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## EX PARTE PRESENTATION

Ms. Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street, SW  
Washington, DC 20554

**Re: Ex Parte Presentation in WT Docket No. 12-69, *Promoting Interoperability in the 700 MHz Commercial Spectrum***

Dear Ms. Dortch:

Pursuant to Section 1.1206 of the Commission's rules, 47 C.F.R. § 1.1206, DISH Network Corporation ("DISH") submits this response to an *ex parte* letter filed by AT&T Services, Inc. ("AT&T") in the above-referenced docket.<sup>1</sup> In particular, DISH responds to AT&T's inaccurate and misleading statements regarding the technical study DISH submitted. DISH's analysis demonstrated that to the extent the Commission adopts 700 MHz interoperability rules, it can do so without changing the Lower 700 MHz E Block authorized power level (50 kW ERP).<sup>2</sup>

The DISH analysis focused on demonstrating that the existing power flux density (PFD) rule imposed on the Lower E Block broadcast transmission (up to 50 kW ERP) results in lower ground-level signals than would be generated by lower power base station deployments in the E Block.<sup>3</sup> DISH reached this conclusion by comparing the ground-level signal strengths resulting from two hypothetical DISH E Block deployments: (i) a high power broadcast deployment and (ii) a lower power cellular base station deployment. DISH's analysis showed that, as the result of the strict ground-level PFD limits applicable to the E Block, a high power Lower E Block broadcast transmission generates lower ground level signals than would a lower power 1 kW/MHz base station transmission (such as an LTE signal) deployed in the same block. As indicated in the study's conclusion,<sup>4</sup> the analysis demonstrates that a PFD-limited high power

<sup>1</sup> See Letter from Joseph P. Marx, AT&T, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 12-69 (June 26, 2013) ("AT&T Letter").

<sup>2</sup> See Letter from Jeffrey H. Blum, DISH, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 12-69 (May 29, 2013) ("DISH Technical Study").

<sup>3</sup> See *id.*, Attachment at 3-7.

<sup>4</sup> *Id.*, Attachment at 13.

broadcast transmission in the Lower E Block is no more harmful to adjacent and neighboring block operations than the lower power alternative.

Proponents of Band 17 claim that lowering the Lower E Block transmission levels to 1 kW/MHz should be a prerequisite to 700 MHz interoperability. However, none of those parties, including AT&T, have produced any analysis or data showing that a PFD-limited high power broadcast transmission in the E Block is a greater threat to adjacent and neighboring block operations compared to a 1 kW/MHz base station transmission in the E Block. On the contrary, the DISH study demonstrated that such a low-power, wide-scale cellular base station deployment in the E Block would generate many instances in which the ground-level power would exceed that of the PFD-limited 50 kW deployment.

The AT&T Letter claims that DISH's analysis is flawed in four ways.<sup>5</sup> As explained in detail below, AT&T is wrong:

- *AT&T Claim: "Unrealistic LTE signal levels[;] DISH erroneously assumes LTE signals on the ground between -40dBm and -10dBm within 1km of LTE transmitters (typically less than -50dBm and much lower at the cell edge)."*<sup>6</sup>

**DISH Response:** AT&T claims that DISH's analysis is flawed because the analytical, simulated ground-level signal data used does not match actual field data, and the reported base station signal levels are inflated. AT&T itself erroneously assumes that DISH's report is based on mere assumptions, rather than sound analytical methodology. The DISH Technical Study is an analytical study that utilizes commercially available 700 MHz broadcast and base station antenna patterns and several well-known propagation models to simulate resulting ground-level signals. Rather than taking issue with the actual analysis methodology or models used, AT&T is complaining that DISH's simulated results are different from field measurements. DISH's analytical study, however, is not intended to match empirical field data; the main objective of DISH's study is to present a comparison between two hypothetical E Block deployments: (1) a PFD-limited high power (50 kW ERP) deployment; and (2) a low power (1kW/MHz ERP) transmission. DISH's goal was to base its analysis on a sound analytical framework suitable for a comparison study. The simulated numbers presented by DISH's analysis represent a fair "apples-to-apples" comparison of the two E Block deployment scenarios. In short, AT&T has failed to substantiate its argument regarding "inflated" base station signal levels because it has not demonstrated any flaw(s) with the methodology or models DISH utilized to produce the results in question.

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<sup>5</sup> AT&T Letter, Attachment at 10.

<sup>6</sup> *Id.*

- *AT&T Claim: “Understates E-Block signal levels near transmitters[;] DISH’s analysis does not rely on actual field measurements[;] Wireless Strategy field measurements during DISH Trial show levels on the ground often above -26dBm.”*<sup>7</sup>

**DISH Response:** Again, AT&T relies on the same “simulation vs. field measurement discrepancy” argument. In its report, DISH described its analytical methodology in detail, including the employed models with the corresponding parameters. Any interested party can follow the report and independently validate the data. AT&T’s claim of “inflated” and “understated” data is not supported by discrete examples of parameters or approaches that AT&T would change with DISH’s analysis methodology. In this case, however, AT&T misrepresents DISH’s findings. DISH’s analysis contains multiple propagation scenarios in order for the Commission to cross-validate DISH’s observations. Figure 6 in the DISH Technical Study shows the high power E Block transmission can cause high ground level signals (> -26 dBm) within 100 meters of the tower, in agreement with the Wireless Strategy field measurements.<sup>8</sup> The same is true for Figures 8 and 9 in the DISH Technical Study,<sup>9</sup> which compare the high and low power transmission ground-level signals with an 8 dB device antenna/body loss value. The Wireless Strategy study provided further laboratory and field measurements demonstrating that commercial Band 12 LTE devices would not experience interference in the presence of a 50 kW E Block deployment.

AT&T’s claim regarding the DISH Technical Study is ultimately a distraction since DISH’s report is constructed to be a comparison study between two E Block deployment models, not a field data calibration study. The Commission should utilize DISH’s findings to compare the two DISH E Block deployment scenarios and their respective impacts to adjacent and neighboring block operations.

- *AT&T Claim: “Ignores interference beyond 1km[;] DISH reports its E-Block and LTE signal level estimates only within 1 km of the transmitter. And even at the inflated LTE signal levels and understated E-Block signal levels it assumes, DISH’s analysis confirms that E-Block signals overwhelm LTE beyond 1 km.”*<sup>10</sup>

**DISH Response:** DISH is not “ignoring” interference. DISH’s analysis is a comparison study of two E Block deployment scenarios. As stated in the DISH Technical Study, DISH’s analysis shows that “the ground-level signals from a 50 kW high power E Block deployment would be similar to the ground-level signals from a typical base station deployment in the Lower E Block.”<sup>11</sup> DISH’s Technical Study reports that “low

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<sup>7</sup> *Id.*

<sup>8</sup> See DISH Technical Study, Attachment at 8.

<sup>9</sup> *Id.*, Attachment at 10-11.

<sup>10</sup> AT&T Letter, Attachment at 10.

<sup>11</sup> DISH Technical Study, Attachment at 4 (emphasis added).

power/height base station transmissions in the Lower E Block would produce higher ground-level signals than their PFD limited high power/height broadcast counterparts.”<sup>12</sup> Based on this observation, DISH concludes that “a high power Lower E Block transmission is no worse an interferer to adjacent block operations than a 1 kW/MHz transmission in the Block,”<sup>13</sup> since the former produces less ground level signal. AT&T’s characterization of the DISH Technical Study as an examination of how a high power E Block transmission co-exists with an adjacent/neighboring block LTE operation is not correct. The comparison is between two DISH E Block deployment cases and their respective ground-level power. Specific power level values reported in the analysis are not a main takeaway, because DISH’s intent was to show that, as the result of PFD limits on a high power 50 kW E Block transmission, the ground level signals from a hypothetical 1 kW/MHz transmission in the E Block would actually be higher than a 50 kW transmission from the same tower.

Second, AT&T’s statement that DISH “inflated LTE signal levels” and “understated E-Block signal levels” is wrong and misleading. The DISH analysis used the current and actual maximum power levels as allowed by the Commission’s rules,<sup>14</sup> which is 50 kW ERP for the high power E Block transmission and 1 kW/MHz ERP for the low power E Block transmission. DISH assumed the maximum signal levels that would be permitted under the regulatory requirements and did not artificially alter power levels in order to inflate or understate certain signal levels.

Third, the Commission should reject AT&T’s argument that DISH should have examined interference “beyond 1 km.”<sup>15</sup> DISH focused on ground-level signals from the two hypothetical E Block deployments inside of 1 km because that distance range is the relevant and appropriate distance when examining potential impact to adjacent block operations. Ground level signal comparison beyond 1 km is irrelevant and unnecessary, because the ground level signal conditions beyond 1 km are dictated by a much denser deployment for the low power transmission scenario. For example, the dominant low power transmission signal beyond 1 km from the transmitting tower will typically be from a neighboring low power tower, making AT&T’s claim moot. The Commission, in its Lower 700 MHz Band Report and Order,<sup>16</sup> had the correct foresight that imposing a PFD limit of 3000  $\mu\text{W}/\text{m}^2$  at ground level only within 1 km of the high power transmission tower is more than adequate to safeguard adjacent low power operations.

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<sup>12</sup> *Id.* Attachment at 13.

<sup>13</sup> *Id.* (emphasis added).

<sup>14</sup> *See id.*, Attachment at 1.

<sup>15</sup> *See* AT&T Letter, Attachment at 10.

<sup>16</sup> *See* Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59), *Report and Order*, 17 FCC Rcd. 1022, 1063-64 ¶¶ 100-105 (2002).

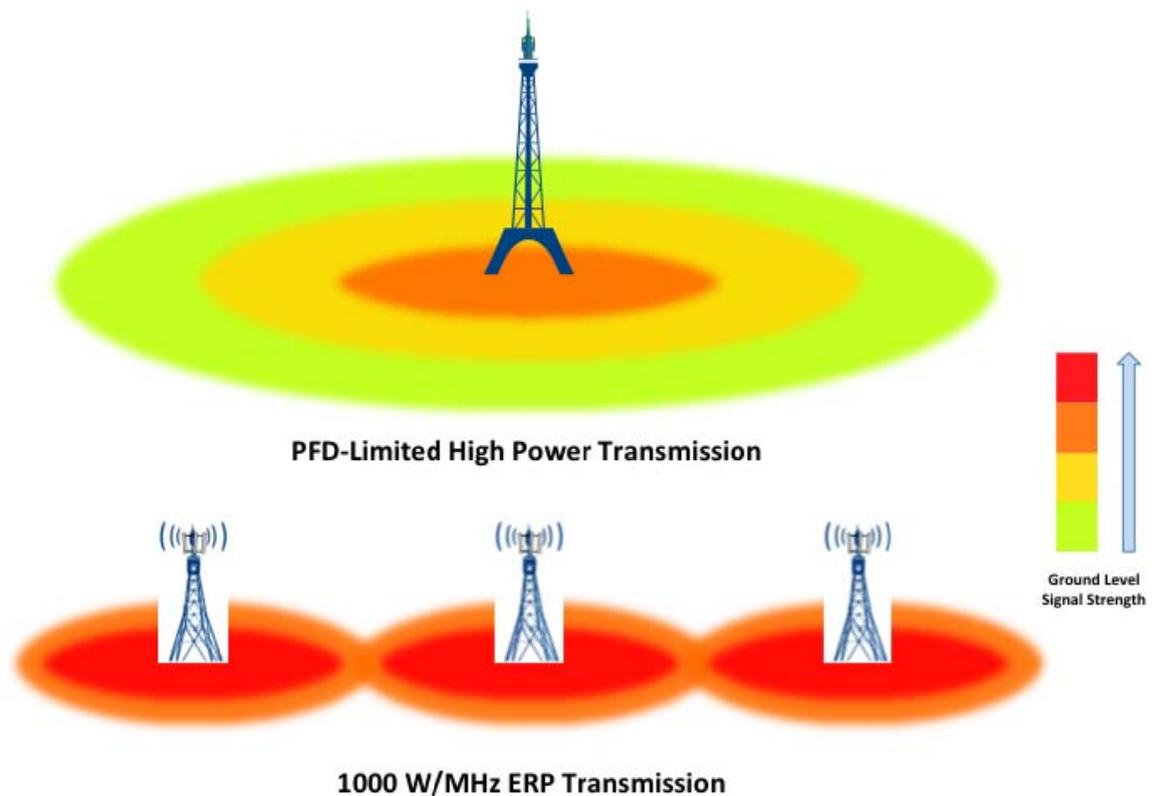
The key point in DISH's analysis is that, within 1 km of the transmission tower, the low power/low height base station transmission overall yields higher ground level signals than the PFD-limited high power/high height counterpart. At the same time, the low power/low height deployment would require many more towers to cover the same geographic area, with a typical inter-site distance much less than 2 km.<sup>17</sup> For these reasons, the overall impact to E Block adjacent/neighboring operations would be *worse* if DISH were forced to limit its E Block transmission power to 1 kW/MHz ERP, as AT&T advocates. For E Block adjacent/neighboring operations, it is clear that with such low power/low height, a "dense" E Block deployment represents a far worse scenario than a 50 kW ERP E Block deployment, which is far less dense and yields less ground level signals. Figure 1 of the DISH Technical Study (reproduced below) illustrates that a denser low power E Block deployment is less favorable to E Block adjacent/neighboring operations than a high power E Block deployment throughout the deployment area.<sup>18</sup>

While DISH concludes that the lower power E Block deployment presents a worse ground-level scenario, DISH also notes that such a scenario is harmonized with neighboring base station transmissions, and as such, presents no practical interference risk to commercial LTE devices.

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<sup>17</sup> See Qualcomm, Inc. Comments, WT Docket No. 12-69, p.30 (June 1, 2012).

<sup>18</sup> DISH Technical Study, Attachment at 3.



**Figure 1. PFD-Limited High Power Transmission vs. Unrestricted Low Power Transmission**

- *AT&T Claim:* “Assumes all E-Block and LTE transmitters are collocated.”<sup>19</sup>

**DISH Response:** Although it is not entirely clear, AT&T appears to be attempting to criticize DISH for limiting its analysis to scenarios where an E Block high power transmitter is collocated with a third party operator’s LTE equipment using an adjacent/neighboring spectrum block. Any such claim is irrelevant and misleading, because the DISH analysis (as stated above) compares two hypothetical E Block deployment scenarios, one that is a 50 kW ERP high power transmission and one that is a lower power, lower height (1 kW/MHz ERP) transmission. The DISH analysis does not compare or analyze the interaction between an E Block deployment and a third party operator. Since the study is a ground-level signal strength comparison between two potential E Block deployments, both high and low power transmissions need to occur at the same location (i.e. collocated). DISH is unaware of any other framework to conduct the stated analysis without “collocating” both high and low power E Block transmitters.

<sup>19</sup> See AT&T Letter, Attachment at 10.

