

RF EXPOSURE REPORT



Applicant: Raytac Corp.
8F, No.788-1, Zhongzheng Rd., Zhonghe Dist., New Taipei City, 235, Taiwan

Manufacturer: Raytac Corp.
8F, No.788-1, Zhongzheng Rd., Zhonghe Dist., New Taipei City, 235, Taiwan

Product Name: Bluetooth Low Energy Module

Brand Name: Raytac

Model No.: AN54LQ

Family Model No.: AN54LQ-P, AN54LQ-U

Model Difference: Dimensions, Antenna type

FCC ID SH6AN54LQ

IC: 8017A-AN54LQ

Date of EUT Received: Feb. 05, 2025

Issue Date: Jul. 21, 2025

Approved By

John Yeh

We hereby certify that:

The above equipment was evaluated by SGS Taiwan Ltd. The evaluation in this report is in compliance with FCC Rule Part §2.1091, KDB 447498 D01 v06 and RSS-102 issue 6.

The results of this report relate only to the sample identified in this report.

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Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
TESA2502000154ES	00	Original	Jul. 11, 2025	Kimmy Chiou	
TESA2502000154ES	01	Modify gain	Jul. 21, 2025	Kimmy Chiou	*

Note:

- 1、The remark "*" indicates modification of the report upon requests from certification body.
- 2、Variant information of model numbers is provided by the applicant. Test results in this report are applicable to the sample EUT(s) received. For details on model differences, please refer to Section 1.2.
In view of the above differences, Radiated Spurious Emission measurements are added. The rest of the internal board structure and circuitry remain the same.

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1 DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

1.1 Product Description

Product Name:	Bluetooth Low Energy Module
Brand Name:	Raytac
Model No.:	AN54LQ
Family Model No.:	AN54LQ-P, AN54LQ-U
Model Difference:	Dimensions, Antenna type

1.2 Model Difference

Diversity Description	Original Model	Family Model	Family Model
	AN54LQ	AN54LQ-P	AN54LQ-U
Dimensions	13.7*9.5*1.8mm	13.7*9.5*1.8mm	14*9.5*1.85mm
Antenna type	Monopole (On board antenna)	PIFA (On board antenna)	Dipole, PCB (External antenna)

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1.3 Antenna Information:

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)
Dipole	YAGEO	ANTX100ETHAB24553	2.4GHz	2.22
Dipole	YAGEO	ANTX100P011B24003	2.4GHz	2.20
Dipole	YAGEO	ANTX100P111B24003	2.4GHz	3.30
Dipole	Aristotle	RFA-02-5-F17H170100B	2.4GHz	5.00
PIFA	Raytac	AN54LQ-P	2.4GHz	0.06
Monopole	Raytac	AN54LQ	2.4GHz	1.42

Note: Antenna information is provided by the applicant.

1.4 Rated Power

Mode	Freq. Range (MHz)	Channels	Max Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Worst Case
BLE	2402-2480	79	7.95	5.00	12.95	V

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2 RF EXPOSURE EVALUATION FOR PORTABLE CONDITIONS

2.1 FCC Standard Applicable

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Mobile device, the MPE is required.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
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
1500-100000	/	/	1.0	30

f = frequency in MHz

* = Plane-wave equipment power density

Prediction of MPE limit at a given distance

$$S = PG/4\pi R^2$$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

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2.2 Measurement Result:

FCC Standalone MPE

Operation Mode	Evaluation Frequency (MHz)	Operation Distance (cm)	Max. Output Power Include Tolerance (dBm)	Antenna Gain (dBi)	Max. EIRP (mW)	Power Density (PD) (mW/cm ²)	Limit (mW/cm ²)	Pass / Fail	Power Density / Limit
BLE	2480.00	20	7.95	5.00	19.72	0.0039	1.000	Pass	0.004

Conclusion: The maximum power density is below Exemption Criteria and/or Routine Evaluation MPE thresholds, therefore the device is compliant FCC RF exposure requirement.

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2.3 ISED Standard Applicable

According to RSS-102 issue 6 § 6.6 RF Exposure Evaluation

Field reference level (FRL) exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm (i.e. mobile devices), except when the device operates as follows:

below 20 MHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 1 W (adjusted for tune-up tolerance)

at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than $4.49/f^{0.5}W$ (adjusted for tune-up tolerance), where f is in MHz

at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance)

at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than $1.31 \times 10^{(-2)} \times f^{0.6834}W$ (adjusted for tune-up tolerance), where f is in MHz

at or above 6 GHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 5 W (adjusted for tune-up tolerance)

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the EIRP was derived.

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2.4 Maximum Permissible Exposure (MPE) Exemption

Operation Mode	Evaluation Frequency (MHz)	Max. output Power include Tolerance (dBm)	Antenna Gain (dBi)	Max. EIRP (W)	Limit (W)	Max. EIRP / Limit	Pass / Fail
BLE	2402.00	7.95	5.00	0.02	2.676	0.007	Pass

Note: For conservativeness, the lowest uplink frequency of each band is used to determine the MPE limit of that band.

~ End of Report ~

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