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Wireline Technologies Broadband over Power Lines (Access)



More bandwidth than required Sell to customers over MV & LV 2G products can notch -35dB Make-ready & keep-ready work Gap noise erodes performance Limited distances & speeds EMC/emissions are site-variable















































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Su	bst	ati	on	Im	munit	ty Sta	andard	ls
Types of Equipment	IEC 608 Tele - c equip	870-2-1 control oment	IEC 60 Rela equij	255-26 aying oment	IEC 61000-6-5 Generic Substation	IEC 60439-1 Switchgear Controlgea	EN 61326 Process Measurement	EN 55024 Computers & Telecoms
Microwave control	,	(144433	1000 -000
Relays & assoc.	4			x			Tines	in the
Sensors			-	4	x		x	RT 11- 17 4
Switchgear						x	A stated	in the second
PC's							ALC: SHARE	x
Power devices					x		×	
Power controls					x		x	2.4 .44
Metering					▲	4	x	
2-way COM							1.00	x
Test Equipment							x	1.1.1
Networking equip.								x

engineering services	Green Power & the Modern Grid The EMC Threat						
EMC Standards for Protective Relays							
1. Letter	Emissions	Immunity					
Conducted	IEC 60255-25	IEC 60255-22-6					
Radiated	は一世で	IEC 60255-22-3					
Power-line	IEC 61000-3-2 IEC 61000-3-3	IEC 61000-4-8 IEC 61000-4-9 IEC 60255-11 IEC 60255-22-7					
ESD	and the second of	IEC 60255-22-2 IEEE C37.90.3					
EFT	37 · · ·	IEC 60255-22-4					
Surge		IEC 60255-22-5					
Surge Withstand	CHIE	IEC 60255-22-1 IEEE C37.90.1					









Green Power & the Modern Grid The Remaining Challenges

Conclusions

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Access to World markets is crucial Standards Testing enables this access Reliability is threatened by device physics Testing for Immunity validates Reliability Reliability is the ultimate <u>Quality</u> indicator



Green Power & the Modern Grid Acknowledgements

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