VE2DX Electronics Design Inc.

SDR1 Manual.

July 2025

By

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Revision 01.05.05

Date	Name	Comments	Revision
January 10th 2025	VE2DX	Release first version 01.01.00	01.01.00
January 19th 2025	VE2DX	Changes to add new PCB revision supporting DUAL mode	01.02.01
July 9th 2025	VE2DX	Finaly Release	01.05.05

1. Introduction:

We were delighted to officially introduce our Hybrid SDR TR Switch in January 2025.

It was designed to fill a badly needed market hole with the end of the MFJ-1708. Even if it was very popular, we felt that the MFJ-1708 needed some significant improvements. Thus, our new SDR1 family of SDR TR Switches.

The SDR1 TR switch product family is made of two different models;

- SDR1-TR; designed for coverage from 50kHz to 172MHz.
  and
- SDR1-TRPlus; designed for coverage from 50Khz to 1.5GHz.

All VE2DX Electronics Design designs ALWAYS use our TrueTTL design standards; these apply to all power, signals, or grounds coming into our devices. In this case,

- 12VDC power source is heavily filtered.
- DC Ground is Heavily filtered.
- PTT signal is Heavily filtered.
- And the PTT Ground is Heavily filtered.

Also, our SMD PCB designs are heavily shielded; in this case, the areas where the antenna signals, SDR receiver signals, transceiver signals, and power signals are coming in are all compartmented from each other.

All these design features are to prevent RFI from affecting your VE2DX SDR1 TR Switch.

2. Installation:

The installation of the VE2DX Electronics Design SDR1-TR family products is relatively simple.

1- Verify that your SDR1 unit is not damaged upon reception; if it is, please contact your reseller for a replacement.
2- Connect your transceiver to the RADIO port connector in the back of the SDR1 unit (Note 1) using a good-quality coax.
3- Connect your antenna to the ANTENNA connector in the back of the SDR1 unit (Note 1, 2) using a good-quality coax.
4- Connect your SDR receiver to the SDR port connector in the back of the SDR1 unit (Note 3) using a good-quality coax.
5- (Optional) Run a cable from your Transceiver PTT output to the SDR1 PTT jack in the front of the SDR1 (Note 4).
6- Apply power to your SDR1.
7- The Green Power and Yellow RX light should be ON, while the Red TX light should stay OFF.
8- If your transceiver goes into TX, the Yellow RX light will go OFF, and the TX light on the SDR1 will go ON (Note 4).

Note 1: the SDR1-TR uses SO-239 connectors, while the SDR1-TRPlus uses N-Type connectors.

Note 2: If you use a linear, external antenna, remote antenna switches, BPF, or any other devices in line with your antenna, all should be installed between the SDR1 and the antenna; the only exception might be an SWR bridge.

Note 3: The SDR1 SDR Port is using an SMA Female jack.

Note 4: Some signal modulations like SSB are so weak that this may cause your SDR1 to flicker from TX to RX. To prevent this, it is

essential to use the PTT signal as a backup to the automatic RF detection while operating in these modes.

3. Configuration:

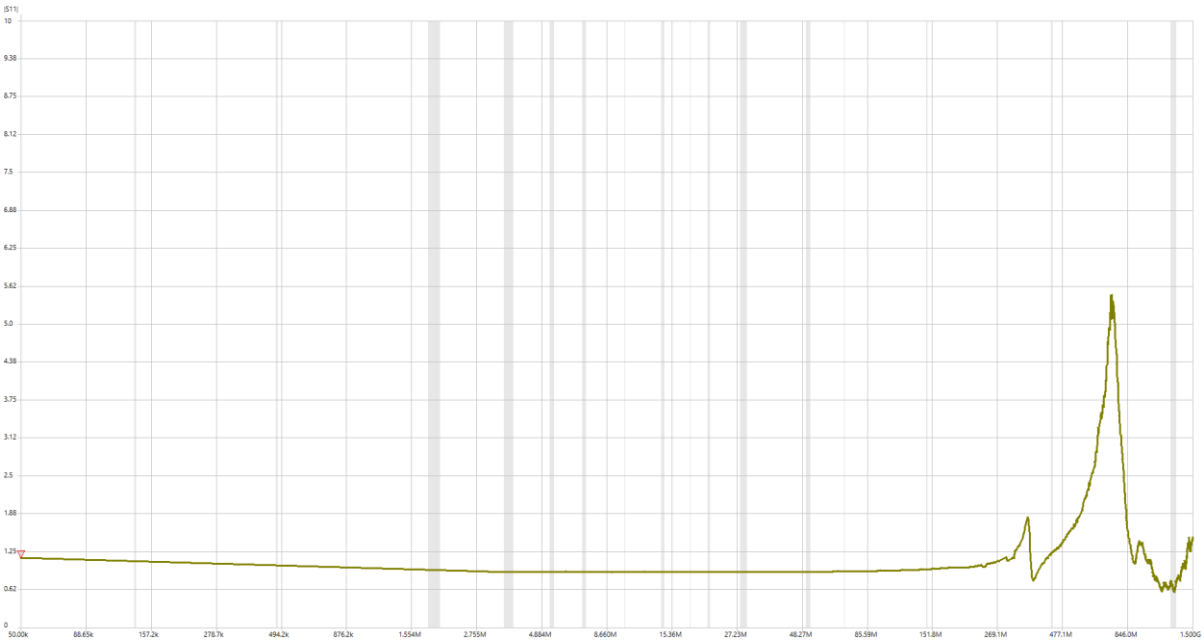
The configuration of the SDR1 is relatively simple;Version 06.XX.XX or newer.

- These PCBs have 3 jumpers (JP1, JP2, and JP3) located in the rear left of the PCB between the firewall and the left orange relay.
- JP1: Always installed.
- JP2: is used to select the SDR Receiver protection during transmit.
    - (Default) JP2 = Installed, is used to short the SDR receiver during transmit to prevent any RF from the transmitter to get inserted into the SDR Receiver antenna input.
    - JP2 = Removed, is this configuration the SDR receiver will have a 50ohm load on the antenna input.
    - JP2 = Installed is the recommended configuration.
- JP3: Always installed.
- RV1: located in the front center of the PCB (BLUE Pot)
    - RV1: is not used at this time and may be enabled at a later date.

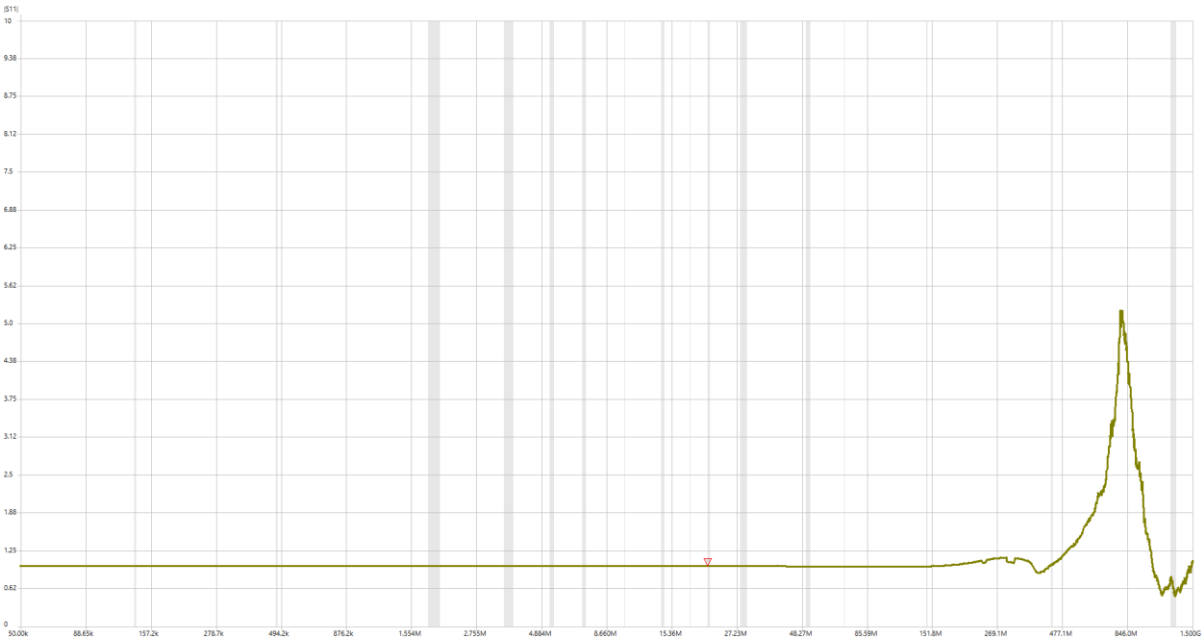
4. Specifications:

	SDR1-TR	SDR1-TRPlus
DC	12V1A	12V1A
Size	100mm X 90mm x 40mm	100mm X 90mm x 40mm
Weight	200g	210g
Low Frequency	50kHz	50kHz
High Frequency	172MHz	1.5Ghz
RX Shared SDR and TRX	No	No
RX RF Splitter	No	No
Antenna connector	SO-239	N-Type
Transceiver connector	SO-239	N-Type
SDR connector	SMA	SMA
PTT connector	Yes, 3.5mm	Yes, 3.5mm
Signal Loss	< 0.1db	< 0.1db

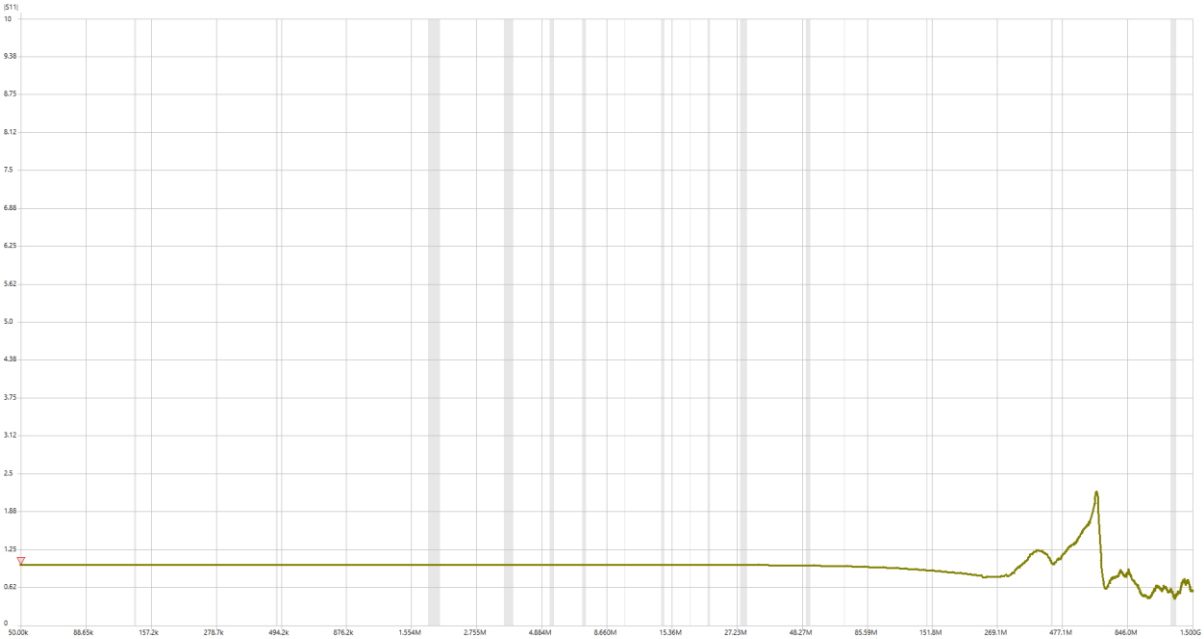
SDR1-TRPlus Dual S11 RX Transceiver to antenna chart:



SDR1-TRPlus Dual S11 TX Transceiver to antenna chart:

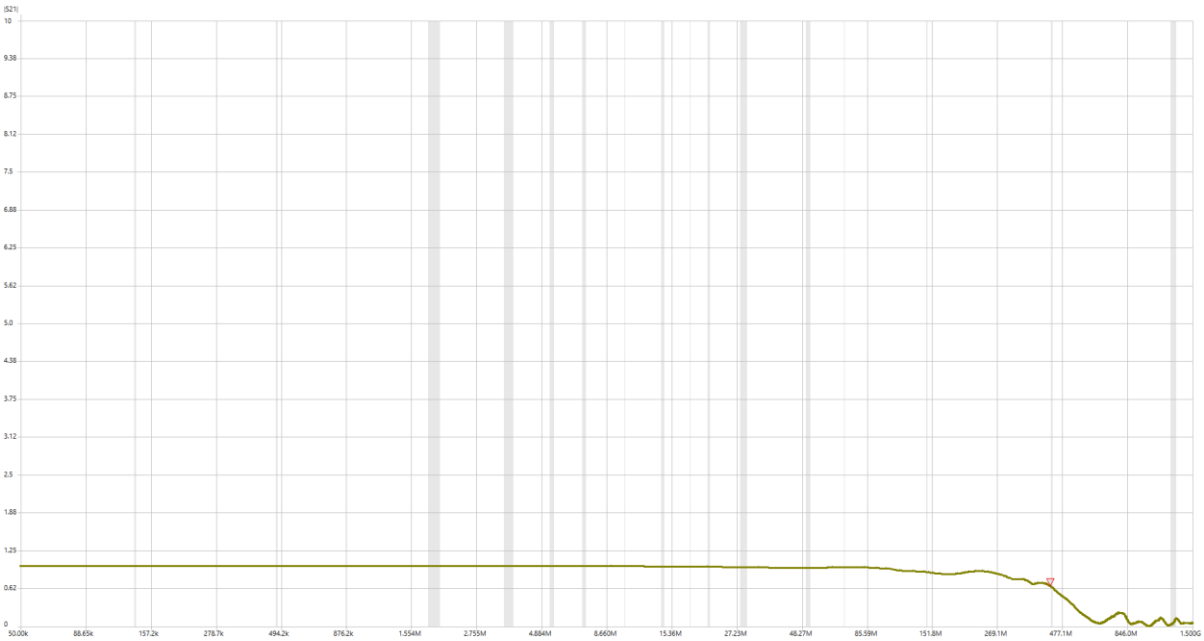


SDR1-TRPlus Dual S11 RX SDR to antenna chart:

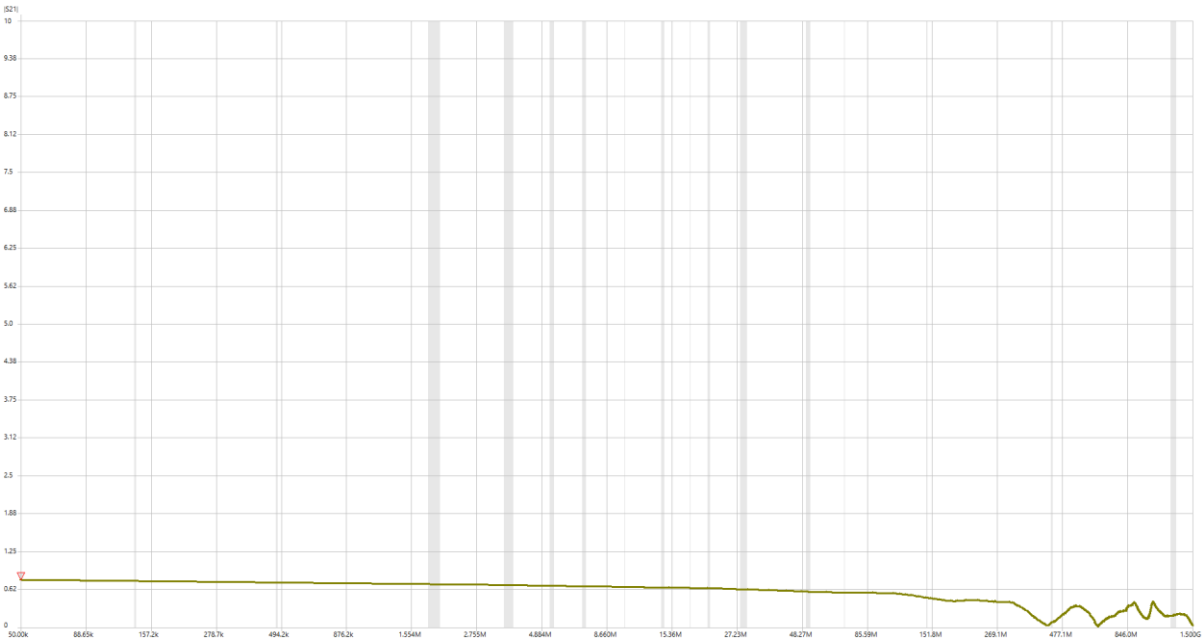


SDR1-TRPlus Dual S21 RX Transceiver to antenna chart:

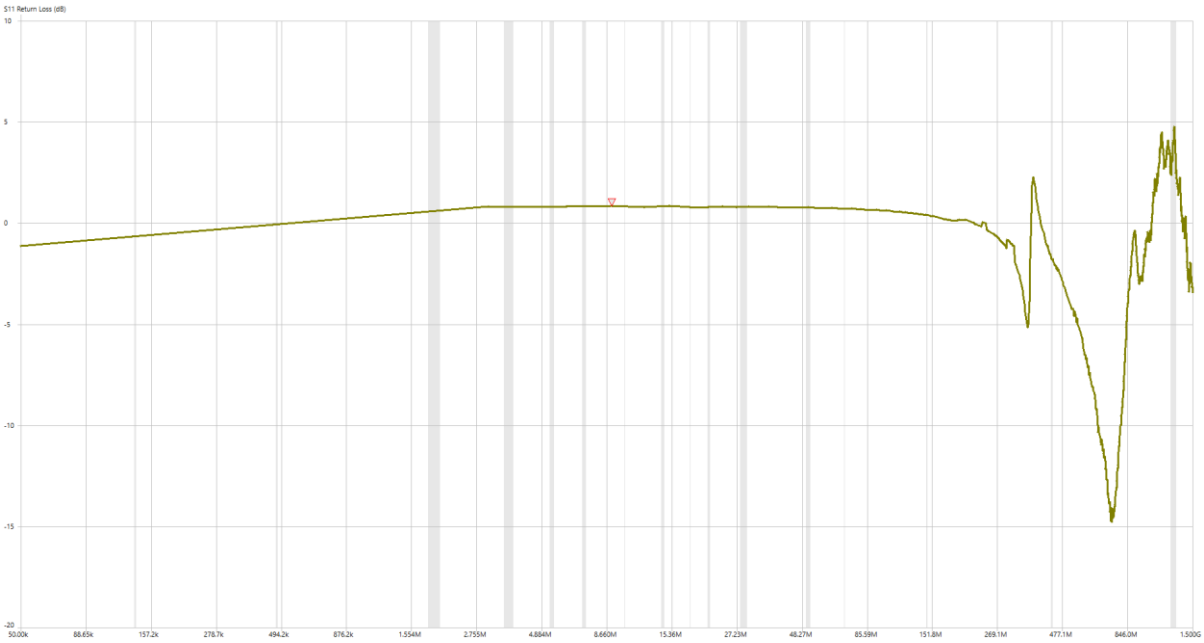
SDR1-TRPlus Dual S21 TX Transceiver to antenna chart:



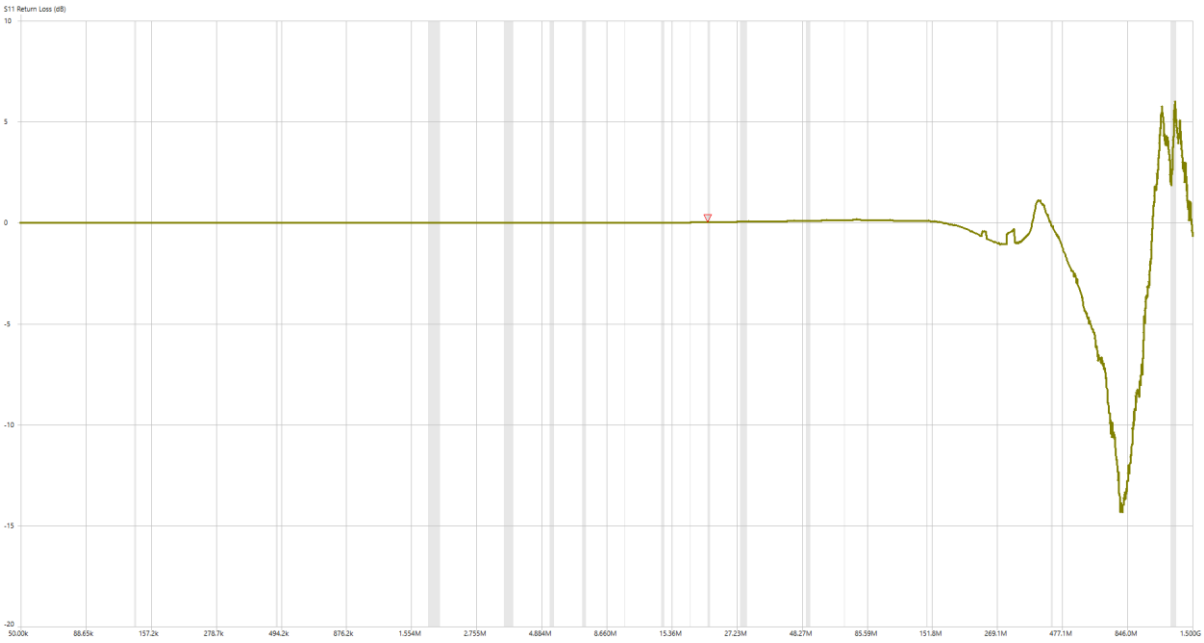
SDR1-TRPlus Dual S21 RX SDR to antenna chart:



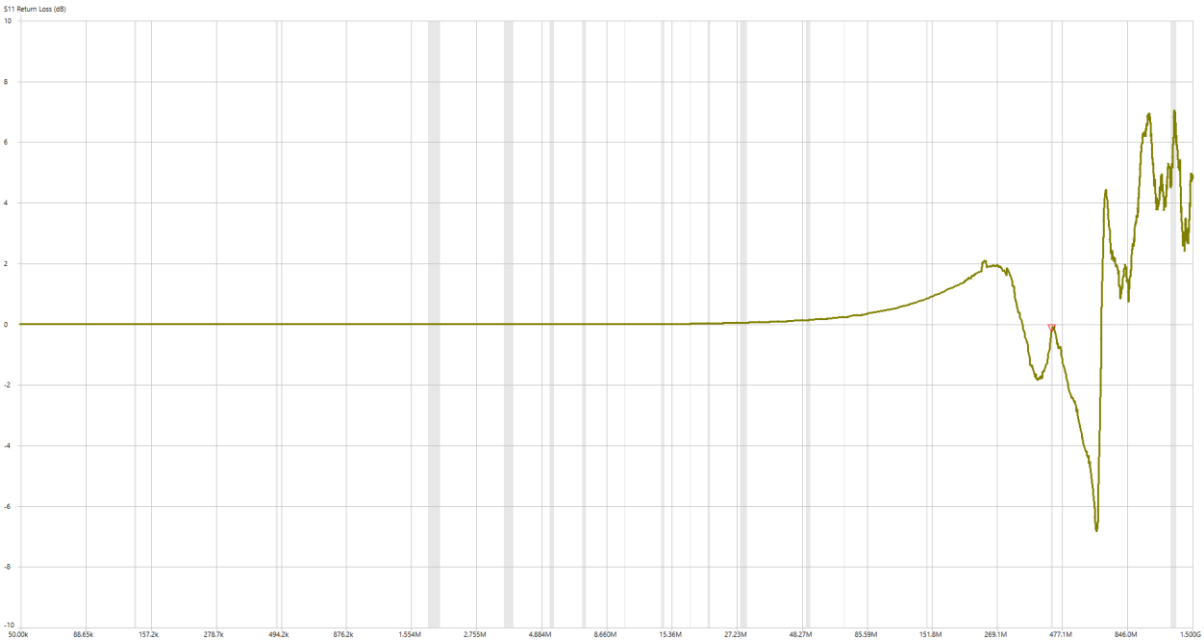
SDR1-TRPlus Dual Return Loss RX Transceiver to antenna chart:



SDR1-TRPlus Dual Return Loss TX Transceiver to antenna chart:

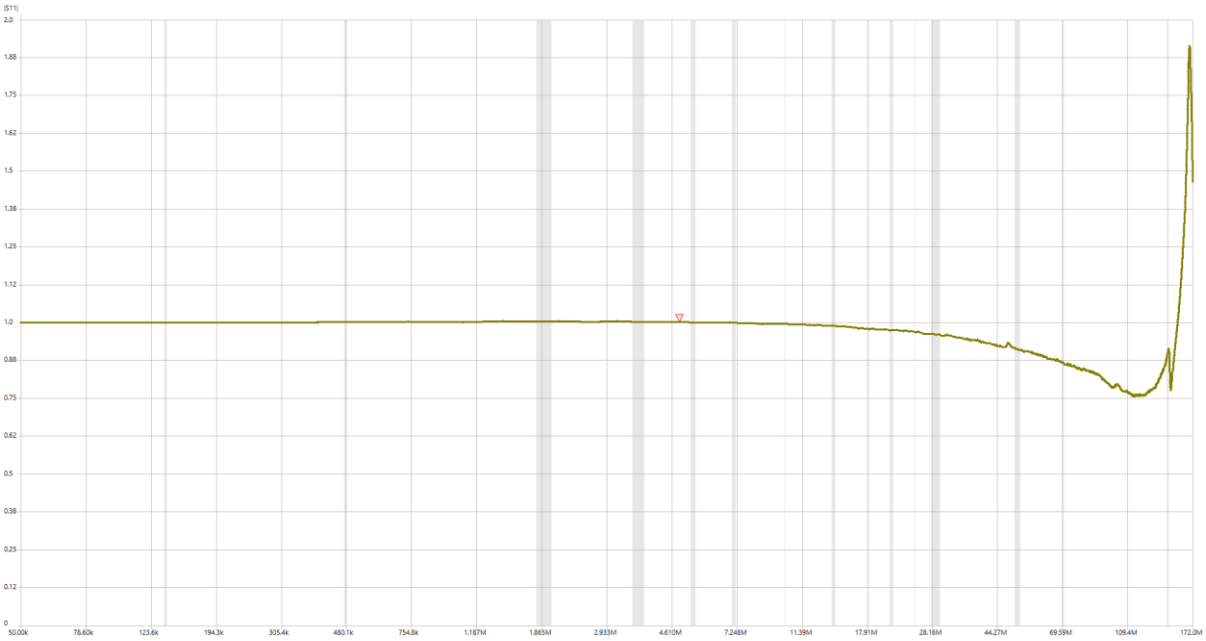


SDR1-TRPlus Dual Return Loss RX SDR to antenna chart:

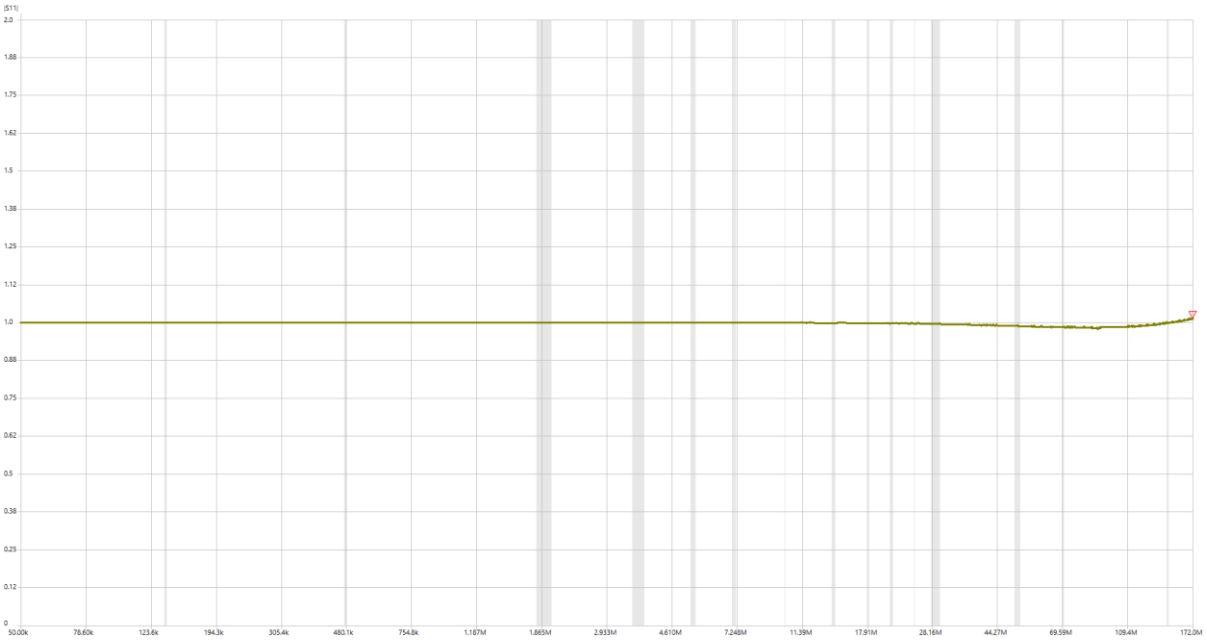


SDR1-TR

S11 RX SDR

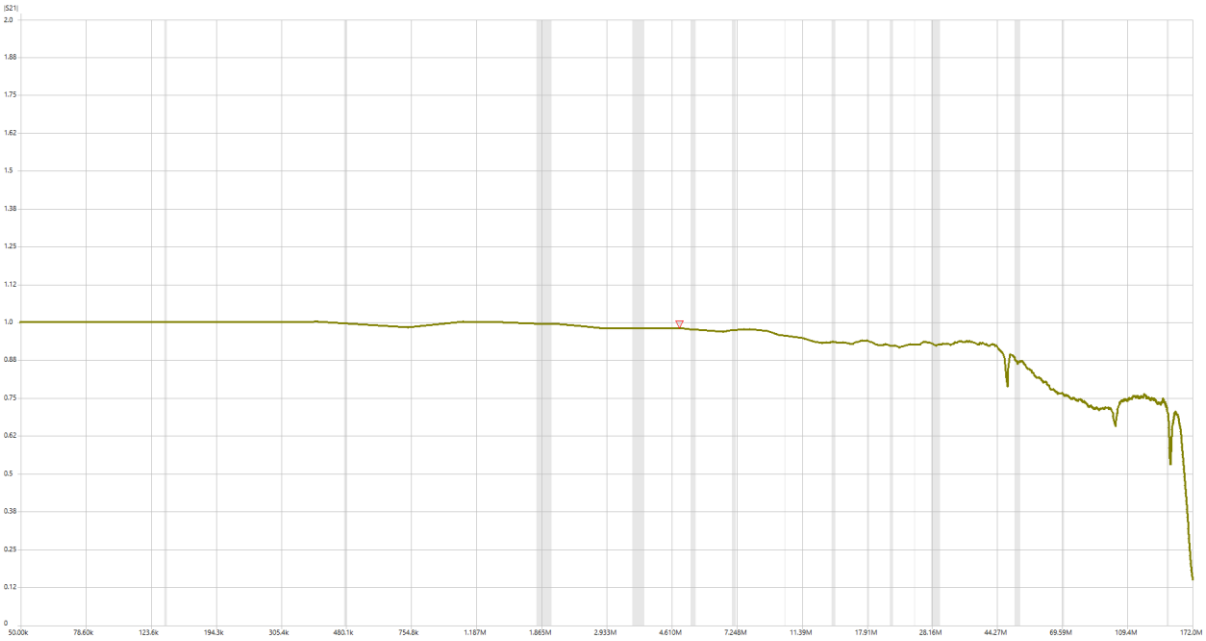


S11 TX

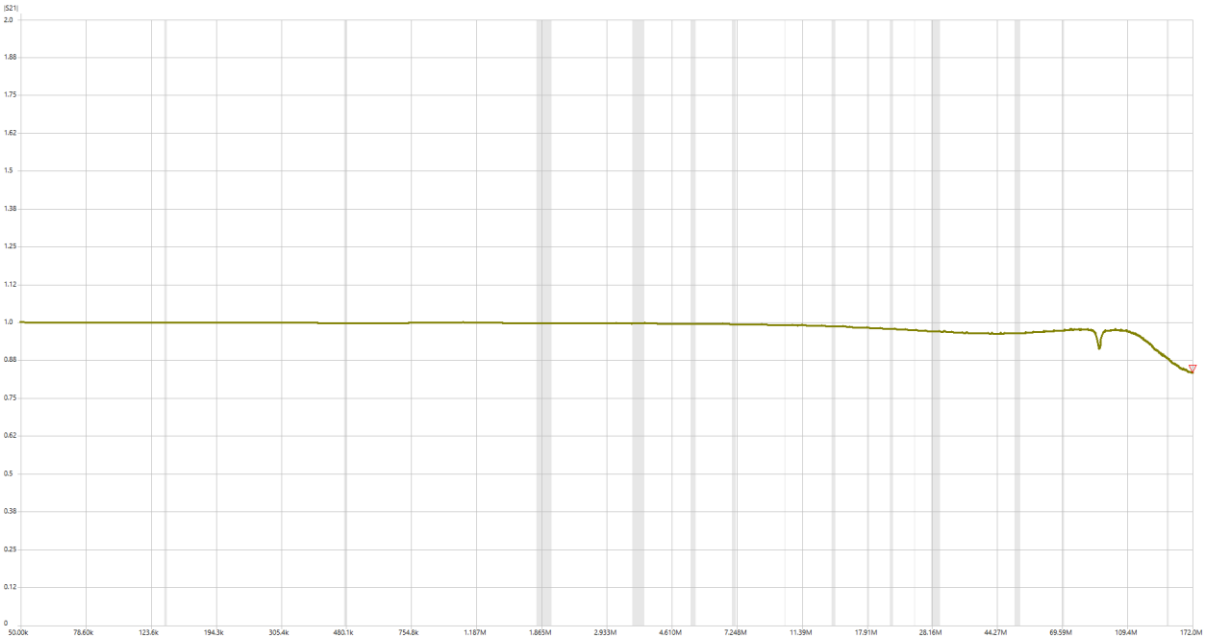


SDR1-TR

S21 RX SDR

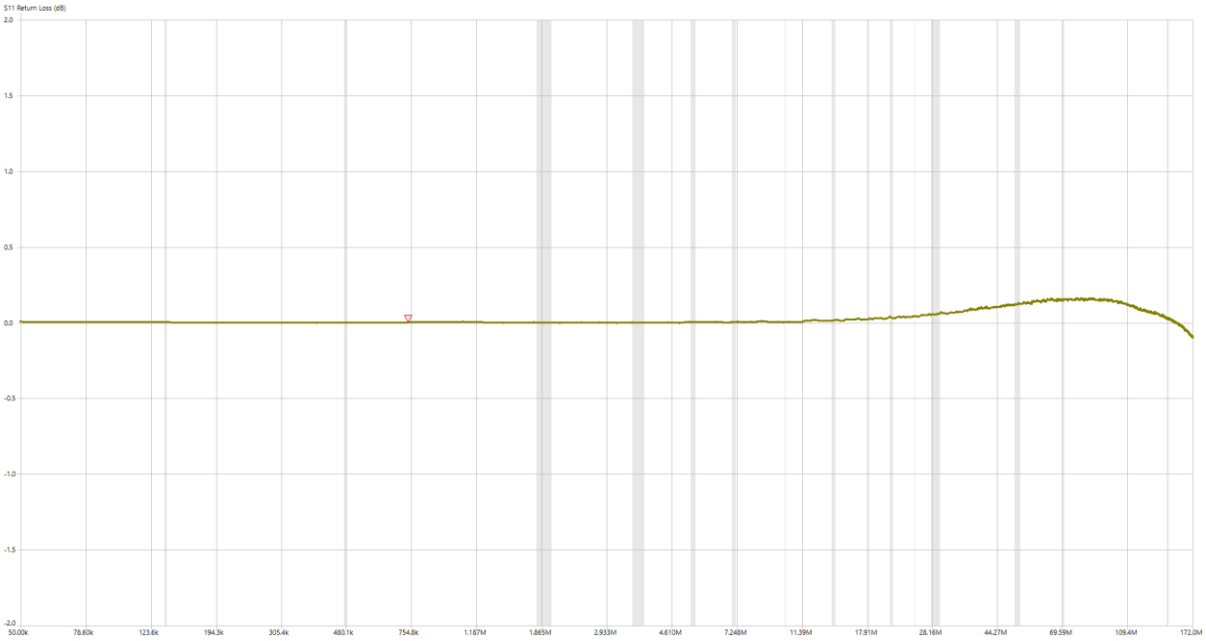


S21 TX

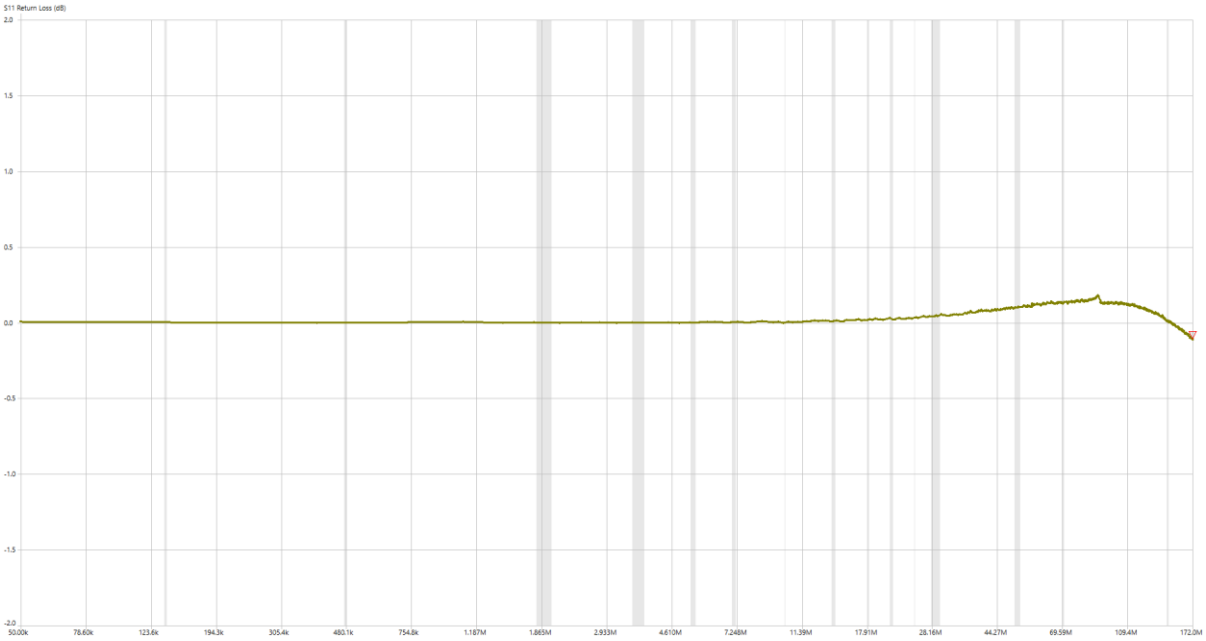


SDR1-TR

Return Loss RX SDR

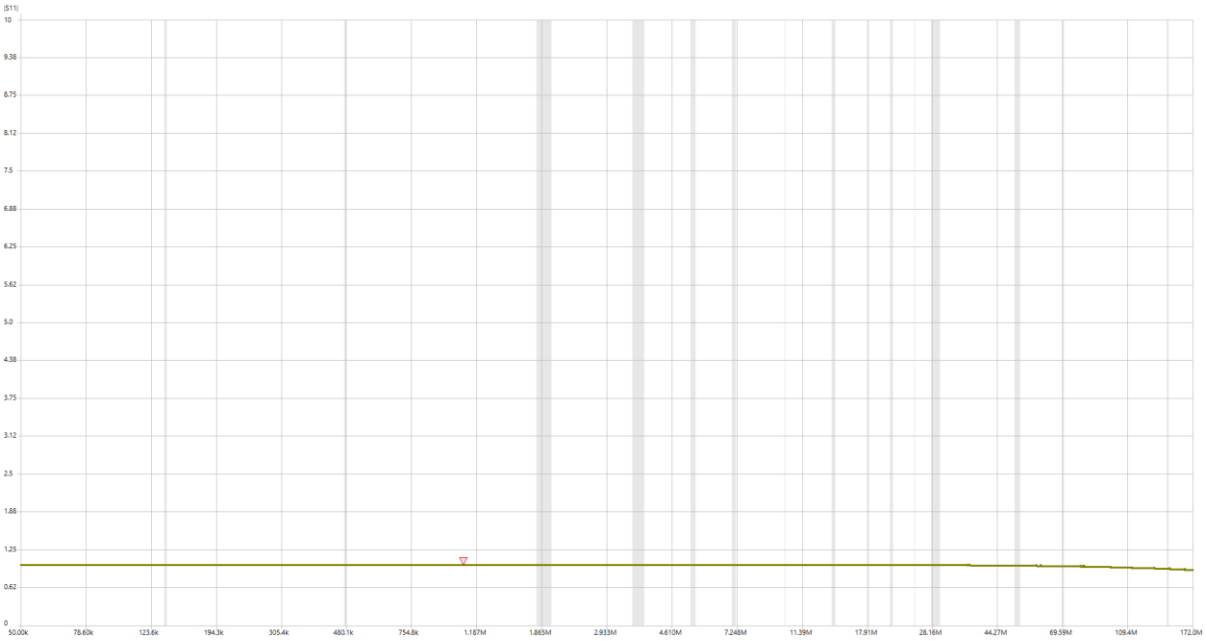


Return Loss TX

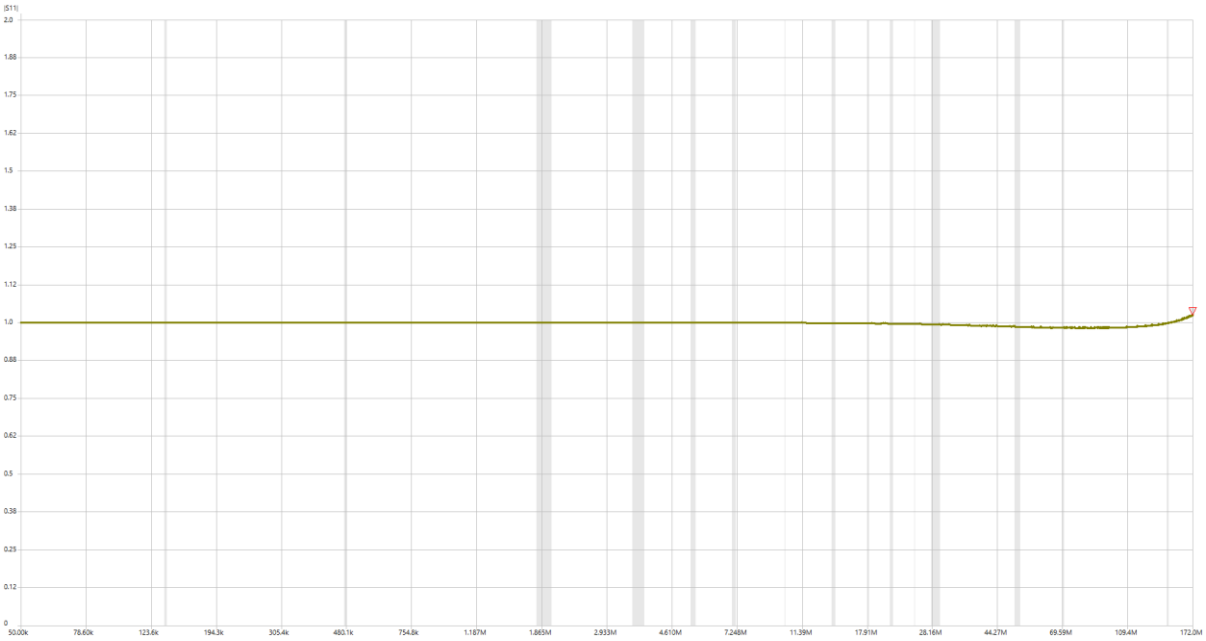


SDR1-TR DUAL

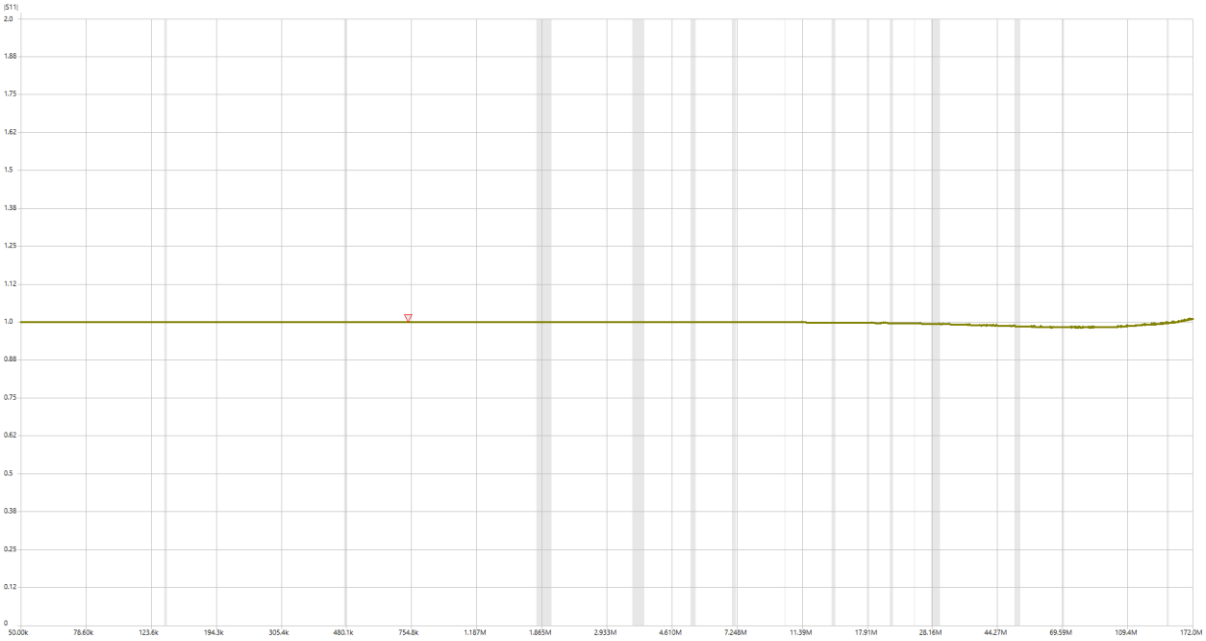
S11 RX SDR



S11 RX TRX

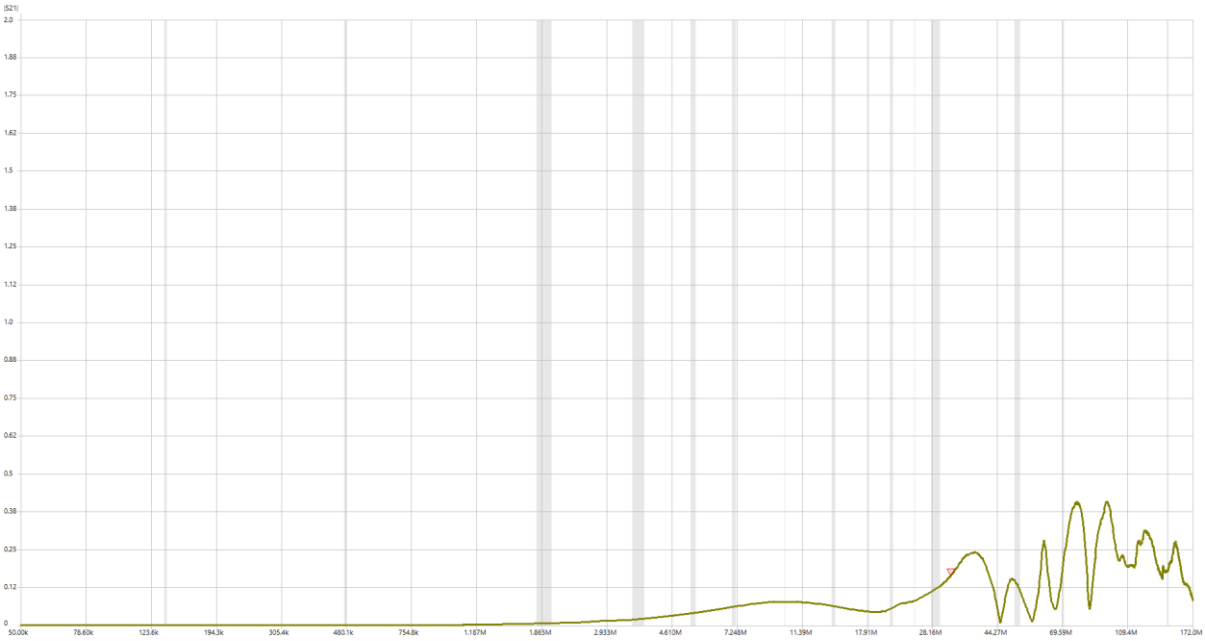


S11 TX TRX

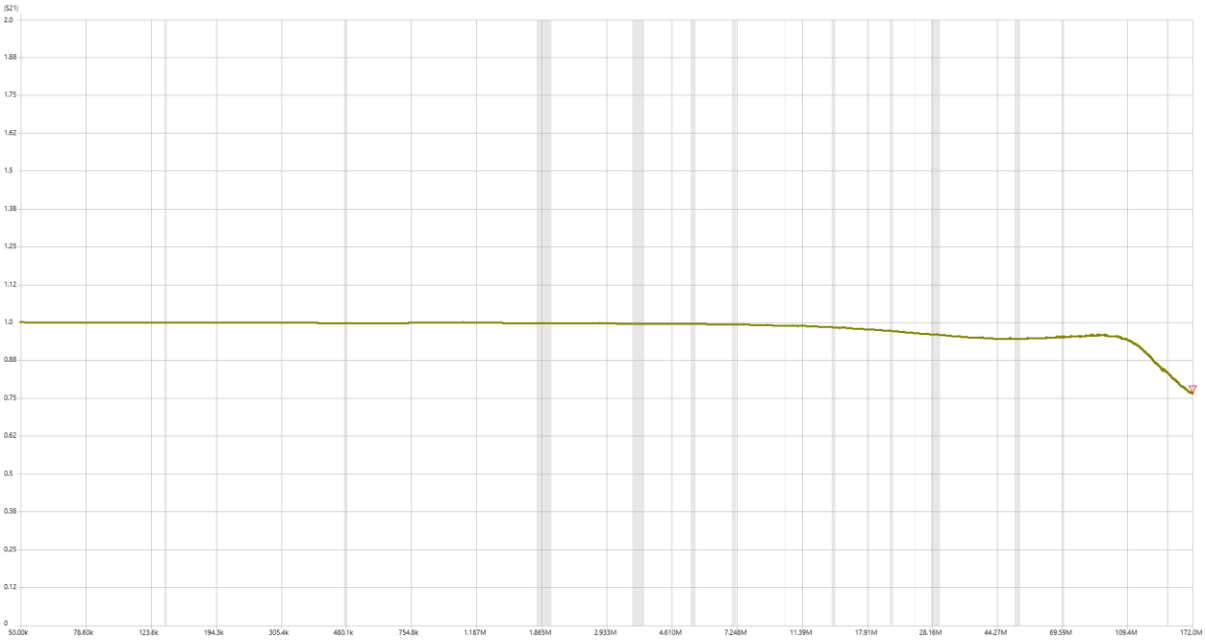

|S11|
2.0
1.88
1.75
1.62
1.5
1.38
1.25
1.12
1.0
0.88
0.75
0.62
0.5
0.38
0.25
0.12
0
50.00k
78.60k
123.6k
194.3k
305.4k
480.1k
754.8k
1.187M
1.865M
2.933M
4.610M
7.248M
11.39M
17.91M
28.16M
44.27M
69.59M
109.4M
172.0M

SDR1-TR DUAL

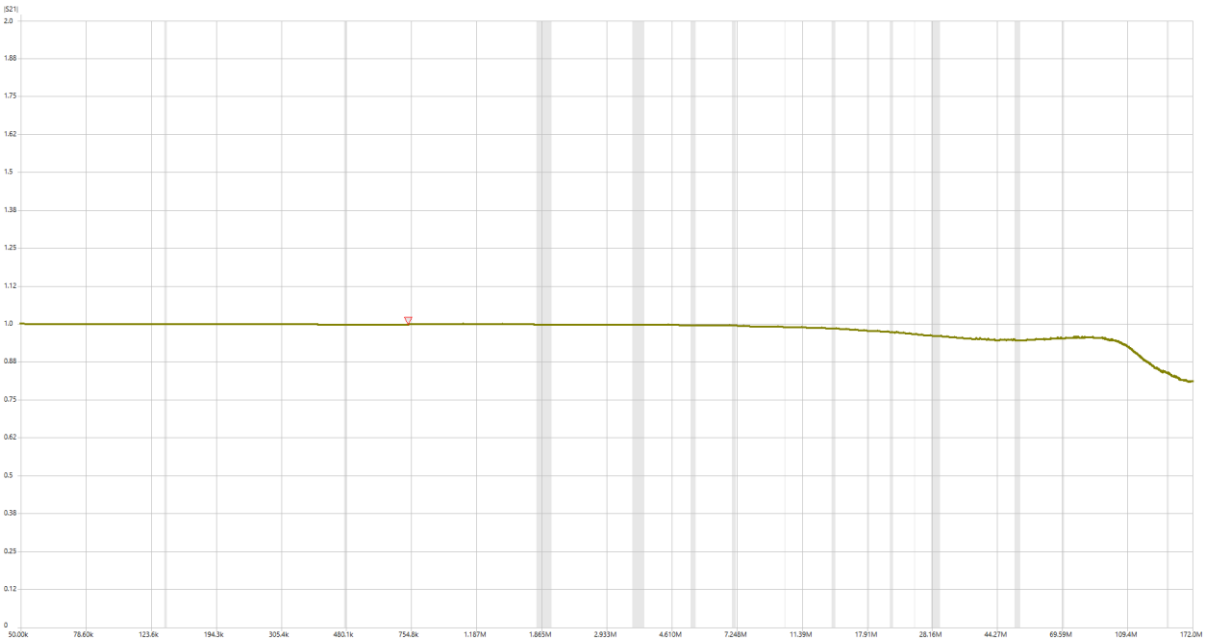
S21 SDR RX



S21 RX



S21 TX


|S21|
2.0
1.88
1.75
1.62
1.5
1.38
1.25
1.12
1.0
0.88
0.75
0.62
0.5
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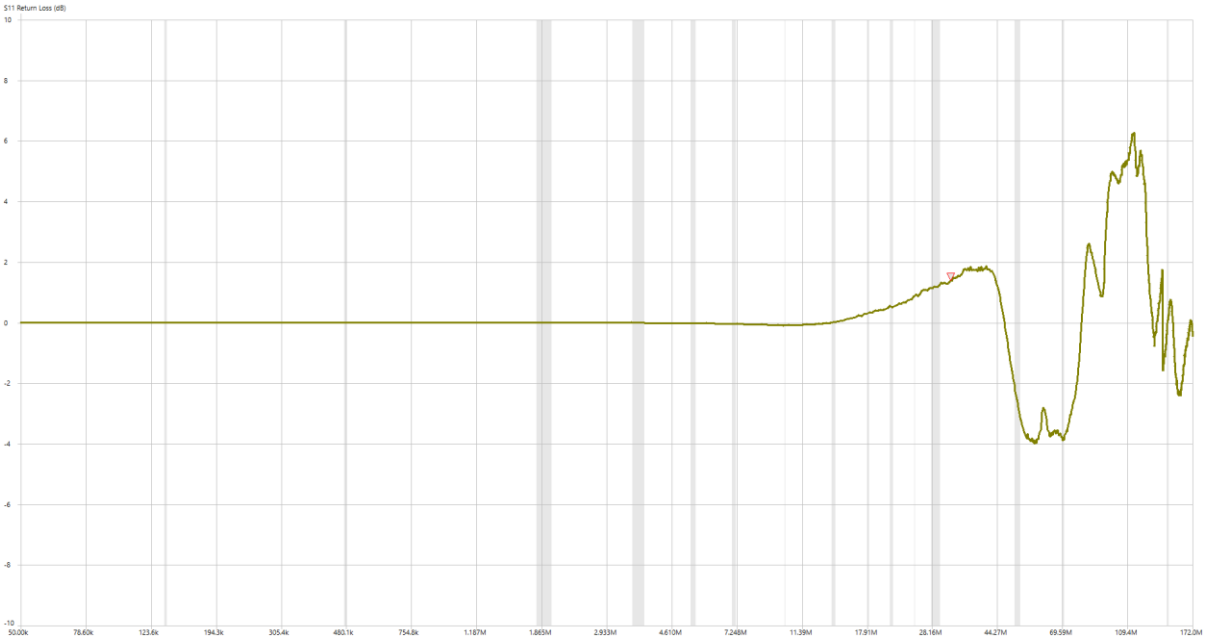
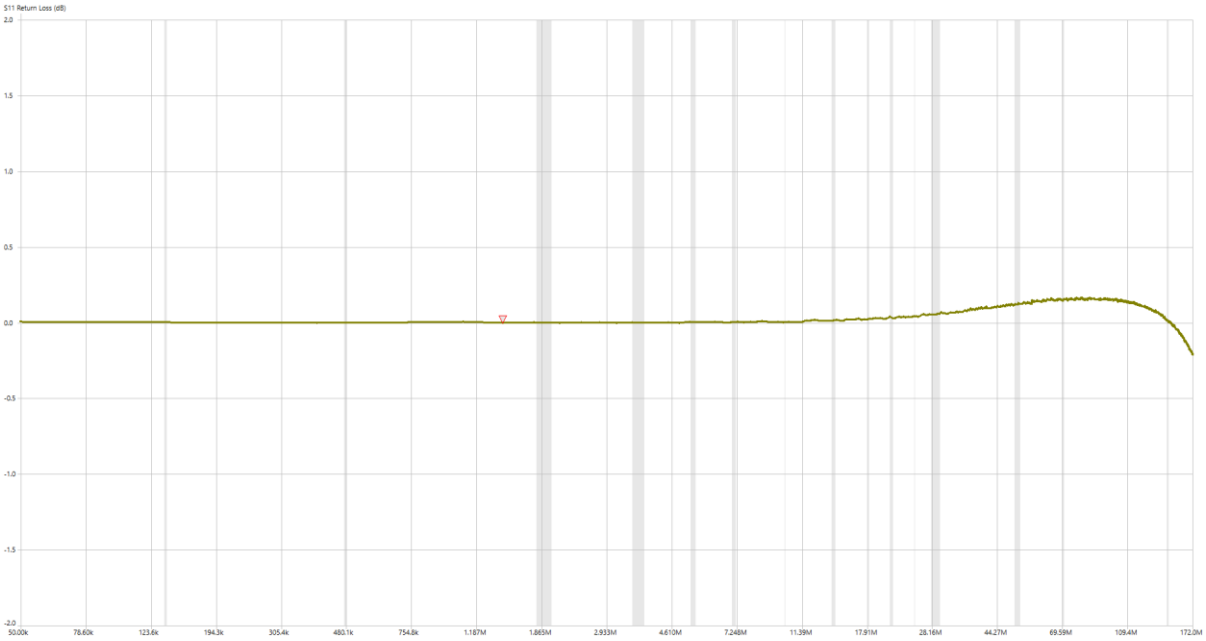
SDR1-TR DUAL

Return Loss SDR RX



Return Loss RX



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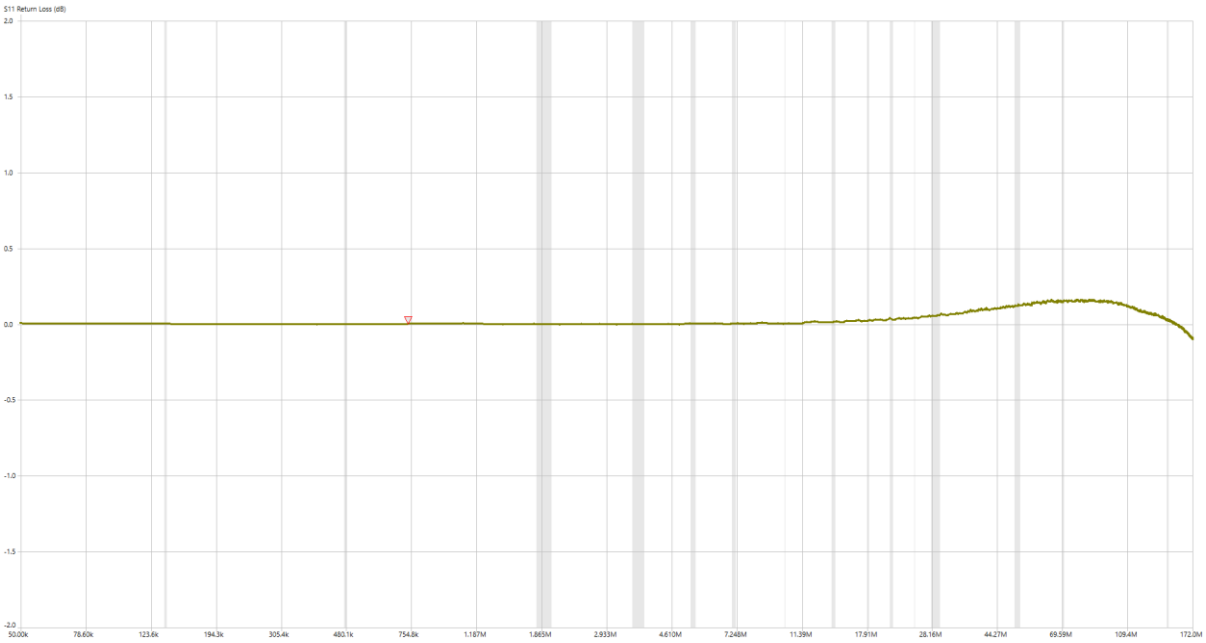
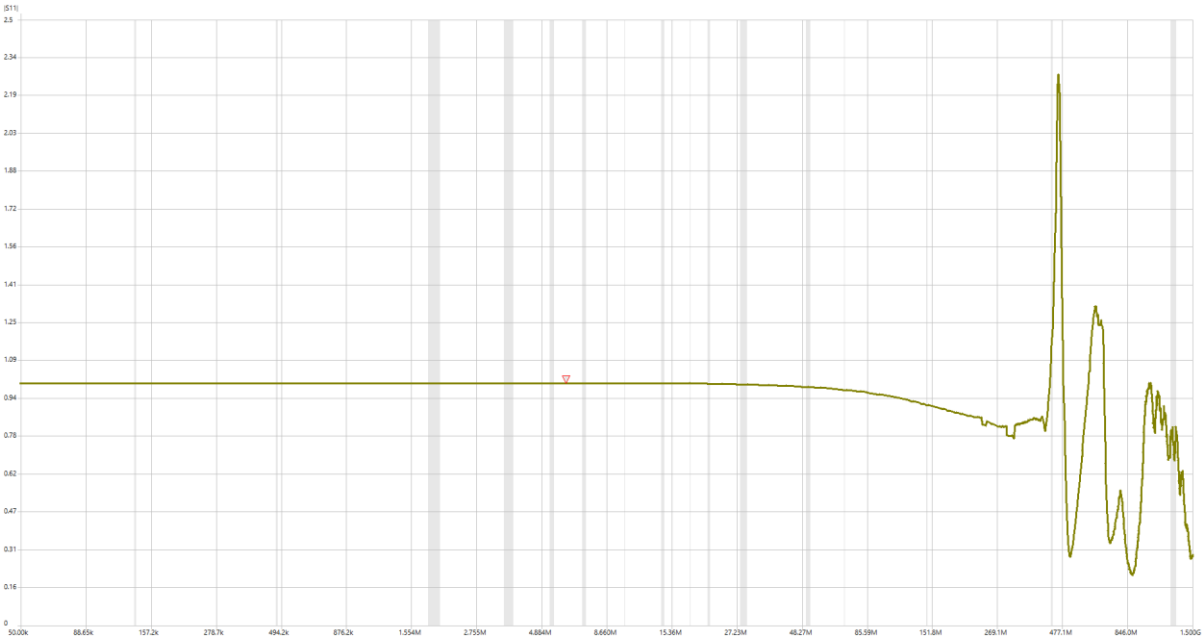
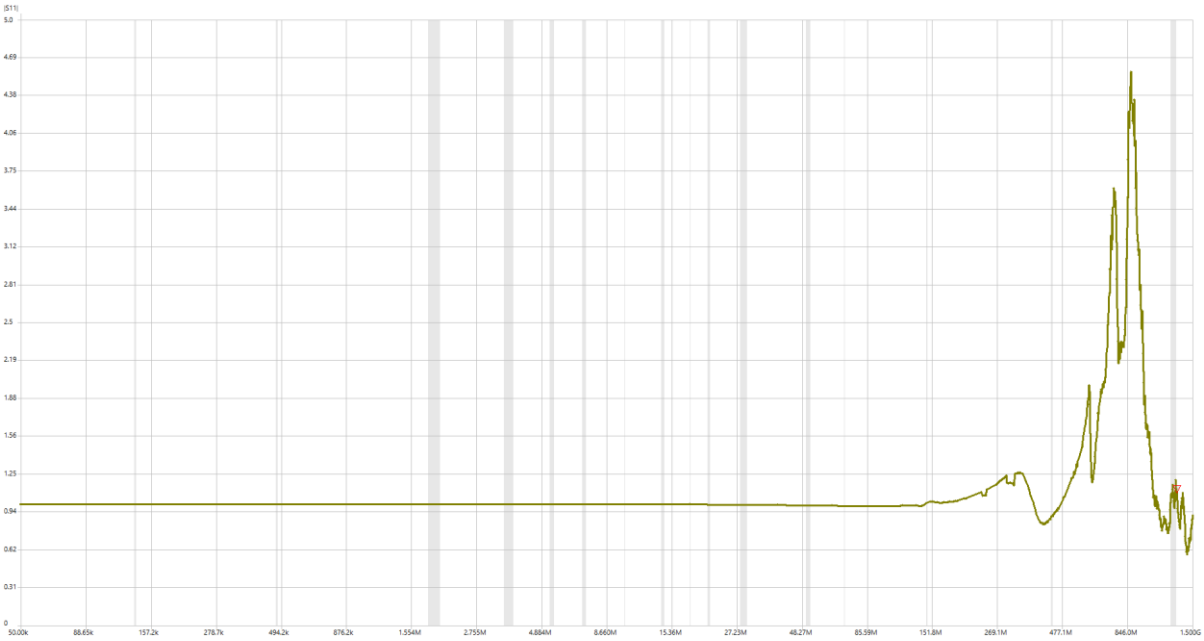


SDr1-TRPlus

S11 SDR RX



S11 TX



SDR1-TRPlus

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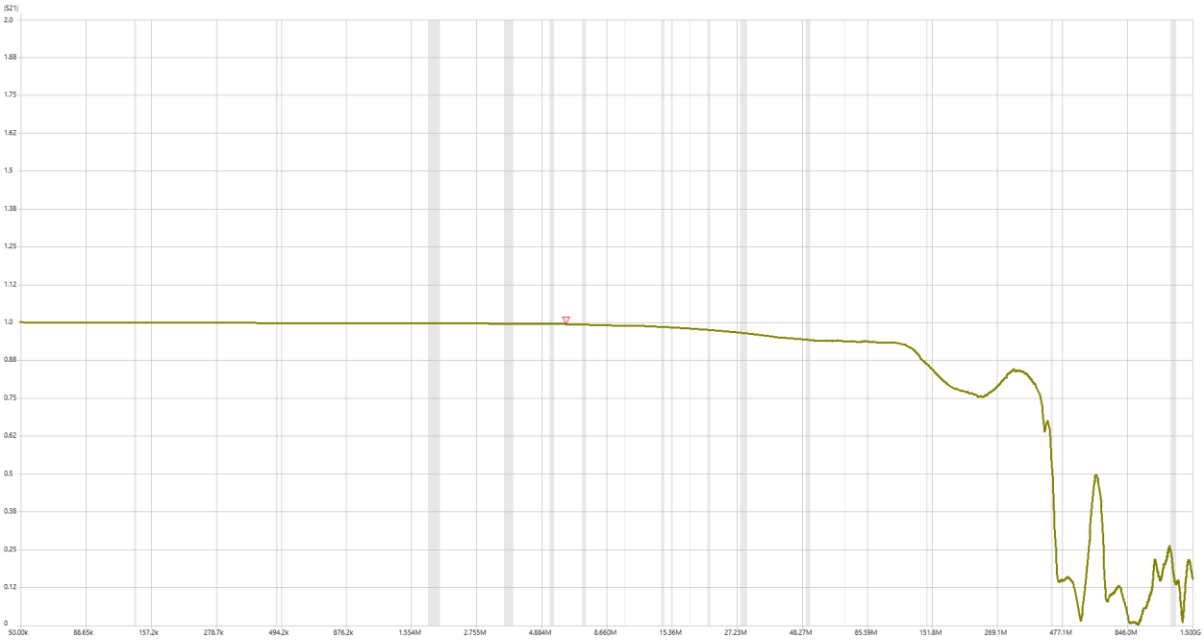

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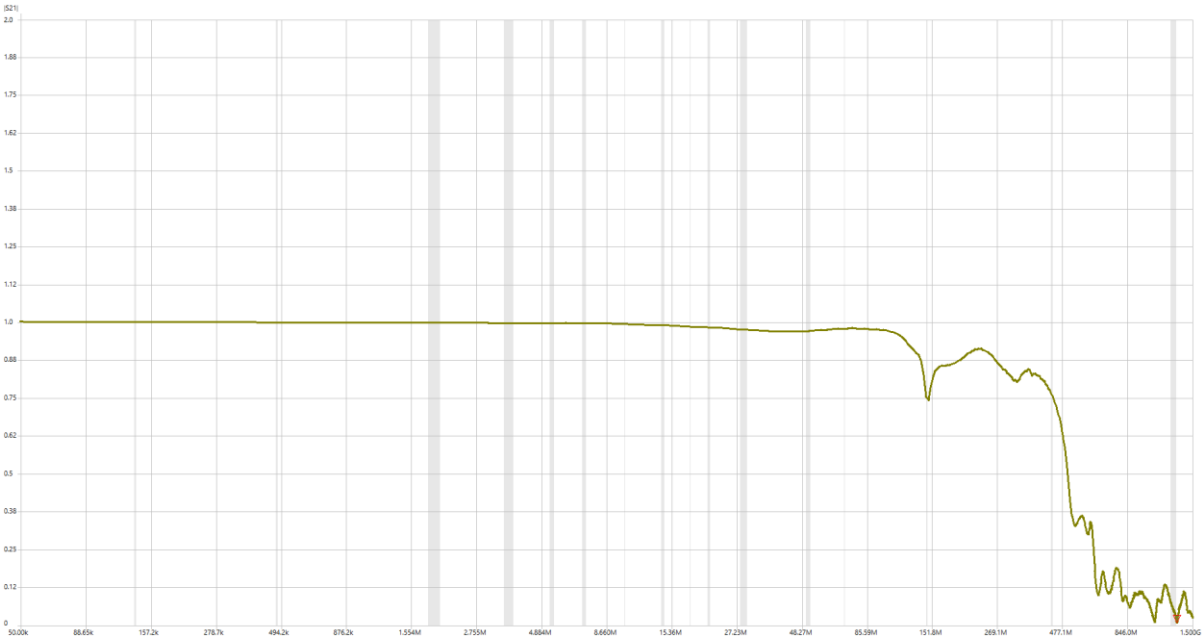
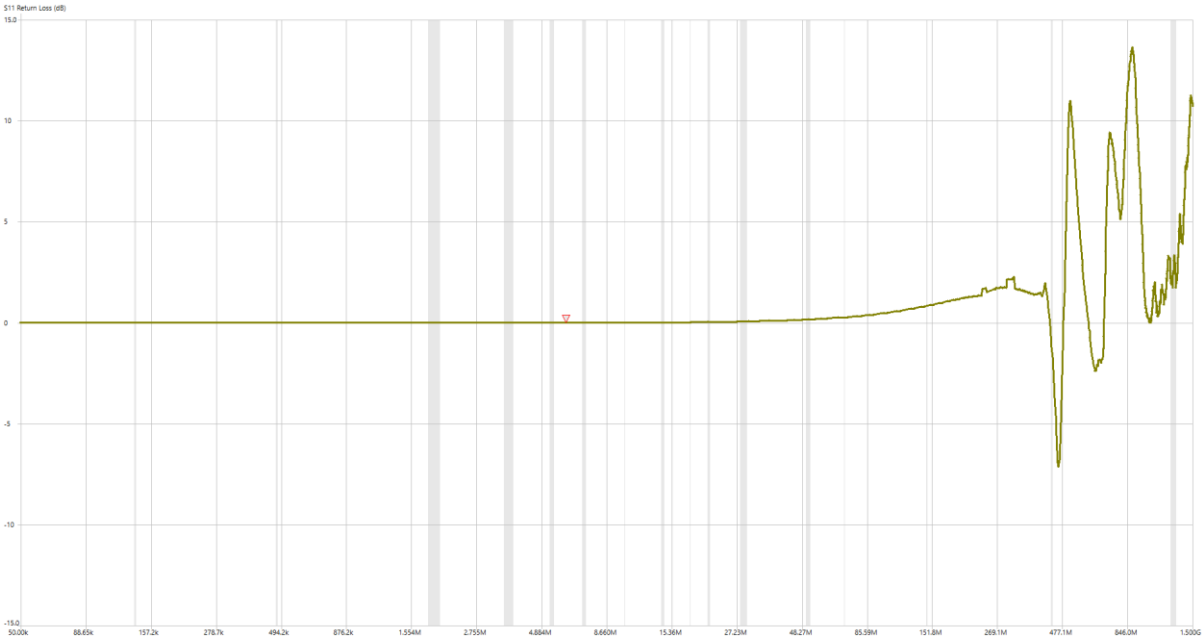


SDR1-TRPlus

Return Loss SDR RX



Return Loss TX