



**TechBook Sciencetech 2139 Understanding 4G VoLTE Smart Phone** is a unique, self contained, easy to operate, training and platform that demonstrates the complete study and working of a 4G Dual SIM VoLTE handset to understand the fundamentals of Smart phone.

Sciencetech 2139 is an ideal product for today's global technical professional. One of the main features of this TechBook is its real time operation and observation of signals/voltages. This TechBook introduces the user to the fundamental of 4G Dual SIM VoLTE mobile equipment and clears the concept underlying VoLTE technology in simple way. The touch screen display, SIM sockets and user interface section of Smart Phone i.e. Vibrator, Buzzer, Microphone, Speaker, Hands free port and camera have been exposed onboard with switched faults creation facility and test points for signal study. Another attractive feature is that user can make android application and IoT related application. Its enriched product tutorial containing useful technical information will help user in creating a full understanding of 4G Dual SIM VoLTE Smart Phone.

## Features

- Real time study and operation of Smart Phone
- Supports to 4G VoLTE (Cat 4), 3G (UMTS/HSPA+), 2G (GSM/EDGE) Networks
- 6.5" Touch screen full HD display
- Full understanding of 4G Dual SIM VoLTE Smart Phone working principle and signals
- Complete block diagram of a 4G Dual SIM VoLTE Smart Phone on-board
- Easy identification of different parts and components of the system at a glance
- Easy measurement of voltages and observation of waveforms on test points
- Soldering free fault creation and troubleshooting
- A testing Tool for Android based application and IoT related application.

## Scope of Learning

### Study of:

- Tx IQ/ Rx IQ signals and their constellation
- Power Management Unit
- Battery and Battery charging phenomena
- User Interface section: Buzzer, Vibrator, MIC/Speaker, Hands free
- Dual SIM interface section, SIM card detection
- Touch Screen display section
- Switch faults in all section of Smart Phone

## Technical Specifications

<b>Cellular system</b>	:	GSM - Band (2 / 3 / 5 / 8); WCDMA - Band (1 / 2 / 5 / 8); 4G VoLTE (TDD) - Band (38 / 40 / 41), LTE (FDD) - Band (1 / 3 / 5 / 7 / 8 / 20)
<b>Tx/Rx Frequency band</b>	:	GSM / HSPA / LTE (850, 900, 1800, 1900 MHZ) UMTS/HSPA+ (850, 900, 1900, 2100 MHZ) 4G VoLTE (B1, 3, 5, 7, 8, 19, 20, 28, 38, 40)
<b>Output power</b>	:	+5... +33dBm/3.2mW... 2 W
<b>OS &amp; Processor Features</b>		
OS	:	Android 12, One UI Core 4.1
Chipset	:	Mediatek MT6765 Helio P35 (12nm)
CPU	:	Octa-core (4x2.3 GHz Cortex-A53 & 4x1.8 GHz Cortex-A53)
GPU	:	PowerVR GE8320
<b>Display Features</b>		
Display	:	PLS LCD
Size	:	6.5 inches, 102.0 cm <sup>2</sup> (~81.8% screen-to-body ratio)
Resolution	:	720 x 1600 pixels, 20:9 ratio (~270 ppi density)
<b>Memory &amp; Storage Features</b>		
Internal storage	:	64 GB
RAM	:	3 GB
<b>Connectivity Features</b>		
Supported networks	:	4G VoLTE UMTS/HSPA+ GSM/EDGE
WLAN	:	Wi-Fi 802.11 b/g/n, Wi-Fi Direct
Bluetooth	:	5.0, A2DP, LE
Positioning	:	GPS, GLONASS, GALILEO, BDS
Radio	:	Unspecified
Wi-Fi hotspot	:	Yes
Audio jack	:	3.5 mm
Location services	:	GPS, A-GPS & GLONASS
Map support	:	Google Maps
GPS support	:	Yes

### Camera Features

Dual	:	13 MP, f/2.2, (wide), AF 2 MP, f/2.4, (depth)
Features	:	LED flash
Video	:	1080p@30fps
Selfie Camera	:	Single 5 MP, f/2.2
Sound	:	Loudspeaker Yes
Video	:	Yes

### General Information

Sensors	:	Accelerometer, Proximity.
SIM Support	:	Smart Dual SIM, Dual stand by
SIM Card type	:	Micro SIM
Battery type	:	Li-Polymer 5000mAH
Sound	:	Speaker and Earphone Jack (3.5mm)
On board sections	:	Battery Assembly, Power Management Unit, Charging Circuit, Touch Display, Dual SIM Interface, User Interface
User interface	:	Buzzer, Vibrator, Mic, Speaker, Hands free port and display LEDs
Test points	:	More than 40 nos.
Switched fault	:	25 nos.
Power Supply	:	100 - 260V AC, 50/60 Hz
Dimension (mm)	:	W 326 x D 252 113 x H52
Weight	:	2.5 Kg (approximately)
Operating condition	:	0-40°C, 85% RH



### Included Accessories

TechBook Power Supply	:	1 no.
Patch cord 16"	:	2 nos.
Hands free kit	:	1 no.
Mains cord	:	1 no.
Mobile Charger & USB cable	:	1 no.
SIM Adaptor	:	1 no.
Mobile Battery	:	1 no.

