The law firm of Wilkinson Barker Knauer LLP (“WBK”) hereby provides its comments on draft version 7 of KDB 447498 (the “Draft Version 7 KDB”), which the Office of Engineering and Technology’s Laboratory Division (“OET Lab”) released on April 20, 2021.¹ In the Draft Version 7 KDB, the OET Lab sets forth procedures and policies for application to mobile and portable devices corresponding to recent changes in the FCC’s rules regarding exemptions from RF evaluation. A WBK client has serious concerns about the potential impact of certain changes proposed in the Draft Version 7 KDB regarding exemptions applicable to body-worn devices. Unfortunately, as discussed below, the proposed new procedures would implement major changes for body-worn devices following a proceeding in which the FCC repeatedly assured the public that it was not making major changes, and those new procedures would adopt a much more stringent approach for RF exposure exemptions than applied by Canada and European authorities. These changes would also portend greatly increased expenses and disruptions for U.S. equipment manufacturers.

In applying for equipment certifications, the WBK client historically has followed the FCC’s guidance provided in version 6 of KDB 447498 (the “Current KDB 447498”) regarding exemption from SAR evaluation for body-worn devices since its effective date.² The Current KDB 447498 provides that “standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Test Exclusion Threshold condition(s), listed below, is (are) satisfied.”³ Current KDB 447498 then provides three different sets of calculations for equipment manufacturers to use based on applicable frequency ranges and minimum test separation distances of the equipment.⁴

For body-worn devices, the relevant SAR test exemption threshold provided in Current KDB 447498 is determined using the calculations set forth in Section 4.3.1(a), which applies to
devices operating between 100 MHz and 6 GHz with test separation distances of less than or equal to 50 mm. The text accompanying the formula in the Current KDB 447498 clarifies that “[w]hen the minimum test separation distance is < 5 mm, a distance of 5 mm … is applied to determine SAR test exclusion.”

Further, Appendix A of the Current KDB 447498 sets forth a table providing “Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances,” including frequency ranges relevant to certain products, to be used in combination with the equation and threshold specified in Section 4.3.1. For example, equipment operating at 2450 MHz having a test separation distance of 5 mm would result in a SAR test exemption threshold of 10 mW or below. Thus, devices operating at 2450 MHz having a test separation distance less than 5 mm are currently exempted from SAR testing if those devices operate at power levels below 10 mW.

In late 2019, the FCC adopted the Second Report and Order replacing its prior service-based exemption regime with formulas for circumstances under which the risk of excessive RF exposure is minimal. In taking that action, the agency assured the public and emphasized repeatedly that it did not believe that the changes would “impose any significant burdens on the impacted parties,” noting specifically that “we expect that if an RF source was ‘categorically excluded’ or ‘exempt’ from routine evaluation under the old rules, it will most likely still be exempt from routine evaluation under the new rules we adopt today.” The FCC concluded that, “[b]y adopting a service-agnostic approach to exemptions, our rules will no longer unduly burden developers who are making new uses of wireless technology.”

After reviewing the recently released Draft Version 7 KDB, WBK, on behalf of its client, seeks clarification or confirmation from the FCC that, as was the case under the Current KDB 447498, a distance of 5 mm may be applied to determine SAR test exclusion when a minimum
test separation distance is less than 5 mm. In an example similar to that noted above (under Current KDB 447498), continuing use of the existing approach would mean that, under Table B.2 in Appendix B to the Draft Version 7 KDB, body-worn devices operating at 2450 MHz would be excluded from SAR evaluation if the devices operate at power levels below 3 mW. While this power level represents a reduction from the 10mW exemption level set forth in the Current KDB 447498, it would still provide an available exemption from SAR evaluation and is fully consistent with the FCC’s 2019 statements that it did not intend to effect disruptive change in replacing the service-based exemption regime.

The continued availability of such an exemption for body-worn devices would also be consistent with RF regimes in Canada and Europe, a very important factor in this age of international trade and worldwide equipment manufacturing and distribution. Any result requiring SAR testing in the U.S. when such tests are not required in other developed countries, such as Canada and European Union nations, would place U.S. companies that trade abroad at a serious disadvantage vis-à-vis manufacturers that do not market their devices in the U.S.

In Canada, for example, the relevant RF guidance (RSS-102) provides that SAR evaluation is required if the separation distance between a user and a device’s radiating element is less than or equal to 20 cm, unless a device operates at or below certain power levels. Under the exemptions provided in RSS-102, devices operating at 2450 MHz at a separation distance of less than or equal to 5 mm are exempt from SAR evaluation if the devices have a power level of 4 mW or less, which is only slightly above the 3 mW power level from Table B.2 in the FCC’s Draft Version 7 KDB.

Similarly, EN-62479, which applies in the European Union for assessment of RF exposure from equipment, provides exemption from SAR evaluation for equipment of various frequencies and separation distances based on the power level of a device. Taking
representative values similar to those in the U.S. and Canadian examples discussed above, the
EN-62479 exemption level for a device operating at 2442 MHz at 5 mm from the body is
specified as 7.3 mW.\textsuperscript{13} Applying the formulas set forth in EN-62479 to extrapolate a value for
body-worn devices (at 00 mm) is believed to yield a testing exemption level of 3.6 mW or
below.\textsuperscript{14}

These various levels from the WBK client’s analysis of KDB 447498, the client’s use of
RSS-102, and its experience with EN-62479 indicate that SAR testing exemptions are currently
available for body-worn devices operating at very low power levels. Interpreting Draft Version
7 KDB in a manner that would remove an exemption from SAR evaluation for body-worn
devices would be extremely disruptive to the market for such devices, if such an interpretation is
correct. Devices that would be impacted include smart watches, which are part of a very
competitive market segment that has grown and flourished over the last several years at least
partly in reliance on the exemption in the Current KDB 447498 for devices operating at 2450
MHz and having test separation distances of less than 5 mm. Departure from the approach taken
in the Current KDB 447498 seems inconsistent with the Commission’s repeated statements that
it was not making major changes and would also trigger significant expense and testing delays
for smart watch manufacturers; moreover, if OET were to interpret the new rules in the Draft
Version 7 KDB as requiring a more stringent regime than presently exists under Current KDB
447498 (and those currently existing in Canada and the European Union), U.S. manufacturers
would be placed at a great competitive disadvantage.

For at least these three reasons – the FCC’s intent not to cause disruptive change, the
FCC’s interest in avoiding a U.S. regime much more stringent than the rest of the world, and the
importance of ensuring the competitiveness of U.S. products – the OET Lab should confirm that
the approach being taken in the Current KDB 447498 – that is, allowing SAR testing exemptions
for body-worn devices at power levels established for devices having a test separation distance of 5 mm – remains the FCC’s intended approach under the Draft Version 7 KDB. The final wording of the Draft Version 7 KDB should also include an express statement to that effect and incorporate any other revisions necessary to confirm this interpretation.

If the OET Lab has questions about these comments, WBK would welcome the opportunity to answer them and address related issues.


3 Id. at p. 12, § 4.3.1.

4 Id. at pp. 12-13, § 4.3.1.

5 Id. at p. 13, § 4.3.1 (emphasis supplied).


7 Id. at 11706 ¶ 34.

8 Draft Version 7 KDB, App. B at Table B.2.

9 WBK’s client is not the only party to have highlighted this issue, including the concern over disruptive change. In its comments already submitted on Draft Version 7 KDB, PCTEST/Element, a Telecommunications Certification Body (“TCB”) noted the guidance in current KDB 447498 providing that, when a distance is less than 5 mm, the exclusion thresholds for 5 mm are used, and it sought to retain this practice. See Comments of PCTEST/Element, Comments 17 & 20, available at https://apps.fcc.gov/eas/comments/GetPublishedDocument.html?id=471&tn=377285.


11 Id.
See generally EESTI Standard, EVS-EN 62479, Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz) (Sept. 2010).

Id. at App. B, Table B.1.

Values from application of the relevant formulas in EN-62479 by WBK’s client are as follows:

- 7.32 mW at 5 mm
- 4.82 mW at 2 mm
- 4.20 mW at 1 mm
- 3.92 mW at 0.5 mm
- 3.76 mW at 0.2 mm
- 3.71 mW at 0.1 mm
- 3.76 mW at 0.01 mm
- 3.66 mW at 0 mm