

# VDLM2 Implementation AFC Fall 2015 Meeting – Montreal



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6-7 October 2015

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#### VDLM2 Multi-Channel Implementation

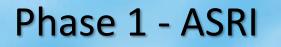
- Update on VDLM2 progress from involved organizations
- Summary of VDLM2 spectrum meeting
- Other VDL considerations



# **VDLM2** Implementation Plan

- ASRI proposed an implementation method after working with CSPs, Harris and the FAA
  - Assign new VDLM2 channels while minimizing impact on existing users
- Planned for 4 phase process from initiation on 1 Jul 2014
  - 1. Reorganize lower band AOC voice users
  - 2. Migrate affected voice users from upper AOC band
  - 3. Migrate upper band ACARS networks
    - a) Secondary ACARS networks (3)
    - b) SITA ACARS base frequency
  - 4. Assign new VDLM2 frequencies
    - a) Upper 136 MHz band (AFC)
    - b) Lower 136 MHz band (FAA)





Lower AOC band voice user reorganization

- Agreed AFC Spring 2014 Meeting
  - 129.525 (de-icing), 129.350, 131.650, & 131.725
     MHz voice users cleared by Q1 2015





Migration of upper AOC band voice users

- Agreed AFC Spring 2014 Meeting
  - Majority of voice users in upper 136 MHz band moved by Q1 2015
  - Voice users remaining on 136.500, and 136.525 MHz
    - Potential for specialist voice users on interstitial channels



# Phase 3A – SITA & ARINC/RC

Migration of secondary ACARS networks in upper AOC band

- Revised at AFC Spring 2015 Meeting
- SITA
  - 136.575, & 136.650 MHz ACARS users to be moved by Q3 2015
- ARINC/RC

- 136.800 MHz ACARS users to be moved by Q1 2016

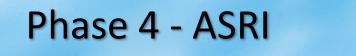
 Both CSPs are responsible for ACARS interference mitigation and resolution with incumbent voice users when migrating to the lower AOC band



#### Phase 3B - SITA

- Migration of SITA ACARS base frequency from 136.850 MHz to 131.725 MHz by Q3 2017
- Agreed AFC Spring 2015 Meeting
  - The 131.725 MHz frequency is available immediately
  - Q3 2017 deadline subject to VDLM2 deployment requirements as they develop
  - No other ACARS GSs will be licensed on 136.850 MHz, with the exception of SITA, provided separated is a minimum of 1 mile from an airport boundary and other VDLM2 stations
  - SITA to coordinate with airlines and airframe manufacturers on ACARS frequency changes, to consolidate and minimize any costs for the changes





Assignment of VDLM2 frequencies

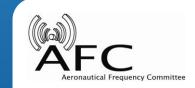
 Upper 136 MHz channel plan confirmed
 Lower 136 MHz plan being discussed with the FAA



# VDLM2 Channel Plan

- Refined from AFC VDLM2 planning in 2010

   Implemented for specific CSPs
   Included pending lower 136 MHz band planning
- Provides best available spectral/physical separation
  - Supporting a dedicated ground and enroute station for each CSP



#### Proposed VDLM2 Channel Plan

Frequency (MHz)	Allocation	Notes	
136.975	Common Signaling Channel	Already assigned nationally to VDLM2	
136.950	Guard Channel		
136.925	Guard Channel		
136.900	Guard Channel		
136.875	Guard Channel		
136.850	Guard Channel		
136.825	Guard Channel		
136.800	VDLM2 on-site SITA	Primarily ground traffic - Planned for national US deployment	
136.775	Guard Channel		
136.750	VDLM2 off-site SITA	Primarily enroute traffic - Planned for national US deployment	
136.725	Guard Channel		
136.700	Guard Channel		
136.675	Guard Channel		
136.650	VDLM2 on-site RC	Primarily ground traffic - Planned for national US deployment	
136.625	Guard Channel		
136.600	VDLM2 off-site RC	Primarily enroute traffic - Planned for national US deployment	
136.575	Guard Channel		
136.550	Guard Channel		
136.525	ASRI voice users	Select US areas only	F
136.500	ASRI voice users	Select US areas only	

Frequency (MHz)	Allocation	Notes		
136.475	FAA voice users	National		
136.450	FAA voice users	National		
136.425	Guard Channel			
136.400	Guard Channel			
136.375	Guard Channel			
136.350	VDLM2 off-site SITA	Primarily enroute traffic - Planned for national US deployment		
136.325	Guard Channel			
136.300	VDLM2 on-site SITA	Primarily ground traffic - Planned for national US deployment		
136.275	Guard Channel			
136.250	Guard Channel			
136.225	Guard Channel			
136.200	Guard Channel			
136.175	Guard Channel			
136.150	VDLM2 off-site RC	Primarily enroute traffic - Planned for national US deployment		
136.125	Guard Channel			
136.100	VDLM2 on-site RC	Primarily ground traffic - Planned for national US deployment		
136.075	Guard Channel			
136.050	Guard Channel			
136.025	Guard Channel			
136.000	Guard Channel			

### **Current timelines**

Frequencies	2014	2015			2016		2017			
(MHz)	07/01	01/01	07/01	01/01	07/01	01/01	07/01			
136.550- 136.950	Clearing Voice*	oice* All Adjacent Channels Cleared								
136.575	ACARS		ACARS Migration**	Cleared						
131.650	Clearing Voice	Cleared	<b>\$</b>	ACARS**						
136.650	ACARS		ACARS Migration		VDLM2 RC					
129.350	Clearing Voice Cleared				ACARS					
136.800	ACARS		ACARS Migration		VDLM2 SITA					
129.525	Clearing De-icing Usage		<b>\$</b>		ACARS					
136.850	ACARS				ACARS Migration** Clea		Cleared			
131.725	Clearing Voice	ared		→ AC						

\*Some voice users will be moved to 136.500 and 136.525 MHz.

\*\*Date and actions subject to change dependent on VDLM2 traffic requirements.

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#### VDLM2 Spectral Group Meeting Summary

- Draft proposal for new VDLM2 justification
  - Based on 95% percentile latency requirement
  - Using historical trends
- Extrapolate the monthly 95% latency values out 18 months
  - Based on the last 12 months
  - Based on the last 6 months
- If projection exceeds 7.5 seconds at 18 months
  - Verify increase in channel utilization is commensurate with throughput growth
  - Verify growth in data throughput
  - Request channel





- New FAA proposal for lower 136 MHz VDLM2 band plan
  - Included guidance on FAA clearance process
- Would require moving of ASRI voice users to lower 136 MHz band
  - ASRI and Harris reviewing the proposal for technical and operational reasons



# **Other VDL Considerations?**

- Reports from airlines that VDLM2 message traffic is not efficient on new aircraft
  - B787 singled out, but A350/A380 concerns too
  - Messages are excessive and not efficient formatted
  - Congestion levels pushing out airline AOC and AAC messages
- Creating additional overhead and eventual network congestion
  - Several major US and EU airlines complaining in DLUF
  - Critical when in context of DataComm latency requirement and costs (end user and CSP)
- Coordinate approach to manufacturers to find a solution

   Current and future airframes



#### **Future Work**

- Review of issue and those affects

   Tentative discussions on collecting data
   Will need support of CSPs (with airline permission)
- Coordinate approach to manufacturers to find a solution

Current and future airframes





# Questions?



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