mBDA Digital Band Selective Repeater

Flexible Indoor Wireless Enhanced Solutions

Features

- Max. 6 bands of 700UpperC/700LowerABC/800/850/1900/EAWS/2300/2600MHz
- Supports GSM, CDMA, WCDMA, and LTE operating
- Supports multi operator configurations / up to 3 sub bands per band
- Operation via WEB based OMT software
- Friendly and easy OMT interface via RJ45 connection
- Support Ethernet for remote monitoring and control
- FCC: PX8MBDA-200S

Product Description

mBDA is a wireless enhanced solution where high-quality voice or high-speed data service is not available between a mobile and a base station. mBDA is ideal for the first phase of the network rollout and for any subsequent phase where cost, coverage, and quality need to be optimized.

mBDA offers a modular, robust design that is easy to install, manage and upgrade. It supports three individually adjustable sub-bands for flexibility and high RF performance, supports multi-carrier and multi-band operation.

Remote configuration and surveillance is possible through Comba's remote control and monitoring system via PC to the OMT/OMC.

Support Technologies

		Frequency Range (MHz)	
Band	**Technologies**	**Downlink (DL)**	**Uplink (UL)**
700MHz UpperC	LTE	746-757	776-787
700MHz LowerABC	LTE	728-746	698-716
800MHz (ESMR)	CDMA/LTE	862-869	817-824
850MHz	GSM/CDMA/WCDMA/LTE	869-894	824-849
1900MHz	GSMCDMA/WCDMA/LTE	1930-1995	1850-1915
EAWS	WCDMA/LTE	2110-2180	1710-1780
2300MHz	LTE	2350-2360	2305-2315
2600MHz	LTE	2620-2690	2500-2570

DS-Control: 2-0-5/ 0818

RF Parameters

LTE 700MHz UpperC		
RF Parameter	**DL**	**UL**
Frequency Range (MHz)	746-757	776-787
Max Output Power Per Antenna Port 1(Composite)	33	17
2 Carriers	-3	/
4 Carriers	-6	/
8 Carriers	-9	/
Sub-bands	1	1
Operating Bandwidth (MHz)	5-11	5-11
Maximum System Gain (dB)	80	80
Pass Band Ripple at FBW, p-p (dB)	4	4
System Noise Figure (dB)	/	5
System Group Delay (usec)	6	6
Gain Adjustable Range	0-30	0-30
Emission Mask	3GPP	3GPP
Intermodulation[1]	3GPP	3GPP

CDMA /LTE 800 MHz (ESMR)		
RF Parameter	**DL**	**UL**
Frequency Range (MHz)	862-869	817-824
Max Output Power Per Antenna Port 1(Composite)	33	17
2 Carriers	-3	/
4 Carriers	-6	/
8 Carriers	-9	/
Sub-bands	3	3
Operating Bandwidth (MHz)	0.2-10	0.2-10
Maximum System Gain (dB)	80	80
Pass Band Ripple at FBW, p-p (dB)	4	4
System Noise Figure (dB)	8	5
System Group Delay (usec)	6	6
Gain Adjustable Range	0-30	0-30
Emission Mask	3GPP	3GPP
Intermodulation[1]	3GPP	3GPP

LTE 700MHz LowerABC		
RF Parameter	**DL**	**UL**
Frequency Range (MHz)	728-746	698-716
Max Output Power Per Antenna Port 1(Composite)	33	17
2 Carriers	-3	/
4 Carriers	-6	/
8 Carriers	-9	/
Sub-bands	3	3
Operating Bandwidth (MHz)	5-18	5-18
Maximum System Gain (dB)	80	80
Pass Band Ripple at FBW, p-p (dB)	4	4
System Noise Figure (dB)	/	5
System Group Delay (usec)	6	6
Gain Adjustable Range	0-30	0-30
Emission Mask	3GPP	3GPP
Intermodulation[2]	3GPP	3GPP

GSM/CDMA/WCDMA/LTE 850 MHz		
RF Parameter	**DL**	**UL**
Frequency Range (MHz)	869-894	824-849
Max Output Power Per Antenna Port 1(Composite)	33	23
2 Carriers	-3	/
4 Carriers	-6	/
8 Carriers	-9	/
Sub-bands	3	3
Operating Bandwidth (MHz)	0.2-24.8	0.2-24.8
Maximum System Gain (dB)	80	80
Pass Band Ripple at FBW, p-p (dB)	4	4
System Noise Figure (dB)	/	5
System Group Delay (usec)	6	6
Gain Adjustable Range	0-30	0-30
Emission Mask	3GPP	3GPP
Intermodulation[1]	3GPP	3GPP

Note:
Operating Bandwidth: GSM/CDMA Max. Bandwidth 25MHz, WCDMA Max. Bandwidth 15MHz, LTE Max. Bandwidth 20MHz.
*WCDMA is based on 3GPP TS 25.106 V9.0.0 (2009-12).
**LTE service is based on 3GPP TS 36.106 V9.0.0 (2009-12)
[1]Intermodulation: WCDMA @ 3GPP; GSM/CDMA @ Less than-13dBm.
[2]Intermodulation: LTE @ 3GPP; GSM @ Less than-13dBm.
RF specification is without Combiner Unit, Comber Unit insert loss is less than 1.0dB.

RF Parameter (continued)

GSM/CDMA/WCDMA/LTE 1900 MHz		
RF Parameter	**DL**	**UL**
Frequency Range (MHz)	1930-1995	1850-1915
Max Output Power Per Antenna Port 1(Composite)	33	23
2 Carriers	-3	/
4 Carriers	-6	/
8 Carriers	-9	/
Sub-bands	3	3
Operating Bandwidth (MHz)	0.2-25	0.2-25
Maximum System Gain (dB)	80	80
Pass Band Ripple at FBW, p-p (dB)	4	4
System Noise Figure (dB)	/	5
System Group Delay (usec)	6	6
Gain Adjustable Range	0-30	0-30
Emission Mask	3GPP	3GPP
Intermodulation[1]	3GPP	3GPP

WCDMA/LTE EAWS		
RF Parameter	**DL**	**UL**
Frequency Range (MHz)	2110-2180	1710-1780
Max Output Power Per Antenna Port 1(Composite)	33	17
2 Carriers	-3	/
4 Carriers	-6	/
8 Carriers	-9	/
Sub-bands	3	3
Operating Bandwidth (MHz)	5-20	5-20
Maximum System Gain (dB)	80	80
Pass Band Ripple at FBW, p-p (dB)	4	4
System Noise Figure (dB)	/	5
System Group Delay (usec)	6	6
Gain Adjustable Range	0-30	0-30
Emission Mask	3GPP	3GPP
Intermodulation	3GPP	3GPP

LTE 2300MHz		
RF Parameter	**DL**	**UL**
Frequency Range (MHz)	2350-2360	2305-2315
Max Output Power Per Antenna Port 1(Composite)	33	17
2 Carriers	-3	/
4 Carriers	-6	/
8 Carriers	-9	/
Sub-bands	3	3
Operating Bandwidth (MHz)	3-10	3-10
Maximum System Gain (dB)	80	80
Pass Band Ripple at FBW, p-p (dB)	4	4
System Noise Figure (dB)	/	5
System Group Delay (usec)	6	6
Gain Adjustable Range	0-30	0-30
Emission Mask	3GPP	3GPP
Intermodulation[1]	3GPP	3GPP

LTE 2600MHz		
RF Parameter	**DL**	**UL**
Frequency Range (MHz)	2620-2690	2500-2570
Max Output Power Per Antenna Port 1(Composite)	33	17
2 Carriers	-3	/
4 Carriers	-6	/
8 Carriers	-9	/
Sub-bands	3	3
Operating Bandwidth (MHz)	5-20	5-20
Maximum System Gain (dB)	80	80
Pass Band Ripple at FBW, p-p (dB)	4	4
System Noise Figure (dB)	/	5
System Group Delay (usec)	6	6
Gain Adjustable Range	0-30	0-30
Emission Mask	3GPP	3GPP
Intermodulation[1]	3GPP	3GPP

Note:
Operating Bandwidth: GSM/CDMA Max. Bandwidth 25MHz,
WCDMA Max. Bandwidth 15MHz, LTE Max. Bandwidth 20MHz.
RF specification is without Combiner Unit, Comber Unit insert loss is less than 1.0dB.

Mechanical Specification

Dimensions, H x W x D, mm (in)	System Rack (4 bands)	267 x 482 x 485, (10.5 x 19 x 19.1)
	Power Unit	220 x 80 x 440, (8.7 x 3.1 x 17.3)
	Combiner Unit	220 x 60 x 230, (8.7 x 2.4 x 9.1)
	RF Unit	220 x 60 x 350, (8.7 x 2.4 x 13.8)
Weight, kg (lb) (approx.)	System Rack (4 bands)	13.2, (29.1)
	Power and Monitor Unit	4, (8.8)
	Combiner Unit	4, (8.8)
	RF Card	3.8, (8.4)
Power Consumption, W (approx.)	Power and Monitor Unit	15
	RF Unit	50
Power Supply		100-240VAC/47-63Hz
Power Up Waiting Time (sec) (approx.)		180
Enclosure Cooling		Convection or Fan
RF Connectors		4.3-10
Operating Temperature (°C)		-20 to +40
Operating Humidity		10% to 85%
Environmental Class		IP30
MTBF (hr)		≥ 50,000
Mounting		19" Rack

Appendix I: Combiner Specification

Electrical	**Band1**	**Band2**	**Band3**	**Band4**	**Band5**
Operating Frequency (MHz)	698-798	817-894	1850-1995	1695-1780/ 2110-2180	2305-2690
Insert Loss (dB)	≤ 0.6				
Pass Band Ripple (dB)	≤ 0.5				
Return Loss (dB)	≥18, typical 20				
Isolation Between Ports (dB)					
698-798MHz	x	60	80	80	80
817-894MHz	60	x	80	80	80
1850-1995MHz	80	80	x	60	60
1695-1790/2110-2180MHz	80	80	60	x	60
2305-2690MHz	80	80	60	60	x
PIM (dBc)					
Coupling Rate	43.0±2.0	43.0±2.0	36.5±2.0	36.5±2.0	34.0±2.0
Max. Input Power (W)	60	60	60	60	60
Impedance (Ohm)	50				
Mechanical					
Dimensions, in (mm)	19.0 x 10.6 x 1.8 / 483.0 x 270.0 x 44.5				
Weight (approx.), lb (kg)	15.0 / 6.8				
RF Connectors	4.3-10				
Operating Temperature	-35°C to +85°C (-31°C to +185°F)				
Operating Humidity	≤ 100%				
Environmental Class	IP30				

Note: Typical specification at room temperature;

Ordering Information

	Module Name	P/N
Rack/ Controller	mBDA RACK Unit, supports maximum 6 bands	mBDA-RACK-E01
	mBDA Power and Monitor Unit, 110/220VAC, Ethernet adaptor	mBDA-PMU-A92W300
RF Unit	mBDA RF Unit 700 UpperC, 2W, 4.3-10 connectors	mBDA-RF-7UP33Q
	mBDA RF Unit 700 LowerABC, 2W, 4.3-10 connectors	mBDA-RF-7LP33Q
	mBDA RF Unit 800 ESMR, 2W, 4.3-10 connector	mBDA-RF-80P33Q
	mBDA RF Unit 850, 2W, 4.3-10 connectors	mBDA-RF-85P33Q
	mBDA RF Unit 1900, 2W, 4.3-10 connectors	mBDA-RF-19P33Q
	mBDA RF Unit EAWS, 2W, 4.3-10 connectors	mBDA-RF-EAWSP33Q
	mBDA RF Unit 2300, 2W, 4.3-10 connectors	mBDA-RF-23P33Q
	mBDA RF Unit 2600, 2W, N connectors	mBDA-RF-26P33
Combiner	mBDA combiner, 698-788, 817-894,1850-1995,1710-1780/2110-2180, 2305-2360, 2496-2690MHz	CM-ACJPY5-IA1