

EMF Test Report

Equipment : WiFi 6E mini PCIe module
Brand Name : AsiaRF Co., Ltd.
Model Name : AW7916-NPD, AW7916-AED
Applicant : AsiaRF Co., Ltd.
1F, 7, Houde Street, Yonghe Dist. New
Taipei City Taiwan 23455
Manufacturer : AsiaRF Co., Ltd.
1F, 7, Houde Street, Yonghe Dist. New
Taipei City Taiwan 23455
Standard : EN IEC 62311:2020 and EN 50665: 2017
EN 50385:2017

The product was received on Apr. 07, 2023, and testing was started from Jun. 01, 2023 and completed on Nov. 13, 2023. We, SPORTON INTERNATIONAL INC. Hsinhua Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in EN IEC 62311:2020 and EN 50665: 2017 and shown compliance with the applicable technical standards.

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



Approved by: Jordan Hsiao

SPORTON INTERNATIONAL INC. Hsinhua Laboratory

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PHOTOGRAPHS OF EUT v01

History of this test report

[illegible]

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
2	-	Exposure evaluation	PASS	-

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

None

Reviewed by: Barry Hsiao

Report Producer: Amber Chiu

1 General Description

1.1 EUT General Information

RF General Information			
Evaluation Mode	Frequency Range (MHz)	Operating Frequency (MHz)	Modulation Type
2.4GHz WLAN	2400-2483.5	2412-2472	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) VHT: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
5GHz WLAN	5150-5350 5725-5875	5180-5320 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
6GHz WLAN	5945-6425	5955-6415	802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)

1.1.1 Table for Multiple Listing

The model names in the following table are all refer to the identical product.

Model Name	Description
AW7916-NPD, AW7916-AED	AW7916-AED is M.2 AE key interface module and AW7619-NPD is Mini PCIe interface module.

1.1.2 Table for Permissive Change

This product is an extension of original one reported under Sporton project number: EA2D0804.

Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
1. Add Model Name. (AW7916-AED) 2. Photographs Of EUT was update.	N/A

1.2 Testing Location

Test Lab. : Sporton International Inc. Hsinhua Laboratory		
<input checked="" type="checkbox"/> Hsinhua (TAF: 3785)	ADD: No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)	
	TEL: 886-3-327-3456	FAX: 886-3-327-0973
<input type="checkbox"/> Wen 33rd.St. (TAF: 3785)	ADD: No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)	
	TEL: 886-3-318-0787	FAX: 886-3-318-0287

1.3 Evaluation Distance

Evaluation Distance
Evaluation distance 20cm as a distance between the equipment and the operator or user when it is used normally. The distance used for the assessment had be specified by the manufacturer and be consistent with the intended usage of the equipment.

1.4 Evaluation Method

Evaluation Method	
Far field region, For calculating the field in the far-field region the free space formula:	
$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d}$	Power Density: $Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$
E = Electric field (V/m)	P = RF output power (W)
G = EUT Antenna numeric gain (numeric)	d = Separation distance between radiator and human (m)
The formula can be changed to	
$Pd = \frac{30 \times P \times G}{377 \times d^2}$	
Co-transmitting Evaluation Method	
Conclusion:	
$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$	
CPD = Calculation power density	
LPD = Limit of power density	

1.5 Basic Restrictions

Restrictions on exposure to time-varying electric, magnetic, and electromagnetic fields which are based directly on established health effects and biological considerations are termed "basic restrictions". Depending upon the frequency of the field, the physical quantities used to specify these restrictions are specific absorption rate (SAR), and power density.

1.6 Reference Levels

Levels of field strength and currents that can be compared with corresponding measured or calculated values. The reference levels are derived from the basic restrictions using worst-case assumptions about exposure. If the reference levels are met, then the basic restrictions will be complied with, but if the reference levels are exceeded, it does not necessarily mean that the basic restrictions will not be met.

1.7 Compliance criteria

If the average power emitted by apparatus operating in the frequency range 10 MHz – 300 GHz is less than or equal to 20 mW then the apparatus is deemed to comply with the basic restrictions without testing. The evaluation of power is only valid if it is made with an uncertainty of less than 30 %.

2 Assessment Result

2.1 Reference Levels Limits

According to Council Recommendation 1999/519/EC Annex III

Reference levels limits for electric, magnetic and electromagnetic fields (0 Hz to 300 GHz)

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	Equivalent plane wave power density Seq (W/m ²)
0-1 Hz	-	3.2×10^4	4×10^4	-
1-8 Hz	10000	$3.2 \times 10^4 / f^2$	$4 \times 10^4 / f^2$	-
8-25 Hz	10000	$4000 / f$	$5000 / f$	-
0.025-0.8 kHz	$250 / f$	$4 / f$	$5 / f$	-
0.8-3 kHz	$250 / f$	5	6.25	-
3-150 kHz	87	5	6.25	-
0.15-1 MHz	87	$0.73 / f$	$0.92 / f$	-
1-10 MHz	$87 / f^{1/2}$	$0.73 / f$	$0.92 / f$	-
10-400 MHz	28	0.073	0.092	2
400-2000 MHz	$1.375 f^{1/2}$	$0.0037 f^{1/2}$	$0.0046 f^{1/2}$	$f / 200$
2-300 GHz	61	0.16	0.2	10

Multiple Transmitters Condition

Co-location as simultaneously transmitting (co-transmitting) and the evaluation shall be consider that simultaneous transmissions from co-located devices the individual transmitters are evaluated separately. After sum of the individual value (basic restriction / reference level) are measured/calculated also have to under basic restriction / reference level.

Co-transmitting mode: 2.4GHz WLAN+5GHz WLAN Mode, 2.4GHz WLAN + 6GHz WLAN Mode

2.2 Reference Levels Evaluation

WLAN 2.4GHz_Non-Beamforming

Mode	Gain (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (W/m ²)	S Limit (W/m ²)
2.4G;G1D	5.00	14.72	19.72	0.09376	20	0.18653	10.00000
2.4G;D1D	5.00	14.97	19.97	0.09931	20	0.19757	10.00000

WLAN 5GHz_Non-Beamforming

Mode	Gain (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (W/m ²)	S Limit (W/m ²)
5.2G;D1D	5.00	17.99	22.99	0.19907	20	0.39604	10.00000
5.8G;D1D	5.00	8.96	13.96	0.02489	20	0.04952	10.00000

WLAN 6GHz_Non-Beamforming

Mode	Gain (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (W/m ²)	S Limit (W/m ²)
6.2G;D1D	5.00	17.96	22.96	0.19770	20	0.39331	10.00000

WLAN 2.4GHz_Beamforming

Mode	Gain (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (W/m ²)	S Limit (W/m ²)
2.4G;D1D	8.01	11.93	19.94	0.09863	20	0.19622	10.00000

WLAN 5GHz_Beamforming

Mode	Gain (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (W/m ²)	S Limit (W/m ²)
5.2G;D1D	8.01	14.97	22.98	0.19861	20	0.39512	10.00000
5.8G;D1D	8.01	5.91	13.92	0.02466	20	0.04906	10.00000

WLAN 6GHz_Beamforming

Mode	Gain (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (W/m ²)	S Limit (W/m ²)
6.2G;D1D	8.01	14.89	22.90	0.19498	20	0.38790	10.00000

WLAN 2.4GHz+WLAN 5GHz Function:

Mode	Gain (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (W/m ²)	S Limit (W/m ²)	Ratio (S/Limit)
2.4G;D1D	5.00	14.97	19.97	0.09931	20	0.19757	10.00000	0.01976
5.2G;D1D	5.00	17.99	22.99	0.19907	20	0.39604	10.00000	0.03960
							Sum Ratio	0.05936
							Ratio Limit	1

WLAN 2.4GHz+WLAN 6GHz Function:

Mode	Gain (dBi)	Power (dBm)	EIRP (dBm)	EIRP (W)	Distance (cm)	S (W/m ²)	S Limit (W/m ²)	Ratio (S/Limit)
2.4G;D1D	5.00	14.97	19.97	0.09931	20	0.19757	10.00000	0.01976
6.2G;D1D	5.00	17.96	22.96	0.19770	20	0.39331	10.00000	0.03933
							Sum Ratio	0.05909
							Ratio Limit	1

————THE END————