
TM-MCPA

*For Cost Effective
Coverage Extension or Capacity Upgrade*



August, 2006

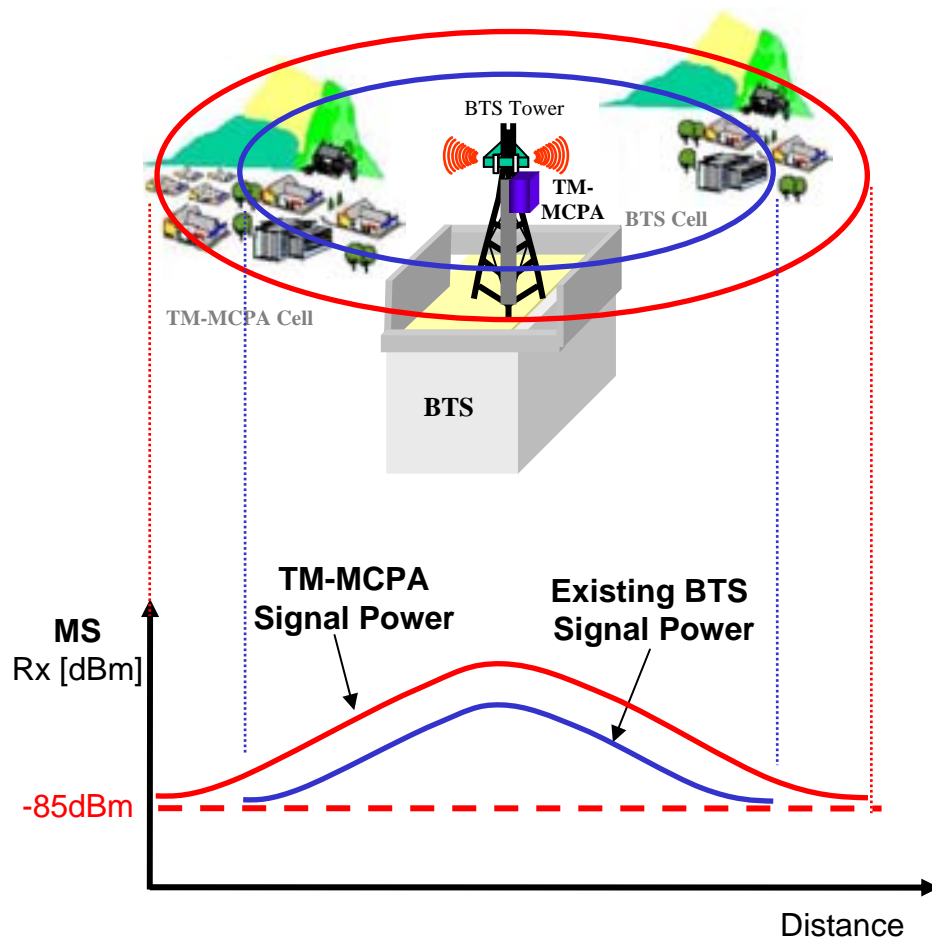
Product Enquiry & Local support contact sales@pacificwave-wireless.com
Another related component can be found at www.pacificwave-wireless.com



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TM-MCPA Overview



Due to rapid changes in wireless network environment, network operators are now faced with various infrastructure solutions and cost issues in upgrading wireless network. HFR's MCPA product line (Tower-Mounted and Ground-Mounted) provides cost effective network coverage extension and capacity upgrade solution. Apart from obvious coverage extension, sharing of existing RF cable and antenna when introducing new service channel for capacity or service upgrade is the major advantage of this system.

TM GSM/GPRS/EDGE MCPA – Advantages

- Increase channel count per antenna while maintaining power level per channel
- Increases coverage area for new cell designs
- Avoid coverage reduction when increasing number of channels in existing systems
- Tower-Mount Feature to maximize output power at the Antenna

TM GSM/GPRS/EDGE MCPA - Management

TM-MCPA can be easily monitored and controlled using built-in microprocessor. Following extensive features are included for managing system easily.

- User selectable downlink/uplink RF gain
- Parameter monitoring and alarm reporting
- Easy setup & maintenance feature



Electrical Specifications

Parameters		Unit	Specifications	Remarks
Frequency Range	Forward	MHz	935 ~ 960	
	Reverse	MHz	890 ~ 915	
Number of Carriers		Channel	1~8 Channels	GSM and EDGE System
Maximum Output Power	Forward	dBm	50dBm (100W) / Total	6 Carrier = 42 dBm / Carrier
	Reverse	dBm	-10 dBm (0.1mW) / Total	
Gain	Forward	dB	20 ± 1	
	Reverse	dB	12 ± 1	Reverse Diversity: 12 dB (± 1dB)
Gain Control Range / Step	Forward	dB	25 / 0.5	
	Reverse	dB	15 / 1.0	
Noise Figure		dB	< 2.5	
Bypass Insertion Loss		dB	< 1.5	At Fail Safe Operation Mode
Cut-off Frequency	Tx - Rx	dBc	> 70	
	Rx - Tx	dBc	> 70	
Intermodulation (IMD)	Forward	dBc	< - 60 (typical)	At 2 Carrier, Max. Output Power
Maximum Tx Input Power without Damage		dBm	+46	
Normal Input Power Range for Rx		dBm	-105 ~ -55	
Gain Flatness	Forward / Reverse	dB	< 1.0	Peak to Peak
Fail Safe Operation	Forward / Reverse		RF Bypass	
Power Supply		VAC	220V± 20%	Instead -48VDC
NMS			SMS Modem	Include External Alarm



Mechanical Overview



TM – MCPA Picture

Parameters	Specifications	Remarks
Environment Application	IP 55	Water proof Type
In/Out RF Connectors	DIN Type Female	
Coupling Port	SMA Type Female	Input / Output
External Alarm Port	D-SUB 9pin (Female)	
Dimension (W x D x H)	370 x 690 x 422 mm	
Weight	53 Kg	
Mounting Type	Wall or Tower Mount	
Operating Temperature	-20 ~ +50 °C	
Storage Temperature	-30 ~ + 80 °C	
Operating Humidity	5 ~ 90 %	Non- Condensing
Storage Humidity	0 ~95 %	Non - Condensing

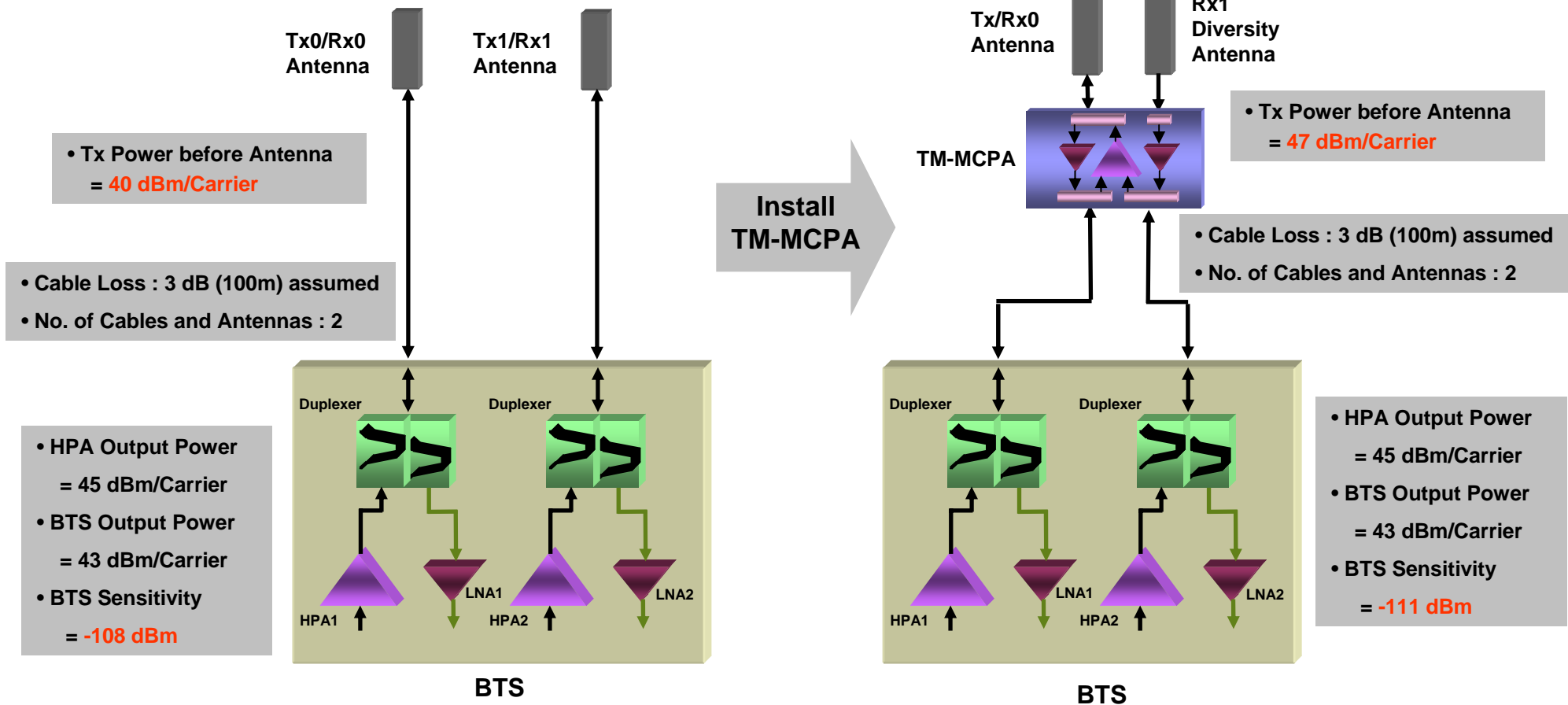


Application - 2 Carrier BTS

Service Configuration without TM-MCPA

- ### Benefits
- ❖ Tx Power : 40 dBm \Rightarrow 47 dBm / Carrier
 - ❖ BTS Sensitivity : -108 dBm \Rightarrow -111 dBm

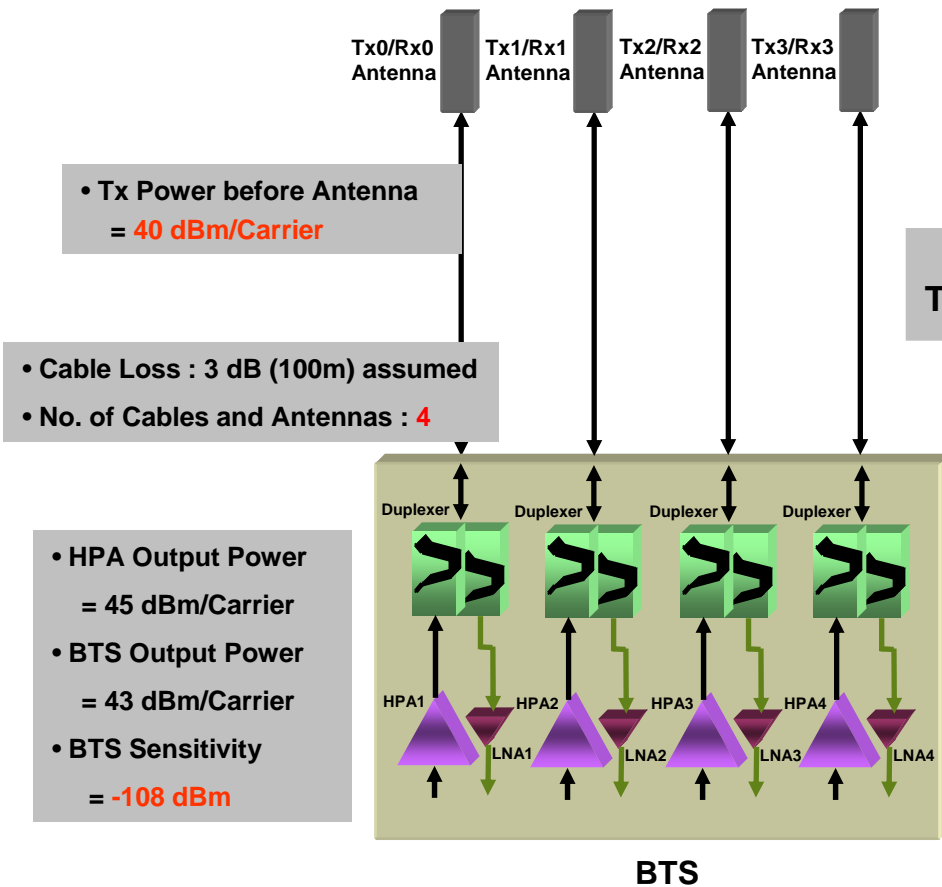
Service Configuration with TM-MCPA





Application - 4 Carrier BTS (Case 1)

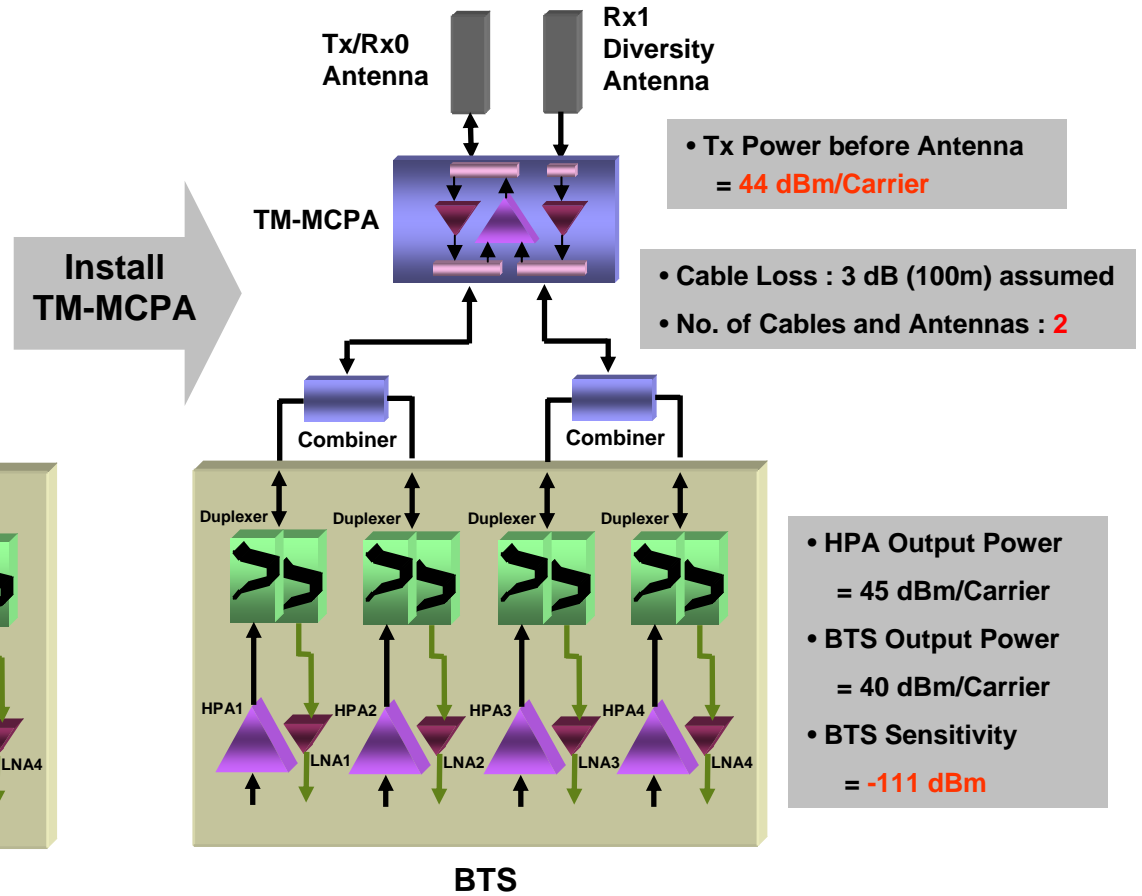
Service Configuration without TM-MCPA



Benefits

- ❖ Tx Power : 40 dBm \Rightarrow 44 dBm / Carrier
- ❖ BTS Sensitivity : -108 dBm \Rightarrow -111 dBm
- ❖ No need for additional antenna installation when increasing no. of carriers from 2 to 4

Service Configuration with TM-MCPA





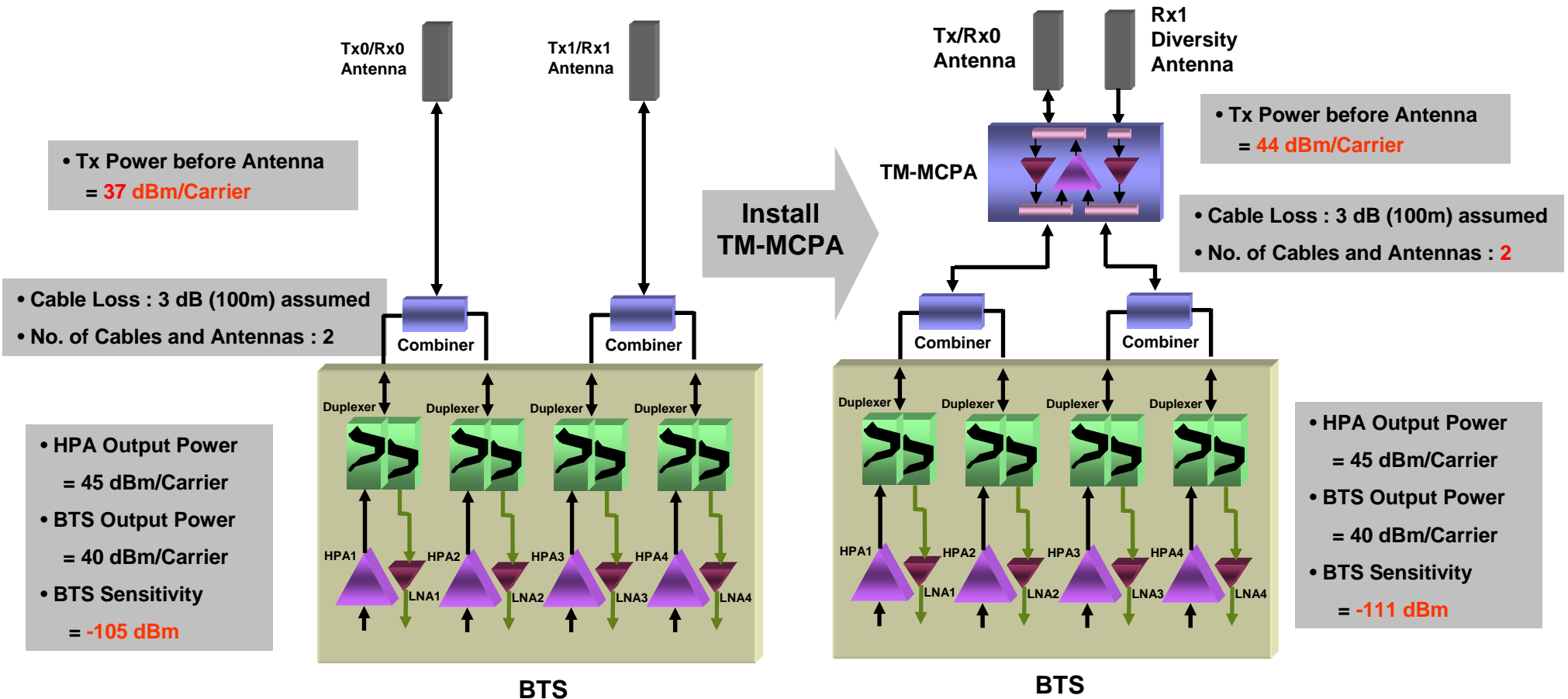
Application - 4 Carrier BTS (Case 2)

Service Configuration without TM-MCPA

Benefits

- ❖ Tx Power : 37 dBm ⇒ 44 dBm / Carrier
- ❖ BTS Sensitivity : -105 dBm ⇒ -111 dBm
- ❖ Avoid coverage reduction when increasing no. of carriers from 2 to 4

Service Configuration with TM-MCPA



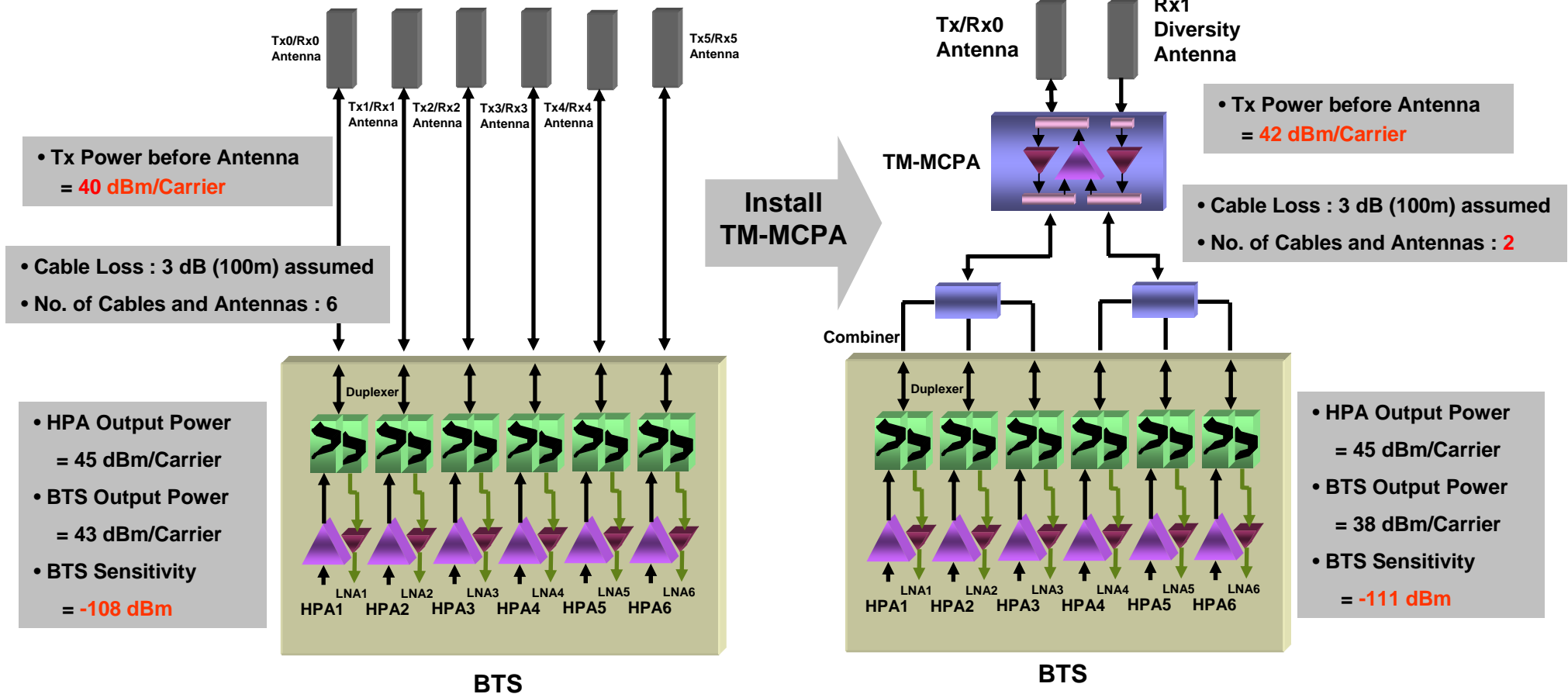
Application - 6 Carrier BTS (Case 1)

Service Configuration without TM-MCPA

Benefits

- ❖ Tx Power : 40 dBm \Rightarrow 42 dBm / Carrier
- ❖ BTS Sensitivity : -108 dBm \Rightarrow -111 dBm
- ❖ Avoid coverage reduction when increasing no. of carriers from 2 or 4 to 6.

Service Configuration with TM-MCPA





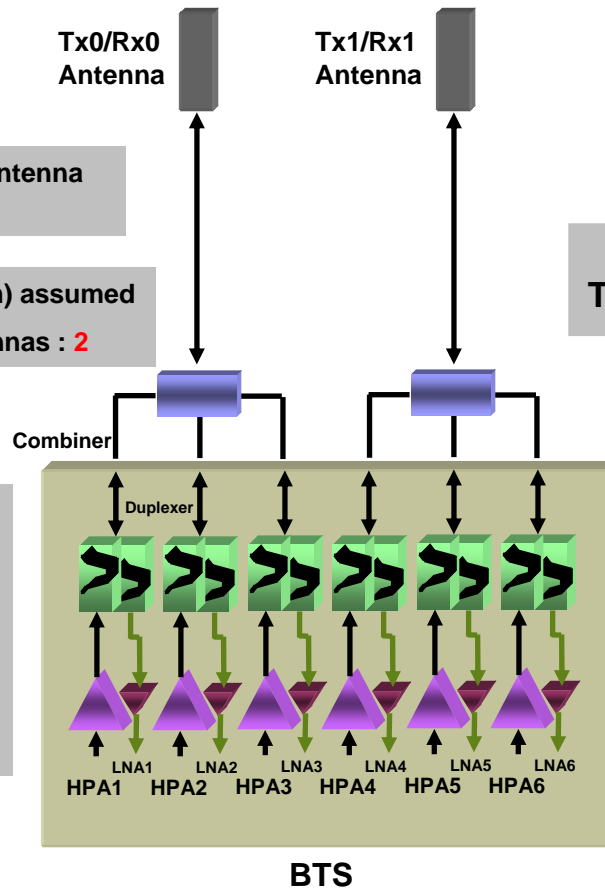
Application - 6 Carrier BTS (Case 2)

Service Configuration without TM-MCPA

- ### Benefits
- ❖ Tx Power : 35 dBm \Rightarrow 42 dBm / Carrier
 - ❖ BTS Sensitivity : -107 dBm \Rightarrow -111 dBm
 - ❖ No need for additional antenna installation
 - ❖ Avoid coverage reduction

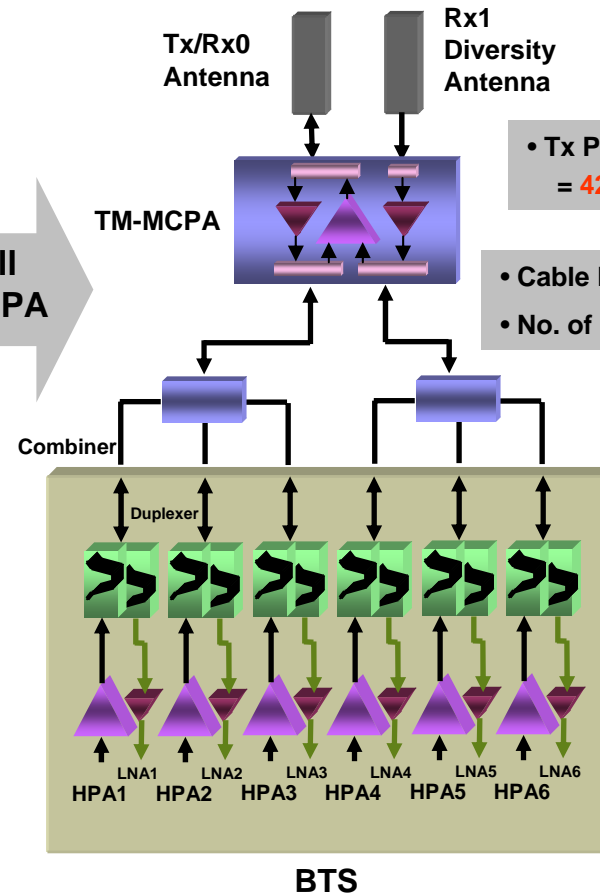
Service Configuration with TM-MCPA

- Tx Power before Antenna = 35 dBm/Carrier
- Cable Loss : 3 dB (100m) assumed
- No. of Cables and Antennas : 2



- HPA Output Power = 45 dBm/Carrier
- BTS Output Power = 38 dBm/Carrier
- BTS Sensitivity = -103 dBm

Install TM-MCPA

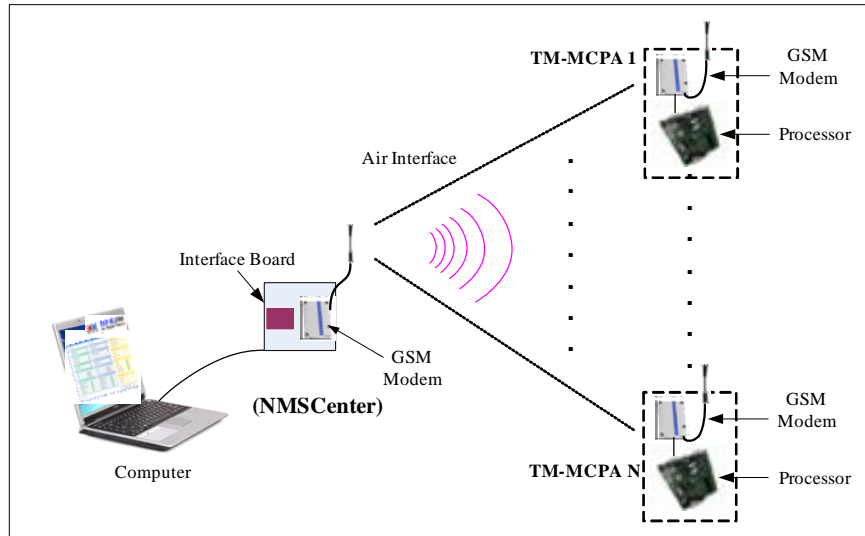


- Tx Power before Antenna = 42 dBm/Carrier
- Cable Loss : 3 dB (100m) assumed
- No. of Cables and Antennas : 2

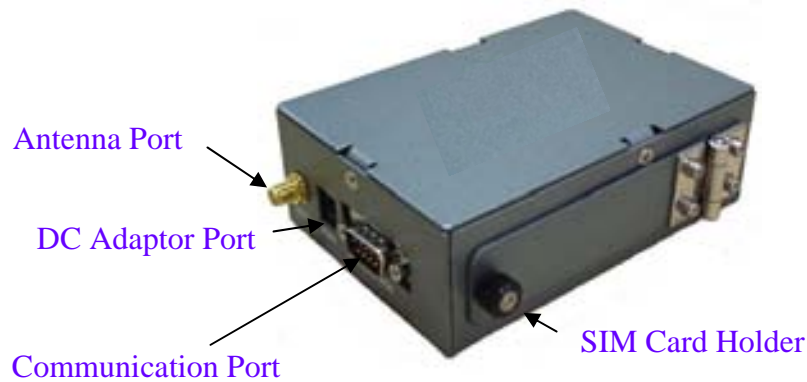
- HPA Output Power = 45 dBm/Carrier
- BTS Output Power = 38 dBm/Carrier
- BTS Sensitivity = -111 dBm



NMS Features



NMS Configuration



NMS Modem Box



NMS Modem Box Components

Thru NMS configuration allows operator to monitor and control alarms and parameters in NMS Center. Personal computer in NMS Center shall be installed with Emulation Program for accessing each TM-MCPA.

GSM Modem equipped in NMS Center and TM-MCPA sends SMS via air interface for 1:1 communication. In order to control or monitor each TM-MCPA from NMS Center, simply add repeater phone number into dialogue window provided in emulator program.

This NMS will be advantageous when managing both repeaters and MCPAs using one NMS screen.

NMS Major Features

- Alarm Reporting to NMS Center
- Alarm Reporting to A/S Phone
- Monitor / Control
- Alarm History with Excel Format
- MCPA & Repeater Registration