

TEST REPORT

For

Bluetooth Module

In conformity with

FCC CFR 47 Part15 Subpart C RSS-247 Issue 2, RSS-Gen Issue 4

Product Marketing Name(PMN)
: WML-C40AH

Hardware Version Identification Number(HVIN)
: WML-C40

FCC ID : EW4-WC40

ISED Certification Number
: 4250A-WC40

Report No. : ERY1804A25R1

Issue Date : April 25, 2018

Prepared for

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History

Report No.	Date	Revisions	Issued By
ERY1803A22R1	March 22, 2018	Initial Issue	T.Yonemura
ERY1803A26R1	March 26, 2018	Page 3: Correction Error Page 7: Correction Error	T.Yonemura
ERY1803A29R1	March 29, 2018	Page 6: Added antenna requirement	T.Yonemura
ERY1804A19R1	April 19, 2018	Page 1: Correction Error and Added HVIN Page 3: Correction Error	T.Yonemura
ERY1804A25R1	April 25, 2018	Page 1-72: Header Correction Error	T.Yonemura

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1 General information

1.1 Product description

Test item : Bluetooth Module
 Manufacturer : Mitsumi Electric Co., Ltd.
 Address : 2-11-2, Tsurumaki, Tama-shi, Tokyo 206-8567 Japan
 Product Marketing Name(PMN) : WML-C40AH
 Hardware Version Identification Number(HVIN) : WML-C40
 FCC ID : EW4-WC40
 ISED Certification Number : 4250A-WC40
 Serial number : 7 (RF conducted), 5 (RF radiated)
 Hardware version : 1.0
 Software version : 19.2 / 21d
 Operating frequency : 2402 - 2480 MHz
 Modulation : GFSK, $\pi/4$ -DQPSK, 8DPSK
 Antenna Gain : -0.73 dBi
 Receipt date of EUT : March 7, 2018
 Nominal power source voltages : DC 3.3 V

Similar model : This EUT has similar model.

Product Marketing Name(PMN)	Difference from tested model	Note
WML-C40AH	-	Tested Interface: H4(UART)
WML-C40AB	Hardware configuration is the same, Software configuration is different.	(This difference has no effect on radio output.) Interface: BCSP(UART)
WML-C40AS	Hardware configuration is the same, Software configuration is different.	(This difference has no effect on radio output.) Interface: SPP(VM access to the UART)

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1.2 Test(s) performed/ Summary of test result

Test specification(s) : FCC CFR 47 Part 15 Subpart C (01 Oct. 2017)
 Test method(s) : ANSI C63.10: 2013
 Test(s) started : March 12, 2018
 Test(s) completed : March 15, 2018


Summary of test result : Complied

Note: The above judgment is only based on the measurement data and it does not include the measurement uncertainty. Accordingly, the statement below is applied to the test result.
 The EUT complies with the limit required in the standard in case that the margin is not less than the measurement uncertainty in the Laboratory.
 Compliance of the EUT is more probable than non-compliance is case that the margin is less than the measurement uncertainty in the Laboratory.

Test engineer

: 
 T. Yonemura
 Engineer
 Wireless testing laboratory

Reviewer

: 
 T. Ikegami
 Manager
 Wireless testing laboratory

1.3 Test facility

[Yokohama Laboratory]

Address: 472, Nippa-cho, Kohoku-ku, Yokohama, 223-0057, Japan
TEL: +81-45-534-0645
FAX: +81-45-592-7506

Accredited by National Voluntary Laboratory Accreditation Program (NVLAP) for the emission tests stated in the scope of the certificate under Certificate Number 200780-0

Registered by ISED Number: The registered facility number is as follows;
Test site (Semi-Anechoic chamber 3m): 6974A-1

Registered by Voluntary Control Council for Interference by Information Technology Equipment (VCCI)
Each registered facility number is as follows;
Test site A-0045

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.



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1.4 Measurement uncertainty

The treatment of uncertainty is based on the general matters on the definition of uncertainty in “Guide to the expression of uncertainty in measurement (GUM)” published by ISO. The Lab’s uncertainty is determined by referring ETSI TR 100 028-1 V1.4.1 (2001-12).

The uncertainty of the measurement result in the level of confidence of approximately 95% (k=2) is as follows;

Conducted emission (150 kHz - 30 MHz):	± 3.4 dB
Radiated emission (9 kHz - 30 MHz):	± 5.1 dB
Radiated emission (30 MHz - 1000 MHz):	± 5.3 dB
Radiated emission (1 GHz - 6 GHz):	± 5.2 dB
Radiated emission (6 GHz - 18 GHz):	± 5.2 dB
Radiated emission (18 GHz - 26 GHz):	± 5.7 dB

1.5 Summary of test results

Requirement	Section in FCC/ISED	Result	Section in this report
Occupied Bandwidth (99 %)	2.1049 / RSS-Gen 6.6	Complied	2.1
Occupied Bandwidth (20 dB)	15.247 (a)(1) / RSS-247 5.1	Complied	2.2
Hopping Carrier Frequency Separation	15.247 (a) / RSS-247 5.1	Complied	2.3
Number of Hopping Channel	15.247 (a) / RSS-247 5.1	Complied	2.4
Average Time of Occupancy	15.247 (a) / RSS-247 5.1	Complied	2.5
Peak Output Power	15.247 (a)(1)/(b)(1) / RSS-247 5.4	Complied	2.6
Conducted Spurious Emissions	15.247 (d) / RSS-247 5.5	Complied	2.7
Tx Radiated Spurious Emissions	15.205 (d)/15.209 / RSS-Gen 6.1.3	Complied	2.8
Tx AC Power Line Spurious Emissions	15.207 / RSS-Gen 8.8	Complied	2.9
Rx Radiated Spurious Emissions	RSS-Gen 7	Complied	2.10
Rx AC Power Line Conducted Emissions	RSS-Gen 8.8	Complied	2.11

FCC Part 15.203 Antenna requirement

The antenna is not removable from EUT. Therefore, the equipment complied with the antenna requirement.

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1.6 Setup of equipment under test (EUT)

1.6.1 Test configuration of EUT

Equipment(s) under test

No.	Item	Manufacture	Model No.	Serial No.
A1	Bluetooth Module	MITSUMI ELECTRIC CO., LTD.	WML-C40AH	7
A2	Bluetooth Module	MITSUMI ELECTRIC CO., LTD.	WML-C40AH	5

Support Equipment(s)

No.	Item	Manufacture	Model No.	Serial No.
B	Jig Board	MITSUMI ELECTRIC CO., LTD.	BTDB02	AF47T
C	AC Adaptor	NEC	PC-VP-BU11-01	-
D	AC Adaptor	UNIFIVE	US303320	D02-0136115

Connected cable(s)

No.	Item	Identification (Manu.etc.)	Cable Shielded	Ferrite Core	Length [m]
1	RS232C	-	Shielded	None	2.0
2	DC(supply to jig board)	-	Unshielded	None	2.0
3-1	DC(supply to eut)	-	Unshielded	None	1.0
3-2	DC(for extender)	Used for radiated emission test	Unshielded	None	2.0

1.6.2 Operating condition:

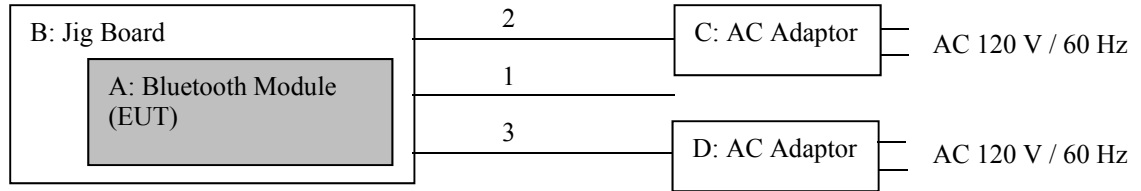
Operating mode:

- DH5 Continuous Tx, 2402 MHz
- DH5 Continuous Tx, 2441 MHz
- DH5 Continuous Tx, 2480 MHz
- DH5 Continuous Tx, Hopping
- 2DH5 Continuous Tx, 2402 MHz
- 2DH5 Continuous Tx, 2441 MHz
- 2DH5 Continuous Tx, 2480 MHz
- 2DH5 Continuous Tx, Hopping
- 3DH5 Continuous Tx, 2402 MHz
- 3DH5 Continuous Tx, 2441 MHz
- 3DH5 Continuous Tx, 2480 MHz
- 3DH5 Continuous Tx, Hopping
- Continuous Rx, 2402 MHz
- Continuous Rx, 2441 MHz
- Continuous Rx, 2480 MHz

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1.6.3 Setup diagram of tested system



1.7 Equipment modifications

No modifications have been made to the equipment in order to achieve compliance with the applicable standards described in clause 1.2.

1.8 Deviation from the standard

No deviations from the standards described in clause 1.2.

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