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: HM170231 No.

Gatekeeper System (HK) Ltd. **Applicant:**

Unit 2305, Level 23, Tower 2, Metroplaza, No. 223 Hing Fong

Road, Kwai Fong, N.T., Hong Kong

Manufacturer: Gatekeeper System (HK) Ltd.

Unit 2305, Level 23, Tower 2, Metroplaza, No. 223 Hing Fong

Road, Kwai Fong, N.T., Hong Kong

Description of Sample(s): Product: Remote Controlled Locking Wheel

> Brand Name: Gatekeeper Systems

Model Number: W-9470A FCC ID: W3Z-W9470A

2016-04-12 Date Sample(s) Received:

Date Tested: 2016-04-25

Perform ElectroMagnetic Interference measurement in accordance **Investigation Requested:**

with FCC 47CFR [Codes of Federal Regulations] Part 15: 2014 and

ANSI C63.10:2013 for FCC Certification.

The submitted product COMPLIED with the requirements of Conclusion(s):

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.

Remark(s):

CHEUNG Chi. Kennett Authorized Signatory ElectroMagnetic Compatibility Department For and on behalf of

The Hong Kong Standards and Testing Centre Ltd.



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1.0 General Details

1.1 Equipment Under Test [EUT] Description of Sample(s)

Product: Remote Controlled Locking Wheel
Manufacturer: Gatekeeper System (HK) Ltd.

Unit 2305, Level 23, Tower 2, Metroplaza, No. 223 Hing Fong Road,

Kwai Fong, N.T., Hong Kong

Brand Name: Gatekeeper Systems

Model Number: W-9470A

Rating: 3Vd.c. ("CR17450" Lithium Battery x 1)

1.2 Description of EUT Operation

The Equipment Under Test (EUT) is a Remote Controlled Locking Wheel of Gatekeeper System (HK) Ltd., it consist with two 2.4GHz transceivers.

The W-9470A has two modes which affect the characteristics of its RF emissions operational mode and program download mode. Operational mode transmissions are modulated at 20kbps FSK (Frequency Shift Keying), with a deviation of 19 kHz (Carson's rule bandwidth about 80 kHz). Program download mode transmissions are modulated with 500 kbps MSK (Minimum Shift Keying)

1.3 Date of Order

2016-04-12

1.4 Submitted Sample(s):

3 Sample(s)

1.5 Test Duration

2016-04-25

1.6 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: 2015 Regulations and ANSI C63.10:2013 for FCC Certification.

2.2 Test Standards and Results Summary Tables

| | EMISSION Results Summary | | | | | | | | |
|---|-----------------------------|------------------|----------|-------------|--------|--|--|--|--|
| Test Condition | Test Requirement | Test Method | Class / | Test I | Result | | | | |
| | | | Severity | Pass | Fail | | | | |
| Field Strength of Fundamental & Harmonics Emissions | FCC 47CFR 15.249 | ANSI C63.10:2013 | N/A | \boxtimes | | | | | |
| Radiated Emissions | FCC 47CFR 15.209 | ANSI C63.10:2013 | N/A | | | | | | |

Note: N/A - Not Applicable



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3.0 Test Results

3.1 Emission

3.1.1 Field Strength of Fundamental & Harmonics Emissions

Test Requirement: FCC 47CFR 15.249
Test Method: ANSI C63.10:2013
Test Date: 2016-04-25

Mode of Operation: On Mode

Test Method:

The sample was placed 0.8m above the ground plane on a standard radiated emission test site. 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. In the frequency range of 9kHz to 30MHz, The center of the loop antenna shall be 1 meter above the ground and rotated loop axis for maximum reading. The emissions worst-case are shown in Test Results of the following pages.

Remark: 3 orthogonal axis apply to hand-held device only.

*: 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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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

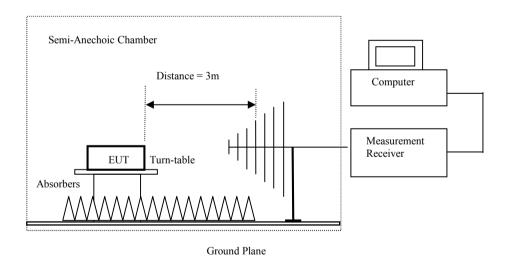
Above 1GHz (Pk & Av) RBW: 3MHz

VBW: 3MHz 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.



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

| Fundamental frequency [MHz] | Field strength of fundamental (millivolts/meter) | Field strength of harmonics (microvolts/meter) |
|-----------------------------|--|--|
| 902-928 MHz | 50 | 500 |
| 2400-2483.5 MHz | 50 | 500 |
| 5725-5875 MHz | 50 | 500 |
| 24.0-24.25 GHz | 250 | 2500 |

Result of Data mode, (Channel 2), (Above 1GHz): Pass

| Res | Result of Data mode, (Channel 2), (Above IGHz): Pass | | | | | | | | | |
|--|---|-------------|----------------|---------------|-----------|-----------|----------|--|--|--|
| | Field Strength of Fundamental and Harmonics Emissions | | | | | | | | | |
| | Peak Value | | | | | | | | | |
| F | requency | Measured | Correction | Field | Field | Limit @3m | E-Field | | | |
| | | Level @3m | Factor | Strength | Strength | | Polarity | | | |
| | MHz | $dB\mu V/m$ | $dB\mu V/m$ | $dB\mu V/m$ | $\mu V/m$ | $\mu V/m$ | | | | |
| | 2401.4 | 56.4 | 27.9 | 84.3 | 16,405.9 | 500,000 | Vertical | | | |
| * | 4802.7 | 15.1 | 32.1 | 47.2 | 229.1 | 5,000 | Vertical | | | |
| | 7204.3 | 2.5 | 38.6 | 41.1 | 113.5 | 5,000 | Vertical | | | |
| | 9605.6 | | | | | 5,000 | Vertical | | | |
| * | 12007.0 | | | | | 5,000 | Vertical | | | |
| | 14408.4 | | | | | 5,000 | Vertical | | | |
| | 16809.8 | Е | missions detec | cted are more | than | 5,000 | Vertical | | | |
| * 19211.2 20 dB below the FCC Limits 5,0 | | | | | 5,000 | Vertical | | | | |
| | 21612.6 5,000 Vertical | | | | | | Vertical | | | |
| | 24014.0 | | | | | 5,000 | Vertical | | | |

| | Field Strength of Fundamental and Harmonics Emissions | | | | | | | | |
|-----------|---|----------------|---------------|-----------|-----------|----------|--|--|--|
| | Average Value | | | | | | | | |
| Frequency | Measured | Correction | Field | Field | Limit @3m | E-Field | | | |
| | Level @3m | Factor | Strength | Strength | | Polarity | | | |
| MHz | dBμV/m | $dB\mu V/m$ | $dB\mu V/m$ | $\mu V/m$ | $\mu V/m$ | | | | |
| 2401.4 | 54.4 | 27.9 | 82.3 | 13,031.7 | 50,000 | Vertical | | | |
| * 4802.7 | 9.2 | 32.1 | 41.3 | 116.1 | 500 | Vertical | | | |
| 7204.3 | -0.8 | 38.6 | 37.8 | 77.6 | 500 | Vertical | | | |
| 9605.6 | | | | | 500 | Vertical | | | |
| * 12007.0 | | | | | 500 | Vertical | | | |
| 14408.4 | | | | | 500 | Vertical | | | |
| 16809.8 | Е | missions detec | cted are more | than | 500 | Vertical | | | |
| * 19211.2 | 20 dB below the FCC Limits 500 Vertical | | | | | | | | |
| 21612.6 | 500 Vertical | | | | | | | | |
| 24014.0 | | | | | | | | | |



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Result of Data mode, (Channel 126), (Above 1GHz): Pass

| Kes | Result of Data mode, (Channel 126), (Above 1GHz): Pass | | | | | | | | |
|-----|--|-------------|---------------|---------------|-----------|-----------|----------|--|--|
| | Field Strength of Fundamental and Harmonics Emissions | | | | | | | | |
| | | | | Peak Value | | | | | |
| F | requency | Measured | Correction | Field | Field | Limit @3m | E-Field | | |
| | | Level @3m | Factor | Strength | Strength | | Polarity | | |
| | MHz | $dB\mu V/m$ | $dB\mu V/m$ | $dB\mu V/m$ | $\mu V/m$ | $\mu V/m$ | | | |
| | 2426.2 | 55.2 | 27.9 | 83.1 | 14,288.9 | 500,000 | Vertical | | |
| * | 4852.3 | 15.0 | 32.1 | 47.1 | 226.5 | 5,000 | Vertical | | |
| * | 7278.4 | 2.3 | 38.6 | 40.9 | 110.9 | 5,000 | Vertical | | |
| | 9704.8 | | | | | 5,000 | Vertical | | |
| * | 12131.0 | | | | | 5,000 | Vertical | | |
| | 14557.2 | | | | | 5,000 | Vertical | | |
| | 16983.4 | Е | missions dete | cted are more | than | 5,000 | Vertical | | |
| * | * 19409.6 20 dB below the FCC Limits 5,000 | | | | | 5,000 | Vertical | | |
| | 21835.8 5,000 Vertical | | | | | | Vertical | | |
| | 24262.0 | | | | | 5,000 | Vertical | | |

| | Field Strength of Fundamental and Harmonics Emissions | | | | | | | | |
|-----------|---|---------------|---------------|-----------|-----------|----------|--|--|--|
| | | A | Average Valu | e | | | | | |
| Frequency | Measured | Correction | Field | Field | Limit @3m | E-Field | | | |
| | Level @3m | Factor | Strength | Strength | | Polarity | | | |
| MHz | $dB\mu V/m$ | $dB\mu V/m$ | $dB\mu V/m$ | $\mu V/m$ | $\mu V/m$ | | | | |
| 2426.2 | 53.8 | 27.9 | 81.7 | 12,161.9 | 50,000 | Vertical | | | |
| * 4852.3 | 9.2 | 32.1 | 41.3 | 116.1 | 500 | Vertical | | | |
| * 7278.4 | 0.1 | 38.6 | 38.7 | 86.1 | 500 | Vertical | | | |
| 9704.8 | | | | | 500 | Vertical | | | |
| * 12131.0 | | | | | 500 | Vertical | | | |
| 14557.2 | | | | | 500 | Vertical | | | |
| 16983.4 | Е | missions dete | cted are more | than | 500 | Vertical | | | |
| * 19409.6 | | 20 dB below | 500 | Vertical | | | | | |
| 21835.8 | 500 Vertical | | | | | | | | |
| 24262.0 | | 500 | Vertical | | | | | | |



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Result of Data mode, (Channel 254), (Above 1GHz): Pass

| Res | Result of Data mode, (Channel 254), (Above 1GHz): Pass | | | | | | | | |
|-----|--|-----------|---------------|---------------|-----------|-----------|----------|--|--|
| | Field Strength of Fundamental and Harmonics Emissions | | | | | | | | |
| | | | | Peak Value | | | | | |
| F | requency | Measured | Correction | Field | Field | Limit @3m | E-Field | | |
| | | Level @3m | Factor | Strength | Strength | | Polarity | | |
| | MHz | dBμV/m | $dB\mu V/m$ | $dB\mu V/m$ | $\mu V/m$ | μV/m | | | |
| | 2451.8 | 56.4 | 27.9 | 84.3 | 16,405.9 | 500,000 | Vertical | | |
| * | 4903.5 | 14.0 | 32.1 | 46.1 | 201.8 | 5,000 | Vertical | | |
| * | 7355.3 | 3.5 | 38.6 | 42.1 | 127.4 | 5,000 | Vertical | | |
| | 9807.2 | | | | | 5,000 | Vertical | | |
| * | 12259.0 | | | | | 5,000 | Vertical | | |
| | 14710.8 | | | | | 5,000 | Vertical | | |
| | 17162.6 | Е | missions dete | cted are more | than | 5,000 | Vertical | | |
| * | 19614.4 20 dB below the FCC Limits | | | | | 5,000 | Vertical | | |
| | 22066.2 | | | | 5,000 | Vertical | | | |
| | 24518.0 | 1 | | | | 5,000 | Vertical | | |

| | Field Strength of Fundamental and Harmonics Emissions | | | | | | | | |
|-----------|---|---------------|---------------|-----------|-----------|----------|--|--|--|
| | | A | Average Valu | e | | | | | |
| Frequency | Measured | Correction | Field | Field | Limit @3m | E-Field | | | |
| | Level @3m | Factor | Strength | Strength | | Polarity | | | |
| MHz | dBμV/m | $dB\mu V/m$ | $dB\mu V/m$ | $\mu V/m$ | $\mu V/m$ | | | | |
| 2451.8 | 54.2 | 27.9 | 82.1 | 12,735.0 | 50,000 | Vertical | | | |
| * 4903.5 | 8.2 | 32.1 | 40.3 | 103.5 | 500 | Vertical | | | |
| * 7355.3 | 0.1 | 38.6 | 38.7 | 86.1 | 500 | Vertical | | | |
| 9807.2 | | | | | 500 | Vertical | | | |
| * 12259.0 | | | | | 500 | Vertical | | | |
| 14710.8 | | | | | 500 | Vertical | | | |
| 17162.6 | Е | missions dete | cted are more | than | 500 | Vertical | | | |
| * 19614.4 | | 20 dB below | 500 | Vertical | | | | | |
| 22066.2 | 500 Vertical | | | | | | | | |
| 24518.0 | | | | | | | | | |



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Result of Announce mode (Channel 8), (Above 1GHz): Pass

| Kes | Result of Announce mode (Channel 8), (Above 1GHz): Pass | | | | | | | | |
|--|---|-------------|---------------|---------------|-----------|-----------|----------|--|--|
| | Field Strength of Fundamental and Harmonics Emissions | | | | | | | | |
| | | | | Peak Value | | | | | |
| I | requency | Measured | Correction | Field | Field | Limit @3m | E-Field | | |
| | | Level @3m | Factor | Strength | Strength | | Polarity | | |
| | MHz | $dB\mu V/m$ | $dB\mu V/m$ | $dB\mu V/m$ | $\mu V/m$ | $\mu V/m$ | | | |
| | 2403.5 | 55.2 | 27.9 | 83.1 | 14,288.9 | 500,000 | Vertical | | |
| * | 4807.3 | 10.2 | 32.1 | 42.3 | 130.3 | 5,000 | Vertical | | |
| | 7211.3 | 1.7 | 38.6 | 40.3 | 103.5 | 5,000 | Vertical | | |
| | 9614.0 | | | | | 5,000 | Vertical | | |
| * | 12017.5 | | | | | 5,000 | Vertical | | |
| | 14421.0 | | | | | 5,000 | Vertical | | |
| | 16824.5 | Е | missions dete | cted are more | than | 5,000 | Vertical | | |
| * 19228.0 20 dB below the FCC Limits 5,0 | | | | | 5,000 | Vertical | | | |
| | 21631.5 5,000 Vertical | | | | | | | | |
| | 24035.0 | | | | | | | | |

| | Field Strength of Fundamental and Harmonics Emissions | | | | | | | |
|-----------|---|----------------|---------------|-----------|-----------|----------|--|--|
| | Average Value | | | | | | | |
| Frequency | Measured | Correction | Field | Field | Limit @3m | E-Field | | |
| | Level @3m | Factor | Strength | Strength | | Polarity | | |
| MHz | dBμV/m | $dB\mu V/m$ | $dB\mu V/m$ | $\mu V/m$ | $\mu V/m$ | | | |
| 2403.5 | 48.6 | 27.9 | 76.5 | 6,683.4 | 50,000 | Vertical | | |
| * 4807.3 | 3.3 | 32.1 | 35.4 | 58.9 | 500 | Vertical | | |
| 7211.3 | -1.0 | 38.6 | 37.6 | 75.9 | 500 | Vertical | | |
| 9614.0 | | | | | 500 | Vertical | | |
| * 12017.5 | | | | | 500 | Vertical | | |
| 14421.0 | | | | | 500 | Vertical | | |
| 16824.5 | Е | missions detec | cted are more | than | 500 | Vertical | | |
| * 19228.0 | 2228.0 20 dB below the FCC Limits | | | | | Vertical | | |
| 21631.5 | 500 Vertical | | | | | | | |
| 24035.0 | | | | | | | | |



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Result of Announce mode (Channel 120), (Above 1GHz): Pass

| Res | Result of Announce mode (Channel 120), (Above 1GHz): Pass | | | | | | | | |
|-----|---|---------------------------------|---------------|---------------|-----------|-----------|----------|--|--|
| | Field Strength of Fundamental and Harmonics Emissions | | | | | | | | |
| | | | | Peak Value | | | | | |
| F | requency | Measured | Correction | Field | Field | Limit @3m | E-Field | | |
| | | Level @3m | Factor | Strength | Strength | | Polarity | | |
| | MHz | dBμV/m | $dB\mu V/m$ | $dB\mu V/m$ | $\mu V/m$ | $\mu V/m$ | | | |
| | 2438.7 | 54.2 | 27.9 | 82.1 | 12,735.0 | 500,000 | Vertical | | |
| * | 4877.7 | 8.3 | 32.1 | 40.4 | 104.7 | 5,000 | Vertical | | |
| * | 7316.5 | 1.5 | 38.6 | 40.1 | 101.2 | 5,000 | Vertical | | |
| | 9754.8 | | | | | 5,000 | Vertical | | |
| * | 12193.5 | | | | | 5,000 | Vertical | | |
| | 14632.2 | | | | | 5,000 | Vertical | | |
| | 17070.9 | Е | missions dete | cted are more | than | 5,000 | Vertical | | |
| * | 19509.6 | 09.6 20 dB below the FCC Limits | | | | | Vertical | | |
| | 21948.3 | 5,000 Vertical | | | | | | | |
| | 24387.0 |] | | | | 5,000 | Vertical | | |

| | Field Strength of Fundamental and Harmonics Emissions | | | | | |
|-----------|---|-------------|-------------|-----------|-----------|----------|
| | Average Value | | | | | |
| Frequency | Measured | Correction | Field | Field | Limit @3m | E-Field |
| | Level @3m | Factor | Strength | Strength | | Polarity |
| MHz | $dB\mu V/m$ | $dB\mu V/m$ | $dB\mu V/m$ | $\mu V/m$ | $\mu V/m$ | |
| 2438.7 | 48.4 | 27.9 | 76.3 | 6,531.3 | 50,000 | Vertical |
| * 4877.7 | 2.2 | 32.1 | 34.3 | 51.9 | 500 | Vertical |
| * 7316.5 | -0.5 | 38.6 | 38.1 | 80.4 | 500 | Vertical |
| 9754.8 | | | | | 500 | Vertical |
| * 12193.5 | | | | 500 | Vertical | |
| 14632.2 | | | | | 500 | Vertical |
| 17070.9 | Emissions detected are more than 500 Verti | | | Vertical | | |
| * 19509.6 | 20 dB below the FCC Limits 500 Vertical | | | Vertical | | |
| 21948.3 | 500 Vertical | | | Vertical | | |
| 24387.0 |] | | | | 500 | Vertical |



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Result of Announce mode (Channel 247), (Above 1GHz): Pass

| Kes | Result of Announce mode (Channel 24/), (Above 1GHz): Pass | | | | | | |
|-----|---|---|-------------|----------|-----------|-----------|----------|
| | Field Strength of Fundamental and Harmonics Emissions | | | | | | |
| | Peak Value | | | | | | |
| F | requency | Measured | Correction | Field | Field | Limit @3m | E-Field |
| | | Level @3m | Factor | Strength | Strength | | Polarity |
| | MHz | dBμV/m | $dB\mu V/m$ | dBμV/m | $\mu V/m$ | $\mu V/m$ | |
| | 2478.6 | 54.0 | 27.9 | 81.9 | 12,445.1 | 500,000 | Vertical |
| * | 4957.1 | 8.2 | 32.1 | 40.3 | 103.5 | 5,000 | Vertical |
| * | 7436.1 | 2.5 | 38.6 | 41.1 | 113.5 | 5,000 | Vertical |
| | 9914.4 | | | | | 5,000 | Vertical |
| * | 12393.0 | | | | 5,000 | Vertical | |
| | 14871.6 | 5,000 Vertical | | | Vertical | | |
| | 17350.2 | Emissions detected are more than 5,000 Vertical | | | | | |
| * | 19828.8 | 20 dB below the FCC Limits 5,000 Vertical | | | Vertical | | |
| | 22307.4 | 5,000 Vertical | | | | | |
| | 24786.0 | 5,000 Vertical | | | | | |

| Field Strength of Fundamental and Harmonics Emissions | | | | | | |
|---|--|-------------|-------------|-----------|-----------|----------|
| | Average Value | | | | | |
| Frequency | Measured | Correction | Field | Field | Limit @3m | E-Field |
| | Level @3m | Factor | Strength | Strength | | Polarity |
| MHz | dBμV/m | $dB\mu V/m$ | $dB\mu V/m$ | $\mu V/m$ | $\mu V/m$ | |
| 2478.6 | 47.4 | 27.9 | 75.3 | 5,821.0 | 50,000 | Vertical |
| * 4957.1 | 0.1 | 32.1 | 32.2 | 40.7 | 500 | Vertical |
| * 7436.1 | 0.2 | 38.6 | 38.8 | 87.1 | 500 | Vertical |
| 9914.4 | | | | | 500 | Vertical |
| * 12393.0 | | | | 500 | Vertical | |
| 14871.6 | | | | 500 | Vertical | |
| 17350.2 | Emissions detected are more than 500 | | | Vertical | | |
| * 19828.8 | 20 dB below the FCC Limits 500 Vertical 500 Vertical | | | Vertical | | |
| 22307.4 | | | | Vertical | | |
| 24786.0 | | | | | 500 | Vertical |

Remarks:

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

*: Denotes restricted band of operation.

Measurements were made using a peak detector. Any emission less than 1000 MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Calculated measurement uncertainty : 9kHz to 30MHz 2.4dB

30MHz to 1GHz 4.9dB 1GHz to 6GHz 4.02dB 6GHz to 18GHz 4.03dB



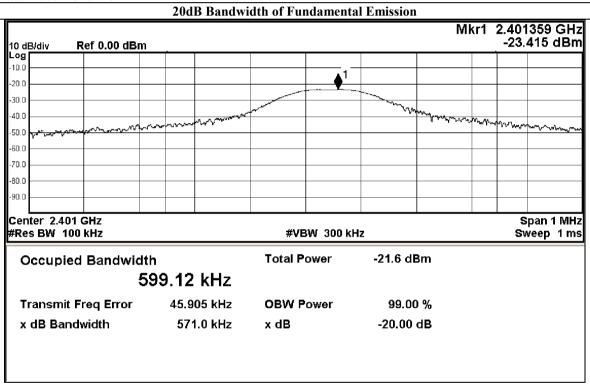
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Limits for 20dB Bandwidth of Fundamental Emission:

| Frequency Range | 20dB Bandwidth |
|-----------------|----------------|
| [MHz] | [MHz] |
| 2401.6 | 0.571 |

Data mode - Channel 2



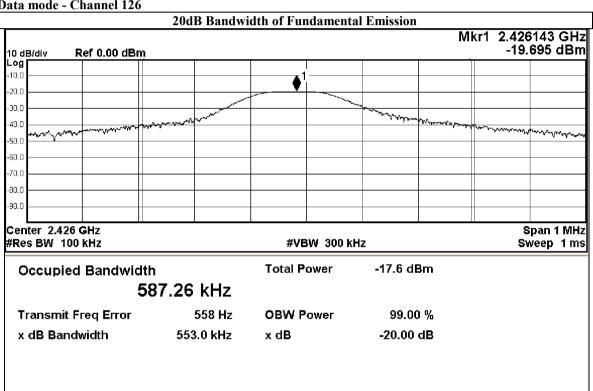


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| Frequency Range | 20dB Bandwidth |
|-----------------|----------------|
| [MHz] | [MHz] |
| 2426.1 | 0.553 |

Data mode - Channel 126



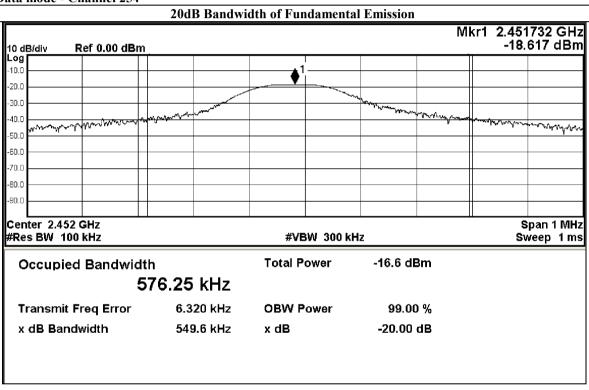


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| Frequency Range | 20dB Bandwidth |
|-----------------|----------------|
| [MHz] | [MHz] |
| 2451.7 | 0.550 |

Data mode - Channel 254



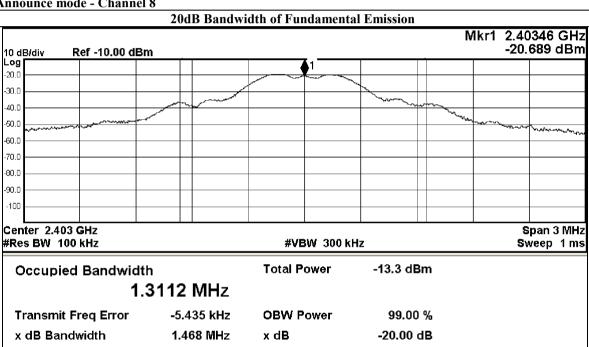


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| Frequency Range | 20dB Bandwidth |
|-----------------|----------------|
| [MHz] | [MHz] |
| 2403.5 | 1.468 |

Announce mode - Channel 8



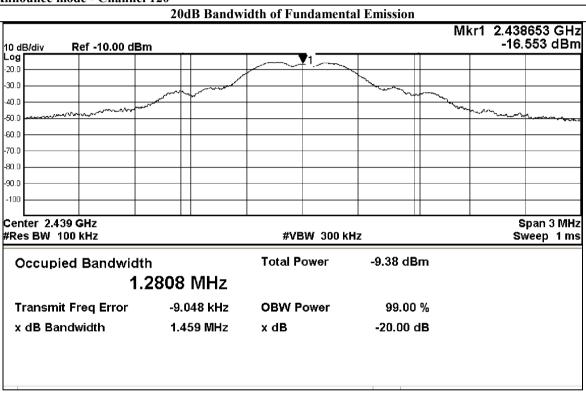


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| Frequency Range | 20dB Bandwidth | |
|-----------------|----------------|--|
| [MHz] | [MHz] | |
| 2438.7 | 1.459 | |

Announce mode - Channel 120



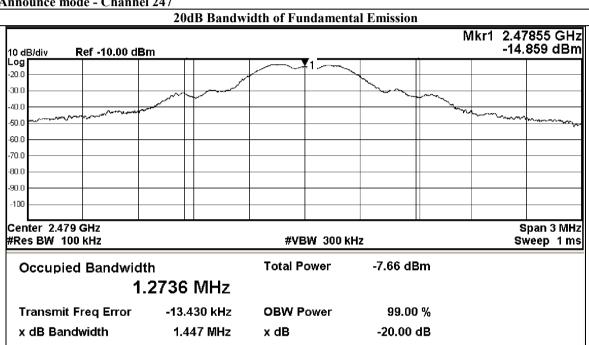


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| Frequency Range | 20dB Bandwidth |
|-----------------|----------------|
| [MHz] | [MHz] |
| 2478.6 | 1.447 |

Announce mode - Channel 247

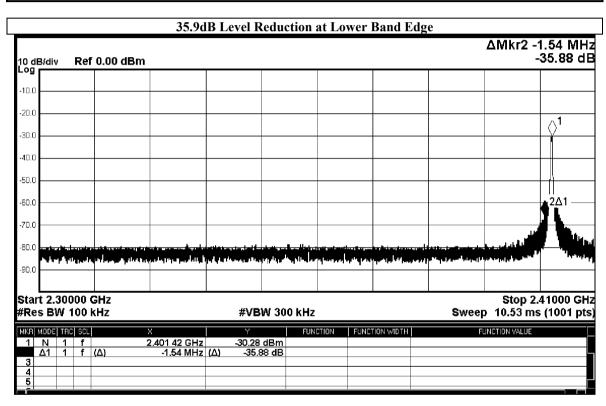




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| Frequency Range | Radiated Emission Attenuated below the Fundamental |
|--------------------------------|--|
| [MHz] | [dB] |
| Data mode – Lowest Fundamental | 35.9 |

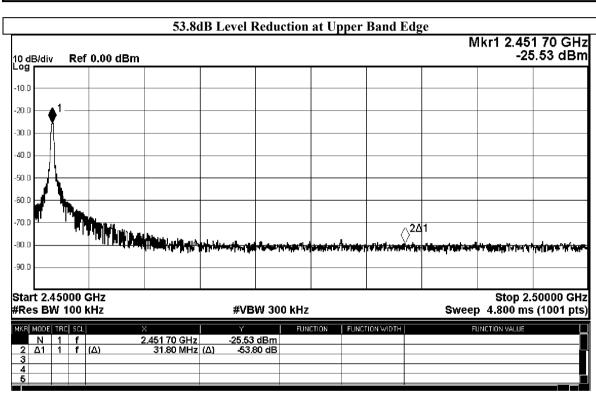




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| Frequency Range | Radiated Emission Attenuated below the Fundamental |
|---------------------------------|--|
| [MHz] | [dB] |
| Data mode – Highest Fundamental | 53.8 |

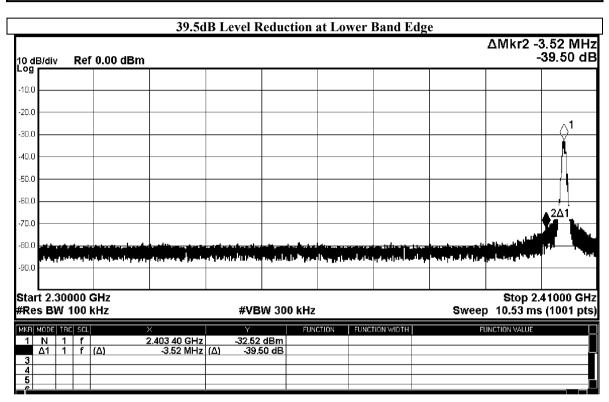




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| Frequency Range [MHz] | Radiated Emission Attenuated below the Fundamental [dB] |
|------------------------------------|---|
| Announce mode – Lowest Fundamental | 39.5 |

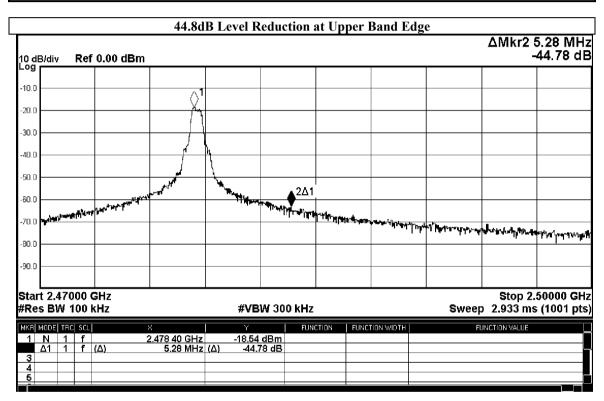




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| Frequency Range | Radiated Emission Attenuated below the Fundamental |
|-------------------------------------|--|
| [MHz] | [dB] |
| Announce mode – Highest Fundamental | 44.8 |





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

| Frequency Range [MHz] | Quasi-Peak Limits [μV/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.

Result of On mode, (9kHz - 30MHz): PASS

Emissions detected are more than 20 dB below the FCC Limits

Result of On mode, (30MHz - 1GHz): PASS

| | Field Strength of Fundamental and Harmonics Emissions | | | | | | | | |
|-----------|---|-------------|--------------|-----------|-----------|------------|--|--|--|
| | | Qı | ıasi-Peak Va | lue | | | | | |
| Frequency | Frequency Measured Correction Field Field Limit @3m E-Field | | | | | | | | |
| | Level @3m Factor Strength Strength | | | | | | | | |
| MHz | $dB\mu V/m$ | $dB\mu V/m$ | $dB\mu V/m$ | $\mu V/m$ | $\mu V/m$ | | | | |
| 63.4 | 0.3 | 9.2 | 9.5 | 3.0 | 100 | Vertical | | | |
| 101.7 | 0.1 | 10.3 | 10.4 | 3.3 | 150 | Vertical | | | |
| 210.4 | 0.2 | 14.0 | 14.2 | 5.1 | 150 | Horizontal | | | |
| 246.5 | 246.5 0.7 15.7 16.4 6.6 200 | | | | | | | | |
| 337.9 | 9 0.5 18.6 19.1 9.0 200 Horizo | | | | | | | | |
| 421.3 | 0.5 | 21.1 | 21.6 | 12.0 | 200 | Horizontal | | | |



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Result of On mode (Data mode, Band-edge measurement), (1GHz – 18GHz): PASS

| Field Strength of Fundamental and Harmonics Emissions | | | | | | | | |
|---|---|--------|----------|----------|-------|----------|--|--|
| | Peak Value | | | | | | | |
| Frequency | Frequency Measured Correction Field Field Limit @3m E-Field | | | | | | | |
| | Level @3m | Factor | Strength | Strength | | Polarity | | |
| MHz $dB\mu V/m$ $dB\mu V/m$ $dB\mu V/m$ $\mu V/m$ $\mu V/m$ | | | | | | | | |
| 2399.1 | 22.4 | 27.9 | 50.3 | 327.3 | 5,000 | Vertical | | |
| 2485.1 | 12.3 | 28.0 | 40.3 | 103.5 | 5,000 | Vertical | | |

| Field Strength of Fundamental and Harmonics Emissions | | | | | | | |
|---|---|---------------------------------------|--------------|-------|----------|----------|--|
| | | A | Average Valu | e | | | |
| Frequency | Frequency Measured Correction Field Field Limit @3m E-Field | | | | | | |
| | Level @3m | el @3m Factor Strength Strength | | | Polarity | | |
| MHz $dB\mu V/m$ $dB\mu V/m$ $dB\mu V/m$ $\mu V/m$ $\mu V/m$ | | | | | | | |
| 2399.1 | 16.9 | 27.9 | 44.8 | 173.8 | 500 | Vertical | |
| 2485.1 | 5.8 | 28.0 | 33.8 | 49.0 | 500 | Vertical | |

Result of On mode (Announce mode, Band-edge measurement), (1GHz - 18GHz): PASS

| Field Strength of Fundamental and Harmonics Emissions | | | | | | |
|---|---|-------------|-------------|-----------|-----------|----------|
| | | | Peak Value | | | |
| Frequency | Frequency Measured Correction Field Field Limit @3m E-Field | | | | | |
| | Level @3m | Factor | Strength | Strength | | Polarity |
| MHz | dBμV/m | $dB\mu V/m$ | $dB\mu V/m$ | $\mu V/m$ | $\mu V/m$ | |
| 2399.1 | 21.2 | 27.9 | 49.1 | 285.1 | 5,000 | Vertical |
| 2484.6 | 21.3 | 28.0 | 49.3 | 291.7 | 5,000 | Vertical |

| Field Strength of Fundamental and Harmonics Emissions Average Value | | | | | | | |
|--|---|--------|--------------|----------|-----|----------|--|
| | | F | Average valu | | | | |
| Frequency | Measured Correction Field Field Limit @3m E-Fie | | | | | | |
| | Level @3m | Factor | Strength | Strength | | Polarity | |
| MHz | MHz $dB\mu V/m$ $dB\mu V/m$ $dB\mu V/m$ $\mu V/m$ $\mu V/m$ | | | | | | |
| 2399.1 | 12.4 | 27.9 | 40.3 | 103.5 | 500 | Vertical | |
| 2484.6 | 12.6 | 28.0 | 40.6 | 107.2 | 500 | Vertical | |



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Result of Receiver mode, (9kHz – 30MHz): PASS Emissions detected are more than 20 dB below the Limits

Result of Receiver mode, (30MHz – 1GHz): PASS Emissions detected are more than 20 dB below the Limits

Result of Receiver mode, (1GHz – 18GHz): PASS

| Nesult of Receiver mode, (IGHz – 18GHz): FASS | | | | | | | | |
|---|-------------|-------------|-------------|-----------|-----------|----------|--|--|
| Field Strength of Fundamental and Harmonics Emissions | | | | | | | | |
| Peak Value | | | | | | | | |
| Frequency | Measured | Correction | Field | Field | Limit @3m | E-Field | | |
| | Level @3m | Factor | Strength | Strength | | Polarity | | |
| MHz | $dB\mu V/m$ | $dB\mu V/m$ | $dB\mu V/m$ | $\mu V/m$ | $\mu V/m$ | | | |
| 2437.2 | 6.2 | 27.9 | 34.1 | 50.7 | 5,000 | Vertical | | |

| Field Strength of Fundamental and Harmonics Emissions | | | | | | | | |
|---|---|-------------|-------------|-----------|-----------|----------|--|--|
| Average Value | | | | | | | | |
| Frequency | equency Measured Correction Field Field Limit @3m E-Field | | | | | | | |
| | Level @3m | Factor | Strength | Strength | | Polarity | | |
| MHz | $dB\mu V/m$ | $dB\mu V/m$ | $dB\mu V/m$ | $\mu V/m$ | $\mu V/m$ | | | |
| 2437.2 | 5.1 | 27.9 | 33.0 | 44.7 | 500 | Vertical | | |

Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz 4.9dB

1GHz to 6GHz 4.02dB 6GHz to 18GHz 4.03dB



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Appendix A

LIST OF MEASUREMENT EQUIPMENT

Radiated Emission

| EQP NO. | DESCRIPTION | MANUFACTURER | MODEL NO. | SERIAL NO. | LAST CAL | DUE CAL |
|---------|--|-----------------------------|-----------|------------|------------|------------|
| EMD062 | DOUBLE-RIDGED WAVEGUIDE HORN ANTENNA | ETS-LINDGREN | 3117 | 00075933 | 2014/11/15 | 2016/11/15 |
| EM215 | MULTIDEVICE CONTROLLER | EMCO | 2090 | 00024676 | N/A | N/A |
| EM216 | MINI MAST SYSTEM | EMCO | 2075 | 00026842 | N/A | N/A |
| EM217 | ELECTRIC POWERED TURNTABLE | EMCO | 2088 | 00029144 | N/A | N/A |
| EM218 | ANECHOIC CHAMBER | ETS-LINDGREN | FACT-3 | | 2016/04/19 | 2017/04/19 |
| EM320 | BICONILOG ANTENNA | ETS-LINDGREN | 3142D | 00094856 | 2014/08/06 | 2016/08/06 |
| EM229 | EMI TEST RECEIVER | R&S | ESIB40 | 100248 | 2015/06/01 | 2016/06/01 |
| EM358 | LOOP ANTENNA | ETS_LINDGREN | 6502 | 00206533 | 2016/03/16 | 2018/03/16 |
| EM299 | DOUBLE-RIDGED WAVEGUIDE HORN ANTENNA | ETS-LINDGREN | 3115 | 00114120 | 2016/04/27 | 2018/04/27 |
| EM302 | PRECISION OMNIDIRECTIONAL DIPOLE (1 – 6GHZ) | SEIBERSDORF LABORATORIES | POD 16 | 161806/L | 2016/05/11 | 2018/05/11 |
| EM303 | PRECISION OMNIDIRECTIONAL DIPOLE (6 – 18GHZ) | SEIBERSDORF LABORATORIES | POD 618 | 6181908/L | 2016/05/11 | 2018/05/11 |

Remarks:

CM Corrective Maintenance

N/A Not Applicable or Not Available

TBD To Be Determined

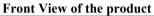


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Appendix B

Photographs of EUT





Rear View of the product



Inner Circuit Top View



Inner Circuit Bottom View

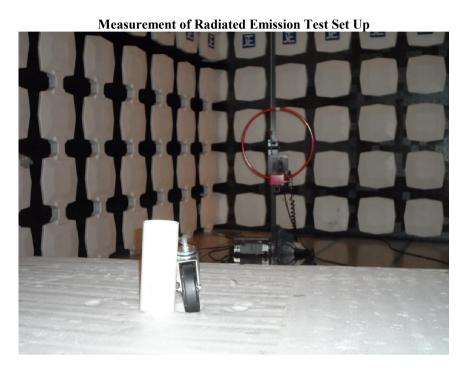




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Photographs of EUT





The Hong Kong Standards and Testing Centre Limited 10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong



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Photographs of EUT

Measurement of Radiated Emission Test Set Up

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



Conditions of Issuance of Test Reports

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- 3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.
- 4. The Report refers only to the sample tested and does not apply to the bulk, unless the sampling has been carried out by the Company and is stated as such in the Report.
- 5. In the event of the improper use the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.
- 6. Sample submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.
- 7. The Company will not be liable for or accept responsibility for any loss or damage howsoever arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.
- 8. Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.
- 9. Subject to the variable length of retention time for test data and report stored hereinto as to otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of this test report for a period of three years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after the retention period. Under no circumstances shall we be liable for damages of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.
- 10. Issuance records of the Report are available on the internet at www.stc-group.org. Further enquiry of validity or verification of the Reports should be addressed to the Company.