Testing and Evaluation Protocol for Radiation Detection Portal Monitors for Use in Homeland Security

T&E Protocol N42.35, 2010

Version 2.02

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Testing and Evaluation Protocol for Radiation Detection Portal Monitors for Use in Homeland Security

1. Scope

This document establishes the protocol for testing alarming personal radiation detectors based on the performance requirements established in ANSI N42.35, "American National Standard for Evaluation and Performance of Radiation Detection Portal for Use in Homeland Security."

2. References

This protocol shall be used in conjunction with the following documents:

[R1] ANSI N42.35, "American National Standard for Evaluation and Performance of Radiation Detection Portal for Use in Homeland Security."

[R2] ANSI/IEEE N42.42, "Data Format Standard for Radiation Detectors Used for Homeland Security."

[R3] NIST Handbook 150:2006, NVLAP Procedures and General Requirements

[R4] NIST Handbook 150-23:2007 (DRAFT) NVLAP Radiation Detection Instruments

3. Compliance Level Information

Instrument under test might meet all the requirements listed in the ANSI/IEEE N42.35 standard. Therefore, different agencies developed documents describing the compliance levels required for particular applications of the instruments under test. Examples of such compliance level requirements are those required by the Graduated Rad/Nuc Detector Evaluation and Reporting (GRaDER or GRaDER Instrument Performance" document located at http://www.dhs.gov/GRaDER.

4. Test and evaluation steps

It is recommended that testing laboratories perform the tests listed in this protocol in the following order:

- Check all items listed in the general requirements
- Perform the radiological tests
- Perform the temperature and humidity tests
- Perform the entire electrical and electromagnetic test except the Electrostatic Discharge (ESD) test
- Perform the impact and the vibration tests
- Perform the moisture and dust test
- Perform the ESD test
- Perform the drop test, as required

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Excel template sheets are provided by NIST to the testing laboratory to guarantee that all data required is being provided in the test report.

5. Recording test results

This Test and Evaluation protocol contains data sheets that shall be used to record and report all test results. Each data sheet is associated with a specific section(s) of the referenced ANSI standard, N42.35. An electronic version of the data sheets is provided in the form of spreadsheets that may be used to record and report the results of the tests. These spreadsheets were verified and validated (V&V) using Microsoft Excel 2007 (compatibility mode).

Instrument status shall be recorded on the "Test Summary" sheet as testing is performed. The comment section in each data sheet shall be used to record changes to the test requirements and methods listed in the ANSI standard. The comment section shall also include the rational of the changes.

6. Test report

A test report summarizing the results of the test shall include the following sections:

- a. Laboratory equipment information:
 - 1. Identify all participating laboratory facilities. Include points of contact names, mailing address, telephone number, and electronic mail addresses.
 - 2. Identify the tests performed in the different facilities.
 - 3. List all supporting equipment name, model number and last day of calibration used for each test.

b. Test equipment information:

- 1. Include manufacturer name, instrument model, instrument serial number, software and firmware version identification, and last day of calibration.
- 2. List the operating modes and parameter setting of the instrument and accessory kit(s) used in each test.

c. Data sheets:

- 1. The data sheets listed in this document shall be completed and provided as part of the report.
- 2. Include changes to the ANSI standard test requirements or methods and rational to the changes.

7. Guidance for testing ANSI N42.42 data format requirements

The standard associated with this Test and Evaluation Protocol requires verification that an output data file is created that complies with ANSI/IEEE N42.42 standard requirements. The range of complexity of the N42.42 compliant instrument output file is extremely broad. Data output files from



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these instruments are simple files that can be checked manually using a text editor such as Notepad or WordPad. These files can also be verified using additional tools. In principle, all data output files that meet ANSI N42.42 can be verified manually using a text editor as these files are XML files. File reading software, such as Altova XMLSpy® 2009 Standard Edition can also be used for manual viewing and validating of structure and content.

N42.42 schemas can be used to validate the file format as specified in the ANSI/IEEE N42.42 standard. These schemas are available at the NIST web site http://physics.nist.gov/Divisions/Div846/Gp4/ANSIN4242/xml.html.

There are several XML validators that can be used to verify the XML structure of the N42.42 compliant instrument output file. Examples of these validators can be found at http://www.xmlvalidation.com/ or http://validator.w3.org/.

8. Considerations

The standard establishes exposure rates for test in Roentgen per hour (R/h). When testing instruments that read in rem per hour, the test field shall be in rem/h instead of R/h. Refer to the "Units and Uncertainties" section in the standard for additional information.



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Test Summary Sheet										
	ANSI N42.35									
Manufacturer:										
Model:										
	Serial#		Serial#		Serial#					
Test Number	Date	Status	Date	Status	Date	Status				
5.1 5.2										
5.3										
5.4										
5.5										
5.6						<u> </u>				
5.7										
5.8										
5.9										
5.10										
6.3										
6.4										
6.5										
6.6										
6.7										
6.8										
7.1										
7.2										
7.3										
8.1										
8.2										
8.3										
8.4 8.5				1						
8.6										
8.7										
9.1										
9.2										
10.0										
Comments:										



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			Pre	e-Test						
		Da	ta Shee	et and F	Repo	ort				
Instrument:										
Model:						Seria	l Number:			
Date Performed:						Test	Location:			
Requirement:	-					perati	on and mair	ntenance ma	anual	
	conta	ining t	he informati	on listed be	low.					
	<u> </u>				<u> </u>		1 (1 (1			
Test Protocol:				-				-		on
			orovided. Al							
			lable. The case	Jocumenta	lion Si	louid	not be in ai	ail ioiiii wili	1	
	IIICOII	ipiete	Sections.							
Note:	Comr	nents	are require	d when the	require	ement	is not verifie	d		
Note:		1101110	aro roquiro		oquiic)o	io not vonilo			
			Tes	t Results						
	Rea	uiren		t ite suits			Yes		No	
		a					100			
Operating instructions and r	restric	tions								
Electrical connection schen										
Spare parts list										
Troubleshooting guide.								ü		
Description and protocol for communication methods of transmitting and										
receiving data							3			
Contact information for the r			er including	name, add	ress,				1.1	
telephone #, fax #, email ad	ldress	, etc.					1			
Power supply requirements										
Recommended operational	param	eters	such as: d	etector res	ponse	and			\Box	
false alarm probability	+									
Complete description of sys Enclosure specification class									- - 	
Inclusion of any hazardous			it may requi	ire addition	<u>al</u>		1			
regulation	maten	iai tiia	it may requ	ire addition	aı		Ţ		Ш	
Description of data analysis procedure	softw	are a	nd radionuc	lide identifi	cation		Ι		لبا	
Description of operation and	d perfo	rmano	ce of the sy	stem or un	it		Ц		1.1	
							-			
Comments:										
Completed by:							Date:			
Reviewed by:			ì		1		Date:			



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		Se	ction 5	5.1 Gene	ral cha	racteri	stics				
			Da	ata Shee	t and F	eport					
Manufact	urer:										
24	1 - 1 -				0!	. I. Ni					
IVI	odel:				Seria	al Number:					
Requirement:	Monito	ors sha	all be capa	ble of operation	na indepen	dently of any	nerinheral	device	or remo	te station	
Note:	Monito a loss Monito — Pe — Pa — Ve — Ra	ors sha ors sha edestria ickage hicle (' ail vehichen	all be able ernal powe all be class an (conveyor) which inclu cle are require	to operate incer and/ or data sified according des contained when the reserved when the reserved according to the contained when the reserved when the reserved according to the contained when the reserved when the reserved according to the contained when the reserved when the reser	cluding stori transfer ca ng to use: rized cargo	ng measure pabilities to	ment data the remote			s if there is	
		Oan ti	ic monitor	орегате тис	pendentry						
Is the mor	nitor ca	apable	of storing	data for up t	o 3 hours 1						
01 16 4			Pedestria	an		Vehicle (ir	cluding ca	argo)			
Classification:			Daaliana	(Caranan)		10.11.11					
		Package (Conveyor)				Rail vehicl	e				
Comments:											
Commisted by						D-4					
Completed by:						Date:					
Reviewed by:						Date:					



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		Se	ection	5.2 Phy	sical	Cor	fiaura	ation			
				ata She							
Manufac	turer:										
M	lodel:				S	erial	Number:				
Requirement:	_									MA4[R	7]
	require	ment	s and shou	uld be classi	ified as IF	² 54 as	designate	ed in IEC 60)529.		
	Manufa	oturo.	سم امار رمط م	مانام مینامات	to	how t	ماد المدمد		nita.		
	Manuia	clure	i snoula pi	rovide guida	nce as to	now to	ınstan tn	e portai mo	mor.		
	Control	le and	l adjustms	ents which af	foot calib	ration	and alarm	cottings of	all bo d	ociano	d co th
			-	ed to authori			anu alann	seuriys si	iali be u	esigne	น 50 แา
	access	to tile		ed to addition	zeu peop	10.					
	Provision	ons s	hall be ma	ide to permit	testina o	fvisua	l or sound	l warning in	dicators	withou	ıt the u
	radiatio			ide to perimi	i too ang o	1 VIO GC	ii oi oouiit	waning in	aioatore	Withou	it uio u
	radiatio	,,,,									
Moto	Commi	onto c		ب ممالة من ممانيي أم							
note:	Commi	enis a	are require	a wnen the i	requireme	ent is i	not verified	ļ.			
Note:	Commi	ents a	are require	a when the i	requireme	ent is r	not verified	I.			
Note:	Commi	enis a	are require	d when the r	requireme	ent is r	not verified	1.			
Note:	Commi	ents a	are require	a when the r	requireme	ent is i	not verified	I.			
Note:	Commi	ents a	are require	d when the r	requiremo	ent is r	not verified	I.	Yes	No	
				at the enclos						No	
										No	
Does the	manufac	cture	r state tha	it the enclos	sure mee	ts NE	MA 4 req	uirements?		No	
Does the	manufac	cture	r state tha		sure mee	ts NE	MA 4 req	uirements?		No	
Does the	manufac	cturer	r state tha	t the enclos	sure mee	ts NE	MA 4 req	uirements?		No	
Does the	manufac	cturer	r state tha	it the enclos	sure mee	ts NE	MA 4 req	uirements?		No	
Does the	manufac	cturer e mar Are	r state tha	t the enclos	sure mee	ts NE	MA 4 req	uirements? d as IP54? nit access?		No	



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r								1
Тур	oe of r	adiatio	n detector?					
size (de	pth, v	vidth, a	nd length)?					
			weight?)				
				1				
Detectio	n sys	tem co	nstruction?	<u>'</u>				
				.1				
O	perat	ıng pa	rameters?	'				
	gam	ma ala	rm setting:					
	yan	IIIIa ala	im setting.					
	neut	tron ala	rm setting:					
	Heui	lion ala	iiii settiiig.	1				
		enera	y windows:					
			,	1				
		sigr	na values:					
				1				
	m	neasure	ment time:					
backgro	ound i	ntegrat	ion period:					
				•				
Comments:								
Completed by						Doto		
Completed by:						Date:		
Reviewed by:						Date:		
Neviewed by.						Date.		



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				Data	She	et ar	nd R	eport				
Manufact	urer:											
M	odel:						Seria	l Number	:			
Requirement:	The da	ata sto	rage sha	all mee	t the foll	owing	criteria	1:				
	For magain and a horizontal series of the se	onitors measi ch occu e and c upancy itor ide m conc kgroun nma-ra	that do urement upancy d date	not us data. ata se n mma- na-ray	e occupa	ontain o	ensors collecti	store at lea , the monite on results	or shall h	nave the a	ibility to s	
	,				-			ground cou uch as a co		ınd transf	er that inf	ormatio
	d) The	moni	tor shall	have th	ne ability	to sto	e gam	ma-ray and	d neutron	o count ra	te time-hi	story da
	detect	ion zoı	ne. This	functio	n shall b	e usei	selec	table. The role less than	ecomme	ended me	easureme	-
	-											



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		Yes	No
Does the monitor have the ability	to store information for up to 3 hours or 1000	162	NO
complete occupancy data sets?	to close mismation for up to c mostle of 1000		
Does each occupancy set contair	n the following required information:		
. ,	Time and date ?		
	Occupancy time ?		
	Monitor identification 2	1	
	Monitor identification ?		
	Alarm condition (gamma-ray and/or neutron) ?		
	Gammari,		
	Background (gamma-ray and neutron) count rate ?		
	Gamma-ray count rate ?		
	Noutron count rata 2	1	
	Neutron count rate ?		
Does the monitor have the ability	to store and transfer background data?		
,			
Does the monitor have the ability	to store time-history data?		
Ooes the user have the ability to s	select measuring a stationary object?		
s the stationary measurement fur	action user selectable?	1	
s the stationary measurement for	iction deci delectable:		
s the recommended stationary m	easurement time stated by the manufacturer?		
·	·		
s this recommended stationary m	neasurement time less than or equal to 2 min?		
0			
Comments:			
Completed by:	Date:		
Completed by:	Date:		



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			Section	on 5.4 lr	ndic	atio	n Featu	ıres			
			D	ata She	et a	and	Report				
							_				
Manufact	ture r:										
М	odel:					Seria	Number:				
Requirement:	Thon	onitor	chall provid	o an indicati	ion of	ita ana	rational atat	ue and alar	m oond	ition or	nd chall bo
Requirement											east 50 m. The
	user shall have the ability to select the visibility of the status indication.										
	All ala	arm indi	cators shall	l automatica	ally or i	manua	lly reset as	defined by th	ne user	•	
Note:	Comi	ments a	re required	when the re	equire	ment is	not verified	•			
				1							
									Yes	No	
	oes t	he moi	nitor indicat	e its operat	tional	status	and alarm	condition?	162	NO	
			iitoi iiidiodi	o ito opeia	croriai	otatao	and didini	oonanion.			
Doe	s the	monito	r have the a	ability to tra	nsmit	signa	ls to remote	e stations?			1
						- 3					
Does th	e use	r have t	he option to	o select the	visib	ility of	the status	indication?			
Are alarm	indic	ators re	eset automa	atically or m	nanua	lly at t	he option o	f the user?			
Comments:											
Completed by:							Date:				
· · · · · ·											
Reviewed by:							Date:				



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Section 5.5 Occupancy and Speed Sensors for Vehicle Monitors Data Sheet and Report										
		Data	Sneet	and Re	port					
Manufact	urer:									
M	odel:			Seria	l Number:					
Requirement:	measure s	speed. If used	, occupancy	and speed	sensors:					
		able to detect detection zone								
		e capable of c ns, etc.), and	perating on	a mix of traf	fic (cars, var	ns, pickup tru	ucks, bu	ises, carg	10	
		unction under				·				
	Rail monit multi-car tr	ors should havains.	ve the ability	to approxim	ate the loca	tion of an al	arm who	en monito	ring	
A system that incorporates an occupancy sensor should have the ability to perform a user-selected series of consecutive occupancies automatically without the need to activate the occupancy sensor. Function variables such as occupancy time and time between occupancies shall be user-selectable.										
Note:	Comment	s are required	when the re	quirement is	s not verified	i.				
	Does th	ne monitor hav	e the ability	v to suppor	t occupance	v sensors?	Yes	No		
	Docs ti	ic monitor na	ve the abilit	y to suppor	Coccupano	y scrisors:				
Does the monitor	have the a		ure speed on zone or a							
f occupancy and s	need sense	ore are rised.								
i occupancy and s	PCCU 301151	ors are used.	Do they o	letect the p	resence of	an object?				
					they estima					
		e is an objects e object or ve								
Do they co	unt a singi	e object or ve	nicie in the	detection 2	one more ti	nan once:				
Do Rail monitors	have the a	bility to appro	oximate loca	ation of an a		monitoring -car trains?				
It is possible	e to trigger	the occupand	cy sensor u		ernal signal for testing					
Comments:										
Comments:										
Completed by:					Date:					
Reviewed by:					Date:					



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			900	ction 5.	e M	arki	nae				
							_				
			Data	a Sheet	and	a Ke	port				
Manufact	ure r:										
a.ia.a.c.											
М	odel:					Seria	l Number:				
						<u> </u>					
Requirement:			rois snail be mponents, a						boards	and/or	
	marvi	auai co	inponento, e	and identilie	auom	ii teeiii	ilicai ilialiae				
	Marki	ngs sh	all be easily	readable ar	nd per	maner	ntly fixed und	ler normal c	ondition	ns of us	e.
	Evtori	or mar	kings shall b	o limited to	tho m	anufac	aturor's unio	uo corial nu	ımbor v	oltago (and
			irements if e							_	
										•	
Note:	Com	ments a	are required	when the re	quire	ment is	not verified				
	•										
									Yes	No	
				Are interr	nal co	ntrols	identified a	s required?	162	NO	
								100		l	
			Are mark	kings easily	read	able a	nd permane	ently fixed?			
										ı	
				Are exterio	or mar	kings	identified a	s required?			
Comments:											
Completed by:							Date:				
completed by.							Date.				
Reviewed by:				!			Date:				



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			S	ection 5	5.7 F	owe	er Supr	oly			
				Data Sl				_			
Manufact	ture r:										
M	odel:					Seria	Number:				
Requirement:	240 V	(Volts)	and from 4	7 to 63 Hz (F	Hertz).					ply voltage of 1 um of 3 hours	
	is a lo	oss of e	xternal pow		alterna	tive pov	wer supply.		ce shall be ba		
Nata.	Comi	m anta d	ro roquirod	when the re	iro	montio	notverified				
Note:	Com	nents a	are required	when the re	quirei	nentis	not verilled	-			
	1	1	1	1		1 1			1	1	
			Deferenc	. Tamanau	4						
			Referenc	e Tempera	iture:						
									Volts	Hertz	
			Wha	t are the po	wer re	equiren	nents for th	e monitor?		Hertz	
			VVIIG	t are the pe	WCITC	-quirei	TICING IOI UII	C THOTHLOT:			
			.,	1 6 01		201 1	- ,		Yes	No	
		an the	monitor op	erate for 3 I	nours	with io	ss of exter	nai power?			
Comments:											
Comments.											
Completed by:							Date:				
Reviewed by:							Date:				



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Section 5.8 Protection of Switches											
Data Sheet and Report											
Manufact											
Manufacturer:											
М	odel:					Seria	l Number:				
Requirement:			d other cont e minimizin					nat the moni	tor coul	d be op	erated
Note:	Comr	nents a	re required	when the re	equire	nent is	not verified				
			·								
									Yes	No	
Are monito	or swit	tches a	and controls	designed	to mir	nimize	accidental	operation?	res	NO	
7 6 6	<u> </u>			, assigned				-			
Comments:											
Completed by:							Date:				
Reviewed by:							Date:				



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	Section 5.9 Effective Range of Measurement										
				a Sheet							
							_				
Manufact	ture r:										
М	odel:				S	Serial	Number:				
Requirement:					onse r	ange	shall be sta	ted by the r	manufac	cturer, ar	nd
	shoul	d be at	least 60 ke	V to 3 MeV.							
	The manufacturer shall state the range for gamma-ray count rate measurement and for										
					ge for g	gamm	a-ray count	rate measi	urement	and for	
	neutro	on cour	it rate indica	ition.							
Note:	Comr	nents a	re required	when the re	quirem	ent is	not verified		-		
			· · ·		-						
				ł.			Re	cord Value	es		
What is	s the s	stated o	gamma ene	ergy range?							
			,	<u> </u>							
What is th	e stat	ed gan	nma count	rate range?							
What is th	e stat	ed neu	tron count	rate range?							
Comments:											
Completed by:				!			Date:				
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	Se	ct						Analysi	S			
			Da	ta She	et an	ıd F	Report					
Manufact	uror.											
Manaiac	uror.											
M	odel:				S	eria	Number:					
Requirement:	5 40 4 0			1 1	.1 .1 . 1 . 6							
Requirement.	The monitransfer s 232, or R technique wireless Proprieta be in the proprietar 5.10.2 Us 5.10.2.1 V The follow – Backgro – High-low – Energy – Occupa	itor shall S-48 es. Vetech ryso XML ryso wing pounc w de stab ancy	shall have the bebased of the used, when used, aniques shapetware should be the the the the the the the the the th	ne ability to the accommoderation should have the accommoderation should have the accommoderation and the properties of the shall be properties as shall be properties according and the condition of the according alid or not according if occup	transfer only availed be gitability to equired SI N42.4 tation, in covided a occupantions (in cceptable ancy se	data ilable iven to be en for re 2 req f need at the ncies ndicat ble ensors	to an exterritechnology of data secuncrypted. mote data uirements. ded. user interfathat can affator of backets are used	nal device, so such as Et rity when us interpretation. The manuface as a minest the overaground conditoring back	nernet, L ing wire n. The tracturer s nimum: ill sensit	JSB, v less of ansfe hall p	vireless data tran rred da rovide	s, Rt nsfe ta s
	5.10.2.2 E The follow – View op – View ala	nge Basi wing perat arm	indication c indication information tional status indication			be pro	ovided for th	ne trained us	er:			
	5.10.2.3 A The follow access controls of Access Access Access Access Access Access Access Access Access	Adva wing or sp to a to a to a to o to w	information pecial comm nd control of larm history ontrol of base ccupancy dehicle photo adiation pro	nands: of operating of data loggi	parame ng inter n function ccupance e) rate tim	eters vals on cyser	alarm cont		ory user t	throug	gh the u	se (
Note:	_ Access	to a	larm select				not verified	J.				



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		Yes	No	NA
Communications p	rotocol and data format			
	Does the monitor have the ability to transfer data to an external device?		$\overline{}$	
Describe the techno	logy used to transfer data:			
If wireless tecl	nniques are used, does it have the ability to encrypt the data being transmitted?			
	Is the transfer protocol and format described in the technical manual?			
	Is the transfer protocol and format described freely distributable?			
	Is the data format as defined in the ANSI N42.42 standard?			
Warning/status ind	icators			
When applicable, are	e the following indications provided at the user interface:	•		
	Background changes that can affect the overall sensitivity?			
	High-low detector count rate conditions?			
	Changes in operational status?			
	Loss of line power?			
	Battery status?			
	Over-range indication?			
Basic indications a	nd functions			
Are the following info	rmation and controls provided to the trained users:			
	View of operational status?			
	Ability to reset alarms?			
Advanced indication				
Are the following info commands:	rmation and controls provided for the supervisory user through the use of access of	contro	s or sp	ecial
oommanao.	Access to and control of operating parameters?			
	Access to and control of data logging intervals?			
	Access to alarm history?			
	Access to control of basic indication functions?			
	Access to occupancy data set? (if available)			
	Access to vehicle photo? (if available)		$\overline{}$	
	Access to radiation profiles?			
	Access to background radiation information?		$\overline{}$	
	Access to alarm selection criteria?			
		,		
Comments:				
Completed by:	Date:			
Reviewed by:	Date:			



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		S	ection	6.3 Fals	se A	larr	n Tes	t			
			Data	Sheet a	nd	Rep	ort				
Manufact	turer:										
M	odel:				Sa	rial N	umber:				
IVI	ouei.				36	iiai iv	uiiibei.				
Requirement:	stated system occup The m	d in Tab ms that pancy se nanufac	le 1, the fals use occupa ensors. cturer shall p	with a stable se alarm rate ancy sensors provide an es e requireme	e shal s or or stimat	l be le ne ala	ss than ′ rm in 2 h	l per 100 for mon	00 occ itors t	upancies hat do not	for use
Note:	Comr	nents a	re required	when more	than o	one ala	arm is o	bserved			
Test	Equip	ment:									
Gamma	Backo	ground	Reading:			(ad	d units)				
Neutron	Racko	round	Reading:			(ad	d units)				
Nedion	Dacke	jiouria	rteaunig.			(au	u umis,				
Ambient Condit	tions:			°C			%RH		in HG	;	
				To	st Re	culte					
				<u>16</u>	St IVE	<u>suits</u>					
	Pass		e for 1000 g Cycles	Number	of Ala	arms	Numb gam ala	ıma	ne	nber of eutron arms	
Comments:											
Completed by:							Date:				
Reviewed by:							Date:				



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	Section 6	.4 Detect	tor Respo	nse to Ga	amma Radi	ation		
			st Data an					
Manufacturer								
Model:						Serial Nun	nhor:	
moder.						Serial Nul	ilber.	
Requirement:							his requirement s	shall be
	verified using 241	Am, ²³² Th, ¹³⁷ Cs	s, ¹³³ Ba, ⁶⁰ Co and	I 57Co. Source	activities for this t	est are given ir	n Table 4.	
	The instrument	resnonse is ac	rcentable when a	minimum of 5	9 alarms occur in	60 occupanci	26	
	THE MORAMENT	coponice is ac	ocpusie wien e		o didiiiio ooddi ii	oo oocapanon		
Note:	Comments are	required when	the requirement	is not verified.				
			1		1			
Test Equipment:								
· ·								
Gamma Background Reading:		(ad	dd units)					
Ambient Conditions:		°C		%RH		in HG		
7				70.4.				
			Test Res	<u>ults</u>				
					urce			
	241 ^	m	137				228 T	'h
Source Number	²⁴¹ A	ım	137(60C	0	²²⁸ T	'h
Source Number: Source Activity:	²⁴¹ A	ım	137(0	²²⁸ T	'h
Source Number: Source Activity:	²⁴¹ A	ım	137(0	²²⁸ T	'h
				Cs	60C			
	Number of	Number of alarms	Number of		60 C	Number of alarms	Number of	Number of alarms
Source Activity:		Number of		Number of	60C	Number of		Number of
Source Activity:	Number of	Number of	Number of	Number of	60 C	Number of	Number of	Number of
Source Activity: Bottom Mid-Point Bottom/Middle	Number of	Number of	Number of	Number of	60 C	Number of	Number of	Number of
Source Activity: Bottom Mid-Point Bottom/Middle Middle	Number of	Number of	Number of	Number of	60 C	Number of	Number of	Number of
Source Activity: Bottom Mid-Point Bottom/Middle	Number of	Number of	Number of	Number of	60 C	Number of	Number of	Number of
Source Activity: Bottom Mid-Point Bottom/Middle Middle Mid-Point Middle/Top	Number of	Number of	Number of	Number of	60 C	Number of	Number of	Number of
Source Activity: Bottom Mid-Point Bottom/Middle Middle Mid-Point Middle/Top Top	Number of occupancies	Number of	Number of	Number of	60 C	Number of	Number of	Number of
Source Activity: Bottom Mid-Point Bottom/Middle Middle Mid-Point Middle/Top	Number of occupancies	Number of	Number of	Number of	60 C	Number of	Number of	Number of
Source Activity: Bottom Mid-Point Bottom/Middle Middle Mid-Point Middle/Top Top	Number of occupancies	Number of	Number of	Number of	60 C	Number of	Number of	Number of
Source Activity: Bottom Mid-Point Bottom/Middle Middle Mid-Point Middle/Top Top	Number of occupancies	Number of	Number of	Number of	60 C	Number of	Number of	Number of
Source Activity: Bottom Mid-Point Bottom/Middle Middle Mid-Point Middle/Top Top	Number of occupancies	Number of	Number of	Number of	60 C	Number of	Number of	Number of
Bottom Mid-Point Bottom/Middle Middle Mid-Point Middle/Top Top Comments:	Number of occupancies	Number of	Number of	Number of	60 C	Number of alarms	Number of	Number of
Source Activity: Bottom Mid-Point Bottom/Middle Middle Mid-Point Middle/Top Top	Number of occupancies	Number of	Number of	Number of	60 C	Number of	Number of	Number of
Bottom Mid-Point Bottom/Middle Middle Mid-Point Middle/Top Top Comments:	Number of occupancies	Number of	Number of	Number of	60 C	Number of alarms	Number of	Number of



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Secti	on 6.5	De	tector R	esponse t	o Neutron	Radiation			
			Test Da	ata and Re	port				
Manufacturer									
Model:						Serial Num	ber		
ouci.							DO 11		
Requirement:						Cf neutron emission			
		specifie	ed by the man	ufacture or at the	passage speed a	as appropriate for the	e monitor t	type be	ing
	tested.								
	The instr	ument r	esponse is a	cceptable when	a minimum of 59	alarms occur in 60 o	ccupancie	es.	
M. c.	0	.4		- H i					
Note:	Commen	its are r	equired whe	n the requiremer	it is not verified.				
								$\overline{}$	
Test Equipment:									
Neutron Background Reading:			(ad	dd units)					
Ambient Conditions:		°C		%RH		in HG			
Ambient Conditions.		_		701411		11110			
]	est Results					
				6.	211800			_	
					ource 52Cf	-			
		Source	e Number:		OI .	_		_	
			ce Activity:						
					T				
				Number of	Number of				
				occupancies	alarms				
			Bottom						
	Mid-Poi	nt Bott	om/Middle						
			Middle						
	Mid-	Point I	Middle/Top						
			Тор						
Common outo									
Comments:									
								+	
Completed by:						Date:			
Completed by.						Date.			
Reviewed by:						Date:			



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				Section	n 6.	6 O	ver-	Rar	nge	Test						
				Те	st D	ata	and	Re	por	t						
Manufacturer																
Model:												Serial Nun	nber:			
Requirement:	when high reset	performing counts" sha acknowled	mea all be ged b	activated ar by the user.	withound sha	ut an c all rem	occupa ain ac	ncy se tivated	ensor, I until t	an alarm i the radiatio	ndicating on field is	ed maximum of for example "reduced or the	high ba e alarm	ackgro n is	ound"	or
Note:	Com	ments are r	equir	ed when the	requi	ireme	nt is no	t verif	ied.							
Test Equipment:																
Gamma Backgro	ound	Reading:					(ad	dd uni	ts)							
Ambient Conditions:			°C				%RH				in HG					
Source Used:																
						Toe	t Resu	lte								
						163	i Ne su	1113								
		hoton ling pre- test	r	Photon eading ring test		Ala	arm		read	hoton ing post- test		time to er is ≤1min				
Trial Number					Y	es	N	0			Yes	No				
1 2												•				
3																
Comments:																
Comments.																
Completed by:												Date:				
•																
Reviewed by:				ĺ								Date:				



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						the Pres	ence (יו ר	1101	UIIS)	
			Test	t Da	ta and	Report						
Manufacturer												
Model:							8	eria	Nur	nber:		
Requirement:	Gamma ra	diation at exp	osure	rates c	of up to 10	mR/h (at the fac	ce of the cer	nter o	f the o	letecti	on ass	sembly
		igger the neu				,						
Note:	Comments	are required	l when	the red	nuirement	is not verified.						
Note:	Обиннопа	z aro roquirou		41010	441101110111	no not vonnou.						
bient Conditions:			°C			%RH	<u> </u>	n HG				
Source Used:												
300100 30001												
		Tes	st Resu									
				eutro	n Alarm No							
	Tri	ial Number		.	140							
			1 2									
			3									
			-			_						
Comments:												
									ate:			
Completed by							1 1					
Completed by:								Ī	atc.			



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		Se	cti	ion	6.8	Ва	ack	gro	und	Eff	ec	ts				
									R epo							
Manufacturer																
Model:										Se	ria	Num	ber:			
D	Thor	m o n i to	- o b c	م الد	ovádo o		oina i	adiaa	tion wh		hon	aa in k	ماده	round in I	25000	nauah
Requirement:														be visual		
		shall be								. 1110	iiiui	ication	Silai	DC VISUAI	and a	udibie,
					_	T		T								
Note:	Com	ments	are	requ	ired wl	hen tl	ne req	uiren	nent is i	not ve	rifie	d.				
													-			
Test Equipment:																
Gamm	а Ва	ckgro	und	Rea	ding:	:				(add	d un	its)				
N				_							, ,					
Neutro	n Ba	скдго	una	Kea	iaing:						(add	units)		_	
Ambient C	ondit	ione			°C				%RH	-			in H	G		
Ambient	Onan	.10115.			C				701311					O	_	
Gamma Sou	urce l	Data:														
		- 0. 00.														
Neutron Sou	urce l	Data:														
						T	est Da	ata								
							, ,									
Test Number		¹³⁷ Cs								²⁵² (
	E	Background Change							Backg				•			
				atio		_				ndica	tio		_			
4	\vdash	Yes	\$		N(0		_	Yes	S		No	0			
1 2	-									-						
3										-					,	
<u> </u>																



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<u> </u>											
						Τe	st Re	sults	1		
										Yes	No
	Mor	nitor in	dicat	ed b	ackgı	round	d char	nge di	uring		
	exp	osure	to ¹³⁷	'Cs							
		nitor in			ackgı	round	d char	nge di	uring		
	exp	osure	to ²⁵²	² Cf							
	Is the visual indication for gammas different										
	from	om the gamma monitoring alarm?									
		ls the audible indication for gammas different									
	from	from the gamma monitoring alarm?									
	Is the visual indication for neutrons different										
									ent		
	from	the n	eutro	n m	onitor	ing a	larm?	<u> </u>			
						_					
		ne aud							erent		
	from	the n	eutro	n m	onitor	ing a	larm?	,			
						_					
Comments:											
						-					
			-			+					
						+					
Completed by:											Date
completed by.											Date
Reviewed by:											Date



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			Section	7.1 Ambi	ent Ter	nperature			
			To	est Data a	nd Re	oort			
Manufacturer									
841 - 1 -					0	: - I NI I			
Model:					Ser	ial Number:			
Requirement:	The monitor s	hall be able t	o operate over	an ambient tem	perature rai	nge from -30°C to	+55°C.		
						9			
Note:	Comments ar	re required w	hen the requir	rement is not ve	rified.				
Gamma	Source Data:								
Noutron	Source Data:								
Neutron	Source Data:		-						
				Test I	Data				
							Acc	eptance Ra	ange
								Gamma Background	
	Pre-Tes	st 22°C		Pre-Test	22°C		#DIV/0!	to	#DIV/0!
	Ambient	Gamma		Ambient	Neutron		-15%		+15%
	Gamma			Neutron					
_	Background			Background					
1 2			(add units)			(add units)	Acceptai	nce Range	- Gamma
3							#DIV/0!	to	#DIV/0!
4							-15%		+15%
5									
6									
7								eptance Ra	
8								ron Backgr	
9							#DIV/0! -15%	to	#DIV/0! +15%
	-						-13%		T 10 /0
Mean	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!				
STD	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!		Acceptai	nce Range	- Neutron
COV	#DIV/0!	#DIV/0!	<u> </u>	#DIV/0!	#DIV/0!		#DIV/0!	to	#DIV/0!
							#DIV/0!	ιο	#DIV/0! +15%
							. 5 70		, 3



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S	security							
With Sources							_	
<u></u>			Į.	-30°	C			
		Beai	nning		hrs	16	hrs	
		Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	
		Response	Response	Response	Response	Response	Response	
	1							
	2							
	3							
	4							
	5							
	6					_		
	7 8							
	9					-		
	10					1		
	Mean	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
	Mean	11 11 17 0 :	II DIVIO.	WBIVIO.	#B1470:	#B14/0:	WBIVIO.	
			Rec	ord readings	after 4 hours	 S		
		-2	0°C)°C	+40)°C	
		Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	
		Response	Response	Response	Response	Response	Response	
	1				•	1		
	2					1		
	3							
	4							
	5							
	6							
	7					-		
	8 9					_		
	10					1		
	Mean	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
	Moun	II BIVIO.	II DIVIO.	WBIVIO.	#B1470:	WBTWO:	IIDIVIO.	
			1	+55°	С			
		Begi	nning		hrs	16	hrs	
		Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	
		Response	Response	Response	Response	Response	Response	
	1							
	2							
	3					_		
	4					 		
	5					_		
	6 7					1		
	8			1		1		
	9					+		
				1		†		
	101							
	10 Mean	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	



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	1 2 3 4 5 6 7 8 9 10 Mean	Post-Te Ambient Gamma Background #DIV/0!	Gamma Response	(add units)		Post-Te: Ambient Neutron Background	Neutron Response	(add units	
	2 3 4 5 6 7 8 9		#DIV/01	(add units)		Background		(add unit	
	2 3 4 5 6 7 8 9	#DIV/0!	#DIV/01	(add units)				(add uni	
	3 4 5 6 7 8 9	#DIV/0!	#DIV/01						
	4 5 6 7 8 9	#DIV/0!	#DIV/01						
	5 6 7 8 9	#DIV/0!	#DIV/01						
	6 7 8 9 10	#DIV/0!	#DIV/01						
	8 9 10	#DIV/0!	#DI\//01						
	9 10	#DIV/0!	#DI\//01						
	10	#DIV/0!	#DI\//01						
		#DIV/0!	#DI\//0I						
	Weari	#DIV/0:				#DIV/0!	#DIV/0!		
			πυιν/υ:			#DIV/0!	#DIV/U!		
				Did the d	occupano	y sensor trigg	er?		
			Beg	inning	nning 8h		161	hrs	
			Yes	No	Yes	No	Yes	No	
		-30°C							
		+55°C							
			Did tl	ne occupancy	sensor tr	igger?			
		-				4hrs			
			Yes	No	Yes	No			
		-20°C							
		0°C							
		+40°C							
Cor	mments:								
_									
Compl	eted by:								
Day-!-	wed by:								



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			5	Section	7.2 Re	lative H	lumidity				
				Tes	t Data a	nd Re	port				
Ma	nufacturer										
	Model:				Seria	l Number:					
	Dog		The monite	or chall bo a	hlo to opora	to during an	d after expecure	to relative humidity (DU)	_	
	Req	uirement.					ure of +40°C.	to relative numbers	,rxi i)		
			iovolo oi up	7 10 00 70 1111	at all all bit	on tomporat					
			There shal	I not be any	observable	effects from	the exposure.				
		Note:	Comments	are require	ed when the	requireme	nt is not verified.				
						•					
	Gamma So	ource Data:									
	Neutron So	ource Data:									
						Test Data					
									ptance R	_	
									Gamma Background		
			st 22°C			st 22°C		#DIV/0!	to	#DIV/0!	
		Ambient	Gamma		Ambient	Neutron		,		4-0/	
		Gamma			Neutron	Response		-15%		+15%	
	1	Backgrou		(add unita)	Backgrou		(add unita)	Accomton	D	- Gamma	
	2			(add units)			(add units)	Acceptan	ce Kange	- Gaiiiiia	
	3							#DIV/0!	to	#DIV/0!	
	4							-15%		+15%	
	5										
	6										
	7							Acce	ptance R	ange	
	8							Neutr	on Backg	round	
	9							#DIV/0!	to	#DIV/0!	
	10							-15%		+15%	
	Mean	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!					
	STD	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!		Acceptan	ce Range	- Neutron	
	cov	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!					
								#DIV/0!	to	#DIV/0!	
								-15%		+15%	



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		With Sour	rces								
					93%	Relative H	umidity at	40°C			
		Ho	ur 1	Но	ur 2		ur 3		ur 4	Ho	ur 5
		Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron
	1										
	2										
	3										
	4										
	5										
	6										
	7										
	8										
	9										
	10	#DI\ //OI	#DI\ //OI	#DI\ //OI	#01/7/01	#DI\ //OI	#DI\ //OI	#DI\ //OI	#DI\ //OI	#DI\ //OI	#DIV//OI
	Mean	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Did the occupancy	Ve -					1					
sensor trigger?	Yes No										
School trigger?	NO										
					93%	Relative H	umidity at	40°C			
		Ho	ur 6	Ho	ur 7	Ho	ur 8	Ho	ur 9	Hou	ır 10
		Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron
	1	Gamma	Hourion	Gaiiiiia	Hoution	Gamma	Hourion	Gamma	Hourion	Gainina	Hoution
	2										
	3										
	4										
	5										
	6										
	7										
	8										
	9										
	10										
	Mean	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2111				_	_						
Did the occupancy	Yes										
sensor trigger?	No										
					Q30/.	Relative H	lumidity at	40°C			
		Hou	ır 11	Hoi	ır 12		ır 13		ır 14	Hou	ır 15
		Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron
	1										
	2										
	3										
	4										
	5										
	6										
	7										
	8										
	9										
	10		#D# (/0:	#D# (/0:	#D# (/0:	#D# (/0:	#D# (/0:	#D# (/0)	#D# (/0)	#D# (/0)	#D# (/0:
	Mean	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Did the			1	1		1	1	1	1		
Did the occupancy sensor trigger?	Yes										
sensor trigger?	No										



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		03% D	olativo			65% D	alativo			65% D	lativo
		93% Relative Humidity at 40°C Hour 16			65% Relative Humidity at 40°C				65% Relative Humidity at 22°C		
		Gamma	Neutron			Gamma	Neutron			Gamma	Neutro
	1				1				1		
	2				2				2		
	3				3				3		
	4				4				4		
	5				5				5		
	6				6				6 7		
	7 8				7 8				8		
	9				9				9		
	10				10				10		
	Mean	#DIV/0!	#DIV/0!		Mean	#DIV/0!	#DIV/0!		Mean	#DIV/0!	#DIV/0
	moun				ou.i				ou		
Did the occupancy	Yes										
sensor trigger?	No										
				Yes	No						
Where there obser	vable effec	ts from the	exposure?								
Describe:											
Co	mmonte										
Co	mments:										
Co	omments:										
Co	omments:										
Co	omments:										
Co	omments:										
Co	omments:										
Co		pleted by:						Date:			
Co	Com	pleted by:						Date:			



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		Section	1 7.3 M	oisture a	nd Dust	Protect	ion		
			Test	t Data an	d Repo	rt			
Manufacturer									
Model:				Seri	al Number:				
Requirement:	stated for If water. For with satisfa	P code 54 (s IP54, the ing	ee IEC 605 gress of dus ion of the in	29). The instrut is not totally partiument or to	ument shall be prevented, but	e protected fr dust shall n	ronment shall om the ingress of penetrate in a plashed agains	of dust and a quantity to	splashing interfere
	Note:	Comments	are require	ed when the r	equirement is	not verified.			
So	urce Data:								
				Test Data	Duct				
				Test Data	- Dust				
	Dro-Tost	Post-Test		Accents	nce Range -	Camma			
	137 Cs	137 Cs		Accepta	ince Kange -	Gaiiiiia			
1		- 55		#DIV/0!	to	#DIV/0!			
2				-15%		+15%			
3									
4									
5				Inspec	tion Results				
6									
7									
8									
9									
10 Magn		#DIV/0!							
Mean STD		#DIV/0! #DIV/0!							
COV		#DIV/0! #DIV/0!							
301	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	., 51, 7, 0:							



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			Test Data - Mo	Jistuie			
	Dua Tai-t	Doot Toot	A	D	2		
	Pre-Test	Post-Test 137 Cs	Acceptar	nce Range -	J amma		
	" Cs	"" Cs	#P.11 #61		//D I) //O!		
1			#DIV/0!	to	#DIV/0!		
2			-15%		+15%		
3							
4							
5			Inspecti	on Results			
6							
7							
8							
9							
10							
Mean	#DIV/0!	#DIV/0!					
STD	#DIV/0!	#DIV/0!					
cov	#DIV/0!	#DIV/0!					
					nsor muaer a	iller lest?	
			2.0.0.00	cupancy se			
			Dust T		Moistur		
			Dust T	est	Moistur	e Test	
			Dust T	est	Moistur	e Test	
C	omments:		Dust T	est	Moistur	e Test	
C	omments:		Dust T	est	Moistur	e Test	
C	omments:		Dust T	est	Moistur	e Test	
C	omments:		Dust T	est	Moistur	e Test	
			Dust T	est	Moistur	e Test	
	omments: pleted by:		Dust T	est	Moistur	e Test No	



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S	ection 8.1	Radio Fre	quency Su	sceptibili	ty	
			and Report		•	
Manufacturer:			_			
Model:			Se	rial Number:		
Requirement:	The monitor sk	ould not be affect	ted by RF fields o	ver the frequer	ncy range of	
rtequirement.			volts per meter (V	•	icy range or	00 WH IZ 10
	2000 111112 01 0	ar interiorly or re	voito per meter (v	,,,,,		
Note:	Comments are	required when th	ne requirement is	not verified.		l.
11040						
Ambient Conditions:		°C		%RH		In. Hg
				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
Test Equipment Used:						
	Frequenc	y Scan Observa	tions Without Se	ources		
		-				



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		v	Vith Cs-137 and	Cf-252 Sources	3	1	
	Nominal						
	No RF		Gamr	na Source Data:			
	Gamma						
1			Neutr	on Source Data:			
2							
3							
4							
5				ice Range (Gai	mma)		
6			#DIV/0!	to	#DIV/0!		
7			low (-15%)		high (+15%)		
8							
9			Acceptan	ice Range (Nei	utron)		
10			#DIV/0!	to	#DIV/0!		
Mean	#DIV/0!		low (-15%)		high (+15%)		
STD	#DIV/0!						
COV	#DIV/0!						
COV	#DIV/0!		Freq	juency Scan O	bservations v	vith Sources	
COV			Freq	quency Scan O	bservations v	vith Sources	3
COV	Nominal		Freq	quency Scan O	bservations v	vith Sources	3
COV	Nominal No RF		Freq	quency Scan O	bservations v	vith Sources	3
	Nominal		Freq	quency Scan O	bservations v	vith Sources	5
1	Nominal No RF		Freq	quency Scan O	bservations v	vith Sources	6
1 2	Nominal No RF		Freq	quency Scan O	bservations v	vith Sources	3
1 2 3	Nominal No RF		Freq	quency Scan O	bservations v	vith Sources	3
1 2 3 4	Nominal No RF		Freq	quency Scan O	bservations v	vith Sources	6
1 2 3 4 5	Nominal No RF		Freq	quency Scan O	bservations v	vith Sources	6
1 2 3 4 5 6	Nominal No RF		Freq	quency Scan O	bservations v	vith Sources	5
1 2 3 4 5 6	Nominal No RF		Freq	quency Scan O	bservations v	vith Sources	6
1 2 3 4 5 6 7	Nominal No RF		Freq	quency Scan O	bservations v	vith Sources	5
1 2 3 4 5 6 7 8	Nominal No RF		Freq	quency Scan O	bservations v	vith Sources	5
1 2 3 4 5 6 7 8 9	Nominal No RF Neutron		Freq	quency Scan O	bservations v	vith Sources	5
1 2 3 4 5 6 7 8 9	Nominal No RF Neutron		Freq	quency Scan O	bservations v	vith Sources	5
1 2 3 4 5 6 7 8 9	Nominal No RF Neutron		Freq	quency Scan O	bservations	vith Sources	5



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Date:	



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	Se	ection 8	.2 Radi	ated Er	nissior	ıs		
		Tes	t Data a	nd Rep	ort			
Manufacturer								
Model:					Seria	l Number:		
in odon					00110	i italiibori		
Requirement:	The emission lim		asured at th	ree meters	from the me	onitoring sys	tem shall b	e less than
	what is shown be	low:						
		Cario ai an						
			Frequency nge	Field S	trength			
			Hz)	(micro vo				
			- 88	10				
			216 - 960	18 20	50			
		>9		50				
Note:	Comments are re	equired whe	n the requir	rement is n	ot verified.			
				Геst Repor	†			
			'	root rtopor	•			
					Yes	No		
			were withir	1				
		acceptable	limits					
Comments:								
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2								
	Completed by:					Date:		
	Reviewed by:					Date:		



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	Section				ge Oper	ation			
		Tes	t Data	and Re	port				
						ı			
Manufacturer:									
Model:					Seria	l Number:			
Requirement:									
	requiremer nominal vo				age that is w	ithin ±12 %	of the		
Note:	Comments	are requir	ed when th	e requirem	ent is not ve	rified.			
Ambient Conditions:		°C		%RH		in HG			
Gamma S	ource Data:								
Gaiiiiia G	ource bata.								
Neutron S	ource Data:								
				Test Data	<u>1</u>				
		Nomina	l Voltage	7					
		Hommu	ronago		Acceptar	nce Range	- Gamma		
		Gamma	Neutron		1 10 00				
	Readings				#DIV/0!	to	#DIV/0!	(add units)	
	1				-15%		+15%		
	2								
	3 4								
	5			-	Accentar	nce Range	- Neutron		
	6			1	Acceptai	ice italige	- NCULION		
	7			1	#DIV/0!	to	#DIV/0!	(add units)	
	8				-15%		+15%		
	9								
	10								
	Mean		#DIV/0!						
	STD		#DIV/0!	-					
	COV	#1010/0!	#517/0!	_					



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	Voltage +12%		Voltage +12% Voltage -12%		58Hz		62Hz	
	Gamma	Neutron	Gamma	Neutron	Gamma Neutron		Gamma Neutron	
Readings								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
Mean	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
			Are	Results W		ge?		
					Yes	no		
			Vol	tage +12%				
			Vo	Itage -12%				
				58 Hz				
				20.11				
				62 Hz				
Commonte								
Comments:								
Completed by:					Date:			
pictou by.					Dais.			
Reviewed by:					Date:			



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		Section	n 8.4 E	Battery	Lifetime	,		
		Dat	a Shee	t and R	eport			
		Te	st Data	and Re	port			
Manufacturer:								
Model:					Seria	l Number:		
Requirement:		hall be able oss of exte		_	storing meas	surement da	ata for up to	3 hours if
Note:	Comments	are require	d when the	requiremen	t is not verifi	ed.		
			Test	Results				
							Yes	No
The mo	onitor perfor	med as rec	uired for 3	hours follow	ving remova	I of power?	100	110
	All th	ne required	information	was stores	for each o	ccupancy?		
	Was th	ne low hatte	ry indicatio	n activated	during the	3 h period?		
	Was ti	ie iow batte	ny maioano	Tr dottvated	daming the C	o ii pened :		
Comments:								
Completed by:						Date:		
Reviewed by:						Date:		



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	Se	ction 8	.5 Elec	trostatic	Discha	rge (E	SD)			
				ata and			•			
					-					
Manufacturer										
Model:				Seria	l Number:					
Requirement:	The instrument				electrosta	tic discharg	es at inter	isities of up	to 6 kV	
	using the contact	ct discharg	e technique) .						
	Noto:	Comments	are require	ed when the re	auirement	is not verifi				
	Note.	Comments	are require	d when the re	quilement	is not venil	eu.			
			1							
Δmhia	ent Conditions:		°C		%RH		in HG			
Allipid	ent conditions.				701XII		11110			
Te	est Equipment:									
Gamı	ma Source Data:									
Neutr	on Source Data:									
								Acc	eptance Ra	nge
								Gam	ma Backgr	ound
	Pre-Tes	st		Pre-T	est			#DIV/0!	to	#DIV/0!
	Ambient	Gamma		Ambient	Neutron			-15%		+15%
	Gamma			Neutron						
	Background			Background						
1			(add units)			(add units)		Accepta	nce Range	- Gamma
2								#D1///O1	4 -	#DI\#01
3								#DIV/0!	to	#DIV/0! +15%
5								-13/0		. 19/0
6										
7								Acc	eptance Ra	nge
8									ron Backgr	
9								#DIV/0!	to	#DIV/0!
10								-15%		+15%
Mean	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!					
STD	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!			Accepta	nce Range	- Neutron
COV	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!					
								#DIV/0!	to	#DIV/0!
								-15%		+15%



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			Occupan	cy Mode wit	hout Source	es (Check	if alarms)	- 2kV		
	Poin	t 1		oint 2		nt 3		nt 4	Poi	int 5
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
		0	ccupancy l	Mode with S	ources (Ch	eck if out	of tolerand	e) - 2kV		
	Poin	t 1	Po	oint 2		nt 3	Poi	nt 4	Poi	int 5
	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
Mean	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
				ancy Mode v						
	Poin	_		int 2		nt 3		nt 4		nt 5
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1									<u> </u>	
2										
3		1	-		-					
4										
5		1								
6		1								
7 8		1			-					-
9		1								1
10		1	-		-					
10]							



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		Non-	Occupanc	y Mode with	Sources	Check if o	ut of tolera	nce) - 2kV		
	Poin			int 2		int 3		nt 4	Poi	int
	Gamma	Neutron	Gamma	Neutron	Gamma		Gamma	Neutron	Gamma	N
1										
2										
3										
4										
5										
6										
7										
8										
9		1								_
10 Moon	#DIV//01	#DIV//01	#DIV//OI	#DIV//OI	#DIV//01	#DI\//01	#DIV//01	#DIV//01	#DI\//01	H
Mean	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
										H
										H
			2kV - Test	Papart						\vdash
			ZKV - 1630	Report	Yes	No				H
	lı	n occupanc	v mode. sv	/stem alarm		110				
	In occupa	ncv mode.	readings v	vithin range						
										H
- 1										
n		n-occupanc	y mode, sy	/stem alarm						
n	In no	n-occupanc	y mode, sy	/stem alarm						
n	In no	n-occupanc	y mode, sy	/stem alarm						
n	In no	n-occupanc	y mode, sy readings w	ystem alarm vithin range						
n	In noi n non-occupa	n-occupanc ncy mode,	y mode, sy readings w Occupano	vstem alarm vithin range cy Mode wit	hout Source					
n	In noi n non-occupa Poin	n-occupanc ncy mode,	y mode, sy readings w Occupand	vstem alarm vithin range cy Mode with int 2	hout Source	int 3	Poi	nt 4	Poi	int
	In noi n non-occupa	n-occupanc ncy mode,	y mode, sy readings w Occupano	vstem alarm vithin range cy Mode wit	hout Source				Poi Yes	int
1	In noi n non-occupa Poin	n-occupanc ncy mode,	y mode, sy readings w Occupand	vstem alarm vithin range cy Mode with int 2	hout Source	int 3	Poi	nt 4		int
1 2	In noi n non-occupa Poin	n-occupanc ncy mode,	y mode, sy readings w Occupand	vstem alarm vithin range cy Mode with int 2	hout Source	int 3	Poi	nt 4		int
1 2 3	In noi n non-occupa Poin	n-occupanc ncy mode,	y mode, sy readings w Occupand	vstem alarm vithin range cy Mode with int 2	hout Source	int 3	Poi	nt 4		int
1 2 3 4	In noi n non-occupa Poin	n-occupanc ncy mode,	y mode, sy readings w Occupand	vstem alarm vithin range cy Mode with int 2	hout Source	int 3	Poi	nt 4		int
1 2 3 4 5	In noi n non-occupa Poin	n-occupanc ncy mode,	y mode, sy readings w Occupand	vstem alarm vithin range cy Mode with int 2	hout Source	int 3	Poi	nt 4		int
1 2 3 4 5	In noi n non-occupa Poin	n-occupanc ncy mode,	y mode, sy readings w Occupand	vstem alarm vithin range cy Mode with int 2	hout Source	int 3	Poi	nt 4		int
1 2 3 4 5 6	In noi n non-occupa Poin	n-occupanc ncy mode,	y mode, sy readings w Occupand	vstem alarm vithin range cy Mode with int 2	hout Source	int 3	Poi	nt 4		int
1 2 3 4 5	In noi n non-occupa Poin	n-occupanc ncy mode,	y mode, sy readings w Occupand	vstem alarm vithin range cy Mode with int 2	hout Source	int 3	Poi	nt 4		int



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								<u> </u>		
		00	cupancy I	Mode with S	ources (Ch	neck if out	of tolerand	e) - 4kV		š
	Poin			int 2		int 3		nt 4	Poi	nt 5
	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	Gamma	Neutro
1										
2										
3										
4										
5										
6										
7 8										
9										
10										
Mean	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/(
Wicani	#DIV/0:	#51770:	#DIV/0:	#DIV/0:	#51770:	#51770:	#51770:	#51770:	#51770:	#DIV/
_										
				ncy Mode v						
	Poin			int 2		int 3		nt 4		nt 5
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1_										
2										
3										
4										
5										
6										
7										
8										
9										
10										
				y Mode with						
	Poin			int 2		int 3		nt 4		nt 5
	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	Gamma	Neutro
1										
2										
3										
4					ļ					
5			1		1		I		1	1
6					1					
6 7										
6 7 8										
6 7 8 9										
6 7 8	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/(



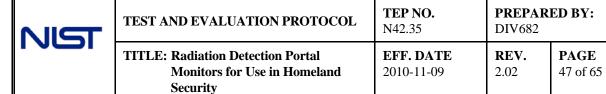
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		Security								
			4kV - Test	Report						
					Yes	No				
				ystem alarm						
	In occupar	ncy mode,	readings v	vithin range						
					•	1				
	In non	-occupanc	y mode, sy	ystem alarm						
	n non-occupar	ncy mode,	readings v	vitnin range						
			Occupano	cy Mode witl	hout Sour	ces (Check	if alarms)	- 6kV		
	Point	:1		oint 2		int 3		nt 4	Poi	nt 5
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1										
2										
3										
5										
6										
7										
8										
9										
10										
				Mode with S						
	Point			int 2		int 3		nt 4		nt 5
1	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron
2										
3										
4										
5										
6										
7										
8										
9										
10	#DI\ //0!	#D# (/0)	#DI\ //01	#DI/ (/O/	#D# (/c:	#D" (/0'	#DI: ('0'	#DI: //0/	#DI: (/O:	#D# (/O:
Mean	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!



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				ncy Mode w						
	Poin			int 2		int 3		nt 4		nt 5
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	N
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
		Non-	Occupanc	y Mode with	Sources (Check if o	ut of tolera	nce) - 6kV		
	Poin			int 2		int 3		nt 4		nt 5
	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	Gamma	Neu
1										
2										
3										
4										
5										
5 6										
6										
6 7										
6 7 8										
6 7 8 9	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DI
6 7 8 9 10	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DI
6 7 8 9 10	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DI
6 7 8 9 10	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DI
6 7 8 9 10	#DIV/0!	#DIV/0!			#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DI
6 7 8 9 10	#DIV/0!	#DIV/0!	#DIV/0!				#DIV/0!	#DIV/0!	#DIV/0!	#DI
6 7 8 9 10			6kV - Test	Report	Yes	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DI
6 7 8 9 10	II.	n occupanc	6kV - Test y mode, sy	Report	Yes		#DIV/0!	#DIV/0!	#DIV/0!	#DI
6 7 8 9 10	II.	n occupanc	6kV - Test y mode, sy	Report	Yes		#DIV/0!	#DIV/0!	#DIV/0!	#DI
6 7 8 9 10	lı In occupa	n occupanc	6kV - Test y mode, sy readings v	Report	Yes		#DIV/0!	#DIV/0!	#DIV/0!	#DI



Cammantai				
Comments:				
Completed by:			Date:	
Reviewed by:			Date:	



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Induced I	by Bursts an	d Radio Frequenc	cies
			0100
1 63	bi Dala allu N	ероп	
		Serial Number:	
		fields that can be conduct	ted onto the monitor
tillough an externa	ii conducting cable.		
Comments are req	uired when the requ	irement is not verified.	
°C		%RH	In. Hg
		70.11.	
ipment Used:			
Frequency So	can Observations \	Without Sources	
	The monitor shall rethrough an external comments are required:	Test Data and R The monitor shall not be affected by RI through an external conducting cable. Comments are required when the requ °C	The monitor shall not be affected by RF fields that can be conduct through an external conducting cable. Comments are required when the requirement is not verified. °C %RH



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			1					
			MC4- 0- 407	05 050 0				
			With Cs-137 and	Cf-252 Sources				
	Nominal		Con	nma Source Data:				
	No RF		Gan	illia Source Data.				
	Gamma		Neur	tron Source Data:				
1	Guillia	(add units)	1100	li oii ooui oo bata.				
2		(add driito)						
3		1	Accepta	nce Range (Gar	nma)			
4			#DIV/0!	to	#DIV/0!			
5		1	low (-15%)		high (+15%)			
6		1	,					
7			Accepta	nce Range (Neu	ıtron)			
8			#DIV/0!	to	#DIV/0!			
9			low (-15%)		high (+15%)			
10								
Mean	#DIV/0!							
STD	#DIV/0!							
COV	#DIV/0!		_					
			Fre	quency Scan O	bservations v	vith Sources	S	
								
	Nominal No RF							
	No RF Neutron							
1	Neutron	(add units)						
2		(add driits)						
3								
4								
5								
6		1	1					
7			1					
8								
9								
10								
Mean	#DIV/0!	1						
STD	#DIV/0!							
COV	#DIV/0!							



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Non-Occupa	ncv Mode							
•								
	Test Eau	uipment Used:						
		Frequenc	y Scan Observa	tions Without S	ourcos			
		rrequent	by Scall Observa	tions without 50	Juices			
			With Cs-137 and	Cf-252 Sources				
	Nominal		Gam	nma Source Data:				
	No RF							
	Gamma		Neu	tron Source Data:				
1		(add units)						
2		(* * * * * * * * * * * * * * * * * * *						
3			Accepta	nce Range (Gar	nma)			
4			#DIV/0!	to	#DIV/0!			
5			low (-15%)		high (+15%)			
6			(,		g (,			
7			Accepta	nce Range (Neu	ıtron)			
8			#DIV/0!	to	#DIV/0!			
9			low (-15%)		high (+15%)			
10		1	1000 (1070)		111911 (1070)			
Mean	#DIV/0!	₹						
STD	#DIV/0!							
COV	#DIV/0!	-						
COV	#DIV/0!		Fue	quency Scan O		vith Carres		
			FIE	quency scan of	uservations v	vitii Sources	•	
	Nominal							
	No RF							
	Neutron	,, .						
1		(add units)						
2 3								
4								
5								
6								
7								
8								
9						1		
10								
Mean	#DIV/0!							
STD	#DIV/0!							
COV	#DIV/0!							



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Comments:				
		•		
Completed by:			Date:	
Reviewed by:			Date:	



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		Se		Surges a			aves			
			Te	st Data an	d Repor	t				
Manufacturer:										
Model:				Se	rial Number					_
	_						<u> </u>			
Requirement:	The monitor sho combination way	ves at 1.2/50	ps and 8/20 με	es or oscillatory v s.	aves of up to 2	kV that are cl	assified as ring	g waves or		
Note:	Comments are	required who	en the require	ment is not verifi	ed.					
Ambie	nt Conditions:		°C		%RH		in HG			
Те	st Equipment:									
Gamm	a Source Data:									
Neutro	on Source Data:									
									ptance Ra na Backgro	
	Pre-To	est		Pre-	Test			#DIV/0!	to	#DIV/0!
	Ambient Gamma	Gamma		Ambient Neutron	Neutron Response			-15%		+15%
1	Background		(add units)	Background		(add units)		Acceptano	oo Banga	Commo
2			(aud units)			(add units)		Acceptant	e Kange	· Gamma
3								#DIV/0!	to	#DIV/0!
4								-15%		+15%
5										
6										
7									ptance Ra	
8									on Backgro	
9			-					#DIV/0!	to	#DIV/0!
10 Mean	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!			-15%		+15%
Mean STD	#DIV/0! #DIV/0!	#DIV/0!		#DIV/0!	#DIV/0! #DIV/0!			Acceptano	o Banca	Noutros
COA	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!			Acceptant	e Kange -	Mentrou
001	#D1410:	,, DIV/O:	4	#51V/O:	,, DIV/O:	1		#DIV/0!	to	#DIV/0!



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			Oc	cupancy Mod	9				
				Cs-137	Source		Cf-252	Source	
	Mode with	out Sources		With Source	With Sources (Check if		With Source	es (Check if	
		f alarms)			olerance)		out of tolerance)		
	Combination			Combination			Combination		
	Wave	Ring Wave		Wave	Ring Wave		Wave	Ring Wave	
1		i i i i i i i i i i i i i i i i i i i			Tuning truste	(add units)		Tung mare	(add units)
2						((**************************************
3									
4									
5	5								
6	6								
7	·								
8									
9									
10									
			Mean	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!	
			STD	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!	
			cov	#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!	
			Non-	Occupancy Mo	ode				
				Cs-137	Source		Cf-252	Source	
	Mode with	out Sources							
		out Sources		With Source	es (Check if		With Source	es (Check if	
	(Check i	f alarms)		With Source	ces (Check if olerance)			es (Check if lerance)	
		f alarms)		With Source out of to	ces (Check if olerance)		With Source out of to	es (Check if lerance)	
1	(Check i Combination Wave	f alarms)		With Source out of to Combination	ces (Check if plerance)	(add units)	With Source out of to Combination	es (Check if lerance)	(add units)
1 2	(Check i Combination Wave	f alarms)		With Source out of to Combination	ces (Check if plerance)	(add units)	With Source out of to Combination	es (Check if lerance)	(add units)
	(Check i Combination Wave	f alarms)		With Source out of to Combination	ces (Check if plerance)	(add units)	With Source out of to Combination	es (Check if lerance)	(add units)
2	(Check i Combination Wave	f alarms)		With Source out of to Combination	ces (Check if plerance)	(add units)	With Source out of to Combination	es (Check if lerance)	(add units)
2	(Check i Combination Wave	f alarms)		With Source out of to Combination	ces (Check if plerance)	(add units)	With Source out of to Combination	es (Check if lerance)	(add units)
2 3 4	(Check i Combination Wave	f alarms)		With Source out of to Combination	ces (Check if plerance)	(add units)	With Source out of to Combination	es (Check if lerance)	(add units)
2 3 4 5	(Check i	f alarms)		With Source out of to Combination	ces (Check if plerance)	(add units)	With Source out of to Combination	es (Check if lerance)	(add units)
2 3 4 5	(Check i	f alarms)		With Source out of to Combination	ces (Check if plerance)	(add units)	With Source out of to Combination	es (Check if lerance)	(add units)
2 3 4 5 6	(Check i Combination Wave	f alarms)		With Source out of to Combination	ces (Check if plerance)	(add units)	With Source out of to Combination	es (Check if lerance)	(add units)
2 3 4 5 6 7	(Check i	f alarms)		With Source out of to Combination	ces (Check if plerance)	(add units)	With Source out of to Combination	es (Check if lerance)	(add units)
2 3 4 5 6 7 8	(Check i	f alarms)	Mean	With Source out of to Combination	ces (Check if plerance)	(add units)	With Source out of to Combination	es (Check if lerance)	(add units)
2 3 4 5 6 7 8	(Check i	f alarms)	Mean STD	With Source out of te	es (Check if blerance)	(add units)	With Source out of to Combination Wave	es (Check if lerance) Ring Wave	(add units)



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					Yes	No	
		In occi	upancy mode.	, system alarm			
	In c	occupancy m	node, reading	s within range			
		In non-occu	ipancy mode,	, system alarm			
	In non-c	occupancy m	node, reading	s within range			
2 1							
Comments:							
Completed by:						Date:	
Reviewed by:		-				Date:	



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		S	ection 9.	1 Microp	honics/l	mpact				
				Data and						
	Manufacturer: Model:					rial Number:				
Da	ate Performed:					est Location:				
De	ite Feriorinea.					est Location.				
	Temperature:		°C	Humidity:		%	Pressure:		in Hg.	
									<u> </u>	
	Requirement:	intensity sha	arp contacts a	ected by micro at energies of u distance of 0.1	p to 1.0 joules	s (J). 1.0 J is				
	Note:	Comments a	are required w	hen the require	ement is not ve	erified.				
Te	est Equipment:									
Gam	ıma Backgrour	nd Reading:		(add units)		Neutron B	ackground	Reading:		(add units
	Temperature:		°C	Humidity:		%	Pressure:		in Hg.	
Gamr	na Source Data:									
Neutr	on Source Data:									
	Pretest				Pretest				_	_
	Response				Response			Acceptan	ice Range	- Gamma
	Gamma				Neutron			#DIV/0!	to	#DIV/0!
1		(add units)		1		(add units)		low		high
2				2						
3				3						
4				4		-		A 4		NI 4
5				5					ce Range	
6				6		-		#DIV/0!	to	#DIV/0!
				7		1		low		high
7										
8				8						
8 9				9						
8 9 10	((D)) ((Q)			9 10	((D)) ((O)					
8 9 10 Mean	#DIV/0!			9 10 Mean	#DIV/0!					
8 9 10	#DIV/0! #DIV/0! #DIV/0!			9 10	#DIV/0! #DIV/0! #DIV/0!					



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		Test Da	ıta - Occupa	ncy Mode			
		Wit	hout Source:	<u>s</u>	1		
Immod			1		1		
Impact Number	Sido	No. 1	Side	No. 2	Side	No 2	
Number	Side			during the tes		NO. 3	
	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	
1							
2							
3							
No. of alarms							
Impact							
Number	Side	No. 4		No. 5	Side	No. 6	
	Commercia	Y		during the tes		Noutron	
1	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	
2							
3							
No. of alarms							
		w	ith Sources				
			0		1		
Impact	01.1.	NI - 4	0.4	N- O	0.4		
Number	Side	No. 1		Side No. 2 ter Each Impact		No. 3	
-	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	
1	Gaiiiiia	Neution	Gaiiiiia	Neutron	Gaiiiiia	Neution	
2							
3							
Mean	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
Impact							
Number	Side	No. 4		No. 5	Side	No. 6	
			fter Each Imp		.		
	Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	
2							
3			 				
Mean	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
Mean	#DIV/U:	$\pi D V V U$:	πDI V/U!	$\pi D V V U$:	$\pi D V V U$:	#DI V/U!	



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Non-Occu	oancy Mode									
T	est Equipment:									
Gan	nma Backgroun	nd Reading:		(add units)		Neutron E	Background	Reading:		(add units
	Temperature:		°C	Humidity:		%	Pressure:		in Hg.	
Gam	ma Source Data:									
Neut	ron Source Data:									
	Pretest				Pretest				D	C
	Response Gamma				Response Neutron	_		#DIV/0!	ice Range to	#DIV/0!
1	Gamma	(add units)		1	Neutron	(add units)		low	10	high
2		(add driits)		2		(add driits)		IOW		riigii
3				3		+				
4				4						
5				5		1		Acceptar	ce Range	- Neutror
6				6				#DIV/0!	to	#DIV/0!
7				7				low		high
8				8						
9				9						
10				10						
Mean				Mean	#DIV/0!					
STD				STD	#DIV/0!					
	#DIV/0!			COV	#DIV/0!	•				



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			Test Data	- Non-Occu	pancy Mode	<u>)</u>		
			Wit	hout Source	<u>s</u>			
	Impact							
	Number	Side	No. 1		No. 2	Side	No. 3	
			Record if mo	onitor alarm	during the tes	st (Yes/No)		
		Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	
	1							
	2							
	3							
	No. of alarms							
	Impact							
	Number	Side	No. 4	Side	No. 5	Side	No. 6	
					during the tes			
		Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	
	1							
	2							
	3							
	No. of alarms							
			w	ith Sources				
	Impact							
	Number	Side	No. 1		No. 2	Side	No. 3	
			Response Af	fter Each Imp	act			
		Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	
ľ	1							
	2							
	3							
	Mean	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
	Impact							
	Number	Side	No. 4	Side	No. 5	Side	No. 6	
			Response Af			•		
		Gamma	Neutron	Gamma	Neutron	Gamma	Neutron	
	1	-						
	2							
	3							
	Mean	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	



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		Test F	Report				
			Порого	Yes	No		
	In occupa	ancy mode, s	ystem alarm				
In occu			within range				
In	non-occupa	ancy mode, s	ystem alarm				
In non-occu	pancy mod	de, readings	within range				
Comments:							
Completed by:						Date:	
Reviewed by:						Date:	



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				Section 9.2 Vibrat	on					
				Test Data and Rep	ort					
	Manufacturer:									
	Model:				Seria	l Number:				
	Requirement:	protected loc	ations of up t	normally when exposed to vibra o 0.5 gn over a frequency range exposure (e.g.: solder joints sha	rom 10 Hz to 15	0 Hz. The p	hysical con	dition of the	eather monitor	
	Note:	Comments a	are required	when the requirement is not ve	ified.					
	Temperature:		°C	Humic	ity:	%	Pressure:		in Hg.	
Te	st Equipment:									
Gam	ma Backgroun	d Reading:		(add units)		Neutron B	ackground	l Reading:		(add ur
Gamma	Source Data:									
Neutron	Source Data:									
				<u>Test Data</u>						
			Readings w	vithin acceptance range wit	sources pres	sent				
		Pre-	Toet				Post	Test		
		Gamma	Neutron				Gamma	Neutron		
	1			(add units)		1			(add units)	
	2			,		2			,	
	3					3				
	4					4				
	5					5				
	6					6				
	8					8				
	9					9				
	10					10		<u> </u>	l	
	Mean	#DIV/0!	#DIV/0!			Mean		#DIV/0!		
	STD	#DIV/0!	#DIV/0!			STD		#DIV/0!		
	CV	#DIV/0!	#DIV/0!			CV		#DIV/0!		
	A	- D				A		News		
	Acceptan	ce Range -	Jamma -			Acceptar	nce Range	- neutron		
	#DIV/0!	to	#DIV/0! +15%	(add units)		#DIV/0!	to	#DIV/0! +15%	(add units)	
	-10/0		1 10 /0			-10/0		. 10/0		



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			Alarms with no source present				
						N .	
		Alarms				Neutron	
	Yes	No				Yes	No
1					1		
2					2		
3					3		
4					4		
5					5		
6					6		
7					7		
8					8		
9					9		
10					10		
Number of alarms				Numbe	r of alarms	i	
Number of diaring				INGILIDO	or alarms		
		•	•				
			Test Report				
			rest Report				
				Yes	No		
		Did the	e system alarm during the test?	163	140		
	1	Whore the	ost-test readings within range?				
W/I 4I							
where there	any mecn	anicai dam	age and/or loose components?				
Comments:							
Comments:							
Comments:							
Comments:							
Comments:						Date:	
						Date:	



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Security				

	Section 10 Documentation Data Sheet and Report
Manufacturer:	
Model	
Requirement	
	10.1 Type test report
	The manufacturer shall make available, at the request of the purchaser, the report on the type tests performed to the requirements of this standard.
	The international strain make available, at the request of the parchaset, the report of the type tests performed to the requirements of this standard.
	10.2 Certification
	The manufacturer shall provide a certificate and evaluation report containing at least the following information:
	- Contact information for the manufacturer including name, address, telephone number, fax number, e-mail address, etc.
	- Type of instrument, detector, and types of radiation the instrument is designed to measure
	- Evaluated portal width and mounting parameter
	- Sensitivity switch settings, detector bias level (lower level discriminator setting), and all significant calibration parameters such as 137Cs 662 keV gamma-r
	pulse height in scintillation detectors or neutron pulse height in 3He proportional counters
	- Power supply requirements
	- Results of tests under environmental conditions
	Results of electrical and mechanical tests
	Recommended operational parameters such as detector response and false alarm probability
	Complete description of the evaluated monitor.
	10.3 Operation and maintenance manual
	The manufacturer shall supply an operational and maintenance manual containing the following
	information to the user:
	Operating instructions and restrictions
	- Schematic electrical diagrams plus spare parts list and specifications
	Troubleshooting guide
	A detailed training manual or instructions for operators and users
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	Description and protocol for communication methods of transmitting and receiving data.



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		Tes	t Results			
					Vac	No
Type test report					Yes	No
	s performed to the re	equirements of the	available from the	manufacturer ?		
Certification.						
he manufacturer provide	d a certificate and	evaluation repo	rt containing at l	east the following	ng information:	:
Contact information for the	manufacturer include	ding name, addres	s. telephone numb	per. fax number.	I	
			•	ail address, etc.		
Type of instrument	, detector and types	of radiation the in:	strument is desigr	ned to measure.		
		Evaluated port	al width and mour	nting parameter.		
Sensitivity switch settings						
calibration parameters suc	h as ¹³⁷ Cs 662 keV	gamma-ray pulse	height in scintillat	ion detectors or		
		neutron pulse he	eight in ³ He propoi	tional counters.		
			Power suppl	y requirements.		
		Results of tes	ts under environm			
			f electrical and m			
Recommended operati	onal parameters suc	h as: detector res	oonse and false a	larm probability.		
		Complete de	scription of the ev	aluated monitor.		
peration and maintenan						
he manufacturer supplie	d an operational a				g information to	o the user:
	0-1		ating instructions			
	Schematic electric	ai diagrams pius s		eshooting guide		
	Δ detailed trai	ning manual or ins		0		
Description and	protocol for commu					
2000p	processor for comme		or trainermitting and	a recoming data.		
Comments:		<u> </u>	'		<u> </u>	
Completed by:					Date:	
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Reviewed by:					Date:	