



Sprint Nextel
2001 Edmund Halley Drive
Reston, VA 20191
Office: (703) 433-8525 Fax: (703) 433-4142
Mobile: (703) 926-9533

March 5, 2008

Notice of Ex Parte Communication

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W. Room TW-A325
Washington, DC 20554

Re: *Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band*
WT Docket No. 07-195

Dear Ms. Dortch:

On behalf of Sprint Nextel Corporation (Sprint Nextel), Richard Engelman, Harry Perlow, and I met yesterday with Julius Knapp, Geraldine Matisse, Jamison Prime, Nicholas Oros, Ahmed Lahjouji, Patrick Forster, and Ira Keltz, all of the Office of Engineering and Technology. We discussed the attached presentation. If you have any questions concerning this filing, please contact me.

Sincerely,

Trey Hanbury, Esq.
Director, Sprint Nextel Corporation

CC: Julius Knapp, Geraldine Matisse, Jamison Prime, Nicholas Oros, Ahmed Lahjouji, Ira Keltz, Patrick Forster

Sprint Nextel Spectrum

800MHz	900MHz	1.9GHz	2.5GHz
800MHz	900MHz	1.9GHz	2.5GHz
800MHz	900MHz	1.9GHz	2.5GHz
800MHz	900MHz	1.9GHz	2.5GHz
800MHz	900MHz	1.9GHz	2.5GHz



Together with NEXTEL

Flexible Use of the AWS-3 Band

March 4, 2008

Adopt a Flexible-Use Band Plan



AWS-1						AWS-3	J Block	2 GHz MSS
A	B	C	D	E	F			
2110	2120	2130		2145	2155		2175	

- Adopt flexible-use, technology-neutral rules that permit TDD operations
 - > Responds to burgeoning demand for new, innovative, and affordable mobile broadband services using a wide array of technologies
 - > Follows long line of FCC decisions and, until now, widespread industry support of full flexibility and technology neutrality
 - > Fulfills longstanding FCC identification of AWS-3 as useful for TDD
 - > Permits the market – not the predilections of AWS-1 licensees – to determine the highest and best use of the available AWS-3 spectrum
 - > Creates little risk of interference when AWS-3 licensees take reasonable precautionary measures
- Adopt co-channel geographic area protection rules based on BRS/EBS
- License the band in a single, twenty-megahertz block on a REAG basis

TDD Poses Limited Real-World Potential for Interference

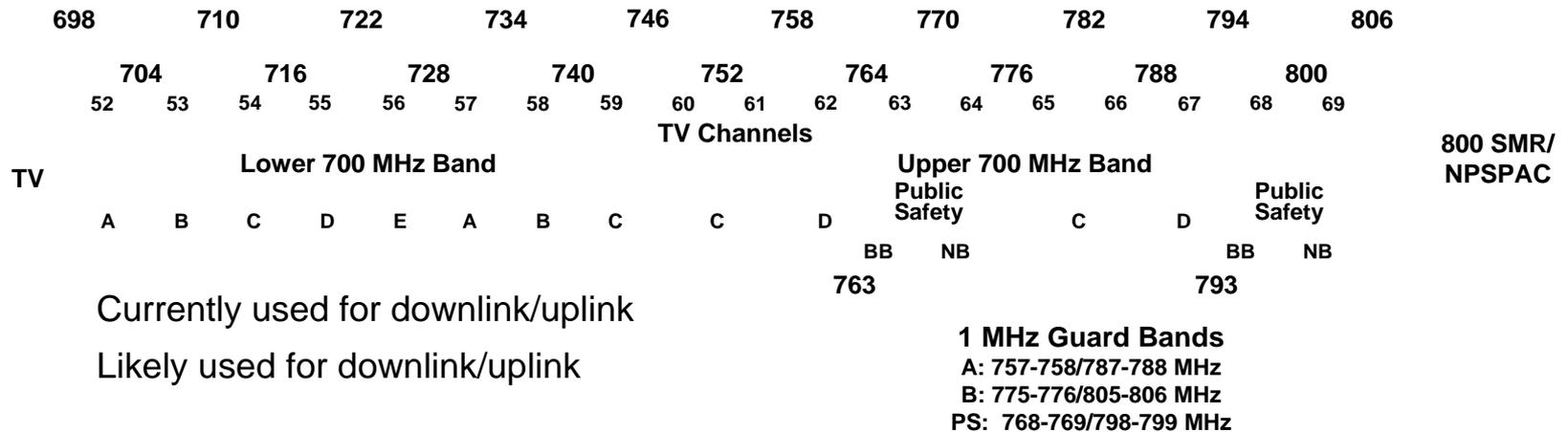


- Mobile-to-base
 - > Not present
- Base-to-mobile
 - > No difference between FDD and TDD operations
- Base-to-base
 - > No difference between AWS-3 and other bands, and only impacts AWS-3
- Mobile-to-mobile
 - > No difference between AWS-3 and other bands, such as 700 MHz, H Block, SMR-Cellular, BRS/EBS
 - Low Probability Event
 - Receiver overload
 - Out-of-band emissions

700 MHz Channelization Plan



Sprint Nextel Spectrum

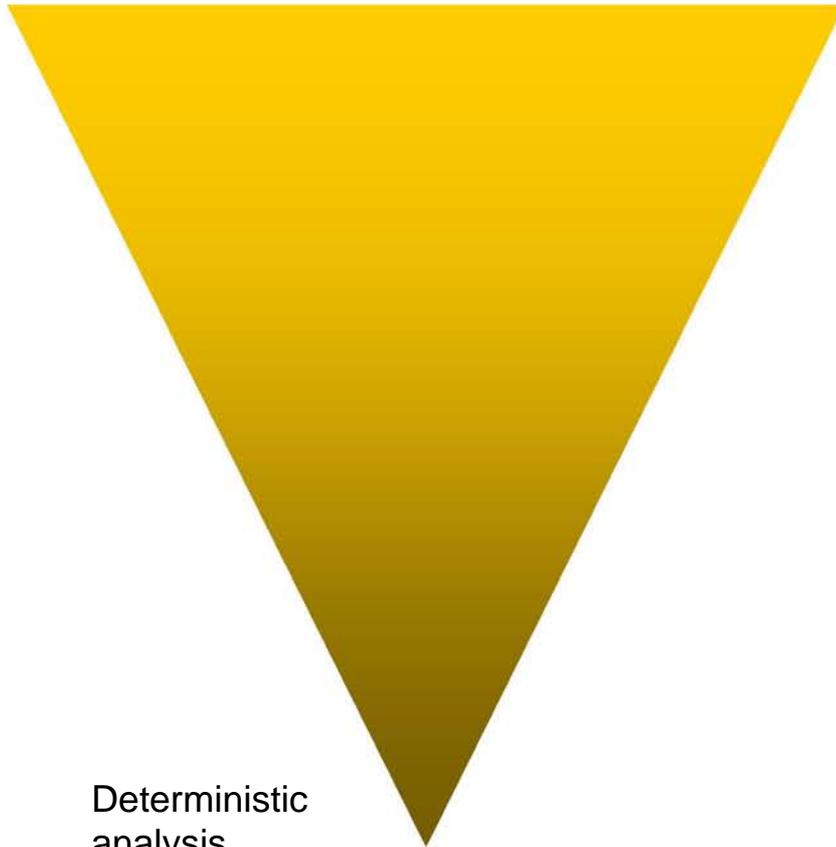


- Almost all channels have flexibility for base or mobile transmit
- Mobile transmit and mobile receive channels will be immediately adjacent to each other, or with at most a 1 MHz guardband in the 700 MHz band
 - > 1 MHz guardband at 700 MHz is equivalent to 2.5 MHz guardband at 2155 MHz

Mobile-to-Mobile Issues Are Very Low Probability Events



Selected Mobile-to-Mobile Probability Factors



Deterministic
analysis
starts here

Operating on Adjacent
Bands

Operating on Uppermost AWS-1
Channel(s) and Lowermost AWS-3
Channel(s)

Maximum Transmit Power

Maximum Receive Sensitivity

Simultaneous Operation at Maximums

Close Physical Proximity

Insufficient Error Correction

Insufficient Channel Isolation, etc.

Mobile-to-Mobile Receiver Overload Issues (1 of 2)



- The probability of receiver-overload interference is “very low” [FCC H Block Allocation Order]
- FCC should not base its decision on desires of AWS-1 licensees or equipment manufacturers to use products developed for use with foreign downlink bands (e.g., 2110-2170 MHz in Europe)
- FCC gave AWS-1 licensees ample notice that 2155-2175 MHz “could be used to provide an asymmetric pairing or TDD operations.” [AWS Third R&O]

Mobile-to-Mobile Receiver Overload Issues (2 of 2)



- FCC has tended to rely on industry to solve overload issues since FCC generally does not regulate receivers
- Improved BRS/700 MHz receiver design (e.g., filters, linearity) can be applied in 2155-2175 MHz
 - > Filtering not only answer; other remedies include improving receiver linearity
 - > Several years before 2155-2175 MHz auction, licensing, and roll-out is complete; providing time to seed improved receivers in AWS-1
- Conclusion: Do not limit mobile transmit power or restrict mobile transmissions

Mobile-to-Mobile Out-of-band Emissions (OOBE) (1 of 3)



- FCC has tended to address OOBE limits, when needed

BRS/EBS	$43 + 10 \log P$	$\leq 5.5 \text{ MHz}$
	$55 + 10 \log P$	$> 5.5 \text{ MHz}$
2 GHz MSS ATC uplink (2000 – 2020 MHz)	$43 + 10 \log P$	0 MHz
	linear interpolation	0 – 5 MHz
	$70 + 10 \log P$	$> 5 \text{ MHz}$
WCS (2.3 GHz)	$110 + 10 \log P$	in SDARS band

- FCC relies on industry at times to impose tighter OOBE limits

PCS	$43 + 10 \log P$	$106 + 10 \log P$ in PCS receive band
700 MHz	$43 + 10 \log P$	tbd

Mobile-to-Mobile Out-of-band Emissions (OOBE) (2 of 3)



- T-Mobile, Verizon Wireless, and Motorola proposed tight limits for mobile transmissions in the AWS-3 band.

T-Mobile	87.3 dBc	-70.3 dBm/1 MHz	$100.3 + 10 \log P$
Motorola	-70 dBm/100 kHz	-60 dBm/1 MHz	$90 + 10 \log P$
Verizon/VComm	-75 dBm/1 MHz	-75 dBm/1 MHz	$105 + 10 \log P$

- However, these proposed tight limits ignore the low probability of OOBE interference actually occurring.

Mobile-to-Mobile Out-of-band Emissions (OOBE) (3 of 3)



- While $43 + 10 \log P$ is likely insufficient, the FCC should require AWS-3 licensees to fully internalize the costs of overcoming OOBE through applying somewhat more stringent OOBE limits or following generally accepted industry best practices

Bandwidth of AWS-1 receiver	3.84 MHz
Noise figure of AWS-1 receiver	8 dB
Antenna gain of AWS-1 mobile	0 dBi
Antenna gain of AWS-1 base station	17 dBi
Body absorption and other losses	3 dB
Frequency of AWS-3 channel	2153 MHz
Distance for 1 dB desensitization of AWS-1 receiver, assuming free space path loss	4882 meters

Weigh Probability, Harm, and Burden on Flexibility to Establish OOB



Bandwidth of AWS-1 receiver	3.84 MHz	3.84 MHz	3.84 MHz	3.84 MHz
Noise figure of AWS-1 receiver	8 dB	8 dB	8 dB	8 dB
Antenna gain of AWS-1 mobile	0 dBi	0 dBi	0 dBi	0 dBi
Antenna gain of AWS-3 mobile	0 dBi	0 dBi	0 dBi	0 dBi
Body absorption and other losses	6 dB total	6 dB total	6 dB total	6 dB total
Frequency of AWS-3 channel	2153 MHz	2153 MHz	2153 MHz	2153 MHz
Distance for 1 dB desensitization of AWS-1 receiver, assuming free space path loss	122.6 meters	21.8 meters	6.9 meters	1.0 meters