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Federal Communications Commission,
Authorization & Evaluation Division,
7435 Oakland Mills Road,
Columbia, MD. 21046

Attention: Equipment Authorization Branch

SOFTWARE UPGRADE FOR DEVICES IN THE FIELD

With this application we hereby ask permission to upgrade devices (FCC ID: QMNRM-845) in the field with a software upgrade. The Software update is to enable Bluetooth Low Energy (2402-2480 MHz). There are neither mechanical nor hardware changes associated with this request.

The Bluetooth chip has been compliant with the Bluetooth specification 4.0 all the time but thus far the features have been limited by SW to use only BT3.0 features

Brief description of the arrangement between parties:

Nokia owns the product configuration.

Nokia is building the product configuration. Deliveries from hardware and software providers are used. All software is delivered to Nokia. Nokia and Microsoft (OS vendor) are responsible for packaging and delivery of the software.

Nokia delivers the original product configuration, while updates hereto are distributed to the end user by Microsoft, using their software update servers.

Nokia certified Customer support providers can also update the software on a device, but they cannot use any software configuration that has not been created by Nokia.

Software control process used by the parties to ensure that reasonable safeguards are in place to ensure that the device cannot be modified by unauthorized parties:

The software update to enable BT Low Energy (BT LE) functionality will only enable BT LE functionality on 2.4 GHz ISM band. The software update needed to enable the BT LE functionality is controlled by Nokia as described in the paragraphs below. Third parties do not have any ability to configure or operate transmitters in any way that violates the approved certification. The protection mechanism relies on the Secure Boot concept and the fact that all software and settings must be digitally signed by secure servers. This will ensure the authenticity and the integrity of all software running on the device. The device will refuse to install or run any package that has not been properly signed.



Signing is a cryptographic process that prevents anyone but the software owner of the package to update it. Packages are tracked by increasing packaging version numbers. There are multiple levels of trust and also OEM software modules cannot execute beyond their granted authority level. All third party software applications must be signed by Microsoft and are only granted the minimal level of access needed and approved by Microsoft.

Software updates are originating from Nokia, hardware/software vendors and Microsoft (OS vendor).

Nokia collects internal updates as well as updates from other parties (hardware and software vendors).

Any updates are assessed for certification impact and if any further permissive change is applicable. Software is only released to the market after full assessment is completed and new approvals are in place if required. Nokia has an internal process that requires certification approval before software is released to third parties.

Only Nokia can deliver updates that can modify the way the transmitter operates.

The update packages collected by Nokia are digitally signed and delivered to Microsoft. Microsoft will add own updates and verify the update package. When the planned update has been verified, the final update package is created and digitally signed.

The last step is to load the update packages to the update servers, so the end user will get the updates.

Attestation from the grantee:

Nokia declares that all software releases provided to the end user will be fully assessed and compliant with the FCC requirements and will ensure that FCC approvals will be in place before software is released to the market.

Internal conclusion was to retest different equipment classes as follows:

Section in CFR 47

15.247(b)(1)	Conducted peak output power
15.247(d), 15.205(b)	Band edge compliance of RF emissions
15.247(d)	Spurious RF conducted emissions
15.247(d), 15.209	Spurious radiated emissions
15.207	AC powerline conducted emissions
15.247(a)(2)	6dB(bandwidth)
15.247(e)	Power spectral density

Test Report related to this change is:

- Exhibit06a_FCC15CBTLE_RM-845_47

NOKIA Inc.

Claudia Villela

Product Certification Officer

SD/Nokia Lumia Quality, San Diego