| REVISIONS | | | | |
|---|---|---|---|---|
| REV. | ECO | DESCRIPTION | DATE | APPROVED |
| 1 | | 1st Draft | 6/21/1999 | |
| 2.0 | | Second draft after 6/22/99 review | 6/25/1999 | |
| 2.1 | | Move splitter from LNA module to CSF module | 7/07/1999 | |
| 3 | | Convert to O1920 system | 1/21/2000 | |
| 4 | | Rename RC1920 system. Revision after 10/20/00 meeting. | 10/26/00 | |
| 5 | | Revision after 10/26/00 meeting. | 11/15/00 | |
| 6 | | Revision after 11/17/00 meeting. | 11/20/00 | |
| 1A | 2718 | Pilot Release. | 5/8/01 | TJB |

# ENGINEERING SYSTEM SPECIFICATION

# RC1920C TWO CHANNEL REPEATER

| | | |
|---|---|---|
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| **REVIEWED:** | | ENGINEERING SYSTEM SPECIFICATION RC1920C TWO CHANNEL REPEATER |
| **USED ON:** | RC1920C | |
| **FILE NAME:** | 500-1300-01 rev 1A.doc | |
| **DISK ID:** | | |
| **REVISION:** | 1A | **DOC NO:** 500-1300-01 |

## 1.0 Introduction

The RC1920C is a channelized PCS repeater optimized for CDMA applications. It is designed to have low reverse link noise figure, high forward link transmit power and optional diversity path in the reverse link. The standard unit can handle two CDMA frequency carriers. However, only one channel may be equipped, if so desired.

## 2.0 Reference Documentation

- OA1900B NR Specification, Over-the-Air On-Frequency Network Repeater for PCS CDMA - Issue 1.0, March 18, 1999, RTI Product Management.
- TIA/EIA-95-B, TIA/EIA-97-C.
- RC1920C Hardware-Software interface control document – to be released.
- Module specification of individual modules
  Forward Front End (090-1302-01)
  Forward Channel Select Filter (090-1304-01 &03)
  Forward Power Amplifier (149-1011-01)
  Reverse Front End (090-1303-01 &02)
  Reverse Channel Select Filter (090-1304-02 &04)
  Reverse Power Amplifier (090-1305-01 &02)
  AC/DC Power Converter (149-1012-01)
  DC/DC Power Converter (087-1549-01)
  Power Control Card (087-1565-01)
  Alarm Control Unit (087-1706-01)
  Line Entry Card (087-1707-01)

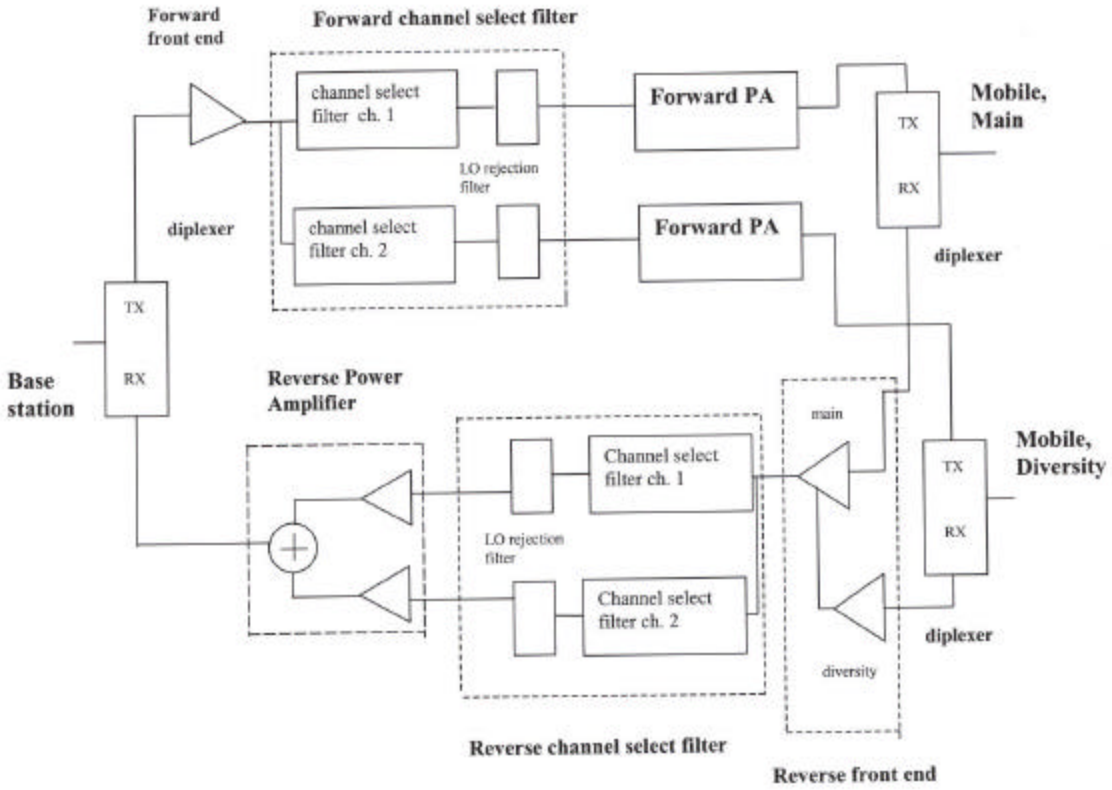
## 3.0 Electrical Specifications

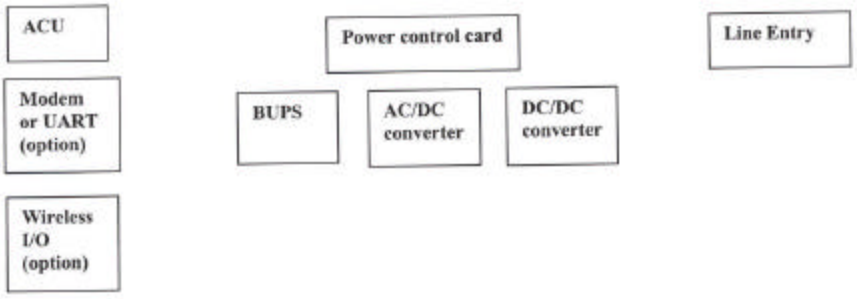
**NOTE: <u>All performance specifications apply to each of the two CDMA channels.</u>**

**In this document, "forward link" is the same as "downlink", and "reverse link" same as "uplink".**

### *3.1 Block Diagram*

The block diagram of the RC1920C two channels repeater is shown below. The two CDMA channels must be within the same frequency block. The Diplexers and Front Ends have wide enough bandwidth to handle both channels. Each channel is then selected by its own Channel Select Filter section. In the forward direction, each channel goes through a different Forward Power Amplifier and is fed to a different antenna. In the reverse direction, after the Channel Select Filter, the channels are combined inside the Reverse Power Amplifier and fed to the same antenna.


Forward front end
Forward channel select filter
channel select filter ch. 1
LO rejection filter
Forward PA
TX
RX
Mobile, Main
diplexer
channel select filter ch. 2
Forward PA
diplexer
TX
RX
Base station
Reverse Power Amplifier
main
Channel select filter ch. 1
Mobile, Diversity
TX
RX
LO rejection filter
Channel select filter ch. 2
diplexer
diversity
Reverse channel select filter
Reverse front end


ACU
Power control card
Line Entry
Modem or UART (option)
BUPS
AC/DC converter
DC/DC converter
Wireless I/O (option)

### 3.1.1 Modules Description

- Diplexer: It provides common access to the same antenna for both reverse and forward link of the two CDMA channels. The TX-RX isolation shall be sufficient to avoid any overload or internal oscillation problems. The filtering shall be sufficient to meet the spurious requirement. Different diplexers will be needed for different frequency blocks. Thus the two CDMA channels must be within the same frequency block.
- Front End: The forward front end and reverse front end are for the receive path of the forward and reverse links. In the reverse link, a combiner is included after the low noise amplifier stage of the reverse front end to combine the main path signal and the delayed diversity path signal. No combiner is needed in the forward link. There is a Programmable Digital Attenuator (PDA) in the reverse front end input for Hot Tone Protection to prevent the front end from input overload conditions.
- Diversity Front End: This is the front end of the diversity receive path. A delay element is inserted after the LNA stage to provide a sufficient time delay for the base station RAKE receivers' discrimination of this signal. The delayed signal is combined with the main receive signal in the combiner in reverse front end. Gain adjustment shall be available in this diversity front end module to balance the gain between the two receive paths. Again, there is a separate PDA in the input section of the diversity front end for Hot Tone Protection. Please note that the reverse front end and diversity front end circuits are on the same PCB and housed in the same module.
- Channel Select Filter: This is the unit that will tune a local oscillator to a specific frequency channel, down convert the RF signal to IF, provide channel filtering, and up convert to RF again. The repeater system gain adjustment is also done in this unit. Notice each CDMA channel needs its own set of Channel Select Filters, one for forward direction and one for reverse direction. Each filter can be tuned to a different channel frequency within the same frequency block. Please note that for each direction, the two channels are on the same PCB and housed in the same module.
- Reverse Power Amplifier: The RPA provides the signal amplification for the reverse link (reverse path). Each channel goes through its own amplification stage and is combined with the other channel at the output.
- Forward Power Amplifier: This is the high power amplifier in the forward link. Each channel has its own forward power amplifier.
- ACU (Alarm Control Unit): ACU is the "brain" of the repeater, which controls and monitors all the modules. It also communicates with the network or local craft PC via RepeaterNet. It shall have a modem plug-in as an option. The ACU also has DC/DC converters for supplying power to the Front Ends, Channel Select Filters and the Reverse Power Amplifier.
- LO Rejection Filter: This is used to filter out image and local oscillator signals at the output of the Channel Select Filter to avoid unnecessary PA loading. This LO rejection filter now has been incorporated into the Channel Select Filter module.
- Power Supply System – Power Control Card, DC/DC converter, AC/DC converter and BUPS.

  The system provides DC power to all the modules. The 1920 system is designed to accept either DC or AC power input. There is a mechanical interlock at the input power connection panel that allows either DC power or AC to be connected. With DC input, there is a dedicated DC/DC converter for the two PA. In the ACU board, there are other DC/DC converters to supply the other low current drain modules. For AC input, the power first goes through the AC/DC power supply and the DC output supplies the various DC/DC converters. This AC power supply also charges up the 24 volt battery in the external BUPS. The charging operation is monitored and controlled by the Power Control Card.
- Modem: Serving as the interface to the repeater network (NMS) for alarm reporting, control and monitoring. The modem allows connection either through wire-line or through a wireless handset.

## 3.2 Operating Frequency

### 3.2.1 Range:

| Frequency Block | Reverse link (MHz) | Forward link (MHz) |
|---|---|---|
| A | 1850 - 1865 | 1930 - 1945 |
| D | 1865 - 1870 | 1945 - 1950 |
| B | 1870 - 1885 | 1950 - 1965 |
| E | 1885 - 1890 | 1965 - 1970 |
| F | 1890 - 1895 | 1970 - 1975 |
| C | 1895 - 1910 | 1975 - 1990 |
| C – Lower | 1895 – 1902.5 | 1975 – 1982.5 |
| C – Upper | 1902.5 – 1910 | 1982.5 - 1990 |

Refer to Section 8 of "OA1900B NR Marketing Requirements, Over-the-Air On-Frequency Network Repeater for PCS CDMA" - Issue 1.0, March 18, 1999, RTI Product Management for details of CDMA frequency parameters.

### 3.2.2 Channel Tuning

Each Channel Select Filter shall contain a frequency synthesizer such that the center frequency of the unit will tune:

| CDMA channel number | Reverse Link (MHz) | Forward Link (MHz) |
|---|---|---|
| 0<= N <=1199 | 1850.000 + 0.050N | 1930.000 + 0.050N |

### 3.2.3 Frequency Reference

The repeater shall have a temperature compensated frequency reference with stability better than 2.5 parts per million (PPM).

## 3.3 Local Oscillator (LO) Phase Noise / Spurious Signals

The phase noise shall be less than -70 dBc/Hz at 1 kHz offset, -90 dBc/Hz at 10 kHz offset, and -110 dBc/Hz from 100 kHz to 2 MHz offsets. Spurious signals (clock tones) shall be less than phase noise in a 30 kHz bandwidth.

## 3.4 Channel Selectivity

### 3.4.1 Pass band

The pass band is set by a SAW filter in the CSF IF stage. The 5dB bandwidth shall be at least 1.26 MHz.

### 3.4.2 Stop band

A minimum of 33 dB rejection shall be achieved at +/- 1.25 MHz offsets from the center frequency.

### 3.4.3 Pass Band Ripple

The peak-to-peak ripple over the center 900 KHz shall be 2 dB maximum.

## 3.5 Gain

The reverse link shall have electronically controllable gain from 65 to 95 dB in 1dB steps. The forward link shall have gain from 65 to 95 dB in 1dB steps. The gain shall be within a 2 dB peak to peak window over the whole pass band at all gain settings.

### 3.5.1 Gain Stability

Gain shall be stable with temperature and supply voltage variations to +2 / -3 dB at all gain settings.

### 3.5.2 Gain Step Accuracy

The accuracy for each 1 dB step shall be within ± 0.5 dB, and the accuracy shall be within ± 1.0 dB when the maximum 30 dB gain step is exercised.

### 3.5.3 Gain Balance, Diversity Path and Main Path (Reverse Link)

The gain balance between main and diversity reverse link path shall be within ± 0.5 dB. The gain adjustment for the balance shall be at Diversity Front End module.

### 3.5.4 Gain Balance between Channels in Two Channel Repeater

The gain balance between the two CDMA channels within the same frequency block shall be within +/- 1.5 dB. This gain adjustment shall be in each Channel Select Filter.

### 3.5.5 Gain Adjustments

Hardware shall provide attenuators for all gain adjustments. System gain adjustments shall be made using digitally controlled attenuators controlled by RepeaterNet and stored in system firmware. Firmware shall also provide a table for attenuator settings and/or offsets for temperature and frequency gain compensation. This compensation is carried out by a different set of digitally controlled attenuators.

## 3.6 Noise Figure

The maximum noise figures over the operating temperature and supply voltage ranges shall be as follows:

| | | |
|---|---|---|
| Reverse link for independent main and diversity paths | 4 dB maximum | All gain settings |
| Reverse link (combined main and diversity) | 7.5 dB maximum | All gain settings |
| Forward link | 12 dB maximum | All gain settings |

## 3.7 Signal levels and Linearity

An input signal at +10 dBm shall not damage the unit. The forward link shall meet the requirements of linearity at all gain settings when the Repeater output is +38.5 dBm for each CDMA channel. The reverse link shall have the same performance at +18 dBm output per channel.

### 3.7.1 Output Intercept Point

For each CDMA channel, the 3rd order intercept point at the output ($IP3_O$) shall be greater than + 28 dBm at all gain settings for the reverse link and greater than +50 dBm for the forward link within the selected 1.23 MHz CDMA channel bandwidth.

### 3.7.2 Waveform Quality Factor

The degradation of ρ for a single CDMA output signal at + 8.5 dBm to +38.5 dBm (forward) or –12 dBm to +18 dBm (reverse) for all gain settings shall be less than 0.04 (4%) relative to the input signal. For example,

if the input CDMA signal has a reading of 0.99, the output ρ should be better than 0.95 at the specified power level.

### 3.7.3 Conducted Spurious Emissions (forward link)

When transmitting in the PCS band, the spurious emissions between 1925 and 1995 MHz shall meet the following specification. For each CDMA channel, the power in a 30 kHz bandwidth at ± 885 kHz away from the center frequency shall be less than -45 dBc relative to the power in that CDMA channel. The power in a 30 KHz bandwidth at ±1.98 MHz away from the center frequency shall be less than –55 dBc. In addition, no spurs higher than –13 dBm (in 1 MHz bandwidth) shall be present from ± 2.75 MHz offset or greater from the center frequency. These are measured when the channel output power is +38.5 dBm when driven by an EIA/TIA-97-C defined CDMA signal or its equivalent.

### 3.7.4 Radiated Spurious Emissions (forward link)

Same as section 3.7.3 when measured from sources other than the antenna connector per FCC Part 2 measurement requirement

### 3.7.5 Conducted Spurious Emissions (reverse link)

When transmitting in the PCS band, the spurious emissions between 1845 and 1915 MHz shall meet the following specification. For each CDMA channel, the power in a 30 kHz bandwidth at ± 1.25 MHz away from the center frequency shall be less than -42 dBc relative to the power in that CDMA channel. The power in a 30 KHz bandwidth at ±1.98 MHz away from the center frequency shall be less than –50 dBc. In addition, no spurs higher than –13 dBm (in 1 MHz bandwidth) shall be present from ± 2.75 MHz offset or greater from the center frequency. These are measured when the channel output power is +18 dBm when driven by an EIA/TIA-97-C defined CDMA signal or its equivalent.

In addition, spurious emissions in each 1.23 MHz band located anywhere between 1930 MHz and 1990 MHz shall be less than -80 dBm.

### 3.7.6 Radiated Spurious Emissions (reverse link)

Same as section 3.7.5 when measured from sources other than the antenna connector per FCC Part 2 measurement requirement

### 3.7.7 Receiver Intermodulation Attenuation (Reverse Link)

For each CDMA channel, when two CW tones combined at the input (reverse link) of the repeater, each at -50 dBm, 1.25 MHz and 2.05 MHz offsets from the center frequency of the channel, no IMD products within the pass band shall be observed at the output of the repeater in a 30 KHz bandwidth. This applies to both main and diversity paths at all gain settings. This requirement ensures repeater performance when interference is present.

## *3.8 Interface Requirement*

### 3.8.1 Interconnection

All RF connector impedance shall be 50 ohms with return loss of better than 11 dB across the operating frequency blocks. Weather and EMI shield shall be provided. Proper gauge and shielding should be designed to meet appropriate safety and regulatory requirement.

### 3.8.2 Alarms

The repeater shall monitor the following conditions and provide alarms to RepeaterNet:

Forward Front End (090-1302-01) – current alarm
Forward & Reverse Channel Select Filter (090-1304-01 thru –04)
- current (alarm and value), channel 1 PLL unlock alarm, channel 2 PLL unlock alarm.

Forward Power Amplifier (149-1011-01) – over-current alarm, forward RF power value, reflected RF power value, vendor ID value and temperature sensor value.
Reverse Front End (090-1303-01 & 02) – total current value for both main and diversity channels, total RF power value from both channels.
Reverse Power Amplifier (090-1305-01 & 02) – forward RF power value of each channel, current value for each channel and total reverse RF power value of both channels.
AC/DC power supply (149-1012-01) – DC output OK alarm, AC input fail alarm.

All module alarms should be defined such that ACU will receive the alarm status when module is not installed or when its power is removed (e.g. open collector).

### 3.8.3 Power Supply

The power supply shall meet FCC Class A requirements and UL-1950. The power supply has separate input terminals for AC and DC inputs. There is a mechanical interlock to allow either DC or AC input.
The power supply system can be equipped with external BUPS. With AC input, the system shall maintain full charge of the BUPS batteries. The power supply system shall provide input reverse voltage protection, output over-current protection with automatic recovery.

AC input: 84-132/170-264 volt AC, 50/60 Hz, ~90% power factor, ____/____ amp maximum. If the BUPS batteries are charging, this will add an additional power of ____/____ amp.

24 volt DC input: 21 to 32 volt DC, ____ amp maximum, negative ground.

### 3.8.4 LEDs

The repeater shall have at four LEDs visible to field service personnel. A green LED indicates that unit is operational and a red LED is illuminated for each particular class of alarm.

### 3.8.5 PA control

The system shall have provisions (software or hardware) to turn off one or both PA. The PA shall be turned off under the following conditions:

- Local Oscillators out of lock
- PA temperature shutdown alarm or PA alarm
- ACU failures
- External digital alarm inputs at interface panel

When the PA is turned off, the repeater shall transmit power less than -40 dBm (reverse link) and shall be less than -20 dBm (forward link) in 30 kHz bandwidth at the tuned channel.

## *3.9 Group delay*

For each channel, the one way group delay of each link shall not exceed 6 microseconds. This does not include the additional delay introduced in the reverse link diversity path. The delay element in the Diversity Front End shall have a delay of 1.8 – 2.0 microseconds across the reverse link operating frequency range (1850 MHz to 1910 MHz)

### 3.10 Internal isolation

The internal carrier to echo ratio (C/E) shall be at least 40 dB for each channel when both channels are tuned to different frequencies.

### 3.11 Automatic Level Control

#### 3.11.1 Reverse Link Front End Protection (Hot Tone Protection)

The repeater shall detect the presence of strong input signals at the reverse front ends and increases attenuations in both the reverse front end and diversity front end to protect the repeater. The thresholds of the input power level to initiate and release the protection are programmable. When the strong signal is removed from the input, the front ends shall reset back to the original gain setting. The time constant for adjustment shall be 2dB per 100 ms nominal.

#### 3.11.2 Automatic Level Control, PA in Forward Link and Reverse Link

The repeater shall monitor the PA output power, and detect when the PA output power is more than a pre-determined value higher than the rated power. When this occurs, for the forward link, the gain in each corresponding Channel Select Filter shall be reduced accordingly. For the reverse link, the gain in the reverse PA is reduced first. When the reverse PA gain is out of range, then the gain in each corresponding Channel Select Filter is reduced. When the strong output signal condition is removed, the repeater shall return to the original gain settings. The time constant for adjustment shall be 1 dB per 100 ms nominal for both the reverse PA gain and Channel Select Filter gain. The thresholds of the output power to initiate and release the protection are programmable.

### 3.12 Automatic System Power Dissipation Control

The repeater shall monitor the temperatures of the two PA. When this temperature gets to be excessive, both PA output levels would be reduced by adjusting the gain in the Channel Select Filter. The output power would be reduced 1 dB at a time until the backplane temperature drops to an acceptable level. The output PA power may be reduced up to 3 dB. The initiation and release thresholds are coded in software.

### 3.13 Internal Battery Backup

The repeater shall provide battery backup to ACU, line entry module LEDs, modem and handset in the event of power failure. The minimum backup time for a fully charged battery shall be 30 minutes.
The current drain from the battery shall be less than 1 mA when the system is turned off. There should be a label to remind the customer to disconnect the battery if the system is not in use for more than 90 days.

### 3.14 Options

The following are field up-gradable options that can be ordered by the customer and are supported by the repeater:

a) Modem
b) Modem and CDMA data phone
c) BUPS (Back Up Power Supply) with battery in external box and using system power supply as charger
d) Non-diversity option
e) 7/16 DIN antenna connectors (external adapters required for mating to type-N connectors on cabinet)
f) Lightning surge protection adapters for antenna RF connectors (to be installed inside the cabinet)

### 3.15 Block and Level Diagram

The block and level diagrams for both the up and down links at low and high gain settings are given in appendix A.

## 4.0 Environmental

### 4.1 Temperature

-40 to +55 degrees C (Ambient)
-40 to +85 degrees C (Base plate)
-40 to +75 degrees C (inside enclosure)
It is acceptable to have optional heater or minimum warm-up interval requirement (30 minutes or less) when operating between -40 and -30 degrees C ambient temperature.

### 4.2 Storage Temperature

-40 to +70 degree C.

### 4.3 Altitude

15000 feet maximum. For altitudes between 5000 and 10000 feet, the maximum ambient operating air temperature is reduced to +50 degree C. For altitudes between 10000 and 15000 feet, the maximum ambient operating air temperature is reduced to +45 degree C.

### 4.4 Weather, Shock and Vibration

The repeater shall comply with the following requirements per Bellcore GR-487-CORE, Issue 1 (6/19/96) for outdoor environment :

1. Sec 3.25 Exposure to Temperature Extremes
2. Sec 3.27 Wind Driven Rain Intrusion
3. Sec 3.32 Impact Resistance
4. Sec 3.35 Corrosion Resistance - Salt Fog
5. Sec 3.36 Corrosion Resistance - Temperature Cycling/High Humidity
6. Sec 3.37 Transportation Shock GR-63-CORE 5.3.1 (drop test)
7. Sec 3.38 Transportation Vibration GR-63-CORE 4.4.4
8. Sec 3.41 Environmentally Induced Vibration GR-63-CORE 5.4.2 (office vibration)

### 4.5 Safety

The following safety requirements shall be met:

1. UL 1950, 3rd edition
2. UL 1419
3. GR-487-CORE, Section 3.3
4. UL 50 (for outdoor only)
5. CSA-C22.2 No.950-95

### 4.6 Electrostatic Discharge (ESD)

ESD requirements in IEC1000-4-2 (formerly IEC801-2) shall be met.

### 4.7 EMI Emissions and Susceptibility

The repeater module shall meet the conducted and radiated emissions and comply with Class B limits set forth in FCC Title 47 Code of Federal regulations, Part 15, subpart A, FCC Part 24, and TIA/EIA-97-C. The repeater shall also meet the GR-1089-CORE electrical field and susceptibility requirements.

## 5.0 Mechanical

### 5.1 Connectors

All antenna connectors shall be type-N female, DIN connectors may be ordered as an option.

### 5.2 Cooling

The unit shall have convection cooling. No fans are allowed. However, for better reliability, customers may order option with cooling fans.

### 5.3 Enclosure

The repeater shall have NEMA 4 rating enclosure to meet the environmental specification in Section 4. The size shall not exceed 21"(h) x 15.75" (w) x 16"(d). The mounting plates and all other exposed hardware shall be designed to prevent unauthorized removal or operating of the unit. The maximum weight of the repeater shall be less than 69 pounds. The door together with the cell phone shall be removable to ease attaching of the enclosure to the mounting bracket. The repeater without the door and cell phone shall be less than 63 pounds.

### 5.4 Lightning Surge Protection

Lightning surge protection shall be provided on all interface cables ( AC, DC, digital signal etc.) per IEC 1024-1 Level III or IEC 801-5. External RF connector adapters for lightning surge protection are optional. Conduit access is required for all non-RF connections.

### 5.5 Reliability

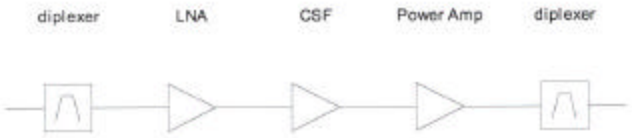
Mean Time Between Failure (MTBF) design goal shall be greater than 85,000 hours based on BellCORE SR-TSY-000385 and TR-NWT-000332.

# APPENDIX A

OA1920 channelized repeater (downlink max gain) Oct 26, 2000


| | | | | | | Total |
|---|---|---|---|---|---|---|
| NF (dB) | 1.50 | 4.00 | 20.00 | 16.00 | 1.50 | 9.01 |
| Gain (dB) | -1.50 | 15.00 | 38.00 | 45.00 | -1.50 | 95.00 |
| OIP3 (dBm) | | 10.00 | 12.00 | 54.00 | | 50.74 |
| Po (dBm) | -58.00 | -43.00 | -5.00 | 40.00 | 38.50 | |
| IP3+ (dBm) | | 0.00 | 1.76 | 4.76 | | |
| NF+ (dB) | | 1.35 | 3.51 | 0.00 | | |
| Input Pwr (dBm) | -56.50 | System Temp (K) | | 290.00 | | |

OA1920 channelized repeater (downlink min gain) Oct 26, 2000




| | | | | | | Total |
|---|---|---|---|---|---|---|
| NF (dB) | 1.50 | 4.00 | 20.00 | 16.00 | 1.50 | 9.16 |
| Gain (dB) | -1.50 | 15.00 | 8.00 | 45.00 | -1.50 | 65.00 |
| OIP3 (dBm) | | 10.00 | 12.00 | 54.00 | | 50.39 |
| Po (dBm) | -28.00 | -13.00 | -5.00 | 40.00 | 38.50 | |
| IP3+ (dBm) | | 0.35 | 1.60 | 4.14 | | |
| NF+ (dB) | | 1.30 | 3.34 | 0.15 | | |
| Input Pwr (dBm) | -26.50 | System Temp (K) | | 290.00 | | |

OA1920 channelized repeater (uplink max gain) Jan 20, 2000


| | | | | | | Total |
|---|---|---|---|---|---|---|
| NF (dB) | 1.50 | 2.00 | 14.00 | 18.00 | 1.50 | 3.66 |
| Gain (dB) | -1.50 | 26.00 | 40.00 | 32.00 | -1.50 | 95.00 |
| OIP3 (dBm) | | 3.00 | 7.00 | 32.00 | | 29.71 |
| Po (dBm) | -78.50 | -52.50 | -12.50 | 19.50 | 18.00 | |
| IP3+ (dBm) | | 0.00 | 0.79 | 7.79 | | |
| NF+ (dB) | | 1.91 | 0.16 | 0.00 | | |
| Input Pwr (dBm) | -77.00 | System Temp (K) | | 290.00 | | |

OA1920 channelized repeater (uplink min gain) Jan 20, 2000


| | | | | | | Total |
|---|---|---|---|---|---|---|
| NF (dB) | 1.50 | 2.00 | 14.00 | 18.00 | 1.50 | 3.70 |
| Gain (dB) | -1.50 | 26.00 | 10.00 | 32.00 | -1.50 | 65.00 |
| OIP3 (dBm) | | 3.00 | 7.00 | 32.00 | | 29.53 |
| Po (dBm) | -48.50 | -22.50 | -12.50 | 19.50 | 18.00 | |
| IP3+ (dBm) | | 0.18 | 0.76 | 6.99 | | |
| NF+ (dB) | | 1.89 | 0.16 | 0.04 | | |
| Input Pwr (dBm) | -47.00 | System Temp (K) | | 290.00 | | |