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**COTS-5G Multi-Mobile Logger & Test Automation Platform with AI features**

Field	Details
Description	COTS is a multi-mobile log capture, analysis, and automation system designed for 5G testing. It provides full control over mobile devices without USB cables and supports live log streaming, test automation, and RF performance tracking and that too without connecting a cable to any mobile device
Key Features	Multi-mobile log capture, test automation, drive test, RF performance monitoring, Wireshark log streaming for Core network and gNodeB, wireless device control
Log Analysis	Protocol layers supported: L1, RLC, MAC, PDCP, RRC, NAS; filtering by event/log types with AI features
Automation	Robot Framework-based scripts (e.g., mobile_load_test.robot) with execution and result viewing
Performance Metrics	Real-time RF stats (RSRP, RSRQ, SNR), DL/UL throughput
Mobility Control	Wireless IP-based device management; no USB required

# COTS

Identities

Phone: IMEI: IMEI: IP address: GPS:

Cell Information

PCI:400  
 TAC:173  
 MCC:405  
 NCI:4119008322

ARFCN: 634080  
 Band: 73  
 MNC: 361  
 Alpha:Long:Jo True80

RF Info

RSRP: -91
RSRQ: -11
SNR: 7

Performance

App: DL 120ps, UL 120ps

LOG Control

Wireshark Stream
  Host IP: 192.168.1.5
  PCAP
  DLF

Log Types

 L1
  RLC
  MAC
  PDCP
  RRC
  NAS

Event Types

 L1
  RLC
  MAC
  PDCP
  RRC
  NAS

Automation (Robot Script)

Select Script:

mobile\_e\_load\_testrobot

Download Logs

S.No	Core Name	IP	Status	Wireshark (Live)
1	core 1	192.168.7.151	Offline	<a href="#">Start</a> <a href="#">Stop</a>

Base Stations				
Start opens <a href="#">desktop Wireshark</a> and streams the live PCAP from <a href="#">tcpdump_api_url</a> .				
S.No	Base Station	IP	Status	Wireshark (Live)
1	base_station_1	192.168.7.92	Offline	<a href="#">Start</a> <a href="#">Raw</a>

Mobiles														Open AI Wireshark (Live)			
S.No	IMSI	Status	IP	RF (dBm/dB)			Throughput (Kbps)		BLER (%)		MCS		Mobile App	Wireshark (Live)	Last Av... Logs (D...)	Last Av... Metrics ...	
				RSRP	RSRQ	SNR	DL	UL	DL	UL	DL	UL					
1	0010112...	Connected	192.168....	-119 dBm	-12 dB	2.0 dB	0	0	-	-	-	-	<a href="#">Open</a>	<a href="#">Open</a>	AI	<a href="#">Get</a>	<a href="#">Get</a>
2	0010112...	-	192.168....	-	-	-	-	-	-	-	-	-	<a href="#">Open</a>	<a href="#">Open</a>	AI	<a href="#">Get</a>	<a href="#">Get</a>
													<a href="#">Open</a>	<a href="#">Open</a>	AI	<a href="#">Get</a>	<a href="#">Get</a>

## COTS – 5G Multi-Mobile Logger & Test Automation Platform (Android mobile app based setup)

CCOTS (Celebration Of Technology in Schools) is MakeMyTechnology's integrated Android mobile app-based setup, paired with a Web Dashboard (PC/Server), that lets you run tests, capture logs, and visualize KPIs directly from real commercial 5G smartphones. Built for 5G labs, R&D teams, faculty training programs, and field troubleshooting, it enables measurable proof, repeatable test flows, and clean artifacts (logs/reports) to validate performance.

A key standout is that COTS is an indigenous MakeInIndia platform and the Android app-first approach makes it uniquely practical and accessible, especially since very few tools in India offer this kind of end-to-end, smartphone-driven 5G testing workflow.

## What problem COTS solves ?

When teams debug 5G, the biggest gap is not “lack of tools” it’s lack of synchronized visibility:

- What the UE is experiencing (RF quality, throughput behaviour, drop events)
- What tests were run and when (ping/iPerf/drive test)
- What logs exist as evidence (DLF/PCAP, reports, charts)

**COTS fixes this by giving a single workflow:**

Observe → Run Test → Capture → Export → Verify

## What's inside (at a glance)

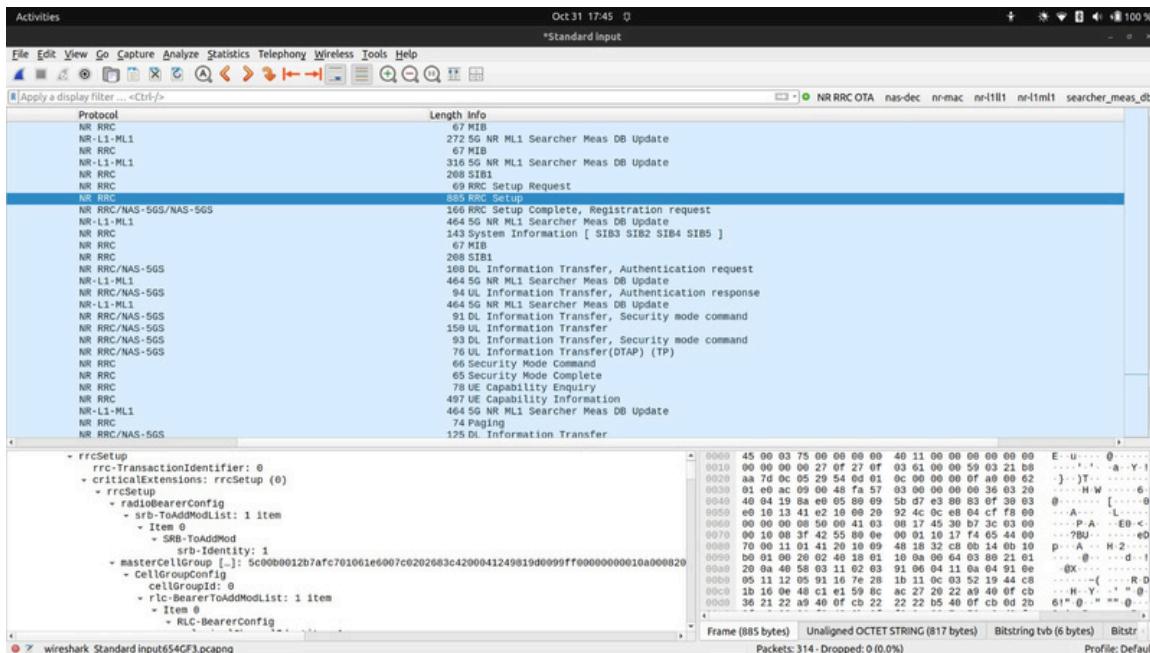
## Web Dashboard (PC/Server):

A single dashboard to view core/base station/mobile status, trigger captures, launch tests, and download artifacts. Ideal for demos, FDP sessions, and lab practicals where the entire room needs to see what's happening. Mobile App (Android):

A 6-in-1 integrated toolset for running:

- Protocol logs on UE side, Core Network & gNodeB
- Drive Test
- Ping Test
- iPerf Client
- iPerf Server
- AT Command
- NR Performance Charts

- Institutes & universities: lab practicals, projects, FDPs, student experiments
- R&D teams: feature validation, KPI comparison, regression tests
- Field teams: site checks, coverage validation, quick issue reproduction
- Demo teams: clear real-time visibility without complex toolchains



# Live Network Monitoring Dashboard (Core + gNB + Mobiles)

## One screen to monitor Core, Base Station, and Multi-Mobile KPIs

COTS is designed to be visually clear during lab sessions and demos. The dashboard organizes information into sections so you can quickly answer:

- Which cell is the UE camped on?
- Is RF strong enough for throughput tests?
- Which device is connected and ready?
- Can I start a capture / get logs instantly?

### Serving Cell Information (UE's current network context)

This block shows the most important live parameters such as:

- PCI / ARFCN / TAC / Band – validates cell identity and configuration
- MCC / MNC / NCI / Operator – confirms network selection and tracking area
- This helps during bring-up and debugging to ensure the UE is actually on the expected cell and band before running tests.

### RF Information (quick "health check") COTS summarizes RF in a single line:

- RSRP (signal strength)
- RSRQ (signal quality)
- SNR (link quality)
- This becomes the "go/no-go" check before iPerf and drive tests.

### SA Cores & IMS + Base Station status COTS lists:

- Core name + IP + status
- Base station name + IP + status
- Wireshark (Live) controls (start/stop) for quick packet capture correlation

### Mobiles table (multi-UE view)

For each connected device, COTS provides:

- LIVE protocol logs like RRC OTA, NAS, PDCP, RLC, MAC and Layer 1
- Status + IP
- RF metrics (RSRP/RSRQ/SNR) and drive tests with GPS tags on a geographical MAP
- Throughput / BLER / MCS columns (for performance correlation)
- Quick actions like Open app / Live Wireshark / Get logs

The dashboard is titled 'COTS' and is divided into three main sections:

- Cell Information:** Displays PCI: 496, ARFCN: 604000, TAC: 7, Band: 77, MCC: 695, MNC: 661, NCI: 4516059378, and Operator: Alphalang: 3G True5G.
- SA Cores & IMS:** A table with columns S.No, Core Name, IP, Status, and Wireshark (Live). It shows one entry: S.No 1, Core Name core\_1, IP 192.168.7.151, Status Online, and Wireshark controls (Start, Stop).
- Mobiles:** A table with columns S.No, Base Station, IP, Status, and Wireshark (Live). It shows one entry: S.No 1, Base Station base\_station\_1, IP 192.168.7.203, Status Online, and Wireshark controls (Start, Stop).

At the bottom of the Mobiles section, there is a table for 'Mobiles' with columns S.No, IMSI, Status, IP, RF (dBm/dB), Throughput (Kbps), BLER (%), MCS, and various controls (Mobile App, Wireshark (Live), AI Wirs... (Live), Logs, Get, Metric...). It shows two entries:

S.No	IMSI	Status	IP	RF (dBm/dB)			Throughput (Kbps)		BLER (%)		MCS		Mobile App	Wiresh...	AI Wirs...	Logs	Get	Metric...
				RSRP	RSRQ	SNR	DL	UL	DL	UL								
1	001011...	Connec...	10.127...	-98 dBm	-12 dB	7.0 dB	0	0	-	-	-	-	<a href="#">Open</a>	<a href="#">Open</a>	All	<a href="#">Get</a>	<a href="#">Get</a>	
2	001011...	Connec...	10.127...	-96 dBm	-12 dB	11.0 dB	0	0	-	-	-	-	<a href="#">Open</a>	<a href="#">Open</a>	All	<a href="#">Get</a>	<a href="#">Get</a>	

## Test Cases, Experiments & Automation (Robot + artifacts)

COTS includes an Experiments panel where users:

1. Select a test case (example shown: NG Setup success between gNB and AMF)
2. Read the test intent/description
3. Click Run Selected Test
4. Collect artifacts for validation and reporting

This is perfect for:

- 5G protocol learning (NGAP, registration flow, attach validation)
- lab grading (same procedure for all students)
- regression checks (after parameter changes)

### Robot Script integration (automation-ready)

COTS supports Robot Script management so labs can:

- upload a script,
- open and edit an existing script,
- or create a new file for custom experiment flows

This enables:

- standardized demos,
- repeatable training exercises,
- automated "run → capture → report" sequences.

### Mobile Log File Viewer (DLF / PCAP)

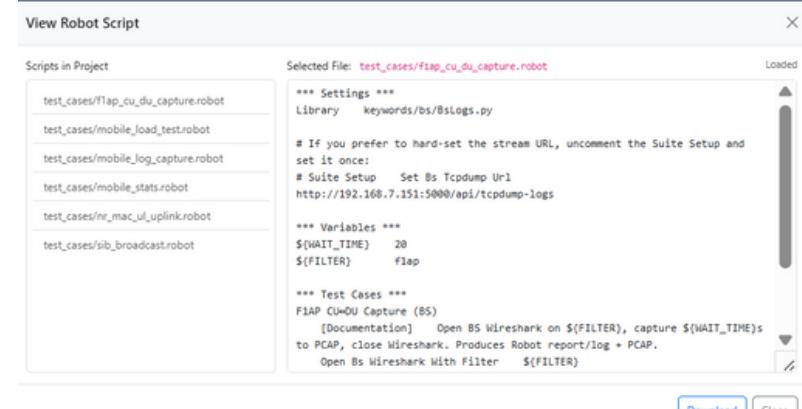
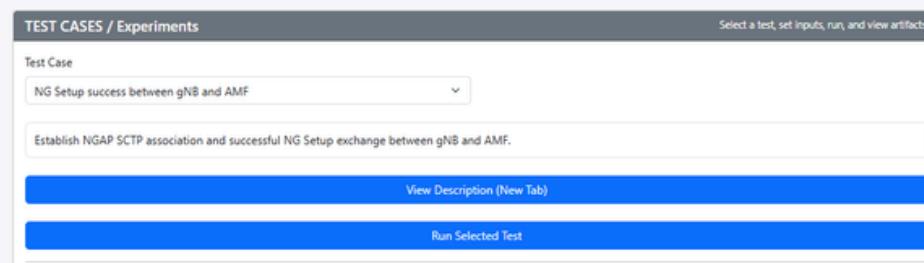
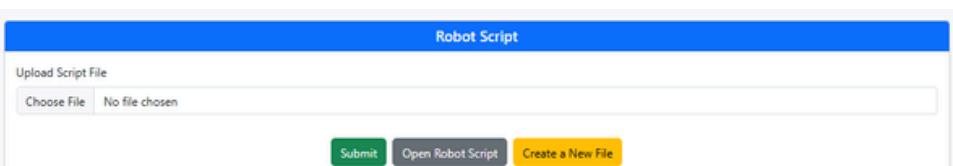
COTS includes a log viewer flow where users can:

- upload .dlf or .pcap files
- convert when required
- analyze the trace and generate artifacts for deeper debugging and documentation

### DIAG DLF Capture + NR Log Code Configuration

These modules help you capture only what you need, when you need it:

- DIAG DLF Capture: clean device-side diagnostic capture during a test window
- NR Log Code Configuration: enable/disable specific NR logging groups (keep traces smaller + more relevant)



## 6 integrated utilities inside the mobile app (built for labs + field teams)

COTS includes a phone-side toolkit so tests can be run directly from the UE while you simultaneously observe RF conditions and dashboard status. This makes it easy to do quick field validations and also run structured lab experiments.

### 1) Drive Test

Used to observe real-world performance variations across movement. It helps correlate:

- coverage changes,
- band changes,
- throughput variations,
- and drop events during mobility.

Ideal for: campus drive tests, corridor coverage checks, demo days.

### 2) Ping Test

Validates end-to-end IP connectivity and basic network stability by measuring:

- latency behaviour,
- packet loss patterns,
- and consistency across the test duration.

Ideal for: quick "is the network stable?" checks before throughput testing.

### 3) iPerf Client

Generates controlled traffic towards an iPerf server to benchmark:

- downlink and uplink throughput,
- consistency over time,
- and impact of RF variation.

Ideal for: comparative benchmarking across cells/bands/configurations.

### 4) iPerf Server

Turns the phone into an endpoint for reverse tests and controlled demo setups.

Ideal for: LAN validation, controlled setups during FDPs, reverse direction testing.

### 5) AT Command

Enables quick modem/diagnostic command execution for lab experiments and troubleshooting.

Ideal for: controlled diagnostics and verification workflows.

### 6) NR Performance Charts

Transforms raw KPIs into visible time-series so users can clearly see:

- signal trends,
- throughput dips/spikes,
- and performance stability instead of single-point readings.

The image shows a split-screen view of the COTS mobile application. The left side displays a dashboard with various connectivity and performance metrics. The right side shows a 'Drive Test' interface with a map, live RF data, and a control panel for logging.

**Left Side (Dashboard):**

- Serving Cell Information:** PCI: 443, ARFCN: 156510, TAC: 13, Band: 28, MCC: 405, MNC: 861, NCI: 4430609458, Operator: Jio True5G.
- RF Information:** RSRP: -120, RSRQ: -13, SNR: 2.
- NR Log Code Configuration:** (button)
- iPerf Client:** (button)
- iPerf Server:** (button)
- Ping Test:** (button)
- Drive Test:** (button)
- AT Command:** (button)
- NR Performance Charts:** (button)
- Licence Activation:** (button)

**Right Side (Drive Test):**

- Logging Interval (ms):** 1000 ms, with a  Follow vehicle option.
- Map:** A satellite map of a city area with buildings and roads. A red polygon highlights a specific region labeled "Visvesvaraya Technological University Regional Center".
- Live RF & GPS Data:**
  - [11:11:40 AM] (SSE)
  - RAT: NR
  - Lat: 12.980474, Lon: 77.5055889, Alt: 797.7
  - Speed: 0.66 m/s (2.4 km/h)
  - RSRP: -106 dBm, RSRQ: -12 dB, SNR: 1.0 dB
  - PCI: 486, ARFCN: 634080, TAC: 7
  - MCC: 405, MNC: 861, NCI: 4516069378
- Buttons:** Start Logging (green) and Stop Logging (red).