

# FCC RF Test Report

## (LTE)

**Applicant:** TECNO MOBILE LIMITED

**Address of Applicant:** FLAT 39 8/F BLOCK D WAH LOK INDUSTRIAL CENTRE 31-35 SHAN MEI STREET FOTAN NT

**Equipment Under Test (EUT)**

Product Name: Mobile Phone

Model No.: KG5j

Trade Mark: TECNO

**FCC ID:** 2ADYY-KG5J

**Applicable Standards:** FCC CFR Title 47 Part 2, Part 27H

**Date of Sample Receipt:** 09 Aug., 2022

**Date of Test:** 10 Aug., to 11 Aug., 2022

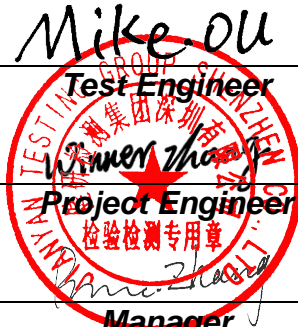
**Date of Report Issued:** 11 Aug., 2022

**Test Result:** PASS

**Tested by:** Mike Ou **Date:** 11 Aug., 2022  
Test Engineer

**Reviewed by:** Wenxin Zhang **Date:** 11 Aug., 2022  
Project Engineer

**Approved by:** Wenxin Zhang **Date:** 11 Aug., 2022  
Manager



This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in above the application standard version. Test results reported herein relate only to the item(s) tested.

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## 1 Version

Version No.	Date	Description
00	11 Aug., 2022	Original

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### 3 General Information

#### 3.1 Client Information

Applicant:	TECNO MOBILE LIMITED
Address:	FLAT 39 8/F BLOCK D WAH LOK INDUSTRIAL CENTRE 31-35 SHAN MEI STREET FOTAN NT
Manufacturer:	TECNO MOBILE LIMITED
Address:	FLAT 39 8/F BLOCK D WAH LOK INDUSTRIAL CENTRE 31-35 SHAN MEI STREET FOTAN NT
Factory:	SHENZHEN TECNO TECHNOLOGY CO., LTD.
Address:	101, Building 24, Waijing Industrial Park, Fumin Community, Fucheng Street, Longhua District, Shenzhen City, P.R.China

#### 3.2 General Description of E.U.T.

Product Name:	Mobile Phone
Model No.:	KG5j
Operation Frequency Range:	LTE Band 2: TX: 1850MHz-1910MHz RX: 1930MHz-1990MHz LTE Band 4: TX: 1710MHz-1755MHz RX: 2110MHz-2155MHz LTE Band 5: TX: 824MHz-849MHz RX: 869MHz-894MHz LTE Band 7: TX: 2500MHz-2570MHz RX: 2110MHz-2200MHz LTE band 17: TX: 704 MHz - 716 MHz RX: 734 MHz - 746 MHz LTE Band 38: TX: 2570MHz-2620MHz RX: 2570MHz-2620MHz LTE Band 41: TX: 2535MHz-2655MHz RX: 2535MHz-2655MHz LTE Band 66: TX: 1710MHz-1780MHz RX: 2110 MHz - 2200 MHz
Modulation Type:	<input checked="" type="checkbox"/> QPSK <input checked="" type="checkbox"/> 16QAM <input checked="" type="checkbox"/> 64QAM (Only supports downlink)
Antenna Type:	Internal Antenna
Antenna Gain:	LTE band 17: -3.0dBi (declare by Applicant)
Power Supply:	Rechargeable Li-ion Polymer Battery DC3.85V, 4900mAh
AC Adapter:	Model: U100TSA Input: AC100-240V, 50/60Hz, 0.3A Output: DC 5.0V, 2A
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

### 3.3 Test Mode and Environment

<b>Test Mode:</b>	
QPSK mode:	Keep the EUT communication with simulated station in QPSK mode
16QAM mode:	Keep the EUT communication with simulated station in 16QAM mode
<i>Remark: The EUT has been tested under continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing. The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for these modes. Just the worst case position (H mode) shown in report.</i>	
<b>Operating Environment:</b>	
Temperature:	Normal: 15°C ~ 35°C, Extreme: -30°C ~ +50°C
Humidity:	20 % ~ 75 % RH
Atmospheric Pressure:	1008 mbar
Voltage:	Nominal: 3.85 Vdc, Extreme: Low 3.50 Vdc, High 4.23 Vdc

### 3.4 Description of Test Auxiliary Equipment

Test Equipment	Manufacturer	Model No.	Serial No.
Simulated Station	Anritsu	MT8820C	6201026545

### 3.5 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%(U = 2Uc(y)))
Radiated Emission (30MHz ~ 1GHz) (3m SAC)	±4.45 dB
Radiated Emission (1GHz ~ 18GHz) (3m SAC)	±5.34 dB
Radiated Emission (18GHz ~ 40GHz) (3m SAC)	±5.34 dB
<i>Note: All the measurement uncertainty value were shown with a coverage k=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.</i>	

### 3.6 Additions to, Deviations, or Exclusions from the Method

No
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### 3.7 Laboratory Facility

<p>The test facility is recognized, certified, or accredited by the following organizations:</p> <ul style="list-style-type: none"> <li>● <b>FCC - Designation No.: CN1211</b> 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.</li> <li>● <b>ISED – CAB identifier.: CN0021</b> 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.</li> <li>● <b>CNAS - Registration No.: CNAS L15527</b> 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.</li> <li>● <b>A2LA - Registration No.: 4346.01</b> 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: <a href="https://portal.a2la.org/scopepdf/4346-01.pdf">https://portal.a2la.org/scopepdf/4346-01.pdf</a></li> </ul>
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### 3.8 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>

### 3.9 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	04-14-2021	04-13-2024
Loop Antenna	Schwarzbeck	FMZB 1519 B	WXJ002-4	03-07-2022	03-06-2023
BiConiLog Antenna	Schwarzbeck	VULB9163	WXJ002	03-08-2022	03-07-2023
Biconical Antenna	Schwarzbeck	VUBA9117	WXJ002-1	07-02-2021	07-01-2024
Horn Antenna	Schwarzbeck	BBHA9120D	WXJ002-2	03-08-2022	03-07-2023
Horn Antenna	Schwarzbeck	BBHA9120D	WXJ002-3	04-07-2022	04-06-2023
Horn Antenna	Schwarzbeck	BBHA9170	WXJ002-5	04-07-2022	04-06-2023
Horn Antenna	Schwarzbeck	BBHA9170	WXJ002-6	04-07-2022	04-06-2023
Pre-amplifier (30MHz ~ 1GHz)	Schwarzbeck	BBV9743B	WXJ001-2	01-20-2022	01-19-2023
Pre-amplifier (1GHz ~ 18GHz)	SKET	LNPA_0118G-50	WXJ001-3	01-20-2022	01-19-2023
Pre-amplifier (18GHz ~ 40GHz)	RF System	TRLA-180400G45B	WXJ002-7	03-30-2022	03-29-2023
EMI Test Receiver	Rohde & Schwarz	ESRP7	WXJ003-1	03-05-2022	03-04-2023
Spectrum Analyzer	Rohde & Schwarz	FSP 30	WXJ004	01-20-2022	01-19-2023
Spectrum Analyzer	KEYSIGHT	N9010B	WXJ004-2	10-27-2021	10-26-2022
Coaxial Cable (30MHz ~ 1GHz)	JYTSZ	JYT3M-1G-NN-8M	WXG001-4	01-20-2022	01-19-2023
Coaxial Cable (1GHz ~ 18GHz)	JYTSZ	JYT3M-18G-NN-8M	WXG001-5	01-20-2022	01-19-2023
Coaxial Cable (18GHz ~ 40GHz)	JYTSZ	JYT3M-40G-SS-8M	WXG001-7	01-20-2022	01-19-2023
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.	Manage No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
Spectrum Analyzer	Keysight	N9020B	WXJ081-1	06-29-2022	06-28-2023
Simulated Station	Rohde & Schwarz	CMW500	WXJ081	06-29-2022	06-28-2023
Temperature Humidity Chamber	ZHONG ZHI	CZ-A-80D	WXJ032-3	03-19-2021	03-18-2023
DC Power Supply	Keysight	E3642A	WXJ025-2	N/A	
RF Control Unit	Tonscend	JS0806-1	WXG010	N/A	
Band Reject Filter Group	Tonscend	JS0806-F	WXG010-1	N/A	
Test Software	Tonscend	TS+	Version: 2.6.9.0526		

## 4 Measurement Setup and Procedure

### 4.1 Test Channel

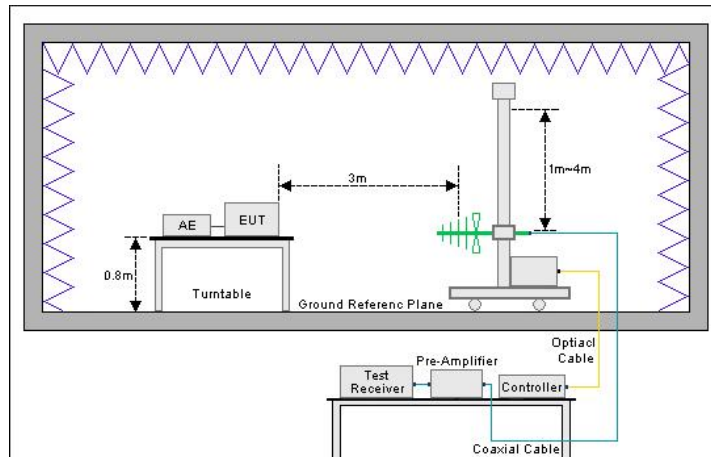
According to ANSI C63.26-2015 chapter 5.1.2.1 Table 2 requirement, select lowest channel, middle channel, and highest channel in the frequency range in which device operates for testing. The detailed frequency points are as follows:

LTE band 17					
5 MHz			10 MHz		
Lowest channel	23755	706.50	Lowest channel	23780	709.00
Middle channel	23790	710.00	Middle channel	23790	710.00
Highest channel	23825	713.50	Highest channel	23800	711.00

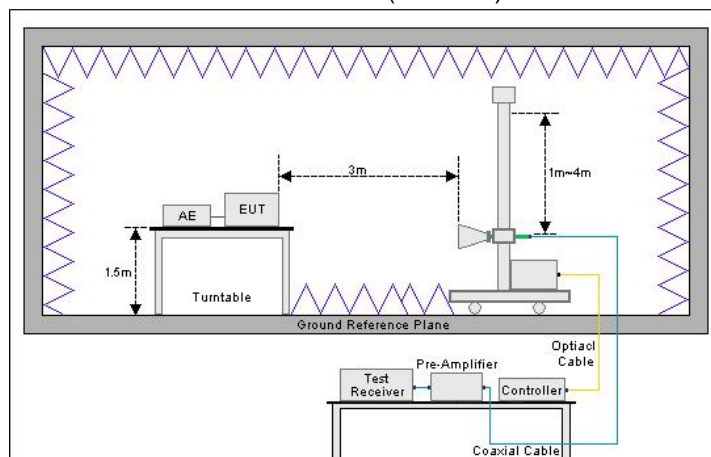
## 4.2 Test Setup

### 1) Radiated emission measurement:

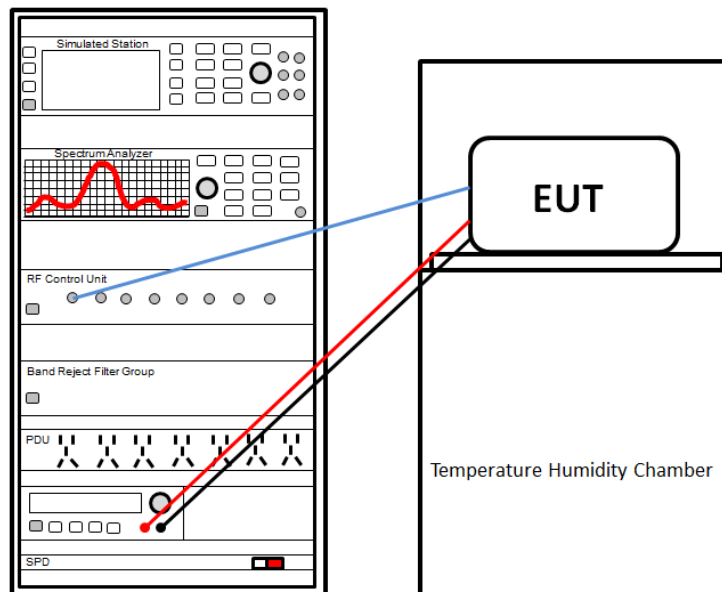
Below 1GHz (3m SAC)



Above 1GHz (3m SAC)



### 2) Conducted test method





### 4.3 Test Procedure

Test method	Test step
Radiated emission	<p><b>For below 1GHz:</b></p> <ol style="list-style-type: none"> <li>The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 3 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 3 m.</li> <li>EUT works in each mode of operation that needs to be tested , and having the EUT continuously working, respectively on 3 axis (X, Y &amp; Z) and considered typical configuration to obtain worst position. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.</li> <li>Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.</li> </ol> <p><b>For above 1GHz:</b></p> <ol style="list-style-type: none"> <li>The EUT was placed on the tabletop of a rotating table 1.5 m the ground at a 3 m fully anechoic room. The measurement distance from the EUT to the receiving antenna is 3 m.</li> <li>EUT works in each mode of operation that needs to be tested , and having the EUT continuously working, respectively on 3 axis (X, Y &amp; Z) and considered typical configuration to obtain worst position. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.</li> <li>Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.</li> </ol>
Conducted test method	<ol style="list-style-type: none"> <li>The LTE antenna port of EUT was connected to the test port of the test system through an RF cable.</li> <li>The EUT is keeping in continuous transmission mode and tested in all modulation modes.</li> <li>Open the test software, prepare a test plan, and control the system through the software. After the test is completed, the test report is exported through the test software.</li> </ol>

## 5 Test Results

### 5.1 Summary

#### 5.1.1 Clause and Data Summary

This report was amended on FCC ID: 2ADYY-KG5J follow FCC Class II Permissive Change. They were identical inside, the electrical circuit design, layout, components used and internal wiring. The only difference is that the software adds LTE Band 17, so only add LTE Band 17 test.

Test items	Standard clause	Test data	Result
RF Exposure (SAR)	Part 1.1307 Part 2.1093	See SAR Report	Pass
RF Output Power	Part 2.1046 Part 27.50 (c)(10)	Appendix – LTE	Pass
Peak-to-Average Power Ratio	report only	Appendix – LTE	report only
Modulation Characteristics	Part 2.1047	Appendix – LTE	Pass
26dB Emission Bandwidth 99% Occupied Bandwidth	Part 2.1049	Appendix – LTE	Pass
Out of Band Emission at Antenna Terminals	Part 2.1051 Part 27.53 (g)	Appendix – LTE	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 27.53 (g)	See Section 6.2	Pass
Frequency Stability vs. Temperature	Part 2.1055 (a)(1)(b) Part 27.54	Appendix – LTE	Pass
Frequency Stability vs. Voltage	Part 2.1055 (d)(2) Part 27.54	Appendix – LTE	Pass
<b>Remark:</b>			
1. Pass: The EUT complies with the essential requirements in the standard.			
2. The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB (Fundamental Frequency below 1GHz)/1.0dB (Fundamental Frequency above 1GHz) (provided by the customer).			
<b>Test Method:</b>	ANSI/TIA-603-E-2016 ANSI C63.26-2015		

**5.1.2 Test Limit**

Test items	Limit
RF Output Power	<b>LTE band 17:</b> 3W ERP
Peak-to-Average Power Ratio	N/A, report only
Modulation Characteristics	N/A, report only
26dB Emission Bandwidth 99% Occupied Bandwidth	N/A, report only
Out of Band Emission at Antenna Terminals  Field Strength of Spurious Radiation	<b>LTE band 17:</b> The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.
Frequency Stability vs. Temperature  Frequency Stability vs. Voltage	<b>LTE band 17:</b> The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.  <b>TABLE C-1—FREQUENCY TOLERANCE FOR TRANSMITTERS IN THE PUBLIC MOBILE SERVICES</b>

Frequency range (MHz)	Base, fixed (ppm)	Mobile >3 watts (ppm)	Mobile ≤3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929	5.0	n/a	n/a
929 to 960	1.5	n/a	n/a
2110 to 2220	10.0	n/a	n/a

## 5.2 Field Strength of Spurious Radiation Measurement

LTE band 17 – 5 MHz bandwidth						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1413.00	-49.03	-8.60	-57.63	-13.00	44.63	Vertical
2119.50	-49.18	-7.65	-56.83	-13.00	43.83	Vertical
2826.00	-50.21	-3.91	-54.12	-13.00	41.12	Vertical
1413.00	-49.41	-8.60	-58.01	-13.00	45.01	Horizontal
2119.50	-46.96	-7.65	-54.61	-13.00	41.61	Horizontal
2826.00	-50.03	-3.91	-53.94	-13.00	40.94	Horizontal
Middle channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1420.00	-49.19	-8.60	-57.79	-13.00	44.79	Vertical
2130.00	-48.74	-7.54	-56.28	-13.00	43.28	Vertical
2840.00	-49.82	-3.85	-53.67	-13.00	40.67	Vertical
1420.00	-49.41	-8.60	-58.01	-13.00	45.01	Horizontal
2130.00	-47.18	-7.54	-54.72	-13.00	41.72	Horizontal
2840.00	-50.17	-3.85	-54.02	-13.00	41.02	Horizontal
Highest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1427.00	-48.76	-8.77	-57.53	-13.00	44.53	Vertical
2140.50	-48.71	-7.54	-56.25	-13.00	43.25	Vertical
2854.00	-49.82	-3.85	-53.67	-13.00	40.67	Vertical
1427.00	-49.02	-8.77	-57.79	-13.00	44.79	Horizontal
2140.50	-46.80	-7.54	-54.34	-13.00	41.34	Horizontal
2854.00	-50.13	-3.85	-53.98	-13.00	40.98	Horizontal
<b>Remark:</b>						
1. The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.						

LTE band 17 – 10 MHz bandwidth						
Lowest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1418.00	-48.83	-8.60	-57.43	-13.00	44.43	Vertical
2127.00	-49.56	-7.65	-57.21	-13.00	44.21	Vertical
2836.00	-50.08	-3.85	-53.93	-13.00	40.93	Vertical
1418.00	-49.84	-8.60	-58.44	-13.00	45.44	Horizontal
2127.00	-46.75	-7.65	-54.40	-13.00	41.40	Horizontal
2836.00	-50.49	-3.85	-54.34	-13.00	41.34	Horizontal
Middle channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1420.00	-49.55	-8.60	-58.15	-13.00	45.15	Vertical
2130.00	-49.01	-7.54	-56.55	-13.00	43.55	Vertical
2840.00	-50.32	-3.85	-54.17	-13.00	41.17	Vertical
1420.00	-49.15	-8.60	-57.75	-13.00	44.75	Horizontal
2130.00	-46.96	-7.54	-54.50	-13.00	41.50	Horizontal
2840.00	-49.98	-3.85	-53.83	-13.00	40.83	Horizontal
Highest channel						
Frequency (MHz)	Reading Level (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Polarization
1422.00	-48.78	-8.60	-57.38	-13.00	44.38	Vertical
2133.00	-48.54	-7.54	-56.08	-13.00	43.08	Vertical
2844.00	-49.61	-3.85	-53.46	-13.00	40.46	Vertical
1422.00	-48.68	-8.60	-57.28	-13.00	44.28	Horizontal
2133.00	-46.90	-7.54	-54.44	-13.00	41.44	Horizontal
2844.00	-49.87	-3.85	-53.72	-13.00	40.72	Horizontal
<b>Remark:</b>						
1. The emission levels of below 1 GHz are lower than the limit 10dB, so not show in test report.						

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