RF Exposure Report

Report No.: SA150420E01

FCC ID: VW3FAST3486

Test Model: F@ST 3486

S/N: Test sample only

P/N: 253641590

Received Date: Apr. 20, 2015

Test Date: Apr. 22, 2015

Issued Date: May 18, 2015

Applicant: SAGEMCOM SAS

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

Manufacturer: SAGEMCOM 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

Lab Address: No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

Test Location (1): No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

Test Location (2): No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

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Release Control Record

Issue No.	Description	Date Issued
SA150420E01	Original release.	May 18, 2015

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 SAS
Test Date:	Apr. 22, 2015
Standards:	FCC Part 2 (Section 2.1091)
	KDB 447498 D03
	IEEE C95.1
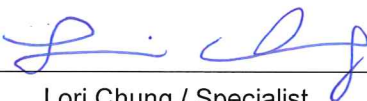
The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : _____ , **Date:** _____ May 18, 2015 _____
Lori Chung / Specialist

Approved by : _____ , **Date:** _____ May 18, 2015 _____
May Chen / Manager

2 RF Exposure

2.1 Limits for Maximum Permissible Exposure (MPE)

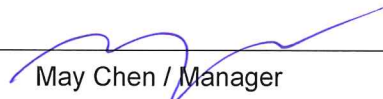| Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
300-1500	…	…	F/1500	30
1500-100,000	…	…	1.0	30

F = Frequency in MHz

2.2 MPE Calculation Formula

$$Pd = (Pout*G) / (4*pi*r^2)$$

where

Pd = power density in mW/cm^2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 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

The antennas provided to the EUT, please refer to the following table:

2.4GHz Band								
Antenna No.	PCB Chain No.	Brand	Model	Ant. Gain(dBi) <Including cable loss>	Frequency range (GHz to GHz)	Antenna Type	Connecter 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	Connecter 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

3 Calculation Result of Maximum Conducted Power

CDD Mode:

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	862.64	8.63	27	0.68690	1
5745-5825	528.52	8.63	27	0.42085	1

Note:

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

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

Beamforming Mode:

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
5180-5240	134.999	8.63	27	0.10750	1
5745-5825	396.664	8.63	27	0.31585	1

Note:

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

CONCLUSION:

Both of the 2.4GHz and 5GHz can transmit simultaneously, the formula of calculated the MPE is:

CPD_1 / LPD_1 + CPD_2 / LPD_2 + ……etc. < 1

CPD = Calculation power density

LPD = Limit of power density

Therefore, the worst-case situation is 0.22744 / 1 + 0.68690 / 1 = 0.914, which is less than "1".

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