Attn: Reviewing Engineer

Federal Communications Commission
7435 Oakland Mills Road
Columbia, MD 21046

RE: Antenna Specification for Bluetooth Comfort Module

To Whom It May Concern:

Three types of SMD antennas are possible to use for the module and are including in the certification, the first antenna (Mica) could be mounted internally on the module or externally and the other two are external antennas. Only one antenna is used at the same time.

The Mica antenna could be mounted internally on the module orexternally and is used as a reference antenna. The measurements are done on this antenna mounted internally, which also has the highest gain (see Table 1). For the Mica antenna matching components are mounted on the PCB for 50Ω matching.

The external antennas (see Table 1) are mounted on another PCB not part of the module. The gains are lower or the same then the reference antenna and do not need any extra measurements for the module with this antennas. The PCB's used for the external antennas are separated from other electrical equipments and can be seen as a standalone antenna on a cable. The connection between the PCB's is a very short wire (<1mm) soldered on an antenna pad on each PCB.

There are four type-numbers for the module depending of the type of antenna (see Table 1).

Table 1 – Possible antennas including in the certification used for the module

Module type	Antenna Manufacturer	Antenna Type nı	Antenna Product Name	Antenna Gain (peek)
BCM001a (internal antenna)	gigaAnt	3030A5645-01	Mica 2.4GHz SMD antenna (Measured on as an reference)	+2.7dBi
BCM001b (external antenna)				
BCM001d (external antenna)	KOREA SANGSHIN ELECTRIC CO.,LTD	KSCA-B2442BP	Bluetooth Antenna	-2.5dBd = -0.35dBi
BCM001c (external antenna)	Mitsubishi Corporation	AHD1403-244ST01	Surface Mountable Dielectric Chip Antenna	+0.5dBd = +2.65dBi

connectBlue ab
residence: malmö
VAT no. se 556589-0851-01

stora varvsgatan 11 n:1
se-211 19 malmö
sweden
tel.+46 (0)40-6307100
fax.+46 (0)40-237137
e-mail: info@connectBlue.se
http://www.connectBlue.se