

Pre-coordinated Frequencies

Tables and Usage

The use of multiple analog frequencies in a common location requires planning and diagnostics to ensure reliable operation. Carriers must be spaced far enough apart and certain rules must be observed to avoid interference caused by the wireless systems themselves. Radio carrier signals also combine and mix to generate sums and differences in a process called “intermodulation” or IM.

IM generates new signals that can interfere with those that are desired. The combinations can become very complex as the number of systems increases.

The tables on the following pages provide 16 frequencies in each band or “block” of frequencies that avoid IM and allow adequate spacing for simultaneous use.

NOTE: If you are viewing this document with Adobe Acrobat or Reader, it is helpful to enable the page display for “two-up” or “facing pages” so that pages 2 and 3 will display together.

Pre-coordinated Frequencies

Interference from IM (intermodulation) is a potential problem in all multi-channel wireless systems, so proper frequency coordination is always required to avoid noise, range and dropout problems. Your options to accomplish this include:

- Using the pre-coordinated frequency groups
- Performing a system checkout
(See Multi-channel System Checkout)
- Calling Lectrosonics for assistance

Compatible Frequency Table

Groupings of compatible frequencies have been created to minimize intermodulation problems in multiple channel wireless systems. The frequencies can be used with Digital Hybrid and analog Lectrosonics wireless equipment. Compatibility with other brands is likely, but not guaranteed by Lectrosonics.

The table provides two different sets of pre-coordinated frequencies for frequency blocks 470 through 29. The table is constructed to create a visual pattern of compatible frequencies to make it easier to use. The frequencies are stored in memory in various products and included in the VRpanel software.

Pre-coordinated frequencies are arranged in four

groups as shown at right.

The uppermost eight frequencies comprise Grp a, the eight just below them comprise Grp b, and so on.

BLOCK 22

FREQ	SW SET	US TV CH
563.700	0,5	tv29
564.300	0,B	tv29
565.200	1,4	tv29
565.800	1,A	tv29
567.100	2,7	tv30
568.000	3,0	tv30
568.500	3,5	tv30
569.300	3,D	tv30
575.700	7,D	tv31
577.900	9,3	tv31
578.600	9,A	tv32
579.900	A,7	tv32
581.700	B,9	tv32
582.600	C,2	tv32
585.200	D,C	tv33
587.500	F,3	tv33

Grp a

Grp b

Grp c

Grp d

Displayed as "GROUP a" through "GROUP d" in the LCD and as "Grp a" through "Grp d" in VRpanel

BLOCK 22

FREQ	SW SET	US TV CH
570.100	4,5	tv30
570.700	4,B	tv30
571.600	5,4	tv30
572.200	5,A	tv31
573.200	6,4	tv31
574.400	7,0	tv31
574.900	7,5	tv31
575.500	7,B	tv31
581.100	B,3	tv32
582.100	B,D	tv32
582.600	C,2	tv32
584.300	D,3	tv32
585.000	D,A	tv32
585.600	E,0	tv32
586.300	E,7	tv32
588.100	F,9	tv32

	BLOCK 470	BLOCK 19	BLOCK 20	BLOCK 21	BLOCK 22	BLOCK 23																
	FREQ	SW SET	US TV CH	FREQ	SW SET	US TV CH	FREQ	SW SET	US TV CH	FREQ	SW SET	US TV CH	FREQ	SW SET	US TV CH	FREQ	SW SET	US TV CH	FREQ	SW SET	US TV CH	
Grp A	NOT AVAILABLE	486.900	0,5	TV16	512.500	0,5	TV21	538.100	0,5	tv25	563.700	0,5	tv29	589.300	0,5	tv33						
	NOT AVAILABLE	487.500	0,B	TV16	513.100	0,B	TV21	538.700	0,B	tv25	564.300	0,B	tv29	589.900	0,B	tv33						
	NOT AVAILABLE	488.400	1,4	TV17	514.000	1,4	TV21	539.600	1,4	tv25	565.200	1,4	tv29	590.800	1,4	tv34						
	NOT AVAILABLE	489.000	1,A	TV17	514.600	1,A	TV21	540.200	1,A	tv25	565.800	1,A	tv29	591.400	1,A	tv34						
	NOT AVAILABLE	490.300	2,7	TV17	515.900	2,7	TV21	541.500	2,7	tv25	567.100	2,7	tv30	592.700	2,7	tv34						
	NOT AVAILABLE	491.200	3,0	TV17	516.800	3,0	TV21	542.400	3,0	tv26	568.000	3,0	tv30	593.600	3,0	tv34						
	NOT AVAILABLE	491.700	3,5	TV17	517.300	3,5	TV21	542.900	3,5	tv26	568.500	3,5	tv30	594.100	3,5	tv34						
	NOT AVAILABLE	492.500	3,D	TV17	518.100	3,D	TV22	543.700	3,D	tv26	569.300	3,D	tv30	594.900	3,D	tv34						
Grp B	473.300	2,0	TV14	498.900	7,D	TV18	524.500	7,D	TV23	550.100	7,D	tv27	575.700	7,D	tv31	601.300	7,D	tv35				
	475.500	3,6	TV14	501.100	9,3	TV19	526.700	9,3	TV23	552.300	9,3	tv27	577.900	9,3	tv31	603.500	9,3	tv36				
	476.200	3,D	TV15	501.800	9,A	TV19	527.400	9,A	TV23	553.000	9,A	tv27	578.600	9,A	tv32	604.200	9,A	tv36				
	477.500	4,A	TV15	503.100	A,7	TV19	528.700	A,7	TV23	554.300	A,7	tv28	579.900	A,7	tv32	605.500	A,7	tv36				
	479.300	5,C	TV15	504.900	B,9	TV19	530.500	B,9	TV24	556.100	B,9	tv28	581.700	B,9	tv32	607.300	B,9	tv36				
	480.200	6,5	TV15	505.800	C,2	TV19	531.400	C,2	TV24	557.000	C,2	tv28	582.600	C,2	tv32							
	482.800	7,F	TV16	508.400	D,C	TV20	534.000	D,C	TV24	559.600	D,C	tv28	585.200	D,C	tv33							
	485.100	9,6	TV16	510.700	F,3	TV20	536.300	F,3	TV25	561.900	F,3	tv29	587.500	F,3	tv33							
Grp C	NOT AVAILABLE	493.300	4,5	TV17	518.900	4,5	TV22	544.500	4,5	tv26	570.100	4,5	tv30	595.700	4,5	tv34						
	NOT AVAILABLE	493.900	4,B	TV17	519.500	4,B	TV22	545.100	4,B	tv26	570.700	4,B	tv30	596.300	4,B	tv35						
	NOT AVAILABLE	494.800	5,4	TV18	520.400	5,4	TV22	546.000	5,4	tv26	571.600	5,4	tv30	597.200	5,4	tv35						
	NOT AVAILABLE	495.400	5,A	TV18	521.000	5,A	TV22	546.600	5,A	tv26	572.200	5,A	tv31	597.800	5,A	tv35						
	NOT AVAILABLE	496.400	6,4	TV18	522.000	6,4	TV22	547.600	6,4	tv26	573.200	6,4	tv31	598.800	6,4	tv35						
	NOT AVAILABLE	497.600	7,0	TV18	523.200	7,0	TV22	548.800	7,0	tv27	574.400	7,0	tv31	600.000	7,0	tv35						
	NOT AVAILABLE	498.100	7,5	TV18	523.700	7,5	TV22	549.300	7,5	tv27	574.900	7,5	tv31	600.500	7,5	tv35						
	NOT AVAILABLE	498.700	7,B	TV18	524.300	7,B	TV23	549.900	7,B	tv27	575.500	7,B	tv31	601.100	7,B	tv35						
Grp D	478.700	5,6	TV15	504.300	B,3	TV19	529.900	B,3	TV23	555.500	B,3	tv28	581.100	B,3	tv32	606.700	B,3	tv36				
	479.700	6,0	TV15	505.300	B,D	TV19	530.900	B,D	TV24	556.500	B,D	tv28	582.100	B,D	tv32	607.700	B,D	tv36				
	480.200	6,5	TV15	505.800	C,2	TV19	531.400	C,2	TV24	557.000	C,2	tv28	582.600	C,2	tv32							
	481.900	7,6	TV15	507.500	D,3	TV20	533.100	D,3	TV24	558.700	D,3	tv28	584.300	D,3	tv32							
	482.600	7,D	TV16	508.200	D,A	TV20	533.800	D,A	TV24	559.400	D,A	tv28	585.000	D,A	tv33							
	483.200	8,3	TV16	508.800	E,0	TV20	534.400	E,0	TV24	560.000	E,0	tv28	585.600	E,0	tv33							
	483.900	8,A	TV16	509.500	E,7	TV20	535.100	E,7	TV24	560.700	E,7	tv29	586.300	E,7	tv33							
	485.700	9,C	TV16	511.300	F,9	TV20	536.900	F,9	TV25	562.500	F,9	tv29	588.100	F,9	tv33							

*** NOTE: These frequencies can also be manually tuned with block 470 modules**

Compatibility Diagram

Compatibility follows the pattern illustrated in the diagram at right.

Grp a and **Grp b** contain the 16 frequencies shown in the table below (upper orange/white set).

Grp c and **Grp d** contain the 16 frequencies shown in the table below (lower blue/white set).

NOTE: There is no assurance that frequencies are compatible between the upper orange/white set and the lower blue/white set. Combined use of frequencies from both sets requires testing with the procedures outlined in the following section entitled **Diagnostics - Multi-channel System Checkout**

These frequencies share RF spectrum with TV channels. The upper orange/white set and the lower blue/white set of frequencies provide two different lists of TV channels. Use the set with fewer active TV stations in the area where you are operating.

Active TV station signals can be discovered by scanning with the Venue receiver, or researched in advance on this web site: www.fccinfo.com.

All 16 within the same block are compatible

The upper eight are compatible with the lower eight in the adjacent blocks.

The lower eight are compatible with the upper eight in the adjacent blocks.

BLOCK 24			BLOCK 25		
FREQ	SW SET	US TV CH	FREQ	SW SET	US TV CH
621.300	4.5	tv39	646.900	4.5	tv43
621.900	4.8	tv39	647.500	4.8	tv43
622.800	5.4	tv39	648.400	5.4	tv43
623.400	5.A	tv39	649.000	5.A	tv43
624.400	6.4	tv39	650.000	6.4	tv43/44
625.800	7.0	tv39	651.200	7.0	tv44
626.100	7.5	tv40	651.700	7.5	tv44
626.700	7.B	tv40	652.300	7.B	tv44
632.300	B.3	tv41	657.900	B.3	tv45
633.200	B.D	tv41	658.900	B.D	tv45
633.800	C.2	tv41	659.400	C.2	tv45
635.500	D.3	tv41	661.100	D.3	tv45
636.200	D.A	tv41	661.800	D.A	tv45
636.800	E.0	tv41	662.400	E.0	tv46
637.500	E.7	tv41	663.100	E.7	tv46
639.300	F.9	tv42	664.900	F.9	tv46

BLOCK 24			BLOCK 25		
FREQ	SW SET	US TV CH	FREQ	SW SET	US TV CH
621.300	4.5	tv39	646.900	4.5	tv43
621.900	4.8	tv39	647.500	4.8	tv43
622.800	5.4	tv39	648.400	5.4	tv43
623.400	5.A	tv39	649.000	5.A	tv43
624.400	6.4	tv39	650.000	6.4	tv43/44
625.800	7.0	tv39	651.200	7.0	tv44
626.100	7.5	tv40	651.700	7.5	tv44
626.700	7.B	tv40	652.300	7.B	tv44
632.300	B.3	tv41	657.900	B.3	tv45
633.200	B.D	tv41	658.900	B.D	tv45
633.800	C.2	tv41	659.400	C.2	tv45
635.500	D.3	tv41	661.100	D.3	tv45
636.200	D.A	tv41	661.800	D.A	tv45
636.800	E.0	tv41	662.400	E.0	tv46
637.500	E.7	tv41	663.100	E.7	tv46
639.300	F.9	tv42	664.900	F.9	tv46

BLOCK 24			BLOCK 25		
FREQ	SW SET	US TV CH	FREQ	SW SET	US TV CH
621.300	4.5	tv39	646.900	4.5	tv43
621.900	4.8	tv39	647.500	4.8	tv43
622.800	5.4	tv39	648.400	5.4	tv43
623.400	5.A	tv39	649.000	5.A	tv43
624.400	6.4	tv39	650.000	6.4	tv43/44
625.800	7.0	tv39	651.200	7.0	tv44
626.100	7.5	tv40	651.700	7.5	tv44
626.700	7.B	tv40	652.300	7.B	tv44
632.300	B.3	tv41	657.900	B.3	tv45
633.200	B.D	tv41	658.900	B.D	tv45
633.800	C.2	tv41	659.400	C.2	tv45
635.500	D.3	tv41	661.100	D.3	tv45
636.200	D.A	tv41	661.800	D.A	tv45
636.800	E.0	tv41	662.400	E.0	tv46
637.500	E.7	tv41	663.100	E.7	tv46
639.300	F.9	tv42	664.900	F.9	tv46

BLOCK 24		
FREQ	SW SET	US TV CH
614.900	0.5	tv38
615.500	0.6	tv38
616.400	1.4	tv38
617.000	1.A	tv38
618.300	2.7	tv38
619.200	3.0	tv38
619.700	3.5	tv38
620.500	3.D	tv39
626.900	7.D	tv40
629.100	9.3	tv40
629.800	9.A	tv40
631.100	A.7	tv40
632.900	B.9	tv41
633.800	C.2	tv41
636.400	D.C	tv41
638.700	F.3	tv42

BLOCK 25		
FREQ	SW SET	US TV CH
640.500	0.5	tv42
641.100	0.6	tv42
642.000	1.4	tv42
642.600	1.A	tv42
643.900	2.7	tv42
644.800	3.0	tv43
645.300	3.5	tv43
646.100	3.D	tv43
652.500	7.D	tv44
654.700	9.3	tv44
655.400	9.A	tv44
656.700	A.7	tv45
658.500	B.9	tv45
659.400	C.2	tv45
662.000	D.C	tv45/46
664.300	F.3	tv46

BLOCK 26		
FREQ	SW SET	US TV CH
666.100	0.5	tv46
666.700	0.6	tv46
667.600	1.4	tv46
668.200	1.A	tv47
669.500	2.7	tv47
670.400	3.0	tv47
670.900	3.5	tv47
671.700	3.D	tv47
678.100	7.D	tv48
680.300	9.3	tv49
681.000	9.A	tv49
682.300	A.7	tv49
684.100	B.9	tv49
685.000	C.2	tv49
687.600	D.C	tv50
689.900	F.3	tv50

BLOCK 27		
FREQ	SW SET	US TV CH
691.700	0.5	tv50
692.300	0.6	tv51
693.200	1.4	tv51
693.800	1.A	tv51
695.100	2.7	tv51
696.000	3.0	tv51
696.500	3.5	tv51
697.300	3.D	tv51
703.700	7.D	tv52
705.900	9.3	tv53
706.600	9.A	tv53
707.900	A.7	tv53
709.700	B.9	tv53
710.600	C.2	tv54
713.200	D.C	tv54
715.500	F.3	tv54

BLOCK 28		
FREQ	SW SET	US TV CH
717.300	0.5	tv55
717.900	0.6	tv55
718.800	1.4	tv55
719.400	1.A	tv55
720.700	2.7	tv55
721.600	3.0	tv55
722.100	3.5	tv56
722.900	3.D	tv56
729.300	7.D	tv57
731.500	9.3	tv57
732.200	9.A	tv57
733.500	A.7	tv57
735.300	B.9	tv58
736.200	C.2	tv58
738.800	D.C	tv58
741.100	F.3	tv59

BLOCK 29		
FREQ	SW SET	US TV CH
742.900	0.5	tv59
743.500	0.6	tv59
744.400	1.4	tv59
745.000	1.A	tv59
746.300	2.7	tv60
747.200	3.0	tv60
747.700	3.5	tv60
748.500	3.D	tv60
754.900	7.D	tv61
757.100	9.3	tv61
757.800	9.A	tv61
759.100	A.7	tv62
760.900	B.9	tv62
761.800	C.2	tv62
764.400	D.C	tv63
766.700	F.3	tv63

BLOCK 24		
FREQ	SW SET	US TV CH
621.300	4.5	tv39
621.900	4.8	tv39
622.800	5.4	tv39
623.400	5.A	tv39
624.400	6.4	tv39
625.800	7.0	tv39
626.100	7.5	tv40
626.700	7.B	tv40
632.300	B.3	tv41
633.200	B.D	tv41
633.800	C.2	tv41
635.500	D.3	tv41
636.200	D.A	tv41
636.800	E.0	tv41
637.500	E.7	tv41
639.300	F.9	tv42

BLOCK 25		
FREQ	SW SET	US TV CH
646.900	4.5	tv43
647.500	4.8	tv43
648.400	5.4	tv43
649.000	5.A	tv43
650.000	6.4	tv43/44
651.200	7.0	tv44
651.700	7.5	tv44
652.300	7.B	tv44
657.900	B.3	tv45
658.900	B.D	tv45
659.400	C.2	tv45
661.100	D.3	tv45
661.800	D.A	tv45
662.400	E.0	tv46
663.100	E.7	tv46
664.900	F.9	tv46

BLOCK 26		
FREQ	SW SET	US TV CH
672.500	4.5	tv47
673.100	4.8	tv47
674.000	5.4	tv47/48
674.600	5.A	tv48
675.600	6.4	tv48
676.800	7.0	tv48
677.300	7.5	tv48
677.900	7.B	tv48
683.500	B.3	tv49
684.500	B.D	tv49
685.000	C.2	tv49
686.700	D.3	tv50
687.400	D.A	tv50
688.000	E.0	tv50
688.700	E.7	tv50
690.500	F.9	tv50

BLOCK 27		
FREQ	SW SET	US TV CH
698.100	4.5	tv52
698.700	4.8	tv52
699.600	5.4	tv52
700.200	5.A	tv52
701.200	6.4	tv52
702.400	7.0	tv52
702.900	7.5	tv52
703.500	7.B	tv52
709.100	B.3	tv53
710.100	B.D	tv54
710.600	C.2	tv54
712.000	D.3	tv54
713.000	D.A	tv54
713.800	E.0	tv54
714.300	E.7	tv54
716.100	F.9	tv55

BLOCK 28		
FREQ	SW SET	US TV CH
723.700	4.5	tv56
724.300	4.8	tv56
725.200	5.4	tv56
725.800	5.A	tv56
726.800	6.4	tv56
728.000	7.0	tv56/57
728.500	7.5	tv57
729.100	7.B	tv57
734.700	B.3	tv58
735.700	B.D	tv58
736.200	C.2	tv58
737.900	D.3	tv58
738.600	D.A	tv58
739.200	E.0	tv58
739.900	E.7	tv58
741.700	F.9	tv59

BLOCK 29		
FREQ	SW SET	US TV CH
749.300	4.5	tv60
749.900	4.8	tv60
750.800	5.4	tv60
751.400	5.A	tv60
752.400	6.4	tv61
753.600	7.0	tv61
754.100	7.5	tv61
754.700	7.B	tv61
760.300	B.3	tv62
761.300	B.D	tv62
761.800	C.2	tv62
763.500	D.3	tv62
764.200	D.A	tv63
764.800	E.0	tv63
765.500	E.7	tv63
767.300	F.9	tv63

Diagnostics

Multi-channel System Checkout

Interference can result from a wide variety of sources including TV station signals, other wireless equipment in use nearby, or from intermodulation within a multi-channel wireless system itself. Regardless of how the frequencies were coordinated, a final checkout procedure is always a good idea.

Scanning with the RF spectrum analyzer built into the Venue system will identify external RF signals, but it does not address the compatibility of the selected frequencies.

The pre-coordinated frequencies on the chart on the previous pages address in-system intermodulation, but obviously cannot take into account RF signals from external sources that may be present in the location where the system will be operating.

In some cases, you can run the scanner to find clear TV channels, then find enough pre-coordinated frequencies in the tuning groups (Grp a through Grp d) to operate on the clear TV channels. Even so, it is still a good idea to go through the check out procedure because you can encounter interference from other wireless, IFB and intercom systems when you get to the production or installation site.

1. Set up the system for testing.

Place antennas in the position in which they will be used and connect to the receivers. Place transmitters about 3 to 5 feet apart, about 25 to 30 feet from the receiver antennas. If possible, have all other equipment on the set, stage or location turned on as well, especially any mixing or recording equipment that will be used with the wireless system.

2. Set all receivers on clear channels.

Turn on all receivers, but leave the transmitters off. Observe at the RF signal strength indicator for each receiver module. If a signal is present, change the frequency to a clear channel where no signal is indicated. If a completely clear channel cannot be found, select the frequency with the lowest RF level indication. Once all receiver modules are on clear channels, go to step 3.

3. Turn each transmitter on one at a time.

Start with all transmitters turned off. As you turn on each one, look at the matching receiver to verify a strong RF signal is received. Then, look at the other receivers and see if one of them is also picking up the signal. Only the matching receiver should indicate a signal. Change frequencies on either system slightly until all channels pass this test, then check again to see that all channels are still clear as done in step 2.

4. Turn each transmitter off one at a time.

With all transmitters and receivers turned on, turn each transmitter off one at a time, in turn, and look at the RF level indicator on the matching receiver module. The RF level should disappear or drop to a very low level. If it does not, change frequency on that receiver and transmitter and try it again. When a clear frequency is found, turn the transmitter on and move on to the next channel.

IMPORTANT: Any time a frequency is changed on any of the systems in use, you must start at the beginning and go through this procedure again for all systems. With a little practice, you will be able to do this quickly and save yourself some "multi-channel grief."

Pilot Tone Bypass

Some wireless equipment uses a supersonic "pilot tone" to control the squelch (audio mute) of a receiver module to keep it silent until a valid signal is received. When a signal with the correct pilot tone is received, the squelch opens and audio is delivered to the output. Pilot tone squelch control also eliminates transients (clicks and pops) when transmitters are turned on and off. Pilot tone is supported in the Digital Hybrid compatibility modes for those systems that use it.

Pilot tone control can be bypassed as a diagnostic tool. Bypass opens the audio output of the receiver unconditionally, allowing you to listen to any signals entering the receiver to help identify their source. Pilot tone bypass will also allow you to use a transmitter that has a defective pilot tone circuit.

CAUTION: When pilot tone is bypassed and the transmitter is turned off, excessive noise will be present. Turn the audio level down before bypassing pilot tone.

