Technical Justification for CFR 47 Part 15.204 Modular antenna approval for Murata LBEE5KL1DX Wi-Fi BT module using Taoglas FXP.831.07.0100C

1. Justification

CFR 47 Part 15.204 requires that, in order for antenna equipment to be modified for an existing device grant, the new antenna equipment must be of the same radiation pattern type, and must have less than or equal to the peak directional gain of the pre-approved antenna in the certified frequency band.

The grant for the Murata LBEE5KL1DX (FCC ID VPYLB1DX) specifies approved antenna with 1.4dBi peak gain of a monopole radiation characteristic, with a grant frequency range of 2.402GHz to 2.480GHz.

The Taoglas FXP831.07.0100C is a monopole antenna that, when adhered to a plastic dielectric, produces a peak directional gain of 1.42dBi maximum from 2.4GHz to 2.483GHz. Table of FXP831.07.0100C peak gain under typical dielectric loading conditions below.

Frequency (MHZ)	2400	2410	2420	2430	2440	2450	2460	2470	2480
Gain (dBi)	1.20475	1.40584	1.41235	1.42344	1.39398	1.13379	0.95447	0.80774	0.4827

Accounting for connector and trace losses when integrating on a lossy PCB (minimum 0.3dB insertion loss in practice), realized peak gain will be less than 1.4dBi, complying with CFR 47 Part 15.204 rules.