

Prüfbericht-Nr.: Test report no.:	CN25L31K 001	Auftrags-Nr.: Order no.:	168546074	Seite 1 von 20 Page 1 of 20
Kunden-Referenz-Nr.: Client reference no.:	N/A	Auftragsdatum: Order date:	2025-04-01	
Auftraggeber: Client:	Xiamen Ampace Technology Limited No.600 Hongtang Road, Tongxiang High-tech Zone, Torch High-tech District, Xiamen City, Fujian 361106, China			
Prüfgegenstand: Test item:	Portable Power Station			
Bezeichnung / Typ-Nr.: Identification / Type no.:	Andes 1500 X (X = A to Z or blank, difference on the model name and appearance colors only for marketing purpose, no technical difference)			
Auftrags-Inhalt: Order content:	Test Report			
Prüfgrundlage: Test specification:	CFR Title 47 FCC Part 15: Subpart C Section 15.247 RSS-247 Issue 3 August 2023 RSS-Gen Issue 5 February 2021			
Wareneingangsdatum: Date of sample receipt:	2025-04-10	Please refer to Photo Document		
Prüfmuster-Nr.: Test sample no.:	A003958044-001~003			
Prüfzeitraum: Testing period:	2025-04-10 - 2025-05-09			
Ort der Prüfung: Place of testing:	Refer to Section 2.1			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (Shenzhen) Co., Ltd.			
Prüfergebnis*: Test result*:	Pass			
geprüft von: tested by:	 Lin		genehmigt von: authorized by:	 Hardy Suo
Datum: Date:	2025-05-23		Ausstellungsdatum: Issue date:	2025-05-23
Stellung / Position:	Sachverständige(r)/Expert		Stellung / Position:	Sachverständige(r)/Expert
Sonstiges / Other:	FCC ID: 2BB9O-ANDES1500B IC: 32540-ANDES1500B, HVIN: ANDES1500B			
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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Anmerkungen
Remarks

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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

5.1.1 ANTENNA REQUIREMENT

RESULT: Pass

5.1.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER

RESULT: Pass

5.1.3 RADIATED SPURIOUS EMISSION

RESULT: Pass

5.1.4 CONDUCTED EMISSION ON AC MAINS

RESULT: Pass

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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.

Appendix B: Photographs of Test Set-up.

2 Test Sites

2.1 Test Facilities

1. TÜV Rheinland (Shenzhen) Co., Ltd.

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

A2LA Certificate Number: 5162.01

FCC Accreditation Designation No.: CN1260

ISED wireless device testing laboratory: 25069

2. EST Technology Co., Ltd.

Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China

A2LA Certificate Number: 4366.01

FCC Accreditation Designation No.: CN1215

ISED wireless device testing laboratory: 9405A

Note: TÜV Rheinland (Shenzhen) Co., Ltd. Subcontracts test item Conducted Emission to EST Technology Co., Ltd. The tests at the test sites have been conducted under the supervision of a TÜV engineer.

2.2 List of Test and Measurement Instruments

Table 1: List of Test and Measurement Equipment

TÜV Rheinland (Shenzhen) Co., Ltd.

Radio Spectrum Testing (SRD-Tonscend)					
Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. until
EXA Signal Analyzer, Multi-touch	Keysight	N9010B	MY60241175	2024-09-26	2025-09-25
MXG X-Series RF Vector Signal Generator	Keysight	N5182B	MY61250137	2024-09-26	2025-09-25
EXG X-Series Microwave Analog Signal Generator	Keysight	N5173B	MY61250141	2024-09-26	2025-09-25
DC power supply	Keysight	E3642A	MY61276100	2024-09-26	2025-09-25
Power Control Unit	Tonscend	JS0806-4ADC	N/A	2024-09-26	2025-09-25
Automation Control Unit	Tonscend	JS0806-2	21C8060396	2024-09-26	2025-09-25
Test Software	Tonscend	JS1120-3	N/A	N/A	N/A
Control PC	Lenovo	TianYi510S-071MB	YLX23JMF	N/A	N/A
Shielding Room	Albatross	SR1	APC17151-SR1	2024-09-14	2027-09-13
Unwanted Emission Testing (TS9975)					
Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. until
EMI Test Receiver	R&S	ESR 7	102021	2024-09-29	2025-09-28
Signal Analyzer	R&S	FSV 40	101439	2024-09-29	2025-09-28

System Controller Interface	R&S	SCI-100	S10010038	N/A	N/A
Filterbank	R&S	Wlan	100759	2024-09-29	2025-09-28
OSP	R&S	OSP 120	102040	N/A	N/A
Pre-amplifier	R&S	SCU08F1	08320031	2024-09-29	2025-09-28
Amplifier	R&S	SCU-18F	180070	2024-09-29	2025-09-28
Amplifier	R&S	SCU40A	100475	2024-09-29	2025-09-28
Trilog Broadband Antenna (30 MHz - 7 GHz)	Schwarzbeck	VULB 9162	193	2024-09-28	2025-09-27
Double-Ridged Antenna (1-18 GHz)	ETS-LINDGREN	3117	00218717	2024-09-28	2025-09-27
Wideband Ridged Horn Antenna (18-40 GHz)	Steatite	QMS-00880	19067	2024-09-28	2025-09-27
Active Loop Antenna	Schwarzbeck	FMZB 1513	302	2024-09-28	2025-09-27
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	2024-09-14	2027-09-13

EST Technology Co., Ltd.

Conducted Emission					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESR3	EST-E141	Jun. 11, 2024	Jun. 10, 2025
Artificial Mains Network	Rohde & Schwarz	ENV216	EST-E145	Jun. 11, 2024	Jun. 10, 2025
V-LISN	SCHWARZBECK	NNLK 8121	EST-E159	Jun. 11, 2024	Jun. 10, 2025
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	EST-E147	Jun. 11, 2024	Jun. 10, 2025
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A

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
All emissions, radiated	± 4.17 dB
Conducted Emission	± 3.38 dB

2.6 Location of Original Data

The original copies of all test data taken during actual testing were attached at Appendix A & B 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 EST Technology Co., Ltd. Test facility located at Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China is listed on the US Federal Communications Commission list of facilities approved to perform measurements.

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, 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 product is Portable Power Station which supports 2.4GHz Band Wi-Fi and Bluetooth dual mode wireless functions.

Note: This product contains transmitter module, FCC ID: 2AC7Z-ESP32WROVERE; IC: 21098-ESPWROVERE with additional type of antenna, since these changed, RF output power, Radiated Spurious Emissions, Conducted Emissions and EMF are arranged re-testing, and the other conducted measurement test data can be referred to test report RSHD200116001-00A, RSHD200116001-00B, RSHD200401002-08A and RSHD200401002-08B issued by Bay Area Compliance Laboratories Corp. (Kunshan).

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	Portable Power Station
Type Designation	Andes 1500 X (X = A to Z or blank, difference on the model name and appearance colors only for marketing purpose, no technical difference)
FCC ID	2BB9O-ANDES1500B
IC	32540-ANDES1500B
HVIN	ANDES1500B
Input	AC 120V, 60Hz (1800W) or DC 11-60V, 12A (600W)
Output	Output1: AC (*4) 120V 60Hz (2400W); AC (*4) 120V 60Hz (1800W, Bypass mode) Output2: Car Charger (*1)+DC 5521(*2)12.6V/9.5A(120W) Output3:USB-A (*4): 5V/3A 9V/2A 12V/1.5A (18W); USB-C (*2): 5V/3A 9V/3A 12V/3A 15V/3A 20V/5A (100W)
Battery Capacity	1462Wh (32.65Ah, 44.8V)
Technical Specification of Bluetooth dual mode	
Operating Frequency	2402 - 2480 MHz
Type of Modulation	GFSK, $\pi/4$ -DQPSK, 8DPSK
Channel Number	BR & EDR mode:79 channels, Low Energy mode:40 channels
Channel Separation	BR & EDR mode:1 MHz, Low Energy mode:2 MHz
Data Rate	BR & EDR mode: 1Mbps, 2Mbps, 3Mbps Low Energy mode: 1Mbps
Antenna Type	FPC Antenna
Antenna Gain	Max. 3.74 dBi (Provided by the Client)
Technical Specification of 2.4GHz Wi-Fi	
Operating Frequency	2412 - 2462 MHz for 802.11b/g/n(HT20) 2422 - 2452 MHz for 802.11n(HT40)
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) 7 channels for 802.11n(HT40)
Channel Separation	5 MHz
Antenna Type	FPC Antenna
Antenna Gain	Max. 3.74 dBi (Provided by the Client)

Note: The correctness of all data provided by customer in the test report is ensured and responsible of the customer. Any misjudgment of the test results caused by the use of incorrect data provided by customer shall be borne by the customer.

Table 4: RF Channel and Frequency of Bluetooth BR & EDR

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
0	2402.00	20	2422.00	40	2442.00	60	2462.00
1	2403.00	21	2423.00	41	2443.00	61	2463.00
2	2404.00	22	2424.00	42	2444.00	62	2464.00
3	2405.00	23	2425.00	43	2445.00	63	2465.00
4	2406.00	24	2426.00	44	2446.00	64	2466.00
5	2407.00	25	2427.00	45	2447.00	65	2467.00
6	2408.00	26	2428.00	46	2448.00	66	2468.00
7	2409.00	27	2429.00	47	2449.00	67	2469.00
8	2410.00	28	2430.00	48	2450.00	68	2470.00
9	2411.00	29	2431.00	49	2451.00	69	2471.00
10	2412.00	30	2432.00	50	2452.00	70	2472.00
11	2413.00	31	2433.00	51	2453.00	71	2473.00
12	2414.00	32	2434.00	52	2454.00	72	2474.00
13	2415.00	33	2435.00	53	2455.00	73	2475.00
14	2416.00	34	2436.00	54	2456.00	74	2476.00
15	2417.00	35	2437.00	55	2457.00	75	2477.00
16	2418.00	36	2438.00	56	2458.00	76	2478.00
17	2419.00	37	2439.00	57	2459.00	77	2479.00
18	2420.00	38	2440.00	58	2460.00	78	2480.00
19	2421.00	39	2441.00	59	2461.00	/	/

Table 5: RF Channel and Frequency of Bluetooth LE

RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)	RF Channel	Frequency (MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474

7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

Table 6: RF Channel and Frequency of 2.4GHz Wi-Fi

RF Channel	802.11 b/g/n(HT20)	802.11 n(HT40)
	Frequency (MHz)	Frequency (MHz)
01	2412	
02	2417	
03	2422	2422
04	2427	2427
05	2432	2432
06	2437	2437
07	2442	2442
08	2447	2447
09	2452	2452
10	2457	
11	2462	

3.3 Independent Operation Modes

The basic operation modes are:

- A. On, Bluetooth BR & EDR wireless transmitting (Low / Middle / High Channel)
- B. On, Bluetooth LE wireless transmitting (Low / Middle / High Channel)
- C. On, 2.4GHz Wi-Fi wireless transmitting (Low / Middle / High Channel)
- D. On, Normal working+Bluetooth+2.4GHz Wi-Fi
- E. Off

3.4 Noise Generating and Noise Suppressing Parts

Refer to Circuit Diagram for further details.

3.5 Submitted Documents

- Application Form
- ID Label and Location Info
- Schematics
- Operation Description
- Block Diagram
- 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 ANSI C63.10: 2013.

According to clause 3.1, all tests were performed on model Andes 1500 in this report.

4.3 Special Accessories and Auxiliary Equipment

Table 7: List of Accessories and Auxiliary Equipment

Items	Manufacturer	Model	Remark
Laptop	Lenovo	T480	SN: PF-16A6N8 Provided by test lab
Decoy load	N/A	4xLC-CMTPD	Provided by test lab
Decoy load	N/A	2xLC-CFTPD	Provided by test lab
Resistive load	N/A	2xLC-CE_FCC	Provided by test lab
Bulbs	N/A	6x300W	Provided by test lab
Router	TP-LINK	802.11n Router	Provided by test lab
iPad	Apple	iPad air	Provided by test lab
Extra Battery	Xiamen Ampace Technology Limited	Extra Battery	Provided by Manufacturer

Items	Description	Remark
Type-C-Cable *2	1.2m, Shielded, Detachable	Provided by test lab
USB Cable * 4	1.2m, Shielded, Detachable	Provided by test lab
Car socket	1m, Unshielded, Detachable	Provided by test lab
DC 5521	1m, Unshielded, Detachable	Provided by test lab
AC Cable	1.3m, Shielded, Detachable	Provided by test lab
Type-C-Cable *2	1m, Shielded, Detachable	Provided by test lab
USB Cable * 4	1m, Shielded, Detachable	Provided by test lab
AC Cable	1.5m, Shielded, Detachable	Provided by test lab

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)

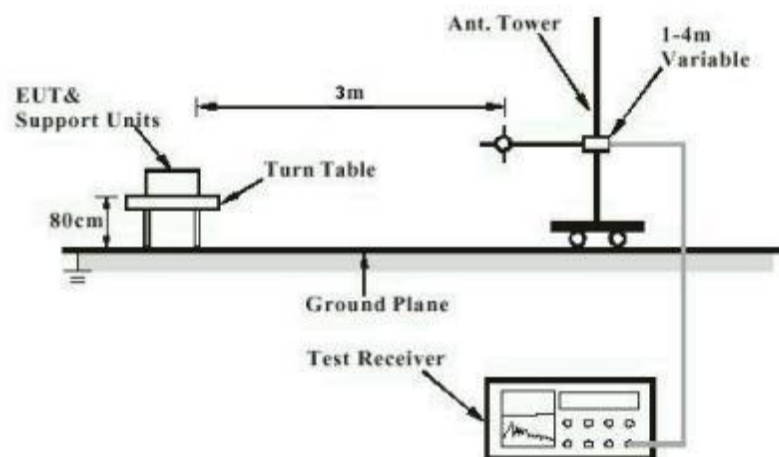


Diagram of Measurement Configuration for Radiation Test (Above 1GHz)

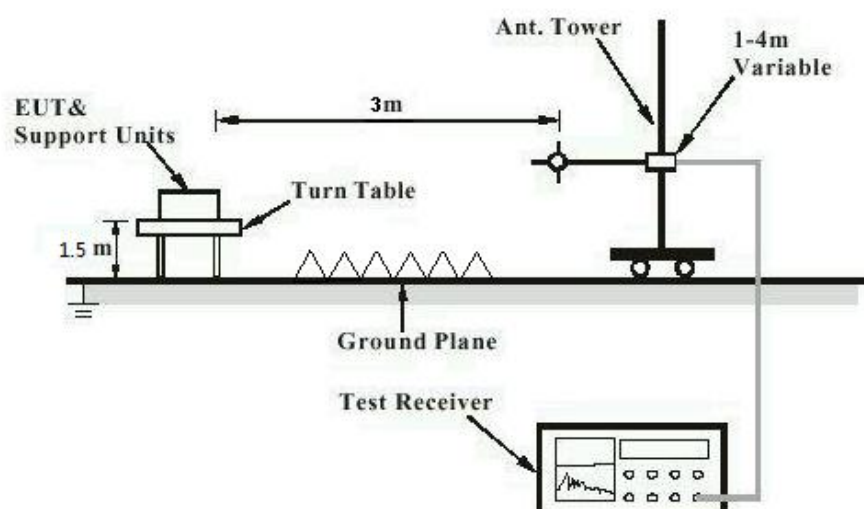


Diagram of Measurement Configuration for Mains Conduction Measurement

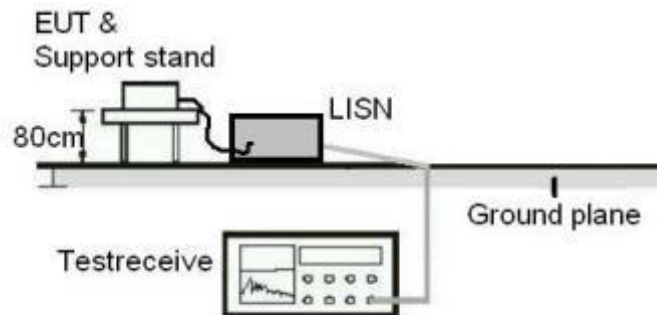
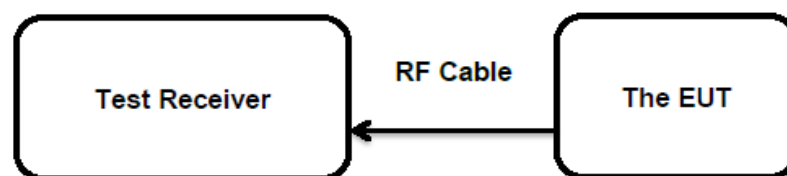


Diagram of Measurement Configuration for Conducted Transmitter Measurement



5 Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT:

Pass

Test Specification

Test standard : FCC Part 15.247(b)(4) and Part 15.203
RSS-Gen Section 6.8

According to the manufacturer declared, the EUT has a FPC antenna, the directional gain of antenna is 3.74dBi, and the antenna connector is designed with permanent attachment and no consideration of replacement.

Therefore the EUT is considered sufficient to comply with the provision.

Refer to EUT Photo for further details.

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5.1.2 Maximum Peak Conducted Output Power

RESULT:

Pass

Test Specification

Test standard : FCC Part 15.247(b)(1)&(3)
RSS-247 Clause 5.4(b)&(d)
Basic standard : ANSI C63.10: 2013
Limits : FHSS < 0.125 Watts, DSSS < 1.0 Watts
Kind of test site : Shielded Room

Test Setup

Date of testing : 2025-04-10
Input voltage : AC 120V, 60Hz
Operation mode : A, B, C
Test channel : Low / Middle / High
Ambient temperature : 25 °C
Relative humidity : 45 %
Atmospheric pressure : 101 kPa

For details refer to following test result.

Table 8: Test Result of Maximum Peak Conducted Output Power, BR & EDR

Test Mode	Test Channel (MHz)	Measured Peak Power		Limit (W)
		(dBm)	(W)	
GFSK (BR)	2402.0	4.08	0.0026	< 0.125
	2441.0	3.88	0.0024	
	2480.0	4.33	0.0027	
8DPSK (EDR)	2402.0	6.25	0.0042	
	2441.0	6.07	0.0040	
	2480.0	6.54	0.0045	
Maximum Measured Value		6.54	0.0045	

Max. e.i.r.p.=6.54dBm+3.74dBi=10.28dBm, which is less than 36dBm=4W.

Table 9: Test Result of Maximum Peak Conducted Output Power, Bluetooth LE

Test Mode	Data Rate	Test Channel (MHz)	Measured Peak Power		Limit (W)
			(dBm)	(W)	
Bluetooth LE	1 Mbps	2402	1.04	0.0013	< 1.0
		2440	0.95	0.0012	
		2480	1.38	0.0014	
Max. Measured Value			1.38	0.0014	

Max. e.i.r.p.=1.38dBm+3.74dBi=5.12dBm, which is less than 36dBm=4W.

Table 10: Test Result of Maximum Peak Conducted Output Power

Test Mode	Data Rate	Test Channel (MHz)	Measured Peak Power		Limit (W)
			(dBm)	(W)	
802.11b	1 Mbps	2412	16.53	0.0450	< 1.0
		2437	16.64	0.0461	
		2462	16.85	0.0484	
802.11g	6 Mbps	2412	21.77	0.1503	
		2437	21.46	0.1400	
		2462	21.44	0.1393	
802.11n (HT20)	MCS0	2412	21.85	0.1531	
		2437	21.64	0.1459	
		2462	21.64	0.1459	
802.11n (HT40)	MCS0	2422	21.78	0.1507	
		2437	21.43	0.1390	
		2452	21.49	0.1409	
Maximum Measured Value			21.85	0.1531	

Max. e.i.r.p.=21.85dBm+3.74dBi=25.59dBm, which is less than 36dBm=4W.

Note:

- 1) The cable loss is taken into account in results.
- 2) Antenna gain(G): 3.74 dBi for Bluetooth & 2.4G Wi-Fi
e.i.r.p.=P_(Peak power)+ G, which is far below the 4 W

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5.1.3 Radiated Spurious Emission

RESULT:

Pass

Test Specification

Test standard	: FCC Part 15.247(d) & FCC Part 15.205 RSS-247 Clause 3.3
Basic standard	: ANSI C63.10: 2013
Limits	: Refer to 15.209(a) of FCC part 15.247(d) RSS-Gen Table 5
Kind of test site	: 3m Semi-anechoic Chamber

Test Setup

Date of testing	: 2025-05-07 to 2025-05-08
Input voltage	: AC 120V, 60Hz
Operation mode	: A, B, C
Test channel	: Low / Middle / High
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. Only the worst case spurious emissions configuration of the each mode were reported.

For the measurement records, refer to the appendix A.

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5.1.4 Conducted Emission on AC Mains

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

Test standard	: FCC Part 15.107(b) ICES-003 Section 3.2.1
Basic standard	: ANSI C63.4: 2014
Frequency range	: 0.15 – 30MHz
Classification of equipment	: Class A
Limits	: FCC Part 15.107(b) ICES-003 Table 1
Kind of test site	: Shielded Room

Test Setup

Date of testing	: 2025-05-09
Input voltage	: AC 120V, 60Hz
Operation mode	: D
Earthing	: Connected
Ambient temperature	: 24.2 °C
Relative humidity	: 53 %
Atmospheric pressure	: 101.1 kPa

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 B.

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