



## LAND MOBILE COMMUNICATIONS COUNCIL

March 22, 2013

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Public Safety & Homeland Security Bureau  
Federal Communications Commission  
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Washington, D.C. 20554

Mr. Scot Stone  
Wireless Telecommunications Bureau  
Federal Communications Commission  
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Re: LMCC Digital Working Group (DWG)  
Digital vs Analog Frequency Coordination Best Practices

Gentlemen:

On December 5, 2012, representatives from both the WTB and PSHSB met with members of the LMCC's Digital Working Group to discuss matters associated with the deployment of digital technologies within the shared Part 90 bands. Near the conclusion of that meeting, it was agreed that the DWG would work towards identifying potential approaches during the frequency coordination and licensing process that may serve to promote more efficient spectrum use, and more specifically, identify processes that would mitigate potential incompatibility events among disparate voice and data system technologies. The LMCC committed to provide the Commission with a "Best Practices" document on or before April 1, 2013.

Since that meeting, the DWG convened multiple teleconferences during which the above objectives were discussed. The product of these meetings is the attached document entitled "Recommended Frequency Coordination Best Practices." Please note that the recommendations are primarily educational in nature as opposed to specific technical solutions that may be employed during the frequency coordination and certification process. It was the DWG's opinion that the fundamental causes of interference in the shared Part 90 bands result from a number of factors, principally that oftentimes both the system sales/service organization and the licensee are unfamiliar with applicable FCC operational rules; that there often is a misunderstanding between

what a license actually authorizes in the way of system operations; and, critical knowledge of a new systems' spectrum environment, specifically the presence of both co-channel and adjacent channel incumbent operations.

The DWG document provides basic educational information recommended by the LMCC and the FCC's certified frequency advisory committees are free to develop and disseminate their own content that is, of course, consistent with the DWG's suggestions. The LMCC's DWG is not recommending that the FCC mandate the dissemination of the educational information, but that it be adopted voluntarily on the part of the FCC's certified frequency advisory committees. FCC comments, editorial suggestions and questions are welcome.

Should the FCC wish to meet with the DWG to discuss next steps or document improvements, we would be pleased to do so.

Sincerely,

**Douglas M. Aiken**

Douglas M. Aiken  
President

#### Attachments

Frequency Coordination Best Practices  
Commonly Deployed Emission Designators (Attachment 1)

cc: David Furth  
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Michael Wilhelm  
Roger Noel  
Tracy Simmons  
Terry Fishel

# Digital Working Group

## Land Mobile Communications Council

### Frequency Coordination “Best Practices”

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#### Issue

An ever growing number of Public Safety, Industrial/Business and Commercial licensees are transitioning their wireless communication systems to digital technologies as these systems offer, among other benefits, greater spectrum utilization, coverage, audio improvements and access to features supporting investment objectives. Despite these system improvements, there are compatibility issues associated among digital and analog systems in shared bands, particularly in the 150-512 MHz space where it is difficult to secure authority for exclusive use channel designations. With that in mind, the following are recommended “Best Practices” for frequency advisory committees.

#### Suggested Best Practices

1. Whether analog or digital system certification, frequency advisory committees shall remind vendors and licensees of regulatory obligations to monitor all shared channels for communications in progress to mitigate instances of interference, and to provide station identification.
2. Information regarding forms of interference in shared spectrum environments; particularly how it may be identified and addressed may be provided. Lists of co-channel and adjacent channel incumbent licensees, points of contact, brief system descriptions and other information may be provided to increase licensee spectrum environment awareness.
3. New licensee and incumbent FCC spectrum rules, obligations and responsibilities may be drafted and distributed by frequency advisory committees to applicants and their sales and service organizations following application submittal covering, among other topics:
  - a) Emission Designators<sup>1</sup> - advise the client as to the type of operation of the coordinated system, for example, designators ending in “E” represent voice systems; those ending in “D” represent data systems; and those ending in “W” represent combined voice/data systems [see Attachment 1];

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<sup>1</sup> Please refer to 47 CFR 2.201(b) for a complete description of the basic characteristics of emission designators.

- b) Technology Platform – advise the applicant whether they are operating an analog or digital system;
  - c) Shared Frequencies - licensees shall take reasonable precautions to avoid causing harmful interference. This includes monitoring the transmitting frequency for communications in progress and such other measures as may be necessary to minimize the potential for causing interference [47 C.F.R. § 90.403(e)];
  - d) Station Identification – Except for certain Commercial Mobile Radio Service (CMRS) stations, transmitters must send identification information (call sign or other permitted identifier) every 15 minutes (30 minutes for public safety) or with each exchange of transmissions, by voice or Morse code [47 C.F.R. § 90.425]; and
  - e) Duty Cycles - on shared frequencies, constant duty cycle is not permitted, and each licensee must restrict all transmissions to the minimum practical transmission time and must employ an efficient operating procedure designed to maximize the utilization of the spectrum [47 C.F.R. § 90.403 (c)].
4. A description of the system parameters certified by the frequency advisory committee should be provided to the new licensee after coordination with a description of what may be installed, what may not be installed (i.e., centralized trunked systems on shared channels), and priority channel suggestions.
  5. Maximize the identification of exclusive use frequencies for all digital/analog centralized, hybrid trunked systems, and incorporate use of the ACCV Table.
  6. In multi-channel trunked systems, recommend that system programmers prioritize channel selection based on system technology, e.g., in a digital system, minimize the certification of channels that are predominately occupied by co-channel and adjacent channel analog systems, and vice versa.
  7. In the VHF band, maximize the identification and certification of channel pairs that are consistent with incumbent operations, e.g., avoid certification of transmit channels that have co-channel or adjacent channel incumbent systems, within the predicted interference area, that use the channel for receive purposes, and vice versa.

## Attachment 1

### Commonly Deployed Emission Designators Digital Working Group Land Mobile Communications Council

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<u>Designator</u>	<u>Information</u>	<u>Technology</u>
4KooF1E	Voice	Digital FDMA
4KooF1D	Data	Digital FDMA
4KooF1W	Voice and Data	Digital FDMA
4KooF7W	Voice and Data	Digital FDMA
4KooF2D	Data	Digital FDMA
7K6oF1E	Voice (Subscriber)	Digital TDMA
7K6oF1D	Data (Subscriber)	Digital TDMA
7K6oF1W	Voice and Data (Subscriber)	Digital TDMA
7K6oFXE	Voice	Digital TDMA
7K6oFXD	Data	Digital TDMA
7K6oF7E	Voice	Digital TDMA
7K6oF7D	Data	Digital TDMA
7K6oF7W	Voice and Data	Digital TDMA
7K6oFXW	Voice and Data	Digital TDMA
8K1oF1D	Data	Digital FDMA
8K1oF1E	Voice	Digital FDMA
8K3oF1E	Voice	Digital FDMA
8K3oF1D	Data	Digital FDMA
8K3oF1W	Voice and Data	Digital FDMA
8K3oF7W	Voice and Data	Digital TDMA
11Kof3E	Voice	Analog FDMA
11K2F3E	Voice	Analog FDMA
11K2F1E	Voice	Digital FDMA
11K2F1D	Data	Digital FDMA
11K2F2D	Data (Tone)	Digital FDMA
2oKod7D	Data	Digital TDMA
2oKod7E	Voice	Digital TDMA
2oKod7W	Television (Video)	Digital TDMA
22Kod7D	Data	Digital TDMA
22Kod7E	Voice	Digital TDMA
22Kod7W	Television (Video)	Digital TDMA