

Radio Exposure Evaluation Report

FCC ID : 2ABLK-GM2038
Equipment : GigaSpire
Brand Name : Calix
Model Name : 7u6m GM2038
Applicant : Calix Inc.
1 Santana West 3155 Olsen Drive, Suite 450,
San Jose California United States 95117
Manufacturer : Calix Inc.
1 Santana West 3155 Olsen Drive, Suite 450,
San Jose California United States 95117
Standard : 47 CFR FCC Part 2 Subpart J, section 2.1091

The product was received on Apr. 25, 2025, and testing was started from Apr. 28, 2025 and completed on Jun. 03, 2025. We, SPORTON INTERNATIONAL INC. Hsinhua Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in 47 CFR FCC Part 2 Subpart J, section 2.1091 and shown compliance with the applicable technical standards.

The test results in this variant report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Hsinhua Laboratory, the test report shall not be reproduced except in full.


Approved by: Jackson Tsai

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Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
2	-	Exposure evaluation	PASS	-

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

None

Reviewed by: Ben Tseng

Report Producer: Amber Chiu

1 General Description

1.1 Information

1.1.1 EUT General Information

RF General Information			
Evaluation Mode	Frequency Range (MHz)	Operating Frequency (MHz)	Modulation Type
2.4GHz WLAN	2400-2483.5	2412-2462	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) VHT: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) 802.11be: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	5180-5240 5260-5320 5500-5720 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) 802.11be: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM)
6GHz WLAN	5925-7125	5955-7115	802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) 802.11be: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM, 4096QAM)

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Support	Radio
1	Pegatron	2G1	dipole	I-Pex	2.4G	Radio 1
2	Pegatron	2G2	dipole	I-Pex	2.4G	Radio 1
3	Pegatron	5GH	dipole	I-Pex	5G	Radio 2
4	Pegatron	5GV	dipole	I-Pex	5G	Radio 2
5	Pegatron	6GH	dipole	I-Pex	6G	Radio 3
6	Pegatron	6GV	dipole	I-Pex	6G	Radio 3

Ant.	Port	Gain (dBi)								
		2.4G	UNII-1	UNII-2A	UNII-2C	UNII-3	UNII-5	UNII-6	UNII-7	UNII-8
1	1	2.38	-	-	-	-	-	-	-	-
2	2	2.07	-	-	-	-	-	-	-	-
3	2	-	2.8	3.28	3.46	4.14	-	-	-	-
4	1	-	3.09	3.37	3.4	2.87	-	-	-	-
5	1	-	-	-	-	-	3.39	3.17	4.09	4.37
6	2	-	-	-	-	-	2.46	4.03	3.68	3.91

Composite Gain (dBi)										
	2.4G	UNII-1	UNII-2A	UNII-2C	UNII-3	UNII-5	UNII-6	UNII-7	UNII-8	
DG [1SS]	4.7	3.09	3.37	3.46	4.14	3.39	4.03	4.09	4.37	

Note 1: The EUT has six antennas.

For 2.4GHz function:

For IEEE 802.11 b/g/n/VHT/ax/be mode (2TX/2RX)

Ant. 1 (port 1), Ant. 2 (port 2) could transmit/receive simultaneously.

For 5GHz function:

For IEEE 802.11 a/n/ac/ax/be mode(2TX/2RX)

Ant. 3 (port 2), Ant. 4 (port 1) could transmit/receive simultaneously.

For 6GHz function:

For IEEE 802.11 a/ax/be mode(2TX/2RX)

Ant. 5 (port 1), Ant. 6 (port 2) could transmit/receive simultaneously.

1.1.3 Table for EUT supports functions

Function
Extender

Note 1: The above information was declared by manufacturer.

1.1.4 Table for Permissive Change

This product is an extension of original one reported under Sporton project number: FA551202

Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
1. Frequency bands U-NII-2A and U-NII-2C were added	All
2. Add 2.4G saw filter	

1.1.5 Accessories

Accessories				
AC/DC Adapter 1	Brand Name	MOSO	Model Name	MS-V3000R120-036L0-US
	Power Rating	I/P: 100 - 240 Vac, 1.3 A, O/P: 12.0 Vdc, 4.0 A		
AC/DC Adapter 2	Brand Name	Amigo	Model Name	AMS317-1203000FU
	Power Rating	I/P: 100 - 240 Vac, 1.3 A, O/P: 12.0 Vdc, 4.0 A		

Reminder: Regarding to more detail and other information, please refer to user manual.

1.2 Testing Location

Test Lab. : Sporton International Inc. Hsinhua Laboratory			
☒	Hsinhua	ADD: No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.)	
	(TAF: 3785)	TEL: 886-3-327-3456	FAX: 886-3-327-0973
Test site Designation No. TW3785 with FCC			
☐	Wen 33rd.St.	ADD: No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.)	
	(TAF: 3785)	TEL: 886-3-318-0787	FAX: 886-3-318-0287
Test site Designation No. TW0008 with FCC			

2 Maximum Permissible Exposure

2.1 Limit of Maximum Permissible Exposure

(A) 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	1842 / f	4.89 / f	(900 / f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	F/300	6
1500-100,000	-	-	5	6

(B) 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/1500	30
1500-100,000	-	-	1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

Multiple Transmitters Condition

Co-location as simultaneously transmitting (co-transmitting) and the evaluation shall be consider that simultaneous transmissions from co-located devices the individual transmitters are evaluated separately. After sum of the individual value (basic restriction / reference level) are measured/calculated also have to under basic restriction / reference level.

Co-transmitting mode: WLAN 2.4G + WLAN 5G + WLAN 6G

2.2 MPE Calculation Method

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d}$$

$$\text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric field (V/m)

P = RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

2.3 Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure

Non-Beamforming

WLAN 2.4GHz

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
2.4G;G1D	2.38	28.21	30.59	0.50	31.09	20	0.25570	1.00000
2.4G;D1D	2.38	27.77	30.15	0.50	30.65	20	0.23106	1.00000

WLAN 5GHz

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
5.2G;D1D	3.09	28.33	31.42	0.50	31.92	20	0.30955	1.00000
5.3G;D1D	3.37	23.49	26.86	0.50	27.36	20	0.10833	1.00000
5.6G;D1D	3.46	23.52	26.98	0.50	27.48	20	0.11136	1.00000
5.8G;D1D	4.14	28.69	32.83	0.50	33.33	20	0.42828	1.00000

WLAN 6GHz

Mode	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
6.2G;D1D	27.27	0.50	27.77	20	0.11905	1.00000
6.4G;D1D	25.89	0.50	26.39	20	0.08664	1.00000
6.7G;D1D	26.99	0.50	27.49	20	0.11162	1.00000
7.0G;D1D	24.50	0.50	25.00	20	0.06291	1.00000

Beamforming

WLAN 2.4GHz

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
2.4G;D1D	4.70	27.34	32.04	0.50	32.54	20	0.35705	1.00000

WLAN 5GHz

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
5.2G;D1D	3.09	28.33	31.42	0.50	31.92	20	0.30955	1.00000
5.3G;D1D	3.37	23.49	26.86	0.50	27.36	20	0.10833	1.00000
5.6G;D1D	3.46	23.52	26.98	0.50	27.48	20	0.11136	1.00000
5.8G;D1D	4.14	28.69	32.83	0.50	33.33	20	0.42828	1.00000

WLAN 6GHz

Mode	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
6.2G;D1D	26.94	0.50	27.44	20	0.11034	1.00000
6.4G;D1D	26.47	0.50	26.97	20	0.09902	1.00000
6.7G;D1D	27.55	0.50	28.05	20	0.12698	1.00000
7.0G;D1D	26.00	0.50	26.50	20	0.08886	1.00000



Simultaneous Transmission Analysis Mode:

WLAN 2.4G + WLAN 5G + WLAN 6G

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
2.4G;D1D	4.70	27.34	32.04	0.50	32.54	20	0.35705	1.00000	0.35953
5.8G;D1D	4.14	28.69	32.83	0.50	33.33	20	0.42828	1.00000	0.42828
6.7G;D1D	-	-	27.55	0.50	28.05	20	0.12698	1.00000	0.12698
								Sum Ratio	0.91479
								Ratio Limit	1.00000

————THE END————