

# Yaesu System Fusion 101

## by KØHCV

When Yaesu Fusion first became available I was asked a lot of questions about the differences between Fusion and DMR. So I wrote this article to help explain the major differences between the two..

There are a lot of differences between Yaesu System Fusion and Digital Mobile Radio or DMR.

The first question I am usually asked is this similar to the Beta vs. VHS recording format of years ago.

The answer to that is a resounding no. Each of these has unique features to offer the user.

The first thing a ham will notice is the price. You can get single band DMR handhelds for 50 to 100 bucks where the cheapest Fusion handheld is the dual band FT-70DR coming in at around 150 bucks. Note that the cheap DMR handhelds are single band. You have to decide if you want VHF or UHF whereas the Fusion handheld is dual band. There are dual band DMR radios now available but their prices are more in line with the FT-70DR.

Thanks to Chuck and the Backyard Repeater Group linking their VHF and UHF DMR repeaters together, purchasing a single band handheld is not really a problem anymore.

The main thing the average ham needs to understand is that DMR started off being used in a commercial environment. In a commercial environment you don't need to be able to change frequencies or change the squelch settings or change PL codes or program memories etc. Accessing these things are known as Front Panel Programming and commercial radios do not have that feature. The radio comes to the end user with the necessary talk groups and other settings having been programmed by the radio department. The user simply selects the channel they want and start talking. This programming is known as the "code plug" and is what Chuck has

been providing via the BYRG website and the numerous classes he has had. This code plug contains the frequency, talk group, time slot, color code and a few other items unique to that channel. These items cannot be changed on the fly. They have to be pre-programmed into the radio via the code plug.

Yaesu System Fusion is incorporated into a radio designed for use by the amateur radio community. It is a radio just like all the other radios we are used to using. We can enter frequencies and other parameters from the front panel on the fly and save them into memory slots. These memories can then be recalled as needed. There are no talk groups or time slots or code plug to worry about.

Let me be extremely clear at this point. One of these is not better than the other one. They just offer different features. I have DMR radios and Fusion radios.

The differences come in to play when using the radios. DMR uses talk groups to provide channels to talk on. Everyone is familiar with the BYRG talk group. This talk group is accessible from any of the DMR repeaters and linked to all the other DMR repeaters to provide a wide coverage area.

System Fusion is simply a digital mode of communication. Repeater can be linked via what Yaesu calls "Rooms". Here in Kansas City I host the "Kansas City" room on my repeater in Olathe. The other repeaters in town are linked together by their node operators connecting to my Kansas City room via the Wires-X software on their node computers.

Yaesu System Fusion uses "nodes" to link repeaters. A "node" is simply a ham who has volunteered to provide a Fusion capable radio, computer and internet connection at their home. Their radio is programmed for the repeater frequency and hooked to their computer running the Wires-X software. This is all transparent to

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the Fusion user. Anyone using Fusion can talk on any of the four local linked repeaters and be heard on the other three simply by keying their microphone and talking. You do not need to program anything special in your radio. Just select the repeater you want and the digital mode "DN" and start talking.

This is a VERY simplified overview of these modes. There is a LOT more detail involved but the end ham user doesn't need to know this to use and enjoy their radio.

We could spend several hours discussing these modes in detail and explaining their features. But most people just want to get on the air and use them. So pick your poison and enjoy yourself.