

1 Fast transient/burst generator

1.1 Wave shape of the pulse into 50 Ω load

1.1.1 Repetition frequency

Repetition frequency (5 kHz)				Repetition frequency (100 kHz)			
Indicated voltage [kV]	Measured [kHz]	Limits [kHz]	Results	Indicated voltage [kV]	Measured [kHz]	Limits [kHz]	Results
+0.25		5($\pm 20\%$) (4.0-6.0)		+0.25		100($\pm 20\%$) (80-120)	
-0.25				-0.25			
+0.5				+0.5			
-0.5				-0.5			
+1.0				+1.0			
-1.0				-1.0			
+2.0				+2.0			
-2.0				-2.0			
+4.0				+4.0			
-4.0				-4.0			

1.1.2 Rise time

Repetition frequency (5 kHz)				Repetition frequency (100 kHz)			
Indicated voltage [kV]	Measured [ns]	Limits [ns]	Results	Indicated voltage [kV]	Measured [ns]	Limits [ns]	Results
+0.25		5(± 1.5 ns) (3.5-6.5)		+0.25		5(± 1.5 ns) (3.5-6.5)	
-0.25				-0.25			
+0.5				+0.5			
-0.5				-0.5			
+1.0				+1.0			
-1.0				-1.0			
+2.0				+2.0			
-2.0				-2.0			
+4.0				+4.0			
-4.0				-4.0			

1.1.3 Pulse width

Repetition frequency (5 kHz)				Repetition frequency (100 kHz)			
Indicated voltage [kV]	Measured [ns]	Limits [ns]	Results	Indicated voltage [kV]	Measured [ns]	Limits [ns]	Results
+0.25		50(± 15 ns) (35-65)		+0.25		50(± 15 ns) (35-65)	
-0.25				-0.25			
+0.5				+0.5			
-0.5				-0.5			
+1.0				+1.0			
-1.0				-1.0			
+2.0				+2.0			
-2.0				-2.0			
+4.0				+4.0			
-4.0				-4.0			

1.1.4 Burst duration

Repetition frequency (5 kHz)				Repetition frequency (100 kHz)			
Indicated voltage [kV]	Measured [ms]	Limits [ms]	Results	Indicated voltage [kV]	Measured [ms]	Limits [ms]	Results
+0.25		15(±3 ms) (12-18)		+0.25		0.75(±0.15 ms) (0.60-0.90)	
-0.25				-0.25			
+0.5				+0.5			
-0.5				-0.5			
+1.0				+1.0			
-1.0				-1.0			
+2.0				+2.0			
-2.0				-2.0			
+4.0				+4.0			
-4.0				-4.0			

1.1.5 Burst period

Repetition frequency (5 kHz)				Repetition frequency (100 kHz)			
Indicated voltage [kV]	Measured [ms]	Limits [ms]	Results	Indicated voltage [kV]	Measured [ms]	Limits [ms]	Results
+0.25		300(±60 ms) (240-360)		+0.25		300(±60 ms) (240-360)	
-0.25				-0.25			
+0.5				+0.5			
-0.5				-0.5			
+1.0				+1.0			
-1.0				-1.0			
+2.0				+2.0			
-2.0				-2.0			
+4.0				+4.0			
-4.0				-4.0			

1.1.6 Peak voltage

Repetition frequency (5 kHz)				Repetition frequency (100 kHz)			
Indicated voltage [kV]	Measured [kV]	Limits [kV]	Results	Indicated voltage [kV]	Measured [kV]	Limits [kV]	Results
+0.25		+0.1125 — +0.1375		+0.25		+0.1125 — +0.1375	
-0.25		-0.1125 — -0.1375		-0.25		-0.1125 — -0.1375	
+0.5		+0.225 — +0.275		+0.5		+0.225 — +0.275	
-0.5		-0.225 — -0.275		-0.5		-0.225 — -0.275	
+1.0		+0.45 — +0.55		+1.0		+0.45 — +0.55	
-1.0		-0.45 — -0.55		-1.0		-0.45 — -0.55	
+2.0		+0.90 — +1.10		+2.0		+0.90 — +1.10	
-2.0		-0.90 — -1.10		-2.0		-0.90 — -1.10	
+4.0		+1.80 — +2.20		+4.0		+1.80 — +2.20	
-4.0		-1.80 — -2.20		-4.0		-1.80 — -2.20	

1.2 Wave shape of the pulse into 1000 Ω load

1.2.1 Repetition frequency

Repetition frequency (5 kHz)				Repetition frequency (100 kHz)			
Indicated voltage [kV]	Measured [kHz]	Limits [kHz]	Results	Indicated voltage [kV]	Measured [kHz]	Limits [kHz]	Results
+0.25		5($\pm 20\%$) (4.0-6.0)		+0.25		100($\pm 20\%$) (80-120)	
-0.25				-0.25			
+0.5				+0.5			
-0.5				-0.5			
+1.0				+1.0			
-1.0				-1.0			
+2.0				+2.0			
-2.0				-2.0			
+4.0				+4.0			
-4.0				-4.0			

1.2.2 Rise time

Repetition frequency (5 kHz)				Repetition frequency (100 kHz)			
Indicated voltage [kV]	Measured [ns]	Limits [ns]	Results	Indicated voltage [kV]	Measured [ns]	Limits [ns]	Results
+0.25		5(± 1.5 ns) (3.5-6.5)		+0.25	4	5(± 1.5 ns) (3.5-6.5)	
-0.25				-0.25	4		
+0.5				+0.5	4		
-0.5				-0.5	3		
+1.0				+1.0	4		
-1.0				-1.0	3		
+2.0				+2.0	3		
-2.0				-2.0	3		
+4.0				+4.0	4		
-4.0				-4.0	4		

1.2.3 Pulse width

Repetition frequency (5 kHz)				Repetition frequency (100 kHz)			
Indicated voltage [kV]	Measured [ns]	Limits [ns]	Results	Indicated voltage [kV]	Measured [ns]	Limits [ns]	Results
+0.25		50(-15 - +100) (35-150)		+0.25	7	50(-15 - +100) (35-150)	
-0.25				-0.25	7		
+0.5				+0.5	1		
-0.5				-0.5	8		
+1.0				+1.0	9		
-1.0				-1.0	7		
+2.0				+2.0	8		
-2.0				-2.0	7		
+4.0				+4.0	8		
-4.0				-4.0	7.5		

1.2.4 Burst duration

Repetition frequency (5 kHz)				Repetition frequency (100 kHz)			
Indicated voltage [kV]	Measured [ms]	Limits [ms]	Results	Indicated voltage [kV]	Measured [ms]	Limits [ms]	Results
+0.25		15(±3 ms) (12-18)		+0.25		0.75(±0.15 ms) (0.60-0.90)	
-0.25				-0.25			
+0.5				+0.5			
-0.5				-0.5			
+1.0				+1.0			
-1.0				-1.0			
+2.0				+2.0			
-2.0				-2.0			
+4.0				+4.0			
-4.0				-4.0			

1.2.5 Burst period

Repetition frequency (5 kHz)				Repetition frequency (100 kHz)			
Indicated voltage [kV]	Measured [ms]	Limits [ms]	Results	Indicated voltage [kV]	Measured [ms]	Limits [ms]	Results
+0.25		300(±60 ms) (240-360)		+0.25		300(±60 ms) (240-360)	
-0.25				-0.25			
+0.5				+0.5			
-0.5				-0.5			
+1.0				+1.0			
-1.0				-1.0			
+2.0				+2.0			
-2.0				-2.0			
+4.0				+4.0			
-4.0				-4.0			

1.2.6 Peak voltage

Repetition frequency (5 kHz)				Repetition frequency (100 kHz)			
Indicated voltage [kV]	Measured [kV]	Limits [kV]	Results	Indicated voltage [kV]	Measured [kV]	Limits [kV]	Results
+0.25		+0.192 — +0.288		+0.25		+0.192 — +0.288	
-0.25		-0.192 — -0.288		-0.25		-0.192 — -0.288	
+0.5		+0.384 — +0.576		+0.5		+0.384 — +0.576	
-0.5		-0.384 — -0.576		-0.5		-0.384 — -0.576	
+1.0		+0.760 — +1.140		+1.0		+0.760 — +1.140	
-1.0		-0.760 — -1.140		-1.0		-0.760 — -1.140	
+2.0		+1.520 — +2.280		+2.0		+1.520 — +2.280	
-2.0		-1.520 — -2.280		-2.0		-1.520 — -2.280	
+4.0		+3.040 — +4.560		+4.0		+3.040 — +4.560	
-4.0		-3.040 — -4.560		-4.0		-3.040 — -4.560	

2 Coupling/decoupling network

2.1 Three-phase CDN

2.1.1 Rise time

Line	Indicated voltage [kV]	Repetition frequency (5 kHz)			Repetition frequency (100 kHz)		
		Measured [ns]	Limits [ns]	Results	Measured [ns]	Limits [ns]	Results
L1	+4.0 -4.0		5.5(±1.5 ns) (4.0-7.0)			5.5(±1.5 ns) (4.0-7.0)	
L2	+4.0 -4.0						
L3	+4.0 -4.0						
N	+4.0 -4.0						
PE	+4.0 -4.0						

2.1.2 Pulse width

Line	Indicated voltage [kV]	Repetition frequency (5 kHz)			Repetition frequency (100 kHz)		
		Measured [ns]	Limits [ns]	Results	Measured [ns]	Limits [ns]	Results
L1	+4.0 -4.0		45(±15 ns) (30-60)			45(±15 ns) (30-60)	
L2	+4.0 -4.0						
L3	+4.0 -4.0						
N	+4.0 -4.0						
PE	+4.0 -4.0						

2.1.3 Peak voltage

Line	Indicated voltage [kV]	Repetition frequency (5 kHz)			Repetition frequency (100 kHz)		
		Measured [kV]	Limits [kV]	Results	Measured [kV]	Limits [kV]	Results
L1	+4.0 -4.0		+1.80 — +2.20 -1.80 — -2.20			+1.80 — +2.20 -1.80 — -2.20	
L2	+4.0 -4.0		+1.80 — +2.20 -1.80 — -2.20			+1.80 — +2.20 -1.80 — -2.20	
L3	+4.0 -4.0		+1.80 — +2.20 -1.80 — -2.20			+1.80 — +2.20 -1.80 — -2.20	
N	+4.0 -4.0		+1.80 — +2.20 -1.80 — -2.20			+1.80 — +2.20 -1.80 — -2.20	
PE	+4.0 -4.0		+1.80 — +2.20 -1.80 — -2.20			+1.80 — +2.20 -1.80 — -2.20	

3 Capacitive coupling clamp

3.1 Rise time

		Repetition frequency (5 kHz)			Repetition frequency (100 kHz)		
Side	Indicated voltage [kV]	Measured [ns]	Limits [ns]	Results	Measured [ns]	Limits [ns]	Results
L	+2 -2		5(±1.5 ns) (3.5-6.5)			5(±1.5 ns) (3.5-6.5)	
R	+2 -2						

3.2 Pulse width

		Repetition frequency (5 kHz)			Repetition frequency (100 kHz)		
Side	Indicated voltage [kV]	Measured [ns]	Limits [ns]	Results	Measured [ns]	Limits [ns]	Results
L	+2 -2		50(±15 ns) (35-65)			50(±15 ns) (35-65)	
R	+2 -2						

3.3 Peak voltage

		Repetition frequency (5 kHz)			Repetition frequency (100 kHz)		
Side	Indicated voltage [kV]	Measured [V]	Limits [V]	Results	Measured [V]	Limits [V]	Results
L	+2 -2		+800 — +1200 -800 — -1200			+800 — +1200 -800 — -1200	
R	+2 -2		+800 — +1200 -800 — -1200			+800 — +1200 -800 — -1200	