



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5) Date : 31 May 2017

Application No. : LV010810(0)

Applicant : LICC Manufacturing Co (Far East) Limited
B7, 18F Kong Nam Ind Bldg 603 Castle Peak Road
Tsuen Wan NT
Hong Kong

Sample Description : One(1) item of submitted sample stated to be

Description	Model
USB Dongle	G202, R201

Sample registration No. : RV019180-001
Radio Frequency : 2409.65MHz – 2465.68MHz Transceiver
Rating : USB Bus powered
No. of submitted sample : Four (4) set (s)

Date Received : 13 Apr 2017.

Test Period : 18 Apr 2017 to 24 Apr 2017.

Test Requested : FCC Part 15 Certification, FCC Part 15 Verification Procedure

Test Method : 47 CFR Part 15 (10-1-15 Edition)
ANSI C63.4 – 2014, ANSI C63.10 – 2013

Test Engineer : Mr. Yau Kwok Pun, Stanley

Test Result : See attached sheet(s) from page 2 to 61.

Conclusion : The submitted sample was found to comply with requirement of FCC Part 15
Subpart B and C.

Remark : All two models are the same in circuitry and components; and therefore model
R201 was chosen to be the representative of the test sample. The difference(s)
between the tested model and the declared model(s) is/are model no., color and
sample description.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Mr. WONG Lap-pong, Andrew
Manager
Electrical Division

Page 1 of 61

FCC ID: CWHPTT200D



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Table of Contents

1	General Information	3
1.1	General Description	3
1.2	Location of the test site	4
1.3	List of measuring equipment.....	5
1.4	Measurement Uncertainty.....	6
2	Description of the emission test	7
2.1	Test Procedure	7
2.2	Conducted Emission Measurement Data	8
2.3	Radiated Emission Measurement Data	9
3	Description of the Line-conducted Test	52
3.1	Test Procedure	55
3.2	Test Result	55
4	Photograph	56
4.1	Photographs of the Test Setup for Radiated Emission and Conducted Emission.....	56
4.2	Photographs of the External and Internal Configurations of the EUT	56
4.3	Antenna requirement.....	56
5	Appendices.....	57
A1	Photos of External Configurations.....	58
A2	Antenna Requirement.....	59



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

1 General Information

1.1 General Description

The equipment under test (EUT) is a receiver USB dongle. The EUT is power by USB 5V. It operates at 2409.65 – 2465.68MHz with receive the GFSK signal and oscillated by a 12MHz crystal. When received the control signal from transmitter, it will take the corresponding action such as slide forward, backward in related software (such as Microsoft power point).

The brief circuit description is listed as follows:

- U2, Y1, ANTENNA and its associated circuit act as RF module.
- U1 and its associated circuit act as MCU.
- U3 and its associated circuit act as memory.



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

1.2 Location of the test site

FCC Registered Test Site Number: 416666

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.10 – 2013. A Semi-Anechoic Chamber Testing Site is set up for investigation and located at:

Ground Floor, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
Fo Tan, Shatin,
New Territories,
Hong Kong.

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.10 – 2013. A shielded room is located at :

Ground Floor, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
Fo Tan, Shatin,
New Territories,
Hong Kong.



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

1.3 List of measuring equipment

Equipment	Manufacturer	Model No.	Serial No.	Calibration Due Date	Calibration Period
EMI Test Receiver	Rohde & Schwarz	ESCS30	100001	01 Feb 2018	1Year
EMI Test Receiver	Rohde & Schwarz	ESCI	100152	16 Nov 2017	1Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	101190	12 May 2017	1Year
Spectrum Analyzer	Rohde & Schwarz	FSP30	100628	28 Mar 2018	1Year
Broadband Antenna	Schaffner	CBL6112B	2692	29 Mar 2018	2Years
Loop Antenna	EMCO	6502	00056620	25 Jan 2018	2Years
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-531	21 Dec 2017	2Years
Broadband Pre-Amplifier	Schwarzbeck	BBV 9718	9718-119	21 Dec 2017	2Years
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170442	02 Aug 2017	2Years
Broadband Pre-Amplifier	Schwarzbeck	BBV 9719	9719-010	02 Aug 2017	2Years
Coaxial Cable	Schaffner	RG 213/U	N/A	18 May 2017	1Year
Coaxial Cable	Suhner	RG 214/U	N/A	18 May 2017	1Year
Coaxial Cable	Suhner	Sucoflex_104	N/A	21 Dec 2017	1Year
LISN	Rohde & Schwarz	ENV216	101323	10 Nov 2017	1Year
Coaxial Cable	Tyco Electronics	RG 58C/U	N/A	29 Oct 2017	1Year
Rohde & Schwarz TS8997 Testing System					
Spectrum Analyzer	Rohde & Schwarz	FSV 40	101190	12 May 2017	1Year
Vector Generator	Rohde & Schwarz	SMBV100A	262024	04 May 2017	1Year
Generator	Rohde & Schwarz	SMB100A	103230	24 May 2017	1Year
OSP	Rohde & Schwarz	OSP	OSP120 V02	06 Jun 2017	1Year

Support Equipment (Supplied by CMA):

- Lenovo ThinkPad (Model: X260)

Support Equipment (Supplied by Client):

- N/A



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

1.4 Measurement Uncertainty

The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a level of confidence of approximately 95%.

Radiated emissions

Frequency	Uncertainty (U_{lab})
30MHz ~ 200MHz (Horizontal)	4.83dB
30MHz ~ 200MHz (Vertical)	4.84dB
200MHz ~ 1000MHz (Horizontal)	4.87dB
200MHz ~ 1000MHz (Vertical)	5.94dB
1GHz ~ 6GHz	4.41dB
6GHz ~ 18GHz	4.64dB

Line-conducted emissions

Frequency	Uncertainty (U_{lab})
150kHz~30MHz	2.64dB



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

2 Description of the emission test

2.1 Test Procedure

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.10 – 2013.

The equipment under test (EUT) was placed on a non-conductive turntable with dimensions of 1.5m x 0.4m and 0.8m high above the ground for below 1GHz measurement and 1.5m high above the ground for above 1GHz measurement. 3m from the EUT, a broadband antenna mounting on the mast received the signal strength. The turntable was rotated to maximize the emission level. The antenna was then moving along the mast from 1m up to 4m until no more higher value was found. Both horizontal and vertical polarization of the antenna were placed and investigated.

For below 30MHz, a loop antenna with its vertical plane is placed 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1 m above the ground.

For 30MHz to 1GHz, broadband antenna with its vertical and horizontal plane is placed 3m from the EUT and rotated about its vertical and horizontal axis for maximum response at each azimuth about the EUT. And the reference point of antenna shall be 1 m above the ground.

For above 1GHz, horn antenna with its vertical and horizontal plane is placed 3m from the EUT and rotated about its vertical and horizontal axis for maximum response at each azimuth about the EUT. Preamplifier and High Pass filter was used for measurements. The reference point of antenna shall be 1 m above the ground.

The device was rotated through three orthogonal axes to determine which attitude and configuration produce the highest emission during measurement for Radiated Emission measurement.

The EUT will connect to TS 8997 testing system for direct conducted measurement.



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

2.2 Conducted Emission Measurement Data

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	24	° C
Relative humidity:	61	%

Summary

Test	Frequency (MHz)	Result
RF output power	2409.65	PASS
Power Spectral Density	2409.65	PASS
Minimum Emission Bandwidth 6 dB	2409.65	PASS
Band Edge low	2409.65	PASS
Tx Spurious Emission	2409.65	PASS
Rx Spurious Emission	2409.65	PASS
RF output power	2436.69	PASS
Power Spectral Density	2436.69	PASS
Minimum Emission Bandwidth 6 dB	2436.69	PASS
Tx Spurious Emission	2436.69	PASS
Rx Spurious Emission	2436.69	PASS
RF output power	2465.68	PASS
Power Spectral Density	2465.68	PASS
Minimum Emission Bandwidth 6 dB	2465.68	PASS
Band Edge high	2465.68	PASS
Tx Spurious Emission	2465.68	PASS
Rx Spurious Emission	2465.68	PASS



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

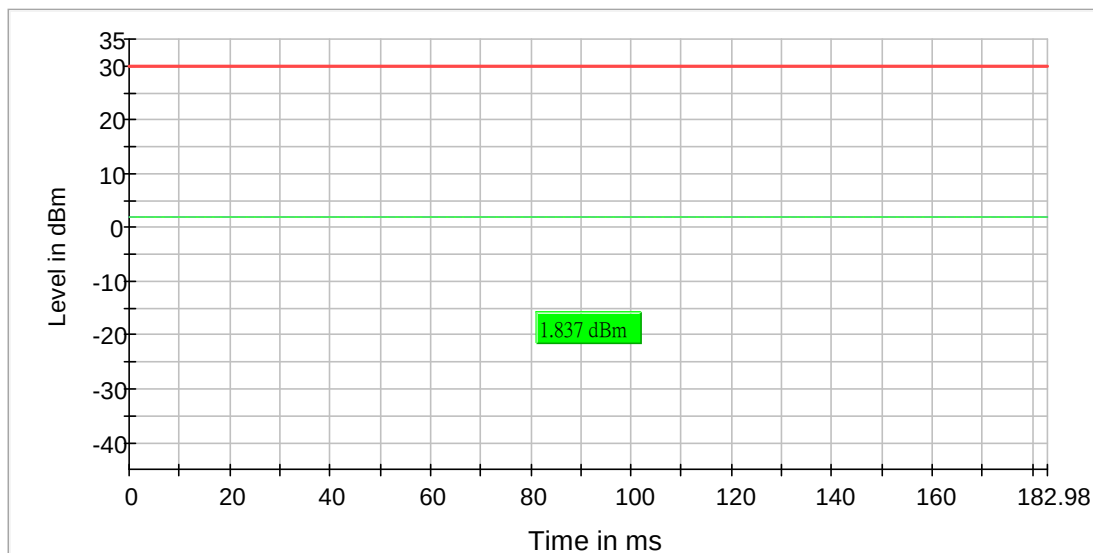
Date : 31 May 2017

RF output power (2409.65 MHz)

Test according to FCC title 47 part 15 §15.247(b) and ANSI C63.10.

Result

DUT Frequency (MHz)	Gated EIRP (dBm)	Limit Max (dBm)	Duty Cycle (%)	Result
2409.650000	1.8	30.0	18.452	PASS





CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

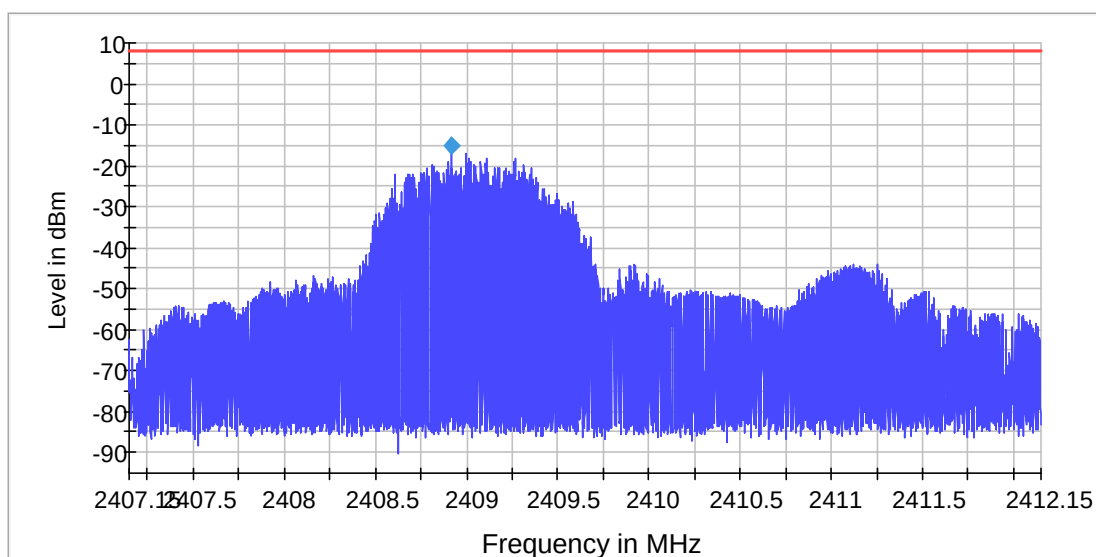
Report No. : AV0023778(5)

Date : 31 May 2017

Power Spectral Density (2409.65 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2409.650000	2408.918896	-15.036	8.0	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40715 GHz	2.40715 GHz
Stop Frequency	2.41215 GHz	2.41215 GHz
Span	5.000 MHz	5.000 MHz
RBW	3.000 kHz	<= 3.000 kHz
VBW	10.000 kHz	>= 9.000 kHz
SweepPoints	3333	~ 3333
SweepTime	3.340 s	3.333 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150
Stable	3 / 3	3



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

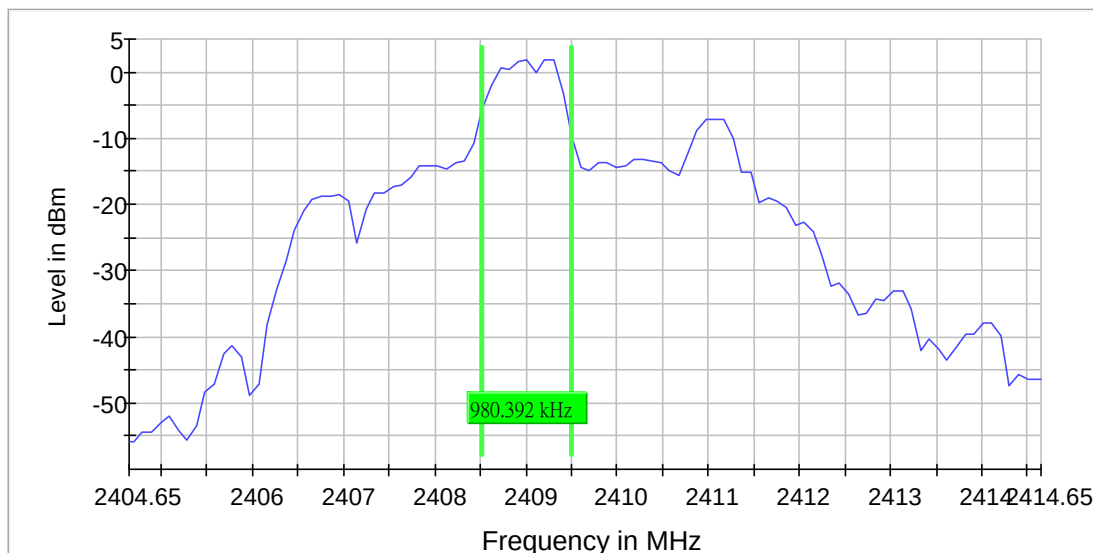
Date : 31 May 2017

Minimum Emission Bandwidth 6 dB (2409.65 MHz)

Test according to FCC title 47 part 15 §15.247(a) and ANSI C63.10.

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2409.650000	0.980392	0.500000	---	2408.522549	2409.502941	1.8	PASS





CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40465 GHz	2.40465 GHz
Stop Frequency	2.41465 GHz	2.41465 GHz
Span	10.000 MHz	10.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 100
SweepTime	37.924 μ s	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	72 / max. 150	max. 150
Stable	15 / 15	15



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Band Edge low (2409.65 MHz)

Test according to FCC title 47 part 15 §15.247(d) and ANSI C63.10.

Result

DUT Frequency (MHz)	Result
2409.650000	PASS

Inband Peak

Frequency (MHz)	Level (dBm)
2408.969629	-5.6

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2360.946696	-51.4	25.8	-25.6	PASS
2360.896724	-51.4	25.8	-25.6	PASS
2361.046641	-52.1	26.5	-25.6	PASS
2360.996669	-52.3	26.7	-25.6	PASS
2361.096613	-53.0	27.4	-25.6	PASS
2361.146585	-53.1	27.5	-25.6	PASS
2361.196557	-53.2	27.6	-25.6	PASS
2360.846752	-53.2	27.6	-25.6	PASS
2361.246530	-53.4	27.8	-25.6	PASS
2360.796780	-53.6	28.0	-25.6	PASS
2360.696835	-53.7	28.1	-25.6	PASS
2361.296502	-53.8	28.2	-25.6	PASS
2360.746807	-53.9	28.3	-25.6	PASS
2396.926707	-55.1	29.5	-25.6	PASS
2396.826763	-55.2	29.6	-25.6	PASS



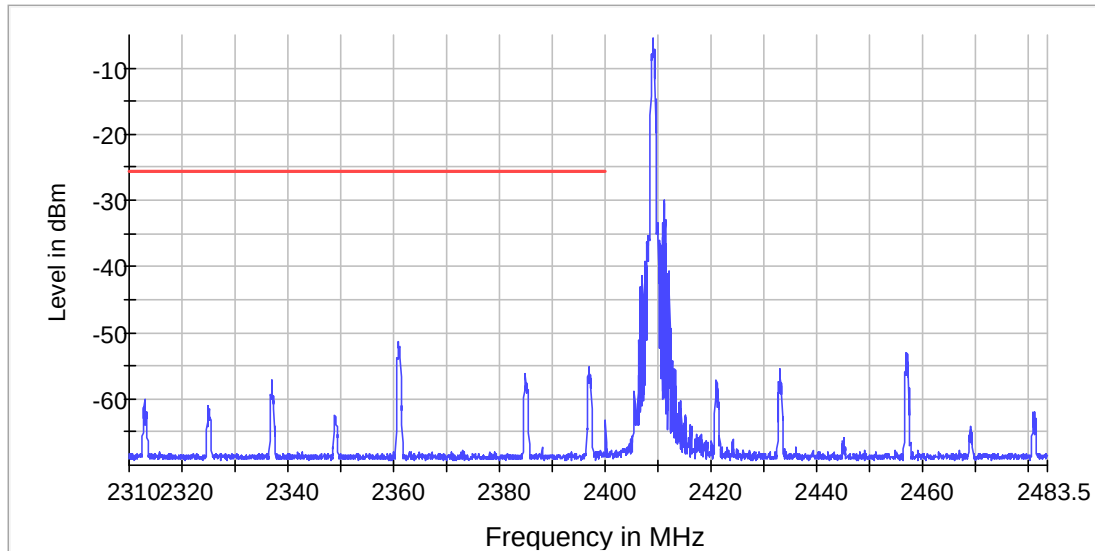
CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017





CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	≤ 100.000 kHz
VBW	300.000 kHz	≥ 300.000 kHz
SweepPoints	1670	~ 1670
SweepTime	1.670 s	1.670 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	3	3
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 15	max. 15
Stable	3 / 3	3

Measurement 2

Setting	Instrument Value	Target Value
RBW	100.000 kHz	≤ 100.000 kHz
VBW	300.000 kHz	≥ 300.000 kHz
SweepPoints	1800	~ 1800
SweepTime	1.800 s	1.800 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	3	3
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 15	max. 15
Stable	3 / 3	3



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Tx Spurious Emission (2409.65 MHz)

Test according to FCC title 47 part 15 §15.247(d) and ANSI C63.10.

Result

DUT Frequency (MHz)	Result
2409.650000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
2360.764013	-42.7	-52.0	-41.2	10.8	PASS
2372.259907	-45.9	-76.1	-41.2	34.9	PASS
4818.491504	-31.3	-41.8	-41.2	0.6	PASS

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
4818.491504	-31.3	-9.9	-41.2
4817.491615	-31.3	-9.9	-41.2
4817.991560	-31.3	-9.9	-41.2
4818.991449	-31.3	-9.9	-41.2
4816.991670	-32.8	-8.5	-41.2
4819.491394	-34.1	-7.1	-41.2
4815.491836	-37.7	-3.6	-41.2
4815.991781	-38.1	-3.1	-41.2
4816.491726	-39.2	-2.0	-41.2
4814.991892	-39.3	-1.9	-41.2
2360.764013	-42.7	1.5	-41.2
2360.264191	-43.0	1.7	-41.2
2361.263834	-43.0	1.8	-41.2
2361.763656	-45.1	3.9	-41.2
4819.991338	-45.8	4.6	-41.2

Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	1000.000000	1	1
1000.000000	2400.000000	2	2
2400.000000	2483.500000	2	2
2483.500000	7000.000000	2	2
7000.000000	26000.000000	2	2



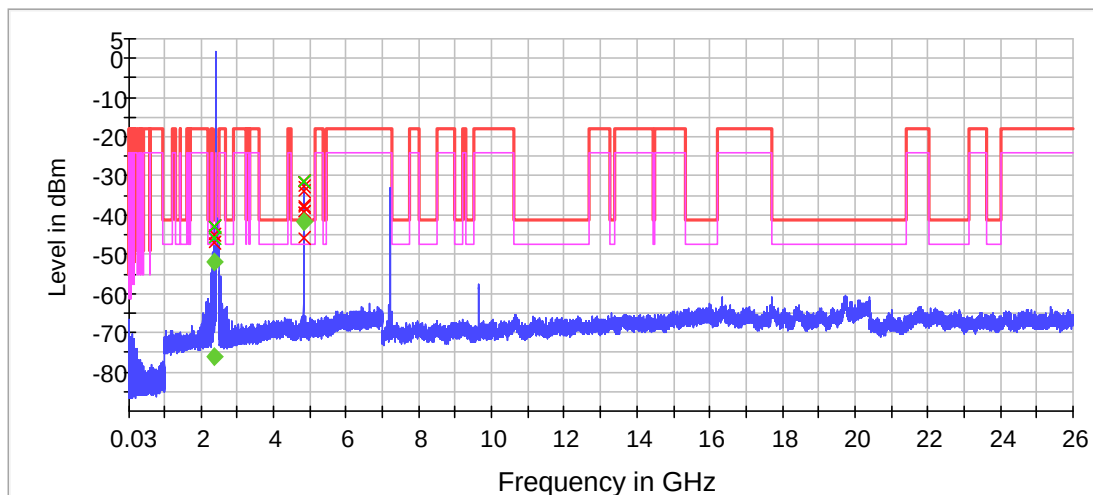
CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017





CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Pre Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	19400	~ 19400
SweepTime	19.400 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	30	30
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150
Stable	3 / 3	3

Pre Measurement 2

Setting	Instrument Value	Target Value
RBW	1.000 MHz	<= 1.000 MHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	2800	~ 2800
SweepTime	2.800 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	30	30
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150
Stable	3 / 3	3

Final Measurement 2

Setting	Instrument Value	Target Value
Span	ZeroSpan	ZeroSpan
RBW	1.000 MHz	~ 1.000 MHz
VBW	3.000 MHz	~ 3.000 MHz
SweepPoints	10001	~ 10001
SweepTime	1.000 s	1.000 s
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 dB	0.000 dB
Detector	RMS	RMS
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Clear Write	Clear Write
SweepType	Sweep	AUTO
Preamp	off	off



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Rx Spurious Emission (2409.65 MHz)

Test according to FCC title 47 part 15 §15.247(d) and ANSI C63.10.

Result

DUT Frequency (MHz)	Result
2409.650000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
19781.827272	-59.8	18.5	-41.2
19724.830272	-60.0	18.7	-41.2
19735.829693	-60.0	18.7	-41.2
19716.830693	-60.4	19.1	-41.2
19704.831325	-60.4	19.2	-41.2
19702.831430	-60.8	19.6	-41.2
19745.829167	-60.8	19.6	-41.2
19714.830798	-60.8	19.6	-41.2
19717.830640	-60.9	19.6	-41.2
19760.828377	-60.9	19.7	-41.2
16366.007052	-61.0	19.8	-41.2
19742.829325	-61.0	19.8	-41.2
19687.832219	-61.1	19.8	-41.2
19756.828588	-61.1	19.9	-41.2
19729.830009	-61.1	19.9	-41.2

Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	1000.000000	1	1
1000.000000	7000.000000	2	2
7000.000000	26000.000000	2	2



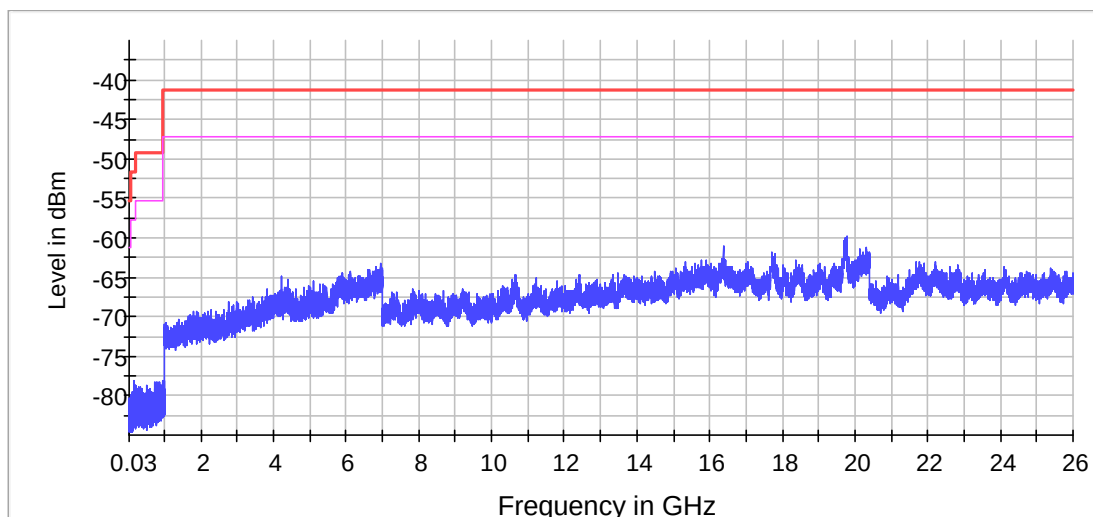
CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017



— Limit [limit.Result:1] × Threshold [limit.2.Result:1]



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Pre Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	9700	~ 9700
SweepTime	9.700 ms	AUTO
Reference Level	-67.000 dBm	-67.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150
Stable	3 / 3	3

Pre Measurement 2

Setting	Instrument Value	Target Value
RBW	1.000 MHz	<= 1.000 MHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	6000	~ 6000
SweepTime	6.000 ms	AUTO
Reference Level	-67.000 dBm	-67.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150
Stable	3 / 3	3



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

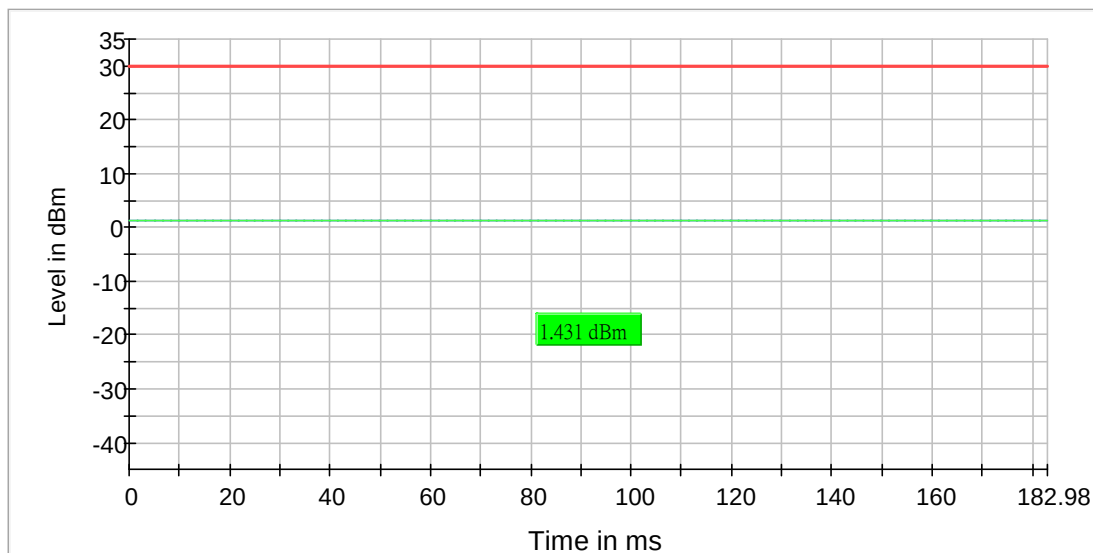
Date : 31 May 2017

RF output power (2435.69 MHz)

Test according to FCC title 47 part 15 §15.247(b) and ANSI C63.10.

Result

DUT Frequency (MHz)	Gated EIRP (dBm)	Limit Max (dBm)	Duty Cycle (%)	Result
2435.690000	1.4	30.0	18.478	PASS





CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

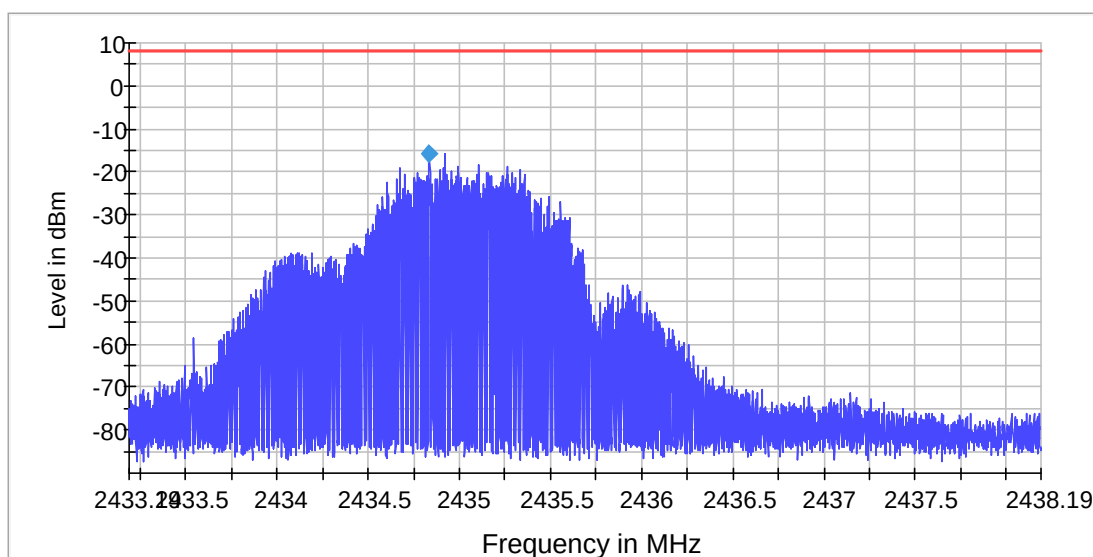
Report No. : AV0023778(5)

Date : 31 May 2017

Power Spectral Density (2435.69 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2435.690000	2434.837421	-15.647	8.0	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43319 GHz	2.43319 GHz
Stop Frequency	2.43819 GHz	2.43819 GHz
Span	5.000 MHz	5.000 MHz
RBW	3.000 kHz	<= 3.000 kHz
VBW	10.000 kHz	>= 9.000 kHz
SweepPoints	3333	~ 3333
SweepTime	3.340 s	3.333 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150
Stable	3 / 3	3



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

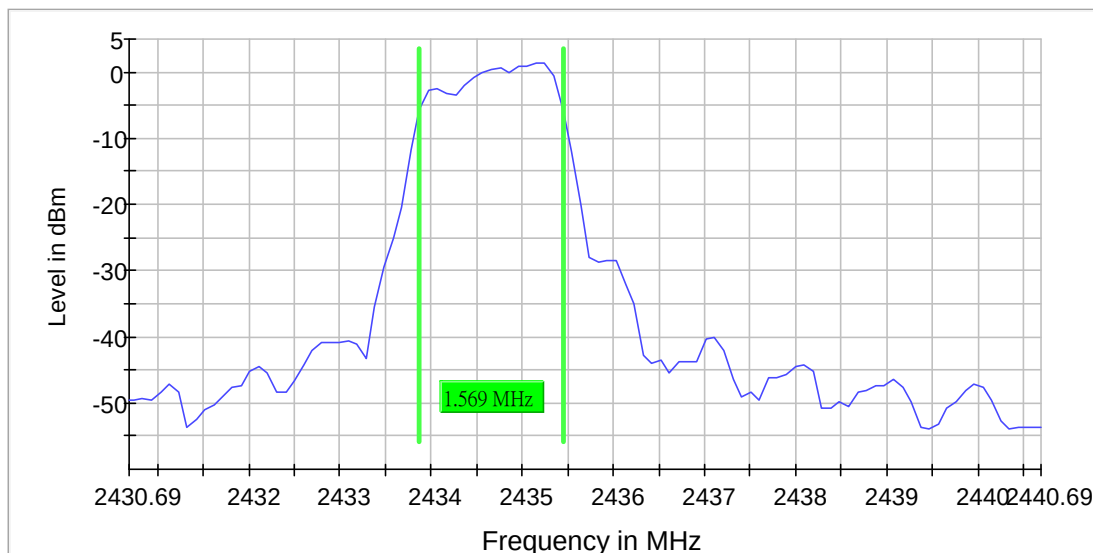
Date : 31 May 2017

Minimum Emission Bandwidth 6 dB (2435.69 MHz)

Test according to FCC title 47 part 15 §15.247(a) and ANSI C63.10.

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2435.690000	1.568627	0.500000	---	2433.876275	2435.444902	1.4	PASS





CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43069 GHz	2.43069 GHz
Stop Frequency	2.44069 GHz	2.44069 GHz
Span	10.000 MHz	10.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 100
SweepTime	37.924 μ s	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	69 / max. 150	max. 150
Stable	15 / 15	15



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Tx Spurious Emission (2435.69 MHz)

Test according to FCC title 47 part 15 §15.247(d) and ANSI C63.10.

Result

DUT Frequency (MHz)	Result
2435.690000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
4870.485748	-31.0	-41.7	-41.2	0.5	PASS
7306.058996	-40.2	-52.4	-41.2	11.2	PASS

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
4870.485748	-31.0	-10.2	-41.2
4869.485859	-31.0	-10.2	-41.2
4870.985693	-31.0	-10.2	-41.2
4869.985804	-31.6	-9.7	-41.2
4868.985914	-32.5	-8.7	-41.2
4871.485638	-34.4	-6.8	-41.2
4868.485970	-39.4	-1.8	-41.2
7306.058996	-40.2	-1.0	-41.2
7304.277858	-40.2	-1.0	-41.2
7304.871571	-40.4	-0.8	-41.2
7306.652709	-40.7	-0.6	-41.2
7305.465283	-40.7	-0.5	-41.2
7303.684145	-42.3	1.1	-41.2
4871.985582	-42.8	1.6	-41.2
7307.246422	-49.0	7.7	-41.2

Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	1000.000000	1	1
1000.000000	2400.000000	2	2
2400.000000	2483.500000	2	2
2483.500000	7000.000000	2	2
7000.000000	26000.000000	2	2



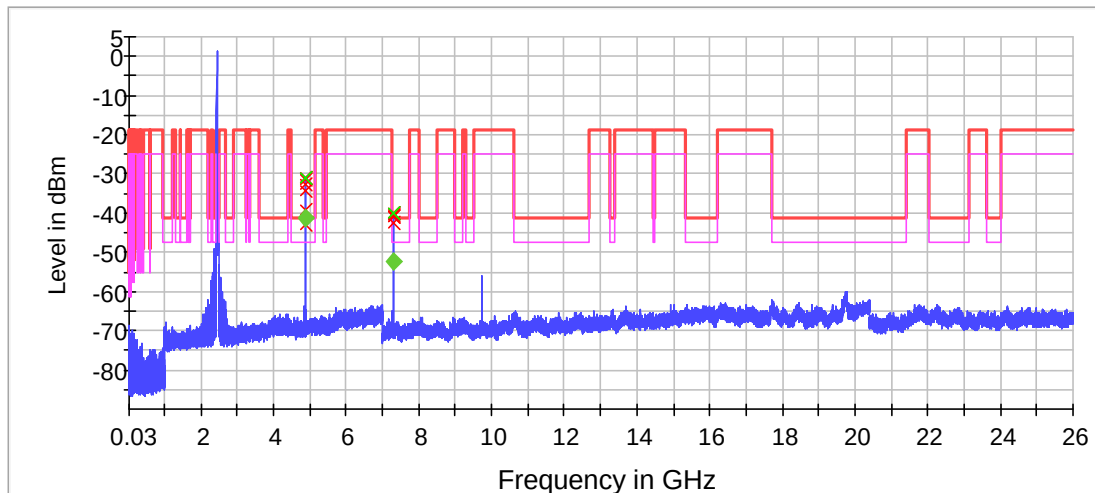
CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017



× Limit [limit.Result:1] × Sum Level [trace.Result:1]
◆ Threshold [limit 2.Result:1] ◆ Critical [Over Limit.Result:1]



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Pre Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	19400	~ 19400
SweepTime	19.400 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	30	30
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150
Stable	3 / 3	3

Pre Measurement 2

Setting	Instrument Value	Target Value
RBW	1.000 MHz	<= 1.000 MHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	2800	~ 2800
SweepTime	2.800 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	30	30
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150
Stable	3 / 3	3

Final Measurement 2

Setting	Instrument Value	Target Value
Span	ZeroSpan	ZeroSpan
RBW	1.000 MHz	~ 1.000 MHz
VBW	3.000 MHz	~ 3.000 MHz
SweepPoints	10001	~ 10001
SweepTime	1.000 s	1.000 s
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 dB	0.000 dB
Detector	RMS	RMS
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Clear Write	Clear Write
SweepType	Sweep	AUTO
Preamp	off	off



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Rx Spurious Emission (2435.69 MHz)

Test according to FCC title 47 part 15 §15.247(d) and ANSI C63.10.

Result

DUT Frequency (MHz)	Result
2435.690000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
19781.827272	-60.4	19.2	-41.2
19734.829746	-60.4	19.2	-41.2
19782.827220	-60.4	19.2	-41.2
19758.828483	-60.5	19.3	-41.2
19752.828798	-60.6	19.3	-41.2
19736.829641	-60.6	19.4	-41.2
19730.829956	-60.9	19.7	-41.2
19723.830325	-61.0	19.7	-41.2
19733.829798	-61.1	19.9	-41.2
19714.830798	-61.1	19.9	-41.2
17715.936003	-61.1	19.9	-41.2
19695.831798	-61.2	19.9	-41.2
19705.831272	-61.2	20.0	-41.2
19708.831114	-61.3	20.1	-41.2
19729.830009	-61.3	20.1	-41.2

Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	1000.000000	1	1
1000.000000	7000.000000	2	2
7000.000000	26000.000000	2	2



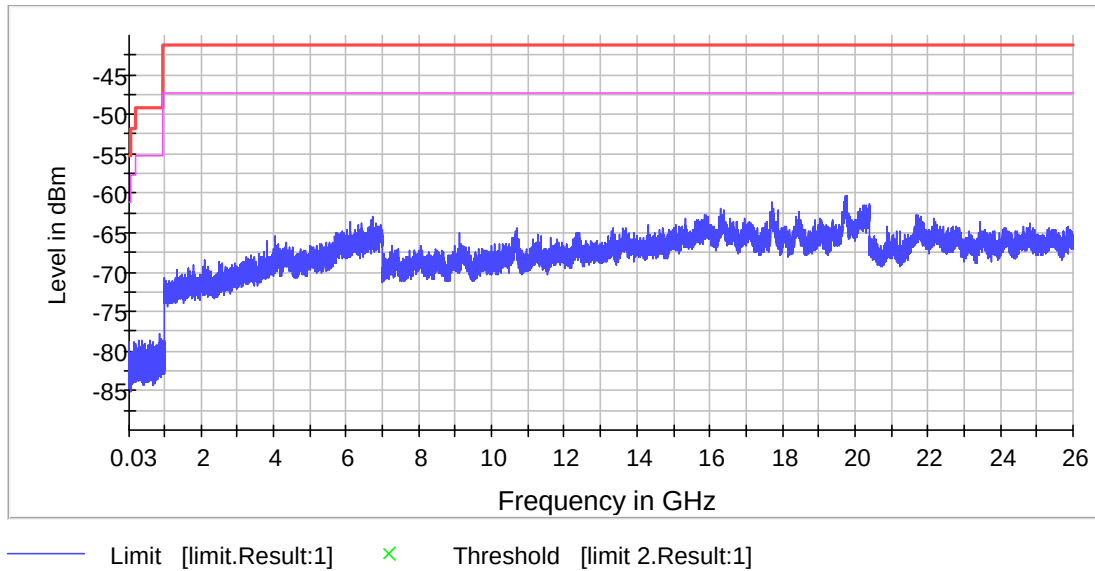
CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017





CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Pre Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	9700	~ 9700
SweepTime	9.700 ms	AUTO
Reference Level	-67.000 dBm	-67.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150
Stable	3 / 3	3

Pre Measurement 2

Setting	Instrument Value	Target Value
RBW	1.000 MHz	<= 1.000 MHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	6000	~ 6000
SweepTime	6.000 ms	AUTO
Reference Level	-67.000 dBm	-67.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150
Stable	3 / 3	3



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

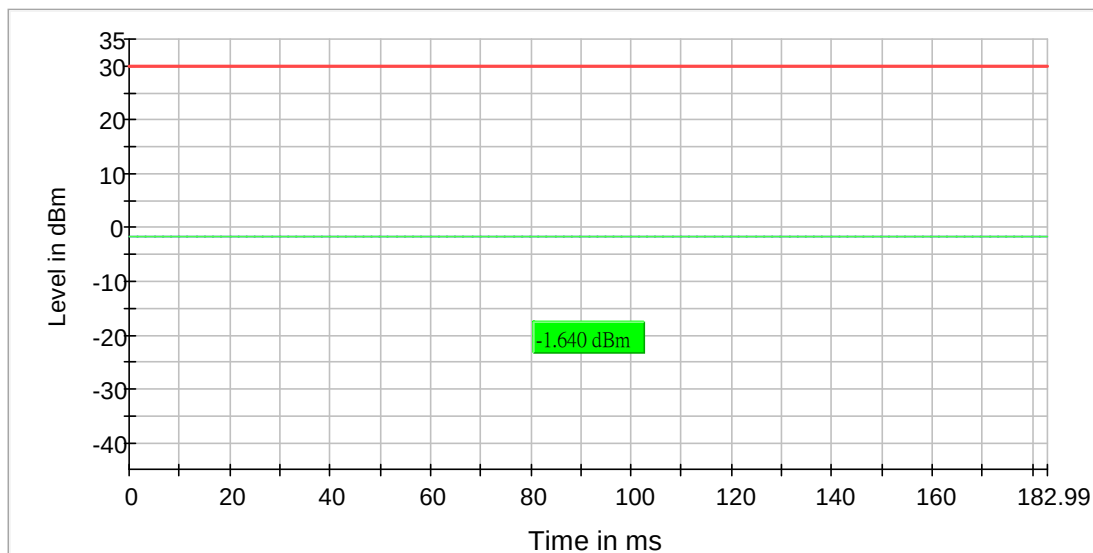
Date : 31 May 2017

RF output power (2465.68 MHz)

Test according to FCC title 47 part 15 §15.247(b) and ANSI C63.10.

Result

DUT Frequency (MHz)	Gated EIRP (dBm)	Limit Max (dBm)	Duty Cycle (%)	Result
2465.680000	-1.6	30.0	18.480	PASS





CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

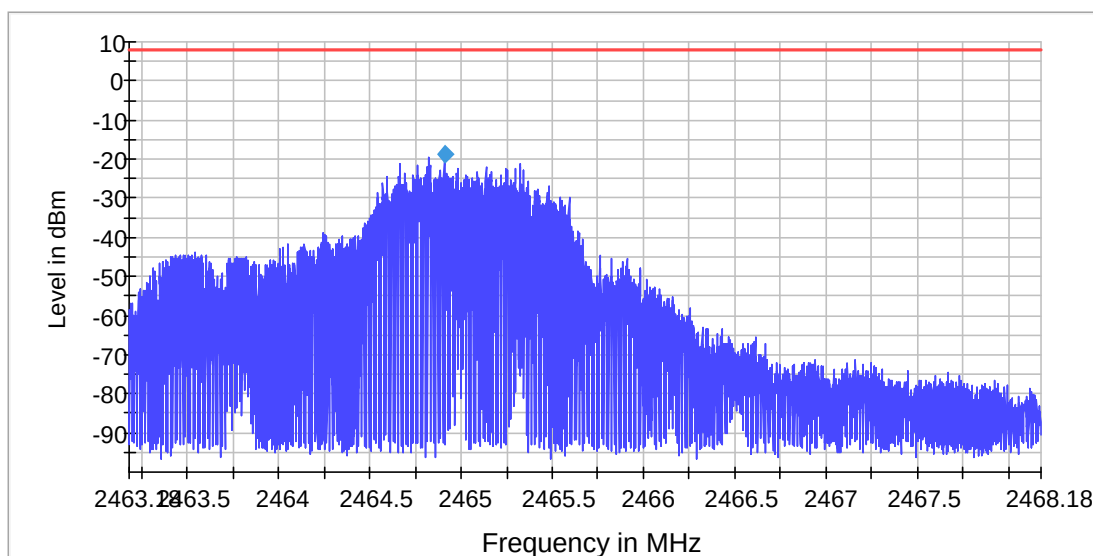
Report No. : AV0023778(5)

Date : 31 May 2017

Power Spectral Density (2465.68 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2465.680000	2464.906905	-18.710	8.0	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.46318 GHz	2.46318 GHz
Stop Frequency	2.46818 GHz	2.46818 GHz
Span	5.000 MHz	5.000 MHz
RBW	3.000 kHz	<= 3.000 kHz
VBW	10.000 kHz	>= 9.000 kHz
SweepPoints	3333	~ 3333
SweepTime	3.340 s	3.333 s
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	RMS	RMS
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150
Stable	3 / 3	3



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

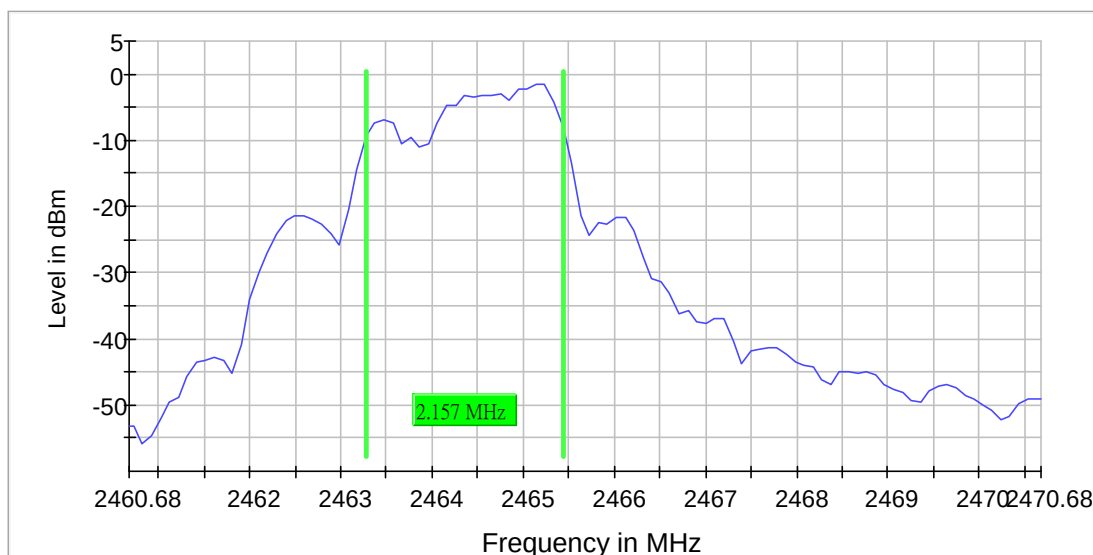
Date : 31 May 2017

Minimum Emission Bandwidth 6 dB (2465.68 MHz)

Test according to FCC title 47 part 15 §15.247(a) and ANSI C63.10.

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2465.680000	2.156863	0.500000	---	2463.278039	2465.434902	-1.6	PASS





CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.46068 GHz	2.46068 GHz
Stop Frequency	2.47068 GHz	2.47068 GHz
Span	10.000 MHz	10.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 100
SweepTime	37.924 μ s	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	79 / max. 150	max. 150
Stable	15 / 15	15



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Band Edge high (2465.68 MHz)

Test according to FCC title 47 part 15 §15.247(d) and ANSI C63.10.

Result

DUT Frequency (MHz)	Result
2465.680000	PASS

Inband Peak

Frequency (MHz)	Level (dBm)
2464.886146	-9.5

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2488.858761	-51.4	22.0	-29.5	PASS
2488.908610	-51.4	22.0	-29.5	PASS
2488.759063	-52.4	22.9	-29.5	PASS
2488.808912	-52.4	23.0	-29.5	PASS
2488.958459	-52.9	23.4	-29.5	PASS
2489.058157	-52.9	23.5	-29.5	PASS
2488.709215	-53.0	23.6	-29.5	PASS
2489.207704	-53.2	23.8	-29.5	PASS
2489.108006	-53.3	23.8	-29.5	PASS
2488.659366	-53.4	23.9	-29.5	PASS
2489.257553	-53.7	24.3	-29.5	PASS
2489.157855	-53.8	24.3	-29.5	PASS
2489.307402	-54.1	24.7	-29.5	PASS
2489.008308	-54.5	25.0	-29.5	PASS
2488.609517	-54.8	25.4	-29.5	PASS



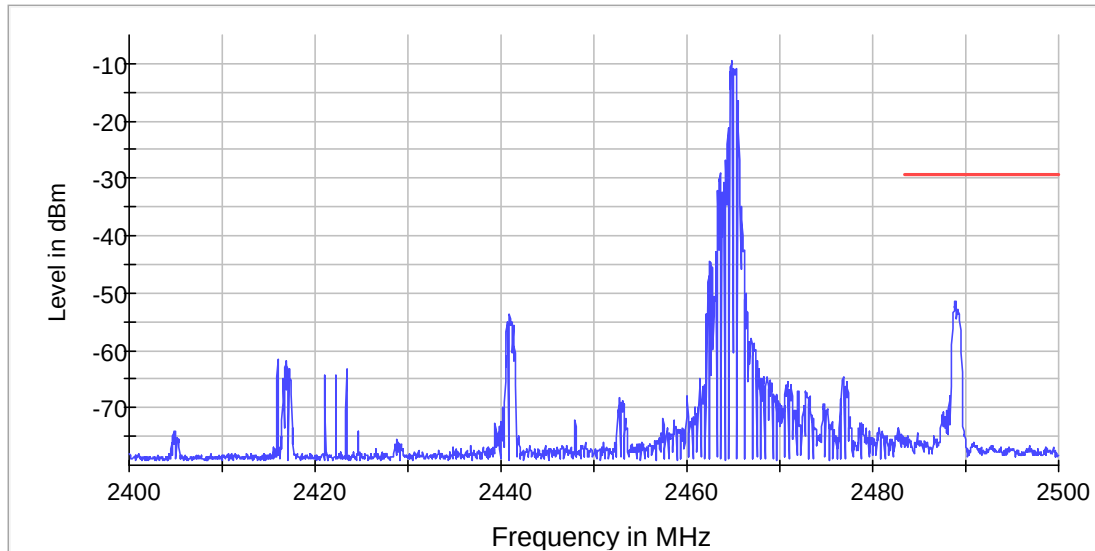
CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017





CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1670	~ 1670
SweepTime	1.670 s	1.670 s
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	RMS	RMS
SweepCount	3	3
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 15	max. 15
Stable	3 / 3	3

Measurement 2

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	330	~ 330
SweepTime	330.000 ms	330.000 ms
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	RMS	RMS
SweepCount	3	3
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 15	max. 15
Stable	3 / 3	3



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Tx Spurious Emission (2465.68 MHz)

Test according to FCC title 47 part 15 §15.247(d) and ANSI C63.10.

Result

DUT Frequency (MHz)	Result
2465.680000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
2489.749308	-43.1	-56.4	-41.2	15.1	PASS
4929.479217	-41.7	-52.1	-41.2	10.9	PASS
7390.959940	-45.1	-70.0	-41.2	28.7	PASS
7394.522217	-35.6	-46.7	-41.2	5.5	PASS

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
7394.522217	-35.6	-5.6	-41.2
7396.303356	-35.7	-5.6	-41.2
7393.928504	-35.7	-5.5	-41.2
7395.709643	-35.9	-5.3	-41.2
7395.115930	-36.1	-5.2	-41.2
7396.897069	-37.6	-3.6	-41.2
7393.334792	-38.6	-2.6	-41.2
4929.479217	-41.7	0.4	-41.2
4930.479107	-41.7	0.5	-41.2
4929.979162	-41.9	0.7	-41.2
4930.979051	-42.0	0.8	-41.2
4928.979273	-42.1	0.8	-41.2
4928.479328	-42.8	1.6	-41.2
2489.749308	-43.1	1.9	-41.2
2489.249364	-43.1	1.9	-41.2

Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	1000.000000	1	1
1000.000000	2400.000000	2	2
2400.000000	2483.500000	2	2
2483.500000	7000.000000	2	2
7000.000000	26000.000000	2	2



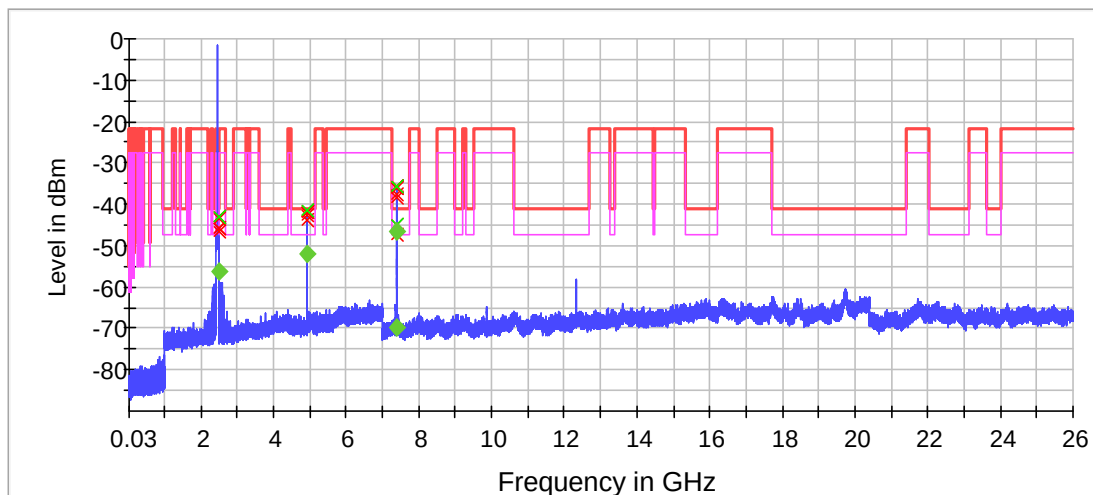
CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017



× Limit [limit.Result:1] × Sum Level [trace.Result:1]
◆ Threshold [limit 2.Result:1] ◆ Critical [Over Limit.Result:1]



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Pre Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	19400	~ 19400
SweepTime	19.400 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	30	30
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150
Stable	3 / 3	3

Pre Measurement 2

Setting	Instrument Value	Target Value
RBW	1.000 MHz	<= 1.000 MHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	2800	~ 2800
SweepTime	2.800 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	30	30
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150
Stable	3 / 3	3

Final Measurement 2

Setting	Instrument Value	Target Value
Span	ZeroSpan	ZeroSpan
RBW	1.000 MHz	~ 1.000 MHz
VBW	3.000 MHz	~ 3.000 MHz
SweepPoints	10001	~ 10001
SweepTime	1.000 s	1.000 s
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 dB	0.000 dB
Detector	RMS	RMS
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Clear Write	Clear Write
SweepType	Sweep	AUTO
Preamp	off	off



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Rx Spurious Emission (2465.68 MHz)

Test according to FCC title 47 part 15 §15.247(d) and ANSI C63.10.

Result

DUT Frequency (MHz)	Result
2465.680000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
19743.829272	-59.9	18.6	-41.2
19755.828641	-60.6	19.3	-41.2
19735.829693	-60.7	19.5	-41.2
20388.795327	-60.9	19.7	-41.2
19723.830325	-60.9	19.7	-41.2
19722.830377	-61.0	19.7	-41.2
19729.830009	-61.0	19.7	-41.2
19708.831114	-61.0	19.8	-41.2
20156.807536	-61.1	19.8	-41.2
19757.828535	-61.1	19.8	-41.2
19773.827693	-61.1	19.9	-41.2
19713.830851	-61.1	19.9	-41.2
19674.832904	-61.1	19.9	-41.2
19760.828377	-61.2	20.0	-41.2
19715.830746	-61.3	20.1	-41.2

Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	1000.000000	1	1
1000.000000	7000.000000	2	2
7000.000000	26000.000000	2	2



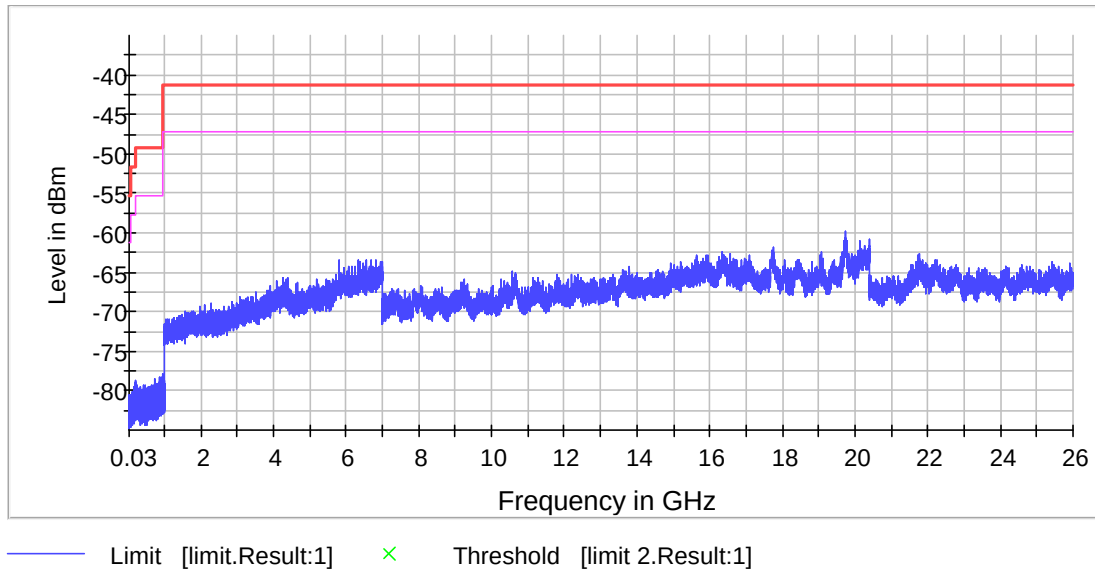
CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017





CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Pre Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	9700	~ 9700
SweepTime	9.700 ms	AUTO
Reference Level	-67.000 dBm	-67.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150
Stable	3 / 3	3

Pre Measurement 2

Setting	Instrument Value	Target Value
RBW	1.000 MHz	<= 1.000 MHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	6000	~ 6000
SweepTime	6.000 ms	AUTO
Reference Level	-67.000 dBm	-67.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150
Stable	3 / 3	3



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

2.3 Radiated Emission Measurement Data

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	24	°C
Relative humidity:	61	%

Testing frequency range: 9kHz to 26GHz Mode: Transmission

Measurement: Quasi-peak (9kHz – 1GHz), Peak and Average(above 1GHz)

RBW: 9kHz (below 30MHz), 120KHz (30MHz – 1GHz), 1MHz (above 1GHz)

VBW: 30kHz (below 30MHz), 300kHz (30MHz – 1GHz), 3MHz (above 1GHz, Peak measurement), 10Hz (above 1GHz, Average measurement)

Channel	Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Transducer Factor (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)	Measurement (Peak/Average)
Lower	2409.310	V	88.9	-4.1	84.8	-	-	Peak
Lower	2409.324	H	86.2	-4.1	82.1	-	-	Peak
Lower	4818.584	V	48.4	3.1	51.5	74.0	-22.5	Peak
Lower	4818.584	V	25.8	3.1	28.9	54.0	-25.1	Average
Lower	4818.589	H	52.2	3.1	55.3	74.0	-18.7	Peak
Lower	4818.589	H	26.5	3.1	29.6	54.0	-24.4	Average
Lower	7226.220	V	45.7	11.0	56.7	74.0	-17.3	Peak
Lower	7226.220	V	23.7	11.0	34.7	54.0	-19.3	Average
Lower	7228.069	H	50.8	11.0	61.8	74.0	-12.2	Peak
Lower	7228.069	H	25.6	11.0	36.6	54.0	-17.4	Average

Remark:

Other emissions more than 20dB below the limit are not reported.

If Peak measurement values are lower than average limit, average measurement is not necessary.



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Channel	Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Transducer Factor (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)	Measurement (Peak/Average)
Middle	2435.250	V	79.4	-4.1	75.3	-	-	Peak
Middle	2435.286	H	82.7	-4.1	78.6	-	-	Peak
Middle	4869.425	H	48.3	1.7	50.0	74.0	-24.0	Peak
Middle	4869.425	H	26.7	1.7	28.4	54.0	-25.6	Average
Middle	4870.749	V	50.6	1.7	52.3	74.0	-21.7	Peak
Middle	4870.749	V	27.4	1.7	29.1	54.0	-24.9	Average
Middle	7304.201	H	48.0	11.0	59.0	74.0	-15.0	Peak
Middle	7304.201	H	24.4	11.0	35.4	54.0	-18.6	Average
Middle	7304.360	V	43.7	11.0	54.7	74.0	-19.3	Peak
Middle	7304.360	V	23.4	11.0	34.4	54.0	-19.6	Average

Remark:

Other emissions more than 20dB below the limit are not reported.

If Peak measurement values are lower than average limit, average measurement is not necessary.



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

Channel	Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Transducer Factor (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)	Measurement (Peak/Average)
Higher	2465.250	H	88.5	-4.3	84.2	-	-	Peak
Higher	2465.278	V	85.9	-4.3	81.6	-	-	Average
Higher	4929.460	V	48.8	3.2	52.0	74.0	-22.0	Peak
Higher	4929.460	V	25.4	3.2	28.6	54.0	-25.4	Average
Higher	4930.629	H	47.4	3.2	50.6	74.0	-23.4	Peak
Higher	4930.629	H	25.0	3.2	28.2	54.0	-25.8	Average
Higher	7394.360	H	50.7	11.0	61.7	74.0	-12.3	Peak
Higher	7394.360	H	25.2	11.0	36.2	54.0	-17.8	Average
Higher	7394.397	V	51.2	11.0	62.2	74.0	-11.8	Peak
Higher	7394.397	V	25.4	11.0	36.4	54.0	-17.6	Average

Remark:

Other emissions more than 20dB below the limit are not reported.

If Peak measurement values are lower than average limit, average measurement is not necessary.



CMA Testing and Certification Laboratories

廠商會檢定中心

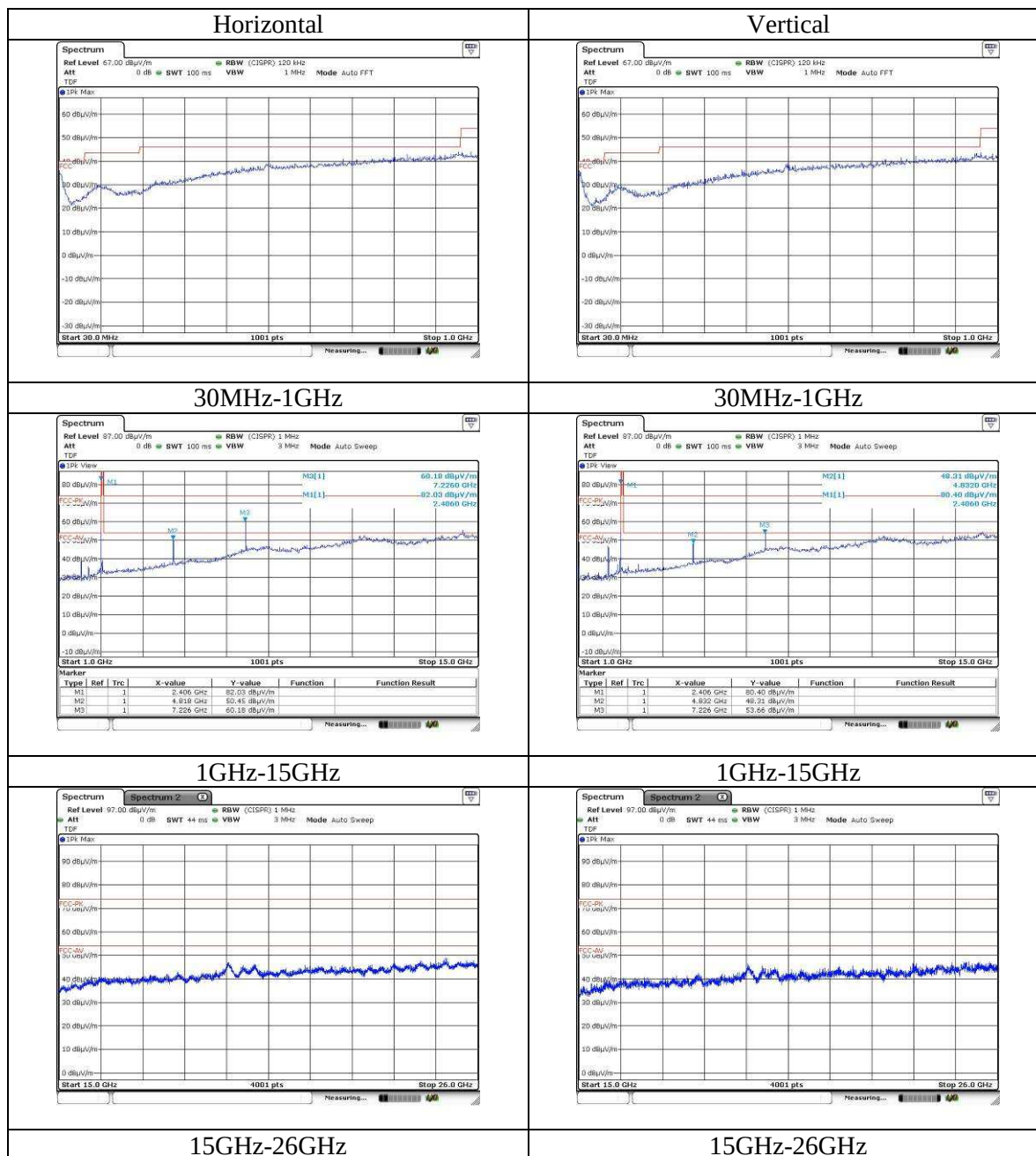
TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

2.3 Radiated Emission Measurement Data (cont'd)

Mode: Transmission (Lower channel)





CMA Testing and Certification Laboratories

廠商會檢定中心

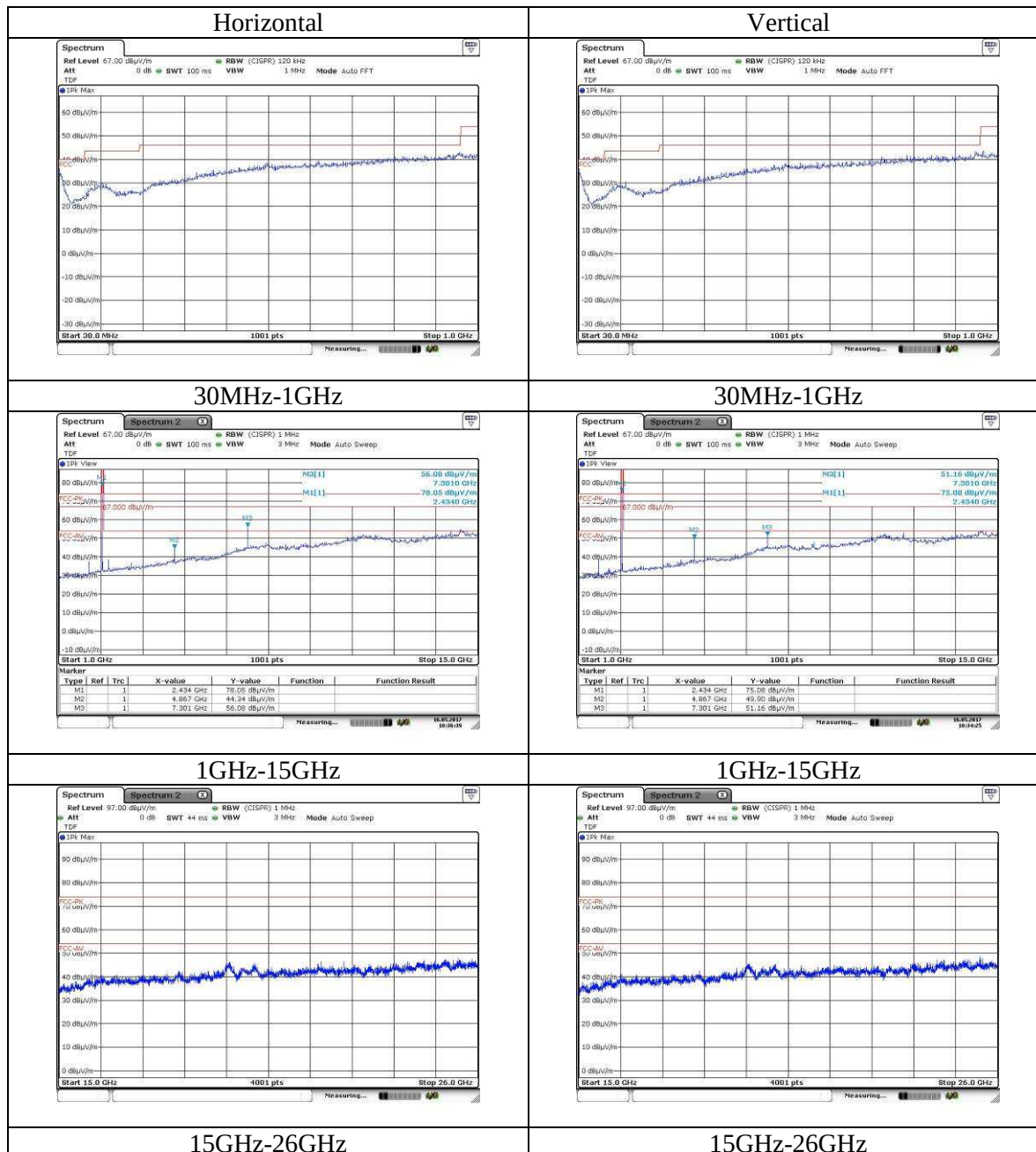
TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

2.3 Radiated Emission Measurement Data (cont'd)

Mode: Transmission (Middle channel)





CMA Testing and Certification Laboratories

廠商會檢定中心

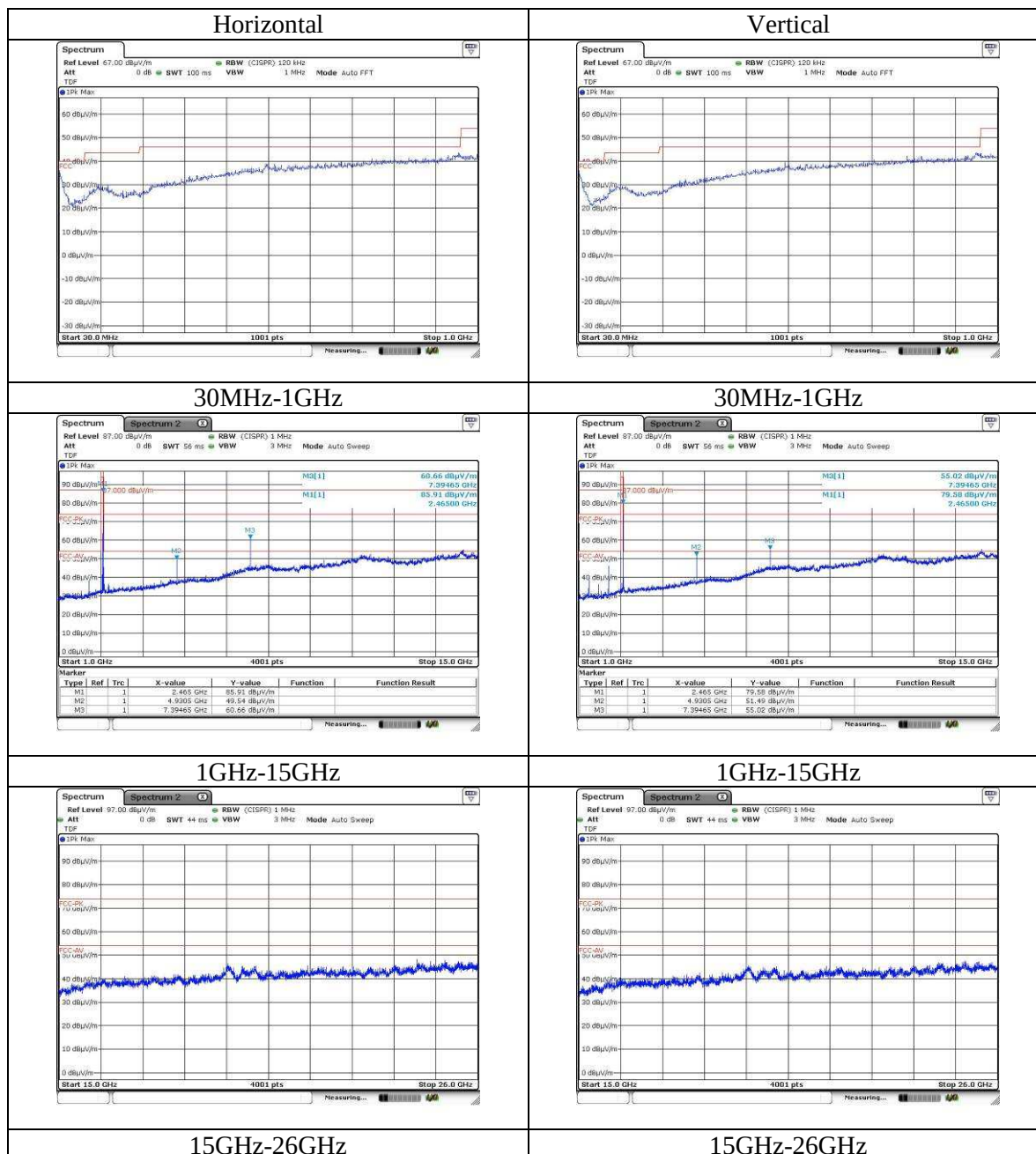
TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

2.3 Radiated Emission Measurement Data (cont'd)

Mode: Transmission (Higher channel)





CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

2.3 Radiated Emission Measurement Data (cont'd)

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	24	° C
Relative humidity:	61	%

Testing frequency range: 9kHz to 26GHz Mode: Receiving

Measurement: Quasi-peak (9kHz – 1GHz), Peak (above 1GHz)

RBW: 9kHz (below 30MHz), 120KHz (30MHz – 1GHz), 1MHz (above 1GHz)

VBW: 30kHz (below 30MHz), 300kHz (30MHz – 1GHz), 3MHz (above 1GHz)

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Transducer Factor (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
-	-	-	-	-	-	-

Remark:

No specified emissions found.



CMA Testing and Certification Laboratories

廠商會檢定中心

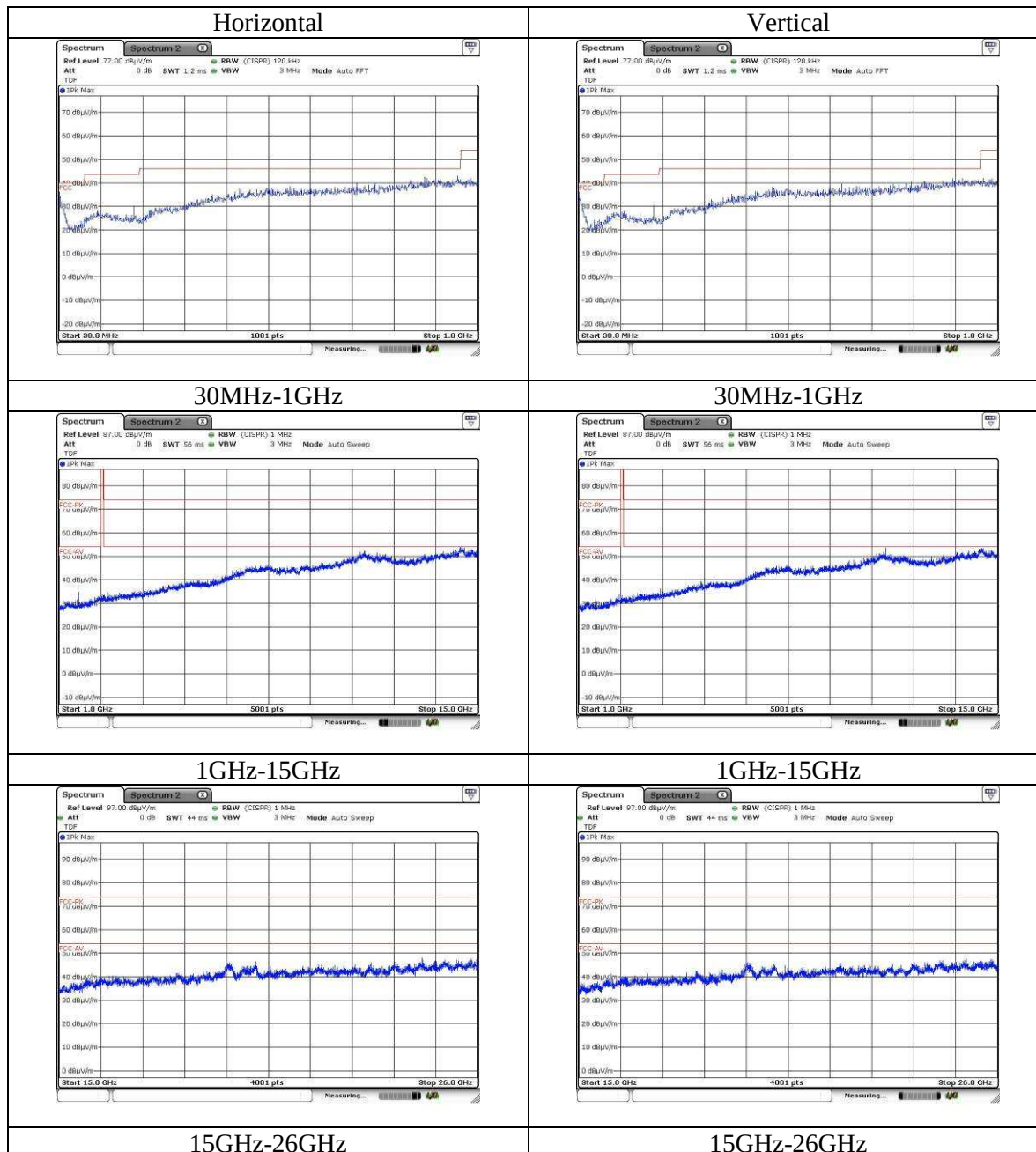
TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

2.3 Radiated Emission Measurement Data (cont'd)

Mode: Receiving (Lower channel)





CMA Testing and Certification Laboratories

廠商會檢定中心

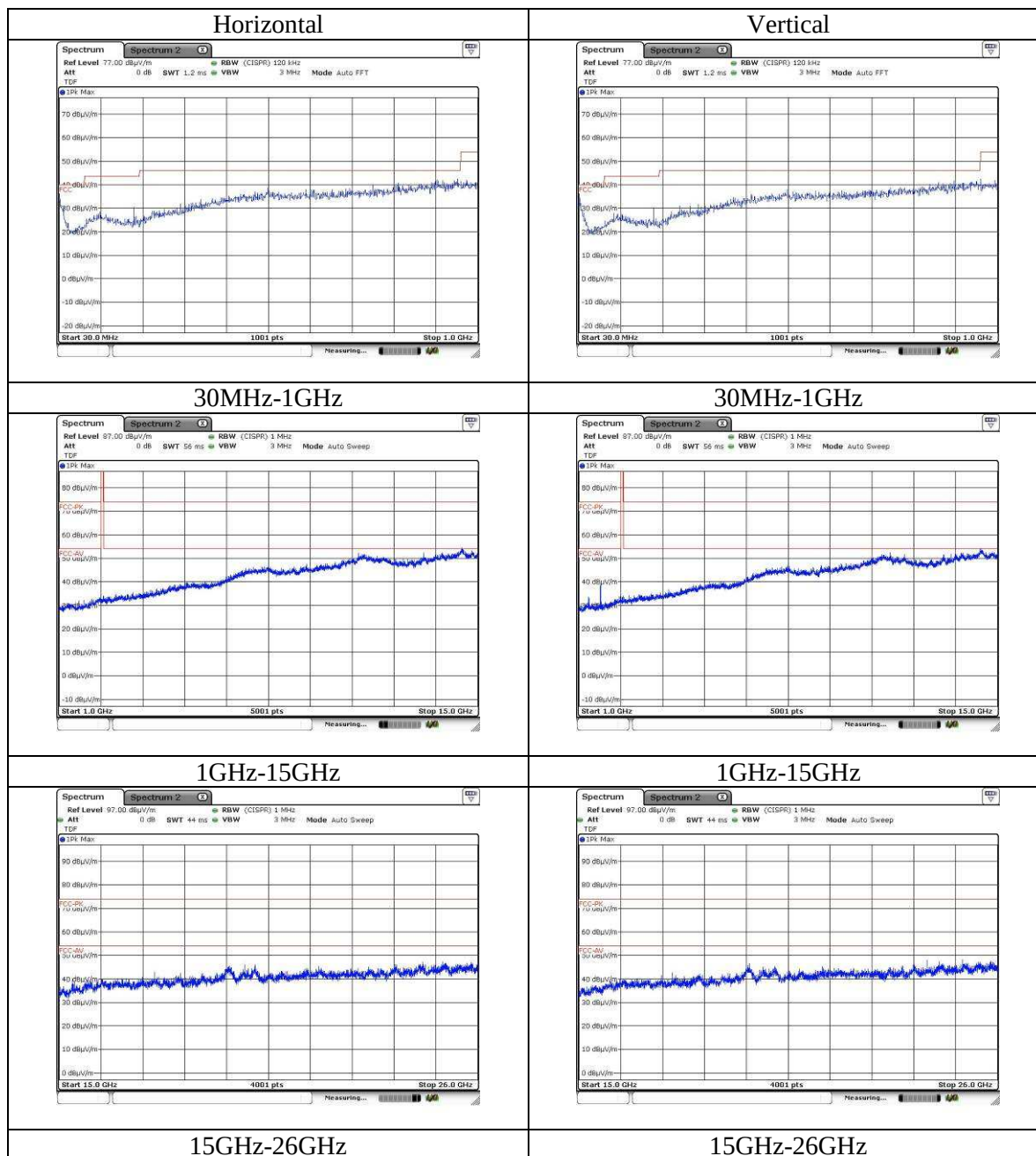
TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

2.3 Radiated Emission Measurement Data (cont'd)

Mode: Receiving (Middle channel)





CMA Testing and Certification Laboratories

廠商會檢定中心

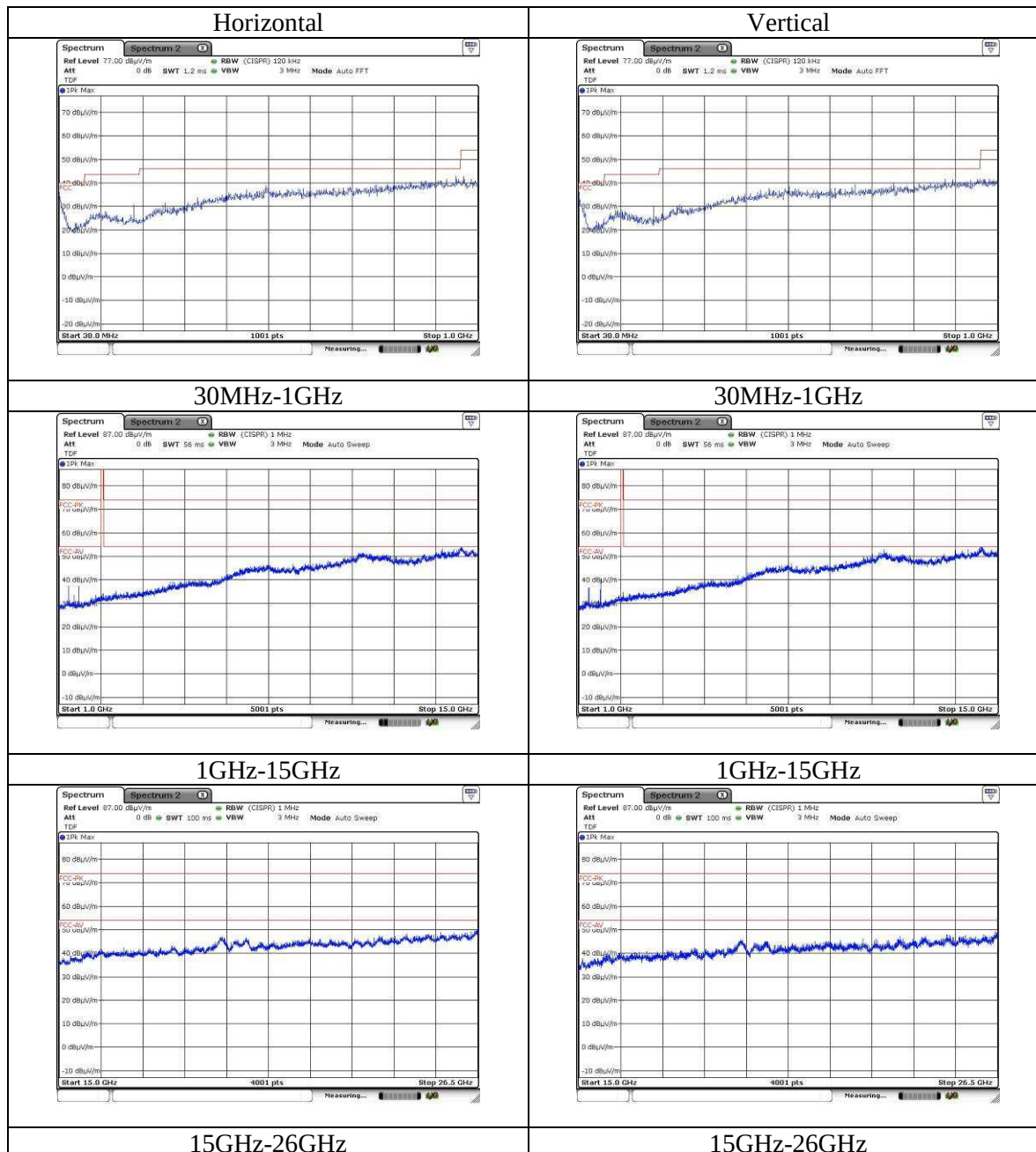
TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

2.3 Radiated Emission Measurement Data (cont'd)

Mode: Receiving (Higher channel)





CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

3 Description of the Line-conducted Test

3.1 Test Procedure

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.10 – 2013. The EUT was setup as described in the procedures, and both lines were measured.

3.2 Test Result

The EUT was tested in receiving mode.

It was found that the EUT met the FCC requirement.

3.3 Graph and Table of Conducted Emission Measurement Data

The plots in Appendices A3 show the graph and data of conducted emission.



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

4 Photograph

4.1 Photographs of the Test Setup for Radiated Emission and Conducted Emission

For electronic filing, the photos are saved with filename CWHPTT200D_Tsup Photos.pdf.

4.2 Photographs of the External and Internal Configurations of the EUT

For electronic filing, the photos are saved with filename CWHPTT200D_Ext Photos.pdf and CWHPTT200D_Int Photos.pdf.

4.3 Antenna requirement

Appendices A2 shows the antenna is permanently attached and cannot be changed. Therefore it fulfils the section 15.203 requirement.



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

5 Appendices

- A1 Photos of External Configurations
- A2 Antenna Requirement
- A3 Conducted Emission Measurement Data

Page 57 of 61

FCC ID: CWHPTT200D

Tested by:

Stanley

Mr. Yau Kwok Pun, Stanley

Reviewed by:

P. J.

Mr. WONG Lap-pong, Andrew



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

A1 Photos of External Configurations



Tested by:

Stanley

Mr. Yau Kwok Pun, Stanley

Reviewed by:

PR.

Mr. WONG Lap-pong, Andrew

FCC ID: CWHPTT200D

Page 58 of 61

This document is issued subject to the latest CMA Testing General Terms and Conditions of Testing and Inspection Services, available on request or accessible at website www.cmatcl.com.
This document shall not be reproduced except in full or with written approval by CMA Testing.

CMA Industrial Development Foundation Limited

Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.

Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmatcl.com Web Site: <http://www.cmatcl.com>



CMA Testing and Certification Laboratories

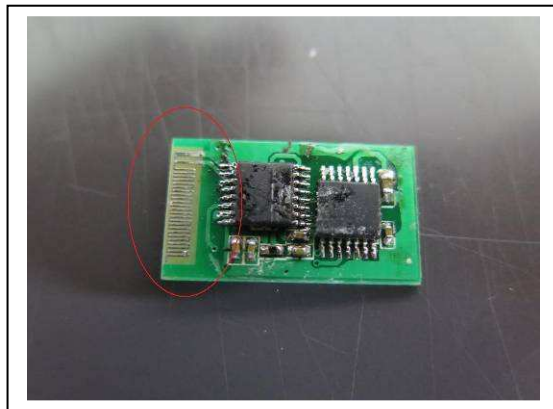
廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

A2 Antenna Requirement



Tested by:

Stanley

Mr. Yau Kwok Pun, Stanley

Reviewed by:

PR.

Mr. WONG Lap-pong, Andrew

FCC ID: CWHPTT200D

Page 59 of 61

This document is issued subject to the latest CMA Testing General Terms and Conditions of Testing and Inspection Services, available on request or accessible at website www.cmatcl.com.
This document shall not be reproduced except in full or with written approval by CMA Testing

CMA Industrial Development Foundation Limited

Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.

Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmatcl.com Web Site: <http://www.cmatcl.com>



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

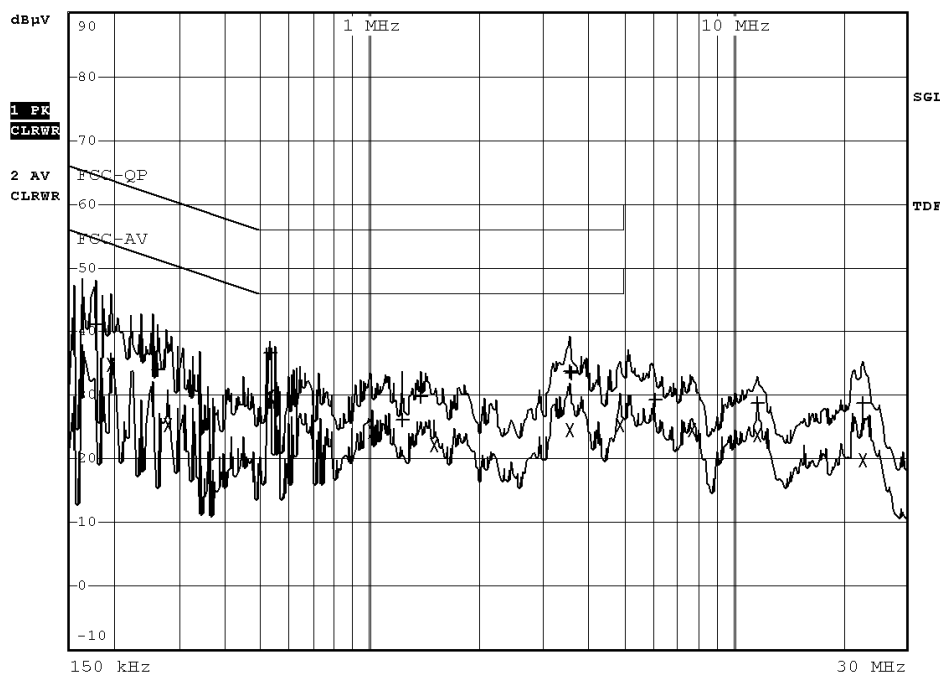
A3 Conducted Emission Measurement Data



RBW 9 kHz

MT 1 s

Att 10 dB AUTO PREAMP OFF



Tested by:

Stanley

Mr. Yau Kwok Pun, Stanley

Reviewed by:

PR.

Mr. WONG Lap-pong, Andrew

Page 60 of 61

FCC ID: CWHPTT200D

This document is issued subject to the latest CMA Testing General Terms and Conditions of Testing and Inspection Services, available on request or accessible at website www.cmatcl.com.
This document shall not be reproduced except in full or with written approval by CMA Testing.

CMA Industrial Development Foundation Limited

Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.

Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmatcl.com Web Site: <http://www.cmatcl.com>



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AV0023778(5)

Date : 31 May 2017

A3 Conducted Emission Measurement Data (cond't)

EDIT PEAK LIST (Final Measurement Results)				
Trace1:	FCC-QP			
Trace2:	FCC-AV			
Trace3:	---			
TRACE	FREQUENCY	LEVEL dBμV		DELTA LIMIT dB
1 Quasi Peak	177 kHz	41.00	N gnd	-23.61
2 Average	195 kHz	34.85	L1 gnd	-18.96
1 Quasi Peak	262.5 kHz	33.87	L1 gnd	-27.47
2 Average	280.5 kHz	25.37	L1 gnd	-25.42
1 Quasi Peak	531.5 kHz	36.48	L1 gnd	-19.51
2 Average	531.5 kHz	29.65	L1 gnd	-16.34
2 Average	1.022 MHz	24.28	L1 gnd	-21.71
1 Quasi Peak	1.229 MHz	26.06	L1 gnd	-29.93
1 Quasi Peak	1.391 MHz	29.64	L1 gnd	-26.35
2 Average	1.5035 MHz	22.21	L1 gnd	-23.78
1 Quasi Peak	3.551 MHz	33.76	N gnd	-22.23
2 Average	3.551 MHz	24.40	L1 gnd	-21.59
1 Quasi Peak	3.605 MHz	33.44	N gnd	-22.55
2 Average	4.883 MHz	25.27	N gnd	-20.72
1 Quasi Peak	6.1385 MHz	29.32	L1 gnd	-30.67
2 Average	7.6955 MHz	24.49	L1 gnd	-25.50
1 Quasi Peak	11.6375 MHz	28.80	L1 gnd	-31.19
2 Average	11.6375 MHz	23.65	L1 gnd	-26.34
1 Quasi Peak	22.694 MHz	28.76	L1 gnd	-31.23
2 Average	22.8515 MHz	19.73	L1 gnd	-30.26

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

Tested by:

Mr. Yau Kwok Pun, Stanley

Reviewed by:

Mr. WONG Lap-pong, Andrew