
Voice Quality testing using GL's Ultra-Portable handheld device: vMobile™



818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878
Phone: (301) 670-4784 Fax: (301) 670-9187 Email: info@gl.com
Website: <https://www.gl.com>

Current GL Mobile Test Hardware Platforms



vMobile™



vMobile™ Interfaces



Back Panel



Front Panel

VQuad™ Probe HD



Back Panel

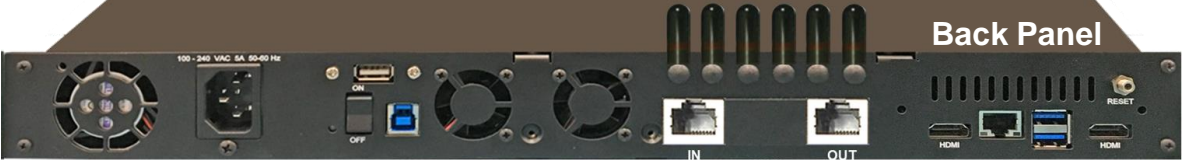


Front Panel

Dual UTA HD



Front Panel

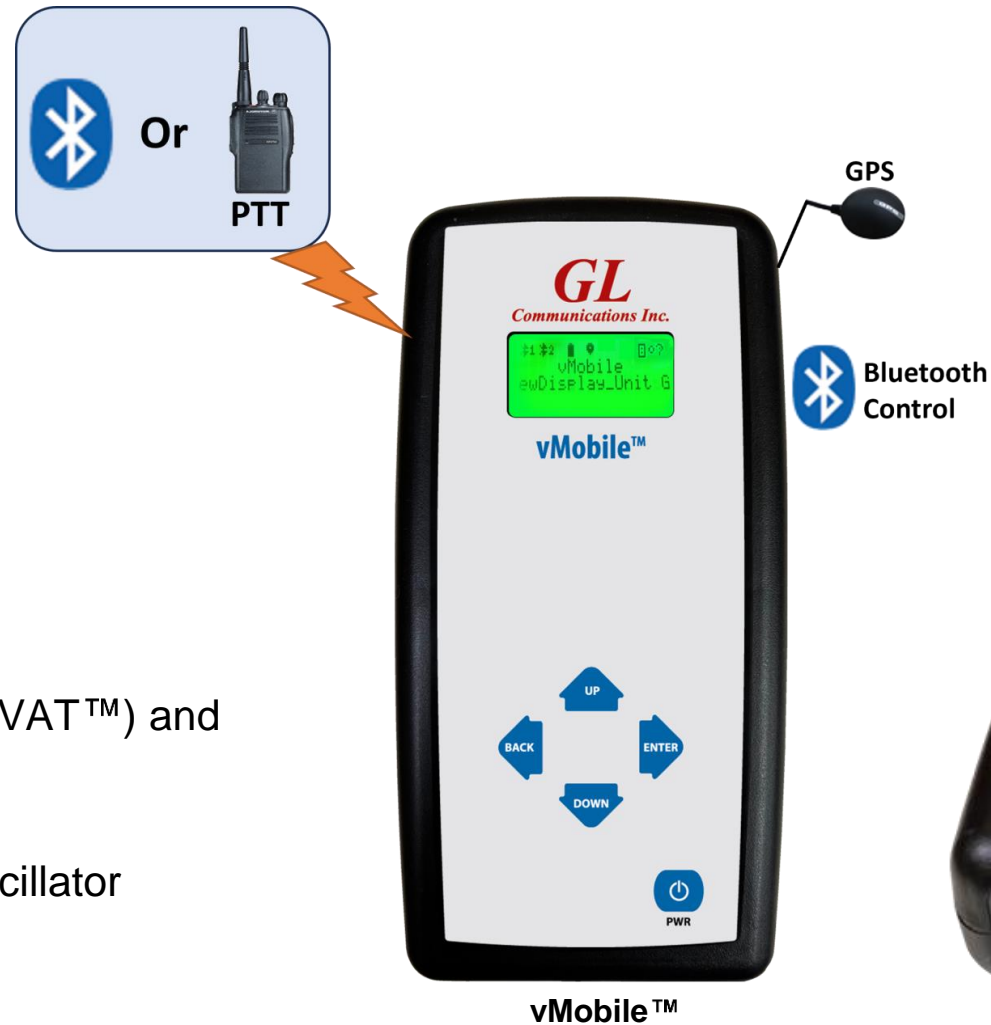


Back Panel

VQuad™ mTOP™

vMobile™ – Ultra Portable Mobile Tester

- Fully Automated
- Mobile Phone and Mobile Radio Testing
- Both Bluetooth and Analog modes
- Drive and Walk Testing
- Voice Quality Testing
- Delay Testing
- Solution supports GL WebViewer™
- Works with GL VQuad™, Voice Analysis Tool (VAT™) and Voice Quality Testing (VQT) solutions
- GPS/WiFi Clock sync, High Precision Clock Oscillator with 40 ms daily precision



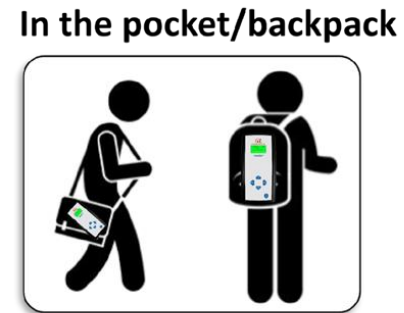
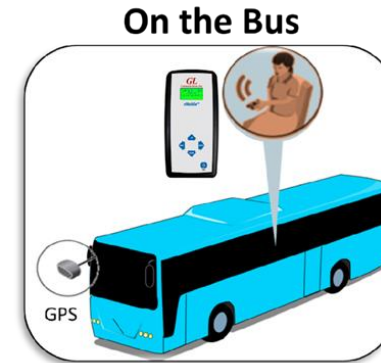
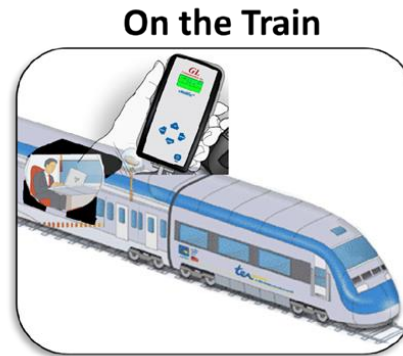
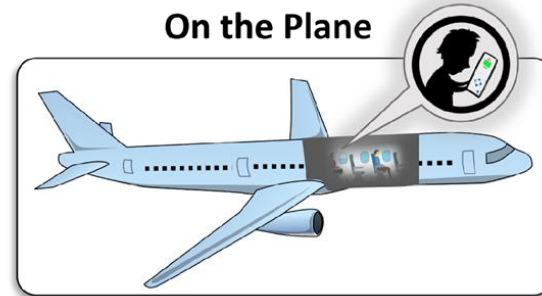
vMobile™ Portable Applications



vMobile™ in Hand

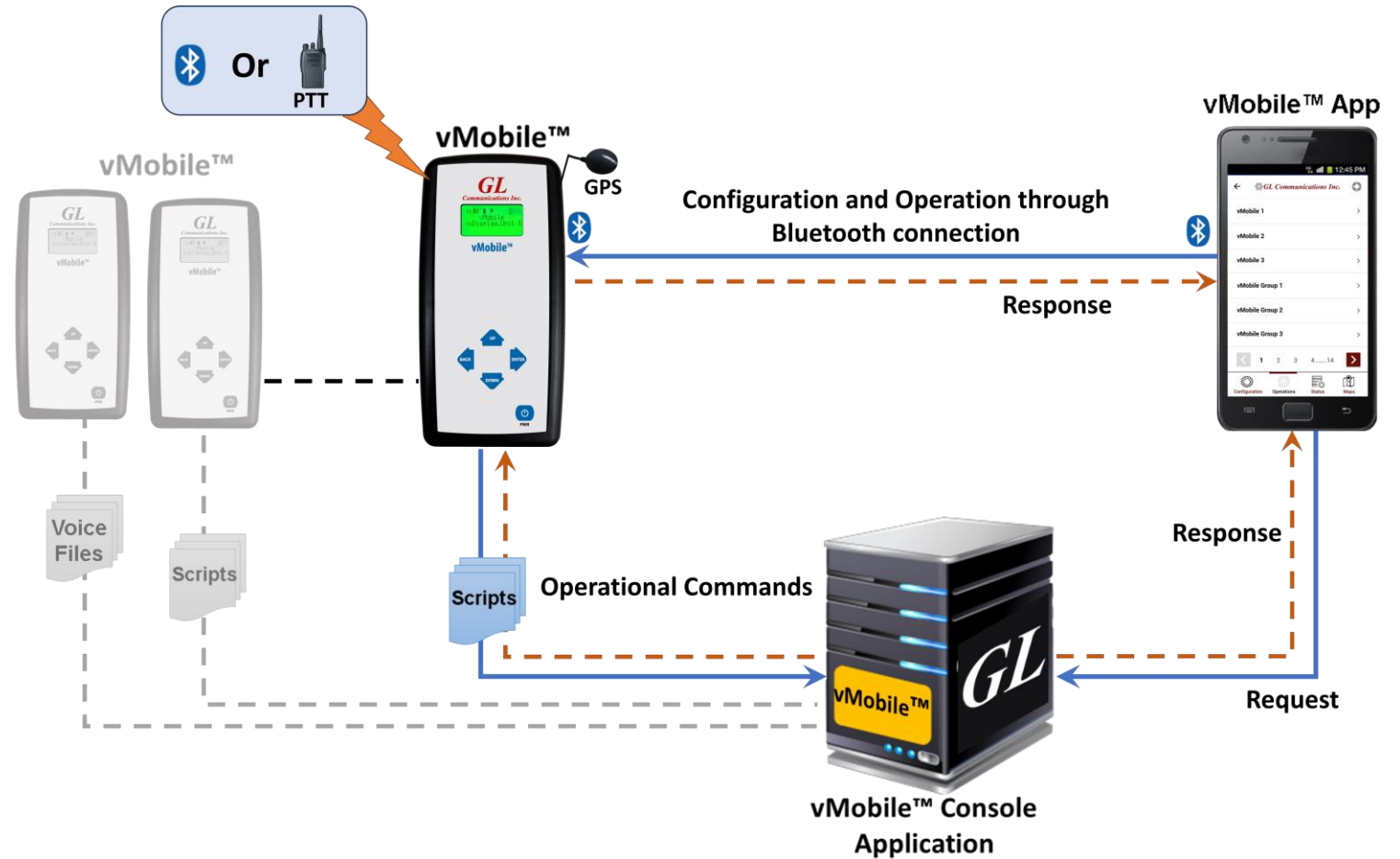


vMobile™ Interfaces



vMobile™ Configuration and Operation using Console and Console App

- The vMobile™ Console can run from any web-browser or using the Console App from any Android/IOS device
- Used to Monitor, Configure, and Operate the individual vMobile™ units
- vMobile™ Console can be used to create and edit vMobile™ scripts as well as upgrade the vMobile™ software when available
- Multiple vMobile™ units can be controlled from a single Console or Console App
- Remotely Upgrade vMobile™ software and audio files
- vMobile™ Error logs can be accessed from the Console or Console App



Automated Call Control via Bluetooth®

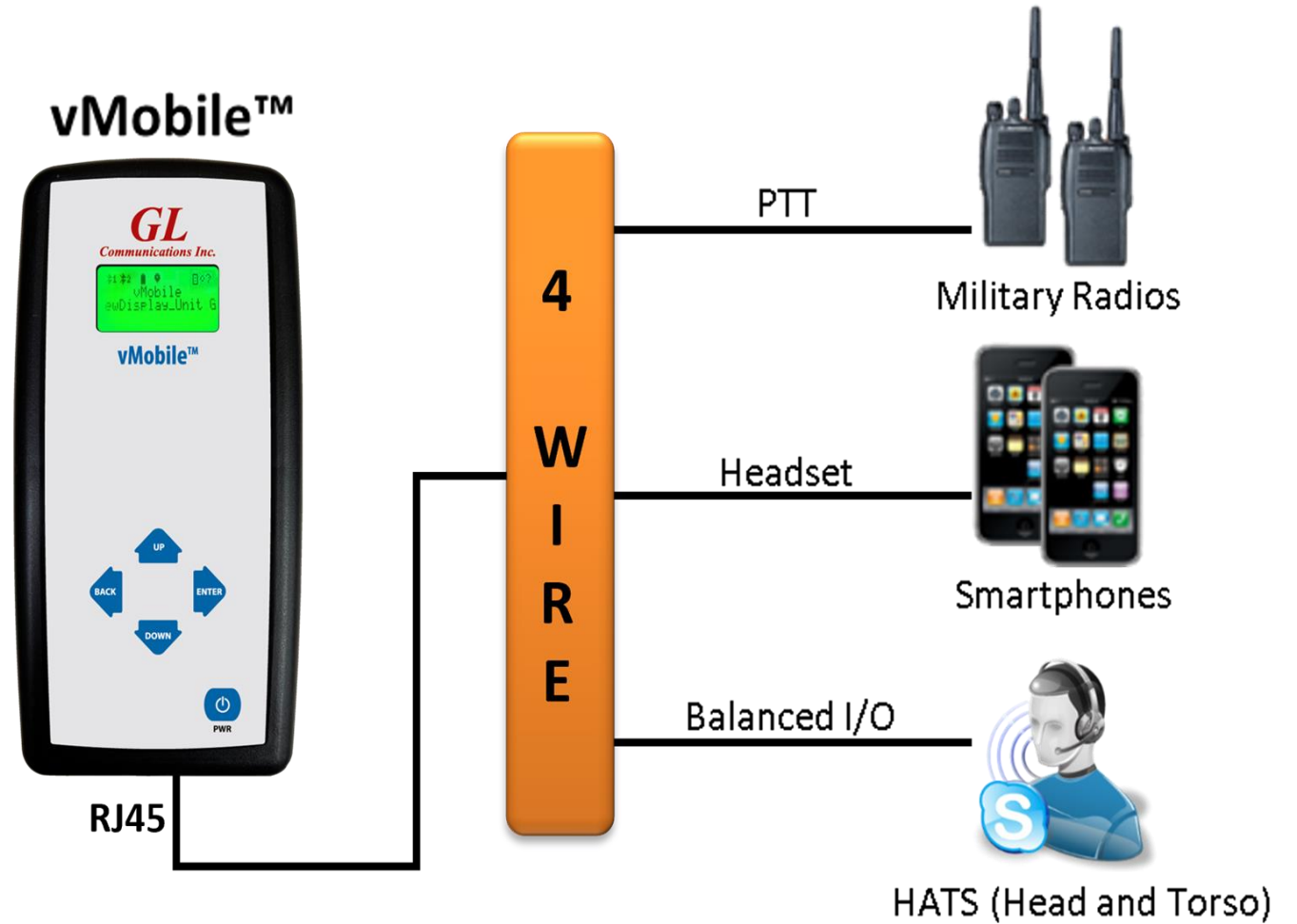


- Supports Mobile (5G, VoLTE, VoWi-Fi, VoFemto, 3G) network with both NB and WB voice
- Supports Bluetooth connection to any Mobile phone, any Carrier, and any Network
- Voice Quality Analysis using POLQA algorithm of recorded voice files, supporting legacy as well as 5G and VoLTE networks
- Bluetooth® connectivity also supports RSSI, Battery level functions, and Network identity



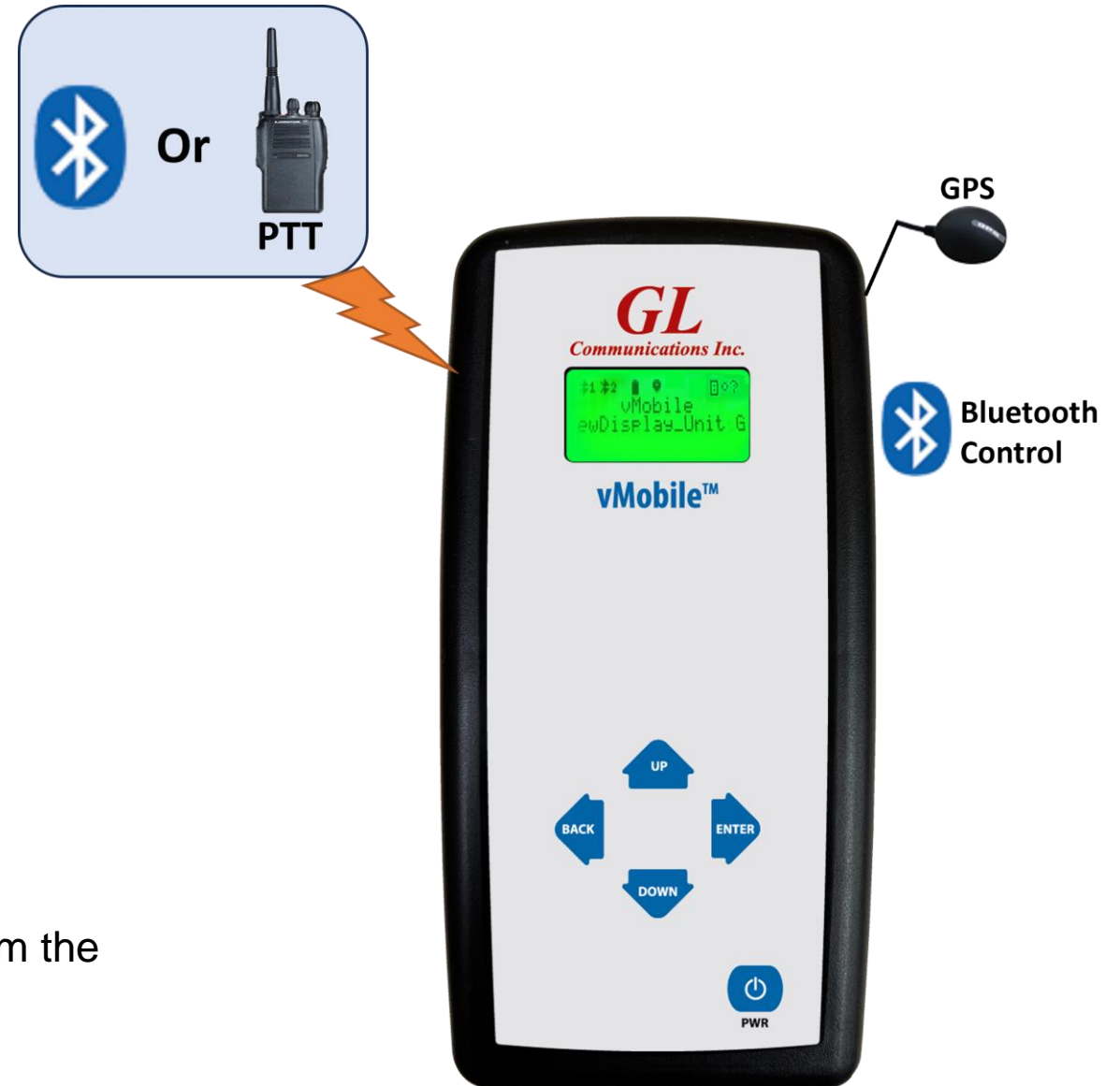
Automated Analog (4-Wire) Testing

- vMobile™ Analog (4-wire) testing
- Connect to any Mobile Radio or replace any analog headset to any device
- Control Mobile Radios with automated Push-to-Talk functionality



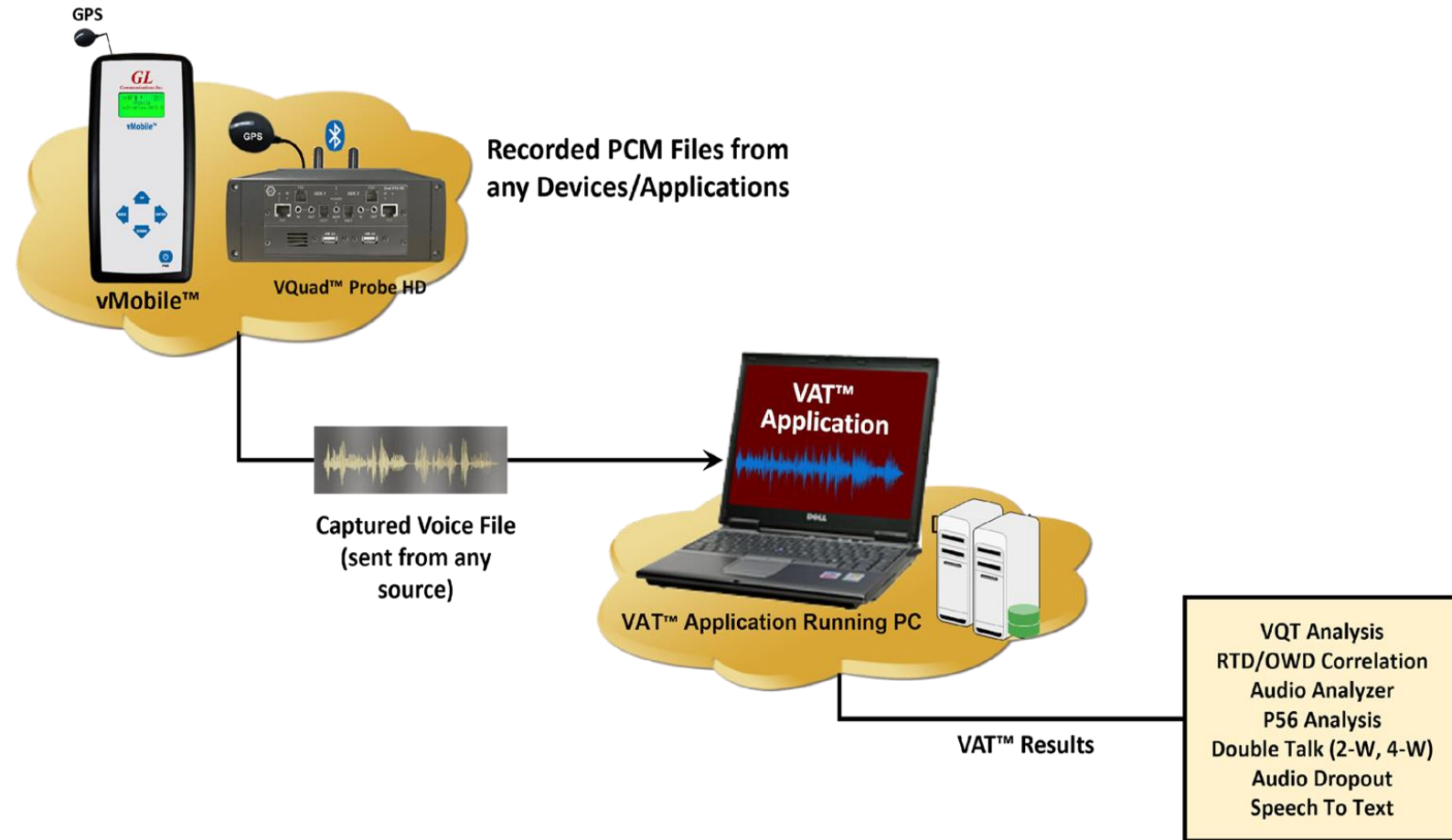
vMobile™ Audio and Data Testing for Mobile Networks

- Automated Voice Quality Testing (VQT)
- Voice Analysis Tool (VAT™)
- Delay Measurements
- Satellite Phone Testing
- Automated Data Quality Testing
- vMobile™ Control and Operation
- Drive and Walk Testing for Wireless Networks
- Accurate Time Synch between two ends of the call
- Remote control vMobile™ and VQuad™ devices from the vMobile™ script

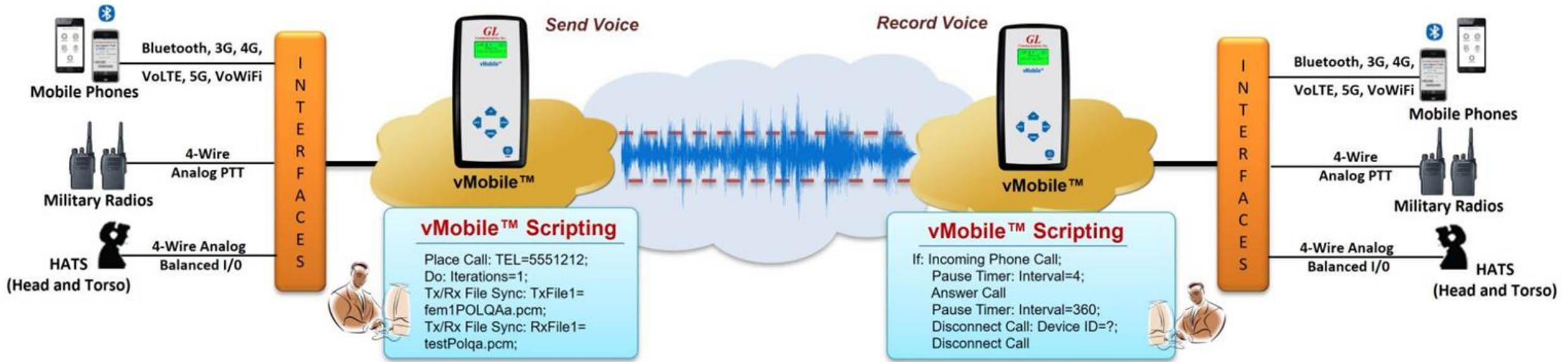


Voice Analysis Tool (VAT™)

- GL VAT™ supports analyzing any Raw PCM voice file including NB, WB, and SWB. Audio files can be generated from any application including GL VQuad™ and vMobile™
- Fully automated operation with log file containing results and stored in the GL Central Database which can be accessed easily using the GL WebViewer™
- VAT™ CLI (Command Line Interface) supports remote operation
- Audio analysis includes, Round Trip and One Way Delay, Dropout Audio analysis, Double-Talk, Power Level and Frequency Analysis, Speech Activity, Active Speech Level and Noise Level, and DC Offset
- Supports VQT analysis when coupled with the GL VQT software
- Supports multiple analytical tests per individual voice file



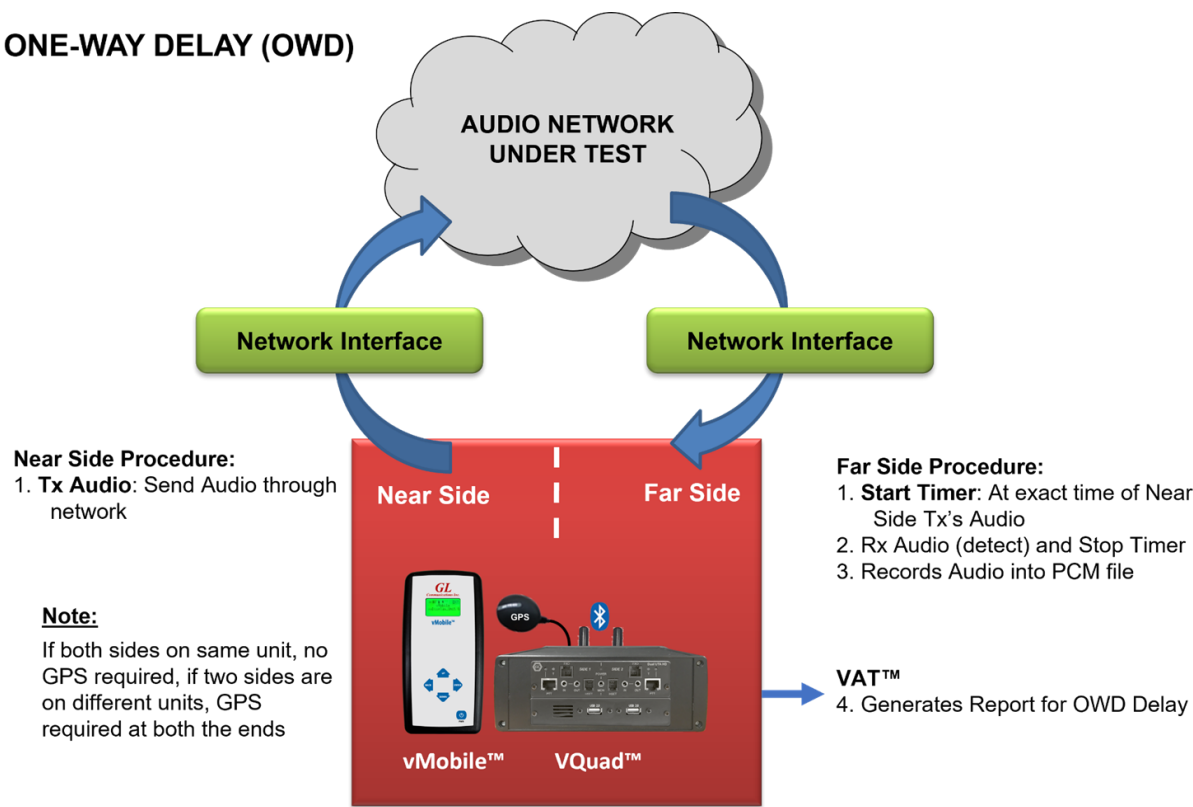
Automated Voice Quality Testing



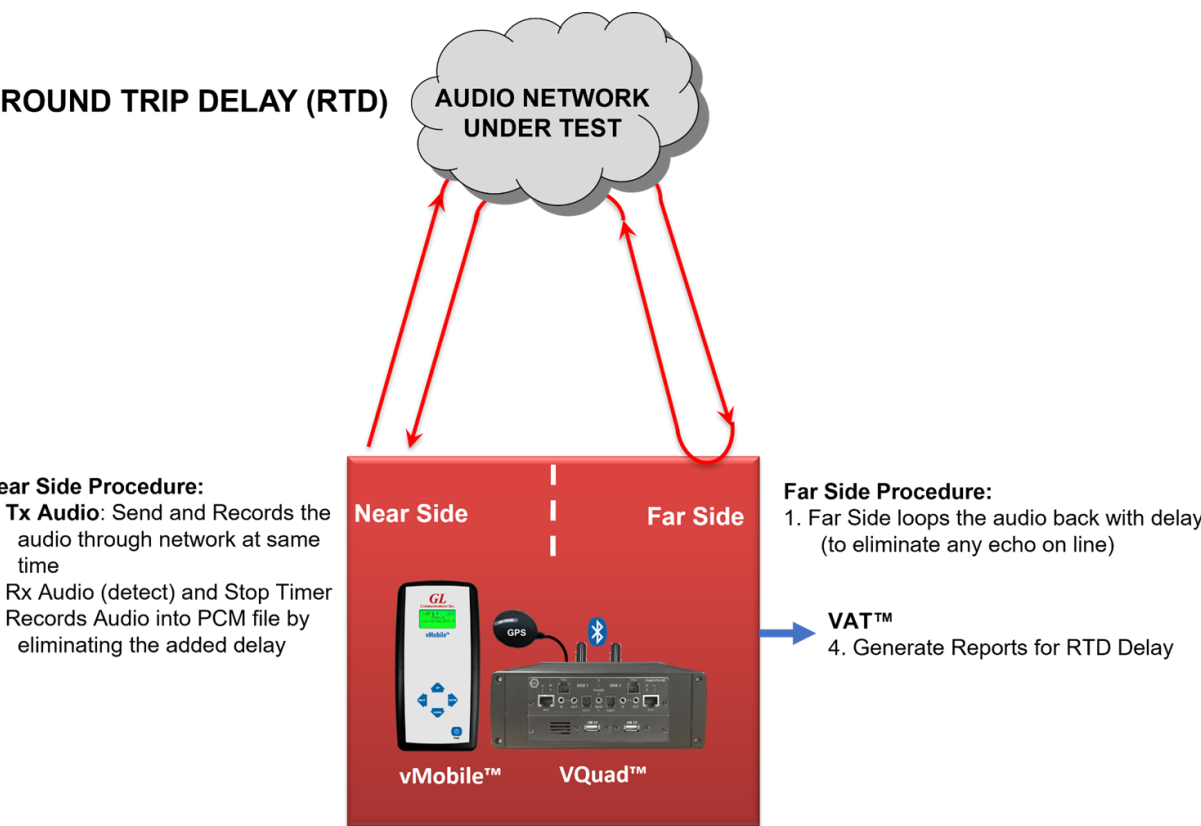
- Network-independent VQT – Supports legacy, as well as Next Generation networks
- POLQA (ITU-T P.863), PESQ (ITU-T P.862), PESQ LQ, LQO (P.862.1), PESQ WB (P.862.2), DAQ for Mobile Radios
- Call control analysis (Failed Calls, Dropped Calls, and Call ID)
- Includes Text-to-Speech technology for automatically creating the necessary voice prompt for placing call over Siri or Google Voice
- Supports POLQA v2.4 and POLQA v3 (NB, WB, and SWB) measurements
- Supports both Narrowband (NB) and Wideband (WB) audio for Bluetooth interface
- Supports Narrowband (NB), Wideband (WB), and Super Wide-Band (SWB) audio for PTT (Analog) interface

Delay Measurements

ONE-WAY DELAY (OWD)

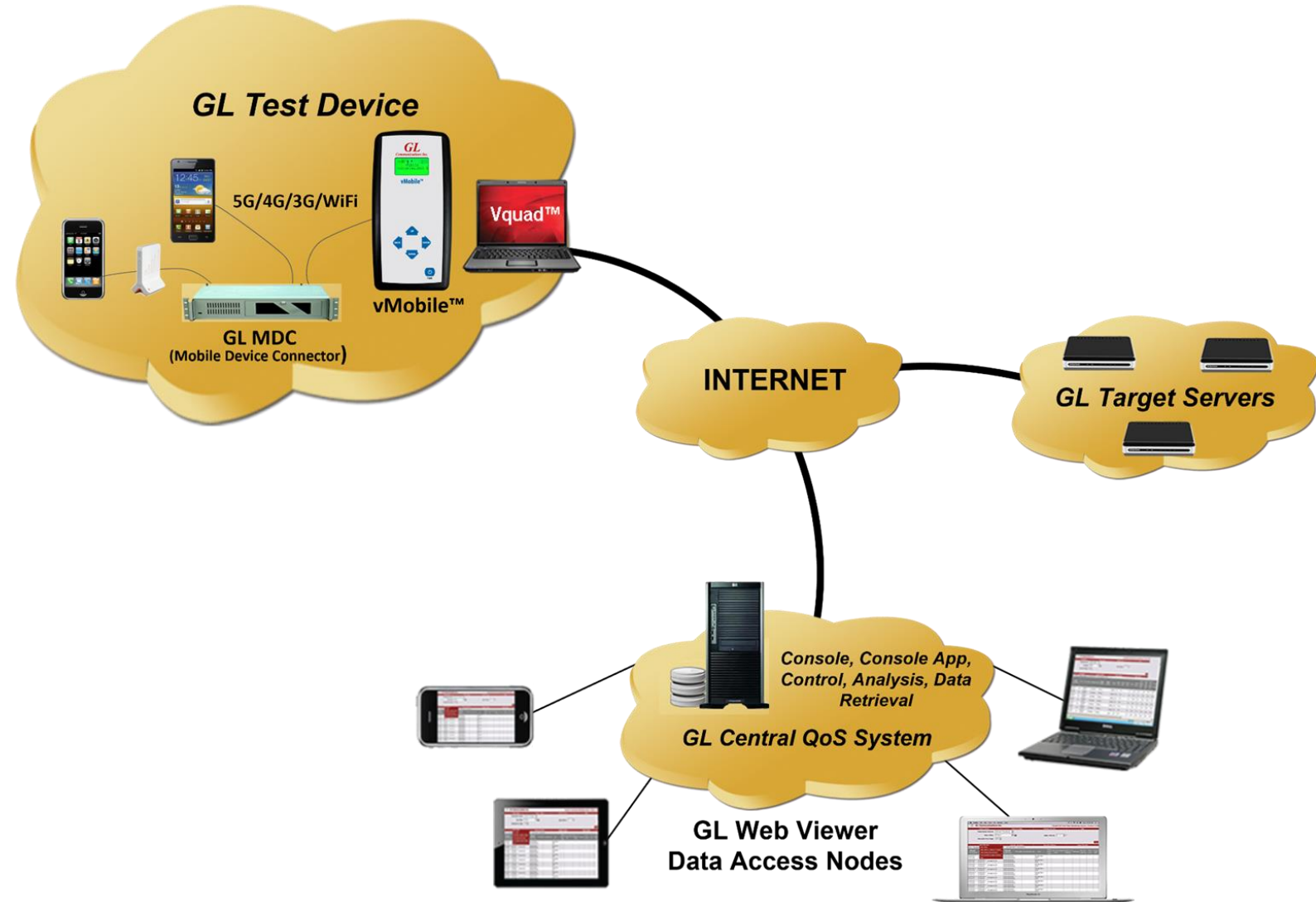


ROUND TRIP DELAY (RTD)



Automated Data Quality Testing Using GL NetTest

- Network independent, supports 5G, 4G LTE, 3G, WiMax, and Wired Internet connections
- Supports IOS and Android devices
- Different type of tests supported - TCP, UDP, HTTP, FTP, DNS, VoIP, Video, SMS, Email, PhoneInfo
- End-to-End SMS Testing over wireless network directly and remotely
- Fully automated and remote testing with all results accessible via GL WebViewer™



vMobile™ Control and Operation

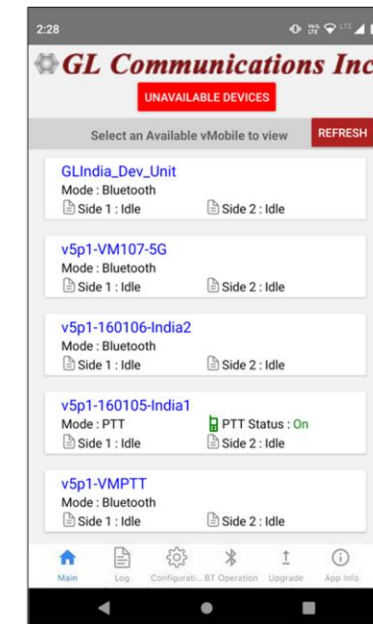
vMobile™ Console

GL Communications Inc.

vMobile Status

vMobile Name	Wi-Fi Network	Side 1	Side 1 Script	Side 2	Side 2 Script	GPS Latitude - Longitude
GLIndia_Dev_Unit	DSPTeam	160073Dev1 (MotoPhone1)	answercallside1.vms	160073Dev2 (motoPhone2)	wbxxrside2.vms	12.911302 , 77.89264
v5p1-VM107-5G	glimesh	US107Test1 (VELVET)	central3000bxrwsb1.vms	US107Test2 (RobGalaxy)	answercallside2.vms	39.143362 , -77.215513
v5p1-160106-India2	DSPTeam	US109Test1 (Q6)	waiteventreceivetestside1.vms	US109Test2 (Q6)	answercall.vms	12.926155 , 77.601742
v5p1-160105-India1	DSPTeam	IN105Test1 PTT On	side1r.vms	NA	NA	12.926363 , 77.601412
v5p1-VMPTT	glimesh	USPTTTest1 (Not Yet Connected)		USPTTTest2 (Not Yet Connected)		39.1434 , -77.215535
Zhiyong22	Zhiyong_test	BTTest113 (RobG8)	central3000bxrwsb1.vms	BTTest213 (Zhi5g)	answercallside2.vms	39.143375 , -77.215552
RobvMobile3	glimesh	LTest1 (RobGalaxy)		LTest2 (ZDBTTest1)		39.14334 , -77.215473
v5p1-VM101-rob	glimesh	US160101Test1 (VELVET)	answercallrunscriptside1.vms	US160101Test2 (RobGalaxy)	runscriptoptionside2.vms	39.1434 , -77.215525
Sonny50m	GURUMNARA	LTest1 (SonnysiPhone)	side1r.vms	LTest2 (GalaxyJ7Prime)	side2m.vms	39.104778 , -77.227892

vMobile™ Console APP



Configuration and Operation
through Internet connection



Internet

Configuration and Operation
through Bluetooth connection



vMobile™

vMobile™ Status

GL Communications Inc.

vMobile Status

vMobile Operation

vMobile Configuration

Console App

Log Configuration

Manage Scripts

Upgrade vMobile

Maps

User Configuration

ITS

Help

vMobile Status

vMobile Name	Wi-Fi Network	Side 1	Side 1 Script	Side 2	Side 2 Script	GPS Latitude - Longitude
GLIndia_Dev_Unit	DSPTeam	160073Dev1 (MotoPhone1)	answercallside1.vms	160073Dev2 (motoPhone2)	wbtxrxside2.vms	12.911302 , 77.89264
v5p1-VM107-5G	glmesh	US107Test1 (VELVET)	central3000txrxwbside1.vms	US107Test2 (RobGalaxy)	answercallside2.vms	39.143362 , -77.215513
v5p1-160106-India2	DSPTeam	US109Test1 (Q6)	waiteventreceivetestside1.vms	US109Test2 (Q6)	answercall.vms	12.926155 , 77.601742
v5p1-160105-India1	DSPTeam	IN105Test1 PTT On	side1r.vms	NA	NA	12.926363 , 77.601412
v5p1-VMPTT	glmesh	USPTTTest1 (Not Yet Connected)		USPTTTest2 (Not Yet Connected)		39.1434 , -77.215535
Zhiyong22	Zhiyong_test	BTTest113 (RobG8)	central3000txrxwbside1.vms	BTTest213 (Zhi5g)	answercallside2.vms	39.143375 , -77.215552
RobvMobile3	glmesh	LTest1 (RobGalaxy)		LTest2 (ZDBTTest1)		39.14334 , -77.215473
v5p1-VM101-rob	glmesh	US160101Test1 (VELVET)	answercallrunscriptside1.vms	US160101Test2 (RobGalaxy)	runscriptoptionside2.vms	39.1434 , -77.215525
Sonny50m	GURUMNARA	LTest1 (SonnysiPhone)	side1r.vms	LTest2 (GalaxyJ7Prime)	side2m.vms	39.104778 , -77.227892

Console Status

2:28

GL Communications Inc.

UNAVAILABLE DEVICES

Select an Available vMobile to view

REFRESH

GLIndia_Dev_Unit

Mode : Bluetooth

Side 1 : Idle

Side 2 : Idle

v5p1-VM107-5G

Mode : Bluetooth

Side 1 : Idle

Side 2 : Idle

v5p1-160106-India2

Mode : Bluetooth

Side 1 : Idle

Side 2 : Idle

v5p1-160105-India1

Mode : PTT

PTT Status : On

Side 1 : Idle

Side 2 : Idle

v5p1-VMPTT

Mode : Bluetooth

Side 1 : Idle

Side 2 : Idle

Main

Log

Configurati...

BT Operation

Upgrade

App Info

Console App Status

Device Configuration

GL Communications Inc.

vMobile Status

vMobile Operation

vMobile Configuration

Console App Status

Log Configuration

Manage Scripts

Upgrade vMobile

Maps

User Configuration

ITS

Help

Device ConfigurationGlobal ConfigurationvMobile Monitor PortManual Sync Console with vMobile

vMobile List

GLIndia_Dev_Unit

Refresh

GLIndia160073Dev1

Device Parameters

vMobile Device Name:GLIndia160073Dev1

vMobile Bluetooth Name:160073Dev1

Connected Phone:MotoPhone1

Auto Reconnect Bluetooth Device:☒

Paired Bluetooth Devices

	Connect	Disconnect	Remove
MotoPhone1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
River	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ocean	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Available Bluetooth Devices from Scan

Pair/Connect

No Devices Found

GLIndia160073Dev2

Device Parameters

vMobile Device Name:GLIndia160073Dev2

vMobile Bluetooth Name:160073Dev2

Connected Phone:Q6

Auto Reconnect Bluetooth Device:☒

Paired Bluetooth Devices

	Connect	Disconnect	Remove
Q6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
motoPhone2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d71cb818raga	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IN105Test1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Available Bluetooth Devices from Scan

Pair/Connect

No Devices Found

Submit

Scan Bluetooth

Cancel

Console

2:58

ReturnGLIndia_Dev_Unit

OPERATION

DEVICE PARAM

GLOBAL PARAM

Side 1

Side 2

Device ID

iLIndia160073Dev1

iLIndia160073Dev2

BT Name

160073Dev1

160073Dev2

Connected Phone

MotoPhone1

motoPhone2

Auto Reconnect

☒

☒


BT CONFIG 1

BT CONFIG 2

REFRESH

SUBMIT

Console App



15

Operation

GL Communications Inc.

vMobile Status

vMobile Operation

vMobile Configuration

Console App Status

Log Configuration

Manage Scripts

Upgrade vMobile

Maps

User Configuration

ITS

Help

Running ScriptManual Tx/Rx audio

vMobile List

GLIndia_Dev_Unit

Refresh

Auto Refresh: --- Select Time ---

Sampling Rate: 8000

Side 1

GLIndia160073Dev1 - (MotoPhone1) Script Name: answercallside1.vms / Script Status: Idle / Idle

vMobile Script

answercallside1.vms

Operation

Start

Start New Variable

Enter Place Call Number

Enter Call ID

Side 2

GLIndia160073Dev2 - (Q6) Script Name: wbttrxside2.vms / Script Status: Idle / Idle

vMobile Script

wbttrxside2.vms

Operation

Start

Start New Variable

Enter Place Call Number

Enter Call ID

Upload Scripts or Reference PCM files to vMobile

Script FilePCM File

answercall.vms

Browse from Local PC

Upload

Download Scripts or Reference PCM files available on vMobile

Script FilePCM File

answercall.vms

Download

Delete Scripts or Reference PCM files available on vMobile

Script FilePCM File

---Select Script File---

Delete

Submit

Console

3:06

ReturnGLIndia_Dev_Unit

OPERATION

DEVICE PARAM

GLOBAL PARAM

Side 1

GLIndia160073Dev1 - (MotoPhone1)

answercallside1.vms

answercall.vms

Start

Start Variables:

5552121

vMobileTest

Sampling Rate

16000

Side 2

GLIndia160073Dev2 - (motoPhone2)

wbttrxside2.vms

wbttrxside2.vms

Start

Start Variables:

Enter Number

Enter Call ID

Sampling Rate

16000

REFRESH

SUBMIT

Console App

vMobile™ Console with Script Editor

GL Communications Inc.

vMobile Status

vMobile Operation

vMobile Configuration

Console App Status

Log Configuration

Manage Scripts

Create/Edit Scripts

Script List

Upload VATProfile

Upgrade vMobile

Maps

User Configuration

ITS

Help

Create New Script or Edit existing vMobile Scripts

vMobile List

GLIndia_Dev_Unit

vMobile Script file to edit

answercallside1.vms

Edit

New Script

Note :Script Name Should not contains underscore (_), dash (—).

Save and Upload to vMobile

Script Components

Call Control

Bluetooth Operations

Voice TxRx Functions

Conditional

Event detection and Reporting

Script Execution

Delay/Reports

Device

Remote

Comment

MDNetTest

Browse From Local PC

Script Name

answercallside1

.vms

Copy

Paste

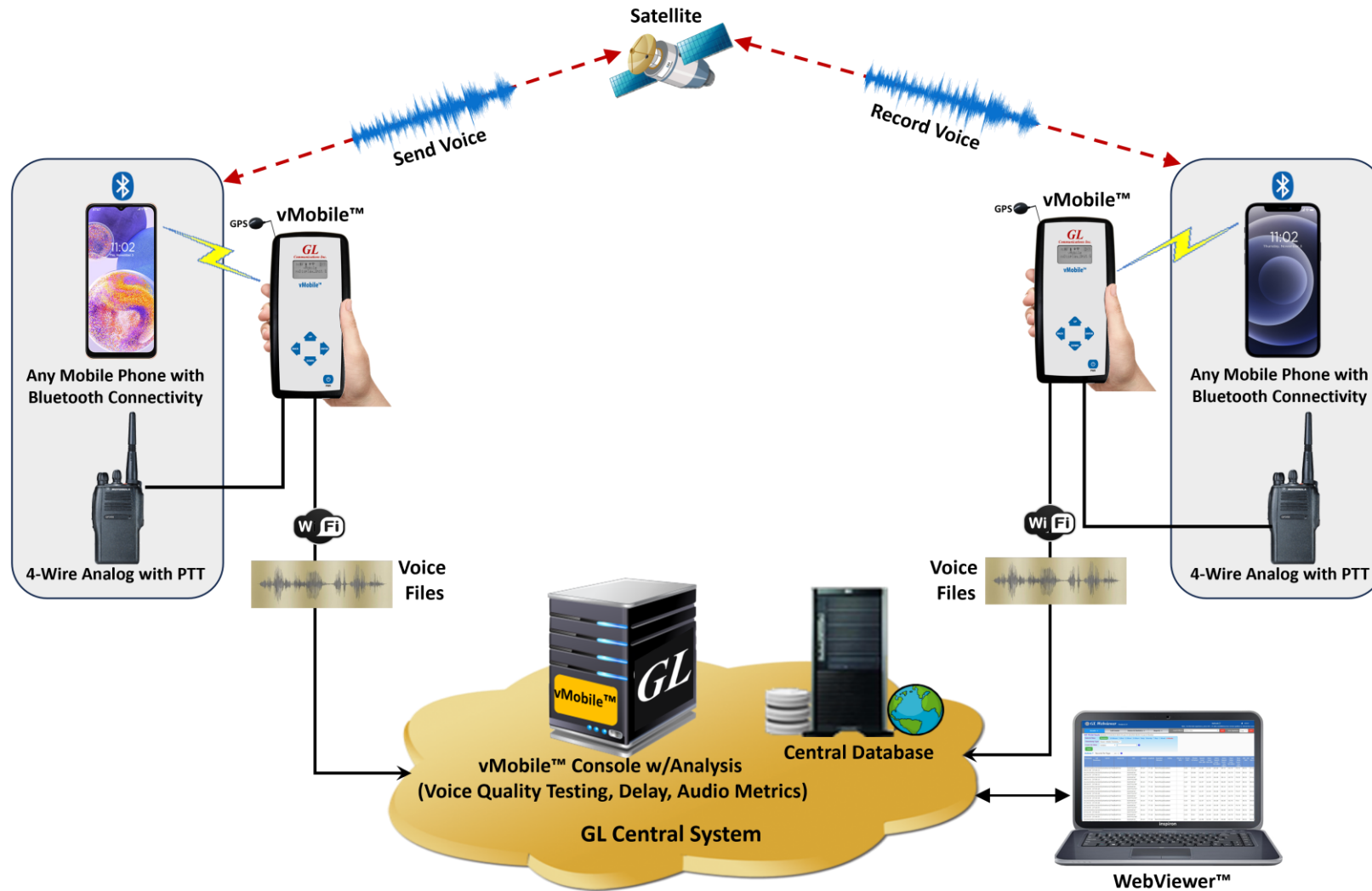
Delete

Comment Line

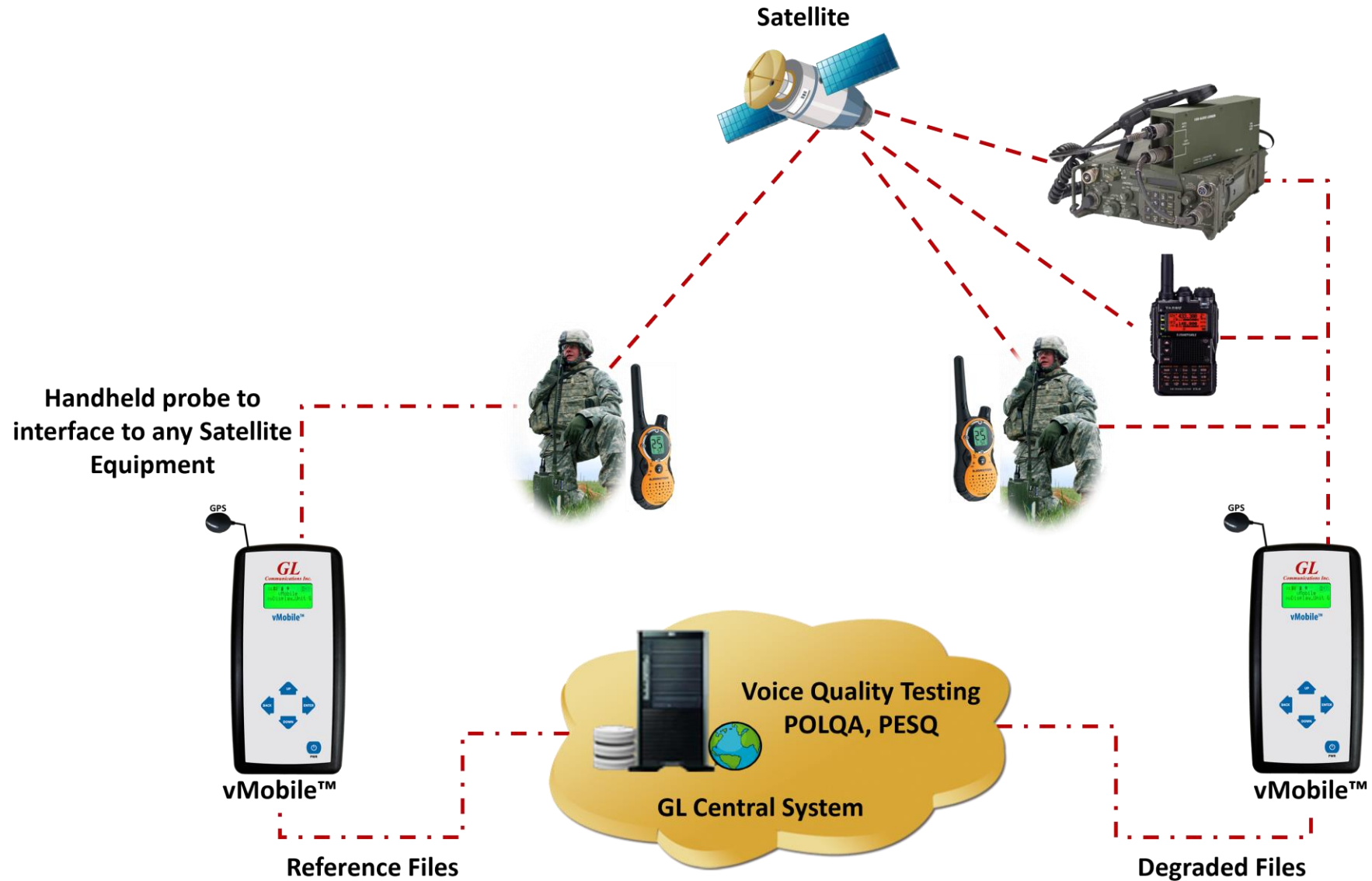
Clipboard

1	//Answer Incoming Call
2	start of script
3	WaitEvent: Event=Incoming Call; Interval=45; Device ID=1;
4	If: Incoming Call;Device ID=1;
5	Answer Call:Device ID=1;
6	//Pause Timer: Interval=1500;
7	End If
8	end of script
9	//
10	//

vMobile™ – Ultra Portable Voice Testing



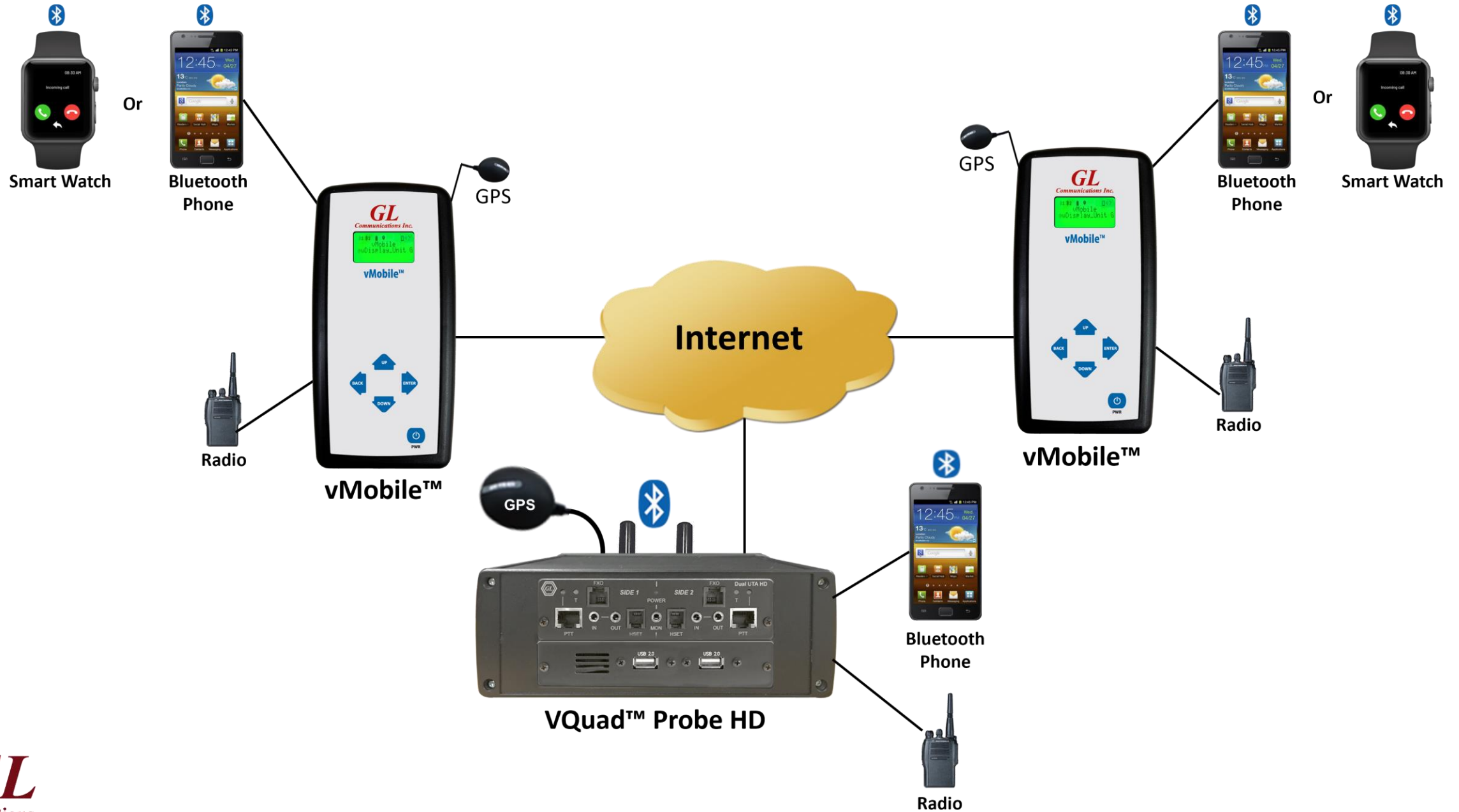
Voice Quality Testing of Radios over Satellite



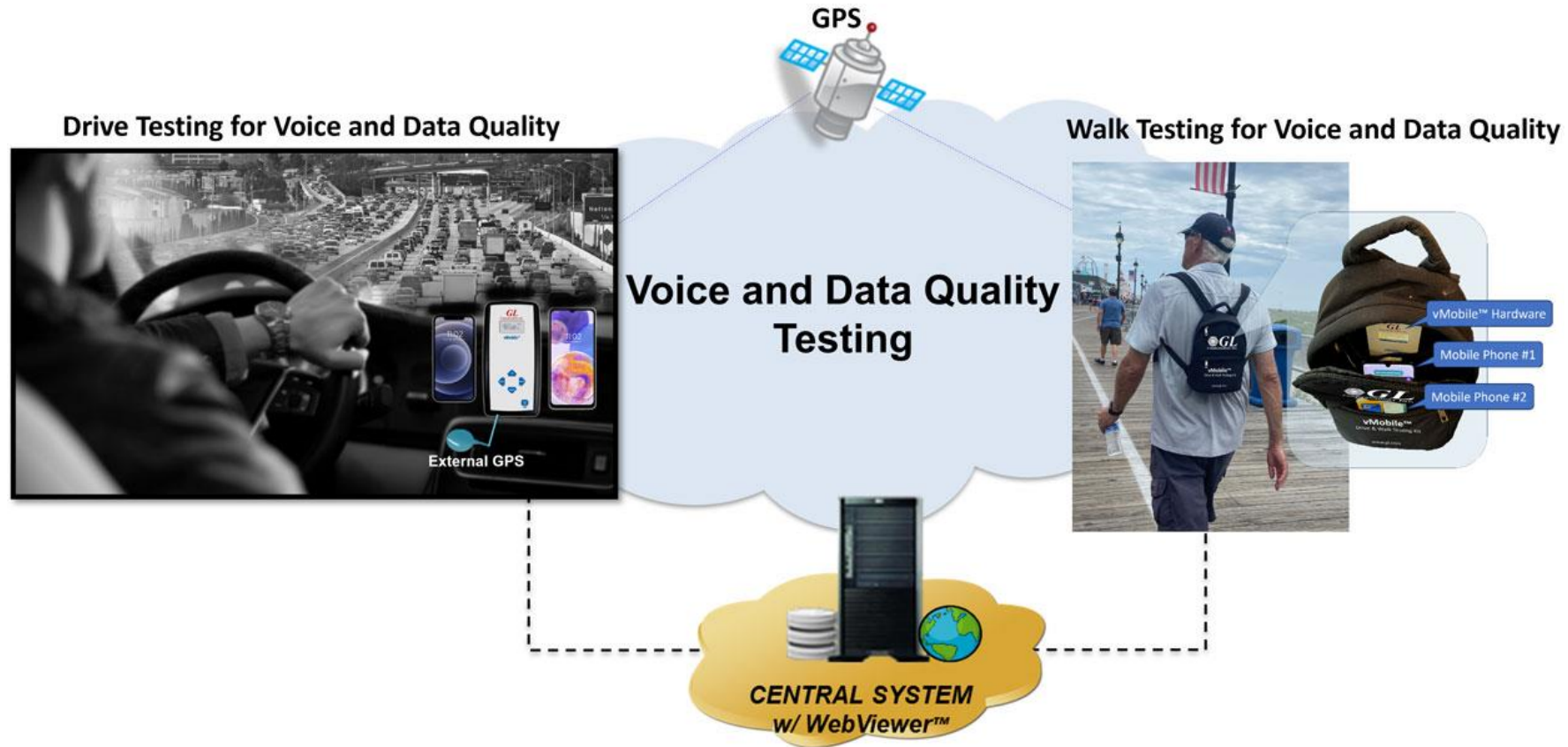
Voice Quality Testing of Satellite Phones



vMobile™ Automated Testing

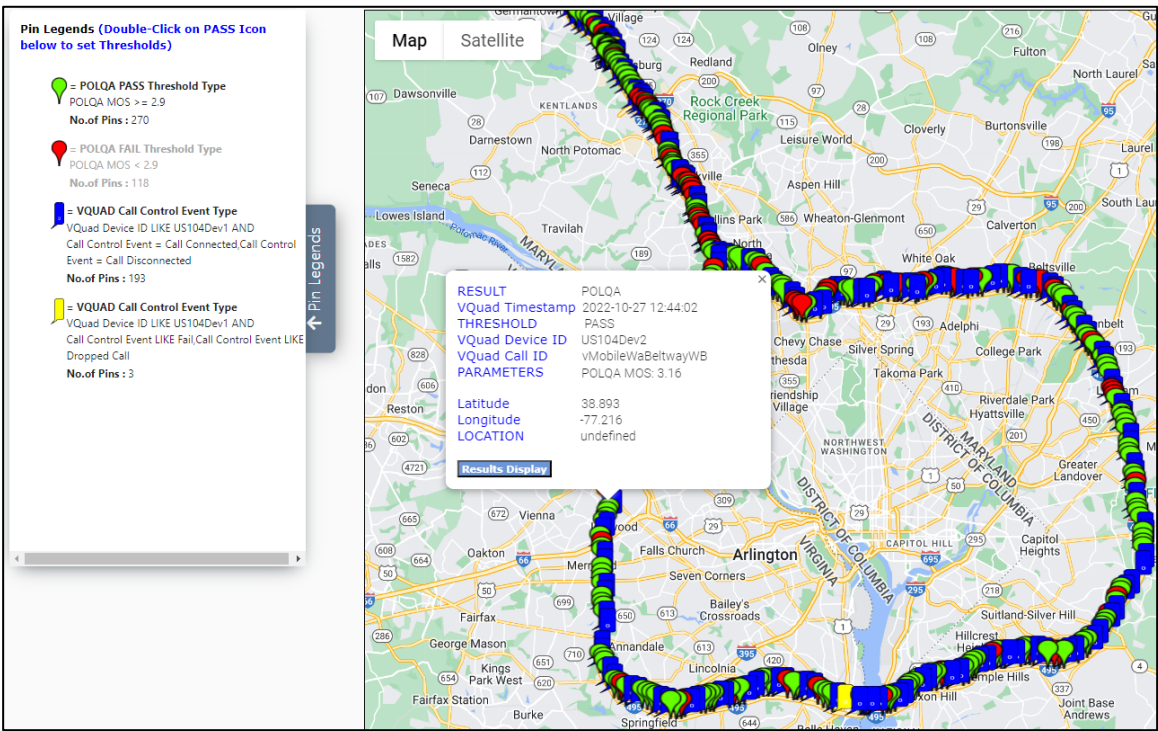


Drive Testing for Wireless Networks



- Drive test with any Wireless device with real-time GPS mapping
- GPS connectivity for recording timing and location of tests performed
- The GPS mapping records and adds the real-time GPS information to all test results and vMobile™ call control
- GPS Location includes stamping each result with Latitude, Longitude, and GPS Time Stamp
- GPS information is automatically sent to central database and accessed via Google Maps feature in WebViewer™

Real-time GPS and ITS Plotting



Real-time GPS Plotting

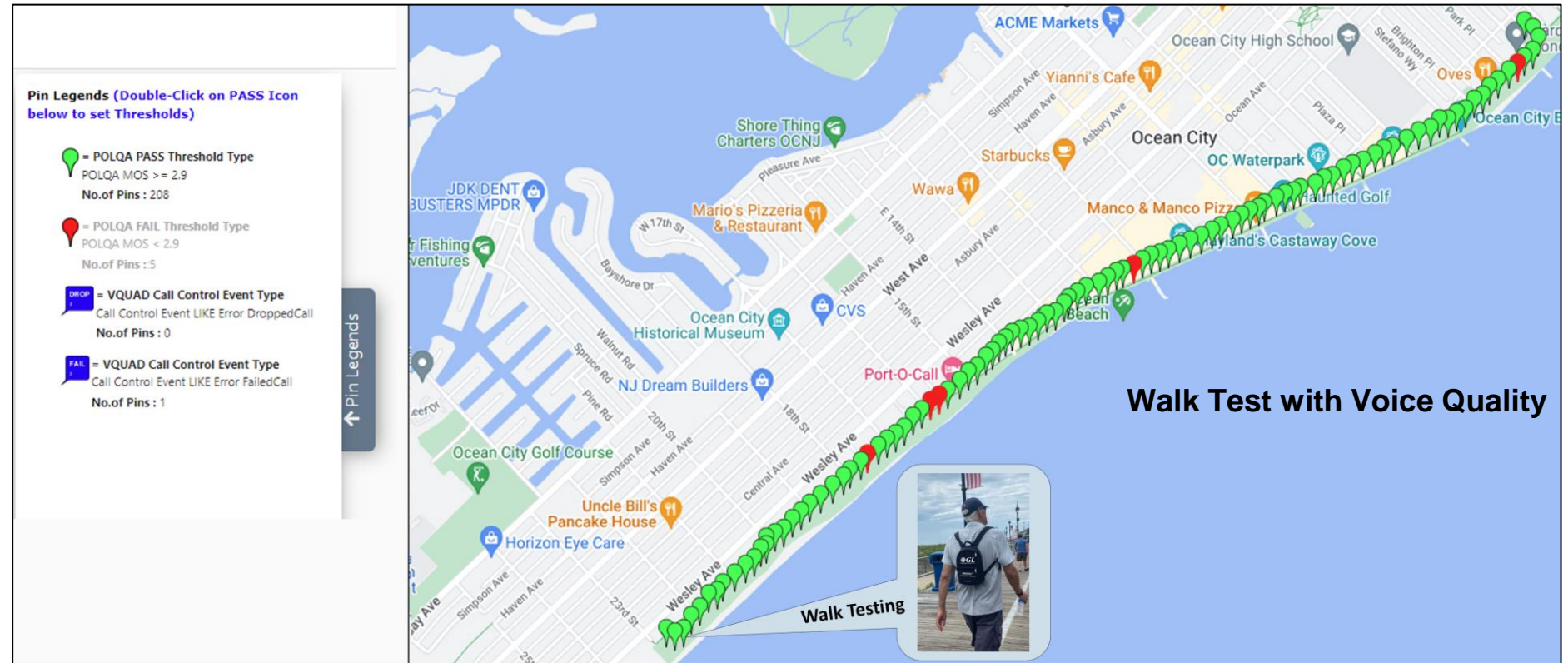
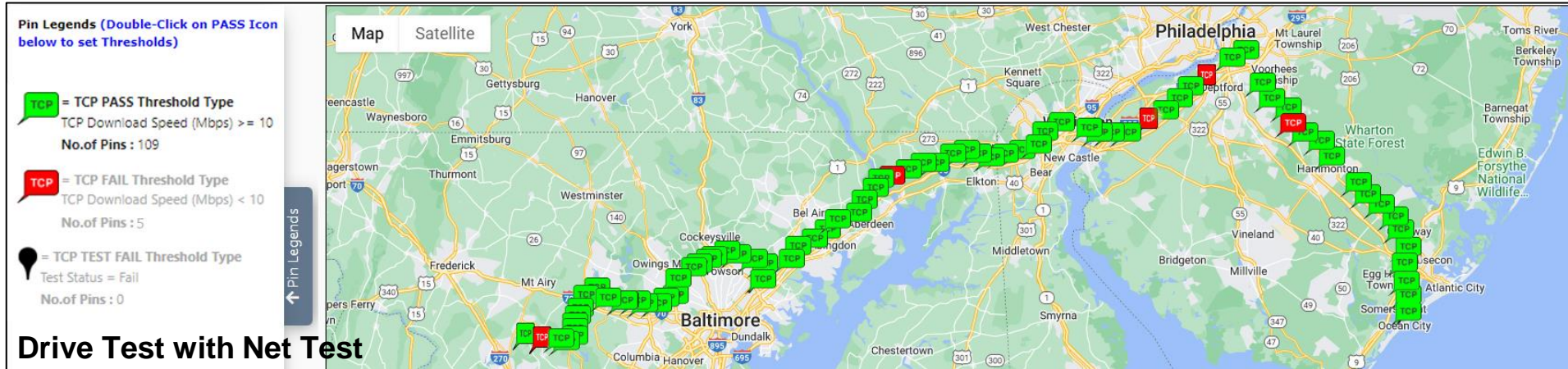


Real-time ITS Plotting

Results in WebViewer™ - Custom Reports



Results in WebViewer™ - From Drive and Walk Test



Thank you!

For more information contact us at info@gl.com

(Please subscribe to our newsletter: <https://www.gl.com/subscribe.php>)