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November 21, 2008

Ms. Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street SW.  
Washington DC 20554

Re: **ET Docket No. 08-59**  
**Ex Parte Filing**

Dear Ms. Dortch:

On November 17, Aerospace and Flight Test Radio Coordinating Council ("AFTRCC") filed the attached ex parte presentation in WT Docket No. 07-293 et al. That presentation deals with proposed technical rules for the Wireless Communications Service ("WCS") and, in particular, measures to protect flight test telemetry from WCS out-of-band emissions. While that proceeding is unrelated to ET Docket No. 08-59, certain aspects of the November 17 filing may relate to the above-referenced docket. Accordingly, out of an abundance of caution, a copy of the earlier submission is attached for inclusion in the record of ET Docket No. 08-59.

Any questions regarding this filing may be directed to the undersigned.

Respectfully submitted,

  
William K. Keane

*Counsel for Aerospace and Flight Test  
Radio Coordinating Council*

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November 17, 2008

Ms. Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street SW.  
Washington DC 20554

**Re: Ex Parte Filing  
WT Docket No. 07-293; IB Docket No. 95-91;  
GEN Docket No. 90-357; RM-8610**

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Dear Ms. Dortch:

This is to confirm that on Friday, November 14, the undersigned, together with Frank Weaver, The Boeing Company; Oakley Brooks and Don Hoehn, Bombardier; Marc Ehudin and Danny Hankins, Textron; Giselle Creeser, Lockheed Martin Corporation; and Dr. Daniel G. Jablonski, Johns Hopkins Applied Physics Lab, met with Julius P. Knapp, Chief, Office of Engineering and Technology; Bruce Romano, Associate Chief, OET; and Ronald Repasi, Deputy Chief, OET regarding the position of Aerospace & Flight Test Coordinating Council and its Member Companies in the above-referenced proceedings. (Messrs. Hoehn and Hankins participated via conference phone.)

The AFTRCC representatives distributed the materials attached. The points covered during the meeting are reflected in those materials, as well as in AFTRCC's earlier filings in the Dockets.

A copy of this ex parte statement is being submitted for the above-referenced proceedings.

Sincerely,



William K. Keane

*Counsel for Aerospace and Flight Test  
Radio Coordinating Council*

cc: Julius P. Knapp  
Bruce Romano  
Ronald Repasi



# WCS Out-of-Band Emissions in Aeronautical Mobile Telemetry Band

Aerospace and Flight Test Radio  
Coordinating Council  
Presentation to  
Office of Engineering and Technology

November 14, 2008

# Current WCS OOB Limits



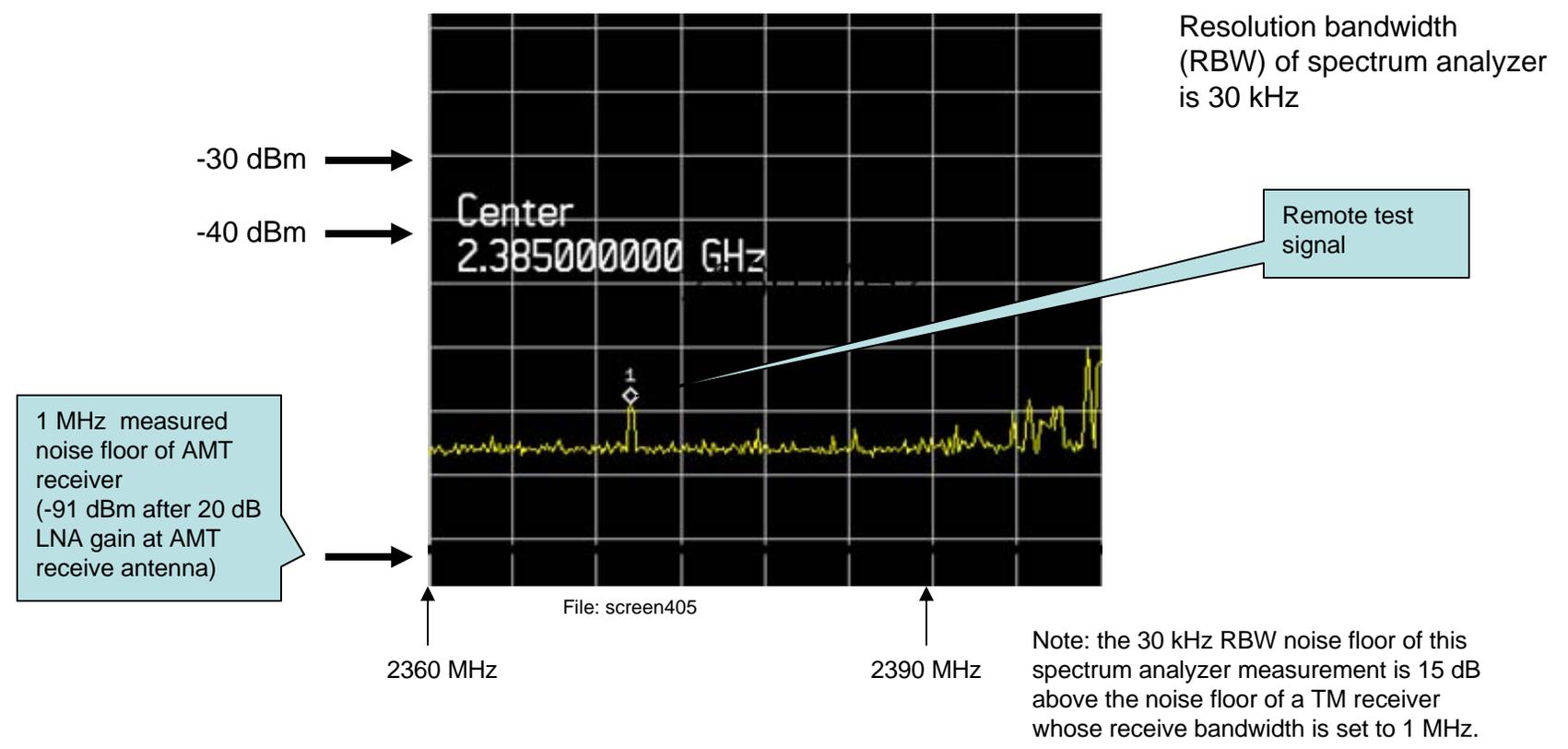
- WCS occupies 2305 – 2320 MHz and 2345 – 2360 MHz
- Flight test telemetry allocated in immediately adjacent band, 2360 – 2395 MHz
- OOB into AMT band is limited to  $43 + 10 \log (P)$  dB per MHz of bandwidth in 2360 – 2370 MHz
- OOB is limited to  $70 + 10 \log (P)$  above 2370 MHz
- Based on peak, not average power (Part 27.50)
- Flight testing has benefited for years from a de facto protection limit of  $110 + 10 \log (P)$  dB per MHz into the SDARS band, 2320 – 2345 MHz
  - This limit has effectively precluded mobile use of the WCS band

# Limits based on $43 + 10 \log (P)$ do not adequately protect Aeronautical Mobile Telemetry (AMT)



- There is no frequency separation between AMT and WCS operations -- by contrast to separation between AMT and the 2.4 GHz ISM band (where, in 2390 – 2400 MHz, sub-band 2390-95 MHz is shared between AMT and amateur radio, and 2395 – 2400 MHz is allocated to Amateurs)
  - This lightly used band provides approximately 27 dB of additional protection (e.g., the difference between  $43 + 10 \log (P)$  and  $70 + 10 \log (P)$ )
  - Allows portable and mobile consumer devices to operate at less restrictive OOB levels while still affording protection to AMT
- Additional protection, corresponding to or equivalent to that afforded by frequency separation, is needed in order to keep 2360 – 2370 MHz and above viable for AMT use
- Long-standing experience of flight test engineers is that OOB is confined to the top end of the AMT band, i.e. 2390 – 2400 MHz.

# Typical AMT band noise floor measurement at Pax River, Maryland



**Note absence of OOB from 2345 – 2360 MHz into the 2360 – 2390 MHz band!**  
(as also validated by -91 dBm measured noise floor of AMT receiver)

# AFTRCC Proposal



- Increase existing protection levels from  $43 + 10 \log (P)$  in 2360 – 2370 MHz and  $70 + 10 \log (P)$  in 2370 – 2390 MHz; that is
  - $70 + 10 \log (P)$  in 2360 - 2370 and  $90 + 10 \log (P)$  in 2370 - 2390 MHz for mobiles and portables
  - $75 + 10 \log (P)$  before transmit antenna in 2360 -2370 MHz and  $95 + 10 \log (P)$  in 2370 - 2390 MHz for base stations
  - Require transmit power control for WCS base stations, mobile users, and portable users
    - Designed expressly to minimize interference
  - Levels are consistent with or less stringent than Rule 27.53 and Commission proposal for H-block (where  $90 + 10 \log (P)$  dB plus 10 MHz guard band proposed for 1915 – 1920 MHz in order to protect PCS at 1930 – 1990 MHz)

# AFTRCC Proposal (cont.)



- Difference between  $43 + 10 \log (P)$  and  $70 + 10 \log (P)$  for mobiles and portables includes:
  - $\sim 16$  dB to reduce maximum single-device interference to noise floor of AMT receiver (under propagation conditions appropriate to flight test, such as free space propagation at 1.5 mile separation)
  - $\sim 8$  dB to account for aggregate interference from multiple devices (corresponding to reduction in single-device interference to an I/N of  $-8$  dB, per Rec. M.1459).
  - $\sim 3$  dB additional margin to account for multipath and other NLOS enhancements to interference signal strength
- Difference between  $43 + 10 \log (P)$  and  $75 + 10 \log (P)$  for base stations
  - Includes an additional 5 dB to help account for improved line of sight from tower-mounted base station antennas to AMT receive sites

# Summary



- Interfering WCS signals from mobile and portable units and base stations will raise the noise floor of AMT systems significantly and cause data dropouts if current OOB levels are not made more restrictive.
  - Material risks to flight safety communications, as well as to industry productivity