











MHF® Series – Micro RF Coaxial Connectors

Click the photos below to get more detailed product information.

Product name		MHF® I LK	MHF® I	MHF® I	MHF® III	MHF® -A
Appearance						
		MHF I with mechanical lock	Best Insertion Loss	Most Cable O.D. options	low profile 1.60 mm	Shortest mated height with 3x3 mm footprint
Plug part number		-	20767-001R	20670-001R-**	20609-002R	20428-001R
Receptacle part number		20279-001E-** (3 pads) 20441-001E-01 (4 pads)			20369-001E-**	20429-001E
Maximum height (mm)		2.9	3.0	2.5	1.6	1.45
Outside dimension of receptacle (mm)		3.0 x 3.0			2.0 x 2.0	3.0 x 3.0
Coax O.D. (Center Conductor AWG)	2.00 mm (26)		●			
	1.80 mm (30)	●		●		
	1.37 mm (30)	●		●		
	1.32 mm (32)	●		●		
	1.13 mm (32)	●		●		●
	0.95 mm (33)					
	0.81 mm (33)					
	0.81 mm (36)	●		●	●	
	0.64 mm (36)				●	
0.48 mm (38)						
Frequency		DC - 9 GHz			DC - 6 GHz	
VSWR (L=100mm)	DC - 3GHz	1.3 max.(PLUG) /1.3 max.(RECE)			1.3 max.	
	3GHz - 6GHz	1.5 max.(PLUG) /1.4 max.(RECE)			1.5 max.	
	6GHz - 9GHz	1.9 max.(PLUG) /1.8 max.(RECE)		1.6 max.(PLUG) 1.8 max.(RECE)	-	
	9GHz - 12GHz	-				
	12GHz - 15GHz	-				
Service temp. (Celsius)		-40 degree - 90 degree				
Characteristic impedance		50ohm				
Rated voltage		AC60V				
Contact resistance		20m ohm max.				
Withstand voltage		AC200V/min				
Insulation resistance		500M ohm min./DC100V				

MHF[®] Series – Micro RF Coaxial Connectors







Click the photos below to get more detailed product information.

Product name		MHF [®] 4L LK	MHF [®] 4L	MHF [®] 4L	MHF [®] 4L	MHF [®] 4
Appearance						
		MHF 4L with Mechanical lock	Best Insertion Loss and VSWR	Industry Standard for M.2	Industry Standard for M.2	low profile1.20 mm
Plug part number		-	20632-001R-37	20565-001R-13	20572-001R-08	20611-001R
Receptacle part number		20449-001E-**(MHF 4) 20579-001E(MHF 4L)				
Maximum height (mm)		2.0	1.7	1.4	1.2	1.2
Outside dimension of receptacle (mm)		2.0 x 2.0				
Coax O.D. (Center Conductor AWG)	2.00 mm (26)					
	1.80 mm (30)					
	1.37 mm (30)	●	●			
	1.32 mm (32)					
	1.13 mm (32)			●		
	0.95 mm (33)			●		
	0.81 mm (33)					
	0.81 mm (36)				●	●
	0.64 mm (36)				●	
	0.48 mm (38)					
Frequency		DC - 12 GHz				DC - 6 GHz
VSWR (L=100mm)	DC - 3 GHz	1.3 max.				
	3 GHz - 6 GHz	1.4 max.		1.45 max		1.5 max.
	6 GHz - 9 GHz	1.5 max.		1.6 max.		-
	9 GHz - 12 GHz	1.6 max.		1.9 max.	1.8 max.	-
	12 GHz - 15 GHz	-				
Service temp. (Celsius)		-40 degree - 90 degree				
Characteristic impedance		50ohm				
Rated voltage		AC60V				
Contact resistance		20m ohm max.				
Withstand voltage		AC200V/min				
Insulation resistance		500M ohm min./DC100V				

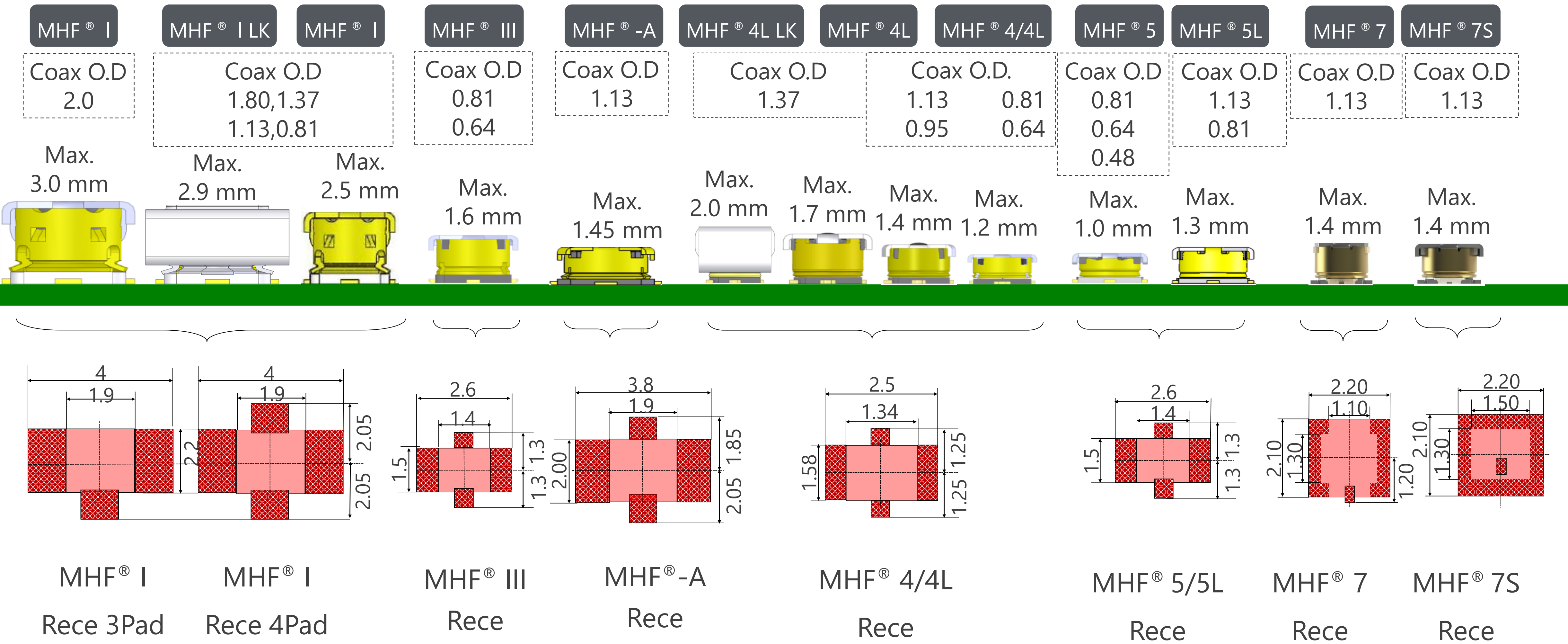
MHF® Series – Micro RF Coaxial Connectors







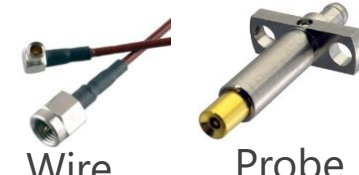






Click the photos below to get more detailed product information.

Product name		MHF® 5L	MHF® 5L	MHF® 5	MHF® 5	MHF® 7		MHF® 7S	
Appearance								 ZenShield™	
		Improved Insertion Loss and VSWR through 15GHz	Improved Insertion Loss and VSWR through 15GHz	low profile 1.00 mm	low profile 1.00 mm	good performance through 45GHz		Unique shielded design increases EMC performance	
Plug part number		20668-001R-13	20714-001R-81	20711-001R-81	20615-002R-48	20939-001R-13		20980-001R-13	
Receptacle part number		20566-001E-01				20921-001E		20981-001E-02	
Maximum height (mm)		1.3		1.0		1.4			
Outside dimension of receptacle (mm)		2.0 x 2.0				2.1 x 2.0		2.0 x 2.0	
Coax O.D.(Center Conductor AWG)	2.00 mm (26)								
	1.80 mm (30)								
	1.37 mm (30)								
	1.32 mm (32)								
	1.13 mm (30)					●			
	1.13 mm (32)	●						●	
	0.95 mm (33)								
	0.81 mm (33)		●						
	0.81 mm (36)			●					
	0.64 mm (36)			●					
0.48 mm (38)					●				
Frequency		DC - 15GHz		DC - 12GHz		DC - 45GHz		DC - 15GHz	
VSWR (L=100mm)	DC -3GHz	1.3 max.				DC~5GHz		1.2 max.	
	3GHz - 6GHz	1.4 max.	1.5 max.			5GHz~10GHz	1.35 max.	1.35 max.	
	6GHz - 9GHz	1.5 max.	1.6 max.			10GHz~15GHz	1.50 max.	1.4 max.	
	9GHz - 12GHz	1.5 max.	1.8 max.		1.6 max.	15GHz~20GHz	1.68 max.	1.45 max.	
	12GHz - 15GHz	1.6 max.	-			20GHz~45GHz	1.68 max.	1.50 max.	
Service temp. (Celsius)		-40 degree - 90 degree							
Characteristic impedance		50ohm							
Rated voltage		AC60V							
Contact resistance		20m ohm max.							
Withstand voltage		AC200V/min							
Insulation resistance		500M ohm min./DC100V							

Micro RF coax connector : Foot pattern



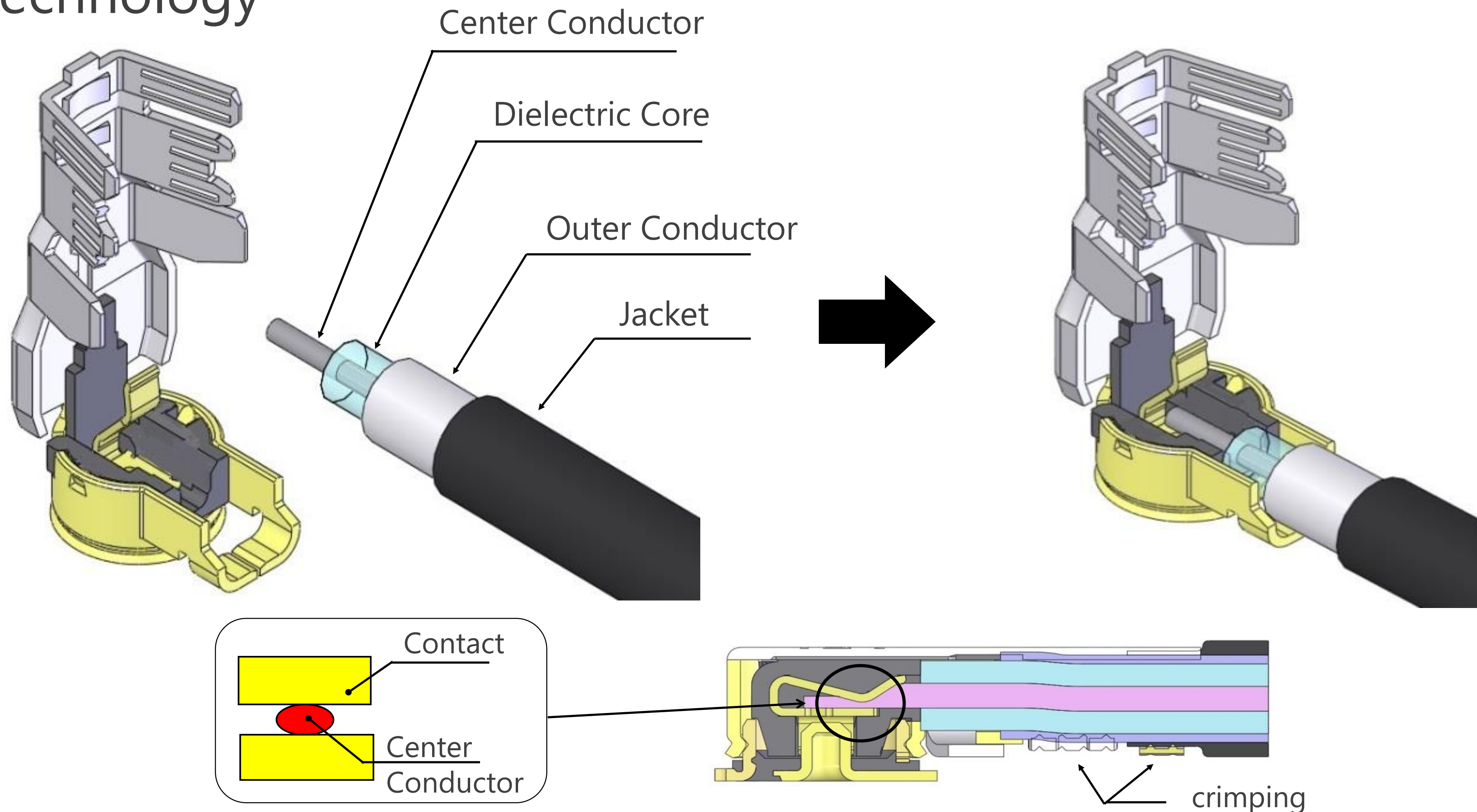
Accessory overview

Product					MHF® I	MHF® I LK		MHF® III	MHF® -A	MHF® 4	MHF® 4L	MHF® 4L LK	MHF® 5	MHF® 7	MHF® 7S	
SMA adapter	for Plug	Durability (cycles)				90193-001		90285-001	90413-001	90449-001			90543-0001	91106-0001	91255-0001	
		for electrical performance check	3K													
		for voltage check	10K													
	for Receptacle	for electrical performance check			500		90193-002	90285-002	90413-002	90449-002			90543-0002	91107-0001	91256-0001	
		High cycle	Normal		10K		90539-001	90491-001	90539-001	90698-0001			90793-0001	-	-	
			Narrow pitch	Wire	100	 Wire Probe	90577-0100 (100mm) 90577-0350 (350mm)		-	90577-0100 (100mm) 90577-0350 (350mm)			91137-J300		91197-0300	
				Probe	10K		90575-0001		-	90575-0001	90576-0001		90847-0001	91145-0001	91145-0001	
			Detachable	Base	200K	 Base Probe	90684-0001								-	-
				Probe	10K		90416-001		-	90416-001	90683-0001			90690-0001	-	-
Hand tool	Mating and unmating tool					90224-001 90885-0001 (for 20767-001R)	-	-	-	90435-001	90609-0001 (for 20572-001R-08 / 20565-001R-13) 90873-0001 (for 20632-001R-37)	-	90612-0001	-	91186-0001	
	Unmating tool					90192-001	-	90287-001	90411-001	-	-	-	-	-	-	
	Mating tool					-	-	-	-	-	-	-	90624-0001	-	-	
	Mating and unmating tweezer					-	-	90501-001	-	90482-001	90616-0008 90615-0013	-	-	91187-0002	-	
	Locking and unlocking tool					-	91026-0001	-	-	-	-	-	91166-0001	-	-	-

MHF[®] Harnesses

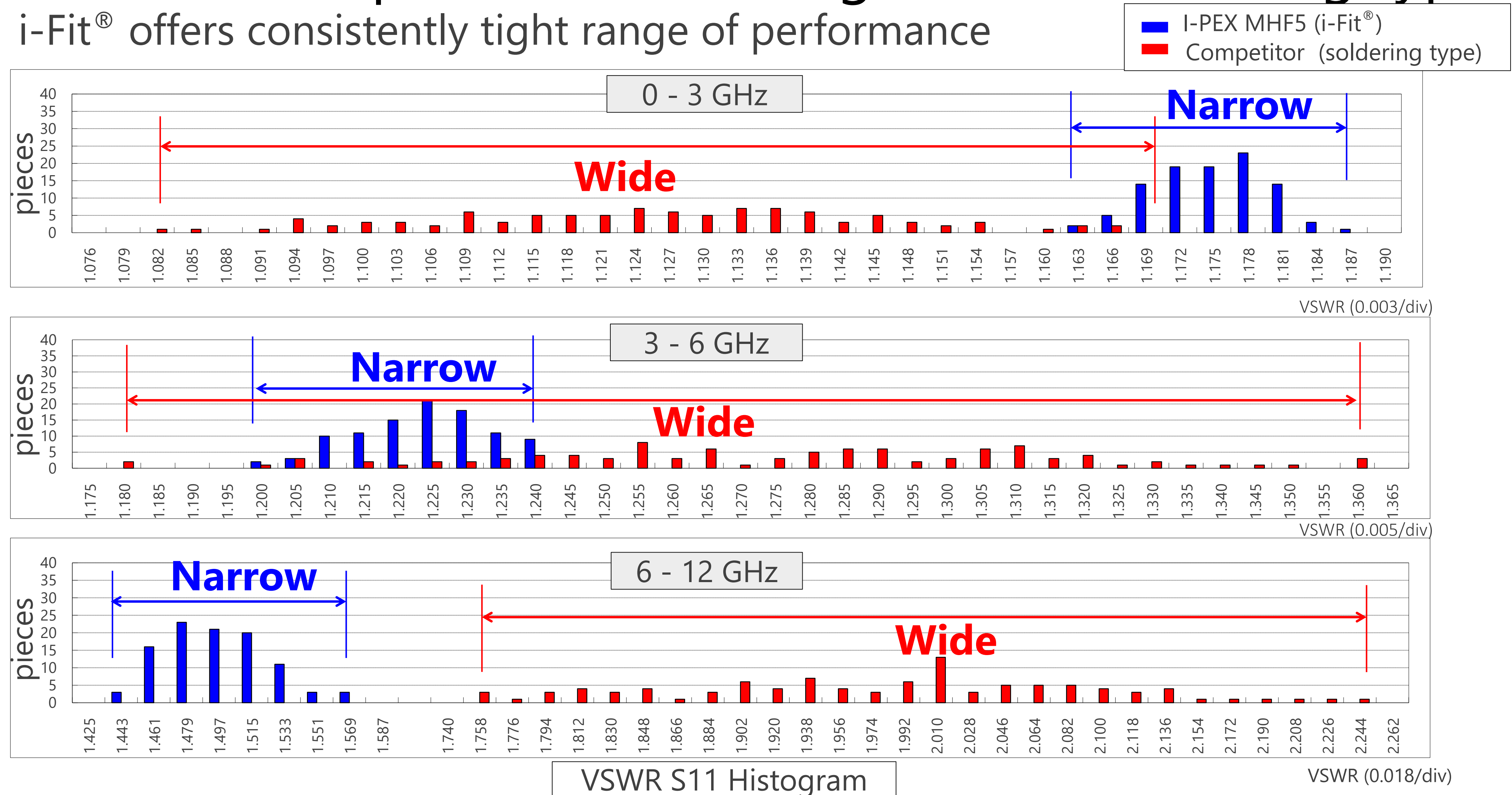
Micro RF coax connector : Wire crimp termination technology

i-Fit[®] Technology



Solder-less crimp "i-Fit[®]" advantage versus soldering types

i-Fit[®] offers consistently tight range of performance



Solder-less crimp "i-Fit[®]" advantage versus manual soldering types

Significantly reduced tact time with i-Fit[®]

		I-PEX MHF "i-Fit"	Manual Soldering
Tact time	Wire strip	Same tact time	
	Termination	6 seconds/ea.	30 seconds/ea.
Qty of cable assemblies a worker can make per month		105,600 assemblies	21,120 assemblies
# of operator needed	1M cable assemblies/mo	10	48
	2M cable assemblies/mo	19	95

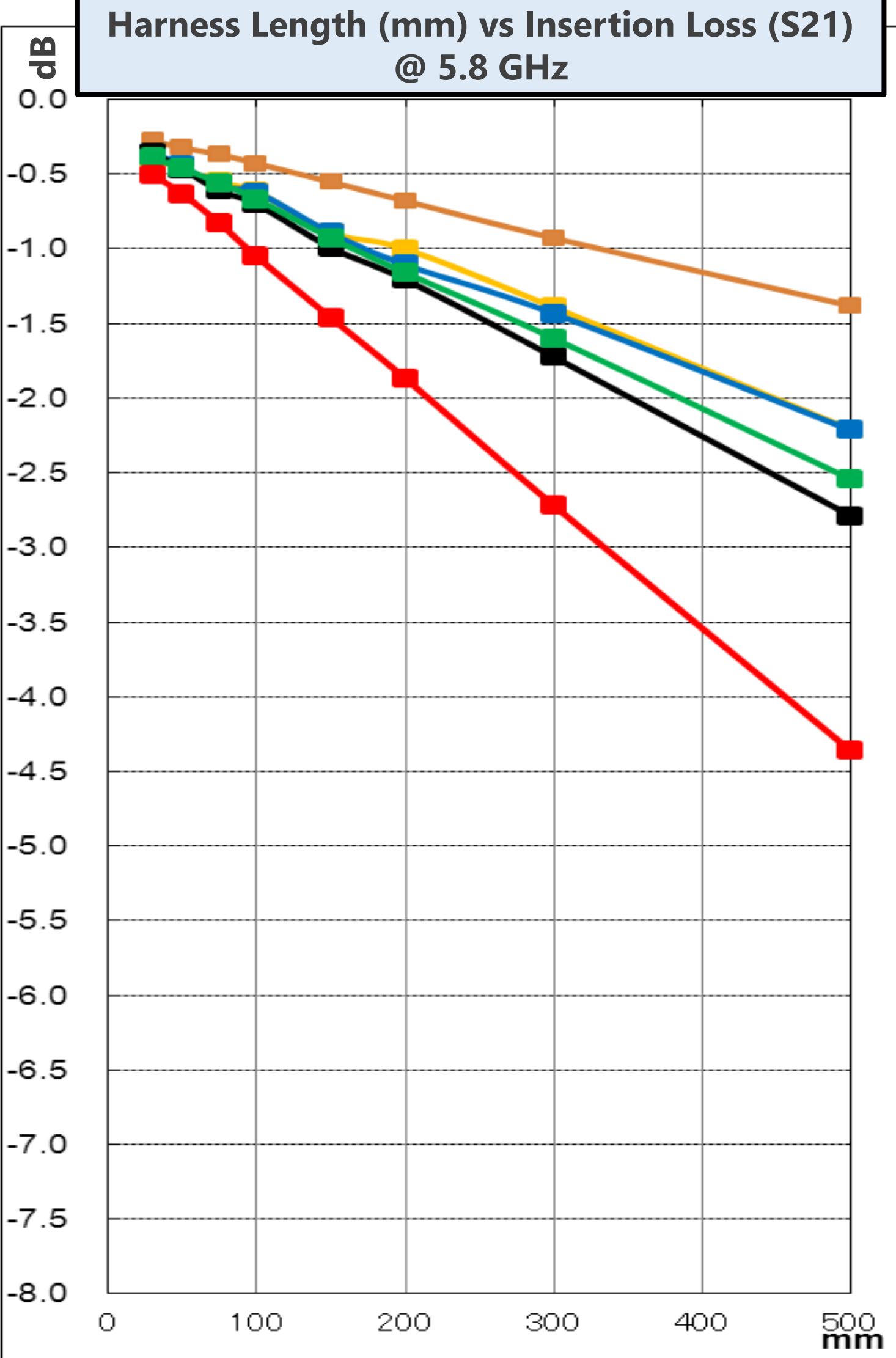
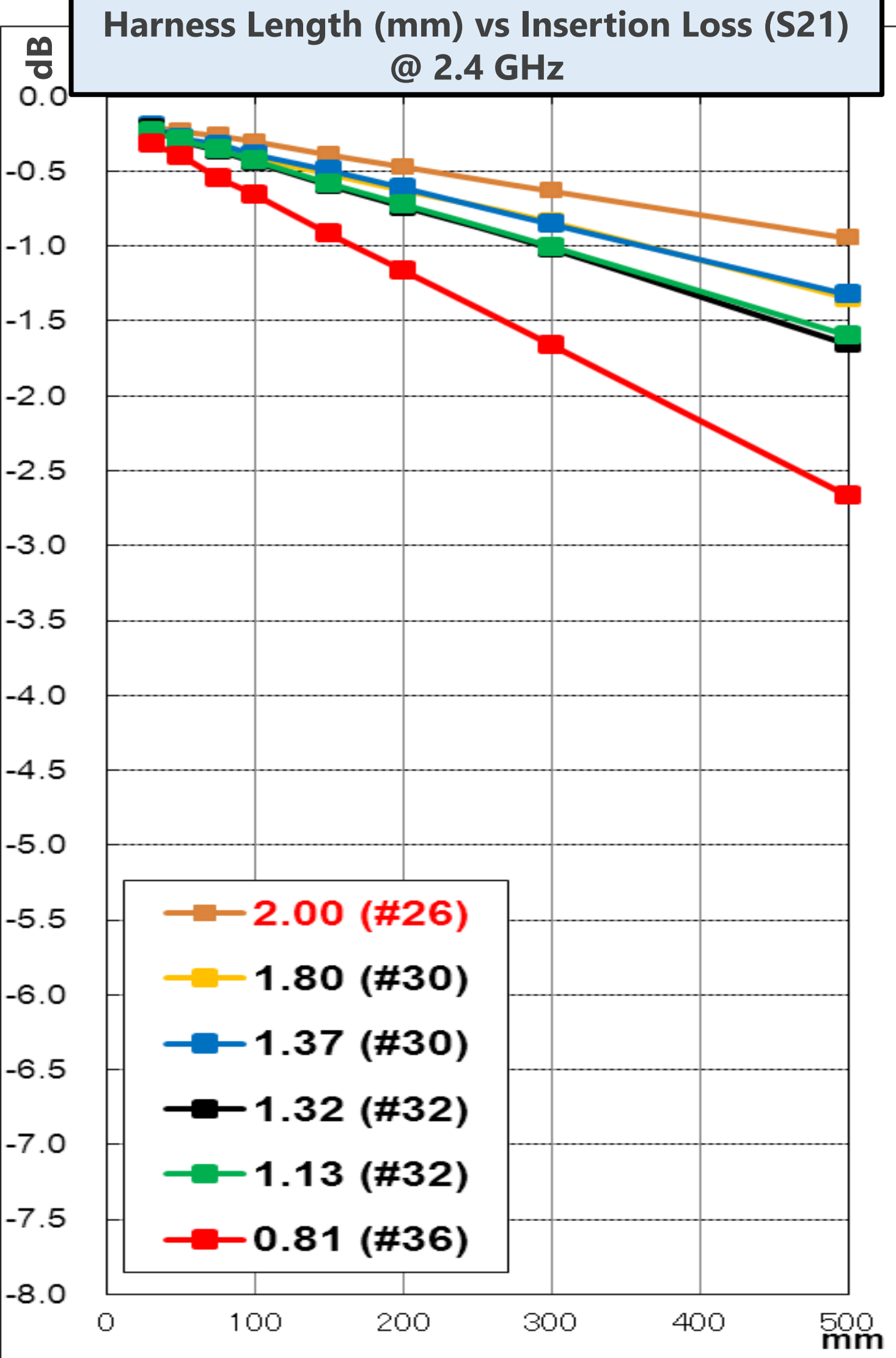
*Calculated based on operation hours of 22days/mo (8hours/day)



i-Fit Semi-Auto crimp tool :

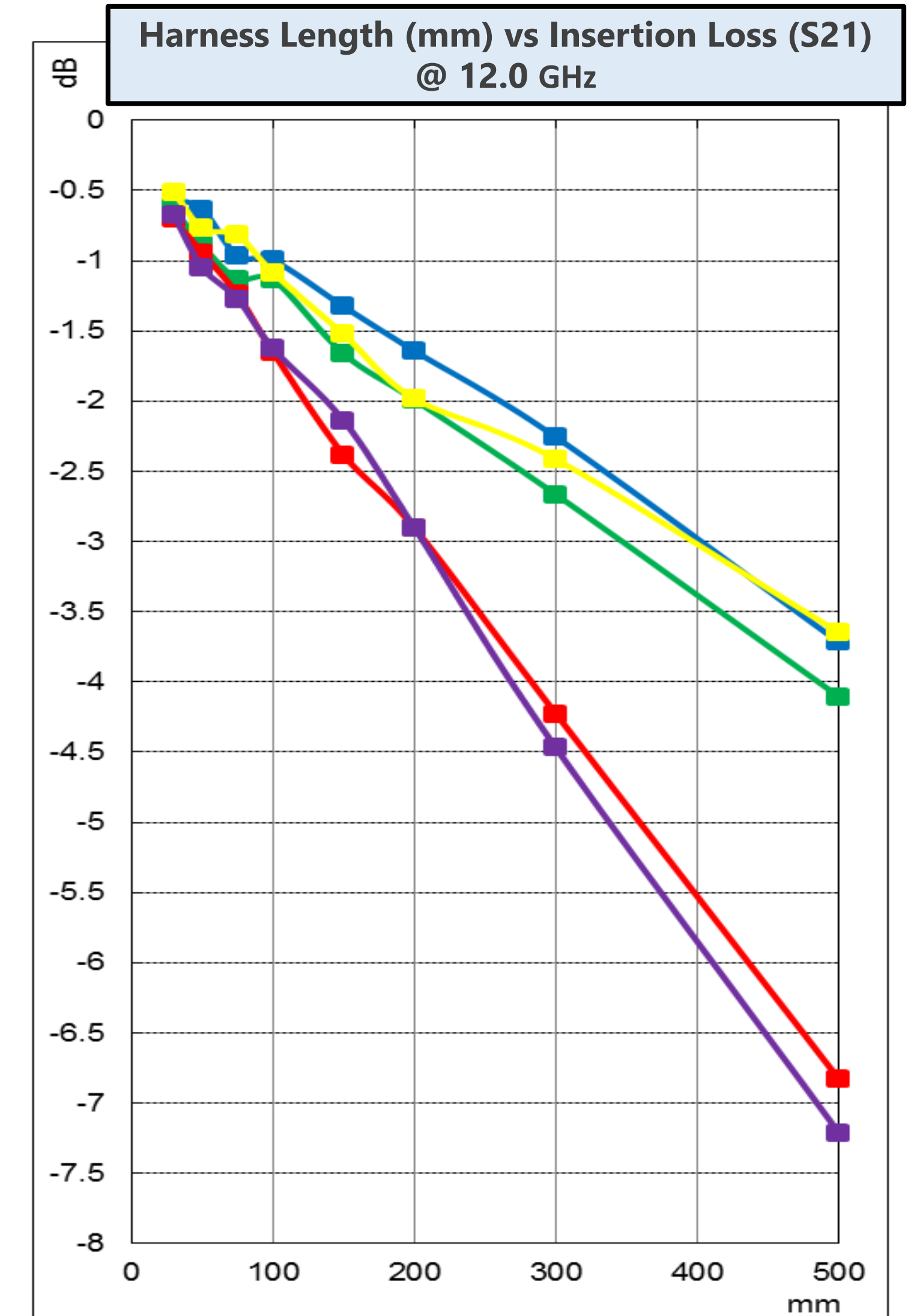
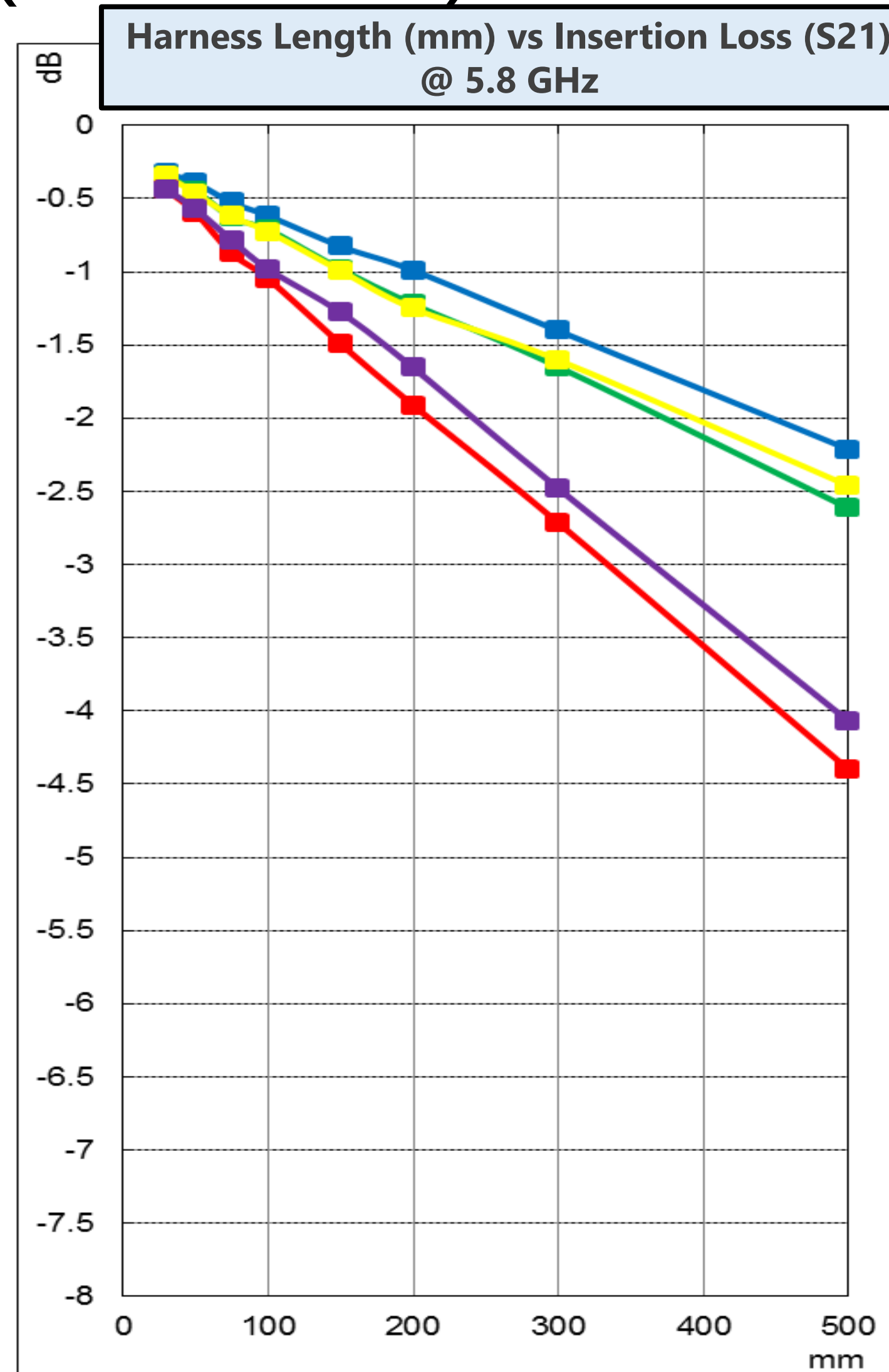
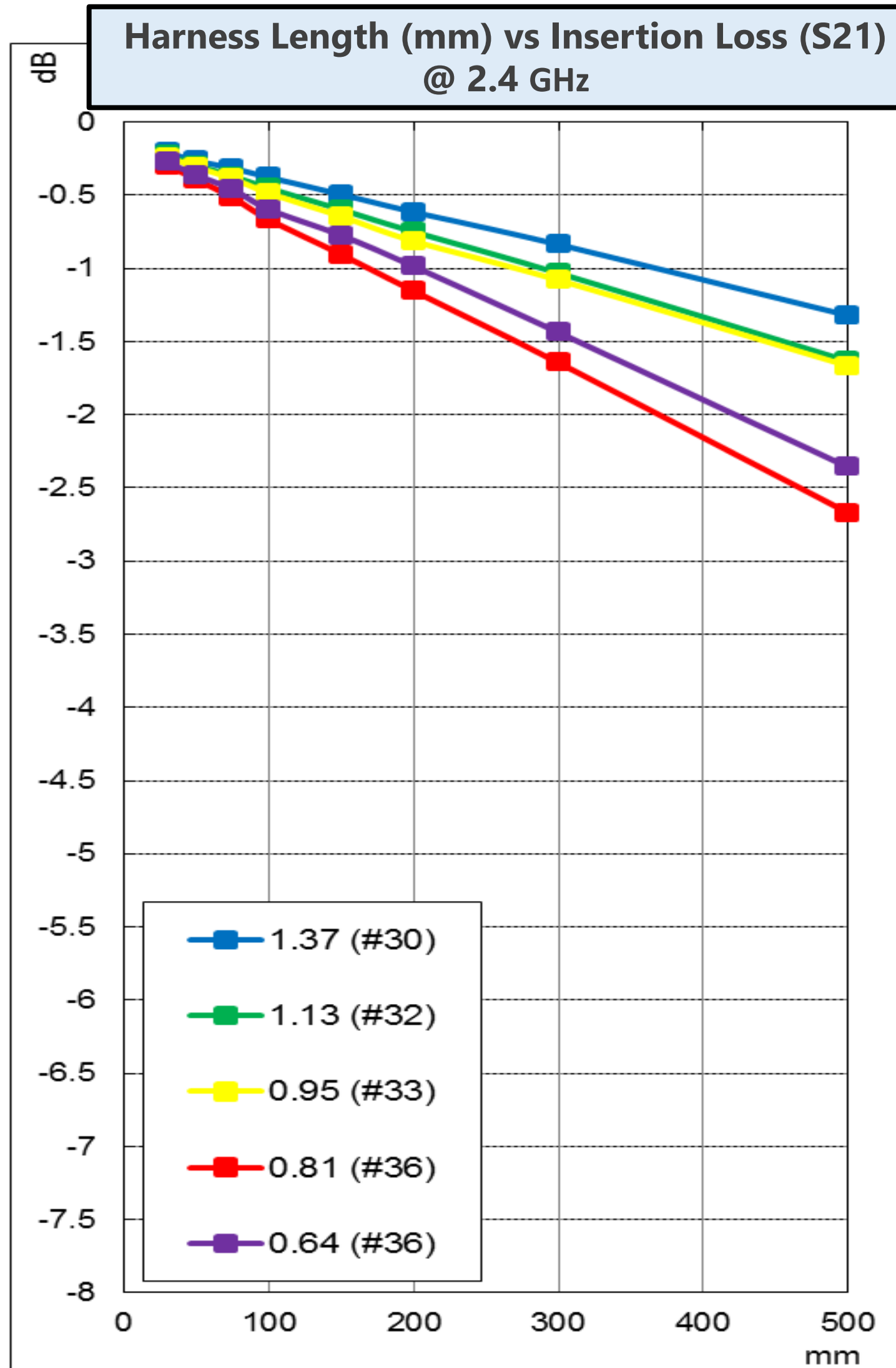
I-PEX has sold over 1,000 units of i-Fit crimping tool.
These are working in many antenna / harness makers around the world.

Wire insertion loss (MHF[®] I) & Minimum bend radius

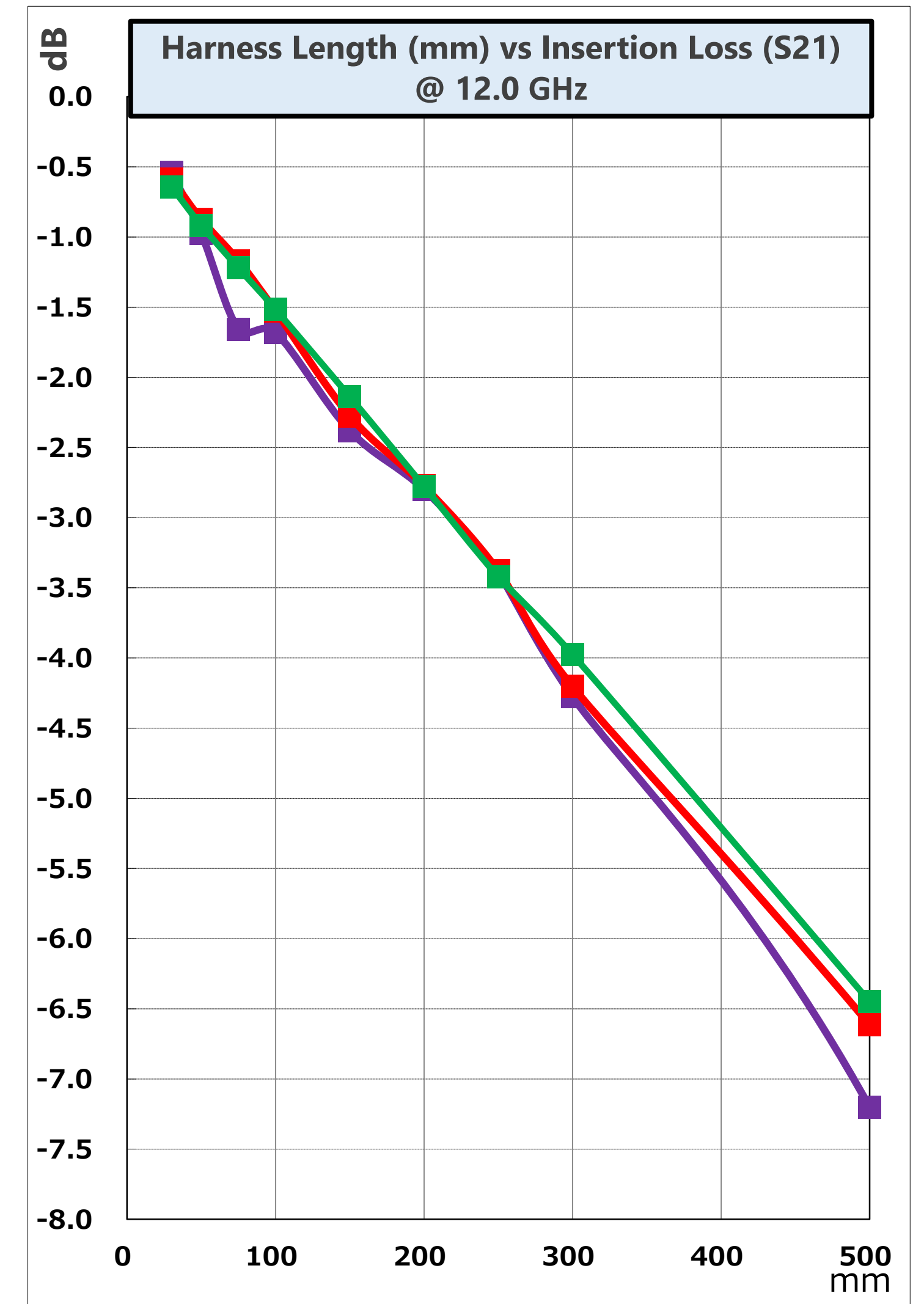
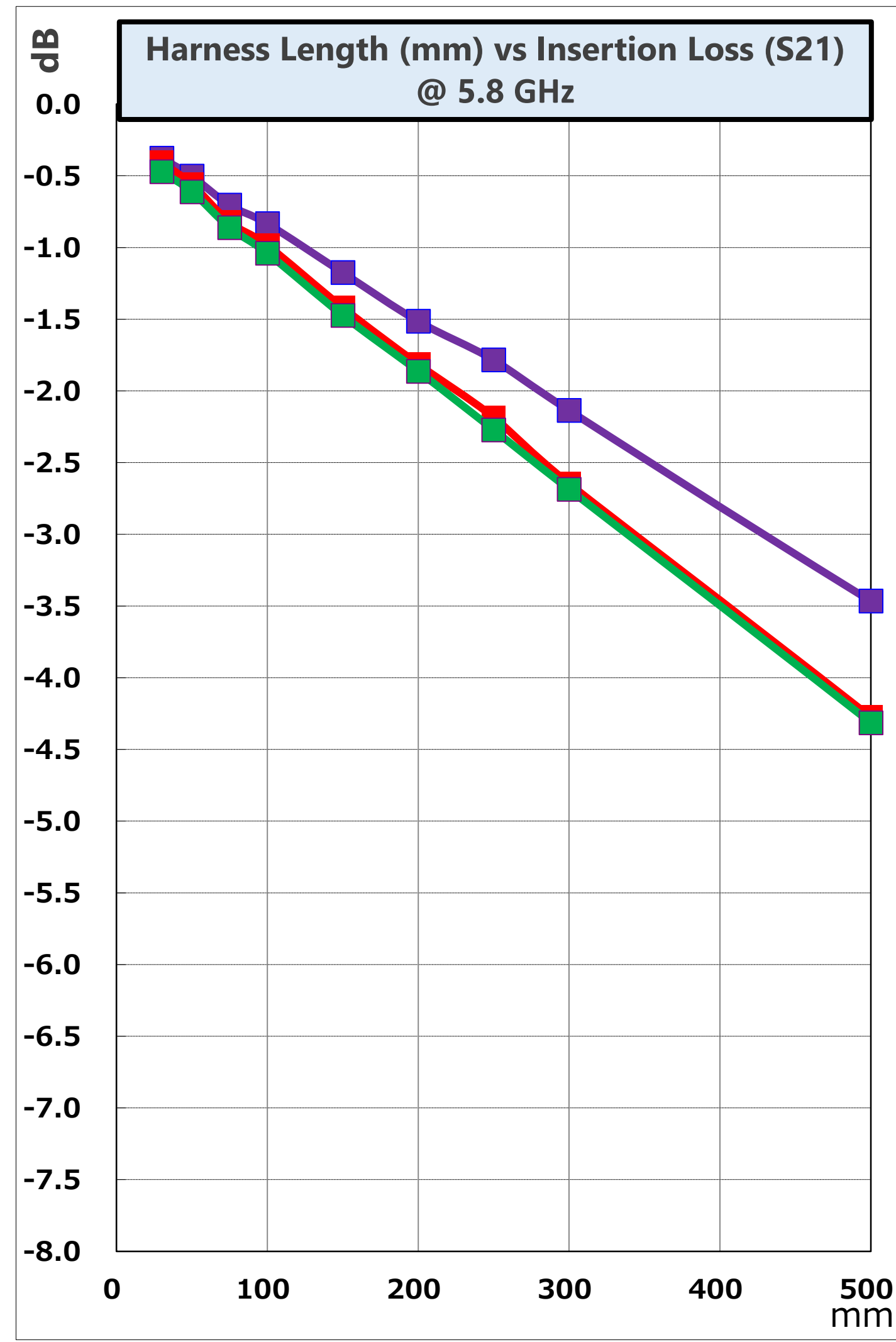
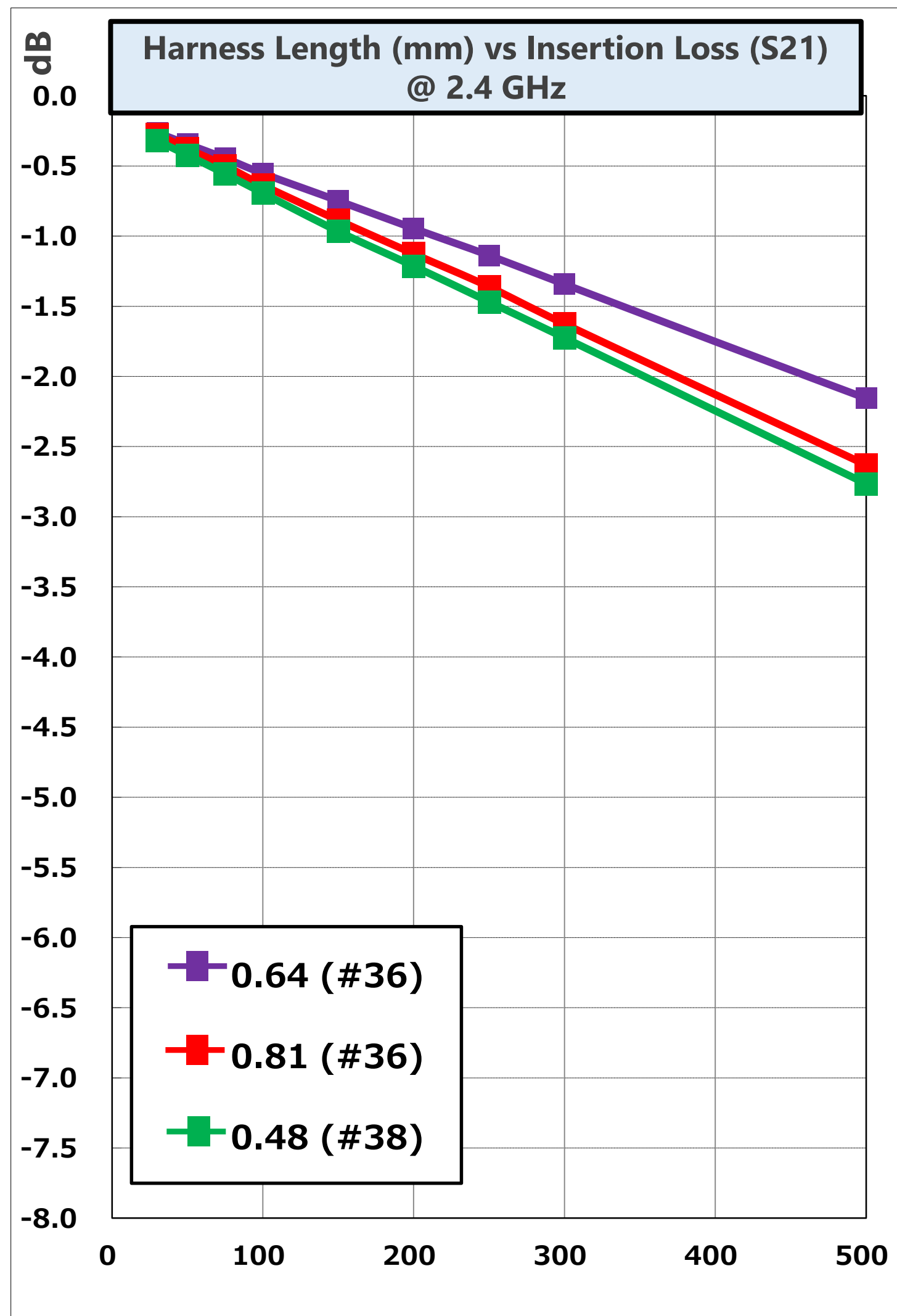


Coax O.D. (Center Conductor AWG)	Minimum bend radius (90 degrees)
2.00 mm (26)	2.0mm
1.80 mm (30)	1.8mm
1.37 mm (30)	1.3mm
1.32 mm (32)	1.3mm
1.13 mm (32)	1.1mm
0.95 mm (33)	1.0mm
0.81 mm (33)	0.8mm
0.81 mm (36)	0.6mm
0.64 mm (36)	0.5mm
0.48 mm (38)	0.3mm
0.34 mm (42)	0.3mm

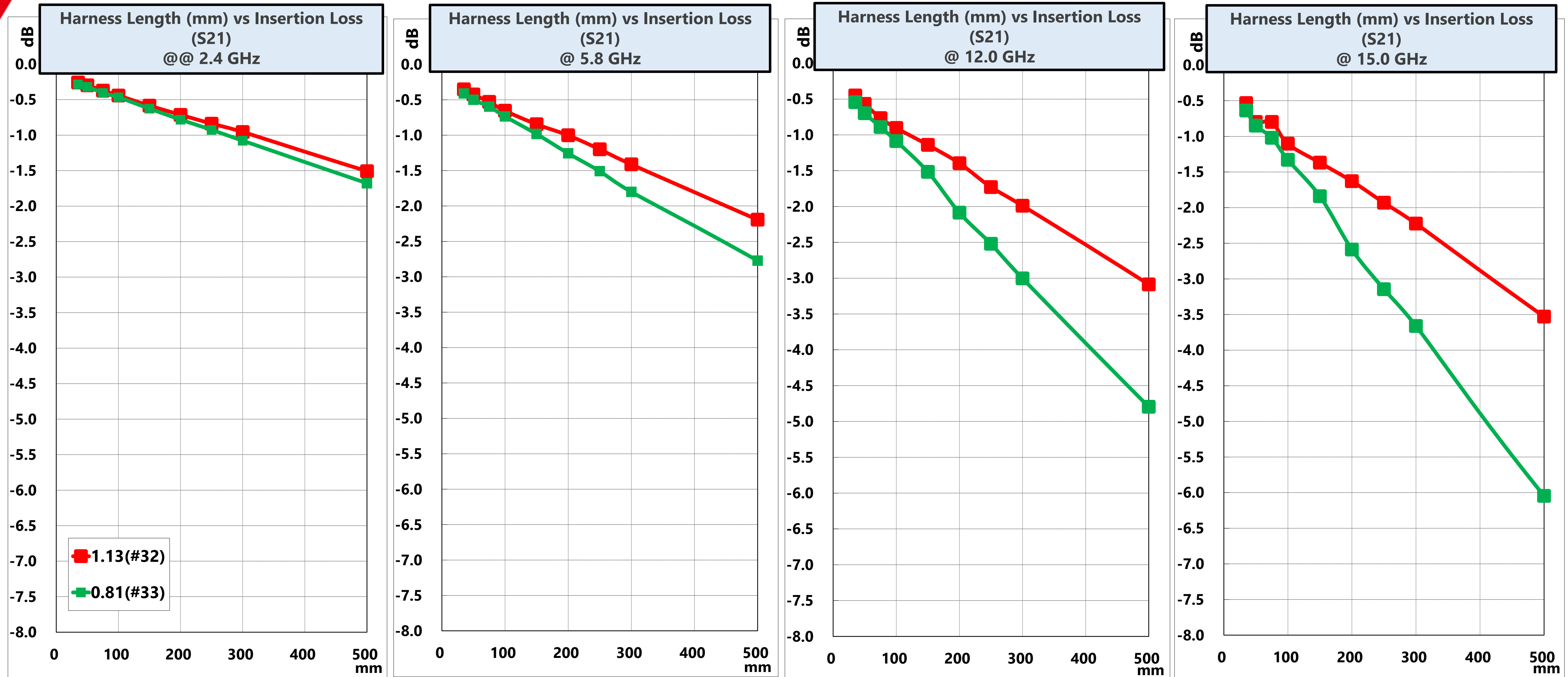
Wire insertion loss (MHF[®] 4L)



Wire insertion loss (MHF[®] 5)

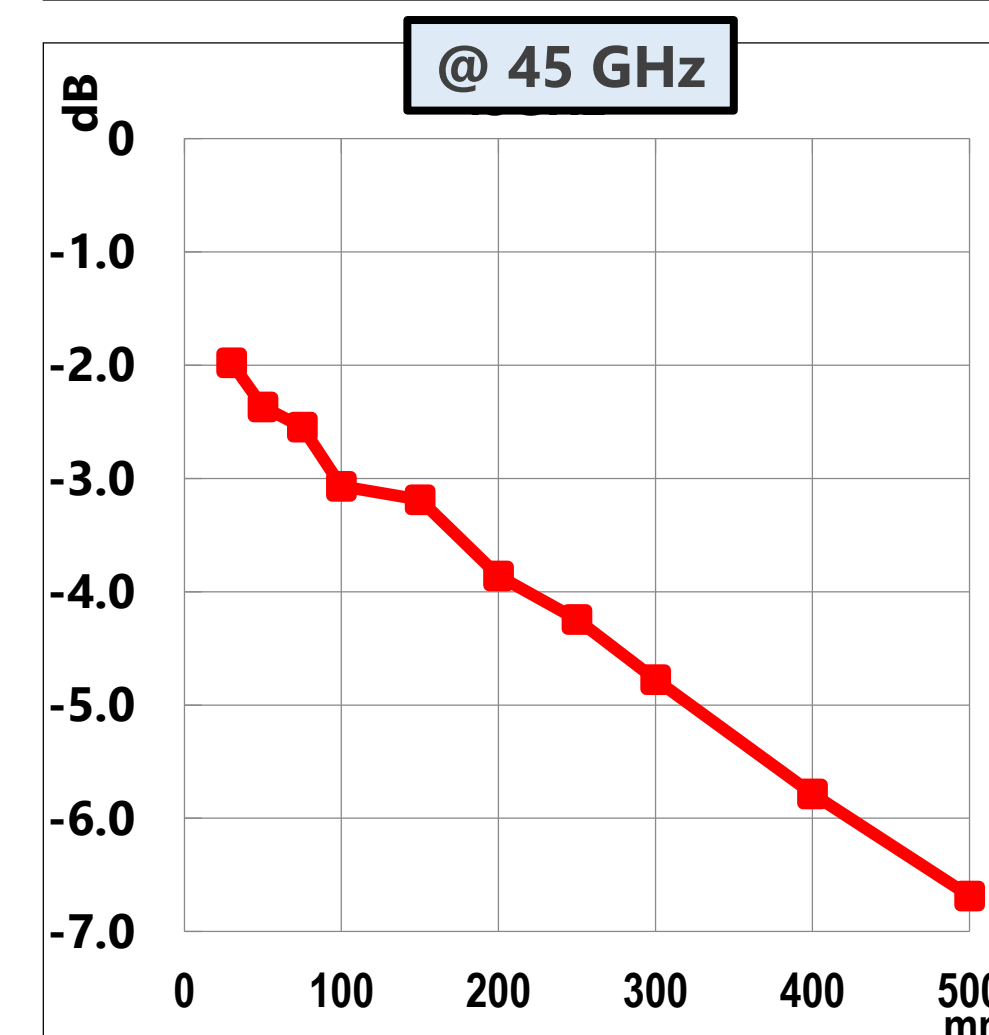
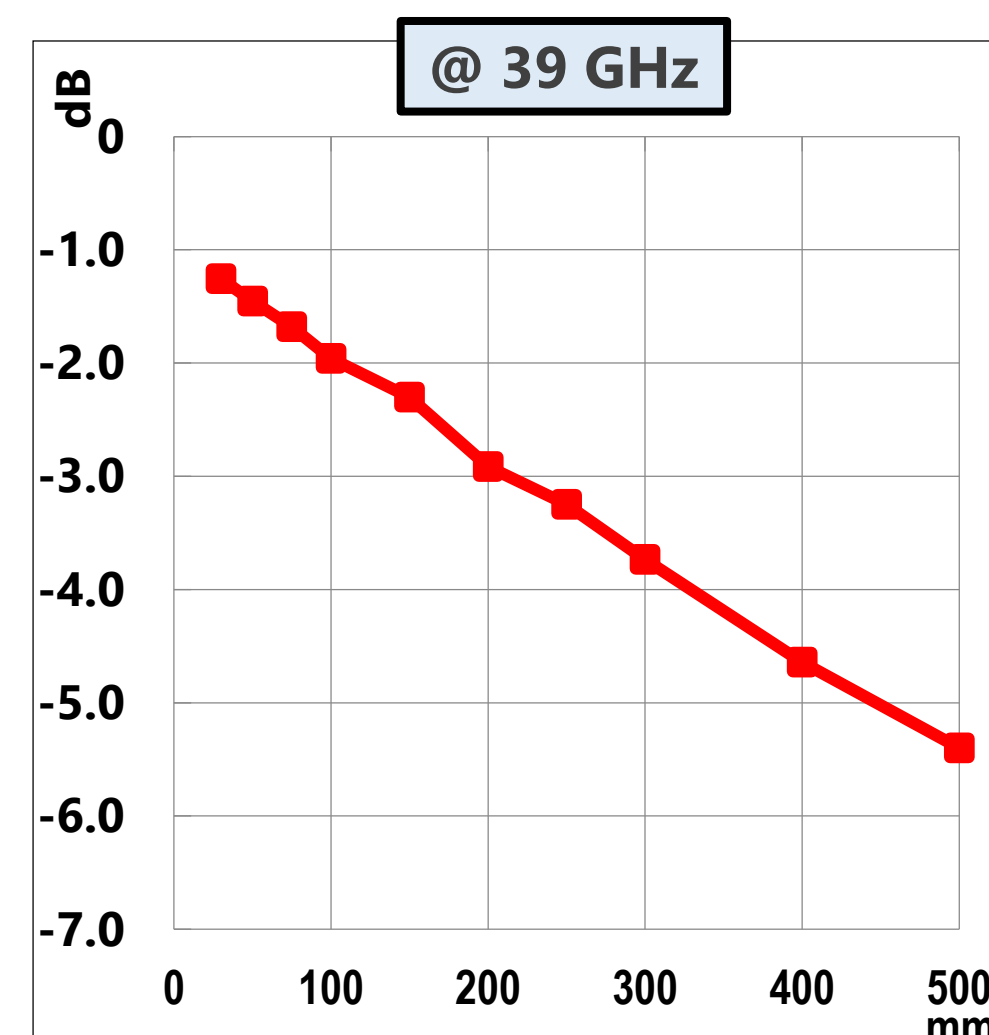
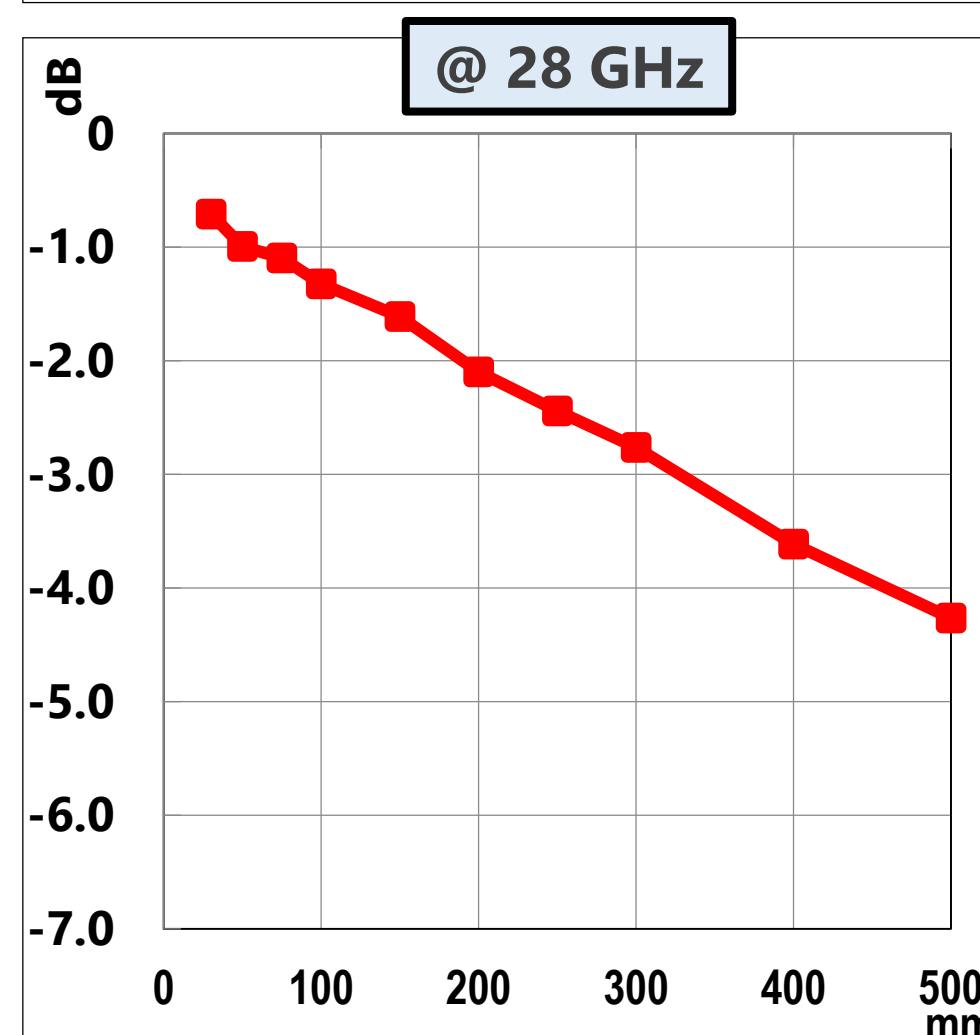
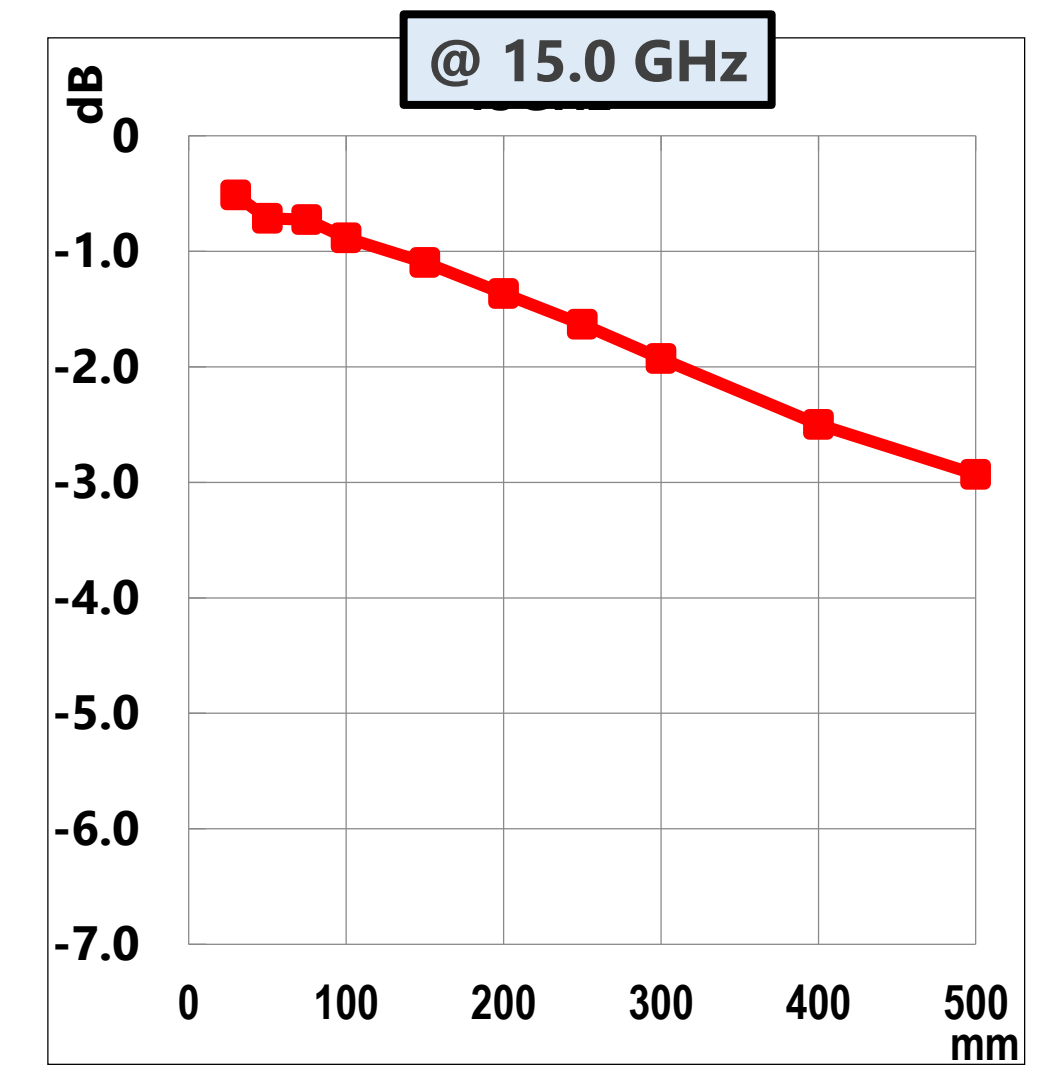
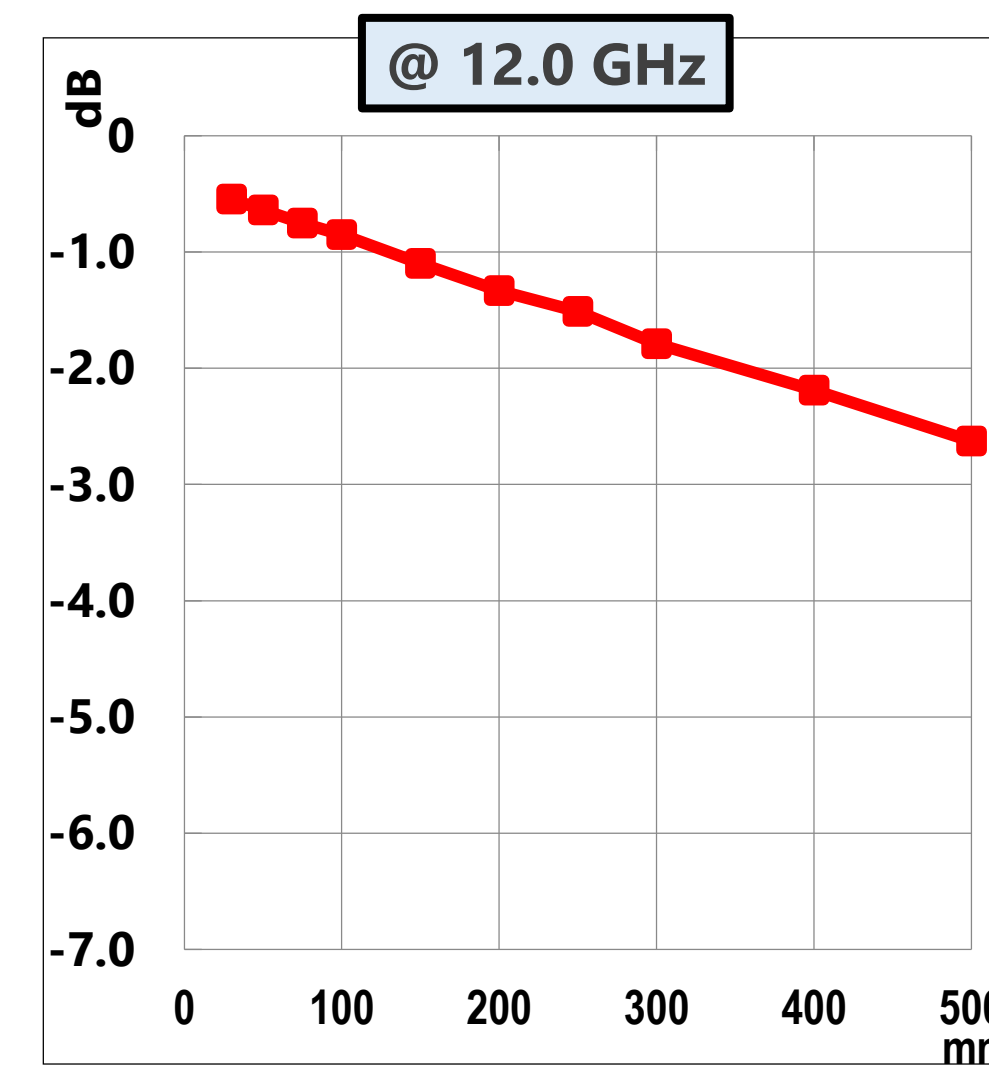
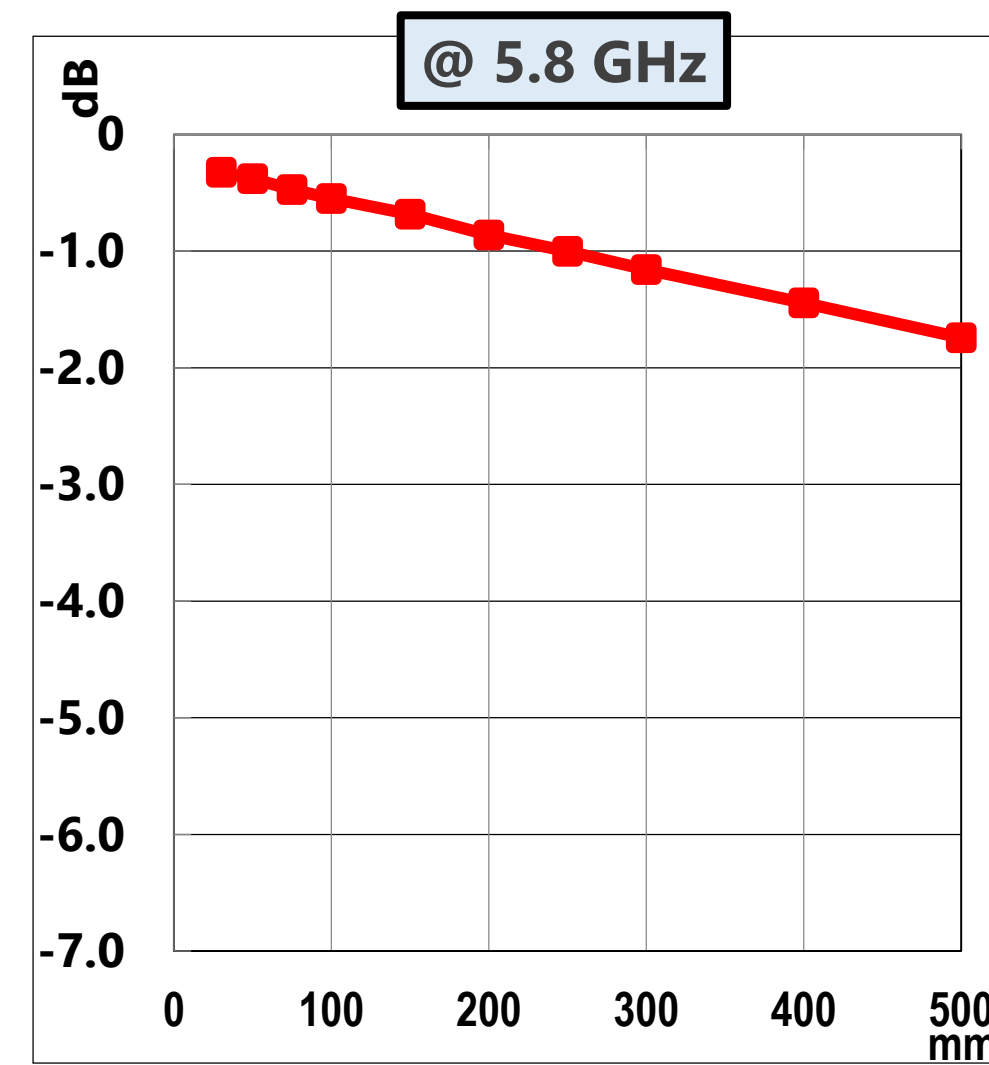
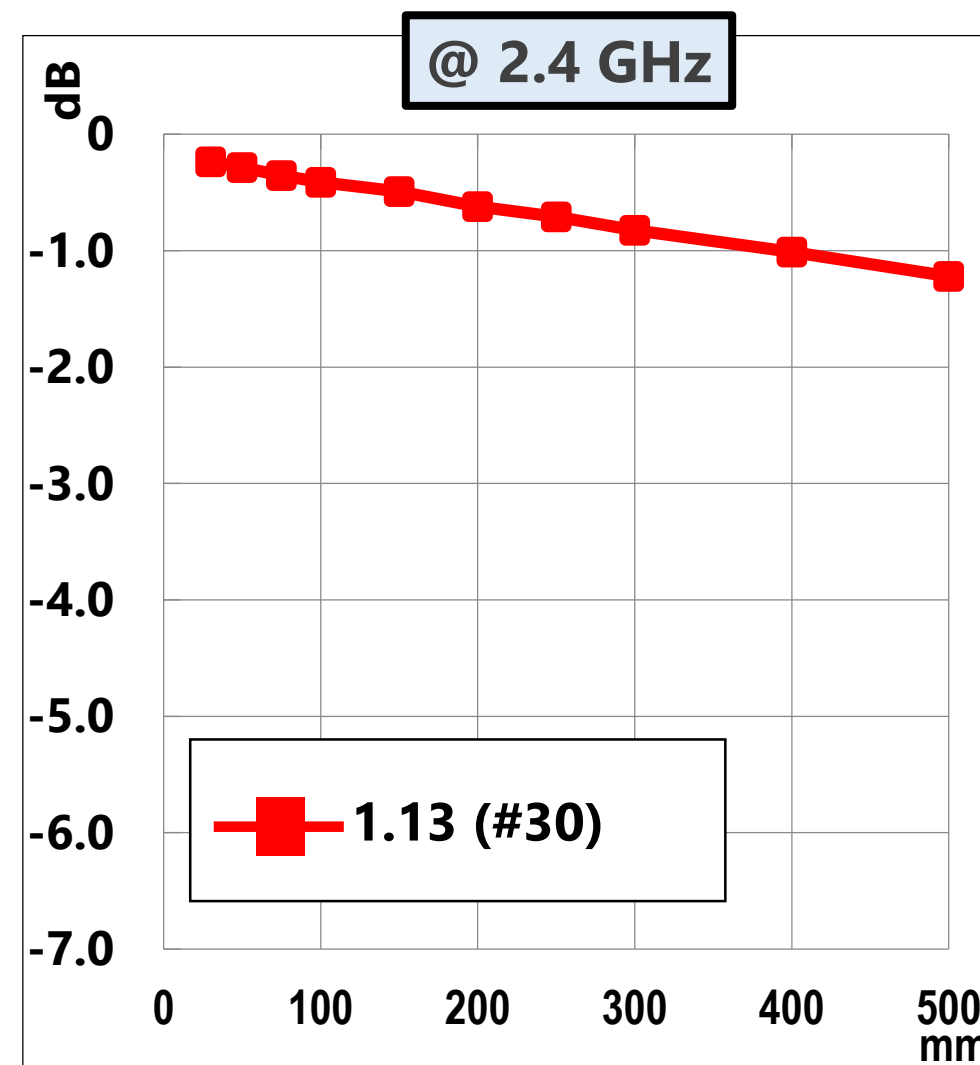


Wire insertion loss (MHF[®] 5L)

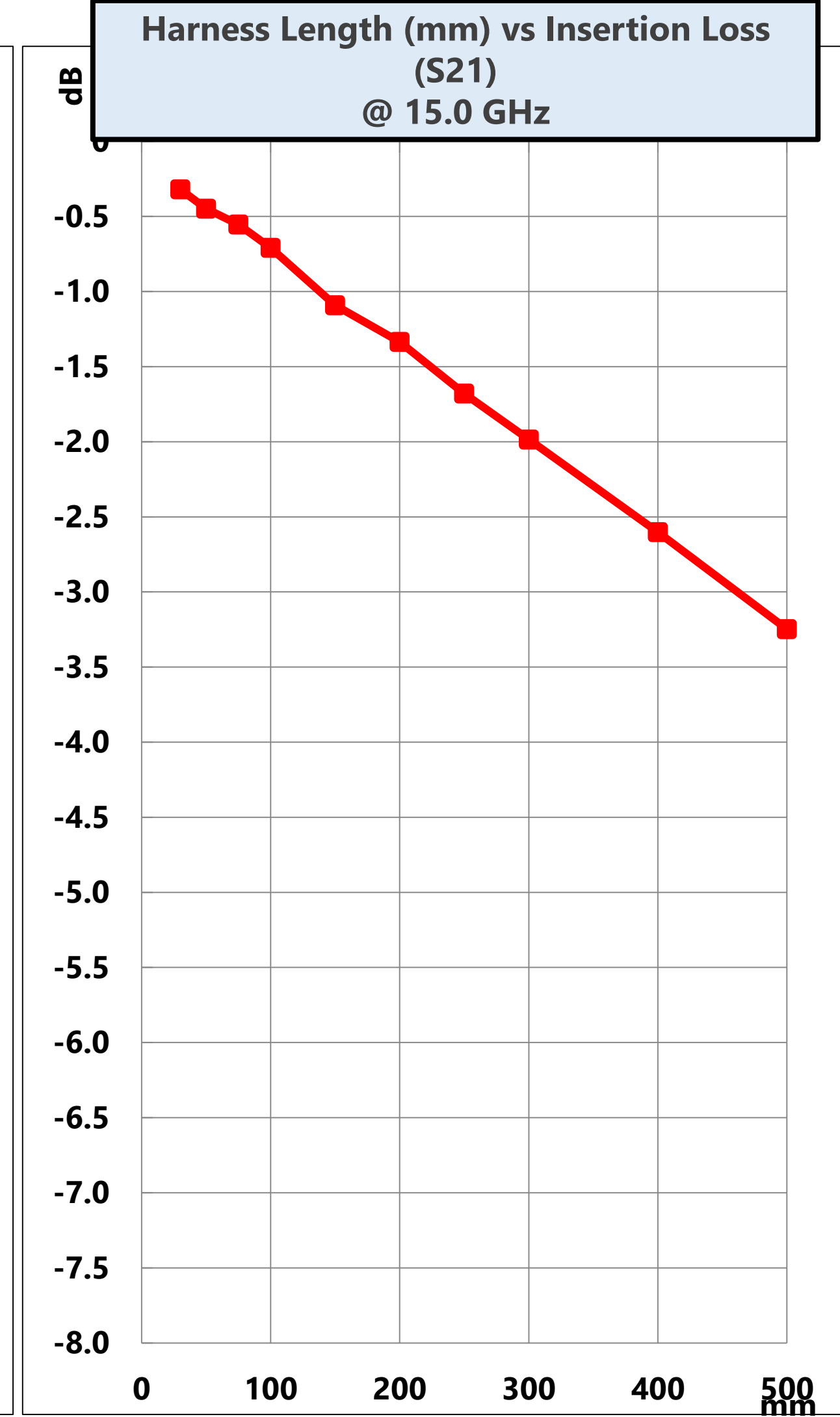
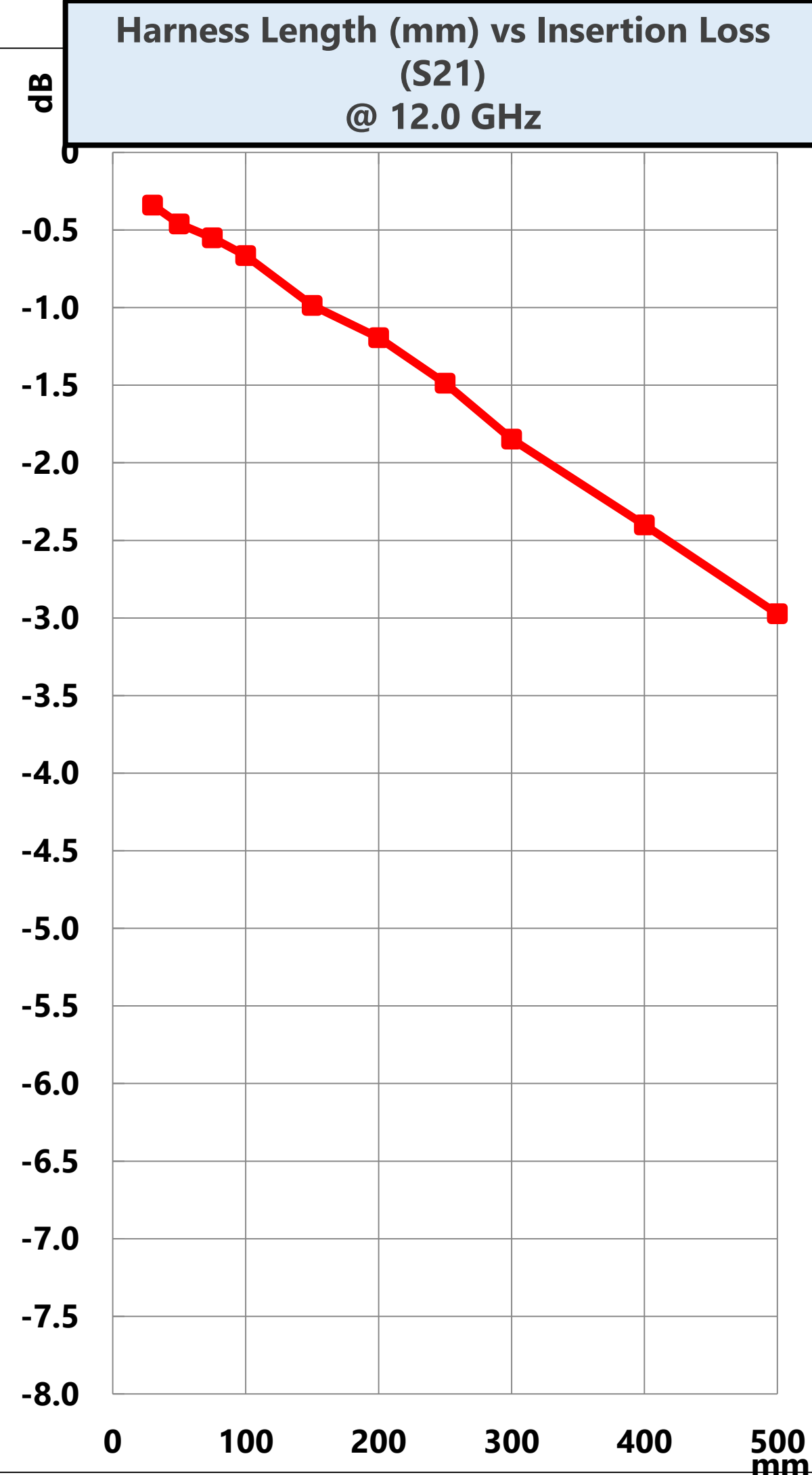
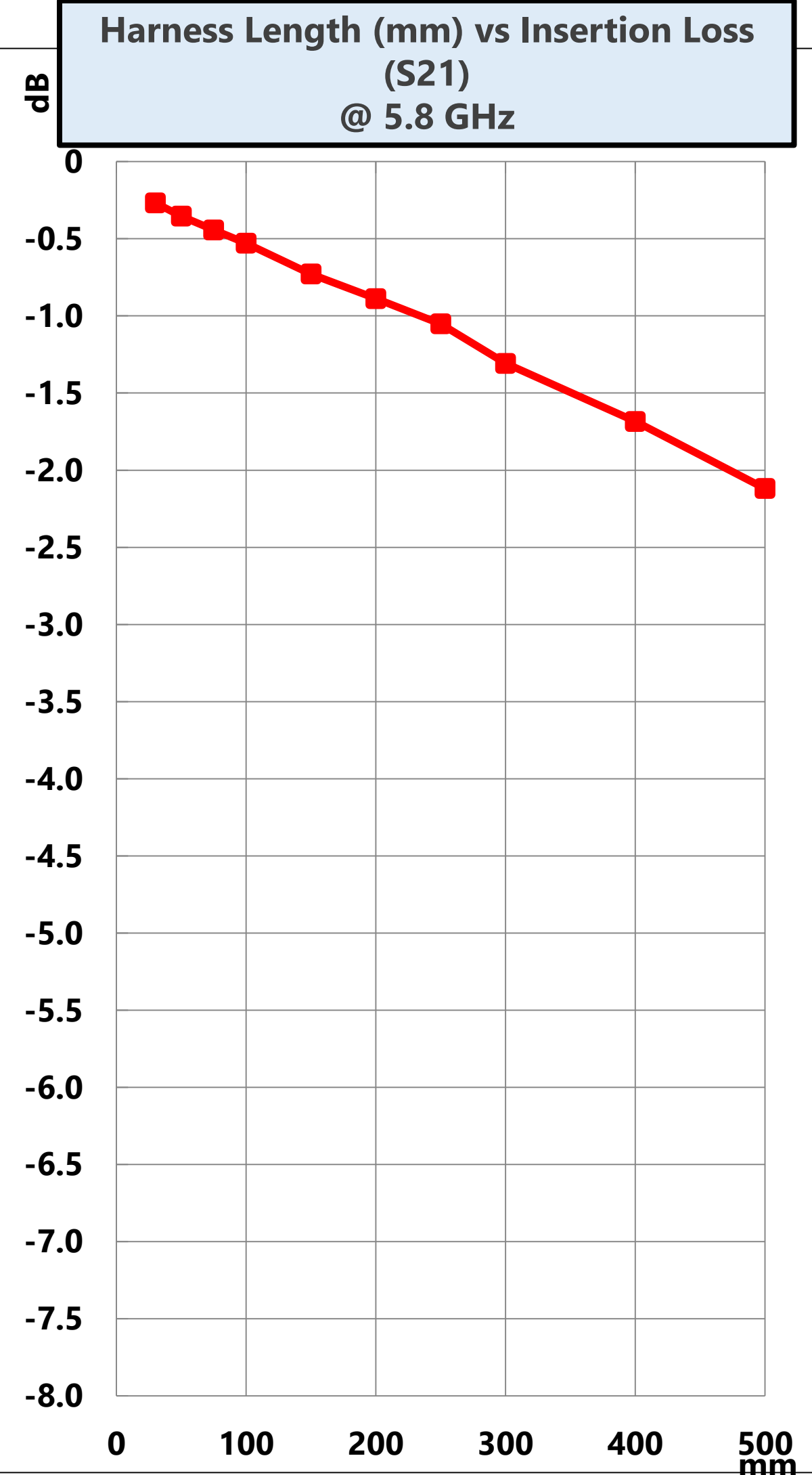
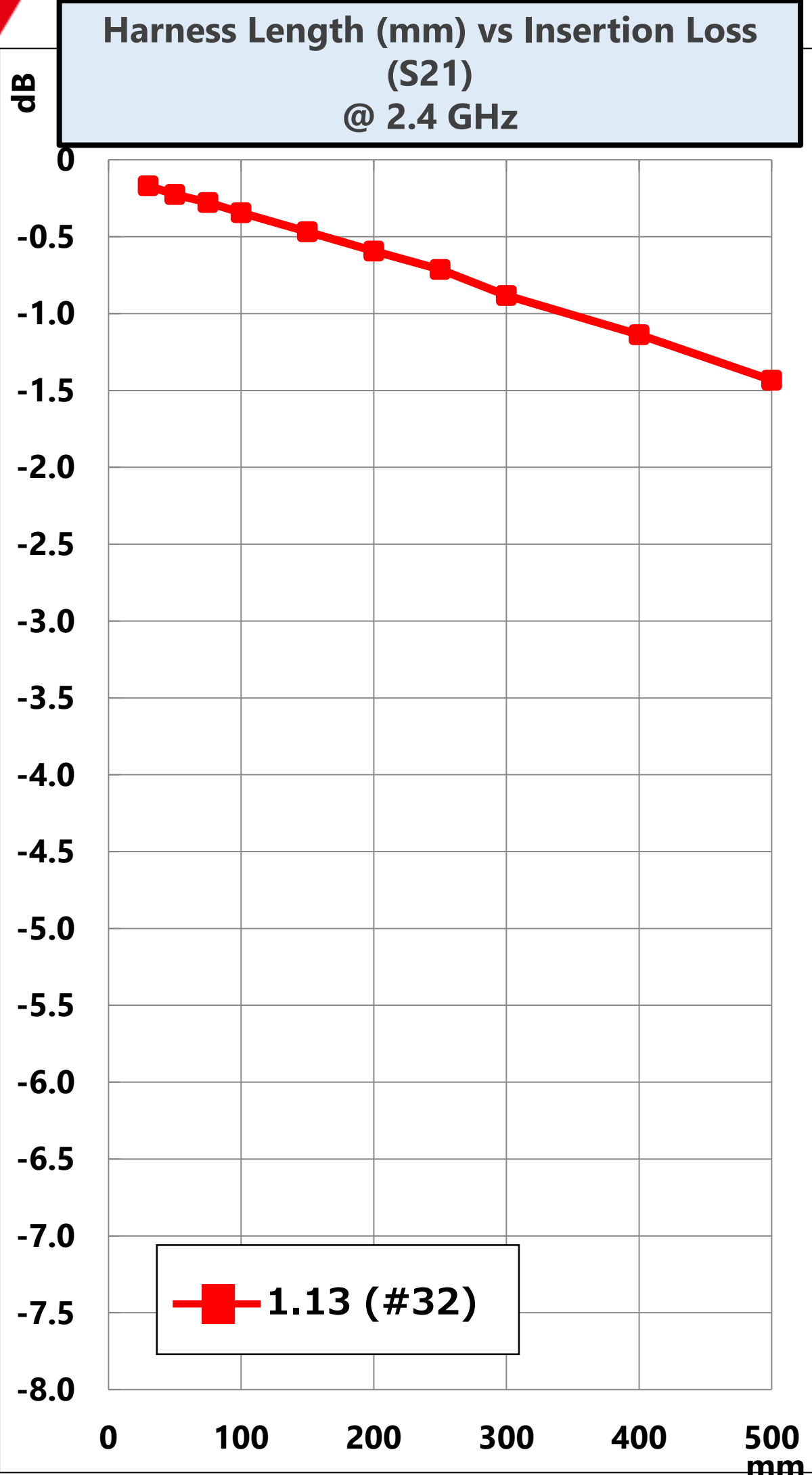


Wire insertion loss (MHF[®] 7)

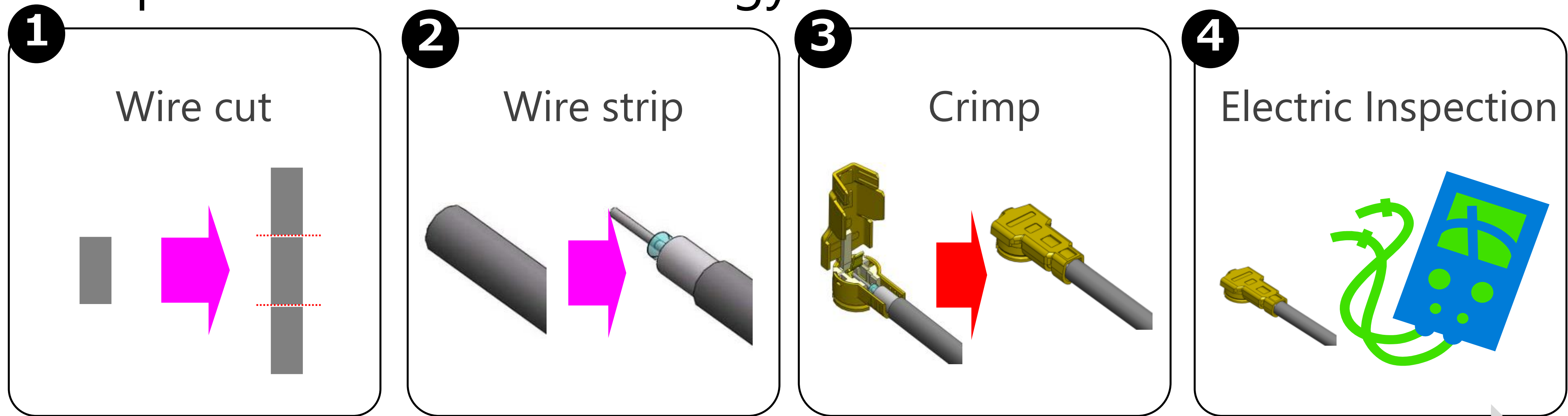
Harness Length (mm) vs Insertion Loss (S21)



Wire insertion loss (MHF[®] 7S)



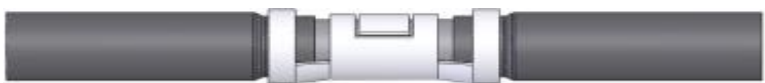

Yes, I-PEX provides harness assemblies!
...And they are made with Fully Automated Machines and our
patented i-Fit[®] technology!!!



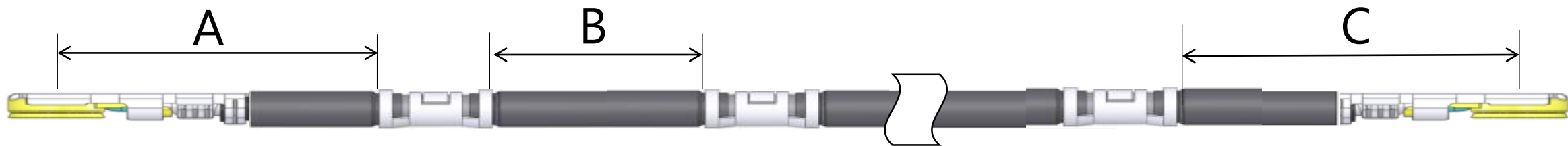
Fully Automated Process



Wire clamp and surface mount clip for grounding

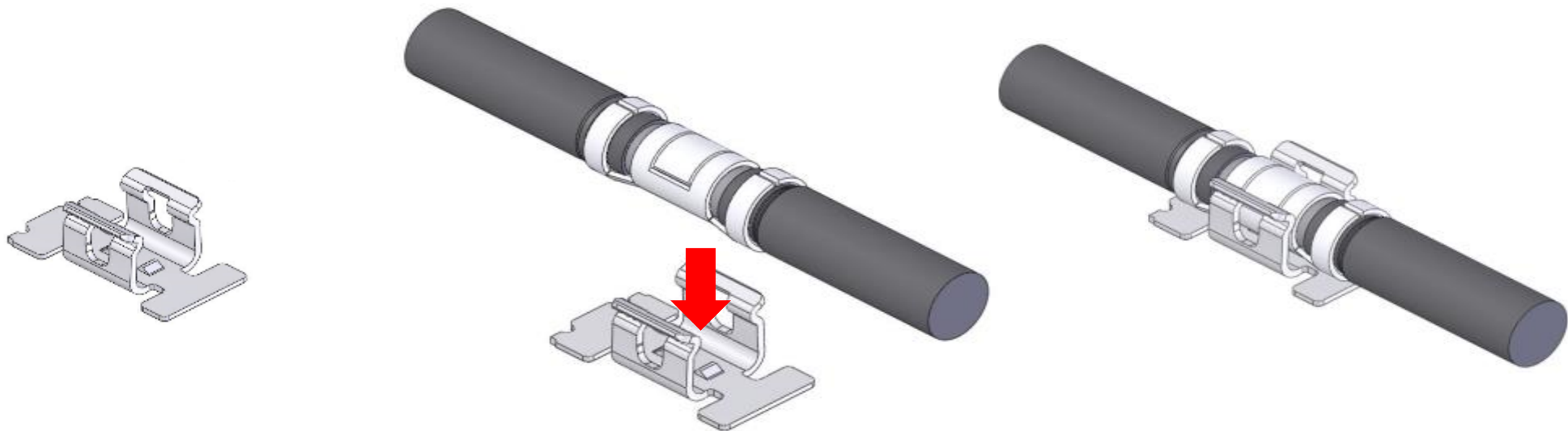
		Grounding clamp 3mm length	Grounding clamp 6mm length	Clip for grounding clamp MP-A series
Appearance				
Coax O.D. (Center Conductor AWG)	1.37 mm (30)		●	● MP-A04 (P/N 3224-0001)
	1.13 mm (32)	●	●	● MP-A02 (P/N 3182-0001)
	0.81 mm (36)	●	●	● MP-A01 (P/N 3096-0001)
	0.64 mm (36)	●	●	● MP-A03 (P/N 3186-0001)

Minimum distance between clamps



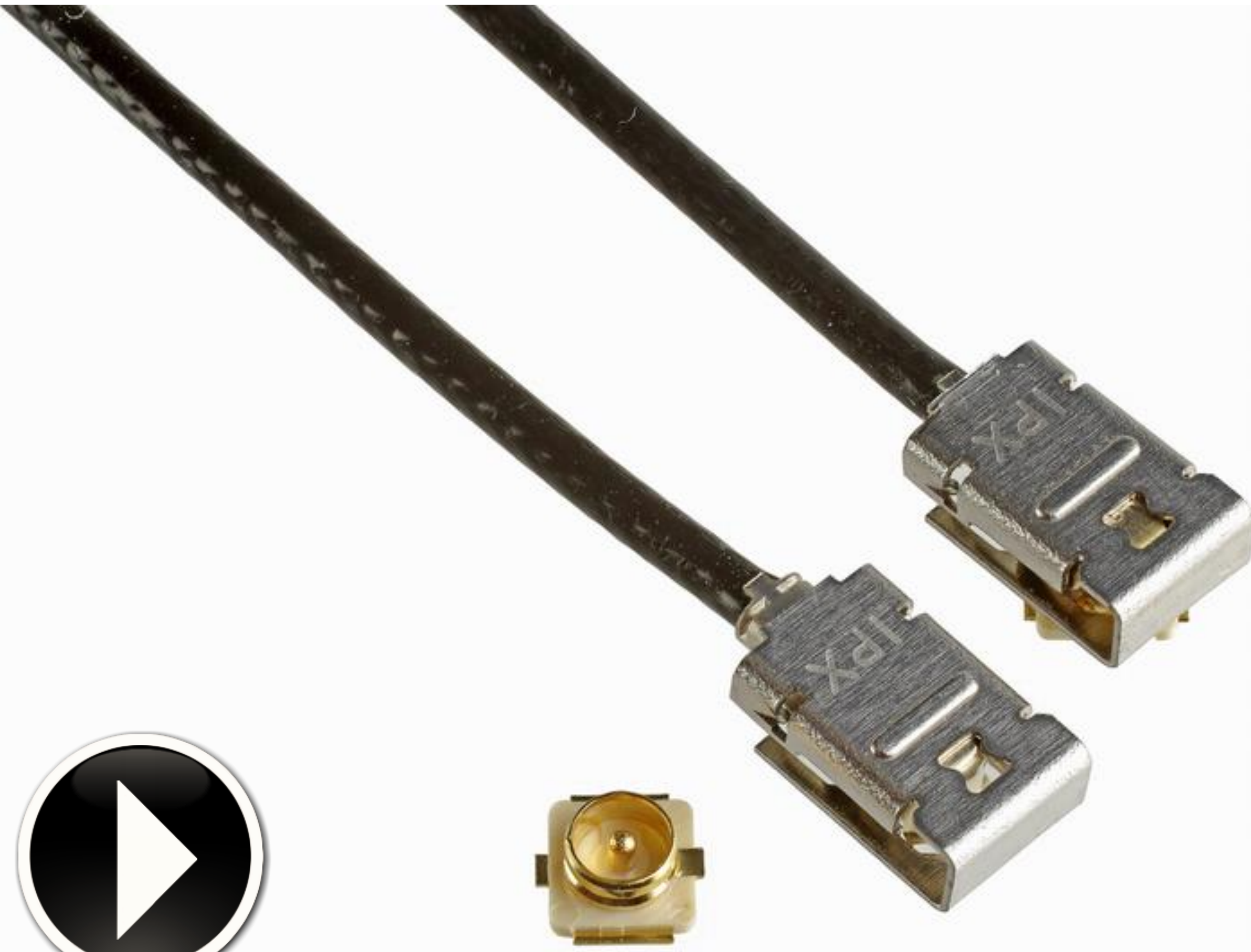
A	B	C
12mm min.	10mm min.	10mm min.

Clips are packaged in tape and reel for surface mount.

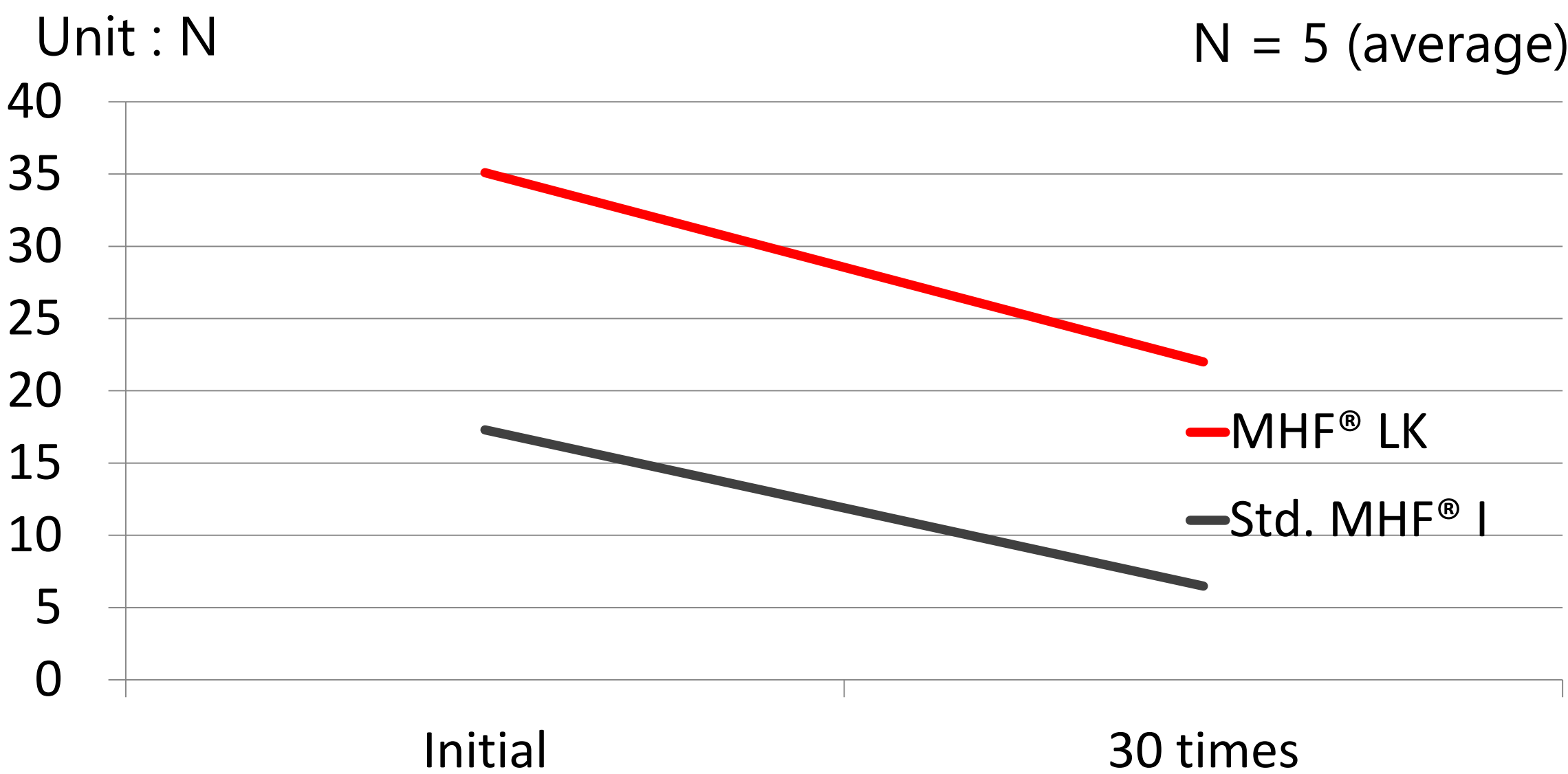


MHF® I LK

Built-in locking function for MHF I



Disengagement Force Comparison




Series	MHF® I LK		Standard MHF® I	
	Initial	30 times*	Initial	30 times
SPEC.	20 MIN.	10 MIN.	5 MIN.	3 MIN.

* Reference Value

MHF[®] SW Series

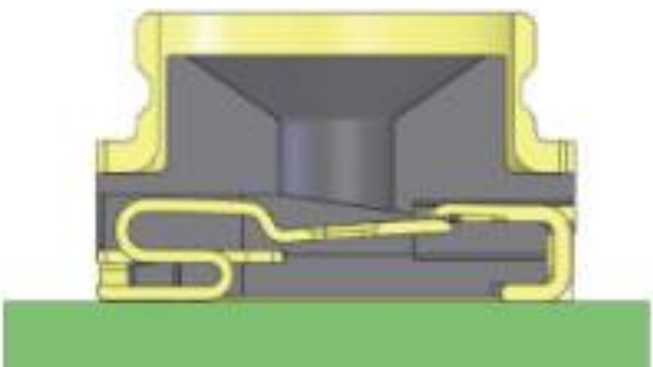
MHF[®]-SW series product overview

Click the photos below to get more detailed product information.

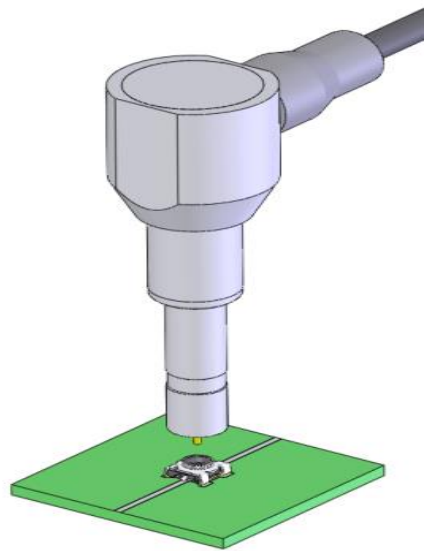
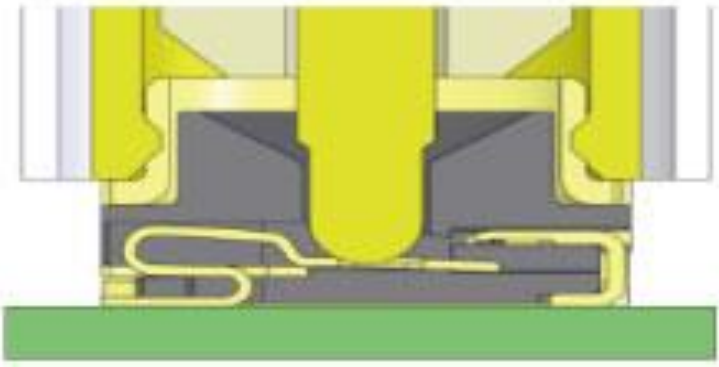
Product name		MHF [®] -SW23
Feature		
		Contaminant discontinuity resistant design 2.3 x 2.3 mm footprint
Part number		20549-001E/-01
Dimension (mm)		2.3 x 2.3 x 1.35 (H)
Rated power		2W max.
Frequency		DC - 11.0GHz
V.S.W.R.	DC - 3.0GHz	1.2 max. (DC - 2.5GHz)
	3.0GHz - 6.0GHz	1.3 max. (2.5 - 6.0GHz)
	6.0GHz - 11.0GHz	1.5 max.
Insertion loss	DC - 3.0GHz	0.15 dB max. (DC - 2.5GHz)
	3.0GHz - 6.0GHz	0.20 dB max. (2.5 - 6.0GHz)
	6.0GHz - 11.0GHz	0.40 dB max.
Isolation	DC - 3.0GHz	20 dB Max. (DC - 2.5GHz)
	3.0GHz - 6.0GHz	15 dB max.
	6.0GHz - 11.0GHz	12 dB max.
Service temp. (Celsius)		40 degree - 85 degree
Characteristic impedance		50 ohm
Contact resistance	Signal contact	100m ohm
	Ground contact	100m ohm
Insulation resistance		DC100 1000M ohm min :Initial 10M ohm min :After test
Withstand voltage		AC 100V: 1min

Product name				MHF [®] -SW23
Appearance				
Probe			Friction lock	90582-**** *(0300/0400)
			Mechanical lock	-
			-	1K Cycles
			without floating	90604-0001
			Durability	10K Cycles
			with floating	90605-0001
			Durability	200K Cycles

On State




Off State

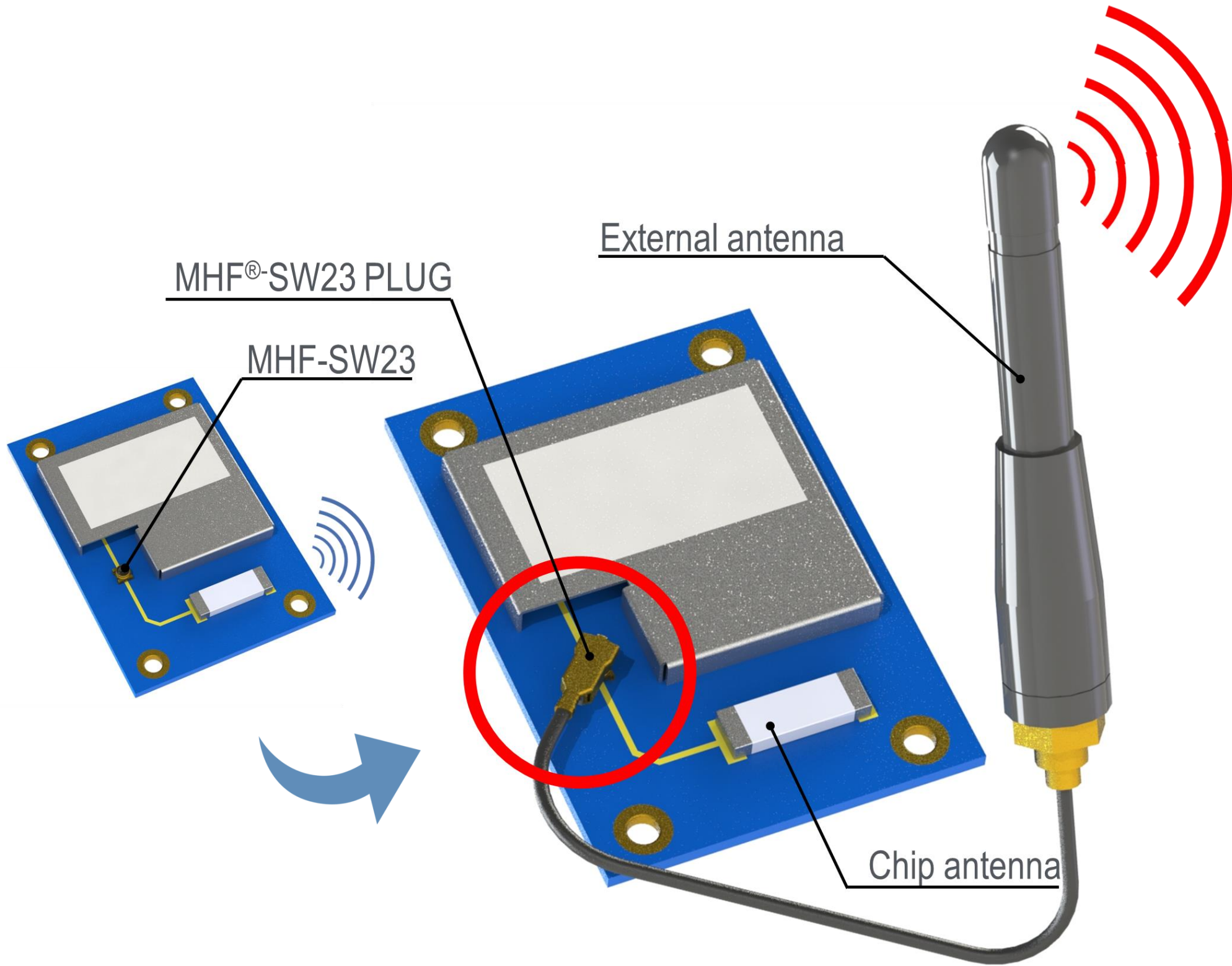


MHF[®]-SW 23 Plug

Click the photo below
to get more detailed product information.

Product name		MHF [®] 23 Plug
Appearance		
	Mating with switch connector	
Plug part number		20851-001R
Switch connector part number		20549-001E/-01 (MHF-SW 23)
Maximum height (mm)		3.7
Outside dimension of switch connector		2.3 x 2.3
Coax O.D. (Center Conductor AWG)	2.00 mm (26)	
	1.80 mm (30)	
	1.37 mm (30)	
	1.32 mm (32)	
	1.13 mm (32)	●
	0.95 mm (33)	
	0.81 mm (33)	
	0.81 mm (36)	
	0.64 mm (36)	
	0.48 mm (38)	
FPC		
Frequency		DC - 6GHz
VSWR (L=100mm)	DC - 3GHz	1.4 max.
	3GHz - 6GHz	1.6 max.
	6GHz - 9GHz	-
	9GHz - 12GHz	-
	12GHz - 15GHz	-
Service temp. (Celsius)		-40 degree - 90 degree
Characteristic impedance		50ohm
Rated voltage		AC60V
Contact resistance		20m ohm max.
Withstand voltage		AC200V/min
Insulation resistance		500M ohm min./DC100V

Flexibility to use PCB antenna or external, higher gain antenna.



Appendix : I-PEX Connectors Series



Click icon below to see latest product information



MHF[®]



High-Frequency
Micro **RF**
Connectors



CABLINFPL[®]



High-Speed
Micro-Coaxial
Connectors



NOVASTACK[®]



High-Density
Board-to-Board
Connectors



EVAFLEX[®]
MINIFLEX[®]



High-Density
FFC/FPC
Connectors



ISH[®]
IARPB[®]



High-Power
Wire-to-Board
Connectors



CUSTOM





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