

May 16, 2014

Compliance Testing 1724 S. Nevada Way Mesa, AZ 85204

To Whom It May Concern:

ALLIANCE REL 6 is SOLiD's multi-carrier, neutral host Distributed Antenna System (DAS), which efficiently delivers wireless RF signals into buildings, campus environments, or any location that is difficult to cover with traditional outdoor macro networks. ALLIANCE DAS supports a broadband frequency range from 150 MHz to 3 GHz to provide coverage for public safety communications, 2-way radio, and commercial wireless service providers.

By greatly improving in-building radio environments, the system allows service providers and enterprise locations to deliver high-quality mobile voice and data services at any site whether a public institution or private facility, including:

- Shopping malls
- Hotels
- Corporate and university campus areas
- Airports
- Hospitals and Clinics
- Underground transportation systems
- Multi-use stadiums and convention centers

The ALLIANCE DAS REL 6 supports both analog (AMPS) and digital (TDMA, CDMA, WCDMA, and LTE) cellular systems in multiple bands through a single strand of fiber for the following communication standards and public interface protocols:

 Frequencies: VHF, UHF, 700MHz (LTE and PS), 800MHz (PS and SMR), 850MHz (Cellular), 900MHz (iDEN and Paging), 1900MHz (PCS), 2100MHz (AWS-1), 2.3GHz (WCS), 2.5GHz (BRS/EBS)

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- Voice protocols: AMPS, TDMA, CDMA, GSM, iDEN, WCDMA
- Data protocols: EDGE, GPRS, WCDMA, CDMA2000, EV-DO, Paging, LTE-FDD, LTE-TDD

ALLIANCE DAS REL 6 provides RF POWER CONTROL™ to guarantee power to each carrier as configured in the DAS management software. Each frequency band has a dedicated amplifier. There is no cross-band sharing, which means more power and control per frequency band. ALLIANCE also features advanced filtering capabilities and 4G Certified MIMO in any band.

The system supports multiple frequencies in a single unit through the addition of plug-in modules. By delivering multiple signals with a single optical cable, the system does not require additional facilities whenever a new frequency is added.

The ALLIANCE multi-carrier system is a flexible and cost-effective neutral host solution offering:

#### Flexible, Scalable

- Clustering multiple-buildings (campus) as one coverage
- Small footprint
- Mix and match remote units (ROUs): low-power 1W (LROU), mid-power 5W (MROU) and high-power 20W (HROU)
- Single fiber strand to each remote unit

#### **Modular Structures**

- Modular frequency upgrade
- Hot-swap plug-in modules for each frequency
- Add additional carriers without the need for additional architecture

## Multi-Band, Multi Operator

- Signals from multiple service providers transmitted simultaneously
- Support for multiple operators in a band
- Single infrastructure for 150 MHz to 3 GHz

## Low OPEX, CAPEX

- Compact and upgradable design
- Ability to utilize pre-existing infrastructure in building
- Easy installation, rapid commissioning with Auto ID of system components
- SNMP support (Simple Network Management Protocol v2) for web-based management
- Remote Management via TCP/IP connection

The ALLIANCE DAS REL 6 is comprised of several primary units as well as optional 220 Pangyoyeok-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea 463-400

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# units including:

- BTS Interface Unit (BIU)
- Optical Distribution Unit (ODU)
- Remote Optic Unit (ROU) \*Available in low-power 1W (LROU), mid-power 5W (MROU) and high-power 20W (HROU) models
- DAS Management System (DMS-1200 REL 6)
- Add-On Remote Units (AOR and ARU) (Optional to support additional bands)
- Optic Expansion Unit (OEU) (Optional fiber MUX to support highly distributed systems)
- Link Balancer Unit (Optional DAS interface tray)

The figure shows a typical system topology with the BIU, DMS-1200, ODU, and multiple ROUs. The figure also shows the optional OEU and Link Balancer Units.

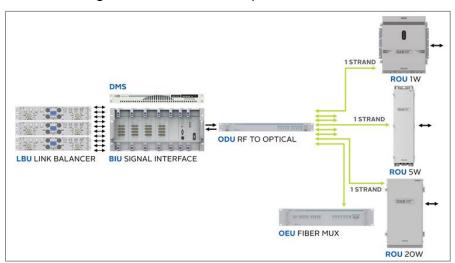


Figure.1 – ALLIANCE DAS Topology

The BIU receives the downlink signals from a base station unit (BTS) or bi-directional amplifier (BDA), combines them, and sends them to the ODU via coax. The ODU converts the RF signals to optical signals and transmits them via fiber to the ROUs. At the ROU, signals are amplified and sent via coax to the remote antennas placed throughout the building or campus. Add-on remotes can be connected to the main ROUs to support additional bands.

For the uplink path from the mobile device to the BTS or BDA, the process is reversed so that the BIU can route each frequency to the proper carrier.

The DMS-1200 is a network management device that provides remote control and monitoring of the DAS through a standard Internet connection.

The OEU is an optional fiber MUX device that is used to connect additional ROUs via fiber when extending the DAS from one building to others within the same campus.

The Link Balancer Unit is an optional DAS interface tray for attenuated downlink and

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uplink signals between the DAS and signal source (BTS or BDA). The figure shows a typical system deployment.

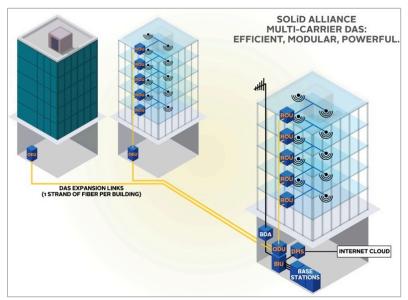


Figure.2 – ALLIANCE DAS Deployment

If there is any further documentation or assistance we can provide for this matter, please do not hesitate to ask. Please consider SOLiD's past filings as an additional resource. The past filings dealt with our ALLIANCE 1 and 20W ROUs. They work in the same fashion as our new 5W ROU.

Sincerely,

Kevin Vierling

**Director of Product Management** 

Kevin M. Vierlingt