

MODEL

DFS100A-24

### Conducted Emission (VCCI-B)

with Case

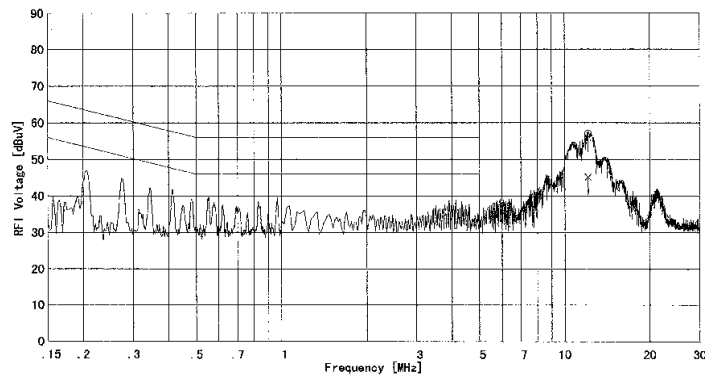
Conditions

Vin : 100VAC / 50Hz

Iout : 100%

Phase : L

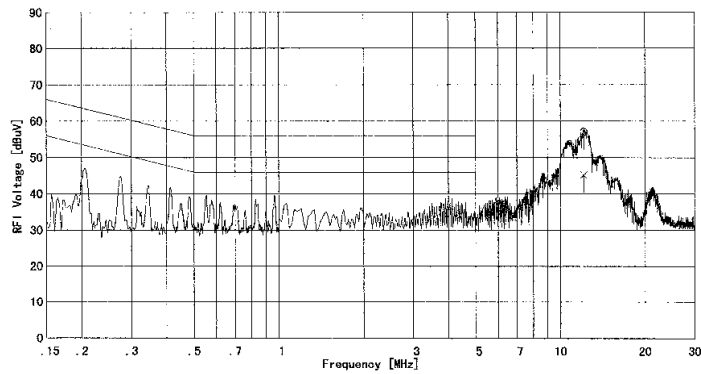
Point A (-MHz)		
Ref.	Limit	Measure
Data	(dBuV)	(dBuV)
QP	60.0	57.0
AV	—	—



VCCI Class B  
QP Limit  
VCCI Class B  
AV Limit

Phase : N

Point B (-MHz)		
Ref.	Limit	Measure
Data	(dBuV)	(dBuV)
QP	60.0	55.8
AV	—	—



VCCI Class B  
QP Limit  
VCCI Class B  
AV Limit

**Conducted Emission (EN55022-B)**

with Case

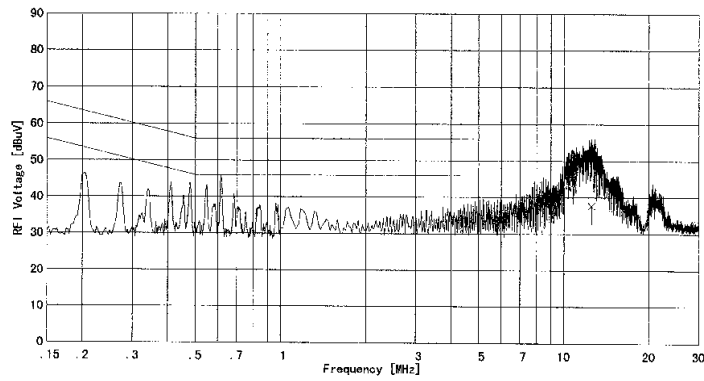
Conditions

Vin : 230VAC / 50Hz

Iout : 100%

Phase : L

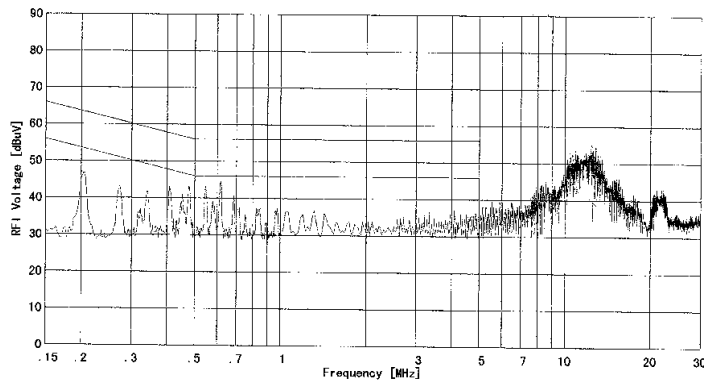
Point A (-MHz)		
Ref.	Limit	Measure
Data	(dBuV)	(dBuV)
QP	60.0	51.6
AV	—	—



EN55022 Class B  
QP Limit  
EN55022 Class B  
AV Limit

Phase : N

Point B (-MHz)		
Ref.	Limit	Measure
Data	(dBuV)	(dBuV)
QP	60.0	51.6
AV	—	—



EN55022 Class B  
QP Limit  
EN55022 Class B  
AV Limit

Radiated Emission (VCCI-B)

with Case

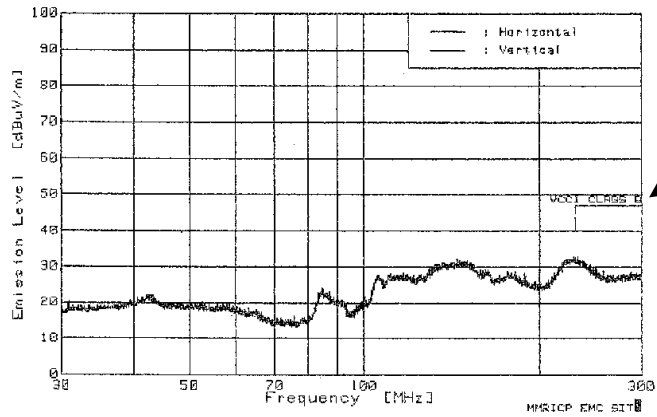
Conditions

Vin : 100VAC / 50Hz

Iout : 100%

HORIZONTAL:

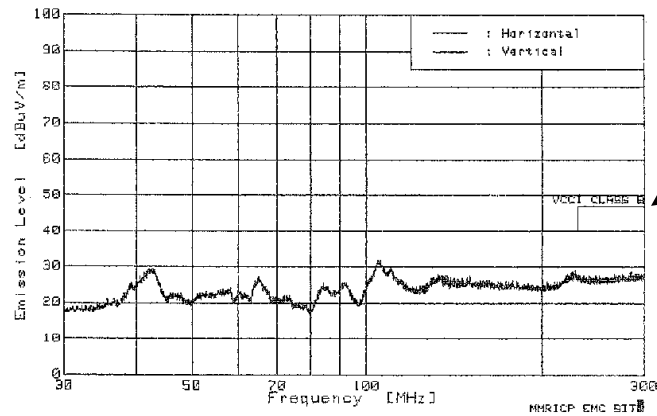
	Point A (-MHz)	
Ref.	Limit	Measure
Data	(dBuV)	(dBuV)
QP	-	-



VCCI ClassB  
QP Limit

VERTICAL:

	Point B (-MHz)	
Ref.	Limit	Measure
Data	(dBuV)	(dBuV)
QP	-	-



VCCI ClassB  
QP Limit

Radiated Emission (EN55022-B)

with Case

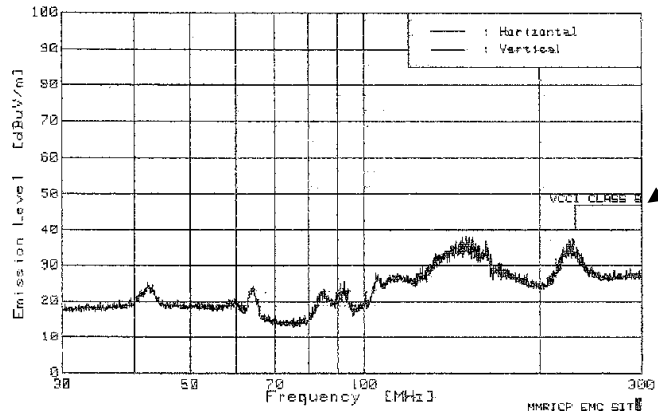
Conditions

Vin : 230VAC / 50Hz

Iout : 100%

HORIZONTAL:

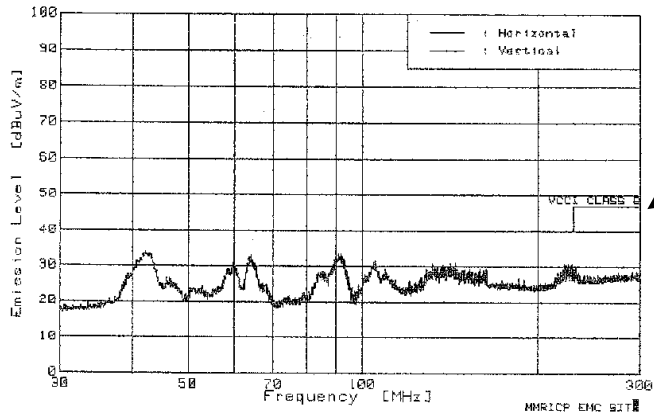
	Point A (-MHz)	
Ref.	Limit	Measure
Data	(dBuV)	(dBuV)
QP	-	-



EN55022  
Class B  
QP Limit

VERTICAL:

	Point B (-MHz)	
Ref.	Limit	Measure
Data	(dBuV)	(dBuV)
QP	-	-



EN55022  
Class B  
QP Limit

MODEL

DFS100A-12

Electrostatic Discharge Immunity Test (EN61000-4-2)

1. Equipment used

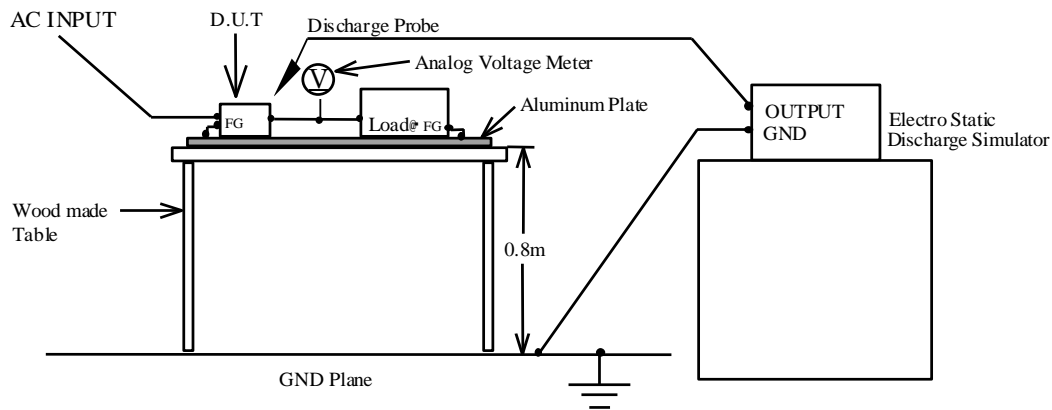
- Electro Static Discharge Simulator : Tokatsu Techno Plaza
- Discharge Gun : Tokatsu Techno Plaza
- Discharge Resistance : 330 Ω
- Discharge Capacity : 150pF

2. Test Condition

- Input Voltage : 200VAC
- Output Power : 100%
- Number of Tests : 10 times
- Ambient Temperature : 25°C
- Output Voltage : Rated
- Polarity : +,-
- Discharge Interval : 1 second
- with Case

3. Testing method and Device Test Point

- Contact Discharge : Case FG, +, -, FG Terminal



4. Acceptable Conditions

- 4-1. Output voltage regulation during the evaluation shall not be limited to  $\pm 5\%$  of the initial value (value before evaluation).
- 4-2. Output voltage after the evaluation shall be stable at the initial value (within specification range).
- 4-3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failure.

5. Test Result

Contact Discharge (kV)	Result
4	OK

Radiated Radio-Frequency Electromagnetic Field Immunity Test (EN61000-4-3)

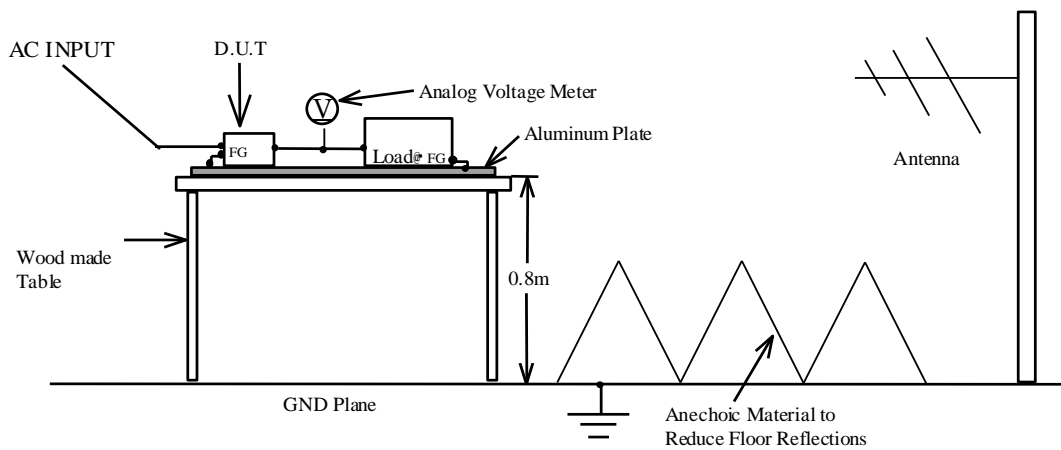
1. Equipment used

- Tokatsu Techno Plaza

2. Test Condition

- Input Voltage : 100 / 200 VAC
- Output Power : 100%
- Electromagnetic Frequency : 80 ~ 1000MHz
- Distance : 2.1m
- Sweep Condition : 1.0% Step Up, 2.8 seconds Hold
- Test Angle : Top/Bottom, Both, Both Sides, Front/Back
- Output Voltage : Rated
- Amplitude modulated : 80%, 1kHz
- Ambient Temperature : 25°C
- Wave Angle : Horizontal and Vertical

3. Testing method



4. Acceptable Conditions

- 4-1. Output voltage regulation during the evaluation shall not be limited to  $\pm 5\%$  of the initial value (value before evaluation).
- 4-2. Output voltage after the avaluation shall be stable at the initial value (within specification range).
- 4-3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failure.

5. Test Result

Radiation Field Strength (V/m)	Result
1	OK
3	OK
10	OK

**MODEL**

**DFS100A-12**

**Electrical Fast Transient / Burst Immunity Test (EN61000-4-4)**

**1. Equipment used**

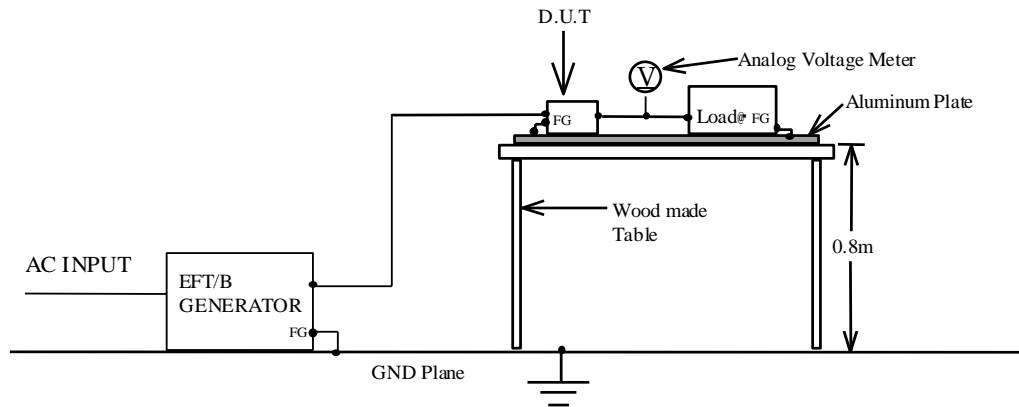
•EFT/B Generator : Tokatsu Techno Plaza

**2. Test Condition**

•Input Voltage : 100VAC  
•Output Power : 100%  
•Polarity : +,-  
•Number of Tests : 3 times  
•Output Voltage : Rated  
•Test Time : 1 minute  
•Ambient Temperature : 25°C

**3. Testing method and Device Test Point**

Apply to N , L1 , FG



**4. Acceptable Conditions**

- 4-1. Output voltage regulation during the evaluation shall not be limited to  $\pm 5\%$  of the initial value (value before evaluation).
- 4-2. Output voltage after the avaluation shall be stable at the initial value (within specification range).
- 4-3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failure.

**5. Test Result**

Test Voltage (kV)	Repetition Rate (kHz)	Result
2.0	5	OK

MODEL

DFS100A-12

Surge Immunity Test (EN61000-4-5)

1. Equipment used

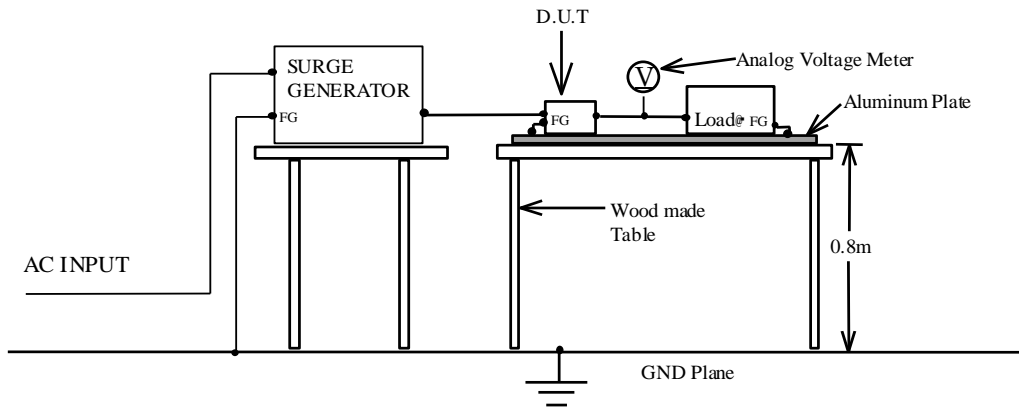
- Surge Generator : Tokatsu Techno Plaza
- Coupling Impedance : Common 12Ω : Normal 2Ω
- Coupling Capacitance : Common 9uF : Normal 18uF

2. Test Condition

- Input Voltage : 100VAC
- Output Power : 100%
- Polarity : +,-
- Phase : 0,90,270deg
- Output Voltage : Rated
- Number of tests : 3 times
- Mode : Common,Normal
- Ambient Temperature : 25°C

3. Testing method and Device Test Point

Apply to Common mode(N-FG , L1-FG) and Normal mode(N-L1)



4. Acceptable Conditions

- 4-1. Output voltage regulation during the evaluation shall not be limited to  $\pm 5\%$  of the initial value (value before evaluation).
- 4-2. Output voltage after the avaluation shall be stable at the initial value (within specification range).
- 4-3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failure.

5. Test Result

Common mode	
Test Voltage (kV)	Result
0.5	OK
1.0	OK
2.0	OK

Normal mode	
Test Voltage (kV)	Result
0.5	OK
1.0	OK



Electrostatic Discharge Immunity Test (EN61000-4-6)

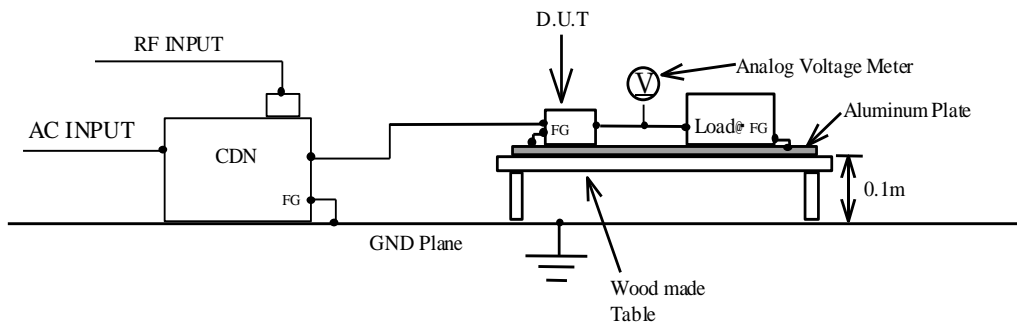
1. Equipment used

- RF POWER AMPLIFIER : Tokatsu Techno Plaza
- SIGNAL GENERATOR : Tokatsu Techno Plaza
- COUPLING DE-COUPPING NETWORK : Tokatsu Techno Plaza

2. Test Condition

- Input Voltage : 100 / 200 VAC
- Output Voltage : Rated
- Output Power : 100%
- Ambient Temperature : 25°C
- Sweep Condition : 1.0% Step Up, 2.8seconds Hold
- Electromagnetic Frequency : 150kHz~80MHz

3. Testing method



4. Acceptable Conditions

- 4-1. Output voltage regulation during the evaluation shall not be limited to  $\pm 5\%$  of the initial value (value before evaluation).
- 4-2. Output voltage after the avaluation shall be stable at the initial value (within specification range).
- 4-3. Along with 1 and 2, no discharge of fire or smoke, as well as no output failure.

5. Test Result

Test Voltage (V)	Result
1.0	OK
3.0	OK
10.0	OK

**MODEL** DFS100A-12

**Power Supply-Frequency Magnetic Field Immunity Test (EN61000-4-8)**

1. Equipment used

• Tokatsu Techno Plaza

2. Test Condition

• Input Voltage : 100VAC  
• Output Power : 100%  
• Ambient Temperature : 25°C

3. Test Result

• Input Frequency : 50Hz

Level	Magnetic Field Intensity (A/m)	x : Supply Current (A)	y : Supply Current (A)	z : Supply Current (A)
1	1	1.42	1.42	2.44
2	3	4.25	4.25	7.32
3	10	14.16	14.16	24.40
4	30	42.48	OK	OK

• Input Frequency : 60Hz

Level	Magnetic Field Intensity (A/m)	x : Supply Current (A)	y : Supply Current (A)	z : Supply Current (A)
1	1	1.44	1.44	2.52
2	3	4.32	4.32	7.55
3	10	14.41	14.41	25.18
4	30	43.24	OK	OK

## Calculated values of MTBF

## 1. 算出方法 Part count reliability projection

MIL-HDBK-217F NOTICE 2の部品点数信頼度予測法により算出されています。

Calculated based on part count reliability projection of MIL-HDBK-217F NOTICE 2.

<算出式>

$$\lambda_{equip} = \sum_{i=1}^{i=n} N_i (\lambda_g \pi_q)_i \quad \text{式を簡単にする為に品質ファクタ } \pi_q = 1 \text{ とする。}$$

$$MTBF = \frac{1}{\lambda_{equip}} \times 10^6 = \frac{1}{\sum_{i=1}^{i=n} N_i (\lambda_g)_i} \times 10^6 \quad \text{[時間] [hour]}$$

$\lambda_{equip}$  : 全機器故障率 (故障率/10<sup>6</sup>時間)  
Total Equipment Failure Rate.(Failure/10<sup>6</sup> hour)

$\lambda_g$  : i番目の同属部品に対する故障率 (故障率/10<sup>6</sup>時間)  
Generic Failure Rate for The ith Generic Part.

$N_i$  : i番目の同属部品個数  
Quantity of ith Generic Part.

$n$  : 異なった同属部品のカテゴリの数  
Number of Different Generic Part Categories.

$\pi_q$  : i番目の同属部品に対する品質ファクタ  
Generic Quality Factor for The ith Generic Part.

## 2. MTBF 値

$G_F$  : 地上・固定 (Ground, Fixed)

$$MTBF = 1 \times 10^6 / 5.541 = \frac{180,459}{\text{hour}} \quad \frac{20.6}{\text{year}}$$