



**Application Note**

# Cost Comparison: Redline AN-30 to 1<sup>st</sup> Generation Wireless T1 Products

The traditional approach to wireless backhaul links is being rapidly replaced with 2<sup>nd</sup> generation backhaul systems like Redline's AN-50. By using a split architecture, putting the radio next to the antenna, and using OFDM technology, there are significant savings in both CAPEX, Installation Expenses, and OPEX

The largest savings in 2<sup>nd</sup> generation wireless backhaul is not the radio hardware but the cable and antenna purchase and installation costs, lower cost tower locations and support costs.

Additional benefits come from:

- better interference immunity,
- better use of scarce spectrum, high reliability
- flexibility to change channels via software control.

### WHAT DOES IT REALLY COST?

	REDLINE AN-30 Rooftop	Redline AN-30 Tower	1st Generation Wireless Tower*
<b>CAPEX</b>			
200' Cable	\$100	\$100	\$950
Antenna/Radome	Incl.	Incl.	\$2,200
Cable/Antenna Install	\$1,460	\$2,550	\$13,300
Subtotal	<b>\$1,560</b>	<b>\$2,650</b>	<b>\$14,250</b>
Equipment Purchase	\$	\$	\$
Total	\$	\$	\$

Available Via:



1-800-949-7079



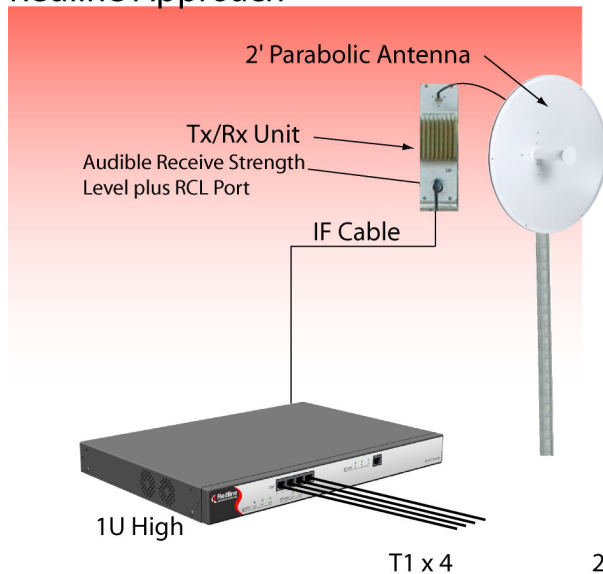
302 Town Centre Blvd.  
Markham, ON  
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[www.redlinecommunications.com](http://www.redlinecommunications.com)

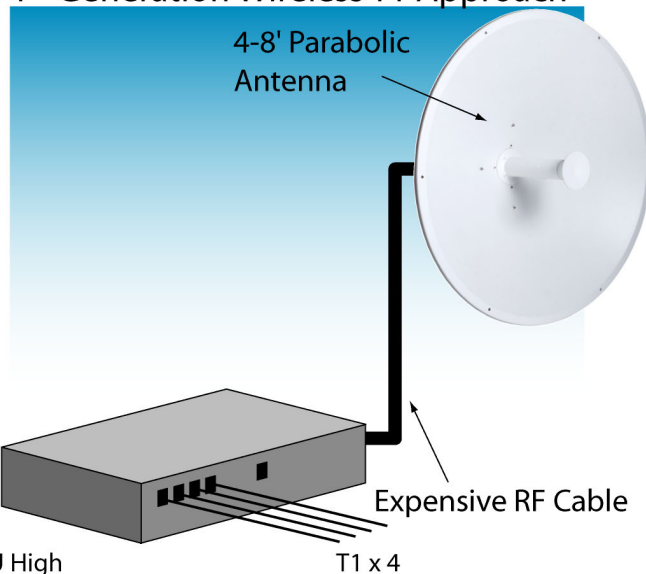
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## Redline Approach



## 1<sup>st</sup> Generation Wireless T1 Approach



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## What is important about 2<sup>nd</sup> generation systems?

Redline's AN-30 offers a set of features that make them easier and cheaper to install, easier to maintain, and locate in less expensive locations. The cost savings can add up to many times the cost of the equipment alone. Second generation system also can operate in locations that would be unavailable to older systems – like the rooftops of buildings, or on small towers. Second generation system can work in conditions where perfect line of sight is just not available or not available at a reasonable cost.

## Why is the Redline AN-30 cheaper to own and operate?

- The split architecture of the AN-50 puts the transmitter/receiver up beside the antenna, eliminating cable losses, and allowing low cost cables and small antennas to be used.
- Antenna alignment is faster with the Redline system. Smaller antennas are easier to align, and an audible receive strength indicator provides rapid feedback on antenna alignment, augmented by a receive carrier level port on the radio.
- The robust AN-30 maintains a good link in some very convenient locations – such as building rooftops and from small towers. Building rooftops with low-cost non-penetrating roof mounts often cost much less to rent, and may not require an expensive rigging team, civil engineering, and crane rentals.
- The AN-30 uses spectrum very efficiently and can software select from up to 9 channels. This leaves room to change channels if required.

\* The higher cost of installation of 1<sup>st</sup> Generation T1 products is attributable to: installation of 4-6' parabolic dishes and LDF4.5 cable, which typically requires: 2 days of a 3 man rigging crew per tower (2 days x \$300/hr x 8hrs), a civil engineering study (\$2,500) rental of a crane for two days (2x\$2,500), accessories \$250 x 2 towers, special antenna shipment \$500.

The small size of the AN-30 antennas and cables usually that civil engineering studies are waived, no crane is required, antenna alignment is much faster, and the time to install is much reduced. Also lower height locations are usually possible as the OFDM technology can often allow antenna location on convenient building-top locations at lower costs. Rooftop installations on short masts do not require a full OSHA approved rigging crew and can be completed in much less time.

<b>Redline AN-30 System</b>	<b>Redline AN-30</b>	<b>Legacy T1</b>
OFDM Multi Carrier Modulation (optical and non line of sight)	Yes	No
Tx/Rx Mounted at the Antenna (eliminating cable loss)	Yes	No
Use Small 1-2 Ft Panel Antennas (lowering structural requirements)	Yes	No
Dynamic TDD Time Division Duplex (enabling best use of bandwidth)	Yes	No
Optional High Speed Ethernet (up to 30 Mbps)	Yes	No
1-4 T1 or E1 Ports	Yes	Yes
Remotely Selectable RF Frequency (Choice of 9, no truck roll)	Yes	No
Selectable Modulation (8 Modulation/Coding Rates to select from)	Yes	No
Audible Antenna Alignment indicate plus RCL output port	Yes	No
Remote Firmware and Configuration Update	Yes	No
SNMP Management – Built in	Yes	No
Space Efficient 1-U Height	Yes	No
MHz Per Channel (MHz)	20	2x20