

New ALA100 special designed broadband loop antenna tested in Ängelholm

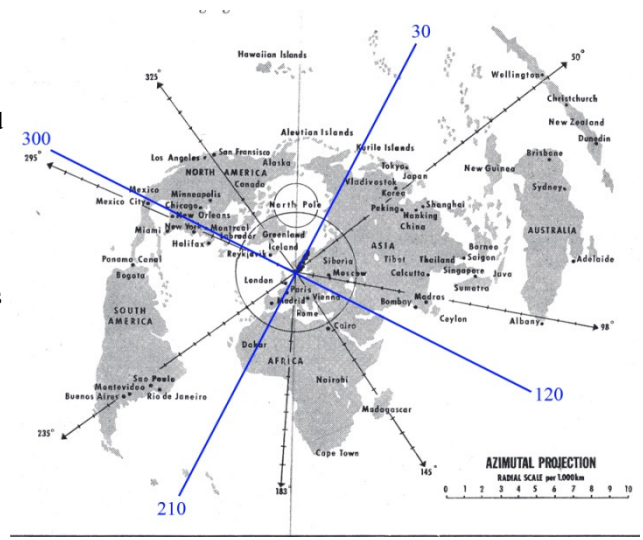
Once again Anders Hultqvist and his ALA100 and lots of excellent loggings have inspired me to erect a new antenna based on the ALA100 design.

So, some weeks ago I decided to put up a temporary design and knocked down two wooden poles and put up a wire in a rectangle, 10 m long by 4 m high. I have not yet connected any Wellbrook amplifier, only the 16:1 balun for the time being.

My ALA100 special version (= broadband loop) is oriented in 120/300° and located in right angle to my flag-antenna which is in 210/30°. The coaxial cable length to Perseus is about 10 m.

According to Wellbrook's website the original ALA100 is recommended to have a circumference of 8 – 18 m and equipped with an interface and a balanced high gain amplifier.

The Flag-antenna is also rectangular, 13 m long by 4 m high. This antenna is reversible with the help of two 4-pole relays. The coaxial cable length to Perseus is about 30 m.



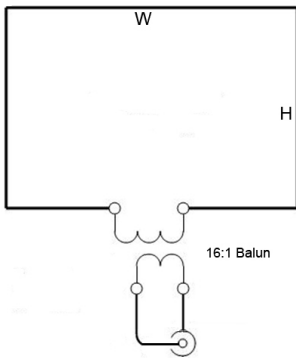
On both antennas the lowest horizontal wire is placed about 0,5 m above the ground.

The ALA100 special version (= broadband loop) has about 5-10 dB more gain than the Flag-antenna at MW, perhaps this is due to shorter coaxial lead in.

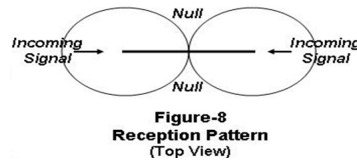
As said above the antennas were erected just as a temporary test. Therefore no amplifiers were connected. The signal strength was sufficient for my needs, but connecting the Wellbrook interface and amplifiers will make the antennas top notch performers. During weak signal conditions you need their additional gain.

Wellbrook offers complete sets for ALA100 with amplifier, interface and power supply. See <http://www.wellbrook.uk.com/pdf/ALA100B1.pdf>

Wellbrook also offers a Flag, Kaz Antenna Amplifier, FLG100, see <http://www.wellbrook.uk.com/pdf/FLG100A.pdf>

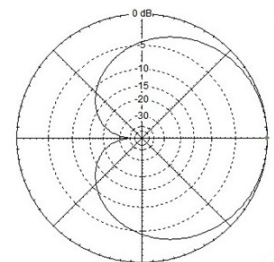
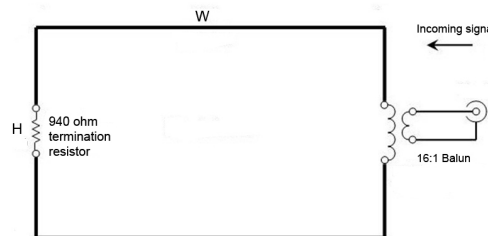


The ALA100 broadband loop is a bi-directional antenna and has an elliptical reception pattern.



The Flag-antenna has a cardioid (heart shaped) reception pattern with an attenuated back lobe with the help of a resistor in the opposite vertical side of the balun.

Recommended width of the flag antenna is 2,1 -2,5 times larger than the height to get best front to back performance.



The baluns for both antennas are wound on the same type of toroids and with the same number of turns. FT114-43 toroids are recommended.

The interesting question is – is there a difference between the antennas?

When checking the noise levels both antennas the Flag is 5 -10 dB weaker than the ALA100 up to 7 mHz. As higher up in frequencies you tune the stronger the signals from ALA100 in relation to the Flag antenna.

The ALA100 pointing towards southern NA (300°) produces 5-10 dB stronger signals on MW than the Flag in 30°. Particularly this has been noticed on the X-band where a number of weak NA stations could be heard and identified. These stations were too weak on the Flag antenna.

On SW towards Asia you might think that the ALA100 broadband loop should equal the flag antenna. But there is a difference, it seems that the Flag is less sensitive for noise and for instance the Indonesians and Papua on 90 and 75 mb are more readable on the Flag. It might depend on ALA100 picking up signals also from the opposite direction.

It is amazing how well those small antennas perform regarding reception for us who have no space for long beverages. The past week a number of NA stations not only from the east Coast have been heard with good reception.

Here is a preliminary table for some different frequencies:

	ALA100	Flag	
590 VOXM	S7	S5	
1390 WEGP	S5	S4	
1470 CJVB	S6	S4,5	
1520 WWKB	S6	S5	Less splatter on Flag
1700 KVNS	S4	-	Only a carrier on Flag
5005 Bata	S7	S7	
5025 Cuba	S9	S8	
3320 Sydafrika	S5	S6	
4985 Brasil Central	S5	S6	

The difference seems small but in reality is big enough to get an ID in difficult situations.

Further tests have been made on both MW and SW. The lower you get in frequency the more directionality from the antenna. On the 60 mb the difference between the Flag in 310° (SA) and ALA100 in 120° (W India) is of course noticeable but not that big.

On MW the difference is big between Flag in 30° (N Japan) and ALA100 in 120° (W India). See table below for 1386, 1377 and 1575 where the Asian stations only can be received on the Flag in 30°.

You can also notice a slight difference in fading behavior.

The following frequencies were checked Oct 23 at 1345-1420 UTC.

Frequency	Time UTC	Station	ALA100	Flag 30°	Flag 210°
2325	2020	Darwin	-105	-100 (good S/N)	No sign
3275	2020	Papua	-105 (mostly noise)	-105 (good S/N)	No sign
3320	1605	Pyongyang	-110 (noise)	-105 (good S/N)	No audio
3325	1600	RRI Palangkaraya	-105 (noise)	-107 (good S/N)	No audio
3945	1320	Indien	-110	-105	Very weak
3976	1320	RRI Pontianak	-110	-115	No sign
3985	1345	Korea	-100	-105 (good S/N)	-105
3995	1350	RRI Kendari	-110	-105	No sign
4750	1355	Lhasa	-100	-105	
5010	1357	Indien	-110	-105	
603	0935	Romania, BBC	-105 (both equal)	-110 (only Romania)	-105 (BBC + France equal, Romania weak)
630	0925	Noway, Germany	-90 (Norway, Germany weak)	-90 (only Norway)	-85 (only Germany)
990	0925	Germany	-95	-100	-80
1368	1400	Manx, Lincoln	-93 (Manx, Lincoln equal)	-105 (Manx very weak)	-90 (Manx strongest)
1368	1420	Iran, Manx	-85 (Manx, Iran weak)	-95 (only Iran)	-80 (only Manx)
1377	1425	Yunost, Lille	-85 Yunost, Lille weak)	-90 (only China)	-70 (Lille)
1377	0920	Lille	-80	-95	-65
1386	1430	China	-110 (several stations)	-105 (only China)	-100 (only Bascia)
1566	1605	AIR Nagpur	-85 (England quite strong below)	-85 (only Nagpur)	-80 (Country Sound, Bristol, Nagpur very weak)
1575	1420	VOA Thailand	-100 (other station below)	-100 (only VOA)	-85 (only Italy)