

## Outdoor multitaps XFO faceplate-only 1.8 GHz upgrade Motorola multitaps



- One product compatible with all original legacy Motorola housings
- No need to splice a new multitap housing to go to 1.8 GHz
  - Ensures power and radio frequency (RF) continuity for all end users down the coaxial line; reduces downtime, and therefore customer churn while upgrading a network to 1.8 GHz
  - 60% faster to install than a full 1.8 GHz multitap, due to the reuse of the fitted housing
  - Technicians need less know-how and experience to execute the 1.8 GHz upgrade
  - No need to invest in new housings, hardline connectors and heat shrinking
- XFO advanced mechanical and electrical matching circuits ensure great RF performance on the legacy housings, removing the large dip in performance it causes around 1.4 GHz
- 70% cost saving for operators compared to full installation of 1.8 GHz multitap
- Enabling operators to start a 'business as usual' 1.8 GHz upgrade process now, as the product is backward compatible to legacy Motorola products



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### Overview

Cable operators are looking at the market's future needs for delivering high-speed and low-latency services to their end customers over the hybrid fiber-coaxial (HFC) network. Extended Spectrum DOCSIS (ESD) allows the use of the spectrum up to 1.8 GHz, enabling operators to drive downstream speeds of over 10 Gbps. Meanwhile, the upstream frequencies are supported run to 684 MHz, enabling upstream speeds of over 6 Gbps - all while using the existing fiber and cable (HFC) infrastructure.

DOCSIS 4.0 roadmaps come in many variations; but when it comes to the deployment of passive components such as multitaps, each one placed into the network should be a 1.8 GHz passive to undertake the move to DOCSIS 4.0. Furthermore, with truck roll and labor creating the largest cost of a passive deployment, the no-screw in/out connector feature on the 1.8 GHz full taps allows for faster installation and greater ease-of-use compared to 1.2 GHz taps. This solution effortlessly solves a tangible pain point, making 1.8 GHz full taps the best choice when splicing a new tap housing. However, in the case of a mass upgrade, faceplate-only deployments are most preferable, since they heavily reduce the time it takes to perform the upgrade. They also save on necessary materials and, therefore, stock management requirements. Crucially, all this can all be executed by less skilled and experienced personnel.

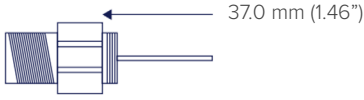
The XFO series is a 1.8 GHz upgrade faceplate for legacy-style multitaps such as Motorola, Regal or Scientific Atlanta and represents an exciting technological breakthrough by Technetix. The existing need to cut hardline cables and mount new housings has a highly impactful effect on the network, demanding temporary radio frequency (RF) and power shutdown on the coaxial line. In addition to this, there is a need for skilled workers to properly execute operations. The XFO series tackles this issue: Not only do upgrades require a faceplate-only swap, it reduces the need for highly skilled labor, and online services remain unaffected during a mass deployment.

The XFO solves challenges presented by legacy housings, with an advanced electro-mechanical design, enabling the connection of legacy in/out screw contacts with the XFO's 1.8 GHz components and printed circuit board (PCB). This creates a good flat in/out response and acceptable return loss levels on official, as well as third-party, legacy housings. The XFO Motorola range has exceptional RF performance to 1.8 GHz. It has the option to use signal conditioning plug-ins compatible with originally manufactured Motorola housings with and without bypass switches and with third-party Motorola-compatible housings that do not feature a bypass switch.

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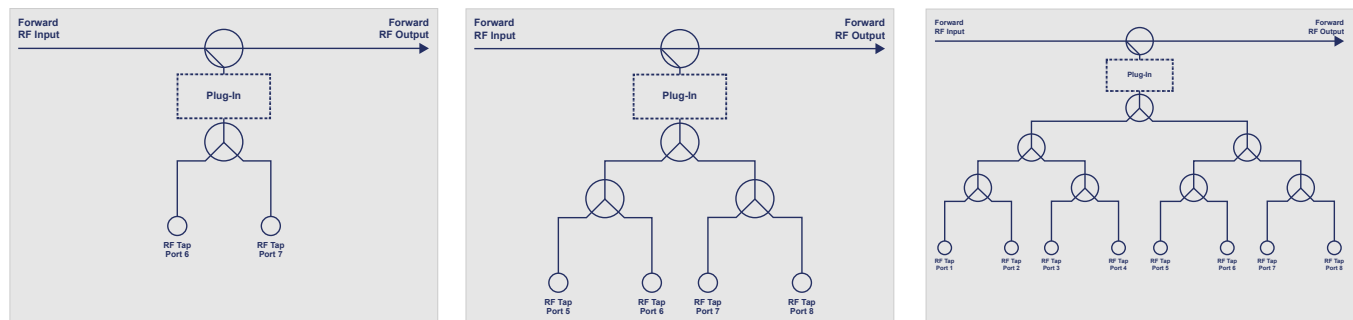


### General specifications

Characteristic	Specification	
Frequency range	5 – 1800 MHz	
Housing connectors In/Out	5/8" Female (SCTE 91)	
Faceplate connector tap ports	F-type Female (SCTE 01)	
KS-male pin length guide		
Housing material	Die-cast aluminum with tri-valent chromate base layer and polyurethane powder coat top layer (blue P5005)	
Torque specification	F connectors	30 in-lbs (3.5 Nm)
	KS 5/8" connectors	40 in-lbs (4.5 Nm)
	Faceplate hex bolts	30 in-lbs (3.5 Nm)
EMI shielding	Min 100 dB (SCTE 48-1)	
	Typ 110 dB (SCTE 48-1)	
Power passing	Max. 12 A	
Surge protection	6 kV all ports (IEEE-C62.14, Combination Wave, Category B3 rise time 1,2 μS/ fall time 50 μS)	
HUM modulation	-65 dB @12 A (SCTE-16)	
Salt fog	1000h (ASTM B117)	
UV degradation	1000h (ASTM G154)	
Operational temperature	-40 / +60 °C (-40 / +140 °F)	

### Block diagrams

2, 4, and 8-way full taps



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### 2-way specifications

Parameter	MHz	4 dB		8 dB		11 dB		14 dB		17 dB		20 dB		23 dB		26 dB		29 dB	
		TYP	MAX	TYP	MAX	TYP	MAX	TYP	MAX	TYP	MAX	TYP	MAX	TYP	MAX	TYP	MAX	TYP	MAX
Insertion loss in-out (dB)	5			4.0		2.2		1.8		1.6		1.2		1.2		1.2		1.2	
	12				4.0		2.2		1.8		1.6		1.2		1.2		1.2		1.2
	200				4.2		2.5		2.0		1.8		1.3		1.3		1.3		1.3
	750				4.9		3.2		2.7		2.4		1.6		1.5		1.5		1.5
	860				5.0		3.4		2.8		2.5		1.6		1.5		1.5		1.5
	1006				5.2		3.6		3.0		2.7		1.7		1.6		1.6		1.6
	1218				5.4		3.9		3.2		2.9		1.8		1.7		1.7		1.7
	1800				6.1		4.7		3.9		3.6		2.1		1.9		1.9		1.9
Insertion loss in-tap (dB)	5	4.0		9.0		11.0		14.0		17.0		20.0		23.0		26.0		29.0	
	12	4.0	5.5	9.0	10.5	11.0	12.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0	24.5	26.0	27.5	29.0	30.5
	200	4.0	5.5	9.0	10.5	11.0	12.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0	24.5	26.0	27.5	29.0	30.5
	750	4.5	6.0	9.0	10.5	11.0	12.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0	24.5	26.0	27.5	29.0	30.5
	860	4.5	6.0	9.0	10.5	11.0	12.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0	24.5	26.0	27.5	29.0	30.5
	1006	4.5	6.0	9.0	10.5	11.5	13.0	14.5	16.0	17.0	18.5	20.0	21.5	23.0	24.5	26.0	27.5	29.0	30.5
	1218	4.5	6.0	9.0	10.5	11.5	13.0	14.5	16.0	17.0	18.5	20.0	21.5	23.0	24.5	26.0	27.5	29.0	30.5
	1800	4.5	6.0	9.5	11.0	12.0	13.5	14.5	16.0	17.0	18.5	20.0	21.5	23.0	24.5	26.0	27.5	29.0	30.5

Parameter	MHz	TYP	MIN	TYP	MIN	TYP	MIN	TYP	MIN	TYP	MIN	TYP	MIN	TYP	MIN	TYP	MIN	TYP	MIN
Return loss I/P and O/P ports (dB)	5 - 12	14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0	
	12 - 20		16.0		16.0		16.0		16.0		16.0		16.0		16.0		16.0		16.0
	20 - 300		16.0		16.0		16.0		16.0		16.0		16.0		16.0		16.0		16.0
	300 - 1006		14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0
	1006 - 1218		14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0
	1218 - 1800		14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0
Return loss tap ports (dB)	5 - 12	14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0	
	12 - 20		16.0		15.0		16.0		16.0		16.0		16.0		16.0		16.0		16.0
	20 - 470		16.0		16.0		16.0		16.0		16.0		16.0		16.0		16.0		16.0
	470 - 1006		16.0		16.0		16.0		16.0		16.0		16.0		16.0		16.0		16.0
	1006 - 1218		16.0		16.0		16.0		16.0		16.0		16.0		16.0		16.0		16.0
	1218 - 1800		16.0		16.0		16.0		16.0		16.0		16.0		16.0		16.0		16.0
Isolation tap-tap (dB)	5 - 12	18.0		18.0		18.0		18.0		18.0		18.0		18.0		18.0		18.0	
	12 - 20		22.0		20.0		22.0		22.0		22.0		22.0		22.0		22.0		22.0
	20 - 470		25.0		25.0		25.0		25.0		25.0		25.0		25.0		25.0		25.0
	470 - 1006		22.0		22.0		22.0		22.0		22.0		22.0		22.0		22.0		22.0
	1006 - 1218		20.0		20.0		20.0		20.0		20.0		20.0		20.0		20.0		20.0
	1218 - 1800		20.0		20.0		20.0		20.0		20.0		20.0		20.0		20.0		20.0

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## 4-way specifications

Parameter	MHz	8 dB		11 dB		14 dB		17 dB		20 dB		23 dB		26 dB		29 dB	
		TYP	MAX	TYP	MAX	TYP	MAX	TYP	MAX	TYP	MAX	TYP	MAX	TYP	MAX	TYP	MAX
Insertion loss in-out (dB)	5			4.0		2.2		1.8		1.6		1.2		1.2		1.2	
	12			4.0		2.2		1.8		1.6		1.2		1.2		1.2	
	200			4.2		2.5		2.0		1.8		1.3		1.3		1.3	
	750			4.9		3.2		2.7		2.4		1.6		1.5		1.5	
	860			5.0		3.4		2.8		2.5		1.6		1.5		1.5	
	1006			5.2		3.6		3.0		2.7		1.7		1.6		1.6	
	1218			5.4		3.9		3.2		2.9		1.8		1.7		1.7	
	1800			6.1		4.7		3.9		3.6		2.1		1.9		1.9	
Insertion loss in-tap (dB)	5	7.5		12.0		14.0		17.0		20.0		23.0		26.0		29.0	
	12	7.5	9.0	12.0	13.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0	24.5	26.0	27.5	29.0	30.5
	200	7.5	9.0	12.0	13.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0	24.5	26.0	27.5	29.0	30.5
	750	7.5	9.0	12.0	13.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0	24.5	26.0	27.5	29.0	30.5
	860	7.5	9.0	12.0	13.5	14.0	15.5	17.0	18.5	20.0	21.5	23.0	24.5	26.0	27.5	29.0	30.5
	1006	7.5	9.0	12.0	13.5	14.5	16.0	17.0	18.5	20.0	21.5	23.0	24.5	26.0	27.5	29.0	30.5
	1218	7.5	9.0	12.0	13.5	14.5	16.0	17.0	18.5	20.0	21.5	23.0	24.5	26.0	27.5	29.0	30.5
	1800	7.8	9.3	13.3	14.8	15.0	16.5	18.0	19.5	20.0	21.5	23.0	24.5	26.0	27.5	29.0	30.5

Parameter	MHz	TYP	MIN	TYP	MIN	TYP	MIN	TYP	MIN	TYP	MIN	TYP	MIN	TYP	MIN	TYP	MIN
Return loss I/P and O/P ports (dB)	5 - 12	14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0	
	12 - 20		16.0		16.0		16.0		16.0		16.0		16.0		16.0		16.0
	20 - 300		16.0		16.0		16.0		16.0		16.0		16.0		16.0		16.0
	300 - 1006		14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0
	1006 - 1218		14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0
	1218 - 1800		14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0
Return loss tap ports (dB)	5 - 12	14.0		14.0		14.0		14.0		14.0		14.0		14.0		14.0	
	12 - 20		16.0		16.0		16.0		16.0		16.0		16.0		16.0		16.0
	20 - 470		16.0		16.0		16.0		16.0		16.0		16.0		16.0		16.0
	470 - 1006		16.0		16.0		16.0		16.0		16.0		16.0		16.0		16.0
	1006 - 1218		16.0		16.0		16.0		16.0		16.0		16.0		16.0		16.0
	1218 - 1800		16.0		16.0		16.0		16.0		16.0		16.0		16.0		16.0
Isolation tap-tap (dB)	5 - 12	18.0		18.0		18.0		18.0		18.0		18.0		18.0		18.0	
	12 - 20		20.0		20.0		20.0		22.0		22.0		22.0		22.0		22.0
	20 - 470		25.0		23.0		23.0		25.0		25.0		25.0		25.0		25.0
	470 - 1006		22.0		22.0		22.0		22.0		22.0		22.0		22.0		22.0
	1006 - 1218		20.0		20.0		20.0		20.0		20.0		20.0		20.0		20.0
	1218 - 1800		20.0		20.0		20.0		20.0		20.0		20.0		20.0		20.0

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## 8-way specifications

Parameter	MHz	11 dB		14 dB		17 dB		20 dB		23 dB		26 dB		29 dB	
		TYP	MAX	TYP	MAX	TYP	MAX	TYP	MAX	TYP	MAX	TYP	MAX	TYP	MAX
Insertion loss in-out (dB)	5			4.0		2.2		1.8		1.6		1.2		1.2	
	12				4.0		2.2		1.8		1.6		1.2		1.2
	200				4.2		2.5		2.0		1.8		1.3		1.3
	750				4.9		3.2		2.7		2.4		1.6		1.5
	860				5.0		3.4		2.8		2.5		1.6		1.5
	1006				5.2		3.6		3.0		2.7		1.7		1.6
	1218				5.4		3.9		3.2		2.9		1.8		1.7
	1800				6.1		4.7		3.9		3.6		2.1		1.9
Insertion loss in-tap (dB)	5	11.0		15.5		18.0		20.5		23.5		26.0		29.0	
	12	11.0	12.5	15.5	17.0	18.0	19.5	20.5	22.0	23.5	25.0	26.0	27.5	29.0	30.5
	200	11.0	12.5	15.5	17.0	18.0	19.5	20.5	22.0	23.5	25.0	26.0	27.5	29.0	30.5
	750	11.0	12.5	16.0	17.5	18.0	19.5	20.5	22.0	23.5	25.0	26.0	27.5	29.0	30.5
	860	11.0	12.5	16.0	17.5	18.0	19.5	20.5	22.0	24.0	25.5	26.0	27.5	29.0	30.5
	1006	11.0	12.5	16.0	17.5	18.5	20.0	21.0	22.5	24.0	25.5	26.0	27.5	29.0	30.5
	1218	11.0	12.5	16.2	17.7	18.5	20.0	21.0	22.5	24.0	25.5	26.0	27.5	29.0	30.5
	1800	11.5	13.0	17.5	19.0	19.3	20.8	21.0	22.5	24.0	25.5	26.0	27.5	29.0	30.5

Parameter	MHz	TYP	MIN	TYP	MIN	TYP	MIN	TYP	MIN	TYP	MIN	TYP	MIN	TYP	MIN
Return loss I/P and O/P ports (dB)	5 - 12	14.0		14.0		14.0		14.0		14.0		14.0		14.0	
	12 - 20		16.0		16.0		16.0		16.0		16.0		16.0		16.0
	20 - 300		16.0		16.0		16.0		16.0		16.0		16.0		16.0
	300 - 1006		14.0		14.0		14.0		14.0		14.0		14.0		14.0
	1006 - 1218		14.0		14.0		14.0		14.0		14.0		14.0		14.0
	1218 - 1800		14.0		14.0		14.0		14.0		14.0		14.0		14.0
Return loss tap ports (dB)	5 - 12	14.0		14.0		14.0		14.0		14.0		14.0		14.0	
	12 - 20		16.0		16.0		16.0		16.0		16.0		16.0		16.0
	20 - 470		16.0		16.0		16.0		16.0		16.0		16.0		16.0
	470 - 1006		16.0		16.0		16.0		16.0		16.0		16.0		16.0
	1006 - 1218		16.0		16.0		16.0		16.0		16.0		16.0		16.0
	1218 - 1800		16.0		16.0		16.0		16.0		16.0		16.0		16.0
Isolation tap-tap (dB)	5 - 12	18.0		18.0		18.0		18.0		18.0		18.0		18.0	
	12 - 20		24.0		22.0		22.0		23.0		23.0		23.0		23.0
	20 - 470		25.0		25.0		25.0		25.0		25.0		25.0		25.0
	470 - 1006		22.0		22.0		22.0		22.0		22.0		22.0		22.0
	1006 - 1218		20.0		20.0		20.0		20.0		20.0		20.0		20.0
	1218 - 1800		20.0		20.0		20.0		20.0		20.0		20.0		20.0

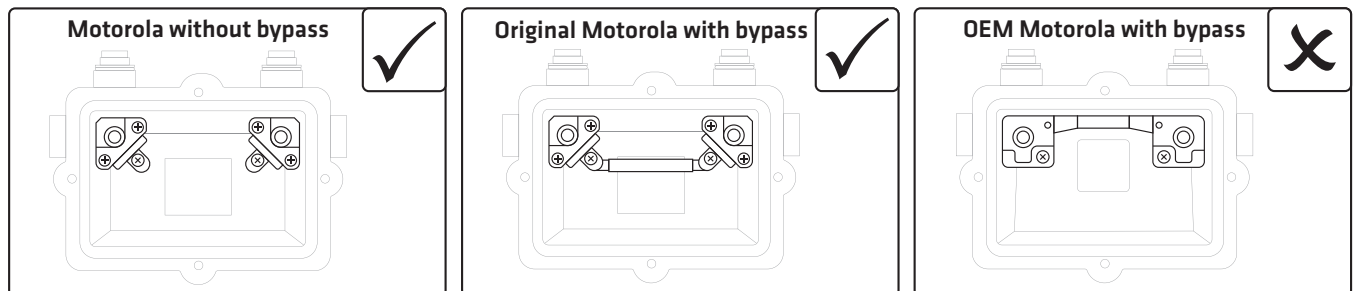
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### Compatibility

Small variations in the legacy housing designs can cause a deviation of max. 2 dB return loss. Insertion loss specification is maintained in all compatible housings.

The XFO Motorola is designed for legacy housings by Original Motorola suppliers. Housings that claim Motorola-style-compatibility, but have a different bypass switch design, will not be compatible with the XFO Motorola. See below pictures that illustrate how to recognize the difference.



#### Tested housings - version (date code)

93 (228-438-OAT) (81-178-001-M) (No bypass)
96 (228-438-OAT) (81-178-001-M) (No bypass)
00 (228-438-OAT) (81-178-001-M)
01 (228-438-OAT) (86178091-M)
02 (228-438-OAT) (81-178-001-M)
03 (228-438-OAT) (81-178-001-M)
05 (228-438-OAT) (86178091-M)
06 (228-438-OAT) (86-178-091-M)
08 (228-438-OAT) (86178091-M)
10 (228-438-OAT) (86178091-M)
11 (228-438-OAT) (86178091-M)
13 (228-438-OAT) (86178091-M)
16 (228-438-OAT) (86178091-M) (No bypass)
20 (228-438-OAT) (86178091-M)

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### Order information

XFO Faceplate Upgrade Kits and legacy style housing are sold separately.

Item number	Item code	Description
<b>2-way taps</b>		
19014892	XFOMZ-2-4T	FACEPLATE ONLY REPLACEMENT MOTOROLA 2-WAY 4 dB 1.8 GHz TERM
19014893	XFOMZ-2-8	FACEPLATE ONLY REPLACEMENT MOTOROLA 2-WAY 8 dB 1.8 GHz
19014894	XFOMZ-2-11	FACEPLATE ONLY REPLACEMENT MOTOROLA 2-WAY 11 dB 1.8 GHz
19014895	XFOMZ-2-14	FACEPLATE ONLY REPLACEMENT MOTOROLA 2-WAY 14 dB 1.8 GHz
19014896	XFOMZ-2-17	FACEPLATE ONLY REPLACEMENT MOTOROLA 2-WAY 17 dB 1.8 GHz
19014897	XFOMZ-2-20	FACEPLATE ONLY REPLACEMENT MOTOROLA 2-WAY 20 dB 1.8 GHz
19014898	XFOMZ-2-23	FACEPLATE ONLY REPLACEMENT MOTOROLA 2-WAY 23 dB 1.8 GHz
19014899	XFOMZ-2-26	FACEPLATE ONLY REPLACEMENT MOTOROLA 2-WAY 26 dB 1.8 GHz
19014900	XFOMZ-2-29	FACEPLATE ONLY REPLACEMENT MOTOROLA 2-WAY 29 dB 1.8 GHz
<b>4-way taps</b>		
19014901	XFOMZ-4-8T	FACEPLATE ONLY REPLACEMENT MOTOROLA 4-WAY 8 dB 1.8 GHz TERM
19014902	XFOMZ-4-11	FACEPLATE ONLY REPLACEMENT MOTOROLA 4-WAY 11 dB 1.8 GHz
19014903	XFOMZ-4-14	FACEPLATE ONLY REPLACEMENT MOTOROLA 4-WAY 14 dB 1.8 GHz
19014904	XFOMZ-4-17	FACEPLATE ONLY REPLACEMENT MOTOROLA 4 WAY 17 dB 1.8 GHz
19014905	XFOMZ-4-20	FACEPLATE ONLY REPLACEMENT MOTOROLA 4-WAY 20 dB 1.8 GHz
19014906	XFOMZ-4-23	FACEPLATE ONLY REPLACEMENT MOTOROLA 4-WAY 23 dB 1.8 GHz
19014907	XFOMZ-4-26	FACEPLATE ONLY REPLACEMENT MOTOROLA 4-WAY 26 dB 1.8 GHz
19014908	XFOMZ-4-29	FACEPLATE ONLY REPLACEMENT MOTOROLA 4-WAY 29 dB 1.8 GHz
<b>8-way taps</b>		
19014909	XFOMZ-8-11T	FACEPLATE ONLY REPLACEMENT MOTOROLA 8-WAY 11 dB 1.8 GHz TERM
19014910	XFOMZ-8-14	FACEPLATE ONLY REPLACEMENT MOTOROLA 8-WAY 14 dB 1.8 GHz
19014911	XFOMZ-8-17	FACEPLATE ONLY REPLACEMENT MOTOROLA 8 WAY 17 dB 1.8 GHz
19014912	XFOMZ-8-20	FACEPLATE ONLY REPLACEMENT MOTOROLA 8-WAY 20 dB 1.8 GHz
19014913	XFOMZ-8-23	FACEPLATE ONLY REPLACEMENT MOTOROLA 8-WAY 23 dB 1.8 GHz
19014914	XFOMZ-8-26	FACEPLATE ONLY REPLACEMENT MOTOROLA 8-WAY 26 dB 1.8 GHz
19014915	XFOMZ-8-29	FACEPLATE ONLY REPLACEMENT MOTOROLA 8-WAY 29 dB 1.8 GHz
<b>Backbox with bypass switch</b>		
19014916	XFOMZ-BB	BACKBOX ONLY XFOMZ MOTOROLA MULTITAP 1.8 GHz



## Outdoor multitaps XFO faceplate-only 1.8 GHz upgrade Motorola multitaps



### Signal conditioning order information

The following types of XGT-series conditioning plug-ins are supported in the XFO-series:

Item number	Item code	Description
<b>1.8 GHz cable equalizers</b>		
19013857	XGT1800-CE03	TECHNETIX XGT/XFO PLUG-IN CABLE EQUALIZER 03 dB 1.8 GHz
19013859	XGT1800-CE06	TECHNETIX XGT/XFO PLUG-IN CABLE EQUALIZER 06 dB 1.8 GHz
19013861	XGT1800-CE09	TECHNETIX XGT/XFO PLUG-IN CABLE EQUALIZER 09 dB 1.8 GHz
19013863	XGT1800-CE12	TECHNETIX XGT/XFO PLUG-IN CABLE EQUALIZER 12 dB 1.8 GHz
19013864	XGT1800-CE14	TECHNETIX XGT/XFO PLUG-IN CABLE EQUALIZER 14 dB 1.8 GHz
19013866	XGT1800-CE18	TECHNETIX XGT/XFO PLUG-IN CABLE EQUALIZER 18 dB 1.8 GHz
<b>1.8 GHz cable simulators</b>		
19013870	XGT1800-CS03	TECHNETIX XGT/XFO PLUG-IN CABLE SIMULATOR 03 dB 1.8 GHz
19013872	XGT1800-CS06	TECHNETIX XGT/XFO PLUG-IN CABLE SIMULATOR 06 dB 1.8 GHz
19013874	XGT1800-CS09	TECHNETIX XGT/XFO PLUG-IN CABLE SIMULATOR 09 dB 1.8 GHz
19013876	XGT1800-CS12	TECHNETIX XGT/XFO PLUG-IN CABLE SIMULATOR 12 dB 1.8 GHz
19013877	XGT1800-CS15	TECHNETIX XGT/XFO PLUG-IN CABLE SIMULATOR 15 dB 1.8 GHz
19013878	XGT1800-CS18	TECHNETIX XGT/XFO PLUG-IN CABLE SIMULATOR 18 dB 1.8 GHz