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GILARDONI
ITALIAN SCIENTIFIC INDUSTRY

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***RADIATION PROTECTION REPORT
REGARDING THE RX EQUIPMENT SECURITY
CHECKS***

Articles 61-79 of the Legislative Decree no. 230/95 – Legislative Decree no. 241/00

GILARDONI FEP ME 1000 HC DV s/n 120870002

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Attachments:

- **Radiological Protection Internal Rules.**

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1 Introduction

The drafting of this report has been carried out based on the Legislative Decree no. 230/95 and on the international recommendations, as applicable.

This report is being prepared for the sole purposes of radiation protection: it is beyond my attributions and competences of Qualified Expert to refer and assess other risks that exist at the work place, which is the object of this report or other risks resulting from the incorrect use of the equipment.

The data, the elements and all the information necessary for the drafting of this report have been provided by the device manufacturing company and collected by the undersigned.

The purpose of the analysis has been that of investigating the framework of the potential hypotheses that could give rise to hazardous events, with harmful consequences for the operators, for the overall work environment and for the population.

On 3/16/2017, radiometric measurements have been conducted, for the purpose of establishing the dose intensity during the operation of the following baggage check device:

BRAND	MODEL	MANUFACTURE DATE	S/N	SW VERSION	SW RELEASE DATE	FUNCTION	MAX Kv	MAX mA
GILARDONI S.p.A.	FEP ME 1000 HC Dv	NOVEMBER 2015	120870002	3AUE0291- 001	3/14/2017	CONVENTIONAL RX SYSTEM FOR SECURITY CHECKS	160	1,8

In the following paragraphs, the measurement methods and the related results will be presented, with the resulting dose estimate for the operators, employed for the use of these devices, under normal and correct operating conditions.

2 System Description

X-ray System for the baggage and package security checks.

The equipment's specific techniques are attached to this report.

3 Operation – Risk Assessment

The system is used for the package checks, with video representation, by means of the chromatic code of the materials representing the objects contained inside the package.

The package is being irradiated while transiting the conveyor belt and at the same time, the related images are being provided on the screen.

The system is capable of distinguishing the density of the parts that make up the baggage.

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3.1 Protection Devices

Taking into consideration the manufacturing characteristics of the systems examined (screening, lead rubber strips for the baggage entry and exit) and those related to the irradiation techniques, the protections mentioned above guarantee the protection of the operators and that of the population.

4 Exposure Assessment

Certain measurements have been conducted, during the transit of a package, with maximum irradiation technique.

Radiations: X Rays

Quality Factor: 1

Simulator: package to be inspected.

i.s.s. = inf. to instrumental sensitivity

The tool used: Unfors X2 Survey ionization chamber – calibration certificate: 1/19/2017.

The fund measured = 0.09 – 0,14 $\mu\text{Sv/h}$

On the equipment's external surfaces, exposure intensity measurements have been conducted, within the maximum operating conditions; the maximum values measured around the equipment are reported in the following tables:

FEP ME 1000 HC DV – s/n 120870002	
Point of measurement	Maximum intensity measured, including the fund $\mu\text{Sv/h}$
In contact with the External walls of the System – upper side	0.12
In contact with the External walls of the System – side	0.12
Entry/Exit of the Package in contact with the Lead Rubber Strips	0.37
Entry/Exit – end of the roller conveyor	Does not exceed the fund
Personal reference group of the population in the adjacent rooms	Does not exceed the fund

5 Dose Estimate

In view of the equipment's operating methods and correct use, as indicated in the user manual, taking into consideration the protections put in place (screenings, lead rubber strips at the entry and exit of the baggage) and the results of the conducted measurements, the following external irradiation doses are being estimated:

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The personnel operating the equipment	< 1 mSv/year
Population	< 1 mSv/year

Referring to the dose limits defined by the Legislative Decrees no. 230/95 and 241/00, to the data reported in the table above and under normal operating conditions, the dose limits set for the population are not being exceeded.

In this context, the examined equipment is compatible with the airport area operation, by the personnel categorized as **NOT EXPOSED**, for the purposes of the Radiation Protection, and the personal dosimetry equipment is not considered to be necessary.

6 Justification Principle

Having considered the benefit obtained by the operation of the equipment subject to the checks from the point of view of the risk involved under normal operating conditions, for the operators, the population and the environment, the practice must be considered widely justified.

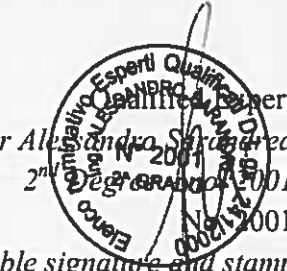
7 Conclusions

From the results of the conducted assessments, the operation of the examined equipment:

- under normal operating conditions,
- complying entirely with radiological protection internal rules,

does not involve a justified, unacceptable or undue radiation risk for the population, the environment and for the operators, which, under the above-mentioned operating conditions, is not likely to exceed the dose limits for the population, provided by the Legislative Decree no. 230/95, subsequently amended and supplemented.

In accordance with the quoted law and pursuant to art. 22, the holder of the equipment shall apply the said provisions, in terms of practice preventive communication, informing, thirty days before the beginning of its possession, the Firefighter Province Squad, the National Health Service bodies and, where applicable, the Labor Province Inspectorate.


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La sottoscritta MARCU ALINA BIANCA, interprete e traduttrice giurata per le lingue straniere italiano ed inglese, in base all'autorizzazione n.31329, rilasciata l'08.04.2011, dal Ministero Romeno della Giustizia, attesto l'esattezza della traduzione fatta dall'italiano all'inglese, che è conforme al documento originale che mi è stato presentato, attesto che il testo presentato è stato tradotto interamente, senza omissioni e che, mediante la traduzione, il contenuto ed il senso del testo non sono stati distorti.

**INTERPRET ȘI TRADUCĂTOR AUTORIZAT
MARCU ALINA BIANCA**

I, the undersigned MARCU ALINA BIANCA, certified translator and interpreter for Italian and English, under the authorization no.31329, issued on 04/08/2011, by the Romanian Ministry of Justice, certify the accuracy of the translation performed from Italian to English, in compliance with the original document that has been submitted to me, that the submitted text has been fully translated, without omissions and that, by translating it, the content and meaning of the text have not been distorted.

**CERTIFIED INTERPRETER AND TRANSLATOR
MARCU ALINA BIANCA**

Traducător și Interpret Autorizat
MARCU ALINA-BIANCA
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