WILKINSON) BARKER) KNAUER) LLP

2300 N STREET, NW
SUITE 700
WASHINGTON, DC 20037
TEL 202.783.4141
FAX 202.783.5851
www.wbklaw.com
MARY N. O'CONNOR
moconnor@wbklaw.com

August 4, 2009

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

Re: *Amendment of Part 27 of the Commission's Rules to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band* (WT Docket No. 07-293) and *Establishment of Rules and Policies for the Digital Audio Radio Satellite Service in the 2310-2360 MHz Frequency Band* (IB Docket No. 95-91)

NOTICE OF ORAL EX PARTE PRESENTATION

Dear Ms. Dortch:

On July 28-29, 2009 in Ashburn, Virginia, the WCS Coalition presented a demonstration that a fully operational Wireless Communications Service ("WCS") system will not cause harmful interference to satellite Digital Audio Radio Service ("SDARS") to representatives from the Office of Engineering and Technology, the Wireless Telecommunications Bureau, the International Bureau, Sirius XM and interested members of the public. As discussed in more detail in Attachment A, the demonstration by the WCS Coalition validated that the Commission can modify the Part 27 WCS rules as proposed by the WCS Coalition without fear of widespread interference to SDARS.[1] The results of this demonstration – the only study of potential interference from an operating WCS system – establish that if the rules the WCS Coalition has proposed are adopted, interference to SDARS is threatened in only the most rare of circumstances. In fact, in all of the scenarios presented during the live system testing (including scenarios added at the request of Sirius XM), there was no muting of the SDARS receiver at all, save for one brief mute in a single isolated instance that is highly unlikely to occur with frequency under real world operating conditions.

In addition, Sirius XM repeated an earlier demonstration in which it purported to demonstrate interference from WCS to SDARS and conducted additional static testing. This replication of the demonstration it previously conducted in Princeton, NJ and circulated to the

[1] Attachment A includes a matrix of the demonstrations proposed to be run by the WCS Coalition. However, in an effort to more efficiently utilize the time allocated, Commission staff requested that certain of the proposed demonstrations not be conducted because, given the results of earlier tests, interference was not likely to occur.

Commission via an edited video suffered the same flaws that the WCS Coalition has previously pointed out on the record -- the test scenario employed by Sirius XM was not realistic and did not reflect how any practical two-way broadband system would operate on these frequencies. Attachment B provides a full discussion of the flaws in the Sirius XM presentation. Perhaps most significantly, Sirius XM set the WCS signal generator it used as a proxy for an actual WCS system to operate a full 5 MHz WiMAX carrier in the D block channel right up against the SDARS band edge, which produced more muting than was demonstrated in the WCS Coalition's drive tests of the C and D block. After the Commission staff requested that Sirius XM move the center frequency of the WiMAX carrier 2 MHz away from the SDARS band edge to more accurately reflect the WCS Coalition proposal, the Sirius XM testing showed very little muting of the satellite signal. Through these demonstrations, it has become abundantly clear that the risk of out-of-band emissions interference from a WCS mobile device into an SDARS receiver will only occur under artificial conditions crafted for the purpose of showing worst-case scenarios. It would be unrealistic to expect an operational WCS two-way broadband system to operate a full 5 MHz carrier in the C or D blocks because the filter required to meet the OOBE limits is far too large to put in a mobile device.

The Commission has before it a draft *Report and Order* that will finally permit practical use of the WCS spectrum to meet the growing demand for mobile two-way broadband use. The successful demonstration presented by the WCS Coalition in Ashburn should eliminate any doubts that adoption of new Part 27 rules to permit flexible use of the WCS band in a technology neutral manner is long overdue.

Pursuant to Sections 1.1206(b)(2) and 1.49(f) of the Commission's Rules, this letter is being filed electronically with the Commission via the Electronic Comment Filing System. Should you have any questions regarding this presentation, please contact the undersigned.

Respectfully submitted,

/s/ Mary N. O'Connor

Mary N. O'Connor

Counsel to the WCS Coalition

cc: Julius Knapp
Jim Schlichting
Robert Nelson
Chip Fleming
Patrick Forster
Robert Weller
Steve Martin

Roger Noel
Jay Jackson
Thomas Derenge
Moslem Sawez
Hung Le
Gardner Foster

Exhibit A

WCS-SDARS COEXISTENCE FIELD DEMONSTRATION

A WCS-SDARS co-existence demonstration environment was developed in Ashburn, VA near Dulles International Airport. The area consists largely of modern commercial and office park developments with buildings ranging in height from one to five stories and is characterized as an open area with rolling terrain, wide streets, and moderate foliage. A survey of SDARS network coverage suggests that both Sirius and XM have suitable satellite coverage in the area. XM also appears to have some weak, intermittent terrestrial repeater coverage around the area, but none was noted within the drive test route. The WCS demonstration used commercialized equipment and the system was carrying actual two-way data traffic, and the test configuration was set up as a “real world” simulation.

The WCS test network consisted of a WiMAX base station and a commercial WiMAX end user device. The base station and commercial mobile device were provided by Alvarion Ltd. and are certified to comply with ETSI and WiMax Forum specifications.

The SDARS subscriber equipment was comprised of newly purchased “after market” units and commercially-installed units in rental cars. The WCS end user device was comprised of the WCS PCMCIA modem connected to a laptop and was situated in a separate rental car.

Software applications were used to generate traffic to send over the WCS airlink connection and to record the real time operating characteristics – output power, position, etc. – of the WCS subscriber terminal. The traffic profiles and drive route were selected to ensure that the WCS end user device operates over a full range of possible transmit power levels and activity profiles.

The demonstration was conducted using two test vehicles: one outfitted with SDARS subscriber equipment and one with the WCS end user device operating at power levels up to +24 dBm average EIRP. Data was collected while these test vehicles drove along a prescribed route. iPerf was used to generate traffic to send over the WCS airlink connection and the Alvarion software diagnostic tools were used to record the real time operating characteristics – output power, position, etc. – of the WCS subscriber terminal.

As set forth in the test matrix below several different demonstration cases, which include various permutations of the WCS device, WCS bands of operation, SDARS service, SDARS coverage condition, and traffic application were performed. As expected, the demonstrations overwhelmingly provided evidence of the effectiveness of reduced maximum power levels, overly restrictive OOBE limits, transmit power control and other “real world” parameters on coexistence of the WCS and SDARS operations and resulted in an interference free environment of the SDARS service.

The test matrix sets forth all of the planned demonstrations, while only those highlighted were actually performed due to the consensus that such additional tests would not show any interference into the SDARS service.

WCS-SDARS Demonstration
Test Matrix
July 28-29, 2009
Ashburn, VA

		SDARS Service		SDARS Device		Application Type			Positioning of WCS Device			WCS Device Tx Power		Results
Test #	WCS Frequency Block	Sirius	XM	OEM	After-Market	High Bandwidth Upload	High Bandwidth Download	VoIP	Lap Height	Ear Height	Dashboard Height	Fixed EIRP +24 dBm	Variable EIRP with TPC	
	A-Block (Upper)	X		X		X			X			X		No muting
2		X			X			X		X		X		No muting
3			X		X	X			X			X		
4			X		X			X		X			X	
5			X		X		X				X	X		
6			X	X			X				X	X		
7			X	X		X			X				X	
8			X	X				X		X		X		
9	B-Block (Lower)		X	X				X		X		X		
10			X		X		X				X	X		
11		X			X	X			X			X		No muting
12		X			X			X		X			X	
13		X			X		X				X	X		
14		X		X		X			X				X	
15		X		X			X				X	X		
16		X		X				X		X		X		
17	D/A-Block	X			X		X				X	X		
18		X		X				X		X		X		
19			X		X		X				X	X		
20			X		X	X			X				X	No muting
21			X		X			X		X		X		
22			X	X		X			X				X	One short mute
23			X	X			X				X	X		
24			X	X				X		X			X	No muting
25	B/C-Block		X		X		X				X	X		
26			X	X				X		X		X		
27		X			X			X		X		X		
28		X			X		X				X	X		
29		X			X	X			X				X	No muting
30		X		X				X		X			X	
31		X		X		X			X			X		No muting
32		X		X			X				X		X	

In addition to the demonstrations set forth above, the WCS Coalition performed two additional demonstrations at the request of the FCC and Sirius XM respectively. The first was a demonstration that put the WCS enabled laptop on top of the SDARS vehicle about 1 ½ feet from the SDARS antenna operating at a fixed +23 dBm in the Lower B block. During WCS VoIP operations there was no muting, during a high bandwidth download there was slight muting and during a high bandwidth upload the SDARS signal was muted. This is not surprising given the unrealistically close proximity of the two devices. The second demonstration performed at the request of the Sirius XM was the same test as test number 22 on the matrix with the high bandwidth upload, except this demonstration was performed while the laptop was on the dashboard of the WCS vehicle, and once again there was no muting of the satellite signal.

Exhibit B

SIRIUS XM DEMONSTRATION

Sirius XM intended to replicate the Princeton, NJ drive tests that had been circulated via video, and to show some static tests focusing on the RF parameters of the generated signals. In addition, Sirius XM performed lab tests to allow measurements of the amount of overload power and OOBE required to mute its receiver. Below is a diagram that sets forth the Sirius XM test setup. The test set-up was not a true replica of any WCS technology currently available and did not use waveforms that were consistent with the operation of a realistic two way network.

All of the equipment including the signal generator, the noise generator, the power combiner, the power amplifier and the transmit filter that would be used to generate a signal, were stacked inside the trunk of one of the test vehicles attached to a vertically polarized dipole antenna intended to replicate a WCS user station. The Sirius XM tests were performed on the full C (2310-2315 MHz) block and the full D (2345-2350 MHz) block with the “WCS” vehicle stationary while the vehicle with the SDARS radio operating slowly pulled away from the WCS vehicle. The SDARS vehicle pulled away until a signal was reestablished anywhere in the range of 10-20 meters. This test-set-up was intended to replicate the worst-case scenario that is possible under what Sirius XM understood to be the proposed new rules, not a realistic depiction of any telecommunications service. Additional tests were performed where the test vehicles were parked within 3 meters of each other with a flat mask and only OOBE tested and there was no muting of the SDARS signal at all.

While the Sirius XM tests were performed in the full C and D blocks, what was demonstrated did not represent was the true impact of a TDD network on their receivers. In an operating system you have a transmission followed by guard time, followed by a reception followed by guard time and then it is repeated as necessary. In order to accurately represent the actual behavior of a two-way signal, SDARS should have modulated 5 ms followed by a 5 ms (or slightly more to accommodate guard time) off time followed by the next transmit frame. SDARS did not do this, but rather just burst the channel (or some subset of tones) 6, 12, or 25 % of the time. It appears that the Sirius XM showed nothing more than the effect of average power density, based on a duty cycle of a transient waveform. If done properly (modulated 5 ms followed by a 5 ms dead time) then the test would have been a more accurate representation of the operation of a mobile device.

In addition, the equipment utilized by Sirius XM to generate a signal in the full C and D block was contrived at best because the filter required is far too large to put in a mobile device and the effect of the filter on the waveform generated would not allow recovery of all the data in the system.

Further tests were performed by moving the WCS signal away from the SDARS band-edge in an attempt to more closely reflect a two-way operational system. Once the signal was adjusted by 2 MHz away from the SDARS band edge, the muting of the SDARS signal was minimal and the results corroborated the results of the positive WCS demonstration performed the day before.

Operation of WCS spectrum pursuant to the rules proposed by the WCS Coalition will not cause any significant interference to the SDARS signal. As is evidenced by these demonstrations, and as the WCS Coalition has been saying for some time, it would take the sun, the moon and the stars aligning just right for a WCS mobile device to cause interference to the SDARS receiver.

Interference from the WCS mobile to the SDARS receiver requires so many variables to be in place simultaneously that the likelihood of it ever occurring approaches zero. Are WCS device and SDARS receiver in close proximity? Is WCS device transmitting? Is the SDARS device receiving? At what power is WCS device transmitting? Are there obstructions between transmitter and receiver? Do WCS antenna and SDARS antenna have high degree of mutual coupling? Are both devices stationary? What frequency block is WCS transmitting on? What service is the SDARS receiver subscribed to? Is SDARS receiver served by terrestrial repeater? As was demonstrated in these tests, if all of these issues do not align in the worst-case for the SDARS receiver, a WCS mobile device will have no effect on the product the SDARS consumer is listening to.

Radiated WCS Test Setup