

Bridge Effect

By: Igor Grigorov, va3znw

Every day when I drive my car to and from my job I drive under bridges and arches. **Figure 1** shows a bridge. **Figure 2** shows an arch. Inside my car I usually listen to radio. My favorite radio is 680 News Radio. The radio station works on 680- kHz. This radio transmits useful news for me. It's the weather, what is and what will be news in Toronto and the World, as well as local traffic, which road is open, what the road is closed due to an accident construction. Knowledge of the traffic saves me a lot of time.



Figure 1 Bridge



Figure 2 Arch

I noticed that volume of the 680-News usually is changed when I drove under a bridge or under an arch.

ARCH

As usual the level of volume is drop down when I drive under an arch. There are some arches (very small quantity) that do not affect to receiving. **Figure 3** shows area of decreasing reception under the arch. Arch does decreasing of reception for any station at MW Band. Arch does not affect to station at FM-Band.

The arch has stable behavior in influence to the MW station. If an arch does decreasing in reception so the arch always does the decreasing. The effect exists in summer, in winter, in rain, in snow, in traffic and on empty road.

If an arch does not influenced to radio reception the arch always does not influenced to this one. It is right for summer, for winter, for rain, for snow, for traffic and for empty road.

ANTENTOP	<p>FREE e- magazine edited by hams for hams Devoted to <i>Antennas</i> and <i>Amateur Radio</i> www.antentop.org</p>
-----------------	--

www.antentop.org

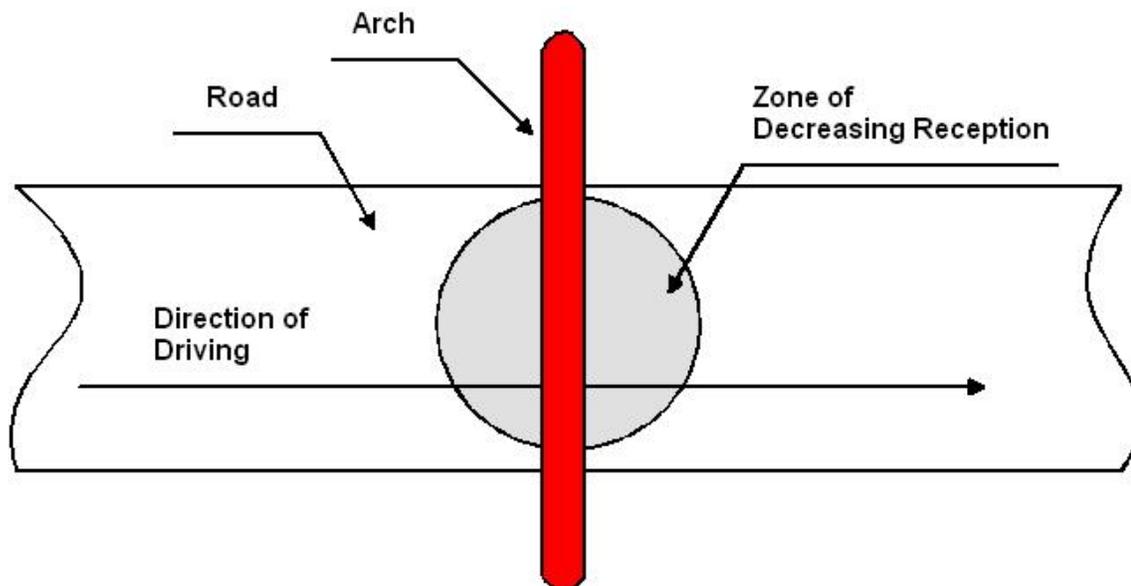


Figure 3 Area of decreasing reception under the Arch

Generally speaking it is possible to find explanation for the “arch effect.”

It could be assumed that the arch is a closed loop, which in its zone of influence produces local shielding, or shift in direction of propagation of radio waves. Both of this effect could result to decreasing in receiving of the MW radio. Automatic Gain Control cannot stand the fast decreasing of the signal level.

The arch, which does not affect the reception of MW signals, is not a closed loop which can screen or modify locally direction of propagation of radio waves in MW Band.

BRIDGE

The bridge influences to radio reception in MW Band in more complicated way compare to the arch. It is possible describe three typical cases and four untypical ones. Bridge does not affect to station at FM-Band.

Three typical cases of the bridge behavior

First typical case is shown in **Figure 4**. It is the most typical case in influence of the bridge to radio in MW Band. Level of volume is drop down when car is driving under the bridge and after the car driving up to 20- 50- meters out of the bridge. Then the volume goes back to usual level.

Second typical case is shown in **Figure 5**. Level of volume is drop down when car is driving strictly under the bridge. When car is driven out of the bridge the volume goes back to usual level.

Third typical case (but rare compare to the first two cases) is shown in **Figure 6**. Level of volume is drop down when car exits out of the bridge.

That is interesting that picture of attenuation of the radio reception lay in the direction of the driving. If a car would drive under the same bridge in the opposite direction the picture (**Figure 4, 5, 6**) would be the same. In my opinion the picture of attenuation of MW reception may be explained by various degrees of shielding of the MW radio by bridge and inertia in the receiver’s AGC. .

Behavior of bridges (to influence to MW radio) is unstable. It is oddly enough but any bridge may behave differently. One day, its behavior is consistent with **Figure 4**, in another day its behavior is consistent with **Figure 5**, and the next day its behavior is consistent with **Figure 6**.

Four untypical cases of the bridge behavior

First untypical case of the bridge behavior is that the bridge has no effect on the reception in MW Band. For the **Second, Third** and **Fourth** untypical case I take inversion in the influence to the MW reception. It means that instead of decreasing in level of volume of MW reception there are increasing in level of volume of MW reception.

Picture of the increasing is the same as for picture of the decreasing of MW reception. So it is the same as shown on **Figures 4, 5, 6**. Only the volume is increased instead decreasing as shown at the **Figures**.

What it depends on?

I tried to find factors that cause the typical and untypical cases in bridge behavior. I took in consideration seasons, weather, traffic, Moon cycles- but I could not.

At the same time of year, at the practically the same weather and traffic, today bridge did decreasing in volume of the MW radio, next day the bridge did increasing in the volume, and the next day did no influence to the reception.

I noticed that the same effect is usually observed for 3-5 bridges in one direction. So, if one bridge did decreasing in reception so as the rule the next 3- 5 bridges also did decreasing in reception of MW radio.

If one bridge did increasing in reception so as the rule the next 3- 5 bridges also did increasing in reception of MW radio.

There are some bridges that have stable effect. The bridges always did decreasing in reception of MW radio or did not influence to the reception.

However I newer did not find bridges that stable increased the radio reception in MW Band.

These effects I have observed at all cars that my family had. There were Nissan Sentra, Saab, Chevrolet Malibu. This effect I observed at our recent cars- Chevrolet Aveo and Sonic.

73! va3znw

Bridge Effect

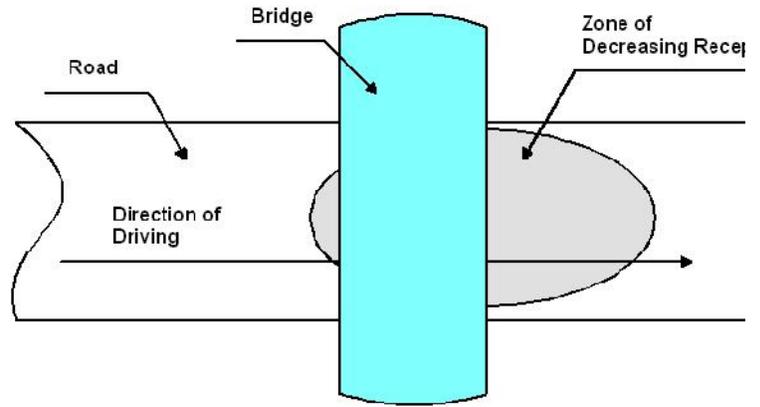


Figure 4 Typical zone of attenuation under the bridge

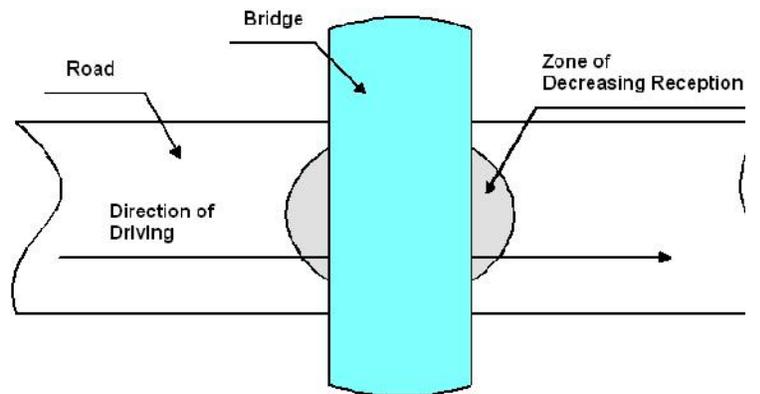


Figure 5 Zone of attenuation strictly under the bridge

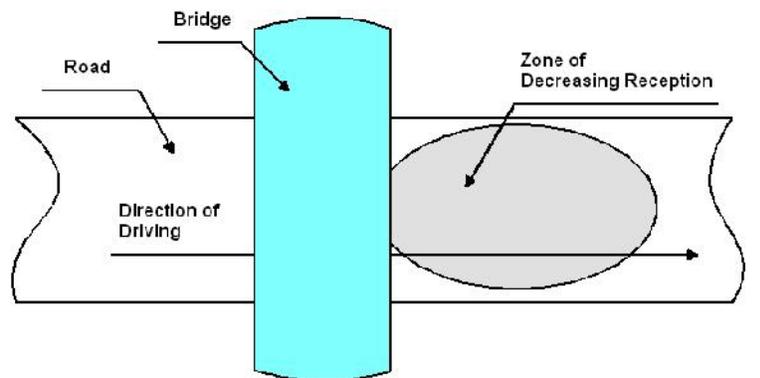


Figure 6 Zone of attenuation at the exit out of the bridge

FREE
Radio Amateurs Books

ANTENTOP

Amateur Library