



5G（第5代移动通信系统）适用
5G (5th generation mobile communication system) compatible

5G测量用元器件・解决方案

综合目录

5G measurement component solutions
General catalog

2020-10

NEW!

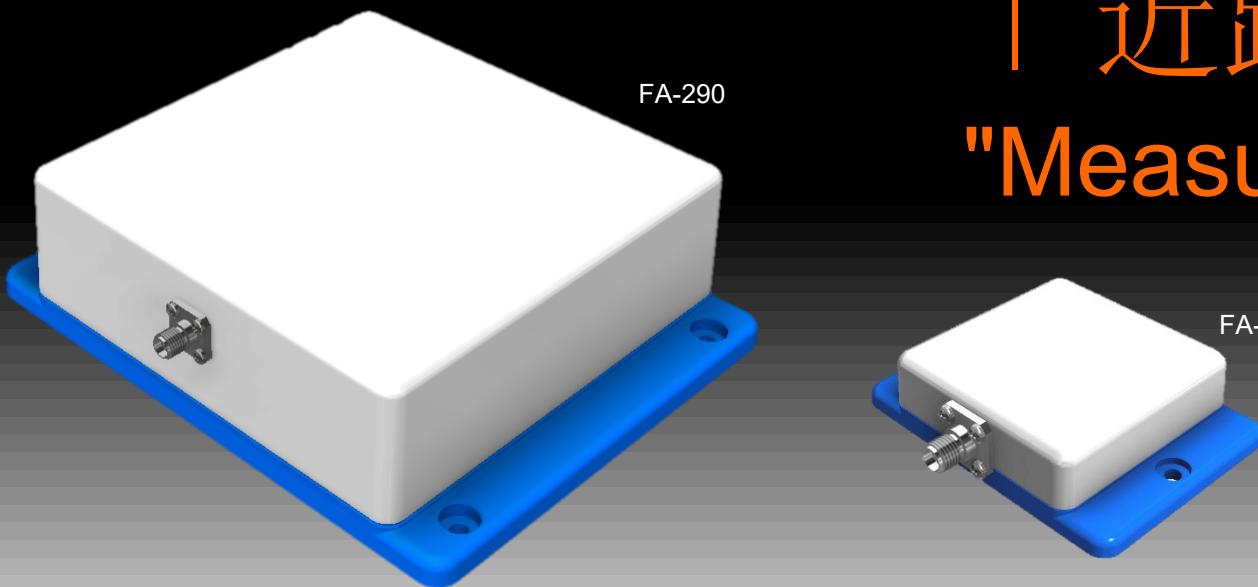
It's 100GHz

vol.5



森田科技公司

MORITA TECH's 5G in a



「近距离 "Measuring

森田科技公司5G 最初研发产品 带宽28GHz天线耦合器
28GHz band antenna coupler that became Morita Tech 5G first product.

5G 「第5代移动通信系统」为移动通信带来新的可能性。 森田科技公司的5G测量用元器件・解决方案是以独特的概念和方式研发的，已向多家客户提供包括天线耦合器在内的多项产品。

除了理解每个频率变化对无线电波和调频波的影响特性外，我们还需要考虑能够协助客户顺利完成无线电波产品的试作和量产的魅力产品。

本目录中，为您罗列了森田科技公司与5G相关的魅力产品。请务必考虑森田科技的5G测量用元器件及解决方案，我们希望在您产品的开发、设计、制造和检查的各环节中做出所贡献。

5G "5th generation mobile communication system" with new possibilities for mobile communication. Morita Tec's component solutions for 5G have been developed and provided with a unique concept and approach, including antenna couplers, and have already been adopted by several customers.

In addition to understanding the characteristics of radio waves and modulated waves that change with each frequency, we consider what products can smoothly support trial production and mass production of customers' radio equipment, and make them attractive together with their ideal form. We strive to provide a certain product.

This catalog covers attractive products related to Morita Tech's 5G. By all means, we will consider Morita Tech's 5G components and solutions and hope to contribute to your development, design, manufacturing and inspection processes.



「近距离测量」 天线耦合器的优点
"Measuring nearby" Features of antenna coupler.

小型动态式5G

compact and dynamic way.

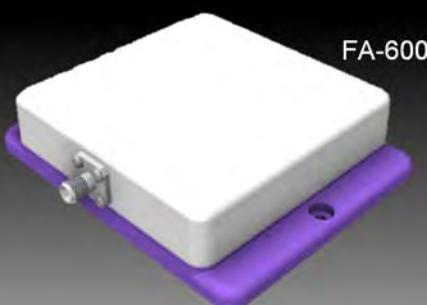
测量「
nearby」



FA-529S

终端设备检测用屏蔽箱小型化专用天线
耦合器 FA-529S

Downsizing the shield box for terminals
Dedicated antenna coupler FA-529S
made possible.



FA-600

第二款研发的天线耦合器 Sub-6GHz
用天线耦合器 FA-600

The second antenna coupler
Sub-6GHz antenna coupler FA-600.



NEW!
FA-597S

适用于56 G H z -75G H z 频段
天线耦合器 FA-597S
Antenna coupler FA-597S that
supports up to 56GHz-75GHz.

FS-1905

森田科技公司最大限度小型化的第二代屏蔽箱
FS-1905

Morita Tech's downsized as much as possible
Second generation shield box FA-1905.



NEW!
WA-667S

挑战全新领域、适用于600MHz-67GHz超
宽频带的宽频电波耦合器 WA-667S
600 MHz-67GHz compatible ultra-
wideband wideband wave coupler WA-
667S that challenges new areas of
couplers.

NEW!
WM1019-04219

确保100GHz 60dB屏蔽特性的屏蔽箱

WM1019-04219

Shield box that secures 100GHz 60dB
WM1019-04219.



森田科技公司 对应5G测量用元器件・解决方案一览表

MORITA TECH CO.,LTD. List of 5G compatible components and solutions.

Antenna Coupler Product List

最适用途类型 Optimal application type	
P:POWER E:EVM B:BEAM M:MIMO T:Trial production N:Mass production K:Base station U:Mobile terminal	
5G SUB6GHz 600MHz - 6GHz	FA-600 FEBMTNKU 直线偏波耦合器 Linear polarization coupler.
5G SUB6GHz 3.5GHz - 5GHz	FA-506S FEBMTNKU 直线偏波耦合器 Linear polarization coupler.
5G SUB6GHz 3.5GHz - 5GHz	FA-606S FEBMTNKU 适用于垂直・水平两偏波直线偏波耦合 V / H polarization compatible.
5G SUB6GHz 3.5GHz - 5GHz	FA-706S FEBMTNKU 适用于垂直水平偏波四极直线偏波耦合器 V / H compatible quadruple coupler.
5G SUB6GHz 600MHz - 18GHz	FA-618 FEBMTNKU 直线偏波耦合器 Linear polarization coupler.
5G SUB6GHz 3.5GHz - 5GHz 24.5GHz - 29.5GHz	FA-862S FEBMTNKU 适用于垂直・水平两偏波四极直线偏波耦合器 SUB 6 GHz / 28 GHz Band V / H Compatible.
5G 24.5GHz - 29.5GHz	FA-290 FEBMTNK 大型直线偏波耦合器 Large size Linear polarization coupler.
5G 24.5GHz - 29.5GHz	FA-291 FEBMTNKU 小型直线偏波耦合器 Small size Linear polarization coupler.
5G 24.5GHz - 29.5GHz	FA-529S FEBMTNU 屏蔽箱专用直线偏波耦合器 Linear polarization coupler for shield box.
5G 24.5GHz - 29.5GHz	FA-629S FEBMTNKU 适用于垂直・水平两偏波直线偏波耦合器 V / H polarization compatible.
5G 24.5GHz - 43.5GHz	FA-729S FEBMTNKU 适用于垂直・水平两偏波四极直线偏波耦合器 V / H compatible quadruple coupler.
5G 24.5GHz - 43.5GHz	FA-520C FEBTNU 屏蔽箱专用圆偏波耦合器 Circular polarization coupler for shield box.
5G 24.5GHz - 43.5GHz	FA-430 FEBMTNKU 大型直线偏波耦合器 Large size Linear polarization coupler.
5G 24.5GHz - 43.5GHz	FA-431 FEBMTNKU 小型直线偏波耦合器 Small size Linear polarization coupler.
5G 24.5GHz - 43.5GHz	FA-543S FEBMTNKU 屏蔽箱专用直线偏波耦合器 Linear polarization coupler for shield box.
5G 24.5GHz - 43.5GHz	FA-643S FEBMTNKU 适用于垂直・水平两偏波直线偏波耦合器 V / H polarization compatible.
5G 56GHz - 75GHz	FA-743S FEBMTNKU 适用于垂直・水平两偏波四极直线偏波耦合器 V / H compatible quadruple coupler.
5G 56GHz - 75GHz	FA-597S FEBMTNKU 屏蔽箱专用直线偏波耦合器 Linear polarization coupler for shield box

5G SUB6GHz	DC - 100GHz	多种屏蔽箱 Various shield boxes. FS-1901 Series for Base station -	FSV-2000 Series 带宽 3GHz band / 28GHz band bidirectional frequency converter.	FPC-3328 NEW! 500MHz-43.5GHzレベル検出器 500MHz-43.5GHz level detector.	FPC-3370 NEW! 500MHz-70GHzレベル検出器 500MHz-70GHz level detector.	WA-667S ワイドバンドウェーブカプラー Wide band wavecoupler.	WA-667S ワイドバンドウェーブカプラー Wide band wavecoupler.
5G 24.5GHz		NEW! FS-1905 Series	NEW! WM1019-04219 for Mobile terminal -	FPC-3000 500MHz to 43.5 GHz band level detector.	FC-1801 Series / FC-1602 Series 低损耗线缆~43.5GHz Low loss cable. (2.92mm)	NEW! FC-1602 Series 天线用线缆~67GHz Antenna cable. (1.85mm)	NEW! FC-1102 Series 天线用线缆~110GHz Antenna cable. (1.00mm)

Other

森田科技公司

对应5G测量用元器件 · 解决方案频率范围一览表

MORITA TECH CO.,LTD. 5G component / solution list by frequency.

Frequency	DC	3.5GHz	5GHz	18GHz	43.5GHz	67GHz	100GHz			
	600MHz	6GHz	24GHz	29GHz	56GHz	75GHz				
天线耦合器 Antenna coupler	 <p>FA-600 直线偏波耦合器 Linear polarization coupler. (P5)</p> <p>FA-862S SUB6 28GHz适用于两用 垂直·水平两偏的用四极直线偏波耦合器 SUB6 28GHz quadruple linear polarization coupler for both vertical and horizontal polarization. (P11)</p> <p>FA-606S 超小型直线偏波耦合器 Ultra-small linear polarization coupler. (P8)</p> <p>FA-706S 适用于垂直·水平两偏波的四极直线偏波耦合器 Supports vertical and horizontal polarization Quad linear polarization coupler. (P6)</p>	 <p>FA-290 直线偏波耦合器 Linear polarization coupler. (P7)</p> <p>FA-291 小型直线偏波耦合器 Small linear polarization coupler. (P7)</p> <p>FA-729S 适用于垂直·水平两偏波的四极直线偏波耦合器 Supports vertical and horizontal polarization Quad linear polarization coupler. (P10)</p> <p>FA-529S 超小型直线偏波耦合器 Ultra-small linear polarization coupler. (P8)</p>	 <p>FA-629S 适用于垂直·水平两偏波的直线偏波耦合器 For both vertical and horizontal polarizationLinear polarization coupler. (P12)</p> <p>FA-597S 超小型直线偏波耦合器 Ultra - small linear polarization coupler. (P8)</p> <p>FA-520C 圆偏波耦合器 Circular polarization coupler. (P9)</p>							
				 <p>FA-430 直线偏波耦合器 Linear polarization coupler. (P7)</p> <p>FA-643S 适用于垂直·水平两偏波的直线偏波耦合器 For both vertical and horizontal polarizationLinear polarization coupler. (P12)</p> <p>FA-431 小型直线偏波耦合器 Small linear polarization coupler. (P7)</p> <p>FA-543S 超小型直线偏波耦合器 Ultra-small linear polarization coupler. (P8)</p>		<p>FA-743S 适用于垂直·水平偏波的四极直线偏波耦合器 Supports vertical and horizontal polarization Quad linear polarization coupler. (P10)</p>				
	 NEW! FA-618 直线偏波耦合器 Linear polarization coupler. (P5)									
宽频带耦合器 Wideband wave coupler										
其他 Other				 NEW! WA-667S 宽频带电波耦合器 Wide band wavecoupler. (P13)						
					 FC-1801 Series (43GHz) FC-1802 Series (43GHz) 低损失线缆 Low loss cable. (P29)	<p>FPC-3340 NEW! 500MHz-43.5GHz电平检出器 500MHz-43.5GHz level detector. (P22)</p> <p>FPC-3370 NEW! 500MHz-70GHz电平检出器 500MHz-43.5GHz level detector. (P23)</p>	<p>FSV-2000 Series 3GHz带宽 / 28GHz带宽 双向频率变频器 3GHz band / 28GHz band bidirectional frequency converter. (P24)</p>	<p>SOC-1290 NEW! 28GHz频带CW振荡器 28GHz band CW oscillator. (P25)</p>	<p>FS-1901 Series (43.5GHz) (P15) — for Base station —</p> <p>FS-1905 Series (100GHz) (P19) — for Mobile terminal —</p>	<p>NEW! WM1019-04219 (100GHz) (P17)</p>



600MHz - 6GHz天线耦合器 600MHz to 6GHz antenna coupler.

FA-600



◆ 规格 Specification

Model number	: FA-600
Frequency band	: 600MHz to 6GHz
V.S.W.R	: 1.8
Polarization plane	: Linear polarization
Maximum power	: 5W or less (at CW)
Connector	: SMA
Exterior	: Flame-retardant ABS resin
Dimension	: 23.5(H) x 80.6(W) x 100.6(D) mm (Not including protrusions and pedestals)

除了移动通信频率(800 MHz, 1.5 GHz, 1.7 GHz, 2 GHz, etc.)外，同时还兼容计划用于第5代移动通信系统（通称：sub-6GHz）中600MHz~6GHz的小型广频宽天线耦合器。

通过与本公司毫米波天线耦合器的组合，在桌上型大小的屏蔽箱中，即可实现能够对移动手机通信所覆盖的全部频段进行测试的系统的构建。

In addition to mobile communication frequencies (800MHz, 1.5 GHz, 1.7GHz, 2GHz, etc.), it supports small broadband 600MHz to 6GHz that covers the frequencies planned to be used in the 5th generation mobile communication system (commonly known as sub 6GHz). It is an antenna coupler. By combining with our millimeter-wave band antenna coupler, a test system for all frequencies covered by mobile mobile communication can be built with a desktop-sized shield box.



600MHz - 18GHz天线耦合器 600MHz to 18GHz antenna coupler.

NEW!

FA-618

该耦合器是对本公司原有的sub-6带用FA-600天线耦合器进行广带宽化，使其能够对应600MHz~18GHz频带。

通过与本公司毫米波天线耦合器的组合，在桌上型大小的屏蔽箱中，即可实现能够对较广频段进行测试的系统的构建。

This is an antenna coupler that supports 600MHz to 18GHz by further widening the band of our antenna coupler FA-600 for sub 6GHz. By combining with our millimeter-wave band antenna coupler, a test system that supports a wide range of frequencies can be built with a desktop-sized shield box.

◆ 规格 Specification

Model number	: FA-618
Frequency band	: 600MHz to 18GHz
V.S.W.R	: 2.0
Polarization plane	: Linear polarization
Maximum power	: 5W or less (at CW)
Connector	: SMA
Exterior	: Flame-retardant ABS resin
Dimension	: 23.5(H) x 80.6(W) x 100.6(D) mm (Not including protrusions and pedestals)

FA-706S



FA-706S是适用于频宽3.5GHz–5GHz的sub-6GHz用天线耦合器，内置2个水平偏波耦合器和2个垂直偏波耦合器，合计4个耦合器。不仅可进行各种偏波的通信实验，还可以以小型方式实现简单的MIMO实验。

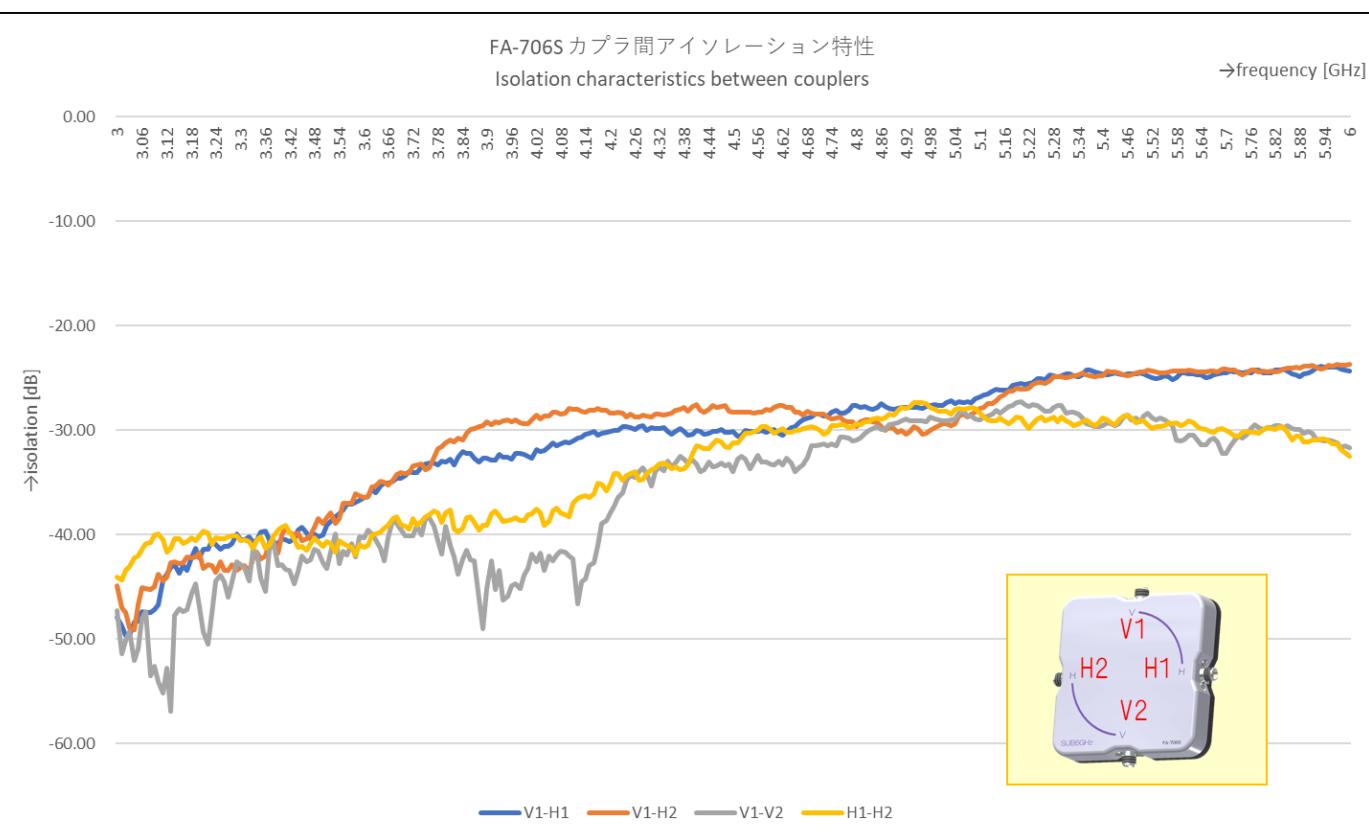
FA-706S is an antenna coupler for SUB6GHz compatible with 3.5GHz-5GHz band. It has two built-in couplers, two horizontally polarized couplers and two vertically polarized couplers. In addition to communication tests at, simple MIMO tests can be realized in a compact manner.

◆ 规格 Specification

型号	: FA-706S
频率带宽	: 3.5GHz to 5GHz
驻波系数	: 2.0 or less
偏振面	: Horizontal polarization x2 Vertical polarization x2
最大功率	: 5W or less (at CW)
连接方式	: SMA-J
外部性	: ABS
尺寸	: 58(W) x 58(D) x 16(H) mm (Not including protrusions and pedestals)

FA-706S カプラ間アイソレーション特性
Isolation characteristics between couplers

→frequency [GHz]





适用于24GHz - 43.5GHz的天线耦合器 24GHz to 43.5GHz antenna coupler.

24GHz - 29.5GHz FA-290 / FA-291

FA-430

24GHz - 43.5GHz FA-430 / FA-431

以能与测定物体紧密贴合为主要特点，标准尺寸的第5代移动通信系统用毫米波高性能天线耦合器。

通过展平耦合特性和吸收全反射过程中的VSWR干扰，使EVM(RMS)值得以改善，这在OTA测试中发挥了巨大作用。

我们准备了24GHz ~ 29.5GHz型号和24GHz ~ 43.5GHz型号，不同大小尺寸合计4款型号。

This is a standard-sized millimeter-wave high-performance antenna coupler for 5th generation mobile communication systems, with an emphasis on using the coupler in close contact with the measurement object.

By flattening the coupling characteristics and absorbing the VSWR disturbance during total reflection, the EVM (RMS) value is improved and it is very useful for OTA measurement.

24GHz ~ 29.5GHz model and 24GHz ~ 43.5GHz model are available , and a total of 4 models of large and small sizes are available.

FA-290



FA-291

FA-430



FA-431

◆共通基本规格

频率带宽

Common basic specifications

: 24GHz - 29.5GHz (FA-290/FA-291)
24GHz - 43.5GHz(FA-430/FA-431)

驻波系数

: 1.8

EVM(RMS)

: 1.2%以下(28.5GHz)

偏振面

: Linear polarization

最大功率

: 1W以下 (CW時)

接口

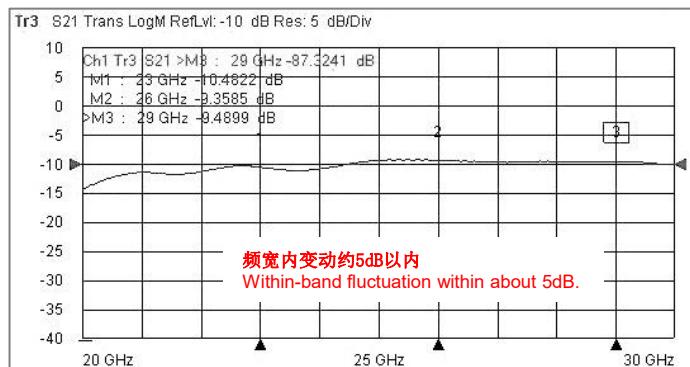
: 2.92mm

外部性

: Flame retardant ABS resin.

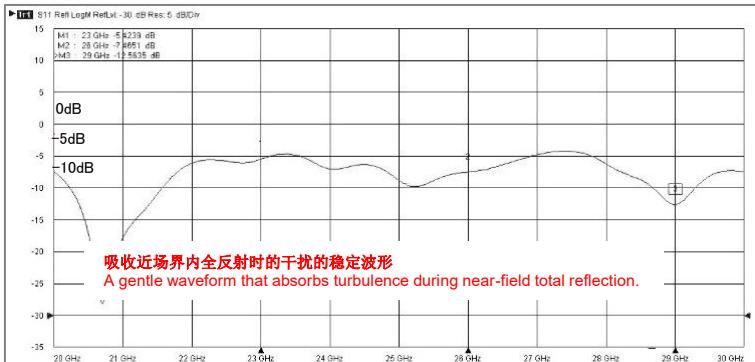
◆连接特性 Bonding characteristics

FA-290对向结合 FA-290 facing coupling.



◆全反射时反射衰减特性 Reflection attenuation characteristics during total reflection.

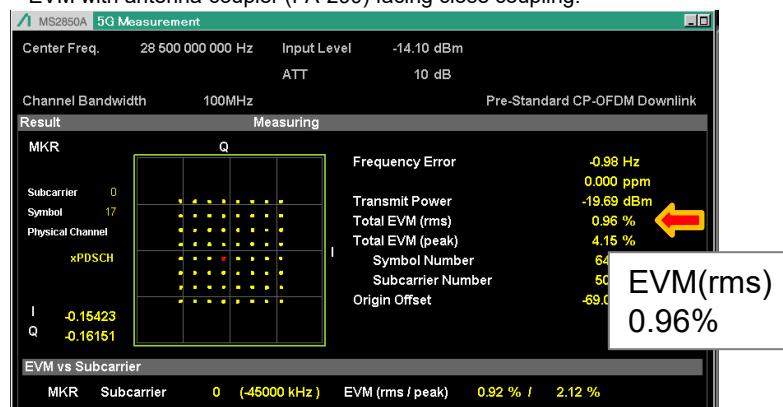
FA-290 5mm厚铝片放置在耦合器上面时 When FA-290 5mm thick aluminum is placed on the coupler surface.



Measured with Anritsu MS46322B.

◆天线耦合器(FA-290)对向紧密连接的EVM

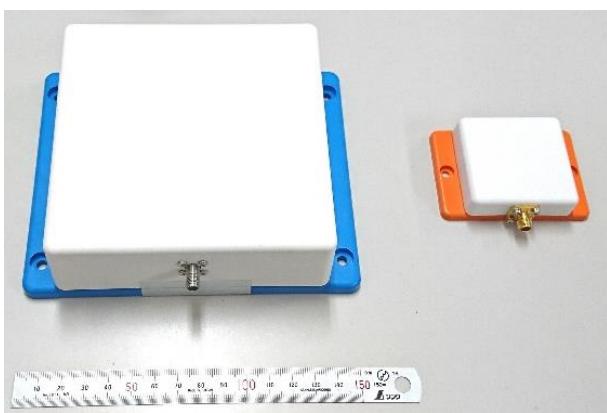
EVM with antenna coupler (FA-290) facing close coupling.



(Measurements are supported by Anritsu Corporation.)

测量条件 Measurement conditions
Frequency: 28.5GHz
Bandwidth: 100MHz
Modulation : Pre-Standard CP-OFDM Downlink

◆外观·尺寸 Appearance and dimensions



Large type(Coupler effective size 80x80)
MODEL:FA-290 / FA-430
Size : 156(W) x 45(H) x 125(D) mm

Small type(Coupler effective size 15x15)
MODEL : FA-430 / FA-431
Size : 50.4(W) x 27(H) x 70.4(D) mm

Body color Blue: 24 GHz to 29.5 GHz
Body color Orange: 24 GHz to 43.5 GHz



◆ 共通基本规格 Common basic specifications

频率带宽 : 3.5GHz - 5GHz(FA-506S)
: 24GHz - 29.5GHz (FA-529S)

: 24GHz - 43.5GHz(FA-543S)

: 56GHz - 75GHz(FA-597S)

: 2.0(FA-506S)

: 1.8(FA-529S / FA-543S)

: 2.5(FA-597S)

: 1.2%以下(FA-529S 28.5GHz)

: Linear polarization

: 1W 以下 (CW时)

: SMA (FA-506S)

: 2.92mm (FA-529S / FA-543S)

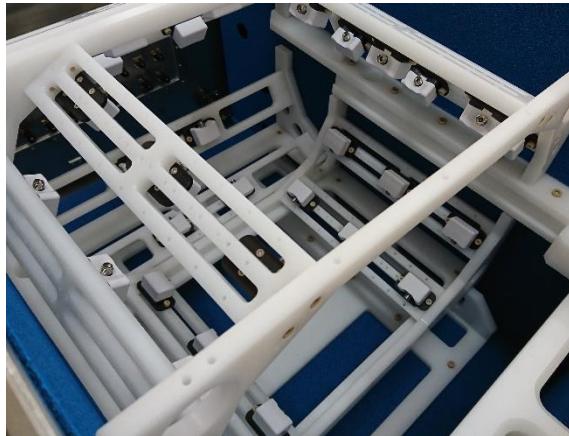
: 1.85mm(FA-597S)

: ABS

: 58(W) x 58(D) x 16(H) mm

(Not including protrusions and pedestals)

◆ 安装例 Mounting example



FS-1801适用于终端用途安装例FA-529Sx32个
Installation example for FS-1801 terminal use FA-529Sx32

NEW

3.5GHz - 5GHz FA-506S

24GHz - 29.5GHz FA-529S

24GHz - 43.5GHz FA-543S

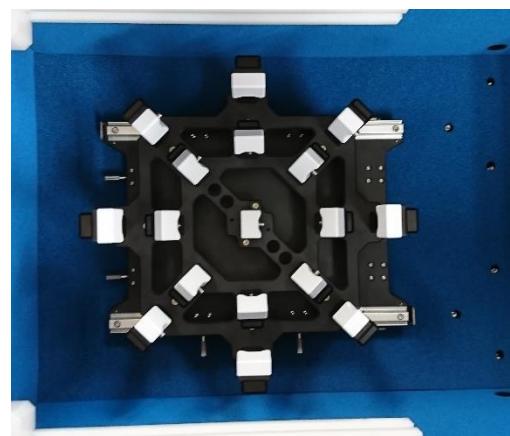
56GHz - 75GHz FA-597S

专为屏蔽箱开发的超小型天线耦合器。

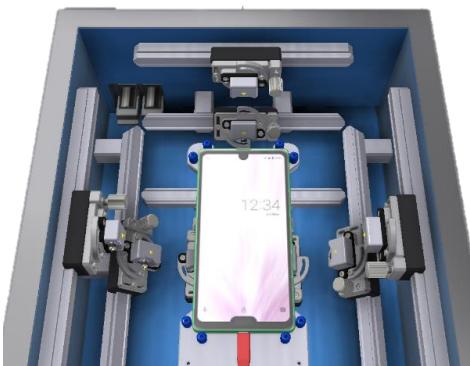
森田科技公司的天线耦合器的最大特点是能够进行近距离测量，在性能不变的基础上实现天线耦合器的小型化，被应用在我公司的屏蔽箱中。

任何频率的天线耦合器都被设计成相同尺寸，因此只要通过简单的更换即可轻松实现对应不同频率的测试。

An ultra-compact antenna coupler developed exclusively for shield boxes . Morita Tech Antenna Coupler The performance that enables short-distance measurement , which is the greatest feature , is miniaturized as it is , and it is oil-extracted in our shield box for terminals . Since all frequencies are designed to have the same size, you can easily support different frequencies simply by changing them.



FS-1801适用于模块用途安装例FA-529Sx17个
FS-1801 module application example FA-529Sx17



FS-1905安装例FA-543Sx9个
FS-1905 installed example FA-543Sx9



FA-520C是频宽28GHz圆偏波天线耦合器，可通过单个耦合器接收水平、垂直两偏波，亦可用于简易传递监测、波束抵达测试等。另外，用于简易终端测试机上可节省空间。

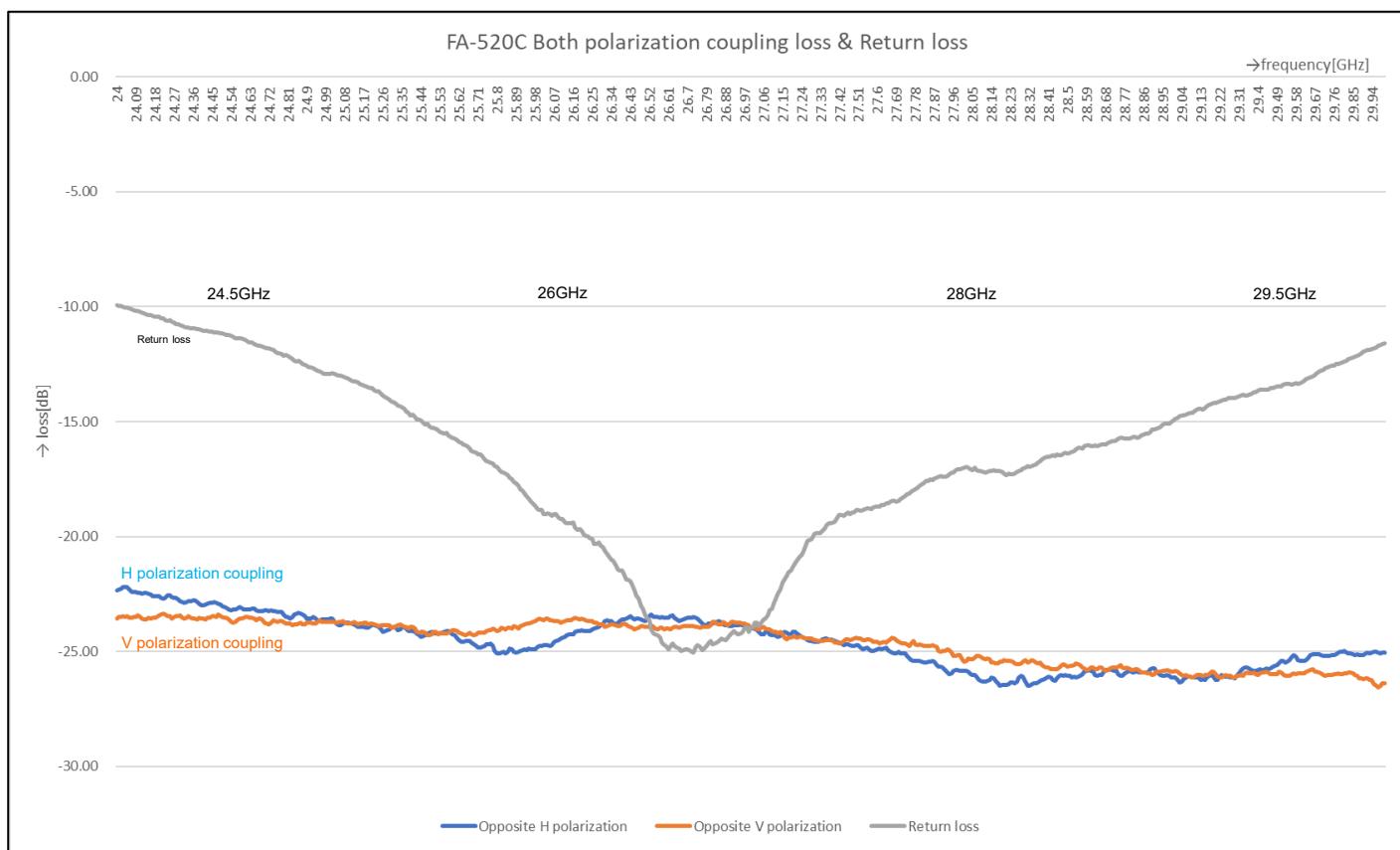
The FA-520C is a circularly polarized 28 GHz band antenna coupler that can receive both horizontal and vertical polarized waves with a single coupler and can be used for simple transmission monitoring and beam arrival tests. In addition, space saving can be realized by adopting it in a simple terminal testing machine.

◆ 规格 Specifications.

型 号	: FA-520C
频率带宽	: 24.5GHz - 29.5GHz
驻波系数	: 2.0
最大功率	: 1W
连接方式	: 2.92mm
波形	: Circular polarization
尺寸	: 16(H) x 43(W) x 18(D) mm (Not including protrusions and pedestals)

◆ 特性 Characteristic.

- 不同偏波连接频率特性
H/V polarization coupling frequency characteristic.
- 回波损耗特性
Return loss characteristics.





FA-729S



FA-743S

24GHz – 29.5GHz FA-729S

24GHz – 43.5GHz FA-743S

FA-729S、FA-743S是在保持我司生产的标准品FA-291、FA-431性能不变的前提下，将2个水平偏波耦合器和2个垂直偏波耦合器，合计4个耦合器内置于其中，不仅能进行各种偏波的通信实验，还可以以小型方式实现简单的MIMO实验。

The FA-729S and FA-743S have four couplers, two horizontal polarization couplers and two vertical polarization couplers, while maintaining the performance of our standard antenna couplers FA- 291 and FA-431. Built-in and can be used for compact MIMO tests as well as communication tests for each polarization.

◆ 规格 Specifications.

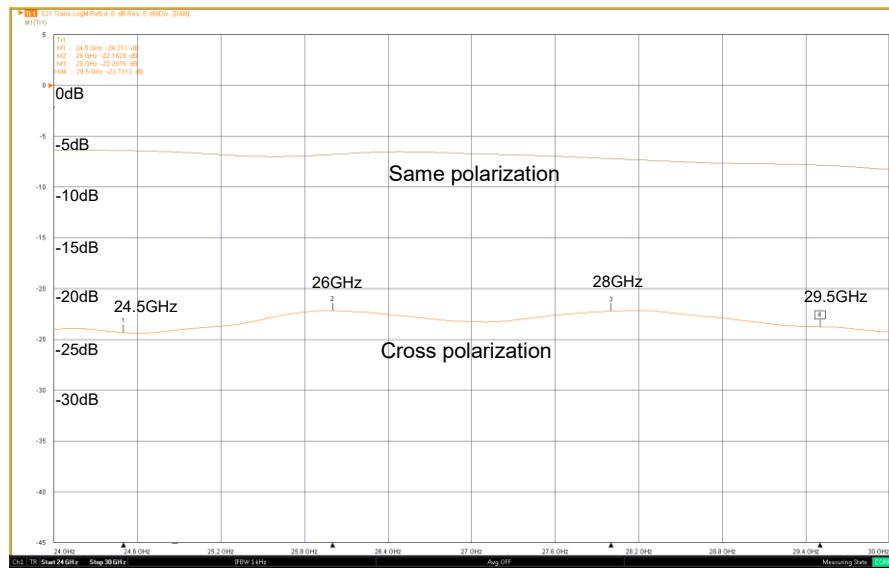
型号	: FA-729S / FA-743S
频率带宽	: 24.5GHz - 29.5GHz(FA-729S) 24.5GHz - 43.5GHz(FA-743S)
驻波系数	: 1.8
最大功率	: 1W
连接方式	: 2.92mm
波形	: Horizontal polarization and Vertical polarization
尺寸	: 43(W) x 43(D) x 16(H) mm (Not including protrusions and pedestals)

外观 Appearance.



◆ 特性(FA-729S) Characteristic.(FA-729S)

- 同偏波连接频率特性
Same polarization coupling frequency characteristic.
- 不同偏波隔离特性
Cross polarization isolation characteristics.



FA-862S



将适用于水平偏波、垂直偏波，频宽sub-6GHz和28GHz的两种天线耦合器浓缩组装在一起的天线耦合器。

FA-862S耦合器在频宽sub-6GHz和28GHz中均将水平偏波、垂直偏波的耦合器内置于其中，使两个频率带宽上的实验都能以小型的方式实现。

This is an antenna coupler that combines a SUB6GHz band (3.5GHz-4.9GHz) and a 28GHz band antenna coupler that support both horizontal and vertical polarization, and is combined into one unit.

The FA-862S incorporates horizontal and vertical polarization couplers in both the SUB6GHz and 28GHz frequency bands, making it possible to realize tests in both frequency bands in a compact manner.

◆规格 Specifications.

型号

: FA-862S

频率带宽

: SUB6GHz band 3.5GHz – 5GHz

外观 Appearance.

驻波系数

: 2.0

最大功率

: 2.0

连接方式

: SMA / 2.92mm

波形

: Horizontal polarization and Vertical polarization

尺寸

: 58(W) x 58(D) x 16(H) mm
(Not including protrusions and pedestals)



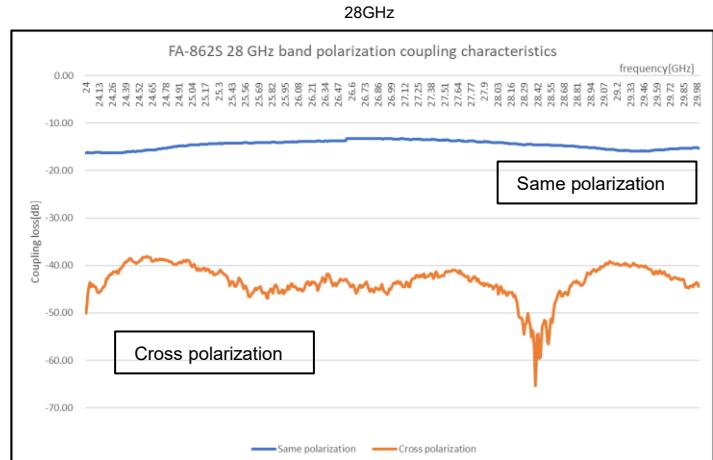
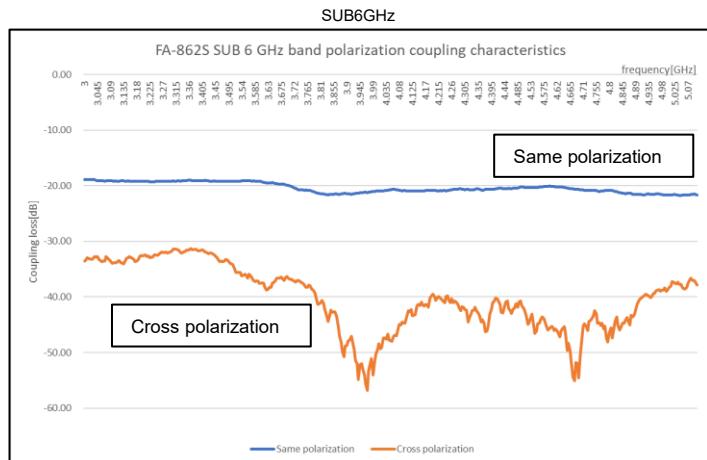
◆特性 Characteristic.

·相同偏波连接特性

Same polarization coupling frequency characteristic.

·不同偏波隔离特性

Cross polarization isolation characteristics.





FA-606S



FA-629S



FA-643S

3.5GHz – 5GHz FA-606S

24GHz~29GHz FA-629S

24GHz~43.5GHz FA-643S

一款天线耦合器中均配置了水平偏波、垂直偏波，各自分别涵盖了sub 6GHz频带（3.5GHz~5GHz），28GHz频带（24.5GHz~29.5GHz），从28GHz频带到43GHz频带（24.5GHz~43.5GHz）的天线耦合器。

通过将水平偏波、垂直偏波耦合器合并在一个单元中，可以实现测试的小型化。

One antenna coupler for horizontal polarization and vertical polarization, respectively, from sub 6 GHz band (3.5 GHz to 5 GHz), 28 GHz band (24.5 GHz to 29.5 GHz), and 28 GHz band to 43 GHz (24.5 GHz to 43.5 GHz) Each antenna coupler is covered.

By incorporating a horizontal polarization and vertical polarization coupler in one unit, it is possible to achieve a compact test.

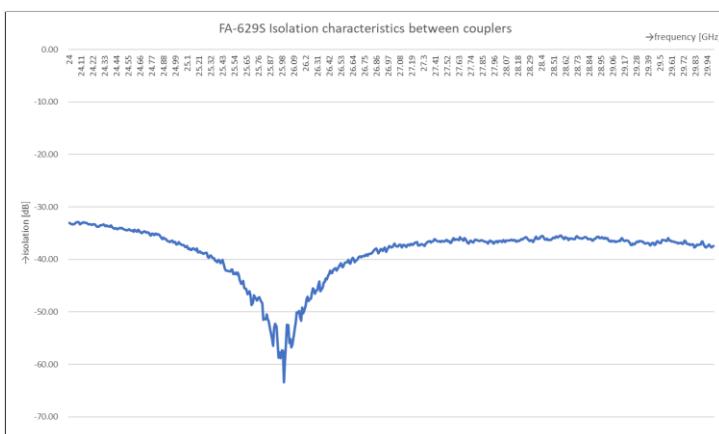
◆ 规格 Specifications.

型号	: FA-606S / FA-629S / FA-643S
频率带宽	: 3.5GHz – 5GHz / 24.5GHz - 29.5GHz / 24.5GHz – 43.5GHz
驻波系数	: 2.0
最大功率	: 5W(CW)
连接方式	: SMA(FA-606S) / 2.92mm(FA-629S,FA-643S)
波形	: Horizontal polarization and Vertical polarization
尺寸 (不含突起和基座)	: 50(H) x 92(W) x 16(D) mm (FA-606S) 33(H) x 60(W) x 16(D) mm (FA-629S,FA-643S)

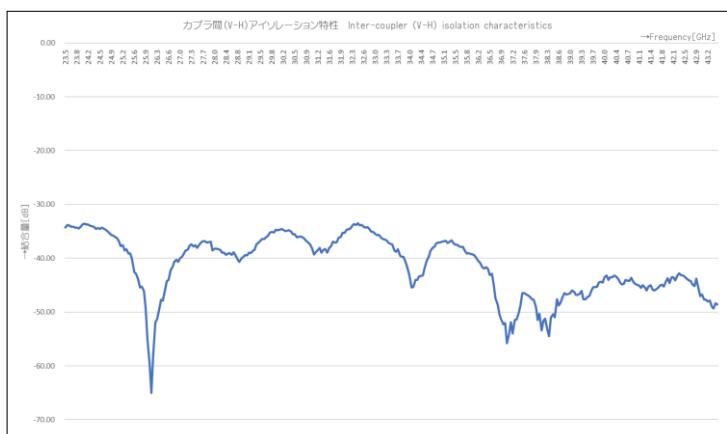
◆ 特性 Characteristic.

- 耦合器间 (V-H) 隔离特性 30dB以上
Inter-coupler (V-H) isolation characteristics. 30dB or more.

FA-629S



FA-643S





600MHz - 67GHz宽频带耦合器 600MHz – 67GHz Widebandwave coupler.

NEW!

WA-667S

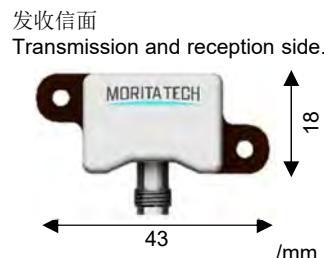


WA-667S是一款可对应600MHz-67GHz超广宽带的耦合器，只需使用一个即可实现对所有主流移动通信频带的覆盖，实现各种测试试验，可以活用在终端设备、各类机器和模块试验（如杂散发射）的监测实验中去。

Morita Tech Co., Ltd. has developed a linearly polarized wave coupler WA-667S for radio wave detection that is compatible with a wide range from 600MHz to 67GHz. The WA-667S supports ultra-wideband up to 600MHz-67GHz, and by covering all the mainstream bands of mobile communication, it is possible to support various tests with one unit. It can be utilized for testing (spurious detection, etc.) and monitoring of terminals, various devices and modules.

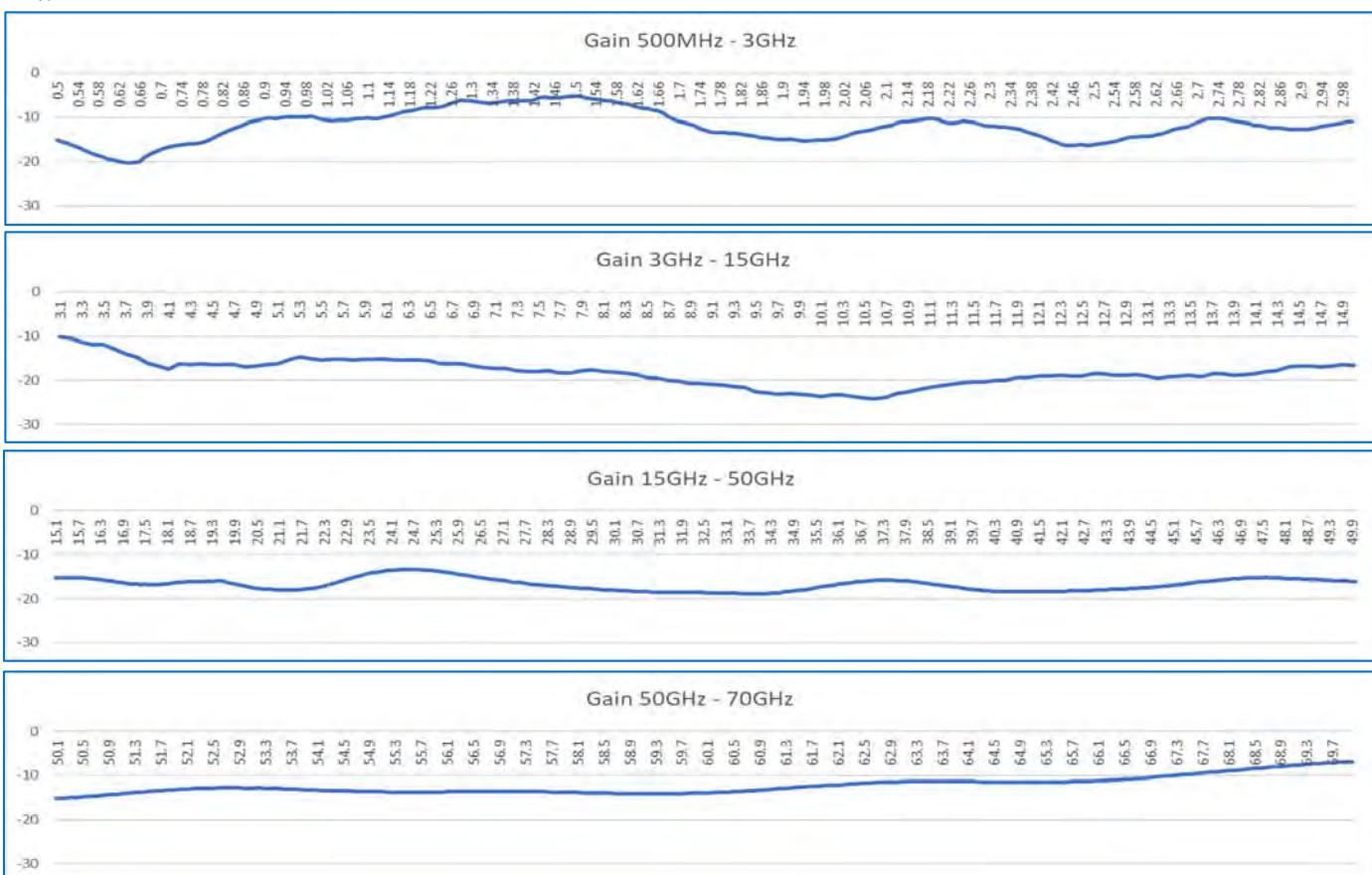
◆ 规格 Specifications.

Model number	: WA-667S
Frequency	: 600MHz - 67GHz
V.S.W.R	: 2.5
Maximum Input power(TX)	: 1W(CW)
Gain	: -25dBtyp
Connector	: 1.85mm
Polarization	: Linear polarization
Size	: 16(H) x 43(W) x 18(D) mm



◆ 特性 Characteristic.

· 增益Gain





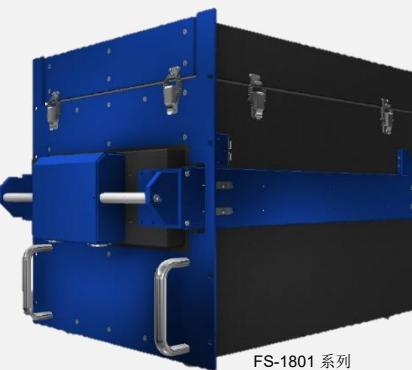
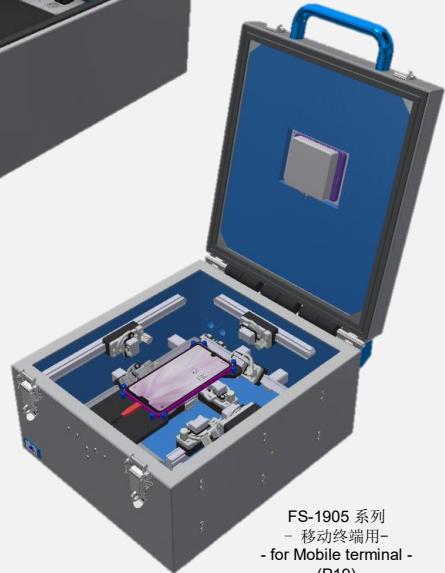
森田科技 5G适用屏蔽箱产品阵容

MORITA TECH CO.,LTD. 5G compatible shield box lineup.

尺寸 Size	主要用途 Main uses	800(600)MHz~43.5GHz Isolation 60dB or more
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P为产品刊载的页码数。
P notation shows the posted page.

大型 Large Size	基站 Base Station	 <p>FS-1901 系列 - 基站用 - - Base station use - (P15)</p>
	中继装置 Repeater	 <p>WM1019-04227 系列 - 中小型多功能型 - - Medium-sized multipurpose use - (P16)</p>
	末端装置 Terminal	 <p>WM1019-04219 系列 - 多功能型 - - Multipurpose use - (P17)</p>
	终端专用机种 Other	 <p>FS-1801 系列 - 移动终端用 - - for Mobile terminal - (P20)</p>
		 <p>FS-1905 系列 - 移动终端用 - - for Mobile terminal - (P19)</p>

除以上产品外，我公司还可生产其他多种类型的定制化产品。
In addition to these, we also have various types including custom products.

FS-1901



◆ 代表规格 Typical specifications.

- Representative box size : 1500(H) x 1100(W) x 800(D) mm
(不含突起部 excluding protrusions)
- Shield attenuation : 60dB or more (600MHz to 45GHz)
- Standard connector : SMA or 2.92mm 16 in total.
- Other : 搭载缆线贯通孔
Equipped with a through tube for cable lead-in.
: 冷却风扇4台
Equipped with 4 cooling FANS.

※定制可能。有需要的话,请联系我公司销售人员
Custom available. Please consult our sales department.

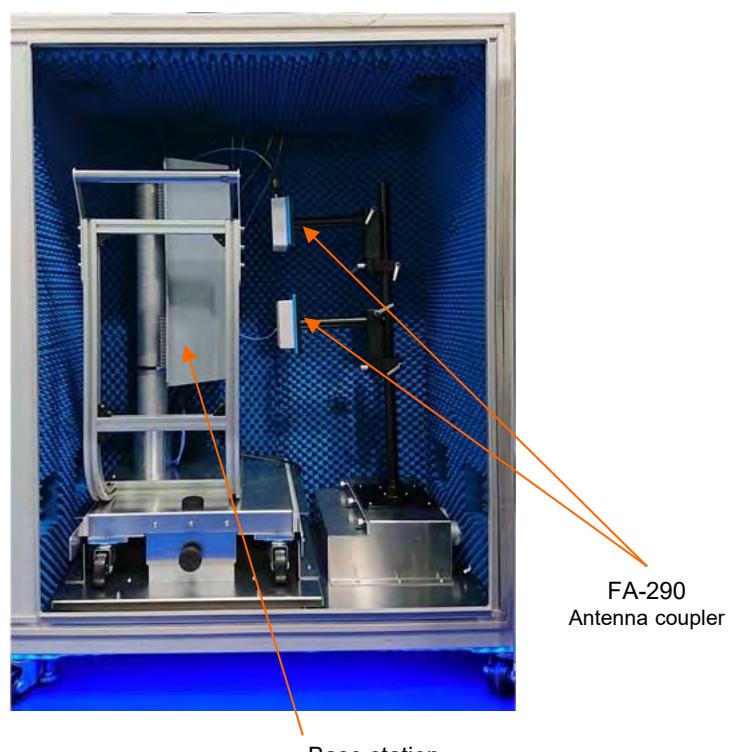
可容纳5G基站的大型屏蔽箱。通过与我公司的天线耦合器的组合, 可实现尺寸的小型化。

除基站试验外, 也可与移动终端用屏蔽箱组合使用, 实现真实基站和移动终端的通信品质试验。

※该产品, 可根据要容纳的基站的尺寸, 进行客制化生产。

A chamber (large shield box) that can accommodate 5G base stations. By combining with our antenna coupler, the radio wave coupling distance can be shortened, so it is realized in a compact size. In addition to base station tests, it is possible to perform quality tests between actual base stations and terminals by combining with a shield box for terminals. * This product can be customized according to the size of the base station to be accommodated.

◆ 内部图 Internal view



WM1019-04227



内部图 Internal view.



◆代表规格 Typical specifications

- External dimensions 600(H) x 600(W) x 600(D)
(excluding protrusions)
- Internal effective dimension 500(H) x 500(W) x 500(D)
- Internal table dimensions 400mm x 400mm
- Penetration tube size Φ50mm x1
- Shield attenuation 60dB or more (800MHz to 43.5GHz)
- Standard connector SMA or 2.92 connector x10
2.92mm x9
USB3.0 x2 / USB2.0 x2 / DSUB9Pin x3
LAN x1 / VGA x1 / AC100V x1

※定制可能。有需要的话,请联系我公司销售人员。

Custom available. Please consult our sales department.

内部有效尺寸为500mm(W) x 500mm(H) x 500mm(D)的多功能中型屏蔽箱。可应用于手机终端、各类电子模块和中继设备等无线通信终端设备的测试中。

屏蔽箱内部配有多种连接方式,除配备RF接口(2.92mm、SMA)、DSUB9Pin、USB、AC、LAN等连接方式外,还配备了VGA,可实现对各类设备的测试。而且还配有贯穿管,可实现光缆和USB缆线等各种缆线的穿引。

标准型号适用的频率范围为800MHz~43.5GHz,可确保屏蔽衰减量在60dB以上。

It is a multipurpose medium size shield box with internal effective dimensions of 500 mm (W) x 500 mm (H) x 500 mm (D). It can be used to measure wireless communication terminals such as mobile terminals as well as various modules and repeaters. It is equipped with a variety of interfaces inside the box, and in addition to the RF connector (2.92mm, SMA), DSUB9Pin, USB, LAN, and AC, it also has VGA and supports measurement of various devices. It is also equipped with a penetrating tube, so it is possible to directly pull in cables such as optical cables and high-speed USB.

The standard model has a frequency of 800MHz to 43.5GHz and a shield attenuation of 60dB or more.

连接界面图 Interface part view.





各类小型设备测评用屏蔽箱

Shield box for evaluation of various small devices.

**NEW
100GHz**

WM1019-04219

可对各类终端设备进行小型化的试验，小型屏蔽箱内为平坦的树脂平台构造，可用一台屏蔽线实现对从手机到游戏机、平板电脑等各类设备电磁波测试环境的建立。频率范围在800MHz~100GHz，可确保60dB以上的衰减量。

屏蔽箱每内部配有多重连接方式，如RF接口（2.92mm、SMA）、USB、AC、CITA等，同时也配备有贯通孔，用于如仿真器等内部设备的多芯缆线的穿引，经常被应用在设备开发和验证等方面。

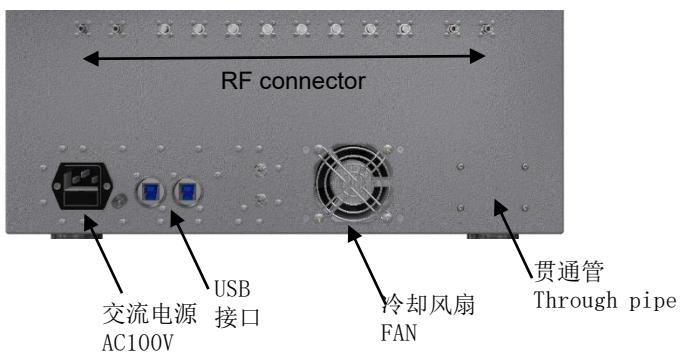
作为内部空气流动的对策，搭载了小型冷却风扇。

A compact shield box that enables testing of various terminal devices in a compact size has a flat resin table structure inside, and a single device can measure the radio wave environment of various devices such as mobile phones, game consoles and tablets. It can be realized. The frequency is 800 MHz to 100GHz, and the amount of attenuation is 60dB or more

Equipped with abundant interfaces inside the box, equipped with RF connector (2.92mm, SMA), USB, AC, CITA, and also equipped with a through tube, which pulls in multicore cables such as emulators of internal equipment. It is very useful in equipment development and verification. Equipped with a small fan, internal airflow measures are taken into consideration.



接口界面图 Interface part view.



内部图 Internal view.



◆代表规格 Typical specifications

- External dimensions 250mm(H) x 410mm(W) x 592.5mm(D)
(excluding protrusions)
- Internal effective dimension 150(H) x 300(W) x 300(D)
- Penetration tube size Φ20mm x1
- Shield attenuation 60dB or more (800MHz to 100GHz)
- Standard connector SMA or 2.92 x8 (Group1)
SMA or 2.92 x4 (Group2)
USB x2 / CITA x2 / AC100V x1

※定制可能。有需要的话，请联系我公司销售人员。

Custom available. Please consult our sales department.

WM1019-04207



手臂插入部位为屏蔽性能较好的柔性布状金属。
不是想图片所示的那种坚硬的圆柱体。
The arm insertion part is a cloth-like metal with a soft shield property. It is not a hard cylinder like the image.

内部图 Internal view.



◆代表规格 Typical specifications

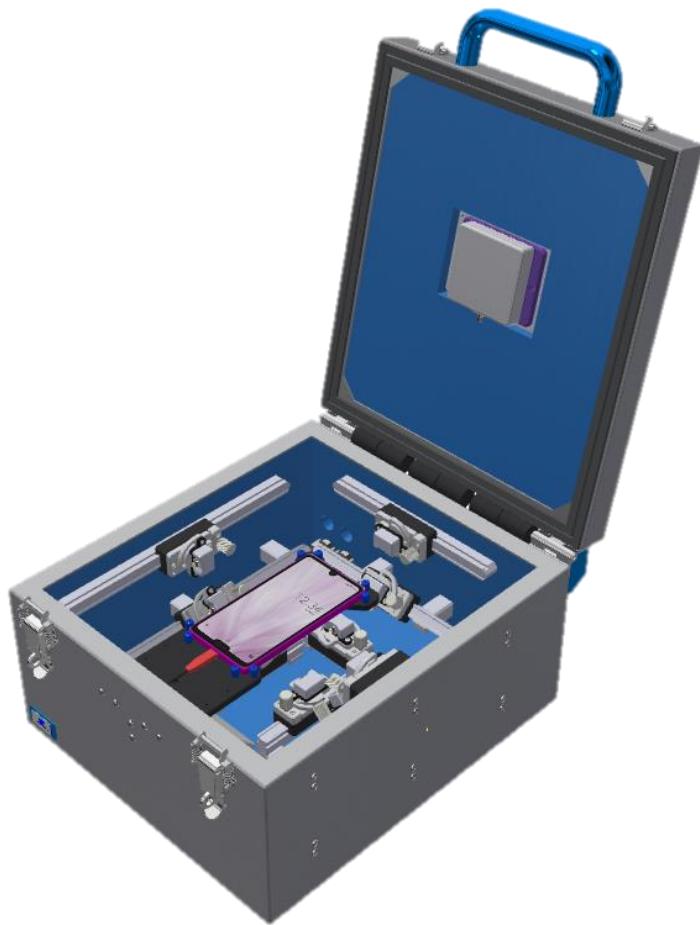
- External dimensions 341mm(H) x 505mm(W) x 584.5mm(D)
(excluding protrusions)
- Internal effective dimension 200mm(H) x 400mm(W) x 400mm(D)
- Penetration tube size Φ20mm x1
- Shield attenuation 60dB or more (800MHz to 43.5GHz)
- Standard connector SMA or 2.92 x8 (Group1)
SMA or 2.92 x4 (Group2)
USB x2 / LAN x1 / CITA x2 / AC100V x1

※可订制，请联系我司销售人员。

Custom available. Please consult our sales department.

NEW!
100GHz

FS-1905 Series



实现对5G终端设备测试袖珍版，第2代小型屏蔽箱。
通过使用我司生产的小型天线耦合器，最大限度对屏蔽箱进行了小型化。

适用于电力、杂散发射、EVM、通信协议、MIMO、波束成形和信号切换等各类测试。

频率带宽适用于24GHz~100GHz。通过和sub 6GHz用天线耦合器的组合，频率可覆盖600MHz~75GHz。屏蔽箱的衰减量可确保在60dB(600MHz~100GHz)以上。

*可以根据被测物的尺寸，对屏蔽箱进行客制化。

This is a second-generation compact shield box that enables testing of 5G terminal equipment in a compact size.

The box was downsized to the limit size by our small antenna coupler.

Various tests such as power, spurious, EVM, protocol, MIMO, beamforming, and handover can be supported. Supports frequencies from 24GHz to 43.5GHz. By combining with sub 6 GHz antenna coupler, it can cover 600MHz ~ 43.5GHz. The attenuation of the shield box has secured 60dB or more.

* The shield box size can be customized according to the size of the object to be measured.

毫米波天线耦合器，按标准是需要配备9个，分别在手机终端设备的左右两面，背面和顶部方向保持一定的距离，在0度(水平)、45度和90度的位置上予以配置。为了能够在水平偏波、垂直偏波进行自由切换，配备了直角旋转装置。

另外还可选择sub 6GHz用天线耦合器(FA-600, FA-600N)，在手机终端装置的斜背面和液晶屏屏幕面方向上安装2个。

Nine millimeter-wave antenna couplers (FA-529S, FA-543S) are installed as standard, and 0 degrees (horizontal), 45 degrees, 90 degrees while maintaining a certain distance in the zenith direction on both the left and right sides and the back of the mobile terminal. Is arranged with degrees. Easy switching between horizontal and vertical polarization

Equipped with a mechanism that rotates at right angles.

Optional sub 6 GHz antenna couplers (FA-600, FA-600N) can be mounted on the mobile phone's diagonal back and liquid crystal surfaces.

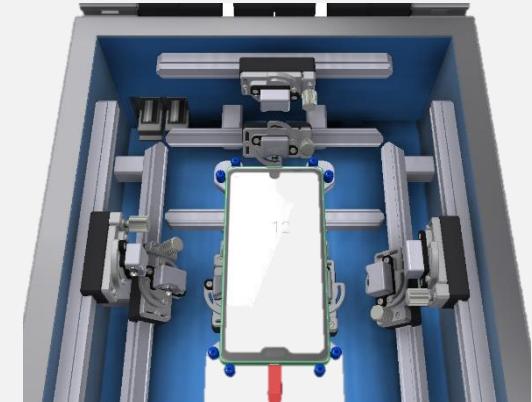
◆代表性规格 Typical specifications

- 箱体尺寸 226(H) x 350(W) x 395(D)
(excluding protrusions)
- 可测量物尺寸 160(H) x 80(W)mm
- 屏蔽衰减量 60dB or more (600MHz to 100GHz)
- 标准连接方式 SMA x2
2.92mm x9
USB3.0 x2
One USB can be replaced with Ethernet

※可订制，请联系我司销售人员。

Custom available. Please consult our sales department.

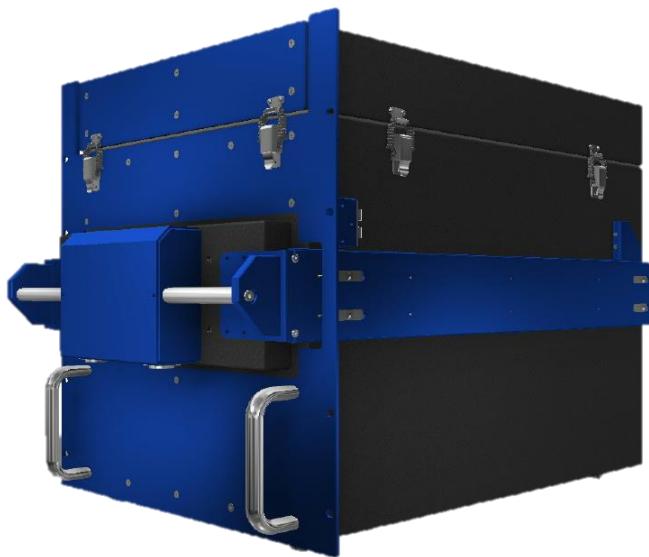
内部图 Internal view.



断面图 Cross section.



FS-1801



这是一款可接近被测物进行测量，并配备了高性能天线耦合器的小型※测试专用屏蔽箱。可以实现在桌子上大小的地方对电力、EVM、波束成形和MIMO(多进多出)等的测试。

※屏蔽箱的尺寸可以根据被测物的大小来进行变动。

This is a small size * shield box equipped with a high-performance antenna coupler that can measure closely to the measurement object. Various evaluations such as power, EVM, beamforming, and MIMO can be realized on the desk.

* The shield box size varies depending on the size of the measured object.

使5G设备测试能在桌子上大小的地方进行的关键部件天线耦合器，是我公司开发的屏蔽箱专用最新的超小型天线耦合器。

适用的频率带宽为24GHz～43.5GHz。通过和SUB-6GHz专业天线耦合器的组合，可覆盖频率带宽600MHz～43.5GHz。

屏蔽箱的衰减量可以确保在60dB以上。

Key to enable 5G device evaluation at desktop size Part antenna coupler. This time, we have developed a new ultra-small antenna coupler specifically for the shield box.

Supports frequencies from 24GHz to 43.5GHz. By combining with sub 6 GHz antenna coupler, it can cover 600MHz - 43.5GHz.

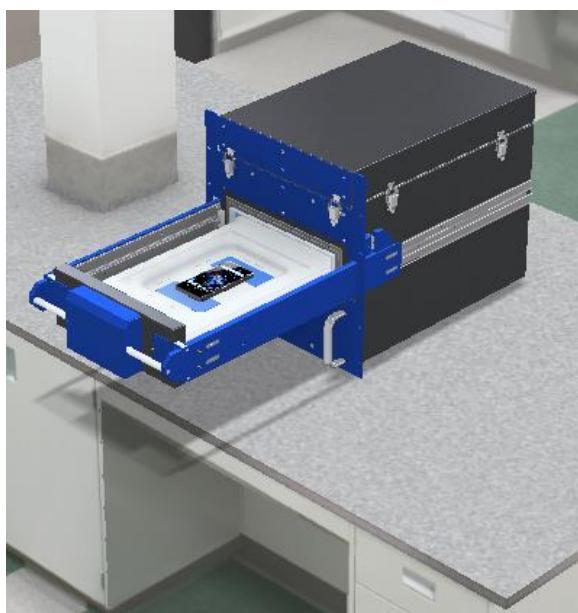
The attenuation of the shield box has secured 60dB or more.

天线耦合器配置在终端设备周围，以使终端设备天线的距离相等。另外，它具有允许自由配置天线耦合器以支持水平偏波和垂直偏波。

还研发了天线耦合器群装置，可对智能手机类、模块类、基站类和元器件类测量物进行测试。

An antenna coupler is placed around the terminal so that the distance from the terminal antenna is equal. In addition, it has a structure that allows antenna couplers to be freely arranged to support horizontal and vertical polarization.

Available measurement items include smartphone type, module type, base station type, and antenna coupler group units corresponding to measurement components.



可在桌子上进行测试
Measure on the desk.



◆代表性规格

- 屏蔽箱尺寸
- 预计测量物尺寸
- 屏蔽衰减量
- 标准配备接口

484(H) x 482(W) x 600(D)mm
(不含突起部分)
19inch(EIA)机架尺寸
148(H) x 74(W) mm
60dB以上 (600MHz～45GHz)
SMA or 2.92mm 计42
USB3.0 x 4
USB1个 可更换至以太网

※可订制。请于我司销售人员联系
Typical specifications

• Box size

484(H) x 482(W) x 600(D) mm

(excluding protrusions)

19-inch (EIA) rack size

148(H) x 74(W) mm

60dB or more (600MHz to 45GHz)

SMA or 2.92mm 42 in total

USB3.0 x4

One USB can be replaced with Ethernet

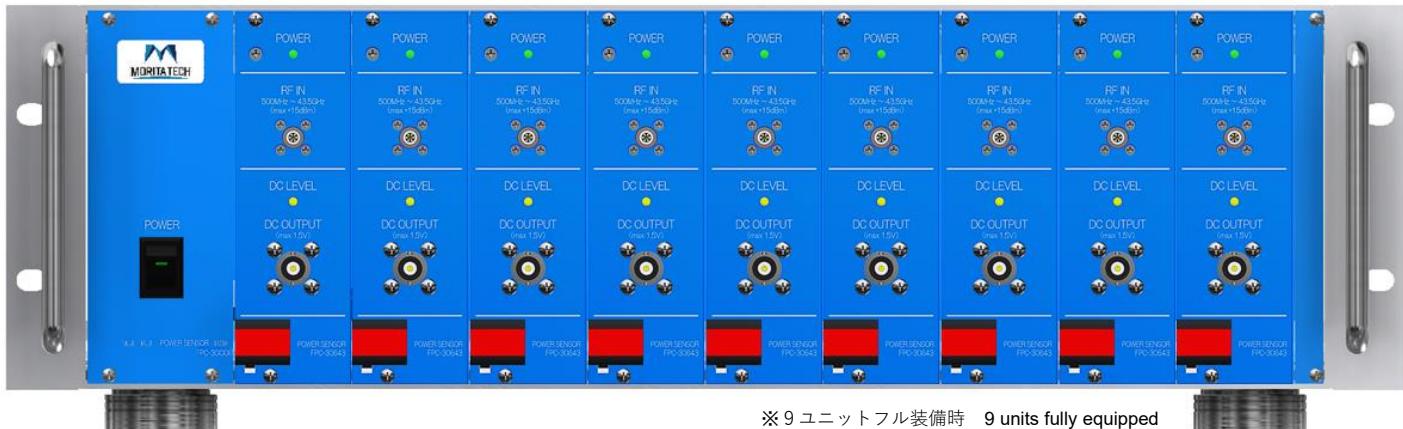
※ Custom available. Please consult our sales department.



500MHz~43.5GHz带宽电平检测器 500MHz to 43.5 GHz band level detector.

FPC-3000

近日发售 Coming soon



这是面向5G检测用设备开发·制造(量产)生产线上做简易检测，可检测电波频率为500MHz~43.5GHz，并将其转换为直流电输出的RF检出装置。电力输出装置，最大可配备9个模块，可根据需要进行选择组装。

在5G设备的开发、制造阶段，如果仅需要简易测量从设备发出的「无线电波」或「电波波束的方向」的情况下，不需要使用频谱仪，测试仪等高额的测量设备，即可判断合格与否(请查看下一节)。

改变后的电压，可与线性变化的模拟输出和数字输出同时输出，数字输出可通过USB连接到电脑上。

This RF detection unit detects 500MHz to 43.5GHz radio waves and converts them to DC voltage for simple inspection of 5G equipment development and manufacturing (mass production) lines. Up to 9 power detection units can be installed (expanded) and configured with the required number of units.

In the 5G equipment development and manufacturing stage, it is only necessary to measure that "radio waves are emitted" or "radio wave beams are being directed" from the equipment, and pass / fail without the need for expensive measuring instruments such as a spectrum analyzer or tester. Judgment (see next section) is possible.

The converted voltage can be output simultaneously with a linearly changing analog output and a digital output that can be imported to a personal computer via USB.

◆规格 Specifications.

·机架部 Chassis part

型号 Model number

最大搭载模块数量 Maximum number of installed units

最小搭载模块数量 Minimum number of installed units

使用模块型号 Applicable unit

输出接口 OUTPUT Connector

电源电压 Power-supply voltage

尺寸 Size

: FPC-3000

: 9模块

: 1模块

: FPC-30643 (500MHz - 43.5GHz)

: USB (USB2.0)

: AC100V - AC240V 50/60Hz

: 132.5(H) x 427.2(W) x 370.4(D) mm

不含机架
Does not include rack mount bracket

·模块部 Unit section

型号 Model number

频率 Frequency

动态范围 Dynamic range

交换特性 Conversion characteristics

电压特性 Conversion voltage characteristic

RF最大输入水平 RF input maximum level

输入接口 INPUT Connector

输出接口 OUTPUT Connector

: FPC-30643

: 500MHz - 43.5GHz

: 30 dB or more

: RMS power measurement.

: 30mV/dB

: +15dBm(Peak)

: 2.92mm

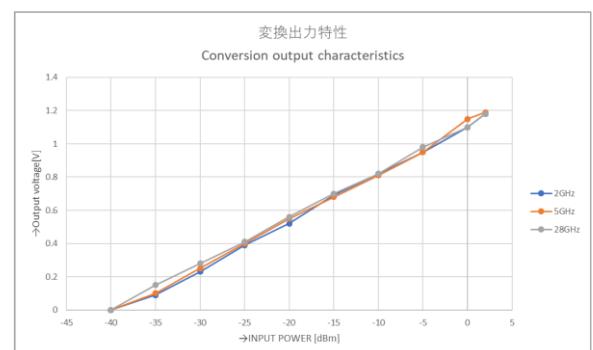
: BNC

: Multi Connector for FPC-3000

: Max 1.5V

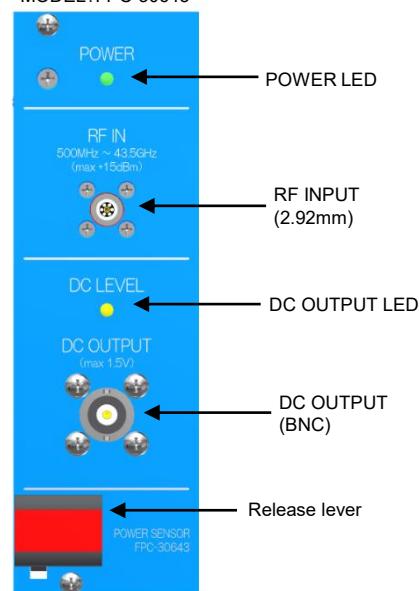


◆特性 Characteristic.



◆显示图 Panel diagram.

MODEL:FPC-30643



变化输出直流电压 Conversion output DC voltage



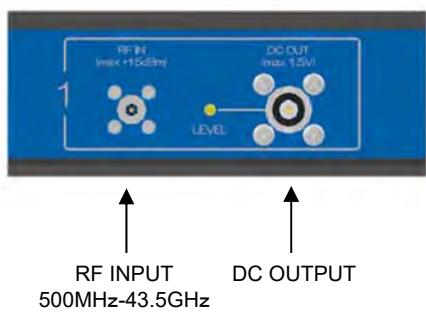
500MHz ~43.5GHz 带电平检出器 500MHz to 43.5 GHz band level detector.

NEW!

FPC-3340



◆输入端口 Input terminal.



该设备面向5G设备开发制造生产线的简易检测用的，搭载了3个可对应在FPC-3000上使用的500 MHz~3.5GHz的电磁波的功率检出单元的电平检出器。

在5G设备的开发以及制造阶段，在只要能够检测到「电波正在从设备中发射出来」、「波束正朝某方向辐射」的简易场景，无需高额的网分仪等测量仪表设备，即可实现产品合格与否的判断。

变化后的电压可同时以线性变化的模拟信号输出（BNC）和可通过USB线将3个频道的数据以数字信号形式输入到电脑中。

使用多台设备频道增加的情况时，通过与电压记录装置FV-3300组合使用，可将最多4台设备12个频道的信息通过USB线输入到电脑中。也可和可对应70GHz的FPC-3370混合使用。

It is a level detector equipped with 3 channels of power detection unit compatible with radio waves of 500MHz to 43.5GHz used in FPC -3000 for simple inspection of 5G equipment development / manufacturing (mass production) line. Pass / fail without the need for expensive measuring instruments such as spectrum analyzers and testers in a simple situation where it is only necessary to measure "radio waves are emitted" and "radio waves are directed" from the equipment at the 5G equipment development / manufacturing stage . Judgment (see the next section) is possible . The converted voltage can be output at the same time as an analog output (BNC) that changes linearly and a digital output that can capture 3 channels of data to a personal computer via USB . When increasing the number of measurement channels by combining multiple units, it is possible to import a total of 12 channels of up to 4 units to a personal computer via USB by combining with the voltage logger unit FV-3300 . It can be mixed with FPC -3370 that supports 70GHz.

◆背部面板 Back panel.



◆规格 Specifications

Model number

: FPC-3340

Frequency

: 500MHz – 43.5GHz

Dynamic range

: 30 dB or more

Conversion characteristics

: RMS power measurement.

Conversion voltage characteristic

: 30mV/dB

RF input maximum level

: +15dBm(Peak)

INPUT Connector

: 2.92mm

OUTPUT Connector

: BNC

Conversion output DC voltage

: Max 1.5V

OUTPUT Connector

: USB(USB2.0)

Power-supply voltage

: AC100V - AC240V 50/60Hz

Size

: 44(H) x 430(W) x 550(D) mm

不含机架

Does not include rack mount bracket



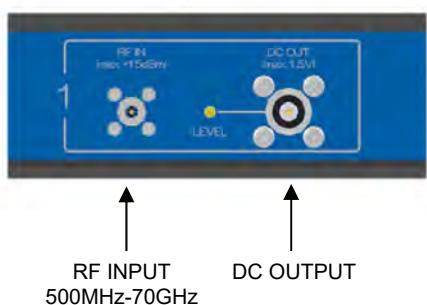
500MHz ~ 70GHz 带电平检出器 500MHz to 70 GHz band level detector.

NEW!

FPC-3370



◆ 输入端口 Input terminal.



RF INPUT 500MHz-70GHz DC OUTPUT

该设备面向5G设备开发制造生产线的简易检测用的，搭载了3个可对应500 MHz~70GHz超广频带的电磁波的功率检出单元的电平检出器。

在5G设备的开发以及制造阶段，在只要能够检测到「电波正在从设备中发射出来」、「波束正朝某方向辐射」的简易场景，无需高额的网分仪等测量仪表设备，即可实现产品合格与否的判断。变化后的电压可同时以线性变化的模拟信号输出（BNC）和可通过USB线将3个频道的数据以数字信号形式输入到电脑中。使用多台设备频道增加的情况下，通过与电压记录装置FV-3300组合使用，可将最多4台设备12个频道的信息通过USB线输入到电脑中。也可和可对应43.5 GHz的FPC-3340混合使用。

It is a level detector equipped with 3 channels of power detection unit that supports ultra-wideband from 500 MHz to 70 GHz for simple inspection of 5G equipment development / manufacturing (mass production) line. Pass / fail without the need for expensive measuring instruments such as spectrum analyzers and testers in a simple situation where it is only necessary to measure "radio waves are emitted" and "radio waves are directed" from the equipment at the 5G equipment development / manufacturing stage. Judgment (see the next section) is possible. The converted voltage can be output at the same time as an analog output (BNC) that changes linearly and a digital output that can capture 3 channels of data to a personal computer via USB. When increasing the number of measurement channels by combining multiple units, it is possible to import a total of 12 channels of up to 4 units to a personal computer via USB by combining with the voltage logger unit FV-3300. It can be mixed with FPC-3340 that supports 43.5GHz.

◆ 背部面板 Back panel.



◆ 规格 Specifications.

Model number

: FPC-3370

Frequency

: 500MHz – 70GHz

Dynamic range

: 30 dB or more

Conversion characteristics

: RMS power measurement.

Conversion voltage characteristic

: 30mV/dB

RF input maximum level

: +15dBm(Peak)

INPUT Connector

: 1.85mm

OUTPUT Connector

: BNC

Conversion output DC voltage

: Max 1.5V

OUTPUT Connector

: USB (USB2.0)

Power-supply voltage

: AC100V - AC240V 50/60Hz

Size

: 44(H) x 430(W) x 550(D) mm

不含金属机架部分

Does not include rack mount bracket



电压记录器装置
Voltage logger unit

NEW!

FVC-3300



该装置为在组合使用2台以上的FPC-3340和FPC-3370等3频道搭载型电平检出器时，能够将全部电平数据收集，从1根USB线输出的电压记录器装置。

最多可将4台FPC-3340和FPC-3370设备的12个频道的电平数据收集到USB线中。

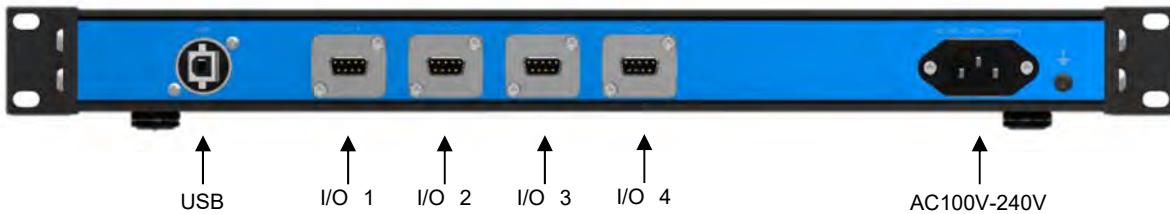
内部配置有与pico公司制相当的USB数据记录器，和可标准表示电平数值的应用程序。

This is a voltage logger unit for aggregating all level data and outputting it with a single USB when using two or more FPC- 3340 and FPC-3370 level detectors equipped with 3 channels. By combining FPC-3340 and FPC-3370, it is possible to collect level data of up to 4 units in total up to 12 channels on USB. The inside is equipped with a USB Data logger equivalent made by pico, and a level display application is attached as standard.

◆ 规格 Specifications

Model number	: FVC-3300
I/O Connector	: DSUB
Maximum number of channels	: 12ch(For 4 FPCs)
Resolution	: 10bit
Maximum input voltage	: +2.5V
Sampling rate	: 1 kS/s or greater
Accuracy	: 1.0% @ 10 bits
OUTPUT Connector	: USB(USB2.0)
Power-supply voltage	: AC100V - AC240V 50/60Hz
Size	: 44(H) x 430(W) x 550(D) mm 不含金属机架部分 Does not include rack mount bracket

◆ 背部面板 Back panel.





28GHz带CW振荡器
28GHz band CW oscillator.

NEW!

SOC-1290



设备为在使用FPC系列电平检出器进行简易的功率测试的情况时，用来向被测物体发送28GHz带以及39GHz带触发波（CW波）的振荡器。该设备在振荡中时，FPC系列电平检出器可被调节到待机状态。采购时，振荡频率可在24.5GHz到29.5GHz之间指定一个频率作为输出频率进行制造。

Level detector A 28GHz band oscillator for sending a trigger radio wave (CW wave) to the terminal under test when performing simple power measurement with the FPC series. The level detector FPC series can be put into standby mode while the instrument is oscillating. The oscillation frequency is specified, manufactured, and output from 1 wave from 24.5GHz to 29.5GHz when receiving an order.

◆背部面板 Back panel.



◆规格 Specifications

Model number	: SOC-1290
Output frequency	: One wave from 24.5GHz to 29.5GHz
Output Level	: +5dBm
Frequency deviation	: 5ppm (Internal reference mode)
OUTPUT Connector	: 2.92mm
INPUT Connector	: BNC(External reference)
External reference Frequency	: 100MHz 0dBm
Power-supply voltage	: AC100V - AC240V 50/60Hz
Size	: 44(H) x 430(W) x 550(D) mm 不含金属机架部分 Does not include rack mount bracket



28GHz / 40GHz频带CW振荡器
28GHz / 40GHz band CW oscillator.

开发中
In development With change.

SOC-1420



设备为在使用FPC系列电平检出器进行简易的功率测试的情况时，用来向被测物体发送28GHz带以及39GHz带触发波（CW波）的振荡器。该设备在振荡中时，FPC系列电平检出器可被调节到待机状态。

采购时，振荡频率可在24.5GHz到29.5GHz之间选择一个频率，和在37GHz 到43GHz之间选择另一个频率，合计2个指定频率，工作时选择其中任意一个频率进行输出。

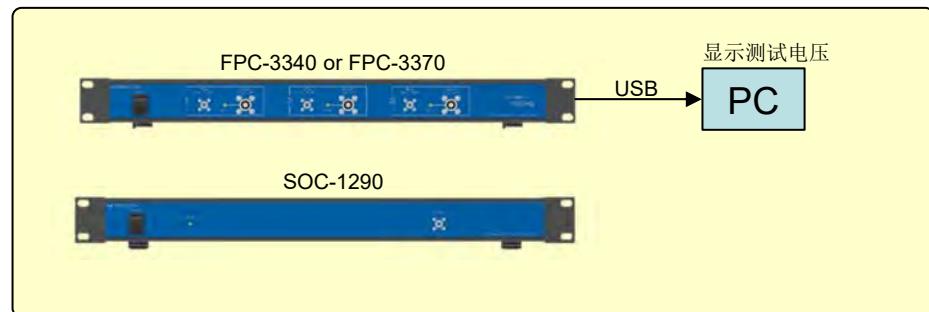
Level detectors 28GHz band and 39GHz band oscillators for sending trigger radio waves (CW waves) to the terminal under test when performing simple power measurement with the FPC series. The level detector FPC series can be put into standby mode while the instrument is oscillating. When receiving an order, the oscillation frequency is specified as one wave from 24.5GHz to 29.5GHz and one wave from 37GHz to 43GHz, for a total of two waves, and one wave is selected and output during operation.

◆规格 Specifications

Model number	: SOC-1420
Output frequency	: One wave from 24.5GHz to 29.5GHz One wave from 37GHz to 43GHz
Output Level	: +5dBm
Frequency deviation	: 5ppm (Internal reference mode)
OUTPUT Connector	: 2.92mm
INPUT Connector	: BNC(External reference)
External reference Frequency	: 100MHz 0dBm
Power-supply voltage	: AC100V - AC240V 50/60Hz
Size	: 44(H) x 430(W) x 550(D) mm 不包括支架 Does not include rack mount bracket

关于FPC-3340 / FPC-3370扩展性 Extensibility of FPC-3340 / FPC-3370.

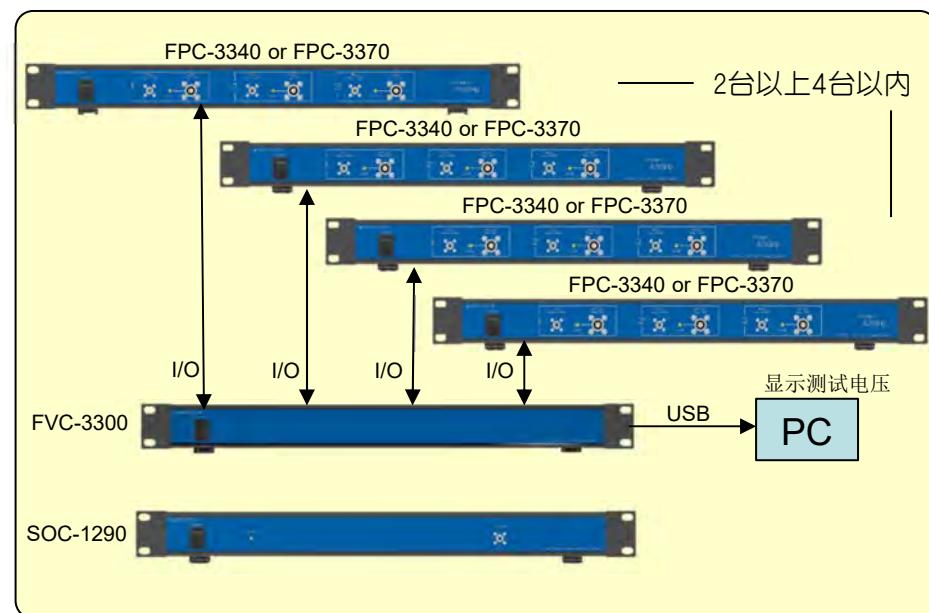
◆ 基本配置 Basic configuration.



使用1台FPC-3340或FPC-3370的情况时，FPC设备中3个频道的电压数据通过1根USB线传输到电脑中，并可加以监测。

When using one FPC-3340 or FPC-3370, the voltage date of 3 channels output from the FPC can be sent to the PC through one single USB and monitored on the PC.

◆ 扩展配置 Extended configuration.



在使用2台以上的FPC-3340或FPC-3370的情况下，通过与电压记录器装置FVC-3300的组合使用，多台（最多4台，12频道）FPC设备中的电压数据，集约后，通过1根USB线传输到电脑中，并可加以监测。

When using two or more FPC-3340s or FPC-3370s, the voltage date output from the FPCs (Maximum 4 units, 12 channels) can be sent to the PC through one single USB and monitored on the PC by combining with the voltage logger unit FVC-3300.

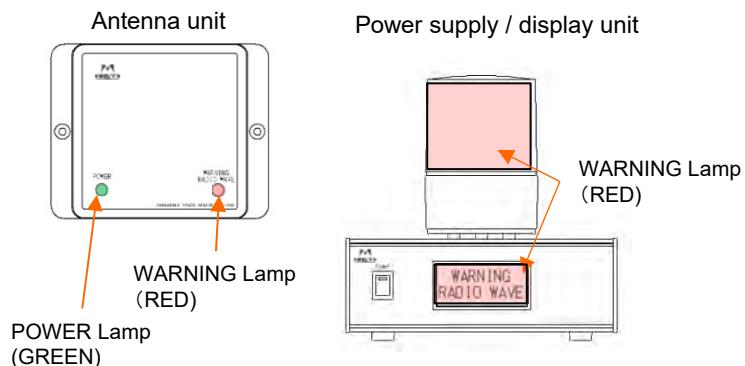
◆ 扩展配置范例 Extended configuration example.



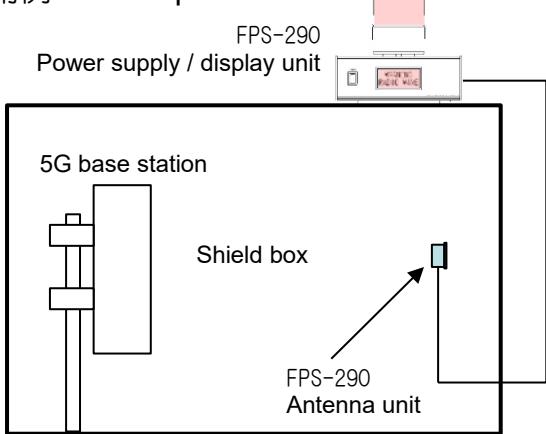


适用于频宽28GHz屏蔽箱的电波警告装置 28GHz radio wave warning device for shield box

FPS-290



◆ 使用例 Example of use.



◆ 规格 Specifications.

型号 Model number

频宽 Frequency

检出部偏波面 Polarization plane of detector

最小输入灵敏度 Minimum input sensitivity

电源电压 Power-supply voltage

天线模块尺寸 Antenna unit size

电源显示模块尺寸 Power supply / display unit size

FPS-290是一款专用于暗箱(大型屏蔽箱)的频宽28GHz电波警告装置。

该设备用于28GHz频宽5G基站测试的屏蔽箱中，当无线电波发射时，它会检测到并通过红色安全信号灯发出警告，避免因疏忽而暴露在无线电波中。

本设备由检测无线电波的天线UNIT，电源和显示器的电源·显示UNIT构成，并通过1根电缆连接即可使用。天线UNIT的无线电波检测部分呈圆偏波设计，考虑其可以任意检测出水平偏波，垂直偏波。

耦合器模块也配置有警告显示灯。

FPS-290 is a 28GHz charged wave warning device for chambers (large shield box).

This device is used in a shield box for 28GHz band 5G base station testing. It detects the radio wave when it is emitted and displays a warning with a red lamp to prevent inadvertent exposure. This device consists of an antenna unit that detects radio waves, a power source and a power source / display unit for the display, and can be used by connecting it with a single cable. The radio wave detection part of the antenna unit is circularly polarized, so that it can be detected both horizontally and vertically. The antenna unit also has a warning indicator.

: FPS-290

: 24.5GHz - 29.5GHz

: Circular polarization

: -28dBm (27.5GHz CW)

: AC100V 50/60Hz

: 80(H) x 100(W) x 44(D)mm

: 196(H) x 200(W) x 230(D)mm



5G设备测评用探棒 5G device evaluation probe.

FP-291 / FP-431



◆ 规格 Specifications.

Model number	: FP-291 / FP-431
Frequency	: 24.5GHz - 29.5GHz / 37GHz - 43.5GHz
V.S.W.R	: 2.5
Maximum power	: 1W(CW)
Connector	: Super SMA / 2.92mm
Polarization	: Linear polarization

我公司干扰扫描仪用毫米波带探棒。

现有24GHz-29.5GHz用的FP-291和37GHz - 43.5GHz用的FP-431两种型号的产品。

This is a millimeter wave band probe for our noise scanner. Two models, FP-291 for 24-29.5GHz and FP-431 for 37GHz-43.5GHz are available.



频宽3GHz / 频宽28GHz双向频率变频器

3GHz band / 28GHz band bidirectional frequency converter.

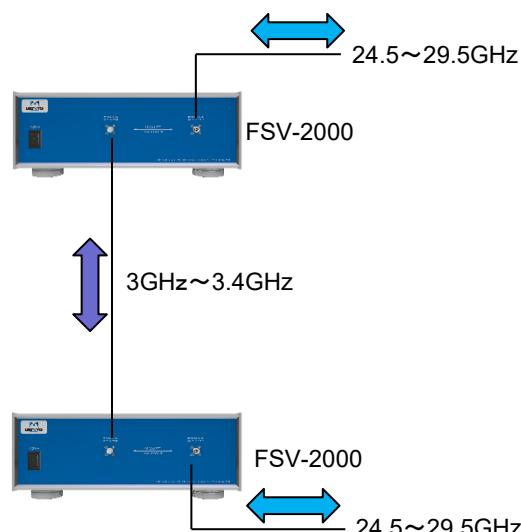
24-29GHz

近日发售 Coming soon

FSV-2000 Series



◆使用例 Example of use.



◆规格 Specifications.

型号	FSV-2000
频率	400MHz width out of 24.5GHz - 29.5GHz
本振频率	3GHz band 3GHz – 3.4GHz
最大输出功率	23GHz band +9dBm
转化损耗	-12dB
连接方式	SMA / 2.92mm
尺寸	88(H) x 260(W) x 430(D) mm
电源电压	AC100 - 240V 50/60Hz

型号	FSV-2000
频率	400MHz width out of 24.5GHz - 29.5GHz
本振频率	3GHz band 3GHz – 3.4GHz
最大输出功率	23GHz band +9dBm
转化损耗	-12dB
连接方式	SMA / 2.92mm
尺寸	88(H) x 260(W) x 430(D) mm
电源电压	AC100 - 240V 50/60Hz



频宽3GHz / 频宽39GHz双向频率变频器

3GHz band / 39GHz band bidirectional frequency converter.

开发中 In development
With change

FSV-3000 Series



◆规格 Specifications.

型号	FSV-3000 Series
频率	39GHz band 37GHz – 40GHz
本振频率	3GHz band 3GHz – 3.4GHz
最大输出功率	37GHz band +10dBm
转化损耗	-12dB
连接方式	SMA / 2.92mm
尺寸	89(H) x 244(W) x 230(D)mm
电源电压	AC100 - 240V 50/60Hz

这是一款「频宽3GHz/频宽39GHz双向频率变频器」，可将频宽39GHz的5G无线电波转化成3GHz、将频宽3GHz的5G无线电波转化成频宽39GHz的双向频率变频器。

其优点包括频宽39GHz的RF电缆传送环境时注重衰减量和可实现现有4G (LTE) 传送设备的能力。

This is a "3 GHz / 39 GHz band bidirectional frequency converter" that converts 39 GHz band 5G radio waves to 3 GHz and 3 GHz 5 G radio waves to 39 GHz bands in both directions. Benefits include attenuation in the 39 GHz RF cable transmission environment and the ability to divert existing 4G (LTE) transmission equipment.



◆ 规格 specifications.

Connector	: 2.92mm(M) – 2.92mm(M)
Frequency	: DC ~ 43GHz (43.5GHz)
Impedance	: 50Ω nominal
V.S.W.R	: 1.4 max
Loss	: -3.3dB min (at 1m)
Cable color	: Blue

◆ 标准长度和型号 Standard length and model number.

0.5m	: FC-1801-005
1.0m	: FC-1801-010
1.5m	: FC-1801-015
2.0m	: FC-1801-020

这是一款具有2.92mm接头的低损耗柔性电缆，非常适合5G测量时使用。该低损耗线缆，最大可对应43GHz，因此可覆盖5G中所使用的全部频率范围。低损耗线缆的长度除了4种标准化长度之外，还可根据客户的需求进行订制。

A Low-Loss flexible cable with a 2.92 mm connector that is ideal for 5G measurements. The Low-Loss cable is adopted, and it corresponds to 43GHz so that the frequency band used in 5G can be covered. In addition to the standard four types of lengths, customized lengths are also manufactured.



◆ 规格 specifications.

Connector	: 2.92mm(M) – 2.92mm(M)
Frequency	: DC ~ 43GHz (43.5GHz)
Impedance	: 50Ω nominal
V.S.W.R	: 1.4 max
Loss(minimum)	: -5.3dB (at 1m)
Cable color	: Blue
Cable diameter	: 3.8mm

◆ 标准长度和型号 Standard length and model number.

0.5m	: FC-1802-005
1.0m	: FC-1802-010

这是一款具有2.92mm接头的极细柔性电缆，可用于与5G兼容的设备内部配线。该电缆用于我公司生产的屏蔽箱中，是一款又细又软非常方便配线的RF电缆。长度有两种类型可供选择。

It is an ultra-thin flexible cable with a 2.92 mm connector for internal wiring of devices compatible with 5G. It is cable adopted in our shield box, and it is RF cable which is thin and is easy to wire easily. We now have. Two types of lengths are available.



内部配线用极细线缆 Extra fine cable for internal wiring

FC-1602 Series

NEW! 最大可对应67GHz的，用于机械内部配线的1.85mm接头极细柔软线缆。

该线缆非常适合用于机械内部的配线，柔软极细的性质，使配线工作更加方便。

2种长度的线缆可供选择。



(1.85mm Connector)

◆ 规格 specifications.

Connector	: 1.85mm(M) – 1.85mm(M)
Frequency	: DC ~ 67GHz
Impedance	: 50Ω nominal
V.S.W.R	: 1.5 max
Loss(minimum)	: -13dB (at 1m 67GHz)
Cable color	: Blue
Cable diameter	: 1.5mm

◆ 标准长度和型号 Standard length and model number.

0.5m	: FC-1602-005
1.0m	: FC-1602-010

An ultra-fine flexible cable with a 1.85 mm connector for internal wiring of equipment that supports up to 67 GHz. An RF cable that is suitable for wiring inside equipment, is thin and soft, and is easy to wire. Two lengths are available.



内部配线用极细线缆 Extra fine cable for internal wiring

FC-1102 Series

最大可对应110GHz的，用于机械内部配线的1.00mm接头极细柔软线缆。

该线缆非常适合用于机械内部的配线，柔软极细的特性，使配线工作更加方便。

2种长度的线缆可供选择。



(1.00mm Connector)

◆ 规格 specifications.

Connector	: 1.00mm(M) – 1.00mm(M)
Frequency	: DC ~ 110GHz
Impedance	: 50Ω nominal
V.S.W.R	: 1.5 max
Loss(minimum)	: -20dB (at 1m 110GHz)
Cable color	: Blue
Cable diameter	: 1.5mm

◆ 标准长度和型号 Standard length and model number.

0.5m	: FC-1102-005
1.0m	: FC-1102-010

An ultra-fine flexible cable with a 1.00 mm connector for internal wiring of equipment that supports up to 110 GHz. An RF cable that is suitable for wiring inside equipment, is thin and soft, and is easy to wire. Two lengths are available.

5G低噪声增幅器 FLA-1928

5G Low Noise Amplifier



一款以低噪音增幅频宽28GHz 5G无线信号的装置。 频宽28GHz Gain20dB以上 NF2.8dB。

This device amplifies 28GHz 5G signal with low noise. 28GHz band Gain20dB or more NF2.8dB.

5G双向增幅器 FAW-1928

5G Bidirectional Amplifier



一款实现频宽28GHz 5G无线信号双向增幅的装置。频宽28GHz Gain20dB以上、双向增幅。

A device that amplifies 5 GHz signals in the 28 GHz band in both directions. Amplifies in both directions with a gain of 20 dB or higher in the 28 GHz band.

5G 矩阵切换器 FX-1800 Series

5G Matrix Switcher

近日发售 Coming soon



一款在基站内进行信号切换测试中使用的矩阵切换器。由同轴开关和可变衰减器构成，可在电脑上设置各种路径和衰减。

This is a matrix switch that performs a handover test in a base station. Consists of coaxial switch and variable attenuator It is possible to set various routes and attenuation on the PC.

5G同轴开关盒 FR-1800 Series

5G Coaxial Switch Box



N输入：以单输出为标准、提供各种各样输入输出的开关盒。不仅可实现脱机切换，还可与测量器连接实现自动切换。特别是可以简单对应屏蔽箱中大量天线耦合器的系统控制。

N input: One output is standard, and switch boxes with various numbers of inputs and outputs are available. Switch standalone

Of course, it is also possible to switch automatically in conjunction with the measuring instrument. In particular, system control of many antenna couplers such as shield boxes can be performed easily.

森田科技的5G产品，根据所对应的频率范围被标记为不同的颜色。一部分产品将此颜色当作产品的颜色使用。

Morita Tech's 5G products have their own color-coded marks according to the corresponding frequency band. Some products use this color as the product color.



SUB6GHz



28GHz BAND



28/43GHz BAND



60GHz BAND

除天线耦合器以标准制品贩售外，其余像屏蔽箱等商品皆可进行客户订制化生产销售。根据客户测试物体尺寸和规格的不同而不同，如有需求，请联系我公司的销售人员。本目录上刊载的情报使用的是2019年11月的产品情报。一部分开发中的产品也进行了刊载。频率等之后也有可能发生变更。本产品是以测评等测试用途为假定设计制造的。涉及到公共安全、财产和生命安全的用途，或监视等用途的，如有需求，请与我公司的销售人员进行联系。出口时，请与我公司的销售人员联系。因为规格和外观的改良，在无事先通知的情况下，规格外观发生改变的情况也会存在。望谅解。Except for standard products such as antenna couplers, the shield box etc. are customized products. Since the size and specifications vary depending on the customer's measurement object, please contact our sales staff when considering. The information in this catalog is current as of November 2019. Some are under development. The frequency may change in the future. This product is designed and manufactured for measurement applications such as evaluation. Please consult with our sales representatives when considering use for public safety, property, life-related use or monitoring. Please consult with our sales representative when exporting. Specifications and appearance are subject to change without notice for improvement. Please note.