




# RADIO EXPOSURE TEST REPORT

FCC ID : VW3FAST3890  
Equipment : DOCSIS Wireless Router  
Brand Name : SAGEMCOM  
Model Name : F@ST 3890 V3 LLA  
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 Mar. 04, 2021, and testing was started from Mar. 04, 2021 and completed on Apr. 12, 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
FA130211-01	01	Initial issue of report	May 21, 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: **Sandy Chuang**



# 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)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	5180-5240 5260-5320 5500-5720 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)



### 1.2 Antenna Information

Ant.	2.4GHz Port	5GHz Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	1	4	UC3WFI0256A	UC3WFI0256A	Dipole Antenna	I-PEX	Note 1
2	2	3	UC3WFI0220A	UC3WFI0220A	Dipole Antenna	I-PEX	
3	3	2	UC3WFI0221A	UC3WFI0221A	Dipole Antenna	I-PEX	
4	4	1	UC3WFI0258A	UC3WFI0258A	Dipole Antenna	I-PEX	

Note 1:

Ant.	Gain (dBi)				
	2.4GHz	5GHz Band 1	5GHz Band 2	5GHz Band 3	5GHz Band 4
1	4.43	3.21	3.4	2.97	2.5
2	3.68	3.75	5.58	4.43	2.27
3	4.2	3.39	4.2	2.49	2.53
4	2.96	3.39	3.64	4.22	3.94
<b>Directional Gain (dBi) (4T1S)</b>	5.88	5.05	5.8	5.17	5.21

Note 2: The above information was declared by manufacturer.

**For 2.4GHz WLAN function**

**IEEE 802.11b/g/n/VHT 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 5GHz WLAN function**

**IEEE 802.11a/n/ac 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: FA130211.

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

Modifications	Performance Checking
Adding 5GHz band 2 and band 3 (5250~5350 MHz, 5470~5725 MHz) for this device.	Maximum Permissible Exposure Report

Note: Maximum Permissible Exposure of 2.4GHz Band and 5GHz Band 1/4 are based on original test report.

### 1.4 Accessories

Accessories			
Equipment Name	Brand Name	Model Name	Rating
Adapter	Sagemcom	NBS42E120350VU	INPUT: 100-240V ~ 50/60Hz, 1.0A OUTPUT: 12V, 3.5A

### 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 <sup>2</sup> )	Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes)
0.3-3.0	614	1.63	*(100)	<6
3.0-30	1842/f	4.89/f	*(900/f <sup>2</sup> )	<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 <sup>2</sup> )	Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	*(100)	<30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	<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 22 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 <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )
2.4G;D1D	4.43	29.95	34.38	0.50	34.88	3.07610	22	0.50575	1.00000
5.2G;D1D	3.75	29.90	33.65	0.50	34.15	2.60016	22	0.42750	1.00000
5.3G;D1D	5.58	23.97	29.55	0.44	29.99	0.99770	22	0.16404	1.00000
5.6G;D1D	4.43	23.96	28.39	0.50	28.89	0.77446	22	0.12733	1.00000
5.8G;D1D	3.94	26.26	30.20	0.50	30.70	1.17490	22	0.19317	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 <sup>2</sup> )	S Limit (mW/cm <sup>2</sup> )	Ratio (S/Limit)
2.4G;D1D	4.43	29.95	34.38	0.50	34.88	3.07610	22	0.50575	1.00000	0.50575
5.2G;D1D	3.75	29.90	33.65	0.50	34.15	2.60016	22	0.42750	1.00000	0.42750
									Sum Ratio	0.93325
									Ratio Limit	1

Note: The above antenna gain was declared by manufacturer.

————THE END————