

FCC - TEST REPORT

Report Number : **60.792.18.015.01R01** Date of Issue : November 16, 2018

Model : HG04705-US-TX

Product Type : WIRELESS WEATHER STATION

Applicant : Lidl US Trading, LLC

Address : 3500 South Clark Street, Arlington, VA 22202, USA

Production Facility : PUTIAN DIOR INDUSTRIAL CO., LTD.

Address : Linan Industrial Area, Xianyou County, Putian, Fujian, China

Test Result : ☒ **Positive** ☐ **Negative**

Total pages
including
Appendices : 18

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2 Description of Equipment Under Test

Description of the Equipment Under Test

Product:	WIRELESS WEATHER STATION
Model no.:	HG04705-US-TX
FCC ID:	2AJ9O-HG4705TX
Rating:	3 VDC (2 x AA battery)
Frequency:	433.92MHz
Antenna gain:	0 dBi
Number of operated channel:	1
Modulation:	FSK

3 Summary of Test Standards

Test Standards
FCC Part 15 Subpart C 10-1-17 Edition Federal Communications Commission, PART 15 — Radio Frequency Devices, Subpart C — Unintentional Radiators

4 Details about the Test Laboratory

Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12&13 Zhiheng Wisdomland Business Park,
Nantou Checkpoint Road 2,
Shenzhen 518052, P.R.China
FCC Registration Number: 514049

Emission Tests	
Test Item	Test Site
FCC Part 15 Subpart C	
FCC Title 47 Part 15.205, 15.209 & 15.231(e) Radiated Emission	Site1
FCC Title 47 Part 15.207 Conduct Emission	NIL
FCC Title 47 Part 15.231(c) 20dB Bandwidth	Site 1
FCC Title 47 Part 15.247(e) Transmission Time	Site 1

4.1 Test Equipment Site List

Radiated emission Test – Site 1

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	2019-7-6
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	2019-6-28
Horn Antenna	Rohde & Schwarz	HF907	102294	2019-6-28
Pre-amplifier	Rohde & Schwarz	SCU 18	102230	2019-7-6
Signal Generator	Rohde & Schwarz	SMY01	839369/005	2019-7-6
Attenuator	Agilent	8491A	MY39264334	2019-7-6
3m Semi-anechoic chamber	TDK	9X6X6	----	2020-7-7
Test software	Rohde & Schwarz	EMC32	Version 9.15.00	N/A

20dB Bandwidth, Transmission Time – Site 1

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Signal Analyzer	Rohde & Schwarz	FSV40	101030	2019-7-6

4.2 Measurement System Uncertainty

Measurement System Uncertainty Emissions

System Measurement Uncertainty	
Items	Extended Uncertainty
Uncertainty for Radiated Emission in 3m chamber 9kHz-30MHz	4.54dB
Uncertainty for Radiated Emission in 3m chamber 30MHz-1000MHz	Horizontal: 4.83dB; Vertical: 4.91dB;
Uncertainty for Radiated Emission in 3m chamber 1000MHz-25000MHz	Horizontal: 4.89dB; Vertical: 4.88dB;
Uncertainty for Conducted RF test	2.04dB

5 Summary of Test Results

Emission Tests				
FCC Part 15 Subpart C				
Test Condition	Pages	Test Result		
		Pass	Fail	N/A
FCC Title 47 Part 15.205, 15.209 & 15.231(e) Radiated Emission	10-13	☒	☐	☐
FCC Title 47 Part 15.207 Conduct Emission (1)	NIL	☐	☐	☒
FCC Title 47 Part 15.231(c) 20dB Bandwidth	14	☒	☐	☐
FCC Title 47 Part 15.247(e) Transmission Time	15	☒	☐	☐

Remark:

- 1) These requirements do not apply for equipment which employ battery power for operation and which do not operate from the AC power lines.

6 General Remarks

Remarks

All mode has been tested, only worst case has shown.

SUMMARY:

- All tests according to the regulations cited on page 5 were

■ - Performed

□ - **Not** Performed

- The Equipment Under Test

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

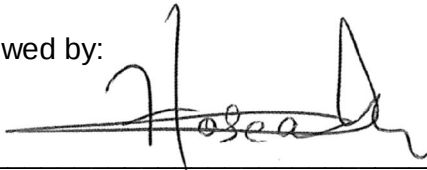
□ - **Does not** fulfill the general approval requirements.

Sample Received Date: November 1, 2018

Testing Start Date: November 2, 2018

Testing End Date: November 12, 2018

Reviewed by:



Hosea CHAN
EMC Project Engineer

Prepared by:



Eric LI
EMC Senior Project Engineer

7 Emission Test Results

7.1 Spurious Radiated Emission

EUT: HG04705-US-TX
 Op Condition: Operated, TX Mode (433.92MHz)
 Test Specification: FCC15.205, 15.209 & 15.231(e) Antenna: Horizontal
 Comment: 3 VDC
 Remark: 9kHz to 5GHz

Test Result	
☒	Passed
☐	Not Passed

Frequency MHz	Result dBμV/m	Limit dBμV/m	Margin dB	Detector
216.940	20.96	46.00	-25.04	Peak
433.920	57.94	92.87	-34.93	Peak
867.918	36.76	72.87	-36.11	Peak
2603.500	43.28	74.00	-30.72	Peak
3037.500	44.98	74.00	-29.02	Peak
3471.500	46.51	74.00	-27.49	Peak

Duty cycle factor=-11.21
 Average value = Peak value + Duty cycle factor

Frequency MHz	PK Result @3m dBμV/m	Duty Cycle Factor dB	AV Result @3m dBμV/m	Limit dBμV/m	Margin dB
216.940	20.96	/	/	46	-25.04
433.951	57.94	-11.21	46.73	72.87	-26.14
867.918	36.76	-11.21	25.55	52.87	-27.32
2603.500	43.28	-11.21	32.07	54	-21.93
3037.500	44.98	-11.21	33.77	54	-20.23
3471.500	46.51	-11.21	35.30	54	-18.70

Spurious Radiated Emission

EUT: HG04705-US-TX
 Op Condition: Operated, TX Mode (433.92MHz)
 Test Specification: FCC15.205, 15.209 & 15.231(e) Antenna: Vertical
 Comment: 3 VDC
 Remark: 9kHz to 5GHz

Test Result	
☒	Passed
☐	Not Passed

Frequency MHz	Result dBμV/m	Limit dBμV/m	Margin dB	Detector
216.940	31.77	46	-14.23	Peak
325.418	30.03	46	-15.97	Peak
433.920	71.53	92.87	-21.34	Peak
867.864	45.32	72.87	-27.55	Peak
2603.625	44.48	74	-29.52	Peak
3037.500	52.06	74	-21.94	Peak
3471.500	46.16	74	-27.84	Peak

Duty cycle factor=-11.21

Average value = Peak value + Duty cycle factor

Frequency MHz	PK Result @3m dBμV/m	Duty Cycle Factor dB	AV Result @3m dBμV/m	Limit dBμV/m	Margin dB
216.940	31.77	/	/	46	-14.23
325.418	30.03	/	/	46	-15.97
433.920	71.53	-11.21	60.32	72.87	-12.55
867.864	45.32	-11.21	34.11	52.87	-18.76
2603.625	44.48	-11.21	33.27	54	-20.73
3037.500	52.06	-11.21	40.85	54	-13.15
3471.500	46.16	-11.21	34.95	54	-19.05

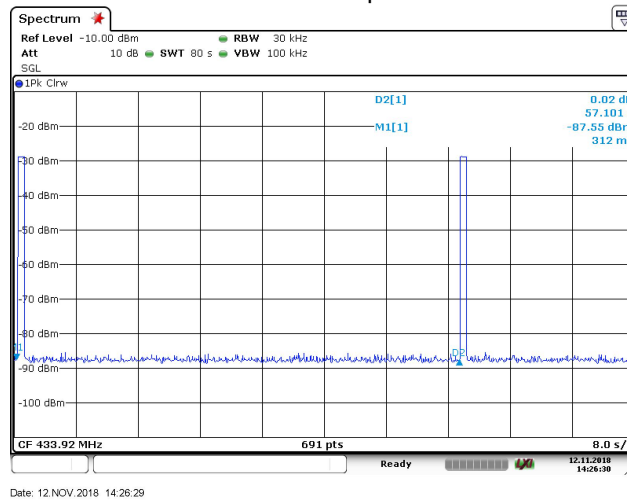
Spurious Radiated Emission

EUT: HG04705-US-TX
 Op Condition: Operated, TX Mode (433.92MHz)
 Test Specification: FCC15.205, 15.209 & 15.231(e) Antenna: Vertical
 Comment: 3 VDC
 Remark: 9kHz to 5GHz

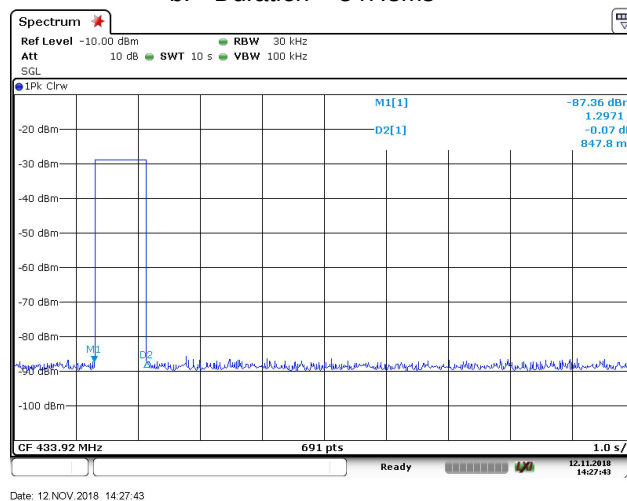
Test Result	
☒	Passed
☐	Not Passed

Duct Cycle Factor Calculation

a. Transmission period



b. Duration = 847.8ms

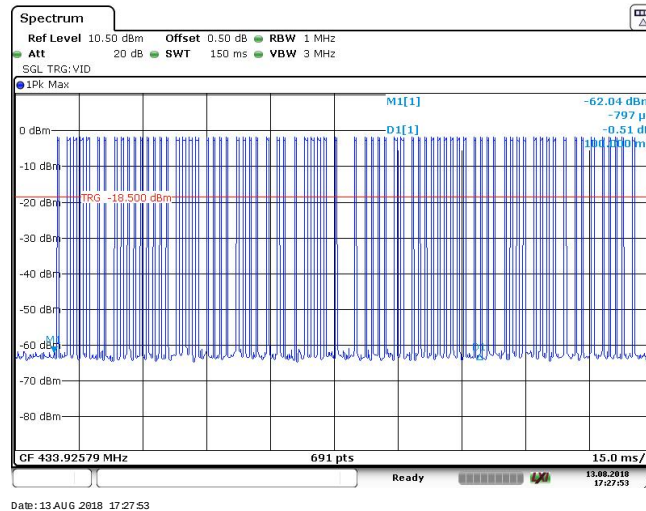


Spurious Radiated Emission

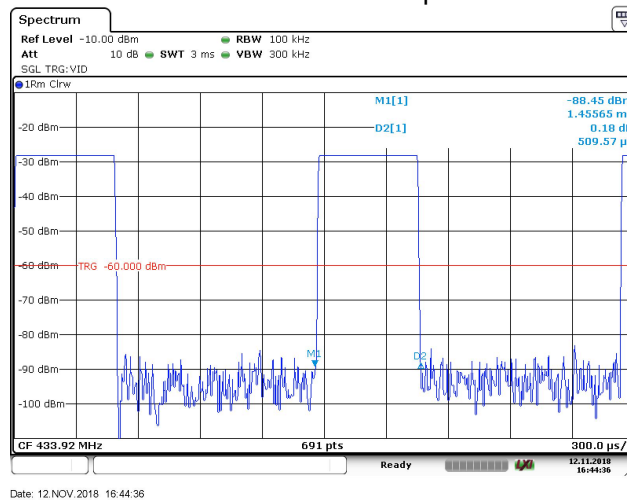
EUT: HG04705-US-TX
 Op Condition: Operated, TX Mode (433.92MHz)
 Test Specification: FCC15.205, 15.209 & 15.231(e) Antenna: Vertical
 Comment: 3 VDC
 Remark: 9kHz to 5GHz

Test Result	
☒	Passed
☐	Not Passed

c. Pulse number in 100ms



d. Pulse width=509.57 μs

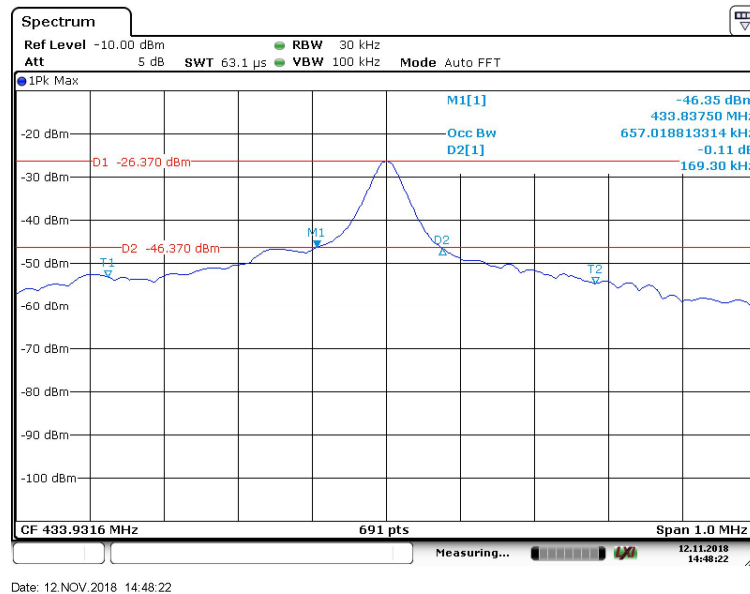


Calculation:
 Max. allowed $T_p=100\text{ms}$
 Number of pulses in $100\text{ms}=54$
 Pulse width= $509.57\text{ }\mu\text{s}$
 $T_{on}=\text{Pulse width} \times \text{Number of pulses in } 100\text{ms}=27.5\text{ ms}$
 Duty cycle factor= $20 \times \log(T_{on}/T_p)=-11.2$

7.2 20dB Bandwidth

EUT: HG04705-US-TX
 Op Condition: Operated, TX Mode (433.92MHz)
 Test Specification: FCC15.231(c) 20dB Bandwidth
 Comment: 3 VDC

Test Result	
☒	Passed
☐	Not Passed



Bandwidth	Measured Value	Limit
20dB bandwidth	169.30 kHz	≤ 1084.8 kHz
Limit=0.25%*Center Frequency=0.25%*433.92MHz=1084.8kHz		

7.3 Transmission Time

EUT: HG04705-US-TX
Op Condition: Operated, TX Mode (433.92MHz)
Test Specification: FCC15.231(e)
Comment: 3 VDC

Test Result	
☒	Passed
☐	Not Passed

Frequency	Duration of each transmission	Limit	Silent period	Limit
433.92MHz	847.8ms	< 1s	56.25s	25.4s

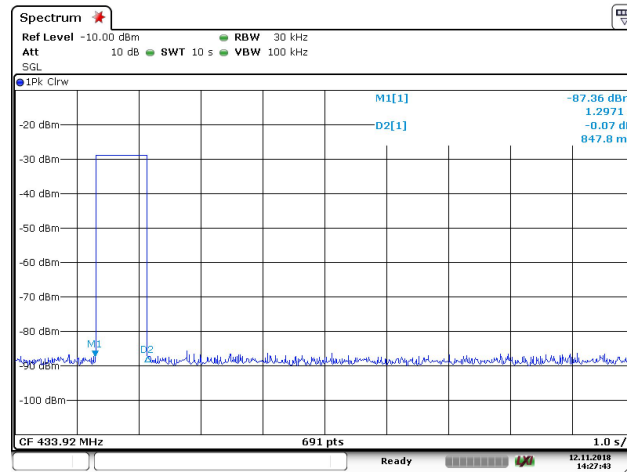
Note: Silent period limit is 30 times the duration of the transmission but in no case less than 10 seconds
Silent period= Transmitting period - Duration of each transmission
= 57.101-0.8478 s
= 56.25 s

Transmission Time

EUT: HG04705-US-TX
Op Condition: Operated, TX Mode (433.92MHz)
Test Specification: FCC15.231(e)
Comment: 3 VDC

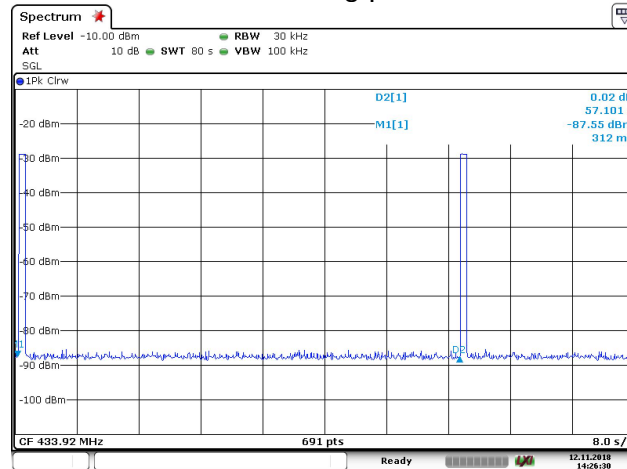
Test Result
☒ Passed
☐ Not Passed

Duration of each transmission



Date: 12.NOV.2018 14:27:43

Transmitting period



Date: 12.NOV.2018 14:26:29

8 Appendix A - General Product Information

Radiofrequency radiation exposure evaluation

According to KDB 447498 D01v06 section 4.3.1, For frequencies between 100 MHz to 6GHz and test separation distances ≤ 50 mm, the Numeric threshold is determined as:

Step a)

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)]

· $[\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR

>> The fundamental frequency of the EUT is 433.92MHz, the test separation distance is $\leq 5\text{mm}$ & $\leq 20\text{mm}$.

(Manufacturer specified the separation distance is: 20mm)

Step a.1)

>> Numeric threshold, mW / **5 mm** * $\sqrt{0.43392\text{GHz}} \leq 3.0$

Numeric threshold $\leq$ **22.771mW**

Step a.2)

>> Numeric threshold, mW / **20 mm** * $\sqrt{0.43392\text{GHz}} \leq 3.0$

Numeric threshold $\leq$ **91.084mW**

>> The power of EUT measured is: -26.52dBm = 0.002mW

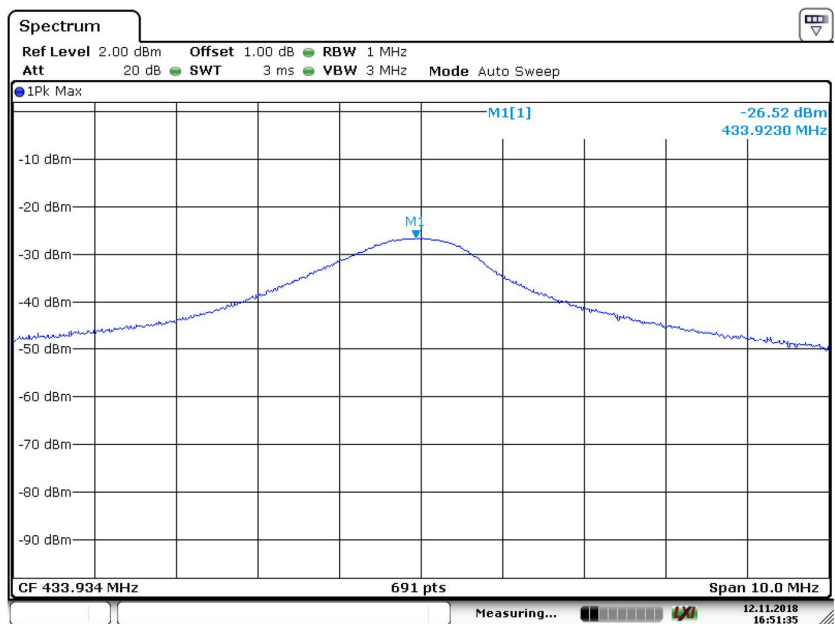
Which is smaller than the Numeric threshold.

Therefore, the device is exempt from stand-alone SAR test requirements.

Appendix A - Conducted power

EUT: HG04705-US-TX
Op Condition: Operated, TX Mode
Comment: 3 VDC
Remark: NA

Test Result	
☒	Passed
☐	Not Passed



Date: 12.NOV.2018 16:51:35