

**FCC - TEST REPORT**Report Number : **709502306225-01B** Date of Issue: August 8, 2024Model : LKOUT WProduct Type : Wireless DisplayApplicant : Fellowes IncAddress : 1789 Norwood Avenue Itasca, IL 60143 United StatesProduction Facility : Fellowes Office Products(Suzhou) Co, LtdAddress : 1# Shilin Road, Suzhou New & Hi-tech District,
215151 Suzhou, Jiangsu, People's Republic of ChinaTest Result : ☒ **Positive** ☐ **Negative**Total 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
709502306225-00B	First Issue	01/22/2024
709502306225-01B	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
No.16 Lane, 1951 Du Hui Road,
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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 adapter (LKOUT P)
100-240V~, 50/60Hz for junction box (LKOUT W)

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

All the test methods were according to KDB 558074 D01 15.247 Meas Guidance v05r02 Measurement Guidance and ANSI C63.10-2020.



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	☒	☐	☐
§15.247 (b) (3)	Conducted peak output power	Referred to Clause 7	Site 1	☒	☐	☐
§15.247(a)(1)	20dB bandwidth and 99% Occupied Bandwidth	---	---	☐	☐	☒
§15.247(a)(1)	Carrier frequency separation	---	---	☐	☐	☒
§15.247(a)(1)(iii)	Number of hopping frequencies	---	---	☐	☐	☒
§15.247(a)(1)(iii)	Dwell Time - Average Time of Occupancy	---	---	☐	☐	☒
§15.247(a)(2)	6dB bandwidth	Referred to Clause 7	Site 1	☒	☐	☐
§15.247(e)	Power spectral density	Referred to Clause 7	Site 1	☒	☐	☐
§15.247(e)	Spurious RF conducted emissions	Referred to Clause 7	Site 1	☒	☐	☐
§15.247(d)	Band edge	Referred to Clause 7	Site 1	☒	☐	☐
§15.247(d) & §15.209 & §15.205	Spurious radiated emissions for transmitter	Referred to Clause 7	Site 1	☒	☐	☐
§15.203	Antenna requirement	See note 1		☒	☐	☐

Remark 1: N/A – Not Applicable.

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



7 General Remarks

Remarks

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

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 709502306225-00B 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, 15.247 of the FCC Part 15, Subpart C rules.

This report in only for 2.4G Wi-Fi.



SUMMARY:

All tests according to the regulations cited on page 5 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:



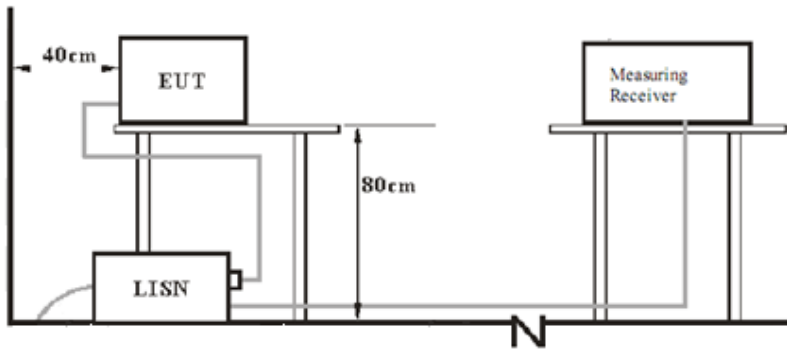
Hui TONG
Review Engineer

Jiaxi XU
Project Engineer

Cheng Huali
Test Engineer

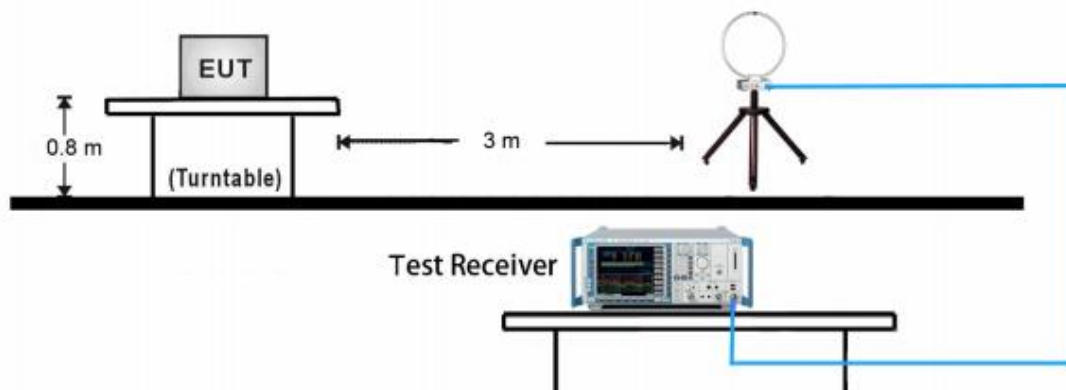
8 Test Setups

7.1 AC Power Line Conducted Emission test setups

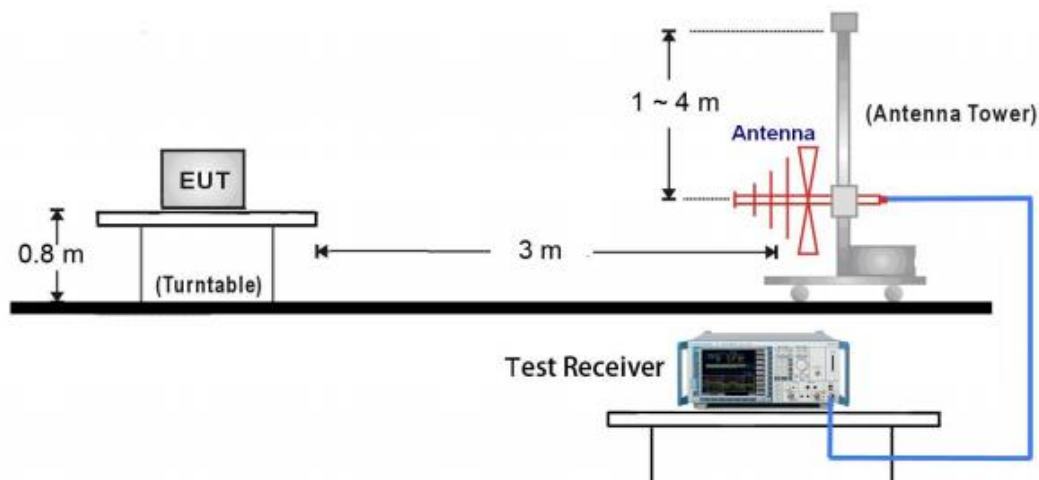


7.2 Radiated test setups

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 1(2412MHz), 6(2437MHz), and 11(2462MHz) for 802.11 b/g/n HT20 test and channel 3(2422MHz), 6(2437MHz), 9(2452MHz) for 802.11n (HT40).

Test Mode Applicability and Tested Channel Detail:

Mode	Tested Channel	Data Rate (Mbps)	Modulation	Index Value (Power level setting)
802.11b	1	1	CCK	33
	6	1	CCK	33
	11	1	CCK	33
802.11g	1	6	OFDM	33
	6	6	OFDM	33
	11	6	OFDM	33
802.11n HT20	1	MCS0	OFDM	33
	6	MCS0	OFDM	33
	11	MCS0	OFDM	33
802.11n HT40	1	MCS0	OFDM	33
	6	MCS0	OFDM	33
	11	MCS0	OFDM	33

Non-hopping mode: The system was configured to operate at a signal channel transmitting. The test software allows the configuration and operation at the worst-case duty and the highest transmit power.

10 Technical Requirement

10.1 Conducted Emission

Test Method

1. The EUT was placed on a table, which is 0.8m above ground plane
2. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.).
3. Maximum procedure was performed to ensure EUT compliance
4. A EMI test receiver is used to test the emissions from both sides of AC line

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

Decreasing linearly with logarithm of the frequency

150k-30MHz Conducted Emission Test

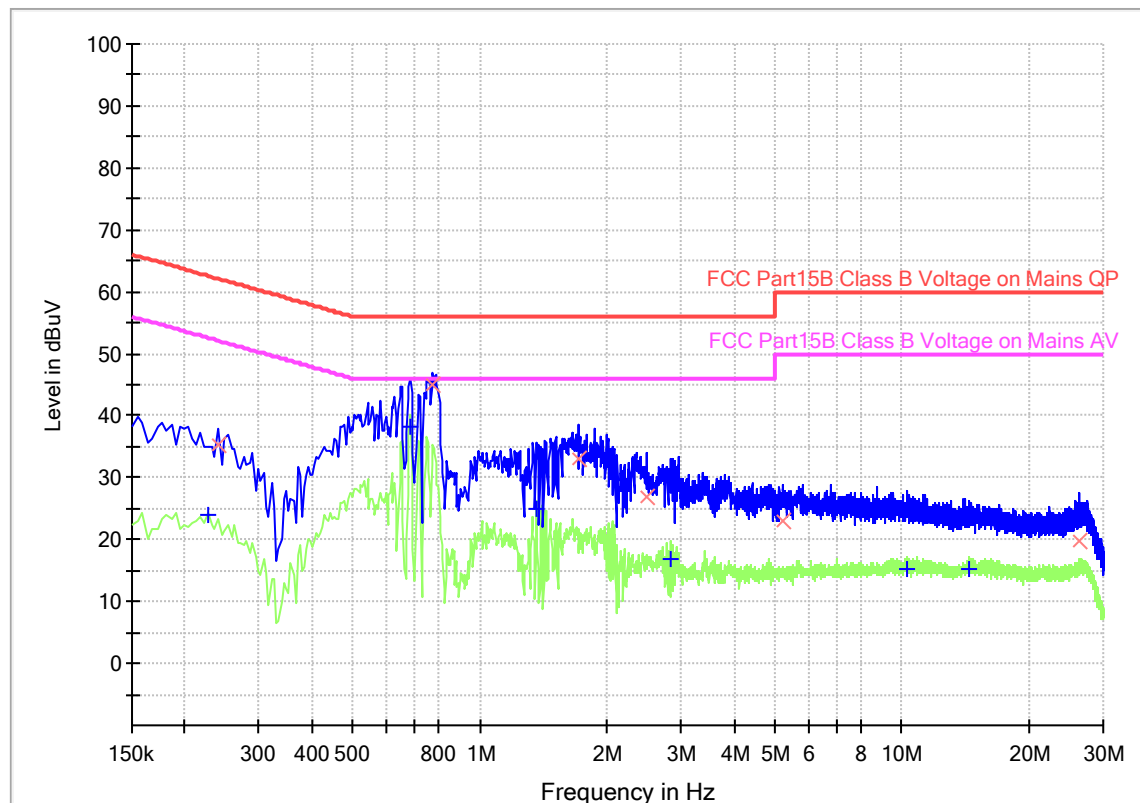
EUT Information

EUT Name: Wireless Display
 Model: LKOUT W
 Client: Fellowes Inc.
 Op Cond: Power on, transmitting at 802.11b_2462MH, AC 120V/60Hz, T24.1, H39.1%, P102.5kPa
 Operator: Cheng Huali
 Standard: FCC Part15.207(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	Preamplifier
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)
0.226500	---	23.88	52.58	28.70	1000.0	9.000	L	19.4
0.240000	35.35	---	62.10	26.75	1000.0	9.000	L	19.4
0.685500	---	38.25	46.00	7.75	1000.0	9.000	L	19.4
0.775500	44.92	---	56.00	11.08	1000.0	9.000	L	19.5
1.365000	---	24.99	46.00	21.01	1000.0	9.000	L	19.5
1.711500	32.95	---	56.00	23.05	1000.0	9.000	L	19.5
2.494500	26.74	---	56.00	29.26	1000.0	9.000	L	19.5
2.836500	---	16.97	46.00	29.03	1000.0	9.000	L	19.5
5.226000	22.91	---	60.00	37.09	1000.0	9.000	L	19.6
10.315500	---	15.22	50.00	34.78	1000.0	9.000	L	19.7
14.433000	---	15.19	50.00	34.81	1000.0	9.000	L	19.9
26.434500	19.81	---	60.00	40.19	1000.0	9.000	L	20.6

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

Factor (dB) = Cable Loss (dB) + LISN Factor (dB) + 10dB Attenuator



150k-30MHz Conducted Emission Test

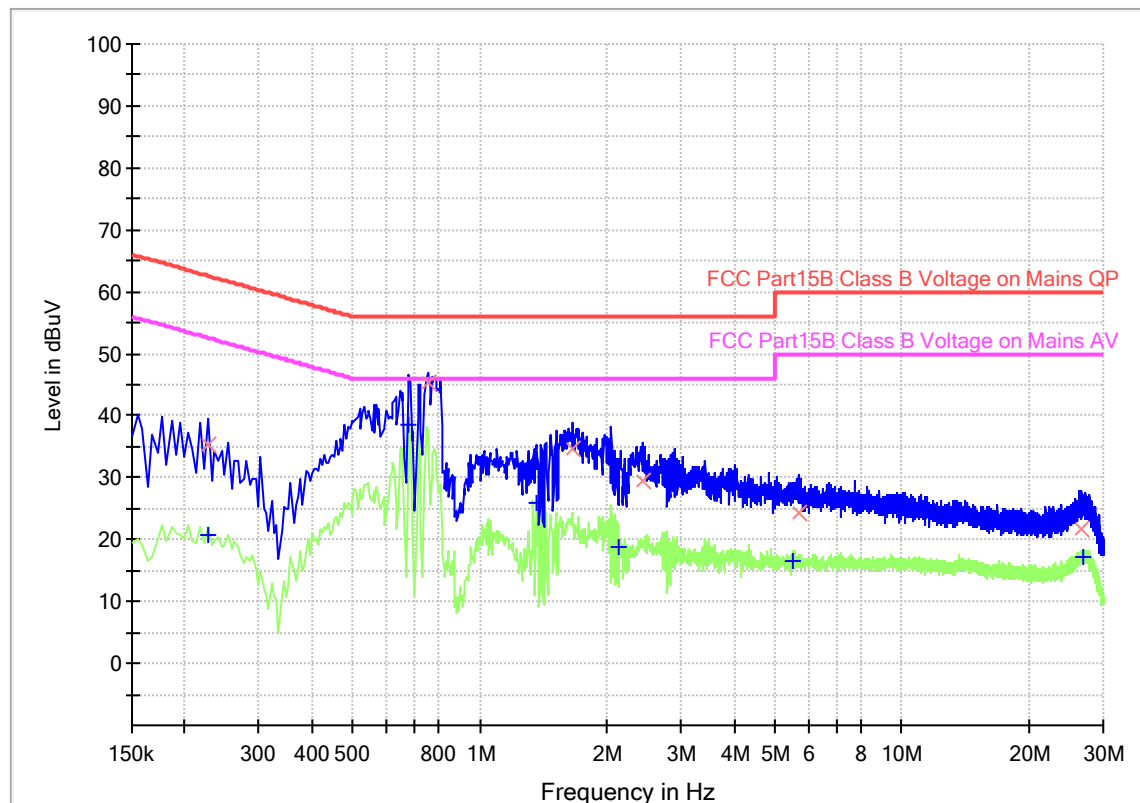
EUT Information

EUT Name: Wireless Display
 Model: LKOUT W
 Client: Fellowes Inc.
 Op Cond: Power on, transmitting at 802.11b_2462MH, AC 120V/60Hz, T24.1, H39.1%, P102.5kPa
 Operator: Cheng Huali
 Standard: FCC Part15.207(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	Preamplifier
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)
0.226500	---	20.83	52.58	31.75	1000.0	9.000	N	19.4
0.226500	35.36	---	62.58	27.22	1000.0	9.000	N	19.4
0.681000	---	38.47	46.00	7.53	1000.0	9.000	N	19.4
0.753000	45.17	---	56.00	10.83	1000.0	9.000	N	19.5
1.369500	---	26.05	46.00	19.95	1000.0	9.000	N	19.5
1.657500	34.58	---	56.00	21.42	1000.0	9.000	N	19.5
2.125500	---	18.88	46.00	27.12	1000.0	9.000	N	19.5
2.436000	29.57	---	56.00	26.43	1000.0	9.000	N	19.5
5.518500	---	16.57	50.00	33.43	1000.0	9.000	N	19.6
5.698500	24.15	---	60.00	35.85	1000.0	9.000	N	19.6
26.704500	21.72	---	60.00	38.28	1000.0	9.000	N	20.6
26.907000	---	17.26	50.00	32.74	1000.0	9.000	N	20.6

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

Factor (dB) = Cable Loss (dB) + LISN Factor (dB) + 10dB Attenuator



10.2 Spurious radiated emissions for transmitter

Test Method

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 3 meter 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 from 0 degrees to 360 degrees to find the maximum reading.
5. Use the following spectrum analyzer settings According to C63.10
 - 1) Procedure for Unwanted Emissions Measurements Below 1000 MHz
Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 100 kHz to 120kHz, VBW ≥ RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.
 - 2) For Peak unwanted emissions Above 1GHz:
Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 1MHz, VBW ≥ RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.
Procedures for average unwanted emissions measurements above 1GHz
 - a) RBW = 1MHz.
 - b) $VBW \setminus [3 \times RBW]$.
 - c) Detector = RMS (power averaging), if $[\text{span} / (\# \text{ of points in sweep})] \setminus RBW / 2$.
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.

3) 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 (AV) at frequency above 1GHz.

Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under § 15.247(b)(3), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a).

Frequency MHz	Field Strength $\mu\text{V/m}$	Field Strength $\text{dB}\mu\text{V/m}$	Detector	Measurement distance meters
0.009-0.490	2400/F(kHz)	48.5-13.8	AV	300
0.490-1.705	24000/F(kHz)	33.8-23.0	QP	30
1.705-30	30	29.5	QP	30
30-88	100	40	QP	3
88-216	150	43.5	QP	3
216-960	200	46	QP	3
960-1000	500	54	QP	3
Above 1000	500	54	AV	3
Above 1000	5000	74	PK	3

Note 1: Limit $3\text{m}(\text{dB}\mu\text{V/m}) = \text{Limit } 300\text{m}(\text{dB}\mu\text{V/m}) + 40\text{Log}(300\text{m}/3\text{m})$ (Below 30MHz)

Note 2: Limit $3\text{m}(\text{dB}\mu\text{V/m}) = \text{Limit } 30\text{m}(\text{dB}\mu\text{V/m}) + 40\text{Log}(30\text{m}/3\text{m})$ (Below 30MHz)



Spurious Radiated Emissions for Transmitter

**The worst case of Radiated Emission below 1GHz:
30-1000MHz Radiated Emission**

EUT Information

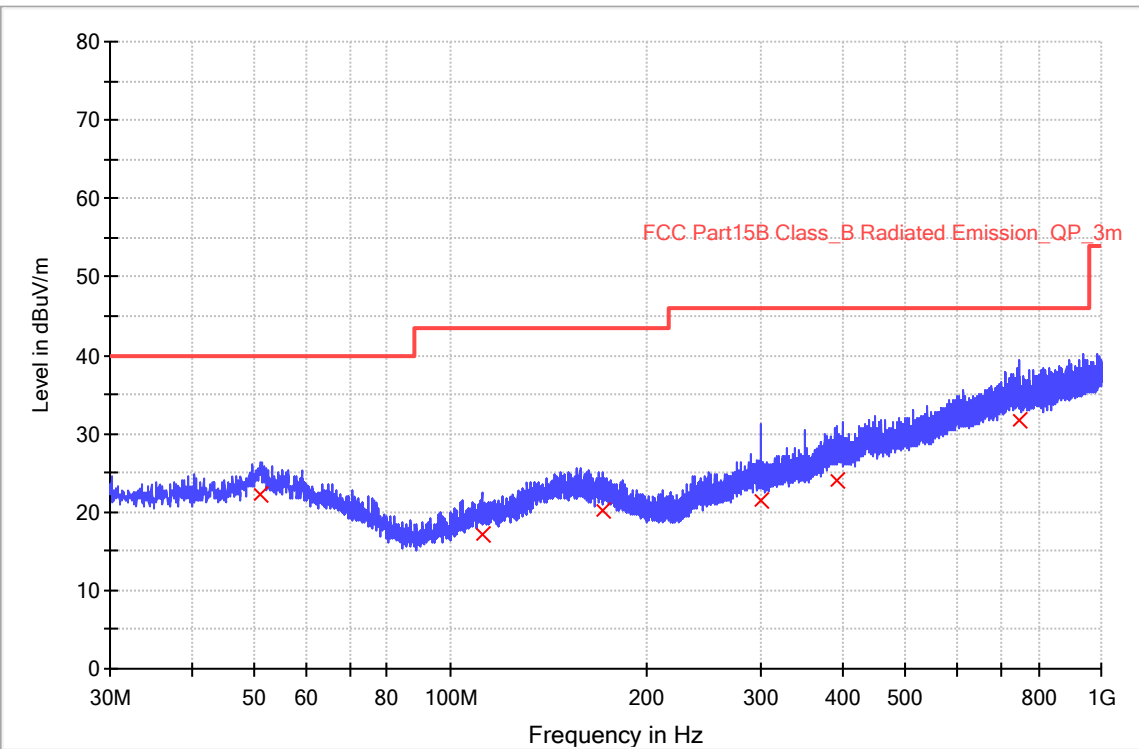
EUT Name: Wireless Display
Model: LKOUT W
Client: Fellowes Inc.
Op Cond: Power on, transmitting at 802.11b_2462MH, AC 120V/60Hz, T22.5, H45.1%. P102.5kPa
Operator: Cheng Huali
Test Spec: FCC Part15.209(a)
Comment: Horizontal
Sample No: SHA-794643-1

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	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)
50.960000	22.2	1000.0	120.000	122.0	H	321.0	20.6	17.8	40.0
111.680000	17.1	1000.0	120.000	202.0	H	118.0	17.5	26.4	43.5
171.320000	20.2	1000.0	120.000	180.0	H	28.0	20.2	23.3	43.5
300.000000	21.5	1000.0	120.000	160.0	H	301.0	21.5	24.5	46.0
392.280000	23.9	1000.0	120.000	200.0	H	286.0	23.9	22.1	46.0
750.040000	31.8	1000.0	120.000	290.0	H	113.0	31.7	14.2	46.0



30-1000MHz Radiated Emission

EUT Information

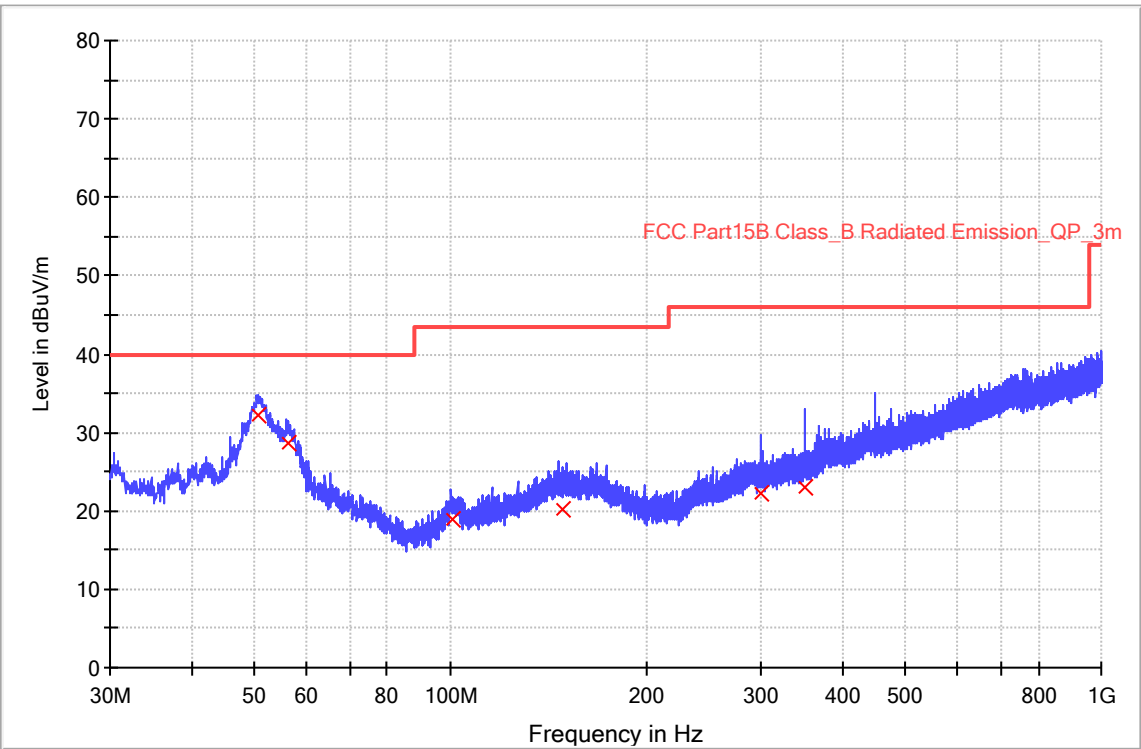
EUT Name: Wireless Display
Model: LKOUT W
Client: Fellowes Inc.
Op Cond: Power on, transmitting at 802.11b_2462MH, AC 120V/60Hz, T22.5, H45.1%, P102.5kPa
Operator: Cheng Huali
Test Spec: FCC Part15.209(a)
Comment: Vertical
Sample No: SHA-794643-1

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	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)
50.680000	32.2	1000.0	120.000	158.0	V	331.0	20.6	7.8	40.0
56.160000	28.7	1000.0	120.000	100.0	V	125.0	20.4	11.3	40.0
101.000000	18.9	1000.0	120.000	225.0	V	269.0	16.2	24.6	43.5
148.440000	20.1	1000.0	120.000	200.0	V	35.0	21.0	23.4	43.5
300.000000	22.2	1000.0	120.000	150.0	V	228.0	21.5	23.8	46.0
350.000000	23.1	1000.0	120.000	302.0	V	19.0	22.6	22.9	46.0



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-----