



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AW0015044(3) Date : 22 Mar 2018

Application No. : LW005191(5)

Applicant : Kid Galaxy Inc
150 Dow Street, Tower 2,
Unit 425B Manchester, NH03101, U.S.A.

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

Sample Description	Model number
Remote of Mega Morphibian	10313T, 10312T, 10193T, 10194T, 10195T, 10196T, 10199T, 20463T

Sample registration no. : RW007892-002
Radio Frequency : 2425MHz – 2472MHz Transceiver
Rating : 2 x 1.5V AAA size batteries
No. of submitted sample : Two (2) piece (s)

Date Received : 29 Jan 2018, 13 Mar 2018
Test Period : 07 Mar 2018 to 20 Mar 2018.

Test Requested : FCC Certification for FCC Part 15, subpart C
ISED Certification for License-exempt Device

Test Method : 47 CFR Part 15 (10-1-16 Edition), ANSI C63.10 – 2013, ANSI C63.4 – 2014
RSS-210 Issue 9, RSS-Gen Issue 4

Test Engineer : Mr. LEUNG Shu-kan, Ken

Test Result : See attached sheet(s) from page 2 to 20.

Conclusion : The submitted sample was found to comply with requirement of FCC Part 15
Subpart B and C and RSS-210 Issue 9.

Remark : All eight models are the same in circuitry and components and construction, and
therefore model 10199 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.
and outlook.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____


Mr. WONG Lap-pong, Andrew
Manager
Electrical Division

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FCC ID: QEA-S615-2G4T
IC: 22849-S615T



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1 General Information

1.1 General Description

The equipment under test (EUT) is a controller for Mega Morphibian series. The EUT is power by 2 x 1.5V AAA size batteries. It operates at 2425MHz – 2472MHz. There are joysticks on the EUT. When the the joysticks are moved, the EUT will transmit the radio control signal to receiver.

Model: 10313, 10312, 10193, 10194, 10195, 10196, 10200 are identical as model: 10199 on the remote control unit (transmitter). The difference is only on the model number

The brief circuit description is listed as follows:

- | | |
|------------------|---|
| - U2 | and its associated circuit act as encoder |
| - U1 | and its associated circuit act as RF circuit |
| - X1 | and its associated circuit act as oscillator |
| - K1, K2, K3, K4 | and its associated circuit act as car control |



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1.2 Location of the test site

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.

FCC Accredited Lab (Designation Number: HK0004)
ISED Wireless Test Site (ISED Assigned Code: 4093A)



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1.3 List of measuring equipment

Equipment	Manufacturer	Model No.	Serial No.	Calibration Due Date	Calibration Period
EMI Test Receiver	R&S	ESCI	100152	07 Dec 2018	1Year
Spectrum Analyzer	R&S	FSP30	100628	28 Mar 2018	1Year
Biconical Antenna	Rohde & Schwarz	HK116	837414/004	17 Aug 2018	1Year
Log Periodic Antenna	Teseq	UPA6109	43666	27 Jul 2018	1Year
Loop Antenna	EMCO	6502	00056620	08 May 2018	2Years
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-531	19 Dec 2018	2Years
Broadband Pre-Amplifier	Schwarzbeck	BBV 9718	9718-119	21 Dec 2018	2Years
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170442	02 Aug 2018	2Years
Broadband Pre-Amplifier	Schwarzbeck	BBV 9719	9719-010	02 Aug 2018	2Years
Horn Antenna	Schwarzbeck	BBHA 9120C	9120C 594	26 Jul 2018	2Years
Pre-amplifier	Schwarzbeck	BBV9718	BBV9718 297	24 Jul 2018	2Years
Coaxial Cable	Schaffner	RG 213/U	N/A	18 May 2018	1Year
Coaxial Cable	Suhner	RG 214/U	N/A	18 May 2018	1Year
Coaxial Cable	Suhner	Sucoflex_104	N/A	20 Dec 2018	1Year



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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)	4.59dB
30MHz ~ 200MHz (Vertical)	4.49dB
200MHz ~ 1000MHz (Horizontal)	4.94dB
200MHz ~ 1000MHz (Vertical)	4.97dB
1GHz ~ 6GHz	4.52dB
6GHz ~ 18GHz	4.58dB

1.5 Test Summary

TEST ITEM	FCC REFERENCE	RESULT
Radiated emission	15.249(a)	Comply
Out-band emission	15.249(d)	Comply
Peak Limit	15.249(e)	Comply
Bandwidth	15.215(c)	Comply



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2 Description of the radiated emission test

2.1 Test Procedure

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

A non-conductive turntable with dimensions of 1.5m x 0.4m x 0.8m (L x W x H) placed above the reference ground plane. The equipment under test (EUT) was placed at 0.8m height for below 1GHz measurement and 1.5m height for above 1GHz measurement. The test distance is 3m between EUT and receiving antenna. A broadband antenna mounting on the mast received the signal strength. The turntable was rotated to maximize the emission level. The antenna was 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. Additional absorbing material will be placed between the EUT and receiving antenna for above 1GHz measurement.

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.

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



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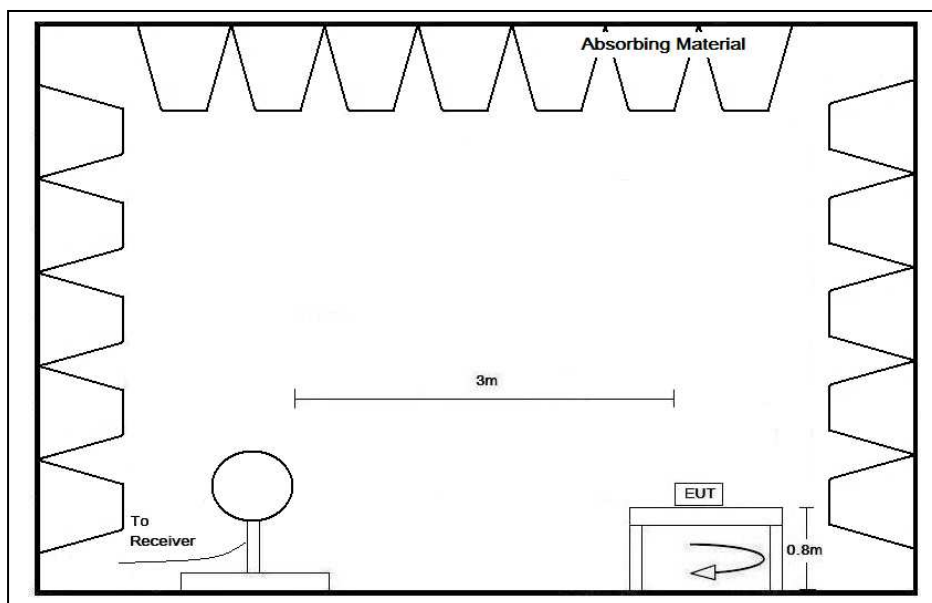
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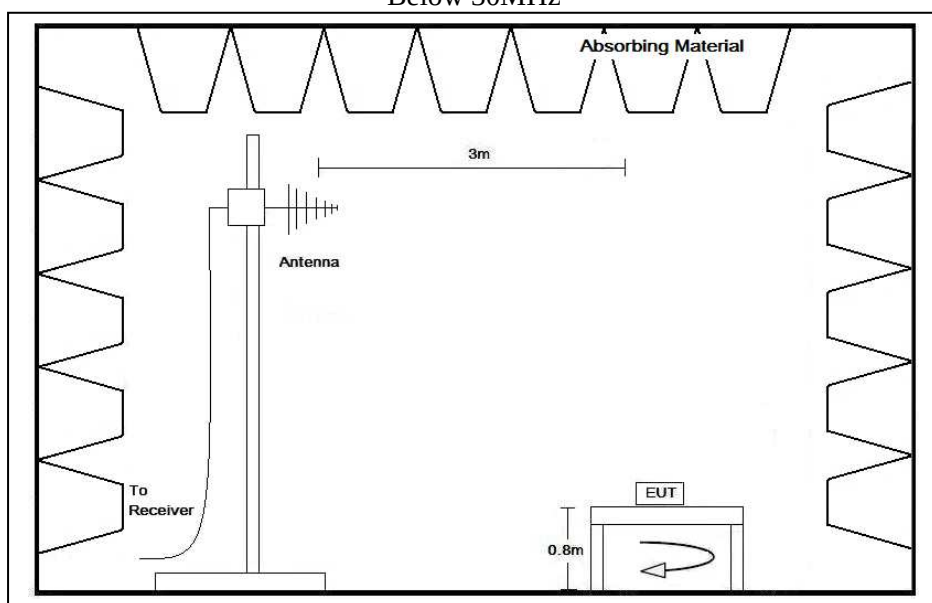
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2.2 Test Setup



Below 30MHz



30MHz – 1GHz



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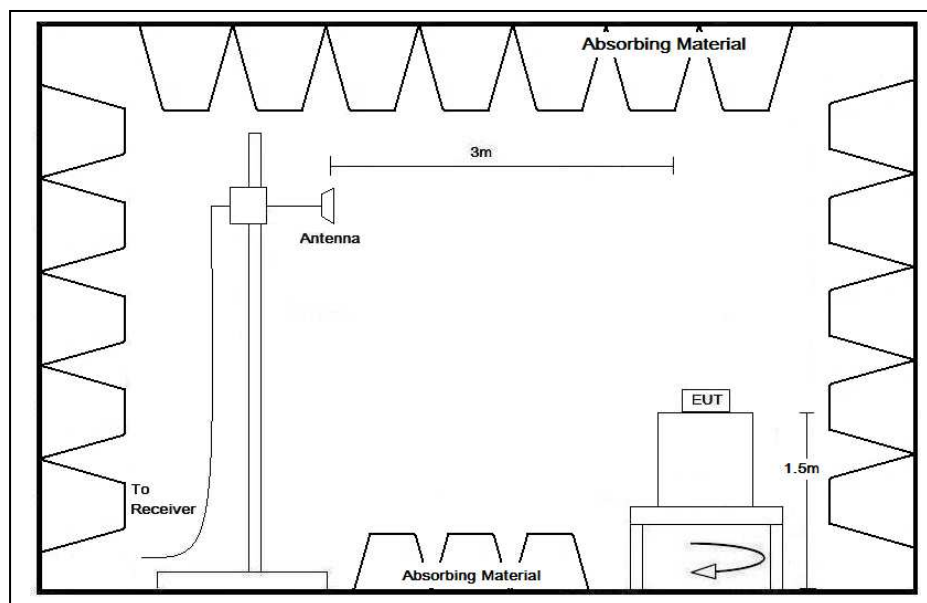
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2.2 Test Setup



Above 1GHz



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2.3 Test Result

Peak Detector data was measured unless otherwise stated.

The radiated emissions are measured from 9kHz to 26GHz (the tenth harmonics)

The worst case configuration is shown on the worst case configuration of test setup photo.

“#” means emissions appearing within the restricted bands of 47 CFR Part 15 section 15.205 and “*” means emission appearing within the restricted band of RSS-GEN section 8.10.

The frequencies from fundamental up to tenth harmonics were investigated, and emissions more 20dB below limit were not reported. Thus, those highest emissions were presented in next pages.

The EUT has been tested in Transmission mode.

It was found that the EUT meet the FCC requirement.



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2.4 Radiated Emission Measurement Data

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	24.3	° C
Relative humidity:	52.7	%

Channel: 2425MHz

Polarization	Frequency (MHz)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)	Detector Type
H	2425.000	98.8	-4.7	94.1	114.0	-19.9	Peak
H	2424.780	41.1	-4.7	36.4	94.0	-57.6	Average
V	2424.836	100.3	-4.7	95.6	114.0	-18.4	Peak
V	2424.972	43.1	-4.7	38.4	94.0	-55.6	Average
H	2400.000	35.2	-4.7	30.5	94.0	-63.5	Peak
V	2400.000	35.3	-4.7	30.6	94.0	-63.4	Peak
H	4849.964 ^{#*}	66.5	2.3	68.8	74.0	-5.2	Peak
H	4849.944 ^{#*}	28.9	2.3	31.2	54.0	-22.8	Average
V	4849.640 ^{#*}	70.1	2.3	72.4	74.0	-1.6	Peak
V	4849.932 ^{#*}	30.1	2.3	32.4	54.0	-21.6	Average
H	7274.400 ^{#*}	47.2	9.6	56.8	74.0	-17.2	Peak
H	7274.844 ^{#*}	24.1	9.6	33.7	54.0	-20.3	Average
V	7254.924 ^{#*}	44.4	9.6	54.0	74.0	-20.0	Peak
V	7254.944 ^{#*}	23.7	9.6	33.3	54.0	-20.7	Average
H	9700.396	46.9	12.7	59.6	74.0	-14.4	Peak
H	9700.000	23.1	12.7	35.8	54.0	-18.2	Average
V	9699.336	50.1	12.7	62.8	74.0	-11.2	Peak
V	9699.916	23.8	12.7	36.5	54.0	-17.5	Average

Remark: 1) The peak detector value is below the average limit at emission of 2400.000MHz, so no additional average measurement is done



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Channel: 2444MHz

Polarization	Frequency (MHz)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)	Detector Type
H	2443.840	97.6	-4.7	92.9	114.0	-21.1	Peak
H	2444.100	42.5	-4.7	37.8	94.0	-56.2	Average
V	2443.982	100.4	-4.7	95.7	114.0	-18.3	Peak
V	2443.940	43.2	-4.7	38.5	94.0	-55.5	Average
H	4887.984 ^{#*}	63.5	2.8	66.3	74.0	-7.7	Peak
H	4887.916 ^{#*}	27.8	2.8	30.6	54.0	-23.4	Average
V	4888.288 ^{#*}	68.3	2.8	71.1	74.0	-2.9	Peak
V	4888.028 ^{#*}	29.5	2.8	32.3	54.0	-21.7	Average
H	7331.984 ^{#*}	46.3	9.6	55.9	74.0	-18.1	Peak
H	7332.000 ^{#*}	24.1	9.6	33.7	54.0	-20.3	Average
V	7332.160 ^{#*}	44.8	9.6	54.4	74.0	-19.6	Peak
V	7331.888 ^{#*}	23.9	9.6	33.5	54.0	-20.5	Average
H	9776.396	45.7	12.7	58.4	74.0	-15.6	Peak
H	9776.000	22.9	12.7	35.6	54.0	-18.4	Average
V	9807.956	49.2	12.7	61.9	74.0	-12.1	Peak
V	9807.832	24.3	12.7	37.0	54.0	-17.0	Average



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Channel: 2472MHz

Polarization	Frequency (MHz)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)	Detector Type
H	2471.824	98.8	-4.7	94.1	114.0	-19.9	Peak
H	2472.028	42.7	-4.7	38.0	94.0	-56.0	Average
V	2472.108	99.3	-4.7	94.6	114.0	-19.4	Peak
V	2471.990	44.2	-4.7	39.5	94.0	-54.5	Average
H	2483.678 ^{**}	61.3	-4.7	56.6	74.0	-17.4	Peak
H	2483.678 ^{**}	33.4	-4.7	28.7	54.0	-25.3	Average
V	2485.435 ^{**}	67.8	-4.7	63.1	74.0	-10.9	Peak
V	2485.435 ^{**}	33.3	-4.7	28.6	54.0	-25.4	Average
H	4943.656 ^{**}	62.2	2.8	65.0	74.0	-9.0	Peak
H	4943.888 ^{**}	26.9	2.8	29.7	54.0	-24.3	Average
V	4943.632 ^{**}	69.4	2.8	72.2	74.0	-1.8	Peak
V	4944.000 ^{**}	29.1	2.8	31.9	54.0	-22.1	Average
H	7415.952 ^{**}	45.2	9.6	54.8	74.0	-19.2	Peak
H	7415.944 ^{**}	23.0	9.6	32.6	54.0	-21.4	Average
V	7415.996 ^{**}	44.4	9.6	54.0	74.0	-20.0	Peak
V	7416.000 ^{**}	24.2	9.6	33.8	54.0	-20.2	Average
H	9888.504	39.3	12.7	52.0	74.0	-22.0	Peak
H	9887.872	21.0	12.7	33.7	54.0	-20.3	Average
V	9888.432	48.2	12.7	60.9	74.0	-13.1	Peak
V	9887.704	23.9	12.7	36.6	54.0	-17.4	Average



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3 Description of the Line-conducted Test

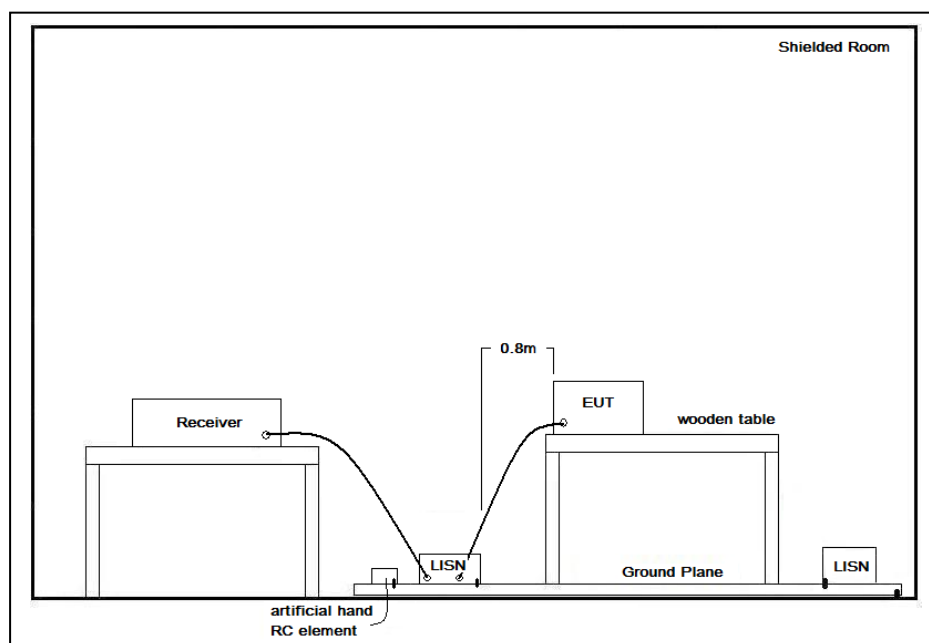
3.1 Test Procedure

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

No measurement is required as the EUT is a battery-operated product.

3.3 Test Setup



3.4 Graph and Table of Conducted Emission Measurement Data

Not Applicable



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4 Supplementary document

The following document were submitted by applicant, and for electronic filing, the document are saved with the following filenames:

Document	Filename
ID Label/Location	Label Artwork and Location.pdf
Block Diagram	Block Diagram.pdf
Schematic Diagram	Schematic.pdf
Users Manual	User Manual.pdf
Operational Description	Operation Description.pdf

4.1 Bandwidth

Appendices A1 is shown the fundamental emission is confined in the specified band. 20dB bandwidth is 7.36MHz. It also shows that the EUT met the FCC Part 15.215(c).



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5 Appendices

A1	20dB Bandwidth Plot	2	pages
A2	99% Bandwidth Plot	2	pages



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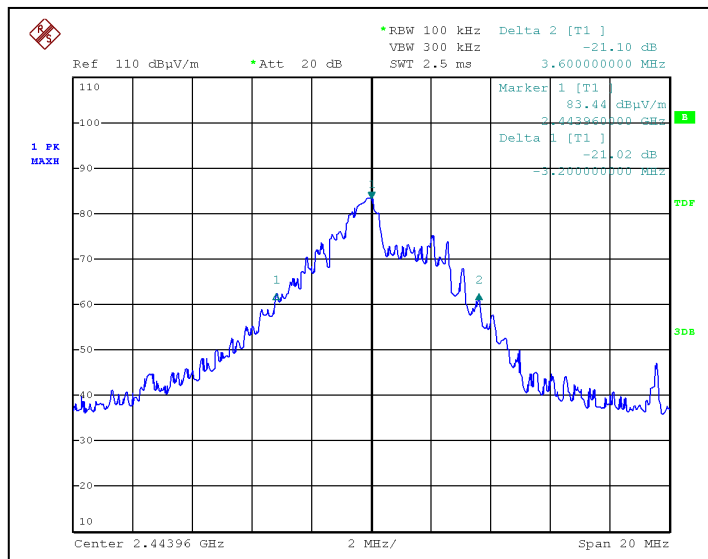
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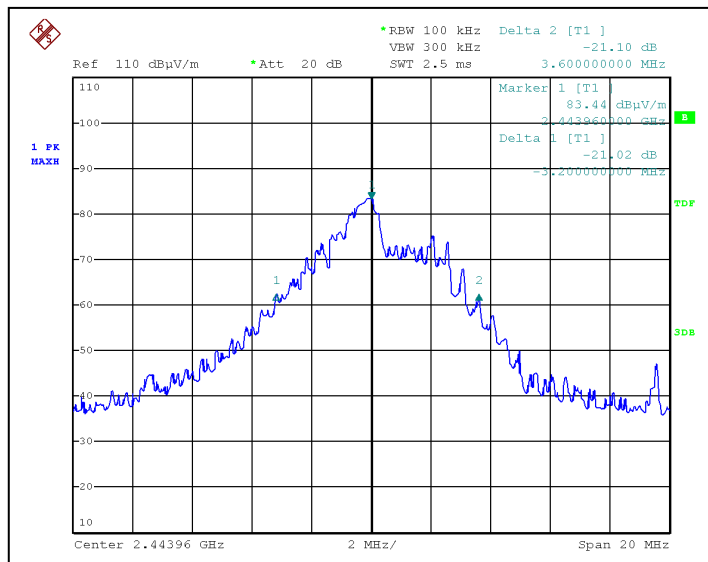
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A1. 20dB Bandwidth Plot



Channel: 2425MHz



Channel: 2444MHz

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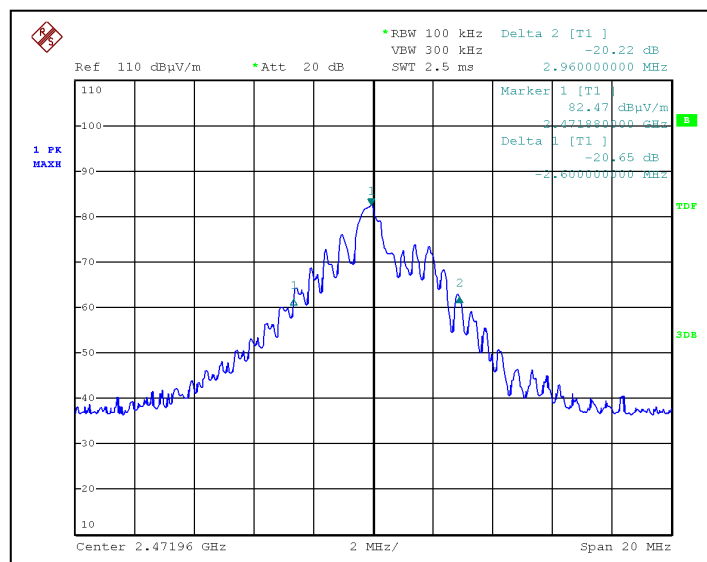
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A1. 20dB Bandwidth Plot



Channel: 2472MHz

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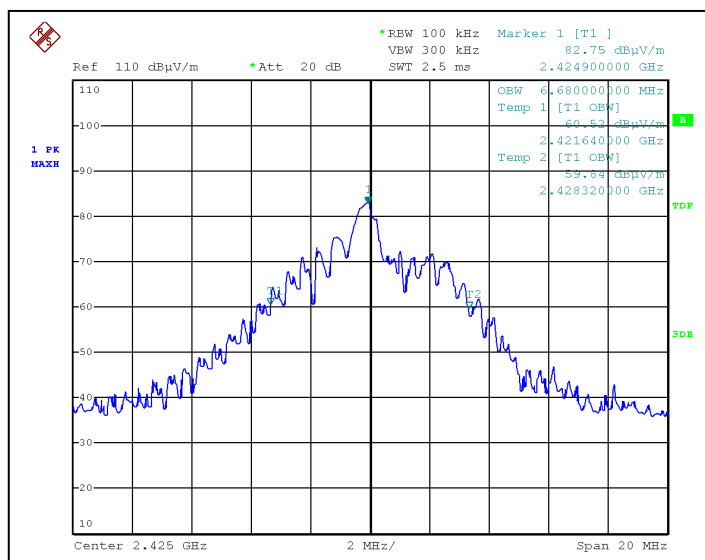
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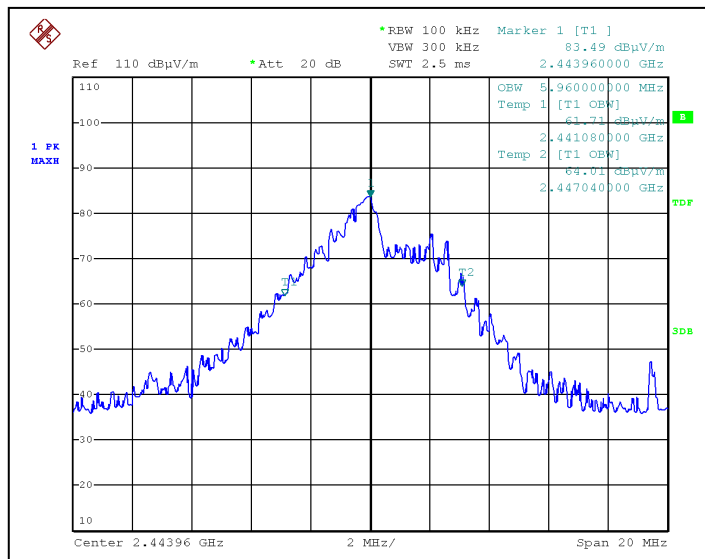
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A2. 99% Bandwidth Plot



Channel: 2425MHz



Channel: 2444MHz

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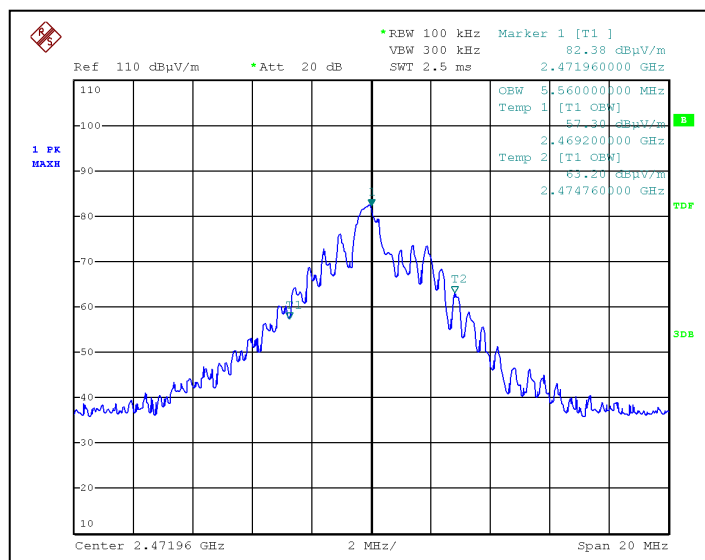
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A2. 99% Bandwidth Plot



Channel: 2472MHz

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

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Mr. LEUNG Shu-kan, Ken

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