

# Overview of Evaluation

## Introduction

This evaluation assesses the quality and performance of WiFi connections for clients connected to a CPE (Customer Premises Equipment) using TR-181 data. The assessment provides a comprehensive analysis based on six key factors that determine network performance and connectivity quality.

## Evaluation Factors

The WiFi evaluation system analyzes the following six factors:

### 1. Signal Strength

Measures the strength of the WiFi signal received by client devices. A stronger signal generally indicates better connectivity and more reliable network performance.

### 2. Noise

Evaluates the level of background noise in the WiFi environment. Lower noise levels contribute to clearer signal transmission and improved overall performance.

### 3. Interference

Assesses the impact of other WiFi networks or devices operating on the same or adjacent channels. Lower interference levels lead to better performance and more stable connections.

### 4. SNR (Signal-to-Noise Ratio)

Represents the ratio between the desired signal level and background noise level. A higher SNR typically results in better WiFi performance and more reliable data transmission.

## 5. Standard

Considers the WiFi standard being used (e.g., 802.11n, 802.11ac, 802.11ax) and how it aligns with the capabilities of both the CPE and client devices. More advanced standards generally offer better performance and enhanced features.

## 6. Speed

Evaluates the actual data transfer rates achieved by client devices compared to the theoretical maximum rates for the given WiFi standard and configuration.

# Frequency Band Analysis

These factors are analyzed for both **2.4GHz** and **5GHz** frequency bands, providing a comprehensive assessment of the WiFi network's performance and quality across different spectrum ranges.

# Multi-AP Support Requirements

For optimal evaluation accuracy, devices should support Multi-AP with the "Data Elements" parameter as defined in the TR-181 standard.

For more information, refer to the [TR-181 Device.WiFi.DataElements specification](#).

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