

Prüfbericht-Nr.: Test report no.:	CN24WLOH 001	Auftrags-Nr.: Order no.:	168459825	Seite 1 von 22 Page 1 of 22
Kunden-Referenz-Nr.: Client reference no.:	N/A	Auftragsdatum: Order date:	2024-01-05	
Auftraggeber: Client:	Xiamen Intretech Inc. No. 100, Dongfu West Road, Haicang District, Xiamen, Fujian, China			
Prüfgegenstand: Test item:	M4GM			
Bezeichnung / Typ-Nr.: Identification / Type no.:	M4GM-NA-01 (Trademark:  SDATAWAY)			
Auftrags-Inhalt: Order content:	Test Report			
Prüfgrundlage: Test specification:	47 CFR FCC Part 22 47 CFR FCC Part 24 47 CFR FCC Part 27 47 CFR FCC Part 2 KDB 971168 D01 ANSI C63.26 RSS-139 Issue 4 (October 2022) RSS-132 Issue 4 (January 2023) RSS-133 Issue 6 (January 2018) RSS-130 Issue 2 (February 2019) RSS-Gen Issue 5 (February 2021)			
Wareneingangsdatum: Date of sample receipt:	2024-03-26	Please refer to Photo Document		
Prüfmuster-Nr.: Test sample no.:	A003680014-001~014			
Prüfzeitraum: Testing period:	2024-03-27 - 2024-04-26			
Ort der Prüfung: Place of testing:	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: Test result*:	Pass			
geprüft von: tested by:			genehmigt von: authorized by:	
Datum: Date:	2024-05-06	Signed by: Jonathan Li	Ausstellungsdatum: Issue date:	2024-05-06 Signed by: Bell Hu
Stellung / Position:	Sachverständige(r)/Expert		Stellung / Position:	Sachverständige(r)/Expert
Sonstiges / Other:	FCC ID: S96M4GMN IC: 22175-M4GMN, HVIN: M4GM-NA-01			
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged			
* 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			
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V05

Prüfbericht-Nr.: CN24WLOH 001
Test report no.:

Seite 2 von 22
Page 2 of 22

Anmerkungen
Remarks

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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 115:2021, 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 115:2021, 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>

Test Summary

5.1.1 RF POWER OUTPUT

RESULT: Pass

5.1.2 MODULATION CHARACTERISTICS

RESULT: Pass

5.1.3 OCCUPIED BANDWIDTH AND 26dB BANDWIDTH

RESULT: Pass

5.1.4 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

RESULT: Pass

5.1.5 SPURIOUS EMISSIONS AT ANTENNA TERMINALS – BAND EDGE

RESULT: Pass

5.1.6 FIELD STRENGTH OF SPURIOUS RADIATION

RESULT: Pass

5.1.7 FREQUENCY STABILITY

RESULT: Pass

5.1.8 PEAK TO AVERAGE RATIO

RESULT: Pass

Contents

1	GENERAL REMARKS	5
1.1	COMPLEMENTARY MATERIALS	5
1.2	TEST STANDARD(S)	5
2	TEST SITES	6
2.1	TEST FACILITIES	6
2.2	LIST OF TEST AND MEASUREMENT INSTRUMENTS.....	6
2.3	TRACEABILITY	7
2.4	CALIBRATION	7
2.5	MEASUREMENT UNCERTAINTY.....	7
2.6	LOCATION OF ORIGINAL DATA.....	8
2.7	STATUS OF FACILITY USED FOR TESTING.....	8
3	GENERAL PRODUCT INFORMATION	9
3.1	PRODUCT FUNCTION AND INTENDED USE.....	9
3.2	RATINGS AND SYSTEM DETAILS	9
3.3	INDEPENDENT OPERATION MODES	11
3.4	NOISE GENERATING AND NOISE SUPPRESSING PARTS.....	11
3.5	SUBMITTED DOCUMENTS.....	11
4	TEST SET-UP AND OPERATION MODES	12
4.1	PRINCIPLE OF CONFIGURATION SELECTION	12
4.2	TEST OPERATION AND TEST SOFTWARE.....	12
4.3	SPECIAL ACCESSORIES AND AUXILIARY EQUIPMENT	12
4.4	COUNTERMEASURES TO ACHIEVE EMC COMPLIANCE	12
4.5	TEST SETUP DIAGRAM	13
5	TEST RESULTS	14
5.1	ESSENTIAL REQUIREMENTS OF STANDARD	14
5.1.1	<i>RF Power Output.....</i>	<i>14</i>
5.1.2	<i>Modulation Characteristics.....</i>	<i>15</i>
5.1.3	<i>Occupied Bandwidth and 26dB Bandwidth</i>	<i>16</i>
5.1.4	<i>Spurious Emissions at Antenna Terminals</i>	<i>17</i>
5.1.5	<i>Spurious Emissions at Antenna Terminals – Band Edge</i>	<i>18</i>
5.1.6	<i>Field Strength of Spurious Radiation</i>	<i>19</i>
5.1.7	<i>Frequency Stability.....</i>	<i>20</i>
5.1.8	<i>Peak to Average Ratio</i>	<i>21</i>
6	PHOTOGRAPHS OF THE TEST SET-UP	22
7	LIST OF TABLES.....	22

1 General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix A: Test Results for WCDMA operation Band 2

Appendix B: Test Results for WCDMA operation Band 4

Appendix C: Test Results for WCDMA operation Band 5

Appendix D: Test Results for LTE operation Band 2

Appendix E: Test Results for LTE operation Band 4

Appendix F: Test Results for LTE operation Band 12

Appendix G: Test Results of Field Strength of Spurious Radiation

Appendix H: Photographs of the Test Set-Up

1.2 Test Standard(s)

Applied Rules:	47 CFR FCC Part 22	RSS-139 Issue 4 (October 2022)
	47 CFR FCC Part 24	RSS-132 Issue 4 (January 2023)
	47 CFR FCC Part 27	RSS-133 Issue 6 (January 2018)
	47 CFR FCC Part 2	RSS-130 Issue 2 (February 2019)
		RSS-Gen Issue 5 (February 2021)
Test Method:	KDB 971168 D01	
	ANSI C63.26	

2 Test Sites

2.1 Test Facilities

TÜV Rheinland (Shenzhen) Co., Ltd.

No. 362 Huanguan Road Middle, Longhua District, 518110, Shenzhen, P. R. China.

FCC Accreditation Designation No.: CN1260

ISED Wireless Device Testing Laboratory: 25069

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

Radio Spectrum Testing (CTE6000)					
Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. until
Shielding Room 6#	Albatross	SR6	APC17151-SR6	2021-06-22	2024-06-22
Wideband Radio Communication Tester	R&S	CMW500	166305	2023-07-25	2024-07-25
Signal Analyzer	R&S	FSV 40	101475	2023-07-25	2024-07-25
Vector Signal Generator	R&S	SMBV100A	263466	2023-09-21	2024-09-21
Signal Generator	R&S	SMB100A	181041	2023-11-06	2024-11-05
High Speed Power Supply	KEITHLEY	2303	4080052	2023-11-06	2024-11-05
RF Control Unit	Tonscend	JS0806-1	19H8060192	N/A	N/A
Band Reject Filter Group	Tonscend	JS0806-F	19I8060194	2023-11-14	2025-11-13
Radio Spectrum Testing (LRD2)					
Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. until
Shielding Room 6#	Albatross	SR6	APC17151-SR6	2021-06-22	2024-06-22
Signal Analyzer	R&S	FSV 40	101475	2023-07-25	2024-07-25
Signal and spectrum analyzer	Rohde & Schwarz	FSV3030	101576	2023-11-06	2024-11-05
Vector signal generator	Rohde & Schwarz	SMBV100B	102642	2023-11-06	2024-11-05
Vector signal generator	Rohde & Schwarz	SMB100A	182690	2023-11-06	2024-11-05
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	170345	2023-11-06	2024-11-05
1 channel power supply	Rohde & Schwarz	HMC8041	101712	2023-11-06	2024-11-05
Band Reject Filter	Tonscend	JS0806-F	21I8060483	2023-11-14	2025-11-13

Group					
RF Control Unit	Tonscend	JS0806-1	21H8060472	N/A	N/A
Test Software	Tonscend	JS1120	N/A	N/A	N/A
Control PC	Lenovo	TianYi510S-07IMB	2018AP3073	N/A	N/A
Unwanted Emission Testing (TS8996)					
Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. until
EMI Test Receiver	R&S	ESR 7	102021	2023-07-26	2024-07-25
Signal Analyzer	R&S	FSV 40	101439	2023-07-26	2024-07-25
System Controller Interface	R&S	SCI-100	S10010038	N/A	N/A
Filterbank	R&S	Wlan	100759	2023-07-26	2024-07-25
OSP	R&S	OSP 120	102040	N/A	N/A
Pre-amplifier	R&S	SCU08F1	08320031	2023-07-26	2024-07-25
Amplifier	R&S	SCU-18F	180070	2023-07-26	2024-07-25
Amplifier	R&S	SCU40A	100475	2023-07-26	2024-07-25
Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	193	2022-08-07	2024-08-06
Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218717	2022-08-07	2024-08-06
Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19067	2022-08-28	2024-08-27
Active Loop Antenna	Schwarzbeck	FMZB 1513	302	2022-08-07	2024-08-06
Test software	R&S	EMC32 (V10.60.10)	N/A	N/A	N/A
Control PC	Dell	OptiPlex 7050	36NV9P2	N/A	N/A
3m Semi-Anechoic Chamber	Albatross	SAC-3m	APC17151-SAC	2021-06-22	2024-06-22

2.3 Traceability

All measurement equipment calibrations are traceable to NIM (National Institute of Metrology) or where calibration is performed in other countries, to equivalent nationally recognized standards organizations.

2.4 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.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements as below table.

Table 2: Measurement Uncertainty

Parameter	Uncertainty (k=2)
RF output power, conducted	± 0.99 dB
Occupied Channel Bandwidth	± 2.08 %
RF power density, conducted	± 0.99 dB
Unwanted Emissions, conducted	± 0.89 dB
All emissions, radiated	±4.17 dB

2.6 Location of Original Data

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

2.7 Status of Facility Used for Testing

The TÜV Rheinland (Shenzhen) Co., Ltd. Test facility located at No. 362 Huanguan Road Middle, Longhua District, 518110, Shenzhen, P. R. China. is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

3 General Product Information

3.1 Product Function and Intended Use

The EUT is a 4G module, which supports WCDMA and LTE wireless technologies.

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

3.2 Ratings and System Details

Table 3: Technical Specification of EUT

General Information of EUT	Value
Product Name:	M4GM
Test Model No.:	M4GM-NA-01
Trademark:	
FCC ID:	S96M4GMN
IC:	22175-M4GMN
HVIN:	M4GM-NA-01
Operating Voltage:	DC 8V~30V
Testing Voltage:	DC 24V
Operation Temperature:	0°C to +60°C
Technical Specification of WCDMA	
Operational Frequency:	WCDMA Band II: Uplink: 1850-1910MHz, Downlink: 1930-1990MHz WCDMA Band IV: Uplink: 1710-1755MHz, Downlink: 2110-2155MHz WCDMA Band V: Uplink: 824-849MHz, Downlink: 869-894MHz
Type of Modulation:	QPSK, 16QAM
Power Class:	Class 3
TX and RX Antenna Ports:	1 * TRX, 1 * RX-only
Antenna Type:	External Antenna
Antenna Number:	1
Max Antenna Gain:	3.4 dBi for WCDMA Band 2 2.8 dBi for WCDMA Band 4 5.4 dBi for WCDMA Band 5 (Provided by the Client)
Technical Specification of LTE	
Operational Frequency:	LTE Band 2: Uplink: 1850-1910MHz, Downlink: 1930-1990MHz LTE Band 4: Uplink: 1710-1755MHz, Downlink: 2110-2155MHz LTE Band 12: Uplink: 699-716MHz, Downlink: 729-746MHz
Type of Modulation:	QPSK, 16QAM
Power Class:	Class 3
UE Category	Cat 1
Subcarrier spacing:	LTE Band 2: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 4: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 12: 1.4MHz, 3MHz, 5MHz, 10MHz

Prüfbericht - Nr.: CN24WLOH 001
Test Report No.:

Seite 10 von 22
Page 10 of 22

TX and RX Antenna Ports:	1 * TRX, 1 * RX-only
Antenna Type:	External Antenna
Antenna Number:	1
Max Antenna Gain:	3.4 dBi for LTE Band 2 2.8 dBi for LTE Band 4 4.5 dBi for LTE Band 12 (Provided by the Client)

Table 4: RF Channel and Frequency of WCDMA

Support Band	Support Standard	Channel Frequency (MHz)	Channel Number
WCDMA Band 2	WCDMA/HSDPA/HSUPA	1852.4	9262
		1880.0	9400
		1907.6	9538
WCDMA Band 4	WCDMA/HSDPA/HSUPA	1712.4	1312
		1732.6	1413
		1752.6	1513
WCDMA Band 5	WCDMA/HSDPA/HSUPA	826.4	4132
		836.4	4182
		846.6	4233

Table 5: RF Channel and Frequency of LTE

Support Band	Bandwidth (MHz)	Channel Frequency (L/M/H) (MHz)	Channel Number (L/M/H)
LTE Band 2	1.4	1850.7 / 1880 / 1909.3	18607 / 18900 / 19193
	3	1851.5 / 1880 / 1908.5	18615 / 18900 / 19185
	5	1852.5 / 1880 / 1907.5	18625 / 18900 / 19175
	10	1855 / 1880 / 1905	18650 / 18900 / 19150
	15	1857.5 / 1880 / 1902.5	18675 / 18900 / 19125
	20	1860 / 1880 / 1900	18700 / 18900 / 19100
LTE Band 4	1.4	1710.7 / 1732.5 / 1754.3	19957 / 20175 / 20393
	3	1711.5 / 1732.5 / 1753.5	19965 / 20175 / 20385
	5	1712.5 / 1732.5 / 1752.5	19975 / 20175 / 20375
	10	1715.0 / 1732.5 / 1750.0	20000 / 20175 / 20350
	15	1717.5 / 1732.5 / 1747.5	20025 / 20175 / 20325
	20	1720.0 / 1732.5 / 1745.0	20050 / 20175 / 20300
LTE Band 12	1.4	699.7 / 707.5 / 715.3	23017 / 23095/ 23173
	3	700.5 / 707.5 / 714.5	23025 / 23095/ 23165
	5	701.5 / 707.5 / 713.5	23035 / 23095/ 23155
	10	704 / 707.5 / 711	23060 / 23095/ 23130

3.3 Independent Operation Modes

The basic operation modes are:

- A. On, WCDMA transmitting mode (Low /Middle / High channel)
- B. On, LTE transmitting mode (Low /Middle / High channel)
- C. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- | | |
|------------------------------|-------------------------|
| - Application Form | - Operation Description |
| - ID Label and Location Info | - Block Diagram |
| - Schematics | - PCB Layout |

4 Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

Radio Spectrum: The equipment under test (EUT) was configured at its highest power output in order to measure its highest possible radiation and conducted level. The test modes were adapted accordingly in reference to the instructions for use.

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Test operation refers to test setup in chapter 5. All tests were performed according to the procedures in KDB 971168 D01 and ANSI C63.26.

According to clause 3.1, all tests were performed on model M4GM-NA-01 in this report.

4.3 Special Accessories and Auxiliary Equipment

Table 6: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
Adapter	N/A	IVP0330-2000	N/A	DC 3.3V, 2.0A
Adapter	N/A	IVP2400-2000	N/A	DC 24V, 2.0A

4.4 Countermeasures to Achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Technical Construction File (TCF).

No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test (Below 1GHz)

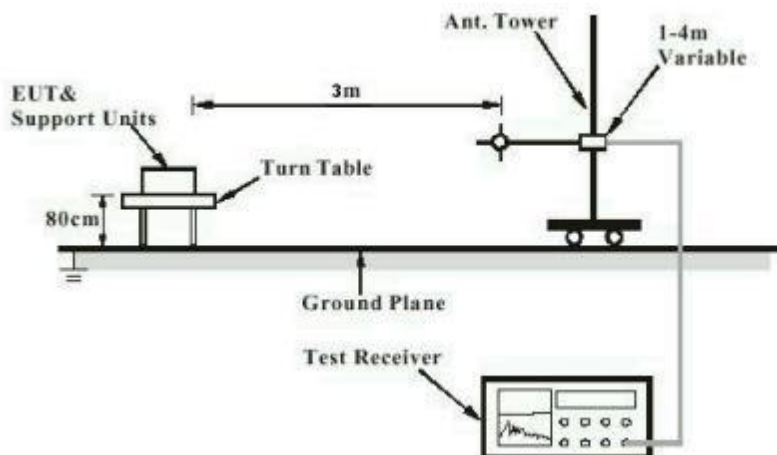


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

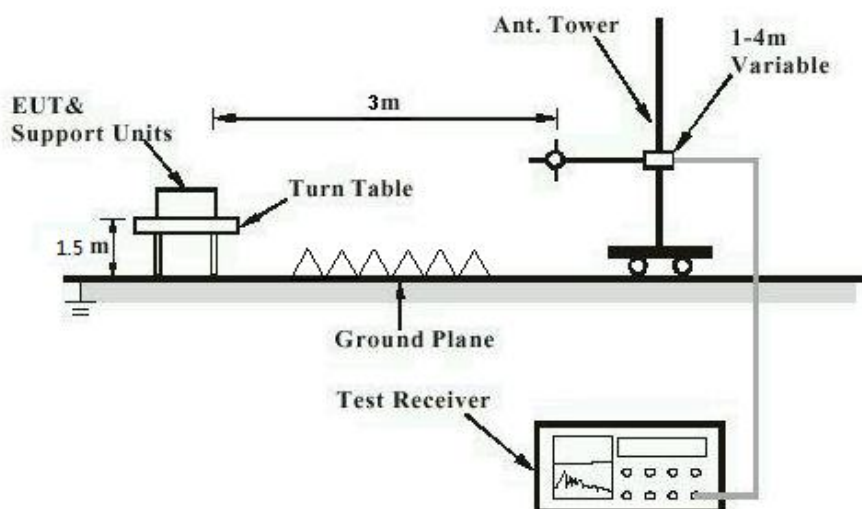
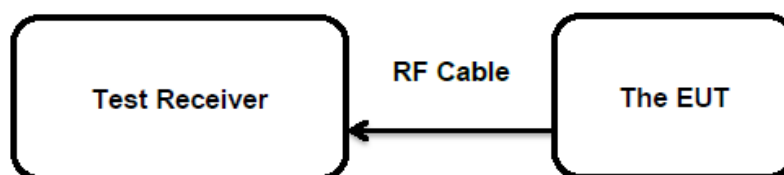


Diagram of Measurement Configuration for Conducted Transmitter Measurement



5 Test Results

5.1 Essential Requirements of Standard

5.1.1 RF Power Output

RESULT:

Pass

Test Specification

Test standard	:	47 CFR FCC Part 22	RSS-130 Issue 2	
		47 CFR FCC Part 24	RSS-132 Issue 4	
		47 CFR FCC Part 27	RSS-133 Issue 6	
		47 CFR FCC Part 2	RSS-139 Issue 4	
			RSS-Gen Issue 5	
Limits	:	Operating band	FCC Limit	ISED Limit
		Band 2	EIRP 2 watts	EIRP 2 watts
		Band 4	EIRP 1 watts	EIRP 1 watts
		Band 5	ERP 7 watts	ERP 11.5 watts
		Band 12	ERP 3 watts	ERP 3 watts
Test procedure	:	Clause 5.2.4.2 of ANSI C63.26		
Kind of test site	:	Shielded Room		

Test Setup

Date of testing	: 2024-03-27 to 2024-04-26
Input voltage	: DC 24V
Operation mode	: A, B
Test channel	: Low / Middle / High
Ambient temperature	: 23.6 °C
Relative humidity	: 52 %
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix A ~ appendix F.

Note:

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_{\text{T}}$$

where

ERP or EIRP: effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as P_{Meas} , e.g. dBm)

P_{Meas} : measured transmitter output power, in dBm

G_{T} : gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

5.1.2 Modulation Characteristics

RESULT:**Pass****Test Specification**

Test standard	: 47 CFR FCC Part 22	RSS-130 Issue 2
	47 CFR FCC Part 24	RSS-132 Issue 4
	47 CFR FCC Part 27	RSS-133 Issue 6
	47 CFR FCC Part 2	RSS-139 Issue 4
		RSS-Gen Issue 5
Limits	: "Other types of equipment", the use of higher order modulations such as OFDM or LTE or other modulation are acceptable for use	
Test procedure	: Clause 5.2.3 of ANSI C63.26	
Kind of test site	: Shielded Room	

Test Setup

Date of testing	: 2024-03-27 to 2024-04-26
Input voltage	: DC 24V
Operation mode	: A, B
Test channel	: Low / Middle / High
Ambient temperature	: 23.6 °C
Relative humidity	: 52 %
Atmospheric pressure	: 101 kPa

Note:

The device implement digital modulation such as QPSK and 16QAM, hence the EUT is deemed to comply with this requirement without additional testing.

5.1.3 Occupied Bandwidth and 26dB Bandwidth

RESULT:**Pass****Test Specification**

Test standard	:	47 CFR FCC Part 22	RSS-130 Issue 2
		47 CFR FCC Part 24	RSS-132 Issue 4
		47 CFR FCC Part 27	RSS-133 Issue 6
		47 CFR FCC Part 2	RSS-139 Issue 4
			RSS-Gen Issue 5
Test requirement	:	Section 2.1049 of 47 CFR FCC Part 2	
Limits	:	N/A	
Test procedure	:	Section 5.4.3 of ANSI C63.26	
Kind of test site	:	Shielded Room	

Test Setup

Date of testing	:	2024-03-27 to 2024-04-26
Input voltage	:	DC 24V
Operation mode	:	A, B
Test channel	:	Low / Middle / High
Ambient temperature	:	23.6 °C
Relative humidity	:	52 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix A ~ appendix F.

5.1.4 Spurious Emissions at Antenna Terminals

RESULT:**Pass****Test Specification**

Test standard	:	47 CFR FCC Part 22	RSS-130 Issue 2
		47 CFR FCC Part 24	RSS-132 Issue 4
		47 CFR FCC Part 27	RSS-133 Issue 6
		47 CFR FCC Part 2	RSS-139 Issue 4
			RSS-Gen Issue 5

Limits	:	Operating band	FCC Limit	ISED Limit
		Band 2	< - 13 dBm /1MHz	< - 13 dBm /1MHz
		Band 4	< - 13 dBm /1MHz	< - 13 dBm /1MHz
			< - 13 dBm /100kHz	
		Band 5	@ < 1GHz	< - 13 dBm /100 kHz
			< - 13 dBm /1MHz	
			@ > 1GHz	
		Band 12	< - 13 dBm /1MHz	< - 13 dBm /1MHz

Test procedure : Section 5.7.4 of ANSI C63.26

Kind of test site : Shielded Room

Test Setup

Date of testing	:	2024-03-27 to 2024-04-26
Input voltage	:	DC 24V
Operation mode	:	A, B
Test channel	:	Low / Middle / High
Ambient temperature	:	23.6 °C
Relative humidity	:	52 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix A ~ appendix F.

The limit calculation:

$$\text{Limit} = P_{\text{Meas}} (\text{dBm}) - [43 + 10 \log(P_{\text{Meas}})] = -13 \text{ dBm}$$

5.1.5 Spurious Emissions at Antenna Terminals – Band Edge**RESULT:****Pass****Test Specification**

Test standard	:	47 CFR FCC Part 22	RSS-130 Issue 2	
		47 CFR FCC Part 24	RSS-132 Issue 4	
		47 CFR FCC Part 27	RSS-133 Issue 6	
		47 CFR FCC Part 2	RSS-139 Issue 4	
			RSS-Gen Issue 5	
Limits	:	Operating band	FCC Limit	ISED Limit
		Band 2	< - 13 dBm /1%EBW	< - 13 dBm / 1%OBW
		Band 4	< - 13 dBm /1%EBW	< - 13 dBm / 1%OBW
		Band 5	< - 13 dBm /1%EBW	< - 13 dBm / 1%OBW
		Band 12	< - 13 dBm /30kHz	< - 13 dBm /30kHz
Test procedure	:	Section 5.7.4 of ANSI C63.26		
Kind of test site	:	Shielded Room		

Test Setup

Date of testing	: 2024-03-27 to 2024-04-26
Input voltage	: DC 24V
Operation mode	: A, B
Test channel	: Low / Middle / High
Ambient temperature	: 23.6 °C
Relative humidity	: 52 %
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix A ~ appendix F.

The limit calculation:

$$\text{Limit} = P_{\text{Meas}} \text{ (dBm)} - [43 + 10 \log(P_{\text{Meas}})] = -13 \text{ dBm}$$

5.1.6 Field Strength of Spurious Radiation

RESULT:**Pass****Test Specification**

Test standard	:	47 CFR FCC Part 22	RSS-130 Issue 2	
		47 CFR FCC Part 24	RSS-132 Issue 4	
		47 CFR FCC Part 27	RSS-133 Issue 6	
		47 CFR FCC Part 2	RSS-139 Issue 4	
			RSS-Gen Issue 5	
Limits	:	Operating band	FCC Limit	ISED Limit
		Band 2	< - 13 dBm /1MHz	< - 13 dBm /1MHz
		Band 4	< - 13 dBm /1MHz	< - 13 dBm /1MHz
			< - 13 dBm /100kHz	
		Band 5	@ < 1GHz	< - 13 dBm /100 kHz
			< - 13 dBm /1MHz	
			@ > 1GHz	
		Band 12	< - 13 dBm /1MHz	< - 13 dBm /1MHz
Test procedure	:	Section 5.5 of ANSI C63.26		
Kind of test site	:	3m Semi-anechoic Chamber		

Test Setup

Date of testing	: 2024-04-11
Input voltage	: DC 24V
Operation mode	: A, B
Test channel	: Middle
Ambient temperature	: Refer to test result
Relative humidity	: Refer to test result
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix G.

The limit calculation:

$$\text{Limit} = \text{PMeas (dBm)} - [43 + 10 \log(\text{PMeas})] = -13 \text{ dBm}$$

Sweep the whole frequency band through the range from 9 kHz to the 10th harmonic of the carrier, the emissions below the noise floor will not be recorded in this report. The measurement is performed for all operational modes and both antenna polarization, only the data of the worst mode is recorded in this report.

5.1.7 Frequency Stability

RESULT:**Pass****Test Specification**

Test standard : 47 CFR FCC Part 22 RSS-130 Issue 2
47 CFR FCC Part 24 RSS-132 Issue 4
47 CFR FCC Part 27 RSS-133 Issue 6
47 CFR FCC Part 2 RSS-139 Issue 4
RSS-Gen Issue 5

Limits : Section 22.355 of 47 CFR FCC Part 22
"2.5ppm for mobile $\leq$ 3 watts"
Section 24.235 of 47 CFR FCC Part 24
"The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block."
Section 27.54 of 47 CFR FCC Part 27
"The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation."

Test procedure : Section 5.6.3 of ANSI C63.26

Kind of test site : Shielded Room

Test Setup

Date of testing : 2024-03-27 to 2024-04-26

Input voltage : DC 24V

Operation mode : A, B

Test channel : Low / Middle / High

Ambient temperature : 23.6 °C

Relative humidity : 52 %

Atmospheric pressure : 101 kPa

For the measurement records, refer to the appendix A ~ appendix F.

5.1.8 Peak to Average Ratio

RESULT:**Pass****Test Specification**

Test standard	: 47 CFR FCC Part 22	RSS-130 Issue 2
	47 CFR FCC Part 24	RSS-132 Issue 4
	47 CFR FCC Part 27	RSS-133 Issue 6
	47 CFR FCC Part 2	RSS-139 Issue 4
		RSS-Gen Issue 5
Limits	: Section 22.913(d) of 47 CFR FCC Part 22	
	Section 24.232(d) of 47 CFR FCC Part 24	
	Section 27.50(d) of 47 CFR FCC Part 27	
	"The peak-to-average ratio (PAR) of the transmission must not exceed 13 dB"	
Test procedure	: Section 5.2.6 of ANSI C63.26	
	RSS-Gen Issue 5	
Kind of test site	: Shielded Room	

Test Setup

Date of testing	: 2024-03-27 to 2024-04-26
Input voltage	: DC 24V
Operation mode	: A, B
Test channel	: Low / Middle / High
Ambient temperature	: 23.6 °C
Relative humidity	: 52 %
Atmospheric pressure	: 101 kPa

For the measurement records, refer to the appendix A ~ appendix F.

6 Photographs of the Test Set-Up

For photographs of the test set-up, refer to the appendix H.

7 List of Tables

Table 1: List of Test and Measurement Equipment.....	6
Table 2: Measurement Uncertainty	8
Table 3: Technical Specification of EUT	9
Table 4: RF Channel and Frequency of WCDMA	10
Table 5: RF Channel and Frequency of LTE.....	10
Table 6: List of Accessories and Auxiliary Equipment.....	12