

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of)
)
Office of Engineering and Technology) ET Docket No. 10-123
Requests Information On Use Of)
1675-1710 MHz Band)
)

COMMENTS OF M2Z NETWORKS, INC.

The National Broadband Plan recommends that the Federal Communications Commission (FCC) make 500 megahertz of spectrum available for broadband use within the next 10 years with 300 megahertz between 225 MHz and 3.7 GHz to be made available for mobile use in the next five years. Accordingly, the FCC's Office of Engineering and Technology (OET) and the National Telecommunications and Information Administration (NTIA) have begun examining various frequency bands that may be suitable for mobile broadband use including the 1675-1710 MHz band which has been preliminary identified as a band for commercial reallocation. OET issued this Public Notice on June 4, 2010 seeking to "better comprehend the current use of the 1675-1710 MHz band by non-federal entities and to also better understand its potential utility for broadband."

M2Z Networks, Inc. ("M2Z") respectfully submits these comments in response to the Public Notice. These comments focus on the Public Notice's first enumerated question, which asked for interested parties to provide "a description of the utility of the 1675-1710 MHz band for wireless broadband services, including any pairing, band plan, or other licensing approaches that would maximize this utility." M2Z (www.m2znetworks.com) is a new venture backed wireless broadband entrant seeking to provide American consumers with a nationwide wireless broadband access using advanced technologies on unpaired spectrum. M2Z's management and investors have been at the forefront of the evolution of the American broadband Internet including investing or working at Netscape, @Home, Amazon, Google, PSINet, and Navisite among many others.

I. The Need for More Unpaired Spectrum for Wireless Broadband

Over the last decade, the FCC has provided over 150 MHz of newly allocated spectrum designed to be used for advanced wireless services including wireless broadband. M2Z has previously pointed out to the Commission that less than ten percent

of the spectrum provided during this period has been allocated on an unpaired basis resulting in an untenable technological imbalance in the United States.¹ M2Z has long advocated that new assignments of spectrum from the FCC should be made in a way that allows for both paired and unpaired use in order to provide licensees the flexibility to use either Time Division Duplexing (“TDD”) or Frequency Division Duplexing (“FDD”) technologies as dictated by advances in technology and consumer demand.² As a result, and consistent with the FCC’s past findings, M2Z recommends that a minimum of 20 MHz of contiguous spectrum be allocated nationwide for broadband use from this band to the extent that the 1675-1710 MHz band is available for commercial reallocation on a primary basis. Also consistent with FCC precedent and absent any adjacency issues, M2Z recommends that commercial users be allowed to use out-of-band emissions and transmit power levels established for commercial users in the Upper 700 MHz band.³

Given these baseline recommendations, M2Z focuses the rest of its comments on how allocating a portion of the 1675-1710 MHz band as a large unpaired block of spectrum makes for a better policy outcome given the flexibility of TDD systems and the asymmetric traffic loads generated by consumer wireless broadband use. These comments also caution the FCC to guard against calls for a regulatory mandate for the pairing of 1675-1710 MHz band with other bands such as the AWS-3 band. M2Z notes that such calls are not grounded in the FCC’s technical flexibility doctrine and would set back the United States in its global competitiveness.

II. Consumer Wireless Use and Its Impact on Spectrum Allocation

Recently, Dan Hesse, chief executive of Sprint Nextel was quoted as saying “Originally, talking was the only cellphone application. But now it’s less than half of the traffic on mobile networks.”⁴ The New York Times also recently reported that the amount of data in text, e-mail messages, streaming video, music and other data services on mobile devices in 2009 surpassed the amount of voice traffic on cell phones.⁵ This trend is not unexpected. As far back as 2003, in comments filed with the Singapore regulator, IDA, Siemens identified the changing nature of wireless use into asymmetric data flows consistent with general Internet usage when it said:

Concerning traffic asymmetry, we believe that the average traffic asymmetry will be around 5 to 1 in 2005:

¹ See Letter from Uzoma Onyeije, M2Z to Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 04-356, 07-195 (filed Dec. 8, 2008).

² See Comments of M2Z Networks, Inc. WT Docket No. 07-195 (filed Dec. 14, 2007); Reply Comments of M2Z Networks, Inc. WT Docket No. 07-195 (filed Jan. 14, 2008); Further Notice Comments of M2Z Networks, Inc. WT Docket Nos. 07-195 and 04-356 (filed Jul. 25, 2008); Further Notice Reply Comments of M2Z Networks, Inc. WT Docket Nos. 07-195 and 04-356 (filed Aug. 11, 2008) (“FNPRM Reply”); Letter from Uzoma Onyeije, M2Z to Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 04-356, 07-195 and GN Docket Nos. 09-51 (filed Oct. 17, 2008); Letter from Uzoma Onyeije, M2Z to Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 04-356, 07-195 and GN Docket Nos. 09-51 (filed Nov. 20, 2008); Letter from Uzoma Onyeije, M2Z to Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 04-356, 07-195 and GN Docket Nos. 09-51 (filed Oct. 2, 2009).

³ See Letter from Uzoma Onyeije, M2Z to Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 04-356, 07-195 and GN Docket Nos. 09-51 (filed Sep. 23, 2008).

⁴ See Cellphones Now Used More for Data Than for Calls, NY Times, 5/13/10, available at: <http://www.nytimes.com/2010/05/14/technology/personaltech/14talk.html?hp>

⁵ *Id.*

Access to Internet/Intranet yields traffic asymmetry up to 200:1 (DL:UL)
Mobile Office applications yield traffic asymmetry up to 40:1 (DL:UL)
Video telephony yield a traffic asymmetry of 1:1 (DL:UL)

The exact amount of traffic asymmetry is highly dependent on the offered (and used) services in the network.⁶

The “disruptive innovation” of broadband Internet access becoming wireless has now resulted in highly asymmetric data traffic flows that greatly affect the future spectrum usage of commercial service providers. This change requires licensees to have increased flexibility in modifying their spectrum usage in order to meet the dynamic uplink and downlink traffic flows as consumer usage of the Internet continues to change dynamically. Thus, should the FCC introduce new commercial spectrum like the 1675-1710 MHz band, it should avoid making an *a priori* determination of the uplink and downlink traffic flows by setting a fixed ratio which would be the case by forcing a “paired” spectrum allocation.

Despite the change in the nature of wireless traffic, CTIA and others continue to call for the FCC to allocate spectrum only in FDD or “paired” spectrum allocations.⁷ The conventional regulatory wisdom in the United States as espoused by CTIA is that new broadband spectrum like AWS-3 and the 1675-1710 MHz bands should be inflexibly allocated on a “paired” basis in order to support incumbent FDD wireless systems that were originally deployed to provide voice services.⁸ Determining a fixed traffic arrangement through government fiat (as would be the case of pairing the 1675-1710 MHz band with AWS-3) is absolutely wrong as a matter of data driven policy making because such an action would substitute a bureaucratic predictive ability for technical choices that are better made in the market place. Calls for such pairing would also be

⁶ See Siemens Corp., Framework for Third Generation (3G) Cellular Network Deployment and Services Offering in Singapore, available at: http://www.ida.gov.sg/doc/Policies%20and%20Regulation/Policies_and_Regulation_Level2/3G_Siemens.pdf

⁷ See Letter from Christopher Guttman-McCabe, CTIA, to Chairman Julius Genachowski, Commissioner Michael J. Copps, Commissioner Robert M. McDowell, Commissioner Mignon Clyburn and Commissioner Meredith Attwell Baker, GN Docket No. 09-51 at 16 (filed Sept. 29, 2009). In addition to CTIA, T-Mobile and MetroPCS have sought the pairing of the 1755-1780 band with AWS-3. See also Letter from Howard J. Symons, on behalf of T-Mobile to Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 04-356, 06-150, 07-195, PS Docket No. 06-229 and GN Docket Nos. 09-47, 09-51, 09-137, 09-157 (filed Feb. 5, 2010); Letter from Kathleen O'Brien Ham, T-Mobile to Marlene H. Dortch, Secretary, FCC, WT Docket No. 07-195, and GN Docket Nos. 09-47, 09-51, (filed May 12, 2010); Letter from Carl W. Northrup, on behalf of MetroPCS to Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 04-356, 07-195 and GN Docket Nos. 09-157, 09-51 (filed Oct. 14, 2009); Letter from Carl Northrup, on behalf of MetroPCS to Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 04-356, 07-195 and GN Docket Nos. 09-157, 09-51, (filed Nov. 5, 2009); Letter from Carl W. Northrup, on behalf of MetroPCS to Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 04-356, 07-195 and GN Docket Nos. 09-157, 09-51, (filed Dec. 8, 2009); Letter from Carl W. Northrup, on behalf of MetroPCS to Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 04-356, 07-195 and GN Docket Nos. 09-157, 09-51 (filed Jan. 14, 2010); Letter from Michael Lazarus, on behalf of MetroPCS and Ericsson, Inc. to Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 04-356, 07-195 and GN Docket Nos. 09-157, 09-51 (filed Jan. 14, 2010); Letter from Carl Northrup, on behalf of MetroPCS to Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 04-356, 07-195 and GN Docket Nos. 09-157, 09-51 (filed Feb. 4, 2010). Members of the Telecommunications Industry Association including representatives from Ericsson, Inc., Lockheed Martin, Nokia Siemens, Harris Corp. and Qualcomm have also advocated for the specific pairing of the 1755-1780 band with AWS-3. See also Letter from Patrick Sullivan, Telecommunications Industry Association to Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 04-356, 07-195 and GN Docket Nos. 09-157, 09-51 (filed Apr. 27, 2010); Letter from Patrick Sullivan, Telecommunications Industry Association to Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 04-356, 07-195 and GN Docket Nos. 09-157, 09-51 (filed Apr. 30, 2010)

⁸ Voice communications are nearly always symmetric in their flow between users and therefore operate well on fixed and equal ratios of uplink and downlink spectrum assignments.

highly incongruent with the FCC's own technical flexibility doctrine as described in the National Broadband Plan.⁹

The better solution would be to make the 1675-1710 MHz band available as an unpaired spectrum block, with technical rules that allow the licensee to use spectrum either in "paired" or "unpaired" configurations giving the licensee the flexibility to build its system based on consumer demand and the licensee's business plan.

III. Surging Global Demand for Unpaired Spectrum

In recent years, there has been a rapidly growing interest among the LTE and WiMAX communities in TDD ("unpaired") variants of each technology, recognizing that TDD implementations can evolve gracefully to accommodate changing uplink/downlink traffic flows whereas FDD systems have fixed data flow that is *largely determined by the regulators at the outset of the spectrum allocation process*. Although most US carriers have shown little interest in TDD systems for domestic use, international demand has been surging driven by the leadership of China Mobile. According to recent press reports, an official of GSMA, the GSM carrier/manufacturer alliance was quoted describing this surging interest:

Interest in TD-LTE, the version of LTE slated to run in the unpaired spectrum known as Time Division Duplex, has heated up rapidly--so much so that TD-LTE deployments won't trail far behind FDD (Frequency Division Duplex) deployments, said Dan Warren, GSMA's director of technology, in an interview with *FierceBroadbandWireless*.

To wit: Ericsson announced a deal last week with Chinese vendor Datang in a bid to gain significant experience with TDD solutions. As part of the deal, Ericsson will begin integrating Datang's TD-SCDMA radio access network equipment into its own 3G offering. TD-SCDMA is China's homegrown 3G standard that China Mobile and others are using, and TD-LTE is seen as the next generation. Today, Nokia Siemens Networks announced a successful TD-LTE data call with Samsung. And of course, there's the biggie: The WiMAX Forum's announcement to speed up timelines for releasing faster versions of WiMAX thanks to the threat of TD-LTE encroaching on its turf.

"TDD is going to be a much more important part of the ecosystem from a 3GPP perspective than ever before," Warren said. "With TD-SCDMA networks up and running in China, vendors are gaining more confidence in the technology."¹⁰

The global demand for unpaired spectrum is supported by nearly all of the major vendors for advanced telecommunications equipment. This support comes as a result of governmental policies in countries like China, India and various members of the

⁹ Connecting America: The National Broadband Plan at 78-79 (Mar. 16, 2010).

¹⁰ See "GSMA's technology director talks up TD-LTE opportunity", *Fierce Broadband Wireless*, 4/29/10, available at: <http://www.fiercebroadbandwireless.com/story/gsmas-technology-director-talks-td-lte-opportunity/2010-04-29>

European Union that are seeking to leapfrog the United States' 4G wireless broadband services and become leaders in the digital economy.

In stark contrast with its prior advocacy¹¹ in the AWS-3 proceeding, 3G Americas (a trade association of GSM carriers like AT&T and equipment suppliers like Ericsson, Alcatel Lucent, Nokia, Motorola, Siemens) recently began advocating that more (unpaired) TD-LTE spectrum be made available globally and in the US in particular.¹² Likewise, individual companies such as Motorola, Nokia, Ericsson, Siemens and Qualcomm that previously opposed unpaired spectrum use of the AWS-3 band¹³ have enthusiastically come out in support of TD-LTE (unpaired) systems.¹⁴ The international experience of these companies confirms, consistent with the discussion above, that unpaired spectrum allows for the most efficient use of spectrum and is also best suited for the use of advanced radio technologies such as smart antennas and beamforming where the US has been a global leader many decades.¹⁵

India's recent spectrum auction demonstrates how our country is falling behind in making unpaired spectrum available. Earlier this month, India's regulator announced that Qualcomm, one of America's leading wireless technology companies, acquired unpaired spectrum in that country in order to deploy its TD-LTE systems.¹⁶ In its press release following the Indian auction, Dr. Paul E. Jacobs, chairman and CEO of Qualcomm said "[a]long with our ecosystem partners, we are now poised to accelerate the mobile broadband revolution with 3G HSPA, EV-DO and LTE to the benefit of all Indians."¹⁷ Unfortunately, the lack of sufficient unpaired spectrum from the FCC has hampered the ability of companies like Qualcomm and M2Z to deploy advanced TDD systems in the United States to the detriment of our nation's global competitiveness.

¹¹ See Letter from Patricia Paoletta, on behalf of 3G Americas to Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 04-356, 07-195 (filed Jun. 25, 2008); Letter from Chris Pearson, John Marinho, Charles L. Jackson, Jonas Naslund, Bill Alberth, Randy, Vish Nandlall Roberto Padovani & Jamshid Khun-Jush, 3G Americas, Alcatel-Lucent, CTIA, Ericsson, Motorola, Nokia Inc., Nortel, QUALCOMM to Chairman Kevin J. Martin, WT Docket Nos. 04-356, 07-195 (filed Dec. 8, 2008).

¹² See 3G Americas, 3GPP LTE for TDD Spectrum in the Americas, available at: <http://www.3gamericas.org/index.cfm?fuseaction=pressreleasedisplay&pressreleaseid=2576>, (Nov. 2009);

¹³ See Letter from Steve B. Sharkey, Motorola to Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 04-356, 07-195 (filed Jun. 5, 2008); Comments of Nokia Inc. and Nokia Siemens Network, WT Docket Nos. 04-356, 07-195 (filed Jul. 25, 2008); Letter from Mark Racek and Lee Hill, Ericsson Inc & Sony Ericsson Mobile Communications USA to Chairman Kevin J. Martin, WT Docket Nos. 04-356, 07-195 (filed Jun. 4, 2008); Letter from Dean R. Brenner to Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 04-356, 07-195 (filed Jun. 4, 2008).

¹⁴ See Motorola, Motorola Teams with Innofidei and ASTRI to Promote TD-LTE Ecosystem Through Use of World's First TD-LTE Dongle at Shanghai Expo available at: <http://mediacenter.motorola.com/content/detail.aspx?ReleaseID=12868&NewsAreaId=2> (Jun. 2010); Samsung and Nokia Siemens Networks collaborate on world's first end-to-end TD-LTE data call, available at: <http://www.3gamericas.org/index.cfm?fuseaction=pressreleasedisplay&pressreleaseid=2770>, (Apr. 2010); Ericsson, A step closer to super fast mobile broadband for Irish Consumer, available at: http://www.ericsson.com/news/100607_super_fast_20100607163555?categoryFilter=corporate_20100505131556 (Jun. 4, 2010); See Qualcomm's White Paper entitled "LTE – An Optimized OFDMA Solution for Wider Bandwidth Spectrum" at 2 available at http://www.qualcomm.com/common/documents/white_papers/LTE_an_optimized_OFDMA_solution_for_wider_bandwidth_spectrum.pdf (May 2009).

¹⁵ As Qualcomm explains, "LTE's OFDMA technology excels in leveraging wider bandwidths to provide very high data rates and thereby an excellent user experience, making it best suited for new spectrum with bandwidths 10 MHz or more." See LTE – An Optimized OFDMA Solution for Wider Bandwidth Spectrum at 2.

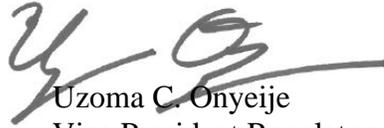
¹⁶ See Qualcomm, Qualcomm Wins BWA Spectrum in the 2.3 GHz Band in India, available at: <http://www.qualcomm.com/news/releases/2010/06/12/qualcomm-wins-bwa-spectrum-23-ghz-band-india-0>, (Jun. 12, 2010).

¹⁷ *Id.*

IV. Conclusion

The demand for wireless Internet access is surging and is bringing with it changes to the user traffic flows. This evolution in wireless use requires a change in the way that the FCC allocates new spectrum like the 1675-1710 MHz band, should it become available. Instead of the FCC relying on a rigid spectrum pairing construct (e.g., 1675-1710 MHz paired with AWS-3) that forces licensees into a predetermined and fixed data flow arrangement and precludes cutting edge technologies from being deployed in the United States, the FCC should instead allocate the spectrum as a large unpaired block that allows the licensees to change the ratio of uplink and downlink traffic flows based on consumer demand. The issuance of large blocks of unpaired spectrum is consistent with the FCC's flexibility doctrine and allocations being made by countries that compete with the United States for leadership in the digital economy. Thus, M2Z recommends that a minimum of 20 MHz of contiguous spectrum be allocated nationwide for broadband use from this band to the extent that the 1675-1710 MHz band is available for commercial reallocation. Also consistent with FCC precedent in the 700 MHz proceeding and absent any adjacency issues, M2Z recommends that commercial users be allowed to use out-of-band emissions and transmit power service rules established for commercial users in the Upper 700 MHz band.

Respectfully submitted,



Uzoma C. Onyeije
Vice President Regulatory Affairs
M2Z Networks, Inc.
2000 North 14th Street
Suite 600
Arlington, VA 22201
(703) 894-9500

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