 5.3 mm
Ratio of SAR at M2 to SAR at M1 = 54.9%
Maximum value of SAR (measured) = 2.05 W/kg



0 dB = 2.05 W/kg = 3.12 dBW/kg

Date: 2022/6/2

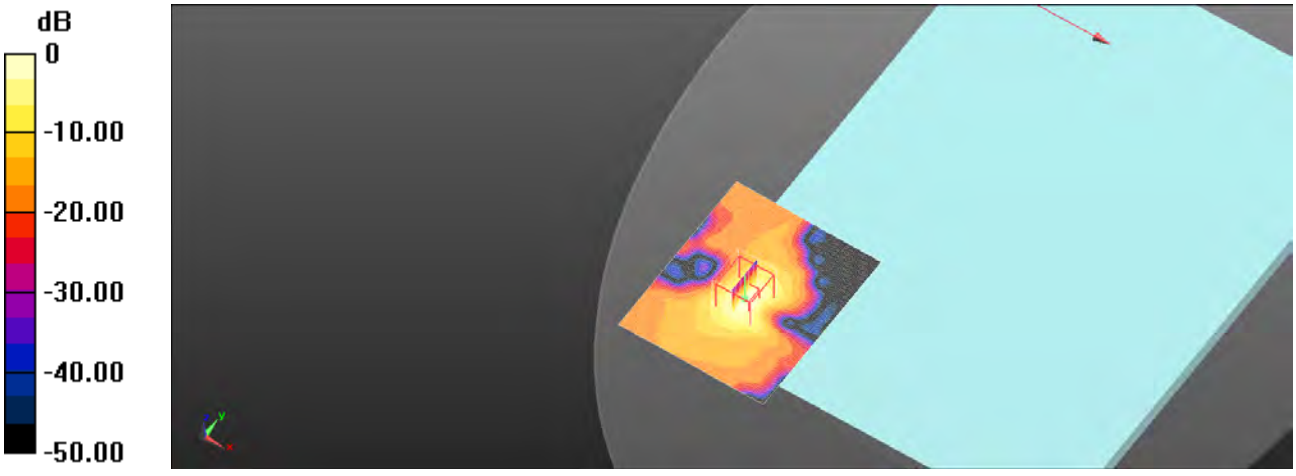
ID: 005
Report No. : TESA2204000062E5
WLAN 802.11n(40M) 5.3G_Body_Bottom Surface_CH 54_0mm_Main
Communication System: WLAN; Frequency: 5270 MHz; Duty Cycle: 1:1.012
Medium parameters used: f = 5270 MHz; σ = 4.752 S/m; ε_r = 36.143; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.3°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(5.05, 5.05, 5.05); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.72 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 8.41 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.86 W/kg
SAR(1 g) = 0.873 W/kg; SAR(10 g) = 0.251 W/kg
Smallest distance from peaks to all points 3 dB below = 5.3 mm
Ratio of SAR at M2 to SAR at M1 = 54.3%
Maximum value of SAR (measured) = 1.98 W/kg



0 dB = 1.98 W/kg = 2.97 dBW/kg

Date: 2022/6/3

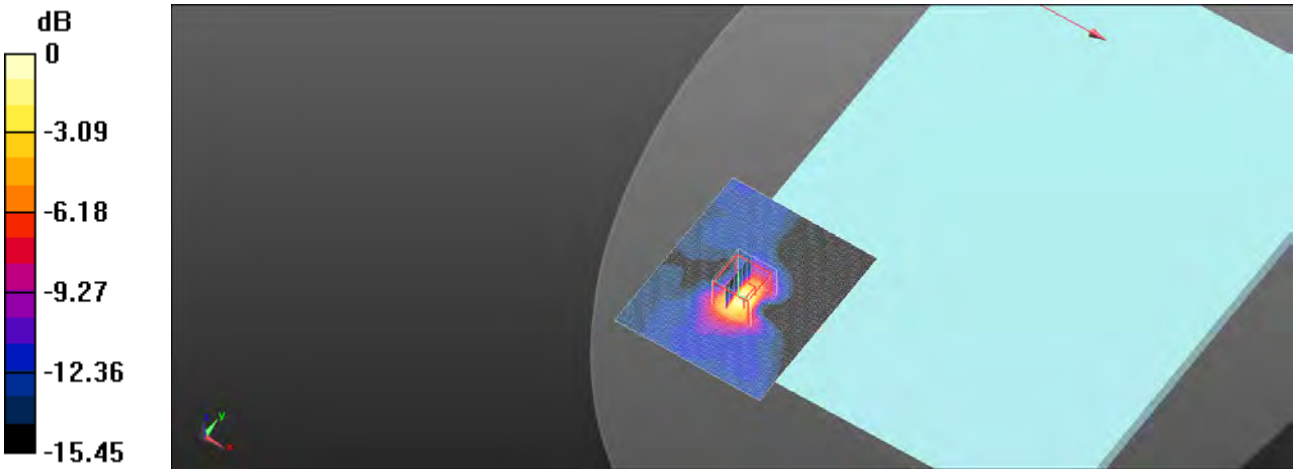
ID: 006
Report No. : TESA2204000062E5
WLAN 802.11n(40M) 5.6G_Body_Bottom Surface_CH 118_0mm_Main
Communication System: WLAN; Frequency: 5590 MHz; Duty Cycle: 1:1.012
Medium parameters used: f = 5590 MHz; σ = 5.071 S/m; ε_r = 35.69; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.6, 4.6, 4.6); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.35 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.41 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 3.68 W/kg
SAR(1 g) = 0.740 W/kg; SAR(10 g) = 0.236 W/kg
Smallest distance from peaks to all points 3 dB below = 5.1 mm
Ratio of SAR at M2 to SAR at M1 = 52.9%
Maximum value of SAR (measured) = 1.53 W/kg



0 dB = 1.53 W/kg = 1.84 dBW/kg

Date: 2022/6/3

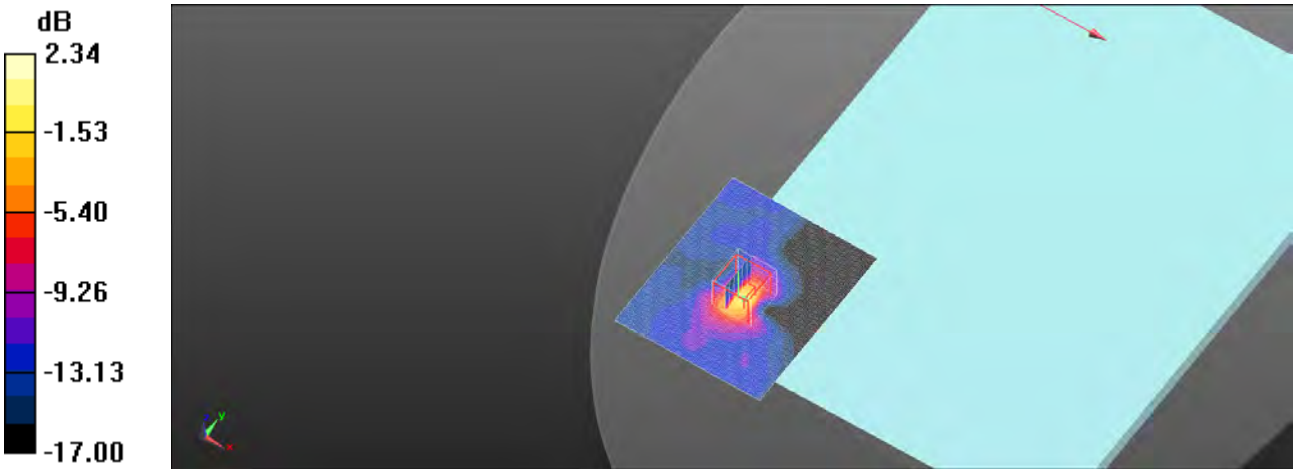
ID: 007
Report No. : TESA2204000062E5
WLAN 802.11ac(80M) 5.6G_Body_Bottom Surface_CH 122_0mm_Main
Communication System: WLAN; Frequency: 5610 MHz; Duty Cycle: 1:1.016
Medium parameters used: f = 5610 MHz; σ = 5.092 S/m; ε_r = 35.667; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.6, 4.6, 4.6); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.36 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.473 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 3.72 W/kg
SAR(1 g) = 0.748 W/kg; SAR(10 g) = 0.238 W/kg
Smallest distance from peaks to all points 3 dB below = 7.7 mm
Ratio of SAR at M2 to SAR at M1 = 52.9%
Maximum value of SAR (measured) = 1.54 W/kg



0 dB = 1.54 W/kg = 1.88 dBW/kg

Date: 2022/6/3

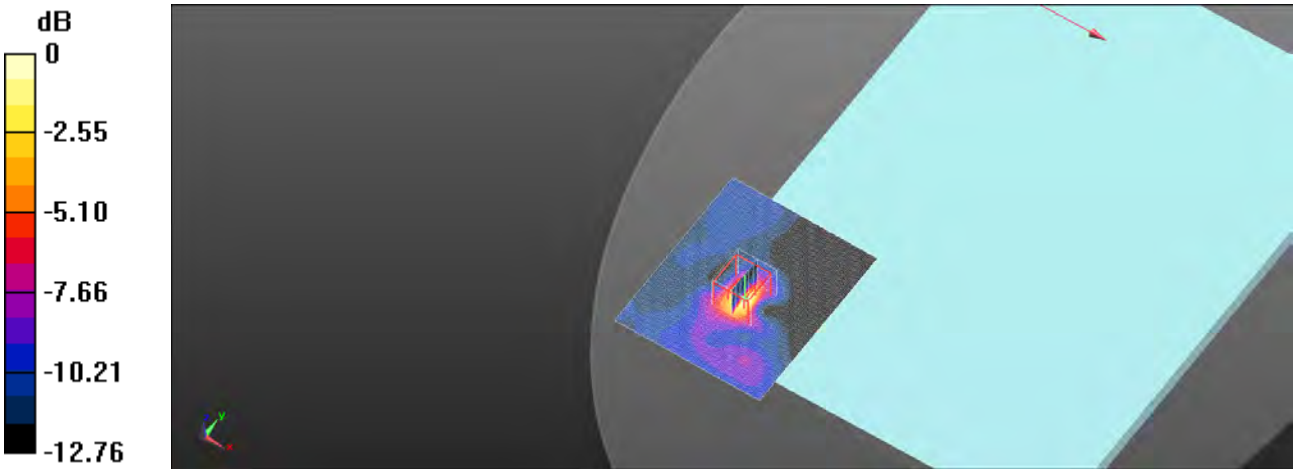
ID: 008
Report No. : TESA2204000062E5
WLAN 802.11n(40M) 5.8G_Body_Bottom Surface_CH 159_0mm_Main
Communication System: WLAN; Frequency: 5795 MHz; Duty Cycle: 1:1.016
Medium parameters used: f = 5795 MHz; σ = 5.281 S/m; ε_r = 35.456; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.65, 4.65, 4.65); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (91x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 0.873 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 2.930 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 2.39 W/kg
SAR(1 g) = 0.435 W/kg; SAR(10 g) = 0.148 W/kg
Smallest distance from peaks to all points 3 dB below = 8.6 mm
Ratio of SAR at M2 to SAR at M1 = 53.1%
Maximum value of SAR (measured) = 0.881 W/kg



0 dB = 0.881 W/kg = -0.55 dBW/kg

Date: 2022/5/31

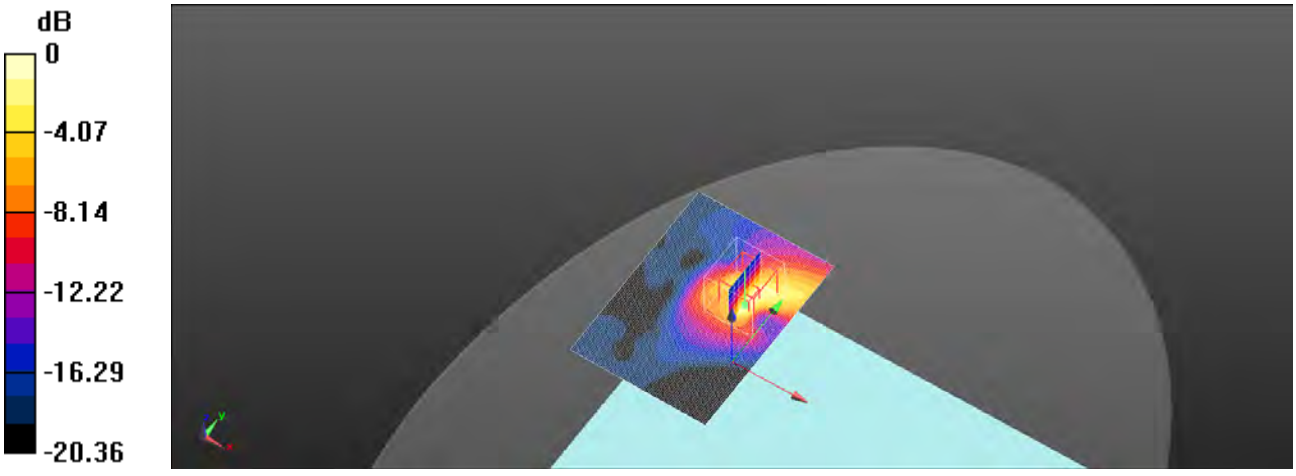
ID: 009
Report No. : TESA2204000062E5
WLAN 802.11b_Body_Bottom Surface_CH 6_0mm_Aux
Communication System: WLAN; Frequency: 2437 MHz; Duty Cycle: 1:1.011
Medium parameters used: f = 2437 MHz; σ = 1.803 S/m; ε_r = 39.373; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.5°C; Liquid temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.39, 7.39, 7.39); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (71x101x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.656 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.21 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.11 W/kg
SAR(1 g) = 0.462 W/kg; SAR(10 g) = 0.189 W/kg
Smallest distance from peaks to all points 3 dB below = 6.5 mm
Ratio of SAR at M2 to SAR at M1 = 65.5%
Maximum value of SAR (measured) = 0.739 W/kg



0 dB = 0.739 W/kg = -1.31 dBW/kg

Date: 2022/5/31

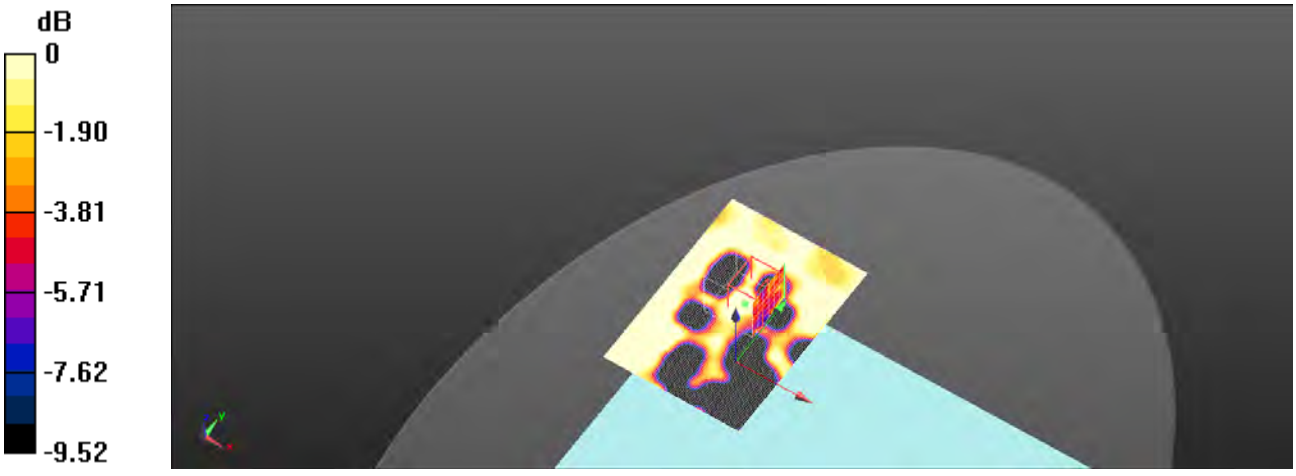
ID: 010
Report No. : TESA2204000062E5
Bluetooth(GFSK)_Body_Bottom Surface_CH 39_0mm_Aux
Communication System: Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.289
Medium parameters used: f = 2441 MHz; σ = 1.806 S/m; ε_r = 39.366; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.5°C; Liquid temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.39, 7.39, 7.39); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (71x101x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.0164 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.87 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.0100 W/kg
SAR(1 g) = 0.00363 W/kg; SAR(10 g) = 0.00206 W/kg
Smallest distance from peaks to all points 3 dB below = 7.4 mm
Ratio of SAR at M2 to SAR at M1 = 68.1%
Maximum value of SAR (measured) = 0.00616 W/kg



0 dB = 0.00616 W/kg = -22.10 dBW/kg

Date: 2022/6/1

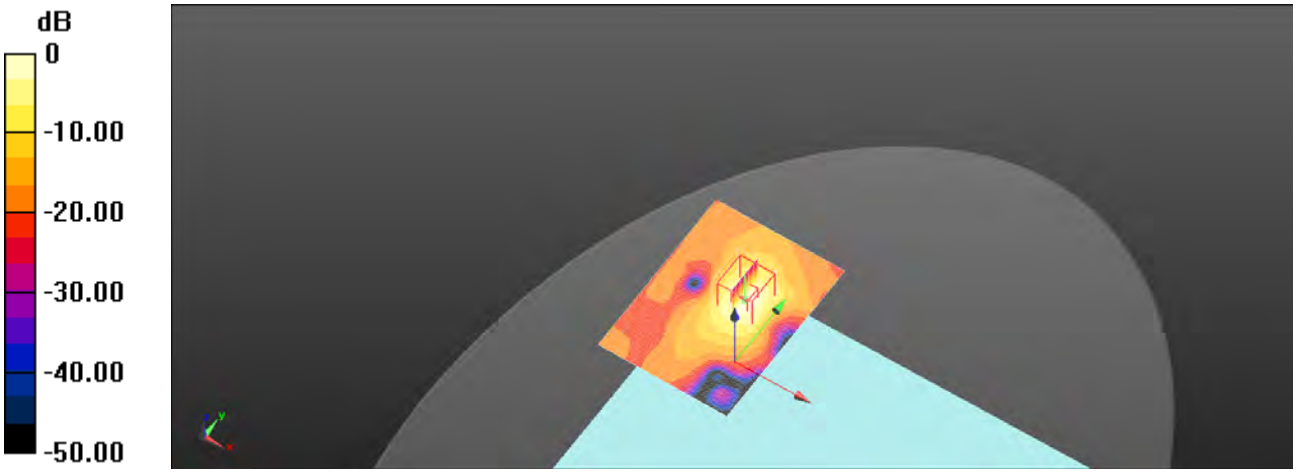
ID: 011
Report No. : TESA2204000062E5
WLAN 802.11a 5.2G_Body_Bottom Surface_CH 48_0mm_Aux
Communication System: WLAN; Frequency: 5240 MHz; Duty Cycle: 1:1.018
Medium parameters used: f = 5240 MHz; σ = 4.71 S/m; ε_r = 36.09; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 21.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(5.05, 5.05, 5.05); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.69 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.67 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.87 W/kg
SAR(1 g) = 0.956 W/kg; SAR(10 g) = 0.284 W/kg
Smallest distance from peaks to all points 3 dB below = 6.4 mm
Ratio of SAR at M2 to SAR at M1 = 56.9%
Maximum value of SAR (measured) = 2.06 W/kg



0 dB = 2.06 W/kg = 3.14 dBW/kg

Date: 2022/6/1

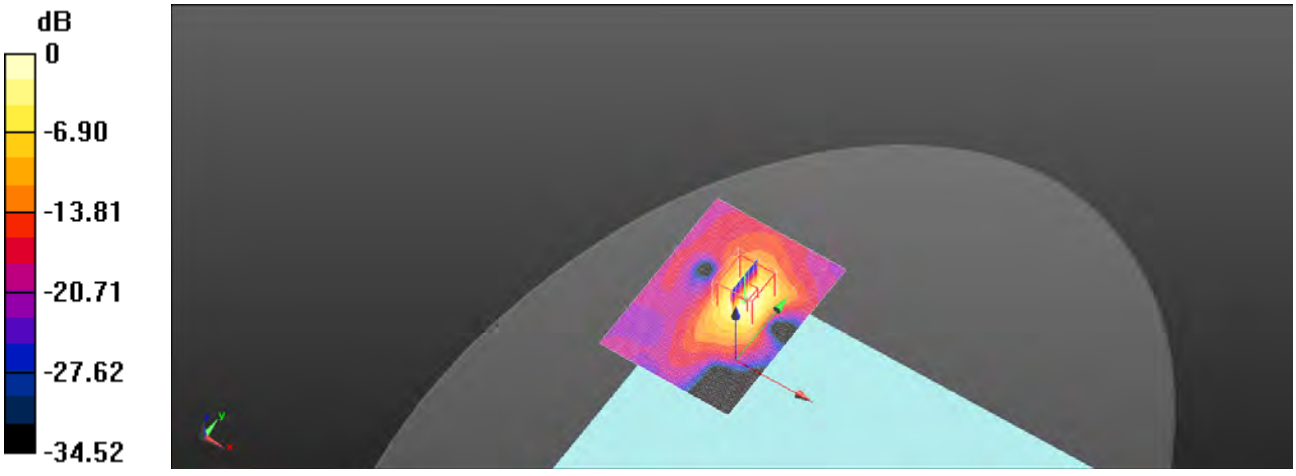
ID: 012
Report No. : TESA2204000062E5
WLAN 802.11n(40M) 5.2G_Body_Bottom Surface_CH 46_0mm_Aux
Communication System: WLAN; Frequency: 5230 MHz; Duty Cycle: 1:1.012
Medium parameters used: f = 5230 MHz; σ = 4.7 S/m; ε_r = 36.101; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 21.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(5.05, 5.05, 5.05); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.83 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 6.87 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 4.43 W/kg
SAR(1 g) = 1.07 W/kg; SAR(10 g) = 0.313 W/kg
Smallest distance from peaks to all points 3 dB below = 6.3 mm
Ratio of SAR at M2 to SAR at M1 = 56.2%
Maximum value of SAR (measured) = 2.29 W/kg



0 dB = 2.29 W/kg = 3.60 dBW/kg

Date: 2022/6/2

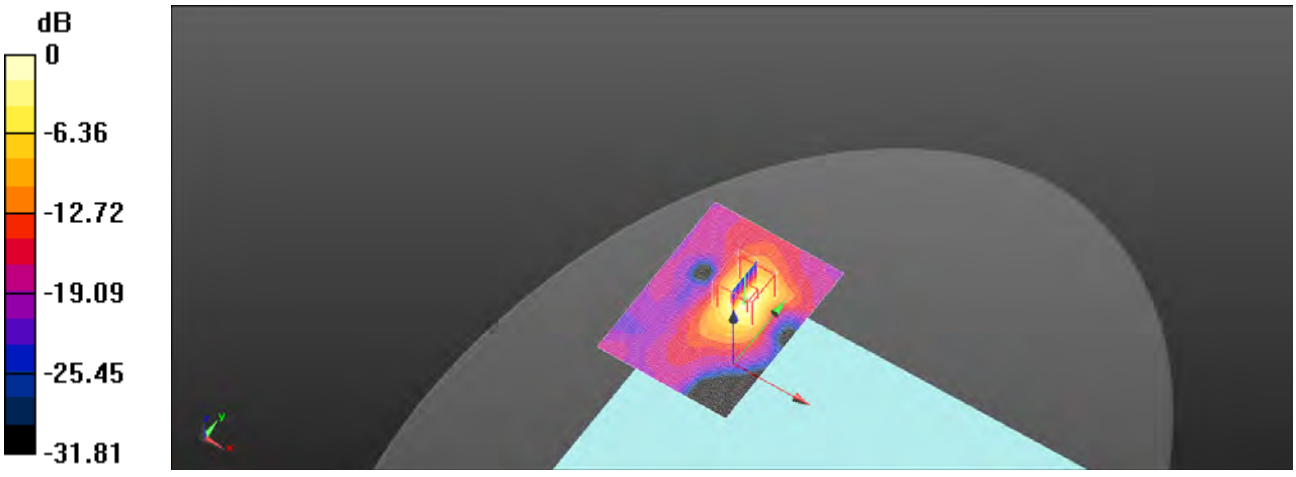
ID: 013
Report No. : TESA2204000062E5
WLAN 802.11a 5.3G_Body_Bottom Surface_CH 60_0mm_Aux
Communication System: WLAN; Frequency: 5300 MHz; Duty Cycle: 1:1.018
Medium parameters used: f = 5300 MHz; σ = 4.783 S/m; ε_r = 36.108; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.3°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(5.05, 5.05, 5.05); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.73 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 19.63 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 3.93 W/kg
SAR(1 g) = 0.972 W/kg; SAR(10 g) = 0.286 W/kg
Smallest distance from peaks to all points 3 dB below = 6.1 mm
Ratio of SAR at M2 to SAR at M1 = 56.6%
Maximum value of SAR (measured) = 2.11 W/kg



0 dB = 2.11 W/kg = 3.24 dBW/kg

Date: 2022/6/2

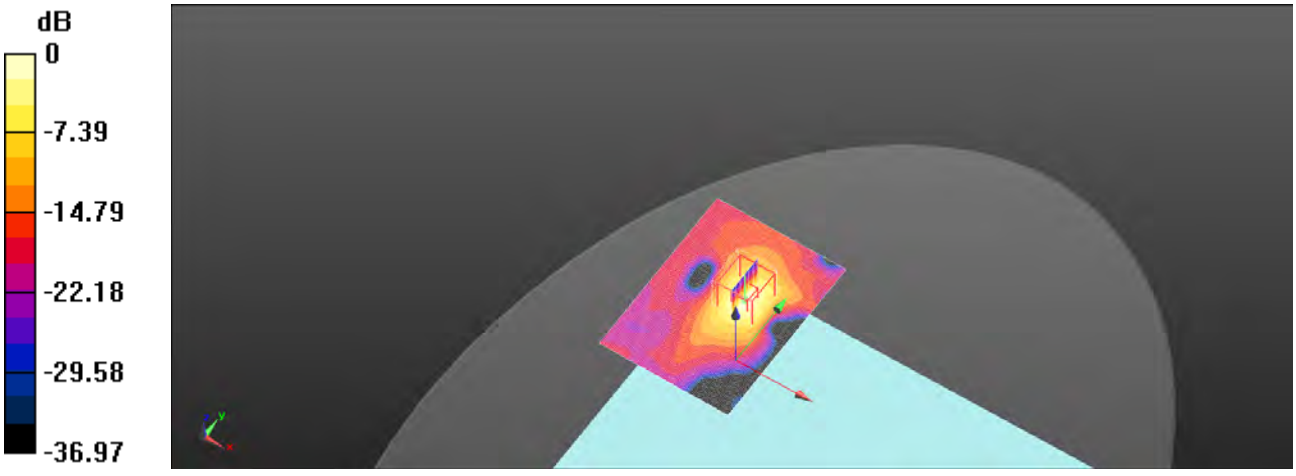
ID: 014
Report No. : TESA2204000062E5
WLAN 802.11n(40M) 5.3G_Body_Bottom Surface_CH 54_0mm_Aux
Communication System: WLAN; Frequency: 5270 MHz; Duty Cycle: 1:1.012
Medium parameters used: f = 5270 MHz; σ = 4.752 S/m; ε_r = 36.143; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.3°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(5.05, 5.05, 5.05); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.73 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 18.73 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 4.30 W/kg
SAR(1 g) = 1.03 W/kg; SAR(10 g) = 0.299 W/kg
Smallest distance from peaks to all points 3 dB below = 5.6 mm
Ratio of SAR at M2 to SAR at M1 = 56.3%
Maximum value of SAR (measured) = 2.18 W/kg



0 dB = 2.18 W/kg = 3.38 dBW/kg

Date: 2022/6/3

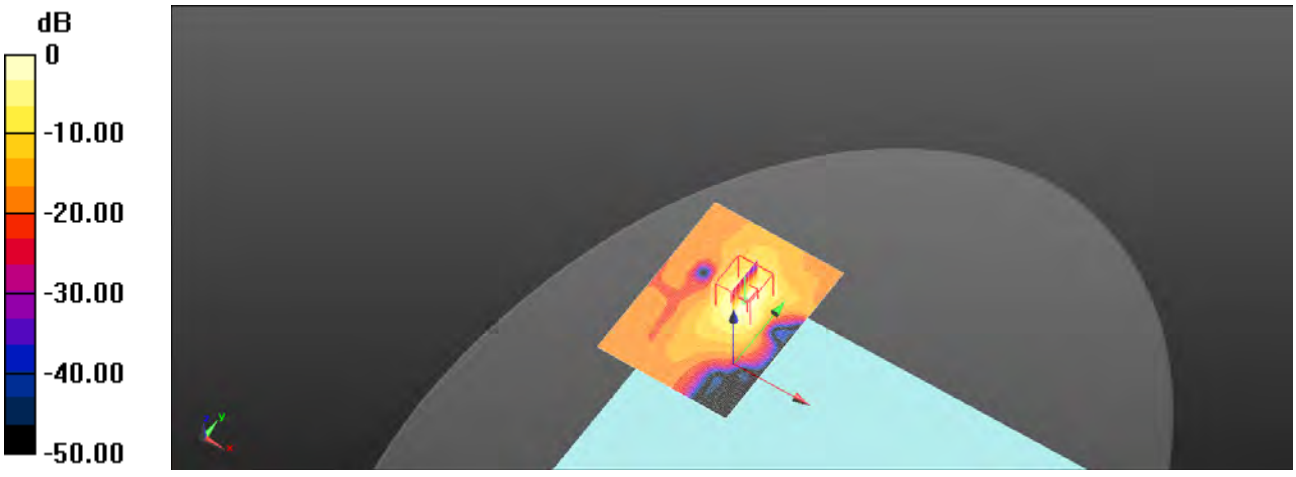
ID: 015
Report No. : TESA2204000062E5
WLAN 802.11n(40M) 5.6G_Body_Bottom Surface_CH 134_0mm_Aux
Communication System: WLAN; Frequency: 5670 MHz; Duty Cycle: 1:1.012
Medium parameters used: f = 5670 MHz; σ = 5.153 S/m; ε_r = 35.599; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.6, 4.6, 4.6); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.82 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 19.11 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 4.37 W/kg
SAR(1 g) = 0.979 W/kg; SAR(10 g) = 0.277 W/kg
Smallest distance from peaks to all points 3 dB below = 5.6 mm
Ratio of SAR at M2 to SAR at M1 = 54%
Maximum value of SAR (measured) = 2.16 W/kg



0 dB = 2.16 W/kg = 3.34 dBW/kg

Date: 2022/6/3

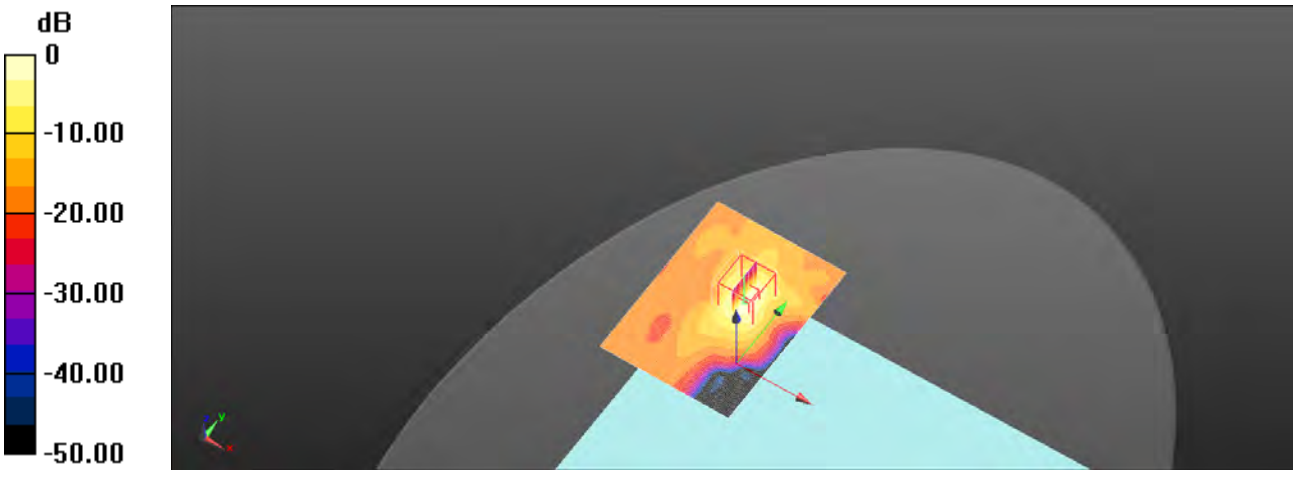
ID: 016
Report No. : TESA2204000062E5
WLAN 802.11n(40M) 5.8G_Body_Bottom Surface_CH 151_0mm_Aux
Communication System: WLAN; Frequency: 5755 MHz; Duty Cycle: 1:1.012
Medium parameters used: f = 5755 MHz; σ = 5.24 S/m; ε_r = 35.501; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.65, 4.65, 4.65); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x111x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.00 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 19.21 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 5.11 W/kg
SAR(1 g) = 1.08 W/kg; SAR(10 g) = 0.295 W/kg
Smallest distance from peaks to all points 3 dB below = 5.3 mm
Ratio of SAR at M2 to SAR at M1 = 53%
Maximum value of SAR (measured) = 2.43 W/kg



0 dB = 2.43 W/kg = 3.86 dBW/kg

Date: 2022/5/31

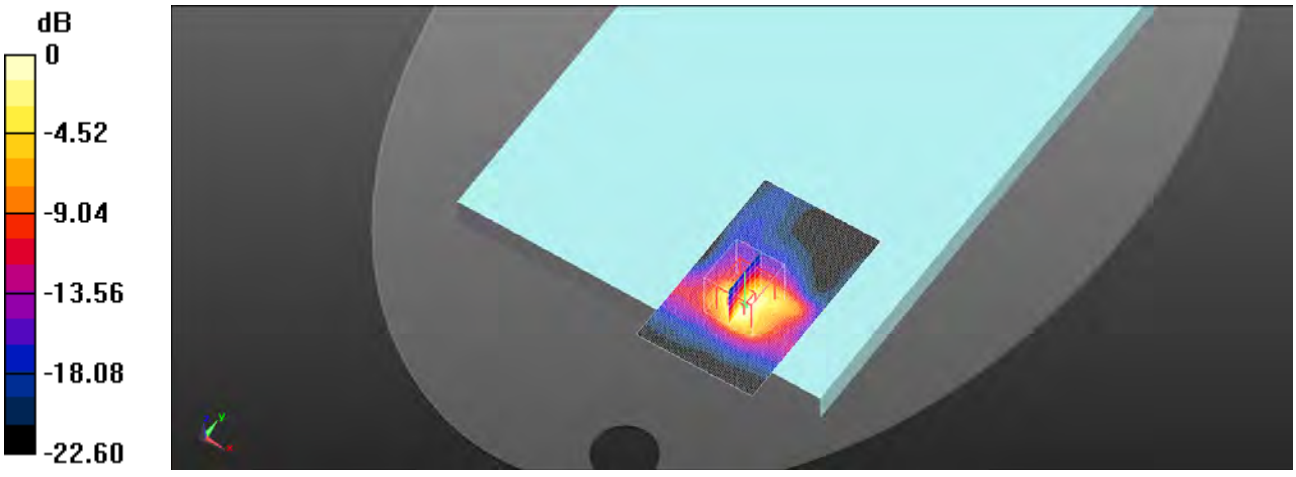
ID: 017
Report No. : TESA2204000062E5
WLAN 802.11b_Body_Back Surface_CH 11_0mm_Main
Communication System: WLAN; Frequency: 2462 MHz; Duty Cycle: 1:1.011
Medium parameters used: f = 2462 MHz; σ = 1.825 S/m; ε_r = 39.335; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.5°C; Liquid temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.39, 7.39, 7.39); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (61x101x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.36 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.910 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.97 W/kg
SAR(1 g) = 0.898 W/kg; SAR(10 g) = 0.379 W/kg
Smallest distance from peaks to all points 3 dB below = 8 mm
Ratio of SAR at M2 to SAR at M1 = 51.5%
Maximum value of SAR (measured) = 1.35 W/kg



0 dB = 1.35 W/kg = 1.32 dBW/kg

Date: 2022/6/1

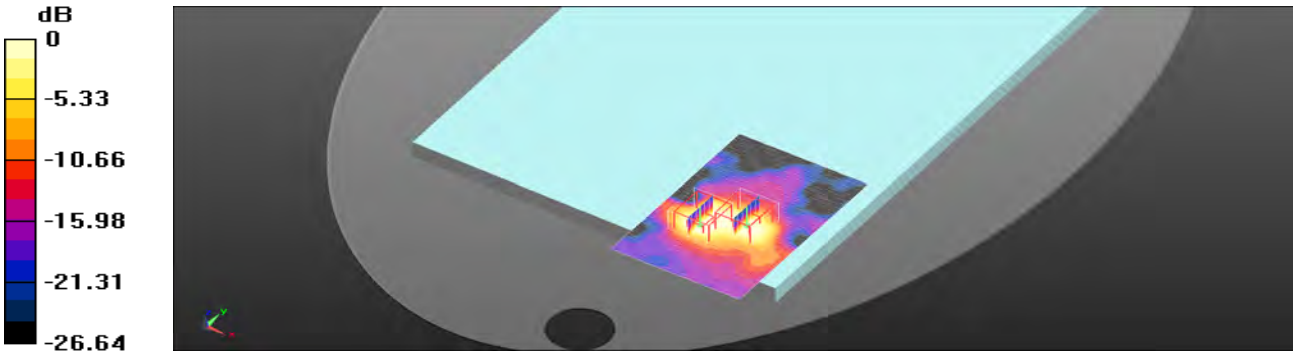
ID: 018
Report No. : TESA2204000062E5
WLAN 802.11n(40M) 5.2G_Body_Back Surface_CH 46_0mm_Main
Communication System: WLAN; Frequency: 5230 MHz; Duty Cycle: 1:1.012
Medium parameters used: f = 5230 MHz; σ = 4.7 S/m; ε_r = 36.101; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 21.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(5.05, 5.05, 5.05); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x121x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.28 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.297 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 2.49 W/kg
SAR(1 g) = 0.640 W/kg; SAR(10 g) = 0.209 W/kg
Smallest distance from peaks to all points 3 dB below = 5.6 mm
Ratio of SAR at M2 to SAR at M1 = 57.9%
Maximum value of SAR (measured) = 1.33 W/kg
Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.297 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.72 W/kg
SAR(1 g) = 0.542 W/kg; SAR(10 g) = 0.203 W/kg
Smallest distance from peaks to all points 3 dB below = 7.6 mm
Ratio of SAR at M2 to SAR at M1 = 60.7%
Maximum value of SAR (measured) = 0.977 W/kg



0 dB = 0.977 W/kg = -0.10 dBW/kg

Date: 2022/6/1

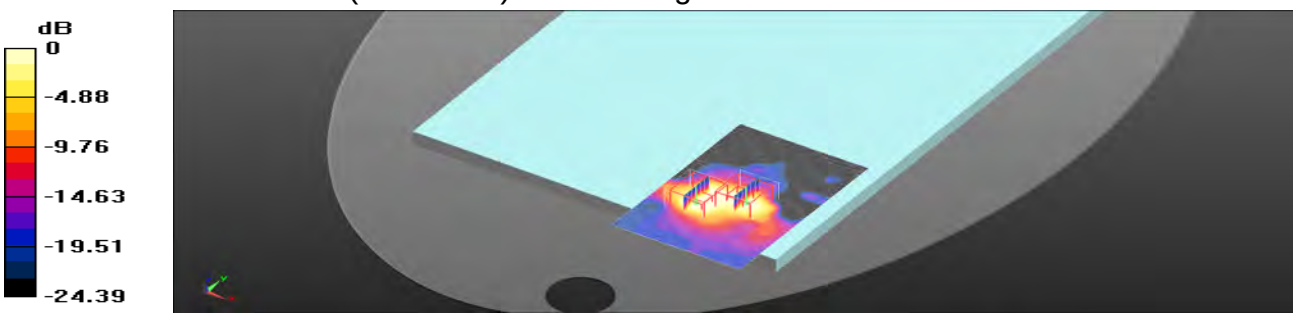
ID: 019
Report No. : TESA2204000062E5
WLAN 802.11ac(80M) 5.2G_Body_Back Surface_CH 42_0mm_Main
Communication System: WLAN; Frequency: 5210 MHz; Duty Cycle: 1:1.016
Medium parameters used: f = 5210 MHz; σ = 4.68 S/m; ε_r = 36.124; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 21.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(5.05, 5.05, 5.05); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x121x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.80 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.774 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.90 W/kg
SAR(1 g) = 0.935 W/kg; SAR(10 g) = 0.274 W/kg
Smallest distance from peaks to all points 3 dB below = 5.6 mm
Ratio of SAR at M2 to SAR at M1 = 57.4%
Maximum value of SAR (measured) = 1.97 W/kg
Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 4.774 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 2.12 W/kg
SAR(1 g) = 0.662 W/kg; SAR(10 g) = 0.234 W/kg
Smallest distance from peaks to all points 3 dB below = 6.5 mm
Ratio of SAR at M2 to SAR at M1 = 60.7%
Maximum value of SAR (measured) = 1.21 W/kg



0 dB = 1.21 W/kg = 0.83 dBW/kg

Date: 2022/6/2

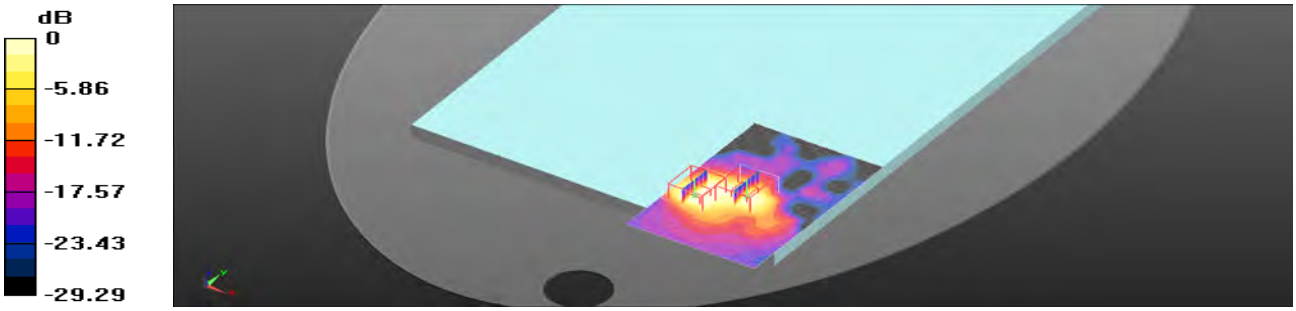
ID: 020
Report No. : TESA2204000062E5
WLAN 802.11n(40M) 5.3G_Body_Back Surface_CH 62_0mm_Main
Communication System: WLAN; Frequency: 5310 MHz; Duty Cycle: 1:1.012
Medium parameters used: f = 5310 MHz; σ = 4.794 S/m; ε_r = 36.097; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.3°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(5.05, 5.05, 5.05); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x121x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.08 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 7.239 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 4.63 W/kg
SAR(1 g) = 1.1 W/kg; SAR(10 g) = 0.318 W/kg
Smallest distance from peaks to all points 3 dB below = 5.6 mm
Ratio of SAR at M2 to SAR at M1 = 56.9%
Maximum value of SAR (measured) = 2.31 W/kg
Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 7.239 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 2.73 W/kg
SAR(1 g) = 0.801 W/kg; SAR(10 g) = 0.278 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 59.2%
Maximum value of SAR (measured) = 1.53 W/kg



0 dB = 1.53 W/kg = 1.83 dBW/kg

Date: 2022/6/2

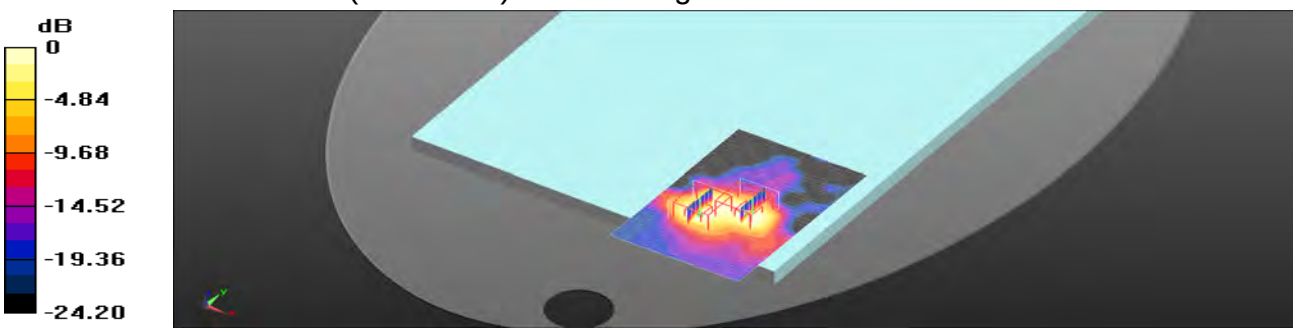
ID: 021
Report No. : TESA2204000062E5
WLAN 802.11ac(80M) 5.3G_Body_Back Surface_CH 58_0mm_Main
Communication System: WLAN; Frequency: 5290 MHz; Duty Cycle: 1:1.016
Medium parameters used: f = 5290 MHz; σ = 4.773 S/m; ε_r = 36.12; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.3°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(5.05, 5.05, 5.05); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x121x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.70 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 6.788 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.46 W/kg
SAR(1 g) = 0.850 W/kg; SAR(10 g) = 0.261 W/kg
Smallest distance from peaks to all points 3 dB below = 5.7 mm
Ratio of SAR at M2 to SAR at M1 = 56.4%
Maximum value of SAR (measured) = 1.79 W/kg
Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 6.788 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 2.29 W/kg
SAR(1 g) = 0.681 W/kg; SAR(10 g) = 0.252 W/kg
Smallest distance from peaks to all points 3 dB below = 7.6 mm
Ratio of SAR at M2 to SAR at M1 = 59.8%
Maximum value of SAR (measured) = 1.23 W/kg



0 dB = 1.23 W/kg = 0.91 dBW/kg

Date: 2022/6/3

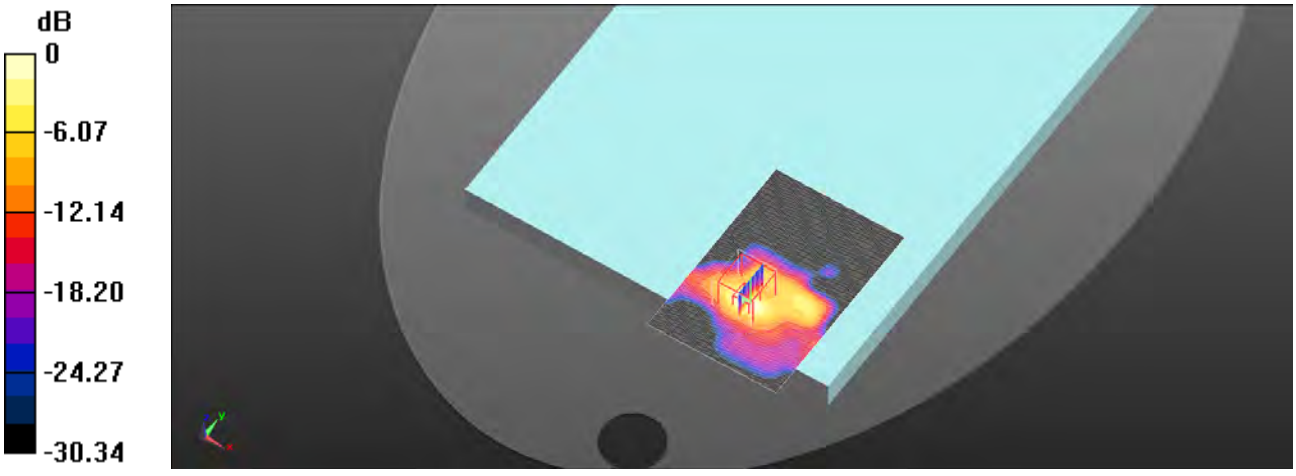
ID: 022
Report No. : TESA2204000062E5
WLAN 802.11ac(80M) 5.6G_Body_Back Surface_CH 138_0mm_Main
Communication System: WLAN; Frequency: 5690 MHz; Duty Cycle: 1:1.016
Medium parameters used: f = 5690 MHz; σ = 5.174 S/m; ε_r = 35.576; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.65, 4.65, 4.65); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x121x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.19 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 10.15 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 5.30 W/kg
SAR(1 g) = 1.1 W/kg; SAR(10 g) = 0.287 W/kg
Smallest distance from peaks to all points 3 dB below = 5.1 mm
Ratio of SAR at M2 to SAR at M1 = 52.2%
Maximum value of SAR (measured) = 2.33 W/kg



0 dB = 2.33 W/kg = 3.68 dBW/kg

Date: 2022/6/3

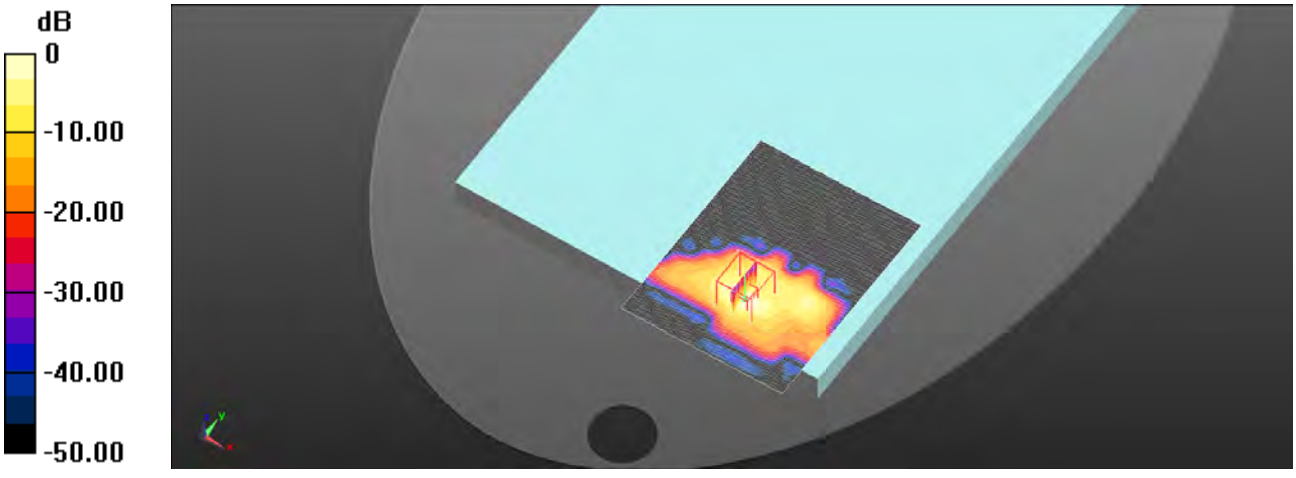
ID: 023
Report No. : TESA2204000062E5
WLAN 802.11n(40M) 5.8G_Body_Back Surface_CH 151_0mm_Main
Communication System: WLAN; Frequency: 5755 MHz; Duty Cycle: 1:1.012
Medium parameters used: f = 5755 MHz; σ = 5.24 S/m; ε_r = 35.501; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.65, 4.65, 4.65); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.39 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 16.70 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 5.22 W/kg
SAR(1 g) = 1.05 W/kg; SAR(10 g) = 0.261 W/kg
Smallest distance from peaks to all points 3 dB below = 5.4 mm
Ratio of SAR at M2 to SAR at M1 = 52.3%
Maximum value of SAR (measured) = 2.39 W/kg



0 dB = 2.39 W/kg = 3.79 dBW/kg

Date: 2022/6/3

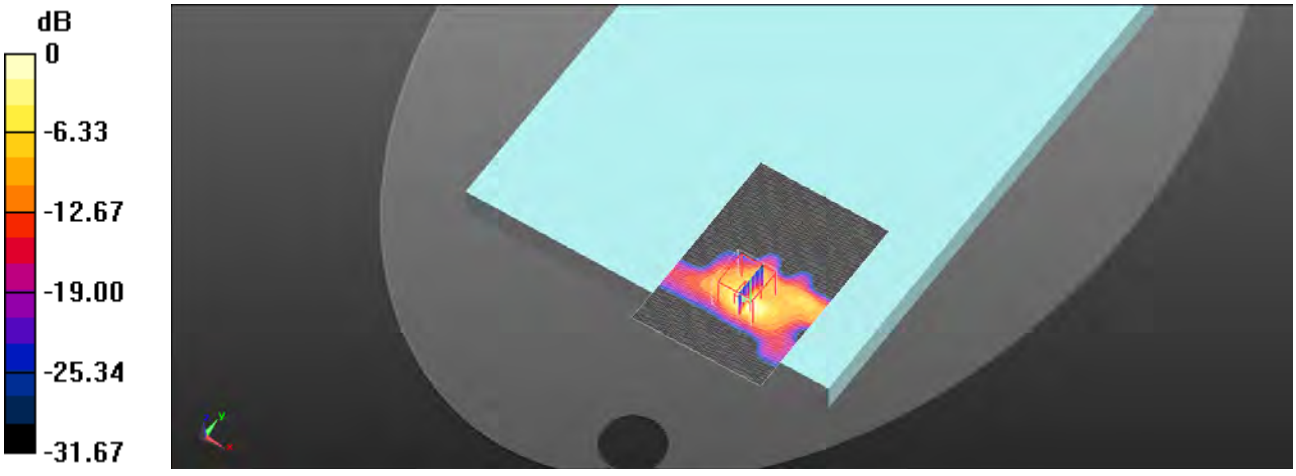
ID: 024
Report No. : TESA2204000062E5
WLAN 802.11ac(80M) 5.8G_Body_Back Surface_CH 155_0mm_Main
Communication System: WLAN; Frequency: 5775 MHz; Duty Cycle: 1:1.016
Medium parameters used: f = 5775 MHz; σ = 5.261 S/m; ε_r = 35.479; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.65, 4.65, 4.65); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x121x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.08 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 5.283 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 5.56 W/kg
SAR(1 g) = 1.04 W/kg; SAR(10 g) = 0.255 W/kg
Smallest distance from peaks to all points 3 dB below = 7.8 mm
Ratio of SAR at M2 to SAR at M1 = 50.3%
Maximum value of SAR (measured) = 2.42 W/kg



0 dB = 2.42 W/kg = 3.83 dBW/kg

Date: 2022/5/31

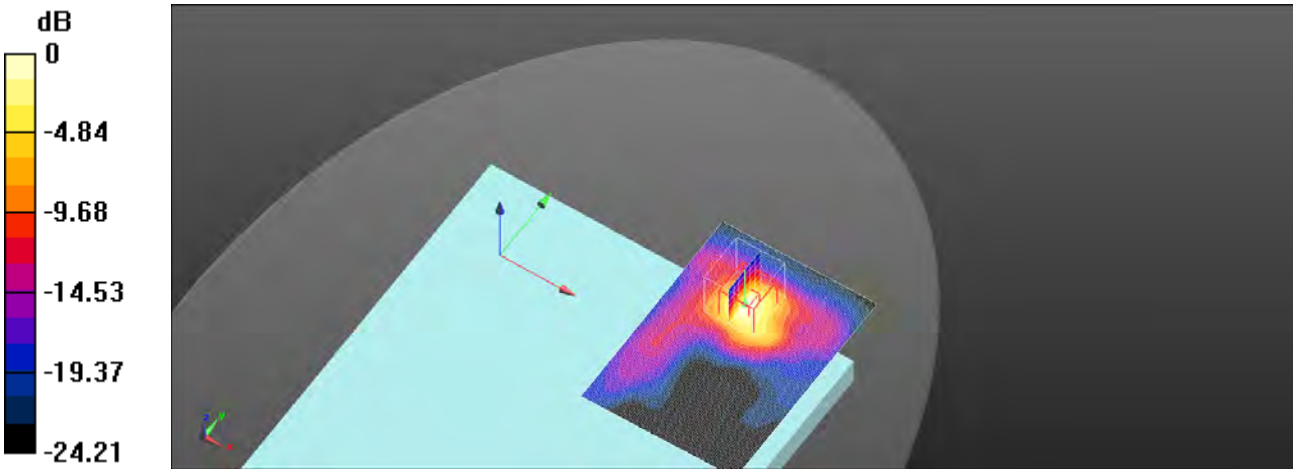
ID: 025
Report No. : TESA2204000062E5
WLAN 802.11b_Body_Back Surface_CH 11_0mm_Aux
Communication System: WLAN; Frequency: 2462 MHz; Duty Cycle: 1:1.011
Medium parameters used: f = 2462 MHz; σ = 1.825 S/m; ε_r = 39.335; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.5°C; Liquid temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.39, 7.39, 7.39); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x111x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 1.81 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.8780 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 2.38 W/kg
SAR(1 g) = 1.09 W/kg; SAR(10 g) = 0.454 W/kg
Smallest distance from peaks to all points 3 dB below = 8.6 mm
Ratio of SAR at M2 to SAR at M1 = 58.4%
Maximum value of SAR (measured) = 1.73 W/kg



0 dB = 1.73 W/kg = 2.38 dBW/kg

Date: 2022/5/31

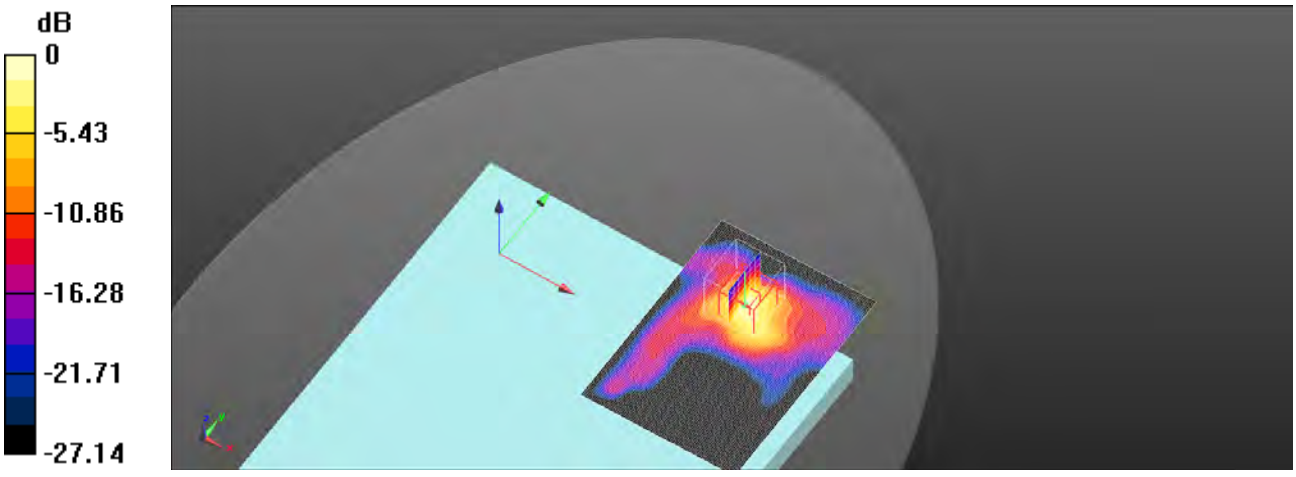
ID: 026
Report No. : TESA2204000062E5
Bluetooth(GFSK)_Body_Back Surface_CH 39_0mm_Aux
Communication System: Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.289
Medium parameters used: f = 2441 MHz; σ = 1.806 S/m; ε_r = 39.366; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.5°C; Liquid temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.39, 7.39, 7.39); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x111x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 0.235 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.730 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.460 W/kg
SAR(1 g) = 0.203 W/kg; SAR(10 g) = 0.086 W/kg
Smallest distance from peaks to all points 3 dB below = 7.8 mm
Ratio of SAR at M2 to SAR at M1 = 57.2%
Maximum value of SAR (measured) = 0.330 W/kg



0 dB = 0.330 W/kg = -4.82 dBW/kg

Date: 2022/6/1

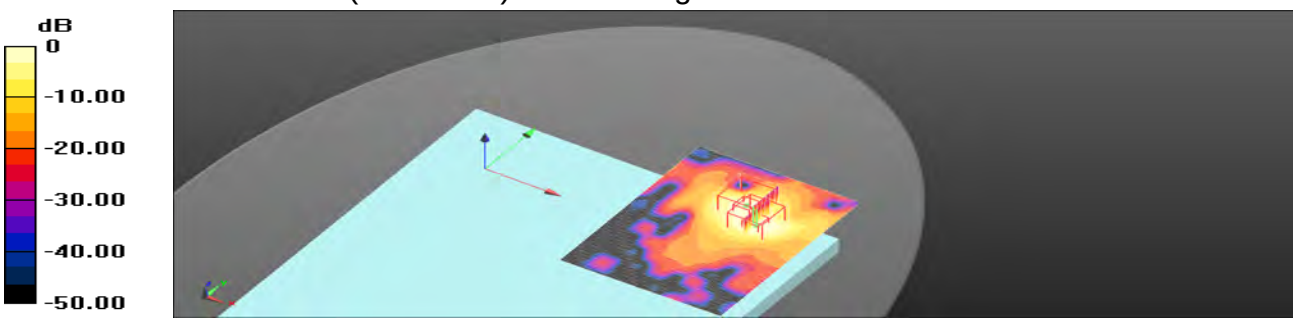
ID: 027
Report No. : TESA2204000062E5
WLAN 802.11n(40M) 5.2G_Body_Back Surface_CH 38_0mm_Aux
Communication System: WLAN; Frequency: 5190 MHz; Duty Cycle: 1:1.012
Medium parameters used: f = 5190 MHz; σ = 4.659 S/m; ε_r = 36.147; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 21.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(5.05, 5.05, 5.05); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.21 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.9930 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.58 W/kg
SAR(1 g) = 1.12 W/kg; SAR(10 g) = 0.397 W/kg
Smallest distance from peaks to all points 3 dB below = 7.6 mm
Ratio of SAR at M2 to SAR at M1 = 60.6%
Maximum value of SAR (measured) = 2.09 W/kg
Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 0.9930 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.55 W/kg
SAR(1 g) = 0.927 W/kg; SAR(10 g) = 0.314 W/kg
Smallest distance from peaks to all points 3 dB below = 8.8 mm
Ratio of SAR at M2 to SAR at M1 = 60.7%
Maximum value of SAR (measured) = 2.02 W/kg



0 dB = 2.02 W/kg = 3.05 dBW/kg

Date: 2022/6/2

ID: 028
Report No. : TESA2204000062E5
WLAN 802.11n(40M) 5.3G_Body_Back Surface_CH 54_0mm_Aux
Communication System: WLAN; Frequency: 5270 MHz; Duty Cycle: 1:1.012
Medium parameters used: f = 5270 MHz; σ = 4.752 S/m; ε_r = 36.143; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.3°C; Liquid temperature: 21.8°C

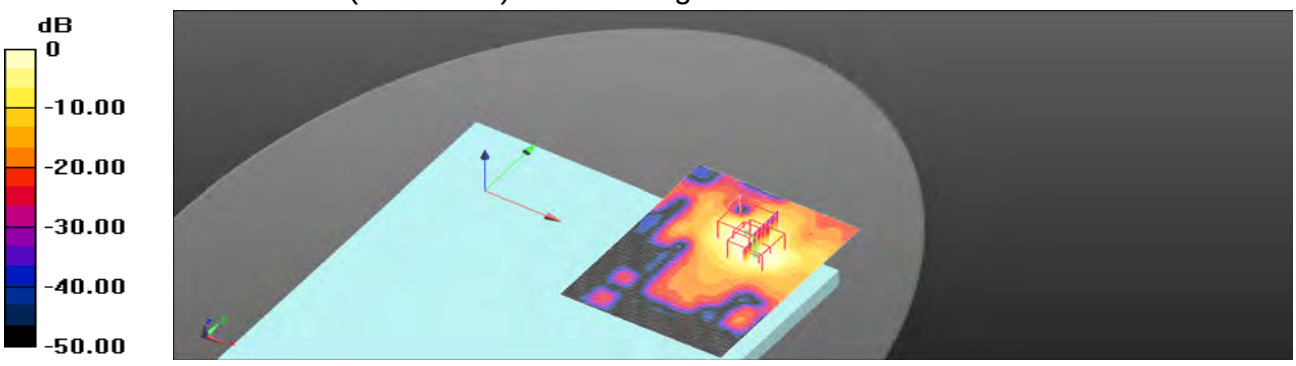
DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(5.05, 5.05, 5.05); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.18 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 15.73 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.43 W/kg
SAR(1 g) = 1.07 W/kg; SAR(10 g) = 0.374 W/kg
Smallest distance from peaks to all points 3 dB below = 6.8 mm
Ratio of SAR at M2 to SAR at M1 = 61%
Maximum value of SAR (measured) = 2.00 W/kg

Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 15.73 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.23 W/kg
SAR(1 g) = 0.860 W/kg; SAR(10 g) = 0.291 W/kg
Smallest distance from peaks to all points 3 dB below = 8.8 mm
Ratio of SAR at M2 to SAR at M1 = 60.5%
Maximum value of SAR (measured) = 1.87 W/kg



0 dB = 1.87 W/kg = 2.73 dBW/kg

Date: 2022/6/2

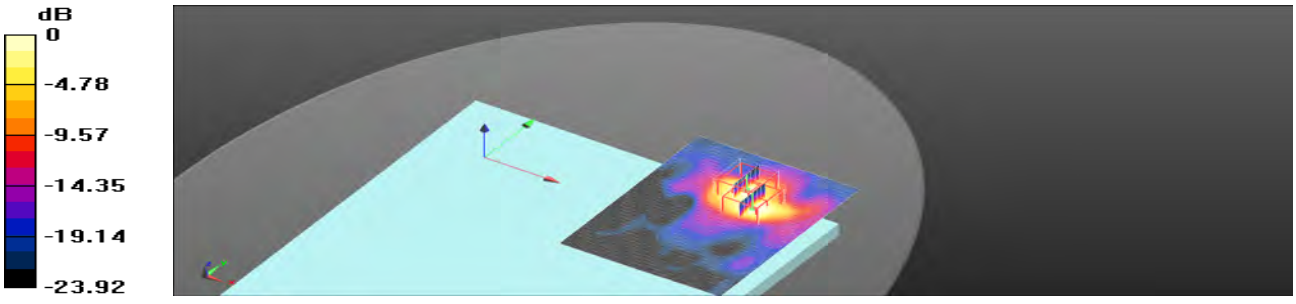
ID: 029
Report No. : TESA2204000062E5
WLAN 802.11ax(80M) 5.3G_Body_Back Surface_CH 58_0mm_Aux
Communication System: WLAN; Frequency: 5290 MHz; Duty Cycle: 1:1.016
Medium parameters used: f = 5290 MHz; σ = 4.773 S/m; ε_r = 36.12; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.3°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(5.05, 5.05, 5.05); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.24 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 8.899 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.90 W/kg
SAR(1 g) = 1.13 W/kg; SAR(10 g) = 0.397 W/kg
Smallest distance from peaks to all points 3 dB below = 7.4 mm
Ratio of SAR at M2 to SAR at M1 = 60%
Maximum value of SAR (measured) = 2.16 W/kg
Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 8.899 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 4.12 W/kg
SAR(1 g) = 1.05 W/kg; SAR(10 g) = 0.351 W/kg
Smallest distance from peaks to all points 3 dB below = 6.4 mm
Ratio of SAR at M2 to SAR at M1 = 55.2%
Maximum value of SAR (measured) = 2.12 W/kg



0 dB = 2.12 W/kg = 3.26 dBW/kg

Date: 2022/6/3

ID: 030
Report No. : TESA2204000062E5
WLAN 802.11ac(80M) 5.6G_Body_Back Surface_CH 138_0mm_Aux
Communication System: WLAN; Frequency: 5690 MHz; Duty Cycle: 1:1.016
Medium parameters used: f = 5690 MHz; σ = 5.174 S/m; ε_r = 35.576; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2°C; Liquid temperature: 21.9°C

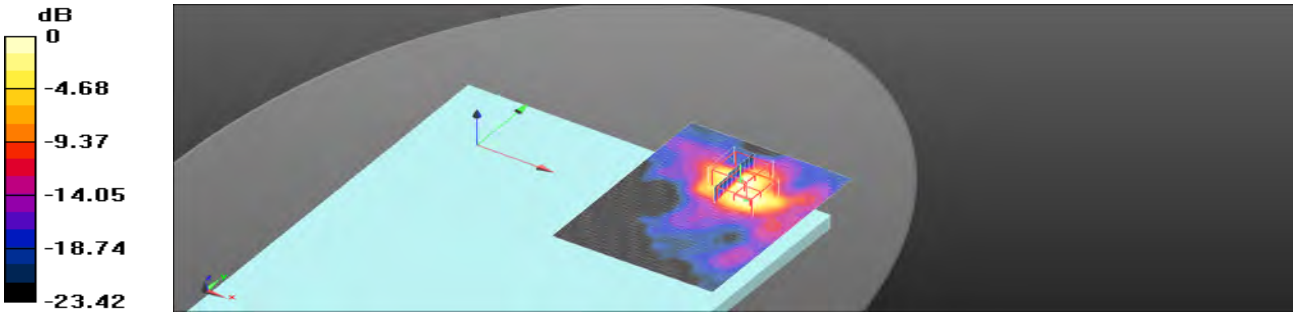
DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.65, 4.65, 4.65); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (101x131x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.02 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.745 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 4.31 W/kg
SAR(1 g) = 0.996 W/kg; SAR(10 g) = 0.328 W/kg
Smallest distance from peaks to all points 3 dB below = 7.4 mm
Ratio of SAR at M2 to SAR at M1 = 52.3%
Maximum value of SAR (measured) = 1.98 W/kg

Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.745 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 4.21 W/kg
SAR(1 g) = 0.896 W/kg; SAR(10 g) = 0.325 W/kg
Smallest distance from peaks to all points 3 dB below = 8.8 mm
Ratio of SAR at M2 to SAR at M1 = 53%
Maximum value of SAR (measured) = 1.94 W/kg



0 dB = 1.94 W/kg = 2.88 dBW/kg

Date: 2022/6/3

ID: 031
Report No. : TESA2204000062E5
WLAN 802.11n(40M) 5.8G_Body_Back Surface_CH 159_0mm_Aux
Communication System: WLAN; Frequency: 5795 MHz; Duty Cycle: 1:1.012
Medium parameters used: f = 5795 MHz; σ = 5.281 S/m; ε_r = 35.456; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2°C; Liquid temperature: 21.9°C

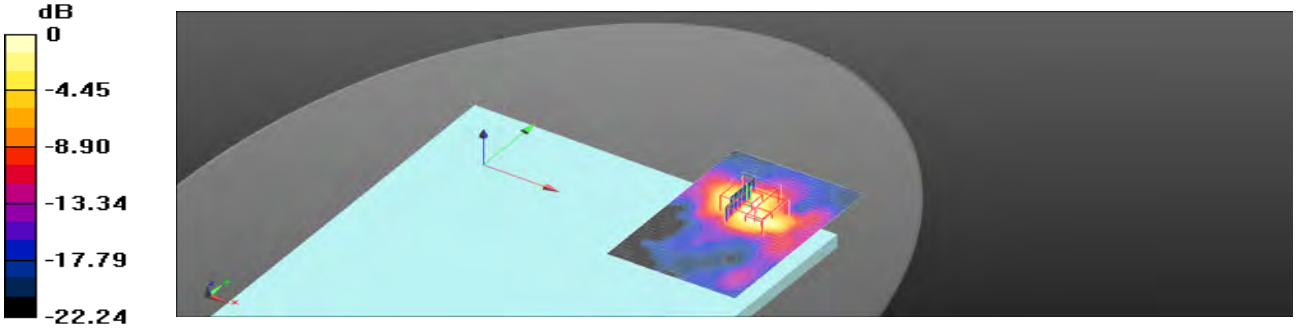
DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.65, 4.65, 4.65); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x121x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 1.78 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.733 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 4.08 W/kg
SAR(1 g) = 0.855 W/kg; SAR(10 g) = 0.302 W/kg
Smallest distance from peaks to all points 3 dB below = 8.4 mm
Ratio of SAR at M2 to SAR at M1 = 51.6%
Maximum value of SAR (measured) = 1.88 W/kg

Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.733 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 4.01 W/kg
SAR(1 g) = 0.929 W/kg; SAR(10 g) = 0.336 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 51.3%
Maximum value of SAR (measured) = 1.88 W/kg



0 dB = 1.88 W/kg = 2.74 dBW/kg

Date: 2022/6/3

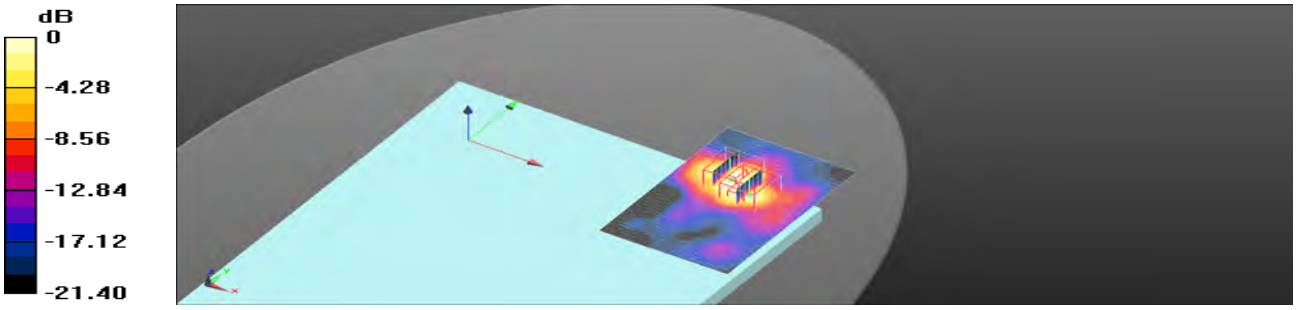
ID: 032
Report No. : TESA2204000062E5
WLAN 802.11ac(80M) 5.8G_Body_Back Surface_CH 155_0mm_Aux
Communication System: WLAN; Frequency: 5775 MHz; Duty Cycle: 1:1.016
Medium parameters used: f = 5775 MHz; σ = 5.261 S/m; ε_r = 35.479; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.65, 4.65, 4.65); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x121x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 2.03 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.104 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 4.37 W/kg
SAR(1 g) = 1 W/kg; SAR(10 g) = 0.362 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 51.9%
Maximum value of SAR (measured) = 1.99 W/kg
Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 3.104 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 3.62 W/kg
SAR(1 g) = 0.937 W/kg; SAR(10 g) = 0.308 W/kg
Smallest distance from peaks to all points 3 dB below = 6.1 mm
Ratio of SAR at M2 to SAR at M1 = 55.3%
Maximum value of SAR (measured) = 1.78 W/kg



0 dB = 1.78 W/kg = 2.51 dBW/kg

6. SAR System Performance Verification

Date: 2022/5/31

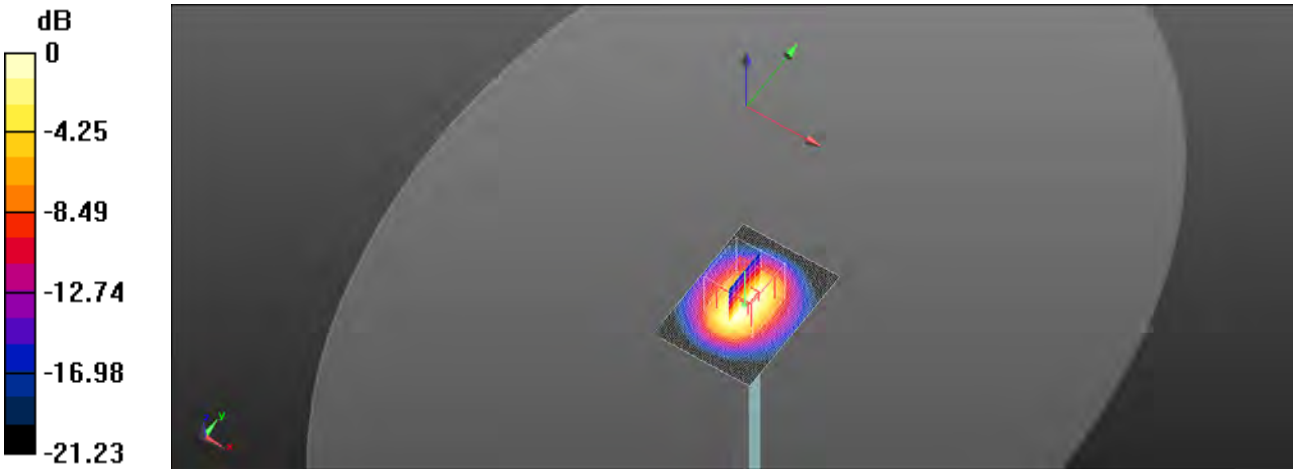
Report No. : TESA2204000062E5
Dipole 2450 MHz_SN:727
Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: f = 2450 MHz; σ = 1.814 S/m; ε_r = 39.35; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.5°C; Liquid temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(7.39, 7.39, 7.39); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (51x71x1): Interpolated grid: dx=12 mm, dy=12 mm
Maximum value of SAR (interpolated) = 22.8 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 107.1 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 27.5 W/kg
SAR(1 g) = 13.6 W/kg; SAR(10 g) = 6.41 W/kg
Smallest distance from peaks to all points 3 dB below = 9.2 mm
Ratio of SAR at M2 to SAR at M1 = 50.1%
Maximum value of SAR (measured) = 20.7 W/kg



0 dB = 20.7 W/kg = 13.17 dBW/kg

Date: 2022/6/1

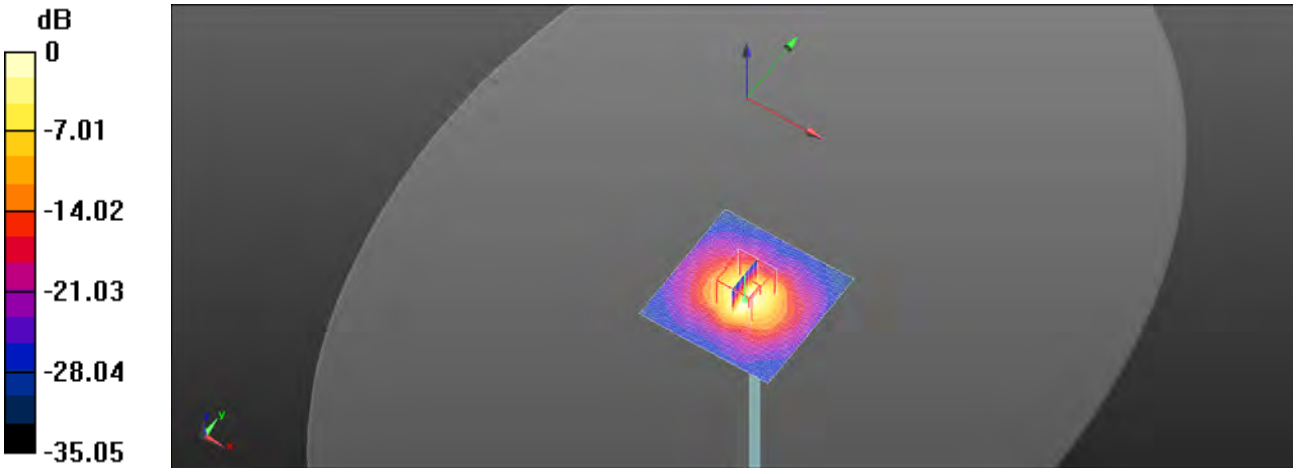
Report No. : TESA2204000062E5
Dipole 5250 MHz_SN:1023
Communication System: CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5250 MHz; σ = 4.721 S/m; ε_r = 36.079; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.1°C; Liquid temperature: 21.6°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(5.05, 5.05, 5.05); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x81x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 16.1 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 63.65 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 31.4 W/kg
SAR(1 g) = 8.27 W/kg; SAR(10 g) = 2.37 W/kg
Smallest distance from peaks to all points 3 dB below = 7.6 mm
Ratio of SAR at M2 to SAR at M1 = 56.6%
Maximum value of SAR (measured) = 16.4 W/kg



0 dB = 16.4 W/kg = 12.15 dBW/kg

Date: 2022/6/2

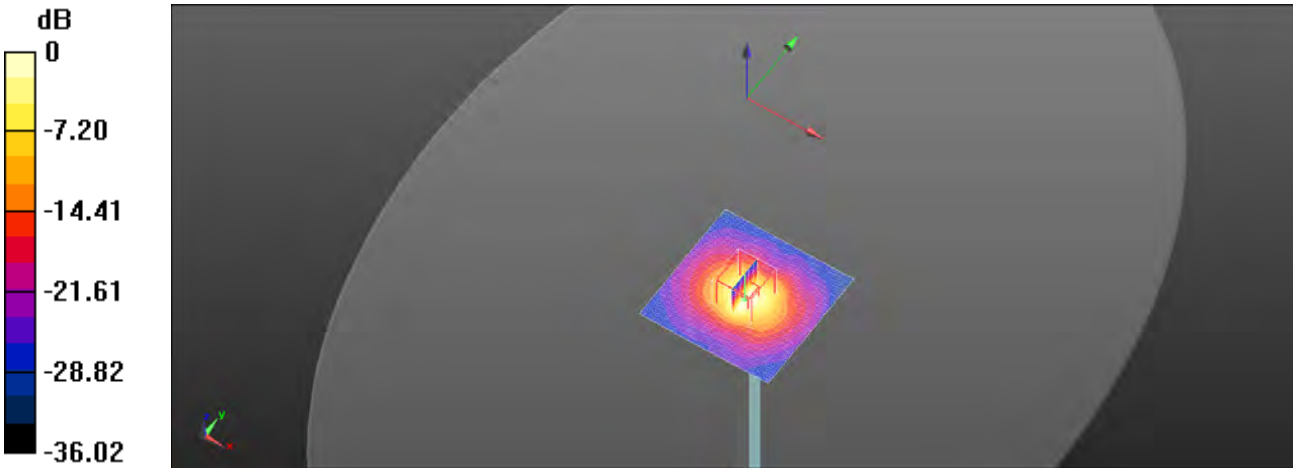
Report No. : TESA2204000062E5
Dipole 5250 MHz_SN:1023
Communication System: CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5250 MHz; σ = 4.732 S/m; ε_r = 36.166; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.3°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(5.05, 5.05, 5.05); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (81x81x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 15.3 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 61.76 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 29.9 W/kg
SAR(1 g) = 7.91 W/kg; SAR(10 g) = 2.35 W/kg
Smallest distance from peaks to all points 3 dB below = 7.6 mm
Ratio of SAR at M2 to SAR at M1 = 56.7%
Maximum value of SAR (measured) = 15.7 W/kg



0 dB = 15.7 W/kg = 11.96 dBW/kg

Date: 2022/6/3

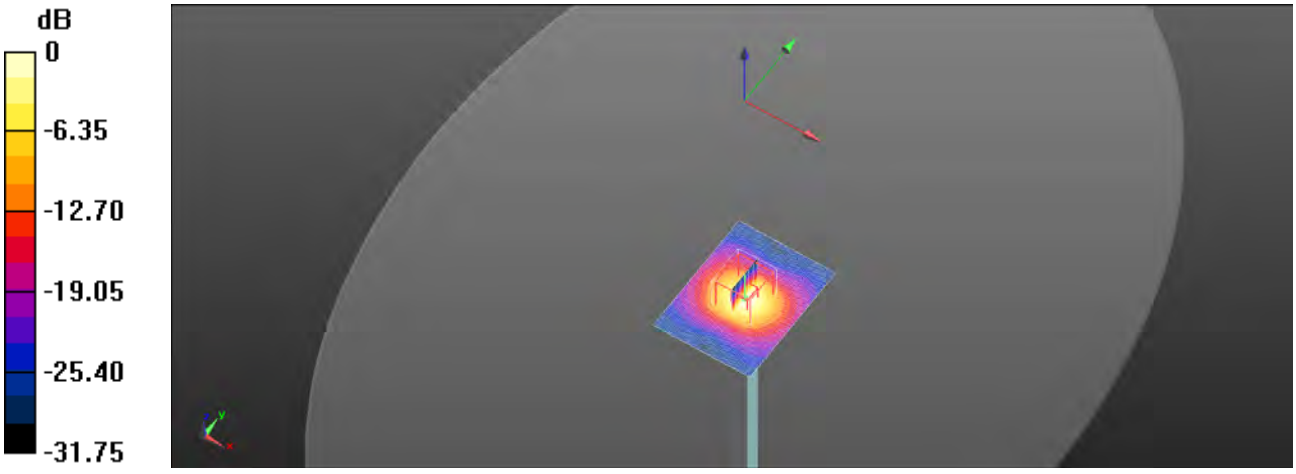
Report No. : TESA2204000062E5
Dipole 5600 MHz_SN:1023
Communication System: CW; Frequency: 5600 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5600 MHz; σ = 5.081 S/m; ε_r = 35.679; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.6, 4.6, 4.6); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 17.5 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 63.15 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 35.7 W/kg
SAR(1 g) = 8.73 W/kg; SAR(10 g) = 2.47 W/kg
Smallest distance from peaks to all points 3 dB below = 7.4 mm
Ratio of SAR at M2 to SAR at M1 = 54.4%
Maximum value of SAR (measured) = 18.0 W/kg



0 dB = 18.0 W/kg = 12.56 dBW/kg

Date: 2022/6/3

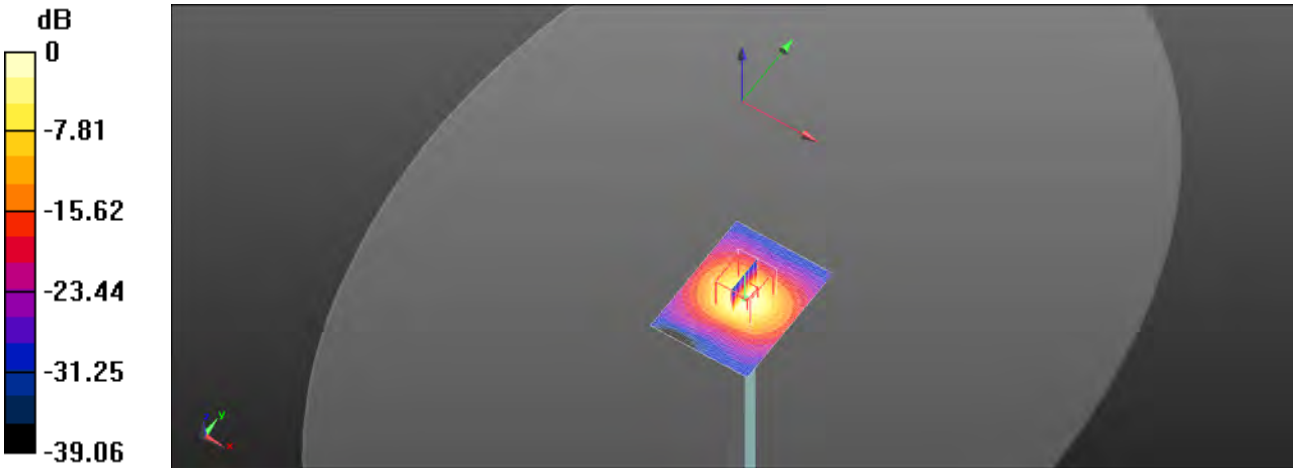
Report No. : TESA2204000062E5
Dipole 5750 MHz_SN:1023
Communication System: CW; Frequency: 5750 MHz; Duty Cycle: 1:1
Medium parameters used: f = 5750 MHz; σ = 5.235 S/m; ε_r = 35.507; ρ = 1000 kg/m^3
Phantom section: Flat Section
Ambient temperature: 22.2°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 - SN3938; ConvF(4.65, 4.65, 4.65); Calibrated: 2022/1/25
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2022/3/23
- Phantom: ELI
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm
Maximum value of SAR (interpolated) = 16.6 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 59.87 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 34.2 W/kg
SAR(1 g) = 8.06 W/kg; SAR(10 g) = 2.33 W/kg
Smallest distance from peaks to all points 3 dB below = 7.9 mm
Ratio of SAR at M2 to SAR at M1 = 52.8%
Maximum value of SAR (measured) = 16.8 W/kg



0 dB = 16.8 W/kg = 12.25 dBW/kg

7. Uncertainty Budget

Measurement Uncertainty evaluation template for DUT SAR test (3-6G)

A	c	D	e		f	g	h=c * f / e	i=c * g / e	k
Source of Uncertainty	Tolerance/ Uncertainty	Probability Distributio	Div	Div Value	ci (1g)	ci (10g)	Standard uncertainty	Standard uncertainty	vi, or Veff
Measurement system									
Probe calibration	6.55%	N	1	1	1	1	6.55%	6.55%	∞
Isotropy , Axial	3.50%	R	√3	1.732	1	1	2.02%	2.02%	∞
Isotropy, Hemispherical	9.60%	R	√3	1.732	1	1	5.54%	5.54%	∞
Modulation Response	2.40%	R	√3	1.732	1	1	1.40%	1.40%	∞
Boundary Effect	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	∞
Detection Limits	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Readout Electronics	0.30%	N	1	1	1	1	0.30%	0.30%	∞
Response time	0.80%	R	√3	1.732	1	1	0.46%	0.46%	∞
Integration Time	2.60%	R	√3	1.732	1	1	1.50%	1.50%	∞
Measurement drift (class A evaluation)	1.75%	R	√3	1.732	1	1	1.01%	1.01%	∞
RF ambient condition - noise	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
RF ambient conditions - reflections	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
Probe positioner Mechanical restrictions	0.40%	R	√3	1.732	1	1	0.23%	0.23%	∞
Probe Positioning with respect to phantom shell	2.90%	R	√3	1.732	1	1	1.67%	1.67%	∞
Post-processing	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Max SAR Eval	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Test Sample related									
Test sample positioning	2.90%	N	1	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	N	1	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	√3	1.732	1	1	2.89%	2.89%	∞
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	∞
Liquid permittivity (mea.)	0.66%	N	1	1	0.64	0.43	0.42%	0.28%	M
Liquid Conductivity (mea.)	0.55%	N	1	1	0.6	0.49	0.33%	0.27%	M
Combined standard uncertainty		RSS					11.73%	11.71%	
Expant uncertainty (95% confidence interval), K=2							23.46%	23.43%	

Measurement Uncertainty evaluation template for DUT SAR test (0.3-3G)

A	c	D	e		f	g	h=c * f / e	i=c * g / e	k
Source of Uncertainty	Tolerance/ Uncertainty	Probability Distributio	Div	Div Value	ci (1g)	ci (10g)	Standard uncertainty	Standard uncertainty	vi, or Veff
Measurement system									
Probe calibration	6.00%	N	1	1	1	1	6.00%	6.00%	∞
Isotropy , Axial	3.50%	R	√3	1.732	1	1	2.02%	2.02%	∞
Isotropy, Hemispherical	9.60%	R	√3	1.732	1	1	5.54%	5.54%	∞
Modulation Response	2.40%	R	√3	1.732	1	1	1.40%	1.40%	∞
Boundary Effect	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	∞
Detection Limits	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Readout Electronics	0.30%	N	1	1	1	1	0.30%	0.30%	∞
Response time	0.80%	R	√3	1.732	1	1	0.46%	0.46%	∞
Integration Time	2.60%	R	√3	1.732	1	1	1.50%	1.50%	∞
Measurement drift (class A evaluation)	1.75%	R	√3	1.732	1	1	1.01%	1.01%	∞
RF ambient condition - noise	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
RF ambient conditions - reflections	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
Probe positioner Mechanical restrictions	0.40%	R	√3	1.732	1	1	0.23%	0.23%	∞
Probe Positioning with respect to phantom shell	2.90%	R	√3	1.732	1	1	1.67%	1.67%	∞
Post-processing	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Max SAR Eval	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Test Sample related									
Test sample positioning	2.90%	N	1	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	N	1	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	√3	1.732	1	1	2.89%	2.89%	∞
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	∞
Liquid permittivity (mea.)	0.38%	N	1	1	0.64	0.43	0.24%	0.16%	M
Liquid Conductivity (mea.)	0.88%	N	1	1	0.6	0.49	0.53%	0.43%	M
Combined standard uncertainty		RSS					11.43%	11.42%	
Expant uncertainty (95% confidence interval), K=2							22.86%	22.83%	

Appendixes

Refer to separated files for the following appendixes.

TESA2204000062E5 SAR_Appendix A Photographs

TESA2204000062E5 SAR_Appendix B DAE & Probe Cal. Certificate

TESA2204000062E5 SAR_Appendix C Phantom Description & Dipole Cal. Certificate

- End of report -