

RF Exposure Report

Report No.: SA150420E01A

FCC ID: VW3FAST3486

Test Model: F@ST 3486

S/N: Test sample only

P/N: 253641590

Received Date: Aug. 03, 2016

Test Date: Aug. 08, 2016

Issued Date: Sep.01, 2016

Applicant: SAGEMCOM BROADBAND SAS

Address: 250 Route de l' Empereur - 92848 RUEIL MALMAISON CEDEX- FRANCE

Manufacturer: SAGEMCOM BROADBAND SAS

Address: 250 Route de l' Empereur - 92848 RUEIL MALMAISON CEDEX- FRANCE

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Hsin Chu Laboratory

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Table of Contents

Release Control Record	3
1 Certificate of Conformity	4
2 RF Exposure	5
2.1 Limits For Maximum Permissible Exposure (MPE)	5
2.2 MPE Calculation Formula	5
2.3 Classification	5
2.4 Antenna Gain	5
2.5 Calculation Result of Maximum Conducted Power	6

Release Control Record

Issue No.	Description	Date Issued
SA150420E01A	Original release.	Sep.01, 2016

1 Certificate of Conformity

Product: Cable Gateway

Brand: SAGEMCOM

Test Model: F@ST 3486

S/N: Test sample only

P/N: 253641590

Sample Status: ENGINEERING SAMPLE

Applicant: SAGEMCOM BROADBAND SAS

Test Date: Aug. 08, 2016

Standards: FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by :



Date:

Sep.01, 2016

Wendy Wu / Specialist

Approved by :



Date:

Sep.01, 2016

May Chen / Manager

2 RF Exposure

2.1 Limits For Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
300-1500	F/1500	30
1500-100,000	1.0	30

F = Frequency in MHz

2.2 MPE Calculation Formula

$$P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$$

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

2.3 Classification

The antenna of this product, under normal use condition, is at least 27cm away from the body of the user.

So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

2.4GHz Band								
Antenna No.	PCB Chain No.	Brand	Model	Ant. Gain(dBi) <Including cable loss>	Frequency range (GHz to GHz)	Antenna Type	Connector Type	Cable Length (mm)
E	0	wanshih	NA	2.0979	2.4~2.4835	PIFA	None (like solder)	NA
B	1	wanshih	NA	2.9762	2.4~2.4835	PCB	i-pex(MHF)	160
F	2	wanshih	NA	2.51	2.4~2.4835	PIFA	None (like solder)	NA
5GHz Band								
Antenna No.	PCB Chain No.	Brand	Model	Ant. Gain(dBi) <Including cable loss>	Frequency range (GHz to GHz)	Antenna Type	Connector Type	Cable Length (mm)
C	0	wanshih	NA	3.81	5.15~5.85	PIFA	None (like solder)	NA
D	1	wanshih	NA	3.92	5.15~5.85	PIFA	None (like solder)	NA
A	2	wanshih	NA	3.8509	5.15~5.85	PCB	i-pex(MHF)	75

2.5 Calculation Result of Maximum Conducted Power

For 2.4GHz and 5GHz (U-NII-1 band) data was copied from the original test report (Report No.: SA150420E01)

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2412-2462	387.091	7.31	27	0.22744	1
5180-5240	528.52	8.63	27	0.42085	1
5745-5825	509.491	8.63	27	0.40569	1

NOTE:

2.4GHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 7.31\text{dBi}$.

5GHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 8.63\text{dBi}$.

Conclusion:

The formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4GHz + WLAN 5GHz = $0.22744 / 1 + 0.42085 / 1 = 0.64829$

Therefore the maximum calculations of above situations are less than the "1" limit.

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