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TEST REPORT

Report No. : AY0055758(8) Date : 11 Oct 2019

Application No. : LY030635(6)

Client : BASIC FUN, INC
Room 518, Chinachem Golden Plaza
No. 77 Mody Road, Tsim Sha Tsui East
Kowloon, Hong Kong

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

Sample Description	Item / Model No.
Joker's Prank Shop Mayhem Speakers	90015
Joker's Prank Shop Joker's Ultimate Prank Kit	90004

Radio Frequency : 2407MHz – 2475MHz Transmitter

Rating : 2 x 1.5V AAA size batteries (For Remote)

No. of submitted sample : One (1) piece (s)

Sample registration No. : RY018853-001

Date Received : 18 Sep 2019.

Test Period : 18 Sep 2019 – 10 Oct 2019.

Test Requested : FCC 47CFR Part 15 Certification

Test Method : 47 CFR Part 15 (10-1-17 Edition)
ANSI C63.10 – 2013
ANSI C63.4 – 2014

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.

Remark : All **Two** models are the same in circuitry and components; and therefore model **90015** 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 Sample Description only.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____

Mr. WONG Lap-pong, Andrew
Manager

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1 General Information

1.1 General Description

The equipment under test (EUT) is a controller of 2.4GHz wireless remote control toys.

It is powered by 2 x 1.5V AAA size batteries, and the radio transmission frequency band is 2407 - 2475MHz. There are 10 buttons on the upper case to remote the “Receiver Unit” activate 10 difference sounds.

The radio transmissions and modulation coding are controlled by IC WM009, and the oscillation frequency is 16MHz generated by crystal.

A non-replaceable PCB antenna is used in EUT and the radio transmission power are un-adjustable.

The brief circuit description is listed as follows:

- U2 (WM009) and its associated circuit act as radio transmissions and digital modulation controller.
- Y1 and its associated circuit act as 16MHz crystal for IC U2 (WM009).
- L1,C6,C7 and its associated circuit act as RF filter and matching network.
- S1- S10 and its associated circuit act as button switch.
- ANT1 and its associated circuit act as PCB antenna.

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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)
Conformity Assessment Body Identifier (CABID: HK0002)

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1.3 List of measuring equipment

Equipment	Manufacturer	Model No.	Serial No.	Calibration Due Date	Calibration Period
EMI Test Receiver	Rohde & Schwarz	ESCI	100152	31 May 2020	1 Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	101190	05 Dec 2019	1 Year
Loop Antenna	EMCO	6502	00056620	29 Oct 2020	2 Years
Biconical Antenna	Rohde & Schwarz	HK116	837414/004	08 Oct 2020	2 Years
Log Periodic Antenna	TESEQ	UPA6109	43666	08 Oct 2020	2 Years
Horn Antenna	Schwarzbeck	BBHA9120D	9120D531	21 Dec 2019	1 Year
Pre-amplifier	Schwarzbeck	BBV9718	9718-119	21 Dec 2019	1 Year
High-pass Filter	Trilithic Inc	6HC3000/18 000-3-KK	200720014	21 Dec 2019	1 Year
Horn Antenna	Schwarzbeck	BBHA9170	BBHA9170 442	16 Sep 2021	2 Years
Pre-amplifier	Schwarzbeck	BBHA9719	9719-010	13 Sep 2021	2 Years
Coaxial Cable	Humber+Suhner	RG 213/U	N/A	08 May 2020	1 Year
Coaxial Cable	Humber+Suhner	RG 214/U	N/A	08 May 2020	1 Year
RF cable With 11 N-47 connector	Humber+Suhner	-	MY24201/4	22 Jan 2020	2 Years
RF cable with PC2.4 connectors	Humber+Suhner	-	MY3432/2	22 Jan 2020	2 Years

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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	4.80dB

1.5 Test Summary

TEST ITEM	FCC REFERANCE	RESULT
Fundamental and harmonic 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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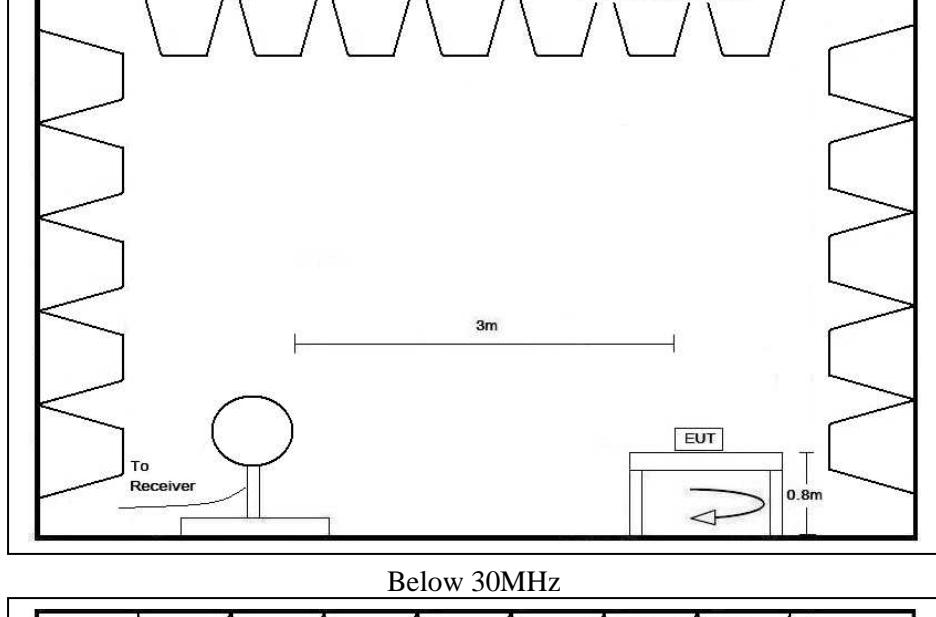
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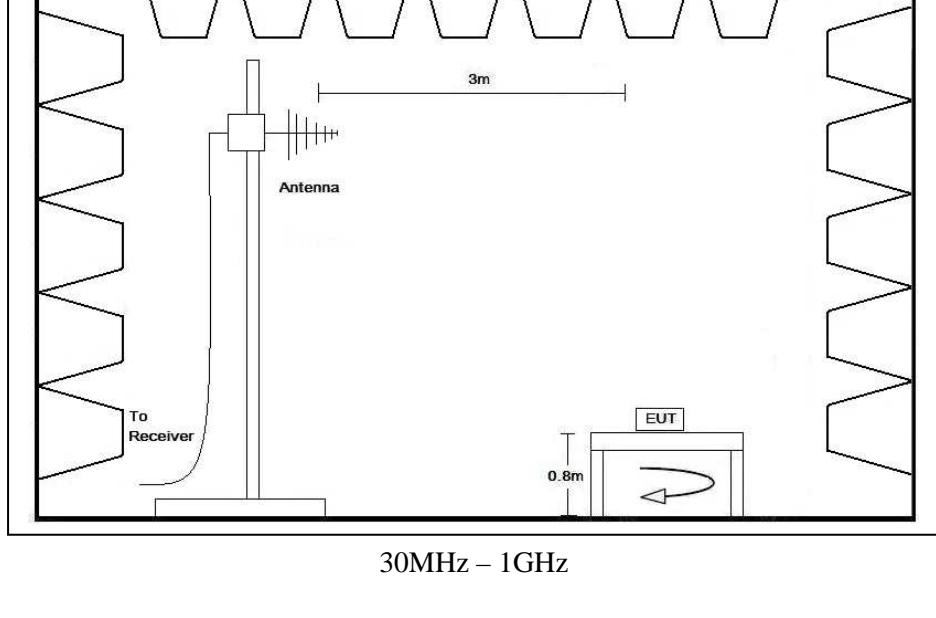
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2.2 Test Setup



Below 30MHz



30MHz – 1GHz

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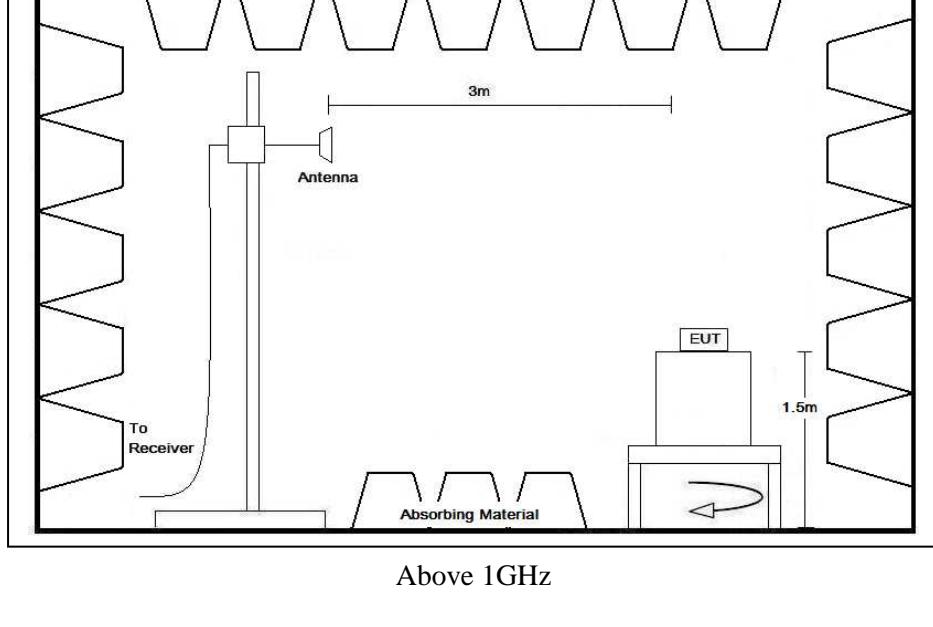
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2.2 Test Setup



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.

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

Radiated emission

Environmental conditions:

Parameter	Recorded value
Ambient temperature:	27.1 °C
Relative humidity:	52.1 %

Channel: 2407MHz

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
H	*2400.000	53.4	-4.6	48.8	54.0	-5.2	Peak
H	2406.605	94.9	-4.6	90.3	114.0	-23.7	Peak
H	2407.025	79.6	-4.6	75.0	94.0	-19.0	Average
V	4813.985	61.9	3.2	65.1	74.0	-8.9	Peak
H	4812.336	44.1	3.2	47.3	54.0	-6.7	Average
H	7219.997	52.7	10.4	63.1	74.0	-10.9	Peak
H	7220.968	36.9	10.4	47.3	54.0	-6.7	Average
H	9628.519	53.8	13.7	67.5	74.0	-6.5	Peak
H	9628.819	35.0	13.7	48.7	54.0	-5.3	Average
V	12033.202	46.8	15.9	62.7	74.0	-11.3	Peak
V	12036.009	29.4	15.9	45.3	54.0	-8.7	Average

Remark: * Average value is not measured since the peak value is compared with average limit.

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Channel: 2443 MHz

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
H	2443.035	95.6	-4.6	91.3	114.0	-22.7	Peak
H	2443.124	80.6	-4.6	76.0	94.0	-18.0	Average
V	4885.748	62.6	3.2	65.8	74.0	-8.2	Peak
V	4884.526	42.0	3.2	45.2	54.0	-8.8	Average
H	7329.338	52.1	10.4	62.5	74.0	-11.5	Peak
H	7330.014	35.7	10.4	46.1	54.0	-7.9	Average
H	9773.343	54.0	13.7	67.7	74.0	-6.3	Peak
H	9773.083	35.0	13.7	48.7	54.0	-5.3	Average
V	12213.776	45.5	15.9	61.4	74.0	-12.6	Peak
V	12216.333	28.7	15.9	44.6	54.0	-9.4	Average

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Channel: 2475MHz

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
H	2475.239	90.8	-4.6	86.2	114.0	-27.8	Peak
H	2475.024	74.7	-4.6	70.1	94.0	-23.9	Average
H	*2483.500	39.9	-4.6	35.3	54.0	-18.7	Peak
V	4950.114	61.5	3.8	65.3	74.0	-8.7	Peak
V	4950.469	42.9	3.8	46.7	54.0	-7.3	Average
H	7424.160	51.2	10.4	61.6	74.0	-12.4	Peak
H	7425.754	33.9	10.4	44.3	54.0	-9.7	Average
V	9900.234	52.4	13.7	66.1	74.0	-7.9	Peak
V	9900.934	34.3	13.7	48.0	54.0	-6.0	Average
V	12375.049	45.0	15.8	60.8	74.0	-13.2	Peak
V	12376.143	28.0	15.8	43.8	54.0	-10.2	Average

Remark: * Average value is not measured since the peak value is compared with average limit.

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3 Description of the Line-conducted Test

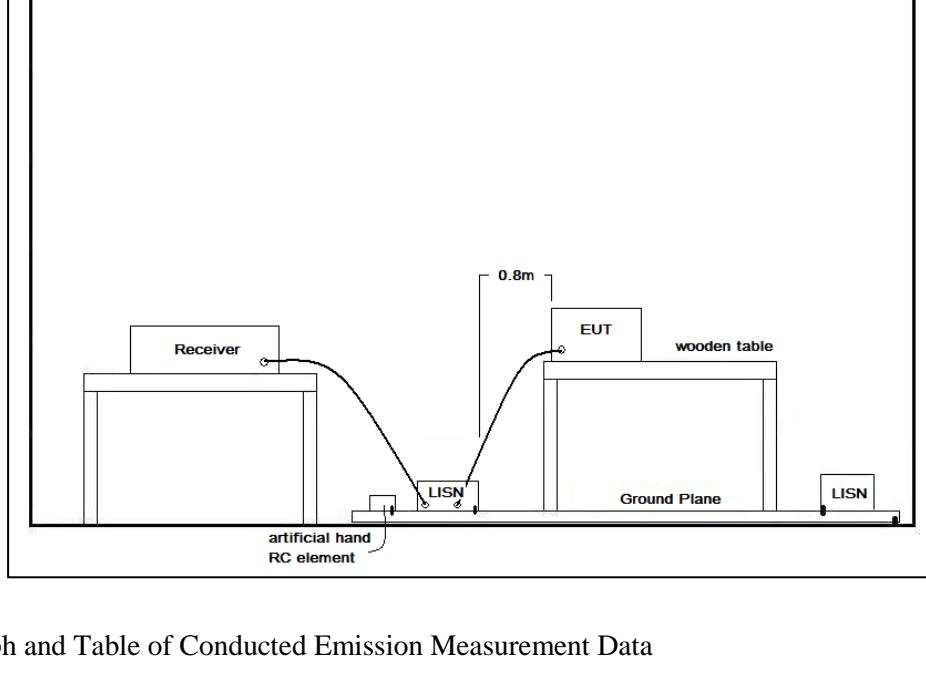
3.1 Test Procedure

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 and A2 are shown the fundamental emission is confined in the specified band. A 20dB bandwidth is 1.310MHz and 99% bandwidth is 1.251MHz. Both bandwidth fall in the band of 2400 – 2483.5MHz. It shows that the EUT met the requirement of FCC Part 15.215(c).

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5 Appendices

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

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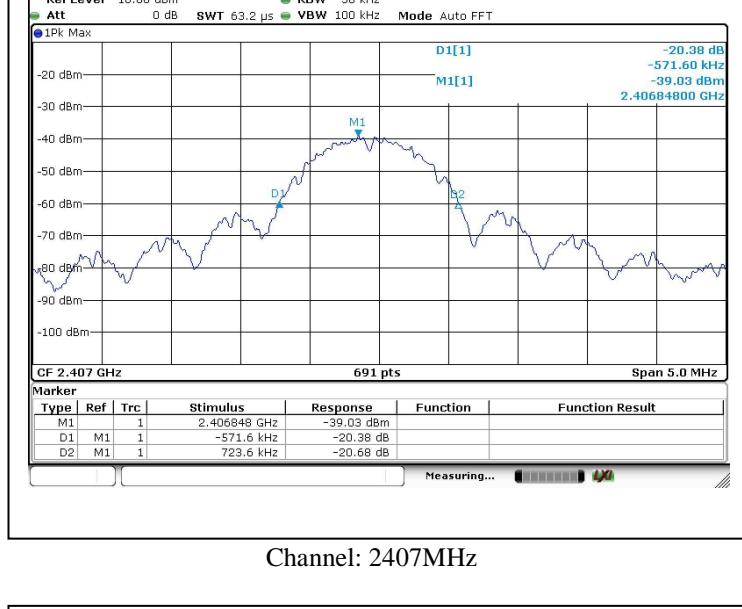
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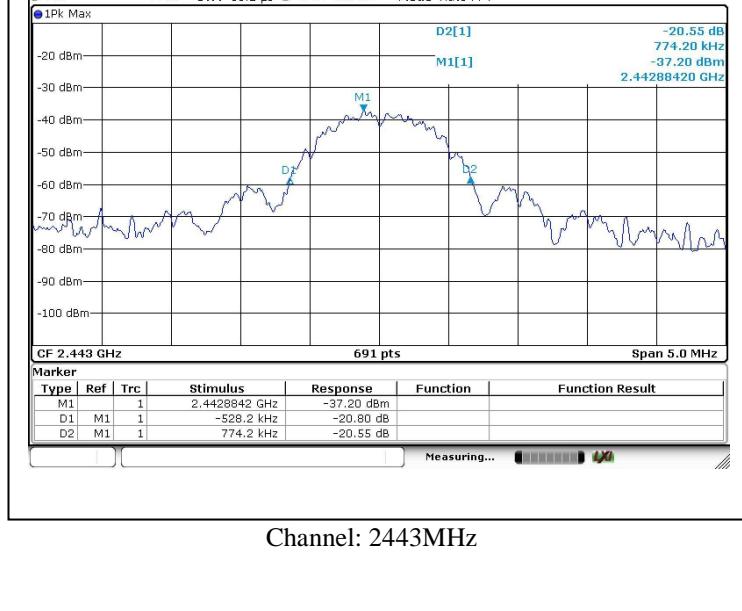
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A1. 20dB Bandwidth Plot



Channel: 2407MHz



Channel: 2443MHz

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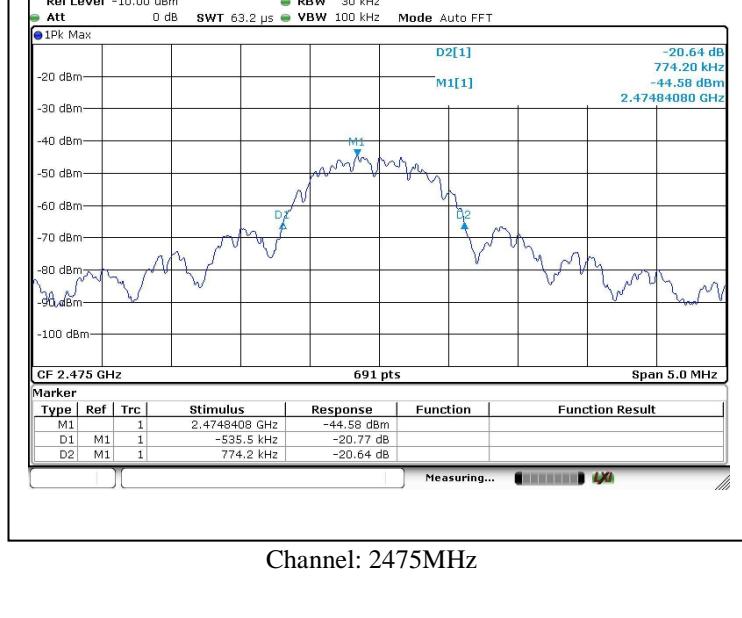
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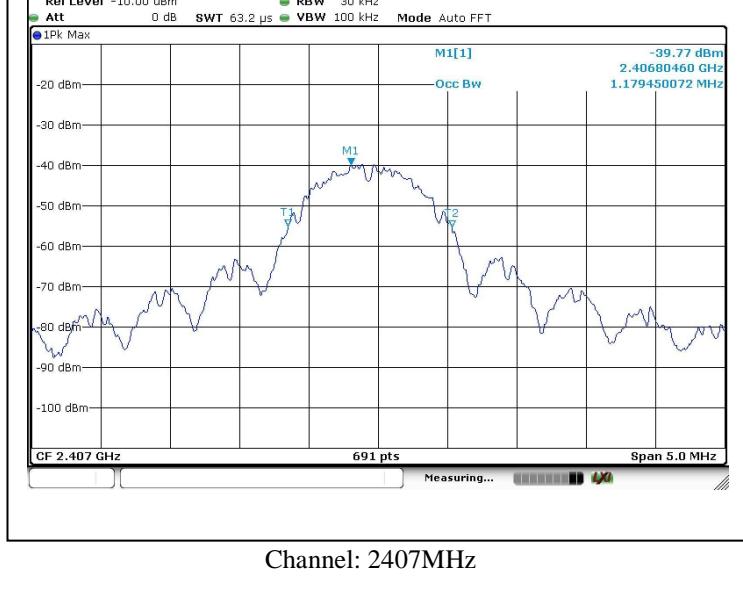
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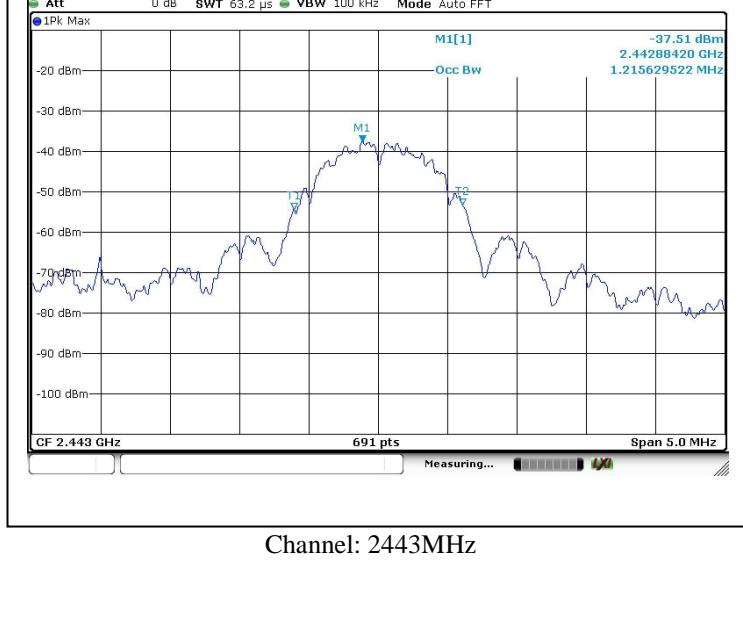
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A2. 99% Bandwidth Plot



Channel: 2407MHz



Channel: 2443MHz

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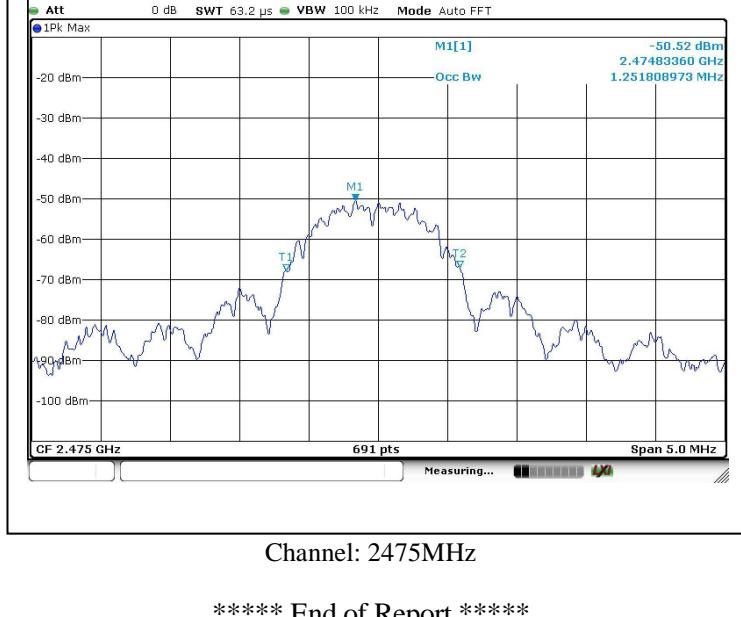
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