

Prüfbericht-Nr.: <i>Test report no.:</i>	CN26J4E3 004	Auftrags-Nr.: <i>Order no.:</i>	168584456	Seite 1 von 11 Page 1 of 11
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2025-11-17	
Auftraggeber: <i>Client:</i>	Moga Technology Co., Ltd. 6-201 Room, business street, Huashan Road, Longshan district, Economic and Technological Development Area, Wuhu 241000 Anhui, P.R. China			
Prüfgegenstand: <i>Test item:</i>	AiMOGA Mornine			
Bezeichnung / Typ-Nr.: <i>Identification / Type no.:</i>	M1			
Auftrags-Inhalt: <i>Order content:</i>	Test Report			
Prüfgrundlage: <i>Test specification:</i>	CFR Title 47 FCC Part 2: Section 2.1091 RSS-102 Issue 6 December 2023			
Wareneingangsdatum: <i>Date of sample receipt:</i>	2026-02-12	Please refer to photo documents		
Prüfmuster-Nr.: <i>Test sample no.:</i>	A004209761-001~009			
Prüfzeitraum: <i>Testing period:</i>	2026-03-19 - 2026-04-01			
Ort der Prüfung: <i>Place of testing:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von: <i>tested by:</i>			genehmigt von: <i>authorized by:</i>	
Datum: <i>Date:</i>	2026-06-05	Ausstellungsdatum: <i>Issue date:</i>		2026-06-05
Signed by: Bell Hu		Signed by: Jonathan Li		
Stellung / Position:	Sachverständige(r)/Expert	Stellung / Position:	Sachverständige(r)/Expert	
Sonstiges / <i>Other:</i>	FCC ID: 2BTJ8MORNINEM1 IC: 34938-MORNINEM1 HVIN: M1			
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:	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
* Legend:	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	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 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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Anmerkungen
Remarks

1	Alle eingesetzten Prüfmittel waren zum angegebenen Prüfzeitraum gemäß eines festgelegten Kalibrierungsprogramms unseres Prüfhauses kalibriert. Sie entsprechen den in den Prüfprogrammen hinterlegten Anforderungen. Die Rückverfolgbarkeit der eingesetzten Prüfmittel ist durch die Einhaltung der Regelungen unseres Managementsystems gegeben. Detaillierte Informationen bezüglich Prüfkonditionen, Prüfequipment und Messunsicherheiten sind im Prüflabor vorhanden und können auf Wunsch bereitgestellt werden. <i>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. Detailed information regarding test conditions, equipment and measurement uncertainty is available in the test laboratory and could be provided on request.</i>
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3	Prüfklausel mit der Note * wurden an qualifizierte Unterauftragnehmer vergeben und sind unter der jeweiligen Prüfklausel des Berichts beschrieben. Abweichungen von Prüfspezifikation(en) oder Kundenanforderungen sind in der jeweiligen Prüfklausel im Bericht aufgeführt. <i>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report.</i> <i>Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.</i>
4	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. <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>

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Test Summary

3.1.1 RF EXPOSURE COMPLIANCE
RESULT: Pass

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1. Test Sites

1.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.

2-3F, 101 & 102, No.2, Nuclear Power Industrial Park, Fuming Community, Fucheng Street, Longhua District, Shenzhen 518000, People's Republic of China

FCC Accreditation Designation No.: 694916

ISED wireless device testing laboratory: 25069

1.2 Traceability

All measurement equipment calibrations are traceable to NIST or where calibration is performed outside the United States, to equivalent nationally recognized standards organizations.

1.3 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

1.4 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendixes of this report and delivered to the applicant. A copy has been retained in the TÜV Rheinland (Shenzhen) file for certification follow-up purposes.

1.5 Status of Facility Used for Testing

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at 2-3F, 101 & 102, No.2, Nuclear Power Industrial Park, Fuming Community, Fucheng Street, Longhua District, Shenzhen 518000, People's Republic of China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

2. General Product Information

2.1 General Description

The Product is an AiMOGA Mornine which support 2.4GHz Wi-Fi, 5GHz Wi-Fi and Lora wireless technologies.

For details refer to the User Manual, Technical Description and Circuit Diagram.

2.2 Rating and System details

Table 1: General Information of EUT

General Information of EUT	Value
Kind of Equipment:	AiMOGA Mornine
Type Designation:	M1
FCC ID:	2BTJ8MORNINEM1
IC:	34938-MORNINEM1
HVIN:	M1
Operating Voltage:	46.8Vdc Battery Powered
Test Voltage:	46.8Vdc Battery Powered
Radiofrequency operating mode:	1) 2.4GHz Wi-Fi: operating within 2400-2483.5MHz 2) 5GHz Wi-Fi: operating within 5150-5250MHz, 5745-5825MHz 3) Lora: 902-928MHz

Table 2: Technical Specification of Transmitter AP6256

Technical Specification of 2.4GHz Wi-Fi	
Operating Frequency:	2412 - 2462 MHz for 802.11b/g/n(HT20)
Type of Modulation:	DSSS, OFDM
Data Rate:	1/2/5.5/11 Mbps for 802.11b 6/9/12/18/24/36/48/54 Mbps for 802.11g MCS0~MCS 7 for 802.11n(HT20) (All data rates considered, only the Worst-cases reported)
Channel Number:	11 channels for 802.11b/g/n(HT20)
Channel Separation:	5 MHz
Antenna Type:	Internal Antenna
Antenna Number:	1Tx1Rx
Antenna Gain:	2.8 dBi (Provided by the Client)
Technical Specification of 5GHz Wi-Fi	
Operating Frequency:	5180-5240MHz, 5745-5825MHz
Protocol:	802.11 a/n20/n40/ac20/ac40/ac80
Channel Number:	5180-5240MHz, 7CHs 5745-5825MHz, 8CHs
Type of Modulation:	OFDM

Data Rate:	6/9/12/18/24/36/48/54 Mbps for 802.11a MCS0~MCS7 for 802.11n MCS0~MCS9 for 802.11ac (All data rates considered, only the Worst-cases reported.)
Channel Separation:	20MHz, 40MHz, 80MHz
Antenna Type:	Internal Antenna
Antenna Number:	1Tx1Rx
Antenna Gain:	3.5 dBi (Provided by the Client)

Table 3: Technical Specification of Transmitter RTL8852BE

Technical Specification of 2.4GHz Wi-Fi		
Operating Frequency:	2412 - 2462 MHz for 802.11b/g/n(HT20)/ax(HE20) 2422 - 2452 MHz for 802.11n(HT40)/ax(HE20)	
Type of Modulation:	DSSS, OFDM, OFDMA	
Data Rate:	1/2/5.5/11 Mbps for 802.11b 6/9/12/18/24/36/48/54 Mbps for 802.11g MCS0~MCS 7 for 802.11n MCS0~MCS 11 for 802.11ax (All data rates considered, only the Worst-cases reported.)	
Channel Number:	11 channels for 802.11b/g/n(HT20)/ax(HE20) 7 channels for 802.11n(HT40)/ax(HE40)	
Channel Separation:	5 MHz	
Antenna Type:	Internal Antenna	
Antenna Number:	2Tx2Rx	
Antenna Gain:	0.6 dBi for ANT1 / ANT2 (Provided by the Client)	
Smart Antenna Systems:	☒ 802.11b	☒ SISO, ☒ 2*2 CDD,
	☒ 802.11n	☒ SISO, ☒ 2*2 CDD,
	☒ 802.11ax	☒ SISO, ☒ 2*2 MIMO(Beamforming)
RU Mode for 802.11ax:	☒ Full RU, ☒ Single RU	
Technical Specification of 5GHz Wi-Fi		
Operating Frequency:	5180-5240MHz, 5745-5825MHz	
Protocol:	802.11 a/n20/n40/ac20/ac40/ac80/ax20/ax40/ax80	
Channel Number:	5180-5240MHz, 7CHs 5745-5825MHz, 8CHs	
Type of Modulation:	OFDM, OFDMA	
Data Rate:	6/9/12/18/24/36/48/54 Mbps for 802.11a MCS0~MCS7 for 802.11n MCS0~MCS9 for 802.11ac MCS0 ~ MCS11 for 802.11ax (All data rates considered, only the Worst-cases reported.)	
Channel Separation:	20MHz, 40MHz, 80MHz	
Antenna Type:	Internal Antenna	
Antenna Number:	2Tx2Rx	
Antenna Gain:	ANT1 / ANT2 (Provided by the Client) 5180-5240MHz:1.81dBi 5745-5825MHz: 2.02dBi	
Smart Antenna Systems:	☒ 802.11a	☒ SISO, ☒ 2*2 CDD,
	☒ 802.11n	☒ SISO, ☒ 2*2 CDD,

		☒ 802.11ac		☒ SISO, ☒ 2*2 MIMO (Beamforming)		
		☒ 802.11ax		☒ SISO, ☒ 2*2 MIMO(Beamforming)		
RU Mode for 802.11ax		☒ Full RU, ☒ Single RU				
Antenna Type	Frequency Band (MHz)	Peak Antenna Gain (dBi)		Beamforming Directional Gain (dBi)	CDD Directional Gain (dBi)	
		Ant 1	Ant 2		For Power	For PSD
Integral Antennas	2400~2483.5MHz	0.6	0.6	3.6	0.6	3.6
	5150~5250MHz	1.81	1.81	4.81	1.81	4.81
	5725~5850MHz	2.02	2.02	5.02	2.02	5.02
1. The device supports CDD Mode and Beamforming mode, details refer to the table as below. 2. CDD signals are correlated, the directional gain as follows, When NSS=1, for power measurements: Array Gain = 0 dB for NANT ≤4, the directional gain = max antenna gain + array gain For power spectral density (PSD) measurements: the max directional gain= 10 log [(10^(G1 /20) + 10^(G2 /20)+ ... + (10^GN) /20)^2 /N_ANT] 3. Beamforming signals are correlated, the directional gain as follows, the max directional gain = 10 log[(10^(G1 /20) + 10^(G2 /20)+ ... + (10^GN) /20)^2 /N_ANT] 4. The information as above is from the antenna specifications.						

Table 4: Technical Specification of Lora transmitters 1 and 2

Technical Specification of Lora	
Operating Frequency:	903-914.2 MHz, 923.3-927.5 MHz
Type of Modulation:	CSS
Channel Number:	903-914.2MHz, 8CHs 923.3-927.5MHz, 8CHs
Channel Separation:	800kHz
Antenna Type:	Internal Antenna
Antenna Number:	1Tx1Rx
Antenna Gain:	2.0 dBi (Provided by the Client)

3. Test Results

3.1 RF Exposure Evaluation

3.1.1 RF Exposure Compliance

RESULT:
Pass

Test standard : CFR Title 47 FCC Part 2.1091
KDB 447498 D01 General RF Exposure Guidance v06
RSS-102 Issue 6

Limit : Table 1 of CFR Title 47 FCC Part 1.1310
Section 6.6 of RSS-102 Issue 6

This device is mobile device, and the applicant declares that the minimum separation distance is greater than 20cm. Therefore, MPE measurement or computational modelling should be used to determine compliance.

3.1.1.1 RF Exposure Compliance Requirement for FCC

a) Radio Frequency Exposure Limit

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
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
1500-100,000			1.0	30

b) Radio Frequency Exposure Calculation Formula

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density (in appropriate units, e.g. mW/cm²)
P = power input to the antenna (in appropriate units, e.g., mW)
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

or:

$$S = \frac{EIRP}{4\pi R^2}$$

where: EIRP = equivalent (or effective) isotropically radiated power

c) RF Exposure Calculations for FCC, stand-alone mode

1. For Transmitter AP6256

Operating Mode	Max. EIRP tune-up (dBm)	Distance (cm)	MPE P_d (mW/cm ²)	Limit (mW/cm ²)	Verdict
2.4GHz Wi-Fi	28.0	20	0.126	1.0	Pass
5GHz Wi-Fi	22.0	20	0.032	1.0	Pass

2. For Transmitter RTL8852BE

Operating Mode	Max. EIRP tune-up (dBm)	Distance (cm)	MPE P_d (mW/cm ²)	Limit (mW/cm ²)	Verdict
2.4GHz Wi-Fi	29.0	20	0.158	1.0	Pass
5GHz Wi-Fi	24.0	20	0.050	1.0	Pass

3. For Lora

Operating Mode	Max. EIRP tune-up (dBm)	Distance (cm)	MPE P_d (mW/cm ²)	Limit (mW/cm ²)	Verdict
Lora	22.5	10	0.035	0.6	Pass

d) RF Exposure Calculations for FCC, Simultaneous mode

Worst mode

Co-location Mode	Sum of the MPE Ratios	Limit	Verdict
Transmitter AP6256 + Lora	0.126/1.0+0.035/0.6=0.184	1.0	Pass
Transmitter RTL8852BE + Lora	0.158/1.0+0.035/0.6=0.216	1.0	Pass

Note: The transmitters AP6256 and RTL8852BE cannot support simultaneous transmitting mode.

The two Lora transmitters cannot support simultaneous transmitting mode

e) Conclusion

Therefore the maximum calculations result of above are meet the requirement of Radio Frequency Exposure (MPE) limit.

3.1.1.2 RSS-102 Exemption Limits for Routine Evaluation – RF Exposure Evaluation

The EUT shall comply with the requirement of RSS-102 section 6.6.

Exemption from Routine Evaluation Limits – RF Exposure Evaluation

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

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

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

a) RF Exposure Calculations for ISED, Stand-alone mode

1. For Transmitter AP6256

Operating Mode	Max. EIRP incl. tune-up (dBm)	Maximum EIRP (W)	Distance (cm)	Threshold power (W)	Verdict
2.4GHz Wi-Fi	28.0	0.631	20	2.68	Pass
5GHz Wi-Fi	22.0	0.158	20	4.53	Pass

2. For Transmitter RTL8852BE

Operating Mode	Max. EIRP incl. tune-up (dBm)	Maximum EIRP (W)	Distance (cm)	Threshold power (W)	Verdict
2.4GHz Wi-Fi	29.0	0.794	20	2.68	Pass
5GHz Wi-Fi	24.0	0.251	20	4.53	Pass

3. For Lora

Operating Mode	Max. EIRP incl. tune-up (dBm)	Maximum EIRP (W)	Distance (cm)	Threshold power (W)	Verdict
Lora	22.5	0.178	20	1.37	Pass

Note: The maximum EIRP lower than the threshold power in section 6.6, thus compliant.

b) RF Exposure Calculations for ISED, Simultaneous mode

Worst mode

Co-location Mode	Sum of the MPE Ratios	Limit	Verdict
Transmitter AP6256 + Lora	$0.631/2.68 + 0.178/1.37 = 0.365$	1.0	Pass
Transmitter RTL8852BE + Lora	$0.794/2.68 + 0.178/1.37 = 0.426$	1.0	Pass

Note: The transmitters AP6256 and RTL8852BE cannot support simultaneous transmitting mode.

The two Lora transmitters cannot support simultaneous transmitting mode

c) Conclusion

“RF Radiation Exposure Statement Caution: This Transmitter must be installed to provide a separation distance of at least 20 cm from all persons.”