

Prüfbericht-Nr.: Test report no.:	60438359-001	Auftrags-Nr.: Order no.:	23870459 030	Seite 1 von 6 Page 1 of 6
Kunden-Referenz-Nr.: Client reference no.:	1288973	Auftragsdatum: Order date:	2020.05.08	
Auftraggeber: Client:	Axis Communications AB			
Prüfgegenstand: Test item:	OSDP card reader			
Bezeichnung / Typ-Nr.: Identification / Type no.:	AXIS A4020-E / FCC ID PNB-AXISA4020-E			
Auftrags-Inhalt: Order content:	RF Exposure Evaluation			
Prüfgrundlage: Test specification:	FCC 47 CFR 2.1091 IEEE Std. C95.1:2005			
Wareneingangsdatum: Date of sample receipt:	N/A			
Prüfmuster-Nr.: Test sample no.:	N/A			
Prüfzeitraum: Testing period:	N/A -			
Ort der Prüfung: Place of testing:	Lund, Sweden			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland Sweden			
Prüfergebnis*: Test result*:	Siehe Sonstiges / See Other			
überprüft von: reviewed by:	genehmigt von: authorized by:			
Datum: 2021.02.24 Date:	Datum: 2021.02.24 Date:			
Stellung / Position:	Senior Technical Expert	Stellung / Position:	Lab Manager	
Sonstiges / Other:	See details below			
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:		Prüfmuster vollständig und unbeschädigt Test item complete and undamaged		
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	4 = ausreichend N/A = nicht anwendbar
* Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory F(ail) = failed a.m. test specification(s)	4 = sufficient N/A = not applicable
5 = mangelhaft N/T = nicht getestet 5 = poor N/T = not tested				
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. <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>				

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	Alexander.holmstrom@axis.com / +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: mobile devices.

3.2 Additional references

Standard	Version	Description
IEEE Std. C95.1	2005	IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency 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 (MHz)	Electric Field Strength (V/m)	Magnetic Field strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3 - 1.34	614	1.63	*100	30
1.34 - 30	824/f	2-19/f	*180/f ²	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 μ 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 μ V/m

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

Technology	Band	E_{3m} dB μ V/m	r (m)	E_r dB μ V/m	E_r V/m	Limit V/m
RFID	13.56 MHz	67.41	0.2	137.98	7.92	60.77