

Subject: FCC-TCB Certification Application - Limited Modular Approval Request

Certification Body



Telefication B.V., Dept. FCC TCB
Edisonstraat 12A
6902 PK ZEVENAAR
The Netherlands

Modular Approval Request FCC

(In accordance with KDB 996369 D01 & Part 15.212)

A limited modular approval (LMA) for *split* modular transmitter – see also **) Explanation

PH1600 EBS-module FCC ID: **2AKBZ-PH1600**

Items to be covered by Single modular transmitters.	Answer from applicant
1. The radio elements must have the radio frequency circuitry shielded. Physical components and tuning capacitor(s) may be located external to the shield, but must be on the module assembly.	The IMS's*) as an internal part of the PH1600 EBS-module has the radio elements and radio frequency circuitry partially shielded. *) IMS - Ink Monitoring System – EBS designed radio operated system on the basis of RFID@13.56MHz technology, for verifying the RFID transponder inside of ink bottle, used as a printer consumable.
2. The module must have buffered modulation/data inputs to ensure that the device will comply with Part 15 requirements with any type of input signal.	Meets the requirement
3. The module must contain power supply regulation on the module	Meets the requirement
4. The module must contain a permanently attached antenna, or contain a unique antenna connector, and be marketed and operated only with specific antenna(s), per §§ 15.203, 15.204(b), 15.204(c), 15.212(a), 2.929(b).	Meets the requirement. The transceiver and antenna are permanently attached inside PH1600. They are only one variant of transceiver and antenna built in each variant of PH1600 EBS-module.
5. The module must demonstrate compliance in a stand-alone configuration.	Meets the requirement of LMA – see below
6. The module must be labeled with its permanently affixed FCC ID label, or use an electronic display (see KDB Publication 784748).	Meets the requirement.
7. The module must comply with all specific rules applicable to the transmitter, including all the conditions provided in the integration instructions by the grantee.	Meets the requirement.

Items to be covered by Single modular transmitters.	Answer from applicant
8. The module must comply with RF exposure requirements.	PH1600 EBS-module is always working and was tested with the host UPC1600, which is also an EBS-module. UPC1600 and PH1600, cable connected, together make a whole EBS-1600 printer.

Items to be covered by Split modular transmitters.	Answer from applicant
1. The modular transmitter must comply with all requirements of a single modular transmitter except for items (1) & (5) of the above single modular approval requirements.	
2. Only the radio front end must be shielded. The physical crystal and tuning capacitors may be located external to the shielded radio elements. The interface between the split sections of the modular system must be digital with a minimum signalling amplitude of 150 mV peak-to-peak.	The IMS's*) as an internal part of the PH1600 EBS-module has the radio elements and radio frequency circuitry partially shielded. *) IMS - Ink Monitoring System – EBS designed radio operated system on the basis of RFID@13.56MHz technology, for verifying the RFID transponder inside of ink bottle, used as a printer consumable.
3. Control information and other data may be exchanged between the transmitter control elements and radio front end.	Meets the requirement.
4. The sections of a split modular transmitter must be tested installed in a host device(s) similar to that which is representative of the platform(s) intended for use.	Meets the requirement. PH1600 EBS-module is always working and was tested with the host UPC1600, which is also an EBS-module. UPC1600 and PH1600, cable connected, together make a whole EBS-1600 printer.
5. Manufacturers must ensure that only transmitter control elements and radio front end components that have been approved together are capable of operating together. The transmitter module must not operate unless it has verified that the installed transmitter control elements and radio front end have been authorized together. Manufacturers may use means including, but not limited to, coding in hardware and electronic signatures in software to meet these requirements, and must describe the methods in their application for equipment authorization.	As above. Meets the requirement.

****) Explanation for appliment the LMA for split modular transmitter:**

PH1600 EBS-module is always working and was tested with the host UPC1600, which is also an EBS-module. UPC1600 and PH1600, cable connected, together make a whole EBS-1600 printer.

EBS Ink-Jet Systems (in short EBS) distinguishes and uses two independent, separate major modules, used to configure the EBS-1600 printers, which are considered as EBS radio modules, in scope of FCC and ISED limited modular approval and/or family approval. They are:

- a). **PH1600** module as the EBS-1600 printer part – is a radio equipment contains inside RFID tranciever circuit, designed by EBS, for read/write a transponder in the printer ink bottle, used as a printer consumable.
 - *) There are 10 different types (variants) of PH1600 print-heads (HVINs), differing in number of nozzles (7N or 16N or 32N), distance between nozzles (1.8 or 3.6 mm) and the kind of solvent bases in used ink: MEK (methyl ethyl ketone/butanone) or Ethanol. Each PH1600 module has always the same RFID circuit (the same transceiver and antenna PCBs), but PH1600 module has inconsiderably different PCBs for control only printing aggregate (they are not a PCBs for radio functions control).
- b). **UPC1600** module as the EBS-1600 printing system part – this is not a radio equipment. There is only one variant of UPC1600 module. This EBS-module is a host for PH1600 EBS-module.

A compliance with RF exposure rules is demonstrated only for particular product configurations defined by EBS only. In each complete EBS-1600 printer each variant of PH1600 module is controlled always by the same UPC1600 module (as a host master device). Each variant of PH1600 module can be only part of EBS 1600 entire printer set and may not be used in any other non-EBS device. EBS provides the integration instructions, which must be followed under entire EBS 1600 printer set assembly.

Applicant name:	Krzysztof Soliński	EBS Ink-Jet Systems Poland Sp. z o. o.	
Applicant title:	QMS and Regulatory Compliance Manager		
Applicant signature:		Date:	December 22, 2021