

2GHz Relocation FAQ's

A. Sprint Nextel Process & Procedures

What BMS Products are eligible for replacement?

All functional 2 GHz analog transmitters and receivers are eligible. Please check with your Nextel Rep to confirm.

Can NEXTEL replacement equipment from BMS be upgraded for HD-ENG?

Yes, BMS products are HD ready. All NEXTEL qualified transmitters and receivers from BMS include an ASI interface that allows use of external HD encoders and decoders. The BMS design allows future expansion to MPEG-4, H.264, HD, or any future compression method that supports an ASI input/output.

Do I have to upgrade my products with the same manufacturer as the original product?

Absolutely not! The choice of vendor is yours to make so long as the replacement products are comparable with your current analog products. You can purchase from any vendor within Nextel's pricing guidelines.

Are antennas and cables replacement products?

We have heard of some cases that they are. Please check with your Nextel Rep to confirm.

What is the process for purchasing BMS Products?

As you enter the Inventory Phase of the Relocation Rollout, you must notify Nextel that you are interested in BMS as an equipment supplier. On your *Facilities Inventory Worksheet* from Nextel **make sure that you select BMS under the Preferred Vendor Column**. This does not constitute a commitment to a particular vendor at this time. However, showing BMS as a *Preferred Vendor* will facilitate the Nextel forecasting of potential equipment quantities and delivery dates from BMS. Once you are authorized by Nextel to place orders for replacement products, simply issue a purchase order to Nextel for the BMS products you selected.

Do I have to go with the cheapest supplier?

No. During your negotiations with Nextel you will negotiate which equipment will be replaced. As long as your chosen equipment meets Nextel's requirements, the choice of vendor within the pricing guidelines is yours to make.



Do I have to change my FCC License?

Yes. It is important to amend your license to avoid automatic cancellation by the FCC. Complete licensing guidance may be viewed at the Sprint/Nextel 2GHz Relocation web site; <http://www.2ghzrelocation.com/plugin/template/broadcast/538/1289>.”

When is my relocation deadline?

Each DMA has its own schedule. Contact your Nextel Broadcast Engineer to find out which DMA you're in and which DMA you're in.what the current schedule is for your DMA. You may also refer to the website <http://www.2ghzrelocation.com>.

Is BMS prepared to handle large orders of radio equipment for customers?

BMS has negotiated preferred rates for radio equipment sold under the BAS 2 GHz Relocation Project. BMS has committed to deliver these products within 8 weeks of order approval from Sprint Nextel. We stand by this commitment.

Can I purchase digital radio equipment prior to entering negotiations with Nextel and still be compensated by Nextel for the cost of the equipment?

Generally, No. However, this will be handled on a case by case basis by Nextel. Please talk to your Nextel regional broadcast engineering representative listed at the following link: <http://www.2ghzrelocation.com/plugin/template/broadcast1/Contact/>

B. Customer Service

What is the BMS Warranty for products purchased through the 2 GHz Relocation Plan?

A 2-year warranty is standard with all BMS products. BMS offers service plans with extended warranties, product upgrades, and spare units for customers who want the insurance of priority service, reduced downtime, and the most current technology. See your BMS Sales Representative for details.

How are repairs handled?

BMS' experienced and dedicated service department turns around repairs typically within 2 weeks or less. However we offer expedited service and warranty programs to reduce downtime. Ask your BMS salesman Sales Representative for further details.

Do I have to pay for future upgrades and improvements?

Certain upgrades and improvements will be provided at no charge and are easily field installed. BMS also offers extended warranty and service plans. For more details please talk to your BMS Sales Representative.

C. Product/Features

Who uses BMS products?

As a leading supplier to the broadcast ENG market for more than 25 years, BMS equipment is used daily worldwide. Such applications include: TV broadcast, sporting arenas, as well as for mobile video transmission for military and law enforcement.

Broadcast Microwave Services, Inc.

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**What steps does BMS take to ensure product quality?**

Careful designs that meet FCC technical specifications while focusing on specific needs of the broadcast market. BMS benefits from over 10 years of COFDM product experience. BMS BAS 2 GHz Relocation products are subject to 100% temperature and vibration testing to ensure quality and reliability.

How can I upgrade to HDTV?

BMS products are HD ready. By using external encoders and decoders HD transmission is easily accomplished with BMS standard ASI ports. The BMS product roadmap includes migration plans to include optional upgrades of SD products to include both an internal HD and SD encoder/decoder.

What other HD products does BMS sell?

In order to meet future needs for HD-ENG, BMS offers a complete line of HD transmitters and diversity receivers. The CT2020HD transmitter is a full featured camera-back or stand-alone unit that offers selectable 720p/1080i, SD/HD operation with on-board MPEG2 compression. The CT2200HDV transmitter is designed specifically to interface with HDV-ENG cameras. Our diversity receivers include the Model DR2000 and DR2100 2-way HD portables and DR6000 6-way fixed site HD receiver.

Digital radios appear to be complex. Are they more difficult to operate?

Not BMS products. The BMS research team took feedback from broadcasters across the country to find out how we could make our products easy to use. For example, use up to 100 preset selections to accommodate varying transmission situations for easy pre-programming so that an operator needs only to select one simple preset for optimal performance. In addition, the Truck-Coder II Pre-sets can be changed by the station engineer using a laptop and Web browser.

Can I expand to other frequency bands?

Yes. BMS products support expansion to dual or multi-band systems. Single 2 GHz receivers are designated for easy interface with the customers existing or BMS supplied block down converter (BDC) for the receive end. For the transmit end, selectable block up converters are added to handle multi-band systems.

Is signal scrambling available?

Yes. BMS supplies a proprietary PIN scrambling system as a standard feature with our products.

I have a 2 GHz STL, can BMS replace that?

BMS will be happy to quote an STL for your 2 GHz Relocation requirement.

What about digital audio?

BMS equipment accepts SDI with embedded audio.

What other product enhancements are available that supports IP over ENG?

The BMS award winning TCII Media Router creates an IP link to the studio over microwave. This IP link allows the mobile unit operator to transfer media files to the studio while simultaneously transmitting a live report.

What about Spectrum Monitoring?

The BMS CRS-DCII receive site decoder provides both first IF and 70 MHz signals. These interface with all popular third party spectrum analyzers and viewers.

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Can we change from MPEG-2 to some other video compression method?

Yes. The BMS design allows future expansion to MPEG-4, AVC, HDTV or any future compression method using external encoders and decoders.

Are other modulations supported?

Yes. BMS products are future proof as to type of modulation. The Truck-Coder II and the Central-DeCoder II Receiver have standard 70 MHz I/O ports. While COFDM modulation is included in these products other modulations such as single carrier QAM (SQC), VSB, or any future, exotic modulation can be used. All that is required is the external modems support 70 MHz I/O.

D. Technology

Are BMS products compatible with other manufacturer's products?

Yes. Our products have been proven to be compatible with many other manufactures' products that are DVB-T compliant. Our receiver products automatically adjust to both COFDM and MPEG settings. All transmitters and receivers are fully user adjustable.

I heard only an omni antenna is required for COFDM Transmission. Is this true?

Digital microwave works well with omni antennas. The same RF congestion issues that exist with FM analog transmission also exist with digital transmission. To be a good RF neighbor, consider using omni antennas only when properly coordinated. Directional antennas are still recommended.

What other product enhancements are available? IP over ENG?

The BMS Media Router creates an IP link to the studio over microwave. This IP link allows the mobile unit operator to transfer media files to the studio while simultaneously transmitting a live report.

What do I need to watch out for in adjacent channel operation?

Spectral Regrowth.

What is spectral Regrowth?

Spectral re-growth is caused by intermodulation distortion in the transmitter. It is primarily a 3rd order product and as such its level increase at 3 times that of the main signal. That is; if the signal power level is increased by 1dB, the spectral re-growth level will increase by 3dB! Clearly the output power at which a transmitter vendor chooses to operate his transmitter will affect the level of the spectral re-growth at the transmitter output (worst case spectral re-growth will be seen at maximum transmit power). Lower levels of spectral re-growth imply very linear Power Amplifier designs which are operated significantly below their maximum power capability. This means better adjacent channel operation.

What data rate can I transmit in 6 MHz?

The useful data rate ranges are:

QPSK	3.732 - 7.917 Mb/s
16 QAM	7.465 - 15.834 Mb/s
64 QAM	11.197 - 23.751 Mb/s

Data rate depends on selected guard intervals and code rates.

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Why can't I stay with my analog equipment?

The FCC doesn't care whether you transmit in analog or digital so long as you meet the new emission mask requirements. Some existing analog equipment can be modified to operate in the new 12 MHz channel plan. This however, is at a significantly reduced picture and sound quality. Most broadcasters have elected to have Nextel upgrade or replace their existing analog equipment with digital.

Is it possible for 2 transmitters to simultaneously transmit within my one home channel?

Yes. The DVB-T standard defines a 6 MHz wide mode that allows stacking two 6 MHz signals side by side within one 12 MHz channel. BMS has tested and demonstrated this capability within our COFDM Digital product line. Not all manufacturers can accomplish this because of spectral regrowth in their amplifiers. See our white paper in the technical info section.

Will a BMS Heli-Coder II System work with my current tracking system?

Older tracking systems that relied on RF signal strength (mono-pulsse tracking) will generally not be compatible with digital microwave. If your system uses GPS location data to track an aircraft, BMS will work with you to arrive at a correct interface. Typically with analog systems GPS data was sent down on an audio channel. Our HCII has a 2nd audio channel to accommodate the same thing.

Do I need a diversity receiver?

While diversity reception is not necessary for all BMS systems, BMS does offer diversity receivers to suit your needs. Ask your BMS salesman for further details.

Will a BMS receive site receiver work with my existing site management?

In some cases, yes. Other cases will require some redesign or software upgrades. BMS has agreements that are cooperative with major antenna suppliers to ensure full system control compatibility.

What's the difference between 4:2:0 and 4:2:2 MPEG?

These are the most popular profiles with MPEG-2 compression. Generally 4:2:2 gives better video fidelity but requires more bandwidth. 4:2:0 is a good compromise in bandwidth limited systems applications such as ENG. BMS offers simple user selection of either profile.

Is COFDM the only authorized digital method?

No. The only FCC requirement is that transmission stay within the defined spectrum mask. COFDM however, has been proven to be technically superior in a rapidly changing ENG environment.

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