

**FCC - TEST REPORT**Report Number : **709502306225-01A** Date of Issue: August 8, 2024

Model : LKOUT W

Product Type : Wireless Display

Applicant : Fellowes Inc

Address : 1789 Norwood Avenue Itasca, IL 60143 United States

Production Facility : Fellowes Office Products(Suzhou) Co, Ltd

Address : 1# Shilin Road, Suzhou New & Hi-tech District,
215151 Suzhou, Jiangsu, People's Republic of ChinaTest Result : ☒ Positive ☐ NegativeTotal pages including
Appendices : 27

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2 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
709502306225-00A	First Issue	01/22/2024
709502306225-01A	Added a new model. Additional tests were performed	08/08/2024

3 Details about the Test Laboratory

Details about the Test Laboratory

Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
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FCC Registration No.: 820234

FCC Designation Number: CN1183

ISED CAB identifier: CN0101

IC Registration No.: 31668



4 Description of the Equipment under Test

Product: Wireless Display

Model no.: LKOUT W

FCC ID: IDH-RMTDSPY

Options and accessories: NA

Rating: DC 12V for Wireless Display
100-240V~, 50/60Hz for junction box

RF Transmission Frequency: 2402~2480MHz for Bluetooth
For 2.4G & 5G Wi-Fi
For 802.11b/g/n-HT20: 2412~2462 MHz
For 802.11n-HT40: 2422~2452 MHz
5180~5240 MHz (U-NII-1)
5745~5825 MHz (U-NII-3)
WCDMA Band II/IV/V
LTE Band 2/4/5/12/13/14/66/71

No. of Operated Channel: 79 channels for Bluetooth 2.1+EDR

Ch	Fre (MH)	Ch	Fre (MH)	Ch	Fre (MH)	Ch	Fre (MH)	Ch	Fre (MHz)
1	2402	17	2418	33	2434	49	2450	65	2466
2	2403	18	2419	34	2435	50	2451	66	2467
3	2404	19	2420	35	2436	51	2452	67	2468
4	2405	20	2421	36	2437	52	2453	68	2469
5	2406	21	2422	37	2438	53	2454	69	2470
6	2407	22	2423	38	2439	54	2455	70	2471
7	2408	23	2424	39	2440	55	2456	71	2472
8	2409	24	2425	40	2441	56	2457	72	2473
9	2410	25	2426	41	2442	57	2458	73	2474
10	2411	26	2427	42	2443	58	2459	74	2475
11	2412	27	2428	43	2444	59	2460	75	2476
12	2413	28	2429	44	2445	60	2461	76	2477
13	2414	29	2430	45	2446	61	2462	77	2478
14	2415	30	2431	46	2447	62	2463	78	2479
15	2416	31	2432	47	2448	63	2464	79	2480
16	2417	32	2433	48	2449	64	2465		

40 channels for Bluetooth 4.2 BLE

Ch	Fre(MHz)	Ch	Fre(MHz)	Ch	Fre(MHz)	Ch	Fre(MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

2.4GHz WIFI: 11 for 802.11b/802.11g/802.11(H20);
7 for 802.11n(HT40)

802.11b/g/n(HT20)				802.11n(HT40)			
Ch	Fre(MHz)	Ch	Fre(MHz)	Ch	Fre(MHz)	Ch	Fre(MHz)
1	2412	7	2442	3	2422	8	2447MHz
2	2417	8	2447	4	2427	9	2452MHz
3	2422	9	2452	5	2432		
4	2427	10	2457	6	2437		
5	2432	11	2462	7	2442		
6	2437						

5180~5240 MHz (U-NII-1):

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
40	5200	48	5240

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
42	5210

5745~5825 MHz (U-NII-3): Channel 149 – 165

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	161	5805
153	5765	165	5825
157	5785		

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
155	5755



Modulation:	Bluetooth 2.1+EDR FHSS: GFSK, $\pi/4$ DQPSK, 8DPSK Bluetooth 4.2+BLE DHSS: GFSK For Wi-Fi: Direct Sequence Spread Spectrum (DSSS) for 802.11b Orthogonal Frequency Division Multiplexing (OFDM) for 802.11a/b/g/n/ac LTE: QPSK/16QAM WCDMA: QPSK/16QAM
Hardware Version:	V2.0
Software Version:	11.0.1_#7210_10.1_2168A1-V2.0
Data speed:	1. Bluetooth 2.1+EDR FHSS: 1Mbps, 2Mbps, 3Mbps 2. Bluetooth 4.2+BLE DHSS: 1Mbps 3. Wi-Fi: 11b 1 ~ 11Mbps, 11g/a 6 ~ 54Mbps, 11n HT20 6.5 ~ 72.2Mbps, 11n HT 40 13.5 ~ 150Mbps, 11ac VHT40 13.5 ~ 200Mbps, 11ac VHT80 29.3 ~ 433.3Mbps
Antenna Type:	PCB Antenna
Antenna Gain:	1.99dBi for 2.4GHz; 1.98dBi for 5GHz
Description of the EUT:	The Equipment Under Test (EUT) is a Wireless Display with Bluetooth and Wi-Fi Module also have a LTE and WCDMA Module.
Test sample no.:	SHA-794643-1

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



5 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2023 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

Test Method:
KDB 789033 D02 General UNII Test Procedures New Rules v02r01
ANSI C63.10-2020, American National Standard of Procedures for Compliance Testing of
Unlicensed Wireless Devices



6 Summary of Test Results

Technical Requirements						
FCC Part 15 Subpart C						
Test Condition		Pages	Test Site	Test Result		
				Pass	Fail	N/A
§15.207	Conducted emission AC power port	13-17	Site 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§15.407(e)	Emission bandwidth	Referred to Clause 7	Site 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§15.407(a)	Maximum Conducted Output Power	Referred to Clause 7	Site 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§15.407(a)	Maximum Power Spectral Density	Referred to Clause 7	Site 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§15.407(g)	Frequencies Stability	Referred to Clause 7	Site 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§15.407(b)(1), §15.407(b)(4),	Spurious radiated emissions for transmitter	Referred to Clause 7	Site 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
§15.407(h)(2)	Dynamic frequency selection	See Remark 2	Site 1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
§15.203	Antenna requirement	See note 1		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Remark 1: The EUT only operation at 5G Wi-Fi UNII-1(5180MHz-5240MHz) and UNII-3 (5745MHz-5825MHz).

Remark 2: N/A – Not Applicable. Dynamic frequency selection for devices operating in the bands 5250-5350 MHz and 5470-5725 MHz.

Note 1: The EUT uses a PCB antenna, which gain is 1.99dBi for 2.4GHz, 1.98dBi for 5GHz. According to §15.203, it is considered sufficiently to comply with the provisions of this section.

15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.



7 General Remarks

Remarks

This report is a supplement of project 709502306225-00A. So the report is not valid without the report of 709502306225-00A.

According to client's requirement, a new model (LKOUT W) need to add in the model list. The display unit of the new model has the same PCB layout, schematic diagram, Bom and wireless technology as well as the other electrical construction as the original model. The only difference is that the original model (LKOUT P) is powered by an adapter. However, the new model (LKOUT W) is powered by a junction box.

So, in this test report only test data of "Spurious radiated emissions for transmitter" below 1GHz and AC power line conducted emission were new data on the new model, the other tests were referred from 709502306225-00A and the test data are still effective.

This submittal(s) (test report) is intended for FCC ID: IDH-RMTDSPY complies with Section 15.207, 15.209, 15.407 of the FCC Part 15, Subpart E Rules.

This report in only for 5GHz Wi-Fi. The TX and RX range is 5180MHz-5240MHz, 5745MHz-5825MHz.



SUMMARY:

All tests according to the regulations cited on page 6 were

■ - Performed

□ - **Not** Performed

The Equipment under Test

■ - **Fulfills** the general approval requirements.

□ - **Does not** fulfill the general approval requirements.

Sample Received Date: August 2, 2024

Testing Start Date: August 2, 2024

Testing End Date: August 7, 2024

- TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

Reviewed by:

Prepared by:

Tested by:



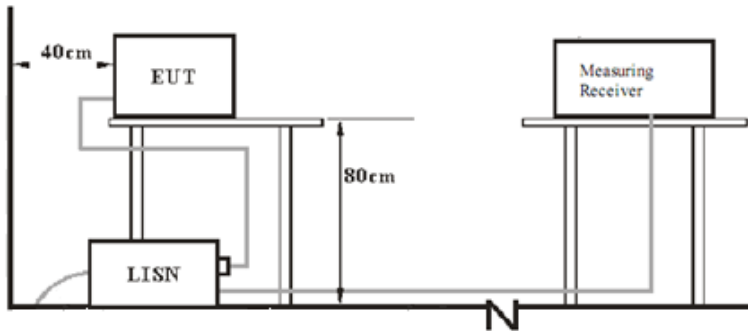
Hui TONG
Review Engineer

Jiaxi XU
Project Engineer

Cheng Huali
Test Engineer

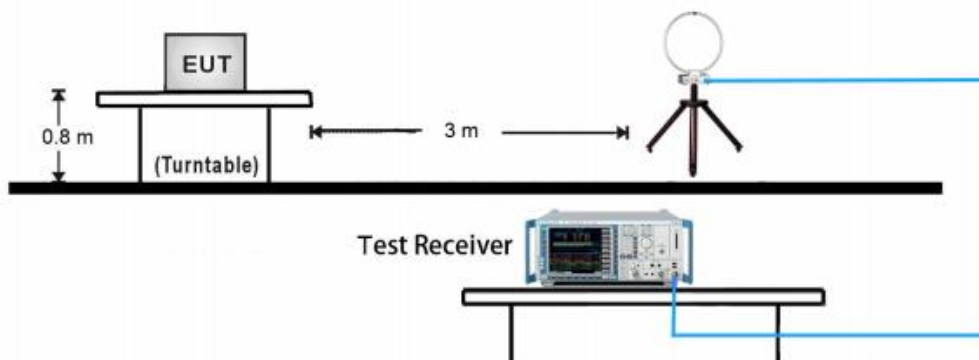
8 Test Setups

7.1 AC Power Line Conducted Emission test setups

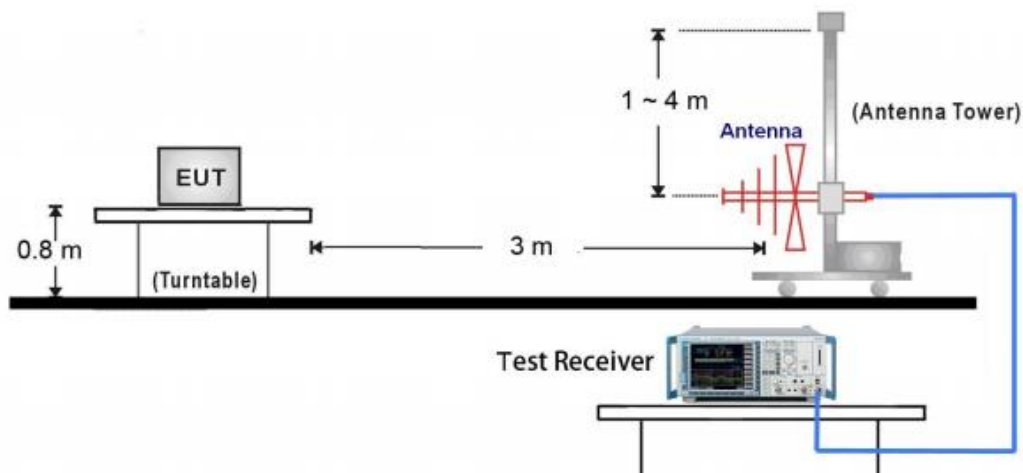


7.2 Radiated test setups

9kHz ~ 30MHz Test Setup:



30MHz ~ 1GHz Test Setup:



9 Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)
Notebook	Lenove	E470	PF-OU5TS7 17/09

Test software: adb commend, which used to control the EUT in continues transmitting mode

The system was configured to channel:

Test Mode	Channel	Index Value (Power level setting)	Frequency (MHz)
802.11a, 802.11n HT20 802.11ac20	36	41	5180
	44	41	5220
	48	41	5240
	149	47	5745
	157	47	5785
	165	47	5825
802.11n HT40 802.11ac40	38	41	5190
	46	41	5230
	151	47	5755
	159	47	5795
802.11ac80	42	41	5210
	155	47	5755

The pre-test has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates.

Modulation Type	Data Rate
802.11a OFDM	6Mbps
802.11n (HT20): OFDM	MCS0 (6.5Mbps)
802.11n (HT20): OFDM	MCS0 (6.5Mbps)
802.11n (HT40): OFDM	MCS0 (13.5Mbps)
802.11ac (VHT20): OFDM	11ac 6.5Mbps (20MHz)
802.11ac (VHT40): OFDM	11ac13.5Mbps (40MHz)
802.11ac (VHT80): OFDM	11ac 29.3Mbps (80MHz)

10 Technical Requirement

10.1 Conducted Emission

Test Method

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. Both sides of AC line were checked for maximum conducted interference.
6. The frequency range from 150 kHz to 30 MHz was searched.
7. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively

Limit

According to §15.207, conducted emissions limit as below:

Frequency MHz	QP Limit dB μ V	AV Limit dB μ V
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

Remark: “*” Decreasing linearly with logarithm of the frequency



Conducted Emission

150k-30MHz Conducted Emission Test

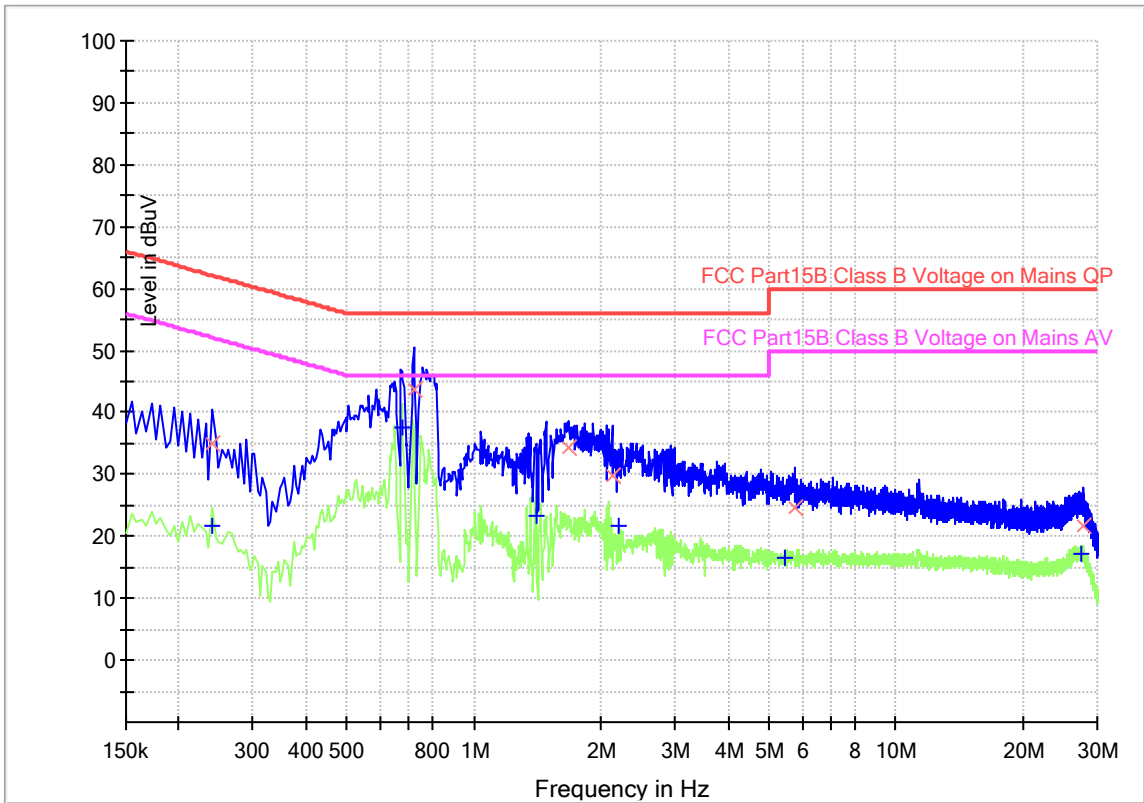
EUT Information

EUT Name:	Wireless Display
Model	LKOUT W
Client:	Fellowes Inc.
Op Cond	Power on, 802.11a_5180MHz, AC 120V/60Hz, T24.1, H39.1%, P102.5kPa
Operator:	Cheng Huali
Standard	FCC part 15.207(a)
Comment:	Phase L
Sample No.:	SHA-794643-1

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	0.02 s	0 dB
150 kHz - 30 MHz	4.5 kHz	PK+; AVG	9 kHz	0.01 s	0 dB





Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.240000	---	21.59	52.10	30.51	1000.0	9.000	L	19.4
0.240000	34.83	---	62.10	27.27	1000.0	9.000	L	19.4
0.676500	---	37.51	46.00	8.49	1000.0	9.000	L	19.4
0.721500	43.76	---	56.00	12.24	1000.0	9.000	L	19.5
1.405500	---	23.32	46.00	22.68	1000.0	9.000	L	19.5
1.671000	34.35	---	56.00	21.65	1000.0	9.000	L	19.5
2.125500	29.87	---	56.00	26.13	1000.0	9.000	L	19.5
2.206500	---	21.78	46.00	24.22	1000.0	9.000	L	19.5
5.478000	---	16.55	50.00	33.45	1000.0	9.000	L	19.6
5.784000	24.64	---	60.00	35.36	1000.0	9.000	L	19.6
27.523500	---	17.16	50.00	32.84	1000.0	9.000	L	20.7
27.820500	21.62	---	60.00	38.38	1000.0	9.000	L	20.7

Remark:

Level=Reading Level + Correction Factor

Correction Factor=Cable Loss + LISN Factor

(The Reading Level is recorded by software which is not shown in the sheet)

150k-30MHz Conducted Emission Test

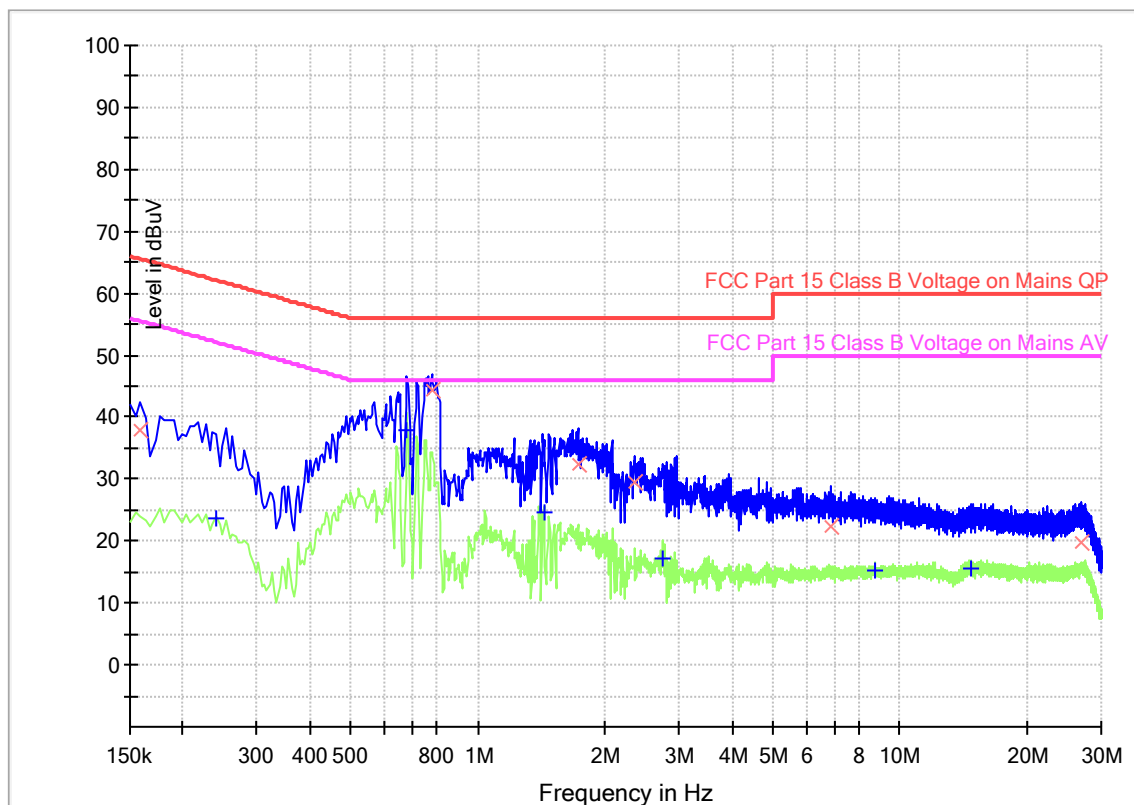
EUT Information

EUT Name:	Wireless Display
Model	LKOUT W
Client:	Fellowes Inc.
Op Cond	Power on, 802.11a_5180MHz, AC 120V/60Hz, T24.1, H39.1%, P102.5kPa
Operator:	Cheng Huali
Standard	FCC part 15.207(a)
Comment:	Phase N
Sample No.:	SHA-794643-1

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	0.02 s	0 dB
150 kHz - 30 MHz	4.5 kHz	PK+; AVG	9 kHz	0.01 s	0 dB





Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.159000	37.78	---	65.52	27.74	1000.0	9.000	N	19.4
0.240000	---	23.53	52.10	28.57	1000.0	9.000	N	19.4
0.681000	---	38.00	46.00	8.00	1000.0	9.000	N	19.4
0.780000	44.50	---	56.00	11.50	1000.0	9.000	N	19.5
1.432500	---	24.47	46.00	21.53	1000.0	9.000	N	19.5
1.725000	32.25	---	56.00	23.75	1000.0	9.000	N	19.5
2.355000	29.46	---	56.00	26.54	1000.0	9.000	N	19.5
2.742000	---	17.08	46.00	28.92	1000.0	9.000	N	19.5
6.832500	22.29	---	60.00	37.71	1000.0	9.000	N	19.6
8.740500	---	15.33	50.00	34.67	1000.0	9.000	N	19.7
14.797500	---	15.42	50.00	34.58	1000.0	9.000	N	19.9
26.956500	19.86	---	60.00	40.14	1000.0	9.000	N	20.6

Remark:

Level=Reading Level + Correction Factor

Correction Factor=Cable Loss + LISN Factor

(The Reading Level is recorded by software which is not shown in the sheet)

10.2 Spurious radiated emissions for transmitter

Transmitting spurious emission test result as below:

Test Method:

Radiated Mode:

1. The EUT was placed on a turn table which is 1.5m above ground plane for above 1GHz and 0.8m above ground for below 1GHz at 3meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.
3. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned
5. Use the following spectrum analyzer settings According to C63.10:
 - 1) Procedure for Unwanted Emissions Measurements Below 1000 MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold
 - 2) For Above 1GHz:
Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz
 - RBW = 1 MHz
 - VBW \geq 3 MHz
 - Detector = Peak
 - Sweep time = auto
 - Trace mode = max hold
 - 3) Procedures for Average Unwanted Emissions Measurements above 1000 MHz
 - a) RBW = 1 MHz.
 - b) VBW \geq [3 \times RBW].
 - c) Detector = Power averaging (rms), if [span / (# of points in sweep)] \leq RBW / 2. Satisfying this condition can require increasing the number of points in the sweep or reducing the span. If the condition is not satisfied, then the detector mode shall be set to peak.
 - d) Averaging type = power (i.e., rms) (As an alternative, the detector and averaging type may be set for linear voltage averaging. Some instruments require linear display mode to use linear voltage averaging. Log or dB averaging shall not be used.)
 - e) Sweep time = auto.
 - f) Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, then the number of traces shall be increased by a factor of 1 / D, where D is the duty cycle. For example, with 50% duty cycle, at least 200 traces shall be averaged. (If a specific emission is demonstrated to be continuous—i.e., 100% duty cycle—then rather than turning ON and OFF with the transmit cycle, at least 100 traces shall be averaged.)
 - g) If tests are performed with the EUT transmitting at a duty cycle less than 98%, then a correction factor shall be added to the measurement results prior to comparing with the



emission limit, to compute the emission level that would have been measured had the test been performed at 100% duty cycle. The correction factor is computed as follows:

(1) If power averaging (rms) mode was used in the preceding step e), then the correction factor is $[10 \log (1 / D)]$, where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 3 dB shall be added to the measured emission levels.

(2) If linear voltage averaging mode was used in the preceding step e), then the correction factor is $[20 \log (1 / D)]$, where D is the duty cycle. For example, if the transmit duty cycle was 50%, then 6 dB shall be added to the measured emission levels. If a specific emission is demonstrated to be continuous (100% duty cycle) rather than turning ON and OFF with the transmit cycle, then no duty cycle correction is required for that emission.

Limit

The radio emission outside the operating frequency band shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. Radiated emissions which fall in the restricted bands, as defined in section 15.205, must comply with the radiated emission limits specified in section 15.209.

Frequency MHz	Field Strength uV/m	Field Strength dBuV/m	Detector
30-88	100	40	QP
88-216	150	43.5	QP
216-960	200	46	QP
960-1000	500	54	QP
Above 1000	500	54	AV
Above 1000	5000	74	PK

According to part 15.407b (1) (2) (3) (4),

For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

According to part 15.407b (9) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

According to part 15.407b (10), the provisions of §15.205 and apply to intentional radiators operating under this section.

Note: According to C63.10, the Conversion Factors between E[dBuV/m] and EIRP[dBm] as below: $E[dBuV/m] = EIRP[dBm] + 95.2$, for $d = 3$ meters.



Spurious radiated emissions for transmitter

The worst case of Radiated Emission below 1GHz:

30-1000MHz Radiated Emission

EUT Information

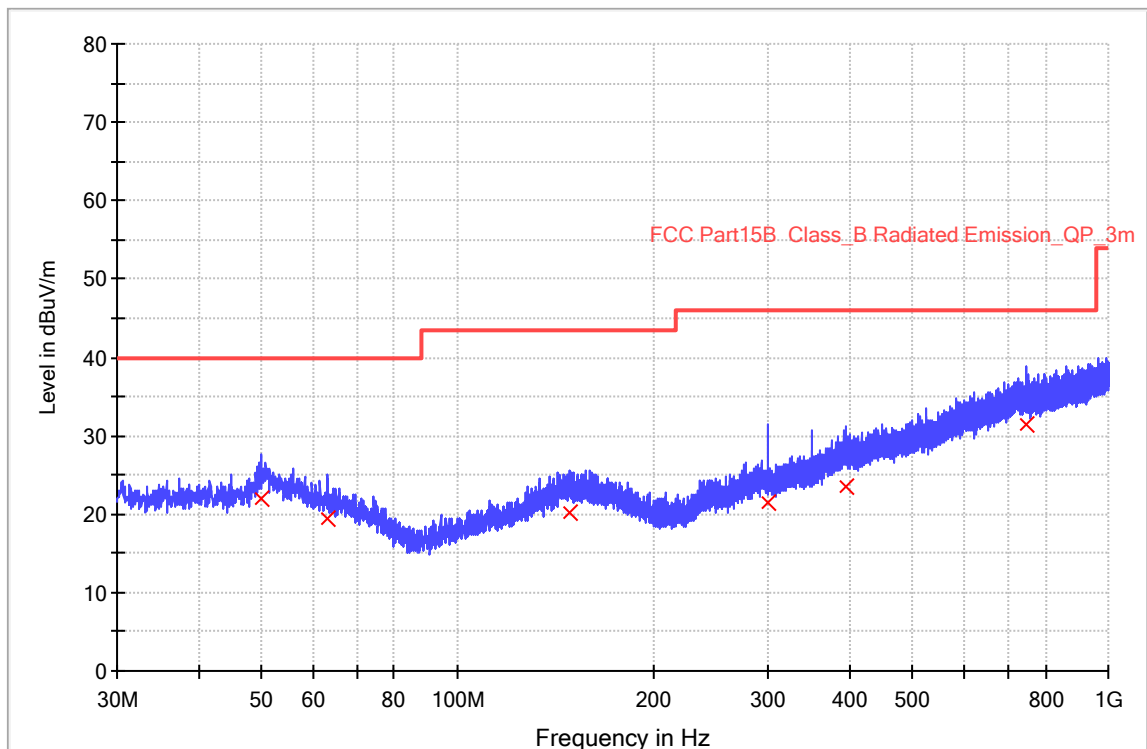
EUT Name:	Wireless Display
Model:	LKOUT W
Client:	Fellows Inc.
Op Cond:	Power on, transmitting at 802.11a_5180MHz, AC 120V/60Hz, T23.9, 47.4%, P102.5kPa
Operator:	Cheng Huali
Test Spec:	FCC Part15.209(a)
Comment:	Horizontal
Sample No:	SHA-794643-1

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	0.2 s	20 dB

RE_VULB9168_pre_Cont_30-1000





Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
50.000000	22.1	1000.0	120.000	150.0	H	213.0	20.5	17.9	40.0
63.120000	19.3	1000.0	120.000	120.0	H	66.0	19.7	20.7	40.0
149.200000	20.2	1000.0	120.000	150.0	H	235.0	21.0	23.3	43.5
300.000000	21.5	1000.0	120.000	200.0	H	31.0	21.5	24.5	46.0
396.040000	23.4	1000.0	120.000	100.0	H	325.0	23.9	22.6	46.0
750.040000	31.4	1000.0	120.000	290.0	H	310.0	31.7	14.6	46.0

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.



30-1000MHz Radiated Emission

EUT Information

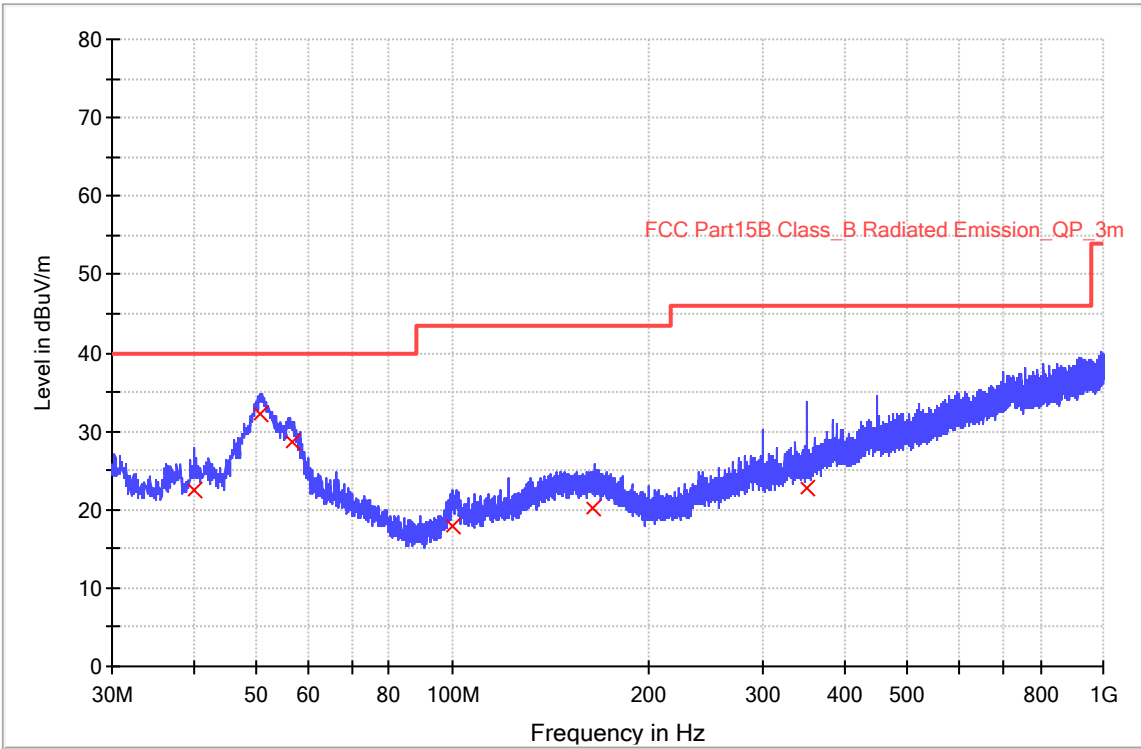
EUT Name: Wireless Display
Model: LKOUT W
Client: Fellowes Inc.
Op Cond: Power on, transmitting at 802.11a_5180MHz, AC 120V/60Hz, T23.9, 47.4%, P102.5kPa
Operator: Cheng Huali
Test Spec: FCC Part15.209(a)
Comment: Vertical
Sample No: SHA-794643-1

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	0.2 s	20 dB

RE_VULB9168_pre_Cont_30-1000





Limit and Margin

Frequency (MHz)	QuasiPeak (dBuV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBuV/m)
40.120000	22.5	1000.0	120.000	102.0	V	235.0	20.0	17.5	40.0
50.560000	32.1	1000.0	120.000	150.0	V	119.0	20.6	7.9	40.0
56.560000	28.7	1000.0	120.000	200.0	V	236.0	20.4	11.3	40.0
99.860000	17.9	1000.0	120.000	150.0	V	332.0	16.0	25.6	43.5
164.280000	20.2	1000.0	120.000	100.0	V	69.0	20.6	23.3	43.5
350.000000	22.7	1000.0	120.000	165.0	V	113.0	22.6	23.3	46.0

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.



11 Test Equipment List

List of Test Instruments Test Site1

	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DATE	CAL. DUE DATE
RE	EMI Test Receiver	Rohde & Schwarz	ESR3	101906	2024-8-1	2025-7-31
	Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9168	961	2021-9-23	2024-9-22
	3m Semi-anechoic chamber	TDK	9X6X6	----	2024-5-8	2027-5-7
CE	EMI Test Receiver	Rohde & Schwarz	ESR3	101907	2024-8-1	2025-7-31
	LISN	Rohde & Schwarz	ENV216	101924	2024-8-1	2025-7-31
Measurement Software Information						
Test Item	Software	Manufacturer		Version		
RE	EMC 32	Rohde & Schwarz		V10.50.40		
CE	EMC 32	Rohde & Schwarz		V9.15.03		



12 System 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, LISN, 3.16dB
Radiated Disturbance	9kHz to 30MHz, 3.52dB 30MHz to 1GHz, 5.03dB (Horizontal) 5.12dB (Vertical) 1GHz to 18GHz, 5.49dB 18GHz to 40GHz, 5.63dB

Measurement Uncertainty Decision Rule:

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2023, clause 4.3.3.



13 Photographs of Test Set-ups

Refer to the < Test Setup photos >.



14 Photographs of EUT

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

-----End of Test Report-----