



 **fipleX**
COMMUNICATIONS INC.

repeaters

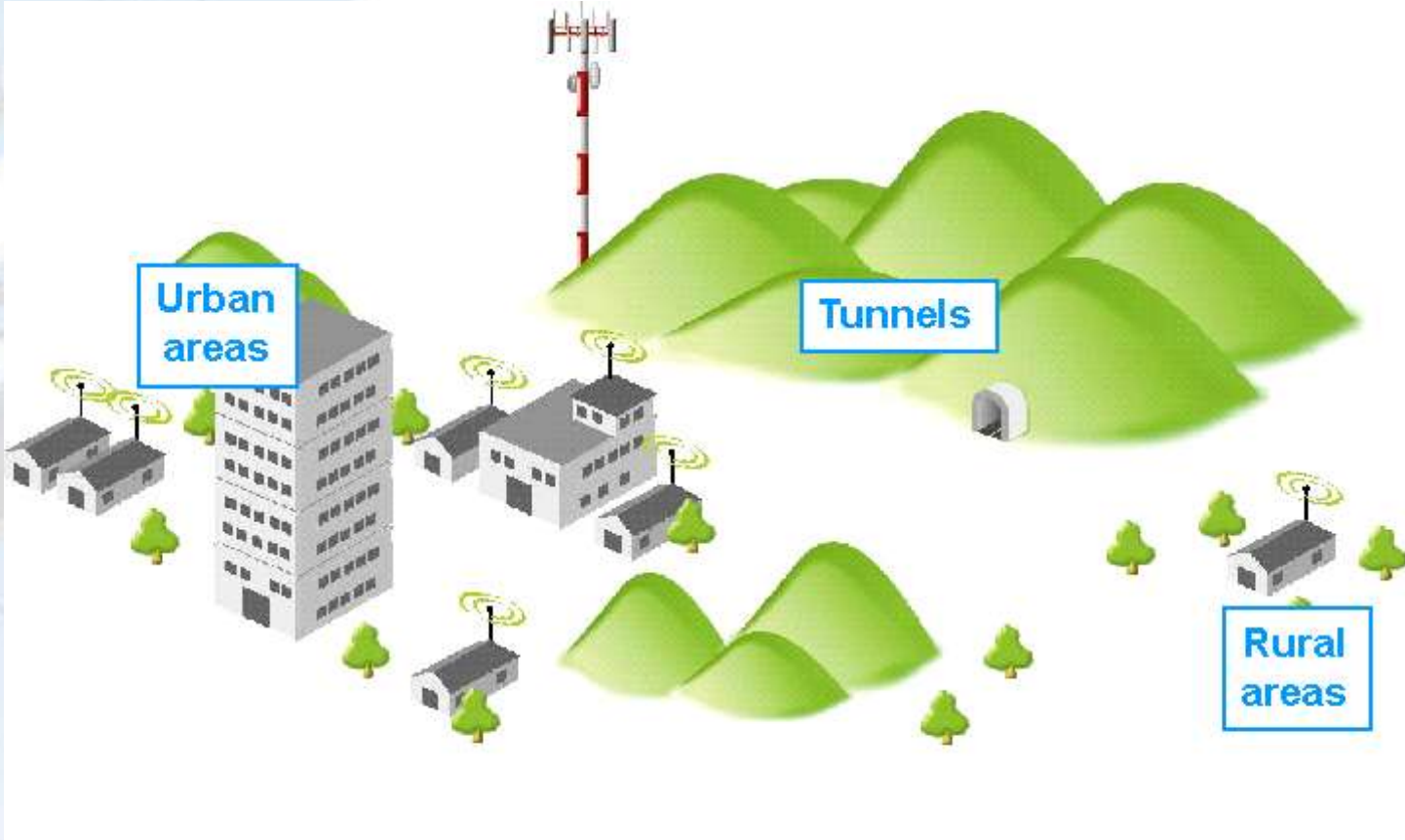


REPEATERS from FIPLEX, overall

- Complete line to cover requirements from SOHO to large in-building systems.
- Available for:
 - FM
 - VHF
 - UHF: Tetra, P25, IDAS, Mototrbo, MPT, LTR, CDMA450,...
 - SMR & Public Safety 700, 800 and 900
 - Cellular 850 and PCS
 - GSM and EGSM: GSM, WCDMA, GSM-R
 - DCS: GSM, WCDMA
 - PCS: GSM, CDMA, WCDMA
 - UMTS
 - AWS
 - Available soon for LTE
- Band Selective & Channel Selective.
- Indoor & outdoor applications.
- Fiber optic links
- Complete line of accessories for inbuilding.



APPLICATIONS



INDOOR COVERAGE

- Solutions for small structures and large buildings.
- Coverage Solutions for tunnels and mines.
- Compact Units for coverage up to 5000 m²
- Powerful Units for coverage greater than 10.000m²



FM, VHF and UHF Repeaters



REPEATERS for FM

- Unidirectional Amplifiers for indoor coverage of FM signals.
- Band Selective and Channel Selective versions.
- FM Break In as optional for local SOS broadcasted messages over FM channels.
- AGC and Overload protection.
- Antenna isolation control.
- Outdoor cabinet.
- Remote control capability (option RC-G).
- Fiber Feed capability (option FO-CT).
- Band Selective models:
 - **UDA10F-1B2LC**
 - **UDA10F-1B4LC**
- Channelized models:
 - **UDA10F-1B2-0x0000** (replace "x" by channels qty)



REPEATERS for VHF

- Repeater for Large size applications.
- Single band.
- 2MHz BW.
- 5MHz min Tx to Rx separation.
- +30dBm output power.
- 80dB gain adjustable.
- AGC and Overload protection.
- Antenna isolation control.
- Outdoor cabinet.
- Remote control capability (option RC-G).
- Fiber Feed capability (option FO-CT).
- Model:
 - **BDA15S-1B2LC**



Low Power REPEATERS for UHF

- For P25, TETRA, IDAS, Mototrbo, MPT, CMDA450 and others.
- Repeater for Small and Medium size. applications.
- Single band as standard, multiband as optional.
- 2MHz and 5MHz BW.
- 5Mhz and 10MHz split.
- +18 dBm output power.
- 70dB gain adjustable.
- AGC and Overload protection.
- Antenna isolation control.
- Outdoor cabinet.
- Remote control capability (option RC-G).
- Fiber Feed capability (option FO-CT).
- Band Selective models:
 - **BDA38S-3A1LC** (5Mhz BW & 10MHz split)
 - **BDA45S-2A1LC** (2Mhz BW & 5MHz split)



High Power REPEATERS for UHF

- For P25, TETRA, IDAS, Mototrbo, MPT, CDMA450 and others.
- Repeater for Large size applications, indoor and outdoor.
- Single band as standard, multiband as optional.
- 2MHz and 5MHz BW.
- 5Mhz and 10MHz split.
- +32 dBm (ETSI) and +37dBm (FCC) output power.
- 80dB gain adjustable.
- AGC and Overload protection.
- Antenna isolation control.
- Outdoor cabinet.
- Remote control capability (option RC-G).
- Fiber Feed capability (option FO-CT).
- Band Selective models:
 - **BDA38S-2B2LC** (ETSI, 2Mhz BW & 5MHz split)
 - **BDA38S-3B2LC** (ETSI, 5Mhz BW & 10MHz split)
 - **BDA45S-2B2LC** (FCC, 2Mhz BW & 5MHz split)
 - **BDA38S-3B2LC** (FCC, 5Mhz BW & 10MHz split)



High Power Channel Sel. REPEATERS for UHF

- For P25, TETRA, IDAS, Mototrbo, MPT, CDMA450 and others.
- Repeater for Large size applications, indoor and outdoor.
- 2 to 8 channel filters.
- 2MHz and 5MHz BW.
- 5Mhz and 10MHz split.
- +32 dBm (ETSI) and +37dBm (FCC) output power.
- 80dB gain adjustable.
- AGC and Overload protection.
- Antenna isolation control.
- Outdoor cabinet.
- Remote control capability (option RC-G).
- Fiber Feed capability (option FO-CT).
- Band Selective models:
 - **BDA38S-2B2-x00000** (ETSI, 2Mhz BW & 5MHz split)
 - **BDA38S-3B2-x00000** (ETSI, 5Mhz BW & 10MHz split)
 - **BDA45S-2B2-x00000** (FCC, 2Mhz BW & 5MHz split)
 - **BDA38S-3B2-x00000** (FCC, 5Mhz BW & 10MHz split)



Public Safety 800MHz Repeaters



REPEATERS for PUBLIC SAFETY 800MHz

- SOHO applications:
 - PS-1A10S
- Medium Size applications:
 - CBDAS-1A1S
- Large Size applications:
 - BDA85S-1A1LC
 - BDA85S-1B2LC
 - BDA85S-1B2-x00000
- Leaky cable applications:
 - IBS-1L1



PS-1A10S – SOHO Repeater

- Model: **PS-1A10S**
- Repeater for SOHO applications.
- Single band.
- Band Selective (SAW filtered):
 - Full band: 15 or 18MHz
 - Narrow band: center frequency USB adjusted
- 65dB gain adjustable & +10dBm output power.
- RSSI and Feedback indicators.
- AGC and Overload protection.
- Indoor cabinet.
- For SMR and ESMR.
- Available soon for Public Safety 700 and 900MHz.
- Compatible TETRA, P25, iDEN, etc.
- Compact size.



PS-1A15S – SOHO Repeater

- Model: **PS-1A15S**
- Repeater for SOHO applications.
- Single band.
- Band Selective (SAW filtered):
 - Full band: 15 or 18MHz
 - Narrow band: center frequency USB adjusted
- 65dB gain adjustable & +15dBm output power.
- RSSI and Feedback indicators.
- AGC and Overload protection.
- Indoor cabinet.
- For SMR and ESMR.
- Available soon for Public Safety 700 and 900MHz.
- Compatible TETRA, P25, iDEN, etc.
- Compact size.



CBDAS-1A1S – Ultra Compact

- Model: **CBDAS-1A1S**
- Repeater for Medium Size applications.
- Single band.
- Band Selective (SAW filtered):
 - Full band: 15 or 18MHz
 - Narrow band: center frequency USB adjusted
- 70dB gain adjustable & +20dBm output power.
- RSSI and Feedback indicators.
- AGC and Overload protection.
- Indoor cabinet.
- For SMR and ESMR.
- Available soon for Public Safety 700 and 900MHz.
- Compatible TETRA, P25, iDEN, etc.
- Compact size.



BDA Series – Compact

- Models:
 - **BDA85S-1A1LC**, 70dB gain, +24dBm
 - **BDA85S-1B23LC**, 80dB gain, +37dBm
- Repeater for Large Size applications.
- **Single band, adjustable from 500KHz to Full Band in 25KHz steps (SAW filtered).**
- FCC IMD compliant.
- AGC and Overload protection.
- Antenna isolation control.
- Outdoor cabinet.
- For SMR and ESMR, software adjustable.
- Available soon for Public Safety 700 and 900MHz.
- Compatible TETRA, P25, iDEN, others.
- Remote control capability (option RC-G).
- Fiber Feed capability (option FO-CT).



Dual Band BDA Series – Compact

- Bands available:
 - **SMR+AWS**
 - **SMR+PCS**
- Repeater for Large Size applications.
- **Single band, adjustable from 500KHz to Full Band in 25KHz steps (SAW filtered).**
- FCC IMD compliant.
- AGC and Overload protection.
- Antenna isolation control.
- Outdoor cabinet.
- For SMR and ESMR, software adjustable.
- Available soon for Public Safety 700 and 900MHz.
- Compatible TETRA, P25, iDEN, WCDMA, GSM, CDMA, 1X, GPRS/EDGE, HSDPA
- Remote control capability (option RC-G).
- Fiber Feed capability (option FO-CT).



BDA-CS Series – Channel Selective


- Models:
 - **BDA85S-1B23-400000**, 4 channels
 - **BDA85S-1B23-800000**, 8 channels
- Repeater for Large Size applications.
- Center frequency software adjustable.
- FCC IMD compliant.
- AGC and Overload protection.
- Antenna isolation control.
- Outdoor cabinet.
- For SMR and ESMR, software adjustable.
- Available soon for Public Safety 700 and 900MHz.
- Compatible TETRA, P25, iDEN, others.
- Remote control capability (option RC-G).
- Fiber Feed capability (option FO-CT).



IBS-1L1 – Line Amplifier

- Model: **IBS-1L1**
- For long runs and leaky cable systems.
- Compensation of cable loss.
- Single band, full band.
- +20dBm output power.
- 30dB gain adjustable.
- AGC and Overload protection.
- Indoor cabinet.
- For SMR and ESMR.
- Next for 700 and 900MHz.
- Available soon for Public Safety 700 and 900MHz.
- Compatible with TETRA, P25, iDEN, others.
- Compact size.





Cellular Repeaters



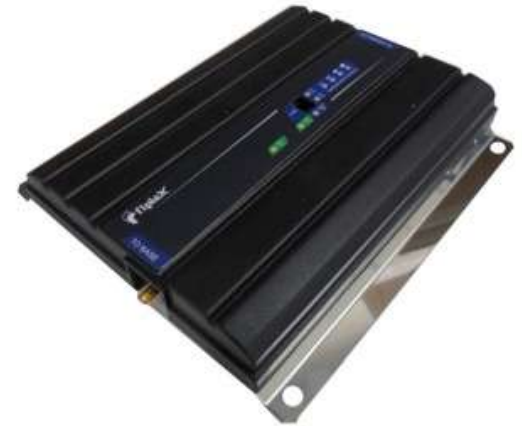
REPEATERS for CELLULAR APPLICATIONS

- SOHO applications:
 - P Series
- Medium Size applications:
 - CBDA Series
- Large Size applications:
 - BDA Series - Band selective
 - BDA Series - Channel Selective
- Leaky cable applications:
 - IB Series



P Series, +10dBm

- Repeater for SOHO applications.
- Single band.
- Band Selective (SAW filtered):
 - Full band
 - Narrow band: center frequency USB adjusted
- 65dB gain adjustable & +10dBm output power.
- RSSI and Feedback indicators.
- AGC and Overload protection.
- Indoor cabinet.
- For 850MHz, EGSM, DCS, PCS, UMTS, AWS.
- Available soon for LTE.
- Compatible GSM, CDMA, WCDMA, 1X, HSDPA, GPRS/EDGE.
- Models:
 - **PC-1A10S-xx**, for 850MHz, replace XX for BW
 - **PE-1A10S-xx**, for EGSM, replace XX for BW
 - **PD-1A10S-xx**, for DCS, replace XX for BW
 - **PP-1A10S-xx**, for PCS, replace XX for BW
 - **PU-1A10S-xx**, for UMTS, replace XX for BW
 - **PA-1A10S-xx**, for AWS, replace XX for BW



P Series, +15dBm

- Repeater for SOHO applications.
- Single band.
- Band Selective (SAW filtered):
 - Full band
 - Narrow band: center frequency USB adjusted
- 65dB gain adjustable & +15dBm output power.
- RSSI and Feedback indicators.
- AGC and Overload protection.
- Indoor cabinet.
- For 850MHz, EGSM, DCS, PCS, UMTS, AWS.
- Available soon for LTE.
- Compatible GSM, CDMA, WCDMA, 1X, HSDPA, GPRS/EDGE.
- Models:
 - **PC-1A15S-xx**, for 850MHz, replace XX for BW
 - **PE-1A15S-xx**, for EGSM, replace XX for BW
 - **PD-1A15S-xx**, for DCS, replace XX for BW
 - **PP-1A15S-xx**, for PCS, replace XX for BW
 - **PU-1A15S-xx**, for UMTS, replace XX for BW
 - **PA-1A15S-xx**, for AWS, replace XX for BW



CBDA Series

- Repeater for Medium Size applications.
- Single band.
- Band Selective (SAW filtered):
 - Full band
 - Narrow band: center frequency USB adjusted
- 70dB gain adjustable & +18/+20dBm output power.
- RSSI and Feedback indicators.
- AGC and Overload protection.
- Indoor cabinet.
- For 850MHz, EGSM, DCS, PCS, UMTS, AWS.
- Available soon for LTE.
- Compatible GSM, CDMA, WCDMA, 1X, HSDPA, GPRS/EDGE.
- Models:
 - **CBDAC-1A1S-xx**, for 850MHz, replace XX for BW
 - **CBD AE-1A1S-xx**, for EGSM, replace XX for BW
 - **CBDAD-1A1S-xx**, for DCS, replace XX for BW
 - **CBDAP-1A1S-xx**, for PCS, replace XX for BW
 - **CBD AU-1A1S-xx**, for UMTS, replace XX for BW
 - **CBD AA-1A1S-xx**, for AWS, replace XX for BW



BDA Series – Band Selective

- Repeater for Large Size applications.
- Single band as standard, multiband as optional.
- Band Selective (SAW filtered):
 - Single band pass, software adjustable
 - Dual band pass, fix BW and center frequency adjustable
- 80dB gain adjustable & +32/+37dBm output power.
- RSSI and Feedback indicators.
- AGC and Overload protection.
- Outdoor cabinet.
- For 850MHz, EGSM, DCS, PCS, UMTS, AWS.
- Compatible GSM, CDMA, WCDMA, 1X, HSDPA, GPRS/EDGE.
- Available soon for LTE.
- Remote control capability (option RC-G).
- DAS Fiber Feed capability (option FO-CT).
- Models:
 - **BDA85C Series**, for 850MHz
 - **BDA85E Series**, for EGSM
 - **BDA85D Series**, for DCS
 - **BDA85P Series**, for PCS
 - **BDA85U Series**, for UMTS
 - **BDA85A Series**, for AWS



Dual Band BDA Series – Compact

- Bands available:
 - **850+PCS**
 - **850+AWS**
 - **AWS+PCS**
- Repeater for Large Size applications.
- **Single band, adjustable from 500KHz to Full Band in 25KHz steps (SAW filtered).**
- FCC IMD compliant.
- AGC and Overload protection.
- Antenna isolation control.
- Outdoor cabinet.
- Compatible TETRA, P25, iDEN, WCDMA, GSM, CDMA, 1X, GPRS/EDGE, HSDPA
- Remote control capability (option RC-G).
- Fiber Feed capability (option FO-CT).



BDA Series – Channel Selective

- Repeater for Large Size applications.
- Single band.
- Channel Selective (SAW filtered):
 - 4 and 8 channels
 - 200KHz, 1.25MHz and 5MHz BW
 - Mix of filters BW for hybrid/multi technology systems
- 80dB gain adjustable & +37dBm output power.
- RSSI and Feedback indicators.
- AGC and Overload protection.
- Outdoor cabinet.
- For PCS.
- Compatible GSM, CDMA, WCDMA, 1X, HSDPA, GPRS/EDGE.
- Remote control capability (option RC-G).
- DAS Fiber Feed capability (option FO-CT).
- Models:
 - **BDA190P-1B3-0x0000**, for GSM channels.
 - **BDA190P-1B3-00x000**, for CDMA channels.
 - **BDA190P-1B3-000x00**, for WCDMA channels.
 - **BDA190P-1B3-0xxx00**, for mix of technologies.



IB Series – Line Amplifiers

- For long runs and leaky cable systems
- Compensation of cable loss
- Single band, fullband.
- +20dBm output power
- 30dB gain adjustable
- RSSI indicator.
- AGC and Overload protection.
- Indoor cabinet.
- For 850MHz, EGSM, DCS, PCS, UMTS, AWS.
- Compatible GSM, CDMA, WCDMA, 1X, HSDPA, GPRS/EDGE.
- Available soon for LTE.
- Compatible GSM, CDMA, WCDMA.
- Models:
 - **IBC-1L1**, for 850MHz.
 - **IBE-1L1**, for EGSM.
 - **IBD-1L1**, for DCS.
 - **IBP-1L1**, for PCS.
 - **IBU-1L1**, for UMTS.
 - **IBA-1L1**, for AWS.



Fiber Optical Systems



MOU Series – Master Optical Unit

- Intended for long runs and Optical DAS.
- Broadband, HF to 2.5GHz.
- 1310 and 1550uM.
- Rack mount and stand alone units.
- Suitable for FO Repeaters.
- Alarm panel.
- AGC and Overload.
- Indoor.
- Remote control capability (option RC-G).
- From 1 to 8 FO links as standard
- Models:
 - **MOU1x**, replace "x" by optical outputs

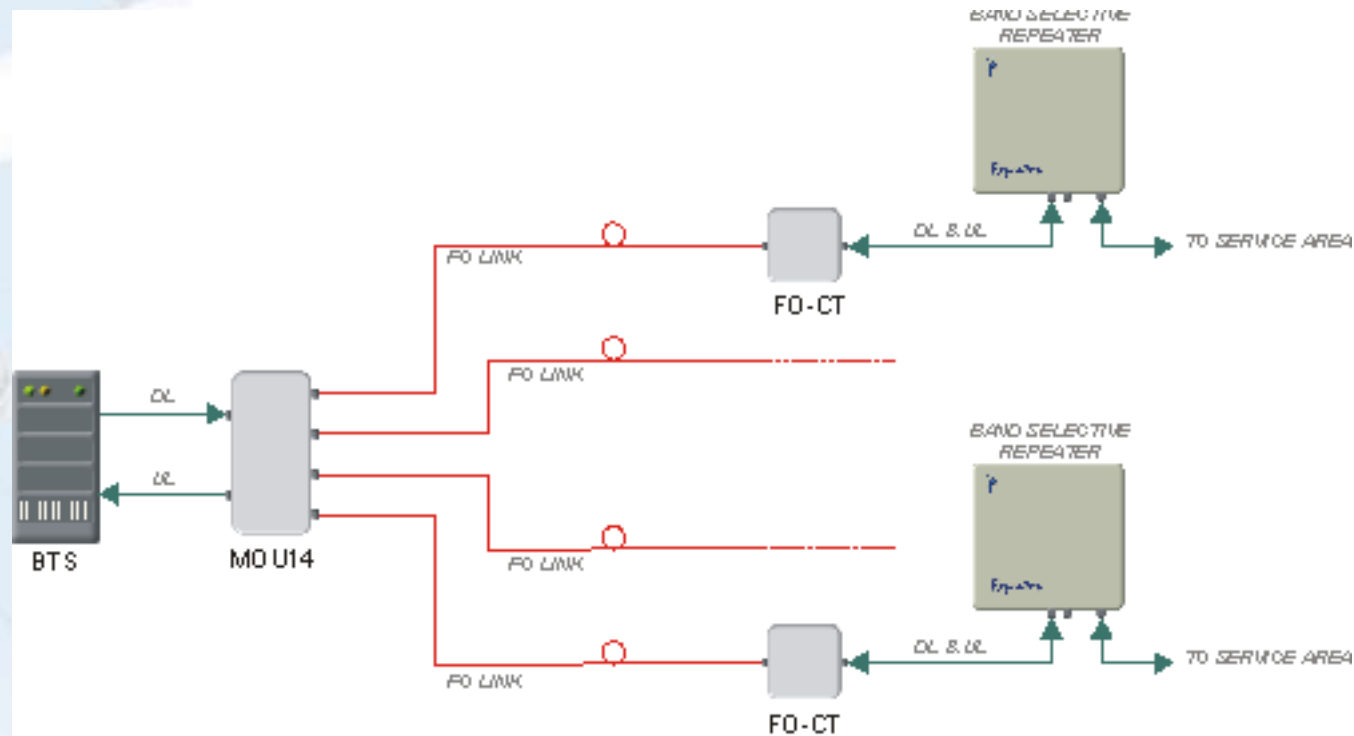


FO-CT – Fiber Feed Unit

- Model: **FO-CT**
- Option for fiber feed conventional Repeaters.
- Full band units, from HF to 2500MHz.
- Suitable for all BDA and Repeaters.
- Single mode fiber.
- WDM included.
- Can be field implemented.
- Applies for all lines of Repeaters, except P and CBDA Series.



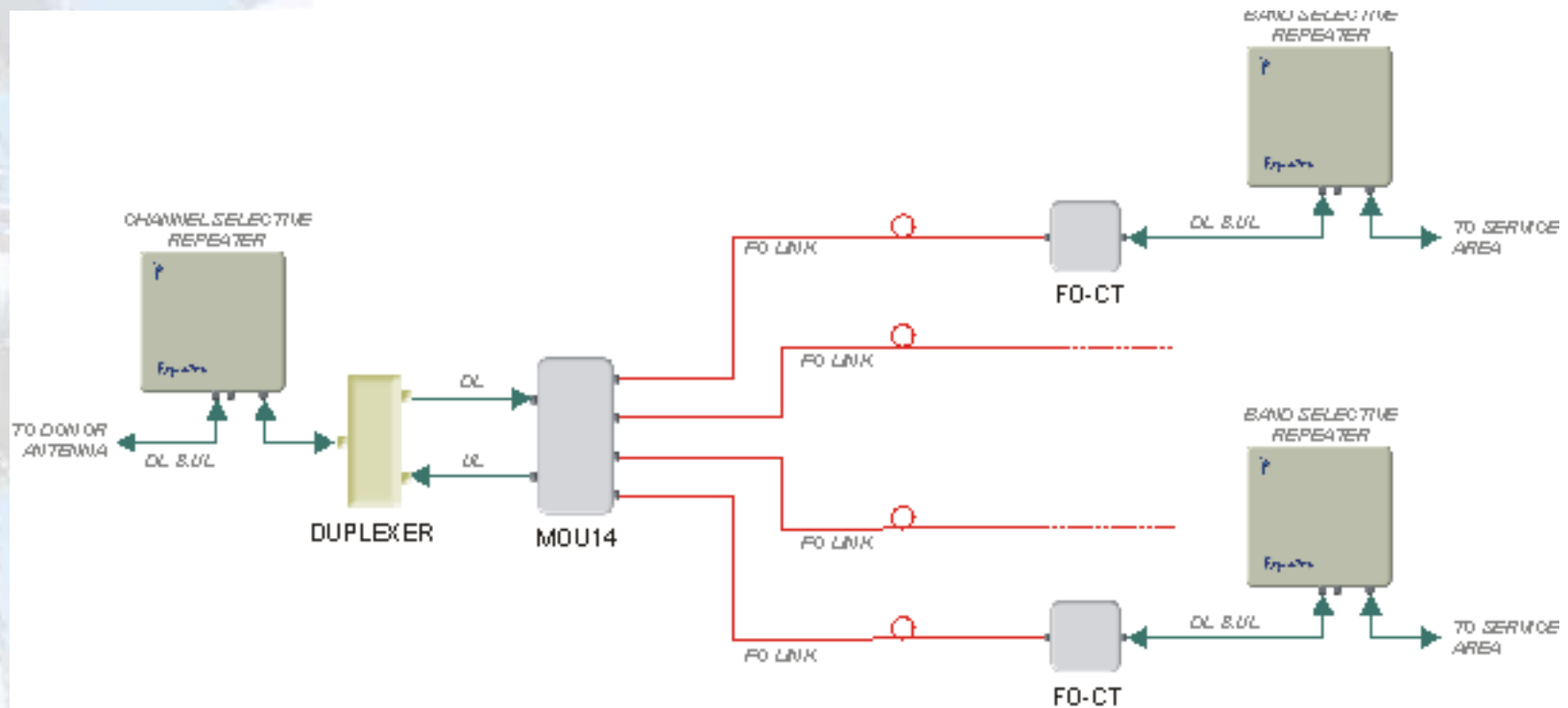
RF over FIBER – Typical Application



In this example:

- Single BTS connected to four "Remote Heads" on a Star Configuration using one MOU14.
- "Remote Heads" are Band Selective Repeaters with FO-CT option.

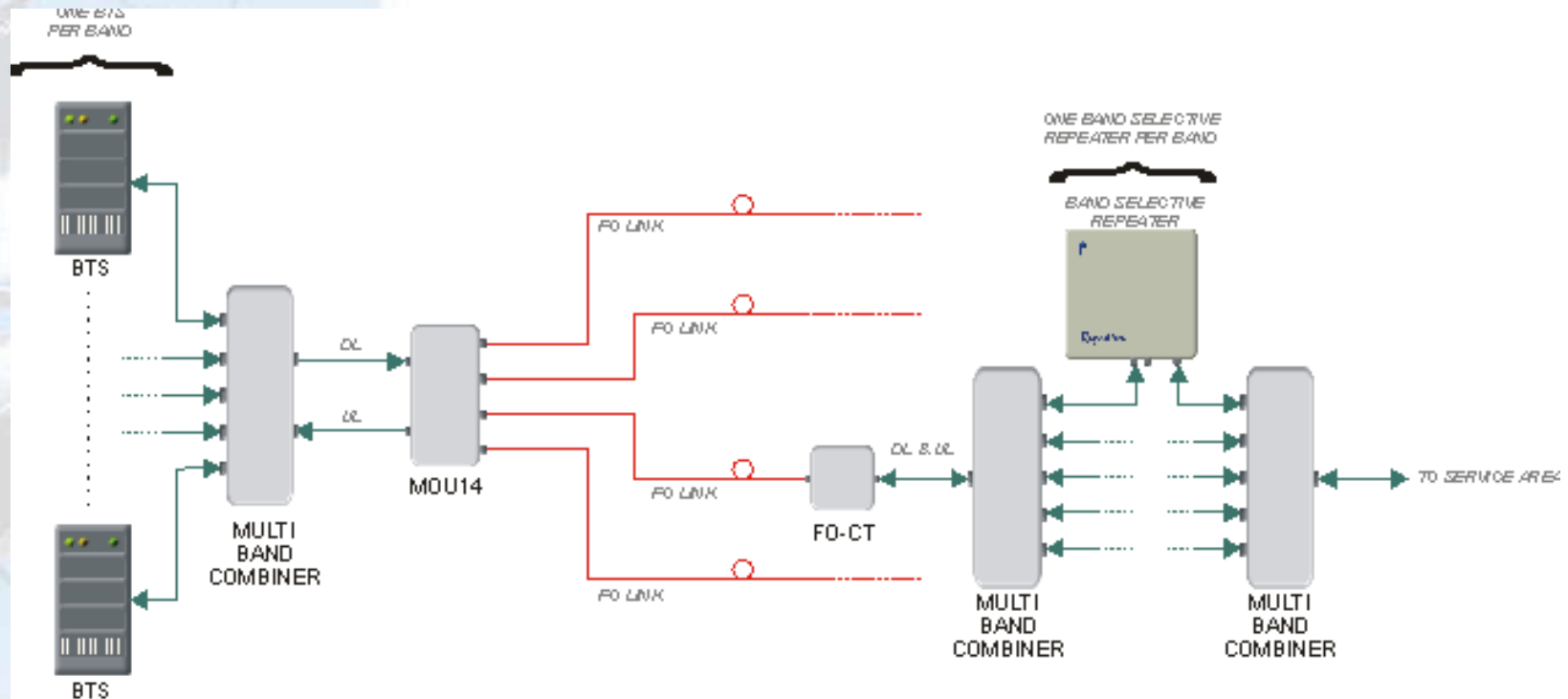
RF over FIBER – Typical Application



In this example:

- Instead of coupling the signals directly from a BTS, a Channel Selective Repeater is used to “pick” the signals from the air.
- Channel Selective Repeater connected to four “Remote Heads” on a Star Configuration using one MOU14.
- “Remote Heads” are Band Selective Repeaters with FO-CT option.

RF over FIBER – Typical Application



In this example:

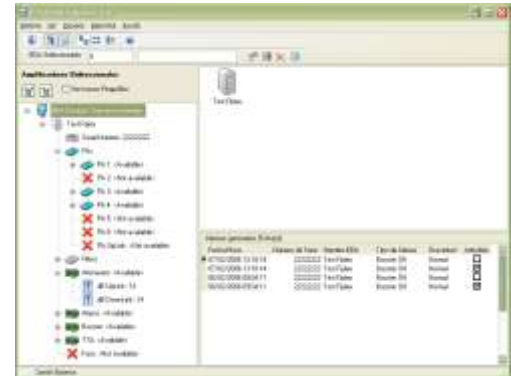
- Multi Band and Multi Technology Indoor Coverage System.
- Several BTS connected to a MOU14 thru a Multi Band Combiner.
- MOU14 connected to four "Remote Heads" on a Star Configuration using one MOU14.
- "Remote Heads" are Multi Band and Multi Technology Repeating Systems composed by Multi Band Combiners and Band Selective Repeaters, fed by a FO-CT module.

Remote Control Management Tool



FOMS – O&M Software

- Model: **FOMS**
- FIPLEX OMS: BDA Administrator System & BDA Control System.
- Real-time.
- Server – client.
- Parameters and alarms.
- Via SMS / packet data.
- Treeview.
- SQL database engine.
- Individual users profiles, permissions.



RC-G – Remote Control Unit

- Model: **RC-G**
- Option for remote supervision of Repeaters.
- Repeater alarms reports.
- Suitable for BDA Series.
- Link via GSM network.
- Proprietary protocol.
- Factory installed.
- Works with FOMS platform.
- Applies for all lines of Repeaters (except P and CBDA Series) and MOUs.



Antennas and Passive Devices



Indoor Omni Antenna

- **FIP1000**
- Dome type.
- Roof mount.
- 800 – 2500MHz, suitable for GSM to WLAN.
- 3dBi gain.
- Vertical polarization, 55 degrees.
- Indoor type.
- N(f) connectors.
- Maximum power 100W.



Indoor Panel Antenna

- **FIP2001**
- Panel type.
- Wall mount.
- 800 – 2500MHz, suitable for GSM to WLAN.
- 8dBi gain.
- Vertical polarization, 58 degrees.
- Horizontal aperture 68 degree.
- Front – Back ratio 15dB min.
- Indoor type.
- N(f) connectors.
- Maximum power 100W.



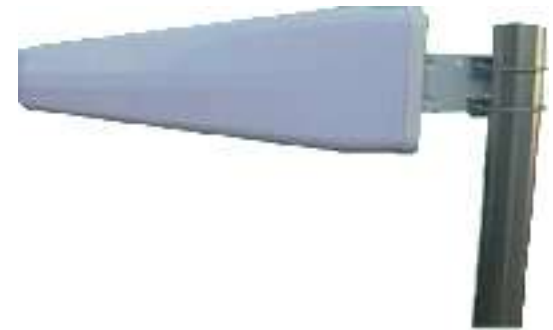
Outdoor Panel Antenna

- **FIP2004**
- Panel type.
- Wall and Pipe mount.
- 800 – 2500MHz, suitable for GSM to WLAN.
- 7dBi gain.
- Vertical polarization, 58 degrees.
- Horizontal aperture 87 degree.
- Front – Back ratio 20dB min.
- Outdoor type
- N(f) connectors
- Maximum power 50W.



Yagui Antenna

- **FIP825**
- Yagui type with radome cover.
- Pipe mount (40-50mm).
- Aluminum alloy, welded.
- 800 – 2500MHz, suitable for GSM to WLAN.
- 11dBi gain.
- Vertical polarization, 50 degrees.
- Horizontal aperture 90 degree.
- Front – Back ratio 25dB min.
- Outdoor type
- N(f) connectors
- Maximum power 100W.



Coaxial Splitters

- **PSC** Series.
- 2, 3 and 4 ways.
- High power handling capability up to 500W.
- From VHF to 2500MHz
- 800-2500MHz broadband models.
- Low insertion loss.
- Low PIM, 160dBc typ.
- Indoor and outdoor versions.
- N(f) and 7/16(f) connectors.



Broadband Splitters

- **DPS** Series.
- 2, 3 and 4 ways.
- Power handling capability as splitter of 50W.
- 800-2500MHz broadband models.
- Low insertion loss.
- Low PIM, 160dBc typ.
- Indoor versions.
- N(f) type connectors.



RF Directional Couplers

- **RSA** Series.
- 6, 10, 15, 20 and 30dB coupling values.
- High power handling capability up to 200W.
- From VHF to 2500MHz
- 800-2500MHz broadband models.
- Low insertion loss.
- Low PIM, 160dBc typ.
- Outdoor use.
- N(f) and 7/16(f) connectors.



Any frequency... any technology... We improve the coverage of your network.



Repeaters (bda)
Tower Mounted Amplifiers (tma)
Products For iDEN®
Products For TETRA / TETRAPOL
Transmitter Combiners
Receiver Multicouplers
Duplexers
Filters
R.f. Components
Broadcasting

