Testing Laboratory 1190

FCC RADIO EXPOSURE TEST REPORT

FCC ID	:	HEDML60LW
Equipment	:	Metrolinq 60G dual band dual radio wireless bridge
Brand Name	:	Ignitenet
Model Name	:	ML-60-LW-DO,ML-5-LW,ML-60-LW
Applicant	:	Accton Technology Corp No. 1, Creation Rd. III, Science-based Industrial Park Hsin Chu 30077, Taiwan
Manufacturer (1)	:	Joy Technology (Shen Zhen) Co. Ltd HengKeng Ind., Shangpai, Shangwu, Aiqun Rd., Shiyan Town, Shenzhen 518108 China
Manufacturer (2)	:	Accton Technology Corp No. 1, Creation Rd. III, Science-based Industrial Park Hsin Chu 30077, Taiwan
Standard	:	47 CFR Part 2.1091

The product was received on Jan. 09, 2018, and testing was started from Apr. 17, 2018 and completed on May 05, 2018. We, SPORTON INTERTIONAL 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 variant report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERTIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Sam Chen

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Photographs of EUT v01

History of this test report

Report No.	Version	Description	Issued Date
FA7D2234-03	01	Initial issue of report	May 07, 2018

Summary of Test Result

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

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)
5GHz WLAN	5150-5250 5725-5850	5180-5240 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
60GHz	57-71 GHz	Channel 1: 58.32 GHz Channel 2: 60.48 GHz Channel 3: 62.64 GHz Channel 4: 64.80 GHz	$\pi/2-BPSK, \pi/2-QPSK, \pi/2-16QAM$

Note 1: This device contains transmitter 60GHz module FCC ID: HEDML60PRS4601

1.2. Table for Multiple List

Model Name	EUT No.	WLAN 2.4GHz Function	WLAN 5GHz Function	60GHz Function
ML-60-LW	EUT 1	V	V	V
		Match antenna “Dipole Antenna, Model Name: 120G00000186X”	Match Antenna “Sector Antenna, Model Name: 120G00000181X”	Match Antenna “Chip Antenna, Model Name: 120300000225X”
ML-5-LW	EUT 2	V	V	X
		Match Antenna “Dipole Antenna, Model Name: 120G00000186X”	Match Antenna “Sector Antenna, Model Name: 120G00000181X”	-
ML-60-LW-DO	EUT 3	V	V	V
		Match Antenna “Dipole Antenna, Model Name: 120G00000192X”	Match Antenna “Dipole Antenna, Model Name: 120G00000191X” and 120G00000192X”	Match Antenna “Chip Antenna, Model Name: 120300000225X”

From the above models, model: ML-60-LW and ML-60-LW-DO were selected as representative model for the test and its data was recorded in this report.

1.3. Table for Class II Change

This product is an extension of original one reported under Sporton project number: FA7D2234-01

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

Modifications	Performance Checking
For the original model name “ML-60-LW”. 1. Changing the Equipment Name to "Metrolinq 60G dual band dual radio wireless bridge" from "MetroLinq 60 LW". 2. Updating the digital board version to R01 from R0B. 3. Changing a new USB cable. 4. Updating EUT Power Type to DC 48V from DC 24V. Based on the above modification. 5. Adding a new model name “ML-5-LW” which without the 60GHz module. 6. Adding a new model name “ML-60-LW-DO” which with a new set dipole antenna. The new set antenna has lower gain, same type antennas in 2.4GHz function and lower gain, different type antennas in 5GHz function.	For item 1~item 5 Do not have to retest assessed. For item 6 RF Exposure Evaluation

Note: for model name: ML-60-LW, RF Exposure Evaluation of 5GHz Band 1, 4, 2.4GHz Band and 60GHz are based on original test report.

1.4. 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 23 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 = Peak 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

For Model Name: ML-60-LW

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	7.00	25.83	32.83	0.50	33.33	2.15278	23	0.32400	1.00000
5.2G;D1D	15.00	17.68	32.68	0.50	33.18	2.07970	23	0.31300	1.00000
5.8G;D1D	15.00	16.63	31.63	0.50	32.13	1.63305	23	0.24578	1.00000
60G;D1D (58.32GHz)	17.2	13.46	30.66	2.00	32.66	1.84502	23	0.27768	1.00000
60G;D1D (60.48GHz)	17.2	13.66	30.86	2.00	32.86	1.93197	23	0.29077	1.00000
60G;D1D (62.64GHz)	17.2	13.50	30.70	2.00	32.70	1.86209	23	0.28025	1.00000
60G;D1D (64.80GHz)	17.2	13.66	30.86	2.00	32.86	1.93197	23	0.29077	1.00000

For Model Name: ML-60-LW-DO

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	6.15	25.83	31.98	0.50	32.48	1.77011	23	0.26627	1.00000
5.2G;D1D	8.11	17.68	25.79	0.50	26.29	0.42560	23	0.06402	1.00000
5.8G;D1D	8.11	16.63	24.74	0.50	25.24	0.33420	23	0.05027	1.00000

Simultaneous Transmission Analysis Mode: WLAN 2.4GHz+WLAN 5GHz+60GHz

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	6.15	25.83	31.98	0.50	32.48	1.77011	23	0.26627	1	0.26627
5.2G;D1D	8.11	17.68	25.79	0.50	26.29	0.42560	23	0.06402	1	0.06402
60G	17.2	13.66	30.86	2.00	32.86	1.93197	23	0.29077	1	0.29077
									Sum Ratio	0.62106
									Ratio Limit	1

———THE END———