



CMA Testing and Certification Laboratories

廠商會檢定中心

TEST REPORT

Report No. : AY0017732(9) Date : Mar 14, 2019

Application No. : LY007548(2)

Applicant : New Bright Industrial Co Ltd.
9/F New Bright Building, 11 Sheung Yuet Road,
Kowloon Bay, Kowloon, Hong Kong

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

Sample Description	Model No.
Toy Receiver	60806RR

Radio Frequency : 2411 – 2472 MHz
Rating : DC 12.8V (Li-ion rechargeable battery)
No. of submitted sample : One Unit
Sample registration No. : RY014403-001(2)

Date Received : Mar 8, 2019.

Test Period : Mar 8, 2019 to Mar 13, 2019

Test Requested : FCC 47CFR Part 15 Certification
ISED Certification for License-exempt Device

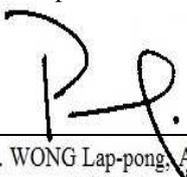
Test Method : 47 CFR Part 15 (10-1-18 Edition)
ANSI C63.10 – 2013
ANSI C63.4 – 2014
RSS-210 Issue 9
RSS-Gen Issue 5

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

Conclusion : The submitted sample was found to comply with requirement of FCC 47CFR Part 15 Subpart C, section 15.249 and ISED Canada Radio Standard Specification RSS-210.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____


Mr. WONG Lap-pong, Andrew
Manager

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FCC ID: G6D60806RR
IC: 9650A-60806RR

Document name: FCC/ISED for LPD - Document Ref No: RT-EL-EMC-047 - Issue Date: 13 Mar 2019 - Edition: 2

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1 General Information

1.1 General Description

The equipment under test (EUT) model 60806RR is a remote controlled car. It operates at frequency band 2411 - 2472MHz for transmitter with 21 hopping channel. The oscillation of radio control is generated by a 16 MHz crystal for RF IC, XNS-102. The EUT is powered by one DC 12.8V Li-ion rechargeable battery. The EUT is remote controlled car and controlled by a remote control unit which is certified by FCC with FCC ID: G6DG21HRR

After the pairing with the remote control by the half-duplex communication link, the EUT can be controlled by remote control on moving forward and backward and turn left and right.

The wire antenna with 0dBi antenna gain is used in EUT and the radio output power is unable to adjust.

The brief circuit description is listed as follows:

- | | |
|---------|--|
| -U1 | and its associated circuit act as RF IC, XNS-102 |
| -U3, U4 | and its associated circuit act as Motor Driver |
| -Y1 | and its associated circuit act as oscillation clock, 16MHz |
| -U2 | and its associated circuit act as a 3.3V LDO |



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1.2 Location of the test site

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2014. 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 C63.4 – 2014. 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 Number	Equipment	Manufacturer	Model No.	Serial No.	Calibration Due Date	Calibration Period
EL-218	EMI Test Receiver	Rohde & Schwarz	ESCS30	100001	21-Jun-19	1 Year
EL-373	Spectrum Analyzer	Rohde & Schwarz	FSV40	100964	11-Sep-19	1 Year
EL-223	Biconical Antenna	Rohde & Schwarz	HK116	837414/004	8-Oct-20	2 Years
EL-1523	Log Periodic Antenna	TESEQ	UPA6109	43666	8-Oct-19	2 Years
EL-301	Loop Antenna	EMCO	6502	56620	29-Oct-20	2 Years
EL-311	Horn Antenna	Schwarzbeck	BBHA9120D	9120D531	21-Dec-19	2 Years
EL-312	Pre-amplifier	Schwarzbeck	BBV9718	9718-119	21-Dec-19	2 Years
EL-330	Horn Antenna	Schwarzbeck	BBHA9170	BBHA91704 42	24-Aug-19	2 Years
EL-331	Pre-amplifier	Schwarzbeck	BBHA9719	9719-010	23-Aug-19	2 Years
EL-392-1	Coaxial Cable	HUBER+SUHNER	RG214/U	-	18-Sep-19	1 Year
EL-392-2	Coaxial Cable	HUBER+SUHNER	RG214/U	-	18-Sep-19	1 Year
EL-331-1	Coaxial Cable	Suhner	Sucoflex_104	124828/4	23-Aug-19	1 Year
EL-333	LISN	Rohde & Schwarz	ENV216	101232	22-Jan-20	1 Year
EL-335	Coaxial Cable	Tyco Electronics	RG58C/U	-	21-Oct-19	1 Year



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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
18GHz ~ 40GHz	4.66dB

1.5 Test Summary

TEST ITEM	FCC REFERANCE	RSS REFERENCE	RESULT
Fundamental and harmonic emission	15.249(a)	RSS-210, Annex B.10(a)	Comply
Out-band emission	15.249(d)	RSS-210, Annex B.10(b)	Comply
Peak Limit	15.249(e)	RSS-Gen, 8.1	Comply
Bandwidth	15.215(c)	RSS-Gen, 6.7	Comply

1.6 External Photo, Internal Photo and Test Configuration Photo

The External Photo, Internal Photo and Test Configuration Photo associated with this report for the tested product are saved in separated pdf file listed in the following

File content	File name
External Photo	G6D60806RR_9650A-60806RR External Photo.pdf
Internal Photo	G6D60806RR_9650A-60806RR Internal Photo.pdf
Test Configuration Photo	G6D60806RR_9650A-60806RR Test configuration photo.pdf



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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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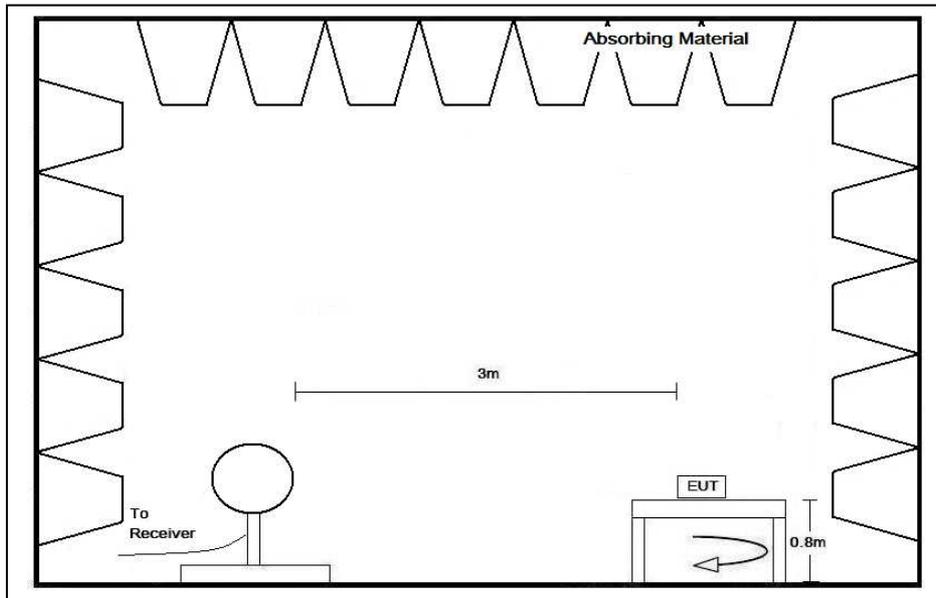
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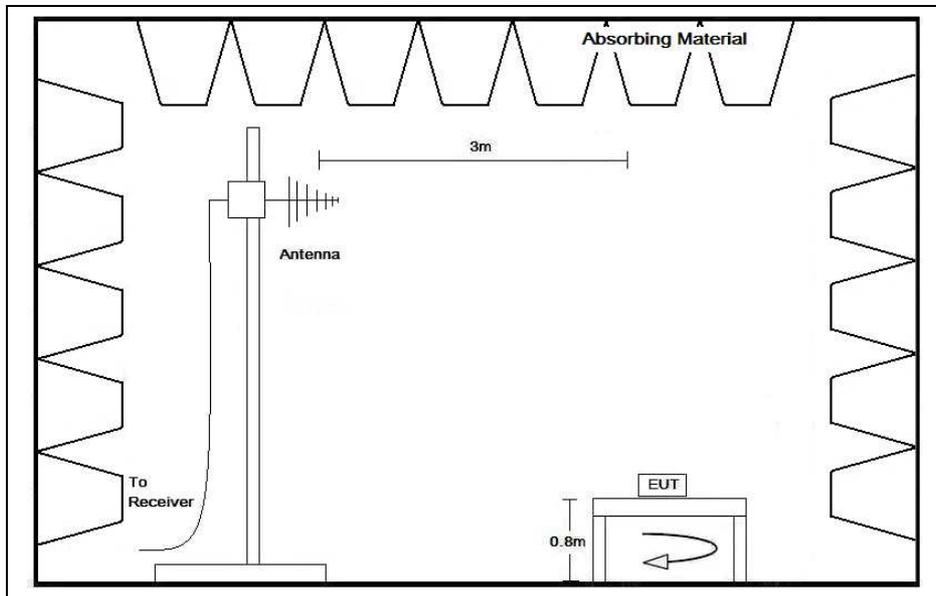
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2.2 Test Setup



Below 30MHz



30MHz – 1GHz

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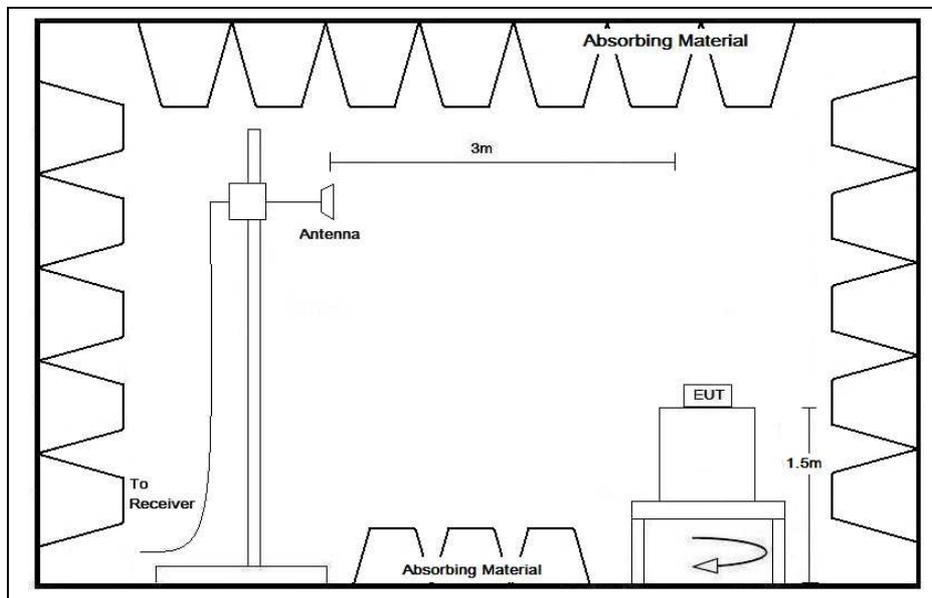
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2.2 Test Setup



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.

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 and RSS requirement.



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2.4 Radiated Emission Measurement Data

Radiated emission

Environmental conditions:

Parameter	Recorded value
Ambient temperature:	25.3 °C
Relative humidity:	56.5 %

Channel: 2411 MHz

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
V	2411.200	74.6	-4.7	69.9	94.0	-24.1	Peak
H	2411.371	72.0	-4.7	67.3	94.0	-26.7	Peak
V	2400.000	44.4	-4.7	39.7	54.0	-14.3	Peak
V	2483.500	46.4	-4.7	41.7	54.0	-12.3	Peak
V	4822.406	50.5	2.3	52.8	54.0	-1.2	Peak
V	7233.768	41.3	9.6	50.9	54.0	-3.1	Peak

Remark: 1) The peak value of emissions are below the average limit, so no average measurement is performed.



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Channel: 2441MHz

Polarization	Frequency (MHz)	Reading at 3m (dB μ V)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)	Detector Type
V	2441.298	76.0	-4.7	71.3	94.0	-22.7	Peak
H	2441.164	70.6	-4.7	65.9	94.0	-28.1	Peak
V	2400.000	44.4	-4.7	39.7	54.0	-14.3	Peak
V	2483.500	46.4	-4.7	41.7	54.0	-12.3	Peak
V	4882.316	46.9	2.3	49.2	54.0	-4.8	Peak
V	7323.680	41.6	9.6	51.2	54.0	-2.8	Peak

Remark: 1) The peak value of emissions are below the average limit, so no average measurement is performed.



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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
V	2472.020	76.3	-4.7	71.6	94.0	-22.4	Peak
H	2472.216	71.7	-4.7	67.0	94.0	-27.0	Peak
V	2400.000	44.4	-4.7	39.7	54.0	-14.3	Peak
V	2483.500	46.4	-4.7	41.7	54.0	-12.3	Peak
V	4944.780	47.3	2.8	50.1	54.0	-3.9	Peak
V	7416.681	41.6	9.6	51.2	54.0	-2.8	Peak

Remark: 1) The peak value of emissions are below the average limit, so no average measurement is performed.



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3 Description of the Line-conducted Test

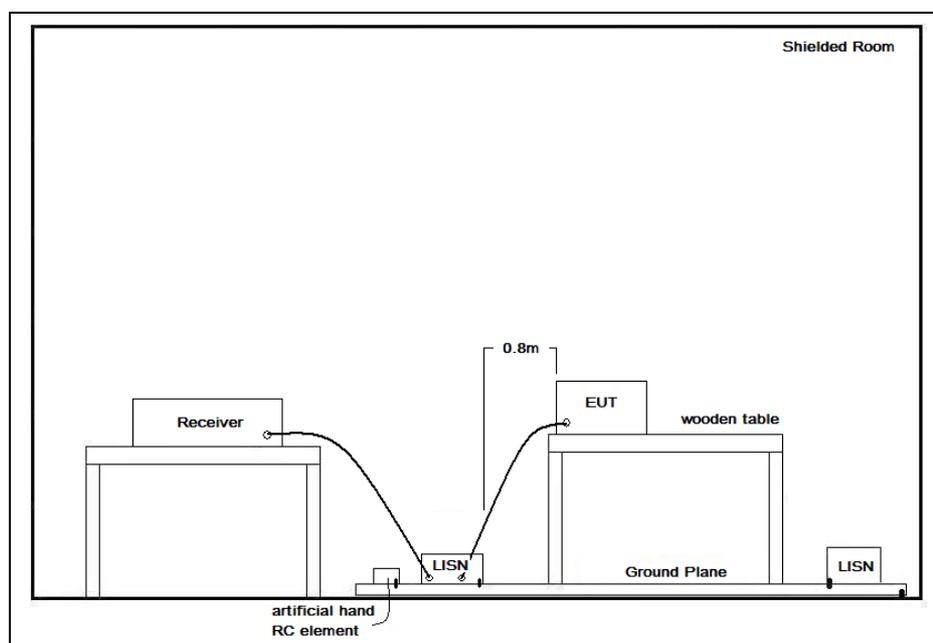
3.1 Test Procedure

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 Bandwidth

Appendices A1 and A2 show the fundamental emission is confined in the specified band. 20dB bandwidth is 1.281MHz and 99% bandwidth is 1.230MHz. Both bandwidths fall in the band of 2400 – 2483.5MHz. It also shows that the EUT met the requirement of FCC Part 15.215(c) and RSS-GEN.



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5 Appendices

A1.	20dB Bandwidth Plot	2	page(s)
A2.	99% Bandwidth Plot	2	Page(s)



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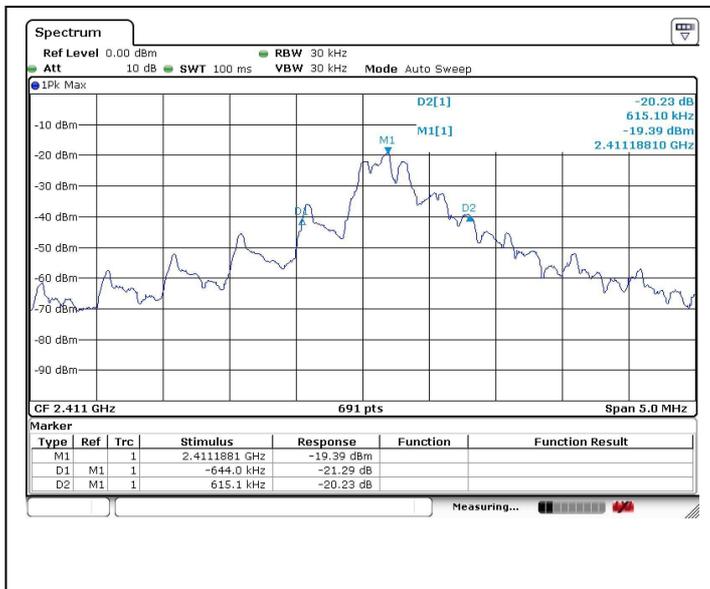
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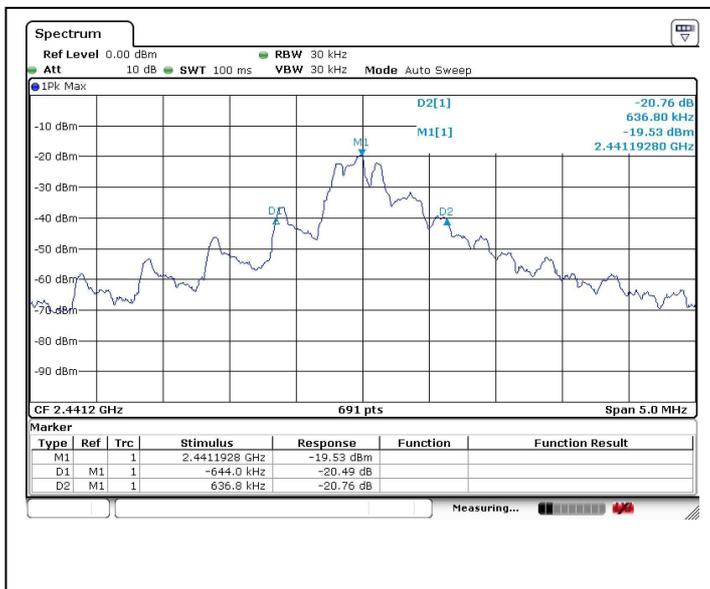
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A1. 20dB Bandwidth Plot



Channel: 2411 MHz



Channel: 2441 MHz



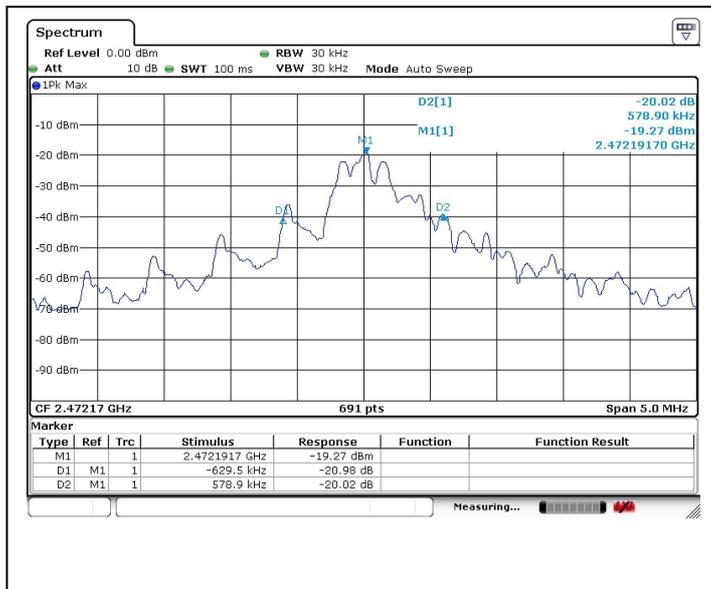
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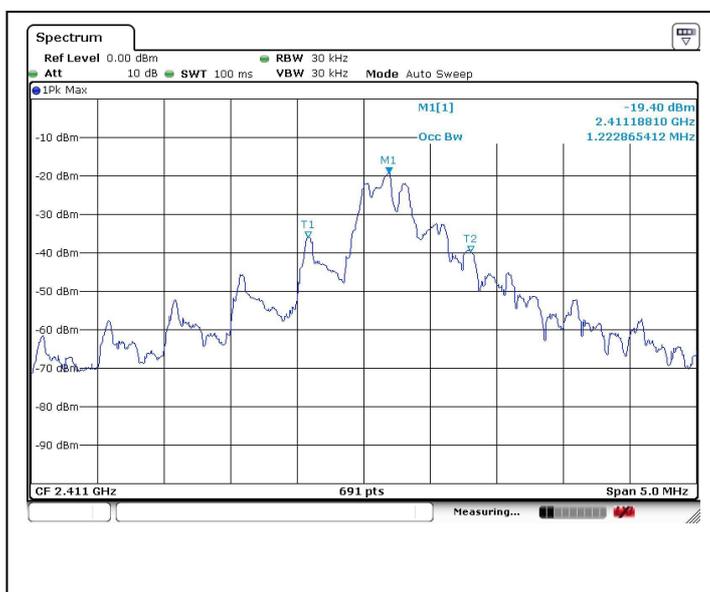
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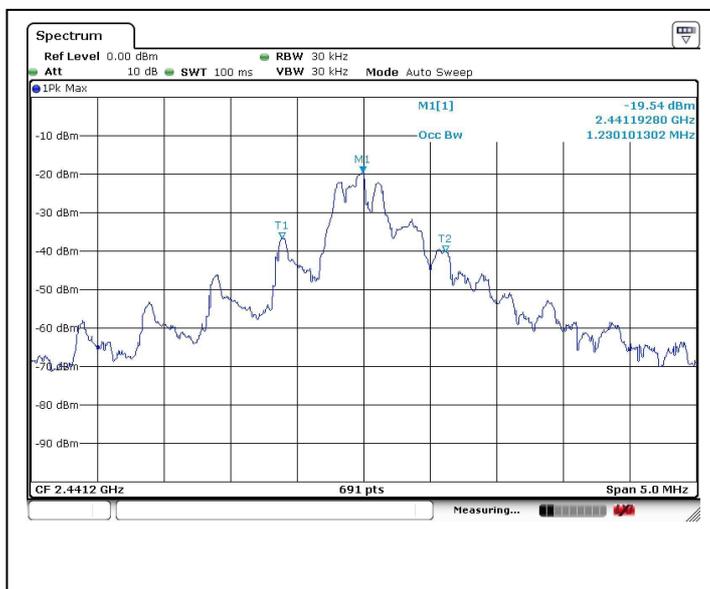
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A2. 99% Bandwidth Plot



Channel: 2411 MHz



Channel: 2441 MHz



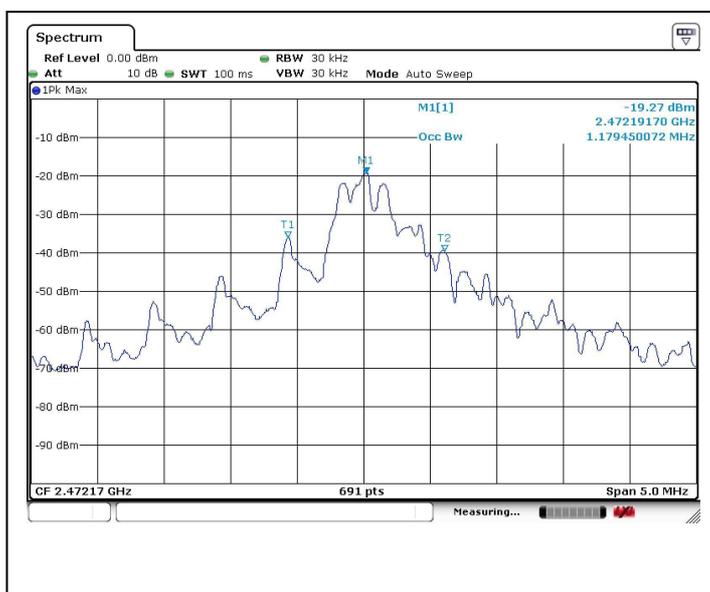
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***** End of Report *****

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