

Prüfbericht-Nr.: Test report no.:	SE24W258-002	Auftrags-Nr.: Order no.:	0290100320	Seite 1 von 6 Page 1 of 6	
Kunden-Referenz-Nr.: Client reference no.:	1288994	Auftragsdatum: Order date:	2022.12.02		
Auftraggeber: Client:	ASSA ABLOY Entrance Systems AB				
Prüfgegenstand: Test item:	Wireless IoT Gateway				
Bezeichnung / Typ-Nr.: Identification / Type no.:	IoT Gateway 2.0 / FCC ID: 2A8JO-IOT20A				
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 – N/A				
Ort der Prüfung: Place of testing:	Lund, Sweden				
Prüflaboratorium: Testing laboratory:	TÜV Rheinland Sweden				
Prüfergebnis*: Test result*:	PASS				
überprüft von: reviewed by:	genehmigt von: authorized by:				
Datum: 2024.05.15 Date:	Datum: 2024.05.15 Date:				
Stellung / Position:	Senior Test Engineer	Stellung / Position:	Lab Manager		
Sonstiges / Other:	-				
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 3 = satisfactory F(ail) = failed a.m. test specification(s)	4 = ausreichend N/A = nicht anwendbar 4 = sufficient N/A = not applicable	5 = mangelhaft N/T = nicht getestet 5 = poor N/T = not tested
* Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good	3 = satisfactory F(ail) = failed a.m. test specification(s)	4 = sufficient N/A = not applicable	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 HistorySE24W258-002SE24W258-002

Revision	Date	Remarks	Author
001	2024.04.12	First Release	Mohammed Ebbeni
002	2024.05.15	Second Release	Mohammed Ebbeni
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 Assa Abloy IoT Gateway (FCC ID: 2A8JO-IOT20A) is compliant with these requirements at a distance of 20cm.

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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:	ASSA ABLOY Entrance Systems AB
Address:	PO Box 822
	SE-261 27 Landskrona
	Sweden
Contact Person:	Fredrik Brödje
Contact e-Mail / Telephone	fredrik.brodje@assaabloy.com +46 10 47 48 907

2. PRODUCT INFORMATION

2.1 General Description

Model name:	IoT Gateway 2
Manufacturer:	ASSA ABLOY Entrance Systems AB
Model number / Marketing name:	IoT Gateway 2
FCC ID:	2A8JO-IOT20A
Description:	Wireless IoT Gateway
Ancillary Equipment:	N/A

2.2 Wireless Technologies and Bands Supported by the EUT

Technology	Band	Frequency Range (Tx)	Evaluation Performed
Bluetooth Low Energy	2.4 GHz	2402.0 MHz – 2480.0 MHz	YES

2.3 Conducted Power and Antenna Gain

Technology	Band	Max. Conducted Output Power (dBm)*	Max. Time-Averaged Output Power (dBm)**	Antenna Gain (dBi)***
Bluetooth Low Energy (BLE)	2.4 GHz	-0.30	-0.30	2.9 dBi

* Sources peak conducted power measurement in test report SE23X7R2-002.

** A duty cycle of 100% is assumed.

*** Supplied by device manufacturer.

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 Power Density (S) at 20cm Distance for Each Band and Technology

The Power Density at 20cm separation distance has been calculated for each of the transmitter technologies supported by the device according to a re-arrangement of the Friis formula, as below:

$$S = \frac{P * G}{4\pi * r^2}$$

Where:

- “S” is power density in mW/cm²
- “P” is maximum avg. conducted power (incl. tolerances) in mW according to data from the manufacturer.
- “G” is the peak antenna gain (numerical) according to data from the manufacturer.
- “r” is the separation distance (20 cm)

Technology	Band	Freq* (MHz)	Power (dBm)	P (mW)	Gain (dBi)	G (Num.)	r (cm)	S (mW/cm ²)	Limit ** (mW/cm ²)
BLE	2.4GHz	2402	-0.30	0.9	2.9	1.95	20	0.0004	1.000

*The lowest frequency in each band has been chosen, to give the most conservative limit

**The limits listed are from FCC 47 CFR 1.1310 Table 1 (B): “Limits for General Population/Uncontrolled”

From 300MHz to 1500MHz, the limit is f/1500 mW/cm² where “f” is the frequency in MHz

From 1500MHz to 100000MHz, the limit is 1.0 mW/cm²

Therefore, the device radiated power density is well below the specified limits when a separation distance of 20cm is maintained.

Inversely, the limit is reached when the device is within 0.4cm separation distance to human body.