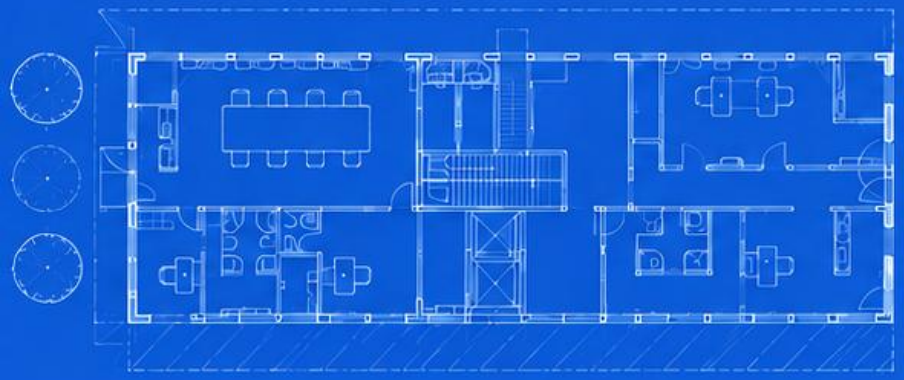
RFCOM

5G DAS Solution

5G MIMO Upgrade for Existing Coaxial DAS





Today’s 5G indoor coverage dilemma

Passive DAS:

- No MIMO support
- Signal loss rises sharply at 3.5 GHz
- Re-cabling for MIMO: complex works,
  3 to 6 months per venue
- No monitoring, no alarms, no remote control
  — faults are found by customer complaint

Fiber Active DAS:

- Higher cost
- Months of civil works
  — new fiber and new power to every antenna position
- Higher power consumption
- A far harder landlord approval

What can our 5G DAS solution do?

Turn the coaxial DAS you already own into a 5G MIMO system

- Implementing 5G MIMO 2T2R or 4T4R using the existing passive DAS system — **No wiring required**
- Enable the 3.5 GHz signal transmitted over the existing coaxial cable, while 2G / 3G / 4G keep running unchanged
- Network speed increased by about 80%
- The deployment cycle doesn't take weeks—just a few days (No infrastructure rebuilds required, only minor modifications to the existing DAS)
- CAPEX reduced by approximately 70%
- Power consumption reduced by approximately 60%

How does our 5G DAS solution do it?

The equipment

Master Unit



Performs the frequency shift

- One 5G branch is down-converted to an intermediate frequency.
- The other 5G branch passes through at its original frequency.

Remote Unit



Omni-directional



Directional

Restores MIMO at the antenna point

- Converts the shifted branch back to NR and pairs it with the pass-through branch.
- Passes 2G / 3G / 4G through unchanged.

How does our 5G DAS solution do it?

Three steps, one cable

1 Combine
at the Master Unit

- One branch of 5G NR is shifted to an intermediate frequency.
- The other 5G NR passes through at 3.5 GHz or 2.1GHz or 2.3GHz.
- Both are combined with the existing 2G / 3G / 4G sources and fed into the combiner and existing cable.

2 Distribute
over the cable

- The combined signal reaches every Remote Unit over the existing coaxial cable.
- The same cable also carries DC power from the Master Unit — no mains supply at any antenna point.
- No new cable, no new routes.

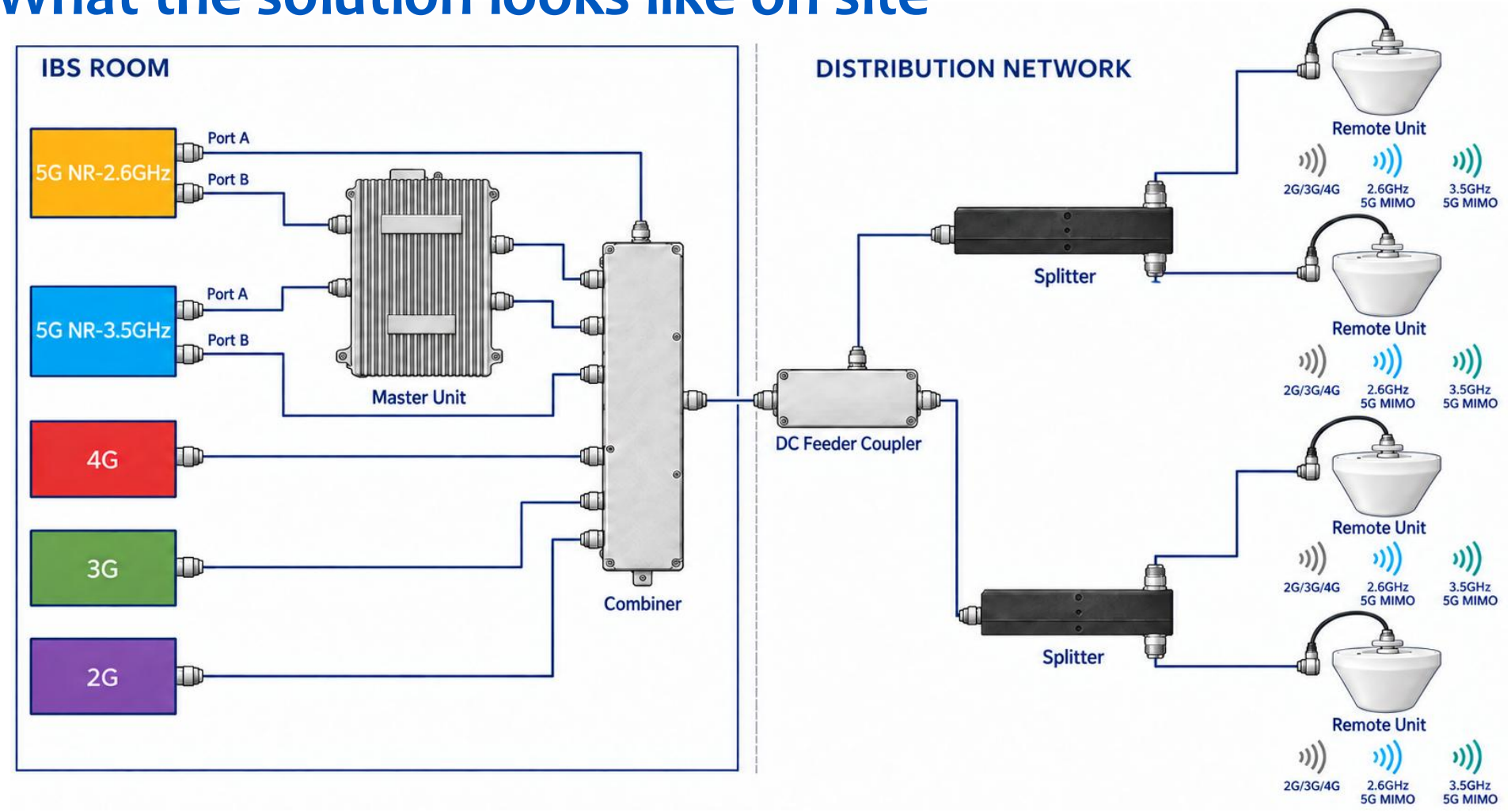
3 Restore
at the Remote Unit

- The shifted branch is converted back to 3.5 GHz or 2.1GHz or 2.3GHz.
- Power compensation makes up the cable loss on the pass-through branch.
- All signals are radiated together.

Two spatial streams over a cable built to carry one—2T2R on a single coaxial run, 4T4R on a dual-cable DAS

How does our 5G DAS solution do it?

What the solution looks like on site



The technologies behind it

Key Technologies

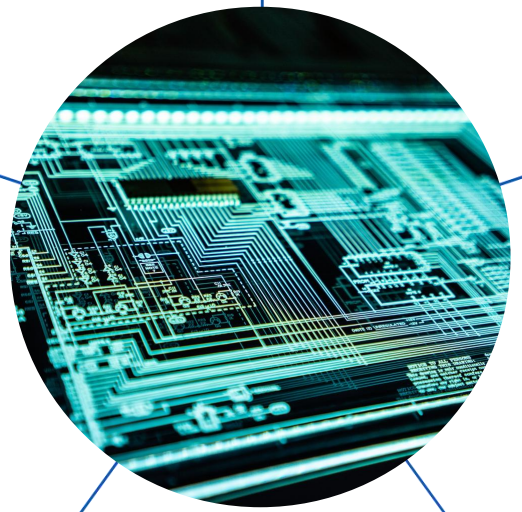
1 5G Signal Frequency Shift

2 Automatic Power Balancing

3 Dynamic Compensation of Output Power

4 Intelligent Energy Saving Management

5 Intelligent Network Management Platform



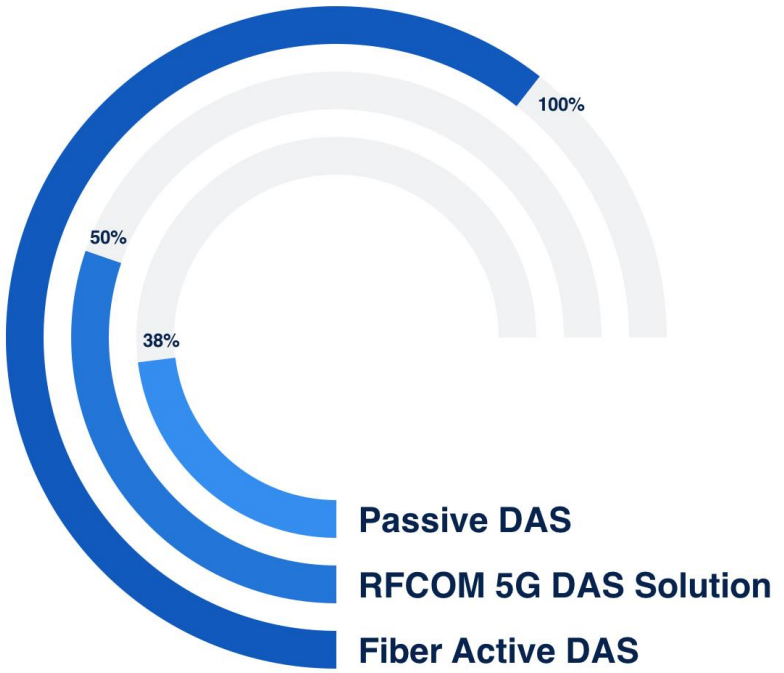
The technologies behind it

Intelligent Energy Saving Management

Smart Power Saving Mode

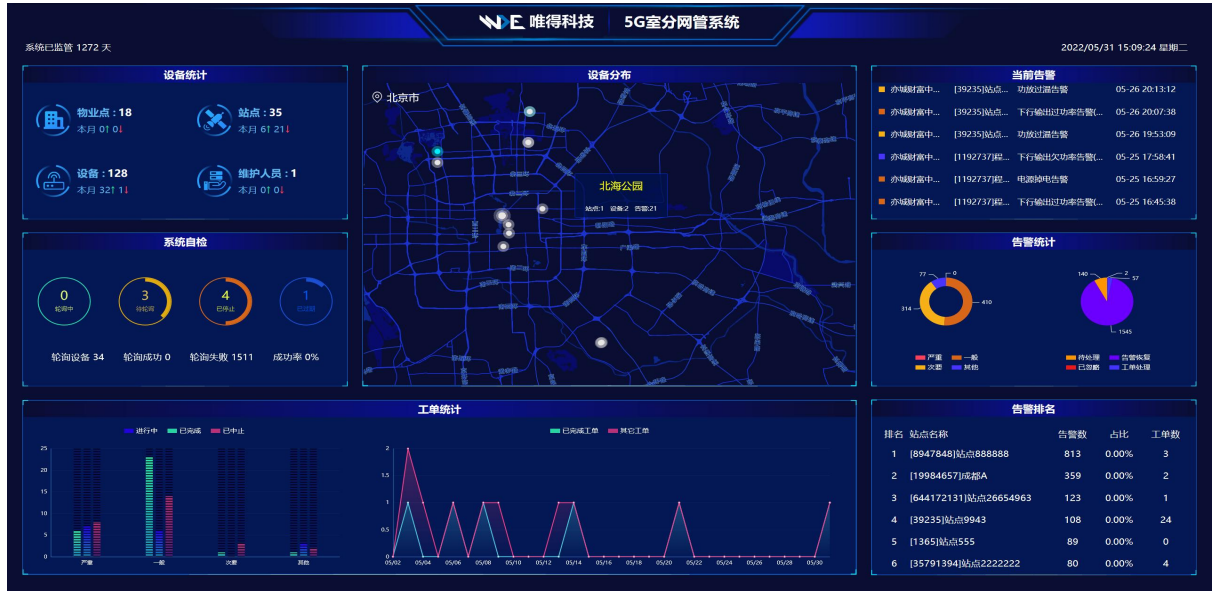
- The power consumption of the master unit which is fully loaded is less than 20 W.
- When the traffic flow is higher than the threshold, the 5G frequency-shifting channel is automatically turned on to achieve MIMO effect. The power at Remote Unit is less than 10 W.
- The frequency-shifting channel can be automatically shut down when the traffic flow is low. The power at Remote Unit is less than 4 W.

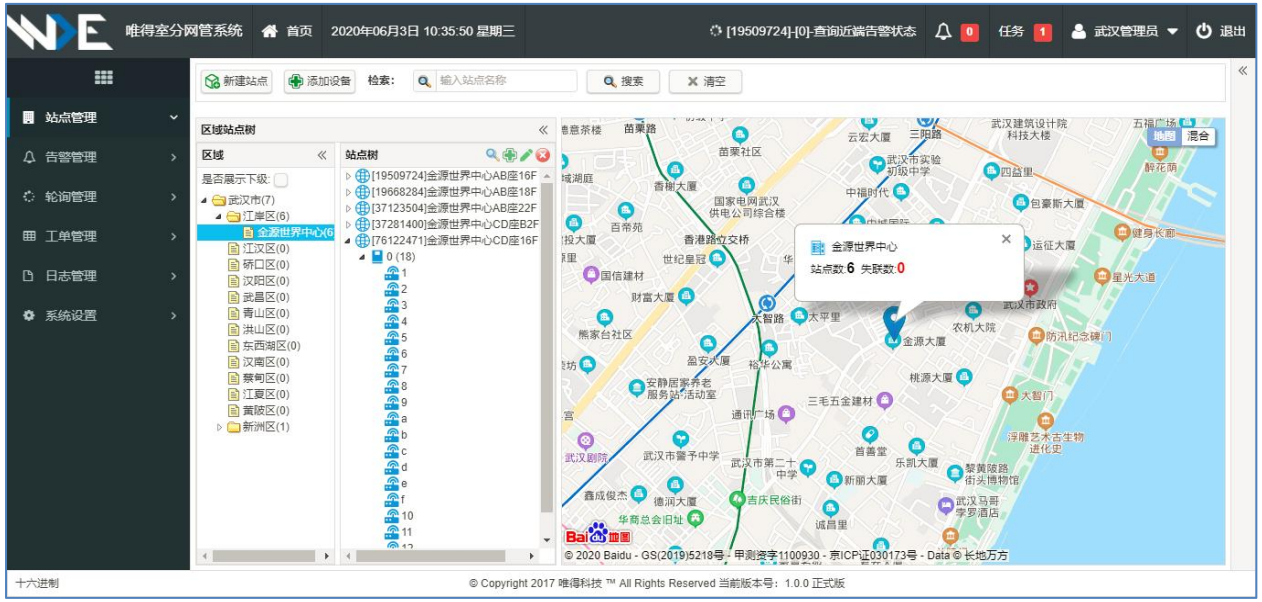
Comparison of Power Consumption



The technologies behind it

Intelligent Network Management Platform





Installation in three steps

3-Steps to install

1. Add the master units

- Mounted in the existing IBS room and fed from the 5G RRU. No new room, no new riser.

2. Swap couplers for DC feeder couplers

- Same positions, same connectors — the coaxial run itself is untouched.

3. Replace passive antennas with remote units

- One-for-one at the existing antenna positions and ceiling openings.

What stays in place

- Coaxial trunk, risers and drops
- Power splitters and cable routes
- Existing 2G / 3G / 4G RRUs
- IBS room, rack space and mains feed
- Antenna positions and ceiling openings

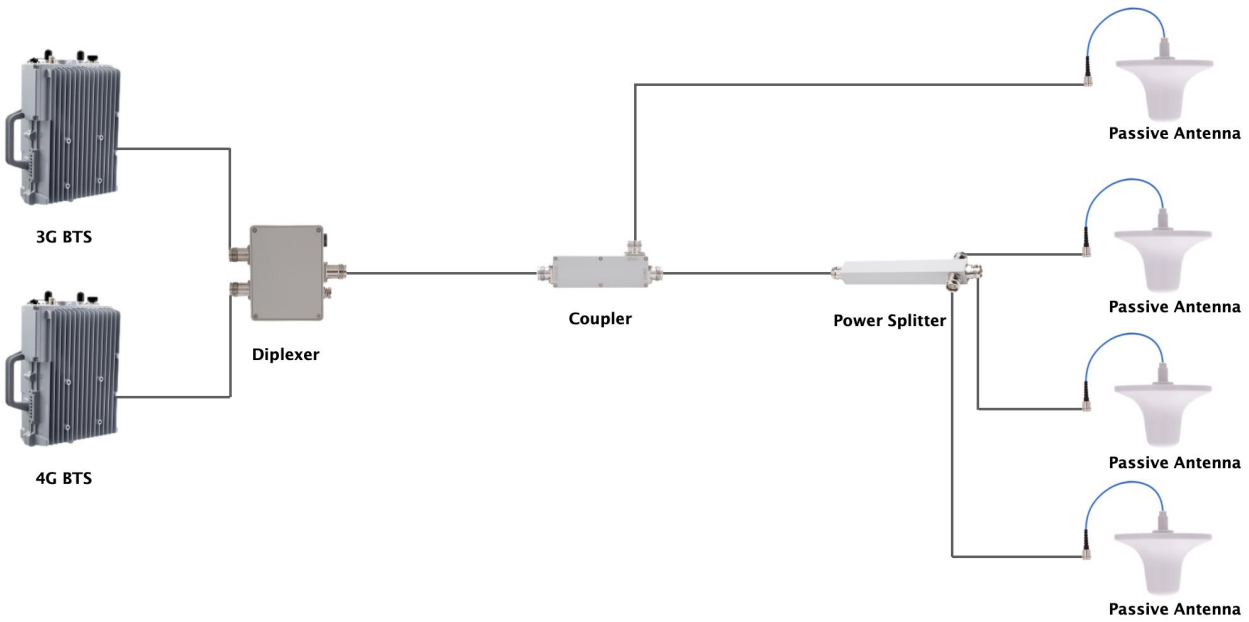
What changes

- Couplers → DC feeder couplers
- Passive antennas → Remote Units
- One 5G RRU added
- Master Unit added at the head end
- 5G combiner added at the head end

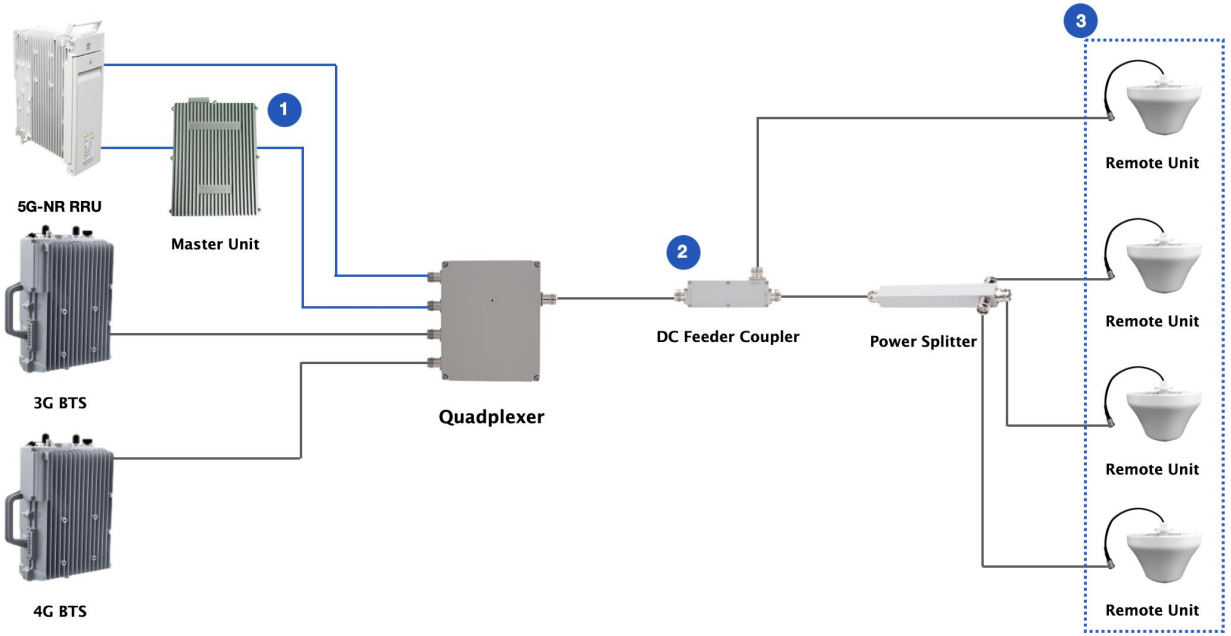
No new cable | No new riser | No service interruption

Network Structure Comparison

Existing DAS



Updated with the RFCOM 5G DAS Solution



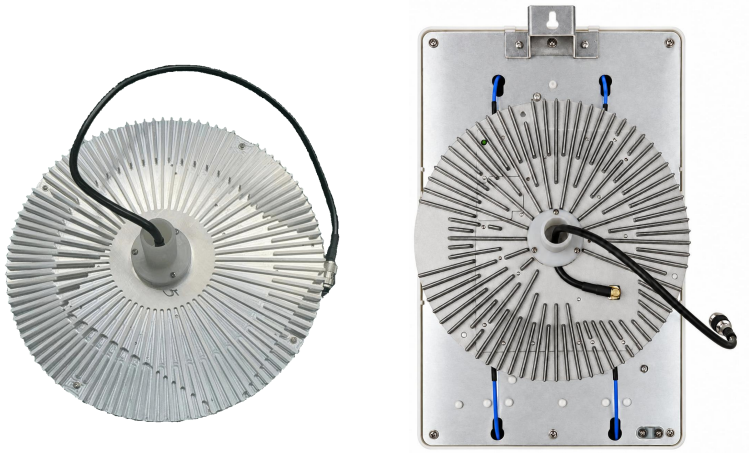
1. Add the master unit
2. Swap couplers for DC feeder couplers
3. Replace passive antennas with remote units

Specifications

Specifications



Interface of Master Unit



Remote Unit Rear View

Parameter	Value
5G Band	NR n78 (3300–3700 MHz) / n41 (2600 MHz)
Legacy Services	700 / 800 / 900 / 1800 / 2100 / 2600 MHz
Tx Output Power Max	20–23 dBm
Rx Output Power Max	– 40±1 dBm
Max Gain	20±3 dB
Time Delay (5G NR)	≤100 ns
Insertion Loss	≤3.0 dB
Noise Figure on NR UL	≤1.8 dB
VSWR	≤1.5
Power Consumption	≤20 W (Master Unit) ≤10 W (Remote Unit) ≤4 W (Remote Unit ECO Mode Switch On)
Connectors	N Female or 4.3-10 Female

Comparison

6,000 m² site

	Passive DAS Single-cable	Passive DAS Dual-cable	Fiber active DAS	RFCOM 5G DAS Solution
DL Rate at 3.5 GHz @100MHz bandwidth	300–350 Mbps	550–650 Mbps	900–1100 Mbps	**800–900 Mbps**
DL Rate at 2.6 GHz @100MHz bandwidth	180–200 Mbps	360–400 Mbps	550–650 Mbps	**400–500 Mbps**
5G MIMO	No	Yes	Yes	**Yes**
Network management	None	None	Full	**Full**
Output power per point	5–15 dBm	5–15 dBm	20–24 dBm	**20–23 dBm**
Power consumption	3,000 W	3,000 W	7,500 W	**2,300 W**
Installation effort	18 person-days	20 person-days	25 person-days	**10 person-days**
Civil works	Low	High	High	**Low**
CAPEX	0.6 USD/m²	1.1 USD/m²	3 USD/m²	**1 USD/m²**

Note: The CAPEX per m² figures are empirical averages from RFCOM's deployed projects in China, based on the combined cost of equipment and installation. Absolute values will differ somewhat from one country to another, but the relative comparison between the four options remains broadly the same.

Competitive Advantages

- Cost Efficiency:

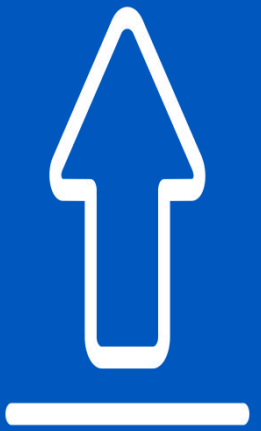
  Reduce deployment costs by 70% and power consumption by 60%.
- Performance:

  Match fiber digital DAS speeds at a fraction of the cost.
- Agility:

  Days to deploy, not months
- Sustainability:

  Smart energy-saving modes reduce idle power to <4 W per unit.
- Future-Proof:

  Unified platform for 2G/3G/4G/5G coexistence.



What do operators gain from our solution?



More 5G sites for the same budget

Passive coaxial DAS was built venue after venue through the 2G/3G/4G era, and that installed base is still in place. Each of those venues can be upgraded to 5G without a major investment.



More sites in the same year

A site or a venue takes days to install, not months. The same field team delivers several times as many sites in a year.



An easier conversation with the landlord

A few days of work, with only minor work at the ceiling and nothing cut into risers or walls — and 2G/3G/4G keep serving users throughout. This is an approval a landlord can say yes to.



Indoor coverage you can actually operate

Faults arrive as alarms on a management platform, not as customer complaints — and most are cleared remotely, without sending anyone to the site.



Reuse the existing coaxial cable infrastructure

The coaxial cable laid years ago for 2G and 3G now carries 5G as well, and those older services keep running on it exactly as before.

Proven at national-operator scale

What we have done in China

3,000+

5G projects delivered

500,000+

Remote Units in service

4

Operator and tower customers

中国移动 China Mobile

中国联通 China unicom

中国电信 CHINA TELECOM

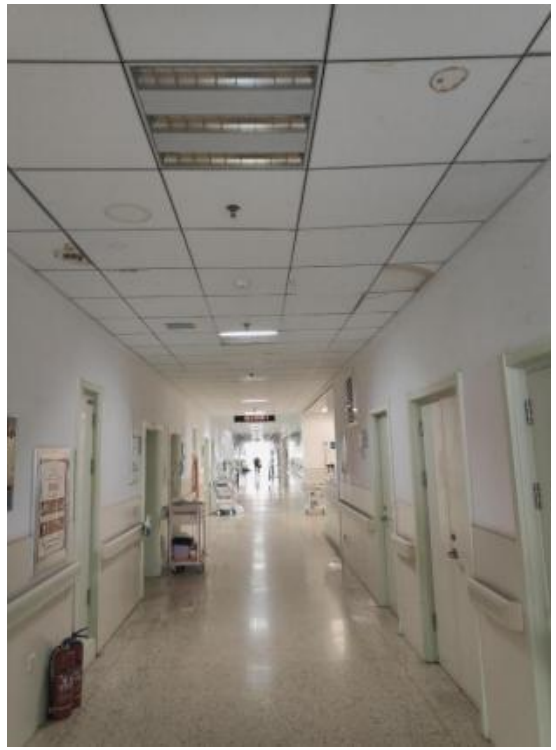
CHINA TOWER 中国铁塔

Project for China Unicom

Shanxi Provincial Cardiovascular Hospital

- Total of 9 floors, including 1 underground parking level and 8 floors above ground
- Total floor area: 17,000 m²
- 220 antennas





Project for China Unicom

Site Information

Existing DAS

Type: SISO

Service: GSM900/WCDMA2100/LTE 2600

5G Signal Resource

Frequency band: 3500MHz–3600MHz

5G RRU: Huawei 5262

Network Speed

UL: 70.8 Mbps

DL: 400 Mbps

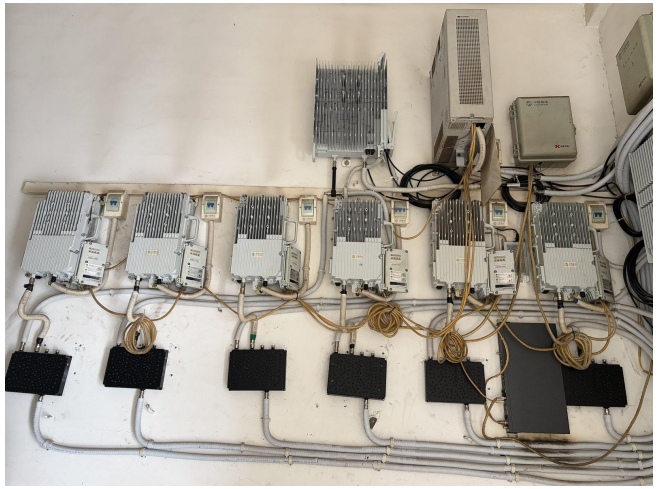
Project for China Unicom

Solution

Actions	Materials	Quantity
Remove	Passive Antennas	220
Remove	Couplers	9
Add	Master Unit	9
Add	Pentaplexer	9
Add	DC Feeder Coupler	9
Replace	Remote Units	220

Project period: 7 days





Project for China Unicom

Result



BEFORE



AFTER



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