

FCC - TEST REPORT

Report Number : **60.792.20.005.01R01** Date of Issue : June 15, 2020

Model : **HG06610A-US, HG06610B-US**

Product Type : **Bluetooth speaker**

Applicant : Lidl US, LLC

Address : 3500 South Clark Street, Arlington, VA 22202

Production Facility : Goldfield Technology Co., Ltd.

Address : No.28 Lingxia Road, Qiaotou Town, Dongguan City, China

Test Result : **Positive** **Negative**

Total pages including Appendices : 47

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2 Description of Equipment Under Test

Description of the Equipment Under Test

| | |
|-----------------------------|--|
| Product: | Bluetooth speaker |
| Model no.: | HG06610A-US, HG06610B-US |
| FCC ID: | 2AJ9O-HG661 |
| Rating: | 1) 3.7 VDC (From internal 3.7 VDC rechargeable battery) 2) 5.0 VDC (From USB charging port) |
| Frequency: | 2402MHz-2480MHz |
| Antenna gain: | -0.58 dBi |
| Number of operated channel: | 79 |
| Modulation: | GFSK, $\pi/4$ DQPSK |

Auxiliary Equipment and Software Used during Test:

| DESCRIPTION | MANUFACTURER | MODEL NO. | S/N |
|-------------|--------------|-----------|---------|
| Adapter | Apple | A1357 | --- |
| Computer | Lenovo | X220 | 0A72168 |

Auxiliary Software Used during Test:

| DESCRIPTION | SOFTWARE NAME | VERSION | REMARK |
|-----------------------|---------------|---------|-----------------------|
| RF Test Mode Software | FCC Assist | 1.4 | Provided by applicant |

3 Summary of Test Standards

| Test Standards |
|----------------|
|----------------|

| |
|---|
| FCC Part 15 Subpart C 10-1-19 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: 502708
 NVLAP Lab Code: 500067-0

| Emission Tests | |
|---|-----------|
| Test Item | Test Site |
| FCC Part 15 Subpart C | |
| FCC Title 47 Part 15.205, 15.209 & 15.247(d) Spurious Radiated Emission | Site 1 |
| FCC Title 47 Part 15.207(a) AC Line Conducted Emission | Site 1 |
| FCC Title 47 Part 15.247(a)(1) 20dB & 99% Bandwidth | Site 1 |
| FCC Title 47 Part 15.247(b) Peak Output Power | Site 1 |
| FCC Title 47 Part 2.1051 & 15.247(d) Spurious Emissions at Antenna Terminals | Site 1 |
| FCC Title 47 Part 15.247(d) 100kHz Bandwidth of band edges | Site 1 |
| FCC Title 47 Part 15.247(a)(1) Minimum Number of Hopping Frequencies | Site 1 |
| FCC Title 47 Part 15.247(a)(1) Minimum Hopping Channel Carrier Frequency Separation | Site 1 |
| FCC Title 47 Part 15.247(a)(1) Average Time of Occupancy | Site 1 |
| FCC Title 47 Part 15.203 & 15.247(b) Antenna Requirement | Site 1 |

Test Engineer information.

| Engineer | Items |
|-------------|---|
| Reader Sang | All RF conducted items |
| Adam Yang | AC Line Conducted Emission and Spurious Radiated Emission |

Test Environment information.

| | |
|------------------------------|-----------|
| Ambient Temperature (°C): | 24.6-27.4 |
| Relative Humidity (%): | 58.7 |
| Atmospheric Pressure (mbar): | 1016 |

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 |
| 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 |
| 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 |

Conducted Emission Test – Site 1

| DESCRIPTION | MANUFACTURER | MODEL NO. | SERIAL NO. | CAL. DUE DATE |
|--------------------|-------------------|----------------|----------------|---------------|
| EMI Test Receiver | Rohde & Schwarz | ESR 3 | 101782 | 2019-7-6 |
| LISN | Rohde & Schwarz | ENV4200 | 100249 | 2019-7-6 |
| LISN | Rohde & Schwarz | ENV432 | 101318 | 2019-7-6 |
| LISN | Rohde & Schwarz | ENV216 | 100326 | 2019-7-6 |
| ISN | Rohde & Schwarz | ENY81 | 100177 | 2019-7-6 |
| ISN | Rohde & Schwarz | ENY81-CA6 | 101664 | 2019-7-6 |
| High Voltage Probe | Rohde & Schwarz | TK9420(VT9420) | 9420-584 | 2019-6-30 |
| RF Current Probe | Rohde & Schwarz | EZ-17 | 100816 | 2019-6-30 |
| Attenuator | Shanghai Huaxiang | TS2-26-3 | 080928189 | 2019-7-6 |
| Test software | Rohde & Schwarz | EMC32 | Version9.15.00 | N/A |

20dB & 99% Bandwidth, Peak Output Power, Spurious Emissions at Antenna Terminals, 100kHz Bandwidth of band edges, Power Spectral Density – Site 1

| DESCRIPTION | MANUFACTURER | MODEL NO. | SERIAL NO. | CAL. DUE DATE |
|-------------------------|-----------------|-----------------|---------------|---------------|
| Signal Generator | Rohde & Schwarz | SMB100A | 108272 | 2019-7-6 |
| Signal Analyzer | Rohde & Schwarz | FSV40 | 101030 | 2019-7-6 |
| Vector Signal Generator | Rohde & Schwarz | SMU 200A | 105324 | 2019-7-6 |
| RF Switch Module | Rohde & Schwarz | OSP120/OSP-B157 | 101226/100851 | 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 Emission at AC Power Line 150kHz-30MHz | 3.21dB |
| Uncertainty for Conducted RF Power | 2.13dB |
| Uncertainty for frequency 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 15.207(a) AC Line Conducted Emission | 12-13 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| FCC Title 47 Part 15.205, 15.209 & 15.247(d) Spurious Radiated Emission | 14-17 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| FCC Title 47 Part 15.247(a)(2) 20dB & 99% Bandwidth | 18-23 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| FCC Title 47 Part 15.247(b) Peak Output Power | 24-29 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| FCC Title 47 Part 2.1051 & 15.247(d) Spurious Emissions at Antenna Terminals | 30-35 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| FCC Title 47 Part 15.247(d) 100kHz Bandwidth of band edges | 36-38 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| FCC Title 47 Part 15.247(a)(1) Min. No. of Hopping Frequencies | 49-40 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| FCC Title 47 Part 15.247(a)(1) Min. of Hopping Channel Carrier Frequency Separation | 41-42 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| FCC Title 47 Part 15.247(a)(1) Average Time of Occupancy | 43-44 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| FCC Title 47 Part 15.203 & 15.247(b) Antenna Requirement | 45 | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

6 General Remarks

Remarks

Client informs that the **HG06610B-US** have the same technical construction including circuit diagram, PCB Layout, components and component layout, all electrical construction and mechanical construction with **Bluetooth speaker, HG06610A-US**. The difference lies only on the different outlook/color of the different models. (Applicant's conformation letter shown at appendix A)

EMC tests were performed on model: **HG06610A-US**.

All measurement and test data in this report was gathered from the production sample serial number: HKG-01-0480663-003 (Assigned by TUV SUD)

This submittal(s) (test report) is intended for **FCC ID: 2AJ90-HG661**, complies with Section 15.203, 15.205, 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C rules for the DSS grant.

The TX and RX range is 2402MHz-2480MHz

SUMMARY:

- All tests according to the regulations cited on page 8 were

- Performed

- **Not** Performed

- The Equipment Under Test

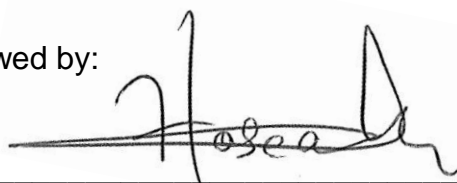
- **Fulfills** the general approval requirements.

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

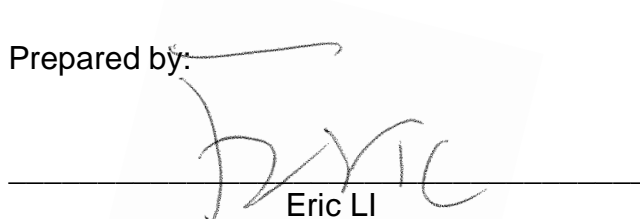
Sample Received Date: May 10, 2019

Testing Start Date: May 11, 2019

Testing End Date: May 25, 2019

Reviewed by: 

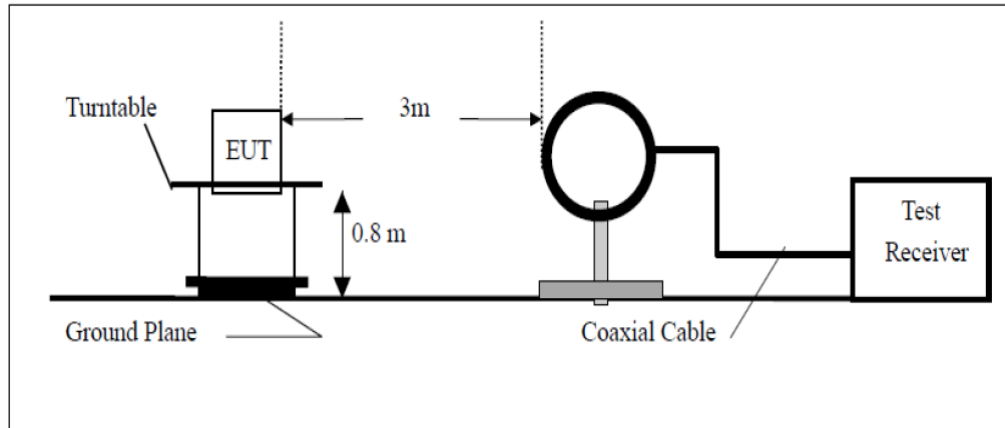
Hosea CHAN
EMC Project Engineer

Prepared by: 

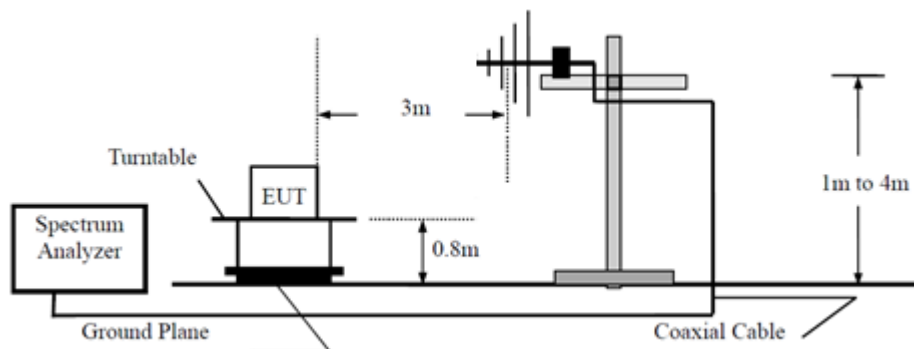
Eric LI
EMC Senior Project Engineer

7 Test Setups

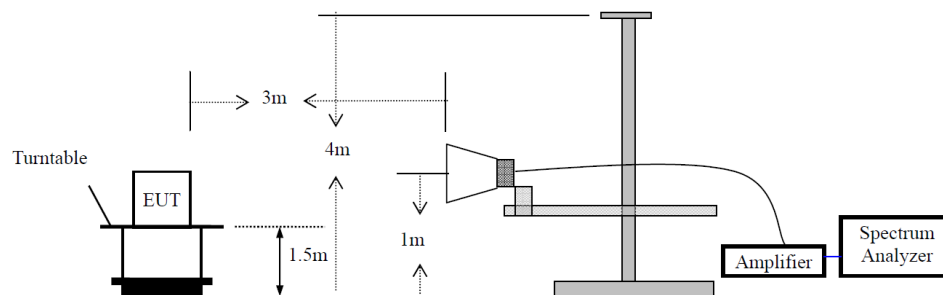
7.1 Radiated test setups 9kHz-30MHz



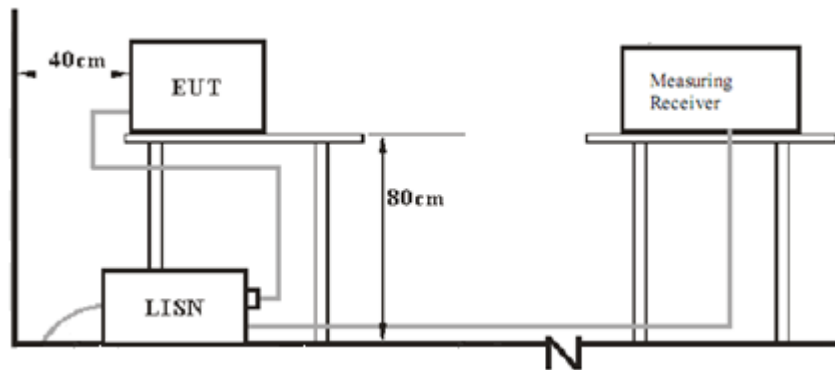
7.2 Radiated test setups Below 1GHz



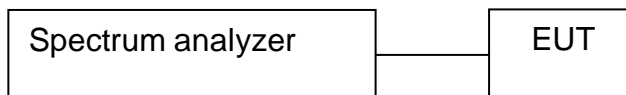
7.3 Radiated test setups Above 1GHz



7.4 AC Power Line Conducted Emission test setups



7.5 Conducted RF test setups

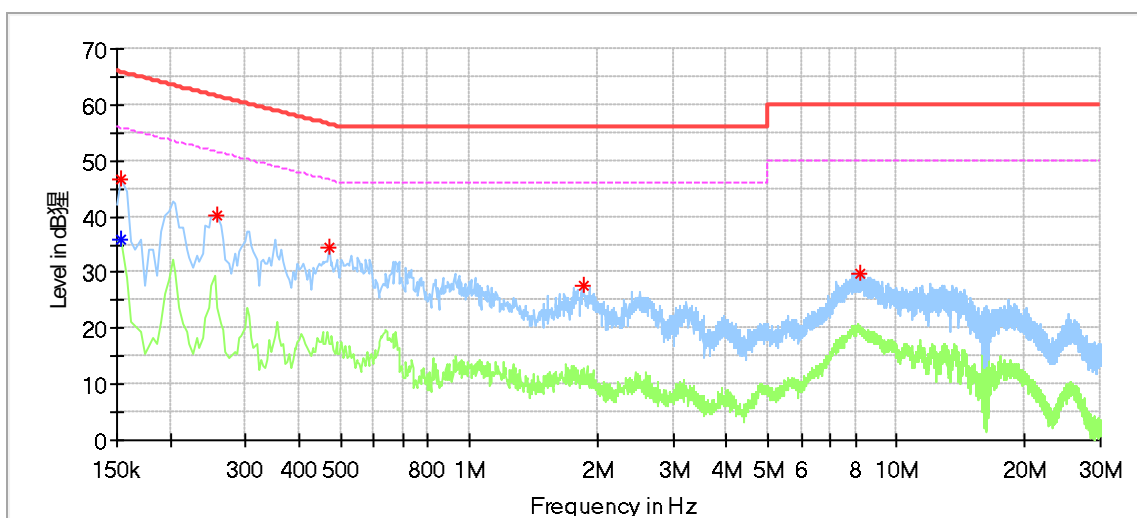


8 Emission Test Results

8.1 Conducted Emission

EUT: HG06610A-US
 Op Condition: Operated, BT link Mode
 Test Specification: FCC15.207, AC Mains, L Line
 Comment: 120VAC, 60Hz
 Test date: May 13, 2020

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

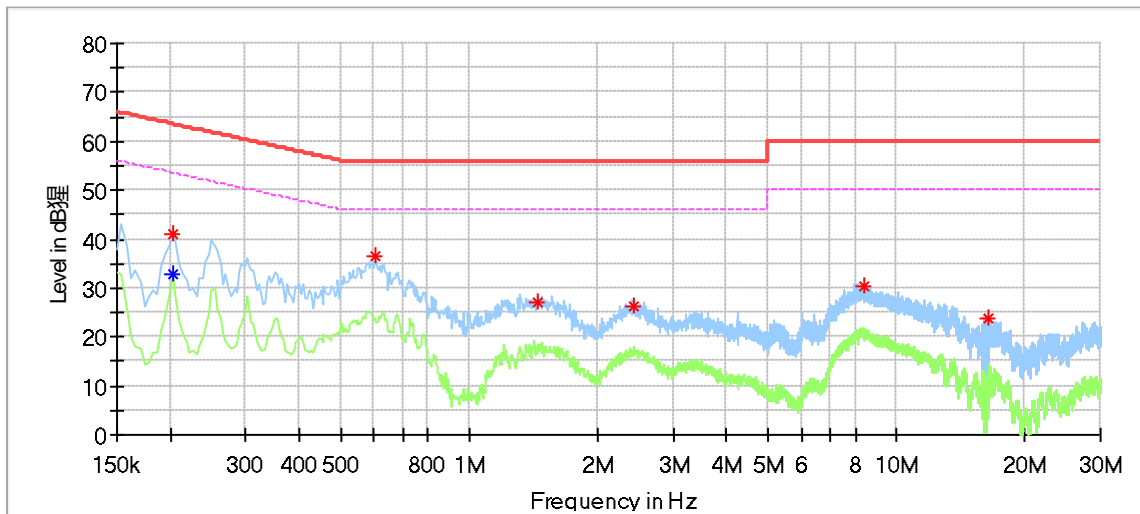


| Frequency (MHz) | MaxPeak (dBμV) | Average (dBμV) | Limit (dBμV) | Margin (dB) | Corr. (dB) |
|-----------------|----------------|----------------|--------------|-------------|------------|
| 0.154000 | --- | 35.88 | 55.78 | -19.90 | 9.5 |
| 0.154000 | 46.74 | --- | 65.78 | -19.04 | 9.5 |
| 0.258000 | 40.26 | --- | 61.50 | -21.24 | 9.5 |
| 0.470000 | 34.33 | --- | 56.51 | -22.18 | 9.5 |
| 1.846000 | 27.55 | --- | 56.00 | -28.45 | 9.6 |
| 8.182000 | 29.97 | --- | 60.00 | -30.03 | 9.7 |

Conducted Emission

EUT: HG06610A-US
 Op Condition: Operated, BT link Mode
 Test Specification: FCC15.207, AC Mains, N Line
 Comment: 120VAC, 60Hz
 Test date: May 13, 2020

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



| Frequency (MHz) | MaxPeak (dBμV) | Average (dBμV) | Limit (dBμV) | Margin (dB) | Corr. (dB) |
|-----------------|----------------|----------------|--------------|-------------|------------|
| 0.202000 | 41.22 | --- | 63.53 | -22.31 | 9.5 |
| 0.202000 | --- | 32.78 | 53.53 | -20.74 | 9.5 |
| 0.606000 | 36.44 | --- | 56.00 | -19.56 | 9.6 |
| 1.446000 | 27.19 | --- | 56.00 | -28.81 | 9.6 |
| 2.426000 | 26.37 | --- | 56.00 | -29.63 | 9.6 |
| 8.418000 | 30.36 | --- | 60.00 | -29.64 | 9.7 |
| 16.306000 | 23.82 | --- | 60.00 | -36.18 | 9.8 |

8.2 Spurious Radiated Emission

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (DH5)
 (2402MHz channel is the worst case)
 Test Specification: FCC15.205, 15.209 & 15.247(d)
 Comment: 3.7 VDC
 Test date: May 13, 2020
 Remark: 9kHz to 1GHz

| | |
|-------------------------------------|------------|
| 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 | Ant. Polarity H/V | Corr. (dB) |
|------------------|------------------|-----------------|--------------|----------------------|----------------------|---------------|
| 51.286111 | 21.41 | 40.00 | -18.59 | Peak | H | 14.6 |
| 56.782778 | 19.96 | 40.00 | -20.04 | Peak | H | 14.1 |
| 97.253333 | 18.36 | 43.50 | -26.14 | Peak | H | 12.5 |
| 105.282778 | 19.22 | 43.50 | -24.28 | Peak | H | 13.0 |
| 208.533889 | 18.32 | 43.50 | -25.18 | Peak | H | 12.2 |
| 354.357222 | 24.08 | 46.00 | -21.92 | Peak | H | 15.7 |
| 46.328333 | 20.30 | 40.00 | -19.70 | Peak | V | 14.7 |
| 50.154444 | 20.58 | 40.00 | -19.42 | Peak | V | 14.7 |
| 94.558889 | 18.97 | 43.50 | -24.53 | Peak | V | 12.0 |
| 107.330556 | 19.95 | 43.50 | -23.55 | Peak | V | 12.8 |
| 197.702222 | 20.50 | 43.50 | -23.50 | Peak | V | 12.0 |
| 236.125000 | 26.81 | 46.00 | -19.20 | Peak | V | 13.1 |

Remark:

1. No obvious emission can be captured in the range 9kHz-30MHz.

Spurious Radiated Emission

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2402MHz, DH5)
 Test Specification: FCC15.205, 15.209 & 15.247(d)
 Comment: 3.7 VDC
 Test date: May 15, 2020
 Remark: 1GHz to 25GHz

| 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 | Ant. Polarity H/V | Corr. (dB) |
|------------------|------------------------|-----------------------|--------------|----------------------|-------------------------|---------------|
| 1595.000000 | 45.99 | 54.00 | -8.01 | Peak | H | -8.7 |
| 2394.000000 | 48.44 | 54.00 | -5.56 | Peak | H | -3.9 |
| 4667.500000 | 49.33 | 54.00 | -4.67 | Peak | H | 2.6 |
| 6970.000000 | 52.78 | 74.00 | -21.22 | Peak | H | 7.1 |
| 6970.000000 | 37.81 | 54.00 | -16.19 | Average | H | 7.1 |
| 12350.000000 | 48.01 | 54.00 | -5.99 | Peak | H | 10.1 |
| 16897.000000 | 51.12 | 74.00 | -22.88 | Peak | H | 16.5 |
| 16897.000000 | 40.25 | 54.00 | -13.75 | Average | H | 16.5 |
| 1597.000000 | 46.74 | 54.00 | -7.26 | Peak | V | -8.6 |
| 2394.500000 | 46.03 | 54.00 | -7.97 | Peak | V | -3.9 |
| 5584.000000 | 50.81 | 54.00 | -3.19 | Peak | V | 3.0 |
| 6793.500000 | 51.63 | 74.00 | -22.37 | Peak | V | 6.6 |
| 6793.500000 | 38.12 | 54.00 | -15.88 | Average | V | 6.6 |
| 12640.500000 | 47.73 | 54.00 | -6.27 | Peak | V | 10.1 |
| 16965.000000 | 51.55 | 74.00 | -22.45 | Peak | V | 16.5 |
| 16965.000000 | 39.85 | 54.00 | -14.15 | Average | V | 16.5 |

Remark:

1. For these frequencies at which the measured peak value less than average limit 3dB or more, average value not been measured because average value will never great than peak value.

Spurious Radiated Emission

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2441MHz, DH5)
 Test Specification: FCC15.205, 15.209 & 15.247(d)
 Comment: 3.7 VDC
 Test date: May 15, 2020
 Remark: 1GHz to 25GHz

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

| Frequency | Result | Limit | Margin | Detector | Ant. Polarity | Corr. |
|--------------|--------------|--------------|--------|----------|---------------|-------|
| MHz | dB μ V/m | dB μ V/m | dB | PK/QP/AV | H/V | (dB) |
| 1600.000000 | 46.57 | 54.00 | -7.43 | Peak | H | -8.6 |
| 2989.000000 | 46.39 | 54.00 | -7.61 | Peak | H | -2.1 |
| 4303.500000 | 47.06 | 54.00 | -6.94 | Peak | H | 2.0 |
| 6567.500000 | 51.81 | 74.00 | -22.19 | Peak | H | 6.8 |
| 6567.500000 | 36.58 | 54.00 | -17.42 | Average | H | 6.8 |
| 7322.500000 | 49.67 | 54.00 | -4.33 | Peak | H | 6.5 |
| 17244.500000 | 51.09 | 74.00 | -22.91 | Peak | H | 17.3 |
| 17244.500000 | 40.36 | 54.00 | -13.64 | Average | H | 17.3 |
| 1179.000000 | 43.46 | 54.00 | -10.54 | Peak | V | -9.7 |
| 2438.000000 | 46.20 | 54.00 | -7.80 | Peak | V | -3.6 |
| 2977.500000 | 47.32 | 54.00 | -6.68 | Peak | V | -2.2 |
| 6350.000000 | 50.80 | 54.00 | -3.20 | Peak | V | 6.0 |
| 7322.500000 | 48.98 | 54.00 | -5.02 | Peak | V | 6.5 |
| 17750.000000 | 51.97 | 74.00 | -22.03 | Peak | V | 17.7 |
| 17750.000000 | 41.27 | 54.00 | -12.73 | Average | V | 17.7 |

Remark:

1. For these frequencies at which the measured peak value less than average limit 3dB or more, average value not been measured because average value will never great than peak value.

Spurious Radiated Emission

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2480MHz, DH5)
 Test Specification: FCC15.205, 15.209 & 15.247(d)
 Comment: 3.7 VDC
 Test date: May 15, 2020
 Remark: 1GHz to 25GHz

| 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 | Ant. Polarity H/V | Corr. (dB) |
|------------------|------------------------|-----------------------|--------------|----------------------|-------------------------|---------------|
| 2852.000000 | 46.40 | 54.00 | -7.60 | Peak | H | -2.9 |
| 5023.000000 | 49.04 | 54.00 | -4.96 | Peak | H | 3.0 |
| 6985.000000 | 52.02 | 74.00 | -21.98 | Peak | H | 7.3 |
| 6985.000000 | 37.65 | 54.00 | -16.35 | Average | H | 7.3 |
| 7439.000000 | 47.53 | 54.00 | -6.47 | Peak | H | 5.9 |
| 10627.500000 | 47.35 | 54.00 | -6.65 | Peak | H | 8.2 |
| 16853.500000 | 50.84 | 74.00 | -23.16 | Peak | H | 16.8 |
| 16853.500000 | 39.87 | 54.00 | -14.13 | Average | H | 16.8 |
| 2390.000000 | 49.13 | 54.00 | -4.87 | Peak | V | -3.9 |
| 3426.000000 | 47.16 | 54.00 | -6.84 | Peak | V | -1.2 |
| 5299.000000 | 49.63 | 54.00 | -4.37 | Peak | V | 2.0 |
| 6500.000000 | 51.79 | 74.00 | -22.21 | Peak | V | 6.6 |
| 6500.000000 | 37.16 | 54.00 | -16.84 | Average | V | 6.6 |
| 12060.000000 | 47.53 | 54.00 | -6.47 | Peak | V | 9.9 |
| 16753.000000 | 51.11 | 74.00 | -22.89 | Peak | V | 16.5 |
| 16753.000000 | 40.36 | 54.00 | -13.64 | Average | V | 16.5 |

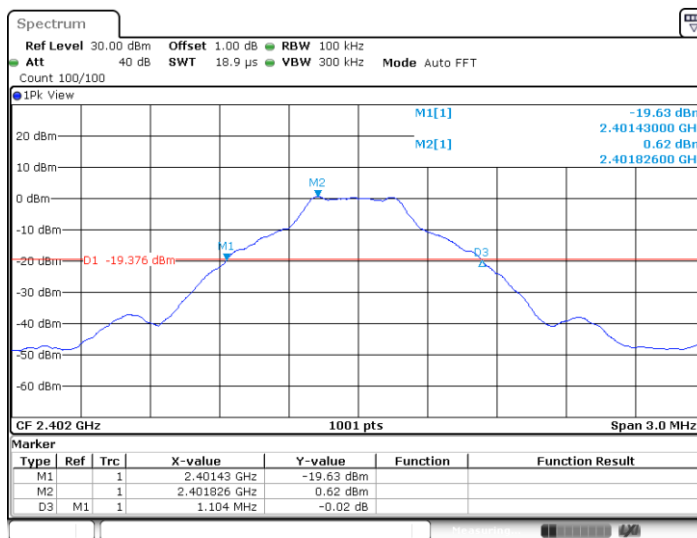
Remark:

1. For these frequencies at which the measured peak value less than average limit 3dB or more, average value not been measured because average value will never great than peak value.

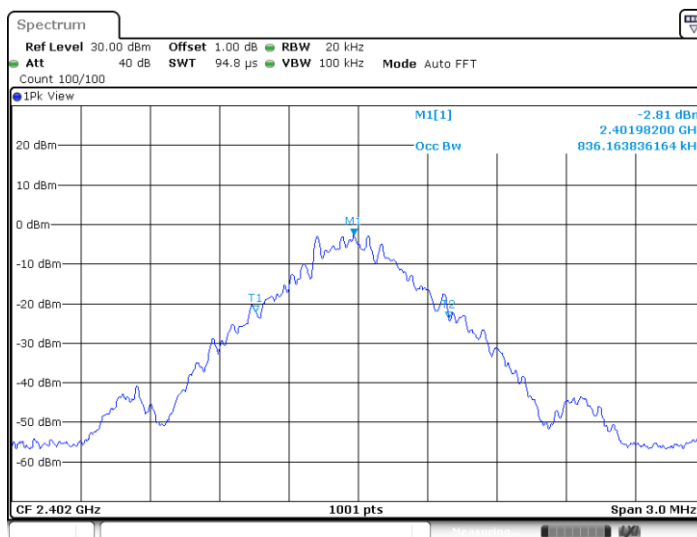
8.3 20dB & 99% Bandwidth

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2402MHz, DH5)
 Test Specification: FCC15.247(a)(2), 20dB Bandwidth & 99% Bandwidth
 Comment: 3.7 VDC

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



Date: 21.MAY.2020 11:55:44



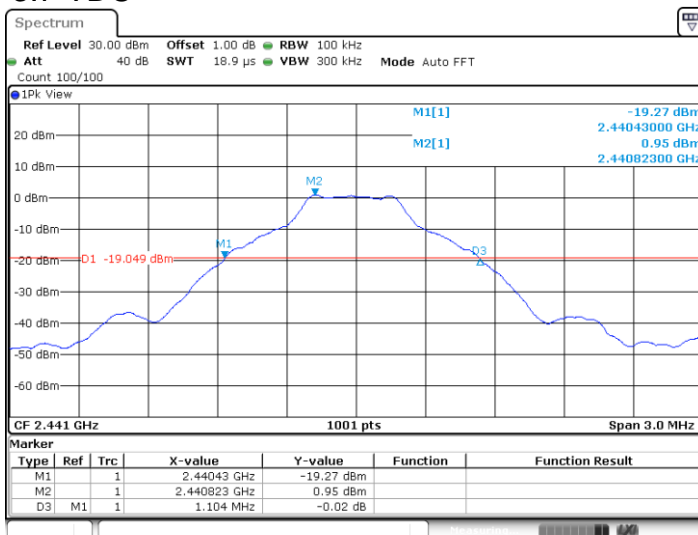
Date: 21.MAY.2020 11:55:55

| | |
|-----------------------|----------------------|
| 20dB bandwidth | 99% bandwidth |
| 1.104 MHz | 0.836 MHz |

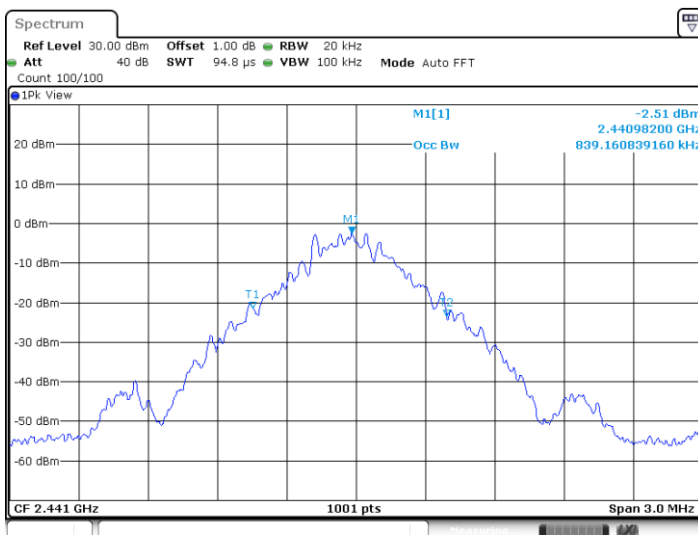
20dB & 99% Bandwidth

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2441MHz, DH5)
 Test Specification: FCC15.247(a)(2), 20dB Bandwidth & 99% Bandwidth
 Comment: 3.7 VDC

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



Date: 21.MAY.2020 11:58:21



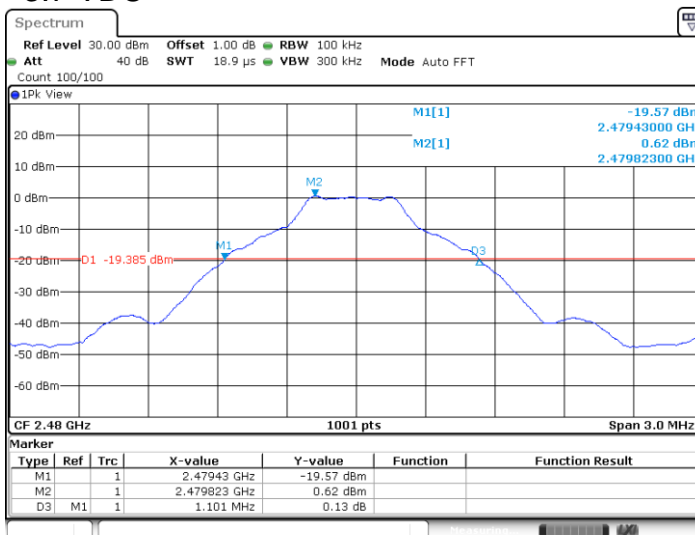
Date: 21.MAY.2020 11:58:32

| | |
|-----------------------|----------------------|
| 20dB bandwidth | 99% bandwidth |
| 1.104 MHz | 0.839 MHz |

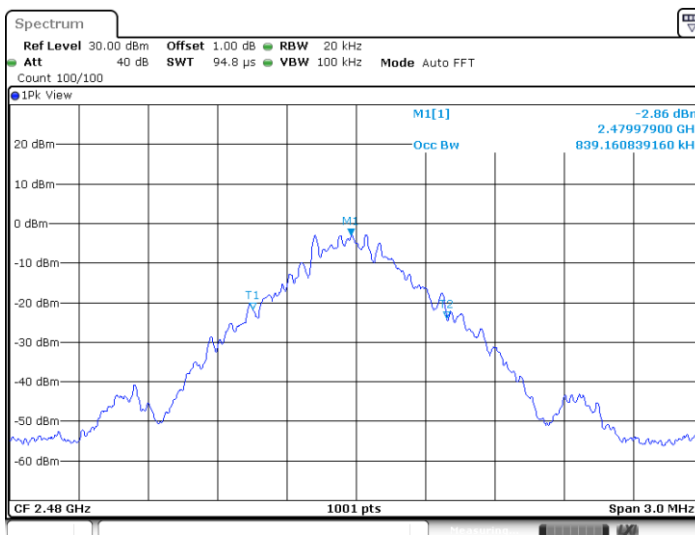
20dB & 99% Bandwidth

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2480MHz, DH5)
 Test Specification: FCC15.247(a)(2), 20dB Bandwidth & 99% Bandwidth
 Comment: 3.7 VDC

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



Date: 21.MAY.2020 11:59:43



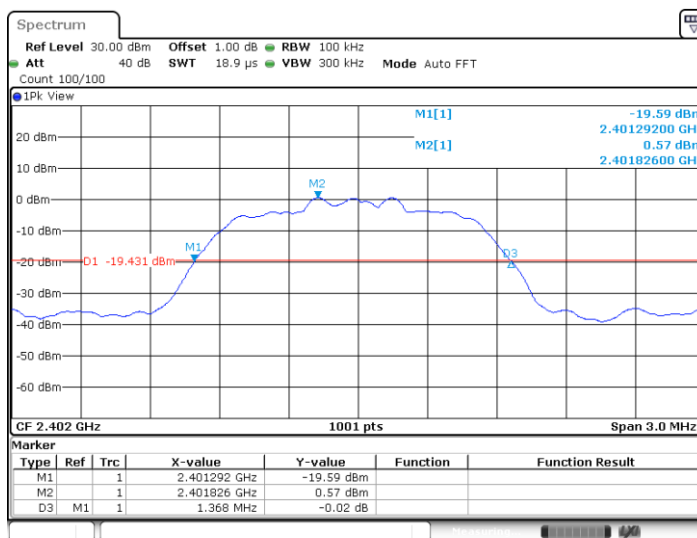
Date: 21.MAY.2020 11:59:54

| | |
|-----------------------|----------------------|
| 20dB bandwidth | 99% bandwidth |
| 1.101 MHz | 0.839 MHz |

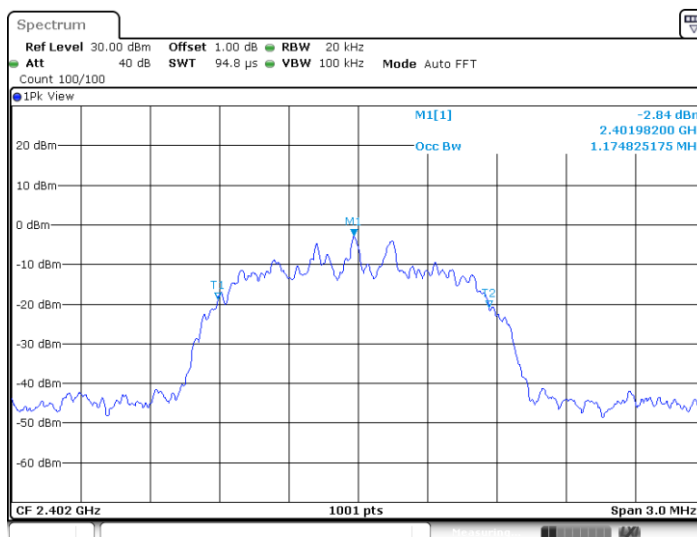
20dB & 99% Bandwidth

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2402MHz, 2DH5)
 Test Specification: FCC15.247(a)(2), 20dB Bandwidth & 99% Bandwidth
 Comment: 3.7 VDC

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



Date: 21.MAY.2020 12:01:50



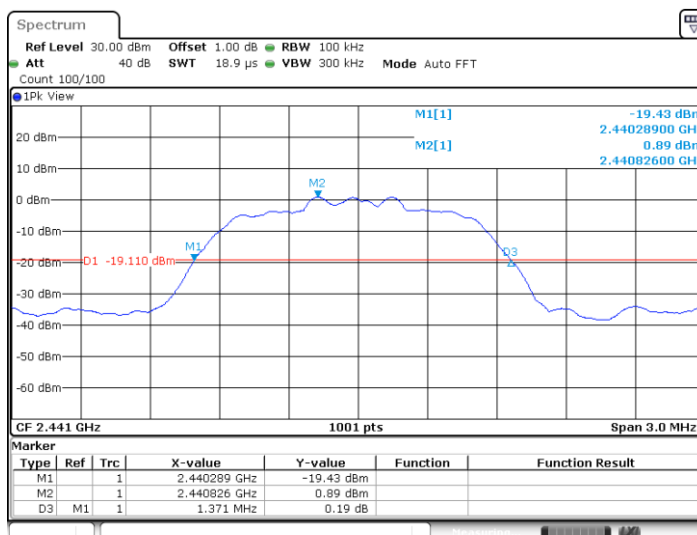
Date: 21.MAY.2020 12:02:01

| | |
|-----------------------|----------------------|
| 20dB bandwidth | 99% bandwidth |
| 1.368 MHz | 1.175 MHz |

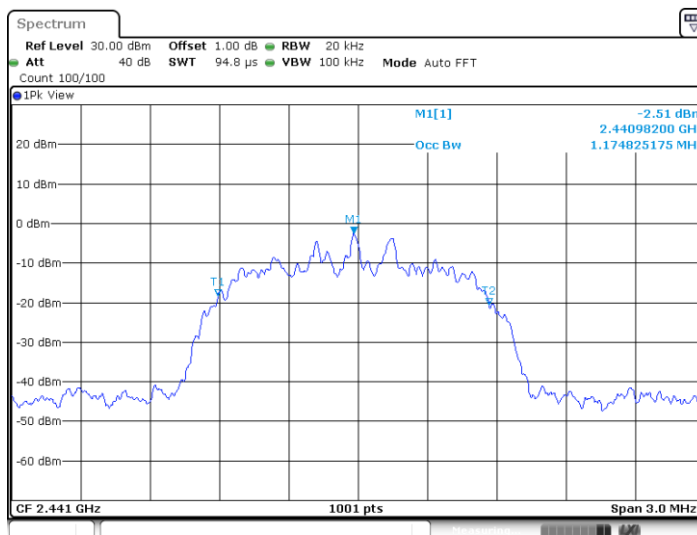
20dB & 99% Bandwidth

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2441MHz, 2DH5)
 Test Specification: FCC15.247(a)(2), 20dB Bandwidth & 99% Bandwidth
 Comment: 3.7 VDC

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



Date: 21.MAY.2020 12:03:56



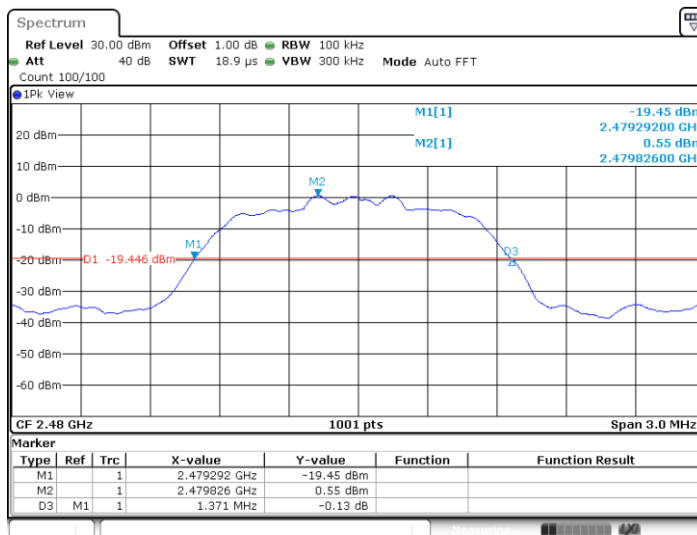
Date: 21.MAY.2020 12:04:07

| | |
|-----------------------|----------------------|
| 20dB bandwidth | 99% bandwidth |
| 1.371 MHz | 1.175 MHz |

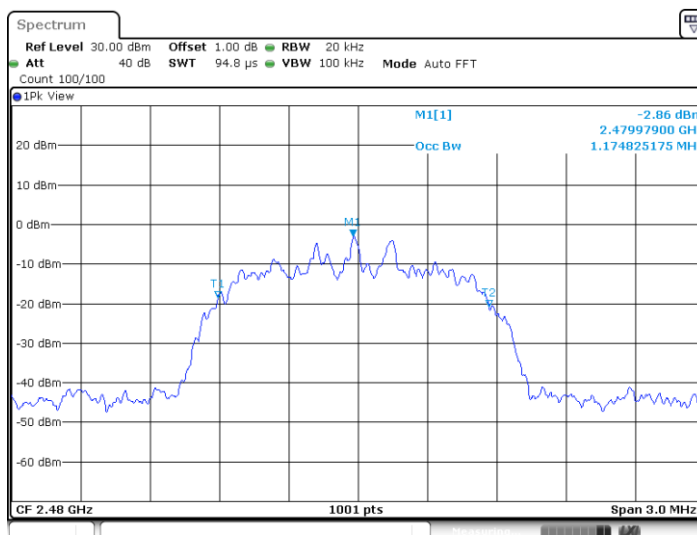
20dB & 99% Bandwidth

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2480MHz, 2DH5)
 Test Specification: FCC15.247(a)(2), 20dB Bandwidth & 99% Bandwidth
 Comment: 3.7 VDC

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



Date: 21 MAY 2020 12:05:21



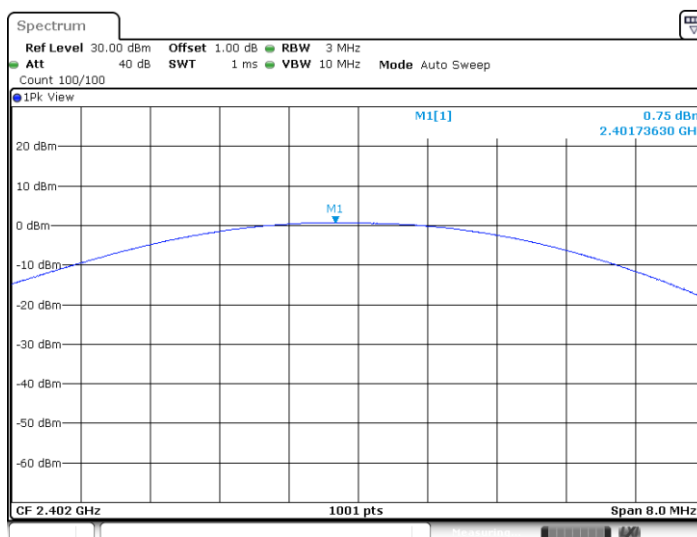
Date: 21 MAY 2020 12:05:32

| | |
|-----------------------|----------------------|
| 20dB bandwidth | 99% bandwidth |
| 1.371 MHz | 1.175 MHz |

8.4 Peak Output Power

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2402MHz, DH5)
 Test Specification: FCC15.247(b)
 Comment: 3.7 VDC

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



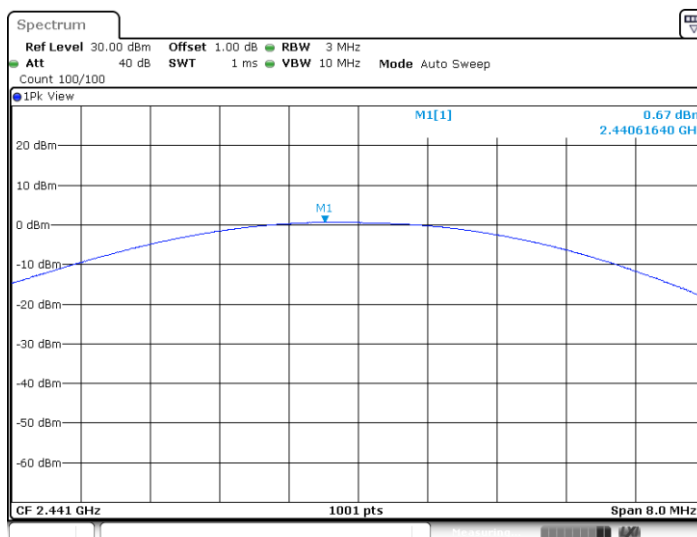
Date: 21.MAY.2020 12:22:18

| Conducted Output Power (dBm) | Conducted Output Power (mW) | Limit (mW) |
|------------------------------|-----------------------------|------------|
| 0.75 | 1.19 | 1000.0 |

Peak Output Power

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2441MHz, DH5)
 Test Specification: FCC15.247(b)
 Comment: 3.7 VDC

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



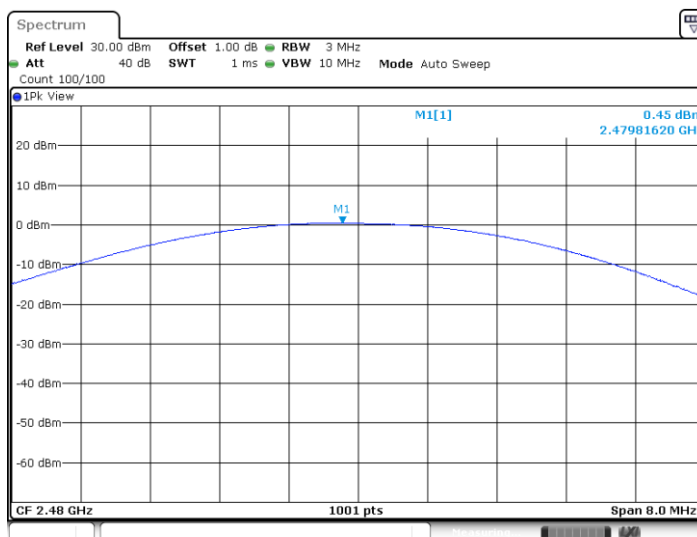
Date: 21.MAY.2020 12:22:49

| Conducted Output Power (dBm) | Conducted Output Power (mW) | Limit (mW) |
|------------------------------|-----------------------------|------------|
| 0.67 | 1.17 | 1000.0 |

Peak Output Power

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2480MHz, DH5)
 Test Specification: FCC15.247(b)
 Comment: 3.7 VDC

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



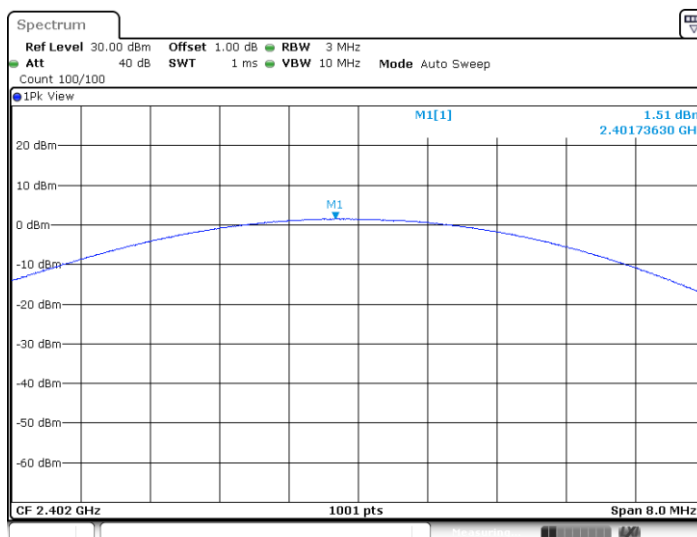
Date: 21.MAY.2020 12:23:05

| Conducted Output Power (dBm) | Conducted Output Power (mW) | Limit (mW) |
|------------------------------|-----------------------------|------------|
| 0.45 | 1.11 | 1000.0 |

Peak Output Power

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2402MHz, 2DH5)
 Test Specification: FCC15.247(b)
 Comment: 3.7 VDC

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



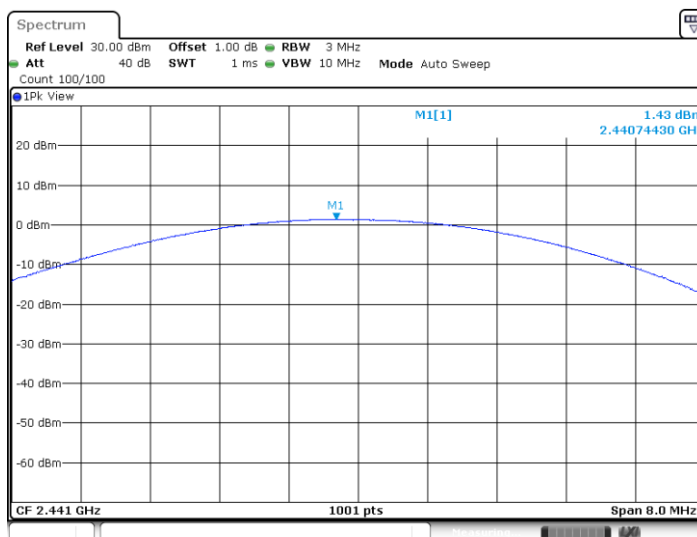
Date: 21.MAY.2020 12:23:23

| Conducted Output Power (dBm) | Conducted Output Power (mW) | Limit (mW) |
|------------------------------|-----------------------------|------------|
| 1.51 | 1.42 | 1000.0 |

Peak Output Power

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2441MHz, 2DH5)
 Test Specification: FCC15.247(b)
 Comment: 3.7 VDC

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



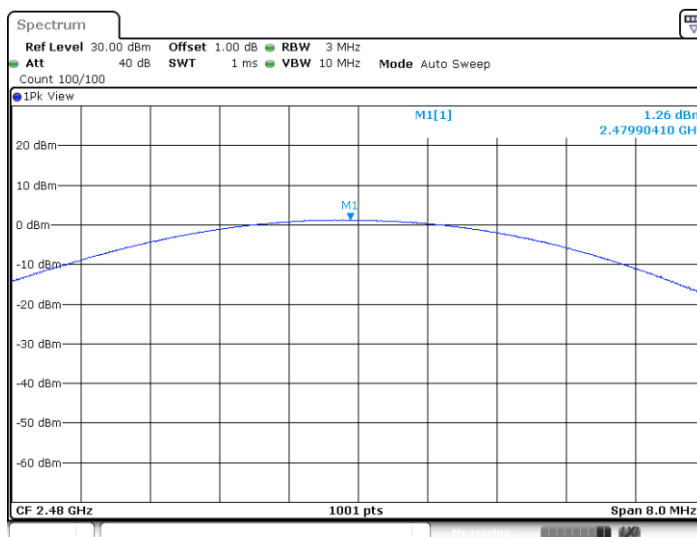
Date: 21.MAY.2020 12:23:41

| Conducted Output Power (dBm) | Conducted Output Power (mW) | Limit (mW) |
|------------------------------|-----------------------------|------------|
| 1.43 | 1.39 | 1000.0 |

Peak Output Power

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2480MHz, 2DH5)
 Test Specification: FCC15.247(b)
 Comment: 3.7 VDC

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



Date: 21.MAY.2020 12:23:58

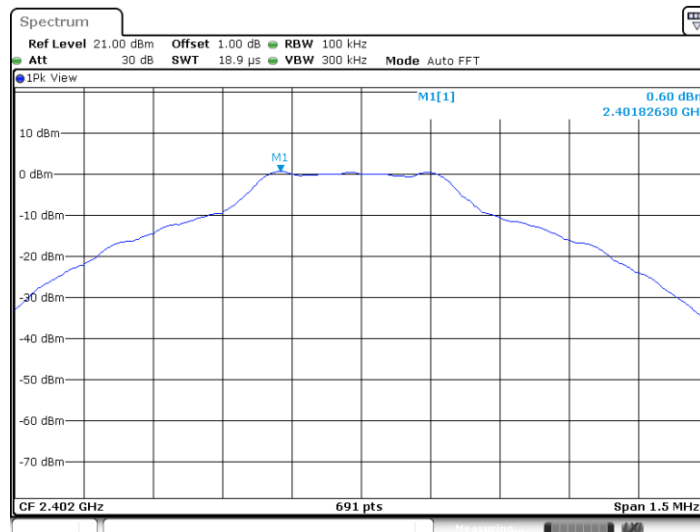
| Conducted Output Power (dBm) | Conducted Output Power (mW) | Limit (mW) |
|------------------------------|-----------------------------|------------|
| 1.26 | 1.34 | 1000.0 |

8.5 Spurious Emissions at Antenna Terminals

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2402MHz, 2DH5) (Worst case)
 Test Specification: FCC2.1051 & 15.247(d)
 Comment: 3.7 VDC

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

| Channel | FreqRange | RefLevel | Result | Limit | Verdict |
|---------|------------|----------|--------|---------|---------|
| 2402 | Reference | 0.60 | --- | --- | PASS |
| 2402 | 30~1000 | 0.60 | -64.2 | <=-19.4 | PASS |
| 2402 | 1000~26500 | 0.60 | -25.21 | <=-19.4 | PASS |

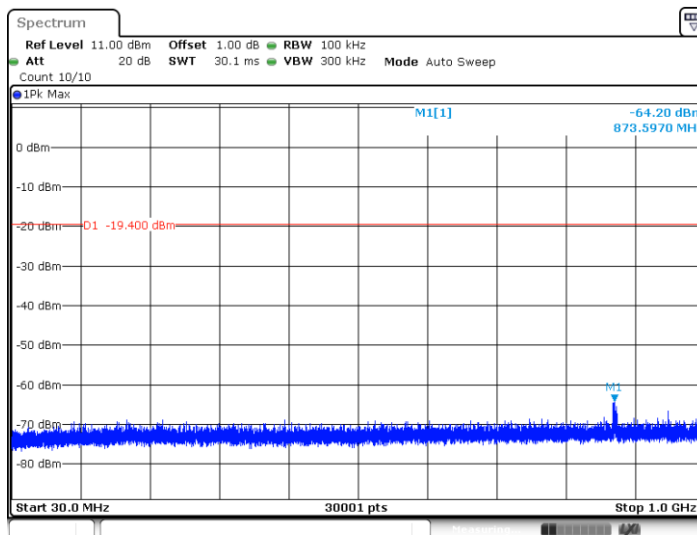


Date: 21 MAY 2020 11:56:10

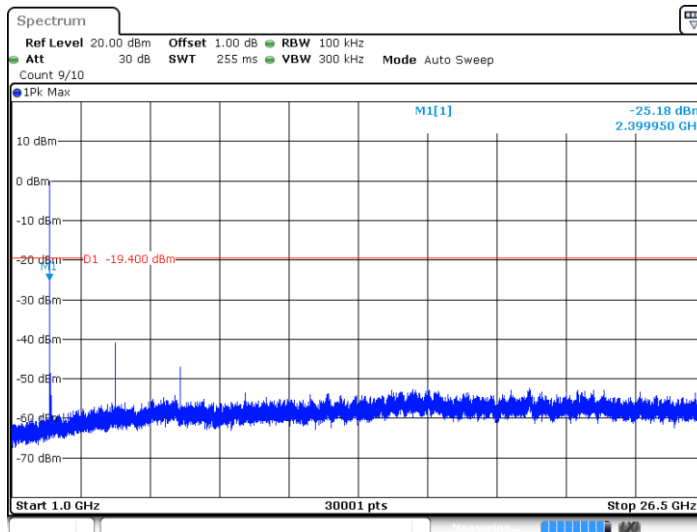
Spurious Emissions at Antenna Terminals

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2402MHz, 2DH5)
 (Worst case)
 Test Specification: FCC2.1051 & 15.247(d)
 Comment: 3.7 VDC

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



Date: 21 MAY 2020 11:56:16



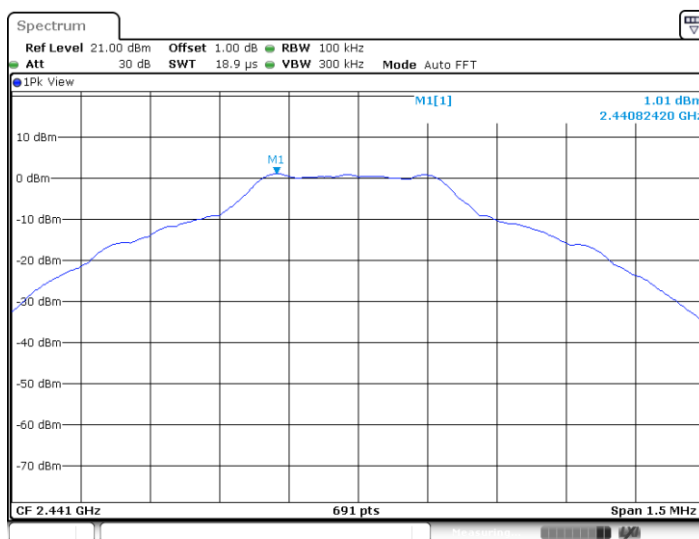
Date: 21 MAY 2020 11:56:24

Spurious Emissions at Antenna Terminals

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2441MHz, 2DH5)
 (Worst case)
 Test Specification: FCC2.1051 & 15.247(d)
 Comment: 3.7 VDC

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

| Channel | FreqRange | RefLevel | Result | Limit | Verdict |
|---------|------------|----------|--------|----------|---------|
| 2441 | Reference | 1.01 | --- | --- | PASS |
| 2441 | 30~1000 | 1.01 | -64.23 | <=-18.99 | PASS |
| 2441 | 1000~26500 | 1.01 | -43.22 | <=-18.99 | PASS |

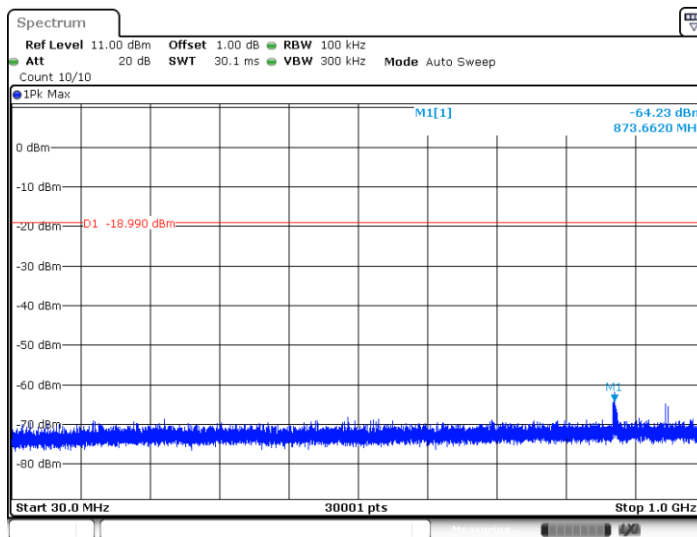


Date: 21.MAY.2020 11:58:37

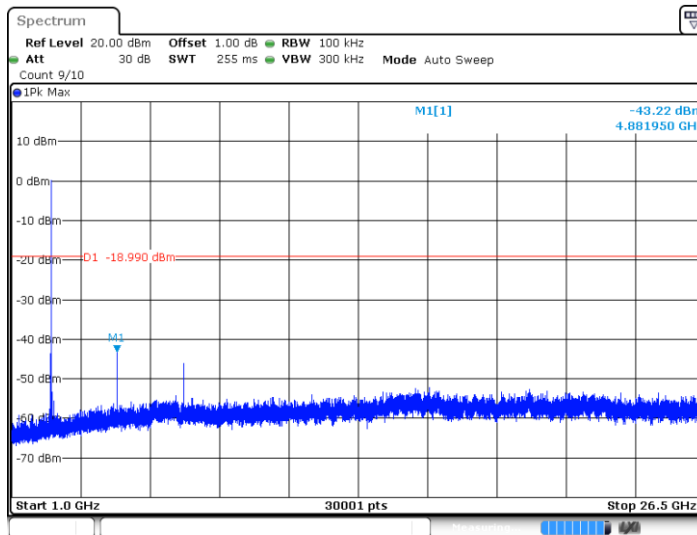
Spurious Emissions at Antenna Terminals

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2441MHz, 2DH5)
 (Worst case)
 Test Specification: FCC2.1051 & 15.247(d)
 Comment: 3.7 VDC

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



Date: 21 MAY 2020 11:58:43



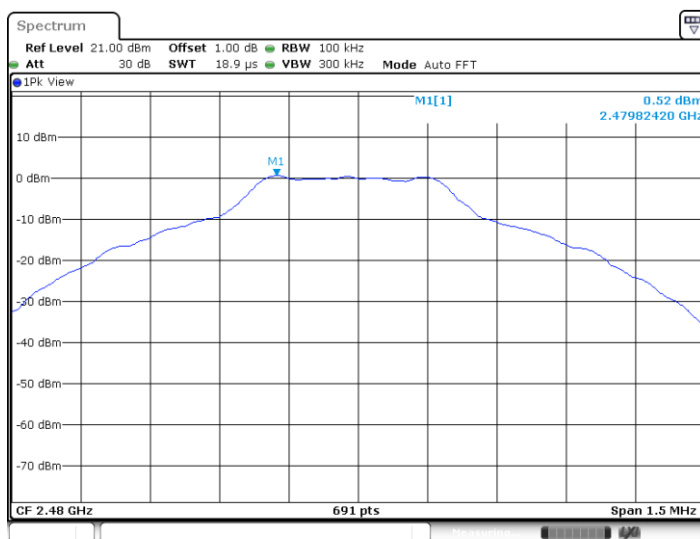
Date: 21 MAY 2020 11:58:51

Spurious Emissions at Antenna Terminals

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2480MHz, 2DH5)
 (Worst case)
 Test Specification: FCC2.1051 & 15.247(d)
 Comment: 3.7 VDC

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

| Channel | FreqRange | RefLevel | Result | Limit | Verdict |
|---------|------------|----------|--------|----------|---------|
| 2480 | Reference | 0.52 | --- | --- | PASS |
| 2480 | 30~1000 | 0.52 | -64.69 | <=-19.48 | PASS |
| 2480 | 1000~26500 | 0.52 | -41.62 | <=-19.48 | PASS |

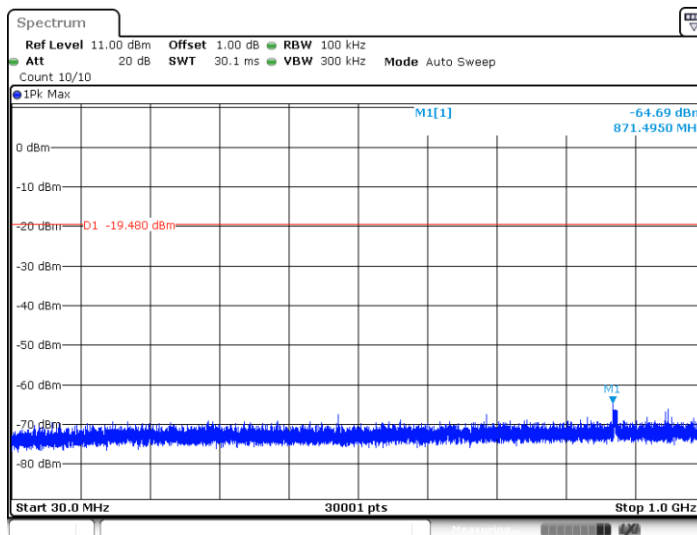


Date: 21.MAY.2020 12:00:08

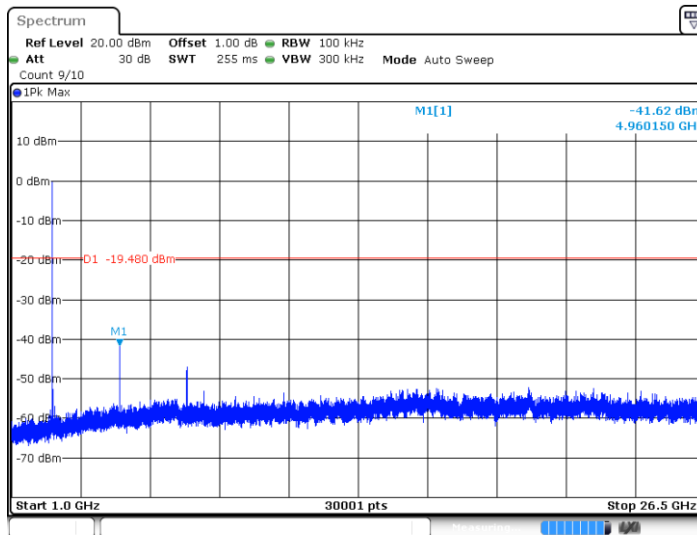
Spurious Emissions at Antenna Terminals

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2480MHz, 2DH5) (Worst case)
 Test Specification: FCC2.1051 & 15.247(d)
 Comment: 3.7 VDC

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



Date: 21 MAY 2020 12:00:14

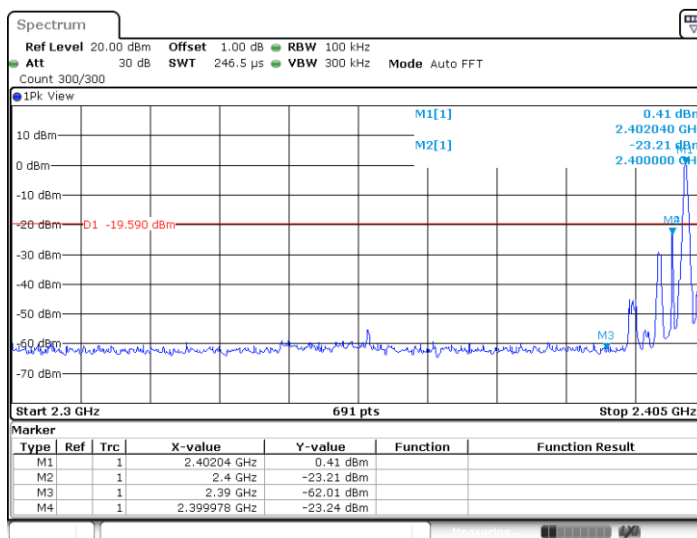


Date: 21 MAY 2020 12:00:22

8.6 100kHz Bandwidth of band edges

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2402MHz, DH5)
 (Worst case)
 Test Specification: FCC15.247(d), Conducted
 Comment: 3.7 VDC

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



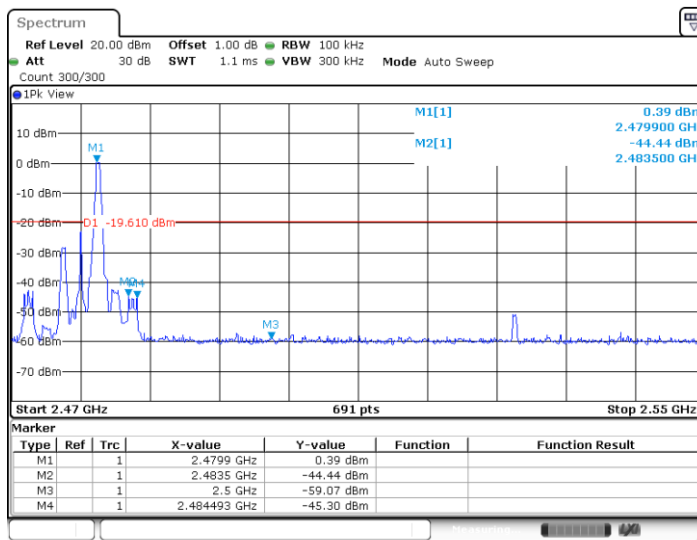
Date: 21.MAY.2020 11:56:04

| | |
|-------------------|--------------|
| Band edges | Limit |
| 23.62 dB | > 20dB |

100kHz Bandwidth of band edges

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2480MHz, DH5)
 (Worst case)
 Test Specification: FCC15.247(d), Conducted
 Comment: 3.7 VDC

Test Result
 Passed
 Not Passed



Date: 21 MAY 2020 12:00:03

| Band edges | Limit |
|------------|--------|
| 44.83 dB | > 20dB |

100kHz Bandwidth of band edges

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2405MHz and 2480MHz, DH5) (Worst case)
 Test Specification: FCC15.247(d), Radiated
 Comment: 3.7 VDC

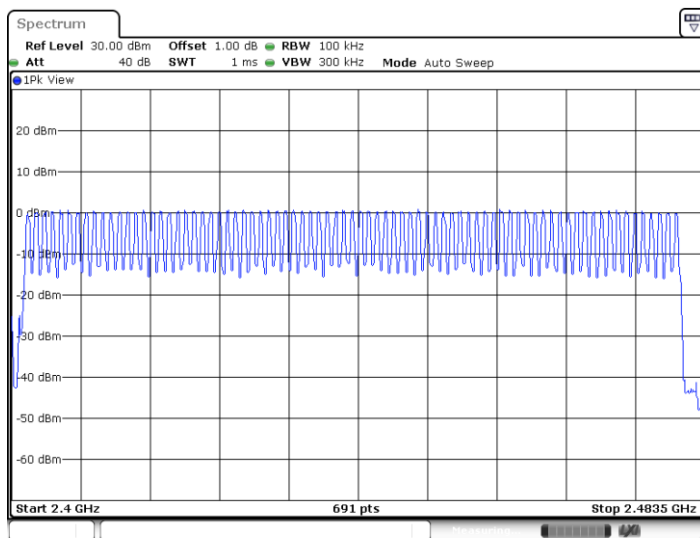
| |
|--|
| Test Result |
| <input checked="" type="checkbox"/> Passed |
| <input type="checkbox"/> Not Passed |

| Frequency MHz | Result dBµV/m | Limit dBµV/m | Margin dB | Detector PK /AV | Ant. Polarity H/V | Corr. (dB) |
|------------------|------------------|-----------------|--------------|--------------------|----------------------|---------------|
| 2400.00 | 70.56 | 74.00 | -3.44 | Peak | H | -4.8 |
| 2400.00 | 46.33 | 54.00 | -7.67 | Average | H | -4.8 |
| 2400.00 | 68.85 | 74.00 | -5.15 | Peak | V | -4.8 |
| 2400.00 | 45.90 | 54.00 | -8.10 | Average | V | -4.8 |
| 2483.50 | 48.18 | 74.00 | -25.82 | Peak | H | -4.2 |
| 2483.50 | 32.65 | 54.00 | -21.35 | Average | H | -4.2 |
| 2483.50 | 49.06 | 74.00 | -24.94 | Peak | V | -4.2 |
| 2483.50 | 35.17 | 54.00 | -18.83 | Average | V | -4.2 |

8.7 Minimum. Number of Hopping Frequencies

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2402-2480MHz, DH5)
 Test Specification: FCC15.247(a)(1)
 Comment: 3.7 VDC

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



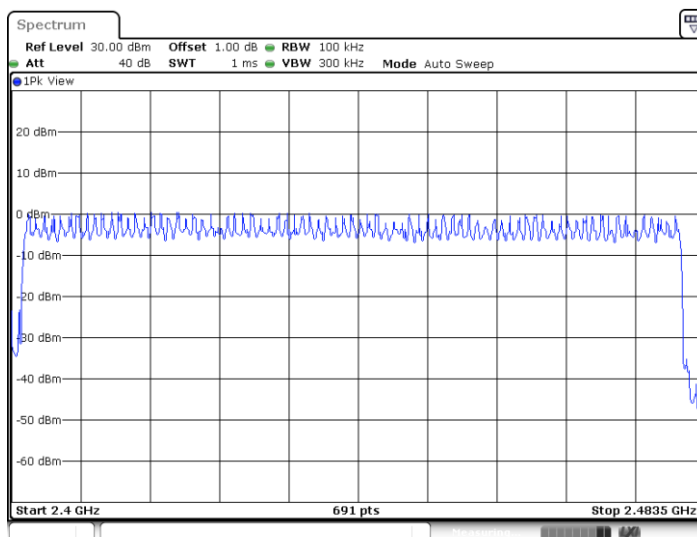
Date: 21.MAY.2020 12:10:07

| Hopping Channels | Limit |
|------------------|-------|
| 79 | ≥ 15 |

Minimum. Number of Hopping Frequencies

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2402-2480MHz, 2DH5)
 Test Specification: FCC15.247(a)(1)
 Comment: 3.7 VDC

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



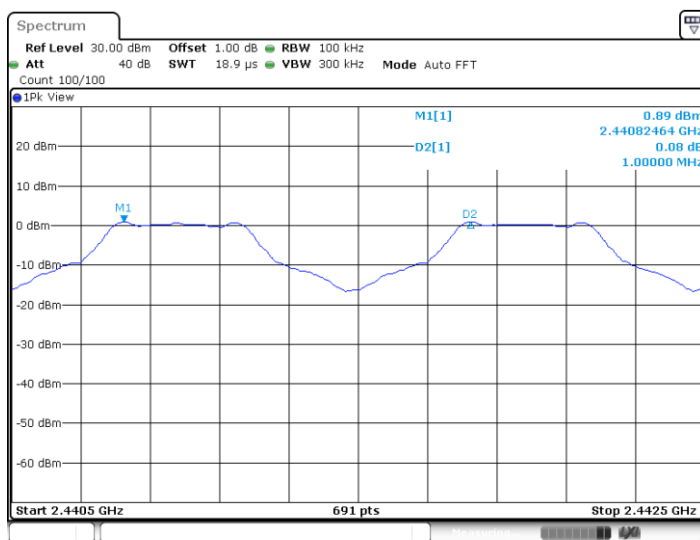
Date: 21.MAY.2020 12:20:16

| Hopping Channels | Limit |
|------------------|-------|
| 79 | ≥ 15 |

8.8 Minimum Hopping Channel Carrier Frequency Separation

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2441MHz, DH5)
 Test Specification: FCC15.247(a)(1)
 Comment: 3.7 VDC

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



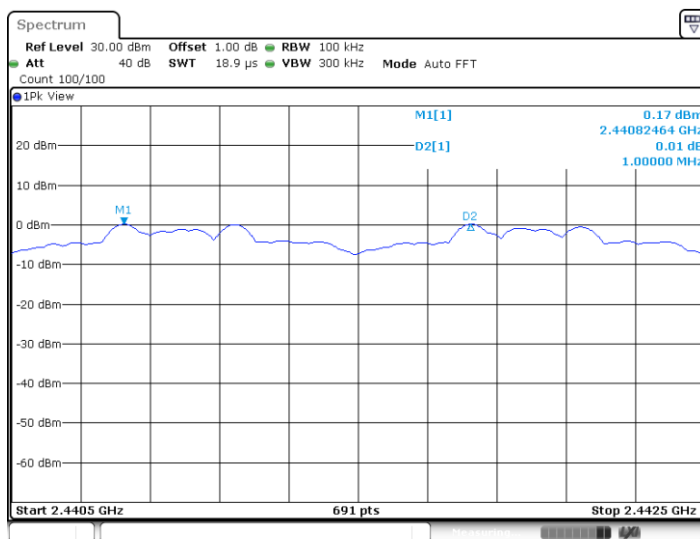
| Chanel Separation | Limit |
|-------------------|---------|
| 1000 kHz | 736 kHz |

Limit: 2/3 of 20dB bandwidth of hopping channel

Minimum Hopping Channel Carrier Frequency Separation

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2441MHz, 2DH5)
 Test Specification: FCC15.247(a)(1)
 Comment: 3.7 VDC

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



Date: 21.MAY.2020 12:19:49

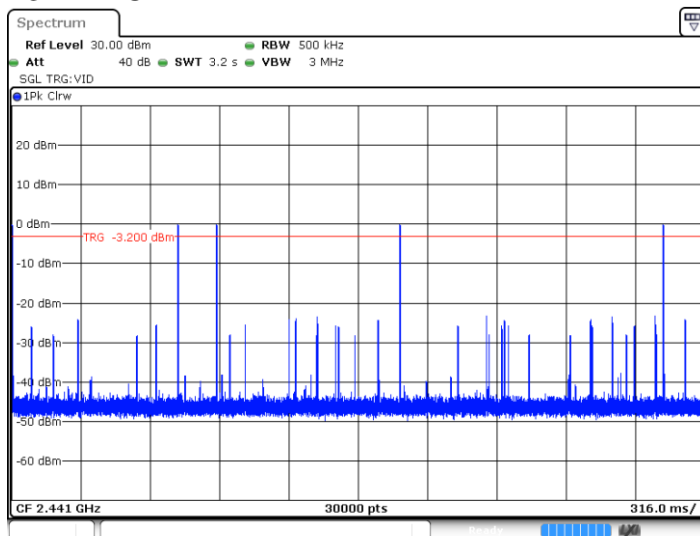
| Chanel Separation | Limit |
|-------------------|---------|
| 1000 kHz | 914 kHz |

Limit: 2/3 of 20dB bandwidth of hopping channel

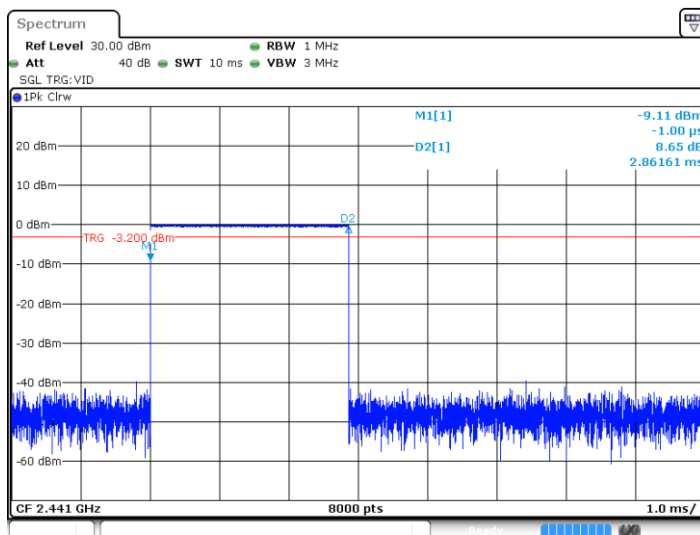
8.9 Average Channel Occupancy Time

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2441MHz, DH5)
 Test Specification: FCC15.247(a)(1)
 Comment: 3.7 VDC

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



Date: 21 MAY 2020 12:10:25



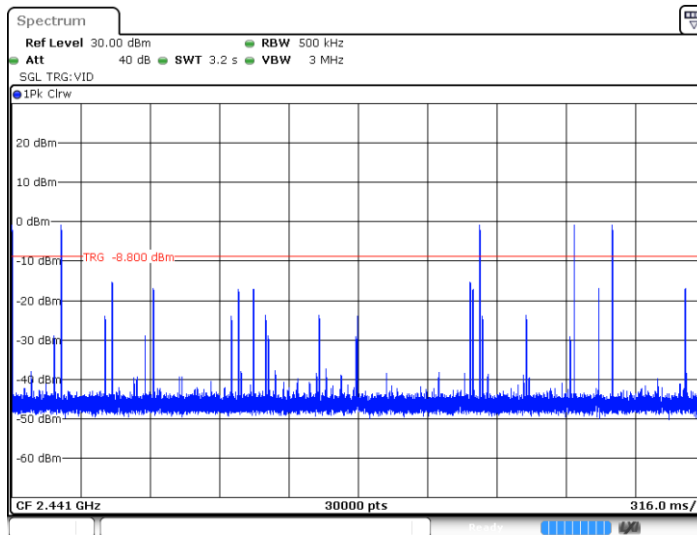
Date: 21 MAY 2020 12:10:19

| Average time of occupancy | Limit |
|---|-------------|
| Number of hops in 3.16 sec.: 4 Period: 0.4 x 79 Ch. = 31.6 sec. Total number of hops in 31.6 sec.: $4 \times 31.6 / 3.16 = 40$ Time of single pulse: 2.862ms Average time of occupancy: $2.862\text{ms} \times 40 = 0.1048\text{sec.}$ | 0.4 Seconds |

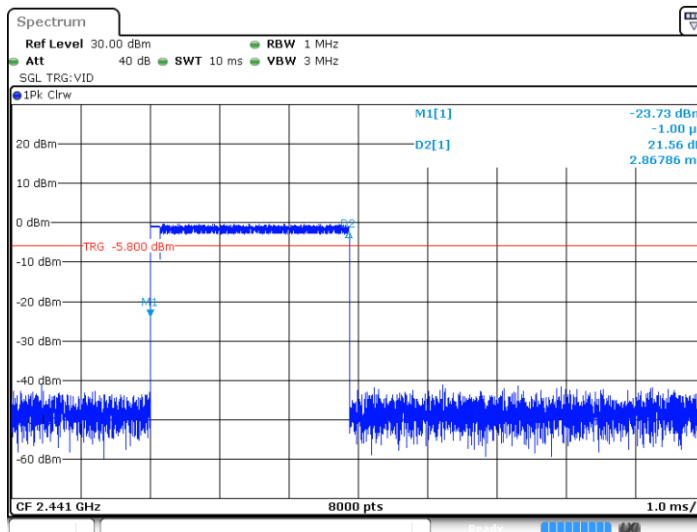
Average Channel Occupancy Time

EUT: HG06610A-US
 Op Condition: Operated, TX Mode (2441MHz, 2DH5)
 Test Specification: FCC15.247(a)(1)
 Comment: 3.7 VDC

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



Date: 21.MAY.2020 12:20:30



Date: 21.MAY.2020 12:20:25

| Average time of occupancy | Limit |
|--|-------------|
| Number of hops in 3.16 sec.: 4 Period: 0.4 x 79 Ch. = 31.6 sec. Total number of hops in 31.6 sec.: $4 \times 31.6 / 3.16 = 40$ Time of single pulse: 2.868ms Average time of occupancy: $2.868\text{ms} \times 40 = 0.1147\text{sec.}$ | 0.4 Seconds |

8.10 Antenna Requirement

EUT: HG06610A-US
Op Condition: Operated, TX Mode
Test Specification: FCC15.203 & 15.247(b)
Comment: 3.7 VDC

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

Limit

For intentional device, according to FCC Title 47 Part 15.203, 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. And according to FCC Title 47 Part 15.247(b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The antenna used in this product is a PCB antenna, and the maximum gain of it is -0.58dBi.

9 Appendix A - General Product Information

Radiofrequency radiation exposure evaluation

This exposure evaluation is intended for **FCC ID: 2AJ90-HG661**.

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 2402-2480MHz,
the test separation distance is ≤ 50 mm.
(Manufacturer specified the separation distance is: 5mm)

Step a)

>> Numeric threshold (2402MHz), $\text{mW} / 5\text{mm} \cdot \sqrt{2.402\text{GHz}} \leq 3.0$
Numeric threshold (2402MHz) $\leq 9.678\text{mW}$

>> Numeric threshold (2440MHz), $\text{mW} / 5\text{mm} \cdot \sqrt{2.441\text{GHz}} \leq 3.0$
Numeric threshold (2440MHz) $\leq 9.601\text{mW}$

>> Numeric threshold (2480MHz), $\text{mW} / 5\text{mm} \cdot \sqrt{2.480\text{GHz}} \leq 3.0$
Numeric threshold (2480MHz) $\leq 9.525\text{mW}$

>> The power of EUT measured (2402MHz) is: 1.51dBm = 1.42mW
The power of EUT measured (2440MHz) is: 1.43dBm = 1.39mW
The power of EUT measured (2480MHz) is: 1.26dBm = 1.34mW
Which is smaller than the Numeric threshold.

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

Appendix A

Declaration letter of model difference

LIDL US, LLC

To: TÜV SÜD Hong Kong Limited

Attention: Edmond Fung

From:

Date: 15 June, 2020

Fax No:

Total Page (Cover Included): 1

Project No.: 60.792.20.005.01

Subject: **Declaration letter**

We: Lidl US LLC.
3500 South Clark Street, Arlington, VA 22202

Officially notify TÜV SÜV Hong Kong Limited that the <<Model A>> have the same technical construction including circuit diagram, PCB Layout, components and component layout, all electrical construction and mechanical construction, with <<PRODUCT>>, <<Model B>>. The difference lies only in the outlook/color of the different models.

<<Model A>>: HG06610B-US

<<Model B>>: HG06610A-US

<<Product>>: **Bluetooth speaker**

Applicant:

15-Jun-2020



Name: Maxwell Hand
Job Title: Sr GA Mgr

Elizabeth Sullivan
QA Manager

(Date)

(Applicant's authorized signature and company Chop)