

CTU Presents

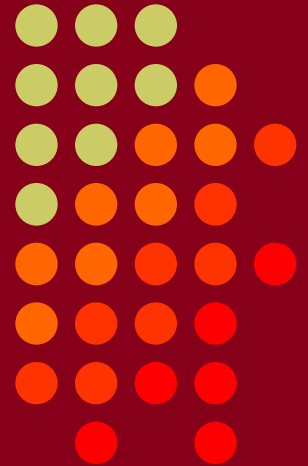
Contesting & Station Optimization

Tim Duffy, K3LR

CTU Chairman

• CTU •
CONTEST
UNIVERSITY

ICOM®

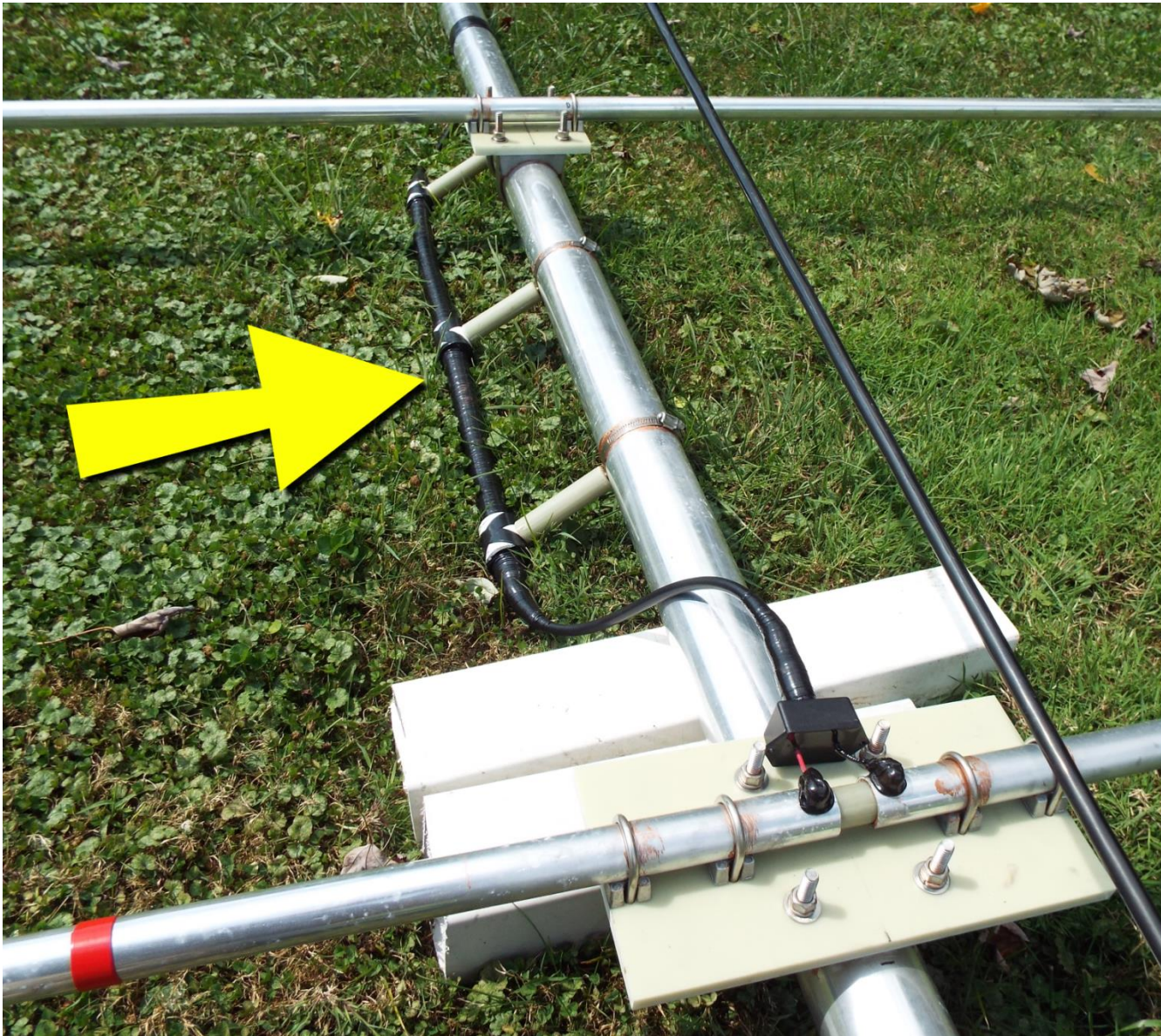


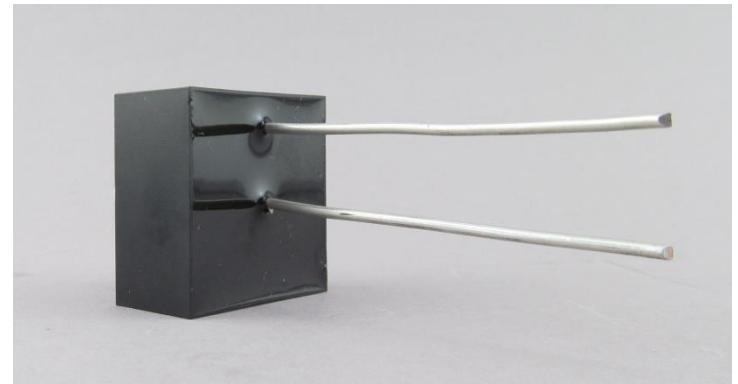
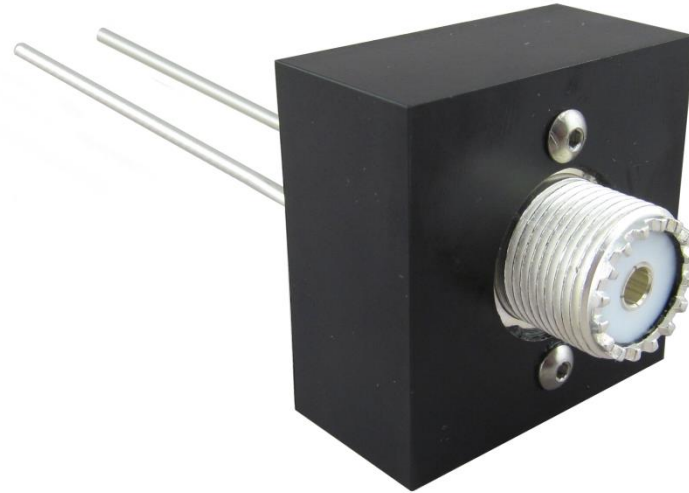
ConTest University Update



- **13th year for Dayton CTU**
- **Icom has supported CTU - ALL 13 YEARS!**
- **Over 7000 students have now attended CTU**
- **CTU Live Stream thanks Icom America & Digital Dorsey!**
- **Strategic Partnerships with the NCDXF & YASME**
- **Support the vendors that support CTU**
- **CTU YouTube and slide decks available on web**
- **N9RV Contesting Terminology – updated for 2019**











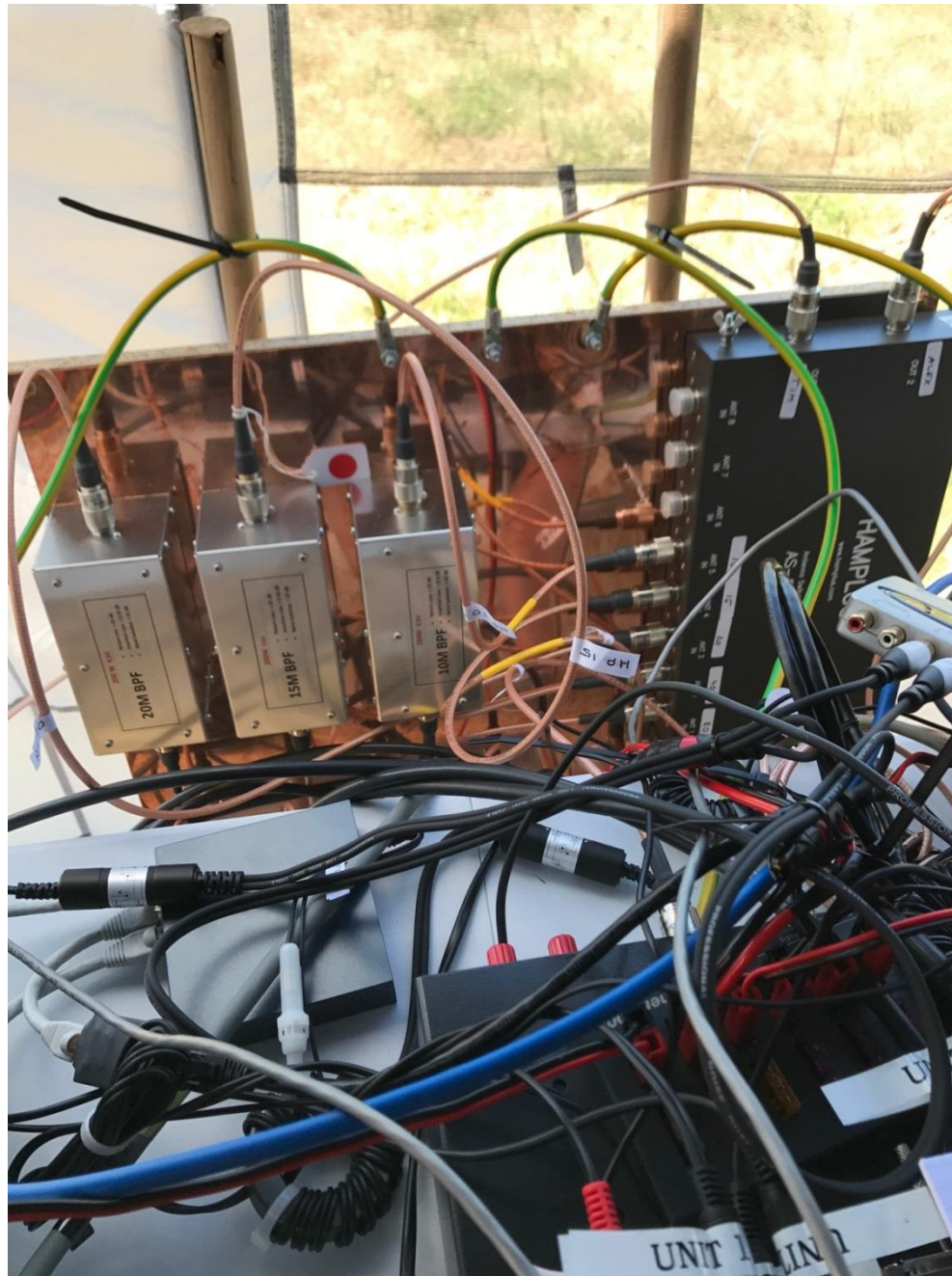


***shown assembled**

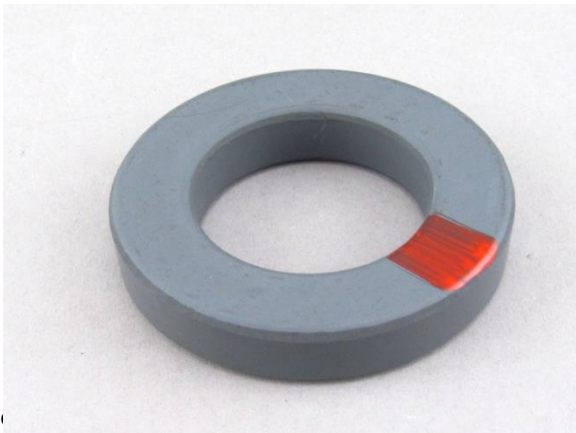
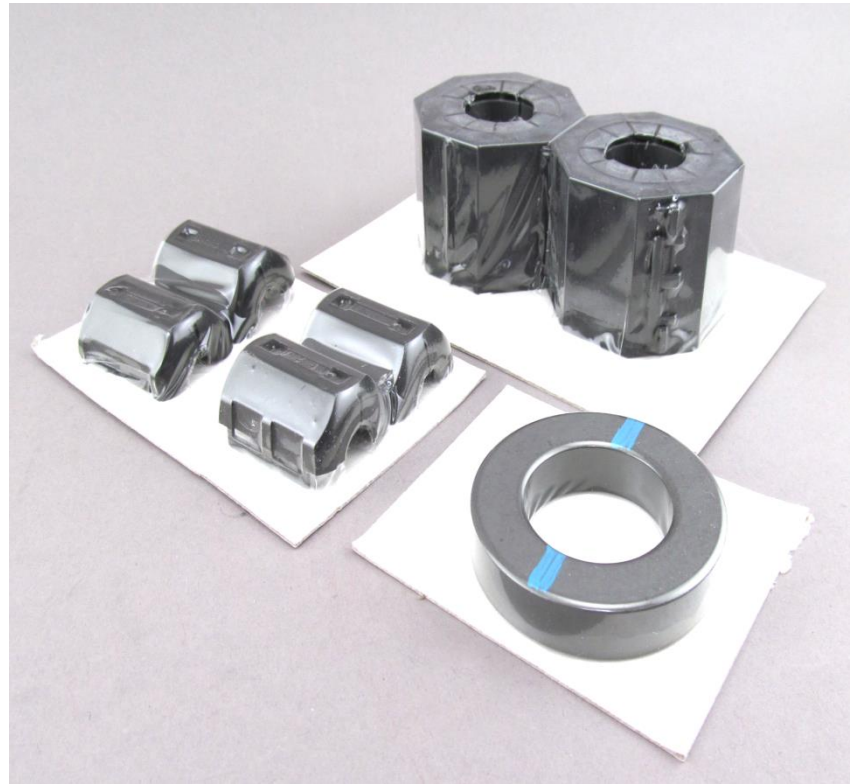








DEX Ferrite cores Color coded



Thick 1 inch wide – indoor use only







Ferrite Selection Chart

Mix Number Color Code	DXE Part Number (Clickable Link)		Parts Included	Snap Bead Size (inches)			Toroid Size (inches)		
				OD	ID	L	OD	ID	L
31 - Blue	DXE-ACDCGEN1-RF1		2 Toroids	-	-	-	4.00	3.00	1.00
31 - Blue	DXE-ACDCGEN2-RF1		2 Snap Beads	2.37	1.00	1.62	-	-	-
31 - Blue	DXE-CB31-500-10		10 Toroids	-	-	-	1.00	0.50	1.125
31 - Blue	DXE-CSB31-10-1		1 Snap Bead	2.37	1.00	1.62	-	-	-
31 - Blue	DXE-CSB31-275-10		10 Snap Beads	0.62	0.25	1.12	-	-	-
31 - Blue	DXE-CSB31-525-5		5 Snap Beads	1.00	0.50	1.12	-	-	-
31 - Blue	DXE-CSB31-750-5		5 Snap Beads	1.00	0.75	1.50	-	-	-
31 - Blue	DXE-CSB31-COMBO		4 Snap Beads 2 Snap Beads 2 Snap Beads	0.62 1.00 1.00	0.25 0.50 0.50	1.12 1.12 1.50	-	-	-
31 - Blue	DXE-LA1-RF1		1 Toroid 2 Snap Beads 1 Snap Bead	- 2.37 1.25	- 1.00 0.50	- 1.62 1.50	2.40 - -	1.40 - -	0.50 - -
31 - Blue	DXE-LA2-RF1		1 Toroid 3 Snap Beads 1 Snap Bead	- 2.37 1.25	- 1.00 0.50	- 1.62 1.50	2.40 - -	1.40 - -	0.50 - -
31 - Blue	DXE-LA3-RF1		1 Toroid 2 Snap Beads 2 Snap Beads	- 2.37 1.25	- 1.00 0.50	- 1.62 1.50	2.4 - -	1.40 - -	0.50 - -
31 - Blue	DXE-TC31-24-4		4 Toroids	-	-	-	2.40	1.40	0.50
31 - Blue	DXE-TC31-40-1		1 Toroid	-	-	-	4.00	3.00	1.00
31 - Blue	DXE-XCVR1-RF1		2 Toroids 3 Snap Beads	1.25	0.50	1.50	2.40	1.40	0.50
31 - Blue 61 - Red 77 - Pink	DXE-TC-COMBO		4 Toroids (mix 31) 3 Toroids (mix 61) 3 Toroids (mix 77)	- - -	- - -	- - -	2.40	1.40	0.50
43 - Silver	DXE-TC43-14-10		10 Toroids	-	-	-	1.40	0.90	0.50





Mix Number Color Code	DXE Part Number (Clickable Link)		Parts Included	Snap Bead Size (inches)			Toroid Size (inches)		
				OD	ID	L	OD	ID	L
43 - Silver	DXE-TC43-24-4		4 Toroids	-	-	-	2.40	1.40	0.50
43 - Silver	DXE-TC43-82-25		25 Toroids	-	-	-	0.80	0.52	0.46
52 - Orange	DXE-TC52-14-4		4 Toroids	-	-	-	1.40	0.90	0.50
52 - Orange	DXE-TC52-24-2		2 Toroids	-	-	-	2.40	1.40	0.50
61 - Red	DXE-CSB61-COMBO		2 Snap Beads 6 Snap Beads 12 Snap Beads	1.50 1.25 0.87	0.75 0.50 0.25	1.87 1.50 1.50	- - -	- - -	- - -
61 - Red	DXE-TC61-24-2		2 Toroid	-	-	-	2.40	1.40	0.50
75 - Green	DXE-CSB75-375		1 Snap Bead	1.00	0.37	1.00	-	-	-
75 - Green	DXE-CSB75-750-2		2 Snap Beads	1.62	0.75	1.87	-	-	-
75 - Green	DXE-TC75-24-2		2 Toroids	-	-	-	2.40	1.40	0.50
77 - Pink 31 - Blue	DXE-AM-RF1		5 Toroids 8 Snap Beads	- 1.25	- 0.50	- 1.50	2.40 -	1.40 -	0.50 -
77 - Pink	DXE-TC77-14-8		8 Toroids	-	-	-	1.40	0.90	0.50
77 - Pink	DXE-TC77-24-2		2 Toroids	-	-	-	2.40	1.40	0.50
77 - Pink	DXE-TC77-82-20		20 Toroids	-	-	-	0.82	0.52	0.25

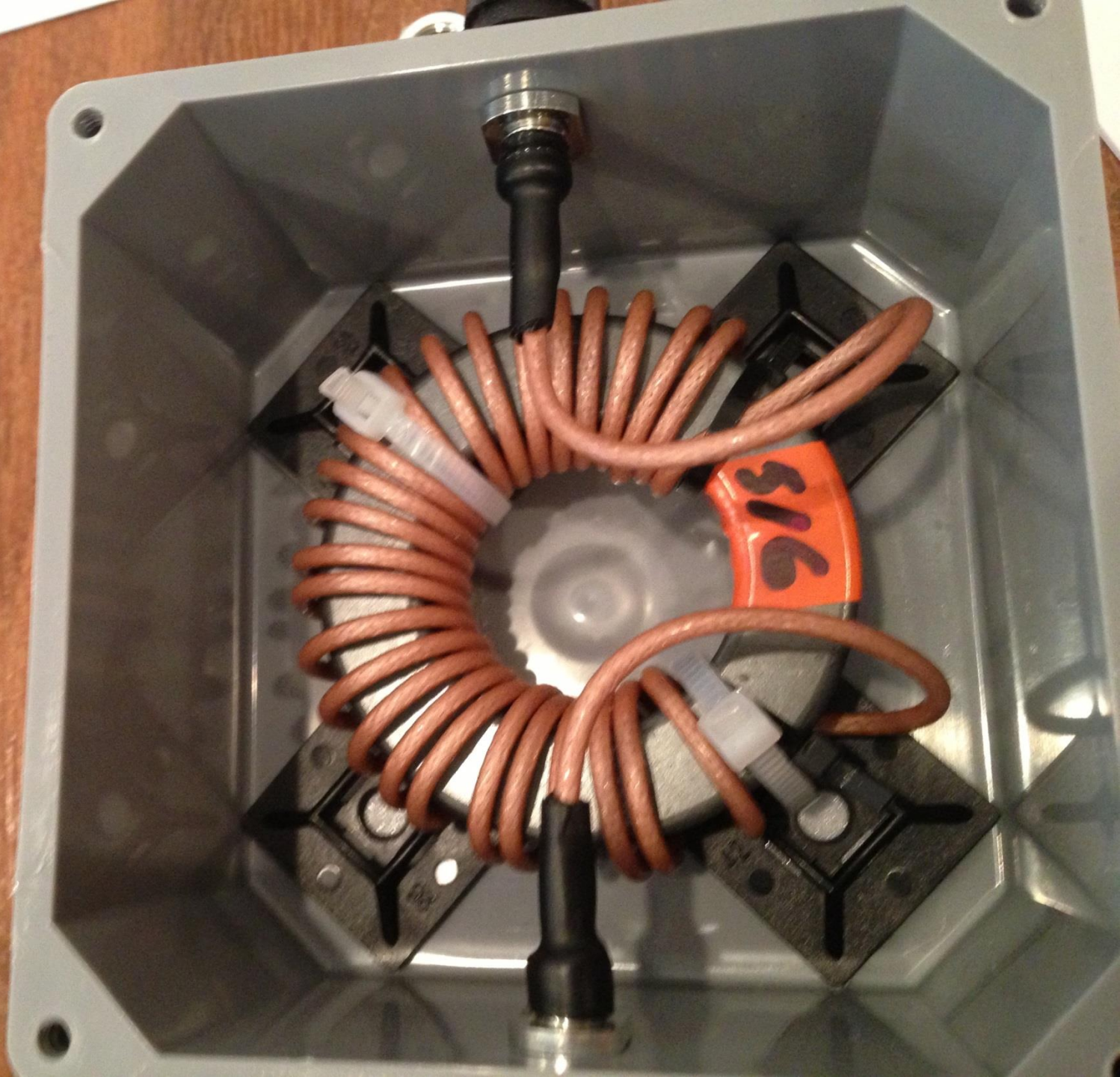
Color Code Marking	Mix Number	Frequency Range	Popular For
Blue	31	1 MHz - 300 MHz	most popular
Silver	43	25 MHz - 300 MHz	VHF
Orange	52	200 MHz - 1 GHz	UHF
Red	61	200 MHz - 2 GHz	UHF
Green	75	150 kHz - 30 MHz	160-80 meters
Pink	77	100 kHz - 50 MHz	160-80 meters

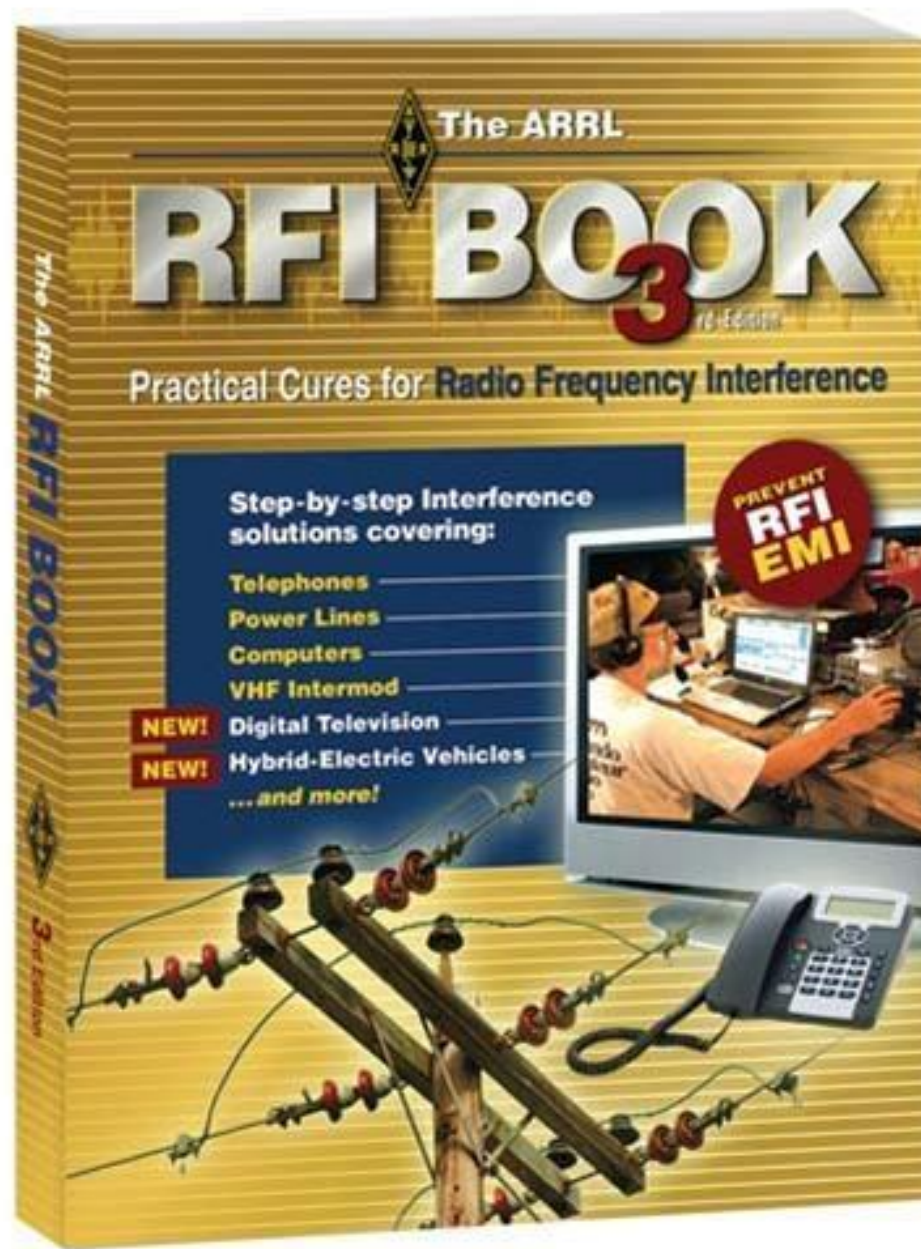
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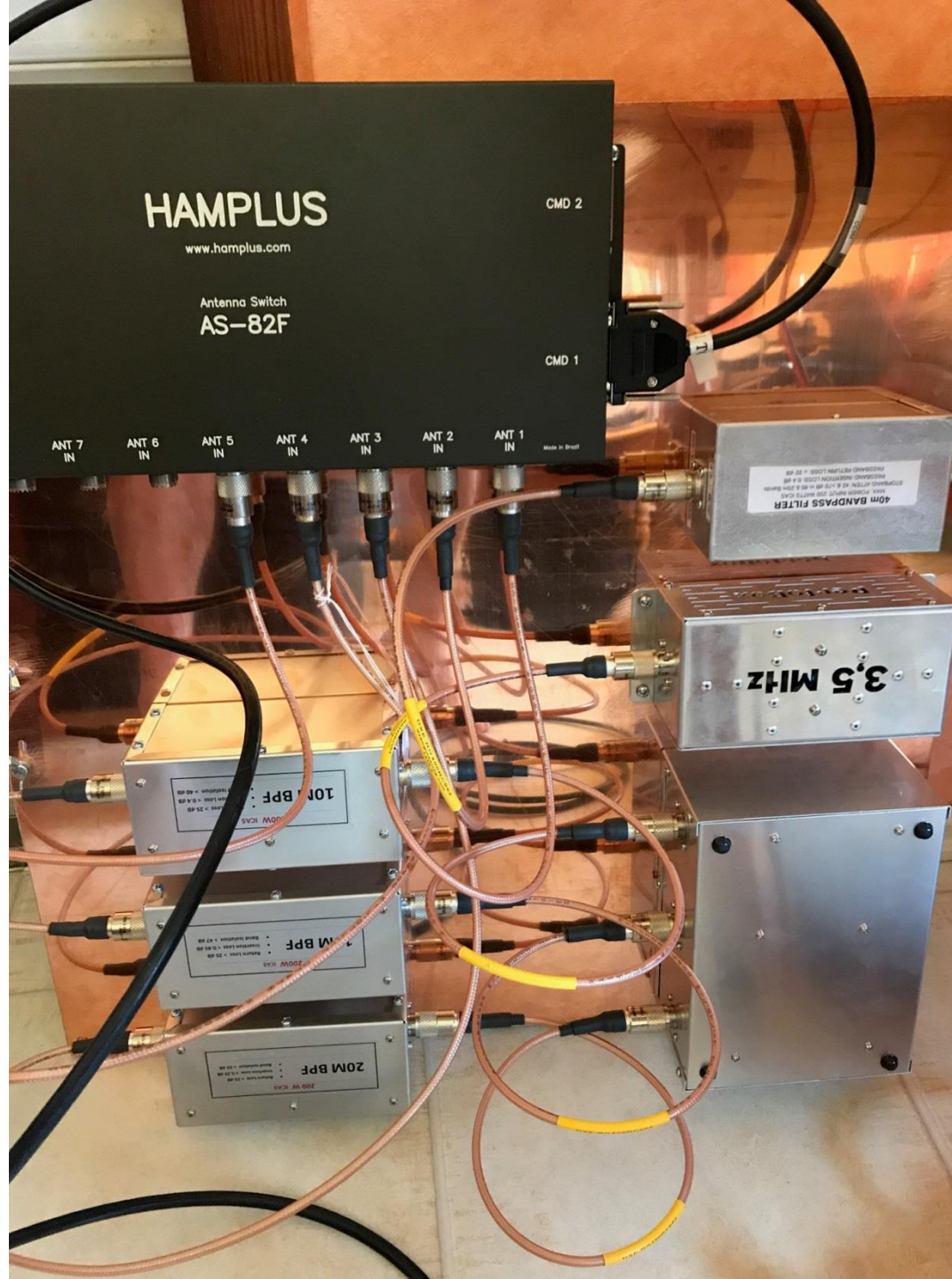
Rev. 3

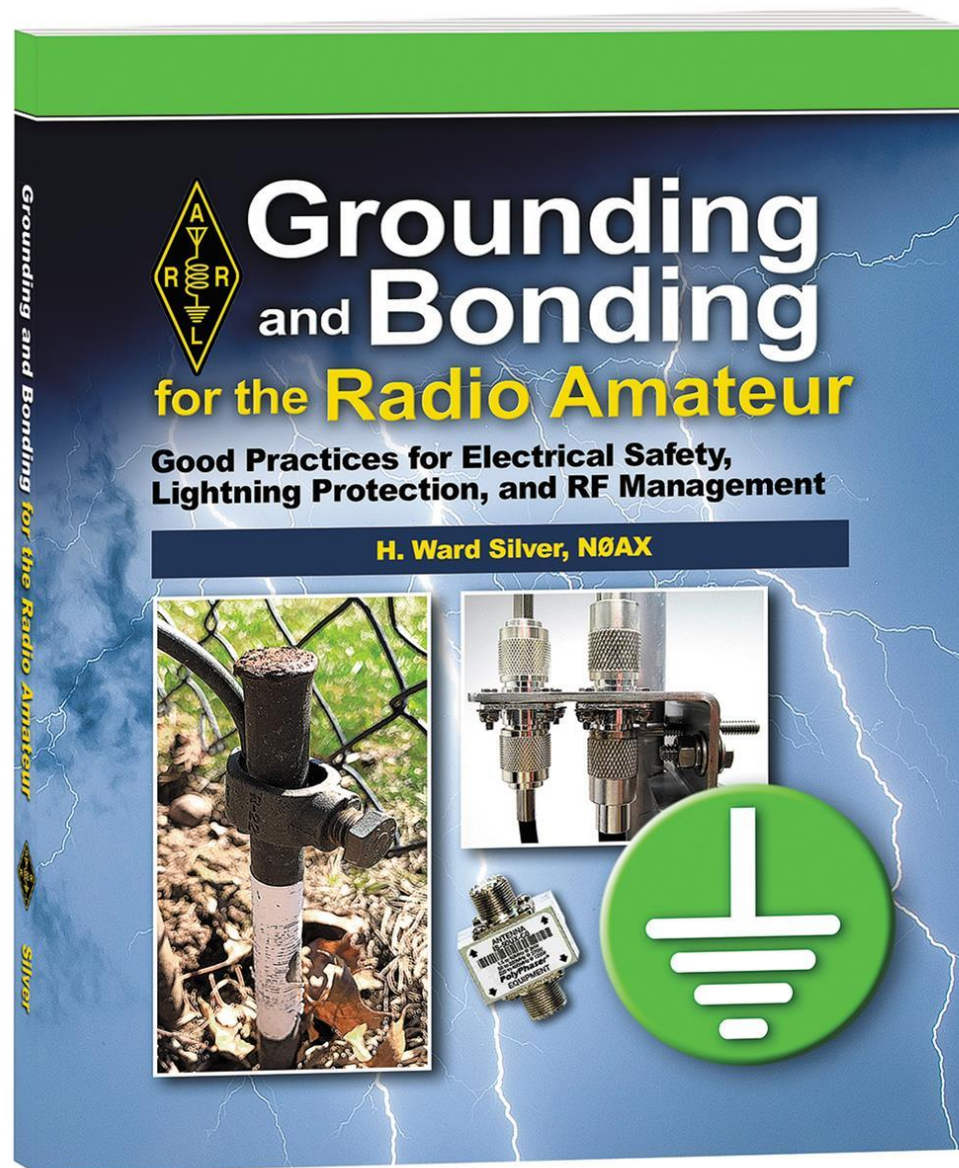
















<http://k9yc.com/2018Cookbook.pdf>

<http://www.yccc.org/Articles/W1HIS/CommonModeChokesW1HIS2006Apr06.pdf>

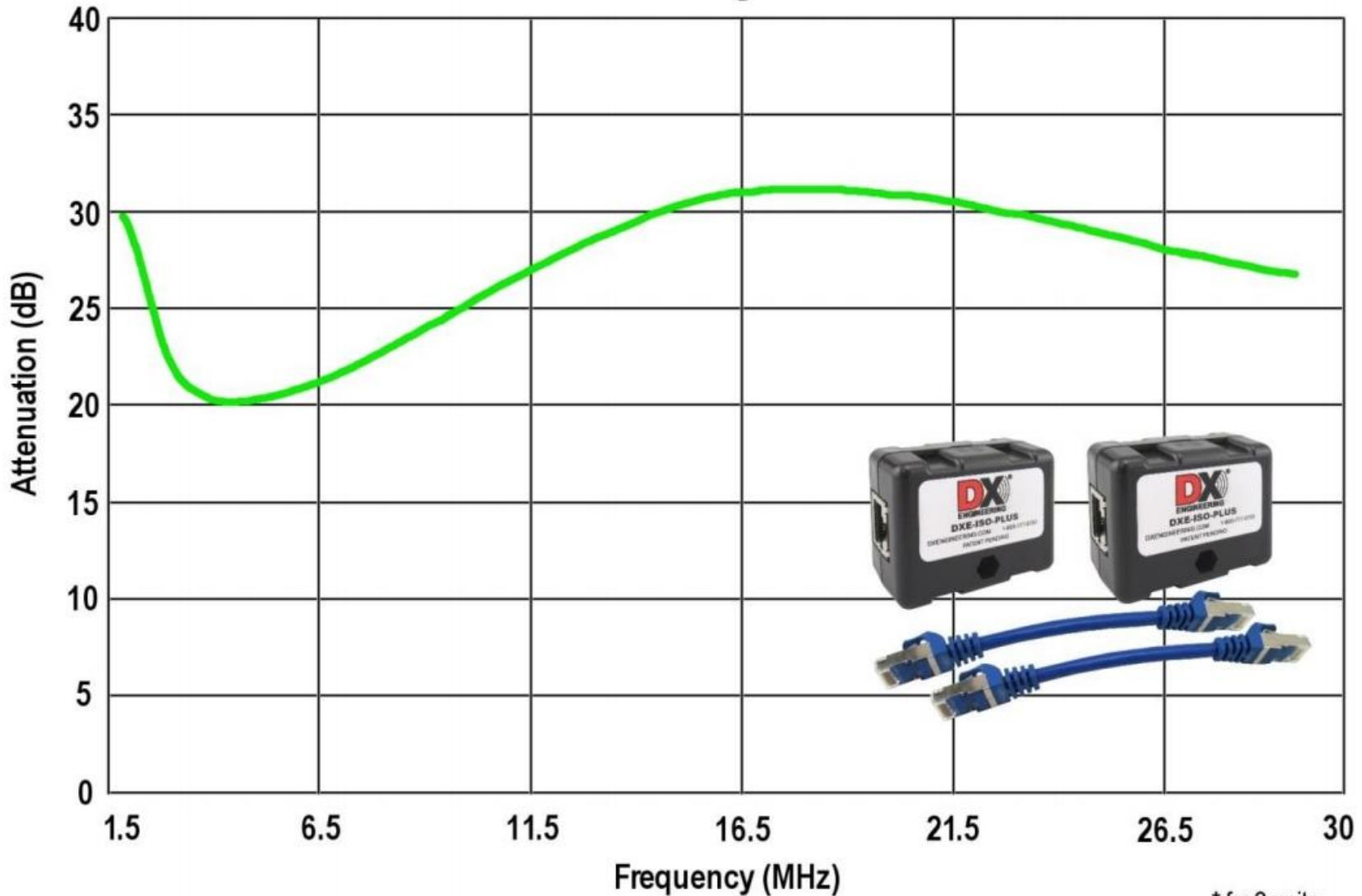
<https://www.youtube.com/watch?v=JHs46k3TxsU&t=0s&index=4&list=PLRSwUN4qr1LpbfLclNG6-aO8hnglHAE1Y>

https://www.contestuniversity.com/wp-content/uploads/2018/05/CTU2018_Grounding-and-Bonding-for-the-Little-Pistol-and-Medium-Gun-N0AX_v1.pdf



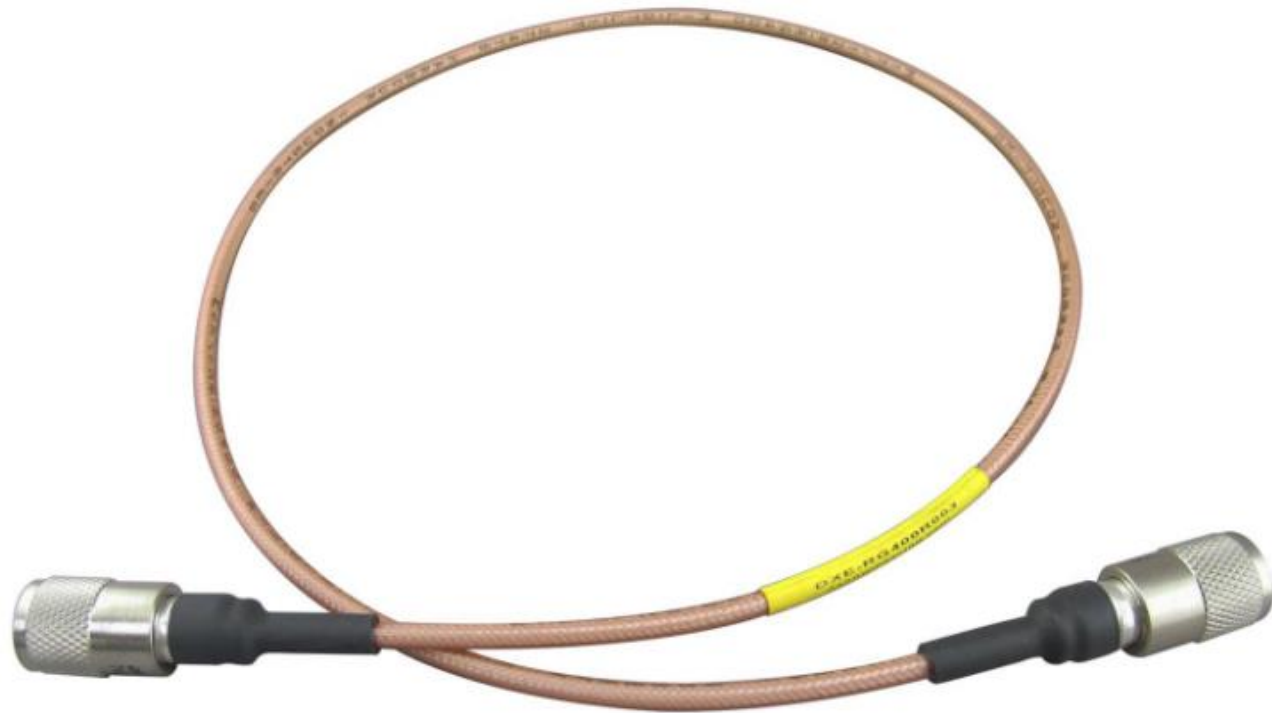


DXE-ISO-PLUS Signal Attenuation*



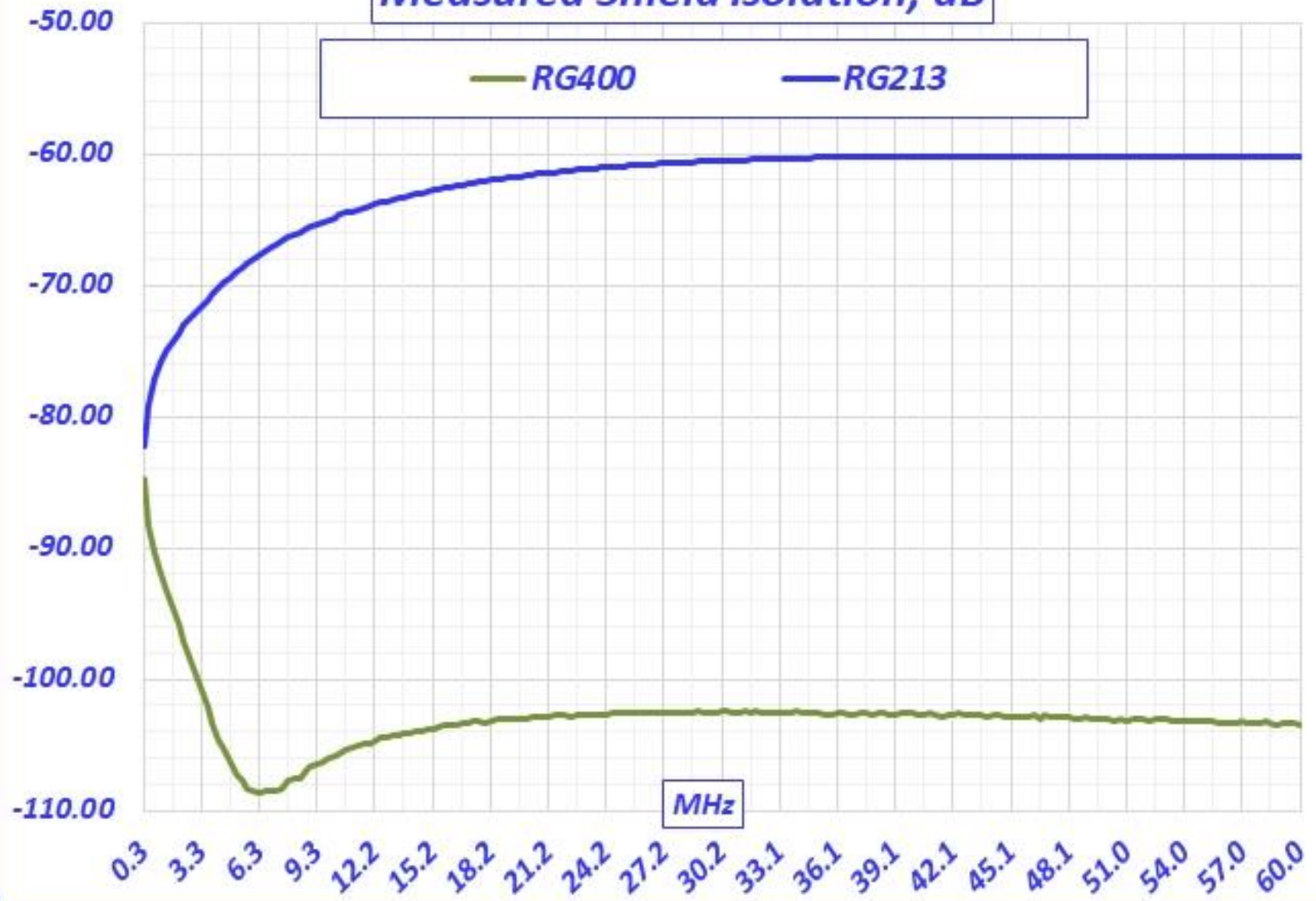


High Quality RG-400 double shield

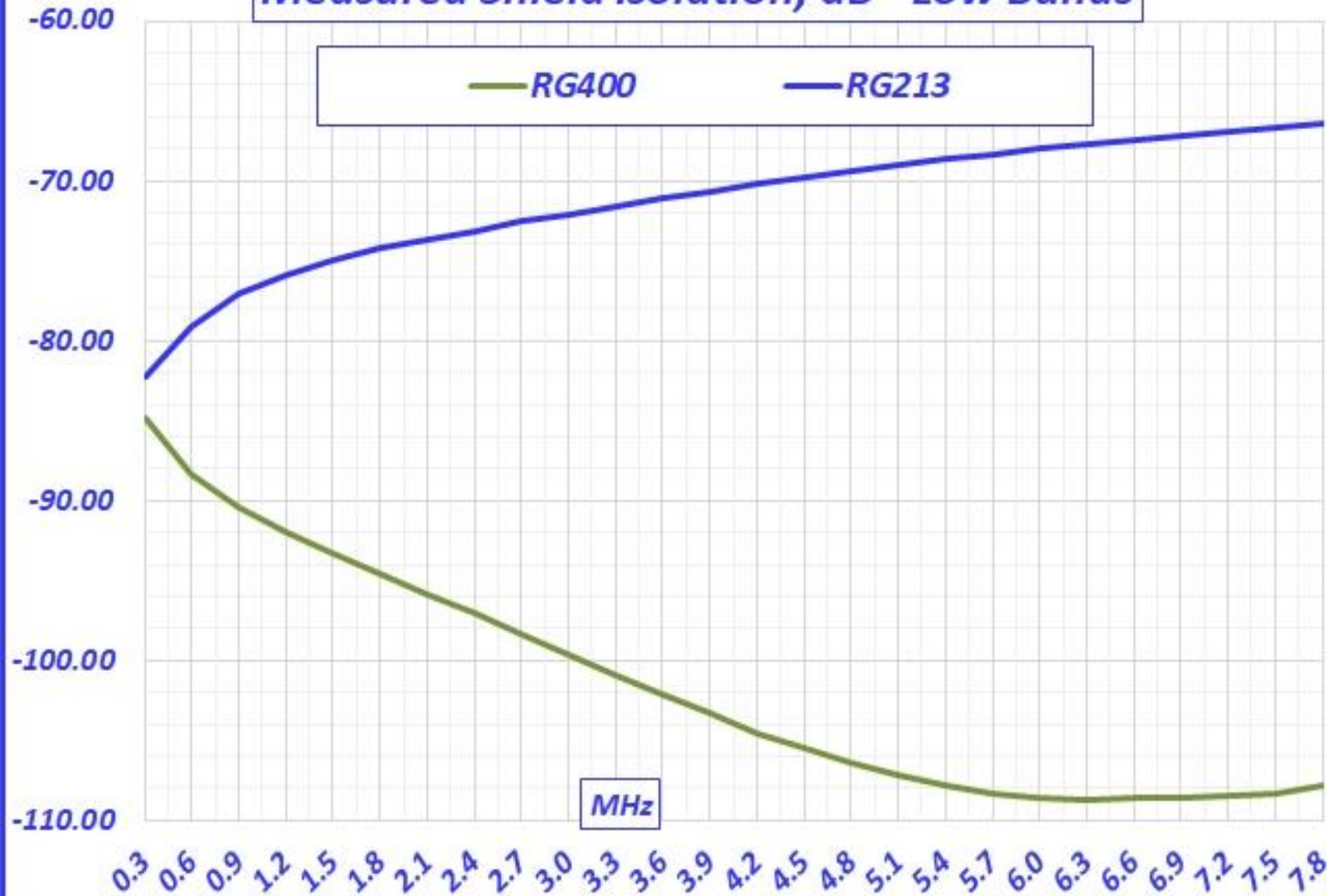


Teflon – aircraft grade 50 ohms

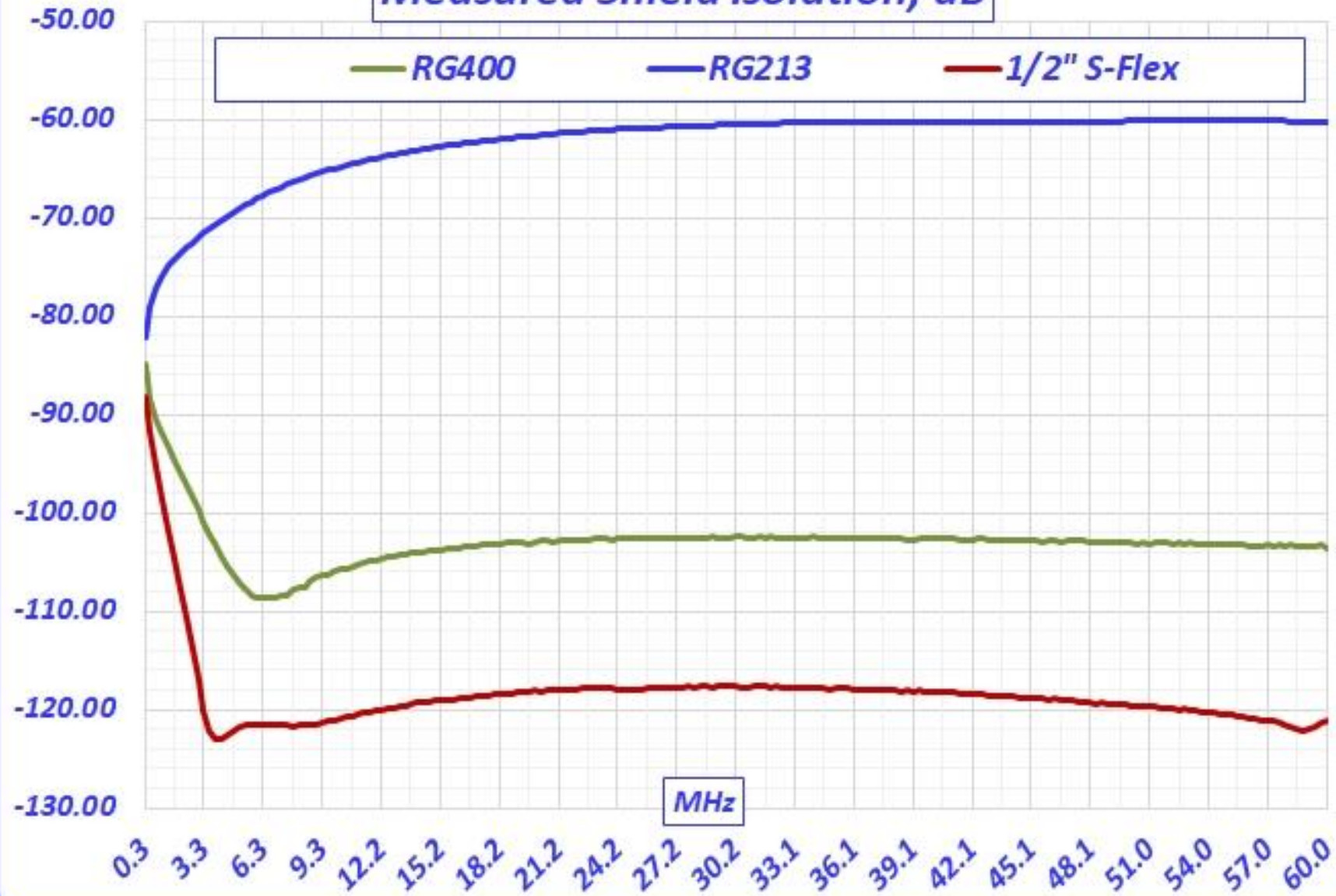
Measured Shield Isolation, dB



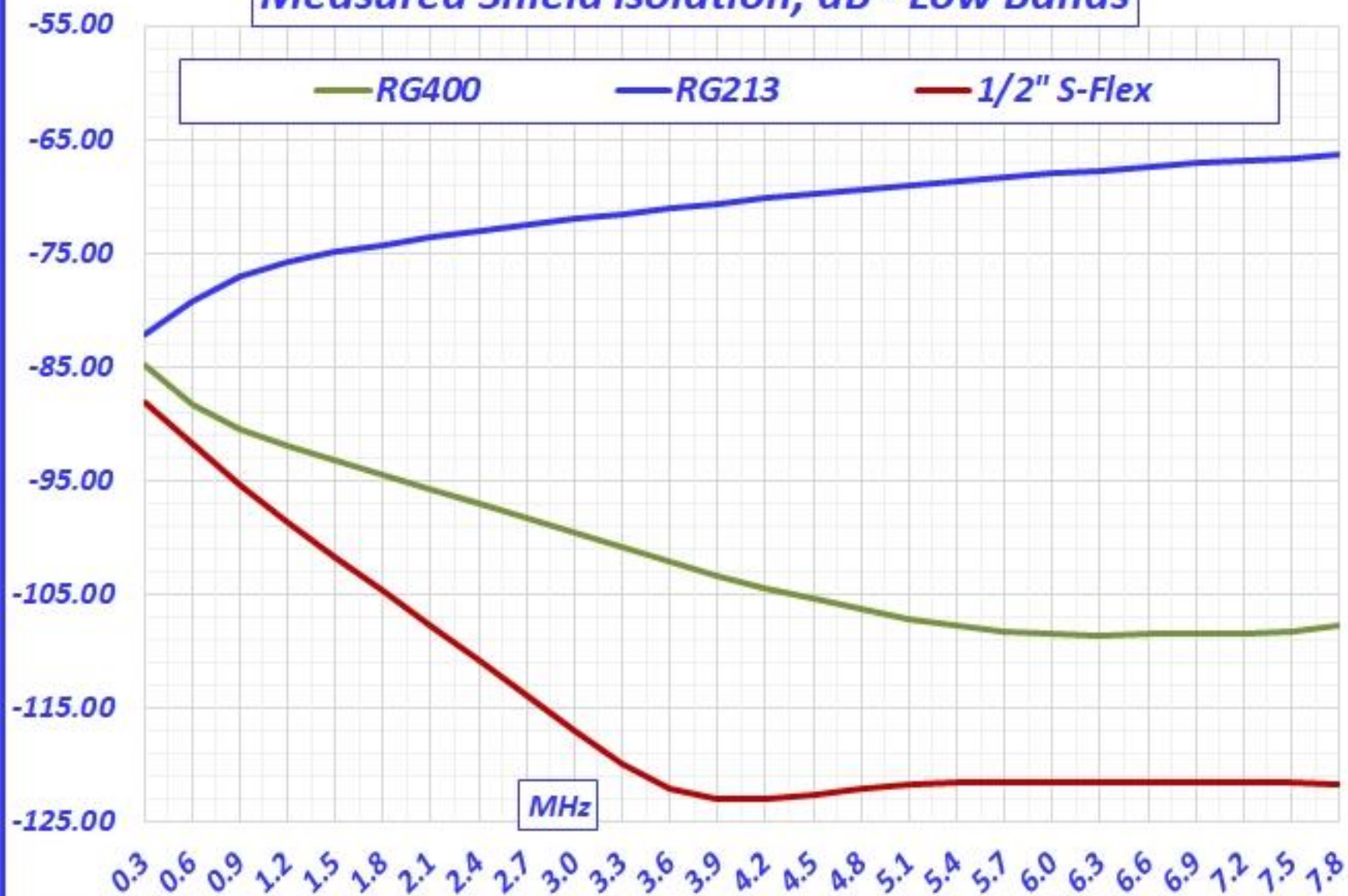
Measured Shield Isolation, dB - Low Bands



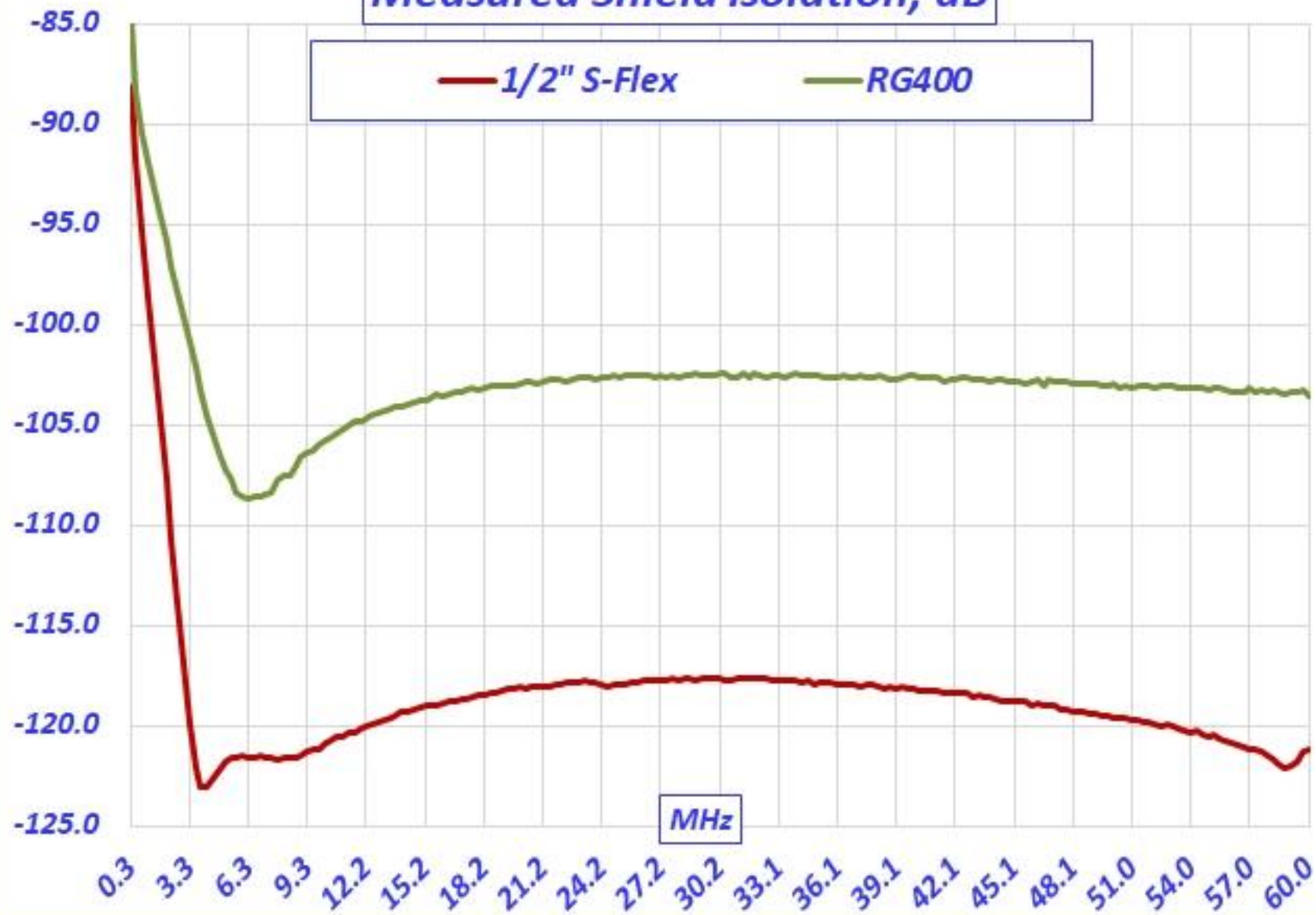
Measured Shield Isolation, dB



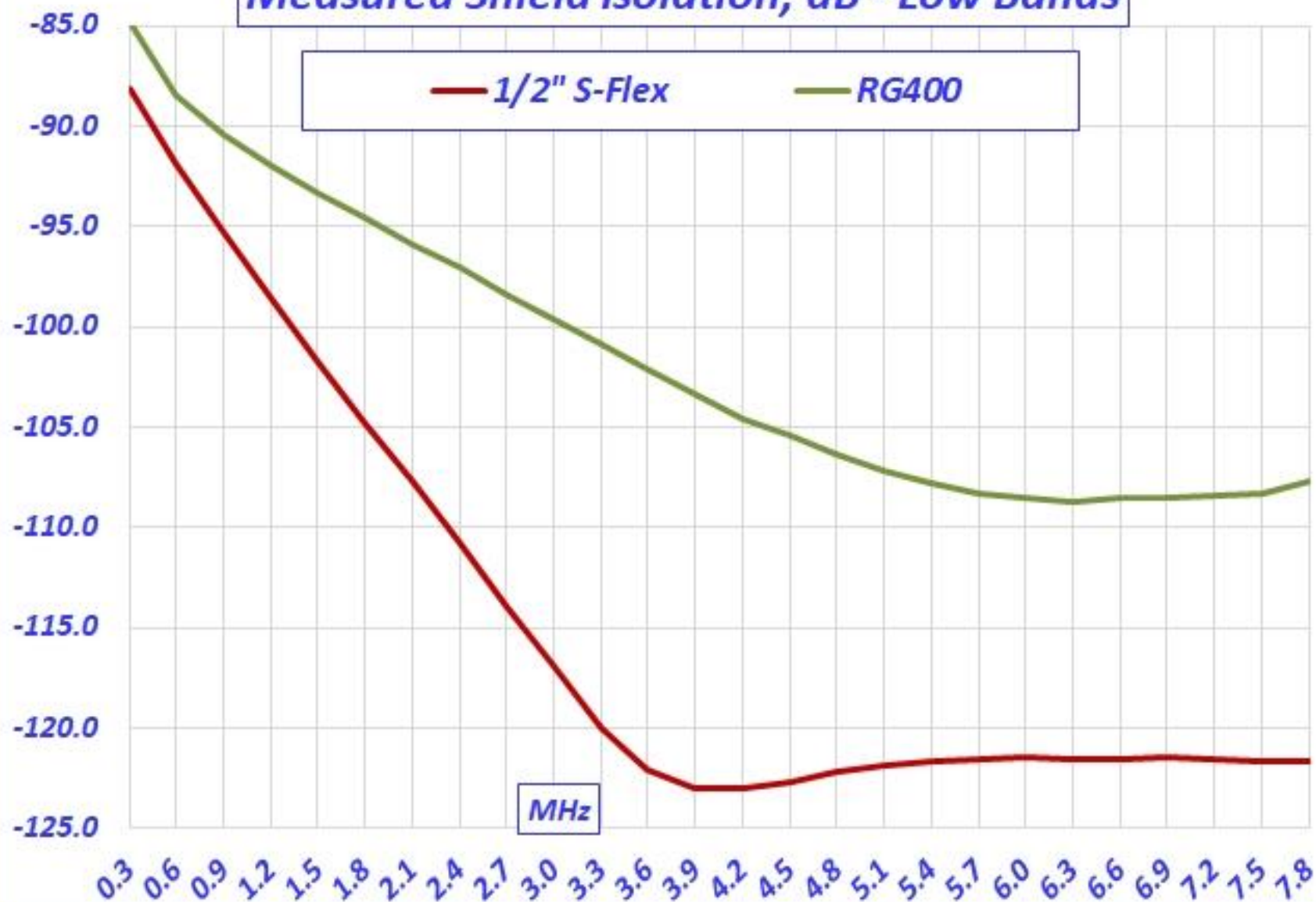
Measured Shield Isolation, dB - Low Bands



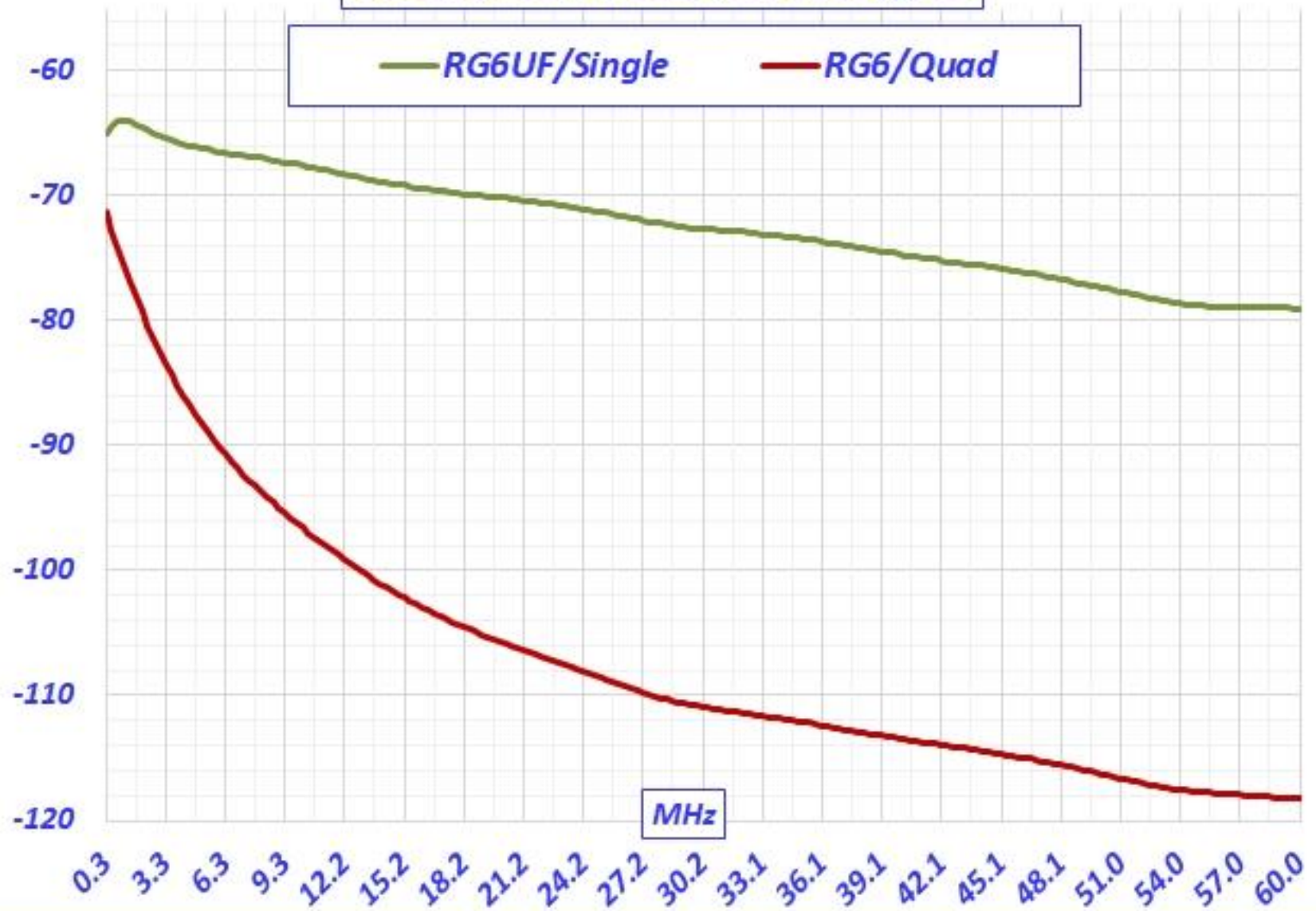
Measured Shield Isolation, dB



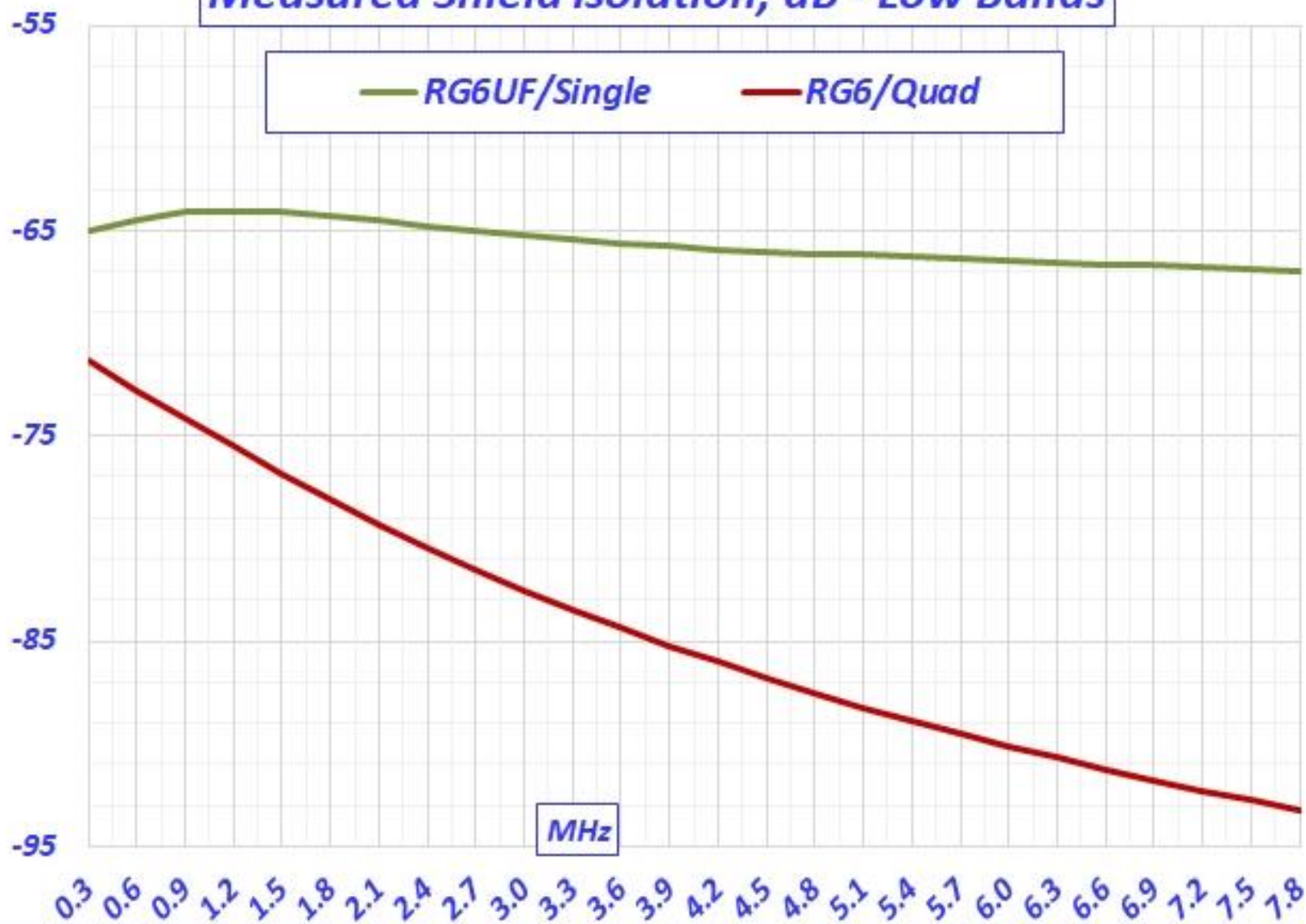
Measured Shield Isolation, dB - Low Bands

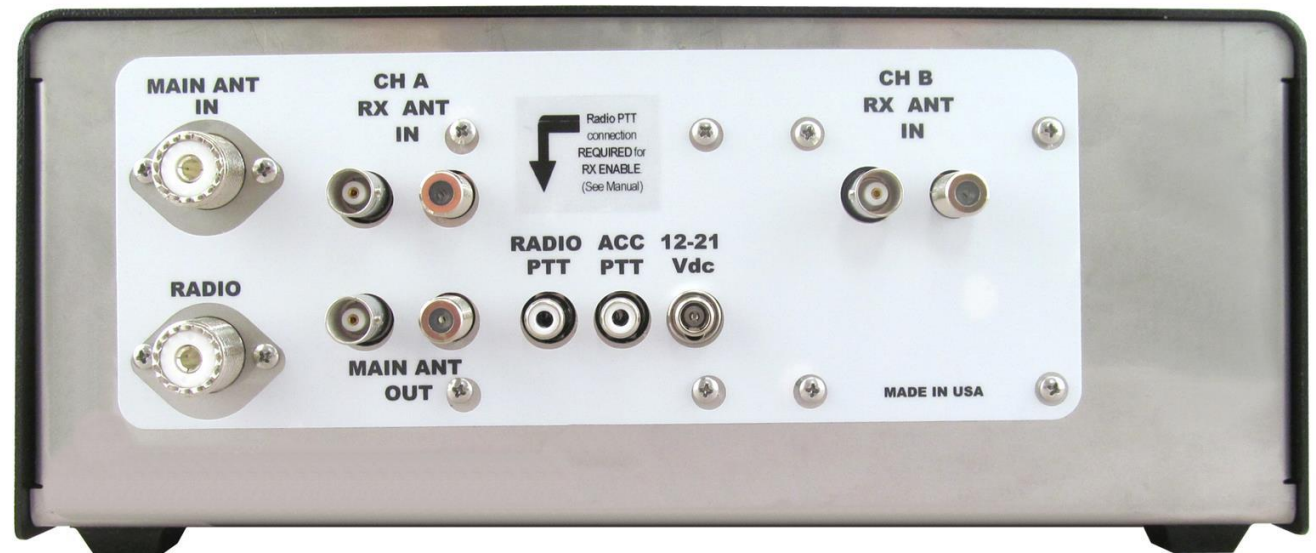


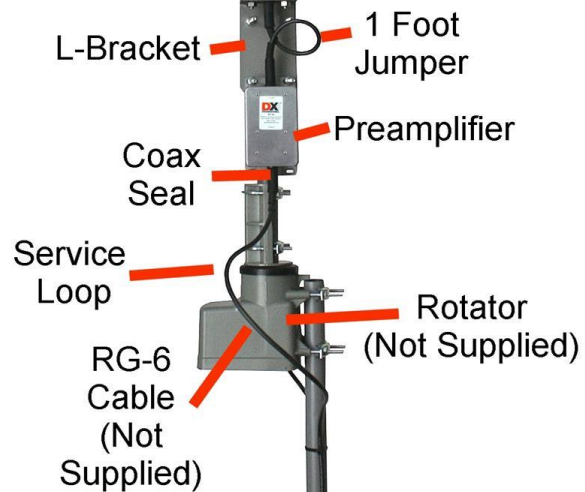
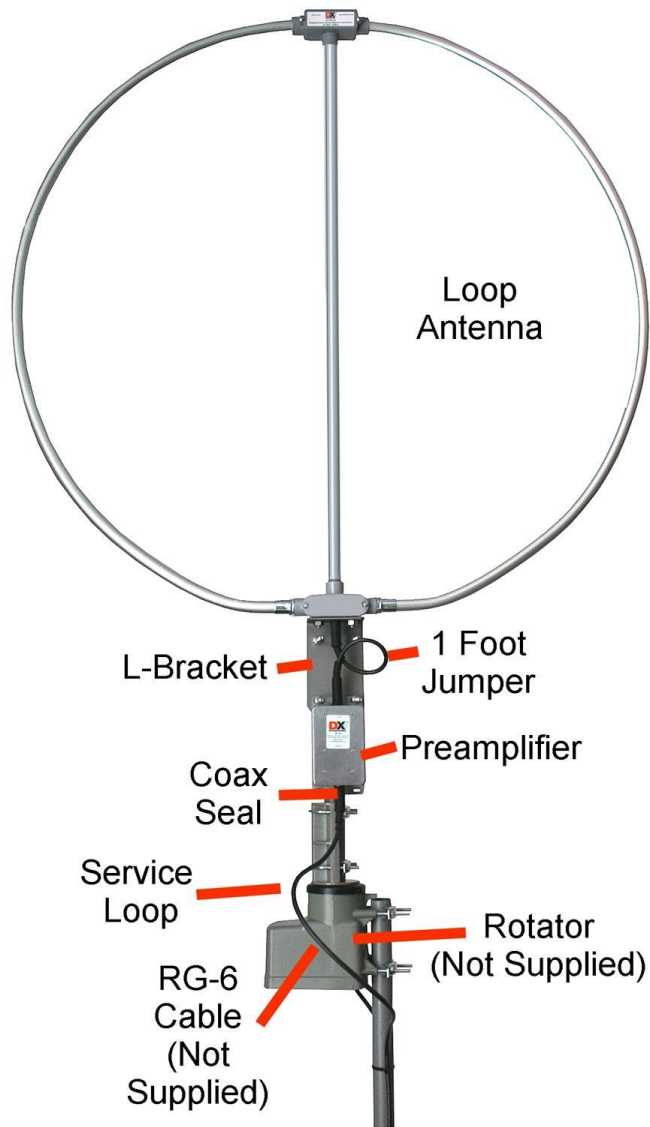
Measured Shield Isolation, dB



Measured Shield Isolation, dB - Low Bands







Details on the test location and methodology



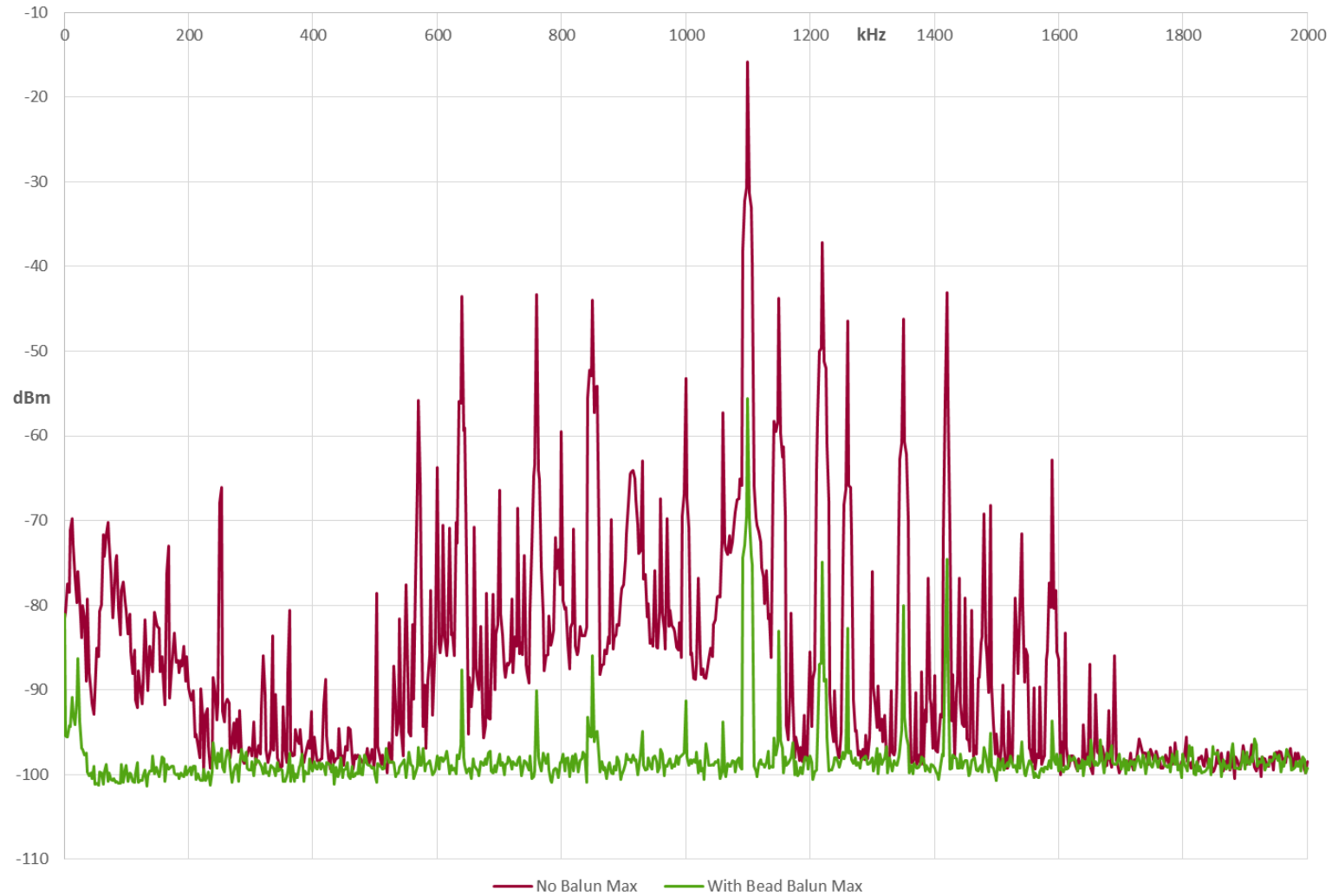
- Two different 200'+ antenna towers in a high RF location (specifically AM broadcast band)
- Measurements taken with a Tektronix RSA306B Spectrum Analyzer and a custom made DXE current probe
- Sweeps recorded with the current probe on 1/2" Superflex hardline before and after the installation of the DXE bead baluns
- Average and maximum sweeps were recorded and displayed here to confirm that these are not transient RF
- Attenuation used to keep 'before' tests from overloading SA

Details on the test location and methodology

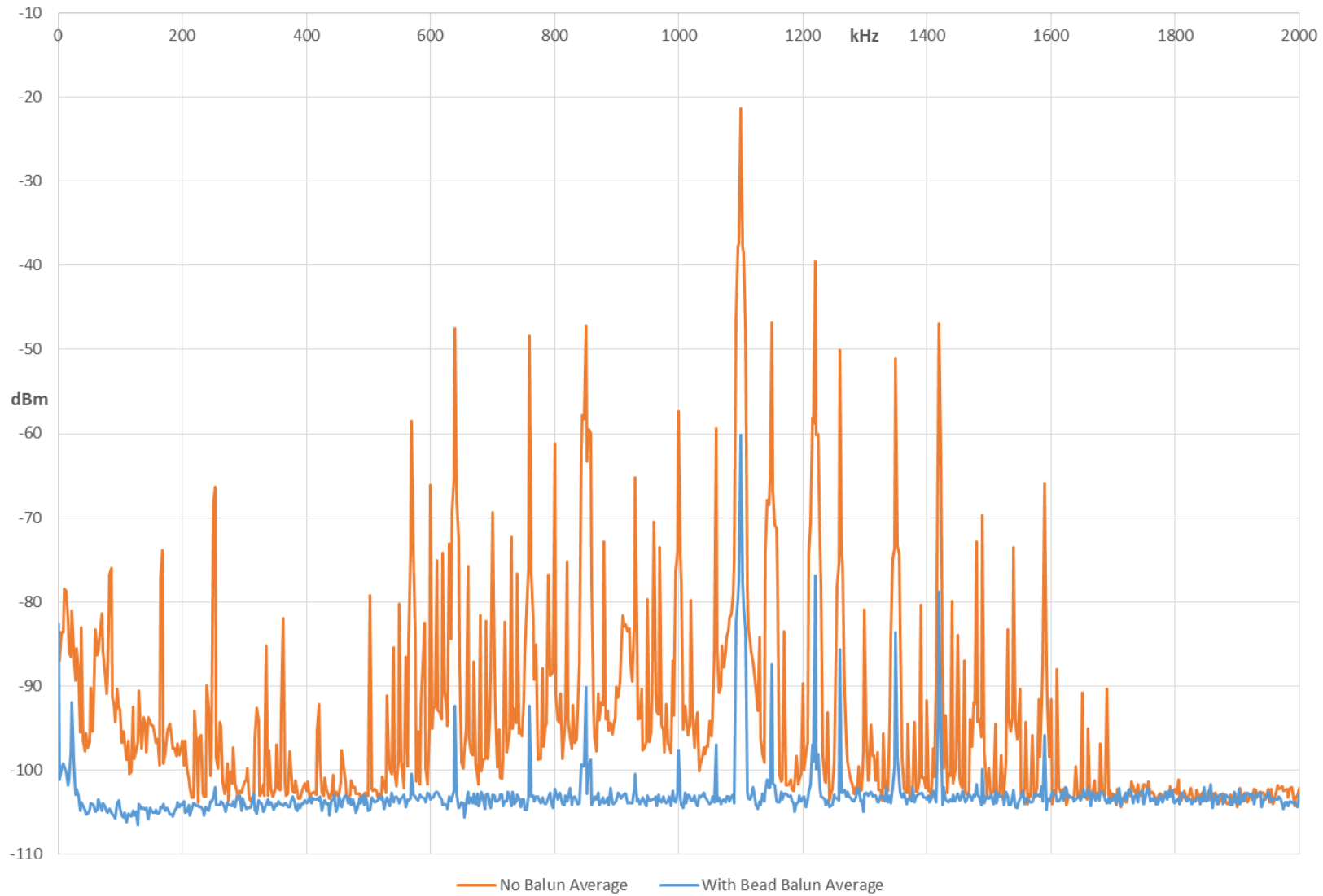




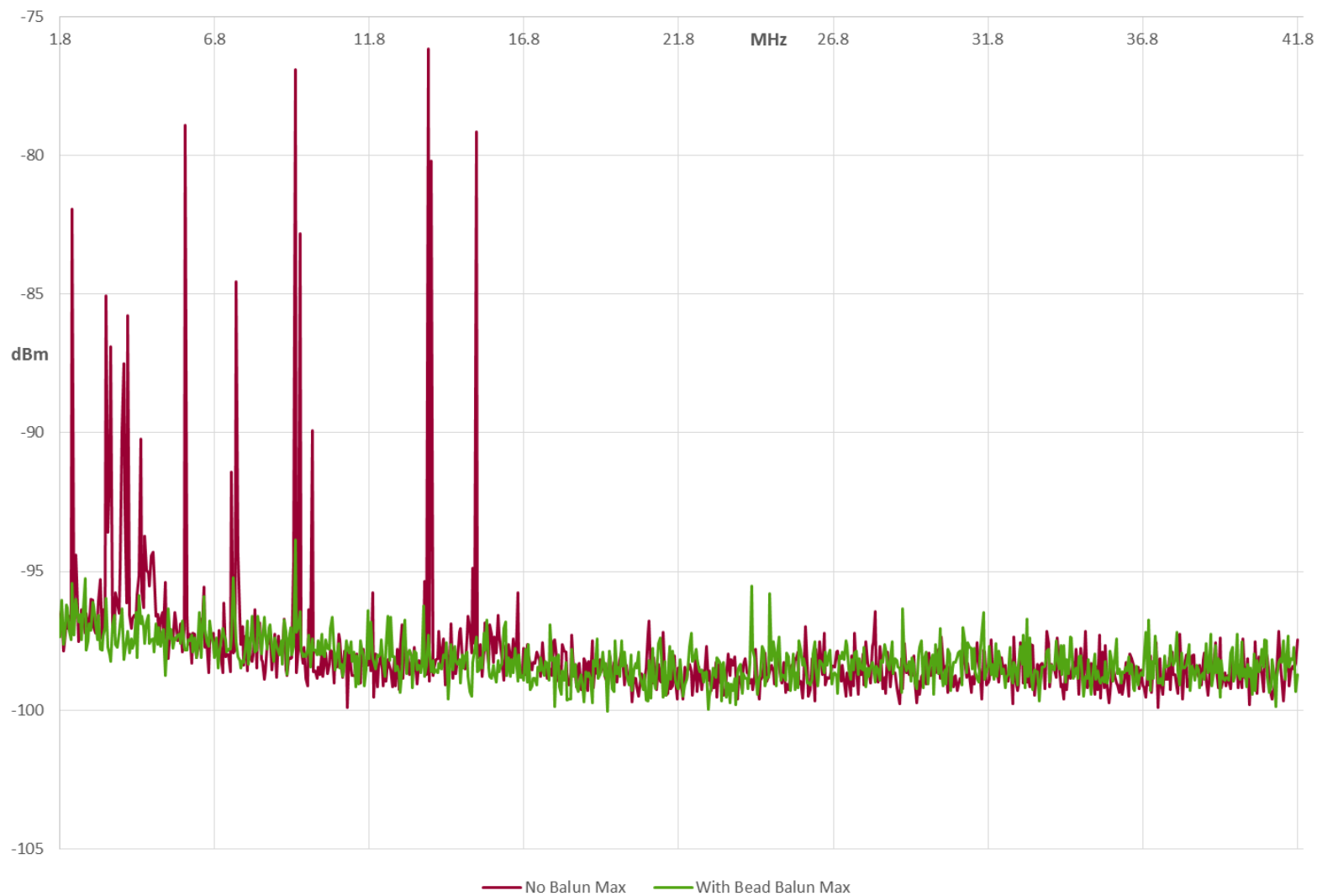
Tower 1 Current Probe Measurements w/ 16 dB Attenuation



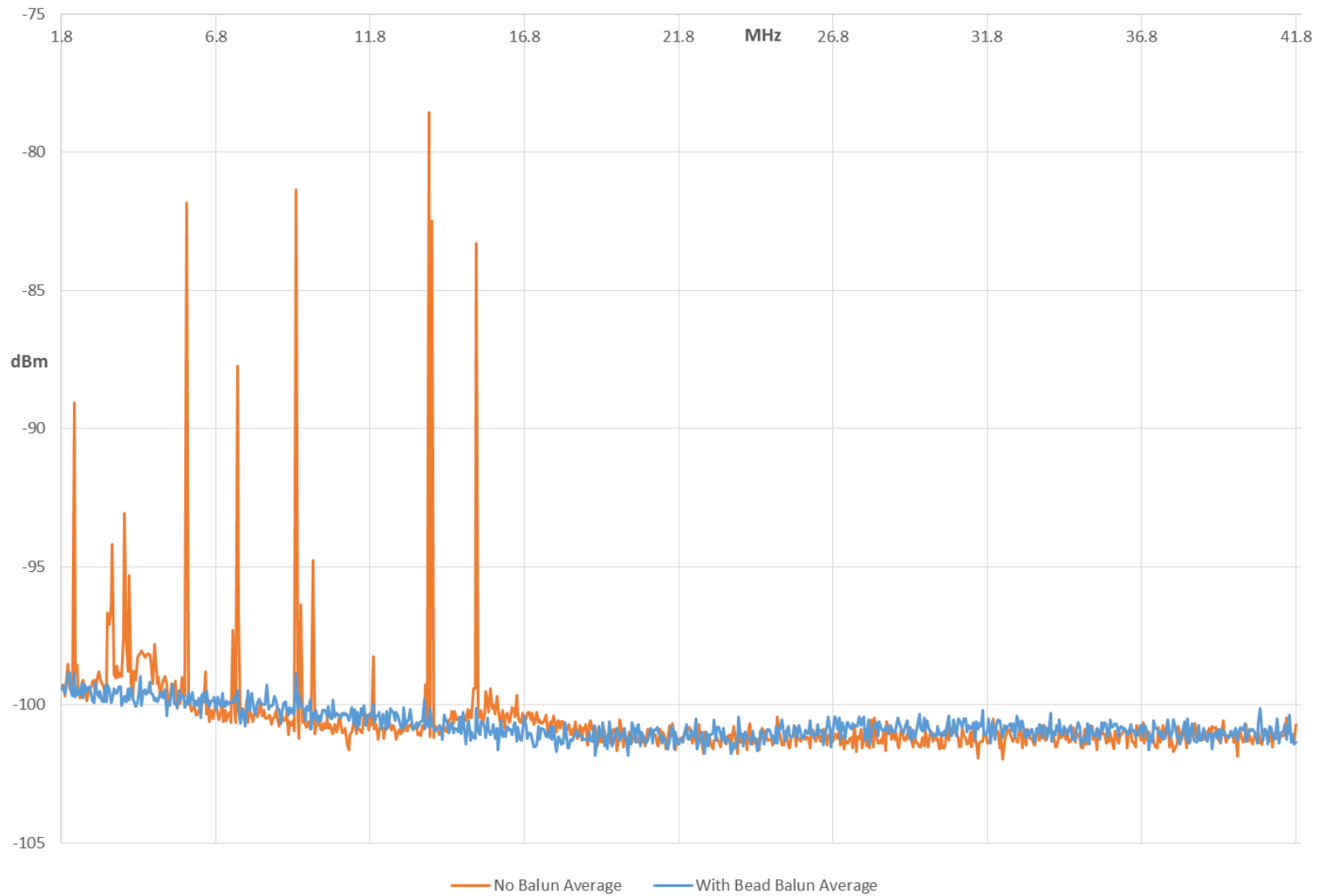
Tower 1 Current Probe Measurements w/ 16 dB Attenuation



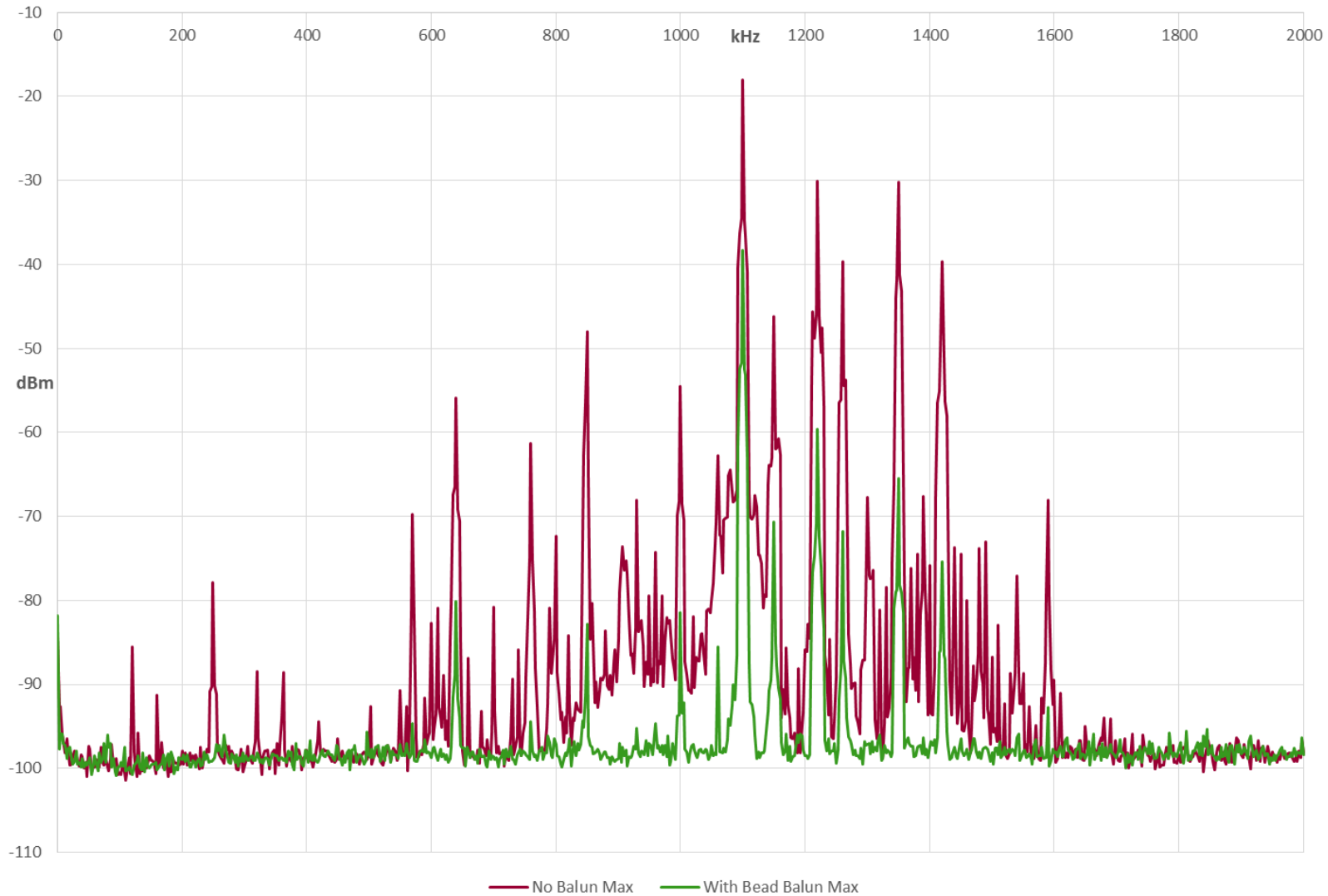
Tower 1 Current Probe Measurements w/ 16 dB Attenuation



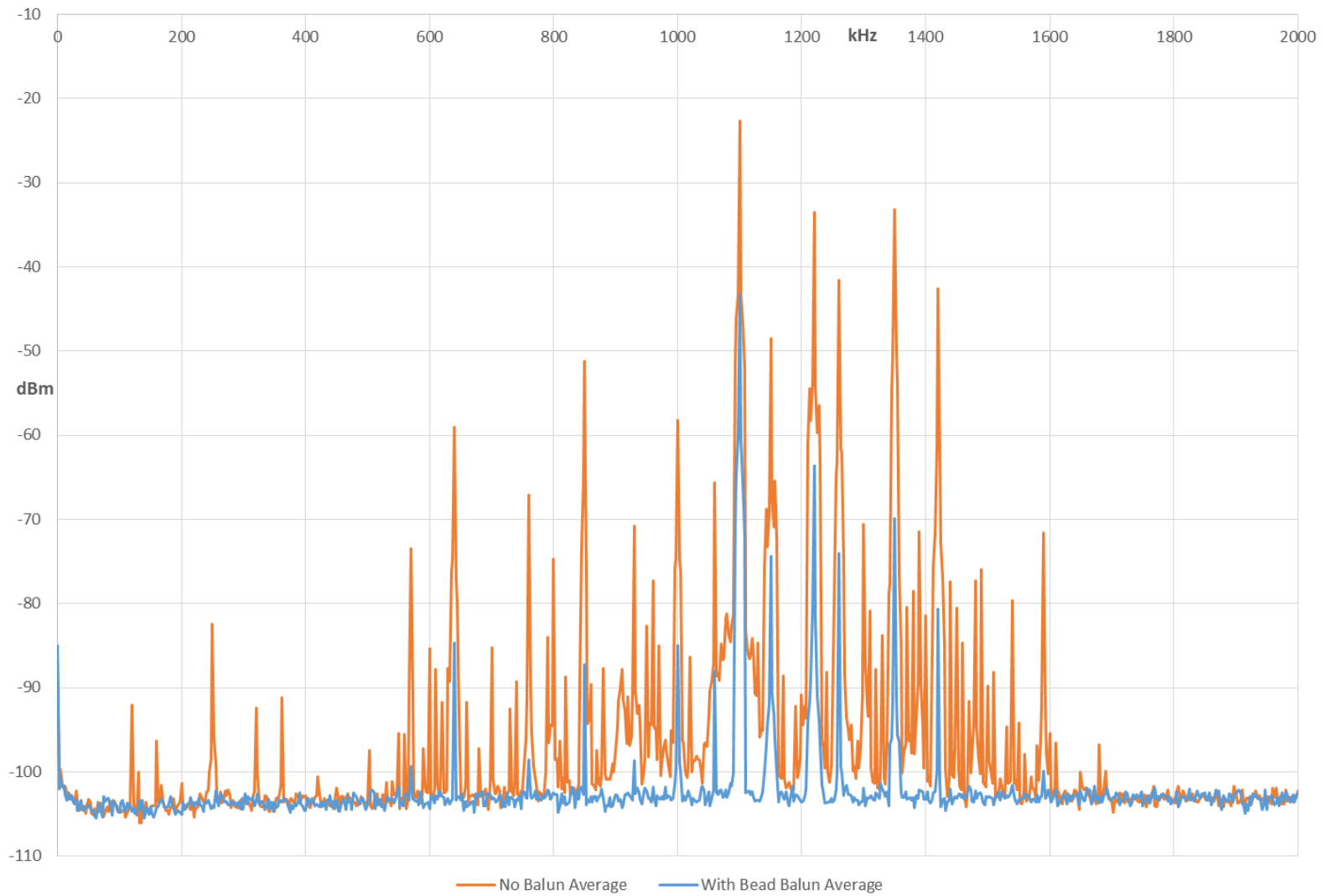
Tower 1 Current Probe Measurements w/ 16 dB Attenuation



Tower 2 Current Probe Measurements w/ 18 dB Attenuation



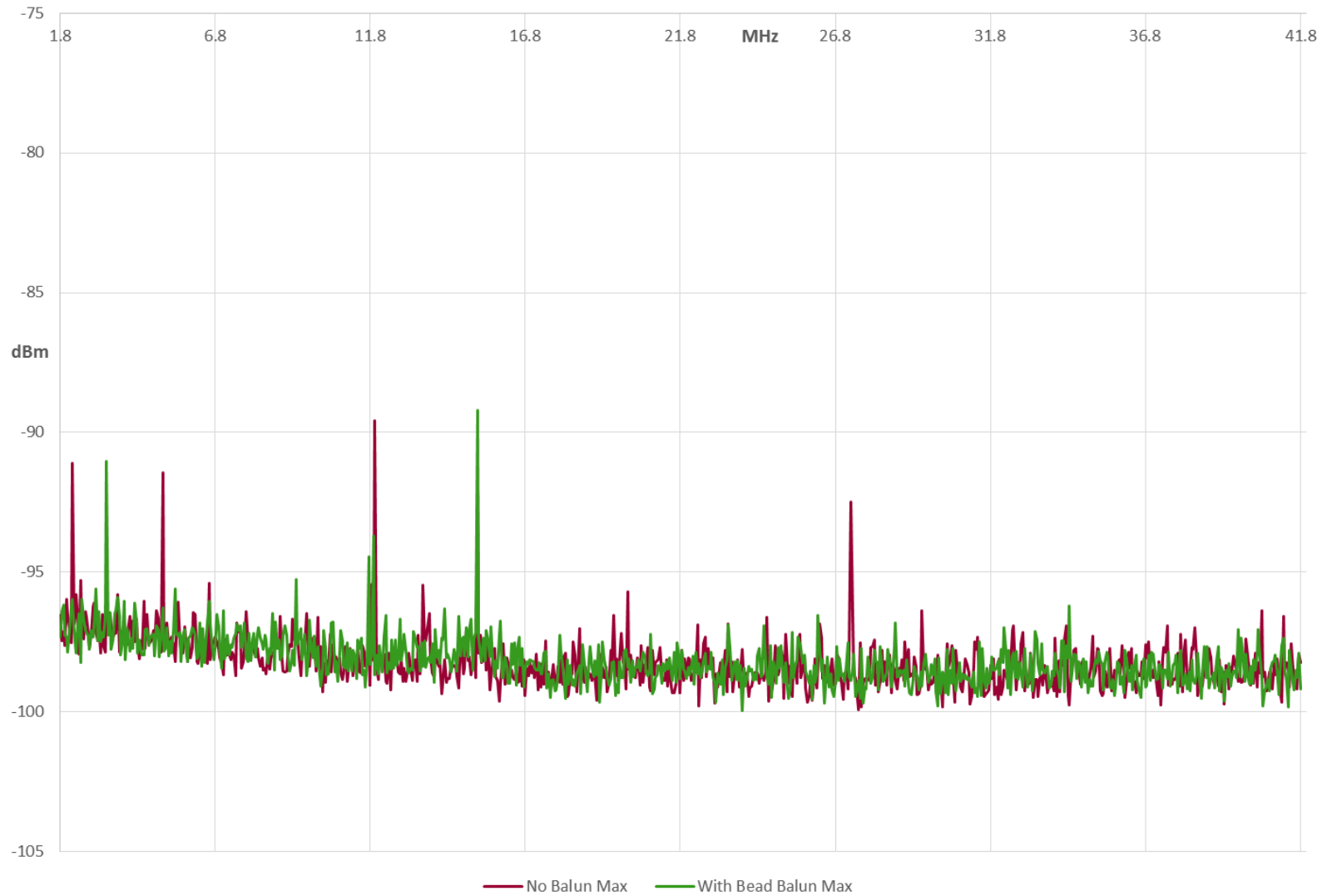
Tower 2 Current Probe Measurements w/ 18 dB Attenuation



Tower 2 Current Probe Measurements w/ 18 dB Attenuation



Tower 2 Current Probe Measurements w/ 18 dB Attenuation





Having Fun with Contesting

- **Be the best example of a model contest operator**
- **Share your contesting passion with others (Youth!) – help THEM put up or fix an antenna. Please be SAFE!**
- **Get on the air and operate. Teach others how to operate in a contest.**
- **Have an open heart to all who are willing to learn – encourage and send congratulations emails.**
- **Be active in your local club – not just Field Day. Join, pay dues and contribute your time and experience!**





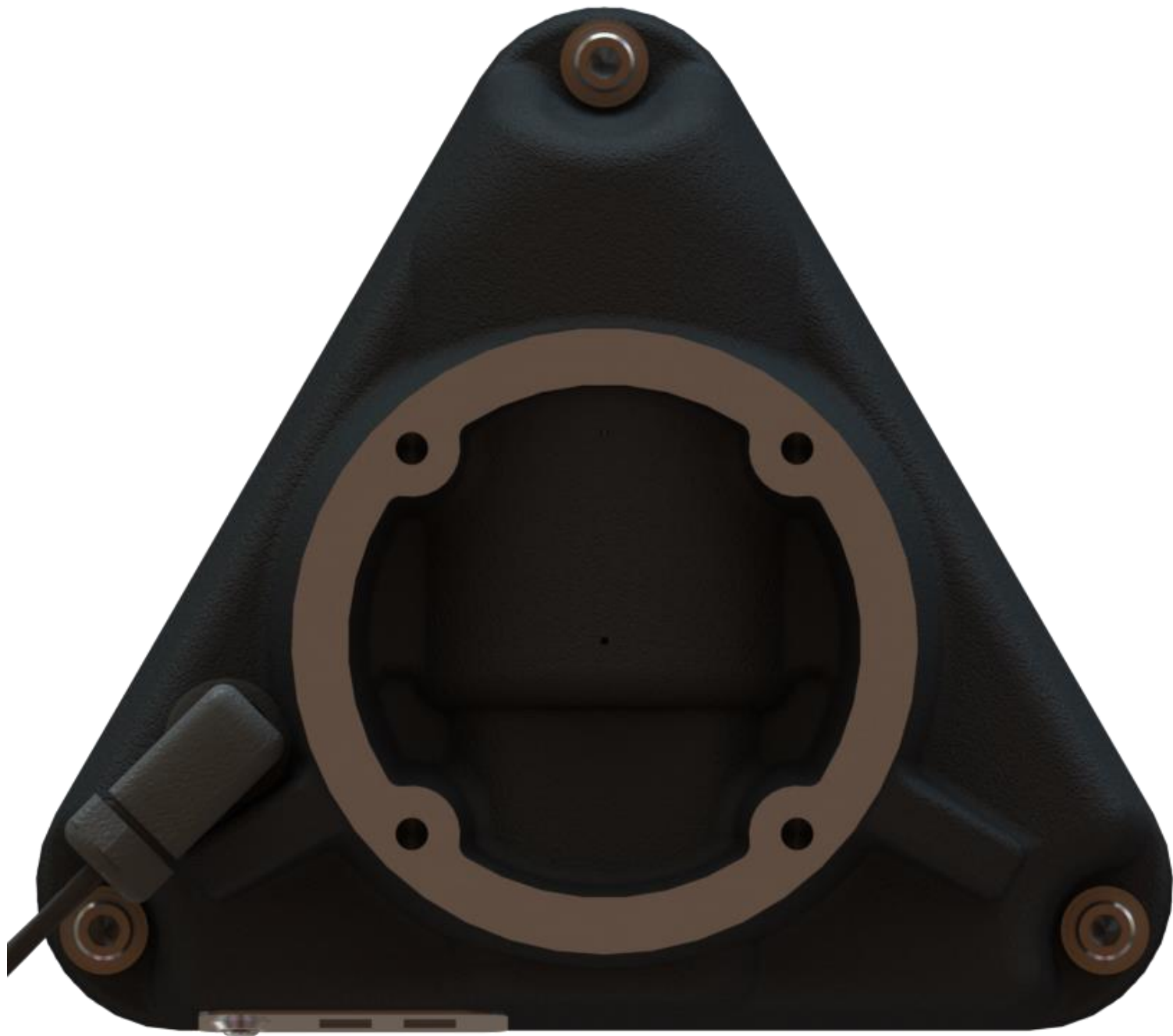


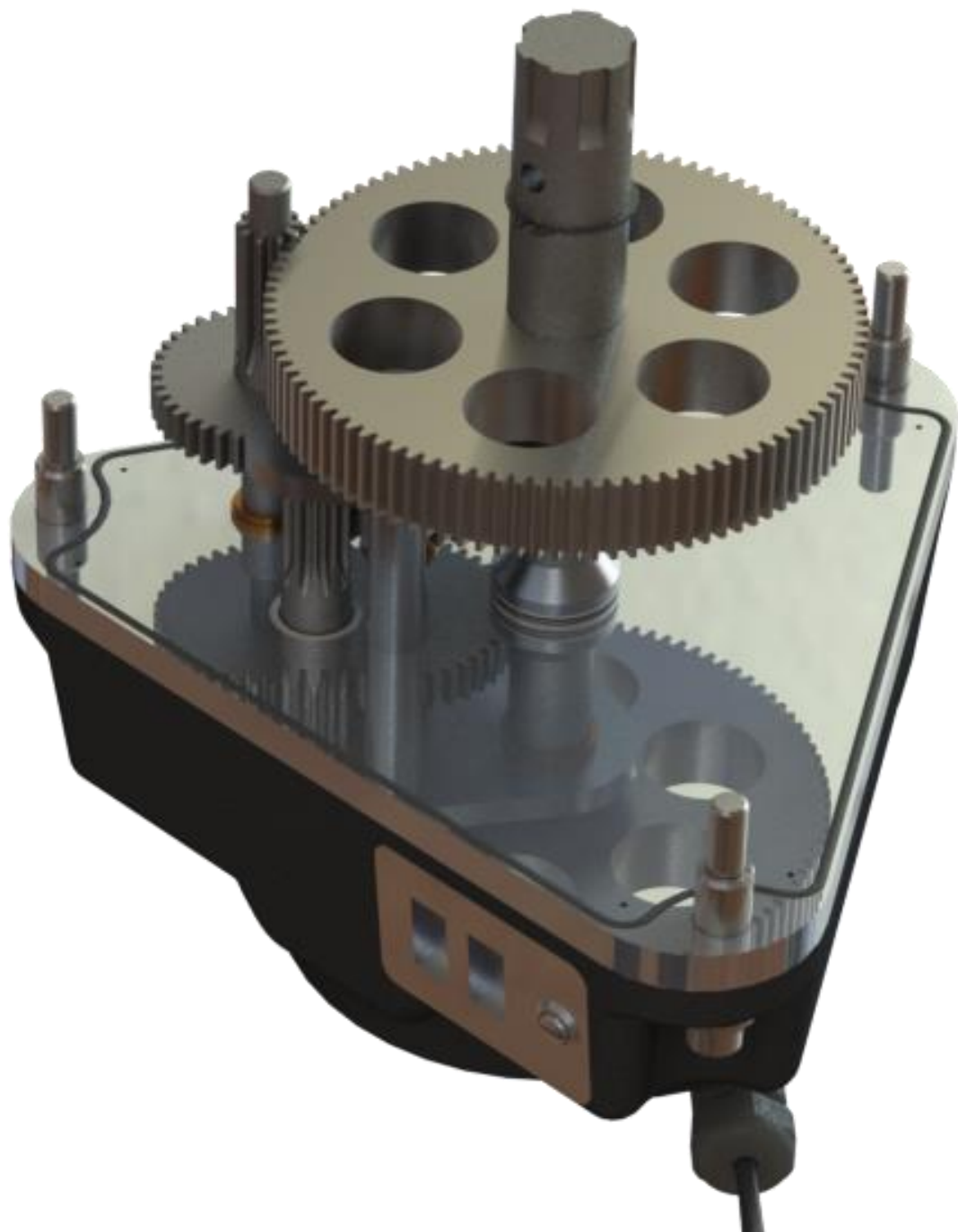




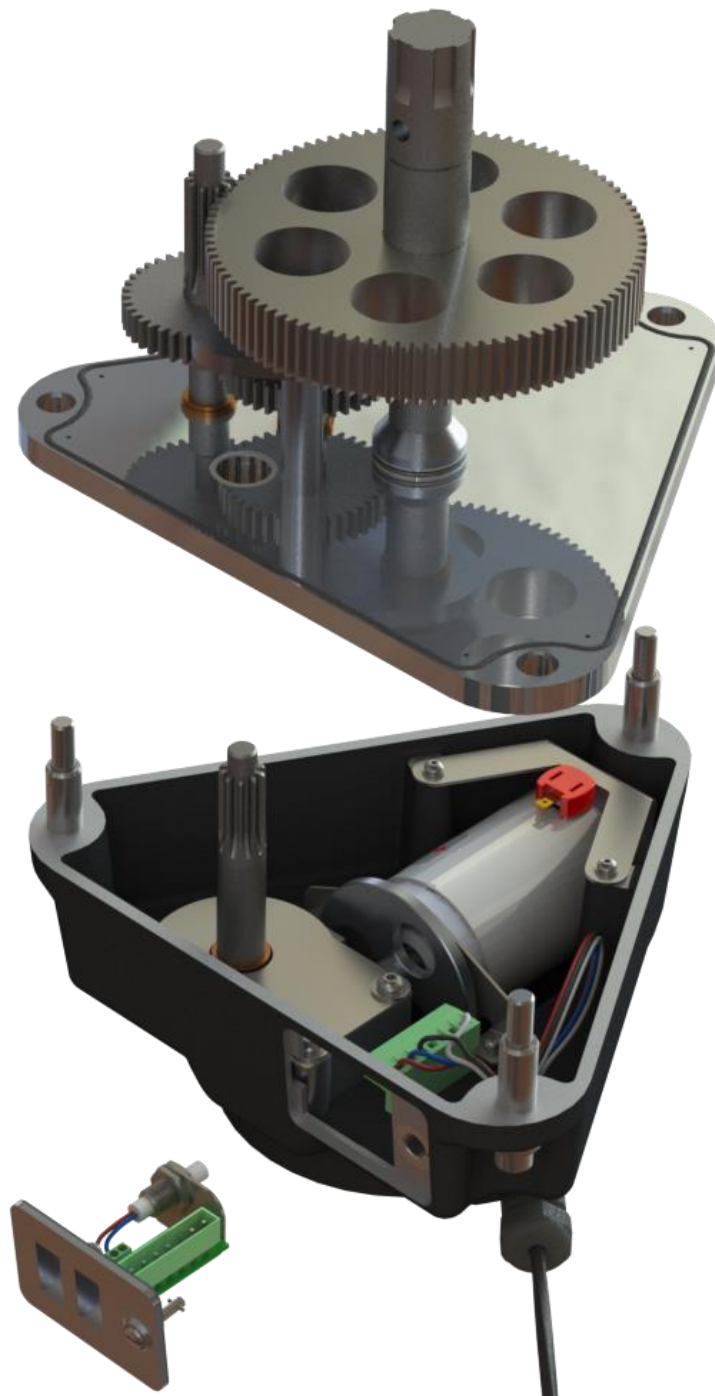


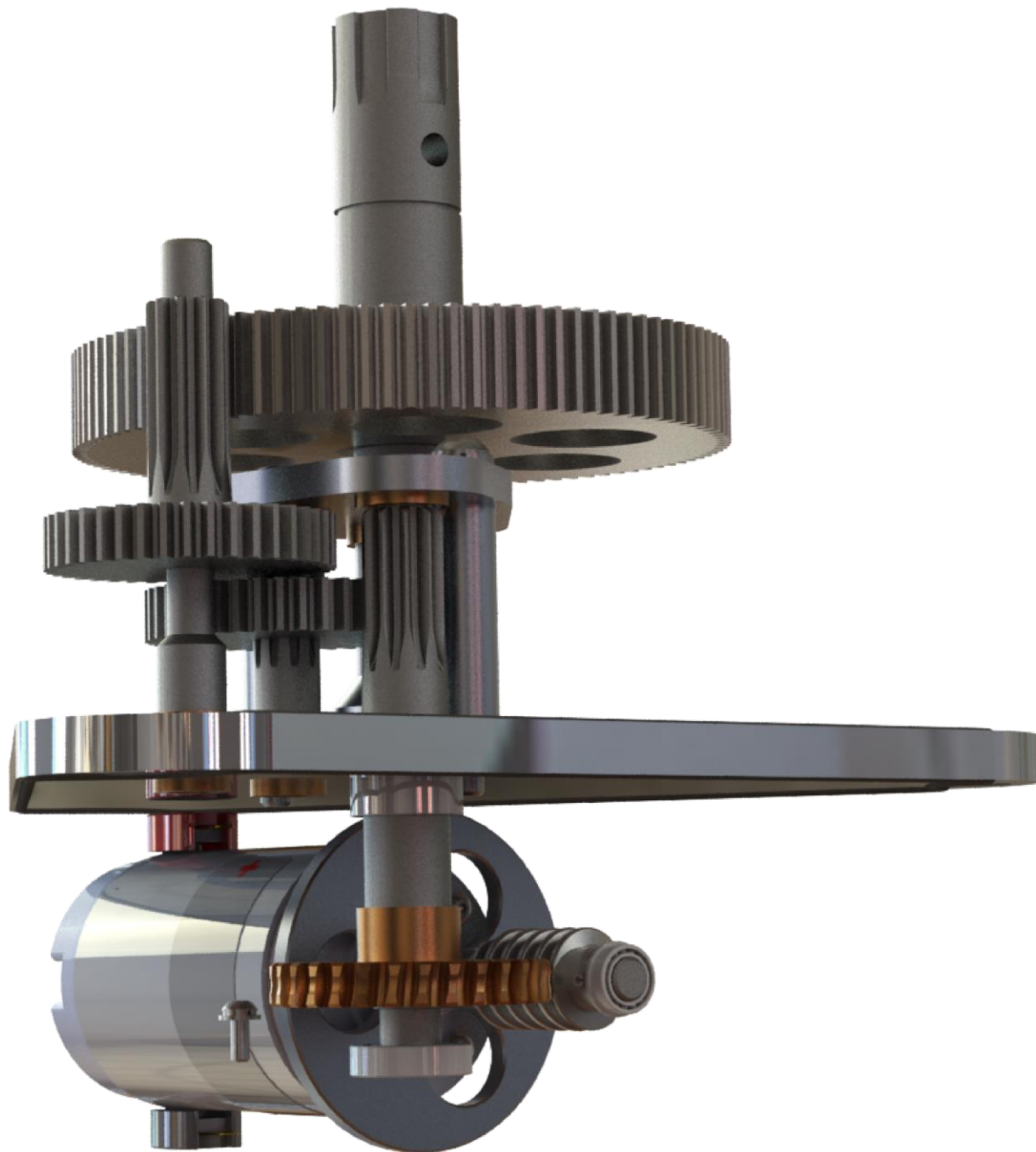




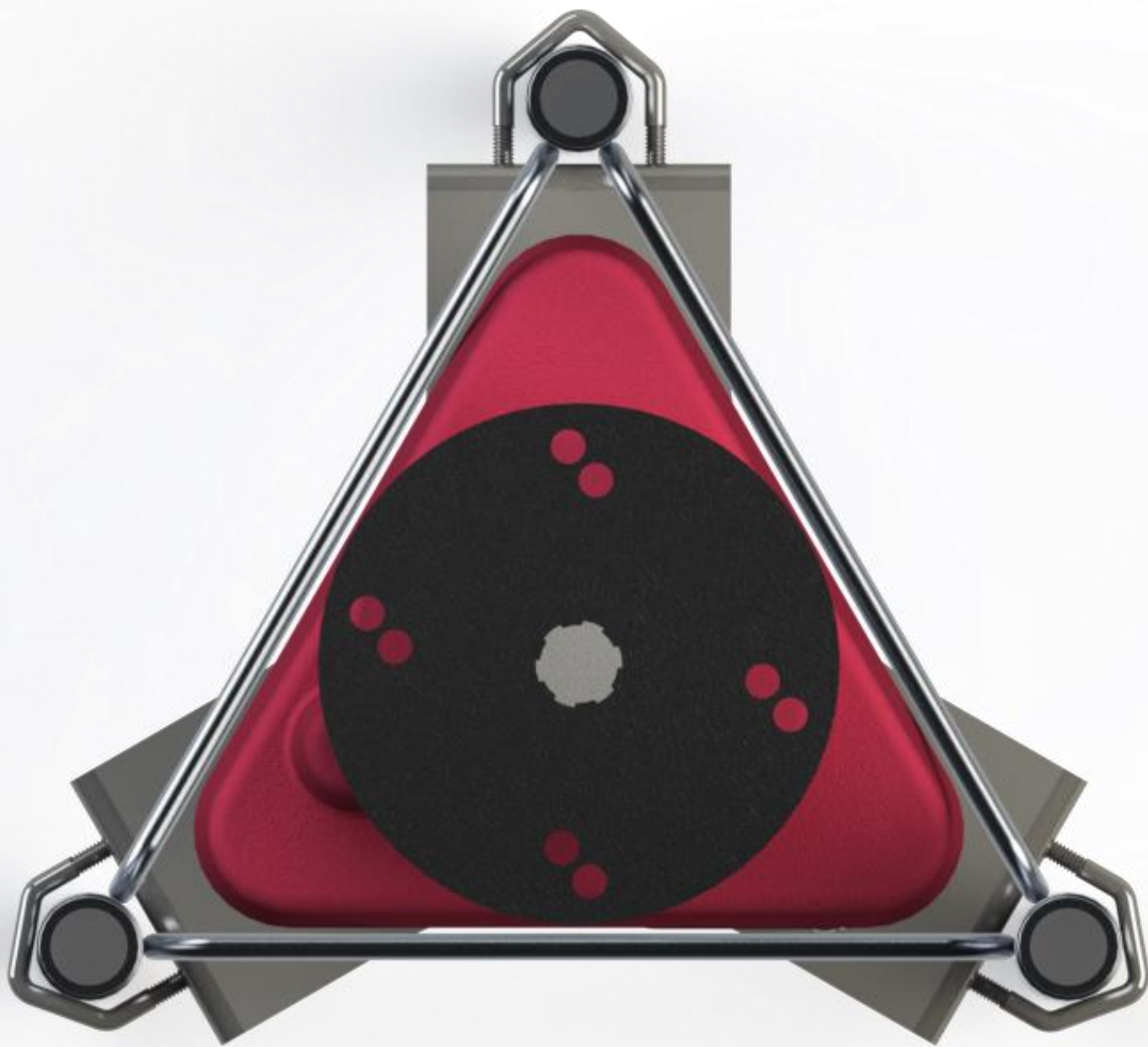














RF2K-S



RF2K-S



