

# TEST REPORT

Report reference No.  
21TR-K0301-1

Date & No. of reception  
November 10, 2021 (D21K0156)

Applicant (Name & address)  
Konami Amusement Co., Ltd.  
1, Ikejiri, Takata, Ichinomiya-shi, Aichi-ken, 491-0125 Japan

Name of product  
CONTROLLER

Model / type Ref.  
BF010

Rating and principal characteristics  
DC5V, 100mA

Test Standard  
FCC 47CFR Part 15 Subpart B (October 1, 2020 Edition) ClassB  
ANSI C63.4:2014

Test Result  
PASS

Date of issue  
November 12, 2021



  
Kazuo OHARA  
Director, Kansai Laboratory  
Japan Electrical Safety & Environment  
Technology Laboratories (JET)

Testing laboratory


Japan Electrical Safety & Environment Technology Laboratories

- JET Tokyo Laboratory  
5-14-12 Yoyogi, Shibuya-ku, Tokyo, 151-8545, Japan
- JET Yokohama Laboratory  
1-12-30 Motomiya, Tsurumi-ku, Yokohama, 230-0004, Japan
- JET Kansai Laboratory  
4-1, Koyo-cho Nishi, Higashinada-ku, Kobe, Hyogo, 658-0033, Japan
- JET Power Technology Testing Laboratory  
1-12-28 Motomiya, Tsurumi-ku, Yokohama, 230-0004, Japan
- Other Location ( )  
Address:

Date of sample received July 27, 2021

Date of test August 5, 2021 until August 5, 2021

Tested by (+ signature)  \_\_\_\_\_  
Kazuhiro YAMAMOTO

Approved by (+ signature)   
Shuichi UKIMORI

Test case verdicts

- N(.A.) : Test case does not apply to the test object.
- P(ass) : Test item does meet the requirement.
- F(ail) : Test item does not meet the requirement.
- : Test item not applied. (according to request from the applicant)

General remarks

- The test results presented in this report relate only to the object tested.
- This report shall not be reproduced except in full without the written approval of JET.

Name of Product : CONTROLLER  
 Model / type Ref. : BF010  
 Serial No. : -----  
 Rating : DC5V, 100mA

Earthing : None  
 Type of Product : Floor standing  
 Protection against Electric Shock : -----

Test Standard :

EMI Standard

- Electrical Appliance and Material Safety Law
- IEC(EN)
- FCC 47CFR Part 15 Subpart B (October 1, 2020 Edition) ClassB
- ANSI C63.4:2014

Low Frequency Emission Standard

- IEC(EN)61000-3-2
- 
- IEC(EN)61000-3-3
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Immunity Standard

- IEC(EN)
- CISPR(EN)
- IEC(EN)61000-4-2
- IEC(EN)61000-4-3
- IEC(EN)61000-4-4
- IEC(EN)61000-4-5
- IEC(EN)61000-4-6
- IEC(EN)61000-4-8
- IEC(EN)61000-4-9
- IEC(EN)61000-4-11
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Remarks (Reason to select the above test standards, and others)

Since the normal operating condition of this EUT is to display the operation program on the PC , it is necessary to display the operation program on the PC in order to operate this EUT.

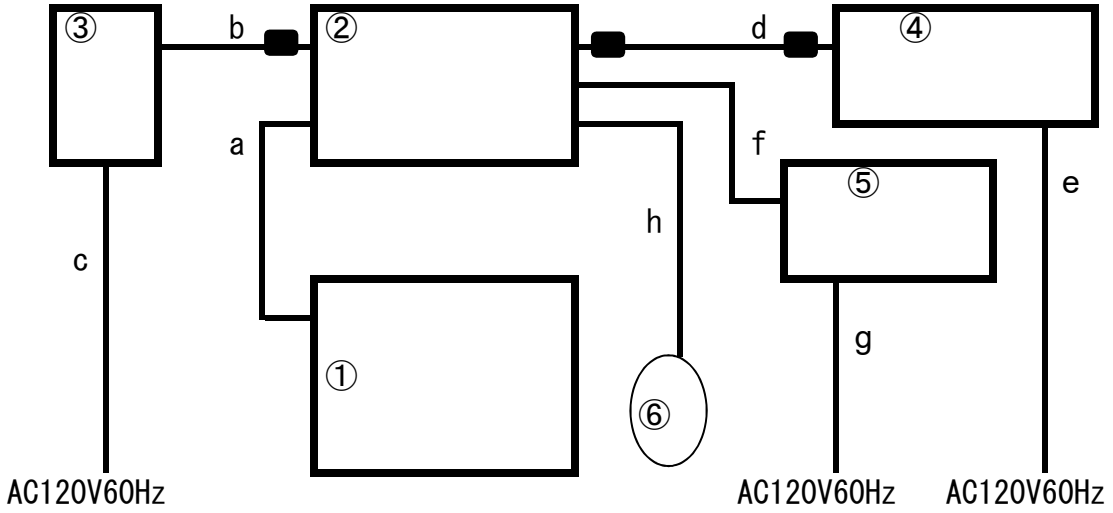
So both H pattern and smallest sized operation program were displayed on the PC monitor.

According to ANSI C63.4, it is preferable to place them in a row on a desk with a width of 1.5m.

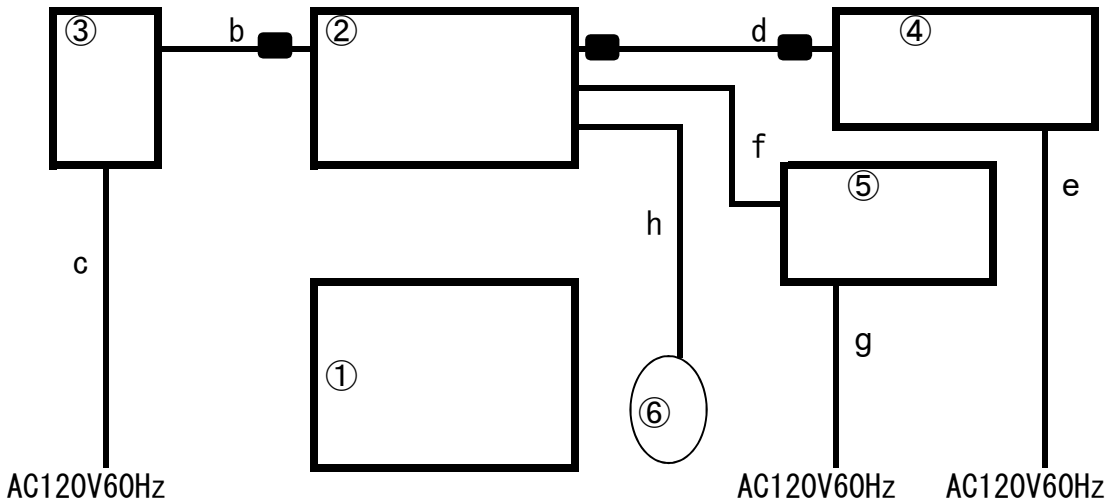
Considering that it would be difficult to fit the width of the table, the PERIPHERAL (printer) was placed 10cm in front.

Configuration of EUT (Information provided by the applicant)

1. USB Mode (EUT Power : USB 5V)



2. Bluetooth Mode (EUT Power : AA Battery × 3)



Configuration of EUT (Information provided by the applicant)

	Name	Model	Serial	Remarks
①	EUT	BF010	—	Controller
②	PC	ZBOOK 15 G2	CND5357280	HP,FCC DoC MARK
③	AC Adapter (PC)	HSTNN-CA27	WBYFC0AHH1Q064	HP,FCC DoC MARK
④	VGA Monitor	E178FPc	CN-0RY981-64180-7A8-3Z1S	DELL,FCC DoC MARK
⑤	Printer	MG6130	ACBM49967	Canon,FCC DoC MARK
⑥	Mouse	MS111-P	CN-011D3V-71581-16N-203B	DELL,FCC DoC MARK
⑦				
⑧				
⑨				
⑩				
⑪				
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	Cable name	Length(m)	Screened	Remarks
a	USB Cable	3	Shielded	
b	DC Cable (PC)	1.8	Unshielded	With core(Standard accessories)
c	AC Cable (PC)	1.75	Unshielded	
d	VGA Cable	2	Shielded	With two cores(Standard accessories)
e	AC Cable (VGA Monitor)	1.8	Unshielded	
f	LAN Cable	5	Unshielded	
g	AC Cable (Printer)	1.7	Unshielded	
h	USB Cable (Mouse)	1.8	Shielded	
i				
j				
k				
l				
m				
n				
o				
p				
q				
r				
s				
t				

Disturbance source (Information provided by the applicant):

Highest frequency: 2.5GHz (Bluetooth)

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~~Suppressor (Information provided by the applicant):~~

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~~Criteria of Immunity Tests (Information provided by the applicant)~~

~~Criteria A :~~

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~~Criteria B :~~

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~~Criteria C :~~

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~~Criteria D :~~

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Test Standard	Test Items	Verdict
<input type="checkbox"/> Electrical Appliance and Material Safety Law  <input checked="" type="checkbox"/> FCC 47CFR Part 15 Subpart B (October 1, 2020 Edition) ClassB  <input checked="" type="checkbox"/> ANSI C63.4:2014	<input checked="" type="checkbox"/> Conducted Disturbance Measurements See pages 11 ~ 14	P
	<input type="checkbox"/> Disturbance Power Measurements See pages ~	—
	<input type="checkbox"/> Radiated Disturbance (Magnetic Field) Measurements See pages ~	—
	<input checked="" type="checkbox"/> Radiated Disturbance (Electric Field) Measurements See pages 15 ~ 22	P
	<input type="checkbox"/> Radiation Disturbance Power Measurements See pages ~	—
	<input type="checkbox"/> Antenna Terminal Voltage Measurements See pages ~	—
	<input type="checkbox"/> See pages ~	—
	<input type="checkbox"/> See pages ~	—
<input type="checkbox"/> IEC(EN)61000-3-2  <input type="checkbox"/>	<input type="checkbox"/> Harmonic Current Measurements See pages ~	—
<input type="checkbox"/> IEC(EN)61000-3-3  <input type="checkbox"/>	<input type="checkbox"/> Voltage Fluctuation and Flicker Measurements See pages ~	—

Remark :  shows applied standards and items.

The SCOPE of VLAC test laboratory accreditation according to IEC/ISO 17025 is following.

**Emission tests**

VCCI Technical Requirements:VCCI-CISPR 32,CISPRJ 15,CISPRJ 32  
FCC Part15 Subpart B (ANSI C63.4:2014)  
CISPR14-1, CISPR22, CISPR32  
EN55014-1, EN55022, EN55032  
J55014-1, J55022,  
AS/NZS CISPR14.1, AS/NZS CISPR22,  
K00014-1, K00022, KN22



## Test Equipment (for Conducted Disturbance Measurements)

This test was conducted in the following room.

- Shielded Room 1A(FCC JP5193, VCCI A-0258)

Measurement Software	EP5/CE	Toyco Corporation	Version : 5.6.020	Calibration due date	Interval (year)
<b>Test Receiver / Spectrum Analyzer</b>					
<input type="checkbox"/>	ESR26	ROHDE&SCHWARZ	K355018Aa	2022/4/30	1
<input checked="" type="checkbox"/>	ESR3	ROHDE&SCHWARZ	K355019Aa	2022/4/30	1
<input type="checkbox"/>	ESCI	ROHDE&SCHWARZ	K354033Na	2021/12/31	1
<b>Test Receiver</b>					
<input type="checkbox"/>	KNM-2402	Kyoritsu Electrical Works	K354040Aa	2022/2/28	1
<b>Spectrum Analyzer</b>					
<input type="checkbox"/>	E4411B	Agilent Technology	K354029Ma	2021/12/31	1
<input type="checkbox"/>	E4411B	Agilent Technology	K354018Aa	2022/1/31	1
<b>LISN</b>					
<input type="checkbox"/>	KNW-341C	Kyoritsu Electrical Works	K354007Aa	2022/6/30	1
<input type="checkbox"/>	KNW-341C	Kyoritsu Electrical Works	K354008Aa	2021/12/31	1
<input checked="" type="checkbox"/>	KNW-341F	Kyoritsu Electrical Works	K355041Aa	2022/6/30	1
<input checked="" type="checkbox"/>	KNW-242F	Kyoritsu Electrical Works	K355042Aa	2022/7/31	1
<input checked="" type="checkbox"/>	KNW-242F	Kyoritsu Electrical Works	K355043Aa	2022/7/31	1
<b>Hi-Impedance Probe</b>					
<input type="checkbox"/>	KNW-410C	Kyoritsu Electrical Works	K354012Aa	2022/7/31	1
<input type="checkbox"/>	KNW-410C	Kyoritsu Electrical Works	K354013Aa	2022/3/31	1
<b>Artificial Hand</b>					
<input type="checkbox"/>	K-9003	Kyoritsu Electrical Works	K354023Aa	2022/6/30	1
<input type="checkbox"/>	K-9003	Kyoritsu Electrical Works	K354024Aa	2022/1/31	1
<b>ISN</b>					
<input type="checkbox"/>	ST08	TESEQ	K355046Aa	2022/5/31	1
<input type="checkbox"/>	T8-CAT6	TESEQ	K355045Aa	2022/5/31	1
<input type="checkbox"/>	T8	TESEQ	K355044Aa	2022/5/31	1
<b>Current Probe</b>					
<input type="checkbox"/>	F-51	Fischer Custom Communications	K355084Aa	2022/5/31	1
<b>Decoupling Clamp</b>					
<input type="checkbox"/>	KEMA801A	TESEQ	K355083Aa	not required	---
<b>Terminator (50Ω)</b>					
<input type="checkbox"/>	Terminator (50Ω)	---	K445017Aa	2022/7/31	1
<input checked="" type="checkbox"/>	Terminator (50Ω)	---	K445015Aa	2022/7/31	1
<input type="checkbox"/>	Terminator (50Ω)	---	K445016Aa	2022/7/31	1
<input checked="" type="checkbox"/>	Terminator (50Ω)	---	K448001Aa	2022/7/31	1
<b>Coaxial cable / RF Switch</b>					
<input checked="" type="checkbox"/>	-----	---	K445004Ba,K355027Ec,K448003Aa	2022/6/30	1
<b>Digital thermo-hygrograph</b>					
<input type="checkbox"/>	TR-77Ui (AC)	T&D	K366175Aa	2022/1/31	1
<input checked="" type="checkbox"/>	TR-77Ui (S1A)	T&D	K366155Aa	2022/1/31	1
<input type="checkbox"/>	TR-77Ui (S2A)	T&D	K366166Aa	2022/1/31	1

## Test Equipment (for Radiated Disturbance Measurements(30M-1000MHz))

This test was conducted in the shielded room (FCC JP5193, VCCI A-0258).

Measurement Software EP5/RE Toyo Corporation Version : 6.00.010

Test Receiver / Spectrum Analyzer			Calibration due date	Interval (year)	
<input checked="" type="checkbox"/>	ESR26	ROHDE&SCHWARZ	K355018Aa	2022/4/30	1
<input type="checkbox"/>	ESR3	ROHDE&SCHWARZ	K355019Aa	2022/4/30	1
<input type="checkbox"/>	ESCI	ROHDE&SCHWARZ	K354033Na	2021/12/31	1
Broadband Antenna					
<input checked="" type="checkbox"/>	BBA9106	Schwarzbeck	K355052Aa/K355050Aa	2022/5/31	2
<input type="checkbox"/>	BBA9106	Schwarzbeck	K355053Aa/K355051Aa	2022/5/31	2
<input checked="" type="checkbox"/>	UHALP9108A	Schwarzbeck	K355054Aa	2022/10/31	2
<input type="checkbox"/>	UHALP9108A	Schwarzbeck	K355055Aa	2022/10/31	2
Pre-amplifier					
<input checked="" type="checkbox"/>	310N	Sonoma	K355057Aa	2022/6/30	1
Coaxial cable / RF Switch					
<input checked="" type="checkbox"/>	-----	---	W202,W002,W107,W105,W104,W102,W101,K354033Nb,K445013Aa	2022/6/30	1
Digital thermo-hygrograph					
<input checked="" type="checkbox"/>	TR-77Ui (AC)	T&D	K366175Aa	2022/1/31	1

## (for Radiated Disturbance Measurements(above 1GHz))

This test was conducted in the Anechoic Chamber (FCC JP5193, VCCI A-0258).

Measurement Software EP5/RE Toyo Corporation Version : 6.00.010

Test Receiver / Spectrum Analyzer					
<input checked="" type="checkbox"/>	ESR26	ROHDE&SCHWARZ	K355018Aa	2022/4/30	1
Double Ridged Guide Antenna					
<input checked="" type="checkbox"/>	3117	ETS-Lindgren	K355056Aa	2022/3/31	2
<input type="checkbox"/>	TR17206	ADVANTEST	EM-080	2023/5/31	2
Pre-amplifier					
<input checked="" type="checkbox"/>	TPA0118-36	TOYO Corporation	K355058Aa	2022/6/30	1
Coaxial cable / RF Switch					
<input checked="" type="checkbox"/>	-----	---	W202,W203	2022/6/30	1
Digital thermo-hygrograph					
<input checked="" type="checkbox"/>	TR-77Ui (AC)	T&D	K366175Aa	2022/1/31	1

# Conducted Disturbance Measurements

Name of Product : CONTROLLER  
 Model / type Ref. : BF010  
 Serial No. : -----  
 Earthing : None  
 Type of Product : Floor standing

## Test Standard (Test Procedure)

- Electrical Appliance and Material Safety Law
- IEC(EN)
- FCC 47CFR Part 15 Subpart B (October 1, 2020 Edition) ClassB (PCM-77-75)
- ANSI C63.4:2014 (PCM-77-75)

Measurement uncertainty : 2.6dB (Expanded uncertainty has confidential interval approx. 95% (k=2).)  
 (150kHz-30MHz) for AMN

Remarks :

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Test Result :  Passed  Failed

# Conducted Disturbance Measurements

## (Mains Terminal)

Date : August 5, 2021 Engineer : Kazuhiro YAMAMOTO

Temp. : 22 °C R.H. : 52 %

Operating conditions :

PC Power : 120V 60Hz

EUT Power : From PC (USB 5V)

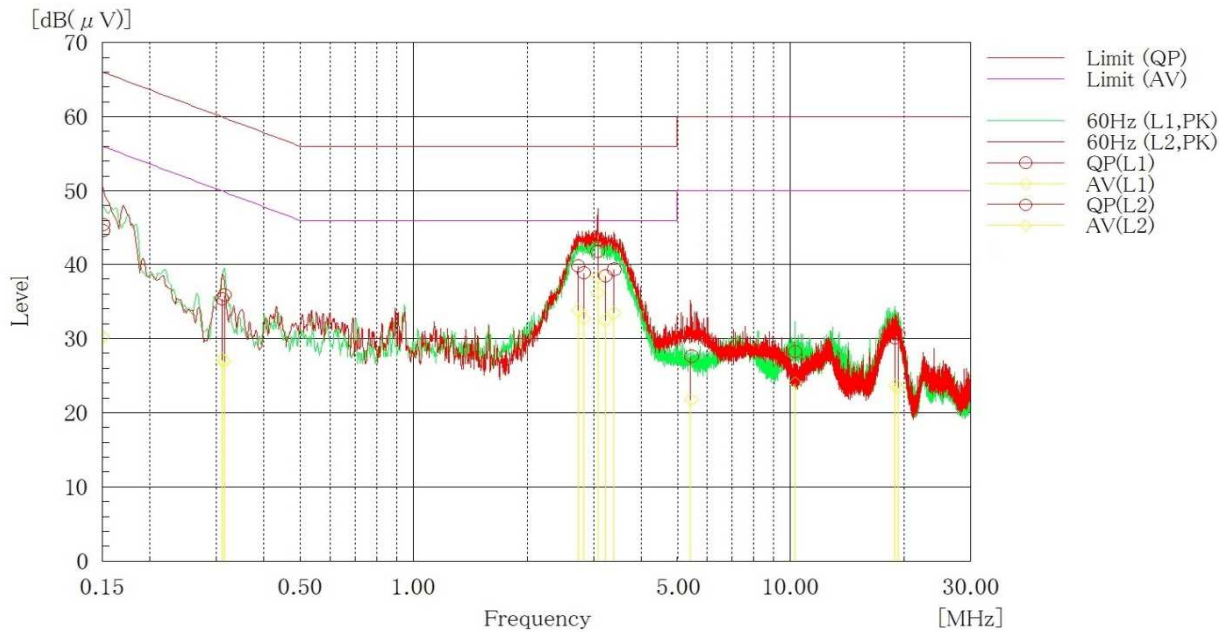
Freq. [MHz]	Corr. Factor [dB]	Line	Quasi Peak				Average			
			Meter [dBμV]	Meas. Value [dBμV]	Limit [dBμV]	Margin [dB]	Meter [dBμV]	Meas. Value [dBμV]	Limit [dBμV]	Margin [dB]
0.150	10.9	L1	33.7	44.6	66.0	21.4	19.3	30.2	56.0	25.8
0.315	10.4	L1	25.4	35.8	59.8	24.0	16.5	26.9	49.8	22.9
2.821	10.4	L1	28.5	38.9	56.0	17.1	22.3	32.7	46.0	13.3
3.071	10.3	L1	31.5	41.8	56.0	14.2	25.9	36.2	46.0	9.8
3.225	10.3	L1	28.1	38.4	56.0	17.6	22.1	32.4	46.0	13.6
10.285	10.8	L1	17.5	28.3	60.0	31.7	13.2	24.0	50.0	26.0
18.914	11.3	L1	18.8	30.1	60.0	29.9	12.4	23.7	50.0	26.3
0.150	10.9	L2	34.5	45.4	66.0	20.6	19.3	30.2	56.0	25.8
0.311	10.4	L2	24.9	35.3	59.9	24.6	16.8	27.2	49.9	22.7
2.723	10.5	L2	29.3	39.8	56.0	16.2	23.3	33.8	46.0	12.2
3.073	10.4	L2	33.0	43.4	56.0	12.6	27.8	38.2	46.0	7.8
3.396	10.5	L2	28.8	39.3	56.0	16.7	23.0	33.5	46.0	12.5
5.445	10.6	L2	17.0	27.6	60.0	32.4	11.1	21.7	50.0	28.3
19.316	11.3	L2	19.3	30.6	60.0	29.4	12.1	23.4	50.0	26.6

Remarks :

USB Mode

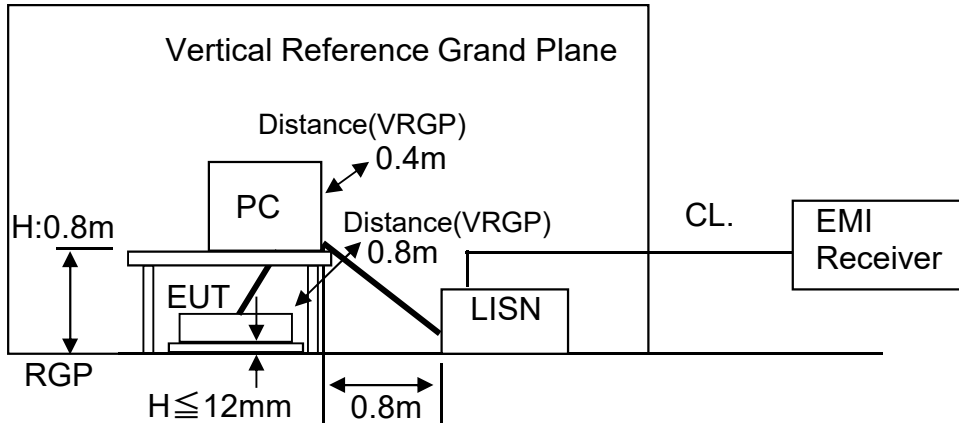
Test Result :  Passed  Failed

# Conducted Disturbance Measurements



## Conducted Disturbance Measurements

Test arrangement of CE.



**Meas. Value = Meter + (Corr.Factor)**

**Corr.Factor = CL + LISN Factor**

The EUT was arranged in a typical equipment configuration and placed on an insulating material above the conducting ground plane, floor of a shield room. Styrofoam with a height of 80cm was positioned 40cm away from the wall of the Vertical-reference ground plane.

The LISN was positioned on the floor of the shield room 80cm from the side of the EUT.

The power cord of the EUT was connected to the LISN.

A second LISN was positioned on the floor of the shield room 80cm from the side of the supporting equipment.

ALL power cords except the EUT were then powered from the second LISN. Power line conducted emissions testing was carried out individually for each current carrying conductor of the EUT.

The excess length of lead between the system and the LISN receptacle was folded back and forth to form a bundle not exceeding 40cm in length.

The shield room, conducting ground plane, analyzer and LISN were bonded together to the protective earth ground.

Preliminary testing was performed to identify the frequencies of the emissions that had the highest amplitudes.

The cables were repositioned to obtain maximum amplitude of measured EMI level.

Once the worst case configuration was identified, plots were made of the EMI from 150kHz to 30MHz then the data was recorded with maximum conducted emissions levels.

## Radiated Disturbance (Electric Field) Measurements

Name of Product : CONTROLLER  
 Model / type Ref. : BF010  
 Serial No. : -----  
 Earthing : None  
 Type of Product : Floor standing

### Test Standard (Test Procedure)

Electrical Appliance and Material Safety Law

IEC(EN)

FCC 47CFR Part 15 Subpart B (October 1, 2020 Edition) ClassB (PCM-77-75)

ANSI C63.4:2014 (PCM-77-75)

Measuring Distance : 3m (30MHz-1000MHz)  
 3m ( $\geq$ 1GHz)

Measurement uncertainty : 5.6dB (Expanded uncertainty has confidential interval approx. 95% (k=2).)  
 (30MHz-1000MHz)  
 4.7dB (Expanded uncertainty has confidential interval approx. 95% (k=2).)  
 ( $\geq$ 1GHz)

### Remarks :

Since the maximum frequency of the product is 2.5 GHz, the measurement was performed up to 12.5 GHz of the 5th harmonic.

It's necessary to conduct the conducted disturbance measurement for the AC adaptor of the PC, because the PC is the power supply unit for the EUT.

So the measurement arrangement of both the conducted disturbance measurement and the radiated disturbance measurement were made with the AC adaptor of the PC included.

Test Result :  Passed  Failed

# Radiated Disturbance (Electric Field) Measurements (Frequency Range : 30M~1000MHz)

Date : August 5, 2021 Engineer : Kazuhiro YAMAMOTO

Temp. : 22 °C R.H. : 52 %

Operating conditions :

PC Power : 120V 60Hz

EUT Power : From PC (USB 5V)

Frequency [MHz]	Corr. Factor [dB]	Meter [dBμV]	Meas. Value [dBμV/m]	Polarity	Limit [dBμV/m]	Margin [dB]	Ant. Height [cm]	Angle [°]
47.80	-15.5	42.9	27.4	Vertical	40.0	12.6	101	351
66.26	-16.3	44.8	28.5	Vertical	40.0	11.5	101	146
73.11	-16.3	43.4	27.1	Vertical	40.0	12.9	104	260
77.22	-16.3	46.2	29.9	Vertical	40.0	10.1	100	258
98.39	-15.4	48.6	33.2	Horizontal	43.5	10.3	239	244
214.38	-9.4	42.8	33.4	Horizontal	43.5	10.1	158	220
224.92	-8.9	43.9	35.0	Horizontal	46.0	11.0	209	206
276.07	-6.4	43.6	37.2	Vertical	46.0	8.8	100	330
456.22	-6.1	43.9	37.8	Horizontal	46.0	8.2	100	322
966.49	1.9	27.8	29.7	Horizontal	54.0	24.3	100	291

Remarks :

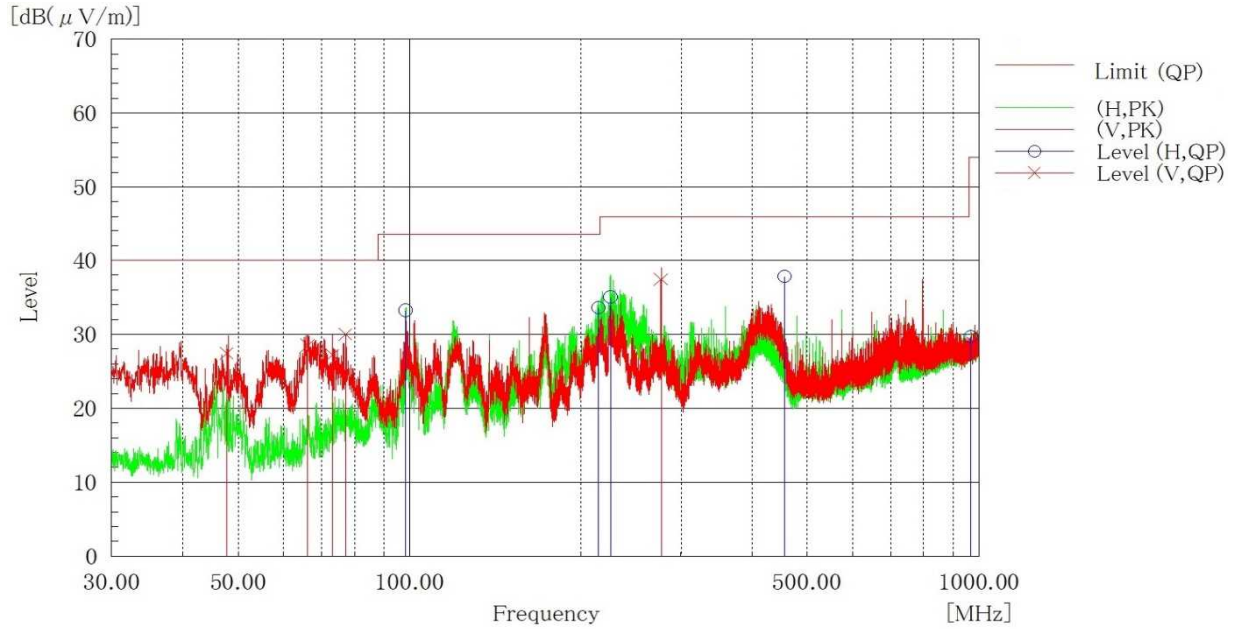
USB Mode  
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Test Result :  Passed  Failed

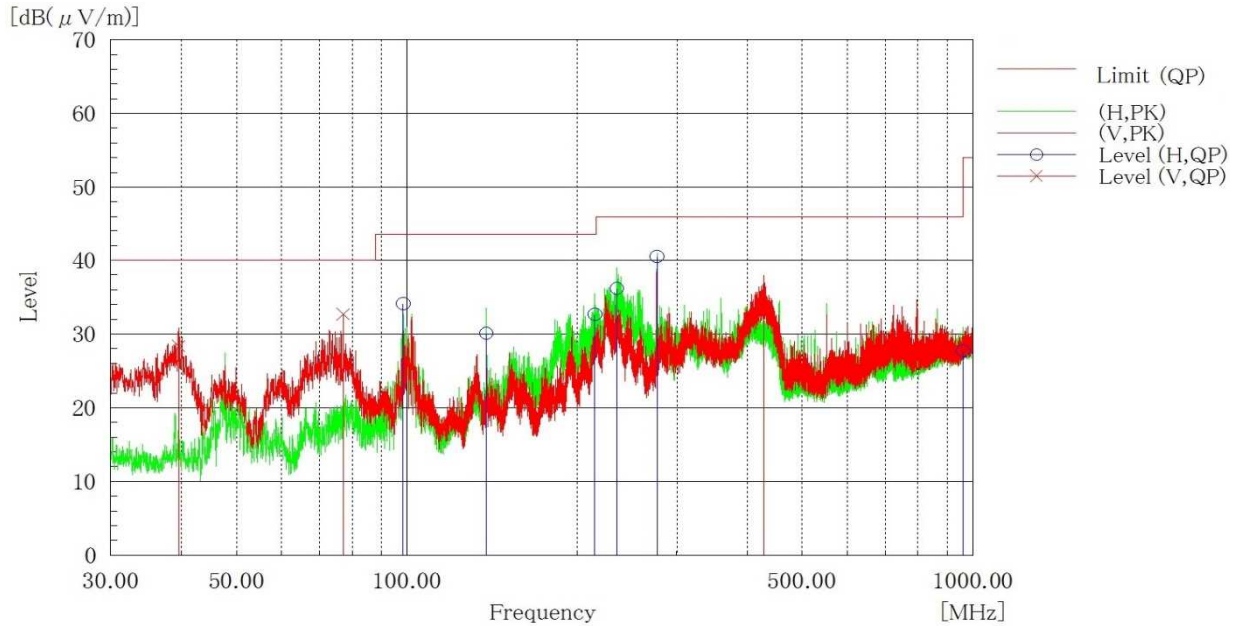




# Radiated Disturbance (Electric Field) Measurements



USB Mode



Bluetooth Mode

Below 1GHz

## Radiated Disturbance (Electric Field) Measurements (Frequency Range : 1G~18GHz)

Date : August 5, 2021 Engineer : Kazuhiro YAMAMOTO

Temp. : 22 °C R.H. : 52 %

Operating conditions :

PC Power : 120V 60Hz

EUT Power : From PC (USB 5V)

Frequency [GHz]	Corr. Factor [dB]	Peak				Average				Polarity	Ant. Height [cm]	Angle [°]
		Meter [dBμV]	Meas. Value [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Meter [dBμV]	Meas. Value [dBμV/m]	Limit [dBμV/m]	Margin [dB]			
1.07225	-8.4	57.9	49.5	74.0	24.5	38.5	30.1	54.0	23.9	Vertical	172	47
1.59575	-7.2	58.0	50.8	74.0	23.2	38.0	30.8	54.0	23.2	Vertical	188	294
1.75725	-6.6	57.4	50.8	74.0	23.2	35.9	29.3	54.0	24.7	Vertical	113	190
2.39675	-3.9	58.6	54.7	74.0	19.3	37.1	33.2	54.0	20.8	Vertical	101	293
11.99625	8.2	45.9	54.1	74.0	19.9	31.4	39.6	54.0	14.4	Vertical	149	337
12.19875	8.2	45.6	53.8	74.0	20.2	31.3	39.5	54.0	14.5	Horizontal	233	210

Remarks :

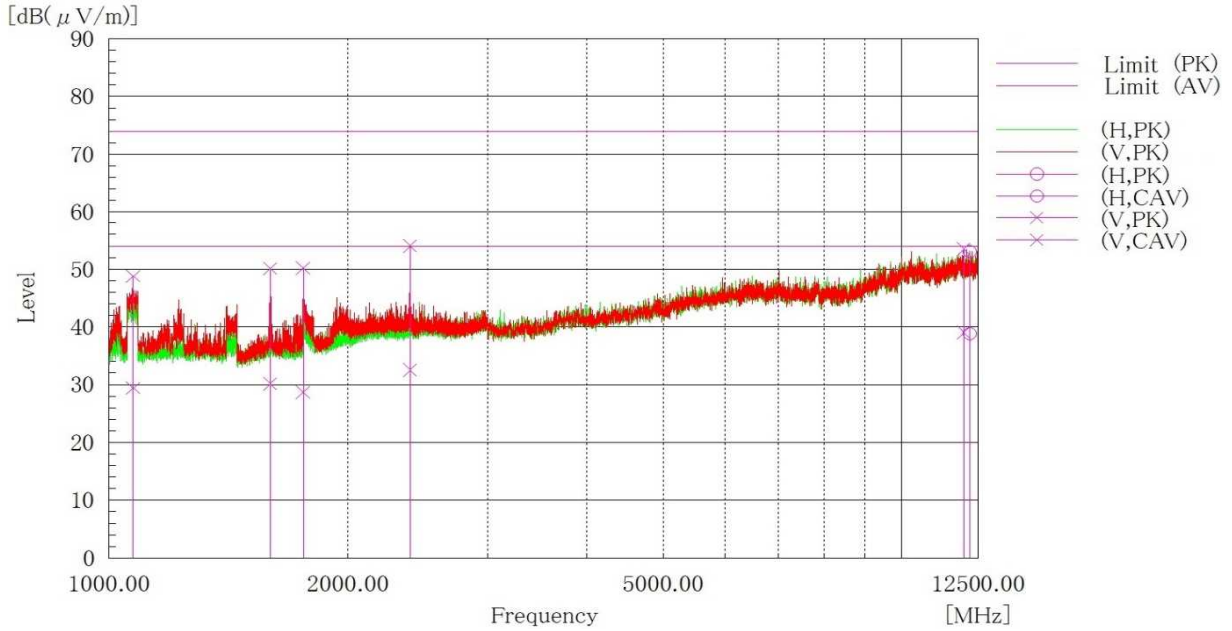
USB Mode

Internal max. frequency:2.5GHz (Measurement frequency up to 12.5GHz)

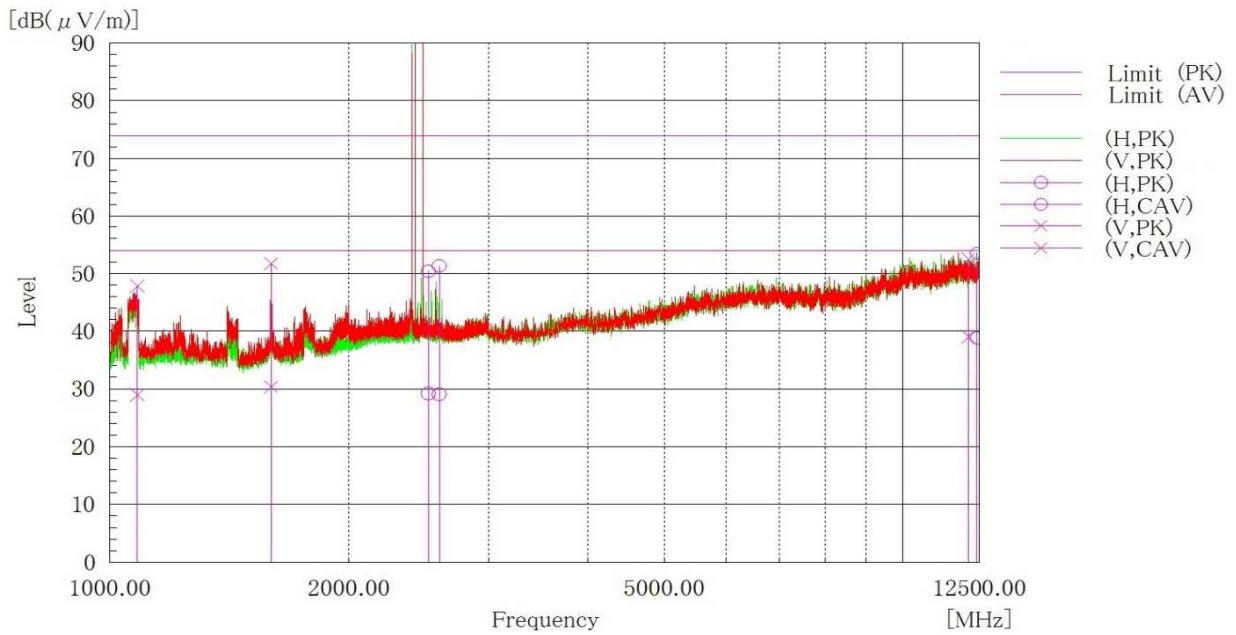
Test Result :  Passed  Failed



# Radiated Disturbance (Electric Field) Measurements



USB Mode

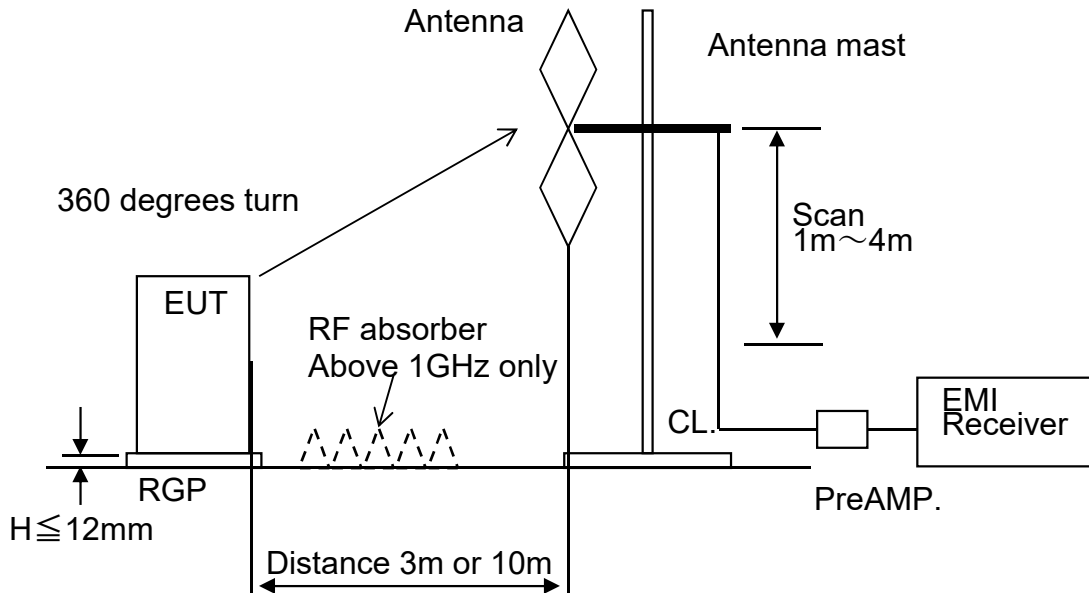


Bluetooth Mode

Above 1GHz

# Radiated Disturbance (Electric Field) Measurements

Test arrangement of RE.



$$\text{Meas. Value} = \text{Meter} + (\text{Corr. Factor})$$

$$\text{Corr. Factor} = \text{CL.} + \text{PreAMP. Gain} + \text{ANTENNA Factor}$$

The EUT was arranged in a typical equipment configuration and operated through all of its various modes.

The interconnecting cables of the EUT and supporting equipment were manipulated such as to obtain maximum levels of radiated emissions within the range of likely configurations.

Radiated emissions measurements were performed to identify the frequencies that produced the highest emissions.

The EUT, supporting equipment and cable locations were noted and reconfigured at the SAC.

The highest radiated emission was then re-maximized at this location before final radiated emissions measurements were performed.

Final data was taken with the EUT located at the SAC at a distance of 3 or 10 meters between the EUT and the receiving antenna.

The frequency spectrum was searched for radiated emissions.

Measured emission levels were maximized by EUT placement on the table, changing cable location, rotating the turntable through 360 degrees, varying the antenna height between 1m and 4m above the ground plane and changing antenna polarization between horizontal and vertical.

Antennas used were Broadband Biconical antenna from 30MHz to 300MHz, Log periodic antenna from 300MHz to 1000MHz, DRG-horn antennas form above 1GHz.

For the measurement above 1GHz: following were taken placed.

- RF absorber was placed on the ground plane as shown in the photo.
- The antenna was kept aimed at the center of EUT, while the antenna height was changed.

--- End of the test report ---

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