

Large In-Building Active DAS Solution

Modular Design for Flexibility in Coverage & Capacity



Active DAS Solution

Large venues such as stadium, airport, sport complex, resort hotel require comprehensive multi-band and multi-system mobile indoor coverage with high capacity. To meet the requirement, active DAS which consists of main unit and remote unit will be the ideal solution. Fiber network for RF signal transport between the main unit and remote unit will be able to support long distance or large coverage area as required.

Active Conditioning Unit (ACU)



- Modular design
- Each ACU can support max 8 RFUs

Combiner (Front & Rear)



- Combining any system band for multi-operator

Optical Control Unit (OCU)



- Each OCU can support max 2 FOU modules

Remote Unit (RU)



- Modular design
- Each RU can support max 4 RFUs or 8 bands

Comba's Latest ComFlex Solution

As a DAS market leader, Comba offers the most flexible active DAS solution, namely ComFlex which is able to support multiple operators and multiple technologies (2G, 3G, 4G) on all commonly deployed EUTRA bands in the global market (700MHz, 800MHz, 900MHz, 1800MHz, 2100MHz, 2300MHz, 2600MHz, etc). Comba's latest ComFlex solution basically consists of ACU, Combiner unit, OCU and RU. In summary, each system's RF signal from Base Station will be combined and distributed through ACU into combiner unit. The combined signals are then converted to optical signal and transmitted via fiber network to RU and eventually to the in-building DAS.

Comba ComFlex AM Solution



Traditional DAS Solution



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Design Reference Case: Typical Large Office Building

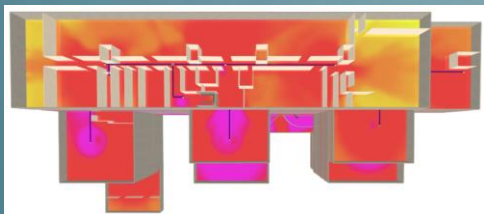


Design Requirements:

- Cover 3 Underground Floors and 6 Ground Floors, total area 15,000 m²
- Combine basic system bands of LTE 800MHz, GSM 900MHz, LTE 1800MHz, UMTS 2100MHz, extension in future of LTE 2600MHz
- All in MIMO and without MIMO option
- Sharing 3 operators per system
- Require 6 sectors for each system

Design Solution:

- Sets of ACU + Combiner + OCU + RU to DAS, 77 Antennas for 6 sectors
- Meet design coverage levels
GSM900 BCCH > -65dBm @ 95%
UMTS2100 RSCP > -75dBm @ 95%
LTE800 RSRP > -80dBm @ 95%
LTE1800 RSRP > -85dBm @ 95%



LTE1800 RSRP Simulation Plots

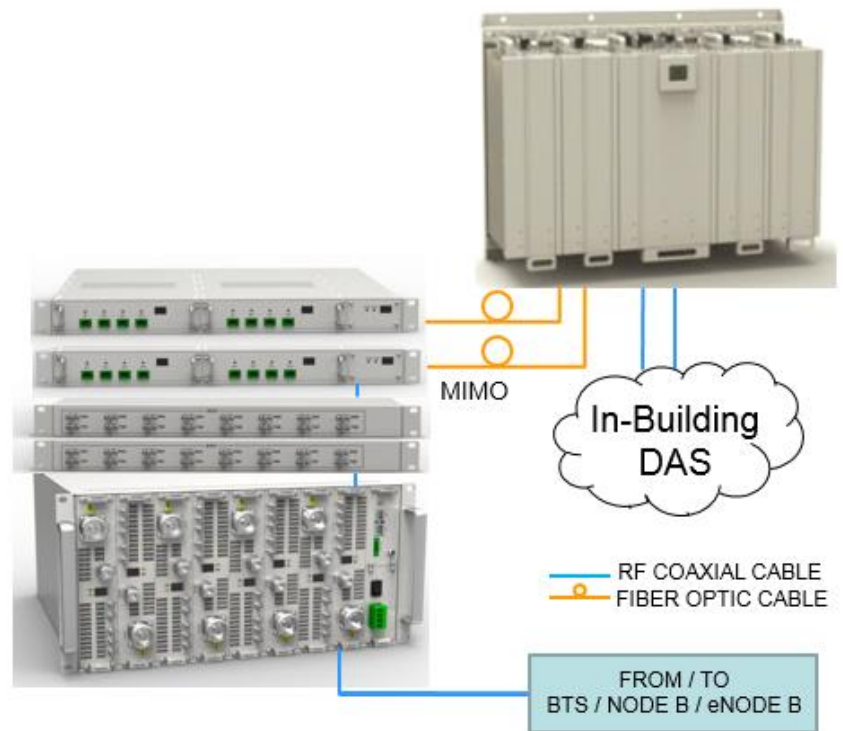


Figure 1: Typical ComFlex Network Schematic

Flexible Solution with Modular Design

Traditionally, customized POI is required at the front-end of the DAS in which customization will result in longer product lead time and lesser flexibility. To address the concern, Comba's ACU has modular design to support any combinations of the frequency band (mentioned above) deployment. In addition, ACU / Combiner unit can be cascaded up to four levels to accommodate up to 32 RF inputs for large networks design.

The solution is able to support up to 16 RUs per sector. Each RU is equipped with 4 RFU units which supports MIMO. With only SISO configuration, one RU can support up to 8 bands, for example the frequency combination of 700+800+850+900+1800+2100+2600+2300 MHz. Alternatively, with full 2x2 MIMO configuration, one RU can support up to 4 bands, for example, 700 MIMO, 1800 MIMO, 2600 MIMO, 2100 MIMO.

Future Enhancement

The proper design practices help to ensure network operation efficiency and superior user experience. The continuous improvement in mobile technology necessitates the deployment of future-proof mobile systems. Comba's ComFlex active DAS solution will definitely provide the best flexibility and capability for any future upgrades due to its compact and modular structure.

