Technical Specification
Smart USB Dongle SSD025

Scope

The document is a technical description of SMART SENSOR DEVICES Bluetooth Low Energy USB dongle white label product SSD025.

The document defines the product technical features and specifications.

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1 Performance Data

Parameter	Value
Bluetooth QDID	QDID 165746 Host QDID 162131 Controller
Model Name	SSD025/1,SSD025/2,SSD025/3,SSD025/4,SSD025/5,SSD025/6
Operational Frequency Band [MHz]	2402-2480
Number Of Channels	40 Channels
Channel Spacing [MHz]	2
Modulation	GFSK
Nominal Input[V]	5
Max Input [V]	5.25
Min Input [V]	4.75
Operational Max Temperature [^{o}C]	65
Operational Min Temperature [^{o}C]	-20
Storage Max temperature [^{o}C]	70
Storage Min temperature [^{o}C]	-30
Nominal Conducted RF Output Power [dBm]	+5.6
Antenna Peak Antenna Gain [dB]	+0.2dBi
Peak Current Consumption Active[mA]	<10
USB Suspend Mode [mA]	< 2.5
Power Supply	USB VBUS
Nominal RF Range [m]	25
Weight [g]	5

Complies with *Bluetooth 5.2*, ETSI EN 300 328 and FCC CFR47 Part 15 (US).

2 Block Diagram

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3 Functional description

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3.6 Antenna

Antenna is to be implemented in PCB trace (IFA type) and tuned for 2.4GHz Band.

The antenna system efficiency measurements are carried out in a *scattered field chamber.* The antenna system efficiency, ε_T, is the ratio of the power delivered at the 50Ω antenna interface, P_t, relative to the power radiated from the antenna, $P_{radiated}$. $\varepsilon_T = P_{radiated} P_t$

The antenna system efficiency can be expressed in dB or %, where 100% corresponds to 0dB.

Antenna system efficiency Freq [Mhz]	Antenna efficiency [dB]
2405	-8.4
2440	-4.1
2480	-6.3

The antenna efficiency is in the order of -5.5 to -6dB with the USB dongle positioned in a computer laptop.

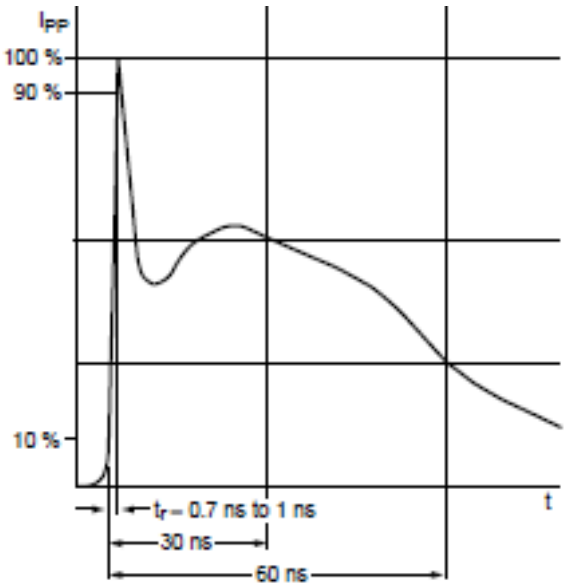
The maximum antenna peak gain is measured to be:

USB dongle as stand-alone:	-2.3dBi
USB dongle positioned in a Lenovo laptop, display closed:	+0.2dBi
USB dongle positioned in a Lenovo laptop, display open:	-0.2dBi

3.7 ESD Protection

The unit is equipped with a TVS protection circuit on the USB interface.

VBUS and data +/- lines is protected up to 8KV (contact) according to IEC 61000-4-2, level 4 (ESD)



3.8 Power Management Unit

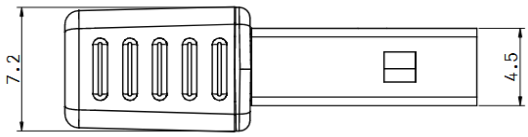
The Bluetooth SoC DA14695 has a complete integrated Power Management Unit (PMU). With several LDOs for the different power rails of the system.

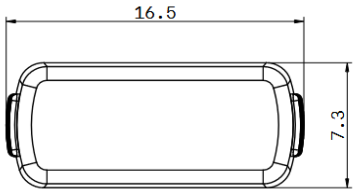
4 Printed Circuit Board

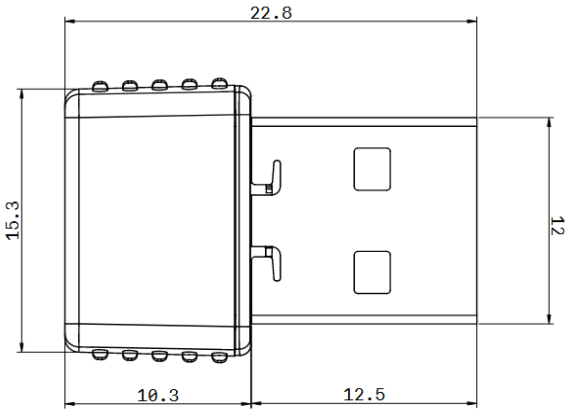
The PCB is a four-layer printed circuit board on FR4 material, gold plated.

5 Enclosure

Plastic material assembled in two parts in PBT + 20% glass fiber.

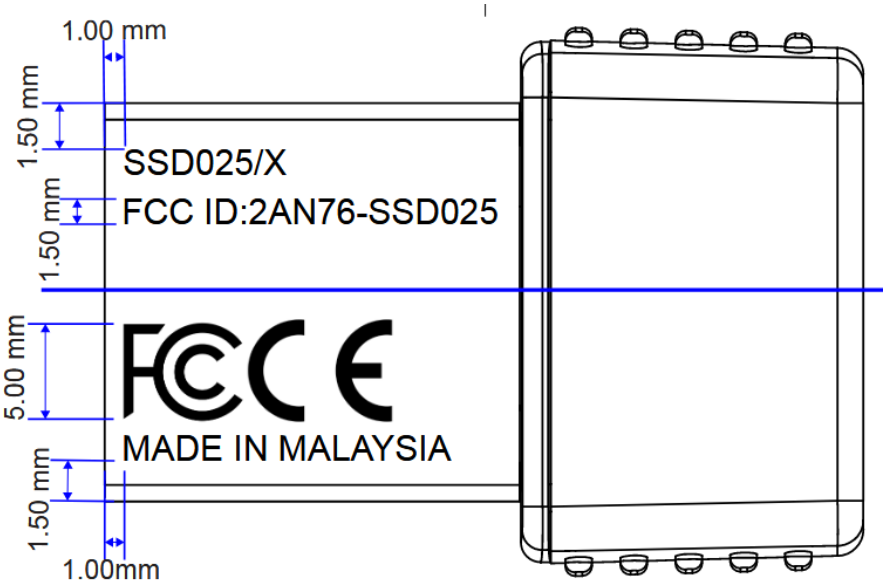






6 Marking information

The device is laser engraved with part number and regulatory information on the metal connector part. FCC and CE logo size requirement is minimum 5mm and font size must be 4pt or 1.5mm.



7 Regulatory requirements

Complies with Radio Equipment Directive (RED) 2014/53/EU and US FCC ID.

Complies with Restriction of Hazardous Substances (RoHS) Directive (Directive 2011/65/EU) ("ROHS3").

No	Description
1	**CE/ RED**
	- ETSI EN 300 328 V2.2.1
	- ETSI EN 301 489-1
	- ETSI EN 301 489-17
	- EN 62479
	- EN 62368-1:2014/AC:2015 (Safety)
	- Radio Equipment Directive (RED) 2014/53/EU
2	**FCC ID**
	FCC Part 15.247

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- ☐ Reorient or relocate the receiving antenna.
- ☐ Increase the separation between the equipment and receiver.
- ☐ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ☐ Consult the dealer or an experienced radio/TV technician for help.

8 Packaging information

The BLE USB Dongle SSD005 is placed in trays (polystyrene). These trays are stacked in a cardboard box containing one packaging unit. The cardboard box is placed inside a delivery package which depends on the order size.

Product Name	Packaging Units in pcs	Tray	Weight PU in kg	Size PU in mm
SSD025	1000	x	3.0	400x300x300