Testing Laboratory 1190

FCC RADIO EXPOSURE TEST REPORT

FCC ID	:	Q87-03564
Equipment	:	Linksys Tri-Band Wireless-AC Router
Brand Name	:	Linksys
Model Name	:	MR8300 V1.1/ MR8250 V1.1
Applicant	:	Linksys LLC 121 Theory Drive Irvine, CA 92617, United States
Standard	:	47 CFR Part 2.1091

The product was received on Mar. 06, 2020, and testing was started from Mar. 06, 2020 and completed on Apr. 07, 2020. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in 47 CFR Part 2.1091 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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

Approved by: Sam Chen

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
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Photographs of EUT v01

History of this test report

Report No.	Version	Description	Issued Date
FA710901-06	01	Initial issue of report	Jun. 15, 2020

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:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sam Chen

Report Producer: Viola Huang

1 General Description

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)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	5180-5240 5260-5320 5500-5700 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Bluetooth	2400-2483.5	2402-2480	BR / EDR: FHSS (GFSK / π/4-DQPSK / 8DPSK) LE: GFSK

1.2 Table for Multiple Listing

Model Name	Software Versions	Equip Adapter	LED Design	Support Function	Description
MR8300 V1.1	WLAN: 2.0.0.200811 Bluetooth: OpenWrt Chaos Calmer 15.05.1 r35193 / LuCI branch (git-16.190.28508-c9d9415)	Adapter 1~3	Please refer to the Photographs of EUT	Master (AP Router, Repeater, Bridge)	All models are identical; different models serve as marketing strategy.
MR8250 V1.1		Adapter 1~3	Same as above		

Note: From the above models, model: MR8300 V1.1 was selected as representative model for the test and it's data was recorded in this report.

Note: Only AP Router mode has been selected to test and recorded in the test report from manufacturer requirement.

1.3 Testing Location

Testing Location							
☐	HWA YA	ADD	:	No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.			
		TEL	:	886-3-327-3456	FAX	:	886-3-327-0973
☒	JHUBEI	ADD	:	No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.			
		TEL	:	886-3-656-9065	FAX	:	886-3-656-9085

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.

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/ cm²)	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)*	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/ cm²)	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)*	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

2.2 MPE Calculation Method

The MPE was calculated at 28 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

E (V/m) = $\frac{\sqrt{30 \times P \times G}}{d}$ Power Density: *Pd* (W/m²) = $\frac{E^2}{377}$

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

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm^2)	S Limit (mW/cm^2)
2.4G;D1D	5.59	27.55	33.14	0.50	33.64	2.31206	28	0.23467	1.00000
5.2G;D1D	5.66	28.79	34.45	0.50	34.95	3.12608	28	0.31730	1.00000
5.3G;D1D	5.65	23.94	29.59	0.40	29.99	0.99770	28	0.10362	1.00000
5.6G;D1D	6.26	23.68	29.94	0.05	29.99	0.99770	28	0.11232	1.00000
5.8G;D1D	5.94	29.36	35.30	0.50	35.80	3.80189	28	0.38589	1.00000
2.4G;BT-BR	3.28	3.64	6.92	0.50	7.42	0.00552	28	0.00056	1.00000
2.4G;BT-LE	3.28	5.42	8.70	0.50	9.20	0.00832	28	0.00084	1.00000

Simultaneous Transmission Analysis Mode:

WLAN 2.4GHz + WLAN 5GHz Band 1~2 + WLAN 5GHz Band 3~4 + Bluetooth

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm^2)	S Limit (mW/cm^2)	Ratio (S/Limit)
2.4G;D1D	5.59	27.55	33.14	0.50	33.64	2.31206	28	0.23467	1	0.23467
5.2G;D1D	5.66	28.79	34.45	0.50	34.95	3.12608	28	0.31730	1	0.31730
5.8G;D1D	5.94	29.36	35.30	0.50	35.80	3.80189	28	0.38589	1	0.38589
2.4G;BT-LE	3.28	5.42	8.70	0.50	9.20	0.00832	28	0.00084	1	0.00084
									Sum Ratio	0.93870
									Ratio Limit	1

Note: The above antenna gain was declared by manufacturer.

———THE END———