

SAR Report

Applicant : LEXON
Product Type : POWERSOUND
Trade Name : LEXON
Model Number : LA128
Applicable Standard : IEEE Std.C95.3
47 CFR § 2.1091 / 47 CFR § 1.1310
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Issued by

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Taiwan Accreditation Foundation accreditation number: 1330
Test Firm MRA designation number: TW0010

Note:

- 1.The test results are valid only for samples provided by customers and under the test conditions described in this report.
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- 3.The relevant information is provided by customers in this test report. According to the correctness, appropriateness or completeness of the information provided by the customer, if there is any doubt or error in the information which affects the validity of the test results, the laboratory does not take the responsibility.



Revision History

Rev.	Issued Date	Revisions	Revised By
00	Jan. 29, 2021	Initial Issue	Nicole Chu



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1. Reference Applicable Standard

Standard	Description	Version
ANSI/IEEE C95.3	IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz–300 GHz	2002
47 CFR Part §2.1091	Radiofrequency radiation exposure evaluation: mobile devices.	-
47 CFR Part §1.1310	Radiofrequency radiation exposure limits.	-
FCC KDB 865664 D01	SAR measurement 100 MHz to 6 GHz - describes SAR measurement procedures for devices operating between 100 MHz to 6 GHz	v01r04
FCC KDB 865664 D02	RF Exposure Reporting - provides general reporting requirements as well as certain specific information required to support MPE and SAR compliance.	v01r02
FCC KDB 447498 D01	General RF Exposure Guidance - provides guidance pertaining to RF exposure requirements for mobile and portable device equipment authorizations.	v06



2. Description of Equipment under Test (EUT)

Applicant	LEXON 125 avenue des Champs Elysées 75008 Paris France			
Manufacturer	LEXON 125 avenue des Champs Elysées 75008 Paris France			
Product Type	POWERSOUND			
Trade Name	LEXON			
Model Number	LA128			
FCC ID	2ARD3-LA128			
Frequency Range	Operate Band			Frequency Range (MHz)
	Bluetooth BR/EDR			2402 - 2480
	Bluetooth LE			2402 - 2480
Antenna Information	Model	Type	Max. Gain (dBi)	
	2.4G ANT	Inverted F Antenna	Bluetooth	-0.58
Antenna Delivery	1TX			
RF Evaluation	0.0002 mW/cm ²			
Operate Temp. Range	0 ~ +40°C			

The above equipment was tested by A Test Lab Techno Corp. For compliance with the requirements set forth in 47 CFR § 2.1091 / 47 CFR § 1.1310. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.



3. Human Exposure Assessment

Due to the design and installation of this product, it is not possible to conduct SAR evaluation. This is because client either manufactures or supplies the antenna(s) that will be used in the installation of this product. Therefore, this product will be evaluated as a mobile device per 47 CFR § 1.1310 titled "Radiofrequency radiation exposure limits", generally referred to as MPE limits.

In 47 CFR § 2.1091, paragraph (b) defines a mobile device as "a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 cm is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. " This product is intended to be installed into a vehicle such that the unit is physically secured at one location. In the installation guide supplied with the product,

Client has made the following statement: "IMPORTANT: To meet the FCC's RF Exposure Guidelines, the antenna should be installed so there is at least 20 cm of separation between the body of the user and nearby persons and the antenna". Based on the installation of the transceiver and the antenna, the transmitters radiating structure is more than 20 cm from the user. Thus, this product is a "mobile device" as defined in section § 2.1091 paragraph (b).

Exposure evaluation

$$S_{eirp} = \frac{EIRP}{4\pi d^2} = \frac{PG}{4\pi d^2} (W / m^2)$$

Where

S: is the input power (W);

G: is the antenna gain;

d : is the distance between antennas and evaluation point (m).



4. Power Density Limit – RF Exposure Evaluation

Thv In 47 CFR § 1.1310, use of the device as based upon the user's awareness and ability to exercise control over human exposure. The two categories defined are Occupational / Controlled Exposure and General Population / Uncontrolled. These two categories are defined as follow:

Limits for General Population / Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
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 / 1,500	30
1,500-100,000	-	-	1.0	30
Limits for Occupational / Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1,842 / f	4.89 / f	(900 / f ²)*	6
30-300	61.4	0.163	1.0	6
300-1,500	-	-	F / 300	6
1,500-100,000	-	-	5	6

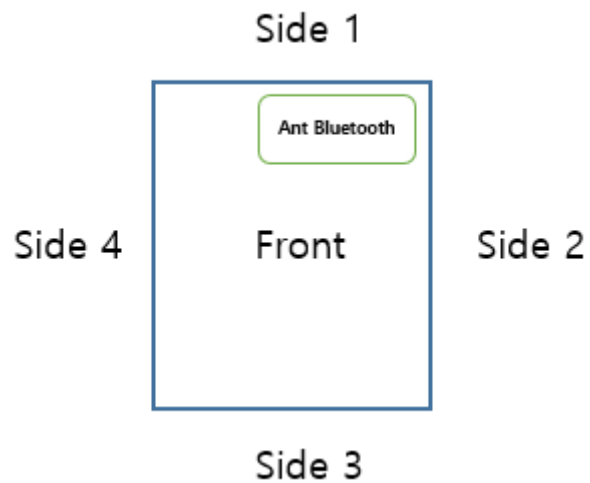


4.1 Conducted Power

Data Rate	Frequency(MHz)	Packet Type	Average Power
			dBm
1Mbps (GFSK)	2402	DH1	-3.95
		DH3	-3.92
		DH5	-3.90
	2441	DH1	-4.00
		DH3	-3.96
		DH5	-3.94
	2480	DH1	-4.65
		DH3	-4.61
		DH5	-4.59
2Mbps ($\pi/4$ -DQPSK)	2402	DH1	-5.22
		DH3	-5.20
		DH5	-5.17
	2441	DH1	-5.42
		DH3	-5.40
		DH5	-5.35
	2480	DH1	-5.92
		DH3	-5.90
		DH5	-5.86

5. Evaluation Results

5.1 Antenna Location



Note: The device not support simultaneous transmission.

Ant. Used	Antenna to user distance (mm)					
	Front	Back	Side 1	Side 2	Side 3	Side 4
Bluetooth Antenna	5	5	9	15	135	50



5.2 Evaluation Results

The evaluation of SAR test reduction according to KDB447498

SAR test is not required when the results showed "EXEMPT".

Body SAR test reduction																	
Ant. Used	Band	Frequency	Tune-Power		Distance of Ant. To User (mm)						Calculated value and evaluated result						
		(GHz)	(dBm)	(mW)	Front	Back	Side1	Side2	Side3	Side4	Front	Back	Side1	Side2	Side3	Side4	exclusion
																	threshold
Bluetooth Antenna	BT	2.480	0	1	5	5	9	15	135	50	0.3	0.3	0.2	0.1	945.0	0.0	3
											EXEMPT	EXEMPT	EXEMPT	EXEMPT	EXEMPT	EXEMPT	

Exclusion Considerations: SAR is not required

- Note:
- 1.Calculated Value include string "mW",that is mean through compare output power with threshold, if the output power more than threshold value the SAR test should be perform. Otherwise,the SAR test could be exempt. (> 50mm)
 - 2.Calculated Value only inculde number format, that is mean through compare output power with threshold, if the Calculated value more than 3, the SAR test should be perform. Otherwise, the SAR test could be exempt. (<50mm)
 - 3.When an antenna qualifies for the standalone SAR test exclusion of KDB 447498 section 4.3.1 and also transmits simultaneously with other antennas, the standalone SAR value must be estimated according to KDB 447498 section "4.3.2. Simultaneous transmission SAR test exclusion considerations b) "
 - 4.We used highest frequency and power,that result should be evaluated the worst case.
 - 5.Power and distance are rounded to the nearest mW and mm before calculation.
 - 6.The result is rounded to one decimal place for comparison.
 - 7.We use a minimum distance of 5mm for bluetooth function.



6. Test Result

Antenna	Band	Frequency (MHz)	Limit mW/cm ²	Distance	Tune-up Power	ANT Gain	Numeric Gain	Duty Cycle	Power with Duty cycle	Power Density
				(cm)	(dBm)				(mW)	mW/cm ²
				[R]	[P]				[P]x[G]	[S]
Bluetooth Antenna	Bluetooth	2402-2480	1.000	20	0.00	-0.58	0.87	1	0.87	0.0002

Note:

1. Mobile or fixed location transmitters, minimum separation distance is 0.2 m, even if calculations indicate MPE distance is less.
2. We used the maximum power and gain to provide MPE results.
3. The Numeric Gain calculated by $10^{(\text{ant. Gain(dBi)} / 10)}$.
4. The MPE results are evaluated by lowest data rate for WLAN.

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