Product Description

MPAM-1x8-240400-50U is an 8-way multi-channel phase & amplitude control system covering 24-40GHz. It is composed of an 8-way power divider/combiner and 8 phase & amplitude control channels. The signal is input from a port and output from 8 ports after synchronously independent phase & amplitude adjusting. At any frequency within 24-40GHz, the absolute phase and amplitude adjusting accuracy under any amplitude & phase setting combination, is ±2° and ±0.2dB maximum from ideal value, control range is 0~360° and 0~50dB, minimum control step is 1° and 0.1dB, the standard size is 3U 19" rack with 110-220V AC-DC converter and fans inside, the special small size 220x290x150mm is available. The standard control interface is USB with Ethernet as option. The software supports the control of single point and scan settings. The system supports reciprocal signal transmission and control.

Main application is accurate wideband signal beamforming system, wideband 5G mmW signal control simulation system, wideband 5G mmW Massive MIMO channel simulation system, wideband 5G mmW antenna test system, wideband 5G mmW OTA test system , phase array antenna test and complicated signal environment simulation etc.

Besides 24-40GHz system, there are different models can cover 0.5-2GHz, 1.7~6GHz and 6~18GHz respectively. Number of channels and structure of the system can be customized upon request.

Key Features

Feature	Advantage
Wide Bandwidth	One unit can cover 24 to 40GHz wideband application such as 5G mmW & various millimeter test system.
Fine Control Resolution	The system supports 0.1dB and 1° minimum amplitude & phase adjusting step. It will help realize high resolution signal control.
Super High Accuracy	The system can adjust signal amplitude & phase to the range of 0.2dB and 2° maximum from the ideal setting. It can realize the precise signal amplitude & phase control.
Ultra Low Insertion Loss	Over 24 to 40GHz, the insertion loss is from 30 to 39dB Max. It can offer higher system output power, reduce the cost of amplifier investment.
Higher Channel Isolation	From 24 to 40GHz, channel isolation is 48dB minimum at 24GHz; Typical isolation is over 58dB up to 40GHz. It reduces the signal interference between channels.
Wide Dynamic Range	The system provides 0 to 50dB and 0 to 360° attenuation & phase shift range, which can simulate the various real signal amplitude & phase change. Also as option up to 120dB attenuation is available.
Excellent Stability & Repeatability Performance	Offer the consistent, stable & reliable performance; Reduce the need of calibration & uncertainty of the system performance.
Simple Interface & Software Control	USB interface & GUI are easy for use. DLL files provide easy compatibility with a wide range of software & programming environments.
Small Size	Standard 3U 19" rack is easy for system integration. And smaller size option like 220 x 290 x 150 mm is good for lab & turn table application.

Specifications（@25℃）

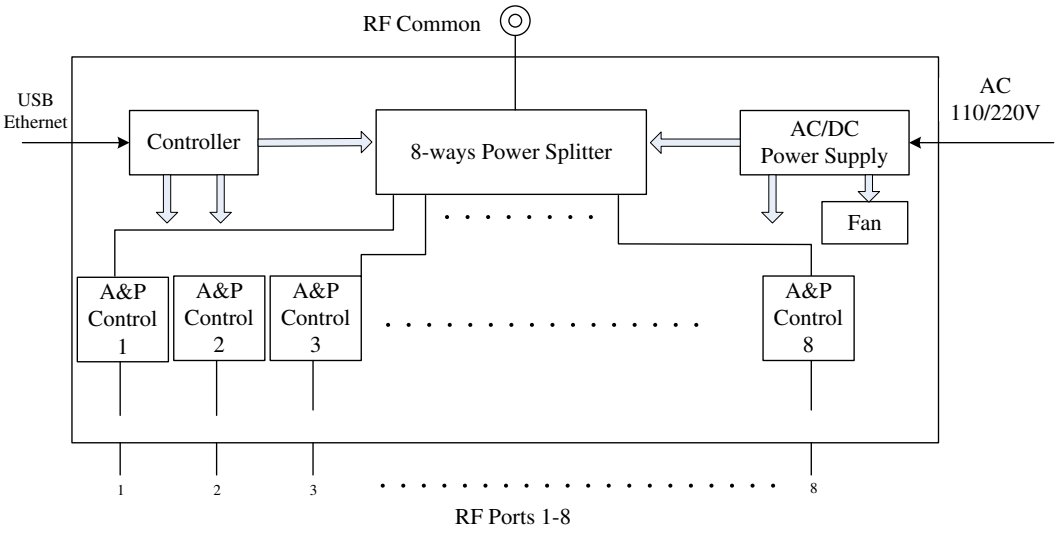
Parameter	Conditions	Min.	Typ.	Max.	Unit
Number of Channels[1]			8		
Attenuation Range[2]	0.1 dB Step Min.	0		50	dB
Attenuation Step		0.1			dB
Attenuation Accuracy	0-50 dB & 0-360°		±0.1	±0.2	dB
Phase Shift Range	1° Step Min.	0°		360°	
Phase Shift Step	0-360º	1°			
Phase Accuracy	0-50 dB & 0-360°		±1°	±2°	
Insertion Loss	0 dB & 0° Set		33.5	39	dB
Isolation	0 dB & 0° Set	48	58		dB
Common / Other RF Port VSWR				2:1 / 2.2:1	
Input Power @RF Common Port without Performance Degradation				32	dBm
Maximum Survival Input Power @RF Common Port				42	dBm
Input Power @ Other RF Ports without Performance Degradation				10	dBm
Maximum Survival Input Power @ Other RF Ports				20	dBm
Supply Voltage		100		240	VAC
Control Mode	USB / Ethernet				
RF In / Out Connector	2.92-F				
Size[3]	19” Rack, 3U				
Operating Temperature	0 ~ 50				℃
Storage Temperature	-20 ~ 70				℃

Note 1: It can be customized, e.g. 4, 16, 32, 64, 128, or any required number is available.

Note 2: Attenuation range: up to 120dB optional.

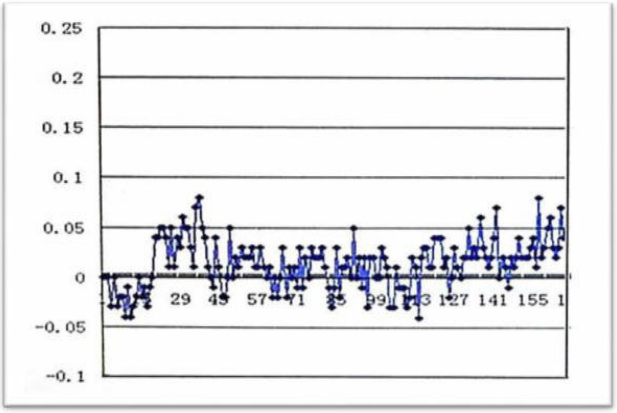
Note 3: Smaller rack size like 220x290x150mm and customized size is available.

Schematic Diagram

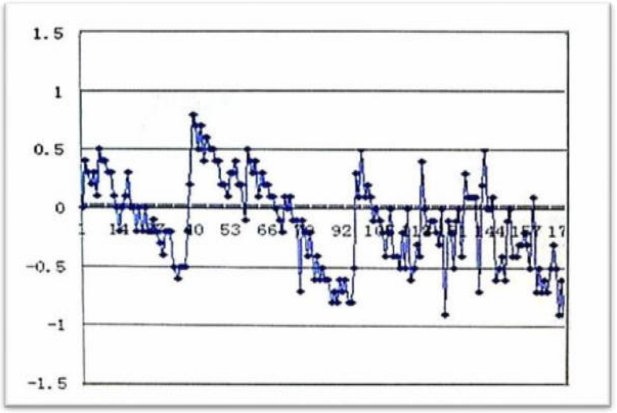


Typical Tested Curve

Phase & Amplitude Control Accuracy



Amplitude accuracy tested data@ 28GHz,
Any combination of phase & attenuation
among 0~50dB & 0~360°



Phase accuracy tested data@28GHz,
Any combination of phase & attenuation
among 0~50dB & 0~360 °

The X-coordinate shows the number of random sampled points within 0~50 dB & 0-360°

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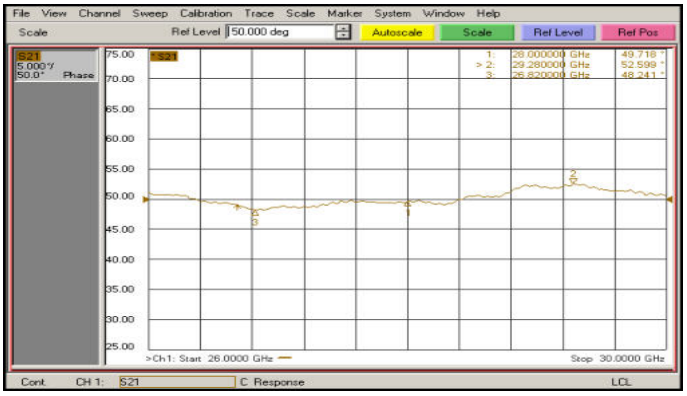
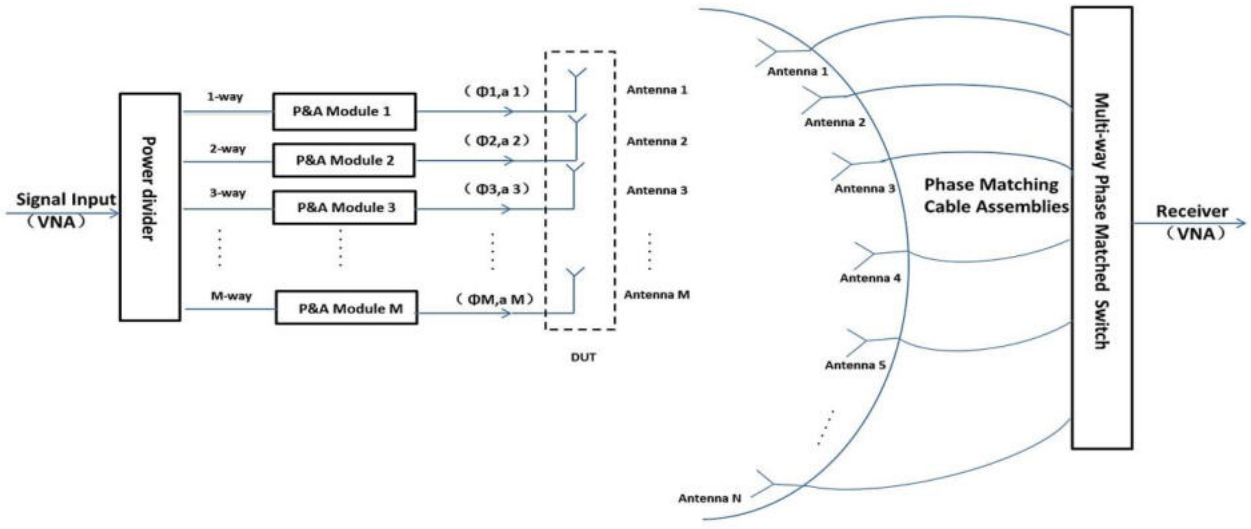
26~40GHz Phase Change over Frequency



Amplitude & Phase Set: 0dB,50°
Phase Tested （Max: 52.599° Min: 48.241° Max-Min: 4.358°）

Example of Application

Wideband 5G Antenna Beamforming Test System & Ideal 5G MIMO Front End Benchmark



Beamforming Characteristics Test of 5G Antenna
Ideal 5G MIMO Front End Benchmark