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August 9, 2012

VIA ELECTRONIC DELIVERY

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Room TWA325
Washington, DC 20554

**Re: Notice of *Ex Parte* Presentations
WT Docket No. 12-69**

Dear Ms. Dortch:

On August 7, 2012, Vulcan Wireless LLC (“Vulcan”) representatives Scott Wills, Paul Nagle, Paul Kolodzy, Michele Farquhar, and Christopher Termini met with: (1) Commissioner Ajit Pai and Courtney Reinhard, Legal Advisor to Commissioner Pai; and (2) David Goldman, Senior Legal Advisor to Commissioner Jessica Rosenworcel.¹ On August 8, 2012, the Vulcan representatives met with (1) Louis Peraertz, Legal Advisor to Commissioner Mignon Clyburn; (2) Renee Wentzel, Legal Advisor to Chairman Julius Genachowski; and (3) John Leibovitz, Deputy Bureau Chief of the FCC’s Wireless Telecommunications Bureau (“WTB”); Tom Peters, Chief Engineer of the WTB; Ziad Sleem, Associate Chief of the WTB’s Spectrum and Competition Policy Division; and Melissa Tye, Legal Advisor to the WTB.

In these meetings, the Vulcan representatives presented the attached materials, reiterated support for prompt regulatory action to restore interoperability in the Lower 700 MHz band, and explained that the Commission need not prescribe the means or technical specifications for implementing Lower 700 MHz interoperability in this proceeding. Rather, the Commission need only adopt an order requiring interoperability across all paired spectrum blocks in the Lower 700 MHz band, and allow interested parties to cooperatively use the industry-driven standards body process to determine the best technical manner to implement an interoperability requirement. Under this approach, the Commission would ensure that a unified band plan is adopted and ratified within a reasonable time period, not to exceed six months (in which case Band Class 12 would become the *de facto* standard if a new, unified standard is not adopted and ratified). The record before the Commission in this proceeding, which includes multiple engineering studies, reflects widespread agreement that substituting Band Class 12 for Band Class 17 would be the most effective means of achieving Lower 700 MHz interoperability, imposing the least cost on licensees, vendors, and consumers.

This approach would also allow interested parties to evaluate the merits of various solutions to effect interoperability—such as by adopting the current Band Class 12 standard, expanding Band Class 17 to add the A Block, modifying Band Class 12, modifying Band Class 17, or through some other means. However, the Commission would need to continue monitoring the industry-based process to ensure that all interested parties cooperate fully and fairly to implement interoperability in accordance

¹ Paul Kolodzy was not present for the meeting with David Goldman.

with the Commission's order. The Vulcan representatives explained that this approach would also be consistent with prior decisions in which the Commission relied on the industry to determine how to technically implement a new Commission requirement.

The Vulcan representatives also explained that the only reliable technical evidence submitted to the record in this proceeding demonstrates that Lower 700 MHz interoperability will not adversely impact Lower B and C Block device reception. By contrast, opponents of Lower 700 MHz interoperability have not provided any reliable measurements or empirical data to support their unsubstantiated claims of interference. Rather, they have only submitted data derived from very limited, fundamentally flawed, and corrupted test designs that fail to reflect real world device and network performance.

For example, Qualcomm did not test any actual 700 MHz devices, components, or network designs. Instead, Qualcomm inexplicably submitted data analysis using a power amplifier designed for the European 1900 MHz band, yielding results that are inapplicable to the U.S. Lower 700 MHz band. Qualcomm's results are inapposite because the analysis was performed with frequency spacing of 24 MHz, which is 6 MHz more than the frequency spacing that exists in the Lower 700 MHz band. This inappropriate use of data allowed Qualcomm to assert an interference scenario that would never exist in a Lower 700 MHz network deployment.

Vulcan also explained that the test results submitted to the record by AT&T are also flawed because AT&T's tests used a theoretical configuration in the Lower B and C Blocks that was more prone to interference than the commercial Lower 700 MHz LTE systems that AT&T has already deployed. Field measurement testing in Atlanta has revealed that AT&T's commercially deployed LTE network currently provides 2 MHz of channel separation between the Lower C and D Blocks—a sensible approach that reduces the risk of potential interference from the downlink transmissions in the Lower D Block. However, for inexplicable reasons, AT&T submitted Channel 51 test results using an LTE signal positioned directly adjacent to the Lower D Block, thereby eliminating the 2 MHz of channel separation. This manipulated simulation not only contradicts AT&T's actual LTE system deployment, but it also created an interference effect that does not actually exist in real world Lower B and C Block deployments, as confirmed by multiple tests submitted to the Commission.

Finally, Vulcan noted that none of the opponents of Lower 700 MHz interoperability has tested any devices, or made any field measurements, to verify the claim that high-powered Lower E Block transmissions will cause harmful interference to Lower B and C Block device reception. By contrast, the lab and field measurements in the record that do test this claim confirm that Lower E Block signals will not adversely impact Band Class 12 devices.

Pursuant to Section 1.1206(b) of the Commission's rules, I am filing this notice electronically in the above-referenced dockets. Please contact me directly with any questions.

Respectfully submitted,

/s/ Christopher J. Termini

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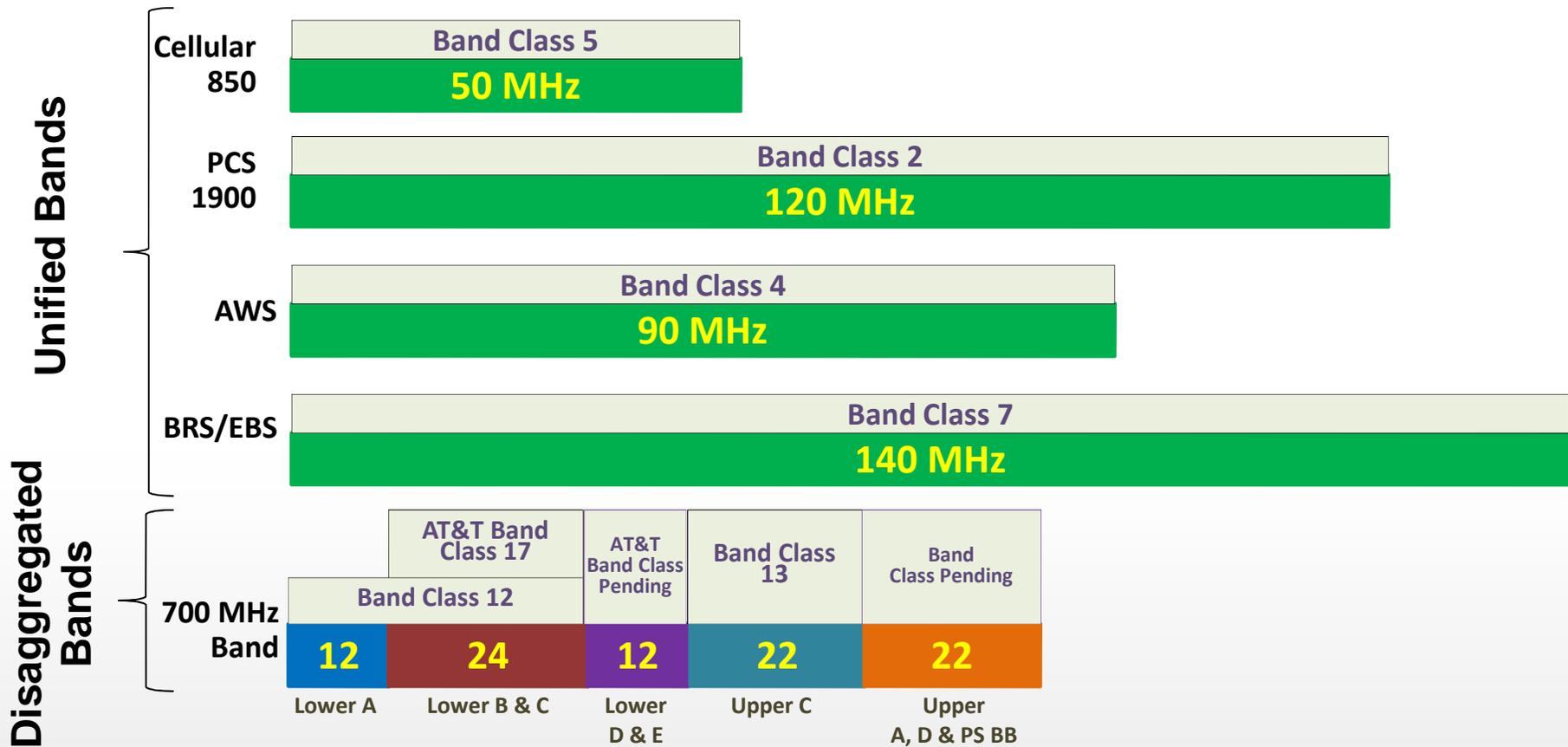
cc: Commissioner Ajit Pai
Courtney Reinhard
David Goldman
Louis Peraertz
Renee Wentzel
John Leibovitz
Tom Peters
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Melissa Tye

Restoring Interoperability in the Lower 700 MHz Band

August 7-8, 2012

The Commission Should Act Promptly to Restore Interoperability in the Lower 700 MHz Band

- **Clear Technical Support.** The only reliable technical evidence before the Commission demonstrates that Lower 700 MHz interoperability will not adversely impact Lower B and C Block device reception. Opponents of interoperability have consistently failed to provide any measurements or empirical data to the contrary.
- **Significant Public Interest Benefits.** There is widespread agreement that restoring interoperability would empower consumers by removing artificial device- and network- related limitations, promoting competition, stimulating innovation, facilitating nationwide roaming, and enhancing spectrum efficiency.
- **Industry-Based Solution for Implementation.** The Commission need not establish the means for implementing Lower 700 MHz interoperability, but can facilitate a measured industry solution to effect the transition.
- **Legal Authority.** The Commission has clear legal authority to adopt an interoperability solution under these circumstances, which constitute a “worst-case” scenario for which regulatory action is necessary.



➤ **With 700 MHz, the 3GPP process has been unduly influenced to force disaggregation**
 The unique use of 700 MHz frequencies exclusively in the U.S. has given AT&T (a dominant 700 MHz spectrum holder) excessive influence, as there are no large international carriers using the same spectrum. This has led to unprecedented band class fragmentation and delays, slower ecosystem development, and less consumer choice.

Activity Timeline for Lower 700 MHz Band Class Pre- and Post- Auction 73

December 2007 (prior to auction) Only Band Class 12 was under consideration by 3GPP

March 2008 Auction closes

May 2008 Motorola submits paper to 3GPP proposing Band Class 17 – only covers B and C Blocks

June 2008 Ericsson questions reason for fracturing the band into separate band classes; Ericsson removes objections after AT&T supports Band Class 17

September 2008 3GPP ratifies Band Class 17 and Band Class 13 (Verizon's Upper C Block)

September 2009 A Block licensees petition FCC for device interoperability

December 2010 3GPP ratifies Band Class 12 with 1 MHz guard band

2011 (ongoing) VZ deploys 4G LTE covering more than 175 cities and more than 186 million Americans

2011 (ongoing) AT&T launches 4G LTE in 15 cities and to reach 70 million Americans by the end of 2011

2011 (ongoing) Band Class 12 licensees still await access to competitive handset ecosystem

November 2011 Ericsson requests that an additional 1 MHz of guard band be provided by Band Class 12 to protect spectrum being acquired from Qualcomm; AT&T speaks at 3GPP in favor of request

December 2011 FCC grants approval to AT&T acquisition of Qualcomm D and E Block licensees without conditions addressing interoperability

March 2012 FCC adopts Interoperability NPRM

Summary of Extensive 700 MHz Device and Field Testing Findings

- No Interference Impediments to Interoperability
 - A combination of 9 commercially deployed Band 12 and Band 17 devices have been tested and confirm no threat to interoperability.
- Band Class 17 B and C Blocks already suffer greater interference threats from each other than what would be introduced from a unified Band Class.
 - Neither high power E Block transmissions nor Channel 51 transmissions create an increased interference threat; in fact, the interference threat is lower.
 - AT&T LTE devices currently receive and successfully manage greater levels of interference from within the B and C Blocks than need to be accounted for by unifying the Lower 700 MHz paired bands.
 - Previous concerns and unsubstantiated claims made about reverse intermodulation distortion interference proved to be unfounded.
- Unsubstantiated concerns and claims about the potential increase in cost or size of devices are inaccurate and misstated as testing shows the Bill of Materials (BOM) costs will remain virtually unchanged.

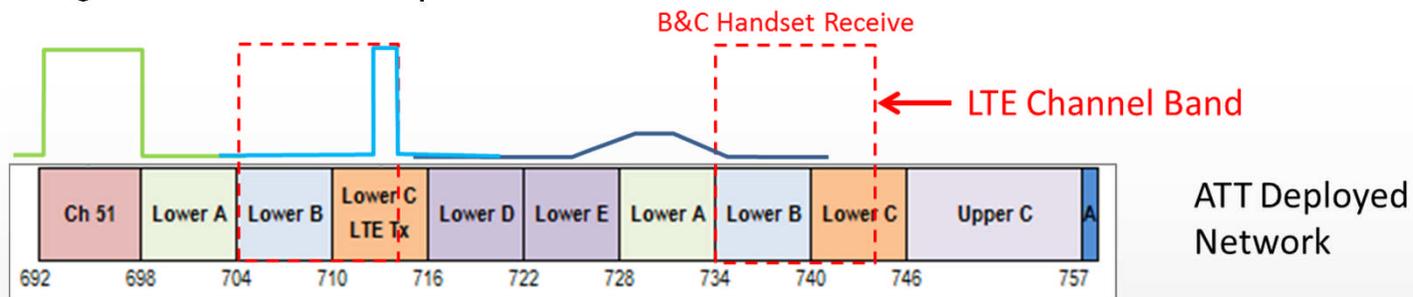
No Interference Impediments to Interoperability

- Interoperability Proponents:
 - **Channel 51 signals do not cause harmful interference to Band 12 devices.**
 - The Hyslop-Kolodzy Study on Band 17 (and extrapolated Band 12) consumer devices demonstrated that Channel 51 transmissions raise no interference concerns for interoperability.
 - The V-COMM Study measured Band 12 and Band 17 devices, confirming HK results.
 - **Lower E Block signals do not cause harmful interference to Band 12 devices.**
 - The HK Study on Band 17 (and extrapolated Band 12) consumer devices revealed that devices sold to consumers are protected from E Block transmissions, demonstrating that the E Block raises no interference concerns for interoperability.
 - The V-COMM laboratory tests of Band 12 and Band 17 devices confirmed that the E Block raises no interference concerns for interoperability.
- Interoperability Opponents:
 - Qualcomm did not test 700 MHz components or devices.
 - AT&T commissioned a flawed test of one device for Channel 51 intermodulation (corrupted test environment, so cannot ensure unbiased results; cannot replicate test results; never tested E Block)

Interference Concerns Not Realized in Testing

- Channel 51 Interference

- Proponents of interoperability have tested 9 devices and made field measurements on 4 Channel 51 stations to confirm that interoperability is technically feasible.
- Opponents of interoperability have tested 1 device (incorrectly) and made no field measurements, failing to correlate device performance to real-world conditions.



- E Block Interference

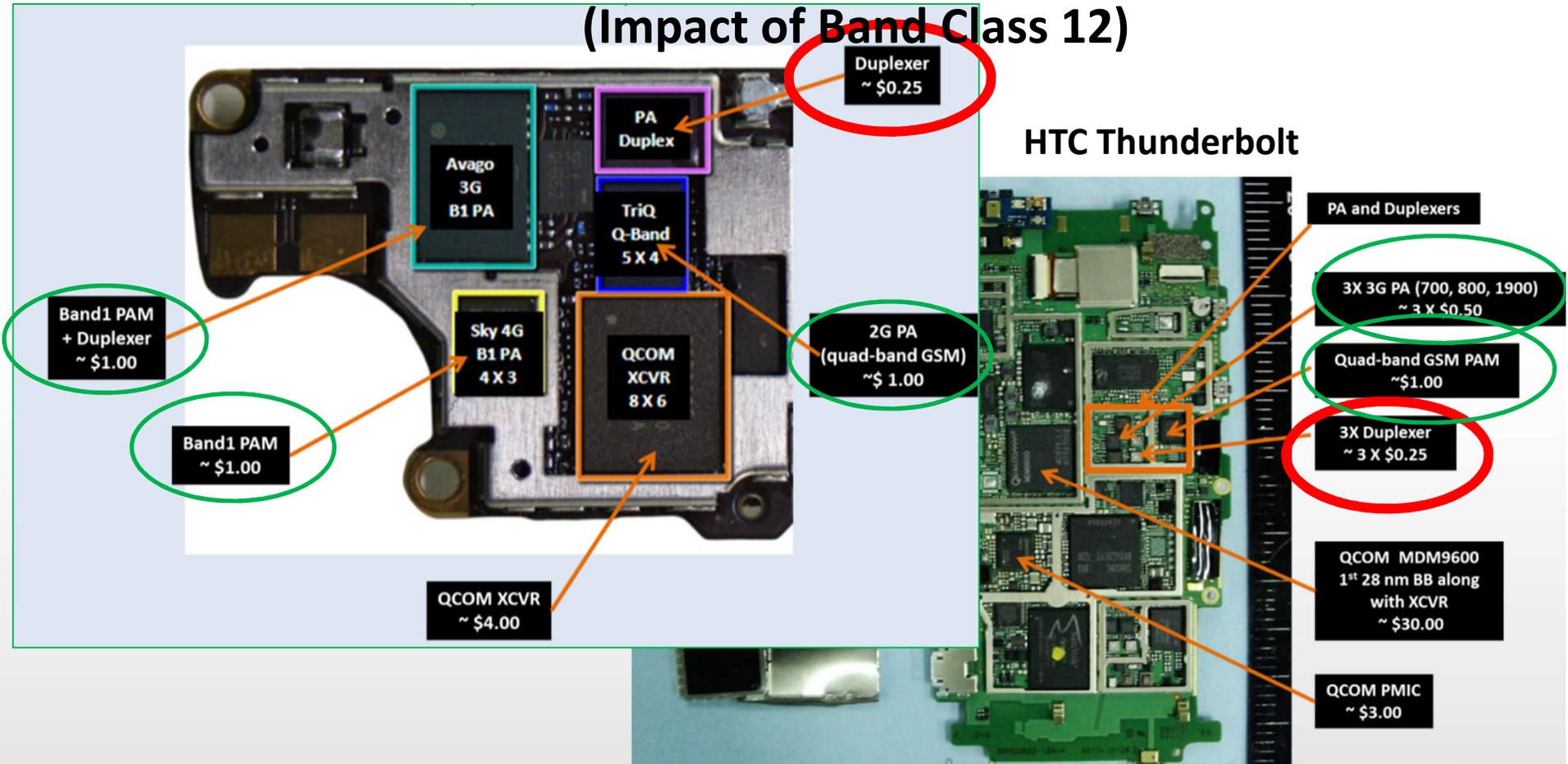
- Proponents of interoperability have tested 9 devices and made field measurements on 4 E Block 50 kW stations to determine interoperability is technically feasible.
- Opponents of interoperability have not tested any device and made no field measurements.



No Cost Increases Anticipated in Either Apple or Android Bill of Materials

iPhone 4S

(Impact of Band Class 12)



Device Performance indicates that no changes are required except to simply broaden the duplexer to cover Lower A, B and C Blocks. However, if new filter (and potentially new Power Amplifier Module) components are required, similar BOMs component prices are all < \$1 and, in quantity, have no cost impact.

A Cooperative Solution to Achieve Interoperability

- Various parties have shown no desire to cooperatively work to achieve an industry solution.
- There are inadequate marketplace incentives to induce Lower 700 MHz interoperability.
- Opponents of interoperability have offered sparse factual support yet remain firmly entrenched in their convictions.
- The Commission can incentivize and facilitate necessary industry cooperation.

A Cooperative Solution to Achieve Interoperability

Role of the Commission

- The Commission need not decide how to implement interoperability.
- The Commission need not prescribe any technical specifications or standards mandate.
- The Commission can simply require interoperability and set a reasonable timeframe to achieve it.
 - Establish a framework to enable industry participants to collectively determine how to best achieve interoperability in the Lower 700 MHz band through the standards process.

A Cooperative Solution to Achieve Interoperability

Role of Licensees and Vendor Community

- Work collaboratively and collectively to adopt a Lower 700 MHz interoperability standard;
- Use the existing industry standards body process; and
- Explore and evaluate multiple interoperability options, which may include:
 - Adopting the current 3GPP Band 12 standard;
 - Adding the A Block to the Band 17 standard;
 - Adopting modifications to the Band 12 standard; or
 - Adopting modifications to the Band 17 standard

The FCC Need Not Determine the Means to Restore Interoperability

To resolve this proceeding, the Commission can and should:

- Require Interoperability: Issue an order requiring that interoperability occur in the Lower 700 MHz band, consistent with all other commercial mobile bands.
- Set a Timeline for Industry-Based Implementation: Designate a 6-month period, during which licensees and vendors can collaborate in the industry 3GPP process to determine the most appropriate means of effecting interoperability.
- Monitor for the Industry Solution: Monitor the 3GPP process to ensure full and fair industry cooperation in achieving the Commission's interoperability requirement.
- After Six Months, Interoperability Will Be Achieved Either by an Industry-Based Solution or Band Class 12: If an industry-wide consensus is not resolved and presented to the FCC within this 6-month timeframe, adopt Band Class 12 as the *de facto* fallback standard for the Lower 700 MHz band.

Industry-Based Implementation Is Consistent with FCC Precedent

The FCC has frequently relied upon industry stakeholders to determine the best technical means to implement a regulatory mandate.

- Implementation of CVAA Accessibility Rules (2011): The FCC adopted a number of accessibility requirements for advanced communications services, but “refrain[ed] from adopting any technical standards.”
- Implementation of DFS technology in 5 GHz band devices (2003): The FCC established a mandate and deadline by which 5 GHz band wireless devices should employ Dynamic Frequency Selection technologies.
- Implementation of CALEA technical requirements (1998): “[I]ndustry is in the best position to determine how to implement [the CALEA] technical requirements most effectively and efficiently.”
- Implementation of Terminal Attachment Rules (1997): The FCC concluded that it “should rely, whenever possible, on standards bodies composed of industry experts to resolve complex technical matters” related to implementing the FCC’s rules regarding customer-provided equipment connected to the network.

Restoring Interoperability Can Be Achieved Promptly, With Minimal Cost

Timeframe for Implementing Interoperability	Milestone
By month 6	<i>Industry Collaboration to Determine Means of Implementation and Standards Ratification for Interoperability</i> – Six-month period during which 3GPP and industry participants collaborate to determine the most appropriate and efficient means of achieving interoperability across the Lower 700 MHz band. The Commission may monitor the 3GPP process to ensure that interested parties cooperate fairly and in accordance with the Commission’s order that interoperability must occur in the Lower 700 MHz band.
By month 12	<i>Base Station Transition</i> – All carriers upgrade their base stations (software-based upgrade) to support interoperability across the entire Lower 700 MHz band. Carriers routinely upgrade software on the base stations via remote processes without impacting customer service.
By month 15	<i>Interim Device Transition</i> – Any carrier that offers service on any paired spectrum block within the Lower 700 MHz band will offer at least one mobile device that is capable of operating across all paired spectrum blocks in the Lower 700 MHz band.
By month 18 (industry regularly introduces new devices in less than 18 month timeframes)	<i>Full Transition</i> – Each device that is capable of operating in any paired spectrum block within the Lower 700 MHz band, which the carrier offers to any person or entity in any market, is capable of operating across all paired spectrum blocks in the Lower 700 MHz band. An industry solution should not result in meaningful increased size or cost compared with currently available devices.

Restoring Interoperability Will Result in Enormous Public Interest Benefits

There is widespread agreement that restoring Lower 700 MHz interoperability would empower consumers, promote competition, spur innovation, facilitate nationwide roaming, enhance spectrum efficiency, and stimulate the economy.

- Restoring interoperability would **empower consumers** by:
 - Removing artificial barriers that prevent consumers from using their wireless devices across multiple networks in the Lower 700 MHz band;
 - Spurring innovation in technology and enabling a wider range of devices;
 - Substantially reducing the switching costs for consumers that rely on service in the Lower 700 MHz band, thereby offering consumers additional choices for service, devices, and rates; and
 - Facilitating nationwide roaming agreements, and preventing incumbent carriers from skirting the FCC's voice and data roaming rules.