Testing and Evaluation Protocol for Portable Radiation Detection Instrumentation for Homeland Security

T&E Protocol N42.33, 2010

Version 2.02

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Testing and Evaluation Protocol for Portable Radiation Detection Instrumentation for Homeland Security

1. Scope

This document establishes the protocol for testing alarming personal radiation detectors based on the performance requirements established in ANSI N42.33, "American National Standard for Portable Radiation Detection Instrumentation for Homeland Security."

2. References

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

- [R1] ANSI N42.33, "American National Standard for Portable Radiation Detection Instrumentation for 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 N42.33 standard. Therefore, different agencies developed documents describing the compliance levels required for particular applications of the instruments under test. An example of such compliance level requirements is those required by the Graduated Rad/Nuc Detector Evaluation and Reporting (GRaDER) program. For this program, information can be found in the "Compliance Level for 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, N42.33. 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.

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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 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 N42.33							
Manufacturer:										
Model:										
	C:-I#		C:-1#		C 1.14					
Test Number	Serial# Date	Status	Serial# Date	Status	Serial# Date	Status				
5.2	Date	Status	Date	Status	Date	Status				
5.3										
5.4										
5.5										
5.6										
5.7										
5.8										
5.9										
5.10										
5.11										
5.12										
6.2										
6.3										
6.4										
6.5										
6.6										
7.1										
7.2										
7.3										
7.4.2										
7.4.3										
7.5										
8.1										
8.2				-						
8.3										
8.4										
8.5										
9.1										
9.2										
9.3										
10.0										
Cammanta										
Comments:										
			-	-		-				



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			Pre	e-Test					
		Dat	ta Shee	et and F	Зер	ort			
Instrument:									
Model:						Seria	Number:		
Date Performed:						Test	Location:		
Requirement:						peration	on and mair	ntenance mar	nual
	contain	ing th	ne informati	on listed be	low.				
Note:	Comme	ents a	are require	d when the	equire	ement	is not verifie	d.	1
	.	•		t Results			I	1	
	Requi	ırem	ent				Yes		No
Operating instructions and r	octrictic	anc.					1.1		1 1
Electrical connection schen		JI 15							
Spare parts list	ialic								<u> </u>
Troubleshooting guide.									<u> </u>
Description and protocol for	commi	ınica	tion metho	ds of trans	mittin	g and			
receiving data	•					9 4.14	LJ		Ш
Contact information for the r	manufac	ture	r including	name, add	ress,				
telephone #, fax #, email ad			J				ш		ш
Power supply requirements							Ш		
Recommended operational	paramet	ters	such as: d	etector resp	oonse	and			
false alarm probability							H		
Complete description of sys							Ц		
Enclosure specification clas							Ц		Ц
Inclusion of any hazardous	material	l that	may requ	ire addition	al				1.1
regulation	6.								
Description of data analysis	softwa	re an	id radionuc	lide identifi	cation	l	LI ∣		\sqcup
procedure Description of operation and	l norforn	2000	o of the ov	otom or un	:4				
Description of operation and	i penom	Hanc	e or the sy	Stern or un	IL		LJ.		
Comments:									
Commonto.									
Completed by:							Date:		
Reviewed by:							Date:		



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		Test Data	and Re	port			
		. 331 2410		, p 4. t			
Manufacturer:							
Model:		Seri	al Number:				
Requirements:	The following s	shall be recorded:	manufacture	er's name ald	ong with the mo	odel, serial nu	um
	and firmware n	number of the inst	rument and	detector, if se	eparate.		
Note:	Comments are	e required when th	ne requireme	nt is not verif	ied.		
						Firmw	-
						Numb	oer
		F	irmware nu	ımber of the	instrument :	Numb	oer
		F			instrument :	Numb	oer
		F				Numb	per
		F				Numb	per
Comments:		F				Numb	per
Comments:		F				Numb	per
Comments:		F				Numb	per
Comments:		F				Numb	per
Comments:		F				Numb	per
Comments:		F				Numb	per
Comments:		F				Numb	per
Comments:		F				Numb	per
		F			the detector:	Numb	per



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		Toot Do	to and Da	nort		
		rest Da	ata and Re	port		
Manufacturer:						
Model:		S	erial Number:			
Requirements:	The following s	hall be identifi	ed and recorde	d: radiation	detector types u	ised (e.g., Na
	GM).					
Note:	Comments are	required whe	n the requireme	nt is not ver	rified.	
						Туре
I						Type
	Re	corded radia	tion detector	tyne (e.a	Nal Cel GM):	
	Re	corded radia	tion detector	type (e.g.,	Nal, Csl, GM) :	
	Re	corded radia	tion detector	type (e.g.,	Nal, Csl, GM) :	
Comments:		corded radia	tion detector	type (e.g.,	Nal, Csl, GM) :	
Comments:		corded radia	tion detector	type (e.g.,	Nal, Csl, GM) :	
Comments:		corded radia	tion detector	type (e.g.,	Nal, Csl, GM) :	
Comments:		corded radia	tion detector	type (e.g.,	Nal, Csl, GM) :	
Comments:		corded radia	tion detector	type (e.g.,	Nal, Csl, GM) :	
Comments:		corded radia	tion detector	type (e.g.,	Nal, Csl, GM):	
Comments:		corded radia	ation detector	type (e.g.,	Nal, Csl, GM):	
		corded radia	ation detector	type (e.g.,		
Comments:		corded radia	tion detector	type (e.g.,	Nal, Csl, GM):	
		corded radia	tion detector	type (e.g.,		



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		Sect	tion 5.4 - Ex _l	oosure Rat	e Ran	ge			
			Test Data	and Repo	rt				
/lanufacturer:									
Model:					Serial	Number:			
Requirement:	The instrun	nent shall h	nave an operating ra	inge from 5 μR/h	(0.05 μG	y/hr) to at	least 10 mR	/h (0.1	
Note:	Comments	are require	ed when the require	ment is not verific	ed.				
								erify	
							Yes	No	
			Does the state	d range meet t	he requi	rement?			
		Wh	at is the stated re	snonse range o	f the inst	rument?			(add ur
		*****	at 13 the stated re-	sponse range o	i tile ilist	i diliciti:			(add di
Comments:									
Comments:									
Comments:									_
Comments:									
Comments:									
Comments:									
Performed by:						Date:			
						Date:			



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	Sect	ions	5.5 - Fu	ınction	ality Te	est		
		Tes	t Data a	and Re	port			
Manufacturer:								
Model:			Seria	Number:				
model.			OCITA	i italiiboi.				
Requirements:	The instrumen 1. A display th 2. Controls tha 3. A menu stru 4. The capabili 5. A display th that the magni point	hat is e at are us ucture t ity to op at provi	asily readal ser-friendly hat is simpl perate if the ides the use	for routine e and easy user is we er with an in	operation, to be follo aring glove: nstantly rec	wed intuitives, and	ely,	
Note:	Comments are	require	ed when the	requireme	nt is not ve	rified.	J	
Ambient C	onditions:		°C		%RH		in HG	
Test Equipm	nent Used:							
Sou	urce Data:							
			Controls				Yes	No
	n/off switch eas	•	ıd?					
	ne controls labe							
	ne labeled conti		•					
vvere cont	rols designed to	o minim	nize the pos	sibility of a	ccidental d	peration?		<u> </u>



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			Display				Yes	N
Was bright	tness/contr	ast adjusta	ble, either r	nanually or	automatica	ally, to	163	•
	te for light	•		manaany o	adiomatio	u.i.y , 10		
			light levels	(<150 lux)?)			
Was the d	isplay read	able in high	light levels	(>10,000 I	ux)?			
Did the dis	play conta	in abbreviat	ions or icor	s? (If no s	kip next qu	estion)		
Were the a	abbreviation	s or icons	easy to inte	rpret or un	derstand?			
Was the ti	me and da	te displayed	d?					
			Operation				Yes	ı
			ate-of-health		o, e.g., batte	ery life,	_	
detector pr	esent and	working, m	emory avail	able?				
			and intuitive					
			erate withou					
Could all th	ne controls	be operate	d with glove	s?				
Describe		•	convey an					
	the radiat	ion level an	d the alarm	indication:				
0								
Comments:								
	-		-					
npleted by:						Date:		
npleted by:						Date:		



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		S	ections	s 5.6 - A	udible	Alarm			
			Test	Data ar	nd Repo	ort			
					-				
Manu	facturer:								
	Model:			Seria	l Number:				
Requir	rements:	The frequer	ncy of an a	udible alarn	n shall be v	vithin the r	ange of 100	00 Hz to 40	000 Hz.
		Mhoro on i	nt armitt ant	· alarma ia nr	ovided the	aignal inte	ما المطم المسم	ot avacad	2.0
		where an i	ntermittent	alarm is pr	омаеа, тпе	signai inte	ervai shali r	ioi exceed	2 S.
		The A-weig	hted alarm	volume at	a distance	of 30 cm fr	om the ala	rm source	shall be at
		_		nall not exce					
				an be shut c					
		alarms at t	-	a vibration a	iarm. it sna	an not be p	ossible to (alsable or s	snut on an
		alaims at t	ne same u						
	Note:	Comments	are require	ed when the	requireme	nt is not ve	erified.	•	
		1					1	1	1
Δ.	mbiant C	onditions:		°C		%RH		in HG	
AI	iibieiit C	onanions.		C		/0 IXI I		IIIIIG	
Tes	t Equipm	ent Used:							
	Sou	urce Data:							
								Yes	rify No
			Is the a	ılarm frequ	encv with	in 1000 to	4000 Hz?	163	140
			10 1110		, , , , , , , , , , , , , , , , , , ,		1000		
Where a	n interm	ittent alarr	n is provi	ded, is the	interval le	ss than 2	seconds?		
						- (1)		<u> </u>	
Is the	alarm vo	olume at a	distance	of 30 cm w	ithin 85 di	3(A) and 1	00 dB(A)?		
If the auc	lible alar	m can be	disablad	does the ir	etrument	have a vi	bration or		
ii tile aut	lible alai	iii caii be	uisabieu,	uoes ille il	istrument		al alarm?		
Does the	e instrum	ent have p	oreventive	measures	for disab	ling all the	e alarms?		
Col	mments:								
30	illille illo.								
Compl	otod by						Doto:		
Compi	eted by:						Date:		
Revie	wed by:						Date:		
							24.0.		



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		Section	ons 5.7 -	Vibrati	on Alarm	S		
		7	Γest Data	and R	eport			
					_			
Manufacturer:								
Model:			Seria	Number:				
D	If the death				C I I	-11 1	· (C) - 1 (1 - 1 - 1	'11-
Requirements:	alert the us It is recom 11 000 rpm	ser to an al	arm condition at the instrum he intensity o	ent incorpo	prate a DC mot	tor that rota	ates from 9	000 rpm to
Noto:	Comments	are require	ad when the re	auiramant	is not verified.			
Note.	Comments	are require	ed when the re	equirement	is not veniled.			
Ambient C	onditions:		°C		%RH		in HG	
Test Equipm	ent Used:							
			Measure	<u>ment Re</u>	<u>sults</u>			
	Intensity							
						(Choos	se One)	
	g					Yes	No	
1			Was each i	ntensity a	t least 0.8 g?			
2								
3								
4								
5								
6				Moto	or frequency:		rpm	
7					, ,			
8								
9								
10								
. •		<u> </u>						
Comments:								
				•				
Completed by:						Date:		
B						P (
Reviewed by:						Date:		



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			J.0 - 1VI	ass			
		Test Data	and Re	port			
Manufacturer:							
Model:		Seria	I Number:				
Requirements:	Instruments sha	II be less than 3	.0 kg (6.6 lk	os).			
Note:	Commente ere r	aguirad whan th	o roquiromo	nt in not vorif	ind.		
Note:	Comments are r	equirea when th	e requireme	ent is not verii	iea.		
Ambient C	anditiona	°C		%RH		in HG	
Ambient C	onditions.			/0KH		III I IG	
Test Equipm	nent Used:						
Tool Equipm							
				•		Ve	rify
						Yes	
							_
			ls	the mass le	ss than 3 kg?		
					ss than 3 kg? ass (grams)?		
Comments:							
Comments:							
Comments:							
Comments:							
Comments:							
					ass (grams)?		
Comments:							



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Security				

		Ta	et Data	and Re	nort			
		1 6	Si Dala	and ite	ροιτ			
Manufacturer:								
Model:			Soria	l Number:				+
Wiodei.			Jena	ii italiibei.				
Requirements:	The instrur	ment shall l	have referer	nce points o	n both the f	ront, or back, a	nd side of	the
					the detector			
		J						
Note:	Comments	are require	ed when the	e reauireme	nt is not ver	ified.		-
110101								
1		1						
							Ve	rify
								rify
ne reference no	ints marke	ed on the f	ront or bad	ck and side	indicating	the effective	Ve Yes	erify
ne reference po	ints marke	ed on the f	ront or bac	ck and side	_			erify
ne reference po	ints marke	ed on the f	ront or bac	ck and side	_	the effective		erify
ne reference po	ints marke	ed on the f	ront or bac	ck and side	_			erify
ne reference po		ed on the f	ront or bac	ck and side	_			erify
		ed on the f	ront or bac	ck and side	_			erify
		ed on the f	ront or bac	ck and side	_			erify
		ed on the f	ront or bac	ck and side	_			erify
		ed on the f	ront or bac	ck and side	_			erify
		ed on the f	ront or bac	ck and side	_			erify
		ed on the fi	ront or bac	ck and side	_			erify
		ed on the f	ront or bac	ck and side	_			erify
		ed on the f	ront or bac	ck and side	_			Partity



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		Tes	t Data a	and Rep	ort			
Manufacturer:								+
Model:			Seri	al Number:				
Requirements:						ument is certifi -913-2002[B3		in
Note:	Comments	are requi	red when th	ne requireme	ent is not	verified		
Note:	Commonic	aro roquii	ioa wiloii ti	10 Toquilottic	7110 1101	vormou.		
								_
							Ve	erify
							Yes	
		la tha i	natrumant	portified for	avalogiya	atmoon baroo		<u></u>
		Is the i	nstrument	certified for e	explosive	atmospheres		L
						atmospheres been provided		
		lf c	certified, ha	as document	ed proof	been provided		
ls co	ompliance b	lf c	certified, ha	as document	ed proof			
ls co	ompliance b	lf c	certified, ha	as document	ed proof	been provided		
		lf c	certified, ha	as document	ed proof	been provided		
Is co		lf c	certified, ha	as document	ed proof	been provided		
		lf c	certified, ha	as document	ed proof	been provided		
		lf c	certified, ha	as document	ed proof	been provided		
		lf c	certified, ha	as document	ed proof	been provided		
Comments:		lf c	certified, ha	as document	ed proof	been provided UL-913-2002?		
		lf c	certified, ha	as document	ed proof	been provided		



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		Sec	ctions 5.11	- Batter	ies			
		T	est Data an	d Repo	rt			
Manufacturer:								
Model:			Seria	l Number:				
	D-#i			le a constance	to the baston		-111 11	
Requirements:			available, shall not	be unique	to the instru	ment, and	shall be repl	aceable in
	the field without t	ne use of spec	cial tools.					
	The betteries abo	و والموسود و ما الد	-f		. 10 h in a na		-1-	
	The patteries sna	iii be capable t	of powering the ins	strument ioi	ion in a no	n-aiaini Si	ale.	
	The instrument sl	hall have a low	battery indicator.					
	THE INSTIGNICHT SI	nan nave a low	battery maleator.					
Note:	Comments are re	equired when the	ne requirement is i	not verified.				
Ambi	ent Conditions:		°C		%RH		in HG	
Test Ed	quipment Used:							
	Source Data:							
		Pre-test			Acceptan	ce range		With Low
		response	After 16 hours					Battery
					low (-15%)	#DIV/0!		Indicated
	Reading 1							
	Reading 2				high (15%)	#DIV/0!		
	Reading 3							
	Reading 4 Reading 5							
	Reading 6							
	Reading 7							
	Reading 8							
	Reading 9							
	Reading 10							
	Average	#DIV/0!	#DIV/0!				Average	#DIV/0!
	Standard dev	#DIV/0!	#DIV/0!				2 2 9 0	
	COV %	#DIV/0!	#DIV/0!					
	Specif	y battery type	•					



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						Yes	No
	Are the batt	orios roplacoa	ble without the	use of spe	cial tools?	103	110
	Ale the batt	eries replacea	bie without the	use or spe	ciai toois:		
		Did the instru	mant anarata n	roporty for	46 haura2		
		Did the mstru	ment operate p	roperty to	10 Hours?		
-		D:	al the elementum	-4!#	46 havea		
		υı	d the alarm fun	iction after	16 nours?		
-	What is the	voltage when t	the low battery	indication	activates?		volts
	Wilatistic	voitage when t	ile low battery	maication	activates:		VOILS
						Yes	No
	Was the res	nonse with low	v battery indica	ted within	15% of the		
	was inc res	sponse with low			batteries?		
			Тофоно	With Hotel	Datio::00:		
Comments:							
Completed by:						Date:	
Reviewed by:						Date:	
				_			



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		Sec	tions 5.12	- Data For	mat				
		1	Γest Data a	and Report	t				
Manufacturer:									
Model:			;	Serial Number:					
Requirements:	with ANSI N42 techniques. W	2.42 requirements /hen used, with	ents. Considerat reless technique	Infrared, etc.) or sion should be given shall have the	en to data sec ability to be en	urity when crypted.	using wirel	ess data tr	
Note:	Comments are	e required whe	en the requireme	nt is not verified.					
Ambient (Conditions:		°C		%RH		in HG		
Test Equip	ment Used:								
Sc	ource Data:								
Describe the data transfer	technique								



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Verify							
Yes No							
	device?	o an externa	transfer data t	e the ability to	he monitor ha	Does	
	ctional?	ission bi-dire	Is the transm				
T			<u> </u>			_	
	, RS-232)	wireless, USE	e.g. Ethernet,	technology?	nonly availab	ed on com	the transfer bas
	1 - 1-1-0	44	4 L (L L 22			16	
	ne data?	ty to encrypt	t have the abil	vireiess, does	ne transfer is	IT 1	
Т	manual2	ho toohnisal	I described in	ander pretee	le the		
	nanuai :	ne technical	i described iii	ansier protoco	15 tile		
	manual?	he technical	t described in	the data forma	Is		
	nanuar i	inc teeminear	t described iii	are data formi	1		
	in XML?	e data forma	ls th				
	ements?	N42.42 requi	nply with ANSI	lata format co	Does the		
	etation?	or data interp	tary software fo	rovide proprie	manufacturer	Did the	
							Comments:
	Date:						Completed by:
							
	Date:						Reviewed by:



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	Se	ections 6	.2 - Acc	uracv			
		Test Data					
		CSI Daic	and ite	port			
Manufacturari							
Manufacturer: Model:			90	rial Number:			
Wiodei.			36	ilai Nulliber.			-
Requirements:	Under stand	ard test cond	itions with c	alibration cont	rols adjusted	according to	the
				elative error of			
				ective range of			
Note:	Comments a	are required w	hen the requ	uirement is no	t verified.		
	-						
Ambient	Conditions:		°C		%RH		in HG
Test Equip	ment Used:						
S	ource Data:						
Instrument maximu	ım measure	ment range:		mR/h			
	Me	asurement R	tesults - Ins	truments			
			Evpoor	rate values			_
	0.10	mR/h	5.00	rate values mR/h	0.00	mR/h	-
1	0.10	mR/h	5.00	mR/h	0.00	mR/h	1
2		mR/h		mR/h		mR/h	1
3		mR/h		mR/h		mR/h	1
4		mR/h		mR/h		mR/h	1
5		mR/h		mR/h		mR/h	Ī
6		mR/h		mR/h		mR/h	
7		mR/h		mR/h		mR/h	
8		mR/h		mR/h		mR/h	
9		mR/h		mR/h		mR/h	1
10		mR/h		mR/h		mR/h	4
Mean	#DIV/0!	mR/h	#DIV/0!	mR/h	#DIV/0!	mR/h	
Accontance Bases	0.07	0.12	2 50	6.50	0.00	0.00	
Acceptance Range	0.07	0.13	3.50	6.50	0.00	0.00	1
	- 30%	+ 30%	- 30%	+ 30%	- 30%	+ 30%	J
		Test R	<u>lesults</u>				
Ann the men to the	him -000′ 0	V	NI.				
Are the results wit	0.1 mR/h	Yes	No	4			
	0.1 mR/n 5 mR/h						
80 % of max							
00 /001 IIIaxi	a range						
Comments:							
Completed by:					Date:		
Reviewed by:					Date:		



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Sec	ctions 6.3	3 - Photo	on Energy	y Respoi	ıse				
			and Repo						
			•						
Manufacturer Model			So.	ial Niverbare					
Model			Ser	ial Number:					
Requirements	The instrume	ent shall resp	oond to photon	radiation bet	ween 60 keV	and 1.33			
			be within ±50°						
	normalized t	ormalized to ¹³⁷ Cs.							
				1					
Note	Comments	are required v	when the requir	rement is not	verified.				
Ambient Conditions		°C		%RH		in HG			
Test Equipment Used	•								
Tool Equipment Good									
Source Data									
Background reading	-			(add units)					
Background reading				(add units)					
		Meas	surement Re	sults					
'		²⁴¹ Am	⁶⁰ Co	¹³⁷ Cs					
		Appl	ied Exposure F	Rates					
				L	(add units)				
	1	Ins	trument Readi	ngs	(add units)				
	2				(aud units)				
	3								
	4								
	5								
	7								
	8								
	9								
	10 Mean	#DIV/0!	#DIV/0!	#DIV/0!					
	Std dev	#DIV/0!	#DIV/0!	#DIV/0!					
	COV %	#DIV/0!	#DIV/0!	#DIV/0!					
		Δα	ceptance ran	ges					
	low (- 50%)	0.00	0.00	0.00					
	high (+ 50%)	0.00	0.00	0.00					
		Test	Results						
Was 4	no rospones			ied experim	n rato?				
vvasti	ie response		% of the appl		e iale f				
		²⁴¹ Am	⁶⁰ Co	¹³⁷ Cs					
	Yes		 						
	No		<u> </u>						
Comments	:								
Completed by			-	Date:					
Reviewed by				Date:					



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	;	Sections	6.4 - Re	sponse	Time		
		Test	Data an	d Repor	't		
Manufacturer:							
Model:			Ser	ial Number:			
Requirements:							/ shall
	indicate the	new exposure	e rate within i	ive seconds	of the change.	•	
Note:	Comments a	re required w	hen the regu	irement is no	t verified.		
Ambient	Conditions:		°C		%RH		in HG
Test Equip	ment Used:						
S	ource Data:						
		Me	asuremen	t Results			
Background Field:		μR/h	Refe	rence Field	Reading dur	ing testing:	
			-				
			Instrument				
			Reading				
		Trial #	after 5 s				
		1			Acceptan	ce Range	
		3			low (- 50 %)	0.00	μR/h
		4		ŀ	nigh (+ 50 %)	0.00	μR/h
		5		'	iigii (+ 30 76)	0.00	μινπ
		6					
		7					
		8					
		9					
		10					
W	• • •					Yes	No
Was each of the	instrument	readings wi			he change?		
Comments:							
					_		
Completed by:					Date:		
Reviewed by:					Date:		



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Section 6	E Va	riation of	Pachane	o with An	alo of Inci	idonoo of	Dadiation
Section 6.5 Variation of Response with Angle of Incidence of Radiation Test Data and Report						Radiation	
			I est Dat	ta and Re	port		
Manufa	cturer:						
	Model:			Se	erial Number:		
Require	ments:			-		spect to 0° incid	
			vertical orienta	itions shall agre	ee to within ± 3	0 % of the resp	onse from 0°
		incidence.					
	Note:	Comments are	required wher	the requireme	nt is not		
Ambient Con	ditions:		°C		%RH		in HG
Test Equipmen	t Used:						
Source	e Data:						
Source	e Data:						
				24	¹ Am		
			Vertical Plan		AIII	Horizontal Pla	ne
		Position A	Position B	Position C	Position A	Position B	Position C
		0	-45	45	0	-45	45
		Degree	Degree	Degree	Degree	Degree	Degree
							ļ
							-
	Mean		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Std Dev	#DIV/0!			#DIV/0!		
	COV %	#DIV/0!			#DIV/0!		
		Acceptan	no Pango		Accontai	nce Range	
		#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!	
		- 30 %	+ 30 %		- 30 %	+ 30 %	
			/+		, .	7	
					Yes	No	
		an response w					
ex	posure	rate of the re-	sponse from (0° incidence?			



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Position A	Vertical Plar Position B	ne	³⁷ Cs	Horizontal Plan	
0				Horizontal Plan	Δ.
0	Position B				
		Position C	Position A	Position B	Position (
	-45	45	0	-45	45
Degree	Degree	Degree	Degree	Degree	Degree
#DI\//OI	#DIV/OI	#DIV/0I	#DIV/OI	#DI\//OI	#DIV/0!
	#DIV/0!	#DIV/U!		#DIV/U!	#DIV/U!
#DIV/0:			#DIV/0:		
Acceptan	ce Range		Acceptai	nce Range	
#DIV/0!	#DIV/0!		#DIV/0!	#DIV/0!	
- 30 %	+ 30 %		- 30 %	+ 30 %	
				No	
-				_	
rate of the re	sponse from (0° incidence?			
				Date:	
				Date:	
	#DIV/0! - 30 % an response w	#DIV/0! #DIV/0! Acceptance Range #DIV/0! #DIV/0! - 30 % + 30 %	#DIV/0! #DIV/0! Acceptance Range #DIV/0! #DIV/0! - 30 % + 30 %	#DIV/0! #DIV/0! #DIV/0! Acceptance Range Acceptanum #DIV/0! #DIV/0! #DIV/0! - 30 % + 30 % - 30 % Yes Acceptanum Acceptanum Acceptanum Acceptanum Acceptanum Acceptanum Acceptanum FDIV/0! #DIV/0! - 30 % Yes	#DIV/0! #DIV/0! #DIV/0! Acceptance Range #DIV/0! #DIV/0! #DIV/0! #DIV/0! #DIV/0! #DIV/0! #DIV/0! #DIV/0! #OIV/0! #DIV/0! #OIV #OIV #OIV #OIV #OIV #OIV #OIV #OIV



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	S	ections	6.6 - O	ver-Ran	ge Res	ponse			
		T	est Dat	ta and R	eport				
Mai	nufacturer:								
	Model:			Seria	I Number:				
Req	uirements:	When expo	sed to an e	xposure rate	that is two	times the ma	ximum expo	osure rate	
						f the instrume			
					rload indica	tion shall be o	displayed fo	r the	
		duration of	the exposur	e.					
	Note:	Comments	are required	when the re	equirement	is not verified.		•	
	Ambient (Conditions:		°C		%RH		in HG	
-	Toet Equipr	nent Used:							
	rescequipi	neni oseu.							
	So	urce Data:							
			Measur	ement Re	sults				
Manufa	acturer-State	ed Max Exp	osure Rate:		mR/h				
	0 0	T F	D. (D/I				
	Over-Ran	ge Test Exp	osure Rate:		mR/h				
	Over-Ra	nge Exposu	re Duration:		min.				
	Overrea	ngo Expood	o Baration.						
								Ve	rify
								Yes	No
				Wasan	over-range	indication of	displayed?		
							_		
	Tł	ne instrume	nt indicati	on remaine	d at the m	aximum of the	ne range?		
	The ever	rango india	cation was	dienlayed	for the dur	ation of the e	vnocuro?	I	
	THE OVE	range mun	cation was	uispiayeu	ioi tile dui	ation of the e	xposure:		
Comments:									
Completed by:						Date:			
Completed by.						Date.			
Reviewed by:						Date:			
.,									1



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				7.1 - Ten							
			rest L	ata and	Report						
Manufacturer:											
Model:			Sei	rial Number:							
Requirements:	The instrume	ant shall func	tion correctly	at temperatu	res from _20	°C to ±50 °C	Relative	-			
Nequirements.				cified in Table							
Note:	Comments a	are required w	hen the requ	irement is not	verified.						
			·								
Test Equip	ment Used:										
s	ource Data:										
			Mea	surement	Results - 1	³⁷ Cs					
	22° C	30° C	40° C	50° C	10° C	0° C	-10° C	-20° C			
	as read	as read									
1											
2											
3											
5											
6											
7											
8											
9											
10	#DIV/01	#DIV/01	#D1//01	#DI\//01	#DIV/01	#DIV/01	#DN//01	#D1\/01			
Mean STD	#DIV/0! #DIV/0!	#DIV/0!									
COV %	#DIV/0!	#DIV/0!									
						<i></i> 2, 0.					
									Yes		nean reading wi
									No	the accep	tance range?
		11	1							1	
									Yes No		ment alarm due erature test alone
		Į							INO	ino tompo	
		(±	15%) Accep	tance Range:	#DIV/0! -15%	to	#DIV/0! + 15 %				
					-10%		+ 10 %				
Comments:											
Completed by:											
					Date:			1			



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							Section	7.2 Te	mperat	ure Sh	ock									
								est Data												
1	Manufacturer																			
	Model										Se	rial Number:								
		The instrument of	II b = 6 III . 6	i Iiili 00					00.00 4- 04	200 0000	- 00 00 00	100 4- 50 00	150004-00	00		ta a sa a da ta		ania Dalas	and the second of the second	
	Requirement	The instrument shall be within the			min of expo	sure to rapid t	emperature ch	anges from	22 °C to -20	J°C, -20°C1	10 22 °C, 22	''C to 50 °C, ar	id 50 °C to 22	"C with eac	n cnange be	ing made ir	i less than t	min. Kelati	ve numidity	
		ondir bo within the	iungo opcomo	u III Tubio 1.																
		Note:	Comments a	re required wh	en the requi	rement is no	verified.													
	Test	Equipment Used:																		
		Source Data:																		
								Moss	urement	Paculte										
								IVICAS	uicilicili	INCOUILO										
	and test of					22 to	50° C			50 t/	22° C			22 to -2	00° C			-20 to	220 C	
	pre-test at 22°C				45	30	45	00	15	30		- 00	15	30	45	-00	45	30		-00
1	22.0				15	30	40	60	10	30	45	60	15	30	40	60	15	30	45	60
2				2																
3				- 3																
4				4																
5				5																
6				6																
7				7																
8				8																
10				10																
Mean	#DIV/0!			Mean	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
STD	#DIV/0!			STD		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
COV %	#DIV/0!			COV %	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	Was	the mean reading		Yes																
		acceptar	ce range?	No																
	ni.		1				1	ı	1	ı	1			1	ı		ı			
	Did	instrument alarm temperature	L	Yes																
		temperature	lest alone !	No																
	(± 15%) A	cceptance Range:	#DIV/0!	to	#DIV/0!															
			low 15%		high 15%															
	Comments																			
	ompleted by						Date:					Reviewed by:						Date:		
, c	ompieteu by						Date.					tevieweu by:						Date:		



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		Sec	tions 7.3	- Humidity	V		
			st Data ar				
Manuf	acturer:				<u> </u>		
	Model:			S	erial Number:		
Requir	ements:	The instrument shall 35 °C.	II function corre	ctly over the ra	nge of relative h	umidity from 40%	to 93% RH at
	Note:	Comments are requ	iired when the r	equirement is r	not verified.		
	Test	Equipment Used:					
		Source Data:					
			Measure	ment Resul	ts - ¹³⁷ Cs		
			Nominal				
			40% RH	93% RH	40% RH		
			22° C	35° C	35° C		
		1				(add units)	
		2					
		3					
		4					
		5					
		6					
		7					
		8					
		9					
		10					
		Mean	#DIV/0!	#DIV/0!	#DIV/0!		
		STD	#DIV/0!	#DIV/0!	#DIV/0!		
		COV %	#DIV/0!	#DIV/0!	#DIV/0!		
		33.70		<i>,,</i> 2.17,0.	#21070.		
			Vas				
	Were	the results within	Yes				
		tolerance?	No				
	Did	any alarms occur					
		umidity exposure	Yes				
		alone?	No				
			Acc	eptance Ra	nge		
			#DIV/0!	to	#DIV/0!		
			low 15%		high 15%		
Comments:							
Jonnie IIIS.							
Compl	eted by:				Date:		
Revie	wed by:				Date:		



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	Section	s 7.4.2 - Moi	sture and	Dust Pro	tection, D	ust			
		Test	Data and	Report					
Ma	nufacturer: Model:			9	erial Number:				
Red	quirements:	The instrument cas	e design shall r	meet the requir	ements stated f	or IP code	53 (see IEC	60529),	
		which means that the For IP53, the ingression							
		interfere with satisf							
		angle up to 60° on	either side of th	e vertical direct	tion shall have n	o harmful e	effects.	-	
	Note:	Comments are requ	uired when a tes	st requirement	is not verified.				
Ambient	Conditions:		°C		%RH		in HG		
Test Equip	ment Used:								
S	ource Data:								
			Pre-Test	Post Test					
			Response	Response					
		1			(add units)				
		2							
		3			_				
		5							
		6							
		7							
		8							
		9							
		10				Acce	eptance R	ange	
		Mean	#DIV/0!	#DIV/0!					
		STD	#DIV/0!	#DIV/0!		#DIV/0!	to	#DIV/0!	
		COV %	#DIV/0!	#DIV/0!		low 15%		high 15%	
Wasthe	post-test re	sponse within the	Yes		1				
	-	cceptance range?	No		1				
Did anv alar	ms occur fro	om dust exposure	Yes						
		alone?	No						
							-	Vei	rify
								Yes	No
	Did d	lust penetrate the	instrument to	the extent wh	ere operation	could be i	impacted?		
				Die	d the alarm fu	nction afte	r the test?		
Comments:									
Johnnents.									
					_				
Cor	npleted by:				Date:				
Re	viewed by:				Date:				
-									



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Sections 7.4.3 - Moisture and Dust Protection, Moisture											
			t Data and								
				•							
Ma	nufacturer: Model:				erial Number:						
	woder.			3	eriai Number:						
Red	quirements:	The instrument cas	e design shall r	meet the require	ements stated for	or IP code	53 (see IEC	60529),			
		which means that t	he instrument s	shall be protect	ed from the ingre	ess of dust	and sprayi	ng water.			
		For IP53, the ingresinterfere with satisf									
		angle up to 60° on						iyod at ari			
	Note.	Commonto oro rogi	irod whon a to	at requirement	is not verified						
	Note:	Comments are requ	ulled when a tes	st requirement	is not verilled.						
Ambient	Conditions:		°C		%RH		in HG				
Test Equip	ment Used:										
S	ource Data:										
			D T (Deed Took							
			Pre-Test Response	Post Test Response							
		1	тооролоо	Пооролю	(add units)						
		2			(add arms)						
		3									
		4			Ì						
		5									
		6									
		7									
		8				Acce	eptance R	ange			
		9									
		10			<u> </u>	#DIV/0!	to	#DIV/0!			
		Mean	#DIV/0!	#DIV/0!	<u> </u>	low 15%		high 15%			
		STD COV %	#DIV/0!	#DIV/0!							
		COV %	#DIV/0!	#DIV/0!	1						
Was the	post-test re	sponse within the	Vac								
***43 416		cceptance range?	Yes No								
			.10								
Did	any alarme	occur from water	Yes								
Dia	uny ulumino	exposure alone?	No								
	Did w	vater penetrate the	instrument?	Yes	No						
	Dia w	rater penetrate un	e msaument:								
	Did th	e alarm function	after the test?								
Comments:											
Cor	mpleted by:				Date:						
	valenne -l I-:				D-4:						
Re	viewed by:				Date:						



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	S	Sections 7.5 -	Cold Ter	nperature	Start Up			
		Tes	t Data an	d Report				
Man	ufacturer:							
IVICII	Model:			S	erial Number:			
Requ	iirements:	The instrument shal	I be able to op	erate when swi	tched on at the	cold tempei	rature limit	: (-20 °C).
	Note:	Comments are requ	ired when a te	st requirement i	is not verified.			
								_
	Test	Equipment Used:						
		Source Data:						
			Pre-Test	Readings at				
			Readings	- 20 °C				
		1			(add units)			
		2						
		3						
		4						
		5						
		6						
		7						
		8				A	-1 Г	2
		9				Acce	ptance F	kange
		Mean	#DIV/0!	#DIV/0!	1	#DIV/0!	40	#DIV/0
		STD	#DIV/0! #DIV/0!	#DIV/0! #DIV/0!		#DIV/0!	to	high 15
		COV %	#DIV/0!	#DIV/0!		10W 1376		Tilgit 13
		OOV 70	1101170.	// DIV/0.				
	Were the	results within the	Yes					
		tance range?	No					
	Did t	he alarm function	Yes					
		ormally at -20 ºC?	No					
omments:								
								-
Com	pleted by:				Date:			
Rev	iewed by:				Date:			
IVG A	y.				Date.			_



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	Section 8.1 Electrostatic Discharge									
	Test Data and Report									
Ma	nufacturer:									
	Model:				Seria	al Number:				
Red	quirements:	contact dis	charge tech	nique, the ir	nstrument sh	intensities on all function harge alone.	correctly. N	•		
	Note:	Comments	are required	when a tes	t requireme	nt is not				
	Ambient C	Conditions:		°C		% RH		in Hg		
	Test Equipn	nent Used:								
	So	urce Data:								



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		<u> </u>	xposure or	Count Rai	e kespons	ie 			
	Pre-Test		Gan	ıma Respo	nse				
	Response		2 kV	4 kV	6 kV				
1		1				(add units)			
2		2				,			
3		3							
4		4							
5		5							
6		6							
7		7					Acce	otance	Range
8		8							
9		9					#DIV/0!	to	#DIV/0!
10		10					low (-15%)		high (+15%
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!				
			Were the r	esults with	in the acc	eptance rai	nge?		
				2 kV	4 kV	6 kV			
			Yes			V			
			No						
			Did the ins	trument al	arm during	testing?	'		
			Yes						
			No						
	_								
	Comments:								
Pei	rformed by:				Date:				
					Date.				
Re	viewed by:				Date:				



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	Section 8	.2 Radio Fr	requency Su	ısceptibi	lity		
		Test Data	a and Repor	t			
Manufacturer:							
Model:			Se	rial Number:			
Requirements:		Hz at an intensity	ected by radio freq of 10 volts per me	• , ,			•
Note:	Comments are	e required when a	a test requirement	s not verified.			
Ambient Conditions:		°C		%RH		In. Hg	_
Test Equ	ipment Used:						
	Frequenc	cy Scan Observ	ations Without So	ources			
			bilities observed?)			
		Yes		No			
		Did the unit ala	arm during testin	g?	<u>I</u>		
		Yes		No			



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			With ¹³	³⁷ Cs			
	Nominal						
	No RF		Source Data:				
	Response						
1		(add units)	Accei	ptance Rai	nae		
2		,	#DIV/0!	to	#DIV/0!		
3			low (-15%)		high (+15%)		
4			, ,		,		
5			Frequ	ency Scar	n Observations w	ith Sources	<u> </u>
6			•				
7							
8							
9							
10							
Mean	#DIV/0!						
STD							
COV%							
			Were susceptibilit	ies observ	ed?		
			Yes		No		
	Comments:						
			<u> </u>				
	Completed by:				Date:		
	. ,						
	Reviewed by:				Date:		
	,						



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	Sections 8.3 - M	agnetic	Fields				
	Test Data a	nd Rep	ort				
Manufacturer:							
Manufacturer: Model:			Serial Number:				
	The instrument should be fully mutually orthogonal orientation		•		OC magnetic fie	eld in three	
	mutually offiogorial offeritation	iis relative t	o a 10 Gauss ma	grietic liela.			
Note:	Comments are required when	a test requi	rement is not veri	fied.			
Ambient Conditions:	°C		%RH		in HG		
Test Equipment Used:							
Source Data:							
	Measurement Results With	out Source	es				
					itation		
		Yes	nitial No	Yes	cond	Thi Yes	ird No
Did the instrum	ent alarm during the test?	tes	NO	res	NO	res	NO
214 116 1161 11	g are real						
Did the instrument dis	splay spurious indications?						
Observations:							



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		<u>Me</u>	asurement Res	sults With Cs-	·137	
					1	
	Initial Ori		Second O		Third Orio	
	Nominal	10 Gauss	Nominal	10 Gauss	Nominal	10 Gauss
	Zero Intensity	(DC)	Zero Intensity	(DC)	Zero Intensity	(DC)
1						
2 3					-	
4					-	
5						
6						
7						
8						
9						
10						
Mean	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
STD	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
COV%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
			<u>Acceptano</u>	e Range		
	la iti a	-1 0-:	#DIV/0!	4-	#DIV/0!	
		al Orientation:		to		
		d Orientation:	#DIV/0!	to	#DIV/0!	
	Inir	d Orientation:	#DIV/0!	to	#DIV/0!	
			low -15%		high +15%	
Comments:						
C	ompleted by:					Date
	p					2410
F						



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	Seci	ion 6.4 Condu	cted Immunity		
		Test Data an	d Report		
Manufacturer:					
Model:			Serial Number:		
Requirements:		ernal conducting cable	d by RF fields that can be co n. Instruments that do not have		
Note:	Comments are	e required when a test	requirement is not verified.		
bient Conditions:		°C	%RH	In. Hg	
Test Equ	ipment Used:				
	Frequenc	cy Scan Observations	s Without Sources		
	•	•			
	1				
		Were susceptibilitie	s observed?		
		Yes	No		
		Did the unit alarm d	uring testing?		



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			With Cs-137	7 Source		
	Nominal					
	No RF		Source Data:			
	Response					
1		(add units)				
2			Accep	tance Rar	<u>ige</u>	
3						
4			#DIV/0!	to	#DIV/0!	
5			low (-15%)		high (+15%)	
6					01	'th 0
7			Freque	ency Scar	Observations w	ith Sources
8						
9			_			
9 10	#DIV/0I					
9 10 Mean	#DIV/0!					
9 10 Mean STD	#DIV/0!					
9 10 Mean			Were suscentibiliti	es observ	2d?	
9 10 Mean STD	#DIV/0!		Were susceptibiliti	es observ		
9 10 Mean STD	#DIV/0!		Were susceptibiliti	es observ	ed?	
9 10 Mean STD	#DIV/0! #DIV/0!			es observ		
9 10 Mean STD	#DIV/0!			es observ		
9 10 Mean STD	#DIV/0! #DIV/0!			es observ		
9 10 Mean STD	#DIV/0! #DIV/0!			es observ		
9 10 Mean STD COV%	#DIV/0! #DIV/0!			es observ		
9 10 Mean STD COV%	#DIV/0! #DIV/0! Comments:			es observ	No	



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	Section	on 8 5 R	adiated Em	nissions			
			ta and Rep				
Manadaatina		i csi Dai	a ana Kep	OI C			
Manufacturer:			_				
Model:			Ser	ial Number:		_	
Pequirement:	The emission	limits when	measured at thr	ee meters fro	m the instrume	ant shall he less	than wh
requirement.	is shown belo			oo motoro no		one onan be leed	tilali Wi
	1	, ,				_	
			n Frequency ange	Field	Strength		
		(1	MHz)	(micro v	olts/meter)		
) – 88		100		
			- 216		150		
	<u> </u>	<u>216 – 960</u>			200		
		Abc	ove 960	ţ	500		
Note:	Comments a	re required w	nhen a test requir	ement is not	verified.		
			·				
Ambient Conditions:		°C		%RH		in HG	
Test Equipment Used:							
rest Equipment Osea.						_	
Source Data:	:						
				Yes	No		
	I Ware DE -	miccione ab	ove the limits?			ı	
	were KF e	11115510115 ab	ove the minus:				
Commonter		iiiissioiis au	ove the illints:				
Comments:		illissions ab	ove the mints:				
Comments:		IIIISSIOIIS AD	Ove the mints:				
Comments:		IIIISSIOIIS AD	ove the mints:				
Comments:		IIIISSIOIIS AU	ove the illinos:				
Comments:		IIIISSIOIIS AD	ove the lilling:	Date:			
		IIIISSIOIIS AD	ove the illinos:	Date:			

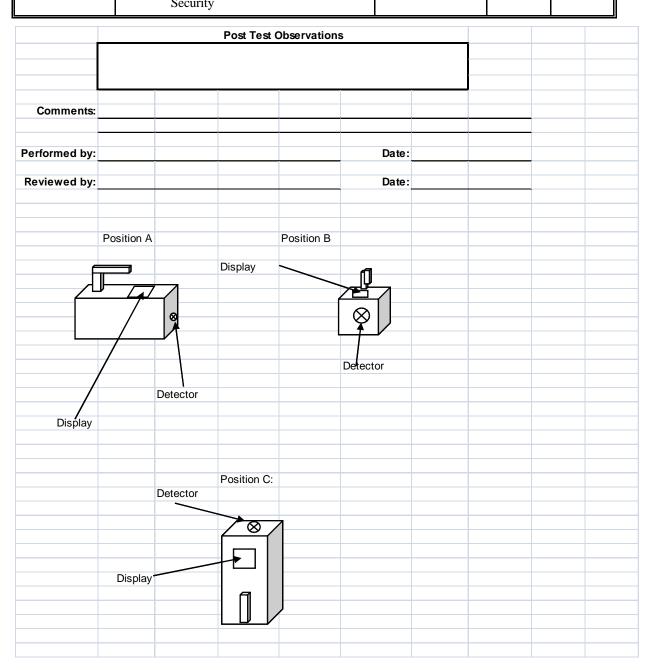


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		Section	9.1 Vibr	ation				
		Test Da	ta and R	eport				
Manufacture								
Mode	l:		Se	erial Number:				_
Requiremen	t: The instrume							_
	instrument s		fected by exp	The physical coosure (e.g.: so				
Note	e: Comments a	are required v	vhen a test re	equirement is n	ot verified.			
Ambie	nt Conditions:		°C		%RH		in HG	
Test Equ	ipment Used:							
	Source Data:							
		After	After	After				
	Pretest	Position A	Position B	Position C				
	1				(add units)			
	2							
	3							
	4							
	5 6							
	7							
	8							
	9					Acc	eptance Ra	ange
1	0							
Mea		#DIV/0!	#DIV/0!	#DIV/0!		#DIV/0!	to	#DIV/C
ST		#DIV/0!	#DIV/0!	#DIV/0!		-15%		15%
COV	% #DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
	Did the ala	rm function	normally a	fter the test?				
		Position A	Position B	Position C				
	Yes							
	No							



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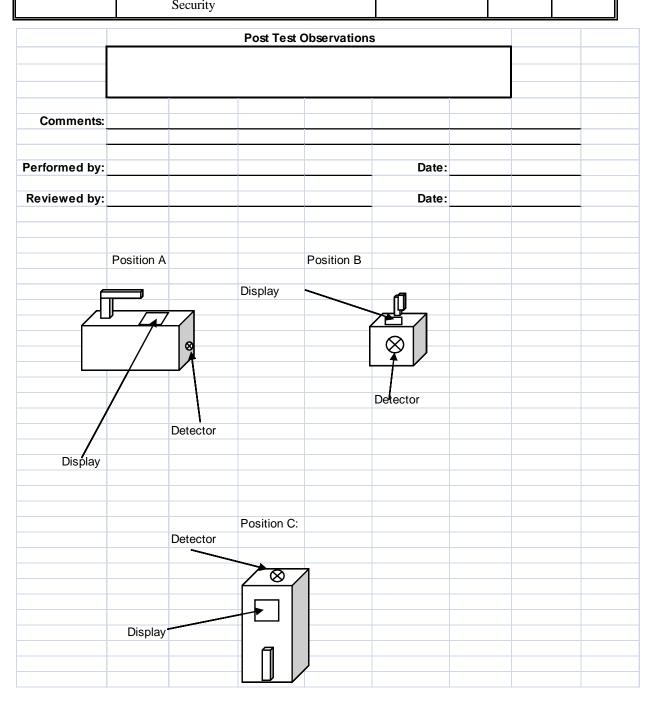


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	Secti	on 9.2 -	Mechan	ical Shoc	k			
		Test Da	ta and R	eport				
Manufacturer:								
Model:			Se	rial Number:				
	each applied physical con	for a nomina dition of instr	al 18 ms in ea ruments shall	ach of three mu not be affecte	itually orthog d by these s	onal axes. T	ће	
Note:	Comments a	re required w	/hen a test re	quirement is n	ot verified.			
Ambient								
So	ource Data:							
	Pretest							
•					(add units)			
3								
-						Acce	eptance Ra	inge
	#DI\//0I	#DIV/0I	#DIV/0I	#DIV/0I		#DIV/0I	to	#DIV/0I
COV%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!				
	Did the ala	rm function	normally a	fter the test?				
	o ala							
	No							



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		Secti	on 9.3	Impact	(Micro	phoni	cs)					
			Test	Data ar	nd Rep	ort						
	6											
war	nufacturer: Model:			Carial	Number:							
	wodei:			Serial	Number:							
Red	quirement:	The instrum										
		those that r surfaces.	may occur	from low in	itensity im	pacts from	sharp cor	ntact with h	ard			-
	Note:	Comments	are require	ed when a t	est require	ement is no	ot verified.					
	Ambient (Conditions:		°C		%RH		in HG				
-	Test Equipr	ment Used:										
	Sc	ource Data:										
				With Sou	Ircas							
	.			With Cot		0:1		0:1	0:1	0.1	0:1	
	Pretest Response				Impact Number	Side No. 1	Side No. 2	Side No. 3	Side No. 4	Side No. 5	Side No. 6	
	пофене								ch Impact	1.0.0	11010	1
1		(add units)			1							(add
2					2							┨
4					3							-
5												
6												
7				Acce	ptance R	ange_						
8 9				#DI\//01		#DIV//01						
10			I.	#DIV/0! ow (-15 %)		#DIV/0! high (+15	%)					
Mean	#DIV/0!		l l	OW (-10 70)		ingii (+15	/0)					
STD	#DIV/0!											
OV%	#DIV/0!											



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	Measuremen	i ive auria Mi	inout 30	Jui 663										
			Side	No. 1	Side	No. 2	Side	No. 3	Side	No. 4	Side	No. 5	Side	No.
			Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	N
Did the gamma response	remain stable durin	g the test?												
Did the ins	strument alarm durin	g the test?												
Did the leaders														
Did the instrumer	nt display spurious in	dications?												
Comments:														
Completed by:				Date:										
completed by.				Date.										
Reviewed by:				Date:										
		Side 4												
	/													
				K										
		K												
/ —	A	$\overline{}$		+		Side 5								
2														
		3	Side 1											
	Side 3													
Note: Side 6 is oppos	site to Side 1.													



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		Se	ections 10 - Documentation		
			Test Data and Report		
Man	ufacturer:				
	Model:		Serial Number		
Requ	iirements:		acturer shall provide a report covering the type tests	performed	in
		10.2 Certif			
			acturer shall provide a certificate or other document ollowing information: (Requirements in data collection		ning at
	Note:	Only one of	data sheet per model is required. Comments are re-	quired when	a test
		requiremen	nt is not verified.		
	Requirement				No
			Requirement	Yes	110
			·		140
		Did the m	anufacturer provide a report on the tests performed?		
		Did the m	anufacturer provide a report on the tests performed?		
		Did the m	·		
		Did the m	anufacturer provide a report on the tests performed? Was contact information provided in the manual?		
		Did the m	anufacturer provide a report on the tests performed?		
			anufacturer provide a report on the tests performed? Was contact information provided in the manual? Did the manual describe the type of detector?		
			anufacturer provide a report on the tests performed? Was contact information provided in the manual?		
		\	anufacturer provide a report on the tests performed? Was contact information provided in the manual? Did the manual describe the type of detector? Was the exposure rate range defined in the manual?		
		\	anufacturer provide a report on the tests performed? Was contact information provided in the manual? Did the manual describe the type of detector?		
		\ Were the re	anufacturer provide a report on the tests performed? Was contact information provided in the manual? Did the manual describe the type of detector? Was the exposure rate range defined in the manual?		



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W	as information	provided regarding the wa	all thickness and	materials?		
	Was information provided regarding energy response?					
	Was information provided angle of incidence response?					
	VVC	as inioimation provided a	rigie of incluence	response:		
	Was information on accuracy, linearity and lower limit of detections provided?					
		Was the weigh	nt and dimensions	provided?		
	Did the manual contain information about battery requirements? Were results under environmental conditions provided? Were results of electrical tests provided?					
	Did operation instructions contain schematic electrical diagrams? Did operation instructions contain spare parts? Did operation instructions contain specifications?					
	Did operation instructions contain troubleshooting guide?					
Comments:						
Completed	l by:			Date:		
Reviewed	l by:			Date:		