

MPE Report

Test Report Number	GLS-21120342-LC-FCC-MPE
FCC ID	MG3-59007000006
Applicant	Universal Electronic Inc.
Applicant Address	201 East Sandpointe Ave., 7th Floor, Santa Ana, CA 92707
Product Name	UE61 Module
Model (s)	UE61S
Date of Receipt	05/25/2022
Date of Test	05/27/2022- 06/10/2022
Report Issue Date	06/10/2022
Test Standards	47 CFR §1.1307(b), 47 CFR §1.1310 RSS-102 Issue 5: Feb 2021
Test Result	PASS
	<p>Issued by:</p> <p>Vista Compliance Laboratories 1261 Puerta Del Sol, San Clemente, CA 92673 USA www.vista-compliance.com</p>
 <hr/> <p>Devin Tai (Test Engineer)</p>	 <hr/> <p>David Zhang (Technical Manager)</p>
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REVISION HISTORY

Report Number	Version	Description	Issued Date
GLS-21120342-LC-FCC-MPE	01	Initial report	06/10/2022

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1 General Information

1.1 Applicant

Applicant	UNIVERSAL ELECTRONICS INC
Applicant address	201 E. Sandpointe Ave., 7th Floor Santa Ana CA 92707
Manufacturer	UNIVERSAL ELECTRONICS INC
Manufacturer Address	201 E. Sandpointe Ave., 7th Floor Santa Ana CA 92707

1.2 Product information

Product Name	UE61 Module
Product Description	UE61S
Model Number	N/A
Family Models	N/A
Serial Number	N/A
Frequency Band	BLE: 2402-2480MHz WLAN: 2412-2462MHz
Type of modulation	BLE: GFSK WLAN_2.4G: CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Equipment Class	DTS
Antenna Information	PCB Antenna Antenna Gain: 1.5dBi ±0.5dB
Clock Frequencies	N/A
Input Power	DC 3.3V
Power Adapter Manufacturer/Model	N/A
Power Adapter SN	N/A
Hardware version	N/A
Software version	N/A
Simultaneous Transmission	BLE and WLAN cannot transmit simultaneously
Additional Info	N/A

1.3 Test standard and method

Test standard	47 CFR §1.1307(b), 47 CFR §1.1310 47 CFR §2.1093
Test method	47 CFR §1.1307(b), 47 CFR §1.1310 47 CFR §2.1093

2 Test Site Information

Lab performing tests	Vista Laboratories, Inc.
Lab Address	1261 Puerta Del Sol, San Clemente, CA 92673 USA
Phone Number	+1 (949) 393-1123
Website	www.vista-compliance.com

Test Condition	Temperature	Humidity	Atmospheric Pressure
RF Testing	23.2°C	57.5%	996 mbar
Radiated Emission Testing	23.2°C	57.5%	996 mbar

3 RF Exposure

3.1 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

3.2 MPE Calculation Formula

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

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

3.3 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.

3.4 Antenna Gain

The antenna type is PCB trace antenna with 1.5 ± 0.5 dBi gain.

4 Test Results

Mode	Max Power (dBm)	Max Power (mW)	Turn-Up Tolerance	Max Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
BLE	5.475	3.53	±1dB	2.0	20	0.0014	1
WLAN	18.46	70.15	±1dB	2.0	20	0.0278	1

Conclusion:

The worst-case ratio = 0.0278 < 1

The above results show that the device complies with the MPE requirement.

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