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SAR TEST REPORT





The following samples were submitted and identified on behalf of the client as:

Product Name Notebook Computer

Brand Name HP

Model No. HSN-I22C **Prepared for** HP Inc.

1501 Page Mill Road, Palo Alto CA 94304 USA

Standards IEEE/ANSI C95.1-1992, IEEE 1528-2013,

> KDB248227D01v02r02,KDB865664D01v01r04, KDB865664D02v01r02,KDB447498D01v06.

KDB616217D04v01r02,

FCC ID B94-AX200NGWT

Date of Receipt Dec. 28, 2018

Date of Test(s) Apr. 08, 2019 ~ Apr. 12, 2019

Date of Issue Jun. 05, 2019

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.

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Signed on behalf of SGS

Clerk / Ruby Ou	Supervisor / Afu Chen	Asst. Manager / John Yeh
Ruby Ou	afor Chen	John Teh

Date: Jun. 05, 2019

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Revision History

Report Number	Revision	Description	Issue Date
EN/2019/40007	Rev.00	Initial creation of document	Apr. 22, 2019
EN/2019/40007	Rev.01	Modify ch1.3	May. 20, 2019
EN/2019/40007	Rev.02	Add section 1.6	Jun. 05, 2019

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1. General Information

1.1 Testing Laboratory

SGS Taiwan Ltd. Electronics & Communication Laboratory						
1F, No. 8, Alley 15, Lane 120, Sec. 1, NeiHu Rd., NeiHu Dist., Taipei City, Taiwan 11493.						
Tel	+886-2-2299-3279					
Fax	+886-2-2298-0488					
Internet	http://www.tw.sgs.com/					

1.2 Details of Applicant

Company Name	HP Inc.
Company Address	1501 Page Mill Road, Palo Alto CA 94304 USA

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1.3 Description of EUT

General Information of Host

General Information of	HOST:			
Equipment Under Test	Notebook Computer			
Brand Name	HP			
Model No.	HSN-I22C			
Integrated Module	Brand Name : Intel Model Name : AX200NGW			
FCC ID	B94-AX200NGWT			
Mode of Operation	⊠WLAN802.11 a/b/g/n/ac/ax(20M/40l ⊠Bluetooth	M/80/16	60M)	
Duty Cycle	WLAN802.11 a/b/g/n/ac/ax(20M/40M/80/160M)		1	
Duty Cycle	Bluetooth		1	
	WLAN802.11 b/g/n/ax(20M)	2412	_	2472
	WLAN802.11 n/ax(40M)	2422	_	2462
	WLAN802.11 a/n/ac/ax(20M) 5.2G	5180	_	5240
	WLAN802.11 n/ac/ax(40M) 5.2G	5190	_	5230
	WLAN802.11 ac/ax(80M) 5.2G	5210		
	WLAN802.11 ac/ax(160M) 5.2G	5250		
	WLAN802.11 a/n/ac/ax(20M) 5.3G	5260	_	5320
TX Frequency Range (MHz)	WLAN802.11 n/ac/ax(40M) 5.3G	5270	_	5310
(1711 12)	WLAN802.11 ac/ax(80M) 5.3G		5290)
	WLAN802.11 a/n/ac/ax(20M) 5.6G	5500	_	5720
	WLAN802.11 n/ac/ax(40M) 5.6G	5510	_	5710
	WLAN802.11 ac/ax(80M) 5.6G	5530	_	5690
	WLAN802.11 ac/ax(160M) 5.6G		5670)
	WLAN802.11 a/n/ac/ax(20M) 5.8G	5745	_	5825
	WLAN802.11 n/ax(40M)/ac/ax(40M) 5.8G	5755	_	5795

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TX Trequency Range	WLAN802.11 ac/ax(80M) 5.8G		5775	
(MHz)	Bluetooth	2402	_	2480
	WLAN802.11 b/g/n/ax(20M)	1	_	13
	WLAN802.11 n/ax(40M)	3	_	11
	WLAN802.11 a/n/ac/ax(20M) 5.2G	36	_	48
	WLAN802.11 n/ac/ax(40M) 5.2G	38	_	46
	WLAN802.11 ac/ax(80M) 5.2G		42	
	WLAN802.11 ac/ax(160M) 5.2G		50	
	WLAN802.11 a/n/ac/ax(20M) 5.3G	52	_	64
	WLAN802.11 n/ac/ax(40M) 5.3G	54	_	62
Channel Number (ARFCN)	WLAN802.11 ac/ax(80M) 5.3G		58	
(vii ti Gi t)	WLAN802.11 a/n/ac/ax(20M) 5.6G	100	_	144
	WLAN802.11 n/ac/ax(40M) 5.6G	102	_	142
	WLAN802.11 ac/ax(80M) 5.6G	106	_	138
	WLAN802.11 ac/ax(160M) 5.6G		144	
	WLAN802.11 a/n/ac/ax(20M) 5.8G	149	_	165
	WLAN802.11 n/ac/ax(40M) 5.8G	151	_	159
	WLAN802.11 ac/ax(80M) 5.8G		155	
	Bluetooth	0	_	78

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AWAN

	Max. SAR (1g) (Unit: W/Kg)									
Antenna	Band	Measured	Reported	Channel	Position					
	WLAN 802.11b	0.48	0.48	1	Top side					
	WLAN 802.11ac(80M) 5.2G	0.34	0.35	42	Top side					
	WLAN 802.11ac(80M) 5.3G	0.36	0.36	58	Top side					
Main	WLAN 802.11ac(80M) 5.6G	0.77	0.78	138	Top side					
	WLAN 802.11ac(160M) 5.6G	0.74	0.76	114	Top side					
	WLAN 802.11ac(80M) 5.8G	0.81	0.81	155	Top side					
	WLAN 802.11b	0.56	0.56	11	Top side					
	WLAN 802.11n(40M)	0.68	0.70	4	Top side					
	Bluetooth(GFSK)	0.06	0.06	39	Top side					
_	WLAN 802.11ac(80M) 5.2G	0.79	0.79	42	Top side					
Aux	WLAN 802.11ac(80M) 5.3G	0.64	0.64	58	Top side					
	WLAN 802.11ac(80M) 5.6G	0.48	0.48	138	Top side					
	WLAN 802.11ac(160M) 5.6G	0.52	0.52	114	Top side					
	WLAN 802.11ac(80M) 5.8G	0.44	0.44	155	Top side					

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HONG-BO

	Max. SAR (1g) (Unit: W/Kg)									
Antenna	Band	Measured	Reported	Channel	Position					
	WLAN 802.11b	0.80	0.80	1	Top side					
	WLAN 802.11ac(80M) 5.2G	0.73	0.74	42	Top side					
	WLAN 802.11ac(80M) 5.3G	0.79	0.80	58	Top side					
Main	WLAN 802.11ac(80M) 5.6G	1.19	1.20	138	Top side					
	WLAN 802.11ac(160M) 5.6G	1.02	1.04	114	Top side					
	WLAN 802.11ac(80M) 5.8G	1.16	1.17	155	Top side					
	WLAN 802.11b	0.75	0.76	11	Top side					
	WLAN 802.11n(40M)	0.96	0.98	4	Top side					
	Bluetooth(GFSK)	0.12	0.13	39	Top side					
_	WLAN 802.11ac(80M) 5.2G	1.01	1.02	42	Top side					
Aux	WLAN 802.11ac(80M) 5.3G	1.18	1.19	58	Top side					
	WLAN 802.11ac(80M) 5.6G	0.63	0.63	138	Top side					
	WLAN 802.11ac(160M) 5.6G	0.61	0.62	114	Top side					
	WLAN 802.11ac(80M) 5.8G	0.76	0.77	155	Top side					

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Antenna Information

Antoma	Antonia information										
Tablet mode											
Vendor		HONG-BO									
Antenna	Main Aux										
Part Number	6036B0233101(260-27273)					6036B0233001(260-27272)					
Frequency	2.4	5.2	5.3	5.6	5.8	2.4 5.2 5.3 5.6 5.8				5.8	
Gain (dBi)	-2.89	-0.32	-1.11	-2.04	1.54	-1.07	-1.65	-1.65	-1.25	-0.03	

Laptop mode										
Vendor		HONG-BO								
Antenna	Main Aux									
Part Number		6036B0233101(260-27273)					6036B0233001(260-27272)			
Frequency	2.4	5.2	5.3	5.6	5.8	2.4 5.2 5.3 5.6 5.8				5.8
Gain (dBi)	0.49	2.58	2.18	1.48	1.19	-1.13	1.32	1.99	1.89	1.89

Tablet mode											
Vendor		AWAN Corporation									
Antenna	Main							Aux			
Part Number	6036B0234201(ANP6Y-100280)					6	036B0234	4101(ANP	6Y-100279)	
Frequency	2.4 5.2 5.3 5.6 5.8 2.4 5.2 5.3 5.6				5.8						
Gain (dBi)	-3.21	0.29	-0.84	-0.18	-0.18	-3.68	-2.82	-2.44	-1.62	-1.27	

	Laptop mode									
Vendor		AWAN Corporation								
Antenna		Main						Aux		
Part Number	6	036B0234	1201(ANP	6Y-100280))	6	036B0234	1101(ANP	6Y-100279)
Frequency	2.4	2.4 5.2 5.3 5.6 5.8			5.8	2.4	5.2	5.3	5.6	5.8
Gain (dBi)	-2.08	0.99	-0.17	-0.68	-1.44	0.18	-1.48	-1.36	0.25	0.44

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WLAN802.11 a/b/g/n/ax(20M/40M)/ac/ax(20M/40M/80M/160M) conducted power table:

Antenna	SI	SO	MIMO
Band	Chain 0	Chain 1	Chain0+1
WLAN802.11b	V	V	-
WLAN802.11g	V	V	
WLAN802.11n(20M)	V	V	V
WLAN802.11n(40M)	V	V	V
WLAN802.11ax(20M)	V	V	V
WLAN802.11ax(40M)	V	V	V
WLAN802.11a	V	V	ı
WLAN802.11n(20M) 5G	V	V	V
WLAN802.11n(40M) 5G	V	V	V
WLAN802.11ac(20M) 5G	V	V	V
WLAN802.11ac(40M) 5G	V	V	V
WLAN802.11ac(80M) 5G	V	V	V
WLAN802.11ac(160M) 5G	V	V	V
WLAN802.11ax(20M) 5G	V	V	V
WLAN802.11ax(40M) 5G	V	V	V
WLAN802.11ax(80M) 5G	V	V	V
WLAN802.11ax(160M) 5G	V	V	V

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Tablet mode

		Aux	x antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		1	2412		17.50	17.45
		6	2437		17.50	17.44
	802.11b	11	2462	1Mbps	17.50	17.46
		12	2467		17.50	17.40
		13	2472		15.25	15.24
		1	2412		17.00	16.95
		2	2417		17.50	17.41
		6	2437		17.50	17.42
	802.11g	10	2457	6Mbps	17.50	17.38
		11	2462		16.00	15.90
		12	2467		13.50	13.41
		13	2472		11.50	11.42
2450 MHz		1	2412		17.00	16.90
2430 1011 12		2	2417		17.50	17.43
		6	2437		17.50	17.40
	802.11n20-HT0	10	2457	MCS0	17.50	17.41
		11	2462		16.00	15.90
		12	2467		13.50	13.42
		13	2472		11.50	11.38
		1	2412		17.00	16.90
		2	2417		17.50	17.38
		6	2437		17.50	17.41
	802.11ax20-HE0	10	2457	MCS0	17.50	17.40
		11	2462		16.00	15.94
		12	2467		13.50	13.41
		13	2472		11.50	11.40

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	Aux antenna									
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)				
		3	2422		16.50	16.40				
		4	2427		17.50	17.40				
		6	2437		16.75	16.72				
	802.11n40-HT0	8	2447	MCS0	16.00	16.00				
		9	2452		15.50	15.49				
		10	2457		12.50	12.38				
2450 MHz		11	2462		12.00	11.97				
2430 1011 12		3	2422		16.50	16.44				
		4	2427		17.50	17.42				
		6	2437		16.75	16.69				
	802.11ax40-HE0	8	2447	MCS0	16.00	15.92				
		9	2452		15.50	15.38				
		10 2457		12.50	12.39					
		11	2462		12.00	11.94				

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		Aux	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		36	5180		15.50	15.40
	802.11a	40	5200	6Mbps	15.50	15.42
	002.11a	44	5220	Olvibbs	15.50	15.41
		48	5240		15.50	15.43
		36	5180		15.50	15.41
	802.11n20-HT0	40	5200	MCS0	15.50	15.46
	002.111120-1110	44	5220	IVICOU	15.50	15.45
		48	5240		15.50	15.44
		36	5180		15.50	15.47
	802.11ac20-VHT0	40	5200	MCS0	15.50	15.41
	002.118020-11110	44	5220	IVICOU	15.50	15.40
		48	5240		15.50	15.43
5.15-5.25 GHz		36	5180		15.50	15.44
0.10-0.20 0112	802.11ax20-HE0	40	5200	MCS0	15.50	15.45
	002.11ax20-11L0	44	5220	IVICOU	15.50	15.43
		48	5240		15.50	15.41
	802.11n40-HT0	38	5190	MCS0	15.50	15.42
	602.1111 4 0-1110	46	5230	MCSU	15.50	15.44
	802.11ac40-VHT0	38	5190	MCS0	15.50	15.42
	002.11ac40-V1110	46	5230	IVICOU	15.50	15.40
	802.11ax40-HE0	38	5190	MCS0	15.50	15.44
	002.11aA+0-11LU	46	5230	IVICOU	15.50	15.46
	802.11ac80-VHT0	42	5210	MCS0	15.50	15.48
	802.11ax80-HE0	42	5210	MCS0	15.50	15.46
	802.11ac160-VHT0	50	5250	MCS0	14.50	14.44
	802.11ax160-HE0	50	5250	MCS0	14.50	14.46

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		Aux	antenna					
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)		
		52	5260		15.50	Average power (dBm) 15.40 15.46 15.41 15.44 15.41 15.42 15.45 15.47 15.44 15.40 15.47 15.43 15.47 15.46 15.47 15.48 15.47 15.43 15.47		
	802.11a	56	5280	GN/hna	15.50	Average power (dBm) 15.40 15.46 15.41 15.44 15.41 15.42 15.45 15.47 15.44 15.40 15.47 15.43 15.47 15.46 15.45 15.47		
	002.11a	60	5300	6Mbps	15.50	15.41		
		64	5320		15.50	15.44		
		52	5260		15.50	15.41		
	802.11n20-HT0	56	5280	MCS0	15.50	15.42		
	002.11112U-Π1U	60	5300	IVICSU	15.50	15.45		
		64	5320		15.50	15.47		
		52	5260		15.50	15.44		
	802.11ac20-VHT0	56	5280	MCS0	15.50	15.40		
	002.118020-11110	60	5300	IVICOU	15.50	15.47		
5.25-5.35 GHz		64	5320		15.50	15.43		
0.20-0.00 0112		52	5260		15.50	15.47		
	802.11ax20-HE0	56	5280	MCS0	15.50	15.46		
	002.11ax20-11L0	60	5300	IVICOU	15.50	15.45		
		64	5320		15.50	15.41		
	802.11n40-HT0	54	5270	MCS0	15.50	15.43		
	002.111140-1110	62	5310	IVICOU	15.50	15.47		
	802.11ac40-VHT0	54	5270	MCS0	15.50	15.45		
	002.11a040-VH10	62	5310	IVICOU	15.50	15.42		
	802.11ax40-HE0	54	5270	MCS0	15.50	15.47		
	002.11aA+0-11LU	62	5310	IVICOU	15.50	15.43		
	802.11ac80-VHT0	58	5290	MCS0	15.50	15.48		
	802.11ax80-HE0	58	5290	MCS0	15.50	15.45		

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		Aux a	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		100	5500		15.50	15.44
		104	5520		15.50	15.41
	802.11a	116	5580	6Mbpa	15.50	15.42
	002.11d	120	5600	6Mbps	15.50	15.43
		136	5680		15.50	15.45
		140	5700		15.50	15.46
		100	5500		15.50	15.42
		104	5520		15.50	15.47
		116	5580		15.50	15.45
	802.11n20-HT0	02.11n20-HT0 120 5600 MCS0	MCS0	15.50	15.40	
		136	5680		15.50	15.46
		140	5700		15.50	15.44
		144	5720		15.50	15.41
5600 MHz		100	5500		15.50	15.46
		104	5520		15.50	15.44
		116	5580		15.50	15.41
	802.11ac20-VHT0	120	5600	MCS0	15.50	15.45
		136	5680		15.50	15.42
		140	5700		15.50	15.40
		144	5720		15.50	15.43
		100	5500		15.50	15.43
		104	5520		15.50	15.46
		116	5580		15.50	15.44
	802.11ax20-HE0	120	5600	MCS0	15.50	15.48
		136	5680		15.50	15.41
		140	5700		15.50	15.45
		144	5720		15.50	15.42

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		Aux	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		102	5510		15.50	15.40
		110	5550		15.50	15.41
	802.11n40-HT0	118	5590	MCS0	15.50	15.43
		134	5670		15.50	15.46
		142	5710		15.50	15.44
		102	5510		15.50	15.43
		110	5550		15.50	15.46
	802.11ac40-VHT0	118	5590	MCS0	15.50	15.42
		134	5670		15.50	15.40
		142	5710		15.50	15.44
		102	5510		15.50	15.43
5600 MHz		110	5550		15.50	15.44
	802.11ax40-HE0	118	5590	MCS0	15.50	15.41
		134	5670		15.50	15.45
		142	5710		15.50	15.46
		106	5530		15.50	15.46
	802.11ac80-VHT0	122	5610	MCS0	15.50	15.43
		138	5690		15.50	15.49
		106	5530		15.50	15.42
	802.11ax80-HE0	122	5610	MCS0	15.50	15.40
		138	5690		15.50	15.43
	802.11ac160-VHT0	114	5570	MCS0	15.50	15.41
	802.11ax160-HE0	114	5570	MCS0	15.00	14.95

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		Aux a	antenna			
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		149	5745		15.50	15.41
	802.11a	157	5785	6Mbps	15.50	15.42
		165	5825		15.50	15.43
		149	5745		15.50	15.42
	802.11n20-HT0	157	5785	MCS0	15.50	15.44
		165	5825		15.50	15.43
		149	5745		15.50	15.48
	802.11ac20-VHT0	157	5785	MCS0	15.50	15.42
		165	5825		15.50	15.44
5800 MHz		149	5745		15.50	15.41
3000 1011 12	802.11ax20-HE0	157	5785	MCS0	15.50	15.44
		165	5825		15.50	15.45
	802.11n40-HT0	151	5755	MCS0	15.50	15.46
	002.111140-1110	159	5795	IVICOU	15.50	15.41
	802.11ac40-VHT0	151	5755	MCS0	15.50	15.44
	002.11a040-VH10	159	5795	IVICOU	15.50	15.43
	802.11ax40-HE0	151	5755	MCS0	15.50	15.42
	002.11ax40-11L0	159	5795	IVICOU	15.50	15.41
,	802.11ac80-VHT0	155	5775	MCS0	15.50	15.49
	802.11ax80-HE0	155	5775	MCS0	15.50	15.44

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		Mair	n antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		1	2412		17.50	17.50
		6	2437		17.50	17.47
	802.11b	11	2462	1Mbps	17.50	17.46
		12	2467		17.00	17.00
		13	2472		14.50	14.42
		1	2412		17.00	16.99
		2	2417		17.50	17.48
	802.11g	6	2437		17.50	17.47
		10	2457	6Mbps	17.50	17.44
		11	2462		16.00	15.97
		12	2467		13.50	13.44
		13	2472		11.50	11.43
2450 MHz		1	2412		17.00	16.94
2430 1011 12		2	2417		17.50	17.45
		6	2437		17.50	17.42
	802.11n20-HT0	10	2457	MCS0	17.50	17.44
		11	2462		16.00	15.93
		12	2467		13.50	13.49
		13	2472		11.50	11.49
		1	2412		17.00	16.99
		2	2417		17.50	17.44
		6	2437		17.50	17.47
	802.11ax20-HE0	10	2457	MCS0	17.50	17.48
		11	2462		16.00	15.99
		12	2467		13.50	13.42
		13	2472		11.50	11.45

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	Main antenna									
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)				
		3	2422		16.50	16.49				
		4	2427		17.00	16.94				
		6	2437		16.75	16.69				
	802.11n40-HT0	8	2447	MCS0	16.00	15.99				
		9	2452		15.25	15.23				
		10	2457		12.50	12.45				
2450 MHz		11	2462		11.50	11.47				
2430 1011 12		3	2422		16.50	16.46				
		4	2427		17.00	16.95				
		6	2437		16.75	16.70				
	802.11ax40-HE0	8	2447	MCS0	16.00	15.95				
		9	2452		15.25	15.24				
		10	2457		12.50	12.48				
		11	2462		11.50	11.42				

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		Main a	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		36	5180		15.50	15.36
	802.11a	40	5200	6Mbps	15.50	15.38
	002.11a	44	5220	Olvibbs	15.50	15.39
		48	5240		15.50	15.40
		36	5180		15.50	15.38
	802.11n20-HT0	40	5200	MCS0	15.50	15.35
	002.111120-1110	44	5220	IVICOU	15.50	15.43
		48	5240		15.50	15.37
		36	5180		15.50	15.38
	802.11ac20-VHT0	40	5200	MCS0	15.50	15.36
	002.11ac20-V1110	44	5220	IVICOU	15.50	15.42
		48	5240		15.50	15.39
5.15-5.25 GHz		36	5180		15.50	15.35
0.10-0.20 0112	802.11ax20-HE0	40	5200	MCS0	15.50	15.40
	002.11ax20-11L0	44	5220	IVICOU	15.50	15.38
		48	5240		15.50	15.37
	802.11n40-HT0	38	5190	MCS0	15.50	15.36
	602.1111 4 0-1110	46	5230	MCSU	15.50	15.38
	802.11ac40-VHT0	38	5190	MCS0	15.50	15.37
	002.11ac 4 0-V1110	46	5230	IVICOU	15.50	15.39
	802.11ax40-HE0	38	5190	MCS0	15.50	15.37
	002.11ax+0-11LU	46	5230	IVICOU	15.50	15.36
	802.11ac80-VHT0	42	5210	MCS0	15.50	15.44
	802.11ax80-HE0	42	5210	MCS0	15.50	15.37
	802.11ac160-VHT0	50	5250	MCS0	14.50	14.42
	802.11ax160-HE0	50	5250	MCS0	14.50	14.40

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		Main a	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		52	5260		15.50	15.43
	802.11a	56	5280	6Mbps	15.50	15.48
	002.11a	60	5300	Glylibps	15.50	15.42
		64	5320		15.50	15.41
		52	5260		15.50	15.45
	802.11n20-HT0	56	5280	MCS0	15.50	15.44
	002.11112011110	60	5300	IVICOU	15.50	15.42
		64	5320		15.50	15.41
		52	5260		15.50	15.47
	802.11ac20-VHT0	56	5280	MCS0	15.50	15.42
	002.118020-11110	60	5300		15.50	15.45
5.25-5.35 GHz		64	5320		15.50	15.41
0.20-0.00 0112		52	5260		15.50	15.43
	802.11ax20-HE0	56	5280	MCS0	15.50	15.41
	002.11ax20-11L0	60	5300	IVICOU	15.50	15.48
		64	5320		15.50	15.42
	802.11n40-HT0	54	5270	MCS0	15.50	15.45
	002.111140-1110	62	5310	IVICOU	15.50	15.41
	802.11ac40-VHT0	54	5270	MCS0	15.50	15.46
	002.11ac40-V1110	62	5310	MCSU	15.50	15.41
	802.11ax40-HE0	54	5270	MCS0	15.50	15.44
	002.11aA+0-11LU	62	5310	101000	15.50	15.41
	802.11ac80-VHT0	58	5290	MCS0	15.50	15.49
	802.11ax80-HE0	58	5290	MCS0	15.50	15.43

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		Main a	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		100	5500		15.50	15.47
		104	5520		15.50	15.44
	802.11a	116	5580	6Mbpc	15.50	15.43
	002.11d	120	5600	6Mbps	15.50	15.42
		136	5680		15.50	15.45
		140	5700		15.50	15.46
		100	5500		15.50	15.41
	802.11n20-HT0	104	5520		15.50	15.43
		116	5580		15.50	15.44
		120	5600	MCS0	15.50	15.42
		136	5680		15.50	15.40
		140	5700		15.50	15.47
		144	5720		15.50	15.39
5600 MHz		100	5500		15.50	15.40
		104	5520		15.50	15.41
		116	5580		15.50	15.40
	802.11ac20-VHT0	120	5600	MCS0	15.50	15.42
		136	5680		15.50	15.41
		140	5700		15.50	15.47
		144	5720		15.50	15.42
		100	5500		15.50	15.46
		104	5520		15.50	15.45
		116	5580		15.50	15.44
	802.11ax20-HE0	120	5600	MCS0	15.50	15.42
		136	5680	1	15.50	15.43
		140	5700		15.50	15.40
		144	5720		15.50	15.43

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		Main a	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		102	5510		15.50	15.47
		110	5550		15.50	15.40
	802.11n40-HT0	118	5590	MCS0	15.50	15.41
		134	5670		15.50	15.42
		142	5710		15.50	15.46
	802.11ac40-VHT0	102	5510		15.50	15.41
		110	5550	MCS0	15.50	15.44
		118	5590		15.50	15.43
		134	5670		15.50	15.44
		142	5710		15.50	15.40
		102	5510		15.50	15.47
5600 MHz		110	5550		15.50	15.43
	802.11ax40-HE0	118	5590	MCS0	15.50	15.41
		134	5670		15.50	15.44
		142	5710		15.50	15.40
		106	5530		15.50	15.46
	802.11ac80-VHT0	122	5610	MCS0	15.50	15.45
		138	5690		15.50	15.48
		106	5530	_	15.50	15.41
	802.11ax80-HE0	122	5610	MCS0	15.50	15.45
		138	5690		15.50	15.43
	802.11ac160-VHT0	114	5570	MCS0	15.50	15.46
	802.11ax160-HE0	114	5570	MCS0	15.50	15.43

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		Main a	ntenna			
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		149	5745		15.50	15.40
	802.11a	157	5785	6Mbps	15.50	15.45
		165	5825		15.50	15.39
	802.11n20-HT0	149	5745		15.50	15.44
		157	5785	MCS0	15.50	15.46
		165	5825		15.50	15.42
		149	5745	MCS0	15.50	15.45
	802.11ac20-VHT0	157	5785		15.50	15.41
		165	5825		15.50	15.43
5800 MHz		149	5745		15.50	15.39
3000 1011 12	802.11ax20-HE0	157	5785	MCS0	15.50	15.46
		165	5825		15.50	15.41
	802.11n40-HT0	151	5755	MCS0	15.50	15.41
	002.111140-1110	159	5795	IVICOU	15.50	15.45
	802.11ac40-VHT0	151	5755	MCS0	15.50	15.42
	002.11a040-VH10	159	5795	IVICOU	15.50	15.41
	802.11ax40-HE0	151	5755	MCS0	15.50	15.43
	002.11ax40-11L0	159	5795	IVICOU	15.50	15.39
	802.11ac80-VHT0	155	5775	MCS0	15.50	15.47
	802.11ax80-HE0	155	5775	MCS0	15.50	15.41

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Notebook mode

		Au	x antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		1	2412		19.50	19.43
		2	2417		20.50	20.44
		6	2437		20.50	20.43
	802.11b	10	2457	1Mbps	20.50	20.41
		11	2462		19.25	19.21
		12	2467		17.50	17.50
		13	2472		15.25	15.25
		1	2412		17.00	16.89
	802.11g	2	2417		19.75	19.67
		6	2437		19.75	19.69
		10	2457	6Mbps	19.75	19.68
		11	2462		16.00	15.88
		12	2467		13.50	13.42
2450 MHz		13	2472		11.50	11.41
2430 1011 12		1	2412		17.00	16.87
		2	2417		19.75	19.69
		6	2437		19.75	19.67
	802.11n20-HT0	10	2457	MCS0	19.75	19.71
		11	2462		16.00	15.90
		12	2467		13.50	13.42
		13	2472		11.50	11.40
		1	2412		17.00	16.89
		2	2417		19.75	19.71
		6	2437		19.75	19.65
	802.11ax20-HE0	10	2457	MCS0	19.75	19.68
		11	2462		16.00	15.92
		12	2467		13.50	13.38
		13	2472		11.50	11.36

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	Aux antenna									
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)				
		3	2422		16.50	16.38				
	802.11n40-HT0	4	2427	MCS0	17.50	16.87				
		6	2437		16.75	16.61				
		8	2447		16.00	15.92				
		9	2452		15.50	15.16				
		10	2457		12.50	12.36				
2450 MHz		11	2462		12.00	11.41				
2430 1011 12		3	2422		16.50	16.37				
		4	2427		17.50	16.91				
		6	2437		16.75	16.60				
	802.11ax40-HE0	8	2447	MCS0	16.00	15.90				
		9	2452		15.50	15.13				
		10	2457		12.50	12.38				
		11	2462		12.00	11.36				

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		Aux	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		36	5180		18.50	18.50
	802.11a	40	5200	6Mbps	20.50	20.49
	002.11a	44	5220	Glylibps	20.50	20.45
		48	5240		20.50	20.48
		36	5180		18.50	18.49
	802.11n20-HT0	40	5200	MCS0	20.50	20.44
	602.111120-1110	44	5220	IVICSU	20.50	20.43
		48	5240		20.50	20.46
		36	5180		18.50	18.47
	802.11ac20-VHT0	40	5200	MCS0	20.50	20.45
	002.11ac20-V1110	44	5220	IVICSO	20.50	20.48
		48	5240		20.50	20.44
5.15-5.25 GHz		36	5180		18.50	18.42
0.10-0.20 0112	802.11ax20-HE0	40	5200	MCS0	20.50	20.42
	002.11ax20-11L0	44	5220	IVICOU	20.50	20.47
		48	5240		20.50	20.49
	802.11n40-HT0	38	5190	MCS0	18.50	18.45
	002.111140-1110	46	5230	MCSU	20.50	20.41
	802.11ac40-VHT0	38	5190	MCS0	18.50	18.44
	002.11ac40-V1110	46	5230	MCSU	20.50	20.42
	802.11ax40-HE0	38	5190	MCS0	18.50	18.46
	JUZ. I TUXTU-I ILU	46	5230		20.50	20.45
	802.11ac80-VHT0	42	5210	MCS0	18.50	18.47
	802.11ax80-HE0	42	5210	MCS0	18.50	18.49
	802.11ac160-VHT0	50	5250	MCS0	14.50	14.49
	802.11ax160-HE0	50	5250	MCS0	14.50	14.49

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		Aux	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		52	5260		20.50	20.41
	802.11a	56	5280	6Mbps	20.50	20.48
	002.11a	60	5300	Glylibbs	20.50	20.49
		64	5320		17.75	17.75
		52	5260		20.50	20.43
	802.11n20-HT0	56	5280	MCS0	20.50	20.41
	002.11112U-Π1U	60	5300	IVICSU	20.50	20.44
		64	5320		17.75	17.68
		52	5260	MCS0	20.50	20.42
	802.11ac20-VHT0	56	5280		20.50	20.43
	002.118020-11110	60	5300		20.50	20.41
5.25-5.35 GHz		64	5320		17.75	17.69
0.20-0.00 0112		52	5260		20.50	20.39
	802.11ax20-HE0	56	5280	MCS0	20.50	20.44
	002.11ax20-11L0	60	5300	IVICOU	20.50	20.40
		64	5320		17.75	17.63
	802.11n40-HT0	54	5270	MCS0	20.50	20.42
	002.111140-1110	62	5310	IVICSU	17.00	17.00
	802.11ac40-VHT0	54	5270	MCS0	20.50	20.42
	002.11a040-VH10	62	5310	IVICOU	17.00	16.93
	802.11ax40-HE0	54	5270	MCS0	20.50	20.44
	002.11aA+0-11LU	62	5310	IVICOU	17.00	16.87
	802.11ac80-VHT0	58	5290	MCS0	18.25	18.15
	802.11ax80-HE0	58	5290	MCS0	18.25	18.14

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		Aux	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		100	5500		19.00	18.94
		104	5520		20.50	20.45
	802.11a	116	5580	6Mbps	20.50	20.43
	002.11a	120	5600	Olvibps	20.50	20.46
		136	5680		20.50	20.49
		140	5700		18.50	18.50
		100	5500		19.00	18.92
	802.11n20-HT0	104	5520		20.50	20.47
		116	5580		20.50	20.44
		120	5600	MCS0	20.50	20.43
		136	5680		20.50	20.44
		140	5700		18.50	18.45
		144	5720		20.50	20.47
5600 MHz		100	5500		19.00	18.99
		104	5520		20.50	20.43
		116	5580		20.50	20.46
	802.11ac20-VHT0	120	5600	MCS0	20.50	20.44
		136	5680		20.50	20.41
		140	5700		18.50	18.48
		144	5720		20.50	20.44
		100	5500		19.00	18.99
		104	5520		20.50	20.45
		116	5580		20.50	20.44
	802.11ax20-HE0	120	5600	MCS0	20.50	20.48
		136	5680		20.50	20.43
		140	5700		18.50	18.46
		144	5720		20.50	20.43

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		Aux	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		102	5510		18.25	18.22
		110	5550		20.50	20.43
	802.11n40-HT0	118	5590	MCS0	20.50	20.42
		134	5670		18.75	18.70
		142	5710		20.50	20.45
		102	5510		18.25	18.24
		110	5550		20.50	20.46
	802.11ac40-VHT0	118	5590	MCS0	20.50	20.47
		134	5670		18.75	18.68
		142	5710		20.50	20.48
		102	5510		18.25	18.21
5600 MHz		110	5550		20.50	20.44
	802.11ax40-HE0	118	5590	MCS0	20.50	20.45
		134	5670		18.75	18.74
		142	5710		20.50	20.43
		106	5530		18.50	18.46
	802.11ac80-VHT0	122	5610	MCS0	19.50	19.49
		138	5690		20.50	20.46
		106	5530		18.50	18.47
	802.11ax80-HE0	122	5610	MCS0	19.50	19.48
		138	5690		20.50	20.46
	802.11ac160-VHT0	114	5570	MCS0	15.00	14.98
	802.11ax160-HE0	114	5570	MCS0	15.00	14.97

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		Auv	antenna			
	1	T Aux a	Interna			
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		149	5745		20.50	20.50
	802.11a	157	5785	6Mbps	20.50	20.44
		165	5825		20.50	20.43
	802.11n20-HT0	149	5745		20.50	20.41
		157	5785	MCS0	20.50	20.46
		165	5825		20.50	20.41
		149	5745	MCS0	20.50	20.46
	802.11ac20-VHT0	157	5785		20.50	20.47
		165	5825		20.50	20.40
5800 MHz		149	5745		20.50	20.46
3000 1011 12	802.11ax20-HE0	157	5785	MCS0	20.50	20.47
		165	5825		20.50	20.40
	802.11n40-HT0	151	5755	MCS0	18.50	18.46
	002.111140-1110	159	5795	IVICOU	20.00	19.99
	802.11ac40-VHT0	151	5755	MCS0	18.50	18.42
	002.11a040-VHTU	159	5795	IVICOU	20.00	19.97
	802.11ax40-HE0	151	5755	MCS0	18.50	18.42
	002.11dX40-17E0	159	5795	IVICOU	20.00	19.97
	802.11ac80-VHT0	155	5775	MCS0	18.50	18.43
	802.11ax80-HE0	155	5775	MCS0	18.50	18.43

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		Maiı	n antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		1	2412		19.25	19.23
		2	2417		20.50	20.41
		6	2437		20.50	20.43
	802.11b	10	2457	1Mbps	20.50	20.49
		11	2462		19.25	19.21
		12	2467		17.00	16.94
		13	2472		14.50	14.48
		1	2412		17.00	16.98
		2	2417		20.00	19.95
		6	2437		20.00	19.94
	802.11g	10	2457	6Mbps	20.00	19.96
		11	2462		16.00	15.92
		12	2467		13.50	13.46
2450 MHz		13	2472		11.50	11.42
2430 1011 12		1	2412		17.00	16.94
		2	2417		20.00	19.96
		6	2437		20.00	19.97
	802.11n20-HT0	10	2457	MCS0	20.00	19.96
		11	2462		16.00	15.95
		12	2467		13.50	13.42
		13	2472		11.50	11.48
		1	2412		17.00	16.95
		2	2417		20.00	19.98
		6	2437		20.00	19.93
	802.11ax20-HE0	10	2457	MCS0	20.00	19.96
		11	2462		16.00	15.95
		12	2467		13.50	13.42
		13	2472		11.50	11.43

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Main antenna							
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)	
		3	2422	MCS0	16.50	16.45	
	802.11n40-HT0	4	2427		17.00	16.99	
		6	2437		16.75	16.68	
		8	2447		16.00	15.92	
		9	2452		15.25	15.24	
2450 MHz		10	2457		12.50	12.44	
		11	2462		11.50	11.43	
	802.11ax40-HE0	3	2422	MCS0	16.50	16.49	
		4	2427		17.00	16.98	
		6	2437		16.75	16.67	
		8	2447		16.00	15.98	
		9	2452		15.25	15.19	
		10	2457		12.50	12.43	
		11	2462		11.50	11.43	

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Main antenna						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
	802.11a	36	5180	- 6Mbps	18.50	18.46
		40	5200		20.50	20.45
		44	5220		20.50	20.42
		48	5240		20.50	20.40
		36	5180		18.50	18.44
	802.11n20-HT0	40	5200	MCS0	20.50	20.46
		44	5220	MCSU	20.50	20.49
		48	5240		20.50	20.47
	802.11ac20-VHT0	36	5180	MCS0	18.50	18.47
		40	5200		20.50	20.49
		44	5220		20.50	20.47
		48	5240		20.50	20.48
5.15-5.25 GHz	802.11ax20-HE0	36	5180	MCS0	18.50	18.47
5.15-5.25 GHZ		40	5200		20.50	20.43
		44	5220		20.50	20.44
		48	5240		20.50	20.41
	802.11n40-HT0	38	5190	MCS0	18.50	18.45
		46	5230		20.50	20.49
	802.11ac40-VHT0	38	5190	MCS0	18.50	18.47
		46	5230		20.50	20.47
	802.11ax40-HE0	38	5190	MCS0	18.50	18.46
		46	5230		20.50	20.49
	802.11ac80-VHT0	42	5210	MCS0	18.50	18.44
	802.11ax80-HE0	42	5210	MCS0	18.50	18.45
	802.11ac160-VHT0	50	5250	MCS0	14.50	14.45
	802.11ax160-HE0	50	5250	MCS0	14.50	14.44

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	Main antenna						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)	
		52	5260	6Mbps	20.50	20.43	
	802.11a	56	5280		20.50	20.48	
		60	5300		20.50	20.45	
		64	5320		17.75	17.74	
		52	5260		20.50	20.40	
	802.11n20-HT0	56	5280	MCS0	20.50	20.39	
		60	5300		20.50	20.37	
		64	5320		17.75	17.62	
	802.11ac20-VHT0	52	5260	MCS0	20.50	20.37	
		56	5280		20.50	20.38	
		60	5300		20.50	20.44	
5.25-5.35 GHz		64	5320		17.75	17.66	
0.23-3.33 GHZ	802.11ax20-HE0	52	5260	MCS0	20.50	20.43	
		56	5280		20.50	20.44	
		60	5300		20.50	20.42	
		64	5320		17.75	17.63	
	802.11n40-HT0	54	5270	MCS0	20.50	20.44	
		62	5310		17.00	16.93	
	802.11ac40-VHT0	54	5270	MCS0	20.50	20.43	
		62	5310		17.00	16.87	
	802.11ax40-HE0	54	5270	MCS0	20.50	20.44	
		62	5310		17.00	16.87	
	802.11ac80-VHT0	58	5290	MCS0	18.25	18.17	
	802.11ax80-HE0	58	5290	MCS0	18.25	18.12	

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Main antenna						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		100	5500		19.00	18.92
		104	5520		20.50	20.45
	802.11a	116	5580	6Mbpc	20.50	20.47
	002.11a	120	5600	6Mbps	20.50	20.44
		136	5680		20.50	20.49
		140	5700		19.00	18.98
		100	5500		19.00	18.96
		104	5520	MCS0	20.50	20.47
	802.11n20-HT0	116	5580		20.50	20.44
		120	5600		20.50	20.48
		136	5680		20.50	20.46
		140	5700		19.00	18.99
		144	5720		20.50	20.43
5600 MHz	802.11ac20-VHT0	100	5500	MCS0	19.00	18.95
		104	5520		20.50	20.49
		116	5580		20.50	20.42
		120	5600		20.50	20.45
		136	5680		20.50	20.44
		140	5700		19.00	18.98
		144	5720		20.50	20.47
	802.11ax20-HE0	100	5500	MCS0	19.00	18.94
		104	5520		20.50	20.49
		116	5580		20.50	20.43
		120	5600		20.50	20.46
		136	5680		20.50	20.47
		140	5700		19.00	18.98
		144	5720		20.50	20.44

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		Main a	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		102	5510		18.25	18.20
		110	5550		20.50	20.43
	802.11n40-HT0	118	5590	MCS0	20.50	20.42
		134	5670		19.25	19.22
		142	5710		20.50	20.45
		102	5510		18.25	18.19
		110	5550		20.50	20.42
	802.11ac40-VHT0	118	5590	MCS0	20.50	20.43
		134	5670		19.25	19.21
		142	5710		20.50	20.40
		102	5510		18.25	18.24
5600 MHz		110	5550		20.50	20.45
	802.11ax40-HE0	118	5590	MCS0	20.50	20.46
		134	5670		19.25	19.22
		142	5710		20.50	20.45
		106	5530		18.50	18.44
	802.11ac80-VHT0	122	5610	MCS0	19.50	19.49
		138	5690		20.50	20.48
		106	5530		18.50	18.47
	802.11ax80-HE0	122	5610	MCS0	19.50	19.45
		138	5690		20.50	20.49
	802.11ac160-VHT0	114	5570	MCS0	15.50	15.47
	802.11ax160-HE0	114	5570	MCS0	15.50	15.42

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		Main a	intenna			
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		149	5745		20.50	20.45
	802.11a	157	5785	6Mbps	20.50	20.42
		165	5825		20.50	20.49
		149	5745		20.50	20.43
	802.11n20-HT0	802.11n20-HT0 157 5785 MCS0	MCS0	20.50	20.41	
		165	5825		20.50	20.45
		149	5745		20.50	20.48
	802.11ac20-VHT0	157	5785	MCS0	20.50	20.43
		165	5825		20.50	20.42
5800 MHz		149	5745		20.50	20.48
3000 1011 12	802.11ax20-HE0	157	5785	MCS0	20.50	20.46
		165	5825		20.50	20.48
	802.11n40-HT0	151	5755	MCS0	20.50	20.49
	002.111140-1110	159	5795	IVICOU	20.50	20.47
	802.11ac40-VHT0	151	5755	MCS0	20.50	20.42
	002.11a040-VH10	159	5795	IVICOU	20.50	20.49
	802.11ax40-HE0	151	5755	MCS0	20.50	20.42
	002.11ax40-FIEU	159	5795	IVICOU	20.50	20.48
	802.11ac80-VHT0	155	5775	MCS0	18.75	18.68
	802.11ax80-HE0	155	5775	MCS0	18.75	18.72

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Bluetooth conducted power table:

		otou pon	o. tabioi					
			1M	bps	2MI	bps	3M	bps
Mode	Channel	Frequency (MHz)	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)
	CH 00	2402	9.50	8.99	5.50	5.50	5.50	5.49
BR/EDR	CH 39	2441	9.50	9.34	5.50	5.46	5.50	5.46
	CH 78	2480	9.50	9.33	5.50	5.47	5.50	5.50

Mode	Modo Channol		Channel		GFSK					
IVIOGE	wode Channel	(MHz)	Max. Rated Avg.Power + Max. Tolerance (dBm)	Average Output Power (dBm)						
	CH 00	2402		5.48						
LE	CH 19	2440	5.5	5.32						
	CH 39	2480		5.25						

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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.

The device is a convertible laptop computer with RF feature. The device will adjust the maximum output power for different user scenario and EUT was tested as below based on KDB inquiry.

Tablet mode

Main/Aux antennas: Back/top/bottom/right/left sides_0mm with reduced power

Laptop mode

SAR measurement for Laptop SAR with full power is not required since the distance between antenna and user is > 20cm.

Note:

802.11b DSSS SAR Test Requirements:

- 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.

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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. BT and WLAN Aux use the same antenna path, but they can't transmit at the same time.
- 8. 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 $\leq 100 \text{ MHz}$.
- 9. 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)
- test exclusion evaluation (based on KDB447498D01) for surfaces/edges of tablet mode is not required since all the applicable surfaces/edges were tested.
- 11. There are two antenna vendors, one is AWAN, and another is HONG-BO. Both of them were measured fully and respectively.
- 12. Based on FCC guidance, general principles of KDB248227D01 can be applied to 802.11ax to determine initial test configuration with 802.11ax being considered as the highest 802.11 mode for the appropriate frequency band.

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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.

90.0		
DUT operating mode	Lid Angle description	WLAN TX state
Lid Close	0° ≤ Lid angle <35 °	No TX Transmission
Notebook	35° ≤ Lid angle < 130°	Full Power Level
Non-Notebook mode	130° ≤ Lid angle ≤ 360°	Reduced Power Level
Stand mode	200° < Lid angle < 345°	Full Power Level

Intel AX200NGW	WLA	AN Main	WL	AN Aux
Wireless technology	Full power (dBm)	Reduced power (dBm)	Full power (dBm)	Reduced power (dBm)
WLAN802.11b	20.5	17.5	20.5	17.5
WLAN802.11g	20	17.5	19.75	17.5
WLAN802.11n(20M)	20	17.5	19.75	17.5
WLAN802.11n(40M)	17	17	17.5	17.5
WLAN802.11ax(20M)	20	17.5	19.75	17.5
WLAN802.11ax(40M)	17	17	17.5	17.5
WLAN802.11a 5.2GHz	20.5	15.5	20.5	15.5
WLAN802.11n(20M) 5.2GHz	20.5	15.5	20.5	15.5
WLAN802.11n(40M) 5.2GHz	20.5	15.5	20.5	15.5
WLAN802.11ac(20M) 5.2GHz	20.5	15.5	20.5	15.5
WLAN802.11ac(40M) 5.2GHz	20.5	15.5	20.5	15.5
WLAN802.11ac(80M) 5.2GHz	18.5	15.5	18.5	15.5
WLAN802.11ac(160M) 5.2GHz	14.5	14.5	14.5	14.5
WLAN802.11ax(20M) 5.2GHz	20.5	15.5	20.5	15.5
WLAN802.11ax(40M) 5.2GHz	20.5	15.5	20.5	15.5
WLAN802.11ax(80M) 5.2GHz	18.5	15.5	18.5	15.5
WLAN802.11ax(160M) 5.2GHz	14.5	14.5	14.5	14.5
WLAN802.11a 5.3GHz	20.5	15.5	20.5	15.5
WLAN802.11n(20M) 5.3GHz	20.5	15.5	20.5	15.5
WLAN802.11n(40M) 5.3GHz	20.5	15.5	20.5	15.5
WLAN802.11ac(20M) 5.3GHz	20.5	15.5	20.5	15.5
WLAN802.11ac(40M) 5.3GHz	20.5	15.5	20.5	15.5
WLAN802.11ac(80M) 5.3GHz	18.25	15.5	18.25	15.5
WLAN802.11ax(20M) 5.3GHz	20.5	15.5	20.5	15.5
WLAN802.11ax(40M) 5.3GHz	20.5	15.5	20.5	15.5
WLAN802.11ax(80M) 5.3GHz	18.25	15.5	18.25	15.5

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Intel AX200NGW	WLA	AN Main	WL	AN Aux
Wireless technology	Full power (dBm)	Reduced power (dBm)	Full power (dBm)	Reduced power (dBm)
WLAN802.11a 5.6GHz	20.5	15.5	20.5	15.5
WLAN802.11n(20M) 5.6GHz	20.5	15.5	20.5	15.5
WLAN802.11n(40M) 5.6GHz	20.5	15.5	20.5	15.5
WLAN802.11ac(20M) 5.6GHz	20.5	15.5	20.5	15.5
WLAN802.11ac(40M) 5.6GHz	20.5	15.5	20.5	15.5
WLAN802.11ac(80M) 5.6GHz	20.5	15.5	20.5	15.5
WLAN802.11ac(160M) 5.6GHz	15.5	15.5	15	15.5
WLAN802.11ax(20M) 5.6GHz	20.5	15.5	20.5	15.5
WLAN802.11ax(40M) 5.6GHz	20.5	15.5	20.5	15.5
WLAN802.11ax(80M) 5.6GHz	20.5	15.5	20.5	15.5
WLAN802.11ax(160M) 5.6GHz	15.5	15.5	15	15
WLAN802.11a 5.8GHz	20.5	15.5	20.5	15.5
WLAN802.11n(20M) 5.8GHz	20.5	15.5	20.5	15.5
WLAN802.11n(40M) 5.8GHz	20.5	15.5	20	15.5
WLAN802.11ac(20M) 5.8GHz	20.5	15.5	20.5	15.5
WLAN802.11ac(40M) 5.8GHz	20.5	15.5	20	15.5
WLAN802.11ac(80M) 5.8GHz	18.75	15.5	18.5	15.5
WLAN802.11ax(20M) 5.8GHz	20.5	15.5	20.5	15.5
WLAN802.11ax(40M) 5.8GHz	20.5	15.5	20	15.5
WLAN802.11ax(80M) 5.8GHz	18.75	15.5	18.5	15.5

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1.6.1 Results and conclusion

The measured output power versus lid angle is tabulated in the following table, 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	802.11ac(80M) 5.2G	802.11ac(80M) 5.3G	802.11ac(80M) 5.6G	802.11ac(160M) 5.6G	802.11ac(80M) 5.8G
		0°	n/a	n/a	n/a	n/a	n/a	n/a
		10°	n/a	n/a	n/a	n/a	n/a	n/a
		20°	n/a	n/a	n/a	n/a	n/a	n/a
	Lid close	30°	n/a	n/a	n/a	n/a	n/a	n/a
		31°	n/a	n/a	n/a	n/a	n/a	n/a
		32°	n/a	n/a	n/a	n/a	n/a	n/a
		33°	n/a	n/a	n/a	n/a	n/a	n/a
		34°	n/a	n/a	n/a	n/a	n/a	n/a
		35°	20.36	18.43	18.09	20.35	15.49	18.67
		36°	20.34	18.31	18.20	20.49	15.32	18.62
		37°	20.36 20.39	18.33 18.31	18.23 18.25	20.39 20.47	15.33 15.46	18.56 18.56
		39°						
		40°	20.33 20.33	18.41 18.50	18.15 18.20	20.48 20.49	15.36 15.32	18.75 18.56
		50°	20.45	18.50	18.11	20.49	15.45	18.58
		60°	20.43	18.48	18.21	20.33	15.39	18.62
		70°	20.41	18.48	18.18	20.33	15.33	18.64
	Notebook	80°	20.41	18.40	18.20	20.39	15.42	18.58
	NOTEDOOK	90°	20.43	18.34	18.06	20.41	15.38	18.72
		100°	20.42		18.22	20.41		18.69
		110°	20.46	18.31 18.45	18.15	20.46	15.43 15.35	18.71
		110°	20.38	18.45	18.15	20.38	15.35	18.56
		125°	20.34	18.50	18.16	20.34	15.46	18.66
		126°	20.34	18.31	18.16	20.40	15.49	18.67
		126 127°	20.49	18.41	18.06	20.36	15.34	18.72
		127°	20.49	18.47	18.06	20.35	15.34	18.72
		129°	20.44	18.33	18.18	20.43	15.33	18.68
	-	130°	17.42	15.45	15.41	15.36	15.33	15.49
		130°	17.42	15.45	15.41	15.36	15.31	15.49
		132°	17.38	15.45	15.33	15.48	15.42	15.32
		133°	17.36	15.42	15.36	15.35	15.36	15.48
		134°	17.30	15.42	15.42	15.35	15.50	15.46
		135°	17.41	15.48	15.32	15.46	15.42	15.35
		140°	17.38	15.35	15.49	15.44	15.34	15.36
		150°	17.34	15.40	15.43	15.45	15.37	15.46
		160°	17.37	15.38	15.42	15.40	15.38	15.41
		170°	17.34	15.32	15.31	15.49	15.33	15.38
		170 180°	17.50	15.45	15.46	15.35	15.36	15.38
		190°	17.36	15.39	15.37	15.40	15.43	15.41
WLAN Main		200°	17.36	15.37	15.40	15.36	15.45	15.45
TTD (IT III CIII)		210°	17.43	15.36	15.47	15.38	15.45	15.39
	Non-Notebook	220°	17.40	15.38	15.36	15.38	15.33	15.42
	THOIT THOUGHOUN	230°	17.49	15.34	15.49	15.49	15.40	15.42
		240°	17.46	15.44	15.40	15.47	15.46	15.49
		250°	17.40	15.43	15.34	15.36	15.33	15.35
		260°	17.46	15.47	15.49	15.43	15.37	15.45
		270°	17.50	15.38	15.39	15.31	15.42	15.49
		280°	17.36	15.49	15.39	15.48	15.49	15.45
		290°	17.43	15.42	15.41	15.31	15.50	15.35
		300°	17.42	15.38	15.33	15.46	15.42	15.48
		310°	17.37	15.49	15.40	15.47	15.49	15.45
		320°	17.39	15.34	15.44	15.33	15.46	15.43
		330°	17.33	15.41	15.40	15.45	15.42	15.41
		340°	17.31	15.33	15.40	15.46	15.47	15.32
		350°	17.47	15.33	15.32	15.40	15.44	15.45
		360°	17.31	15.32	15.40	15.38	15.39	15.32
		201°	20.39	18.33	18.12	20.37	15.38	18.64
		202°	20.46	18.47	18.15	20.36	15.48	18.65
		203°	20.39	18.46	18.17	20.39	15.45	18.64
		204°	20.44	18.47	18.09	20.33	15.43	18.75
		205°	20.35	18.46	18.25	20.45	15.31	18.57
		210°	20.43	18.32	18.10	20.35	15.44	18.72
		220°	20.44	18.42	18.18	20.31	15.41	18.73
		230°	20.40	18.36	18.25	20.35	15.43	18.72
		240°	20.42	18.34	18.10	20.44	15.50	18.61
		250°	20.44	18.42	18.18	20.33	15.40	18.70
		260°	20.36	18.45	18.20	20.44	15.43	18.57
	Stand	270°	20.32	18.47	18.23	20.41	15.31	18.57
		280°	20.48	18.36	18.07	20.36	15.31	18.62
		290°	20.38	18.46	18.11	20.40	15.48	18.75
		300°	20.48	18.34	18.22	20.41	15.43	18.66
		310°	20.44	18.37	18.20	20.49	15.50	18.64
		320°	20.50	18.45	18.11	20.48	15.37	18.66
		330°	20.50	18.42	18.13	20.34	15.39	18.56
		340°	20.48	18.42	18.23	20.43	15.36	18.65
		341°	20.46	18.36	18.22	20.35	15.33	18.74
		342°	20.47	18.42	18.08	20.38	15.48	18.72
		343°	20.43	18.41	18.22	20.43	15.40	18.68
		344°	20.41	18.34	18.13	20.37	15.45	18.72
	1	J.T	20.71	.5.54	10.10	20.01	.0.40	10.12

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Antenna C	Operation mode	Lid angle	802.11b	802.11ac(80M) 5.2G	802.11ac(80M) 5.3G	802.11ac(80M) 5.6G	802.11ac(160M) 5.6G	802.11ac(80M) 5.
		344°	20.31	18.50	18.24	20.47	15.33	18.62
		343°	20.38	18.44	18.14	20.41	15.37	18.68
	_	342°	20.37	18.48	18.15	20.42	15.50	18.73
	_	341°	20.38	18.42	18.15	20.44	15.43	18.69
	_	340° 330°	20.38	18.32 18.40	18.10 18.19	20.46 20.50	15.35 15.43	18.61 18.66
	-	320°	20.44	18.45	18.16	20.50	15.43	18.72
		310°	20.48	18.50	18.25	20.33	15.32	18.67
	_	300°	20.31	18.48	18.23	20.33	15.36	18.63
	_	290°	20.45	18.42	18.10	20.42	15.50	18.69
		280°	20.50	18.42	18.24	20.50	15.34	18.68
	Stand	270°	20.33	18.36	18.16	20.44	15.38	18.64
		260°	20.32	18.47	18.14	20.46	15.41	18.64
		250°	20.35	18.31	18.16	20.47	15.48	18.63
		240°	20.43	18.31	18.07	20.49	15.34	18.69
		230°	20.36	18.33	18.23	20.34	15.42	18.74
	_	220° 210°	20.46 20.45	18.44 18.49	18.15 18.11	20.42 20.45	15.50 15.49	18.60 18.74
	-	205°	20.48	18.49	18.21	20.45	15.31	18.67
	-	205°	20.46	18.42	18.07	20.32	15.32	18.67
	-	203°	20.40	18.42	18.06	20.34	15.50	18.67
	-	202°	20.47	18.43	18.09	20.33	15.33	18.61
		201°	20.34	18.45	18.18	20.36	15.41	18.74
 		360°	17.39	15.37	15.35	15.39	15.36	15.33
	—	350°	17.40	15.37	15.36	15.50	15.38	15.40
	—	340°	17.42	15.46	15.39	15.45	15.50	15.36
		330°	17.49	15.45	15.50	15.46	15.32	15.39
		320°	17.38	15.45	15.35	15.47	15.34	15.42
		310°	17.43	15.36	15.46	15.37	15.42	15.43
		300°	17.40	15.47	15.31	15.38	15.42	15.31
	_	290° 280°	17.41 17.31	15.36 15.36	15.34 15.32	15.39 15.43	15.45 15.32	15.38 15.45
	-	270°	17.36	15.33	15.42	15.47	15.43	15.45
	-	260°	17.30	15.49	15.34	15.34	15.48	15.50
		250°	17.36	15.42	15.48	15.31	15.41	15.37
	-	240°	17.37	15.31	15.50	15.50	15.46	15.46
		230°	17.32	15.36	15.37	15.43	15.37	15.36
	Non-Notebook	220°	17.37	15.43	15.48	15.38	15.33	15.39
		210°	17.42	15.35	15.45	15.45	15.46	15.39
WLAN Main		200°	17.35	15.38	15.45	15.45	15.42	15.31
		190°	17.43	15.37	15.36	15.48	15.32	15.40
		180°	17.49	15.46	15.48	15.49	15.48	15.41
	_	170°	17.37	15.40	15.32	15.50	15.50	15.45
	<u> </u>	160°	17.32	15.46	15.33	15.31	15.49	15.42
	<u> </u>	150° 140°	17.37 17.47	15.34 15.43	15.42 15.31	15.41 15.31	15.44 15.43	15.50 15.39
	-	135°	17.32	15.43	15.38	15.35	15.43	15.32
	-	134°	17.43	15.31	15.48	15.41	15.32	15.41
		133°	17.37	15.47	15.44	15.47	15.35	15.46
	⊢	132°	17.50	15.43	15.47	15.47	15.31	15.42
	–	131°	17.34	15.46	15.42	15.39	15.49	15.47
		130°	17.40	15.33	15.31	15.50	15.47	15.50
		129°	20.37	18.50	18.08	20.49	15.46	18.62
		128°	20.46	18.46	18.24	20.50	15.42	18.72
		127°	20.33	18.41	18.10	20.39	15.48	18.64
	L	126°	20.44	18.36	18.09	20.36	15.41	18.69
	<u> </u>	125°	20.32	18.35 18.44	18.21	20.50	15.33	18.57
		120° 110°	20.44 20.34	18.44 18.45	18.24 18.12	20.38 20.31	15.45 15.34	18.73 18.69
	⊢	100°	20.37	18.46	18.19	20.41	15.49	18.67
	F	90°	20.42	18.38	18.17	20.43	15.47	18.62
	Notebook	80°	20.32	18.46	18.09	20.48	15.35	18.71
	· -	70°	20.42	18.50	18.07	20.40	15.31	18.69
		60°	20.31	18.35	18.18	20.45	15.32	18.71
	Г	50°	20.33	18.45	18.22	20.31	15.37	18.75
		40°	20.32	18.37	18.12	20.33	15.47	18.65
		39°	20.40	18.36	18.06	20.47	15.49	18.66
		38°	20.36	18.49	18.22	20.42	15.37	18.72
	L	37°	20.48	18.44	18.21	20.36	15.49	18.58
	L	36°	20.37	18.44	18.20	20.42	15.45	18.67
<u></u>		35° 34°	20.48	18.48	18.09	20.36	15.32	18.74
	<u> </u>	34°	n/a n/a	n/a n/a	n/a n/a	n/a n/a	n/a n/a	n/a n/a
	<u> </u>	32°	n/a n/a	n/a n/a	n/a n/a	n/a n/a	n/a n/a	n/a n/a
		32°	n/a n/a	n/a n/a	n/a n/a	n/a n/a	n/a n/a	n/a n/a
	Lid close	30°	n/a	n/a	n/a	n/a	n/a	n/a
	H	20°	n/a	n/a	n/a	n/a	n/a	n/a
	-	10°	n/a	n/a	n/a	n/a	n/a	n/a
		0°	n/a	n/a	n/a	n/a	n/a	n/a

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Antenna	Operation mode	Lid angle	802.11b	802.11n(40M)	802.11ac(80M) 5.2G	802.11ac(80M) 5.3G	802.11ac(80M) 5.6G	802.11ac(160M) 5.6G	802.11ac(80M) 5.80
		0°	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		10°	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		20°	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Lid close	30°	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Liu ciose	31°	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		32°	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		33°	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		34°	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		35°	20.34	17.41	18.38	18.12	20.35	14.96	18.40
		36°	20.43 20.42	17.36 17.40	18.38 18.48	18.06 18.25	20.40 20.34	14.88 14.96	18.40 18.48
		38°	20.35	17.40	18.31	18.18	20.49	14.88	18.31
		39°	20.37	17.31	18.44	18.22	20.49	14.88	18.44
		40°	20.43	17.42	18.32	18.17	20.48	14.91	18.39
		50°	20.50	17.47	18.36	18.18	20.31	14.98	18.39
		60°	20.32	17.35	18.39	18.08	20.45	14.97	18.34
		70°	20.41	17.38	18.40	18.18	20.47	14.92	18.44
		80°	20.42	17.39	18.50	18.20	20.48	14.91	18.46
	Notebook	90°	20.33	17.35	18.31	18.14	20.42	14.98	18.32
		100°	20.48	17.40	18.46	18.10	20.42	14.99	18.36
		100°	20.48	17.40	18.44	18.10	20.47	14.99	18.36
		110°	20.37	17.34			20.38	14.92	18.44
		120° 125°	20.43		18.47	18.10	20.38		18.34
				17.33	18.36	18.22		14.95	
		126°	20.36	17.36	18.50	18.07	20.40	14.84	18.35
		127°	20.48	17.38	18.41	18.21	20.46	14.90	18.38
		128°	20.43	17.45	18.40	18.25	20.34	14.86	18.41
	L	129°	20.37	17.36	18.49	18.09	20.34	14.89	18.47
		130°	17.44	15.37	15.40	15.49	15.35	14.89	15.37
		131°	17.48	15.40	15.42	15.32	15.36	15.00	15.33
		132°	17.35	15.47	15.44	15.35	15.48	14.92	15.38
		133°	17.37	15.38	15.45	15.33	15.37	14.92	15.35
		134°	17.36	15.34	15.46	15.41	15.38	14.98	15.38
		135°	17.40	15.33	15.46	15.45	15.39	14.86	15.34
	I Aux	140°	17.37	15.47	15.33	15.45	15.39	14.95	15.44
		150°	17.42	15.38	15.49	15.50	15.40	15.00	15.50
		160°	17.47	15.36	15.39	15.42	15.49	14.81	15.40
		170°	17.36	15.50	15.49	15.34	15.41	14.87	15.31
		180°	17.49	15.48	15.32	15.43	15.35	14.82	15.35
WLAN Aux		190°	17.40	15.35	15.36	15.45	15.33	14.83	15.32
		200°	17.43	15.34	15.37	15.49	15.39	14.87	15.42
		210°	17.46	15.50	15.48	15.33	15.35	15.00	15.39
	THOIT THOLODOGIC	220°	17.35	15.40	15.44	15.36	15.43	14.96	15.32
		230°	17.39	15.49	15.32	15.37	15.46	14.95	15.41
		240°	17.40	15.35	15.41	15.50	15.38	14.86	15.36
		250°	17.45	15.33	15.31	15.49	15.47	14.95	15.40
		260°	17.47	15.49	15.45	15.42	15.44	14.95	15.48
		270°	17.48	15.47	15.31	15.49	15.37	14.94	15.48
		280°	17.39	15.46	15.47	15.37	15.37	14.92	15.48
		290°	17.50	15.41	15.44	15.43	15.32	14.89	15.38
		300° 310°	17.33 17.35	15.45 15.34	15.34 15.48	15.45 15.43	15.40 15.40	14.92 14.88	15.32 15.49
		310° 320°	17.35	15.34	15.48	15.43 15.48	15.40	14.88	15.49
		330°	17.35	15.50	15.43	15.35	15.31	14.90	15.35
		340°	17.44	15.49	15.36	15.46	15.50	14.82	15.35
		350°	17.35	15.33	15.38	15.50	15.44	14.81	15.38
		360°	17.32	15.37	15.46	15.35	15.46	14.87	15.46
		201°	20.46	17.40	18.34	18.25	20.42	14.95	18.38
		202°	20.32	17.43	18.37	18.16	20.48	14.92	18.36
		203°	20.49	17.43	18.34	18.21	20.48	14.87	18.43
		204° 205°	20.33	17.49 17.31	18.46 18.49	18.19 18.11	20.44 20.44	14.90 14.89	18.48 18.45
		205° 210°	20.48 20.46	17.31 17.32	18.49 18.39	18.11 18.23	20.44	14.89 14.89	18.45 18.46
		210°	20.46	17.32	18.32	18.25	20.42	14.89	18.39
		230°	20.45	17.40	18.31	18.11	20.34	14.87	18.31
		240°	20.34	17.38	18.44	18.24	20.31	14.90	18.38
		250°	20.44	17.45	18.37	18.18	20.50	14.89	18.41
		260°	20.49	17.49	18.39	18.21	20.31	14.85	18.37
	Ctr	270°	20.49	17.43	18.36	18.12	20.49	14.89	18.35
	Stand	280°	20.31	17.48	18.38	18.12	20.37	14.83	18.31
		290°	20.34	17.31	18.35	18.21	20.31	15.00	18.42
		300°	20.41	17.32	18.38	18.19	20.35	14.84	18.44
		310°	20.33	17.38	18.32	18.12	20.32	14.81	18.49
		320°	20.41	17.40	18.44	18.24	20.47	14.92	18.39
		330°	20.35	17.43	18.33	18.15	20.44	14.86	18.41
		340°	20.32	17.46	18.34	18.12	20.37	14.99	18.40
						18.14	20.32	14.97	18.38
		3410	20 41	17 33					
		341°	20.41	17.33	18.43				
		341° 342° 343°	20.41 20.49 20.43	17.33 17.34 17.41	18.43 18.44 18.50	18.14 18.25 18.14	20.32 20.44 20.44	14.97 14.91 14.89	18.35 18.34

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Antenna Op	peration mode	Lid angle	802.11b	802.11n(40M)		802.11ac(80M) 5.3G		802.11ac(160M) 5.6G	
	L	344°	20.43	17.33	18.47	18.06	20.32	15.00	18.43
	L	343°	20.34	17.47	18.39	18.19	20.38	14.84	18.36
	L	342°	20.38	17.45	18.39	18.18	20.39	14.95	18.33
	-	341°	20.44	17.38	18.49	18.23	20.35	15.00	18.46
	-	340° 330°	20.32 20.48	17.31 17.39	18.39 18.47	18.16 18.12	20.38 20.47	14.91 14.99	18.45 18.38
		320°	20.48	17.39	18.47	18.12	20.47	14.99	18.39
	-	310°	20.48	17.47	18.32	18.15	20.50	14.94	18.42
	-	300°	20.36	17.44	18.34	18.08	20.34	14.96	18.44
	-	290°	20.35	17.35	18.36	18.16	20.38	14.85	18.49
	F	280°	20.47	17.31	18.39	18.21	20.38	14.87	18.40
	Stand	270°	20.49	17.39	18.48	18.09	20.40	14.99	18.44
	Ottano	260°	20.50	17.33	18.34	18.11	20.42	14.85	18.35
		250°	20.38	17.42	18.40	18.19	20.31	14.94	18.45
		240°	20.42	17.46	18.50	18.12	20.42	14.96	18.40
		230°	20.41	17.35	18.32	18.08	20.31	14.82	18.34
		220°	20.37	17.36	18.50	18.15	20.43	14.84	18.50
		210°	20.48	17.43	18.33	18.14	20.33	14.93	18.47
		205°	20.32	17.35	18.36	18.25	20.33	14.90	18.37
		204°	20.49	17.49	18.39	18.14	20.50	14.87	18.33
		203°	20.37	17.44	18.46	18.10	20.34	14.90	18.45
		202°	20.48	17.33	18.36	18.22	20.38	15.00	18.46
		201°	20.32	17.38	18.41	18.10	20.33	14.87	18.38
		360°	17.40	15.40	15.47	15.34	15.41	14.96	15.44
		350°	17.31	15.45	15.41	15.31	15.35	14.91	15.34
		340°	17.33	15.32	15.45	15.48	15.39	14.89	15.48
		330°	17.38	15.40	15.41	15.37	15.39	14.98	15.31
		320°	17.43	15.40	15.31	15.46	15.43	14.87	15.38
		310°	17.48	15.36	15.48	15.46	15.32	14.95	15.34
		300°	17.42	15.33	15.35	15.33	15.44	14.98	15.41
		290°	17.37	15.38	15.39	15.50	15.35	15.00	15.49
		280°	17.41	15.44	15.48	15.46	15.31	14.92	15.34
		270°	17.41	15.46	15.38	15.48	15.33	14.93	15.48
		260°	17.45	15.46	15.45	15.48	15.34	14.82	15.37
		250°	17.42	15.31	15.37	15.42	15.34	14.97	15.37
		240°	17.46	15.41	15.40	15.36	15.38	14.85	15.48
N/e	lon-Notebook	230°	17.49	15.41	15.34	15.45	15.38	14.92	15.45
Non-Notebook	IOII-INOLEDOOK	220°	17.46	15.45	15.46	15.42	15.32	14.97	15.39
WLAN Aux	LAN Aux	210°	17.45	15.46	15.33	15.40	15.40	14.85	15.43
		200°	17.39	15.36	15.38	15.33	15.31	14.96	15.49
		190°	17.49	15.32	15.44	15.45	15.49	14.81	15.36
		180°	17.36	15.48	15.40	15.44	15.47	14.92	15.50
		170°	17.34	15.44	15.43	15.44	15.36	14.98	15.49
		160°	17.45	15.37	15.39	15.45	15.44	14.84	15.46
		150°	17.40	15.39	15.50	15.35	15.35	14.83	15.47
		140°	17.34	15.35	15.44	15.41	15.41	14.98	15.35
	L	135°	17.41	15.34	15.49	15.43	15.49	14.87	15.40
	-	134°	17.39	15.38	15.35	15.31	15.40	14.98	15.32
l	- ⊦	133° 132°	17.34 17.42	15.31 15.34	15.46 15.33	15.33 15.41	15.49 15.47	14.90 14.89	15.31 15.33
1	-	131°	17.44	15.48	15.49	15.47	15.50	14.99	15.31
l	 	130°	17.38	15.41	15.41	15.41	15.33	14.92	15.44
<u> </u>		129°	20.38	17.42	18.47	18.18	20.38	14.94	18.35
1		128°	20.45	17.40	18.48	18.18	20.33	14.98	18.33
l		127°	20.43	17.38	18.36	18.11	20.49	14.94	18.46
1	Ļ	126°	20.48	17.38	18.49	18.12	20.49	14.84	18.42
	<u> </u>	125° 120°	20.39 20.35	17.42 17.35	18.47 18.45	18.20 18.17	20.33 20.43	15.00 14.95	18.50 18.33
l	-	120°	20.35	17.35	18.45	18.17	20.43	14.95	18.33
	-	100°	20.37	17.49	18.32	18.20	20.41	14.91	18.38
	⊦	90°	20.31	17.47	18.45	18.10	20.37	14.84	18.35
	Notebook	80°	20.41	17.33	18.48	18.22	20.32	14.96	18.31
		70°	20.33	17.31	18.39	18.09	20.37	14.90	18.48
		60°	20.39	17.42	18.47	18.08	20.41	14.90	18.48
	L	50°	20.48	17.45	18.35	18.16	20.42	14.87	18.35
	-	40°	20.32	17.32	18.50	18.10	20.41	14.99	18.50
	ļ_	39°	20.50	17.37	18.36	18.25	20.32	14.89	18.41
1	<u> </u>	38°	20.45	17.38	18.36	18.23	20.33	14.99	18.42
1	 	37°	20.32	17.39	18.41	18.22	20.50	14.95	18.39
l	ļ_	36°	20.50	17.42	18.34	18.09	20.44	14.97	18.48
<u> </u>		35°	20.35	17.31	18.37	18.24	20.45	14.98	18.36
l	Į_	34°	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	L	33°	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	L	32°	n/a	n/a	n/a	n/a	n/a	n/a	n/a
l	Lid close	31°	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1		30°	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		20°	n/a	n/a	n/a	n/a	n/a	n/a	n/a
l	L	10°	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		0°	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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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

- 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
- 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.

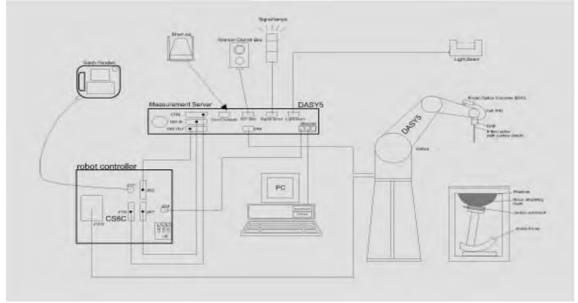


Fig. a The block diagram of SAR system

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- 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.
- 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.

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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 2450/5200/5300/5600/5800 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	$10 \mu W/g \text{ to > } 100 \text{ mW/g}$
Range	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%.

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PHANTOM

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

DEVICE HOLDER

DEVICE HOLL	ZER	
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

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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 2450/5200/5300/5600/5800 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 ≥ 15 cm ± 5 mm (frequency ≤ 3 GHz) or ≥ 10 cm ± 5 mm (frequency > 3 G Hz) 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.

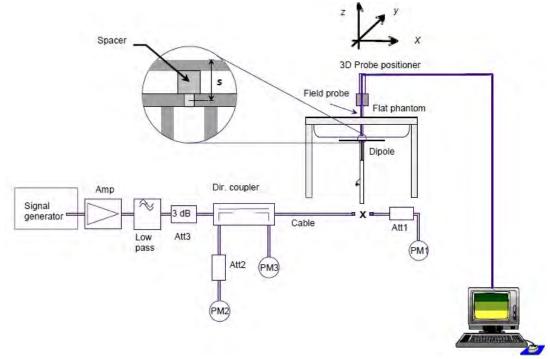


Fig. b The block diagram of system verification

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Validation Kit	S/N	Frequ (Mh	,	1W Target SAR-1g (mW/g)	Pin=250mW Measured SAR-1g (mW/g)	Measured SAR-1g normalized to 1W (mW/g)	Deviation (%)	Measured Date
D2450V2	727	2450	Body	50.8	12.8	51.2	0.79%	Apr. 08, 2019

Validation Kit	S/N	Frequ (MI		1W Target SAR-1g (mW/g)	Pin=100mW Measured SAR-1g (mW/g)	Measured SAR-1g normalized to 1W (mW/g)	Deviation (%)	Measured Date		
	1040 -	5200	Body	75.2	7.37	73.7	-1.99%	Apr. 09, 2019		
DECH-1/2		1040	1040	5300	Body	76.4	7.78	77.8	1.83%	Apr. 10, 2019
D5GHzV2			5600	Body	81.5	7.99	79.9	-1.96%	Apr. 11, 2019	
		5800	Body	77.3	8.08	80.8	4.53%	Apr. 12, 2019		

Table 1. Results of system validation

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1.10 Tissue Simulant Fluid for the Frequency Band

The dielectric properties for this Head-simulant fluid were measured by using the Agilent Model 85070E Dielectric Probe (rates frequency band 200 MHz to 20 GHz) in conjunction with Network Analyzer.

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 \geq 15 cm \pm 5 mm (Frequency \leq 3G) or \geq 10 cm \pm 5 mm (Frequency >3G) during all tests. (Fig. 2)

Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, Er	Measured Conductivity , σ (S/m)	% dev ɛr	% dev σ
		2402.00	52.764	1.904	51.412	1.956	-2.56%	2.72%
		2412.00	52.751	1.914	51.377	1.967	-2.60%	2.79%
		2427.00	52.731	1.928	51.342	1.988	-2.63%	3.11%
		2437.00	52.717	1.938	51.325	2.003	-2.64%	3.38%
	Apr, 08. 2019	2441.00	52.712	1.941	51.289	2.009	-2.70%	3.48%
		2447.00	52.704	1.947	51.264	2.019	-2.73%	3.69%
		2450.00	52.700	1.950	51.248	2.023	-2.76%	3.74%
		2462.00	52.685	1.967	51.244	2.038	-2.73%	3.61%
		2480.00	52.662	1.993	51.203	2.066	-2.77%	3.69%
Body	Apr, 09. 2019	5200.00	49.014	5.299	49.230	5.170	0.44%	-2.44%
Воцу		5210.00	49.001	5.311	49.182	5.202	0.37%	-2.05%
	Apr. 10. 2019	5290.00	48.892	5.404	48.905	5.317	0.03%	-1.62%
	Apr., 10. 2019	5300.00	48.879	5.416	48.890	5.326	0.02%	-1.66%
		5530.00	48.566	5.685	48.151	5.705	-0.86%	0.36%
		5570.00	48.512	5.731	48.040	5.769	-0.97%	0.66%
	Apr, 11. 2019	5600.00	48.471	5.766	47.998	5.814	-0.98%	0.82%
		5610.00	48.458	5.778	47.911	5.846	-1.13%	1.18%
		5690.00	48.349	5.872	47.671	5.995	-1.40%	2.10%
	Apr, 12. 2019	5775.00	48.261	5.947	47.431	6.113	-1.72%	2.78%
	Αμι, 12. 2019	5800.00	48.200	6.000	47.349	6.150	-1.77%	2.50%

Table 2. Dielectric Parameters of Tissue Simulant Fluid

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The composition of the tissue simulating liquid:

_				Ingi	redient			T
Frequency (MHz)	Mode	DGMBE	Water	Salt	Preventol D-7	Cellulose	Sugar	Total amount
2450M	Body	301.7ml	698.3ml	_	_	_	_	1.0L(Kg)

Body Simulating Liquids for 5 GHz. Manufactured by SPEAG:

Ingredients	Water	Esters, Emulsifiers, Inhibitors	Sodium and Salt
(% by weight)	60-80	20-40	0-1.5

Table 3. Recipes for Tissue Simulating Liquid

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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

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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:

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- 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 ($\sim 2\%$ for c; much better for p), 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., 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

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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.

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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

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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.

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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

AWAN

WLAN Antenna (Tablet mode)

Antenna	Mode	Position	Distance (mm)	СН	Freq.	Max. Rated Avg. Power + Max.	Measured Avg. Power	Scaling	Averaged S (W/		Plot page
			()		(Tolerance (dBm)	(dBm)		Measured	Reported	pago
		Back side	0	1	2412	17.50	17.50	100.00%	0.013	0.013	-
	WLAN 802.11b	Top side	0	1	2412	17.50	17.50	100.00%	0.476	0.476	77
		Bottom side	0	1	2412	17.50	17.50	100.00%	0.012	0.012	-
		Right side	0	1	2412	17.50	17.50	100.00%	0.055	0.055	-
		Left side	0	1	2412	17.50	17.50	100.00%	0.039	0.039	-
		Back side	0	42	5210	15.50	15.44	101.39%	0.055	0.056	-
		Top side	0	42	5210	15.50	15.44	101.39%	0.343	0.348	78
	WLAN 802.11ac(80M) 5.2G	Bottom side	0	42	5210	15.50	15.44	101.39%	0.021	0.022	-
		Right side	0	42	5210	15.50	15.44	101.39%	0.010	0.010	-
		Left side	0	42	5210	15.50	15.44	101.39%	0.026	0.026	-
		Back side	0	58	5290	15.50	15.49	100.23%	0.058	0.058	-
		Top side	0	58	5290	15.50	15.49	100.23%	0.358	0.359	79
	WLAN 802.11ac(80M) 5.3G	Bottom side	0	58	5290	15.50	15.49	100.23%	0.024	0.024	-
		Right side	0	58	5290	15.50	15.49	100.23%	0.010	0.010	-
		Left side	0	58	5290	15.50	15.49	100.23%	0.027	0.027	-
Main		Back side	0	138	5690	15.50	15.48	100.46%	0.087	0.088	-
		Top side	0	138	5690	15.50	15.48	100.46%	0.773	0.777	80
	WLAN 802.11ac(80M) 5.6G	Bottom side	0	138	5690	15.50	15.48	100.46%	0.051	0.051	-
		Right side	0	138	5690	15.50	15.48	100.46%	0.028	0.028	-
		Left side	0	138	5690	15.50	15.48	100.46%	0.055	0.056	-
		Back side	0	114	5570	15.50	15.41	102.09%	0.068	0.069	-
		Top side	0	114	5570	15.50	15.41	102.09%	0.740	0.755	81
	WLAN 802.11ac(160M) 5.6G	Bottom side	0	114	5570	15.50	15.41	102.09%	0.047	0.048	-
		Right side	0	114	5570	15.50	15.41	102.09%	0.026	0.027	-
		Left side	0	114	5570	15.50	15.41	102.09%	0.053	0.054	-
		Back side	0	155	5775	15.50	15.47	100.69%	0.095	0.096	-
		Top side	0	155	5775	15.50	15.47	100.69%	0.807	0.813	82
	W/I ANI 000 44/00NF 5 00	Top side*	0	155	5775	15.50	15.47	100.69%	0.791	0.796	-
	WLAN 802.11ac (80M) 5.8G	Bottom side	0	155	5775	15.50	15.47	100.69%	0.060	0.061	-
		Right side	0	155	5775	15.50	15.47	100.69%	0.034	0.034	-
		Left side	0	155	5775	15.50	15.47	100.69%	0.066	0.066	-

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

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WLAN Aux Antenna (Tablet mode)

Antenna	Mode	Position	Distance (mm)	СН	Freq.	Max. Rated Avg. Power + Max.	Measured Avg. Power	Scaling	Averaged S		Plot page
			(11111)		(1011 12)	Tolerance (dBm)	(dBm)		Measured	Reported	page
		Back side	0	11	2462	17.50	17.46	100.93%	0.017	0.017	-
		Top side	0	11	2462	17.50	17.46	100.93%	0.556	0.561	83
	WLAN 802.11b	Bottom side	0	11	2462	17.50	17.46	100.93%	0.045	0.045	-
		Right side	0	11	2462	17.50	17.46	100.93%	0.058	0.058	-
		Left side	0	11	2462	17.50	17.46	100.93%	0.464	0.468	-
		Back side	0	4	2427	17.50	17.40	102.33%	0.019	0.019	-
		Top side	0	4	2427	17.50	17.40	102.33%	0.684	0.700	84
		Top side	0	6	2437	16.75	16.72	100.69%	0.662	0.667	-
	WLAN 802.11n(40M)	Top side	0	8	2447	16.00	16.00	100.00%	0.633	0.633	-
		Bottom side	0	4	2427	17.50	17.40	102.33%	0.053	0.054	-
		Right side	0	4	2427	17.50	17.40	102.33%	0.066	0.067	-
		Left side	0	4	2427	17.50	17.40	102.33%	0.554	0.567	-
		Back side	0	39	2441	9.50	9.34	103.75%	0.002	0.002	-
		Top side	0	39	2441	9.50	9.34	103.75%	0.060	0.062	85
	Bluetooth (GFSK)	Bottom side	0	39	2441	9.50	9.34	103.75%	0.005	0.005	-
		Right side	0	39	2441	9.50	9.34	103.75%	0.006	0.006	-
		Left side	0	39	2441	9.50	9.34	103.75%	0.044	0.045	-
		Back side	0	42	5210	15.50	15.48	100.46%	0.079	0.079	-
	WLAN 802.11ac(80M) 5.2G	Top side	0	42	5210	15.50	15.48	100.46%	0.789	0.793	86
		Bottom side	0	42	5210	15.50	15.48	100.46%	0.023	0.023	-
		Right side	0	42	5210	15.50	15.48	100.46%	0.037	0.037	-
Aux		Left side	0	42	5210	15.50	15.48	100.46%	0.709	0.712	-
		Back side	0	58	5290	15.50	15.48	100.46%	0.061	0.062	-
		Top side	0	58	5290	15.50	15.48	100.46%	0.635	0.638	87
	WLAN 802.11ac(80M) 5.3G	Bottom side	0	58	5290	15.50	15.48	100.46%	0.019	0.019	-
		Right side	0	58	5290	15.50	15.48	100.46%	0.033	0.033	-
		Left side	0	58	5290	15.50	15.48	100.46%	0.607	0.610	-
		Back side	0	138	5690	15.50	15.49	100.23%	0.057	0.057	-
		Top side	0	138	5690	15.50	15.49	100.23%	0.481	0.482	88
	WLAN 802.11ac(80M) 5.6G	Bottom side	0	138	5690	15.50	15.49	100.23%	0.017	0.017	-
		Right side	0	138	5690	15.50	15.49	100.23%	0.031	0.031	-
		Left side	0	138	5690	15.50	15.49	100.23%	0.462	0.463	-
		Back side	0	114	5570	15.50	15.46	100.93%	0.060	0.060	-
		Top side	0	114	5570	15.50	15.46	100.93%	0.519	0.524	89
	WLAN 802.11ac(160M) 5.6G	Bottom side	0	114	5570	15.50	15.46	100.93%	0.018	0.018	-
		Right side	0	114	5570	15.50	15.46	100.93%	0.032	0.033	-
		Left side	0	114	5570	15.50	15.46	100.93%	0.548	0.553	-
		Back side	0	155	5755	15.50	15.49	100.23%	0.052	0.052	-
		Top side	0	155	5755	15.50	15.49	100.23%	0.439	0.440	90
	WLAN 802.11ac(80M) 5.8G	Bottom side	0	155	5755	15.50	15.49	100.23%	0.015	0.015	-
		Right side	0	155	5755	15.50	15.49	100.23%	0.030	0.030	-
		Left side	0	155	5755	15.50	15.49	100.23%	0.405	0.406	-

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

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HONG-BO

WLAN Antenna (Tablet mode)

Antenna	Mode	Position	Distance (mm)	СН	Freq.	Max. Rated Avg. Power + Max.	Measured Avg. Power	Scaling	Averaged S (W/	AR over 1g /kg)	Plot page
			(11111)		(IVII IZ)	Tolerance (dBm)	(dBm)		Measured	Reported	page
		Back side	0	1	2412	17.50	17.50	100.00%	0.151	0.151	-
	WLAN 802.11b	Top side	0	1	2412	17.50	17.50	100.00%	0.801	0.801	91
		Top side*	0	1	2412	17.50	17.50	100.00%	0.796	0.796	
		Top side	0	6	2437	17.50	17.47	100.69%	0.578	0.582	
		Bottom side	0	1	2412	17.50	17.50	100.00%	0.008	0.008	-
		Right side	0	1	2412	17.50	17.50	100.00%	0.078	0.078	
		Left side	0	1	2412	17.50	17.50	100.00%	0.084	0.084	-
		Back side	0	42	5210	15.50	15.44	101.39%	0.008	0.009	-
		Top side	0	42	5210	15.50	15.44	101.39%	0.732	0.742	92
	WLAN 802.11ac(80M) 5.2G	Bottom side	0	42	5210	15.50	15.44	101.39%	0.023	0.023	-
		Right side	0	42	5210	15.50	15.44	101.39%	0.011	0.011	-
		Left side	0	42	5210	15.50	15.44	101.39%	0.042	0.043	-
		Back side	0	58	5290	15.50	15.49	100.23%	0.009	0.009	-
		Top side	0	58	5290	15.50	15.49	100.23%	0.794	0.796	93
	WLAN 802.11ac(80M) 5.3G	Bottom side	0	58	5290	15.50	15.49	100.23%	0.025	0.025	-
		Right side	0	58	5290	15.50	15.49	100.23%	0.011	0.011	-
		Left side	0	58	5290	15.50	15.49	100.23%	0.044	0.044	-
Main		Back side	0	138	5690	15.50	15.48	100.46%	0.013	0.013	-
		Top side	0	106	5530	15.50	15.46	100.93%	1.160	1.171	-
		Top side	0	138	5690	15.50	15.48	100.46%	1.190	1.195	94
	WLAN 802.11ac(80M) 5.6G	Top side*	0	138	5690	15.50	15.48	100.46%	1.170	1.175	-
		Bottom side	0	138	5690	15.50	15.48	100.46%	0.032	0.032	-
		Right side	0	138	5690	15.50	15.48	100.46%	0.017	0.017	-
		Left side	0	138	5690	15.50	15.48	100.46%	0.067	0.068	-
		Back side	0	114	5570	15.50	15.41	102.09%	0.012	0.012	-
		Top side	0	114	5570	15.50	15.41	102.09%	1.020	1.041	95
	WLAN 802.11ac(160M) 5.6G	Bottom side	0	114	5570	15.50	15.41	102.09%	0.029	0.030	-
		Right side	0	114	5570	15.50	15.41	102.09%	0.014	0.014	-
		Left side	0	114	5570	15.50	15.41	102.09%	0.064	0.065	-
		Back side	0	155	5775	15.50	15.47	100.69%	0.013	0.013	-
		Top side	0	155	5775	15.50	15.47	100.69%	1.160	1.168	96
	WI AN 000 44(00M 5 00	Top side*	0	155	5775	15.50	15.47	100.69%	1.140	1.148	-
	WLAN 802.11ac(80M) 5.8G	Bottom side	0	155	5775	15.50	15.47	100.69%	0.031	0.031	-
		Right side	0	155	5775	15.50	15.47	100.69%	0.015	0.016	-
		Left side	0	155	5775	15.50	15.47	100.69%	0.065	0.066	-

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

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WLAN Aux Antenna (Tablet mode)

Antenna	Mode	Position	Distance (mm)	СН	Freq.	Max. Rated Avg. Power + Max.	Measured Avg. Power	Scaling	Averaged S	AR over 1g /kg)	Plot page
			(11111)		(1011 12)	Tolerance (dBm)	(dBm)		Measured	Reported	page
		Back side	0	11	2462	17.50	17.46	100.93%	0.057	0.058	-
		Top side	0	11	2462	17.50	17.46	100.93%	0.748	0.755	97
	WLAN 802.11b	Bottom side	0	11	2462	17.50	17.46	100.93%	0.032	0.032	-
		Right side	0	11	2462	17.50	17.46	100.93%	0.017	0.017	-
		Left side	0	11	2462	17.50	17.46	100.93%	0.631	0.637	-
		Back side	0	4	2427	17.50	17.40	102.33%	0.063	0.064	-
		Top side	0	4	2427	17.50	17.40	102.33%	0.959	0.981	98
		Top side*	0	4	2427	17.50	17.40	102.33%	0.951	0.973	-
	WLAN 802.11n(40M)	Top side	0	6	2437	16.75	16.72	100.69%	0.968	0.975	-
		Bottom side	0	4	2427	17.50	17.40	102.33%	0.043	0.044	-
		Right side	0	4	2427	17.50	17.40	102.33%	0.018	0.018	-
		Left side	0	39	2427	17.50 9.50	17.40 9.34	102.33%	0.660	0.675	-
		Back side Top side	0	39	2441 2441	9.50	9.34	103.75% 103.75%	0.007 0.124	0.007	99
	Bluetooth (GFSK)	Bottom side	0	39	2441	9.50	9.34	103.75%	0.124	0.129	-
	Bidelootii (GF3K)	Right side	0	39	2441	9.50	9.34	103.75%	0.003	0.003	-
		Left side	0	39	2441	9.50	9.34	103.75%	0.004	0.080	-
		Back side	0	42	5210	15.50	15.48	100.46%	0.014	0.014	_
	WLAN 802.11ac(80M) 5.2G	Top side	0	42	5210	15.50	15.48	100.46%	1.010	1.015	100
		Top side*	0	42	5210	15.50	15.48	100.46%	0.994	0.999	-
		Bottom side	0	42	5210	15.50	15.48	100.46%	0.039	0.039	-
		Right side	0	42	5210	15.50	15.48	100.46%	0.045	0.045	-
Aux		Left side	0	42	5210	15.50	15.48	100.46%	0.453	0.455	-
		Back side	0	58	5290	15.50	15.48	100.46%	0.015	0.015	-
		Top side	0	58	5290	15.50	15.48	100.46%	1.180	1.185	101
	WII AN 000 44 (00M 5.00	Top side*	0	58	5290	15.50	15.48	100.46%	1.160	1.165	-
	WLAN 802.11ac(80M) 5.3G	Bottom side	0	58	5290	15.50	15.48	100.46%	0.041	0.041	-
		Right side	0	58	5290	15.50	15.48	100.46%	0.046	0.046	-
		Left side	0	58	5290	15.50	15.48	100.46%	0.459	0.461	-
		Back side	0	138	5690	15.50	15.49	100.23%	0.011	0.011	-
		Top side	0	138	5690	15.50	15.49	100.23%	0.626	0.627	102
	WLAN 802.11ac(80M) 5.6G	Bottom side	0	138	5690	15.50	15.49	100.23%	0.035	0.035	-
		Right side	0	138	5690	15.50	15.49	100.23%	0.041	0.041	-
		Left side	0	138	5690	15.50	15.49	100.23%	0.422	0.423	-
		Back side	0	114	5570	15.50	15.46	100.93%	0.010	0.010	-
		Top side	0	114	5570	15.50	15.46	100.93%	0.613	0.619	103
	WLAN 802.11ac(160M) 5.6G	Bottom side	0	114	5570	15.50	15.46	100.93%	0.034	0.034	-
		Right side	0	114	5570	15.50	15.46	100.93%	0.040	0.041	-
		Left side	0	114	5570	15.50	15.46	100.93%	0.418	0.422	-
		Back side	0	155	5755	15.50	15.49	100.23%	0.012	0.012	-
		Top side	0	155	5755	15.50	15.49	100.23%	0.763	0.765	104
	WLAN 802.11ac(80M) 5.8G	Bottom side	0	155	5755	15.50	15.49	100.23%	0.036	0.036	-
		Right side	0	155	5755	15.50	15.49	100.23%	0.042	0.042	-
		Left side	0	155	5755	15.50	15.49	100.23%	0.434	0.435	-

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

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

Reported SAR = measured SAR * (scaling)

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

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2.3 Reporting statements of conformity

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

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3. Simultaneous Transmission Analysis

Simultaneous Transmission Scenarios:

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

Note:

- 1. Bluetooth and WLAN Aux share the same antenna path, and BT can transmit with WLAN Main
- 2. For 2.4/5GHz WLAN Main and Aux antennas, the maximum output power of each antenna during simultaneous transmission is the same with that used in standalone transmission, and we used the sum of 1-g SAR provision in KDB447498D01 to exclude the simultaneous transmitted SAR measurement.

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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:

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.

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AWAN

2.4 GHz WLAN MIMO

	JIIL TTE/ (IT IVIIIVIO					
No.	Conditions	Position	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0.013	0.019	0.032	ΣSAR<1.6, Not required
1 2.4 GHz WLAN M + WLAN Aux		Top side	0.476	0.700	1.176	ΣSAR<1.6, Not required
	2.4 GHz WLAN Main + WLAN Aux	Bottom side	0.012	0.054	0.066	ΣSAR<1.6, Not required
		Right side	0.055	0.067	0.122	ΣSAR<1.6, Not required
		Left side	0.039	0.567	0.606	ΣSAR<1.6, Not required

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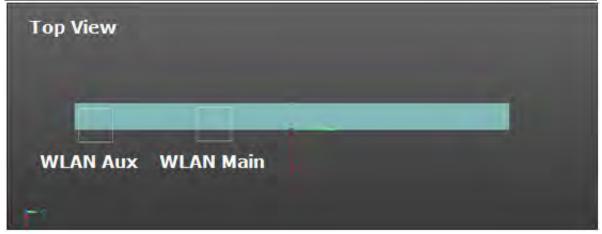
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5 GHz WLAN MIMO

	12 VV E/ (IV IVIIIVIO					
No.	Conditions	Position	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
	Back side	0.096	0.079	0.175	ΣSAR<1.6, Not required	
	5 GHz WLAN Main + WLAN Aux	Top side	0.813	0.793	1.606	Analyzed as below
2		Bottom side	0.061	0.023	0.084	ΣSAR<1.6, Not required
		Right side	0.034	0.037	0.071	ΣSAR<1.6, Not required
		Left side	0.066	0.712	0.778	ΣSAR<1.6, Not required

5 GHz WLAN MIMO

Conditions	Position	SAR Value	Cod	ordinates (d	cm)	ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission SAR Test
		(W/kg)	х	у	Z	(VV/Kg)	Distance (mm)		
WLAN Main	- Top side	0.813	-0.40	-5.58	-0.28	1.606	83.22	0.024	SPLSR<0.04,
WLAN Aux	Top side	0.793	-0.22	-13.90	-0.27	1.000			Not required



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BT+ 2.4GHz WLAN Main

<u>=</u>	TT 2.70112 WEAN Main									
No.	Conditions	Position	Max. WLAN Main	ВТ	SAR Sum	SPLSR				
	3 2.4 GHz WLAN Main + BT	Back side	0.013	0.002	0.015	ΣSAR<1.6, Not required				
		Top side	0.476	0.062	0.538	ΣSAR<1.6, Not required				
3		Bottom side	0.012	0.005	0.017	ΣSAR<1.6, Not required				
		Right side	0.055	0.006	0.061	ΣSAR<1.6, Not required				
		Left side	0.039	0.045	0.084	ΣSAR<1.6, Not required				

BT+ 5GHz WLAN Main

No.	Conditions	Position	Max. WLAN Main	ВТ	SAR Sum	SPLSR
	Back side	0.096	0.002	0.098	ΣSAR<1.6, Not required	
	5 GHz WLAN Main + BT	Top side	0.813	0.062	0.875	ΣSAR<1.6, Not required
4		Bottom side	0.061	0.005	0.066	ΣSAR<1.6, Not required
		Right side	0.034	0.006	0.040	ΣSAR<1.6, Not required
		Left side	0.066	0.045	0.111	ΣSAR<1.6, Not required

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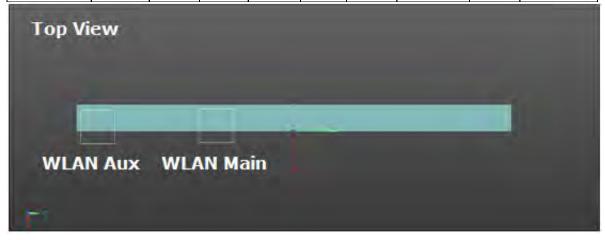
HONG-BO

2.4 GHz WLAN MIMO

	JIIL WEXTEN					
No.	Conditions	Position	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0.151	0.064	0.215	ΣSAR<1.6, Not required
		Top side	0.801	0.981	1.782	Analyzed as below
1	2.4 GHz WLAN Main + WLAN Aux	Bottom side	0.008	0.044	0.052	ΣSAR<1.6, Not required
	,	Right side	0.078	0.018	0.096	ΣSAR<1.6, Not required
		Left side	0.084	0.675	0.759	ΣSAR<1.6, Not required

2.4 GHz WI AN MIMO

	+ OTIZ VVE/IVIIVIO											
Conditions	Position	SAR Value	-		cm)	ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission			
		(W/kg)	x	У	Z	(vv/kg)	Distance (mm)		SAR Test			
WLAN Main	Top side	0.801	0.801	-0.58	-4.96	1.78	85.61	0.028	SPLSR<0.04,			
WLAN Aux	Top side	0.981	0.981	-0.52	-13.52	1.70	00.01	0.020	Not required			



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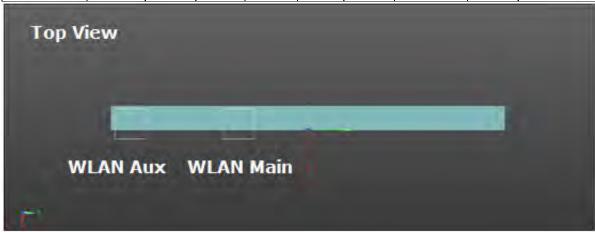
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5 GHz WLAN MIMO

<u> </u>	12 TT E/ (17 10111010					
No.	Conditions	Position	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
	Back side	0.013	0.015	0.028	ΣSAR<1.6, Not required	
		Top side	1.195	1.185	2.380	Analyzed as below
2	5 GHz WLAN Main + WLAN Aux	Bottom side	0.032	0.041	0.073	ΣSAR<1.6, Not required
		Right side	0.017	0.046	0.063	ΣSAR<1.6, Not required
		Left side	0.068	0.461	0.529	ΣSAR<1.6, Not required

5 GHz WLAN MIMO

 01.12 11.27										
Conditions	Position	SAR Value	Cod	ordinates (d	cm)	ΣSAR (M/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission	
		(W/kg)	x	у	Z	(W/kg)	Distance (mm)		SAR Test	
WLAN Main	Top side	1.195	-0.58	-5.72	-0.20	2.380	94.62	0.039	SPLSR<0.04,	
WLAN Aux	Top side	1.185	-0.42	-15.18	-0.27	2.000	34.02	0.009	Not required	



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BT+ 2.4GHz WLAN Main

	Z.TOTIZ WEAT MA	***				
No.	Conditions	Position	Max. WLAN Main	ВТ	SAR Sum	SPLSR
	Back side	0.151	0.007	0.158	ΣSAR<1.6, Not required	
		Top side	0.801	0.129	0.930	ΣSAR<1.6, Not required
3	2.4 GHz WLAN Main + BT	Bottom side	0.008	0.005	0.013	ΣSAR<1.6, Not required
		Right side	0.078	0.004	0.082	ΣSAR<1.6, Not required
		Left side	0.084	0.080	0.164	ΣSAR<1.6, Not required

BT+ 5GHz WLAN Main

	COLIE TYEATH MAIN					
No.	Conditions	Position	Max. WLAN Main	ВТ	SAR Sum	SPLSR
	Back side	0.013	0.007	0.020	ΣSAR<1.6, Not required	
		Top side	1.195	0.129	1.324	ΣSAR<1.6, Not required
4	5 GHz WLAN Main + BT	Bottom side	0.032	0.005	0.037	ΣSAR<1.6, Not required
		Right side	0.017	0.004	0.021	ΣSAR<1.6, Not required
		Left side	0.068	0.080	0.148	ΣSAR<1.6, Not required

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4. Instruments List

Manufacturer	Device	Туре	Serial number	Date of last calibration	Date of next calibration
SPEAG	Dosimetric E-Field Probe	EX3DV4	3770	Apr.25,2018	Apr.24,2019
CDEAC	System Validation	D2450V2	727	Apr.24,2018	Apr.23,2019
SPEAG	Dipole	D5GHzV2	1040	Jun.28,2018	Jun.27,2019
SPEAG	Data acquisition Electronics	DAE4	856	Apr.21,2018	Apr.20,2019
SPEAG	Software	DASY 52 52.8.8	N/A	Calibration not required	Calibration not required
SPEAG	Phantom	ELI	N/A	Calibration not required	Calibration not required
Agilent	Network Analyzer	E5071C	MY46107530	Feb.23,2019	Feb.22,2020
Agilent	Dielectric Probe Kit	85070E	MY44300677	Calibration not required	Calibration not required
Agilent	Dual-directional	772D	MY52180142	Jul.04,2018	Jul.03,2019
Agilent	coupler	778D	MY52180302	Jul.05,2018	Jul.04,2019
Agilent	Signal Generator	N5181A	MY52180142	Jul.04,2018	Jul.03,2019
Agilent	Power Meter	ML2496A	1326001	Aug.09,2018	Aug.02,2019
Agilont	Power Sensor	MA2411B	1315048	Aug.09,2018	Aug.02,2019
Agilerit	Agilent Power Sensor		1315049	Aug.09,2018	Aug.02,2019
Changzhou Xinwang	Digital thermometer	PT1	EC14011603	Jul.06,2018	Jul.05,2019
TECPEL	Digital thermometer	DTM-303A	TP131515	Jul.17,2018	Jul.16,2019

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5. Measurements

Date: 2019/4/8

WLAN 802.11b_Body_Top side_CH 1_Main_0mm

Communication System: WLAN 2.45G; Frequency: 2412 MHz; Duty Cycle: 1:1

Medium parameters used: f = 2412 MHz; $\sigma = 1.967$ S/m; $\varepsilon_r = 51.377$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient temperature: 21.7°C; Liquid temperature: 22.1°C

DASY5 Configuration:

Probe: EX3DV4 - SN3770; ConvF(7.59, 7.59, 7.59); Calibrated: 2018/4/25;

• Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2018/4/21

Phantom: ELI

• DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (51x101x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.655 W/kg

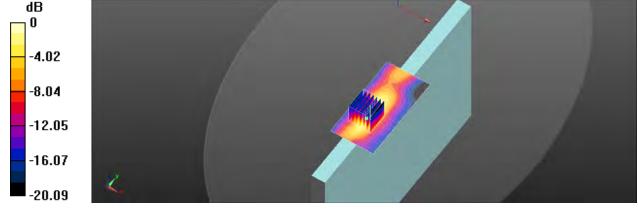
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.265 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 1.37 W/kg

SAR(1 g) = 0.476 W/kg; SAR(10 g) = 0.214 W/kg

Maximum value of SAR (measured) = 0.855 W/kg



0 dB = 0.855 W/kg = -0.68 dBW/kg

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Date: 2019/4/9

WLAN 802.11ac(80M) 5.2G_Body_Top side_CH 42_Main_0mm

Communication System: WLAN 5G; Frequency: 5210 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5210 MHz; $\sigma = 5.202 \text{ S/m}$; $\varepsilon_r = 49.182$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 21.9°C; Liquid temperature: 22.4°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.65, 4.65, 4.65); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (61x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.737 W/kg

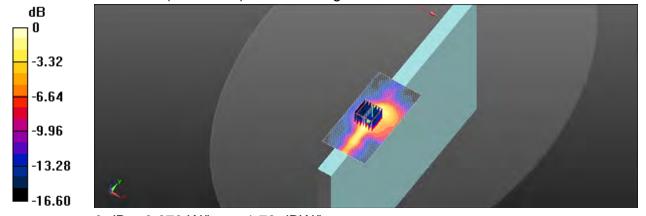
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 2.579 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 1.53 W/kg

SAR(1 g) = 0.343 W/kg; SAR(10 g) = 0.135 W/kg

Maximum value of SAR (measured) = 0.673 W/kg



0 dB = 0.673 W/kg = -1.72 dBW/kg

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Date: 2019/4/10

WLAN 802.11ac(80M) 5.3G_Body_Top side_CH 58_Main_0mm

Communication System: WLAN 5G; Frequency: 5290 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5290 MHz; $\sigma = 5.317 \text{ S/m}$; $\varepsilon_r = 48.905$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

Probe: EX3DV4 - SN3770; ConvF(4.65, 4.65, 4.65); Calibrated: 2018/4/25;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2018/4/21

Phantom: ELI

DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (61x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.708 W/kg

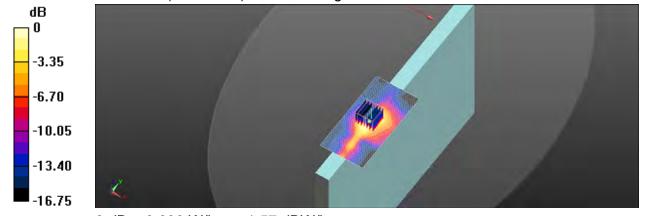
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.678 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 1.49 W/kg

SAR(1 g) = 0.358 W/kg; SAR(10 g) = 0.138 W/kg

Maximum value of SAR (measured) = 0.696 W/kg



0 dB = 0.696 W/kg = -1.57 dBW/kg

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Date: 2019/4/11

WLAN 802.11ac(80M) 5.6G_Body_Top side_CH 138_Main_0mm

Communication System: WLAN 5G; Frequency: 5690 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5690 MHz; $\sigma = 5.995 \text{ S/m}$; $\varepsilon_r = 47.671$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.3°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.38, 4.38, 4.38); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (61x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.67 W/kg

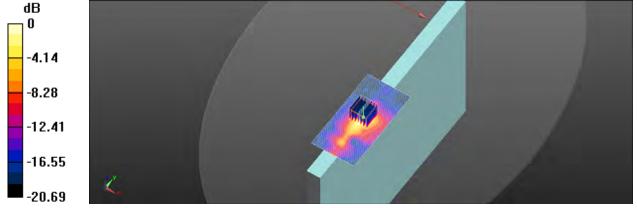
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 2.211 V/m; Power Drift = -0.17 dB

Peak SAR (extrapolated) = 3.86 W/kg

SAR(1 g) = 0.773 W/kg; SAR(10 g) = 0.229 W/kg

Maximum value of SAR (measured) = 1.65 W/kg



0 dB = 1.65 W/kg = 2.17 dBW/kg

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Date: 2019/4/11

WLAN 802.11ac(160M) 5.6G_Body_Top side_CH 114_Main_0mm

Communication System: WLAN 5G; Frequency: 5570 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5570 MHz; $\sigma = 5.769 \text{ S/m}$; $\varepsilon_r = 48.04$; $\rho = 1400 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.3°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.38, 4.38, 4.38); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (61x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.21 W/kg

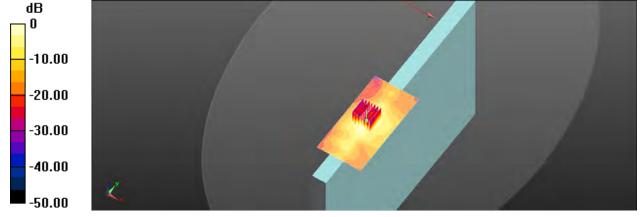
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 2.727 V/m; Power Drift = -0.02dB

Peak SAR (extrapolated) = 3.01 W/kg

SAR(1 g) = 0.740 W/kg; SAR(10 g) = 0.244 W/kg

Maximum value of SAR (measured) = 1.38 W/kg



0 dB = 1.38 W/kg = 1.40 dBW/kg

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Date: 2019/4/12

WLAN 802.11ac(80M) 5.8G_Body_Top side_CH 155_Main_0mm

Communication System: WLAN 5G; Frequency: 5775 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5775 MHz; $\sigma = 6.113$ S/m; $\varepsilon_r = 47.431$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient temperature: 22.6°C; Liquid temperature: 22.3°C

DASY5 Configuration:

Probe: EX3DV4 - SN3770; ConvF(4.38, 4.38, 4.38); Calibrated: 2018/4/25;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2018/4/21

Phantom: ELI

DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (61x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.75 W/kg

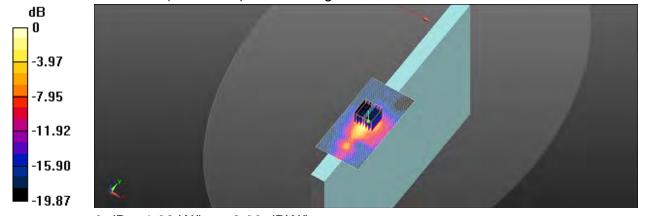
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.919 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 4.22 W/kg

SAR(1 g) = 0.807 W/kg; SAR(10 g) = 0.235 W/kg

Maximum value of SAR (measured) = 1.82 W/kg



0 dB = 1.82 W/kg = 2.60 dBW/kg

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Date: 2019/4/8

WLAN 802.11b_Body_Top side_CH 11_Aux_0mm

Communication System: WLAN 2.45G; Frequency: 2462 MHz; Duty Cycle: 1:1

Medium parameters used: f = 2462 MHz; $\sigma = 2.038$ S/m; $\varepsilon_r = 51.244$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient temperature: 21.7°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(7.59, 7.59, 7.59); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (51x101x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.873 W/kg

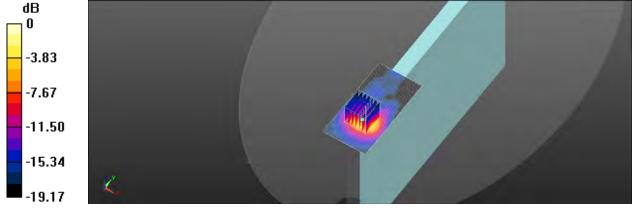
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.997 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 1.25 W/kg

SAR(1 g) = 0.556 W/kg; SAR(10 g) = 0.243 W/kg

Maximum value of SAR (measured) = 0.820 W/kg



0 dB = 0.820 W/kg = -0.86 dBW/kg

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Date: 2019/4/8

WLAN 802.11n(40)_Body_Top side_CH 4_Aux_0mm

Communication System: WLAN 2.45G; Frequency: 2427 MHz; Duty Cycle: 1:1

Medium parameters used: f = 2427 MHz; $\sigma = 1.988 \text{ S/m}$; $\varepsilon_r = 51.342$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 21.7°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(7.59, 7.59, 7.59); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (51x101x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 1.05 W/kg

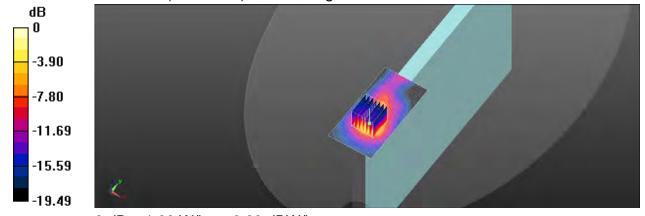
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.399 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 1.65 W/kg

SAR(1 g) = 0.684 W/kg; SAR(10 g) = 0.301 W/kg

Maximum value of SAR (measured) = 1.08 W/kg



0 dB = 1.08 W/kg = 0.33 dBW/kg

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Bluetooth(GFSK)_Body_Top side_CH 39_Aux_0mm

Communication System: Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1

Medium parameters used: f = 2441 MHz; $\sigma = 2.009$ S/m; $\varepsilon_r = 51.289$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient temperature: 21.7°C; Liquid temperature: 22.1°C

DASY5 Configuration:

Probe: EX3DV4 - SN3770; ConvF(7.59, 7.59, 7.59); Calibrated: 2018/4/25;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2018/4/21

Phantom: ELI

DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (51x101x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.0978 W/kg

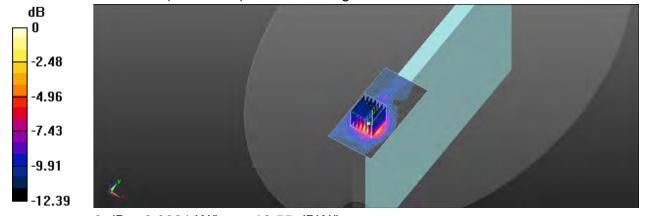
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.350 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.146 W/kg

SAR(1 g) = 0.060 W/kg; SAR(10 g) = 0.028 W/kg

Maximum value of SAR (measured) = 0.0881 W/kg



0 dB = 0.0881 W/kg = -10.55 dBW/kg

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Date: 2019/4/9

WLAN 802.11ac(80M) 5.2G_Body_Top side_CH 42_Aux_0mm

Communication System: WLAN 5G; Frequency: 5210 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5210 MHz; $\sigma = 5.202 \text{ S/m}$; $\varepsilon_r = 49.182$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 21.9°C; Liquid temperature: 22.4°C

DASY5 Configuration:

Probe: EX3DV4 - SN3770; ConvF(4.65, 4.65, 4.65); Calibrated: 2018/4/25;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2018/4/21

Phantom: ELI

DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (61x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.64 W/kg

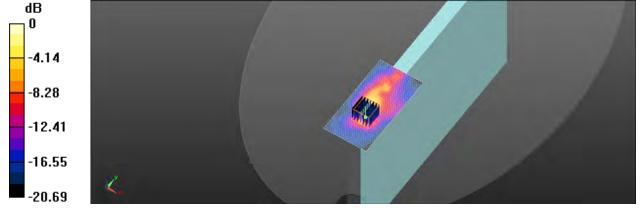
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.918 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 4.03 W/kg

SAR(1 g) = 0.789 W/kg; SAR(10 g) = 0.198 W/kg

Maximum value of SAR (measured) = 1.86 W/kg



0 dB = 1.86 W/kg = 2.70 dBW/kg

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Date: 2019/4/10

WLAN 802.11ac(80M) 5.3G_Body_Top side_CH 58_Aux_0mm

Communication System: WLAN 5G; Frequency: 5290 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5290 MHz; $\sigma = 5.317 \text{ S/m}$; $\varepsilon_r = 48.905$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.65, 4.65, 4.65); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (61x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.34 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.457 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 3.35 W/kg

SAR(1 g) = 0.635 W/kg; SAR(10 g) = 0.170 W/kg

Maximum value of SAR (measured) = 1.45 W/kg

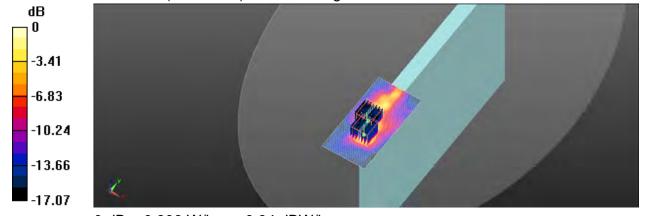
Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.457 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 1.61 W/kg

SAR(1 g) = 0.428 W/kg; SAR(10 g) = 0.159 W/kg

Maximum value of SAR (measured) = 0.806 W/kg



0 dB = 0.806 W/kg = -0.94 dBW/kg

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Date: 2019/4/11

WLAN 802.11ac(80M) 5.6G_Body_Top side_CH 138_Aux_0mm

Communication System: WLAN 5G; Frequency: 5690 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5690 MHz; $\sigma = 5.995 \text{ S/m}$; $\varepsilon_r = 47.671$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.3°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.38, 4.38, 4.38); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (61x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.04 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.941 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 2.56 W/kg

SAR(1 g) = 0.481 W/kg; SAR(10 g) = 0.174 W/kg

Maximum value of SAR (measured) = 1.01 W/kg

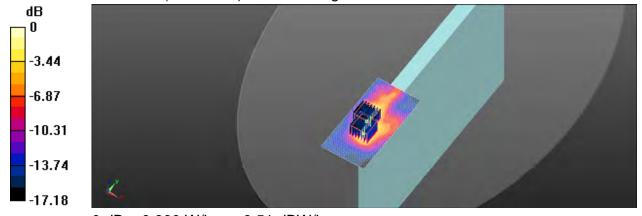
Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.941 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 1.98 W/kg

SAR(1 g) = 0.451 W/kg; SAR(10 g) = 0.175 W/kg

Maximum value of SAR (measured) = 0.890 W/kg



0 dB = 0.890 W/kg = -0.51 dBW/kg

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Date: 2019/4/11

WLAN 802.11ac(160M) 5.6G_Body_Top side_CH 114_Aux_0mm

Communication System: WLAN 5G; Frequency: 5570 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5570 MHz; $\sigma = 5.769$ S/m; $\varepsilon_r = 48.04$; $\rho = 1000$ kg/m³

Ambient temperature: 22.3°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.38, 4.38, 4.38); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (61x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.11 W/kg

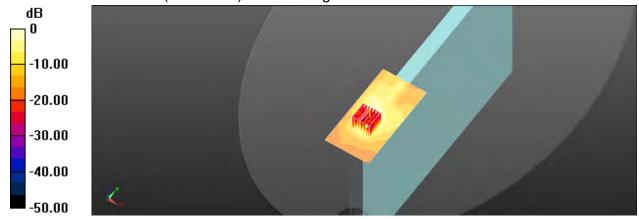
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.309 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 2.45 W/kg

SAR(1 g) = 0.519 W/kg; SAR(10 g) = 0.169 W/kg

Maximum value of SAR (measured) = 1.09 W/kg



0 dB = 1.09 W/kg = 0.37 dBW/kg

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Date: 2019/4/12

WLAN 802.11ac(80M) 5.8G_Body_Top side_CH 155_Aux_0mm

Communication System: WLAN 5G; Frequency: 5775 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5775 MHz; $\sigma = 6.113$ S/m; $\varepsilon_r = 47.431$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient temperature: 22.6°C; Liquid temperature: 22.3°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.38, 4.38, 4.38); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (61x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.939 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 2.259 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 1.91 W/kg

SAR(1 g) = 0.439 W/kg; SAR(10 g) = 0.172 W/kg

Maximum value of SAR (measured) = 0.861 W/kg

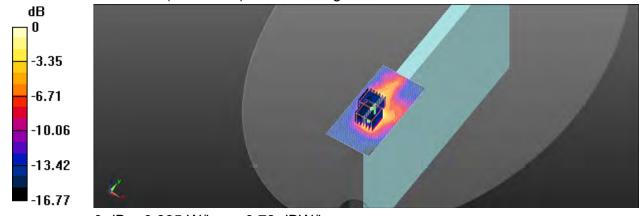
Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 2.259 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 2.20 W/kg

SAR(1 g) = 0.390 W/kg; SAR(10 g) = 0.152 W/kg

Maximum value of SAR (measured) = 0.835 W/kg



0 dB = 0.835 W/kg = -0.78 dBW/kg

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Date: 2019/4/8

WLAN 802.11b_Body_Top side_CH 1_Main_0mm

Communication System: WLAN 2.45G; Frequency: 2412 MHz; Duty Cycle: 1:1

Medium parameters used: f = 2412 MHz; $\sigma = 1.967$ S/m; $\varepsilon_r = 51.377$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient temperature: 21.7°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(7.59, 7.59, 7.59); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (51x101x1): Interpolated grid: dx=12 mm, dy=12 mm

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

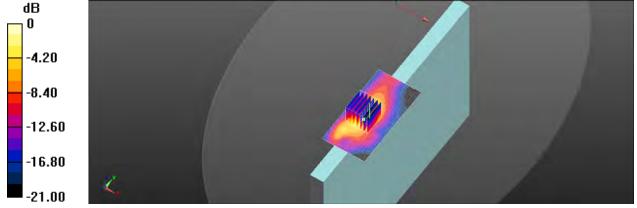
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.159 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 2.31 W/kg

SAR(1 g) = 0.801 W/kg; SAR(10 g) = 0.354 W/kg

Maximum value of SAR (measured) = 1.47 W/kg



0 dB = 1.47 W/kg = 1.67 dBW/kg

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Date: 2019/4/9

WLAN 802.11ac(80M) 5.2G_Body_Top side_CH 42_Main_0mm

Communication System: WLAN 5G; Frequency: 5210 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5210 MHz; $\sigma = 5.202 \text{ S/m}$; $\varepsilon_r = 49.182$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 21.9°C; Liquid temperature: 22.4°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.65, 4.65, 4.65); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (61x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.52 W/kg

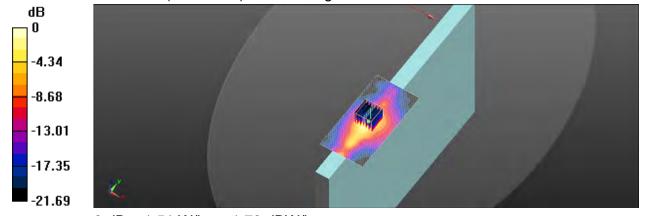
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 2.093 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 3.26 W/kg

SAR(1 g) = 0.732 W/kg; SAR(10 g) = 0.245 W/kg

Maximum value of SAR (measured) = 1.51 W/kg



0 dB = 1.51 W/kg = 1.79 dBW/kg

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Date: 2019/4/10

WLAN 802.11ac(80M) 5.3G_Body_Top side_CH 58_Main_0mm

Communication System: WLAN 5G; Frequency: 5290 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5290 MHz; $\sigma = 5.317 \text{ S/m}$; $\varepsilon_r = 48.905$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.65, 4.65, 4.65); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (61x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.71 W/kg

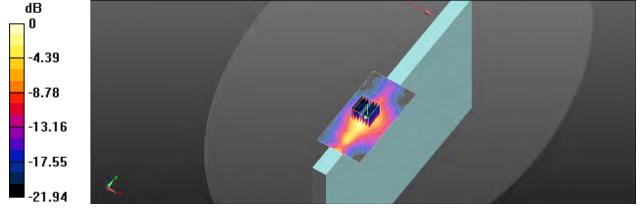
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 2.267 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 3.60 W/kg

SAR(1 g) = 0.794 W/kg; SAR(10 g) = 0.262 W/kg

Maximum value of SAR (measured) = 1.70 W/kg



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

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Date: 2019/4/11

WLAN 802.11ac(80M) 5.6G_Body_Top side_CH 138_Main_0mm

Communication System: WLAN 5G; Frequency: 5690 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5690 MHz; $\sigma = 5.995 \text{ S/m}$; $\varepsilon_r = 47.671$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.3°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.38, 4.38, 4.38); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (61x121x1): Interpolated grid: dx=10 mm, dy=10 mm

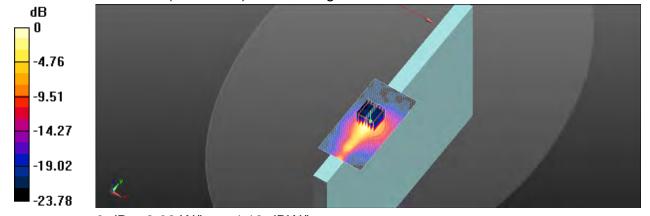
Maximum value of SAR (interpolated) = 2.82 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 2.098 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 6.34 W/kg

SAR(1 g) = 1.19 W/kg; SAR(10 g) = 0.337 W/kg Maximum value of SAR (measured) = 2.62 W/kg



0 dB = 2.62 W/kg = 4.18 dBW/kg

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Date: 2019/4/11

WLAN 802.11ac(160M) 5.6G_Body_Top side_CH 114_Main_0mm

Communication System: WLAN 5G; Frequency: 5570 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5570 MHz; $\sigma = 5.769 \text{ S/m}$; $\varepsilon_r = 48.04$; $\rho = 1550 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.3°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.38, 4.38, 4.38); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (61x121x1): Interpolated grid: dx=10 mm, dy=10 mm

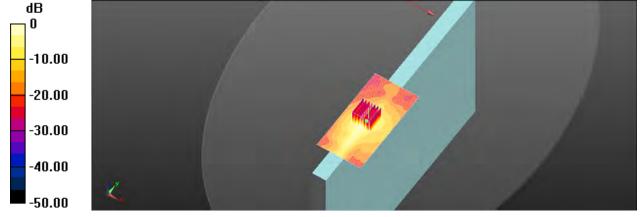
Maximum value of SAR (interpolated) = 1.68 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.785 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 4.40 W/kg

SAR(1 g) = 1.02 W/kg; SAR(10 g) = 0.325 W/kg Maximum value of SAR (measured) = 1.79 W/kg



0 dB = 1.79 W/kg = 2.53 dBW/kg

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WLAN 802.11ac(80M) 5.8G_Body_Top side_CH 155_Main_0mm

Communication System: WLAN 5G; Frequency: 5775 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5775 MHz; $\sigma = 6.113$ S/m; $\varepsilon_r = 47.431$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient temperature: 22.6°C; Liquid temperature: 22.3°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.38, 4.38, 4.38); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (61x121x1): Interpolated grid: dx=10 mm, dy=10 mm

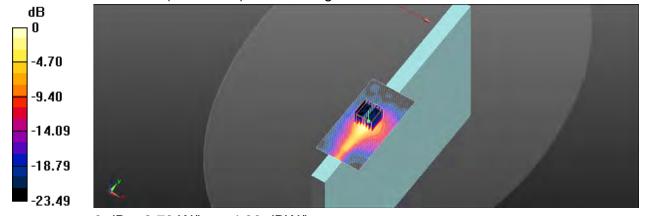
Maximum value of SAR (interpolated) = 2.82 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 2.009 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 7.47 W/kg

SAR(1 g) = 1.16 W/kg; SAR(10 g) = 0.333 W/kg Maximum value of SAR (measured) = 2.73 W/kg



0 dB = 2.73 W/kg = 4.36 dBW/kg

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WLAN 802.11b_Body_Top side_CH 11_Aux_0mm

Communication System: WLAN 2.45G; Frequency: 2462 MHz; Duty Cycle: 1:1

Medium parameters used: f = 2462 MHz; $\sigma = 2.038 \text{ S/m}$; $\varepsilon_r = 51.244$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 21.7°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(7.59, 7.59, 7.59); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (51x101x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.842 W/kg

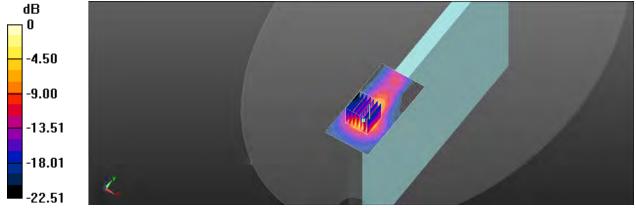
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.220 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 2.03 W/kg

SAR(1 g) = 0.748 W/kg; SAR(10 g) = 0.279 W/kg

Maximum value of SAR (measured) = 1.24 W/kg



0 dB = 1.24 W/kg = 0.93 dBW/kg

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WLAN 802.11n(40)_Body_Top side_CH 4_Aux_0mm

Communication System: WLAN 2.45G; Frequency: 2427 MHz; Duty Cycle: 1:1

Medium parameters used: f = 2427 MHz; $\sigma = 1.988 \text{ S/m}$; $\varepsilon_r = 51.342$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 21.7°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(7.59, 7.59, 7.59); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (51x101x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 1.01 W/kg

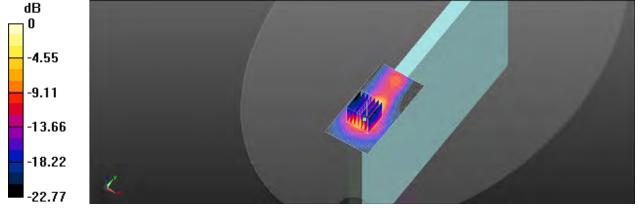
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.074 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 2.62 W/kg

SAR(1 g) = 0.959 W/kg; SAR(10 g) = 0.361 W/kg

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



0 dB = 1.80 W/kg = 2.55 dBW/kg

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Bluetooth(GFSK)_Body_Top side_CH 39_Aux_0mm

Communication System: Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1

Medium parameters used: f = 2441 MHz; $\sigma = 2.009$ S/m; $\varepsilon_r = 51.289$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient temperature: 21.7°C; Liquid temperature: 22.1°C

DASY5 Configuration:

Probe: EX3DV4 - SN3770; ConvF(7.59, 7.59, 7.59); Calibrated: 2018/4/25;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2018/4/21

Phantom: ELI

DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (51x101x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.138 W/kg

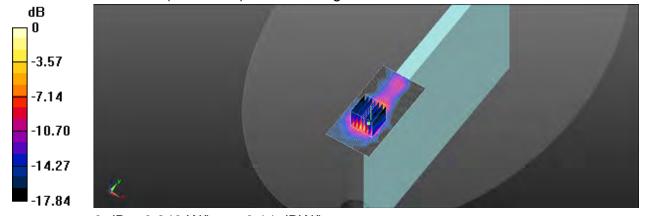
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.934 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.364 W/kg

SAR(1 g) = 0.124 W/kg; SAR(10 g) = 0.047 W/kg

Maximum value of SAR (measured) = 0.243 W/kg



0 dB = 0.243 W/kg = -6.14 dBW/kg

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Date: 2019/4/9

WLAN 802.11ac(80M) 5.2G_Body_Top side_CH 42_Aux_0mm

Communication System: WLAN 5G; Frequency: 5210 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5210 MHz; $\sigma = 5.202 \text{ S/m}$; $\varepsilon_r = 49.182$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 21.9°C; Liquid temperature: 22.4°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.65, 4.65, 4.65); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (61x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 2.33 W/kg

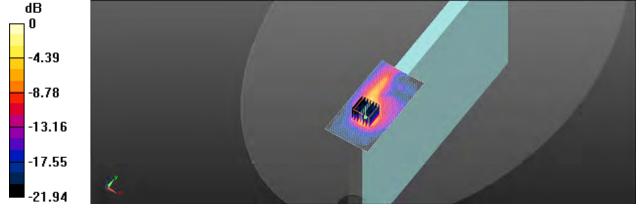
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.641 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 8.86 W/kg

SAR(1 g) = 1.01 W/kg; SAR(10 g) = 0.256 W/kg

Maximum value of SAR (measured) = 2.29 W/kg



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

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Date: 2019/4/10

WLAN 802.11ac(80M) 5.3G_Body_Top side_CH 58_Aux_0mm

Communication System: WLAN 5G; Frequency: 5290 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5290 MHz; $\sigma = 5.317 \text{ S/m}$; $\varepsilon_r = 48.905$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.65, 4.65, 4.65); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (61x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 2.84 W/kg

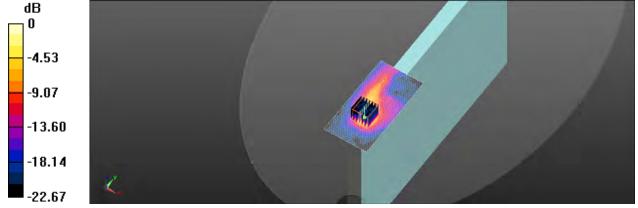
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.577 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 6.67 W/kg

SAR(1 g) = 1.18 W/kg; SAR(10 g) = 0.300 W/kg

Maximum value of SAR (measured) = 2.79 W/kg



0 dB = 2.79 W/kg = 4.46 dBW/kg

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WLAN 802.11ac(80M) 5.6G_Body_Top side_CH 138_Aux_0mm

Communication System: WLAN 5G; Frequency: 5690 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5690 MHz; $\sigma = 5.995 \text{ S/m}$; $\varepsilon_r = 47.671$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.3°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.38, 4.38, 4.38); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (61x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.39 W/kg

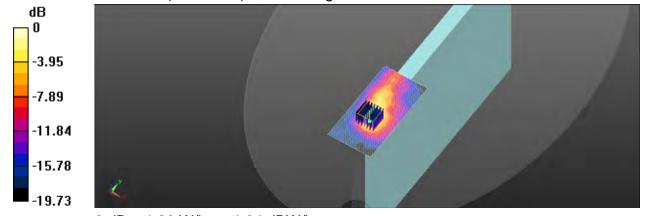
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.713 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 3.46 W/kg

SAR(1 g) = 0.626 W/kg; SAR(10 g) = 0.206 W/kg

Maximum value of SAR (measured) = 1.36 W/kg



0 dB = 1.36 W/kg = 1.34 dBW/kg

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WLAN 802.11ac(160M) 5.6G_Body_Top side_CH 114_Aux_0mm

Communication System: WLAN 5G; Frequency: 5570 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5570 MHz; $\sigma = 5.769 \text{ S/m}$; $\varepsilon_r = 48.04$; $\rho = 2550 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.3°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.38, 4.38, 4.38); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (61x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.885 W/kg

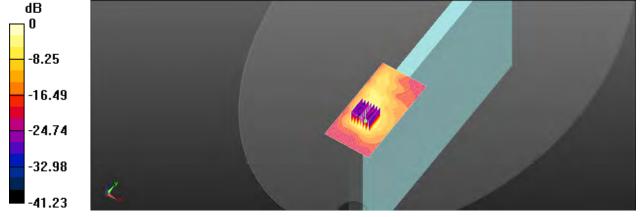
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 1.491 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 2.27 W/kg

SAR(1 g) = 0.613 W/kg; SAR(10 g) = 0.204 W/kg

Maximum value of SAR (measured) = 0.924 W/kg



0 dB = 0.924 W/kg = -0.34 dBW/kg

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Date: 2019/4/12

WLAN 802.11ac(80M) 5.8G_Body_Top side_CH 155_Aux_0mm

Communication System: WLAN 5G; Frequency: 5775 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5775 MHz; $\sigma = 6.113$ S/m; $\varepsilon_r = 47.431$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Ambient temperature: 22.6°C; Liquid temperature: 22.3°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.38, 4.38, 4.38); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (61x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.79 W/kg

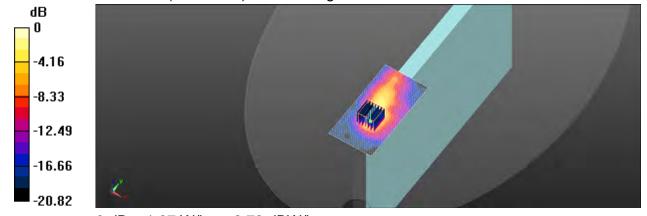
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 2.291 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 3.97 W/kg

SAR(1 g) = 0.763 W/kg; SAR(10 g) = 0.250 W/kg

Maximum value of SAR (measured) = 1.87 W/kg



0 dB = 1.87 W/kg = 2.72 dBW/kg

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6. SAR System Performance Verification

Date: 2019/4/8

Dipole 2450 MHz SN:727

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used: f = 2450 MHz; $\sigma = 2.023 \text{ S/m}$; $\varepsilon_r = 51.248$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 21.7°C; Liquid temperature: 22.1°C

DASY5 Configuration:

Probe: EX3DV4 - SN3770; ConvF(7.59, 7.59, 7.59); Calibrated: 2018/4/25;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2018/4/21

Phantom: ELI Type: Not Specified; Serial: Not Specified

DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=12 mm, dy=12 mm

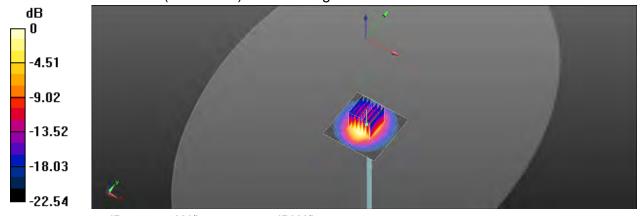
Maximum value of SAR (interpolated) = 20.3 W/kg

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

Reference Value = 98.93 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 27.5 W/kg

SAR(1 g) = 12.8 W/kg; SAR(10 g) = 5.85 W/kgMaximum value of SAR (measured) = 20.0 W/kg



0 dB = 20.0 W/kg = 13.01 dBW/kg

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Date: 2019/4/9

Dipole 5200 MHz_SN:1040

Communication System: CW; Frequency: 5200 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5200 MHz; $\sigma = 5.17 \text{ S/m}$; $\varepsilon_r = 49.23$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 21.9°C; Liquid temperature: 22.4°C

DASY5 Configuration:

Probe: EX3DV4 - SN3770; ConvF(4.65, 4.65, 4.65); Calibrated: 2018/4/25;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2018/4/21

Phantom: ELI

DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Pin=100mW/Area Scan (51x51x1): Interpolated grid: dx=10 mm, dy=10 mm

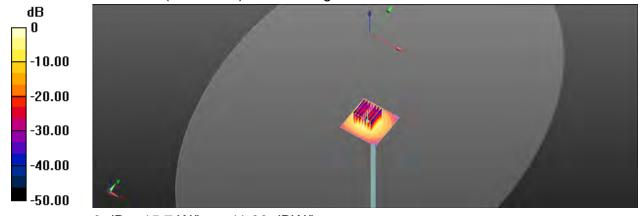
Maximum value of SAR (interpolated) = 14.9 W/kg

Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm,

Reference Value = 55.05 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 31.8 W/kg

SAR(1 g) = 7.37 W/kg; SAR(10 g) = 2.01 W/kgMaximum value of SAR (measured) = 15.7 W/kg



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

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Date: 2019/4/10

Dipole 5300 MHz_SN:1040

Communication System: CW; Frequency: 5300 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5300 MHz; $\sigma = 5.326 \text{ S/m}$; $\varepsilon_r = 48.889$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.65, 4.65, 4.65); Calibrated: 2018/4/25;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2018/4/21
- Phantom: ELI
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Pin=100mW/Area Scan (51x51x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 16.2 W/kg

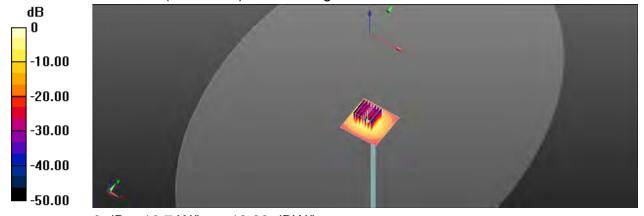
Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm,

dz=2mm

Reference Value = 55.79 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 34.4 W/kg

SAR(1 g) = 7.78 W/kg; SAR(10 g) = 2.11 W/kg Maximum value of SAR (measured) = 16.7 W/kg



0 dB = 16.7 W/kg = 12.23 dBW/kg

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Date: 2019/4/11

Dipole 5600 MHz_SN:1040

Communication System: CW; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5600 MHz; $\sigma = 5.814 \text{ S/m}$; $\varepsilon_r = 47.998$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.3°C; Liquid temperature: 21.9°C

DASY5 Configuration:

Probe: EX3DV4 - SN3770; ConvF(4.06, 4.06, 4.06); Calibrated: 2018/4/25;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2018/4/21

Phantom: ELI

DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Pin=100mW/Area Scan (51x51x1): Interpolated grid: dx=10 mm, dy=10 mm

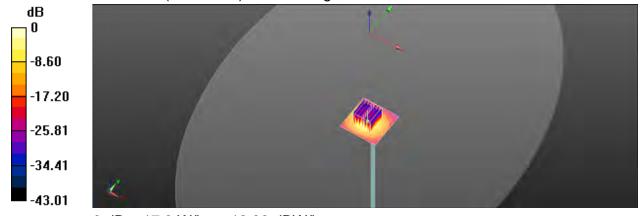
Maximum value of SAR (interpolated) = 17.0 W/kg

Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm,

Reference Value = 59.55 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 33.6 W/kg

SAR(1 g) = 7.99 W/kg; SAR(10 g) = 2.2 W/kgMaximum value of SAR (measured) = 17.3 W/kg



0 dB = 17.3 W/kg = 12.38 dBW/kg

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Date: 2019/4/12

Dipole 5800 MHz SN:1040

Communication System: CW; Frequency: 5800 MHz; Duty Cycle: 1:1

Medium parameters used: f = 5800 MHz; $\sigma = 6.15 \text{ S/m}$; $\varepsilon_r = 47.349$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Ambient temperature: 22.6°C; Liquid temperature: 22.3°C

DASY5 Configuration:

Probe: EX3DV4 - SN3770; ConvF(4.38, 4.38, 4.38); Calibrated: 2018/4/25;

Sensor-Surface: 2mm (Mechanical Surface Detection)

Electronics: DAE4 Sn856; Calibrated: 2018/4/21

Phantom: ELI

DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Pin=100mW/Area Scan (51x51x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 17.4 W/kg

Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm,

dz=2mm

Reference Value = 56.76 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 40.8 W/kg

SAR(1 g) = 8.08 W/kg; SAR(10 g) = 2.23 W/kg Maximum value of SAR (measured) = 17.7 W/kg



0 dB = 17.7 W/kg = 12.48 dBW/kg

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7. Uncertainty Budget

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

A	С	D	е		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%	œ
Isotropy , Axial	3.50%	R	√3	1.732	1	1	2.02%	2.02%	œ
Isotropy, Hemispherical	9.60%	R	√3	1.732	1	1	5.54%	5.54%	œ
Modulation Response	2.40%	R	√3	1.732	1	1	1.40%	1.40%	8
Boundary Effect	1.00%	R	√3	1.732	1	1	0.58%	0.58%	œ
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	œ
Detection Limits	1.00%	R	√3	1.732	1	1	0.58%	0.58%	œ
Readout Electronics	0.30%	N	1	1	1	1	0.30%	0.30%	œ
Response time	0.80%	R	√3	1.732	1	1	0.46%	0.46%	00
Integration Time	2.60%	R	√3	1.732	1	1	1.50%	1.50%	œ
Measurement drift (class A evaluation)	1.75%	R	√3	1.732	1	1	1.01%	1.01%	œ
RF ambient condition - noise	3.00%	R	√3	1.732	1	1	1.73%	1.73%	œ
RF ambient conditions - reflections	3.00%	R	√3	1.732	1	1	1.73%	1.73%	œ
Probe positioner Mechanical restrictions	0.40%	R	√3	1.732	1	1	0.23%	0.23%	œ
Probe Positioning with respect to phantom shell	2.90%	R	√3	1.732	1	1	1.67%	1.67%	00
Post-processing	1.00%	R	√3	1.732	1	1	0.58%	0.58%	00
Max SAR Eval	1.00%	R	√3	1.732	1	1	0.58%	0.58%	00
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%	œ
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	œ
Liquid permittivity (mea.)	1.77%	N	1	1	0.64	0.43	1.13%	0.76%	М
Liquid Conductivity (mea.)	2.78%	N	1	1	0.6	0.49	1.67%	1.36%	М
Combined standard uncertainty		RSS					11.89%	11.81%	
Expant uncertainty (95% confidence interval), K=2							23.78%	23.62%	

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

A	С	D	е		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.)	2.77%	N	1	1	0.64	0.43	1.77%	1.19%	М
Liquid Conductivity (mea.)	3.74%	N	1	1	0.6	0.49	2.24%	1.83%	М
Combined standard uncertainty		RSS					11.77%	11.62%	
Expant uncertainty (95% confidence interval), K=2							23.54%	23.23%	

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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Appendixes

Refer to separated files for the following appendixes.

EN201940007 SAR_Appendix A Photographs

EN201940007 SAR_Appendix B DAE & Probe Cal. Certificate

EN201940007 SAR_Appendix C Phantom Description & Dipole Cal. Certificate

- End of report -

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