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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Prüfbericht-Nr.:</b><br>Test report no.:                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>IN25DYSZ 001/IN25AC4W 001</b><br><b>IN25R2HW 001/IN25JD8U 001</b>                                                                                                                                       | <b>Auftrags-Nr.:</b><br>Order no.:   | 146973395 010                            | Seite 1 von 5<br>Page 1 of 5                                                          |
| <b>Kunden-Referenz-Nr.:</b><br>Client reference no.:                                                                                                                                                                                                                                                                                                                                                                                                                 | 2053360                                                                                                                                                                                                    | <b>Auftragsdatum:</b><br>Order date: | 2024-10-14                               |                                                                                       |
| <b>Auftraggeber:</b><br>Client:                                                                                                                                                                                                                                                                                                                                                                                                                                      | Fisher Controls International LLC<br>205 South Center Street, Marshalltown IA 50158, USA                                                                                                                   |                                      |                                          |                                                                                       |
| <b>Prüfgegenstand:</b><br>Test item:                                                                                                                                                                                                                                                                                                                                                                                                                                 | FISHER™ ARMOR™                                                                                                                                                                                             |                                      |                                          |                                                                                       |
| <b>Bezeichnung / Typ-Nr.:</b><br>Identification / Type no.:                                                                                                                                                                                                                                                                                                                                                                                                          | ARMOR 8000                                                                                                                                                                                                 |                                      |                                          |                                                                                       |
| <b>Auftrags-Inhalt:</b><br>Order content:                                                                                                                                                                                                                                                                                                                                                                                                                            | Testing and issue of Test Report with Grant Certificate                                                                                                                                                    |                                      |                                          |                                                                                       |
| <b>Prüfgrundlage:</b><br>Test specification:                                                                                                                                                                                                                                                                                                                                                                                                                         | FCC Part1 1.1310, KDB 447498 D01<br>RSS 102 Issue 6                                                                                                                                                        |                                      |                                          |                                                                                       |
| <b>Wareneingangsdatum:</b><br>Date of sample receipt:                                                                                                                                                                                                                                                                                                                                                                                                                | 2025-02-03                                                                                                                                                                                                 |                                      |                                          |                                                                                       |
| <b>Prüfmuster-Nr.:</b><br>Test sample no:                                                                                                                                                                                                                                                                                                                                                                                                                            | A003919647-002                                                                                                                                                                                             |                                      |                                          |                                                                                       |
| <b>Prüfzeitraum:</b><br>Testing period:                                                                                                                                                                                                                                                                                                                                                                                                                              | 2025-02-17 - 2025-03-07                                                                                                                                                                                    |                                      |                                          |                                                                                       |
| <b>Ort der Prüfung:</b><br>Place of testing:                                                                                                                                                                                                                                                                                                                                                                                                                         | Wireless laboratory,<br>Bangalore                                                                                                                                                                          |                                      |                                          |                                                                                       |
| <b>Prüflaboratorium:</b><br>Testing laboratory:                                                                                                                                                                                                                                                                                                                                                                                                                      | TÜV Rheinland (India)<br>Pvt.Ltd., 27/B, 2nd Cross,<br>Electronic City Phase1<br>Bangalore -560 100, India<br>FCC Test site registration<br>number: 496599<br>ISED Test site registration<br>number: 27711 |                                      |                                          |                                                                                       |
| <b>Prüfergebnis*:</b><br>Test result*:                                                                                                                                                                                                                                                                                                                                                                                                                               | Pass                                                                                                                                                                                                       |                                      |                                          |                                                                                       |
| <b>geprüft von:</b><br>tested by:                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                         |                                      | <b>genehmigt von:</b><br>authorized by:  |  |
| <b>Datum:</b><br>Date:                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2025-05-30<br><small>Signed by: Naveen Kumar Muthyalapati Venkata</small>                                                                                                                                  |                                      | <b>Ausstellungsdatum:</b><br>Issue date: | 2025-05-30<br><small>Signed by: Madhu Nagaraju</small>                                |
| <b>Stellung / Position:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>M.V.Naveen Kumar</b><br><b>Senior Engineer</b>                                                                                                                                                          |                                      | <b>Stellung / Position:</b>              | <b>Madhu K.N</b><br><b>Assistant Manager</b>                                          |
| <b>Sonstiges /</b><br><b>Other:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                  | FCC ID: W68ARMOR-8000<br>IC: 8247A-ARMOR8000<br>HVIN: ARMOR8000                                                                                                                                            |                                      |                                          |                                                                                       |
| <b>Zustand des Prüfgegenstandes bei Anlieferung:</b><br>Condition of the test item at delivery:                                                                                                                                                                                                                                                                                                                                                                      | Prüfmuster vollständig und unbeschädigt<br>Test item complete and undamaged                                                                                                                                |                                      |                                          |                                                                                       |
| <small>* Legende:</small>                                                                                                                                                                                                                                                                                                                                                                                                                                            | <small>P(ass) = entspricht o.g. Prüfgrundlage(n)    F(ail) = entspricht nicht o.g. Prüfgrundlage(n)    N/A = nicht anwendbar    N/T = nicht getestet</small>                                               |                                      |                                          |                                                                                       |
| <small>* Legend:</small>                                                                                                                                                                                                                                                                                                                                                                                                                                             | <small>P(ass) = passed a.m. test specification(s)    F(ail) = failed a.m. test specification(s)    N/A = not applicable    N/T = not tested</small>                                                        |                                      |                                          |                                                                                       |
| <b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b><br><i>This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i> |                                                                                                                                                                                                            |                                      |                                          |                                                                                       |

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|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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| 4 | <p>Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnissen in diesem Prüfbericht basiert auf der "Null-Grenzwert-Regel" und der "Einfachen Akzeptanz" gemäß ILAC G8:2019 und IEC Guide 115:2023, es sei denn, in der auf Seite 1 dieses Berichts genannten angewandten Norm ist etwas anderes festgelegt oder vom Kunden gewünscht. Dies bedeutet, dass die Messunsicherheit nicht berücksichtigt wird und daher auch nicht im Prüfbericht angegeben wird. Zu weiteren Informationen bezüglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019.</p> <p><i>The decision rule for statements of conformity, based on numerical measurement results, in this test report is based on the "Zero Guard Band Rule" and "Simple Acceptance" in accordance with ILAC G8:2019 and IEC Guide 115:2023, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account and hence also not declared in the test report. For additional information to the resulting risk based of this decision rule please refer to ILAC G8:2019.</i></p>                                                                                                                                                                                                                                                                                       |

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# 1 RF Exposure Evaluation

## 1.1 RF Exposure Compliance Requirement

The limit for Maximum Permissible Exposure (MPE) specified in FCC Part 1 Subpart I 1.1310 is followed. The gain of the antennas used in the product are extracted from the Antenna data sheets provided and also the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.

Although the Friis Transmission formula is far field assumption, the calculated result of that is an over-prediction for near field power density. It is taken as worst case to specify the safety range.

## 1.2 Test Reference Limits

According to FCC Part 1 Subpart I 1.1310 The criteria listed in the following table shall be used to evaluate the environmental impact of the human exposure to radio-frequency (RF) radiation as specified in 1.1307 (b)

**Table 1: Limits for Maximum Permissible Exposure (MPE) as per FCC**

| Frequency Range (MHz)                                 | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density (mW/cm <sup>2</sup> ) |
|-------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|
| Limits for Occupational / controlled Exposures        |                               |                               |                                     |
| 300 - 1500                                            | --                            | --                            | F/300                               |
| 1500 – 100000                                         | --                            | --                            | 5.0                                 |
| Limits for General population / Uncontrolled Exposure |                               |                               |                                     |
| 300 - 1500                                            | --                            | --                            | F/1500                              |
| 1500 – 100000                                         | --                            | --                            | 1.0                                 |

F or  $f$  = Frequency in MHz

**Table 2: Limits for Maximum Permissible Exposure (MPE) as per ICSED Canada**

| Frequency Range (MHz)                                 | Electric Field (V/m rms) | Magnetic Field (A/m rms) | Power Density (W/m <sup>2</sup> ) |
|-------------------------------------------------------|--------------------------|--------------------------|-----------------------------------|
| Limits for Occupational / controlled Exposures        |                          |                          |                                   |
| 100-6000                                              | $15.60 f^{0.25}$         | $0.04138 f^{0.25}$       | $0.6455 f^{0.5}$                  |
| Limits for General population / Uncontrolled Exposure |                          |                          |                                   |
| 300-6000                                              | $3.142 f^{0.3417}$       | $0.008335 f^{0.3417}$    | $0.02619 f^{0.6834}$              |

F or  $f$  = Frequency in MHz

According to IC **RSS 102 Issue 6 clause 6.6:** Field reference level exposure exemption limits:

at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than  $1.31 \times 10^{-2} f^{0.6834} \text{ W}$  (adjusted for tune-up tolerance), where  $f$  is in MHz.

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### Friss Formula

Friss Transmission Formula:  $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where,

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

$G$  = gain of antenna in linear scale

$\pi$  = 3.1416

$R$  = Distance between observation point and the center of radiator in cm

If we know the maximum gain of the antenna and the total output power to the antenna, through calculation.

### Test Results:

#### Antenna details:

| Protocol | Antenna Type | Band (MHz) | Antenna Gain (dBi) |
|----------|--------------|------------|--------------------|
| LTE      | PCB Antenna  | Band 2     | 3.3                |
|          |              | Band 4     | 3.3                |
|          |              | Band 5     | -1.4               |
|          |              | Band 12    | -1.4               |
|          |              | Band 13    | -1.4               |
| BLE      |              | 2.4GHz     | 3.3                |

| Frequency (MHz) | Band | Avg Power (dB) | Antenna Gain (dBi) | Antenna Gain in linear | Average power including Tune up value (dBm) | Power including Tune up value (mW) | Distance (CM) | $P_d$ (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) |
|-----------------|------|----------------|--------------------|------------------------|---------------------------------------------|------------------------------------|---------------|-----------------------------|-----------------------------|
| 1855.00         | 2    | 19.78          | 3.30               | 2.14                   | 21.78                                       | 150.66                             | 20.00         | 0.0641                      | 1.0000                      |
| 1732.50         | 4    | 21.21          | 3.30               | 2.14                   | 23.21                                       | 209.41                             | 20.00         | 0.0891                      | 1.0000                      |
| 829.00          | 5    | 21.70          | -1.40              | 0.72                   | 23.70                                       | 234.42                             | 20.00         | 0.0338                      | 0.5527                      |
| 711.00          | 12   | 21.39          | -1.40              | 0.72                   | 23.39                                       | 218.27                             | 20.00         | 0.0315                      | 0.4740                      |
| 784.50          | 13   | 20.69          | -1.40              | 0.72                   | 22.69                                       | 185.78                             | 20.00         | 0.0268                      | 0.5230                      |
| 2440.00         | BLE  | 0.37           | 3.30               | 2.14                   | 1.37                                        | 1.37                               | 20.00         | 0.0006                      | 1.0000                      |

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**Test Results for ISED:**

| Frequency (MHz) | Band | Avg Power (dB) | Antenna Gain (dBi) | Antenna Gain in linear | Average power including Tune up value (dBm) | Power including Tune up value (mW) | Distance (CM) | Pd (W/m <sup>2</sup> ) | Limit (W/m <sup>2</sup> ) |
|-----------------|------|----------------|--------------------|------------------------|---------------------------------------------|------------------------------------|---------------|------------------------|---------------------------|
| 1855.00         | 2    | 19.78          | 3.30               | 2.14                   | 21.78                                       | 150.66                             | 20.00         | 0.641                  | 4.485                     |
| 1732.50         | 4    | 21.21          | 3.30               | 2.14                   | 23.21                                       | 209.41                             | 20.00         | 0.891                  | 4.280                     |
| 829.00          | 5    | 21.70          | -1.40              | 0.72                   | 23.70                                       | 234.42                             | 20.00         | 0.338                  | 2.586                     |
| 711.00          | 12   | 21.39          | -1.40              | 0.72                   | 23.39                                       | 218.27                             | 20.00         | 0.315                  | 2.329                     |
| 784.50          | 13   | 20.69          | -1.40              | 0.72                   | 22.69                                       | 185.78                             | 20.00         | 0.268                  | 2.491                     |
| 2440.00         | BLE  | 0.37           | 3.30               | 2.14                   | 1.37                                        | 1.37                               | 20.00         | 0.006                  | 5.409                     |

**\*Note:**

- Supplier has been declared tune up value as  $\pm 2$ dB for LTE &  $\pm 1$ dB for BLE protocol and same as applied in above table.

### 1.3 Conclusion

The Power density of the EUT is less than the defined limit as shown above. Hence, it's meeting the RF Exposure evaluation.

The max. output power also less than Field reference level exposure exemption limits (2.67W for 2400MHz).