

# SAR TEST REPORT



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

Product Name	Notebook PC
Brand Name	HP
Model No.	TPN-Q239
Prepared for	HP Inc. 1501 Page Mill Road Palo Alto, CA 94304
Standards	IEEE/ANSI C95.1-1992, IEEE 1528-2013,
	KDB248227D01v02r02,KDB865664D01v01r04,
	KDB865664D02v01r02,KDB447498D01v06,
	KDB616217D04v01r02,
FCC ID	B94-AX201D2WS
Date of Receipt	Dec. 23, 2019
Date of Test(s)	Jan. 23, 2020 ~ Feb. 03, 2020
Date of Issue In the configuration tested, the EUT	Feb. 19, 2020 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 / Annie Chang	Engineer / Bond Tsai	Asst. Manager / John Yeh
Amile Chang	Bondfrai	John Teh
		Date: Feb. 19. 202

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Report No. : E5/2019/C0012 Page: 2 of 144

# **Revision History**

Report Number	Revision	Description	Issue Date
E5/2019/C0012	Rev.00	Initial creation of document	Feb. 19, 2020

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# 1. General Information

# **1.1 Testing Laboratory**

SGS Taiwan Ltd. Electronics & Communication Laboratory				
No. 2, Keji 1st Rd., Guishan Township, Taoyuan County, 33383, Taiwan				
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

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# **1.3 Description of EUT**

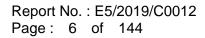
General Information of Host:							
Equipment Under Test	Notebook PC						
Brand Name	HP						
Model No.	TPN-Q239						
Integrated Module	Brand Name : Intel Model Name : AX201D2W						
FCC ID	B94-AX201D2WS						
Mode of Operation	WLAN802.11 a/b/g/n/ac/ax(20M/40	M/80M/	160M	)			
Duty Cycle	WLAN802.11 a/b/g/n/ac/ax(20M/40M/80M/160M)		1				
	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	1			
	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			
	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		—	5690			
	WLAN802.11 ac/ax(160M) 5.6G		5570	l			
	WLAN802.11 a/n/ac/ax(20M) 5.8G	5745	—	5825			
	WLAN802.11 n/ac/ax(40M) 5.8G	5755	_	5795			

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TX Frequency 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	
	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		114	
	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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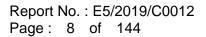
# **High-Tek**

Max. SAR (1g) (Unit: W/Kg)								
Antenna	Band	Measured	Reported	Channel	Position			
	WLAN 802.11b	1.08	1.09	11	Top side			
	WLAN 802.11n(40M) 5.2G	0.86	0.88	38	Top side			
Ant2	WLAN 802.11 ac(80M) 5.2G	0.85	0.85	42	Top side			
Antz	WLAN 802.11ac(80M) 5.3G	0.78	0.80	58	Top side			
	WLAN 802.11ac(80M) 5.6G	0.59	0.59	138	Top side			
	WLAN 802.11ac(80M) 5.8G	0.62	0.63	155	Top side			
	WLAN 802.11b	1.09	1.11	6	Top side			
	Bluetooth(GFSK)	0.03	0.05	78	Top side			
	WLAN 802.11ac(80M) 5.2G	0.63	0.64	42	Top side			
Ant1	WLAN 802.11ac(80M) 5.3G	0.71	0.72	58	Top side			
	WLAN 802.11ac(80M) 5.6G	0.96	0.97	138	Top side			
	WLAN 802.11n(40M) 5.8G	0.97	0.97	159	Top side			
	WLAN 802.11ac(80M) 5.8G	1.01	1.02	155	Top side			

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#### **INPAQ**

Max. SAR (1g) (Unit: W/Kg)								
Antenna	Band	Measured	Reported	Channel	Position			
	WLAN 802.11b	0.84	0.85	6	Top side			
	WLAN 802.11n(40M) 5.2G	0.85	0.87	46	Top side			
A nt2	WLAN 802.11ac(80M) 5.2G	0.83	0.85	42	Top side			
Ant2	WLAN 802.11ac(80M) 5.3G	0.79	0.80	58	Top side			
	WLAN 802.11ac(80M) 5.6G	0.78	0.78	106	Top side			
	WLAN 802.11ac(80M) 5.8G	0.60	0.61	155	Top side			
	WLAN 802.11b	0.61	0.62	6	Top side			
	Bluetooth(GFSK)	0.08	0.13	78	Top side			
Ant1	WLAN 802.11ac(80M) 5.2G	0.70	0.70	42	Top side			
	WLAN 802.11ac(80M) 5.3G	0.70	0.71	58	Top side			
	WLAN 802.11ac(80M) 5.6G	0.85	0.86	106	Top side			
	WLAN 802.11ac(80M) 5.8G	0.61	0.611	155	Top side			

#### **Antenna Information**

					Tablet mode					
Vendor		INPAQ								
Antenna			Ant 1 (PIFA)					Ant2 (PIFA)		
Part Number			Q60PLBLB4 P-LBLB-02-					Q60PLBLB4 -P-LBLB-02-		
Frequency	2400-2500	5150-5250	5250-5350	5470-5725	5725-5850	2400-2500	5150-5250	5250-5350	5470-5725	5725-5850
Gain (dBi)	-2.16	-2.02	-0.26	-0.18	-0.56	-2.35	-2.60	-2.33	-0.4	0
Vendor				•	н	тк	•		•	•
Antenna			Ant 1 (PIFA)					Ant2 (PIFA)		
Part Number	DQ60ACQD067 (0ACQD019079N)							Q60ACQD06 ACQD019079		
Frequency	2400-2500	5150-5250	5250-5350	5470-5725	5725-5850	2400-2500	5150-5250	5250-5350	5470-5725	5725-5850
Gain (dBi)	-4.05	-1.50	-1.50	-0.81	-1.49	-2.93	-0.48	-0.48	-0.25	-0.25
				No	otebook mod	le				
Vendor					INF	PAQ				
Antenna			Ant 1 (PIFA)					Ant2 (PIFA)		
Part Number		-	Q60PLBLB4 -P-LBLB-02-	-		DQ60PLBLB40 (WA-P-LBLB-02-102)				
Frequency	2400-2500	5150-5250	5250-5350	5470-5725	5725-5850	2400-2500	5150-5250	5250-5350	5470-5725	5725-5850
Gain (dBi)	0.29	-2.10	-0.96	-0.43	-1.53	-0.02	-2.93	-2.86	-0.35	-0.35
Vendor					H	ГК				
Antenna			Ant 1 (PIFA)					Ant2 (PIFA)		
Part Number	DQ60ACQD067 (0ACQD019079N)							Q60ACQD06 ACQD019079		
Frequency	2400-2500	5150-5250	5250-5350	5470-5725	5725-5850	2400-2500	5150-5250	5250-5350	5470-5725	5725-5850
Gain (dBi)	-2.50	-1.50	-1.50	-1.55	-1.55	-1.89	-2.47	-1.81	-1.37	-1.63

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

Antenna	SI	SISO		
Band	Ant1	Ant2	Ant1 + Ant2	
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	-	
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 (High-Tek)

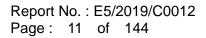
		Antź	2 antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		1	2412		19.00	18.98
		2	2417		19.00	18.82
		6	2437		19.00	18.89
	802.11b	10	2457	1Mbps	19.00	18.85
		11	2462		19.00	18.96
		12	2467		18.50	18.41
		13	2472		19.00	18.94
		1	2412		17.00	16.89
		2	2417		18.50	18.44
		6	2437		19.00	18.87
	802.11g	10	2457	6Mbps	18.75	18.69
		11	2462		15.00	14.90
		12	2467	-	15.00	14.93
2450 MHz		13	2472		12.50	12.45
		1	2412		17.00	16.92
		2	2417		18.50	18.38
		6	2437		19.00	18.85
	802.11n20-HT0	10	2457	MCS0	18.75	18.63
		11	2462		15.00	14.99
		12	2467		15.00	14.95
		13	2472		12.50	12.37
		1	2412		17.00	16.89
		2	2417		18.50	18.41
		6	2437		19.00	18.88
	802.11ax20-HE0	10	2457	MCS0	18.75	18.70
		11	2462		15.00	14.96
		12	2467		15.00	14.83
		13	2472		12.50	12.46

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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		Ant2	2 antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		3	2422		16.50	16.45
	802.11n40-HT0	4	2427		16.50	16.41
		6	2437	MCS0	16.00	15.85
		8	2447		15.50	15.48
		9	2452		15.50	15.43
		10	2457		12.50	12.39
2450 MHz		11	2462		13.00	12.97
2430 1011 12		3	2422		16.50	16.43
		4	2427		16.50	16.38
		6	2437		16.00	15.91
	802.11ax40-HE0	8	2447	MCS0	15.50	15.40
		9	2452		15.50	15.36
		10	2457		12.50	12.48
		11	2462		13.00	12.97

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		Ant2	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		36	5180		16.00	15.82
	802.11a	40	5200	6Mbps	16.00	15.77
	002.11a	44	5220	olviops	16.00	15.85
		48	5240		16.00	15.89
		36	5180		16.00	15.86
	802.11n20-HT0	40	5200	MCS0	16.00	15.95
	оо <u>2.111120-н10</u>	44	5220		16.00	15.91
		48	5240		16.00	15.98
		36	5180		16.00	15.88
	802.11ac20-VHT0	40	5200	MCS0	16.00	15.83
		44	5220	NIC30	16.00	15.75
		48	5240		16.00	15.71
5.15-5.25 GHz		36	5180		16.00	15.96
0.10-0.20 0112	802.11ax20-HE0	40	5200	MCS0	16.00	15.92
	002.11ax20-HEU	44	5220	IVIC SU	16.00	15.84
		48	5240		16.00	15.80
	802.11n40-HT0	38	5190	MCS0	16.00	15.90
	оuz.111140-п10	46	5230	IVICSU	16.00	15.91
	802.11ac40-VHT0	38	5190	MCS0	16.00	15.83
	002.11ac40-VH10	46	5230	NIC30	16.00	15.86
	802.11ax40-HE0	38	5190	MCS0	16.00	15.92
	002.11ax40-11L0	46	5230	NIC30	16.00	15.91
	802.11ac80-VHT0	42	5210	MCS0	16.00	15.98
	802.11ax80-HE0	42	5210	MCS0	16.00	15.98
	802.11ac160-VHT0	50	5250	MCS0	15.25	15.19
	802.11ax160-HE0	50	5250	MCS0	15.25	15.15

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		Ant2	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		52	5260		16.00	15.90
	000.44	56	5280	6 Mbpa	16.00	15.91
	802.11a	60	5300	6Mbps	16.00	15.81
		64	5320		16.00	15.85
		52	5260		16.00	15.79
	802.11n20-HT0	56	5280	MCS0	16.00	15.82
		60	5300	10030	16.00	15.86
		64	5320		16.00	15.82
	802.11ac20-VHT0	52	5260		16.00	15.86
		56	5280	MCS0	16.00	15.92
		60	5300	10030	16.00	15.89
5.25-5.35 GHz		64	5320		16.00	15.84
5.25-5.55 0112		52	5260		16.00	15.88
	802.11ax20-HE0	56	5280	MCS0	16.00	15.92
	002.11ax20-HEU	60	5300	10030	16.00	15.83
		64	5320		16.00	15.87
	802.11n40-HT0	54	5270	MCS0	16.00	15.98
	002.11140-1110	62	5310	INCSU	16.00	15.93
	802.11ac40-VHT0	54	5270	MCS0	16.00	15.90
	002.118040-01110	62	5310	10000	16.00	15.94
	802.11ax40-HE0	54	5270	MCS0	16.00	15.97
		62	5310	10000	16.00	15.89
	802.11ac80-VHT0	58	5290	MCS0	16.00	15.93
	802.11ax80-HE0	58	5290	MCS0	16.00	15.96

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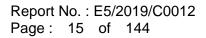
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		Ant2 a	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		100	5500		16.00	15.94
		104	5520		16.00	15.91
		116	5580		16.00	15.92
	802.11a	120	5600	6Mbps	16.00	15.96
		136	5680		16.00	15.82
		140	5700		16.00	15.85
		144	5720		16.00	15.80
	802.11n20-HT0	100	5500		16.00	15.88
		104	5520		16.00	15.86
		116	5580		16.00	15.83
		120	5600	MCS0	16.00	15.90
		136	5680		16.00	15.89
		140	5700		16.00	15.95
		144	5720	1	16.00	15.96
5600 MHz		100	5500		16.00	15.94
		104	5520		16.00	15.96
		116	5580		16.00	15.88
	802.11ac20-VHT0	120	5600	MCS0	16.00	15.91
		136	5680		16.00	15.83
		140	5700		16.00	15.95
		144	5720		16.00	15.89
		100	5500		16.00	15.92
		104	5520		16.00	15.84
		116	5580		16.00	15.87
	802.11ax20-HE0	120	5600	MCS0	16.00	15.82
		136	5680		16.00	15.90
		140	5700		16.00	15.88
		144	5720		16.00	15.85

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		Ant2	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		102	5510		16.00	15.94
		110	5550		16.00	15.92
	802.11n40-HT0	118	5590	MCS0	16.00	15.95
		134	5670		16.00	15.93
		142	5710		16.00	15.99
		102	5510		16.00	15.93
		110	5550		16.00	15.89
	802.11ac40-VHT0	118	5590	MCS0	16.00	15.87
		134	5670		16.00	15.90
		142	5710		16.00	15.82
		102	5510		16.00	15.85
5600 MHz		110	5550		16.00	15.80
	802.11ax40-HE0	118	5590	MCS0	16.00	15.88
		134	5670		16.00	15.86
		142	5710		16.00	15.83
		106	5530		16.00	15.95
	802.11ac80-VHT0	122	5610	MCS0	16.00	15.99
		138	5690		16.00	15.90
		106	5530		16.00	15.85
	802.11ax80-HE0	122	5610	MCS0	16.00	15.89
		138	5690		16.00	15.91
	802.11ac160-VHT0	114	5570	MCS0	14.50	14.42
	802.11ax160-HE0	114	5570	MCS0	14.50	14.47

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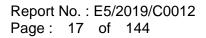


		Ant2 a	antenna			
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		149	5745		16.00	15.89
	802.11a	157	5785	6Mbps	16.00	15.91
		165	5825		16.00	15.83
	802.11n20-HT0	149	5745		16.00	15.86
		157	5785	MCS0	16.00	15.78
		165	5825		16.00	15.81
	802.11ac20-VHT0	149	5745	MCS0	16.00	15.76
		157	5785		16.00	15.84
		165	5825		16.00	15.82
5800 MHz		149	5745		16.00	15.79
	802.11ax20-HE0	157	5785	MCS0	16.00	15.86
		165	5825		16.00	15.85
	802.11n40-HT0	151	5755	MCS0	16.00	15.92
	002.11140-F110	159	5795	WC30	16.00	15.94
	802.11ac40-VHT0	151	5755	MCS0	16.00	15.90
	002.110040-0110	159	5795	NC30	16.00	15.87
	802.11ax40-HE0	151	5755	MCS0	16.00	15.88
	002.118340-1120	159	5795	NC30	16.00	15.92
	802.11ac80-VHT0	155	5775	MCS0	16.00	15.96
	802.11ax80-HE0	155	5775	MCS0	16.00	15.84

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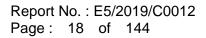




		Ant	1 antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		1	2412		19.00	18.95
		2	2417		19.00	18.84
		6	2437		19.00	18.94
	802.11b	10	2457	1Mbps	19.00	18.93
		11	2462		19.00	18.90
		12	2467		18.50	18.42
		13	2472		19.00	18.95
		1	2412		16.75	16.61
		2	2417		18.50	18.43
		6	2437		19.00	18.86
	802.11g	10	2457	6Mbps	18.75	18.71
		11	2462		15.50	15.45
		12	2467		15.00	14.92
0.450 1.41		13	2472		12.75	12.68
2450 MHz		1	2412		16.75	16.74
		2	2417		18.50	18.42
		6	2437		19.00	18.92
	802.11n20-HT0	10	2457	MCS0	18.75	18.70
		11	2462		15.50	15.36
		12	2467		15.00	14.91
		13	2472		12.75	12.69
		1	2412		16.75	16.68
		2	2417		18.50	18.35
		6	2437		19.00	18.95
	802.11ax20-HE0		2457	MCS0	18.75	18.73
		11	2462		15.50	15.45
		12	2467		15.00	14.89
		13	2472		12.75	12.71

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		Ant	l antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		3	2422		16.50	16.33
		4	2427		16.50	16.42
	802.11n40-HT0	6	2437	MCS0	16.00	15.87
		8	2447		15.50	15.45
		9	2452		14.50	14.41
		10	2457		12.50	12.38
2450 MHz		11	2462		13.00	12.90
2450 1011 12		3	2422		16.50	16.48
		4	2427		16.50	16.43
		6	2437		16.00	15.86
	802.11ax40-HE0	8	2447	MCS0	15.50	15.33
		9	2452		14.50	14.45
		10	2457		12.50	12.37
		11	2462		13.00	12.92

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		Ant1	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		36	5180		16.00	15.93
	802.11a	40	5200	6Mbps	16.00	15.88
	002.11a	44	5220	olviops	16.00	15.85
		48	5240		16.00	15.89
		36	5180		16.00	15.92
	802.11n20-HT0	40	5200	MCS0	16.00	15.84
	оо <u>2.111120-нто</u>	44	5220	101030	16.00	15.88
		48	5240		16.00	15.91
		36	5180		16.00	15.83
	802.11ac20-VHT0	40	5200	MCS0	16.00	15.91
	802.11ac20-0110	44	5220	10030	16.00	15.90
		48	5240		16.00	15.83
5.15-5.25 GHz		36	5180		16.00	15.86
0.10-0.20 0112	802.11ax20-HE0	40	5200	MCS0	16.00	15.90
	002.11ax20-HEU	44	5220	IVIC SU	16.00	15.81
		48	5240		16.00	15.88
	802.11n40-HT0	38	5190	MCS0	16.00	15.93
	оо <u>2.1104</u> 0-п10	46	5230	IVIC SU	16.00	15.97
	802.11ac40-VHT0	38	5190	MCS0	16.00	15.91
	002.118040-1110	46	5230	NIC30	16.00	15.85
	802.11ax40-HE0	38	5190	MCS0	16.00	15.95
	002.118X40-MEU	46	5230	IVICOU	16.00	15.88
	802.11ac80-VHT0	42	5210	MCS0	16.00	15.96
	802.11ax80-HE0	42	5210	MCS0	16.00	15.95
	802.11ac160-VHT0	50	5250	MCS0	14.75	14.66
	802.11ax160-HE0	50	5250	MCS0	14.75	14.71

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		Ant1	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		52	5260		16.00	15.94
	000.44	56	5280	6 Mbpa	16.00	15.89
	802.11a	60	5300	6Mbps	16.00	15.86
		64	5320		16.00	15.90
		52	5260		16.00	15.93
	802.11n20-HT0	56	5280	MCS0	16.00	15.85
		60	5300	10030	16.00	15.89
		64	5320		16.00	15.92
	802.11ac20-VHT0	52	5260		16.00	15.93
		56	5280	MCS0	16.00	15.87
		60	5300	10030	16.00	15.90
5.25-5.35 GHz		64	5320		16.00	15.81
5.25-5.55 0112		52	5260		16.00	15.84
	802.11ax20-HE0	56	5280	MCS0	16.00	15.88
	002.11ax20-HEU	60	5300	10030	16.00	15.91
		64	5320		16.00	15.88
	802.11n40-HT0	54	5270	MCS0	16.00	15.97
	002.11140-1110	62	5310	INCSU	16.00	15.92
	802.11ac40-VHT0	54	5270	MCS0	16.00	15.94
	002.110040-01110	62	5310	10000	16.00	15.85
	802.11ax40-HE0	54	5270	MCS0	16.00	15.88
		62	5310	10000	16.00	15.92
	802.11ac80-VHT0	58	5290	MCS0	16.00	15.95
	802.11ax80-HE0	58	5290	MCS0	16.00	15.92

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		Ant1 a	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		100	5500		16.00	15.79
		104	5520		16.00	15.95
		116	5580		16.00	15.96
	802.11a	120	5600	6Mbps	16.00	15.84
		136	5680		16.00	15.86
		140	5700		16.00	15.78
		144	5720		16.00	15.81
		100	5500		16.00	15.93
		104	5520		16.00	15.85
	802.11n20-HT0	116	5580		16.00	15.84
		120	5600	MCS0	16.00	15.81
		136	5680		16.00	15.82
		140	5700		16.00	15.86
		144	5720		16.00	15.72
5600 MHz		100	5500		16.00	15.75
		104	5520		16.00	15.70
		116	5580		16.00	15.78
	802.11ac20-VHT0	120	5600	MCS0	16.00	15.76
		136	5680		16.00	15.73
		140	5700		16.00	15.80
		144	5720		16.00	15.83
		100	5500		16.00	15.87
		104	5520	1	16.00	15.89
		116	5580		16.00	15.90
	802.11ax20-HE0	120	5600	MCS0	16.00	15.95
		136	5680		16.00	15.99
		140	5700		16.00	15.86
		144	5720		16.00	15.90

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		Ant1	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		102	5510		16.00	15.92
		110	5550		16.00	15.98
	802.11n40-HT0	118	5590	MCS0	16.00	15.91
		134	5670		16.00	15.90
		142	5710		16.00	15.93
		102	5510		16.00	15.89
	802.11ac40-VHT0	110	5550		16.00	15.93
		118	5590	MCS0	16.00	15.84
		134	5670		16.00	15.79
		142	5710		16.00	15.83
		102	5510		16.00	15.85
5600 MHz		110	5550		16.00	15.86
	802.11ax40-HE0	118	5590	MCS0	16.00	15.91
		134	5670		16.00	15.95
		142	5710		16.00	15.82
		106	5530		16.00	15.96
	802.11ac80-VHT0	122	5610	MCS0	16.00	15.98
		138	5690		16.00	15.93
		106	5530		16.00	15.84
	802.11ax80-HE0	122	5610	MCS0	16.00	15.90
		138	5690	1	16.00	15.88
	802.11ac160-VHT0	114	5570	MCS0	14.25	14.17
	802.11ax160-HE0	114	5570	MCS0	14.25	14.19

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		Ant1 a	antenna			
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		149	5745		16.00	15.87
	802.11a	157	5785	6Mbps	16.00	15.84
		165	5825		16.00	15.85
		149	5745		16.00	15.89
	802.11n20-HT0	157	5785	MCS0	16.00	15.75
		165	5825		16.00	15.78
	802.11ac20-VHT0	149	5745	MCS0	16.00	15.73
		157	5785		16.00	15.81
		165	5825		16.00	15.79
5800 MHz		149	5745		16.00	15.76
3000 1011 12	802.11ax20-HE0	157	5785	MCS0	16.00	15.83
		165	5825		16.00	15.82
	802.11n40-HT0	151	5755	MCS0	16.00	15.98
	002.11140-1110	159	5795	WC30	16.00	15.99
	802.11ac40-VHT0	151	5755	MCS0	16.00	15.87
	002.110040-1110	159	5795	10000	16.00	15.89
	802.11ax40-HE0	151	5755	MCS0	16.00	15.81
		159	5795		16.00	15.84
	802.11ac80-VHT0	155	5775	MCS0	16.00	15.96
	802.11ax80-HE0	155	5775	MCS0	16.00	15.88

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#### Notebook mode

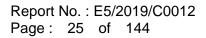
Ant2 antenna									
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)			
		1	2412		19.25	19.23			
		2	2417		20.50	20.38			
		6	2437		20.50	20.44			
	802.11b	10	2457	1Mbps	20.50	20.35			
		11	2462		19.50	19.31			
		12	2467		18.50	18.39			
		13	2472		19.00	18.82			
		1	2412		17.00	16.81			
		2	2417		18.50	18.31			
		6	2437		20.00	19.95			
	802.11g	10	2457	6Mbps	18.75	18.73			
		11	2462		15.00	14.96			
		12	2467		15.00	14.84			
2450 MHz		13	2472		12.50	12.30			
		1	2412		17.00	16.90			
		2	2417		18.50	18.34			
		6	2437		20.00	19.91			
	802.11n20-HT0	10	2457	MCS0	18.75	18.55			
		11	2462		15.00	14.90			
		12	2467		15.00	14.94			
		13	2472		12.50	12.43			
		1	2412		17.00	16.99			
		2	2417		18.50	18.32			
		6	2437		20.00	19.83			
	802.11ax20-HE0	10	2457	MCS0	18.75	18.74			
		11	2462		15.00	14.82			
		12	2467		15.00	14.88			
		13	2472		12.50	12.37			

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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	Ant2 antenna									
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)				
		3	2422		16.50	16.48				
		4	2427	MCS0	16.50	16.32				
	802.11n40-HT0	6	2437		16.00	15.99				
		8	2447		15.50	15.34				
		9	2452		15.50	15.34				
		10	2457		12.50	12.38				
2450 MHz		11	2462		13.00	12.94				
2450 1011 12		3	2422		16.50	16.33				
		4	2427		16.50	16.41				
		6	2437		16.00	15.93				
	802.11ax40-HE0	8	2447	MCS0	15.50	15.42				
		9	2452		15.50	15.35				
		10	2457		12.50	12.32				
		11	2462		13.00	12.92				

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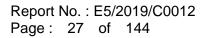


	Ant2 antenna								
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)			
		36	5180		18.50	18.37			
	802.11a	40	5200	6Mbps	20.00	19.94			
	002.11a	44	5220	olviops	20.50	20.43			
		48	5240		20.50	20.46			
		36	5180		18.50	18.41			
	902 11p20 UT0	40	5200	MCS0	20.00	19.98			
	802.11n20-HT0	44	5220	MCSU	20.50	20.41			
		48	5240		20.50	20.42			
		36	5180		18.50	18.49			
	802.11ac20-VHT0	40	5200	MCS0	20.00	19.82			
	002.118020-01110	44	5220	10000	20.50	20.36			
		48	5240		20.50	20.38			
5.15-5.25 GHz		36	5180		18.50	18.37			
5.15-5.25 0112	802.11ax20-HE0	40	5200	MCS0	20.00	19.88			
	002.11ax20-HEU	44	5220	NIC30	20.50	20.31			
		48	5240		20.50	20.40			
	802.11n40-HT0	38	5190	MCS0	18.50	18.34			
	оuz.111140-п10	46	5230	IVICSU	20.50	20.48			
	802.11ac40-VHT0	38	5190	MCS0	18.50	18.44			
	002.118040-0110	46	5230	NIC30	20.50	20.35			
	802.11ax40-HE0	38	5190	MCS0	18.50	18.33			
	002.11ax40-11L0	46	5230	NIC30	20.50	20.40			
	802.11ac80-VHT0	42	5210	MCS0	18.25	18.21			
	802.11ax80-HE0	42	5210	MCS0	18.25	18.16			
	802.11ac160-VHT0	50	5250	MCS0	15.25	15.16			
	802.11ax160-HE0	50	5250	MCS0	15.25	15.08			

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Ant2 antenna									
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)			
		52	5260		20.50	20.47			
	802.11a	56	5280	GMbaa	20.50	20.44			
	602.11a	60	5300	6Mbps	20.50	20.46			
		64	5320		18.25	18.10			
		52	5260		20.50	20.31			
	802.11n20-HT0	56	5280	MCS0	20.50	20.43			
	802.11120-1110	60	5300	101030	20.50	20.37			
		64	5320		18.25	18.08			
		52	5260		20.50	20.38			
	802.11ac20-VHT0	56	5280	MCS0	20.50	20.33			
	002.118620-0110	60	5300		20.50	20.31			
5.25-5.35 GHz		64	5320		18.25	18.12			
5.25-5.55 0112		52	5260		20.50	20.36			
	802.11ax20-HE0	56	5280	MCS0	20.50	20.42			
	002.11ax20-HEU	60	5300	10030	20.50	20.32			
		64	5320		18.25	18.12			
	802.11n40-HT0	54	5270	MCS0	20.50	20.46			
	002.11140-1110	62	5310	NIC30	17.25	17.19			
	802.11ac40-VHT0	54	5270	MCS0	20.50	20.41			
	002.110040-01110	62	5310	10000	17.25	17.06			
	802.11ax40-HE0	54	5270	MCS0	20.50	20.37			
		62	5310	10000	17.25	17.22			
	802.11ac80-VHT0	58	5290	MCS0	17.75	17.60			
	802.11ax80-HE0	58	5290	MCS0	17.75	17.66			

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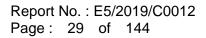


		Ant2	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		100	5500		19.00	18.92
		104	5520		20.50	20.41
		116	5580		20.50	20.45
	802.11a	120	5600	6Mbps	20.50	20.41
		136	5680		20.50	20.39
		140	5700		18.00	17.84
		144	5720		20.50	20.34
		100	5500		19.00	18.93
		104	5520		20.50	20.34
		116	5580		20.50	20.33
	802.11n20-HT0	120	5600	MCS0	20.50	20.42
		136	5680		20.50	20.37
		140	5700		18.00	17.99
		144	5720		20.50	20.38
5600 MHz		100	5500		19.00	18.84
		104	5520		20.50	20.45
		116	5580		20.50	20.41
	802.11ac20-VHT0	120	5600	MCS0	20.50	20.38
		136	5680		20.50	20.42
		140	5700		18.00	17.85
		144	5720		20.50	20.44
		100	5500		19.00	18.85
		104	5520		20.50	20.42
		116	5580		20.50	20.43
	802.11ax20-HE0	120	5600	MCS0	20.50	20.31
		136	5680		20.50	20.37
		140	5700		18.00	17.83
		144	5720		20.50	20.45

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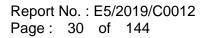




		Ant2	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		102	5510		18.25	18.22
		110	5550		20.50	20.47
	802.11n40-HT0	118	5590	MCS0	20.50	20.41
		134	5670		19.25	19.13
		142	5710		20.50	20.45
		102	5510		18.25	18.15
		110	5550		20.50	20.31
	802.11ac40-VHT0	118	5590	MCS0	20.50	20.38
		134	5670		19.25	19.10
		142	5710		20.50	20.43
		102	5510		18.25	18.19
5600 MHz		110	5550		20.50	20.42
	802.11ax40-HE0	118	5590	MCS0	20.50	20.30
		134	5670		19.25	19.10
		142	5710		20.50	20.41
		106	5530		18.75	18.62
	802.11ac80-VHT0	122	5610	MCS0	19.75	19.64
		138	5690		20.50	20.49
		106	5530		18.75	18.61
	802.11ax80-HE0	122	5610	MCS0	19.75	19.59
		138	5690	1	20.50	20.44
	802.11ac160-VHT0	114	5570	MCS0	14.50	14.49
	802.11ax160-HE0	114	5570	MCS0	14.50	14.40

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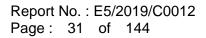




		Ant2 a	antenna			
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		149	5745		20.50	20.47
	802.11a	802.11a 157 5785 6Mbps	20.50	20.48		
		165	5825		20.50	20.46
	802.11n20-HT0	149	5745		20.50	20.30
		157	5785	MCS0	20.50	20.45
		165	5825		20.50	20.34
		149	5745	MCS0	20.50	20.41
	802.11ac20-VHT0	157	5785		20.50	20.31
		165	5825		20.50	20.39
5800 MHz		149	5745		20.50	20.33
3000 1011 12	802.11ax20-HE0	157	5785	MCS0	20.50	20.36
		165	5825		20.50	20.30
	802.11n40-HT0	151	5755	MCS0	20.50	20.46
	002.11140-1110	159	5795	10000	20.50	20.49
	802.11ac40-VHT0	151	5755	MCS0	20.50	20.42
	002.110040-01110	159	5795	10000	20.50	20.46
	802.11ax40-HE0	151	5755	MCS0	20.50	20.31
		159	5795	10000	20.50	20.39
	802.11ac80-VHT0	155	5775	MCS0	18.50	18.34
	802.11ax80-HE0	155	5775	MCS0	18.50	18.35

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		Ant	1 antenna	_		
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		1	2412		19.50	19.31
		2	2417		20.50	20.31
		6	2437		20.50	20.40
	802.11b	10	2457	1Mbps	20.50	20.39
		11	2462		19.50	19.42
		12	2467		18.50	18.39
		13	2472		19.00	18.83
		1	2412		16.75	16.60
		2	2417		18.50	18.43
		6	2437		20.00	19.83
	802.11g	10	2457	6Mbps	18.75	18.64
		11	2462		15.50	15.49
		12	2467		15.00	14.87
		13	2472		12.75	12.67
2450 MHz		1	2412		16.75	16.59
		2	2417		18.50	18.37
		6	2437		20.00	19.88
	802.11n20-HT0	10	2457	MCS0	18.75	18.67
		11	2462	1	15.50	15.47
		12	2467		15.00	14.90
		13	2472	1	12.75	12.64
		1	2412		16.75	16.64
		2	2417	1	18.50	18.34
		6	2437	1	20.00	19.98
	802.11ax20-HE0	10	2457	MCS0	18.75	18.66
		11	2462	1	15.50	15.45
		12	2467	1	15.00	14.95
		13	2472		12.75	12.71

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		Ant	1 antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		3	2422		16.50	16.35
		4	2427		16.50	16.33
	802.11n40-HT0	6	2437	MCS0	16.00	15.98
		8	2447		15.50	15.43
		9	2452		14.50	14.50
		10	2457		12.50	12.50
2450 MHz		11	2462		13.00	12.89
2400 10112		3	2422		16.50	16.35
		4	2427		16.50	16.32
		6	2437		16.00	15.87
	802.11ax40-HE0	8	2447	MCS0	15.50	15.39
		9	2452		14.50	14.33
		10	2457		12.50	12.37
		11	2462		13.00	12.86

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Ant1 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	18.38
		40	5200		19.50	19.33
		44	5220		20.50	20.41
		48	5240		20.50	20.45
		36	5180		18.50	18.34
	802.11n20-HT0	40	5200	MCS0	19.50	19.45
	оо2.111120- <b>п</b> 10	44	5220	MC50	20.50	20.38
		48	5240		20.50	20.30
	802.11ac20-VHT0	36	5180	MCS0	18.50	18.40
		40	5200		19.50	19.33
		44	5220		20.50	20.31
		48	5240		20.50	20.37
5.15-5.25 GHz	802.11ax20-HE0	36	5180	MCS0	18.50	18.44
0.10-0.20 0112		40	5200		19.50	19.32
		44	5220		20.50	20.30
		48	5240		20.50	20.32
	802.11n40-HT0	38	5190	MCS0	18.50	18.38
		46	5230		20.50	20.49
	802.11ac40-VHT0	38	5190	MCS0	18.50	18.32
		46	5230		20.50	20.30
	802.11ax40-HE0	38	5190	MCS0	18.50	18.44
		46	5230		20.50	20.39
	802.11ac80-VHT0	42	5210	MCS0	18.50	18.42
	802.11ax80-HE0	42	5210	MCS0	18.50	18.36
	802.11ac160-VHT0	50	5250	MCS0	14.75	14.56
	802.11ax160-HE0	50	5250	MCS0	14.75	14.73

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Ant1 antenna						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		52	5260		20.50	20.45
	802.11a	56	5280	6Mbps	20.50	20.42
		60	5300		20.50	20.48
		64	5320		18.00	17.97
		52	5260		20.50	20.38
	802.11n20-HT0	56	5280	MCS0	20.50	20.42
		60	5300		20.50	20.37
		64	5320		18.00	17.89
	802.11ac20-VHT0	52	5260	MCS0	20.50	20.30
		56	5280		20.50	20.35
		60	5300		20.50	20.37
5.25-5.35 GHz		64	5320		18.00	17.81
0.20 0.00 01 12	802.11ax20-HE0	52	5260	MCS0	20.50	20.43
		56	5280		20.50	20.39
		60	5300		20.50	20.41
		64	5320		18.00	17.82
	802.11n40-HT0	54	5270	MCS0	20.50	20.42
		62	5310		17.25	17.18
	802.11ac40-VHT0	54	5270	MCS0	20.50	20.42
		62	5310		17.25	17.15
	802.11ax40-HE0	54	5270	MCS0	20.50	20.40
		62	5310		17.25	17.24
	802.11ac80-VHT0	58	5290	MCS0	17.75	17.72
	802.11ax80-HE0	58	5290	MCS0	17.75	17.67

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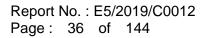
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Ant1 antenna						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		100	5500		19.00	18.89
		104	5520		20.50	20.40
		116	5580		20.50	20.39
	802.11a	120	5600	6Mbps	20.50	20.33
		136	5680		20.50	20.39
		140	5700		17.50	17.49
		144	5720		20.50	20.48
		100	5500		19.00	18.83
		104	5520	MCS0	20.50	20.30
	802.11n20-HT0	116	5580		20.50	20.41
		120	5600		20.50	20.48
		136	5680		20.50	20.35
		140	5700		17.50	17.49
5600 MHz		144	5720		20.50	20.48
	802.11ac20-VHT0	100	5500	MCS0	19.00	18.98
		104	5520		20.50	20.30
		116	5580		20.50	20.36
		120	5600		20.50	20.42
		136	5680		20.50	20.39
		140	5700		17.50	17.40
		144	5720		20.50	20.47
	802.11ax20-HE0	100	5500	MCS0	19.00	18.88
		104	5520		20.50	20.42
		116	5580		20.50	20.43
		120	5600		20.50	20.38
		136	5680		20.50	20.32
		140	5700		17.50	17.46
		144	5720		20.50	20.37

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Ant1 antenna						
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		102	5510		18.25	18.18
		110	5550		20.50	20.49
	802.11n40-HT0	118	5590	MCS0	20.50	20.38
		134	5670		19.25	19.17
		142	5710		20.50	20.47
		102	5510		18.25	18.21
	802.11ac40-VHT0	110	5550	MCS0	20.50	20.42
		118	5590		20.50	20.36
		134	5670		19.25	19.14
		142	5710		20.50	20.31
	802.11ax40-HE0	102	5510	MCS0	18.25	18.06
5600 MHz		110	5550		20.50	20.44
		118	5590		20.50	20.46
		134	5670		19.25	19.17
		142	5710		20.50	20.36
	802.11ac80-VHT0	106	5530	MCS0	18.75	18.62
		122	5610		19.75	19.65
		138	5690		20.50	20.43
	802.11ax80-HE0	106	5530	MCS0	18.75	18.63
		122	5610		19.75	19.74
		138	5690		20.50	20.39
	802.11ac160-VHT0	114	5570	MCS0	14.25	14.06
	802.11ax160-HE0	114	5570	MCS0	14.25	14.10

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		Ant1 a	antenna	Ant1 antenna									
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)							
		149	5745		20.50	20.47							
	802.11a	157	5785	6Mbps	20.50	20.44							
		165	5825		20.50	20.48							
	802.11n20-HT0	149	5745		20.50	20.46							
		157	5785	MCS0	20.50	20.32							
		165	5825		20.50	20.44							
	802.11ac20-VHT0	149	5745	MCS0	20.50	20.43							
		157	5785		20.50	20.45							
		165	5825		20.50	20.43							
5800 MHz		149	5745		20.50	20.34							
3000 1011 12	802.11ax20-HE0	157	5785	MCS0	20.50	20.45							
		165	5825		20.50	20.35							
	802.11n40-HT0	151	5755	MCS0	20.50	20.45							
	002.11140-1110	159	5795	MCSU	20.50	20.43							
	802.11ac40-VHT0	151	5755	MCS0	20.50	20.32							
	002.1140-01110	159	5795	WC00	20.50	20.31							
	802.11ax40-HE0	151	5755	MCS0	20.50	20.40							
		159	5795	10000	20.50	20.43							
	802.11ac80-VHT0	155	5775	MCS0	18.50	18.36							
	802.11ax80-HE0	155	5775	MCS0	18.50	18.34							

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### Bluetooth conducted power table:

			1Mbps		2M	ops	3Mbps	
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		7.78		5.28		5.27
BR/EDR	CH 39	2441	11.00	8.26	7.00	5.59	7.00	5.56
	CH 78	2480		9.12		5.35		5.34

Mada	Frequency		GFSK			
Mode	Channel	(MHz)	Max. Rated Avg.Power + Max. Tolerance (dBm)	Average Output Power (dBm)		
	CH 00	2402		5.61		
LE	CH 19	2440	7	5.77		
	CH 39	2480		5.53		

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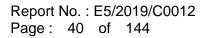


### Tablet mode (INPAQ)

		Antź	2 antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		1	2412		19.00	18.99
		2	2417		19.00	18.85
		6	2437		19.00	18.98
	802.11b	10	2457	1Mbps	19.00	18.81
		11	2462		19.00	18.91
		12	2467		18.50	18.45
		13	2472		19.00	18.83
		1	2412		17.00	16.83
	802.11g	2	2417		18.50	18.41
		6	2437		19.00	18.85
		10	2457	6Mbps	18.75	18.68
		11	2462		15.00	14.87
		12	2467		15.00	14.81
2450 MHz		13	2472		12.50	12.47
2430 1011 12		1	2412		17.00	16.98
		2	2417		18.50	18.44
		6	2437		19.00	18.95
	802.11n20-HT0	10	2457	MCS0	18.75	18.73
		11	2462		15.00	14.92
		12	2467		15.00	14.91
		13	2472		12.50	12.44
		1	2412		17.00	16.94
		2	2417		18.50	18.42
		6	2437		19.00	18.86
	802.11ax20-HE0	10	2457	MCS0	18.75	18.69
		11	2462		15.00	14.92
		12	2467		15.00	14.88
		13	2472		12.50	12.35

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Ant2 antenna									
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)			
		3	2422		16.50	16.46			
		4	2427	MCS0	16.50	16.37			
	802.11n40-HT0	6	2437		16.00	15.90			
		8	2447		15.50	15.45			
		9	2452		15.50	15.42			
		10	2457		12.50	12.45			
2450 MHz		11	2462		13.00	12.94			
2430 10112		3	2422		16.50	16.39			
		4	2427		16.50	16.33			
		6	2437		16.00	15.92			
	802.11ax40-HE0	8	2447	MCS0	15.50	15.41			
		9	2452		15.50	15.35			
		10	2457		12.50	12.46			
		11	2462		13.00	12.89			

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	Ant2 antenna									
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)				
		36	5180		16.00	15.77				
	802.11a	40	5200	6Mbps	16.00	15.72				
	002.11a	44	5220	olviops	16.00	15.80				
		48	5240		16.00	15.84				
		36	5180		16.00	15.81				
	802.11n20-HT0	40	5200	MCSO	16.00	15.90				
	802.11120-H10	44	5220	NIC30	16.00	15.86				
		48	5240		16.00	15.93				
		36	5180		16.00	15.83				
	802.11ac20-VHT0	40	5200	MCS0	16.00	15.78				
	002.118020-01110	44	5220		16.00	15.70				
		48	5240		16.00	15.66				
5.15-5.25 GHz		36	5180		16.00	15.91				
5.15-5.25 0112	802.11ax20-HE0	40	5200	MCS0	16.00	15.87				
	002.11ax20-HEU	44	5220	IVIC SU	16.00	15.79				
		48	5240		16.00	15.75				
	802.11n40-HT0	38	5190	MCS0	16.00	15.90				
	602.111140-ПТО	46	5230	IVIC50	16.00	15.92				
	802.11ac40-VHT0	38	5190	MCS0	16.00	15.84				
	002.11aC40-VH10	46	5230	IVIC50	16.00	15.88				
	802.11ax40-HE0	38	5190	MCS0	16.00	15.91				
	002.11ax40-nE0	46	5230	NC30	16.00	15.84				
	802.11ac80-VHT0	42	5210	MCS0	16.00	15.93				
	802.11ax80-HE0	42	5210	MCS0	16.00	15.86				
	802.11ac160-VHT0	50	5250	MCS0	15.25	15.17				
	802.11ax160-HE0	50	5250	MCS0	15.25	15.21				

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		Ant2	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		52	5260		16.00	15.86
	902 110	56	5280	GMbpa	16.00	15.90
	802.11a	60	5300	6Mbps	16.00	15.93
		64	5320		16.00	15.85
		52	5260		16.00	15.93
	802.11n20-HT0	56	5280	MCS0	16.00	15.92
	002.11120-1110	60	5300	10030	16.00	15.85
		64	5320		16.00	15.88
		52	5260	MCS0	16.00	15.92
	802.11ac20-VHT0	56	5280		16.00	15.83
	002.118620-0110	60	5300		16.00	15.90
5.25-5.35 GHz		64	5320		16.00	15.95
5.25-5.55 0112		52	5260		16.00	15.90
	802.11ax20-HE0	56	5280	MCS0	16.00	15.87
	002.11ax20-HEU	60	5300	10030	16.00	15.91
		64	5320		16.00	15.94
	802.11n40-HT0	54	5270	MCS0	16.00	15.98
	002.11140-1110	62	5310	10000	16.00	15.93
	802.11ac40-VHT0	54	5270	MCS0	16.00	15.88
	002.110040-01110	62	5310	10000	16.00	15.84
	802.11ax40-HE0	54	5270	MCS0	16.00	15.87
		62	5310	10000	16.00	15.91
	802.11ac80-VHT0	58	5290	MCS0	16.00	15.98
	802.11ax80-HE0	58	5290	MCS0	16.00	15.92

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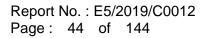
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Ant2 antenna									
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)			
		100	5500		16.00	15.82			
		104	5520		16.00	15.98			
		116	5580		16.00	15.99			
	802.11a	120	5600	6Mbps	16.00	15.87			
		136	5680		16.00	15.89			
		140	5700		16.00	15.81			
		144	5720		16.00	15.84			
		100	5500		16.00	15.96			
	802.11n20-HT0	104	5520	1	16.00	15.88			
		116	5580		16.00	15.87			
		120	5600	MCS0	16.00	15.84			
		136	5680		16.00	15.85			
		140	5700		16.00	15.89			
		144	5720		16.00	15.75			
5600 MHz		100	5500		16.00	15.78			
		104	5520		16.00	15.73			
		116	5580		16.00	15.81			
	802.11ac20-VHT0	120	5600	MCS0	16.00	15.79			
		136	5680		16.00	15.76			
		140	5700		16.00	15.83			
		144	5720		16.00	15.86			
		100	5500		16.00	15.90			
		104	5520	1	16.00	15.92			
		116	5580		16.00	15.93			
	802.11ax20-HE0	120	5600	MCS0	16.00	15.98			
		136	5680		16.00	15.92			
		140	5700		16.00	15.89			
		144	5720		16.00	15.93			

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		Ant2	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		102	5510		16.00	15.94
		110	5550		16.00	15.97
	802.11n40-HT0	118	5590	MCS0	16.00	15.84
		134	5670		16.00	15.98
		142	5710		16.00	15.90
		102	5510		16.00	15.82
		110	5550		16.00	15.84
	802.11ac40-VHT0	118	5590	MCS0	16.00	15.88
		134	5670		16.00	15.78
		142	5710		16.00	15.94
		102	5510		16.00	15.92
5600 MHz		110	5550		16.00	15.95
	802.11ax40-HE0	118	5590	MCS0	16.00	15.93
		134	5670		16.00	15.99
		142	5710		16.00	15.91
		106	5530		16.00	15.99
	802.11ac80-VHT0	122	5610	MCS0	16.00	15.88
		138	5690		16.00	15.98
		106	5530		16.00	15.84
	802.11ax80-HE0	122	5610	MCS0	16.00	15.86
		138	5690		16.00	15.79
	802.11ac160-VHT0	114	5570	MCS0	14.50	14.38
	802.11ax160-HE0	114	5570	MCS0	14.50	14.43

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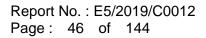
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Ant2 antenna									
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)			
		149	5745		16.00	15.90			
	802.11a	157	5785	6Mbps	16.00	15.87			
		165	5825		16.00	15.88			
	802.11n20-HT0	149	5745		16.00	15.92			
		157	5785	MCS0	16.00	15.78			
		165	5825		16.00	15.81			
	802.11ac20-VHT0	149	5745	MCS0	16.00	15.76			
		157	5785		16.00	15.84			
		165	5825		16.00	15.82			
5800 MHz		149	5745		16.00	15.79			
	802.11ax20-HE0	157	5785	MCS0	16.00	15.86			
		165	5825		16.00	15.85			
	802.11n40-HT0	151	5755	MCS0	16.00	15.91			
	002.11140-F110	159	5795	WC30	16.00	15.99			
	802.11ac40-VHT0	151	5755	MCS0	16.00	15.78			
	002.110040-0110	159	5795	NC30	16.00	15.81			
	802.11ax40-HE0	151	5755	MCS0	16.00	15.89			
	002.118340-1120	159	5795	NIC30	16.00	15.84			
	802.11ac80-VHT0	155	5775	MCS0	16.00	15.96			
	802.11ax80-HE0	155	5775	MCS0	16.00	15.93			

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		Ant	1 antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		1	2412		19.00	18.91
		2	2417	1	19.00	18.88
		6	2437		19.00	18.97
	802.11b	10	2457	1Mbps	19.00	18.85
		11	2462	1	19.00	18.89
		12	2467		18.50	18.42
		13	2472		19.00	18.81
		1	2412		16.75	16.66
		2	2417	6Mbps	18.50	18.43
		6	2437		19.00	18.86
	802.11g	10	2457		18.75	18.61
		11	2462		15.50	15.40
		12	2467		15.00	14.83
		13	2472		12.75	12.68
2450 MHz		1	2412		16.75	16.69
		2	2417		18.50	18.42
		6	2437		19.00	18.89
	802.11n20-HT0		2457	MCS0	18.75	18.74
		11	2462		15.50	15.44
		12	2467		15.00	14.91
		13	2472		12.75	12.72
		1	2412		16.75	16.71
		2	2417		18.50	18.43
		6	2437		19.00	18.92
	802.11ax20-HE0		2457	MCS0	18.75	18.73
		11	2462		15.50	15.45
		12	2467	1	15.00	14.87
		13	2472		12.75	12.68

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		Ant	1 antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		3	2422		16.50	16.39
		4	2427		16.50	16.36
	802.11n40-HT0	6	2437	MCS0	16.00	15.94
		8	2447		15.50	15.33
		9	2452		14.50	14.36
		10	2457		12.50	12.41
2450 MHz		11	2462		13.00	12.95
2400 10112		3	2422		16.50	16.42
		4	2427		16.50	16.38
		6	2437		16.00	15.90
	802.11ax40-HE0	8	2447	MCS0	15.50	15.47
		9	2452	-	14.50	14.43
		10	2457		12.50	12.48
		11	2462		13.00	12.99

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		Ant1	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		36	5180		16.00	15.85
	802.11a	40	5200	6Mbps	16.00	15.80
	002.11a	44	5220	olviops	16.00	15.88
		48	5240		16.00	15.92
		36	5180		16.00	15.89
	802.11n20-HT0	40	5200	MCS0	16.00	15.98
	802.11120- <b>п</b> 10	44	5220	INICSU	16.00	15.94
		48	5240		16.00	15.84
	802.11ac20-VHT0	36	5180		16.00	15.91
		40	5200	MCS0	16.00	15.86
		44	5220	NIC30	16.00	15.78
		48	5240	1	16.00	15.74
5.15-5.25 GHz		36	5180		16.00	15.78
0.10-0.20 0112	802.11ax20-HE0	40	5200	MCS0	16.00	15.95
	002.11ax20-HEU	44	5220	NIC30	16.00	15.87
		48	5240		16.00	15.83
	802.11n40-HT0	38	5190	MCS0	16.00	15.93
	оо <u>2.1104</u> 0-п10	46	5230	IVIC SU	16.00	15.96
	802.11ac40-VHT0	38	5190	MCS0	16.00	15.88
	002.118040-1110	46	5230	NIC30	16.00	15.90
	802.11ax40-HE0	38	5190	MCS0	16.00	15.85
	002.11ax40-ne0	46	5230	IVIC SU	16.00	15.92
	802.11ac80-VHT0	42	5210	MCS0	16.00	15.99
	802.11ax80-HE0	42	5210	MCS0	16.00	15.92
	802.11ac160-VHT0	50	5250	MCS0	14.75	14.69
	802.11ax160-HE0	50	5250	MCS0	14.75	14.71

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		Ant1	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		52	5260		16.00	15.98
	902 110	56	5280	GMbpa	16.00	15.94
	802.11a	60	5300	6Mbps	16.00	15.86
		64	5320		16.00	15.86
		52	5260		16.00	15.90
	802.11n20-HT0	56	5280	MCS0	16.00	15.85
	002.11120-1110	60	5300	10030	16.00	15.77
		64	5320		16.00	15.73
		52	5260		16.00	15.98
	802.11ac20-VHT0	56	5280	MCS0	16.00	15.94
	002.118620-0110	60	5300		16.00	15.85
5.25-5.35 GHz		64	5320		16.00	15.82
0.20-0.00 0112		52	5260		16.00	15.84
	802.11ax20-HE0	56	5280	MCS0	16.00	15.79
	002.11ax20-11L0	60	5300	10050	16.00	15.87
		64	5320		16.00	15.92
	802.11n40-HT0	54	5270	MCS0	16.00	15.91
	002.11140-1110	62	5310	10000	16.00	15.96
	802.11ac40-VHT0	54	5270	MCS0	16.00	15.97
	002.1180-0-01110	62	5310	MOOO	16.00	15.92
	802.11ax40-HE0	54	5270	MCS0	16.00	15.96
		62	5310		16.00	15.93
	802.11ac80-VHT0	58	5290	MCS0	16.00	15.97
	802.11ax80-HE0	58	5290	MCS0	16.00	15.94

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		Ant1 a	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		100	5500		16.00	15.92
		104	5520		16.00	15.89
		116	5580		16.00	15.90
	802.11a	120	5600	6Mbps	16.00	15.94
		136	5680		16.00	15.80
		140	5700		16.00	15.83
		144	5720		16.00	15.78
		100	5500		16.00	15.86
		104	5520	1	16.00	15.84
		116	5580		16.00	15.81
	802.11n20-HT0	120	5600	MCS0	16.00	15.88
		136	5680		16.00	15.87
		140	5700		16.00	15.93
		144	5720		16.00	15.94
5600 MHz		100	5500		16.00	15.92
		104	5520		16.00	15.94
		116	5580		16.00	15.86
	802.11ac20-VHT0	120	5600	MCS0	16.00	15.89
		136	5680		16.00	15.81
		140	5700		16.00	15.93
		144	5720		16.00	15.87
		100	5500		16.00	15.90
		104	5520	1	16.00	15.82
		116	5580		16.00	15.85
	802.11ax20-HE0	120	5600	MCS0	16.00	15.80
		136	5680		16.00	15.88
		140	5700		16.00	15.86
		144	5720		16.00	15.83

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		Ant1	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		102	5510		16.00	15.94
		110	5550		16.00	15.91
	802.11n40-HT0	118	5590	MCS0	16.00	15.86
		134	5670		16.00	15.98
		142	5710		16.00	15.95
	802.11ac40-VHT0	102	5510		16.00	15.93
		110	5550	MCS0	16.00	15.91
		118	5590		16.00	15.89
		134	5670		16.00	15.87
		142	5710		16.00	15.84
		102	5510		16.00	15.82
5600 MHz		110	5550		16.00	15.85
	802.11ax40-HE0	118	5590	MCS0	16.00	15.90
		134	5670		16.00	15.88
		142	5710		16.00	15.92
		106	5530		16.00	15.93
	802.11ac80-VHT0	122	5610	MCS0	16.00	15.81
		138	5690		16.00	15.92
		106	5530		16.00	15.95
	802.11ax80-HE0	122	5610	MCS0	16.00	15.89
		138	5690	1	16.00	15.90
	802.11ac160-VHT0	114	5570	MCS0	14.25	14.21
	802.11ax160-HE0	114	5570	MCS0	14.25	14.15

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Ant1 antenna									
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)			
		149	5745		16.00	15.91			
	802.11a	157	5785	6Mbps	16.00	15.93			
		165	5825		16.00	15.85			
		149	5745		16.00	15.88			
	802.11n20-HT0	157	5785	MCS0	16.00	15.80			
		165	5825		16.00	15.83			
	802.11ac20-VHT0	149	5745	MCS0	16.00	15.80			
		157	5785		16.00	15.88			
		165	5825		16.00	15.86			
5800 MHz		149	5745		16.00	15.83			
3600 MHZ	802.11ax20-HE0	157	5785	MCS0	16.00	15.90			
		165	5825		16.00	15.89			
	802.11n40-HT0	151	5755	MCS0	16.00	15.97			
	002.11140-F110	159	5795	WC30	16.00	15.94			
	802.11ac40-VHT0	151	5755	MCS0	16.00	15.79			
	002.1140-01110	159	5795	NIC30	16.00	15.84			
	802.11ax40-HE0	151	5755	MCS0	16.00	15.81			
	002.110340-1120	159	5795	INICS0	16.00	15.87			
	802.11ac80-VHT0	155	5775	MCS0	16.00	15.99			
	802.11ax80-HE0	155	5775	MCS0	16.00	15.91			

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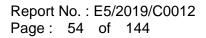
#### Notebook mode

Ant2 antenna									
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)			
		1	2412		19.25	19.12			
		2	2417		20.50	20.45			
		6	2437		20.50	20.41			
	802.11b	10	2457	1Mbps	20.50	20.44			
		11	2462		19.50	19.37			
		12	2467		18.50	18.42			
		13	2472		19.00	18.78			
		1	2412		17.00	16.90			
	802.11g	2	2417		18.50	18.43			
		6	2437		20.00	19.86			
		10	2457	6Mbps	18.75	18.62			
		11	2462		15.00	14.91			
		12	2467		15.00	14.98			
		13	2472		12.50	12.42			
2450 MHz		1	2412		17.00	16.85			
		2	2417		18.50	18.36			
		6	2437		20.00	19.77			
	802.11n20-HT0	10	2457	MCS0	18.75	18.72			
		11	2462		15.00	14.91			
		12	2467		15.00	14.96			
		13	2472		12.50	12.37			
		1	2412		17.00	16.95			
		2	2417		18.50	18.47			
		6	2437		20.00	19.89			
	802.11ax20-HE0	10	2457	MCS0	18.75	18.59			
		11	2462		15.00	14.77			
		12	2467		15.00	14.86			
		13	2472		12.50	12.25			

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Ant2 antenna									
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)			
		3	2422		16.50	16.36			
	802.11n40-HT0	4	2427	MCS0	16.50	16.32			
		6	2437		16.00	15.96			
		8	2447		15.50	15.44			
		9	2452		15.50	15.37			
		10	2457		12.50	12.45			
2450 MHz		11	2462		13.00	12.83			
2430 10112		3	2422		16.50	16.42			
		4	2427		16.50	16.45			
		6	2437		16.00	15.92			
	802.11ax40-HEC	8	2447	MCS0	15.50	15.41			
		9	2452		15.50	15.34			
		10	2457		12.50	12.37			
		11	2462		13.00	12.90			

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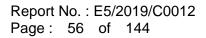


Ant2 antenna								
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)		
		36	5180		18.50	18.41		
	802.11a	40	5200	6Mbps	20.00	19.95		
	002.11a	44	5220	olviops	20.50	20.47		
		48	5240		20.50	20.44		
		36	5180		18.50	18.34		
	802.11n20-HT0	40	5200	MCS0	20.00	19.88		
		44	5220	IVICSU	20.50	20.38		
		48	5240		20.50	20.33		
	802.11ac20-VHT0	36	5180		18.50	18.35		
		40	5200	MCS0	20.00	19.79		
		44	5220	NIC30	20.50	20.42		
		48	5240		20.50	20.46		
5.15-5.25 GHz		36	5180		18.50	18.26		
5.15-5.25 0112	802.11ax20-HE0	40	5200	MCS0	20.00	19.90		
	002.11ax20-HEU	44	5220	NIC30	20.50	20.41		
		48	5240		20.50	20.37		
	802.11n40-HT0	38	5190	MCS0	18.50	18.39		
	002.11140-F110	46	5230	NIC30	20.50	20.48		
	802.11ac40-VHT0	38	5190	MCS0	18.50	18.31		
	002.118040-0110	46	5230	NIC30	20.50	20.40		
	802.11ax40-HE0	38	5190	MCS0	18.50	18.35		
	002.11ax+0-11E0	46	5230	NIC30	20.50	20.43		
	802.11ac80-VHT0	42	5210	MCS0	18.25	18.09		
	802.11ax80-HE0	42	5210	MCS0	18.25	18.14		
	802.11ac160-VHT0	50	5250	MCS0	15.25	15.19		
	802.11ax160-HE0	50	5250	MCS0	15.25	15.11		

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		Ant2	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		52	5260		20.50	20.48
	802.11a	56	5280	6 Mbpa	20.50	20.46
	002.11a	60	5300	6Mbps	20.50	20.43
		64	5320		18.25	18.11
		52	5260		20.50	20.37
	802.11n20-HT0	56	5280	MCS0	20.50	20.33
	002.11120-1110	60	5300	10000	20.50	20.28
		64	5320		18.25	18.11
		52	5260		20.50	20.32
	802.11ac20-VHT0	56	5280	MCS0	20.50	20.29
	002.118020-01110	60	5300		20.50	20.40
5.25-5.35 GHz		64	5320		18.25	18.04
0.20-0.00 0112		52	5260		20.50	20.37
	802.11ax20-HE0	56	5280	MCS0	20.50	20.33
	002.118/20-1120	60	5300	WC00	20.50	20.36
		64	5320		18.25	18.15
	802.11n40-HT0	54	5270	MCS0	20.50	20.47
	002.111140-1110	62	5310	10000	17.25	17.16
	802.11ac40-VHT0	54	5270	MCS0	20.50	20.24
		62	5310	10000	17.25	17.05
	802.11ax40-HE0	54	5270	MCS0	20.50	20.41
		62	5310		17.25	17.11
	802.11ac80-VHT0	58	5290	MCS0	17.75	17.58
	802.11ax80-HE0	58	5290	MCS0	17.75	17.63

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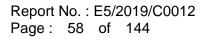


		Ant2 a	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		100	5500		19.00	18.88
		104	5520		20.50	20.37
		116	5580		20.50	20.42
	802.11a	120	5600	6Mbps	20.50	20.35
		136	5680		20.50	20.29
		140	5700		18.00	17.89
		144	5720		20.50	20.48
		100	5500		19.00	18.96
		104	5520	1	20.50	20.40
	802.11n20-HT0	116	5580		20.50	20.42
		120	5600	MCS0	20.50	20.37
		136	5680		20.50	20.33
		140	5700	1	18.00	17.90
		144	5720		20.50	20.46
5600 MHz		100	5500		19.00	18.92
		104	5520		20.50	20.31
		116	5580		20.50	20.38
	802.11ac20-VHT0	120	5600	MCS0	20.50	20.40
		136	5680		20.50	20.34
		140	5700		18.00	17.86
		144	5720		20.50	20.44
		100	5500		19.00	18.80
		104	5520		20.50	20.43
		116	5580		20.50	20.42
	802.11ax20-HE0	120	5600	MCS0	20.50	20.37
		136	5680		20.50	20.31
		140	5700		18.00	17.99
		144	5720		20.50	20.46

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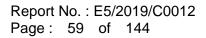




		Ant2	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		102	5510		18.25	18.18
		110	5550		20.50	20.44
	802.11n40-HT0	118	5590	MCS0	20.50	20.36
		134	5670		19.25	19.16
		142	5710		20.50	20.49
		102	5510		18.25	18.14
		110	5550		20.50	20.42
	802.11ac40-VHT0	118	5590	MCS0	20.50	20.35
		134	5670		19.25	19.14
		142	5710		20.50	20.35
		102	5510		18.25	18.17
5600 MHz		110	5550		20.50	20.38
	802.11ax40-HE0	118	5590	MCS0	20.50	20.41
		134	5670		19.25	19.19
		142	5710		20.50	20.48
		106	5530		18.75	18.66
	802.11ac80-VHT0	122	5610	MCS0	19.75	19.68
		138	5690		20.50	20.45
		106	5530		18.75	18.70
	802.11ax80-HE0	122	5610	MCS0	19.75	19.66
		138	5690	1	20.50	20.39
	802.11ac160-VHT0	114	5570	MCS0	14.50	14.35
	802.11ax160-HE0	114	5570	MCS0	14.50	14.39

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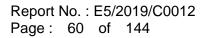




Ant2 antenna								
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)		
		149	5745		20.50	20.48		
	802.11a	157	5785	6Mbps	20.50	20.49		
		165	5825		20.50	20.44		
	802.11n20-HT0	149	5745		20.50	20.46		
		157	5785	MCS0	20.50	20.39		
		165	5825		20.50	20.31		
	802.11ac20-VHT0	149	5745	MCS0	20.50	20.45		
		157	5785		20.50	20.37		
		165	5825		20.50	20.34		
5800 MHz		149	5745		20.50	20.28		
5600 MHZ	802.11ax20-HE0	157	5785	MCS0	20.50	20.41		
		165	5825		20.50	20.43		
	802.11n40-HT0	151	5755	MCS0	20.50	20.40		
	002.11140-010	159	5795	IVICSU	20.50	20.47		
	802.11ac40-VHT0	151	5755	MCS0	20.50	20.35		
	002.110040-0110	159	5795	WC30	20.50	20.38		
	802.11ax40-HE0	151	5755	MCS0	20.50	20.37		
	002.118,40-1120	159	5795	IVICS0	20.50	20.31		
	802.11ac80-VHT0	155	5775	MCS0	18.50	18.42		
	802.11ax80-HE0	155	5775	MCS0	18.50	18.45		

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		Ant	1 antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		1	2412		19.50	19.37
		2	2417		20.50	20.49
		6	2437		20.50	20.47
	802.11b	10	2457	1Mbps	20.50	20.40
		11	2462		19.50	19.37
		12	2467		18.50	18.39
		13	2472		19.00	18.87
		1	2412		16.75	16.71
	ł	2	2417	6Mbps	18.50	18.40
		6	2437		20.00	19.88
	802.11g	10	2457		18.75	18.66
		11	2462		15.50	15.39
		12	2467		15.00	14.86
0.450 MIL		13	2472		12.75	12.65
2450 MHz		1	2412		16.75	16.67
		2	2417		18.50	18.38
		6	2437		20.00	19.98
	802.11n20-HT0	10	2457	MCS0	18.75	18.74
		11	2462		15.50	15.43
		12	2467		15.00	14.90
		13	2472		12.75	12.61
		1	2412		16.75	16.63
		2	2417		18.50	18.42
		6	2437		20.00	19.88
	802.11ax20-HE0		2457	MCS0	18.75	18.65
		11	2462		15.50	15.43
		12	2467		15.00	14.92
		13	2472		12.75	12.68

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		Ant	1 antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		3	2422		16.50	16.41
		4	2427		16.50	16.46
		6	2437	MCS0	16.00	15.82
	802.11n40-HT0	8	2447		15.50	15.29
		9	2452		14.50	14.25
		10	2457		12.50	12.38
2450 MHz		11	2462		13.00	12.97
2430 1011 12		3	2422		16.50	16.37
		4	2427		16.50	16.41
		6	2437		16.00	15.93
Ę	802.11ax40-HE0	8	2447	MCS0	15.50	15.46
		9	2452		14.50	14.39
		10	2457		12.50	12.43
		11	2462		13.00	12.84

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		Ant1	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		36	5180		18.50	18.38
	902 110	40	5200	6Mbps	19.50	19.39
	802.11a -	44	5220	olviops	20.50	20.44
		48	5240		20.50	20.49
		36	5180		18.50	18.35
	902 11p20 UT0	40	5200	MCS0	19.50	19.37
	802.11n20-HT0	44	5220	NIC30	20.50	20.41
		48	5240		20.50	20.45
		36	5180	MCS0	18.50	18.33
	802.11ac20-VHT0	40	5200		19.50	19.32
	002.11ac20-01110	44	5220	10000	20.50	20.39
		48	5240		20.50	20.27
5.15-5.25 GHz		36	5180		18.50	18.22
5.15-5.25 0112	802.11ax20-HE0	40	5200	MCS0	19.50	19.34
	002.11ax20-HEU	44	5220	NIC30	20.50	20.40
		48	5240		20.50	20.45
	802.11n40-HT0	38	5190	MCS0	18.50	18.43
	602.111140-ПТО	46	5230	IVIC50	20.50	20.40
	802.11ac40-VHT0	38	5190	MCS0	18.50	18.44
	002.118040-1010	46	5230	IVICSU	20.50	20.37
	802.11ax40-HE0	38	5190	MCS0	18.50	18.45
	002.118340-17E0	46	5230	WC30	20.50	20.31
	802.11ac80-VHT0	42	5210	MCS0	18.50	18.28
	802.11ax80-HE0	42	5210	MCS0	18.50	18.30
	802.11ac160-VHT0	50	5250	MCS0	14.75	14.59
	802.11ax160-HE0	50	5250	MCS0	14.75	14.62

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		Ant1	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		52	5260		20.50	20.45
	902 110	56	5280	GMbaa	20.50	20.42
	802.11a	60	5300	6Mbps	20.50	20.41
		64	5320		18.00	17.99
		52	5260		20.50	20.37
	802.11n20-HT0	56	5280	MCS0	20.50	20.35
	002.111201110	60	5300	10030	20.50	20.39
		64	5320		18.00	17.76
		52	5260	MCS0	20.50	20.25
	802.11ac20-VHT0	56	5280		20.50	20.42
	002.118020-01110	60	5300		20.50	20.36
5.25-5.35 GHz		64	5320		18.00	17.70
0.20 0.00 01 12		52	5260		20.50	20.34
	802.11ax20-HE0	56	5280	MCS0	20.50	20.37
	002.118,20-1120	60	5300	WC00	20.50	20.40
		64	5320		18.00	17.84
	802.11n40-HT0	54	5270	MCS0	20.50	20.43
	002.111 <del>1</del> 0-1110	62	5310	10000	17.25	17.15
	802.11ac40-VHT0	54	5270	MCS0	20.50	20.38
		62	5310	10000	17.25	17.16
	802.11ax40-HE0	54	5270	MCS0	20.50	20.45
		62	5310		17.25	17.09
	802.11ac80-VHT0	58	5290	MCS0	17.75	17.71
	802.11ax80-HE0	58	5290	MCS0	17.75	17.66

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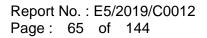


		Ant1 a	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		100	5500		19.00	18.87
		104	5520		20.50	20.43
		116	5580		20.50	20.39
	802.11a	120	5600	6Mbps	20.50	20.37
		136	5680		20.50	20.40
		140	5700		17.50	17.36
		144	5720		20.50	20.35
		100	5500		19.00	18.88
		104	5520	MCS0	20.50	20.25
		116	5580		20.50	20.32
	802.11n20-HT0	120	5600		20.50	20.29
		136	5680		20.50	20.40
		140	5700		17.50	17.47
		144	5720		20.50	20.48
5600 MHz		100	5500		19.00	18.96
		104	5520		20.50	20.46
		116	5580		20.50	20.43
	802.11ac20-VHT0	120	5600	MCS0	20.50	20.49
		136	5680		20.50	20.41
		140	5700		17.50	17.42
		144	5720		20.50	20.38
		100	5500		19.00	18.91
		104	5520		20.50	20.35
		116	5580		20.50	20.30
	802.11ax20-HE0	120	5600	MCS0	20.50	20.46
		136	5680		20.50	20.43
		140	5700		17.50	17.42
		144	5720		20.50	20.45

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		Ant1	antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		102	5510		18.25	18.15
		110	5550		20.50	20.42
	802.11n40-HT0	118	5590	MCS0	20.50	20.39
		134	5670		19.25	19.17
		142	5710		20.50	20.45
		102	5510		18.25	18.17
		110	5550		20.50	20.41
	802.11ac40-VHT0	118	5590	MCS0	20.50	20.45
		134	5670		19.25	19.18
		142	5710		20.50	20.42
		102	5510		18.25	18.19
5600 MHz		110	5550		20.50	20.36
	802.11ax40-HE0	118	5590	MCS0	20.50	20.44
		134	5670		19.25	19.17
		142	5710		20.50	20.45
		106	5530		18.75	18.67
	802.11ac80-VHT0	122	5610	MCS0	19.75	19.70
			5690		20.50	20.45
			5530		18.75	18.68
	802.11ax80-HE0	122	5610	MCS0	19.75	19.65
		138	5690		20.50	20.44
	802.11ac160-VHT0	114	5570	MCS0	14.25	14.11
	802.11ax160-HE0	114	5570	MCS0	14.25	14.17

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		Ant1 a	antenna			
Mode	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		149	5745		20.50	20.48
	802.11a	157	5785	6Mbps	20.50	20.46
		165	5825		20.50	20.49
		149	5745		20.50	20.42
	802.11n20-HT0	157	5785	MCS0	20.50	20.33
		165	5825		20.50	20.28
		149	5745	MCS0	20.50	20.34
	802.11ac20-VHT0	157	5785		20.50	20.37
		165	5825		20.50	20.42
5800 MHz		149	5745		20.50	20.44
3000 1011 12	802.11ax20-HE0	157	5785	MCS0	20.50	20.29
		165	5825		20.50	20.49
	802.11n40-HT0	151	5755	MCS0	20.50	20.47
	002.11140-1110	159	5795	WC30	20.50	20.48
	802.11ac40-VHT0	151	5755	MCS0	20.50	20.40
	002.110040-01110	159	5795	10000	20.50	20.38
	802.11ax40-HE0	151	5755	MCS0	20.50	20.35
		159	5795	10000	20.50	20.45
	802.11ac80-VHT0	155	5775	MCS0	18.50	18.37
	802.11ax80-HE0	155	5775	MCS0	18.50	18.41

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### Bluetooth conducted power table:

			1M	bps	2M	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		8.15		6.32		6.32
BR/EDR	CH 39	2441	11.00	8.70	7.00	6.57	7.00	6.55
	CH 78	2480		9.14		6.40		6.39

Mada	Ohannal	Frequency				
Mode	Channel	(MHz)	Max. Rated Avg.Power + Max. Tolerance (dBm)	Average Output Power (dBm)		
	CH 00	2402		6.72		
LE	CH 19	2440	7	6.91		
	CH 39	2480		6.68		

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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 FCC guidance.

### Tablet mode

Back/edges\_0mm with reduced power.

### Laptop mode

SAR measurement for this mode is not required because the separation distance between antennas and user will be larger than 20cm.

Note:

802.11b DSSS SAR Test Requirements:

- 1. SAR is measured for 2.4 GHz 802.11b DSSS mode using the highest measured maximum output power channel, when the reported SAR of the highest measured maximum output power channel for the exposure configuration is  $\leq 0.8$  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  $\leq 1.2$  W/kg.

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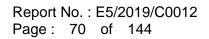


Initial Test Configuration:

- 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.
- 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  $\leq$  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 ant 1 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  $\leq$  0.8 W/kg, when the transmission band is  $\leq$  100 MHz.
- According to KDB865664 D01, SAR measurement variability must be assessed for each frequency band. When the original highest measured SAR is  $\geq$  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)
- 10. 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.
- 11. There are two antenna vendors for the device, one is INPAQ, and another is HTK. Both INPAQ and HTK were measured fully and respectively.

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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.

#### Lid Angle change

#### Lid Close $\rightarrow$ Notebook $\rightarrow$ non-Notebook

DUT operating mode	Lid Angle description	WLAN TX state
Lid Close	0° $\leq$ Lid angle $\leq$ 12.5 °	No TX Transmission
Notebook	12.5° < Lid angle $\leq$ 200°	High Power Level
Non-Notebook	200° < Lid angle ≤ 360°	Low Power Level

## Lid Angle change

#### Non-Notebook $\rightarrow$ Notebook $\rightarrow$ Lid Close

DUT operating mode	Lid Angle description	WLAN TX state
Lid Close	0° $\leq$ Lid angle $\leq$ 12.5 °	No TX Transmission
Notebook	12.5° < Lid angle $\leq$ 160°	High Power Level
Non-Notebook	160° < Lid angle ≤ 360°	Low Power Level

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#### 1.6.1 Results and conclusion

Based on 2019-11 TCB workshop guidance, 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	802.11n(40M) 5.2G	802.11n(40M) 5.3G	802.11ac(80M) 5.6G	802.11n(40M) 5.8G
	Lid close	0°	n/a	n/a	n/a	n/a	n/a
	Lid close	10°	n/a	n/a	n/a	n/a	n/a
	Notebook mode	20°	20.50	20.44	20.34	20.45	20.36
	NOTEDOOK MODE	15°	20.37	20.44	20.49	20.48	20.43
		10°	n/a	n/a	n/a	n/a	n/a
	Lid close	11°	n/a	n/a	n/a	n/a	n/a
		12°	n/a	n/a	n/a	n/a	n/a
		13°	20.38	20.50	20.42	20.37	20.49
		14°	20.36	20.49	20.41	20.46	20.38
		15°	20.31	20.43	20.47	20.50	20.36
		16°	20.38	20.39	20.48	20.35	20.31
		17°	20.33	20.34	20.31	20.49	20.31
		18°	20.33	20.44	20.42	20.31	20.40
		19°	20.33	20.46	20.35	20.50	20.49
		20°	20.37	20.44	20.33	20.31	20.46
		30°	20.34	20.38	20.36	20.44	20.32
		40°	20.32	20.43	20.35	20.36	20.50
Ant2		50°	20.36	20.48	20.43	20.36	20.47
Antz		60°	20.31	20.46	20.36	20.48	20.50
	Notebook mode	70°	20.49	20.39	20.40	20.35	20.47
	Notebook mode	80°	20.42	20.48	20.43	20.31	20.39
		90°	20.34	20.39	20.34	20.50	20.33
		100°	20.38	20.43	20.47	20.42	20.34
		110°	20.42	20.35	20.39	20.40	20.31
		120°	20.38	20.47	20.50	20.36	20.38
		130°	20.46	20.38	20.37	20.47	20.48
		140°	20.36	20.46	20.39	20.45	20.42
		150°	20.39	20.36	20.36	20.39	20.36
		160°	20.42	20.33	20.40	20.37	20.43
		170°	20.43	20.45	20.34	20.34	20.31
		180°	20.40	20.33	20.41	20.34	20.49
		190°	20.31	20.31	20.36	20.33	20.42
		200°	20.44	20.46	20.32	20.49	20.49
	Neg Netskeel, m. 1	210°	18.85	16.00	15.85	15.97	15.92
	Non-Notebook mode	205°	18.95	15.97	15.91	15.87	15.84
	Notebook mode	200°	20.31	20.42	20.34	20.38	20.36

### Ant2 Antenna

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Antenna	Operation mode	Lid angle	802.11b	802.11n(40M) 5.2G	802.11n(40M) 5.3G	802.11ac(80M) 5.6G	802.11n(40M) 5.8G
		201°	18.83	15.93	15.87	15.92	15.95
		202°	18.87	15.83	15.99	15.83	15.91
		203°	18.90	15.87	15.94	15.97	15.88
		204°	18.84	15.89	15.90	15.85	15.82
		205°	18.92	15.84	15.98	15.97	15.83
		215° 225°	18.98 18.88	16.00 15.82	15.87 15.90	15.84 15.93	15.99 15.92
		225 235°	18.94	15.99	15.86	15.82	15.83
		235 245°	18.83	15.81	15.89	15.97	15.90
		255°	18.91	15.86	15.92	15.81	15.97
		265°	18.84	15.90	15.84	15.99	15.95
		275°	18.99	15.88	15.90	15.96	15.89
		285°	18.97	15.86	15.85	15.97	15.87
		295°	18.84	15.98	15.98	15.84	15.88
		305°	18.96	15.85	15.82	15.81	15.92
		315°	18.84	15.84	15.83	15.94	15.81
		325°	18.88	15.88	15.87	15.91	15.95
		335°	18.86	15.96	15.93	16.00	15.89
	Non-Notebook mode	345°	18.86	15.85	15.82	15.85	15.95
		355°	18.87	15.84	15.95	15.86	15.92
		360°	18.96	15.98	15.87	15.94	15.98
		350°	18.84	15.91	15.87	15.81	16.00
		340°	18.98	15.88	15.88	15.92	15.86
		330° 320°	18.89 18.92	15.95 15.81	15.97 15.88	15.94 15.90	15.89 15.97
		320°	18.92	15.93	15.88	15.81	15.85
		310°	19.00	16.00	16.00	15.81	15.85
		290°	18.90	15.94	15.85	15.99	16.00
		230°	18.96	15.99	15.94	15.92	15.93
		270°	18.82	15.96	15.83	15.95	15.86
		260°	19.00	15.82	15.82	15.89	15.96
		250°	18.84	15.88	15.98	15.90	15.96
		240°	18.85	15.85	15.83	15.84	15.81
		230°	18.84	15.88	15.90	15.81	15.81
		220°	18.91	15.83	15.94	15.86	15.89
		210°	18.95	15.93	15.94	15.86	15.81
		200°	18.85	15.84	15.85	16.00	15.98
		190°	18.90	15.95	15.87	15.84	15.91
		180°	18.85	15.98	15.85	15.87	15.88
	No. 1 and the later	170°	18.90	15.97	15.84	15.82	15.97
Ant2	Notebook mode	160°	20.46	20.46	20.33	20.39	20.48
		165°	18.99	15.81	15.96	15.83	15.82
		164°	18.90	15.94	15.92	15.93	15.86
		163° 162°	18.86 18.87	16.00 15.94	15.81 15.87	15.81 15.92	15.97 15.85
		162 161°	18.99	15.94	15.83	15.92	15.85
		160°	20.43	20.31	20.36	20.34	20.47
		159°	20.43	20.34	20.30	20.34	20.32
		158°	20.37	20.34	20.45	20.32	20.32
		150°	20.36	20.31	20.38	20.45	20.40
		156°	20.43	20.47	20.35	20.45	20.34
		155°	20.39	20.36	20.43	20.35	20.45
		135 145°	20.39	20.30	20.45	20.33	20.43
	Notebook mode	145 135°	20.39	20.41	20.33	20.32	20.30
		135°	20.35	20.45	20.32	20.45	20.38
		125 115°	20.33	20.45	20.34	20.45	20.37
		105°	20.33	20.43	20.33	20.43	20.48
		95°	20.46	20.32	20.45	20.32	20.37
		85°	20.40	20.32	20.39	20.32	20.37
		75°	20.39	20.38	20.36	20.34	20.38
		65°	20.47	20.48	20.34	20.46	20.44
		55°	20.45	20.43	20.38	20.42	20.50
		45°	20.50	20.47	20.39	20.32	20.41
		45 35°	20.47	20.31	20.33	20.35	20.35
		25°	20.43	20.32	20.32	20.35	20.31
		15°	20.36	20.36	20.43	20.37	20.50
	Lid close	5°	n/a	n/a	n/a	n/a	n/a
		10°	n/a	n/a	n/a	n/a	n/a
	Notebook mode	15°	20.40	20.47	20.40	20.39	20.37
		14°	20.38	20.44	20.43	20.49	20.36
		13°	20.32	20.47	20.35	20.42	20.35
	Lid close	12°	n/a	n/a	n/a	n/a	n/a
		11°	n/a	n/a	n/a	n/a	n/a
		10°	n/a	n/a	n/a	n/a	n/a
		9°	n/a	n/a	n/a	n/a	n/a
		8°	n/a	n/a	n/a	n/a	n/a
		7°	n/a	n/a	n/a	n/a	n/a
		6°	n/a	n/a	n/a	n/a	n/a
		5° 0°	n/a n/a	n/a n/a	n/a n/a	n/a n/a	n/a n/a

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#### Ant1 Antenna

Antenna	Operation mode	Lid angle	802.11b	802.11n(40M) 5.2G	802.11n(40M) 5.3G	802.11ac(80M) 5.6G	802.11n(40M) 5.8G
	Lid close	0°	n/a	n/a	n/a	n/a	n/a
	LIU CIUSE	10°	n/a	n/a	n/a	n/a	n/a
	Notebook mode	20°	20.49	20.42	20.33	20.44	20.36
	NOLEDOOK IIIOUE	15°	20.35	20.43	20.48	20.46	20.42
		10°	n/a	n/a	n/a	n/a	n/a
	Lid close	11°	n/a	n/a	n/a	n/a	n/a
		12°	n/a	n/a	n/a	n/a	n/a
		13°	20.41	20.44	20.42	20.42	20.42
		14°	20.34	20.48	20.42	20.44	20.36
		15°	20.31	20.38	20.48	20.41	20.50
		16°	20.35	20.47	20.38	20.31	20.33
		17°	20.33	20.40	20.38	20.32	20.32
		18°	20.41	20.43	20.40	20.34	20.47
		19°	20.38	20.40	20.33	20.42	20.39
		20°	20.44	20.33	20.43	20.37	20.49
		30°	20.33	20.36	20.31	20.34	20.42
		40°	20.32	20.37	20.44	20.47	20.47
Ant1		50°	20.37	20.36	20.35	20.47	20.46
And		60°	20.43	20.36	20.48	20.44	20.40
	Notebook mode	70°	20.35	20.48	20.50	20.31	20.33
	Notebook mode	80°	20.46	20.31	20.42	20.33	20.43
		90°	20.34	20.49	20.37	20.44	20.45
		100°	20.48	20.39	20.39	20.41	20.45
		110°	20.40	20.42	20.35	20.45	20.40
		120°	20.40	20.47	20.37	20.39	20.43
		130°	20.33	20.43	20.44	20.42	20.46
		140°	20.47	20.47	20.49	20.31	20.45
		150°	20.41	20.39	20.44	20.38	20.50
		160°	20.31	20.31	20.33	20.38	20.40
		170°	20.35	20.50	20.50	20.41	20.45
		180°	20.32	20.39	20.39	20.50	20.41
		190°	20.48	20.46	20.36	20.32	20.49
		200°	20.39	20.47	20.50	20.43	20.32
	Non-Notebook	210°	18.84	15.85	15.95	15.91	15.93
	mode	205°	18.97	15.92	15.81	15.94	15.81
	Notebook mode	200°	20.42	20.39	20.48	20.37	20.50

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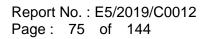
A	On continue on the	1.1.1 and also	000 445	000 44-(4014) 5-00	000 44-(4014) 5-00	000 44 (0014) 5.00	000 44-(4014) 5.00
Antenna	Operation mode	Lid angle 201°	802.11b 18.91	802.11n(40M) 5.2G 15.92	802.11n(40M) 5.3G 15.96	802.11ac(80M) 5.6G 15.91	802.11n(40M) 5.8G 15.90
	-	201°	18.99	15.92	16.00	15.91	15.86
	-	202 203°	18.84	15.99	15.94	15.93	15.92
	-	203	18.92	15.95	15.84	15.88	15.84
		205°	18.85	15.88	15.98	15.81	15.98
		215°	18.98	15.92	15.87	15.82	15.93
	-	225°	18.88	15.93	15.94	15.88	15.94
		235°	18.96	15.97	15.87	15.85	15.94
		245°	19.00	15.89	15.99	15.84	15.88
		255°	18.85	15.91	15.86	15.83	15.98
		265°	18.98	15.82	15.97	15.83	16.00
		275°	18.92	15.98	16.00	15.98	15.99
		285°	19.00	15.98	15.91	15.92	15.95
	_	295°	18.85	15.92	15.96	15.91	15.98
		305°	18.93	15.81	15.81	15.99	15.89
	_	315°	18.92	15.88	15.99	15.88	15.99
	_	325°	18.90	15.96	15.97	15.90	15.82
	-	335°	18.91	15.84	15.93	15.85	15.95
		345°	18.88	15.98	15.95	15.85	15.95
	Non-Notebook	355°	18.84	15.89	15.96	15.97	15.95
	mode	360°	18.98	15.99	15.87	15.85	15.84
		350°	18.92	15.97	15.96	15.84	15.86
		340° 330°	18.88	15.95	15.92	15.92	15.96 15.85
			18.96	15.87	15.86	15.95	
		320° 310°	18.94 18.81	15.82 15.83	15.81 16.00	15.98 15.93	15.86 15.83
		310°	19.00	15.83	15.98	15.93	15.83
		290°	19.00	15.89	15.81	15.97	15.86
		290°	18.92	15.81	15.81	15.85	15.83
		270°	18.97	15.89	15.84	15.84	15.83
		270°	18.88	15.87	15.82	15.86	15.90
	ł	250°	19.00	15.94	15.82	16.00	16.00
	-	230 240°	18.89	15.97	15.86	15.96	15.90
	-	230°	18.98	15.88	15.83	15.84	15.85
	-	230°	18.94	15.96	15.83	15.97	16.00
		210°	18.97	15.81	15.93	15.87	15.86
	-	200°	18.89	15.97	15.88	15.82	15.97
	-	190°	18.91	16.00	15.92	15.87	15.90
		180°	19.00	15.82	15.94	15.96	15.97
	-	170°	18.96	15.99	15.87	15.83	15.88
Ant1	Notebook mode	160°	20.48	20.32	20.48	20.35	20.48
And		165°	18.97	15.94	15.85	15.81	15.91
		164°	18.84	15.82	15.95	15.81	15.86
	Non-Notebook	163°	18.89	15.86	15.97	15.86	15.95
	mode	162°	18.89	15.87	15.97	15.89	15.81
	-	161°	18.88	15.91	15.83	15.90	15.85
		160°	20.46	20.32	20.42	20.44	20.31
	-	159°	20.36	20.39	20.42	20.50	20.44
		158°	20.42	20.33	20.34	20.33	20.48
	-	157°	20.42	20.49	20.35	20.39	20.40
	-	156°	20.32	20.44	20.46	20.31	20.44
	ł	155°	20.32	20.44	20.46	20.31	20.44
		145°	20.38				
				20.45	20.32	20.32	20.36
		135°	20.35	20.31	20.49	20.40	20.46
		125°	20.35	20.41	20.39	20.32	20.50
	Notebook mode	115°	20.37	20.33	20.37	20.34	20.45
		105°	20.50	20.33	20.49	20.32	20.35
		95°	20.42	20.39	20.38	20.32	20.36
		85°	20.50	20.43	20.31	20.38	20.34
		75°	20.50	20.45	20.31	20.48	20.32
		65°	20.46	20.36	20.46	20.42	20.37
		55°	20.36	20.32	20.33	20.45	20.48
		45°	20.31	20.48	20.44	20.39	20.39
		35°	20.32	20.41	20.32	20.50	20.40
		25°	20.38	20.48	20.36	20.33	20.48
	↓↓	15°	20.43	20.43	20.42	20.34	20.40
	Lid close	5°	n/a	n/a	n/a	n/a	n/a
		10°	n/a	n/a	n/a	n/a	n/a
	Notchask	15°	20.44	20.48	20.35	20.35	20.46
	Notebook mode	14° 13°	20.44 20.42	20.42 20.40	20.41 20.49	20.38 20.34	20.41 20.43
	++						
		12°	n/a	n/a	n/a	n/a	n/a
		11°	n/a	n/a	n/a	n/a	n/a
		10°	n/a	n/a	n/a	n/a	n/a
	Lid close	9°	n/a	n/a	n/a	n/a	n/a
	Liu ciose	8° 7°	n/a	n/a	n/a	n/a	n/a
		7°	n/a	n/a	n/a	n/a	n/a
		6°	n/a	n/a	n/a	n/a	n/a
		5° 0°	n/a n/a	n/a	n/a	n/a	n/a
		v	11/d	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=  $\sigma$  (|Ei|<sup>2</sup>)/  $\rho$  where  $\sigma$  and  $\rho$  are the conductivity and mass density of the tissuesimulant.

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

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

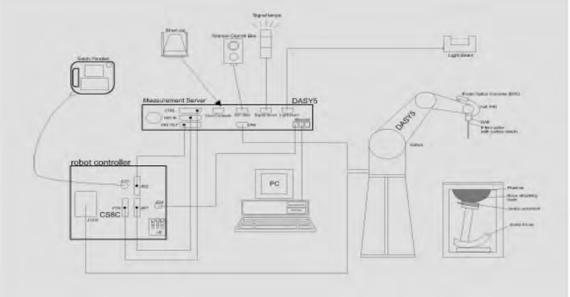


Fig. a The block diagram of SAR system

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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.
- Tissue simulating liquid mixed according to the given recipes. 10.
- 11. Validation dipole kits allowing to validate the proper functioning of the system.

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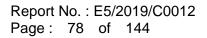
#### **1.8 System Components**

#### **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 2450/5250/5600/5750 MHz Additional CF for other liquids and frequencies upon request					
Frequency	10 MHz to > 6 GHz					
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)					
Dynamic	$10 \mu\text{W/g}$ to > 100 mW/g					
Range	Linearity: $\pm 0.2 \text{ dB}$ (noise: typically < 1 $\mu$ W/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

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

#### **DEVICE HOLDER**

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

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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 2450/5250/5600/5750 MHz. The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed in the table 1 (SAR values are normalized to 1W forward power delivered to the dipole). During the tests, the liquid depth above the ear reference points was  $\geq$  15 cm  $\pm$  5 mm (frequency  $\leq$  3 GHz) or  $\geq$  10 cm  $\pm$  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.

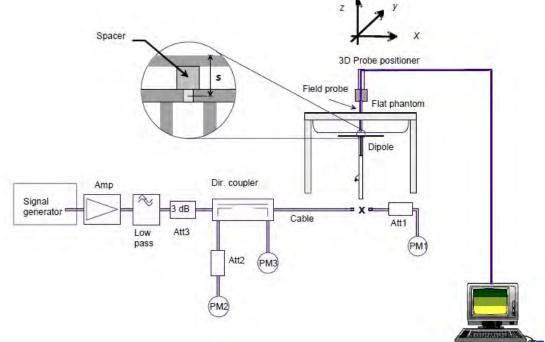


Fig. b The block diagram of system verification

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Validation Kit	S/N	Frequency (MHz)		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	Head	53	13.70	54.8	3.40%	Jan, 26, 2020			
Validation Kit	S/N	•	uency Hz)	1W Target SAR-1g (mW/g)	Pin=100mW Measured SAR-1g (mW/g)	Measured SAR-1g normalized to 1W (mW/g)	Deviation (%)	Measured Date			
		5250	Head	78.8	7.83	78.3	-0.63%	Jan, 28, 2020			
D5GHzV2	1145	5250	5250	5250	5250	neau	78.8	7.84	78.4	-0.51%	Jan, 29, 2020
0301272	1140	5600	Head	81	7.84	78.4	-3.21%	Jan, 29, 2020			
		5750	Head	78.8	7.91	79.1	0.38%	Jan, 30, 2020			

Validation Kit	S/N	Frequency (MHz)		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	Head	53	13.60	54.4	2.64%	Jan, 27, 2020
Validation Kit	S/N		uency Hz)	1W Target SAR-1g (mW/g)	Pin=100mW Measured SAR-1g (mW/g)	Measured SAR-1g normalized to 1W (mW/g)	Deviation (%)	Measured Date
		5250	Head	78.8	7.83	78.3	-0.63%	Feb, 01, 2020
D5GHzV2	1145	5250	5250 Heau	78.8	7.85	78.5	-0.38%	Jan, 29, 2020
0301272	1140	5600	Head	81	8.12	81.2	0.25%	Feb, 02, 2020
		5750	Head	78.8	7.93	79.3	0.63%	Feb, 03, 2020

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, εr	Measured Conductivity, σ (S/m)	% dev ɛr	% dev σ
		2412	39.268	1.766	39.083	1.755	-0.47%	-0.64%
		2417	39.259	1.771	39.066	1.759	-0.49%	-0.66%
		2437	39.223	1.788	39.043	1.774	-0.46%	-0.81%
	Jan, 26. 2020	2437	39.223	1.788	39.039	1.776	-0.47%	-0.70%
	Jan, 20. 2020	2450	39.200	1.800	38.984	1.788	-0.55%	-0.67%
		2457	39.191	1.808	38.983	1.795	-0.53%	-0.70%
		2462	39.185	1.813	38.969	1.800	-0.55%	-0.72%
		2480	39.162	1.827	38.950	1.813	-0.54%	-0.75%
		5190	35.997	4.645	35.639	4.596	-0.99%	-1.05%
		5210	35.974	4.665	35.625	4.616	-0.97%	-1.06%
	Jan, 28. 2020	5220	35.963	4.676	35.607	4.623	-0.99%	-1.12%
Head	Jan, 20. 2020	5230	35.951	4.686	35.593	4.633	-1.00%	-1.13%
Tieau		5240	35.940	4.696	35.588	4.646	-0.98%	-1.06%
		5250	35.929	4.706	35.583	4.652	-0.96%	-1.15%
		5250	35.929	4.706	35.561	4.654	-1.02%	-1.11%
	Jan, 29. 2020	5270	35.906	4.727	35.557	4.676	-0.97%	-1.07%
		5290	35.883	4.747	35.517	4.697	-1.02%	-1.06%
		5530	35.609	4.993	35.267	4.936	-0.96%	-1.15%
	Jan, 30. 2020	5600	35.529	5.065	35.170	5.009	-1.01%	-1.11%
		5690	35.426	5.157	35.068	5.102	-1.01%	-1.07%
		5750	35.357	5.219	35.023	5.159	-0.95%	-1.14%
	Jan, 31. 2020	5755	35.351	5.224	35.001	5.164	-0.99%	-1.15%
	Jan, 31. 2020	5775	35.329	5.244	34.986	5.188	-0.97%	-1.07%
		5795	35.306	5.265	34.952	5.204	-1.00%	-1.16%

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Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev εr	% dev σ
		2412	39.268	1.766	39.052	1.754	-0.55%	-0.69%
		2417	39.259	1.771	39.051	1.758	-0.53%	-0.72%
	Jan, 27. 2020	2437	39.223	1.788	39.039	1.776	-0.47%	-0.70%
	Jan, 27. 2020	2450	39.200	1.800	39.018	1.788	-0.46%	-0.67%
		2457	39.191	1.808	39.015	1.795	-0.45%	-0.70%
		2480	39.162	1.827	38.778	1.806	-0.98%	-1.13%
		5190	35.997	4.645	35.643	4.595	-0.98%	-1.07%
	Feb, 01. 2020	5210	35.974	4.665	35.633	4.614	-0.95%	-1.10%
		5220	35.963	4.676	35.614	4.624	-0.97%	-1.10%
	Feb, 01. 2020	5230	35.951	4.686	35.592	4.634	-1.00%	-1.10%
Head		5240	35.940	4.696	35.570	4.645	-1.03%	-1.09%
		5250	35.929	4.706	35.566	4.656	-1.01%	-1.07%
		5250	35.929	4.706	35.561	4.654	-1.02%	-1.11%
	Jan, 29. 2020	5270	35.906	4.727	35.557	4.676	-0.97%	-1.07%
		5290	35.883	4.747	35.517	4.697	-1.02%	-1.06%
		5530	35.609	4.993	35.252	4.937	-1.00%	-1.13%
	Feb, 02. 2020	5600	35.529	5.065	35.184	5.007	-0.97%	-1.15%
		5690	35.426	5.157	35.061	5.098	-1.03%	-1.15%
		5750	35.357	5.219	35.019	5.163	-0.96%	-1.07%
	Feb, 03. 2020	5775	35.329	5.244	34.961	5.188	-1.04%	-1.07%
		5795	35.306	5.265	34.957	5.208	-0.99%	-1.08%

Table 2. Dielectric Parameters of Tissue Simulant Fluid

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#### The composition of the tissue simulating liquid:

_				Ingre	dient			<b>-</b>	
Frequency (MHz)	Mode	DGMBE	Water	Salt	Preventol D-7	Cellulose	Sugar	Total amount	
2450	Head	550ml	450ml	_	_	_	_	1.0L(Kg)	

#### 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 Postprocessing 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 highresolution arid
- 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  $\sigma$  is the conductivity,  $\rho$  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 (~ 2% for c; much better for  $\rho$ ), there is no standard for the measurement of the conductivity. Depending on the method and liquid, the error can well exceed ±5%.
- Temperature rise measurements are not very sensitive and therefore are often performed at a higher power level than the E-field measurements. The nonlinearities in the system (e.g., power measurements, different components, etc.) must be considered.

Considering these problems, the possible accuracy of the calibration of Efield probes with temperature gradient measurements in a carefully designed setup is about  $\pm 10\%$  (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  $\pm 5\%$  (RSS) when the same liquid is used for the calibration and for actual measurements and  $\pm 7-9\%$  (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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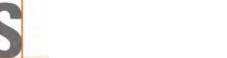
setups might be above the resonant cutoff frequencies. The field distribution in the setup must be carefully checked for conformity with the theoretical field distribution.

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#### 1.13 Test Standards and Limits

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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.

- Limits for Occupational/Controlled exposure: 0.4 W/kg as averaged over the (1) 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).
- Occupational/Controlled limits apply when persons are exposed as a (2) 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.
- Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged (3) over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). General Population/Uncontrolled limits apply when the general public may be exposed, or when persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or do not exercise control over their exposure. Warning labels placed on consumer

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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

#### WLAN Ant2 Antenna Max. Rated Avg. Measured Averaged SAR over 1g Distance Plot Freq. Mode (W/kg) Antenna Position СН Scaling Power + Max Ava. Powe (MHz) (mm) page Tolerance (dBm) (dBm) Measured Reported Back side 0 1 2412 19.00 18.98 100.46% 0.241 0.242 Top side 0 1 2412 19.00 18.98 100.46% 1.020 1.025 Top side 2462 19.00 18.98 100.46% 1.085 103 0 11 1.080 WLAN 802.11b Top side\* 0 11 2462 19.00 18.98 100.46% 0.954 0.958 Bottom side 0 1 2412 19.00 18.98 100.46% 0.055 0.055 Right side 0 2412 19.00 18.98 100.46% 0.061 0.061 1 100.46% Left side 2412 19.00 18.98 0.010 0.010 0 Top side 0 38 5190 16.00 15.90 102.33% 0.855 0.875 104 WLAN 802.11n(40M) 5.2G Top side 0 46 5230 16.00 15.91 102.09% 0.802 0.819 Back side 0 42 5210 16.00 15.98 100.46% 0.117 0.118 Top side 42 5210 16.00 15.98 100.46% 0.848 0.852 105 0 42 5210 16.00 100.46% 0.837 Top side 15.98 0.833 0 WLAN 802.11ac(80M) 5.2G Bottom side 0 42 5210 16.00 15.98 100.46% 0.019 0.019 Right side 0 42 5210 16.00 15.98 100.46% 0.048 0.048 42 5210 16.00 15.98 100.46% 0.001 0.001 Left side 0 Ant2 Back side 0 58 5290 16.00 15.93 101.62% 0.112 0.114 Top side 0 58 5290 16.00 15.93 101.62% 0.784 0.797 106 58 5290 16.00 101.62% 0.015 WLAN 802.11ac(80M) 5.3G Bottom side 0 15.93 0.015 Right side 0 58 5290 16.00 15.93 101 62% 0.044 0.045 Left side 0 58 5290 16.00 15.93 101.62% 0.001 0.001 15.99 100.23% Back side 0 138 5690 16.00 0.083 0.083 Top side 138 5690 16.00 15.99 100.23% 0.593 0.594 107 0 WLAN 802.11ac(80M) 5.6G Bottom side 138 5690 16.00 15.99 100.23% 0.011 0.011 0 Right side 0 138 5690 16.00 15.99 100.23% 0.034 0.034 Left side 0 138 5690 16.00 15.99 100.23% 0.001 0.001 100.93% 0.091 0.092 Back side 0 155 5775 16.00 15.96 Top side 0 155 5775 16.00 15.96 100 93% 0.621 0.627 108 WLAN 802.11ac(80M) 5.8G Bottom side 0 155 5775 16.00 15.96 100.93% 0.012 0.012 16.00 15.96 100.93% 0.039 Right side 0 155 5775 0.039 Left side 0 155 5775 16.00 15.96 100.93% 0.001 0.001 \* - repeated at the highest SAR measurement according to the KDB 865664 D01

# Tablet mode (High-Tek)

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#### WLAN Ant1 Antenna

Antenna	Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max.	Measured Avg. Power	Scaling	Averaged S (W)		Plot page
			()		(	Tolerance (dBm)	(dBm)		Measured	Reported	page
		Back side	0	1	2412	19.00	18.95	101.16%	0.218	0.221	-
		Top side	0	1	2412	19.00	18.97	100.69%	0.959	0.966	-
		Top side	0	6	2437	19.00	18.94	101.39%	1.090	1.105	109
	WLAN 802.11b	Top side*	0	6	2437	19.00	18.94	101.39%	1.050	1.065	-
		Bottom side	0	1	2412	19.00	18.95	101.16%	0.029	0.029	-
		Right side	0	1	2412	19.00	18.95	101.16%	0.011	0.011	-
		Left side	0	1	2412	19.00	18.95	101.16%	0.082	0.083	-
		Back side	0	78	2480	11.00	8.60	173.78%	0.007	0.011	-
		Top side	0	78	2480	11.00	8.60	173.78%	0.029	0.050	110
	Bluetooth (GFSK)	Bottom side	0	78	2480	11.00	8.60	173.78%	0.001	0.002	-
		Right side	0	78	2480	11.00	8.60	173.78%	0.001	0.002	-
		Left side	0	78	2480	11.00	8.60	173.78%	0.003	0.004	-
		Back side	0	42	5210	16.00	15.96	100.93%	0.076	0.077	-
		Top side	0	42	5210	16.00	15.96	100.93%	0.629	0.635	111
	WLAN 802.11ac(80M) 5.2G	Bottom side	0	42	5210	16.00	15.96	100.93%	0.028	0.028	-
		Right side	0	42	5210	16.00	15.96	100.93%	0.005	0.005	-
		Left side	0	42	5210	16.00	15.96	100.93%	0.006	0.006	-
		Back side	0	58	5290	16.00	15.99	100.23%	0.083	0.083	-
Ant1		Top side	0	58	5290	16.00	15.99	100.23%	0.708	0.710	112
Anti	WLAN 802.11ac(80M) 5.3G	Bottom side	0	58	5290	16.00	15.99	100.23%	0.034	0.034	-
		Right side	0	58	5290	16.00	15.99	100.23%	0.218 0.221   0.959 0.966   1.090 1.105   1.050 1.065   0.029 0.029   0.011 0.011   0.082 0.083   0.007 0.011   0.029 0.050   0.001 0.002   0.001 0.002   0.003 0.004   0.076 0.077   0.629 0.635   0.028 0.028   0.005 0.005   0.006 0.0083   0.0076 0.710	0.007	-
		Left side	0	58	5290	16.00	15.99	100.23%	0.008	0.008	-
		Back side	0	138	5690	16.00	15.98	100.46%	0.112	0.113	-
		Top side	0	106	5530	16.00	15.96	100.93%	0.644	0.650	-
		Top side	0	138	5690	16.00	15.98	100.46%	0.963	0.967	113
	WLAN 802.11ac(80M) 5.6G	Top side*	0	138	5690	16.00	15.98	100.46%	0.947	0.951	-
		Bottom side	0	138	5690	16.00	15.98	100.46%	0.050	0.050	-
		Right side	0	138	5690	16.00	15.98	100.46%	0.010	0.010	-
		Left side	0	138	5690	16.00	15.98	100.46%	0.011	0.011	-
		Top side	0	151	5755	16.00	15.98	100.46%	0.966	0.970	-
	WLAN 802.11n(40M) 5.8G	Top side	0	159	5795	16.00	15.99	100.23%	0.972	0.974	114
		Top side*	0	159	5795	16.00	15.99	100.23%	0.958	0.960	-
		Back side	0	155	5775	16.00	15.96	100.93%	0.126	0.127	-
		Top side	0	155	5775	16.00	15.96	100.93%	1.010	1.019	115
	W/LAN 802 11cc/80N0 5 CC	Top side*	0	155	5775	16.00	15.96	100.93%	0.990	0.999	
	WLAN 802.11ac(80M) 5.8G	Bottom side	0	155	5775	16.00	15.96	100.93%	0.055	0.056	-
		Right side	0	155	5775	16.00	15.96	100.93%	0.011	0.011	-
		Left side	0	155	5775	16.00	15.96	100.93%	0.013	0.013	-

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

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#### Tablet mode (INPAQ) WLAN Ant2 Antenna

Antenna	Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max.	Measured Avg. Power	Scaling	Averaged S (W)		Plot page
			```		. ,	Tolerance (dBm)	(dBm)		Measured	Reported	1.01
		Back side	0	1	2412	19.00	18.99	100.23%	0.295	0.296	-
		Top side	0	1	2412	19.00	18.98	100.46%	0.835	0.839	-
		Top side	0	6	2437	19.00	18.98	100.46%	0.844	0.848	116
	WLAN 802.11b	Top side*	0	6	2437	19.00	18.98	100.46%	0.839	0.843	-
		Bottom side	0	1	2412	19.00	18.99	100.23%	0.029	0.029	-
		Right side	0	1	2412	19.00	18.99	100.23%	0.080	0.080	-
		Left side	0	1	2412	19.00	18.99	100.23%	0.008	0.008	-
		Back side	0	46	5230	16.00	15.92	101.86%	0.075	0.076	-
		Top side	0	38	5190	16.00	15.90	102.33%	0.841	0.861	-
	WLAN 802.11n(40M) 5.2G	Top side	0	46	5230	16.00	15.92	101.86%	0.853	0.869	117
	W LAN 802. 111(40W) 5.2G	Bottom side	0	46	5230	16.00	15.92	101.86%	0.007	0.007	-
		Right side	0	46	5230	16.00	15.92	101.86%	0.056	0.057	-
		Left side	0	46	5230	16.00	15.92	101.86%	0.001	0.001	-
		Back side	0	42	5210	16.00	15.93	101.62%	0.092	0.093	-
		Top side	0	42	5210	16.00	15.98	100.46%	0.833	0.837	118
	W/LAN 902 11cc/90M 5 2C	Top side*	0	42	5210	16.00	15.93	101.62%	0.819	0.832	-
4-40	WLAN 802.11ac(80M) 5.2G	Bottom side	0	42	5210	16.00	15.93	101.62%	0.008	0.008	-
Ant2		Right side	0	42	5210	16.00	15.93	101.62%	0.062	0.063	-
		Left side	0	42	5210	16.00	15.93	101.62%	0.001	0.001	-
		Back side	0	58	5290	16.00	15.98	100.46%	0.079	0.079	-
		Top side	0	58	5290	16.00	15.98	100.46%	0.792	0.796	119
	WLAN 802.11ac(80M) 5.3G	Bottom side	0	58	5290	16.00	15.98	100.46%	0.008	0.008	-
		Right side	0	58	5290	16.00	15.98	100.46%	0.064	0.064	-
		Left side	0	58	5290	16.00	15.98	100.46%	0.001	0.001	-
		Back side	0	106	5530	16.00	15.99	100.23%	0.077	0.077	-
		Top side	0	106	5530	16.00	15.99	100.23%	0.776	0.778	121
	WLAN 802.11ac(80M) 5.6G	Bottom side	0	106	5530	16.00	15.99	100.23%	0.007	0.007	-
		Right side	0	106	5530	16.00	15.99	100.23%	0.056	0.056	-
		Left side	0	106	5530	16.00	15.99	100.23%	0.001	0.008 -   0.076 -   0.861 -   0.869 117   0.007 -   0.057 -   0.001 -   0.093 -   0.837 118   0.832 -   0.008 -   0.0063 -   0.0079 -   0.796 119   0.008 -   0.001 -   0.007 -   0.0077 -   0.776 121   0.007 -   0.056 -   0.001 -	-
		Back side	0	155	5775	16.00	15.96	100.93%	0.058	0.059	-
		Top side	0	155	5775	16.00	15.96	100.93%	0.600	0.606	122
	WLAN 802.11ac(80M) 5.8G	Bottom side	0	155	5775	16.00	15.96	100.93%	0.006	0.006	-
		Right side	0	155	5775	16.00	15.96	100.93%	0.048	0.048	-
		Left side	0	155	5775	16.00	15.96	100.93%	0.001	0.001	-

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

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#### WLAN Ant1 Antenna

Antenna	Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max.	Measured Avg. Power	Scaling			Plot page
			()		(	Tolerance (dBm)	(dBm)		Measured	Reported	page
		Back side	0	6	2437	19.00	18.97	100.69%	0.214	0.215	-
		Top side	0	6	2437	19.00	18.97	100.69%	0.601	0.605	124
	WLAN 802.11b	Bottom side	0	6	2437	19.00	18.97	100.69%	0.056	0.056	-
		Right side	0	6	2437	19.00	18.97	100.69%	0.026	0.026	-
		Left side	0	6	2437	19.00	18.97	100.69%	0.069	0.069	-
		Back side	0	78	2480	11.00	9.14	153.46%	0.030	0.046	-
		Top side	0	78	2480	11.00	9.14	153.46%	0.083	0.127	125
	Bluetooth (GFSK)	Bottom side	0	78	2480	11.00	9.14	153.46%	0.008	0.012	-
		Right side	0	78	2480	11.00	9.14	153.46%	0.004	0.006	-
		Left side	0	78	2480	11.00	9.14	153.46%	0.009	0.014	-
		Back side	0	42	5210	16.00	15.99	100.23%	0.133	0.133	-
		Top side	0	42	5210	16.00	15.99	100.23%	0.700	0.702	126
	WLAN 802.11ac(80M) 5.2G	Bottom side	0	42	5210	16.00	15.99	100.23%	0.006	0.006	-
		Right side	0	42	5210	16.00	15.99	100.23%	0.035	0.035	-
		Left side	0	42	5210	16.00	15.99	100.23%	0.214 0.215   0.601 0.605   0.056 0.056   0.026 0.026   0.069 0.069   0.030 0.046   0.083 0.127   0.008 0.012   0.004 0.006   0.005 0.014   0.133 0.133   0.700 0.702   0.006 0.006   0.026 0.026   0.026 0.026   0.144 0.145   0.703 0.708   0.007 0.007   0.028 0.028   0.173 0.176   0.824 0.837   0.702 0.715   0.009 0.009   0.036 0.037   0.036 0.037   0.122 0.122   0.6610 0.6611   0.007 0.007   0.041 0.041	0.026	-
Ant1		Back side	0	58	5290	16.00	15.97	100.69%	0.144	0.145	-
Anu		Top side	0	58	5290	16.00	15.97	100.69%	0.703	0.708	128
	WLAN 802.11ac(80M) 5.3G	Bottom side	0	58	5290	16.00	15.97	100.69%	0.007	26 0.026   44 0.145   03 0.708   07 0.007   42 0.042	-
	WLAN 802.11ac(80M) 5.3G	Right side	0	58	5290	16.00	15.97	100.69%	0.042	0.042	-
		Left side	0	58	5290	16.00	15.97	100.69%	0.028	0.028	-
		Back side	0	106	5530	16.00	15.93	101.62%	0.173	0.176	-
		Top side	0	106	5530	16.00	15.93	101.62%	0.848	0.862	130
		Top side*	0	106	5530	16.00	15.93	101.62%	0.824	0.837	-
	WLAN 802.11ac(80M) 5.6G	Top side	0	138	5690	16.00	15.92	101.86%	0.702	0.715	-
		Bottom side	0	106	5530	16.00	15.93	101.62%	0.009	0.009	-
		Right side	0	106	5530	16.00	15.93	101.62%	0.055	0.056	-
		Left side	0	106	5530	16.00	15.93	101.62%	0.036	0.037	-
		Back side	0	155	5775	16.00	15.99	100.23%	0.122	0.122	-
		Top side	0	155	5775	16.00	15.99	100.23%	0.610	0.611	131
	WLAN 802.11ac(80M) 5.8G	Bottom side	0	155	5775	16.00	15.99	100.23%	0.007	0.007	-
		Right side	0	155	5775	16.00	15.99	100.23%	0.041	0.041	-
		Left side	0	155	5775	16.00	15.99	100.23%	0.029	0.029	-

\* - 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

#### 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 ant 2	Yes
BT + 5GHz WLAN ant 1	Yes

Note:

1. Bluetooth and WLAN ant 1 share the same antenna path, and BT can transmit with WLAN ant 2 simultaneously.

2. For 2.4/5GHz WLAN ant 1 and ant 2 antennas, the maximum output power of each antenna during simultaneous transmission is less than that used in standalone transmission, and we used the sum of standalone 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 =  $\frac{\text{Max. tune up power (mW)}}{\text{Min. test separation distance(mm)}} \times \frac{\sqrt{f(\text{GHz})}}{7.5}$ 

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-1q.

#### 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  $\leq$  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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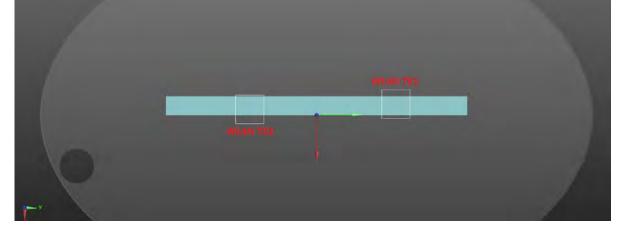
#### Tablet mode (High-Tek)

#### 2.4 GHz WLAN MIMO

No.	Conditions	Position	Max. WLAN Ant2	Max. WLAN Ant1	SAR Sum	SPLSR
		Back side	0.242	0.221	0.463	ΣSAR<1.6, Not required
		Top side	1.090	1.105	2.195	Analyzed as below
1	2.4 GHz WLAN Ant1 + WLAN Ant2	Bottom side	0.055	0.029	0.084	ΣSAR<1.6, Not required
		Right side	0.061	0.011	0.072	ΣSAR<1.6, Not required
		Left side	0.010	0.083	0.093	ΣSAR<1.6, Not required

#### 2.4 GHz WLAN MIMO

Conditions	Position	SAR Value	Cod	ordinates (d	cm)	ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	x	У	z	(W/Kg)	Distance (mm)		SAR Test
WLAN Ant2	Top side	1.09	-0.78	8.42	-0.50	2.195	14.80	0.022	SPLSR<0.04,
WLAN Ant1	TOP SIDE	1.105	-0.30	7.02	-0.51	2.195	14.00	0.022	Not required



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#### **5 GHz WLAN MIMO**

No.	Conditions	Position	Max. WLAN Ant2	Max. WLAN Ant1	SAR Sum	SPLSR
		Back side	0.118	0.127	0.245	ΣSAR<1.6, Not required
		Top side	0.875	1.019	1.894	Analyzed as below
2	5 GHz WLAN Ant1 + WLAN Ant2	Bottom side	0.019	0.056	0.075	ΣSAR<1.6, Not required
		Right side	0.048	0.011	0.059	ΣSAR<1.6, Not required
		Left side	0.001	0.013	0.014	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
		(W/kg)	х	У	z	(VV/Kg)	Distance (mm)		SAR Test
WLAN Ant2	Top side	0.875	-0.50	9.04	0.52	1 804	197.02	0.001	SPLSR<0.04,
WLAN Ant1	TOP SIDE	1.019	7.00	7.00 -9.18 0.51 1.894		1.094	197.02	0.001	Not required

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#### BT+ 2.4GHz WLAN Ant2

No.	Conditions	Position	Max. WLAN Ant2	BT	SAR Sum	SPLSR
		Back side	0.242	0.011	0.253	ΣSAR<1.6, Not required
		Top side	1.090	0.050	1.140	ΣSAR<1.6, Not required
3	2.4 GHz WLAN Ant2 + BT	Bottom side	0.055	0.002	0.057	ΣSAR<1.6, Not required
		Right side	0.061	0.002	0.063	ΣSAR<1.6, Not required
		Left side	0.010	0.004	0.014	ΣSAR<1.6, Not required

#### **BT+ 5GHz WLAN Ant2**

No.	Conditions	Position	Max. WLAN Ant2	BT	SAR Sum	SPLSR		
		Back side	0.118	0.011	0.129	ΣSAR<1.6, Not required		
		Top side	0.852	0.050	0.902	ΣSAR<1.6, Not required		
4	5 GHz WLAN Ant2 + BT			Bottom side	0.019	0.002	0.021	ΣSAR<1.6, Not required
		Right side	0.048	0.002	0.050	ΣSAR<1.6, Not required		
		Left side	0.001	0.004	0.005	ΣSAR<1.6, Not required		

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#### Tablet mode (INPAQ)

#### 2.4 GHz WLAN MIMO

No.	Conditions	Position	Max. WLAN Ant2	Max. WLAN Ant1	SAR Sum	SPLSR
		Back side	0.296	0.215	0.511	ΣSAR<1.6, Not required
		Top side	0.848	0.605	1.453	ΣSAR<1.6, Not required
5	2.4 GHz WLAN Ant1 + WLAN Ant2	Bottom side	0.029	0.056	0.085	ΣSAR<1.6, Not required
		Right side	0.080	0.026	0.106	ΣSAR<1.6, Not required
		Left side	0.008	0.070	0.078	ΣSAR<1.6, Not required

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#### **5 GHz WLAN MIMO**

No.	Conditions	Position	Max. WLAN Ant2	Max. WLAN Ant1	SAR Sum	SPLSR
		Back side	0.093	0.176	0.269	ΣSAR<1.6, Not required
		Top side	0.869	0.862	1.731	Analyzed as below
6	5 GHz WLAN Ant1 + WLAN Ant2	Bottom side	0.008	0.009	0.017	ΣSAR<1.6, Not required
		Right side	0.064	0.056	0.120	ΣSAR<1.6, Not required
		Left side	0.001	0.037	0.038	ΣSAR<1.6, Not required

#### **5 GHz WLAN MIMO**

Conditions	Position	SAR Value (W/kg)	Coordinates (cm)			2SAR Separatio	Peak Location Separation	SPLSR	Simultaneous Transmission
			x	У	z	(W/kg)	Distance (mm)		SAR Test
WLAN Ant2	• Top side	0.869	-1.06	7.78	0.55	1.731	47.79	0.005	SPLSR<0.04,
WLAN Ant1		0.862	-0.98	3.00	0.54	1.731	47.79	0.005	Not required

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#### BT+ 2.4GHz WLAN Ant2

No.	Conditions	Position	Max. WLAN Ant2	ВТ	SAR Sum	SPLSR
	2.4 GHz WLAN Ant2 + BT	Back side	0.296	0.046	0.342	ΣSAR<1.6, Not required
		Top side	0.848	0.127	0.975	ΣSAR<1.6, Not required
7		Bottom side	0.029	0.012	0.041	ΣSAR<1.6, Not required
		Right side	0.080	0.006	0.086	ΣSAR<1.6, Not required
		Left side	0.008	0.014	0.022	ΣSAR<1.6, Not required

#### **BT+ 5GHz WLAN Ant2**

No.	Conditions	Position	Max. WLAN Ant2	BT	SAR Sum	SPLSR
		Back side	0.093	0.046	0.139	ΣSAR<1.6, Not required
		Top side	0.869	0.127	0.996	ΣSAR<1.6, Not required
8	5 GHz WLAN Ant2 + BT	Bottom side	0.008	0.012	0.020	ΣSAR<1.6, Not required
		Right side	0.064	0.006	0.070	ΣSAR<1.6, Not required
		Left side	0.001	0.014	0.015	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	3665	Aug.30,2019	Aug.29,2020
SPEAG	System Validation	D2450V2	727	Apr.24,2019	Apr.23,2020
	Dipole	D5GHzV2	1145	Oct.16,2019	Oct.15,2020
SPEAG	Data acquisition Electronics	DAE4	547	Mar.22,2019	Mar.21,2020
SPEAG	Software	DASY 52 52.10.3	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 coupler	772D	MY46151242	Jul.30,2019	Jul.29,2020
/ igliciti		778D	MY48220468	Jul.30,2019	Jul.29,2020
Agilent	Signal Generator	N5181A	MY50141235	Apr.22,2019	Apr.21,2020
Agilent	Power Meter	E4417A	MY51410006	Feb.19,2019	Feb.18,2020
Agilopt	Power Sensor	E9301H	MY51470001	Feb.19,2019	Feb.18,2020
Agilent			MY51470002	Feb.19,2019	Feb.18,2020
TECPEL	Digital thermometer	DTM-303A	TP130074	Mar.26,2019	Mar.25,2020

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# 5. Measurements

Date: 2020/1/26

### WLAN 802.11b\_Body\_Top side\_CH 11\_0mm\_Ant2

Communication System: WLAN 2.45G; Frequency: 2462 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2462 MHz;  $\sigma$  = 1.8 S/m;  $\epsilon_r$  = 38.969;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.3°C; Liquid temperature: 21.9°C

**DASY5** Configuration:

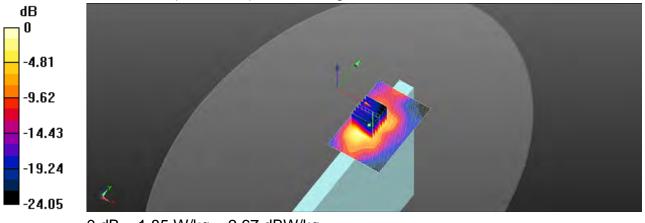
- Probe: EX3DV4 SN3665; ConvF(7.36, 7.36, 7.36); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22 •
- Phantom: ELI
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (61x91x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 1.49 W/kg

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

Reference Value = 5.895 V/m; Power Drift = 0.05 dB Peak SAR (extrapolated) = 3.99 W/kg SAR(1 g) = 1.08 W/kg; SAR(10 g) = 0.442 W/kgSmallest distance from peaks to all points 3 dB below = 5.2 mm Ratio of SAR at M2 to SAR at M1 = 34.6% Maximum value of SAR (measured) = 1.85 W/kg



0 dB = 1.85 W/kg = 2.67 dBW/kg

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Date: 2020/1/28

#### WLAN 802.11n(40M) 5.2G\_Body\_Top side\_CH 38\_0mm\_Ant2

Communication System: WLAN 5G; Frequency: 5190 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5190 MHz;  $\sigma$  = 4.596 S/m;  $\epsilon_r$  = 35.639;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN3665; ConvF(5.28, 5.28, 5.28); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (71x111x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.62 W/kg

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

Reference Value = 3.679 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 4.89 W/kg

SAR(1 g) = 0.855 W/kg; SAR(10 g) = 0.240 W/kg

Smallest distance from peaks to all points 3 dB below = 4.3 mm

Ratio of SAR at M2 to SAR at M1 = 34.2%

Maximum value of SAR (measured) = 1.93 W/kg

Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 3.679 V/m; Power Drift = 0.02 dB

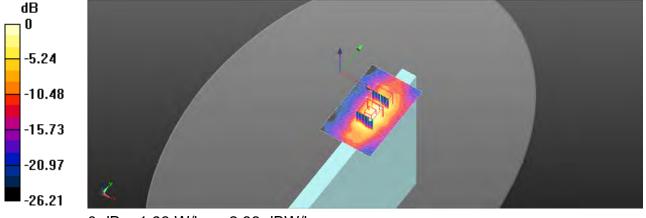
Peak SAR (extrapolated) = 3.59 W/kg

SAR(1 g) = 0.747 W/kg; SAR(10 g) = 0.246 W/kg

Smallest distance from peaks to all points 3 dB below = 4.7 mm

Ratio of SAR at M2 to SAR at M1 = 32.4%

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



0 dB = 1.93 W/kg = 2.86 dBW/kg

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Date: 2020/1/28

#### WLAN 802.11ac(80M) 5.2G\_Body\_Top side\_CH 42\_0mm\_Ant2

Communication System: WLAN 5G; Frequency: 5210 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5210 MHz;  $\sigma$  = 4.616 S/m;  $\epsilon_r$  = 35.625;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN3665; ConvF(5.28, 5.28, 5.28); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (71x121x1): 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 = 3.378 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 4.82 W/kg

SAR(1 g) = 0.848 W/kg; SAR(10 g) = 0.250 W/kg

Smallest distance from peaks to all points 3 dB below = 4.6 mm

Ratio of SAR at M2 to SAR at M1 = 41.4%

Maximum value of SAR (measured) = 1.76 W/kg

Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 3.378 V/m; Power Drift = 0.03 dB

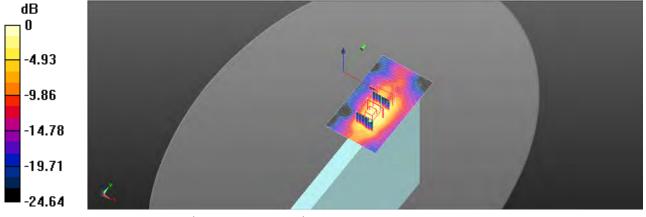
Peak SAR (extrapolated) = 3.60 W/kg

SAR(1 g) = 0.747 W/kg; SAR(10 g) = 0.246 W/kg

Smallest distance from peaks to all points 3 dB below = 4.4 mm

Ratio of SAR at M2 to SAR at M1 = 44.7%

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



0 dB = 1.76 W/kg = 2.45 dBW/kg

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Date: 2020/1/29

#### WLAN 802.11ac(80M) 5.3G\_Body\_Top side\_CH 58\_0mm\_Ant2

Communication System: WLAN 5G; Frequency: 5290 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5290 MHz;  $\sigma$  = 4.697 S/m;  $\epsilon_r$  = 35.517;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

Ambient temperature: 22.2°C; Liquid temperature: 21.8°C

**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(5.18, 5.18, 5.18); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (71x111x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.55 W/kg

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

Reference Value = 3.588 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 4.13 W/kg

SAR(1 g) = 0.784 W/kg; SAR(10 g) = 0.252 W/kg

Smallest distance from peaks to all points 3 dB below = 5.4 mm

Ratio of SAR at M2 to SAR at M1 = 35.1%

Maximum value of SAR (measured) = 1.62 W/kg

Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 3.588 V/m; Power Drift = 0.06 dB

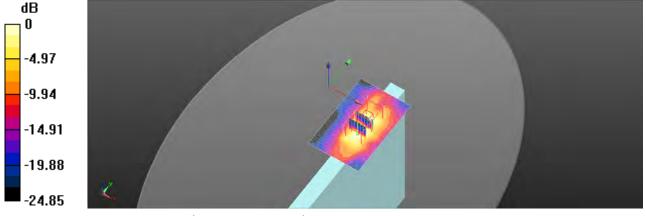
Peak SAR (extrapolated) = 4.05 W/kg

SAR(1 g) = 0.695 W/kg; SAR(10 g) = 0.200 W/kg

Smallest distance from peaks to all points 3 dB below = 4.1 mm

Ratio of SAR at M2 to SAR at M1 = 33.2%

Maximum value of SAR (measured) = 1.56 W/kg



0 dB = 1.62 W/kg = 2.09 dBW/kg

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Date: 2020/1/30

#### WLAN 802.11ac(80M) 5.6G\_Body\_Top side\_CH 138\_0mm\_Ant2

Communication SystemWLAN 5G; Frequency: 5690 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5690 MHz;  $\sigma$  = 5.102 S/m;  $\epsilon_r$  = 35.068;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

Ambient temperature: 22.0°C; Liquid temperature: 21.6°C

**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(4.99, 4.99, 4.99); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (71x111x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.23 W/kg

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

Reference Value = 3.083 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 3.95 W/kg

SAR(1 g) = 0.593 W/kg; SAR(10 g) = 0.177 W/kg

Smallest distance from peaks to all points 3 dB below = 4.5 mm

Ratio of SAR at M2 to SAR at M1 = 35.4%

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

Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 3.083 V/m; Power Drift = 0.02 dB

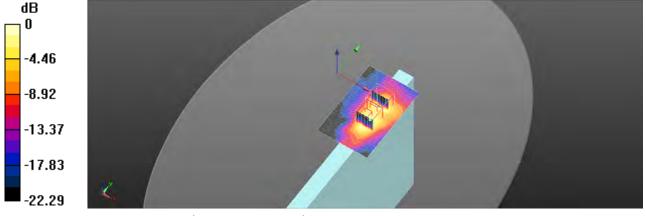
Peak SAR (extrapolated) = 2.48 W/kg

SAR(1 g) = 0.431 W/kg; SAR(10 g) = 0.157 W/kg

Smallest distance from peaks to all points 3 dB below = 4.7 mm

Ratio of SAR at M2 to SAR at M1 = 36.6%

Maximum value of SAR (measured) = 0.900 W/kg



0 dB = 1.36 W/kg = 1.35 dBW/kg

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Date: 2020/1/31

## WLAN 802.11ac(80M) 5.8G\_Body\_Top side\_CH 155\_0mm\_Ant2

Communication System: WLAN 5G; Frequency: 5775 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5775 MHz;  $\sigma$  = 5.188 S/m;  $\epsilon_r$  = 34.986;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 SN3665; ConvF(4.97, 4.97, 4.97); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

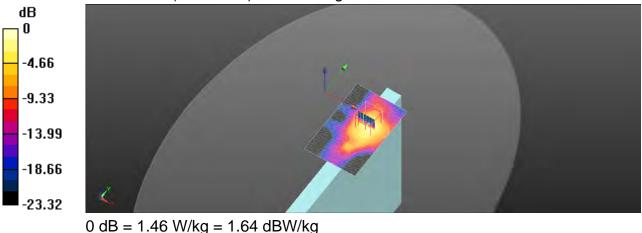
Area Scan (71x111x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.43 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 1.946 V/m; Power Drift = 0.02 dB Peak SAR (extrapolated) = 3.79 W/kg

SAR(1 g) = 0.621 W/kg; SAR(10 g) = 0.202 W/kgSmallest distance from peaks to all points 3 dB below = 4.5 mm Ratio of SAR at M2 to SAR at M1 = 40.5%

Maximum value of SAR (measured) = 1.46 W/kg



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Date: 2020/1/26

#### WLAN 802.11b\_Body\_Top side\_CH 6\_0mm\_Ant1

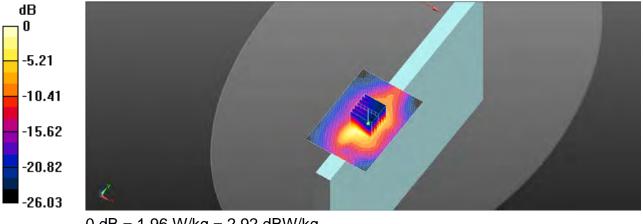
Communication System: WLAN 2.45G; Frequency: 2437 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2437 MHz;  $\sigma$  = 1.776 S/m;  $\epsilon_r$  = 39.039;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.3°C; Liquid temperature: 21.9°C

**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(7.36, 7.36, 7.36); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI •
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (71x101x1): Interpolated grid: dx=12 mm, dy=12 mm Maximum value of SAR (interpolated) = 1.89 W/kg

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 8.593 V/m; Power Drift = 0.02 dB Peak SAR (extrapolated) = 4.09 W/kg SAR(1 g) = 1.09 W/kg; SAR(10 g) = 0.450 W/kg Smallest distance from peaks to all points 3 dB below = 5.3 mm Ratio of SAR at M2 to SAR at M1 = 34.1% Maximum value of SAR (measured) = 1.96 W/kg



0 dB = 1.96 W/kg = 2.92 dBW/kg

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Date: 2020/1/26

#### Bluetooth(GFSK)\_Body\_Top side\_CH 78\_0mm\_Ant1

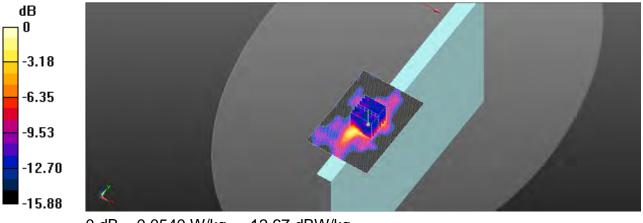
Communication System: Bluetooth; Frequency: 2480 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2480 MHz;  $\sigma$  = 1.813 S/m;  $\epsilon_r$  = 38.95;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.3°C; Liquid temperature: 21.9°C

**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(7.36, 7.36, 7.36); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI •
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (71x101x1): Interpolated grid: dx=12 mm, dy=12 mm Maximum value of SAR (interpolated) = 0.0515 W/kg

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 1.171 V/m; Power Drift = 0.02 dB Peak SAR (extrapolated) = 0.0960 W/kg SAR(1 g) = 0.029 W/kg; SAR(10 g) = 0.013 W/kg Smallest distance from peaks to all points 3 dB below = 5.5 mm Ratio of SAR at M2 to SAR at M1 = 36.8% Maximum value of SAR (measured) = 0.0540 W/kg



0 dB = 0.0540 W/kg = -12.67 dBW/kg

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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Date: 2020/1/28

#### WLAN 802.11ac(80M) 5.2G\_Body\_Top side\_CH 42\_0mm\_Ant1

Communication System: WLAN 5G; Frequency: 5210 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5210 MHz;  $\sigma$  = 4.616 S/m;  $\epsilon_r$  = 35.625;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN3665; ConvF(5.28, 5.28, 5.28); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (71x121x1): Interpolated grid: dx=10 mm, dy=10 mm

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

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

Reference Value = 2.845 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 2.96 W/kg

SAR(1 g) = 0.629 W/kg; SAR(10 g) = 0.216 W/kg

Smallest distance from peaks to all points 3 dB below = 4.1 mm

Ratio of SAR at M2 to SAR at M1 = 34.1%

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

Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 2.845 V/m; Power Drift = 0.03 dB

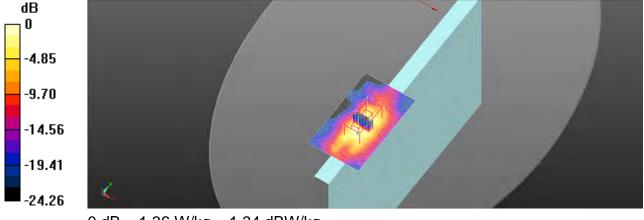
Peak SAR (extrapolated) = 2.65 W/kg

SAR(1 g) = 0.513 W/kg; SAR(10 g) = 0.167 W/kg

Smallest distance from peaks to all points 3 dB below = 4.9 mm

Ratio of SAR at M2 to SAR at M1 = 32.9%

Maximum value of SAR (measured) = 1.22 W/kg



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

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Date: 2020/1/29

#### WLAN 802.11ac(80M) 5.3G\_Body\_Top side\_CH 58\_0mm\_Ant1

Communication System: WLAN 5G; Frequency: 5290 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5290 MHz;  $\sigma$  = 4.697 S/m;  $\epsilon_r$  = 35.517;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

Ambient temperature: 22.2°C; Liquid temperature: 21.8°C

**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(5.18, 5.18, 5.18); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (71x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.27 W/kg

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

Reference Value = 2.906 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 3.33 W/kg

SAR(1 g) = 0.708 W/kg; SAR(10 g) = 0.246 W/kg

Smallest distance from peaks to all points 3 dB below = 4.8 mm

Ratio of SAR at M2 to SAR at M1 = 43.1%

Maximum value of SAR (measured) = 1.56 W/kg

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

Reference Value = 2.906 V/m; Power Drift = 0.04 dB

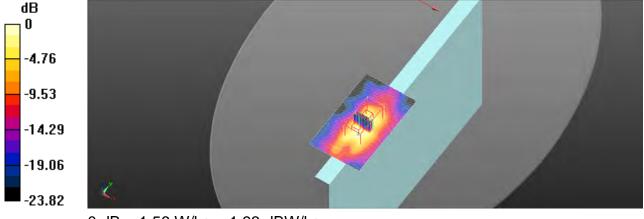
Peak SAR (extrapolated) = 3.30 W/kg

SAR(1 g) = 0.555 W/kg; SAR(10 g) = 0.174 W/kg

Smallest distance from peaks to all points 3 dB below = 4.6 mm

Ratio of SAR at M2 to SAR at M1 = 38.9%

Maximum value of SAR (measured) = 1.28 W/kg



0 dB = 1.56 W/kg = 1.93 dBW/kg

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### WLAN 802.11ac(80M) 5.6G\_Body\_Top side\_CH 138\_0mm\_Ant1

Communication System: WLAN 5G; Frequency: 5690 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5690 MHz;  $\sigma$  = 5.102 S/m;  $\epsilon_r$  = 35.068;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.0°C; Liquid temperature: 21.6°C

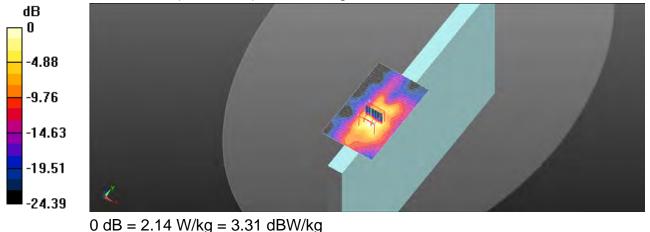
DASY5 Configuration:

- Probe: EX3DV4 SN3665; ConvF(4.99, 4.99, 4.99); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (71x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.92 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 1.993 V/m; Power Drift = -0.05 dB Peak SAR (extrapolated) = 5.39 W/kg SAR(1 g) = 0.963 W/kg; SAR(10 g) = 0.304 W/kgSmallest distance from peaks to all points 3 dB below = 4.4 mm Ratio of SAR at M2 to SAR at M1 = 37.1% Maximum value of SAR (measured) = 2.14 W/kg



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Date: 2020/1/31

#### WLAN 802.11n(40M) 5.8G\_Body\_Top side\_CH 159\_0mm\_Ant1

Communication System: WLAN 5G; Frequency: 5795 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5795 MHz;  $\sigma$  = 5.204 S/m;  $\epsilon_r$  = 34.952;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

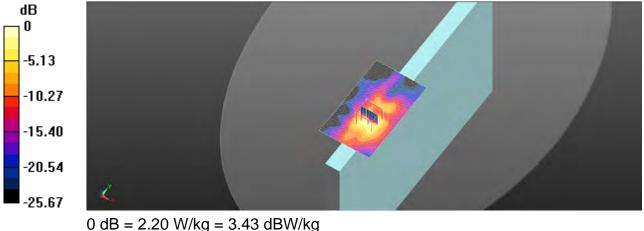
Ambient temperature: 22.1°C; Liquid temperature: 21.7°C

**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(4.97, 4.97, 4.97); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI •
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (71x121x1): Interpolated grid: dx=10 mm, dy=10 mm Maximum value of SAR (interpolated) = 1.98 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 0.05700 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 5.36 W/kg SAR(1 g) = 0.972 W/kg; SAR(10 g) = 0.304 W/kg Smallest distance from peaks to all points 3 dB below = 4.4 mm Ratio of SAR at M2 to SAR at M1 = 33.8% Maximum value of SAR (measured) = 2.20 W/kg



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Date: 2020/1/31

#### WLAN 802.11ac(80M) 5.8G\_Body\_Top side\_CH 155\_0mm\_Ant1

Communication System: WLAN 5G; Frequency: 5775 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5775 MHz;  $\sigma$  = 5.188 S/m;  $\epsilon_r$  = 34.986;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

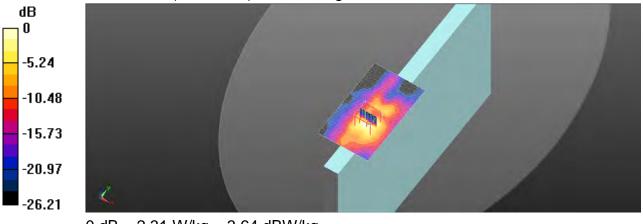
Ambient temperature: 22.1°C; Liquid temperature: 21.7°C

**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(4.97, 4.97, 4.97); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI •
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (71x121x1): Interpolated grid: dx=10 mm, dy=10 mm Maximum value of SAR (interpolated) = 2.05 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 1.285 V/m; Power Drift = 0.05 dB Peak SAR (extrapolated) = 5.87 W/kg SAR(1 g) = 1.01 W/kg; SAR(10 g) = 0.314 W/kg Smallest distance from peaks to all points 3 dB below = 4.5 mm Ratio of SAR at M2 to SAR at M1 = 35.4% Maximum value of SAR (measured) = 2.31 W/kg



0 dB = 2.31 W/kg = 3.64 dBW/kg

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Date: 2020/1/27

#### WLAN 802.11b\_Body\_Top side\_CH 6\_0mm\_Ant2

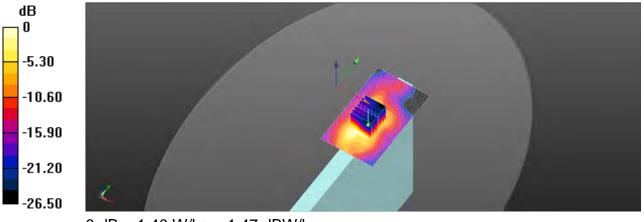
Communication System: WLAN 2.45G; Frequency: 2437 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2437 MHz;  $\sigma$  = 1.776 S/m;  $\epsilon_r$  = 39.039;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(7.36, 7.36, 7.36); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI •
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (61x101x1): Interpolated grid: dx=12 mm, dy=12 mm Maximum value of SAR (interpolated) = 1.56 W/kg

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 5.071 V/m; Power Drift = 0.01 dB Peak SAR (extrapolated) = 2.75 W/kg SAR(1 g) = 0.844 W/kg; SAR(10 g) = 0.369 W/kg Smallest distance from peaks to all points 3 dB below = 5.4 mm Ratio of SAR at M2 to SAR at M1 = 41.4% Maximum value of SAR (measured) = 1.40 W/kg



0 dB = 1.40 W/kg = 1.47 dBW/kg

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Date: 2020/2/1

#### WLAN 802.11n(40M) 5.2G\_Body\_Top side\_CH 46\_0mm\_Ant2

Communication System: WLAN 5G; Frequency: 5230 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5230 MHz;  $\sigma$  = 4.634 S/m;  $\epsilon_r$  = 35.592;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.3°C; Liquid temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 SN3665; ConvF(5.28, 5.28, 5.28); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

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

Maximum value of SAR (interpolated) = 1.93 W/kg

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

Reference Value = 2.166 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 4.95 W/kg

SAR(1 g) = 0.743 W/kg; SAR(10 g) = 0.240 W/kg

Smallest distance from peaks to all points 3 dB below = 4.2 mm

Ratio of SAR at M2 to SAR at M1 = 41.5%

Maximum value of SAR (measured) = 1.84 W/kg

Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 2.166 V/m; Power Drift = 0.04 dB

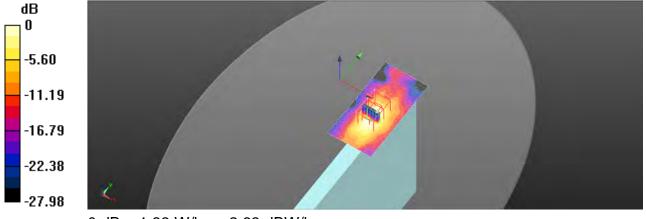
Peak SAR (extrapolated) = 4.37 W/kg

SAR(1 g) = 0.853 W/kg; SAR(10 g) = 0.279 W/kg

Smallest distance from peaks to all points 3 dB below = 4.6 mm

Ratio of SAR at M2 to SAR at M1 = 43.3%

Maximum value of SAR (measured) = 1.83 W/kg



0 dB = 1.83 W/kg = 2.63 dBW/kg

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Date: 2020/2/1

#### WLAN 802.11ac(80M) 5.2G\_Body\_Top side\_CH 42\_0mm\_Ant2

Communication System: WLAN 5G; Frequency: 5210 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5210 MHz;  $\sigma$  = 4.614 S/m;  $\epsilon_r$  = 35.633;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.3°C; Liquid temperature: 21.4°C

DASY5 Configuration:

- Probe: EX3DV4 SN3665; ConvF(5.28, 5.28, 5.28); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (71x121x1): Interpolated grid: dx=10 mm, dy=10 mm

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

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

Reference Value = 2.102 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 4.34 W/kg

SAR(1 g) = 0.833 W/kg; SAR(10 g) = 0.256 W/kg

Smallest distance from peaks to all points 3 dB below = 4.6 mm

Ratio of SAR at M2 to SAR at M1 = 38.3%

Maximum value of SAR (measured) = 1.85 W/kg

Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 2.102 V/m; Power Drift = 0.02 dB

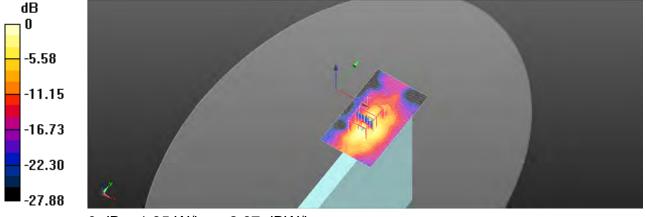
Peak SAR (extrapolated) = 5.02 W/kg

SAR(1 g) = 0.717 W/kg; SAR(10 g) = 0.220 W/kg

Smallest distance from peaks to all points 3 dB below = 4.9 mm

Ratio of SAR at M2 to SAR at M1 = 41.6%

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



0 dB = 1.85 W/kg = 2.67 dBW/kg

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Date: 2020/1/29

#### WLAN 802.11ac(80M) 5.3G\_Body\_Top side\_CH 58\_0mm\_Ant2

Communication System: WLAN 5G; Frequency: 5290 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5290 MHz;  $\sigma$  = 4.697 S/m;  $\epsilon_r$  = 35.517;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.2°C; Liquid temperature: 21.8°C

**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(5.18, 5.18, 5.18); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI •
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (71x121x1): 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 = 2.143 V/m; Power Drift = 0.01 dB Peak SAR (extrapolated) = 4.51 W/kg SAR(1 g) = 0.792 W/kg; SAR(10 g) = 0.233 W/kgSmallest distance from peaks to all points 3 dB below = 4.8 mm Ratio of SAR at M2 to SAR at M1 = 34.3% Maximum value of SAR (measured) = 1.67 W/kg Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 2.143 V/m; Power Drift = 0.01 dB Peak SAR (extrapolated) = 4.77 W/kg SAR(1 g) = 0.687 W/kg; SAR(10 g) = 0.201 W/kg Smallest distance from peaks to all points 3 dB below = 4.1 mm Ratio of SAR at M2 to SAR at M1 = 36.5% Maximum value of SAR (measured) = 1.64 W/kg Zoom Scan (7x7x12)/Cube 2: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 2.143 V/m; Power Drift = 0.01 dB Peak SAR (extrapolated) = 4.29 W/kg SAR(1 g) = 0.465 W/kg; SAR(10 g) = 0.162 W/kg Smallest distance from peaks to all points 3 dB below = 4.3 mm Ratio of SAR at M2 to SAR at M1 = 35.7%Maximum value of SAR (measured) = 1.47 W/kg

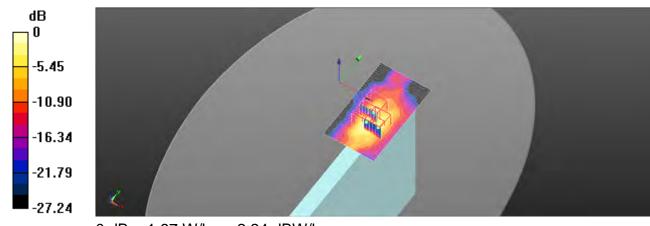
t (886-2) 2299-3279 台灣檢驗科技股份有限公司

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0 dB = 1.67 W/kg = 2.24 dBW/kg

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Date: 2020/2/2

#### WLAN 802.11ac(80M) 5.6G\_Body\_Top side\_CH 106\_0mm\_Ant2

Communication System: WLAN 5G; Frequency: 5530 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5530 MHz;  $\sigma$  = 4.937 S/m;  $\epsilon_r$  = 35.252;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.5°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN3665; ConvF(4.99, 4.99, 4.99); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (71x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.40 W/kg

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

Reference Value = 1.463 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 4.35 W/kg

SAR(1 g) = 0.776 W/kg; SAR(10 g) = 0.234 W/kg

Smallest distance from peaks to all points 3 dB below = 4.6 mm

Ratio of SAR at M2 to SAR at M1 = 40.1%

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

Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 1.463 V/m; Power Drift = 0.05 dB

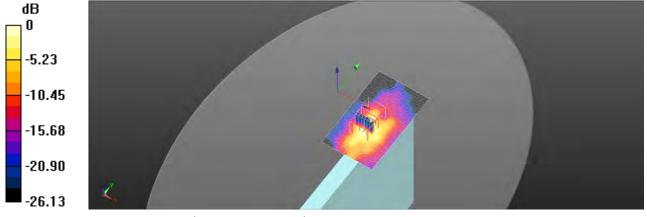
Peak SAR (extrapolated) = 4.49 W/kg

SAR(1 g) = 0.714 W/kg; SAR(10 g) = 0.194 W/kg

Smallest distance from peaks to all points 3 dB below = 4.8 mm

Ratio of SAR at M2 to SAR at M1 = 39.7%

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



0 dB = 1.67 W/kg = 2.22 dBW/kg

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Date: 2020/2/3

#### WLAN 802.11ac(80M) 5.8G\_Body\_Top side\_CH 155\_0mm\_Ant2

Communication System: WLAN 5G; Frequency: 5775 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5775 MHz;  $\sigma$  = 5.188 S/m;  $\epsilon_r$  = 34.961;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

Ambient temperature: 22.6°C; Liquid temperature: 21.7°C

**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(4.97, 4.97, 4.97); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI •
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (71x121x1): Interpolated grid: dx=10 mm, dy=10 mm

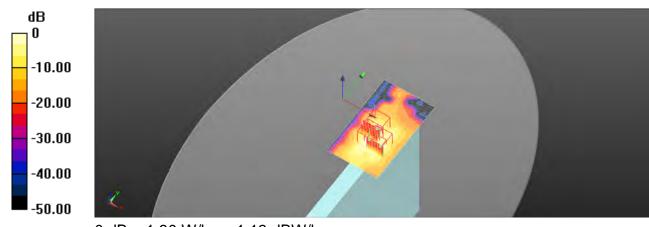
Maximum value of SAR (interpolated) = 1.14 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 1.201 V/m; Power Drift = -0.03 dB Peak SAR (extrapolated) = 3.92 W/kg SAR(1 g) = 0.600 W/kg; SAR(10 g) = 0.176 W/kg Smallest distance from peaks to all points 3 dB below = 4.8 mm Ratio of SAR at M2 to SAR at M1 = 37.3% Maximum value of SAR (measured) = 1.30 W/kg Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 1.201 V/m; Power Drift = -0.03 dB Peak SAR (extrapolated) = 3.87 W/kg SAR(1 g) = 0.363 W/kg; SAR(10 g) = 0.119 W/kgSmallest distance from peaks to all points 3 dB below = 5.4 mm Ratio of SAR at M2 to SAR at M1 = 38.6% Maximum value of SAR (measured) = 1.10 W/kg Zoom Scan (7x7x12)/Cube 2: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 1.201 V/m; Power Drift = -0.03 dB Peak SAR (extrapolated) = 4.15 W/kg SAR(1 g) = 0.484 W/kg; SAR(10 g) = 0.126 W/kg Smallest distance from peaks to all points 3 dB below = 4.8 mm Ratio of SAR at M2 to SAR at M1 = 35.9% Maximum value of SAR (measured) = 1.12 W/kg

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0 dB = 1.30 W/kg = 1.13 dBW/kg

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Date: 2020/1/27

#### WLAN 802.11b\_Body\_Top side\_CH 6\_0mm\_Ant1

Communication System: WLAN 2.45G; Frequency: 2437 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2437 MHz;  $\sigma$  = 1.776 S/m;  $\epsilon_r$  = 39.039;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(7.36, 7.36, 7.36); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (61x101x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.871 W/kg

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

Reference Value = 5.447 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 2.16 W/kg

SAR(1 g) = 0.601 W/kg; SAR(10 g) = 0.258 W/kg

Smallest distance from peaks to all points 3 dB below = 5.3 mm

Ratio of SAR at M2 to SAR at M1 = 34.1%

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

**Zoom Scan (7x7x7)/Cube 1:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.447 V/m; Power Drift = 0.01 dB

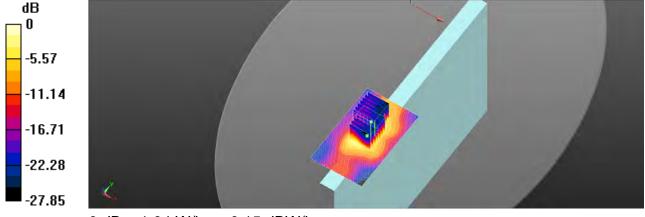
Peak SAR (extrapolated) = 1.93 W/kg

SAR(1 g) = 0.568 W/kg; SAR(10 g) = 0.233 W/kg

Smallest distance from peaks to all points 3 dB below = 5.5 mm

Ratio of SAR at M2 to SAR at M1 = 38.7%

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



0 dB = 1.04 W/kg = 0.15 dBW/kg

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Date: 2020/1/27

#### Bluetooth(GFSK)\_Body\_Top side\_CH 78\_0mm\_Ant1

Communication System: Bluetooth; Frequency: 2480 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2480 MHz;  $\sigma$  = 1.806 S/m;  $\epsilon_r$  = 38.778;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

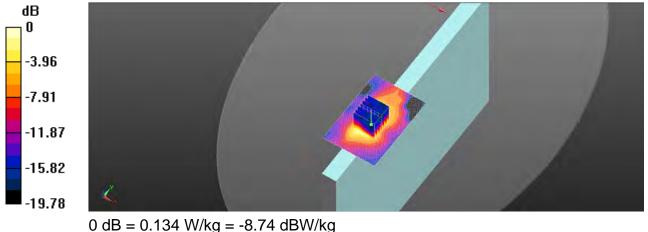
**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(7.36, 7.36, 7.36); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI •
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (61x91x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.129 W/kg

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 2.060 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 0.300 W/kg SAR(1 g) = 0.083 W/kg; SAR(10 g) = 0.036 W/kg Smallest distance from peaks to all points 3 dB below = 5.2 mm Ratio of SAR at M2 to SAR at M1 = 37.8% Maximum value of SAR (measured) = 0.134 W/kg



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Date: 2020/2/1

#### WLAN 802.11ac(80M) 5.2G\_Body\_Top side\_CH 42\_0mm\_Ant1

Communication System: WLAN 5G; Frequency: 5210 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5210 MHz;  $\sigma$  = 4.614 S/m;  $\epsilon_r$  = 35.633;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.3°C; Liquid temperature: 21.4°C

**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(5.28, 5.28, 5.28); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI •
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (71x121x1): Interpolated grid: dx=10 mm, dy=10 mm

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

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 2.638 V/m; Power Drift = 0.05 dB Peak SAR (extrapolated) = 3.29 W/kg SAR(1 g) = 0.700 W/kg; SAR(10 g) = 0.242 W/kg Smallest distance from peaks to all points 3 dB below = 4.6 mm Ratio of SAR at M2 to SAR at M1 = 37.5%Maximum value of SAR (measured) = 1.41 W/kg Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 2.638 V/m; Power Drift = 0.05 dB Peak SAR (extrapolated) = 3.83 W/kg SAR(1 g) = 0.602 W/kg; SAR(10 g) = 0.181 W/kgSmallest distance from peaks to all points 3 dB below = 4.3 mm Ratio of SAR at M2 to SAR at M1 = 37.6% Maximum value of SAR (measured) = 1.45 W/kg Zoom Scan (7x7x12)/Cube 2: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 2.638 V/m; Power Drift = 0.05 dB Peak SAR (extrapolated) = 3.38 W/kg SAR(1 g) = 0.496 W/kg; SAR(10 g) = 0.171 W/kg Smallest distance from peaks to all points 3 dB below = 4.4 mm Ratio of SAR at M2 to SAR at M1 = 38.6% Maximum value of SAR (measured) = 1.47 W/kg

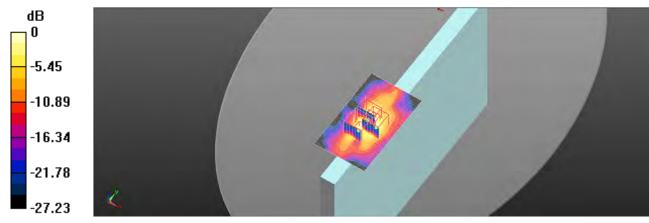
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0 dB = 1.41 W/kg = 1.50 dBW/kg

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Date: 2020/1/29

#### WLAN 802.11ac(80M) 5.3G\_Body\_Top side\_CH 58\_0mm\_Ant1

Communication System: WLAN 5G; Frequency: 5290 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5290 MHz;  $\sigma$  = 4.697 S/m;  $\epsilon_r$  = 35.517;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.2°C; Liquid temperature: 21.8°C

**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(5.18, 5.18, 5.18); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI •
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (71x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.30 W/kg

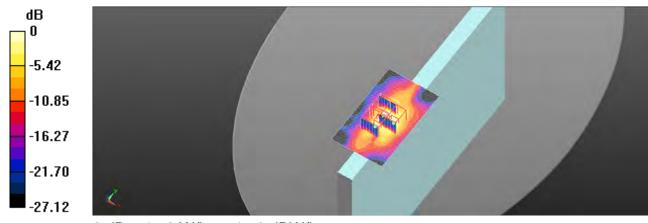
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 2.564 V/m; Power Drift = 0.05 dB Peak SAR (extrapolated) = 3.54 W/kg SAR(1 g) = 0.703 W/kg; SAR(10 g) = 0.243 W/kg Smallest distance from peaks to all points 3 dB below = 4.3 mm Ratio of SAR at M2 to SAR at M1 = 34.4% Maximum value of SAR (measured) = 1.50 W/kg Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 2.564 V/m; Power Drift = 0.05 dB Peak SAR (extrapolated) = 3.52 W/kg SAR(1 g) = 0.520 W/kg; SAR(10 g) = 0.191 W/kgSmallest distance from peaks to all points 3 dB below = 4.4 mm Ratio of SAR at M2 to SAR at M1 = 36.4% Maximum value of SAR (measured) = 1.50 W/kg Zoom Scan (7x7x12)/Cube 2: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 2.564 V/m; Power Drift = 0.05 dB Peak SAR (extrapolated) = 4.11 W/kg SAR(1 g) = 0.650 W/kg; SAR(10 g) = 0.184 W/kg Smallest distance from peaks to all points 3 dB below = 4.1 mm Ratio of SAR at M2 to SAR at M1 = 33.4% Maximum value of SAR (measured) = 1.45 W/kg

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0 dB = 1.50 W/kg = 1.76 dBW/kg

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Date: 2020/2/2

#### WLAN 802.11ac(80M) 5.6G\_Body\_Top side\_CH 106\_0mm\_Ant1

Communication System: WLAN 5G; Frequency: 5530 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5530 MHz;  $\sigma$  = 4.937 S/m;  $\epsilon_r$  = 35.252;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.5°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN3665; ConvF(4.99, 4.99, 4.99); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (71x121x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.42 W/kg

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

Reference Value = 2.697 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 4.55 W/kg

SAR(1 g) = 0.848 W/kg; SAR(10 g) = 0.247 W/kg

Smallest distance from peaks to all points 3 dB below = 4.8 mm

Ratio of SAR at M2 to SAR at M1 = 36.9%

Maximum value of SAR (measured) = 1.83 W/kg

Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 2.697 V/m; Power Drift = -0.01 dB

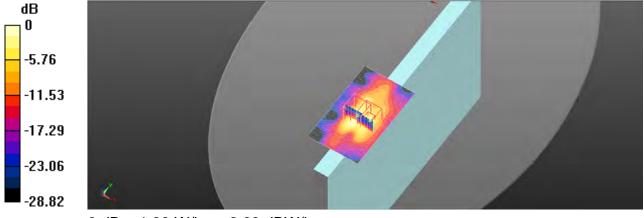
Peak SAR (extrapolated) = 4.97 W/kg

SAR(1 g) = 0.491 W/kg; SAR(10 g) = 0.169 W/kg

Smallest distance from peaks to all points 3 dB below = 4.6 mm

Ratio of SAR at M2 to SAR at M1 = 36.7%

Maximum value of SAR (measured) = 1.85 W/kg



0 dB = 1.83 W/kg = 2.63 dBW/kg

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Date: 2020/2/3

#### WLAN 802.11ac(80M) 5.8G\_Body\_Top side\_CH 155\_0mm\_Ant1

Communication System: WLAN 5G; Frequency: 5775 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5775 MHz;  $\sigma$  = 5.188 S/m;  $\epsilon_r$  = 34.961;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

Ambient temperature: 22.6°C; Liquid temperature: 21.7°C

**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(4.97, 4.97, 4.97); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (71x121x1): Interpolated grid: dx=10 mm, dy=10 mm

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

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

Reference Value = 1.482 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 3.35 W/kg

SAR(1 g) = 0.610 W/kg; SAR(10 g) = 0.199 W/kg

Smallest distance from peaks to all points 3 dB below = 4.6 mm

Ratio of SAR at M2 to SAR at M1 = 38.3%

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

Zoom Scan (7x7x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 1.482 V/m; Power Drift = 0.02 dB

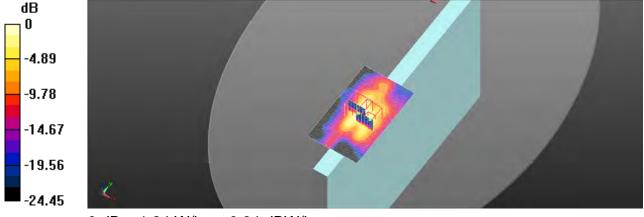
Peak SAR (extrapolated) = 3.65 W/kg

SAR(1 g) = 0.422 W/kg; SAR(10 g) = 0.147 W/kg

Smallest distance from peaks to all points 3 dB below = 4.8 mm

Ratio of SAR at M2 to SAR at M1 = 36.3%

Maximum value of SAR (measured) = 1.19 W/kg



0 dB = 1.24 W/kg = 0.94 dBW/kg

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## 6. SAR System Performance Verification

#### Dipole 2450 MHz SN:727

Date: 2020/1/26

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2450 MHz;  $\sigma$  = 1.788 S/m;  $\epsilon_r$  = 38.984;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.3°C; Liquid temperature: 21.9°C

#### **DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(7.36, 7.36, 7.36); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection) ٠
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (51x71x1): Interpolated grid: dx=12 mm, dy=12 mm

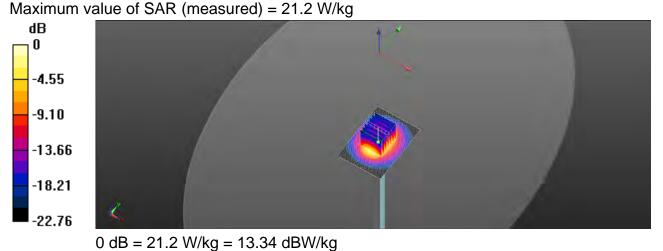
Maximum value of SAR (interpolated) = 23.1 W/kg

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

Reference Value = 111.4 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 28.9 W/kg

SAR(1 g) = 13.7 W/kg; SAR(10 g) = 6.28 W/kg Smallest distance from peaks to all points 3 dB below = 5.3 mm Ratio of SAR at M2 to SAR at M1 = 50.9%



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#### Dipole 5250 MHz SN:1145

Communication System: CW; Frequency: 5250 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5250 MHz;  $\sigma$  = 4.652 S/m;  $\epsilon_r$  = 35.583;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

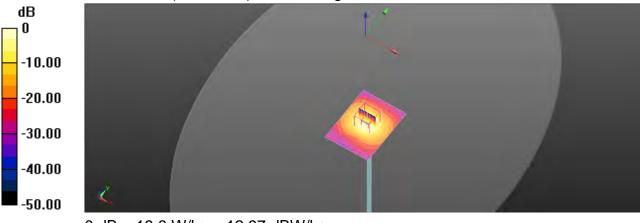
**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(5.28, 5.28, 5.28); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI •
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 19.4 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 65.63 V/m; Power Drift = -0.01 dB Peak SAR (extrapolated) = 42.1 W/kg SAR(1 g) = 7.83 W/kg; SAR(10 g) = 2.24 W/kg Smallest distance from peaks to all points 3 dB below = 5.2 mm Ratio of SAR at M2 to SAR at M1 = 49.2%Maximum value of SAR (measured) = 19.8 W/kg



0 dB = 19.8 W/kg = 12.97 dBW/kg

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#### Dipole 5250 MHz SN:1145

Communication System: CW; Frequency: 5250 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5250 MHz;  $\sigma$  = 4.654 S/m;  $\epsilon_r$  = 35.561;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.2°C; Liquid temperature: 21.8°C

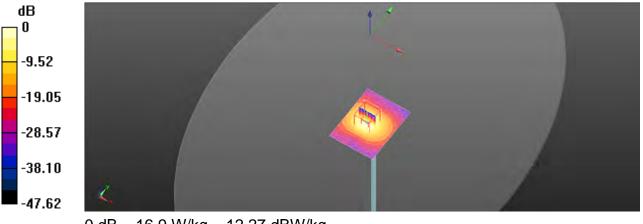
**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(5.18, 5.18, 5.18); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI •
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 16.1 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 56.96 V/m; Power Drift = 0.03 dB Peak SAR (extrapolated) = 34.9 W/kg SAR(1 g) = 7.84 W/kg; SAR(10 g) = 2.27 W/kg Smallest distance from peaks to all points 3 dB below = 5.6 mm Ratio of SAR at M2 to SAR at M1 = 49.4% Maximum value of SAR (measured) = 16.9 W/kg



0 dB = 16.9 W/kg = 12.27 dBW/kg

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#### Dipole 5600 MHz SN:1145

Communication System: CW; Frequency: 5600 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5600 MHz;  $\sigma$  = 5.009 S/m;  $\epsilon_r$  = 35.17;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.0°C; Liquid temperature: 21.6°C

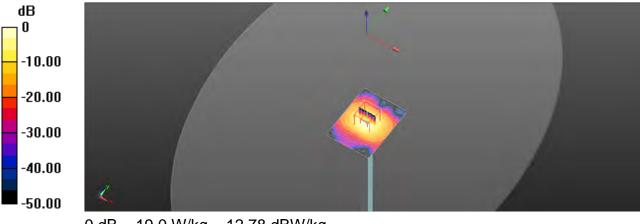
**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(4.99, 4.99, 4.99); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI •
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 18.3 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 64.25 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 41.5 W/kg SAR(1 g) = 8.13 W/kg; SAR(10 g) = 2.34 W/kg Smallest distance from peaks to all points 3 dB below = 4.9 mm Ratio of SAR at M2 to SAR at M1 = 48.9%Maximum value of SAR (measured) = 19.0 W/kg



0 dB = 19.0 W/kg = 12.78 dBW/kg

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#### Dipole 5750 MHz SN:1145

Communication System: CW; Frequency: 5750 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5750 MHz;  $\sigma$  = 5.159 S/m;  $\epsilon_r$  = 35.023;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.7°C

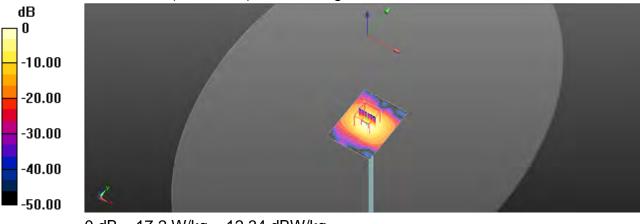
**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(4.97, 4.97, 4.97); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI •
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 16.9 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 60.63 V/m; Power Drift = -0.06 dB Peak SAR (extrapolated) = 39.3 W/kg SAR(1 g) = 7.91 W/kg; SAR(10 g) = 2.24 W/kg Smallest distance from peaks to all points 3 dB below = 4.8 mm Ratio of SAR at M2 to SAR at M1 = 41.2%Maximum value of SAR (measured) = 17.2 W/kg



0 dB = 17.2 W/kg = 12.34 dBW/kg

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#### Dipole 2450 MHz SN:727

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2450 MHz;  $\sigma$  = 1.788 S/m;  $\epsilon_r$  = 39.018;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

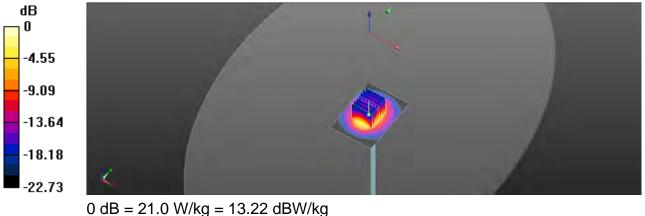
**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(7.36, 7.36, 7.36); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI •
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (51x71x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 23.4 W/kg

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 107.7 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 28.4 W/kg SAR(1 g) = 13.6 W/kg; SAR(10 g) = 6.26 W/kg Smallest distance from peaks to all points 3 dB below = 5.5 mm Ratio of SAR at M2 to SAR at M1 = 48.9%Maximum value of SAR (measured) = 21.0 W/kg



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#### Dipole 5250 MHz SN:1145

Communication System: CW; Frequency: 5250 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5250 MHz;  $\sigma$  = 4.656 S/m;  $\epsilon_r$  = 35.566;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.3°C; Liquid temperature: 21.4°C

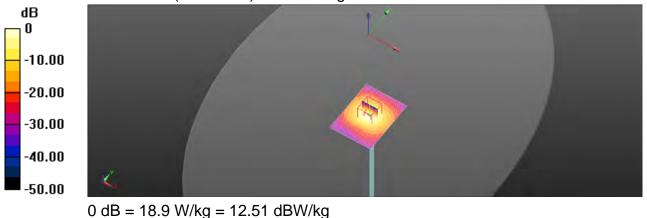
**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(5.28, 5.28, 5.28); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI •
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 16.1 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 59.64 V/m; Power Drift = -0.03 dB Peak SAR (extrapolated) = 33.1 W/kg SAR(1 g) = 7.83 W/kg; SAR(10 g) = 2.23 W/kg Smallest distance from peaks to all points 3 dB below = 4.8 mm Ratio of SAR at M2 to SAR at M1 = 50.3% Maximum value of SAR (measured) = 18.9 W/kg



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#### Dipole 5250 MHz SN:1145

Communication System: CW; Frequency: 5250 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5250 MHz;  $\sigma$  = 4.654 S/m;  $\epsilon_r$  = 35.561;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.2°C; Liquid temperature: 21.8°C

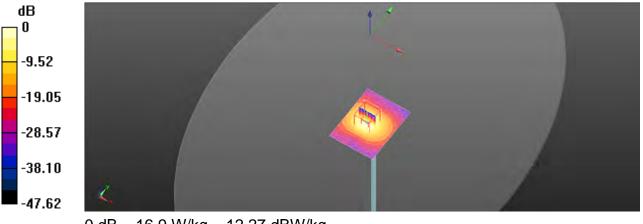
**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(5.18, 5.18, 5.18); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI •
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 16.3 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 57.14 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 34.7 W/kg SAR(1 g) = 7.85 W/kg; SAR(10 g) = 2.27 W/kg Smallest distance from peaks to all points 3 dB below = 5.4 mm Ratio of SAR at M2 to SAR at M1 = 51.4% Maximum value of SAR (measured) = 16.5 W/kg



0 dB = 16.9 W/kg = 12.27 dBW/kg

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#### Dipole 5600 MHz SN:1145

Communication System: CW; Frequency: 5600 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5600 MHz;  $\sigma$  = 5.007 S/m;  $\epsilon_r$  = 35.184;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.5°C; Liquid temperature: 21.8°C

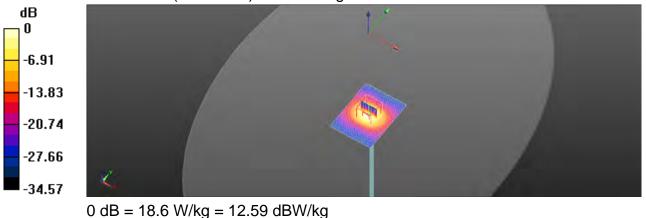
**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(4.99, 4.99, 4.99); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI •
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 18.1 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 64.66 V/m; Power Drift = -0.05 dB Peak SAR (extrapolated) = 39.7 W/kg SAR(1 g) = 8.12 W/kg; SAR(10 g) = 2.33 W/kg Smallest distance from peaks to all points 3 dB below = 5.1 mm Ratio of SAR at M2 to SAR at M1 = 47.7%Maximum value of SAR (measured) = 18.6 W/kg



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#### Dipole 5750 MHz SN:1145

Communication System: CW; Frequency: 5750 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5750 MHz;  $\sigma$  = 5.163 S/m;  $\epsilon_r$  = 35.019;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Ambient temperature: 22.6°C; Liquid temperature: 21.7°C

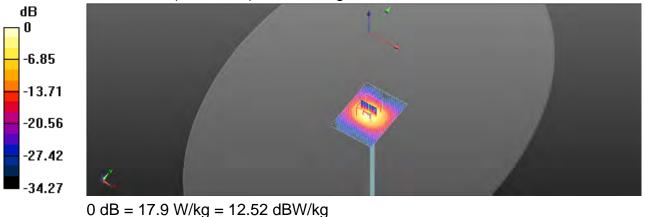
**DASY5** Configuration:

- Probe: EX3DV4 SN3665; ConvF(4.97, 4.97, 4.97); Calibrated: 2019/8/30;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2019/3/22
- Phantom: ELI •
- DASY52 52.10.3(1513); SEMCAD X 14.6.13(7474)

Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 17.3 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 61.46 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 41.4 W/kg SAR(1 g) = 7.93 W/kg; SAR(10 g) = 2.25 W/kg Smallest distance from peaks to all points 3 dB below = 5.6 mm Ratio of SAR at M2 to SAR at M1 = 52.1% Maximum value of SAR (measured) = 17.9 W/kg



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# 7. Uncertainty Budget

А	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%	$\infty$
lsotropy , Axial	3.50%	R	√3	1.732	1	1	2.02%	2.02%	8
lsotropy, Hemispherical	9.60%	R	√3	1.732	1	1	5.54%	5.54%	8
Modulation Response	2.40%	R	√3	1.732	1	1	1.40%	1.40%	8
Boundary Effect	1.00%	R	$\sqrt{3}$	1.732	1	1	0.58%	0.58%	8
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	8
Detection Limits	1.00%	R	√3	1.732	1	1	0.58%	0.58%	8
Readout Electronics	0.30%	N	1	1	1	1	0.30%	0.30%	8
Response time	0.80%	R	√3	1.732	1	1	0.46%	0.46%	8
Integration Time	2.60%	R	$\sqrt{3}$	1.732	1	1	1.50%	1.50%	8
Measurement drift (class A evaluation)	1.75%	R	$\sqrt{3}$	1.732	1	1	1.01%	1.01%	8
RF ambient condition - noise	3.00%	R	√3	1.732	1	1	1.73%	1.73%	8
RF ambient conditions - reflections	3.00%	R	$\sqrt{3}$	1.732	1	1	1.73%	1.73%	8
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	$\sqrt{3}$	1.732	1	1	1.67%	1.67%	8
Post-processing	1.00%	R	$\sqrt{3}$	1.732	1	1	0.58%	0.58%	8
Max SAR Eval	1.00%	R	√3	1.732	1	1	0.58%	0.58%	8
Test Sample related									
Test sample positioning	2.90%	Ν	1	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	Ν	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.)	1.04%	N	1	1	0.64	0.43	0.67%	0.45%	М
Liquid Conductivity (mea.)	1.16%	N	1	1	0.6	0.49	0.70%	0.57%	М
Combined standard uncertainty		RSS					11.76%	11.73%	
Expant uncertainty (95% confidence interval), K=2							23.51%	23.46%	

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

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	c Tolerance/	D Probability	e		r	g	h=c * f / e Standard	i=c * g / e Standard	
Source of Uncertainty	Uncertainty	Distributio	Div	Div Value	ci (1g)	ci (10g)	uncertainty	uncertainty	vi, or Veff
Measurement system									
Probe calibration	6.00%	N	1	1	1	1	6.00%	6.00%	8
lsotropy , Axial	3.50%	R	√3	1.732	1	1	2.02%	2.02%	~
lsotropy, 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%	8
Boundary Effect	1.00%	R	√3	1.732	1	1	0.58%	0.58%	8
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	8
Detection Limits	1.00%	R	√3	1.732	1	1	0.58%	0.58%	8
Readout Electronics	0.30%	Ν	1	1	1	1	0.30%	0.30%	8
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%	8
RF ambient condition - noise	3.00%	R	√3	1.732	1	1	1.73%	1.73%	8
RF ambient conditions - reflections	3.00%	R	√3	1.732	1	1	1.73%	1.73%	8
Probe positioner Mechanical restrictions	0.40%	R	√3	1.732	1	1	0.23%	0.23%	8
Probe Positioning with respect to phantom shell	2.90%	R	√3	1.732	1	1	1.67%	1.67%	8
Post-processing	1.00%	R	√3	1.732	1	1	0.58%	0.58%	8
Max SAR Eval	1.00%	R	√3	1.732	1	1	0.58%	0.58%	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Test Sample related									
Test sample positioning	2.90%	N	1	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	N	1	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	√3	1.732	1	1	2.89%	2.89%	~
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	~
Liquid permittivity (mea.)	0.98%	N	1	1	0.64	0.43	0.63%	0.42%	М
Liquid Conductivity (mea.)	1.13%	N	1	1	0.6	0.49	0.68%	0.55%	М
Combined standard uncertainty		RSS					11.45%	11.43%	
Expant uncertainty (95% confidence interval), K=2							22.91%	22.86%	

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

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## **Appendixes**

Refer to separated files for the following appendixes.

E52019C0012 SAR\_Appendix A Photographs

E52019C0012 SAR\_Appendix B DAE & Probe Cal. Certificate

E52019C0012 SAR\_Appendix C Phantom Description & Dipole Cal. Certificate

- End of report -

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