

Prüfbericht-Nr.: <i>Test report no.:</i>	IN235LQF 001	Auftrags-Nr.: <i>Order no.:</i>	146814428 0010	Seite 1 von 4 Page 1 of 4
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	2273364	Auftragsdatum: <i>Order date:</i>	26-07-2023	
Auftraggeber: <i>Client:</i>	Matica Technologies group SA Chamerstrasse 79, 6300 Zug, Switzerland			
Prüfgegenstand: <i>Test item:</i>	Re-transfer Card Printer			
Bezeichnung <i>Identification</i>	XID-M300, XFI-M300, XID-M100, XID-M600, XFI-M600, XID-600P, XID-M300K, XID-M600K.			
Auftrags-Inhalt: <i>Order content:</i>	Maximum Permissible Exposure			
Prüfgrundlage: <i>Test specification:</i>	FCC 1.1310, and RSS 102 Issue 5 KDB 447498 D01			
Wareneingangsdatum: <i>Date of sample receipt:</i>	26-07-2023			
Prüfmuster-Nr.: Serien -Nr.: <i>Test sample no:</i> <i>Serial no.:</i>	A003526149-001 009			
Prüfzeitraum: <i>Testing period:</i>	09-08-2023 - 21-08-2023			
Ort der Prüfung: <i>Place of testing:</i>	Wireless laboratory, Bangalore			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (India) Pvt. Ltd. 27/B, 2nd cross road, Electronic city Phase 1, Bangalore-560100, India FCC Test Site Registration No: 496599 ISED Test Site Reg No: 277661 HVIN: XIDM			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von: <i>tested by:</i>	genehmigt von: <i>authorized by:</i>			
Datum: <i>Date:</i>	24-08-2023	Ausstellatum: <i>Issue date:</i>	12-10-2023	
Stellung / Position:	M.V.Naveen Kumar Senior Engineer	Stellung / Position:	Madhu K.N Assistant Manager	
Sonstiges / Other:	FCC ID: 2AT78-XIDM IC : 25413-XIDM			
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>			
* 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
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. This test report does not entitle to carry any test mark.</i>				

1 SAR Evaluation

1.1 RF Exposure Compliance Requirement

1.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06 4.3.1. Standalone SAR test exclusion considerations. Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by Measurement or numerical simulation, is not required when the corresponding SAR Exclusion. Threshold condition, listed below, is satisfied.

1.2 Limits:

1.2.1 For FCC

1. For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot$

$[\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR, and ≤ 7.5 for 10-g extremity SAR, where $f(\text{GHz})$ is the RF channel transmit frequency in GHz.

2. For 100 MHz to 6 GHz and test separation distances > 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following (also illustrated in Appendix B):

1) $\{[\text{Power allowed at numeric threshold for 50 mm in step a)}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot (f(\text{MHz})/150)]\}$ mW, for 100 MHz to 1500 MHz

2) $\{[\text{Power allowed at numeric threshold for 50 mm in step a)}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot 10]\}$ mW, for > 1500 MHz and ≤ 6 GHz

3. For frequencies below 100 MHz, the following may be considered for SAR test exclusion (also illustrated in Appendix C):

1) For test separation distances > 50 mm and < 200 mm, the power threshold at the corresponding test separation distance at 100 MHz in step b) is multiplied by $[1 + \log(100/f(\text{MHz}))]$

2) For test separation distances ≤ 50 mm, the power threshold determined by the equation in c) 1) for 50 mm and 100 MHz is multiplied by $\frac{1}{2}$

3) SAR measurement procedures are not established below 100 MHz

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1.2.2 For IC

**Table 4: RF Field Strength Limits for Devices Used by the General Public
(Uncontrolled Environment)**

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
0.003-10 ²¹	83	90	-	Instantaneous*
0.1-10	-	0.73/ f	-	6**
1.1-10	87/ f ^{0.5}	-	-	6**
10-20	27.46	0.0728	2	6
20-48	58.07/ f ^{0.25}	0.1540/ f ^{0.25}	8.944/ f ^{0.5}	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 f ^{0.3417}	0.008335 f ^{0.3417}	0.02619 f ^{0.6834}	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ f ^{1.2}
150000-300000	0.158 f ^{0.5}	4.21 x 10 ⁻⁴ f ^{0.5}	6.67 x 10 ⁻⁵ f	616000/ f ^{1.2}

Note: f is frequency in MHz.

*Based on nerve stimulation (NS).

** Based on specific absorption rate (SAR).

1.2.3 EUT RF Exposure

$$e.i.r.p(dBm) = FS(dB\mu V/m) - 95.2$$

$$e.i.r.p(dBm) = 39.70 - 95.2$$

$$e.i.r.p = -55.5 \text{ dBm} = 0.0000000028 \text{ mW}$$

Where: FS → Field Strength in dBμV/m

Note: Above mentioned Field strength taken from the test report: **IN235LQF 001**

Per KDB 447498 D01 - Clause 4.3.1 Standalone SAR test exclusion considerations

P = power threshold in milliwatts

D = distance in mm

F = Frequency in GHz

f = Frequency in MHz

Step 1 - For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot$$

$$[\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR, and } \leq 7.5 \text{ for 10-g extremity SAR, 30 where}$$

f(GHz) is the RF channel transmit frequency in GHz.

$$= \{(0.0000000028)/(50) \cdot (\sqrt{0.01356})\}$$

$$= 0.000000000065$$

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Step 2: - For 100 MHz to 6 GHz and test separation distances > 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following (also illustrated in Appendix B):32

1) {[Power allowed at numeric threshold for 50 mm in step a)] + [(test separation distance – 50 mm)·(f(MHz)/150)]} mW, for 100 MHz to 1500 MHz
= 63.33 mW

Considered minimum separation distance 145mm as manufactured declared.

Step 3: For frequencies below 100 MHz, the following may be considered for SAR test exclusion (also illustrated in Appendix C):33

1) For test separation distances > 50 mm and < 200 mm, the power threshold at the corresponding test separation distance at 100 MHz in step b) is multiplied by [1 + log(100/f(MHz))]
= 63.33*(1+ log (100/13.56))
= 118.29 mW

1.3 Conclusion

The Power density of the EUT is less than defined limit as shown above, hence EUT is exempted from routine SAR.