

APPLICATION FOR CERTIFICATION

On Behalf of

Philips (China) Investment Co., Ltd.

LED Lamps

Model No. : 9290002761

Brand : Philips

FCC ID : O3M9290002761X

Prepared for

**Philips (China) Investment Co., Ltd.**

No. 9, Lane 888, Tian Lin Road, 200233, Shanghai, China

Prepared by

**Audix Technology (Wujiang) Co., Ltd. EMC Dept.**

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Report Number : ACWE-F103002

Date of Test : Nov.23,2013~Feb.24,2014

Date of Report : Mar.11,2014

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**TEST REPORT CERTIFICATION**

Applicant : Philips (China) Investment Co., Ltd.  
 Manufacturer #1 : Changan Win Channel Electronics Company Limited  
 Manufacturer #2 : Arts Electronics Co., Ltd.  
 EUT Description : LED Lamps  
 FCC ID : O3M9290002761X  
 (A) Model No. : 9290002761  
 (B) Brand : Philips  
 (C) Power Supply : AC 110-130V; 50/60Hz; 9W  
 (D) Test Voltage : AC 120V, 60Hz

## Applicable Standards:

**FCC RULES AND REGULATIONS PART 15 SUBPART C, Oct. 2012**  
**ANSI C63.4-2003**  
**KDB 558074 D01 DTS Meas Guidance v03r01**

The device described above was tested by Audix Technology (Wujiang) Co., Ltd. EMC Dept. to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15 subpart C section 15.207, 15.205, 15.209&15.247 limits.

The measurement results are contained in this test report and Audix Technology (Wujiang) Co., Ltd. EMC Dept. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Wujiang) Co., Ltd. EMC Dept.

Date of Test: Nov.23,2013~Feb.24,2014

Date of Report: Mar.11,2014

Prepared by

:

*Tina Zhang*

(Tina Zhang/Assistant)

Reviewer

:

*Jingo Lin*

(Jingo Lin/Section Manager)

Approved &amp; Authorized Signer

:

*Ken Lu 3/15/14*

(Ken Lu/ Assistant General Manager)

# 1. SUMMARY OF MEASUREMENTS AND RESULTS

The EUT has been tested according to the applicable standards and test results are referred as below.

Description of Test Item	Standard	Results	Remark
CONDUCTED EMISSION	FCC 47 CFR Part 15 Subpart C/ Section 15.207 And ANSI C63.4-2003 And KDB 558074 D01 DTS Meas Guidance v03r01	PASS	Minimum passing margin is 0.19 dB at 16.16 MHz
RADIATED EMISSION	FCC 47 CFR Part 15 Subpart C/ Section 15.209& Section 15.205 And ANSI C63.4-2003 And KDB 558074 D01 DTS Meas Guidance v03r01	PASS	Minimum passing margin is 3.08 dB at 2483.50 MHz
6 dB BANDWIDTH	FCC 47 CFR Part 15 Subpart C/ Section 15.247(a)(2) And ANSI C63.4-2003 And KDB 558074 D01 DTS Meas Guidance v03r01	PASS	Minimum passing margin is 78.6kHz at CH11
MAXIMUM PEAK OUTPUT POWER	FCC 47 CFR Part 15 Subpart C/ Section 15.247(b)(3) And ANSI C63.4-2003 And KDB 558074 D01 DTS Meas Guidance v03r01	PASS	Minimum passing margin is 22.397dB at CH11
BAND EDGES	FCC 47 CFR Part 15 Subpart C/ Section 15.247(d) And ANSI C63.4-2003 And KDB 558074 D01 DTS Meas Guidance v03r01	PASS	---
POWER SPECTRAL DENSITY	FCC 47 CFR Part 15 Subpart C/ Section 15.247(e) And ANSI C63.4-2003 And KDB 558074 D01 DTS Meas Guidance v03r01	PASS	Minimum passing margin is 20.824dB at CH11
EMISSION LIMITATIONS	FCC 47 CFR Part 15 Subpart C/ Section 15.247(d) And ANSI C63.4-2003 And KDB 558074 D01 DTS Meas Guidance v03r01	PASS	---

## 2. GENERAL INFORMATION

### 2.1. Description of Device (EUT)

Description	:	LED Lamps
Model No.	:	9290002761
FCC ID	:	O3M9290002761X
Brand	:	Philips
Applicant	:	Philips (China) Investment Co., Ltd. No. 9, Lane 888, Tian Lin Road, 200233, Shanghai, China
Manufacturer #1	:	Changan Win Channel Electronics Company Limited No.85, Tong Gu Xia Lu, Shangjiao Community, Changan Town, Dongguan City, Guangdong Province, China
Manufacturer #2	:	Arts Electronics Co., Ltd. Shangxing Lu, Shangjiao Community, Changan Town, Dongguan Guangdong523000 China
Radio Technology	:	IEEE 802.15.4 (ZigBee®)
Antenna Gain	:	-8.5dBi
Fundamental Range	:	2405 MHz -2480MHz
Tested Frequency	:	2405MHz (CH11) 2450MHz (CH20) 2480MHz (CH26)
Highest Working Frequency	:	2.4GHz
Date of Receipt of Sample	:	Nov.20, 2013
Date of Test	:	Nov.23,2013~Feb.24,2014

## 2.2. Description of Test Facility

Name of Firm : **Audix Technology (Wujiang) Co., Ltd. EMC Dept.**

Site Location : No. 1289 Jiangxing East Road, the Eastern Part of  
Wujiang Economic Development Zone  
Jiangsu China 215200

Test Facilities : **No.1 Conducted Shielding Enclosure**  
  
**No.1 3m Semi-anechoic Chamber**  
Date of Validity: May. 23, 2015  
FCC Registration No.: 897661  
IC Registration No.:5183D-2  
  
**RF Fully Chamber**

NVLAP Lab Code : 200786-0  
(NVLAP is a NATA accredited body under Mutual  
Recognition Agreement)  
Valid until on Sep.30, 2014

## 2.3. Measurement Uncertainty

Test Item	Range Frequency	Uncertainty
Conducted Disturbance Measurement	0.15MHz ~ 30MHz	$\pm 2.48\text{dB}$
Radiated Disturbance Measurement (At 3m Chamber)	30MHz ~ 1000MHz	$\pm 3.35\text{dB}$ (Horizontal)
		$\pm 3.32\text{dB}$ (Vertical)
Radiated Disturbance Measurement (At 3m Chamber)	Above 1GHz	$\pm 4.69\text{dB}$

Remark: Uncertainty =  $k_{uc}(y)$

Test Item	Uncertainty
6 dB Bandwidth	$\pm 3.1 \times 10^{-6} \text{ MHz}$
Maximum Peak Output Power	$\pm 0.30\text{dB}$
Band Edges	$\pm 0.302\text{dB}$
Power Spectral Density	$\pm 0.212\text{dB}$
Emission Limitations	$\pm 0.24\text{dB}$

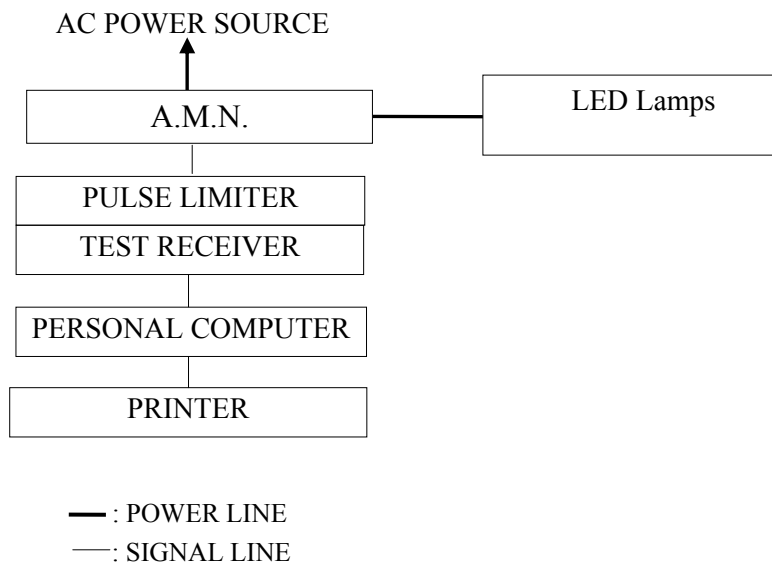
Remark: Uncertainty =  $k_{uc}(y)$

### 3. CONDUCTED EMISSION MEASUREMENT

#### 3.1. Test Equipment

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R & S	ESCI	100839	2014-01-05	2015-01-04
2.	A.M.N.	R & S	ESH2-Z5	100153	2013-05-17	2014-05-16
3.	L.I.S.N	Kyoritsu	KNW-407	8-1793-3	2013-08-06	2014-08-05
4.	Pulse Limiter	R&S	ESH3-Z2	100605	2013-08-06	2014-08-05
5.	RF Cable	Harbour Industries	RG400	003	2013-03-24	2014-03-23

#### 3.2. Block Diagram of Test Setup



#### 3.3. Power line Conducted Emission Limit

##### 3.3.1. Power line Conducted Emission Limit (FCC Part 15, Section 15.207, Class B)

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level	Average Level
150kHz ~ 500kHz	66 ~ 56 dB $\mu$ V	56 ~ 46 dB $\mu$ V
500kHz ~ 5MHz	56 dB $\mu$ V	46 dB $\mu$ V
5MHz ~ 30MHz	60 dB $\mu$ V	50 dB $\mu$ V

Remark1: If the average limit is met when using a Quasi-Peak detector, the EUT shall be deemed to meet both limits and measurement with the average detector is unnecessary.

2: The lower limit applies at the band edges.



### 3.4. Test Procedure

The measuring process is according to ANSI C63.4-2003 and laboratory internal procedure TKC-301-004. (For FCC Part15 Subpart C)

In the conducted emission measurement, the EUT and all peripheral devices were set up on a non-metallic table which was 0.8 meters height above the ground plane, and 0.4 meters far away from the vertical plane. The EUT (installed in PC system) was powered by AC mains through Artificial Mains Network (A.M.N), other peripheral devices were powered by AC mains through the second Line Impedance Stabilization Network (L.I.S.N). For the measurement, the A.M.N measuring port was terminated by a 50Ω measuring equipment and the second L.I.S.N measuring port was terminated by a 50Ω resistive load. All measurements were done on the phase and neutral line of the EUT's power cord. All cables or wires placement were verified to find out the maximum emission.

The bandwidth of measuring receiver was set at 9 kHz.

The required frequency band (0.15 MHz ~ 30 MHz) was pre-scanned with peak detector, the final measurement was measured with quasi-peak detector and average detector. (If the average limit is met when using a quasi-peak detector, the average detector is necessary).

The emission level is calculated automatically by the test system which uses the following equation:

Emission level (dBμV) = Meter-Reading (dBμV) + A.M.N factor (dB) + Cable loss (dB).

(Cable loss include pulse limiter loss)

### 3.5. Conducted Emission Measurement Results

#### 3.5.1. Conducted Emission Measurement Results (For FCC Part15 Subpart C)

**PASSED.**

(All the emissions not reported below are too low against the prescribed limits.)

EUT was performed during this section testing and all the test results are attached in next pages.

Test Date : Feb.23,2014

Temperature : 17.7

Humidity : 41%

Mode	Test Condition	Reference Test Data No.	
		Neutral	Line
1	CH 11	# 5	# 6
2	CH 20	# 7	# 8
3	<b>CH 26</b>	<b># 9</b>	<b># 10</b>

NOTE 1- ' ' means the worst test mode.

NOTE 2- The worst emission is detected at 0.19 MHz with emission level of 48.05 dB (μV) and with QP detector (Limit is 64.21 dB (μV)), when the Neutral of the EUT is connected to AMN.

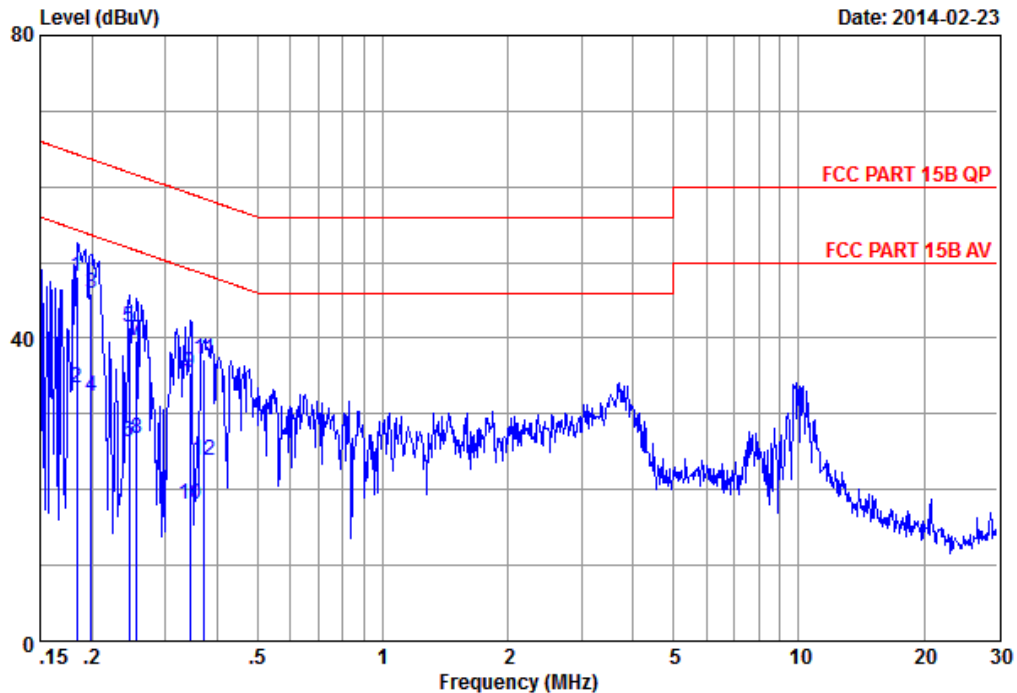


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Data: 5

File: F:\2013Test Data\Report\11\G13111033.EM6 (12)

Date: 2014-02-23



Site no. : No.1 Conducted shielding Enclosure Data no. : 5  
 AMN/LISN : ESH2-Z5-1305 Phase : NEUTRAL  
 Limit : FCC PART 15B QP  
 Env. / Ins. : 17.7\*41%/ESCI Engineer : KM.Tong  
 EUT : LED Lamps  
 M/N : 9290002761  
 Power Rating : 120Vac/60Hz  
 Test mode : CH11  
 Memo :

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.18	0.18	9.87	38.00	48.05	64.30	16.25	QP
2	0.18	0.18	9.87	23.30	33.35	54.30	20.95	Average
3	0.20	0.18	9.87	35.80	45.85	63.65	17.80	QP
4	0.20	0.18	9.87	22.30	32.35	53.65	21.30	Average
5	0.25	0.18	9.86	31.31	41.35	61.92	20.57	QP
6	0.25	0.18	9.86	16.21	26.25	51.92	25.67	Average
7	0.26	0.18	9.86	29.71	39.75	61.56	21.81	QP
8	0.26	0.18	9.86	16.81	26.85	51.56	24.71	Average
9	0.34	0.19	9.86	25.40	35.45	59.11	23.66	QP
10	0.34	0.19	9.86	8.10	18.15	49.11	30.96	Average
11	0.37	0.19	9.86	27.10	37.15	58.43	21.28	QP
12	0.37	0.19	9.86	13.80	23.85	48.43	24.58	Average

1. Emission Level = AMN Factor + Cable Loss + Reading.
2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

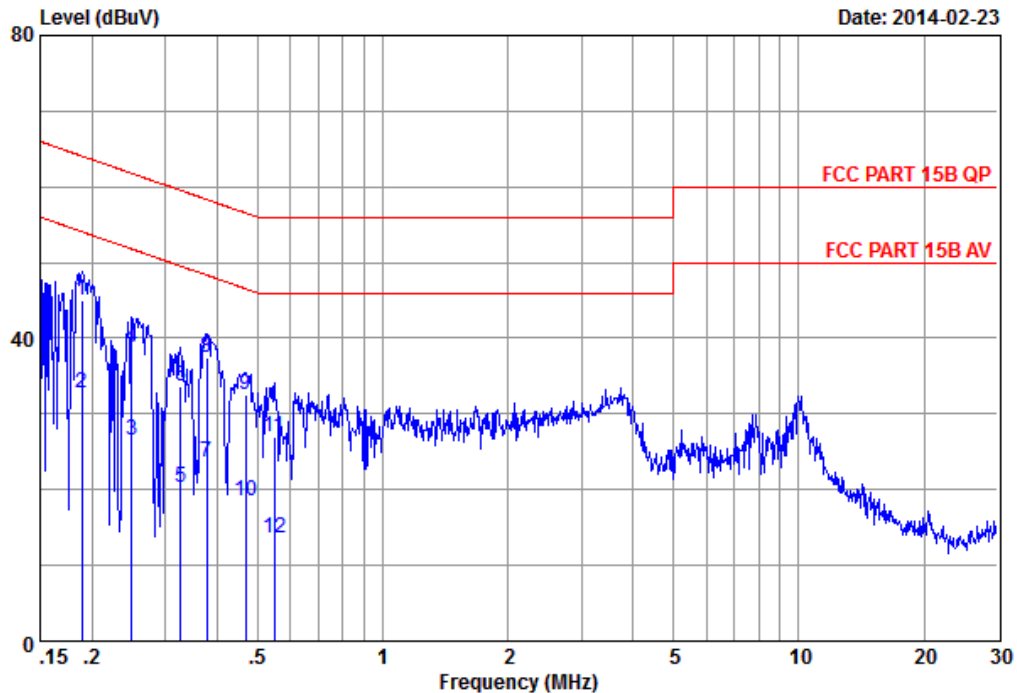


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Data: 6

File: F:\2013Test Data\Report\11\G1311033.EM6 (12)

Date: 2014-02-23



Site no. : No.1 Conducted shielding Enclosure Data no. : 6  
 AMN/LISN : ESH2-Z5-1305 Phase : LINE  
 Limit : FCC PART 15B QP  
 Env. / Ins. : 17.7°C&41%/ESCI Engineer : KM.Tong  
 EUT : LED Lamps  
 M/N : 9290002761  
 Power Rating : 120Vac/60Hz  
 Test mode : CH11  
 Memo :

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.19	0.24	9.87	34.90	45.01	64.08	19.07	QP
2	0.19	0.24	9.87	22.60	32.71	54.08	21.37	Average
3	0.25	0.25	9.86	16.41	26.52	51.79	25.27	Average
4	0.25	0.25	9.86	28.61	38.72	61.79	23.07	QP
5	0.33	0.27	9.86	10.10	20.23	49.55	29.32	Average
6	0.33	0.27	9.86	23.60	33.73	59.55	25.82	QP
7	0.38	0.28	9.86	13.51	23.65	48.35	24.70	Average
8	0.38	0.28	9.86	27.31	37.45	58.35	20.90	QP
9	0.47	0.30	9.87	22.39	32.56	56.55	23.99	QP
10	0.47	0.30	9.87	8.29	18.46	46.55	28.09	Average
11	0.55	0.31	9.87	16.70	26.88	56.00	29.12	QP
12	0.55	0.31	9.87	3.50	13.68	46.00	32.32	Average

1. Emission Level = AMN Factor + Cable Loss + Reading.
2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

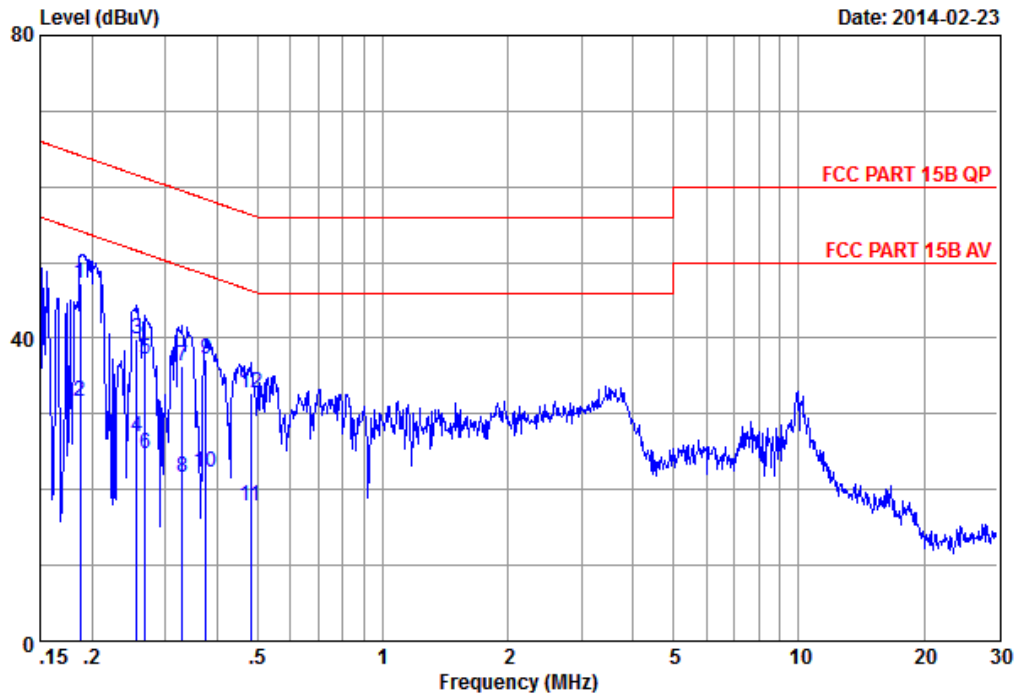


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Data: 7

File: F:\2013Test Data\Report\11\G1311033.EM6 (12)

Date: 2014-02-23



Site no. : No.1 Conducted shielding Enclosure Data no. : 7  
 AMN/LISN : ESH2-Z5-1305 Phase : NEUTRAL  
 Limit : FCC PART 15B QP  
 Env. / Ins. : 17.7°C&41%/ESCI Engineer : KM.Tong  
 EUT : LED Lamps  
 M/N : 9290002761  
 Power Rating : 120Vac/60Hz  
 Test mode : CH20  
 Memo :

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.19	0.18	9.87	37.30	47.35	64.17	16.82	QP
2	0.19	0.18	9.87	21.50	31.55	54.17	22.62	Average
3	0.26	0.18	9.86	29.91	39.95	61.56	21.61	QP
4	0.26	0.18	9.86	17.01	27.05	51.56	24.51	Average
5	0.27	0.18	9.86	27.21	37.25	61.18	23.93	QP
6	0.27	0.18	9.86	14.61	24.65	51.18	26.53	Average
7	0.33	0.19	9.86	26.30	36.35	59.45	23.10	QP
8	0.33	0.19	9.86	11.60	21.65	49.45	27.80	Average
9	0.38	0.19	9.86	27.10	37.15	58.39	21.24	QP
10	0.38	0.19	9.86	12.30	22.35	48.39	26.04	Average
11	0.48	0.19	9.87	7.80	17.86	46.32	28.46	Average
12	0.48	0.19	9.87	22.60	32.66	56.32	23.66	QP

1. Emission Level = AMN Factor + Cable Loss + Reading.
2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

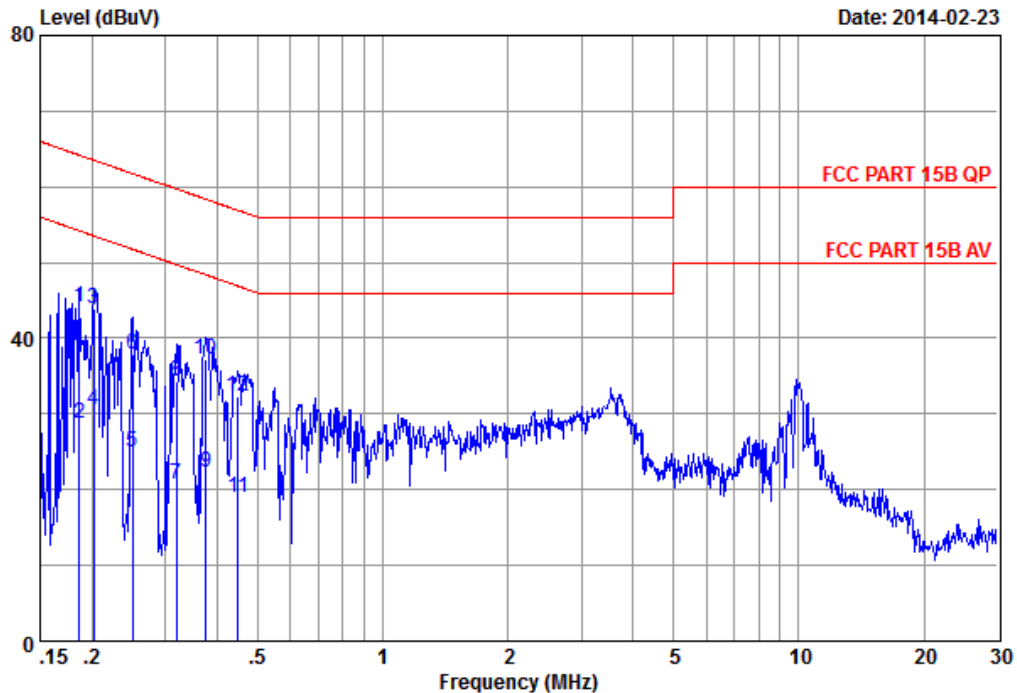


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Data: 8

File: F:\2013Test Data\Report\11\G1311033.EM6 (12)

Date: 2014-02-23



Site no. : No.1 Conducted shielding Enclosure Data no. : 8  
 AMN/LISN : ESH2-Z5-1305 Phase : LINE  
 Limit : FCC PART 15B QP  
 Env. / Ins. : 17.7°C&41%/ESCI Engineer : KM.Tong  
 EUT : LED Lamps  
 M/N : 9290002761  
 Power Rating : 120Vac/60Hz  
 Test mode : CH20  
 Memo :

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.19	0.24	9.87	33.99	44.10	64.21	20.11	QP
2	0.19	0.24	9.87	18.69	28.80	54.21	25.41	Average
3	0.20	0.24	9.87	33.80	43.91	63.53	19.62	QP
4	0.20	0.24	9.87	20.50	30.61	53.53	22.92	Average
5	0.25	0.25	9.86	14.81	24.92	51.76	26.84	Average
6	0.25	0.25	9.86	27.81	37.92	61.76	23.84	QP
7	0.32	0.27	9.86	10.70	20.83	49.73	28.90	Average
8	0.32	0.27	9.86	24.20	34.33	59.73	25.40	QP
9	0.38	0.28	9.86	12.11	22.25	48.39	26.14	Average
10	0.38	0.28	9.86	27.01	37.15	58.39	21.24	QP
11	0.45	0.29	9.87	8.70	18.86	46.89	28.03	Average
12	0.45	0.29	9.87	22.20	32.36	56.89	24.53	QP

1. Emission Level = AMN Factor + Cable Loss + Reading.
2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

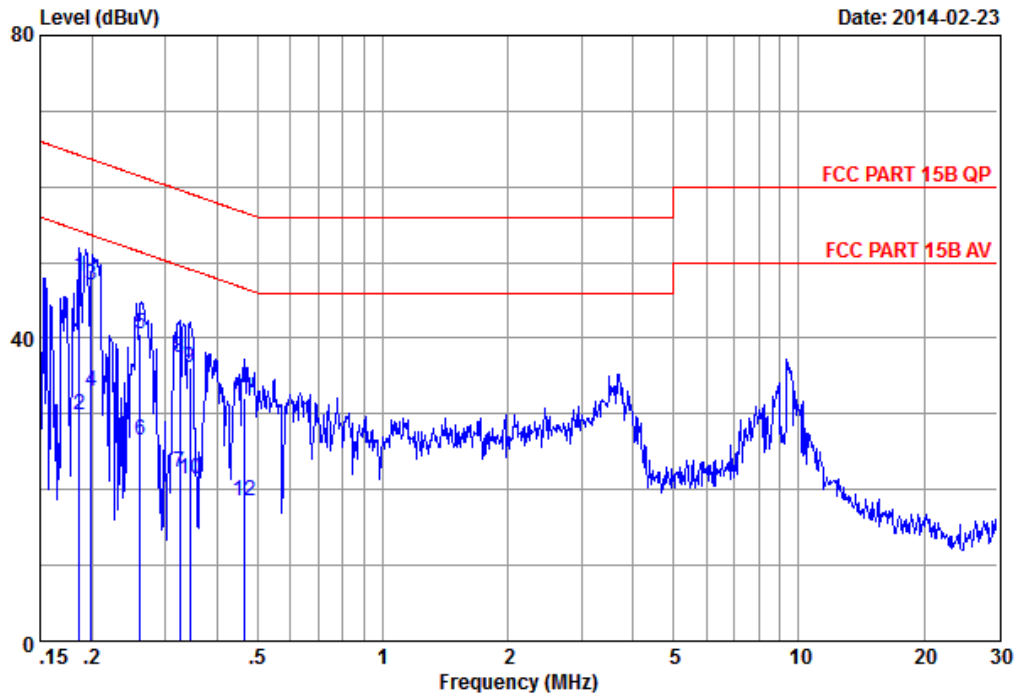


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Data: 9

File: F:\2013Test Data\Report\11\G1311033.EM6 (12)

Date: 2014-02-23



Site no. : No.1 Conducted shielding Enclosure Data no. : 9  
 AMN/LISN : ESH2-Z5-1305 Phase : NEUTRAL  
 Limit : FCC PART 15B QP  
 Env. / Ins. : 17.7°C&41%/ESCI Engineer : KM.Tong  
 EUT : LED Lamps  
 M/N : 9290002761  
 Power Rating : 120Vac/60Hz  
 Test mode : CH26  
 Memo :

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.19	0.18	9.87	38.00	48.05	64.21	16.16	QP
2	0.19	0.18	9.87	19.90	29.95	54.21	24.26	Average
3	0.20	0.18	9.87	37.00	47.05	63.65	16.60	QP
4	0.20	0.18	9.87	22.90	32.95	53.65	20.70	Average
5	0.26	0.18	9.86	30.41	40.45	61.40	20.95	QP
6	0.26	0.18	9.86	16.51	26.55	51.40	24.85	Average
7	0.33	0.19	9.86	12.20	22.25	49.58	27.33	Average
8	0.33	0.19	9.86	27.50	37.55	59.58	22.03	QP
9	0.34	0.19	9.86	26.10	36.15	59.11	22.96	QP
10	0.34	0.19	9.86	11.40	21.45	49.11	27.66	Average
11	0.46	0.19	9.87	22.10	32.16	56.64	24.48	QP
12	0.46	0.19	9.87	8.40	18.46	46.64	28.18	Average

1. Emission Level = AMN Factor + Cable Loss + Reading.
2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

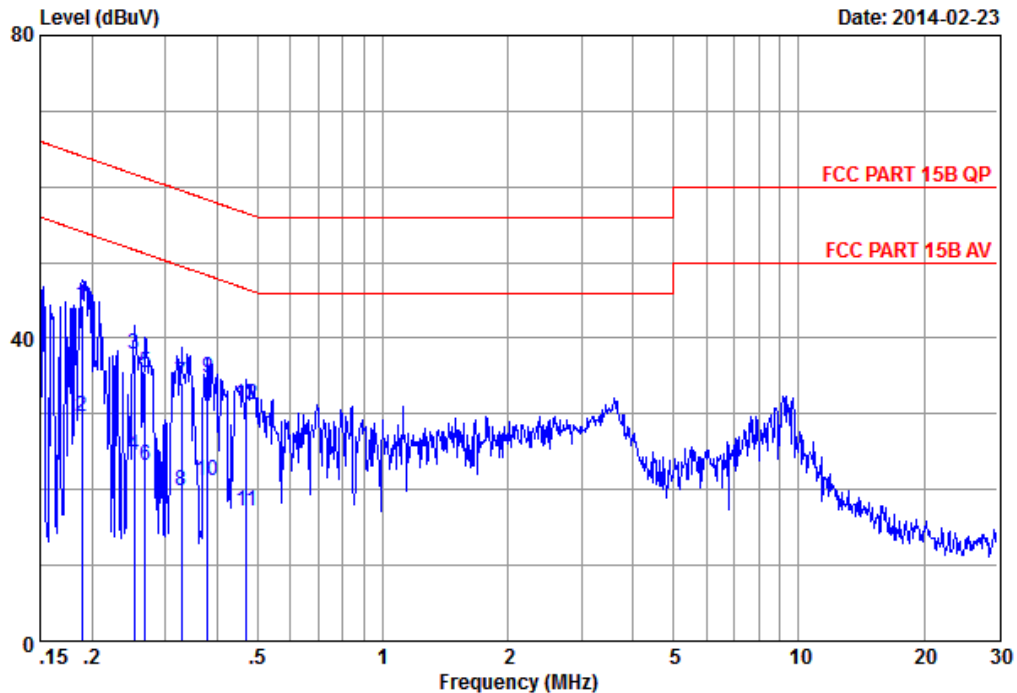


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Data: 10

File: F:\2013Test Data\Report\11\G1311033.EM6 (12)

Date: 2014-02-23



Site no. : No.1 Conducted shielding Enclosure Data no. : 10  
 AMN/LISN : ESH2-Z5-1305 Phase : LINE  
 Limit : FCC PART 15B QP  
 Env. / Ins. : 17.7\*C&41%/ESCI Engineer : KM.Tong  
 EUT : LED Lamps  
 M/N : 9290002761  
 Power Rating : 120Vac/60Hz  
 Test mode : CH26  
 Memo :

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.19	0.24	9.87	34.30	44.41	64.08	19.67	QP
2	0.19	0.24	9.87	19.60	29.71	54.08	24.37	Average
3	0.25	0.26	9.86	27.70	37.82	61.66	23.84	QP
4	0.25	0.26	9.86	14.50	24.62	51.66	27.04	Average
5	0.27	0.26	9.86	25.20	35.32	61.18	25.86	QP
6	0.27	0.26	9.86	13.10	23.22	51.18	27.96	Average
7	0.33	0.27	9.86	24.00	34.13	59.50	25.37	QP
8	0.33	0.27	9.86	9.60	19.73	49.50	29.77	Average
9	0.38	0.28	9.86	24.71	34.85	58.30	23.45	QP
10	0.38	0.28	9.86	11.11	21.25	48.30	27.05	Average
11	0.47	0.30	9.87	7.10	17.27	46.50	29.23	Average
12	0.47	0.30	9.87	21.10	31.27	56.50	25.23	QP

1. Emission Level = AMN Factor + Cable Loss + Reading.
2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

## 4. RADIATED EMISSION MEASUREMENT

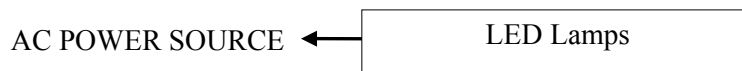
### 4.1. Test Equipment

The following test equipment was used during the radiated emission measurement:  
At 3m Semi-Anechoic Chamber

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Preamplifier	Agilent	8449B	2944A10921	2014-01-05	2015-01-04
2.	Preamplifier	Agilent	8447D	2944A10921	2013-08-14	2014-08-13
3.	PXA Signal Analyzer	Agilent	N9030A	MY53120367	2013-06-24	2014-06-23
4.	Bi-log Antenna	Schaffner	CBL6112D	22253	2013-05-04	2014-05-03
5.	Horn Antenna	EMCO	3115	00062960	2013-05-07	2014-05-06
6.	Horn Antenna	EMCO	3116	00062641	2013-06-08	2015-06-07
7.	Test Receiver	R&S	ESCI	100361	2014-01-05	2015-01-04
8.	RF Cable #1	Yuhang CSYH	cable-3m	001(0.5m)	2013-08-13	2014-08-12
9.	RF Cable #2	Yuhang CSYH	cable-3m	002(0.5m)	2013-03-24	2014-03-23
10.	RF Cable #3	Yuhang CSYH	cable-3m	003(3.0m)	2013-03-24	2014-03-23

### 4.2. Block Diagram of Test Setup

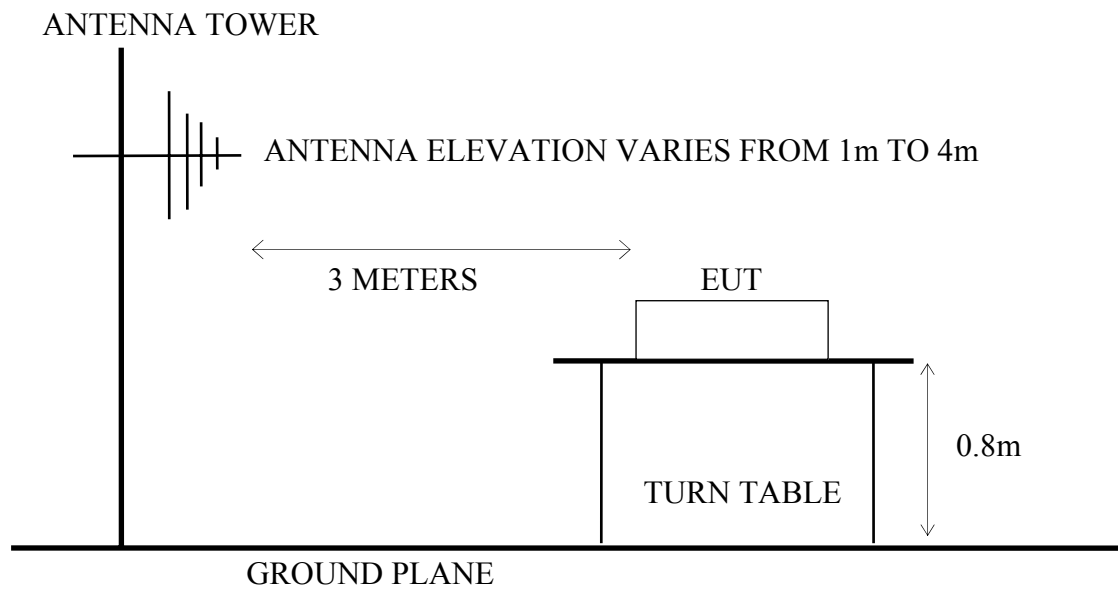
#### 4.2.1. Block Diagram of Test Setup between EUT and simulators



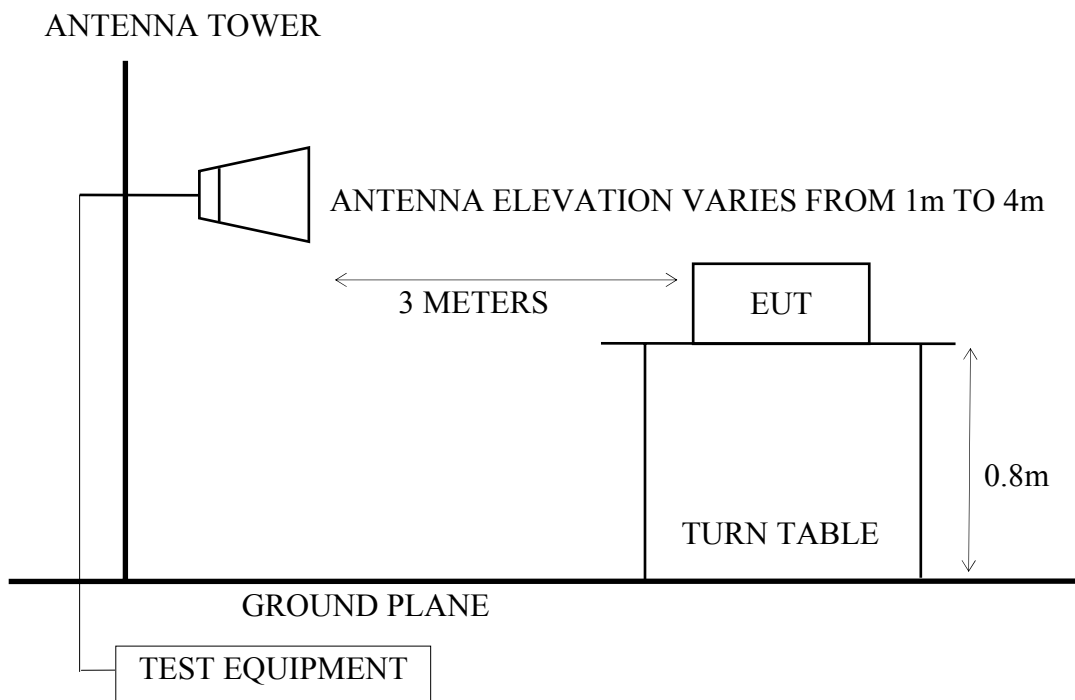
— : POWER LINE



## 4.2.2. No. 1 3m Semi-Anechoic Chamber Setup Diagram (Test distance:3m) for 30-1000MHz



## 4.2.3. No. 1 3m Semi-Anechoic Chamber Setup Diagram (Test distance: 3m) for above 1GHz



#### 4.3. Radiated Emission Limits

Radiated Emission Limits (FCC Part15 C, section 15.209, CISPR22)

Frequency MHz	Distance Meters	Field Strengths Limits
		dB $\mu$ V/m
30 ~ 230	10	30.0
230 ~ 1000	10	37.0
Above 1000	3	74.0 dB $\mu$ V/m (Peak) 54.0 dB $\mu$ V/m (Average)

Remark : (1) Emission level (dB $\mu$ V/m) = 20 log Emission level ( $\mu$ V/m)  
(2)The tighter limit applies at the edge between two frequency bands.

#### 4.4. Test Procedure

The measuring process is according to ANSI C63.4-2003 and laboratory internal procedure TKC-301-001. (For FCC Part15 Subpart C)

In the radiated disturbance measurement, the EUT and all simulators were set up on a non-metallic turn table which was 0.8 meters above the ground plane. Measurement distance between EUT and receiving antennas was set at 10 meters at 30MHz~1000MHz and 3 meters at above 1GHz. The specified distance is the distance between the antennas and the closest periphery of EUT. During the radiated measurement, the EUT was rotated 360° and receiving antennas were moved from 1 ~ 4 meters for finding maximum emission. Two receiving antennas were used for both horizontal and vertical polarization detection for 30MHz~1GHz, One receiving antennas was used for both horizontal and vertical polarization detection for above 1GHz (the absorbing material was added when testing of above 1GHz was done). All cables or wires placement were verified to find out the maximum emission.

The bandwidth of measuring receiver (or spectrum analyzer) was set to:

RBW (120 kHz), VBW (300 kHz) for QP detector below 1GHz  
RBW (1 MHz), VBW (1MHz) for Peak detector above 1GHz  
RBW (1 MHz), VBW (10 Hz) for AV detector above 1GHz

The required frequency band (30 MHz ~ 12000 MHz) was pre-scanned with peak detector; all final measurements were measured with quasi-peak detector below 1GHz, measured with average detector and peak detector above 1GHz.

The emission level is calculated automatically by the test system which uses the following equation :

- For 30-1000MHz measurement:  
Emission Level (dB $\mu$ V/m) = Meter-Reading (dB $\mu$ V)+Antenna Factor (dB/m)+Cable Loss (dB)
- For Above 1GHz measurement:  
Emission Level (dB $\mu$ V/m) = Meter-Reading (dB $\mu$ V)+Antenna Factor (dB/m)+Cable Loss(dB)  
-Pre-amplifier factor (dB)

#### 4.5. Assessment In All Three Orthogonal Planes

After assessment in all three orthogonal planes, when choosing Channel11 test in the radiation, found that XY plan is the worst mode, so in the test of radiation, all with XY plan model test, refer to the following specific data.

##### Test Mode:XY Plan

Polarization	Frequency (MHz)	Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	2404.48	90.55	28.21	6.40	35.07	90.09	74.00	-16.09	Peak
Vertical	2404.54	90.51	28.21	6.40	35.07	90.05	74.00	-16.05	Peak

##### Test Mode:XZ Plan

Polarization	Frequency (MHz)	Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	2404.54	90.54	28.21	6.40	35.07	90.08	74.00	-16.08	Peak
Vertical	2404.30	89.21	28.21	6.40	35.07	88.75	74.00	-14.75	Peak

##### Test Mode:YZ Plan

Polarization	Frequency (MHz)	Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	2405.62	87.92	28.21	6.40	35.07	87.46	74.00	-13.46	Peak
Vertical	2404.54	90.33	28.21	6.40	35.07	89.87	74.00	-15.87	Peak

#### 4.6. Measurement Results

##### **PASSED**

(All the emissions not reported below are too low against the prescribed limits.)

##### 4.6.1. For Restricted Bands:

The EUT was tested in restricted bands and all the test results are listed in section 4.6 & 4.7.

(The restricted bands defined in part 15.205(a))

For Frequency range : below 1GHz

No.	Test Mode and Frequency		Reference Test Data No.	
			Horizontal	Vertical
1.	Transmitting	2405MHz (Channel 11)	# 5	# 6
2.		2450MHz (Channel 20)	# 7	# 8
3.		2480MHz (Channel 26)	# 9	# 10
4.	Receiving		# 11	# 12

For Frequency range : above 1GHz

No.	Test Mode and Frequency		Reference Test Data No.	
			Horizontal	Vertical
1.	Transmitting	2405MHz (Channel 11)	#13	# 14
2.		2450MHz (Channel 20)	# 15	# 16
3.		2480MHz (Channel 26)	# 19	# 20
4.	Receiving		# 21	# 22

##### 4.6.2. For Band Edge Emission

The EUT was tested in restricted bands and all the test results are listed in section 4.8. The restricted bands defined in part 15.205(a))

No.	Test Mode and Frequency		Reference Test Data No.	
			Horizontal	Vertical
1.	Transmitting	2405MHz (Channel 11)	# 23, #25	# 24, # 26
2.		2480MHz (Channel 26)	# 27, # 29	# 28, # 30

## 4.7. Restricted Bands Measurement Results (For Below 1GHz)



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Site NO. : 3m Semi-Anechoic Chamber  
 Dis. / Ant. : 3m 6112D(22253)-1305-3M  
 Limit : FCC PART 15 CLASS B  
 Env. / Ins. : 15.6\*C&62%/ESCI  
 EUT : LED Lamps  
 M/N : 9290002761  
 Power Rating: 120Vac/60Hz  
 Test Mode : TX CH11 2405MHz  
 Memo :

Data NO. : 5  
 Ant. pol. : HORIZONTAL  
 Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	51.26	8.40	0.45	31.21	27.38	12.68	40.00	27.32	QP
2	112.36	12.70	0.71	28.26	27.01	14.66	43.50	28.84	QP
3	148.34	11.30	0.81	35.87	26.83	21.15	43.50	22.35	QP
4	199.75	10.50	1.00	49.16	26.58	34.08	43.50	9.42	QP
5	218.18	10.70	1.06	48.70	26.52	33.94	46.00	12.06	QP
6	318.38	14.40	1.31	50.78	26.50	39.99	46.00	6.01	QP

Remarks: 1. Emission Level= Ant.Factor + Cable Loss + Reading - Preamp.Factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



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Site NO. : 3m Semi-Anechoic Chamber  
 Dis. / Ant. : 3m 6112D(22253)-1305-3M  
 Limit : FCC PART 15 CLASS B  
 Env. / Ins. : 15.6\*C&62%/ESCI  
 EUT : LED Lamps  
 M/N : 9290002761  
 Power Rating: 120Vac/60Hz  
 Test Mode : TX CH11 2405MHz  
 Memo :

Data NO. : 6  
 Ant. pol. : VERTICAL  
 Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	48.35	9.80	0.44	48.36	27.40	31.20	40.00	8.80	QP
2	113.42	12.70	0.74	47.38	27.01	33.81	43.50	9.69	QP
3	145.43	11.40	0.81	43.44	26.84	28.81	43.50	14.69	QP
4	187.14	9.80	1.02	50.01	26.63	34.20	43.50	9.30	QP
5	226.27	11.05	1.16	54.08	26.50	39.79	46.00	6.21	QP
6	319.06	14.40	1.32	48.40	26.50	37.62	46.00	8.38	QP

Remarks: 1. Emission Level= Ant.Factor + Cable Loss + Reading - Preamp.Factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



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Site NO. : 3m Semi-Anechoic Chamber  
Dis. / Ant. : 3m 6112D(22253)-1305-3M  
Limit : FCC PART 15 CLASS B  
Env. / Ins. : 15.6\*CC&62%/ESCI  
EUT : LED Lamps  
M/N : 9290002761  
Power Rating: 120Vac/60Hz  
Test Mode : TX CH20 2450MHz  
Memo :

Data NO. : 7  
Ant. pol. : HORIZONTAL  
Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	48.43	9.80	0.44	29.93	27.40	12.77	40.00	27.23	QP
2	113.42	12.70	0.74	30.32	27.01	16.75	43.50	26.75	QP
3	146.40	11.40	0.82	31.30	26.84	16.68	43.50	26.82	QP
4	199.75	10.50	1.00	49.37	26.58	34.29	43.50	9.21	QP
5	225.94	11.00	1.16	48.75	26.50	34.41	46.00	11.59	QP
6	315.18	14.40	1.27	50.00	26.48	39.19	46.00	6.81	QP

Remarks: 1. Emission Level= Ant.Factor + Cable Loss + Reading - Preamp.Factor.  
2. The emission levels that are 20dB below the official limit are not reported.



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Site NO. : 3m Semi-Anechoic Chamber  
Dis. / Ant. : 3m 6112D(22253)-1305-3M  
Limit : FCC PART 15 CLASS B  
Env. / Ins. : 15.6\*CC&62%/ESCI  
EUT : LED Lamps  
M/N : 9290002761  
Power Rating: 120Vac/60Hz  
Test Mode : TX CH20 2450MHz  
Memo :

Data NO. : 8  
Ant. pol. : VERTICAL  
Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	48.43	9.80	0.44	50.34	27.40	33.18	40.00	6.82	QP
2	113.42	12.70	0.74	47.82	27.01	34.25	43.50	9.25	QP
3	144.46	11.60	0.81	44.76	26.85	30.32	43.50	13.18	QP
4	184.23	9.80	1.05	50.39	26.65	34.59	43.50	8.91	QP
5	225.94	11.00	1.16	53.84	26.50	39.50	46.00	6.50	QP
6	316.15	14.40	1.29	46.25	26.48	35.46	46.00	10.54	QP

Remarks: 1. Emission Level= Ant.Factor + Cable Loss + Reading - Preamp.Factor.  
2. The emission levels that are 20dB below the official limit are not reported.



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Site NO. : 3m Semi-Anechoic Chamber  
 Dis. / Ant. : 3m 6112D(22253)-1305-3M  
 Limit : FCC PART 15 CLASS B  
 Env. / Ins. : 15.6\*℃&62%/ESCI  
 EUT : LED Lamps  
 M/N : 9290002761  
 Power Rating: 120Vac/60Hz  
 Test Mode : TX CH26 2480MHz  
 Memo :

Data NO. : 9  
 Ant. pol. : HORIZONTAL  
 Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	48.43	9.80	0.44	31.54	27.40	14.38	40.00	25.62	QP
2	114.39	12.80	0.75	30.04	27.00	16.59	43.50	26.91	QP
3	144.46	11.60	0.81	31.33	26.85	16.89	43.50	26.61	QP
4	198.78	10.50	0.99	48.73	26.58	33.64	43.50	9.86	QP
5	225.94	11.00	1.16	47.86	26.50	33.52	46.00	12.48	QP
6	315.18	14.40	1.27	50.50	26.48	39.69	46.00	6.31	QP

Remarks: 1. Emission Level= Ant.Factor + Cable Loss + Reading - Preamp.Factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



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Site NO. : 3m Semi-Anechoic Chamber  
 Dis. / Ant. : 3m 6112D(22253)-1305-3M  
 Limit : FCC PART 15 CLASS B  
 Env. / Ins. : 15.6\*℃&62%/ESCI  
 EUT : LED Lamps  
 M/N : 9290002761  
 Power Rating: 120Vac/60Hz  
 Test Mode : TX CH26 2480MHz  
 Memo :

Data NO. : 10  
 Ant. pol. : VERTICAL  
 Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	48.43	9.80	0.44	50.12	27.40	32.96	40.00	7.04	QP
2	113.42	12.70	0.74	46.81	27.01	33.24	43.50	10.26	QP
3	144.46	11.60	0.81	43.17	26.85	28.73	43.50	14.77	QP
4	198.78	10.50	0.99	51.57	26.58	36.48	43.50	7.02	QP
5	226.91	11.05	1.16	53.34	26.50	39.05	46.00	6.95	QP
6	320.03	14.40	1.33	46.18	26.50	35.41	46.00	10.59	QP

Remarks: 1. Emission Level= Ant.Factor + Cable Loss + Reading - Preamp.Factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



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Site NO. : 3m Semi-Anechoic Chamber  
 Dis. / Ant. : 3m 6112D(22253)-1305-3M  
 Limit : FCC PART 15 CLASS B  
 Env. / Ins. : 15.6\*CS&62%/ESCI  
 EUT : LED Lamps  
 M/N : 9290002761  
 Power Rating: 120Vac/60Hz  
 Test Mode : RX  
 Memo :  
 Data NO. : 11  
 Ant. pol. : HORIZONTAL  
 Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	52.13	8.40	0.45	33.43	27.37	14.91	40.00	25.09	QP
2	115.23	12.80	0.76	31.03	27.00	17.59	43.50	25.91	QP
3	199.20	10.50	0.99	47.57	26.58	32.48	43.50	11.02	QP
4	235.40	11.70	1.07	43.25	26.47	29.55	46.00	16.45	QP
5	313.20	14.37	1.25	43.14	26.47	32.29	46.00	13.71	QP
6	407.14	17.07	1.49	33.61	27.04	25.13	46.00	20.87	QP

Remarks: 1. Emission Level= Ant.Factor + Cable Loss + Reading - Preamp.Factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



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Site NO. : 3m Semi-Anechoic Chamber  
 Dis. / Ant. : 3m 6112D(22253)-1305-3M  
 Limit : FCC PART 15 CLASS B  
 Env. / Ins. : 15.6\*CS&62%/ESCI  
 EUT : LED Lamps  
 M/N : 9290002761  
 Power Rating: 120Vac/60Hz  
 Test Mode : RX  
 Memo :  
 Data NO. : 12  
 Ant. pol. : VERTICAL  
 Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	36.80	16.20	0.30	34.62	27.47	23.65	40.00	16.35	QP
2	52.32	8.40	0.45	48.80	27.37	30.28	40.00	9.72	QP
3	118.46	12.90	0.87	41.02	26.98	27.81	43.50	15.69	QP
4	143.25	11.80	0.81	41.56	26.86	27.31	43.50	16.19	QP
5	200.20	10.50	1.00	46.25	26.57	31.18	43.50	12.32	QP
6	323.25	14.47	1.40	44.25	26.53	33.59	46.00	12.41	QP

Remarks: 1. Emission Level= Ant.Factor + Cable Loss + Reading - Preamp.Factor.  
 2. The emission levels that are 20dB below the official limit are not reported.



## 4.8. Restricted Bands Measurement Results (ForAbove1GHz)



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Tel: (0512) 63403993 Fax: (0512) 63403993

Site NO. : 3m Semi-Anechoic Chamber  
Dis. / Ant. : 3m 3115-62593-130528  
Limit : FCC PART 15 C PK  
Env. / Ins. : 15.6\*C&62%/N9030A  
EUT : LED Lamps  
M/N : 9290002761  
Power Rating: 120Vac/60Hz  
Test Mode : TX CH11 2405MHz  
Memo :

Data NO. : 13  
Ant. pol. : HORIZONTAL  
Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	4808.00	32.86	9.10	38.02	34.52	45.46	74.00	28.54	Peak
2	7258.00	36.10	11.45	36.36	34.63	49.28	74.00	24.72	Peak
3	9876.00	37.92	14.03	35.99	34.35	53.59	74.00	20.41	Peak
4	11878.00	39.21	14.73	34.91	34.14	54.71	74.00	19.29	Peak
5	11879.24	39.21	14.73	25.01	34.14	44.81	54.00	9.19	Average
6	12325.61	39.21	14.85	24.62	33.56	45.12	54.00	8.88	Average
7	12326.00	39.21	14.85	34.63	33.56	55.13	74.00	18.87	Peak
8	12858.00	39.95	15.53	33.30	32.64	56.14	74.00	17.86	Peak
9	12858.70	39.95	15.53	23.66	32.64	46.50	54.00	7.50	Average

Remarks: 1. Emission Level= Ant.Factor + Cable Loss + Reading - Preamp.Factor.  
2. The emission levels that are 20dB below the official limit are not reported.



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Site NO. : 3m Semi-Anechoic Chamber  
Dis. / Ant. : 3m 3115-62593-130528  
Limit : FCC PART 15 C PK  
Env. / Ins. : 15.6\*C&62%/N9030A  
EUT : LED Lamps  
M/N : 9290002761  
Power Rating: 120Vac/60Hz  
Test Mode : TX CH11 2405MHz  
Memo :

Data NO. : 14  
Ant. pol. : VERTICAL  
Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	4808.00	32.86	9.10	38.69	34.52	46.13	74.00	27.87	Peak
2	7216.00	36.00	11.36	36.66	34.63	49.39	74.00	24.61	Peak
3	9792.00	37.87	13.90	36.45	34.37	53.85	74.00	20.15	Peak
4	10408.00	38.15	13.66	36.38	34.30	53.89	74.00	20.11	Peak
5	11990.00	39.35	14.86	35.27	34.13	55.35	74.00	18.65	Peak
6	11992.13	39.35	14.86	24.17	34.13	44.25	54.00	9.75	Average
7	12900.00	40.03	15.44	33.44	32.56	56.35	74.00	17.65	Peak
8	12904.10	40.03	15.44	22.62	32.56	45.53	54.00	8.47	Average

Remarks: 1. Emission Level= Ant.Factor + Cable Loss + Reading - Preamp.Factor.  
2. The emission levels that are 20dB below the official limit are not reported.



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Site NO. : 3m Semi-Anechoic Chamber  
Dis. / Ant. : 3m 3115-62593-130528  
Limit : FCC PART 15 C PK  
Env. / Ins. : 15.6\*C&62%/N9030A  
EUT : LED Lamps  
M/N : 9290002761  
Power Rating: 120Vac/60Hz  
Test Mode : TX CH20 2450MHz  
Memo :

Data NO. : 15  
Ant. pol. : HORIZONTAL  
Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	4906.00	33.03	9.19	37.48	34.49	45.21	74.00	28.79	Peak
2	7342.00	36.28	11.33	36.06	34.63	49.04	74.00	24.96	Peak
3	9834.00	37.90	13.99	36.10	34.37	53.62	74.00	20.38	Peak
4	12004.00	39.40	14.83	34.65	34.09	54.79	74.00	19.21	Peak
5	12005.13	39.40	14.83	24.82	34.09	44.96	54.00	9.04	Average
6	12508.00	39.10	14.93	34.94	33.26	55.71	74.00	18.29	Peak
7	12509.04	39.10	14.93	23.94	33.26	44.71	54.00	9.29	Average
8	12900.00	40.03	15.44	33.33	32.56	56.24	74.00	17.76	Peak
9	12900.45	40.03	15.44	22.38	32.56	45.29	54.00	8.71	Average

Remarks: 1. Emission Level= Ant.Factor + Cable Loss + Reading - Preamp.Factor.  
2. The emission levels that are 20dB below the official limit are not reported.



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Site NO. : 3m Semi-Anechoic Chamber  
Dis. / Ant. : 3m 3115-62593-130528  
Limit : FCC PART 15 C PK  
Env. / Ins. : 15.6\*C&62%/N9030A  
EUT : LED Lamps  
M/N : 9290002761  
Power Rating: 120Vac/60Hz  
Test Mode : TX CH20 2450MHz  
Memo :

Data NO. : 16  
Ant. pol. : VERTICAL  
Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	4906.00	33.03	9.19	37.11	34.49	44.84	74.00	29.16	Peak
2	7342.00	36.28	11.33	35.89	34.63	48.87	74.00	25.13	Peak
3	9862.00	37.92	14.03	35.95	34.35	53.55	74.00	20.45	Peak
4	9863.12	37.92	14.03	25.60	34.35	43.20	54.00	10.80	Average
5	11962.00	39.35	14.76	35.72	34.13	55.70	74.00	18.30	Peak
6	11963.32	39.35	14.76	24.03	34.13	44.01	54.00	9.99	Average
7	12550.00	39.18	15.21	34.26	33.17	55.48	74.00	18.52	Peak
8	12551.23	39.18	15.21	24.90	33.17	46.12	54.00	7.88	Average
9	12816.00	39.78	15.37	33.91	32.73	56.33	74.00	17.67	Peak
10	12816.04	39.78	15.37	22.06	32.73	44.48	54.00	9.52	Average

Remarks: 1. Emission Level= Ant.Factor + Cable Loss + Reading - Preamp.Factor.  
2. The emission levels that are 20dB below the official limit are not reported.



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Site NO. : 3m Semi-Anechoic Chamber  
Dis. / Ant. : 3m 3115-62593-130528  
Limit : FCC PART 15 C PK  
Env. / Ins. : 15.6\*C&62%/N9030A  
EUT : LED Lamps  
M/N : 9290002761  
Power Rating: 120Vac/60Hz  
Test Mode : TX CH26 2480MHz  
Memo :

Data NO. : 19  
Ant. pol. : HORIZONTAL  
Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	4962.00	33.13	9.21	37.85	34.48	45.71	74.00	28.29	Peak
2	7440.00	36.46	11.38	34.98	34.63	48.19	74.00	25.81	Peak
3	9722.00	37.83	13.87	35.57	34.39	52.88	74.00	21.12	Peak
4	11136.00	38.48	14.38	34.97	34.24	53.59	74.00	20.41	Peak
5	11932.01	39.31	14.75	25.50	34.14	45.42	54.00	8.58	Average
6	11934.00	39.31	14.75	34.58	34.14	54.50	74.00	19.50	Peak
7	12731.30	39.61	15.34	23.74	32.86	45.83	54.00	8.17	Average
8	12732.00	39.61	15.34	34.24	32.86	56.33	74.00	17.67	Peak

Remarks: 1. Emission Level= Ant.Factor + Cable Loss + Reading - Preamp.Factor.  
2. The emission levels that are 20dB below the official limit are not reported.



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Site NO. : 3m Semi-Anechoic Chamber  
Dis. / Ant. : 3m 3115-62593-130528  
Limit : FCC PART 15 C PK  
Env. / Ins. : 15.6\*C&62%/N9030A  
EUT : LED Lamps  
M/N : 9290002761  
Power Rating: 120Vac/60Hz  
Test Mode : TX CH26 2480MHz  
Memo :

Data NO. : 20  
Ant. pol. : VERTICAL  
Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	4962.00	33.13	9.21	38.12	34.48	45.98	74.00	28.02	Peak
2	7440.00	36.46	11.38	35.79	34.63	49.00	74.00	25.00	Peak
3	9820.00	37.88	13.99	36.07	34.37	53.57	74.00	20.43	Peak
4	11808.00	39.12	14.65	34.59	34.15	54.21	74.00	19.79	Peak
5	11809.12	39.12	14.65	24.67	34.15	44.29	54.00	9.71	Average
6	12423.73	39.14	14.72	23.62	33.39	44.09	54.00	9.91	Average
7	12424.00	39.14	14.72	34.55	33.39	55.02	74.00	18.98	Peak
8	12857.90	39.95	15.53	23.35	32.64	46.19	54.00	7.81	Average
9	12858.00	39.95	15.53	33.14	32.64	55.98	74.00	18.02	Peak

Remarks: 1. Emission Level= Ant.Factor + Cable Loss + Reading - Preamp.Factor.  
2. The emission levels that are 20dB below the official limit are not reported.



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Site NO. : 3m Semi-Anechoic Chamber  
Dis. / Ant. : 3m 3115-62593-130528  
Limit : FCC PART 15 C PK  
Env. / Ins. : 15.6\*C&62%/N9030A  
EUT : LED Lamps  
M/N : 9290002761  
Power Rating: 120Vac/60Hz  
Test Mode : RX  
Memo :

Data NO. : 21  
Ant. pol. : HORIZONTAL  
Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2400.00	28.20	6.40	43.40	35.07	42.93	74.00	31.07	Peak
2	4808.00	32.86	9.10	39.64	34.52	47.08	74.00	26.92	Peak
3	9806.00	37.88	13.90	36.06	34.37	53.47	74.00	20.53	Peak
4	11374.00	38.62	14.27	35.12	34.21	53.80	74.00	20.20	Peak
5	12590.66	39.27	15.05	21.95	33.08	43.19	54.00	10.81	Average
6	12592.00	39.27	15.05	35.24	33.08	56.48	74.00	17.52	Peak
7	12809.98	39.78	15.37	22.09	32.73	44.51	54.00	9.49	Average
8	12816.00	39.78	15.37	35.08	32.73	57.50	74.00	16.50	Peak

Remarks: 1. Emission Level= Ant.Factor + Cable Loss + Reading - Preamp.Factor.  
2. The emission levels that are 20dB below the official limit are not reported.



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Site NO. : 3m Semi-Anechoic Chamber  
Dis. / Ant. : 3m 3115-62593-130528  
Limit : FCC PART 15 C PK  
Env. / Ins. : 15.6\*C&62%/N9030A  
EUT : LED Lamps  
M/N : 9290002761  
Power Rating: 120Vac/60Hz  
Test Mode : RX  
Memo :

Data NO. : 22  
Ant. pol. : VERTICAL  
Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	8000.00	37.10	11.87	37.47	34.65	51.79	74.00	22.21	Peak
2	9624.00	37.77	13.53	36.98	34.42	53.86	74.00	20.14	Peak
3	9890.00	37.93	13.75	36.92	34.35	54.25	74.00	19.75	Peak
4	9894.62	37.93	13.75	24.37	34.35	41.70	54.00	12.30	Average
5	12032.00	39.38	14.79	34.95	34.04	55.08	74.00	18.92	Peak
6	12035.64	39.38	14.79	23.08	34.04	43.21	54.00	10.79	Average
7	12326.00	39.21	14.85	35.15	33.56	55.65	74.00	18.35	Peak
8	12330.92	39.21	14.85	22.66	33.56	43.16	54.00	10.84	Average
9	12760.00	39.69	15.34	34.31	32.82	56.52	74.00	17.48	Peak
10	12760.18	39.69	15.34	22.35	32.82	44.56	54.00	9.44	Average

Remarks: 1. Emission Level= Ant.Factor + Cable Loss + Reading - Preamp.Factor.  
2. The emission levels that are 20dB below the official limit are not reported.

## 4.9. Spurious Emission Measurement Results in Band Edge Emission (FCC Part 15, 15.205)

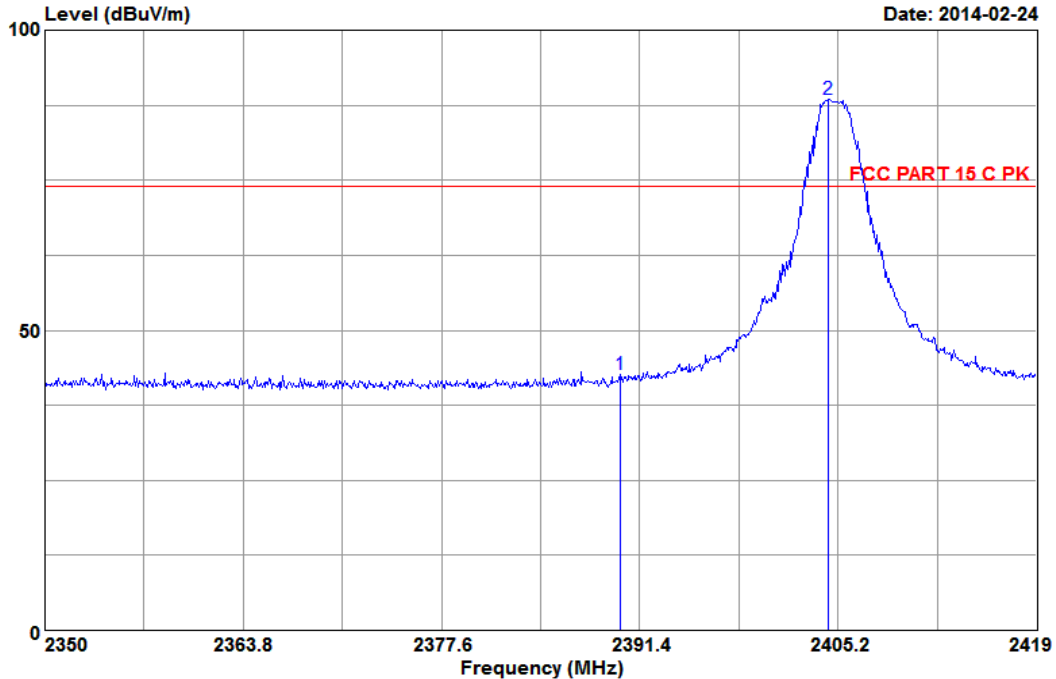


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Data: 23

File: G:\Test Data\2013\Reports\11\G1311033.EM6 (61)

Date: 2014-02-24



Site NO. : 3m chamber  
 Dis. / Ant. : 3m 3115-62593-130528  
 Limit : FCC PART 15 C PK  
 Env. / Ins. : 15.6\*CS&62%/N9030A  
 EUT : LED Lamps  
 M/N : 9290002761  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX CH11 2405MHz  
 Memo :

Data NO. :23  
 Ant. pol. : HORIZONTAL  
 Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark
1	2390.00	28.17	6.40	43.07	42.57	74.00	31.43	Peak
2	2404.48	28.21	6.40	88.94	88.48	74.00	-14.48	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

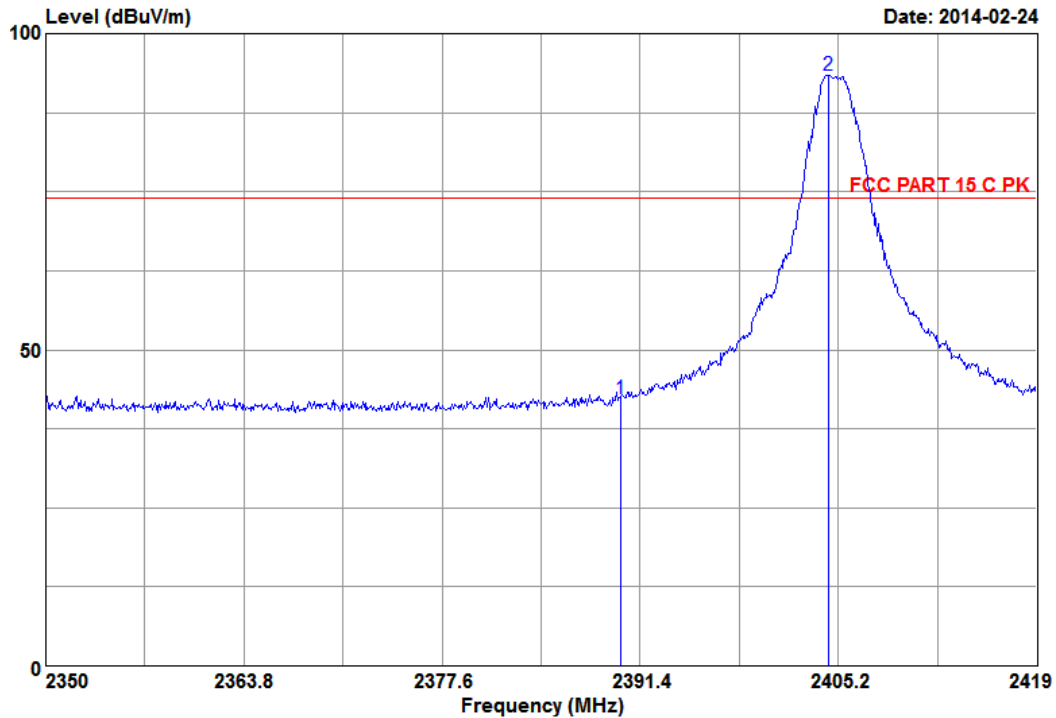


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Data: 24

File: G:\Test Data\2013\Reports\11\G1311033.EM6 (61)

Date: 2014-02-24



Site NO. : 3m chamber  
 Dis. / Ant. : 3m 3115-62593-130528  
 Limit : FCC PART 15 C PK  
 Env. / Ins. : 15.6\*CS&62%/N9030A  
 EUT : LED Lamps  
 M/N : 9290002761  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX CH11 2405MHz  
 Memo :

Data NO. :24  
 Ant. pol. : VERTICAL  
 Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.00	28.17	6.40	42.81	42.31	74.00	31.69	Peak
2	2404.56	28.21	6.40	93.92	93.46	74.00	-19.46	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

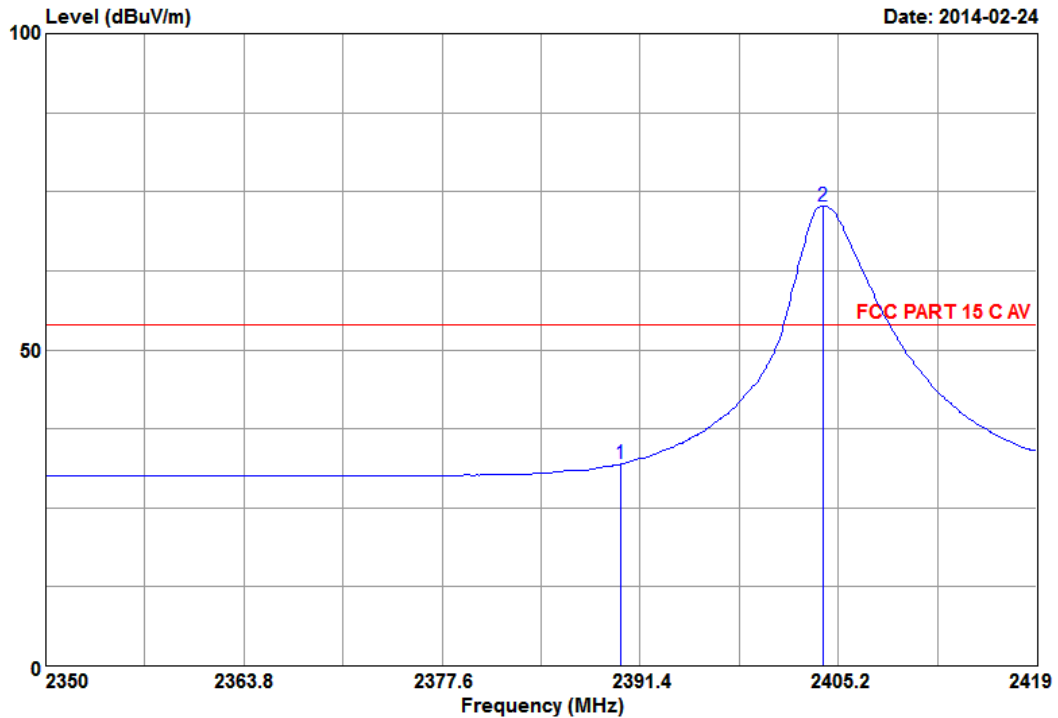


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Data: 25

File: G:\Test Data\2013\Reports\11\G1311033.EM6 (61)

Date: 2014-02-24



Site NO. : 3m chamber  
 Dis. / Ant. : 3m 3115-62593-130528  
 Limit : FCC PART 15 C AV  
 Env. / Ins. : 15.6\*CS&62%/N9030A  
 EUT : LED Lamps  
 M/N : 9290002761  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX CH11 2405MHz  
 Memo :

Data NO. :25  
 Ant. pol. : HORIZONTAL  
 Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.00	28.17	6.40	32.40	31.90	54.00	22.10	Average
2	2404.16	28.20	6.40	73.18	72.71	54.00	-18.71	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

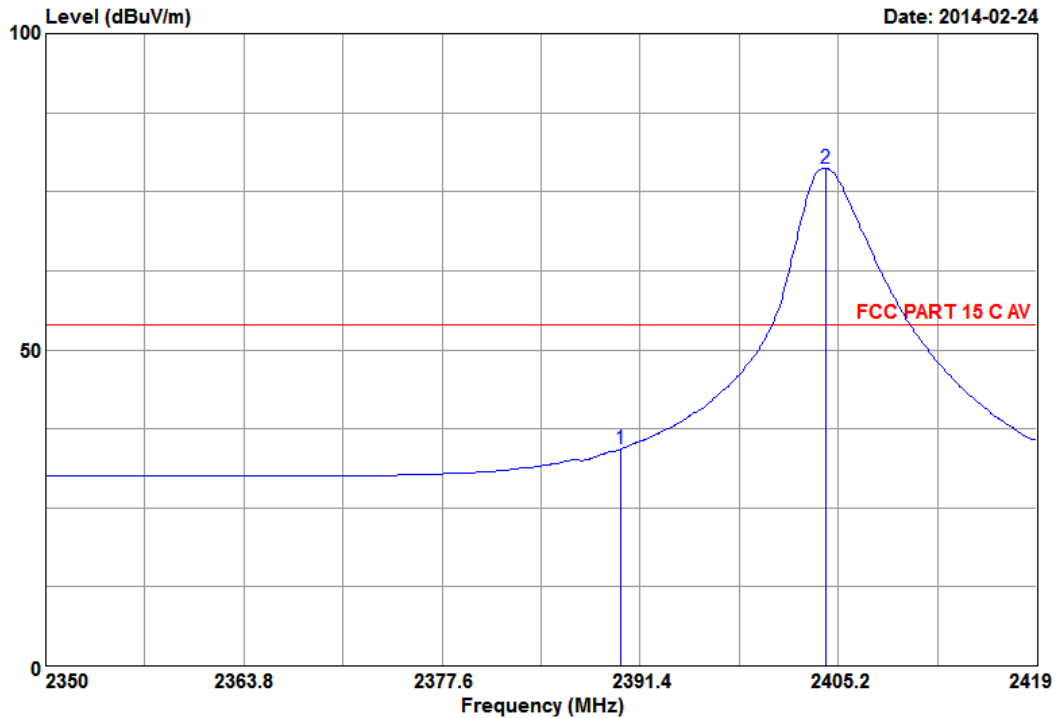


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Data: 26

File: G:\Test Data\2013\Reports\11\G1311033.EM6 (61)

Date: 2014-02-24



Site NO. : 3m chamber  
 Dis. / Ant. : 3m 3115-62593-130528  
 Limit : FCC PART 15 C AV  
 Env. / Ins. : 15.6\*CS&62%/N9030A  
 EUT : LED Lamps  
 M/N : 9290002761  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX CH11 2405MHz  
 Memo :

Data NO. :26  
 Ant. pol. : VERTICAL  
 Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.00	28.17	6.40	34.77	34.27	54.00	19.73	Average
2	2404.32	28.21	6.40	79.10	78.64	54.00	-24.64	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



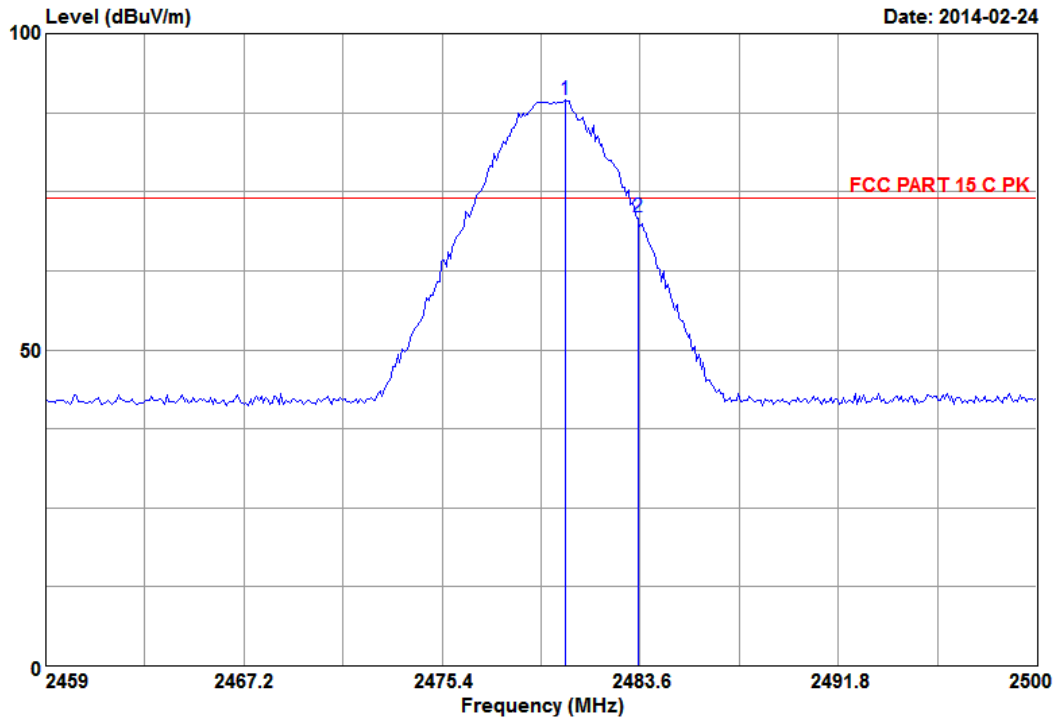


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Data: 27

File: G:\Test Data\2013\Reports\11\G1311033.EM6 (61)

Date: 2014-02-24



Site NO. : 3m chamber  
 Dis. / Ant. : 3m 3115-62593-130528  
 Limit : FCC PART 15 C PK  
 Env. / Ins. : 15.6\*CS&62%/N9030A  
 EUT : LED Lamps  
 M/N : 9290002761  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX CH26 2480MHz  
 Memo :

Data NO. :27  
 Ant. pol. : HORIZONTAL  
 Engineer : boqiang\_li

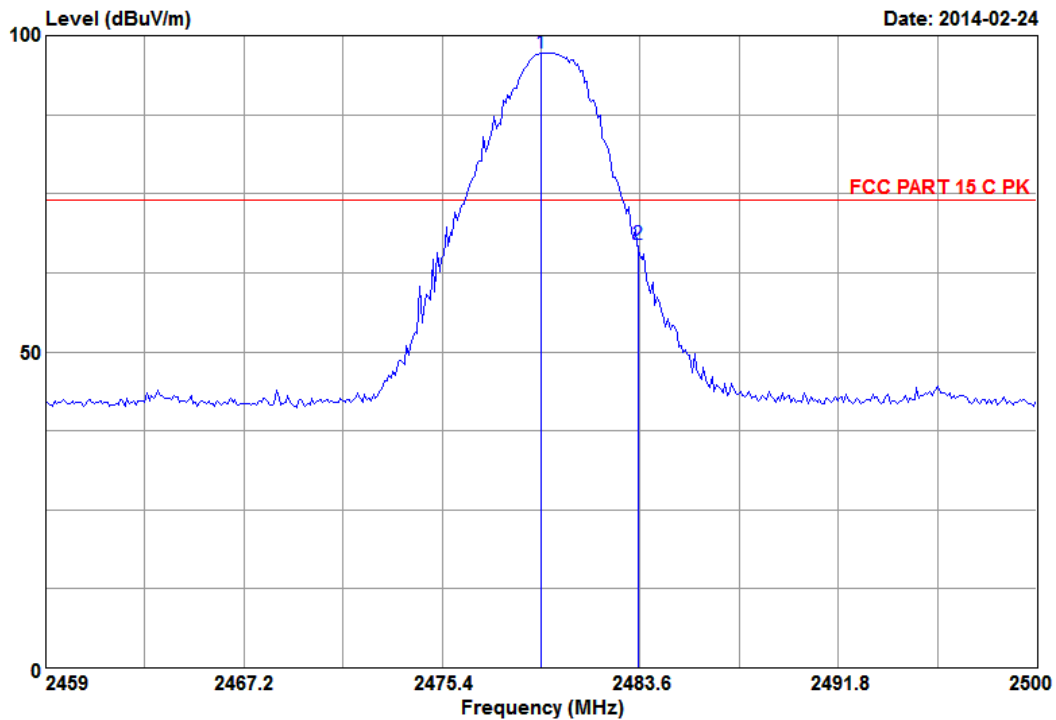
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2480.48	28.36	6.44	89.87	89.61	74.00	-15.61	Peak
2	2483.50	28.37	6.44	71.17	70.92	74.00	3.08	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.



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Data: 28 File: G:\Test Data\2013\Reports\11\G1311033.EM6 (61)



Site NO. : 3m chamber  
 Dis. / Ant. : 3m 3115-62593-130528  
 Limit : FCC PART 15 C PK  
 Env. / Ins. : 15.6\*CS&62%/N9030A  
 EUT : LED Lamps  
 M/N : 9290002761  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX CH26 2480MHz  
 Memo :

Data NO. :28  
 Ant. pol. : VERTICAL  
 Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2479.48	28.36	6.44	97.59	97.33	74.00	-23.33	Peak
2	2483.50	28.37	6.44	67.29	67.04	74.00	6.96	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

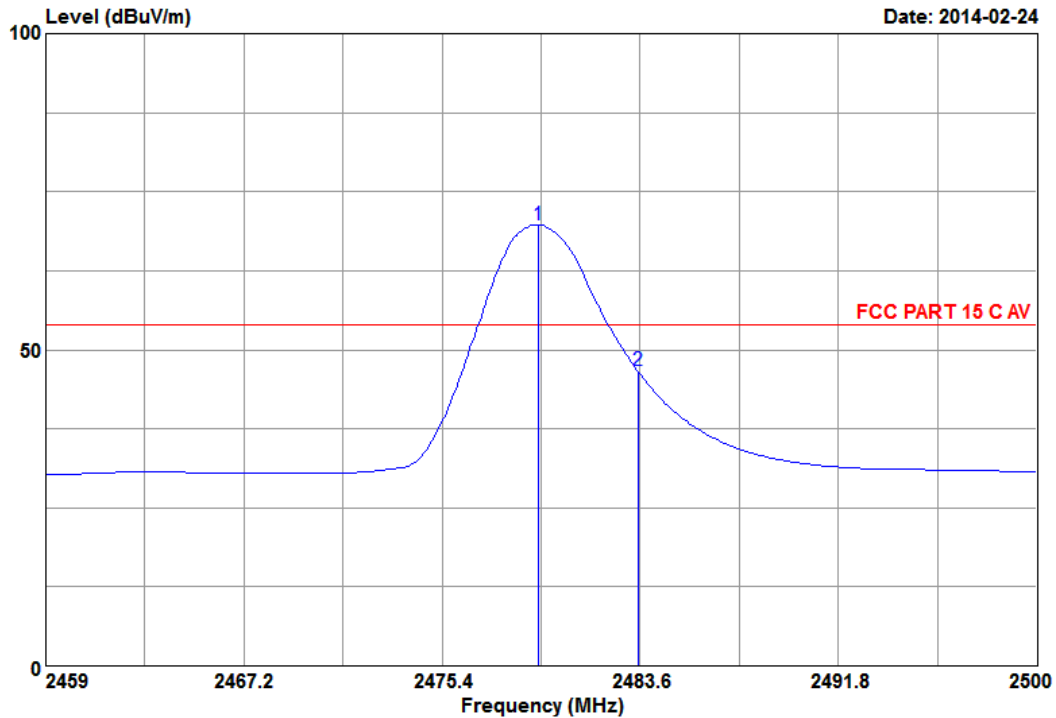


Audix Technology(Wujiang)Co.,Ltd.  
 No.1289,Jiang Xing East Road,The Eastern Part of Wu Jiang  
 Economic Development Zone,Jiangsu,China  
 Tel: (0512) 63403993 Fax: (0512) 63403993

Data: 29

File: G:\Test Data\2013\Reports\11\G1311033.EM6 (61)

Date: 2014-02-24



Site NO. : 3m chamber  
 Dis. / Ant. : 3m 3115-62593-130528  
 Limit : FCC PART 15 C AV  
 Env. / Ins. : 15.6\*CS&62%/N9030A  
 EUT : LED Lamps  
 M/N : 9290002761  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX CH26 2480MHz  
 Memo :

Data NO. :29  
 Ant. pol. : HORIZONTAL  
 Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2479.38	28.36	6.44	69.99	69.73	54.00	-15.73	Average
2	2483.50	28.37	6.44	47.00	46.75	54.00	7.25	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

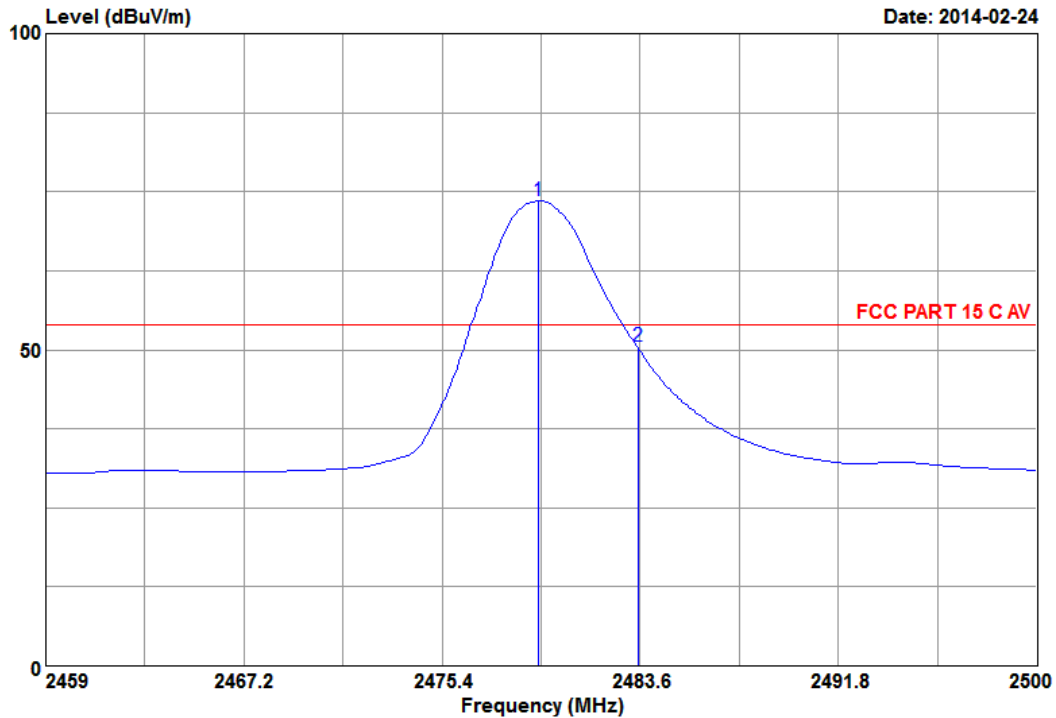


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 Economic Development Zone,Jiangsu,China  
 Tel:(0512) 63403993 Fax:(0512) 63403993

Data: 30

File: G:\Test Data\2013\Reports\11\G1311033.EM6 (61)

Date: 2014-02-24



Site NO. : 3m chamber  
 Dis. / Ant. : 3m 3115-62593-130528  
 Limit : FCC PART 15 C AV  
 Env. / Ins. : 15.6\*CS&62%/N9030A  
 EUT : LED Lamps  
 M/N : 9290002761  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX CH26 2480MHz  
 Memo :

Data NO. :30  
 Ant. pol. : VERTICAL  
 Engineer : boqiang\_li

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2479.38	28.36	6.44	73.77	73.51	54.00	-19.51	Average
2	2483.50	28.37	6.44	50.70	50.45	54.00	3.55	Average

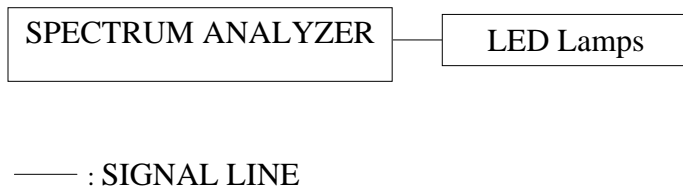
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.  
 2. The emission levels that are 20dB below the official limit are not reported.

## 5. 6 dB BANDWIDTH MEASUREMENT

### 5.1. Test Equipment

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	PXA Signal Analyzer	Agilent	N9030A	MY53120367	2013-06-24	2014-06-23

### 5.2. Block Diagram of Test Setup



### 5.3. Specification Limits (§15.247(a)(2))

Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500kHz.

### 5.4. Test Procedure

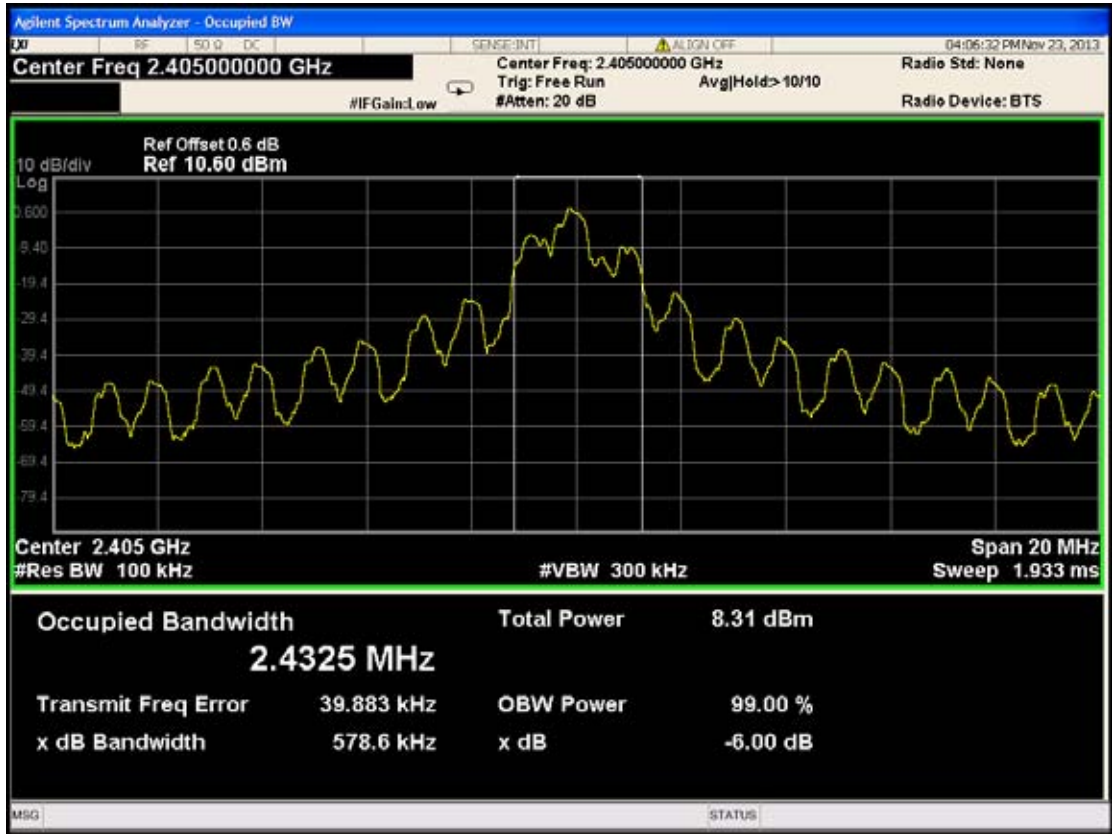
The transmitter output was connected to the test receiver / spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB. The measurement guideline was according to KDB558074 v03r01:2013.

### 5.5. Test Results

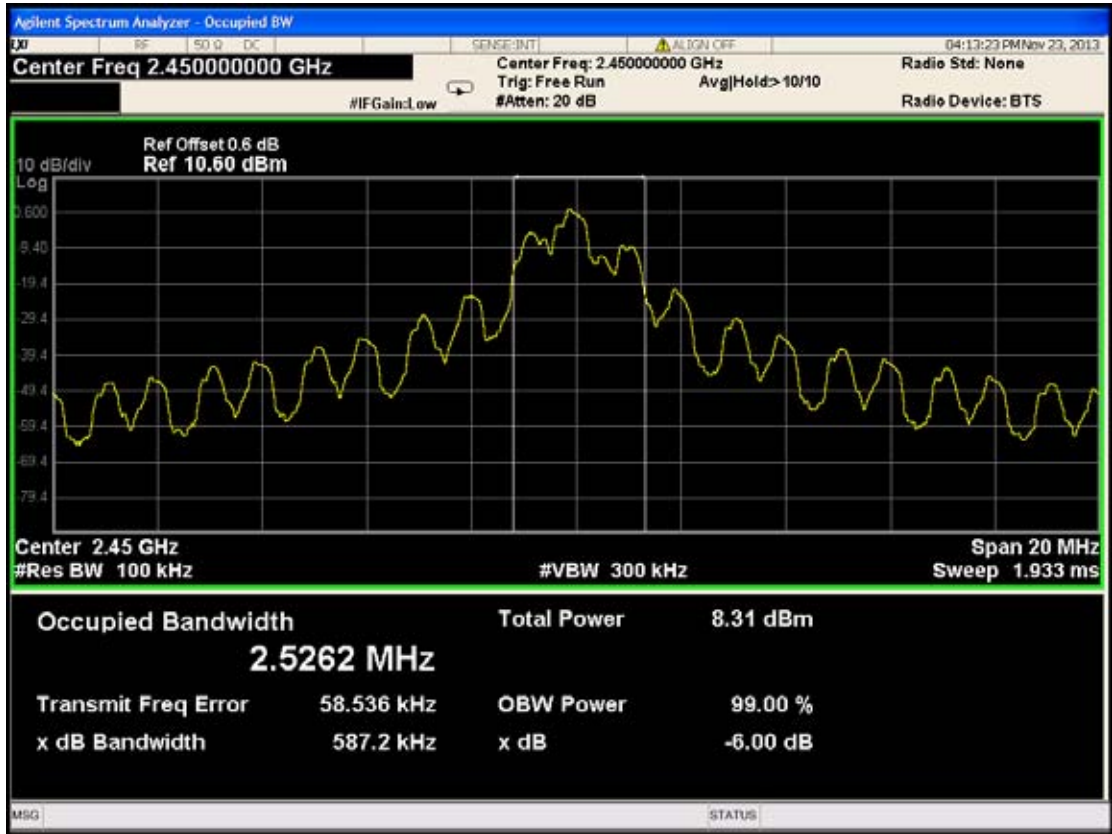
**PASSED.** All the test results are attached in next pages.

Channel	Test Frequency (MHz)	6dB Bandwidth (kHz)
11	2405	<b>578.6</b>
20	2450	<b>587.2</b>
26	2480	<b>586.6</b>

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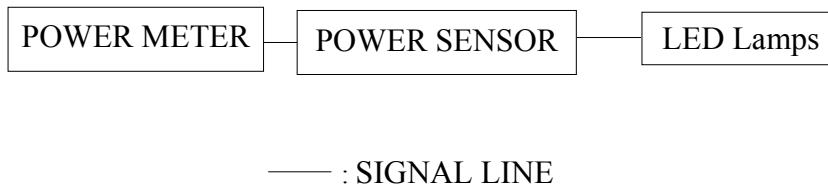


## 6. MAXIMUM PEAK OUTPUT POWER MEASUREMENT

### 6.1. Test Equipment

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Power Meter	Agilent	N1911A	MY45100361	2014-01-05	2015-01-04
2.	Power Sensor	Agilent	N1921A	MY45240521	2014-01-05	2015-01-04

### 6.2. Block Diagram of Test Setup



### 6.3. Specification Limits (§15.247(b)(3))

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

### 6.4. Test Procedure

This is an RF conducted test. Use a direct connection between the antenna port of the transmitter and the power meter, through suitable attenuation. The transmitter output was connected to the power meter that was designed to detect peak value automatically.

Note: The bandwidth of the power meter is 20MHz.

### 6.5. Test Results

**PASSED.** All the test results are attached in next pages.

Channel	Frequency	Power(dBm)	Limit(dBm)
11	2405	7.603	30
20	2450	7.061	30
26	2480	7.193	30



## 7. BAND EDGES MEASUREMENT

### 7.1. Test Equipment

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	PXA Signal Analyzer	Agilent	N9030A	MY53120367	2013-06-24	2014-06-23

### 7.2. Block Diagram of Test Setup

The same as section 5.2.

### 7.3. Specification Limits (§15.247(d))

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

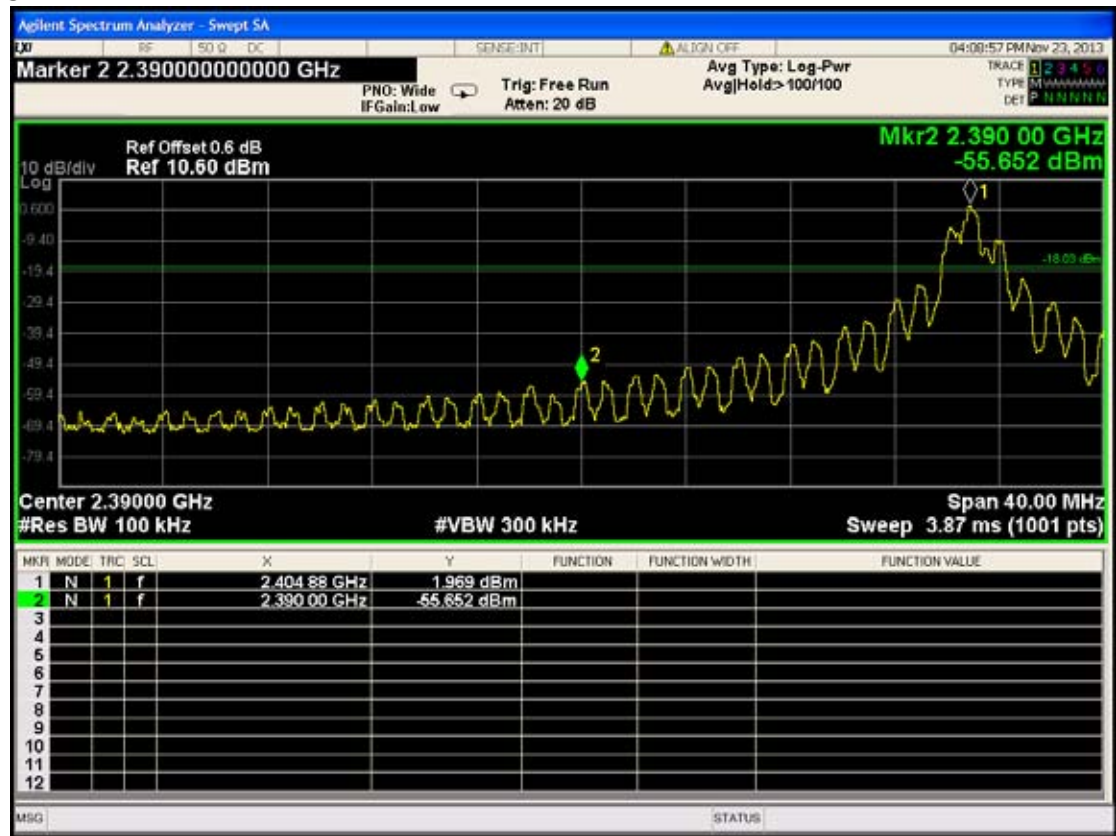
### 7.4. Test Procedure

The transmitter output was connected to the test receiver / spectrum analyzer. Set RBW of spectrum analyzer to 100kHz and VBW to 300kHz with suitable frequency span including 100kHz bandwidth from band edge.

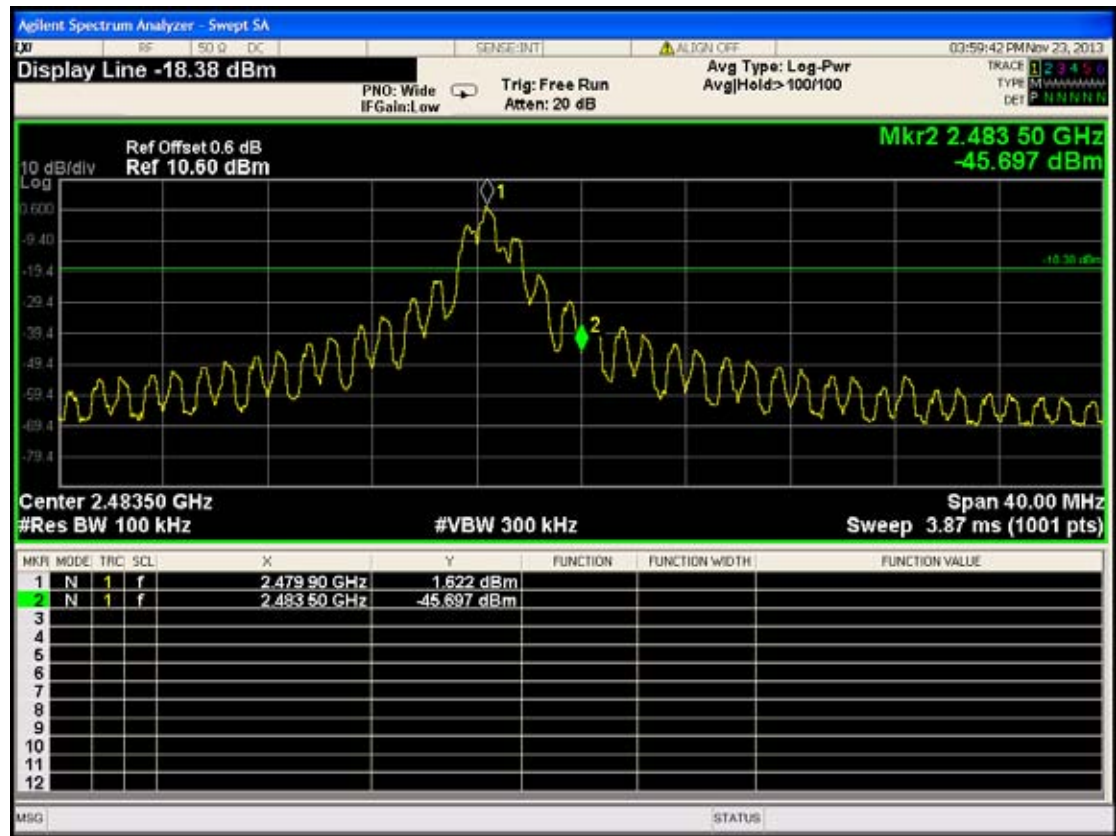
### 7.5. Test Results

**PASSED.** The testing data was attached in the next pages.

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## 8. POWER SPECTRAL DENSITY MEASUREMENT

### 8.1. Test Equipment

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	PXA Signal Analyzer	Agilent	N9030A	MY53120367	2013-06-24	2014-06-23

### 8.2. Block Diagram of Test Setup

The same as section 5.2.

### 8.3. Specification Limits (§15.247(e))

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### 8.4. Test Procedure

The transmitter output was connected to the test receiver / spectrum analyzer. The test receiver / spectrum analyzer was set as RBW  $\geq$  3kHz, VBW  $\geq$  3 x RBW, span = 1.5 times the DTS channel bandwidth. The measurement guideline was according to KDB558074 v03r01:2013.

### 8.5. Test Results

**PASSED.** All the test results are attached in next page.

Channel	Frequency(GHz)	Value(dBm)
11	2.404944	2.376
20	2.449936	1.924
26	2.479936	1.888

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## 9. EMISSION LIMITATIONS MEASUREMENT

### 9.1. Test Equipment

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	PXA Signal Analyzer	Agilent	N9030A	MY53120367	2013-06-24	2014-06-23

### 9.2. Block Diagram of Test Setup

The same as section 5.2.

### 9.3. Specification Limits (§15.247(d))

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

### 9.4. Test Procedure

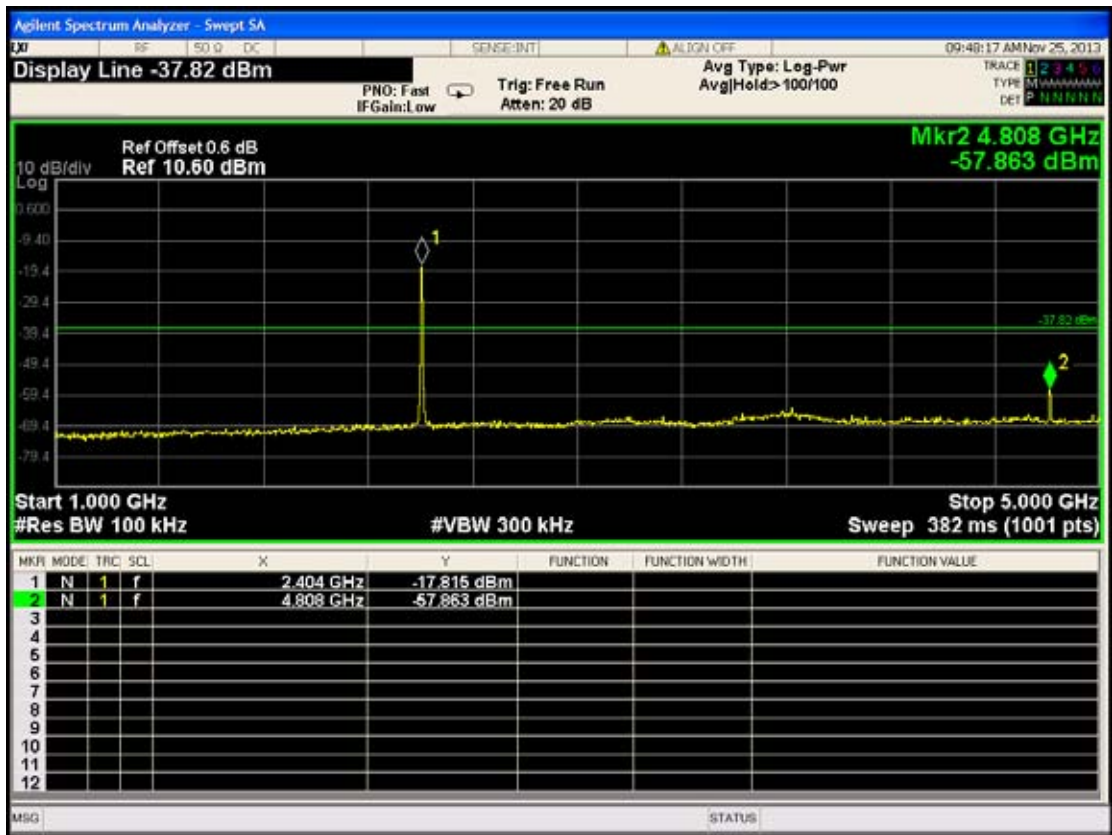
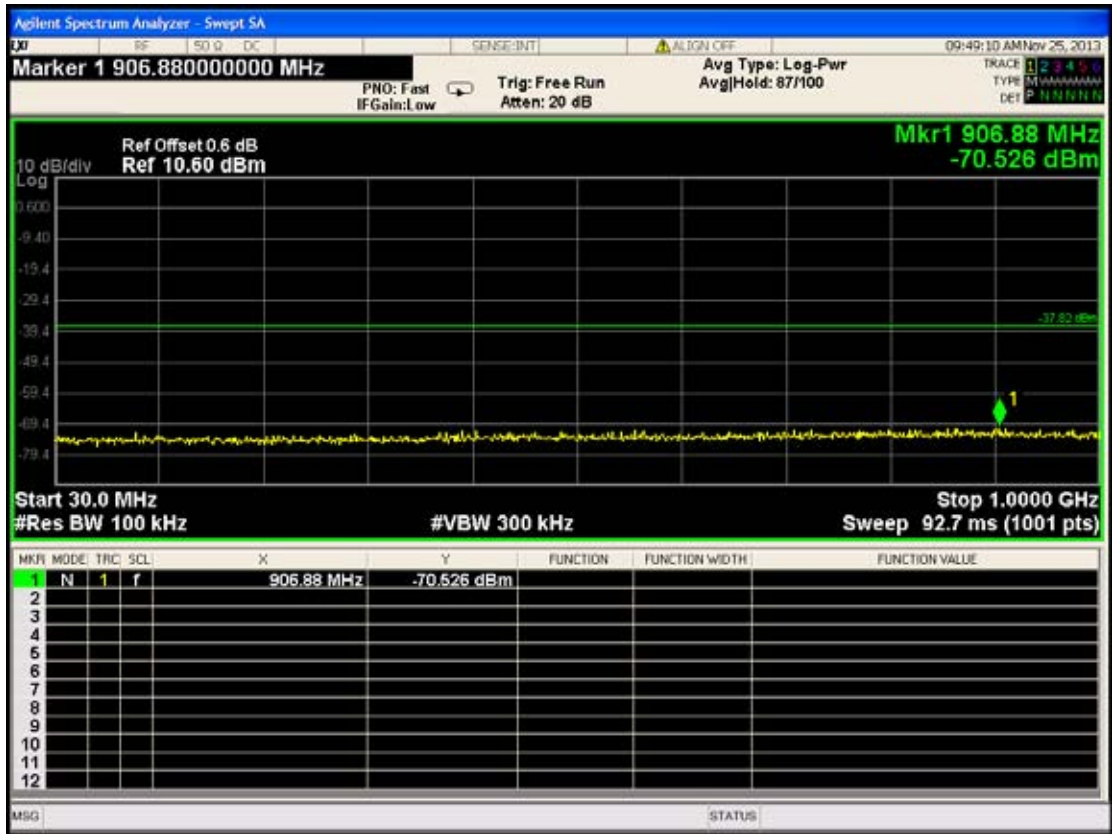
The transmitter output was connected to the spectrum analyzer. Set RBW = 100kHz, VBW  $\geq$  300 kHz, scan up through 10<sup>th</sup> harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW. The measurement guideline was according to KDB558074 v03r01:2013.

## 9.5. Test Results

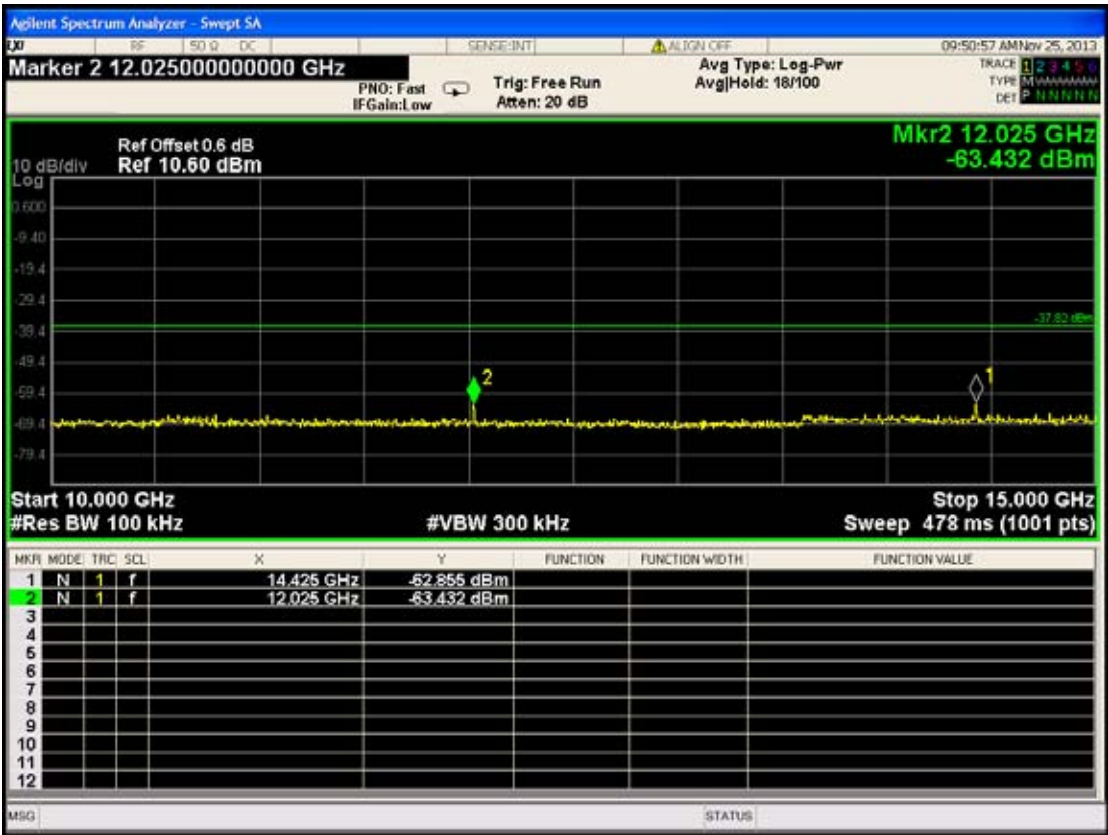
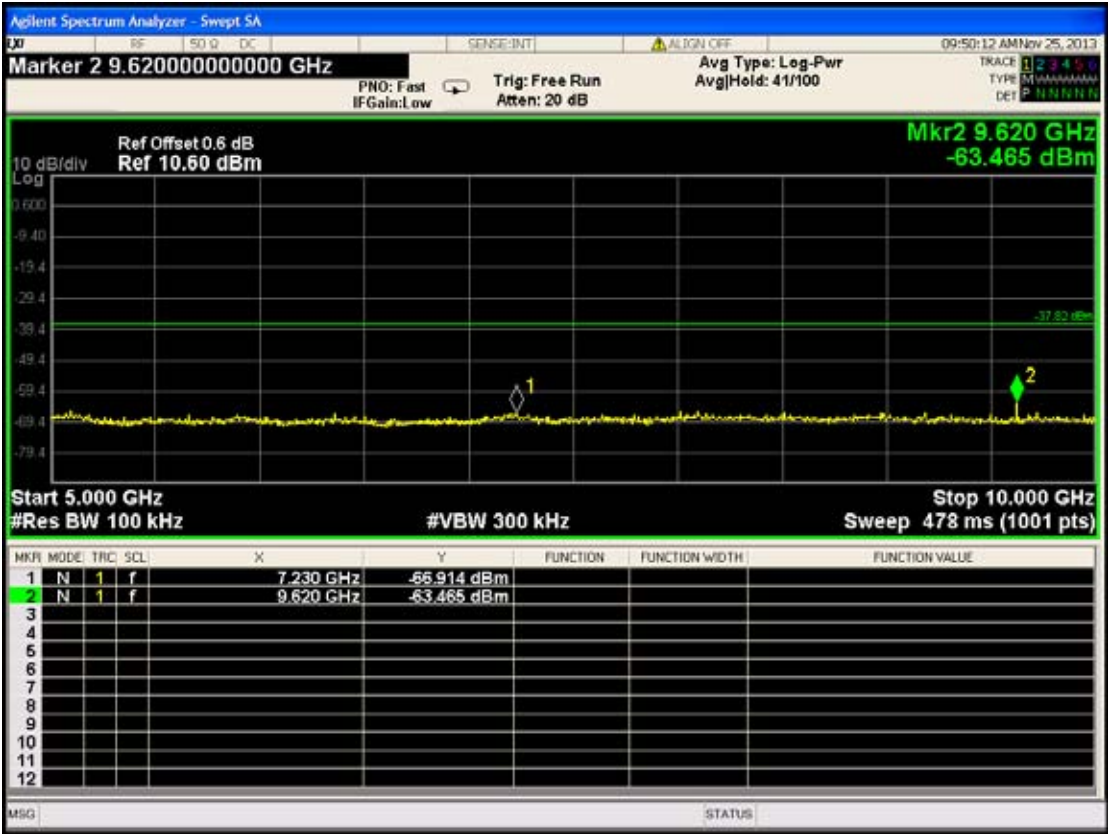
**PASSED.** All the test results are attached in next pages.

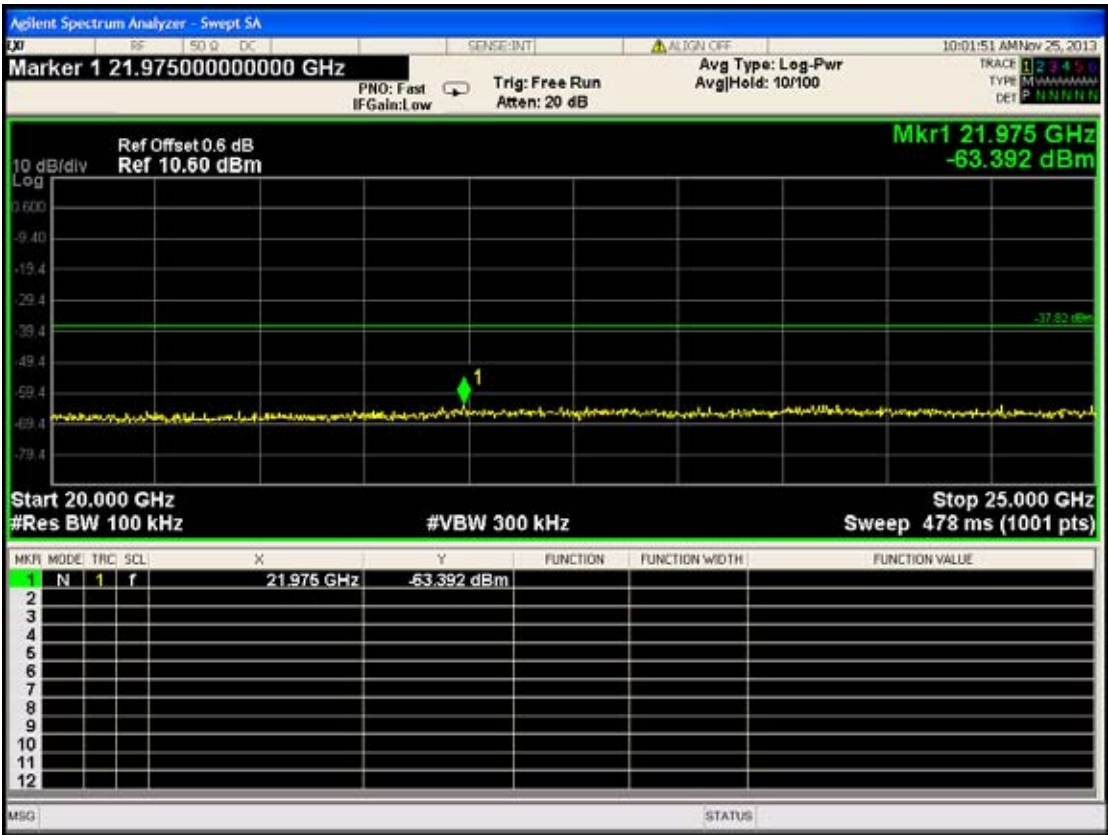
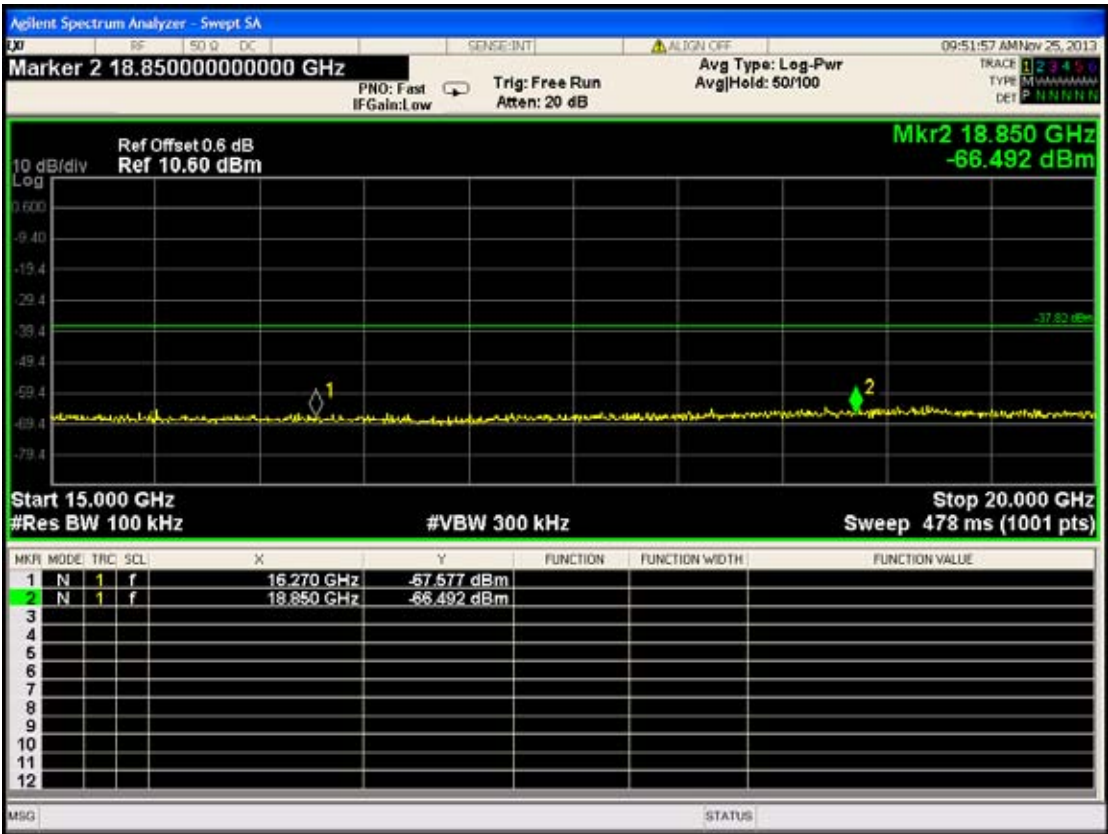
Channel	Frequency(MHz)	Amplitude(dBm)
11	906.88	-70.526
	2404	-17.815
	4808	-57.863
	7230	-66.914
	9620	-63.465
	14425	-62.855
	12025	-63.432
	16270	-67.577
	18850	-66.492
	21975	-63.392
20	897.18	-71.708
	2448	-17.631
	4900	-60.615
	9800	-50.133
	7320	-68.361
	12250	-62.729
	19040	-63.544
	22050	-62.997
26	828.31	-70.665
	2480	-17.299
	4960	-62.691
	9920	-51.803
	12400	-60.869
	19160	-63.682
	23575	-63.098

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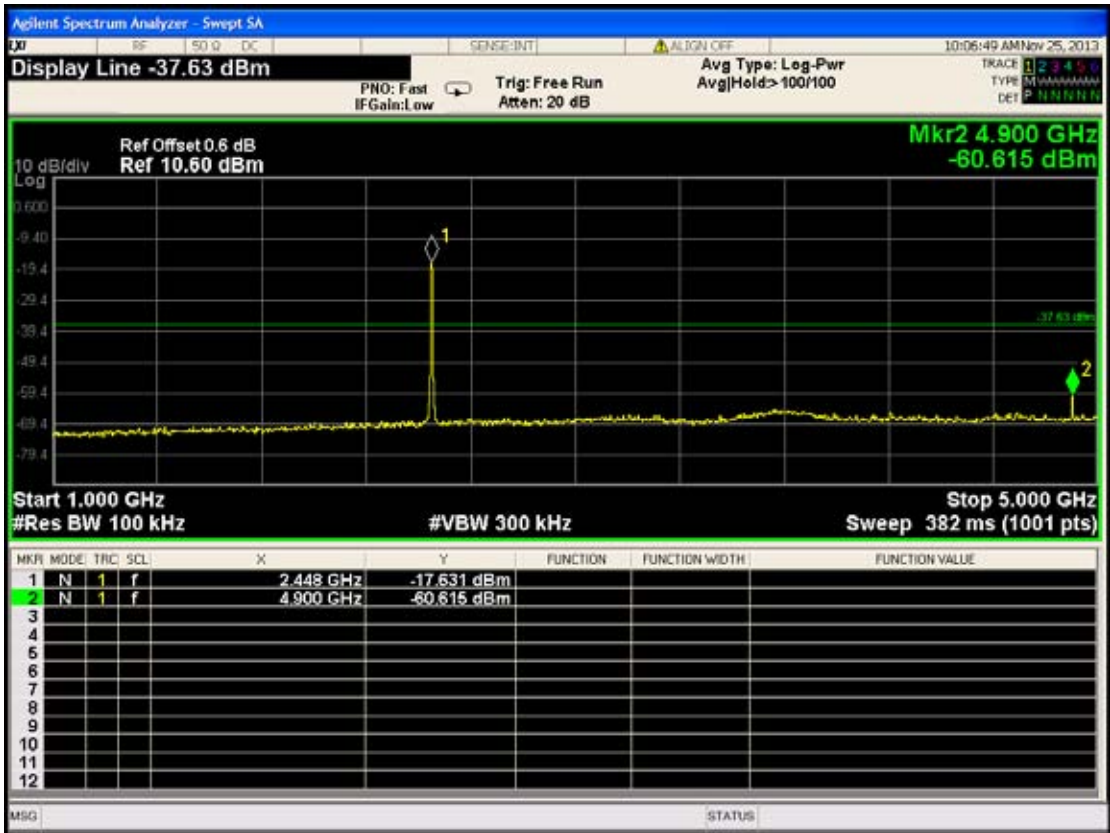
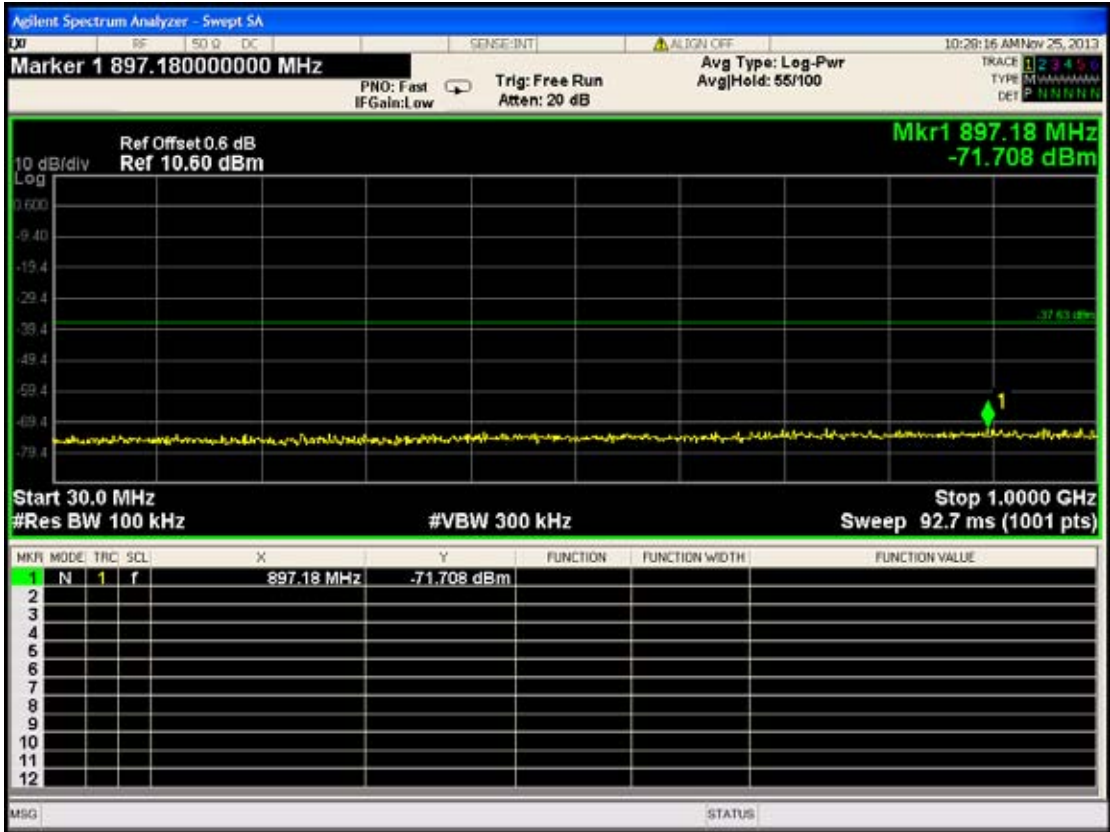


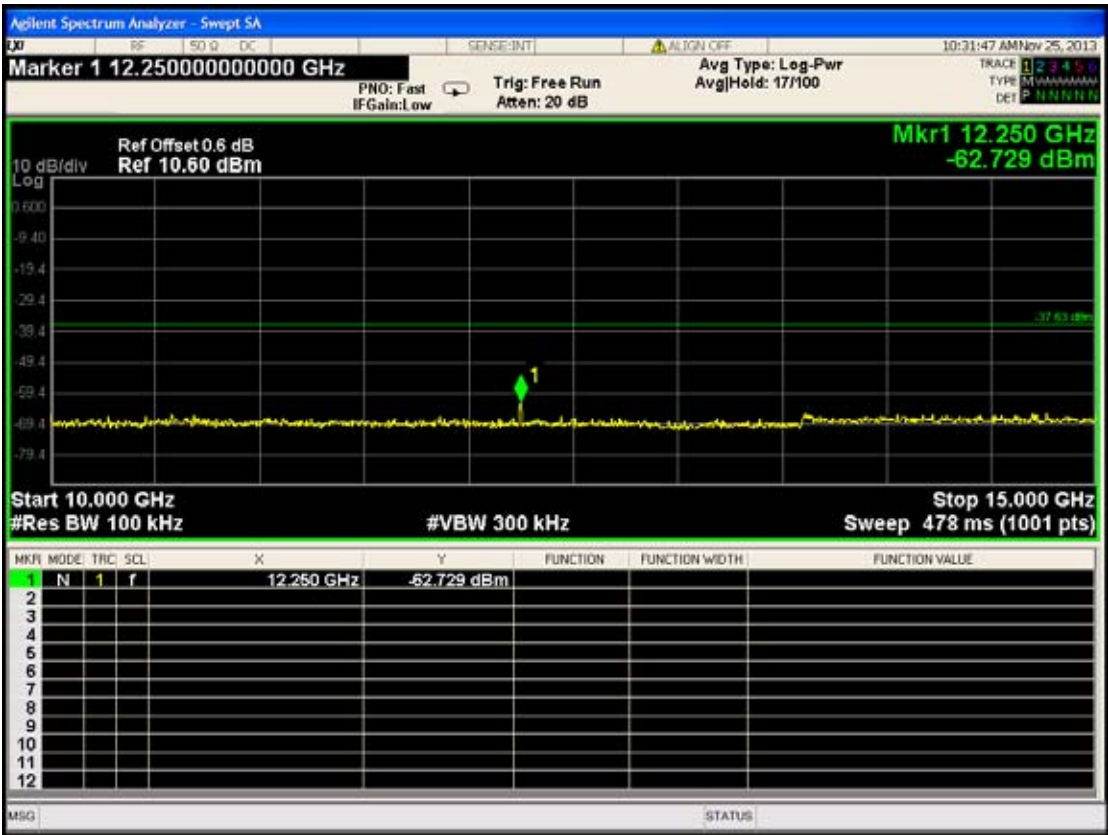
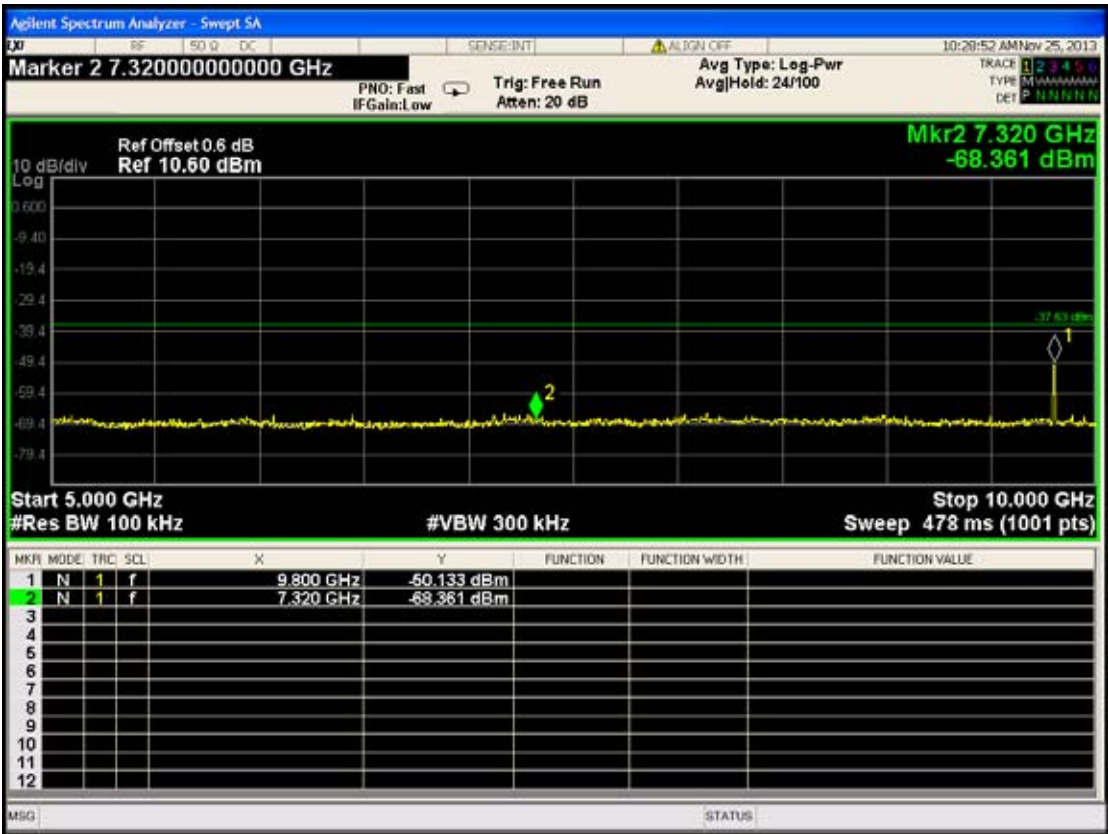




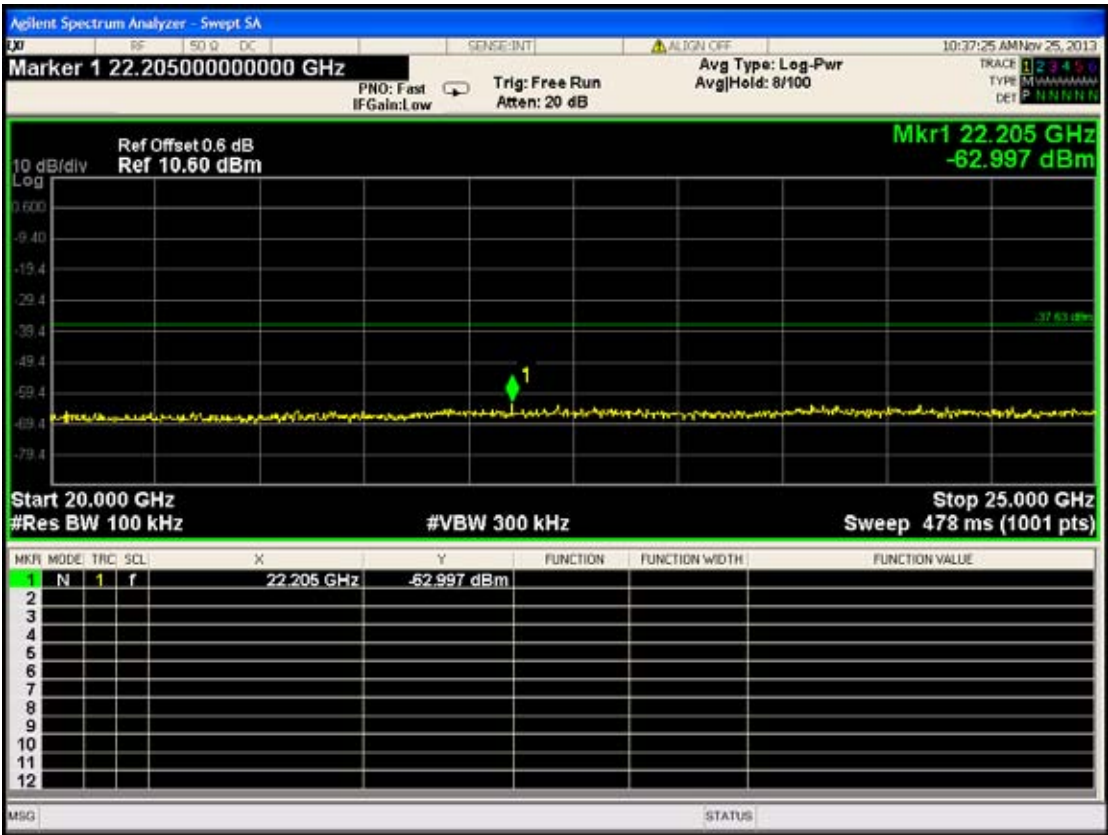
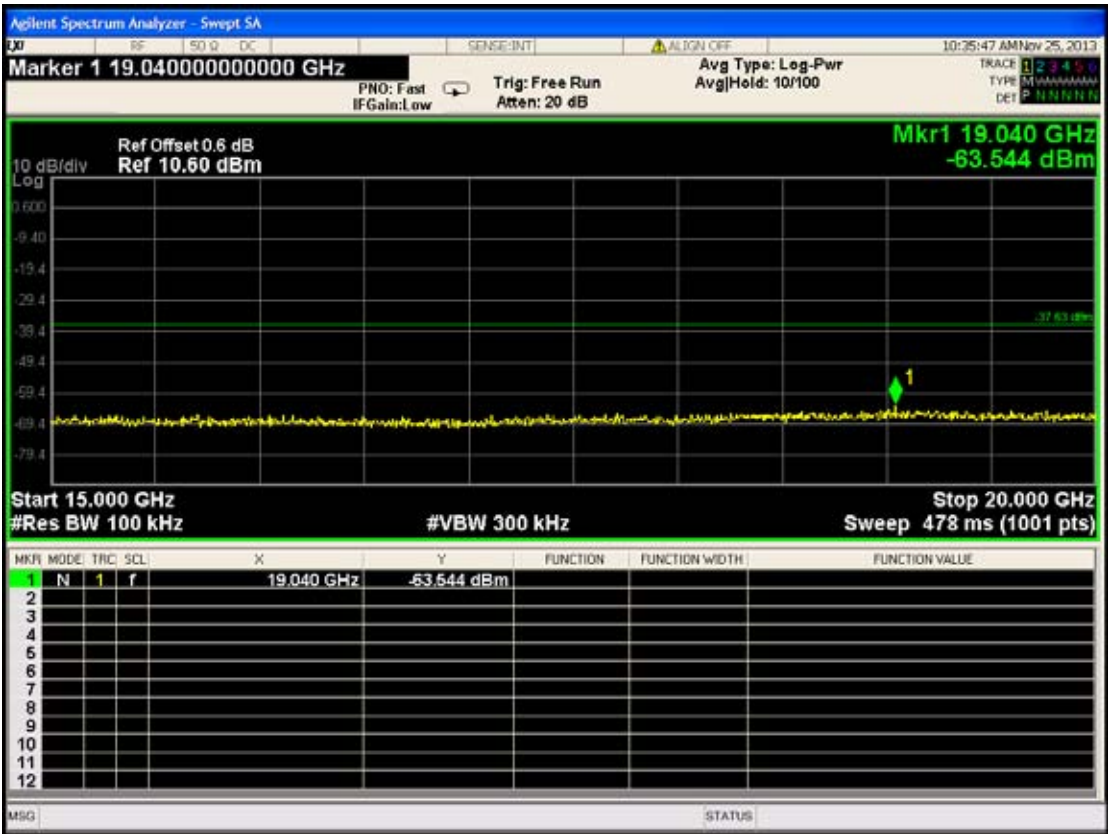


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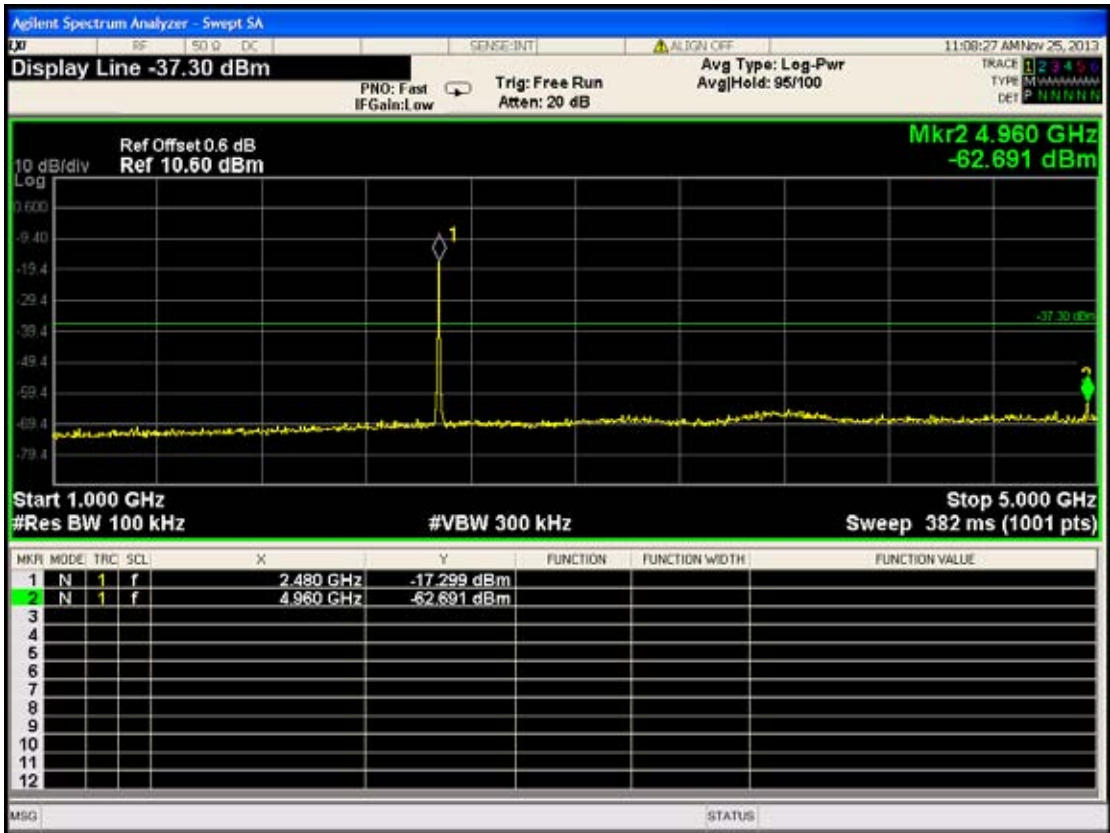
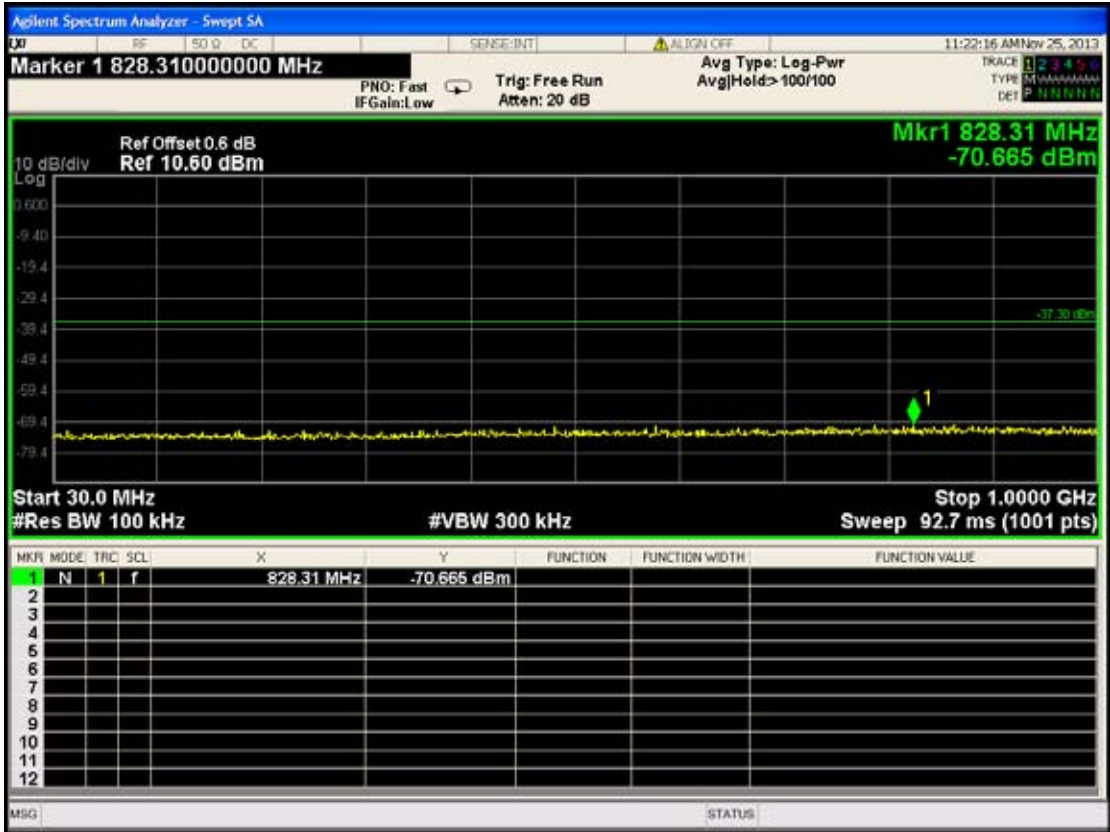


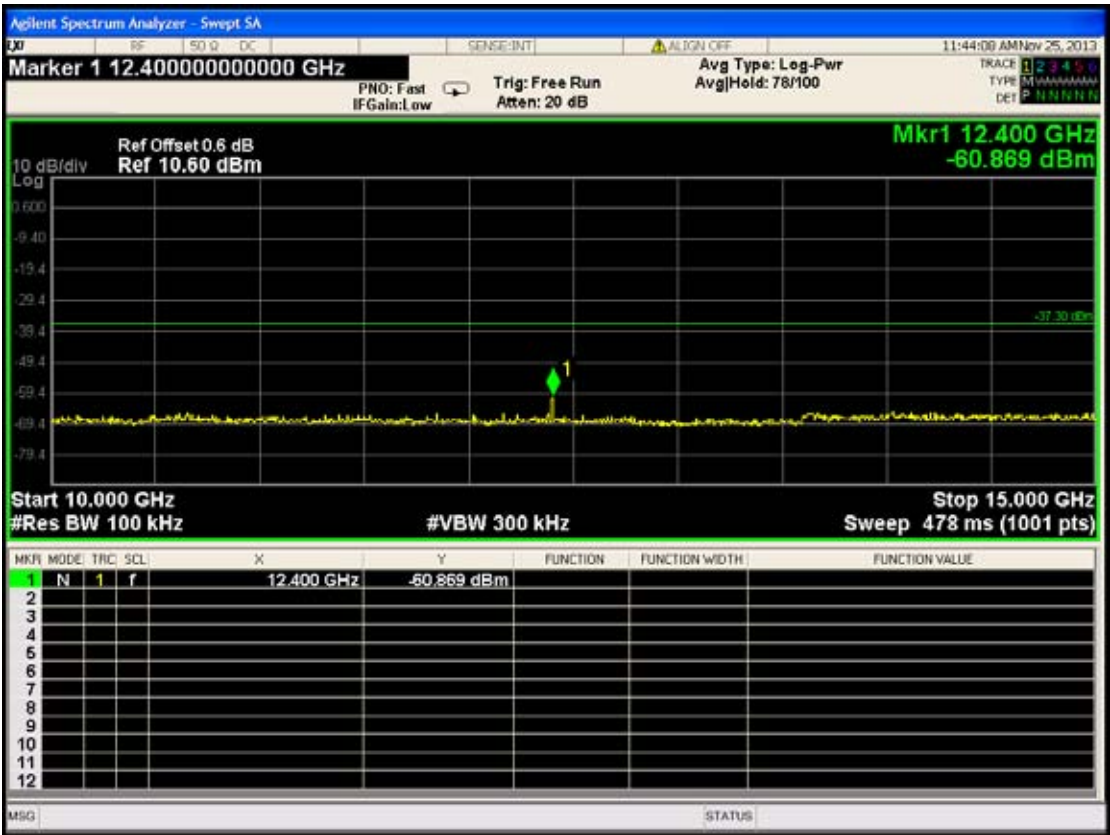
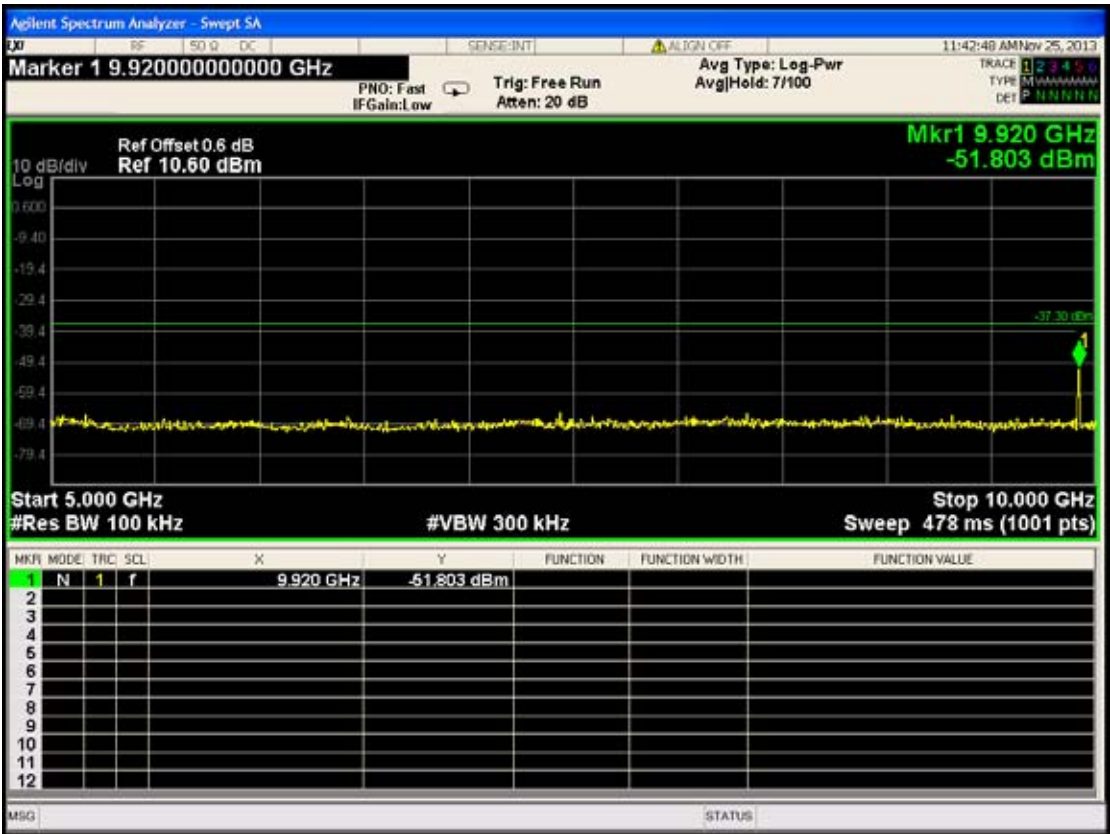


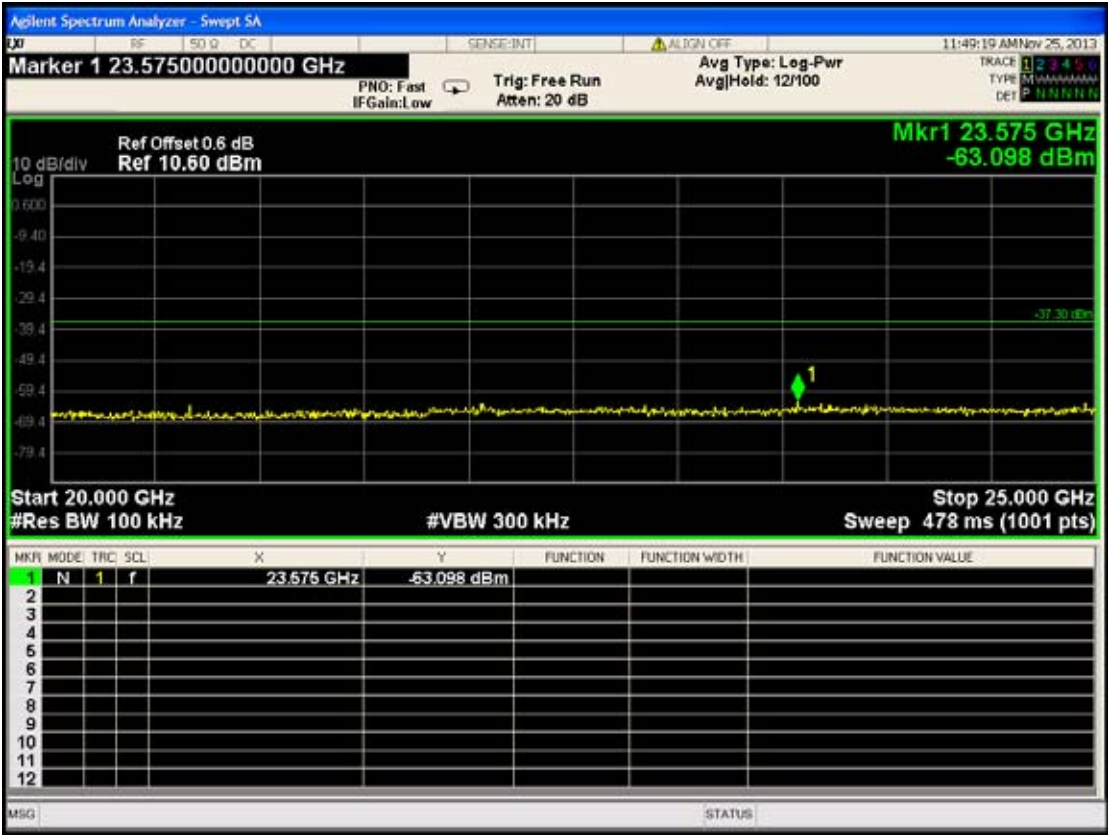
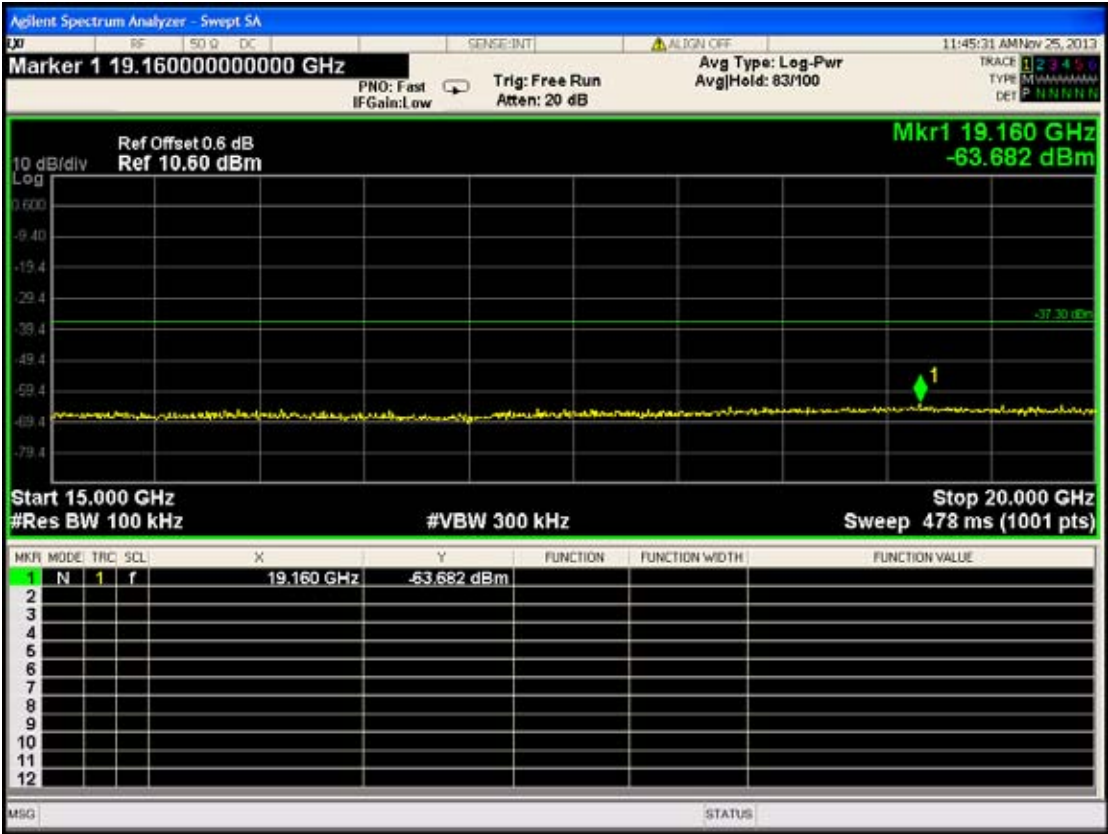




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## 10.DUTY CYCLE

### 10.1. Test Equipment

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	PXA Signal Analyzer	Agilent	N9030A	MY53120367	2013-06-24	2014-06-23

### 10.2. Test Results

The measurement of duty cycle is 100%.

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## **11.DEVIATION TO TEST SPECIFICATIONS**

**【NONE】**