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**United States of America**  
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## **CERTIFICATION TEST REPORT**

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**Manufacturer:** Prentke Romich Company dba PRC-Salttillo  
1022 Heyl Road  
Wooster, Ohio 44691 USA

**Applicant:** Same As Above

**Product Name:** Bluetooth Low Energy Wireless Radio Module

**Product Description:** Transceiver Module

**Model(s):** BGM220P22A

**FCC ID:** 2AD9P-GM220P

**Testing Commenced:** 2022-10-05

**Testing Ended:** 2022-10-05

**Summary of Test Results:** **In Compliance**

The EUT complies with the EMC requirements when manufactured identically as the unit tested in this report, including any required modifications and/or manufacturer's statement. Any changes to the design or build of this unit subsequent to this testing may deem it non-compliant.

**Note: Test report reflects testing done to verify power reduction for SAR requirements for PCII.**

**Standards:**

- **FCC Part 15 Subpart C, Section 15.247**
- **FCC Part 15.31(e)**
- **ANSI C63.10:2020**



**Evaluation Conducted by:**

Julius Chiller, EMC/Wireless Engineer

**Report Reviewed by:**

Ken Littell, Vice President of EMC

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# 1 ADMINISTRATIVE INFORMATION

## 1.1 Measurement Location:

F2 Labs in Middlefield, Ohio. Site description and attenuation data are on file with the FCC's Sampling and Measurement Branch at the FCC Laboratory in Columbia, MD.

## 1.2 Measurement Procedure:

All measurements were performed according to ANSI C63.10 and recommended FCC procedure of measurement under Section 15.247 and in KDB558074. A list of the measurement equipment can be found in Section 6.

## 1.3 Uncertainty Budget:

The uncertainty in EMC measurements arises from several factors which affect the results, some associated with environmental conditions in the measurement room, the test equipment being used and the measurement techniques adopted.

The measurement uncertainty budgets detailed below are calculated from the test and calibration data, and are expressed with a 95% confidence factor. Note: Only measurements listed below which relate to tests included in this Test Report are applicable to it.

Measurement Range	Expanded Uncertainty	Combined Uncertainty
Radiated Emissions <1 GHz @ 3m	±5.07dB	±2.54
Radiated Emissions <1 GHz @ 10m	±5.09dB	±2.55
Radiated Emissions 1 GHz to 2.7 GHz	±3.62dB	±1.81
Radiated Emissions 2.7 GHz to 18 GHz	±3.10dB	±1.55
AC Power Line Conducted Emissions, 150kHz to 30 MHz	±2.76dB	±1.38

This Uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 1.4 Document History

Document Number	Description	Issue Date	Approved By
F2P28508B-04E	First Issue	2022-11-16	K. Littell



**2 SUMMARY OF TEST RESULTS**

<b>Test Name</b>	<b>Standard(s)</b>	<b>Results</b>
Conducted Output Power	CFR 47 Part 15.247(b)(3) / KDB558074	Complies

<b>Modifications Made to the Equipment</b>
None



**3 TABLE OF MEASURED RESULTS**

<b>Test</b>	<b>Low Channel 2.402 GHz</b>	<b>Mid Channel 2.440 GHz</b>	<b>High Channel 2.480 GHz</b>
Conducted Output Power	1.84mW / 2.65dBm	2.19mW / 3.40dBm	2.36mW / 3.72Bm
Conducted Output Power Limit	2.51mW / 4dBm	2.51mW / 4dBm	2.51mW / 4dBm
E.I.R.P., 1.86dBi Antenna Gain	2.82mW / 4.51dBm	3.36mW / 5.26dBm	3.61mW / 5.58dBm
E.I.R.P. Limit	4 mW / 6dBm	4 mW / 6dBm	4 mW / 6dBm



#### **4 ENGINEERING STATEMENT**

This report has been prepared on behalf of Prentke Romich Company dba PRC-Salttillo to provide documentation for the testing described herein. This equipment has been tested and found to comply with Part 15.247 of the FCC Rules using ANSI C63.10 and KDB558074 standards. The test results found in this test report relate only to the items tested.



**5 EUT INFORMATION AND DATA**

**5.1 Equipment Under Test:**

Product: Bluetooth Low Energy Wireless Radio Module  
Model: BGM220P22A  
Serial No.: 100  
Firmware: 1.10.2  
Hardware: 020-200011  
2224A02FZT  
FCC ID: 2AD9P-GM220P

**5.2 Trade Name:**

Prentke Romich Company dba PRC-Salttillo

**5.3 Power Supply:**

**GlobTek - Model GTM96605-G2A1-R2 and Serial Number - 111557139/20**

**5.4 Applicable Rules:**

CFR 47, Part 15.247, subpart C

**5.5 Equipment Category:**

Radio Transmitter-DTS

**5.6 Antenna:**

Category	Type	Gain	Manufacturer	Model Number
Bluetooth	Integral	1.86	AMOTECH Co., Ltd.	AMAN301512ST01

**5.7 Accessories:**

Device	Manufacturer	Model Number	Serial Number
Laptop	Dell	None Specified	None Specified
UART Interface	None Specified	None Specified	None Specified

**5.8 Test Item Condition:**

The equipment to be tested was received in good condition.

**5.9 Testing Algorithm:**

EUT was set to continuously transmit on a low, mid and high channel in the 2.4 GHz band. Power was adjusted to ensure power output did not exceed 4mW E.I.R.P. with a 1.86dBi antenna. The highest emissions were recorded in the data tables.





### 6 LIST OF MEASUREMENT INSTRUMENTATION

Equipment Type	Asset Number	Manufacturer	Model	Serial Number	Calibration Due Date
Shielded Chamber	CL166-E	Albatross Projects	B83117-DF435-T261	US140023	2023-08-22
Receiver	CL151	Rohde & Schwarz	ESU40	100319	2023-03-31
Low Loss Cable Set	--	Pasternack	PE3C0666-252 / PE3C066-50CM	None Spec.	2023-10-12
Pre-Amplifier	CL153	Keysight Tech.	83006A	MY39500791	2022-10-12
Horn Antenna	CL098	Emco	3115	9809-5580	2023-01-26
Software:	EMC 32, Version 8.53.0		Software Verified: 2022-10-05		
Temp/Hum. Recorder	CL296	Thermpro	TP50	4	2023-04-15



## 7 FCC PART 15.247(b)(3) – CONDUCTED OUTPUT POWER

The EUT antenna port was fitted with an SMA connector and directly connected to the input of the receiver. The peak power output was measured.

### 7.1 Requirements:

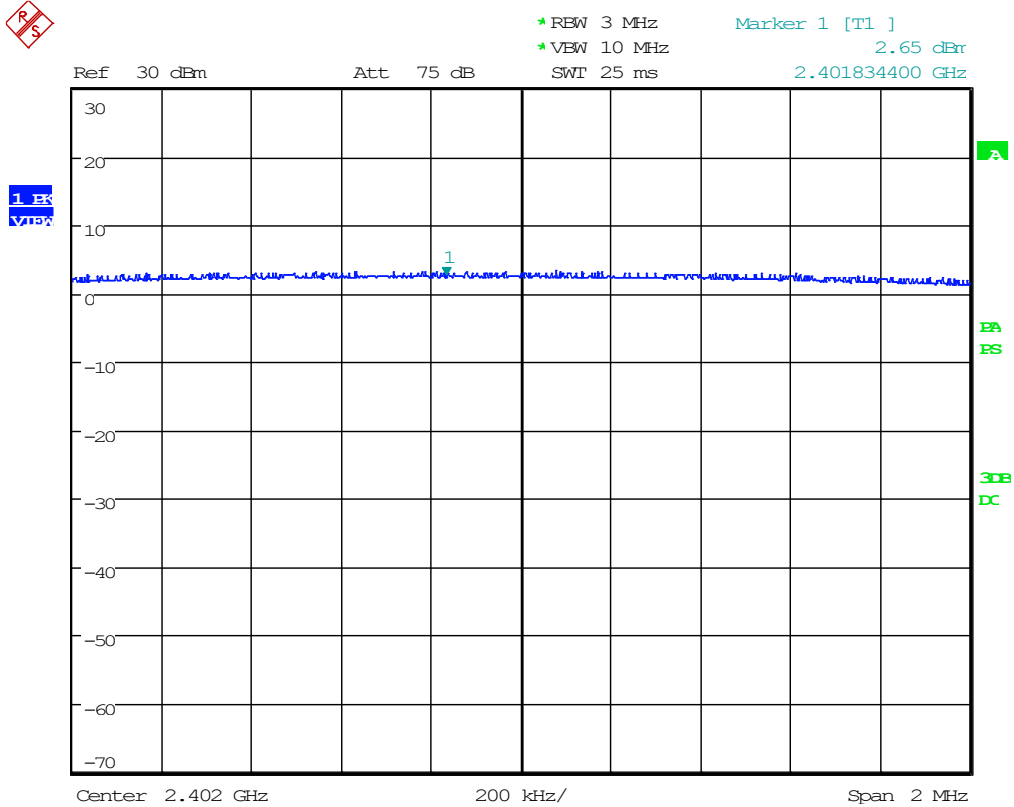
The peak power output shall be 1 watt (30 dBm) or less when using an antenna with a gain of less than 6dBi. For antennas having a gain of more than 6dBi, the limit is reduced by 1dB for every dB the antenna gain is over 6dBi.



### 7.2 Conducted Output Power Test Data

<b>Test Date:</b>	2022-10-05	<b>Test Engineer:</b>	J. Chiller
<b>Standards:</b>	CFR 47 Part 15.247(b)(3); KDB558074	<b>Air Temperature:</b>	23.6°C
		<b>Relative Humidity:</b>	40%

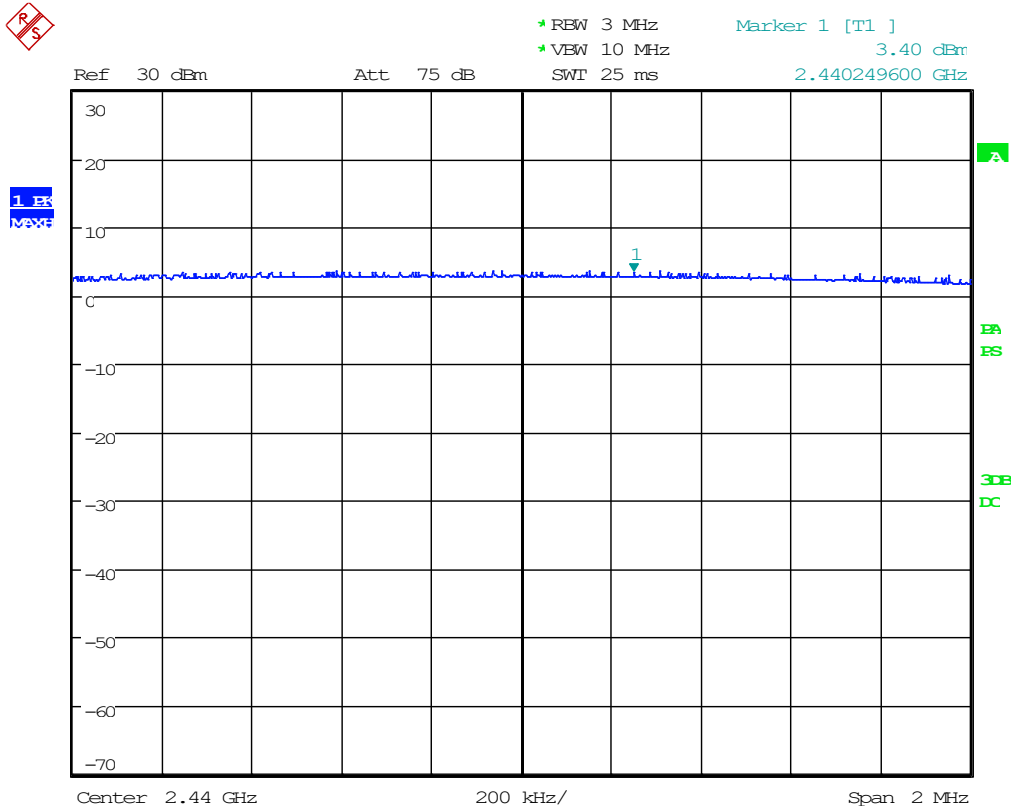
#### Low Channel



Date: 5.OCT.2022 15:01:54



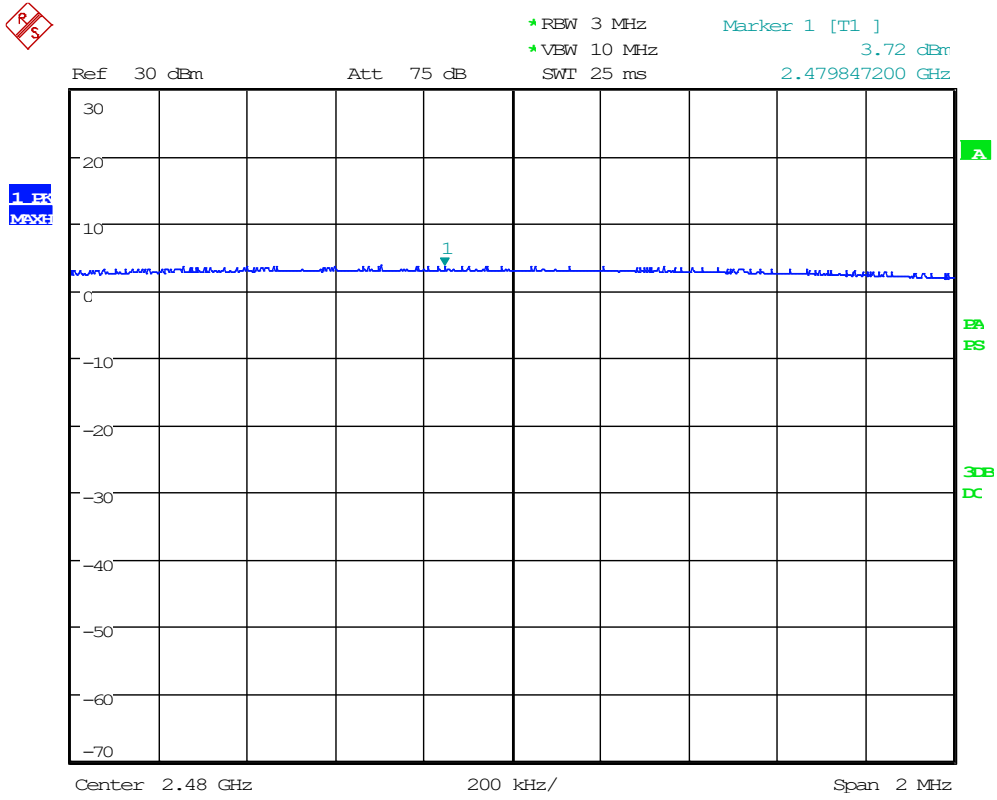
### Mid Channel



Date: 5.OCT.2022 15:02:45



### High Channel



Date: 5.OCT.2022 15:03:40



8 PHOTOGRAPH(S)

Test Setup: Conducted Output Power

