Brochure

VIAVI
CellAdvisor 5G
5G Analyzer

VIAVI CellAdvisor 5G is the ideal field portable solution to validate 5G radio access. Its main 5G test functions include:
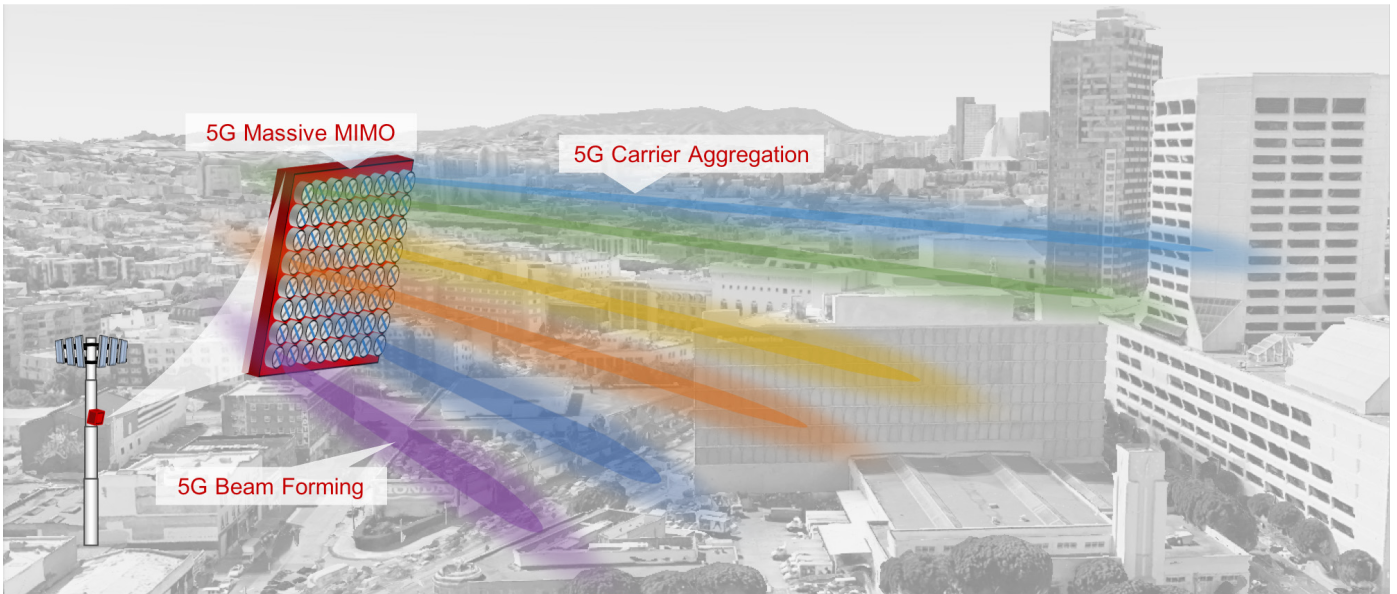
- Real-time spectrum and interference analysis with persistence display for 5G FR1 (Sub-6GHz) and FR2 (mmWave)

- 5G carrier scanner measuring up to eight 5G carriers' power as well as strongest beam power level and corresponding identifier (ID)

- 5G beam analyzer measuring individual beams and indicating corresponding identifier, power level, and signal-to-noise ratio

- 5G route map for coverage verification, mapping in real time the physical cell identity (PCI) and beam strength, as well as providing coverage data for post-processing

Introduction to 5G Radio Access

5G technology is based on orthogonal frequency division multiple access (OFDMA) transmission technology, similar to LTE, supporting data modulation from QPSK to 256QAM; however, it incorporates additional flexibility, for example:

- Frequency operating bands: carriers' transmission bands are defined in two main categories: Frequency Region 1 (FR1) for sub-6GHz and Frequency Region 2 (FR2) for millimeter wave (mmWave) between 24GHz and 52GHz

- Channel bandwidth: flexibility for wider channel bandwidth configurations; FR1 range is from 5MHz to 100MHz and FR2 is from 50MHz to 400MHz

- Carrier aggregation: capability to aggregate two or more component carriers to increase channel bandwidth

- Beam forming: ability to generate and shape multiple beams based on phase and amplitude to direct radiated power to the user's serving area

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5G Massive MIMO, Carrier Aggregation and Beam Forming

Real-Time Spectrum and Interference Analysis

CellAdvisor 5G has a real-time spectrum analysis mode and comprehensive interference analysis mode. This includes 2D and 3D spectrogram measurements as well as persistence spectrum analysis to better characterize 5G serving signals and potential interferers in both time and frequency domains.
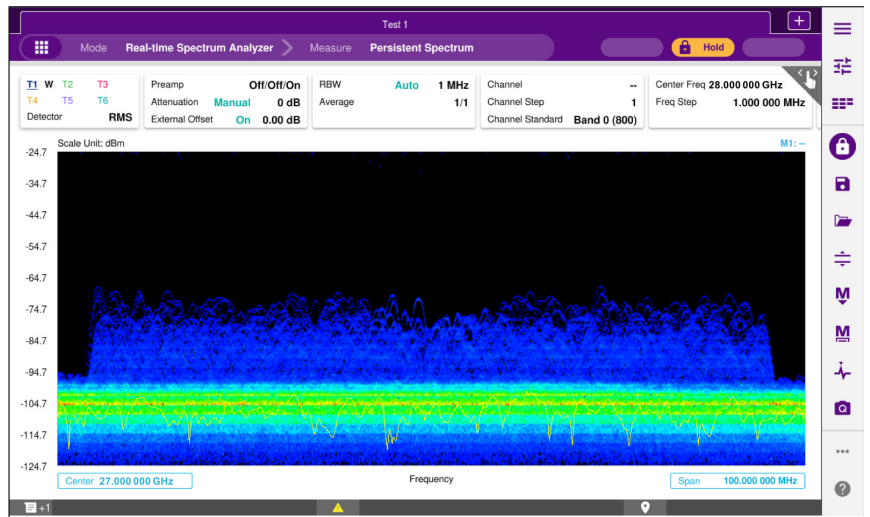

Persistence Spectrum
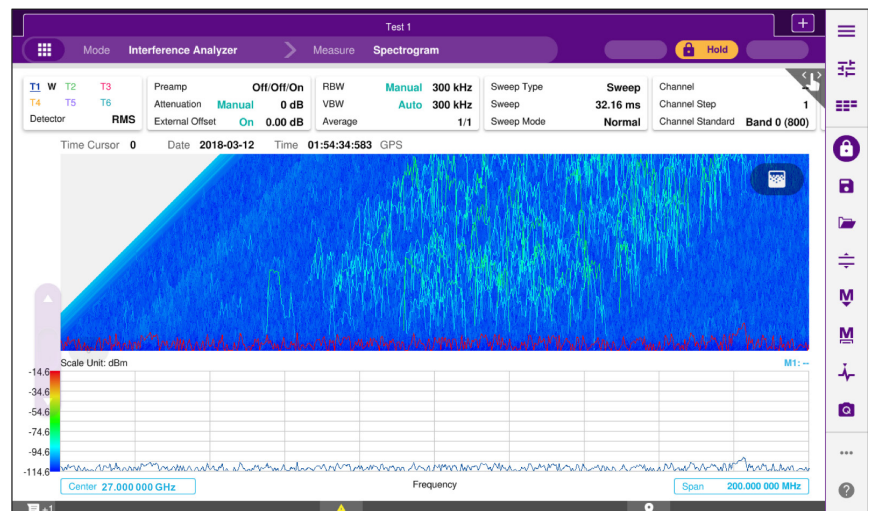
3D Spectrogram

5G Carrier Scanner

5G Carrier Scanner provides an easy-to-use, fast-response power measurement for up to eight 5G carriers. The power measurement for each carrier includes:

- Channel Power: Integrated power of the entire channel bandwidth (e.g., 100MHz) during an entire transmission frame (10ms)

- SS-RSRP (Secondary Synchronization – Reference Signal Received Power): Average power measurement of the strongest beam in the corresponding carrier through the entire transmission bandwidth (e.g., 90MHz) during the beam's transmission period
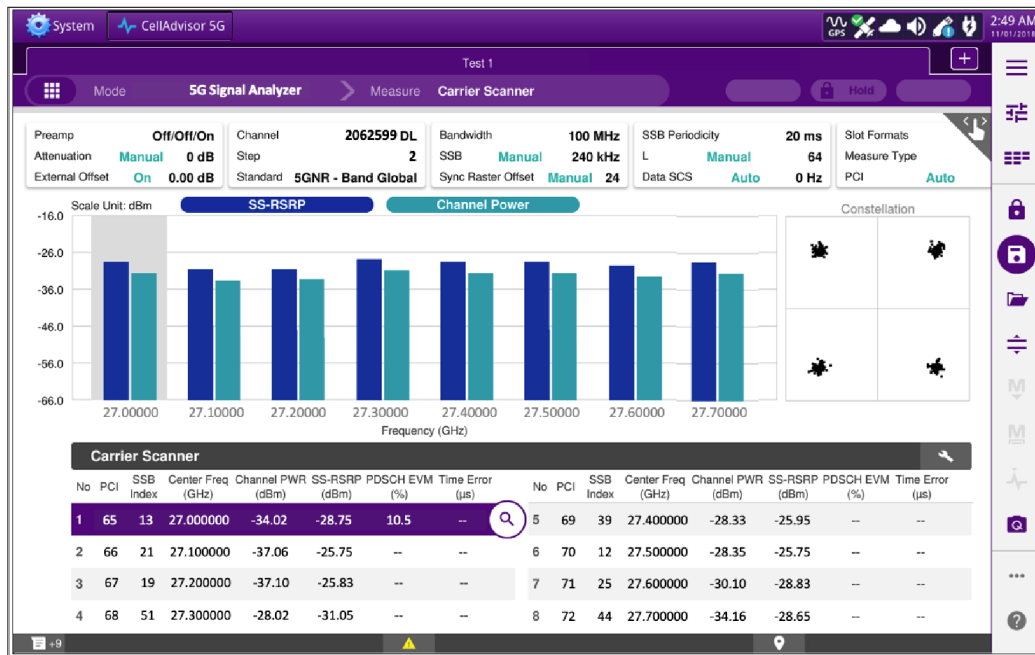

5G Carrier Scanner

5G Beam Analyzer

5G beam analyzer provides the beamforming profile of each transmission carrier, including the eight strongest beams and the corresponding power levels during its transmission period, including:

- SS-RSRP (Secondary Synchronization – Reference Signal Received Power): Linear average power of the resource elements carrying secondary synchronization signals

- PS-RSRP (Primary Synchronization – Reference Signal Received Power): Linear average power of the resource elements carrying primary synchronization signals

- SS-SINR (Synchronization Signal – Signal to Noise Ratio): Linear average power of the resource elements carrying secondary synchronization signals divided by the linear average power of noise and interference of the same frequency bandwidth
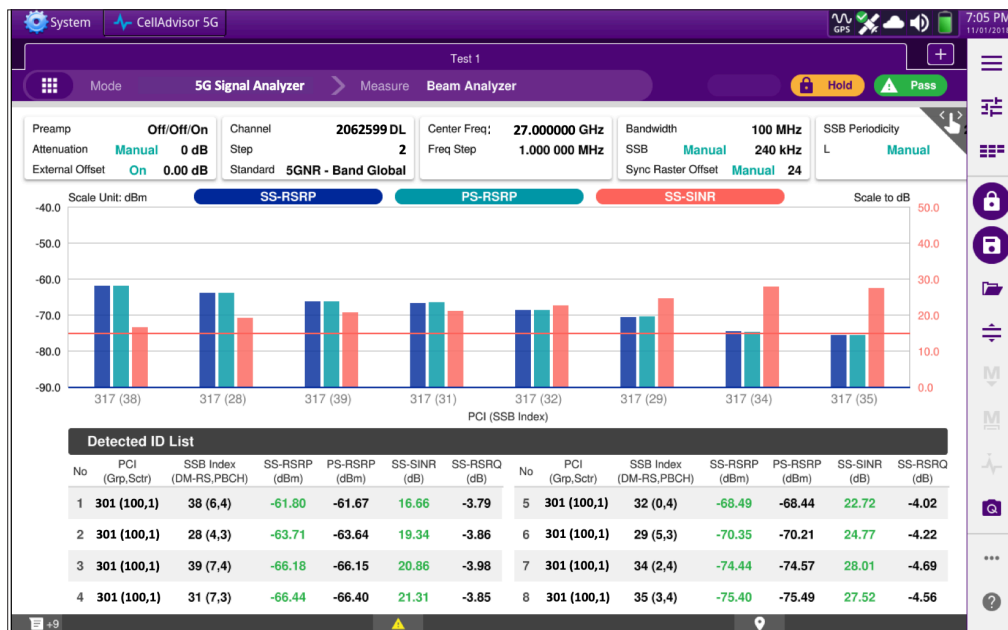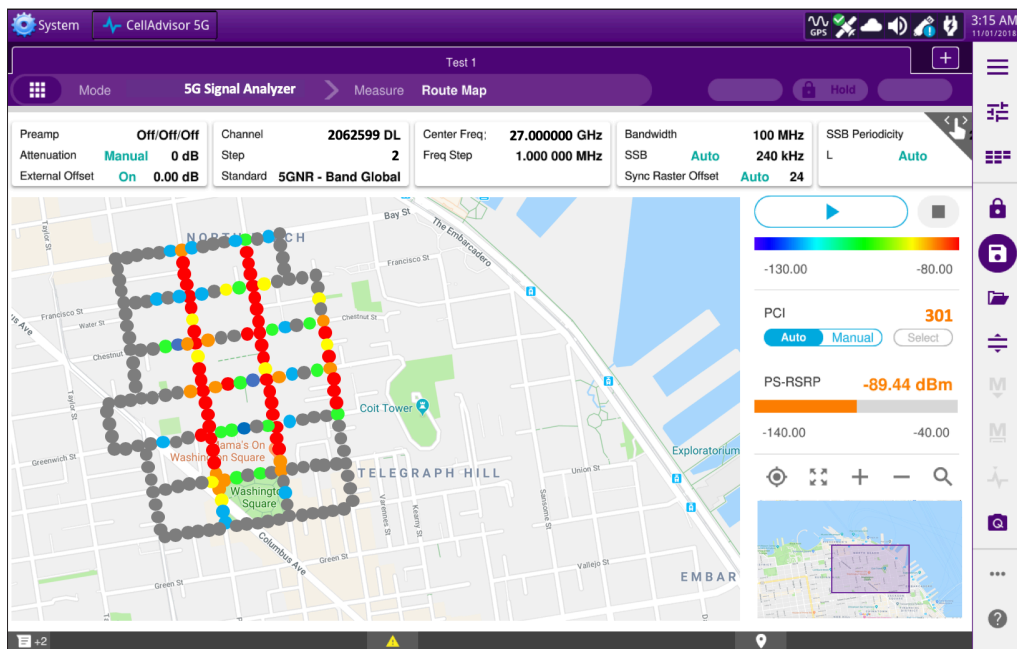

5G Beam Analyzer

5G Route Map

The 5G route map provides a basic coverage map depicting service availability developed from on a walk or drive test. Location is tracked through an integral GPS receiver and the heat map measurements are captured using a special omni-directional antenna system and the CellAdvisor 5G Beam Analyzer function. In addition to the continually updated display results, CellAdvisor 5G also captures a log file that can be exported to off-line coverage analysis tools.

The 5G route map is used by field technicians to verify and measure:

• Cell Coverage: identifies the physical cell ID for each datapoint

• Beam Availability: attributes the beam index for each datapoint

• Beam Propagation: provides the measured beam power and beam Signal to Noise Ratio (SNR) at each datapoint

5G Route Map