



RF EXPOSURE EVALUATION REPORT

FCC ID : ACJFZA3A20A
Equipment : Radio module
Brand Name : Panasonic
Model Name : WW18A
Marketing Name : WW18A
Applicant : Panasonic Corporation of North America
Two Riverfront Plaza, 9th Floor, Newark, NJ 07102-5490
Manufacturer : Panasonic Mobile Communications Co., Ltd.
600 Saedo-cho, Tsuzuki-ku, Yokohama City 224-8539, Japan
Standard : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part 2.1091 and it complies with applicable limit.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC evaluation.

Approved by: Cona Huang / Deputy Manager

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History of this test report

Report No.	Version	Description	Issued Date
FA992410-07	Rev. 01	Initial issue of report	Jun. 17, 2020

**1. Description of Equipment Under Test (EUT)**

Product Feature & Specification	
EUT Type	Radio module
Brand Name	Panasonic
Model Name	WW18A
FCC ID	ACJFZA3A20A
Wireless Technology and Frequency Range	WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 14: 790.5 MHz ~ 795.5 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 MHz
Mode	RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA LTE: QPSK, 16QAM, 64QAM
Remark: 1. When the external antenna is used for this device, the device will away human body 20cm above, the MPE calculation to show compliance.	

Host Information	
EUT Type	Tablet Computer
Brand Name	Panasonic
Model Name	FZ-A3
FCC ID	ACJFZA3A
Wireless Technology and Frequency Range	WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	WLAN: 802.11a/b/g/n/ac HT20 / HT40 / VHT20 / VHT40 / VHT80 Bluetooth BR/EDR/LE NFC:ASK

Reviewed by: Jason WangReport Producer: Wan Liu

2. Maximum RF average output power among production units

Mode		Maximum Average power(dBm)
WCDMA	Band II	24
	Band IV	24
	Band V	24
LTE	Band 2	24
	Band 4	24
	Band 5	24
	Band 7	23
	Band 12	24
	Band 13	24
	Band 14	24
	Band 26	24
	Band 41	23
	Band 66	24

Mode	Maximum Average power(dBm)
2.4GHz WLAN	18
5GHz WLAN	17
Bluetooth	7.7

3. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna

4. Radio Frequency Radiation Exposure Evaluation

4.1. Standalone Power Density Calculation

<WWAN radio module>

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)	Power Density / Limit
WCDMA Band 2	1852.4	4.10	24.00	28.100	0.646	645.654	0.129	1.000	0.129
WCDMA Band 4	1712.4	4.10	24.00	28.100	0.646	645.654	0.129	1.000	0.129
WCDMA Band 5	826.4	1.40	24.00	25.400	0.347	346.737	0.069	0.551	0.125
LTE Band 2	1850.7	4.10	24.00	28.100	0.646	645.654	0.129	1.000	0.129
LTE Band 4	1710.7	4.10	24.00	28.100	0.646	645.654	0.129	1.000	0.129
LTE Band 5	824.7	1.40	24.00	25.400	0.347	346.737	0.069	0.550	0.126
LTE Band 7	2502.5	4.10	23.00	27.100	0.513	512.861	0.102	1.000	0.102
LTE Band 12	699.7	1.40	24.00	25.400	0.347	346.737	0.069	0.466	0.148
LTE Band 13	779.5	1.40	24.00	25.400	0.347	346.737	0.069	0.520	0.133
LTE Band 14	790.5	1.40	24.00	25.400	0.347	346.737	0.069	0.527	0.131
LTE Band 26	814.7	1.40	24.00	25.400	0.347	346.737	0.069	0.543	0.127
LTE Band 41	2498.5	4.10	23.00	27.100	0.513	512.861	0.102	1.000	0.102
LTE Band 66	1710.7	4.10	24.00	28.100	0.646	645.654	0.129	1.000	0.129

<Host>

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)	Power Density / Limit
2.4GHz WLAN	2412.0	2.00	18.00	20.000	0.100	100.000	0.020	1.000	0.020
5GHz WLAN	5180.0	2.00	17.00	19.000	0.079	79.433	0.016	1.000	0.016
Bluetooth	2402.0	2.00	7.70	9.700	0.009	9.333	0.002	1.000	0.002

4.2. Collocated Power Density Calculation

WWAN Power Density / Limit	WLAN Power Density / Limit	Bluetooth Power Density / Limit	Σ (Power Density / Limit) of WWAN+WLAN+Bluetooth
0.148	0.020	0.002	0.170

1. The wwan module is also integrated into FCC ID: ACJFZA3A, report no: FA992410-04., evaluation simultaneous transmission to show compliance
2. Σ(Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for WWAN + WLAN + Bluetooth.
3. Considering the all the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of 3 collocated transmitters is compliant

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.