

FCC REPORT

Applicant: Baicells Technologies Co., Ltd.

Address of Applicant: 9-10F, 1stBldg., No.81BeiQingRoad, Haidian District, Beijing, China

Equipment Under Test (EUT)

Product Name: LTE-Turbo BS

Model No.: BS6430E

Trade mark: Baicells

FCC ID: 2AG32BS6430E

Applicable standards: FCC CFR Title 47 Part 2
FCC CFR Title 47 Part 96

Date of sample receipt: 28 Mar., 2022

Date of Test: 29 Mar., to 21 May, 2022

Date of report issued: 22 May, 2022

Test Result: PASS*

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the JYT product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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2. Version

Version No.	Date	Description
00	22 May, 2022	Original

Tested by:

Mike.ou

Date:

22 May, 2022

Test Engineer

Reviewed by:

Winner Zhang

Date:

22 May, 2022

Project Engineer

3. Contents

Page

1.	COVER PAGE	1
2.	VERSION	2
3.	CONTENTS	3
4.	TEST SUMMARY	4
5.	GENERAL INFORMATION	5
5.1	CLIENT INFORMATION	5
5.2	GENERAL DESCRIPTION OF E.U.T	5
5.3	TEST MODES	6
5.4	MEASUREMENT UNCERTAINTY	6
5.5	DESCRIPTION OF SUPPORT UNITS	6
5.6	RELATED SUBMITTAL(S) / GRANT (S)	6
5.7	DESCRIPTION OF CABLE USED	6
5.8	LABORATORY FACILITY	6
5.9	LABORATORY LOCATION	6
5.10	TEST INSTRUMENTS LIST	7
6.	TEST RESULTS	8
6.1	EFFECTIVE ISOTROPIC RADIATED (EIRP) AND POWER SPECTRAL DENSITY (PSD)	8
6.2	PEAK-TO-AVERAGE POWER RATIO (PAPR)	12
6.3	OCCUPY BANDWIDTH	13
6.4	EMISSION MASK	14
6.5	OUT OF BAND EMISSION AT ANTENNA TERMINALS	15
6.6	FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT	16
6.7	FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT	20
6.8	FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT	21
7	TEST SETUP PHOTO	22
8	EUT CONSTRUCTIONAL DETAILS	23

4. Test Summary

Test Item	Section in CFR 47	Result
	FCC	
Effective Isotropic Radiated Power (EIRP) Power Spectral Density (PSD)	Part 2.1046 Part 96.41(b)	Pass
Peak-to-average power ratio (PAPR)	Part 96.41(g)	Pass
Modulation Characteristics	Part 2.1047 Part 96.41(a)	Pass
99% Occupied Bandwidth -26 dB Occupied Bandwidth	Part 2.1049 Part 96.41(e)(3)	Pass
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 96.41(e)(1)(2)	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 96.41(e)(1)(2)	Pass
Frequency stability vs. temperature	Part 2.1055(a)(b)	Pass
Frequency stability vs. voltage	Part 2.1055(d)	Pass
Test Method: ● ANSI C63.26-2015 ● ANSI/TIA-603-E-2016 ● ANSI C63.4-2014 ● KDB 971168 D01 Power Meas License Digital Systems v03r01 ● KDB 940660 D01 Part 96 CBRS Eqpt v02 ● KDB 662911 D01 Multiple Transmitter Output v02r01 Note: ● Offset Ext Gain = ATT loss + Cable loss + Duty cycle correction		
<i>Pass: The EUT complies with the essential requirements in the standard.</i>		

5. General Information

5.1 Client Information

Applicant:	Baicells Technologies Co., Ltd.
Address:	9-10F, 1stBldg., No.81BeiqingRoad, Haidian District, Beijing, China
Manufacturer	Baicells Technologies Co., Ltd.
Address:	9-10F, 1stBldg., No.81BeiqingRoad, Haidian District, Beijing, China

5.2 General Description of E.U.T.

Product Name:	LTE-Turbo BS
Model No.:	BS6430E
Operation Frequency range:	Band48: 3550MHz~3700MHz
Modulation type:	QPSK, 16QAM, 64QAM
Supported Carrier:	2 Max
Antenna supports:	Antenna 0&1 2x2MIMO, Antenna 2&3 2x2MIMO
Antenna type:	External antenna
Antenna gain:	LTE Band 48: 17.0dBi
Category device:	Category B device
AC adapter:	Model: G0566-480-100 Input: AC100-240V, 50/60Hz, MAX 1.5A Output: DC 48.0V, 1.0A, 48W
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

Test Channel:

10MHz			20MHz		
Channel:	Channel No.:	Frequency (MHz)	Channel:	Channel No.:	Frequency (MHz)
Lowest	55290	3555.0	Lowest	55340	3560.0
Middle	55990	3625.0	Middle	55990	3625.0
Highest	56690	3695.0	Highest	56640	3690.0

5.3 Test modes

Test mode:	
Data mode (QPSK)	Keep the EUT in data communicating mode (QPSK). (10MHz, 20MHz)
Data mode (64QAM)	Keep the EUT in data communicating mode (64QAM). (10MHz, 20MHz)

5.4 Measurement Uncertainty

Parameters	Expanded Uncertainty
Radiated Emission (30MHz ~ 1000MHz)	±4.45 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	±5.34 dB (k=2)
Radiated Emission (18GHz ~ 40GHz)	±5.34 dB (k=2)

5.5 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
LENOVO	Laptop	SL510	2847A65	DoC

5.6 Related Submittal(s) / Grant (s)

FCC: This submittal(s) (test report) is filing to comply with Section Part 96 of the FCC CFR 47 Rules.
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5.7 Description of Cable Used

N/A

5.8 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations: ● FCC - Designation No.: CN1211 JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551. ● ISED – CAB identifier.: CN0021 The 3m Semi-anechoic chamber and 10m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1. ● CNAS - Registration No.: CNAS L15527 JianYan Testing Group Shenzhen Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L15527. ● A2LA - Registration No.: 4346.01 This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf
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5.9 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd. Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China. Tel: +86-755-23118282, Fax: +86-755-23116366 Email: info-JYTee@lets.com, Website: http://jyt.lets.com

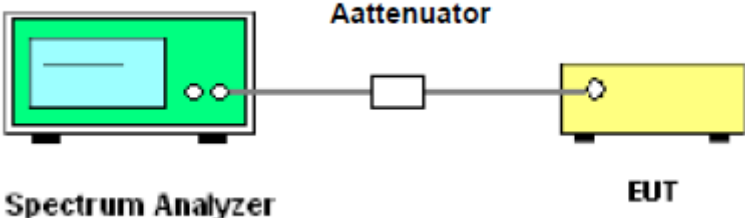
5.10 Test Instruments list

Radiated Emission(3m SAC):					
Test Equipment	Manufacturer	Model No.	Manage No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	ETS	9m*6m*6m	WXJ001-1	01-19-2021	01-18-2024
BiConiLog Antenna	Schwarzbeck	VULB9163	WXJ002	02-17-2022	02-16-2023
Biconical Antenna	Schwarzbeck	VUBA9117	WXJ002-1	06-20-2021	06-19-2022
Horn Antenna	Schwarzbeck	BBHA9120D	WXJ002-2	02-17-2022	02-16-2023
Horn Antenna	Schwarzbeck	BBHA9120D	WXJ002-3	06-18-2021	06-17-2022
Broadband Horn Antenna	Schwarzbeck	BBHA9170	WXJ002-5	04-07-2021	04-06-2022
				04-07-2022	04-06-2023
Pre-amplifier (30MHz ~ 1GHz)	Schwarzbeck	BBV9743B	WXG001-7	02-17-2022	02-16-2023
Pre-amplifier (1GHz ~ 18GHz)	SKET	LNPA_0118G-50	WXG001-3	02-17-2022	02-16-2023
Pre-amplifier (18GHz ~ 40GHz)	RF System	TRLA-180400G45B	WXG001-9	02-17-2022	02-16-2023
EMI Test Receiver	Rohde & Schwarz	ESRP7	WXJ003-1	02-17-2022	02-16-2023
Spectrum Analyzer	KEYSIGHT	N9010B	WXJ004-2	11-27-2021	11-26-2022
Pre-amplifier (18GHz ~ 40GHz)	RF System	TRLA-180400G45B	WXG001-9	02-17-2022	02-16-2023
Coaxial Cable (30MHz ~ 1GHz)	JYTSZ	JYT3M-1G-NN-8M	WXG001-4	02-17-2022	02-16-2023
Coaxial Cable (1GHz ~ 18GHz)	JYTSZ	JYT3M-18G-NN-8M	WXG001-5	02-17-2022	02-16-2023
Coaxial Cable (9kHz ~ 30MHz)	JYTSZ	JYT3M-1G-BB-5M	WXG001-6	02-17-2022	02-16-2023
Coaxial Cable (18GHz ~ 40GHz)	JYTSZ	JYT3M-40G-SS-8M	WXG001-7	02-17-2022	02-16-2023
Band Reject Filter Group	Tonscend	JS0806-F	WXJ089	N/A	
Test Software	Tonscend	TS+	Version: 3.0.0.1		

Conducted method:					
Test Equipment	Manufacturer	Model No.	Management Number	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
Spectrum Analyzer	Keysight	N9020B	WXJ081-1	07-02-2021	07-01-2022
RF Control Unit	Tonscend	JS0806-1	WXG010-2	N/A	N/A
RF Control Unit	Tonscend	JS0806-1	WXG010-3	N/A	N/A
Band Reject Filter Group	Tonscend	JS0806-F	WXG010-4	N/A	N/A
Test Software	Tonscend	TS+	Version: 2.6.9.0526		

6. Test results

6.1 Effective Isotropic Radiated (EIRP) and Power Spectral Density (PSD)

Test Requirement:	FCC part 96.41(b), FCC part2.1046															
Limit:	<table><tr><td>Device</td><td>Maximum EIRP (dBm/10 megahertz)</td><td>Maximum PSD (dBm/MHz)</td></tr><tr><td>End User Device</td><td></td><td>23</td><td>n/a</td></tr><tr><td>Category A CBSD</td><td></td><td>30</td><td>20</td></tr><tr><td>Category B CBSD¹</td><td></td><td>47</td><td>37</td></tr></table>	Device	Maximum EIRP (dBm/10 megahertz)	Maximum PSD (dBm/MHz)	End User Device		23	n/a	Category A CBSD		30	20	Category B CBSD ¹		47	37
Device	Maximum EIRP (dBm/10 megahertz)	Maximum PSD (dBm/MHz)														
End User Device		23	n/a													
Category A CBSD		30	20													
Category B CBSD ¹		47	37													
Test setup	 The diagram illustrates the test setup. A green Spectrum Analyzer is connected via a coaxial cable to a white Attenuator, which is then connected to a yellow EUT (Equipment Under Test).															
Test Procedure:	For Maximum EIRP 1. Connect the transmitter to the spectrum analyzer via coaxial cable while ensuring proper impedance matching. 2. Set span to 2 × to 3 × the OBW. 3. Set RBW = 1% to 5% of the OBW. 4. Set VBW ≥ 3 × RBW. 5. Set number of measurement points in sweep ≥ 2 × span / RBW. 6. Sweep time: 1) Set = auto-couple, or 2) Set ≥ [10 × (number of points in sweep) × (transmission symbol period)] for single sweep (automation-compatible) measurement. 7. Detector = power averaging (rms). 8. Set sweep trigger to “free run.” 9. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. To accurately determine the average power over the on and off time of the transmitter, it can be necessary to increase the number of traces to be averaged above 100, or if using a manually configured sweep time, increase the sweep time. 10. Compute power by integrating the spectrum across the OBW(10MHz) of the signal using the instrument’s band or channel power measurement function with band/channel limits set equal to the OBW(10MHz) band edges. 11. Add 10 log (1/duty cycle) to the measured power level to compute the average power during continuous transmission. 12. EIRP = P_{Meas} + G_T. P_{Meas} measured transmitter output power or PSD. G_T gain of the transmitting antenna. For Maximum PSD The PSD is measured following the same procedures described for measuring the maximum EIRP but with the RBW set to the reference bandwidth specified(eg.1MHz) by the applicable regulatory requirement, and by using the marker function to identify the maximum PSD instead of summing the power across the OBW.															
Test Instruments:	Refer to section 5.10 for details															
Test mode:	Refer to section 5.3 for details															
Test results:	Passed															

Measurement Data (EIRP):

Band width	Modulation	Channel	ANT 0 Output Power (dBm/10MHz)	ANT 1 Output Power (dBm/10MHz)	Total Power (dBm/ 10MHz)	Gain (dBi)	Eirp	Limit (dBm/ 10MHz)	Verdict
10MHz	64QAM	55290	23.69	24.28	27.01	17.0	44.01	47	PASS
10MHz	64QAM	55990	23.24	23.29	26.28	17.0	43.28	47	PASS
10MHz	64QAM	56690	23.17	22.97	26.08	17.0	43.08	47	PASS
10MHz	QPSK	55290	23.52	23.90	26.72	17.0	43.72	47	PASS
10MHz	QPSK	55990	23.15	23.12	26.15	17.0	43.15	47	PASS
10MHz	QPSK	56690	23.21	22.80	26.02	17.0	43.02	47	PASS
20MHz	64QAM	55340	21.14	21.37	24.27	17.0	41.27	47	PASS
20MHz	64QAM	55990	20.76	20.83	23.81	17.0	40.81	47	PASS
20MHz	64QAM	56640	20.80	20.59	23.71	17.0	40.71	47	PASS
20MHz	QPSK	55340	20.63	21.32	24.00	17.0	41.00	47	PASS
20MHz	QPSK	55990	20.45	20.71	23.59	17.0	40.59	47	PASS
20MHz	QPSK	56640	20.85	20.53	23.70	17.0	40.70	47	PASS

Remark:

- ANT 0, ANT 1 are 2*2MIMO
- All transmit signals are completely uncorrelated with each other, Directional gain = GANT =17dBi

Band width	Modulation	Channel	ANT 2 Output Power (dBm/10MHz)	ANT 3 Output Power (dBm/10MHz)	Total Power (dBm/ 10MHz)	Gain (dBi)	Eirp	Limit (dBm/ 10MHz)	Verdict
10MHz	64QAM	55290	23.95	23.80	26.89	17.0	43.89	47	PASS
10MHz	64QAM	55990	23.12	22.94	26.04	17.0	43.04	47	PASS
10MHz	64QAM	56690	22.98	22.88	25.94	17.0	42.94	47	PASS
10MHz	QPSK	55290	24.01	23.66	26.85	17.0	43.85	47	PASS
10MHz	QPSK	55990	23.25	22.92	26.10	17.0	43.10	47	PASS
10MHz	QPSK	56690	22.78	22.91	25.86	17.0	42.86	47	PASS
20MHz	64QAM	55340	21.22	20.81	24.03	17.0	41.03	47	PASS
20MHz	64QAM	55990	21.23	20.49	23.89	17.0	40.89	47	PASS
20MHz	64QAM	56640	20.81	20.37	23.61	17.0	40.61	47	PASS
20MHz	QPSK	55340	21.02	20.74	23.89	17.0	40.89	47	PASS
20MHz	QPSK	55990	20.72	20.53	23.64	17.0	40.64	47	PASS
20MHz	QPSK	56640	20.59	20.31	23.46	17.0	40.46	47	PASS

Remark:

- ANT 2, ANT 3 are 2*2MIMO
- All transmit signals are completely uncorrelated with each other, Directional gain = GANT =17dBi

Band width	Modulation	Channel	ANT 0 Output Power (dBm/20MHz)	ANT 1 Output Power (dBm/20MHz)	Total Power (dBm/ 20MHz)	Gain (dBi)	Eirp
20MHz	64QAM	55340	23.65	24.01	26.84	17	43.84
20MHz	64QAM	55990	23.46	23.57	26.53	17	43.53
20MHz	64QAM	56640	23.38	23.02	26.21	17	43.21
20MHz	QPSK	55340	23.44	23.88	26.68	17	43.68
20MHz	QPSK	55990	23.15	23.40	26.29	17	43.29
20MHz	QPSK	56640	23.52	23.09	26.32	17	43.32
Band width	Modulation	Channel	ANT 2 Output Power (dBm/20MHz)	ANT 3 Output Power (dBm/20MHz)	Total Power (dBm/ 20MHz)	Gain (dBi)	Eirp
20MHz	64QAM	55340	23.90	23.54	26.73	17	43.73
20MHz	64QAM	55990	23.72	23.25	26.50	17	43.50
20MHz	64QAM	56640	23.49	22.91	26.22	17	43.22
20MHz	QPSK	55340	23.99	23.50	26.76	17	43.76
20MHz	QPSK	55990	23.37	23.37	26.38	17	43.38
20MHz	QPSK	56640	23.41	22.97	26.21	17	43.21
Remark: 1. ANT 0, ANT 1 are 2*2MIMO, ANT 2, ANT 3 are 2*2MIMO 2. All transmit signals are completely uncorrelated with each other, Directional gain = GANT =17dBi							

Measurement Data (PSD):

Band width	Modulation	Channel	ANT 0 PSD (dBm/MHz)	ANT 1 PSD (dBm/MHz)	Total PSD (dBm/MHz)	Gain (dBi)	Eirp. PSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
10MHz	64QAM	55290	15.44	15.34	18.40	17	35.40	37	PASS
10MHz	64QAM	55990	15.46	15.78	18.63	17	35.63	37	PASS
10MHz	64QAM	56690	14.96	15.80	18.41	17	35.41	37	PASS
10MHz	QPSK	55290	15.59	15.11	18.37	17	35.37	37	PASS
10MHz	QPSK	55990	14.81	15.67	18.27	17	35.27	37	PASS
10MHz	QPSK	56690	15.30	15.37	18.35	17	35.35	37	PASS
20MHz	64QAM	55340	12.57	12.69	15.64	17	32.64	37	PASS
20MHz	64QAM	55990	12.85	12.51	15.69	17	32.69	37	PASS
20MHz	64QAM	56640	13.25	13.12	16.20	17	33.20	37	PASS
20MHz	QPSK	55340	12.23	12.37	15.31	17	32.31	37	PASS
20MHz	QPSK	55990	12.89	12.46	15.69	17	32.69	37	PASS
20MHz	QPSK	56640	13.01	12.99	16.01	17	33.01	37	PASS

Remark:

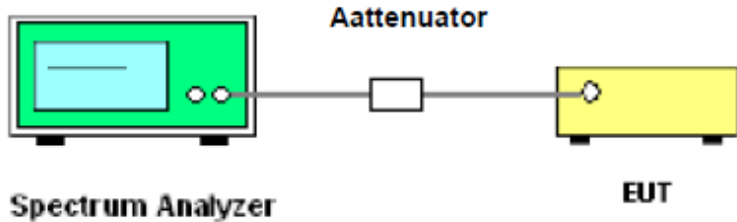
- ANT 0, ANT 1 are 2*2MIMO
- All transmit signals are completely uncorrelated with each other, Directional gain = GANT =17dBi

Band width	Modulation	Channel	ANT 2 PSD (dBm/MHz)	ANT 3 PSD (dBm/MHz)	Total PSD (dBm/MHz)	Gain (dBi)	Eirp. PSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
10MHz	64QAM	55290	15.619	15.401	18.52	17	35.52	37	PASS
10MHz	64QAM	55990	16.109	15.915	19.02	17	36.02	37	PASS
10MHz	64QAM	56690	15.191	15.028	18.12	17	35.12	37	PASS
10MHz	QPSK	55290	15.420	15.294	18.37	17	35.37	37	PASS
10MHz	QPSK	55990	15.308	15.121	18.23	17	35.23	37	PASS
10MHz	QPSK	56690	15.364	16.209	18.82	17	35.82	37	PASS
20MHz	64QAM	55340	12.494	13.077	15.81	17	32.81	37	PASS
20MHz	64QAM	55990	12.885	12.665	15.79	17	32.79	37	PASS
20MHz	64QAM	56640	13.751	13.244	16.52	17	33.52	37	PASS
20MHz	QPSK	55340	12.707	12.417	15.57	17	32.57	37	PASS
20MHz	QPSK	55990	12.194	12.671	15.45	17	32.45	37	PASS
20MHz	QPSK	56640	13.222	13.346	16.29	17	33.29	37	PASS

Remark:

- ANT 2, ANT 3 are 2*2MIMO
- All transmit signals are completely uncorrelated with each other, Directional gain = GANT =17dBi

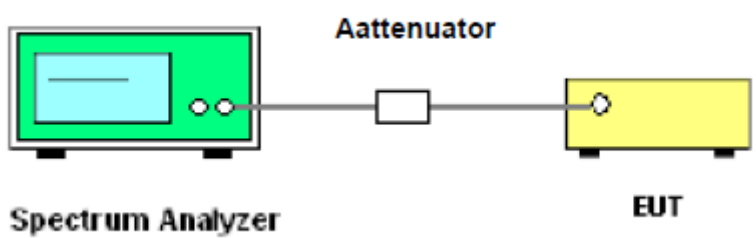
6.2 Peak-to-Average Power Ratio (PAPR)

Test Requirement:	FCC part 96.41(g)
Limit:	The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.
Test setup:	 The diagram illustrates the test setup for measuring PAPR. A Spectrum Analyzer (green box) is connected via a cable to an Attenuator (white box), which is then connected to the EUT (yellow box). The labels 'Spectrum Analyzer', 'Attenuator', and 'EUT' are placed below their respective components.
Test Procedure:	1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 2 Set the CCDF option in spectrum analyzer, RBW= OBW, 3 Set the EUT working in highest power level, measured and recorded the 0.1% as PAPR level. 4 Repeat step 1~3 at other frequency and modulations.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed (Pre-scan all modulation type (QPSK, 16-QAM, 64-QAM), and found the QPKS was the worst case. so only the worst case test data.)

Measurement Data:

Refer to Appendix A – Antenna0&1, Appendix B – Antenna2&3

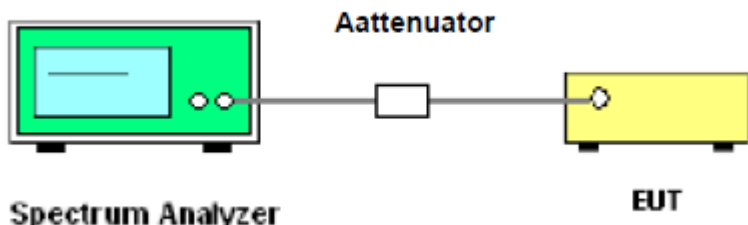
6.3 Occupy Bandwidth

Test Requirement:	FCC part 96.41(E)(3)
Test setup:	 The diagram illustrates the test setup. On the left is a green box labeled 'Spectrum Analyzer'. A cable connects its output to a small white box labeled 'Attenuator'. Another cable connects the attenuator to a yellow box labeled 'EUT' (Equipment Under Test).
Test Procedure:	1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer 2. The transmitter shall be operated at its maximum carrier power measured under normal test conditions. 3. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. 4. The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

Refer to Appendix A – Antenna0&1, Appendix B – Antenna2&3

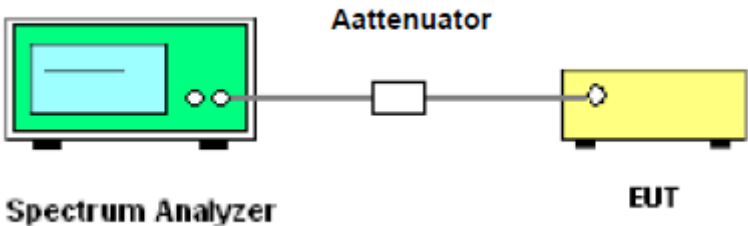
6.4 Emission Mask

Test Requirement:	FCC part 96.41(e)(1)(2)
Limit:	-13 dBm/MHz at frequencies within 0-10MHz of channel edge -25 dBm/MHz at frequencies greater than 10MHz above and below channel edge -40 dBm/MHz at frequencies below 3530 MHz and above 3720 MHz
Test setup:	 The diagram illustrates the test setup. A green Spectrum Analyzer is connected via a cable to a white Attenuator, which is then connected to a yellow EUT (Equipment Under Test).
Test Procedure:	1. The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. Measurements must be performed for low, mid, and high channels. 2. RBW=1% of fundamental for measurements within 1 MHz immediately outside the authorized channel; and 1 MHz for beyond 1 MHz outside the authorized channel. (eg.For 5MHz, RBW=51KHz within 1 MHz immediately outside the authorized channel) 3. Trace average at least 100 traces
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	PASS (Pre-scan all modulation type (QPSK, 16-QAM, 64-QAM), and found the QPKS and 64QAM was the worst case. so only the worst case test data.)

Measurement Data:

Refer to Appendix A – Antenna0&1, Appendix B – Antenna2&3

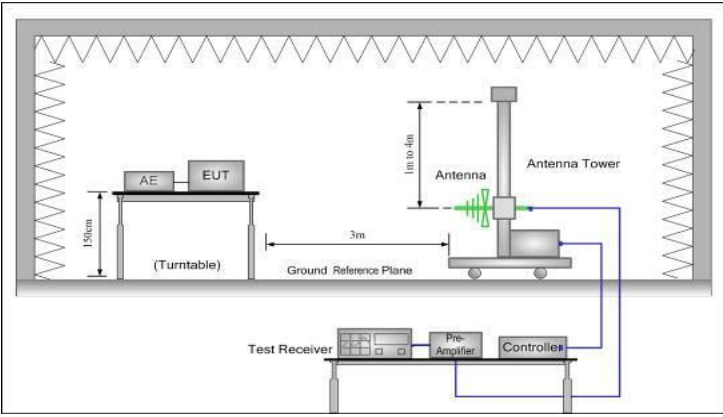
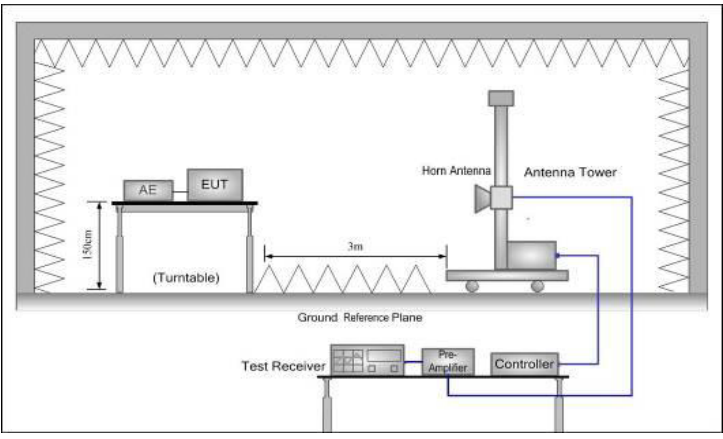
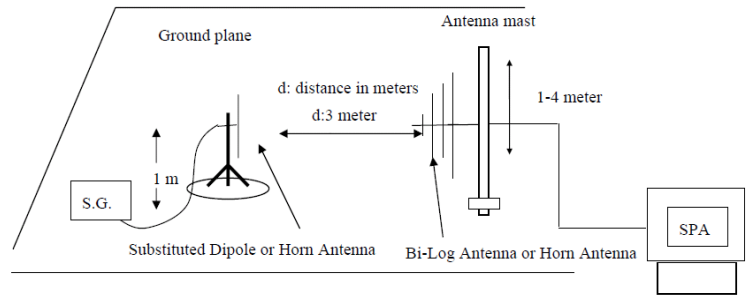
6.5 Out of band emission at antenna terminals

Test Requirement:	FCC part 96.41(e)(1)(2)
Limit:	below 3530 MHz and above 3720 MHz $\leq$ -40dBm
	 The diagram illustrates the test setup. On the left is a green box labeled 'Spectrum Analyzer'. A line connects its output to a small white box labeled 'Attenuator'. Another line connects the attenuator to a yellow box labeled 'EUT' (Equipment Under Test).
Test Procedure:	1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 2 For the out of band: RBW =1 MHz, VBW=3 MHz, Start=30MHz, Stop= 10th harmonic. 3 Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.(Band Edge test data refer to the Section 6.4)
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Remark:	1. (Pre-scan all modulation type (QPSK, 16-QAM, 64-QAM), and found the QPKS and 64QAM was the worst case. so only the worst case test data.)

Measurement Data:

Refer to Appendix A – Antenna0&1, Appendix B – Antenna2&3

6.6 Field strength of spurious radiation measurement

Test Requirement:	Part 96.41(e)(1)(2)
Limit:	-40 dBm/MHz
Test setup:	Below 1GHz  Above 1GHz  Substituted method: 
Test Procedure:	1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations. 3. The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method.

	4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency. ERP / EIRP = S.G. output (dBm) + Antenna Gain(dB/dBi) – Cable Loss (dB)
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details.
Test results:	Passed
Remark:	During the test, pre-scan the QPSK, 64QAM modulation, and found the QPSK modulation is the worst case.

Measurement Data (worst case):

Band 48 (10 MHz) QPSK							
Lowest channel							
Frequency (MHz)	Level at antenna terminals (dBm)	Substitute antenna gain (dBi)	Cable Loss (dBi)	Spurious Emission level (dBm)	Limit Line (dBm)	Over Limit (dBm)	Polarization
7110.00	-52.98	11.27	1.36	-43.07	-40.00	-3.07	Vertical
10665.00	-52.07	11.30	1.85	-42.62	-40.00	-2.62	Vertical
14220.00	-52.96	11.63	1.98	-43.31	-40.00	-3.31	Vertical
7110.00	-54.08	11.27	1.36	-44.17	-40.00	-4.17	Horizontal
10665.00	-52.28	11.30	1.85	-42.83	-40.00	-2.83	Horizontal
14220.00	-53.01	11.63	1.98	-43.36	-40.00	-3.36	Horizontal
Middle channel							
Frequency (MHz)	Level at antenna terminals (dBm)	Substitute antenna gain (dBi)	Cable Loss (dBi)	Spurious Emission level (dBm)	Limit Line (dBm)	Over Limit (dBm)	Polarization
7250.00	-52.97	11.35	1.37	-42.99	-40.00	-2.99	Vertical
10875.00	-51.82	11.18	1.86	-42.5	-40.00	-2.50	Vertical
14500.00	-53.28	12.05	1.99	-43.22	-40.00	-3.22	Vertical
7250.00	-53.77	11.35	1.37	-43.79	-40.00	-3.79	Horizontal
10875.00	-52.39	11.18	1.86	-43.07	-40.00	-3.07	Horizontal
14500.00	-53.59	12.05	1.99	-43.53	-40.00	-3.53	Horizontal
Highest channel							
Frequency (MHz)	Level at antenna terminals (dBm)	Substitute antenna gain (dBi)	Cable Loss (dBi)	Spurious Emission level (dBm)	Limit Line (dBm)	Over Limit (dBm)	Polarization
7390.00	-52.78	11.43	1.41	-42.76	-40.00	-2.76	Vertical
11085.00	-51.71	11.23	1.88	-42.36	-40.00	-2.36	Vertical
14780.00	-53.31	12.47	2.01	-42.85	-40.00	-2.85	Vertical
7390.00	-52.59	11.43	1.41	-42.57	-40.00	-2.57	Horizontal
11085.00	-52.55	11.23	1.88	-43.2	-40.00	-3.20	Horizontal
14780.00	-54.42	12.47	2.01	-43.96	-40.00	-3.96	Horizontal
Remark: The emission levels of below 1 GHz are lower than the limit 20dB and not show in test report.							

Band 48 (20 MHz) QPSK							
Lowest channel							
Frequency (MHz)	Level at antenna terminals (dBm)	Substitute antenna gain (dBi)	Cable Loss (dBi)	Spurious Emission level (dBm)	Limit Line (dBm)	Over Limit (dBm)	Polarization
7120.00	-52.49	11.27	1.36	-42.58	-40.00	-2.58	Vertical
10680.00	-51.92	11.29	1.85	-42.48	-40.00	-2.48	Vertical
14240.00	-53.07	11.66	1.99	-43.4	-40.00	-3.40	Vertical
7120.00	-54.51	11.27	1.36	-44.6	-40.00	-4.60	Horizontal
10680.00	-52.26	11.29	1.85	-42.82	-40.00	-2.82	Horizontal
14240.00	-53.03	11.66	1.99	-43.36	-40.00	-3.36	Horizontal
Middle channel							
Frequency (MHz)	Level at antenna terminals (dBm)	Substitute antenna gain (dBi)	Cable Loss (dBi)	Spurious Emission level (dBm)	Limit Line (dBm)	Over Limit (dBm)	Polarization
7250.00	-52.18	11.35	1.37	-42.2	-40.00	-2.20	Vertical
10875.00	-52.15	11.18	1.86	-42.83	-40.00	-2.83	Vertical
14500.00	-53.01	12.05	1.99	-42.95	-40.00	-2.95	Vertical
7250.00	-54.44	11.35	1.37	-44.46	-40.00	-4.46	Horizontal
10875.00	-52.01	11.18	1.86	-42.69	-40.00	-2.69	Horizontal
14500.00	-53.80	12.05	1.99	-43.74	-40.00	-3.74	Horizontal
Highest channel							
Frequency (MHz)	Level at antenna terminals (dBm)	Substitute antenna gain (dBi)	Cable Loss (dBi)	Spurious Emission level (dBm)	Limit Line (dBm)	Over Limit (dBm)	Polarization
7380.00	-52.75	11.43	1.41	-42.73	-40.00	-2.73	Vertical
11070.00	-52.09	11.21	1.88	-42.76	-40.00	-2.76	Vertical
14760.00	-53.71	12.44	2.00	-43.27	-40.00	-3.27	Vertical
7380.00	-52.89	11.43	1.41	-42.87	-40.00	-2.87	Horizontal
11070.00	-52.14	11.21	1.88	-42.81	-40.00	-2.81	Horizontal
14760.00	-53.78	12.44	2.00	-43.34	-40.00	-3.34	Horizontal
Remark:							
The emission levels of below 1 GHz are lower than the limit 20dB and not show in test report.							

6.7 Frequency stability V.S. Temperature measurement

Test Requirement:	FCC Part 2.1055(a)(b)																																																																														
Limit:	FCC: <table><thead><tr><th rowspan="2">Frequency range (MHz)</th><th rowspan="2">Fixed and base stations (±ppm)</th><th colspan="2">Mobile stations (±ppm)</th></tr><tr><th>Over 2 watts output power</th><th>2 watts or less output power</th></tr></thead><tbody><tr><td>Below 25</td><td>100</td><td>100</td><td>200</td></tr><tr><td>25-50</td><td>20</td><td>20</td><td>50</td></tr><tr><td>72-76</td><td>5</td><td></td><td>50</td></tr><tr><td>150-174</td><td>5</td><td>5</td><td>50</td></tr><tr><td>216-220</td><td>1.0</td><td></td><td>1.0</td></tr><tr><td>220-222</td><td>0.1</td><td>1.5</td><td>1.5</td></tr><tr><td>421-512</td><td>2.5</td><td>5</td><td>5</td></tr><tr><td>806-809</td><td>1.0</td><td>1.5</td><td>1.5</td></tr><tr><td>809-824</td><td>1.5</td><td>2.5</td><td>2.5</td></tr><tr><td>851-854</td><td>1.0</td><td>1.5</td><td>1.5</td></tr><tr><td>854-869</td><td>1.5</td><td>2.5</td><td>2.5</td></tr><tr><td>896-901</td><td>0.1</td><td>1.5</td><td>1.5</td></tr><tr><td>902-928</td><td>2.5</td><td>2.5</td><td>2.5</td></tr><tr><td>902-928</td><td>2.5</td><td>2.5</td><td>2.5</td></tr><tr><td>929-930</td><td>1.5</td><td></td><td></td></tr><tr><td>935-940</td><td>0.1</td><td>1.5</td><td>1.5</td></tr><tr><td>1427-1435</td><td>300</td><td>300</td><td>300</td></tr><tr><td>Above 2450</td><td></td><td></td><td></td></tr></tbody></table>	Frequency range (MHz)	Fixed and base stations (±ppm)	Mobile stations (±ppm)		Over 2 watts output power	2 watts or less output power	Below 25	100	100	200	25-50	20	20	50	72-76	5		50	150-174	5	5	50	216-220	1.0		1.0	220-222	0.1	1.5	1.5	421-512	2.5	5	5	806-809	1.0	1.5	1.5	809-824	1.5	2.5	2.5	851-854	1.0	1.5	1.5	854-869	1.5	2.5	2.5	896-901	0.1	1.5	1.5	902-928	2.5	2.5	2.5	902-928	2.5	2.5	2.5	929-930	1.5			935-940	0.1	1.5	1.5	1427-1435	300	300	300	Above 2450			
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Above 2450																																																																															
Test setup:	Spectrum analyzer  Att. Temperature Chamber EUT Variable Power Supply Note : Measurement setup for testing on Antenna connector																																																																														
Test procedure:	1. The equipment under test was connected to an external DC power supply and input rated voltage. 2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. 3. The EUT was placed inside the temperature chamber. 4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25℃ operating frequency as reference frequency. 5. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached																																																																														
Test Instruments:	Refer to section 5.10 for details																																																																														
Test mode:	Refer to section 5.3 for details																																																																														
Test results:	Passed																																																																														
Remark:	All three channels of all modulations have been tested, but only the worst channel and the worst modulation show in this test item.																																																																														

Measurement Data:

Refer to Appendix A – Antenna0&1, Appendix B – Antenna2&3

6.8 Frequency stability V.S. Voltage measurement

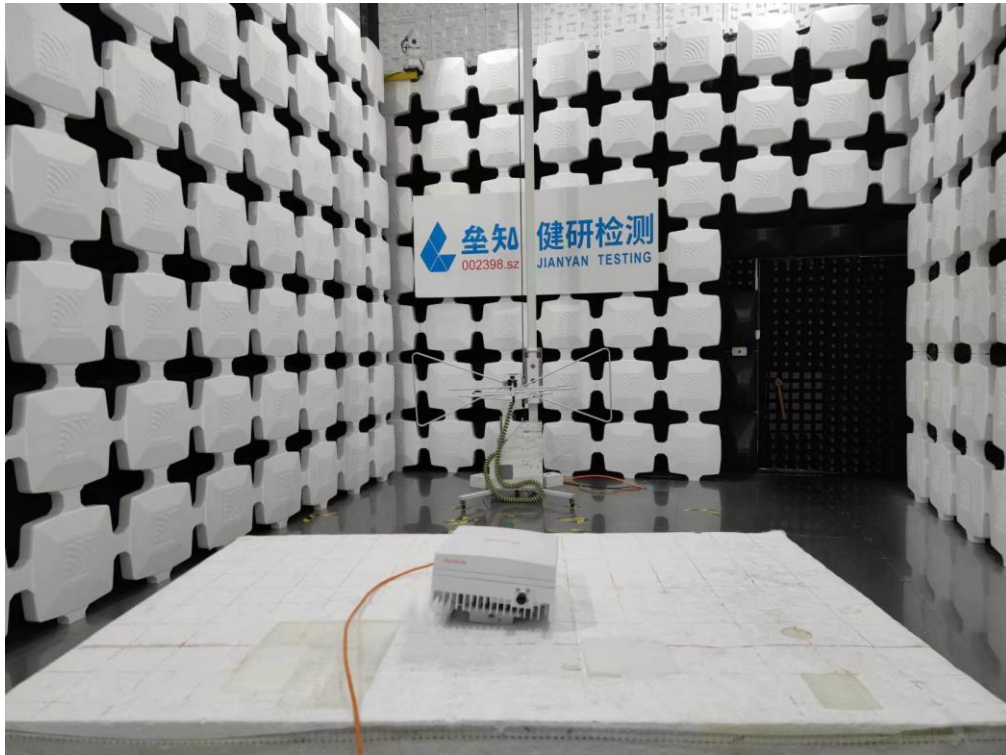
Test Requirement:	FCC Part 2.1055(b)																																																																										
Limit:	FCC: <table><thead><tr><th rowspan="2">Frequency range (MHz)</th><th rowspan="2">Fixed and base stations (±ppm)</th><th colspan="2">Mobile stations (±ppm)</th></tr><tr><th>Over 2 watts output power</th><th>2 watts or less output power</th></tr></thead><tbody><tr><td>Below 25</td><td>100</td><td>100</td><td>200</td></tr><tr><td>25–50</td><td>20</td><td>20</td><td>50</td></tr><tr><td>72–76</td><td>5</td><td></td><td>50</td></tr><tr><td>150–174</td><td>5</td><td>5</td><td>50</td></tr><tr><td>216–220</td><td>1.0</td><td></td><td>1.0</td></tr><tr><td>220–222</td><td>0.1</td><td>1.5</td><td>1.5</td></tr><tr><td>421–512</td><td>2.5</td><td>5</td><td>5</td></tr><tr><td>806–809</td><td>1.0</td><td>1.5</td><td>1.5</td></tr><tr><td>809–824</td><td>1.5</td><td>2.5</td><td>2.5</td></tr><tr><td>851–854</td><td>1.0</td><td>1.5</td><td>1.5</td></tr><tr><td>854–869</td><td>1.5</td><td>2.5</td><td>2.5</td></tr><tr><td>896–901</td><td>0.1</td><td>1.5</td><td>1.5</td></tr><tr><td>902–928</td><td>2.5</td><td>2.5</td><td>2.5</td></tr><tr><td>929–930</td><td>1.5</td><td></td><td></td></tr><tr><td>935–940</td><td>0.1</td><td>1.5</td><td>1.5</td></tr><tr><td>1427–1435</td><td>300</td><td>300</td><td>300</td></tr><tr><td>Above 2450</td><td></td><td></td><td></td></tr></tbody></table>	Frequency range (MHz)	Fixed and base stations (±ppm)	Mobile stations (±ppm)		Over 2 watts output power	2 watts or less output power	Below 25	100	100	200	25–50	20	20	50	72–76	5		50	150–174	5	5	50	216–220	1.0		1.0	220–222	0.1	1.5	1.5	421–512	2.5	5	5	806–809	1.0	1.5	1.5	809–824	1.5	2.5	2.5	851–854	1.0	1.5	1.5	854–869	1.5	2.5	2.5	896–901	0.1	1.5	1.5	902–928	2.5	2.5	2.5	929–930	1.5			935–940	0.1	1.5	1.5	1427–1435	300	300	300	Above 2450			
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Test setup:	Spectrum analyzer  Att. Temperature Chamber EUT  Variable Power Supply Note : Measurement setup for testing on Antenna connector																																																																										
Test procedure:	1. Set chamber temperature to 25°C. Use a variable DC power source to power the EUT and set the voltage to rated voltage. 2. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency. 3. Reduce the input voltage to specify extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.																																																																										
Test Instruments:	Refer to section 5.10 for details																																																																										
Test mode:	Refer to section 5.3 for details, and all channels have been tested, only shows the worst channel data in this report.																																																																										
Test results:	Passed																																																																										
Remark:	All three channels of all modulations have been tested, but only the worst channel and the worst modulation show in this test item.																																																																										

Measurement Data:

Refer to Appendix A – Antenna0&1, Appendix B – Antenna2&3

7 Test Setup Photo

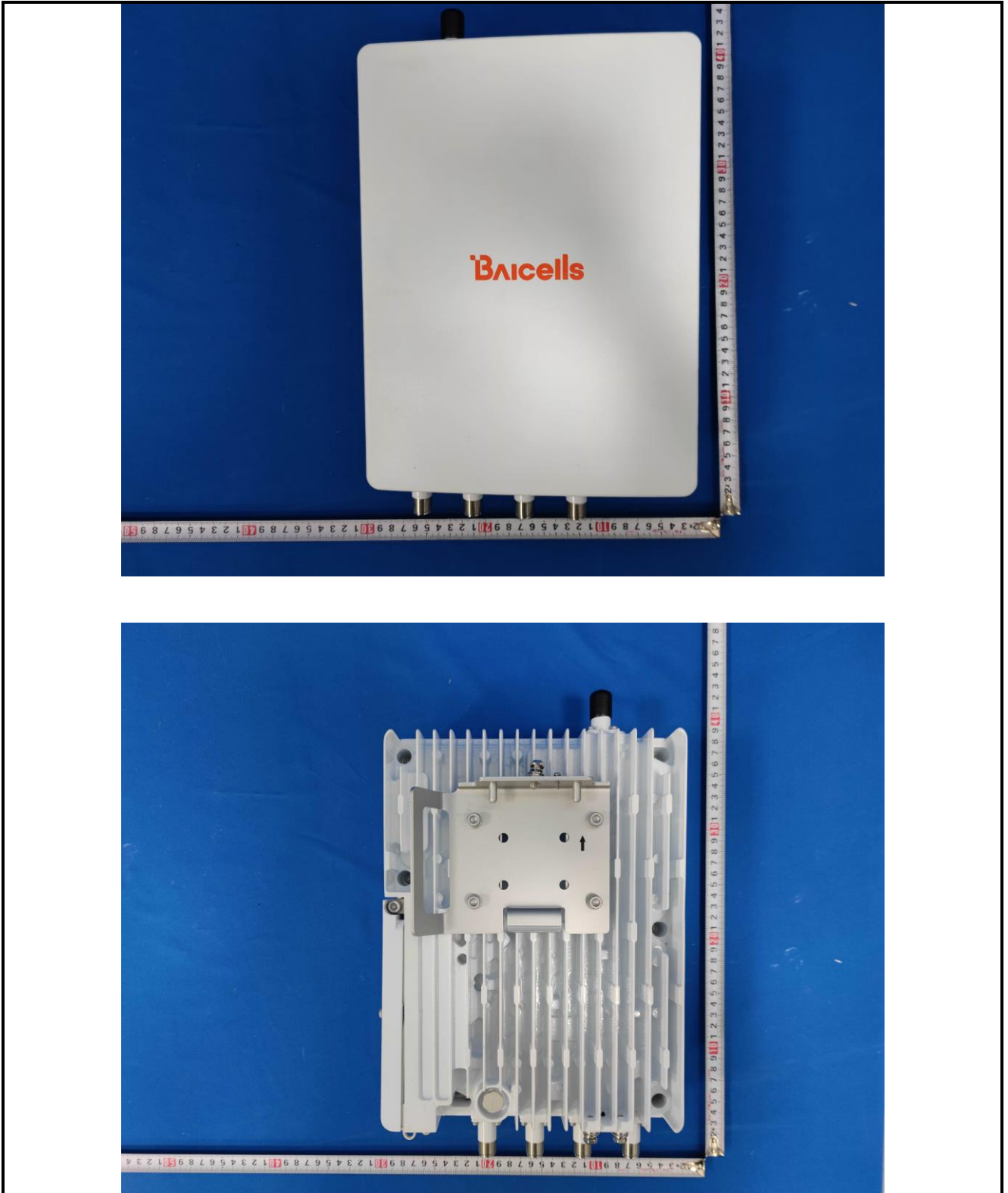
**Radiated Spurious Emission
Below 1GHz**

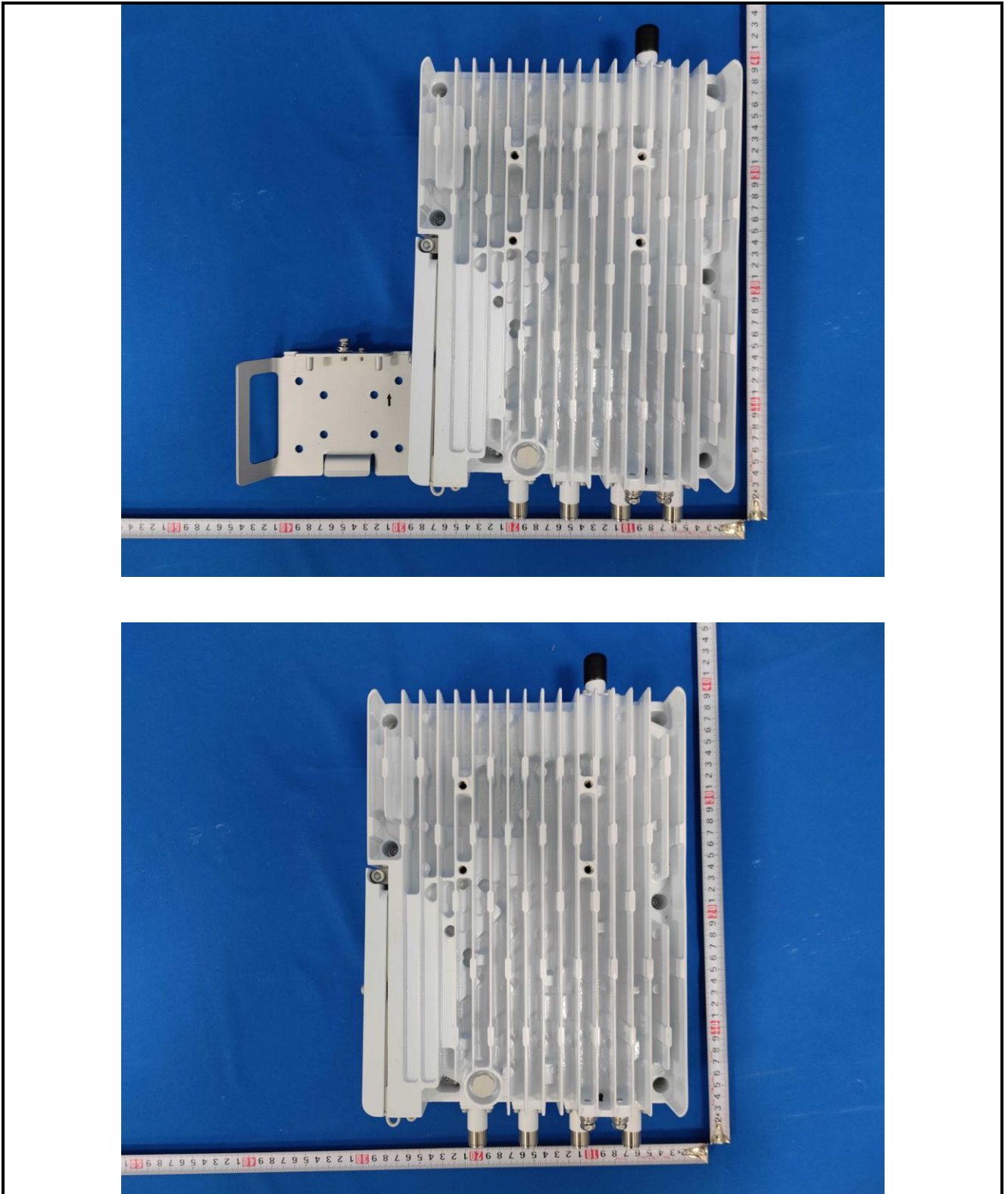


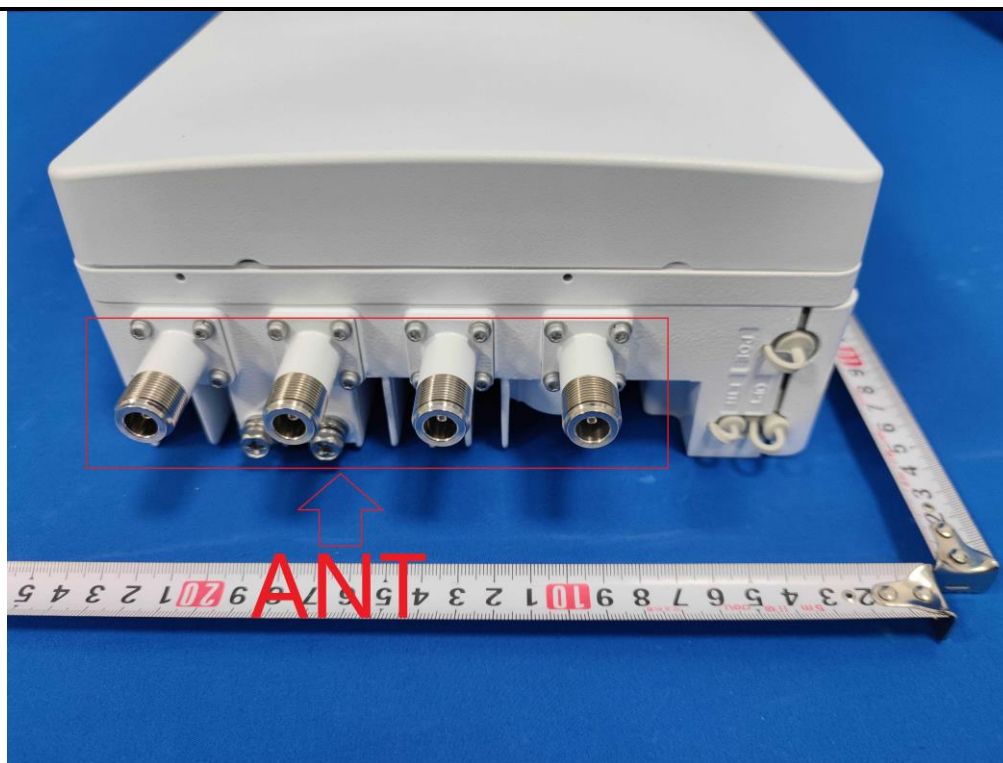
Above 1GHz



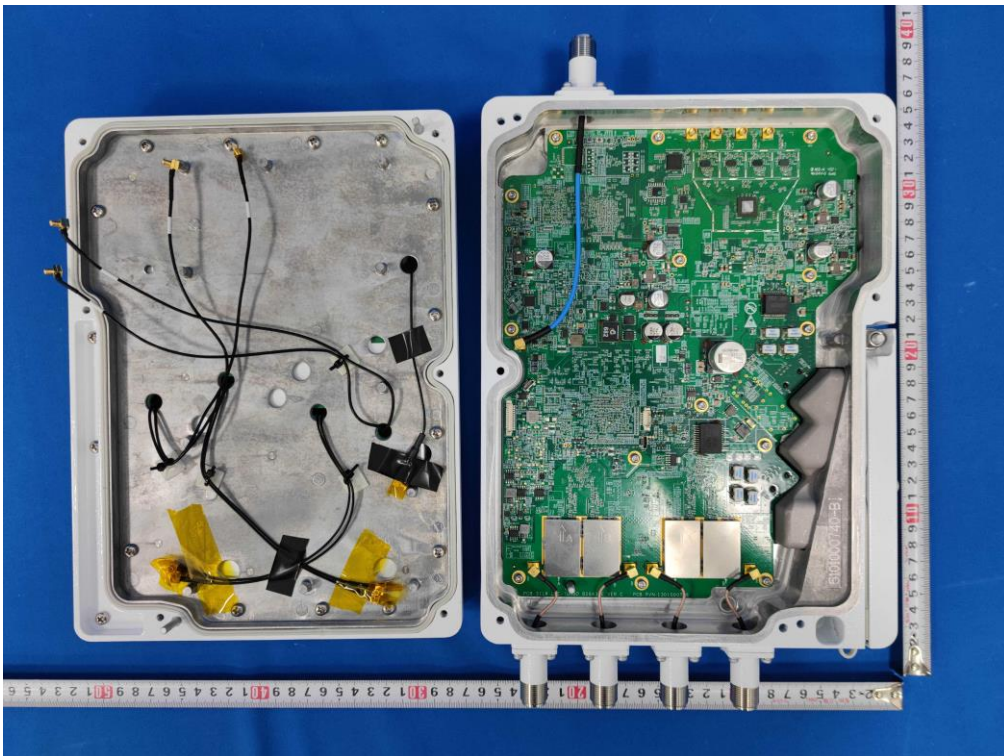
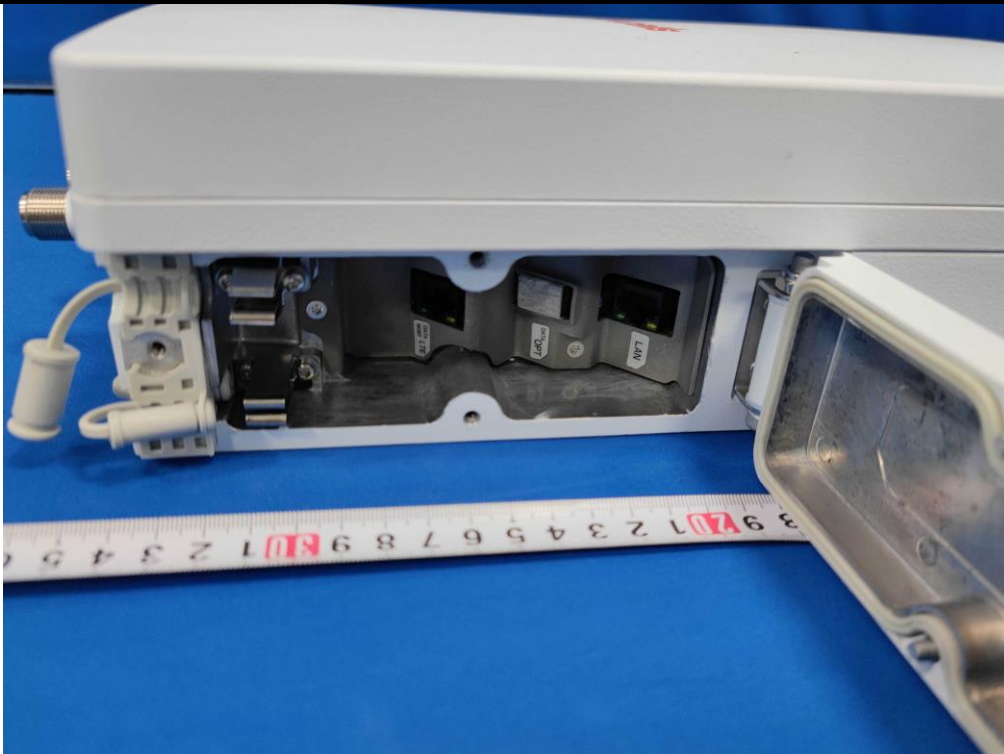
8 EUT Constructional Details

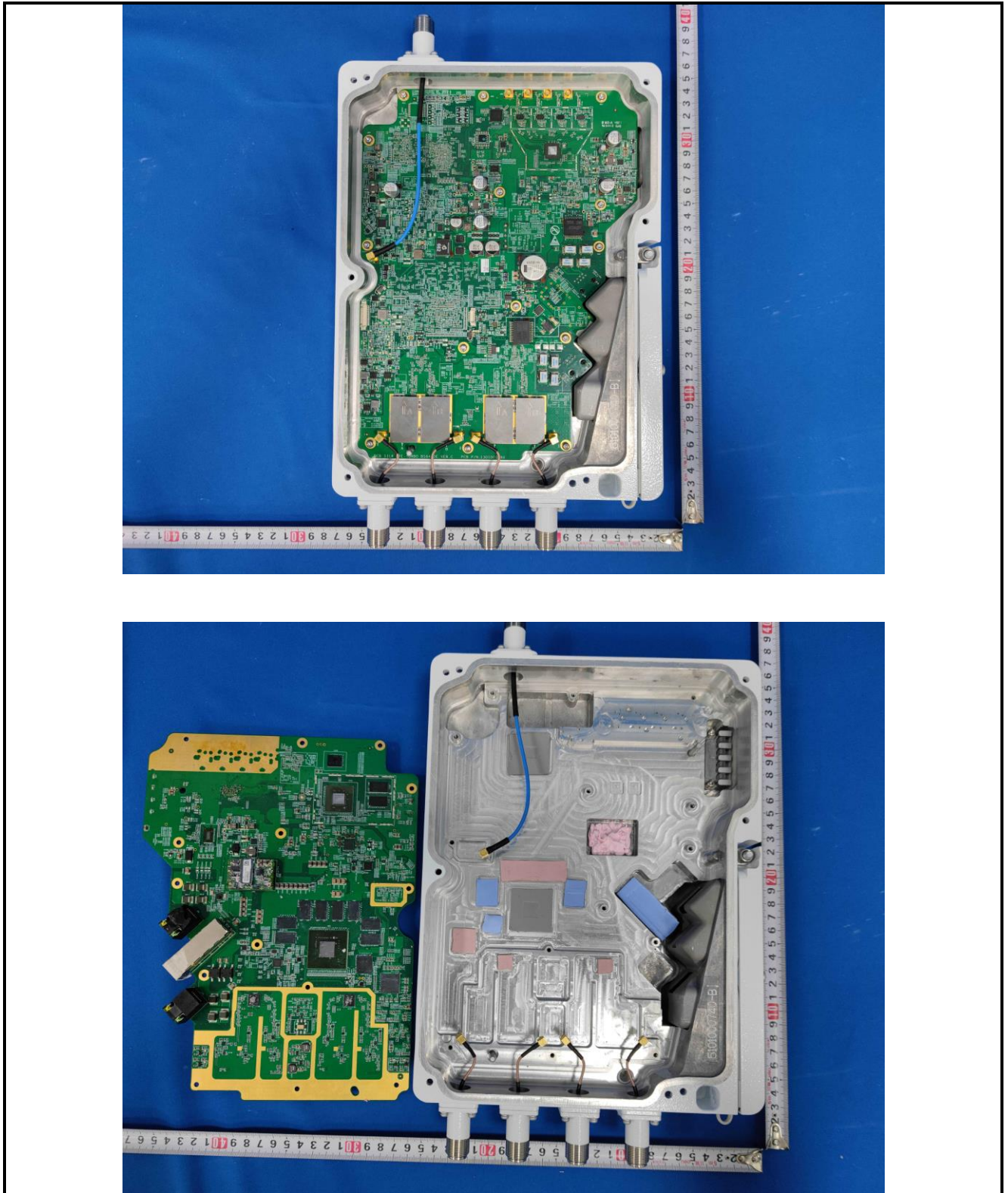


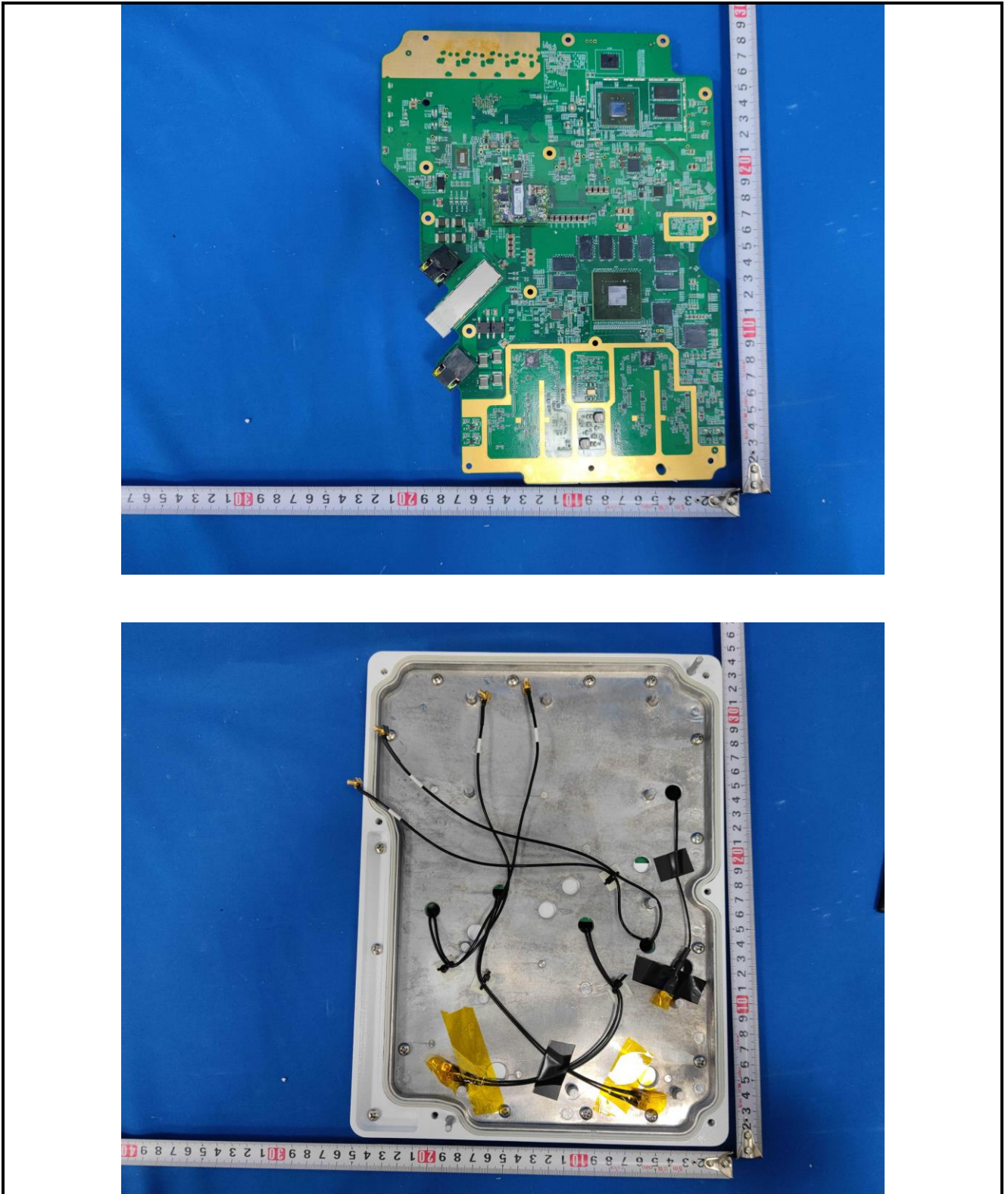




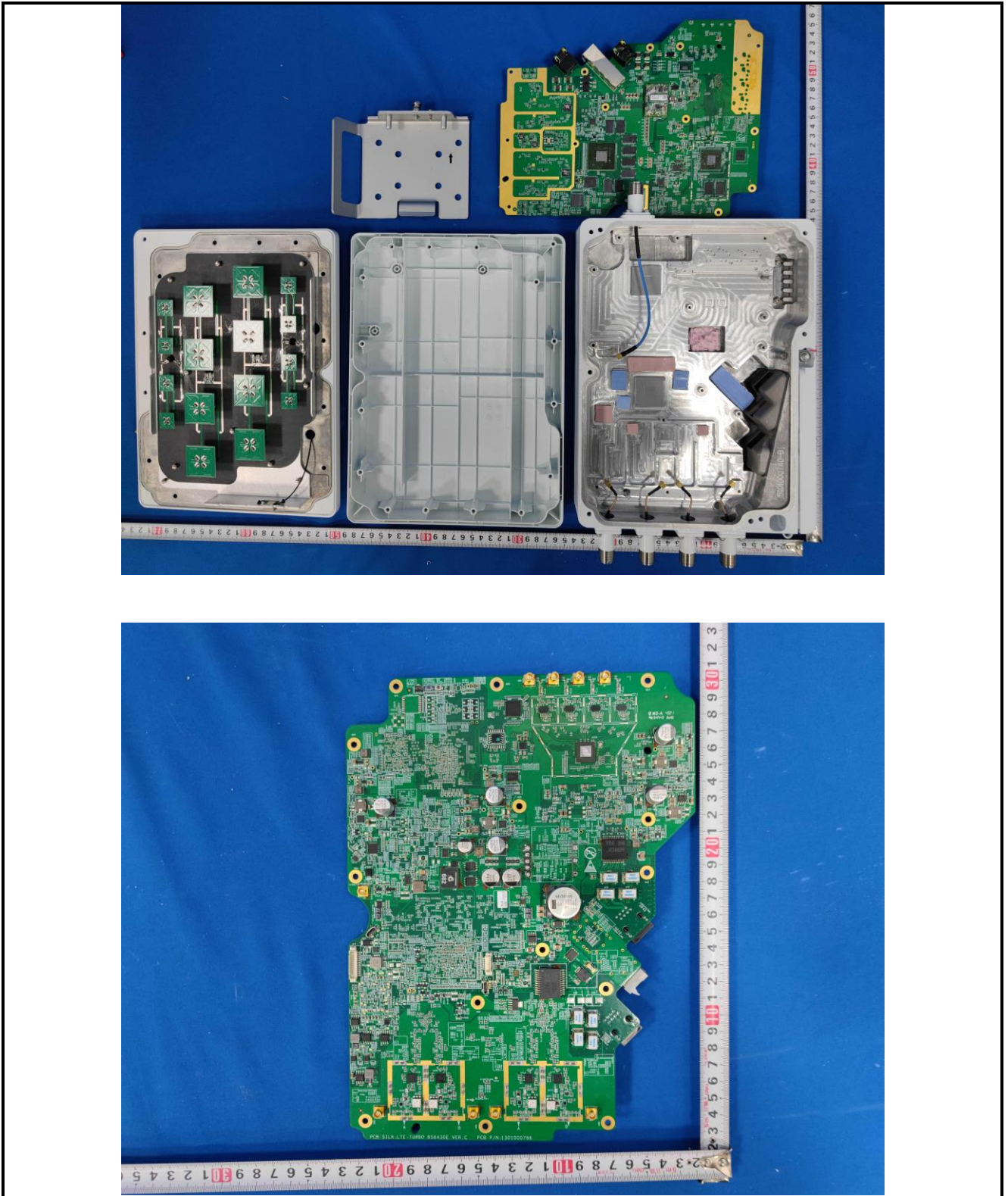


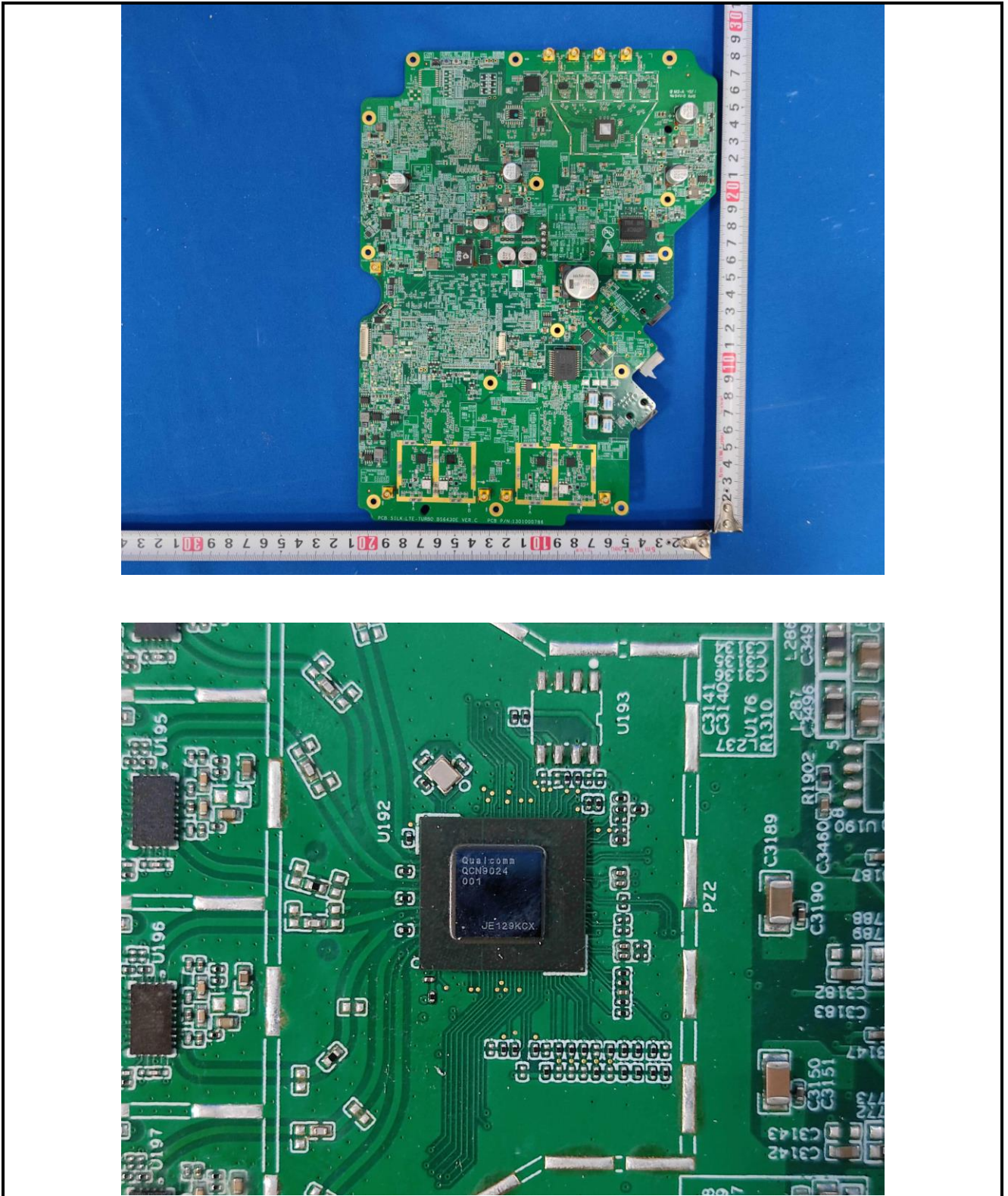


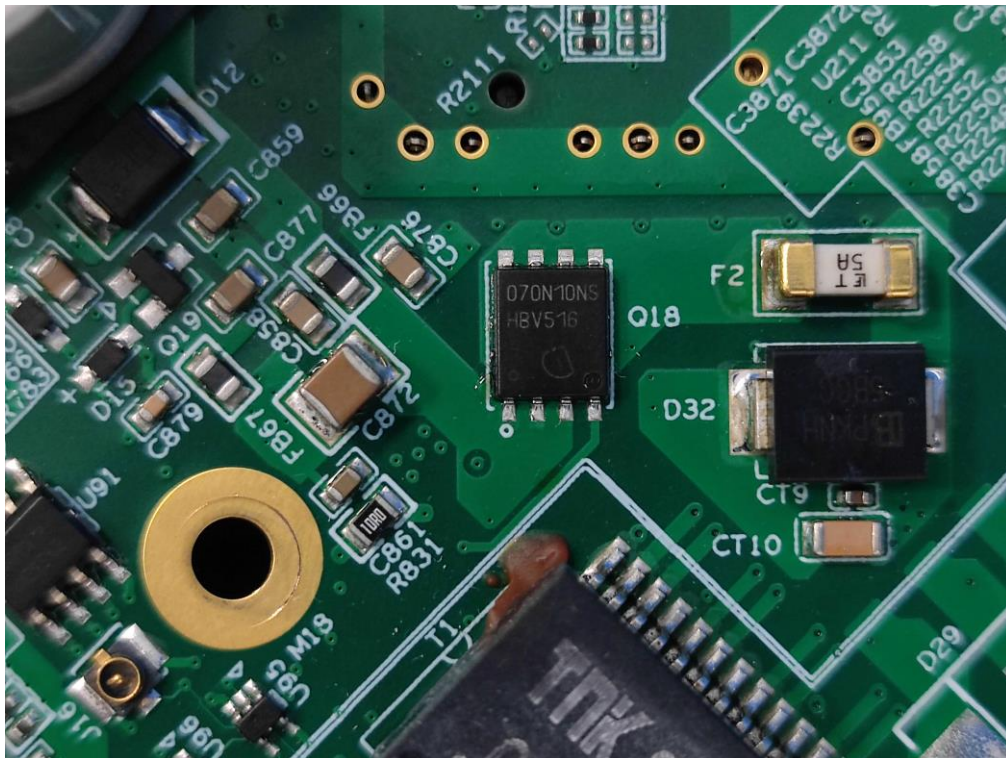
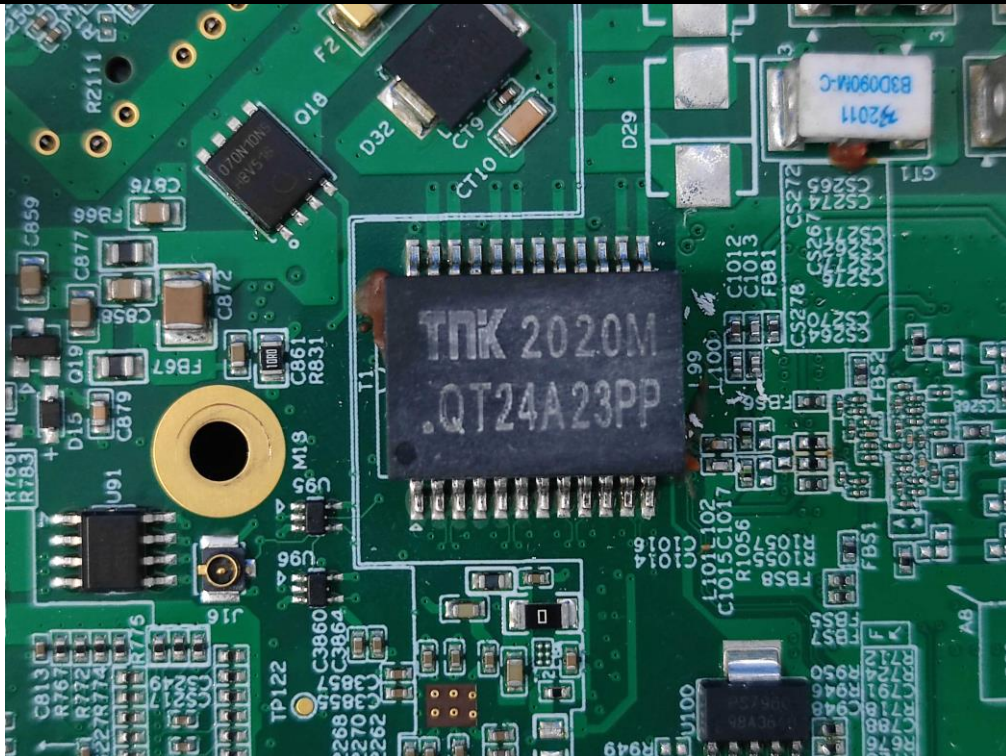


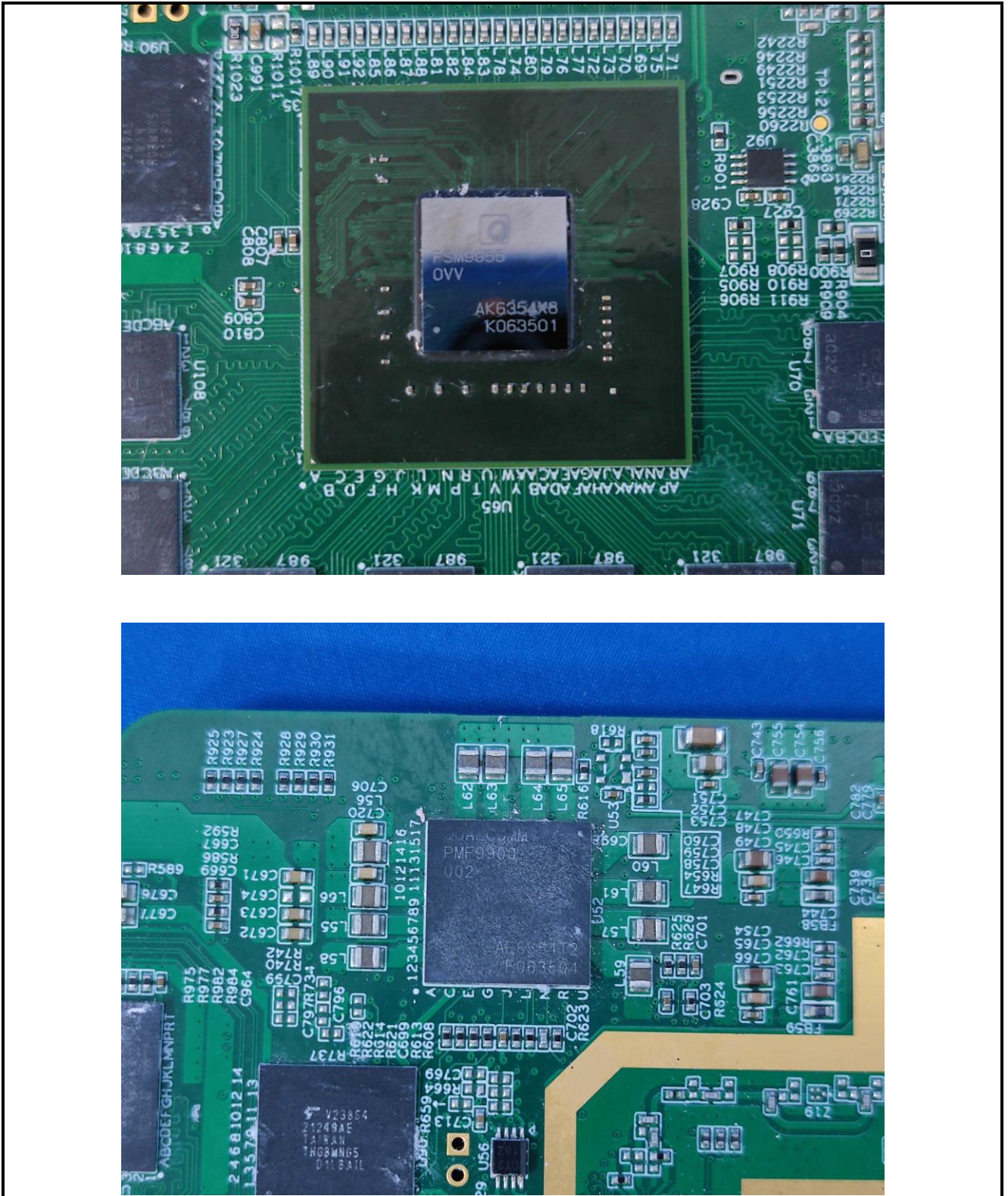


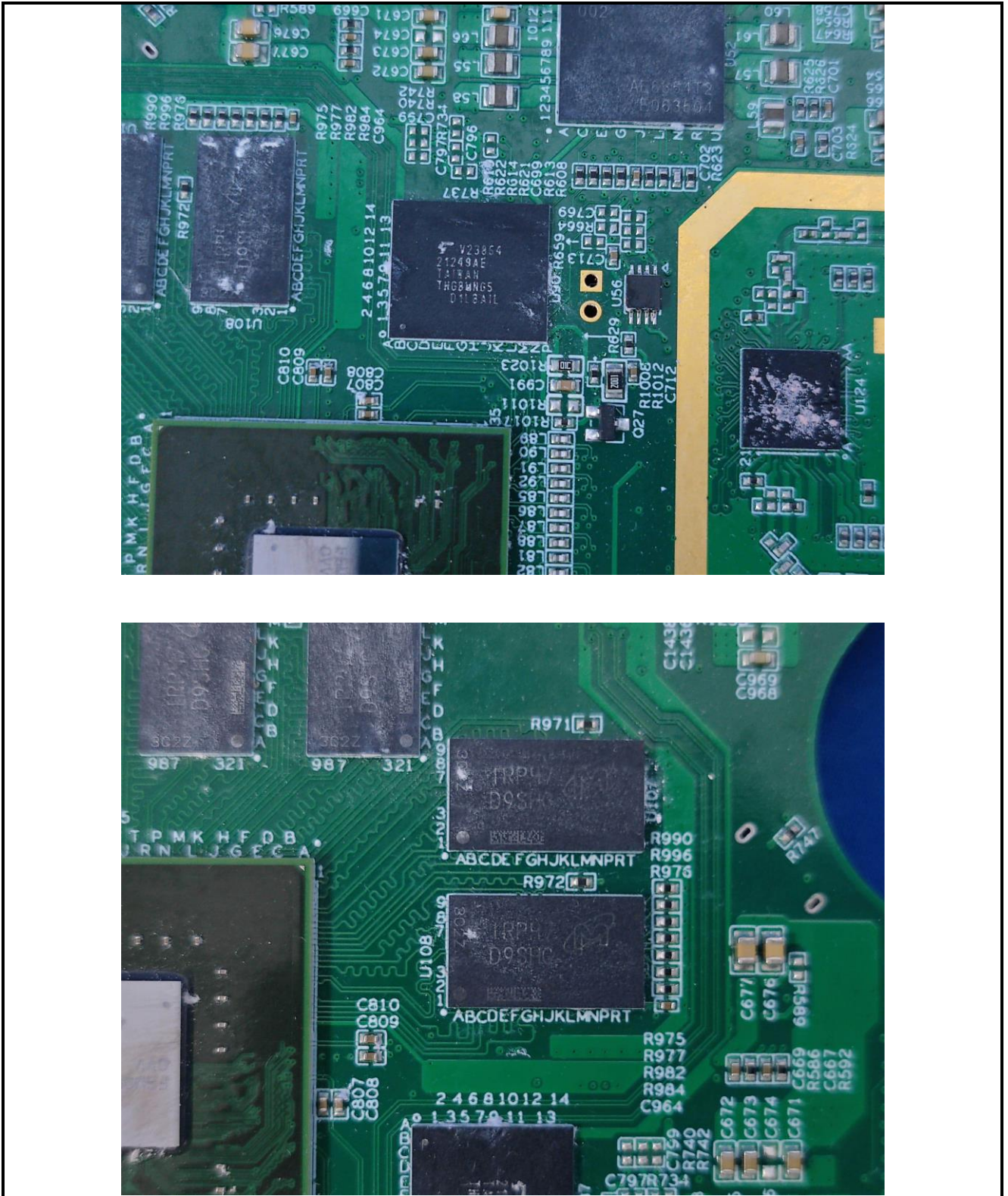


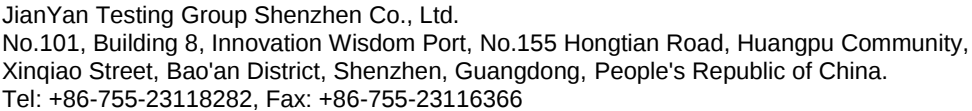


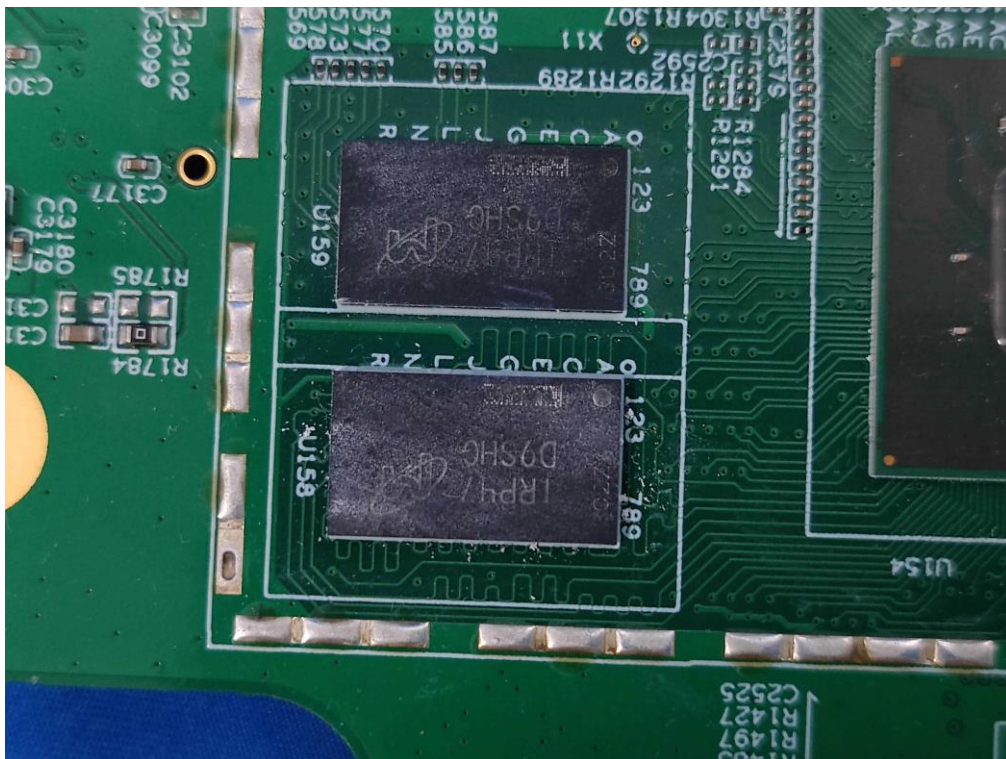
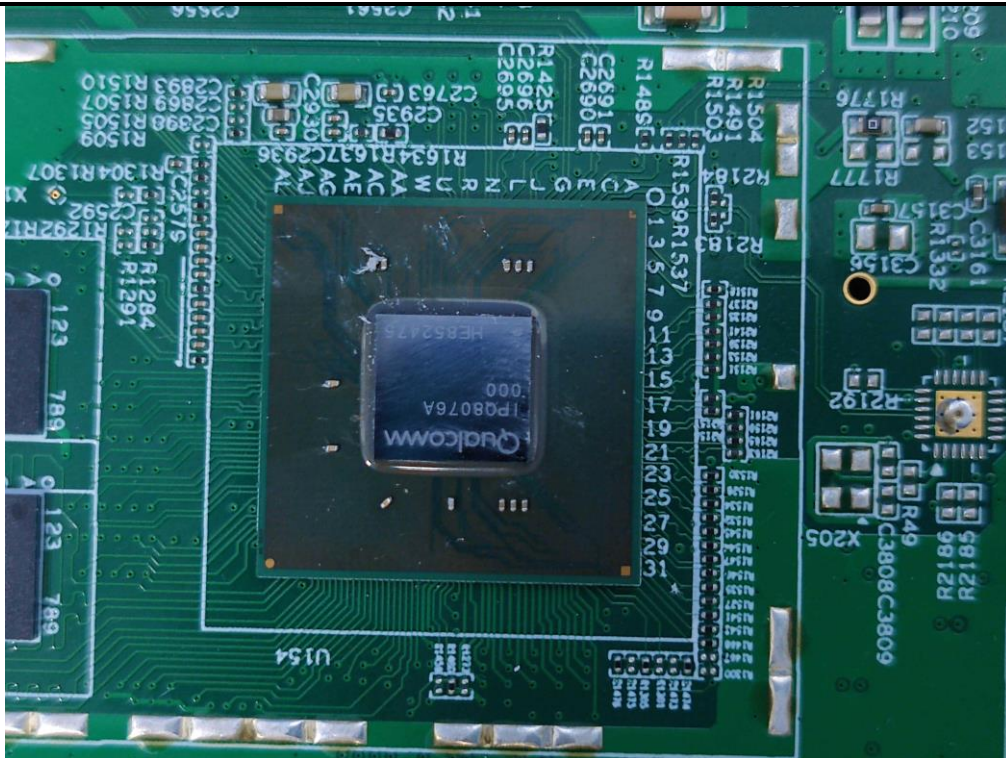












-----End of report-----