Unication

R-Series Micro Site Equipment

Micro Site for Public Safety

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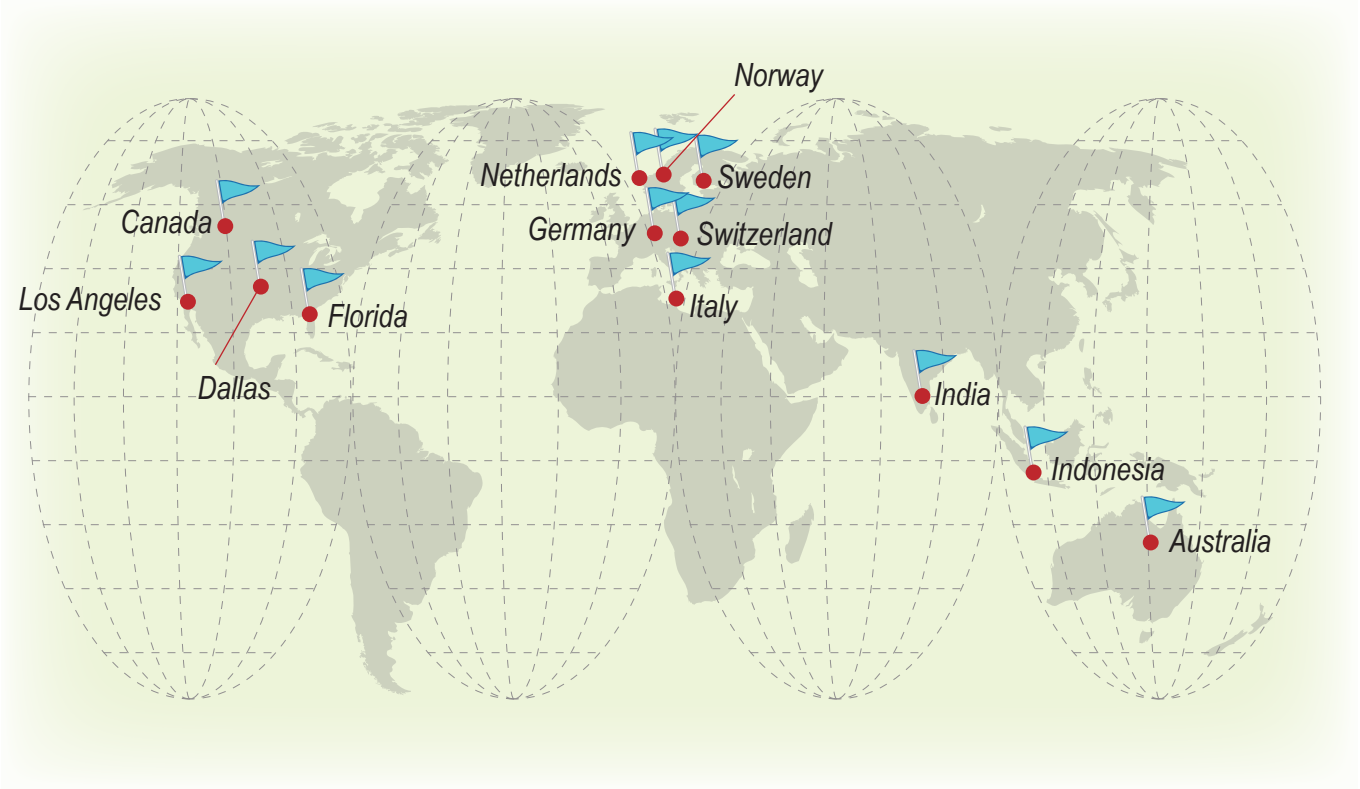
Content

What is Unication ?

- Unication Co., Ltd was originally founded in 1992 and has 27 years' experience with designing and manufacturing advanced critical communication solutions and systems. The innovation and advancement of Unction's professional radio communications products is the main spindle of the brand's development.
- Unication currently has independent design centers or sales companies in Los Angeles, Dallas, Florida, Poca Reyton, Canada, Australia, and Germany.
- As of now, Unication radio products have been sold to the United States / Canada, the Netherlands, Norway, Sweden, Switzerland, Australia, Italy, India, Indonesia and Middle East countries



Design Concept of R-Series Micro Site Equipment

Existing P25 systems can have coverage gaps due to localized terrain impediments and/or user growth into outer fringe areas.

- These problem 'marginal coverage' areas can have many buildings with limited or no in building coverage.
- The poor coverage area can be several square miles
- Traditional BDA installations for many buildings is very expensive and time consuming to install.

Cost: Addition of traditional trunking sites is an option

- However the cost of additional trunking sites is also very cost prohibitive and installation time costly. (new towers, linking, base station radio site etc.)

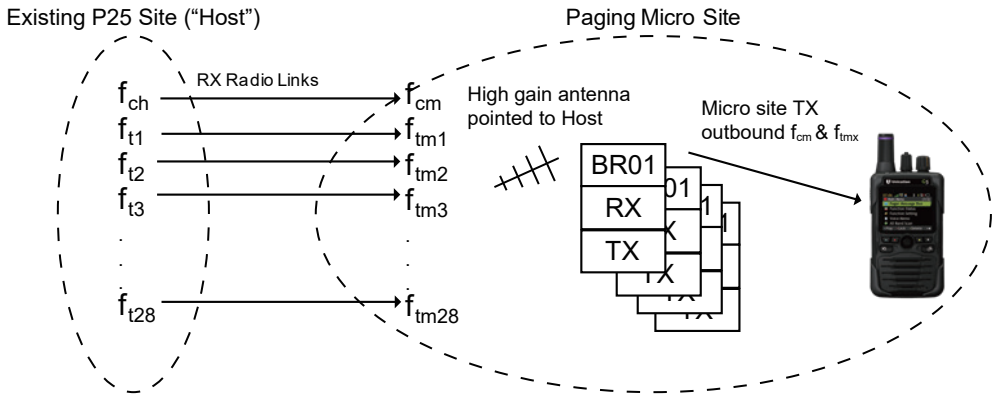
Cost Effective Full power P25 Trunking Equipment

- TC01 Trunking Site Controller, compact 1U
- Advanced efficient transmitter cooling to deliver high reliability

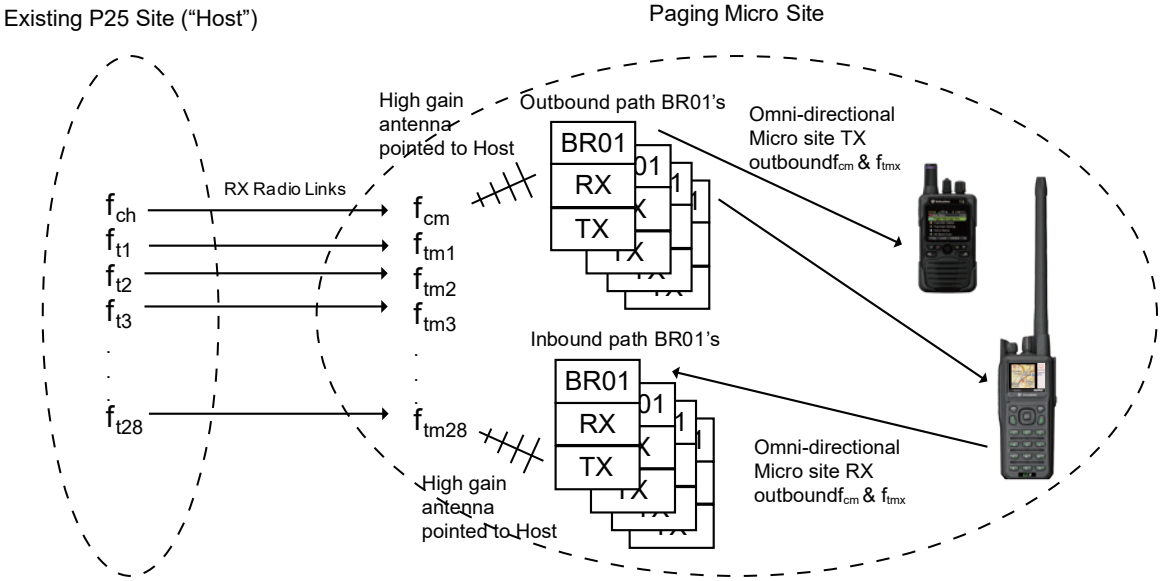
Wide area P25 Coverage Extension/Fill in

- Extend existing P25 System ("Host") into marginal areas extension into marginal or new coverage areas.
- Installation of sites in remote areas
- Campus inbound P25 signal diversity reception.
- Re-use legacy Police/Fire station VHF base sites including re-se of existing legacy antenna towers

■ P25 Pager Micro site using Remote Radio Linked Host



■ P25 2-Way Micro site Using Remote Radio Linked Host



Feature of R-Series Micro Site Equipment

• Flexible Platform Topologies

- 1-way P25 Trunking Coverage Extension for P25 Paging
- Upgradable to 2-way Trunking. Re-uses the 1-way Paging equipment. (GPS Locked frequency & Time reference.)
- Base Station Radio R0x has independent and configurable Receiver band Transmitter frequency bands.
- Conventional : dynamic mixed mode P25 digital conventional or analog conventional
- Data : Dynamic assignment between voice and SNDCP data frames
- Linear option supports :

  Simulcast operation. Supports all linear modulations including LSM, WCPSK, H-DQPSK (phase II)

  TDMA Phase II Transmission

• Radio linking to receive Host site using directional antennas

- Cost effective, efficient installation
- No monthly linking costs for 1-way paging site configuration using TC01.
- Can re-use legacy County Fire / Police Station sites / towers using TC01.

• Standard P25 Standard ISSI IP linking using TC01

- Interface to standard dispatch and existing radio systems
- Dual redundant Microwave radio and / or / Fibre etc.
- Software upgrade to support ISSI standard 2-way site configuration

• Inbound P25 Receiver Diversity using CR01

- CR01 receivers installed in problem areas (no fan, can be in ‘dusty’ environment)
- Install DCS “Diversity combiner software” at main repeater BR01site
- Rugged metal housing, no fan, 12VDC operation (wall adapter, standard UPS), wide temperature operating range -30 to 60C
- No FCC license required for the CR01 site, can use low cost sites
- GPS Synchronization and packet time stamping
- Connects to BR01 repeater site diversity combiner DC01 unit
- Multiple connection methods to DC01
- Wifi, LTE, Ethernet, BR01 RF linking, 4wire, satellite

• Alarm Reporting

- TX01 Alarms and information include these :

  TX01 Temperature
  VSWR
  Forward power after isolator
  Reverse power after isolator
  DC input voltage (at Transmitter DC terminals)
  Synthesizer
  Fan rotation
  PA currents
  Battery voltage
  Power supply voltage
  AC main failure / running on battery backup
  MSN
  Hardware revision

- CR01 Alarms and information :

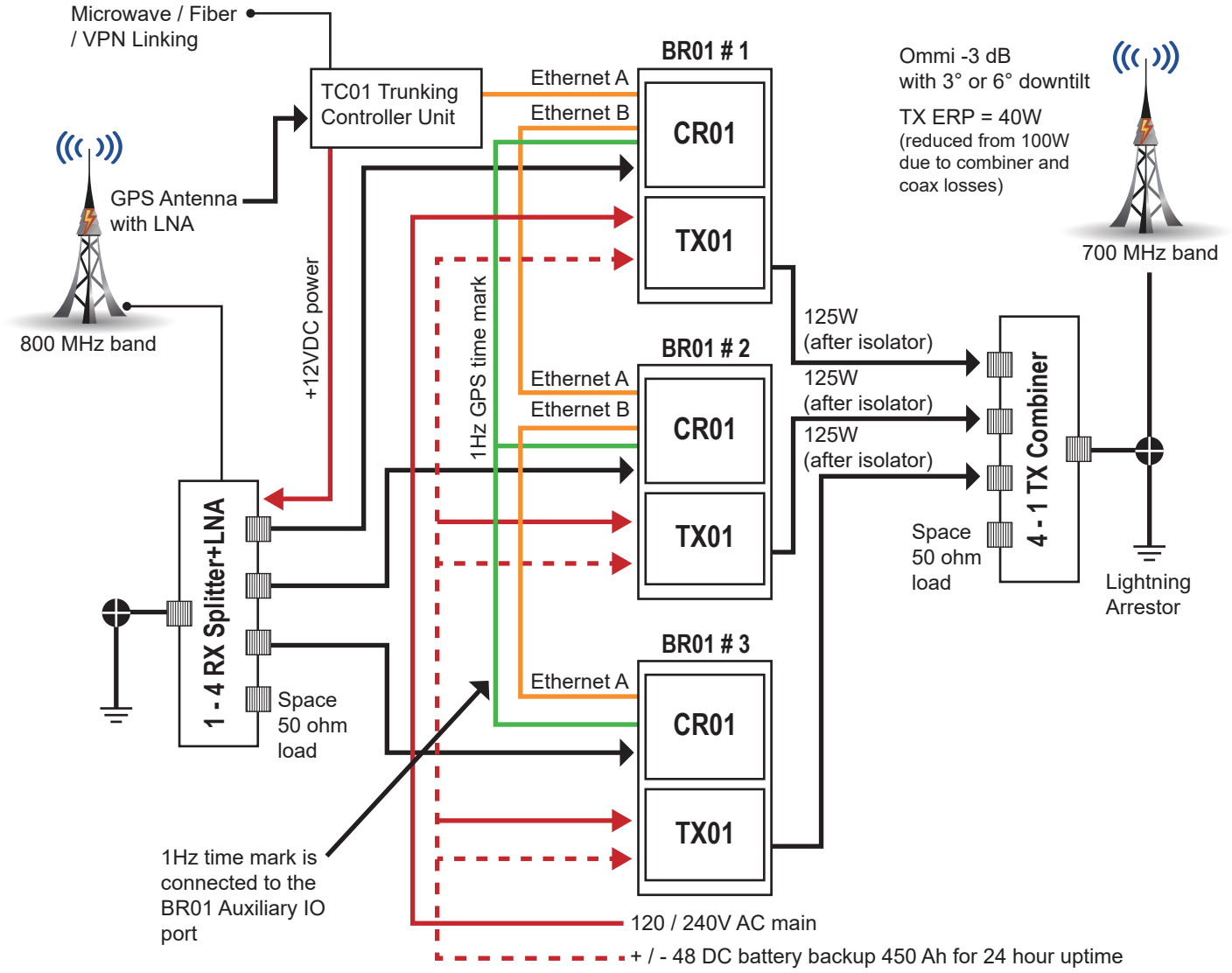
  CR01 temperature
  Loss of GPS signal
  Loss of external time mark signal
  DSP failures
  Loss of communications to TX01
  Receiver alarms including synthesizer
  Power supply voltage
  Battery voltage
  MSN
  Hardware revision
  Software revision of DSPs and ARM
  Intrusion alarm – front door
  Intrusion alarm – rear door
  GPIO – telemetry ports
  ADC port
  DAC port
  Serial port

Site Assembly & Equipments :

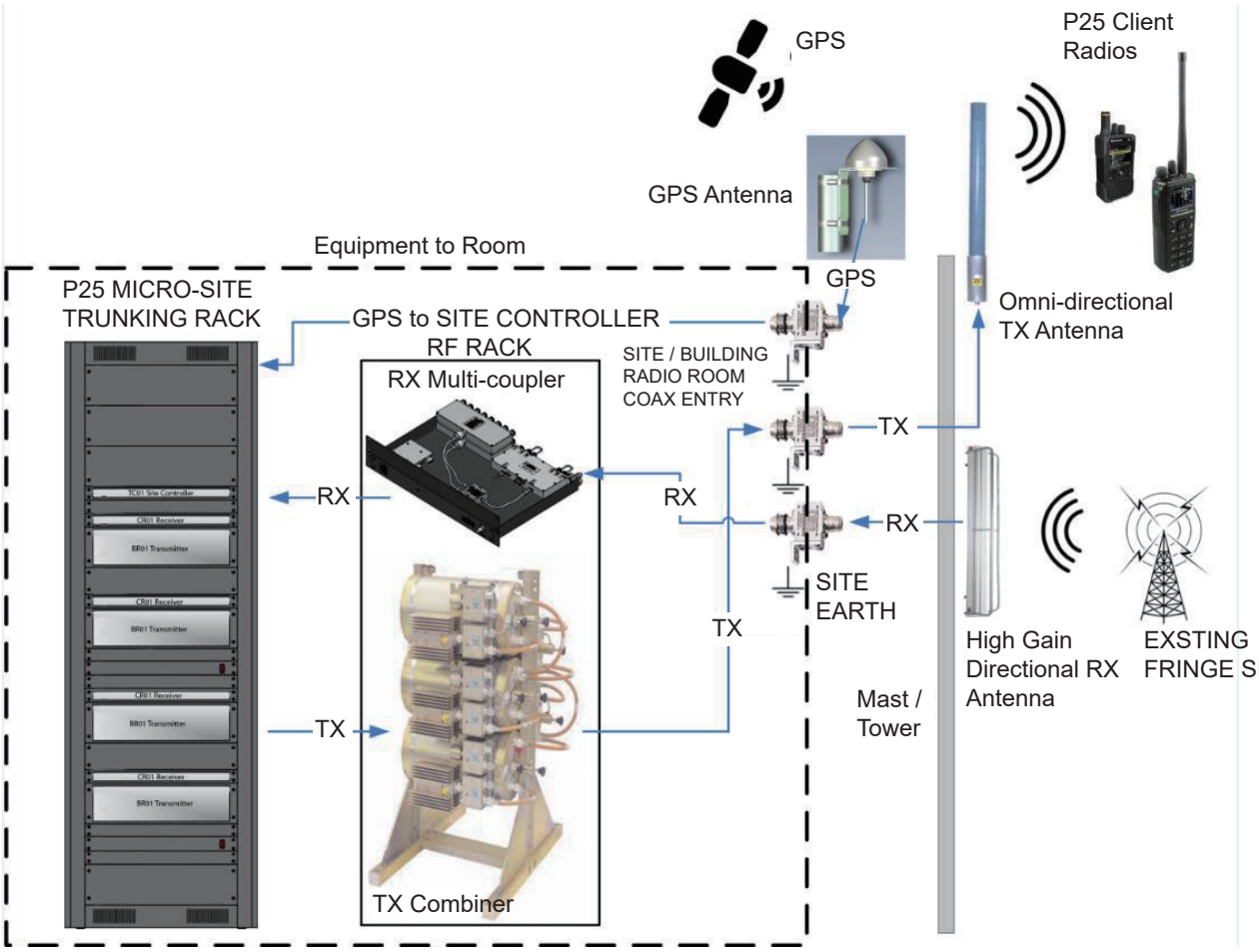
■ Cabinet
- ●Standard 72” cabinet supports up to five full 130W per channel Transmitters
- ●Space for additional equipment and Redundant receivers

■ Redundancy and Alarming
- ●Dual 120/VAC power supplies
- ●Soft power supply transfer from AC to +/-48VDC with no communications interruption
- ●Automatic control channel reassignment to any BR01 at site
- ●TC01 Site Controller has dual fully redundant power supply inputs, and automatically transfers to another TC01 in case of failure
- ●External LNA splitter is powered from TC01 redundant DC supply
- ●Optional BR01s for additional Redundancy
- ●Full complement of remotely monitored real-time Radio and Site alarms

Micro-Site system Inter - BR01 Connection Diagram For 1Way :



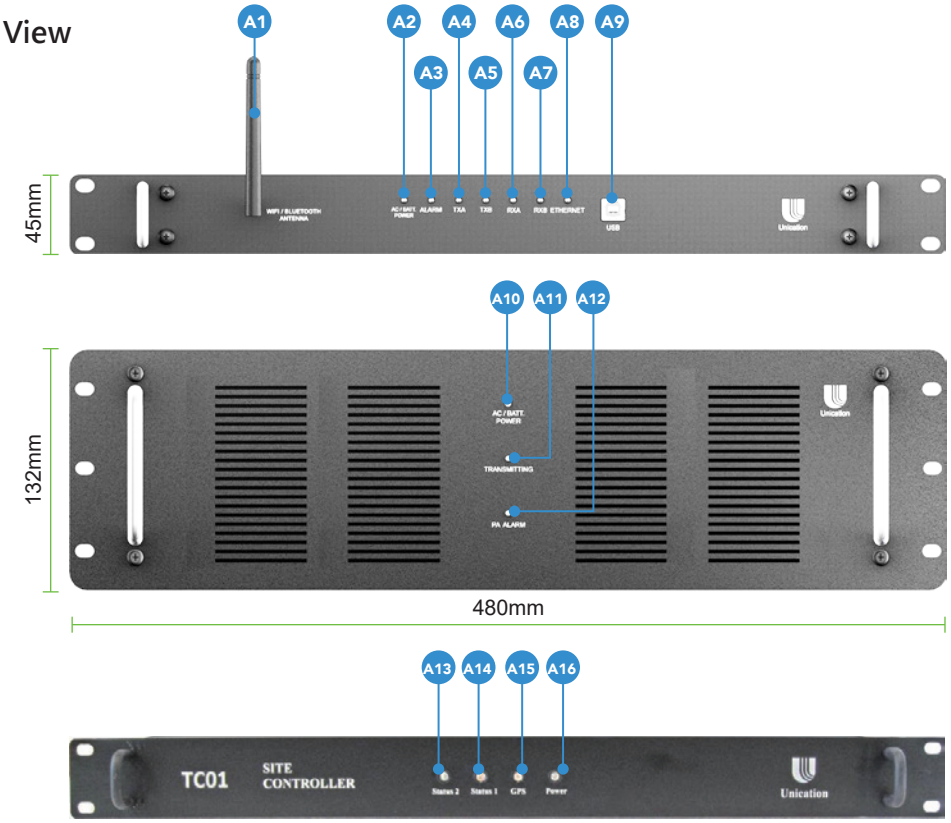
The Micro-Site components overview



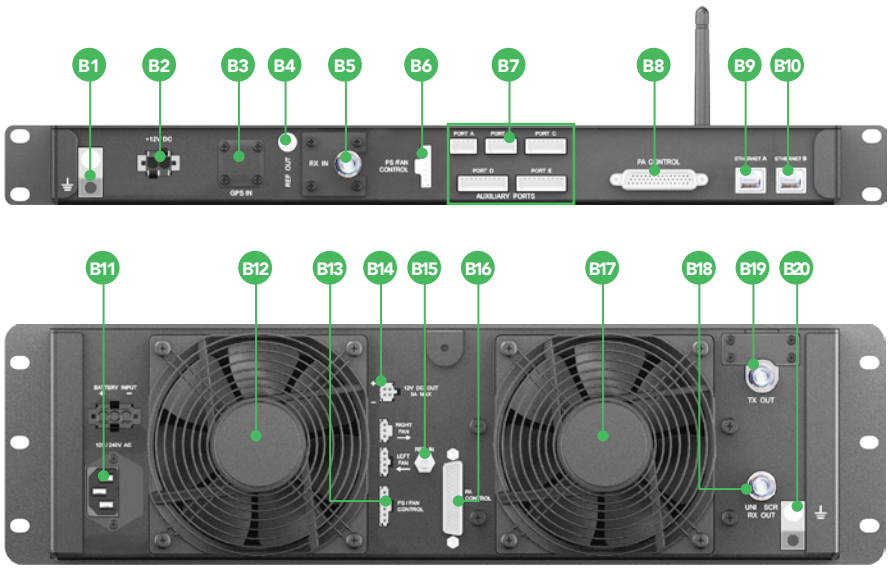
■ Specification and Function of BR01 :

● Appearance Introduction of BR01 :

● Front View



● Rear View



A : Front View			
A1	Bluttooth Antenna(Option)	A9	USB Port
A2	AC/BAT Power Indicator	A10	AC/BAT Power Indicator
A3	ALARM Indicator	A11	Transmitting Indicator
A4	TXA Indicator	A12	PA Alarm Indicator
A5	TXB Indicator	A13	Status 2
A6	RXA Indicator	A14	Status 1
A7	RXB Indicator	A15	GPS
A8	Ethernet Indicator	A16	Power

B : Rear View					
B1	Ground screw	B8	PA Control	B15	Reference Input
B2	CR01 12VDC Power Input	B9	Ethernet Port A	B16	PA Control
B3	GPS Antenna (Option)	B10	Ethernet Port B	B17	PA Fan Control
B4	Reference Out	B11	AC Input	B18	Uni Scr (R&R)
B5	RX Connector	B12	Power Supply Fan		RX Out (Option)
B6	PA Fan Control	B13	PA Fan Control	B19	TX Connector
B7	Accessory Connector	B14	CR01 12VDC Power	B20	Ground Screw

■ Product number		R-Series Micro Site Equipment						
■ Model number supported by this product		BR01						
A	**TX01 Transmitter RF specifications**							
A1	Power Output	1. VHF / UHF : 10 to 100 watts in steps of 1 watt increments, selectable under CR01 software control. 2. 700/800MHz : 10 to 130 watts in steps of 1 watt increments, selectable under CR01 software control. 3. WLB: 10 to 75 watts in steps of 1 watt increments, selectable under CR01 software control. Note : the PA can also be used in the EXT02 by removing the exciter from the TX01 box.						
A2	Power Output accuracy	1. VHF / UHF : 10 to 100 watts : +/- 0.6 dB over temperature, AC & DC input voltage, after PA calibration. 2. 700/800MHz : 10 to 130 watts: +/- 0.6 dB over temperature, AC & DC input voltage, after PA calibration. 3. WLB : 10 to 75 watts: +/- 0.6 dB over temperature, AC & DC input voltage, after PA calibration						
A3	Power Supply Input	1. Standard : AC Main input option : 85 to 264 VAC, 47 to 63 Hz (no DC input) 2. Option : 120VAC plus +/-48 VDC automatic switchover backup						
A4	Frequency bands (electronic bandwidth)	30 to 88 MHz	136 to 174 MHz	400 to 470 MHz	300 to 400 MHz	450 to 520 MHz	762-776, 851-870 MHz	792-806, 806-825 MHz
A5	Channel Switch time	8.75 ms						
A6	TX01 Current Drain	1. Transmit : 10 amp at 48 VDC battery voltage input, at 100 watt TX power, 12VDC regulated 3 amp current limited auxiliary out, Fan running at maximum speed. 2. PA Standby (Idle): 1 amp at 48 VDC battery voltage input, fan is running at low speed.						
A7	CR01 Current Drain	2 amp at +12VDC.						
A8	Temperature	1. Ambient Operating : -30 to +50° C. 2. Storage Temperature : -45 to +85°C.						
A9	Transmitter noise at 1 MHz from carrier	<-148 dB / Hz	<-148 dB / Hz	<-142 dB / Hz	<-148 dB / Hz	<-148 dB / Hz	<-148 dB / Hz	<-148 dB / Hz
A10	TX01 Protection	1. Thermal, VSWR, power reduction followed by shut off, reset upon return to normal temperature and VSWR. 2. Power falls back 6 dB on : High Reverse power or PA high temperature 3. CR01 reads the alarms periodically with period less than or equal to 1 second and when the alarms start to get into the warning (yellow) level, the CR01 will start to reduce the PA output power. 4. TX01 has self-protection in case that CR01 communications is lost or cable disconnected In this case TX01 will power off. TX01 will stay in off condition until CR01 communications is restored and instructed to turn on by CR01. 5. TX01 will self-power off when reference signal is lost. 6. TX01 reports immediately to the CR01 with the fan failure in the event that the fan stops working. 7. When alarms approach serious level, such as PA temperature or synthesizer lock problem (i.e.,RED), the TX01 shall automatically cut power to the RF PA via hardware method (self protect). 8. If the PA power has been cut off due alarms or via CR01 command, the TX01 digital interface to CR01 shall continue to be powered up and function so that the CR01 can continue to communicate to the TX01.						

■ Product number		R-Series Micro Site Equipment
■ Model number supported by this product		BR01
A	TX01 Transmitter RF specifications	
A11	Alarms and information reported to CR01	1. TX01 Temperature (PA, Driver, & PA), ambient temperature on fan controller, heatsink, power supply 2. Forward power after isolator 3. Reverse power after isolator 4. PA DC input voltage & current 5. AC & DC input voltage at TX01 AC & DC terminal 6. Synthesizer (LO & modulator) 7. Fan rotation 8. PA driver currents 9. AC main failure / running on battery backup 10. Power supply voltage 11. Battery voltage 12. MSN of all boards. 13. PCB revisions stored in EEPROM
A12	Channel Bandwidths	1. 12.5 kHz and 25 kHz. Selected dynamically via software control from the CR01.
A13	Output Impedance	50 Ohms
A14	Reference Oscillator	1. Uses external reference oscillator input from CR01 reference module, 50 ohms, 13MHz
A15	TX Intermodulation Attenuation at antenna connector	1. VHF / UHF / 700/800 : > 55 dBc (includes integrated isolator) 2. WLB : > 40 dBc
A16	Modulation	1. Analog : FM TIA603C 2. Digital : CFSK (DMR, P25 Phase I, etc.).
A17	Modulation limiting	1. +/- 2.5 kHz for 12.5 kHz channel bandwidth 2. +/- 5.0 kHz for 25 kHz channel bandwidth
A18	FM Hum and Noise	1. Better than -40 dB for 12.5kHz channel bandwidth 2. Better than -45 dB for 25kHz channel bandwidth
A19	Integrated Isolator	1. VHF / UHF / 700/800 MHz : 20 dB typical, 18 dB minimum 2. WLB : no isolator
A20	Conducted spurious and harmonic emissions attenuation at antenna connector	1. VHF / UHF / 700/800 : Less than -36dBm for below 1 GHz Less than -30dBm for above 1 GHz 2. WLB : less than -20 dBm
A21	Operating VSWR	The output power shall be reduced gracefully under software control as a function of VSWR when the VSWR is > 3:1. Use the TIA specifications, if applicable, for operation when the VSWR > 3:1.
A22	Audio Response	TIA603C
A23	Audio Distortion	< 2 %

■ Product number		R-Series Micro Site Equipment
■ Model number supported by this product		BR01
A	**TX01 Transmitter RF specifications**	
A24	Emission Designators	1. Analog Voice Call, 12.5 KHz channel : 11K0F3E 2. Analog Voice Call, 25kHz channel : 16K0F3E 3. Uni2TDMA voice : 7K8FXE 4. Uni2TDMA data : 7K8FXD 5. Uni2TDMA voice and data : 7K8FXW 6. P25 Phase I voice : 8K2F1E 7. P25 Phase I voice and data : 8K2F1D
A25	Vibration	MIL-STD-810E : The device shall be capable of withstanding a 30 to 500 Hz acceleration limited oscillation with 0.25G rms for 40 minutes on vibration table. After test, the unit shall be fully functional with no impairments and shall show no signs of physical degradation including all fastening screws.
A26	Electrostatic discharge	1. Reference IEC 6100-4-2.: +/- 15KV air, +/8KV contact on all planes applied to any point on the TX01 unit, including all contacts and connectors.
A27	Altitude	1. 30,000 feet for storage and shipping.
A28	MTBF	Greater than 45,000 hours (5 years), with following assumptions : 1. 100% transmission duty cycle, 2. 100 watts output, 3. Ambient temperature = +30°C, 4. 0.1G continuous sinusoidal 30 to 500 Hz vibrations
B	**CR01 Receiver & Controller RF specifications**	
B1	Frequency bands (electronic bandwidth)	30 to 88 MHz | 136 to 174 MHz | 400 to 470 MHz | 300 to 400 MHz | 450 to 520 MHz | 792-806, 806-825 MHz | 762-776, 851-870 MHz
B2	Maximum Received power at receiver port	1. Operates up to : +27 dBm 2. Does not damage receiver for signals up to +30 dBm for 1 minute duration.
B3	RF Input impedance	50 ohms
B4	Temperature	1. Ambient Operating : -30 to +60° C. 2. Storage Temperature : -45 to +85° C.
B5	Channel bandwidths	12.5 kHz and 25 kHz. Selected via PPS software control
B6	Channel switch time	8.75 ms
B7	Sensitivity	1. Analog, 12.5 kHz bandwidth, at 12dB Sinad: 122 dBm 2. Analog, 25.0 kHz bandwidth, at 12 dB Sinad: 122 dBm 3. Digital (C4FSK) : < 5% BER at 122 dBm (12.5kHz bandwidth)
B8	Reference Oscillator	External reference oscillator input from CR01 reference module, 50 ohms, 13MHz, 50 ohms
B9	Adjacent Channel Selectivity (TIA603C)	1. VHF / UHF : 12.5 kHz : > 55 dB 25.0 kHz : > 80 dB 2. WLB : 25.0 kHz : > 64 dB 3. 700/700MHz : 12.5 kHz : > 55 dB, 60dB typical 25.0 kHz : > 80 dB

■ Product number			R-Series Micro Site Equipment						
■ Model number supported by this product			BR01						
B	**CR01 Receiver & Controller RF specifications**								
B10	Conducted Intermodulation (TIA603C)		70 dB	78 dB	75 dB	75 dB	75 dB	75 dB	75 dB
B11	Conducted Spurious Rejection (TIA603C)		70 dB	80 dB	75 dB	75 dB	75 dB	75 dB	75 dB
C	**CR01 Receiver RF specifications**								
C1	Rated Audio (using basic Speaker mic)		0.5 W						
C2	Audio Distortion (using basic Speaker mic) at rated audio		< 2%						
C3	Audio Response		TIA603C						
C4	FM Hum and Noise		12.5 kHz : > 40 dB 25.0 kHz : > 45 dB						
C5	Blocking		100 dB						
C6	Reference Oscillator Module	Frequency	13 MHz, ovenised, low phase noise oscillator						
		Stability over temperature and aging, free-running mode.	1. 1 year aging : +/- 0.1 ppm 2. 10 year aging : +/- 0.5 ppm						
		Stability over temperature and aging, locked mode: locked to GPS or external 1Hz pulse. External pulse is locked to GPS.	1. Over temperature : +/- 0.05 ppm 2. Over temperature and 10 year aging : +/- 0.05 ppm						
D	**TX01 Unit General Specifications**								
D1	Main Function		Modulation of digital signal from CR01 by using exciter and RF power amplification of the transmitted signal to be transmitted into antenna at 100Watts (maximum power).						
D2	Key Components inside TX01		1. RF exciter, 2. RF PA, 3. PA controller and alarming monitor, 4. RF power detector, 5. Transmitted signal harmonic filter 6. Power supply						
D3	Connections to CR01		1. TX Interface cable. 2. TX01 is controlled by CR01, TX01 sends alarms to CR01 for processing via this cable. 3. PS and Fan control cable 4. CR01 controls the TX01 PS. Alarms from TX01 PS and fan sent to CR01 via this cable. 5. 13 MHz Reference oscillator input cable from CR01. 6. 12VDC output cable to supply power the CR01						
D4	Transmitter Duty Cycle		100%, continuous transmission at full power						
D5	Cooling Method		Integrated variable speed cooling fan on rear face of unit. Fresh air intake is via vent on front face plate, exhaust is via rear of unit. Fan speed is a function of the internal PA temperature. CR01 reads the PA temperature and sends speed adjust commands to TX01 fan. The fan also sends the alarm status if fan is rotating or not to CR01						
D6	RF Isolator		Integrated single stage transmitter Isolator						

■ Product number			R-Series Micro Site Equipment
■ Model number supported by this product			BR01
D TX01 Unit General Specifications			
D7	Power Supply		1. Standard power supply is +48VDC input from battery : 2. Optional power supplies are : Option 1 : 120/240VAC Main input option: 85 to 264 VAC, 47 to 63 Hz (no DC input) Option 2 : +/- 40 to +/- 60VDC, -48VDC nominal (no 120/240 VAC) Option 3 : 120VAC with +/-48 VDC automatic switchover backup during AC mains power loss. Switch over from AC main to battery is automatic and does not interrupt operation during loss of AC main power. 3. Indicator signal when TX01 is operating from battery is sent to CR01 via PS & Fan control cable. 4. 120 / VAC Main Power Supply option has power factor correction included 5. The DC Battery Power Supply connects to a dedicated or shared external battery.Multiple TX01, CR01, multiple TX01' s, CR01' s and 3rd party repeaters can connect to same battery (at battery terminal directly).
D8	Front Face		1. Air Intake Vent grill 2. AC Power ON / Battery backup LED 3. PA Fault LED 4. Carrying handles on left and right sides 5. Unication logo
D9	Rear Face		1. Power Supply Fan exhaust 2. Earth Ground screw. Capable of supporting 8 gauge wire to earth ground copper bar. 3. 120 / 240VAC plug standard plug 4. Battery connectors (+ and -) terminal plug for +48VDC or +/-48VDC option 5. Power Supply and Fan Control: DB9 female connector 6. Auxiliary 12VDC/3amp power ouput: Barrel style connector. 7. TX Interface: High density DB 25 Shell, 44 pin connector. Connects to CR01 8. RX Out. SMA connector. 9. Connects to CR01 RX Input for single channel repeater operation. 10. PA fan exhaust. Externally mounted for easy replacement. 11. RF TX Out: Type N. 12. This connector supports two modes of operation: 13. Traditional Repeater 14. Connects to transmitter cavity RF pre-filter and duplexor for traditional dual frequency repeater operation. 15. Unication Proprietary Single Channel Repeater 16. Connects to RF pre-filter and antenna for Unication proprietary single channel repeater operation. 17. Reference Input: 13 MHz reference input from CR01.
E CR01 Unit General Specifications			
E1	CR01 General	Power Supply Input	+12VDC, supplied from TX01 rear panel 12VDC power supply output.
		Current Drain	4 amp at +12VDC battery voltage input
		Temperature	1. Ambient Operating : -30°C to +60°C. 2. Storage Temperature : -45°C to +85°C.

■ Product number			R-Series Micro Site Equipment
■ Model number supported by this product			BR01
F TC01 Unit Specifications			
E1	TC01 General	Mechanical	Standard 19" wide rack mount, 14' deep, 1U height
		Power Supply Input	1. Dual redundant +10 to +16 VDC, supplied from TX01 rear panel 12VDC power supply output. 2. Nominal 13.4VDC,
		Current Drain	2.0 amp at +12VDC battery voltage input
		Temperature	1. Ambient Operating: -30 to +60° C. 2. Storage Temperature: -45 to +85° C.
		Humidity	Operating units are subjected to 50°C at 95% Non-condensing.
		Vibration	MIL-STD-810E The device shall be capable of withstanding a 30 to 500 Hz acceleration limited oscillation with 0.25G rms for 40 minutes on vibration table. After test, the unit shall be fully functional with no impairments and shall show no signs of physical degradation including all fastening screws.
		Electrostatic discharge	Reference IEC 6100-4-2.: 5KV, 10KV and 15KV on all planes applied to any point on the TC01 unit, including all contacts and connectors.
		Altitude	30,000 feet for storage and shipping.
		MTBF	Greater than 45,000 hours (5 years), with following assumptions: 1. Ambient temperature = +30°C, 2. 0.1G continuous sinusoidal 30 to 500 Hz vibrations
E2	GPS Receiver Specifications	GPS Receiver Antenna port	1. Performance: SIRF or equivalent 2. 50 ohm impedance, 3. Provides DC power to power external GPS antenna LNA. The GPS port shall provide 5VDC +/- 10%, 27mA power for the external GPS LNA. 4. Provide 1 Hz time mark output for reference oscillator and timing synchronization.
E3	WIFI Radio	802.11 WIFI	WIFI 3rd party radio module. Antenna is 3rd party WIFI mono-pole antenna connected to rear face SMA connector. 50 ohm connector.
E4	Internal Ethernet Switch	Ethernet Switch	• Internal Ethernet switch has eight (8) ports, ports A, B, C, D, E, F, G, H • Assignment of the above eight ports is per rear face connector definition below)
E5	Trunking Controller Processor Unit (TCPU) Requirements	Trunking Controller Processor Unit hardware	1. 3rd Party PC module capable of Standard Linux OS 2. Memory: 1 GByte RAM, 1GByte Non-Volatile SDCARD or equivalent
		Trunking Controller Processor Unit functions	1. Generates LED status on front face of TC01 2. Perform Trunking channel processing according to TIA-102 P25 specifications or Microsite Functions as outlined in functional requirements in section 4 3. TCPU has ability to power cycle the Internal Ethernet Switch via a control line 4. TCPU has ability to enable / disable the internal GPS radio module 5. TCPU watchdog hardware timer pulse signal to the internal power supply. Expiry of this watchdog timer causes the internal power supply to reset the TCPU. 6. TCPU constantly monitors each BR01 and if one unexpectedly fails or is powered down for any reason then the TCPU reassigns the control channel and traffic channels as required inorder to keep the site functional

■ Product number			R-Series Micro Site Equipment
■ Model number supported by this product			BR01
F TC01 Unit Specifications			
E6	Local and Remote Connections	TC01 Local/Remote Connections	1. Remote connection via RJ45 connected to local PC or via dual redundant secure Ethernet links (Microwave/Fibre/VPN) and/or via optional WIFI secure Internet (VPN) 2. Connectivity includes these functions: a. Alarming & Status i. Retrieves alarms and status from each of the four (4) BR01' s (see CR01 alarms) ii. Reports and displays alarms and status via local PC display or remotely using IP connection, RJ45 or WIFI. iii. Retrieves alarms and status from the TC01 processor. b. Remote software download to TC01 and to each BR01 via dual redundant secure Ethernet links (Microwave/Fibre/VPN). c. Remote configuration (PPS) via dual redundant secure Ethernet links (Microwave/Fibre/VPN). d. Operates the front face status LEDs
E7	Front Face Indicators	LED indicators	There are four front face LED indicators: 1. Power • States: Green, OFF 2. GPS, 1 Hz time mark pulse • States: Flashing Green at 1 Hz when GPS radio is locked, OFF when GPS signal is lost 3. TC01 status #1, Trunking controller Alarm: • States: Green = TCPU controller running properly, Red = Alarm (specific TC01 alarm is read on alarm screen) 4. TC01 status #2, BR01 alarm: • States: one of the BR01' s is generating alarm (specific alarm is read on the TC01 alarm screen)
E8	Connectors on rear face of TC01 unit	Redundant 13.8 VDC power input #1	• 2 pins: + 13.8 VDC and GND input • Source: from BR01 #1 (TX01 13.8VDC output) • On latching connector #1, reverse polarity
		Redundant 13.8 VDC power input #2	• 2 pins: + 13.8 VDC and GND input • Source: from BR01 #2 (TX01 13.8VDC output) • On latching connector #2, reverse polarity protection • This redundant input is in case of maintenance or failure of BR01 #1 (or vice versa)
		13.8 VDC power output	• Power output to the RX LNA/Splitter • 2 Pins: + 13.8 VDC and GND • On latching connector #3, reverse polarity protection
		GPS RF + LNA DC power	• Type N connector, • Used to connect to GPS antenna coax cable to roof top GPS + LNA • Provides 5VDC power output to the GPS LNA
		WIFI RF	SMA to connect 3rd party WIFI antenna
		Ethernet	Standard RJ45 connectors with following eight (8) ports and assignments: 1. Port A: Connection to internal Trunking Controller Processor Unit 2. Port B: Inter-site microwave radio/fibre link 3. Port C: Redundant: Inter-site microware radio/fibre link 4. Port D: BR01 #1 5. Port E: BR01 #2 6. Port F: BR02 #3 7. Port G: BR02 #4 8. Port H: Spare

■ Product number			R-Series Micro Site Equipment
■ Model number supported by this product			BR01
F TC01 Unit Specifications			
E8	Connectors on rear face of TC01 unit	GPS 1 Hz clock	• 1 Hz GPS output, 5V TTL, pins, • Connected to BR01 #1, 1 Hz daisy chain input. The 1 Hz daisy chain output is connected to BR01 #2, etc. • On in line latching connector #4
		General Purpose Input	• Quantity four (4) general purpose inputs, • 5V TTL, open collector, • Connected to CPU controller unit, • On in line latching connector #5: 1. Input #1 2. Input #2 3. Input #3 4. Input #4
		General Purpose Output	• Quantity four (4) general purpose outputs, • 5V TTL, open collector, • Connected to CPU controller unit, • On in line latching connnector #5: 1. Output #1 2. Output #2 3. Output #3 4. Output #4
		I2C	• Quantity 2 I2C for general purpose accessories such as radio room and cabinet temperature • Connect to CPU controller unit, • On in line latching connector #5
		SPI	• Quantity 4 SPI for diagnostic purposes • Connect to CPU controller unit, • On in line latching connector #5
		Earth ground lug	• Supports gauge #2 • Connected to the copper ground bar inside cabinet

R-Series Micro Site Equipment