

TMA2093F00V1-1

TWIN TMA 1900/AWS LOWPASS

Designed to be deployed in co-located AWS, 1900 and low band (698-960) systems with wideband antennas, the Kaelus TMA2093 provides internal duplexing in all three bands with uplink gain in the high bands. A passive Tx/Rx path is provided to a low-band antenna port, thereby saving capital expenditure and tower leasing fees.

FEATURES

- Improved base station sensitivity through gain in the AWS and 1900 uplink bands
- Excellent noise figure performance
- Internal duplexing of 698-960MHz signals to be passed to additional ANT ports
- AISG2.0 compatible, hardware & software configuration using AISG "personality" upload
- Internal duplexing of AWS and 1900MHz bands
- DC/AISG bypass onto low band main (optional)



TECHNICAL SPECIFICATIONS

BAND NAME	1900	AWS
DOWNLINK		
Passband	1930 - 1990MHz	2110 - 2170MHz
Insertion loss	0.7dB typical	0.4dB typical
Return loss	18dB minimum	
Maximum input power	160W (average) / 2kW (PEP)	160W (average) / 2kW (PEP)
Intermodulation products	-153dBc maximum, (3rd order) in RX band with 2 x 20W carriers	-163dBc maximum, (7th order) in RX band with 2 x 20W carriers
UPLINK		
Passband	1850 - 1910MHz	1710 - 1770MHz
Gain	12dB	
Gain variation	±1dB maximum	
Return loss	18dB minimum operating, 12dB in bypass mode	
Bypass loss	2.7dB typical	2.5dB typical
Noise figure	1.4dB typical	
Output IP3	30dBm minimum	
Maximum input power with no damage	12dBm	
LOW BAND BYPASS PATH		
Passband	698 - 960MHz	
Return loss	18dB minimum	
Insertion loss	0.1dB typical	
Maximum input power with no damage	120W (average) / 2kW (PEP)	
Intermodulation @ antenna ports	-153dBc, (3rd order) with 2 x 20W carriers	
ELECTRICAL		
Impedance	50Ohms	

POWER SUPPLY AND ALARM (CURRENT WINDOW ALARM MODE, DEFAULT)

Current window alarm mode (CWA) is the default TMA operating mode and can be configured to specific customer requirements. The generic personality (F00V1) is configured so that both channels are independently powered and monitored via the respective BTS port. The BTS port sinks additional current to indicate an alarm state in its uplink path. Normal operating and alarm current values are configured independently and can be altered via a field-loadable personality file, contact Kaelus for more information.

DC supply voltage	7.5 to 30V DC, case is DC ground
DC supply voltage via BTS-RF cable	DC power can be applied to either port DC power to be drawn from one BTS port only DC applied to both BTS ports power will only be drawn from BTS1
DC supply current, normal mode	150 ± 15mA per port (for F00V1)
DC supply current, alarm mode programmable range	150 - 250mA, 220 ± 20mA per port (for F00V1)

AISG MODE OF OPERATION (AUTO SELECTED ON VALID AISG 2.0 FRAMES)

AISG signals can be applied to either BTS1 or BTS2 port. The TMA unit switches to AISG mode when valid frames are detected on one of the BTS ports. Both LNAs take DC power from the port with AISG frames or, if DC is present on both ports, both channels supply equal power to the TMA.

DC supply voltage	7.5V to 30V DC
AISG version	2.0 (1.1 optional)
Supply current, AISG mode	300mA @ 7.5V, 85mA @ 30V typical
AISG connector, current rating	IEC60130-9, 8-pin female, < 4A peak, 2A continuous, pin 6
Field firmware upgradable	Yes

AUTOSENSING FUNCTION ON ANT 1 PORT (TMA2093FXXV2 ONLY)

When a valid AISG signal is applied to either of its BTS ports, the TMA2093 (FxxV2) communicates in AISG mode and applies DC/AISG to the ANT1 port. If a low resistance is detected on ANT1 port, DC is disconnected from this port. In CWA mode, the autosensing switch is open and no DC will be passed to the ANT1 port.

Mode of operation	Current draw on ANT1 port	Assumption	"Autosense + Protection" switch status	Comment
CWA mode	Any	Unit in CWA mode	Open	No DC will be passed on to ANT1 Low band Port
AISG mode	Current < 4A	Device present or open circuit on ANT1, Unit in AISG Mode	Close	AISG signal (sub-carrier) will be supplied thru to ANT1 Low band Port
AISG mode	Current > 4A	DC short circuit or low DC resistance present on ANT1 port	Open	Attempts are made periodically to re-connect. The TMA will operate in AISG mode.

ENVIRONMENTAL

For further details of environmental compliance, please contact Kaelus.

Temperature range	-40°C to +65°C -40°F to +149°F
Ingress protection	IP67
Lightning protection	IEC61312-1, RF: ±5kA maximum (8/20us), AISG: ±2kA maximum (8/20us)
MTBF	>1,000,000 hours
Compliance	FCC part 15, ETSI EN 300 019 class 4.1, RoHS

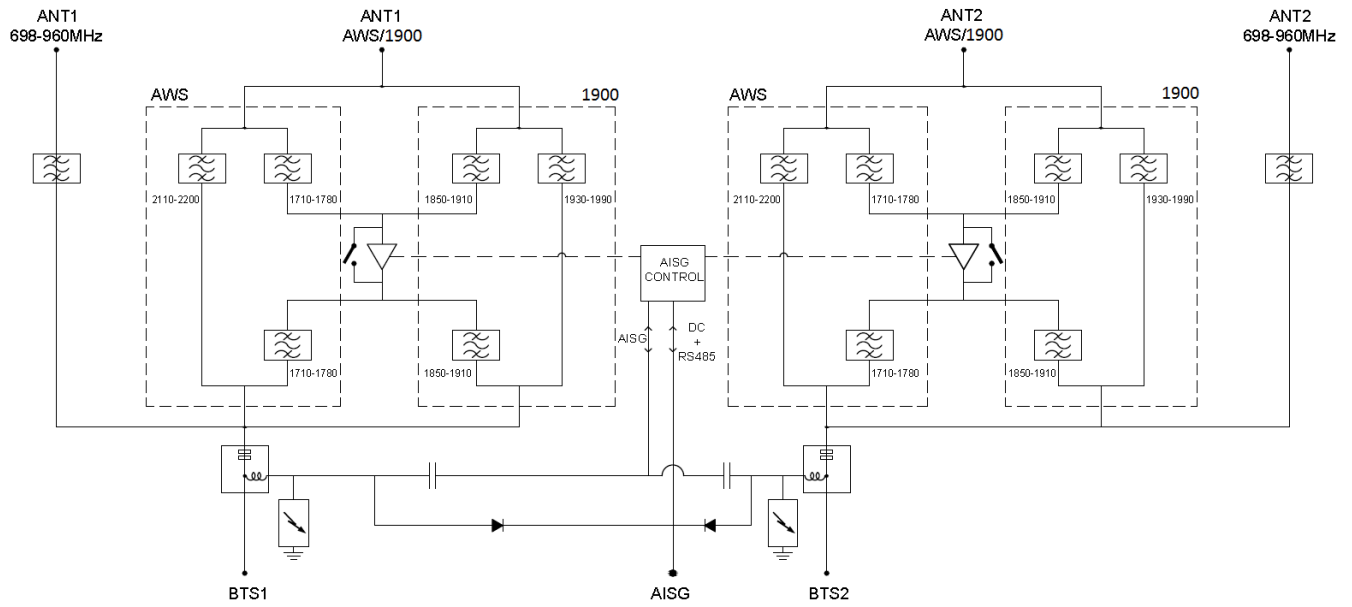
MECHANICAL

Dimensions H x D x W	300 x 250 x 95mm 11.8 x 9.8 x 3.7in (excluding brackets and connectors)
Weight	10.5kg 23.1lbs estimated
Finish	Painted, light grey (RAL7035)
Connectors	DIN 7-16 (F) x 6 long neck, AISG (F) x 1
Mounting	Pole/wall bracket supplied with two metal clamps 45-178mm diameter poles

ORDERING INFORMATION

PART NUMBER	CONFIGURATION	OPTIONAL FEATURES	CONNECTORS
TMA2093F00V1-1	TWIN 2 in / 4 out	Configured with generic personality	DIN 7-16 (F)
TMA2093F01V2-1	TWIN 2 in / 4 out	DC/AISG to main ANT low band port	DIN 7-16 (F)
TMA2093FxxV1-1	TWIN 2 in / 4 out	xx denotes customized CWA configuration	DIN 7-16 (F)

ELECTRICAL BLOCK DIAGRAM



MECHANICAL BLOCK DIAGRAM

