



China

FCC Test Report

Report Number : 7088818001175-00 Date of Issue: Apr 20,2020

Model / Serial No. : Levado™

FCC ID : IDHLEVADO

Product Type : Height Adjustable Desk Base

Applicant : Fellowes Inc.

Manufacturer : Changzhou Kaidi Electrical Inc.

License holder : Fellowes Inc.

Address : 1789 Norwood Avenue Itasca IL 60143 USA

Test Result : ☐ Positive ☐ Negative

Total pages

Date of Test : Mar 30,2020

Reviewed by:

Prepared by:

Tested by:

Hui Tong

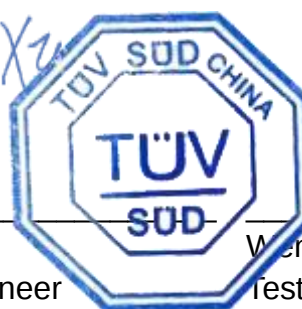
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Rev.20.00

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1. Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Issue	Description of Change	Date of Issue
1	First Issue	04/20/2020

2. Test Facility

Test Site ■ TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
 No.16, Lane 1951, Du Hui Road, Shanghai 201108, P.R. China
 (Test Firm Registration Number: 820234)
 Telephone: +86 21 60379100 Fax: +86 21 60379100

Test Firm 820234
 Registration
 Number:

Ambient Condition in laboratory:

Items	Test	Required(IEC68-1)	Actual
Temperature(°C)	ANSI.C 63.4 CE	15-35	21.2
Humidity (%)		25-75	50.5
Atmospheric Pressure(mbar)		860-1060	1031
Temperature(°C)	ANSI.C 63.4 RE	15-35	21.2
Humidity (%)		25-75	43.6
Atmospheric Pressure(mbar)		860-1060	1031

3. EUT Information

3.1 EUT Description

Product Type	:	Height Adjustable Desk Base
Model / Serial No.	:	Levado™
EUT Voltage	:	AC120V,60Hz

The sample's mentioned in this report is submitted manufactured by client. The laboratory therefore assumes no responsibility for accuracy of information on the brand name, model number, origin of manufacture, consignment or any information supplied.

3.2 EUT Configuration

Height Adjustable Desk Base	:	Levado™
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3.3 EUT Operating Mode

The equipment under test was operated under the following conditions during emissions testing:

- ☐ - Standby
- ☐ - Test Program (H - Pattern)
- ☐ - Test Program (Color Bar)
- ☐ - Test Program (Customer Specified)
- ☒ - Normal Operating Mode
- ☐ - _____

3.4 Peripheral devices and interface cables were connected during the testing:

- ☒ - NA _____ Type : NA _____

3.5 EUT Exercise Software:

The EUT is not programmable and does not use software.

3.6 EUT Modification

N/A



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4. Test Summary

Test	Specification	Test Result	Remark
Conducted Emission	CFR47 Part 15 §15.107,	Pass	Refer to page 6-11
Radiated Emission	CFR47 Part 15 §15.109,	Pass	Refer to page 12-18

Remarks:

According to the Section 15.33 of FCC part 15, the work frequency is between 1.705MHz and 108MHz, so the radiated emission range is 30MHz to 1000MHz.

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30.
1.705-108	1000.
108-500	2000.
500-1000	5000.
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower.

5. Conducted Emission

5.1 Test Equipment

The following test equipments are used:

USED	Equipment Name	Model	Manufacturer	Equipment ID.	Calibration Due Date
☒	EMI test receiver	ESR3	R&S	S1503001-YQ-EMC	2020-8-04
☒	2-Line V-network	ENV216	R&S	S1503103-YQ-EMC	2020-8-04
☐	4-Line V-network	ENV4200	R&S	S1503106-YQ-EMC	2020-8-04

5.2 Test Specification

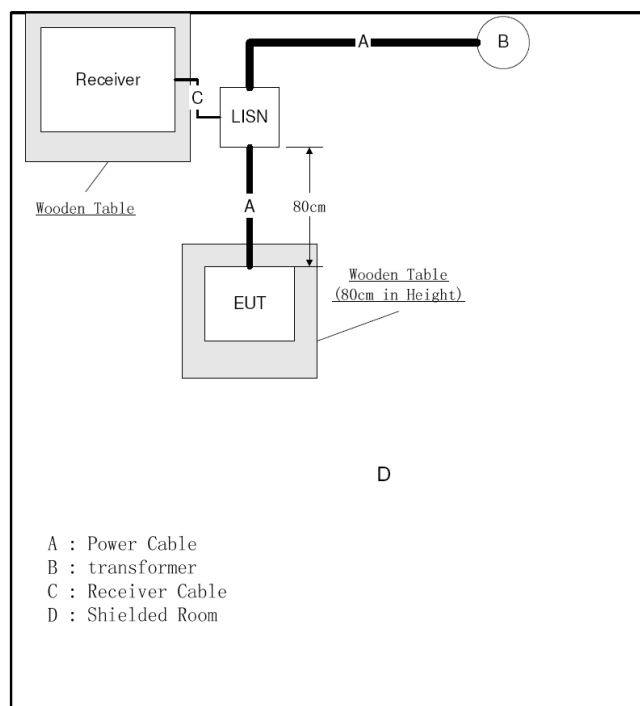
Tests are performed according to CFR47 Part 15 subpart B and ICES-003 issue 6. Limit as below:

CFR47 Part 15 subpart B §15.107 Limits (dBμV)				
Frequency (MHz)	Class A		Class B	
	QP	AV	QP	AV
0.15-0.5	79	66	66-56	56-46
0.5-5.0	73	60	56	46
5.0-30	73	60	60	50

5.3 Test Procedure

The test is performed in shield room. EUT is placed on the table which is 80cm above ground plane and connected to a line Impedance Stabilization Network (LISN). The conducted emission is scanned over the frequency from 150KHz to 30MHz with peak detector. A final measurement is performed with quasi-peak detector and average detector. IF bandwidth is 10KHz.

5.4 Test Setup



5.5 Test Photo





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5.6 Test Result

150k-30MHz Conducted Emission Test

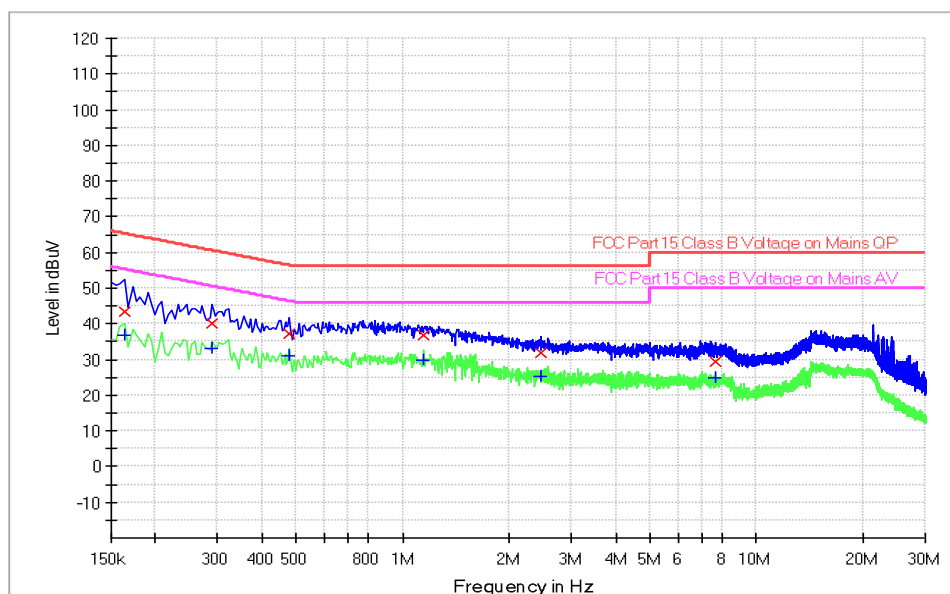
EUT Information

EUT Name: Height Adjustable Desk Base
Model: Levado™
Client: Fellowes Inc.
Op Cond: Power on, AC120V/60Hz, T21.2, H50.5%, P103.1kPa
Operator: Liu zhu
Standard: FCC Part 15B
Comment: Phase L
Sample No.: SHA-446996-1

Scan Setup: Voltage with 2-Line-LISN pre [EMI conducted]

Hardware Setup: Voltage with 2-Line-LISN
Receiver: [ESR 3]
Level Unit: dBuV

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
9 kHz - 150 kHz	100 Hz	PK+	200 Hz	0.01 s	0 dB
150 kHz - 30 MHz	4.5 kHz	PK+; AVG	9 kHz	0.01 s	0 dB





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Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Meas. Time	Bandwidth (kHz)	Line	Filter	Corr. (dB)	Margin - QPK	Limit - QPK	Margin - CAV
0.163500	43.5	37.0	1000.0	9.000	L1	OFF	19.4	21.8	65.3	18.3
0.289500	40.0	33.0	1000.0	9.000	L1	OFF	19.4	20.5	60.5	17.5
0.478500	37.3	31.2	1000.0	9.000	L1	OFF	19.4	19.1	56.4	15.2
1.149000	36.8	29.8	1000.0	9.000	L1	OFF	19.5	19.2	56.0	16.2
2.454000	32.0	25.2	1000.0	9.000	L1	OFF	19.5	24.0	56.0	20.8
7.660500	29.5	24.8	1000.0	9.000	L1	OFF	19.7	30.5	60.0	25.2



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150k-30MHz Conducted Emission Test

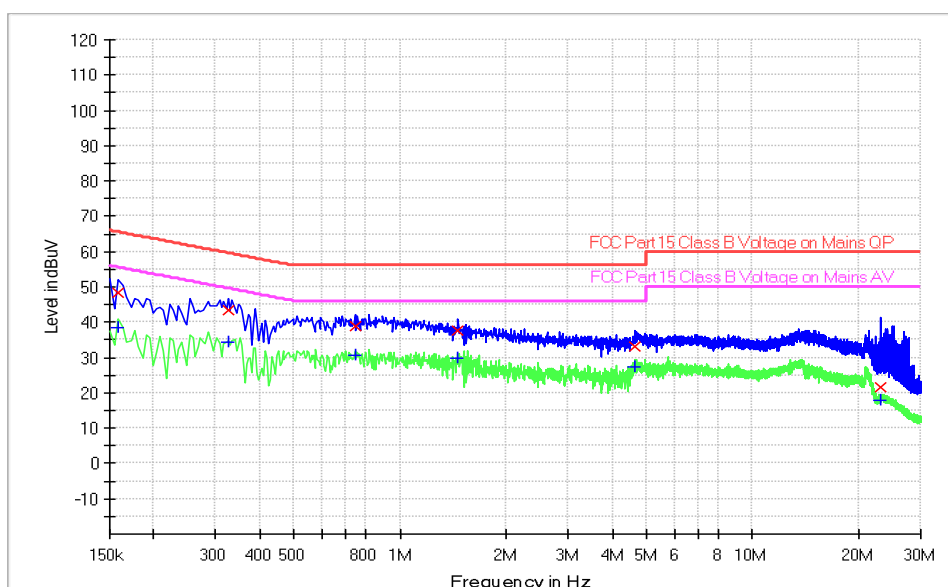
EUT Information

EUT Name: Height Adjustable Desk Base
Model: Levado™
Client: Fellowes Inc.
Op Cond: Power on, AC120V/60Hz, T21.2, H50.5%, P103.1kPa
Operator: Liu zhu
Standard: FCC Part 15B
Comment: Phase N
Sample No.: SHA-446996-1

Scan Setup: Voltage with 2-Line-LISN pre [EMI conducted]

Hardware Setup: Voltage with 2-Line-LISN
Receiver: [ESR 3]
Level Unit: dBuV

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
9 kHz - 150 kHz	100 Hz	PK+	200 Hz	0.01 s	0 dB
150 kHz - 30 MHz	4.5 kHz	PK+; AVG	9 kHz	0.01 s	0 dB





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Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Meas. Time	Bandwidth (kHz)	Line	Filter	Corr. (dB)	Margin - QPK	Limit - QPK	Margin - CAV
0.159000	48.6	38.6	1000.0	9.000	N	OFF	19.6	17.0	65.5	16.9
0.325500	43.4	34.4	1000.0	9.000	N	OFF	19.6	16.2	59.6	15.2
0.744000	39.1	30.6	1000.0	9.000	N	OFF	19.5	16.9	56.0	15.4
1.459500	37.8	29.8	1000.0	9.000	N	OFF	19.6	18.2	56.0	16.2
4.645500	33.0	27.4	1000.0	9.000	N	OFF	19.6	23.0	56.0	18.6
23.046000	21.5	17.9	1000.0	9.000	N	OFF	20.0	38.5	60.0	32.1

Note 1: Emission Level = Reading level + Correction Factor

Correction Factor = LISN Factor + Cable Loss + Attenuator Factor

Margin=Limit – Emission Level

6 Radiated Emission

6.1 Test Equipment

The following test Equipment are used:

USED	Equipment Name	Model	Manufacturer	Equipment ID.	Calibration Due Date
☒	EMI test receiver	ESR3	R&S	S1503109-YQ-EMC	2020-8-04
☒	Trilog super broadband antenna	VULB 9168	SCHWARZBECK	S1808296-YQ-EMC	2022-3-15
☐	Double-ridged waveguide horn antenna	HF907	R&S	S1503009-YQ-EMC	2021-4-01
☐	Signal conditioning unit	SCU-18D	R&S	S1503012-YQ-EMC	2020-8-04
☐	Signal and spectrum analyzer	FSV40	R&S	S1503003-YQ-EMC	2020-8-04
☐	Double Ridged Horn Antenna	3116C-PA	ETS-Lindgren	487/62183 9	2022-9-25

6.2 Test Specification

Tests are performed according to CFR47 Part 15 subpart B and ICES-003 issue 6.

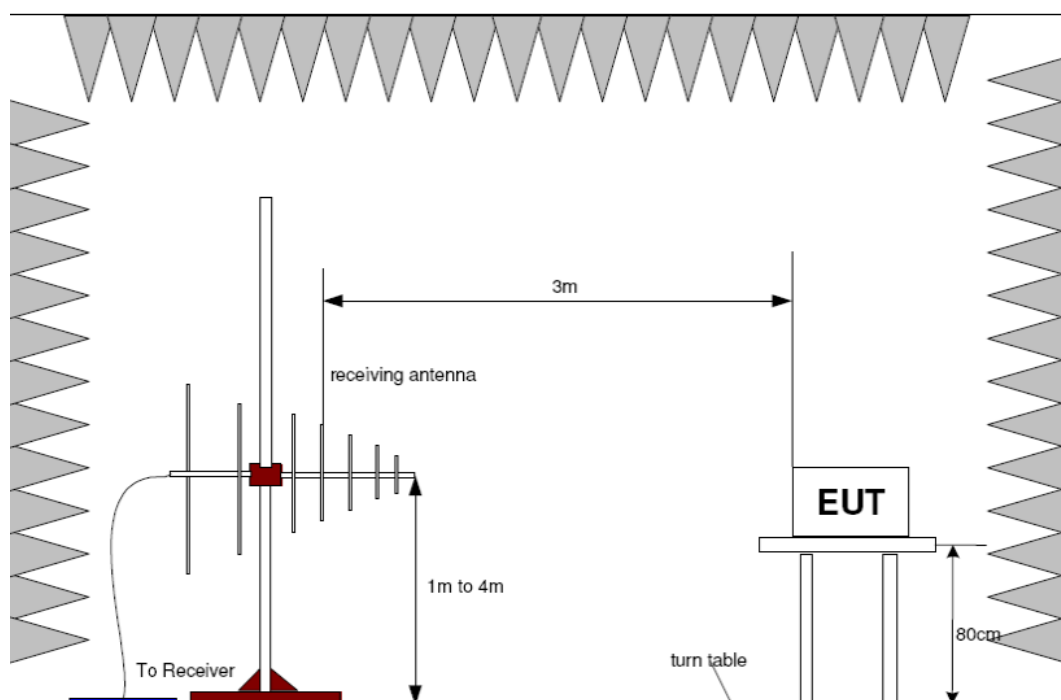
Limit as below:

CFR47 Part 15 subpart B §15.109 and ICES-003 §6.2 Limits (dBμV/m)				
Frequency (MHz)	Class A		Class B	
	Distance	QP	Distance	QP
30-88	10m	39	3m	40
88-216	10m	43.5	3m	43.5
216-960	10m	46.4	3m	46
Above 960	10m	49.5	3m	54

6.3 Test Procedure

The EUT is placed on a turntable which is 80cm above ground plane. The turntable rotates 360 degrees and antenna moves up and down between 1m and 4 m to find maximum emission. Both horizontal and vertical polarizations of antenna are set in the measurement. For class A equipment, the EUT is positioned at 10m away from antenna and for class B equipment, the EUT is positioned at 3m away from antenna.

6.4 Test Setup



Note: w : The dimension of the line tangent to the EUT formed by $\theta_{3\text{ dB}}$ at the measurement distance 3m

w value	Measurement frequency band	Antenna Model
1.6m	1~18GHz	HF907
1.95m	18~26.5GHz	3116C-PA
0.74m	26.5~40GHz	3116C-PA

6.5 Test Photo





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6.6 Test Result

30-1000MHz Radiated Emission

EUT Information

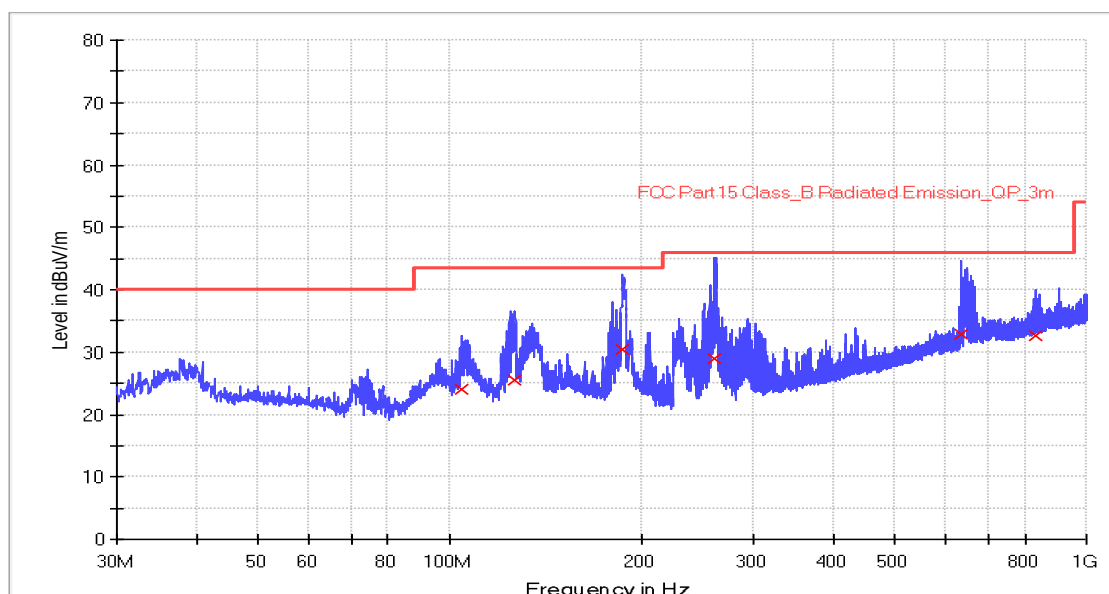
EUT Name: Height Adjustable Desk Base
Model: Levado™
Client: Fellowes Inc.
Op Cond: Power on, 120V/60Hz, T21.2, H43.6%, P103.1kPa
Operator: Liu zhu
Test Spec: FCC Part 15 Class B
Comment: Horizontal
Sample No: SHA-446996-1

Sweep Setup: RE_VULB9168_pre_Cont_30-1000 [EMI radiated]

Hardware Setup: RE_VULB9168
Receiver: [ESR 3]
Level Unit: dBuV/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamp
30 MHz - 1 GHz	48.5 kHz	PK+	120 kHz	0.005 s	20 dB

RE_VULB9168_pre_Cont_30-1000





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Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - QPK	Limit - QPK
104.240000	24.1	1000.0	120.000	150.0	H	166.0	11.8	19.4	43.5
126.720000	25.6	1000.0	120.000	150.0	H	321.0	14.1	17.9	43.5
187.000000	30.6	1000.0	120.000	150.9	H	175.0	12.6	13.0	43.5
260.080000	28.9	1000.0	120.000	150.9	H	354.0	13.8	17.1	46.0
636.360000	32.9	1000.0	120.000	150.0	H	46.0	22.2	13.1	46.0
829.480000	32.6	1000.0	120.000	150.0	H	1.0	24.9	13.4	46.0



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30-1000MHz Radiated Emission

EUT Information

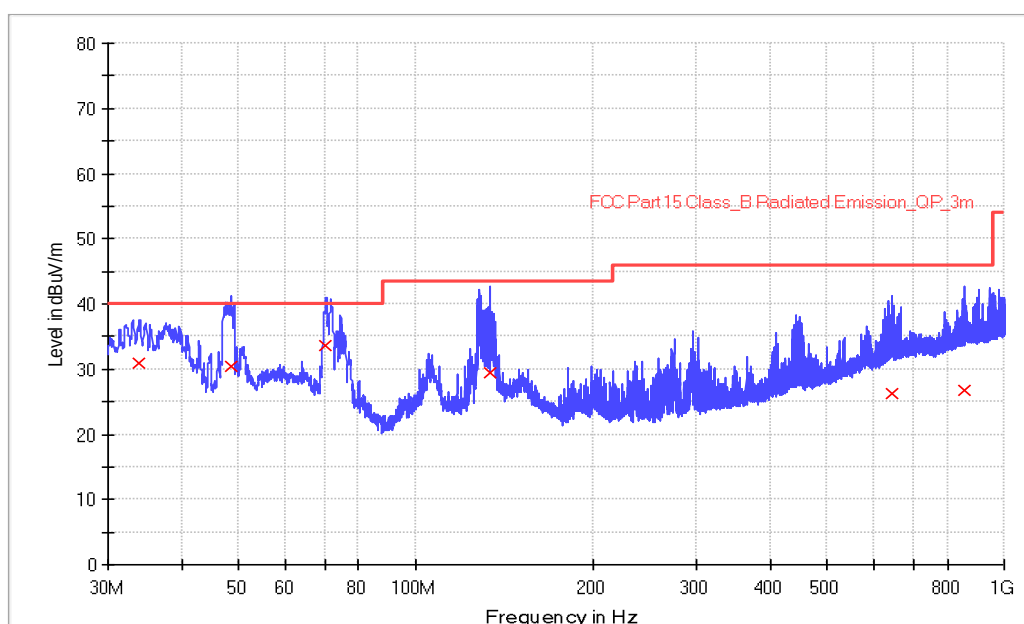
EUT Name: Height Adjustable Desk Base
Model: Levado
Client: Fellowers Inc.
Op Cond: Power on,120V/60Hz, T21.2, H43.6%, P103.1kPa
Operator: Liu zhu
Test Spec: FCC Part 15 Class B
Comment: Vertical
Sample No: SHA-446996-1

Sweep Setup: RE_VULB9168_pre_Cont_30-1000 [EMI radiated]

Hardware Setup: RE_VULB9168
Receiver: [ESR 3]
Level Unit: dBuV/m

Subrange	Step Size	Detectors	Bandwidth	Sweep Time	Preamplifier
30 MHz - 1 GHz	48.5 kHz	PK+	120 kHz	0.005 s	20 dB

RE_VULB9168_pre_Cont_30-1000





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Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - QPK	Limit - QPK
33.920000	31.0	1000.0	120.000	100.0	V	309.0	14.0	9.0	40.0
48.480000	30.4	1000.0	120.000	100.9	V	33.0	14.4	9.6	40.0
70.360000	33.6	1000.0	120.000	100.0	V	131.0	11.7	6.4	40.0
133.480000	29.5	1000.0	120.000	100.0	V	219.0	14.5	14.0	43.5
646.680000	26.3	1000.0	120.000	100.0	V	210.0	22.4	19.7	46.0
857.560000	26.9	1000.0	120.000	100.0	V	25.0	25.3	19.1	46.0

Note 1: Emission Level = Reading level + Correction Factor

Corrector Factor = Antenna Factor + Cable Loss - Pre-amplifier Gain

Margin=Limit – Emission Level



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7 Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

Items	Extended Uncertainty
Conducted Disturbance at Mains Terminals	150kHz to 30MHz, $\pm 3.16\text{dB}$
Radiated Disturbance	30MHz to 1GHz, $\pm 5.03\text{dB}$ (Horizontal) $\pm 5.12\text{dB}$ (Vertical) 1GHz to 18GHz, $\pm 5.49\text{dB}$ 18GHz to 40GHz, $\pm 5.63\text{dB}$



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8 EUT Photograph

Refer to the < External Photos > & < Internal Photos >.

THE END