



# IDAS™ Digital Simulcast

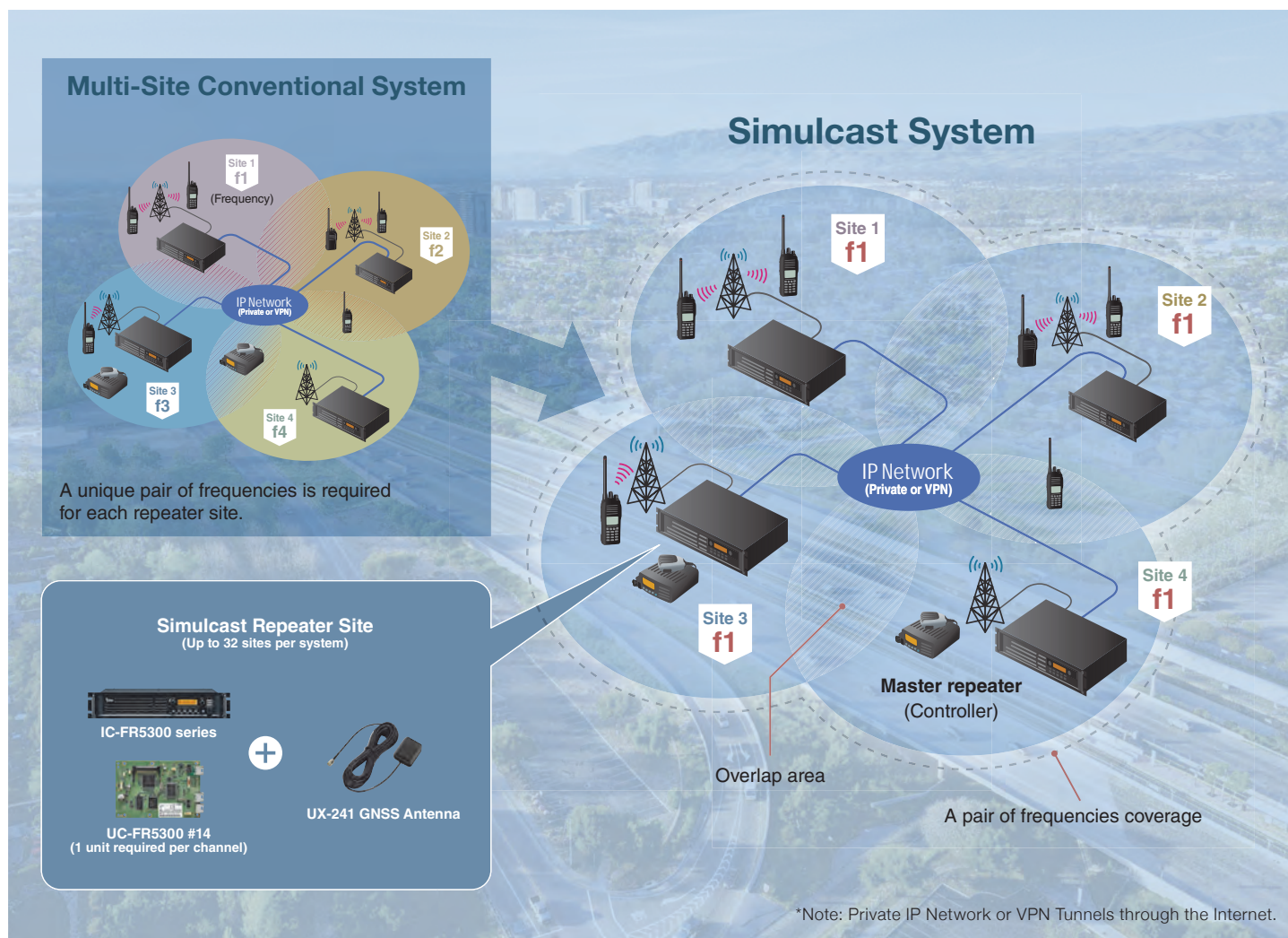


**IDAS™**  
ICOM DIGITAL ADVANCED SYSTEM

# Wide Area Coverage on a Single Pair of Frequencies

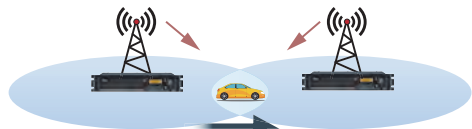
The IDAS Simulcast synchronizes multiple repeater sites for seamless wide area repeater coverage using just a pair of frequencies, regardless of the number of repeater sites in the network\*. Each repeater site in the system is simply composed of only a network controller, GNSS antenna and repeater. No external timing reference unit, no additional modulation unit or other equipment is required.

\* The maximum number of sites for an IDAS Simulcast system is 32.



## Seamless Coverage

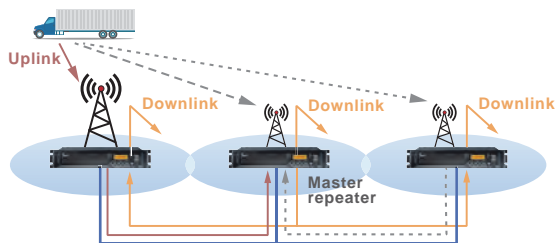
Simulcast repeaters transmit a signal on the same frequency and at the same time with GNSS synchronization. Using the digital signal, the IDAS simulcast system can greatly reduce signal degradation in overlapping areas. By tuning the timing of the repeater transmission, overlapping signal areas can be adjusted relatively simply.



Repeaters transmit a downlink signal in sync at the same frequency.

## Simulcast Selects the Best Signal

Uplink signals received by each repeater site are first collected



The master repeater selects the best signal to downlink.

by the Master Repeater (Controller) through the network. The best uplink signal is selected and distributed to all repeater sites to be retransmitted.

## Abundant IDAS Radio Lineup

All NXDN™ compatible IDAS radio terminals can be used on the IDAS simulcast system. In addition, the radio terminals wait for a call without scanning, so the battery consumption can be reduced. It extends the operating time, when compared to a conventional multi-site system.

No external devices, software or license is required for IDAS Simulcast



No complex settings are needed to use IDAS Simulcast

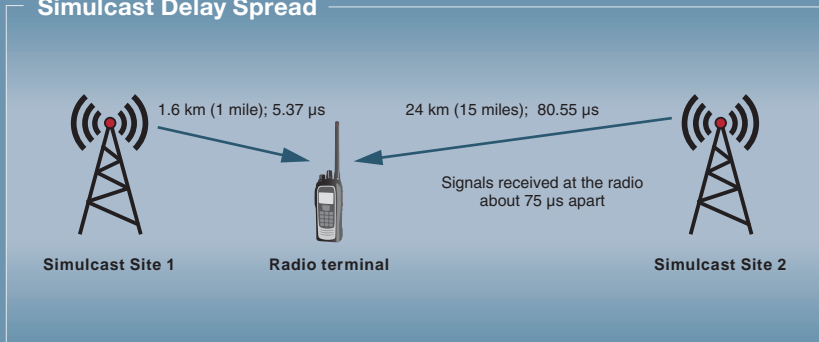
## Scalability and Flexibility

Installation and maintenance of a simulcast system couldn't be easier. You can effortlessly expand the coverage area by just adding repeaters. Additional pairs of frequencies are not required. Those repeaters can be integrated into the network with simple setup (No reprogramming of radio terminals is necessary).

# 6.25 kHz FDMA Technology is Ideal for Simulcast

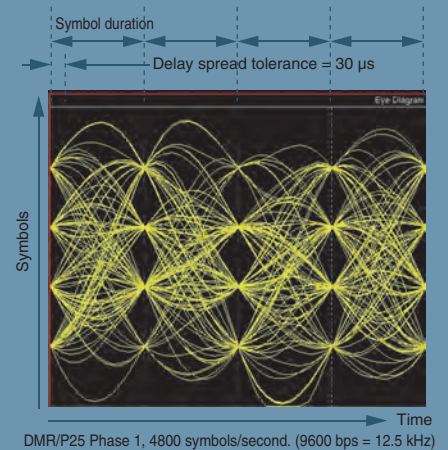
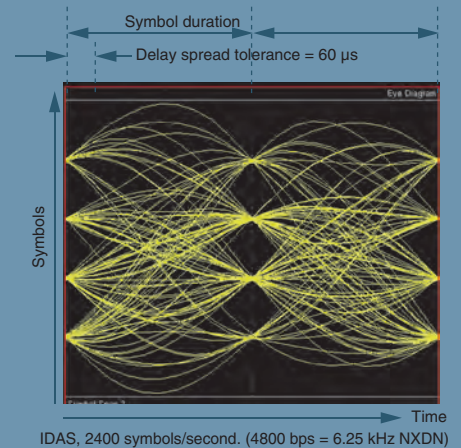
In a simulcast system, there is an overlapping area where multiple signals arrive from two or more repeater sites. Delay spread means the time difference between receiving the signals, according to the distance from the respective repeater sites. Delay spread can make received audio unintelligible, similar to multipath fading, which reduces repeater coverage.

## Simulcast Delay Spread



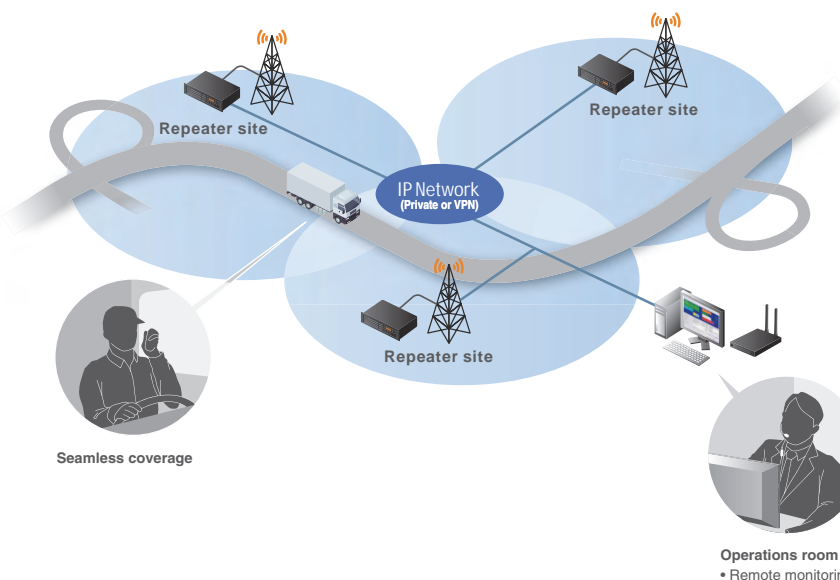
The IDAS Simulcast system sends digital voice and data in 4800 bps using 4-Level FSK, and 6.25 kHz very narrow bandwidth FDMA technology. Symbol duration is about 420 microseconds ( $\mu$ s). This long symbol duration affects very small Inter-Symbol Interference (ISI). As a result, the delay spread tolerance of the IDAS Simulcast system is about 60  $\mu$ s. The simplicity of a non-linear transmitter and GNSS synchronization enables an FDMA digital system to achieve wide repeater coverage as an analogue FM simulcast system.

By comparison, the delay spread tolerance of a DMR/P25 Phase 1 system is about 30  $\mu$ s, the coverage radius is reduced by a similar amount. In a P25 simulcast system, a more complex Linear Simulcast Modulation system is required to maintain a better tolerance to delay spread and for greater repeater coverage.



## Application Example – Highway, Railroad Communication Solution

The IDAS Simulcast system provides mobile communication along a highway or railroad. You can communicate all the way on the same channel.



### RoIP Gateway

#### VE-PG4

Provides an interconnection with an IP Phone, LTE radio, WLAN radio and analogue radio.



### Remote Communicator

#### RC-FS10

A virtual radio/simple dispatcher software on a Windows® based PC.





VHF REPEATER

UHF REPEATER

## IC-FR5300 IC-FR6300



### FEATURES

- 136–174, 400–470, 450–512, 450–520 and 330–400 MHz\*
  - 50 W output power at 50% duty, or 25 W at 100% duty cycle operation\* (Ambient temperature: 25 °C)
  - 32 channel capacity and 5 programmable buttons
  - 19-inch rack mount design, 2U height low profile design
  - Two RF modules in one unit\* (\* UR-FR5300 or UR-FR6300 required)
  - PC programmable through an IP network\* (\*UC-FR5300 required)
  - D-SUB 25-pin accessory connector
  - CW-ID transmitter
  - SNMP/SYSLOG\* (\*UC-FR5300 required)
  - Simple simulcast setup and maintenance through a web browser
- \* Frequency range and output power vary according to the repeater version.

### REQUIRED NETWORK BANDWIDTH


40 kbps x number of repeater sites or a minimum of 100 kbps is required.  
For example, 40 kbps x 5 repeater sites = 200 kbps

### REQUIRED ACCESSORIES (for an IDAS Simulcast system)

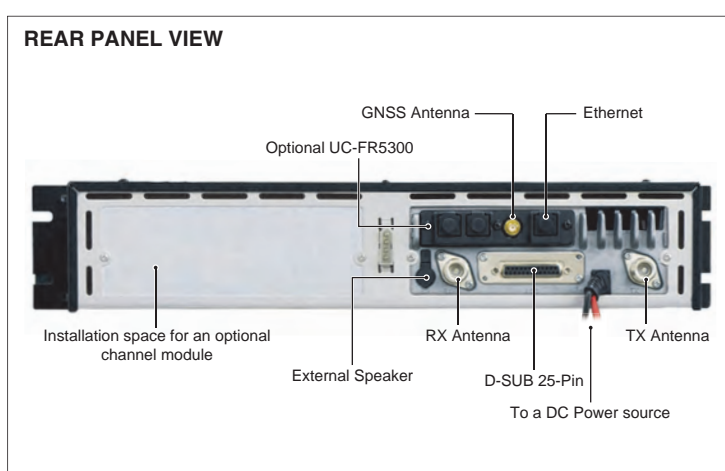
<p><b>IDAS NETWORK CONTROLLER</b> UC-FR5300 #14 Includes CF-FR5300SC</p> 	<p><b>SIMULCAST SOFTWARE</b> CF-FR5300SC Supplied with UC-FR5300 #14</p> 
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<p><b>GNSS ANTENNA</b> UX-241 Cable length 5 m, 16.4 ft</p> 
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### OPTIONAL ACCESSORIES (for the IC-FR5300/FR6300 series repeaters)

<p><b>CHANNEL MODULES</b> UR-FR5300 : 136–174 MHz, 50/25 W UR-FR6300 : 400–470, 450–512, 450–520, 330–400 MHz, 50/25 W</p> 
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<p><b>EXTERNAL SPEAKERS</b> SP-35: 2 m, 6.6 ft cable SP-35L: 6 m, 19.7 ft cable</p> 
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Les spécifications et informations données dans ce document peuvent être modifiées sans préavis. La configuration du poste peut varier suivant les versions.

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