TEST REPORT

of

FCC Part 15 Subpart C

☒ New Application; ☐ Class I PC; ☐ Class II PC

Product :	**WIRELESS MOUSE**
Brand:	**GIGABYTE**
Model:	**GM-M7590W**
Model Difference:	**N/A**
FCC ID:	**JCKM7590WV10**
FCC Rule Part:	**§15.249**
Applicant:	**GIGA-BYTE Technology Co., Ltd.**
Address:	**No.6, Bao Chiang Road, Hsin-Tien Dist., New Taipei City 231, Taiwan**

Test Performed by:

International Standards Laboratory

<Lung-Tan LAB>
*Site Registration No.
BSMI: SL2-IN-E-0013; MRA TW1036; TAF: 0997; IC: IC4067B-3;
*Address:
No. 120, Lane 180, Hsin Ho Rd., Lung-Tan Dist., Tao Yuan City 325, Taiwan
*Tel : 886-3-407-1718; Fax: 886-3-407-1738

Report No.: **ISL-16LR237FCDXX**
Issue Date : **2016/10/05**

Test results given in this report apply only to the specific sample(s) tested and are traceable to national or international standard through calibration of the equipment and evaluating measurement uncertainty herein.
This report MUST not be used to claim product endorsement by TAF, NVLAP or any agency of the Government.
This test report shall not be reproduced except in full, without the written approval of International Standards Laboratory.

VERIFICATION OF COMPLIANCE

Applicant:	GIGA-BYTE Technology Co., Ltd.
Product Description:	WIRELESS MOUSE
Brand Name:	GIGABYTE
Model No.:	GM-M7590W
Model Difference:	N/A
FCC ID:	JCKM7590WV10
Date of test:	2016/09/01 ~ 2016/10/04
Date of EUT Received:	2016/09/01

We hereby certify that:

All the tests in this report have been performed and recorded in accordance with the standards described above and performed by an independent electromagnetic compatibility consultant, International Standards Laboratory.

The test results contained in this report accurately represent the measurements of the characteristics and the energy generated by sample equipment under test at the time of the test. The sample equipment tested as described in this report is in compliance with the limits of above standards.

Test By:	Dino Chen	***Date:***	2016/10/05
	Dino Chen / Engineer		
Prepared By:	Gigi yeh	***Date:***	2016/10/05
	Gigi Yeh / Specialist		
Approved By:	Vincent Su	***Date:***	2016/10/05
	Vincent Su / Technical Manager		

Version

Version No.	Date	Description
00	2016/10/05	Initial creation of document

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1. GENERAL INFORMATION

1.1. Product Description

General:

Product Name	WIRELESS MOUSE
Brand Name	GIGABYTE
Model Name	GM-M7590W
Model Difference	N/A
Power Supply	3V dc form 2*AAA battery

2.4GHz Transceiver 1TX / 1RX

Frequency Range(MHz)	2408-2474MHz
Modulation type	FSK
Channel Number	CH01: (2408)MHz /CH02: (2410)MHz / CH03: (2412)MHz CH04: (2414)MHz / CH05: (2416)MHz / CH06: (2418)MHz CH07: (2420)MHz / CH08: (2422)MHz / CH09: (2424)MHz CH10: (2426)MHz / CH11: (2428)MHz / CH12: (2430)MHz CH13: (2432)MHz / CH14: (2434)MHz / CH15: (2436)MHz CH16: (2438)MHz / CH17: (2440)MHz / CH18: (2442)MHz CH19: (2444)MHz / CH20: (2446)MHz / CH21: (2448)MHz CH22: (2450)MHz / CH23: (2452)MHz / CH24: (2454)MHz CH25: (2456)MHz / CH26: (2458)MHz / CH27: (2460)MHz CH28: (2462)MHz / CH29: (2464)MHz / CH30: (2466)MHz CH31: (2468)MHz / CH32: (2470)MHz / CH33: (2472)MHz CH34: (2474)MHz
Measured Power	85.94dBuV/m at 3 m
Antenna Designation:	PCB Antenna / 4.775 dBi

1.2. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID**: **JCKM7590WV10** filing to comply with Section 15.249 of the FCC Part 15, Subpart C Rules.

1.3. Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.10: 2013 and RSS-Gen issue 4: 2014. Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4. Test Facility

The measurement facilities used to collect the 3m Radiated Emission and AC power line conducted data are located on the address of **International Standards Laboratory** <Lung-Tan LAB> No. 120, Lane 180, Hsin Ho Rd., Lung-Tan Dist., Tao Yuan City 325, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.10: 2013. FCC Registration Number is: 872200; Designation Number is: TW1036, Canada Registration Number: 4067B-3.

1.5. Special Accessories

Not available for this EUT intended for grant.

1.6. Equipment Modifications

Not available for this EUT intended for grant.

2. System Test Configuration

2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2. EUT Exercise

The Transmitter was operated in the engineering operating mode. the Tx frequency was fixed at 2408, 2440 and 2474MHz which were for the purpose of the measurements.

2.3. Test Procedure

2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 6 of ANSI C63.10: 2013 and RSS-Gen issue 4: 2014. Con-ducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR 16-1-1 Quasi-Peak and Average detector mode.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m/1.5m(Frequency above 1GHz) above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 6 and 11 of ANSI C63.10: 2013.

2.4. Limitation

(1) Conducted Emission

According to section 15.207(a) Conducted Emission Limits is as following.

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 – 0.5	66 - 56	56 - 46
0.5 – 5	56	46
5 - 30	60	50

(2) Radiated Emission 15.249(a)

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following.

Frequency (MHz)	Field strength of Fundamental	Field strength of Harmonics	Distance (m)
902 - 928	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3
2400 – 2483.5	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3
5725 – 5875	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3

(3) Radiated Emission15.249 (d)

Emission Radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in Section 15.209 as below, whichever is the lesser attenuation.

Frequency (MHz)	Field strength μV/m	Distance (m)	Field strength at 3m dBμV/m
1.705-30	30	30	69.54
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54

(4) Radiated Emission 15.249(e)

For frequencies above 1000MHz, the above field strength limits are based on average limits. The peak filed strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20dB under any condition of modulation.

Remark:
1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of ξ 15.205
4. Emission spurious frequency which appearing within the Restricted Bands specified in provision of ξ15.205, then the general radiated emission limits in ξ 15.209 apply.

2.5. Configuration of Tested System

Fig. 1 Configuration of Tested System

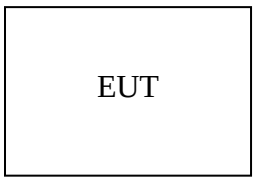


Table 1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1	N/A					

Note: All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

Grounding: Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.

3. Summary of Test Results

FCC Rules	Description Of Test	Result
§15.207/	Conducted Emission	N/A
§15.249(a)(d)(e)	Field Strength Measurement	Compliant
§15.215(c)	20dB band width Measurement	Compliant

Description of test modes

The EUT has been tested under operating condition.

Test program used to control the EUT for staying in continuous transmitting and receive mode is programmed.

Channel low (2408MHz)、mid (2440MHz) and high (2474MHz) with highest data rate are chosen for full testing.

4. Conducted Emissions Test

4.1 Measurement Procedure:

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

4.2 Test SET-UP (Block Diagram of Configuration)

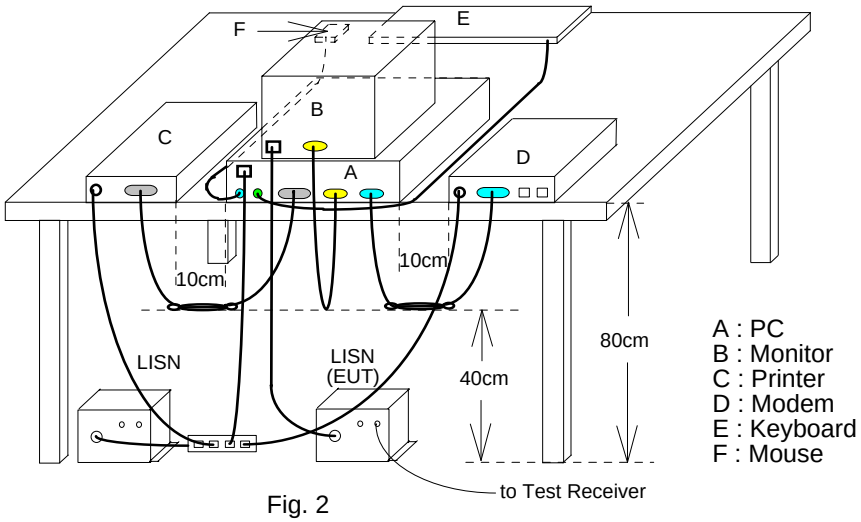


Fig. 2

4.3 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Conduction 04-3 Cable	WOKEN	CFD 300-NL	Conduction 04 -3	07/27/2016	07/26/2017
EMI Receiver 17	Rohde & Schwarz	ESCI 7	100887	09/08/2016	09/07/2017
LISN 18	ROHDE & SCHWARZ	ENV216	101424	02/11/2016	02/10/2017
LISN 19	ROHDE & SCHWARZ	ENV216	101425	03/12/2016	03/11/2017
Test Software	Farad	EZEMC Ver:ISL-03A2	N/A	N/A	N/A

4.4 Measurement Result: N/A

Note: Refer to next page for measurement data and plots.

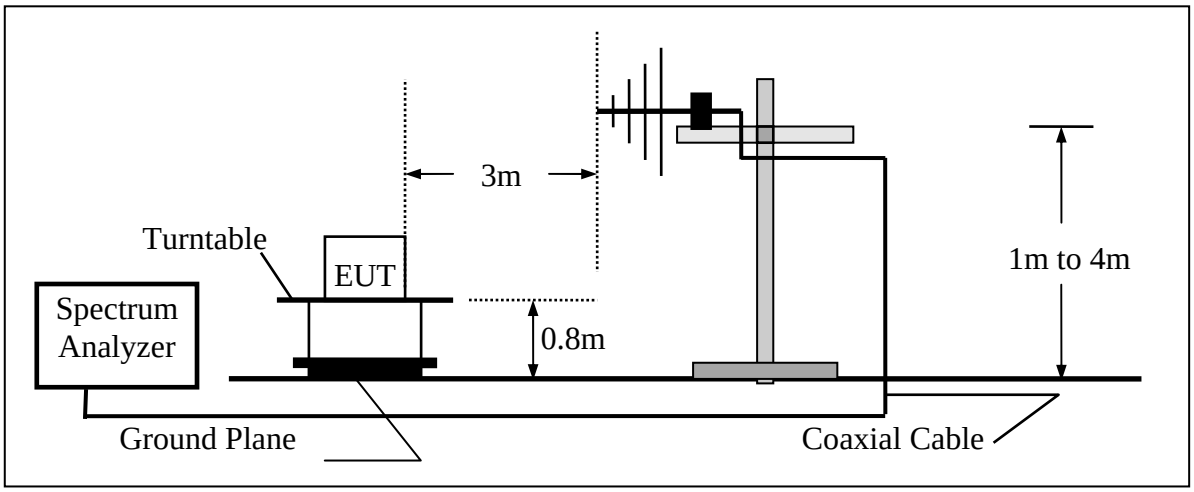
5. Radiated Emission Test

5.1 Measurement Procedure

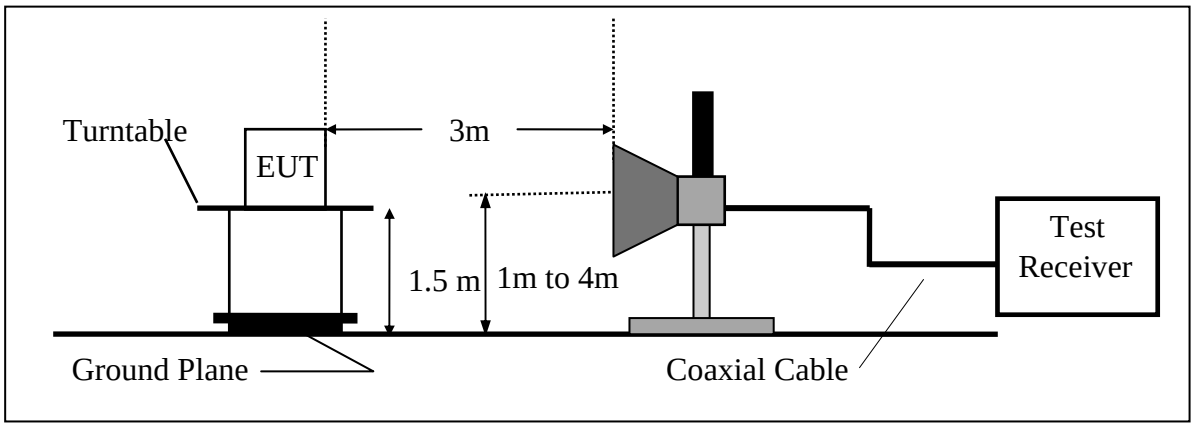
1. The EUT was placed on a turntable that is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

5.2 Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(B) Radiated Emission Test Set-UP Frequency Over 1 GHz



5.3 Measurement Equipment Used:

Chamber 14(966)					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
966 Chamber	Chance Most	Chamber 19	N/A	08/15/2016	08/14/2017
Spectrum Analyzer 21(3Hz-44GHz)	Agilent	N9030A	MY51360021	10/02/2016	10/01/2017
Loop Antenna (9K-30M)	A.H.SYSTEM	SAS-564	294	06/17/2015	06/16/2017
Bilog Antenna (30M-1G)	SCHWARZBECK	VULB9168 w 5dB Att	736	07/22/2016	07/21/2017
Horn antenna (1G-18G)	SCHWARZBECK	9120D	9120D-1627	07/22/2016	07/21/2017
Horn antenna (18G-26G)	Com-power	AH-826	081001	07/24/2015	07/23/2017
Horn antenna (26G-40G)	Com-power	AH-640	100A	01/21/2015	01/20/2017
Preamplifier (9k-1000M)	HP	8447F	3113A06362	11/13/2015	11/12/2016
Preamplifier(1G-26G)	Agilent	8449B	3008A02471	08/25/2016	08/24/2017
RF Cable (9k-18G)	HUBER SUHNER	SUCOFLEX 104A	MY1397/4A	08/25/2016	08/24/2017
RF cable (18G~40G)	HUBER SUHNER	Sucoflex 102	27963/2&37421/2	11/03/2015	11/02/2016
2.4G Filter	Micro-Tronics	Brm50702	76	12/26/2015	12/25/2016
Test Software	Audix	E3 Ver:6.12023	N/A	N/A	N/A
Test Software	Farad	EZEMC Ver:ISL-03A2	N/A	N/A	N/A

5.4 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

5.5 Measurement Result

Fundamental Emission Measurement Result

Operation Mode	: TX mode	Test Date	: 2016/09/01
Fundamental Frequency	: 2408 MHz, 2440 MHz, 2474MHz	Test By	: Dino
Temp	: 25 ℃	Hum.	: 60%

CH Low:

No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	2408.50	79.61	-5.64	73.97	114.00	-40.03	Peak	VERTICAL
1	2408.44	89.33	-5.64	83.69	114.00	-30.31	Peak	HORIZONTAL

CH Mid:

No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	2440.58	81.41	-5.55	75.86	114.00	-38.14	Peak	VERTICAL
1	2440.49	90.79	-5.55	85.24	114.00	-28.76	Peak	HORIZONTAL

CH High:

No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	2474.50	83.90	-5.44	78.46	114.00	-35.54	Peak	VERTICAL
1	2473.62	91.38	-5.44	85.94	114.00	-28.06	Peak	HORIZONTAL

Remark:

1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency

2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.

3 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

4 Spectrum AV mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 10KHz.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	TX CH Low	Test Date	2016/09/01
Fundamental Frequency	2408 MHz	Test By	Dino
Temperature	25 ℃	Humidity	60 %

No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Over L imit dB	Remark	Pol V/H
1	96.93	46.24	-16.34	29.90	43.50	-13.60	Peak	VERTICAL
2	106.63	51.04	-15.58	35.46	43.50	-8.04	Peak	VERTICAL
3	259.89	38.49	-11.70	26.79	46.00	-19.21	Peak	VERTICAL
4	286.08	42.34	-12.27	30.07	46.00	-15.93	Peak	VERTICAL
5	302.57	38.38	-11.91	26.47	46.00	-19.53	Peak	VERTICAL
6	398.60	36.40	-9.85	26.55	46.00	-19.45	Peak	VERTICAL
1	96.93	40.48	-16.34	24.14	43.50	-19.36	Peak	HORIZONTAL
2	106.63	38.28	-15.58	22.70	43.50	-20.80	Peak	HORIZONTAL
3	299.66	40.14	-11.97	28.17	46.00	-17.83	Peak	HORIZONTAL
4	600.36	34.34	-6.99	27.35	46.00	-18.65	Peak	HORIZONTAL
5	749.74	35.62	-5.32	30.30	46.00	-15.70	Peak	HORIZONTAL
6	900.09	33.26	-3.90	29.36	46.00	-16.64	Peak	HORIZONTAL

Remark:

1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency

2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.

3 “F” denotes fundamental frequency; “H” denotes harmonics frequency. “S” denotes spurious frequency.

4 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

6 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	TX CH Mid	Test Date	2016/09/01
Fundamental Frequency	2440 MHz	Test By	Dino
Temperature	25 ℃	Humidity	60 %

No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	71.71	40.49	-20.29	20.20	40.00	-19.80	Peak	VERTICAL
2	96.93	46.35	-16.34	30.01	43.50	-13.49	Peak	VERTICAL
3	106.63	50.85	-15.58	35.27	43.50	-8.23	Peak	VERTICAL
4	286.08	43.21	-12.27	30.94	46.00	-15.06	Peak	VERTICAL
5	303.54	38.65	-11.90	26.75	46.00	-19.25	Peak	VERTICAL
6	398.60	36.39	-9.85	26.54	46.00	-19.46	Peak	VERTICAL
1	96.93	41.01	-16.34	24.67	43.50	-18.83	Peak	HORIZONTAL
2	255.04	35.72	-12.36	23.36	46.00	-22.64	Peak	HORIZONTAL
3	299.66	39.90	-11.97	27.93	46.00	-18.07	Peak	HORIZONTAL
4	600.36	34.65	-6.99	27.66	46.00	-18.34	Peak	HORIZONTAL
5	749.74	35.86	-5.32	30.54	46.00	-15.46	Peak	HORIZONTAL
6	900.09	33.36	-3.90	29.46	46.00	-16.54	Peak	HORIZONTAL

Remark:

1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency

2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.

3 “F” denotes fundamental frequency; “H” denotes harmonics frequency. “S” denotes spurious frequency.

4 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

6 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	TX CH High	Test Date	2016/09/01
Fundamental Frequency	2474 MHz	Test By	Dino
Temperature	25 ℃	Humidity	60 %

No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	96.93	46.57	-16.34	30.23	43.50	-13.27	Peak	VERTICAL
2	106.63	50.92	-15.58	35.34	43.50	-8.16	Peak	VERTICAL
3	286.08	42.46	-12.27	30.19	46.00	-15.81	Peak	VERTICAL
4	303.54	39.22	-11.90	27.32	46.00	-18.68	Peak	VERTICAL
5	398.60	36.22	-9.85	26.37	46.00	-19.63	Peak	VERTICAL
6	415.09	34.71	-9.51	25.20	46.00	-20.80	Peak	VERTICAL
1	96.93	40.63	-16.34	24.29	43.50	-19.21	Peak	HORIZONTAL
2	263.77	37.24	-11.96	25.28	46.00	-20.72	Peak	HORIZONTAL
3	299.66	39.99	-11.97	28.02	46.00	-17.98	Peak	HORIZONTAL
4	600.36	34.75	-6.99	27.76	46.00	-18.24	Peak	HORIZONTAL
5	749.74	35.61	-5.32	30.29	46.00	-15.71	Peak	HORIZONTAL
6	900.09	33.20	-3.90	29.30	46.00	-16.70	Peak	HORIZONTAL

Remark:

1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency

2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.

3 “F” denotes fundamental frequency; “H” denotes harmonics frequency. “S” denotes spurious frequency.

4 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

6 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	: TX CH Low	Test Date	: 2016/09/01
Fundamental Frequency	: 2408 MHz	Test By	: Dino
Temp	: 25 ℃	Hum.	: 60%

No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Over L imit dB	Remark	Pol V/H
1	4816.00	42.27	0.96	43.23	74.00	-30.77	Peak	VERTICAL
2	7224.00	29.21	7.67	36.88	74.00	-37.12	Peak	VERTICAL
1	4816.00	38.54	0.96	39.50	74.00	-34.50	Peak	HORIZONTAL
2	7224.00	29.58	7.67	37.25	74.00	-36.75	Peak	HORIZONTAL

Remark:

1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency

2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.

3 “F” denotes fundamental frequency; “H” denotes harmonics frequency. “S” denotes spurious frequency.

4 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

6 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	: TX CH Mid	Test Date	: 2016/09/01
Fundamental Frequency	: 2440 MHz	Test By	: Dino
Temp	: 25 ℃	Hum.	: 60%

No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Over L imit dB	Remark	Pol V/H
1	4880.00	40.52	1.08	41.60	74.00	-32.40	Peak	VERTICAL
2	7320.00	30.34	7.81	38.15	74.00	-35.85	Peak	VERTICAL
1	4880.00	39.08	1.08	40.16	74.00	-33.84	Peak	HORIZONTAL
2	7320.00	29.29	7.81	37.10	74.00	-36.90	Peak	HORIZONTAL

Remark:

1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency

2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.

3 “F” denotes fundamental frequency; “H” denotes harmonics frequency. “S” denotes spurious frequency.

4 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

6 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	: TX CH High	Test Date	: 2016/09/01
Fundamental Frequency	: 2474 MHz	Test By	: Dino
Temp	: 25 ℃	Hum.	: 60%

No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Over L imit dB	Remark	Pol V/H
1	4948.00	38.71	1.22	39.93	74.00	-34.07	Peak	VERTICAL
2	7422.00	28.89	7.96	36.85	74.00	-37.15	Peak	VERTICAL
1	4948.00	43.01	1.22	44.23	74.00	-29.77	Peak	HORIZONTAL
2	7422.00	28.91	7.96	36.87	74.00	-37.13	Peak	HORIZONTAL

Remark:

1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency

2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.

3 “F” denotes fundamental frequency; “H” denotes harmonics frequency. “S” denotes spurious frequency.

4 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

6 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (Band Edge)

Operation Mode : Band Edge Test Date :2016/09/01
Temp./Hum. : 25 ℃/ : 60% Test By : Dino

CH Low

No	Freq MHz	Reading dBuV	Factor dB	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	2390.00	51.56	-5.70	45.86	74.00	-28.14	Peak	VERTICAL
2	2400.00	51.85	-5.66	46.19	74.00	-27.81	Peak	VERTICAL
1	2390.00	51.86	-5.70	46.16	74.00	-27.84	Peak	HORIZONTAL
2	2400.00	53.15	-5.66	47.49	74.00	-26.51	Peak	HORIZONTAL

CH High

No	Freq MHz	Reading dBuV	Factor dB	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	2483.50	52.16	-5.41	46.75	74.00	-27.25	Peak	VERTICAL
1	2483.50	56.99	-5.41	51.58	74.00	-22.42	Peak	HORIZONTAL
2	2484.67	51.00	-5.41	45.59	54.00	-8.41	Average	HORIZONTAL
3	2484.67	61.15	-5.41	55.74	74.00	-18.26	Peak	HORIZONTAL
4	2487.46	49.02	-5.41	43.61	54.00	-10.39	Average	HORIZONTAL
5	2487.46	59.52	-5.41	54.11	74.00	-19.89	Peak	HORIZONTAL

Remark:

1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency

2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.

3 Measurement of data within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

4 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

5 Spectrum AV mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 10MHz.

6. 20 dB Band Width Measurement

6.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set ETU normal operating mode.
3. Set SPA Center Frequency = fundamental frequency, RBW = 100kHz, VBW = 300kHz, Span =5MHz.
4. Set SPA Max hold. Mark peak, -20dB.

6.2 Test SET-UP (Block Diagram of Configuration)

Same as 4.2 Radiated Emission Measurement.

6.3 Measurement Equipment Used:

Same as 4.2 Radiated Emission Measurement.

6.4 Measurement Results:

2408 Channel = 2.221MHz

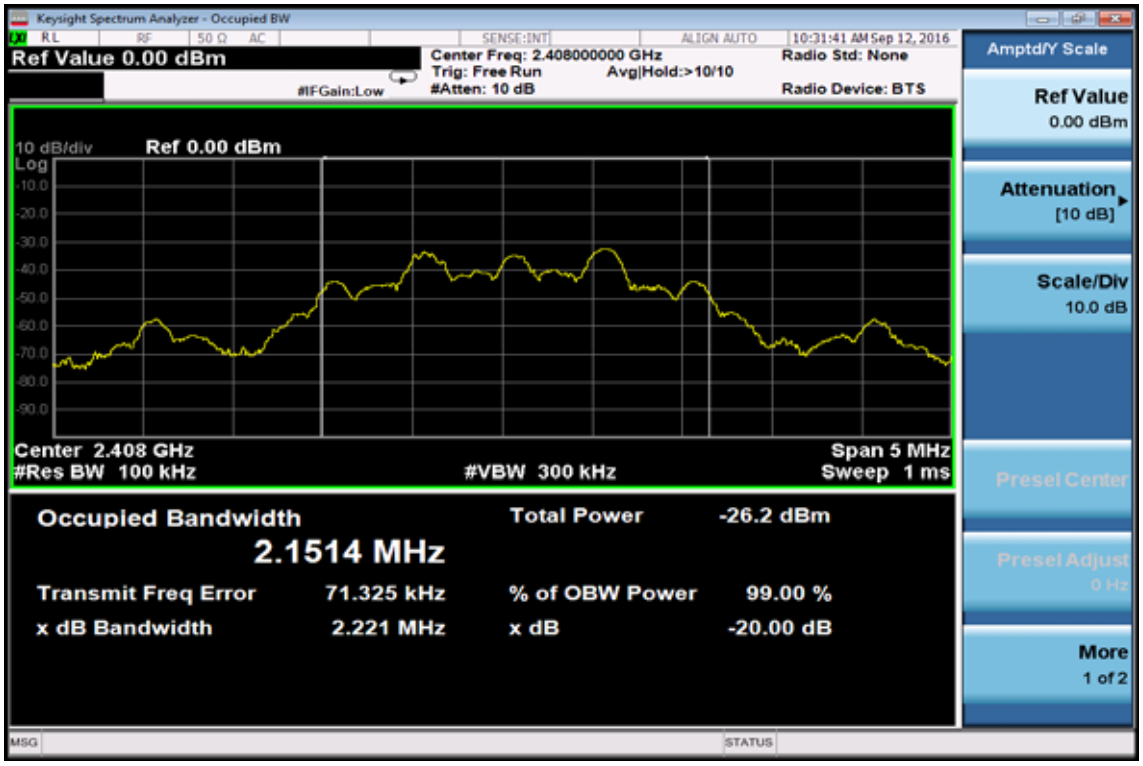
2440 Channel = 2.228MHz

2464 Channel = 2.228MHz

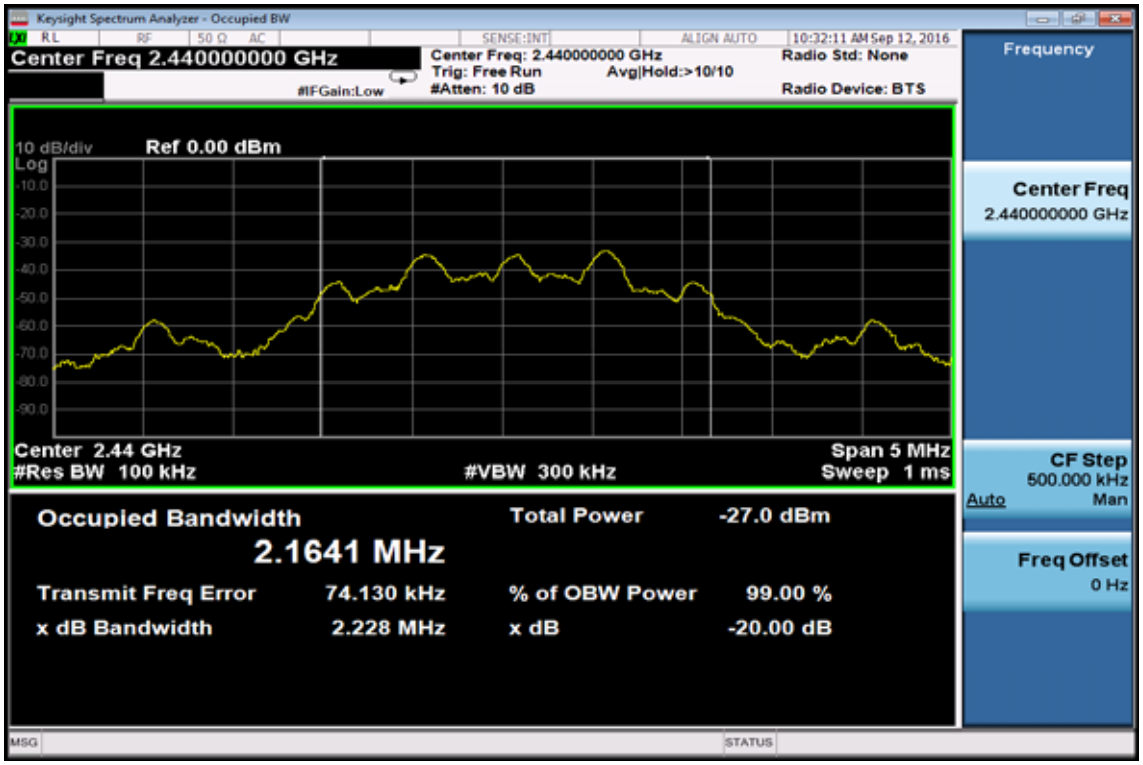
Refer to attached data chart.

20dB Band Width test Plot

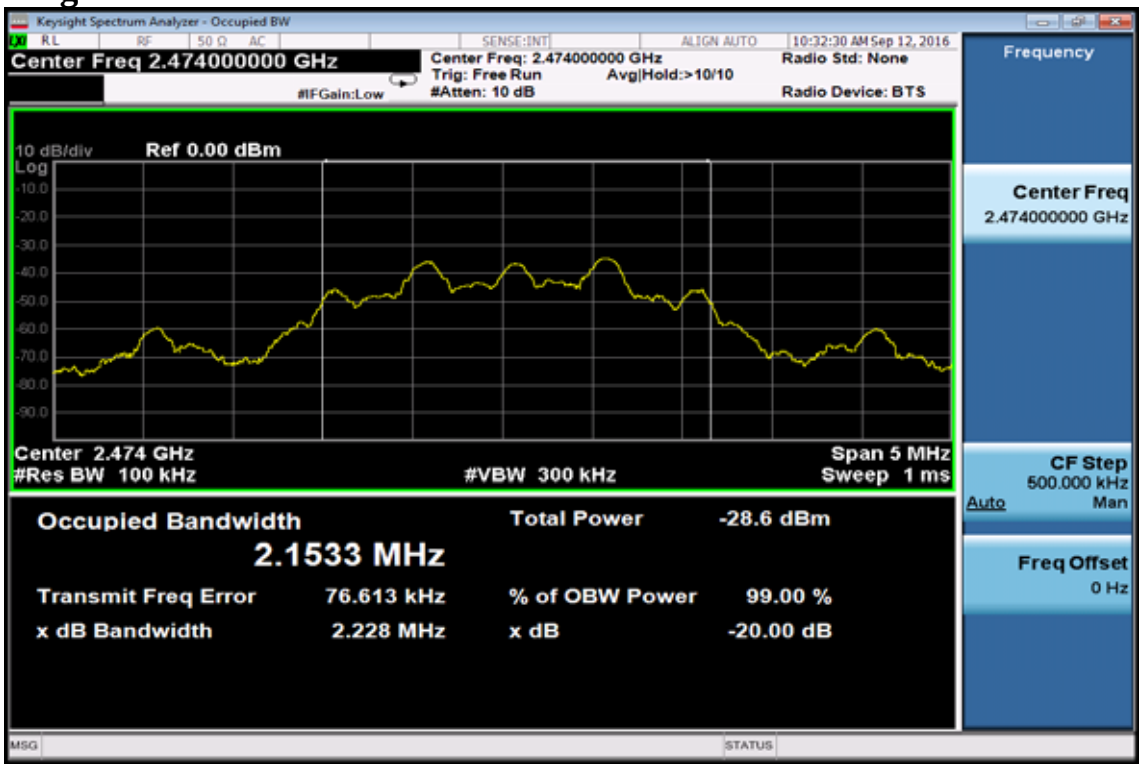
CH Low



CH Mid



CH High


Keysight Spectrum Analyzer - Occupied BW
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
10:32:30 AM Sep 12, 2016
Center Freq 2.474000000 GHz
Center Freq: 2.474000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 10 dB
Radio Std: None
Radio Device: BTS
Frequency
10 dB/div
Log
Ref 0.00 dBm
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
Center Freq
2.474000000 GHz
Center 2.474 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 5 MHz
Sweep 1 ms
CF Step
500.000 kHz
Auto
Man
Occupied Bandwidth
2.1533 MHz
Total Power
-28.6 dBm
Freq Offset
0 Hz
Transmit Freq Error
76.613 kHz
% of OBW Power
99.00 %
x dB Bandwidth
2.228 MHz
x dB
-20.00 dB
MSG
STATUS