



RADIO EXPOSURE TEST REPORT

FCC ID : VW3FAST399
Equipment : Wireless Home Router
Brand Name : SAGEMCOM
Model Name : FAST 399
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 Jul. 02, 2021, and testing was started from Jul. 02, 2021 and completed on Oct. 20, 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

No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)



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Photographs of EUT v01



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: Viola 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) VHT: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
5GHz WLAN	5150-5250 5725-5850	5180-5240 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	5925-7125	5995-7095	802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)



1.2 Antenna Information

Ant.	Port			Brand	Model Name	Type	Connector	Gain (dBi)	Remark
	2.4GHz	5GHz	6GHz						
1	3	3	-	Galtronics	02102140-07501-1 DB1	PCB	I-Pex	Note1	WLAN 2.4G+ WLAN 5G U-NII 1, U-NII 2A,U-NII 2C, U-NII 3
2	2	2	-	Galtronics	02102140-07501-2 DB2	PCB	I-Pex		WLAN 2.4G+ WLAN 5G U-NII 1, U-NII 2A,U-NII 2C, U-NII 3
3	1	1	-	Galtronics	02102140-07501-3 DB3	PCB	I-Pex		WLAN 2.4G+ WLAN 5G U-NII 1, U-NII 2A,U-NII 2C, U-NII 3
4	-	4	-	Galtronics	02102142-07501 5G	PCB	I-Pex		WLAN 2.4G+ WLAN 5G U-NII 1, U-NII 2A,U-NII 2C, U-NII 3
5	-	-	1	Galtronics	02102475-07501B1 6G1 (HPOLOMNI)	PCB	I-Pex		WLAN 6G U-NII 5~8
6	-	-	2	Galtronics	02102475-07501B2 6G2 (HPOLOMNI)	PCB	I-Pex		WLAN 6G U-NII 5~8
7	-	-	3	Galtronics	02102475-07501A1 6G3	PCB	I-Pex		WLAN 6G U-NII 5~8
8	-	-	4	Galtronics	02102475-07501A2 6G4	PCB	I-Pex		WLAN 6G U-NII 5~8

Note1:

Ant.	Gain (dBi)								
	2.4GHz	5GHz U-NII 1	5GHz U-NII 2A	5GHz U-NII 2C	5GHz U-NII 3	6GHz U-NII 5	6GHz U-NII 6	6GHz U-NII 7	6GHz U-NII 8
1	2.09	1.76	2.15	2.23	2.97	-	-	-	-
2	2.6	2.28	2.63	2.67	2.83	-	-	-	-
3	4.02	1.42	1.4	1.84	2.02	-	-	-	-
4	-	4.5	5.57	4.43	3.11	-	-	-	-
5	-	-	-	-	-	2.99	1.45	1.77	2.2
6	-	-	-	-	-	2.38	3.49	3.74	2.76
7	-	-	-	-	-	3.66	1.86	2.74	3.85
8	-	-	-	-	-	3.84	4.81	3.52	4.82
Directional Gain (dBi) (3T1S)	4.42	-	-	-	-	-	-	-	-
Directional Gain (dBi) (4T1S)	-	5.03	5.88	5.41	4.22	4.27	5.04	3.8	5.37



Note2:The directional gain is measured which follows the procedure of KDB 662911 D03. The antenna report is provided in the operational description for this application.

For WLAN 2.4GHz function, 802.11 b/g/n/VHT/ax mode (3TX/3RX):

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

Port 1, Port 2 and Port 3 could transmit/receive simultaneously.

For WLAN 5GHz UNII 1, 3 function, 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.

For WLAN 6GHz UNII 5~8 function, 802.11ax 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 Accessories

Accessories			
Equipment Name	Brand Name	Model Name	Rating
Adapter	SAGEMCOM	ADS-36FLJ-12 12030EPCU-L	INPUT: 100-127V~50/60Hz, Max.0.9A OUTPUT: 12V, 2.5A

1.4 Table for Permissive Change

This product is an extension of original one reported under Sporton project number: FA170737

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

Modifications	Performance Checking
Adding UNII 5~UNII 8 for this device.	Maximum Permissible Exposure

Note: RF Exposure Evaluation of 5GHz UNII 1, UNII 3 and 2.4GHz Band are based on original test report

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 24 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d}$$

$$\text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

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	4.02	29.94	33.96	0.50	34.46	2.79254	24	0.38580	1.00000
5.2G;D1D	5.03	29.99	35.02	0.50	35.52	3.56451	24	0.49246	1.00000
5.8G;D1D	4.22	29.97	34.19	0.50	34.69	2.94442	24	0.40679	1.00000
6.2G;D1D	4.27	22.30	26.57	0.50	27.07	0.50933	24	0.07037	1.00000
6.4G;D1D	5.04	21.66	26.70	0.50	27.20	0.52481	24	0.07251	1.00000
6.7G;D1D	3.80	22.68	26.48	0.50	26.98	0.49888	24	0.06892	1.00000
7.0G;D1D	5.37	21.04	26.41	0.50	26.91	0.49091	24	0.06782	1.00000

Simultaneous Transmission Analysis Mode: WLAN 2.4GHz + WLAN 5GHz UNII 1, UNII 3 + WLAN 6GHz UNII 5~8

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	4.02	29.94	33.96	0.50	34.46	2.79254	24	0.38580	1.00000	0.38580
5.2G;D1D	5.03	29.99	35.02	0.50	35.52	3.56451	24	0.49246	1.00000	0.49246
6.4G;D1D	5.04	21.66	26.70	0.50	27.20	0.52481	24	0.07251	1.00000	0.07251
									Sum Ratio	0.95077
									Ratio Limit	1

Note: The above antenna gain was declared by manufacturer.

—————THE END—————