

| EMC TEST REPORT             |  |                  |  |  |  |  |  |
|-----------------------------|--|------------------|--|--|--|--|--|
|                             | FCC 47 CFR Part 15B<br>Industry Canada ICES-003  |                  |  |  |  |  |  |
| Electromagr                 | Electromagnetic compatibility - Unintentional radiators  |                  |  |  |  |  |  |
| Report Reference No         | G0M-1705-6514-EF0215B-V02  |                  |  |  |  |  |  |
| Testing Laboratory          | Eurofins Product Service GmbH  |                  |  |  |  |  |  |
| Address:                    | Storkower Str. 38c<br>15526 Reichenwalde<br>Germany  |                  |  |  |  |  |  |
|                             |  |                  |  |  |  |  |  |
|                             | A2LA Accredited Testing Laborato<br>FCC Test Firm Designation Number<br>IC Testing Laboratory site: 3470A- | er: DE0008       |  |  |  |  |  |
| Applicant's name:           | : Robert Bosch Tool Corporation  |                  |  |  |  |  |  |
| Address :                   | : 1800 W. Central Road<br>60056 Mount Prospect, IL<br>USA  |                  |  |  |  |  |  |
| Test specification:         |  |                  |  |  |  |  |  |
| Standard:                   | 47 CFR Part 15 Subpart B<br>ICES-003, Issue 6:2016<br>ANSI C63.4:2014                                      |                  |  |  |  |  |  |
| Equipment under test (EUT): |  |                  |  |  |  |  |  |
| Product description         | Laser Rangefinder  |                  |  |  |  |  |  |
| Model No.                   | GLM400CL   |                  |  |  |  |  |  |
| Additional Models           | None   |                  |  |  |  |  |  |
| Hardware version            | Main PCBA 3.1 (BOM 3.2), Long-Range PCBA 3.3   |                  |  |  |  |  |  |
| Firmware / Software version | CPU 1.0.0, MCU 1.0.0, Bluetooth 7  | 1.2.0            |  |  |  |  |  |
|                             | FCC-ID: TXTGLM400C   | IC: 909H-GLM400C |  |  |  |  |  |
| Test result                 | Passed   |                  |  |  |  |  |  |



| Possible test case verdicts:  |            |  |  |  |
|---|------------|--|--|--|
| - not applicable to test object   | N/A        |  |  |  |
| - test object does meet the requirement   | P (Pass)   |  |  |  |
| - test object does not meet the requirement   | F (Fail)   |  |  |  |
| Testing:  |            |  |  |  |
| Date of receipt of test item  | 2017-11-22 |  |  |  |
| Date (s) of performance of tests  | 2017-12-15 |  |  |  |
| Compiled by Matthias Handrik  |            |  |  |  |
| Tested by (+ signature) Matthias Handrik  | ( pent     |  |  |  |
| Approved by (+ signature): Jens Marquardt<br>Deputy Head of Lab   | J- Kyw     |  |  |  |
| Date of issue 2018-01-31  |            |  |  |  |
| Total number of pages 32  |            |  |  |  |
| General remarks:  |            |  |  |  |
| The test results presented in this report relate only to the object tested.<br>The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.<br>This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. |            |  |  |  |
|   |            |  |  |  |



### **Version History**

| Version | Issue Date | Remarks            | Revised by |
|---------|------------|--------------------|------------|
| V01     | 2017-12-19 | Initial Release    |            |
| V02     | 2018-01-31 | FCC ID / IC added. | M. Handrik |



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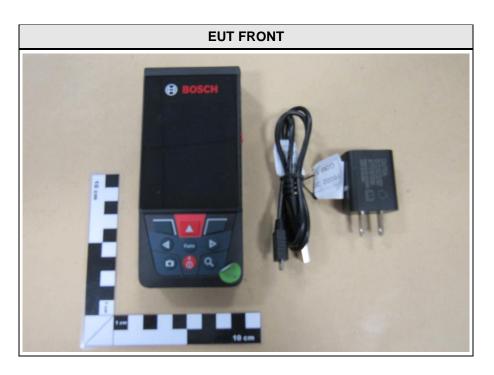


### 1 Equipment (Test item) Description

| Description                 | Laser Rangefinder   |                             |  |
|-----------------------------|---|-----------------------------|--|
| Model                       | GLM 400CL   |                             |  |
| Additional Models           | None  |                             |  |
| Serial number               | None  |                             |  |
| Hardware version            | Main PCBA 3.1 (BO   | M 3.2), Long-Range PCBA 3.3 |  |
| Software / Firmware version | CPU 1.0.0, MCU 1.0  | .0, Bluetooth 1.2.0         |  |
| FCC-ID                      | TXTGLM400C  |                             |  |
| IC                          | 909H-GLM400C  |                             |  |
| Power supply                | 3.6V DC   |                             |  |
| AC/DC-Adaptor               | Model : 1600A0143H<br>Manufacturer : Bosch<br>Input : 100-240VAC / 50-60Hz<br>Output : 5V DC / 1.0A |                             |  |
|                             | Туре  | Bluetooth Low Energy        |  |
|                             | Model   | unspecified                 |  |
|                             | Manufacturer  | unspecified                 |  |
| Radio module                | HW Version  | unspecified                 |  |
|                             | SW Version  | unspecified                 |  |
|                             | SVN   | unspecified                 |  |
|                             | FCC-ID  | unspecified                 |  |
|                             | IC  | unspecified                 |  |
|                             | Robert Bosch Power  | Tools GmbH                  |  |
| Manufacturer                | 70538 Stuttgart   |                             |  |
|                             | Germany   |                             |  |
| Highest emission frequency  | 2480MHz   |                             |  |
| Device classification       | Class B   |                             |  |
| Equipment type              | Tabletop  |                             |  |
| Number of tested samples    | 1   |                             |  |



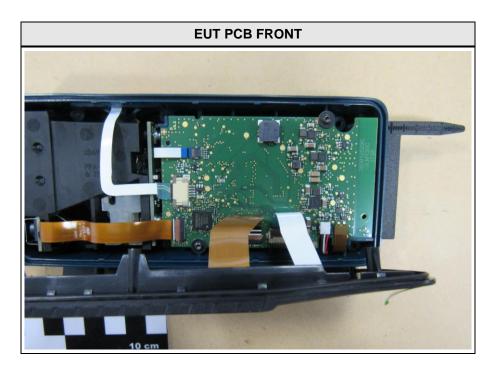
#### 1.1 Photos – Equipment external

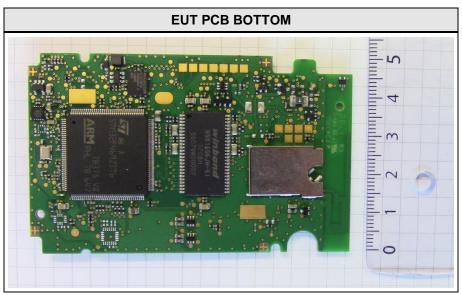






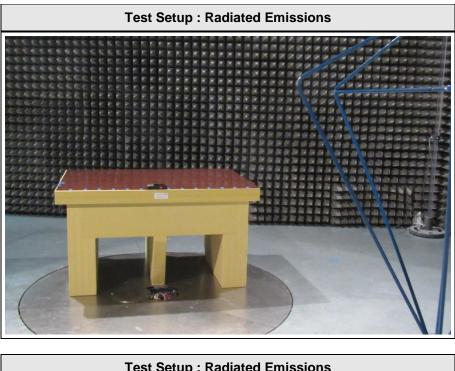
#### 1.2 Photos – Equipment internal

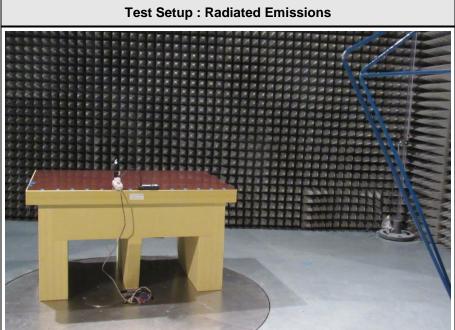




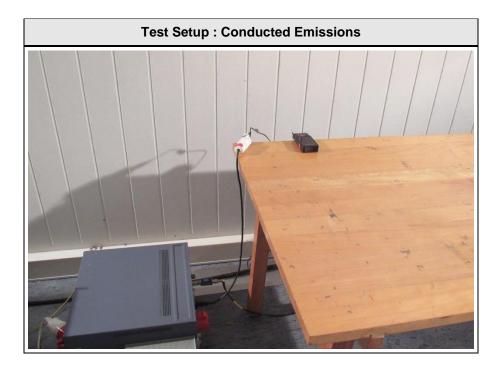


#### 1.3 Photos – Test setup











#### 1.4 Supporting Equipment Used During Testing

| Product<br>Type* | Device                                  | Manufacturer | Model No.                  | Comments (e.g. serial no.) |  |  |
|------------------|---|--------------|----------------------------|----------------------------|--|--|
| AE               | iPhone                                  | Apple        | A1429 EMC 2610             |                            |  |  |
| AE               | AC adapter                              | Bosch        | 1600A0143H                 |                            |  |  |
| AE               | USB cable                               | Bosch        | 2609120670                 |                            |  |  |
| AE               | Software application                    | Bosch        | App version:<br>1.2.0.7942 | Measuring Master           |  |  |
|                  |   | None         |                            |                            |  |  |
| *Note: Use       | e the following abbrevia                | ations:      |                            |                            |  |  |
| AE :             | AE : Auxiliary/Associated Equipment, or |              |                            |                            |  |  |
| SIM :            | SIM : Simulator (Not Subjected to Test) |              |                            |                            |  |  |
| CABL :           | CABL : Connecting cables                |              |                            |                            |  |  |

#### 1.5 Input / Output Ports

| Port #   | Name                                    | Туре*    | Max. Cable<br>Length | Cable<br>Shielded | Comments (e.g. Cat. of Cable) |  |
|----------|---|----------|----------------------|-------------------|-------------------------------|--|
| 1        | USB                                     | DC / I/O | 60cm                 |                   |                               |  |
| *Note: U | *Note: Use the following abbreviations: |          |                      |                   |                               |  |
| AC       | AC : AC power port                      |          |                      |                   |                               |  |
| DC       | DC : DC power port                      |          |                      |                   |                               |  |
| N/E      | N/E : Non electrical                    |          |                      |                   |                               |  |
| I/C      | I/O : Signal input or output port       |          |                      |                   |                               |  |
| TF       | TP : Telecommunication port             |          |                      |                   |                               |  |



#### **1.6 Operating Modes and Configurations**

| Mode # | Description  |
|--------|--|
| 1      | EUT powered up. Bluetooth Low Energy connection to iPhone.<br>Software application: continuous measurement mode. |
| 2      | Charging via AC/DC adaptor   |

| Configuration # | EUT Configuration   |  |
|-----------------|---|--|
| Bluetooth       | EUT powered up. Software application on iPhone controlled EUT via Bluetooth Low Energy. iPhone is placed outside the measurement chamber. Measurement values transmit via Bluetooth Low Energy to iPhone. |  |
| Charging        | EUT connected via USB cable to AC/DC adaptor.   |  |



#### 1.7 Test Equipment Used During Testing

| Measurement Software               |              |            |           |  |
|------------------------------------|--------------|------------|-----------|--|
| Description                        | Manufacturer | Name       | Version   |  |
| EMC Test Software Dare Instruments |              | Radimation | 2016.1.10 |  |

| Conducted emissions SR1 |              |         |            |             |             |
|-------------------------|--------------|---------|------------|-------------|-------------|
| Description             | Manufacturer | Model   | Identifier | Cal. Date   | Cal. Due    |
| AMN                     | R&S          | ESH2-Z5 | EF00182    | 2017-01     | 2019-01     |
| AMN                     | R&S          | ESH3-Z5 | EF00036    | 2017-01     | 2019-01     |
| EMI Test Receiver       | R&S          | ESR7    | EF00943    | 2017-07     | 2018-07     |
| Cable                   | -            | RG223/U | -          | System Cal. | System Cal. |

| Radiated emissions AC1         |                          |                    |            |             |            |  |
|--------------------------------|--------------------------|--------------------|------------|-------------|------------|--|
| Description                    | Manufacturer             | Model              | Identifier | Cal. Date   | Cal. Due   |  |
| Biconical Antenna              | R&S                      | HK 116             | EF00030    | 2016-04     | 2019-04    |  |
| LPD Antenna                    | R&S                      | HL 223             | EF00187    | 2016-05     | 2019-05    |  |
| Double-Ridged<br>Guide Antenna | ETS-Lindgren<br>USA      | 3117               | EF01256    | 2017-07     | 2018-07    |  |
| MXE EMI Receiver               | Keysight<br>Technologies | N9038A-<br>526/WXP | EF01070    | 2017-08     | 2018-08    |  |
| RF Cable                       |                          |                    | -          | System Cal. | System Cal |  |
| RF Cable                       |                          |                    | -          | System Cal. | System Cal |  |



#### **1.8 Sample emission level calculation**

The following is a description of terms and a sample calculation, as appears in the radiated emissions data table. The numbers used in the calculation are for example only. There is no direct correlation to the specific data taken for the product described in this document:

Reading:

This is the reading obtained on the spectrum analyzer in  $dB\mu V$ . Any external preamplifiers used are taken into account through internal analyzer settings.

A.F.:

This is the antenna factor for the receiving antenna. It is a conversion factor, which converts electric fields strengths to voltages, which can be measured directly on the spectrum analyzer. It is treated as a loss in dB. Cable losses have been included with the A.F. to simplify the calculations. The antenna factor is used in calculations as follows:

Reading on Analyzer ( $dB\mu V$ ) + A.F. (dB) = Net field strength ( $dB\mu V/m$ )

Net:

This is the net field strength measurement (as shown above).

Limit:

This is the FCC Class B radiated emission limit (in units of  $dB\mu V/m$ ). The FCC limits are given in units of  $\mu V/m$ . The following formula is used to convert the units of  $\mu V/m$  to  $dB\mu V/m$ :

Limit (dB
$$\mu$$
V/m) = 20\*log ( $\mu$ V/m)

Margin:

This is the margin of compliance below the FCC limit. The units are given in dB. A negative margin indicates the emission was below the limit. A positive margin indicates that the emission exceeds the limit.

Example only:

| Reading + AF =      | <ul> <li>Net Reading</li> </ul> | : | Net reading - FCC limit = Margin  |
|---------------------|---------------------------------|---|---|
| 21.5 dBµV + 26 dB = | 47.5 dBμV/m                     | : | $47.5 \text{ dB}\mu\text{V/m} - 57.0 \text{ dB}\mu\text{V/m} = -9.5 \text{ dB}$ |



### 2 Result Summary

| FCC 47 CFR Part 15B, Industry Canada ICES-003 |                                   |                     |        |         |
|---|-----------------------------------|---------------------|--------|---------|
| Product Specific<br>Standard                  | Requirement – Test                | Reference<br>Method | Result | Remarks |
| 47 CFR 15.109<br>ICES-003 Item 6.2            | Radiated emissions                | ANSI C 63.4         | PASS   |         |
| 47 CFR 15.107<br>ICES-003 Item 6.1            | AC power line conducted emissions | ANSI C63.4          | PASS   |         |
| Remarks:                                      | ·                                 |                     | •<br>• |         |



#### 3 Test Conditions and Results

#### 3.1 Test Conditions and Results – Radiated emissions

| Radiated emissions acc. FCC 47 CFR 15.109 / ICES-003 Verdict: |                            |                            | PASS             |                 |               |        |  |
|---|----------------------------|----------------------------|------------------|-----------------|---------------|--------|--|
| Laboratory Parameters:  |                            | Required prior to the test |                  | During the test |               |        |  |
| Ambient Temperature   |                            |                            | 15 to 35 °C      | 23°C            |               |        |  |
| Relative  | Humidity                   |                            | 30 to 60 %       |                 | 28%           |        |  |
| Test according referenced                                     |                            | Reference Method           |                  |                 |               |        |  |
|   | dards                      | ANSI C63.4                 |                  |                 |               |        |  |
| Sample is tested  | with respect to the        |                            | Equipme          | ent class       | •             |        |  |
|   | ne equipment class         | Class B                    |                  |                 |               |        |  |
| Test frequency ran  | ge determined from         | Highest emission frequency |                  |                 |               |        |  |
|   | sion frequency             | 2480MHz                    |                  |                 |               |        |  |
| Fully configured sa   | ample scanned over         | Frequency range            |                  |                 |               |        |  |
|   | equency range              | 30 MHz to 13 GHz           |                  |                 |               |        |  |
| Operating mode  |                            | 1/2                        |                  |                 |               |        |  |
| Configuration   |                            | Bluetooth / Charging       |                  |                 |               |        |  |
|   | Limits and results Class B |                            |                  |                 |               |        |  |
| Frequency [MHz]   | Quasi-Peak [dBµV/m         | n] Result                  | Average [dBµV/m] | Result          | Peak [dBµV/m] | Result |  |
| 30 - 88   | 40                         | PASS                       | -                |                 | -             | -      |  |
| 88 – 216  | 43.5                       | PASS                       | -                |                 | -             | -      |  |
| 216 – 960   | 46                         | PASS                       | -                |                 | -             | -      |  |
| 960 – 1000  | 54                         | PASS                       | -                |                 | -             | -      |  |
| > 1000  | -                          | -                          | 54               | PASS            | 74            | PASS   |  |
| Comments:   |                            |                            |                  |                 |               |        |  |



#### Test Procedure:

The test site is in accordance with ANSI C63-4:2014 requirements and is listed by FCC. The measurement procedure is as follows:

Exploratory measurement:

- The EUT was placed on a non-conductive table at a height of 0.8m.
- The EUT and support equipment, if needed, were set up to simulate typical usage.
- Cables, of type and length specified by the manufacturer, were connected to at least one port of each type and were terminated by a device or simulating load of actual usage.
- The antenna was placed at a distance of 3 or 10 m.
- The received signal was monitored at the measurement receiver.
  - Cables not bundled were manipulated within the range of likely arrangements to produce the highest emission amplitude
  - To maximize the suspected emissions the EUT is rotated 360 degrees. If the signal exceeds the previous amplitude, go back to the corresponding azimuth and manipulate the cables again for maximizing the emissions if possible.
  - Move the antenna from 1 to 4m to maximize the suspected highest amplitude signal.

• This procedure has to be performed in both antenna polarizations, horizontal and vertical.

• The arrangement of the equipment with the maximum emission level is shown on the setup picture at item 1.3.

Final measurement:

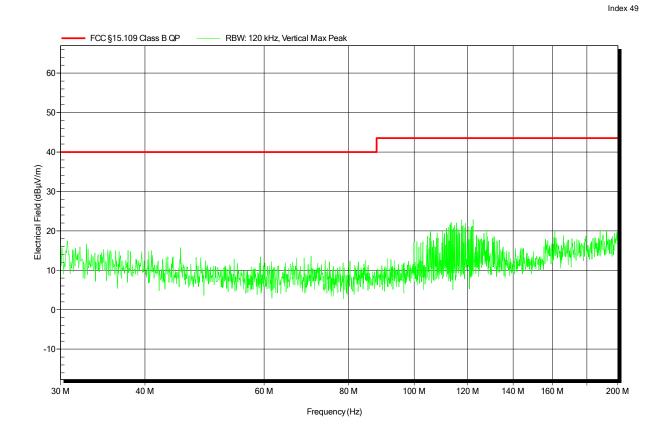
- The EUT was placed on a 0.8 m non-conductive table at a 3 m distance from the receive antenna. The antenna output was connected to the measurement receiver
- A biconical antenna was used for the frequency range 30 200 MHz, a logarithmic periodical antenna was used for the frequency range from 200 – 1000 MHz. Above one 1 GHz a Double Ridged Broadband Horn antenna was used. The antenna was placed on an adjustable height antenna mast
- The EUT and cable arrangement were based on the exploratory measurement results
- Emissions were maximized at each frequency by rotating the EUT and adjusting the receive antenna height and polarization. The maximum values were recorded.
- The test data of the worst-case conditions were recorded and shown on the next pages.



#### Radiated emissions under normal conditions according to FCC Part 15b

Project number: G0M-1705-6514

| Applicant:<br>EUT Name:<br>Model:<br>Test Site:<br>Operator:<br>Test Conditions:<br>Antenna:<br>Measurement distance:<br>Mode: | Robert Bosch GmbH<br>Laser Rangefinder<br>GLM400CL<br>Eurofins Product Service GmbH<br>Mr. Handrik<br>Tnom: 23°C, Unom: 3.6V DC<br>Rohde & Schwarz HK 116, Vertical<br>3m<br>Mode#1 |
|--|---|
|  |   |
| Test Date:   | 2017-12-15  |
| Note:  |   |

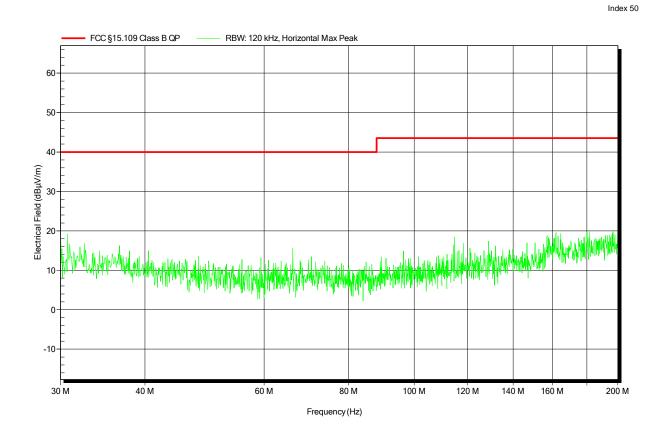




#### Radiated emissions under normal conditions according to FCC Part 15b

Project number: G0M-1705-6514

| Applicant:            | Robert Bosch GmbH                  |
|-----------------------|------------------------------------|
| EUT Name:             | Laser Rangefinder                  |
| Model:                | GLM400CL                           |
| Test Site:            | Eurofins Product Service GmbH      |
| Operator:             | Mr. Handrik                        |
| Test Conditions:      | Tnom: 23°C, Unom: 3.6V DC          |
| Antenna:              | Rohde & Schwarz HK 116, Horizontal |
| Measurement distance: | 3m                                 |
| Mode:                 | Mode#1                             |
| Test Date:            | 2017-12-15                         |
| Note:                 |                                    |

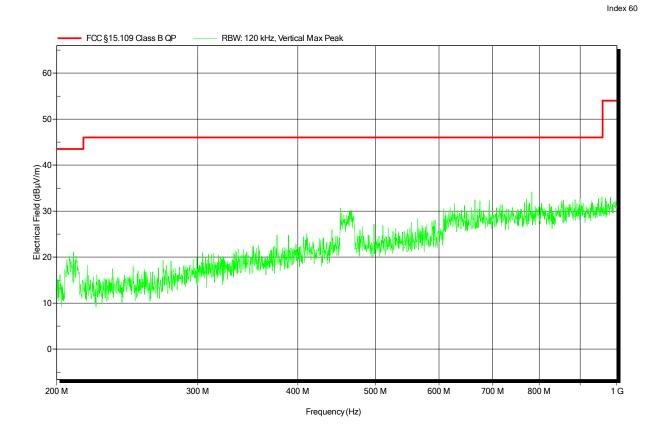




#### Radiated emissions under normal conditions according to FCC Part 15b

Project number: G0M-1705-6514

| Applicant:<br>EUT Name:<br>Model:<br>Test Site:<br>Operator:<br>Test Conditions:<br>Antenna:<br>Measurement distance:<br>Mode:<br>Test Date: | Robert Bosch GmbH<br>Laser Rangefinder<br>GLM400CL<br>Eurofins Product Service GmbH<br>Mr. Handrik<br>Tnom: 23°C, Unom: 3.6V DC<br>Rohde & Schwarz HL 223, Vertical<br>3m<br>mode#1<br>2017-12-15 |
|--|---|
| Test Date:   | 2017-12-15  |
| Note:  |   |





#### Radiated emissions under normal conditions according to FCC Part 15b

Project number: G0M-1705-6514

| Applicant:            | Robert Bosch GmbH                  |
|-----------------------|------------------------------------|
| EUT Name:             | Laser Rangefinder                  |
| Model:                | GLM400CL                           |
| Test Site:            | Eurofins Product Service GmbH      |
| Operator:             | Mr. Handrik                        |
| Test Conditions:      | Tnom: 23°C, Unom: 3.6V DC          |
| Antenna:              | Rohde & Schwarz HL 223, Horizontal |
| Measurement distance: | 3m                                 |
| Mode:                 | mode#1                             |
| Test Date:            | 2017-12-15                         |
| Note:                 |                                    |

FCC §15.109 Class B QP RBW: 120 kHz, Horizontal Max Peak RBW: 120 kHz, Horizontal Max Quasi Peak 60 50 Electrical Field (dBμV/m) 00 00 00 Very and an and and and and an and 10 0 200 M 300 M 400 M 500 M 600 M 700 M 800 M 1 G Frequency (Hz) Quasi-Peak Quasi-Peak Peak Number Quasi-Peak Quasi-Peak Height Frequency Angle Limit Difference Status 749.96 MHz 38.3 dBµV/m 46.02 dBµV/m -7.72 dB Pass -19 Degree 1 m 1 803.8 MHz 38.52 dBµV/m 46.02 dBµV/m -7.5 dB Pass -19 Degree 1 m 2 3 4 5 866.262 MHz 38.36 dBµV/m 46.02 dBµV/m -7.67 dB Pass -19 Degree 1 m -19 Degree -19 Degree 898.303 MHz -9.37 dB 36.65 dBµV/m 46.02 dBµV/m Pass 1 m 950.205 MHz -11.02 dB 35 dBµV/m 46.02 dBµV/m Pass 1 m

Test Report No.: G0M-1705-6514-EF0215B-V02

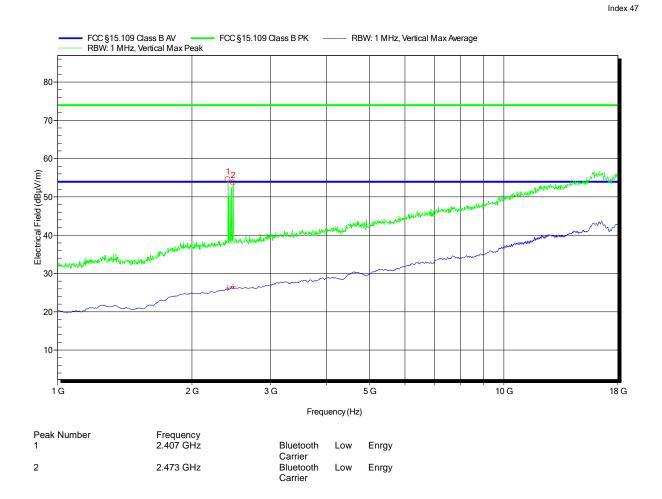
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#### Radiated emissions under normal conditions according to FCC Part 15b

Project number: G0M-1705-6514

| Applicant:            | Robert Bosch GmbH             |
|-----------------------|-------------------------------|
| EUT Name:             | Laser Rangefinder             |
| Model:                | GLM400CL                      |
| Test Site:            | Eurofins Product Service GmbH |
| Operator:             | Mr. Handrik                   |
| Test Conditions:      | Tnom: 23°C, Unom: 3.6V DC     |
| Antenna:              | ETS-Lindgren 3117, Vertical   |
| Measurement distance: | 3m                            |
| Mode:                 | Mode#1                        |
| Test Date:            | 2017-12-15                    |
| Note:                 |                               |

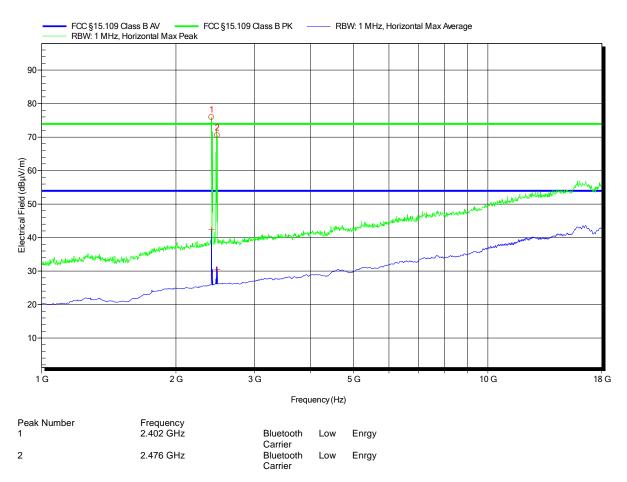




#### Radiated emissions under normal conditions according to FCC Part 15b

Project number: G0M-1705-6514

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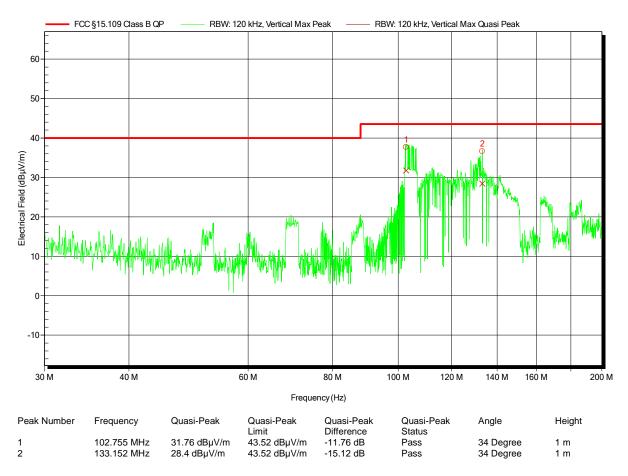
#### Radiated emissions under normal conditions according to FCC Part 15b

Project number: G0M-1705-6514

| Applicant:            | Robert Bosch GmbH                         |
|-----------------------|---|
| EUT Name:             | Laser Rangefinder                         |
| Model:                | GLM400CL                                  |
| Test Site:            | Eurofins Product Service GmbH             |
| Operator:             | Mr. Handrik                               |
| Test Conditions:      | Tnom: 23°C, Unom: 120V AC (AC/DC adaptor) |
| Antenna:              | Rohde & Schwarz HK 116, Vertical          |
| Measurement distance: | 3m  |
| Mode:                 | mode#2                                    |
| Test Date:            | 2017-12-15                                |

Note:

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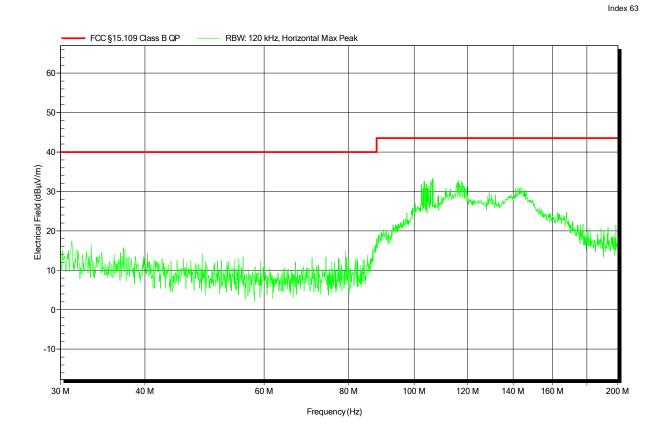




#### Radiated emissions under normal conditions according to FCC Part 15b

Project number: G0M-1705-6514

| Applicant:<br>EUT Name:<br>Model:<br>Test Site:<br>Operator:<br>Test Conditions:<br>Antenna:<br>Measurement distance:<br>Mode:<br>Test Date: | Robert Bosch GmbH<br>Laser Rangefinder<br>GLM400CL<br>Eurofins Product Service GmbH<br>Mr. Handrik<br>Tnom: 23°C, Unom: 120V AC (AC/DC adaptor)<br>Rohde & Schwarz HK 116, Horizontal<br>3m<br>mode#2<br>2017-12-15 |
|--|---|
| Test Date:<br>Note:  | 2017-12-15  |
| NULE.  |   |





#### Radiated emissions under normal conditions according to FCC Part 15b

Project number: G0M-1705-6514

| Applicant:<br>EUT Name:<br>Model:<br>Test Site:<br>Operator:<br>Test Conditions:<br>Antenna:<br>Measurement distance:<br>Mode:<br>Test Date: | Robert Bosch GmbH<br>Laser Rangefinder<br>GLM400CL<br>Eurofins Product Service GmbH<br>Mr. Handrik<br>Tnom: 23°C, Unom: 120V AC (AC/DC adaptor)<br>Rohde & Schwarz HL 223, Vertical<br>3m<br>mode#2<br>2017-12-15 |
|--|---|
|  | 2017-12-15  |
|  |   |

FCC §15.109 Class B QP RBW: 120 kHz, Vertical Max Peak 60 50 Electrical Field (dBµV/m) 10 0 800 M 200 M 300 M 400 M 500 M 600 M 700 M 1 G Frequency (Hz)

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#### Radiated emissions under normal conditions according to FCC Part 15b

Project number: G0M-1705-6514

FCC §15.109 Class B QP RBW: 120 kHz, Horizontal Max Peak 60 50 valitan ju pavilan mening an han hat the same at the standard and the same at the standard and the same at the s 10 0 200 M 300 M 400 M 500 M 600 M 700 M 800 M 1 G Frequency (Hz)

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#### Radiated emissions under normal conditions according to FCC Part 15b

Project number: G0M-1705-6514

| Applicant:<br>EUT Name:<br>Model:<br>Test Site:<br>Operator:<br>Test Conditions:<br>Antenna:<br>Measurement distance:<br>Mode:<br>Test Date: | Robert Bosch GmbH<br>Laser Rangefinder<br>GLM400CL<br>Eurofins Product Service GmbH<br>Mr. Handrik<br>Tnom: 23°C, Unom: 120V AC (AC/DC adaptor)<br>ETS-Lindgren 3117, Vertical<br>3m<br>mode#2<br>2017-12-15 |
|--|--|
| Test Date:   | 2017-12-15   |
| Note:  |  |

FCC §15.109 Class B AV FCC §15.109 Class B PK - RBW: 1 MHz, Vertical Max Average \_ RBW: 1 MHz, Vertical Max Peak 80 70 Electrical Field (dBµV/m) 00 00 00 William ut la wither 30 Mana 20 10 G 2 G 3<sup>'</sup>G 5G 13 G 1 G Frequency (Hz)

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#### Radiated emissions under normal conditions according to FCC Part 15b

Project number: G0M-1705-6514

| Applicant:<br>EUT Name:<br>Model:<br>Test Site:<br>Operator:<br>Test Conditions:<br>Antenna:<br>Measurement distance:<br>Mode:<br>Test Date: | Robert Bosch GmbH<br>Laser Rangefinder<br>GLM400CL<br>Eurofins Product Service GmbH<br>Mr. Handrik<br>Tnom: 23°C, Unom: 120V AC (AC/DC adaptor)<br>ETS-Lindgren 3117, Horizontal<br>3m<br>mode#2<br>2017-12-15 |
|--|--|
|  | 2017-12-15   |
| Note:  |  |

FCC §15.109 Class B AV FCC §15.109 Class B PK - RBW: 1 MHz, Horizontal Max Average -RBW: 1 MHz, Horizontal Max Peak 80 70 Electrical Field (dBµV/m) 00 00 00 alamber and the لامهار المرادي MAN MAN 30 www.www.minneleuluw 20 10 G 2 G 3<sup>'</sup>G 5G 13 G 1 G Frequency (Hz)

Test Report No.: G0M-1705-6514-EF0215B-V02

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#### 3.2 Test Conditions and Results – AC power line conducted emissions

| Conducted emissions acc. FCC 47 CFR 15.107 / ICES-003 Verdict: F         |                      |                    |                       |      | Verdict: PASS |            |  |
|--|----------------------|--------------------|-----------------------|------|---------------|------------|--|
| Laboratory Para  | meters:              | Req                | uired prior to the t  | est  | Durin         | g the test |  |
| Ambient Temperature  |                      |                    | 15 to 35 °C           |      | 23°C          |            |  |
| Relative Humidity  |                      |                    | 30 to 60 %            |      | 27%           |            |  |
| Test according referenced standards                                      |                      | Reference Method   |                       |      |               |            |  |
|  |                      | ANSI C63.4         |                       |      |               |            |  |
| Fully configured sample scanned over the following frequency range       |                      | Frequency range    |                       |      |               |            |  |
|  |                      | 0.15 MHz to 30 MHz |                       |      |               |            |  |
| Sample is tested with respect to the requirements of the equipment class |                      | Equipment class    |                       |      |               |            |  |
|  |                      | Class B            |                       |      |               |            |  |
| Points of Appli  | cation               |                    | Application Interface |      |               |            |  |
| AC Mains   |                      |                    | LISN                  |      |               |            |  |
| Operating mode   |                      | 2                  |                       |      |               |            |  |
| Configuration  |                      |                    | Charging              |      |               |            |  |
| Limits and results Class B   |                      |                    |                       |      |               |            |  |
| Frequency [MHz]  | Quasi-Peak [         | dBµV]              | Result                | Aver | age [dBµV]    | Result     |  |
| 0.15 to 5  | 66 to 56*            |                    | PASS                  | 5    | 6 to 46*      | PASS       |  |
| 0.5 to 5   | 56                   |                    | PASS                  |      | 46            | PASS       |  |
| 5 to 30  | 60                   |                    | PASS                  |      | 50            | PASS       |  |
| Comments:<br>* Limit decreases linearly w                                | vith the logarithm o | f the frequ        | ency.                 |      |               |            |  |



#### Test Procedure:

The test site is in accordance with ANSI C63-4:2014 requirements and is listed by FCC. The measurement procedure is as follows:

Exploratory measurement:

- The EUT was placed on a non conductive table 0.8 m above the reference ground plane and 0.4 m away from the vertical conducting plane (ANSI C63.4: 2014 item 7.3.1)
- The power cord that is normally supplied or recommended by the manufacturer was connected to the LISN.
- The distance between the outer edge of the EUT and the LISN shall be set to 0.8 m. A longer power cord shall be bundled to this length (bundling shall not exceed 40 cm in length).
- The LISN measurement port was connected to a measurement receiver
- I/O cables were bundled not longer than 0.4 m
- Measurement was performed in the frequency range 0.15 30MHz on each current-carrying conductor
- To maximize the emissions the cable positions were manipulated
- The worst configuration of EUT and cables is shown on a test setup picture at item 1.3

#### **Test Procedure:**

Final measurement:

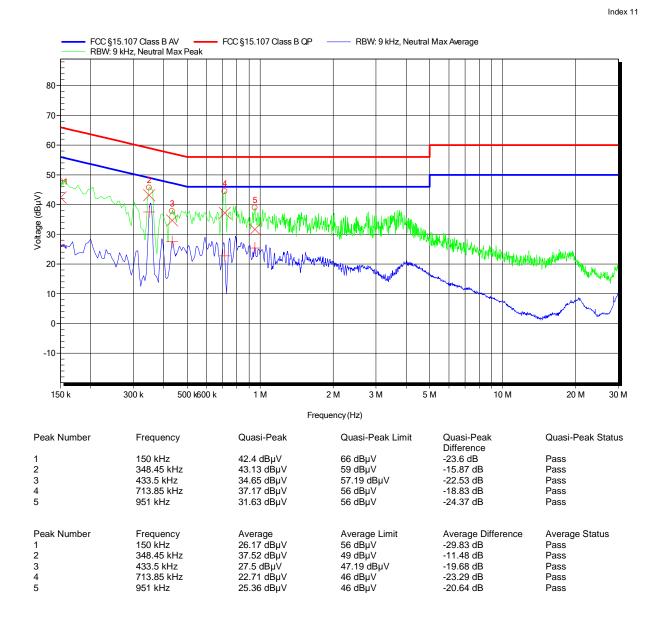
- The EUT was placed on a non conductive table 0.8 m above the reference ground plane and 0.4 m away from the vertical conducting plane (ANSI C63.4: 2014 item 7.3.1)
- The power cord that is normally supplied or recommended by the manufacturer was connected to the LISN.
- The distance between the outer edge of the EUT and the LISN shall be set to 0.8 m. A longer power cord shall be bundled to this length (bundling shall not exceed 40 cm in length).
- The LISN measurement port was connected to a measurement receiver
- The EUT and cable arrangement were based on the exploratory measurement results
- The test data of the worst-case conditions were recorded and shown on the next pages.



#### EMI voltage test in the ac-mains according to FCC 15B

Project number: G0M-1705-6514

| Applicant:<br>EUT Name:<br>Model:<br>Test Site:<br>Operator:<br>Test Conditions:<br>LISN:<br>Mode:<br>Test Date: | Robert Bosch GmbH<br>Laser Rangefinder<br>GLM400CL<br>Eurofins Product Service GmbH<br>Mr. Handrik<br>Tnom: 22°C, Unom: 120V AC (AC/DC adaptor)<br>ESH2-Z5 N<br>mode#2<br>2017-12-15 |
|--|--|
| Test Date:   | 2017-12-15   |
| Note:  |  |





#### EMI voltage test in the ac-mains according to FCC 15B

Project number: G0M-1705-6614

