



A universal choice for selective transmission of interleaved sub-bands for amplification of GSM, EDGE, TDMA, CDMA, WCDMA, and HSDPA signals within multiple frequency bands.

## Node A Universal Multi-Band, Multi-Service, Software-Based Repeater Platform

### COVERAGE SOLUTION FOR INTERLEAVED SUB-BANDS WITHIN MULTIPLE FREQUENCY BANDS

- Supports up to four frequency bands in a single chassis with fully integrated multi-band combiner and modem for remote monitoring and control.
- Software-based platform enables on-the-fly filter changes and development of new features and capabilities without expensive hardware upgrades.
- Channel and band selective automatic gain/power control for multi-operator and public safety applications.
- Available in both medium and high power classes to enhance coverage in a wide range of facility footprints to optimize total system cost.
- Intuitive auto setup wizard and help screens for easy system configuration, minimizing setup time and reliance on expensive and bulky test equipment.
- Advanced QoS measurements and reports, including inbound and outbound measurement of channel power/pilot power/RSSI to facilitate set up and verify ongoing system operation.
- Remote alarming through SNMP or SMS using wireless data.
- Seamless integration with other Andrew products (e.g., ION<sup>™</sup>B/ION<sup>™</sup>M).
- Rated for both indoor and outdoor use with versatile rack mount, wall mount or pole mounting options.

## Electrical

### Number of supported RF cards (see table 1)

Node A 2	2
Node A 4	4

### Number of supported sub-bands per rack

Node A 2	12*
Node A 4	24*

Frequency range and RF output power ..... see table 1

### Bandwidth available in Uplink and Downlink per rack, MHz

Node A 2	up to 60 (see table 2 for details)
Node A 4	up to 120 (see table 2 for details)

Gain in Uplink and Downlink ..... see table 1

Gain adjust range, dB ..... 30 in steps of 1

Filter selection step size, kHz ..... 10

Output Power step size in Powermode, dB ..... 1

Output Power accuracy over all conditions, dB ..... ±2

Maximum Input Power without damage, dBm ..... +10

Maximum Input Power without overdrive, dBm ..... -20

P-1dB, dBm

	Uplink	+35
RF card AX23 - AX25	Downlink	+32
RF card AX35 - AX36	Downlink	+42

OIP3, dBm

RF card AX23 - AX25	Uplink	+52
RF card AX35 - AX36	Downlink	+48
	Downlink	+63

### Noise figure

@ maximum gain, dB	Uplink	4.0
	Downlink	4.0
@ minimum gain, dB	Uplink	6.0
	Downlink	12.0

Delay, µs

Standard filter set ..... 6

Power supply

Standard	100 to 240 Vac
Option	36 to 72 Vdc

### Power consumption, Watts

Node A 2 chassis	70
Node A 4 chassis	120
RF card AX23 - AX25	70
RF card AX35 - AX36	145

Antenna port connectors ..... N Female

Spurious Emissions, dBm ..... acc. to GSM05.05,  
3GPP45.005,  
3GPP25.106

\* Valid for sub-band bandwidth up to 5 MHz.

## Mechanical

Height, width, depth, mm (in)

Node A 2	177.8 x 350 x 450 (7 x 13.8 x 17.7)
Node A 4	177.8 x 482.6 x 450 (7 x 19 x 17.7)

Weight, kg (lb)

Node A 2	11 (24)
Node A 4	12.5 (27.5)
RF card AX23 - AX25	3 (6.5)
RF card AX35 - AX36	4.5 (10)

## Environmental

Operating temperature range, °C ..... -33 to +50

Ingress protection ..... IP65 (Fans: IP55)

Acoustic Noise, dB(A) ..... 47 @ 25°C  
55 @ 50°C

All figures are typical values and refer to the antenna ports of the RF card. The loss of the integrated RF combiner section (Option) is typically 0.5 to 1.0 dB.

## Features

Items measured	Measurement of pilot power (UMTS), synch. power (UMTS), Ec/Io (UMTS), BCCH power (GSM), channel power (GSM), RSSI, and system identification.
Statistic collection	Collecting data (min., max., average, standard deviation) of items measured in a 15 minutes interval.
Auto configuration	Setup based on downlink power requirements, not gain. Uplink gain is automatically setup based on the downlink settings.
Access	Web browser based local access and remote access. Packet data and circuit switched data options. OMC connectivity via SNMP.
External alarms	Up to 5 alarms, active high or low configurable via software.
Interference Analysis Database	Event triggered database to identify interference signals in terms of frequency, power level, duration, etc.
Uplink Muting	Gain reduction of unused timeslots of channels in order to avoid Uplink desensitization of BTS receiver. (GSM ONLY)

Table 1: RF Card Options

Modulation scheme	RF Card	UL Frequency, MHz	DL Frequency, MHz	Max. Gain, dB	Uplink Composite Output Power, dBm*	Downlink Composite Output Power, dBm*
EGSM 900, UMTS 900	AF 923	880 to 915	925 to 960	80	25	23
	AF 936			90	25	36
GSM 1800	AF 1823	1710 to 1785	1805 to 1880	80	26	23
	AF 1835			92	26	35
UMTS 2100	AF 2125	1920 to 1980	2110 to 2170	82	28	25
	AF 2135			92	28	35

\* Output power per carrier (dBm) = composite output power (dBm) - 10 x log (no. of carriers)

### Detailed System Description

The Node A RF Cards convert the RF into digital signals and transfer them to the Node A rack for digital filtering. The digital architecture allows sub-band filtering and is shared between all RF Cards inserted into the Node A rack. The Node A2 can provide up to 12 filter resources (up to 5 MHz each) and the Node A4 can provide up to 24 filter resources. When the sub-band bandwidths are greater than 5 MHz, the filter resources are grouped together, without phase or amplitude ripple, where the sub-band is defined by a start and stop frequency. The total number of used filter resources is determined by adding the number of filter resources required for each sub-band.

For example, if there are three sub-bands with 4 MHz for the first sub-band, 11 MHz for the second sub-band, and 20 MHz for the third sub-band, then 1 filter resource is required for the first sub-band, 3 filter resources are required for the second sub-band and 4 filter resources are required for the third sub-band. The total number of used filter resources in this example is 8. However, the maximum available bandwidth (Node A2 60 MHz and Node A4 120 MHz) will only be achieved with sub-band bandwidths of integer multiple of 5 MHz.

Table 2: Bandwidth available in UL and DL per rack, MHz

Sub-Band Bandwidth [MHz]	Filter Resources
0.01 to 5.00	1
5.01 to 10.00	2
10.01 to 15.00	3
15.01 to 20.00	4
20.01 to 25.00	5
25.01 to 30.00	6
30.01 to 35.00	7
35.01 to 40.00	8
40.01 to 45.00	9
45.01 to 50.00	10
50.01 to 55.00	11
55.01 to 60.00	12
60.01 to 65.00	13
65.01 to 70.00	14
70.01 to 75.00	15

Examples: Filter Resources Allocation (up to 5 MHz wide)

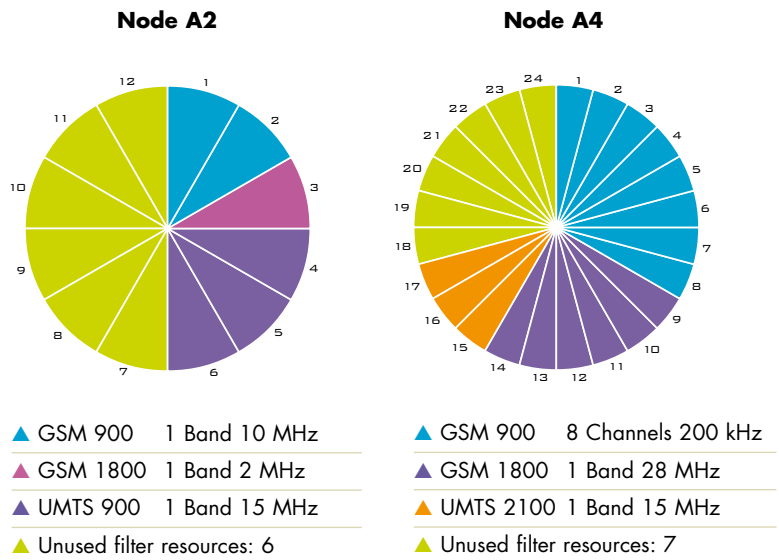


Table 3: Node A Ordering Guide

	Description	Part-Number	
Required	System Rack:	Node A 2	7561393
		Node A 4	7561392
Required	Power Supply:	Power Supply Unit AC IN 100-240V	7547518-00
		Power Supply Unit DC IN 48V	7560164-00
Optional	Number of supported RF Cards:	1 (Basic Configuration)	
		up to 2	7578839-00
		up to 3 (only Node A4)	7578840-00
		up to 4 (only Node A4)	7578861-00
Required . at least one	RF cards	DCM AF 923	7562492-00
		DCM AF 936	7562493-00
		DCM AF 1823	7562494-00
		DCM AF 1835	7562495-00
		DCM AF 2125	7562496-00
		DCM AF 2135	7562497-00
Optional	Number of Dummy Cards (each empty slot must be filled with a Dummy Card)	7574285-00	
Optional	Number of supported Sub-bands / channels	1 (Basic Configuration)	
		up to 4	7578862-00
		up to 12 (A2) / 24 (A4)	7578863-00
Optional	Additional Software Features	Uplink Muting	t.b.d.
		Interference Analysis Database	t.b.d.
Optional	RF Combiner Section with integrated modem coupler:	1-way-Combiner (350-3500MHz)	7574290
		2-way-Combiner (350-960/1710-2170MHz)	7577517
		3-way-Combiner (824-960/1710-1880/1920-2170MHz)	7574287
Optional	Modem for alarm forwarding:	MC35 (GSM 900/1800)	7572583
		MC75 (GSM/EDGE 850/900/1800/1900)	7572585
		HC25 (GSM/EDGE 850/900/1800/1900, UMTS 850/2100)	7572584
		USB/Ethernet Adapter (LAN)	7605086
Optional	Mounting Options	19" Rack mounting Node A 2	7598847-00
		Wall Mounting Kit Node A 2 Outdoors	7597819
		Pole Mounting Kit Node A 2	7597823
		Wall Mounting Kit Node A 2 and A 4	7597821
		19" Rack mounting Node A 4 (included in basic configuration)	
		Wall Mounting Kit Node A 4 Outdoors	7597820
		Pole Mounting Kit Node A 4	7597825

Note: A pre-configured System Rack including Power Supply, RF Combiner Section, Modem, number of supported RF Cards, and number of supported sub-bands, channels can be ordered with one single Part Number. Contact your local Andrew Solutions sales representative to order with a single part number.



[www.commscope.com/andrew](http://www.commscope.com/andrew)

Visit our Web site or contact your local Andrew Solutions representative for more information.

© 2009 CommScope, Inc. All rights reserved.

Andrew Solutions is a trademark of CommScope. All trademarks identified by ® or ™ are registered trademarks or trademarks, respectively, of CommScope. This document is for planning purposes only and is not intended to modify or supplement any specifications or warranties relating to Andrew Solutions products or services.

CO-103016.2-EN (9/09)