

## Lothar's 1090 MHZ Cable Data

@lothar of the Hill People on discord.

The 3 dB maximum cable loss length is a general recommendation ONLY for RTL SDRs that have a Sky7510 amplifier and Taisaw 3 dB loss SAW filter before the Sky7510.

Beware: Some SDR's have the amp in front of the 1090 filter. This does provide a better noise figure overall, but this topology is NOT recommended for installations in high RF fields.

You have to balance the cost of other more exotic SDRs and LNA combinations for really long cable runs versus keeping it the lowest possible installation costs.

You can run longer cabling by using a lower loss 1090 filter, and still keep the same loss before the SDR amplifier. Example: a cavity filter has a maximum of 0.9 dB loss while the best SAW filters are 3 dB loss.

This means that you can accept 5 dB of cable loss if you use a cavity filter and an unfiltered amplified SDR like the Airframes.io "Orange stick" RTL SDR.

This also means that if you stick to 3 dB cable loss and use a cavity filter, you get more sensitivity and better ADS-B decodes at lower signal levels, and a better system noise figure.

This is general guidance only. High RF field environments must consider other factors.

Important: make sure whatever cable you decide to use has structural return loss data available to above 1000 MHz. Garden variety CATV cables are rated to 1 GHz. Satellite rated RG cables are SRL rated to at least 1.5 GHz. The best are rated to 3 GHz.

Maker / Country	Type	3dB loss footage	Notes
Times Microwave Systems (US)	LMR-240	32'	
	LMR-400	62'	
	LMR-600	96'	
HDG Telecom (CN))	KMR-240	28'	1,2,4
	KMR-300	30'	1,2,4
	KMR-400	92'	1,2,4
	KMR-500	94'	1,2,4
	KMR-600	96'	1,2,4
Belden (US)	(RG-8) 9914	65	1
	(RG-6) 1694A	44'	1,3
	(RG-6) 7916A	42'	1,3
CommScope (US)	(RG-11) 2287V	55'	1,3
	(RG-6) 2227V	38'	1,3

### Notes

- 1 - Linear Interpolated from known manufacturers data frequency points.
- 2 - Includes corrections found from real tests. KMR is NOT equal to LMR.
- 3 - Includes 0.14 additional loss for 75 ohm mismatch.
- 4 - Metric data converted to imperial