RF EXPOSURE REPORT

Applicant:	Qualcomm Technologies, Inc. 5775 Morehouse Drive, San Diego, CA 92121-1714, United States
Manufacturer:	Qualcomm Technologies, Inc. 5775 Morehouse Drive, San Diego, CA 92121-1714, United States
Product Name:	Tri-Radio LGA Module for IoT applications
Brand Name:	Qualcomm
Model No.:	QCC744M-0
FCC ID	J9C-QCC744M0
Date of EUT Received:	Nov. 06, 2024
Issue Date:	Dec. 13, 2024

Approved By John Yeh

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.

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

Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
TESA2411000738ES	00	Original	Dec. 06, 2024	Kimmy Chiou	
TESA2411000738ES	01	Modify comment	Dec. 13, 2024	Kimmy Chiou	*

Note:

1、The remark "*" indicates modification of the report upon requests from certification body.

Contents

1 DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

1.1 Product Description

Product Name:	Tri-Radio LGA Module for IoT applications
Brand Name:	Qualcomm
Model No.:	QCC744M-0
HW SKU:	QCC744M-0U, QCC744M-0B, QCC748M-0U, QCC748M-0B

1.2 HW SKU Difference Table:

HW SKU	Antenna Type	Impedance	Chip design
QCC744M-0U	3 types: PIFA, Monopole, Dipole	C21=1.86pF, C20=1.89pF	Does not support USB pinout
QCC744M-0B	1 type: PCB	C21=1.52pF, C20=2.05pF	Does not support USB pinout
QCC748M-0U	3 types: PIFA, Monopole, Dipole	C21=1.86pF, C20=1.89pF	Support USB pinout
QCC748M-0B	1 type: PCB	C21=1.52pF, C20=2.05pF	Support USB pinout

1.3 Evaluation site

Laboratory		Site Address	FCC Designation number	ISED Company Number	CAB Identifier
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	☐	No. 134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, 24803, Taiwan.	TW0027	4620A	TW3702
	☒	No. 2, Keji 1st Rd., Guishan Township, Taoyuan County, 333 Taiwan.	TW0028	4620E	
	☐	1F, No. 8, Alley 15, Lane 120, Sec. 1, Nei Hu Road, Neihu District, Taipei City, 222 Taiwan.	TW0029	23862	

1.4 Antenna Information:

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)
PCB	INPAQ	RFIQM0744010NB001	2.4GHz	2.52
PIFA	INPAQ	RFPCA441010EMABY01		3.19
Monopole	INPAQ	RFPCA501010EMABY01		3.12
Dipole	INPAQ	RFPCA521010EMABY01		**3.37**

Note: Antenna information is provided by the applicant.

1.5 Rated Power

Mode	Freq. Range (MHz)	Channels	Modulation Technology	Max Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Worst Case
BR+EDR	2402-2480	79	GFSK + π /4DQPSK + 8DPSK	10	3.37	13.37	
BLE	2402-2480	40	GFSK	20	3.37	23.37	
Thread	2405-2480	16	O-QPSK & DSSS	20	3.37	23.37	
WLAN2.4GHz	2412-2462	11	DSSS & OFDM	22.5	3.37	**25.87**	V
Modulation type:		CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 4096QAM for OFDMA in 11ax HE mode					

Note: PG information is provided by the applicant.

2 MAXIMUM PERMISSIBLE EXPOSURE (MPE)

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 Permissive 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

2.2 Power Density Calculation (Worst Case)

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	Collocated MPE
Thread	2480.00	20	20	3.37	217.27	0.0432	1.000	Pass	0.043	V
BLE	2480.00	20	20	3.37	217.27	0.0432	1.000	Pass	0.043	V
WLAN 2.4G	2442.00	20	22.5	3.37	386.37	0.077	1.000	Pass	0.077	V

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

~ End of Report ~