



JAPAN RADIO TEST REPORT

Applicant: Shenzhen Lichuan Trading Company

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Manufacturer: Shenzhen Xinhubang Technology Co., Ltd.

Address: Middle, 2/F, 3 Building, Jiantai Industrial Park, No.1 District Fuqiao, Fu Yong bridge community, Baoan District, Shenzhen, China

EUT: Tablet computer

Trade Mark: N/A

Model Number: HT10
HT20, HT30, HT40, HT50, HT60

Date of Receipt: Oct. 10, 2024

Test Date: Oct. 10, 2024 - Oct. 23, 2024

Date of Report: Oct. 23, 2024

Prepared By: Shenzhen DL Testing Technology Co., Ltd.

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Applicable Standards: Article 2 Paragraph 1, item 19-3
MIC Notice No.88 Appendix No.45

Test Result: Pass

Report Number: DL-241010014ER

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This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen DL Testing Technology Co., Ltd.



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1. TEST SUMMARY

Test Standard	Description of Test	Result
Article 49-20	Frequency Tolerance	Compliance
Article 49-20 Article 14, table 7	Antenna Power& Output Power Tolerance	Compliance
Article 6 Annex 2.30	Occupied Bandwith	Compliance
Article 7 Annex 3.29	Unwanted Emission Strength/Spurious Area	Compliance
Article 49-20	Adjacent Channel Leakage Power	Compliance
Article 24.2	Secondary Radiated Emssion Strength	Compliance
Article 49-20	Transmission Burst Length	Compliance
Article 49-20 No.295 of 2022	Carrier Sensing Function	Compliance
Article 9-4.5 Article 6-2.3	Interference prevention function	Compliance
Article 49-20	EIRP	Compliance



1.1 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 3.2\text{dB}$
2	Radiated Emission Test	$\pm 4.7\text{dB}$
3	RF power, conducted	$\pm 0.16\text{dB}$
4	Spurious emissions, conducted	$\pm 0.21\text{dB}$
5	All emissions, radiated (<1G)	$\pm 4.68\text{dB}$
6	All emissions, radiated(>1G)	$\pm 5.0\text{dB}$
7	frequency error ppm	$\pm 0.5\text{ppm}$
8	Occupied Bandwidth	$\pm 0.32\text{MHz}$



2. GENERAL INFORMATION

2.1. General Description of E.U.T.

Product Name	:	Tablet computer
Trademark	:	N/A
Model Number	:	HT10
Series Model No.	:	HT20, HT30, HT40, HT50, HT60
Model Difference	:	The product's different for model number and appearance color.
Specification	:	WIFI 5.2G(W52)
Operating frequency	:	5180MHz~5240MHz 802.11a/n/ac(HT20) 5190MHz~5230MHz (802.11n(HT40) (802.11ac(HT40) 5210MHz: (802.11ac(HT80))
Modulation	:	OFDM with BPSK / QPSK / 16QAM / 64QAM for 802.11a OFDM with BPSK / QPSK / 16QAM / 64QAM for 802.11n OFDM with BPSK / QPSK / 16QAM / 64QAM/256QAM for 802.11ac
Antenna installation	:	Internal Antenna
Antenna Gain	:	-0.02dBi
Power supply	:	DC 3.8V from battery
Hardware Version	:	HV01
Software Version	:	SV01

ANT	Brand	Model Name	Antenna Type	Gain (dBi)	NOTE
1	N/A	Antenna	Internal Antenna	3.65	N/A



2.2.General condition

Ambient Condition: 25 °C 59 %RH

2.3.Test condition

The wifi module was tested while in a continuous transmitter/receiver mode.

The EUT was tuned to a low, middle, and high channel for all tests. For all test case pre/scans were completed in all Modes to determine worst case levels.

Voltage Fluctuation Test		Normal Voltage	High Voltage + 10% of Normal Voltage	Low Voltage - 10% of Normal Voltage
Input Power		3.8V	4.18V	3.42V
Module Voltage		3.3V	3.3V	3.3V
Voltage error(%)	Result	Ref.level	0	0

Note:

Voltage Variation (%)

= (Output high or Low Voltage - Output Normal Voltage)/ Output Normal Voltage* 100

During the input supply voltage to the EUT from the external power source is varied by +/- 10%,

if output voltage had been confirmed that the fluctuation of power supply to the RF circuit of EUT

(excluding power source) is equal to or less than +/-1%. Exempt extremely high and low supply

voltage condition test, EUT only operated in normal voltage to test all regulations.

2.4.Test Mode

The EUT has been tested under operating condition.

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

IEEE802.11a: Channel 36(5180MHz), Channel 40(5200MHz) and Channel 48(5240MHz) with MCS0 Worst data rate (worst case) are chosen for the final testing.



IEEE802.11n20: Channel 36(5180MHz), Channel 40(5200MHz) and Channel 48(5240MHz) with MCS0 Worst data rate (worst case) are chosen for the final testing.

IEEE802.11n40: Channel 38(5190MHz), Channel 46(5230MHz) with MCS0 Worst data rate (worst case) are chosen for the final testing.

IEEE802.11ac(HT20): Channel 36(5180MHz), Channel 40(5200MHz) and Channel 48(5240MHz) with MCS0 Worst data rate (worst case) are chosen for the final testing.

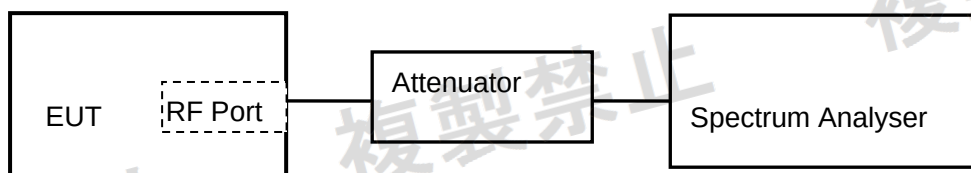
IEEE802.11ac(HT40): Channel 38(5190MHz), Channel 46(5230MHz) with MCS0 Worst data rate (worst case) are chosen for the final testing.

IEEE802.11ac(HT80): Channel 42 (5210MHz) with MCS0 Worst data rate (worst case) are chosen for the final testing.

2.5.Test Equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	EMC Analyzer (9k~26.5GHz)	Agilent	E4407B	MY45109572	Nov. 06, 2023	Nov. 05, 2024	1 year
2	EMI Test Receiver	Rohde & Schwarz	ESCI	101417	Nov. 06, 2023	Nov. 05, 2024	1 year
3	Power Meter	Anritsu	ML2495A	0949003	Nov. 06, 2023	Nov. 05, 2024	1 year
4	Power Sensor	Anritsu	MA2411B	0917017	Nov. 06, 2023	Nov. 05, 2024	1 year
5	DC Power Source	GW Instek	GPC-303DN	EK880675	Nov. 06, 2023	Nov. 05, 2024	1 year
6	Frequency Meter	Agilent	53132A	N/A	Nov. 06, 2023	Nov. 05, 2024	1 year
7	MXA Signal Analyzer (20k~26.5GHz)	Agilent	N9020A	MY51110381	Nov. 06, 2023	Nov. 05, 2024	1 year

2.6.Test Configuration





3. FREQUENCY TOLERANCE TEST

3.1. Test Limit

Test Limit	±20 ppm
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3.2. Test Equipment

Same as 2.5.

3.3. Test Configuration

Same as 2.6.

3.4. Test Data

Temperature:	25.6 °C	Relative Humidity:	55.8%	Pressure:	1010mbar
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Pass, the table and plot please see annex 1.



4. OCCUPIED BANDWIDTH (99%) TEST

4.1. Test Equipment

Same as 2.5

4.2. Test Configuration

One antenna position was evaluated based on verification that changing the diversity switch position did not affect the occupied bandwidth of the center channel at nominal voltage.

The occupied bandwidth was measured with the spectrum analyzer configured according to the table below.

The occupied bandwidth was determined from the 99% power bandwidth by determining the highest and lowest frequencies at which 99.5% of the power was captured and then subtracting the two numbers.

The limits are as follows:

Modulation Type	Occupied Band Width
20MHz system for 5.2 (OFDM)	< 20 MHz
20MHz system for 5.2 (Other)	< 20 MHz
40MHz system for 5.2 (OFDM)	< 40 MHz
80MHz system for 5.2 (OFDM)	< 80 MHz

The calculation was done by either the analyzer directly or via the software used to capture the plot.

Instrument Settings and Test Requirements				
Modulation Type	Analyzer Settings			
	Span	RB	VB	Other
OFDM (eg 802.11an)	40-160 MHz	100kHz	1MHz	Sample detector, averaging (10 sweeps)2, sweep time auto1)

Note 1: For burst transmissions sweep time set to ensure dwell time in each bandwidth > transmission cycle time (sweep time = transmit cycle time x span/ measurement bandwidth)

Note 2: For burst transmissions trace set for max hold and detector set to positive peak.

4.3. Test Results

Temperature:	25.6 °C	Relative Humidity:	55.8%	Pressure:	1010mbar
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Pass, the table and plot please see annex 1.



5. SPURIOUS AND UNWANTED EMISSIONS

5.1. Test Equipment

Same as 2.5

5.2. Test Configuration

Any emissions above the limit from the initial peak scan (RB=VB=1MHz, peak detector) are measured by tuning to that signal, setting RB=VB=1MHz, span=0Hz and using a sample detector. The average power over a transmission burst is calculated if the highest signal level still exceeds the limit. If the system uses burst transmissions during testing the threshold for requiring individual measurements becomes limit -3dB relative to the limit.

For Test from 30MHz to 1000MHz, set RBW=VBW= 1MHz;

For Test from 1000MHz to 26500MHz, set RBW=VBW= 1MHz;

The device transmits in a burst mode, sweep time is calculated for each band tested as shown below.

The plots are composite plots of the individual frequency bands.

Frequency (MHz)		Bandwidth (MHz)	
Start	Stop	RB	VB
30	1000	1	1
1000	5140	1	1
5360	10000	1	1
10000	26500	1	1
5340	5360	1	1
5140	5360	1	1

The device transmits continuously so the analyzer sweep time is auto-coupled.

5.3. Test requirements

W52			
20MHz system		40MHz system	80MHz system
OBW : 18MHz or less	OBW : 18 - 20 MHz		
5,142 MHz or less : 2.5 μ W/MHz	5,142 MHz or less : 2.5 μ W/MHz	5,141.6 MHz or less : 2.5 μ W/MHz	5,123.2 MHz or less : 2.5 μ W/MHz
5,142 - 5,150 MHz : 15 μ W/MHz	5,142 - 5,150 MHz : 15 μ W/MHz	5,141.6 - 5,150 MHz : 15 μ W/MHz	5,123.2 - 5,150 MHz : 15 μ W/MHz
	5,250 - 5,260.2 MHz : $10^{1-(8/3)(f-5250)}$ mW/MHz		
5,250 - 5,251 MHz : $10^{1-(8/3)(f-5250)}$ mW/MHz	5,250.2 - 5,251 MHz : $10^{1-(8/3)(f-5250)}$ mW/MHz	5,250 - 5,251 MHz : $10^{-(f-5250)+\log(1/2)}$ mW/MHz	5,250 - 5,251 MHz : $10^{-(f-40)+\log(1/4)}$ mW/MHz
5,251 - 5,260 MHz : $10^{-1-(8/3)(f-5250)}$ mW/MHz	5,251 - 5,260 MHz : $10^{-1-(8/3)(f-5250)}$ mW/MHz	5,251 - 5,270 MHz : $10^{-(8/3)(f-5250)-1+\log(1/2)}$ mW/MHz	5,251 - 5,260 MHz : $10^{-(8/3)(f-40)-1+\log(1/4)}$ mW/MHz
5,260 - 5,266.7 MHz : $10^{-1.8-(6/5)(f-5260)}$ mW/MHz	5,260 - 5,266.7 MHz : $10^{-1.8-(6/5)(f-5260)}$ mW/MHz	5,270 - 5,278.4 MHz : $10^{-(3/5)(f-5270)-1.8+\log(1/2)}$ mW/MHz	5,260 - 5,266.7 MHz : $10^{-(3/5)(f-40)-1.8+\log(1/4)}$ mW/MHz
5,266.7 MHz or more : 2.5 μ W/MHz	5,266.7 MHz or more : 2.5 μ W/MHz	5,278.4 MHz or more : 2.5 μ W/MHz	5,266.7 MHz or more : 2.5 μ W/MHz
f = MHz, Difference from 5240 (MHz)	f = MHz, Difference from 5240 (MHz)	f = MHz, Difference from 5230 (MHz)	f = MHz, Difference from 5210 (MHz)

5.4. Test Results

Temperature:	25.6 °C	Relative Humidity:	55.8%	Pressure:	1010mbar
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Pass, the table and plot please see annex 1.



6. ANTENNA POWER TEST

6.1. Test Equipment

Same as 2.5

6.2. Test Configuration

Measure the output power

Instrument Settings: RB=VB=1MHz, continuous sweep, trace clear-write

The output power is the power measured by the average power meter connected to the IF output of the analyzer, corrected for the IF path loss, the value of the external attenuator (if used) and the duty cycle of the transmission sequence if the product is not transmitting continuously.

The limits are as follows:

1) RF Output Power:

Conditions	Power Limits
5.2 for OBW for 20MHz	< 10mW/MHz
5.2 for OBW for 40MHz	< 5mW/MHz
5.2 for OBW for 80MHz	< 2.5mW/MHz

2) EIRP Power:

Conditions	Power Limits
5.2 for OBW for 20MHz	< 10mW/MHz
5.2 for OBW for 40MHz	< 5mW/MHz
5.2 for OBW for 80MHz	< 2.5mW/MHz

3) Tolerance:

-80% ~ +20% for 5.2GHz

6.3. Test Results

Temperature:	25.6 °C	Relative Humidity:	55.8%	Pressure:	1010mbar
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Pass, the table and plot please see annex 1.



7. ADJACENT CHANNEL LEAKAGE POWER

7.1. Test Equipment

Same as 2.5

7.2. Test Configuration

The power in a ± 9 MHz band centered on the operating frequency is measured and used as a reference value. The powers in the ± 9 MHz band on the adjacent channels (± 20 MHz from the operating channel) and alternate channels (± 40 MHz from the operating channel) are also measured. The Channel Leakage ratio (CLR) shall be at least 25 dB for the adjacent channels and at least 40 dB for the alternate channels.

The limits are as follows:

OBW ≤ 18 MHz: $F_c \pm 20$ MHz, ± 9 MHz, -25 dBc

OBW ≤ 18 MHz: $F_c \pm 40$ MHz, ± 9 MHz, -40 dBc

$18 \text{ MHz} \leq \text{OBW} \leq 20 \text{ MHz}$: $F_c \pm 20$ MHz, ± 10 MHz, -25 dBc

$18 \text{ MHz} \leq \text{OBW} \leq 20 \text{ MHz}$: $F_c \pm 40$ MHz, ± 10 MHz, -40 dBc

OBW for 40 MHz: $F_c \pm 40$ MHz, ± 20 MHz, -25 dBc

OBW for 40 MHz: $F_c \pm 80$ MHz, ± 20 MHz, -40 dBc

OBW for 80 MHz: $F_c \pm 80$ MHz, ± 40 MHz, -25 dBc

7.3. Test Results

Temperature:	25.6 °C	Relative Humidity:	55.8%	Pressure:	1010 mbar
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Pass, the table and plot please see annex 1.



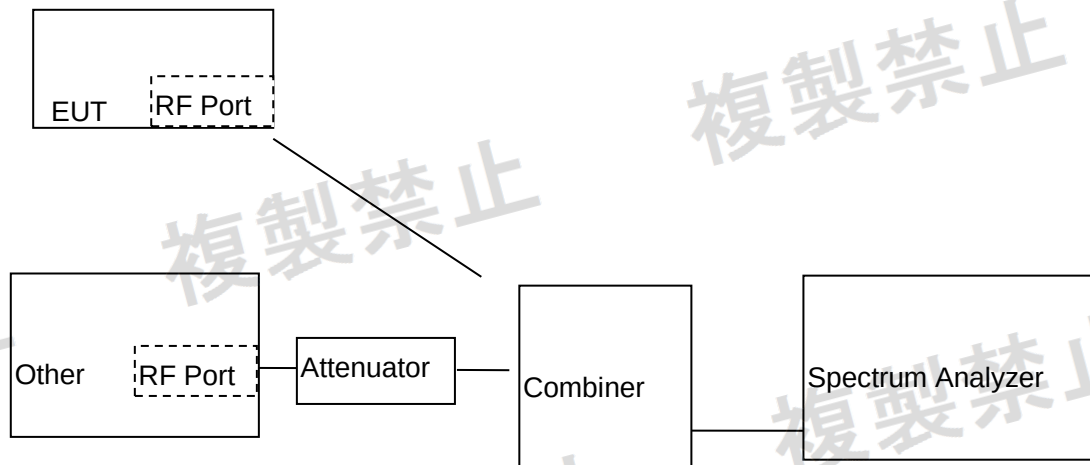
8. BURST TRANSMISSION DURATION

8.1. Test Equipment

Same as 2.5

8.2. Test Configuration

The device was configured to transmit maximum length packets at the fastest and slowest data rate



Conditions	Limits
5180-5240MHz	< 8ms

8.3. Test Results

Temperature:	25.6 °C	Relative Humidity:	55.8%	Pressure:	1010mbar
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Pass, the table and plot please see annex 1.



9. SECONDARY RADIATED EMISSIONS

9.1. Test Equipment

Same as 2.5

9.2. Test Configuration

Same as 3.6

Preliminary Measurements:

Instrument Settings: RB and VB as detailed below, positive peak detector and maximum hold for a minimum of 10 sweeps, but until the spectrum displayed becomes stable and no new signals are observed.

Sweep Settings

Frequency (MHz)		Bandwidth (MHz)		Sweep Time
Start	Stop	RB	VB	
30	1000	0.1	0.1	AUTO ms
1000	26500	1.0	1.0	AUTO ms

9.3. Test Results

Temperature:	25.6 °C	Relative Humidity:	55.8%	Pressure:	1010mbar
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Pass, the table and plot please see annex 1.

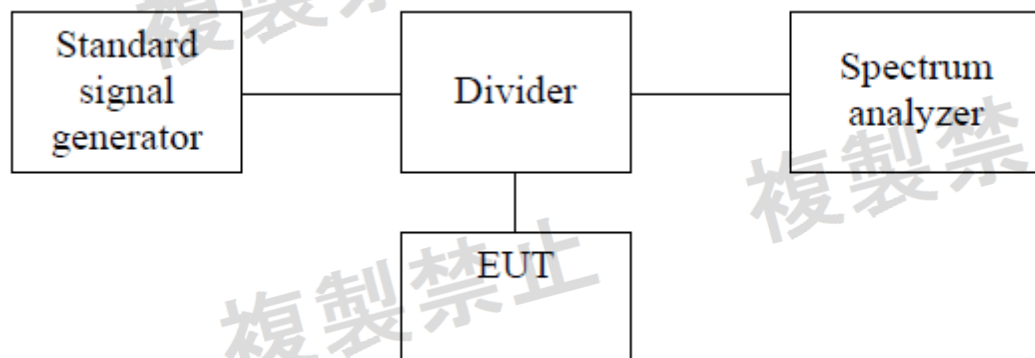


10. CARRIER SENSE

10.1. Test Equipment

Same as 2.5

10.2. Test Setup



10.3. Test Configuration

1. Set the standard signal generator as follows.

Carrier frequency Center frequency of received frequency band

Modulation Non-modulation

Output level declared level of applicant at the antenna input part of the EUT.

2. Set the spectrum analyzer as follows.

Frequency: Center frequency of received frequency band

Span 50MHz

RBW 1MHz

VBW 1MHz

Triggered Free run

Detector mode Positive peak



10.4. Test Measurement procedure

1. Confirm that EUT can transmit.
2. Set EUT into Rx Mode.
3. Signal Generator ON
4. Confirm that EUT don't transmit.
5. Start transmission after performing a carrier sense. However, when transmission and reception are controlled from other radio equipment, and when the radioequipment which performed transmission resumes transmission within 4 millisecond after a career sense, it can omit performing a career sense.

10.5. Test Data

Temperature:	25.6 °C	Relative Humidity:	55.8%	Pressure:	1010mbar
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Mode	Frequency (MHz)	Test Result
802.11a	5180	Pass
	5200	Pass
	5240	Pass
802.11n20	5180	Pass
	5200	Pass
	5240	Pass
802.11ac20	5180	Pass
	5200	Pass
	5240	Pass
802.11n40	5190	Pass
	5230	Pass
802.11ac40	5190	Pass
	5230	Pass
802.11ac80	5210	Pass

Note: After a carrier signal $22.79 + Gr - 20 \cdot \log(f) \text{ (dBm)}$ was injected into EUT, it stopped transmission.

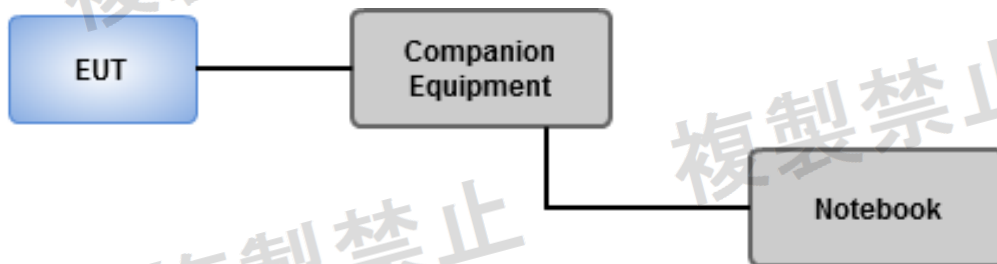


11. INTERFERENCE PREVENTION FUNCTION

11.1. Test Limit

Test Limit	The identification code shall be 48 bits long
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11.2. Test Setup



11.3. 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

11.4. Test Data

Temperature:	25.6 °C	Relative Humidity:	55.8%	Pressure:	1010mbar
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Test Mode	ID Code	Test Results
WIFI 5.2G(W52)	1a:9c:04:3f:00:47	Pass

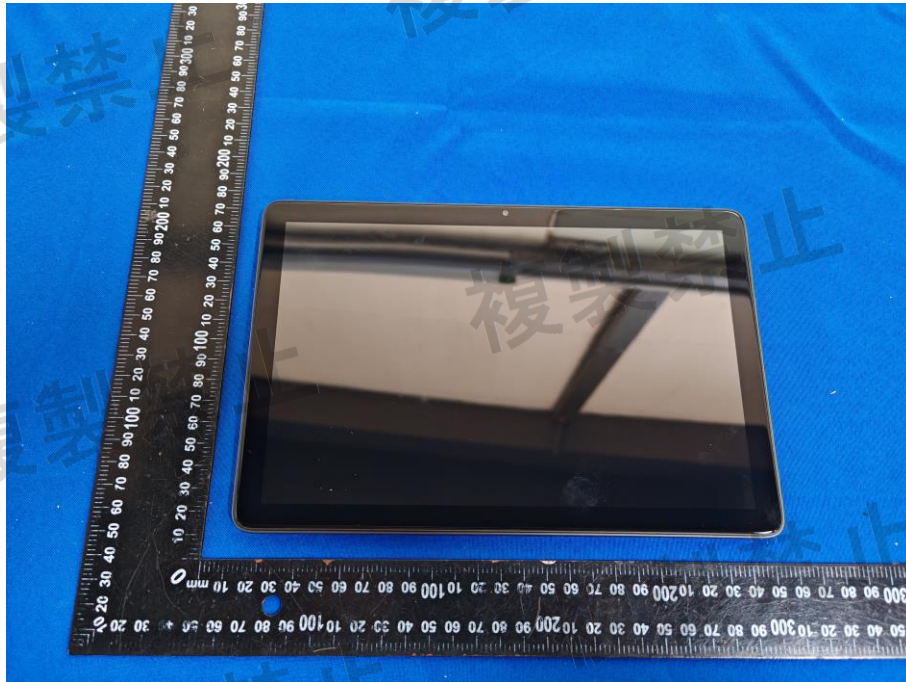
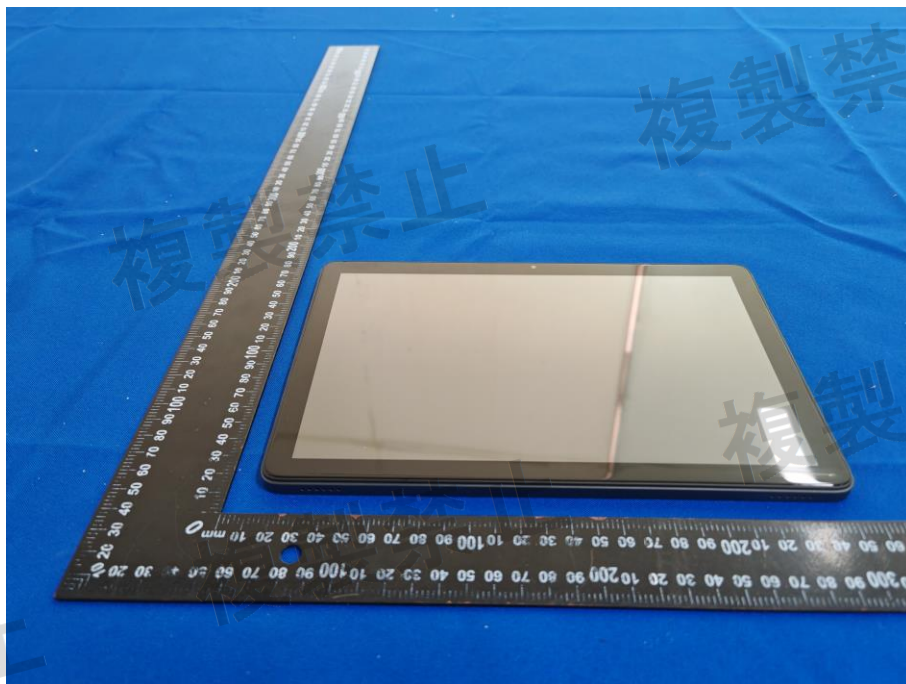


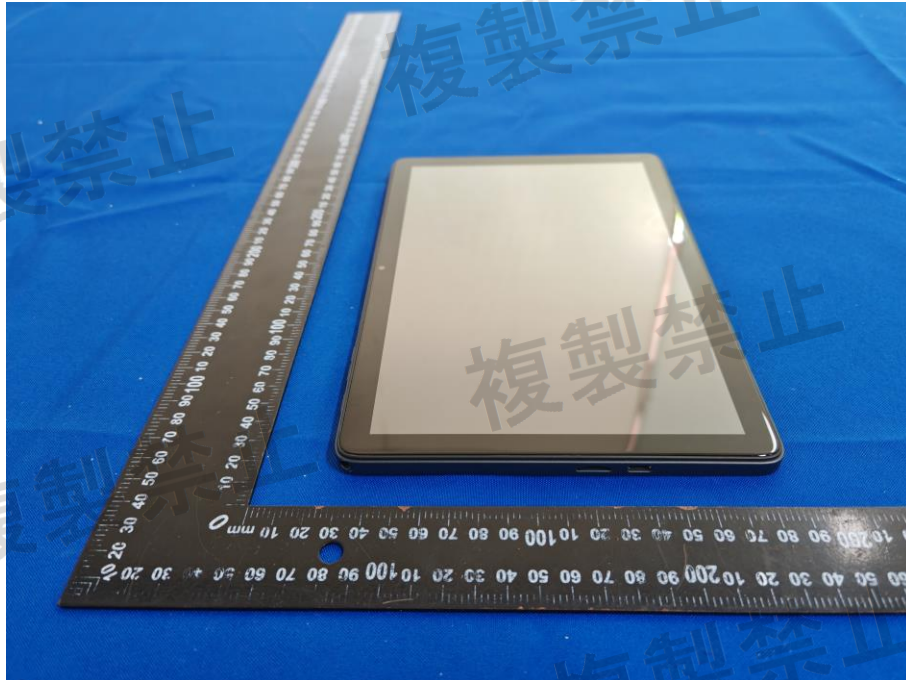
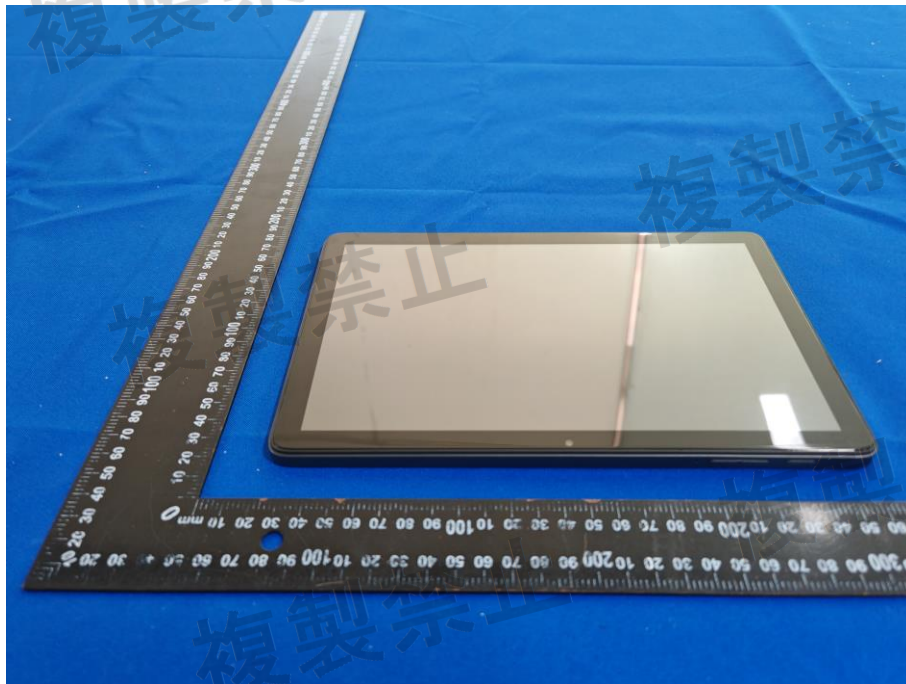
12. TEST SETUP PHOTOGRAPH

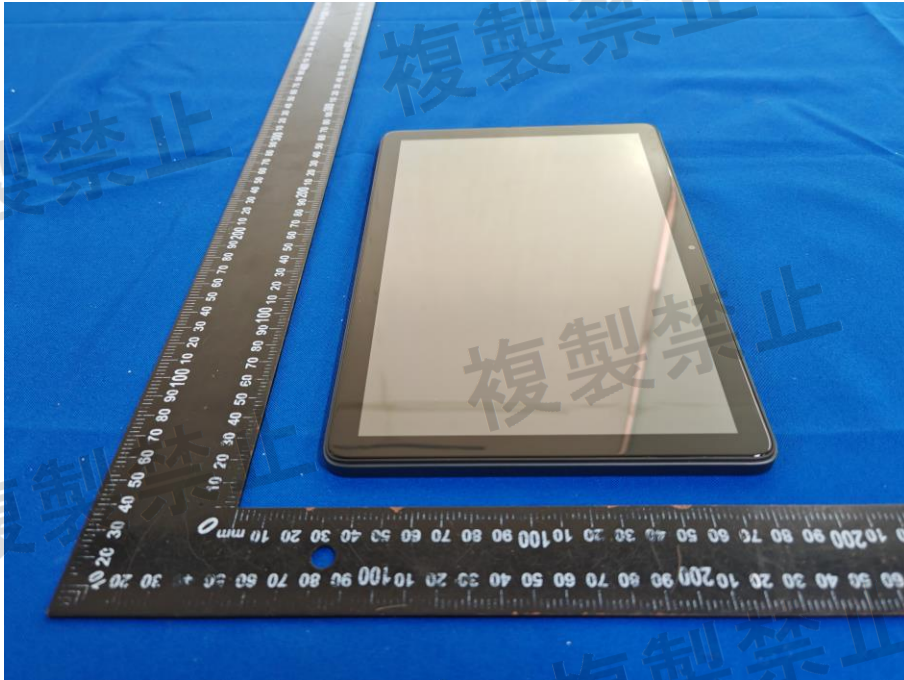
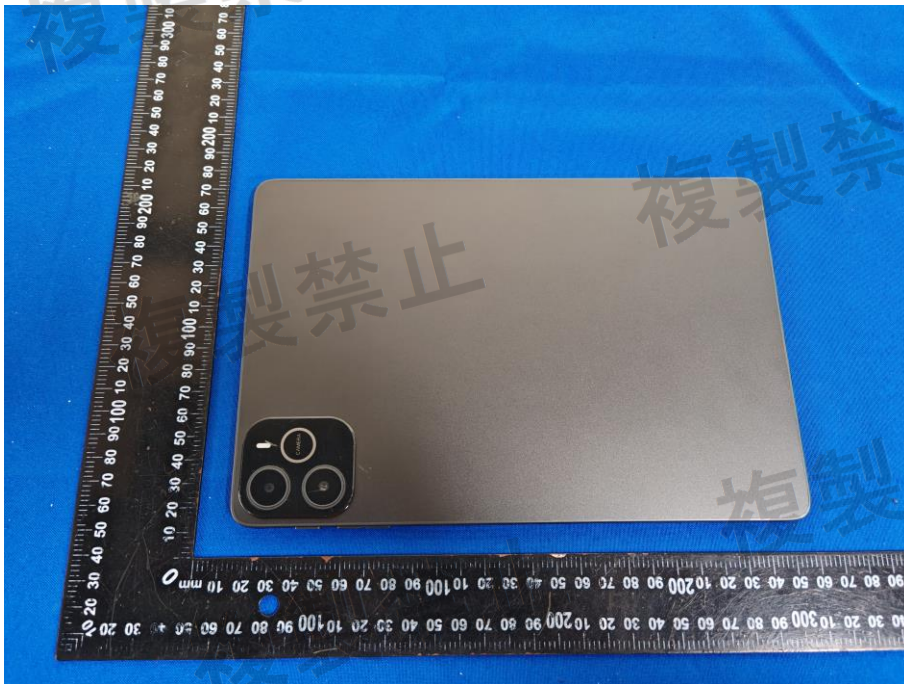


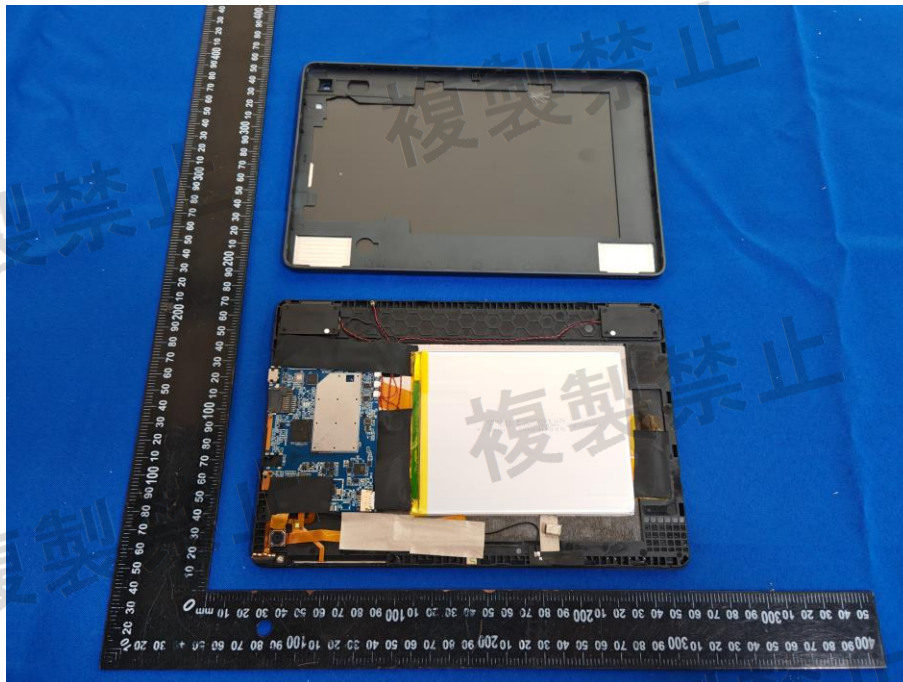
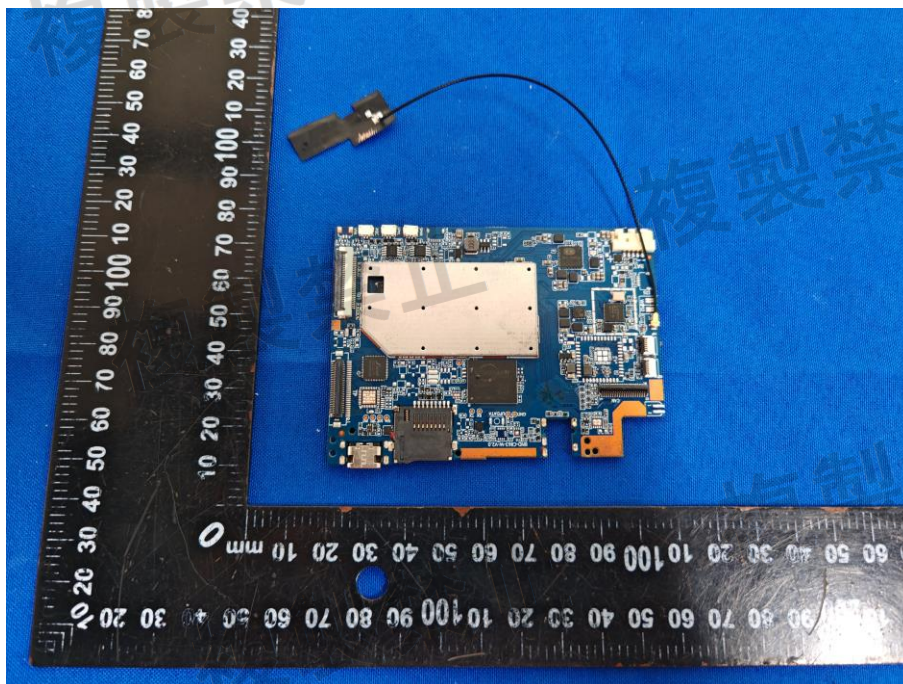


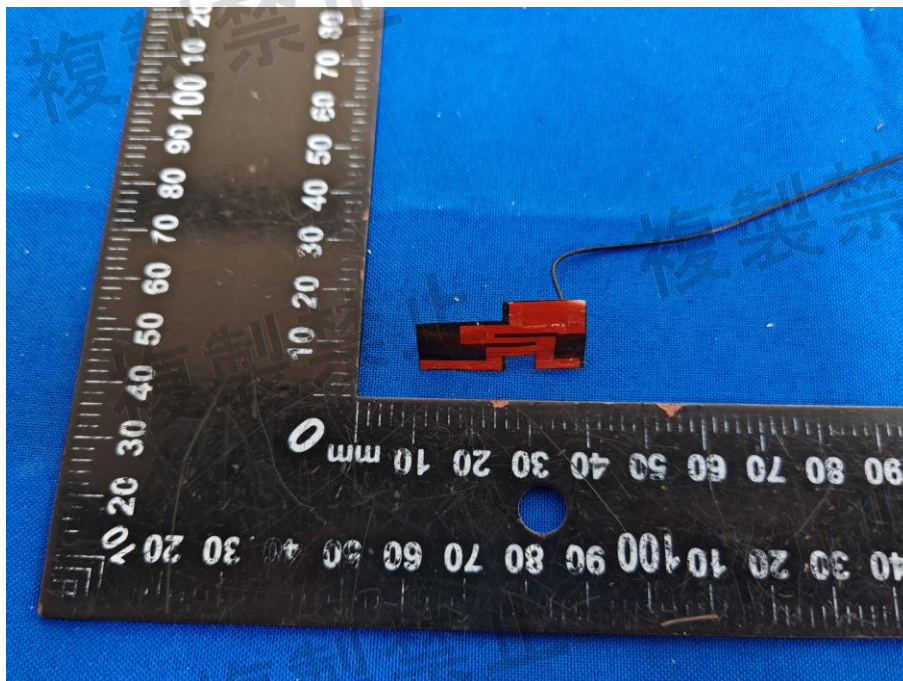
13.EUT PHOTOGRAPH

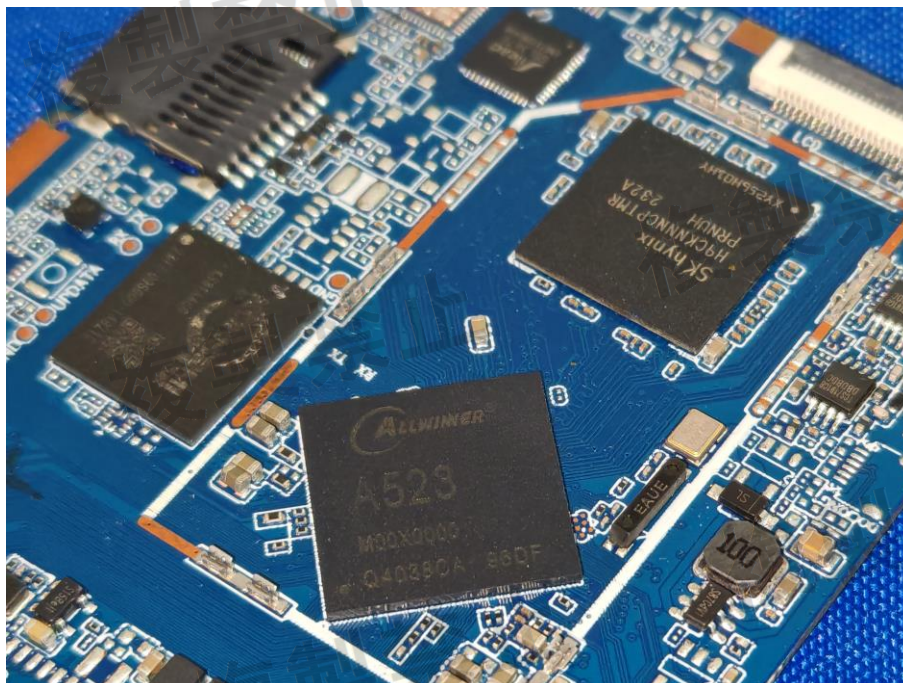


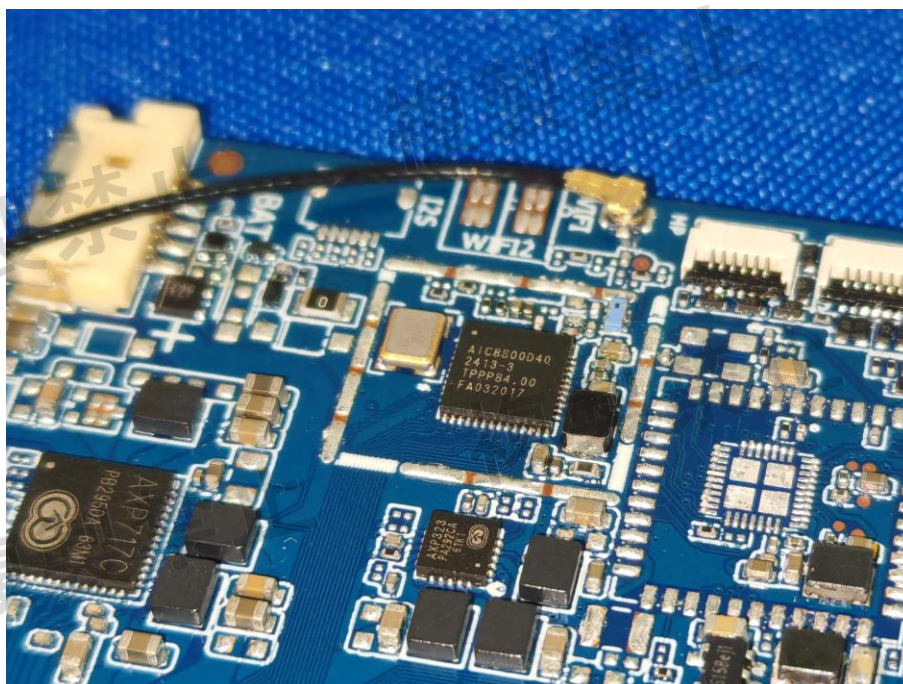
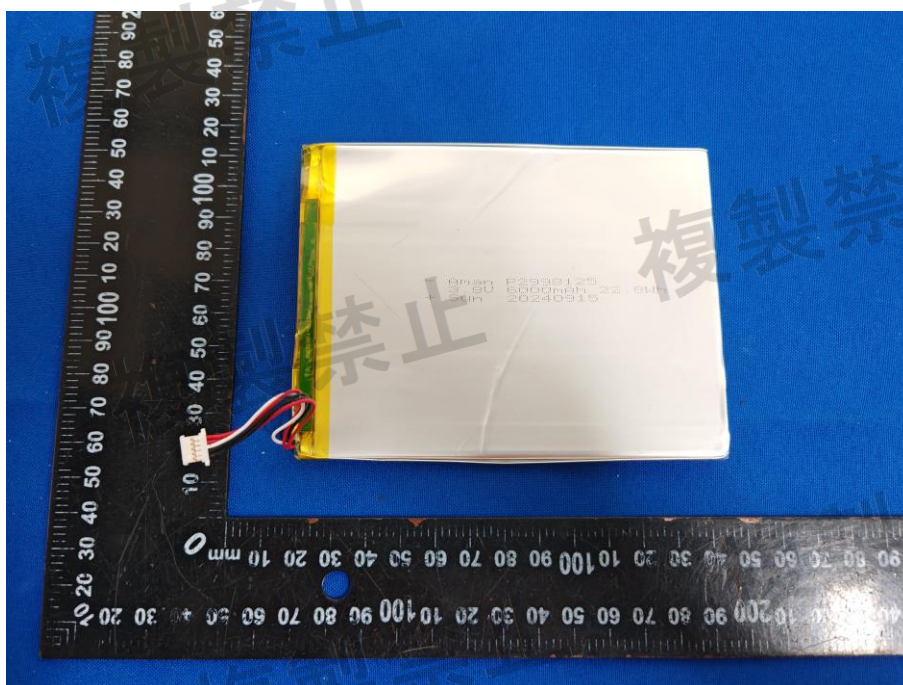


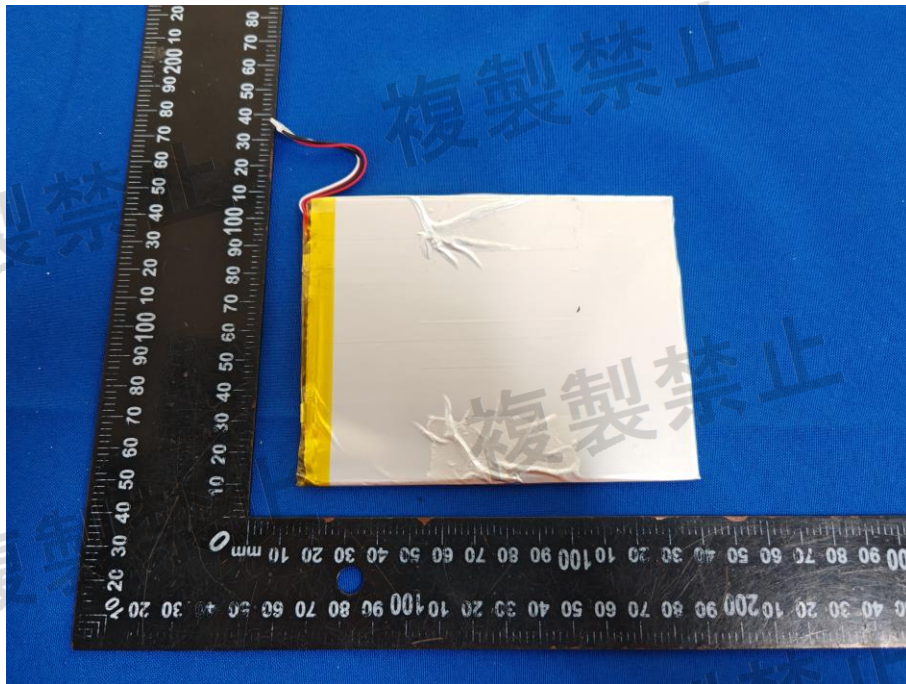












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