



RADIO EXPOSURE TEST REPORT

FCC ID : VW3FAST5285
Equipment : Wireless Router
Brand Name : SAGEMCOM
Model Name : FAST5285
Applicant : SAGEMCOM BROADBAND SAS
250 Route de l'Empereur - 92848 RUEIL
MALMAISON CEDEX- FRANCE
Manufacturer : SAGEMCOM BROADBAND SAS
250 Route de l'Empereur - 92848 RUEIL
MALMAISON CEDEX- FRANCE
Standard : 47 CFR Part 2.1091

The product was received on Jun. 03, 2021, and testing was started from Jun. 07, 2021 and completed on Oct. 27, 2021. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in 47 CFR Part 2.1091 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. Hsinchu Laboratory, the test report shall not be reproduced except in full.

Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory

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Photographs of EUT v01



History of this test report

Report No.	Version	Description	Issued Date
FA061130-02	01	Initial issue of report	Jul. 14, 2021
FA061130-02	02	Re-evaluated the directional gain	Aug. 27, 2021
FA061130-02	03	Revised the Max Gain of 5GHz UNII 3, UNII 4 in section 1.2.	Oct. 27, 2021



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:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: **Sam Chen**

Report Producer: **Vicky Huang**



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	2412-2462	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850 5850-5895	5180-5240 5260-5320 5500-5720 5745-5825 5815-5885	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)

1.2 Antenna Information

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	1	GALTRONICS	02102140-07251-1	PCB Antenna	I-PEX	Note
2	2	GALTRONICS	02102140-07251-2	PCB Antenna	I-PEX	
3	3	GALTRONICS	02102140-07251-3	PCB Antenna	I-PEX	
4	4	GALTRONICS	02102140-07251-4	PCB Antenna	I-PEX	

Note:

Band	Max Gain (dBi)			
	Ant. 1	Ant. 2	Ant. 3	Ant. 4
2.4GHz	4.53	1.21	3.31	0.95
5GHz UNII 1, 2A, 2C	5.04	4.55	2.01	3.68
5GHz UNII 3	4.92	4.11	2.81	4.8
5GHz UNII 4	5.64	4.98	3.34	4.63

Band	Max DG (dBi)			
	4T1S	4T2S	4T3S	4T4S
2.4GHz	4.52	2.14	0.68	-0.58
5GHz UNII 1, 2A, 2C, 3	5.91	4.00	3.90	1.16



Band	Max DG (dBi)		
	4T1S	4T2S	4T4S
For 5GHz UNII 4 channel span UNII-3 and UNII 4 Bands	5.45	4.92	-0.31

Band	Max DG (dBi)		
	4T1S	4T2S	4T4S
5GHz UNII 4	5.89	5.64	0.35

Note: The above information was declared by manufacturer.

For 2.4GHz WLAN function

For IEEE 802.11n/ax mode (4TX, 4RX):

Port 1、Port 2、Port 3 and Port 4 can be used as transmitting/receiving antenna.

Port 1、Port 2、Port 3 and Port 4 could transmit/receive simultaneously.

For IEEE 802.11b/g mode (1TX/1RX, 4TX/4RX):

For 1TX/1RX:

Only Port 1 can be used as transmitting/receiving antenna.

For 4TX/4RX:

Port 1、Port 2、Port 3 and Port 4 can be used as transmitting/receiving antenna.

Port 1、Port 2、Port 3 and Port 4 could transmit/receive simultaneously.

For 5GHz WLAN function

For IEEE 802.11a/n/ac/ax mode (4TX, 4RX):

Port 1、Port 2、Port 3 and Port 4 can be used as transmitting/receiving antenna.

Port 1、Port 2、Port 3 and Port 4 could transmit/receive simultaneously.

1.3 Table for Class II Change

This product is an extension of original one reported under Sporton project number: FA061130-01

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

Modifications	Performance Checking
Adding 5850~5895MHz for the device.	Maximum Permissible Exposure.

Note: Maximum Permissible Exposure of 2.4GHz and 5GHz band 1~4 are based on original test report



1.4 Accessories

Accessories			
Equipment Name	Brand Name	Model Name	Rating
Adapter 1	DELTA	ADH-36EW B	Input: 100-125V~1.5A, 50-60Hz Output:12.0V, 3.0A
Adapter 2	NetBit	NBS36J120300VU	Input: 100-120V~, 50/60Hz, 1.0A Output:12.0V, 3.0A
Other			
RJ-45 Cable*1, non-shielded, 1.8m			

1.5 Testing Location

Testing Location Information	
Test Lab. : Sporton International Inc. Hsinchu Laboratory	
Hsinchu	ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)
(TAF: 3787)	TEL: 886-3-656-9065 FAX: 886-3-656-9085
Test site Designation No. TW3787 with FCC.	
Conformity Assessment Body Identifier (CABID) TW3787 with ISED.	



2 Maximum Permissible Exposure

2.1 Limit of Maximum Permissible Exposure

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
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

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
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

Note: f = frequency in MHz ; *Plane-wave equivalent power density

2.2 MPE Calculation Method

The MPE was calculated at 30 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric field (V/m)

P = RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$



2.3 Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
2.4G;G1D	4.53	29.96	34.49	0.50	34.99	3.15500	30	0.27896	1.00000
5.2G;D1D	5.91	29.95	35.86	0.13	35.99	3.97192	30	0.35119	1.00000
5.3G;D1D	5.91	23.92	29.83	0.16	29.99	0.99770	30	0.08822	1.00000
5.6G;D1D	5.91	23.96	29.87	0.12	29.99	0.99770	30	0.08822	1.00000
5.81G;D1D	5.45	29.92	35.37	0.50	35.87	3.86367	30	0.34162	1.00000
5.87G;D1D	5.64	30.32	35.96	0.03	35.99	3.97192	30	0.35119	1.00000

Simultaneous Transmission Analysis Mode: WLAN 2.4GHz+WLAN 5GHz

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
2.4G;G1D	4.53	29.96	34.49	0.50	34.99	3.15500	30	0.27896	1.00000	0.27896
5.87G;D1D	5.64	30.32	35.96	0.03	35.99	3.97192	30	0.35119	1.00000	0.35119
									Sum Ratio	0.63015
									Ratio Limit	1

Note: The above antenna gain was declared by manufacturer.

—————THE END—————