



June 25, 2021

Ms. Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 - 12th Street, S.W.  
Washington, D.C. 20554

Re: Notice of Ex Parte Presentation, Unlicensed Use of the 6 GHz Band, ET Docket No. 18-295; Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz, GN Docket No. 17-183.

Dear Ms. Dortch:

On June 23, 2021, Brett Kilbourne and Rob Thormeyer from the Utilities Technology Council (“UTC”), and Aryeh Fishman from the Edison Electric Institute (“EEI”), as well as Randall Watkins, Kasey Chow, Michael Rosenthal, Larry Butts, and Wells Ellenberg from Southern Company, and Tom Dombrowsky from DLA Piper, David Rines outside counsel to Southern Company, and David Hattey from Lockard & White (“L&W”) on behalf of Southern Company met with Michael Ha, Ira Keltz, Bahman Badipour, Nick Oros, Ron Repasi and Damian Ariza from the FCC’s Office of Engineering & Technology (“OET”) to discuss matters related to the above-referenced proceedings. The purpose of the meeting was to review and discuss the findings from recent field-testing of commercially available, FCC-certified unlicensed low power indoor (LPI”) devices on an actual typical 6 GHz Fixed service microwave link, which was conducted by Southern Company together with Lockard & White (“L&W”) and the Electric Power Research Institute (“EPRI”).<sup>1</sup>

In the fall of 2020, using a programmable vector signal generator to represent the transmission of a single LPI device, CTIA and Southern Company conducted field testing that showed a single LPI device can cause interference to a licensed fixed-microwave link from as far as 9 kilometers (km) away.<sup>2</sup> For the electric industry, these results caused serious concern because of the implication that unlicensed LPIs are virtually certain to cause harmful interference to incumbent microwave systems that support mission critical voice and data communications with utility personnel and are used to monitor and control electric power delivery to ensure the safe, reliable and secure generation, transmission and distribution of

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<sup>1</sup> The report documenting the results of these interference tests was previously provided to the staff of the FCC’s Office of Engineering and Technology. See Letter from Larry Butts, Manager, Telecom Engineering, Southern Company Services, Inc. to Marlene H. Dortch, Secretary, Federal Communications Commission in ET Docket No. 18-295 and GN Docket No. 17-183 (filed June 23, 2021); and see Attachment A: Test Report on the Effects of 6 GHz Unlicensed RLAN Units on Fortson to Columbus Microwave Link June 21, 2021, available at <https://www.fcc.gov/ecfs/filing/106231367519302> (“6 GHz Interference Report”).

<sup>2</sup> See Letter from Jennifer L. Oberhausen, CTIA, to Marlene H. Dortch, Secretary, Federal Communications Commission, ET Docket No. 18-295, GN Docket No. 17-183 (filed Nov. 13, 2020).

electric services. Thus, EEI and UTC and other incumbent stakeholders alerted the Commission that more testing and review of LPI devices was warranted. We indicated eagerness to work with the Commission and all stakeholders on the necessary rigorous real-world testing to assess the operating parameters and mitigation technologies that unlicensed LPI devices will rely upon.<sup>3</sup> We emphasized that testing under real-world conditions using actual unlicensed devices is critical to be certain that harmful interference will not occur before the Commission issues additional equipment certification approvals for 6 GHz LPI devices. We suggested that pausing further equipment certification of devices at this stage when equipment is still in development – before it becomes commercially available – would not pose an undue burden that would materially adversely impact equipment manufacturers or the public interest.

In April 2021, Southern Company, L&W, and EPRI, conducted new testing, this time using commercially available LPIs near a typical existing licensed 6 GHz fixed microwave link between Fortson and Columbus, GA. Southern previously discussed the outline for the plan for this testing with the OET and stated that representatives of the Commission and other stakeholders were welcome to observe in this testing. During the meeting, L&W underscored the new testing, in addition to examining the normal data communications from unlicensed LPI devices, also measured the effect associated with beacon transmissions by testing actual commercially available LPI devices. Significantly, this testing of off-the-shelf LPI devices revealed that the beacon signals from these devices alone will cause harmful interference, which will occur as soon as they are powered up and will continuously transmit at least every 104 milliseconds, irrespective of any broadband data transmissions from the devices. In addition, the new test results confirmed the testing from the fall of 2020, which indicated that the broadband data transmissions from LPI devices will also cause harmful interference to licensed microwave systems.

During the meeting, L&W explained that by itself the beacon signal resulted in interference that exceeded the FCC's – 6 dB I/N threshold at five of the thirteen test configurations. In addition, broadband data transmissions from LPI devices sending low speed data (*i.e.*, 100 Mbps or less) produced interference that exceeded the FCC's threshold for eleven of the thirteen configurations, including a site more than 4.5 km from the microwave receiver. Testing with LPI devices operating at higher data rates (*i.e.*, 750 Mbps or less) produced more interference, which could be measured as far as 9 km away from the licensed microwave path. Before and after measurements of the 30 dB fade margin of the microwave link show that it was reduced by 14 to nearly 26 dB for five of the thirteen configurations tested, which rendered the link too unreliable to use under these test scenarios. These measurements accounted for naturally occurring fading, thus removing any doubt that interference from the LPI device was the sole cause of the impact on the microwave fade margins. In fact, if testing occurred during the measured fades during fog, the microwave link would have been taken off the air entirely. Probably the most troubling and significant finding from the testing is the duty cycle of the interference from LPI devices. Instead of a 0.4% duty cycle as assumed by simulations relied upon by the Commission, the tests showed that the LPI duty cycle from beacon signals alone is actually 2.2% and the measured duty cycle with low-speed data streams (100 Mbps or less) was over 50%, thus fundamentally undermining the basis upon which the FCC determined that 6 GHz LPI devices did not pose a significant risk of interference to licensed operations.

In sum, we reiterated our heightened concern that the new testing demonstrates that LPI devices will cause harmful interference to licensed microwave systems and again emphasized our industry's willingness to further engage with OET to further understand the new information presented and to

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<sup>3</sup> See Letter from Utilities Technology Council, et al., to Marlene H. Dortch, Secretary, Federal Communications Commission, ET Docket No. 18-295, GN Docket No. 17-183 (filed Jan. 26, 2021); Letter from Jennifer L. Oberhausen, CTIA to Marlene H. Dortch, Secretary, Federal Communications Commission, ET Docket No. 18-295, GN Docket No. 17-183 (filed March 5, 2021).

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expeditiously examine the best mitigation solutions towards co-existence of unlicensed LPIs with incumbent fixed microwave licensees in the 6 GHz band. This collaboration is particularly urgent as actual commercial devices are already in the market with more to come, which will only compound the risk to the public.

Thank you for your help in this matter. If there are any questions, please contact the undersigned.

Sincerely

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s/ Brett Kilbourne

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cc: OET participants