

|                                                                                                                                                                                                                                                                                                                                                                                                             |                                                             |                                                                             |                                                                     |                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------|
| <b>Prüfbericht-Nr.:</b><br>Test report no.:                                                                                                                                                                                                                                                                                                                                                                 | <b>60438359-001</b>                                         | <b>Auftrags-Nr.:</b><br>Order no.:                                          | 23870459 030                                                        | Seite 1 von 6<br>Page 1 of 6             |
| <b>Kunden-Referenz-Nr.:</b><br>Client reference no.:                                                                                                                                                                                                                                                                                                                                                        | 1288973                                                     | <b>Auftragsdatum:</b><br>Order date:                                        | 2020.05.08                                                          |                                          |
| <b>Auftraggeber:</b><br>Client:                                                                                                                                                                                                                                                                                                                                                                             | Axis Communications AB                                      |                                                                             |                                                                     |                                          |
| <b>Prüfgegenstand:</b><br>Test item:                                                                                                                                                                                                                                                                                                                                                                        | OSDP card reader                                            |                                                                             |                                                                     |                                          |
| <b>Bezeichnung / Typ-Nr.:</b><br>Identification / Type no.:                                                                                                                                                                                                                                                                                                                                                 | AXIS A4020-E / FCC ID PNB-AXISA4020-E                       |                                                                             |                                                                     |                                          |
| <b>Auftrags-Inhalt:</b><br>Order content:                                                                                                                                                                                                                                                                                                                                                                   | RF Exposure Evaluation                                      |                                                                             |                                                                     |                                          |
| <b>Prüfgrundlage:</b><br>Test specification:                                                                                                                                                                                                                                                                                                                                                                | FCC 47 CFR 2.1091<br>IEEE Std. C95.1:2005                   |                                                                             |                                                                     |                                          |
| <b>Wareneingangsdatum:</b><br>Date of sample receipt:                                                                                                                                                                                                                                                                                                                                                       | N/A                                                         |                                                                             |                                                                     |                                          |
| <b>Prüfmuster-Nr.:</b><br>Test sample no.:                                                                                                                                                                                                                                                                                                                                                                  | N/A                                                         |                                                                             |                                                                     |                                          |
| <b>Prüfzeitraum:</b><br>Testing period:                                                                                                                                                                                                                                                                                                                                                                     | N/A -                                                       |                                                                             |                                                                     |                                          |
| <b>Ort der Prüfung:</b><br>Place of testing:                                                                                                                                                                                                                                                                                                                                                                | Lund, Sweden                                                |                                                                             |                                                                     |                                          |
| <b>Prüflaboratorium:</b><br>Testing laboratory:                                                                                                                                                                                                                                                                                                                                                             | TÜV Rheinland Sweden                                        |                                                                             |                                                                     |                                          |
| <b>Prüfergebnis*:</b><br>Test result*:                                                                                                                                                                                                                                                                                                                                                                      | Siehe Sonstiges / See Other                                 |                                                                             |                                                                     |                                          |
| <b>überprüft von:</b><br>reviewed by:                                                                                                                                                                                                                                                                                                                                                                       | <b>genehmigt von:</b><br>authorized by:                     |                                                                             |                                                                     |                                          |
| <b>Datum: 2021.02.24</b><br>Date:                                                                                                                                                                                                                                                                                                                                                                           | <b>Datum: 2021.02.24</b><br>Date:                           |                                                                             |                                                                     |                                          |
| <b>Stellung / Position:</b>                                                                                                                                                                                                                                                                                                                                                                                 | Senior Technical Expert                                     | <b>Stellung / Position:</b>                                                 | Lab Manager                                                         |                                          |
| <b>Sonstiges / Other:</b>                                                                                                                                                                                                                                                                                                                                                                                   | See details below                                           |                                                                             |                                                                     |                                          |
| <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 |                                                                     |                                          |
| * Legende:                                                                                                                                                                                                                                                                                                                                                                                                  | 1 = sehr gut<br>P(ass) = entspricht o.g. Prüfgrundlage(n)   | 2 = gut<br>F(ail) = entspricht nicht o.g. Prüfgrundlage(n)                  | 3 = befriedigend<br>F(ail) = entspricht nicht o.g. Prüfgrundlage(n) | 4 = ausreichend<br>N/A = nicht anwendbar |
| * Legend:                                                                                                                                                                                                                                                                                                                                                                                                   | 1 = very good<br>P(ass) = passed a.m. test specification(s) | 2 = good<br>F(ail) = failed a.m. test specification(s)                      | 3 = satisfactory<br>F(ail) = failed a.m. test specification(s)      | 4 = sufficient<br>N/A = not applicable   |
| 5 = mangelhaft<br>N/T = nicht getestet<br>5 = poor<br>N/T = not tested                                                                                                                                                                                                                                                                                                                                      |                                                             |                                                                             |                                                                     |                                          |
| <p><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></p> <p><i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts.</i></p> |                                                             |                                                                             |                                                                     |                                          |

V05

## Revision History60438359-00160438359-001

| Revision                                                                       | Date       | Remarks       | Author          |
|--------------------------------------------------------------------------------|------------|---------------|-----------------|
| 001                                                                            | 2021.02.24 | First Release | Niall Forrester |
|                                                                                |            |               |                 |
|                                                                                |            |               |                 |
| Note: Latest revision report will replace all previous reports                 |            |               |                 |
| This report based on RF Exposure FCC 47CR 2-1091 IEEE C95 Template version 1.1 |            |               |                 |

## Statement of Compliance

Evaluation was performed based on FCC 47 CFR 2.1091 and IEEE C95.1:2005, together with the “General Population / Uncontrolled” requirements set out in FCC 47 CFR 1.1310 Table 1 (B)

The calculations below show that the AXIS A4020-E / PNB-AXISA4020-E device is compliant with these requirements at a distance of 20cm for all supported wireless transmitter technologies

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## 1. GENERAL INFORMATION

### 1.1 Test Site

|                                     |                         |
|-------------------------------------|-------------------------|
| Test Facility:                      | TÜV Rheinland Sweden AB |
| Address:                            | Mobilvägen 10           |
|                                     | 223 62 Lund             |
|                                     | Sweden                  |
|                                     |                         |
| Swedac Registration Number:         | 10325                   |
| FCC Test Firm Registration Number:  | 517458                  |
| ISED Test Site Registration Number: | 24753                   |

### 1.2 Client Information

|                            |                                                                                                  |
|----------------------------|--------------------------------------------------------------------------------------------------|
| Company Name:              | Axis Communications                                                                              |
| Address:                   | Emdalavägen 14                                                                                   |
|                            | 223 69 Lund                                                                                      |
|                            | Sweden                                                                                           |
|                            |                                                                                                  |
| Contact Person:            | Alexander Holmström                                                                              |
| Contact e-Mail / Telephone | <a href="mailto:Alexander.holmstrom@axis.com">Alexander.holmstrom@axis.com</a> /<br>+46709615637 |

## 2. PRODUCT INFORMATION

### 2.1 General Description

|                                |                  |
|--------------------------------|------------------|
| Model name:                    | AXIS A4020-E     |
| Manufacturer:                  | AXIS             |
| Model number / Marketing name: | AXIS A4020-E     |
| FCC ID:                        | PNB-AXISA4020-E  |
| Description:                   | OSDP card reader |
| Ancillary Equipment:           | N/A              |

### 2.2 Device Usage and Evaluation Distance

The device is an RFID card reader for access control. An evaluation distance of 20cm has been selected

### 2.3 Wireless Technologies and Bands Supported by the EUT

| Technology    | Band | Frequency Range (Tx)    | Evaluation Performed |
|---------------|------|-------------------------|----------------------|
| 13.56MHz RFID | HF   | 13.553 MHz – 13.567 MHz | YES                  |

### 2.4 Simultaneous Transmission Configurations

NO SIMULTANEOUS TRANSMISSION CONFIGURATIONS ARE SUPPORTED BY THE DEVICE

### 2.5 Coil Current, Voltage and E-Field Strength

| Technology | Band | Antenna Type | Maximum Current (mA) | Maximum Voltage Applied (V) | E-Field Strength* dBµV/m @3m |
|------------|------|--------------|----------------------|-----------------------------|------------------------------|
| RFID       | HF   | Loop Antenna | 170                  | 3.3                         | 67.41                        |

Measured E-Field strength figures are worst cases taken from the graphs in report: "60424291-001\_FCC\_Part\_15-225\_AXIS\_Card\_Reader". These represent the field strength measured at 3m distance from the DUT.

### 3. TEST METHODS

#### 3.1 Test Standards

Testing was performed according to the following standards / references

| Standard      | Version | Description                                                      |
|---------------|---------|------------------------------------------------------------------|
| 47 CFR 2.1091 | -       | Radiofrequency radiation exposure evaluation:<br>mobile devices. |

#### 3.2 Additional references

| Standard        | Version | Description                                                                                                                      |
|-----------------|---------|----------------------------------------------------------------------------------------------------------------------------------|
| IEEE Std. C95.1 | 2005    | IEEE Standard for Safety Levels with Respect to<br>Human Exposure to Radio Frequency<br>Electromagnetic Fields, 3 kHz to 300 GHz |

#### 3.3 Limits

Extract from 47 CFR 1.1310 - Radiofrequency radiation exposure limits

Table 1B

Limits for Maximum Permissible Exposure (MPE)  
(Limits for general Population / Uncontrolled Exposure)

| Frequency Range<br>(MHz) | Electric Field<br>Strength (V/m) | Magnetic Field<br>strength (A/m) | Power Density<br>(mW/cm <sup>2</sup> ) | Averaging Time<br>(minutes) |
|--------------------------|----------------------------------|----------------------------------|----------------------------------------|-----------------------------|
| 0.3 - 1.34               | 614                              | 1.63                             | *100                                   | 30                          |
| 1.34 - 30                | 824/f                            | 2-19/f                           | *180/f <sup>2</sup>                    | 30                          |
| 30 - 300                 | 27.5                             | 0.073                            | 0.2                                    | 30                          |
| 300 - 1500               | -                                | -                                | f/1500                                 | 30                          |
| 1500 - 10000             | -                                | -                                | 1.0                                    | 30                          |

Notes:

1.  $f$  = frequency in MHz
2. \* = Plane-wave equivalent power density

## 4. EVALUATION DETAILS

### 4.1 Electric Field Strength at 20cm Distance for Each Band and Technology

Based on the assumption of a  $1/r^3$  electric field roll-off with distance  $r$ , the maximum measured electric field strength at 3m can be used to calculate the maximum electric field strength at distance  $r$  from the DUT

$$E_r = E_{3m} + 20 \log \left[ \left( \frac{3}{r} \right)^3 \right]$$

Where:

- $r$  is the distance from the device in meters
- $E_r$  is the field strength at distance  $r$  (in dB $\mu$ V/m)
- $E_{3m}$  is the maximum field strength measured at 3m

The limit for  $E_r$  in this case, from the table above is:  $(824 / 13.56) \text{ V/m} = 60.77 \text{ V/m}$  or 155.67 dB $\mu$ V/m

The E-field strength at 20cm from the device has been calculated below and compared to the limit:

| Technology | Band      | $E_{3m}$<br>dB $\mu$ V/m | $r$<br>(m) | $E_r$<br>dB $\mu$ V/m | $E_r$<br>V/m | Limit<br>V/m |
|------------|-----------|--------------------------|------------|-----------------------|--------------|--------------|
| RFID       | 13.56 MHz | 67.41                    | 0.2        | 137.98                | 7.92         | 60.77        |