



MA 1000 Converged In-building Coverage System

MobileAccess™ 1000 converged wireless networks solution provides *multi-operator in-building coverage support* for multiple wireless data and voice services through a single coax and broadband antenna infrastructure.

This scalable solution is based on combining a number of services, voice and data, and distributing them at each remote location through a common antenna infrastructure.

Voice services are bi-directionally transferred between the BTS/BDA side and the remote locations over optic fiber. Data services from 802.11/a/b/g APs may be integrated into the MA 1000 system at the remote sites.

Features

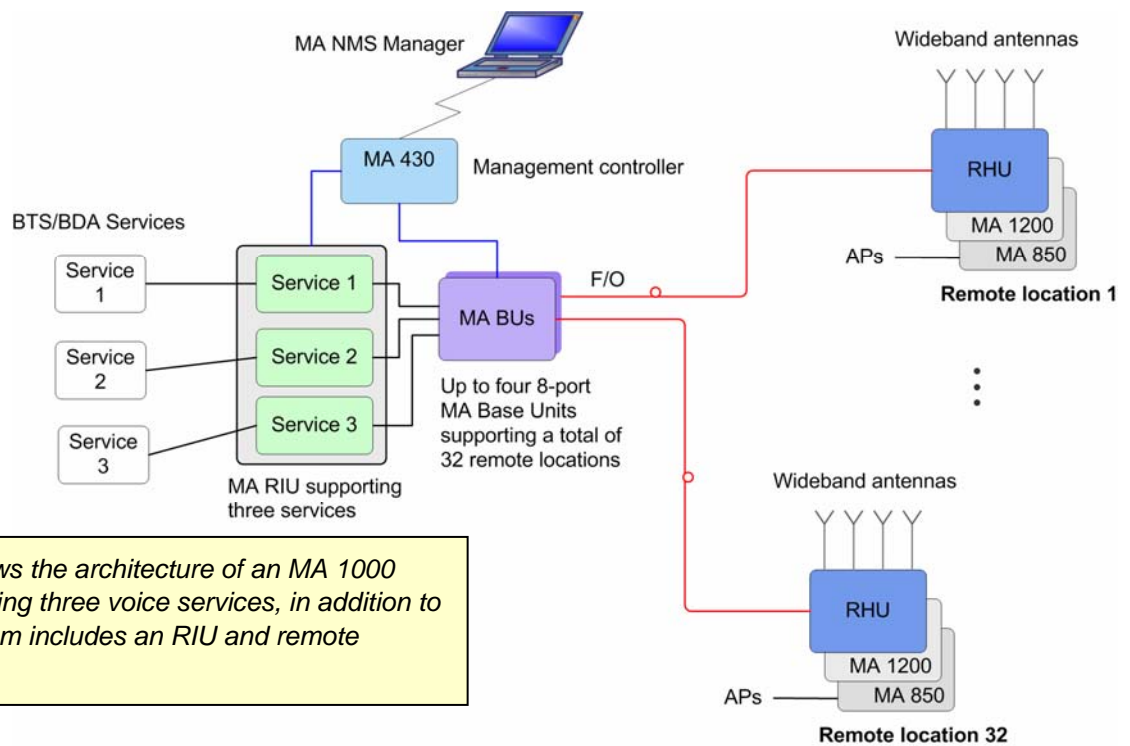
- Support for all current and future technologies such as TDMA, CDMA, WCDMA and GSM, and services such as PCS/CELLULAR, Paging, iDEN and 802.11 (a/b/g) Wireless LAN
- All services are distributed through a single coax and antenna infrastructure
- All active components are located in the communication closet/room
- Modular, scalable and future-safe – additional remote units can easily be installed
- Single coax antenna infrastructure prevents RF interferences such as those induced where multiple antenna systems are used to serve multiple services
- Enables fast deployment for corporate enterprises, property owners and WSP's of new services
- Reduces tenant disruption
- Low power required by the system eliminates the need for high power BTS/RBS, reducing operator expenses
- Local and remote monitoring and control capabilities
- Software programmable parameters including output power, AGC (on/off and levels), and system gain
- Real time component setting capabilities for optimal performance

Main elements - The MA 1000 solution is based on the following main elements:

- **MA Base Units (BUs)** – Essential units that perform the RF-to-optic conversion at the head-end.
- **MA Remote Hub Units (RHUs)** – service specific devices that perform the optic to RF (and vice versa) conversion, filtering and amplification at the remote locations. Each RHU can support two services.
- **MA 1200 Add-on Units** – Single service unit that can be integrated onto an RHU for an additional service.

Optional elements – for more information see product specific data sheets.

- **MA Radio Interface Unit (RIU)** –provides conditioning and remote control of a number of service signals at the head-end. Optimizes coverage.
- **MA 850** – a WiFi AP Switching Hub that enables converging 802.11a/b/g services with cellular services.
- **MA Network Management System (MA NMS)** – enables remote management of all MA 1000 elements from a *single location*.



This figure shows the architecture of an MA 1000 system supporting three voice services, in addition to WiFi. The system includes an RIU and remote management.

Figure-1 – Example of MA 1000 Architecture

RF Frequency Range

Services	Frequency Range	
	Uplink	Downlink
CELL	824-849	869-894
iDEN	806-824	851-869
GSM	890-915	935-960
SMR	896-902	929-941
DCS	1710-1785	1805-1880
PCS	1850-1910	1930-1990
UMTS	1920-1980	2110-2170

RF Parameters – Low Band												
RHU 1000	CELL CDMA/WCDMA/ TDMA/GSM		iDEN NEXTEL		iDEN		GSM		SMR		SMR NEXTEL ****	
	D	U	D	U	D	U	D	U	D	U	D	U
Max output power per antenna port												
1 (comp)	20		10		20		14		20		10	
2 carriers	17		7		17		11		17		7	
4 carriers	14		4		14		8		14		4	
8 carriers	11		1		11		5		11		1	
12 carriers	9		-1		9		3		9		-1	
Mean Gain(dB) *	20	7	10	7	20	7	14	7	20	7	10	7
Pin (dBm) *	0		0		0		0		0		0	
Input IP3 (dBm) AGC OFF Min		-5		-5		-5		-5		-5		-5
Input IP3 (dBm) AGC ON Min		5		5		5		5		5		5
SFDR ** (dB)		69/ 73/68		74		74		68		74		73
Max Intermod Distortion (dBm)	-13				-13		-36		-13			
Max NF (dB)		16		16		16		16		16		18
Max Intermod. Distortion (dBc)	***		-45								-45	
Gain Flatness (dB)	±1.5						±2.0					

* Factory set mean gain BU-RHU when RIU is not used. May be field adjusted using system controller.

** SFDR for CDMA and WCDMA services is calculated in 100Kb/sec

*** WCDMA complies with 3GPP TS 25.106 V5.0.0 (2002-03) table 9.4 spectrum emission mask

**** Specs include the 900 UL Filter Kit. The output power is limited on the downlink.

RF Parameters-High Band						
RHU 1000	DCS		PCS CDMA/WCDMA		PCS GSM/TDMA	
Max output PWR / ANT Port	D	U	D	U	D	U
1 (comp)	16		20		20	
2 carriers	13		17		17	
4 carriers	10		14		14	
8 carriers	7		11		11	
12 carriers	5		9		9	
Mean Gain(dB) *	16	3	20	3	20	3
Pin (dBm) *	0		0		0	
Input IP3 (dBm) AGC OFF Min		-6		-6		-6
Input IP3 (dBm) AGC ON Min		3		3		3
SFDR ** (dB)		65		67		70/65
Max Intermod. Distortion (dBm)	-30		-13		-13	
Max NF(dB)		18		18		18
Gain Flatness (dB)	±2.0					

* Factory set mean gain BU-RHU when RIU is not used. May be field adjusted using system controller.

** SFDR for CDMA and WCDMA services is calculated in 100Kb/sec

1200 add-on RF parameters per service						
1200 Add-on	PCS CDMA/WCDMA		PCS GSM/TDMA		UMTS	
Max output power per antenna port	D	U	D	U	D	U
1(composite)	20		21		18	
2 carriers	17		18		14	
4 carriers	14		15		11	
8 carriers	11		12		8	
12 carriers	9		10		6	
Mean Gain(dB)*	20	3	20	3	18	3
Pin (dBm) *	0		1		0	
Max. Intermodulation Distortion [dBm]	-13/**		-13		***	
Input IP3 (dBm)		-7		-7		-7
SFDR (dBm)**		66		64		66
Max NF (dB)		18		18		18
Gain Flatness (dB) ****	±2.0					

*Factory set mean gain BU-RHU when RIU is not used. May be field adjusted using system controller.

** SFDR for CDMA and WCDMA services is calculated in 100Kb/sec

***UMTS and WCDMA complies with 3GPP TS 25.106 V5.0.0 (2002-03) table 9.4 spectrum emission mask

**** Gain Ripple is specified for unduplexed port of the system

Absolute Maximum Rating	
Total Input RF Power to BU:	10 dBm
Power Supply:	60 VDC

Fiber Optic Specifications	
Optical output power	<3mW
Max. Optical budget	2 dB for fiber + 1 dB for connectors (assumed) = 3 dB total
Optical loss per mated-pair connectors	0.5dB (max)
Optical Connector	SC/APC
Fiber type	9/125 SM
Wavelength	1310±10nm

Temperature Specifications	
Operating	0°C to +50°C (32°F to 122°F)
Storage	-20°C to 85°C (-4°F to 185°F)

Standards and Approvals	
USA	FCC-47CFR, parts 2,15, 22, 24,90
Canada	IC

NOTE: This datasheet provides detailed information on the Base Units, RHUs and MA 1200 remote units. Information on MA 850, MA RIU and MA NMS (controller and management application) is provided in the corresponding datasheets.

Base Unit Specifications



Figure 2. 8-port Base Unit

Models:	4-port model, 8-port model (illustrated above)
Supported services:	Wideband device supporting all services supported by MA systems
RF (total Input):	10 dBm max
Power:	
Input power	20 to 48V DC
Power consumption	14W (8-port BU)
RF connections	N-type Female, 50 ohm – interface to RIU or to passive BTS interface
Optic connections	Four or eight (depending on the model) SC/APC optic connections
Remote management	SNMP, NMS via connection to MA 410/430 controller.
Physical	
Dimensions	48.26x4.44x29.97cm (19"x1Ux11.8")
Weight	3Kg (6.6 lb)

RHU Specifications



Figure 3. RHU 1000

Supported services:	Two services corresponding to the model
Power:	
Input power	20 to 48V DC
Power consumption	29W
RF connections	To antennas: N-type Female, 50 ohm To MA 1200 add-on: SMA 50 ohm
Optic connections	SC/APC optic connections
Remote management	SNMP, NMS via Base Unit connection to MA 410/430 controller.
Physical	
Dimensions	27.9x24.1x4.5cm (10.98"x9.5x1.75")
Weight	2.8Kg (6.2 lb)

MA 1200 Add-on Specifications



Figure 4. RHU 1200 Add-on

Supported services:	Single service corresponding to the model
RF Connections:	To RHU: SMA 50 ohm
Power:	
Input power	25-48VDC
Power consumption	50W
Remote management	SNMP, NMS via RHU connection
Physical	
Dimensions	27.9x24.1x4.5cm (10.98"x9.5x1.75")
Weight	2.8Kg (6.2 lb)

MobileAccess Universal Base Units	
WB-B8U	Wide Band Base 8 Unit supporting 8 RHUs
WB-B4U	Wide Band Base 4 Unit supporting 4 RHUs

MobileAccess 1000 RHUs	
1000-CELL-4E	Single band-Cellular, 4 ports enhanced out power
1000-PCS-4E	Single band-PCS 4 ports enhanced out power
1000-DCS-4E	Single band-DCS 4 ports, enhanced out power
1000-CELL-PCS4E	Dual band-Cell/PCS, 4 ports, enhanced out power
1000-CELL-DCS4E	Dual band Cell/DCS 4P,enhanced out power
1000-GSM-DCS4E	Dual band GSM/DCS 4P ,enhanced out power
1000-GSMO-DCS4E	Dual band GSM orange/DCS 4P ,enhanced out power
1000-iDEN-SMR4	Dual-band-iDEN/SMR Paging 4-Ports ready for add-on unit
1000-IDEN-SMR4F	Dual band-iDEN/SMR, 4 ports with filter kit
1000-SMR-FILTER	Filter kit for SMR 900

MobileAccess 1000 RHUs (Litenna compatible)	
10L-D-IDEN-PCS4	Dual band-iDEN/PCS, 4 ports, LBC
10L-D-SMR-PCS4	Dual band-SMR/PAGING/PCS, 4 ports, LBC
10L-D-CELL-PCS4	Dual band-Cell/PCS, 4 ports, LBC
10L-D-CELL-DCS4	DB Cell/DCS 4P ready for add-on units-LBC
10L-D-CL-M-DCS4	DB Cell multi-operator/DCS 4P ready for add-on units-LBC
10L-D-GSM-DCS4	DB GSM/DCS 4P ready for add-on units-LBC
10L-D-GSMO-DCS4	DB GSM orange/DCS 4P ready for add-on units-LBC

MobileAccess 1200 RHU	
1200-PCS-AO	Add-on RHU supporting a PCS service
1200-UMTS-AO	Add-on RHU supporting UMTS service

MobileAccess 1200 RHU (Litenna UMTS Ready compatible)	
12L-UMTS-AO	Add-on RHU supporting UMTS service LBC

Network Controller	
410	Network Controller – Serial Interface (dial-up)
430	Network Controller –Ethernet/IP Interface

Network Management System	
NMS-SW-SERVER	GUI and server S/W package (one per site)
NMS-SW-MFEE	NMS annual S/W maintenance fee (per 430-CTLR)

Radio Interface Unit	
RIU-IM	Radio Interface Unit
RIU-BTSC-CELL	BTS Conditioner for Cellular
RIU-BTSC-IDEN	BTS Conditioner for iDEN
RIU-BTSC-PCS	BTS Conditioner for PCS
RIU-BTSC-SMR	BTS Conditioner for SMR-Paging
RIU-BTSC-GSM	BTS Conditioner for GSM 900MHz
RIU-BTSC-GSM-O	BTS Conditioner for GSM 900MHz for Orange
RIU-BTSC-DCS	BTS Conditioner for DCS 1800MHz
RIU-BTSC-UMTS	BTS Conditioner for UMTS 2100MHz
RIU-BDAC-CELL	BDA Conditioner for Cellular
RIU-BDAC-IDEN	BDA Conditioner for iDEN
RIU-BDAC-PCS	BDA Conditioner for PCS
RIU-BDAC-SMR	BDA Conditioner for SMR-Paging
RIU-BDAC-GSM	BDA Conditioner for GSM 900MHz
RIU-BDAC-GSM-O	BDA Conditioner for GSM 900MHz for Orange
RIU-BDAC-DCS	BDA Conditioner for DCS 1800MHz
RIUL-ESMR-SMR-P1	RIU Lite for iDEN800 ,SMR900 and PCS 1900 supporting 1 BU8
RIU-L-CELL-PCS1	RIU Lite Cellular 800,PCS 1900

Power Supply	
LPS-48V-66W	Local AC/DC Converter 66W
LPS-48V-100W	Local AC/DC Converter 100W

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