

FCC - TEST REPORT

Report Number : **60.792.19.001.01R01** Date of Issue : March 13, 2019

Model : HG00783A-TX, HG00783B-TX

Product Type : Wireless Doorbell

Applicant : Lidl US LLC

Address : 3500 S Clark Street, ARLINGTON VA 22202

Production Facility : PUTIAN DIOR INDUSTRIAL CO., LTD.

Address : LINAN INDUSTRIAL DISTRICT, XIANYOU COUNTY, 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 Doorbell
Model no.:	HG00783A-TX
FCC ID:	2AJ9O-783TX
Rating:	3 VDC (1 x CR2302 battery)
Frequency:	433.92MHz
Antenna gain:	0 dBi
Number of operated channel:	1
Modulation:	OOK(2ASK)

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

All the tests were performed using the procedures from ANSI C63.4(2014) and ANSI C63.10 (2013).

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
Signal Analyzer	Rohde & Schwarz	FSV40	101031	2019-7-6
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100398	2019-7-6
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	2019-6-28
Horn Antenna	Rohde & Schwarz	HF907	102294	2019-6-28
Wideband Horn Antenna	Q-PAR	QWH-SL-18-40-K-SG	12827	2019-7-12
Pre-amplifier	Rohde & Schwarz	SCU 18	102230	2019-7-6
Pre-amplifier	Rohde & Schwarz	SCU 40A	100432	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	4.46dB
Uncertainty for Radiated Emission in 3m chamber 30MHz-1000MHz	Horizontal: 4.91dB; Vertical: 4.89dB;
Uncertainty for Radiated Emission in 3m chamber 1000MHz-25000MHz	Horizontal: 4.80dB; Vertical: 4.79dB;
Uncertainty for Conducted RF test	2.13dB
Uncertainty for Frequency RF test	0.6×10 ⁻⁷



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	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC Title 47 Part 15.207 Conduct Emission (1)	NIL	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
FCC Title 47 Part 15.231(c) 20dB Bandwidth	14	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC Title 47 Part 15.247(e) Transmission Time	15	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Remark:

1) Conducted Emission testing is not applicable for battery operating device.

6 General Remarks

Remarks

Client informs that the **HG00783B-TX** have the same technical construction including circuit diagram, PCB Layout, components and component layout, all electrical construction and mechanical construction with **Wireless Doorbell, HG00783A-TX**. The difference lies only on the different color of the different models. (Client's conformation letter shown at appendix A)

All tests were performed on model **HG00783A-TX**.

This submittal(s) (test report) is intended for **FCC ID: 2AJ90-783TX**, complies with Section 15.205, 15.207, 15.209, 15.231 of the FCC Part 15, Subpart C rules for the DXX grant

The TX range is 433.92MHz.

SUMMARY:

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

■ - Performed

□ - **Not** Performed

- The Equipment Under Test

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

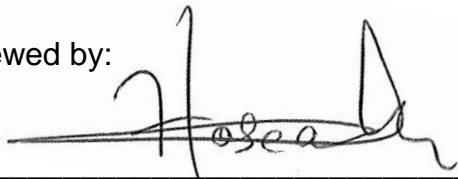
□ - **Does not** fulfill the general approval requirements.

Sample Received Date: January 2, 2019

Testing Start Date: January 10, 2019

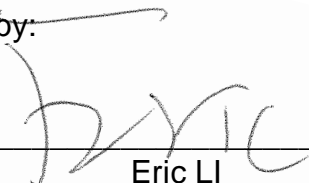
Testing End Date: January 22, 2019

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: HG00783A-TX
 Op Condition: Operated, TX Mode (433.92MHz)
 Test Specification: FCC15.205, 15.209 & 15.231(b) Antenna: Horizontal
 Comment: 3 VDC
 Remark: 9kHz to 5GHz

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Frequency MHz	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector PK/QP/AV	Corr. (dB)
433.92	78.10	100.83	-22.73	Peak	-23.2
867.84	45.85	80.83	-34.98	Peak	-15.9
1301.76	40.08	74.00	-33.92	Peak	-11.7
2169.60	41.22	80.83	-39.61	Peak	-7.3
2603.52	44.26	80.83	-36.57	Peak	-4.2
3037.44	40.87	80.83	-39.96	Peak	-3.6
4339.20	38.75	80.83	-42.08	Peak	1.2

Duty cycle factor=-11.81
 Average value = Peak value + Duty cycle factor

Frequency MHz	PK Result @3m dB μ V/m	Duty Cycle Factor dB	AV Result @3m dB μ V/m	Limit dB μ V/m	Margin dB
433.92	78.10	-11.81	66.29	80.83	-14.54
867.84	45.85	-11.81	34.04	60.83	-26.79
1301.76	40.08	-11.81	28.27	54.00	-25.73
2169.60	41.22	-11.81	29.41	60.83	-31.42
2603.52	44.26	-11.81	32.45	60.83	-28.38
3037.44	40.87	-11.81	29.06	60.83	-31.77
4339.20	38.75	-11.81	26.94	60.83	-33.89

Spurious Radiated Emission

EUT: HG00783A-TX
 Op Condition: Operated, TX Mode (433.92MHz)
 Test Specification: FCC15.205, 15.209 & 15.231(b) Antenna: Vertical
 Comment: 3 VDC
 Remark: 9kHz to 5GHz

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Frequency MHz	Result dBµV/m	Limit dBµV/m	Margin dB	Detector PK/QP/AV	Corr. (dB)
433.92	64.57	100.83	-36.26	Peak	-23.2
867.84	31.53	80.83	-49.30	Peak	-15.9
2169.60	41.50	80.83	-39.33	Peak	-7.3
2603.52	39.80	80.83	-41.03	Peak	-4.2
3037.44	41.24	80.83	-39.59	Peak	-3.6

Duty cycle factor=-11.81
 Average value = Peak value + Duty cycle factor

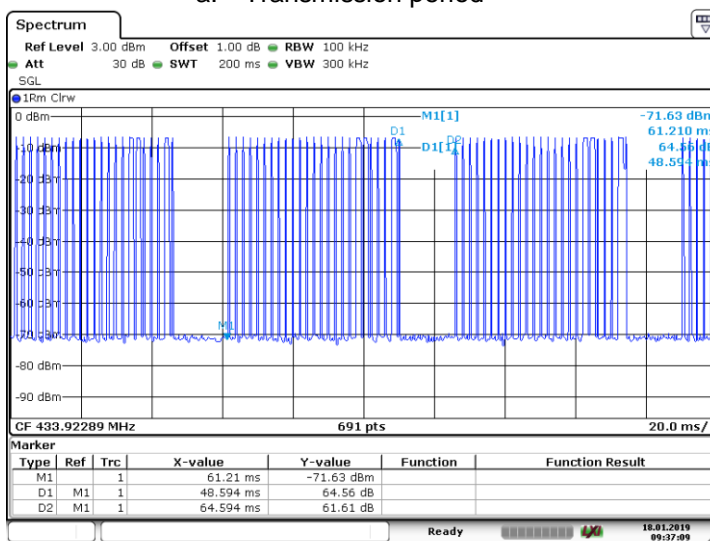
Frequency MHz	PK Result @3m dBµV/m	Duty Cycle Factor dB	AV Result @3m dBµV/m	Limit dBµV/m	Margin dB
433.92	64.57	-11.81	52.76	80.83	-28.07
867.84	31.53	-11.81	19.72	60.83	-41.11
2169.60	41.50	-11.81	29.69	60.83	-31.14
2603.52	39.80	-11.81	27.99	60.83	-32.84
3037.44	41.24	-11.81	29.43	60.83	-31.4

Spurious Radiated Emission

EUT: HG00783A-TX
 Op Condition: Operated, TX Mode (433.92MHz)
 Test Specification: FCC15.205, 15.209 & 15.231(b)
 Comment: 3 VDC
 Remark: Duty Cycle Factor Calculation

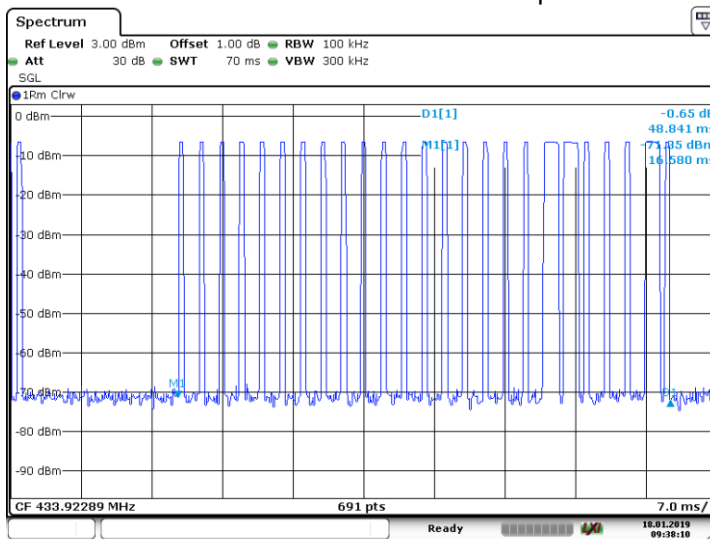
Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

a. Transmission period



Date: 18.JAN.2019 09:37:10

b. Pulse number in each transmission period



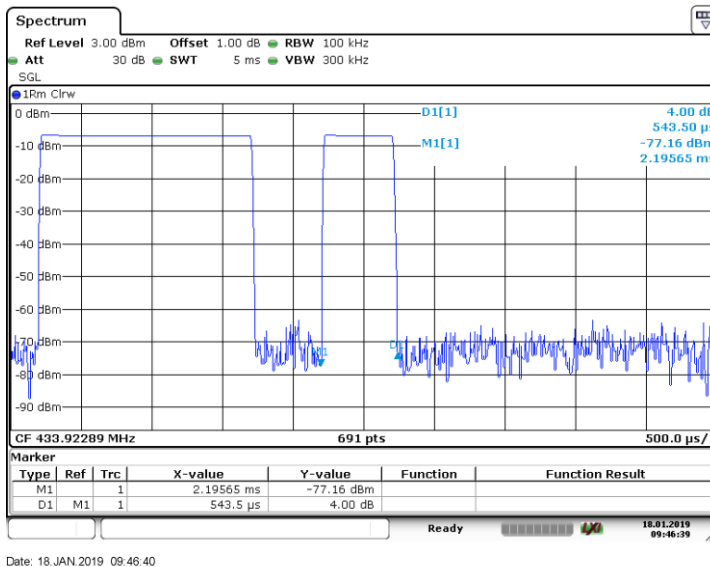
Date: 18.JAN.2019 09:38:10

Spurious Radiated Emission

EUT: HG00783A-TX
 Op Condition: Operated, TX Mode (433.92MHz)
 Test Specification: FCC15.205, 15.209 & 15.231(b)
 Comment: 3 VDC
 Remark: Duty Cycle Factor Calculation

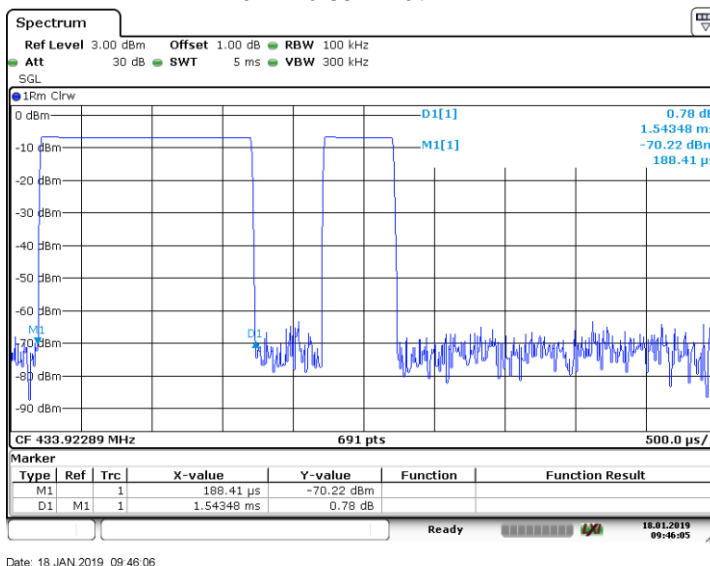
Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

c. Pulse1 width



Date: 18.JAN.2019 09:46:40

d. Pulse2 width



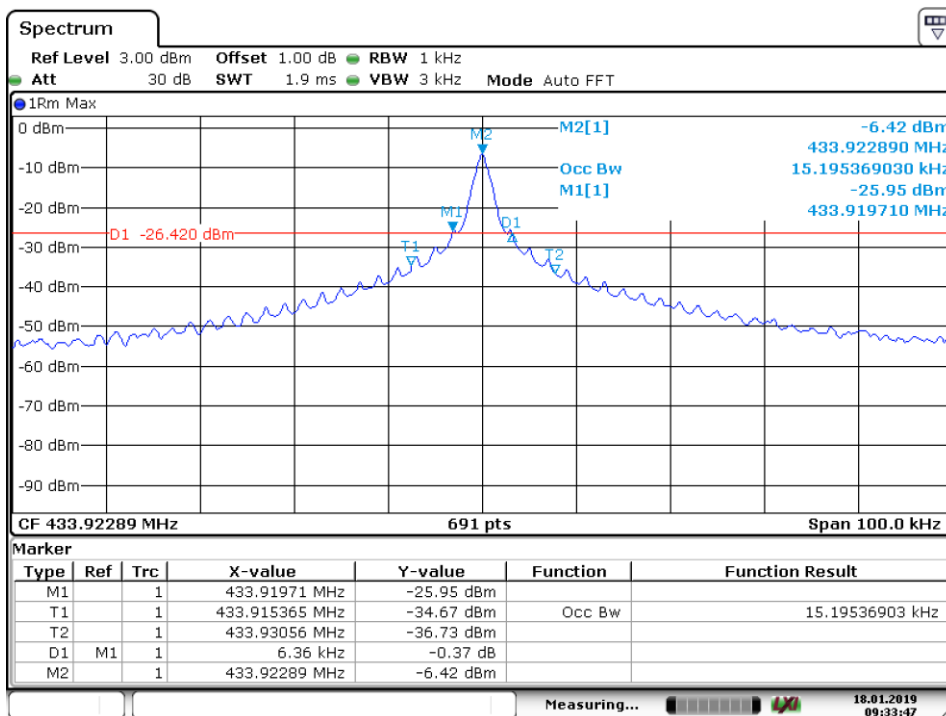
Date: 18.JAN.2019 09:46:06

Calculation:
 $T_p = 64.594 \text{ ms}$
 Number of pulse1 in 1 period = 22, Pulse1 width = 0.5435 ms
 Number of pulse2 in 1 period = 3, Pulse2 width = 1.54348 ms
 $T_{on} = \text{Pulse1 width} \times \text{Number of pulses in 1 period} + \text{Pulse2 width} \times \text{Number of pulses in 1 period}$
 $= 16.58744 \text{ ms}$
 Duty cycle factor = $20 \times \log(T_{on}/T_p) = -11.81$

7.2 20dB Bandwidth

EUT: HG00783A-TX
 Op Condition: Operated, TX Mode (433.92MHz)
 Test Specification: FCC15.231(c) 20dB Bandwidth
 Comment: 3 VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Date: 18.JAN.2019 09:33:47

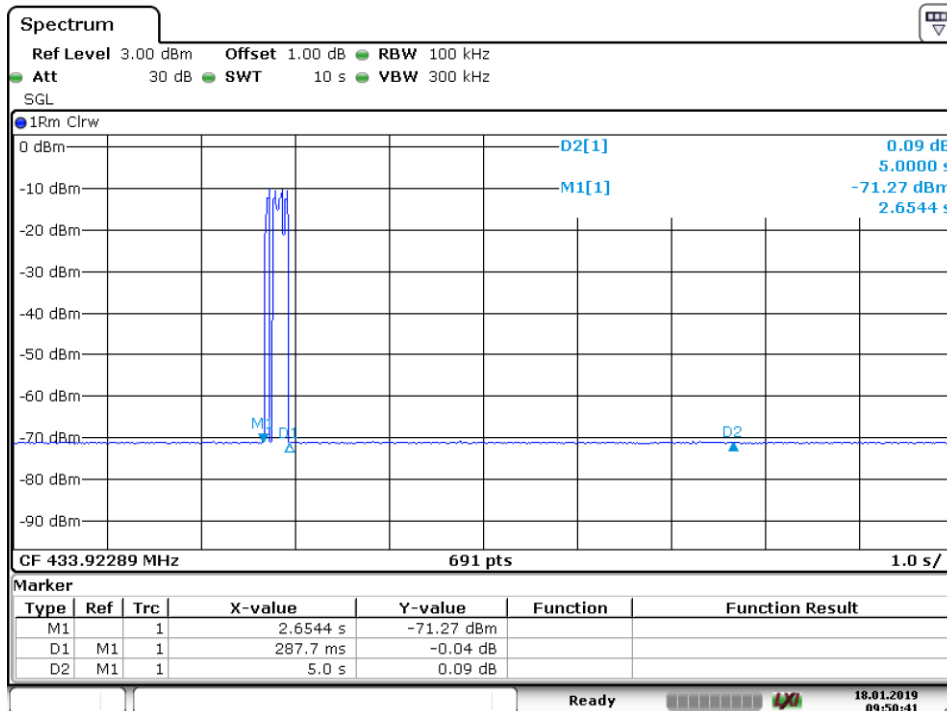
Bandwidth	Measured Value	Limit
20dB bandwidth	6.36 kHz	<= 1084.8 kHz
Limit=0.25%*Center Frequency=0.25%*433.92MHz=1084.8kHz		

7.3 Transmission Time

EUT: HG00783A-TX
 Op Condition: Operated, TX Mode (433.92MHz)
 Test Specification: FCC15.231(a)
 Comment: 3 VDC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Duration of a transmission



Date: 18.JAN.2019 09:50:41

Frequency	Duration of a transmission	Limit
433.92MHz	287.7ms	< 5s

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)

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ 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, $\text{mW} / 5 \text{ mm} * \sqrt{0.43392\text{GHz}} \leq 3.0$
Numeric threshold $\leq 22.771\text{mW}$

Step a.2)

>> Numeric threshold, $\text{mW} / 20 \text{ mm} * \sqrt{0.43392\text{GHz}} \leq 3.0$
Numeric threshold $\leq 91.084\text{mW}$

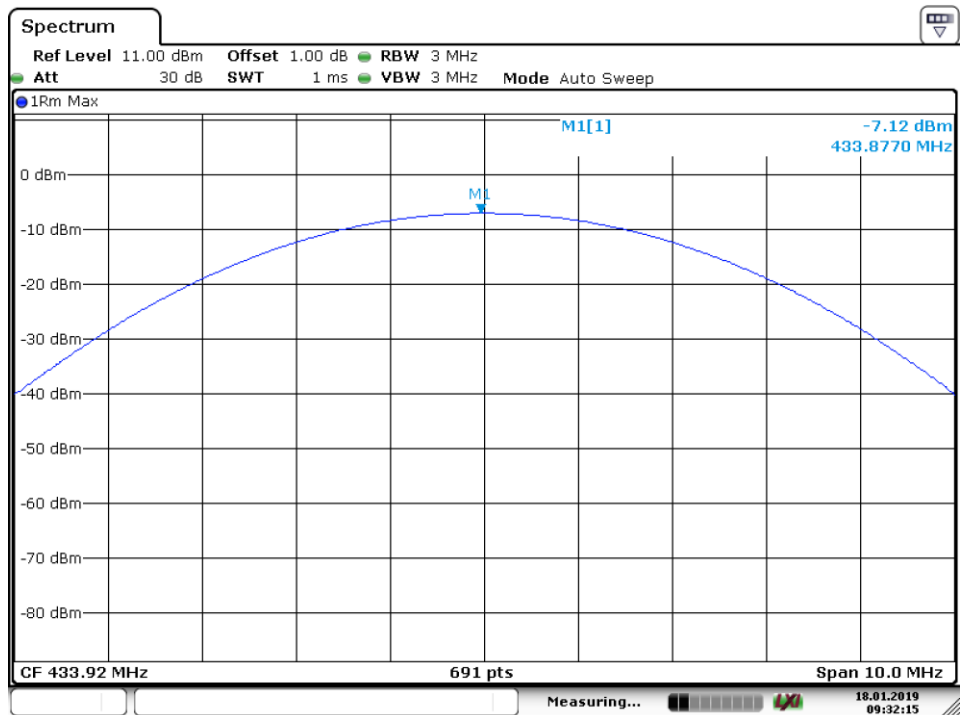
>> The power of EUT measured is: $-7.12\text{dBm} = 0.194\text{mW}$
Which is smaller than the Numeric threshold.

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

Appendix A - Conducted power

EUT: HG00783A-TX
Op Condition: Operated, TX Mode
Comment: 3 VDC
Remark: NA

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Date: 18.JAN.2019 09:32:15

Appendix A Declaration letter of model difference

Lidl US, LLC

320257

To: TÜV SÜD HKG Ltd.

Attention: Mr. Edmond Fung

From:

Date: March 4, 2019

Fax No:

Total Page (Cover Included): 1

Declaration Letter

Subject: Declaration Letter for Model Number

We:

Officially notify TÜV SÜD HKG Ltd. that the <<Additional Model>> have the same technical construction including circuit diagram, PCB Layout, components and component layout, all electrical construction and mechanical construction, with <<PRODUCT>>, <<Main Test Model>>. The difference lies only on different color of the different models.

<<Additional Model >>: HG00783B-TX

<<Main Test Model >>: HG00783A-TX


<<Product>>: Wireless Doorbell

Applicant:

3/4/19

(Date)

3/4/19


ELIZABETH SULLIVAN

(Applicant's authorized signature and company Chop)


Pagiel Yoo