RF Exposure Report

Report No.: SA180816E04

FCC ID: TX2-RTL8822CE

Test Model: RTL8822CE

Received Date: Aug. 16, 2018

Test Date: Oct. 20 to 22, 2018

Issued Date: Oct. 25, 2018

Applicant: Realtek Semiconductor Corp.

Address: No. 2, Innovation Road II, Hsinchu Science Park, Hsinchu 300, Taiwan

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

Lab Address: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.

Test Location : E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.

FCC Registration / Designation Number: 723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
SA180816E04	Original release.	Oct. 25, 2018

1   Certificate of Conformity

Product: 802.11a/b/g/n/ac RTL8822CE Combo module

Brand: Realtek

Test Model: RTL8822CE

Sample Status: ENGINEERING SAMPLE

Applicant: Realtek Semiconductor Corp.

Test Date: Oct. 20 to 22, 2018

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:** _____Oct. 25, 2018_____

Wendy Wu / Specialist

Approved by : _____ , **Date:** _____Oct. 25, 2018_____

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

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 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

Antenna No.	CON No.	Brand	Model	Ant. Net Gain (dBi)	Frequency range (GHz)	Antenna Type	Connecter Type
1	CON1 CON2 CON3 (only for SKU A,B)	LYNwave	ALA110-222050-300011	3.5	2.4~2.4835	PIFA	i-pex(MHF)
				5	5.15~5.85	PIFA	i-pex(MHF)
2	CON1 CON2 CON3 (only for SKU A,B)	PSA	RFDPA171320E MLB301	3.14	2.4~2.4835	Dipole	i-pex(MHF)
				5	5.15~5.85	Dipole	i-pex(MHF)

2.5   Calculation Result of Maximum Conducted Power

Operation Mode	Evaluation Frequency (MHz)	Max. Average Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
WLAN 2.4GHz	2437	259.739	6.51	20	0.23135	1
WLAN UNII-1	5230	203.495	8.01	20	0.25603	1
WLAN UNII-2A	5270	207.037	8.01	20	0.26048	1
WLAN UNII-2C	5550	217.036	8.01	20	0.27306	1
WLAN UNII-3	5745	307.991	8.01	20	0.38750	1
Bluetooth (BT-EDR)	2402	19.231	3.5	20	0.00857	1
Bluetooth (BT-LE)	2404	14.555	3.5	20	0.00648	1

NOTE:

2.4GHz: Directional gain = 3.5dBi + 10log(2) = 6.51dB

5GHz: Directional gain = 5dBi + 10log(2) = 8.01dB

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 + Bluetooth = 0.23135 / 1 + 0.00857 / 1 = 0.23992

WLAN 5GHz + Bluetooth = 0.38750 / 1 + 0.00857 / 1 = 0.39607

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

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