

# Military Solution





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# 1. 1:2 Combiner/Divider

The power dividers are useful for dividing & combining signals

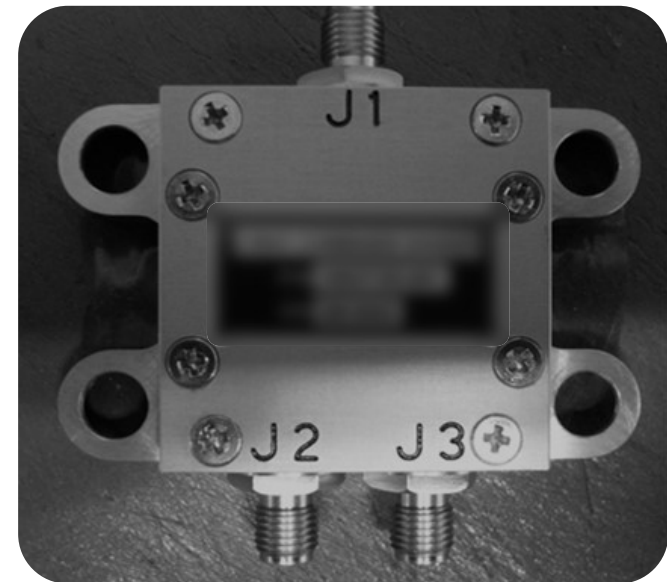
power dividers employ lumped element circuits up to DC-5GHz, 7 distributed elements beyond 2GHz or so, usually stripline.

## ○ Key Features

- High Performance
- MIL-STD-810F, Methods 501.4 and 502.4 Procedures I and II

## ○ Specification

Item	Spec.
Operating Frequency Range	3100 to 3500MHz
Insertion Loss	0.8dB max
VSWR	1.4:1 / 1.5:1 max
Isolation	20.0dB min
Amplitude Balance	$\pm 0.3\text{dB}$ max
Phase Balance	$\pm 5^\circ$ max
Input Average Power	35dBm
Environmental CONDITIONS	MIL-STD-810F, Methods 501.4 and 502.4, Procedures I and II



## 2. 1:4 Combiner/Divider

The power dividers are useful for dividing & combining signals

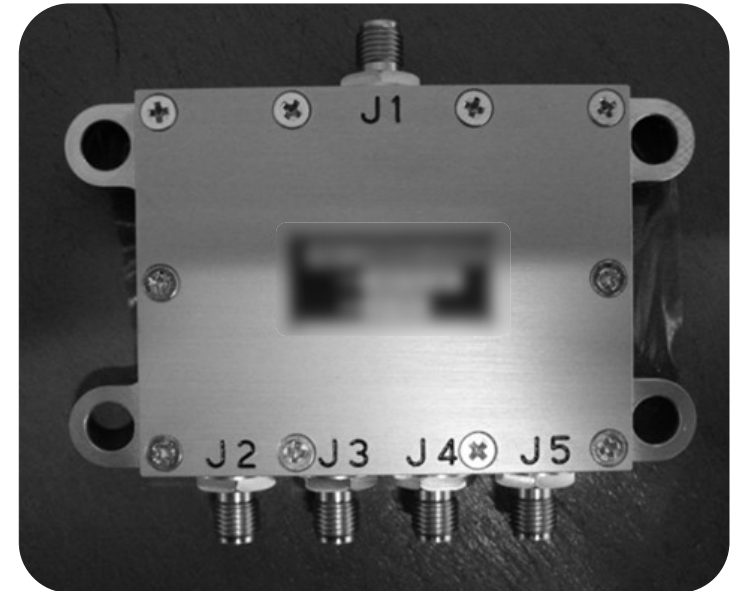
power dividers employ lumped element circuits up to DC-5GHz, 7 distributed elements beyond 2GHz or so, usually stripline.

### ○ Key Features

- High Performance
- MIL-STD-810F, Methods 501.4 and 502.4 Procedures I and II

### ○ Specification

Item	Spec.
Operating Frequency Range	3100 to 3500MHz
Insertion Loss	0.2dB max
VSWR	1.2:1 / 1.3:1 max
Isolation	20.0dB min
Amplitude Balance	$\pm 0.2$ dB max
Phase Balance	$\pm 2^\circ$ max
Input Average Power	20dBm
Environmental CONDITIONS	MIL-STD-810F, Methods 501.4 and 502.4, Procedures I and II





### 3. 1:8 Combiner/Divider

The power dividers are useful for dividing & combining signals

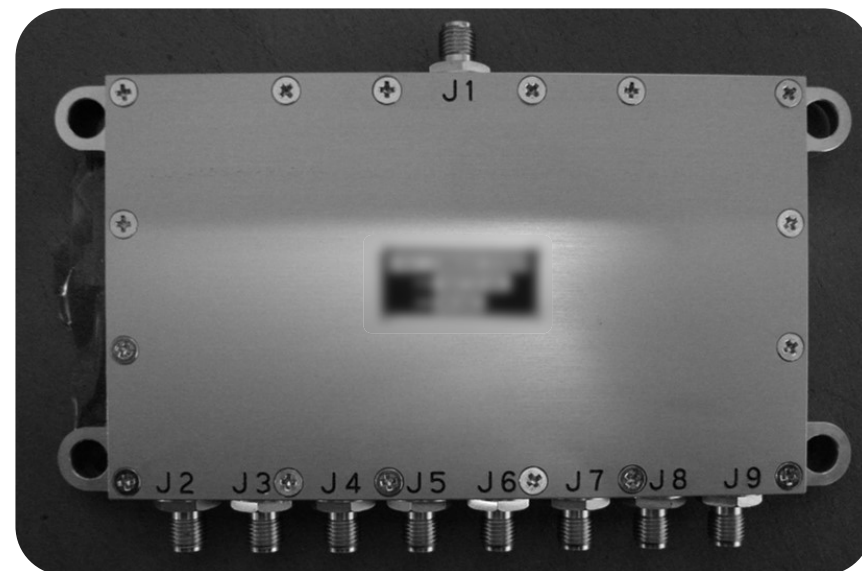
power dividers employ lumped element circuits up to DC-5GHz, 7 distributed elements beyond 2GHz or so, usually stripline.

#### ○ Key Features

- High Performance
- MIL-STD-810F, Methods 501.4 and 502.4 Procedures I and II

#### ○ Specification

Item	Spec.
Operating Frequency Range	3100 to 3500MHz
Insertion Loss	0.8dB max
VSWR	1.2:1 / 1.3:1 max
Isolation	20.0dB min
Amplitude Balance	$\pm 0.2$ dB max
Phase Balance	$\pm 2^\circ$ max
Input Average Power	10dBm
Environmental CONDITIONS	MIL-STD-810F, Methods 501.4 and 502.4, Procedures I and II



## 4. DUAL 1:4 Combiner/Divider

The power dividers are useful for dividing & combining signals

power dividers employ lumped element circuits up to DC-5GHz, 7 distributed elements beyond 2GHz or so, usually stripline.

### ○ Key Features

- High Performance
- MIL-STD-810F, Methods 501.4 and 502.4,

### ○ Specification

Item	Spec.
Operating Frequency Range	3100 to 3500MHz
Insertion Loss	0.8dB max
VSWR	1.4:1 / 1.5:1 max
Isolation	20.0dB min
Amplitude Balance	$\pm 0.3\text{dB}$ max
Phase Balance	$\pm 5^\circ$ max
Input Average Power	200mW
Environmental CONDITIONS	MIL-STD-810F, Methods 501.4 and 502.4,



## 5. 1:8 Combiner/Divider

The power dividers are useful for dividing & combining signals

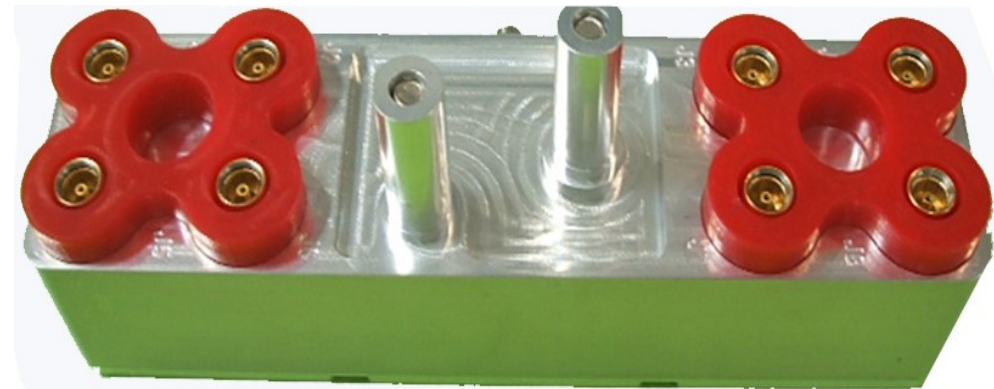
power dividers employ lumped element circuits up to DC-5GHz, 7 distributed elements beyond 2GHz or so, usually stripline.

### ○ Key Features

- High Performance
- MIL-STD-810F, method 509.2 (5% NaCl for 48 hours)

### ○ Specification

Item	Spec.
Operating Frequency Range	3100 to 3500MHz
Insertion Loss	1.5dB max
VSWR	1.4:1 / 1.5:1 max
Isolation	24.0dB min
Output amplitude unbalance (between outputs)	$\pm 0.3\text{dB}$ max
Phase Balance	$\pm 5^\circ$ max
Input Average Power	200mW
Environmental CONDITIONS	MIL-STD-810F, method 509.2



## 6. 9 Way Combiner/Divider

The power dividers are useful for dividing & combining signals

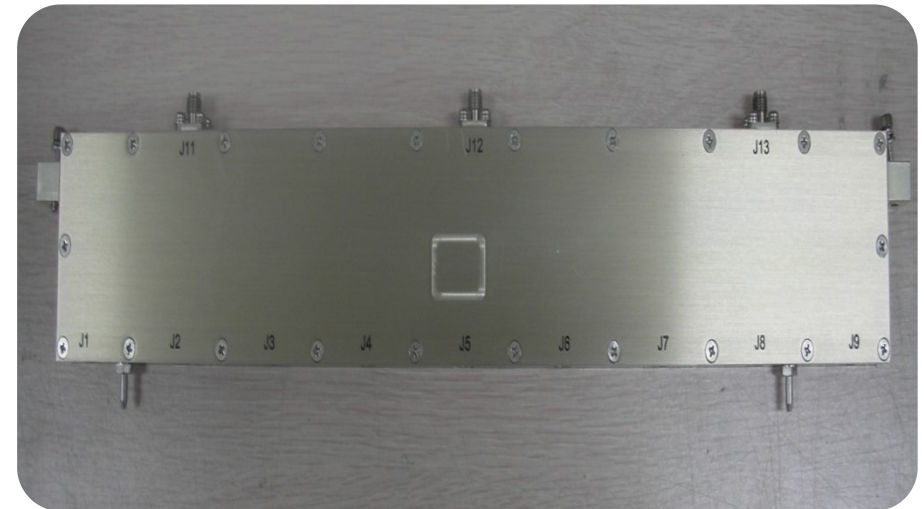
power dividers employ lumped element circuits up to DC-5GHz, 7 distributed elements beyond 2GHz or so, usually stripline.

### ○ Key Features

- High Performance
- MIL-STD-810F, Methods 501.4 and 502.4,

### ○ Specification

Item	Spec.
Operating Frequency Range	3100 to 3500MHz
Insertion Loss	12.2dB max
VSWR	1.4:1 / 1.5:1 max
Isolation	22.0dB min
Amplitude Balance	$\pm 0.5$ dB max
Phase Balance	$\pm 5^\circ$ max
Input Average Power	1W
Size(mm)	360(w) x 52.2(d) x 14.5(h) mm
Environmental CONDITIONS	MIL-STD-810F, Methods 501.4 and 502.4,





# 7. Low Capacity Trunk Radio System for Band Pass Filter

The LCTRS BPF is useful for MLR system

TICN: Tactical Information Communication Network

The LCTRS BPF is Cavity Method

## ○ Key Features

- High Performance
- High Reliability

## ○ Specification

Item	Spec.
Operating Frequency Range	2175.2 ~ 2236.4 MHz
Insertion Loss	1.0 dB Max
VSWR	1.3:1
Rejection	22.0dB min
Pass Band Ripple	±0.5dB max
Rejection	52.7dBc @ 2250 MHz 80dBc @ 2058.8 MHz
Input Average Power	10W
Size(mm)	123(w) x 66(d) x 66(h) mm
Operating Temperature	-32°C~+70°C



## 8. KU Band Pass Filter

2 stage 6-pole band pass filter(BPF) is designed and implemented by using triple-mode cavity for Receiver seeker module payload system. The BPF has a 500MHz bandwidth at the center frequency of 14.5GHz(Ku-band) and the response of the filter is the Chebyshev function. The cavity filter uses two orthogonal modes and one mode

### ○ Key Features

- High Performance
- High Reliability

### ○ Specification

Item	Spec.
Center frequency	14.5GHz
Bandwidth	500MHz
Insertion Loss	1.0 dB Max
VSWR	1.2:1
Rejection	18.0dB min
Pass Band Ripple	$\pm 0.5$ dB max
Input Average Power	10W
Size(mm)	40(w) x 20(d) x 14(h) mm
Operating Temperature	-35°C~+75°C



## 9. 11 Channels Switched Bank Filter

The SBF is a switch bank filter, part of the WB Receiver front end, intended to assure the receiver's IP2 performance specification. The SBF has one input and 2 outputs. One output is for 7 bands and the second output is for bands 1-3 & 5,6 and has amplifiers that turn on only when a specific band activates.

There is an option to By-Pass the amplifiers

### ○ Key Features

- High Performance
- High IIP2
- 11 Channels

### ○ Specification

Item	Spec.
Operating Frequency Range	20MHz~3.0GHz / 11Channels
Noise Figure	< 5dB
Gain	14±1dB
Noise figure	7±1dB
IIP2	CH 4~11 +55dBm CH 1~3 +65dBm
Switching Time	< 100 μsec
Size(mm)	135(w) x70(d) x 13.5(h)mm
Environmental CONDITIONS	MIL-STD-810F, Methods 501.4 and 502.4,



# 10. SP4T & 8 Filters Switched Bank

The filter bank includes independent transmit channel (Tx path) and received channel (Rx path) with 4 filters for each path. Because the transmit channel and received topologic channel are the same (switches and filters) it is possible to offer them separately (two units 4 filters each) if it cost lower than one unit.

## ○ Key Features

- High Performance
- High Rejection
- 4 Channels 8 Path

## ○ Specification

Item	Spec.
Operating Frequency Range	4400 ~ 5000MHz / Band 1~4
Insertion Loss (Tx/Rx)	< 3.1dB
Input Power	16W (C.W) min
Switching Time	2uSec
Isolation (between ports)	80dB min.
Return Loss (all ports)	15dB min
Size(mm)	190(w) x100(d) x 60(h)mm
Environmental CONDITIONS	MIL-STD-810E MIL-STD-461E





# 11. TX & RX Dual 7Channel Filters Switched Bank

The filter bank includes independent transmit channel (Tx path) and received channel (Rx path) with 7 filters for each path. TX Path accommodates a high power of 20W, and RX Path is designed to have a gain of 7 to 12 dB. TX Path and RX Path are independent, each setting any channel.

## ○ Key Features

- High Performance
- High Rejection
- Dual 7 Channels 2 Path

## ○ Specification

Item	Spec.
Operating Frequency Range	1300 ~ 2700MHz / Dual 7Channel
Insertion Loss (Tx/Rx)	TX : < 3.8dB / RX : Gain 7~12dB
TX Input Power / RX Input P1dB	20W (C.W) / 0 dBm
Switching Time	5uSec
Isolation (between ports)	80dB min.
Return Loss (all ports)	15dB min
Size(mm)	210(w) x100(d) x 60(h)mm
Environmental CONDITIONS	MIL-STD-810E MIL-STD-461E



# 12. Guided Weapon Main Receiver for Seeker

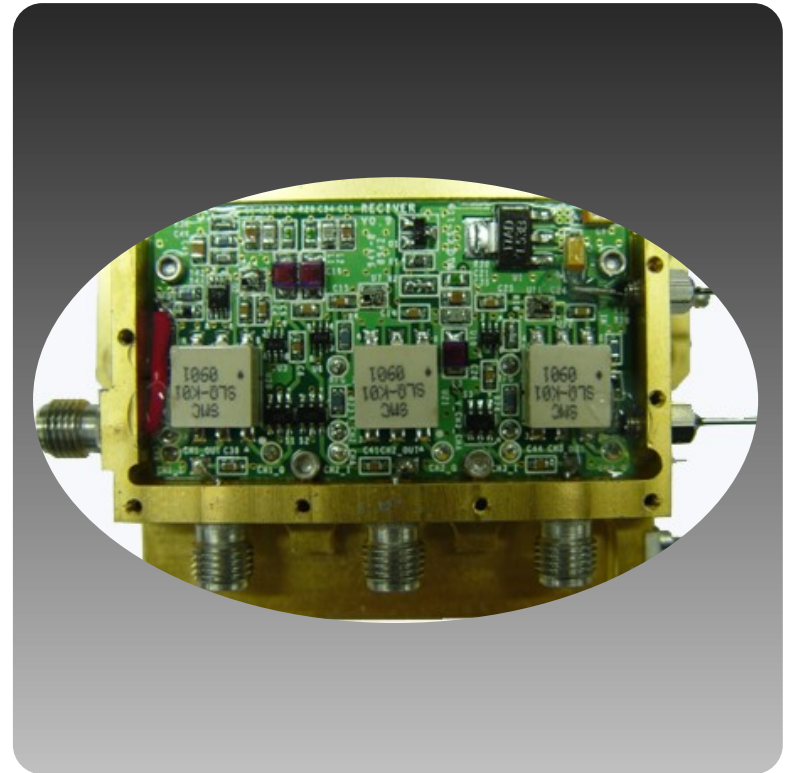
Guided Weapon Main Receiver seeker module is very High speed switching time.  
It is for using KU Band

## ○ Key Features

- Application for Guided Weapon Defense Missile
- High Performance
- High Switch Isolation
- Low power DC Consumption

## ○ Specification

Item	Spec.
Operating Frequency Range	15.8GHz~16GH
Noise Figure	< 5dB
Gain	33±3dB
RFG Attenuation Value	32+3dB/-4dB(28~35)
IF BW	(-7.5MHz~+7.5MHz)
Switching Time	< 70ns
Size(mm)	80(w) x 40(d) x 25(h)mm
Operating Temperature	-40°C~+85°C



# 13. Wide Band Continuous Multiplexer

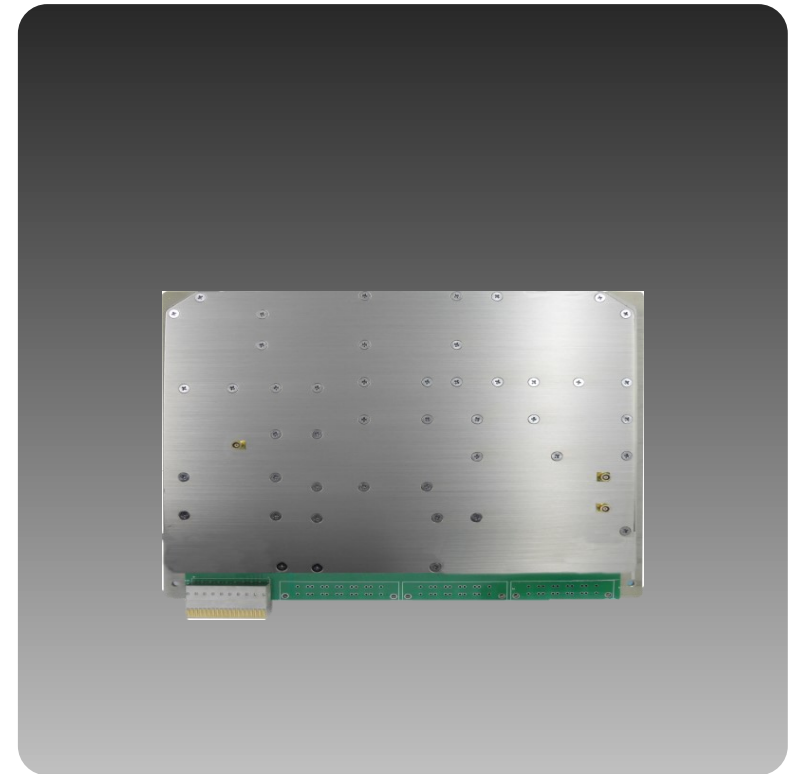
For wideband receiver application, the 20~3000MHz spectrum is divided into N-channel filters before and after amplification stage.

## ○ Key Features

- Application for EW, ISR
- 20~3000MHz multi-channel support
- Configuration of continuous channel filter bank
- Maintaining a cross over band phase linearity
- High performance harmonic rejection
- Low loss and good wideband gain flatness

## ○ Specification

Item	Spec.
Operating Frequency Range	20~3,000MHz
Harmonic Rejection	70dBc
3rd Order Intercept Point	40dB
Gain & Flatness	10dB $\pm$ 2dB
Noise Figure	< 5dB
Size(mm)	150(w) x 200(d) x 24(h)mm
Operating Temperature	-30°C~+65°C



# 14. Wide Band Up-Down Converter

It is for up-converting input signal of 1.5-400MHz with bandwidth of 250MHz generated by DDS. It amplifies and converts input signal by mixers, amplifiers and filters. Up-converted signal will be placed into any output spectrum of 1.5-3000MHz. It generates its own reference signal that is used as a reference source for LO.

## ○ Key Features

- Application for EW, ISR
- Wide band frequency conversion functions
- 1.5 ~ 3,000MHz frequency range
- BIT functions for Output level status check
- 10MHz built-in reference signals and its distribution

## ○ Specification

Item	Spec.
Input Frequency	1.5 ~ 400MHz
Output Frequency	1.5 ~ 3,000MHz
Operating Bandwidth	250MHz
Frequency adjusting speed	< 50us
Gain & Flatness	0dB $\pm$ 2dB
Size(mm)	220(w) x 160(d) x 24(h)mm
Operating Temperature	-30°C~+65°C





# 15. DDS Hopping Synthesizer

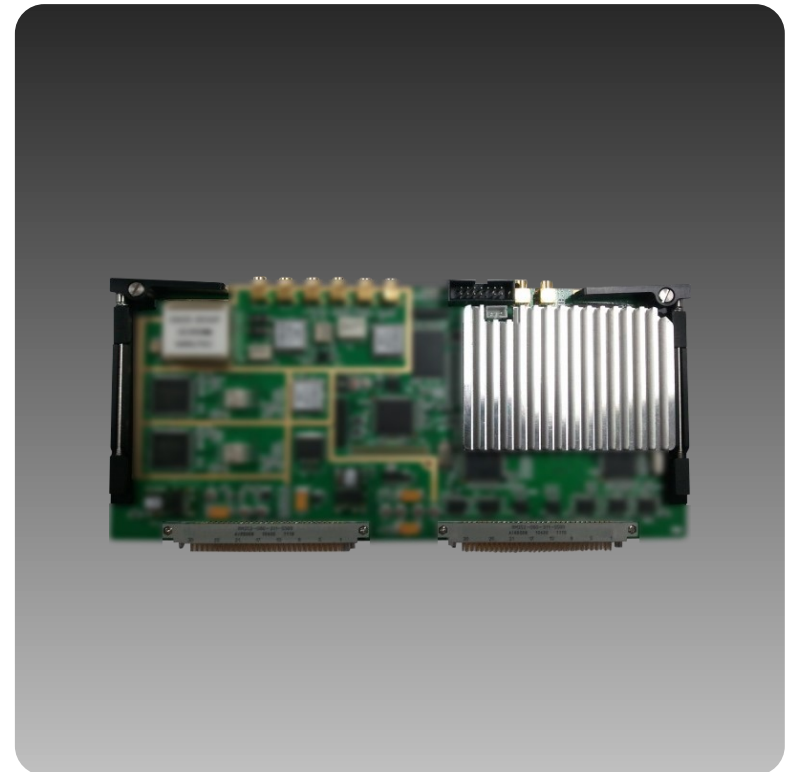
In some application, fine tune, fast lock and wide frequency rang are very critical issues. This module satisfy all of specifications. It consists of Direct Digital Synthesis and PLL Synthesizer. Because of fast lock it can generate high speed hopping signal in the 20 ~ 3000MHz frequency band.

## ○ Key Features

- Application for C4I, EW, ISR
- 20~3,000MHz wideband hopping support
- High speed hopping frequency
- High performance Phase Noise
- High Frequency Resolution,1Hz
- Wide range variable output power
- Self BIT check function

## ○ Specification

Item	Spec.
Operating Frequency Range	20~3,000MHz
Frequency Resolution	< 10Hz
Output Power	0dBm ~ -90dBm / 1dB step
Frequency hopping speed	< 50us
Phase Noise	< -90dBc/Hz @10KHz
Size(mm)	213(w) x 138.6(d) x 17(h)mm
Operating Temperature	-30°C~+65°C



# 16. Phase Matched Wide Band Matrix Switch

Phase Matched wideband matrix switch module is 18x18 Matrix Switch. 18-port output of the high-band/low-band switching can selectively accept the input of the low-band(9Port) and High-band(9Port) in the 20~3000MHz band.

## ○ Key Features

- Application for EW, ISR
- High Performance Phase Matched channel
- High Isolation
- Compact Physical Form

## ○ Specification

Item	Spec.
Operating Frequency Range	20~3,000MHz
Insertion Loss	< -8dB
Phase Balance	< $\pm 3^\circ$
Chanel Amplitude	$\pm 0.5\text{dB}$
Chanel Isolation	< -80dBc
Switching Time	< 5 $\mu\text{s}$
Size(mm)	222(w) x 54(d) x 24(h)mm
Operating Temperature	-30°C~+65°C

