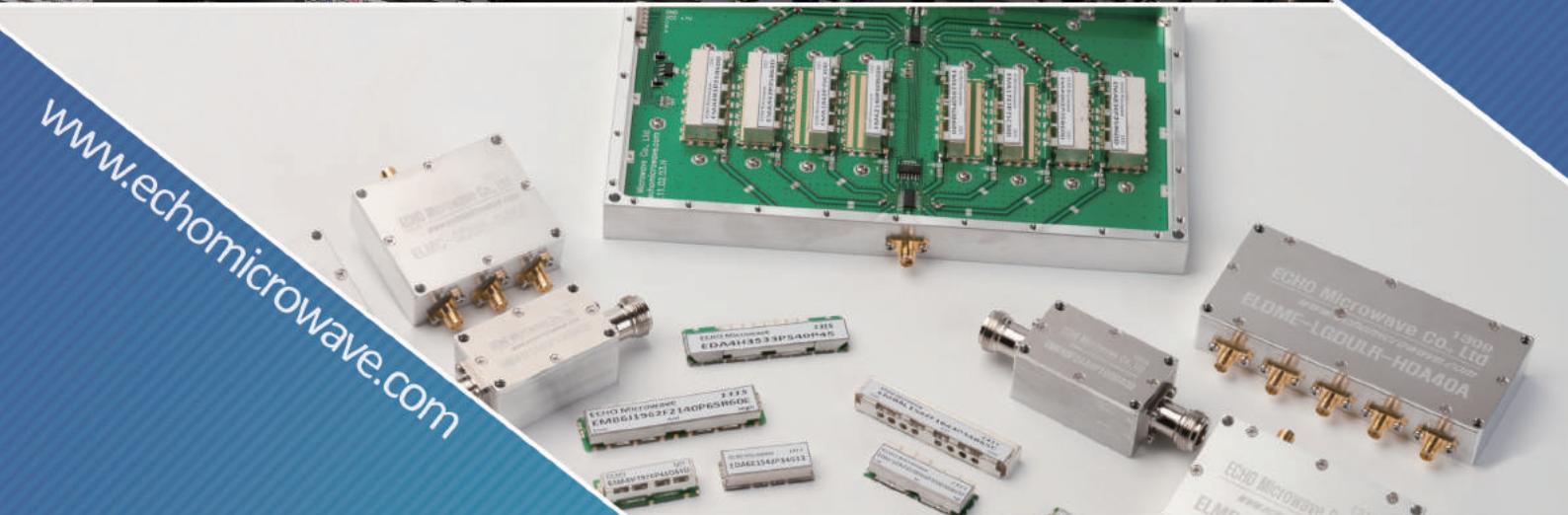




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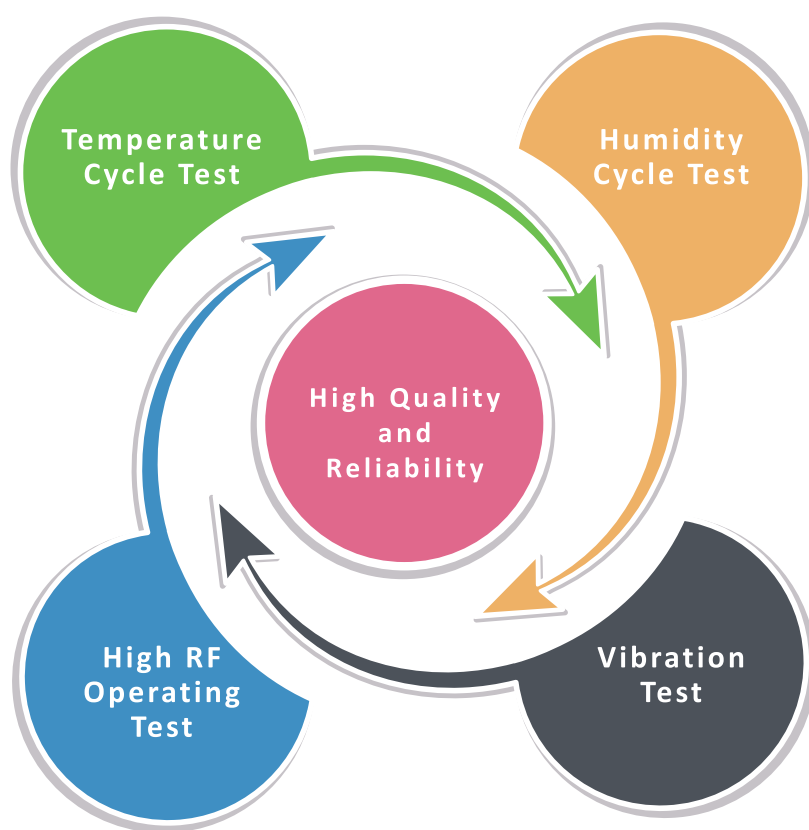
PRODUCT CATALOG

RF & Microwave Filtering Solution

Content

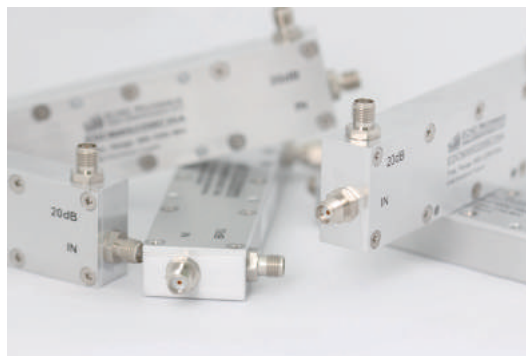
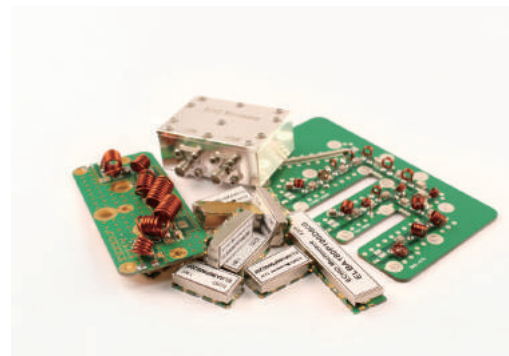
0 2 Content

- 0 4 Ceramic Filter, Duplexer and Multiplexer
- 0 8 L/C Filter, Diplexer and Multiplexer
- 1 0 Cavity Filter, Duplexer and Multiplexer
- 1 4 Cavity Dual-band Combiners
- 1 6 Power Divider and Combiner, Directional Coupler
- 1 8 Attenuators and Terminators



Company Overview

ECHO Microwave offers a specialized design, development and manufacturing capability for RF passive components. ECHO Microwave stands apart from other suppliers, in that we work closely with the engineering teams of customers where required, to provide customized solutions for meeting individual specifications, or manufacturing needs. Our communications solutions span multiple technologies for applications including radio communications, telemetry, mobile radio base stations and much more, including for both commercial and military operations. Our high performance, low cost filters, duplexers and multiplexers are offered in a wide range of topologies, including lumped element, TE mode, cavity and ceramic designs. We specialize in the manufacture of power dividers/combiners, directional couplers and much more.



Quality Assurance

ECHO Microwave is committed to

- Customer loyalty and satisfaction
- Product quality, delivery and service
- Continuous improvement of the quality assurance system
- Teamwork and standard of excellence

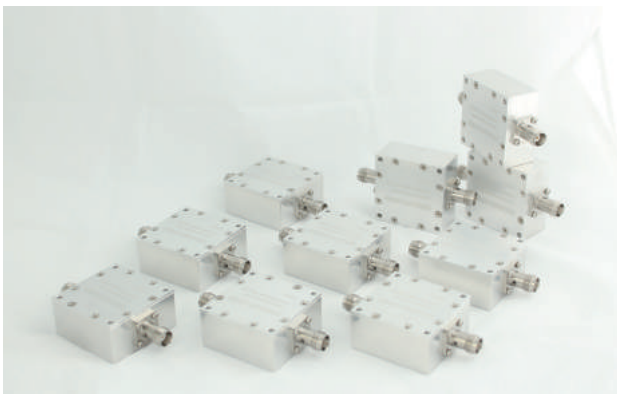
Manufacturing Certificates

- ISO 9001:2008
- ISO 14001:2004
- OHSAS 18001:2007

Summary

ECHO Microwave

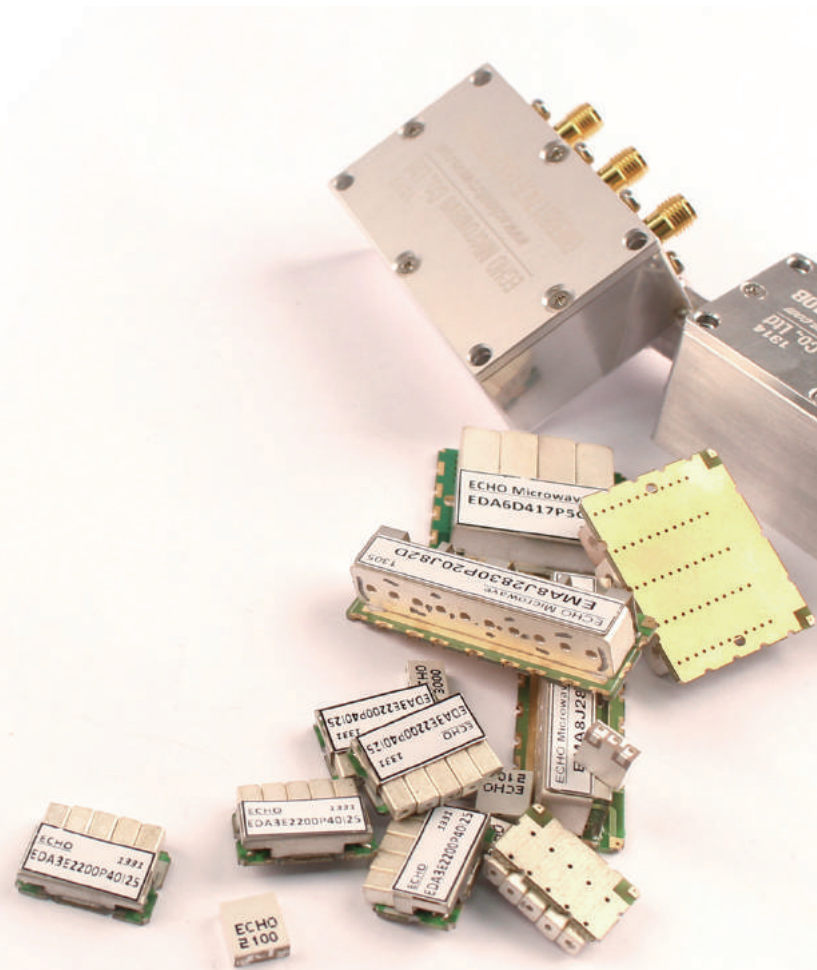
ECHO Microwave provides ceramic filters, duplexers and multiplexers from **100MHz to 12GHz**. These are suitable for both commercial (e.g. TETRA, LTE, GSM, DCS, UMTS, GPS) and military applications (e.g. S-band, C-band systems). ECHO's ceramic filter products provide a compromise between cavity and lumped element designs, by offering high performance in a small size and at low cost. The high quality factor, "Q", of our devices ensures low insertion loss and high temperature stability.



All ceramic devices can be customized for specialized mounting configurations and input/output connector types and we offer both leaded and surface-mount manufacture. High power products are specified up to 20W. Performance and reliability are our top priorities. ECHO Microwave's design and manufacturing processes are subject to rigorous quality assurance procedures, which differentiate our products from those of our competitors. All of our ceramic devices come with a 2-year guarantee and comply with RoHS.

Feature

- Frequency Range from **100MHz to 12GHz**
- Discrete, Mono-block and Connectorized Design available
- BPF/ BRF/ DPX/ MUX up to 6 bands
- Excellent Temperature Stability (-40°C to +80°C)
- Suitable for Commercial and Military Applications
- Cost Effective and Power Handling up to 20W
- Customized Design and Pin to Pin-Compatibility available



Ceramic Bandpass Filter

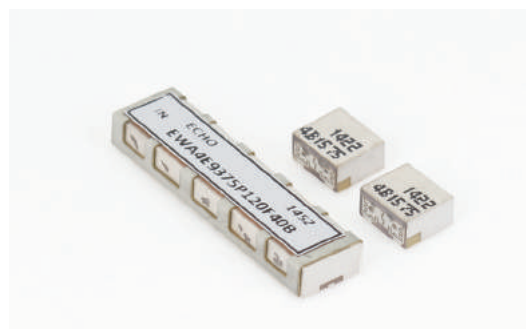
No.	Part Number	Frequency (MHz)	I.L in BW (dB, MAX.)	Return Loss (dB, MIN.)	Rejection (dB, MIN.)	Size (mm)
1	EDEA8D153P4E20B	151~155	2.5	15.0	20 @ 146MHz 20 @ 160MHz	65.0x85.0x25.0
2	EDEA6F227P25D40A	215 ~ 240	2.0	16.0	40 @ DC ~ 200MHz 40 @ 260 ~ 500MHz	65.0x70.0x20.0
3	EMA15F382P5F15D	380~385	3.0	12.0	40 @ 50~230 MHz 15 @ 390~395 MHz 40 @ 876~2170 MHz	50.0x30.0x16.3
4	EMA15D392P5F15D	390~395	3.0	12.0	40 @ 50~230 MHz 15 @ 380~385 MHz 40 @ 876~2170 MHz	30.0x30.0x16.4
5	EMA8J707P18F25B	698~716	3.0	15.0	25 @ 728 MHz	40.5x15.0x8.2
6	EMA15J725P45E60D	703 ~ 748	2.5	15.0	60 @ 758 ~ 803MHz	70.0x24.0x17.0
7	EMA6H806P30I40D	791~821	4.5	15.0	40 @ DC ~ 771 MHz 40 @ 832 ~ 862 MHz	36.0x17.0x7.0
8	EDA3D806P30F50L	791~821	3.0	14.0	40 @ DC ~ 536 MHz 50 @ 990 MHz 40 @ 1706~ 3000 MHz 50 @1159~1189 MHz	16.0x16.0x5.0
9	EDA3D942P35F50L	925~960	3.0	14.0	40 @ DC~672.5MHz 50 @ 1127MHz 40 @ 1212.5~3000MHz	16.0x16.0x5.0
10	EMA8J942P35F35D	925~960	3.5	15.0	35 @ 880~915 MHz 25 @ 990~1300 MHz	42.0x17.0x8.8
11	EMA4C1747P75D25B	1710~1785	2.0	12.0	35 @ 1464~1539 MHz 35 @ 1615 MHz 25 @ 1880 MHz 35 @ 1956~2031 MHz	8.69x6.3x3.87
12	EDA3E1842P75F50	1805~1880	3.0	14.0	50 @ 1436~1511 MHz 40 @DC~1572.5MHz 50 @1658 MHz 40 @ 2112~3000MHz	16.0x16.0x5.0
13	EMA10F1950P60C40D	1920~1980	1.5	15.0	40 @ 1805~1880 MHz 40 @ 2110~2170 MHz	35.0x15.0x12.0
14	EMA10D2535P70B20D	2500~2570	1.0	15.0	10 @ DC~2400 MHz 20 @ 2620~2690MHz 10 @ 2690~4000MHz	25.0x15.0x12.0
15	EMA6E2655P70E30D	2620~2690	2.5	14.0	30 @ 2450~2570 MHz 30 @ 2750~3000MHz	20.3x11.0x7.5



16	EDA4E8000P200F50	7900~8100	3.0	14.0	50 @ 11000 MHz	22.0x15.0x5.5
17	EDA4E9600P100G60	9550~9650	3.5	14.0	60 @ 8950MHz 60 @ 11300MHz	22.0x15.0x5.5
18	EDA4E11200P150J60	11125~11275	5.0	12.0	60 @ 9500MHz	22.0x15.0x5.5

75 Ohm Ceramic Rejection Filter

No.	Part Number	Notch BW (MHz)	Rejection (dB, MIN.)	I.L in PW (dB, MAX.)	Return Loss (dB, MIN.)	Size (mm)
1	EDRA8E791F862D12	826.5 (791~862)	12 @791MHz 30@793~821MHz 15@832~862MHz	1.5@470~778MHz 2.5@778~786MHz	10 @ 470~790MHz	45.0x25.0x11.0
2	EDRA12E791F862D15	826.5 (791~862)	15 @791MHz 30@793~821MHz 15@832~862MHz	1.5@470~778MHz 2.0@778~786MHz	10 @ 470~790MHz	65.0x25.0x15.0
3	EDERA12E791F862D15F	826.5 (791~862)	15 @791MHz 30@793~821MHz 15@832~862MHz	1.5@470~778MHz 2.0@778~786MHz	10 @ 470~790MHz	F-Type Con. 85.0x70.0x25.0



Ceramic Duplexers

No.	Part Number	Frequency (MHz)	I.L in BW (dB, MAX.)	Return Loss (dB, MIN.)	Rejection (dB, MIN.)	Size (mm)
1	EDEB6L232F274P15F28G20D40E	225~240	2.0	15.0	40 @ DC~200MHz 40 @ 260~500MHz	TNC(Female) 100.0x60.0x25.0
		260~288	2.0	15.0	40 @ DC ~ 240MHz 40 @ 320 ~ 500MHz	
2	EMB15L382F392P5G5F55D	380~385	3.0	15.0	55@390~395MHz	80.0x22.5x16.3
		390~395	3.0	15.0	55@380~385MHz	
3	EMB8J707F737P18G12F40D	698~716	3.0	15.0	40@728~746MHz 50@824~960MHz	42.0x20.0x9.5
		728~746	3.0	15.0	40@698~716MHz 50@824~960MHz	
4	EMB15L725F780P45G10F50D	703~748	3.0	15.0	50@758~803MHz	80.0x22.5x16.3
		758~803	3.0	15.0	50@703~748MHz	
5	EMB8J836F881P25G20E55D	824~849	2.2	15.0	55@869~894MHz	42.0x17.0x8.8
		869~894	2.2	15.0	55@824~849MHz	
6	EMB6J897F942P35G10H50D	880~915	4.0	15.0	50@925~960MHz	42.0x17.0x8.8
		925~960	4.0	15.0	50@880~915MHz	
7	EDB6F1232F1568P140F90G221B15D	1162~1302	0.6	15.0	15@DC~1015MHz 15@1450~2500MHz	38.36x14.73x7.37
		1523~1613	0.6	15.0	15@DC~1370MHz 15@1765~2500MHz	
8	EDEB4M1449F2545P1502F290G200D50BAR	698~2200	1.5	15.0	50@2400~2690MHz	ANT-N, L/H-SMA 85.0x65.0x22.0
		2400~2690	2.0	15.0	50@698~2200MHz	
9	EMB10L1747F1842P75G20F50D	1710~1785	2.8	15.0	50@1805~1880MHz	65.0x15.0x11.2
		1805~1880	2.8	15.0	50@1710~1785MHz	
10	EMB10L1795F2045P170R250G40D40D	1710~1880	2.0	14.0	40@1920~2170MHz	65.0x15.0x11.2
		1920~2170	2.0	14.0	40@1710~1880MHz	
11	EMB10L1882F1962P65G15G50D	1850~1915	3.5	14.0	50@1930~1995MHz	65.0x15.0x11.2
		1930~1995	3.5	14.0	50@1850~1915MHz	
12	EMB8J1950F2140P60G130B55D	1920~1980	1.0	15.0	55@2110~2170MHz	42.0x17.0x8.8
		2110~2170	1.0	15.0	55@1920~1980MHz	
13	EMB8J2535F2655P70G50D55D	2500~2570	2.0	15.0	55@2620~2690MHz	42.0x17.0x8.8
		2620~2690	2.0	15.0	55@2500~2570MHz	
14	EMB4J3647F3747P25G75F60B	3635~3660	2.8	15.0	60@3735~3760MHz	26.6x7.2x4.4
		3735~3760	2.8	15.0	60@3635~3660MHz	



Ceramic Multiplexers

No.	Part Number	Frequency (MHz)	I.L in BW (dB, MAX.)	Return Loss (dB, MIN.)	Rejection (dB, MIN.)	Size (mm)
1	EDEC6R232F274F335P15F28F30 G20F32D40E (3-plexer)	225~240	2.0	15.0	40 @ DC~200MHz 40 @ 260~500MHz	TNC(Female) 150.0x75.0x25.0
		260~288	2.0	15.0	40 @ DC ~ 240MHz 40 @ 320 ~ 500MHz	
		320~350	2.0	15.0	40 @ DC ~ 300MHz 40 @ 380 ~ 500MHz	
2	EMC707R742F781GH45D (3-plexer)	698~716	3.5	15.0	45@728~757MHz 50@776~787MHz	90.0x34.0x10.0
		728~757	4.0	15.0	50@698~716MHz 50@776~787MHz	
		776~787	3.5	15.0	50@698~716MHz 50@728~757MHz	
3	EMC828F897F1747E30D (3-plexer)	807~849	2.5	15.0	30@880~915MHz 30@1710~1785MHz	70.0x30.0x9.5
		880~915	2.5	15.0	30@807~849MHz 30@1710~1785MHz	
		1710~1785	2.5	15.0	30@DC~915MHz	
4	ELMED-836F1732F1880F2535F30AQ (4-plexer)	824~849	3.0	15.0	30@ other bands	SMA(Female) 78.0x50.0x20.0
		1710~1755	3.0	15.0		
		1850~1910	3.0	15.0		
		2500~2570	3.0	15.0		
5	EMDME-LCU2LF-F40A(5-plexer)	728~757	3.0	14.0	40@ other bands	SMA(Female) 110.0x50.0x20.0
		869~894	3.0	14.0		
		1930~1990	3.0	14.0		
		2110~2155	3.0	14.0		
		2620~2690	3.0	14.0		
6	EME806F897F1747F1950F2535E40D (5-plexer)	791~821	2.0	14.0	40@ other bands	95.0x40.0x9.5
		880~915	2.0	14.0		
		1710~1785	2.0	14.0		
		1920~1980	2.0	14.0		
		2500~2570	2.5	14.0		
7	EMMF-L3CAPLR-F40A (6-plexer)	698~716	3.0	14.0	40@ other bands	SMA(Female) 130.0x50.0x20.0
		776~798	3.0	14.0		
		814~849	3.0	14.0		
		1710~1755	3.0	14.0		
		1850~1915	3.0	14.0		
		2500~2570	3.0	14.0		



Summary

ECHO Microwave's LC Filters (Lumped Element) are available over the frequency range of **1MHz to 10GHz**. These products offer small size and high performance. As per our other filter devices, our LC designs can be individually customized to meet specialized requirements and input/output connector configurations, in addition to standard packages.

L/C Filters

No.	Part Number	Frequency (MHz)	I.L in BW (dB, MAX.)	Return Loss (dB, MIN.)	Rejection (dB, MIN.)	Size (mm)
1	ELBA60P9F30G	55.5~64.5	3.0	15.0	60 @ DC~35MHz 30 @ 48 and 72MHz 60 @ 85~150MHz	G-Package (38.1x11.7x8.0)
2	ELEBA140P120C40F	80~200	1.5	14.0	50 @ DC ~ 30MHz 40 @ 250 ~ 600MHz	BNC(Female) 60.0x40.0x24.0
3	ELEBA5475P1150D20P	4900~6050	2.0	15.0	60 @ 700~3000 MHz 40 @ 3000~4000 MHz	PIN Type 61.0x14.0x7.5

L/C Diplexers

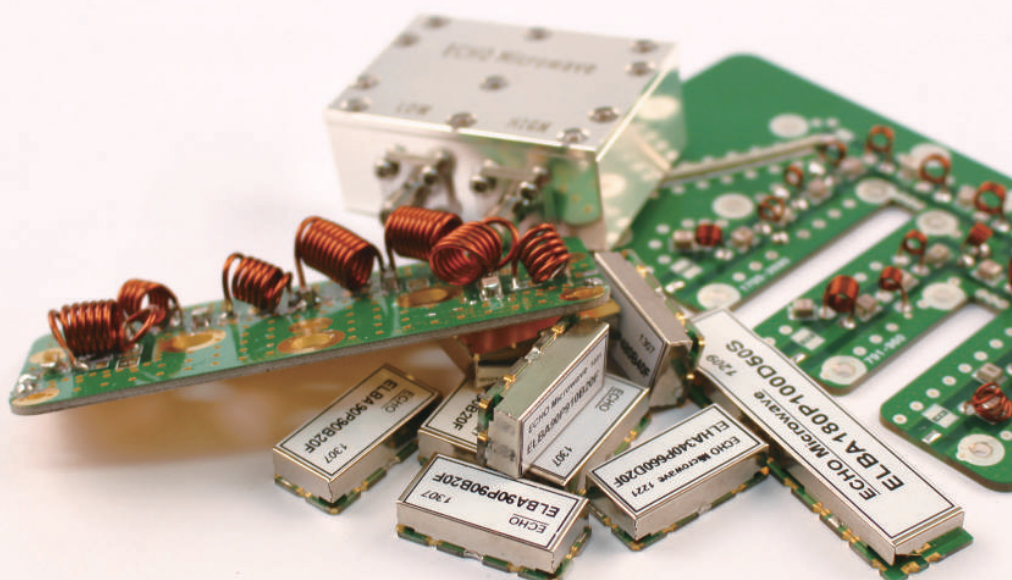
No.	Part Number	Frequency (MHz)	I.L in BW (dB, MAX.)	Return Loss (dB, MIN.)	Rejection (dB, MIN.)	Size (mm)
1	ELEB108F174G66B60AQ	87~108	1.0	15.0	60@ 174~230MHz	SMA(Female)
		174~230	1.0	15.0	60 @87 ~ 108MHz	100.0x50.0x25.0
2	ELEBB500F800G300B60BQM	50~500	1.0	15.0	60@800~2600MHz	N(Female)
		800~2600	1.0	15.0	60@50~500MHz	100.0x50.0x25.0
3	ELEB1000F1600G600B60BQ	700~1000	1.0	14.0	60@1600~2800MHz	N(Female)
		1600~2800	1.0	14.0	60@700~1000MHz	100.0x50.0x25.0

L/C Triplexers

No.	Part Number	Frequency (MHz)	I.L in BW (dB, MAX.)	Return Loss (dB, MIN.)	Rejection (dB, MIN.)	Size (mm)
1	ELEBC108F174F380B60AQ	87~108	1.0	15.0	60@ Other bands	SMA(Female) 120.0x57.5x25.0
		174~230	1.0	15.0		
		380~470	1.0	15.0		
2	ELDC860F1710F2400D50A	860~960	1.0	15.0	50@ Other bands	SMA(Female) 70.0x50.0x15.0

Feature

- Frequency Range from **1MHz to 10GHz**
- **Low PIMD** and Custom Design Available
- **BPF, LPF, HPF, BRF, DPX** and **MUX** Available
- Power Handling up to 200W and High-Q Element
- Excellent Temperature Stability (-40℃ to +80℃)
- Small Package and Cost Effective Solutions
- Broadcasting, Public Safety, Commercial and Military Applications



■ LC Diplexer with LOW PIMD (ECHO'S P/N: ELEBB960F1710G750B40AQM)

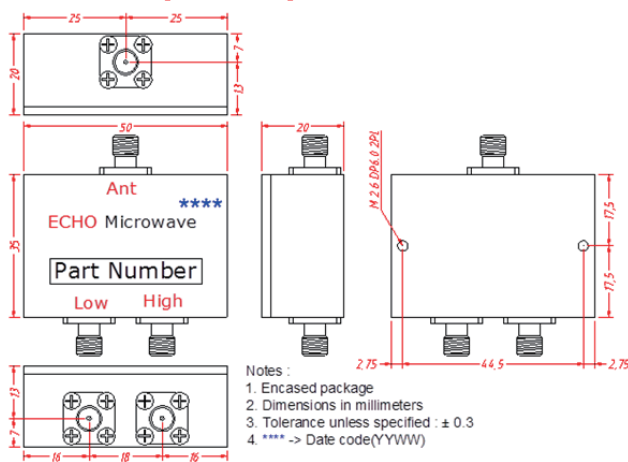
ECHO Microwave offers High-Q L/C Diplexer as a special design for Low PIMD. The silver coating is applied for all materials to achieve Low PIMD values. Plus, we use high-Q capacitors and thickness coils to guarantee high input power and better electrical performance. The application for this DPX is to integrate various frequencies into your antenna system with minimizing PIMD. Our filter engineers are experts to achieve Low PIMD through constant R&D activities. It has a compact design and cost-effective solution. It complies with RoHS.



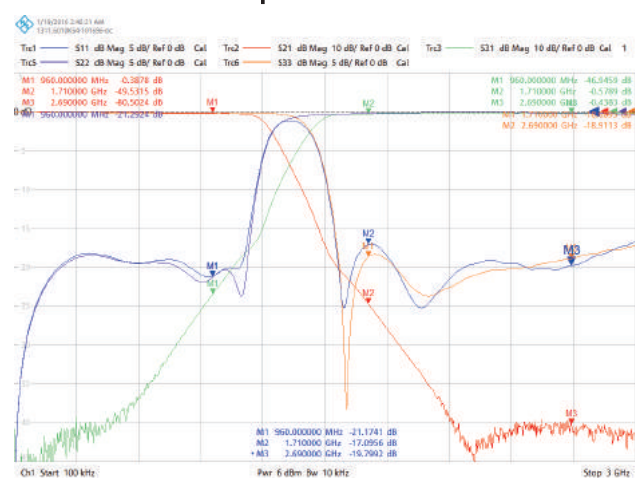
■ Electrical Specification

No.	Parameter	Unit	Specification	
			Low	High
1	Cut off Frequency	MHz	960MHz	1710MHz
2	Bandwidth	MHz	DC ~ 960	1710 ~ 2690
3	Insertion Loss in BW	dB	1.0 max.	1.0 max.
4	Ripple in BW	dB	1.0 max.	1.0 max.
5	Return Loss in BW	dB	15.0 min.	15.0 min.
6	Attenuation	dB	40 min. @ 1710 ~ 2690MHz	40 min. @ DC ~ 960MHz
7	PIMD	dBc	135 min. @ 30dBm * 2	
8	Input Power	Watt	10 max.	
9	IN/OUT Impedance	Ω	50	
10	Operating Temp. Range	$^{\circ}\text{C}$	-30 ~ +65	
11	In / Out Port Connector	-	SMA(Female) – All Port	
12	Finish	-	White Chromate	

■ Dimension [Unit: mm]



■ Performance Graph



Summary

ECHO Microwave's cavity filters, duplexers and multiplexers are available over the frequency range of **100MHz to 25GHz**. These components provide low insertion loss, steep skirt selectivity and narrower bandwidths than ceramic filter solutions.

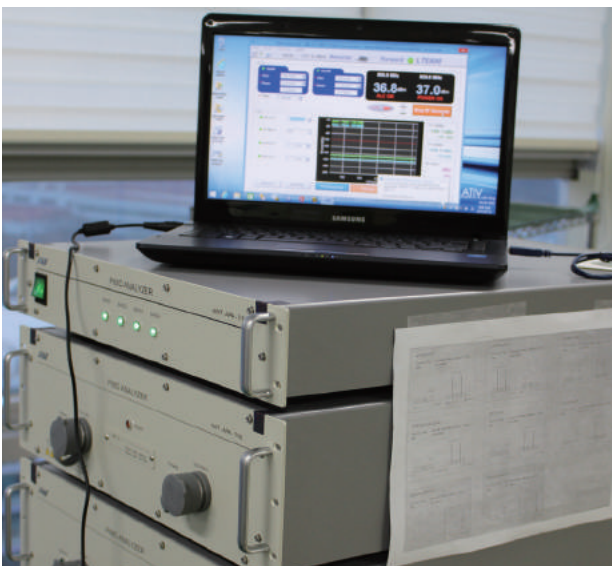
ECHO Microwave provides cavity devices manufactured to customer specifications including for **low passive intermodulation**, which is important for TETRA, LTE700, EGSM, DCS, UMTS and LTE2600 systems. The high performance of our cavity filter products is driven by our careful selection of materials and specialized design topologies and sizing. High "Q" DR-Puck resonators can be implemented to achieve both low insertion loss and high band-edge rejection. Our products are suitable for fixed and mobile applications in the VHF, TETRA, LTE, GSM, DCS, UMTS and GPS bands and for both commercial and military satellite networks in the S,C,X and Ku bands. ECHO Microwave offers a custom design capability with up to 12 frequency bands being used for demanding customer requirements.

ECHO Microwave



Feature

- Frequency Range from **100MHz to 25GHz**
- PCB Type and High "Q" DR-Puck Designs available
- BPF, BRF, LPF, Duplexer, Diplexer and Multiplexer in up to 12 bands
- Excellent Temperature Stability (-40°C to +80°C)
- Suitable for Commercial and Military Applications
- Cost Effective Solutions and Custom Design Available
- Power Handling up to 1KW
- **LOW PIMD Solution**



Cavity Bandpass Filter

No.	Part Number	Frequency (MHz)	I.L in BW (dB, MAX.)	Return Loss (dB, MIN.)	Rejection (dB, MIN.)	Connector Type
1	ECA269P11B20A	264~275	1.0	15.0	40 @ 190~210MHz 20 @ 290~295MHz 40 @ 380~1400MHz	SMA(Female)
2	ECA392P5D20A	390~395	2.0	20.0	20 @ 370MHz 40 @ 410MHz	SMA(Female)
3	ECA707P18D100B	698~716	2.0	16.0	100 @ 728~2690 MHz	N(Female)
4	ECA742P29C100B	728~757	1.5	16.0	100 @ 698~716 MHz 40 @ 776~2570 MHz	N(Female)
5	ECA781P11C55B	776~787	1.5	18.0	55 @ 698~716 MHz 55 @ 728~757 MHz	N(Female)
6	ECA806P30C100B	791~821	1.5	16.0	100 @ 832 ~ 2690MHz	N(Female)
7	ECA836P25B65A	824~849	1.0	18.0	65 @ 869 ~ 894 MHz	SMA(Female)
8	ECA897P35B50B	880~915	1.0	20.0	50 @ 925 ~ 960 MHz	N(Female)
9	ECA947P25C62A	935~960	1.2	18.0	62 @ 500~893MHz 62 @ 992~2000MHz	SMA(Female)
10	ECA1575P50B60A	1550~1600	1.0	15.0	60 @ 1640 MHz	SMA(Female)
11	ECA1732P45C55B	1710~1755	1.5	18.0	55 @ 2110~2155 MHz	N(Female)
12	ECA1747P75B65A	1710~1785	1.0	18.0	65 @ 1805~2000 MHz 65 @ 824~966 MHz	SMA(Female)
13	ECA1842P75B45A	1805~1880	1.0	20.0	45 @ 1710~1785 MHz	SMA(Female)
14	ECA1950P60B60B	1920~1980	1.0	15.0	60 @ DC~1900 MHz 60 @ 2000~3000MHz	N(Female)
15	ECA2140P60B60A	2110~2170	1.0	20.0	60 @ 1880 MHz	SMA(Female)
16	ECA2350P100C40A	2300~2400	1.5	18.0	40 @ 2250 MHz 40 @ 2540MHz	SMA(Female)
17	ECA2535P70B60A	2500~2570	0.9	20.0	60 @ DC~2400 MHz 60 @ 2620~5000MHz	N(Female)
18	ECA2595P50C40A	2570~2620	1.5	18.0	40 @ 2550 MHz 40 @ 2640MHz	SMA(Female)
19	ECDA2655P70B25DM	2620~2690	0.6	18.0	25 @ DC~2500 MHz 45 @ 2500~2570MHz 25 @ 5180~5440MHz	TX : MCX(F), ANT: QMA(F)



20	ECA8250P600B30A	7950~8550	1.0	20.0	80 @ DC~6350 MHz 30 @ 6500~7000 MHz 30 @ 9000~10000 MHz 80 @ 10150~13400 MHz	SMA(Female)
21	ECA1090P500D55AMF	10650~10500	2.0	18.0	55 @ 9600~10500MHz	SMA(male) SMA(Female)
22	ECA18000P2000C30A	17000~19000	1.5	10.0	30 @ 12000MHz 30 @ 28000MHz	SMA(Female)



■ Cavity Rejection Filter

No.	Part Number	Notch BW (MHz)	Rejection (dB, MIN.)	I.L in PW (dB, MAX.)	Return Loss (dB, MIN.)	Connector Type
1	ECRA553S596D60AMF	575 (553.5~596.5)	60	2.0@470~778MHz	12	SMA(Male) SMA(Female)
2	ECRA791F861B15F	826 (791~861)	20 @ 791MHz 30 @ 821MHz 30 @ 832MHz 15 @ 861MHz	1.0@DC~782MHz	10	F Type (Female)
3	ECRA851F860F30A	855.5 (851~860)	30	3.0@824~849MHz 3.0@869~894MHz 2.0@698~824MHz 2.0@894~2200MHz	14	SMA(Female)
4	ECRA1575R2B70B	1575.42 (1574.42~1576.42)	70	1.0@DC~1560MHz 1.0@1591~3000MHz	13	N(Female)
5	ECRA1805F1880C52A	1842.5 (1805~1880)	52	1.4@DC~1785MHz 1.4@1900~3000MHz 2.1@3000~3600MHz	10	SMA(Female)
6	ECRA1920F1980C52A	1950 (1920~1980)	52	1.4@DC~1900MHz 1.4@2000~3000MHz 2.1@3000~3600MHz	12	SMA(Female)
7	ECRA2110C2170B25BFMP	2140 (2110~2170)	25	1.0@1400~2030MHz 1.0@2250~2700MHz	12	N(Male) N(Female)
8	ECRA2462S2482D40A	2472 (2462~2482)	40	1.75@DC~2452MHz 1.75@2492~6000MHz	14	SMA(Female)
9	ECRA5170S5190E40A	5180 (5170~5190)	40	2.5@DC~5152MHz 2.5@5208~8000MHz	12	SMA(Female)
10	ECRA5690S5710E40A	5700 (5690~5710)	40	2.5@DC~5672MHz 2.5@5728~8000MHz	12	SMA(Female)

■ Cavity Duplexers

No.	Part Number	Frequency (MHz)	I.L in BW (dB, MAX.)	Return Loss (dB, MIN.)	Rejection (dB, MIN.)	Connector Type
1	ECB140F148P1G8D75B	139.5~140.5	1.8	20.0	75@ 148~149MHz	N(Female)
		148~149	1.8	20.0	75 @139.5~140.5MHz	
2	ECB382R392P5G5D65A	380~385	2.0	20.0	65@390~395MHz	SMA(Female)
		390~395	2.0	20.0	65@380~385MHz	
3	ECB725R780P45G10B90BPR (IP67, Outdoor usage)	703~748	1.0	18.0	90@758~803MHz	N(Female)
		758~803	1.0	18.0	90@703~748MHz	
4	ECB806R847P30G11C65A	791~821	1.5	20.0	65@832~862MHz	SMA(Female)
		832~862	1.5	20.0	65@791~821MHz	
5	ECB836R881P25G20B90BPR (IP67, Outdoor usage)	824~849	1.0	18.0	90@869~894MHz	N(Female)
		869~894	1.0	18.0	90@824~849MHz	
6	ECB897R942P25G10C60A	880~915	1.2	20.0	60@925~960MHz	SMA(Female)
		925~960	1.2	20.0	60@880~915MHz	
7	ECB1575R1950P20R500G115B80B	1565~1585	1.0	18.0	80@1700~2200MHz	N(Female)
		1700~2200	1.0	18.0	80@1565~1585MHz	
8	ECB1747R1842P75G20C60A	1710~1785	1.4	20.0	60@1805~1880MHz	SMA(Female)
		1805~1880	1.4	20.0	60@1710~1785MHz	
9	ECB1882R1962P65G20B80B	1850~1915	1.2	20.0	80@1930~1995MHz	N(Female)
		1930~1995	1.2	20.0	80@1850~1915MHz	
10	ECB1950R2140P60G130B60A	1920~1980	1.0	20.0	60@2110~2170MHz	SMA(Female)
		2110~2170	1.0	20.0	60@1920~1980MHz	
11	ECB2310R2355P10G35B65A	2305~2315	1.0	18.0	65@2350~2360MHz	SMA(Female)
		2350~2360	1.0	18.0	65@2305~2315MHz	
12	ECB2535R2655P70G50C65A	2500~2570	1.5	20.0	65@2620~2690MHz	SMA(Female)
		2620~2690	1.5	20.0	65@2500~2570MHz	
13	ECB5725R5875P80G70D60A	5685~5765	2.0	15.0	60@5835~5915MHz	SMA(Female)
		5835~5915	2.0	15.0	60@5685~5765MHz	
14	ECB10290R10640P56D70A	10262~10318	2.0	18.0	70@10612~10668MHz	SMA(Female)
		10612~10668	2.0	18.0	70@10262~10318MHz	

■ Cavity Multiplexers

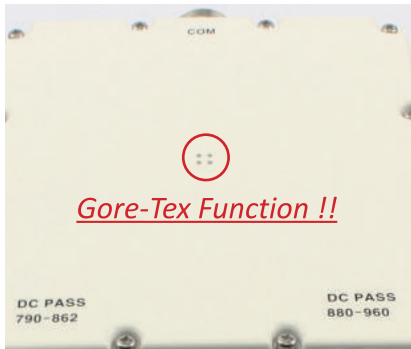
No.	Part Number	Frequency (MHz)	I.L in BW (dB, MAX.)	Return Loss (dB, MIN.)	Rejection (dB, MIN.)	Connector Type
1	ECC707R782R742P18R12R29D90A (3-plexer)	698~716	2.0	20.0	90 @ other bands	SMA(Female)
		776~788	2.0	20.0		
		728~757	1.5	20.0		
2	ELCE-V4T-C30A (5-plexer)	168~170	1.5	20.0	30 (Port to Port)	SMA(Female)
		380~400	1.5	20.0		
		410~430	1.5	20.0		
		450.6~455.6	1.5	20.0		
		461~468	1.5	20.0		
3	ECF-USL12L13L5L2L4L2600R-D50P2AK (6-plexer / 1 Port IN – 1 Port OUT)	698~716	2.0	16.0	50@728~757MHz 50@864~894MHz 50@1805~1880MHz 50@1930~1995MHz 50@2110~2155MHz 50@2620~2690MHz	SMA(Female)
		776~787				
		819~849				
		1850~1915				
		1710~1755				
		2500~2570				
4	ECK-USL12L13-14L5L2L4L2600-F80P3AK (11-plexer / 3ports)	698~716(UL)	2.0	14.0	80 Between UL and DL	SMA(Female)
		776~798(UL)				
		824~849(UL)				
		1710~1755(UL)				
		1850~1910(UL)				
		2500~2570(UL)				
		728~768(DL)	2.0	14.0		
		869~894(DL)				
		1930~1995(DL)				
		2110~2155(DL)				
2620~2690(DL)						



Summary

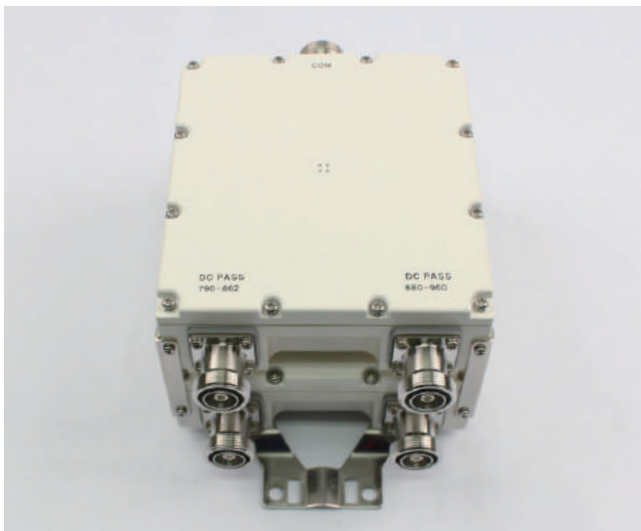
ECHO's Dual-Band Combiners are designed for combining different frequencies and it is used near the BTS or in a reciprocal function near the antenna. Our combiner solutions have **LOW PIMD** value and it has single or dual layer options.

ECHO Microwave



800 +900MHz (ECHO'S P/N: EHC862FD880A50CMPDA)

No.	Parameter	Unit	Specification	
			LOW Path (Port 1)	HIGH Path (Port 2)
1	Frequency Range	MHz	790~862	880~960
2	Insertion Loss in BW	dB	0.4 max.	0.4 max.
3	VSWR	-	1.25 max.	1.25 max.
4	Isolation Port1 $\leftrightarrow$ Port2	dB	50 min. @ 880~960MHz	50 min. @ 790~862MHz
5	Input Power	Watt	200 max.	
6	IN/OUT Impedance	Ω	50	
7	PIMD	dBc	-160 min. @ 2x20W (3 rd order)	
8	Operating Temp. Range	$^{\circ}\text{C}$	-40 ~ +60	
9	Connector	-	7/16 Female (Long neck)	
10	Application	-	Indoor or Outdoor (IP66)	
11	DC/AISG Transparency	-	By-pass (Port1 $\leftrightarrow$ Port3, Port2 $\leftrightarrow$ Port3)	
12	Lightning protection	-	3kA, 10/350us pulse	
13	Mounting	-	Wall mounting bracket	
14	Finish	-	Grey Epoxy Painting	
15	Dimensions	Filter	168.0×188.0×119.5	
		Included Brackets	168.0×280.0×129.5	
16	Approx Weight	Kg	7.5	



- Design for Co-siting system
- Low Passive Intermodulation (-160dBc min@43dBm /2tone)
- DC Pass /AISG Transparency Available
- Built in Lightning Protection
- Indoor or Outdoor usage
- Wall or Pole Mounting
- Single or Double layer options
- Gore-Tex Function

■ GSM1800 +UMTS2100 +LTE2600 (ECHO'S P/N: EHC1880ED1920MD2500A50CMPDA)

No.	Parameter	Unit	Specification		
			Port 1	Port 2	Port 3
1	Frequency Range	MHz	1710~1880	1920~2200	2500~2690
2	Insertion Loss in BW	dB	0.35 max.	0.35 max.	0.25 max.
3	VSWR	-	1.25 max.	1.25 max.	1.25 max.
4	Isolation Port to Port	dB	50 min.		
5	Input Power	Watt	300 max.		
6	IN/OUT Impedance	Ω	50		
7	PIMD	dBc	-160 min. @ 2x20W (3 rd order)		
8	Operating Temp. Range	°C	-40 ~ +60		
9	Connector	-	7/16 Female (Long neck)		
10	Application	-	Indoor or Outdoor (IP66)		
11	DC/AISG Transparency	-	By-pass (Port1←→Port4, Port2←→Port4, Port3←→Port4)		
12	Lightning protection	-	3kA, 10/350us pulse		
13	Mounting	-	Wall mounting bracket		
14	Finish	-	Grey Epoxy Painting		
15	Dimensions	Filter	188.0×168.0×103.5		
		Included Brackets	188.0×260.0×113.5		
16	Approx Weight	Kg	7.5		

■ Others

No	Part Number	Frequency (MHz)	I.L in BW (dB, MAX.)	V.S.W.R (MAX.)	Isolation P to P (dB, MIN.)	PIMD @ 2x20W (3 rd order)
1	EHC1880FS1920A50CMPDAK (Single Unit)	1710~1880	0.35	1.20	55	-160
		1920~2200	0.35	1.20	50	
2	EHC2180FS2400A50CMPDSAK (Single Unit)	1710~2180	0.20	1.25	55	-160
		2400~2700	0.20	1.25	50	
3	EHC960ES1710MS2490A50CMPDAK (Single Unit)	790~960	0.20	1.25	50	-160
		1710~2180	0.20	1.25	50	
		2490~2690	0.20	1.25	50	
4	EHC862FS880A50CMPDAK (Single Unit)	790~862	0.40	1.25	50	-160
		880~960	0.40	1.25	50	
5	EHC2180FS2400A50CMPDAK (Single Unit)	1710~2180	0.20	1.25	55	-160
		2400~2700	0.20	1.25	50	
6	EHC1880FD1920A50CMPDA (Double Unit)	1710~1880	0.35	1.20	55	-160
		1920~2200	0.35	1.20	50	
7	EHC1755C2110R1850A50CMPAK (Single Unit)	1710~1755	0.40	1.25	50	-155
		2110~2155	0.40	1.25	50	



Summary

ECHO Microwave manufactures Power divider/ Combiners and Directional Couplers that operate across our standard specified frequency range from **698MHz to 2700MHz**.

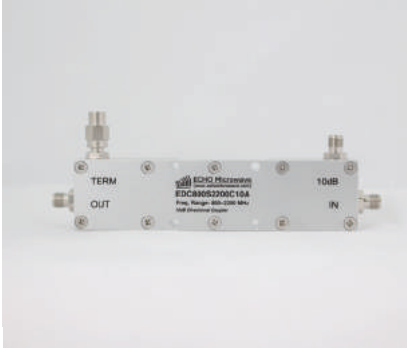
- 2Way through to 16way configuration
- Standard Products for 698~2700MHz Frequency range with optimized specifications
- Coupling value from 3dB to 30dB depending on customer's request.
- IP65 and IP67 waterproof available
- Cost-Effective solution and power handling up to 200W
- Custom Design available according to your specific needs.

Power Combiners and Dividers



No.	Part Number	Frequency (MHz)	I.L in BW (dB, MAX.)	Return Loss (dB, MIN.)	Isolation (dB, MIN.)	Input Power (W, MAX.)	No. of Ways	Connector Type
1	EPDD50S1000P1BB(Divider)	50~1000	7.5	18.0	18.0	1	4	N(F)
2	EPCB70S1000P1BB(Combiner)	70~1000	3.8	14.0	18.0	1(SUM)	2	N(F)
3	EPDB80S500P2AA(Divider)	80~500	3.8	18.0	18.0	2	2	SMA(F)
4	EPDE150S500P1AA(Divider)	150~500	8.8	18.0	18.0	1	10	SMA(F)
5	EPDB380S2700P1AA(Divider)	380~2700	3.8	20.0	20.0	1	2	SMA(F)
6	EPDB380S2700P10AA(Divider)	380~2700	3.8	20.0	20.0	10	2	SMA(F)
7	EPDB698S2700P1AA(Divider)	698~2700	3.5	20.0	20.0	1	2	SMA(F)
8	EPDC698S2700P1AA(Divider)	698~2700	5.8	18.0	20.0	1	3	SMA(F)
9	EPDD698S2700P1AA(Divider)	698~2700	7.0	18.0	20.0	1	4	SMA(F)
10	EPDF698S2700P1AA(Divider)	698~2700	9.1	17.0	18.0	1	6	SMA(F)
11	EPDD698S2700P10BB(Divider)	698~2700	7.0	19.0	20.0	1	4	N(F)
12	EPCB700S2700P1MBA(Combiner)	700~2700	3.5	18.0	20.0	1(SUM)	2	IN-SMA(F) OUT-N(F)
13	EPCH700S2700MBA(Combiner)	700~2700	11.0	17.0	17.0	1(SUM)	8	IN-SMA(F) OUT-N(F)
14	EPDB700S2200P1AA(Divider)	700~2200	3.5	20.0	20.0	1	2	SMA(F)
15	EPDC700S2200P1AA(Divider)	700~2200	5.7	20.0	20.0	1	3	SMA(F)
16	EPDD700S2200P1AA(Divider)	700~2200	6.8	20.0	20.0	1	4	SMA(F)
17	EPDE700S950P1AA(Divider)	700~950	8.8	17.0	18.0	1	5	SMA(F)
18	EPDJ700S950P1AA(Divider)	700~950	11.5	17.0	18.0	1	10	SMA(F)
19	EPCC1700S2200P1AA(Combiner)	1700~2200	5.2	20.0	20.0	1(SUM)	3	SMA(F)
20	EPDD4000S6000P1AA(Divider)	4000~6000	6.6	18.0	20.0	1	4	SMA(F)
21	EPDH4000S8000P1AA(Divider)	4000~8000	11.0	18.0	20.0	1	8	SMA(F)
22	EPDC5000S6000P1AA(Divider)	5000~6000	5.6	20.0	20.0	1	3	SMA(F)

Directional Coupler



No.	Part Number	Frequency (MHz)	Coupling Value (dB)	I.L in BW (dB, MAX.)	Return Loss (dB, MIN.)	Directivity (dB, MIN.)	Input Power (W, MAX.)	Connector Type
1	EDC380S800C30B	380~800	30±1.0	0.3	20.0	20.0	150	N(F)
2	EDC380S800C10B	380~800	10±1.0	0.8	20.0	20.0	150	N(F)
3	EDC380S800C6B	380~800	6±1.0	1.7	20.0	20.0	150	N(F)
4	EDC500S3000C20B	500~3000	20±1.5	0.5	18.0	20.0	100	N(F)
5	EDC500S3000C10B	500~3000	10±1.5	1.0	18.0	20.0	100	N(F)
6	EDC500S3000C6B	500~3000	6.0±1.5	2.0	18.0	20.0	100	N(F)
7	EDC600S2200C30A	600~2200	30±1.5	0.5	20.0	20.0	20	SMA(F)
8	EDC600S2200C20A	600~2200	20±1.5	0.5	20.0	20.0	20	SMA(F)
9	EDC600S2200C10A	600~2200	10±1.5	0.5	20.0	20.0	20	SMA(F)
10	EDC698S2700C30BMP(IP67)	698~2700	30±1.0	0.2	20.0	20.0	200	N(F)
11	EDC698S2700C20BMP(IP67)	698~2700	20±1.0	0.2	20.0	20.0	200	N(F)
12	EDC698S2700C25BMP(IP67)	698~2700	25±1.0	0.2	20.0	20.0	200	N(F)
13	EDC698S2700C15BMP(IP67)	698~2700	15±1.0	0.4	20.0	20.0	200	N(F)
14	EDC698S2700C13BMP(IP67)	698~2700	13±1.0	0.5	20.0	20.0	200	N(F)
15	EDC698S2700C08BMP(IP67)	698~2700	8.0±0.8	1.2	20.0	20.0	200	N(F)
16	EDC698S2700C10BMP(IP67)	698~2700	10±1.0	0.8	20.0	20.0	200	N(F)
17	EDC698S2700C07BMP(IP67)	698~2700	7.0±0.8	1.5	20.0	20.0	200	N(F)
18	EDC698S2700C06BMP(IP67)	698~2700	6.0±0.8	1.7	20.0	20.0	200	N(F)
19	EDC7000S2700C10B	700~2700	10±1.0	0.7	20.0	20.0	200	N(F)
20	EDC700S2200C10A	700~2200	10±1.0	0.8	20.0	20.0	50	SMA(F)
21	EDC700S2700C10A	700~2700	10±1.5	0.8	20.0	20.0	20	SMA(F)
22	EDC700S2200C20A	700~2200	20±1.0	0.3	20.0	20.0	50	SMA(F)
23	EDC800S2700C10A	800~2700	10±1.0	0.8	20.0	20.0	50	SMA(F)
24	EDC800S2700C20A	800~2700	20±1.0	0.3	20.0	20.0	50	SMA(F)
25	EDC800S2200C20A	800~2200	20±1.0	0.3	20.0	20.0	50	SMA(F)
26	EDC800S2200C10A	800~2200	10±1.0	0.8	20.0	20.0	50	SMA(F)
27	EDC2000S8000C10A	2000~8000	10±1.0	1.0	18.0	20.0	50	SMA(F)



Summary

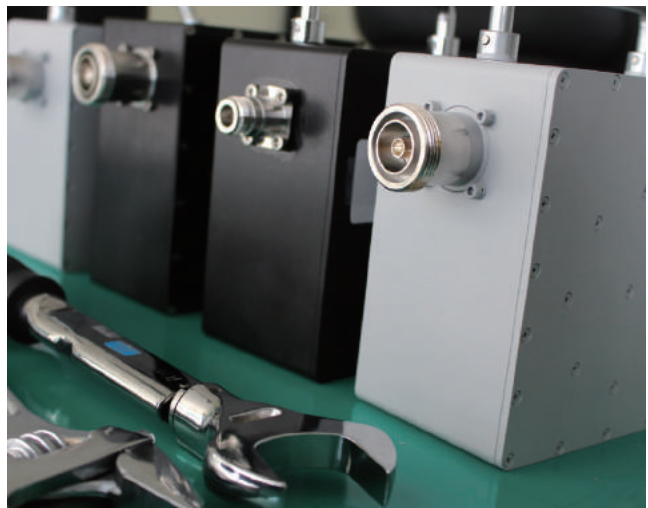
ECHO Microwave provides attenuators and terminators that operate across our standard specified frequency range from DC to 3000MHz.

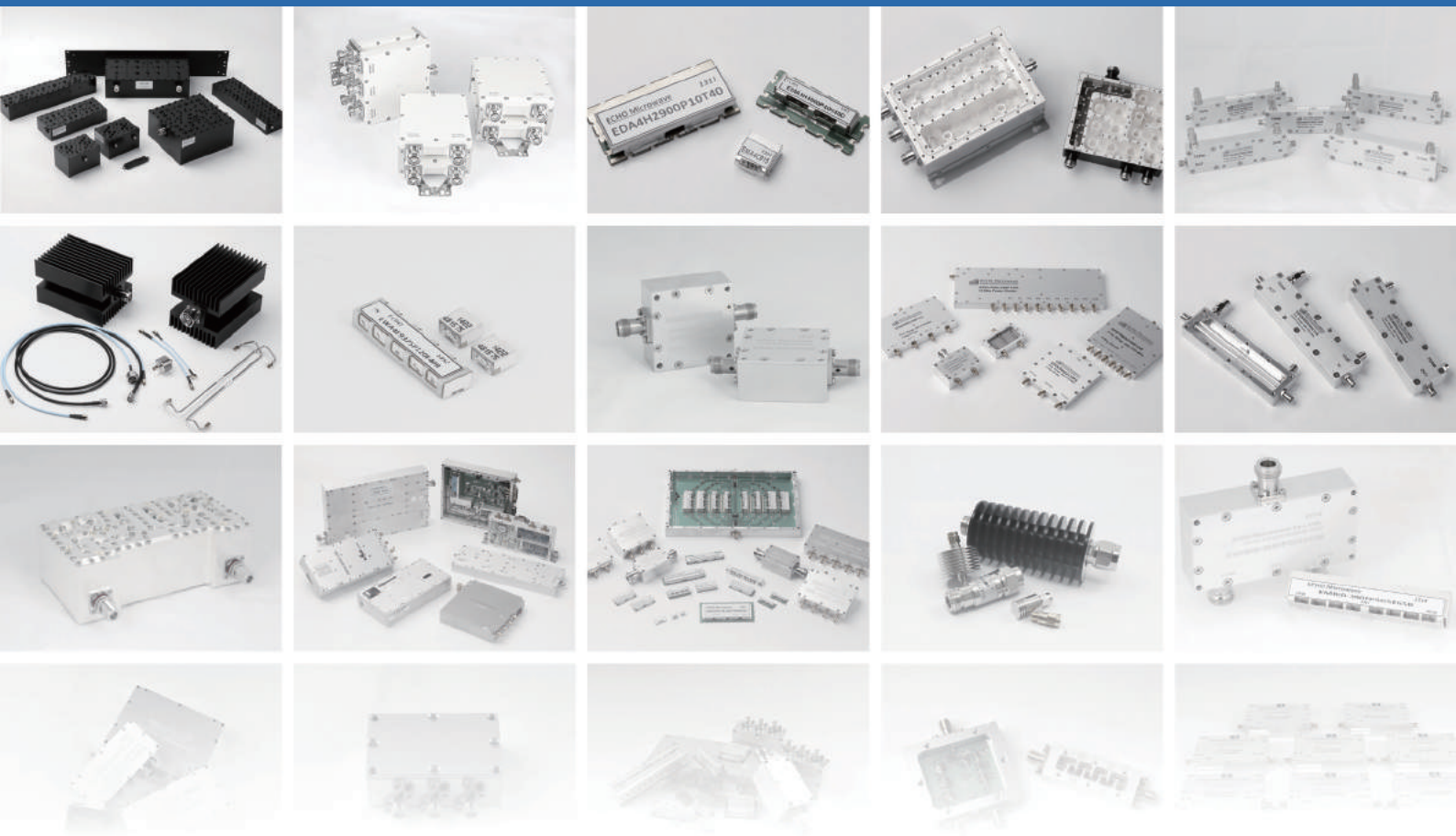
Attenuators

No.	Part Number	Frequency (MHz)	Attenuation (dB)	V.S.W.R (MAX.)	Input Power (W, MAX.)	IMP (ohms)	CON (IN)	CON (OUT)
1	EA3000A5P2A	DC~3000	5 ± 0.5	1.2 :1	2	50	SMA(M)	SMA(F)
2	EA3000A10P2A	DC~3000	10 ± 1.0	1.2 :1	2	50	SMA(M)	SMA(F)
3	EA3000A15P2A	DC~3000	15 ± 1.0	1.2 :1	2	50	SMA(M)	SMA(F)
4	EA3000A20P2A	DC~3000	20 ± 1.0	1.2 :1	2	50	SMA(M)	SMA(F)
5	EA3000A3P3B	DC~3000	3 ± 0.7	1.2 :1	3	50	N(M)	N(F)
6	EA3000A5P3B	DC~3000	5 ± 0.8	1.2 :1	3	50	N(M)	N(F)
7	EA3000A10P3B	DC~3000	10 ± 1.0	1.2 :1	3	50	N(M)	N(F)
8	EA3000A20P3B	DC~3000	20 ± 1.0	1.2 :1	3	50	N(M)	N(F)
9	EA3000A3P5BMF	DC~3000	3 ± 0.7	1.25 :1	5	50	N(M)	N(F)
10	EA3000A6P5BMF	DC~3000	6 ± 0.8	1.25 :1	5	50	N(M)	N(F)
11	EA3000A9P5BMF	DC~3000	9 ± 1.0	1.25 :1	5	50	N(M)	N(F)
12	EA3000A10P5BMF	DC~3000	10 ± 1.0	1.25 :1	5	50	N(M)	N(F)
13	EA3000A15P5BMF	DC~3000	15 ± 1.0	1.25 :1	5	50	N(M)	N(F)
14	EA3000A20P5BMF	DC~3000	20 ± 1.0	1.25 :1	5	50	N(M)	N(F)
15	EA3000A30P5BMF	DC~3000	30 ± 1.5	1.25 :1	5	50	N(M)	N(F)
16	EA3000A3P5AMF	DC~3000	3 ± 0.7	1.25 :1	5	50	SMA(M)	SMA(F)
17	EA3000A6P5AMF	DC~3000	6 ± 0.8	1.25 :1	5	50	SMA(M)	SMA(F)
18	EA3000A9P5AMF	DC~3000	9 ± 1.0	1.25 :1	5	50	SMA(M)	SMA(F)
19	EA3000A10P5AMF	DC~3000	10 ± 1.0	1.25 :1	5	50	SMA(M)	SMA(F)
20	EA3000A15P5AMF	DC~3000	15 ± 1.0	1.25 :1	5	50	SMA(M)	SMA(F)
21	EA3000A20P5AMF	DC~3000	20 ± 1.0	1.25 :1	5	50	SMA(M)	SMA(F)
22	EA3000A30P5AMF	DC~3000	30 ± 1.5	1.25 :1	5	50	SMA(M)	SMA(F)
23	EA3000A30P50B	DC~3000	30 ± 1.5	1.25 :1	50	50	N(M)	N(F)

Terminators

No.	Part Number	Frequency (MHz)	V.S.W.R (MAX.)	IMP (ohms)	Power (W, MAX.)	PIMD (dBc, MIN)	Temp. (Range)	Connector Type
1	ET2500P5A	DC~2500	1.2:1	50	5	-	-30 ~+60	SMA(M)
2	ET2500P20A	DC~2500	1.2:1	50	20	-	-30 ~+60	SMA(M)
3	ET3000P5BM	DC~3000	1.2:1	50	5	-	-30 ~+60	N(M)
4	ET3000P150BM	DC~3000	1.2:1	50	150	-80 (2x43dBm)	-30 ~+60	N(M)
5	ET3000P150CM	DC~3000	1.2:1	50	150	-80 (2x43dBm)	-30 ~+60	7/16 DIN(M)
6	ET2600P200CAM	300~2600	1.2:1	50	200	-160 (2x43dBm)	-30 ~+60	7/16 DIN(F)
7	ET2700P200CAM	300~2700	1.2:1	50	200	-	-30 ~+60	7/16 DIN(F)
8	ET4000P2B	DC~4000	1.2:1	50	2	-	-30 ~+60	N(M)





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