

JAPAN SPECIFIED RADIO TEST REPORT

Client Name : Anker Innovations Limited

Address : Room 1318-19, Hollywood Plaza, 610 Nathan Road,
Mongkok, Kowloon, Hongkong

Product Name : Nebula 4K Streaming Dongle

Date : Jul. 31, 2021

Shenzhen Anbotech Compliance Laboratory Limited



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TEST REPORT

Applicant : Anker Innovations Limited
Manufacturer : Anker Innovations Limited
Product Name : Nebula 4K Streaming Dongle
Model No. : D0480
Trade Mark : NEBULA
Rating(s) : Input: DC 5V, 1.5A (via adapter input: 100-240V~50/60Hz, 0.3A; Output: DC 5V, 1.5A)
Test Standard(s) : **MIC Notice No.88 Annex43**
Certificate regulation article 2, paragraph 1, item 19

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the MIC Notice No.88 Annex43 and Certificate regulation article 2, paragraph 1, item 19 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

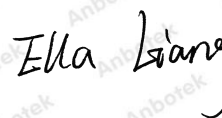
Date of Receipt

May 28, 2021

Date of Test

May 28~Jul. 21, 2021

Prepared By



(Ella Liang)

Approved & Authorized Signer



(Kingkong Jin)

1. General Information

1.1. Client Information

| | | |
|--------------|---|--|
| Applicant | : | Anker Innovations Limited |
| Address | : | Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok, Kowloon, Hongkong |
| Manufacturer | : | Anker Innovations Limited |
| Address | : | Room 1318-19, Hollywood Plaza, 610 Nathan Road, Mongkok, Kowloon, Hongkong |

1.2. Description of Device (EUT)

| | | |
|---------------------|----------------------|---|
| Product Name | : | Nebula 4K Streaming Dongle |
| Model No. | : | D0480 |
| Trade Mark | : | NEBULA |
| Test Power Supply | : | AC 100V |
| Test Sample No. | : | 1-2-1(Normal Sample), 1-2-2(Engineering Sample) |
| Product Description | Operation Frequency: | BDR+EDR/ BLE: 2402~2480MHz WiFi 2.4G: 802.11b/g/n(HT20): 2412-2472MHz 802.11n(HT40): 2422-2462MHz WiFi 5.2G: 5180MHz~5240MHz WiFi 5.3G: 5260MHz~5320MHz WiFi 5.6G: 5500MHz~5580MHz, 5660MHz~5700MHz |
| | Number of Channel: | BDR+EDR: 79 Channels BLE: 40 Channels WiFi 2.4G 802.11b/ g/ n(HT20): 13 Channels WiFi 2.4G 802.11n(HT40): 11 Channels WiFi 5.2G: 4 Channels for 802.11a/n(HT20)/ac(HT20) 2 Channels for 802.11n(HT40)/ac(HT40) 1 Channels for 802.11ac(HT80) WiFi 5.3G: 4 Channels for 802.11a/n(HT20)/ac(HT20) 2 Channels for 802.11n(HT40)/ac(HT40) 1 Channels for 802.11ac(HT80) WiFi 5.6G: 8 Channels for 802.11a/n(HT20)/ac(HT20) 3 Channels for 802.11n(HT40)/ac(HT40) 1 Channels for 802.11ac(HT80) |
| | Modulation Type: | BDR+EDR: GFSK, $\pi/4$ -DQPSK, 8-DPSK BLE: GFSK WiFi 2.4G: CCK, DQPSK, DBPSK for DSSS; 64QAM, 16QAM, QPSK, BPSK for OFDM WiFi 5G: OFDM with BPSK/QPSK/16QAM/64QAM/256QAM |
| | Antenna Type: | BT+WiFi 2.4G ANT1+WiFi 5G ANT1: PCB antenna |

| | | |
|--|---------------------|--|
| | | WiFi 2.4G ANT2+WiFi 5G ANT2: PCB antenna |
| | Antenna Gain(Peak): | BDR+EDR: 1.59dBi BLE: 1.59dBi WiFi 2.4G ANT 1: 1.59dBi WiFi 2.4G ANT 2: 1.56dBi WiFi 5.2G ANT 1: 1.83dBi WiFi 5.2G ANT 2: 1.61dBi WiFi 5.3G ANT 1: 1.83dBi WiFi 5.3G ANT 2: 1.61dBi WiFi 5.6G ANT 1: 1.83dBi WiFi 5.6G ANT 2: 1.61dBi |
| | Rated output Power: | BDR+EDR: GFSK: 0.06mW/MHz π/4-DQPSK: 0.09mW/MHz 8-DPSK: 0.07mW/MHz BLE: 4.2mW WiFi 2.4G: 802.11b: 3.4mW/MHz 802.11g: 1.5mW/MHz 802.11n(HT20): 1.3mW/MHz 802.11n(HT20): 0.50mW/MHz WiFi 5.2G: 802.11a: 2.6mW/MHz Max. 802.11n(HT20): 3.6mW/MHz Max. 802.11ac(HT20): 3.4mW/MHz Max. 802.11n(HT40): 1.20mW/MHz Max. 802.11ac(HT40): 1.10mW/MHz Max. 802.11ac(HT80): 0.46mW/MHz Max. WiFi 5.3G: 802.11a: 1.80mW/MHz Max. 802.11n(HT20): 1.80mW/MHz Max. 802.11ac(HT20): 1.70mW/MHz Max. 802.11n(HT40): 0.55mW/MHz Max. 802.11ac(HT40): 0.57mW/MHz Max. 802.11ac(HT80): 0.45mW/MHz Max. WiFi 5.6G: 802.11a: 2.80mW/MHz Max. 802.11n(HT20): 2.60mW/MHz Max. 802.11ac(HT20): 2.80mW/MHz Max. 802.11n(HT40): 0.92mW/MHz Max. 802.11ac(HT40): 0.94mW/MHz Max. 802.11ac(HT80): 0.46mW/MHz Max. |
| | Hardware version : | V6 |
| | Software version : | V10.1.10 |
| | Adapter: | Model: SA43-050150U Input: 100-240V~50/60Hz, 0.3A; Output: DC 5V, 1.5A |
| Remark: 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual. 2) This report is for BLE module. | | |

1.3. Auxiliary Equipment Used During Test

| | |
|-----|--|
| N/A | |
|-----|--|

1.4. Description of Test Modes

The EUT has been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Channel Low(2402MHz), Channel Middle(2440MHz) and Channel High(2480MHz) are chosen for the final testing.

1.5. Test Conditions

| | Normal Test Conditions | Extreme Test Conditions |
|-------------------|------------------------|-------------------------|
| Temperature | 15°C - 30°C | -10°C ~ 35°C |
| Relative Humidity | 20% - 75% | N/A |
| Pressure Range | 86-106kPa | N/A |

1.6. Test Voltage

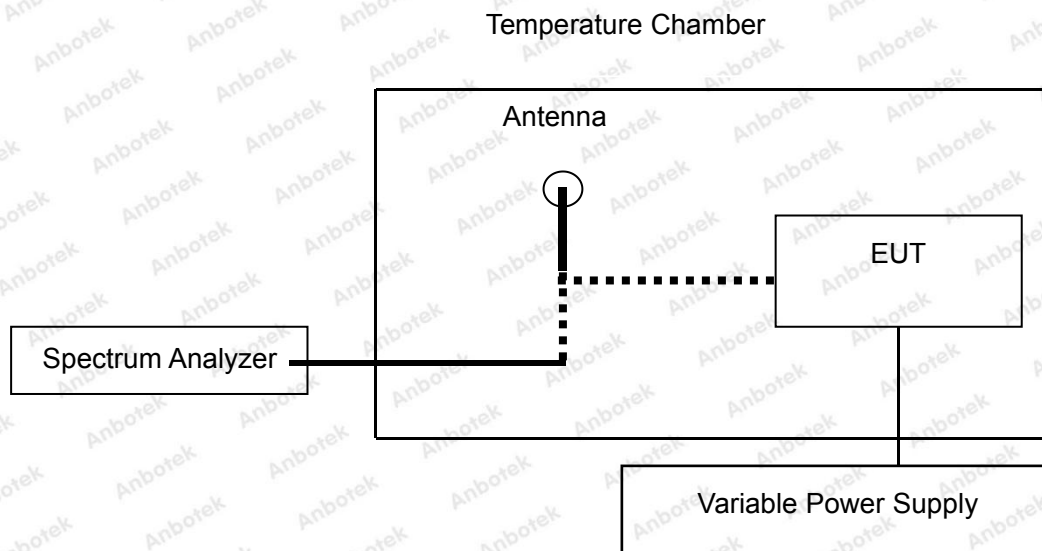
Power Supply Voltage Fluctuation Test

| Voltage Fluctuation Test | Normal Voltage | High Voltage +10% of Normal Voltage | Low Voltage -10% of Normal Voltage |
|--------------------------|----------------|-------------------------------------|------------------------------------|
| Input To EUT | AC 100V | AC 110V | AC 90V |
| Output To RF Module | DC 3.30V | DC 3.30V | DC 3.30V |
| Voltage Variation (%) | -- | 0.00% | 0.00% |

Note: Voltage Variation (%)=(Output high or Low Voltage - Output Normal Voltage)/ Output Normal Voltage* 100

For extreme voltage test, we have tested the relationship between the external power supply and RF IC power supply. Base on the test results, only the normal voltage was selected to perform all items.

1.7. Test Configuration



1.8. Test Equipment List

| Item | Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Cal. Interval |
|------|---|----------------------------|------------------|---------------|---------------|---------------|
| 1. | L.I.S.N. Artificial Mains Network | Rohde & Schwarz | ENV216 | 100055 | Oct. 26, 2020 | 1 Year |
| 2. | EMI Test Receiver | Rohde & Schwarz | ESCI | 100627 | Oct. 26, 2020 | 1 Year |
| 3. | EMI Test Receiver | Rohde & Schwarz | ESR26 | 101481 | Oct. 26, 2020 | 1 Year |
| 4. | RF Switching Unit | Compliance Direction | RSU-M2 | 38303 | Oct. 26, 2020 | 1 Year |
| 5. | MAX Spectrum Analysis | Agilent | N9020A | MY51170037 | Oct. 26, 2020 | 1 Year |
| 6. | Preamplifier | SKET Electronic | BK1G18G30 D | KD17503 | Oct. 26, 2020 | 1 Year |
| 7. | Double Ridged Horn Antenna | Instruments corporation | GTH-0118 | 351600 | Nov. 02, 2020 | 2 Year |
| 8. | Bilog Broadband Antenna | Schwarzbeck | VULB9163 | VULB 9163-289 | Nov. 02, 2020 | 2 Year |
| 9. | Loop Antenna | Schwarzbeck | FMZB1519B | 00053 | Nov. 02, 2020 | 2 Year |
| 10. | Horn Antenna | A-INFO | LB-180400- KF | J211060628 | Nov. 02, 2020 | 2 Year |
| 11. | Pre-amplifier | SONOMA | 310N | 186860 | Oct. 26, 2020 | 1 Year |
| 12. | EMI Test Software EZ-EMC | SHURPLE | N/A | N/A | N/A | N/A |
| 13. | RF Test Control System | YIHENG | YH3000 | 2017430 | Oct. 26, 2020 | 1 Year |
| 14. | Power Sensor | DAER | RPR3006W | 15100041SN045 | Oct. 26, 2020 | 1 Year |
| 15. | Power Sensor | DAER | RPR3006W | 15100041SN046 | Oct. 26, 2020 | 1 Year |
| 16. | MXA Spectrum Analysis | Agilent | N9020A | MY51170037 | Oct. 26, 2020 | 1 Year |
| 17. | MXG RF Vector Signal Generator | Agilent | N5182A | MY48180656 | Oct. 26, 2020 | 1 Year |
| 18. | Signal Generator | Agilent | E4421B | MY41000743 | Oct. 26, 2020 | 1 Year |
| 19. | DC Power Supply | IVYTECH | IV3605 | 1804D360510 | Oct. 26, 2020 | 1 Year |
| 20. | Constant Temperature Humidity Chamber | ZHONGJIAN | ZJ-KHWS80 B | N/A | Oct. 26, 2020 | 1 Year |

1.9. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC-Registration No.: 184111

Shenzhen Anbotech Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 184111, September 30, 2020.

ISED-Registration No.: 8058A

Shenzhen Anbotech Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A, September 30, 2020.

Test Location

Shenzhen Anbotech Compliance Laboratory Limited.

1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518102

2. Summary of Test Results

| Test Items | Subclause | Required | Results |
|---|----------------|----------|----------|
| General Provisions | | | |
| Frequency Tolerance | 5 | Yes | Complies |
| Occupied Bandwidth | 6 | Yes | Complies |
| Spurious Emissions | 7 | Yes | Complies |
| Transmitting equipment | | | |
| Antenna power | 14 | Yes | Complies |
| SAR | 14.2 | N/A | N/A |
| Frequency stabilization | 15 | Yes | Complies |
| Transmitter antenna | | | |
| Type, configuration, etc. of transmitting antenna | 20 | Yes | Complies |
| Directional pattern of transmitting antenna | 22 | Yes | Complies |
| Receiving equipment | | | |
| Spurious emission of receiver | 24 | Yes | Complies |
| Refer to all articles for transmitter antenna | 26 | Yes | Complies |
| Operating frequency 2400-2483.5MHz | | | |
| High Frequency/modulation section cannot be opened easily | 49.20(1); a | Yes | Complies |
| Communication method | 49.20(1); b | N/A | N/A |
| Modulation method | 49.20(1); c | Yes | Complies |
| Spread spectrum method | 49.20(1); d | N/A | N/A |
| Antenna power | 49.20(1); e | Yes | Complies |
| Absolute gain of transmitting antenna | 49.20(1); f(1) | N/A | N/A |
| Angular width of principal radiation (AWPR) | 49.20(1); f(2) | N/A | N/A |
| Number of carriers within 1 MHz bandwidth in OFDM | 49.20(1); g | N/A | N/A |
| Diffusion bandwidth | 49.20(1); h | Yes | Complies |
| Spreading factor | 49.20(1); i | N/A | N/A |
| Frequency retention time (FH employed) | 49.20(1); j | N/A | N/A |
| Carrier sensing function | -- | N/A | N/A |
| interference prevention function | -- | Yes | Complies |
| Note: "N/A" denotes test is not applicable in this Test Report. | | | |

3. Frequency Tolerance Test

3.1. Test Limit

| | |
|------------|---------|
| Test Limit | ±50 ppm |
|------------|---------|

3.2. Test Equipment

Same as 1.7.

3.3. Test Configuration

Same as 1.6.

3.4. Test Data

PASS

Please refer to clause 1 of the Appendix Test Data.

4. Occupied Bandwidth (99%) Test

4.1. Test Limit

| | |
|---------------------------|---|
| Under all test conditions | FH: 83.5 MHz |
| | FH + DS: 83.5 MHz |
| | FH + OFDM: 83.5MHz |
| | OFDM, DS: 26MHz |
| | Others: 26MHz |
| | OFDM equipment with 40MHz channel separation: 38MHz |

4.2. Test Equipment

Same as 1.7 Frequency tolerance measurement.

4.3. Test Configuration

Same as 1.6 Frequency tolerance measurement.

4.4. Test Data

PASS

Please refer to clause 2 of the Appendix Test Data.

5. Spread-Spectrum Bandwidth (90%) And Factor Test

5.1. Test Limit

| | |
|------------|---|
| Test Limit | Spreading Factor: N/A |
| | Spread bandwidth: 500KHz or more(DSSS, FHSS, FHSS+DSSS, FHSSS +OFDM) |

5.2. Test Equipment

Same as 1.7 Frequency tolerance measurement.

5.3. Test Configuration

Same as 1.6 Frequency tolerance measurement.

5.4. Test Data

N/A.

Note: BT BLE is the non DSSS, FHSS, FHSS+DSSS, FHSSS +OFDM device. So spread bandwidth is not need to be test.



6. Spurious Emissions Intensity Test

6.1. Test Equipment

Same as 1.7 Frequency tolerance measurement.

6.2. Test Configuration

Same as 1.6 Frequency tolerance measurement.

6.3. Test Data

| | | |
|--------------------|---|-------------------|
| Scanning Bandwidth | : | 30~ 1000MHz |
| | | 1000~ 2387MHz |
| | | 2387~ 2400MHz |
| | | 2483.5~ 2496.5MHz |
| | | 2496.5~ 12500MHz |

Pass

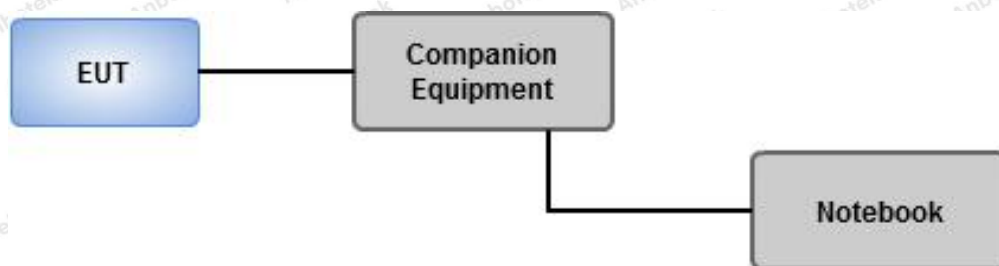
Please refer to clause 5 of the Appendix Test Data.

7. Interference prevention function

7.1. Test Limit

| | |
|------------|---|
| Test Limit | The identification code shall be 48 bits long |
|------------|---|

7.2. Test Setup



7.3. Test Configuration

1. Set EUT under operating mode and link up with companion equipment
2. Check communication status between EUT and companion equipment is normal
3. Record the max. reading.
4. Confirm the MAC address of EUT

7.4. Test Data

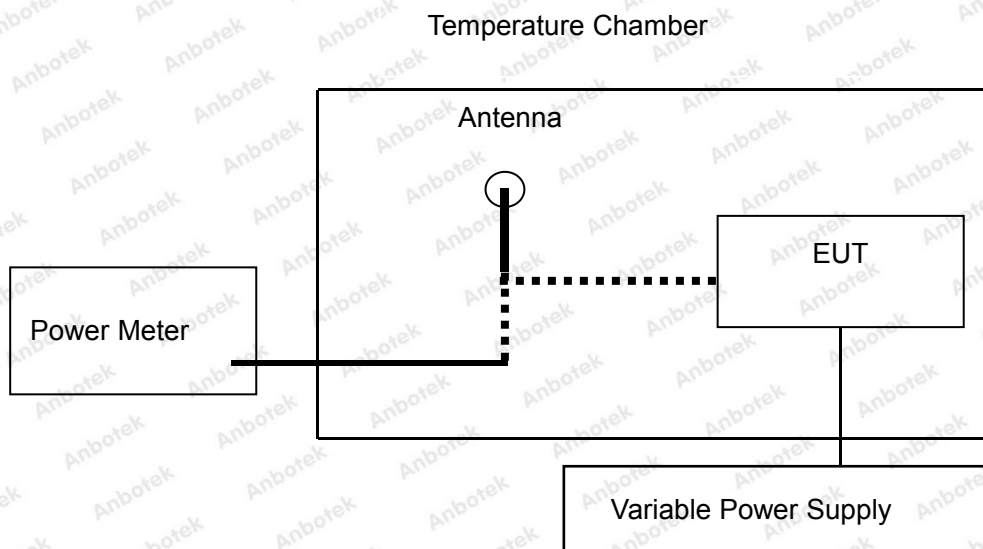
| Test Mode | ID Code | Test Results |
|-----------|-------------------|--------------|
| BLE | D5:22:E7:B1:22:67 | Pass |

8. Antenna Power Test

8.1. Test Equipment

Same as 1.7 Frequency tolerance measurement.

8.2. Test Setup



8.3. Test Data

Pass

Please refer to clause 4 of the Appendix Test Data.

9. Limitation Of Collateral Emissions Of Receiver Test

9.1. Test Equipment

Same as 1.7 Frequency tolerance measurement.

9.2. Test Configuration

Same as 1.6 Frequency tolerance measurement.

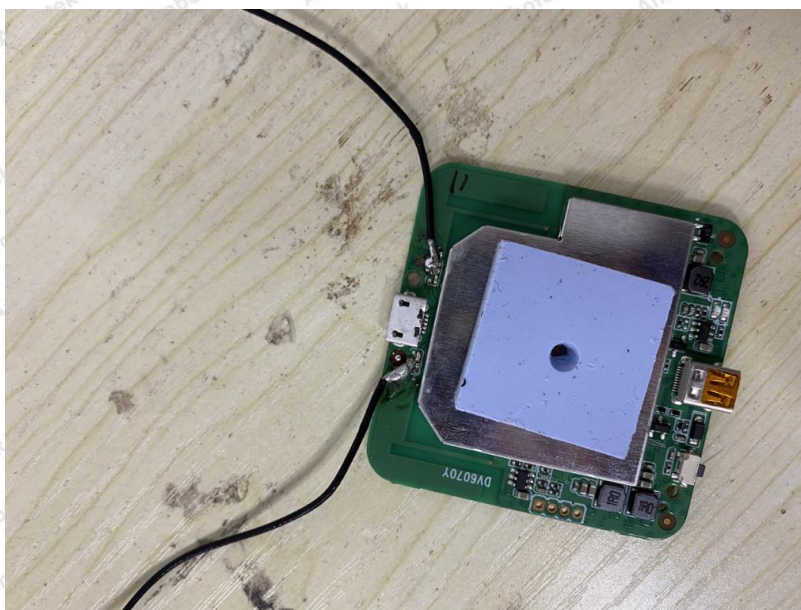
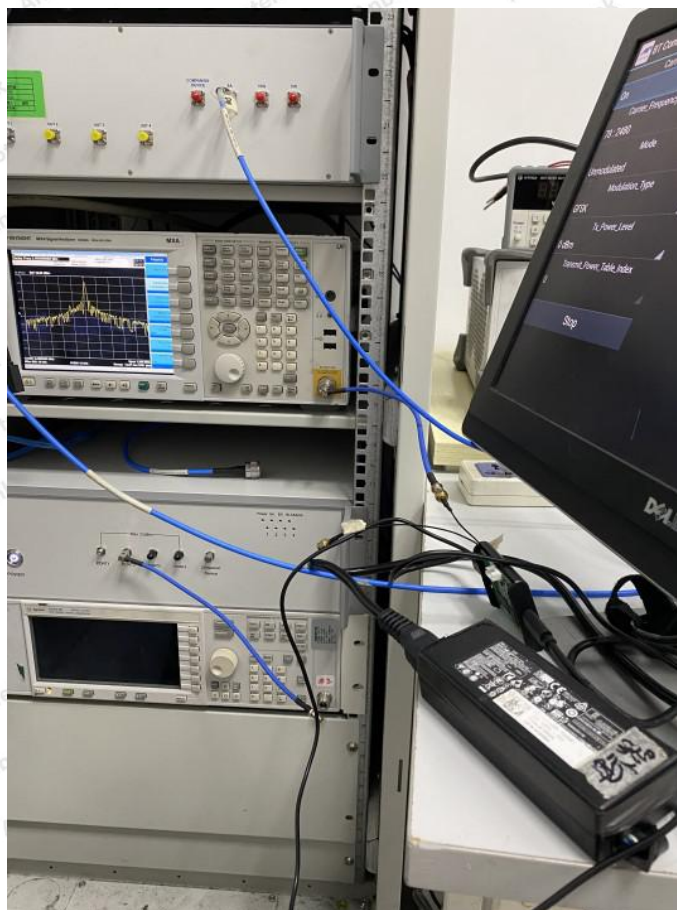
9.3. Test Data

| | | |
|--------------------|---|----------------|
| Scanning Bandwidth | : | 30~ 1000MHz |
| | | 1000~ 12750MHz |

Pass

Please refer to clause 6 of the Appendix Test Data.

APPENDIX I -- TEST SETUP PHOTOGRAPH



APPENDIX II -- EXTERNAL PHOTOGRAPH

Reference to the test report 18220WC10109001.

APPENDIX III -- INTERNAL PHOTOGRAPH

Reference to the test report 18220WC10109001.



APPENDIX IV – Appendix Test Data