

**U.S. Stadiums &
Arenas: *Cellular In-
Building Wireless
Spending, 2020-
2025***

Market Study
Second Quarter 2021





U.S. Stadiums & Arenas: *Cellular In-Building Wireless Spending, 2020-2025*

Market Study

Published Second Quarter 2021

Version 1.0

Report Number: 02Q2021-12

iGR

12400 W. Hwy 71

Suite 350 PMB 341

Austin TX 78738

Table of Contents

Abstract	1
Executive Summary	3
Table A: Total Spending in Stadiums and Arenas by Spectrum, 2020-2025	4
Figure A: Total Spending in Stadiums and Arenas by Spectrum, 2020-2025.....	4
What This Means.....	4
Methodology.....	6
Sources.....	6
2021 Revised Forecast	6
Definitions.....	7
The Smart Stadium.....	8
Why make stadiums and arenas smart?.....	8
What is required for a Smart Stadium?	10
Technologies and Spectrum Behind Connected Stadiums/Arenas.....	11
5G	11
eMBB	12
URLLC	12
mMTC	13
5G Services and Use Cases	13
CBRS.....	13
mmWave.....	14
Outlook for the Stadium/Arena Cellular IBW Market.....	15
Measuring Impact of COVID-19.....	15
Table 1: Pandemic Influence on Building Categories	15
Current Trends and COVID Impact on Stadiums and Arenas.....	15
Impact of COVID-19 on Cellular IBW Forecast for Stadiums and Arenas	18
Cellular IBW Spending Forecast Methodology and Assumptions.....	20
Basic Pandemic Assumption	20
Buildings Methodology.....	20
Table 2: Commercial Buildings in the U.S.	21
Table 3: Sub-types of Public Assembly Buildings.....	22
Technology-specific assumptions.....	23
Other Stadium/Arena Assumptions	24
Network Build Spending Methodology	25
Operational Spending Methodology	25
Cellular IBW Spending Forecast – Stadiums and Arenas.....	27



Quoting information from an iGillottResearch publication: external — any iGillottResearch information that is to be used in press releases, sales presentations, marketing materials, advertising, or promotional materials requires prior written approval from iGillottResearch. iGillottResearch reserves the right to deny approval of external usage for any reason. Internal-quoting individual sentences and paragraphs for use in your company's internal communications activities does not require permission from iGillottResearch. The use of large portions or the reproduction of any iGillottResearch document in its entirety does require prior written approval and may have some financial implications.

Sub 6 GHz Bands	27
Network Build.....	27
Table 4: Sub 6 GHz Network Build Spending in Stadiums and Arenas, 2020-2025	27
Figure 1: Sub 6 GHz Network Build Spending in Stadiums and Arenas, 2020-2025	27
Operational	27
Table 5: Sub 6 GHz Operational Spending in Stadiums and Arenas, 2020-2025	28
Figure 2: Sub 6 GHz Operational Spending in Stadiums and Arenas, 2020-2025.....	28
Total Sub 6 GHz Spending	28
Table 6: Total Sub 6 GHz Spending for Stadiums and Arenas, 2020-2025	28
Figure 3: Total Sub 6 GHz Spending for Stadiums and Arenas, 2020-2025	29
CBRS	29
Network Build.....	29
Table 7: CBRS Network Build Spending in Stadiums and Arenas, 2020-2025	29
Figure 4: CBRS Network Build Spending in Stadiums and Arenas, 2020-2025	30
Operational	30
Table 8: CBRS Operational Spending in Stadiums and Arenas, 2020-2025	30
Figure 5: CBRS Operational Spending in Stadiums and Arenas, 2020-2025	30
Total CBRS Spending.....	31
Table 9: Total CBRS Spending for Stadiums and Arenas, 2020-2025	31
Figure 6: Total CBRS Spending for Stadiums and Arenas, 2020-2025	31
mmWave	32
Network Build.....	32
Table 10: mmWave Network Build Spending in Stadiums and Arenas, 2020-2025	32
Figure 7: mmWave Network Build Spending in Stadiums and Arenas, 2020-2025.....	32
Operational	32
Table 11: mmWave Operational Spending in Stadiums and Arenas, 2020-2025.....	32
Figure 8: mmWave Operational Spending in Stadiums and Arenas, 2020-2025.....	33
Total mmWave Spending	33
Table 12: Total mmWave Spending for Stadiums and Arenas, 2020-2025	33
Figure 9: Total mmWave Spending for Stadiums and Arenas, 2020-2025	34
Total Spending for Stadiums and Arenas	34
Table 13: Total Spending in Stadiums and Arenas by Spectrum, 2020-2025	34
Figure 10: Total Spending in Stadiums and Arenas by Spectrum, 2020-2025	35
Figure 11: Total Spending in Stadiums and Arenas, 2020-2025	35
Definitions	36
Definitions Table	36
About iGR	58
Disclaimer	58



Quoting information from an iGillottResearch publication: external — any iGillottResearch information that is to be used in press releases, sales presentations, marketing materials, advertising, or promotional materials requires prior written approval from iGillottResearch. iGillottResearch reserves the right to deny approval of external usage for any reason. Internal-quoting individual sentences and paragraphs for use in your company's internal communications activities does not require permission from iGillottResearch. The use of large portions or the reproduction of any iGillottResearch document in its entirety does require prior written approval and may have some financial implications.

Abstract

Counting professional sports teams, college athletics and high school sports, there are several thousand stadiums/arenas in the U.S. Many of these buildings already have distributed antenna systems (DAS) and Wi-Fi systems deployed to handle attendee data traffic, but additional in-building wireless (IBW) systems will be needed to improve attendees' experiences and create 'smart stadiums.'

This market study provides a revised forecast of the cellular in-building wireless (IBW) market for stadiums and arenas. *iGR* found that due to the pandemic, the IBW market for 2020 and beyond is significantly different than it was previously. The 2021 revised forecast was modeled with:

- New data and assumptions regarding the (ongoing) COVID-19 pandemic
- Newly available data (November 2020) from the Commercial Buildings Energy Consumption Survey (CBECS)
- Information gathered from conversations with multiple solution providers in the IBW market.

Included in the market study is a five-year forecast for both network build spending and operational spending for the deployment of cellular IBW in U.S. stadiums and arenas in the sub 6 GHz, CBRS, and mmWave bands.

Key questions addressed in this study:

- What is a smart stadium? What applications and services are enabled in a smart stadium?
- How has COVID-19 impacted the IBW market for stadiums and arenas?
- How much will be spent to build and operate sub 6 GHz, CBRS and mmWave IBW systems in U.S. stadiums and arenas from 2020 to 2025?
- What technologies are required for a smart stadium/arena?
- What are 5G, CBRS, and MmWave, some of the technologies and spectrums that will support cellular IBW?

This market study is recommended for:



Quoting information from an *iGillottResearch* publication: external — any *iGillottResearch* information that is to be used in press releases, sales presentations, marketing materials, advertising, or promotional materials requires prior written approval from *iGillottResearch*. *iGillottResearch* reserves the right to deny approval of external usage for any reason. Internal-quoting individual sentences and paragraphs for use in your company's internal communications activities does not require permission from *iGillottResearch*. The use of large portions or the reproduction of any *iGillottResearch* document in its entirety does require prior written approval and may have some financial implications.

Copyright © 2021 *iGillottResearch*, Inc. Reproduction is forbidden unless authorized.
FOR INFORMATION PLEASE CONTACT IAIN GILLOTT (512) 263-5682

- Mobile operators, particularly those servicing the U.S. market
- Mobile backhaul providers, including telcos and cable MSOs
- Wired and wireless backhaul vendors and solution providers
- Mobile OEMs, particularly those servicing the U.S. market
- Wired and wireless infrastructure vendors, particularly those servicing the U.S. market
- Financial and investment analysts.



Quoting information from an *iGillottResearch* publication: external — any *iGillottResearch* information that is to be used in press releases, sales presentations, marketing materials, advertising, or promotional materials requires prior written approval from *iGillottResearch*. *iGillottResearch* reserves the right to deny approval of external usage for any reason. Internal-quoting individual sentences and paragraphs for use in your company's internal communications activities does not require permission from *iGillottResearch*. The use of large portions or the reproduction of any *iGillottResearch* document in its entirety does require prior written approval and may have some financial implications.

Copyright © 2021 *iGillottResearch*, Inc. Reproduction is forbidden unless authorized.
FOR INFORMATION PLEASE CONTACT IAIN GILLOTT (512) 263-5682