


DBM20

IMMUNITY DATA

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-----DBM20-----	
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Terminology used.

	Definition
FG Frame GND
 Earth
Ta Ambient temperature

※ Test results are reference data based on our standard measurement condition.

1. Summary of Immunity Test Result

MODEL : DBM20

Item	Standard	Test level	Criteria	Result	page	Notes & Conditions
Electrostatic Discharge Immunity Test	IEC61000-4-2	1,2,3,4	A	PASS	R-2	
Radiated Radio-Frequency Electromagnetic Field Immunity Test	IEC61000-4-3	1,2,3	A	PASS	R-3	
Electrical Fast Transient/Burst Immunity Test	IEC61000-4-4	a) 1,2,3 b) 1	A	PASS	R-4	*Note 2
Surge Immunity Test	IEC61000-4-5	a) 1,(2) b) 1	A	PASS	R-5	*Note 1 *Note 2
Conducted Disturbances Induced by Radio-Frequency Field immunity Test	IEC61000-4-6	1,2,3	A	PASS	R-6	

Detail of test condition refer to each test page.

*Note 1 : a) Level 2, common mode only

*Note 2 : b) For signal pin to FG only

Criteria A :

1. Input/Output voltage regulation not exceed +/- 5% of initial (before test) value during test.
2. Input/Output voltage must be within the regulation specification after the test.
3. No change on signals
4. No blinking on LEDs
5. Smoke and fire are not allowed.

2. Electrostatic Discharge Immunity Test (IEC61000-4-2)

MODEL : DBM20

(1) Equipment used:

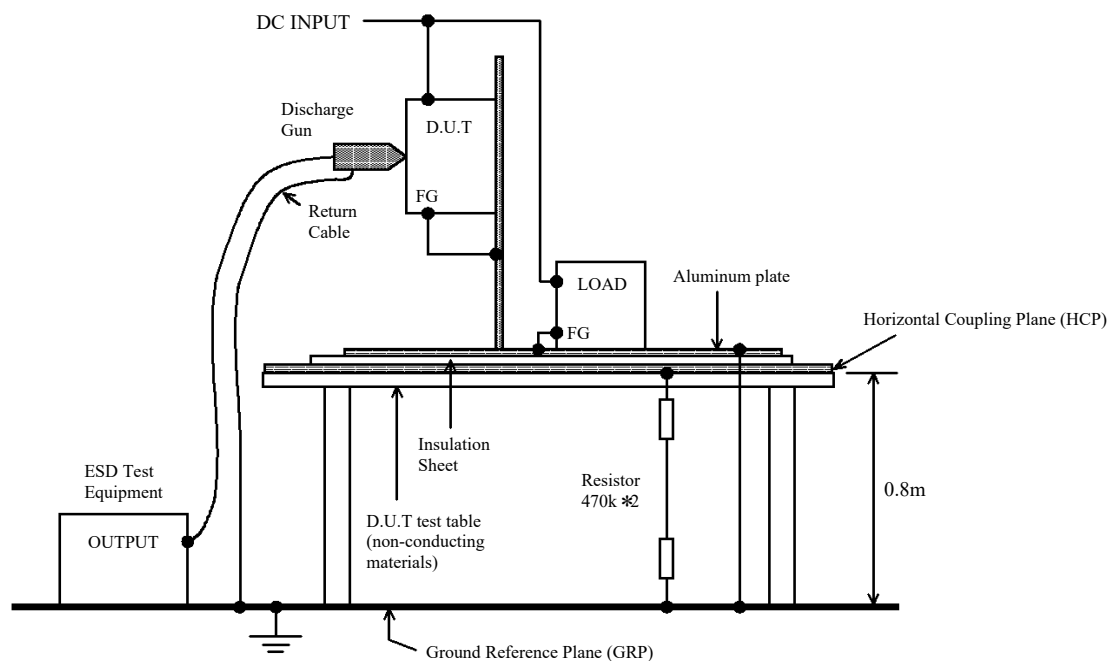
NSG 435 (Schaffner)

(2) Test Conditions :

Vin : 24Vdc Ready mode
 Load : 0%, 100% Polarity : +, -
 No. of Test : 10 times at each point Ambient Temperature : 25 °C

(3) Test Method and Device Test Point

Contact Discharge : FG, Case screw
 Air Discharge : input/output terminal (+V, -V, FG), signal terminal (inhibit, Ready, Buffer, +, DC OK), LEDs (RED, GREEN), Case screw.



(4) Acceptable Conditions

1. Must not have temporary function degradation that requires input restart.
2. Input/Output voltage must be within the regulation specification after the test.
3. No change on signals
4. No blinking on LEDs
5. Smoke and fire are not allowed.

(5) Results:

Contact Discharge (kV)	DBM20	Air Discharge (kV)	DBM20
2	PASS	2	PASS
4	PASS	4	PASS
6	PASS	8	PASS
8	PASS	15	PASS

3. Radiated Radio Frequency Electromagnetic Field Immunity Test (IEC61000-4-3)

MODEL : DBM20

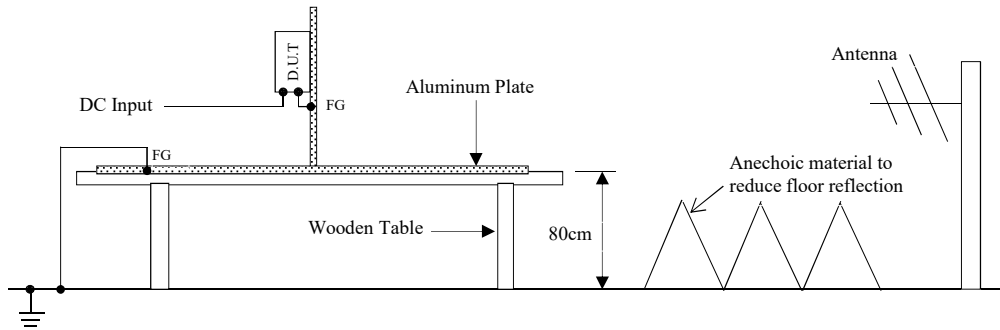
(1) Equipment used

- FL7218 AR Laser Probe
- MG3692C Anritsu Signal Generator
- N1913A Keysight EPM Series Power Meter
- E9304A Agilent E-Series Avg Power Sensor, 1nW-100mW (-60 to +20dBm) 9kHz - 6GHz
- STLP-9128E Schwarzbeck Log-Per Antenna
- CBA 1G-1200B Teseq Amplifier (80-1000MHz)
- BBHA-9120E Schwarzbeck Broad-band horn Antenna 450MHz-4GHz
- AS0827-110 Milmega Solid State Amplifier 0.8 - 2.7GHz

(2) Test Conditions

Vin	: 24Vdc	Ready mode	
Load	: 0%		Electromagnetic Frequency : 80 ~ 1000MHz 1000Hz ~ 2700MHz
Wave Angle	: Horizontal and Vertical		Distance : 3m
Frequency step	: 1% of preceding frequency		Test severity Level : 10V/m, 80% AM 1kHz
Sweep rate	: $\leq 1.5 \times 10^{-3}$ decades/s		Ambient Temperature : 25 °C
Test Angle	: Top/Bottom, both sides, front/back		

(3) Test Method



(4) Acceptable Conditions

1. Input/Output voltage regulation not exceed +/- 5% of initial (before test) value during test.
2. Input/Output voltage must be within the regulation specification after the test.
3. No change on signals
4. No blinking on LEDs
5. Smoke and fire are not allowed.

(5) Results:

Test Voltage (V)	DBM20
1	PASS
3	PASS
10	PASS

4. Electrical Fast Transient/Burst Immunity Test (IEC61000-4-4)

MODEL : DBM20

(1) Equipment used

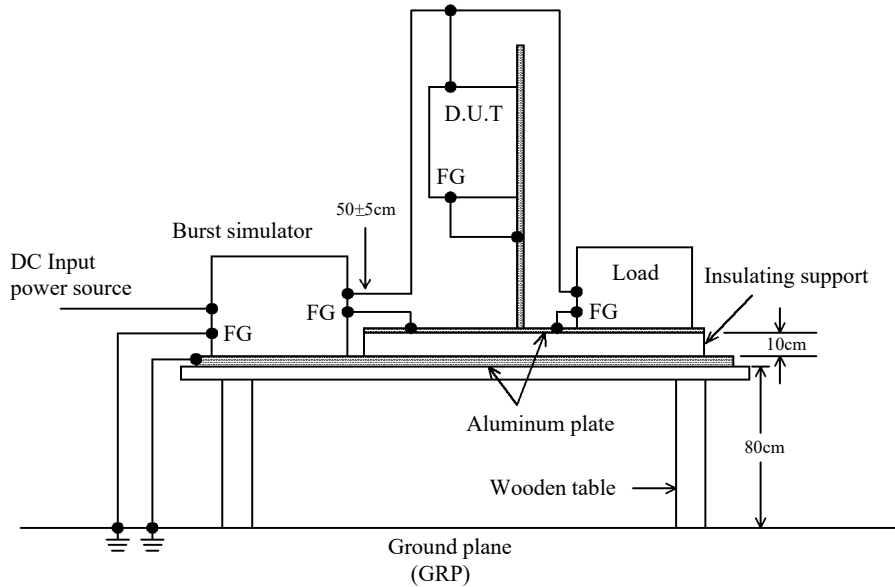
AMETEK Compact NX

(2) Test Conditions

V _{in}	: 24Vdc	Ready mode	Number of test	: 3 times
Load	: 0%, 100%		Polarity	: +, -
Coupling	: All coupling combinations		Ambient Temperature	: 25 °C

(3) Test Method

- a) Apply to (+V, -V, FG)
- b) Apply to each signal & FG (+, Ready, Buffer, Inhibit, DC OK - FG)



(4) Acceptable Conditions

- 1. Must not have temporary function degradation that requires input restart.
- 2. Input/Output voltage must be within the regulation specification after the test.
- 3. No change on signals
- 4. No blinking on LEDs
- 5. Smoke and fire are not allowed.

(5) Test Results

a) Input Pins : +V, -V, FG

Test Voltage (kV)	Repetition Rate (KHz)	DBM20
0.5	5	PASS
1.0	5	PASS
2.0	5	PASS

b) Signal Pin : +, Buffer, Ready, Inhibit, DC OK - FG

Test Voltage (kV)	Repetition Rate (KHz)	DBM20
0.5	5	PASS

5. Surge Immunity Test (IEC61000-4-5)

MODEL : DBM20

(1) Equipment used

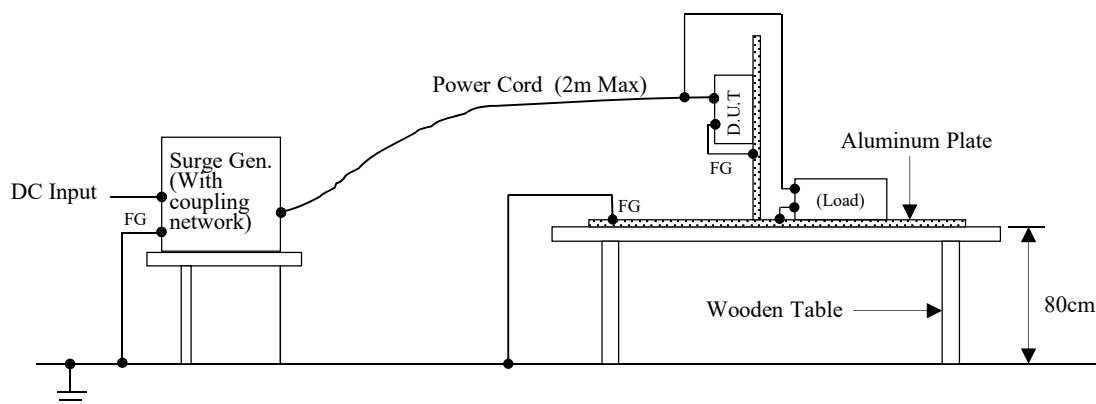
AMETEK Compact NX

(2) Test Conditions

Vin	: 24Vdc	Ready mode		
Load	: 0%, 100%		Number of test	: 5 times
Polarity	: +, -		Mode	: Common, Normal
Phase	: 0, 90 degree		Ambient Temperature	: 25 °C

(3) Test Method

- a) Apply to Common Mode (+V - FG, -V - FG) and Normal Mode (+V - -V)
- b) Apply to each signal & FG (+, Ready, Buffer, Inhibit, DC OK - FG)



(4) Acceptable Conditions

1. Must not have temporary function degradation that requires input restart.
2. Input/Output voltage must be within the regulation specification after the test.
3. No change on signals
4. No blinking on LEDs
5. Smoke and fire are not allowed.

(5) Test Results

a) Input Pins : +V, -V & FG

Test Voltage (kV) Common	DBM20	Test Voltage (kV) Normal	DBM20
0.5	PASS	0.5	PASS
1.0	PASS	-	

b) Signal Pins : +, Buffer, Ready, Inhibit, DC OK - FG

Test Voltage (kV) Normal	DBM20
0.5	PASS

6. Conducted Disturbances Induced by Radio-Frequency Field Immunity Test (IEC61000-4-6)

MODEL : DBM20

(1) Equipment used

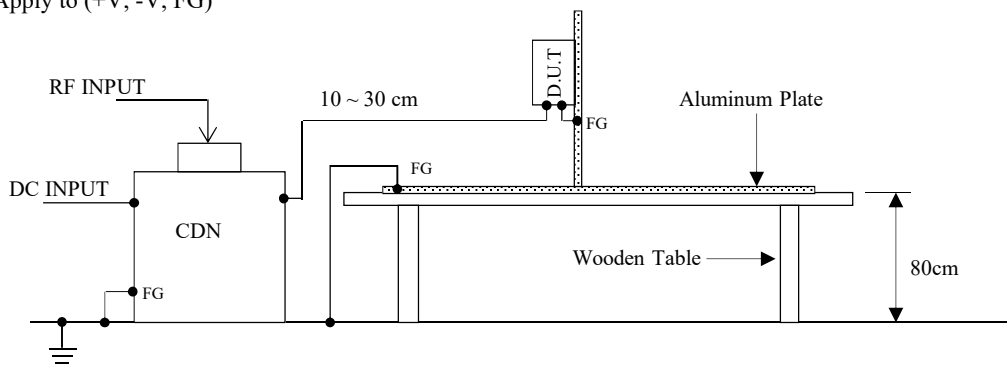
NSG-2070 (Schaffner RF Generator)
 CDN M016 (Teseq Coupling and Decoupling Network (2/3 - pin))

(2) Test Conditions

V _{in}	: 24Vdc	Ready mode	
Load	: 0%		Electromagnetic Frequency : 150kHz~80MHz
Frequency steps	: 1% of fundamental		Modulation : 80% AM, 1 kHz
Sweep rate	: 1.5×10^{-3} decades/sec		Test severity level : 10V, 80% AM 1kHz
Dwell time	: 3 sec		Ambient Temperature : 25 °C

(3) Test Method

Apply to (+V, -V, FG)



(4) Acceptable Conditions

1. Input/Output voltage regulation not exceed +/- 5% of initial (before test) value during test.
2. Input/Output voltage must be within the regulation specification after the test.
3. No change on signals
4. No blinking on LEDs
5. Smoke and fire are not allowed.

(5) Results

Test Voltage (V)	DBM20
1	PASS
3	PASS
10	PASS