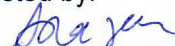



RADIO SPECTRUM TEST REPORT #	1344-4
Date of issue	05.12.2022.
Date of testing	24.11.2022.
Job #	1344
Customer	Workaround GmbH Building 64.08a, Rupert-Mayer-Straße 44, 81379 München, Germany
Manufacturer	Workaround GmbH Building 64.08a, Rupert-Mayer-Straße 44, 81379 München, Germany
Product/EUT	BLE barcode scanner (brand name ProGlove)
Model	MARK 3
Serial No.	M3XR B 10 000051 FCC ID: 2AOJL-MARK-3
VERDICT (based solely on tests listed in Clause 1)	PASS
Remarks: None.	

Tested by:



LAB engineer Andrijana Lazić

Verified by:


LAB engineer Andrijana Lazić



Approved by:


Technical Manager Saša Jorgovanović

Disclaimer:

This testing and results apply only for tested sample of the product (EUT). Laboratory is not responsible for the data submitted by the customer. Laboratory accepts no responsibility either misuses or wrong interpretations and decisions based on this report.

1. TEST SUMMARY

EUT is tested in the laboratory.

The purpose of the measurement is to find the peak antenna gain used by the EUT.

STANDARD	TEST METHOD	MODE OF OPERATION	LIMITS	VERDICT
/	Peak antenna gain measurement	Normal modulation (continuous transmission)	< 0 dBi	PASS (-3.70 dBi)

2. CONTENTS

- 0. Front page
- 1. Test summary
- 2. Contents
- 3. Identification of the EUT
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 - 3.2. Photographs/schematics
 - 3.3. Auxiliary equipment
 - 3.4. Modes of operation
 - 3.5. Limits
 - 3.6. Product related notes
- 4. Testing location and conditions
- 5. Test results
 - 5.1. Measurement of peak antenna gain
- 6. Measurement equipment
- 7. Measurement uncertainty
- 8. General remarks
- 9. Appendixes

3. IDENTIFICATION of the EUT

3.1. Data*

EUT: BLE barcode scanner

Model: ProGlove MARK 3
Serial No.: M3XR B 10 000051
FCC ID: 2A0JL-MARK-3

ProGlove MARK 3 (multi range)

WIRELESS COMMUNICATION

BLUETOOTH RADIO	Supports Bluetooth Low Energy 4.0, 4.1, 4.2, 5.0						
FREQUENCY RANGE	Frequency band used BLE: 2400-2483.5 MHz						
MAX RADIO-FREQU. POWER TRANSMITTED	< 20dBm						
TRANSMISSION RANGE	<table> <tr> <td>3rd party device</td><td>ProGlove Gateway</td></tr> <tr> <td>Free field: 40 m (131 ft)**</td><td>Free field: 70 m (230 ft)**</td></tr> <tr> <td>Indoor: 10-20 m (33-66 ft)**</td><td>Indoor: 30-40 m (100-130 ft)**</td></tr> </table>	3 rd party device	ProGlove Gateway	Free field: 40 m (131 ft)**	Free field: 70 m (230 ft)**	Indoor: 10-20 m (33-66 ft)**	Indoor: 30-40 m (100-130 ft)**
3 rd party device	ProGlove Gateway						
Free field: 40 m (131 ft)**	Free field: 70 m (230 ft)**						
Indoor: 10-20 m (33-66 ft)**	Indoor: 30-40 m (100-130 ft)**						

**may decrease in industrial environments (e.g. due to walls, metal shelving, machines)

BARCODE DECODING CAPABILITIES

1D	Auto decodes all standard 1D codes including GS1 DataBar linear codes et al.
2D	PDF417, MicroPDF417, Data matrix, QR Code, Micro QR Code, Aztec, MaxiCode, et al.
POSTAL	US PostNet, US Planet, UK Postal, Australia Postal, Japan Postal, Dutch Postal (KIX) et Al.

ELECTRICAL PROPERTIES

BATTERY	670 mAh, Lithium polymer (rechargeable)
CHARGING TIME	2 hours with ProGlove Charging Station
OPERATING TIME / SCANS	approx. 12000 scans depending on the application and environmental conditions

MECHANICAL PROPERTIES

DIMENSIONS	50 x 45 x 17 mm (1.47 x 1.77 x 0.67 in)
WEIGHT	42 g (1.48 oz)

ENVIRONMENTAL CONDITIONS

DROP RESISTANCE	Resists 100 drops from 2 m (6.5 ft) onto concrete
TUMBLES	1000 tumbles from 1 m
PROTECTION AGAINST DUST AND WATER	IP 65
TEMPERATURE	Operating Temperature: -20°C - 50°C (-4°F - 122°F) Charging Temperature: 5°C - 40°C (41°F - 104°F) Storage Temperature: -20°C - 60°C (-4°F - 140°F)
HUMIDITY	5% - 95% non condensing
ELECTROSTATIC DISCHARGE (ESD)	±8kVdc air discharge ±4kVdc contact discharge

INTERFACES

BLUETOOTH	HID Profiles
ANDROID	HID, Insight Mobile (Android) (App/SDK)
IOS	HID, Insight Mobile (iOS) (SDK)
USB	ProGlove Gateway

SCANNER PROPERTIES

RESOLUTION	2688 x 1520
READING FIELD OF VIEW	Horizontal: 37°, vertical: 21°
SKREW, PITCH & ROLL	Skew tolerance: ±60° Pitch tolerance: ±60° Roll tolerance: 360°
AMBIENT LIGHT	0 - 107,639 lux
AIMER	Green Laser 520nm

UTILITIES & ACCESSORIES*

CONFIGURATION & DEVICE MANAGEMENT	https://insight.proglove.com
DIGITAL DOCUMENTATION ANDROID INTEGRATION	https://docs.proglove.com Insight Mobile: Provides a full featured integration for Android enterprise applications.
GATEWAY INTEGRATION	ProGlove Gateway: Hardware connector to enable the full capabilities of the ProGlove Ecosystem via USB-Interface.
TRIGGER	Scanner can be triggered only with ProGlove wearables (Hand Strap, Index-Trigger, Reel et al.)

SCAN RANGES

Minimum distance determined by symbol length, scan-angle and environmental conditions (e.g. lightning, printing quality, contrast et al.).

MULTI RANGE

3 mil Code 39	Near Distance: 2.7 in./6.9 cm; Far Distance: 16.2 in./41.1 cm
5 mil Code 39	Near Distance: 2.5 in./6.4 cm; Far Distance: 26.6 in./67.6 cm
5 mil PDF417	Near Distance: 2.8 in./7.1 cm; Far Distance: 19.6 in./49.8 cm
6.7 mil PDF417	Near Distance: 2.6 in./6.6 cm; Far Distance: 25.6 in./65.0 cm
10 mil DataMatrix	Near Distance: 2.2 in./5.6 cm; Far Distance: 27.1 in./68.8 cm
100% UPCA (13 mil)	Near Distance: 2.5 in./6.4 cm; Far Distance: 71 in./180 cm
15 mil Code 128	Near Distance: 7.2 in./18.2 cm; Far Distance: 72 in./182.9 cm
20 mil Code 39	Far Distance: 109 in./276.9 cm
55 mil Code 39	Far Distance: 293 in./744.2 cm
100 mil Code 39	Far Distance: 554 in./1407.2 cm
100 mil DataMatrix	Far Distance: 270 in./685.8 cm

WARRANTY & SLA

WARRANTY	12 months factory warranty
PROGLOVE CARE	36 and 60 months maintenance contracts available. For more information please contact your ProGlove representative or visit https://proglove.com

SAFETY & REGULATORY

RADIO AND ELECTROMAGNETIC COMPATIBILITY	EU: 2014/53/EU Radio Equipment Directive (RED) FCC ID: xx IC: xx
ELECTRICAL SAFETY	EU: acc. to 2014/53/EU Radio Equipment Directive (RED) EN 62368-1:2014 + A11:2017 INTERNATIONAL: IEC 62368-1:2014 US: UL 62368-1 and CAN/CSA C22.2 No. 62368-1
LASER CLASSIFICATION	Multi range: According to EN 60825-1: 2014 and IEC 60825-1 (Ed. 3.0) Laser class 2 device. Caution Laser Radiation - Do not stare into beam.
ENVIRONMENTAL	RoHS Directive 2011/65/EU; Amendment 2015/863, REACH SVHC 1907/2006, WEEE

COUNTRY CERTIFICATION

Regulatory markings are affixed to the device, indicating that the radio modules are approved for use in the following regions: European Economic Area*, Canada, United States of America, United Mexican States, China.

Detailed information on the regulatory markings can be found in the Declaration of Conformity (DoC) at www.proglove.com

*CE is valid in the European Economic Area and additional countries: Austria, Belgium, Bulgaria, Croatia, Republic of Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom, Iceland, Liechtenstein, Switzerland and Norway.

*Supplied by the customer

3.2. Photographs/schematics



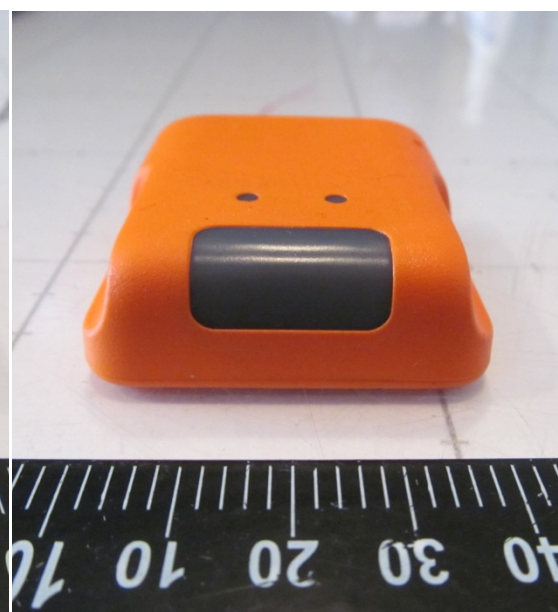
EUT, top side



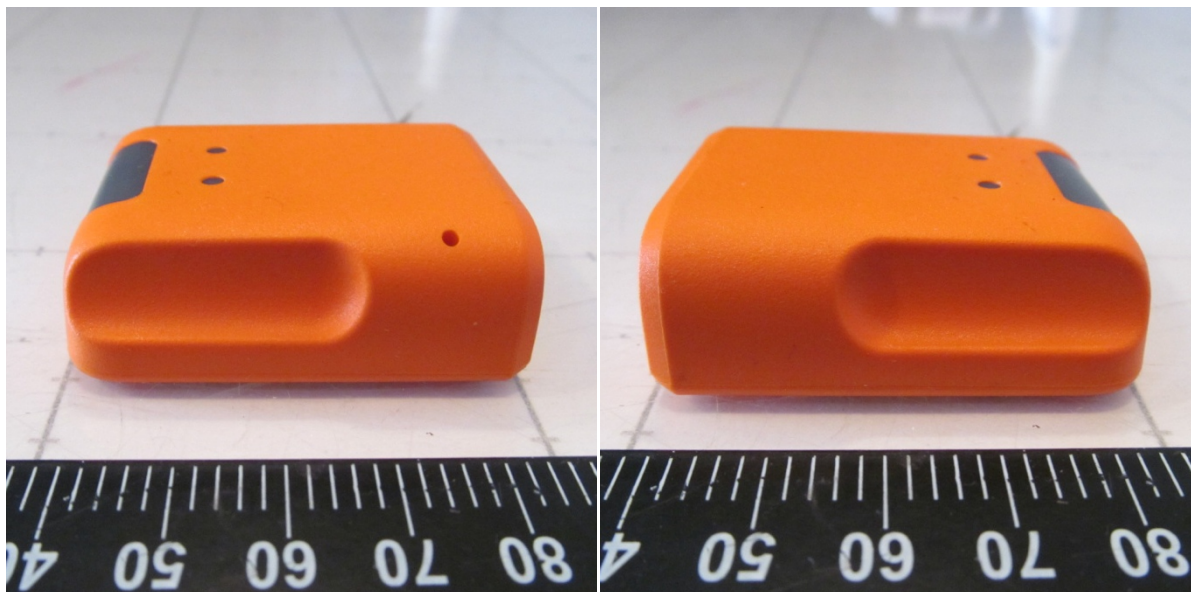
EUT, bottom side



EUT, front side



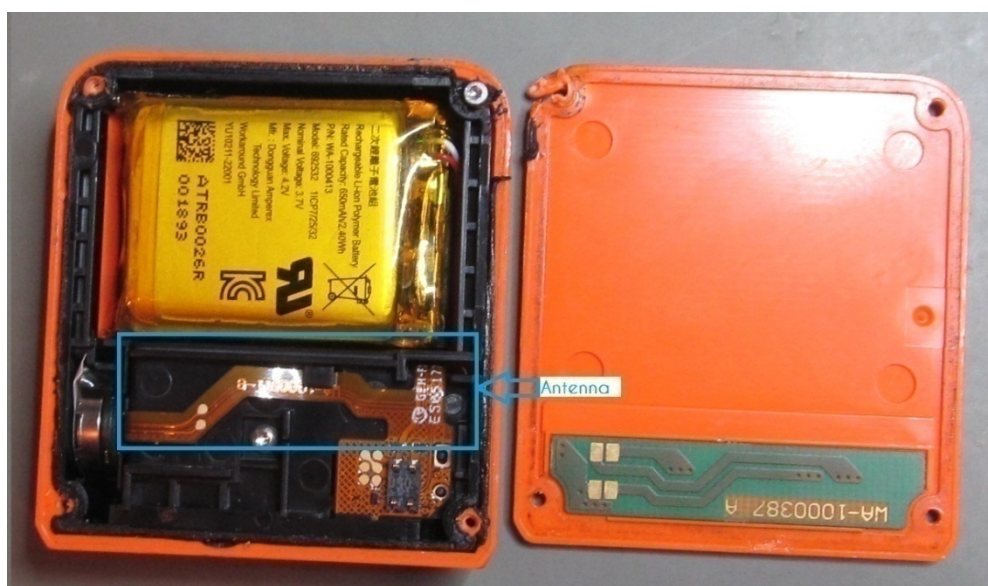
EUT, rear side



EUT, lateral sides



EUT, the label



EUT, inside

3.3. Auxiliary equipment

MARK	NAME / TYPE / PURPOSE	QUANTITY
PGCS 2200 19063	Charging Station + AC/DC adapter	1
/	Glove/trigger	1



3.4. Modes of operation

MODE OF OPERATION	DESCRIPTION
Normal modulation (continuous transmission)	The EUT is battery-powered (~3.7 V DC). The EUT is transmitting a pseudo-random bitstream (modulated) continuously at the fixed channel. Special barcodes are used to set transmission at the fixed channel with 1 Mbps or 2 Mbps data rate (see figure 1 below). The Tx output power (power delivered to the antenna port) is 0.15 dBm. ⁽¹⁾

⁽¹⁾ The maximum conducted RF output power is 0.15 dBm, according to the test report No. UL-RPT-RP-14317245-216-FCC issued on July 12, 2022 from UL INTERNATIONAL GERMANY GMBH.



Figure 1: Barcodes for setting transmission at the fixed channel with 1 Mbps / 2 Mbps data rate

3.5. Limits

Maximum peak antenna gain to be < 0 dBi as declared by the manufacturer.

3.6. Product related notes

Product information (declared by the customer):

Modulation	Other types of wide band modulation than FHSS
RF output power (e.i.r.p.) ⁽¹⁾	0 dBm
Power spectral density	<10 dBm / MHz
The different transmit operating modes	Equipment with only one antenna
Operating frequency range(s)	2402 MHz (channel 37) to 2480 MHz (channel 39)
Occupied channel bandwidth	1 MHz / 2 MHz
Type of equipment (stand-alone, plug-in, combined, etc.)	Stand-alone
Antenna type	Integral antenna
Antenna gain	< 0 dBi
Supply voltage	3.7 VDC
The type of power source	Battery
The equipment type(e.g. Bluetooth, IEEE 802.11, IEEE 802.15.4, etc.)	Bluetooth LE
Adaptive / non- adaptive equipment	Non-adaptive equipment
Duty cycle, Tx-Sequence, Tx-gap	Not applicable
Medium Utilization	Not applicable

⁽¹⁾ *The worst case operational mode.*

4. TESTING LOCATION AND CONDITIONS

Location: **Idvorsky Laboratories Ltd. Belgrade**
Volgina 15, 11060 Belgrade, Serbia

Conditions:

Temperature:	21.8 °C
Relative humidity:	44.3 %
Atmospheric pressure:	985 hPa

5. TEST RESULTS

The tests are performed at the lowest, the middle and the highest operating channel frequency.

5.1. Measurement of peak antenna gain

Date: 24.11.2022.
Tested under: Normal test conditions
Test conducted by: Andrijana Lazić

5.1.1. Setup

