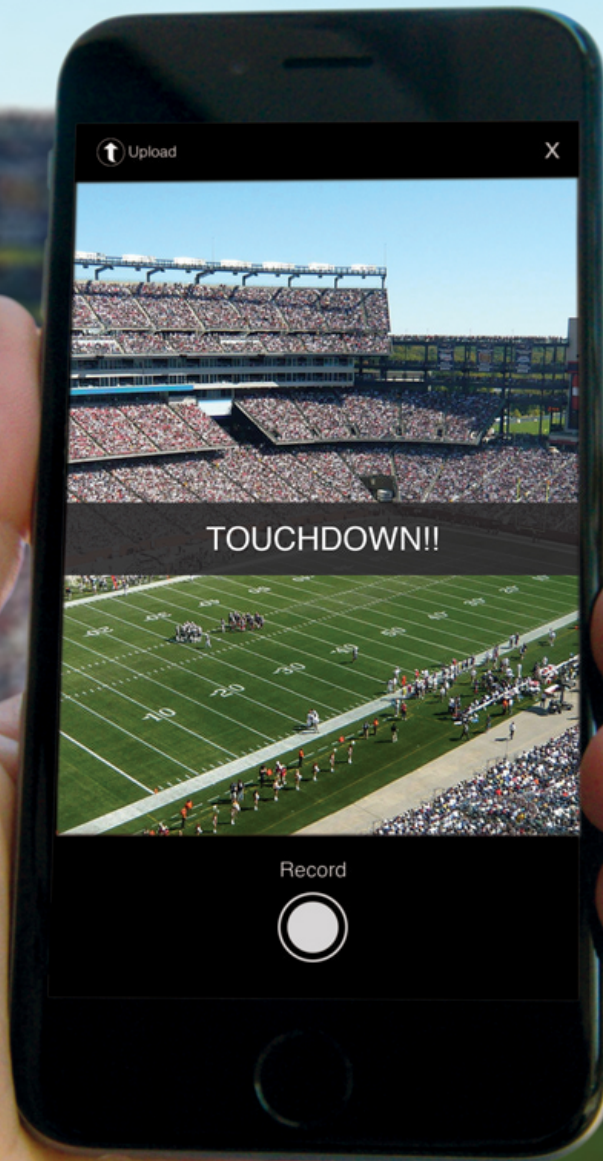




ADX SERIES

DISTRIBUTED ANTENNA SYSTEM



THE SIGNAL FOR SUCCESS™

ADX DAS IS IDEALLY SUITED FOR:

VERTICAL MARKETS



PUBLIC VENUE

Venue:
Kauffman Stadium
Location:
Kansas City, MO



HIGHER EDUCATION

Venue:
Florida Gulf Coast University
Location:
Fort Myers, FL



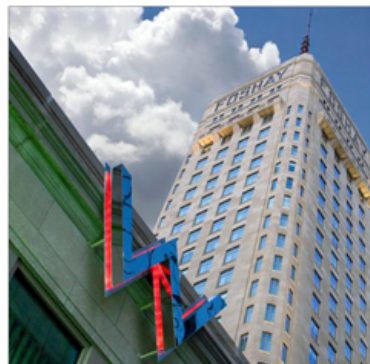
COMMERCIAL REAL ESTATE

Venue:
Sprint World Headquarters Campus
Location:
Overland Park, KS



HEALTHCARE

Venue:
Memorial Sloan Kettering Cancer Center
Location:
West Harrison, NY



HOSPITALITY

Venue:
W Minneapolis - The Foshay
Location:
Minneapolis, MN



PUBLIC SAFETY

Venue:
Consolidated Forensic Laboratory
Location:
Washington, D.C.

ADX SERIES

INDOOR/OUTDOOR
DISTRIBUTED ANTENNA SYSTEM



CASE STUDY: DIRECTV GLOBAL HEADQUARTERS

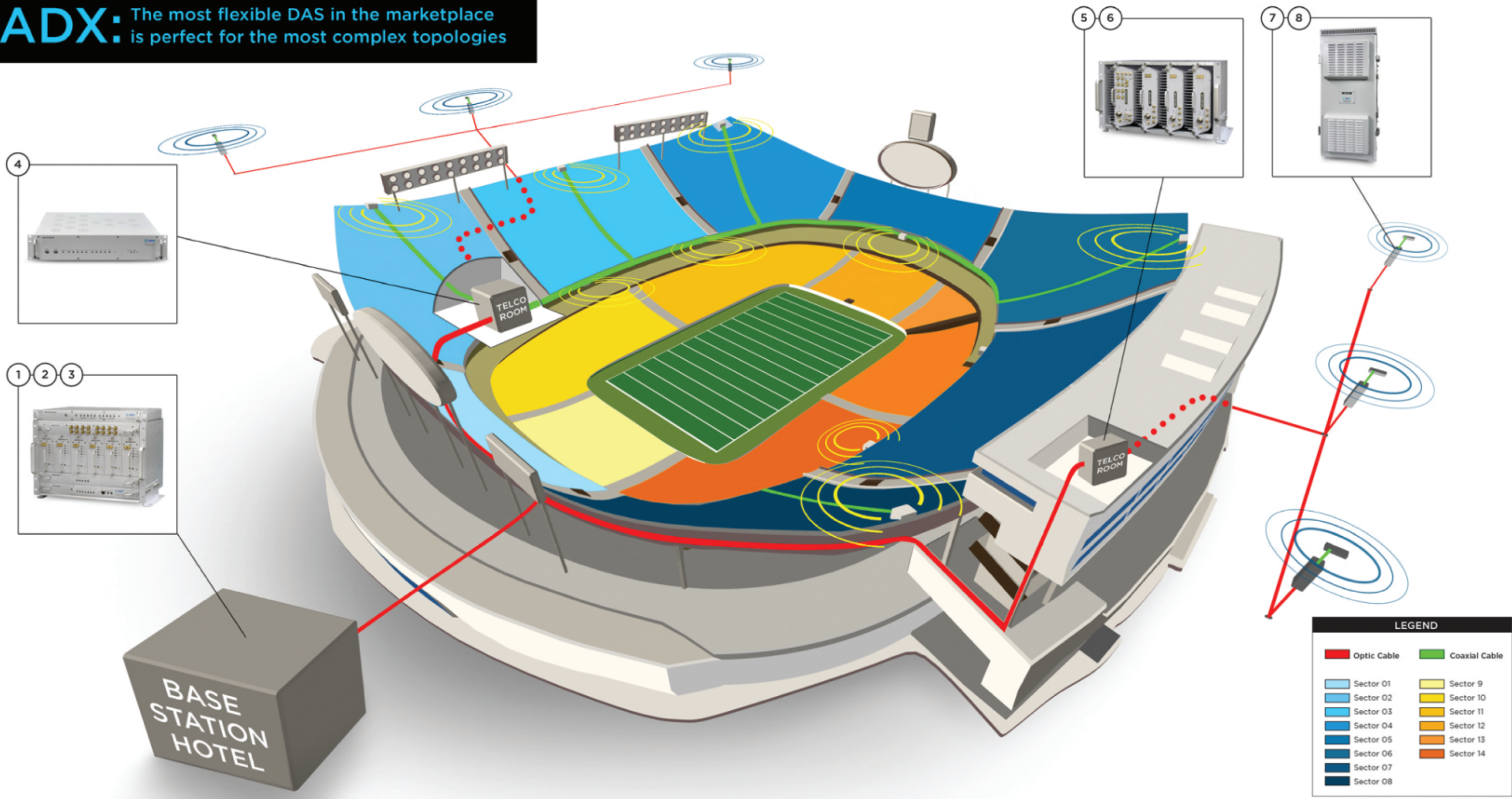


DIRECTV®

- Multi-carrier DAS for global headquarters in El Segundo, CA
- Provides capacity and coverage to entire corporate campus spanning over 900,000 sq. ft.
- Currently features all four Tier 1 Carriers, with capability to support future bands
- Utilizes both Medium Power and High Power Remote Units fed from common Head End



ADX: The most flexible DAS in the marketplace is perfect for the most complex topologies

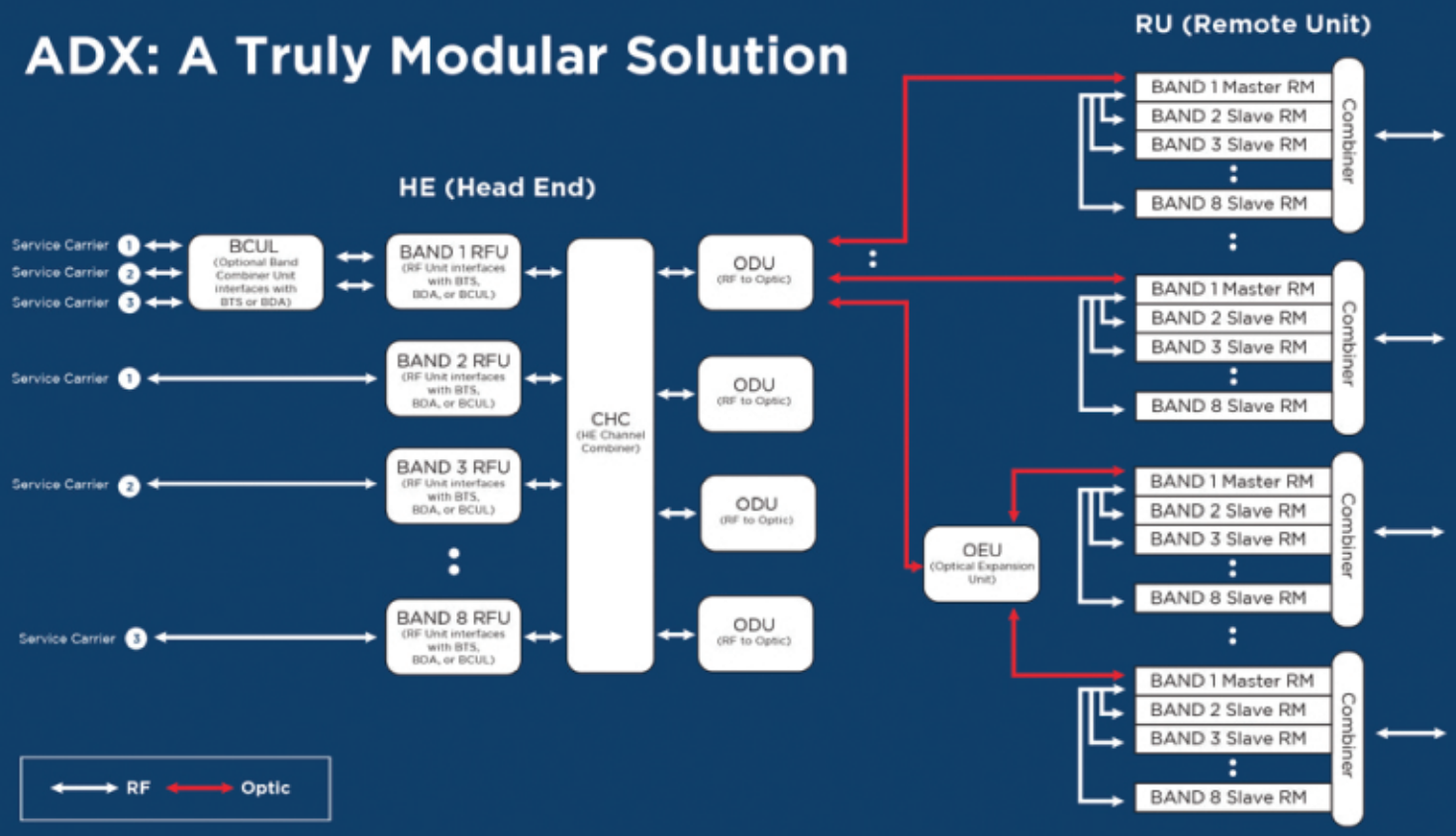


LEGEND

█ Optic Cable	█ Coaxial Cable
█ Sector 01	█ Sector 09
█ Sector 02	█ Sector 10
█ Sector 03	█ Sector 11
█ Sector 04	█ Sector 12
█ Sector 05	█ Sector 13
█ Sector 06	█ Sector 14
█ Sector 07	
█ Sector 08	

- 1 Truly modular architecture means our Head End (HE) is ideal for both single carrier and neutral host applications.
- 2 Innovative, patented Band Combiner Unit (BCU)[™] enables dynamic power allocation amongst carriers.
- 3 Multi Supervisory Unit (MSU) enables alarm monitoring and remote management of multiple Head Ends via our famed ADRF web-based GUI for even the densest multi-sector systems.
- 4 Up to 15 dBo of optical link budget, when coupled with Optical Expansion Unit (OEU), over one strand of SMF allows distant remote units to be fed with minimal fiber cabling.
- 5 1W, 2W, and 5W output power options for Remote Unit (RU) modules are completely interchangeable, allowing adaptability to any design demands.
- 6 Patented technologies (such as Auto Commissioning Routine[™] and Noise Detection Routine[™]) speed RU commissioning time to reduce cost.
- 7 High Power Remote Units (HPR) feature up to 40W of output power to ensure robust coverage, even for poorly propagating frequency bands such as PCS, AWS, and BRS.
- 8 Flexibility of modular components enables MIMO applications within a single ruggedized HPR cabinet.

ADX: A Truly Modular Solution



ADX-HPR-CHA (High Power Chassis)

- Supports up to 6 ADX-HPR High Power Remote Modules
- Supports up to 2 ADX-HPR-ORU (Optical Receiver Units) for MIMO support in a single chassis
- IP65 Rated

ADX-HPR-7F/S8/C43 ADX-HPR-P/A/W/BT46 (High Power Remote Modules)

- 20W modules available for low bands (700MHz, Cell, and SMR800)
- 40W modules available for high bands (PCS, AWS, WCS, and BRS-TDD)

ADX-HPR-ORU-X (High Power RU Optic Remote)

- Up to 10dB optical link budget
- Receives optic signal from the Head End and converts to RF

ADRF-CHC-U-LP-D (Low PIM RU Channel Combiner)

- DIN Female connectors
- PIM Rated at 153dBc @ 2 tones x 43dBm
- Combines 700MHz/Cell+SMR800/PCS/WCS/AWS/BRS with minimal loss (<0.7dB)
- Outdoor rated at IP67

ADRF-CHC-V-LPIM (Low PIM RU Channel Combiner)

- Mini-DIN (Female) Input and Output RF ports
- Combines 700MHz, SMR800+Cellular, AWS, and PCS band signals
- 30dB coupler test ports

ADX-R-____M-X/S (Master or Slave Remote Module)

- Available for UHF/VHF, PS700, 700MHz, SMR800/900, Cell, PCS, AWS, WCS, BRS
- 25dBm modules available for UHF/VHF
- 1W and 2W versions available for all bands
- 5W versions available for PCS/AWS/BRS-TDD
- Efficiently solves out of band interference problems by supporting optional external filters

ADX-R-CHA (Remote Unit Chassis)

- Supports up to 2 Master + 2 Slave or 1 Master + 3 Slave Remote Modules
- Wall or 19" Rack Mountable

ADX-R-CHC-V/S ADX-R-CHC-2WS/4WS (RU Channel Combiner)

- Combines outputs of RU with minimal loss
- Supports optional 2-way (CHC-2WS)/4-way (CHC-4WS) add-on splitter
- ADX-R-CHC-V supports 700MHz, Cell, PCS, and AWS
- ADX-R-CHC-S supports SMR800/900, PCS, BRS, and Wi-Fi

ADX-R-CCH-4-X (RU Channel Combiner)

- SMA (Female) Input and N-Type (Female) Output RF ports
- Supports up to (4) LOW inputs between 698-960 MHz
- Supports up to (4) HIGH inputs between 1710-2690 MHz
- Low and high signals are combined and split 4-ways
- Mounts inside of the ADX-R-CHA (if free slot is available)

ADX-BPF-____ (RU External Filter)

- Optional Band Pass Filters that provide additional filtering to prevent interference from adjacent signals
- Rack or Wall Mountable

ADX-R-78P-N4X-X ADX-R-VU25-N4X-X ADX-R-VU25M-X/S (Public Safety RU)

- Efficiently solves out of band interference problems by supporting optional external filters
- Individually wall mountable or installed in optional chassis (rack or wall mountable)
- Stand-alone chassis

ADX-R-CHA-N4X (RU Enclosure)

- Supports up to 2 Master + 4 Slave Remote Modules
- RU Enclosure

ADX-R-PSU (RU Power Supply Unit)

- Supports up to 8 Remote Modules
- Supports ADRF-BBU for battery backup solution
- DC power option also available (ADX-R-PSU-DC)

ADX-R-FAN-R/W (Fan for RU Chassis)

- Provides active cooling for remote modules
- Required when rack mounting remote modules
- DC power versions available

ADX-R-OEU-8-X (Optical Expansion Unit)

- Extends DAS coverage to other buildings
- Operates with up to 5dB optical loss between HE and OEU
- Drives up to 8 additional Master RUs
- Provides DAS coverage to remote building while minimizing equipment and fiber

ADX-H-NMS-PKG (HE NMS Package)

- Includes HE chassis, ADX-H-NMS, ADX-H-PSU, and ADX-H-CHC
- Provides remote control and monitoring status of alarms
- Supports up to 8 frequency bands
- Supports full SNMP (get, set & trap) and web-based GUI interface

ADX-H-BCUL-____ (HE Band Combiner Unit)

- SMA (Female) Input and Output RF ports
- Receives up to 4 duplex or simplex RF input signals from -20dBm to +25dBm
- Power ratios can be specified between 4 RF input signals
- Easily add multiple carriers' signals without additional RU equipment

ADX-H-CHC-M (HE MIMO Channel Combiner)

- SMA (Female) Input and Output RF ports
- Supports up to 4 RFUs and 4 ADX-H-ODUs
- Required if running a MIMO or multi-sector system with a single NMS

ADX-H-PSU-DC (HE DC Power Supply Unit)

- Supports PSU alarming
- Provides power for all Head End modules
- -48V to +24V DC input range

ADX-H-MSU (Multi Supervisory Unit)

- Monitoring and management of multiple ADX-H-NMS units
- Provides 7 physical Ethernet ports
- Supports up to 64 port forwarding rules
- Supports SNMP (get, set, & trap)

ADX-H-RFU-____ (HE RF Unit)

- N-Type (Female) Input and SMA (Female) Output RF ports
- Input range from 0 to +25dBm; RFU-BT input range from -15 to +37 dBm
- Provides RF interface with BTS, BDA, or BCUL
- Each RFU is modular, hot-swappable, and has independent gain control and filtering
- Supports both simplex and duplex inputs; RFU-BT supports only duplex input

ADX-H-ODU-1/4-X (HE Optical Distribution Module)

- Converts RF to optic and transports signal to remote units
- Minimizes the number of optic cable need by transporting multi band signals over a single strand of fiber using WDM technology
- ADX-H-ODU-4-X supports up to 4 remote units with up to 5dB loss
- ADX-H-ODU-1-X supports 1 remote unit with up to 10dB loss

ADX ORDERING GUIDE

DESCRIPTION

PART NAME

HEAD END

1. Head End Chassis, NMS, PSU, CHC	ADX-H-NMS-PKG
2. Head End Chassis, NMS, PSU (DC), CHC	ADX-H-NMS-PKG-DC
3. Head End Channel Combiner Unit for MIMO	ADX-H-CHC-M
4. 10dBo Optic Module (1 Port) (Head End) (supports WCS, BRS)	ADX-H-ODU-1-X
5. 5dBo Optic Module (4 Ports) (Head End) (supports WCS, BRS)	ADX-H-ODU-4-X
6. Rack for Optic Module (2 Bays) (Head End)	ADX-RACK-ODU
7. 700MHz Head End Band Combiner Unit (Lower A/B/C, Upper C)	ADX-H-BCUL-7F
8. Cellular Head End Band Combiner Unit	ADX-H-BCUL-C
9. PCS Head End Band Combiner Unit	ADX-H-BCUL-P
10. AWS Head End Band Combiner Unit	ADX-H-BCUL-A
11. 700MHz Single Band RF Unit (Lower A/B/C, Upper C)	ADX-H-RFU-7F
12. 700MHz Single Band RF Unit (Lower A/B/C, Upper C) (Rack Type)	ADX-H-RFU-7F-R
13. 700MHz Single Band RF Unit (Public Safety)	ADX-H-RFU-7P
14. SMR 800MHz/900MHz Dual Band RF Unit	ADX-H-RFU-S89
15. Cellular Single Band RF Unit	ADX-H-RFU-C
16. PCS Single Band RF Unit	ADX-H-RFU-P
17. AWS Single Band RF Unit	ADX-H-RFU-A
18. AWS Single Band RF Unit (Rack Type)	ADX-H-RFU-A-R
19. WCS Single Band RF Unit	ADX-H-RFU-W
20. BRS Single Band RF Unit (TD-LTE)	ADX-H-RFU-BT
21. VHF/UHF Dual Band RF Unit	ADX-H-RFU-VU-R
22. Multi Supervisory Unit to Monitor Multiple Sectors	ADX-H-MSU
23. Rack for Duplexer	ADX-RACK-2PLX
24. Head End External Filter to support Cellular	ADX-H-2PLX-C
25. Head End External Filter to support PS 700	ADX-H-2PLX-7P
26. Head End External Filter to support PS 800	ADX-H-2PLX-S8
27. Head End External Filter to support 700MHz	ADX-H-2PLX-7F
28. Head End External Filter to support SMR 800/900	ADX-H-2PLX-S89

BAND PASS FILTER

1. Rack for Band Pass Filter	ADX-RACK-BPF
2. Remote Unit External Filter to support 700MHz UL path	ADX-BPF-7FUL
3. Remote Unit External Filter to support PS 700 DL path	ADX-BPF-7PDL
4. Remote Unit External Filter to support PS 700 UL path	ADX-BPF-7PUL
5. Remote Unit External Filter to support cellular UL path	ADX-BPF-CUL
6. Remote Unit External Filter to support SMR 800/900 DL path	ADX-BPF-S89DL
7. Remote Unit External Filter to support SMR 800/900 UL path	ADX-BPF-S89UL
8. Remote Unit External Filter to support PS 800 DL path	ADX-BPF-S8DL
9. Remote Unit External Filter to support PS 800 UL path	ADX-BPF-S8UL
10. Remote Unit External Filter to support PS 700 and SMR 800	ADX-BPF-7PS8DL

HIGH POWER REMOTE UNIT

1. High Power Remote Unit Chassis + AC Power Supply	ADX-HPR-CHA
2. High Power Remote Unit Chassis + DC Power Supply	ADX-HPR-CHA-DC
3. High Power Remote Unit Optic Module (supports WCS, BRS)	ADX-HPR-ORU-X
4. 20W 700MHz Remote Module (Lower A/B/C, Upper C)	ADX-HPR-7F43
5. 20W SMR 800MHz Remote Module	ADX-HPR-S843
6. 20W Cellular Remote Module	ADX-HPR-C43
7. 40W PCS Remote Module	ADX-HPR-P46
8. 40W AWS Remote Module	ADX-HPR-A46
9. 40W WCS Remote Module	ADX-HPR-W46
10. 40W BRS Remote Module (TD-LTE)	ADX-HPR-BT46
11. Universal Low PIM Channel Combiner Unit, DIN (F)	ADRF-CHC-U-LP-D
12. Universal Low PIM Channel Combiner Unit, Mini DIN (F)	ADRF-CHC-U-LP-M

DESCRIPTION

PART NAME

REMOTE UNIT

1. Remote Unit Chassis (supports 1 Master RU + 3 Slave RUs)	ADX-R-CHA
2. Remote Unit Enclosure (supports 2 Master RUs + 4 Slave RUs)	ADX-R-CHA-N4X
3. Power Supply Unit for Remote Unit	ADX-R-PSU
4. DC Power Supply Unit for Remote Unit	ADX-R-PSU-DC
5. AC/DC Adaptor for Remote Unit	ADX-R-ADP
6. Low PIM Channel Combiner Unit for Verizon Wireless	ADRF-CHC-V-LPIM
7. Remote Unit Channel Combiner Unit for Verizon Wireless	ADX-R-CHC-V
8. Remote Unit Channel Combiner Unit for Sprint	ADX-R-CHC-S
9. Remote Unit Channel Combiner Unit for Enterprise (supports WCS, BRS)	ADX-R-CCH-4-X
10. Remote Unit 2-Way Splitter (add-on part to ADX-R-CHC-V/S)	ADX-R-CHC-2WS
11. Remote Unit 4-Way Splitter (add-on part to ADX-R-CHC-V/S)	ADX-R-CHC-4WS
12. 25dBm VHF/UHF Master Remote Module (supports WCS, BRS)	ADX-R-VU25M-X
13. 25dBm VHF/UHF Master Remote Module (supports WCS, BRS)	ADX-R-VU25-N4X-X
14. 25dBm VHF/UHF Slave Remote Module	ADX-R-VU25S
15. 1W 700MHz/800MHz Master Remote Module (Public Safety) (supports WCS, BRS)	ADX-R-78P30M-X
16. 1W 700MHz/800MHz Master Remote Module (Public Safety) (supports WCS, BRS)	ADX-R-78P-N4X-X
17. 1W 700MHz Master Remote Module (Lower A/B/C, Upper C) (supports WCS, BRS)	ADX-R-7F30M-X
18. 1W 700MHz Slave Remote Module (Lower A/B/C, Upper C)	ADX-R-7F30S
19. 1W 700MHz Slave Remote Module (Public Safety)	ADX-R-7P30S
20. 1W SMR 800MHz/900MHz Master Remote Module (supports WCS, BRS)	ADX-R-S8930M-X
21. 1W SMR 800MHz/900MHz Slave Remote Module	ADX-R-S8930S
22. 1W Cellular Master Remote Module (supports WCS, BRS)	ADX-R-C30M-X
23. 1W Cellular Slave Remote Module	ADX-R-C30S
24. 1W PCS Master Remote Module (supports WCS, BRS)	ADX-R-P30M-X
25. 1W PCS Slave Remote Module	ADX-R-P30S
26. 2W PCS Master Remote Module (supports WCS, BRS)	ADX-R-P33M-X
27. 2W PCS Slave Remote Module	ADX-R-P33S
28. 5W PCS Master Remote Module (supports WCS, BRS)	ADX-R-P37M-X
29. 5W PCS Slave Remote Module	ADX-R-P37S
30. 1W AWS Master Remote Module (supports WCS, BRS)	ADX-R-A30M-X
31. 1W AWS Slave Remote Module	ADX-R-A30S
32. 2W AWS Master Remote Module (supports WCS, BRS)	ADX-R-A33M-X
33. 2W AWS Slave Remote Module	ADX-R-A33S
34. 5W AWS Master Remote Module (supports WCS, BRS)	ADX-R-A37M-X
35. 5W AWS Slave Remote Module	ADX-R-A37S
36. 2W WCS Master Remote Module (supports WCS, BRS)	ADX-R-W33M-X
37. 2W WCS Slave Remote Module	ADX-R-W33S
38. 2W BRS Master Remote Module (TD-LTE) (supports WCS, BRS)	ADX-R-BT33M-X
39. 2W BRS Slave Remote Module (TD-LTE)	ADX-R-BT33S
40. 5W BRS Master Remote Module (TD-LTE) (supports WCS, BRS)	ADX-R-BT37M-X
41. 5W BRS Slave Remote Module (TD-LTE)	ADX-R-BT37S
42. Remote Unit 4-Way Splitter (to support more than 3 Slave RUs)	ADX-R-4WS
43. Fan for Remote Unit Chassis (Rack Mounted)	ADX-R-FAN-R
44. Fan for Remote Unit Chassis (Wall Mounted)	ADX-R-FAN-W
45. DC Fan for Remote Unit Chassis (Rack Mounted)	ADX-R-FAN-R-DC
46. DC Fan for Remote Unit Chassis (Wall Mounted)	ADX-R-FAN-W-DC
47. Optic Expansion Unit (8 Ports) (supports WCS, BRS)	ADX-R-OEU-8-X

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