



FREQUENCY EXTENSION SOURCES SERIES

[FES-19 - 40-60GHz](#)

[FES-15 - 50-75GHz](#)

[FES-12 - 60-90GHz](#)

[FES-10 - 75-110GHz](#)

[FES-06 - 110-170GHz](#)

[FES-05 - 140-220GHz](#)

[FES-03 - 220-325GHz](#)

Datasheet

Description

The FES-03 series will expand your existing microwave Signal Generator capabilities to conduct measurement in WR-03 band (220-325GHz). These frequency extension modules easily connect to the output of your signal generator so you have a high performance source for your DUT characterisation activities. Characterise your DUT with the confidence that the superior performance in terms of output power, spurious and harmonics will provide product accurate results.



Features

- Solid state multipliers
- Coverage 40 GHz to 325 GHz
- High output power specification
- Good harmonic suppression
- Separate AC/DC power source
- Low cost
- Stable and light weight
- Supports FM/PM and pulse modulations
- Compatible with standard signal generators
- Optional manual variable attenuator

Applications

- Test equipment extension
- Frequency sources for emerging mm-wave applications
- RF/LO sources for mixer measurements

Accessories

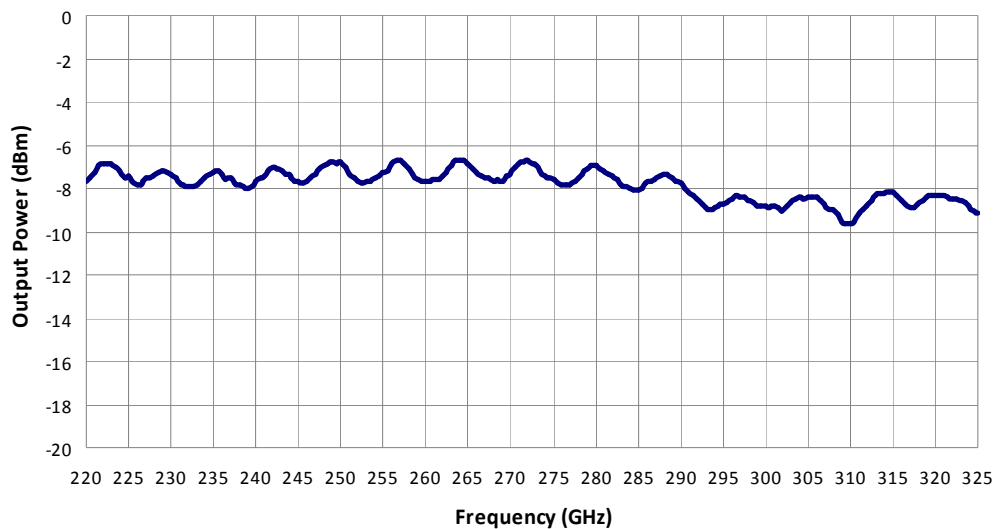
- AC/DC converter with 2m cable
- Manual

Specification	Unit	Min	Typ	Max
System Operating Frequency	GHz	220		325
Test Port Output Power (2)	dBm		-10	
Optional Manual Variable Attenuator	dB	0		25
RF Input Frequency	GHz	12.22		18.05
RF Input Power	dBm	+5		+10
RF Multiplication Factor	GHz		18	
RF Input Port Damage Level	dBm	+15		
RF Input VSWR	-		< 1.5	
RF Output VSWR	-		< 2.5	
Test Port Interface	-	WR-03 UG-387/UM		
RF Connector	-	SMA (F)		
DC Power Requirements	-	+12V at 1000 mA		
Weight	kg		1.5	
Dimensions (L x W x H)	-	250 x 130 x 85		
Operating Temperatures	°C	0		30

- (1) Specifications are typical and subject to change without a notice.
- (2) For frequencies greater than 110 GHz traceable only to FTL calorimeter.

Datasheet

Typical FES-03 Output Power



Datasheet

Description

The FES-05 series will expand your existing microwave Signal Generator capabilities to conduct measurement in WR05 (140-220GHz). These frequency extension modules easily connect to the output of your signal generator so you have a high performance source for your DUT characterisation activities. Characterise your DUT with the confidence that the superior performance in terms of output power, spurious and harmonics will provide product accurate results.



Features

- Solid state multipliers
- Coverage 40 GHz to 325 GHz
- High output power specification
- Good harmonic suppression
- Separate AC/DC power source
- Low cost
- Stable and light weight
- Supports FM/PM and pulse modulations
- Compatible with standard signal generators
- Optional manual variable attenuator

Applications

- Test equipment extension
- Frequency sources for emerging mm-wave applications
- RF/LO sources for mixer measurements

Accessories

- AC/DC converter with 2m cable
- Manual

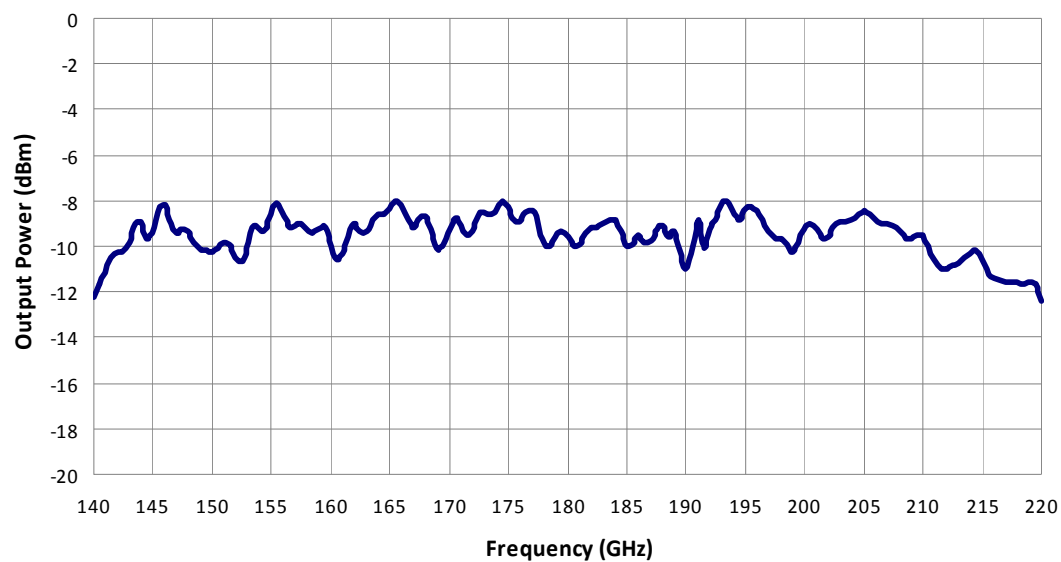
Specification	Unit	Min	Typ	Max
System Operating Frequency	GHz	140		220
Test Port Output Power (2)	dBm		-12	
Optional Manual Variable Attenuator	dB	0		25
RF Input Frequency	GHz	11.67		18.33
RF Input Power	dBm	+5		+10
RF Multiplication Factor	GHz		12	
RF Input Port Damage Level	dBm	+15		
RF Input VSWR	-		< 1.5	
RF Output VSWR	-		< 1.5	
Test Port Interface	-	WR-05 UG-387/UM		
RF Connector	-	SMA (F)		
DC Power Requirements	-	+12V at 1000 mA		
Weight	kg		1.5	
Dimensions (L x W x H)	-	250 x 130 x 85		
Operating Temperatures	°C	0		30

(1) Specifications are typical and subject to change without a notice.

(2) For frequencies greater than 110 GHz traceable only to FTL calorimeter.

Datasheet

Typical FES-05 Output Power



Datasheet

Description

The FES-06 series will expand your existing microwave Signal Generator capabilities to conduct measurement in WR06 (110-170GHz). These frequency extension modules easily connect to the output of your signal generator so you have a high performance source for your DUT characterisation activities. Characterise your DUT with the confidence that the superior performance in terms of output power, spurious and harmonics will provide product accurate results.



Features

- Solid state multipliers
- Coverage 40 GHz to 325 GHz
- High output power specification
- Good harmonic suppression
- Separate AC/DC power source
- Low cost
- Stable and light weight
- Supports FM/PM and pulse modulations
- Compatible with standard signal generators
- Optional manual variable attenuator

Applications

- Test equipment extension
- Frequency sources for emerging mm-wave applications
- RF/LO sources for mixer measurements

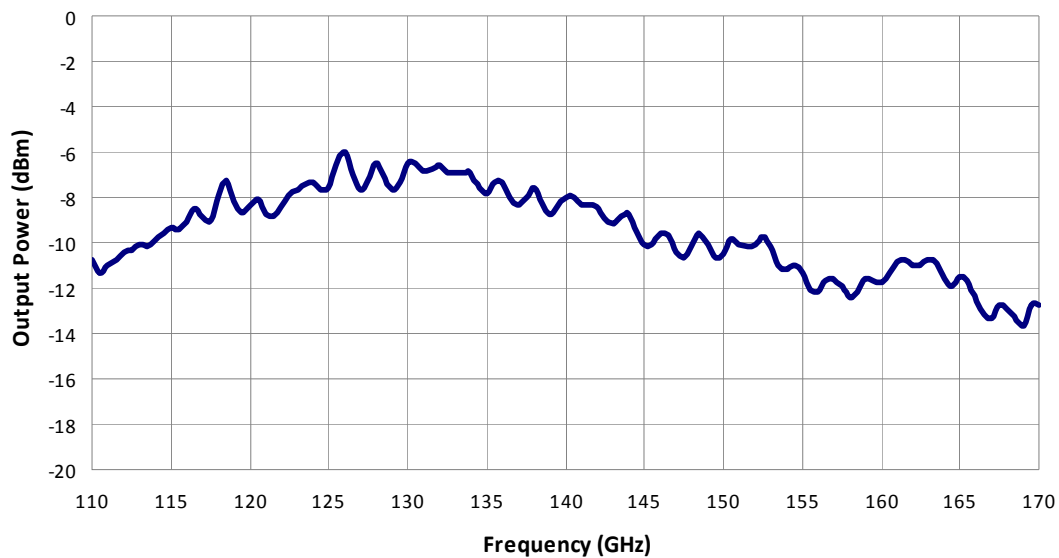
Accessories

- AC/DC converter with 2m cable
- Manual

Specification	Unit	Min	Typ	Max
System Operating Frequency	GHz	110		170
Test Port Output Power (2)	dBm		-10	
Optional Manual Variable Attenuator	dB	0		25
RF Input Frequency	GHz	9.17		14.17
RF Input Power	dBm	+5		+10
RF Multiplication Factor	GHz		12	
RF Input Port Damage Level	dBm	+15		
RF Input VSWR	-		< 1.5	
RF Output VSWR	-		< 1.5	
Test Port Interface	-	WR-06 UG-387/UM		
RF Connector	-	SMA (F)		
DC Power Requirements	-	+12V at 1000 mA		
Weight	kg		1.5	
Dimensions (L x W x H)	-	250 x 130 x 85		
Operating Temperatures	°C	0		30

(1) Specifications are typical and subject to change without a notice.

(2) For frequencies greater than 110 GHz traceable only to FTL calorimeter.

Datasheet**Typical FES-06 Output Power**

Datasheet

Description

The FES-10 series will expand your existing microwave Signal Generator capabilities to conduct measurement in WR10 (75-110GHz). These frequency extension modules easily connect to the output of your signal generator so you have a high performance source for your DUT characterisation activities. Characterise your DUT with the confidence that the superior performance in terms of output power, spurious and harmonics will provide product accurate results.



Features

- Solid state multipliers
- Coverage 40 GHz to 325 GHz
- High output power specification
- Good harmonic suppression
- Separate AC/DC power source
- Low cost
- Stable and light weight
- Supports FM/PM and pulse modulations
- Compatible with standard signal generators
- Optional manual variable attenuator

Applications

- Test equipment extension
- Frequency sources for emerging mm-wave applications
- RF/LO sources for mixer measurements

Accessories

- AC/DC converter with 2m cable
- Manual

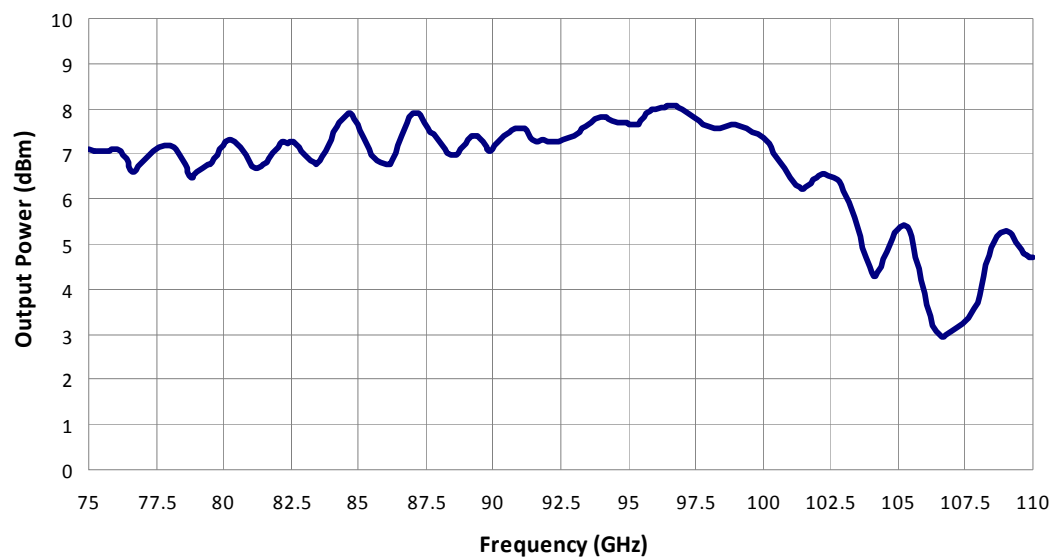
Specification	Unit	Min	Typ	Max
System Operating Frequency	GHz	75		110
Test Port Output Power (2)	dBm		+5	
Optional Manual Variable Attenuator	dB	0		25
RF Input Frequency	GHz	12.5		18.33
RF Input Power	dBm	+5		+10
RF Multiplication Factor	GHz		6	
RF Input Port Damage Level	dBm	+15		
RF Input VSWR	-		< 1.5	
RF Output VSWR	-		< 1.5	
Test Port Interface	-	WR-10 UG-387/UM		
RF Connector	-	SMA (F)		
DC Power Requirements	-	+12V at 1000 mA		
Weight	kg		1.5	
Dimensions (L x W x H)	-	250 x 130 x 85		
Operating Temperatures	°C	0		30

(1) Specifications are typical and subject to change without a notice.

(2) For frequencies greater than 110 GHz traceable only to FTL calorimeter.

Datasheet

Typical FES-10 Output Power



Datasheet

Description

The FES-12 series will expand your existing microwave Signal Generator capabilities to conduct measurement in WR12 (60-90GHz). These frequency extension modules easily connect to the output of your signal generator so you have a high performance source for your DUT characterisation activities. Characterise your DUT with the confidence that the superior performance in terms of output power, spurious and harmonics will provide product accurate results.



Features

- Solid state multipliers
- Coverage 40 GHz to 325 GHz
- High output power specification
- Good harmonic suppression
- Separate AC/DC power source
- Low cost
- Stable and light weight
- Supports FM/PM and pulse modulations
- Compatible with standard signal generators
- Optional manual variable attenuator

Applications

- Test equipment extension
- Frequency sources for emerging mm-wave applications
- RF/LO sources for mixer measurements

Accessories

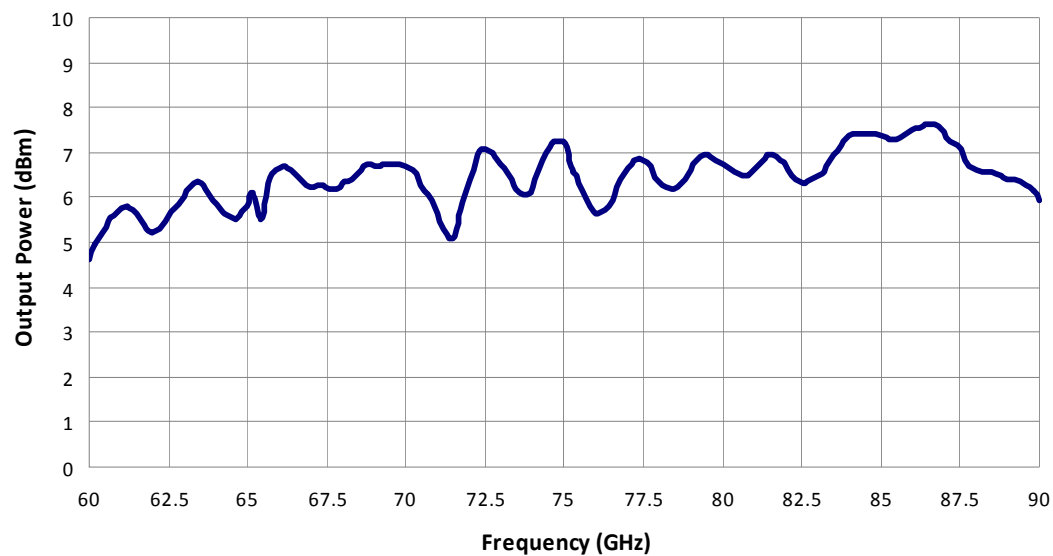
- AC/DC converter with 2m cable
- Manual

Specification	Unit	Min	Typ	Max
System Operating Frequency	GHz	60		90
Test Port Output Power (2)	dBm		+6	
Optional Manual Variable Attenuator	dB	0		25
RF Input Frequency	GHz	10		15
RF Input Power	dBm	+5		+10
RF Multiplication Factor	GHz		6	
RF Input Port Damage Level	dBm	+15		
RF Input VSWR	-		< 1.5	
RF Output VSWR	-		< 1.5	
Test Port Interface	-	WR-12 UG-387/U		
RF Connector	-	SMA (F)		
DC Power Requirements	-	+12V at 1000 mA		
Weight	kg		1.5	
Dimensions (L x W x H)	-	250 x 130 x 85		
Operating Temperatures	°C	0		30

- (1) Specifications are typical and subject to change without a notice.
- (2) For frequencies greater than 110 GHz traceable only to FTL calorimeter.

Datasheet

Typical FES-12 Output Power



Datasheet

Description

The FES-15 series will expand your existing microwave Signal Generator capabilities to conduct measurement in WR15 (50- 75GHz). These frequency extension modules easily connect to the output of your signal generator so you have a high performance source for your DUT characterisation activities. Characterise your DUT with the confidence that the superior performance in terms of output power, spurious and harmonics will provide product accurate results.



Features

- Solid state multipliers
- Coverage 40 GHz to 325 GHz
- High output power specification
- Good harmonic suppression
- Separate AC/DC power source
- Low cost
- Stable and light weight
- Supports FM/PM and pulse modulations
- Compatible with standard signal generators
- Optional manual variable attenuator

Applications

- Test equipment extension
- Frequency sources for emerging mm-wave applications
- RF/LO sources for mixer measurements

Accessories

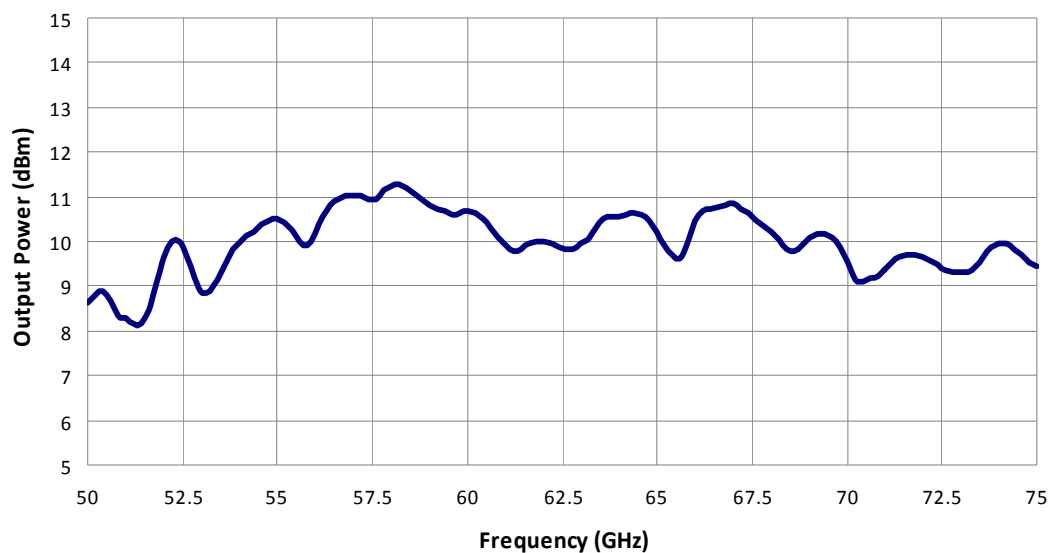
- AC/DC converter with 2m cable
- Manual

Specification	Unit	Min	Typ	Max
System Operating Frequency	GHz	50		75
Test Port Output Power (2)	dBm		+10	
Optional Manual Variable Attenuator	dB	0		25
RF Input Frequency	GHz	12.5		18.75
RF Input Power	dBm	+5		+10
RF Multiplication Factor	GHz		4	
RF Input Port Damage Level	dBm	+15		
RF Input VSWR	-		< 1.5	
RF Output VSWR	-		< 1.5	
Test Port Interface	-	WR-15 UG-385/U		
RF Connector	-	SMA (F)		
DC Power Requirements	-	+12V at 1000 mA		
Weight	kg		1.5	
Dimensions (L x W x H)	-	250 x 130 x 85		
Operating Temperatures	°C	0		30

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Datasheet

Typical FES-15 Output Power



Datasheet

Description

The FES-19 series will expand the frequency of your existing microwave Signal Generator to WR19 (40-60GHz) band. These frequency extension modules easily connect to the output of your signal generator so you have a high performance signal source for your DUT characterisation activities. Characterise your DUT with the confidence that the superior performance in terms of output power, spurious and harmonics level will provide accurate results.



Features

- Solid state multipliers
- Coverage 40 GHz to 325 GHz
- High output power specification
- Good harmonic suppression
- Separate AC/DC power source
- Low cost
- Stable and light weight
- Supports FM/PM and pulse modulations
- Compatible with standard signal generators
- Optional manual variable attenuator

Applications

- Test equipment extension
- Frequency sources for emerging mm-wave applications
- RF/LO sources for mixer measurements

Accessories

- AC/DC converter with 2m cable
- Manual

Specification	Unit	Min	Typ	Max
System Operating Frequency	GHz	40		60
Test Port Output Power (2)	dBm		+10	
Optional Manual Variable Attenuator	dB	0		25
RF Input Frequency	GHz	10		15
RF Input Power	dBm	+5		+10
RF Multiplication Factor	GHz		4	
RF Input Port Damage Level	dBm	+15		
RF Input VSWR	-		< 1.5	
RF Output VSWR	-		< 1.5	
Test Port Interface	-	WR-19 UG-383/UM		
RF Connector	-	SMA (F)		
DC Power Requirements	-	+12V at 1000 mA		
Weight	kg		1.5	
Dimensions (L x W x H)	-	250 x 130 x 85		
Operating Temperatures	°C	0		30

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- (2) For frequencies greater than 110 GHz traceable only to FTL calorimeter.

Datasheet

Typical FES-19 Output Power

