

FCC 2.1093 SAR Test Report

for

LG Electronics Inc.

222, LG-ro, Jinwi-myeonPyeongtaek-Si, Gyeonggi-Do, 17709 Republic of Korea

Product Name : Notebook Computer

Model Name : (1)17Z90TL (2)17ZB90TL

(3)17ZD90TL (4)17ZG90TL

Brand : LG

FCC ID : BEJNT-17Z90TL





The test report is based on a single evaluation of one sample of the above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab logo.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.



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TEST REPORT

Applicant : LG Electronics Inc.

Manufacturer : LG Electronics Inc.

Factory : LG Electronics Nanjing New Technology Co., Ltd.

EUT Description

(1) Product : Notebook Computer

(2) Model : (1)17Z90TL (2)17ZB90TL (3)17ZD90TL (4)17ZG90TL

(3) Brand : LG

(4) Power Supply : DC 20V, 3.25A

Applicable Standards:

Title 47FCC CFR, Part 2 §2.1093

Audix Technology Corp. tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report.

Audix Technology Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens and samples.

Reviewed by:

Approved by:

| Community |





1. REVISION RECORD OF TEST REPORT

Edition No.	Issued Date	Revision Summary	Report Number
0	2024. 12. 27	Original Report	EM-SR240106



2. SUMMARY OF TEST RESULTS

INPAQ Antenna					
Highest Transmission SAR	Reported Body SAR _{1g}	Limit			
WLAN 2.4G	0.538 W/kg	1.6 W/kg			
BT	0.176 W/kg	1.6 W/kg			
WLAN 5G	0.723 W/kg	1.6 W/kg			

INPAQ Antenna				
Highest Simultaneous Transmission SAR	Reported SAR	Reported Body SAR _{1g}		
WLAN 5G (5785MHz) AUX-ANT +	0.723			
WLAN 5G (5785MHz) Main-ANT	0.289	1.188 W/kg		
BT (2480MHz) AUX-ANT	0.176			

LUXSHARE-ICT Antenna				
Highest Transmission SAR	Reported Body SAR _{1g}	Limit		
WLAN 2.4G	0.654 W/kg	1.6 W/kg		
BT	0.162 W/kg	1.6 W/kg		
WLAN 5G	0.524 W/kg	1.6 W/kg		

LUXSHARE-ICT Antenna				
Highest Simultaneous Transmission SAR	Reported SAR	Reported Body SAR _{1g}		
WLAN 5G (5785MHz) AUX-ANT +	0.524			
WLAN 5G (5785MHz) Main-ANT	0.495	1.181 W/kg		
BT (2480MHz) AUX-ANT	0.162			



3. GENERAL INFORMATION

3.1. Description of Application

Applicant	LG Electronics Inc. 222, LG-ro, Jinwi-myeonPyeongtaek-Si, Gyeonggi-Do, 17709
Пррисши	Republic of Korea
	LG Electronics Inc.
Manufacturer	222, LG-ro, Jinwi-myeonPyeongtaek-Si, Gyeonggi-Do, 17709 Republic of Korea
	LG Electronics Nanjing New Technology Co., Ltd.
Factory	No.346, Yaoxin Road, Economic & Technical Development Zone, Nanjing, China.
Product	Notebook Computer
Model	(1)17Z90TL (2)17ZB90TL (3)17ZD90TL (4)17ZG90TL The difference between all models is different in the sales customers and color difference.
Brand	LG



3.2. Description of EUT

Test Model	17Z90TL						
Serial Number	N/A	N/A					
Power Rating	DC 20V, 3.25A						
Software Version	XY (X, Y can be 0 parameter)	to 9 for different SW version	not influence RF				
RF Features	WLAN:802.11 a/b	WLAN:802.11 a/b/g/n/ac/ax/be, Bluetooth: BT and BLE (BT5.4)					
		2.4 GHz					
	802.11b	802.11b					
	802.11g		1T1R				
	802.11n-HT20/40)	2T2R				
	802.11ax-HE20/4	40	2T2R				
	802.11be-EHT20	/40	2T2R				
	BT/BLE		1T1R				
		U-NII Bands					
	802.11a		1T1R				
Transmit Type	802.11n-HT20/40						
	802.11ac-VHT20	2T2R 2T2R					
	802.11ax-HE20/4	2T2R					
	802.11be-EHT20	802.11be-EHT20/40/80/160					
	802.11be-EHT20/40/80/160 2T2R WLAN 6E Bands						
	802.11ax-HE20/4	2T2R					
	802.11be-EHT20	2T2R					
	The MIMO is uncorrelated and supported SDM(Spatial Division Multiplexing) mode only. This radio device doesn't support beamforming and Cyclic Delay Diversity (CDD).						
Sample Status	Trial sample						
	Sample No.	Test Item	Firmware				
Test Sample	04	SAR	N/A				
	02	SAR	N/A				
Date of Receipt	2024. 11. 11						
Date of Test	2024. 11. 25 ~ 28						
Interface Ports of EUT	 One HDMI Port Two USB Type C Ports One Earphone Port Two USB 3.0 Ports One Memory Card Slot 						
Accessories Supplied	AC Adapter USB C Cable LAN Gender ction 7.8.2. Audix Technology Corp. does not assume responsibility for all EUT's						

Note: Pursuant ISO 17025:2017 section 7.8.2, Audix Technology Corp. does not assume responsibility for all EUT's information including RF features, transmit type, antenna information...etc are provided by customer.





3.3. Reference Test Guidance

IEEE 1528-2013

IEC/IEEE 62209-1528:2020

KDB 447498 D04 Interim General RF Exposure Guidance v01

KDB 865664 D01 SAR Measurement 100MHz to 6GHz v01r04

KDB 616217 D04 SAR for laptop and tablets v01r02

KDB 248227 D01 802 11 Wi-Fi SAR v02r02



3.4. Antenna Information

No.	Antenna Part Number	Manufacture	Antanna Tuna	Eraguanay (MUz)	Max Ga	ain(dBi)									
	Antenna Fart Number	Manuracture	Antenna Type	Frequency (MHz)	Main	AUX									
				2400~2500	2.4	2.2									
				5150~5350	1.6	1.2									
				5470~5725	1.3	0.7									
				5725~5850	2.1	1.5									
1	WA-P-LBLB-04-117	INPAQ	Mono-Pole	5850~5900	1.6	1.6									
				5925~6425	1.5	1.5									
				6425~6525	1.4	1.4									
			1										6525~6875	1.0	1.3
				6875~7125	1.2	2.1									

According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then Directional gain = $10 \log[(10^{G1/10}+10^{G2/10}+...+10^{GN/10})/N_{ANT}]$ dBi

Note 1. 2.4G: Directionalgain =

2400~2500MHz: Directionalgain = $10 \log[(10^{2.4/10} + 10^{2.2/10})/2] = 2.30$ dBi

Note 2. 5G: Directionalgain =

 $5150 \sim 5350$ MHz: = $10 \log[(10^{1.6/10} + 10^{1.2/10})/2] = 1.40$ dBi

5850~ 5900MHz: =10 log[$(10^{1.6/10} + 10^{1.6/10})/2$]= 1.60dBi

Note 3. UNII Band (WLAN 6G):

 $5925\sim6425$ MHz: Directionalgain = $10 \log[(10^{1.5/10} + 10^{1.5/10})/2] = 1.50$ dBi $6425\sim6525$ MHz: Directionalgain = $10 \log[(10^{1.4/10} + 10^{1.4/10})/2] = 1.40$ dBi 6525~6875MHz: Directionalgain = $10 \log[(10^{1.0/10} + 10^{1.3/10})/2] = 1.15dBi$ $6875 \sim 7125$ MHz: Directionalgain = $10 \log[(10^{1.2/10} + 10^{2.1/10})/2] = 1.67$ dBi

No.	No. Antenna Part Number Manufacture	Manufaatuma	Antonno Tymo	Engagement (MIIIa)	Max Ga	ain(dBi)							
NO.	Antenna Part Number	Manufacture	Antenna Type	Frequency (MHz)	Main	AUX							
				2400~2500	0.1	1.4							
				5150~5350	3.3	3.6							
				5470~5725	3.1	2.5							
				5725~5850	1.0	2.5							
2	L1LRF018-CS-H	LUXSHARE-ICT	Mono-Pole	5850~5925	0.5	1.9							
				5925~6425	2.7	2.8							
											6425~6525	1.7	1.6
							6525~6825	0.4	1.3				
				6825~7125	-1.2	-2.7							

According to KDB 662911 D01 d) ii), transmit signals are completely uncorrelated, then

Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + ... + 10^{GN/10})/N_{ANT}] dBi$

Note 1. 2.4G: Directionalgain =

2400~2500MHz: Directionalgain = $10 \log[(10^{0.1/10} + 10^{1.4/10})/2] = 0.80$ dBi

Note 2. 5G: Directionalgain =

 $5150 \sim 5350 \text{MHz}$: =10 log[(10^{3.3/10} +10^{3.6/10})/2]=3.45dBi

5850~ 5925MHz: =10 log[$(10^{0.5/10} + 10^{1.9/10})/2$]= 1.26dBi

Note 3. UNII Band (WLAN 6G):

 $5925\sim6425$ MHz: Directionalgain = $10 \log[(10^{2.7/10} + 10^{2.8/10})/2] = 2.75$ dBi $6425\sim6525$ MHz: Directionalgain = $10 \log[(10^{1.7/10} + 10^{1.6/10})/2] = 1.65$ dBi

6525~6825MHz: Directionalgain = $10 \log[(10^{0.4/10} + 10^{1.3/10})/2] = 0.87dBi$ 6825~7125MHz: Directionalgain = $10 \log[(10^{-1.2/10} + 10^{-2.7/10})/2] = -1.89 dBi$

3.5. EUT Specifications Assessed in Current Report

2.4GHz						
Mode	Fundamental Range (MHz)	Channel Number				
802.11b						
802.11g						
802.11n-HT20	2412-2472	13				
802.11ax-HE20						
802.11be-EHT20						
802.11n-HT40						
802.11ax-HE40	2422-2462	9				
802.11be-EHT40						
Bluetooth	2402-2480	79				
BLE	2402-2480	40				

5GHz					
Mode	U-NII Band	Fundamental Range (MHz)	Channel Number		
	1	5180-5240	4		
	2A	5260-5320	4		
802.11a	2C	5500-5720	12		
	3	5745-5825	5		
	4	5845-5885	3		
002.11 11720	1	5180-5240	4		
802.11n-HT20 802.11ac-VHT20	2A	5260-5320	4		
802.11ac-VH120 802.11ax-HE20	2C	5500-5720	12		
802.11ax-HE20 802.11be-EHT20	3	5745-5825	5		
802.110e-E11120	4	5845-5885	3		
002.11 11740	1	5190-5230	2		
802.11n-HT40 802.11ac-VHT40	2A	5270-5310	2		
802.11ac-VH140 802.11ax-HE40	2C	5510-5710	6		
802.11ax-11E40 802.11be-EHT40	3	5755-5795	2		
802.110e-E11140	4	5845-5885	2		
	1	5210	1		
802.11ac-VHT80	2A	5290	1		
802.11ax-HE80	2C	5530-5690	3		
802.11be-EHT80	3	5775	1		
	4	5855	1		
000 11aa VIIT160	1	5250	1		
802.11ac-VHT160 802.11ax-HE160	2A	3230	1		
802.11ax-HE160 802.11be-EHT160	2C	5570	1		
002.110C-E111100	4	5815	1		
Remark: U-NII Band 2A an	d 2C (DFS Func	tion, Slave/no In service monito	or, no Ad-Hoc mode)		





Mode	Modulation	Data Rate (Mbps)
802.11b	DSSS (DBPSK/DQPSK/CCK)	Up to 11
802.11g	OFDM (BPSK/QPSK/16QAM/64QAM)	Up to 54
802.11a	OFDM	Up to 54
802.11n-HT20	(BPSK/QPSK/16QAM/64QAM)	Up to 144.4
802.11n-HT40	(BI SR/QI SR/10QAM/04QAM)	Up to 300
802.11ac-VHT20		Up to 173.3
802.11ac-VHT40	OFDM	Up to 400
802.11ac-VHT80	(BPSK/QPSK/16QAM/64QAM/256QAM)	Up to 866.7
802.11ac-VHT160		Up to 1733.3
802.11ax-HE20		Up to 287
802.11ax-HE40	OFDMA	Up to 574
802.11ax-HE80	(BPSK/QPSK/16QAM/64QAM/256QAM/1024QAM)	Up to 1201
802.11ax-HE160		Up to 2402
802.11be-EHT20	OFDMA	Up to 344
802.11be-EHT40	OFDMA (BPSK/QPSK/16QAM/64QAM/256QAM/1024QAM/	Up to 688
802.11be-EHT80	(BFSR/QFSR/10QAW/04QAW/230QAW/1024QAW/ 4096QAM)	Up to 1441
802.11be-EHT160	1070Q71141)	Up to 2882
Bluetooth	FHSS (GFSK, π /4 DQPSK, 8-DPSK)	Up to 3
BLE	GFSK(1Mbps, 2Mbps, PHY Coded S8, PHY Coded S2)	Up to 2



3.6. Description of Key Components

3.6.1. For the All Component Lists

Item	Supplier	Model / Type	Character
		Win10 Home/Pro	
System	Microsoft	Win11 Home/Pro	
Main Board	LG	LNL MAIN B/D PCB	Manufacturer: #1 Hannstar Board Tech (Jiang Yin) Corp.,Ltd. #2 Elec&Eltek Company (MCO) Limited.
SUB Board	LG	17Z90TL SUB B/D	Manufacturer: #1 HannstarBoardTech(Jiang Yin)Corp.,Ltd. #2Elec&Eltek Company (MCO) Limited.
an		Ultra 9 288V (RAM 32GB)	3.3GHz(RAM 32GBLPDDR5x on CPU RAM)
CPU (Socket: BGA2833)	Intel	Ultra 7 258V (RAM 32GB)	2.2GHz(RAM 32GB LPDDR5x on CPU RAM)
(Socket: DGA2655)		Ultra 7 256V (RAM 16GB) Ultra 5226V (RAM 16GB)	2.2GHz(RAM 16GB LPDDR5x on CPU RAM) 2.1GHz(RAM 16GB LPDDR5x on CPU RAM)
17" LCD Panel	LG Display	LP170WQ1 (SP)(F2)	Resolution: 2560 x 1600, 60Hz (with Touch & w/o Touch)
	Samsung		256GB / 512GB / 1TB
Storage (SSD)	SK hynix		256GB / 512GB / 1TB
	Phison		256GB / 512GB / 1TB
Battery Pack	LG	LB3122MM	77Wh, DC 15.52V, 4963mAh
WLAN Combo Card	Intel	BE201D2W	WLAN and BT, 2x2 PCle M.2 1216-soldered down module FCC ID: PD9BE201D2 IC: 1000M-BE201D2
WLAN Combo	LG (INPAQ)	WA-P-LBLB-04-117	PCB, Mono-pole Type (Black, Gray) for with Touch LCD Panel
Antenna	LG (LUXSHARE)	L1LRF018-CS-H	PCB, Mono-pole Type (Black, Gray) for without Touch LCD Panel
Vll	LITE-ON	SN8D02B	
Keyboard	TIC	KT0120B9	
T 1 D 1	LITE-ON	SP8001(SG-A0630-00A)	
Touch Pad	ELAN	SD081A-36H0	
Web Camera	Chicony	CKFOF1721005290LH	
Finger Print	ELAN	F1207A-H0001A	(White)
Tillger Friiit	ELAN	F1207A-H0002A	(Black)
	SUZHOU MEC	80-5946-111	(White) 10/100 Megabit Ethernet
	ELECTRONICS	80-5946-101	(Black) 10/100 Megabit Ethernet
	ARIN TECH CO.	GD-08MF-36-WH-LP10	(White) 10/100 Megabit Ethernet
	LTD	GD-08MF-36-BK-LP11	(Black) 10/100 Megabit Ethernet
	HUIZHOU	370-50713	(White) 10/100 Megabit Ethernet
	DEHONG TECHNOLOGY CO.,LTD.	370-50714	(Black) 10/100 Megabit Ethernet
LAN Gender (Type C to LAN)	Type C to LAN: Shi	elded, Undetached	•
(Type C to LAIN)	ARIN TECH CO.	GD-08MF-50-WH-LP12	(White) 10/100/1000 Megabit Ethernet
	LTD	GD-08MF-50-BK-LP13	(Black) 10/100/1000 Megabit Ethernet
	Type C to LAN: Shi		V /
		80-5946-230-FA	(White) 10/100/1000 Megabit Ethernet
	SUZHOU MEC ELECTRONICS		·
		80-5946-240-FA	(Black) 10/100/1000 Megabit Ethernet
	#1 Type C Cable (3.4 #2 Type C Cable (5.4		



Item	Supplier	Model / Type	Character
	LG (PI ELECTRONICS)	LP65WFC20P-NJ	I/P: AC 100-240V, 1.6A, 50-60Hz O/P:DC 5V,3A(15W) or DC 9V, 3A(27W)or DC 15V,3A (45W) or DC 20V,3.25A (65W) (US Type, Wall-mount, Black / White)
		ielded, Undetached (5A) ielded, Undetached (3A)	

Remark: For more detailed features description, please refer to the manufacturer's specifications or the user manual.

3.6.2. The EUT collocates with following worst components, which are used to establish a basic configuration of system during test:

	SKU (Mode)					
Main Board		LG, LNL MAIN B/D PCB	V			
SUB Board		LG, 17Z90TL SUB B/D	V			
CPU		Intel, Ultra 9 288V (RAM 32GB)	V			
17" LCD Panel		LG Display, LP170WQ1 (SP)(F2)	V			
Storage (SSD)		SAMSUNG, 512GB /+1TB	V			
Battery Pack		LG, LB3122MM, 77Wh	V			
Keyboard		LITE-ON, SN8D02B	V			
Touch Pad		LITE-ON, SP8001 (SG-A0630-00A)	V			
Web Camera		Chicony, CKFOF1721005290LH	V			
Finger Print		ELAN, F1207A-H0002A	V			
WLAN Combo Card	l	Intel, BE201D2W	V			
WI AN Combo Anto		LG (INPAQ), WA-P-LBLB-04-117	V			
WLAN Combo Antenna		LG (LUXSHARE) , L1LRF018-CS-H	V			
Туре С	AC Adapter	LG (PI ELECTRONICS), LP65WFC20P-NJ	V			
	Link to LAN Gender	SUZHOU MEC ELECTRONICS. (10/100/1000Mbps)	V			

3.7. Test Environment

Ambient conditions in the laboratory:

Item	Require	Actual
Temperature (°C)	18-25	22 ±2
Humidity (%RH)	30-70	48 ± 2

3.8. Description of Test Facility

Name of Test Firm	Audix Technology Corporation / EMC Department No. 491, Zhongfu Rd., Linkou Dist., New Taipei City 244, Taiwan Tel: +886-2-26092133 Fax: +886-2-26099303 Website: www.audixtech.com Contact e-mail: attemc_report@audixtech.com
Accreditations	The laboratory is accredited by following organizations under ISO/IEC 17025:2017 (1) NVLAP(USA) NVLAP Lab Code 200077-0 (2) TAF(Taiwan) No. 1724
Test Facilities	FCC OET Designation Number under APEC MRA by NCC is: TW1724 (1) SAR Room



3.9. Measurement Uncertainty

DASY5 Uncertainty								
According	to IEEE 15	528-2013 a	ind IEC 62	209-1/201	6 (0.3 - 6 (GHz range	e) 	
Error Description	Uncert. value	Prob. Dist.	Div.	(ci) 1g	(ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(Vi) Veff
Measurement System								
Probe Calibration	±6.0%	N	1	1	1	±6.0%	±6.0%	∞
Axial Isotropy	±4.7%	R	$\sqrt{3}$	0.7	0.7	±1.9%	±1.9%	8
Hemispherical Isotropy	±9.6%	R	$\sqrt{3}$	0.7	0.7	±3.9%	±3.9%	∞
Boundary Effects	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Linearity	±4.7%	R	$\sqrt{3}$	1	1	±2.7%	±2.7%	∞
System Detection Limits	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Readout Electronics	±0.3%	N	1	1	1	±0.3%	±0.3%	∞
Response Time	±0.8%	R	$\sqrt{3}$	1	1	±0.5%	±0.5%	∞
Integration Time	±2.6%	R	$\sqrt{3}$	1	1	±1.5%	±1.5%	∞
RF Ambient Noise	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
RF Ambient Reflections	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
Probe Positioner	±0.4%	R	$\sqrt{3}$	1	1	±0.2%	±0.2%	∞
Probe Positioning	±2.9%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
Max. SAR Eval.	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Test Sample Related			•	•	•	•	1	
Device Positioning	±2.9%	N	1	1	1	±2.9%	±2.9%	145
Device Holder	±3.6%	N	1	1	1	±3.6%	±3.6%	5
Power Drift	±5.0%	R	$\sqrt{3}$	1	1	±2.9%	±2.9%	∞
Phantom and Setup							•	
Phantom Uncertainty	±4.0%	R	$\sqrt{3}$	1	1	±2.3%	±2.3%	∞
Liquid Conductivity (target)	±5.0%	R	$\sqrt{3}$	0.64	0.43	±1.8%	±1.2%	∞
Liquid Conductivity (meas.)	±2.5%	N	1	0.64	0.43	±1.6%	±1.1%	∞
Liquid Permittivity (target)	±5.0%	R	$\sqrt{3}$	0.6	0.49	±1.7%	±1.4%	∞
Liquid Permittivity (meas.)	±2.5%	N	1	0.6	0.49	±1.5%	±1.2%	∞
Combined Std. Uncertainty	Combined Std. Uncertainty $\pm 11\%$ $\pm 10.8\%$ 387					387		
Expanded STD Uncertainty	Expanded STD Uncertainty ±22% ±21.5%							



DASY5 Uncertainty According to IEC 62209-2/2010 (30 MHz - 6 GHz range)								
Error Description	Uncert.	Prob. Dist.	Div.	(ci) 1g	(ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(Vi) Veff
Measurement System				•	•			•
Probe Calibration	±6.0%	N	1	1	1	±6.0%	±6.0%	∞
Axial Isotropy	±4.7%	R	√3	0.7	0.7	±1.9%	±1.9%	∞
Hemispherical Isotropy	±9.6%	R	√3	0.7	0.7	±3.9%	±3.9%	∞
Boundary Effects	±1.0%	R	√3	1	1	±0.6%	±0.6%	∞
Linearity	±4.7%	R	√3	1	1	±2.7%	±2.7%	∞
System Detection Limits	±1.0%	R	√3	1	1	±0.6%	±0.6%	∞
Readout Electronic	±0.3%	N	1	1	1	±0.3%	±0.3%	∞
Response Time	±0.8%	R	√3	1	1	±0.5%	±0.5%	∞
Integration Time	±2.6%	R	√3	1	1	±1.5%	±1.5%	∞
RF Ambient Noise	±3.0%	R	√3	1	1	±1.7%	±1.7%	∞
RF Ambient Reflections	±3.0%	R	√3	1	1	±1.7%	±1.7%	∞
Probe Positioner	±0.4%	R	√3	1	1	±0.2%	±0.2%	∞
Probe Positioning	±2.9%	R	√3	1	1	±1.7%	±1.7%	∞
Modulation Response	±2.5%	R	√3	1	1	±1.45	±1.45	∞
Post-processing	±3.8%	R	√3	1	1	±2.2%	±2.2%	∞
Test Sample Related			l	1	l .	l	l.	l
Test Sample Positioning	±2.9%	N	1	1	1	±2.9%	±2.9%	145
Device Holder	±3.6%	N	1	1	1	±3.6%	±3.6%	5
Power Drift	±5.0%	R	√3	1	1	±2.9%	±2.9%	∞
Power Scaling	±0.0%	R	√3	1	1	±0.0%	±0.0%	∞
Phantom and Setup								
Phantom Uncertainty	±4.5%	R	√3	1	1	$\pm 2.4\%$	±2.4%	∞
SAR correction	±1.9%	R	$\sqrt{3}$	1	0.84	±1.9%	±1.9%	∞
Liquid Conductivity (target)	±5.0%	R	√3	0.64	0.43	±1.8%	±1.2%	∞
Liquid Conductivity (mea.)DAK	±2.5%	R	√3	0.64	0.43	±0.9%	±0.6%	∞
Liquid Permittivity (target)	±5.0%	R	√3	0.6	0.49	±1.7%	±1.4%	∞
Liquid Permittivity(mea.)DAK	±2.5%	R	√3	0.6	0.49	±0.9%	±0.7%	∞
Combined Std. Uncertainty	·					387		
Expanded STD Uncertainty ±22.1% ±21.8%								



4. MEASUREMENT EQUIPMENTLIST

Item	Туре	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Stäubli Robot TX90 XL	Stäubli	TX90	F12/5K9SA1/A101	N.C.R.	N.C.R.
2.	Controller	SPEAG	CS8c	N/A	N.C.R.	N.C.R.
3.	SAM Twin Phantom	SPEAG	N/A	1706	N.C.R.	N.C.R.
4.	ELI V5.0 Phantom	SPEAG	N/A	1170	N.C.R.	N.C.R.
5.	Device Holder	SPEAG	N/A	N/A	N.C.R.	N.C.R.
6.	Data Acquisition Electronic	SPEAG	DAE4	1337	2024.03.15	1 Year
7.	E-Field Probe	SPEAG	EX3DV4	3855	2024.09.17	1 Year
8.	ENA Network Analyzer	Agilent	E5071C-480	MY46214331	2024.09.25	1 Year
9.	Signal Generator	Agilent	E8257D	MY44320296	2023.12.12	1 Year
10.	Power Meter	Aglient	ML2487A	MY52180007	2024.08.28	1 Year
11.	Power Sensor	Aglient	N8481	MY52080006	2024.08.28	1 Year
12.	Dipole Antenna	SPEAG	D2450V2	888	2024.09.13	3 Years
13.	Dipole Antenna	SPEAG	D5GHzV2	1124	2024.09.17	3 Years
14.	Test Software	Speag	DASY52 52.10.4	N/A	N.C.R.	N.C.R.

5. SAR MEASUREMENT SYSTEM

5.1. Definition of Specific Absorption Rate (SAR)

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$SAR = \frac{d}{dt} \Big(\frac{dW}{dm} \Big) = \frac{d}{dt} \Big(\frac{dW}{\rho dv} \Big)$$

SAR is expressed in units of Watts per kilogram (W/kg) SAR measurement can be related to the electrical field in the tissue by

$$SAR = \frac{\sigma |E|^2}{\rho}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

5.2. SPEAG DASY System

DASY system consists of high precision robot, probe alignment sensor, phantom, robot controller, controlled measurement server and near-field probe. The robot includes six axes that can move to the precision position of the DASY5 software defined. The DASY software can define the area that is detected by the probe. The robot is connected to controlled box. Controlled measurement server is connected to the controlled robot box. The DAE includes amplifier, signal multiplexing, AD converter, offset measurement and surface detection. It is connected to the Electro-optical coupler (ECO). The ECO performs the conversion form the optical into digital electric signal of the DAE and transfers data to the PC.

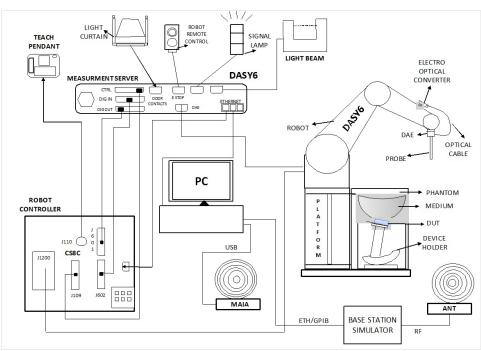


Fig-3.1 DASY6 System Setup

5.2.1. Robot

The DASY6 system uses the high precision robots from Stäubli SA (France). For the 6-axis controller system, the robot controller version (DASY5: CS8c) from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability ±0.035 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)





5.2.2. Probes

Model	EX3DV4	
Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz to 6 GHz Linearity: ± 0.2 dB	1
Directivity	\pm 0.3 dB in HSL (rotation around probe axis) \pm 0.5 dB in tissue material (rotation normal to probe axis)	
DynamicRange	$10~\mu W/g$ to $100~mW/g$ Linearity: $\pm~0.2~dB$ (noise: typically $<~1~\mu W/g$)	
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

5.2.3. Data Acquisition Electronics (DAE)

Model	DAE4	
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY4/5 embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop.	
MeasurementRange	-100 to +300 mV (16 bit resolution and two range settings: 4mV, 400mV)	
Input Offset Voltage	< 5µV (with auto zero)	
Input Bias Current	< 50 fA	
Dimensions	60 x 60 x 68 mm	



5.2.4. Phantom

Model	Twin SAM	
Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.	
Material	Vinylester, glass fiber reinforced (VE-GF)	
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)	
Dimensions	Length: 1000 mm Width: 500 mm Height: adjustable feet	
Filling Volume	approx. 25 liters	

Model	ELI	
Construction	Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.	
Material	Vinylester, glass fiber reinforced (VE-GF)	
Shell Thickness	2.0 ± 0.2 mm (bottom plate)	and the second second
Dimensions	Major axis: 600 mm Minor axis: 400 mm	
Filling Volume	approx. 30 liters	

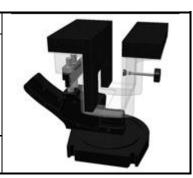


5.2.5. Device Holder

Model	Mounting Device	
Construction	In combination with the Twin SAM Phantom or ELI4, the Mounting Device enables the rotation of the mounted transmitter device in spherical coordinates. Rotation point is the ear opening point. Transmitter devices can be easily and accurately positioned according to IEC, IEEE, FCC or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat).	
Material	POM	



Model	Laptop Extensions Kit
Construction	Simple but effective and easy-to-use extension for Mounting Device that facilitates the testing of larger devices according to IEC 62209-2 (e.g., laptops, cameras, etc.). It is lightweight and fits easily on the upper part of the Mounting Device in place of the phone positioner.
Material	POM, Acrylic glass, Foam



5.2.6. Reference Dipole

Model	System Validation Dipoles
Construction	Symmetrical dipole with 1/4 balun. Enables measurement of feed point impedance with NWA. Matched for use near flat phantoms filled with tissue simulating solutions.
Frequency	750 MHz to 5800 MHz
Return Loss	> 20 dB
Power Capability	> 100 W (f < 1GHz), > 40 W (f > 1GHz)

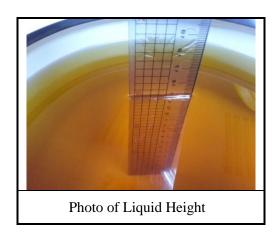






5.2.7. Tissue Simulating Liquids

For SAR measurement of the field distribution inside the phantom, the phantom must be filled with homogeneous tissue simulating liquid to a depth of at least 15 cm. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. The nominal dielectric values of the tissue simulating liquids in the phantom and the tolerance of 5% are listed in Table-5.1.



The dielectric properties of the head tissue simulating liquids are defined in IEEE 1528 and FCC OET 65 Supplement C Appendix C. For the body tissue simulating liquids, the dielectric properties are defined in FCC OET 65 Supplement C Appendix C. The dielectric properties of the tissue simulating liquids were verified prior to the SAR evaluation using an Agilent 85070D Dielectric Probe Kit and an Agilent Network Analyzer.





Table-5.1 Targets of Tissue Simulating Liquid

	Table-3.1 Targets	of Tissue Simulatii	ig Liquiu	
Target Frequency [MHz]	Target Permittivity (ɛr)	Range of ± 5%	Target Conductivity σ[s/m]	Range of ± 5%
750	41.9	39.805 ~ 43.995	0.89	0.846 ~ 0.935
835	41.5	39.425 ~ 43.575	0.90	0.855 ~ 0.945
900	41.5	39.425 ~ 43.575	0.97	0.922 ~ 1.019
1450	40.5	38.475 ~ 42.525	1.20	1.140 ~ 1.260
1640	40.3	38.285 ~ 42.315	1.29	1.226 ~ 1.355
1750	40.1	38.095 ~ 42.105	1.37	1.302 ~ 1.439
1800	40.0	38.000 ~ 42.000	1.40	1.330 ~ 1.470
1900	40.0	38.000 ~ 42.000	1.40	1.330 ~ 1.470
2000	40.0	38.000 ~ 42.000	1.40	1.330 ~ 1.470
2300	39.5	37.525 ~ 41.475	1.67	1.587 ~ 1.754
2450	39.2	37.240 ~ 41.160	1.80	1.710 ~ 1.890
2600	39.0	37.050 ~ 40.950	1.96	1.862 ~ 2.058
3500	37.9	36.005 ~ 39.795	2.91	2.765 ~ 3.056
5200	36.0	34.2.00 ~ 37.800	4.66	4.427 ~ 4.893
5300	35.9	34.105 ~ 37.695	4.76	4.522 ~ 4.998
5500	35.6	33.820 ~ 37.380	4.96	4.712 ~ 5.208
5600	35.5	33.725 ~ 37.275	5.07	4.817 ~ 5.324
5800	35.3	33.535 ~ 37.065	5.27	5.007 ~ 5.534
6000	35.1	33.345~ 36.855	5.48	5.206 ~ 5.754
6500	34.5	32.775 ~ 36.225	6.07	5.767 ~ 6.374
7000	33.9	32.205 ~ 35.595	6.65	6.318 ~ 6.983

Table-5.2-1 Recipes of Tissue Simulating Liquid, 30MHz to 900MHz

Frequency (MHz)	30	5	0	14	14	4	50	835	90	0	
Recipe source number	3	3	2	2	3	2	4	2	2	4	
Ingredients (% by	weight)										
De-ionized water	48,30	48,30	53,53	55,12	48,30	48,53	56	50,36	50,31	56	
Tween 20			44,70	43,31		49,51		48,39	48,34		
Oxidized mineral oil							44			44	
Diethylenglycol monohexylether											
Triton X-100											
Diacetin	50,00	50,00			50,00						
DGBE											
NaCl	1,60	1,60	1,77	1,57	1,60	1,96		1,25	1,35		
Additives and salt	0,10	0,10			0,10						
Measured tempera	Measured temperature dependence										
Temp. (°C)			21	21		21	20	21	21	20	
ε _{liquid temp. unc.} (%)	0,8	0,1			0,1	0,1		0,04	0,04		
$\sigma_{ m liquid\ temp.\ unc.}$ (%)	2,8	2,8			2,6	4,2		1,6	1,6		

Table-5.2-2 Recipes of Tissue Simulating Liquid, 1800MHz to 10000MHz

Frequency (MHz)	1 8	00	2 450	4 000	5 000	5 200	5 800	6 000	8 000	10 000
Recipe source number	2	4	4	4	4	1	1	4	5	5
Ingredients (% by weight)			•			•				•
De-ionized water	54,23	56	56	56	56	65,53	65,53	56	67,8	66,0
Tween	45,27								31,1	33,0
Oxidized mineral oil		44	44	44	44			44		
Diethylenglycol monohexylether						17,24	17,24			
Triton X-100						17,24	17,24			
Diacetin										
DGBE										
NaCl	0,50									
Additives and salt										
Measured temperature de	pendend	e	•	•	•				•	
Temp. (°C)	21	20	20	20	20	22	22	20	20	20
$arepsilon_{ ext{liquid temp. unc.}}$ (%)	0,4					1,7	1,8			
σ _{liquid temp. unc.} (%)	2,3					2,7	2,6			

NOTE 1 Multiple columns under a single frequency indicate optional recipes.

NOTE 2 Recipe source numbers: 1 verified by different labs, 2 Reference [59], 3 developed by IT'IS Foundation, 4 developed by IT'IS Foundation, 5 Reference [60].

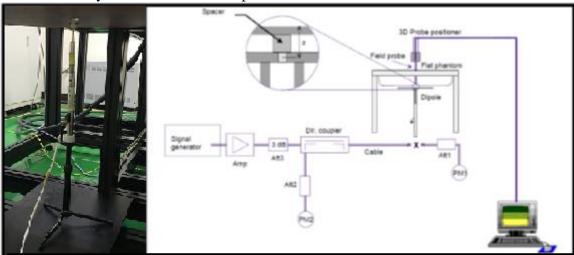
NOTE 3 The values of $\varepsilon_{\text{liquid temp. unc.}}$ and $\sigma_{\text{liquid temp. unc.}}$ are liquid temperature uncertainties described in 0.9.6, based on measurements of the applicable liquid recipes given above. These are not part of the original publications but have been subsequently developed by the project team.

NOTE 4 The recipes at 8 000 MHz and 10 000 MHz are sufficiently broadband that they cover the frequency range of 6 000 MHz to 10 000 MHz within a tolerance of ± 10 % for permittivity and conductivity.



5.3. SAR System Verification

The system check verifies that the system operates within its specifications. It is performed daily or before every SAR measurement. The system check uses normal SAR measurements in the flat section of the phantom with a matched dipole at a specified distance. The system verification setup is shown as below.



The validation dipole is placed beneath the flat phantom with the specific spacer in place. The distance spacer is touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The power meter PM1 measures the forward power at the loation of the system check dipole connector. The signal generator is adjusted for the desired forward power (250 mW is used for 700 MHz to 3 GHz, 100 mW is used for 3.5 GHz to 6 GHz) at the dipole connector and the power meter PM2 is read at that level. After connecting the cable to the dipole, the signal generator is readjusted for the same reading at power meter PM2.

After system check testing, the SAR result will be normalized to 1W forward input power and compared with the reference SAR value derived from validation dipole certificate report. The deviation of system check should be within 10 %.

5.3.1. SAR System Verification Result

Dipole Kit: D2450V2											
Test Date:2024. 11. 25 Liquid Temp. [°C]: 20.0											
Frequency [MHz]		1g SAR 10g SAR									
Zoom Scan to 250mW Normalize to 1W Reference result ± 10% window 250mW Target Value Reference result ± 10% window 250mW Target Value Reference result ± 10% window											
13.4 53.60 52.0 6.21 24.84 24.36 21.92 to											

Dipole Kit: D5GHzV2										
Test Date: 2024. 11. 26 Liquid Temp. [°ℂ]: 20.0										
Frequency [MHz]		1g S	AR		10g S.	AR				
5200MHz	Zoom Scan to 100mW	Normalize to 1W	Zoom Scan to 100mW	Normalize to 1W	Target Value Reference result ± 10% window					
	7.92	79.20	82.7 74.43 to 90.97	2.21	22.10	23.60 21.24 to 25.96				

Dipole Kit: D5GHzV2										
Test Date: 2024. 11. 27 Liquid Temp. [°ℂ]: 20.0										
Frequency [MHz]		1g SAR 10g SAR								
5600MHz	Zoom Scan to 100mW	Normalize to 1W	Target Va Reference 1 ± 10% win	result	Zoom Scan to 100mW	Normalize to 1W	Refe	get Varence %	result	
	8.13	81.30	79.6 71.64 to	87.56	2.34	23.40	20.88	23.20 to	25.52	

Dipole Kit: D5	GHzV2									
Test Date: 2024. 11. 28 Liquid Temp. [°C]: 20.0										
Frequency [MHz]		1g SAR 10g SAR								
5800MHz	Zoom Scan to 100mW	Normalize to 1W	Refe	get Varence 1 wir	result					
	8.06	80.60	78.0 70.20 to 85.80	2.35	23.50	20.34	22.60 to	24.86		

5.3.2. SAR System Check Data

Date: 11/25/2024

Test Laboratory: Audix SAR Lab

System Check H2450

DUT: D2450V2 - SN888

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle:1:1 Medium parameters used: f = 2450 MHz; σ = 1.765 S/m; ϵ_r = 39.927; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 SN3855; ConvF(7.15, 7.5, 7.88) @ 2450 MHz; Calibrated: 9/17/2024
- Sensor-Surface: 2mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1337; Calibrated: 3/15/2024
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1170
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

P=250mW/Area Scan (5x5x1): Measurement grid: dx=20mm, dy=20mm Maximum value of SAR (measured) = 18.1 W/kg

P=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 90.52 V/m; Power Drift = 0.04 dB

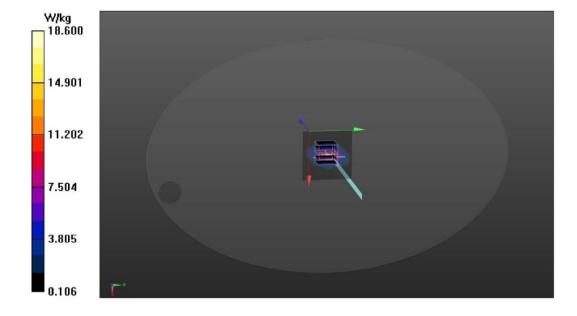
Peak SAR (extrapolated) = 22.2 W/kg

SAR(1 g) = 13.4 W/kg; SAR(10 g) = 6.21 W/kg

Smallest distance from peaks to all points 3 dB below = 9.6 mm

Ratio of SAR at M2 to SAR at M1 = 50.8%

Maximum value of SAR (measured) = 18.6 W/kg



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Date: 11/26/2024

Test Laboratory: Audix_SAR Lab

System Check_H5200

DUT: D5GHzV2 - SN1124

Communication System: UID 0, CW (0); Frequency: 5200 MHz;Duty Cycle:1:1 Medium parameters used: f = 5200 MHz; σ = 4.815 S/m; ϵ_r = 36.571; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 SN3855; ConvF(5.29, 5.55, 5.83) @ 5200 MHz; Calibrated: 9/17/2024
- Sensor-Surface: 2mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1337; Calibrated: 3/15/2024
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1170
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

P=100mW/Area Scan (9x9x1): Measurement grid: dx=10mm, dy=10mm Maximum value of SAR (measured) = 17.9 W/kg

P=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 50.84 V/m; Power Drift = 0.02 dB

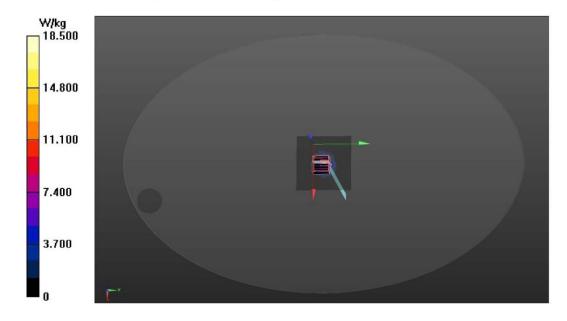
Peak SAR (extrapolated) = 35.7 W/kg

SAR(1 g) = 7.92 W/kg; SAR(10 g) = 2.21 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 53.2%

Maximum value of SAR (measured) = 18.5 W/kg



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Date: 11/27/2024

Test Laboratory: Audix SAR Lab

System Check H5600

DUT: D5GHzV2 - SN1124

Communication System: UID 0, CW (0); Frequency: 5600 MHz; Duty Cycle:1:1 Medium parameters used: f = 5600 MHz; $\sigma = 5.27$ S/m; $\varepsilon_r = 35.908$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

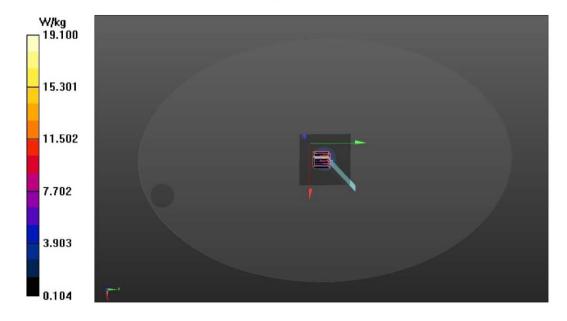
- Probe: EX3DV4 SN3855; ConvF(4.84, 5.08, 5.34) @ 5600 MHz; Calibrated: 9/17/2024
- Sensor-Surface: 2mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1337; Calibrated: 3/15/2024
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1170
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

P=100mW/Area Scan (9x9x1): Measurement grid: dx=10mm, dy=10mm Maximum value of SAR (measured) = 18.3 W/kg

P=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 49.21 V/m; Power Drift = -0.03 dB Peak SAR (extrapolated) = 41.9 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 = 8.3 mm Ratio of SAR at M2 to SAR at M1 = 53.9% Maximum value of SAR (measured) = 19.1 W/kg



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Date: 11/28/2024

Test Laboratory: Audix SAR Lab

System Check H5800

DUT: D5GHzV2 - SN1124

Communication System: UID 0, CW (0); Frequency: 5800 MHz;Duty Cycle:1:1 Medium parameters used: f = 5800 MHz; σ = 5.508 S/m; ϵ_r = 35.529; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 SN3855; ConvF(4.87, 5.11, 5.36) @ 5800 MHz; Calibrated: 9/17/2024
- Sensor-Surface: 2mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1337; Calibrated: 3/15/2024
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1170
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

P=100mW/Area Scan (9x9x1): Measurement grid: dx=10mm, dy=10mm Maximum value of SAR (measured) = 18.6 W/kg

P=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 50.64 V/m; Power Drift = -0.01 dB

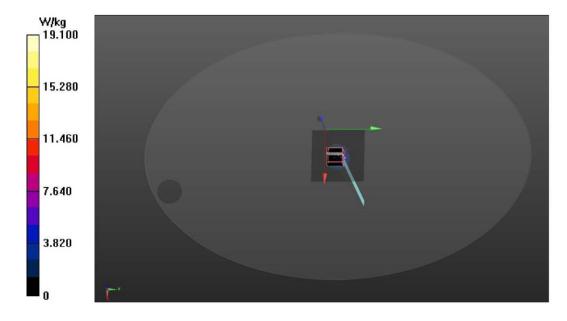
Peak SAR (extrapolated) = 41.6 W/kg

SAR(1 g) = 8.06 W/kg; SAR(10 g) = 2.35 W/kg

Smallest distance from peaks to all points 3 dB below = 7.9 mm

Ratio of SAR at M2 to SAR at M1 = 49.6%

Maximum value of SAR (measured) = 19.1 W/kg



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5.4. SAR Measurement Procedure

According to the SAR test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

- (a) Power reference measurement
- (b) Area scan
- (c) Zoom scan
- (d) Power drift measurement

The SAR measurement procedures for each of test conditions are as follows:

- (a) Make EUT to transmit maximum output power
- (b) Measure conducted output power through RF cable
- (c) Place the EUT in the specific position of phantom
- (d) Perform SAR testing steps on the DASY system
- (e) Record the SAR value

5.4.1. Area & Zoom Scan Procedure

According to IEC/IEEE 62209-1528, the resolution for Area and Zoom scan is specified in the table below.

Items	≤2 GHz	2-3 GHz	3-4 GHz	4-5 GHz	5-6 GHz
Area Scan $(\Delta x, \Delta y)$	≤15mm	≤12mm	≤12mm	≤10mm	≤10mm
Zoom Scan $(\Delta x, \Delta y)$	≤8mm	≤5mm	≤5mm	≤4mm	≤4mm
Zoom Scan (Δz)	≤5mm	≤5mm	≤4mm	≤3mm	≤2mm
Zoom Scan Volume	≥30mm	≥30mm	≥28mm	≥25mm	≥22mm

Note:

When zoom scan is required and report SAR is <= 1.4 W/kg, the zoom scan resolution of $\Delta x / \Delta y$ (2-3GHz: ≤ 8 mm, 3-4GHz: ≤ 7 mm, 4-6GHz: ≤ 5 mm) may be applied.

According to IEC/IEEE 62209-1528, if the zoom scan measured as specified in the preceding paragraphs complies with both of the following items, or if the peak spatial-average SAR is below 0.1 W/kg, no additional measurements are needed:

- (1) The smallest horizontal distance from the local SAR peaks to all points 3 dB below the SAR peak shall be larger than the horizontal gird steps in both x and y directions (Δx , Δy). This shall be checked for the measured zoom scan plane conformal to the phantom at the distance z_{M1} .
- (2) The ratio of the SAR at the second measured point (M2) to the SAR at the closest measured point (M1) at the x, y location of the measured mazimum SAR value shall be at least 30%.

5.4.2. Volume Scan Procedure

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

5.4.3. Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drift more than 5%, the SAR will be retested.

5.4.4. Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

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

- (a) Extraction of the measured data (grid and values) from the Zoom Scan
- (b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
- (c) Generation of a high-resolution mesh within the measured volume
- (d) Interpolation of all measured values form the measurement grid to the high-resolution grid
- (e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- (f) Calculation of the averaged SAR within masses of 1g and 10g





5.4.5. SAR Averaged Methods

In DASY, the interpolation and extrapolation are both based on the modified Quadratic Shepard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation.

Extrapolation routines are used to obtain SAR values between the lowest measurement points and the inner phantom surface. The extrapolation distance is determined by the surface detection distance and the probe sensor offset. 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 5 mm.



6. SAR MEASUREMENT EVALUATION

6.1. Test Configuration and EUT setting

The standalone SAR test exclusion shall be refer to FCC § 1.1307 (b)(3)(i)(B) SAR-Based exemption which device determined the distance from antenna to user/bystander. The formula is

$$\begin{array}{ll} P_{th} \ (mW) = ERP_{20cm} \ (d \ / \ 20)^x & for \ distance \ d \leq 20cm \\ P_{th} \ (mW) = ERP_{20cm} & for \ distance \ 20cm < d \leq 40cm \\ x = - \log 10 \ (\frac{60}{ERP20cm \sqrt{f}}) & \\ ERP_{20cm} (mW) & 0.3 \ GHz \leq f < 1.5 \ GHz: \ 2040f \\ & 1.5 \ GHz \leq f \leq 6 \ GHz: \ 3060 & \end{array}$$

F = GHz

 $P_{th}(mW)$ = available maximum time-average power or effective radiated power, whichever is greater.

D =the separation distance (cm)

From KDB 616217 D04 section 4.2 to 4.3, The SAR exclusion threshold can be applied to KDB 447498 to determine if SAR necessary test.

Test program "DRTU" is used for enabling EUT BT or WLAN function under continues transmitting and choosing data rate/ channel and supported stable power rating.

6.2. EUT Testing Position

SAR-Based exemption table

SAK-Daseu ex	emphon tab	ic					
Centre Frequency (MHz)	5	10	15	20	25	Distance(mm)	
2450	3.000	10.000	22.000	38.000	59.000	Power(mW)	
5200	2.000	6.000	15.000	26.000	42.000		
5500	1.000	6.000	14.000	26.000 41.00] Fower(IIIW)	
5800	1.000	6.000	14.000	25.000	40.000		
	30	35	40	45	50	Distance(mm)	
2450	83.000	111.000	143.000	179.000	219.000	Power(mW)	
5200	61.000	84.000	110.000	110.000	110.000		
5500	59.000	82.000	108.000	108.000	108.000		
5800	58.000	80.000	106.000	106.000	106.000		
	7	10	15	20	25	Distance(cm)	
2450	415.000	819.000	1770.000	3060.000	3060.000		
5200	350.000	731.000	1689.000	3060.000	3060.000	Power(mW)	
5500	345.000	725.000	1683.000	3060.000	3060.000		
5800	341.000	719.000	1678.000	3060.000	3060.000		
	30	33	35	37	40	Distance(cm)	
2450	3060.000	3060.000	3060.000	3060.000	3060.000		
5200	3060.000	3060.000	3060.000	3060.000	3060.000	Power(mW)	
5500	3060.000	3060.000	3060.000	3060.000	3060.000		
5800	3060.000	3060.000	3060.000	3060.000	3060.000		

The SAR testing required mode is listed as below.

Antenna	Front Face	Rear Face	Top Side	Bottom Side	Left Side	Right Side	Screen Side
WLAN				$\sqrt{}$			$\sqrt{}$

According to SAR-Based exemption table, the laptop only need evaluate bottom side and screen side.



6.3. Tissue Calibration Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using Agilent Dielectric Probe Kit and Agilent E5071C Vector Network Analyzer.

Body Tissue S	Body Tissue Simulate Measurement									
Frequency	Description	Dielectric l	Liquid Temp. [°C]							
[MHz]	Description	σ[s/m]	$\epsilon_{\rm r}$	Elquid Tellip. [C]						
	Reference result	1.8	39.2	N/A						
2450MHz	± 5% window	1.710 to 1.890	37.240 to 41.160	IV/A						
	2024. 11. 25	1.765	39.927	20.0						

Body Tissue S	Body Tissue Simulate Measurement									
Frequency	Description	Dielectric l	Liquid Temp. [°C]							
[MHz]	Description	σ[s/m]	$\epsilon_{ m r}$	Elquiu Tellip. [C]						
	Reference result	4.76	35.9	N/A						
5200MHz	± 5% window	4.522 to 4.998	34.105 to 37.695	1 V /A						
	2024. 11. 26	4.815	36.571	20.0						

Body Tissue S	Body Tissue Simulate Measurement										
Frequency	Description	Dielectric 1	Liquid Tomp [°C]								
[MHz]	Description	σ[s/m]	$\epsilon_{\rm r}$	Liquid Temp. [°C]							
	Reference result	5.07	35.0	N/A							
5600MHz	± 5% window	4.817 to 5.324	33.250 to 36.750	11/14							
	2024. 11. 27	5.27	35.908	20.0							

Body Tissue S	Body Tissue Simulate Measurement										
Frequency	Description	Dielectric l	Liquid Temp. [°C]								
[MHz]	Description	σ[s/m]	$\epsilon_{ m r}$	Elquid Temp. [C]							
	Reference result	5.27	35.3	N/A							
5800MHz	± 5% window	5.007 to 5.534	33.535 to 37.065	IV/A							
	2024. 11. 27	5.508	35.529	20.0							

File Number: C1M2411089 Report Number: EM-SR240105





6.4. SAR Exposure Limits

SAR assessments have been made in line with the requirements of IEEE-1528, FCC Supplement C, and comply with ANSI/IEEE C95.1-1992 "Uncontrolled Environments" limits. These limits apply to a location which is deemed as "Uncontrolled Environment" which can be described as a situation where the general public may be exposed to an RF source with no prior knowledge or control over their exposure.

Limits for General Population/Uncontrolled Exposure (W/kg)

Type Exposure	Uncontrolled Environment Limit
Spatial Peak SAR (1g cube tissue for brain or body)	1.60 W/kg
Spatial Average SAR (whole body)	0.08 W/kg
Spatial Peak SAR (10g for hands, feet, ankles and wrist)	4.00 W/kg





6.5. Conducted Power Measurement

Note:

- 1. Per KDB 447498 D04 the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - Scale Factor = tune-up limit power (mW)/EUT Conducted power (mW), where tune-up limit is the maximum rated power among all production units.
 - Scale SAR(W/kg)= Measured SAR(W/kg)* Scaling Factor
- 2. Per KDB 447498 D04 for each exposure position, if the highest output channel reported SAR ≤0.8W/kg, other channels SAR testing is not necessary.
- 3. Per KDB 248227 D01, for OFDM transmission configuration in the 2.4G and 5G bands. An initial test configuration is determined by the highest maximum output power including tune-up tolerance. When multiple transmission modes(802.11a/g/n/ac/ax) have same maximum power, largest channel bandwidth, lowest order modulation and lowest data rate, lowest order 802.11 mode is selected. (i.e. a, g, n, ac then ax)
- 4. Per KDB 248227 D01, when the highest reported SAR for the initial test configuration (when applicable, include subsequent highest output channels), according to the initial test position or fixed exposure position requirements, is adjusted by the ratio of the subsequent test configuration to initial test configuration specifiedmaximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for that subsequent test configuration.
- 5. Per KDB 248227 D01,U-NII-1 and U-NII-2A bands have the same specified maximum output and tolerance; SAR is measured for U-NII-2A band first. Adjusted SAR of U-NII-2A band is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band. When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reportedSAR for the testedconfiguration is adjusted by the ratio of lower to higher specified maximum output powerfor the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output powerin that test configuration; otherwise, each band is tested independently for SAR.
- 6. Per KDB 248227 D01, When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested.
- 7. Pursuant section 2.8.1(2) KDB 865664 D01, when the original highest measured SAR is \geq 0.80 W/kg, repeat that measurement once.
- 8. Pursuant section 2.8.1(3) KDB 865664 D01, 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 ($\sim 10\%$ from the 1-g SAR limit)



6.5.1. For WLAN Function

		1	Average Output Power (dBm)					
	Frequency		AUX-ANT	8 1		Main-ANT		GAD T.
Type of Network	(MHz)	Average	Tune-Up	Scale	Average	Tune-Up	Scale	SAR Test
		Power	Limit	Factor	Power	Limit	Factor	
	2412	17.20	18.0		18.77	19.3		
	2417	17.39	18.0		18.55	19.3		No ^{NOTE2}
802.11b	2422	17.42	18.0		18.91	19.5		
802.110	<mark>2442</mark>	18.92	19.5	1.142	18.85	19.5	<mark>1.161</mark>	Yes
	2467	18.36	19.0		17.96	18.5		No ^{NOTE2}
	2472	16.53	17.3		16.40	17.0		NO
	2412	18.94	19.5		18.26	19.0		
	2417	18.29	19.0		18.68	19.3		
802.11g	2442	18.36	19.0		17.82	18.5		No ^{NOTE6}
002.116	2462	18.32	19.0		18.14	19.0		110
_	2467	13.10	14.0		15.24	16.0		
	2472	13.06	14.0		13.30	14.0		
_	2412	16.84	17.5		17.12	18.0		
_	2417	18.82	19.5		18.75	19.3		
802.11n-HT20	2442	18.73	19.3		18.66	19.3		4
-	2462	17.86	18.5		12.02	13.0		
	2467	12.89	13.5		12.07	13.0		
	2472	12.22	13.0		11.75	12.3		
	2422	16.69	17.3		15.84	16.5		
	2427	17.02	18.0		16.83	17.5		- - -
802.11n-HT40	2432	17.83	18.5		17.62	18.3		
	2442	18.07	19.0		17.76	18.3		
	2447	16.84	17.5		16.67	17.3		
	2452	16.79	17.3		16.88	17.5		
	2462	12.49	13.0		11.57	12.3		_
	2412	16.90	17.5		16.35	17.0		_
	2417	18.64	19.3		18.61	19.3		_
802.11ax-HE20	2442	18.57	19.3		17.92	18.5		_
	2462	17.84	18.5		17.48	18.0		
	2472	11.63	12.3		11.38	12.0		<u> </u>
	2422	17.70	18.3		16.89	17.5		NOTE4 2
_	2427	17.64	18.3		17.89	18.5		No ^{NOTE4,3}
_	2432	17.76	18.3		17.84	18.5		_
802.11ax-HE40	2437	17.82	18.5		17.84	18.5		<u> </u>
	2442	17.12	18.0		17.82	18.5		_
	2447	17.10	18.0		17.00	18.0		_
_	2452	16.70	17.3		17.14	18.0		<u> </u>
	2462	12.48	13.0		11.51	12.3		
<u> </u>	2412	16.90	17.5		15.60	16.3		-
902 11h - EUT20	2417	18.37	19.0		18.79	19.3		1
802.11be-EHT20	2442	18.75	19.3		18.55	19.3		-
-	2462	18.17	19.0		17.91	18.5		-
	2472	11.92	12.5		11.30	12.0		1
}	2422	16.94	17.5		16.52	17.3		1
-	2427	16.96	17.5		17.05	18.0		
-	2432	17.11	18.0		17.38	18.0		
802.11be-EHT40	2437 2442	17.16	18.0		17.13	18.0		
}		17.14	18.0		17.29	18.0		
-	2447 2452	16.70	17.3 17.0		16.70 16.59	17.3		
	2432	16.45	17.0		10.59	17.3		





Audix Technology Corp. No. 491, Zhongfu Rd., Linkou Dist., New Taipei City244, Taiwan

				1	Average Outpu	ıt Power (dBm)		SAR Test
T	Frequency	RU		AUX-ANT			Main-ANT		
Type of Network	(MHz)	Configuration	Average	Tune-Up	Scale	Average	Tune-Up	Scale	SAK Test
			Power	Limit	Factor	Power	Limit	Factor	
		26/0	23.82	24.5		23.21	24.0		
	2412	52/37	23.70	24.3		23.37	24.0		
002.11 HE20		106/53	23.61	24.3		23.03	24.0		
802.11ax-HE20	2472	26/8	16.92	17.5		16.03	17.0		No ^{NOTE4,3}
		52/40	15.46	16.0		14.75	15.3		No
		106/54	21.40	22.0		20.66	21.3		
000 11 HE40	2422	242/61	22.14	23.0		21.51	22.3		
802.11ax-HE40	2462	242/62	24.12	25.0		24.36	25.0		
		26/0	23.96	24.5		23.11	24.0		
	2412	52/37	22.70	23.3		22.84	23.5		
000 111 EVEDO		106/53	23.43	24.0		22.87	23.5		
802.11be-EHT20		26/8	14.78	15.3		14.31	15.0		No ^{NOTE4,3}
	2472	52/40	14.33	15.0		13.74	14.3		No
		106/54	19.93	20.5		19.19	20.0		
000 111 FUE10	2422	242/61	22.58	23.3		21.91	22.5		
802.11be-EHT40	2462	242/62	24.19	25.0		23.23	24.0		





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Type of Network	Frequency (MHz)	Average	AUX-ANT			Main-ANT		
Type of Network		Average				Main-ANT		
	5180	Power	Tune-Up Limit	Scale Factor	Average Power	Tune-Up Limit	Scale Factor	SAR Test
	5180	15.84	16.5		15.85	16.5		No ^{NOTE3,5}
	5200	15.92	16.5	1.142	15.83	16.5	1.166	Yes
	5240	15.63	16.3		15.54	16.3		No ^{NOTE3,5}
	<mark>5260</mark>	16.21	17.0	<mark>1.199</mark>	15.97	16.5	1.129	Yes
	5300	15.96	16.5		15.38	16.0		No ^{NOTE2}
	5320	15.72	16.3		15.76	16.3		No ^{NOTE2}
	5500	16.04	17.0		15.56	16.3		No ^{NOTE2,3}
802.11a	5580	16.14	17.0		15.56	16.3		No ^{NOTE2,3}
002.11a	<mark>5700</mark>	<mark>16.04</mark>	17.0	<mark>1.247</mark>	16.23	<mark>17.0</mark>	<mark>1.193</mark>	Yes
	5720	15.70	16.3		15.69	16.3		No ^{NOTE4,3}
	5745	16.17	17.0		16.25	17.0		No ^{NOTE4,3}
	<mark>5785</mark>	<mark>16.27</mark>	<mark>17.0</mark>	<mark>1.183</mark>	16.15	<mark>17.0</mark>	<mark>1.216</mark>	Yes
<u> </u>	5825	15.65	16.3		16.10	17.0		No ^{NOTE4,3}
	5845	16.11	17.0		16.05	17.0		No ^{NOTE2,3}
	5865	16.04	17.0		16.20	17.0		No ^{NOTE2,3}
	<mark>5885</mark>	16.30	<mark>17.0</mark>	1.174	16.35	17.0	1.161	Yes
	5180	16.14	17.0		15.73	16.3		
	5200	15.84	16.5		15.79	16.3		
	5240	16.16	17.0		16.10	17.0		
	5260	15.50	16.3		16.12	17.0		
	5300	15.75	16.3		15.18	16.0		
	5320	15.56	16.3		15.81	16.5		
	5500	15.89	16.5		15.07	16.0		
802.11n-HT20	5580	16.12	17.0		16.03	17.0		No ^{NOTE4,3}
	5700	16.23	17.0		15.97	16.5		110
	5720	15.42	16.0		15.79	16.3		
	5745	16.14	17.0		15.97	16.5		
	5785	15.72	16.3		16.04	17.0		
	5825	16.03	17.0		15.50	16.3		
	5845	16.17	17.0		16.08	17.0		
	5865	16.29	17.0		16.20	17.0		
	5885	16.13	17.0		15.45	16.0		
	5190	16.11	17.0		15.55	16.3		
	5230	15.99	16.5		16.05	17.0		
	5270	15.47	16.0		15.32	16.0		
	5310	15.19	16.0		15.56	16.3		
	5510	15.50	16.3		15.19	16.0		
	5550	15.80	16.5		15.50	16.3		- NOTE 4.2
802.11n-HT40	5670	16.19	17.0		16.14	17.0		$No^{NOTE4,3}$
	5710	16.20	17.0		16.11	17.0		
	5755	16.16	17.0		15.90	16.5		
	5795	15.89	16.5		16.16	17.0		
	5835	15.88	16.5		15.84	16.5		
 	5875	15.63	16.3		15.71	16.3		





				Average Outpu	t Power (dBm	1)		
T CN 1	Frequency		AUX-ANT			Main-ANT		CADT
Type of Network	(MHz)	Average Power	Tune-Up Limit	Scale Factor	Average Power	Tune-Up Limit	Scale Factor	SAR Test
	5180	15.87	16.5		15.44	16.0		
	5200	15.71	16.3		15.58	16.3		
	5240	15.97	16.5		15.92	16.5		
	5260	15.40	16.0		16.04	17.0		
	5300	15.61	16.3		14.96	15.5		
	5320	15.37	16.0		15.59	16.3		
	5500	15.71	16.3		14.92	15.5		
	5580	15.94	16.5		16.03	17.0		No ^{NOTE4,3}
802.11ac-VHT20	5700	15.98	16.5		15.73	16.3		
	5720	15.32	16.0		15.70	16.3		
	5745	15.89	16.5		15.70	16.3		
	5785	15.63	16.3		15.86	16.5		- -
	5825	15.90	16.5		15.23	16.0		
	5845	15.93	16.5		15.82	16.5		
	5865	16.14	17.0		16.18	17.0		
	5885	15.88	16.5		15.35	16.0		
	5190	15.88	16.5		15.35	16.0		
-	5230	15.81	16.5		16.01	17.0		
	5270							
	5310	15.46	16.0		15.03	16.0		
	5510	14.95	15.5		15.43	16.0		
	5550	15.34	16.0		15.04	16.0		
802.11ac-VHT40		15.72	16.3		15.24	16.0		$No^{\text{NOTE4,3}}$
	5670	15.99	16.5		16.09	17.0		
	5710	15.99	16.5		15.91	16.5		
	5755	16.05	17.0		15.64	16.3		
	5795	15.70	16.3		16.06	17.0		
	5835	15.69	16.3		15.84	16.5		
	5875	15.40	16.0		15.42	16.0		
	5210 5290	15.55 15.01	16.3 16.0		15.69 15.16	16.3 16.0		
	5530	15.00	16.0		14.71	15.3		
802.11ac-VHT80	5610	15.53	16.3		15.38	16.0		No ^{NOTE4,3}
302.1140 111100	5690	15.96	16.5		15.84	16.5		110
	5775	16.09	17.0		16.04	17.0		
	5855	15.82	16.5		15.87	16.5		\dashv
	5250	14.62	15.3		14.96	15.5		
802.11ac-VHT160	5570	15.40	16.0		15.05	16.0		No ^{NOTE4,3}
	5815	15.97	16.5		16.08	17.0		





				Average Outpu	t Power (dBm	ı)		
TD CNT . 1	Frequency		AUX-ANT			Main-ANT		GAD TE
Type of Network	(MHz)	Average Power	Tune-Up Limit	Scale Factor	Average Power	Tune-Up Limit	Scale Factor	SAR Test
	5180	15.41	16.0		15.40	16.0		
	5200	15.38	16.0		15.18	16.0		
	5240	15.94	16.5		16.03	17.0		
	5260	15.41	16.0		15.81	16.5		
	5300	15.95	16.5		16.05	17.0		
	5320	15.32	16.0		15.67	16.3		
	5500	15.79	16.3		15.81	16.5		
ŀ	5580	15.61	16.3		15.08	16.0		
802.11ax-HE20	5700	16.23	17.0		15.58	16.3		No ^{NOTE4,3}
	5720	16.12	17.0		15.98	16.5		
	5745	16.20	17.0		15.78	16.3		
	5785	16.03	17.0		15.88	16.5		
	5825	15.54	16.3		15.84	16.5		
	5845	15.35	16.0		15.24	16.0		
	5865	15.45	16.0		15.84	16.5		
ŀ	5885	15.43	16.3		15.17	16.0		
	5190	15.66	16.3		15.50	16.3		
	5230	16.04	17.0		16.02	17.0		
-	5270	16.00	17.0					- -
-	5310	16.05	17.0		15.66 16.02	16.3 17.0		
-	5510							
_		15.67	16.3		15.57	16.3		
802.11ax-HE40	5550	15.58	16.3		16.05	17.0		No ^{NOTE4,3}
-	5670	16.01	17.0		15.60	16.3		
-	5710	15.98	16.5		15.98	16.5		
	5755	15.94	16.5		15.57	16.3		
	5795	15.43	16.0		15.75 15.16	16.3		
	5835	16.45	17.0			16.0		
	5875	15.87	16.5		15.36	16.0		
-	5210	15.37	16.0		15.66	16.3		
	5290	14.80	15.5		15.12	16.0		
902 11 HE90	5530	14.96	15.5		14.65	15.3		No ^{NOTE4,3}
802.11ax-HE80	5610	15.47	16.0		15.33	16.0		INO "TE ",S
}	5690	15.85	16.5		15.79	16.3		
}	5775	16.03	17.0		16.00	17.0		4
	5855	15.73	16.3		15.91	16.5		
902 11. HE160	5250	14.62	15.3		14.95	15.5		N NOTE43
802.11ax-HE160	5570	15.41	16.0		15.06	16.0		No ^{NOTE4,3}
	5815	16.07	17.0		16.10	17.0		





				Average Outpu	t Power (dBm)		
The CAN to 1	Frequency		AUX-ANT			Main-ANT		CAD TO
Type of Network	(MHz)	Average	Tune-Up		Average	Tune-Up	a 1 F	SAR Test
		Power	Limit	Scale Factor	Power	Limit	Scale Factor	
	5180	15.83	16.5		15.44	16.0		
	5200	15.99	16.5		15.58	16.3		
	5240	15.31	16.0		15.44	16.0		
	5260	15.86	16.5		15.81	16.5		
	5300	15.69	16.3		15.99	16.5		
	5320	15.79	16.3		15.51	16.3		
	5500	15.59	16.3		15.57	16.3		
	5580	16.11	17.0		16.10	17.0		No ^{NOTE4,3}
802.11be-EHT20	5700	16.13	17.0		16.11	17.0		No ^{NOTE4,5}
	5720	16.00	17.0		15.73	16.3		
	5745	15.88	16.5		15.36	16.0		
	5785	16.02	17.0		16.14	17.0		
	5825	15.68	16.3		16.14	17.0		
	5845	16.06	17.0		15.38	16.0		
	5865	15.54	16.3		15.47	16.0		
	5885	16.24	17.0		15.25	16.0		
	5190	15.39	16.0		15.89	16.5		
	5230	15.86	16.5		15.51	16.3		
	5270	15.31	16.0		15.82	16.5		
	5310	15.58	16.3		16.02	17.0		
	5510	16.07	17.0		15.92	16.5		
	5550	15.56	16.3		15.41	16.0		- NOTE4 2
802.11be-EHT40	5670	16.21	17.0		15.85	16.5		No ^{NOTE4,3}
	5710	16.20	17.0		15.96	16.5		
	5755	16.16	17.0		15.48	16.0		
	5795	15.58	16.3		16.08	17.0		
	5835	16.49	17.0		15.56	16.3		
	5875	15.50	16.3		15.34	16.0		
	5210	15.40	16.0		15.68	16.3		
	5290	14.82	15.5		15.11	16.0		
	5530	15.01	16.0		14.65	15.3		
802.11be-EHT80	5610	15.53	16.3		15.32	16.0		No ^{NOTE4,3}
	5690	15.87	16.5		15.84	16.5		
	5775	16.01	17.0		16.01	17.0		1
	5855	15.77	16.3		15.86	16.5		
	5250	14.66	15.3		14.92	15.5		
802.11be-EHT160	5570	15.92	16.5		14.82	15.5		No ^{NOTE4,3}
	5815	16.02	17.0		16.14	17.0		





Audix Technology Corp. No. 491, Zhongfu Rd., Linkou Dist., New Taipei City244, Taiwan

				1	Average Outpu	ut Power (dBm)		
	Frequency	RU		AUX-ANT			Main-ANT		G.1.D
Type of Network	(MHz)	Configuration	Average	Tune-Up	Scale	Average	Tune-Up	Scale	SAR Test
			Power	Limit	Factor	Power	Limit	Factor	
		26/0	9.60	10.3		8.96	9.5		
	5180	52/37	12.29	13.0		12.21	13.0		
		106/53	15.29	16.0		14.85	15.5		
		26/8	9.26	10.0		8.91	9.5		
	5320	52/40	12.31	13.0		12.44	13.0		
		106/54	14.73	15.3		14.79	15.3		
		26/0	9.14	10.0		9.18	10.0		
	5500	52/37	13.14	14.0		12.26	13.0		-
000 11 77700		106/53	15.40	16.0		15.55	16.3		No ^{NOTE4,3}
802.11ax-HE20	5700	26/8	9.73	10.3		9.44	10.0		No
		52/40	13.38	14.0		12.63	13.3		-
		106/54	16.17	17.0		16.13	17.0		
		26/0	15.99	16.5		15.43	16.0		
	5745	52/37	16.09	17.0		16.06	17.0		
		106/53	16.02	17.0		15.94	16.5		- - -
		26/8	16.24	17.0		16.23	17.0		
	5825	52/40	15.98	16.5		16.19	17.0		
		106/54	16.13	17.0		16.10	17.0		
	5190	242/61	15.80	16.5		15.10	16.0		
	5310	242/62	16.12	17.0		15.55	16.3		
000 11 115 40	5510	242/61	15.68	16.3		15.41	16.0		No ^{NOTE4,3}
802.11ax-HE40	5670	242/62	16.12	17.0		15.72	16.3		No
	5755	242/61	16.15	17.0		15.64	16.3		
	5795	242/62	16.21	17.0		15.81	16.5		
	5210	484/65	15.22	16.0		14.64	15.3		
	5290	484/66	14.02	15.0		14.66	15.3		
002 11 11500	5530	484/65	14.75	15.3		14.64	15.3		No ^{NOTE4,3}
802.11ax-HE80	5610	484/66	14.56	15.3		14.78	15.3		No
	5775	484/65	15.93	16.5		15.48	16.0		
	5775	484/66	15.56	16.3		14.54	15.3		
	5050	996/67	15.20	16.0		15.55	16.3		
000.11 4751.60	5250	996/S67	14.35	15.0		15.10	16.0		No ^{NOTE4,3}
802.11ax-HE160	5570	996/67	15.00	16.0		14.82	15.5		
	5570	996/S67	15.50	16.3		15.25	9.5		





Audix Technology Corp. No. 491, Zhongfu Rd., Linkou Dist., New Taipei City244, Taiwan

				Average Output Power (dBm) AUX-ANT Main-ANT							
TO CAY 1	Frequency	RU		AUX-ANT			Main-ANT		GAD T		
Type of Network	(MHz)	Configuration	Average	Tune-Up	Scale	Average	Tune-Up	Scale	SAR Test		
			Power	Limit	Factor	Power	Limit	Factor			
		26/0	9.23	10.0		8.89	9.5				
	5180	52/37	13.29	14.0		12.02	13.0				
		106/53	14.81	15.5		14.83	15.5				
		26/8	8.71	9.3		9.10	10.0				
	5320	52/40	13.05	14.0		12.30	13.0				
		106/54	15.53	16.3		15.00	16.0				
		26/0	9.27	10.0		9.15	10.0				
	5500	52/37	12.48	13.0		12.61	13.3		No ^{NOTE4,3}		
000 111 EUE00		106/53	16.19	17.0		15.73	16.3		No		
802.11be-EHT20		26/8	9.65	10.3		9.41	10.0				
	5700	52/40	12.34	13.0		12.39	13.0				
		106/54	15.23	16.0		16.09	17.0				
		26/0	16.20	17.0		16.01	17.0				
	5745	52/37	15.87	16.5		15.73	16.3				
		106/53	15.73	16.3		15.49	16.0				
	5825	26/8	15.89	16.5		16.23	17.0				
		52/40	16.20	17.0		16.21	17.0		No ^{NOTE4,3}		
		106/54	15.97	16.5		16.14	17.0		No		
	5190	242/61	15.90	16.5		15.73	16.3				
	5310	242/62	15.31	16.0		15.76	16.3				
000 111 FUE10	5510	242/61	15.76	16.3	-	15.85	16.5		No ^{NOTE4,3}		
802.11be-EHT40	5670	242/62	16.14	17.0		16.22	17.0		No		
	5755	242/61	13.16	14.0		12.79	13.3				
	5795	242/62	12.31	13.0		12.47	13.0				
	5210	484/65	14.95	15.5		14.56	15.3				
	5290	484/66	14.10	15.0		14.86	15.5				
000 111 FUE00	5530	484/65	14.61	15.3		15.29	16.0		No ^{NOTE4,3}		
802.11be-EHT80	5610	484/66	14.70	15.3		13.72	14.3		No		
	5775	484/65	15.02	16.0		15.85	16.5				
	5775	484/66	15.97	16.5		15.18	16.0				
	5250	996/67	15.37	16.0		15.50	16.3				
000 11h - FUELCO	5250	996/S67	14.30	15.0		15.00	16.0		No ^{NOTE4,3}		
802.11be-EHT160	5570	996/67	15.17	16.0		14.81	15.5		No		
	5570	996/S67	15.50	16.3		15.32	16.0				





6.5.2. For BT Function

	roi Bi Function		1	Average Outpu	ıt Power (dBm)		
T	Frequency		AUX-ANT			Main-ANT		SAR Test
Type of Network	(MHz)	Average	Tune-Up	Scale	Average	Tune-Up	Scale	SAK Test
		Power	Limit	Factor	Power	Limit	Factor	
	2402	12.87	13.5					No
Bluetooth (GFSK)	2441	12.93	13.5					NO
	<mark>2480</mark>	12.99	13.5	<mark>1.124</mark>				Yes
	2402	10.37	11.0					
Bluetooth (8-DPSK)	2441	10.46	11.0					No
	2480	10.76	11.3				-	
	2402	13.12	14.0				-	
BLE (1Mbps)	2440	13.18	14.0				-	
	2480	13.28	14.0					
	2402	11.52	12.3					
BLE (2Mbps)	2440	11.55	12.3					
	2480	11.91	12.5				-	N.
	2402	12.01	13.0					No
BLE (PHY Coded S2)	2440	12.20	13.0					
	2480	12.27	13.0					
	2402	12.54	13.3					
BLE (PHY Coded S8)	2440	12.60	13.3					
	2480	12.87	13.5					



6.6. SAR Test Result

6.6.1. WiFi 2.4G/Bluetooth

Test Date	2024. 11. 25	Temp./Hum.	21°C/50%
Test Voltage	AC 120V, 60Hz (with AC Adapter)	Tested by	Brian Hsieh
Test Antenna	IN	PAQ	

Liquid 7	Гетрегаture	: 20.0°C						Depth of	f Liquid:>1	15cm	
Test M	Test Mode: 2.4GHz										
Plot No.	Test Position: Body	Antenna Position	Separation Distance (cm)	Frequency	Conducted Power (dBm)	Maximum Tune-up (dBm)	SAR 1g (W/kg)	Scale Factor	Reported SAR	Limit (W/kg)	
					802.11b						
				Anten	na: AUX-AN	NT					
P1 ^{Note 1}	Screen	Fixed	0.5	2442	18.92	19.5	0.471	1.142	0.538	1.60	
Р3	Bottom	Fixed	0	2442	18.92	19.5	0.073	1.142	0.083	1.60	
	_	_		Anten	na: Main-AN	NT					
P2	Screen	Fixed	0.5	2442	18.85	19.50	0.053	1.161	0.062	1.60	
P4 ^{Note 1}	Bottom	Fixed	0	2442	18.85	19.50	0.242	1.161	0.281	1.60	

Note: 1. We only presented the worst plots for each test configuration.

Liquid 7	Liquid Temperature : 20.0°C Depth of Liquid: >15cm										
Test N	Test Mode: BT-GFSK										
Plot No. Body Test Antenna Position: Body Antenna Position Body Separation Distance (cm) Prequency (dBm) Conducted Maximum Tune-up (dBm) SAR 1g (W/kg) Factor SAR (W/kg)											
				Anter	nna: AUX-A	NT					
P5 ^{Note 1}	Screen	Fixed	0.5	2480	12.99	13.50	0.157	1.124	0.176	1.60	
P6 ^{Note 1}	Bottom	Fixed	0	2480	12.99	13.50	0.045	1.124	0.051	1.60	





Test Date	2024. 11. 25	Temp./Hum.	21°C/50%
Test Voltage	AC 120V, 60Hz (with AC Adapter)	Tested by	Brian Hsieh
Test Antenna	LUXSH	IARE-ICT	

Liquid 7	Γemperature	: 20.0°C						Depth of	f Liquid:>	15cm
Test M	Гest Mode: 2.4GHz									
Plot No.	Test Position: Body	Antenna Position	Separation Distance (cm)	Frequency	Conducted Power (dBm)	Maximum Tune-up (dBm)	SAR 1g (W/kg)	Scale Factor	Reported SAR	Limit (W/kg)
					802.11b					
				Anten	na: AUX-AN	NT				
P1 ^{Note 1}	Screen	Fixed	0.5	2442	18.92	19.50	0.413	1.142	0.472	1.60
Р3	Bottom	Fixed	0	2442	18.92	19.50	0.140	1.142	0.160	1.60
				Anten	na: Main-AN	VТ				
P2 ^{Note 1}	Screen	Fixed	0.5	2442	18.85	19.50	0.563	1.161	0.654	1.60
P4	Bottom	Fixed	0	2442	18.85	19.50	0.164	1.161	0.190	1.60

Note: 1. We only presented the worst plots for each test configuration.

Liquid 7	Temperature	: 20.0°C						Depth of 1	Liquid: > 15	cm
Test M	Test Mode: BT-GFSK									
Plot Position: No. Body Position Body Position Separation Position (cm) Position (Cm) Power (dBm) Power (dBm) SAR 1g (W/kg) Factor SAR (W/kg)										
				Anter	nna: AUX-A	NT				
P5 ^{Note 1}	Screen	Fixed	0.5	2480	12.99	13.50	0.144	1.124	0.162	1.60
P6 ^{Note 1}	Bottom	Fixed	0	2480	12.99	13.50	0.075	1.124	0.084	1.60





6.6.2. WiFi 5G

Test Date	2024. 11. 26 ~ 28	Temp./Hum.	21°C/48~56%
Test Voltage	AC 120V, 60Hz (with AC Adapter)	Tested by	Brian Hsieh
Test Antenna	IN	PAQ	

Liquid Ten	nperature : 2	20.0°C					Depth of	Liquid:>	15cm	
Test Mod	le: 5GHz									
Plot No.	Test Position: Body	Antenna Position	Separation Distance (cm)	Frequency	Conducted Power (dBm)	Maximum Tune-up (dBm)	SAR 1g (W/kg)	Scale Factor	Reported SAR	Limit (W/kg)
				:	802.11a					
				Antenn	a: AUX-AN	T				
P17	Screen	Fixed	0.5	5200	15.92	16.50	0.365	1.142	0.417	1.60
P7	Screen	Fixed	0.5	5260	16.21	17.00	0.557	1.199	0.668	1.60
P9	Screen	Fixed	0.5	5700	16.04	17.00	0.629	1.247	0.784	1.60
P11 ^{Note 1}	Screen	Fixed	0.5	5785	16.27	17.00	0.611	1.183	0.723	1.60
P13	Screen	Fixed	0.5	5885	16.30	17.00	0.554	1.174	0.650	1.60
P15	Bottom	Fixed	0	5785	16.27	17.00	0.135	1.183	0.160	1.60
P19	Bottom	Fixed	0	5700	16.04	17.00	0.150	1.247	0.187	1.60
				Antenr	na: Main-AN	T				
P18	Screen	Fixed	0.5	5200	15.83	16.50	0.192	0.166	0.032	1.60
P8	Screen	Fixed	0.5	5260	15.97	16.50	0.221	1.129	0.250	1.60
P10	Screen	Fixed	0.5	5700	16.23	17.00	0.245	1.193	0.292	1.60
P12 ^{Note 1}	Screen	Fixed	0.5	5785	16.15	17.00	0.238	1.216	0.289	1.60
P14	Screen	Fixed	0.5	5885	16.35	17.00	0.246	1.161	0.286	1.60
P16	Bottom	Fixed	0	5785	16.15	17.00	0.075	1.216	0.091	1.60
P20	Bottom	Fixed	0	5700	16.23	17.00	0.088	1.193	0.105	1.60





Test Date	2024. 11. 26 ~ 28	Temp./Hum.	21°C/48~56%
Test Voltage	AC 120V, 60Hz (with AC Adapter)	Tested by	Brian Hsieh
Test Antenna	LUXSE	IARE-ICT	

Liquid Ten	nperature : 2	20.0°C					Depth of	Liquid:>	15cm	
Test Mod	le: 5GHz									
Plot No.	Test Position: Body	Antenna Position	Separation Distance (cm)	Frequency	Conducted Power (dBm)	Maximum Tune-up (dBm)	SAR 1g (W/kg)	Scale Factor	Reported SAR	Limit (W/kg)
					802.11a					
				Antenn	a: AUX-AN	ΙΤ				
P17	Screen	Fixed	0.5	5200	15.92	16.50	0.309	1.142	0.353	1.60
P7	Screen	Fixed	0.5	5260	16.21	17.00	0.354	1.199	0.424	1.60
P9	Screen	Fixed	0.5	5700	16.04	17.00	0.476	1.247	0.594	1.60
P11 ^{Note 1}	Screen	Fixed	0.5	5785	16.27	17.00	0.443	1.183	0.524	1.60
P13	Screen	Fixed	0.5	5885	16.30	17.00	0.352	1.174	0.413	1.60
P15	Bottom	Fixed	0	5785	16.27	17.00	0.114	1.183	0.135	1.60
P19	Bottom	Fixed	0	5700	16.04	17.00	0.106	1.247	0.132	1.60
				Antenr	na: Main-AN	T				
P18	Screen	Fixed	0.5	5200	15.83	16.50	0.281	0.166	0.047	1.60
P8	Screen	Fixed	0.5	5260	15.97	16.50	0.323	1.129	0.365	1.60
P10	Screen	Fixed	0.5	5700	16.23	17.00	0.373	1.193	0.445	1.60
P12 ^{Note 1}	Screen	Fixed	0.5	5785	16.15	17.00	0.407	1.216	0.495	1.60
P14	Screen	Fixed	0.5	5885	16.35	17.00	0.343	1.161	0.398	1.60
P16	Bottom	Fixed	0	5785	16.15	17.00	0.072	1.216	0.088	1.60
P20	Bottom	Fixed	0	5700	16.23	17.00	0.067	1.193	0.080	1.60



6.6.3. Highest Simultaneous Transmission SAR

Test Antenna: INPAQ

Highest Simultaneous Transmission SAR	Reported SAR	Reported Body SAR _{1g}
WLAN 2.4G (2442MHz) AUX-ANT +	0.538	0.600 W/kg
WLAN 2.4G (2442MHz) Main-ANT	0.062	
WLAN 2.4G (2442MHz) Main-ANT	0.062	0.238 W/kg
BT (2480MHz) AUX-ANT	0.176	
WLAN 5G (5785MHz) Main-ANT +	0.178	0.354 W/kg
BT (2480MHz) AUX-ANT	0.176	
WLAN 5G (5785MHz) AUX-ANT +	0.723	1.012 W/kg
WLAN 5G (5785MHz) Main-ANT	0.289	
WLAN 5G (5785MHz) AUX-ANT +	0.723	
WLAN 5G (5785MHz) Main-ANT	0.289	1.188 W/kg
BT (2480MHz) AUX-ANT	0.176	

Note: 1. The SAR limit (SAR1g 1.6 W/kg) for general population / uncontrolled exposure is specified in FCC 47 CFR part 2 (2.1093).

Test Antenna: LUXSHARE-ICT

Highest Simultaneous Transmission SAR	Reported SAR	Reported Body SAR _{1g}
WLAN 2.4G (2442MHz) AUX-ANT +	0.472	1.126 W/kg
WLAN 2.4G (2442MHz) Main-ANT	0.654	
WLAN 2.4G (2442MHz) AUX-ANT +	0.472	0.634 W/kg
BT (2480MHz) AUX-ANT	0.162	
WLAN 5G (5785MHz) Main-ANT +	0.495	0.657 W/kg
BT (2480MHz) AUX-ANT	0.162	
WLAN 5G (5785MHz) AUX-ANT +	0.524	1.019 W/kg
WLAN 5G (5785MHz) Main-ANT	0.495	
WLAN 5G (5785MHz) AUX-ANT +	0.524	
WLAN 5G (5785MHz) Main-ANT	0.495	1.181 W/kg
BT (2480MHz) AUX-ANT	0.162	

Note: 1. The SAR limit (SAR1g 1.6 W/kg) for general population / uncontrolled exposure is specified in FCC 47 CFR part 2 (2.1093).

^{2.} It is calculated from scale SAR.

^{3.} It is larger than the limit 1.6(W/kg), SAR test exclusion is determined by the SAR to peak location separation ratio.

^{2.} It is calculated from scale SAR.

^{3.} It is larger than the limit 1.6(W/kg), SAR test exclusion is determined by the SAR to peak location separation ratio.



APPENDIX A

TEST GRAPH RESULT

(Model: 17Z90TL)



With INPAQ Antenna WiFi 2.4G/Bluetooth

Date: 11/25/2024

Test Laboratory: Audix SAR Lab

P1 802.11b CH7 2442MHz Screen Aux

DUT: 17Z90TL(INPAQ)

Communication System: UID 0, WIFI 2.4G 802.11B (0); Frequency: 2442 MHz; Duty Cycle:1:1

Medium parameters used: f = 2442 MHz; $\sigma = 1.759$ S/m; $\varepsilon_r = 39.93$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 SN3855; ConvF(7.15, 7.5, 7.88) @ 2442 MHz; Calibrated: 9/17/2024
- Sensor-Surface: 2mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1337; Calibrated: 3/15/2024
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1170
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (5x6x1): Measurement grid: dx=20mm, dy=20mm Maximum value of SAR (measured) = 0.687 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.279 V/m; Power Drift = 0.02 dB

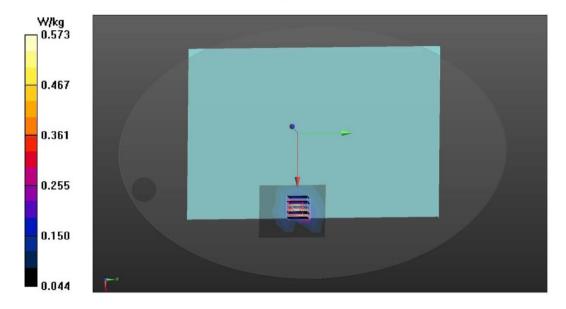
Peak SAR (extrapolated) = 0.872 W/kg

SAR(1 g) = 0.471 W/kg; SAR(10 g) = 0.235 W/kg

Smallest distance from peaks to all points 3 dB below = 8.1 mm

Ratio of SAR at M2 to SAR at M1 = 63.2%

Maximum value of SAR (measured) = 0.573 W/kg



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Date: 11/25/2024

Test Laboratory: Audix SAR Lab

P4 802.11b CH7 2442MHz Bottom Main

DUT: 17Z90TL(INPAQ)

Communication System: UID 0, WIFI 2.4G 802.11B (0); Frequency: 2442 MHz; Duty Cycle:1:1

Medium parameters used: f = 2442 MHz; $\sigma = 1.759$ S/m; $\varepsilon_r = 39.93$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 SN3855; ConvF(7.15, 7.5, 7.88) @ 2442 MHz; Calibrated: 9/17/2024
- Sensor-Surface: 2mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1337; Calibrated: 3/15/2024
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1170
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (5x11x1): Measurement grid: dx=20mm, dy=20mm Maximum value of SAR (measured) = 0.153 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.620 V/m; Power Drift = 0.02 dB

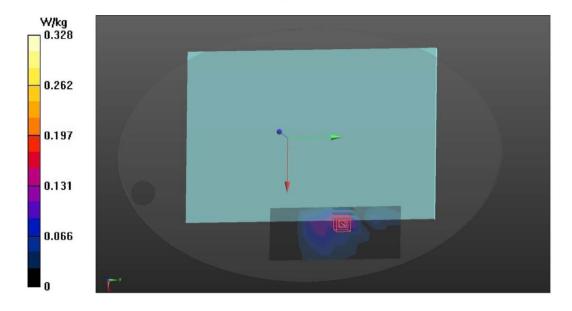
Peak SAR (extrapolated) = 0.559 W/kg

SAR(1 g) = 0.242 W/kg; SAR(10 g) = 0.092 W/kg

Smallest distance from peaks to all points 3 dB below = 6.4 mm

Ratio of SAR at M2 to SAR at M1 = 52%

Maximum value of SAR (measured) = 0.328 W/kg



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Date: 11/25/2024

Test Laboratory: Audix_SAR Lab

P5 GFSK CH78 2480MHz Screen

DUT: 17Z90TL(INPAQ)

Communication System: UID 0, BT (0); Frequency: 2480 MHz; Duty Cycle:1:1.3 Medium parameters used: f = 2480 MHz; $\sigma = 1.789 \text{ S/m}$; $\varepsilon_r = 39.899$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 SN3855; ConvF(7.15, 7.5, 7.88) @ 2480 MHz; Calibrated: 9/17/2024
- Sensor-Surface: 2mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1337; Calibrated: 3/15/2024
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1170
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (5x6x1): Measurement grid: dx=20mm, dy=20mm Maximum value of SAR (measured) = 0.209 W/kg

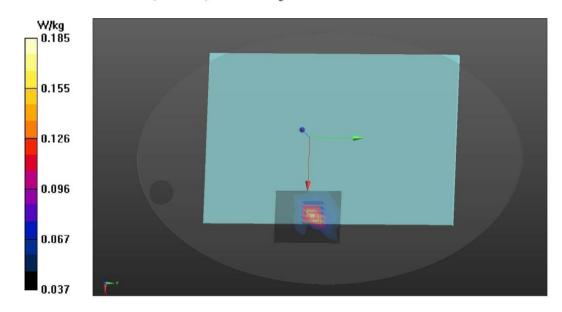
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 4.782 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.282 W/kg SAR(1 g) = 0.157 W/kg; SAR(10 g) = 0.090 W/kg

Smallest distance from peaks to all points 3 dB below = 8.6 mm

Ratio of SAR at M2 to SAR at M1 = 67.4%

Maximum value of SAR (measured) = 0.185 W/kg



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Date: 11/25/2024

Test Laboratory: Audix_SAR Lab

P6 GFSK CH78 2480MHz Bottom

DUT: 17Z90TL(INPAQ)

Communication System: UID 0, BT (0); Frequency: 2480 MHz;Duty Cycle:1:1.3 Medium parameters used: f = 2480 MHz; σ = 1.789 S/m; ϵ_r = 39.899; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 SN3855; ConvF(7.15, 7.5, 7.88) @ 2480 MHz; Calibrated: 9/17/2024
- Sensor-Surface: 2mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1337; Calibrated: 3/15/2024
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1170
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (5x6x1): Measurement grid: dx=20mm, dy=20mm Maximum value of SAR (measured) = 0.0568 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.1002 V/m; Power Drift = 0.24 dB

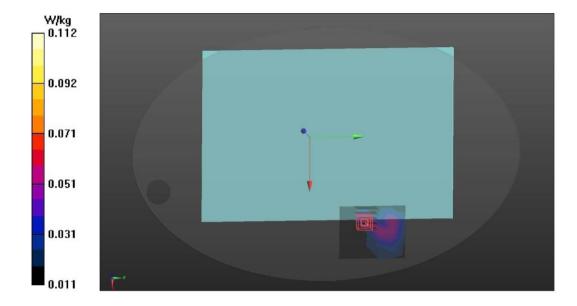
Peak SAR (extrapolated) = 0.165 W/kg

SAR(1 g) = 0.045 W/kg; SAR(10 g) = 0.016 W/kg

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

Ratio of SAR at M2 to SAR at M1 = 43.4%

Maximum value of SAR (measured) = 0.112 W/kg



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WiFi 5G

Date: 11/28/2024

Test Laboratory: Audix_SAR Lab

P11 802.11a CH157 5785MHz Screen Aux

DUT: 17Z90TL(INPAQ)

Communication System: UID 0, WIFI 5G 802.11a (0); Frequency: 5785 MHz;Duty Cycle:1:1 Medium parameters used: f = 5785 MHz; σ = 5.491 S/m; ϵ_r = 35.529; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 SN3855; ConvF(4.87, 5.11, 5.36) @ 5785 MHz; Calibrated: 9/17/2024
- Sensor-Surface: 2mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1337; Calibrated: 3/15/2024
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1170
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (9x11x1): Measurement grid: dx=10mm, dy=10mm Maximum value of SAR (measured) = 0.470 W/kg

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

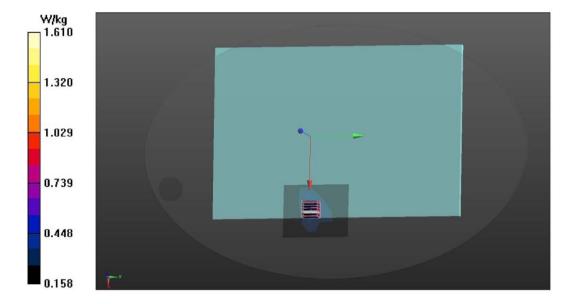
Reference Value = 5.590 V/m; Power Drift = 0.52 dB Peak SAR (extrapolated) = 3.51 W/kg

SAR(1 g) = 0.611 W/kg; SAR(10 g) = 0.273 W/kg

Smallest distance from peaks to all points 3 dB below = 6.4 mm

Ratio of SAR at M2 to SAR at M1 = 59.9%

Maximum value of SAR (measured) = 1.61 W/kg



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Date: 11/28/2024

Test Laboratory: Audix SAR Lab

P12 802.11a CH157 5785MHz Screen Main

DUT: 17Z90TL(INPAQ)

Communication System: UID 0, WIFI 5G 802.11a (0); Frequency: 5785 MHz;Duty Cycle:1:1 Medium parameters used: f = 5785 MHz; $\sigma = 5.491$ S/m; $\epsilon_r = 35.529$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 SN3855; ConvF(4.87, 5.11, 5.36) @ 5785 MHz; Calibrated: 9/17/2024
- Sensor-Surface: 2mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1337; Calibrated: 3/15/2024
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1170
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

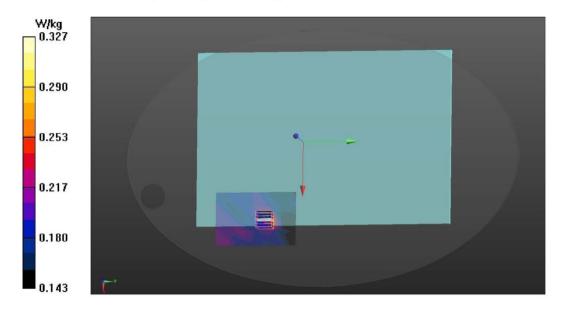
Area Scan (9x13x1): Measurement grid: dx=10mm, dy=10mm Maximum value of SAR (measured) = 0.333 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 5.588 V/m; Power Drift = -0.38 dB Peak SAR (extrapolated) = 1.08 W/kg

SAR(1 g) = 0.238 W/kg; SAR(10 g) = 0.184 W/kg

Smallest distance from peaks to all points 3 dB below = 18.9 mm Ratio of SAR at M2 to SAR at M1 = 69.8%

Maximum value of SAR (measured) = 0.327 W/kg



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Tel: +886 2 26099301

Fax: +886 2 26099303

Date: 11/25/2024

With LUXSHARE-ICT Antenna WiFi 2.4G/Bluetooth

Test Laboratory: Audix_SAR Lab

P1 802.11b CH7 2442MHz Screen Aux

DUT: 17Z90TL(LUXSHARE)

Communication System: UID 0, WIFI 2.4G 802.11B (0); Frequency: 2442 MHz; Duty Cycle:1:1

Medium parameters used: f = 2442 MHz; $\sigma = 1.759$ S/m; $\varepsilon_r = 39.93$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

Probe: EX3DV4 - SN3855; ConvF(7.15, 7.5, 7.88) @ 2442 MHz; Calibrated: 9/17/2024

• Sensor-Surface: 2mm (Mechanical Surface Detection), z = 1.0, 31.0

• Electronics: DAE4 Sn1337; Calibrated: 3/15/2024

• Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1170

• DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (5x6x1): Measurement grid: dx=20mm, dy=20mm Maximum value of SAR (measured) = 0.448 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.285 V/m; Power Drift = 0.20 dB

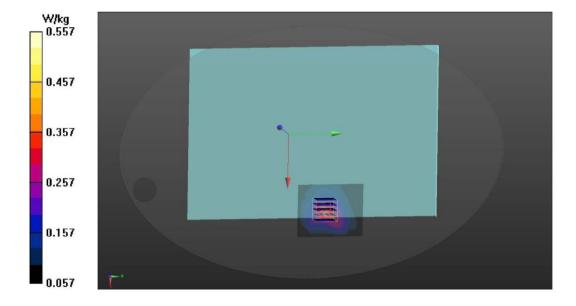
Peak SAR (extrapolated) = 0.660 W/kg

SAR(1 g) = 0.413 W/kg; SAR(10 g) = 0.238 W/kg

Smallest distance from peaks to all points 3 dB below = 11.2 mm

Ratio of SAR at M2 to SAR at M1 = 65.8%

Maximum value of SAR (measured) = 0.557 W/kg



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Date: 11/25/2024

Test Laboratory: Audix_SAR Lab

P2 802.11b CH7 2442MHz Screen Main

DUT: 17Z90TL(LUXSHARE)

Communication System: UID 0, WIFI 2.4G 802.11B (0); Frequency: 2442 MHz; Duty Cycle:1:1

Medium parameters used: f = 2442 MHz; $\sigma = 1.759$ S/m; $\varepsilon_r = 39.93$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 SN3855; ConvF(7.15, 7.5, 7.88) @ 2442 MHz; Calibrated: 9/17/2024
- Sensor-Surface: 2mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1337; Calibrated: 3/15/2024
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1170
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (5x7x1): Measurement grid: dx=20mm, dy=20mm Maximum value of SAR (measured) = 0.623 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.573 V/m; Power Drift = -0.05 dB

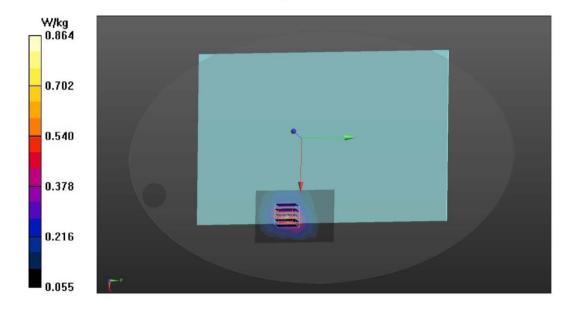
Peak SAR (extrapolated) = 1.10 W/kg

SAR(1 g) = 0.563 W/kg; SAR(10 g) = 0.306 W/kg

Smallest distance from peaks to all points 3 dB below = 9.6 mm

Ratio of SAR at M2 to SAR at M1 = 67.6%

Maximum value of SAR (measured) = 0.864 W/kg



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Date: 11/25/2024

Test Laboratory: Audix_SAR Lab

P5 GFSK CH78 2480MHz Screen

DUT: 17Z90TL(LUXSHARE)

Communication System: UID 0, BT (0); Frequency: 2480 MHz;Duty Cycle:1:1.3 Medium parameters used: f = 2480 MHz; σ = 1.789 S/m; ϵ_r = 39.899; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 SN3855; ConvF(7.15, 7.5, 7.88) @ 2480 MHz; Calibrated: 9/17/2024
- Sensor-Surface: 2mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1337; Calibrated: 3/15/2024
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1170
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (5x6x1): Measurement grid: dx=20mm, dy=20mm Maximum value of SAR (measured) = 0.152 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.259 V/m; Power Drift = -0.35 dB

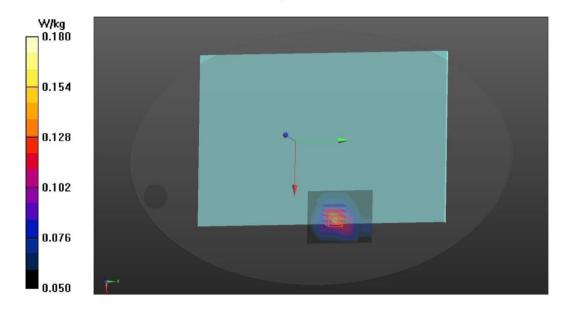
Peak SAR (extrapolated) = 0.206 W/kg

SAR(1 g) = 0.144 W/kg; SAR(10 g) = 0.098 W/kg

Smallest distance from peaks to all points 3 dB below = 12.8 mm

Ratio of SAR at M2 to SAR at M1 = 75.2%

Maximum value of SAR (measured) = 0.180 W/kg



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Date: 11/25/2024

Test Laboratory: Audix SAR Lab

P6 GFSK CH78 2480MHz Bottom

DUT: 17Z90TL(LUXSHARE)

Communication System: UID 0, BT (0); Frequency: 2480 MHz;Duty Cycle:1:1.3 Medium parameters used: f = 2480 MHz; σ = 1.789 S/m; ϵ_r = 39.899; ρ = 1000 kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 SN3855; ConvF(7.15, 7.5, 7.88) @ 2480 MHz; Calibrated: 9/17/2024
- Sensor-Surface: 2mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1337; Calibrated: 3/15/2024
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1170
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (6x8x1): Measurement grid: dx=20mm, dy=20mm Maximum value of SAR (measured) = 0.0762 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

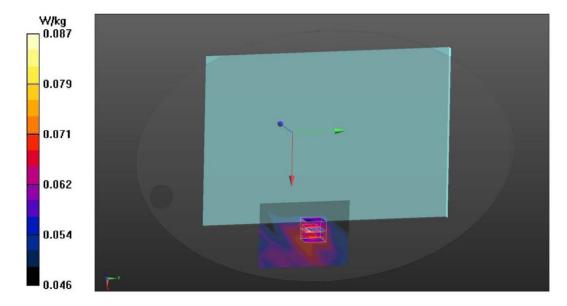
Reference Value = 4.991 V/m; Power Drift = -0.35 dB

Peak SAR (extrapolated) = 0.0910 W/kg

SAR(1 g) = 0.075 W/kg; SAR(10 g) = 0.066 W/kg

Smallest distance from peaks to all points 3 dB below: Larger than measurement grid Ratio of SAR at M2 to SAR at M1 = 83.1%

Maximum value of SAR (measured) = 0.0873 W/kg



file:///C:/Users/USER/Desktop/report%20data/P6%20GFSK%20CH78%202480MHz%20Bottom...

WiFi 5G

Date: 11/28/2024

Test Laboratory: Audix_SAR Lab

P11 802.11a CH157 5785MHz Screen Aux

DUT: 17Z90TL(LUXSHARE)

Communication System: UID 0, WIFI 5G 802.11a (0); Frequency: 5785 MHz;Duty Cycle:1:1 Medium parameters used: f = 5785 MHz; $\sigma = 5.491$ S/m; $\varepsilon_r = 35.529$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 SN3855; ConvF(4.87, 5.11, 5.36) @ 5785 MHz; Calibrated: 9/17/2024
- Sensor-Surface: 2mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1337; Calibrated: 3/15/2024
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1170
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Area Scan (9x11x1): Measurement grid: dx=10mm, dy=10mm Maximum value of SAR (measured) = 0.607 W/kg

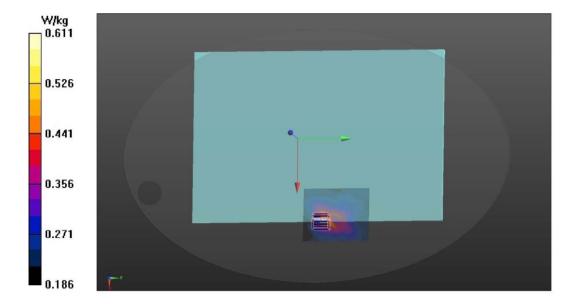
Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 6.590 V/m; Power Drift = -0.66 dB

Peak SAR (extrapolated) = 1.61 W/kg

SAR(1 g) = 0.443 W/kg; SAR(10 g) = 0.292 W/kg

Smallest distance from peaks to all points 3 dB below = 12.8 mm Ratio of SAR at M2 to SAR at M1 = 72.4%

Maximum value of SAR (measured) = 0.611 W/kg



file:///C:/Users/USER/Desktop/report%20data/P11%20802.11a%20CH157%205785MHz%20Scr...

Date: 11/28/2024

Test Laboratory: Audix_SAR Lab

P12 802.11a CH157 5785MHz Screen Main

DUT: 17Z90TL(LUXSHARE)

Communication System: UID 0, WIFI 5G 802.11a (0); Frequency: 5785 MHz;Duty Cycle:1:1 Medium parameters used: f = 5785 MHz; $\sigma = 5.491$ S/m; $\varepsilon_r = 35.529$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 SN3855; ConvF(4.87, 5.11, 5.36) @ 5785 MHz; Calibrated: 9/17/2024
- Sensor-Surface: 2mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1337; Calibrated: 3/15/2024
- Phantom: ELI V5.0 (20deg probe tilt); Type: QD OVA 002 AA; Serial: 1170
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

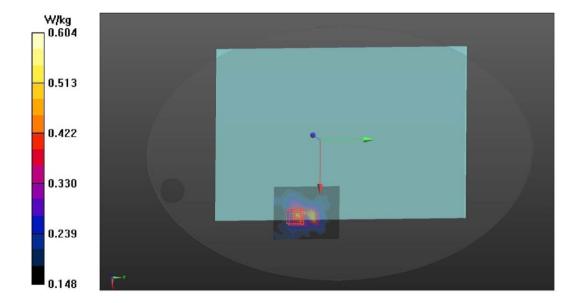
Area Scan (9x11x1): Measurement grid: dx=10mm, dy=10mm Maximum value of SAR (measured) = 0.523 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 5.536 V/m; Power Drift = -1.24 dB

Peak SAR (extrapolated) = 1.35 W/kg

SAR(1 g) = 0.407 W/kg; SAR(10 g) = 0.251 W/kg

Smallest distance from peaks to all points 3 dB below = 11.2 mm Ratio of SAR at M2 to SAR at M1 = 66.5% Maximum value of SAR (measured) = 0.604 W/kg



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APPENDIX B

TEST PHOTOGRAPHS

(Model: 17Z90TL)