



Test Report

Date : 2018-09-18
No. : HMD18080001

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- Applicant** : SecureData Inc
3255 Cahuenga Blvd. West #111, Los Angeles, CA 90068, USA
- Supplier / Manufacturer** : Chase Glory Industrial Limited
Flat B-D, 15/F., Haribest Ind. Bldg., 45-47 Au Pui Wan St., Fotan,
Shating, N.T., Hong Kong
- Description of Sample(s)** : Submitted sample(s) said to be
Product: Secure USB BT
Brand Name: Secure Data
Model No.: SU-BT-BU-64
FCC ID: 2AOXICAUSB
- Date Samples Received** : 2018-07-30
- Date Tested** : 2018-09-13 to 2018-09-17
- Investigation Requested** : Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2017 and ANSI C63.10: 2013 for FCC Certification.
- Conclusions** : The submitted product COMPLIED with the requirements of Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.
- Remarks** : For additional model(s) details, see page 3.



CHEUNG Chi, Kenneth
Authorized Signatory



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1.0 General Details

1.1 Test Laboratory

The Hong Kong Standards and Testing Centre Ltd.
EMC Laboratory
10 Dai Wang Street, Taipo Industrial Estate, New Territories, Hong Kong
Telephone: 852 2666 1888
Fax: 852 2664 4353

1.2 Equipment Under Test [EUT]

Description of Sample(s)

| | |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Product: | Secure USB BT |
| Manufacturer: | Chase Glory Industrial Limited Flat B-D, 15/F., Haribest Ind. Bldg., 45-47 Au Pui Wan St., Fotan, Shating, N.T., Hong Kong |
| Brand Name: | Secure Data |
| Model Number: | SU-BT-BU-64 |
| Additional Model Number: | SU-BT-BU-XX (XX is the capacity of the drives) |
| Rating: | 5Vd.c. (power by USB port) |

1.3 Description of EUT Operation

The Equipment Under Test (EUT) is a Secure USB BT. It is a transceiver operating at 2402MHz~2480MHz and the RF signal was modulated by IC.

1.4 Date of Order

2018-07-30

1.5 Submitted Sample(s):

1 Sample

1.6 Test Duration

2018-09-13 to 2018-09-17

1.7 Country of Origin

China

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2.0 Technical Details

2.1 Investigations Requested

Perform Electromagnetic Interference measurements in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2017 Regulations and ANSI C63.10: 2013 for FCC Certification. The device was realized by test software.

2.2 Test Standards and Results Summary Tables

| EMISSION Results Summary | | | | | | |
|-----------------------------------------------------|------------------|-------------------|------------------|-------------------------------------|--------------------------|--------------------------|
| Test Condition | Test Requirement | Test Method | Class / Severity | Test Result | | |
| | | | | Pass | Failed | N/A |
| Field Strength of Fundamental & Harmonics Emissions | FCC 47CFR 15.249 | ANSI C63.10: 2013 | N/A | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Radiated Emissions | FCC 47CFR 15.209 | ANSI C63.10: 2013 | N/A | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| AC Mains Conducted Emissions | FCC 47CFR 15.207 | ANSI C63.10: 2013 | N/A | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Antenna requirement | FCC 47CFR 15.203 | N/A | N/A | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Note: N/A - Not Applicable

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3.0 Test Results

3.1 Emission

3.1.1 Radiated Emissions

Ambient temperature 25°C

Relative humidity 57%

| | |
|--------------------|-------------------------------------|
| Test Requirement: | FCC 47CFR 15.249 & FCC 47CFR 15.209 |
| Test Method: | ANSI C63.10:2013 |
| Test Date: | 2018-09-17 |
| Mode of Operation: | Tx mode |

Test Method:

For emission measurements at or below 1 GHz, the sample was placed 0.8m above the ground plane of semi-anechoic Chamber*. For emission measurements above 1 GHz, the sample was placed 1.5m above the ground plane of semi-anechoic Chamber*. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

* Semi-Anechoic chamber located on the G/F of The Hong Kong Standards and Testing Centre Ltd. with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 607756.

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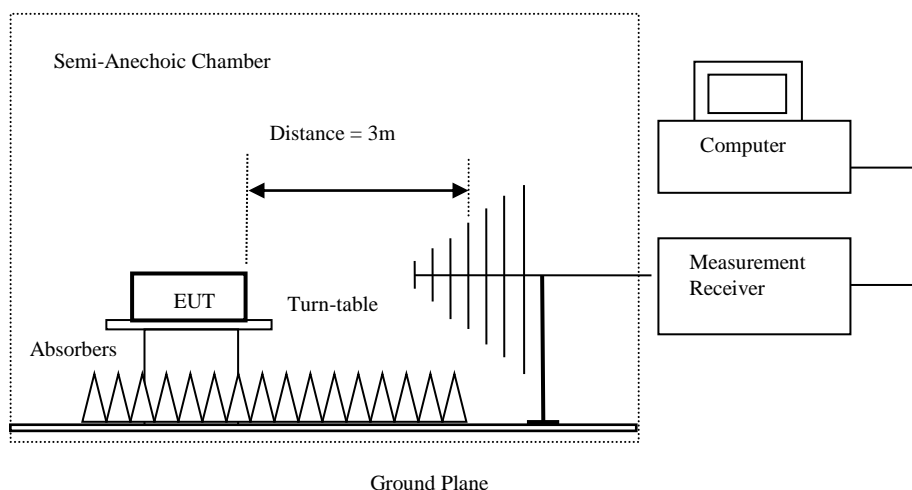
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Spectrum Analyzer Setting:

| | |
|------------------------|-------------------------------------------------------------------------------------------------------------------|
| 9KHz – 30MHz (Pk & Av) | RBW: 10kHz VBW: 30kHz Sweep: Auto Span: Fully capture the emissions being measured Trace: Max. hold |
| 30MHz – 1GHz (QP) | RBW: 120kHz VBW: 120kHz Sweep: Auto Span: Fully capture the emissions being measured Trace: Max. hold |
| Above 1GHz (Pk) | RBW: 1MHz VBW: 1MHz Sweep: Auto Span: Fully capture the emissions being measured Trace: Max. hold |
| Above 1GHz (Av) | RBW: 1MHz VBW: 10Hz Sweep: Auto Span: Fully capture the emissions being measured Trace: Max. hold |

Test Setup:



- Absorbers placed on top of the ground plane are for measurements above 1000MHz only.
- Measurements between 30MHz to 1000MHz made with Bi-log antennas, above 1000MHz horn antennas are used, 9kHz to 30MHz loop antennas are used.

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Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.249]:

| Frequency Range of Fundamental [MHz] | Field Strength of Fundamental Emission [microvolts/meter] | Field Strength of Harmonics Emission [microvolts/meter] |
|-----------------------------------------|--------------------------------------------------------------|------------------------------------------------------------|
| 902-928 | 50,000 [Quasi-Peak] | 500 [Average] |
| 2400-2483.5 | 50,000 [Average] | 500 [Average] |

Results of Tx mode (Lowest Frequency Channel-2402 MHz): Pass

| Field Strength of Fundamental Emissions Peak Value | | | | | | |
|---------------------------------------------------------------|------------------------------------|-----------------------------------|--------------------------------|-----------------------------|------------------------|------------------|
| Frequency MHz | Measured Level @3m dB μ V/m | Correction Factor dB μ V/m | Field Strength dB μ V/m | Field Strength μ V/m | Limit @3m μ V/m | E-Field Polarity |
| 2402.00 | 51.0 | 36.8 | 87.8 | 24,547.1 | 500,000 | Vertical |
| 2402.00 | 51.8 | 36.4 | 88.2 | 25,704.0 | 500,000 | Horizontal |

| Field Strength of Fundamental Emissions Average Value | | | | | | |
|------------------------------------------------------------------|------------------------------------|-----------------------------------|--------------------------------|-----------------------------|------------------------|------------------|
| Frequency MHz | Measured Level @3m dB μ V/m | Correction Factor dB μ V/m | Field Strength dB μ V/m | Field Strength μ V/m | Limit @3m μ V/m | E-Field Polarity |
| 2402.00 | 42.7 | 36.8 | 79.5 | 9,440.6 | 50,000 | Vertical |
| 2402.00 | 41.7 | 36.4 | 78.1 | 8,035.3 | 50,000 | Horizontal |

| Field Strength of Harmonics Emission Peak Value | | | | | | |
|------------------------------------------------------------|------------------------------------|-----------------------------------|--------------------------------|-----------------------------|------------------------|------------------|
| Frequency MHz | Measured Level @3m dB μ V/m | Correction Factor dB μ V/m | Field Strength dB μ V/m | Field Strength μ V/m | Limit @3m μ V/m | E-Field Polarity |
| 4804.0 | 14.7 | 41.5 | 56.2 | 645.7 | 5,000 | Vertical |
| 4804.0 | 13.0 | 42.4 | 55.4 | 590.9 | 5,000 | Horizontal |
| 7206.0 | 9.8 | 45.1 | 54.9 | 552.7 | 5,000 | Vertical |
| 7206.0 | 8.8 | 46.2 | 55.0 | 559.8 | 5,000 | Horizontal |
| 9608.0 | 7.2 | 48.0 | 55.2 | 578.1 | 5,000 | Vertical |
| 9608.0 | 6.4 | 48.8 | 55.2 | 574.1 | 5,000 | Horizontal |
| 12010.0 | 4.01 | 51.8 | 55.8 | 617.3 | 5,000 | Vertical |
| 12010.0 | 3.6 | 52.4 | 56.0 | 632.4 | 5,000 | Horizontal |

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| Field Strength of Harmonics Emission | | | | | | |
|---------------------------------------------|---------------------------------------|--------------------------------------|-----------------------------------|--------------------------------|------------------------|---------------------|
| Average Value | | | | | | |
| Frequency MHz | Measured Level @3m dB μ V/m | Correction Factor dB μ V/m | Field Strength dB μ V/m | Field Strength μ V/m | Limit @3m μ V/m | E-Field Polarity |
| 4804.0 | 0.8 | 41.5 | 42.3 | 130.8 | 500 | Vertical |
| 4804.0 | -1.7 | 42.4 | 40.7 | 108.6 | 500 | Horizontal |
| 7206.0 | -5.3 | 45.1 | 39.8 | 97.3 | 500 | Vertical |
| 7206.0 | -5.7 | 46.2 | 40.5 | 105.7 | 500 | Horizontal |
| 9608.0 | -8.7 | 48.0 | 39.3 | 92.6 | 500 | Vertical |
| 9608.0 | -9.1 | 48.8 | 39.8 | 97.2 | 500 | Horizontal |
| 12010.0 | -11.4 | 51.8 | 40.5 | 105.3 | 500 | Vertical |
| 12010.0 | -12.3 | 52.4 | 40.1 | 101.5 | 500 | Horizontal |

Results of Tx mode (Middle Frequency Channel- 2440MHz): Pass

| Field Strength of Fundamental Emissions | | | | | | |
|------------------------------------------------|---------------------------------------|--------------------------------------|-----------------------------------|--------------------------------|------------------------|---------------------|
| Peak Value | | | | | | |
| Frequency MHz | Measured Level @3m dB μ V/m | Correction Factor dB μ V/m | Field Strength dB μ V/m | Field Strength μ V/m | Limit @3m μ V/m | E-Field Polarity |
| 2440.00 | 50.6 | 36.8 | 87.4 | 23,442.3 | 500,000 | Vertical |
| 2440.00 | 51.8 | 36.4 | 88.2 | 25,704.0 | 500,000 | Horizontal |

| Field Strength of Fundamental Emissions | | | | | | |
|------------------------------------------------|---------------------------------------|--------------------------------------|-----------------------------------|--------------------------------|------------------------|---------------------|
| Average Value | | | | | | |
| Frequency MHz | Measured Level @3m dB μ V/m | Correction Factor dB μ V/m | Field Strength dB μ V/m | Field Strength μ V/m | Limit @3m μ V/m | E-Field Polarity |
| 2440.00 | 42.5 | 36.8 | 79.3 | 9,225.7 | 50,000 | Vertical |
| 2440.00 | 42.3 | 36.4 | 78.7 | 8,609.9 | 50,000 | Horizontal |



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| Field Strength of Harmonics Emission | | | | | | |
|---------------------------------------------|---------------------------------------|--------------------------------------|-----------------------------------|--------------------------------|------------------------|---------------------|
| Peak Value | | | | | | |
| Frequency MHz | Measured Level @3m dB μ V/m | Correction Factor dB μ V/m | Field Strength dB μ V/m | Field Strength μ V/m | Limit @3m μ V/m | E-Field Polarity |
| 4880.0 | 14.1 | 41.6 | 55.7 | 608.1 | 5,000 | Vertical |
| 4880.0 | 12.4 | 42.5 | 54.9 | 555.3 | 5,000 | Horizontal |
| 7320.0 | 1.9 | 53.2 | 55.1 | 570.8 | 5,000 | Vertical |
| 7320.0 | 8.9 | 46.3 | 55.2 | 574.8 | 5,000 | Horizontal |
| 9760.0 | 7.1 | 48.1 | 55.2 | 574.8 | 5,000 | Vertical |
| 9760.0 | 6.4 | 48.9 | 55.3 | 579.4 | 5,000 | Horizontal |
| 12200.0 | 3.71 | 51.6 | 55.3 | 582.8 | 5,000 | Vertical |
| 12200.0 | 3.5 | 52.5 | 56.0 | 631.0 | 5,000 | Horizontal |

| Field Strength of Harmonics Emission | | | | | | |
|---------------------------------------------|---------------------------------------|--------------------------------------|-----------------------------------|--------------------------------|------------------------|---------------------|
| Average Value | | | | | | |
| Frequency MHz | Measured Level @3m dB μ V/m | Correction Factor dB μ V/m | Field Strength dB μ V/m | Field Strength μ V/m | Limit @3m μ V/m | E-Field Polarity |
| 4880.0 | -1.0 | 41.6 | 40.6 | 107.5 | 500 | Vertical |
| 4880.0 | -2.8 | 42.5 | 39.7 | 97.1 | 500 | Horizontal |
| 7320.0 | -5.1 | 45.2 | 40.1 | 100.9 | 500 | Vertical |
| 7320.0 | -7.0 | 46.3 | 39.3 | 91.9 | 500 | Horizontal |
| 9760.0 | -8.7 | 48.1 | 39.5 | 93.9 | 500 | Vertical |
| 9760.0 | -8.1 | 48.9 | 40.8 | 109.3 | 500 | Horizontal |
| 12200.0 | -11.1 | 51.6 | 40.5 | 106.2 | 500 | Vertical |
| 12200.0 | -11.3 | 52.5 | 41.2 | 114.4 | 500 | Horizontal |

Results of Tx mode (Highest Frequency Channel – 2480MHz): Pass

| Field Strength of Fundamental Emissions | | | | | | |
|------------------------------------------------|---------------------------------------|--------------------------------------|-----------------------------------|--------------------------------|------------------------|---------------------|
| Peak Value | | | | | | |
| Frequency MHz | Measured Level @3m dB μ V/m | Correction Factor dB μ V/m | Field Strength dB μ V/m | Field Strength μ V/m | Limit @3m μ V/m | E-Field Polarity |
| 2480.00 | 50.6 | 36.8 | 87.4 | 23,442.3 | 500,000 | Vertical |
| 2480.00 | 51.9 | 36.4 | 88.3 | 26,001.6 | 500,000 | Horizontal |

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| Field Strength of Fundamental Emissions | | | | | | |
|------------------------------------------------|---------------------------------------|--------------------------------------|-----------------------------------|--------------------------------|------------------------|---------------------|
| Average Value | | | | | | |
| Frequency MHz | Measured Level @3m dB μ V/m | Correction Factor dB μ V/m | Field Strength dB μ V/m | Field Strength μ V/m | Limit @3m μ V/m | E-Field Polarity |
| 2480.00 | 41.8 | 36.8 | 78.6 | 8,511.4 | 50,000 | Vertical |
| 2480.00 | 43.1 | 36.4 | 79.5 | 9,440.6 | 50,000 | Horizontal |

| Field Strength of Harmonics Emission | | | | | | |
|---------------------------------------------|---------------------------------------|--------------------------------------|-----------------------------------|--------------------------------|------------------------|---------------------|
| Peak Value | | | | | | |
| Frequency MHz | Measured Level @3m dB μ V/m | Correction Factor dB μ V/m | Field Strength dB μ V/m | Field Strength μ V/m | Limit @3m μ V/m | E-Field Polarity |
| 4960.0 | 14.7 | 41.4 | 56.1 | 634.6 | 5,000 | Vertical |
| 4960.0 | 12.5 | 42.7 | 55.2 | 576.8 | 5,000 | Horizontal |
| 7440.0 | 9.6 | 45.6 | 55.2 | 576.1 | 5,000 | Vertical |
| 7440.0 | 8.7 | 46.5 | 55.2 | 572.8 | 5,000 | Horizontal |
| 9920.0 | 7.3 | 48.6 | 55.9 | 623.0 | 5,000 | Vertical |
| 9920.0 | 6.1 | 49.7 | 55.8 | 618.0 | 5,000 | Horizontal |
| 12400.0 | 3.5 | 51.7 | 55.2 | 572.8 | 5,000 | Vertical |
| 12400.0 | 2.7 | 52.7 | 55.4 | 590.2 | 5,000 | Horizontal |

| Field Strength of Harmonics Emission | | | | | | |
|---------------------------------------------|---------------------------------------|--------------------------------------|-----------------------------------|--------------------------------|------------------------|---------------------|
| Average Value | | | | | | |
| Frequency MHz | Measured Level @3m dB μ V/m | Correction Factor dB μ V/m | Field Strength dB μ V/m | Field Strength μ V/m | Limit @3m μ V/m | E-Field Polarity |
| 4960.0 | 0.0 | 41.4 | 41.4 | 117.9 | 500 | Vertical |
| 4960.0 | -2.8 | 42.7 | 39.9 | 99.0 | 500 | Horizontal |
| 7440.0 | -6.4 | 45.6 | 39.3 | 91.7 | 500 | Vertical |
| 7440.0 | -6.2 | 46.5 | 40.3 | 103.2 | 500 | Horizontal |
| 9920.0 | -9.2 | 48.6 | 39.4 | 93.8 | 500 | Vertical |
| 9920.0 | -9.6 | 49.7 | 40.1 | 100.9 | 500 | Horizontal |
| 12400.0 | -11.4 | 51.7 | 40.3 | 103.9 | 500 | Vertical |
| 12400.0 | -12.5 | 52.7 | 40.2 | 102.2 | 500 | Horizontal |

Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

Calculated measurement uncertainty (9kHz-30MHz): 2.0dB

(30MHz -1GHz): 4.9dB

(1GHz -6GHz): 4.02dB

(6GHz -26.5GHz): 4.03dB

Emissions in the vertical and horizontal polarizations have been investigated and the worst-case test results are recorded in this report.

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Radiated Emissions Measurement:

Limit :

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator 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. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 5.205(c)).

Result: RF Radiated Emissions (1GHz-26GHz) (Lowest)-GFSK

| Field Strength of Band-edge Compliance Peak Value | | | | | | |
|--------------------------------------------------------------|-------------------------------------|------------------------------|-----------------------------------|------------------------------|------------------------|---------------------|
| Frequency MHz | Measured Level @3m dB μ V | Correction Factor dB/m | Field Strength dB μ V/m | Limit @3m dB μ V/m | Margin dB μ V/m | E-Field Polarity |
| 2400.0 | 23.5 | 36.8 | 60.3 | 74.0 | 13.7 | Vertical |

| Field Strength of Band-edge Compliance Average Value | | | | | | |
|-----------------------------------------------------------------|-------------------------------------|------------------------------|-----------------------------------|------------------------------|------------------------|---------------------|
| Frequency MHz | Measured Level @3m dB μ V | Correction Factor dB/m | Field Strength dB μ V/m | Limit @3m dB μ V/m | Margin dB μ V/m | E-Field Polarity |
| 2400.0 | 9.3 | 36.8 | 46.1 | 54.0 | 7.9 | Vertical |

Result: RF Radiated Emissions (1GHz-26GHz) (Highest) -GFSK

| Field Strength of Band-edge Compliance Peak Value | | | | | | |
|--------------------------------------------------------------|-------------------------------------|------------------------------|-----------------------------------|------------------------------|------------------------|---------------------|
| Frequency MHz | Measured Level @3m dB μ V | Correction Factor dB/m | Field Strength dB μ V/m | Limit @3m dB μ V/m | Margin dB μ V/m | E-Field Polarity |
| 2483.5 | 18.1 | 36.8 | 54.9 | 74.0 | 19.1 | Vertical |

| Field Strength of Band-edge Compliance Average Value | | | | | | |
|-----------------------------------------------------------------|-------------------------------------|------------------------------|-----------------------------------|------------------------------|------------------------|---------------------|
| Frequency MHz | Measured Level @3m dB μ V | Correction Factor dB/m | Field Strength dB μ V/m | Limit @3m dB μ V/m | Margin dB μ V/m | E-Field Polarity |
| 2483.5 | 2.5 | 36.8 | 39.3 | 54.0 | 14.7 | Vertical |

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Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

| Frequency Range [MHz] | Quasi-Peak Limits [$\mu\text{V/m}$] |
|-----------------------|---------------------------------------|
| 0.009-0.490 | 2400/F (kHz) |
| 0.490-1.705 | 24000/F (kHz) |
| 1.705-30 | 30 |
| 30-88 | 100 |
| 88-216 | 150 |
| 216-960 | 200 |
| Above960 | 500 |

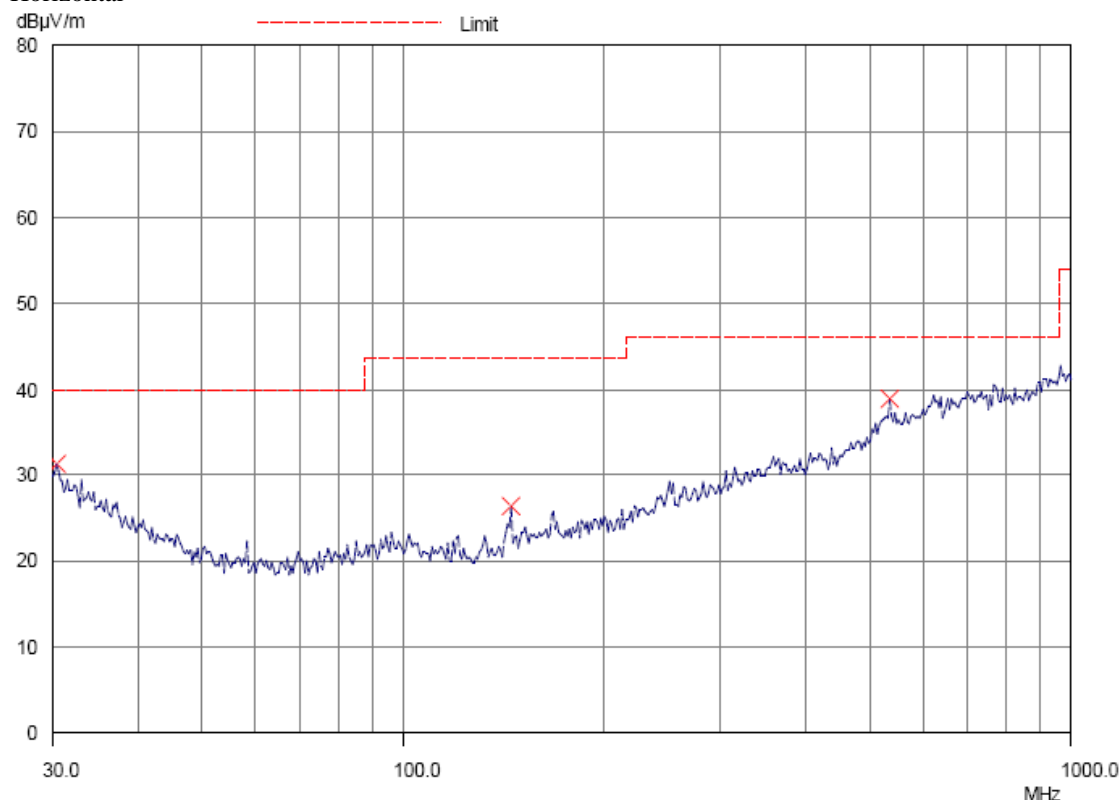
The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Results of TX mode (9kHz – 30MHz): PASS

Emissions detected are more than 20 dB below the FCC Limits

Results of TX mode (30MHz – 1GHz)(2402MHz worst case): PASS

Horizontal



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Results of TX mode (30MHz – 1GHz) (2402MHz worst case): PASS

| Radiated Emissions Quasi-Peak | | | | | |
|----------------------------------|---------------------|------------------------------|------------------------------|---------------------------|---------------------------|
| Emission Frequency MHz | E-Field Polarity | Level @3m dB μ V/m | Limit @3m dB μ V/m | Level @3m μ V/m | Limit @3m μ V/m |
| 30.2 | Horizontal | 31.3 | 40.0 | 36.7 | 100 |
| 145.2 | Horizontal | 26.3 | 43.5 | 20.7 | 150 |
| 532.7 | Horizontal | 39.0 | 46.0 | 88.9 | 200 |

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Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

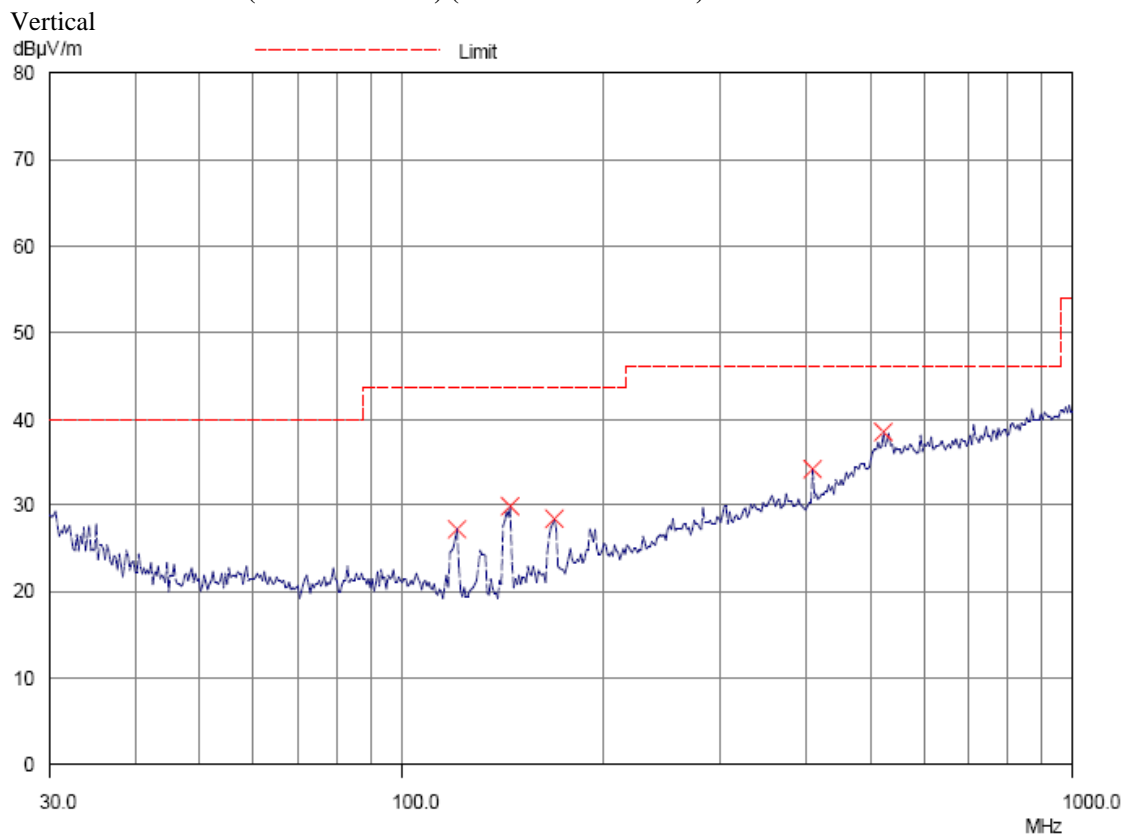
| Frequency Range [MHz] | Quasi-Peak Limits [$\mu\text{V/m}$] |
|-----------------------|---------------------------------------|
| 0.009-0.490 | 2400/F (kHz) |
| 0.490-1.705 | 24000/F (kHz) |
| 1.705-30 | 30 |
| 30-88 | 100 |
| 88-216 | 150 |
| 216-960 | 200 |
| Above960 | 500 |

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Results of TX mode (9kHz – 30MHz): PASS

Emissions detected are more than 20 dB below the FCC Limits

Results of TX mode (30MHz – 1GHz) (2402MHz worst case): PASS



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Results of TX mode (30MHz – 1GHz) (2402MHz worst case): PASS

| Radiated Emissions Quasi-Peak | | | | | |
|----------------------------------|---------------------|------------------------------|------------------------------|---------------------------|---------------------------|
| Emission Frequency MHz | E-Field Polarity | Level @3m dB μ V/m | Limit @3m dB μ V/m | Level @3m μ V/m | Limit @3m μ V/m |
| 121.2 | Vertical | 27.2 | 43.5 | 22.9 | 150 |
| 145.1 | Vertical | 29.9 | 43.5 | 31.2 | 150 |
| 169.3 | Vertical | 28.4 | 43.5 | 26.3 | 150 |
| 408.0 | Vertical | 34.2 | 46.0 | 51.3 | 200 |
| 520.1 | Vertical | 38.4 | 46.0 | 83.2 | 200 |

Remarks:

Calculated measurement uncertainty (30MHz – 1GHz): 4.9dB

Emissions in the vertical and horizontal polarizations have been investigated and the worst-case test results are recorded in this report.

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3.1.2 AC Mains Conducted Emissions (0.15MHz to 30MHz)

Ambient temperature 25°C

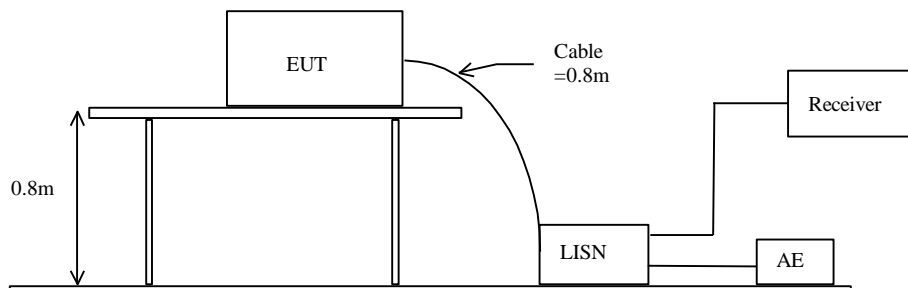
Relative humidity 57%

| | |
|--------------------|-------------------------------------|
| Test Requirement: | FCC 47CFR 15.249 & FCC 47CFR 15.207 |
| Test Method: | ANSI C63.10:2013 |
| Test Date: | 2018-09-14 |
| Mode of Operation: | TX mode |
| Test Voltage: | 120V a.c. 60Hz |

Test Method:

The test was performed in accordance with ANSI C63.10:2013, with the following: an initial measurement was performed in peak and average detection mode on the live line, any emissions recorded within 30dB of the relevant limit line were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.

Test Setup:



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Limits for Conducted Emissions (FCC 47 CFR 15.207):

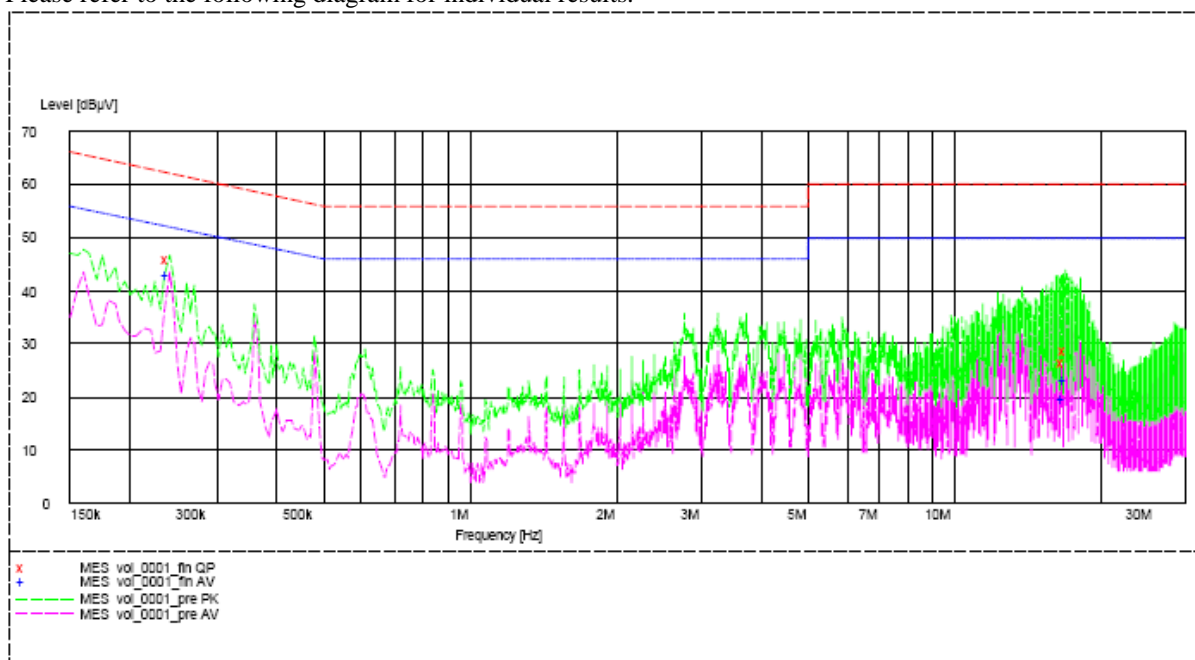
| Frequency Range [MHz] | Quasi-Peak Limits [dB μ V] | Average [dB μ V] |
|--------------------------|-----------------------------------|-------------------------|
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5.0 | 56 | 46 |
| 5.0-30.0 | 60 | 50 |

* Decreases with the logarithm of the frequency.

Limits for Conducted Emissions Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.

Results of TX mode (L): PASS

Please refer to the following diagram for individual results.



| Conductor Live or Neutral | Frequency MHz | Quasi-peak | | Average | |
|------------------------------|------------------|---------------------|---------------------|---------------------|---------------------|
| | | Level dB μ V | Limit dB μ V | Level dB μ V | Limit dB μ V |
| Live | 0.240 | 45.9 | 62.0 | -*- | -*- |
| Live | 16.735 | 26.5 | 60.0 | -*- | -*- |
| Live | 16.975 | 28.5 | 60.0 | -*- | -*- |
| Live | 0.240 | -*- | -*- | 43.0 | 52.0 |
| Live | 16.735 | -*- | -*- | 19.8 | 50.0 |
| Live | 16.975 | -*- | -*- | 23.4 | 50.0 |

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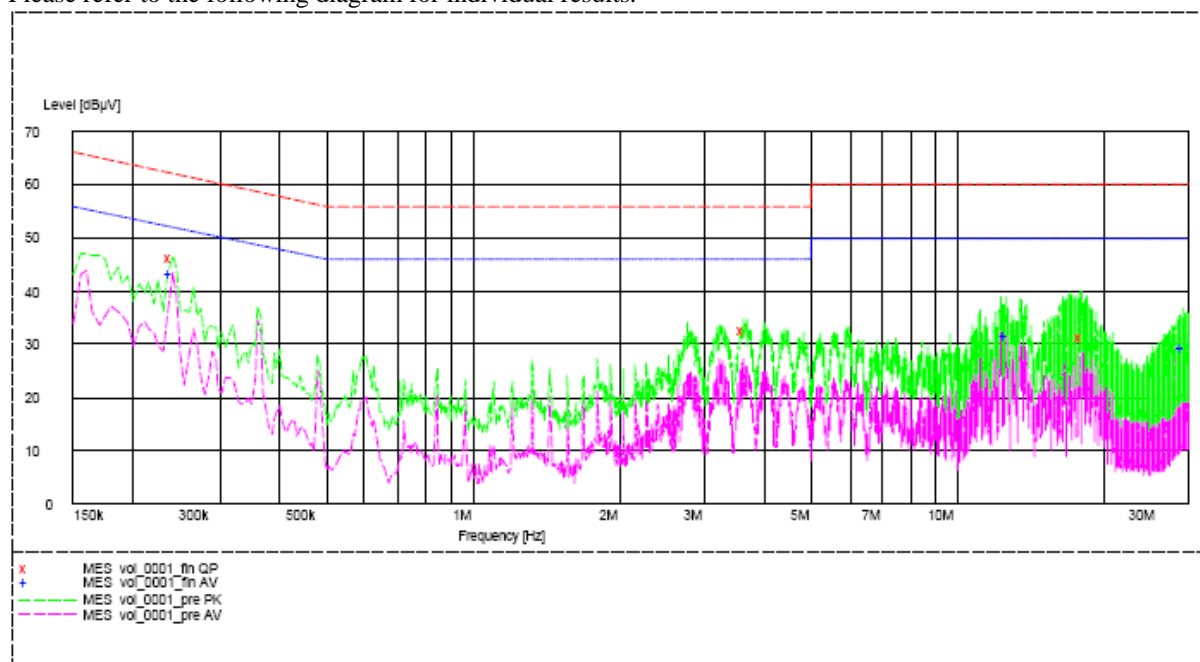
| Frequency Range [MHz] | Quasi-Peak Limits [dB μ V] | Average [dB μ V] |
|--------------------------|-----------------------------------|-------------------------|
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5.0 | 56 | 46 |
| 5.0-30.0 | 60 | 50 |

* Decreases with the logarithm of the frequency.

Limits for Conducted Emissions Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.

Results of TX mode (N): PASS

Please refer to the following diagram for individual results.



| Conductor Live or Neutral | Frequency MHz | Quasi-peak | | Average | |
|------------------------------|------------------|---------------------|---------------------|---------------------|---------------------|
| | | Level dB μ V | Limit dB μ V | Level dB μ V | Limit dB μ V |
| Neutral | 0.240 | 46.1 | 62.0 | -*- | -*- |
| Neutral | 3.620 | 32.5 | 56.0 | -*- | -*- |
| Neutral | 18.095 | 31.3 | 60.0 | -*- | -*- |
| Neutral | 0.240 | -*- | -*- | 43.4 | 52.0 |
| Neutral | 12.650 | -*- | -*- | 31.8 | 50.0 |
| Neutral | 29.080 | -*- | -*- | 29.3 | 50.0 |

Remarks:

Calculated measurement uncertainty (0.15MHz – 30MHz): 3.2dB

-*- Emission(s) that is far below the corresponding limit line.



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3.1.3 Antenna Requirement

Ambient temperature 25°C

Relative humidity 57%

Test Requirements: § 15.203

Test Specification:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Test Results:

This is small SMD chip antenna. There is no external antenna, the antenna gain =0dBi. User is unable to remove or changed the Antenna.

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3.1.4 20dB Bandwidth of Fundamental Emission

Ambient temperature 25°C

Relative humidity 57%

Test Requirement: FCC 47 CFR 15.249
Test Method: ANSI C63.10:2013
Test Date: 2018-09-13
Mode of Operation: Tx mode

Test Method:

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

Test Setup:

As Test Setup of clause 3.1.1 in this test report.

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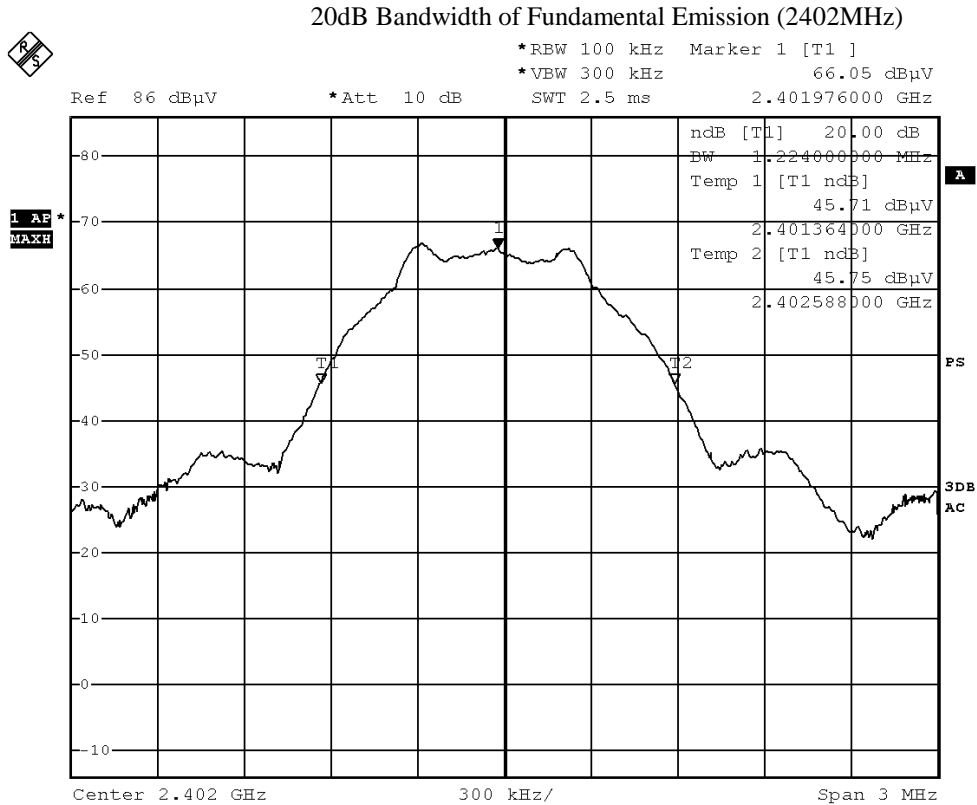
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Limits for 20dB Bandwidth of Fundamental Emission (Low Frequency Channel):

| Frequency Range [MHz] | 20dB Bandwidth [MHz] |
|--------------------------|-------------------------|
| 2402.0 | 1.224 |



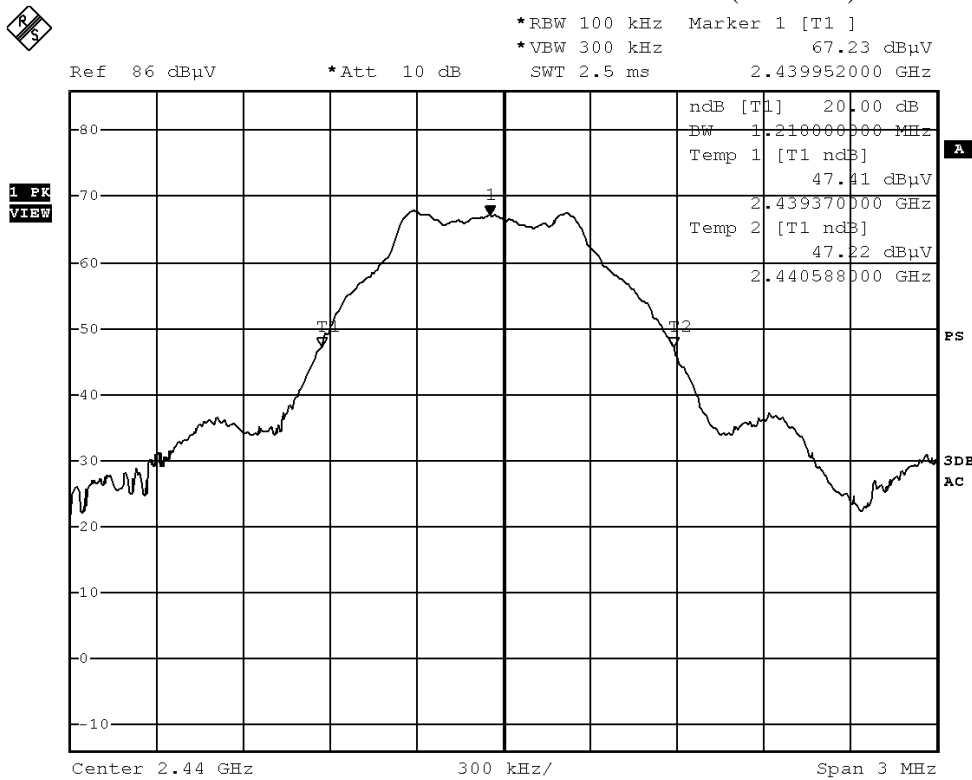
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Limits for 20dB Bandwidth of Fundamental Emission (Middle Frequency Channel):

| Frequency Range [MHz] | 20dB Bandwidth [MHz] |
|--------------------------|-------------------------|
| 2440.0 | 1.210 |

20dB Bandwidth of Fundamental Emission (2440MHz)





Test Report

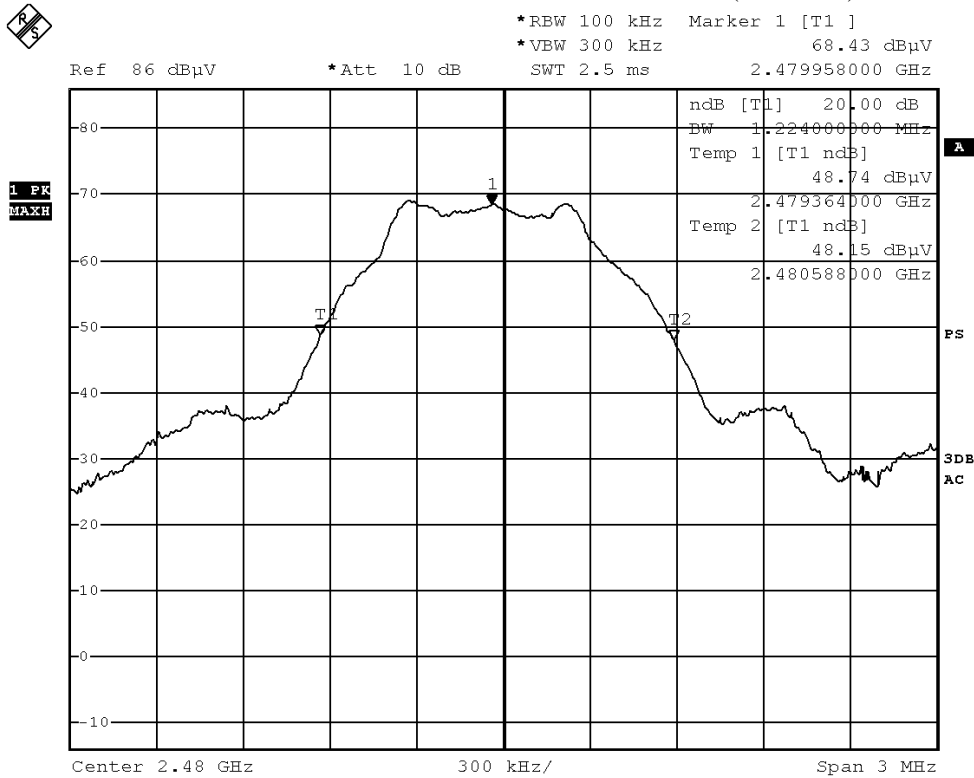
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Limits for 20dB Bandwidth of Fundamental Emission (High Frequency Channel):

| Frequency Range [MHz] | 20dB Bandwidth [MHz] |
|--------------------------|-------------------------|
| 2480.0 | 1.224 |

20dB Bandwidth of Fundamental Emission (2480MHz)



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Appendix A

List of Measurement Equipment

Radiated Emission

| EQP NO. | DESCRIPTION | MANUFACTURER | MODEL NO. | SERIAL NO. | LAST CAL | DUE CAL |
|---------|----------------------------------------------|--------------------------|----------------|----------------|------------|------------|
| EM215 | MULTIDEVICE CONTROLLER | EMCO | 2090 | 00024676 | N/A | N/A |
| EM217 | ELECTRIC POWERED TURNTABLE | EMCO | 2088 | 00029144 | N/A | N/A |
| EM218 | ANECHOIC CHAMBER | ETS-LINDGREN | FACT-3 | -- | 2018/01/24 | 2019/01/24 |
| EM356 | ANTENNA POSITIONING TOWER | ETS-LINDGREN | 2171B | 00150346 | N/A | N/A |
| EM354 | BICONILOG ANTENNA | ETS-LINDGREN | 3143B | 00142073 | 2018/03/29 | 2020/03/29 |
| EM229 | EMI TEST RECEIVER | R&S | ESIB40 | 100248 | 2018/06/01 | 2019/06/01 |
| EM276 | BROADBAND HORN ANTENNA | A-INFOMW | JTXLB-10180-SF | J2031090903007 | 2018/04/27 | 2020/04/27 |
| EM300 | PYRAMIDAL STANDARD GAIN HORN ANTENNA | ETS-LINDGREN | 3160-09 | 00130130 | 2018/05/13 | 2019/05/13 |
| EM301 | PYRAMIDAL STANDARD GAIN HORN ANTENNA | ETS-LINDGREN | 3160-10 | 00130988 | 2018/05/13 | 2019/05/13 |
| EM302 | PRECISION OMNIDIRECTIONAL DIPOLE (1 – 6GHZ) | SEIBERSDORF LABORATORIES | POD 16 | 161806/L | 2018/05/11 | 2020/05/11 |
| EM303 | PRECISION OMNIDIRECTIONAL DIPOLE (6 – 18GHZ) | SEIBERSDORF LABORATORIES | POD 618 | 6181908/L | 2018/05/11 | 2020/05/11 |
| EM353 | LOOP ANTENNA | ETS_LINDGREN | 6502 | 00206533 | 2018/04/16 | 2020/04/16 |
| EM045 | POWER METER | ROHDE & SCHWARZ | NRVD | 843246/028 | 2017/10/14 | 2018/10/14 |

Line Conducted

| EQP NO. | DESCRIPTION | MANUFACTURER | MODEL NO. | SERIAL NO. | LAST CAL | DUE CAL |
|---------|-------------------------------------|-------------------------------|-----------|-----------------|------------|------------|
| EM119 | LISN | R & S | ESH3-Z5 | 0831.5518.52 | 2017/11/29 | 2018/11/29 |
| EM145 | EMI TEST RECEIVER | R & S | ESCS 30 | 830245/021 | 2018/06/01 | 2019/06/01 |
| EM179 | IMPULSE LIMITER | ROHDE & SCHWARZ | ESH3-Z2 | 357-8810.52/54 | 2018/01/11 | 2019/01/11 |
| EM154 | SHIELDING ROOM | SIEMENS MATSUSHITA COMPONENTS | N/A | 803-740-057-99A | 2017/02/02 | 2022/02/02 |
| N/A | MEASUREMENT AND EVALUATION SOFTWARE | ROHDE & SCHWARZ | BSIB-K1 | V1.20 | N/A | N/A |

Remarks:-

N/A Not Applicable or Not Available

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Appendix B

Photographs of EUT

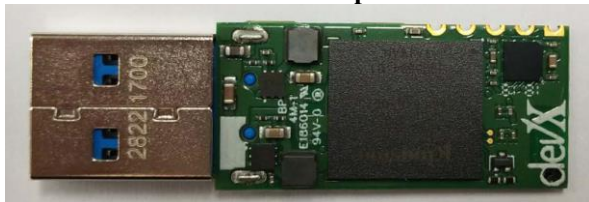
View of the product



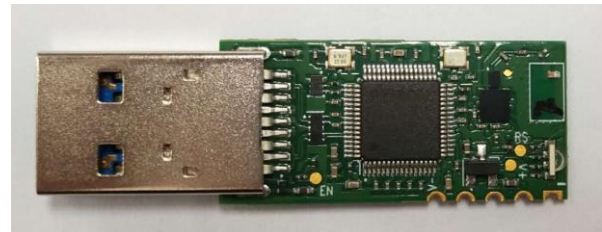
View of the product



Inner Circuit Top View



Inner Circuit Bottom View



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Photographs of EUT

Measurement of Radiated Emission Test Set Up (9kHz to 30MHz)



Measurement of Radiated Emission Test Set Up (30MHz to 1000MHz)



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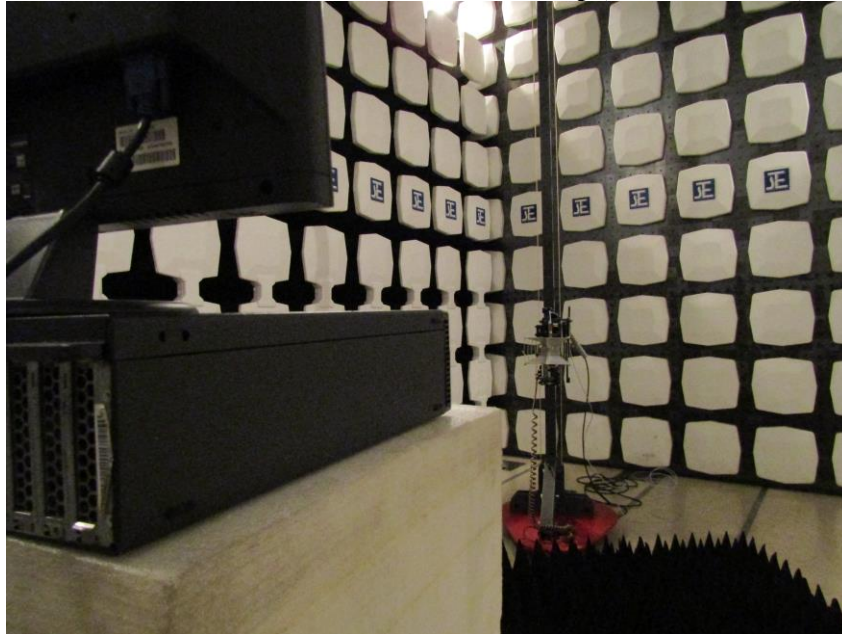
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Photographs of EUT

Measurement of Radiated Emission Test Set Up (Above 1000MHz)



Measurement of Conducted Emission Test Set Up



******* End of Test Report *******

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