

FCC SAR TEST REPORT

FCC ID : ACJ9TGW21B
Equipment : Radio Module
Brand Name : Panasonic
Model Name : WW21B
Applicant : Panasonic Corporation of North America
Two Riverfront Plaza, Newark, New Jersey,
07102-5490, USA
Standard : FCC 47 CFR Part 2 (2.1093)

The product was installed into Laptop (Brand Name: Panasonic, Model Name: FZ-40(mk3)) during evaluation.

We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample provide by manufacturer and the test data has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been pass the FCC requirement.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Laboratory, the test report shall not be reproduced except in full.



Approved by: Cona Huang / Deputy Manager



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History of this test report

Report No.	Version	Description	Issued Date
FA4D1251-02	01	Initial issue of report	Sep. 15, 2025



1. Equipment Under Test (EUT) Information

1.1 General Information

Product Feature & Specification	
Equipment Name	Radio Module
Brand Name	Panasonic
Model Name	WW21B
FCC ID	ACJ9TGW21B
Wireless Technology and Frequency Range	WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz
Mode	RMC 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+ (16QAM uplink) LTE: QPSK, 16QAM, 64QAM, 256QAM

Host Information	
Equipment Name	Laptop
Brand Name	Panasonic
Model Name	FZ-40(mk3)
Integrated WLAN Module	Brand Name: Panasonic Model Name: WL24A
Wireless Technology and Frequency Range	WLAN 2.4 GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2 GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.3 GHz Band: 5250 MHz ~ 5350 MHz WLAN 5.6 GHz Band: 5470 MHz ~ 5725 MHz WLAN 5.8 GHz Band: 5725 MHz ~ 5850 MHz WLAN 5.9 GHz Band: 5850 MHz ~ 5895 MHz WLAN 6GHz Band: 5925 MHz~6425 MHz, 6425 MHz~6525 MHz, 6525 MHz~6875 MHz, 6875 MHz~7125 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz RFID: 13.56 MHz
Mode	WLAN: 802.11a/b/g/n/ac/ax/be HT20/HT40/VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160/EHT20/EHT40/EHT80/EHT160/EHT320 Bluetooth BR/EDR/LE RFID: ASK
Remark: 1. The Panasonic WL24A WLAN/Bluetooth/RFID module is integrated into this host, WLAN/Bluetooth power and WLAN/Bluetooth/ RFID SAR testing data, which can be referred to Sporton FCC SAR Test Report, Report No.: FA4D1251-01 and these results are used simultaneous transmission analysis.	

Reviewed by: Jason Wang
Report Producer: Paula Chen

2. Guidance Applied

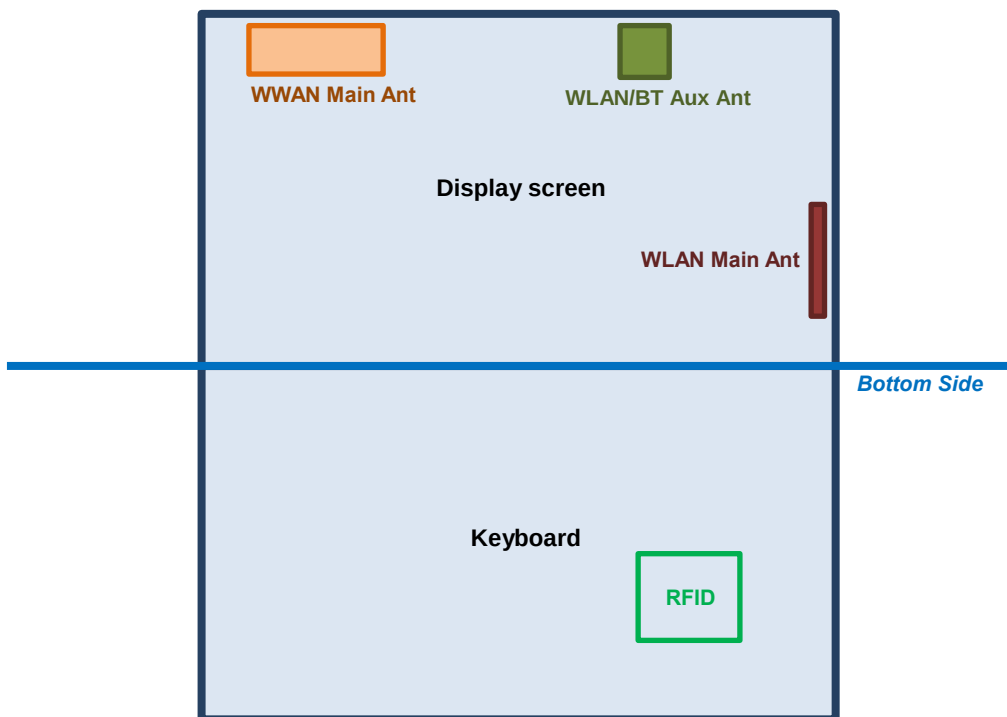
The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards, the below KDB standard may not including in the TAF code without accreditation.

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 616217 D04 SAR for laptop and tablets v01r02

3. Maximum Tune-up Limit (Unit: dBm)

Mode		Maximum Average power(dBm)
WCDMA	Band II	24.5
	Band IV	24.5
	Band V	24.5
LTE	Band 2	24
	Band 4	24
	Band 5	24
	Band 7	24.5
	Band 12	24
	Band 13	24
	Band 14	24
	Band 17	24
	Band 25	24
	Band 26	24
	Band 38	24
	Band 41	24.5
	Band 48	8.9
	Band 66	24
	Band 71	24

4. Antenna Location



The separation distance for antenna to edge :

Antenna	To Bottom Side (mm)
WWAN Main Antenna	276.8
WLAN Main Antenna	96.4
WLAN/BT Aux Antenna	276.8



5. SAR test exclusion table

General Note:

1. The below table, when the distance is < 50 mm exclusion threshold is "Ratio", when the distance is < 50 mm exclusion threshold is "mW"
2. Maximum power is the source-based time-average power and represents the maximum RF output power among production units
3. Per KDB 447498 D01v06, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
4. Per KDB 447498 D01v06, standalone SAR test exclusion threshold is applied; If the test separation distance is 5mm, 5mm is used to determine SAR exclusion threshold.
5. Per KDB 447498 D01v06, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:

$$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR}$$
 - f(GHz) is the RF channel transmit frequency in GHz
 - Power and distance are rounded to the nearest mW and mm before calculation
 - The result is rounded to one decimal place for comparison
6. Per KDB 447498 D01v06, at 100 MHz to 6 GHz and for *test separation distances* 50 mm, the SAR test exclusion threshold is determined according to the following
 - a) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm) · (f(MHz)/150)] mW, at 100 MHz to 1500 MHz
 - b) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm) · 10] mW at 1500 MHz and ≤ 6 GHz

Exposure Position	Wireless Interface	WCDMA Band V	WCDMA Band IV	WCDMA Band II	LTE Band 71	LTE Band 12/17	LTE Band 13	LTE Band 14	LTE Band 5	LTE Band 26	LTE Band 66/4	LTE Band 2	LTE Band 25	LTE Band 7	LTE Band 38	LTE Band 41	LTE Band 42	LTE Band 48
	Calculated Frequency (MHz)	846	1750	1907	695	715	784	795	848	848	1779	1909	1914	2567	2617	2687	3597	3697
	Maximum power (dBm)	24.5	24.5	24.5	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.5	24.0	24.5	8.0	8.9
	Maximum rated power(mW)	281.84	281.84	281.84	251.19	251.19	251.19	251.19	251.19	251.19	251.19	251.19	251.19	281.84	251.19	281.84	6.31	7.76
Bottom Side	Separation distance(mm)	276.8																
	exclusion threshold	1442.0	2381.0	2377.0	1231.0	1258.0	1355.0	1370.0	1445.0	1445.0	2380.0	2377.0	2376.0	2362.0	2361.0	2360.0	2347.0	2346.0
	Testing required?	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

6. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Body
1.	WWAN + 2.4GHz WLAN Main + 2.4GHz WLAN Aux + RFID	Yes
2.	WWAN +2.4GHz WLAN Main + Bluetooth Aux + RFID	Yes
3.	WWAN + 5/6GHz WLAN Main + 5/6GHz WLAN Aux + Bluetooth Aux + RFID	Yes

General Note:

- Per KDB 447498 D01v06 SAR test exclusion in section5, the WWAN standalone SAR testing is not required for this device, the estimated 1g SAR 0.4 W/kg is used for simultaneous transmission analysis when the separation distance is > 50mm.
- The device also supports inter-band UL CA, when the inter-band UL CA is active the max total power will not higher than standalone transmit power, therefore, the Sim-Tx analysis was selected highest standalone transmit antenna SAR to be evaluation.
- Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - Scalar SAR summation < 1.6W/kg.
 - $SPLSR = (SAR1 + SAR2)^{1.5} / (\text{min. separation distance, mm})$, and the peak separation distance is determined from the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
 - If $SPLSR \leq 0.04$, simultaneously transmission SAR measurement is not necessary.
 - Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.

6.1 Body Exposure Conditions

Exposure Position	1	3	4	5	6	7	8	9	1+3+4+8 Summed 1g SAR (W/kg)	1+3+7+8 Summed 1g SAR (W/kg)	1+5+6+7+8 Summed 1g SAR (W/kg)	1+3+4+9 Summed 1g SAR (W/kg)	1+3+7+9 Summed 1g SAR (W/kg)	1+5+6+7+9 Summed 1g SAR (W/kg)
	WWAN	2.4GHz WLAN Main	2.4GHz WLAN Aux	5/6GHz WLAN Main	5/6GHz WLAN Aux	BT Aux	RFID RI21A	RFID RI23A						
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)						
Bottom Side at 0mm	0.4	0.038	0.4	0.268	0.4	0.4	0.001	0.001	0.839	0.839	1.469	0.839	0.839	1.469

Test Engineer : John Fan

7. References

- [1] FCC 47 CFR Part 2 "Frequency Allocations and Radio Treaty Matters; General Rules and Regulations"
- [2] ANSI/IEEE Std. C95.1-1992, "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz", September 1992
- [3] IEEE Std. 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", Sep 2013
- [4] SPEAG DASY System Handbook
- [5] FCC KDB 447498 D01 v06, "Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies", Oct 2015
- [6] FCC KDB 616217 D04 v01r02, "SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers", Oct 2015
- [7] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.
- [8] FCC KDB 865664 D02 v01r02, "RF Exposure Compliance Reporting and Documentation Considerations" Oct 2015.