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July 31, 2003

BY ELECTRONIC FILING

Marlene H. Dortch, Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, D.C. 20554

Re: WT Docket No. 02-55
Ex Parte Presentation

Dear Ms. Dortch:

On Wednesday, July 30, 2003, representatives of the nation's leading public safety organizations, major private wireless trade associations, and Nextel Communications, Inc. (collectively, the "Consensus Parties") met with numerous Commission staffers to discuss technical issues relating to CMRS – public safety interference in the 800 MHz band, and to conduct a "hands-on" demonstration of this interference and the retuning process for 800 MHz radios. During this demonstration, representatives of the Consensus Parties showed the real-world effects of 800 MHz interference on public safety radios, described how 800 MHz realignment would be implemented in a given region, and performed actual, real-time retuning of 800 MHz equipment.

A list of attendees from the Consensus Parties and from the Commission is provided in Attachment 1. The Consensus Parties offered a slide presentation entitled "Consensus Plan – Retuning Methodology" at this meeting, and a copy of this slide presentation is provided in Attachment 2. Pursuant to section 1.1206(b)(2) of the Commission's rules, 47 C.F.R. § 1.1206(b)(2), this letter and these attachments are being filed electronically for inclusion in the public record of the above-referenced proceeding.

Sincerely,

/s/ Regina M. Keeney
Regina M. Keeney

Attachments

cc: Commission staff listed in Attachment 1

ATTACHMENT 1

ATTENDEES AT JULY 30, 2003 TECHNICAL DEMONSTRATION

Representatives of the Consensus Parties:

Connie Durcsak – PCIA - The Wireless Infrastructure Association ("PCIA")
Rick Edwards – Shulman, Rogers, Gandal, Pordy & Ecker, P.A. (Counsel to PCIA)
Sandy Edwards – Nextel Communications, Inc. ("Nextel")
Dave Ellis – Nextel
Garnet Goins – Nextel
James Goldstein – Nextel
Robert Gurss – Association of Public Safety Communications Officials-International, Inc.
Robert Johnson – Nextel
Gina Keeney – Lawler, Metzger & Milkman, LLC (Counsel to Nextel)
Lawrence Krevor – Nextel
Elizabeth Sachs – American Mobile Telecommunications Association
Michael Swaim – Nextel
Alan Tilles – Shulman, Rogers, Gandal, Pordy & Ecker, P.A. (Counsel to the City of Denver)

Commission Staff in Attendance:

Shellie Blakeney- Wireless Telecommunications Bureau ("WTB")
John Branscome – WTB
Rashmi Doshi – Office of Engineering and Technology ("OET")
John Evanoff - WTB
David Furth – Associate Bureau Chief, WTB
William Inglis – OET
Gregory Intoccia – WTB
Jeanne Kowalski - WTB
Evan Kwerel – Office of Strategic Planning and Policy Analysis ("OSP")
Anna-Elisa Mackowiak – Office of Commissioner Kathleen Abernathy
Jennifer Manner – Office of Commissioner Abernathy
Brian Marenco – WTB
John Muleta – WTB
Roberto Mussenden – WTB
Kathleen O'Brien Ham – OSP
Salomon Satche – OET
James Schlichting – OET
Catherine Seidel – WTB
Ziad Sleem – WTB
Rodney Small – OET
Thomas Stanley – WTB
Walter Strack – WTB
D'wana Terry – WTB
Edward Thomas – OET
Michael Wilhelm - WTB

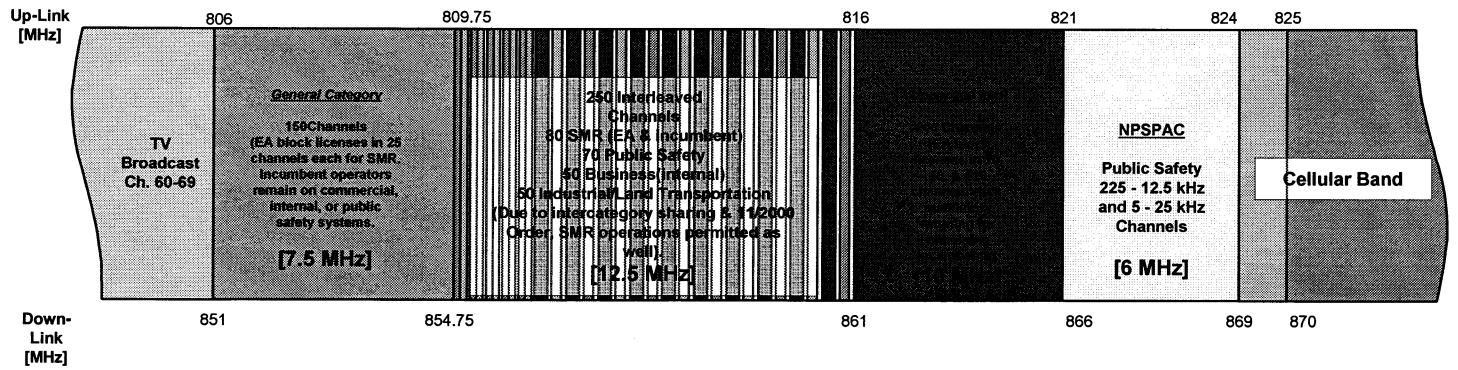
Consensus Plan

Retuning Methodology

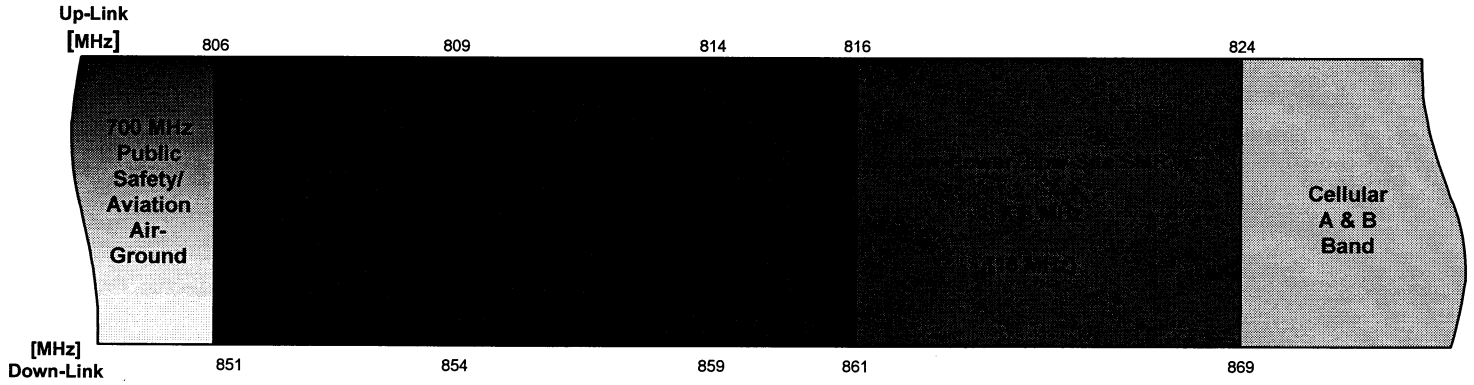
July 2003

Consensus Plan for Public Safety Spectrum Realignment

Before:



After:



NPSPAC Region 7, Colorado

Licensee	# Freqs to Retune
Mobile Relay Associates	1
ACS Investments, LLC	3
Anderson, David W	1
Auto Parts Wholesale	1
Brenner, Jerry	1
Bresnan Communications, LLC	1
Cherry Creek School District 5	4
Colorado Callcom	1
Colorado, Inc.	1
Colorado, State of	2
Cure Brothers	1
Denver Public Schools	1
Firstview Communications, LLC	1
Jefferson County Public Schools	4
Kinder Morgan CO2 Company, LP	1
Mac Vik Plumbing & Heating Co.	1
Mobile Relay Associates	18
Motient Communications Inc.	1
Quicksilver Express Courier	2
Ready Mixed Concrete Company	1
Rocky Mts Motorists; AAA	1
Tarco Inc	1
Transit Mix Concrete Co.	1
Triple C Communications Inc.	2
Two Way Communications Inc.	3
United Airlines	2
Wheat Ridge, City of	1
X.W., LLC	3
28	**61**

NPSPAC Region 7, Colorado

Sample Before and After

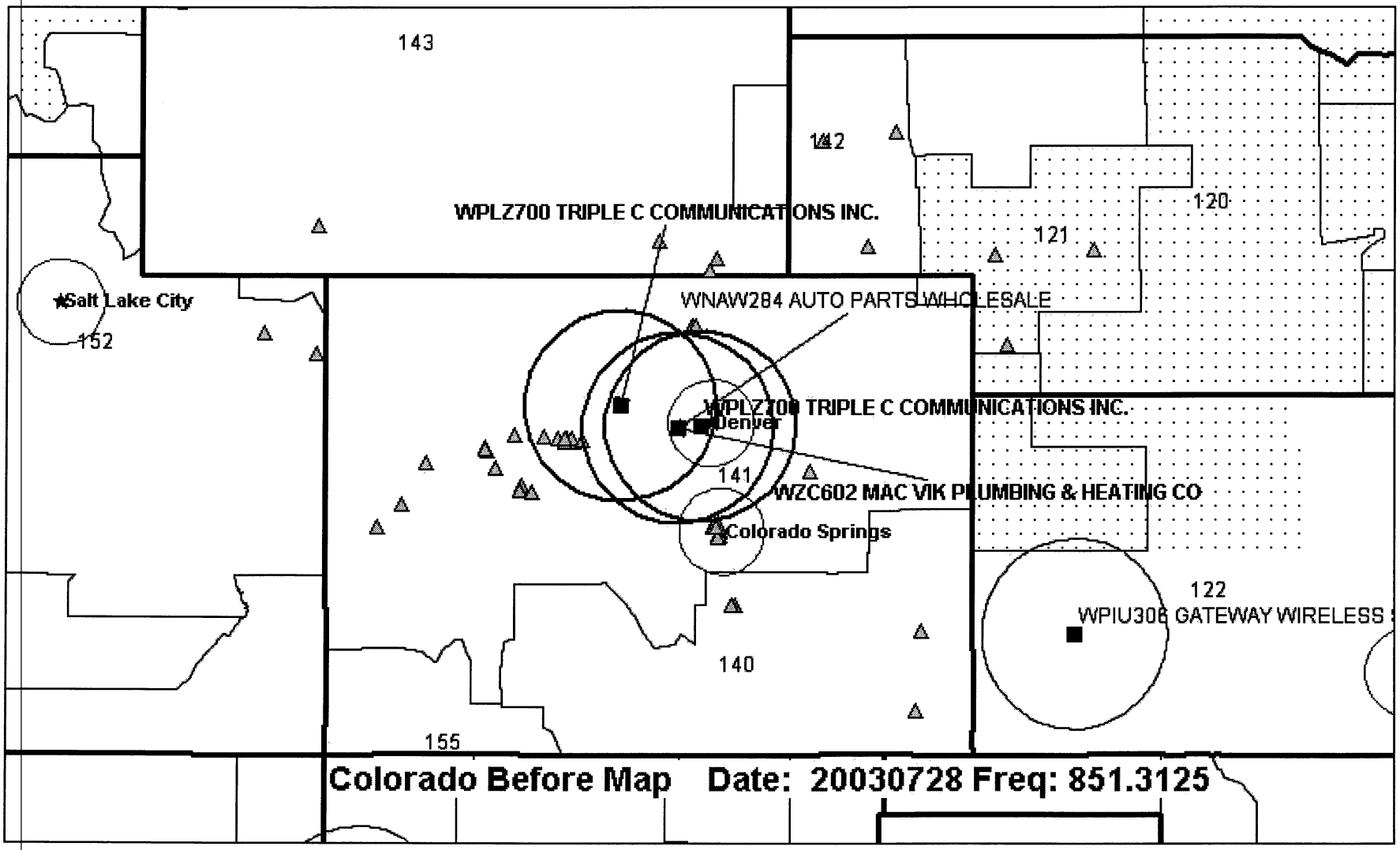
Ch #	TX Freq (MHz)	Call sign	Licensee	City	Replacement TX Freq	New Ch #
1	851.0125	WPBZ428	Cure Brothers	Bethune	860.6375	386
2	851.0375	WNCD872	Mobile Relay Associates	Boulder	860.6375	386
4	851.0875	WNUX414	Bresnan Communications, LLC	Rocky Ford	860.6375	386
5	851.1125	WPBB691	Anderson, David W	Boulder	859.5375	342
5	851.1125	KNCR504	Kinder Morgan CO2 Company, LP	Mancos	859.5375	342
6	851.1375	WNQV537	X.W.,LLC	Plainview	859.9125	357
12	851.2875	WYY839	Mobile Relay Associates	Golden	860.5625	383
12	851.2875	WRG788	Cherry Creek School District 5	Colorado Springs	856.6625	227
12	851.2875	WNXN898	Mobile Relay Associates	Plainview	856.6625	227
13	851.3125	WNAW284	Auto Parts Wholesale	Golden	859.0125	321
13	851.3125	WZC602	Mac Vik Plumbing & Heating Co.	Golden	859.0125	321
13	851.3125	WPLZ700	Triple C Communications Inc.	Boulden	859.0125	321
13	851.3125	WPLZ700	Triple C Communications Inc.	Denver	859.0125	321
14	851.3375	WNKF229	Two Way Communications Inc.	Grand Junction	859.1375	326
18	851.4375	WPBW478	ACS Investments, LLC	Plainview	859.1375	326
20	851.4875	WYY828	Mobile Relay Associates	Golden	859.5875	344
23	851.5625	WYY828	Mobile Relay Associates	Golden	860.1375	366
25	851.6125	WPKM267	Mobile Relay Associates	Evergreen	860.0875	364
27	851.6625	WNXN898	Mobile Relay Associates	Plainview	859.0375	322
29	851.7125	WRG788	Cherry Creek School District 5	Springs	855.9375	198
34	851.8375	WRG788	Cherry Creek School District 5	Morrison	855.9375	198
35	851.8625	WRG788	Cherry Creek School District 5	Morrison	854.2875	132
44	852.0875	WQP353	Tarco Inc	Plainview	859.5625	343
45	852.1125	KNHH521	Mobile Relay Associates	Plainview	860.5375	382
50	852.2375	KNCD434	Wheat Ridge, City of	Wheat Ridge	854.5875	144
52	852.2875	KNDB969	Transit Mix Concrete Co.	Colorado Springs	859.5375	342
53	852.3125	WNCD872	Mobile Relay Associates	Boulder	859.1875	328
54	852.3375	WNKF229	Two Way Communications Inc.	Grand Junction	859.1875	328
58	852.4375	WNXN898	Mobile Relay Associates	Plainview	860.0375	362
59	852.4625	WNXF838	Jefferson County Public Schools	Lakewood	854.0375	122
59	852.4625	WNJU950	Jefferson County Public Schools	Lakewood	854.0375	122
65	852.6125	WNXN846	Ready Mixed Concrete Company	Boulder	859.3375	334
66	852.6375	WPPZ839	Motient Communications Inc.	Colorado Springs	859.3375	334

NPSPAC Region 7, Colorado

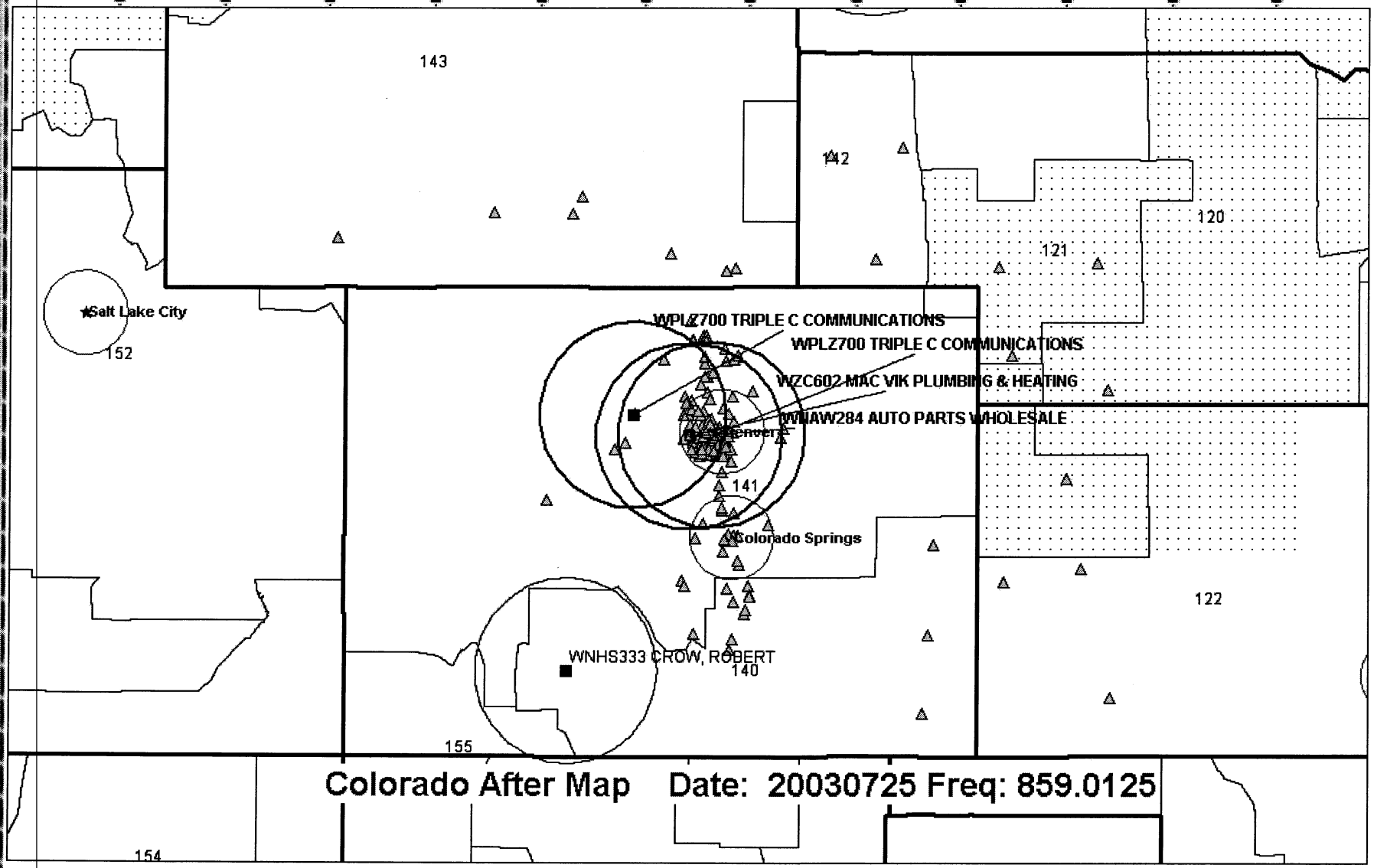
Sample Before and After (continued)

Ch #	TX Freq (MHz)	Call sign	Licensee	City	Replacement TX Freq	New Ch #
70	852.7375	WNXN898	Mobile Relay Associates	Plainview	860.1875	368
71	852.7625	WNXS760	Colorado, State of	Lakewood	856.5375	222
72	852.7875	WNZG276	Denver Public Schools	Golden	855.5875	184
76	852.8875	WNXN898	Mobile Relay Associates	Plainview	859.6125	345
81	853.0125	WNXS807	Brenner, Jerry	Hale	859.6375	346
81	853.0125	WNCD872	Mobile Relay Associates	Boulder	859.6375	346
82	853.0375	WPBZ432	ACS Investments, LLC	Plainview	859.0625	323
82	853.0375	WNXS842	Colorado Callcom	Denver	859.0625	323
84	853.0875	WNWJ207	ACS Investments LLC	Plainview	858.5375	302
85	853.1125	WNXF838	Jefferson County Public Schools	Lakewood	854.8125	153
85	853.1125	WNJU950	Jefferson County Public Schools	Lakewood	854.8125	153
89	853.2125	WNXN898	Mobile Relay Associates	Plainview	860.6125	385
94	853.3375	WNKF229	Two Way Communications Inc.	Grand Junction	860.5125	381
96	853.3875	WNXN898	Mobile Relay Associates	Plainview	860.5125	381
97	853.4125	WPKM267	Mobile Relay Associates	Evergreen	859.5125	341
99	853.4625	WPEZ734	United Airlines	Denver	860.7875	392
99	853.4625	WNPY697	United Airlines	Denver	860.7875	392
104	853.5875	WNXN898	Mobile Relay Associates	Plainview	859.6875	348
107	853.6625	WPUM686	Firstview Communications, LLC	Boulder	859.7875	352
107	853.6625	WNZY846	X.W., LLC	Boulder	859.7875	352
109	853.7125	WNXN898	Mobile Relay Associates	Plainview	860.6875	388
111	853.7625	WPAJ869	Colorado, State of	Conifer	859.0875	324
111	853.7625	WPAJ869	Rocky Mts Motorists; AAA	Conifer	859.0875	324
112	853.7875	WPAJ869	Colorado, Inc.	Idaho Springs	860.0125	361
114	853.8375	WNZU663	Quicksilver Express Courier	Plainview	860.3375	374
114	853.8375	WNZU656	Quicksilver Express Courier	Conifer	860.3375	374
115	853.8625	WPAB810	X.W., LLC	Boulder	860.0625	363
116	853.8875	WNXN898	Mobile Relay Associates	Plainview	860.5875	384

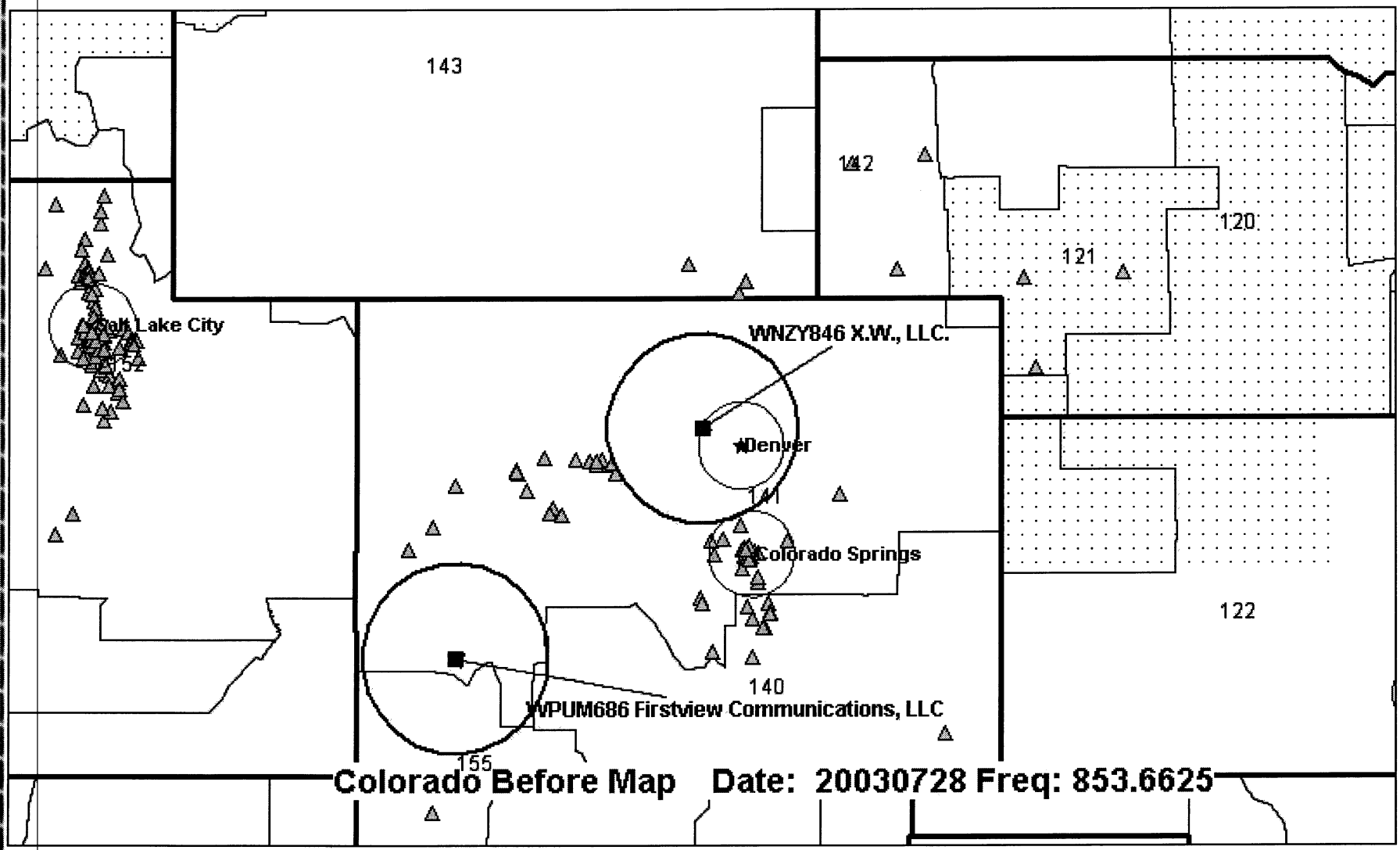
851.3125 Before Retune



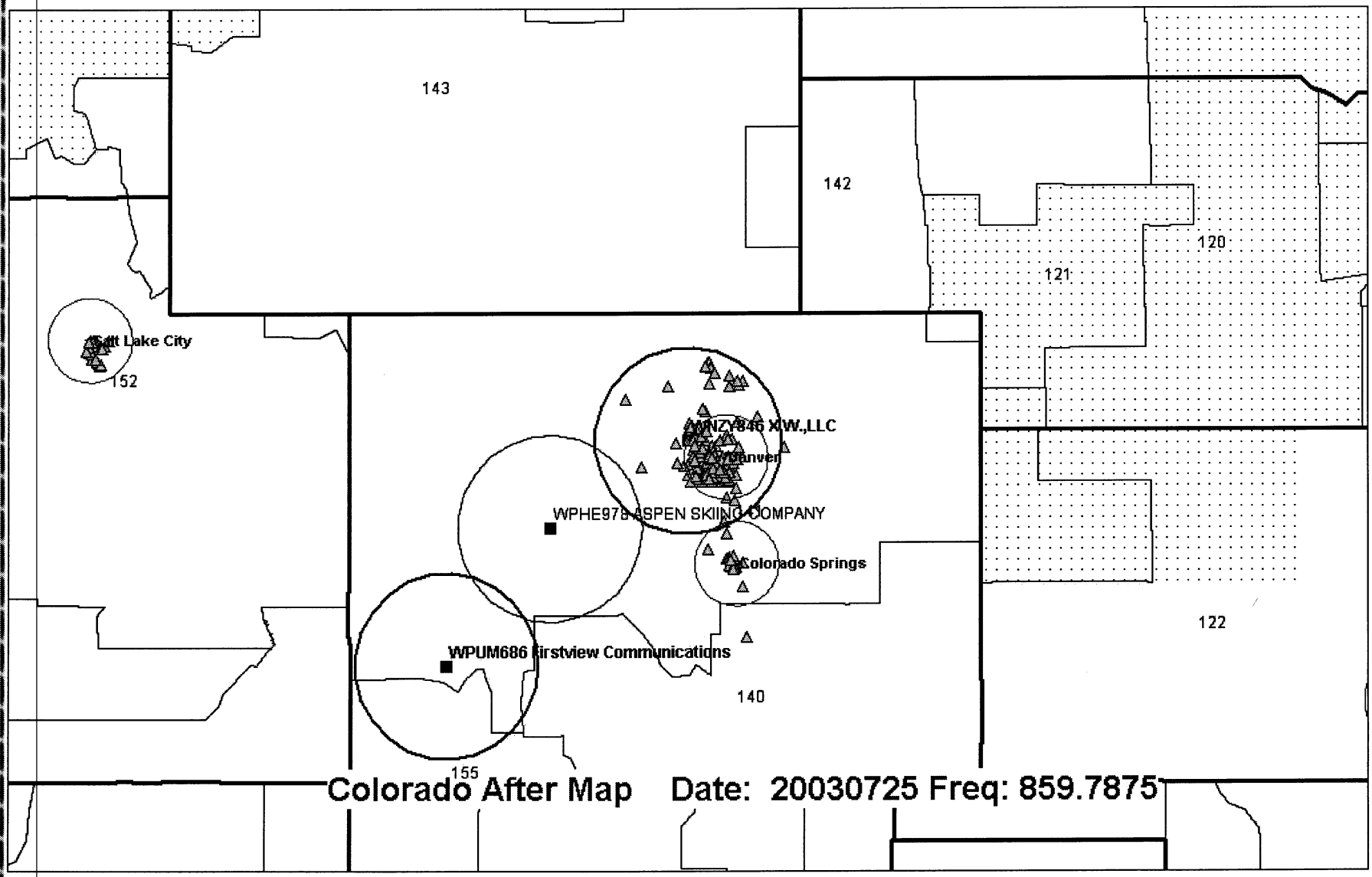
Replacement for 851.3125



853.6625 Before Retune



Replacement for 853.6625



Myths of Retuning

- Cannot be done
- Tower is full
- No room in equipment building
- Antenna will not work on new frequencies
- Must put up additional TX antenna
- Roamer over multiple states makes retune impossible
- Nextel does not understand the analog business
- Nextel wants customer list

Clearing 1-120 Frequency Band

851-852-853

- # GB/ILT/SMR Incumbents 1071
- # Public Safety Incumbents 316
- Total 1387

Clearing 1-120 Frequency Band
851-852-853

Conventional Systems

• GB/ILT/SMR	Incumbents	734
• Public Safety	Incumbents	203
• Total		937

68% of Total Incumbents

Clearing 1-120 Frequency Band
851-852-853

- SMR — 189 Incumbents, 2656 Frequencies

- Two incumbents have 40% of the total frequencies

- All other incumbents average 8 or less frequencies

Clearing 1-120 Frequency Band
851-852-853

- GB/ILT — 148 Incumbents

  3594 Frequencies

- Three incumbents have 64% of the frequencies

- All other incumbents average 9 or less frequencies

Clearing 1-120 Frequency Band
851-852-853

- Public Safety — 113 Incumbents, 2667 Frequencies
- Voice Channels only — 61 Incumbents
- Control Channels — 52 Incumbents

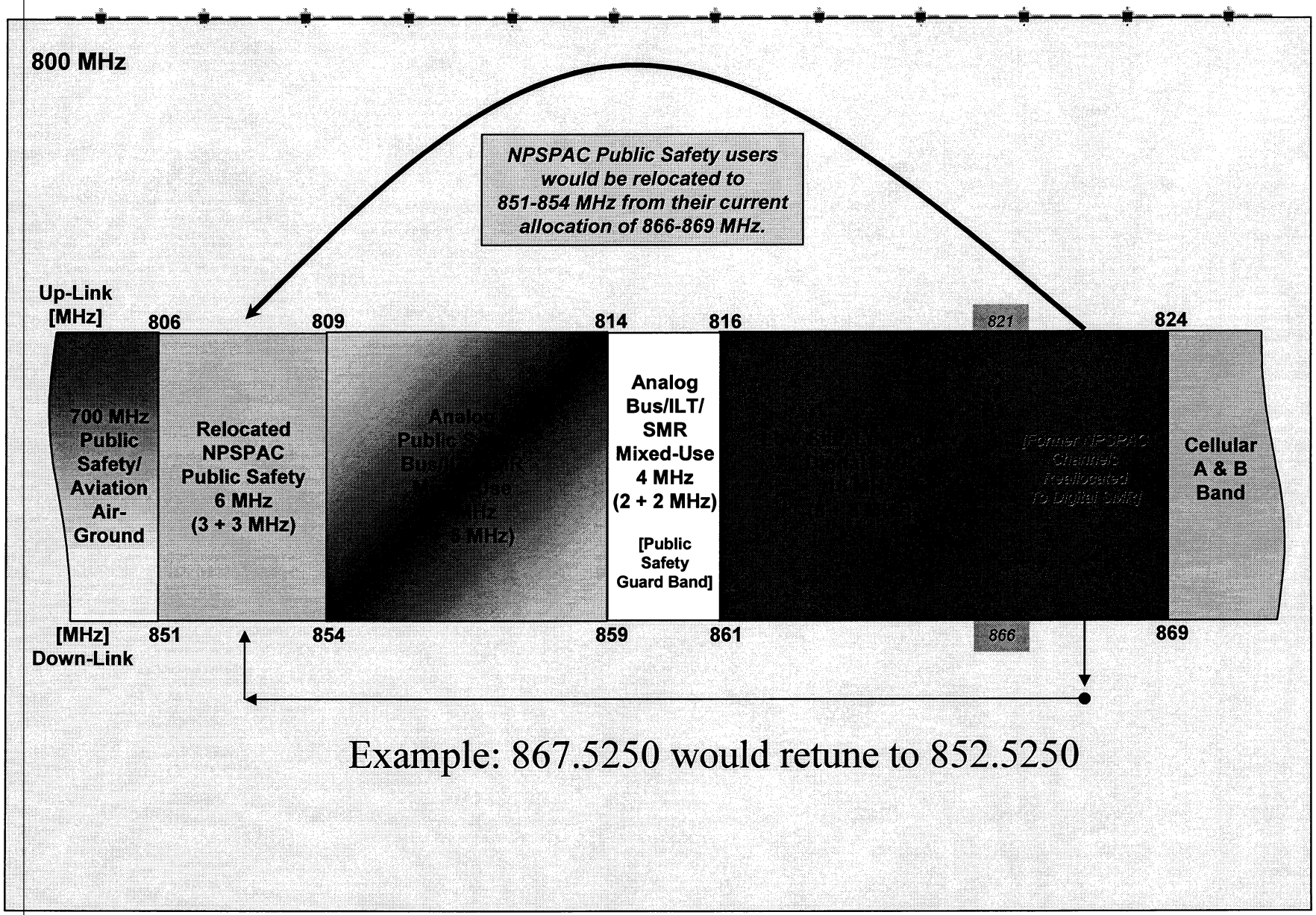
(Only 4 with all control channels)

Clearing 1-120 Frequency Band
851-852-853

Incumbents with:

• Conventional Systems	937	68%
• Single Site Trunked Systems	362	26%
• Simulcast, Multi Site, or Very Large Systems	88	6%

Proposed FCC 800 MHz Re-Allocation Based On Consensus Plan



Example: 867.5250 would retune to 852.5250

NPSPAC Retuning

- # of Public Safety Incumbents 1137
- # of Public Safety Callsigns 5033
- # of Public Safety Frequencies 52305

NPSPAC Retuning

Incumbents with:

Conventional Systems	261	23%
Single Site Trunked Systems	388	34%
Simulcast Systems	213	19%
Multi Site Systems	207	18%
Very Large Systems	68	6%

Combined Retuning

1 to 120 and NPSPAC

Conventional Systems	1198	47%	77%
Single Site Trunked Systems	751	30%	
Simulcast, MultiSite, and Very Large Systems	575	23%	
Total	2524		

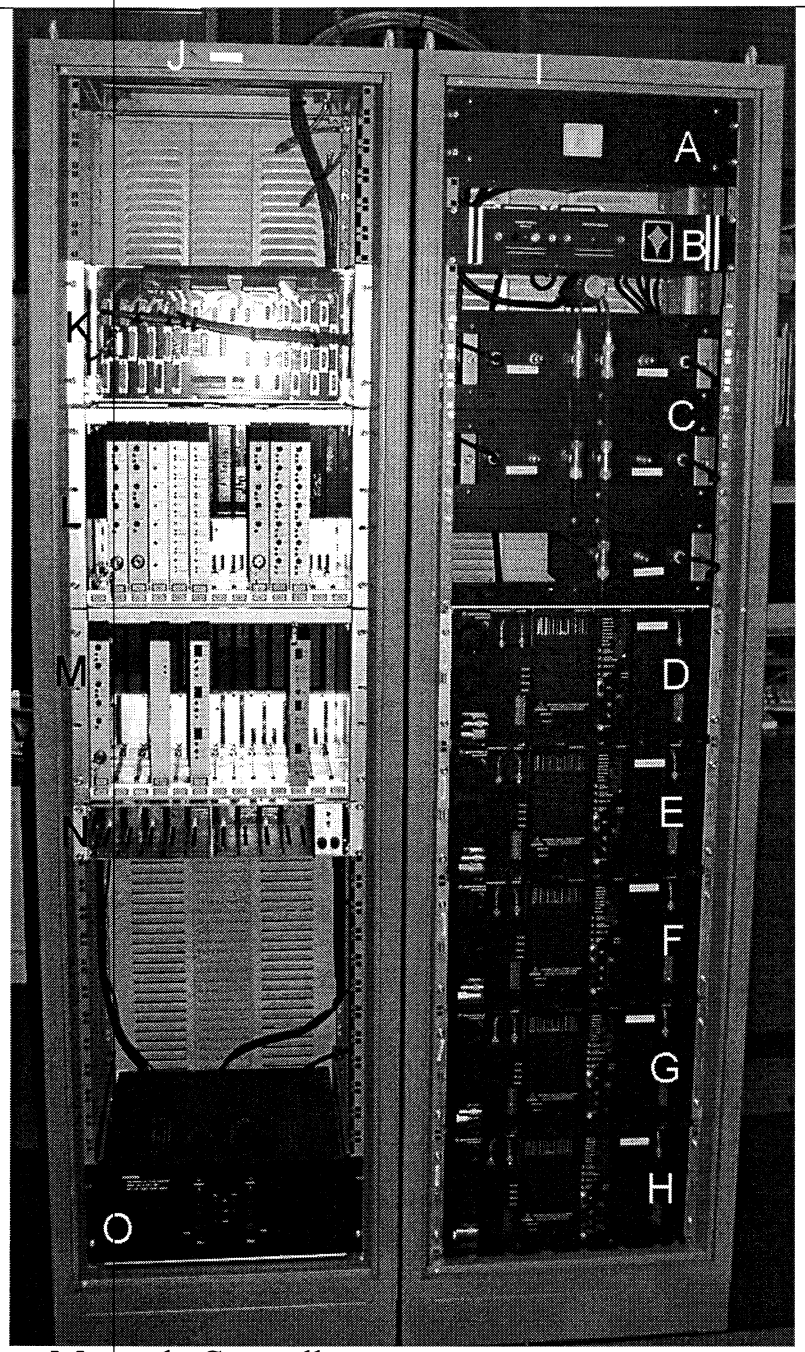
Retuning Trunked Systems

Manufacture of today's 800 MHz trunking radio systems is dominated by 2 entities, Motorola and Macom/Ericsson type systems. Both systems operate similarly, however both have their own distinct protocol.

Generically both have 2 types of channels, one is a Control Channel and the other is a Voice/working channel. Only one Control Channel at a site operates at a time and is the frequency that is continuously broadcasting and listening for any radio to request a frequency to use. If a request is made, the Control Channel will assign a voice/working channel for the communications to take place on and the Control Channel will go back to listening for other requests.

A Motorola system has 4 Control Channels programmed in the system and a Macom/Ericsson system may have as many as 24 Control Channels. Once again, no more than 1 Control Channel is ever being used at one time and all the other channels are utilized as voice/working channels. The unused Control Channels are used as both backup Control Channels and voice/working channels. This point is key when determining the strategy and implementation of a system retune.

Example of Single Site Trunked System



Motorola Controller 5 Channel Motorola System

ID	Description
A	Duplexer
B	Multicoupler
C	Combiner
D	Quantar Repeater
E	Quantar Repeater
F	Quantar Repeater
G	Quantar Repeater
H	Quantar Repeater
I	Cabinet w/cables
J	Cabinet w/cables
K	28 Channel with Interconnect Chassis
L	28 Channel Cage w/cards
M	CIT Card Cage w/cards
N	Pulsecom Cage w/cards
O	Power Supply

One Step Method

Each radio will only have to be reprogrammed one time. This situation can occur with Motorola equipment when only 2 of the Control Channels must be changed. The radios in a Motorola system only have the control channels programmed in the units and can have any channel assigned as a voice/working channel. To retune, in this type of situation, the system technician would tell the system not to use the channels being changed as a Control channel. The system technician would then reprogram all the radios, leaving the 2 frequencies that not do need to be retuned and changing the other 2 Control Channels from the old to the new replacement frequencies. After all the radios are retuned, the system technician will then tell the system that it is ok to use any of the 4 Control Channels

This method could also be used in a situation where all 4 channels must be changed. The radios are programmed as before and then the system technician tells the system to only use the 2 new channels. The system has the capability of operating with only 2 Control Channels available and there will be no degradation to the system performance. The radio will not only have the 2 new channels, but also the 2 old Control Channels. There is no harm in leaving unused channels in a Motorola radio. The system will now only have the ability to utilize 2 Control Channels rather than 4.

One Step Method Example

Step A

Current system rotates through 4 control channels

Start

Freq	Type
860.7625	Control
859.7625	Control
858.7625	Control
857.7625	Control
856.7625	Voice

Finish

Freq
854.7625
855.7625
858.7625
857.7625
856.7625

One Step Method Example

Step B

Program the Controller to rotate through 2 Control Channels

System

Freq	Type
860.7625	Voice
859.7625	Voice
858.7625	Control
857.7625	Control
856.7625	Voice

One Step Method Example

Step C

Reprogram the Radios to the New Frequencies

Current Set Up

Freq
860.7625
859.7625
858.7625
857.7625

Reprogram

Freq
854.7625
855.7625
858.7625
857.7625

One Step Method Example

Step D

Once the radios have all been reprogrammed to the new frequencies, realign the two repeaters and associated combiner cavities (from 859-860.7625 to 854-855.7625). This can be done one repeater at a time or together. Swap the "code plug" in the controller.

System

Freq	Type
854.7625	Voice
855.7625	Voice
858.7625	Control
857.7625	Control
856.7625	Voice

One Step Method Example

Step E

Program the controller to resume rotating through all four control channels.

System

Freq	Type
854.7625	Control
855.7625	Control
858.7625	Control
857.7625	Control
856.7625	Voice

Retune is complete

Two Step Method

The same steps are taken as the one-step method with replacing the 2 control channels and switching to the 2 new control channels, however, the system technician would then return to each radio in order to take the remaining 2 old control channels out and replace them with 2 new frequencies. At this point the system would now have the ability to choose from 4 different control channels, rather than 2. This, two-step process, would probably occur when it is necessary for every system to have the ability to utilize 4 different Control Channels.

Redundant System Method

This method is the most complex. Situations may arise in which the licensee's equipment is so aged that it cannot be reprogrammed to the new frequencies or there may not be ample memory or capacity in the radios to make the necessary changes required in the other two methods. This situation is referred to as the redundant system procedure. Here, an entirely new system would be constructed mirroring the licensee's current system. This redundant system would be tested and deemed operationally equivalent to the current system by the licensee. At this point the redundant system would be made operational and the licensee's system would be turned off. The licensee's system would then be reprogrammed to accommodate the new frequencies and then turned back on and checked for operational consistency. The radios would now be reprogrammed to operate on the licensee's original system, utilizing the new frequencies. This would be done in two different manners. One way would be retuning the radios that logically talk to each other on a consistent basis. Example: All the police radios in Precinct 2 or the fire radios out of Station 14. The second way is to give the user a loaner radio to use during the shift while their radio is being reprogrammed.

3Ways to Retune Conventional Systems

Method 1

- Turn system off
- Retune radios to new frequency
- Retune repeater to new frequency
- Turn system on

System will be off air for length of time it takes to retune radios and repeater

3 Ways to Retune Conventional Systems

Method 2

- Add new frequency to radios (new system setting)
- Turn system off
- Retune Repeater
- Turn system on
- Change radios over to new system setting

System will be off air for length of time it takes to retune repeater

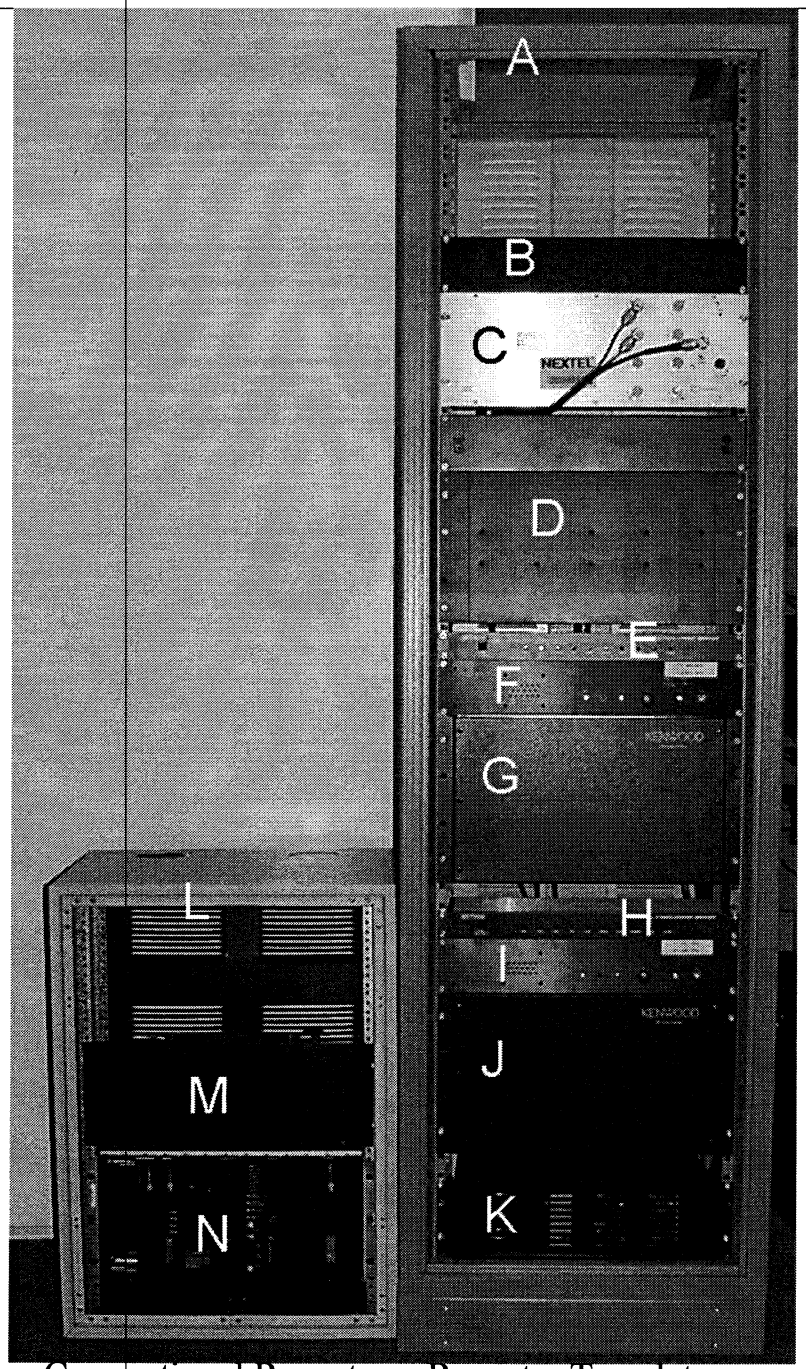
3 Ways to Retune Conventional Systems

Method 3

Use Back to Back Repeater Method

(DEMONSTRATION)

Conventional and Back to Back Repeater Systems



Conventional Repeater Repeater Translator

ID	Description
A	Cabinet with cables
B	Duplexer
C	Multicoupler
D	Combiner
E	Zetron Controller
F	Kenwood Repeater
G	Milcom PA
H	Zetron Controller
I	Kenwood Repeater
J	Milcom PA
K	Power Supply
L	Cabinet
M	Duplexer
N	Quantar Repeater

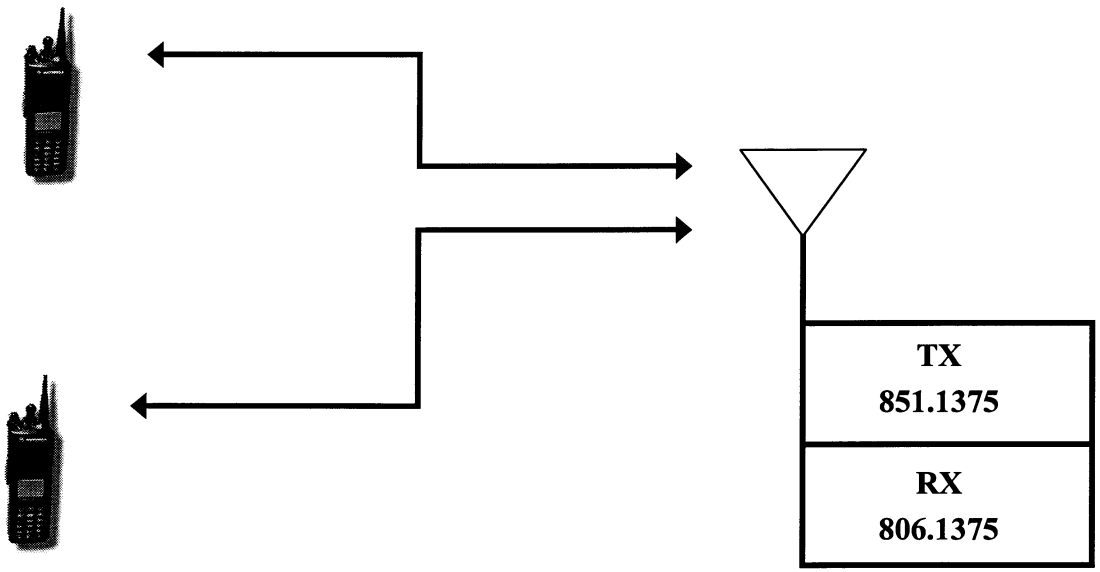
Conventional Retune using Back to Back Repeaters

Incumbent: AB Warehouse

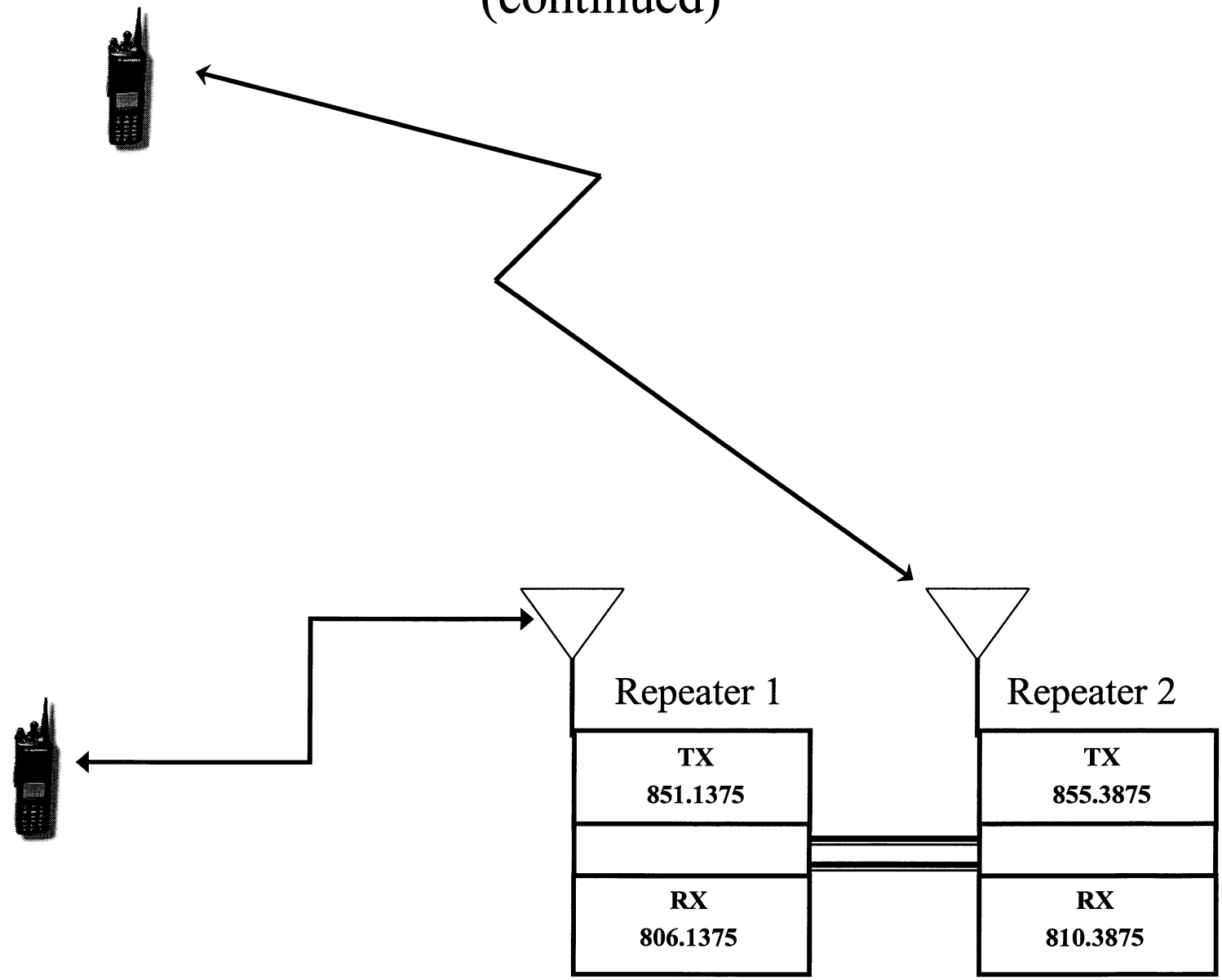
1 Motorola Quantar Repeater

Current frequency 851.1375

Needs to be retuned without any interruption of their communications



Conventional Retune using Back to Back Repeaters (continued)

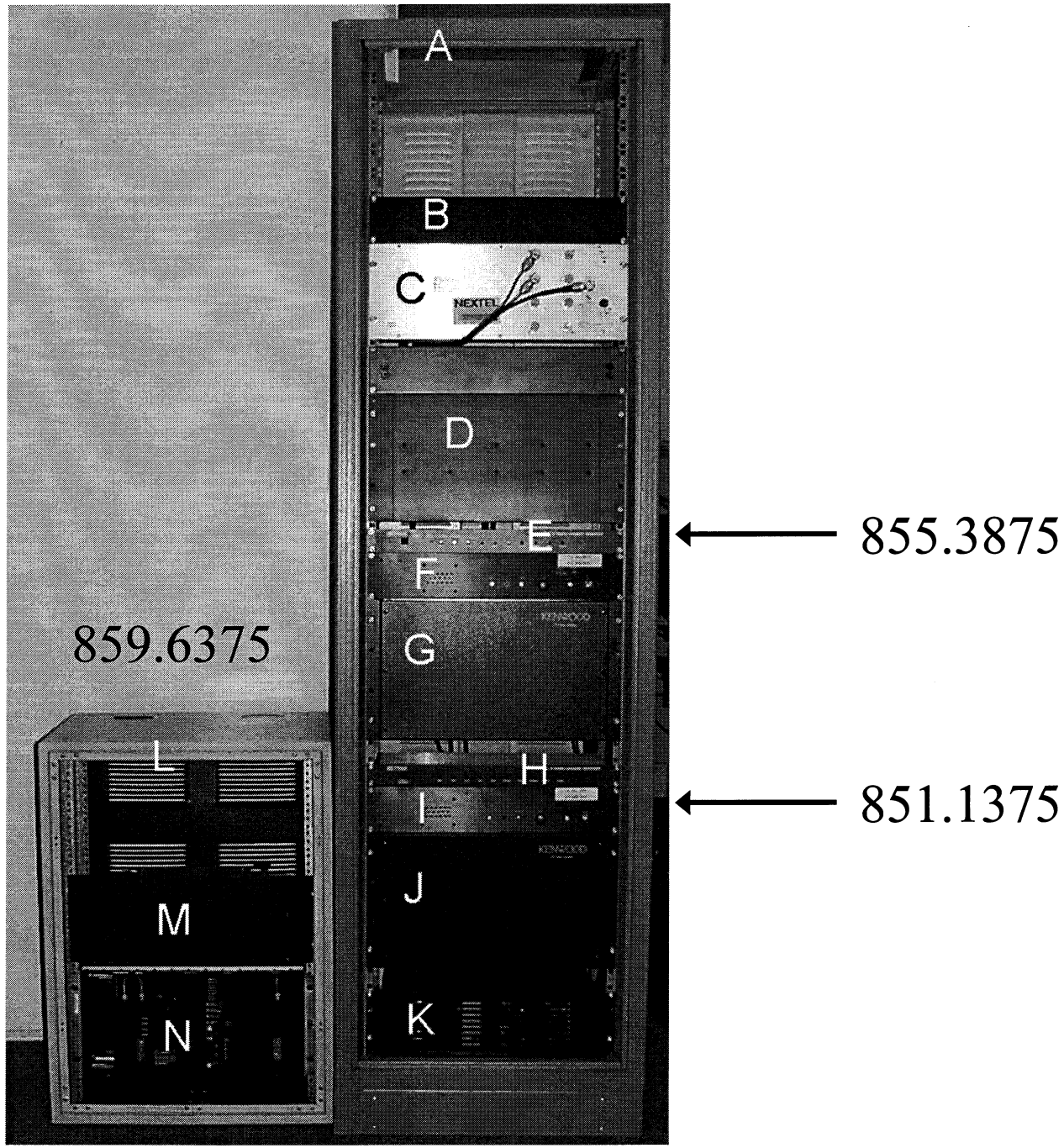


Example of IM Interference

IM Product 2A-B

2 x 855.3875 – 851.1375

= 859.6375


A
B
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