"Results You Can Count On"

# Quick Start Guide for

# The Telebyte Cable Qualifier

Ethernet-APL & 10Base-T1L PoDL
Cable Testing Solution


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# 3 INTRODUCTION

The Telebyte Cable Qualifier offers a portable and affordable method for testing the performance and reliability of 10BASE-T1L and Ethernet-APL cables in the SPE network. This easy-to-use system allows the user to test per the IEEE's 802.3-2022 10BASET1L and Ethernet-APL standards that define the cable limits for data and power over data lines. The Cable Qualifier App provides straightforward selection of the Standard, Data Only, or Power Class as well as simple Pass/Fail indicators. The Cable Qualifier App is available for Android, IOS, MAC and Windows.

# 4 BEFORE YOU BEGIN

## 4.1 INCLUDED WITH THE CABLE QUALIFIER

- Cable Qualifier unit
- 2 AA batteries
- Cable connectors

## 4.2 GENERAL INSTRUCTIONS

Two units are needed to perform a test (one acting as a Controller and the other acting as a Remote unit). There is a setup for the Controller Unit and different one for the Remote unit.

**Setup steps should be performed in the following order:**

Take note of the diagram that indicates the locations of the connectors, indicators and switches
Perform the Initial Hardware Setup tasks
Download the Cable Qualifier software

# 5 CABLE QUALIFIER CONNECTORS/INDICATORS/SWITCHES


1. **Power Control**
   - **Power On/Off**: Press the main push button to toggle device power.
2. **Cable Connector**
   - **Interface**: Use the designated connector to attach a single pair 10BaseT1L cable.
3. **LED Indicators**
   - **Blinking Blue:** Device is operating in Controller Mode
   - **Blinking Yellow:** Device is operating in Remote Mode
   - **Solid Cyan:** Device is in Standby Mode (Controller)
   - **Solid Yellow:** Device is in Standby Mode (Remote)
   - **Solid Red:** Low Battery Warning – Replace batteries promptly
4. **Mode Selection Button**
   - **Remote Mode Activation:** Press and hold the button for 3 seconds to switch to Remote Mode.
   - **Controller Mode Activation:** Press the button briefly to switch to Controller Mode.
5. **Micro USB Port**
   - Reserved for future connectivity or firmware updates (if applicable).
6. **Battery Compartment**
   - Insert two AA batteries into the battery holder to power the device.

# 6 INITIAL HARDWARE SETUP

- Prepare two cable qualifier units
  - Take off silicon boots
  - Insert two AA batteries into battery compartments of each unit
  - Leave battery compartments open for programming

- Program **Controller** unit
  - Press "Power Control" button #1 to turn unit on. LED will blink yellow
  - Press "Mode Selection" button #4 one time briefly. LED will blink blue

- Program **Remote** unit
  - Press "Power Control" button #1 to turn unit on. LED will blink yellow
  - Press "Mode Selection" button #4 one time for 3 seconds. LED will blink yellow

- Finish Hardware Setup
  - Close battery compartments.
    - ➢ Do not allow the locking mechanism to touch the "Mode Selection" button

- Put silicon boots back onto each unit

# 7 CABLE QUALIFIER COMPANION APP

## 7.1 HOW TO DOWNLOAD

Download the app from one of the following platforms:

Download on the App Store | ANDROID APP ON Google play | Download from Windows Store

## 7.2 STEPS FOR CABLE TESTING

- Connect Cable Qualifier units with cable under test
  - Install provided (green) cable connectors, one on each end of the cable under test.

- Plug one connector into the controller unit, the other connector into the socket of the remote unit

- Open Cable Qualifier app on smart phone
  - Select Mode/tests to be performed then, press "Run tests"

- Establish Bluetooth connection then, press "Run tests"
  - Refer to 8.0 Cable Qualifier Application for details

- Retrieve Test results

# 8 CABLE QUALIFIER APPLICATION

## 8.1 STARTUP SCREEN

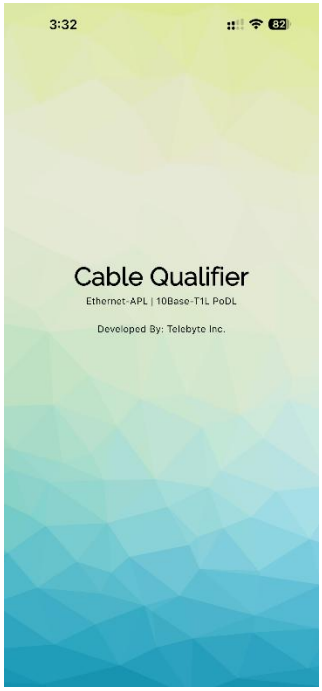


*Figure 1 Startup Screen*

# 9 TEST MODE OVERVIEW

## 9.1 SIMPLE MODE

- Enables streamlined cable validation against **Ethernet-APL** and **IEEE class specifications**.
- Ideal for quick compliance checks and basic diagnostics.
    - **Signal-to-Noise Ratio (SNR):** SNR testing execution time is 30 seconds and has pass, marginal, and fail standards based on the dB calculated for the signal to noise ratio.
    - **DC Loop Resistance:** Measures DC Loop resistance in ohms across the cable loop to assess conductor integrity and the respective power classes supported, taking into account the cable voltage drops due to the power class current and DC Loop Resistance.

## 9.2 ADVANCED MODE

- Provides access to a comprehensive set of individual diagnostic tests.
- Suitable for in-depth cable analysis and troubleshooting.
- Available Test Functions
    - **Signal-to-Noise Ratio (SNR)**: SNR testing can be executed for durations of up to **10 minutes**. Default execution time is **30 seconds**, configurable based on test requirements.
    - **DC Loop Resistance**: Measures resistance across the cable loop to assess conductor integrity.
    - **Shield Continuity**: Verifies the electrical continuity of cable shielding for proper grounding.
    - **Ping Packet Loss**: Evaluates data transmission reliability by detecting bit-level errors.
    - **Cable Fault Detection**: Identifies faults, discontinuities, and impedance mismatches along the cable length.
    - **Cable Length Detection**: Identifies cable length for specific cable types. If cable type is unknown, select Other (NVP 68%).

**Note:** In advance mode use can run Signal-to-Noise Ratio, DC Loop Resistance and Shield Continuity in combination. Cable Fault detection and Cable length detection run individually.

# 10 TEST SELECTION SCREEN

- Select either the Simple Mode or the Advanced Mode.

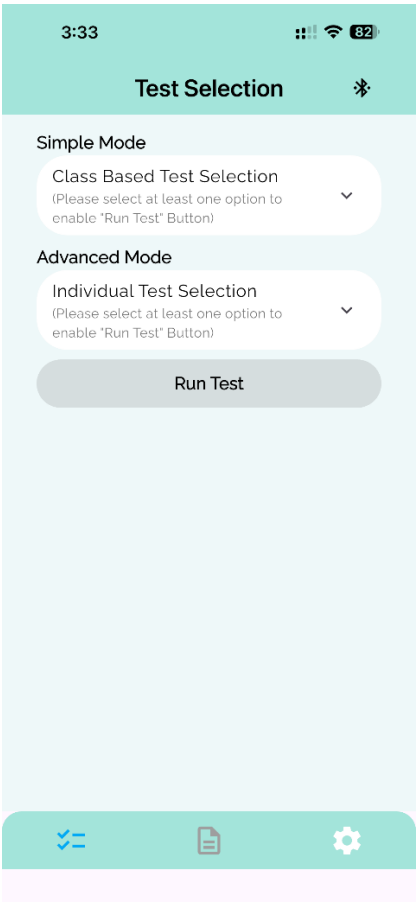


*Figure 2* Test Selection Screen

- To enable the Run Test button, select at least one checkbox from either Simple Mode or Advanced Mode.

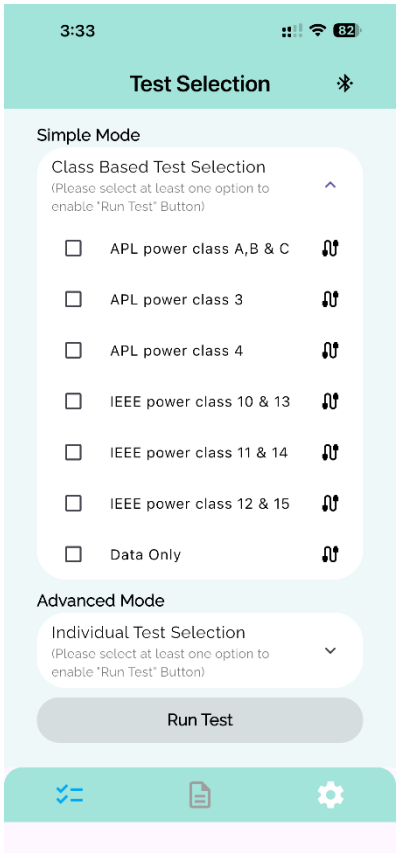


*Figure 3 Simple Mode*

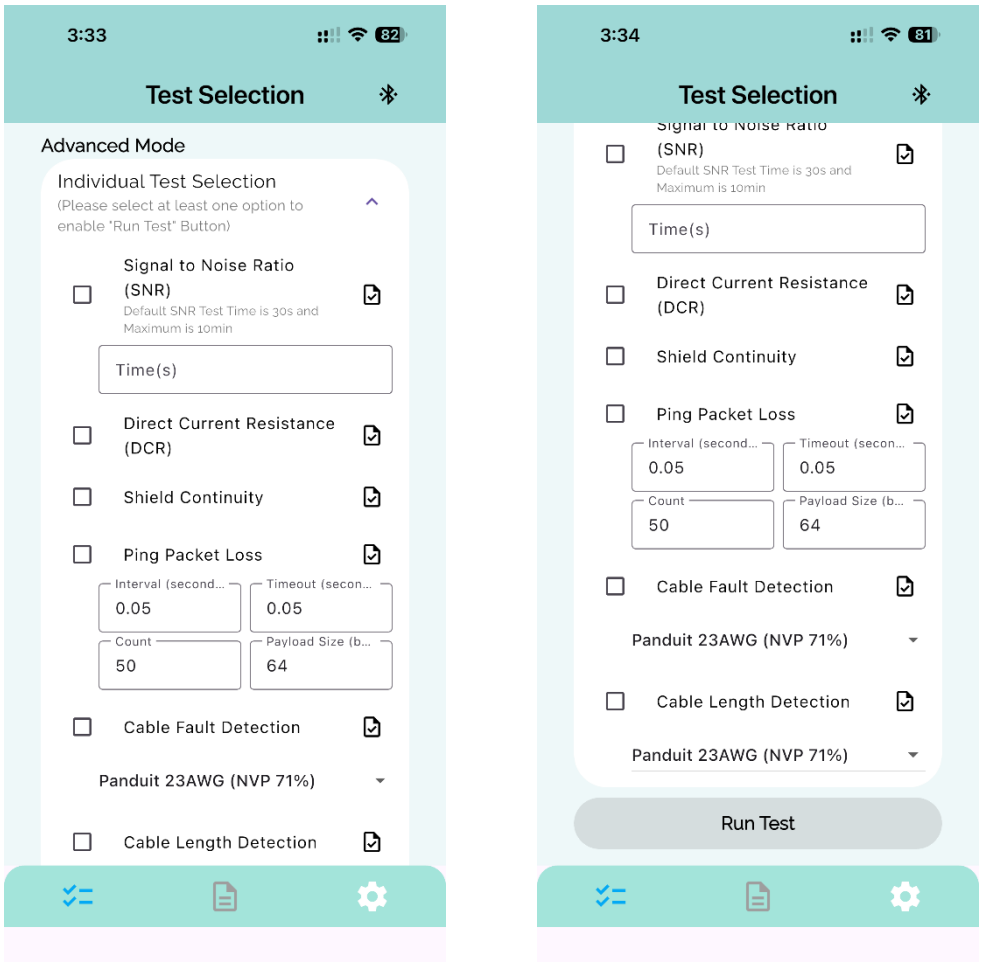


*Figure 4 Advance Mode*

# 11 TEST RESULT SCREEN OVERVIEW

The **Test Result Screen** displays a comprehensive summary of the cable test outcomes, including detailed metrics and status indicators.

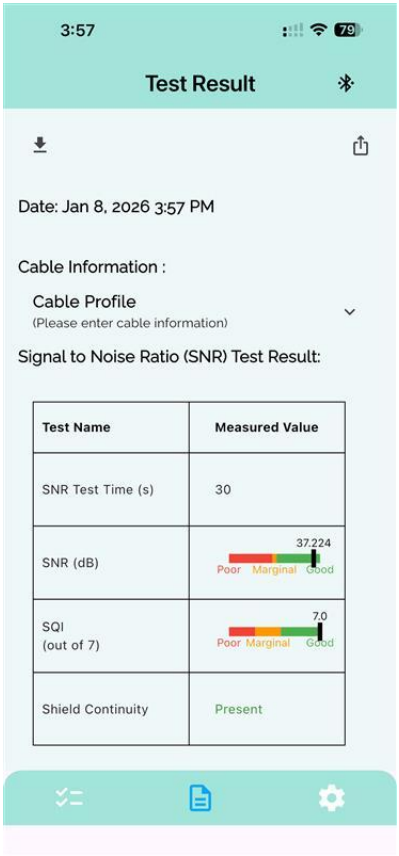


*Figure 5 Test Result Screen*

## 11.1 PASS/FAIL CRITERIA

- Evaluation is based on compliance with **Ethernet-APL** and **IEEE class specifications**.
- Results are categorized as:
  - **Pass** – Displayed in **Green**
  - **Marginal** – Displayed in **Orange**
  - **Fail** – Displayed in **Red**

## 11.2 EXPORT & SHARING OPTIONS

- **Share Icon**: Allows users to export the result in **PDF format** via supported applications.
- **Download Icon**: Saves the result locally as a **PDF file** in the device's directory.

## 11.3 CABLE IDENTIFICATION

- Users can manually enter **cable information** for documentation and traceability purposes.

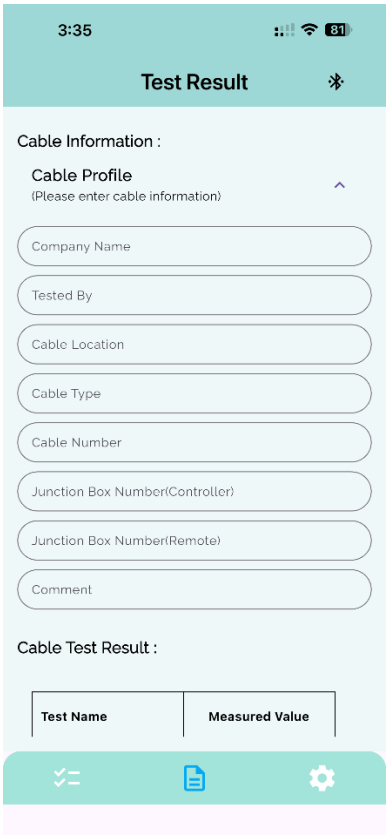


*Figure 6 Cable Profile*

## 12 SETTINGS SCREEN OVERVIEW

The **Settings** screen provides configuration options to optimize device connectivity, language preferences, data management, and battery monitoring**.**

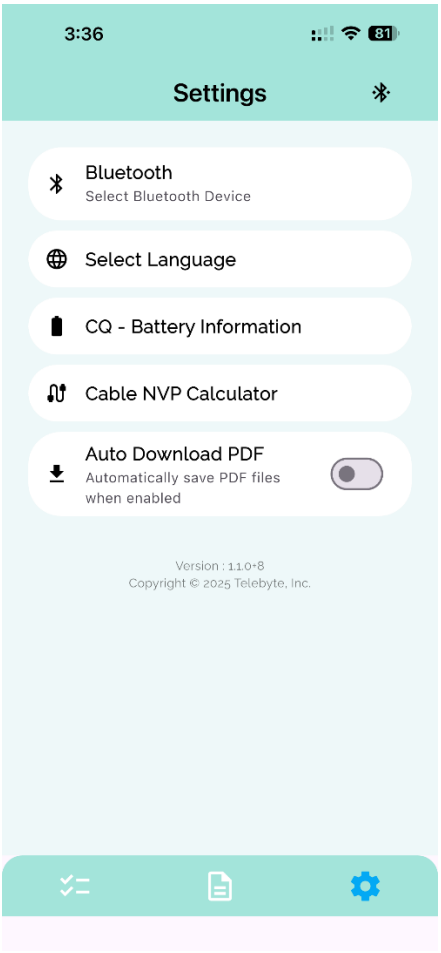


*Figure 7 Settings Screen*

## 12.1 BLUETOOTH

- Initiate a scan to detect available TB-Cable Qualifier devices.
- Connect or disconnect devices directly from the Bluetooth scan interface.

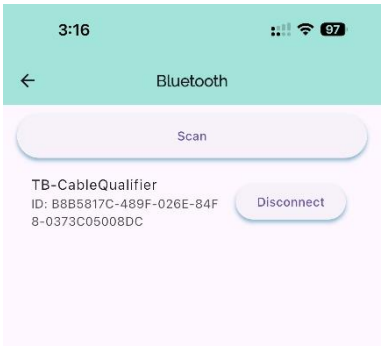


*Figure 8 Bluetooth Screen*

## 12.2 SELECT LANGUAGE

- The application supports English and Chinese.
- Select your preferred language for UI and report output.


*Figure 9 Select Language Screen*

## 12.3 CQ-BATTERY INFORMATION

- Displays battery levels for both **Controller** and **Remote** Cable Qualifier units.

➢ To retrieve battery status, ensure both devices are physically connected via cable.

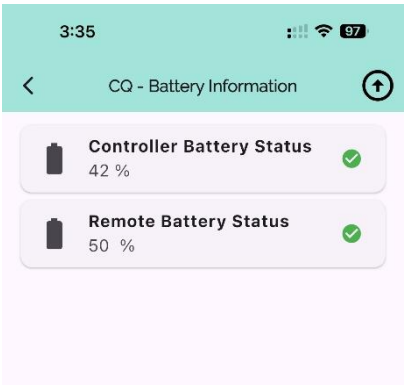


*Figure 10 CQ - Battery Information Screen*

## 12.4 CABLE NVP CALCULATOR

- Enter cable length of sample cable to calculate the Nominal Velocity of Propagation (NVP).

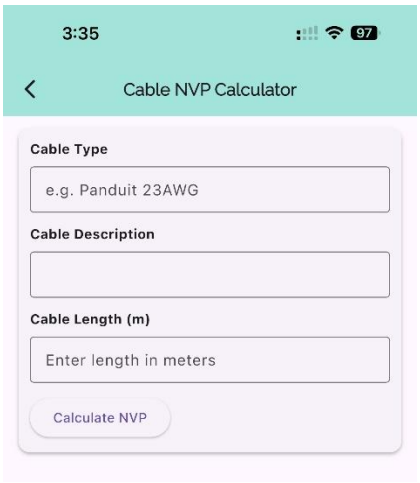


*Figure 11 Cable NVP Calculator Screen*

## 12.5 AUTO DOWNLOAD PDF

- Enable this feature to automatically save test results in PDF format to a designated directory.

## 12.6 AUTO DOWNLOAD DIRECTORY

- Choose a local directory for storing downloaded test results.
    - The **Auto Download** option must be enabled to access directory selection.
- The Auto Download Directory option is not available in the iOS application.