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RF Exposure Evaluation Report

Report No.:	CQASZ20241202517E-04
Applicant:	Ultimea Technology (Shenzhen) Limited
Address of Applicant:	20th Floor, Building 4, Tianan Cloud Park, Bantian St., Longgang District, Shenzhen, China
Equipment Under Test (EUT):	
EUT Name:	Soundbar
Model No.:	U2620, U2622, U2623, U2624
Test Model No.:	U2620
Brand Name:	ULTIMEA
FCC ID:	2A900-U2620S1
Standards:	47 CFR Part 1.1307 47 CFR Part 1.1310 447498 D04 Interim General RF Exposure Guidance v01
Date of Receipt:	2024-12-2
Date of Test:	2024-12-2 to 2024-12-16
Date of Issue:	2024-12-31
Test Result:	**PASS***

***In the configuration tested, the EUT complied with the standards specified above**

Tested By: lewis zhou
(Lewis Zhou)

Reviewed By: Timo Lei
(Timo Lei)

Approved By: Jack Ai
(Jack Ai)

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20241202517E-04	Rev.01	Initial report	2024-12-31

2 Contents

3 General Information

3.1 Client Information

Applicant:	Ultimea Technology (Shenzhen) Limited
Address of Applicant:	20th Floor, Building 4, Tianan Cloud Park, Bantian St., Longgang District, Shenzhen, China
Manufacturer:	Ultimea Technology (Shenzhen) Limited
Address of Manufacturer:	20th Floor, Building 4, Tianan Cloud Park, Bantian St., Longgang District, Shenzhen, China

3.2 General Description of EUT

Product Name:	Soundbar
Model No.:	U2620, U2622, U2623, U2624
Test Model No.:	U2620
Trade Mark:	ULTIMEA
Software Version:	NA
Hardware Version:	PD220-MF
Power Supply:	Power supply DC18V form adapter
	Model No.:FX48U-180300C Input:100-240V~50/60Hz 1A Max Output:18V 3A

3.3 General Description of BT Classic

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	Bluetooth Spec 5.3
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, π/4DQPSK, 8DPSK
Number of Channel:	79
Transfer Rate:	1Mbps/2Mbps/3Mbps
Hopping Channel Type:	Adaptive Frequency Hopping systems
Sample Type:	☒ Mobile ☐ Portable ☐ Fix Location
Antenna Type:	PCB antenna
Antenna Gain:	1.65dBi
Cable loss:	1.0 dB

3.4 General Description of BLE

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	Bluetooth Spec 5.3
Modulation Type:	GFSK
Number of Channel:	40
Transfer Rate:	1Mbps/2Mbps
Sample Type:	☒ Mobile ☐ Portable ☐ Fix Location

Antenna Type:	PCB antenna
Antenna Gain:	1.65dBi
Cable loss:	1.0 dB

3.5 General Description of 5.8G custom

Operation Frequency:	5735MHz~5840MHz
Modulation Type:	GFSK
Number of Channel:	3
Sample Type:	☒ Mobile ☐ Portable ☐ Fix Location
Antenna Type:	PCB antenna
Antenna Gain:	ANT1:2.79dBi ANT2:2.79dBi
Cable loss:	1.0 dB

Note：

The above parameters will directly affect the test results. The information is provided by the applicant.

4 MPE Evaluation

4.1 RF Exposure Compliance Requirement

4.1.1 Limits

The table applies to any RF source (i.e., single fixed, mobile, and portable transmitters) and specifies power and distance criteria for each of the five frequency ranges used for the MPE limits. These criteria apply at separation distances from any part of the radiating structure of at least $\lambda/2\pi$. The thresholds are based on the general population MPE limits with a single perfect reflection, outside of the reactive near-field, and in the main beam of the radiator.For mobile devices that are not exempt per Table B.1 [Table 1 of § 1.1307(b)(1)(i)(C)] at distances from 20 cm to 40 cm and in 0.3 GHz to 6 GHz, evaluation of compliance with the exposure limits in § 1.1310 is necessary if the ERP of the device is greater than ERP20cm inFormula (B.1) [repeated from § 2.1091(c)(1) and § 1.1307(b)(1)(i)(B)].

$$P_{\text{th}}\,(\text{mW}) = ERP_{20\,\text{cm}}\,(\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

If the ERP is not easily obtained, then the available maximum time-averaged power may be used (i.e., without consideration of ERP only if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave Dipole.
SAR-based exemptions are constant at separation distances between 20 cm and 40 cm to avoid discontinuities in the threshold when transitioning between SAR-based and MPE-based exemption criteria at 40 cm, considering the importance of reflections.

4.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

4.1.3 EUT RF Exposure

1) For BT Classic

Output Power Into Antenna & RF Exposure Evaluation Distance:

Measurement Data

GFSK mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2402MHz)	2.85	0.7	0.5±1	1.5	1.413
Middle(2441MHz)	1.96	-0.19	0±1	1.0	1.259
Highest(2480MHz)	2.47	0.32	0.5±1	1.5	1.413
π/4DQPSK mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2402MHz)	2.79	0.64	0.5±1	1.5	1.413
Middle(2441MHz)	1.98	-0.17	0±1	1.0	1.259
Highest(2480MHz)	2.51	0.36	0.5±1	1.5	1.413
8DPSK mode					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2402MHz)	2.83	0.68	0.5±1	1.5	1.413
Middle(2441MHz)	1.9	-0.25	0±1	1.0	1.259
Highest(2480MHz)	2.53	0.38	0.5±1	1.5	1.413

The ERP of this product is less than 3060mW

Note: 1) Refer to report No. CQASZ20241202517E-01 for EUT test Max Conducted Peak Output Power value.

2) EUT's module is more than 20cm away from the human body.

2) For BLE

Output Power Into Antenna & RF Exposure Evaluation Distance:

Measurement Data

GFSK mode(1Mbps)					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2402MHz)	2.81	0.66	0.5±1	1.5	1.413
Middle(2440MHz)	1.77	-0.38	0±1	1.0	1.259
Highest(2480MHz)	2.69	0.54	0.5±1	1.5	1.413
GFSK mode(2Mbps)					
Test channel	EIRP (dBm)	ERP (dBm)	Tune up tolerance (dBm)	Maximum tune-up Power	
				(dBm)	(mW)
Lowest(2402MHz)	2.67	0.52	0.5±1	1.5	1.413
Middle(2440MHz)	1.74	-0.41	-0.5±1	0.5	1.122
Highest(2480MHz)	2.38	0.23	0±1	1.0	1.259

The ERP of this product is less than 3060mW

Note: 1) Refer to report No. CQASZ20241202517E-02 for EUT test Max Conducted Peak Output Power value.

2) EUT's module is more than 20cm away from the human body.

3) For 5.8G custom

$$\mathrm{EIRP} = E_{\mathrm{Meas}} + 20\log\left(d_{\mathrm{Meas}}\right) - 104.7$$

where

EIRP	is the equivalent isotropically radiated power, in dBm
E_{Meas}	is the field strength of the emission at the measurement distance, in dBμV/m
d_{Meas}	is the measurement distance, in m

Channel	EIRP (dBm)	ERP (dBm)	Maximum tune-up Power (mW)	Exclusion threshold (mW)
Lowest (5735MHz)	-0.12	-2.27	0.59	3060
Middle (5785MHz)	-2.69	-4.84	0.33	
Highest (5840MHz)	0.35	-1.80	0.66	

Remark: The Max Peak Output Power data refer to report Report No.:CQASZ20241202517E-03.

BT+BLE+5.8GWIFI=5.01/3060+5.01/3060+0.53/3060=0.003≤1

*** END OF REPORT ***