

**U.S. Macrocell  
Antenna Forecast,  
2015 – 2020:  
Spectrum Drives  
Upgrades and More  
Sectors**

Market Study  
Second Quarter 2016





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# **U.S. Macrocell Antenna Forecast, 2015 – 2020: Spectrum Drives Upgrades and More Sectors**

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## **Market Study**

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## Abstract

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This market study presents *iGR*'s forecast for the number of antennas on macrocells/macrosites in the U.S. from 2015 through 2020. It does not include DAS, small cells or any other type of indoor or outdoor cellular sites. It also does not include estimates around antennas for 600 MHz spectrum or future 5G IMT-2020 networks.

Typically, base station antennas are contained within a weather-proof enclosure (casing/radome). If an operator has deployed an enclosure with three frequency bands for one sector, that would be a minimum of six antennas (three transmit and three receive). Installations like this are more accurately called "antenna arrays" since each enclosure can contain multiple antennas spanning multiple bands.

*iGR* expects the total number of installed antennas in the U.S. to grow significantly in the next five years as mobile operators deploy LTE in new spectrum (such as AWS-3), refarm 2G and 3G networks and deploy LTE and expand the number of sectors used in the mobile network. All of these events may require new antennas. In upgrading their antennas, *iGR* expects that over the entire forecast period U.S. mobile operators will visit nearly 230,000 macrosites in order to upgrade the antennas.

Key questions addressed in this study:

- What are cell towers and sites?
- What are antennas?
- What are antenna arrays?
- How do antennas work?
- What is MIMO, carrier aggregation and beamforming?
- What are active antenna systems?
- Why do mobile operators replace antenna arrays?
- What are some of the key cost drivers surrounding antenna replacement?
- How many 2G/3G antennas are currently deployed?
- How many 4G LTE antennas are currently deployed?
- What is the forecast for 2G, 3G and 4G antennas through 2020?



- What will it cost to upgrade/replace antenna array?

This report is recommended for:

- Mobile operators, particularly those servicing the U.S. market
- Wireless antenna manufacturers and providers
- Wireless network construction vendors
- Mobile wireless tower companies
- Wired and wireless infrastructure vendors, particularly those servicing the U.S. market
- Financial and investment analysts.

