Prüfbericht-Nr.: *Test report no.*:	**CN23YM2P 003**	**Auftrags-Nr.:** *Order no.*:	**168443071**	Seite 1 von 24 *Page 1 of 24*
Kunden-Referenz-Nr.: *Client reference no.*:	N/A	**Auftragsdatum:** *Order date:*	2023-09-08	
Auftraggeber: *Client*:	**Allied Universal Electronic Monitoring US, Inc.** 1838 Gunn Hwy, Odessa FL 33556, United States			
Prüfgegenstand: *Test item*:	Home comunication unit			
Bezeichnung / Typ-Nr.: *Identification / Type no.*:	HUB-300 (Trademark: Attenti)			
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 90 47 CFR FCC Part 2		KDB 971168 D01V03 ANSI C63.26 2015	
Wareneingangsdatum: *Date of sample receipt*:	2023-08-29	Please refer to Photo Document		
Prüfmuster-Nr.: *Test sample no:*	A003550494-001~011			
Prüfzeitraum: *Testing period*:	2024-01-04 - 2024-02-01			
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:	X Breeze Jiang Signed by: Breeze Jiang	**genehmigt von:** *authorized by*:	X Bell Hu Signed by: Bell Hu
Datum: *Date:* 2024-02-05		**Ausstellungsdatum:** *Issue date:* 2024-02-05	
Stellung / Position:	Sachverständige(r)/Expert	**Stellung** / Position:	Sachverständige(r)/Expert

Sonstiges / *Other*: FCC ID: NC3HUB-300
This report for WCDMA, LTE function.

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*

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. *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.*
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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. *Test clauses with remark of * are subcontracted to qualified subcontractors and descripted under the respective test clause in the report.* *Deviations of testing specification(s) or customer requirements are listed in specific test clause in the report.*
4	Die Entscheidungsregel für Konformitätserklärungen basierend auf numerischen Messergebnisen 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 bezueglich des Risikos durch diese Entscheidungsregel siehe ILAC G8:2019. 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.

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

5.1.9 CO-LOCATED RADIATED SPURIOUS EMISSION
RESULT: Pass

Contents

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 of Radiated Spurious Emissions
Appendix B: Test Results of Band 2 for WCDMA operation
Appendix C: Test Results of Band 4 for WCDMA operation
Appendix D: Test Results of Band 5 for WCDMA operation
Appendix E: Test Results of Band 2 for LTE operation
Appendix F: Test Results of Band 4 for LTE operation
Appendix G: Test Results of Band 5 for LTE operation
Appendix H: Test Results of Band 12 for LTE operation
Appendix I: Test Results of Band 13 for LTE operation
Appendix J: Test Results of Band 14 for LTE operation
Appendix K: Test Results of Band 25 for LTE operation
Appendix L: Test Results of Band 26 (814-824) for LTE operation
Appendix M: Test Results of Band 26 (824-849) for LTE operation
Appendix N: Test Results of Band 66 for LTE operation
Appendix O: Test Results of Band 71 for LTE operation
Appendix P: Photographs of the Test Set-up

1.2 Test Standard(s)

Applied Rules:	47 CFR FCC Part 22 47 CFR FCC Part 24 47 CFR FCC Part 27 47 CFR FCC Part 90 47 CFR FCC Part 2
Test Method:	KDB 971168 D01V03 ANSI C63.26 2015 2015

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 Registration No.: 694916

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. until**
Shielding Room 6#	Albatross	SR6	APC17151-SR6	2024-06-22
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	166305	2024-07-25
Signal Analyzer	Rohde & Schwarz	FSV 40	101475	2024-07-25
Vector Signal Generator	Rohde & Schwarz	SMBV100A	263466	2024-09-21
Signal Generator	Rohde & Schwarz	SMB100A	181041	2024-11-05
High Speed Power Supply	KEITHLEY	2303	4080052	2024-11-05
RF Control Unit	Tonscend	JS0806-1	19H8060192	N/A
Band Reject Filter Group	Tonscend	JS0806-F	19I8060194	2025-11-13
Temp.&Humidity Chamber	GIANT FORCE	ITH-150-40-CP-AR	IAA1406-004	2024-07-31
NB-IoT&Emtc Integration Filter Group	Tonscend	JS0806-F	21D8060410	2024-07-31
Test Software	Tonscend	JS1120	N/A	N/A
Control PC	Dell	Inspiron3670	5HVGWS2	N/A
GNSS Simulators	OROLIA	GSG-5	202726	2024-01-19
Radio Spectrum Testing (LRD2)				
Equipment	**Manufacturer**	**Model**	**Serial No.**	**Cal. until**
Shielding Room 6#	Albatross	SR6	APC17151-SR6	2024-06-22
Signal Analyzer	R&S	FSV 40	101475	2024-07-25
Signal and spectrum analyzer	Rohde & Schwarz	FSV3030	101576	2024-11-05
Vector signal generator	Rohde & Schwarz	SMBV100B	102642	2024-11-05
Vector signal generator	Rohde & Schwarz	SMB100A	182690	2024-11-05
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	170345	2024-11-05
1 channel power supply	Rohde & Schwarz	HMC8041	101712	2024-11-05
Band Reject Filter Group	Tonscend	JS0806-F	21I8060483	2025-11-13
RF Control Unit	Tonscend	JS0806-1	21H8060472	N/A
Test Software	Tonscend	JS1120	N/A	N/A
Control PC	Lenovo	TianYi510S-07IMB	2018AP3073	N/A
Unwanted Emission Testing (TS9975)				

Equipment	Manufacturer	Model	Serial No.	Cal. until
EMI Test Receiver	R&S	ESR 7	102021	2024-07-25
Signal Analyzer	R&S	FSV 40	101439	2024-07-25
System Controller Interface	R&S	SCI-100	S10010038	N/A
Filterbank	R&S	Wlan	100759	2024-07-25
OSP	R&S	OSP 120	102040	N/A
Pre-amplifier	R&S	SCU08F1	08320031	2024-07-25
Amplifier	R&S	SCU-18F	180070	2024-07-25
Amplifier	R&S	SCU40A	100475	2024-07-25
Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	193	2024-08-06
Double-Ridged Antenna (1 -18 GHz)	ETS-LINDGREN	3117	00218717	2024-08-06
Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19067	2024-08-27
Active Loop Antenna	Schwarzbeck	FMZB 1513	302	2024-08-06
Test software	R&S	EMC32 (V10.60.10)	N/A	N/A
Control PC	Dell	OptiPlex 7050	36NV9P2	N/A
3m Semi-Anechoic Chamber	Albatross	SAC-3m	APC17151-SAC	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 basics 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 P 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 Home comunication unit which supports 915MHz, 2.4G Wi-Fi and WDMA/LTE functions.

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**
Kind of Equipment:	Home comunication unit
Type Designation:	HUB-300
Trademark:	Attenti
FCC ID:	NC3HUB-300
Operating Voltage:	DC 5V input via AC/DC adapter
Testing Voltage:	AC 120V, 60Hz
Operating Temperature Range:	-20 °C ~ +55 °C
AC/DC adapter:	Model: KSA-12W-050200VE Input: 100-240AC Output: 5VDC, 2A
Technical Specification of 915MHz	
Operating Frequency:	915 MHz
Type of Modulation:	GFSK
Channel Number:	1 channel
Antenna Type:	Internal Antenna
Antenna Gain:	1.5 dBi (Provided by the Client)
Technical Specification of Wi-Fi 802.11 b/g/n	
Operating Frequency:	2412 - 2462 MHz for 802.11b/g/n(HT20)
Type of Modulation:	DSSS(DBPSK/DQPSK/CCK) OFDM(BPSK/QPSK/16QAM/64QAM)
Data Rate:	1/2/5.5/11 Mbps for 802.11b 6/9/12/18/24/36/48/54 Mbps for 802.11g MCS0 ~ MCS7 for 802.11n
Channel Number:	11 channels for 802.11b/g/n(HT20)
Channel Separation:	5 MHz
Antenna Type:	Internal Antenna
Antenna Gain:	3.7 dBi (Provided by the Client)
Technical Specification of WCDMA	
Operational Frequency:	WCDMA Band 2: 1852.4 to 1907.6 MHz WCDMA Band 4: 1712.4 to 1752.6 MHz WCDMA Band 5: 826.4 to 846.6 MHz
Type of Modulation:	QPSK

Power Class:	Class 3
Channel Bandwidth:	5MHz
TX and RX Antenna Ports:	1 * TRX, 1 * RX-only
Antenna Type:	Internal Antenna
Antenna Gain:	1.0 dBi for 698MHz to 960MHz 2.9 dBi for 1710MHz to 2170MHz (Provided by the Client)
Technical Specification of LTE	
Operational Frequency:	LTE Band 2: 1850 to 1910 MHz LTE Band 4: 1710 to 1755 MHz LTE Band 5: 824 to 849 MHz LTE Band12: 699 to 716 MHz LTE Band13: 777 to 787 MHz LTE Band14: 788 to 798 MHz LTE Band 25: 1850 to 1915 MHz LTE Band 26: 814 to 849 MHz LTE Band 66: 1710 to 1780 MHz LTE Band 71: 663 to 698 MHz
Type of Modulation:	QPSK
Power Class:	Class 3
Channel Bandwidth:	LTE Band 2: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 4: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 5: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band12: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band13: 5MHz, 10MHz LTE Band14: 5MHz, 10MHz LTE Band 25: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 26: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 66: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 71: 5MHz, 10MHz, 15MHz, 20MHz
TX and RX Antenna Ports:	1 * TRX, 1 * RX-only
Antenna Type:	Internal Antenna
Antenna Gain:	1.0 dBi for 698MHz to 960MHz 2.9 dBi for 1710MHz to 2170MHz (Provided by the Client)

Table 4: RF Channel and Frequency of WCDMA

Support Band	Support Standard	Channel Frequency (MHz)
WCDMA Band 2	WCDMA/HSDPA/HSUPA	1852.4
		1880.0
		1907.6
WCDMA Band 4	WCDMA/HSDPA/HSUPA	1712.4
		1732.6
		1752.6
WCDMA Band 5	WCDMA/HSDPA/HSUPA	826.4
		836.4
		846.6

Table 5: RF Channel and Frequency of LTE

Support Band	Bandwidth (MHz)	Channel Frequency (L/M/H)

		(MHz)
LTE Band 2	1.4	1850.7 / 1880 / 1909.3
	3	1851.5 / 1880 / 1908.5
	5	1852.5 / 1880 / 1907.5
	10	1855 / 1880 / 1905
	15	1857.5 / 1880 / 1902.5
	20	1860 / 1880 / 1900
LTE Band 4	1.4	1710.7 / 1732.5 / 1754.3
	3	1711.5 / 1732.5 / 1753.5
	5	1712.5 / 1732.5 / 1752.5
	10	1715.0 / 1732.5 / 1750.0
	15	1717.5 / 1732.5 / 1747.5
	20	1720.0 / 1732.5 / 1745.0
LTE Band 5	1.4	824.7 / 836.5 / 848.3
	3	825.5 / 836.5 / 847.5
	5	826.5 / 836.5 / 846.5
	10	829 / 836.5 / 844
LTE Band 12	1.4	699.7 / 707.5 / 715.3
	3	700.5 / 707.5 / 714.5
	5	701.5 / 707.5 / 713.5
	10	704 / 707.5 / 711
LTE Band 13	5	779.5 / 782 / 784.5
	10	782
LTE Band 14	5	790.5 / 793 / 795.5
	10	793
LTE Band 25	1.4	1850.7 / 1882.5 / 1914.3
	3	1851.5 / 1882.5 / 1913.5
	5	1852.5 / 1882.5 / 1912.5
	10	1855 / 1882.5 / 1910
	15	1857.5 / 1882.5 / 1907.5
	20	1860 / 1882.5 / 1905
LTE Band 26 (814 to 824 MHz)	1.4	814.7 / 819 / 823.3
	3	815.5 / 819 / 822.5
	5	816.5 / 819 / 821.5
	10	819
LTE Band 26 (824 to 849 MHz)	1.4	824.7/836.5/848.3
	3	825.5/836.5/847.5
	5	826.5/836.5/846.5
	10	829.0/836.5/844
	15	831.5/836.5/841.5
LTE Band 66	1.4	1710.7 / 1745 / 1779.3
	3	1711.5 / 1745 / 1778.5
	5	1712.5 / 1745 / 1777.5
	10	1715 / 1745 / 1775
	15	1717.5 / 1745 / 1772.5
	20	1720 / 1745 / 1770
LTE Band 71	5	665.5 / 680.5 / 695.5
	10	668 / 680.5 / 693
	15	670.5 / 680.5 / 690.5
	20	673 / 683 / 688

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. On, 915MHz, Wi-Fi and WCDMA / LTE Co-location mode
D. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- Application Form
- Operation Description
- PCB Layout
- User Manual
- Block Diagram
- ID Label and Location Info

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 D01V03 and ANSI C63.26 2015.
According to clause 3.1, all tests were performed on model HUB-300 in this report.

4.3 Special Accessories and Auxiliary Equipment

Table 6: List of Accessories and Auxiliary Equipment

Description	Manufacturer	Model	S/N
Laptop	Lenovo	T480	PF-16A6N8

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)

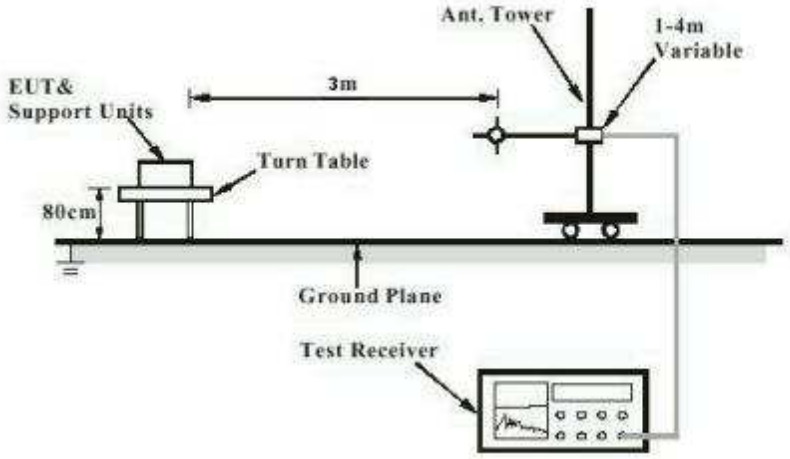


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

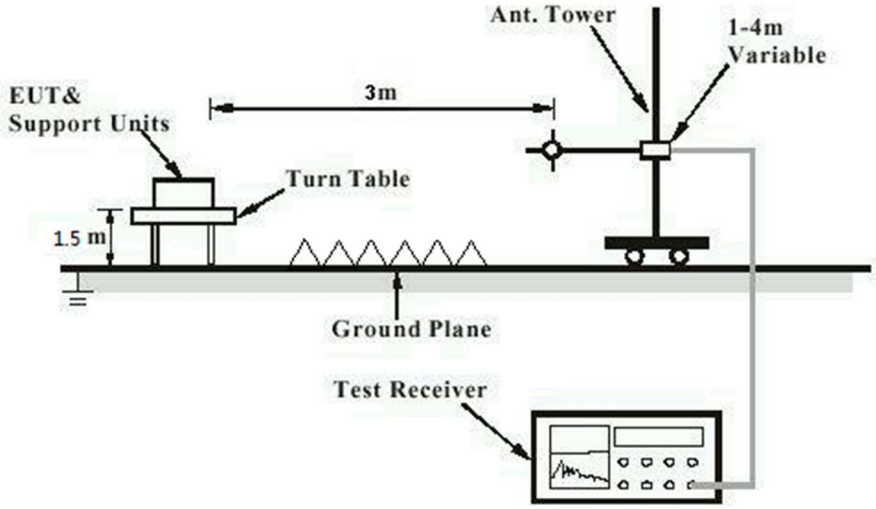
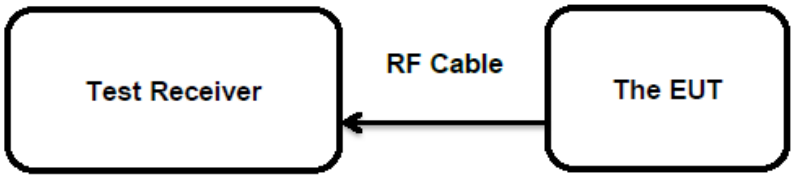


Diagram of Measurement Configuration for Conducted Transmitter Measurement



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 47 CFR FCC Part 24 47 CFR FCC Part 27 47 CFR FCC Part 90 47 CFR FCC Part 2	
Limits	:	Operating band	FCC Limit
		Band 2	EIRP 2 watts
		Band 4	EIRP 1 watts
		Band 5	ERP 7 watts
		Band 12	ERP 3 watts
		Band 13	ERP 3 watts
		Band 14	ERP 3 watts
		Band 25	EIRP 2 watts
		Band 26	ERP 100 watts for 814-824MHz, ERP 7 watts for 824-849MHz
		Band 66	EIRP 1 watts
		Band 71	ERP 3 watts
Test procedure	:	Clause 5.2.4.2 of ANSI C63.26 2015	
Kind of test site	:	Shielded Room	

Test Setup

Date of testing	:	2024-02-01
Input voltage	:	Fully charged battery
Operation mode	:	A, B
Test channel	:	Low / Middle / High
Ambient temperature	:	24.2 ℃
Relative humidity	:	53 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B ~ appendix O.

Note:
ERP or EIRP = $P_{Meas} + G_T$
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 47 CFR FCC Part 24 47 CFR FCC Part 27 47 CFR FCC Part 90 47 CFR FCC Part 2
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 2015
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2024-02-01
Input voltage	:	Fully charged battery
Operation mode	:	A, B
Test channel	:	Low / Middle / High
Ambient temperature	:	24.2 ℃
Relative humidity	:	53 %
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 47 CFR FCC Part 24 47 CFR FCC Part 27 47 CFR FCC Part 90 47 CFR FCC Part 2
Test requirement	:	Section 2.1049 of 47 CFR FCC Part 2
Limits	:	N/A
Test procedure	:	Section 5.4.3 of ANSI C63.26 2015
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2024-02-01
Input voltage	:	Fully charged battery
Operation mode	:	A, B
Test channel	:	Low / Middle / High
Ambient temperature	:	24.2 ℃
Relative humidity	:	53 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B ~ appendix O.

5.1.4 Spurious Emissions at Antenna Terminals

RESULT: **Pass**

Test Specification

Test standard	:	47 CFR FCC Part 22 47 CFR FCC Part 24 47 CFR FCC Part 27 47 CFR FCC Part 90 47 CFR FCC Part 2	
Limits	:	Operating band	FCC Limit
		Band 2	< - 13 dBm /1MHz
		Band 4	< - 13 dBm /1MHz
		Band 5	< - 13 dBm /100kHz @ < 1GHz < - 13 dBm /1MHz @ > 1GHz
		Band 12	< - 13 dBm /1MHz
		Band 13	< - 13 dBm /1MHz
		Band 14	< - 13 dBm /1MHz
		Band 25	< - 13 dBm /100kHz @ < 1GHz < - 13 dBm /1MHz @ > 1GHz
		Band 26	< - 13 dBm /100kHz @ < 1GHz < - 13 dBm /1MHz @ > 1GHz
		Band 66	< - 13 dBm /1MHz
		Band 71	< - 13 dBm /100kHz
Test procedure	:	Section 5.7.4 of ANSI C63.26 2015	
Kind of test site	:	Shielded Room	

Test Setup

Date of testing	:	2024-02-01
Input voltage	:	Fully charged battery
Operation mode	:	A, B
Test channel	:	Low / Middle / High
Ambient temperature	:	24.2 ℃
Relative humidity	:	53 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B ~ appendix O.

The limit calculation:
Limit = P_{Meas} (dBm) – [43+10log(P_{Meas})] = −13 dBm

5.1.5 Spurious Emissions at Antenna Terminals – Band Edge

RESULT: **Pass**

Test Specification

Test standard	:	47 CFR FCC Part 22 47 CFR FCC Part 24 47 CFR FCC Part 27 47 CFR FCC Part 90 47 CFR FCC Part 2
Limits	:	Operating band — FCC Limit
		Band 2 — < - 13 dBm /1%EBW
		Band 4 — < - 13 dBm /1%EBW
		Band 5 — < - 13 dBm /1%EBW
		Band 12 — < - 13 dBm /30kHz
		Band 13 — < - 13 dBm /30kHz
		Band 14 — < - 13 dBm /30kHz
		Band 25 — < - 13 dBm /1%EBW
		Band 26 — < - 13 dBm /1%EBW
		Band 66 — < - 13 dBm /1%EBW
		Band 71 — < - 13 dBm /30kHz
Test procedure	:	Section 5.7.4 of ANSI C63.26 2015
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2024-02-01
Input voltage	:	Fully charged battery
Operation mode	:	A, B
Test channel	:	Low / Middle / High
Ambient temperature	:	24.2 ℃
Relative humidity	:	53 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B ~ appendix O.

The limit calculation:
Limit = P_{Meas} (dBm) – [43+10log(P_{Meas})] = −13 dBm

5.1.6 Field Strength of Spurious Radiation

RESULT: **Pass**

Test Specification

Test standard	:	47 CFR FCC Part 22 47 CFR FCC Part 24 47 CFR FCC Part 27 47 CFR FCC Part 90 47 CFR FCC Part 2
Limits	:	Operating band — FCC Limit
		Band 2 — < - 13 dBm /1MHz
		Band 4 — < - 13 dBm /1MHz
		Band 5 — < - 13 dBm /100kHz @ < 1GHz < - 13 dBm /1MHz @ > 1GHz
		Band 12 — < - 13 dBm /1MHz
		Band 13 — < - 13 dBm /1MHz
		Band 14 — < - 13 dBm /1MHz
		Band 25 — < - 13 dBm /1MHz
		Band 26 — < - 13 dBm /1MHz
		Band 66 — < - 13 dBm /1MHz
		Band 71 — < - 13 dBm /100kHz
Test procedure	:	Section 5.5 of ANSI C63.26 2015
Kind of test site	:	3m Semi-anechoic Chamber

Test Setup

Date of testing	:	2024-02-01
Input voltage	:	Fully charged battery
Operation mode	:	A, B, C
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 A.

The limit calculation:
Limit = PMeas (dBm) – [43+10log(PMeas)] = -13 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 47 CFR FCC Part 24 47 CFR FCC Part 27 47 CFR FCC Part 90 47 CFR FCC Part 2
Limits	:	Section 22.355 of 47 CFR FCC Part 22 “2.5ppm for mobile ≤ 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.” Section 90.213 of 47 CFR FCC Part 90 “2.5ppm for mobile stations which the output power is less than 2 watts”
Test procedure	:	Section 5.6.3 of ANSI C63.26 2015
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2024-02-01
Input voltage	:	Fully charged battery
Operation mode	:	A, B
Test channel	:	Low / Middle / High
Ambient temperature	:	24.2 ℃
Relative humidity	:	53 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B ~ appendix O.

5.1.8 Peak to Average Ratio

RESULT: **Pass**

Test Specification

Test standard	:	47 CFR FCC Part 22 47 CFR FCC Part 24 47 CFR FCC Part 27 47 CFR FCC Part 90 47 CFR FCC Part 2
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 2015 RSS-Gen Issue 5
Kind of test site	:	Shielded Room

Test Setup

Date of testing	:	2024-02-01
Input voltage	:	Fully charged battery
Operation mode	:	A, B
Test channel	:	Low / Middle / High
Ambient temperature	:	24.2 ℃
Relative humidity	:	53 %
Atmospheric pressure	:	101 kPa

For the measurement records, refer to the appendix B ~ appendix O.

5.1.9 Co-located Radiated Spurious Emission

RESULT: **Pass**

Test Specification

Test standard	:	CFR47 FCC Part 15: Subpart C Section 15.247 47 CFR FCC Part 22 47 CFR FCC Part 24 47 CFR FCC Part 27 47 CFR FCC Part 90 47 CFR FCC Part 2
Basic standard	:	ANSI C63.26 2015
Limits	:	The emissions not exceed the highest limit.
Test procedure	:	Section 5.7 of ANSI C63.26 2015
Kind of test site	:	3m Semi-anechoic Chamber

Test Setup

Date of testing	:	2024-01-04 to 2024-01-05
Input voltage	:	AC 120V, 60Hz
Operation mode	:	B
Test channel	:	Middle
Ambient temperature	:	Refer to test result
Relative humidity	:	Refer to test result
Atmospheric pressure	:	101 kPa

Remark:
Testing was carried out within frequency range 9kHz to the tenth harmonics. All configurations tested for both MIMO and SISO, only worst-case mode data reported.

For the measurement records, refer to the appendix A.

6 Photographs of the Test Set-Up

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

7 List of Tables