

To: FCC License Holders

Subject: ***FCC Mandated Migration to Narrowband Emissions***

This letter is to alert you to an order by the FCC that may affect your radio operation. Contained within this document you will find an explanation of the order, a diagram that will visually explain what is happening, and a list of recommendations.

FCC Order

In order to promote the migration to narrowband (12.5 KHz) technology in the private land mobile radio services, the FCC has ordered the following:

For licensees in the Industrial/Business Radio Pool operating in the 150-170 MHz and 421-512 MHz bands, January 1, 2013 has been established as the deadline for migration to 12.5 KHz technology for *voice* transmissions – or to 4800 bits per second per 6.25 KHz for *data* transmissions if the current bandwidth is greater than 12.5 KHz.

Manufacture or importation of equipment operating on a channel bandwidth up to 25 KHz will be permitted only until January 1, 2011. And applications for new operations using 25 KHz channels will be accepted until January 1, 2011.

Basic Background

For every FCC license, there is an assigned “bandwidth”. Most of our customers are either using 25 KHz or the newer 12.5 bandwidths, although there are others. The FCC wants to promote efficient use of available spectrum; and, basically when 12.5 KHz spacing is used, two radio channels can be used in the same spectrum that previously held one channel.

You can see why the FCC would be desirous of moving everyone currently at 25 KHz spacing to 12.5 KHz. It frees up spectrum for use by the ever increasing number of radio communication users by compressing the bandwidths. In fact, the FCC is already planning another mandate to 6.25 KHz spacing for the future.

The attached diagram demonstrates the spectrum as further explanation of bandwidth.

So What?

You may ask why you should care about this. You may say, “so what?” A few of those answers are as follows:

- You may be utilizing 25 KHz bandwidth right now. If your license has not been modified to 12.5 KHz by the deadline of 1-1-2013, you will be fined by the FCC. Typically FCC fines are significant. More importantly, the FCC can and has in the past demanded that radio users, who do not have a valid FCC license operating within all current FCC rules and regulations, stop transmitting and using their entire radio system immediately.
- You may have radios, either mobiles or handheld, that are not equipped to be modified to a 12.5 KHz banding. If not, you will need to take them out of service when you migrate to narrowband. This will most likely involve replacing them.
- The reason you should do something about this *now* is to ensure any needed equipment changes are made well in advance. Advance planning will allow the purchase of any replacement equipment be made over the next 42 months before the change becomes mandatory.
- You may experience increased channel interference as other licensees migrate to narrowband. You may also experience interference from the very few radio users now operating on 6.25 KHz spacing.

Recommendations

1. Determine if your FCC license(s) has 25 KHz or 12.5 KHz emissions designators. Do this by looking at your FCC license. In the part of the license listing your frequencies, one of the columns in that section lists the Emission Designator for each frequency. That section looks like this:

| Antennas | | | | | | | | | | | |
|----------|----------|-------------------|-----------|-----------|------------|---------------------|----------------------|-------------|--------------------|-----------------|-------------------------|
| Loc. No. | Ant. No. | Frequencies (MHZ) | Sta. Cls. | No. Units | No. Pagers | Emission Designator | Output Power (watts) | ERP (watts) | Ant. Ht./Tp meters | Ant. AAT meters | Construct Deadline Date |
| 1 | 1 | 451.9750000 | FB2 | 1 | 0 | 20K0F3E | 90.000 | 900.000 | 137.0 | | |

In the case of the above licensee, the emission designator of 20K0F3E is an indicator that this frequency is operating on 25 KHz and needs to migrate to narrowband. A second example follows:

| Antennas | | | | | | | | | | | |
|----------|----------|-------------------|-----------|-----------|------------|---------------------|----------------------|-------------|--------------------|-----------------|-------------------------|
| Loc. No. | Ant. No. | Frequencies (MHZ) | Sta. Cls. | No. Units | No. Pagers | Emission Designator | Output Power (watts) | ERP (watts) | Ant. Ht./Tp meters | Ant. AAT meters | Construct Deadline Date |
| 1 | 1 | 451.83750 | MO | 16 | 0 | 11K2F3E | 25.000 | 25.000 | | | |

The licensee shown above has an emission designator of 11K2F3E, and that is a 12.5 KHz emission designator and does not need to be migrated.

There are other emission designators, but the two shown above are the most often used. If any of your frequencies show a 25 KHz emission designator, your license must be modified.

2. If you have frequencies with 25 KHz bandwidth, don't wait to migrate. Do it now. There is nothing to be gained by waiting. Your radios will operate just as well and the money you spend to accomplish the migration will probably be less than it will be in a few years. You will have the satisfaction of knowing you are well ahead of the curve on this issue.
3. If you have radio equipment that currently is not equipped to operate on 12.5 KHz bandwidth, you should plan to replace it. The advance notice that you have to do this should help with budget planning. If you are unsure whether or not your equipment is able to operate on 12.5 KHz, Electrocomm would be glad to research your license and inventory your radio fleet to determine which equipment is compatible with 12.5 KHz spacing. If you do have to replace radios, top level dealers should be able to provide equipment for moving to 12.5 KHz at 30-35% off the price you currently pay for mobile and handheld radios.
4. If you are operating on 25 KHz spacing, and your equipment is capable of operating on 12.5 KHz, it will have to be modified at the time you migrate to 12.5 KHz.
5. Lastly, while we are talking about FCC licenses, you should make sure that all of your licenses are current and correct. Renewals need to be done on time, and all changes to your radio system, (frequencies, repeater moves, additions, etc.) need to be reflected on your license.

If you have any questions on this subject and would like the experts at Electrocomm-Michigan to assist you, please call us on 248-334-4300.

Questions and Answers

Q: If my current 25 KHz FCC license expires after January 1, 2013, will I be required to change or modify my existing FCC license?

A: Yes, if you currently have a 25 KHz license, it must be modified to a 12.5 KHz FCC license prior to January 1, 2013.

Q: Will the FCC reduce the channel spacing beyond 12.5 KHz in the future?

A: Yes the FCC will reduce the channel spacing to 6.25 KHz some time in the future. Presently, the FCC has only said that all radio manufacturers must have type-accepted radios by January 2011. Once enough radio manufacturers have type-accepted equipment, the FCC will set a migration date for 6.25 KHz channel spacing.

Q: When will the migration to 6.25 KHz take place?

A: There are many unknowns at this point, but a "guesstimate" is around 2020 or later. The final timeline will be set by the FCC and advance notice will be made available to the general public. The FCC made it public in 1997 that all radio users will have to move to 1.5 KHz spacing and it will finally be effective in 2013 – sixteen years later.

Q: Should I start purchasing equipment or change my FCC license immediately?

A: No, unless you currently have all 12.5 KHz capable radios in your bus fleet. If you have a mixture of 25 KHz and 12.5 KHz there are several steps that are intertwined. And making the wrong move may immediately require you to replace all of your 25 KHz radios.

Q: Has the technology improved with either the 12.5 KHz or 6.25 KHz radios?

A: Yes. In the past 12-24 months new equipment has been released that offers benefits of text messaging, GPS, emergency alerts, private conversations with buses during emergencies, terrorist alerts, computer dispatching, and more.

Q: Are the rules in place by the FCC firm or could they change?

A: As of today the order is firm, but keep in mind that the FCC has extended dates in the past. An example is the date to convert to Digital TV which was extended by several months.

Q: Could the FCC change its mind and not migrate to 12.5 KHz?

A: No. As we have become an increasingly wireless society, the demand on radio channels has increased to a point where today most school districts share channels with other companies and/or other school districts. More radio users apply for FCC licenses each day and they only add to the channel congestion. Moving to 12.5 KHz channel spacing is the only answer to increase the number of radio channels available for the general public.

Q: Will I be required to purchase digital radios?

A: No, but several 2-way radio companies have told school districts they are required to purchase digital radios to make the move from 25 KHz to 12.5 KHz spacing. This is just not true. Presently there are several digital radios on the market and they do offer some benefits. If these benefits are features your district is interested in, then digital radios may be for you. But the FCC is not requiring any school or business to purchase digital radios before making the move to 12.5 KHz spacing.

Q: Should I purchase digital radios?

A: Again, that is a district by district decision. In the past we have all purchased equipment that was just released and found that two things usually happen. First, the new equipment was released without all the 'bugs' being worked out. Second, new technology always costs more in the first few years and then inevitably reduces in price as manufacturers mass produce items and competition drives price down. These may be points to consider before making a purchase of digital equipment.

Q: What radio equipment is capable of being changed to narrowband operation today?

A: Radio manufacturers have been aware of the pending narrowband mandate since 1997, and most equipment purchased in the last five years will be capable of changing to narrowband operation by simple reprogramming.

The following is a general summary, by major manufacturer, of reprogramming capabilities:

- Vertex – All Vertex radios can be reprogrammed to narrowband.
- GE – The majority of GE equipment is not capable of being reprogrammed to narrowband.
- Kenwood and Icom – The largest percentage of Kenwood and Icom equipment is capable of being reprogrammed to narrowband. Only a small percentage can not.
- Motorola – Motorola has a number of models that are not capable of being reprogrammed to 12.5 KHz and they are listed below:

| <u>Handheld Radios</u> | <u>Mobiles</u> | <u>Base/Repeaters</u> |
|------------------------|----------------|-----------------------|
| CP100 | GM300 | Flexar |
| GP300 | M100 | Micor |
| HT50 | M120 | Mocom 70 |
| HT600 | M206 | Motrac |
| HT90 | M214 | MSF5000 |
| MT100 | M216 | |
| P110 | Maratrac | |
| P200 | Maxtrac | |
| P50 | Mostar | |
| P50+ | SM50 | |
| SP50 | SM120 | |
| Saber | Spectra | |

To find out whether your specific radio models are 12.5 KHz capable, you can call Electrocomm on 248-334-4300.