A UNIQUE WI-FI SENSOR AND HIGH-PERFORMANCE CLIENT

7SIGNAL®
THE WI-FI PERFORMANCE COMPANY

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	• 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	• Automated, continuous process • 40 different performance indicators for each AP, channel, antenna • Access point settings, capabilities, signal levels, channels, noise levels
Traffic Analysis	• 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	• 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	• 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.

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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)