EN 50665:2017
EN IEC 62311:2020
BS EN 50665:2017
BS EN IEC 62311:2020

ASSESSMENT REPORT

For

Renesas Design Korea Inc.

7th SiliconPark, 35 Pangyo-ro 255 beon-gil Bundang-gu, Seongnam-si, Gyeonggi-do, 13486 Republic of Korea

Tested Model: RRQ61051-008
Multiple Models: RRQ61051-208, RRQ61051-408

Report Type:	**Product Type:**
Original Report	RRQ61051 Module

Report Number:	2602P42652E
Report Date:	2026/3/11
Reviewed By:	Ivy Tang Project Engineer
Approved By:	Rocky Xiao RF Supervisor
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) (No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China) Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

TABLE OF CONTENTS

DOCUMENT REVISION HISTORY **3**

GENERAL INFORMATION **4**

PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) 4
OBJECTIVE 4
TEST METHODOLOGY 4
TEST FACILITY 4
DECLARATIONS 5
TECHNICAL REQUIREMENTS SPECIFICATION IN EN IEC 62311 & BS EN IEC 62311 5
TEST DATA (FAR FIELD CALCULATION) 8

EXHIBIT A – EUT PHOTOGRAPHS **9**

DECLARATION OF SIMILARITY LETTER **10**

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	2602P42652E	Original Report	2026/3/11

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product Name:	RRQ61051 Module
EUT Model:	RRQ61051-008
Multiple Models:	RRQ61051-208, RRQ61051-408
Model Difference:	Please refer to the "Model differences table" below
Rated Input Voltage:	1.8~3.6Vdc (Typical:3.3Vdc)
Serial Number:	3GDB-2 (For RF Conducted Test: RRQ61051-008) 3GDB-1 (For Radiated Test: RRQ61051-008)
EUT Received Date:	2026/1/20
EUT Received Status:	Good

Model differences table

Model	Description		Other
RRQ61051-008	WiFi/BLE combo module, WiFi6-Dual band 2.4/5GHz 802.11 a/b/g/n/ac/ax	/	Only the software difference that whether 5GHz band or 802.11ax mode is supported. The hardware is same.
RRQ61051-208	WiFi/BLE combo module, WiFi4-Single band 2.4GHz 802.11 b/g/n	Disabled the 5GHz band and 802.11ax mode on software.	
RRQ61051-408	WiFi/BLE combo module, WiFi6-Single band 2.4GHz 802.11 b/g/n/ax	Disabled the 5GHz band on software.	

Objective

This report is prepared on behalf of ***Renesas Design Korea Inc.*** in accordance with EN 50665:2017 and BS EN 50665:2017 Generic standard for assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz);
EN IEC 62311:2020 and BS EN IEC 62311:2020 Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz to 300 GHz).

The objective is to determine the compliance of EUT with EN 50665:2017, EN IEC 62311:2020, BS EN 50665:2017, BS EN IEC 62311:2020.

Test Methodology

All measurements contained in this report were conducted with EN IEC 62311:2020, BS EN IEC 62311:2020.

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.

Declarations

The information marked ▲ is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

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Each test item follows test standards and with no deviation.

Technical Requirements Specification in EN IEC 62311 & BS EN IEC 62311

General Description of Applied Standards

In general, the basic restrictions shall be used as exposure limits for the assessment of compliance. However, in most cases reference levels are used as limits. Such reference levels for exposure to electric, magnetic and electromagnetic fields are derived from the basic restrictions using realistic worst-case assumptions about exposure. If the reference levels are met, then the basic restrictions will also be met; if the reference levels are exceeded, that does not necessarily mean that the basic restrictions are exceeded. In some situations, it may be possible to show compliance with the basic restrictions directly. It may also be possible to derive compliance criteria that allow a simple measurement or calculation to demonstrate compliance with the basic restrictions. Often these compliance criteria can be derived using realistic assumptions about conditions under which exposures from a device may occur, rather than the conservative assumptions that are the basis for the reference levels.

RF Exposure Evaluation

Limit:

According to EN 50665:2017 & BS EN 50665:2017, the criteria listed in the below table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified table 2 of Council Recommendation 1999/519/EC.

Reference levels for electric, magnetic and electromagnetic fields
(0 Hz to 300 GHz, unperturbed rms values)

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field(μT)	Equivalent plane wave power density $S_{eq}(W/m^2)$

0-1 Hz	-	$3{,}2 \times 10^4$	4×10^4	-
1-8 Hz	10 000	$3{,}2 \times 10^4/f^2$	$4 \times 10^4/f^2$	-
8-25 Hz	10 000	4 000/f	5 000/f	-
0,025-0,8 kHz	250/f	4/f	5/f	-
0,8-3 kHz	250/f	5	6,25	-
3-150 kHz	87	5	6,25	-
0,15-1 MHz	87	0,73/f	0,92/f	-
1-10 MHz	$87/f^{1/2}$	0,73/f	0,92/f	-
10-400 MHz	28	0,073	0,092	2
400-2 000 MHz	$1{,}375\ f^{1/2}$	$0{,}0037\ f^{1/2}$	$0{,}0046\ f^{1/2}$	f/200
2-300 GHz	61	0,16	0,20	10

Notes:

1. f as indicated in the frequency range column.

Test method

Far Field:
The antenna of the product, under normal use condition is at least 20cm away from the body of the user. So, this product under normal use is located on electromagnetic far field between the human body.

Far Field Calculation Formula

$$E = \frac{\sqrt{30PG(\theta,\phi)}}{r}$$

Where:
P= Tune-up average conducted power
G= antenna gain relative to an isotropic antenna
θ, ϕ = elevation and azimuth angles to point of investigation
r= distance from observation point to the antenna

Equivalent plane wave power density:

Equivalent plane wave power density Seq Calculation Formula

Power density Seq= $PG/(4\pi r^2)$

Where:
P= Tune-up average conducted power
G= antenna gain relative to an isotropic antenna
r= distance from observation point to the antenna

Exposure from sources with multiple frequencies:

For ICNIRP there are two separate summation regimes of different frequencies: 1 Hz to 10 MHz for stimulation effects and 100 kHz to 300 GHz for thermal effects. Additivity should be examined separately for the effects of thermal and electrical stimulation, and the basic restrictions should be met.
All values and formulas in this clause are based on the ICNIRP 1998 Guidelines [2]. The quantities are RMS values.

Basic restrictions – ICNIRP Guidelines 1998

In this frequency range, the exposure standard is based on the avoidance of thermal effects.The basic restrictions are on *SAR* and power density, and summation of these quantities should follow the formula:

$$\sum_{i=100\text{kHz}}^{10\text{GHz}} \frac{SAR_i}{SAR_\text{L}} + \sum_{i>10\text{GHz}}^{300\text{GHz}} \frac{S_i}{S_\text{L}} \leq 1$$

where
SAR_i is the *SAR* caused by exposure at frequency i;
SAR_L is the *SAR* basic restriction;
S_i is the power density at frequency i;
S_L is the power density basic restriction.

The values of *SAR* in the above formula can be for the whole body or part of the body. Values of partial-body *SAR* should be summed together; whole-body *SAR* should be summed together. Partial-body should not be summed with whole-body.

Field reference levels – ICNIRP Guidelines 1998

Exposure field strengths can be compared to the reference levels on a sum square basis:

$$\sum_{i=100\text{kHz}}^{1\text{MHz}} \left(\frac{E_i}{c}\right)^2 + \sum_{i>1\text{MHz}}^{300\text{GHz}} \left(\frac{E_i}{E_{\text{L},i}}\right)^2 \leq 1$$

and

$$\sum_{i=100\text{kHz}}^{1\text{MHz}} \left(\frac{H_i}{d}\right)^2 + \sum_{i>1\text{MHz}}^{300\text{GHz}} \left(\frac{H_i}{H_{\text{L},i}}\right)^2 \leq 1$$

where
E_i is the electric field strength at frequency i;
$E_{\text{L},i}$ is the electric field reference level;
H_i is the magnetic field strength at frequency i;
$H_{\text{L},i}$ is the magnetic field reference level;
c is $610/f$ V/m (f in MHz) for occupational exposure and $87/f^{1/2}$ V/m (f in MHz) for general public exposure;
d is $1{,}6/f$ A/m (f in MHz) for occupational exposure and $0{,}73/f$ A/m (f in MHz) for general public exposure.

NOTE The values c and d are only examples.

Test Data (Far Field Calculation)

RF Mode	Frequency	Maximum Measured Power (EIRP)	Tune-up power (EIRP)▲	E-Field Strength	Limit	Result
	(MHz)	(dBm)	(dBm)	(V/m)	(V/m)	
BLE	2402-2480	0.95	2	1.09	61	Pass
Wi-Fi 2.4G	2412-2472	18.99	20	8.66	61	Pass
Wi-Fi 5.2G	5180-5240	20.296	21	9.717	61	Pass
Wi-Fi 5.3G	5260-5320	20.310	21	9.717	61	Pass
Wi-Fi 5.6G	5500-5700	18.992	20	8.6	61	Pass
Wi-Fi 5.8G	5745-5825	13.840	13.96	4.32	61	Pass

Note:

1. **General Public/Uncontrolled Environment Exposure Limits** applied to the EUT;
2. The distance from observation point to the antenna is 20cm.
3. The **Tune-up Power** was provided by the applicant, which not exceed 2dB of the test data.

Conclusion: Compliant

EXHIBIT A – EUT PHOTOGRAPHS

For photos in this section, please refer to report No.: 2602P42652E-22A EXHIBIT A.

DECLARATION OF SIMILARITY LETTER

Renesas Design Korea Inc.
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DECLARATION OF SIMILARITY

Date: 2026-01-19

To whom it may concern

Dear Sir or Madam:

We, Renesas Design Korea Inc., hereby declare that the product, named RRQ61051 Module, model RRQ61051-208, RRQ61051-408 are electrically similar with the model RRQ61051-008 which was tested by Bay Area Compliance Laboratories Corp.(Dongguan).

The differences between those models and that are declared similar are as follows:

Model	Description		Other
RRQ61051-008	WiFi/BLE combo module, WiFi6-Dual band 2.4/5GHz 802.11 a/b/g/n/ac/ax	/	Only the software difference that whether 5GHz band or 802.11ax mode is supported. The hardware is same.
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RRQ61051-408	WiFi/BLE combo module, WiFi6-Single band 2.4GHz 802.11 b/g/n/ax	Disabled the 5GHz band on software.	

Please contact me should there be need for any additional clarification or information.

Best Regards,

Signature: 

Printed Name: Kui Nam Kim
Title: Vice President

*******END OF REPORT*******