

RF Exposure Report

Report No.: SA181219E02

FCC ID: I88EMG3435Q20B

Test Model: EMG3435-Q20A

Series Model: SoMA5200

Received Date: Dec. 19, 2018

Test Date: Jan. 22, 2019

Issued Date: Mar. 12, 2019

Applicant: Zyxel Communications Corporation

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

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**FCC Registration /
Designation Number:** 723255 / TW2022

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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	6
2.5 Calculation Result of Maximum Conducted Power	7

Release Control Record

Issue No.	Description	Date Issued
SA181219E02	Original release.	Mar. 12, 2019

1 Certificate of Conformity

Product: Dual-Band Wireless AC2600 Gigabit Ethernet Gateway

Brand: ZYXEL

Test Model: EMG3435-Q20A

Series Model: SoMA5200

Sample Status: ENGINEERING SAMPLE

Applicant: Zyxel Communications Corporation

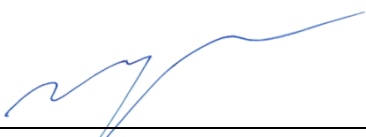
Test Date: Jan. 22, 2019

Standards: FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

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:** Mar. 12, 2019
Claire Kuan / Specialist

Approved by :  , **Date:** Mar. 12, 2019
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				
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

f = Frequency in MHz ; *Plane-wave equivalent power density

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 41cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

Antenna No.	Chain No.	Brand	Model	Antenna Net Gain (dBi)	Frequency range (GHz)	Antenna type	Connector Type						
1	Chain 0	WHA YU	C107-511211-A	3.5	2.4~2.4835	Dipole	N type						
	Chain 3			6.0	5.15~5.25								
				5.3	5.725~5.85								
2	Chain 1	WHA YU	C107-511211-A	3.5	2.4~2.4835			Dipole	N type				
	Chain 2			6.0	5.15~5.25								
				5.3	5.725~5.85								
3	Chain 2	WHA YU	C107-511211-A	3.5	2.4~2.4835					Dipole	N type		
	Chain 1			6.0	5.15~5.25								
				5.3	5.725~5.85								
4	Chain 3	WHA YU	C107-511211-A	3.5	2.4~2.4835							Dipole	N type
	Chain 0			6.0	5.15~5.25								
				5.3	5.725~5.85								

2.5 Calculation Result of Maximum Conducted Power

Operation Mode	Evaluation Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
WLAN 2.4GHz	2437	628.549	9.52	41	0.26642	1
WLAN 5GHz (U-NII-1)	5240	244.893	12.02	41	0.18459	1
WLAN 5GHz (U-NII-3)	5785	985.078	11.32	41	0.63196	1

Note:

2.4GHz: Directional gain = 3.5dBi + 10log(4) = 9.52dBi

5GHz(U-NII-1): Directional gain = 6.0dBi + 10log(4) = 12.02dBi

5GHz(U-NII-3): Directional gain = 5.3dBi + 10log(4) = 11.32dBi

Conclusion:

The formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 +etc. < 1

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4GHz + WLAN 5GHz = 0.26642 / 1 + 0.63196 / 1 = 0.89838

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

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