

A UNIQUE WI-FI SENSOR AND HIGH-PERFORMANCE CLIENT

PRODUCT OVERVIEW
SAPPHIRE EYE™ 2100

Sapphire Eyes are robust Wi-Fi sensors and high-performance clients developed and patented by 7SIGNAL. They are uniquely designed to measure connectivity and the quality of end-user experiences on Wi-Fi networks. It complements your existing wireless access point management software by providing proactive Wi-Fi network assurance.

The Sapphire Eye 2100 contains a directional sector antenna array with beam steering to provide amplification in the target direction, which suppresses interference from other directions. This enables Eyes to connect to many access points (typically 4 to 8) at -65dBm or better and make accurate active measurements from a single location. The use of client-end beam steering technology essentially creates virtual test points in each beam direction.

Sapphire Eyes are self-contained, compact units utilizing Power over Ethernet (PoE), which allows for active Ethernet testing also. All wireless and wired communications use TLS encryption.



Sapphire Eye Capabilities

Synthetic Tests	<ul style="list-style-type: none"> Automated, continuous process, Wi-Fi & Ethernet interfaces 60 different performance indicators for each access point/SSID pair FTP, PING, HTTP, DHCP, SIP, VOIP Association, authentication, DHCP testing Throughput, packet loss, latency, jitter, MOS
RF Analysis	<ul style="list-style-type: none"> Automated, continuous process 40 different performance indicators for each AP, channel, antenna Access point settings, capabilities, signal levels, channels, noise levels
Traffic Analysis	<ul style="list-style-type: none"> Passive test, automated process 500 performance indicators for each client, SSID, AP, band, antenna Radio frame header analysis for traffic flow between clients and access points Data rates, retry rates, air congestion, roaming, frame size, device vendor Statistics for all 802.11 frame types, reason codes and status codes
Spectrum Analysis	<ul style="list-style-type: none"> Automated, continuous process High resolution 2.4 and 5 GHz spectrum analysis Chart types include waterfall, line and 3D Historical spectrum data saved for 3 months
Full Packet Capture	<ul style="list-style-type: none"> Remote, manual process for troubleshooting purposes Easy export to packet level analyzer, like Wireshark. Performed without interruption to automated monitoring process

WHY 7SIGNAL

- Get system-wide WLAN visibility and quickly determine if issues are wired, wireless or client device related.
- 24x7 Wi-Fi network benchmarking and service level compliance alerting.
- Easily monitor Wi-Fi network performance in remote locations.
- Performance testing is continuous and discrete.
- Identify the difference between what your WLAN is capable of, and what clients truly experience.

How It's Different

Unlike your Wireless LAN vendor, 7SIGNAL provides visibility of the Wi-Fi experience from the end-user's point of view. 7SIGNAL software "lives on the edge", on client devices, where the wireless experience matters most.

Technical Specifications

Wi-Fi Standard	802.11a/b/g/n/ac 3x3:3
Physical Layer	DSSS, OFDM
Modulation	BPSK, QPSK, DBPSK, DQPSK, CCK, 16-QAM, 64-QAM, 256-QAM
Sensitivity (typical):	802.11bg -94dBm @ 6Mbps 802.11gn HT20 -94dBm @ MCS0 802.11gn HT40 -93dBm @ MCS0 802.11a -94dBm @ 6Mbps 802.11n/ac HT20 -93dBm @ MCS0 802.11n/ac HT40 -93dBm @ MCS0 802.11n/ac HT80 -89dBm @ MCS0
Integrated Antenna:	2.4 GHz / 5 GHz wideband antenna 9 horizontal sectors, up to 3 used at once (3x3 MIMO) Horizontal and vertical polarization Horizontal beam width/antenna element 60° 4-6dBi gain per antenna element
Radio chipset:	Qualcomm-Atheros QCA9880 version 2
RF Output Power:	2.4 GHz – Up to 20 dBm 5 GHz – Up to 22 dBm *Regional restrictions may apply
Frequency Bands:	5.180 GHz – 5.825GHz 2.4 GHz – 2.490GHz (US, Canada & ETSI)
Channels: 802.11a/n/ac	ETSI: 19 channels (Channels:36,40,44,48,52,56,60,64,100,104,108,112,116,120, 124,128,132,136, 140) US: 24 channels (Channels: 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140, 149, 153, 157, 161, 165) Japan: 5.17, 5.19, 5.21, 5.23Ghz (Channels: 34, 38,42,46) band J52 5.18, 5.20, 5.22, 5.24, 5.26, 5.28, 5.30, 5.32Ghz (Channels: 36, 40, 44, 48, 52, 56, 60, 64)
Channels: 802.11b/g/n	ETSI: 13 (ch.1-13) US/Canada: 11 (ch. 1-11) France: 4 (10-13) Japan: 14 (1-14) 11b Japan: 13 (1-13) 11g
Security:	64-bit, 128-bit, 152-bit WEP, 128-bit AES, TKIP
Authentication:	802.1X, EAP-PEAP, EAP-TLS , EAP-TTLS WPA & WPA2-PSK
Processor and Memory:	800 MHz dual core ARM 1GB FLASH 512MB SDRAM
Radio features:	Spatial Multiplexing, Cyclic-Delay Diversity(CDD), low-density parity check (LDPC), Maximal Ratio Combining (MRC), Space Time Block Code (STBC), Dynamic Frequency Selection (DFS), Short Guard Interval/Normal Guard Interval (SGI/NGI)
Spectrum Analyzer:	2.4 and 5 GHz spectrum analysis with Qualcomm-Atheros Spectrum Analyzer
Compass:	Internal electrical compass
External Connectors	RJ-45 Network Connector (10/100/1000M) DC power adapter
Power	Power over Ethernet (PoE) IEEE802.3af (48V) 12V DC, external power supply sold separately
Mechanical	Ceiling mount with T-bar clips included Wall mounting kit sold separately
Environmental	Operating temperature: 32F ~ +122F (0C ~ +50C) Storage temperature: -40F ~ +185F (-40C ~ +85C) Environment: IP44, indoor usage
Dimensions	Height: 2.7 in. (68.5mm) Max diameter: 8.7 in. (221mm)