Cavity Filter and Combiner Products

RF COMPONENTS

RFCOMPONENTS.COM.AU

Quality and Service

- **Customer Service**
  - ✓ RFQ response in 12 hours, quotation with custom solution in 24 hours
  - ✓ Quick sample delivery of 4weeks typ. and 1-2weeks for special requests
- **Cavity Filters Production Capacity**
  - ✓ 40 pcs/day for Ultra Low PIM Products
  - ✓ 100pcs/day for normal filter products
  - ✓ 600 pcs/day for passive components
- **Lead-time**
  - ✓ Lead-time without forecast is **4** weeks
  - ✓ Lead-time with forecast is **1** week

Ultra Low PIM Duplexers Series

RF COMPONENTS

RFCOMPONENTS.COM.AU

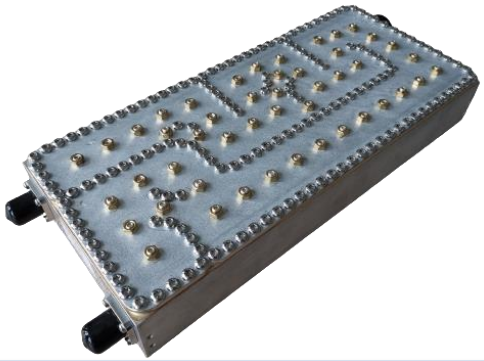
Features:

✓Frequency bands ***160MHz to 6GHz (system up to 18G)***

✓Ultra low PIM as low as **175dBc typ. @ 2*43dBm tones**

✓*The standard for global brands PIM measurements equipment*

✓Other Frequency bands and custom packages designs available on request



Our Ultra low PIM filter products are currently the standard for global brands PIM measurements equipment !

Typ. 3700MHz Triplexer, Ultra Low PIM

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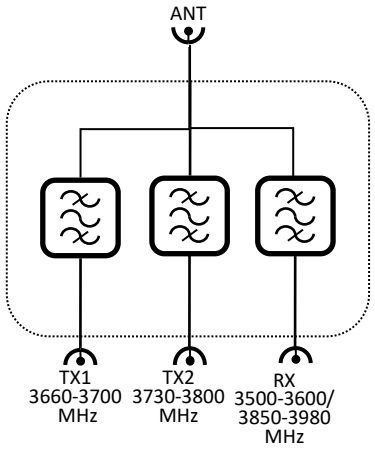
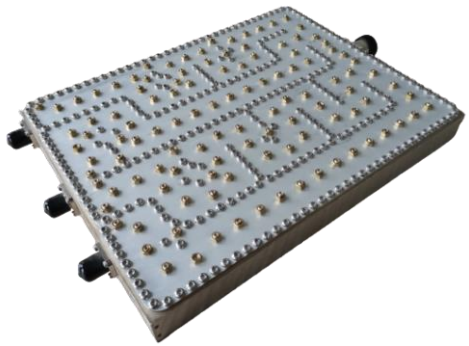


Frequency Band	**3660-3700 MHz**
Insertion Loss	1.8 dB max
Return Loss	18 dB min
Rejection@ RX band	100 dB min
Rejection@ Tx2 band	50 dB min
Input Power, Sea level at ambient temperature, COM port 50 Ohm loaded	150W CW max

Frequency Band	**3730-3800 MHz**
Insertion Loss	1.8 dB max
Return Loss	18 dB min
Rejection@ Rx band	100 dB min
Rejection@ Tx1 band	50 dB min
Input Power, Sea level at ambient temperature, COM port 50 Ohm loaded	150W CW max

Frequency Band	**3500-3600 and 3850-3980 MHz**
Insertion Loss	1.8 dB max
Return Loss	18 dB min
Rejection@ TX1 and TX2 band	115 dB min
Power Handling, Sea level at ambient temperature, COM port 50 Ohm loaded	2W CW max
IMD in RX band (2 CW tones +43 dBm in each)	174 dBc typ., 171 dBc min



High Power Low PIM Filters

RF COMPONENTS

RFCOMPONENTS.COM.AU

Features:

- ✓Frequency bands: ***160MHz to 6GHz***
- ✓High power handling as high as **1000W CW max, 8000W Peak max**
- ✓Ultra low PIM as low as **175dBc typ. @ 2*43dBm tones**
- ✓Other Frequency bands and custom packages designs available on request

Description	Tx band (MHz)	Rx band (MHz)	PIM (dBc , min)	Power Handling (W CW)
700L, duplexer, ultra low PIM, 1000W,high power	728-746	698-716	173 dBc Typ. 170 dBc min	1000W CW max, 8000W Peak max
APT700, duplexer, ultra low PIM, 1000W,high power	758-803	703-748	171 dBc Typ., 168 dBc min	1000W CW max, 5000W Peak max
800MHz, duplexer,ultra low PIM, 1000W,high power	791-821	832-862	171 dBc Typ., 168 dBc min	1000W CW max, 5000W Peak max
850MHz, duplexer, ultra low PIM, 1000W,high power	869-894	824-849	171 dBc Typ., 168 dBc min	1000W CW max, 8000W Peak max
900MHz, duplexer, ultra low PIM, 1000W,high power	925-960	880-915	171 dBc Typ., 168 dBc min	1000W CW max, 8000W Peak max
1800MHz, duplexer, ultra low PIM, 1000W, high power	1805-1880	1710-1785	171 dBc Typ., 168 dBc min	1000W CW max, 8000W Peak max
1900MHz, duplexer, ultra low PIM, 1000W,high power	1930-1990	1850-1910	171 dBc Typ., 168 dBc min	1000W CW max, 5000W Peak max
2100MHz,duplexer,ultra low PIM, 1000W,high power	2110-2170	1920-2080	171 dBc Typ., 168 dBc min	1000W CW max, 5000W Peak max
2500MHz Duplexer, ultra low PIM,1000W,high power	2515-2675	2400-2484	173 dBc Typ., 170 dBc min	1000W CW max, 4000W Peak max
2600MHz, duplexer, ultra low PIM, 1000W,high power	2620-2695	2500-2580	171 dBc Typ., 168 dBc min	1000W CW max, 5000W Peak max
3500MHz, duplexer, ultra low PIM, 1000W,high power	3510-3594	3410-3490	171 dBc Typ., 168 dBc min	1000W CW max, 5000W Peak max

Typ. High Power, Ultra low PIM 3500MHz duplexer

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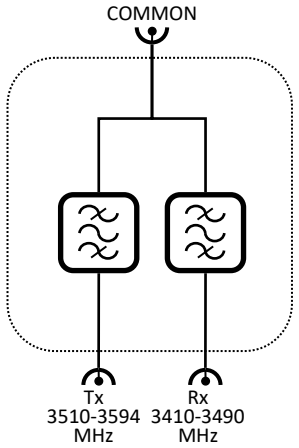
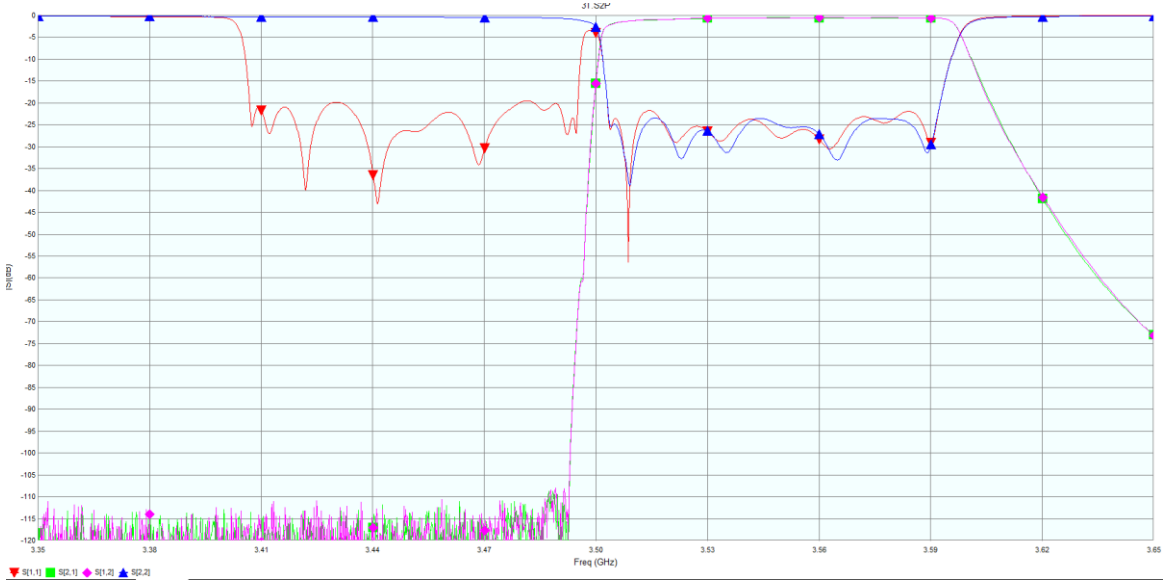
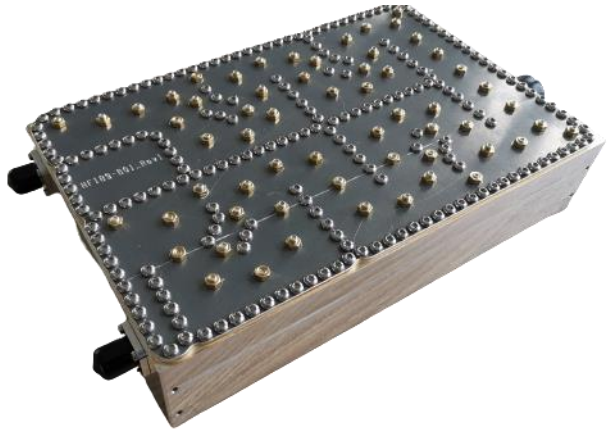


Frequency Band	**3510-3594 MHz**
Insertion Loss	1.0 dB max
Return Loss	18 dB min
Rejection@ Rx Band	85 dB min
Power Handling, Sea level at ambient temperature, COM port 50 Ohm loaded	1000W CW max, 5000W Peak max
Frequency Band	**3410-3490 MHz**
Insertion Loss	1.5 dB max
Return Loss	18 dB min
Tx Band	90 dB min
IMD in RX band, COM port (2 CW tones +43 dBm each)	**171 dBc Typ., 168 dBc min**





Low PIM BP/BR Diplexers Series

RF COMPONENTS

RFCOMPONENTS.COM.AU

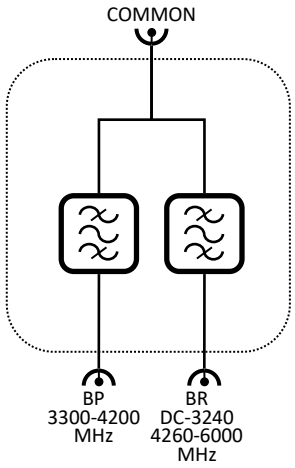
Features

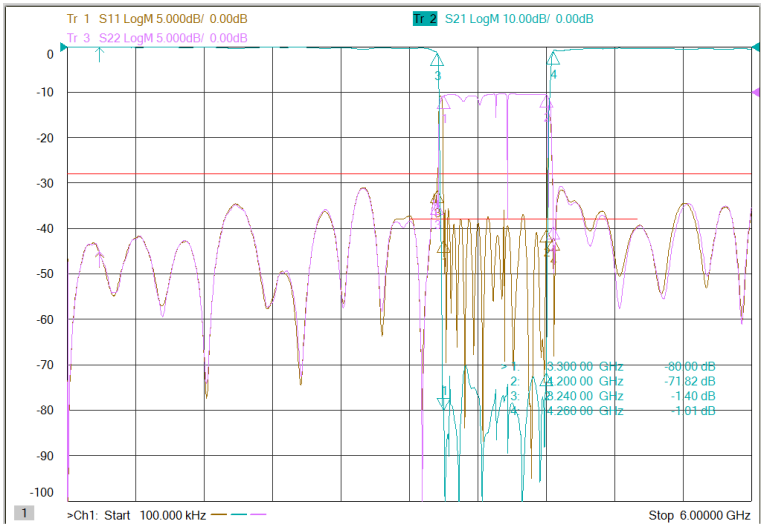
- ✓Full frequency bands from ***400MHz to 10 GHz***
- ✓Ultra low PIM as low as **165dBc typ. (2*43dBm tones)**
- ✓High rejection, low insertion loss, wide band
- ✓Narrow guard band as narrow as ***5%*** of notch bandwidth
- ✓Other Frequency bands and custom package designs available on request

Typ.3300-4200 MHz diplexer, Ultra Low PIM

RF COMPONENTS

RFCOMPONENTS.COM.AU





Frequency Band	3300-4200MHz
Insertion Loss	1.5 dB typ., 3.0 dB max @ edge
Return Loss	14 dB typ., 12 dB min
Rejection@DC-2690 MHz	70 dB min
Rejection@4400-6000 MHz	70 dB min
Power Handling @Common port(input)	500W CW max
Notch Band	3300-4200 MHz
Pass Band	DC-3240 and 4260-6000 MHz
Insertion Loss @DC-3240 MHz	1.5 dB typ., 3.0 dB max @ edge
Insertion Loss @4260-6000MHz	1.5 dB typ., 3.0 dB max @ edge
Rejection in notch band	70 dB min
Return Loss in pass band	10 dB typ., 9 dB min
Reverse IMD3 measured at Com port, with 2*46 dBm in 3300-4200MHz delivered to common port	-167 dBc Typ., -164dBc max

Low PIM Notch Filter Series

RF COMPONENTS

RFCOMPONENTS.COM.AU

Features:

- ✓ Frequency bands: ***400MHz to 6.5GHz***
- ✓ High Rejection up to **110 dBm min**
- ✓ Low PIM as Low as **155 dBc**@ 2*43 dBm
- ✓ Other Frequency bands and custom package designs available on request

Description	Notch band (MHz)	Pass band (MHz)	IL (dB max)	RL (dB min)	Rejection (dB min)	IMD dBc typ.@ 2*43 dBm
1427.9-1462.9MHz,Notch Filter, with 110dB rejection, low PIM	1427.9-1462.9	DC-1414 /1475.9-3220	1	13	110	155
1695-1785MHz, Notch Filter, with 110 dBm rejection, low PIM	1695-1785	DC-1673 /1805-4500	1.5	13	110	155
1710-1785MHz,Notch Filter, with 110 dB rejection, low PIM	1710-1785	DC-1693 /1803-3930	1.5	13	110	155
1710-1785MHz, Notch Filter, with 110 dB rejection, low PIM	1710-1785	DC-1693 /1803-3930	1.5	13	110	155
1850-1915MHz, Notch Filter, 110dB rejection, low PIM	1805-1915	DC-1830 /1930-4500	1.5	12	110	155
1920-1980MHz,Notch filter, with 110dB rejection, low PIM	1920-1980	DC-1900 /2000-4500	1.5	10	110	155
2300-2400MHz, Notch Filter, 110dB rejection, low PIM	2300-2400	DC-2275 /2425-4500	1.5	12	110	155
2305-2315MHz, Notch Filter, 110dB rejection, low PIM	2305-2315	DC-2280 /2340-4500	1.5	12	110	155
2496-2690MHz,Notch filter, with 110 dB rejection, low PIM	2496-2690	DC-2471 /2715-4500	1.5	12	110	155
2500-2570MHz Rejection Filter with 110 dB, Low PIM	2500-2570	DC-2475 /2595-5000	1.5	12	110	155

Low PIM Notch Filter Series

RF COMPONENTS

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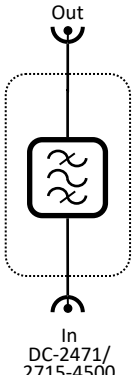
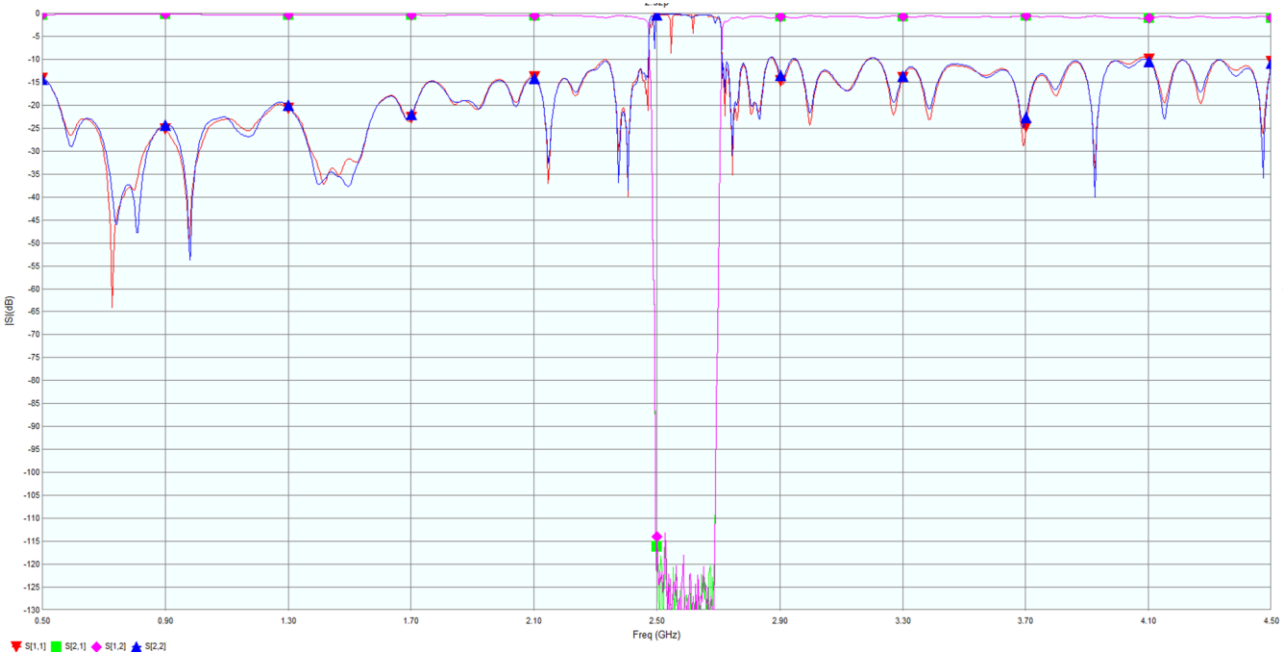


Notch Band	2496-2690 MHz
Pass Band	DC-2471 and 2715-4500MHz
Insertion Loss@DC-2451 MHz	1.5 dB max
Insertion Loss@2451-2471 MHz	3.0 dB max
Insertion Loss@2715-2735 MHz	3.0 dB max
Insertion Loss@2735-4500MHz	1.5 dB max
Return Loss	12 dB typ., 9 dB min
Rejection@ Notch Band	110 dB min
Power handling	100 W CW max
In/out Impedance	50 Ω
IMD in RX band, COM port (2 CW tones +43 dBm each)	115 dBm typ., 112 dBm min



mm-Wave BPF Filter Series

RF COMPONENTS

RFCOMPONENTS.COM.AU

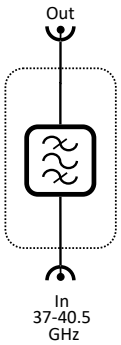
Features:

- ✓Up to 67 G Frequency Range
- ✓Compact Package Design, High Q Response
- ✓Low Insertion Loss, High Rejection
- ✓Other Frequency bands and custom package designs available on request

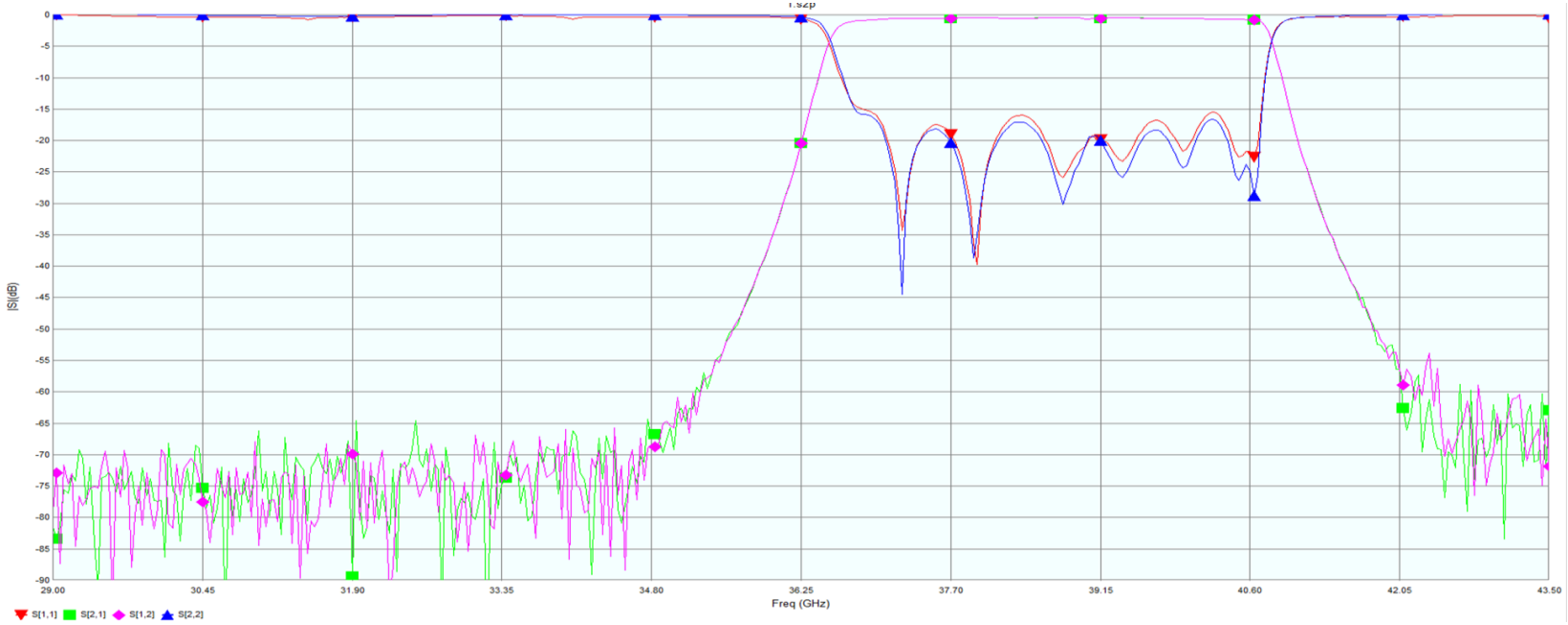
Typ. 38.75 GHz (BW 3.5 GHz) Bandpass Filter

RF COMPONENTS

RFCOMPONENTS.COM.AU



Pass Band	37-40.5 GHz
Insertion Loss	2 dB max
Return Loss	14 dB min
Rejection @ 29-35.25 GHz	45 dB min
Rejection @ 42-48 GHz	40 dB min
Power handling	1 W CW max
In/out Impedance	50 Ω

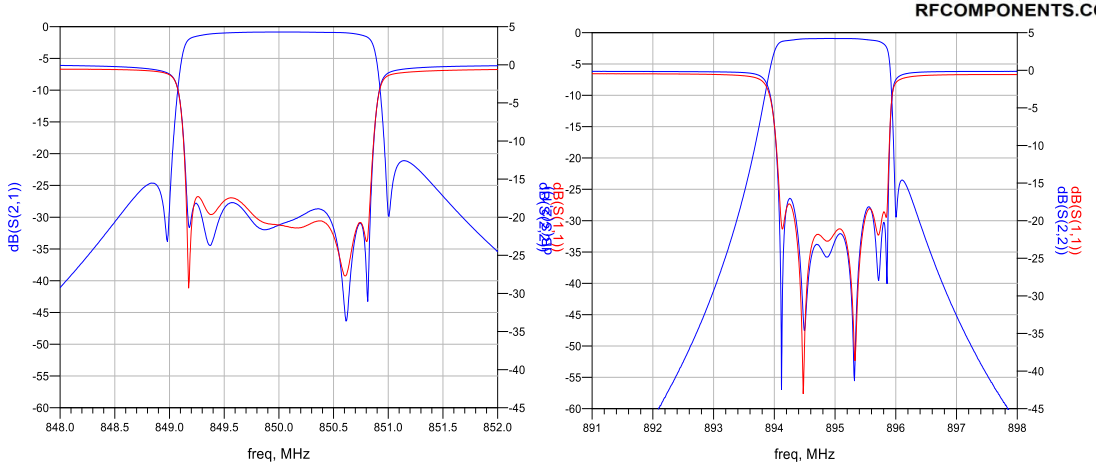


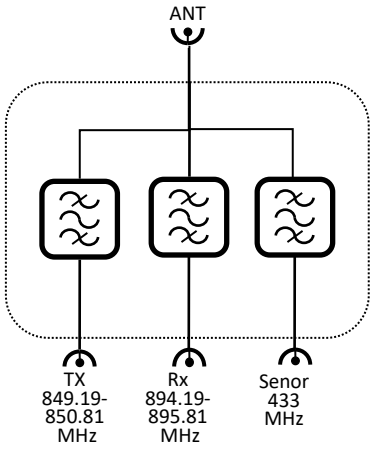
850MHz DR Triplexer

RFCOMPONENTS.COM.AU

Features

- ✓ Narrow Pass Band=1.62MHz
- ✓ High Q value:29000
- ✓ Sharp Rejection
- ✓ low insertion loss
- ✓ With 433MHz Azimuth Tilt Sensor
- ✓ Compact design



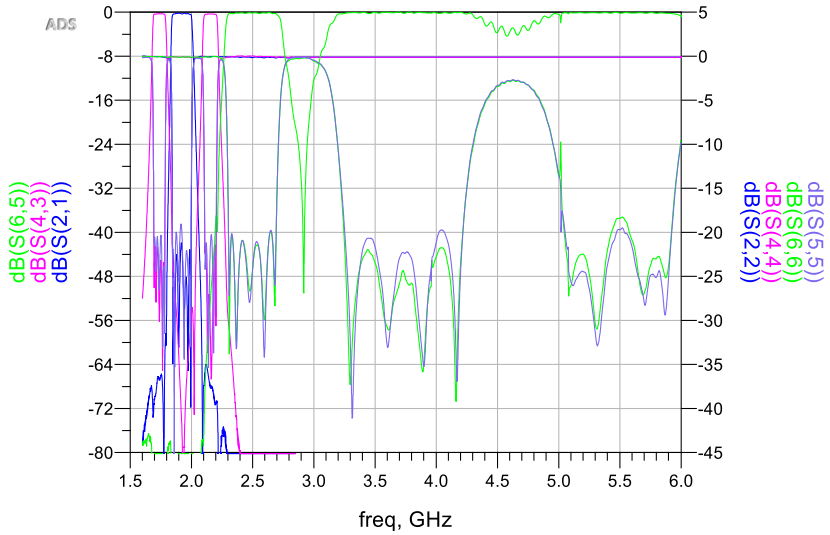


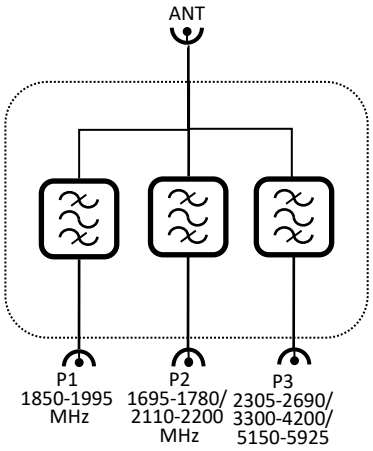
Small Cell combiner 1

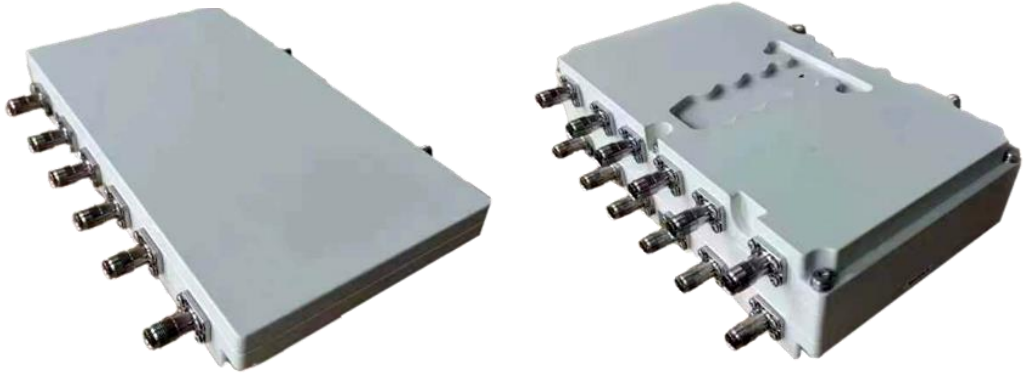
RFCOMPONENTS.COM.AU

Features

- ✓ Wide Band combiner
- ✓ Mini size
- ✓ low insertion loss
- ✓ Low PIM performance
- ✓ Compact design





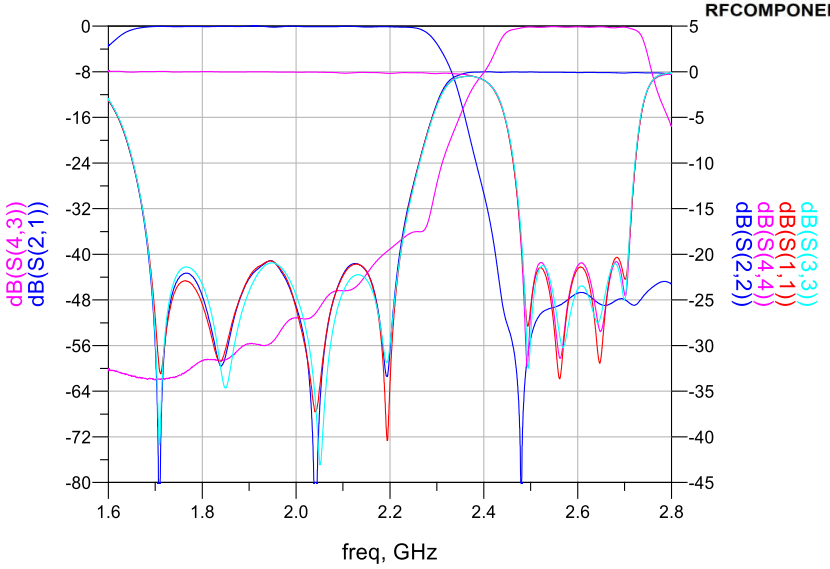


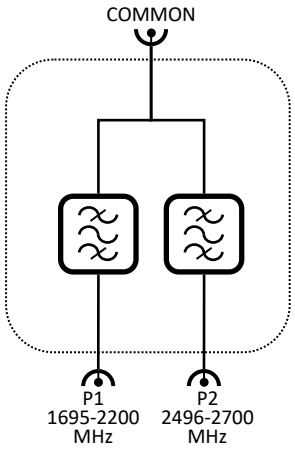
Small Cell combiner 2

RFCOMPONENTS.COM.AU

Features

- ✓ Mini size
- ✓ low insertion loss
- ✓ Low PIM performance
- ✓ Compact design





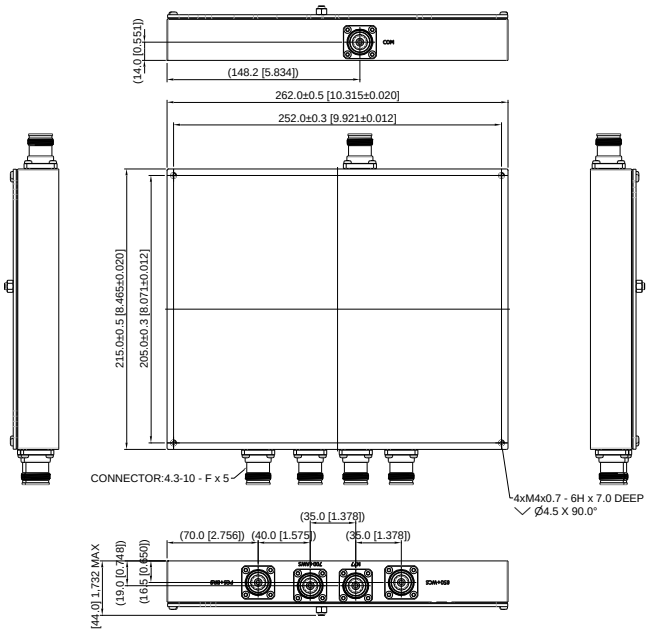
700+AWS,850+WCS,PCS+BRS, N77 combiner

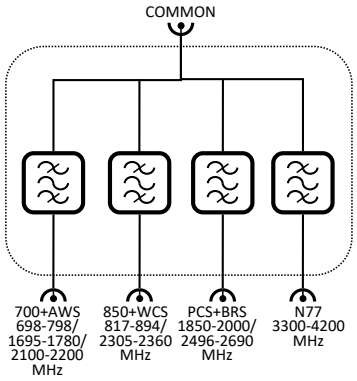
RF COMPONENTS

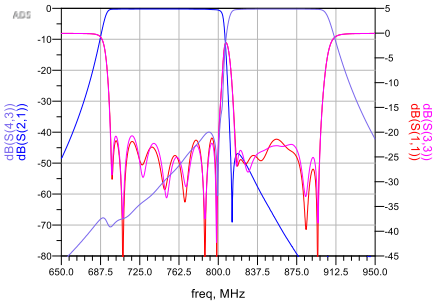
RFCOMPONENTS.COM.AU

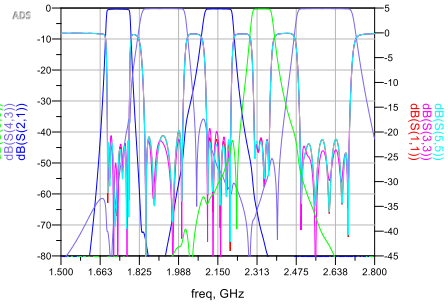
Features

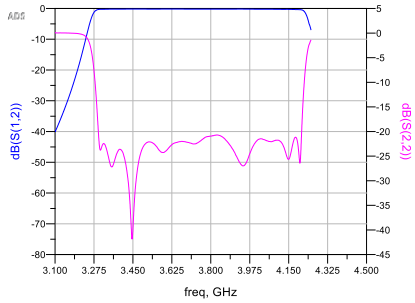
- ✓ Wide band from 698-4200MHz
- ✓ Cover 700/AWS,850+WCS,PCS+BRS,N77 bands
- ✓ low PIM as low as 161dBc @2*43dBm
- ✓ High rejection, low insertion loss
- ✓ Other Frequency bands and custom package designs available on request









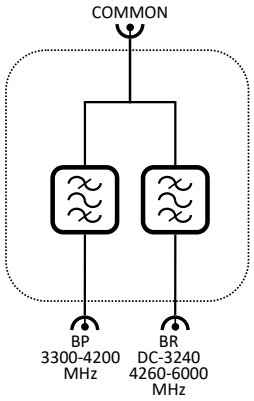


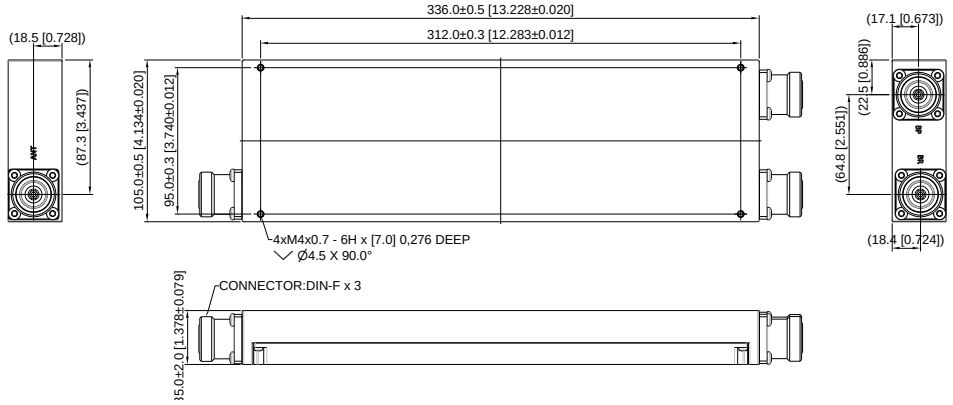
N77 Low PIM BR/BP Diplexer

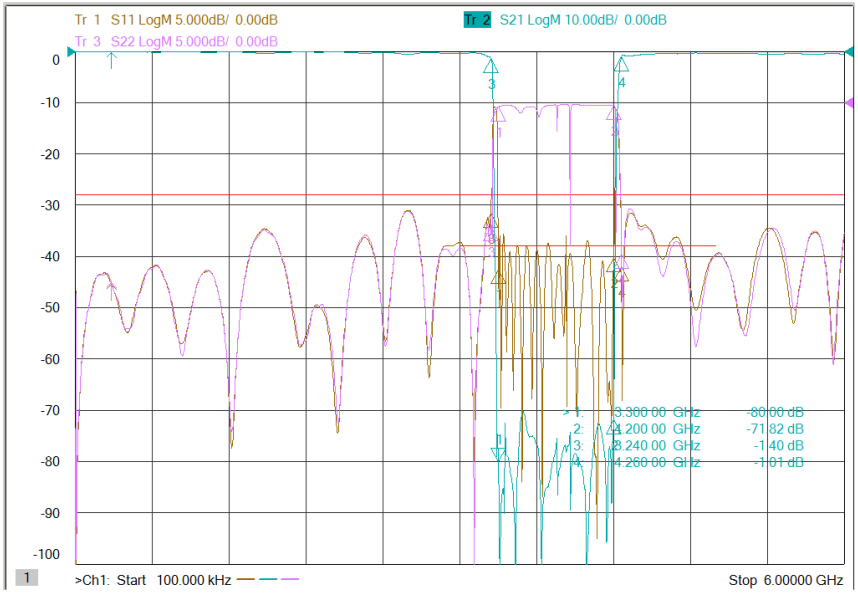
RFCOMPONENTS.COM.AU

Features

- ✓ Wide notch band 3300-4200MHz
- ✓ Narrow Guard-band:60MHz
- ✓ Ultra low PIM as low as 165dBc typ
- ✓ High rejection, low insertion loss
- ✓ Other Frequency bands and custom package designs available on request







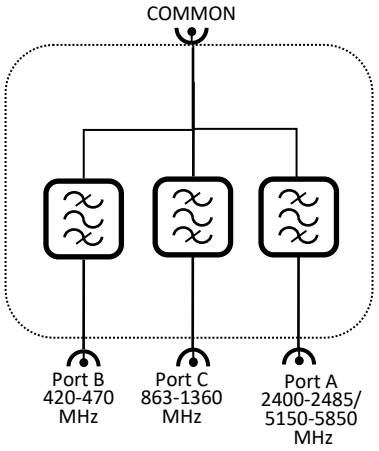
Wide Band Triplexer

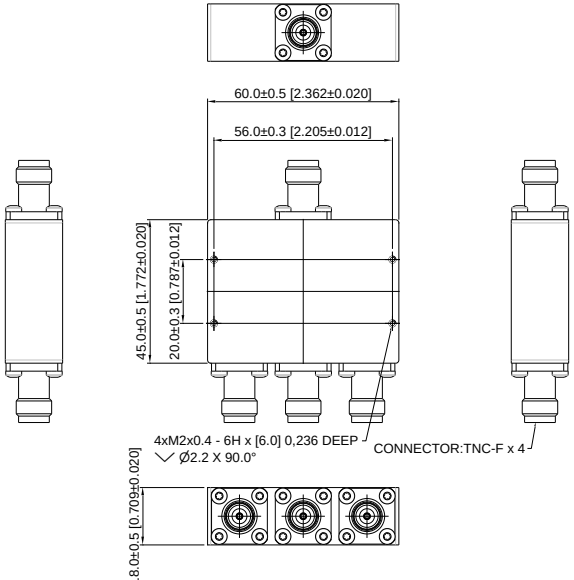
RF COMPONENTS

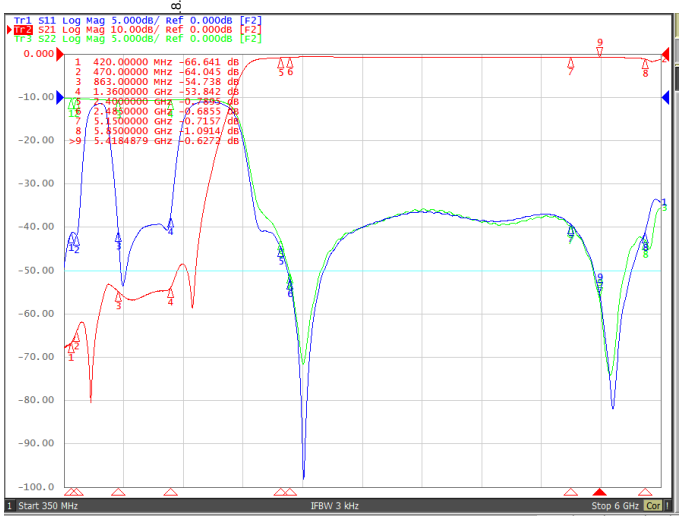
RFCOMPONENTS.COM.AU

Features

- ✓ Wide band, 420-5850MHz
- ✓ Low Insertion loss
- ✓ Mini size
- ✓ High rejection
- ✓ Other Frequency bands and custom package designs available on request







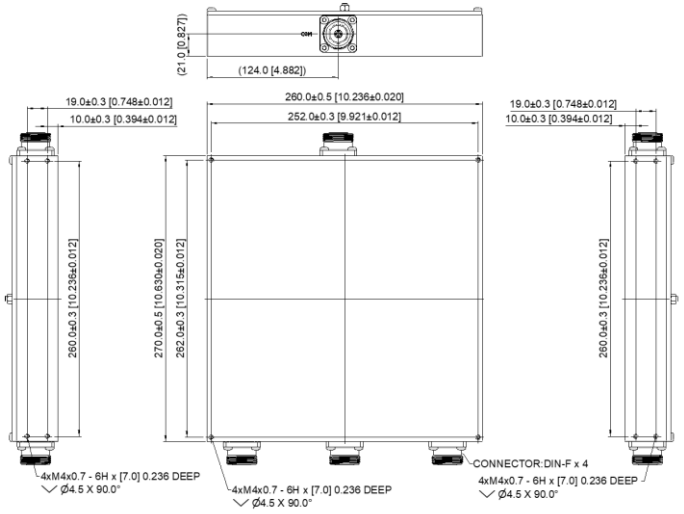
1500MHz High Power Triplexer

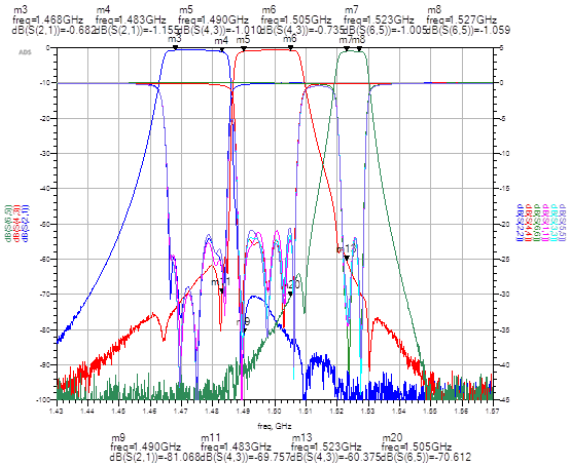
RF COMPONENTS

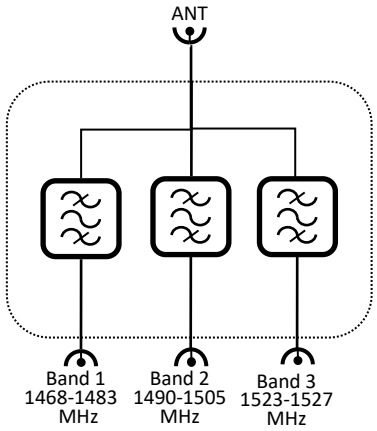
RFCOMPONENTS.COM.AU

Features

- ✓ High Power with 500W with Narrow Band for each port
- ✓ Low Insertion loss
- ✓ High rejection
- ✓ Other Frequency bands and custom package designs available on request







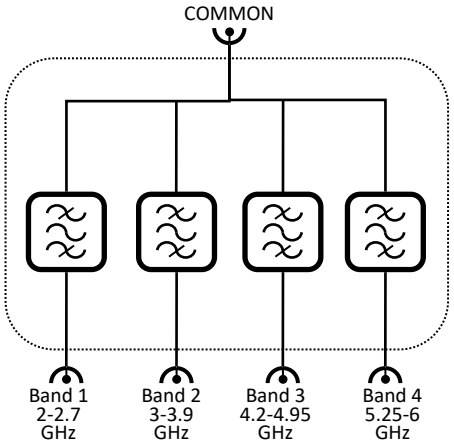
2-2.7/3-3.9/4.2-4.95/5.25-6GHz Wide Band Combiner

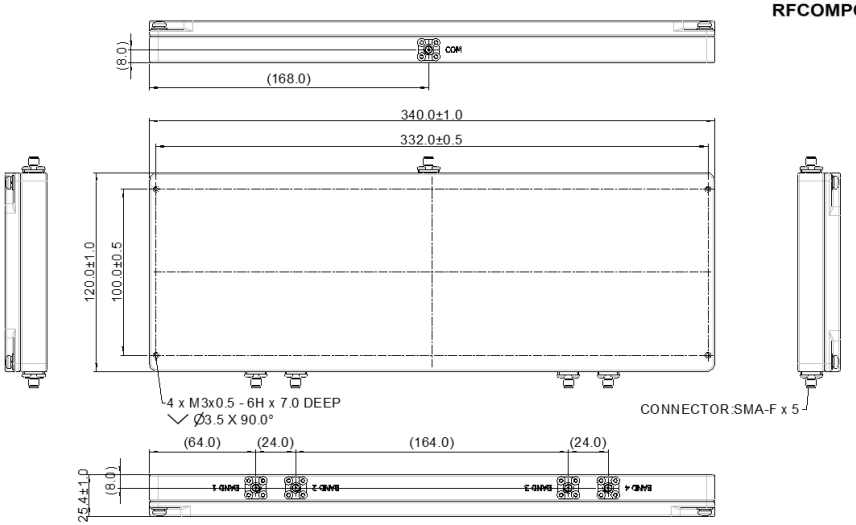
RF COMPONENTS

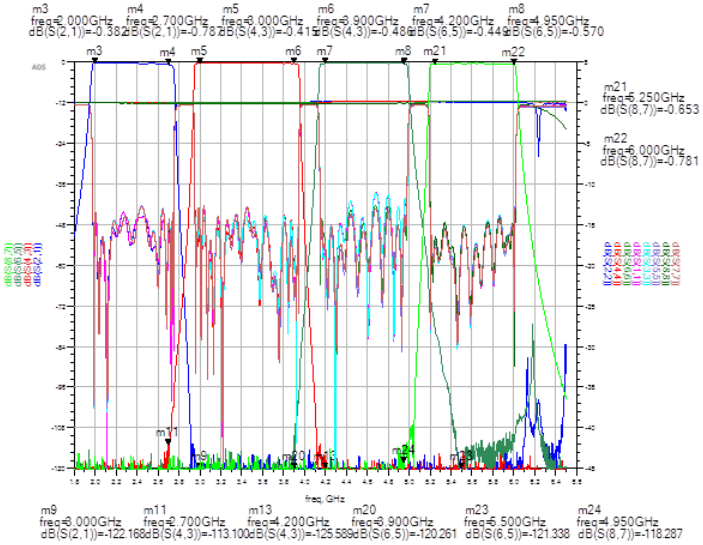
RFCOMPONENTS.COM.AU

Features

- ✓ Wide band cover 2-6GHz
- ✓ Low Insertion loss
- ✓ High rejection
- ✓ Thin structure
- ✓ Other Frequency bands and custom package designs available on request





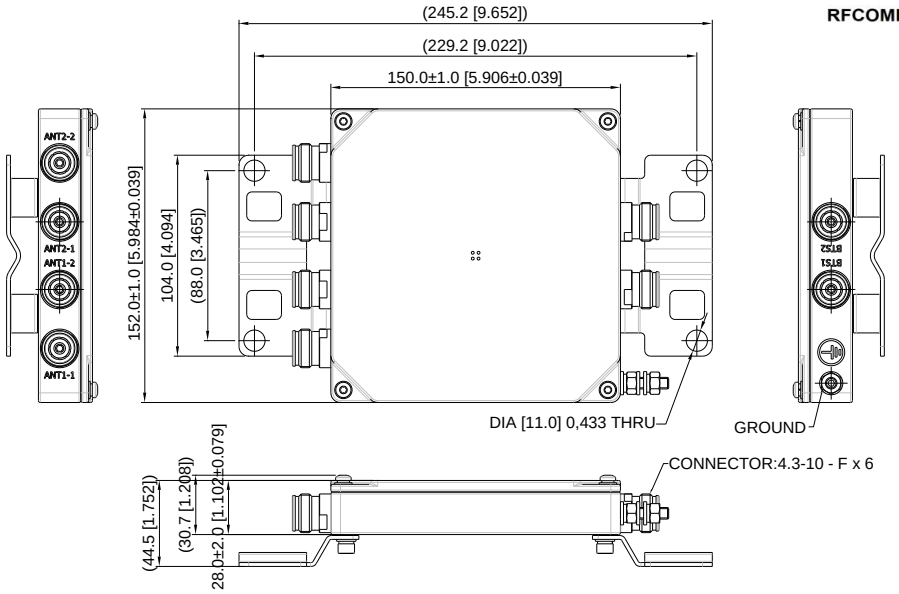


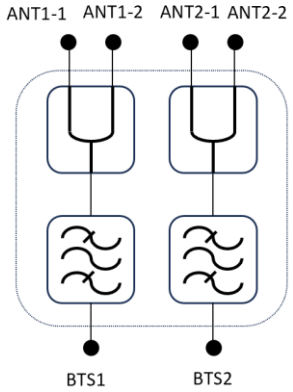
4945-4985MHz Dual Cavity Filters with power Splitter

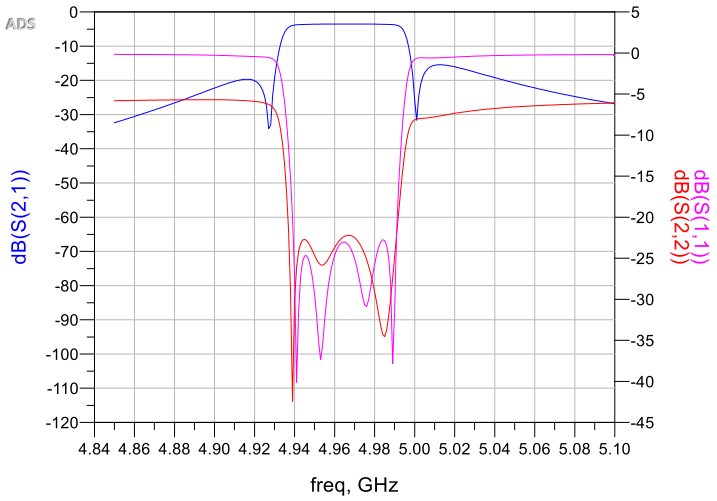
RFCOMPONENTS.COM.AU

Features

- ✓ Narrow Band
- ✓ Low Insertion loss
- ✓ Good temperature compensation
- ✓ Out door application
- ✓ Other Frequency bands and custom package designs available on request







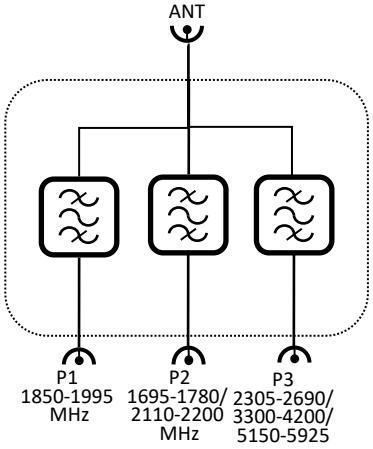
Small Cell combiner

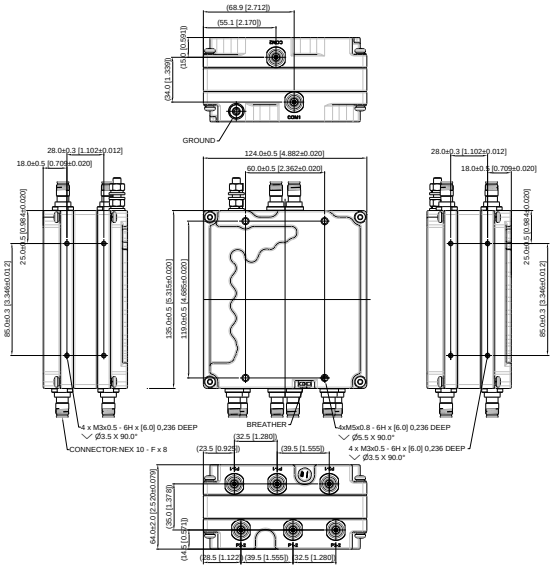
RF COMPONENTS

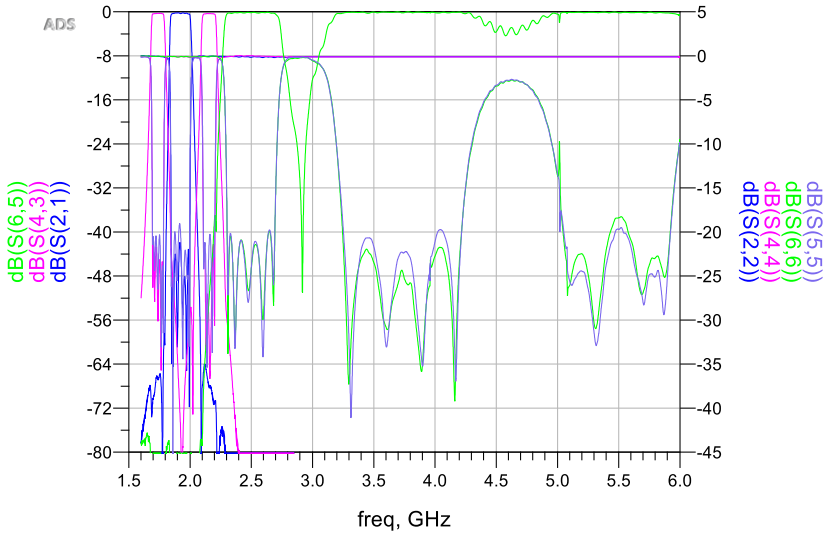
RFCOMPONENTS.COM.AU

Features

- ✓ Wide Band combiner cover 1695-5925MHz
- ✓ Mini size
- ✓ low insertion loss
- ✓ Low PIM performance
- ✓ Compact design







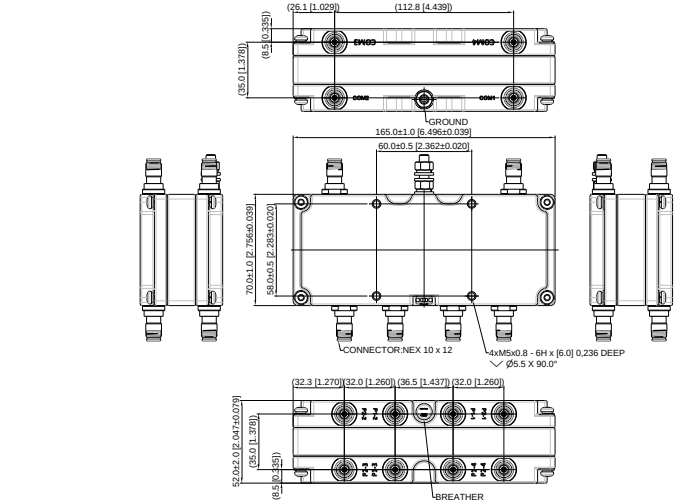
Small Cell combiner

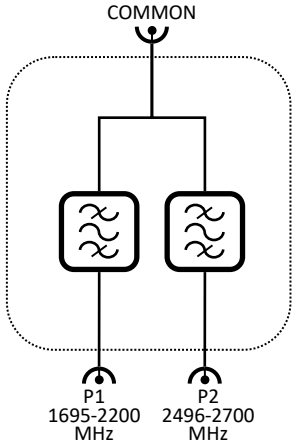
RF COMPONENTS

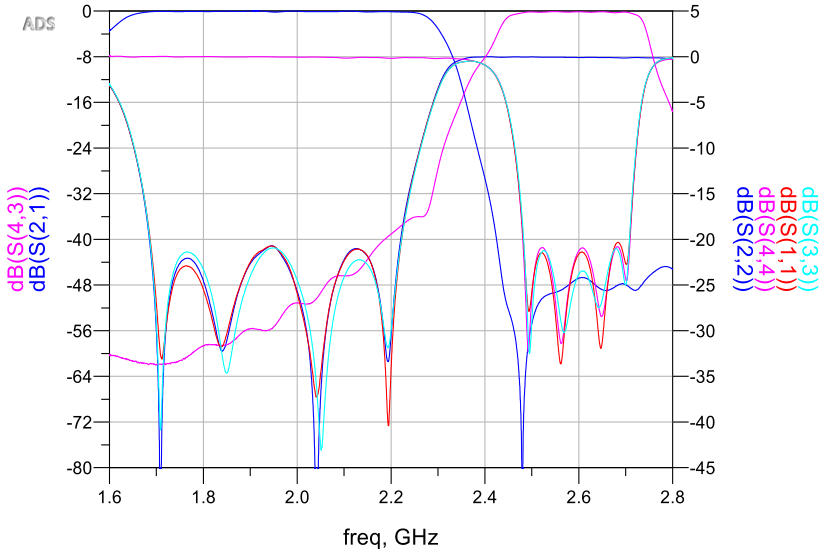
RFCOMPONENTS.COM.AU

Features

- ✓ Mini size
- ✓ low insertion loss
- ✓ Low PIM performance
- ✓ Compact design





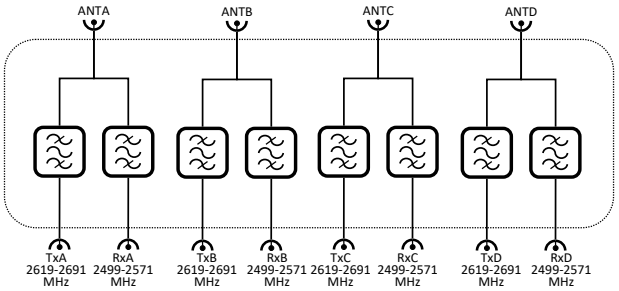


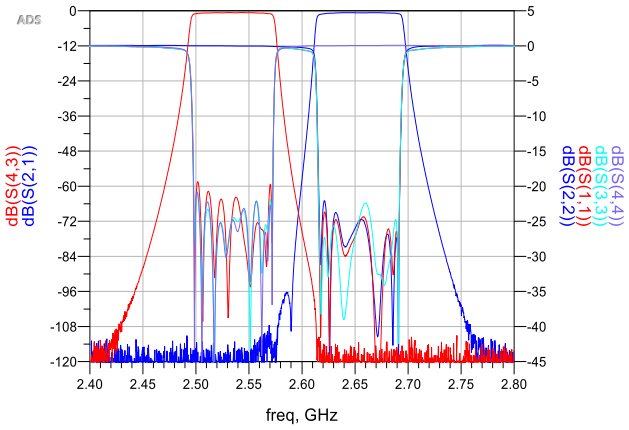
Fix PIM

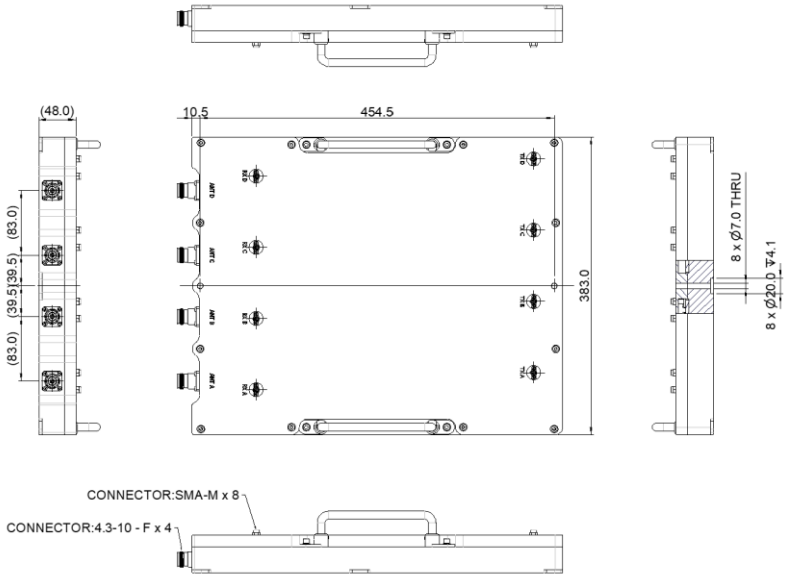
RFCOMPONENTS.COM.AU

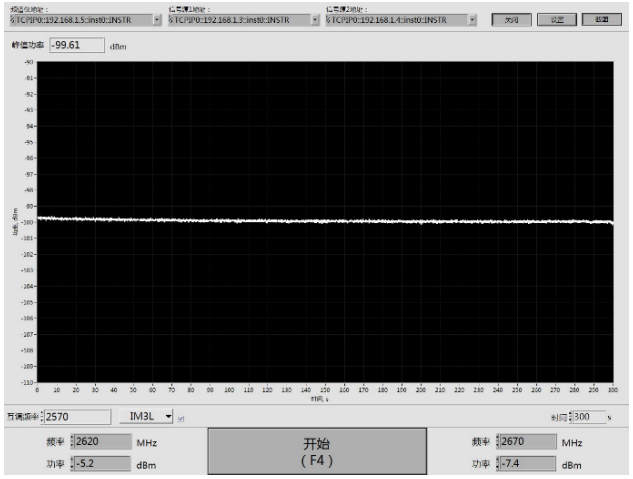
Features

- ✓ Fix PIM with 100 dBm
- ✓ High Isolation, low Insertion loss
- ✓ Other Frequency bands and custom packages designs available on request









RF Components

7 Band Low PIM Combiner Example

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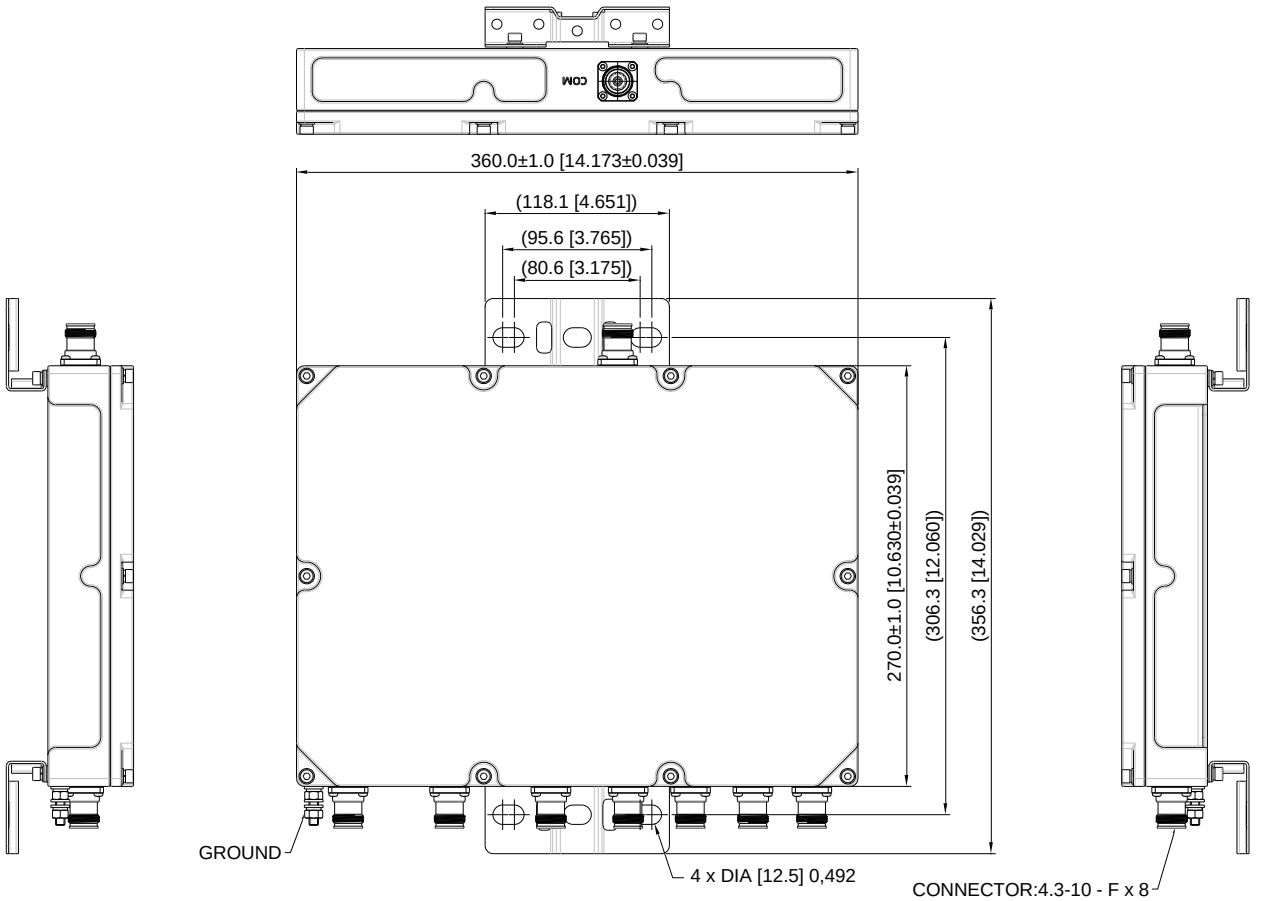

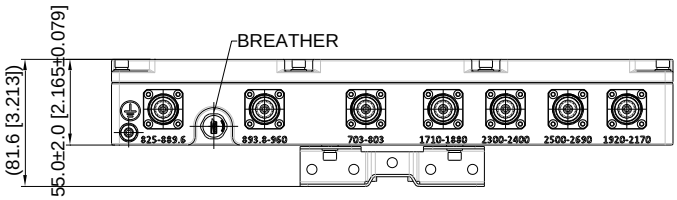

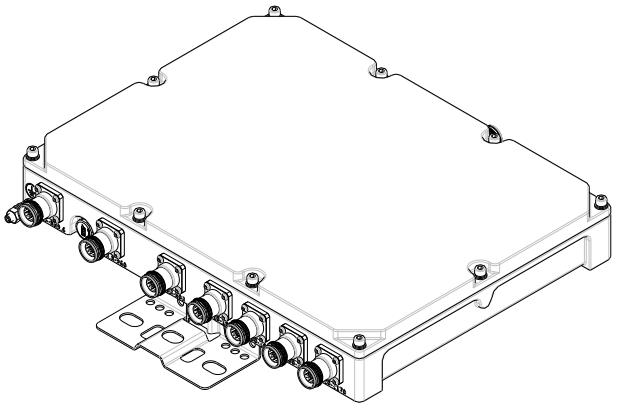

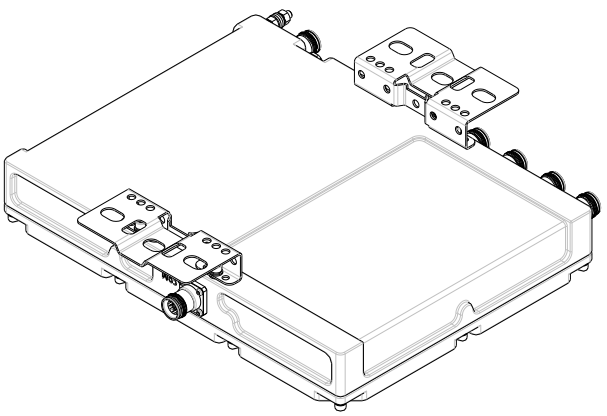

RF Components
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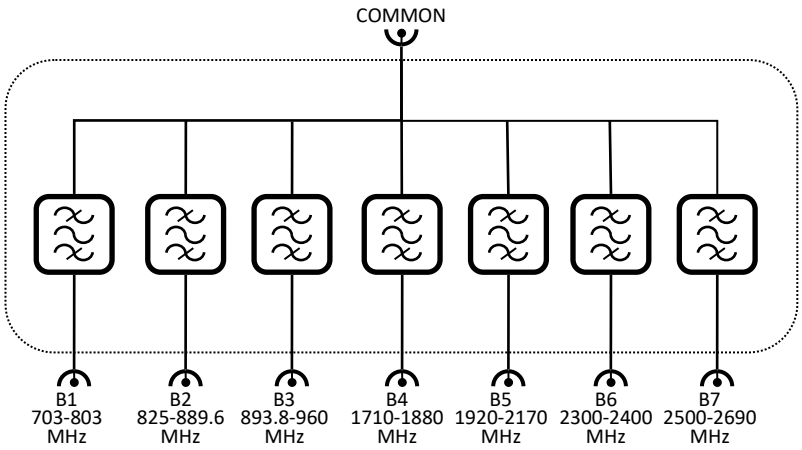
7 Band Low PIM Combiner Example



ELECTRICAL SPECIFICATION

B1 to COM port

Frequency Band	703-803MHz
Insertion Loss	0.8 dB max
Rejection@825-960MHz	50 dB min
Rejection@1710-2690 MHz	50 dB min

B2 to COM port

Frequency Band	825-889.6MHz
Insertion Loss	1.6 dB max
Rejection@703-803MHz	50 dB min
Rejection@893.8-960MHz	50 dB min
Rejection@1710-2690 MHz	50 dB min

B3 to COM port

Frequency Band	893.8-960MHz
Insertion Loss	2.3 dB max
Rejection@703-803MHz	50 dB min
Rejection@825-889.6MHz	70 dB min
Rejection@1710-2690 MHz	50 dB min

B4 to COM port

Frequency Band	1710-1880 MHz
Insertion Loss	0.8 dB max
Rejection@703-960MHz	50 dB min
Rejection@1920-2170MHz	50 dB min
Rejection@2300-2690MHz	50 dB min

B5 to COM port

Frequency Band	1920-2170 MHz

7 Band Low PIM Combiner Example

Insertion Loss	0.8 dB max
Rejection@703-960MHz	50 dB min
Rejection@1710-1880 MHz	50 dB min
Rejection@2300-2690MHz	5

B6 to COM port

Frequency Band	2300-2400MHz
Insertion Loss	1.3 dB max
Rejection@703-960MHz	50 dB min
Rejection@1710-2170 MHz	50 dB min
Rejection@2500-2690MHz	5
Rejection@2170-2295MHz	18 dB min
Rejection@2405-2500MHz	18 dB min

B7 to COM port

Frequency Band	2500-2690 MHz
Insertion Loss	0.8 dB max
Rejection@703-960MHz	50 dB min
Rejection@1710-2170MHz	50 dB min
Rejection@2300-2400MHz	50 dB min

Return Loss for all ports	20 dB typ.,16 dB min
Isolation between ports	50 dB min
Input power per port	200W CW max
IMD in RX band, COM port (2 CW tones +43 dBm each)	158dBc Typ., 155dBc min

DC/AISG TRANSPARENCY

All Port DC impedance	By pass(3A max) with Preconfigured

MECHANICAL SPECIFICATION

RF Connectors	4.3-10 female for all ports
RF Connectors Configuration	In line
Weight	10 Kg max
Dimensions without connectors and mounting brackets	360*270*55 mm typ.
Outside finish	Grey powder coating, RAL9002
Product Configuration	Single unit
Mounting option	Poles with clamps included for Φ35-125mm or walls
Mounting orientation	Any
Ground screw	M6

7 Band Low PIM Combiner Example

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PACKAGING SPECIFICATION

Applicable standard	NEBS GR-63-CORE

ENVIRONMENTAL SPECIFICATI

Operational Temperature Range	-20 to +60° C
IP Class	IP67 for outdoor
Lightning protection all ports	EC 61000-4-5; 8kA, 8/20 s
EMC / EMI	NEBS GR-1089-CORE and EN 55022
Safety	EN 60950
Corrosion resistance	14 days salt fog according to IEC 60068 2-11 Test Ka

DC/AISG Preconfigured

01- No DC/AISG By-pass
02- DC/AISG By-pass@Band1
03- DC/AISG By-pass@Band2
04- DC/AISG By-pass@Band3
05- DC/AISG By-pass@Band4
06- DC/AISG By-pass@Band5
07- DC/AISG By-pass@Band6
08- DC/AISG By-pass@Band7
10- Full DC/AISG By-pass