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February 9, 2009

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BY HAND DELIVERY

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FEB 9 2009
Federal Communications Commission
Office of the Secretary

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

Re: Ex Parte Presentation: IB Docket No. 95-91; WT Docket No. 07-293

Dear Ms. Dortch:

On February 6, 2009, representatives of Sirius XM Satellite Radio Inc. ("Sirius XM") met with Commission staff identified below to discuss issues relating to the above-captioned proceedings.

The Sirius XM participants included James Blitz and Craig Wadin, who were accompanied by Michael Lewis (Engineering Consultant) and the undersigned from Wiley Rein, LLP on behalf of the company. Sirius XM reiterated their concern over mobile WCS devices interfering with satellite reception, as it has previously expressed throughout this proceeding. Sirius XM presented the enclosed video that demonstrates the harmful effects on satellite radio reception from mobile WCS devices. In addition, the attached written materials were distributed to the FCC staff. Accordingly, these should be inserted into the record.

Sincerely,

/s/ Robert L. Pettit
Robert L. Pettit

Enclosures

cc: Patrick Forster
Robert nelson
Chip Fleming
Sankar Persaud
Linda Chang
Walter Johnston
Roger Noel
John Giusti
James Schlichting
Steven Spaeth
Arthur Lechtman
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Ronald Repasi
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WCS Interference to Satellite Radio Consumers
Myth vs. Fact

Background: Satellite radio spectrum is sandwiched between two WCS spectrum blocks. (See attached chart.) At each end, WCS spectrum is immediately adjacent to frequencies used by Sirius XM's satellites – broadcasting from thousands of miles away with relatively low power. The Sirius and XM satellite systems are each designed so that one of the satellites is visible to car receivers at all times. Sirius XM also uses terrestrial repeaters covering about 1% of the country to overcome blockages to the satellite signals. All of these signals are necessary to provide satellite radio consumers (more than 19 million) with a high-quality streaming audio service that is at least comparable to that offered by Sirius XM's major competitors.

Myth: *Former Chairman Martin's proposal announced in the press represents a "compromise" between the WCS and satellite radio proposals.*

Fact: That recommendation is not a compromise.

- Martin proposed to adopt the exact technical specs for WCS operations that the WCS Coalition proposed in February 2008 – which would allow WCS licensees to operate mobile devices wherever they want in the WCS band, without regard to the impact on satellite radio consumers.
- In fact, the Martin proposal offers less protection than subsequent recommendations made by the WCS Coalition.
- Martin's recommendation is not even a *quid pro quo*. While it would finalize the long-pending rules governing satellite radio repeaters, satellite radio repeaters will not resolve the problem of interference from mobile WCS operations.

Myth: *WCS has waited more than a decade for the FCC to authorize mobile operations.*

Fact: Not true – WCS licensees only recently asked the FCC to approve mobile uses.

- WCS licensees bought their spectrum at auction in 1997 for less than $14 million. In 2007, less than 18 months ago, WCS licensees petitioned the FCC to adopt new rules to allow mobile WCS operations. WCS licensees obtained spectrum under one set of rules, warehoused that spectrum for more than 10 years, and now want the FCC to change the rules to allow mobile operations and dramatically increase the value of their spectrum. During this same time frame, Sirius XM has designed and developed a new radio service that now serves more than 19 million subscribers.
- The only aspect of this docket that has been waiting ten years for resolution is satellite radio's need for final rules to operate its terrestrial repeaters.

Myth: *Mobile WCS operations won't increase interference to satellite radio customers.*

Fact: The available evidence – and the Commission's previous determinations – all point to a significant risk of interference to satellite radio consumers.

- In 1997, the Commission determined that mobile use in the WCS band was "technologically infeasible" because the power levels needed for mobile use in the band would interfere with satellite radio reception. Relying on these protections, Sirius XM paid more than $173 million for spectrum, designed satellite and repeater networks based on the FCC's interference protection rules, and spent billions of dollars to deploy those networks. Millions of satellite radio consumers have spent billions more for receivers designed in accordance with the Commission's interference protections.
- Additional tests submitted by Sirius XM in the proceeding confirm the Commission's 1997 finding: allowing large-scale mobile operations in the WCS spectrum will cause interference to satellite radio consumers. The laws of physics have not changed since 1997, and no magic filter or screen will protect the millions of existing satellite radio receivers from interference. This is one reason why the major automakers unanimously oppose the WCS proposal.
- Martin's proposal would be the first time the Commission has authorized a mobile service in the spectrum directly adjacent to a satellite downlink band. This is problematic because the sensitivity that a radio that needs to receive a signal transmitted thousands of miles away makes interference from a nearby mobile transmitter highly likely.
- The attempt to rush approval of mobile WCS operations stands in marked contrast to the Commission's approach in the AWS-3 proceeding where the FCC supervised joint testing the parties, published its proposed findings and took comments on those findings. No such process or evaluation has occurred in the WCS/satellite radio proceeding. While Sirius XM proposed joint testing over a year ago, WCS has refused to participate, and so far, no public comment has been sought or received on Martin's proposal.
- Martin's proposal is inconsistent. On one side of the WCS band edge – used for civilian and military aviation telemetry and radio astronomy – the draft would retain the existing out-of-band emission requirements. But at the WCS band edges that are adjacent to Sirius XM's satellites, the draft proposes *dramatically lower* interference protection.

Myth: *Any additional interference to satellite radio receivers from mobile WCS operations can be overcome by terrestrial repeaters.*

Fact: Sirius XM's terrestrial repeaters cannot solve the problem of interference from WCS mobile devices due to both cost and technical constraints.

- Repeaters cover only approximately 1% of the land area in the continental United States. In Washington, DC, there are few, if any, repeaters alongside major

commuting routes such as I-66 in Virginia and I-270 in Maryland. The repeaters that exist are primarily in areas where buildings make it difficult for a satellite signal to penetrate. The locations of such areas are known or predictable while the locations of areas subject to WCS interference are not.

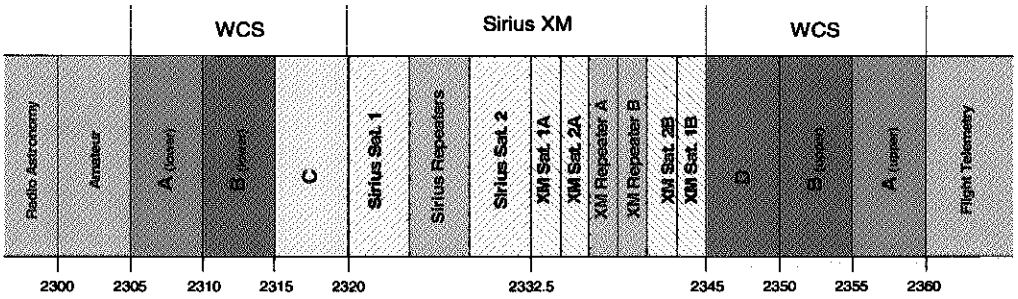
- Even where terrestrial repeaters exist, their signals may not be powerful enough to overcome WCS interference. Sirius XM's repeater network was never designed to overcome interference from other services but was intended to maximize the satellite radio coverage area, consistent with rules the FCC established in 1997. Tens of thousands of additional repeaters would be needed to attempt to overcome WCS mobile interference, at enormous cost to Sirius XM and essentially transforming satellite radio into a terrestrial service. Moreover, the repeater network can never be made to fully cure the interference due to design constraints.

Myth: *Increasing the risk of interference to satellite radio consumers is acceptable when providing spectrum for mobile broadband services to develop in rural areas.*

Fact: Many other spectrum bands exist that are better suited for this service, are being funded by well-established entities, and are farther ahead in their development than WCS.

- There is no guarantee that WCS licensees will provide broadband, much less rural broadband, service. NextWave, the primary WCS licensee, is offering its licenses for sale. AT&T has announced that it may use WCS spectrum for streaming video services to vehicles. In flexible use spectrum allocations, the FCC must adopt rules that are agnostic between technologies and business models and that properly protect adjacent services.
- There is no reason why all WCS licensees are not providing broadband services today. The current restrictions only apply to *mobile* broadband service. AT&T is already using their WCS spectrum to provide fixed broadband service and the Commission can look to this as the model for how the spectrum can further broadband goals using the existing rules.
- With more than 1500 MHz of spectrum available for broadband services, the lack of spectrum isn't holding back broadband deployment in rural areas. Clearwire has 150-200 MHz of spectrum in many rural areas by itself. The AWS-1 and 700 MHz bands offer an additional 170 MHz for broadband services. The WCS spectrum is insignificant compared to the overall broadband spectrum allocations. On the other hand, the current allocation of 25 MHz licensed to Sirius XM is the only spectrum for satellite radio services – spectrum that must be free from interference for Sirius XM to continue to provide viable and competitive service to subscribers.

WCS and Satellite Radio Operate on Adjacent Frequencies

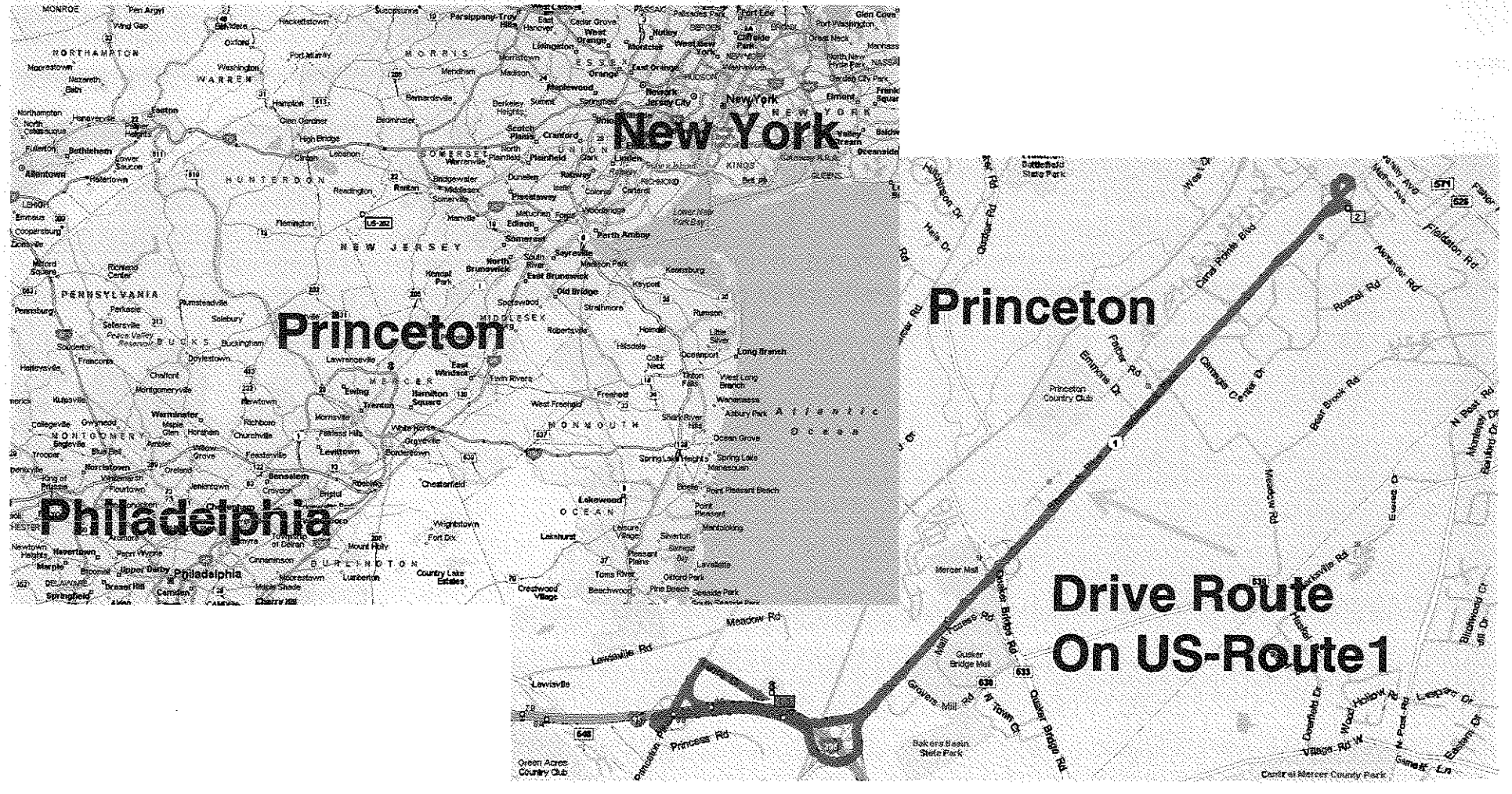


- The satellite radio allocation falls between two WCS spectrum blocks.
- WCS C & D Blocks are immediately adjacent to satellite downlink spectrum.
- WCS spectrum is also immediately adjacent to flight telemetry and nearby to radio astronomy allocations.

Test Description

- ★ Outfitted one vehicle with equipment to generate a mobile WiMAX waveform in various WCS sub-bands. The WCS antenna was located inside the vehicle.
- ★ Outfitted a second "victim vehicle" with Sirius and XM satellite radio receivers.
- ★ Drove both vehicles on commuter roads in and around Princeton, New Jersey during normal traffic patterns. This location receives strong satellite signals with minimal residual terrestrial repeater coverage on the test route.
- ★ Recorded the audio output from the Sirius and XM satellite radio receivers in the victim vehicle with the "interfering vehicle" nearby. Videotaped the "interfering vehicle" to demonstrate the separation distances at which interference occurs.

Test Location and Drive Route



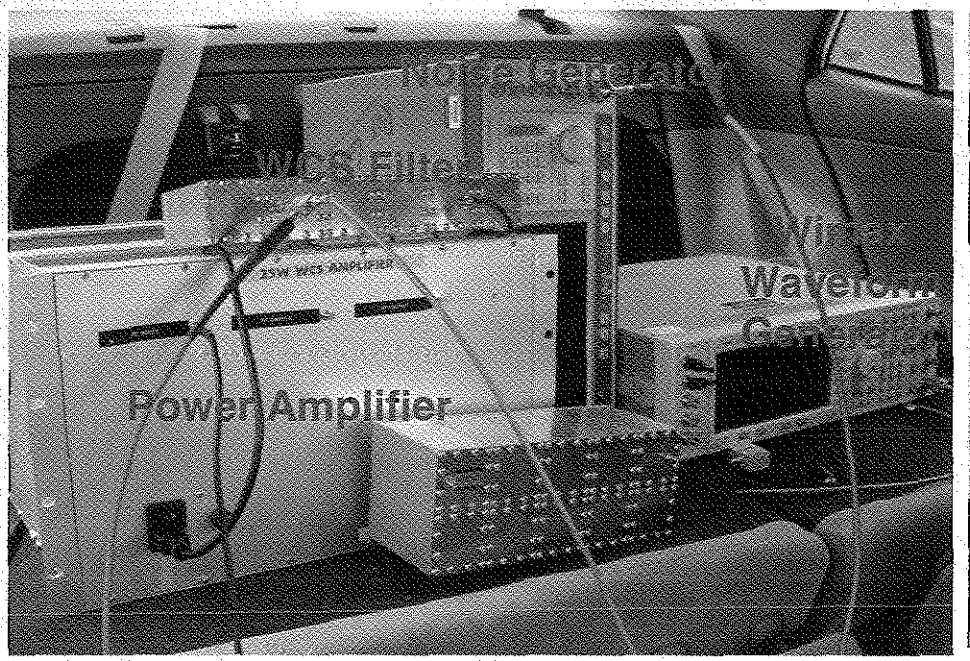
- ☆ **Princeton, NJ equidistant between Philadelphia and New York City**

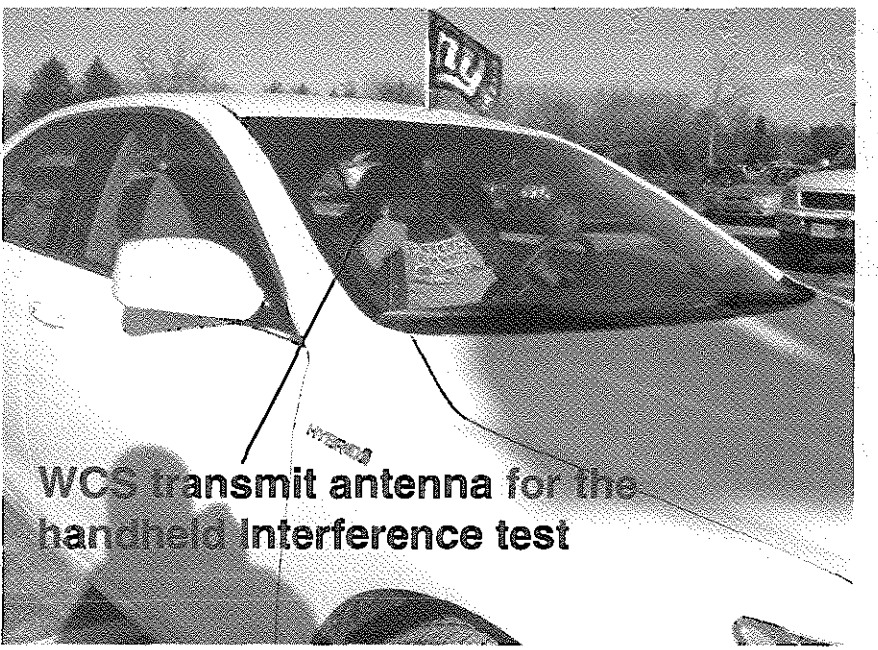
Test Vehicles

"Interfering Vehicle"
Equipped with WCS WiMAX Transmitter

"Victim Vehicle"
Equipped with Satellite Radio Receivers

WCS Interference Generator and Vehicle Setup

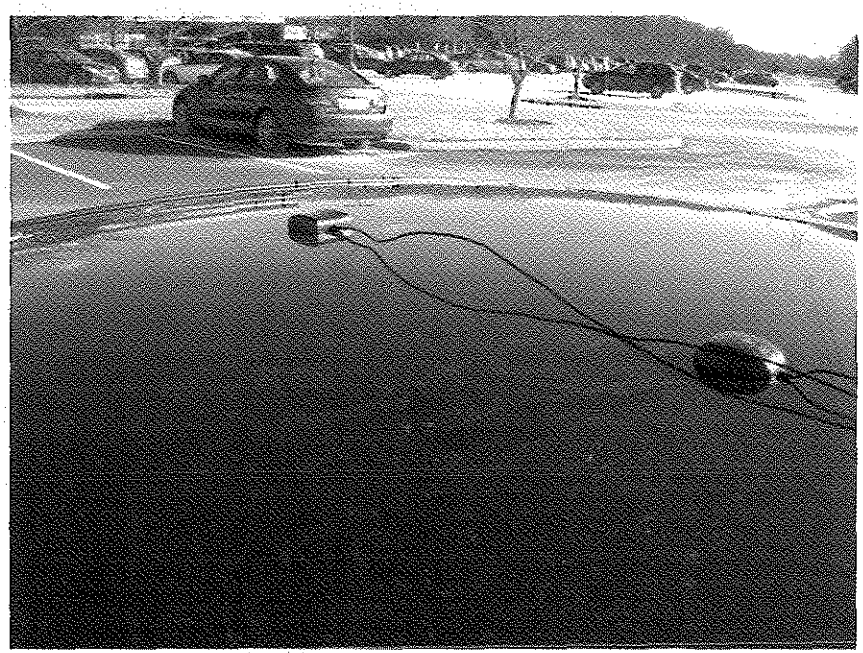




WCS Transmitter Setup (Simulates the FCC's Draft WCS-band Emission Proposal)

- Mobile WiMax signal generator with proper amplification and filtering to provide the following emission profiles:
  - D Block: 150 mW transmit power, 55 + 10logP OOBE noise mask at Satellite Radio spectrum
  - C Block: 150 mW transmit power, 60 + 10logP OOBE noise mask at Satellite Radio spectrum
  - B(lower) Block: 250 mW transmit power, 60 + 10logP OOBE noise mask at Satellite Radio spectrum

Satellite Radio Vehicle



- Sirius and XM receiver antennas mounted on roof using typical installation
- Standard aftermarket Sirius and XM receivers
- An XM upper-ensemble channel, and a Sirius channel is monitored for mutes
- Video/Audio recording of radio output and visual of WCS interference vehicle

Test Cases

Test cases simulate the WCS Coalition's proposal for the WCS band emission levels. Three different use cases were tested (Handheld, laptop and dashboard installation).

- ★ Test 1: Handheld-use case, WCS D block emitter (interference to XM receiver).
- ★ Test 2: Handheld-use case, WCS D block emitter (interference to XM receiver).
- ★ Test 3: Handheld-use case, WCS D block emitter (interference to XM receiver).
- ★ Test 4: Handheld-use case, WCS C block emitter (interference to Sirius receiver).
- ★ Test 5: Handheld-use case, WCS B(lower) block emitter (interference to Sirius receiver).
- ★ Test 6: Handheld-use case, WCS B(lower) block emitter (interference to Sirius receiver).
- ★ Test 7: Laptop-use case, WCS C block emitter (interference to Sirius receiver).
- ★ Test 8: Dashboard-use case, WCS C block emitter (interference to Sirius receiver).

Summary of Observations

- Satellite radio signal reception is highly susceptible to interference from WCS mobile devices operating under the technical parameters proposed in the FCC draft.
- Severe interference from WCS occurs for long durations, over large distances and in typical traffic patterns. Interference will not be a low probability event.
- Interference occurs in typical mobile conditions where the satellite radio receivers have a clear view of the sky and no obstructions in place, at unpredictable times and locations. Such scenarios will create significant customer confusion and dissatisfaction.
- Interference occurs in all manners of WCS in-vehicle orientations that were tested (*e.g.*, held to head, laptop, mounted on dash). Dash mounted devices are most problematic.
- Princeton, NJ receives relatively high satellite signal levels. The interference effects would be worse if this test was conducted in locations having weaker satellite signals.
- Even in areas near Princeton, NJ where repeater coverage was encountered, WCS mobile devices caused interference to satellite reception.

DOCKET NO. 95-91, 07-293

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