



Test Report

Date : 2019-06-11
No. : HM19030026

Page 1 of 84

Applicant: K-MARK INDUSTRIAL LIMITED
FLAT A, 7/F., MAI ON IND. BLDG. 17-21 KUNG YIP STREET,
KWAI CHUNG, HONG KONG

Supplier / Manufacturer: K-MARK INDUSTRIAL LIMITED
FLAT A, 7/F., MAI ON IND. BLDG. 17-21 KUNG YIP STREET,
KWAI CHUNG, HONG KONG

Description of Sample(s): Submitted sample(s) said to be
Product: Hunting camera with 2.4GHz Wi-Fi and BT 4.0
module
Brand Name: GSM, LLC
Model No.: FLX Camera
FCC ID: VEP-FLXCAM

Date Samples Received: 2019-03-28

Date Tested: 2019-05-10 to 2019-05-16

Investigation Requested: Perform ElectroMagnetic Interference measurement in accordance with
FCC 47CFR [Codes of Federal Regulations] Part 15: 2018 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: IEEE 802.11b/g/n (HT20 and HT40)


CHEUNG Chi, Kenneth
Authorized Signatory



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taiipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 2 of 84

CONTENT:

Cover	Page 1 of 84
Content	Page 2 of 84
<u>1.0 General Details</u>	
1.1 Test Laboratory	Page 3 of 84
1.2 Equipment Under Test [EUT] Description of EUT operation	Page 3 of 84
1.3 Date of Order	Page 3 of 84
1.4 Submitted Sample(s)	Page 3 of 84
1.5 Test Duration	Page 3 of 84
1.6 Country of Origin	Page 3 of 84
1.7 RF Module Details	Page 4 of 84
1.8 Channel List	Page 4 of 84
<u>2.0 Technical Details</u>	
2.1 Investigations Requested	Page 5 of 84
2.2 Test Standards and Results Summary	Page 5 of 84
<u>3.0 Test Results</u>	
3.1 Emission	Page 6-79 of 84
<u>Appendix A</u>	
List of Measurement Equipment	Page 80 of 84
<u>Appendix B</u>	
Photograph(s) of Product	Page 80-84 of 84

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11

Page 3 of 84

No. : HM19030026

1.0 General Details

1.1 Test Laboratory

The Hong Kong Standards and Testing Centre Ltd.

EMC Laboratory

Head Office: 10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Telephone: 852 2666 1888

Fax: 852 2664 4353

1.2 Equipment Under Test [EUT]

Description of Sample(s)

Product: Hunting camera with 2.4GHz Wi-Fi and BT 4.0 module

Manufacturer: K-mark industrial limited

Flat a, 7/f., mai on ind. Bldg. 17-21 kung yip street, kwai chung, hong kong

Brand Name: GSM, LLC

Model Number: FLX Camera

Rating: "AA" x8 = 12Vd.c / 12Vd.c from Lead-acid battery through DC jack

1.2.1 Description of EUT Operation

The Equipment Under Test (EUT) is a Hunting camera with wireless function. The tests were conducted under RF Test mode to maintain continuous transmission (>98% duty cycle) during test. The transmission signal is digital modulated with channel frequency range 2412-2472MHz. The R.F. signal was modulated by IC; the type of modulation used was DSSS and OFDM. The EUT does not supported Ad-Hoc function.

1.3 Date of Order

2019-03-28

1.4 Submitted Sample(s):

1 Sample

1.5 Test Duration

2019-05-10 to 2019-05-16

1.6 Country of Origin

China

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 4 of 84

1.7 RF Module Details

802.11b/g/n
Module Model Number: RTL8189ES
Module FCC ID: N/A
Module Transmission Type: 802.11 b/g/n
Modulation: DSSS, OFDM
Data Rates: 300Mbps (Max)
Frequency Range: 2400-2483.5MHz
Carrier Frequencies: 2412MHz – 2472MHz

Bluetooth (BLE)
Module Model Number: RYB070I
Module FCC ID: QLY-RYB070I
Module Transmission Type: BLE
Modulation: GFSK
Data Rates: 1Mbps (Max)
Frequency Range: 2400-2483.5MHz
Carrier Frequencies: 2402MHz – 2480MHz

Module Specification (specification provided by manufacturer)

1.8 Channel List

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432	12	2467
6	2437	13	2472
7	2442	--	--

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 5 of 84

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.
According FCC KDB 558074 DTS Measurement Guidance, Duty cycle $\geq 98\%$.
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
Maximum Peak Output Power	FCC 47CFR 15.247(b)(3)	ANSI C63.10: 2013	N/A	☒	☐	☐
Radiated Spurious Emissions	FCC 47CFR 15.209	ANSI C63.10: 2013	N/A	☒	☐	☐
AC Mains Conducted Emissions	FCC 47CFR 15.207	ANSI C63.10: 2013	N/A	☒	☐	☐
Power Spectral Density	FCC 47CFR 15.247(e)	ANSI C63.10: 2013	N/A	☒	☐	☐
6dB Bandwidth	FCC 47CFR 15.247(a)(2)	ANSI C63.10: 2013	N/A	☒	☐	☐
Band Edge Emissions (Radiated)	FCC 47CFR 15.247(d)	ANSI C63.10: 2013	N/A	☒	☐	☐
Antenna requirement	FCC 47CFR 15.203	N/A	N/A	☒	☐	☐
RF Exposure	FCC 47CFR 15.247(i)	N/A	N/A	☒	☐	☐

Note: N/A - Not Applicable

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 6 of 84

3.0 Test Results

3.1 Emission

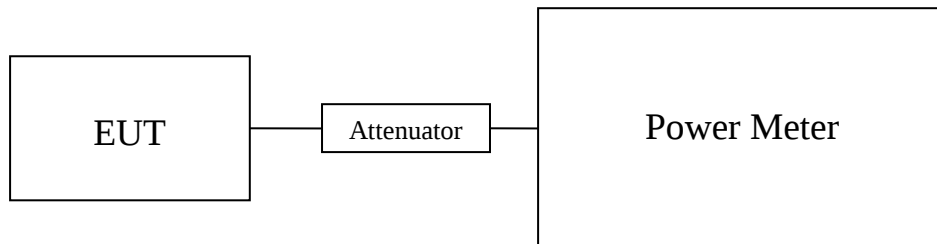
3.1.1 Maximum Peak Output Power

Test Requirement:	FCC 47CFR 15.247(b)(3)
Test Method:	ANSI C63.10: 2013
Test Date:	2019-05-10
Mode of Operation:	Tx mode (802.11b/g/n)

Test Method:

The RF output of the EUT was connected to the Power Meter. All the attenuation or cable loss will be added to the measured maximum output power. The results are recorded in Watt.

Test Setup:



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 7 of 84

Limits for Peak Output Power of Fundamental & Harmonics Emissions [FCC 47CFR 15.247]:

For Digital Transmission systems in 2400-2483.5 MHz Band: 1 Watt (30dBm)

Results of Tx Mode: Pass (TX Unit) (802.11b) Maximum conducted output power

Channel	Frequency(MHz)	Output Power(Watt)
1	2412	0.0041
7	2442	0.0044
13	2472	0.0066

Results of Tx Mode: Pass (TX Unit) (802.11g) Maximum conducted output power

Channel	Frequency(MHz)	Output Power(Watt)
1	2412	0.0035
7	2442	0.0042
13	2472	0.0054

Results of Tx Mode: Pass (TX Unit) (802.11n(HT20)) Maximum conducted output power

Channel	Frequency(MHz)	Output Power(Watt)
1	2412	0.0033
7	2442	0.0043
13	2472	0.0051

Results of Tx Mode: Pass (TX Unit) (802.11(HT40)) Maximum conducted output power

Channel	Frequency(MHz)	Output Power(Watt)
3	2422	0.0033
7	2442	0.0036
11	2462	0.0043

Calculated measurement uncertainty : 30MHz to 1GHz 1.7dB
1GHz to 26GHz 1.7dB

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

Test Report

Date : 2019-06-11
No. : HM19030026

Page 8 of 84

3.1.2 Radiated Emissions

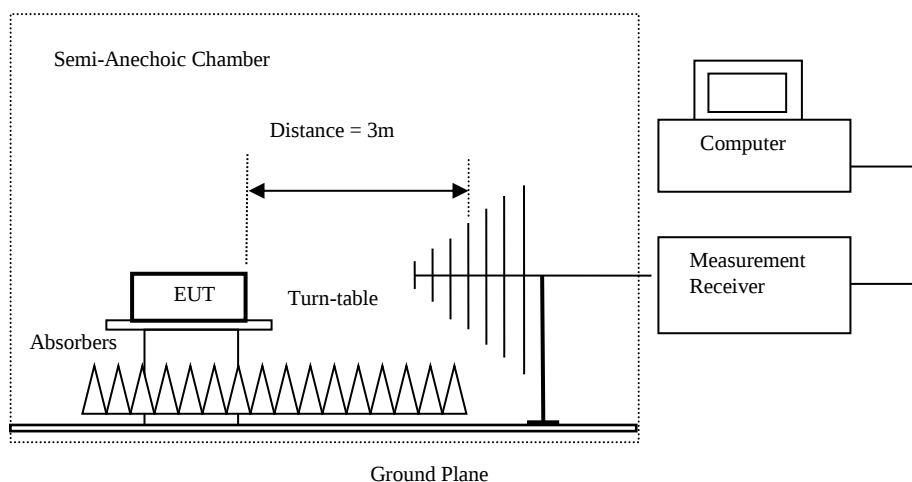
Test Requirement:	FCC 47CFR 15.209
Test Method:	ANSI C63.10:2013
Test Date:	2019-05-13
Mode of Operation:	Tx mode (802.11 b/g/n)

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, 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. The measured field strength would be calculated as EIRP.

Semi-anechoic chamber located at STC filed with Industry Canada File Number: 4789A

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.
- For emissions testing at or below 1 GHz, the table height shall be 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m.

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 9 of 84

Limits for Radiated Emissions FCC 47 CFR 15.247 Class B]:

Frequency Range	Quasi-Peak Limits
[MHz]	[μ 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.

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

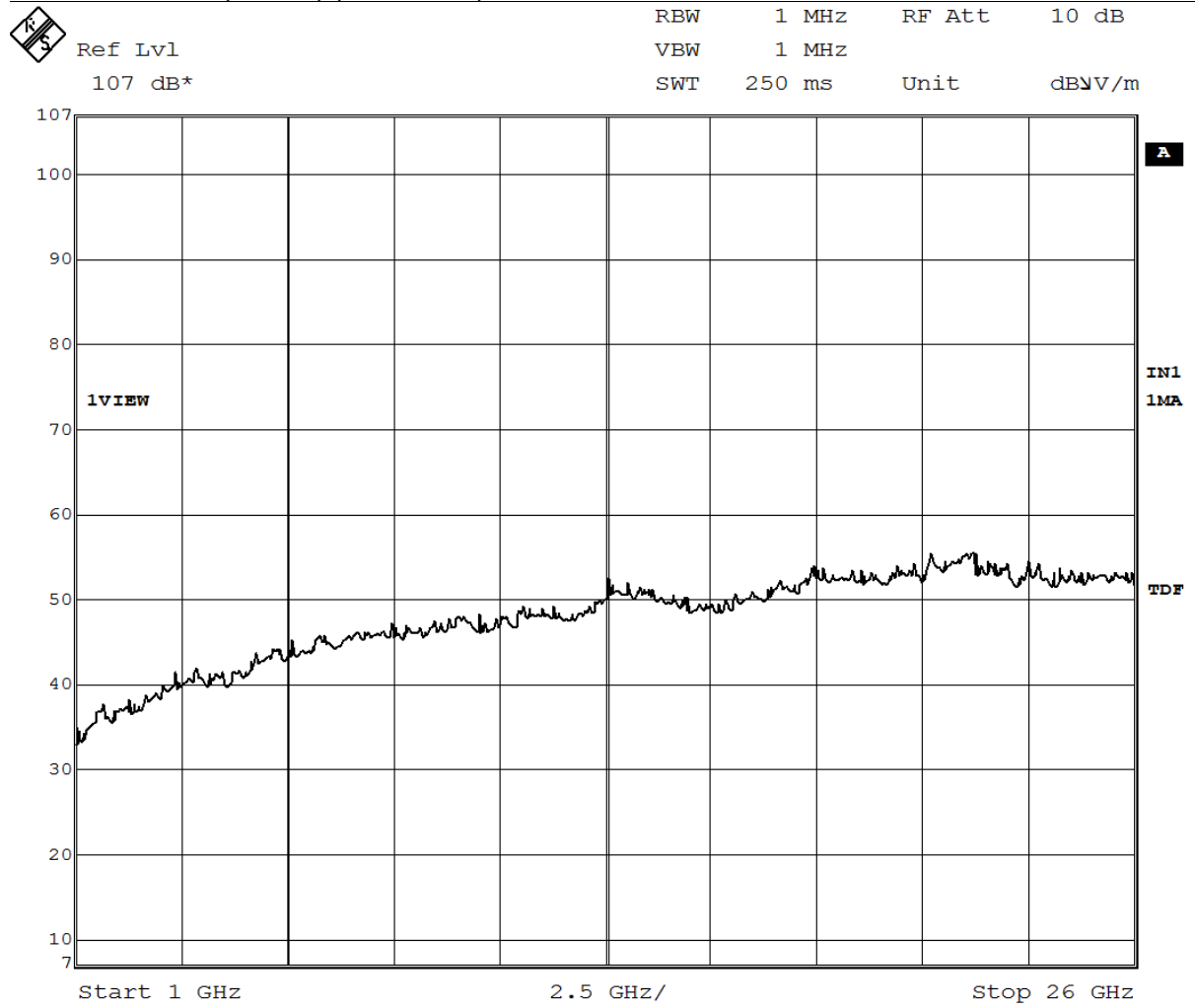


Test Report

Date : 2019-06-11
No. : HM19030026

Page 10 of 84

Result of Tx mode (802.11b) (2412.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 11 of 84

Result of Tx mode (802.11b) (2412.0 MHz) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the Limits						

Result of Tx mode (802.11b) (2412.0 MHz) (Above 1GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2412.0	72.3	27.9	100.2	N/A	N/A	Vertical
4824.0	9.4	32.1	41.5	74.0	32.5	Vertical
7236.0	2.1	38.6	40.7	74.0	33.3	Vertical
9648.0	-1.3	41.3	40.0	74.0	34.0	Vertical
12060.0	-1.8	43.5	41.7	74.0	32.3	Vertical

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2412.0	64.8	27.9	92.7	N/A	N/A	Vertical
4824.0	0.3	32.1	32.4	54.0	21.6	Vertical
7236.0	-2.1	38.6	36.5	54.0	17.5	Vertical
9648.0	-8.7	41.3	32.6	54.0	21.4	Vertical
12060.0	-9.1	43.5	34.4	54.0	19.6	Vertical

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

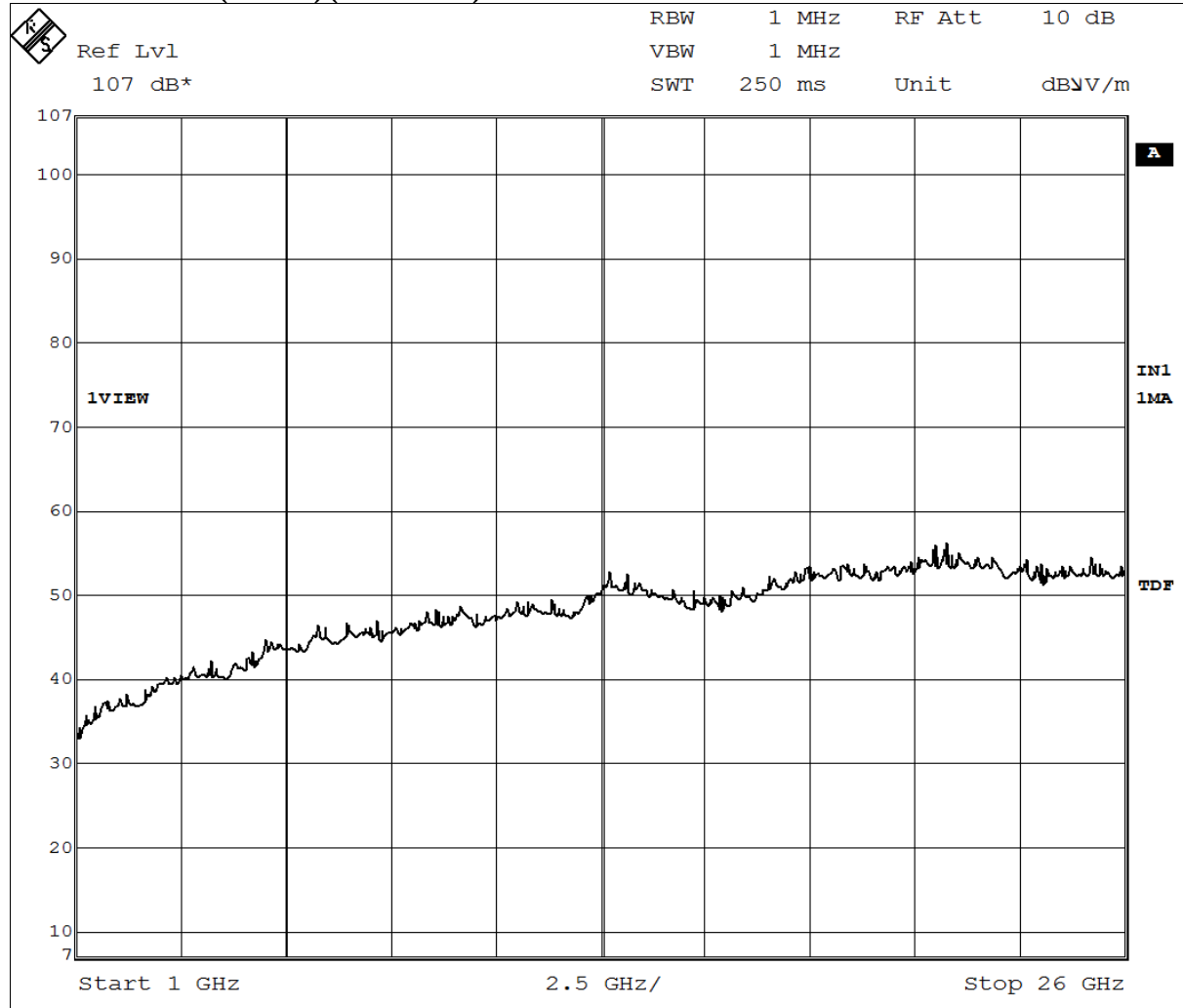


Test Report

Date : 2019-06-11
No. : HM19030026

Page 12 of 84

Result of Tx mode (802.11b) (2442.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taiipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 13 of 84

Result of Tx mode (802.11b) (2442.0 MHz) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the Limits						

Result of Tx mode (802.11b) (2442.0 MHz) (Above 1GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2442.0	71.1	27.9	99.0	N/A	N/A	Vertical
4884.0	9.4	32.1	41.5	74.0	32.5	Vertical
7326.0	1.9	38.6	40.5	74.0	33.5	Vertical
9768.0	-1.5	41.3	39.8	74.0	34.2	Vertical
12210.0	-2.1	43.5	41.4	74.0	32.6	Vertical

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2442.0	63.5	27.9	91.4	N/A	N/A	Vertical
4884.0	-0.8	32.1	31.3	54.0	22.7	Vertical
7326.0	-1.5	38.6	37.1	54.0	16.9	Vertical
9768.0	-8.4	41.3	32.9	54.0	21.1	Vertical
12210.0	-8.5	43.5	35.0	54.0	19.0	Vertical

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

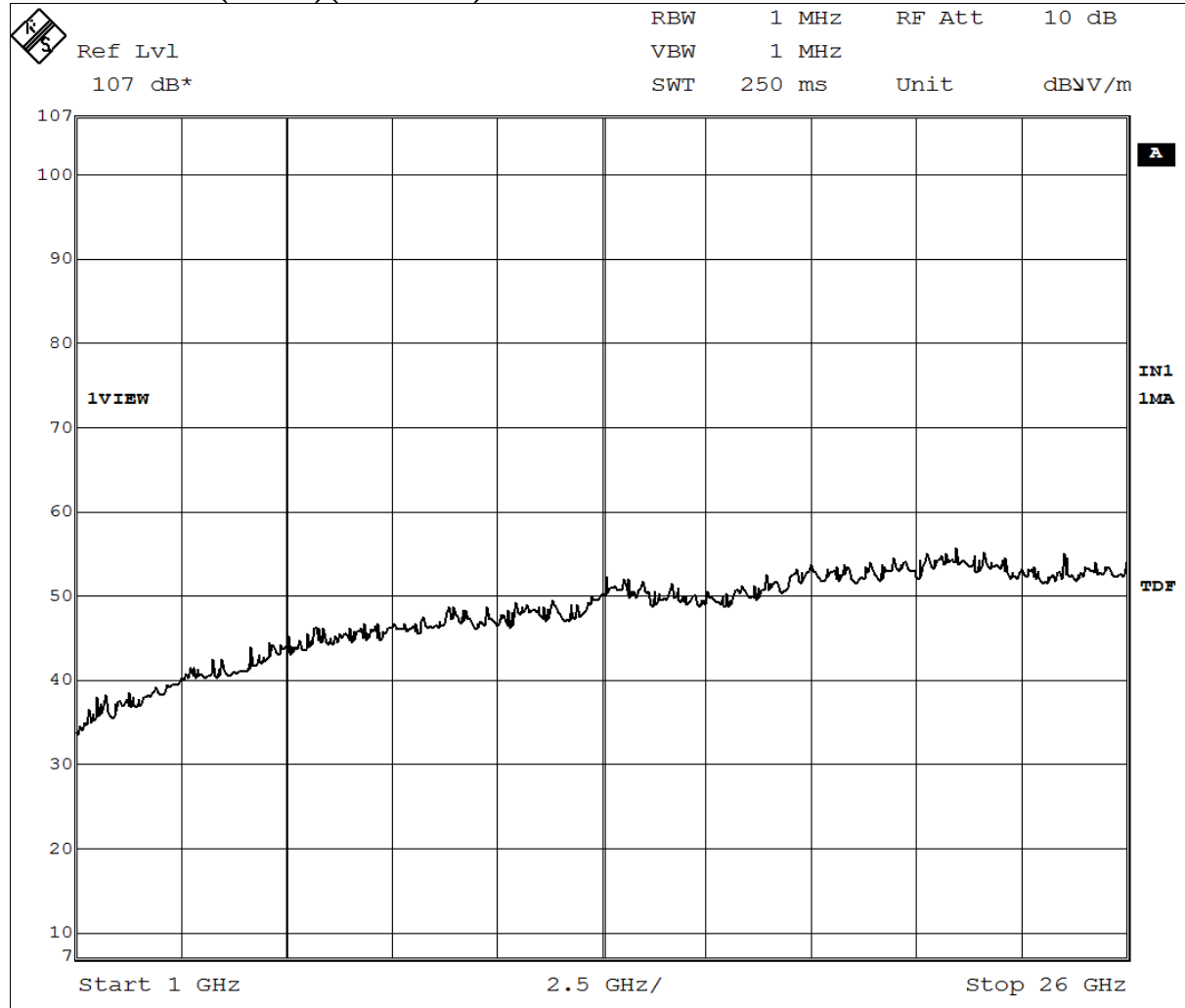


Test Report

Date : 2019-06-11
No. : HM19030026

Page 14 of 84

Result of Tx mode (802.11b) (2472.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 15 of 84

Result of Tx mode (802.11b) (2472.0 MHz) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the Limits						

Result of Tx mode (802.11b) (2472.0 MHz) (Above 1GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2472.0	76.5	27.9	104.4	N/A	N/A	Vertical
4944.0	10.5	32.2	42.7	74.0	31.3	Vertical
7416.0	3.1	38.6	41.7	74.0	32.3	Vertical
9888.0	-0.9	42.1	41.2	74.0	32.8	Vertical
12360.0	-2.7	44.1	41.4	74.0	32.6	Vertical

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2472.0	67.4	27.9	95.3	N/A	N/A	Vertical
4944.0	-2.1	32.2	30.1	54.0	23.9	Vertical
7416.0	-3.1	38.6	35.5	54.0	18.5	Vertical
9888.0	-8.9	42.1	33.2	54.0	20.8	Vertical
12360.0	-8.6	44.1	35.5	54.0	18.5	Vertical

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

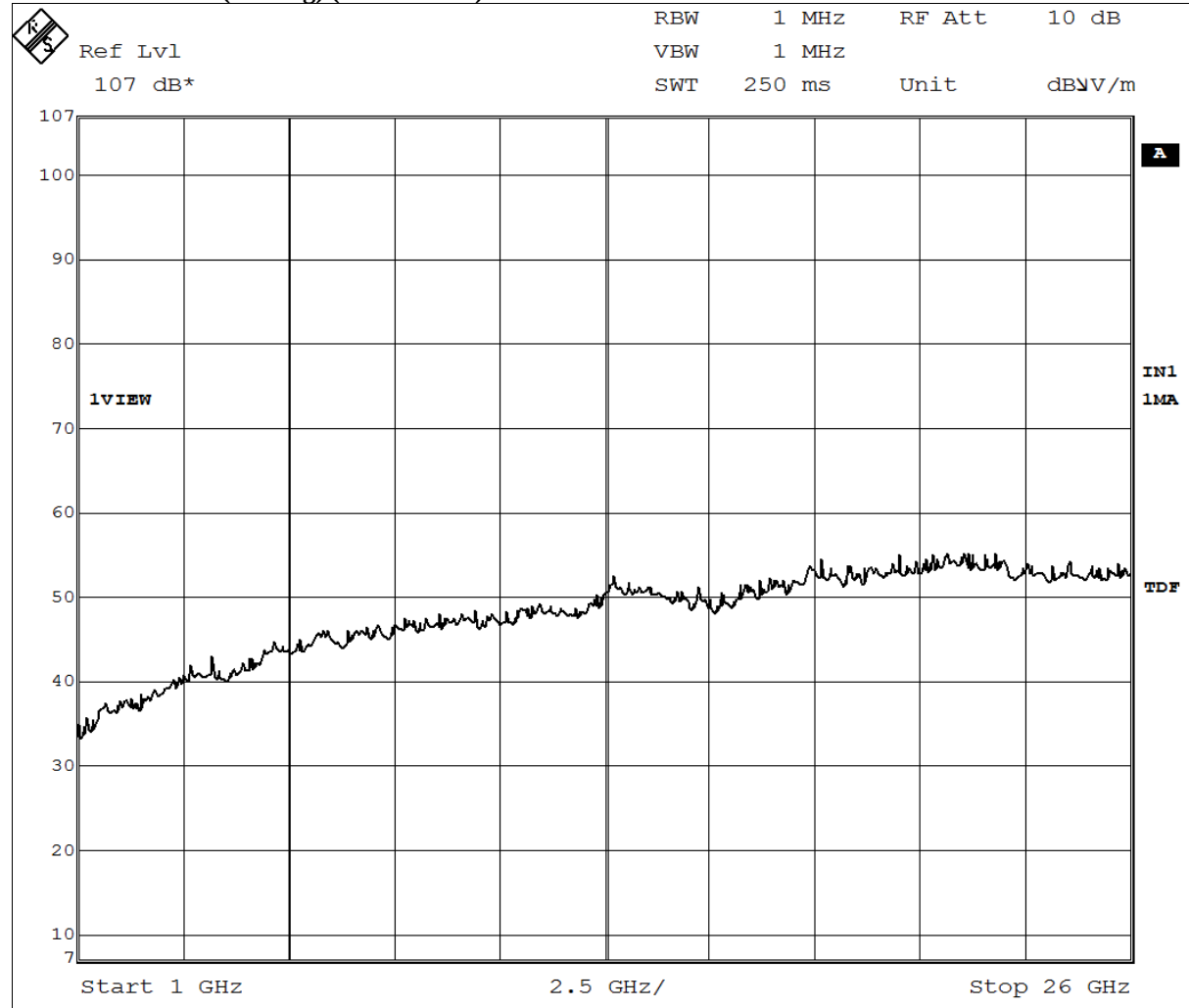


Test Report

Date : 2019-06-11
No. : HM19030026

Page 16 of 84

Result of Tx mode (802.11g) (2412.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 17 of 84

Result of Tx mode (802.11g) (2412.0 MHz) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the Limits						

Result of Tx mode (802.11g) (2412.0 MHz) (Above 1GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2412.0	63.2	27.9	91.1	N/A	N/A	Vertical
4824.0	7.9	32.1	40.0	74.0	34.0	Vertical
7236.0	2.1	38.6	40.7	74.0	33.3	Vertical
9648.0	-2.1	41.3	39.2	74.0	34.8	Vertical
12060.0	-2.5	43.5	41.0	74.0	33.0	Vertical

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2412.0	51.4	27.9	79.3	N/A	N/A	Vertical
4824.0	-2.1	32.1	30.0	54.0	24.0	Vertical
7236.0	-2.3	38.6	36.3	54.0	17.7	Vertical
9648.0	-8.9	41.3	32.4	54.0	21.6	Vertical
12060.0	-9.2	43.5	34.3	54.0	19.7	Vertical

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taiipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

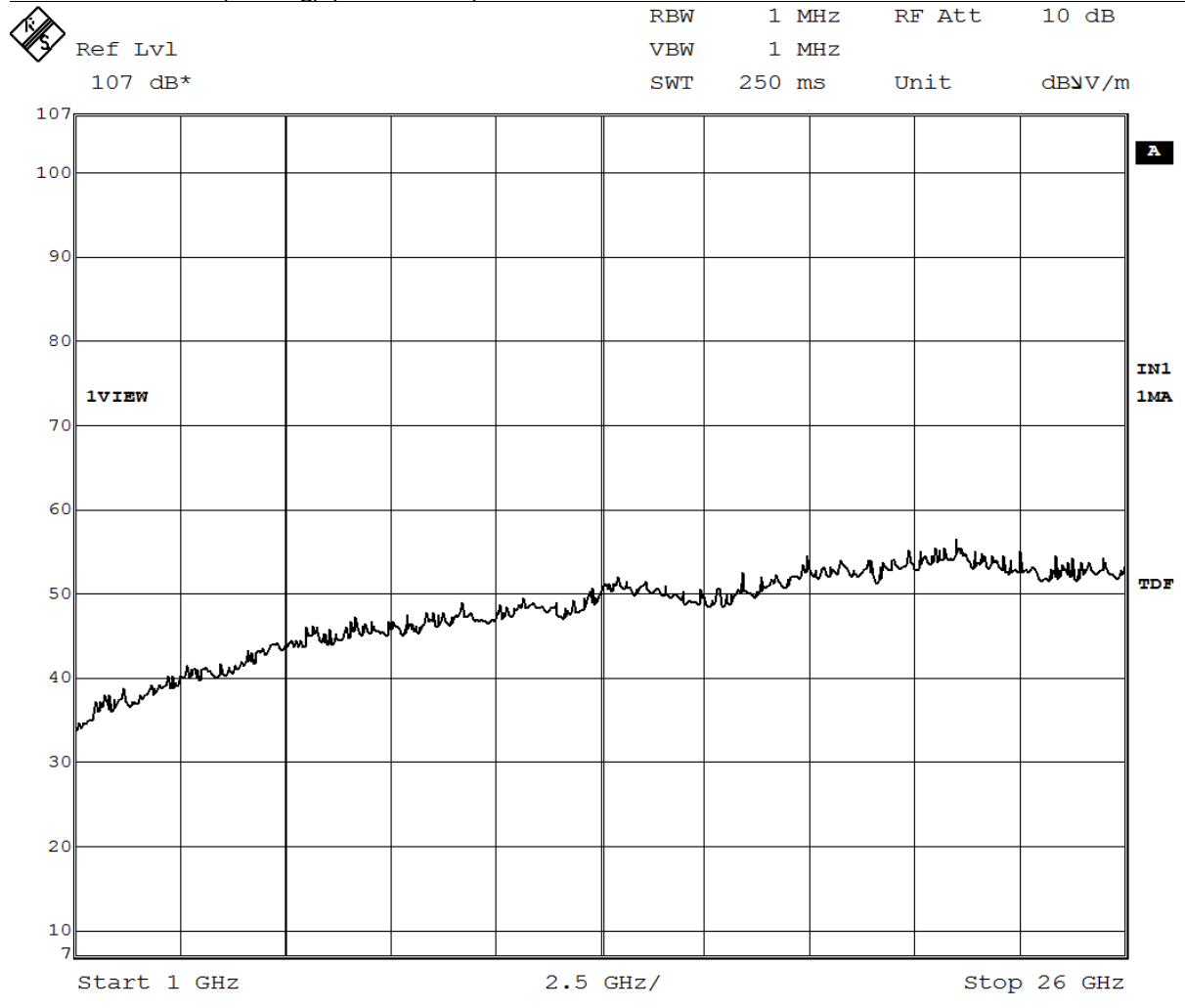


Test Report

Date : 2019-06-11
No. : HM19030026

Page 18 of 84

Result of Tx mode (802.11g) (2442.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 19 of 84

Result of Tx mode (802.11g) (2442.0 MHz) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the Limits						

Result of Tx mode (802.11g) (2442.0 MHz) (Above 1GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2442.0	61.3	27.9	89.2	N/A	N/A	Vertical
4884.0	7.2	32.1	39.3	74.0	34.7	Vertical
7326.0	1.1	38.6	39.7	74.0	34.3	Vertical
9768.0	-2.3	41.3	39.0	74.0	35.0	Vertical
12210.0	-3.1	43.5	40.4	74.0	33.6	Vertical

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2442.0	49.7	27.9	77.6	N/A	N/A	Vertical
4884.0	-2.1	32.1	30.0	54.0	24.0	Vertical
7326.0	-3.1	38.6	35.5	54.0	18.5	Vertical
9768.0	-7.8	41.3	33.5	54.0	20.5	Vertical
12210.0	-8.1	43.5	35.4	54.0	18.6	Vertical

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

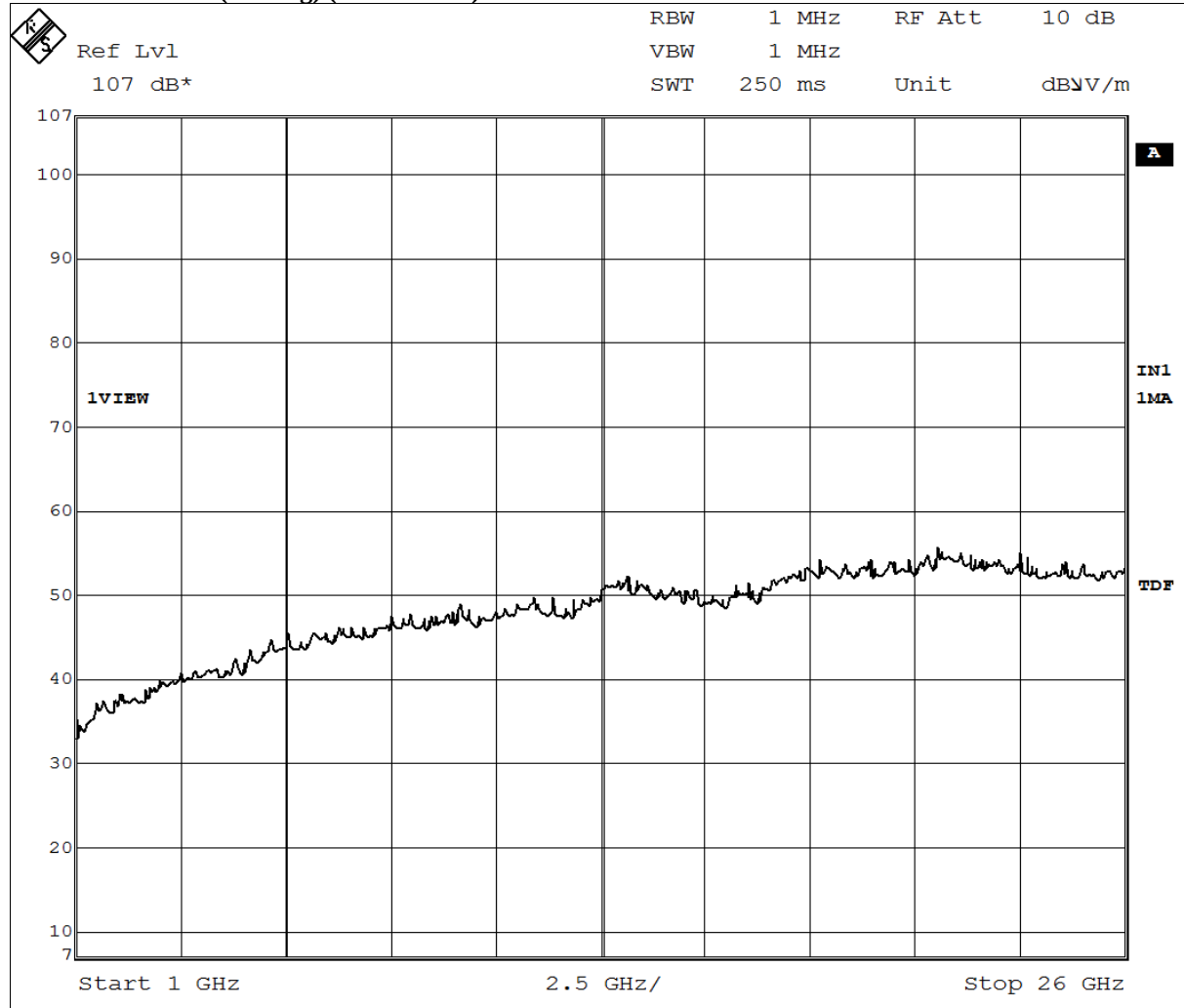


Test Report

Date : 2019-06-11
No. : HM19030026

Page 20 of 84

Result of Tx mode (802.11g) (2472.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taiipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 21 of 84

Result of Tx mode (802.11g) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the Limits						

Result of Tx mode (802.11g) (2472.0 MHz) (Above 1GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2472.0	65.2	27.9	93.1	N/A	N/A	Vertical
4944.0	7.9	32.2	40.1	74.0	33.9	Vertical
7416.0	-1.5	38.6	37.1	74.0	36.9	Vertical
9888.0	-2.7	42.1	39.4	74.0	34.6	Vertical
12360.0	-3.4	44.1	40.7	74.0	33.3	Vertical

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2472.0	52.4	27.9	80.3	N/A	N/A	Vertical
4944.0	-1.7	32.2	30.5	54.0	23.5	Vertical
7416.0	-2.1	38.6	36.5	54.0	17.5	Vertical
9888.0	-8.7	42.1	33.4	54.0	20.6	Vertical
12360.0	-9.1	44.1	35.0	54.0	19.0	Vertical

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

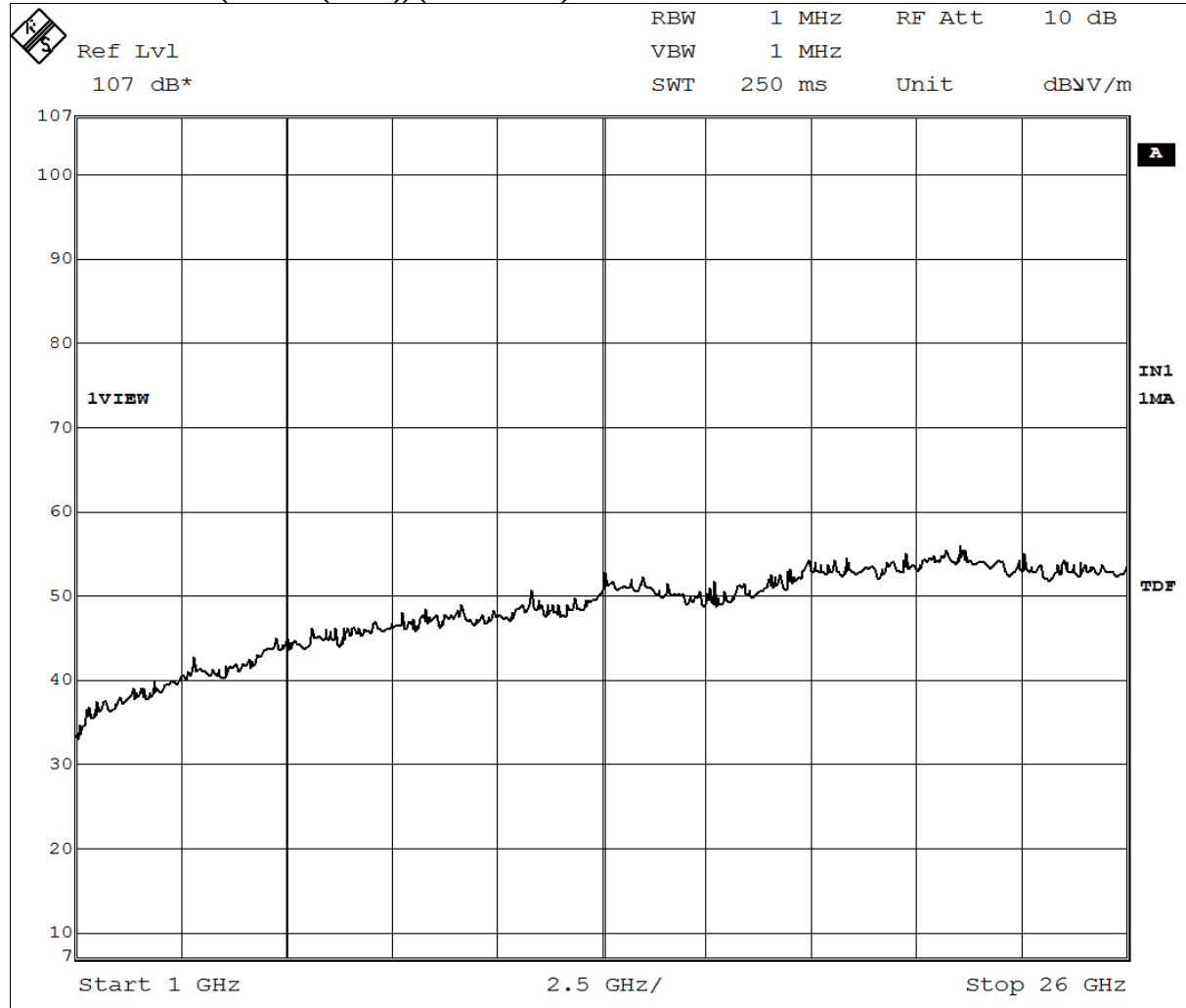


Test Report

Date : 2019-06-11
No. : HM19030026

Page 22 of 84

Result of Tx mode (802.11n (HT20)) (2412.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 23 of 84

Result of Tx mode (802.11n (HT20)) (2412.0 MHz) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the Limits						

Result of Tx mode (802.11n (HT20)) (2412.0 MHz) (Above 1GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2412.0	64.1	27.9	92.0	N/A	N/A	Vertical
4824.0	6.8	32.1	38.9	74.0	35.1	Vertical
7236.0	1.6	38.6	40.2	74.0	33.8	Vertical
9648.0	-2.3	41.3	39.0	74.0	35.0	Vertical
12060.0	-2.5	43.5	41.0	74.0	33.0	Vertical

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2412.0	48.4	27.9	76.3	N/A	N/A	Vertical
4824.0	-1.4	32.1	30.7	54.0	23.3	Vertical
7236.0	-2.1	38.6	36.5	54.0	17.5	Vertical
9648.0	-8.4	41.3	32.9	54.0	21.1	Vertical
12060.0	-9.1	43.5	34.4	54.0	19.6	Vertical

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

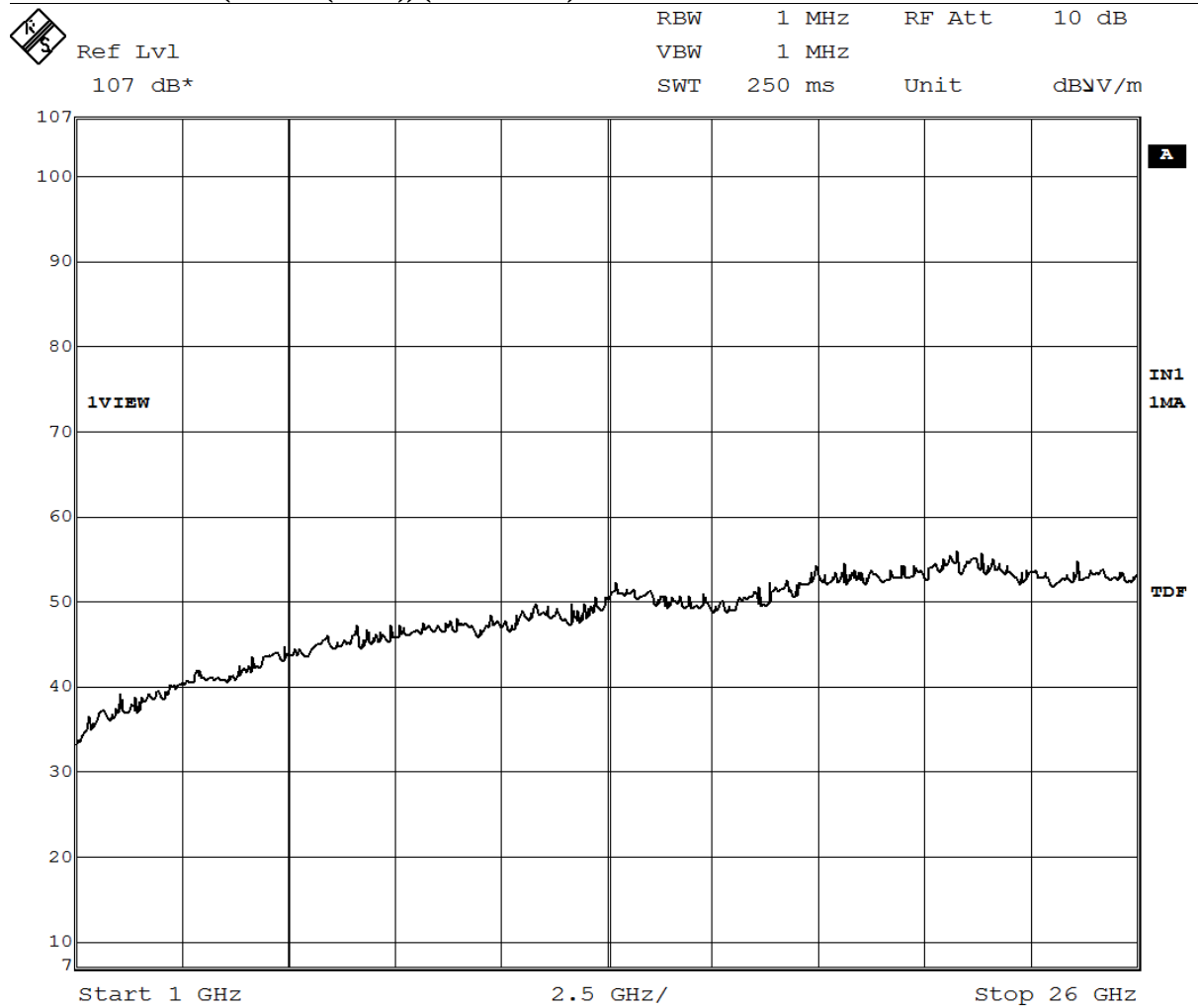


Test Report

Date : 2019-06-11
No. : HM19030026

Page 24 of 84

Result of Tx mode (802.11n (HT20)) (2442.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 25 of 84

Result of Tx mode (802.11n (HT20)) (2442.0 MHz) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the Limits						

Result of Tx mode (802.11n (HT20)) (2442.0 MHz) (Above 1GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2442.0	63.4	27.9	91.3	N/A	N/A	Vertical
4884.0	5.9	32.1	38.0	74.0	36.0	Vertical
7326.0	1.2	38.6	39.8	74.0	34.2	Vertical
9768.0	-1.8	41.3	39.5	74.0	34.5	Vertical
12210.0	-2.7	43.5	40.8	74.0	33.2	Vertical

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2442.0	46.3	27.9	74.2	N/A	N/A	Vertical
4884.0	1.4	32.1	33.5	54.0	20.5	Vertical
7326.0	-2.6	38.6	36.0	54.0	18.0	Vertical
9768.0	-9.3	41.3	32.0	54.0	22.0	Vertical
12210.0	-8.4	43.5	35.1	54.0	18.9	Vertical

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

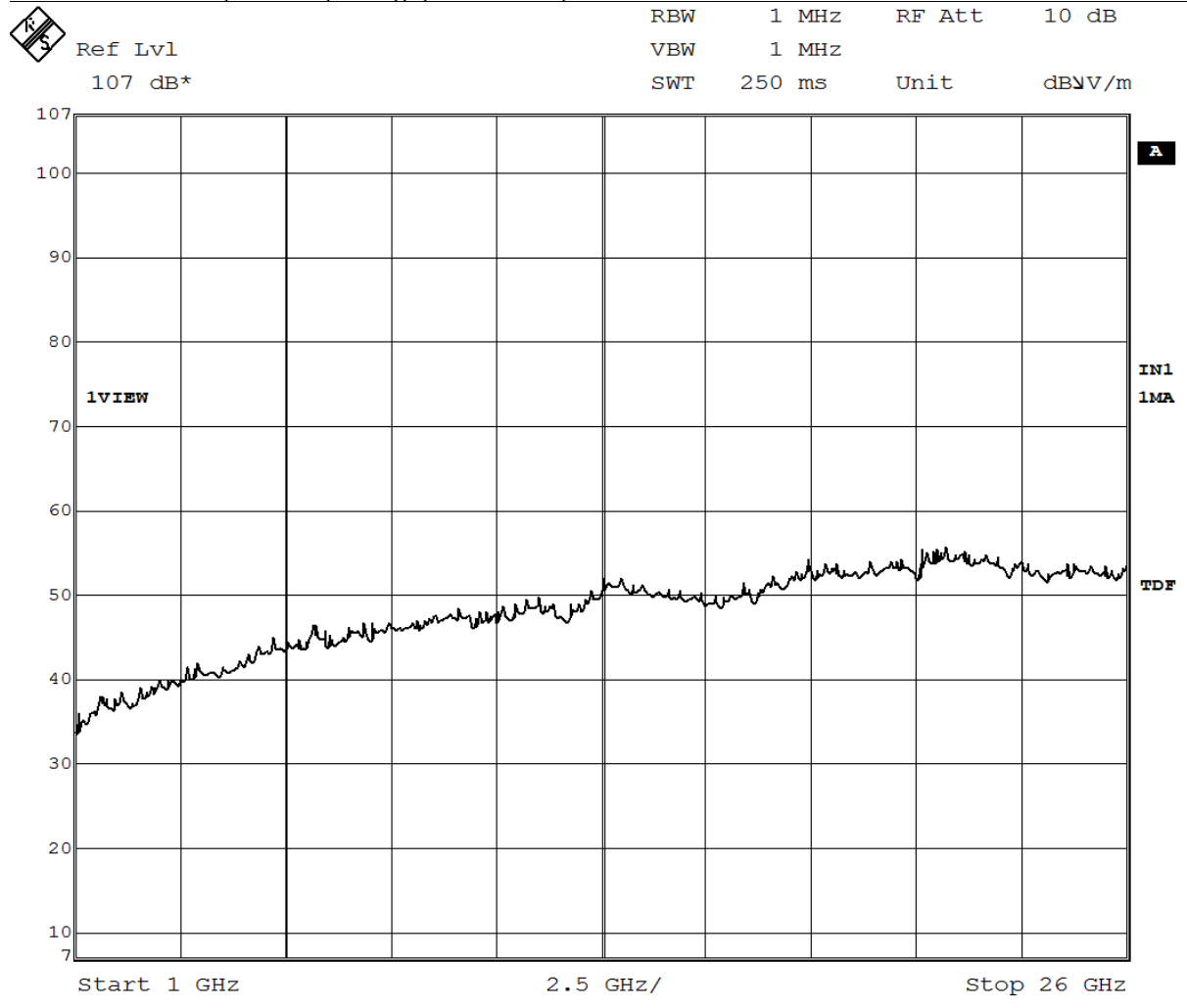


Test Report

Date : 2019-06-11
No. : HM19030026

Page 26 of 84

Result of Tx mode (802.11n (HT20)) (2472.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 27 of 84

Result of Tx mode (802.11n (HT20)) (2472.0 MHz) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the Limits						

Result of Tx mode (802.11n (HT20)) (2472.0 MHz) (Above 1GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2472.0	67.4	27.9	95.3	N/A	N/A	Vertical
4944.0	5.8	32.2	38.0	74.0	36.0	Vertical
7416.0	0.9	38.6	39.5	74.0	34.5	Vertical
9888.0	-2.4	42.1	39.7	74.0	34.3	Vertical
12360.0	-2.9	44.1	41.2	74.0	32.8	Vertical

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2472.0	50.9	27.9	78.8	N/A	N/A	Vertical
4944.0	-1.8	32.2	30.4	54.0	23.6	Vertical
7416.0	-3.4	38.6	35.2	54.0	18.8	Vertical
9888.0	-7.8	42.1	34.3	54.0	19.7	Vertical
12360.0	-8.5	44.1	35.6	54.0	18.4	Vertical

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

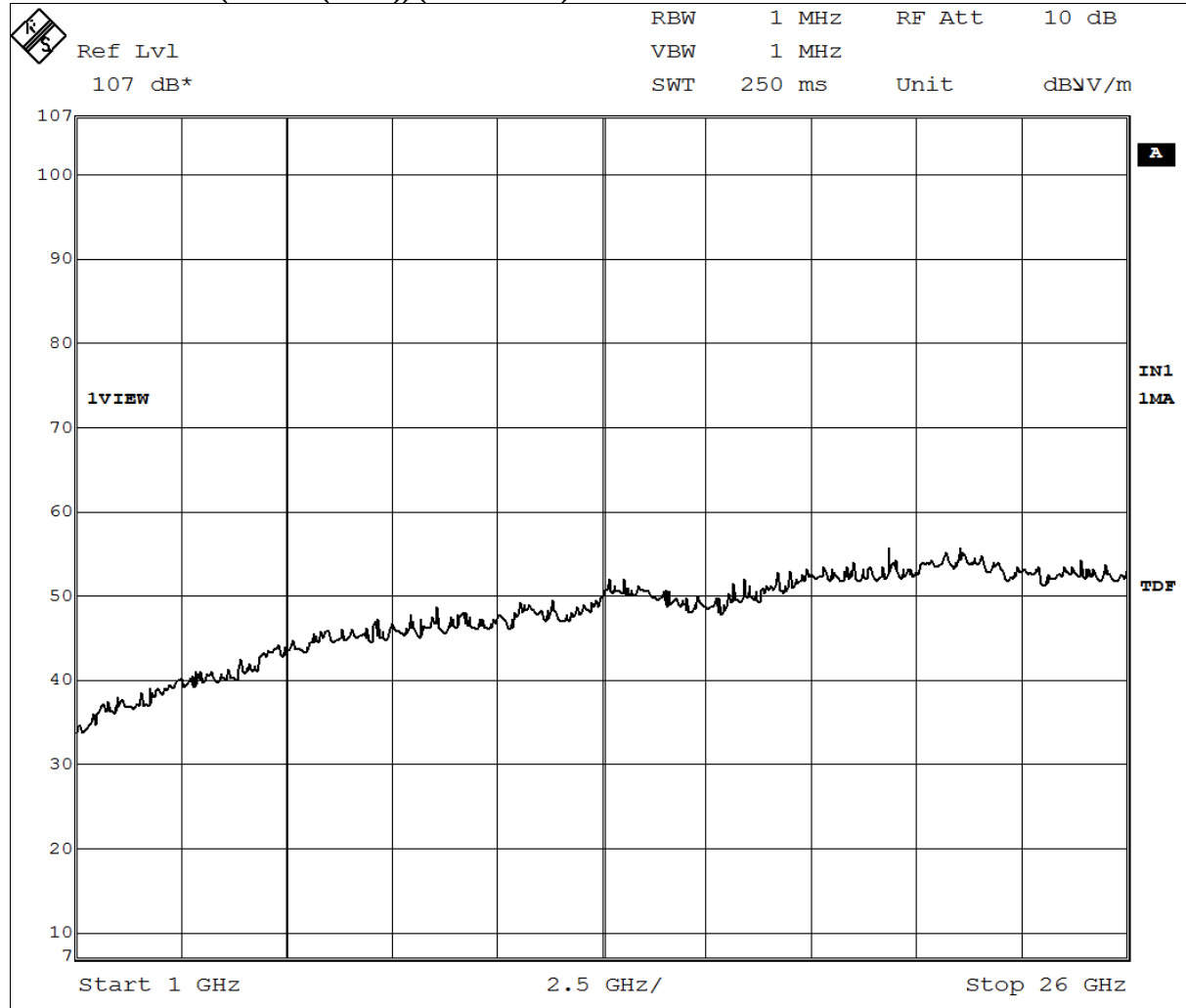


Test Report

Date : 2019-06-11
No. : HM19030026

Page 28 of 84

Result of Tx mode (802.11n (HT40)) (2422.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 29 of 84

Result of Tx mode (802.11n (HT40)) (2422.0 MHz) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the Limits						

Result of Tx mode (802.11n (HT40)) (2422.0 MHz) (Above 1GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2422.0	61.8	27.9	89.7	N/A	N/A	Vertical
4844.0	5.8	32.1	37.9	74.0	36.1	Vertical
7266.0	-1.8	38.6	36.8	74.0	37.2	Vertical
9688.0	-2.5	41.3	38.8	74.0	35.2	Vertical
12110.0	-2.7	43.5	40.8	74.0	33.2	Vertical

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2422.0	46.2	27.9	74.1	N/A	N/A	Vertical
4844.0	-1.8	32.1	30.3	54.0	23.7	Vertical
7266.0	-4.7	38.6	33.9	54.0	20.1	Vertical
9688.0	-8.9	41.3	32.4	54.0	21.6	Vertical
12110.0	-9.3	43.5	34.2	54.0	19.8	Vertical

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

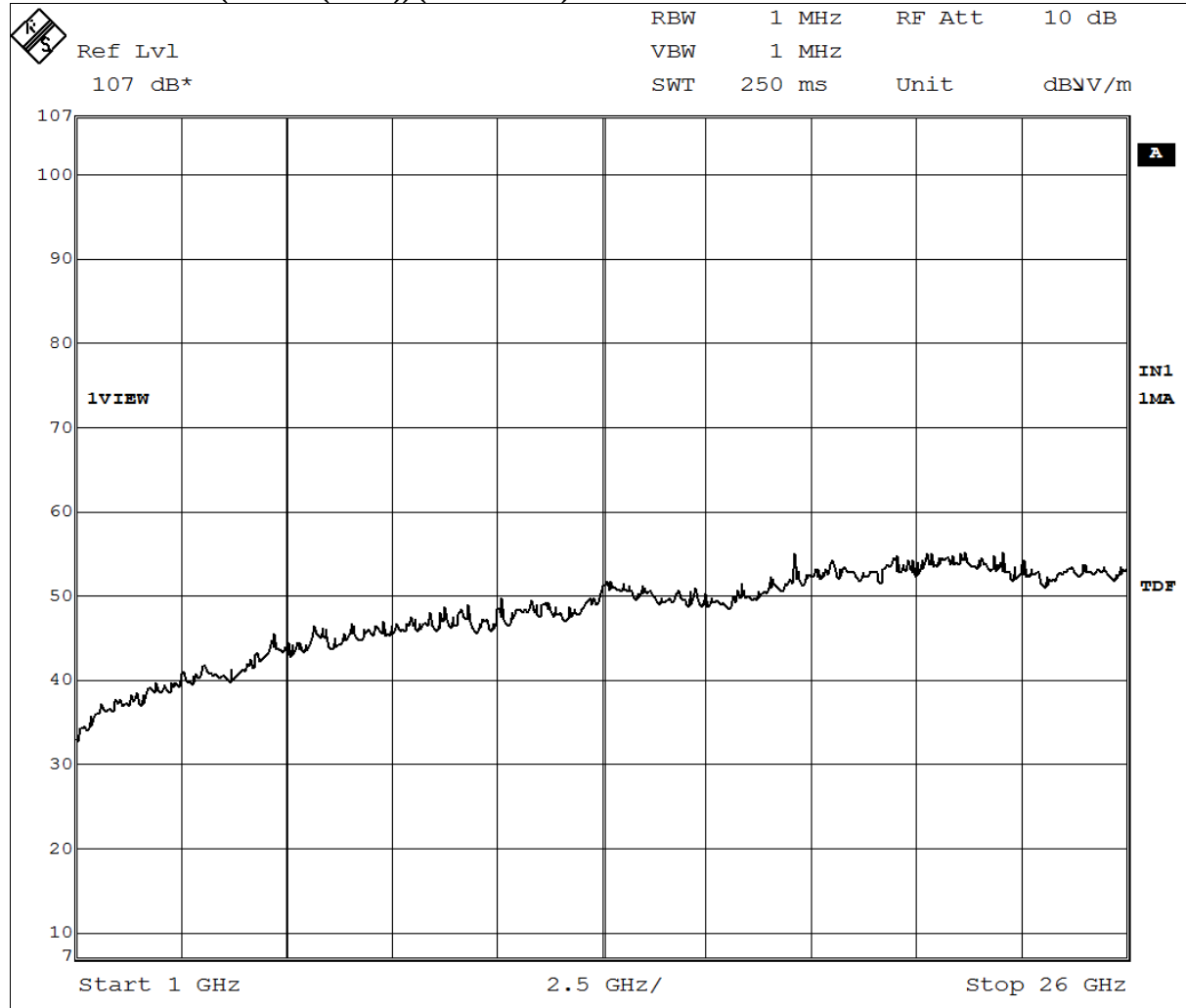


Test Report

Date : 2019-06-11
No. : HM19030026

Page 30 of 84

Result of Tx mode (802.11n (HT40)) (2442.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11

Page 31 of 84

No. : HM19030026

Result of Tx mode (802.11n (HT40)) (2442.0 MHz) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the Limits						

Result of Tx mode (802.11n (HT40)) (2442.0 MHz) (Above 1GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2442.0	60.7	27.9	88.6	N/A	N/A	Vertical
4884.0	5.3	32.1	37.4	74.0	36.6	Vertical
7326.0	-2.2	38.6	36.4	74.0	37.6	Vertical
9768.0	-2.8	41.3	38.5	74.0	35.5	Vertical
12210.0	-3.3	43.5	40.2	74.0	33.8	Vertical

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2442.0	43.1	27.9	71.0	N/A	N/A	Vertical
4884.0	-1.9	32.1	30.2	54.0	23.8	Vertical
7326.0	-2.7	38.6	35.9	54.0	18.1	Vertical
9768.0	-7.5	41.3	33.8	54.0	20.2	Vertical
12210.0	-9.6	43.5	33.9	54.0	20.1	Vertical

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

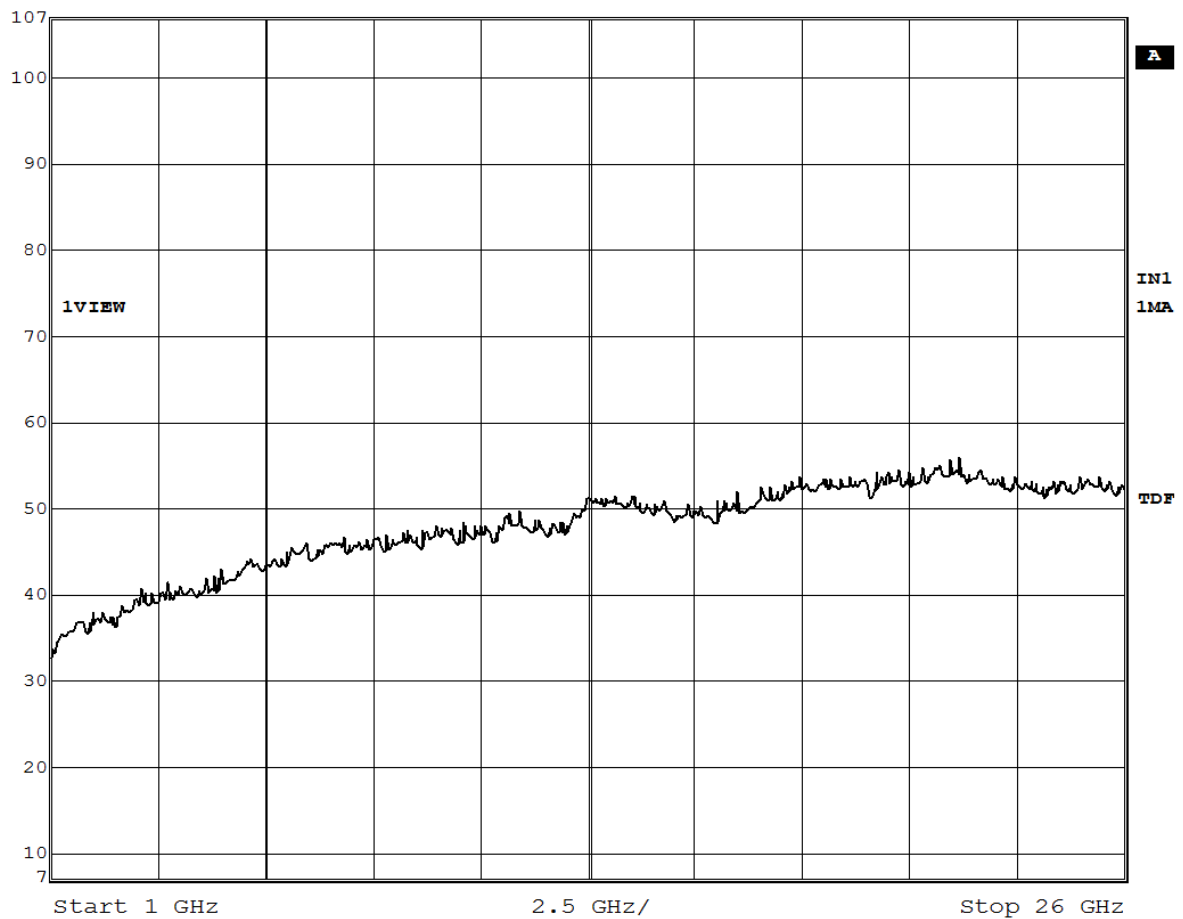
Page 32 of 84

Result of Tx mode (802.11n (HT40)) (2462.0 MHz)



Ref Lvl
107 dB*

RBW	1 MHz	RF Att	10 dB
VBW	1 MHz		
SWT	250 ms	Unit	dBμV/m



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 33 of 84

Result of Tx mode (802.11n (HT40)) (2462.0 MHz) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBuV	Correction Factor dB/m	Field Strength dBuV/m	Field Strength uV/m	Limit uV/m	E-Field Polarity
Emissions detected are more than 20 dB below the Limits						

Result of Tx mode (802.11n (HT40)) (2462.0 MHz) (Above 1GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2462.0	62.4	27.9	90.3	N/A	N/A	Vertical
4924.0	5.9	32.2	38.1	74.0	35.9	Vertical
7386.0	0.3	38.6	38.9	74.0	35.1	Vertical
9848.0	-2.4	42.1	39.7	74.0	34.3	Vertical
12310.0	-3.3	44.1	40.8	74.0	33.2	Vertical

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2462.0	44.7	27.9	72.6	N/A	N/A	Vertical
4924.0	-2.8	32.2	29.4	54.0	24.6	Vertical
7386.0	-3.3	38.6	35.3	54.0	18.7	Vertical
9848.0	-7.6	42.1	34.5	54.0	19.5	Vertical
12310.0	-8.9	44.1	35.2	54.0	18.8	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 1000MHz 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.

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 9kHz-30MHz 3.3dB
30MHz -1GHz 4.6dB
1GHz -26GHz 4.4dB

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 34 of 84

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

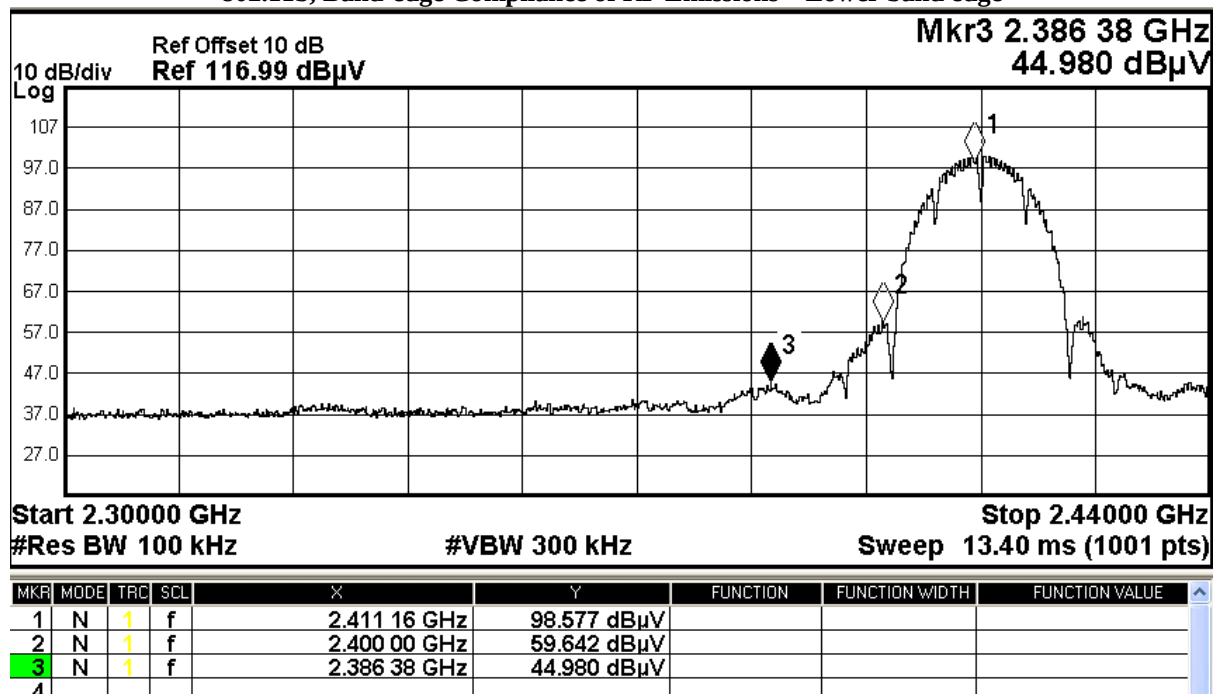
Band Edge Measurement:

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)).

Frequency Range	Conducted Emission Attenuated below the Fundamental
[MHz]	[dB]
2400 – Lowest Fundamental (2412)	38.9

802.11b, Band-edge Compliance of RF Emissions – Lower band edge



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

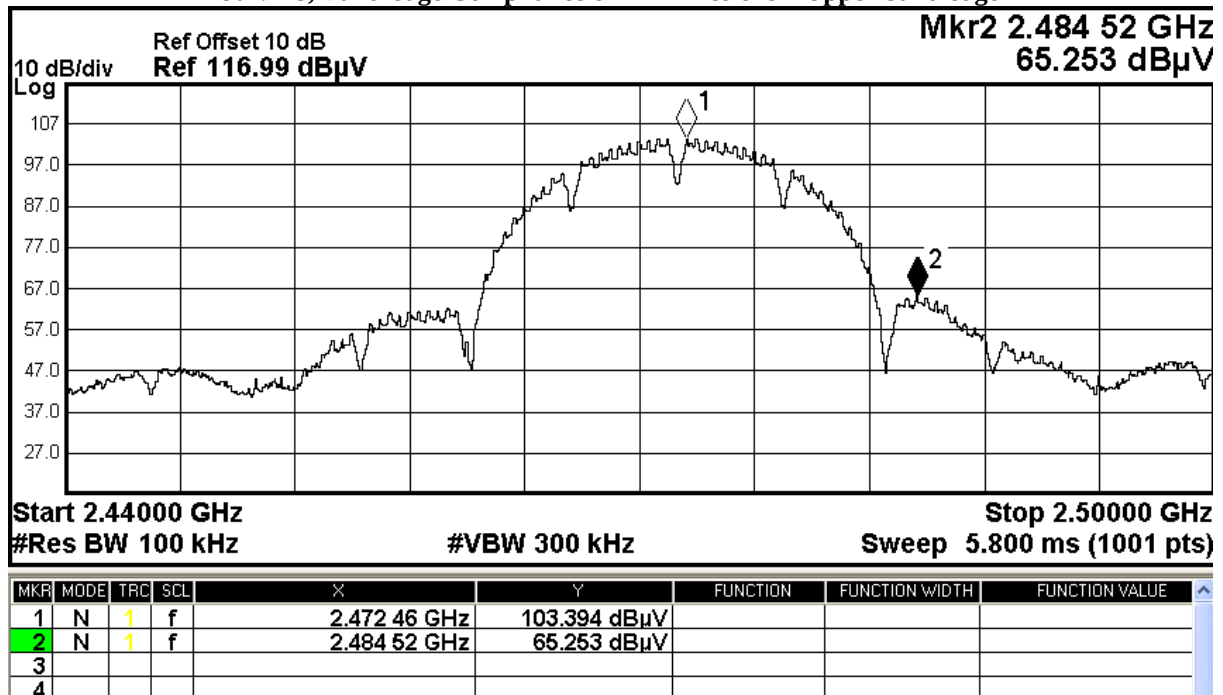
Date : 2019-06-11
No. : HM19030026

Page 35 of 84

Band-edge Compliance of RF Conducted Emissions Measurement:

Frequency Range [MHz]	Conducted Emission Attenuated below the Fundamental [dB]
2483.5 - Highest Fundamental (2472)	38.1

802.11b, Band-edge Compliance of RF Emissions – Upper band edge



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 36 of 84

802.11b, Radiated Emissions Band-edge and Restricted Band Result:

Field Strength of Band-edge Compliance Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2386.4	17.1	27.9	45.0	74.0	29.0	Vertical
2484.5	37.4	27.9	65.3	74.0	8.7	Vertical

Field Strength of Band-edge Compliance Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2386.4	4.5	27.9	32.4	54.0	21.6	Vertical
2484.5	24.9	27.9	52.8	54.0	1.2	Vertical

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



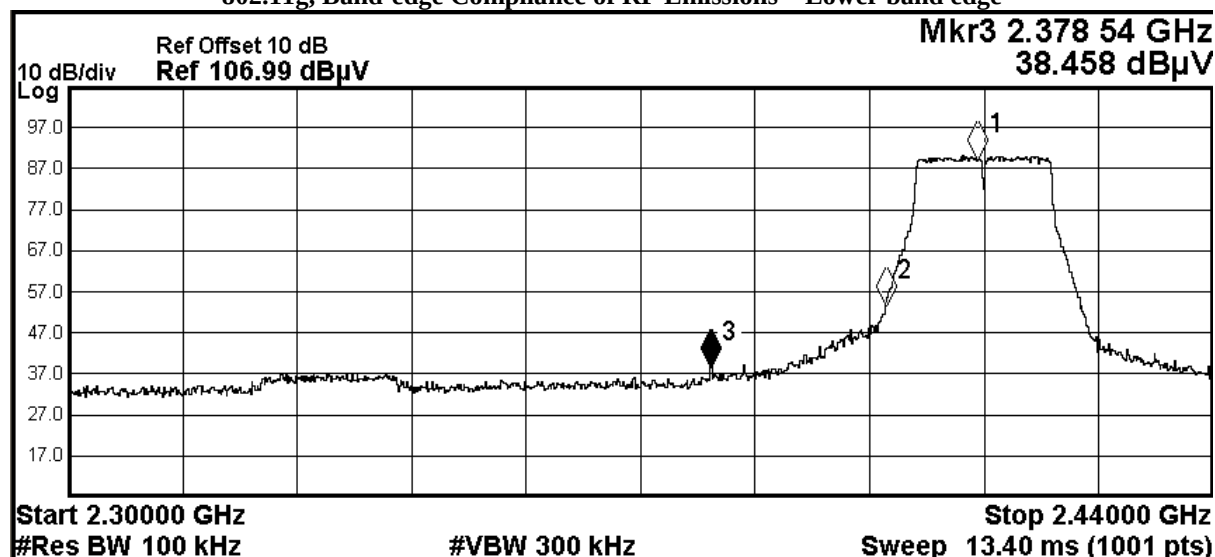
Test Report

Date : 2019-06-11
No. : HM19030026

Page 37 of 84

Frequency Range	Conducted Emission Attenuated below the Fundamental
[MHz]	[dB]
2400 – Lowest Fundamental (2412)	35.4

802.11g, Band-edge Compliance of RF Emissions – Lower band edge



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.411 16 GHz	88.839 dBμV			
2	N	1	f	2.400 00 GHz	53.419 dBμV			
3	N	1	f	2.378 54 GHz	38.458 dBμV			
4								

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

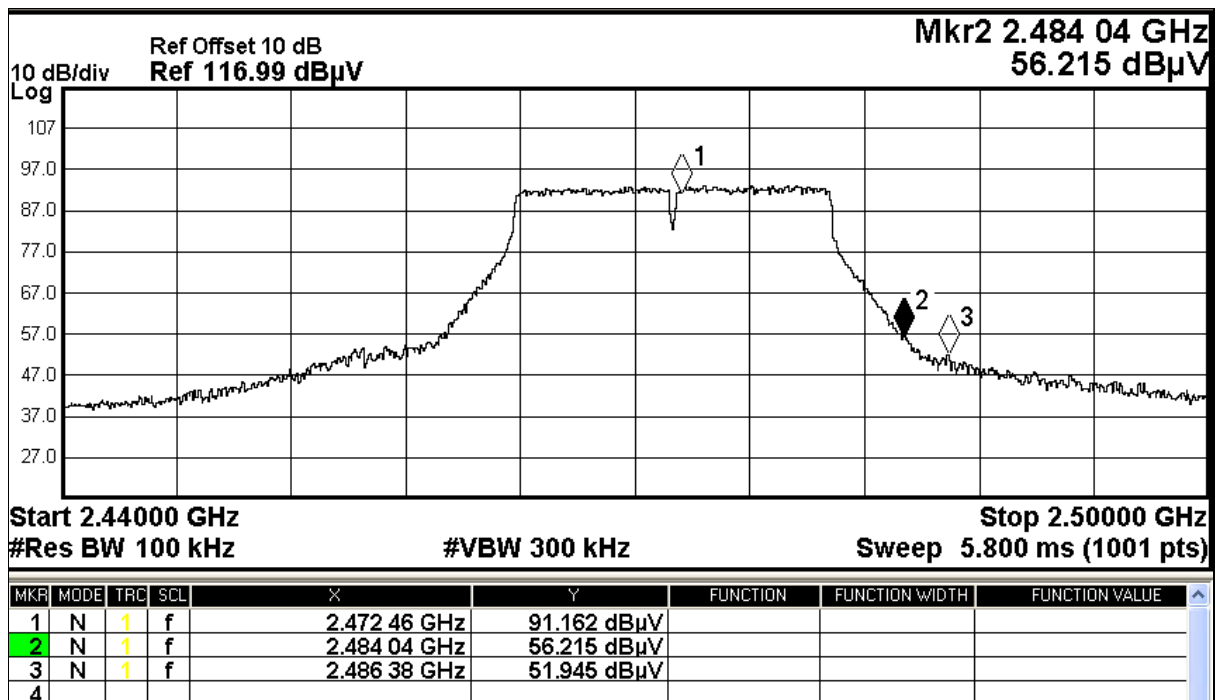
Date : 2019-06-11
No. : HM19030026

Page 38 of 84

Band-edge Compliance of RF Conducted Emissions Measurement:

Frequency Range [MHz]	Conducted Emission Attenuated below the Fundamental [dB]
2483.5 - Highest Fundamental (2472)	34.9

802.11g, Band-edge Compliance of RF Emissions – Upper band edge



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 39 of 84

802.11g, Radiated Emissions Band-edge and Restricted Band Result:

Field Strength of Band-edge Compliance Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2378.0	11.1	27.9	39.0	74.0	35.0	Vertical
2484.0	28.3	27.9	56.2	74.0	17.8	Vertical

Field Strength of Band-edge Compliance Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2378.0	1.8	27.9	29.7	54.0	24.3	Vertical
2484.0	13.7	27.9	41.6	54.0	12.4	Vertical

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



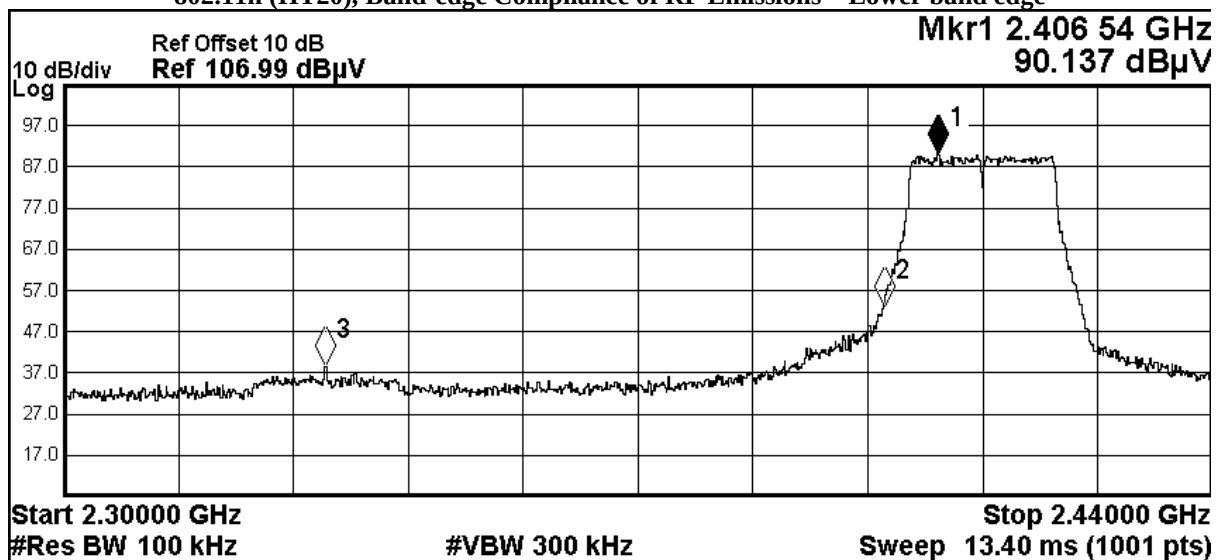
Test Report

Date : 2019-06-11
No. : HM19030026

Page 40 of 84

Frequency Range	Conducted Emission Attenuated below the Fundamental
[MHz]	[dB]
2400 – Lowest Fundamental (2412)	37.0

802.11n (HT20), Band-edge Compliance of RF Emissions – Lower band edge



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.406 54 GHz	90.137 dBμV			
2	N	1	f	2.400 00 GHz	53.091 dBμV			
3	N	1	f	2.331 92 GHz	38.592 dBμV			
4								

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

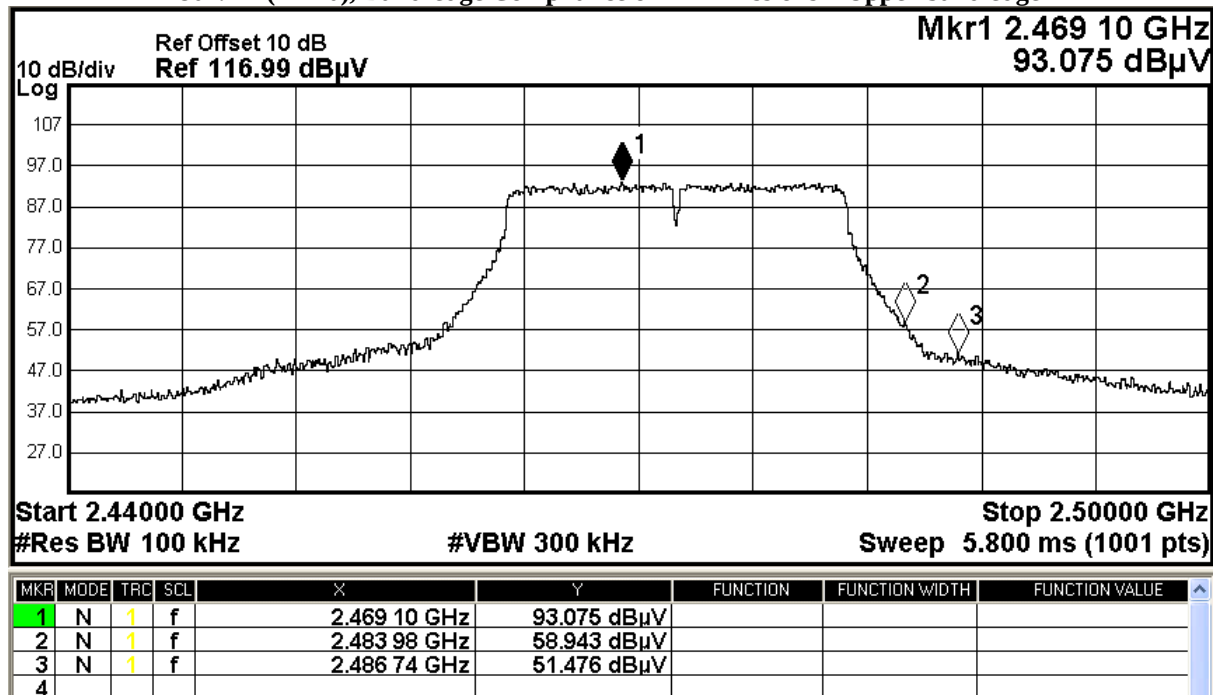
Date : 2019-06-11
No. : HM19030026

Page 41 of 84

Band-edge Compliance of RF Conducted Emissions Measurement:

Frequency Range	Conducted Emission Attenuated below the Fundamental
[MHz]	[dB]
2483.5 - Highest Fundamental (2472)	34.1

802.11n(HT20), Band-edge Compliance of RF Emissions – Upper band edge



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taiipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 42 of 84

802.11n(HT20), Radiated Emissions Band-edge and Restricted Band Result:

Field Strength of Band-edge Compliance Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2331.9	10.7	27.9	38.6	74.0	35.4	Vertical
2486.7	23.6	27.9	51.5	74.0	22.5	Vertical

Field Strength of Band-edge Compliance Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2331.9	1.3	27.9	29.2	54.0	24.8	Vertical
2486.7	7.5	27.9	35.4	54.0	18.6	Vertical

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



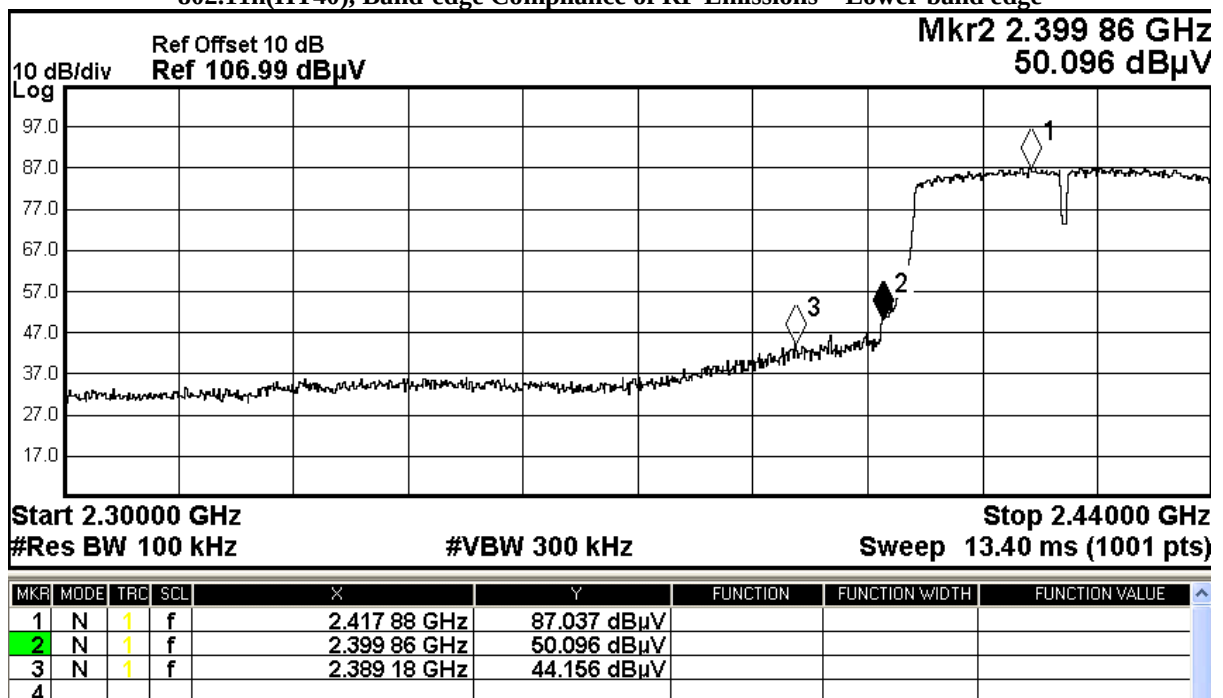
Test Report

Date : 2019-06-11
No. : HM19030026

Page 43 of 84

Frequency Range	Conducted Emission Attenuated below the Fundamental
[MHz]	[dB]
2400 – Lowest Fundamental (2412)	36.9

802.11n(HT40), Band-edge Compliance of RF Emissions – Lower band edge



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

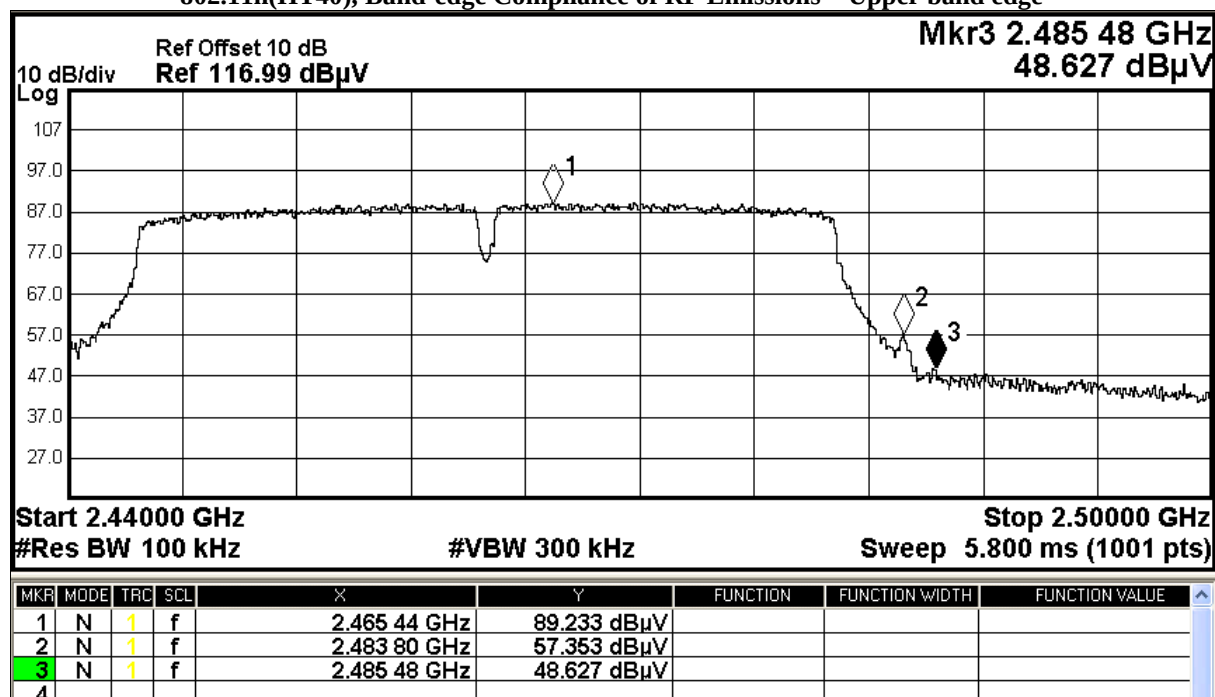
Date : 2019-06-11
No. : HM19030026

Page 44 of 84

Band-edge Compliance of RF Conducted Emissions Measurement:

Frequency Range	Conducted Emission Attenuated below the Fundamental
[MHz]	[dB]
2483.5 - Highest Fundamental (2472)	40.6

802.11n(HT40), Band-edge Compliance of RF Emissions – Upper band edge



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 45 of 84

802.11n (HT40), Radiated Emissions Band-edge and Restricted Band Result:

Field Strength of Band-edge Compliance Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2389.2	16.2	27.9	44.1	74.0	29.9	Vertical
2485.4	20.7	27.9	48.6	74.0	25.4	Vertical

Field Strength of Band-edge Compliance Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2389.2	1.3	27.9	29.2	54.0	24.8	Vertical
2485.4	10.8	27.9	38.7	54.0	15.3	Vertical

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 46 of 84

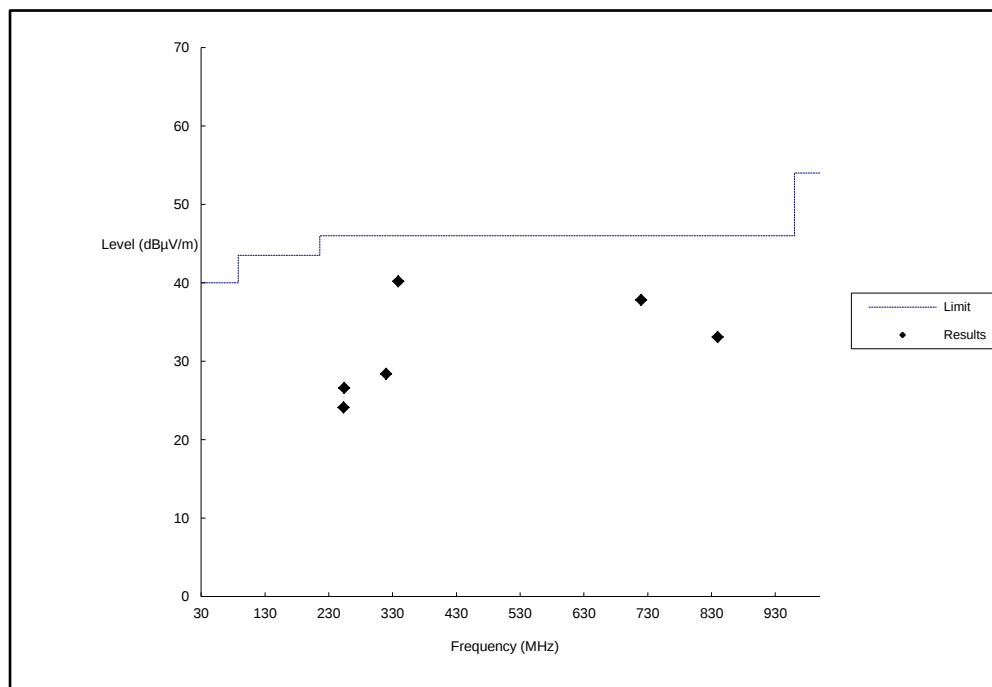
Limits for Radiated Emissions FCC 47 CFR 15.247 Class B]:

Frequency Range	Quasi-Peak Limits
[MHz]	[$\mu\text{V/m}$]
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 (802.11b, 2402MHz) (30MHz – 1GHz): Pass

Please refer to the following table for result details(The data is the worst cases)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 47 of 84

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
254.4	Horizontal	26.6	46.0	21.4	200
339.3	Horizontal	40.2	46.0	102.3	200
720.0	Horizontal	37.8	46.0	77.6	200
253.1	Vertical	24.1	46.0	16.0	200
320.1	Vertical	28.4	46.0	26.3	200
840.0	Vertical	33.1	46.0	45.2	200

Remarks:

Calculated measurement uncertainty (30MHz – 1GHz): 4.6dB

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

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

Test Report

Date : 2019-06-11
No. : HM19030026

Page 48 of 84

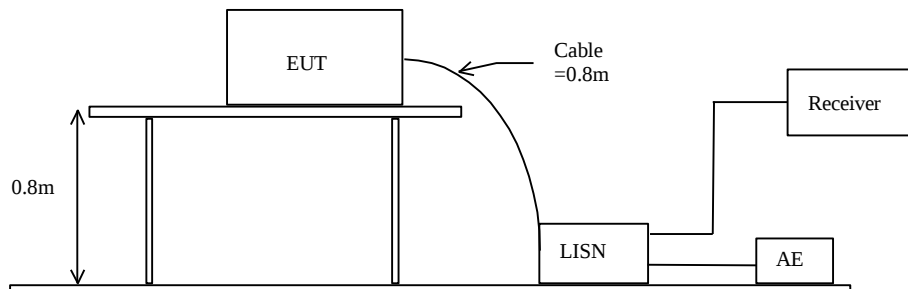
3.1.3 Conducted Emissions (0.15MHz to 30MHz)

Test Requirement:	FCC 47CFR 15.207 Class B
Test Method:	ANSI C63.10: 2013
Test Date:	2019-05-16
Mode of Operation:	Charge mode

Test Method:

The test was performed in accordance with ANSI C63.10: 2013, with the following: initial measurements were performed in peak and average detection modes on the live line, any emissions recorded within 30dB of the relevant limit lines 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:





Test Report

Date : 2019-06-11
No. : HM19030026

Page 49 of 84

Limits for Conducted Emissions (FCC 47 CFR 15.207):

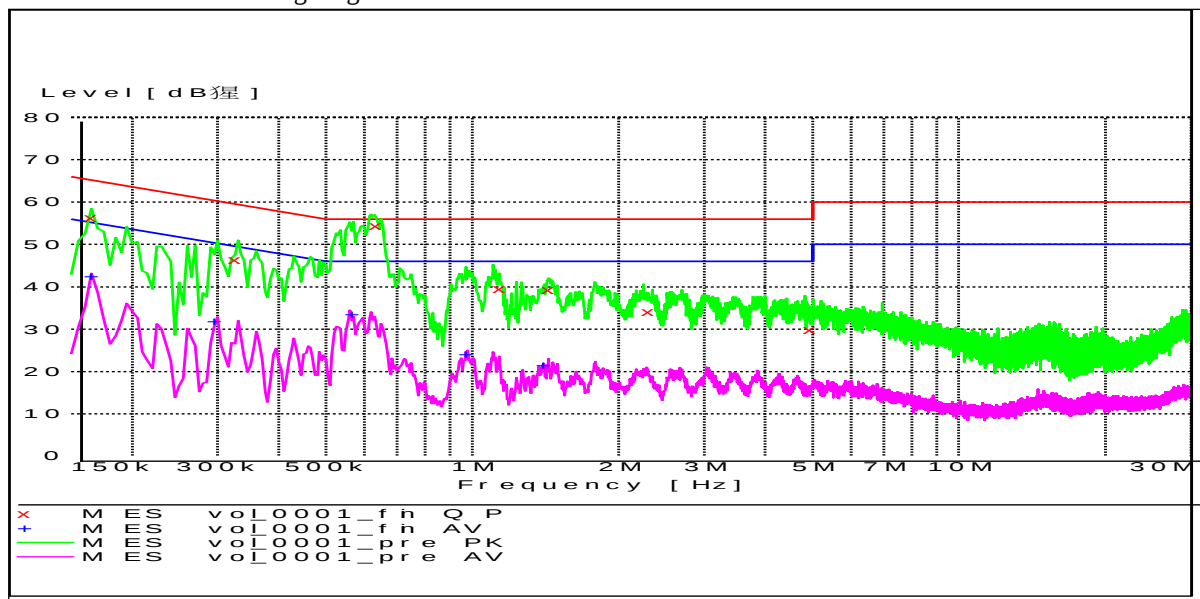
Frequency Range [MHz]	Quasi-Peak Limits [dB μ V]	Average [dB μ V]
0.15-0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0-30.0	60	50

* 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 (Live and Neutral): PASS

Please refer to the following diagram for individual results.



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 50 of 84

Results of Tx mode: PASS

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.165000	56.30	9.9	65	8.9	N	GND
0.325000	46.40	10.0	60	13.1	N	GND
0.635000	54.50	10.0	56	1.5	N	GND
1.140000	39.50	10.0	56	16.5	N	GND
1.435000	39.20	10.0	56	16.8	N	GND
2.305000	34.20	10.1	56	21.8	N	GND
4.945000	29.80	10.3	56	26.2	N	GND

MEASUREMENT RESULT: "vol_0001_fin AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.165000	42.40	9.9	55	12.8	N	GND
0.295000	31.80	9.9	50	18.6	N	GND
0.565000	33.40	10.0	46	12.6	N	GND
0.970000	23.90	10.0	46	22.1	N	GND
1.400000	21.40	10.0	46	24.6	N	GND

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 51 of 84

3.1.4 Power Spectral Density

Test Requirement:	FCC 47CFR 15.247(e)
Test Method:	ANSI C63.10:2013
Test Date:	2019-05-10
Mode of Operation:	Tx mode (802.11 b/g/n)

Test Method:

The RF output of the EUT was connected to the spectrum analyzer. Set the fundamental frequency as the center frequency of the spectral analyzer. Use RBW=3kHz , VBW= 10kHz , Set the span to 1.5 times the DTS channel bandwidth. Detector = peak, Sweep time = auto couple , Trace mode = max hold.

Test Setup:

As Test Setup of clause 3.1.1 in this test report.

Test Limit:

The maximum power spectral density (PSD) shall not exceeded 8dBm in any 3kHz band.

Remarks:

The RBW used for PSD measurement was 100 kHz, therefore correction factor applied to calculate final results. The correction factor = $10\log(3\text{kHz}/100\text{kHz}) = -15.2\text{dB}$.

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 52 of 84

Results of Tx Mode (802.11b) : Pass
Maximum power spectral density

Transmitter Frequency (MHz)	Maximum Power spectral density level / 3kHz band (dBm)	Maximum Power spectral density / 3kHz band limit
2412.0	-22.0	8dBm
2442.0	-21.1	8dBm
2472.0	-27.1	8dBm

Results of Tx Mode (802.11g) : Pass
Maximum power spectral density

Transmitter Frequency (MHz)	Maximum Power spectral density level / 3kHz band (dBm)	Maximum Power spectral density / 3kHz band limit
2412.0	-32.1	8dBm
2442.0	-31.2	8dBm
2472.0	-30.0	8dBm

Results of Tx Mode (802.11n(HT20)) : Pass
Maximum power spectral density

Transmitter Frequency (MHz)	Maximum Power spectral density level / 3kHz band (dBm)	Maximum Power spectral density / 3kHz band limit
2412.0	-31.8	8dBm
2442.0	-31.4	8dBm
2472.0	-30.0	8dBm

Results of Tx Mode (802.11n(HT40)) : Pass
Maximum power spectral density

Transmitter Frequency (MHz)	Maximum Power spectral density level / 3kHz band (dBm)	Maximum Power spectral density / 3kHz band limit
2422.0	-34.9	8dBm
2442.0	-34.4	8dBm
2462.0	-33.5	8dBm

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

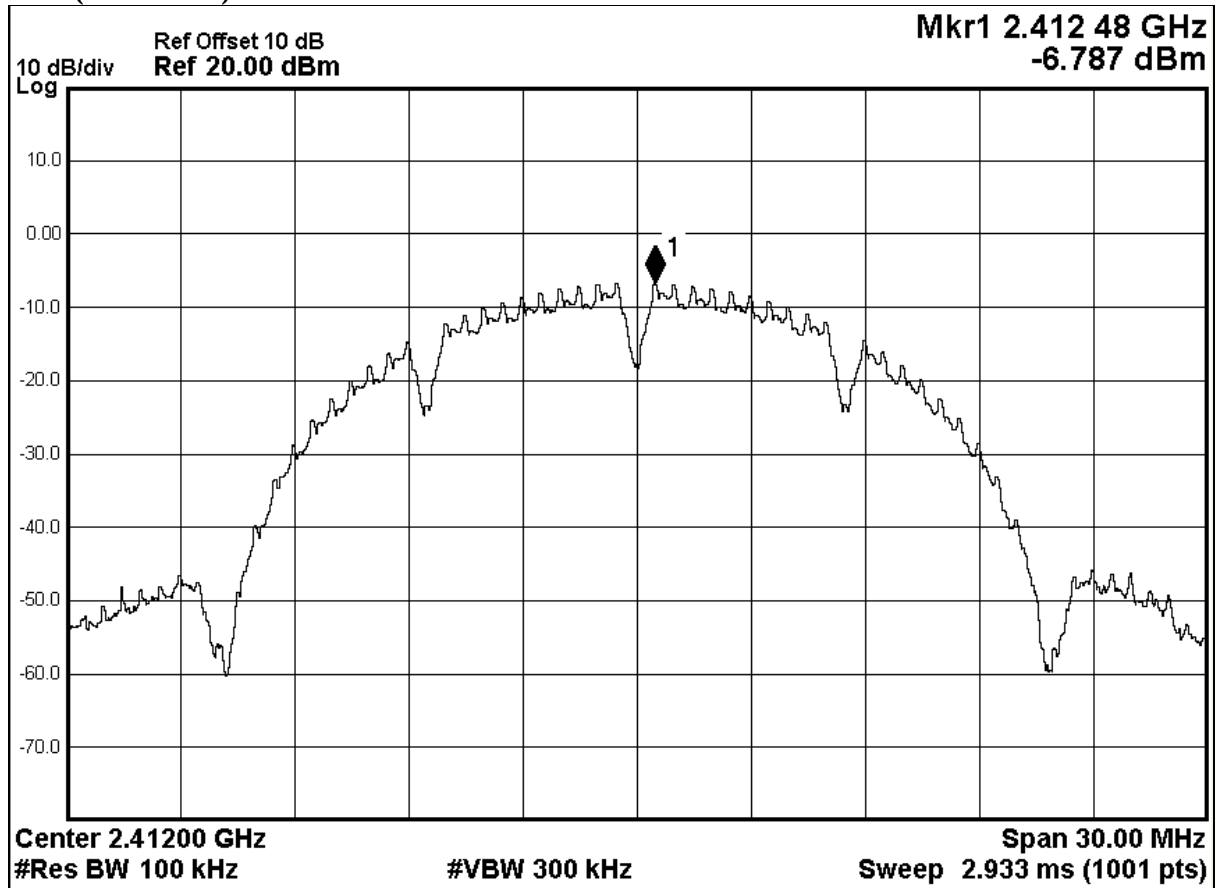


Test Report

Date : 2019-06-11
No. : HM19030026

Page 53 of 84

Tx mode (802.11b)
CH 1 (2412.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

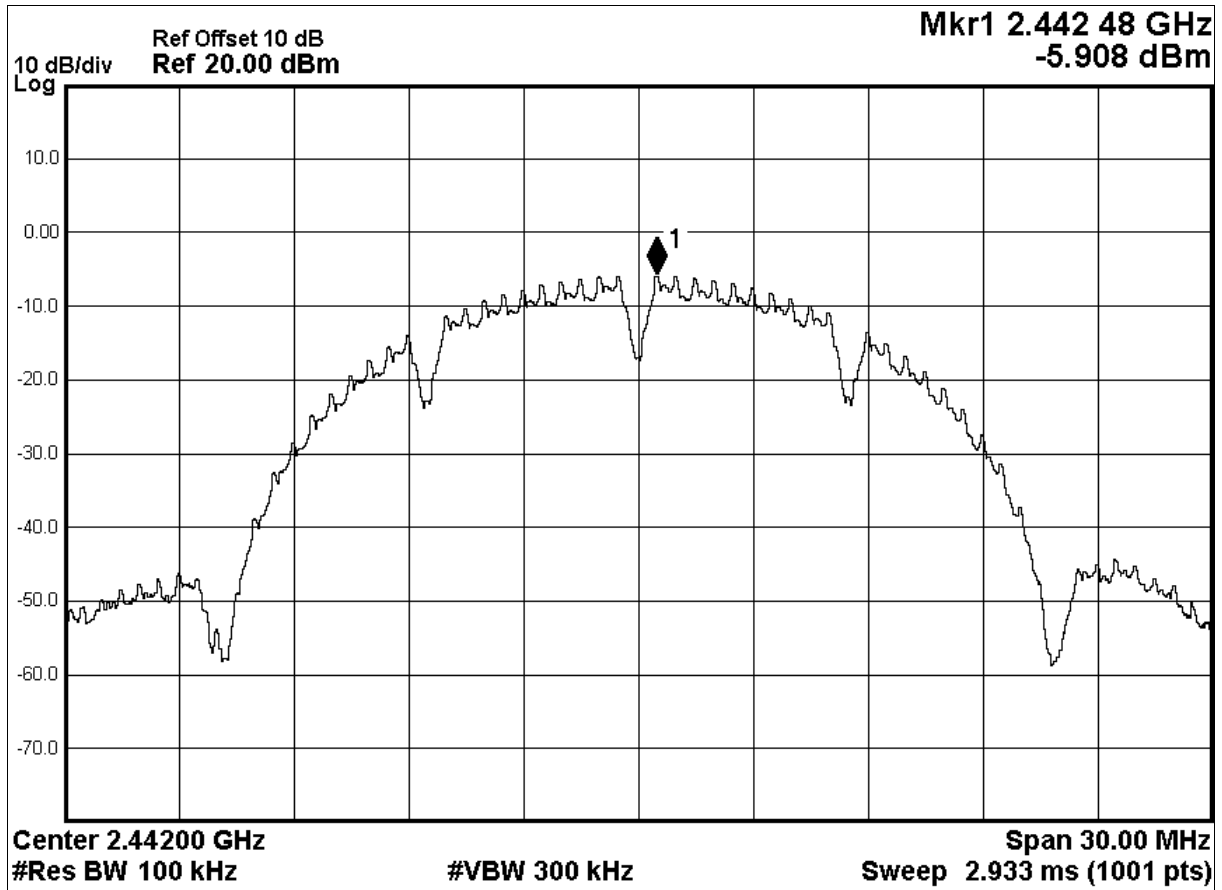


Test Report

Date : 2019-06-11
No. : HM19030026

Page 54 of 84

Tx mode (802.11b)
CH 7 (2442.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

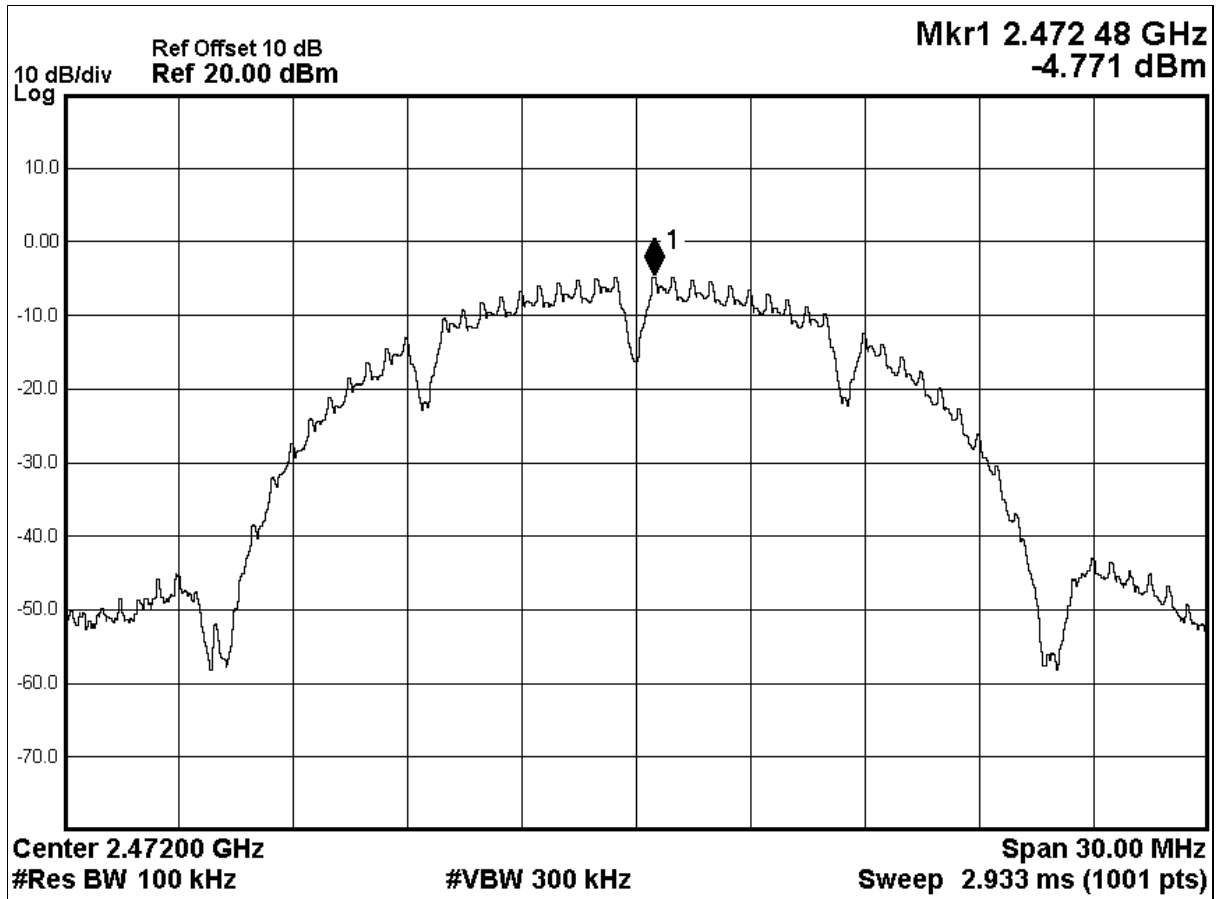


Test Report

Date : 2019-06-11
No. : HM19030026

Page 55 of 84

Tx mode (802.11b)
CH 13 (2472.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

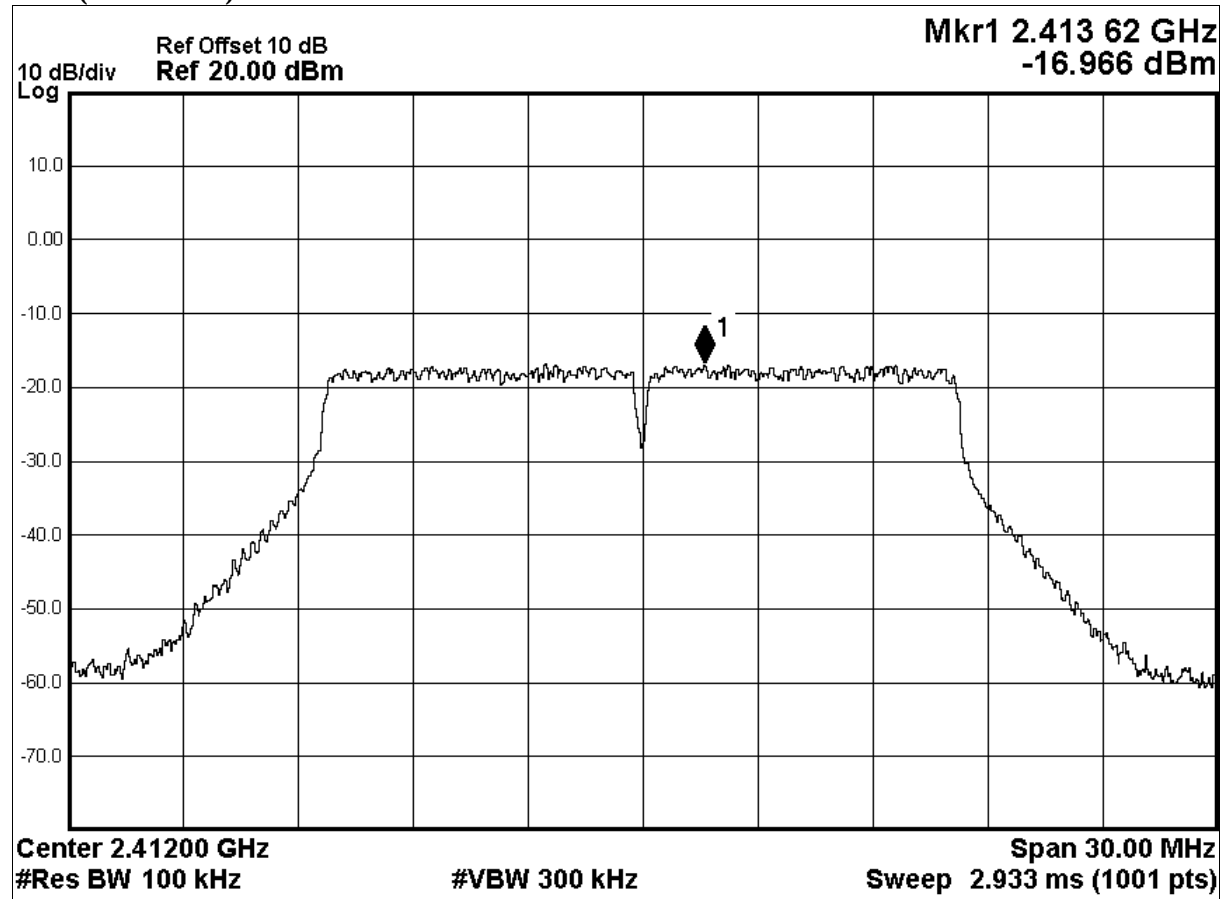


Test Report

Date : 2019-06-11
No. : HM19030026

Page 56 of 84

Tx mode (802.11g)
CH 1 (2412.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

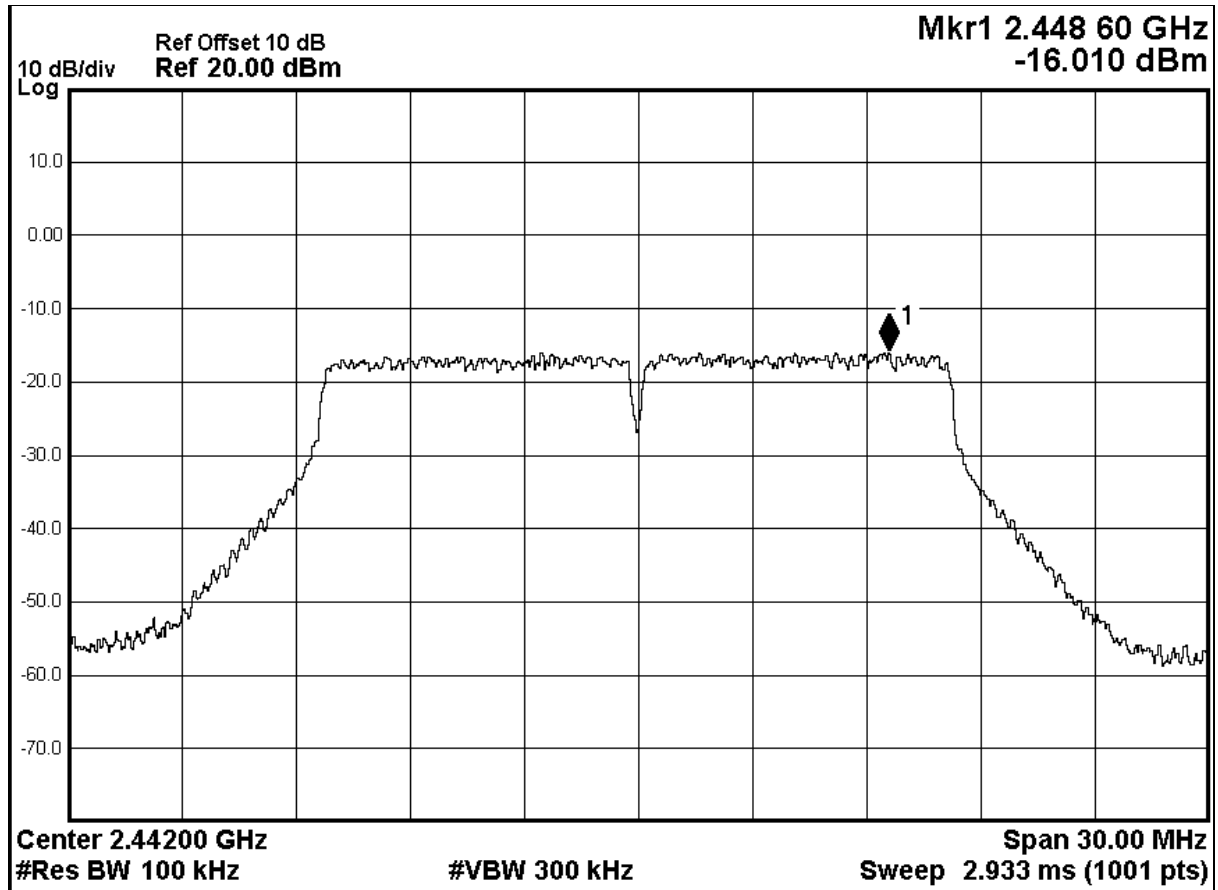


Test Report

Date : 2019-06-11
No. : HM19030026

Page 57 of 84

Tx mode (802.11g)
CH 7 (2442.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

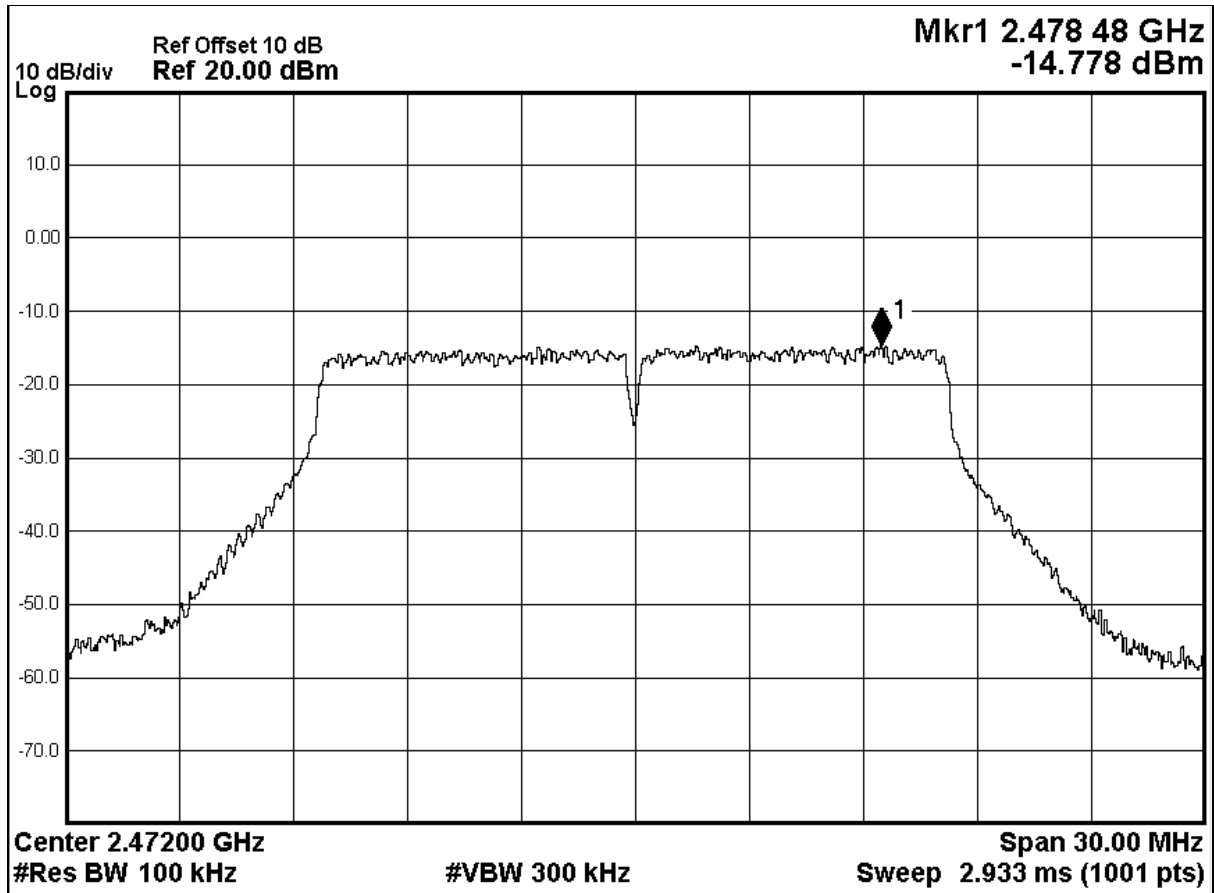


Test Report

Date : 2019-06-11
No. : HM19030026

Page 58 of 84

Tx mode (802.11g)
CH 13 (2472.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

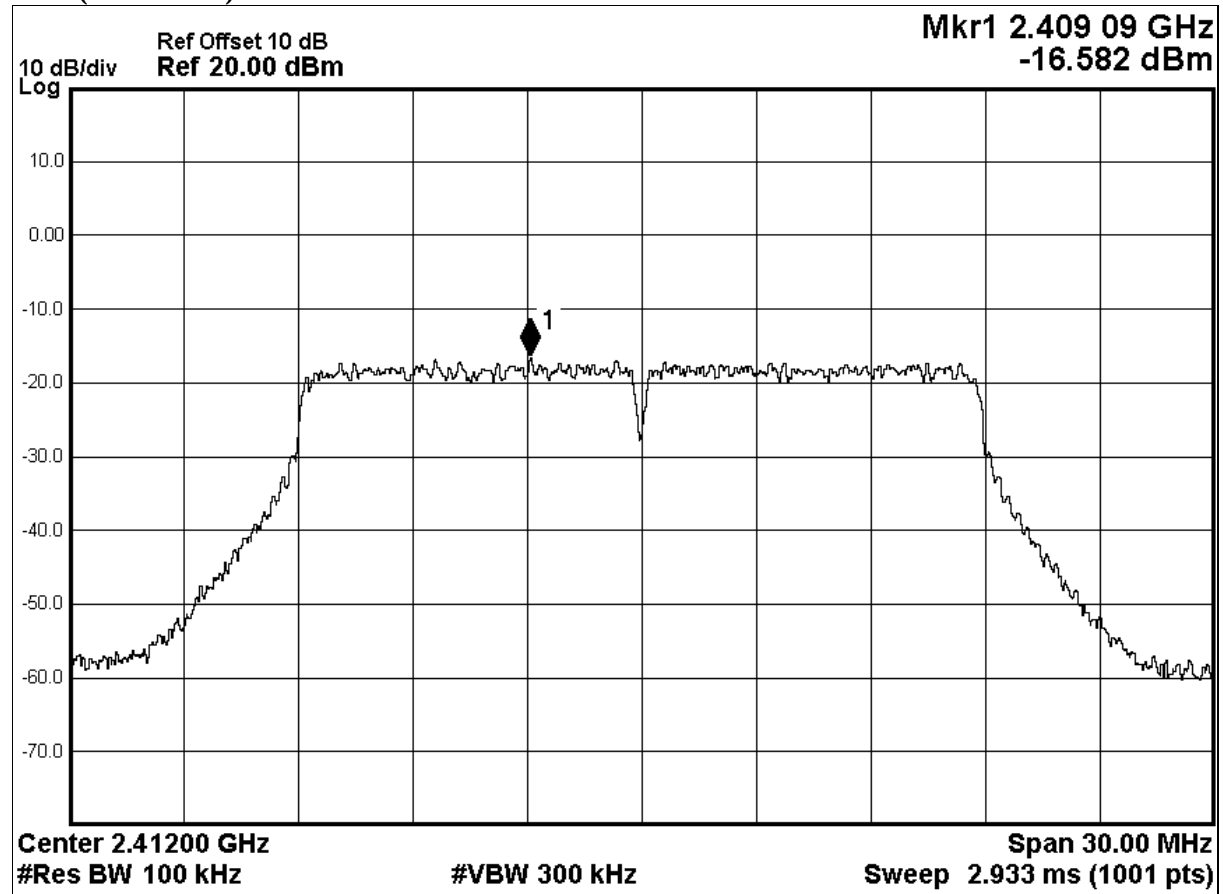


Test Report

Date : 2019-06-11
No. : HM19030026

Page 59 of 84

Tx mode (802.11n(HT20))
CH 1 (2412.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

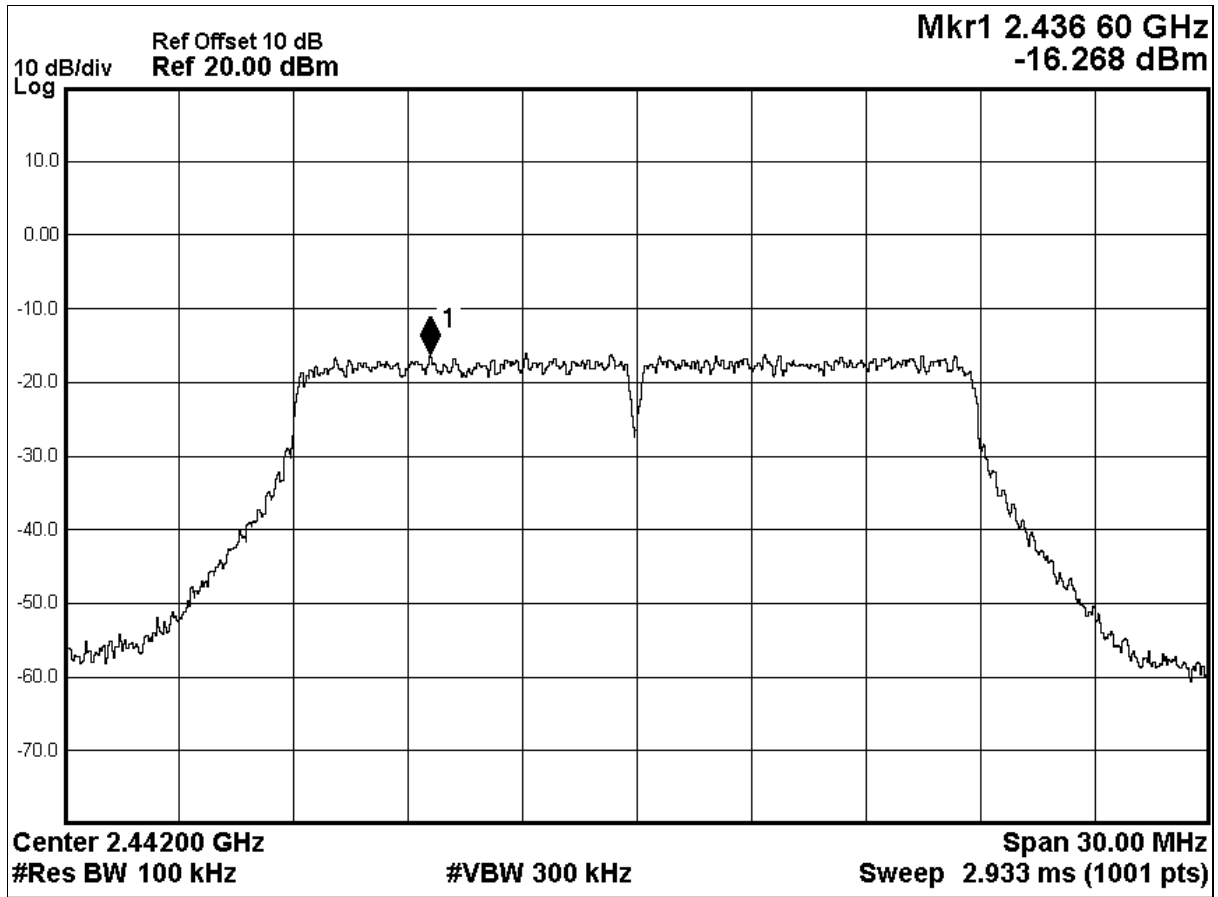


Test Report

Date : 2019-06-11
No. : HM19030026

Page 60 of 84

Tx mode (802.11n(HT20))
CH 7 (2442.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taiipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

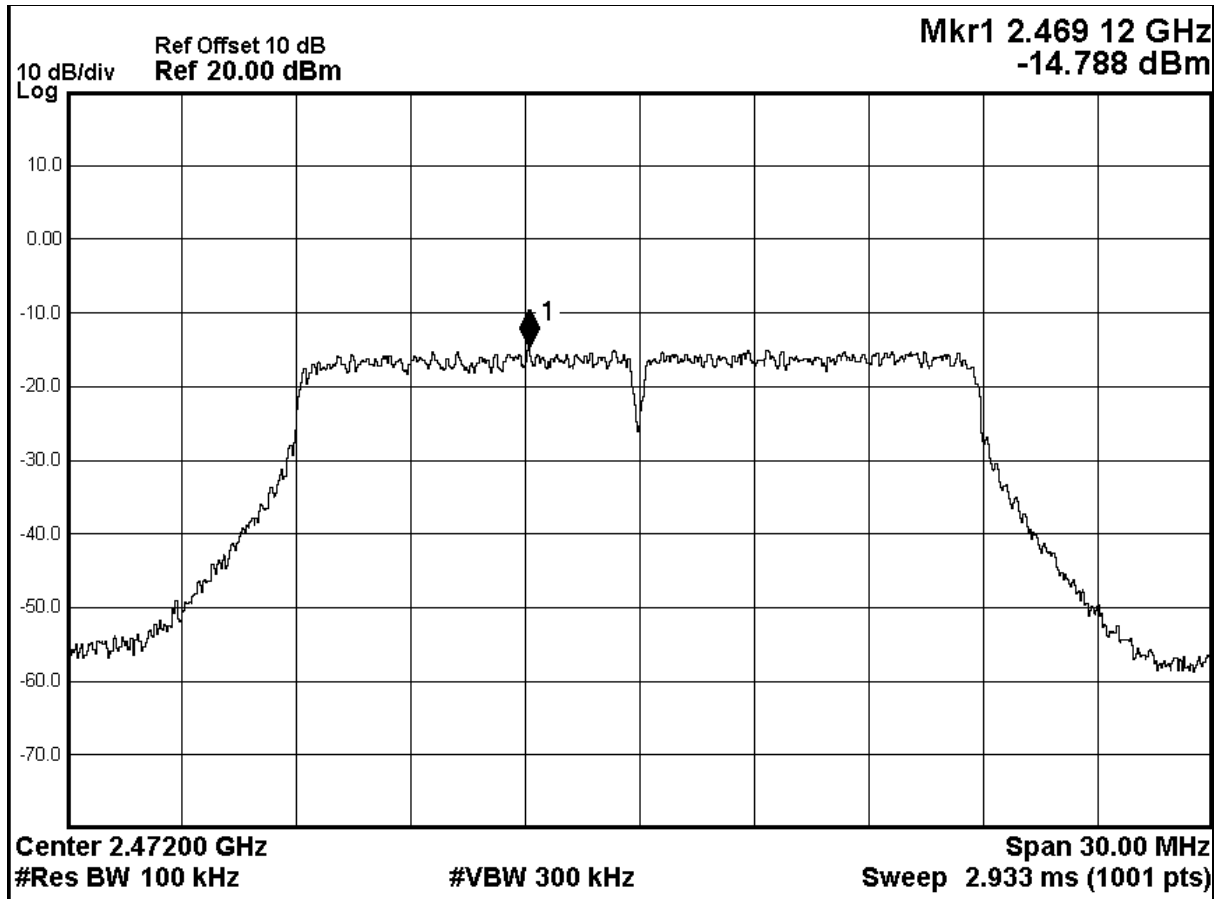


Test Report

Date : 2019-06-11
No. : HM19030026

Page 61 of 84

Tx mode (802.11n(HT20))
CH 13 (2472.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

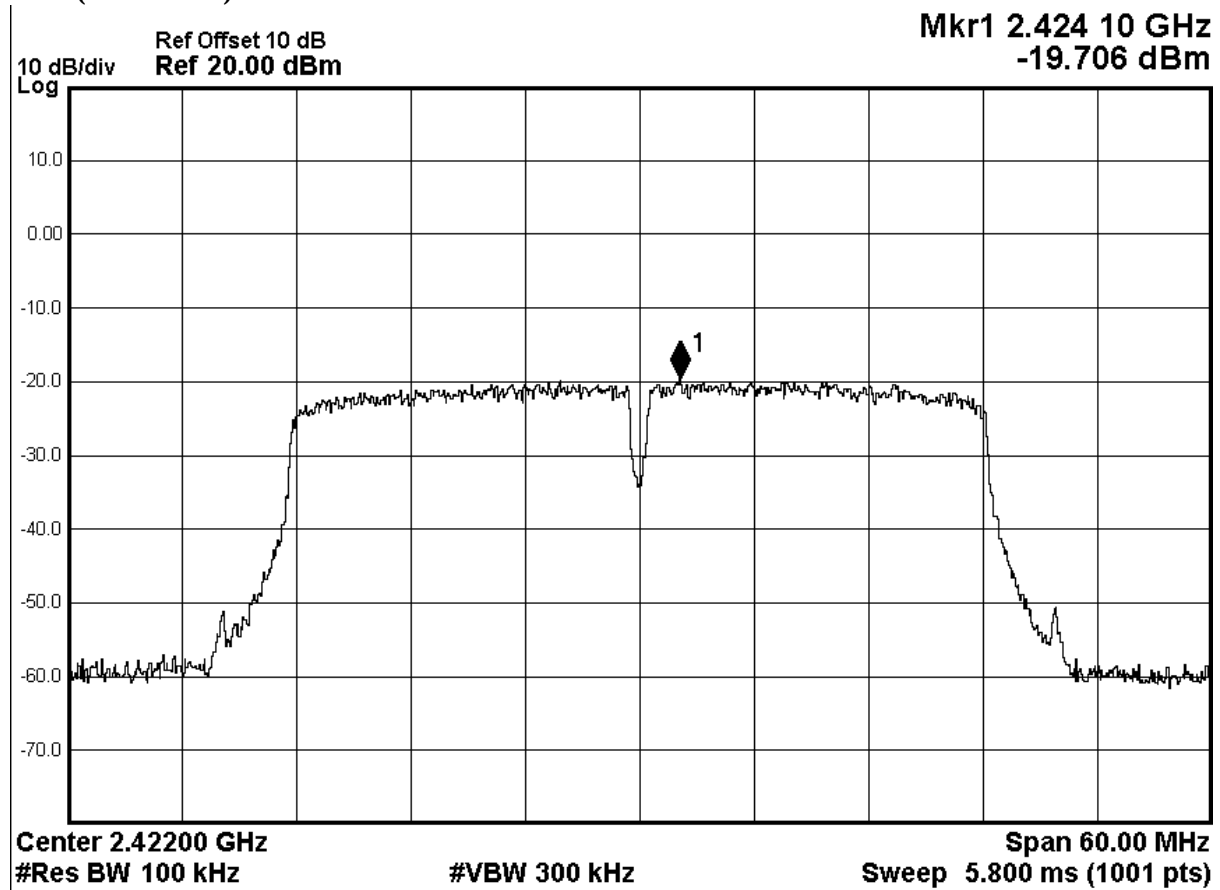


Test Report

Date : 2019-06-11
No. : HM19030026

Page 62 of 84

Tx mode (802.11n(HT40))
CH 3 (2422.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

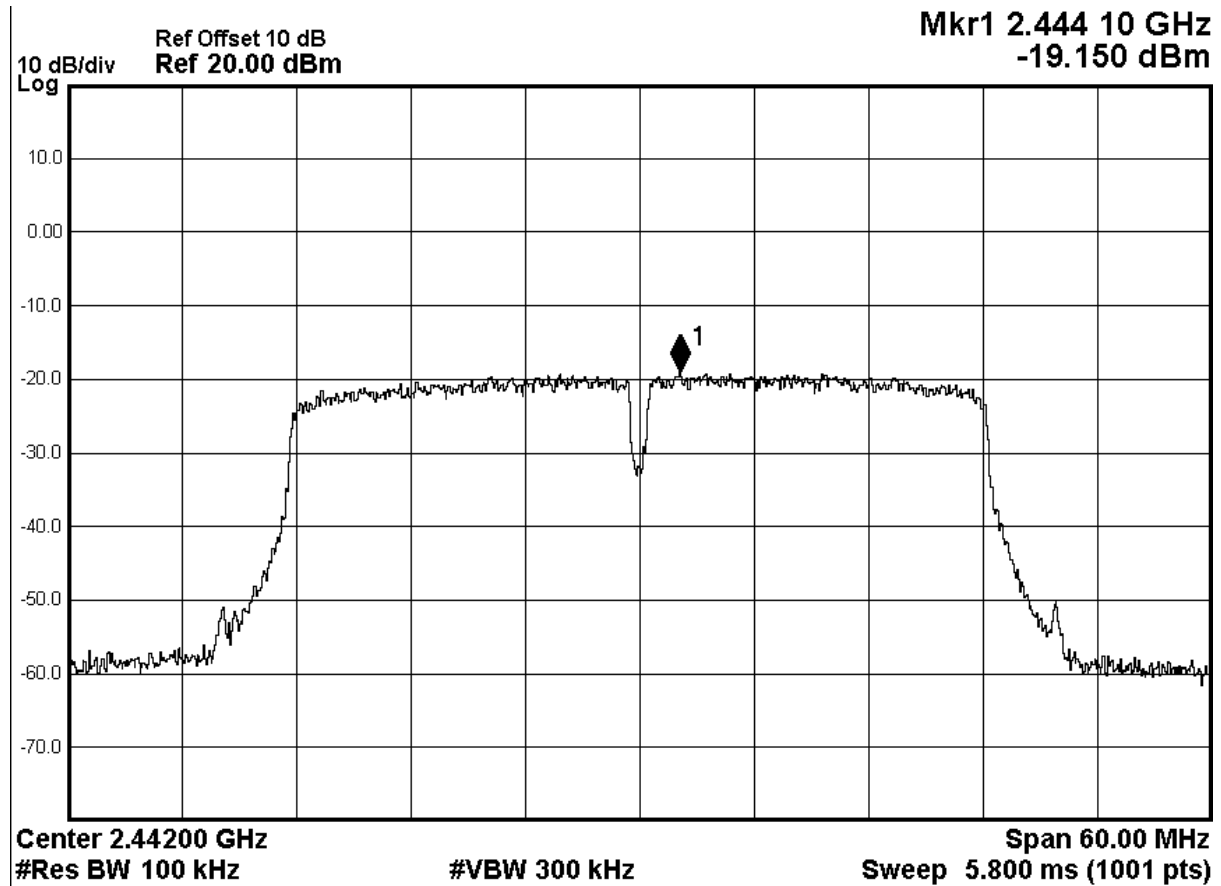


Test Report

Date : 2019-06-11
No. : HM19030026

Page 63 of 84

Tx mode (802.11n(HT40))
CH 7 (2442.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taiipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

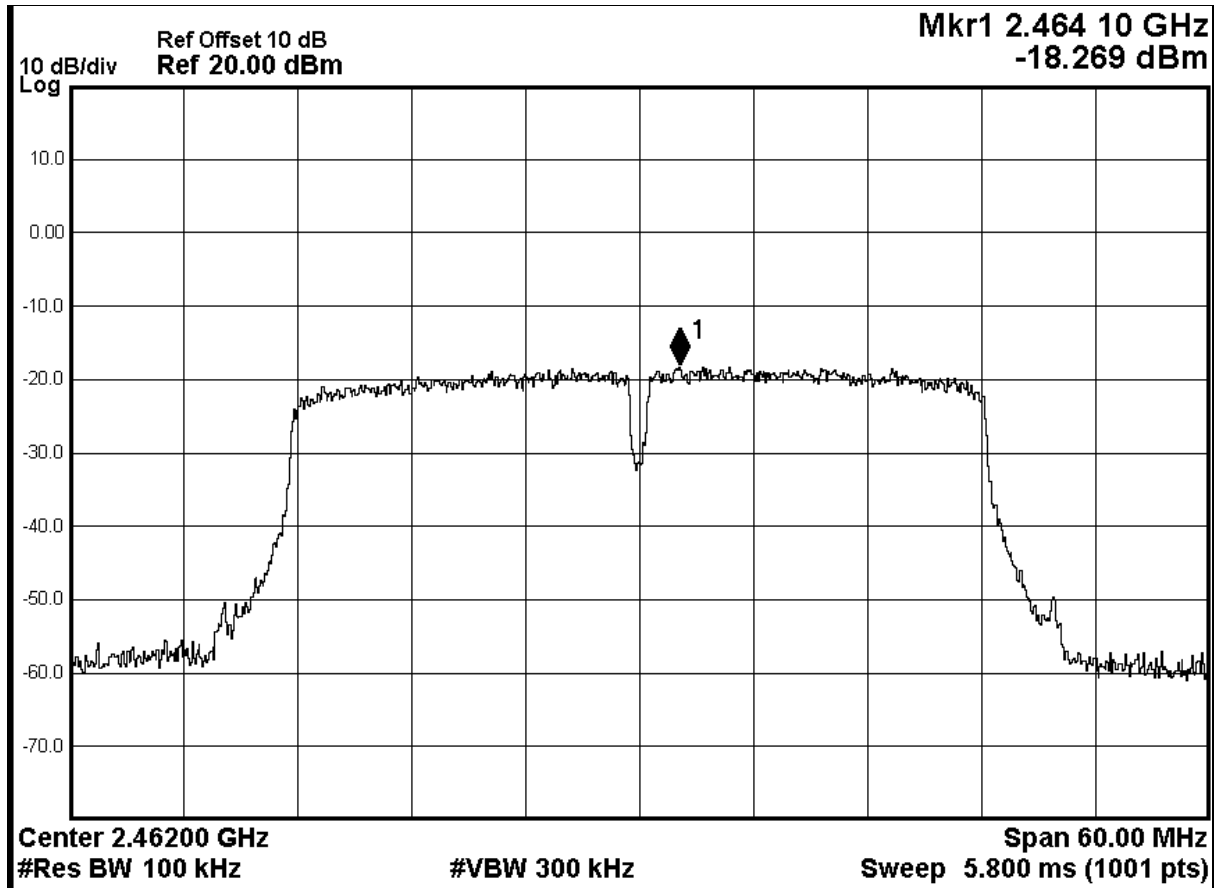


Test Report

Date : 2019-06-11
No. : HM19030026

Page 64 of 84

Tx mode (802.11n(HT40))
CH 11 (2462.0 MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taiipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 65 of 84

3.1.5 6dB Spectrum Bandwidth Measurement

Test Requirement:	FCC 47CFR 15.247(a)(2)
Test Method:	ANSI C63.10:2013
Test Date:	2019-05-14
Mode of Operation:	Tx mode (802.11 b/g/n)

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.

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

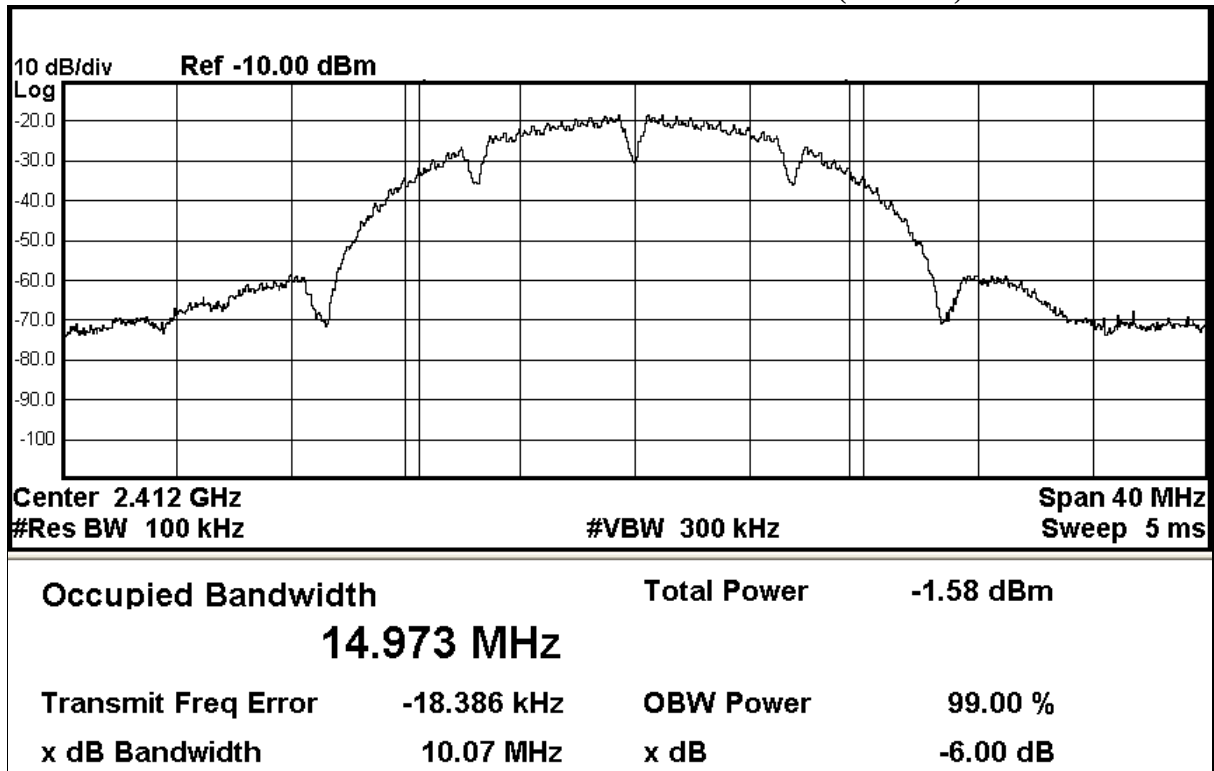
Date : 2019-06-11
No. : HM19030026

Page 66 of 84

Limits for 6dB Spectrum Bandwidth Measurement:

Center Frequency [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2412.0	10.07	> 500

6dB Bandwidth of Fundamental Emission on 802.11b (2412MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taiipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

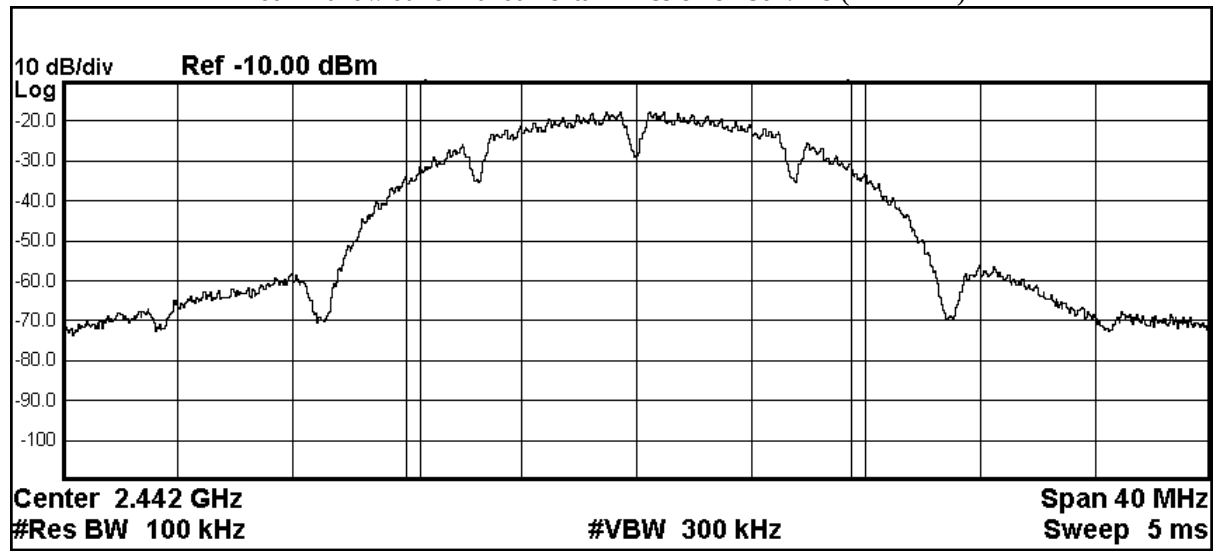
Date : 2019-06-11
No. : HM19030026

Page 67 of 84

Limits for 6dB Spectrum Bandwidth Measurement:

Frequency Range [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2442.0	10.06	> 500

6dB Bandwidth of Fundamental Emission on 802.11b (2442MHz)



Occupied Bandwidth

Total Power

-0.78 dBm

14.945 MHz

Transmit Freq Error

23.015 kHz

OBW Power

99.00 %

x dB Bandwidth

10.06 MHz

x dB

-6.00 dB

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taiipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

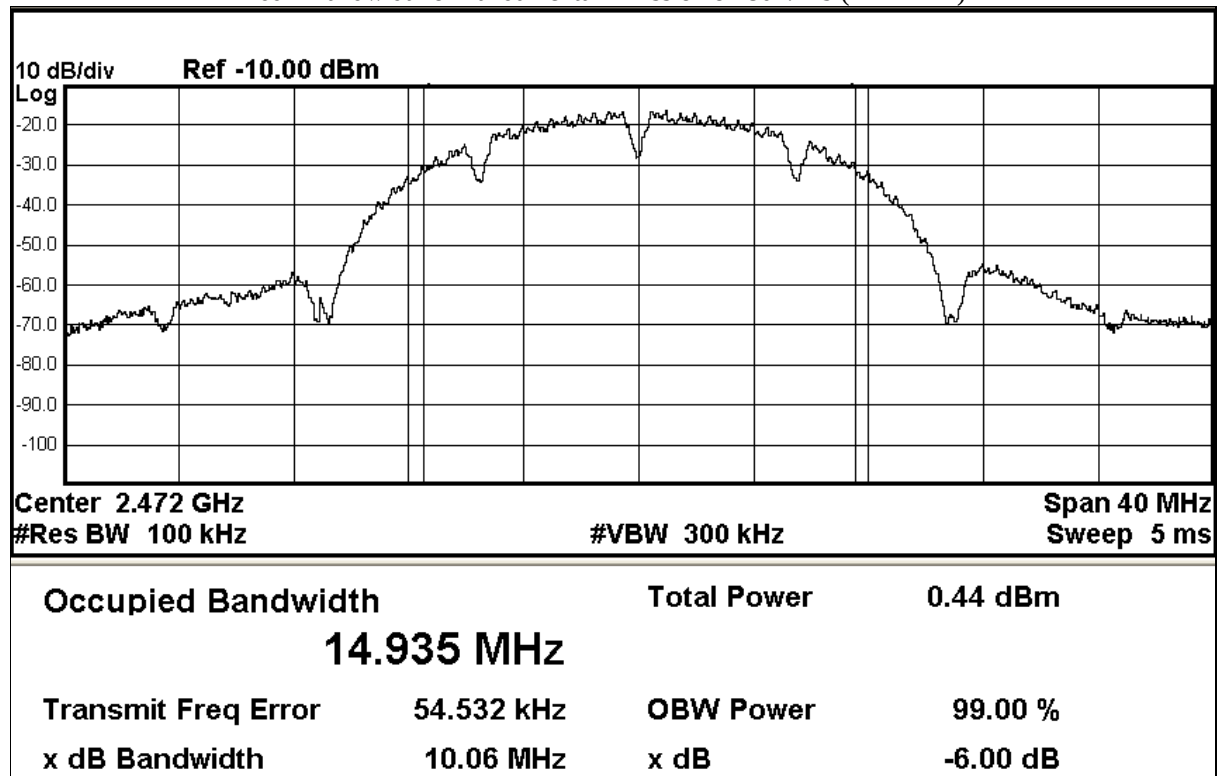
Date : 2019-06-11
No. : HM19030026

Page 68 of 84

Limits for 6dB Spectrum Bandwidth Measurement:

Frequency Range [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2472.0	10.06	> 500

6dB Bandwidth of Fundamental Emission on 802.11b (2472MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

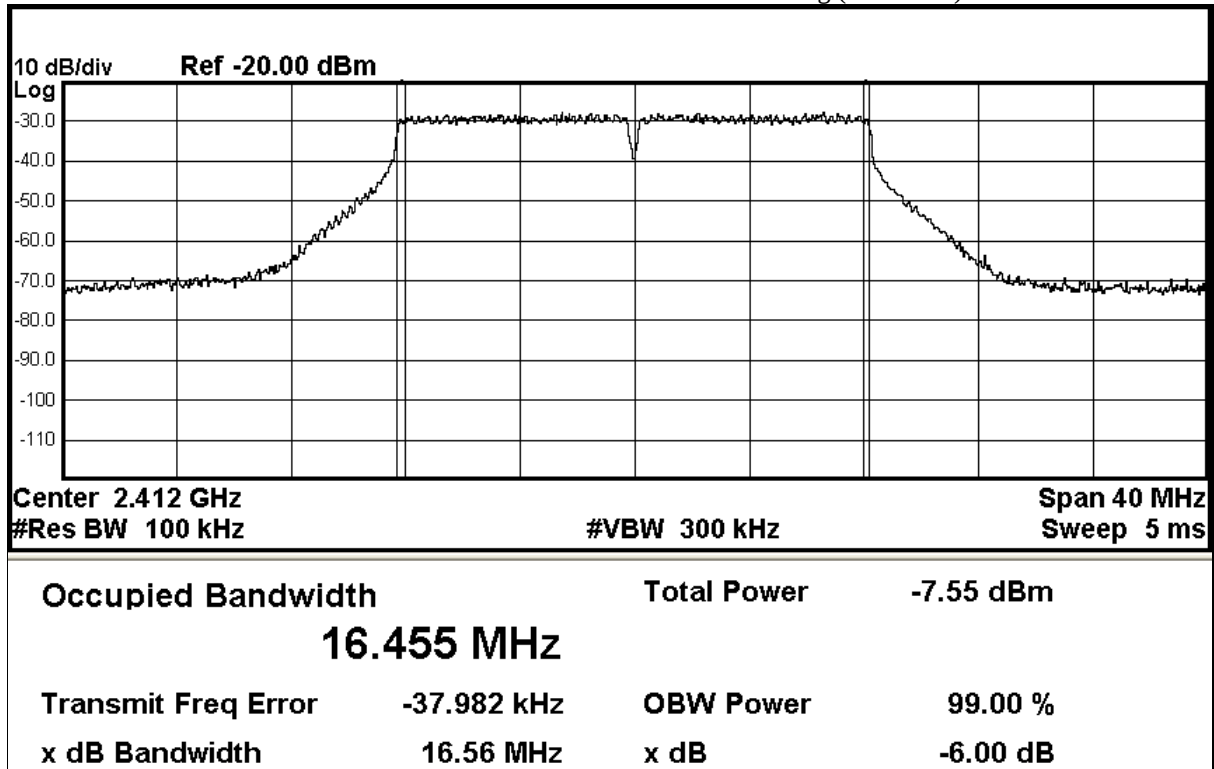
Date : 2019-06-11
No. : HM19030026

Page 69 of 84

Limits for 6dB Spectrum Bandwidth Measurement:

Center Frequency [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2412.0	16.56	> 500

6dB Bandwidth of Fundamental Emission on 802.11g (2412MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

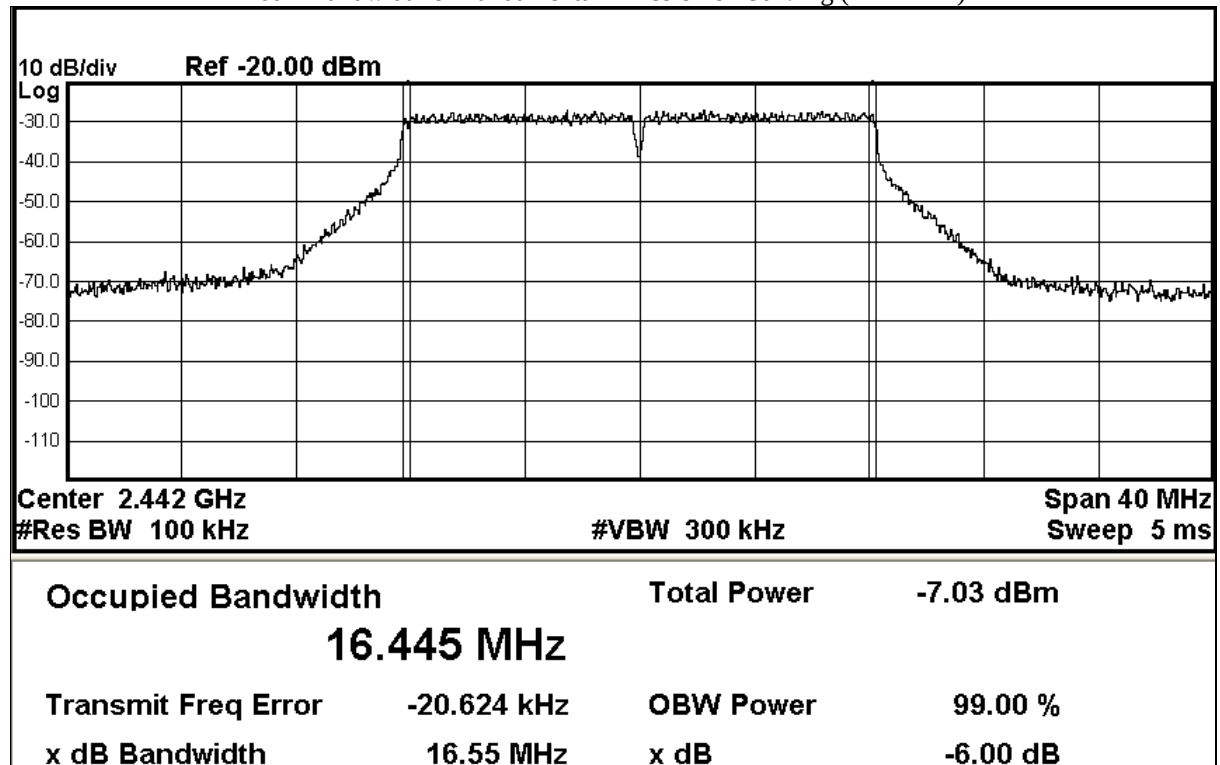
Date : 2019-06-11
No. : HM19030026

Page 70 of 84

Limits for 6dB Spectrum Bandwidth Measurement:

Frequency Range [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2442.0	16.55	> 500

6dB Bandwidth of Fundamental Emission on 802.11g (2442MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

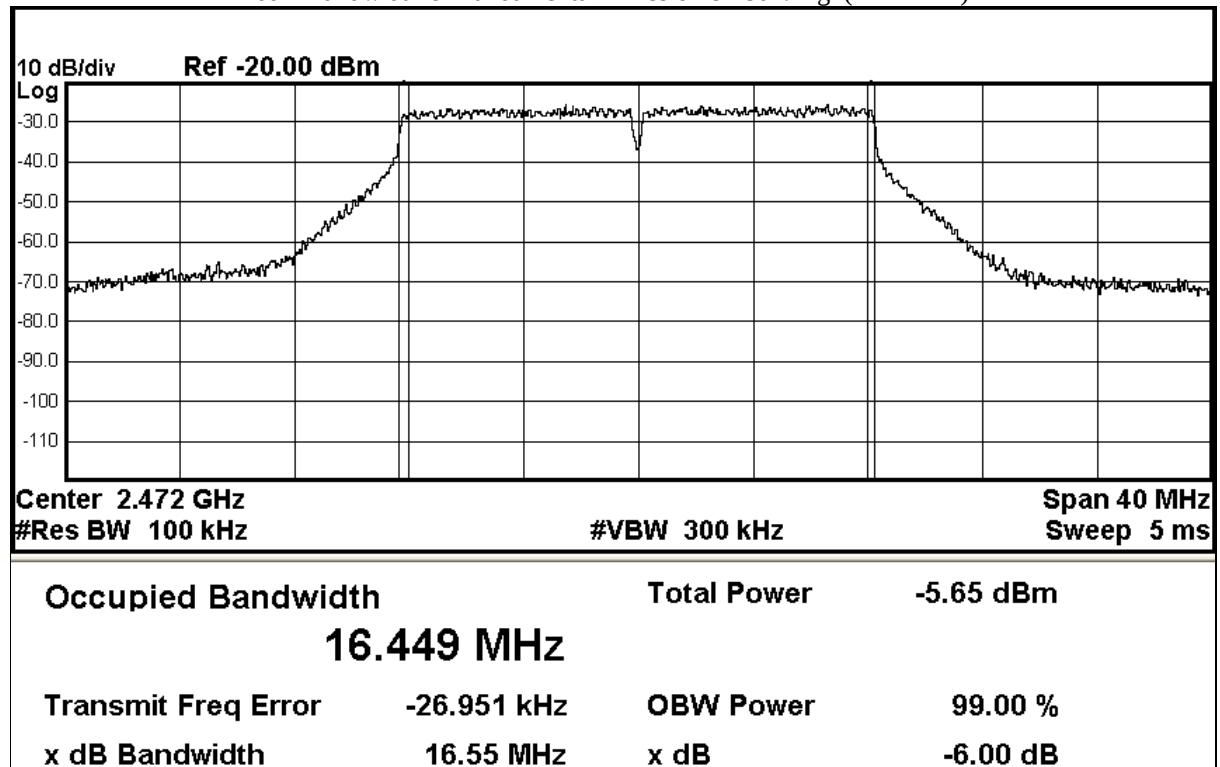
Date : 2019-06-11
No. : HM19030026

Page 71 of 84

Limits for 6dB Spectrum Bandwidth Measurement:

Frequency Range [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2472.0	16.55	> 500

6dB Bandwidth of Fundamental Emission on 802.11g (2472MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

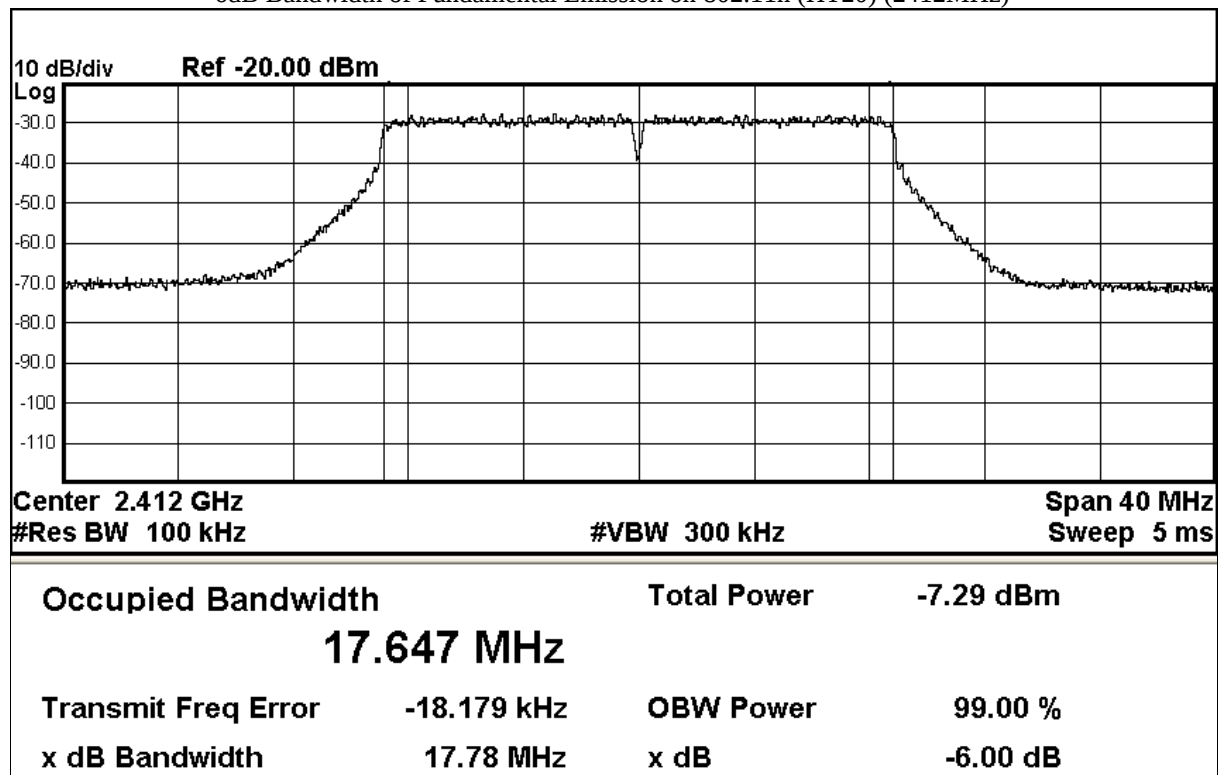
Date : 2019-06-11
No. : HM19030026

Page 72 of 84

Limits for 6dB Spectrum Bandwidth Measurement:

Center Frequency [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2412.0	17.78	> 500

6dB Bandwidth of Fundamental Emission on 802.11n (HT20) (2412MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

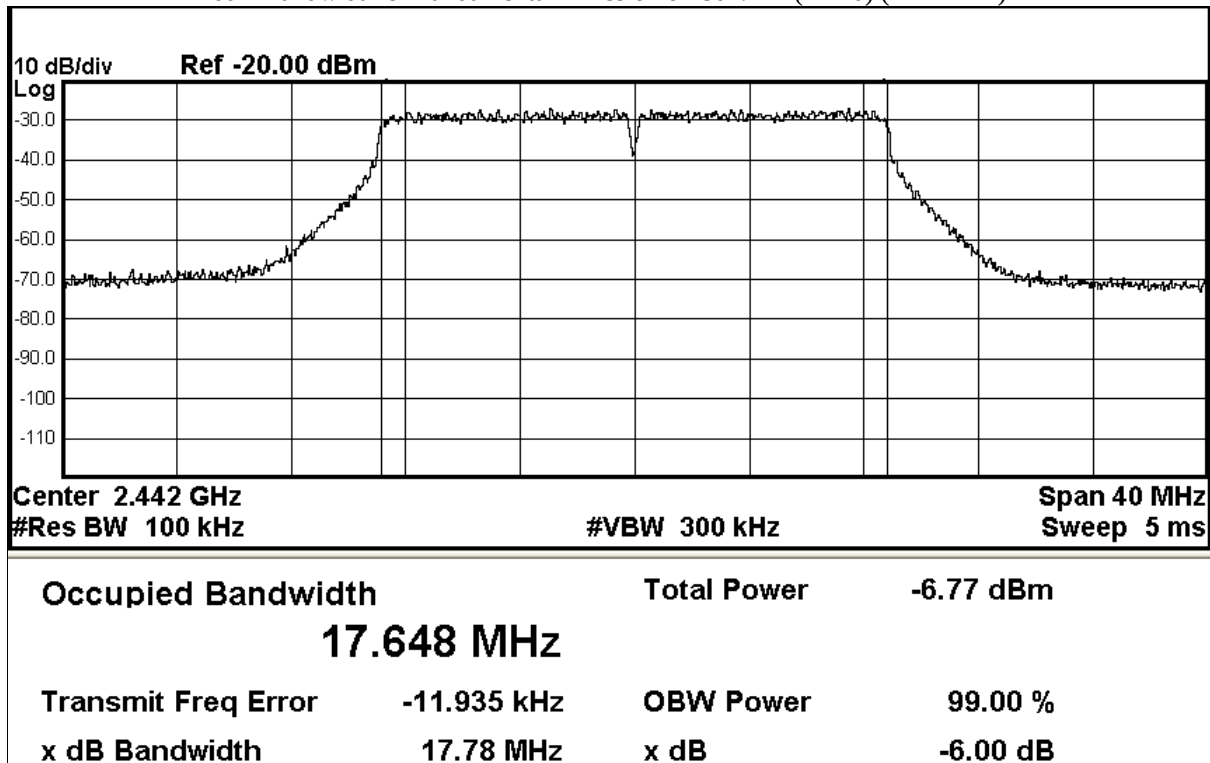
Date : 2019-06-11
No. : HM19030026

Page 73 of 84

Limits for 6dB Spectrum Bandwidth Measurement:

Frequency Range [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2442.0	17.78	> 500

6dB Bandwidth of Fundamental Emission on 802.11n (HT20) (2442MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taiipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

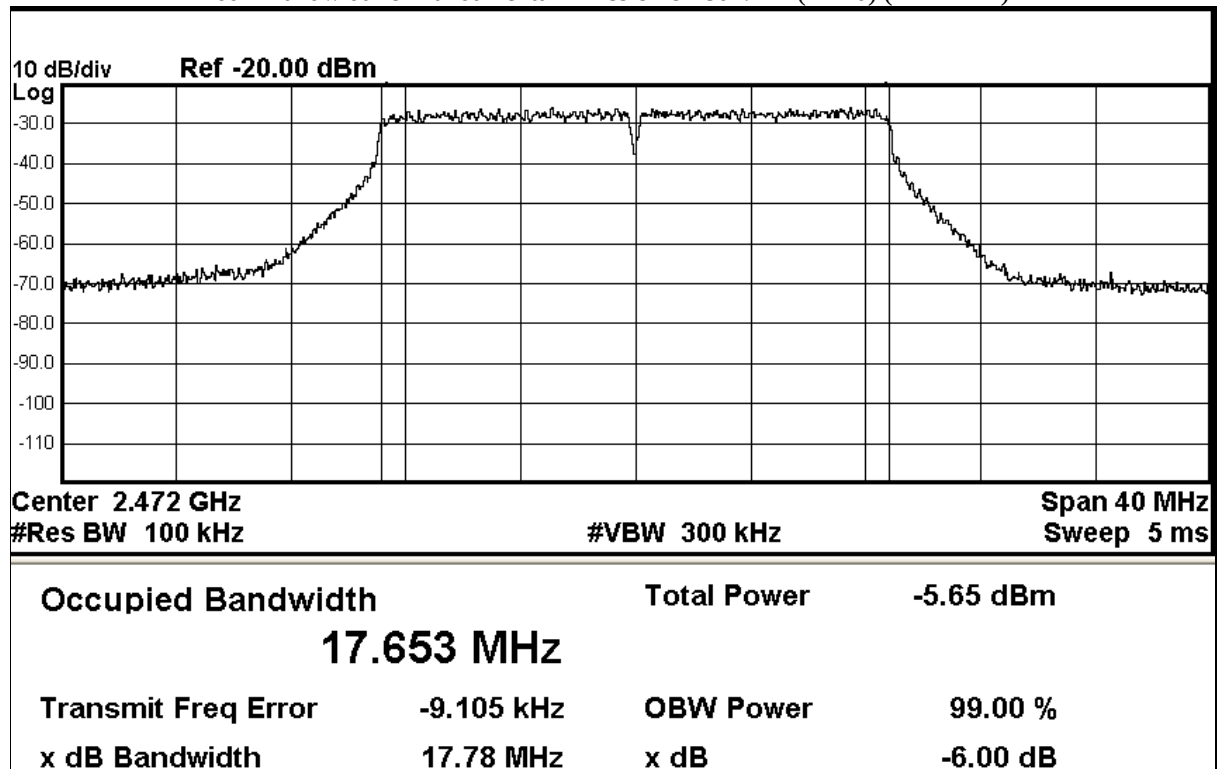
Date : 2019-06-11
No. : HM19030026

Page 74 of 84

Limits for 6dB Spectrum Bandwidth Measurement:

Frequency Range [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2472.0	17.78	> 500

6dB Bandwidth of Fundamental Emission on 802.11n (HT20) (2472MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

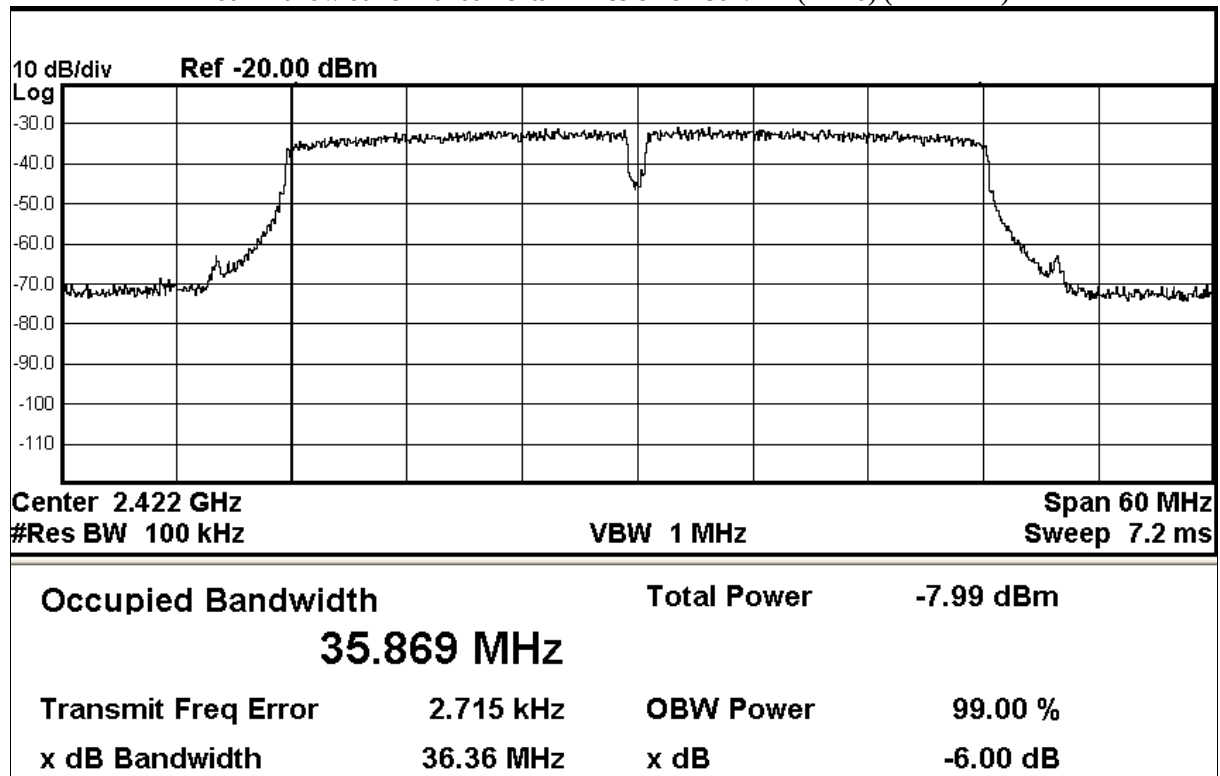
Date : 2019-06-11
No. : HM19030026

Page 75 of 84

Limits for 6dB Spectrum Bandwidth Measurement:

Center Frequency [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2422.0	36.36	> 500

6dB Bandwidth of Fundamental Emission on 802.11n (HT40) (2422MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

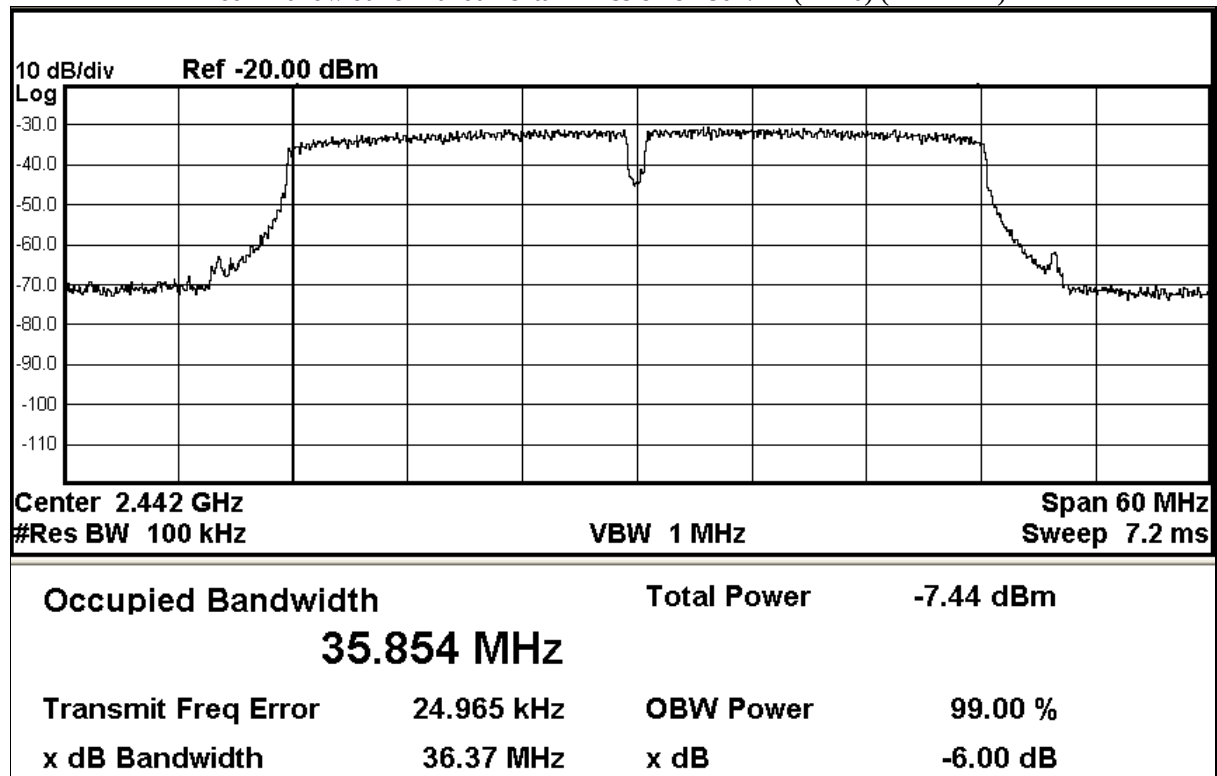
Date : 2019-06-11
No. : HM19030026

Page 76 of 84

Limits for 6dB Spectrum Bandwidth Measurement:

Frequency Range [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2442.0	36.37	> 500

6dB Bandwidth of Fundamental Emission on 802.11n(HT40) (2442MHz)



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

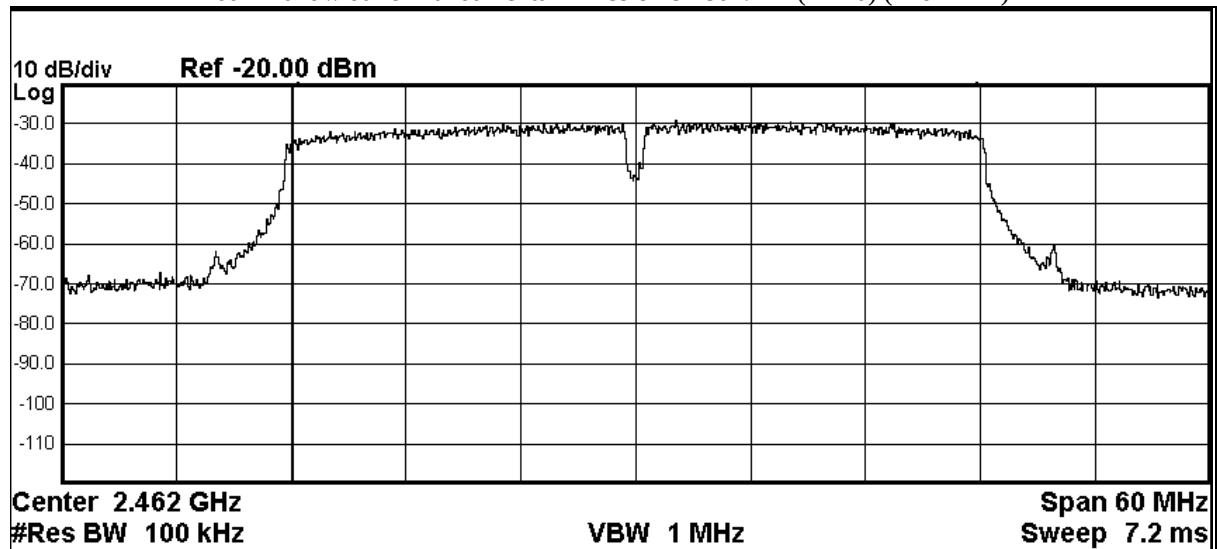
Date : 2019-06-11
No. : HM19030026

Page 77 of 84

Limits for 6dB Spectrum Bandwidth Measurement:

Frequency Range [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2462.0	36.34	> 500

6dB Bandwidth of Fundamental Emission on 802.11n (HT40) (2462MHz)



Occupied Bandwidth
35.842 MHz

Total Power
-6.50 dBm

Transmit Freq Error
41.703 kHz

OBW Power
99.00 %

x dB Bandwidth
36.34 MHz

x dB
-6.00 dB

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 78 of 84

3.1.6 RF Exposure

RF Exposure

Test Requirement: FCC 47CFR 15.247(i)
Test Date: 2019-05-16
Mode of Operation: Tx mode

Requirements:

In 15.247(i), an equipment shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the limits in §§ 1.1310 and 2.1093 of this chapter. Applications to the Commission for construction permits, licenses to transmit or renewals thereof, equipment authorizations or modifications in existing facilities must contain a statement confirming compliance with the limits unless the facility, operation, or transmitter is categorically excluded, as discussed below. Technical information showing the basis for this statement must be submitted to the Commission upon request.

According to KDB447498 D01 General RF Exposure Guidance v06, unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition.

Test Results:

RF Exposure Evaluation

For 802.11b/g/n

The Maximum tune-up power = 9.89dBm (9.76mW)

SAR Test Exclusion Thresholds= 38mW

The test separation distances is ≤ 20 mm

The power tune up tolerance is 8.19 ± 1.70 dBm

Max. duty factor is 100%

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11

Page 79 of 84

No. : HM19030026

RF Exposure Evaluation

Bluetooth (BLE)

Field Strength of Spurious Emissions						
Peak Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2402.0	51.3	27.9	79.2	N/A	N/A	Vertical
2440.0	50.2	27.9	78.1	N/A	N/A	Vertical
2442.0	50.7	27.9	78.6	N/A	N/A	Vertical

Field Strength of Spurious Emissions						
Average Value						
Frequency MHz	Measured Level @3m dBuV	Correction Factor dB/m	Field Strength dBuV/m	Limit @3m dBuV/m	Margin dBuV/m	E-Field Polarity
2402.0	40.3	27.9	68.2	N/A	N/A	Vertical
2440.0	39.8	27.9	67.7	N/A	N/A	Vertical
2442.0	41.1	27.9	69.0	N/A	N/A	Vertical

The Maximum EIRP = -16.1dBm (0.025mW)

SAR Test Exclusion Thresholds= 38mW

The test separation distances is ≤ 20 mm

The power tune up tolerance is 8.19 ± 1.70 dBm

Max. duty factor is 100%

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Taipo Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.



Test Report

Date : 2019-06-11
No. : HM19030026

Page 80 of 84

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 TURN TABLE	EMCO	2088	00029144	N/A	N/A
EM218	ANECCHOIC CHAMBER	ETS-LINDGREN	FACT-3	--	2019/01/24	2020/01/24
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	2018/06/12	2019/06/12
EM276	BROADBAND HORN ANTENNA	A-INFOMW	JXTXLB- 10180-SF	J203109090300 7	2018/04/27	2020/04/27
EM318	USB WIDEBAND POWER SENSOR	AGILENT	U2022XA	MY53470001	2019/03/23	2021/03/23
EM353	LOOP ANTENNA	ETS_LINDGREN	6502	00206533	2018/04/16	2020/04/16

Line Conducted

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM119	LISN	R & S	ESH3-Z5	0831.5518.52	2018/11/13	2019/11/13
EM181	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB7	100072	2018/06/12	2019/06/12
EM179	IMPULSE LIMITER	ROHDE & SCHWARZ	ESH3-Z2	357-8810.52/54	2019/01/24	2020/01/24
EM154	SHIELDING ROOM	SIEMENS MATSUSHITA COMPONENTS	N/A	803-740-057- 99A	2017/02/06	2022/02/06
N/A	MEASUREMENT AND EVALUATION SOFTWARE	ROHDE & SCHWARZ	ESIB-K1	V1.20	N/A	N/A

Remarks:-

CM Corrective Maintenance
N/A Not Applicable
TBD To Be Determined

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

Test Report

Date : 2019-06-11
No. : HM19030026

Page 81 of 84

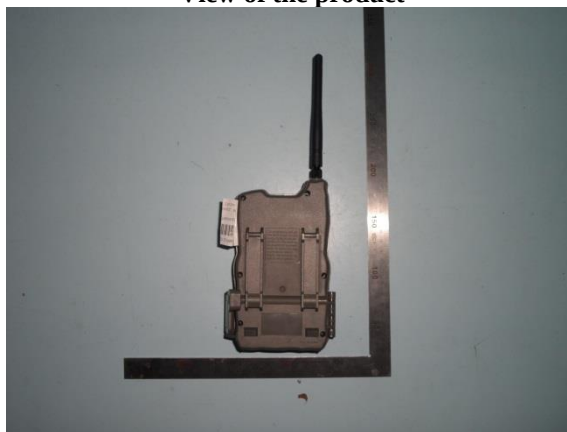
Appendix B

Photographs of EUT

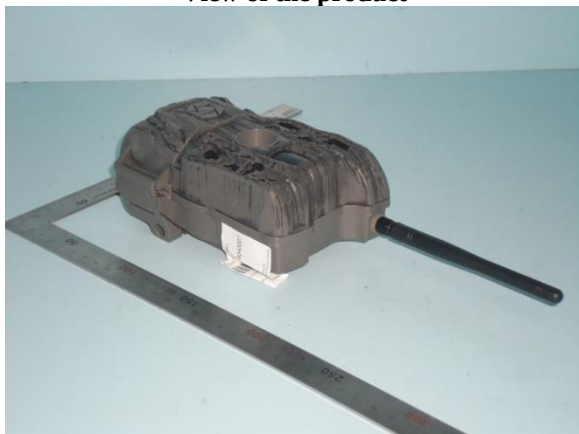
View of the product



View of the product



View of the product



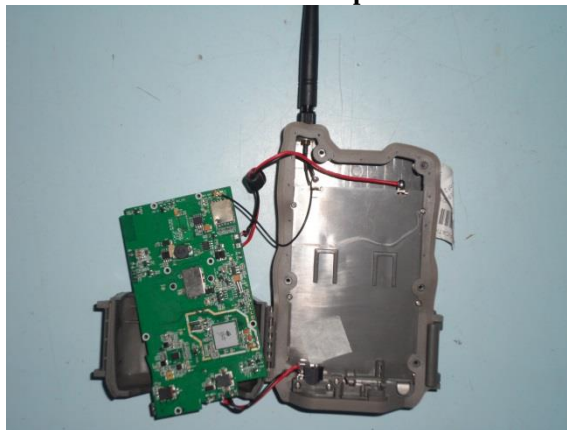
View of the product



View of the product



Inside View of the product



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

Test Report

Date : 2019-06-11
No. : HM19030026

Page 82 of 84

Photographs of EUT

Circuit Top View



Circuit Bottom View



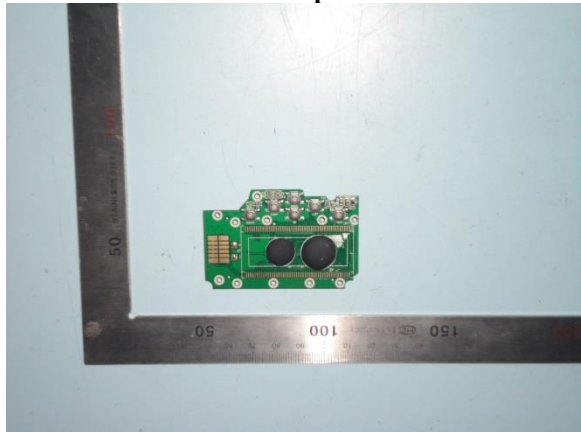
Circuit Bottom View (Shield covered removed)



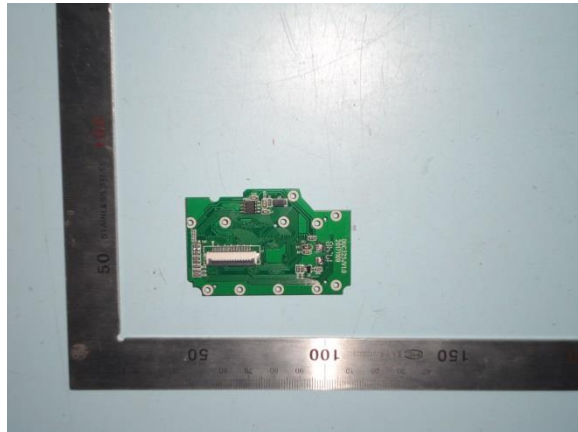
Circuit Bottom View (RF module Zoom)



Circuit Top View



Circuit Bottom View



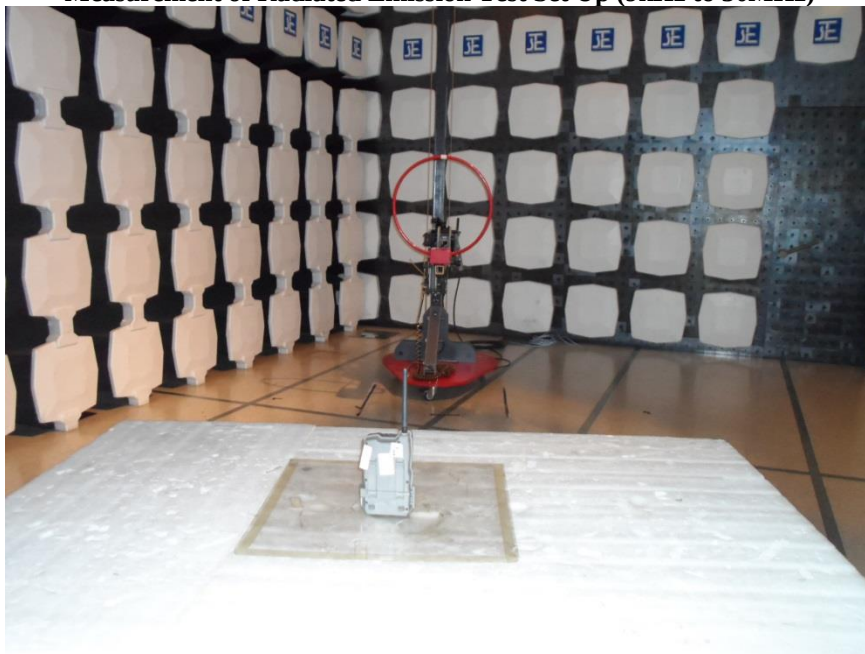
Test Report

Date : 2019-06-11
No. : HM19030026

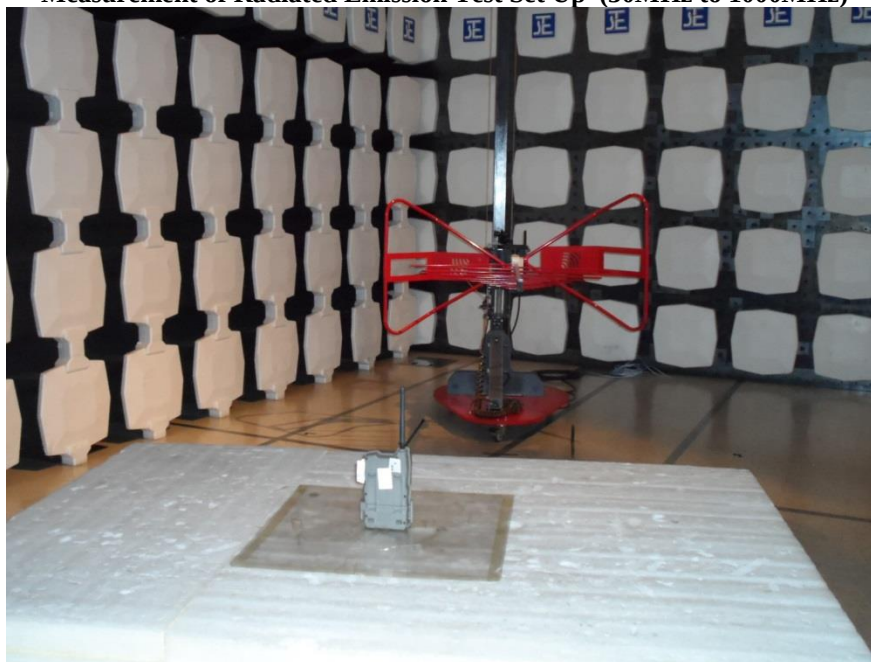
Page 83 of 84

Photographs of EUT

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



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



The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

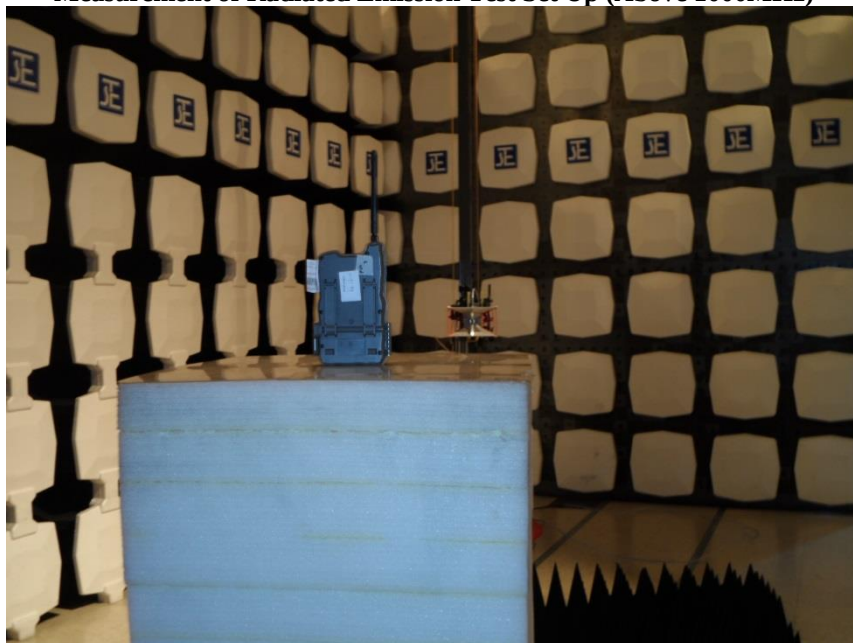
Test Report

Date : 2019-06-11
No. : HM19030026

Page 84 of 84

Photographs of EUT

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



Measurement of Conducted Emission Test Set Up



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

The Hong Kong Standards and Testing Centre Limited

10 Dai Wang Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong

Tel: +852 2666 1888 Fax: +852 2664 4353 Email: hkstc@stc.group Website: www.stc.group

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Limited.

For Conditions of Issuance of this test report, please refer to "Conditions of Issuance of Test Reports" section or Website.

Conditions of Issuance of Test Reports

1. All samples and goods are accepted by The Hong Kong Standards & Testing Centre Limited (the “Company”) solely for testing and reporting in accordance with the following terms and conditions. The Company provides its services on the basis that such terms and conditions constitute express agreement between the Company and any person, firm or company requesting its services (the “Clients”).
2. Any report issued by the Company as a result of this application for testing service (the “Report”) shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to his customer, supplier or other persons directly concerned. Subject to clause 3, the Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.
3. The Company shall be at liberty to disclose the testing-related documents and/or files anytime to any third-party accreditation and/or recognition bodies for audit or other related purposes. No liabilities whatsoever shall attach to the Company's act of disclosure.
4. 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.
5. The results in Report apply only to the sample as received and do not apply to the bulk, unless the sampling has been carried out by the Company and is stated as such in the Report.
6. When a statement of conformity to a specification or standard is provided, the ILAC-G8 Guidance document (and/or IEC Guide 115 in the electrotechnical sector) will be adopted as a decision rule for the determination of conformity unless it is inherent in the requested specification or standard, or otherwise specified in the Report.
7. 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.
8. 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.
9. 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.
10. 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.
11. 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.
12. Issuance records of the Report are available on the internet at www.stc.group. Further enquiry of validity or verification of the Reports should be addressed to the Company.