TEST REPORT

Report Number: 100404100MPK-001
Project Number: G100404100
Report Date: July 05, 2011

Testing performed on the
Radio Module
Model: 5792
FCC ID: VU65792
IC ID: 7480A-5792
to

FCC Part 15.247 and RSS-210 Issue 8

for

City Theatrical, Inc.

Test Performed by:	Test Authorized by:
Intertek	City Theatrical, Inc.
1365 Adams Court	475 Barell Avenue
Menlo Park, CA 94025 USA	Carlstadt, NJ 07072 USA

Prepared by: _____ **Date:** July 05, 2011
Krishna K Vemuri

Reviewed by: _____ **Date:** July 05, 2011
Ollie Moyrong

Report No. 100404100MPK-001

Equipment Under Test:	Radio Module
Trade Name:	City Theatrical, Inc.
Model No.:	5792
FCC ID:	VU65792
IC ID:	7480A-5792
Applicant:	City Theatrical, Inc.
Contact:	Mr. Larry Dunn
Address:	475 Barell Avenue Carlstadt, NJ 07072
Country	USA
Tel. Number:	201-549-1160
Fax number:	201-549-1161
Email:	Ldunn@citytheatrical.com
Applicable Regulation:	FCC Part 15, Subpart C RSS-210 Issue 8
Test Site Location:	ITS – Site 1 1365 Adams Drive Menlo Park, CA 94025
Date of Test:	June 24 to July 02, 2011

We attest to the accuracy of this report:

Krishna K Vemuri
EMC Senior Staff Engineer

Ollie Moyrong
Engineering Manager

TABLE OF CONTENTS

1.0 Introduction

The Equipment Under Test (EUT), model 5792, is a 2.4GHz frequency hopping spread spectrum radio module. It is designed to be used in various DMX512 theatre lighting equipment.

This report is designed to show compliance of the 2.4 GHz transceiver with the requirements of FCC Part 15.247 and RSS-210.

1.1 Summary of Tests

TEST	REFERENCE FCC 17.247	REFERENCE RSS-210	RESULTS
Output Power	15.247(b)(1)	A8.4	Complies
20-dB Bandwidth and Occupied Bandwidth	15.247(a)(1)	A8.1(a)	Complies
Channel Separation	15.247(a)(1)	A8.1(b)	Complies
Number of Hopping Channels	15.247(a)(1)	A8.1(d)	Complies
Average Channel Occupancy Time	15.47(a)(1)	A8.1(d)	Complies
Out-of-Band Antenna Conducted Emission	15.247(d)	A8.5	Complies
Out-of-Band Radiated Emission (except emissions in Restricted Bands)	15.247(d)	A8.5	Complies
Radiated Emission in Restricted Bands	15.247(d), 15.209, 15.205	2.2	Complies
RF exposure	15.247(i)	RSS-102	Complies
AC Conducted Emission	15.207	RSS-GEN	Complies
Radiated Emission from Digital Parts and Receiver	15.109	ICES-003	Complies
Antenna Requirement	15.203	RSS-GEN	Complies. Antenna port is SMA plug reverse polarity

2.0 General Description

2.1 Product Description

The Equipment Under Test (EUT), model 5792, is a 2.4GHz frequency hopping spread spectrum radio module. It is designed to be used in various DMX512 theatre lighting equipment.

Overview of the EUT

Applicant	City Theatrical, Inc. 475 Barell Avenue Carlstadt, NJ 07072 USA
Manufacturer name & address	City Theatrical, Inc. 475 Barell Avenue Carlstadt, NJ 07072 USA
Trade Name & Part No.	5792
FCC ID	VU65792
IC ID	7480A-5792
Use of Product	Radio module
Type of Transmission	Spread Spectrum, Frequency Hopping
Rated RF Output	25.7 mW
Frequency Range	2406 to 2477 MHz
Number of Channel(s)	2 sets of 36 full band. 2 sets of 16 - low, mid, & high partial band selectable patterns with low cross correlation and selectable adaptive hopping algorithms.
Hop Timing	Legacy: Timing synchronized to the DMX w/Hop every 11.334ms Nemesis: Timing synchronized to the DMX w/ Hop every 2.2668ms
Modulation Type	FSK frequency hopping
Data Rate	1 Mbps
Antenna(s) type & Gain	Omni whip, SMA plug reverse polarity, Max gain: 5dBi Panel, SMA plug reverse polarity via provided Antenna Cable, Max gain: 8.5dBi Yagi, SMA plug reverse polarity via provided Antenna Cable, Max gain: 14dBi

A pre-production version of the sample was received on June 24, 2011 in good condition. As declared by the Applicant, it is identical to production units.

Test start date June 24, 2011
Test end date: July 02, 2011

2.2 Related Submittal(s) Grants

None.

2.3 Test Methodology

Radiated and AC Line conducted emissions measurements were performed according to the procedures in ANSI C63.4 (2003). Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the **"Data Sheet"** of this Application. All other measurements were made in accordance with the procedures described in DA 00-705.

2.4 Test Facility

The radiated emission test site and conducted measurement facility used to collect the data is 10m semi-anechoic chamber located in Menlo Park, California. This test facility and site measurement data have been fully placed on file with the FCC, IC and A2LA accredited.

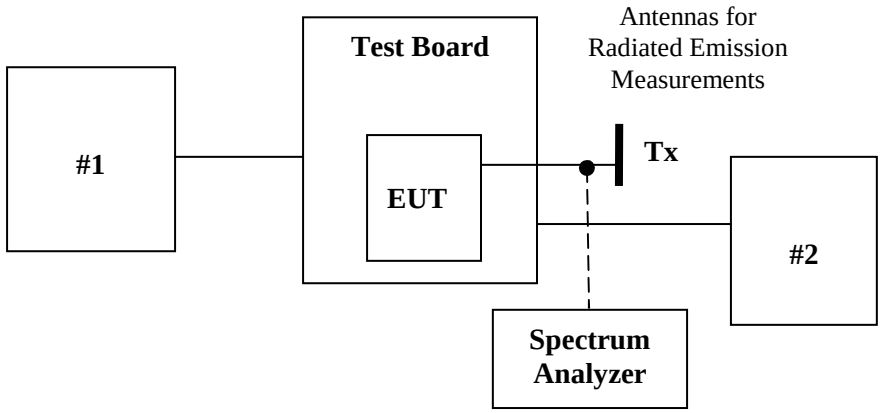
3.0 System Test Configuration

3.1 Support Equipment

Item #	Description	Model No.	Serial No.
1	DC Power Supply	6030A	US38320722
2	Laptop, ASUS	ASUS 701	7C0AAQ020863

3.2 Block Diagram of Test Setup

The diagram shown below details the interconnection of the EUT and support equipment. For specific layout, refer to the test configuration photograph in the relevant section of this report.



S = Shielded	**F** = With Ferrite
U = Unshielded	**m** = Length in Meters

3.3 Justification

For radiated emission measurements the EUT is placed on a non-conductive table. The EUT is attached to peripherals and they are connected and operational (as typical as possible). The EUT is wired to transmit full power. During testing, all cables are manipulated to produce worst-case emissions.

In normal operation, the EUT is installed inside the host unit and it is DC powered internally. For testing the EUT was attached to a test board, connected to a laptop, which provides power to the EUT and control by test software.

The model: 5792 can be configured with any one of the approved antennas listed below for fixed, point-to-point one server and one client configuration. When the model: 5792 is configured for point-to-multipoint one server and multiple clients' configuration (client's talk to server only one at a time), client's can use any of the approved antennas listed below and the server can use any of the approved antennas listed below with the exception of the 14dBi antenna.

List of Approved Antennas

Antenna #	Manufacturer	Model	Type	Connector	Gain
1	Nearson	S151AH-2450S	Omni whip	SMA plug reverse polarity	5dBi
2	Nearson	S141AH-2450	Omni whip	SMA plug reverse polarity	2dBi
3	Nearson	S131AH-2450S	Omni whip	SMA plug reverse polarity	2dBi
4	Centurion	WCP2400-MMCX4	Omni whip	MMCX jack on 4" coax pigtail	2.5dBi
5	Nearson	DG102N-2.4/5.25	Omni whip	SMA plug reverse polarity via provided Antenna Cable	5dBi
6	Maxrad	MP24008XFPT	Panel	SMA plug reverse polarity via provided Antenna Cable	8dBi
7	Maxrad	MYP24010PT	Yagi	SMA plug reverse polarity via provided Antenna Cable	10dBi
8	Maxrad	MYP24014PT	Yagi	SMA plug reverse polarity via provided Antenna Cable	14dBi

During the radiated emissions tests, the EUT was configured with each type of antenna from the above list having the highest gain. The antennas that were selected for the testing were: #1, #6 and #8 from the list.

3.4 Software Exercise Program

The EUT exercise program used during radiated and conducted testing was provided by the Applicant.

3.5 Mode of Operation During Test

The EUT was operated in two modes: hopping mode as in normal use and hopping disabled mode in which the EUT was transmitting at the lowest, middle, and highest channels (frequencies).

Tests were performed with the EUT in two configuration modes:
1. “Legacy” mode also known as “Classic” mode
2. “Nemesis” also known as “SHoW DMX Neo™”
Note: The worst case data was reported.

3.6 Modifications Required for Compliance

No modifications were installed by Intertek Testing Services during compliance testing in order to bring the product into compliance.

4.0 Measurement Results

4.1 Conducted Output Power at Antenna Terminals
FCC 15.247(b)(1)

Requirement

For antennas with gains of 6 dBi or less, operating in the 2400-2483.5 MHz band employing at least 75 hopping channels, the maximum peak output power is 1 watt (30 dBm), for all other systems 0.125 W (21 dBm).

Systems used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Procedure

The antenna port of the EUT was connected to the input of a spectrum analyzer. Power was read directly and cable loss correction was added to the reading to obtain the power at the EUT antenna terminal.

Test Results

The results are presented on the following plots 1.1 – 1.6 and summarized in the table below.

Legacy mode

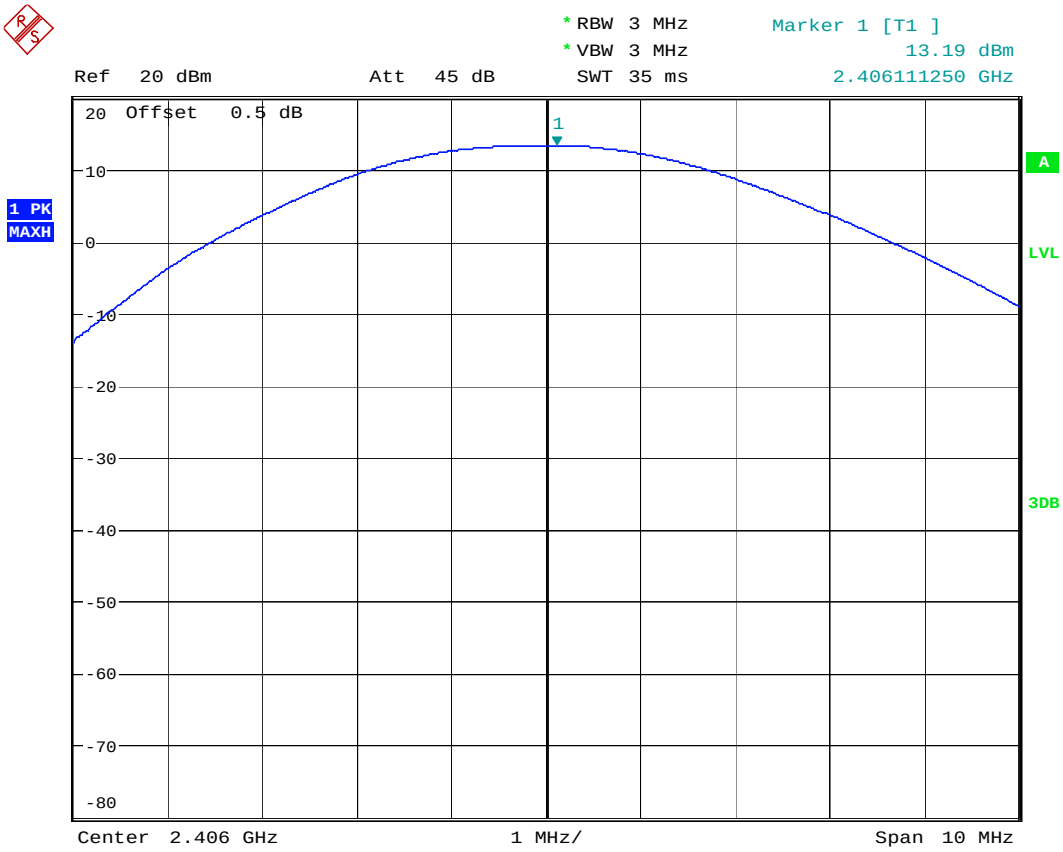
Frequency (MHz)	Output in dBm	Output in mW	Plot number
2406	13.2	20.9	1.1
2440	13.8	24.0	1.2
2477	14.1	25.7	1.3

Nemesis mode

Frequency (MHz)	Output in dBm	Output in mW	Plot number
2406	13.2	20.9	1.4
2440	13.8	24.0	1.5
2477	14.1	25.7	1.6

Notes: 1. Hopping function was disabled during the test.

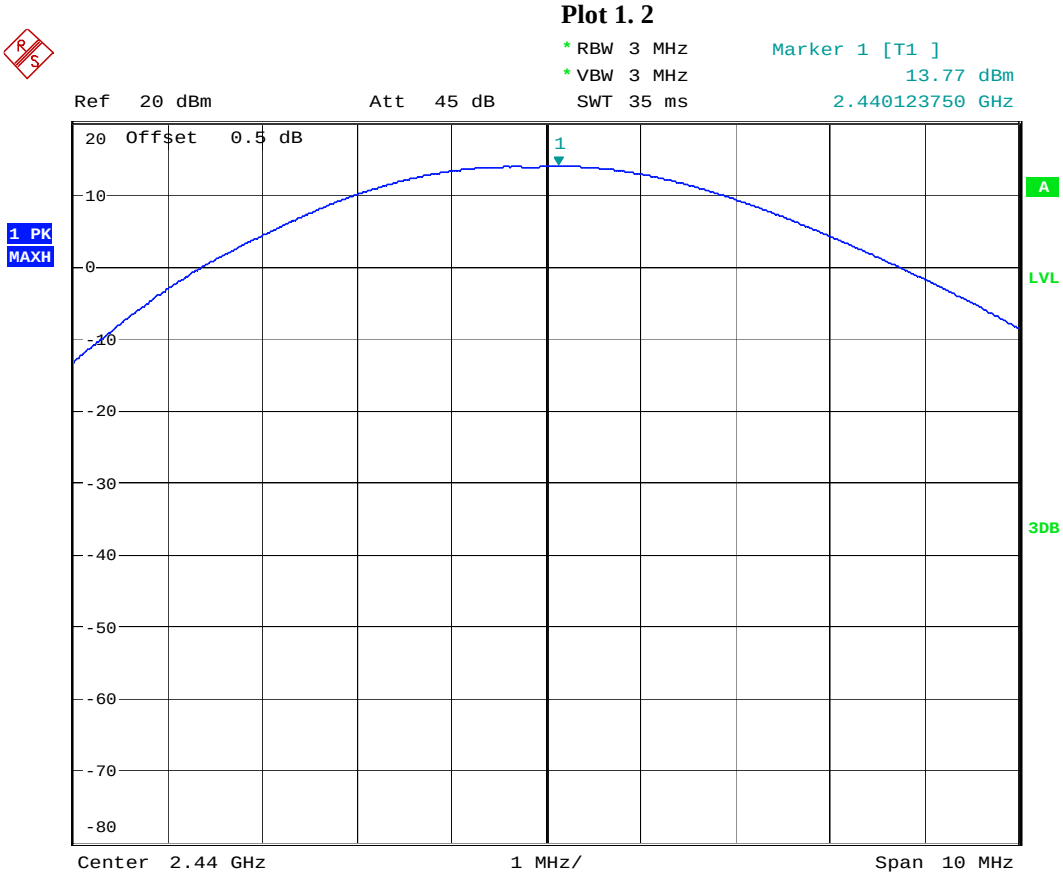
Plot 1. 1



Output power, Legacy mode

Date: 24.JUN.2011 13:41:26

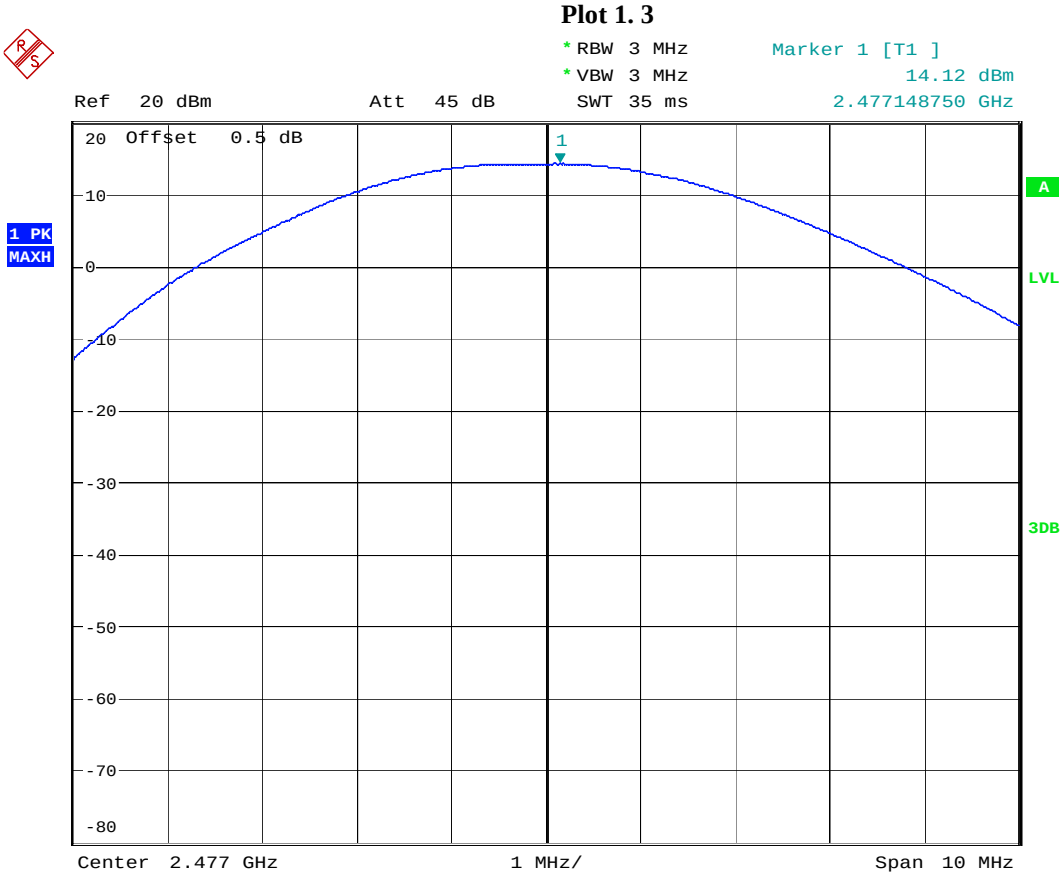
Plot 1. 2



Output power, Legacy mode

Date: 24.JUN.2011 13:45:12

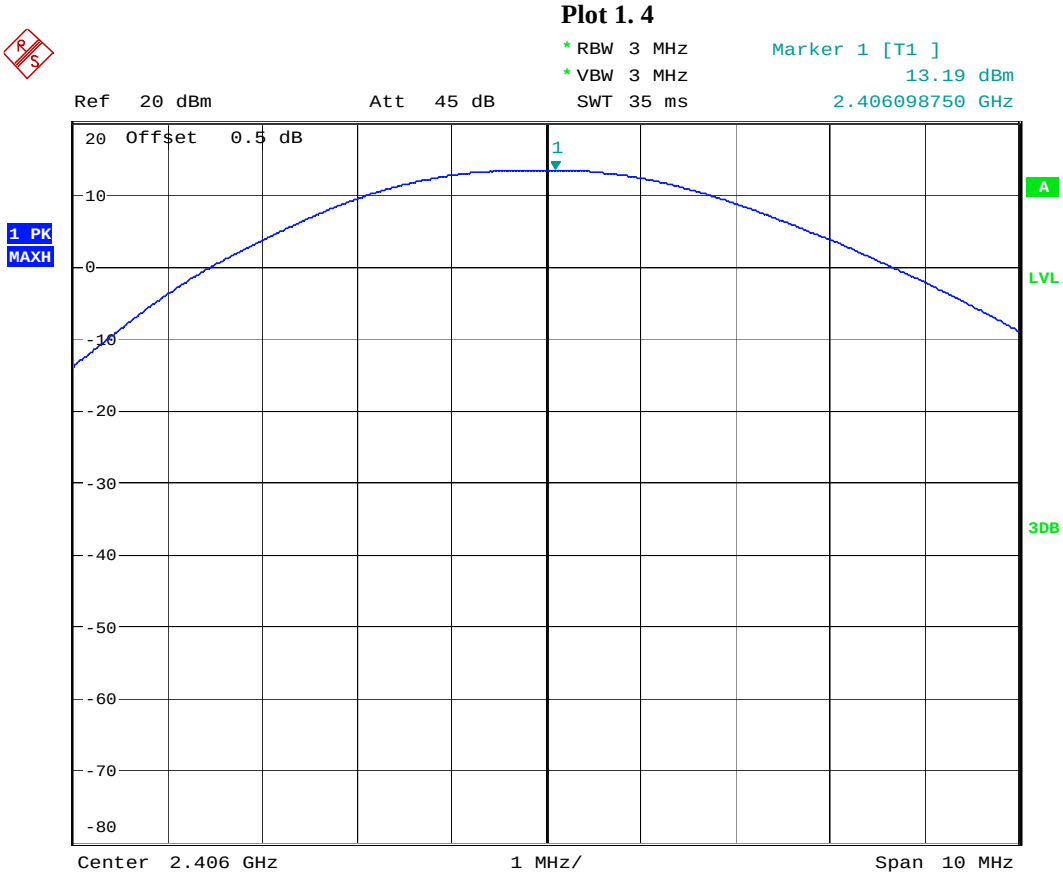
Plot 1. 3



Output power, Legacy mode

Date: 24.JUN.2011 13:46:59

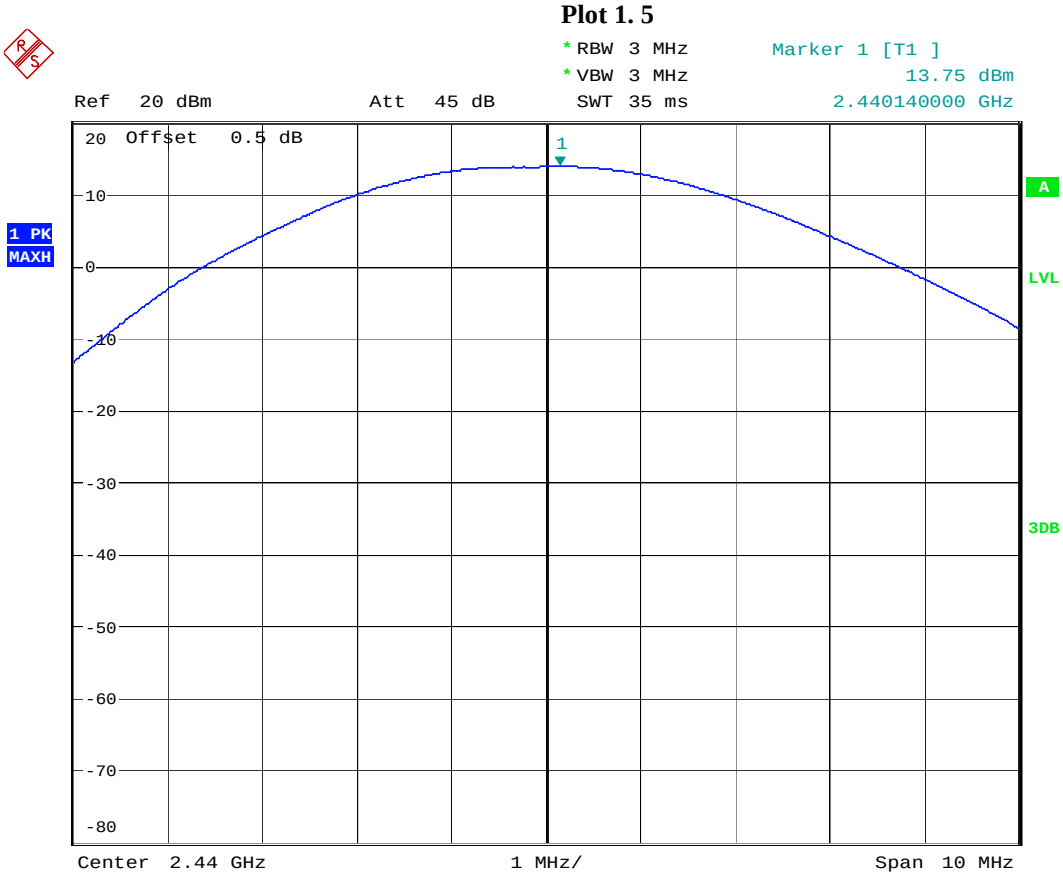
Plot 1. 4



Output power, Nemesis mode

Date: 24.JUN.2011 13:52:19

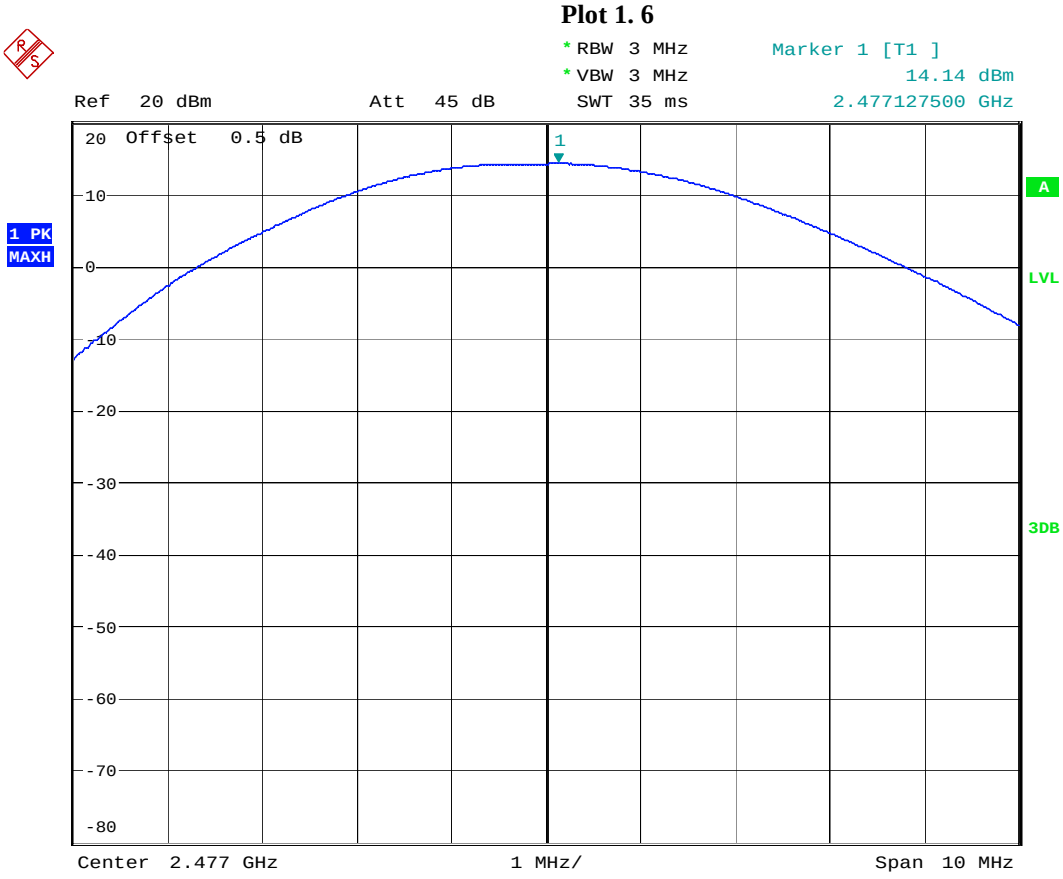
Plot 1. 5



Output power, Nemesis mode

Date: 24.JUN.2011 13:51:24

Plot 1. 6



Output power, Nemesis mode

Date: 24.JUN.2011 13:50:50

4.2 Hopping Channel 20-dB Bandwidth and Occupied Bandwidth
FCC 15.247(a)(1)

Procedure

The antenna port of the EUT was connected to the input of a spectrum analyzer.
The spectrum analyzer resolution bandwidth was set to approximately 1% of the 20-dB Bandwidth. The 20-dB Bandwidth was measured by using the DELTA MARKER function of the analyzer.

In addition, the occupied bandwidth (99%) was measured.

Test Results

Nemesis mode

Frequency (MHz)	20-dB channel bandwidth (MHz)	Plot
2406	1.18	2.1
2440	1.18	2.2
2477	1.19	2.3

Legacy mode

Frequency (MHz)	20-dB channel bandwidth (MHz)	Plot
2406	1.18	2.4
2440	1.18	2.5
2477	1.19	2.6

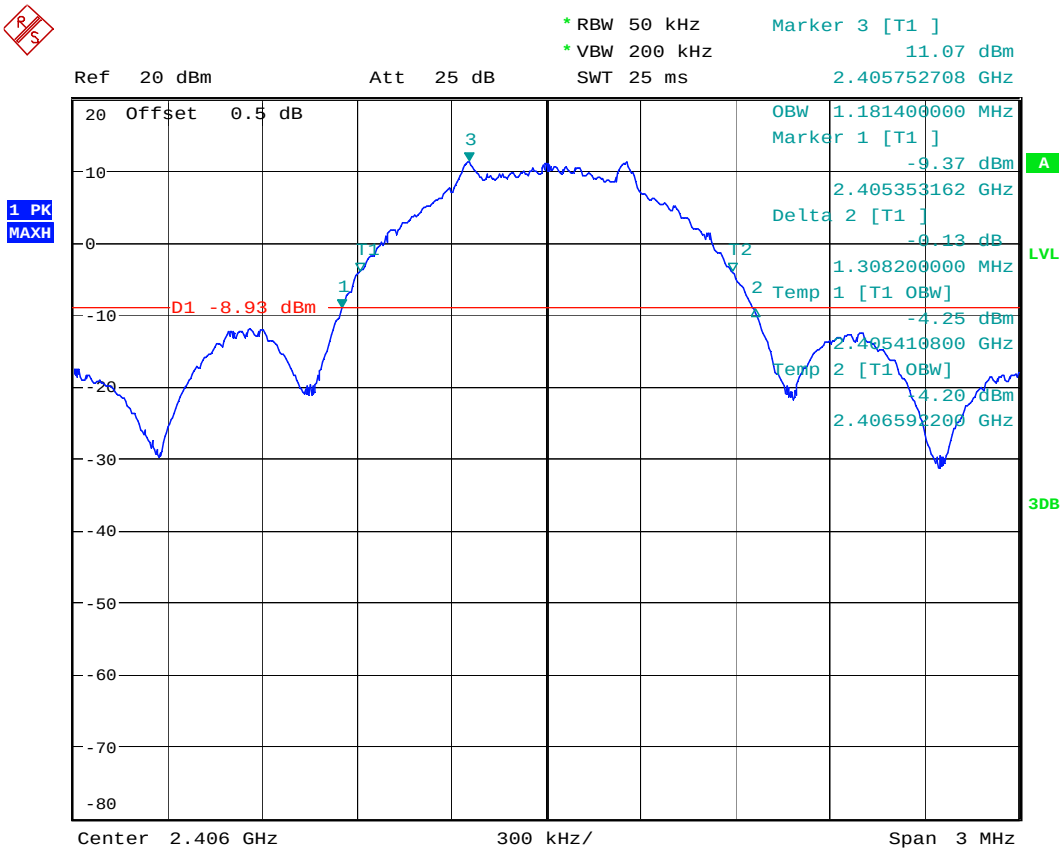
Nemesis mode

Frequency (MHz)	Occupied bandwidth (MHz)	Plot
2406	1.31	2.1
2440	1.30	2.2
2477	1.29	2.3

Legacy mode

Frequency (MHz)	Occupied bandwidth (MHz)	Plot
2406	1.30	2.4
2440	1.31	2.5
2477	1.30	2.6

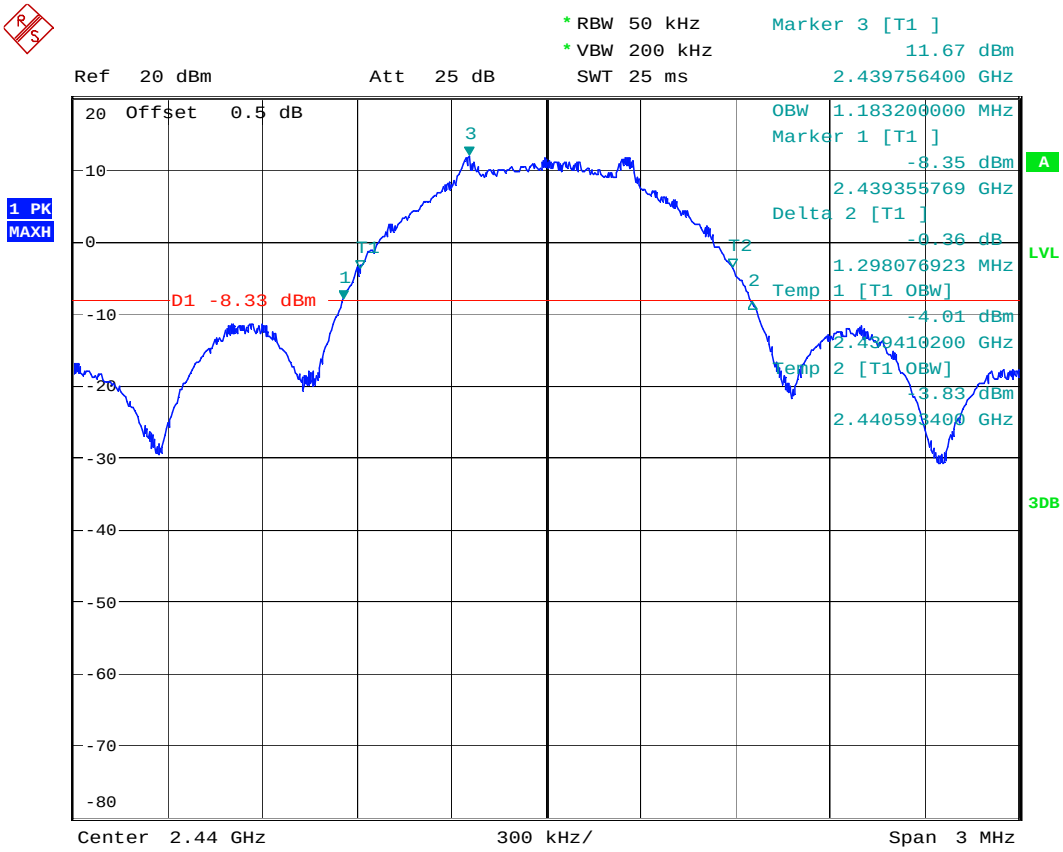
Plot 2. 1



20-dB Bandwidth and Occupied Bandwidth, Nemesis mode

Date: 24.JUN.2011 16:45:53

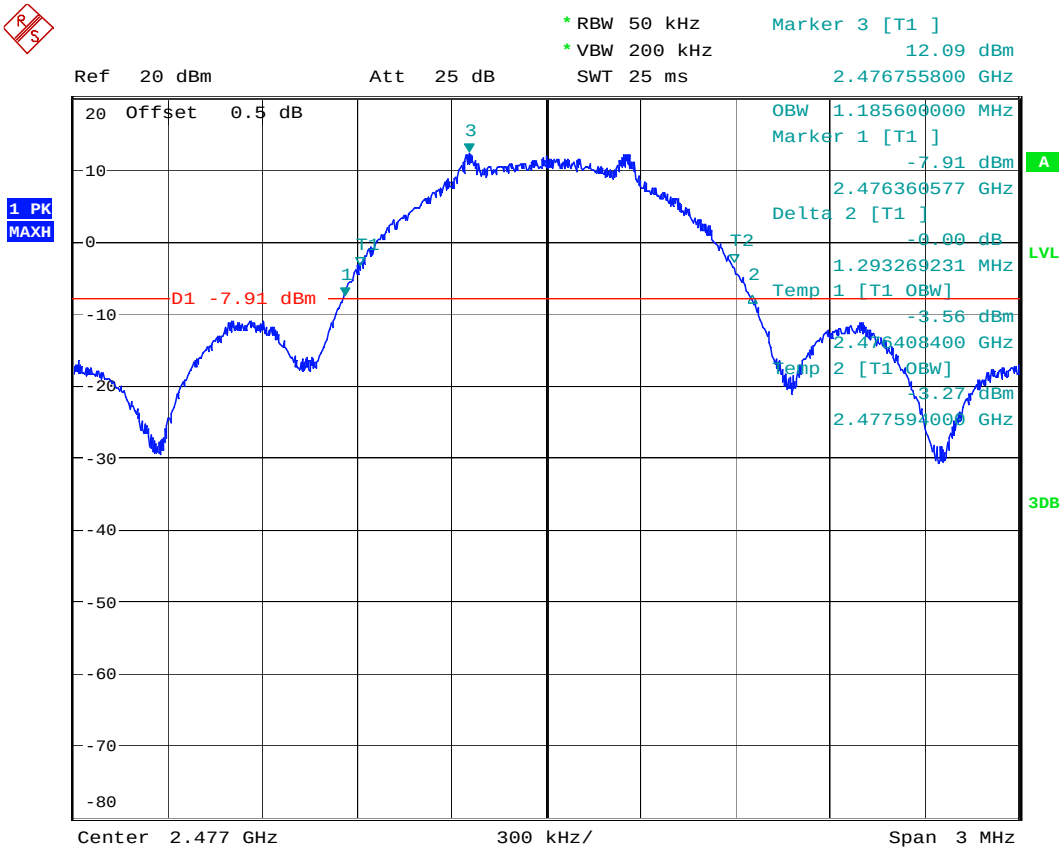
Plot 2. 2



20-dB Bandwidth and Occupied Bandwidth, Nemesis mode

Date: 24.JUN.2011 16:53:24

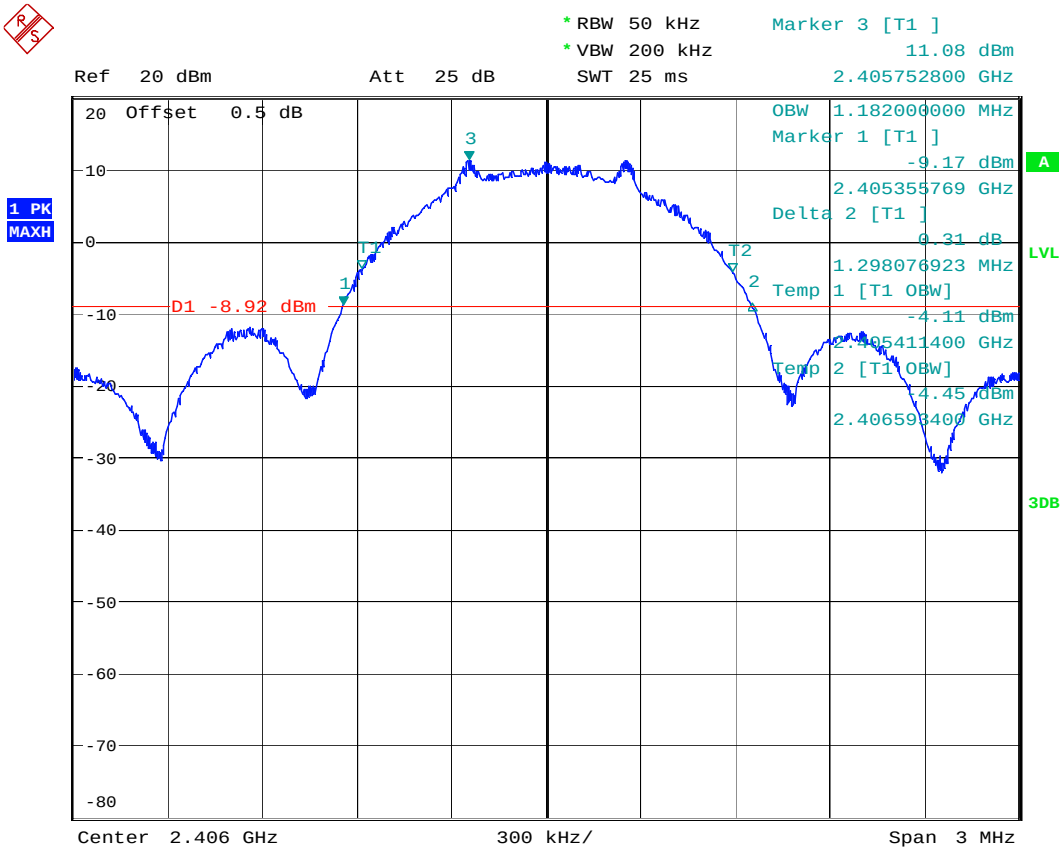
Plot 2. 3



20-dB Bandwidth and Occupied Bandwidth, Nemesis mode

Date: 24.JUN.2011 16:57:46

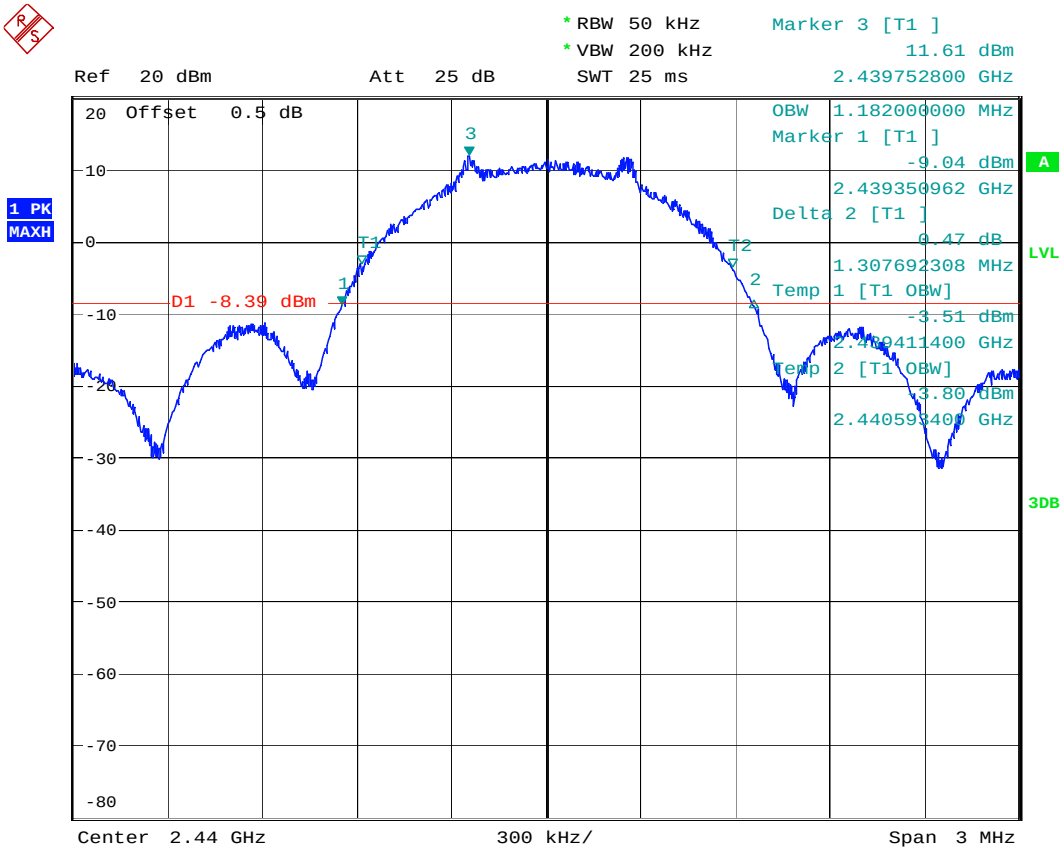
Plot 2. 4



20-dB Bandwidth and Occupied Bandwidth, Legacy mode

Date: 24.JUN.2011 17:06:52

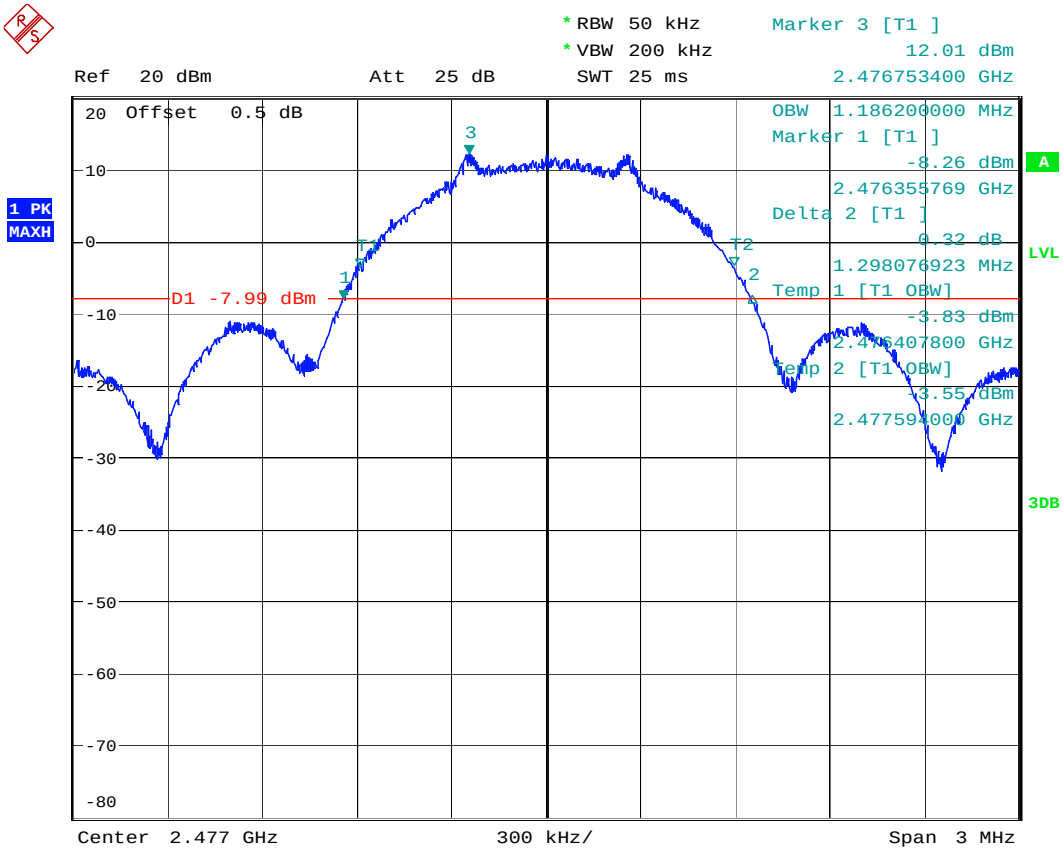
Plot 2. 5



20-dB Bandwidth and Occupied Bandwidth, Legacy mode

Date: 24.JUN.2011 17:10:17

Plot 2. 6



20-dB Bandwidth and Occupied Bandwidth, Legacy mode

Date: 24.JUN.2011 17:13:28

4.3 Carrier Frequency Separation
FCC Ref: 15.247(a)(1)

Requirement

Systems shall have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20-dB bandwidth of the hopping channel, whichever is greater.

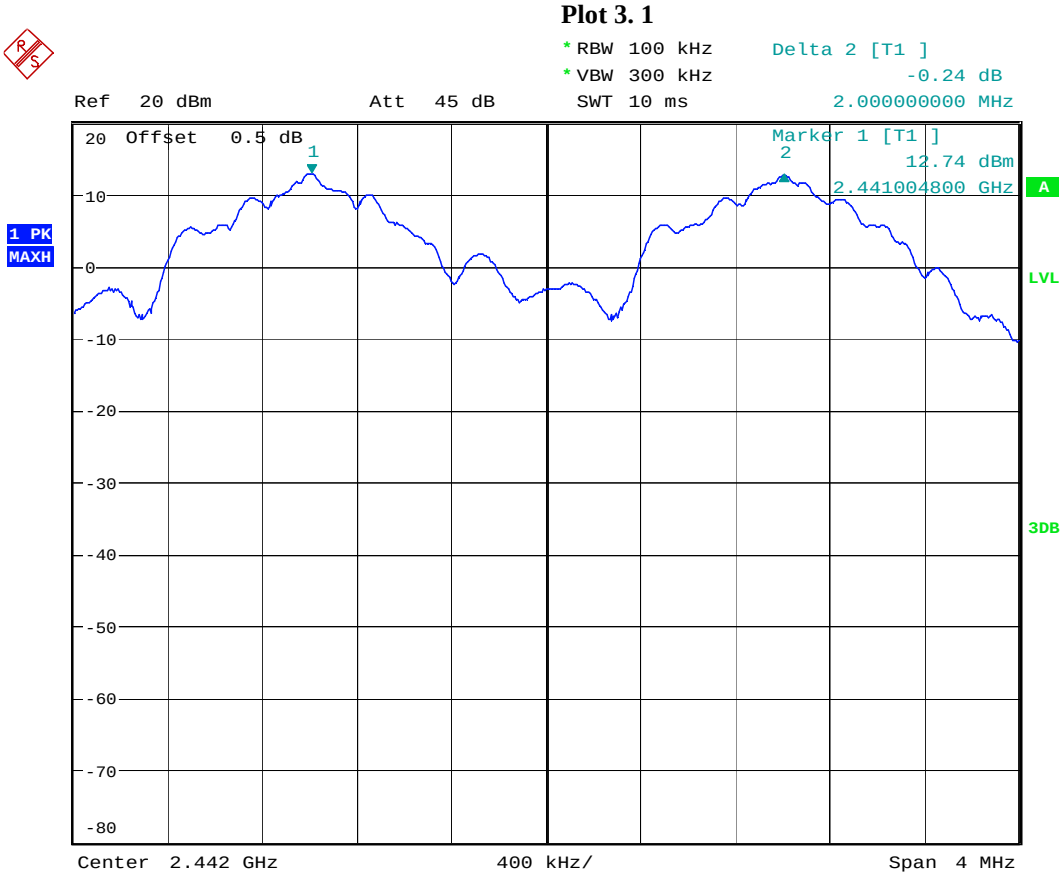
Procedure

Using the DELTA MARKER function of the analyzer, the frequency separation between two adjacent channels was measured and compared against the limit.

Test Results

Please refer to the attached spectrum analyzer plot # 3.1 and #3.2 for the test result.
The channel separation is 2.0 MHz (Legacy and Nemesis modes).

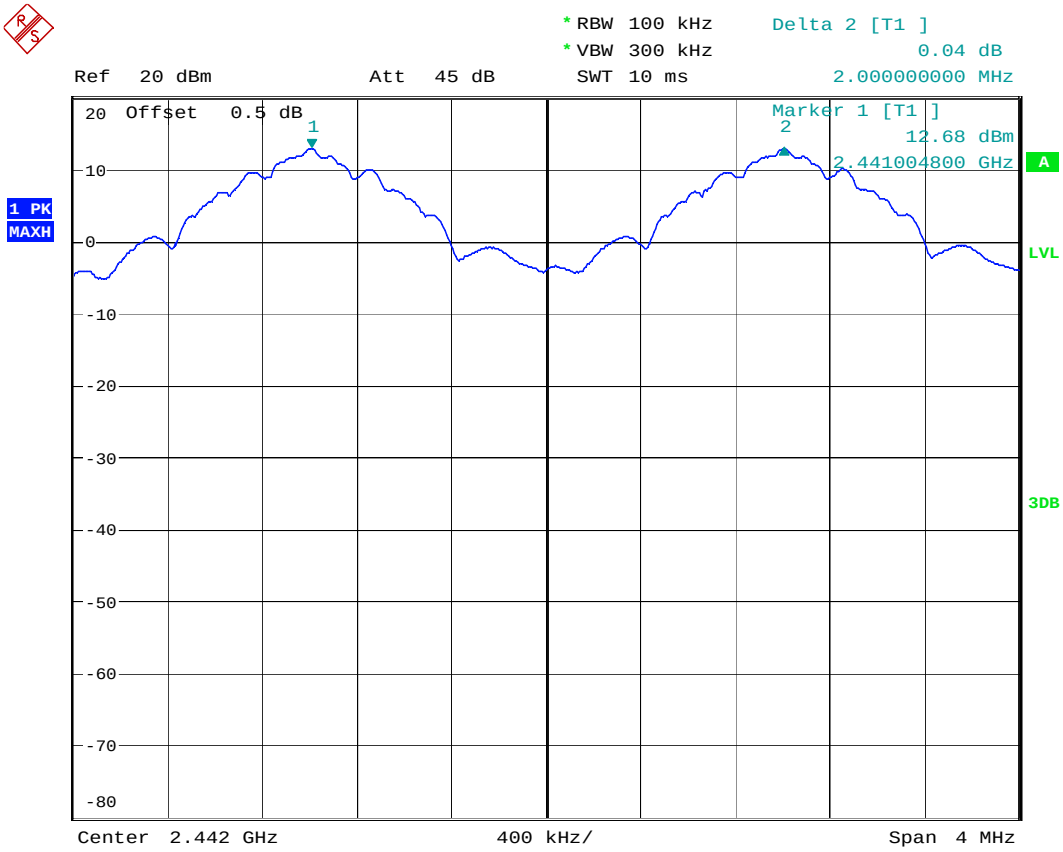
Plot 3. 1



Carrier frequency separation, Legacy mode

Date: 24.JUN.2011 15:52:37

Plot 3. 2



Carrier frequency separation, Nemesis mode

Date: 24.JUN.2011 16:17:30

4.4 Number of Hopping Channels
FCC Ref: 15.247(a)(1)

Requirement

Systems operating in the 2400-2483.5 MHz band shall use at least 15 hopping channels.

Procedure

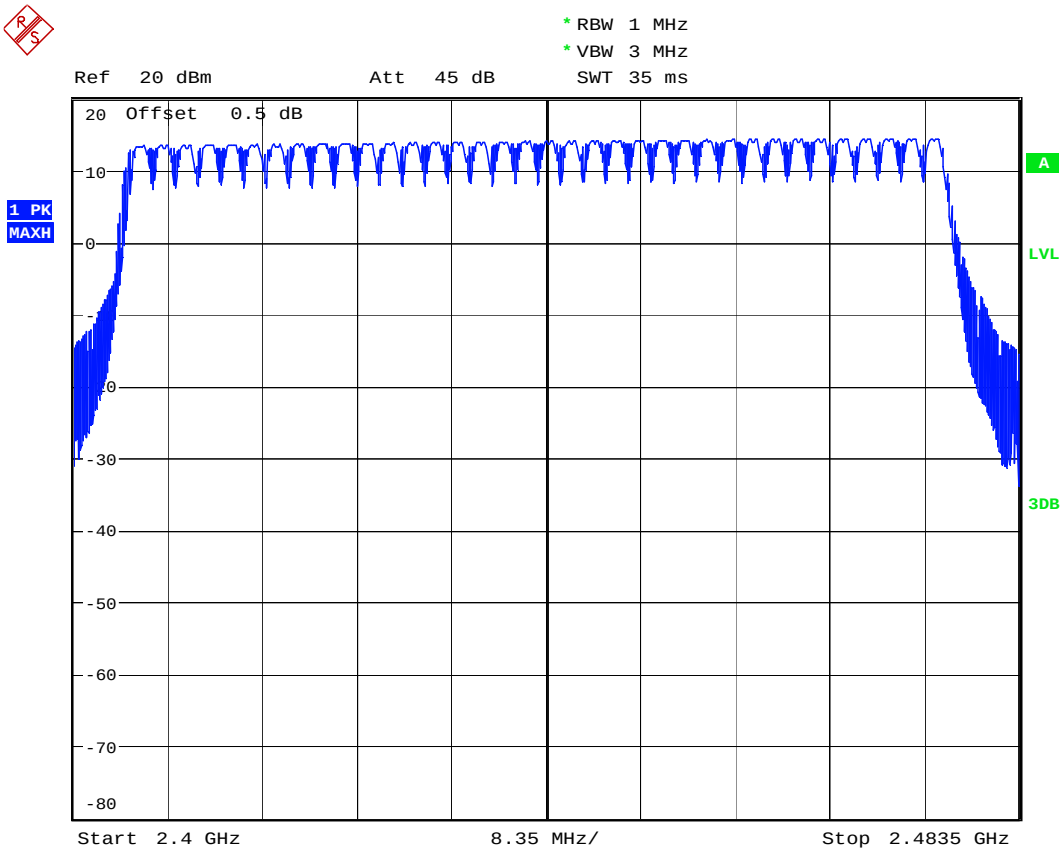
With the analyzer set to MAX HOLD, readings were taken for 2 - 3 minutes The channel peaks so recorded and compared to the minimum number of channels required in the regulation.

Test Results

Number of hopping channels	2 sets of 36 full band. 2 sets of 16 - low, mid, & high partial band selectable patterns with low cross correlation and selectable adaptive hopping algorithms.

Refer to attached spectrum analyzer charts: Plots 4.1 to 4.18

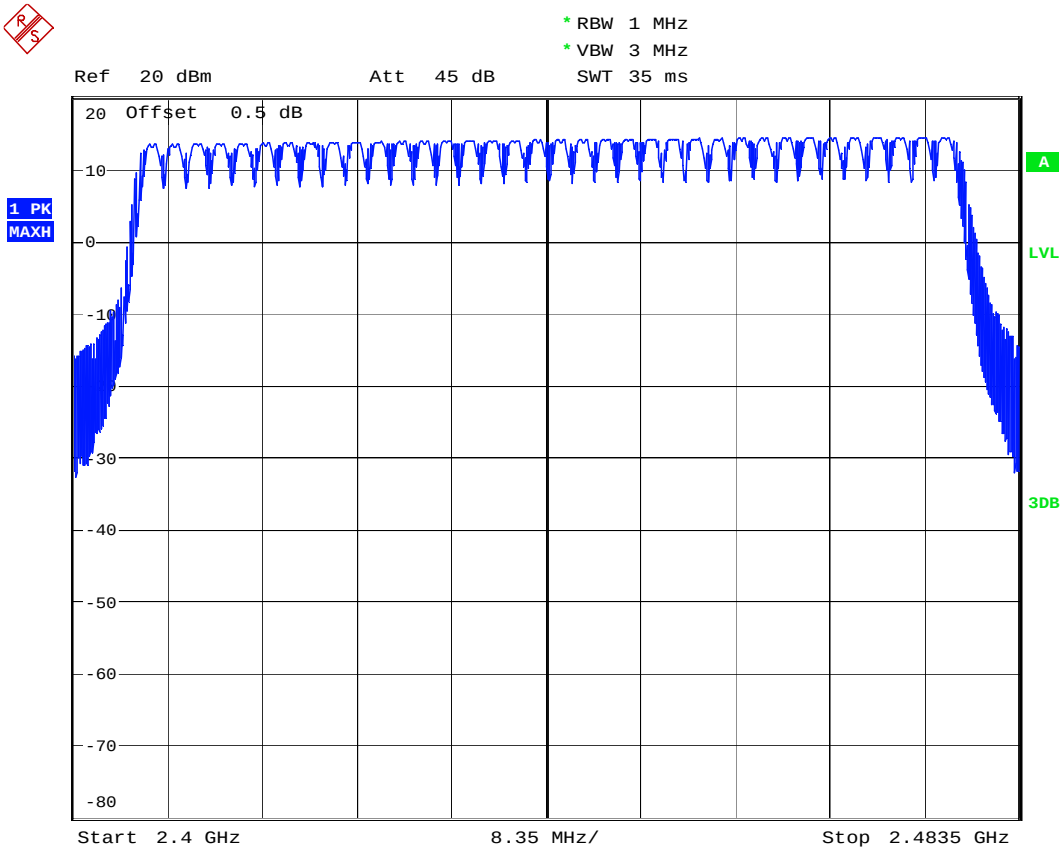
Plot 4. 1



Number of hopping channels, Nemesis, Even full

Date: 24.JUN.2011 14:12:24

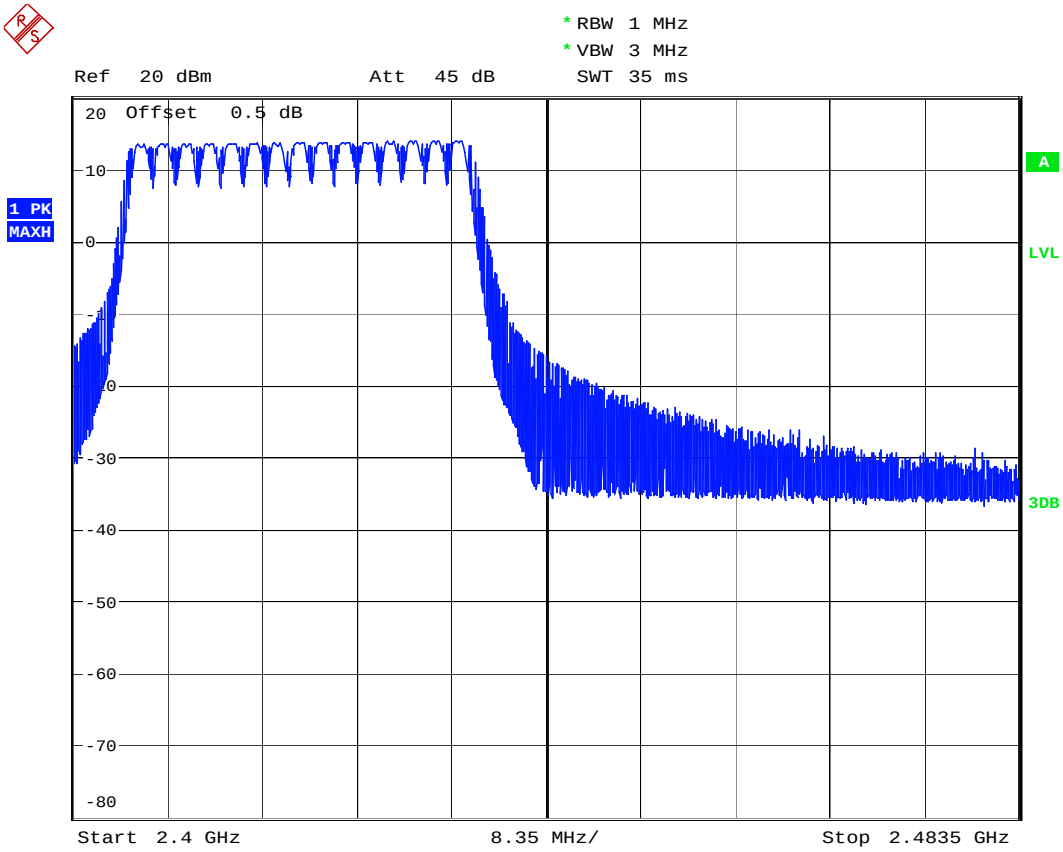
Plot 4. 2



Number of hopping channels, Nemesis, Odd full

Date: 24.JUN.2011 14:17:23

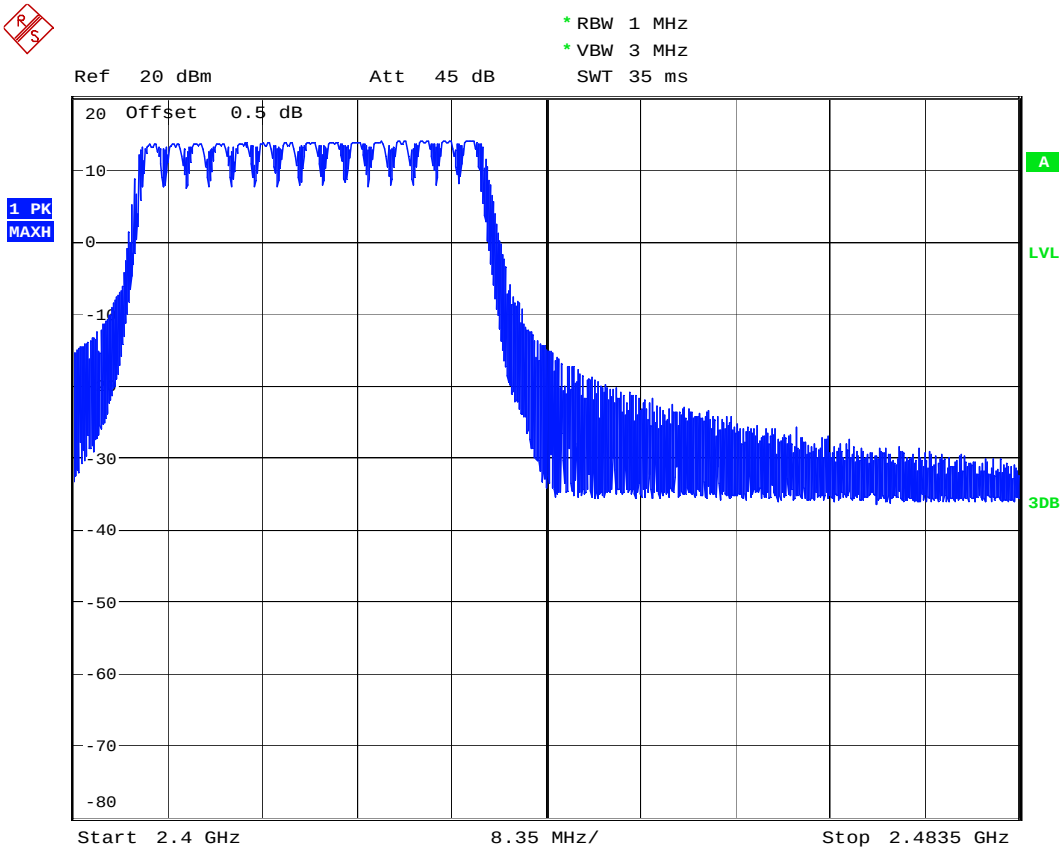
Plot 4. 3



Number of hopping channels, Nemesis, Even low sub

Date: 24.JUN.2011 14:19:38

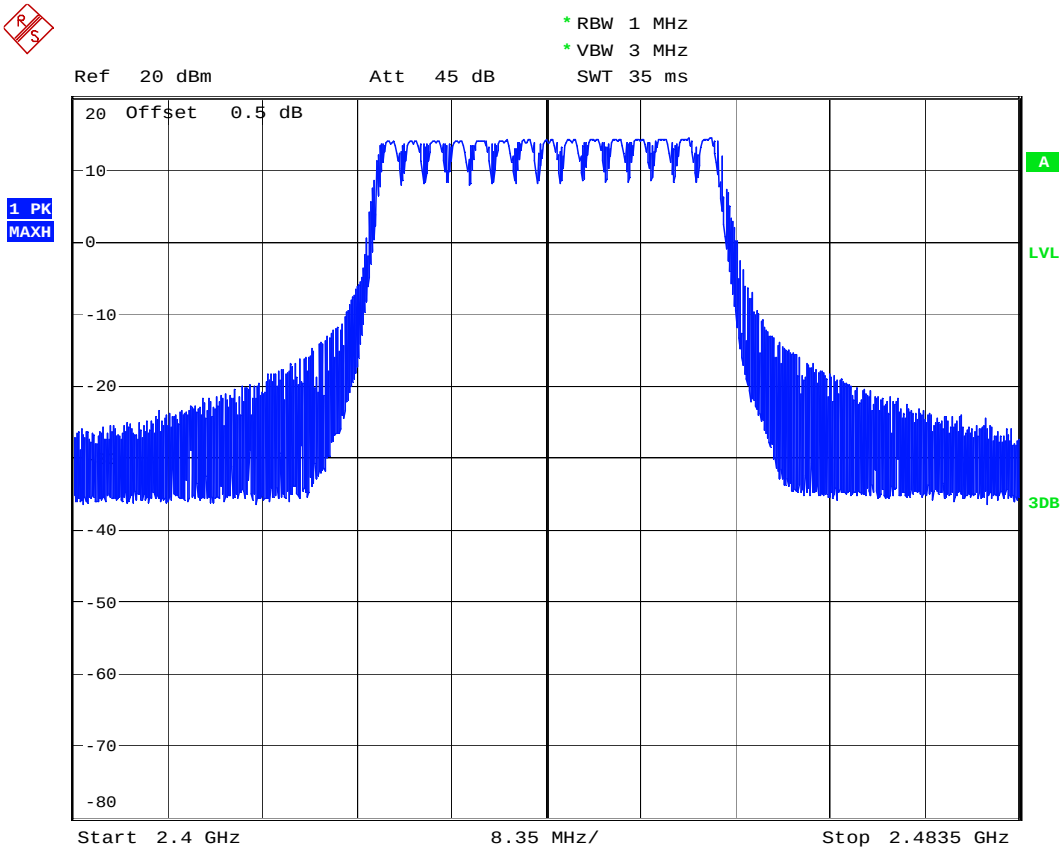
Plot 4. 4



Number of hopping channels, Nemesis, Odd low sub

Date: 24.JUN.2011 14:32:07

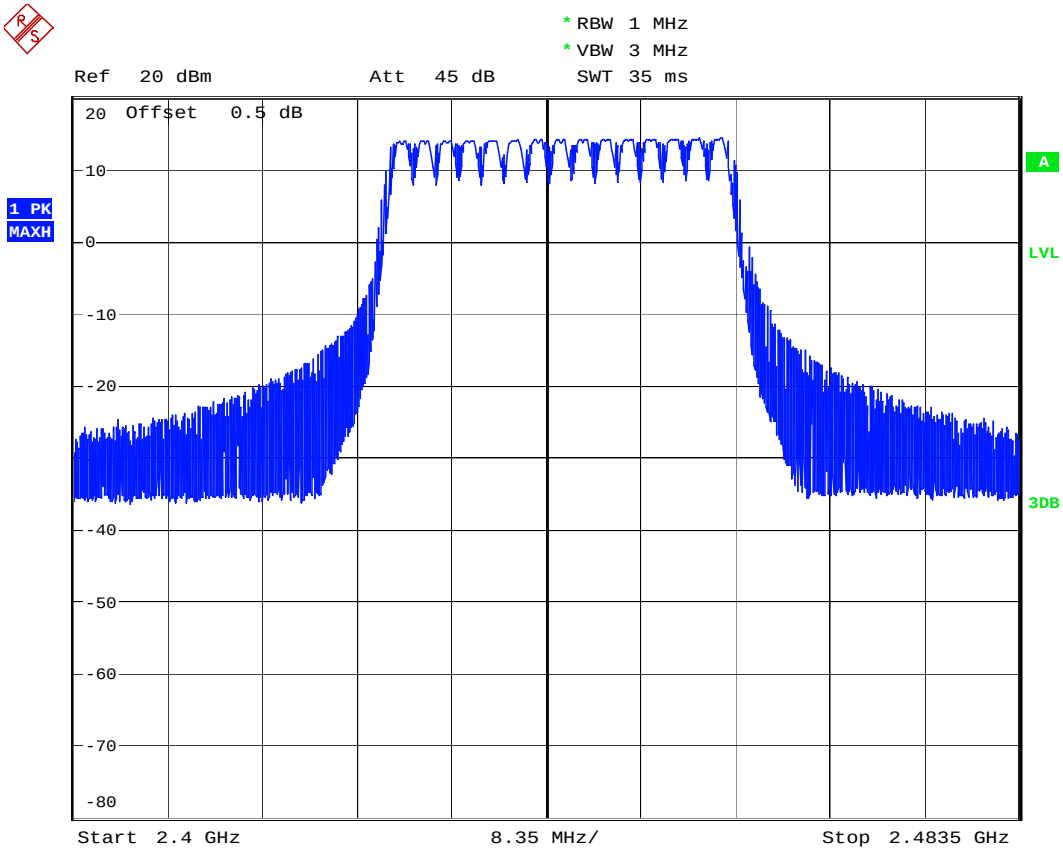
Plot 4. 5



Number of hopping channels, Nemesis, Even mid sub

Date: 24.JUN.2011 14:34:09

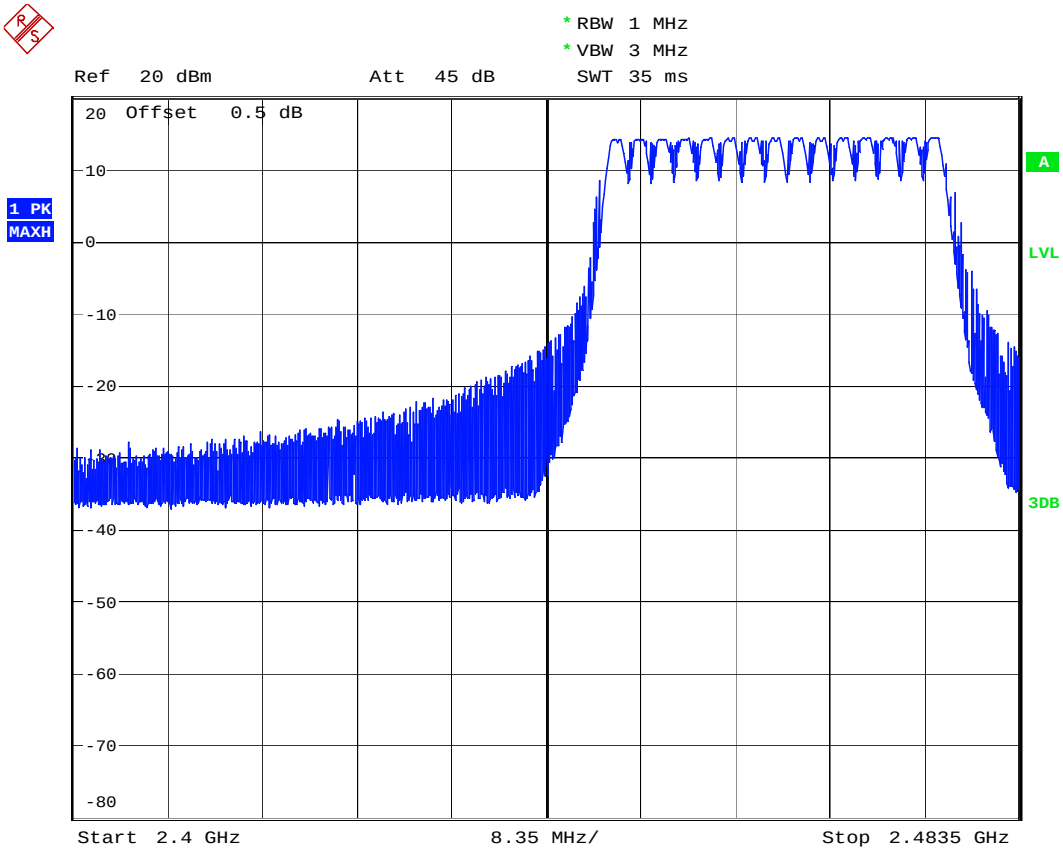
Plot 4. 6



Number of hopping channels, Nemesis, Odd mid sub

Date: 24.JUN.2011 14:36:09

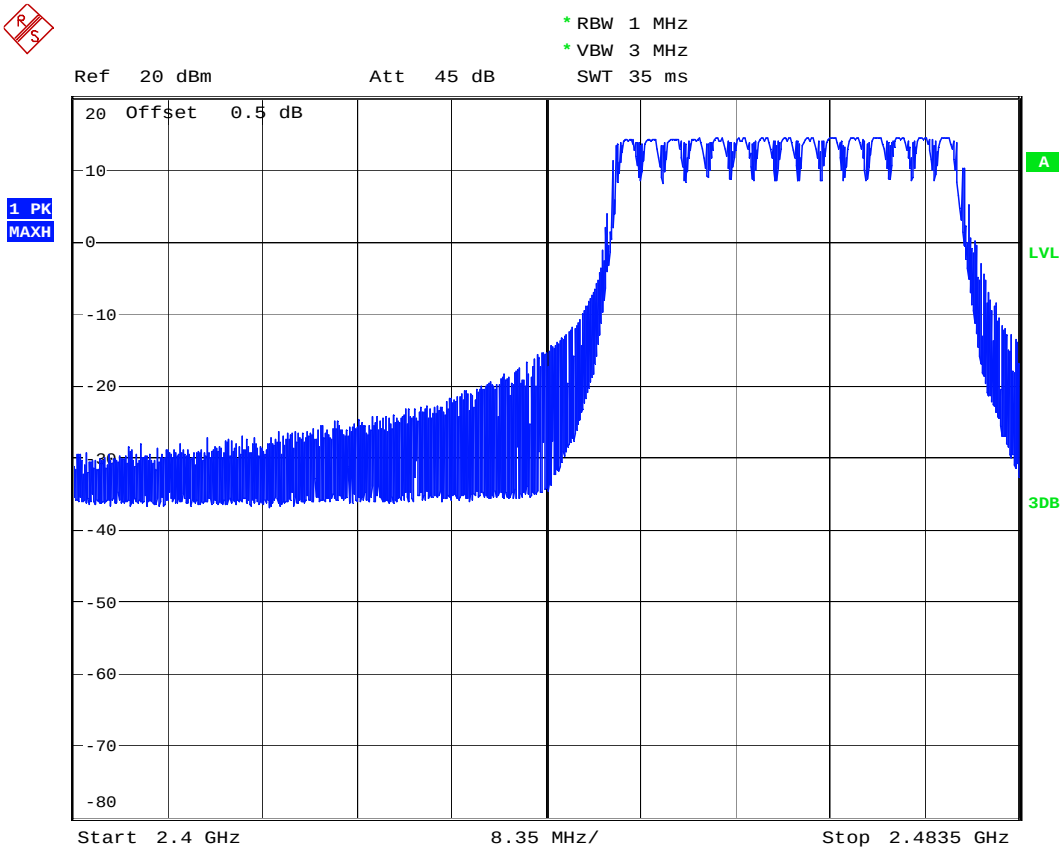
Plot 4. 7



Number of hopping channels, Nemesis, Even high sub

Date: 24.JUN.2011 14:38:12

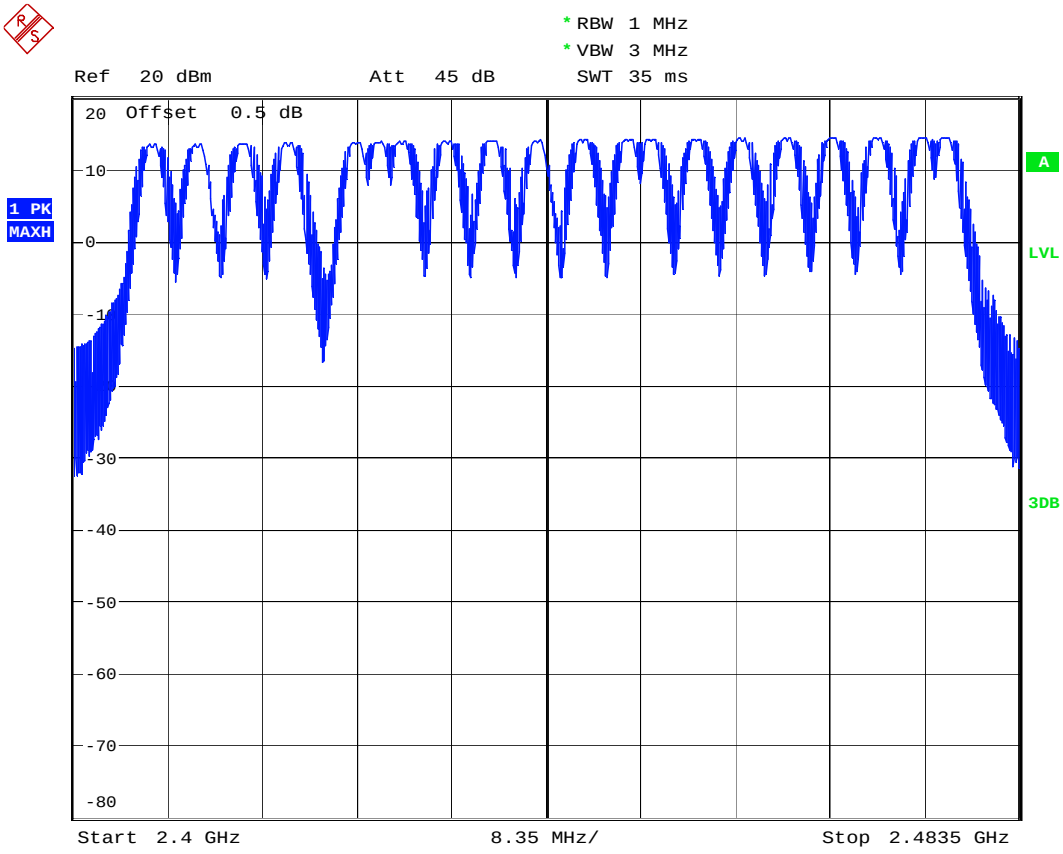
Plot 4. 8



Number of hopping channels, Nemesis, Odd high sub

Date: 24.JUN.2011 14:40:05

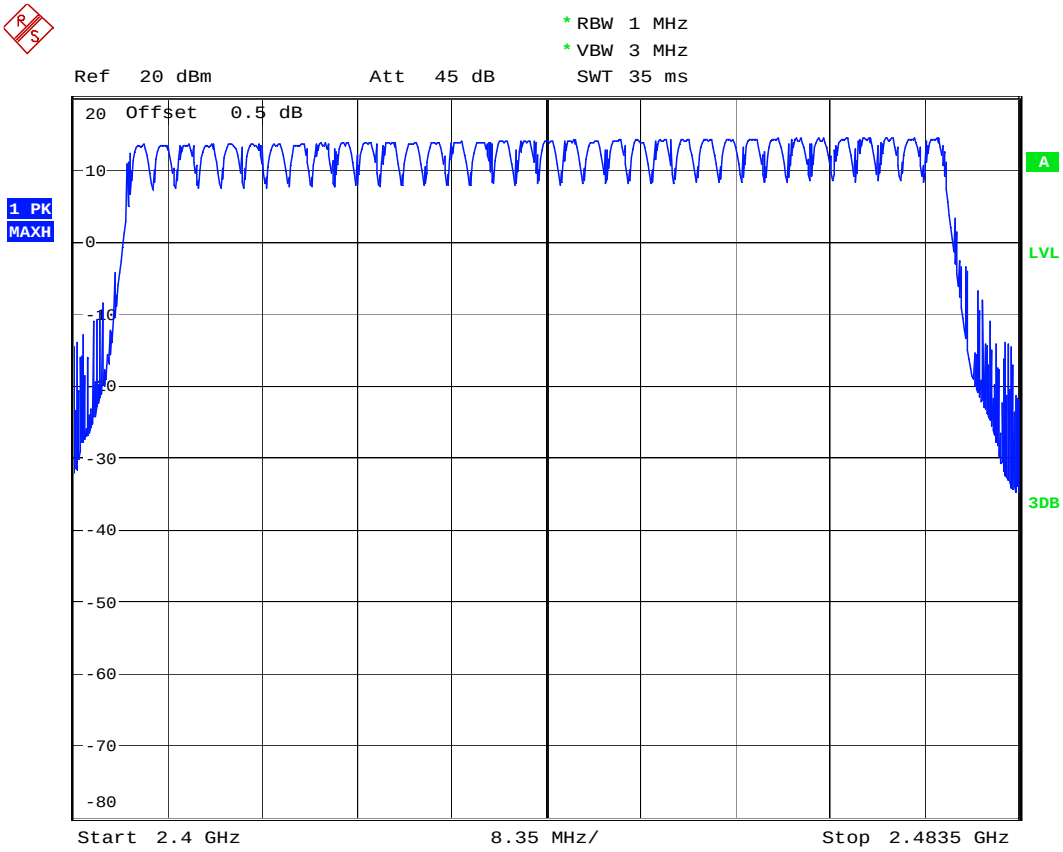
Plot 4. 9



Number of hopping channels, Nemesis, Adaptive default

Date: 24.JUN.2011 14:44:34

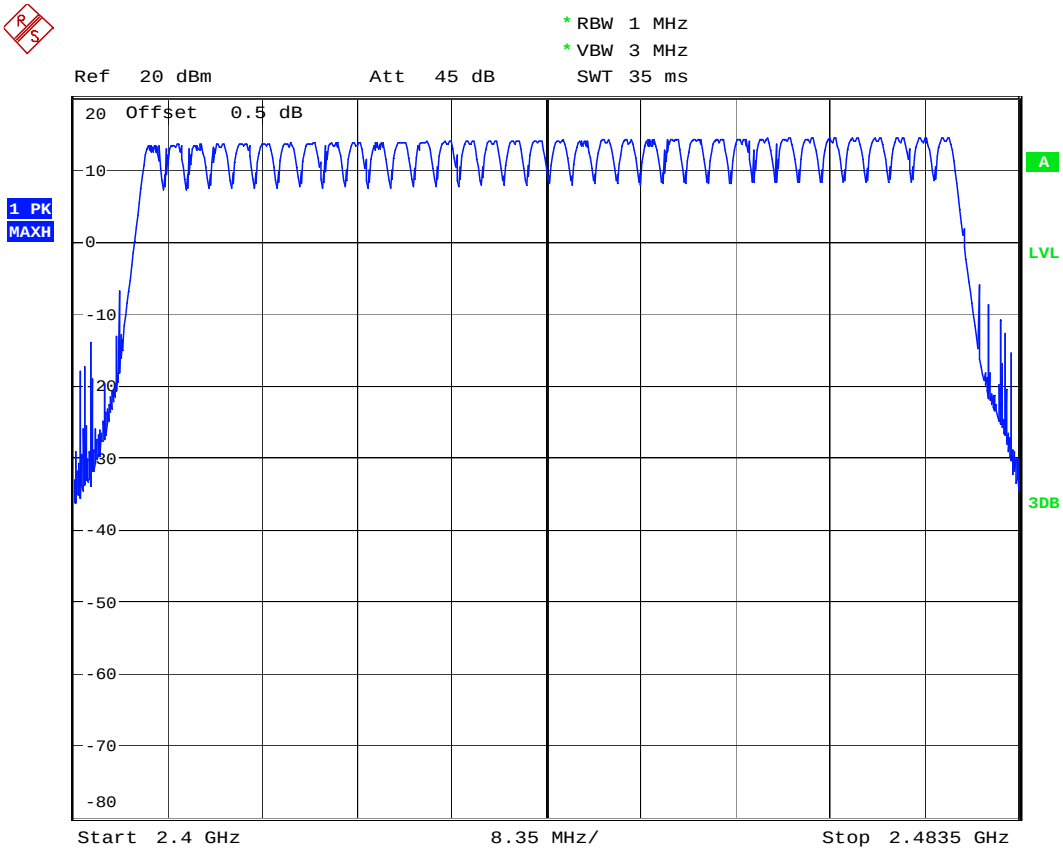
Plot 4. 10



Number of hopping channels, Legacy, Even full

Date: 24.JUN.2011 14:50:46

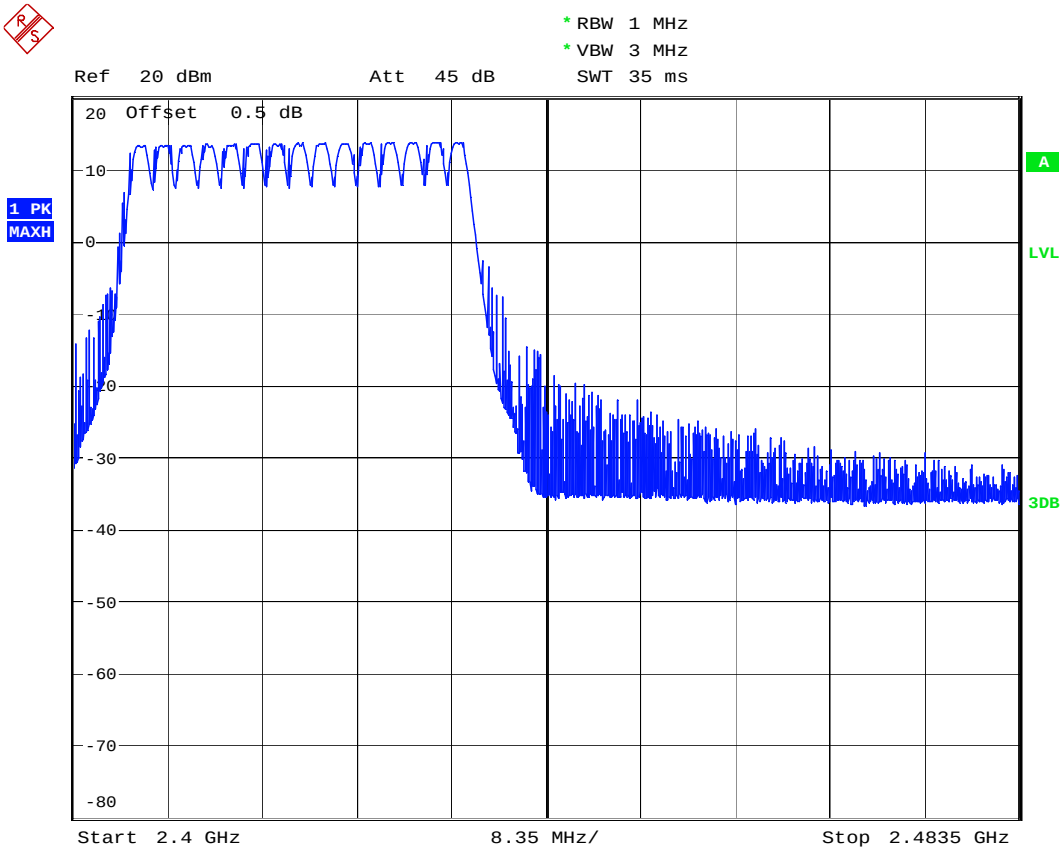
Plot 4. 11



Number of hopping channels, Legacy, Odd full

Date: 24.JUN.2011 14:51:47

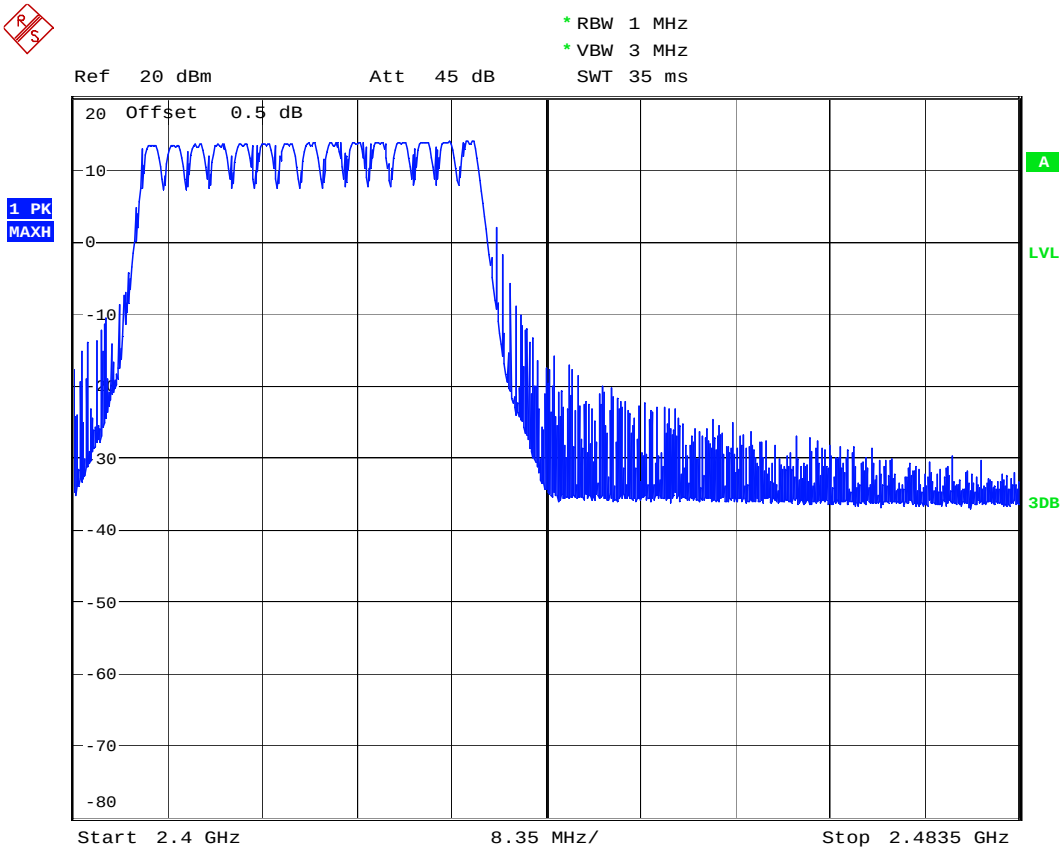
Plot 4. 12



Number of hopping channels, Legacy, Even low sub

Date: 24.JUN.2011 14:53:34

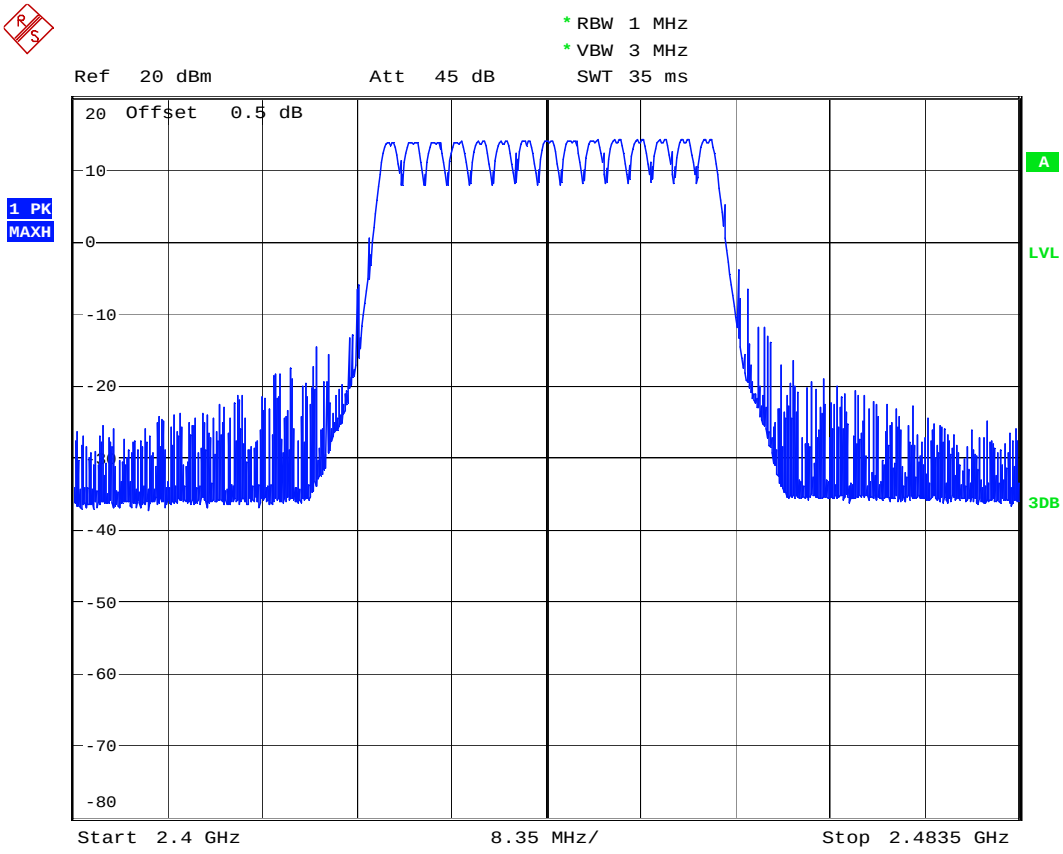
Plot 4. 13



Number of hopping channels, Legacy, Odd low sub

Date: 24.JUN.2011 14:54:45

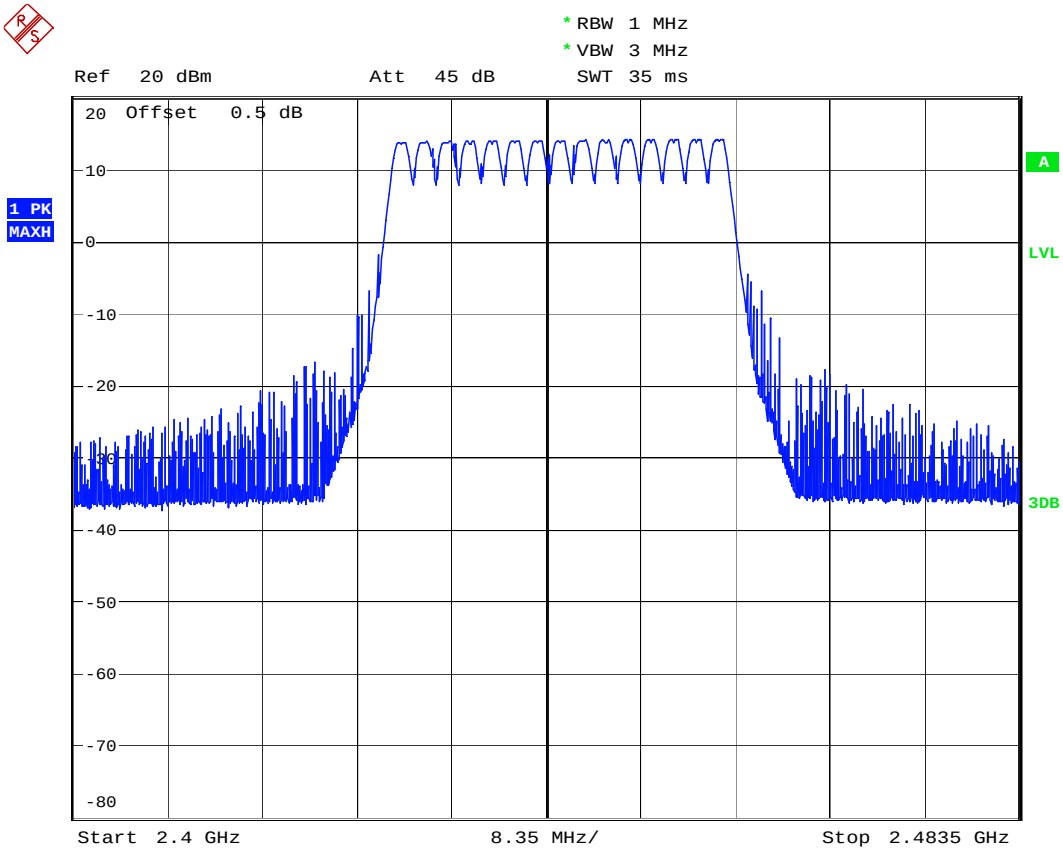
Plot 4. 14



Number of hopping channels, Legacy, Even mid sub

Date: 24.JUN.2011 14:55:41

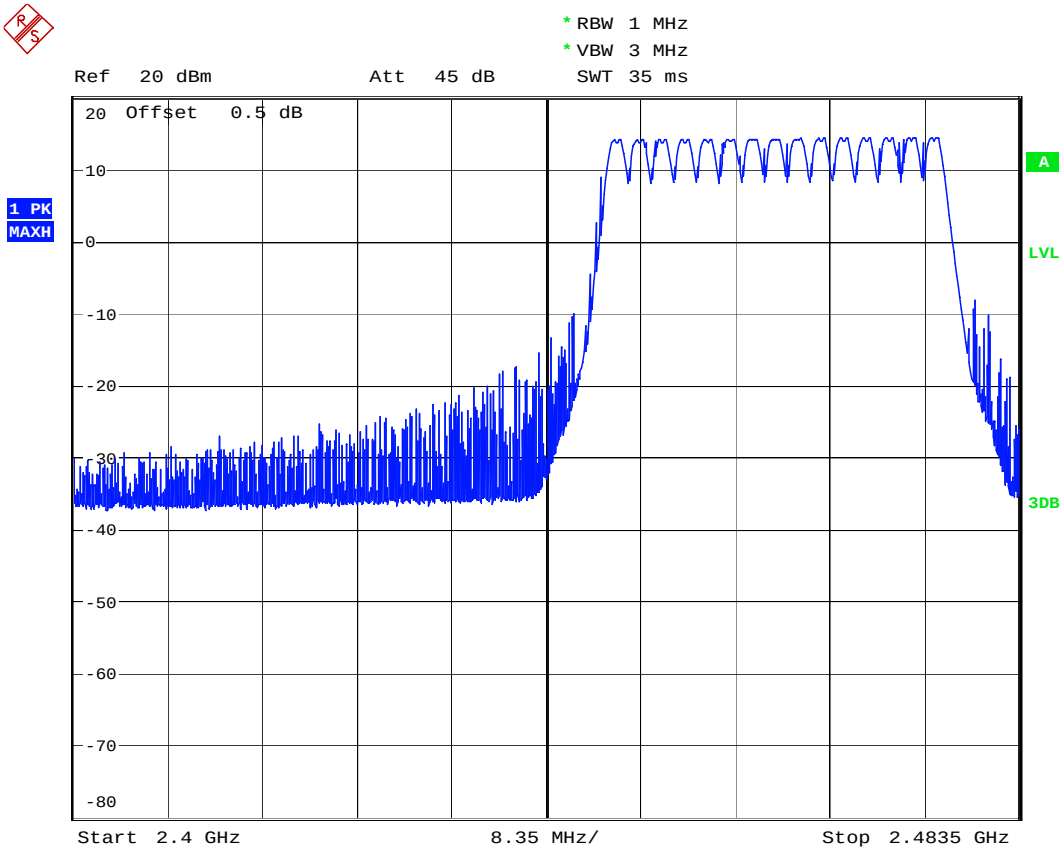
Plot 4. 15



Number of hopping channels, Legacy, Odd mid sub

Date: 24.JUN.2011 14:56:35

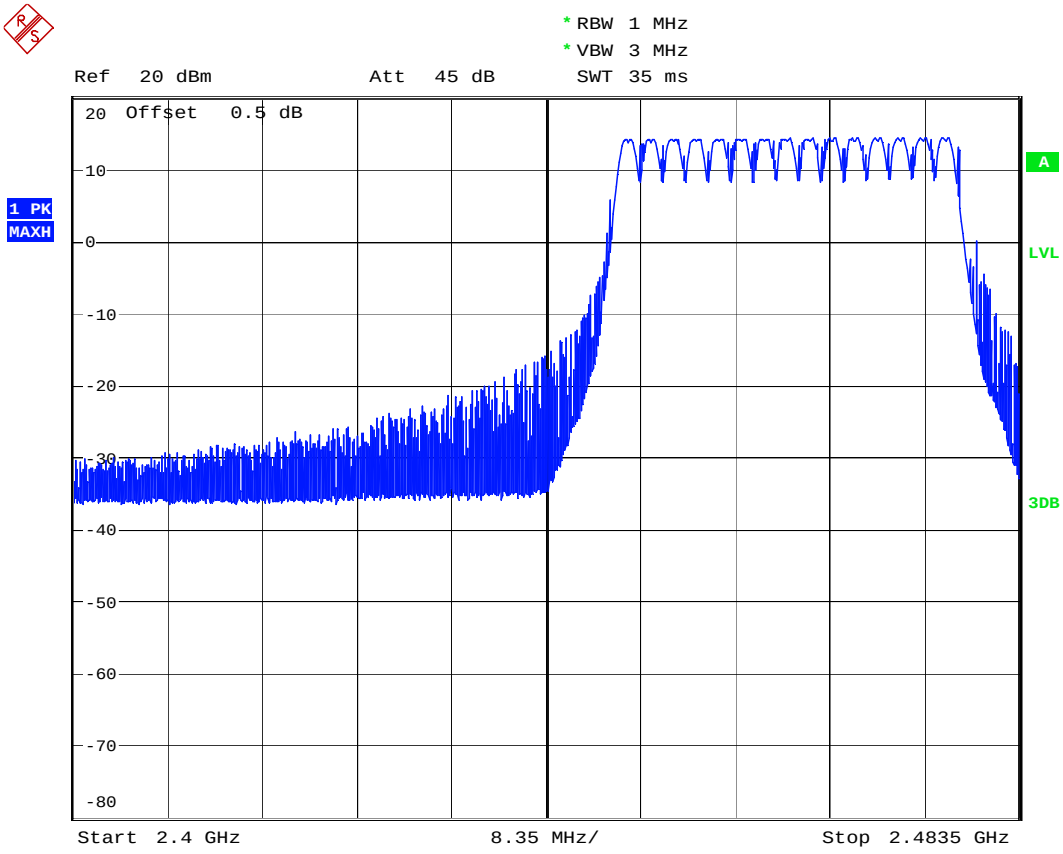
Plot 4. 16



Number of hopping channels, Legacy, Even high sub

Date: 24.JUN.2011 14:57:42

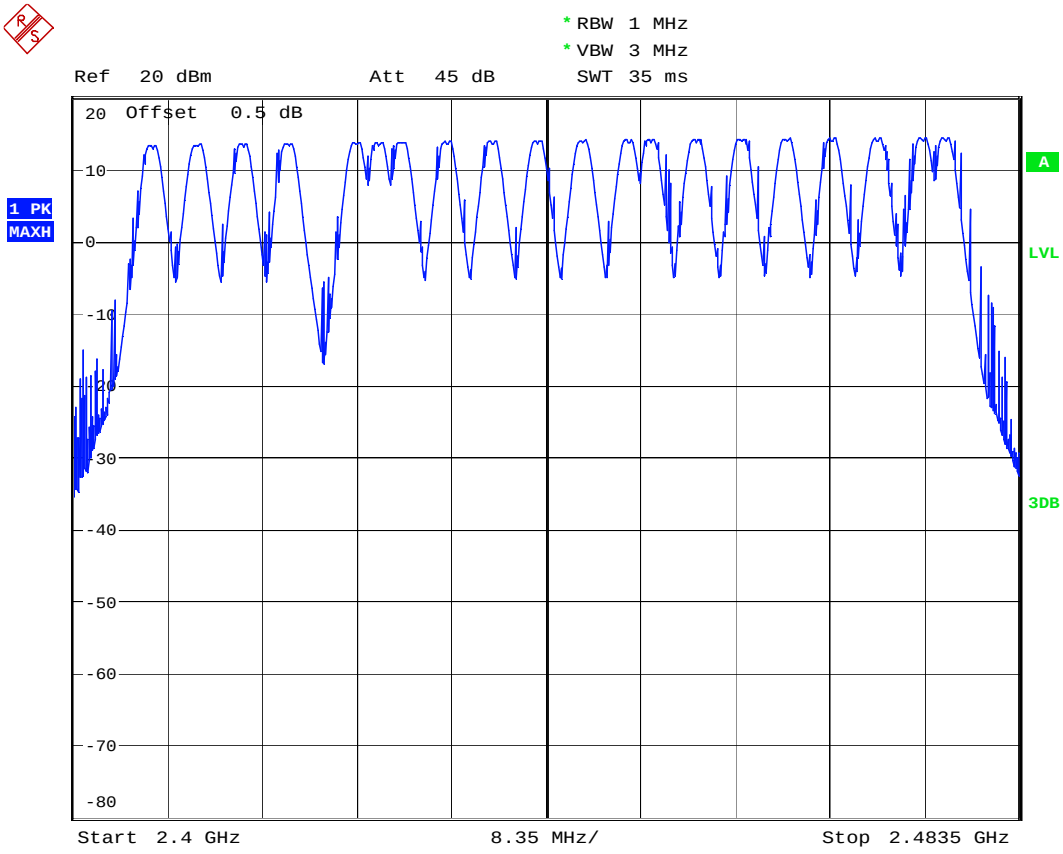
Plot 4. 17



Number of hopping channels, Legacy, Odd high sub

Date: 24.JUN.2011 15:00:29

Plot 4. 18



Number of hopping channels, Legacy, Adaptive default

Date: 24.JUN.2011 15:02:10

4.5 Average Channel Occupancy Time
FCC 15.247(a)(1)

Requirement

For systems operating in the 2400-2483.5 MHz band, the average time of occupancy on any channel shall not be greater than 0.4 second within a period of 0.4 second multiplied by the number of hopping channels employed.

Procedure

The spectrum analyzer center frequency was set to one of the known hopping channels, the SPAN was set to ZERO SPANS, and the TRIGGER was set to VIDEO. The time duration of the transmission so captured was measured with the MARKER DELTA function.

Since the radio is employed 36 hopping channels, the Occupancy Time was calculated for the period of 0.4 * 36= 14.4 sec.

Since the radio is employed 15 hopping channels, the Occupancy Time was calculated for the period of 0.4 * 15= 6.0 sec.

Since the radio is employed 20 hopping channels, the Occupancy Time was calculated for the period of 0.4 * 20= 8.0 sec.

Test Results

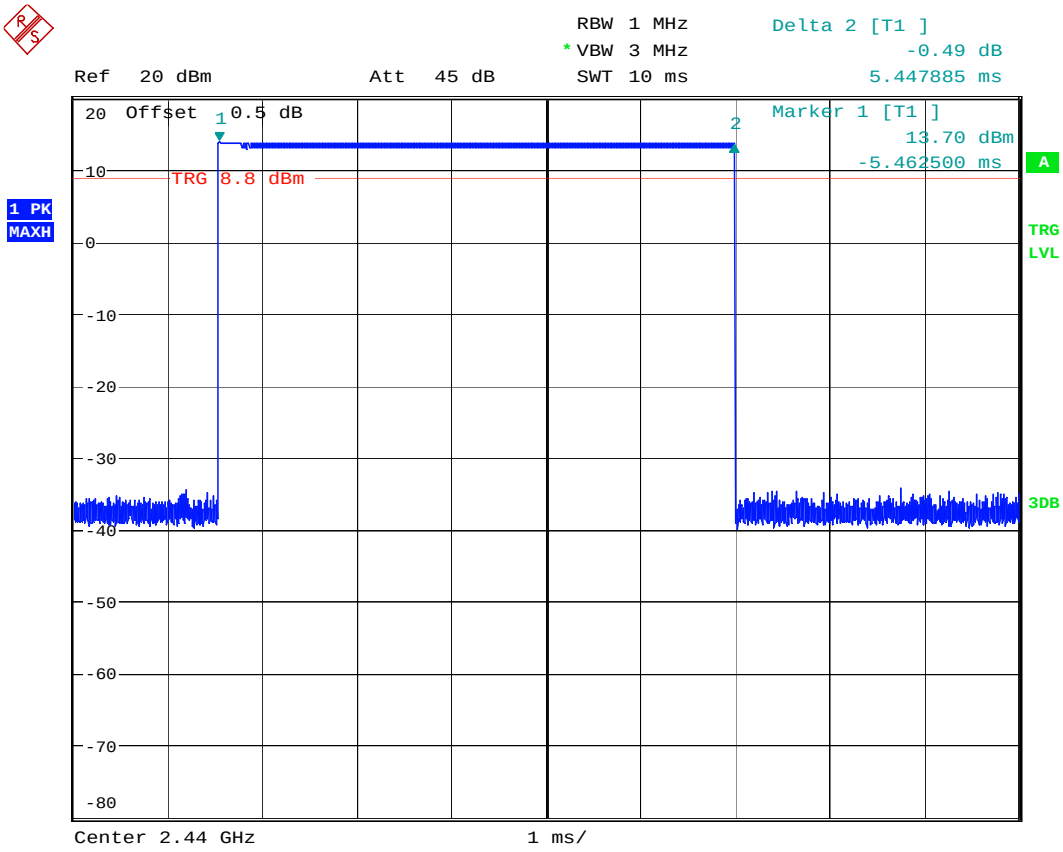
Occupancy Time

Legacy mode:
Evenfull (36 Channels):
0.005448*4 *10 = 0.2179 sec
Even mid sub (15 Channels)
0.005448*4 *10 = 0.2179 sec
Adaptive default (20 Channels)
0.005448*4 *10 = 0.2179 sec

Nemesis mode:
Evenfull (36 Channels):
0.000008013*18 *10 = 0.00144 sec
Even mid sub (15 Channels)
0.000008013*18 *10 = 0.00144 sec
Adaptive default (20 Channels)
0.000008013*18 *10 = 0.00144 sec

Refer to attached spectrum analyzer plots 5.1-5.10 for details.

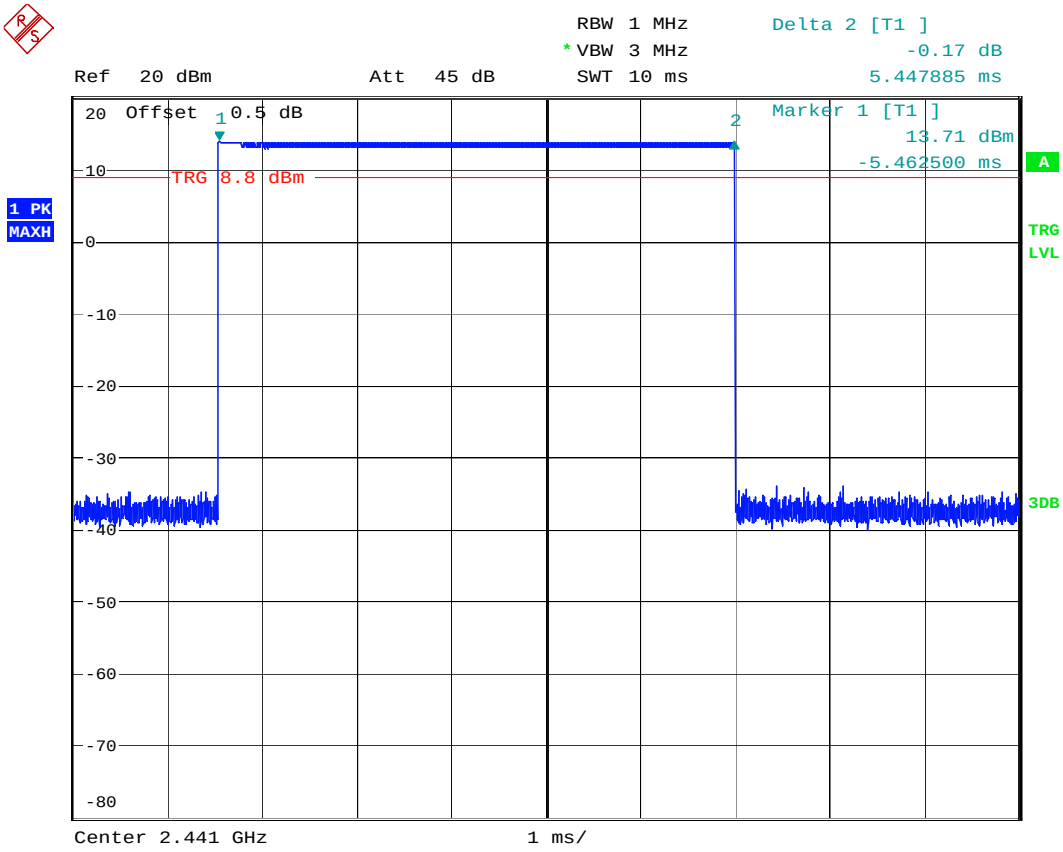
Plot 5. 1



Dwell time, Legacy mode

Date: 24.JUN.2011 15:10:13

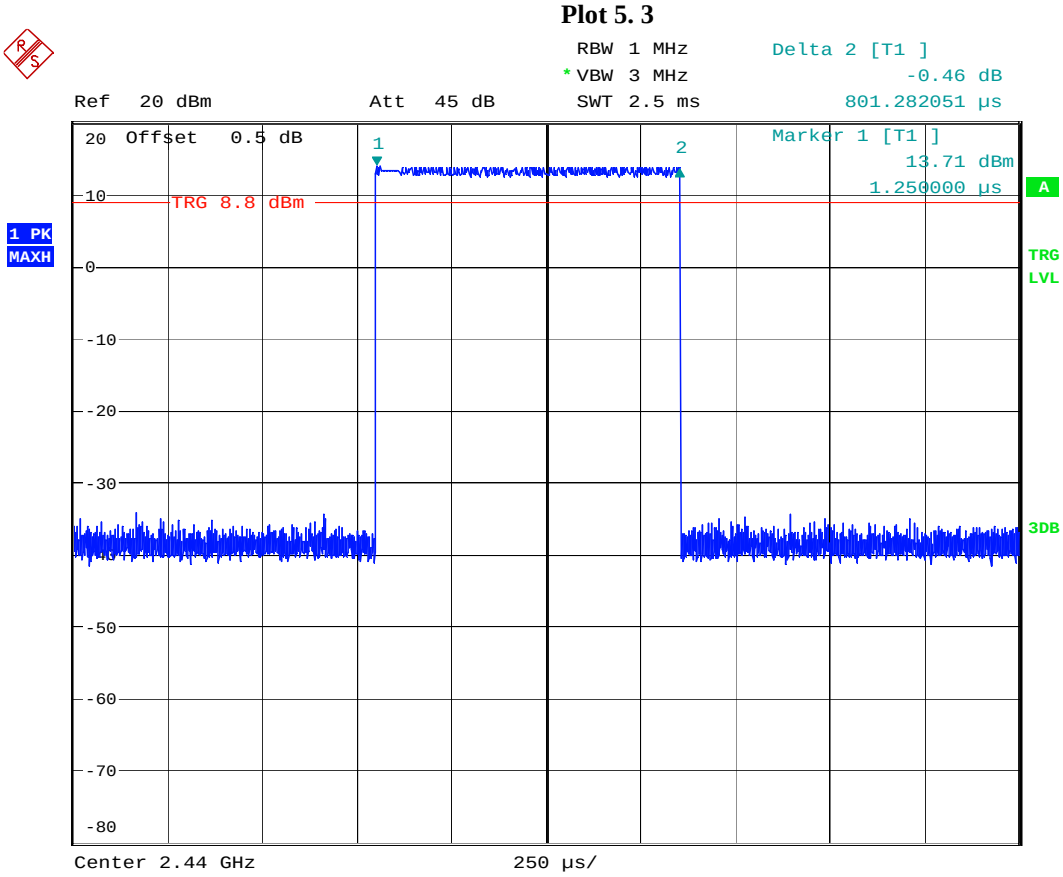
Plot 5. 2



Dwell time, Legacy mode

Date: 24.JUN.2011 15:13:17

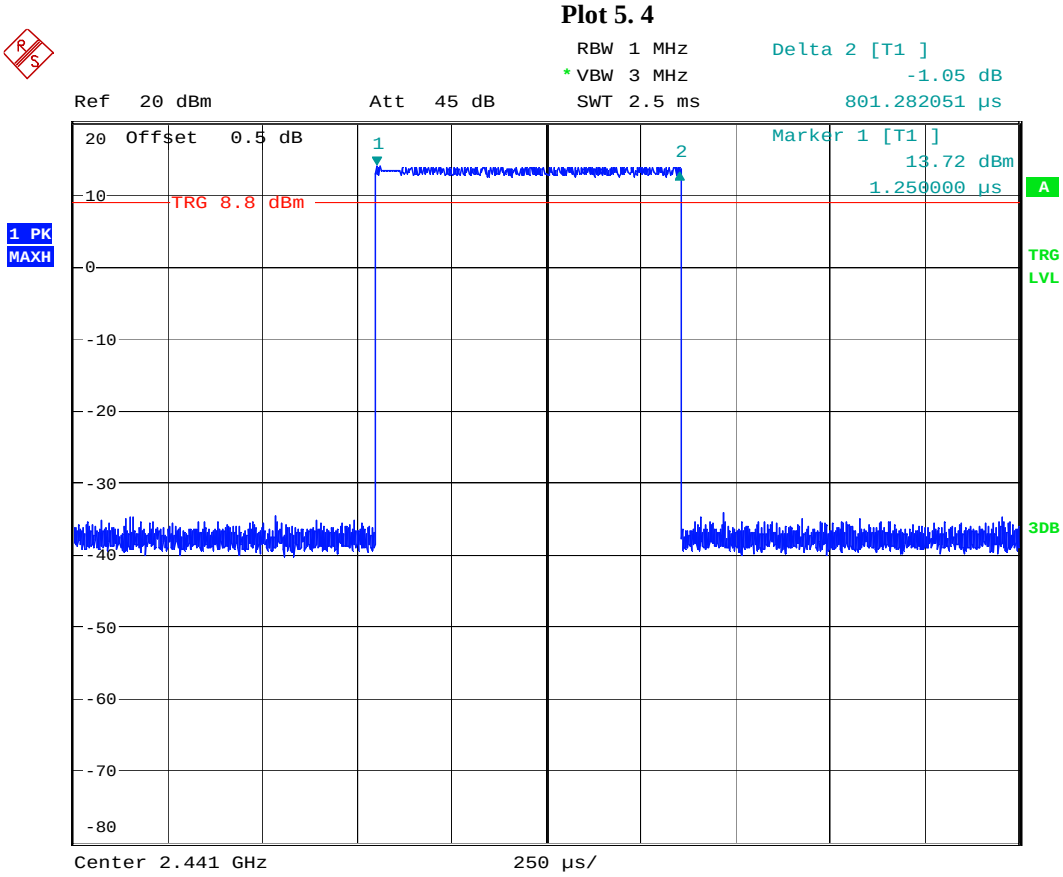
Plot 5. 3



Dwell time, Nemesis mode

Date: 24.JUN.2011 15:17:55

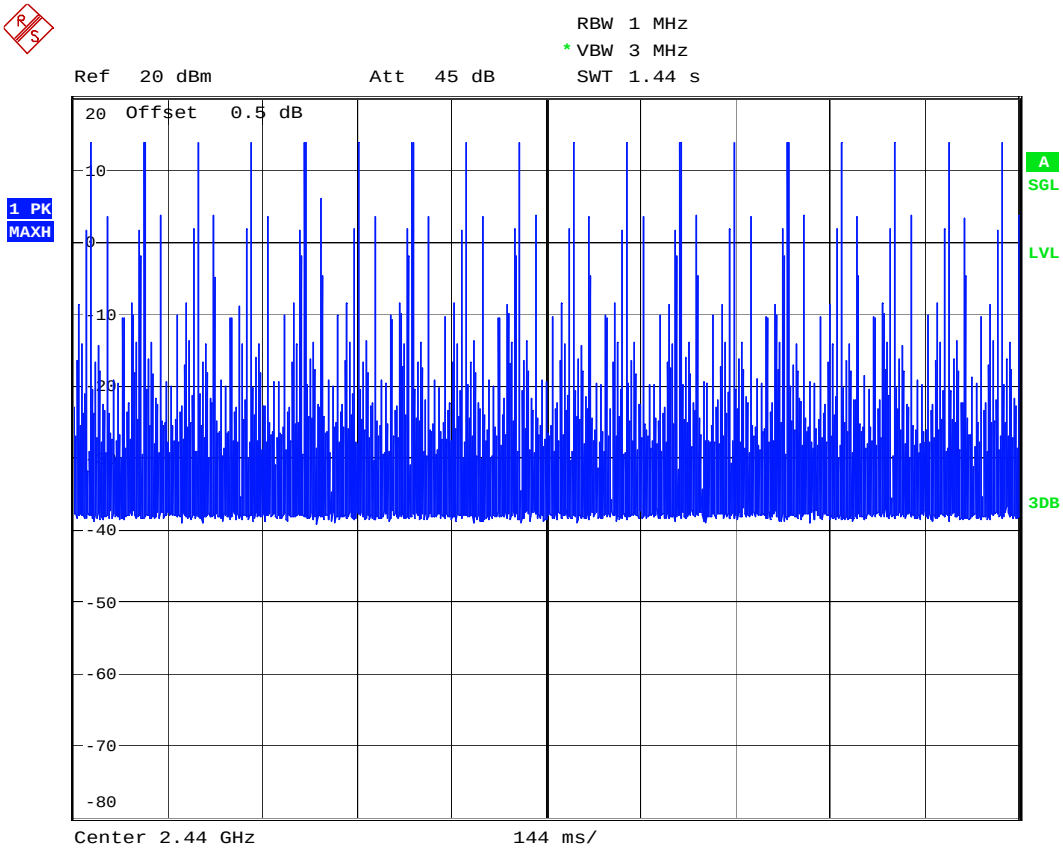
Plot 5. 4



Dwell time, Nemesis mode

Date: 24.JUN.2011 15:18:38

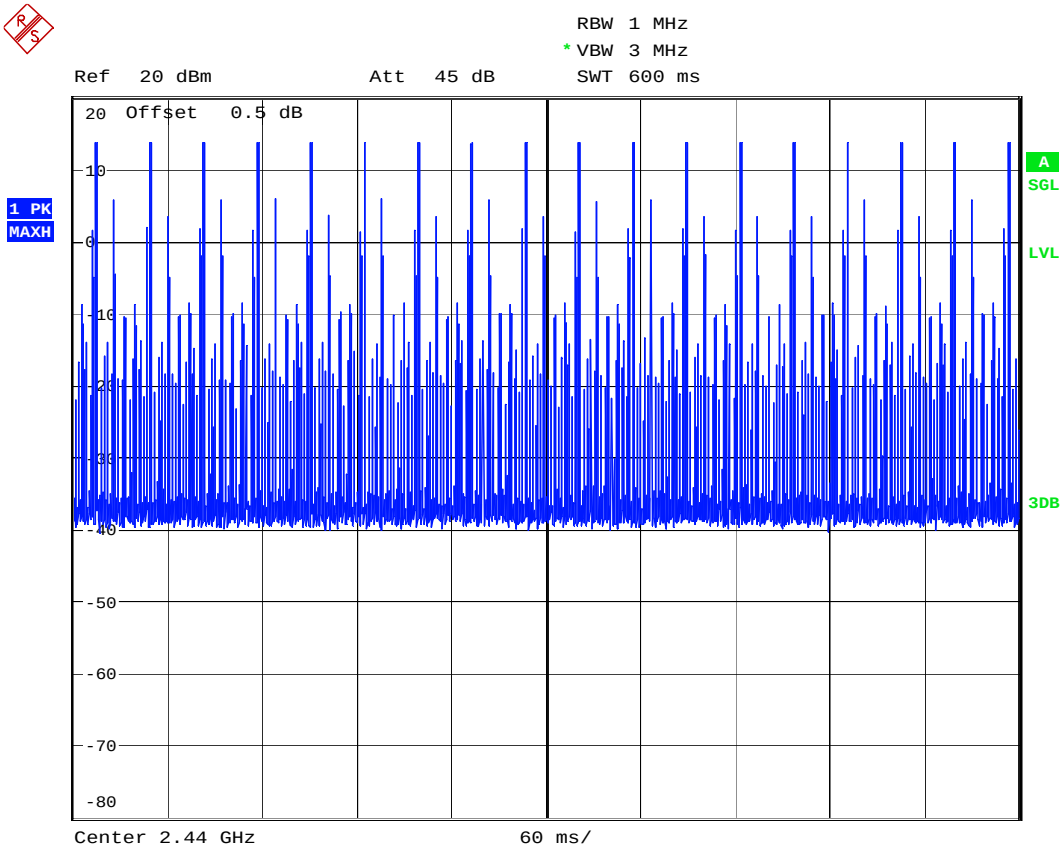
Plot 5. 5



Dwell time, Nemesis mode, Even full

Date: 24.JUN.2011 15:24:10

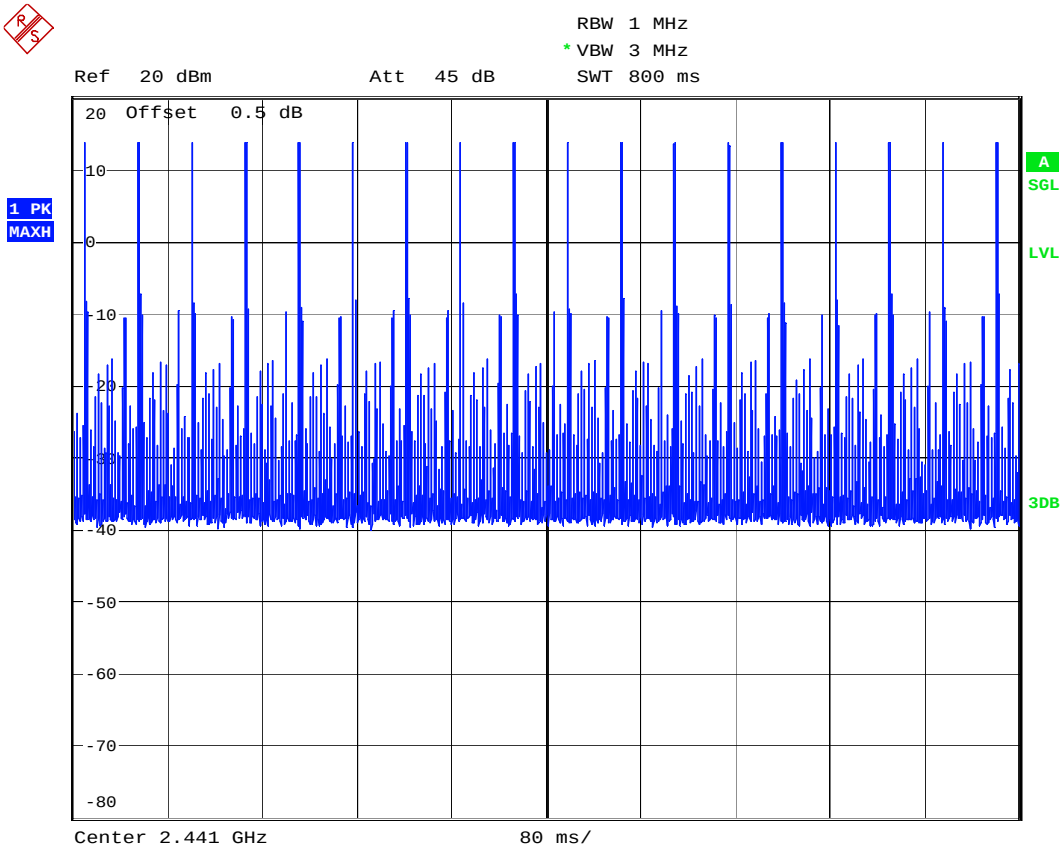
Plot 5. 6



Dwell time, Nemesis mode, Even mid sub

Date: 24.JUN.2011 15:27:40

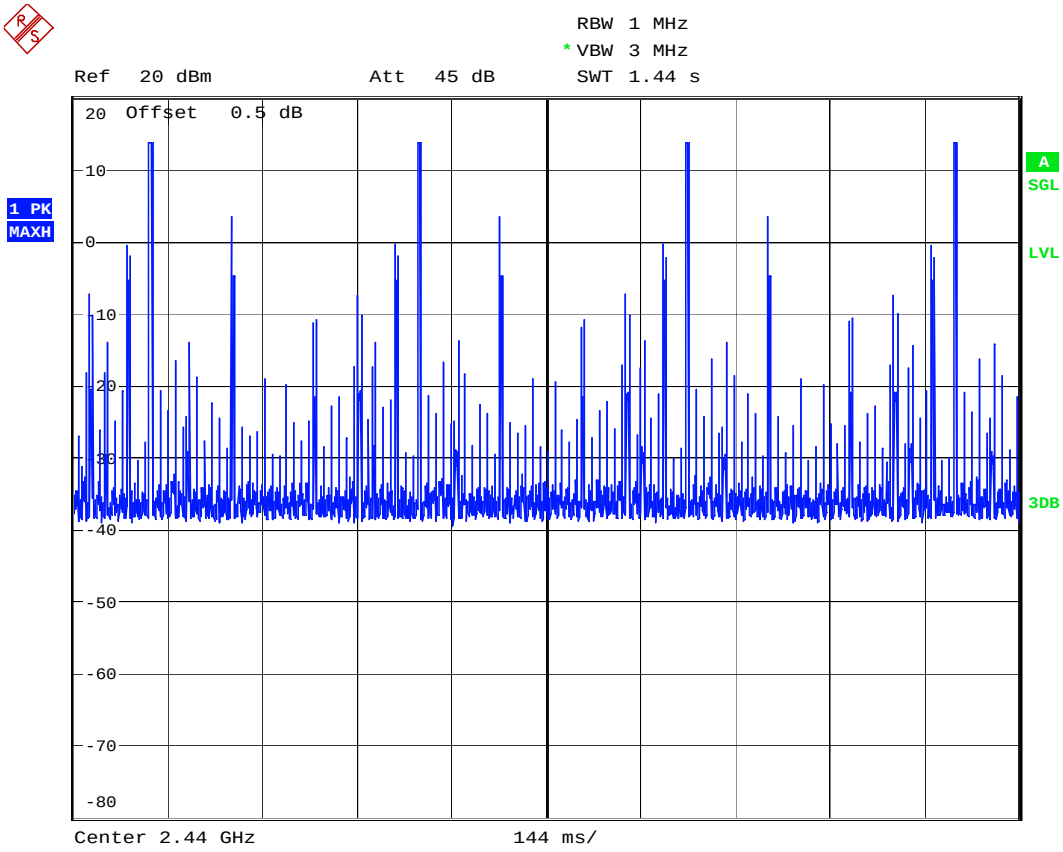
Plot 5. 7



Dwell time, Nemesis mode, Adaptive default

Date: 24.JUN.2011 15:31:08

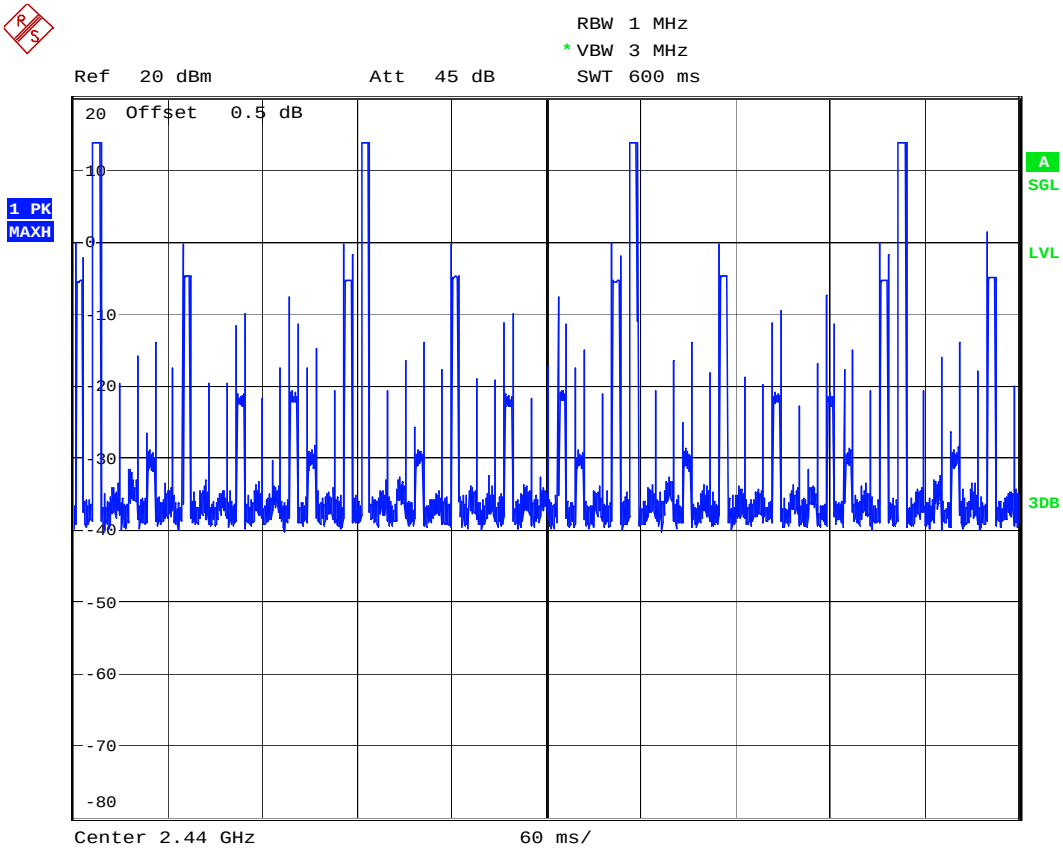
Plot 5. 8



Dwell time, Legacy mode, Even full

Date: 24.JUN.2011 15:34:21

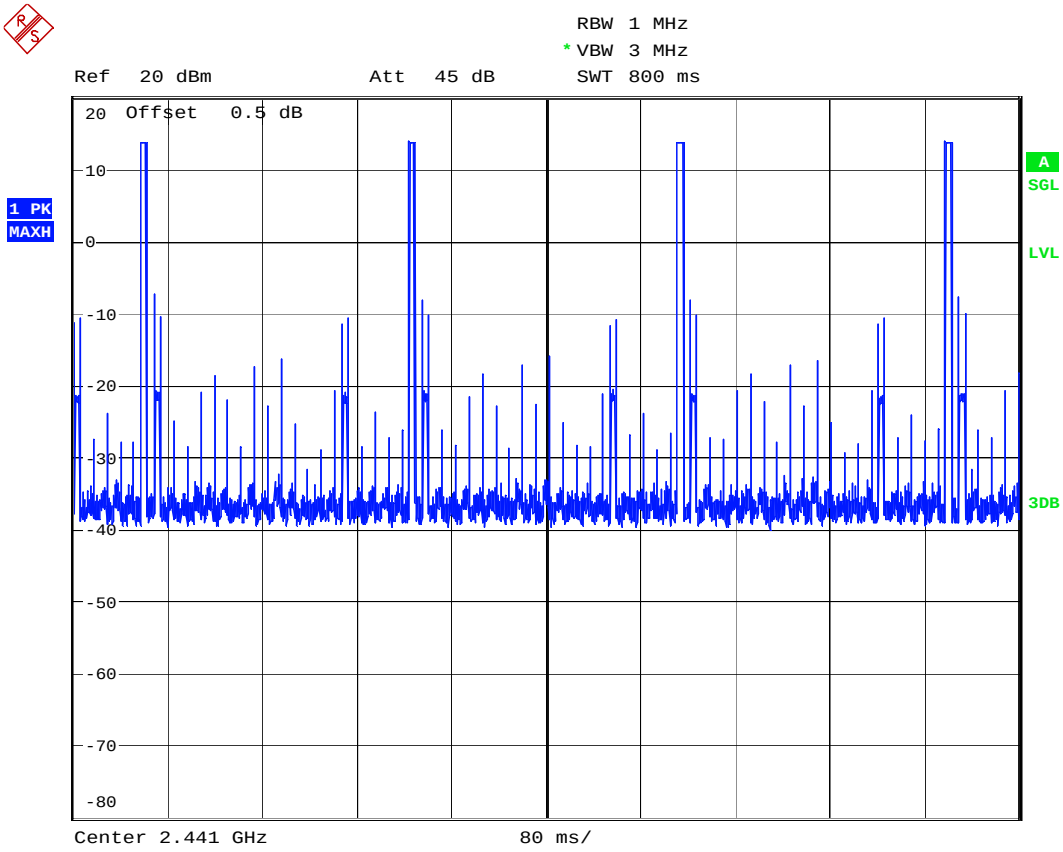
Plot 5. 9



Dwell time, Legacy mode, Even mid sub

Date: 24.JUN.2011 15:35:48

Plot 5. 10



Dwell time, Legacy mode, Adaptive default

Date: 24.JUN.2011 15:36:58

4.6 Out-of Band-Conducted Emissions
FCC 15.247(d)

Requirement

In any 100 kHz bandwidth outside the EUT pass-band, the RF power shall be at least 20 dB below that of the maximum in-band 100 kHz emission.

Procedure

A spectrum analyzer was connected to the antenna port of the transmitter. Analyzer Resolution Bandwidth was set to 100 kHz. For each channel investigated, the in-band and out-of-band emission measurements were performed. The out-of-band emissions were measured from 30 MHz to 25 GHz.

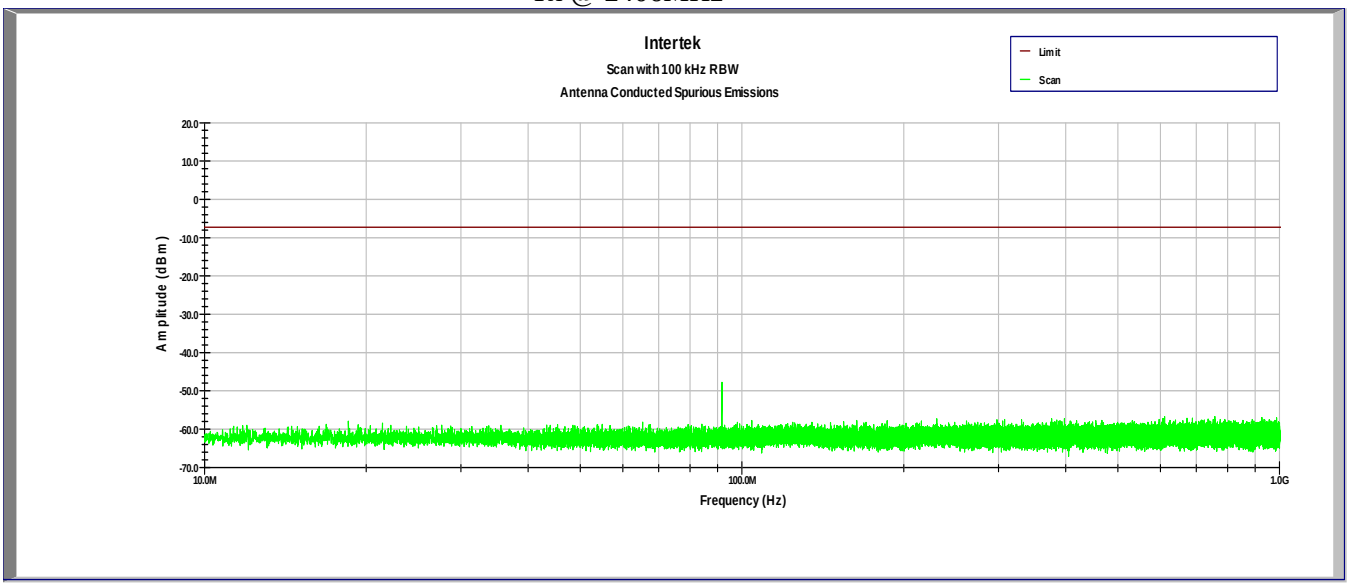
Test Result

Refer to the following plots for the test result:

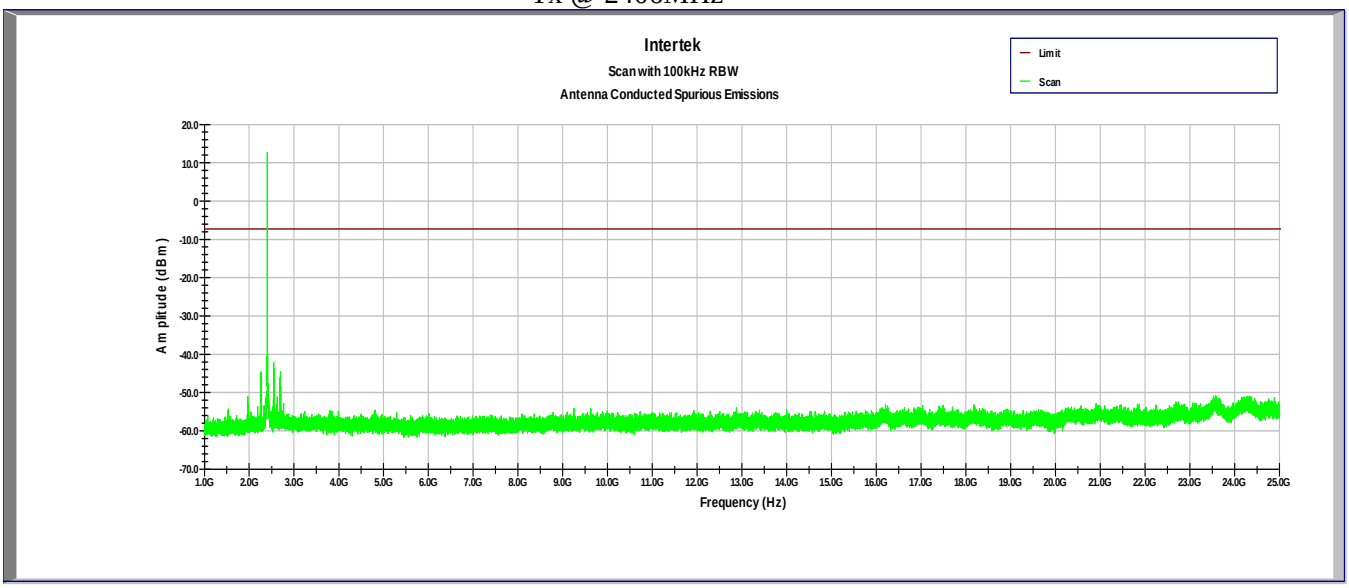
Frequency (MHz)	Description	Plot
2406	Scan 30 MHz – 25 GHz	6.1, 6.2
	Emissions on the low band-edge frequency	6.7
2440	Scan 30 MHz – 25 GHz	6.3, 6.4
2447	Scan 30 MHz – 25 GHz	6.5, 6.6
	Emissions on the high band-edge frequency	6.8

The attenuation is more than 20 dB.

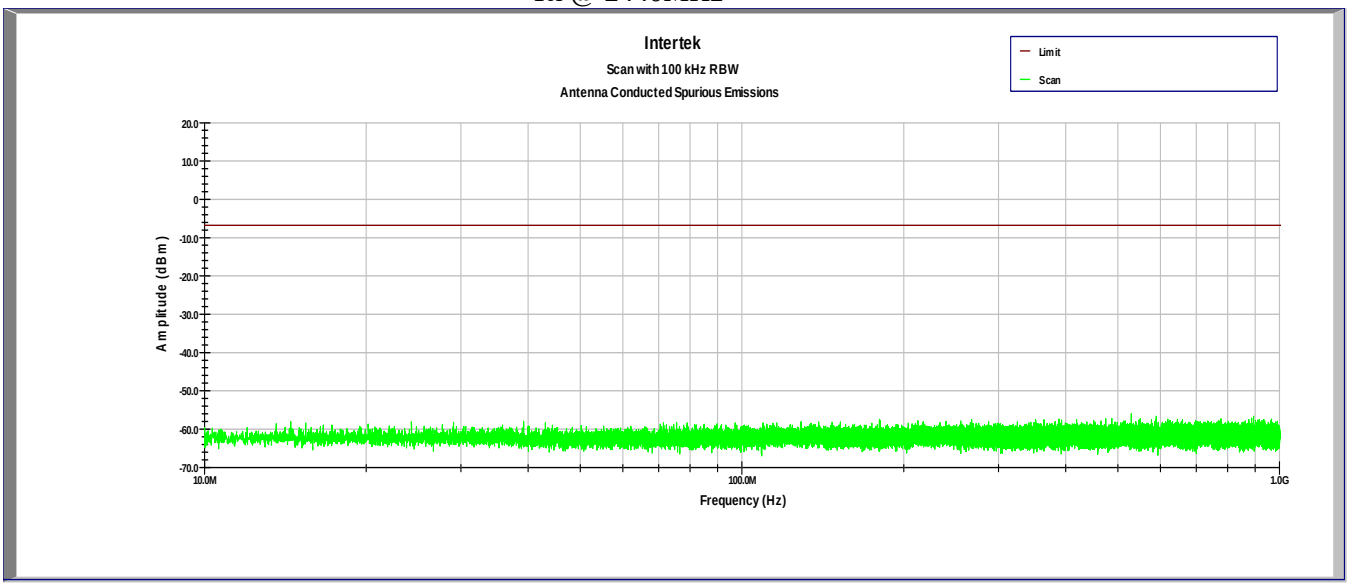
Plot 6.1
Tx @ 2406MHz



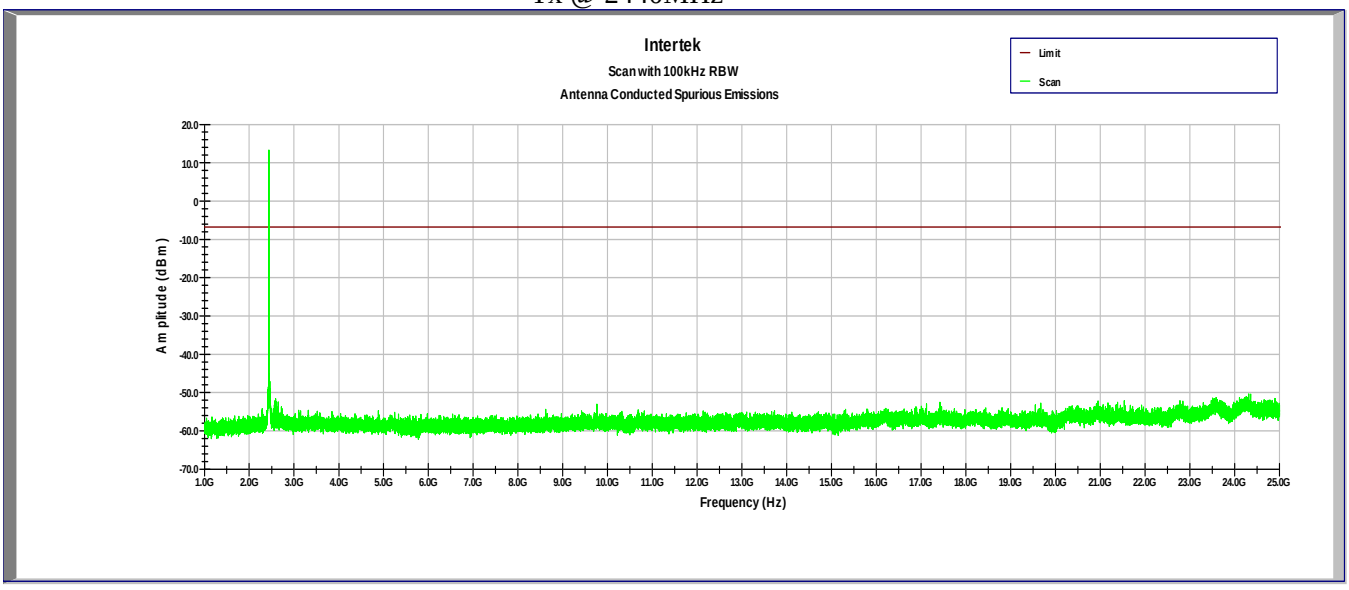
Plot 6.2
Tx @ 2406MHz



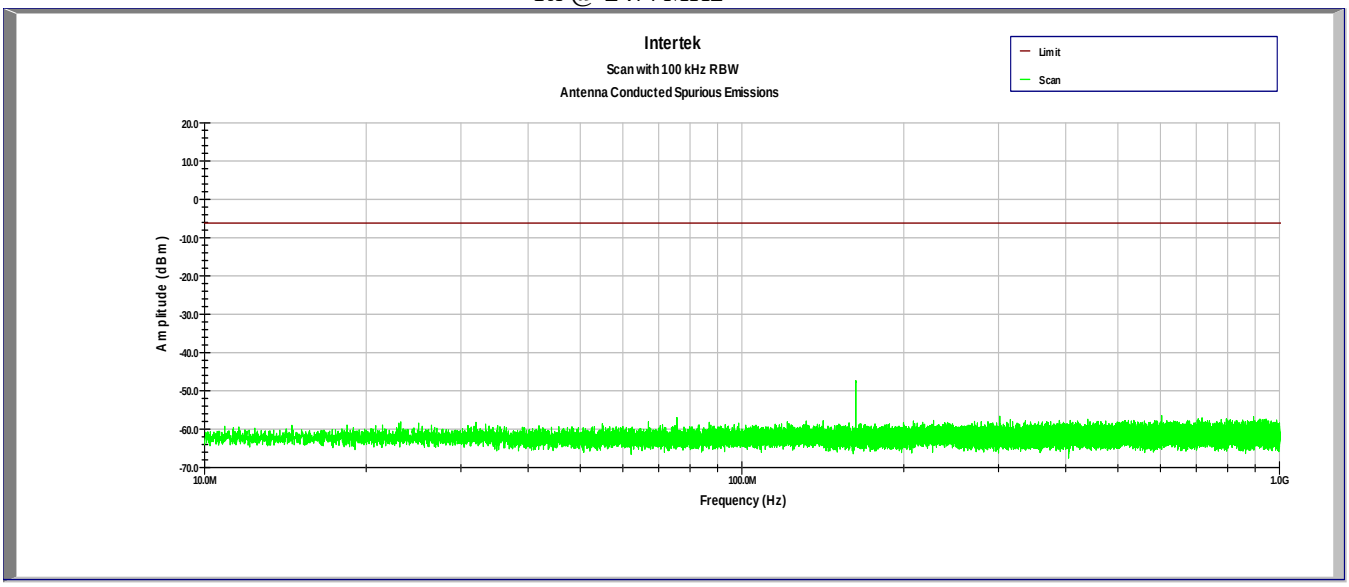
Plot 6.3
Tx @ 2440MHz



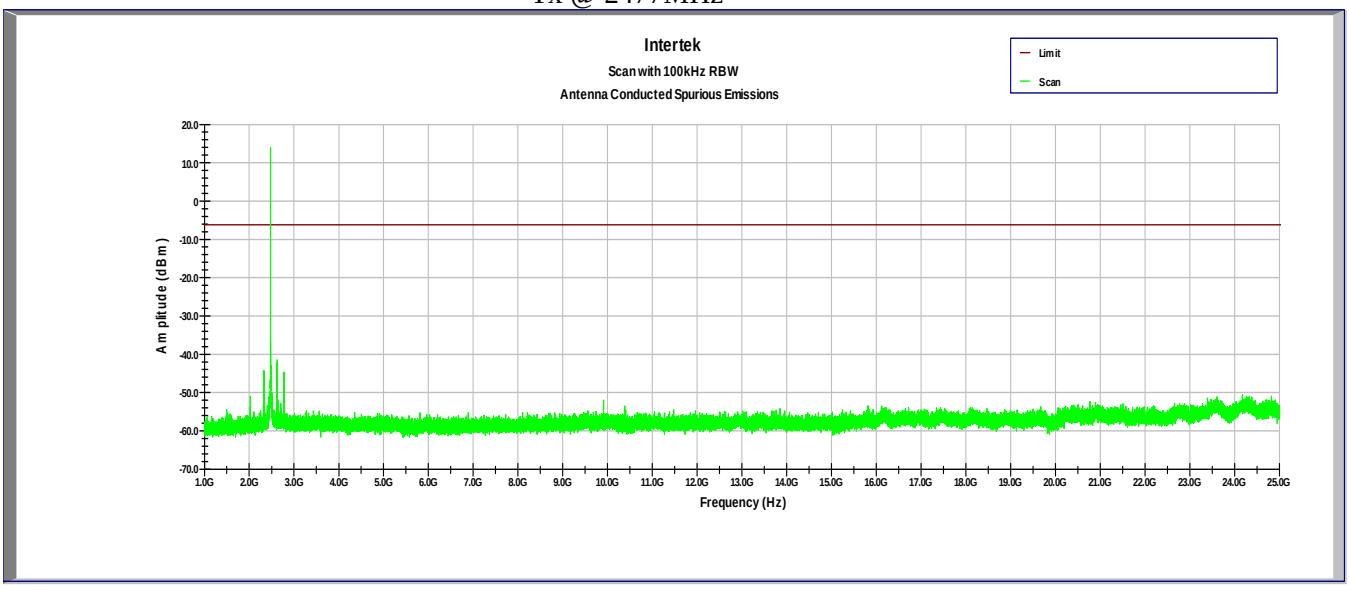
Plot 6.4
Tx @ 2440MHz



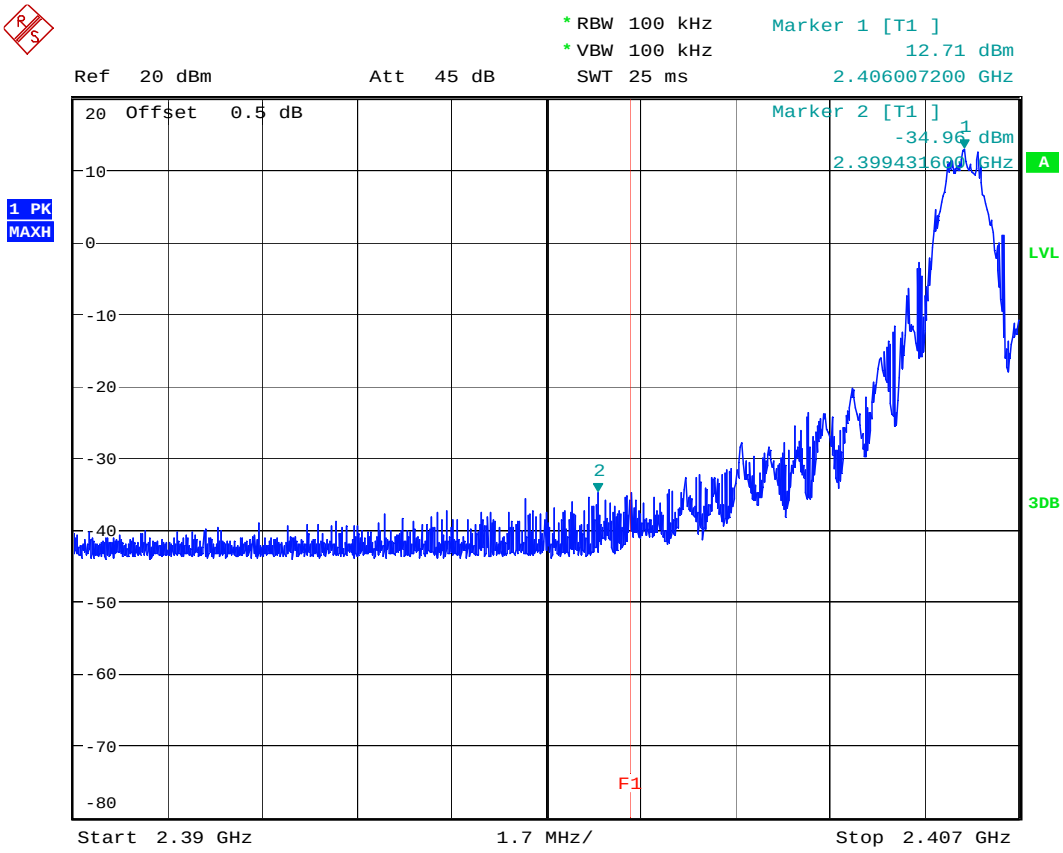
Plot 6.5
Tx @ 2477MHz



Plot 6.6
Tx @ 2477MHz



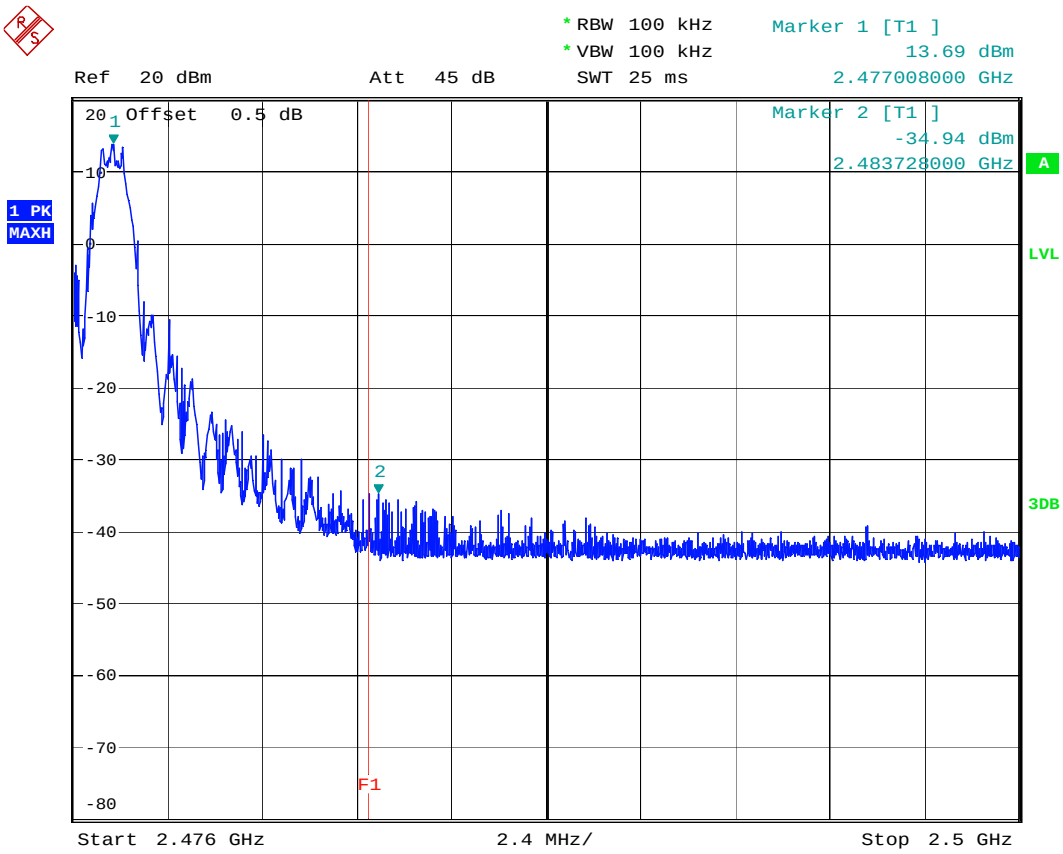
Plot 6.7



Spurious emissions, freq 2406MHz

Date: 24.JUN.2011 17:58:38

Plot 6.8



Spurious emissions, freq 2477MHz

Date: 24.JUN.2011 18:06:52

4.7 Transmitter Radiated Emissions
FCC Rule 15.247(d), 15.209, 15.205

Requirement

Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

For out of band radiated emissions (except for frequencies in restricted bands), in any 100 kHz bandwidths outside the EUT pass-band, the RF power shall be at least 20dB (peak) or 30 dB (average) below that of the maximum in-band 100 kHz emissions.

Procedure

Radiated emission measurements were performed from 30 MHz to 25,000 MHz. Spectrum Analyzer Resolution Bandwidth is 100 kHz or greater for frequencies 30 MHz to 1000 MHz, 1 MHz for frequencies above 1000 MHz.

The EUT is placed on a plastic turntable that is 80 cm in height. If the EUT attaches to peripherals, they are connected and operational (as typical as possible). During testing, all cables were manipulated to produce worst-case emissions. The signal is maximized through rotation. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters.

Radiated emissions are taken at three meters for frequencies above 1 GHz and at 10 meters for frequencies below 1 GHz.

Data is included for the worst-case configuration (the configuration which resulted in the highest emission levels).

Example Field Strength Calculation

For measurements made at 10 meters distance

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

The field strength is calculated by adding the Antenna Factor and Cable Factor and the Distance Correction Factor; and subtracting the Amplifier Gain from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF – AG + DCF

Where FS = Field Strength in dB(μV/m)
RA = Receiver Amplitude (including preamplifier) in dB(μV)
AF = Antenna Factor in dB(1/m)
CF = Cable Attenuation Factor in dB
AG = Amplifier Gain in dB
DCF = Distance Correction Factor in dB for measurements made at 10 meters distance

Assume a receiver reading of 52.5 dB(μV) is obtained. The antennas factor of 7.4 dB(1/m) and cable factor of 1.6 dB is added. The amplifier gain of 29 dB and Distance Correction Factor (for measurements made at 10 meters distance) of 10.5 dB is subtracted, giving field strength of 22 dB(μV/m). This value in dB(μV/m) was converted to its corresponding level in μV/m.
RA = 52.5 dB(μV)
AF = 7.4 dB(1/m)
CF = 1.6 dB
AG = 29.0 dB
DCF = 10.5 dB
FS = 52.5+7.4+1.6-29.0+10.5 = 43 dB(μV/m).
Level in μV/m = Common Antilogarithm [(43 dBμV/m)/20] = 141.3 μV/m.

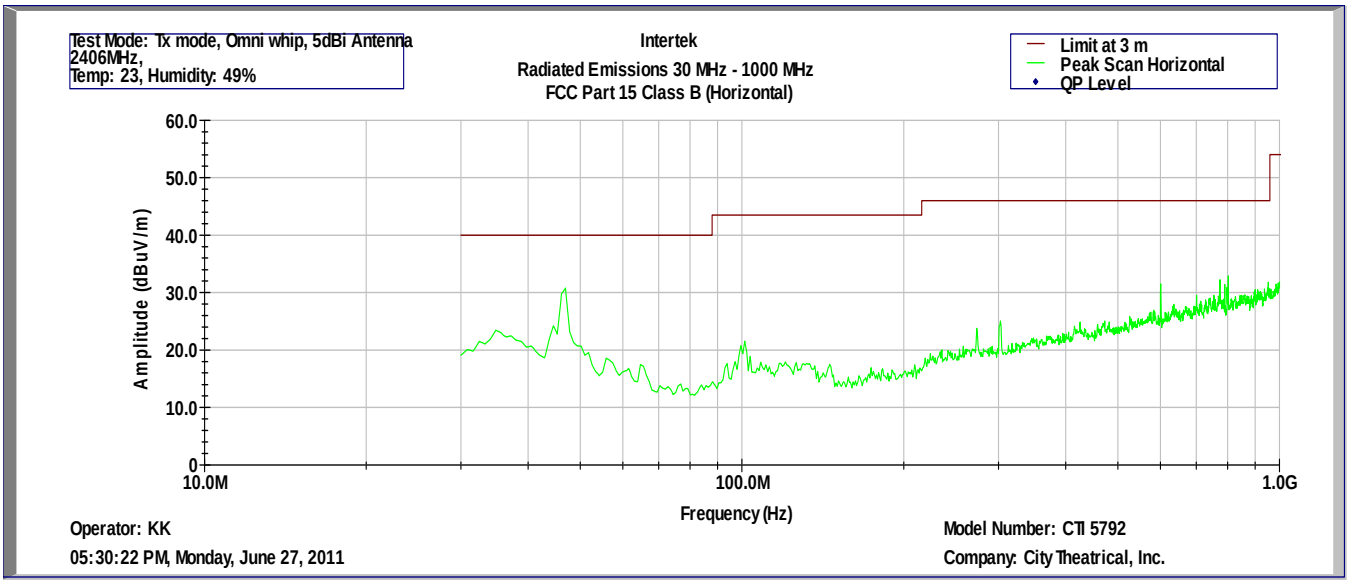
For measurements made at 3 meters distance

The field strength is calculated by following the example above *for measurements made at 10 meters distance* except the Distance Correction Factor in dB is not applied.

Test Results

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

The EUT passed the test by 5.4 dB.



Intertek Testing Services
Radiated Emissions 30 MHz - 1000 MHz
FCC Part 15 Class B (Pk-Horizontal)

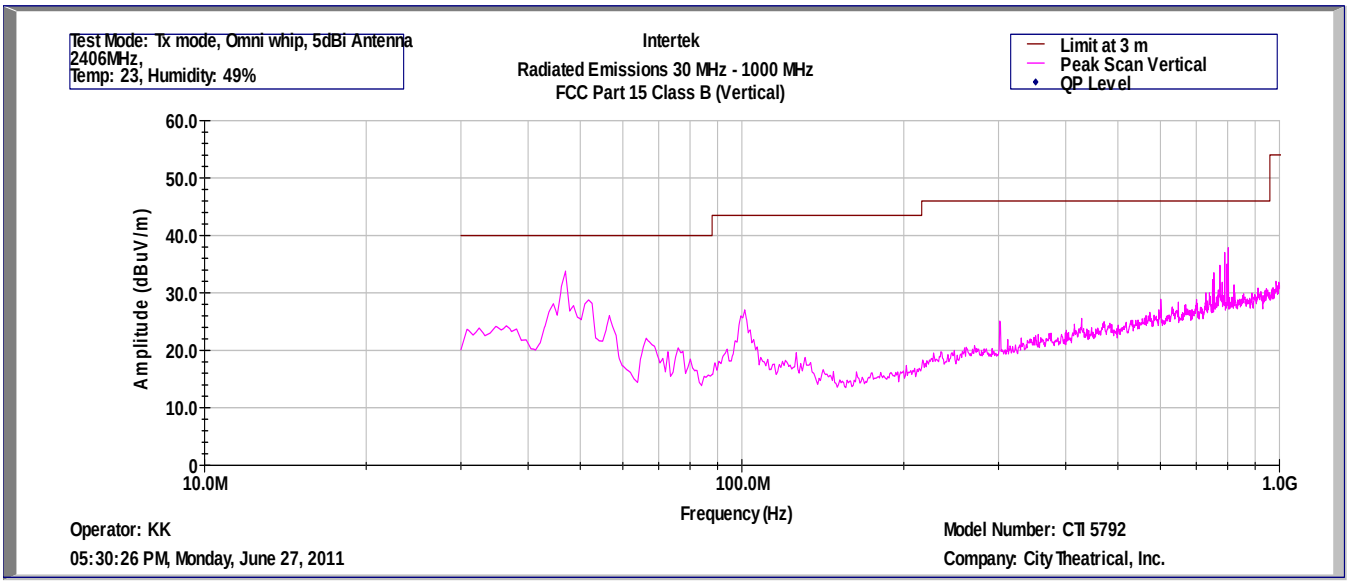
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency (Hz)	Peak FS dB(uV/m)	Limit@3m dB(uV/m)	Margin dB	RA dB(uV)	CF dB	AG dB	DCF dB	AF dB(1/m)
4.70E+07	30.8	40.0	-9.2	36.2	0.8	31.9	10.5	15.2
1.01E+08	21.5	43.5	-22.0	31.7	1.2	32.1	10.5	10.2
6.01E+08	31.5	46.0	-14.5	32.0	2.9	32.0	10.5	18.1
7.74E+08	32.2	46.0	-13.8	29.3	3.3	32.0	10.5	21.1
8.03E+08	32.9	46.0	-13.1	30.5	3.4	32.0	10.5	20.4

Test Mode: Tx mode, Omni whip, 5dBi Antenna
2406MHz,
Temp: 23, Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz- 1000 MHz
FCC Part 15 Class B (Pk-Vertical)

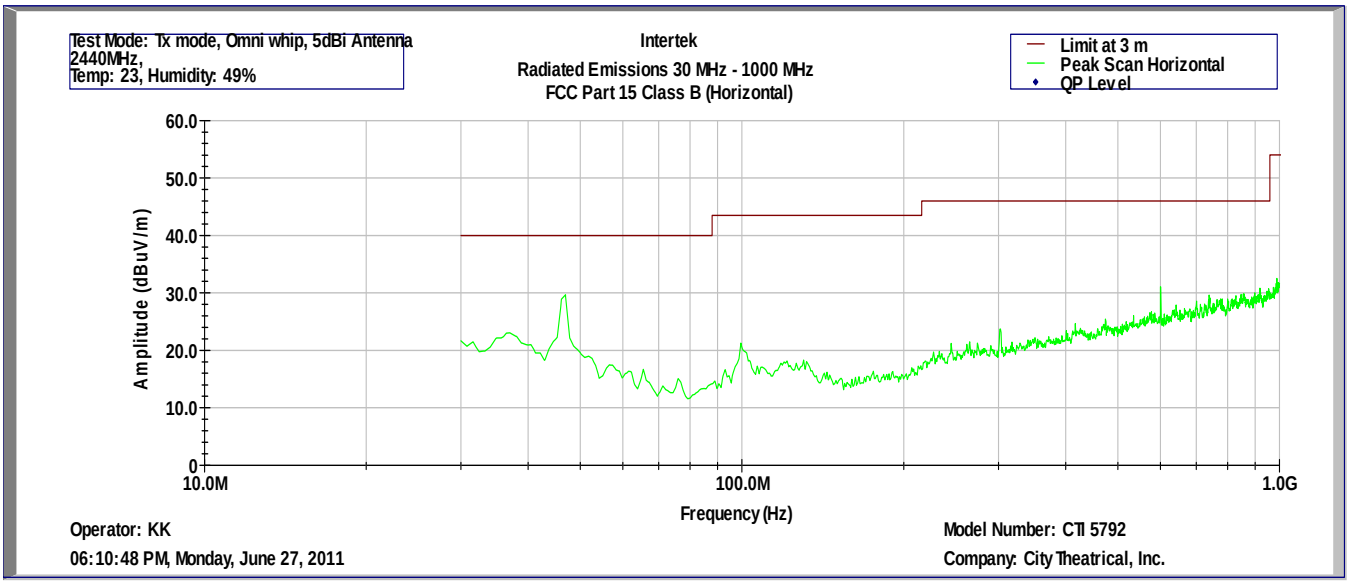
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency (Hz)	Peak FS dB(uV/m)	Limit@3m dB(uV/m)	Margin dB	RA db(uV)	CF dB	AG dB	DCF dB	AF dB(1/m)
4.70E+07	33.7	40.0	-6.3	39.2	0.8	31.9	10.5	15.2
6.64E+07	22.1	40.0	-17.9	34.7	0.9	32.1	10.5	8.1
1.01E+08	27.0	43.5	-16.5	37.3	1.2	32.1	10.5	10.2
7.55E+08	33.5	46.0	-12.5	31.8	3.3	32.0	10.5	20.0
7.74E+08	34.7	46.0	-11.3	31.9	3.3	32.0	10.5	21.1
7.91E+08	37.0	46.0	-9.0	35.2	3.3	32.0	10.5	19.9
7.99E+08	35.0	46.0	-11.0	33.0	3.4	32.0	10.5	20.1
8.03E+08	37.8	46.0	-8.2	35.5	3.4	32.0	10.5	20.4

Test Mode: Tx mode, Omni whip, 5dBi Antenna
2406MHz,
Temp: 23, Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz - 1000 MHz
FCC Part 15 Class B (Pk-Horizontal)

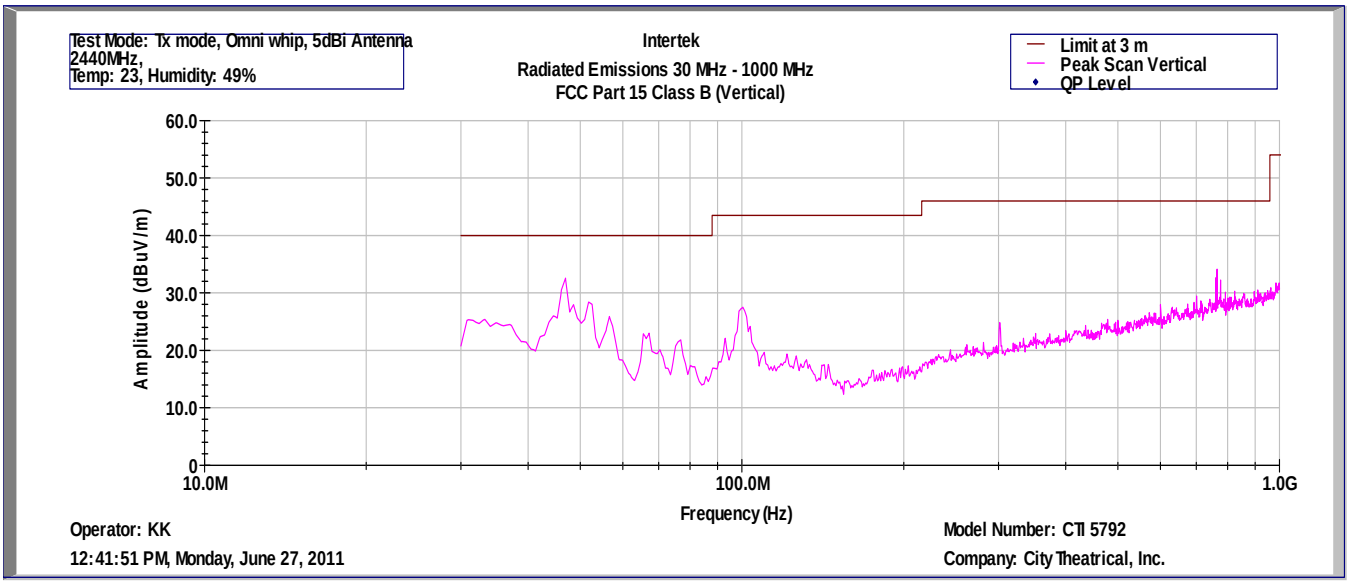
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency (Hz)	Peak FS dB(uV/m)	Limit@3m dB(uV/m)	Margin dB	RA dB(uV)	CF dB	AG dB	DCF dB	AF dB(1/m)
4.70E+07	29.6	40.0	-10.4	35.0	0.8	31.9	10.5	15.2
9.95E+07	21.2	43.5	-22.3	32.0	1.2	32.1	10.5	9.7
6.01E+08	31.0	46.0	-15.0	31.6	2.9	32.0	10.5	18.1
9.89E+08	32.5	54.0	-21.5	26.0	3.8	31.0	10.5	23.2

Test Mode: Tx mode, Omni whip, 5dBi Antenna
2440MHz,
Temp: 23, Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz- 1000 MHz
FCC Part 15 Class B (Pk-Vertical)

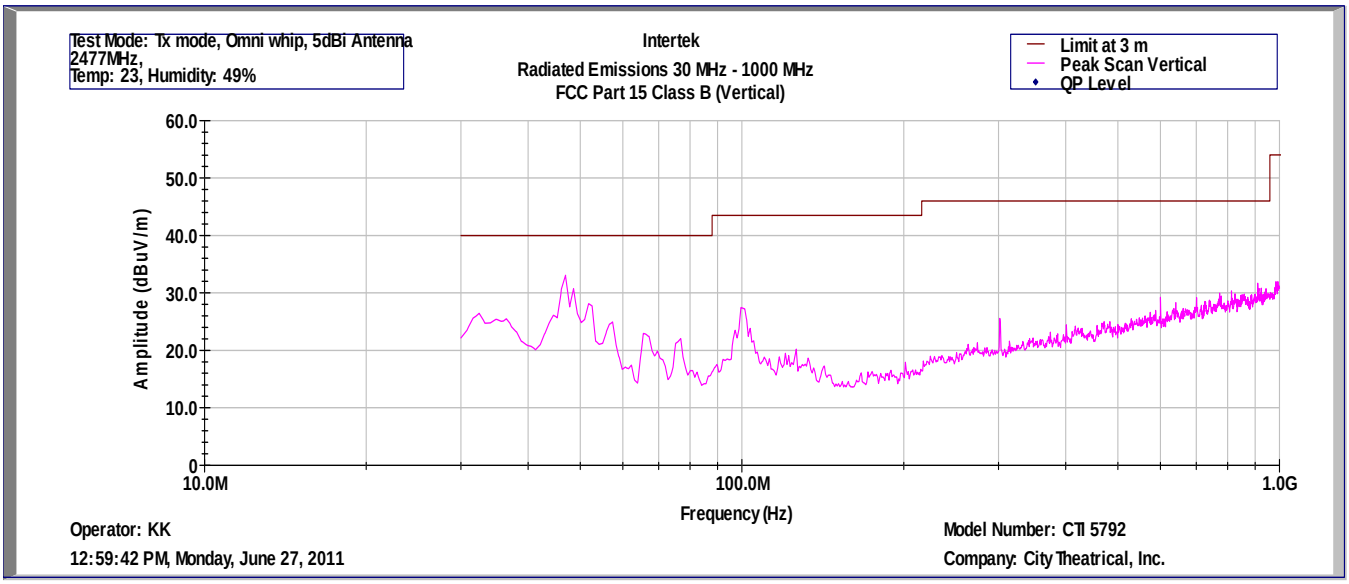
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency (Hz)	Peak FS dB(uV/m)	Limit@3m dB(uV/m)	Margin dB	RA db(uV)	CF dB	AG dB	DCF dB	AF dB(1/m)
4.70E+07	32.6	40.0	-7.4	38.0	0.8	31.9	10.5	15.2
6.72E+07	23.0	40.0	-17.0	35.8	0.9	32.1	10.5	7.8
7.69E+07	21.8	40.0	-18.2	35.8	1.0	32.1	10.5	6.6
1.00E+08	27.5	43.5	-16.0	38.0	1.2	32.1	10.5	9.9
7.65E+08	34.1	46.0	-11.9	31.9	3.3	32.0	10.5	20.5

Test Mode: Tx mode, Omni whip, 5dBi Antenna
2440MHz,
Temp: 23, Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz- 1000 MHz
FCC Part 15 Class B (Pk-Vertical)

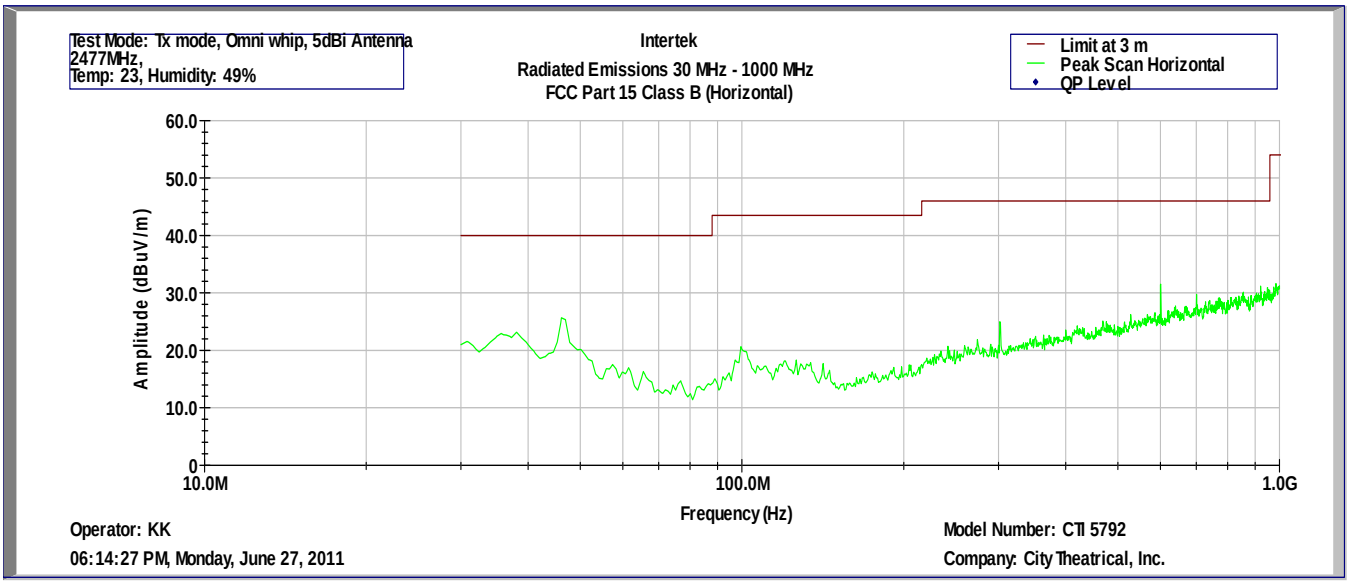
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency (Hz)	Peak FS dB(uV/m)	Limit@3m dB(uV/m)	Margin dB	RA db(uV)	CF dB	AG dB	DCF dB	AF dB(1/m)
3.24E+07	26.4	40.0	-13.6	29.8	0.7	31.8	10.5	17.3
4.70E+07	33.1	40.0	-6.9	38.5	0.8	31.9	10.5	15.2
6.56E+07	22.9	40.0	-17.1	35.3	0.9	32.1	10.5	8.3
7.69E+07	22.0	40.0	-18.0	36.0	1.0	32.1	10.5	6.6
9.95E+07	27.4	43.5	-16.1	38.2	1.2	32.1	10.5	9.7
3.02E+08	25.5	46.0	-20.5	31.8	2.0	31.9	10.5	13.1
9.85E+08	32.0	54.0	-22.0	25.7	3.8	31.0	10.5	23.0

Test Mode: Tx mode, Omni whip, 5dBi Antenna
2477MHz,
Temp: 23, Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz - 1000 MHz
FCC Part 15 Class B (Pk-Horizontal)

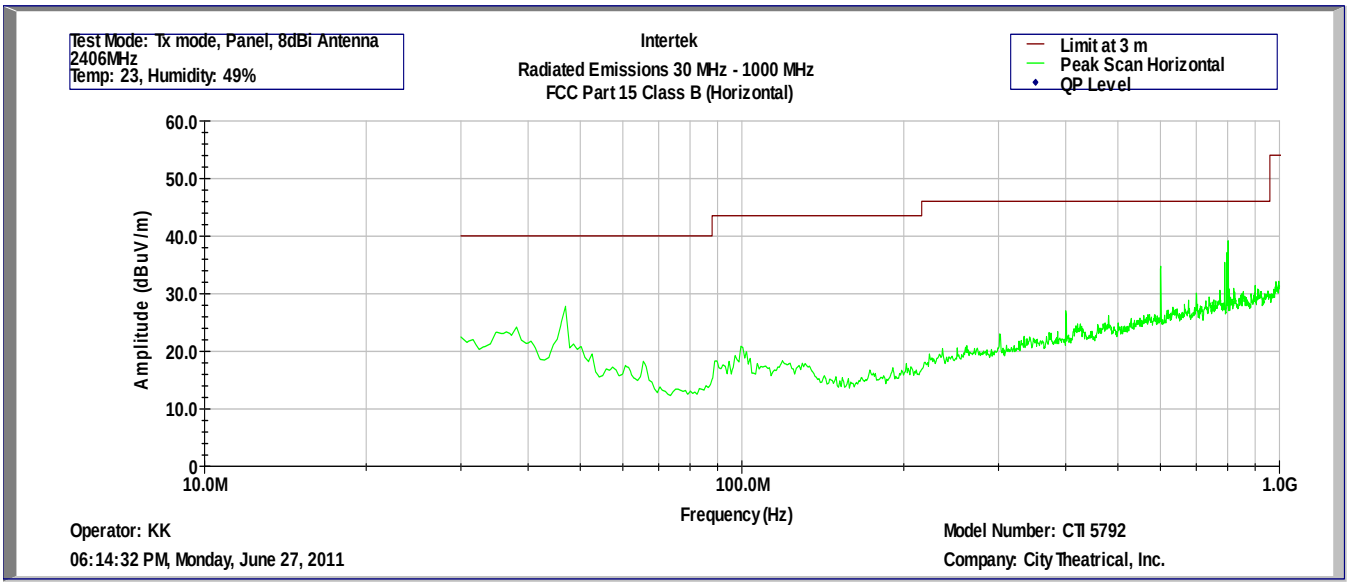
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency	Peak FS	Limit@3m	Margin	RA	CF	AG	DCF	AF
(Hz)	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB	dB	dB	dB(1/m)
4.62E+07	25.6	40.0	-14.4	30.8	0.8	31.9	10.5	15.4
9.95E+07	20.6	43.5	-22.9	31.3	1.2	32.1	10.5	9.7
6.01E+08	31.5	46.0	-14.5	32.0	2.9	32.0	10.5	18.1
9.85E+08	31.6	54.0	-22.4	25.4	3.7	31.0	10.5	23.0

Test Mode: Tx mode, Omni whip, 5dBi Antenna
2477MHz,
Temp: 23, Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz - 1000 MHz
FCC Part 15 Class B (Pk-Horizontal)

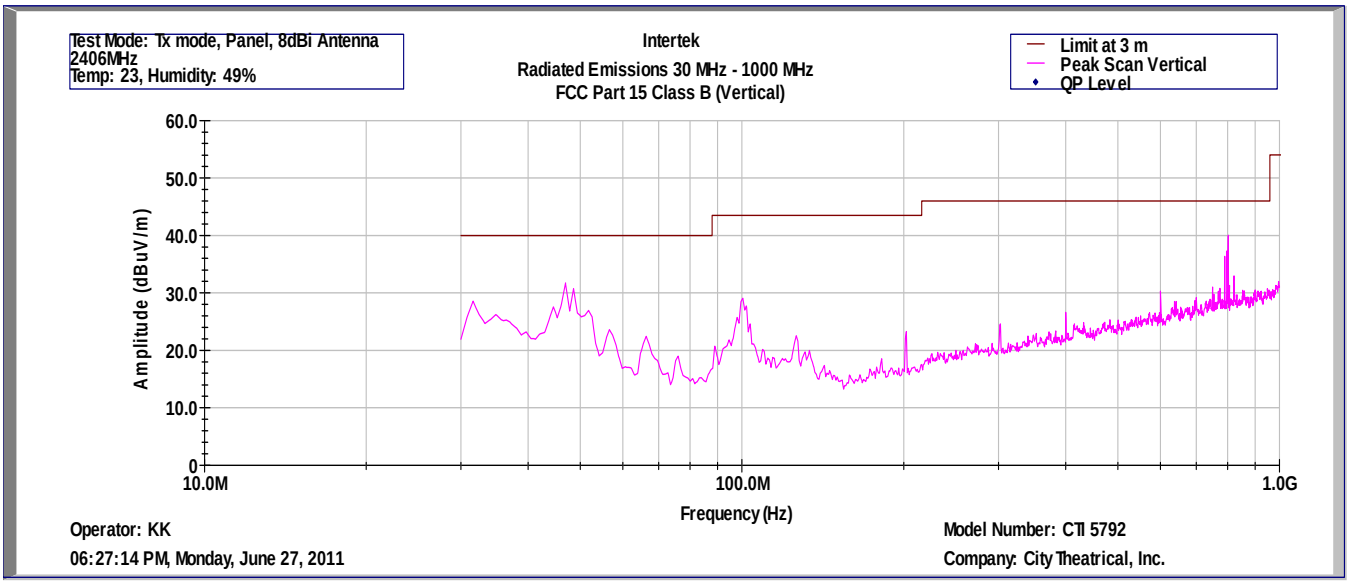
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency (Hz)	Peak FS dB(uV/m)	Limit@3m dB(uV/m)	Margin dB	RA dB(uV)	CF dB	AG dB	DCF dB	AF dB(1/m)
4.70E+07	27.8	40.0	-12.2	33.2	0.8	31.9	10.5	15.2
9.95E+07	20.8	43.5	-22.7	31.5	1.2	32.1	10.5	9.7
6.01E+08	34.7	46.0	-11.3	35.3	2.9	32.0	10.5	18.1
7.91E+08	35.4	46.0	-10.6	33.7	3.3	32.0	10.5	19.9
7.99E+08	37.1	46.0	-8.9	35.1	3.4	32.0	10.5	20.1
8.03E+08	39.2	46.0	-6.8	36.9	3.4	32.0	10.5	20.4

Test Mode: Tx mode, Panel, 8dBi Antenna
2406MHz
Temp: 23, Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz- 1000 MHz
FCC Part 15 Class B (Pk-Vertical)

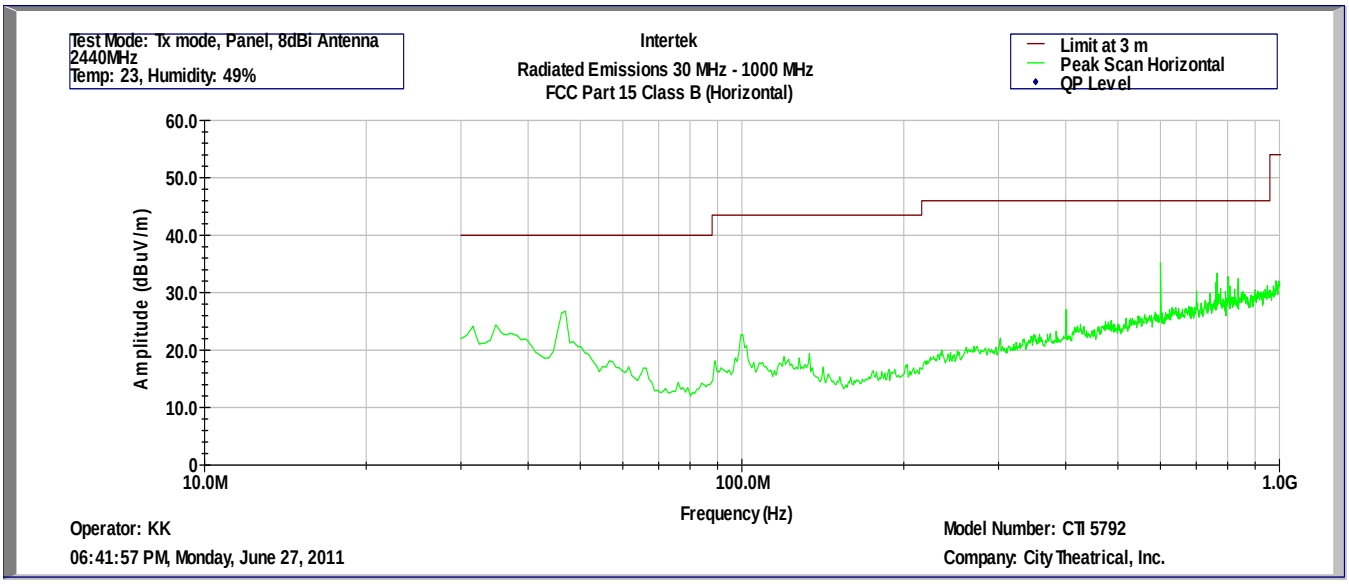
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency (Hz)	Peak FS dB(uV/m)	Limit@3m dB(uV/m)	Margin dB	RA db(uV)	CF dB	AG dB	DCF dB	AF dB(1/m)
3.16E+07	28.6	40.0	-11.4	31.9	0.6	31.8	10.5	17.4
4.70E+07	31.7	40.0	-8.3	37.1	0.8	31.9	10.5	15.2
6.64E+07	22.4	40.0	-17.6	35.0	0.9	32.1	10.5	8.1
1.00E+08	29.1	43.5	-14.4	39.6	1.2	32.1	10.5	9.9
2.02E+08	23.2	43.5	-20.3	33.2	1.7	31.9	10.5	9.8
7.91E+08	36.3	46.0	-9.7	34.6	3.3	32.0	10.5	19.9
7.99E+08	37.3	46.0	-8.7	35.3	3.4	32.0	10.5	20.1
8.03E+08	40.0	46.0	-6.0	37.7	3.4	32.0	10.5	20.4
8.23E+08	33.0	46.0	-13.0	29.8	3.4	31.9	10.5	21.2

Test Mode: Tx mode, Panel, 8dBi Antenna
2406MHz
Temp: 23, Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz - 1000 MHz
FCC Part 15 Class B (Pk-Horizontal)

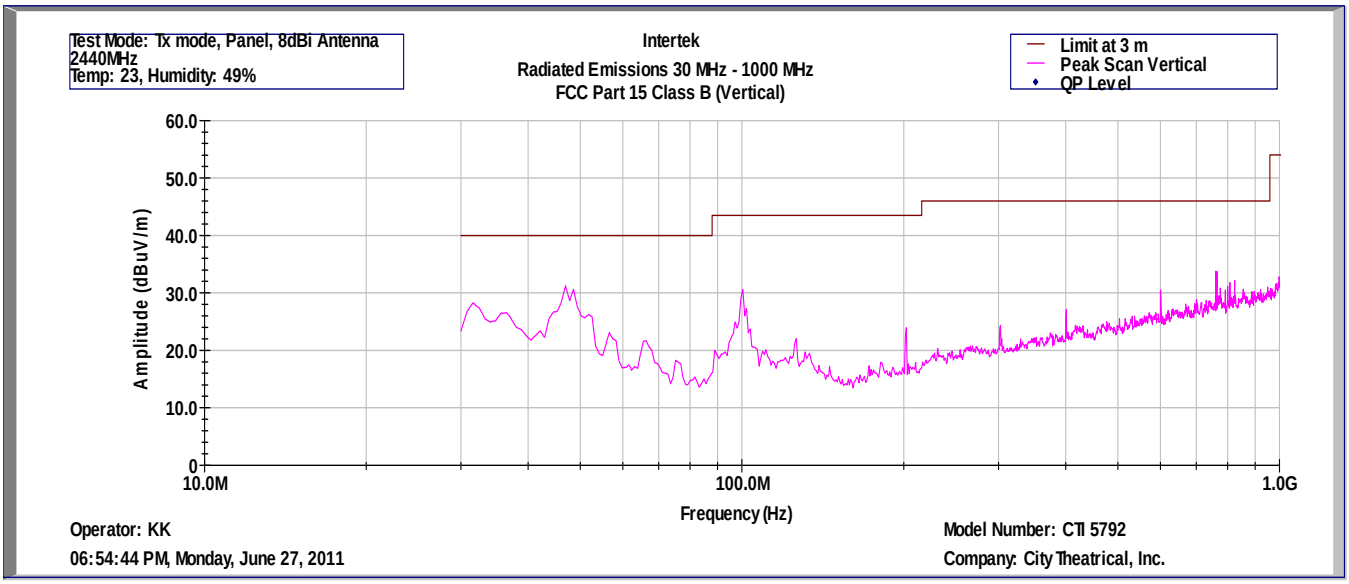
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency	Peak FS	Limit@3m	Margin	RA	CF	AG	DCF	AF
(Hz)	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB	dB	dB	dB(1/m)
4.70E+07	26.8	40.0	-13.2	32.2	0.8	31.9	10.5	15.2
1.00E+08	22.7	43.5	-20.8	33.2	1.2	32.1	10.5	9.9
6.01E+08	35.2	46.0	-10.8	35.7	2.9	32.0	10.5	18.1
7.65E+08	33.4	46.0	-12.6	31.1	3.3	32.0	10.5	20.5
8.01E+08	32.8	46.0	-13.2	30.6	3.4	32.0	10.5	20.3

Test Mode: Tx mode, Panel, 8dBi Antenna
2440MHz
Temp: 23, Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz- 1000 MHz
FCC Part 15 Class B (Pk-Vertical)

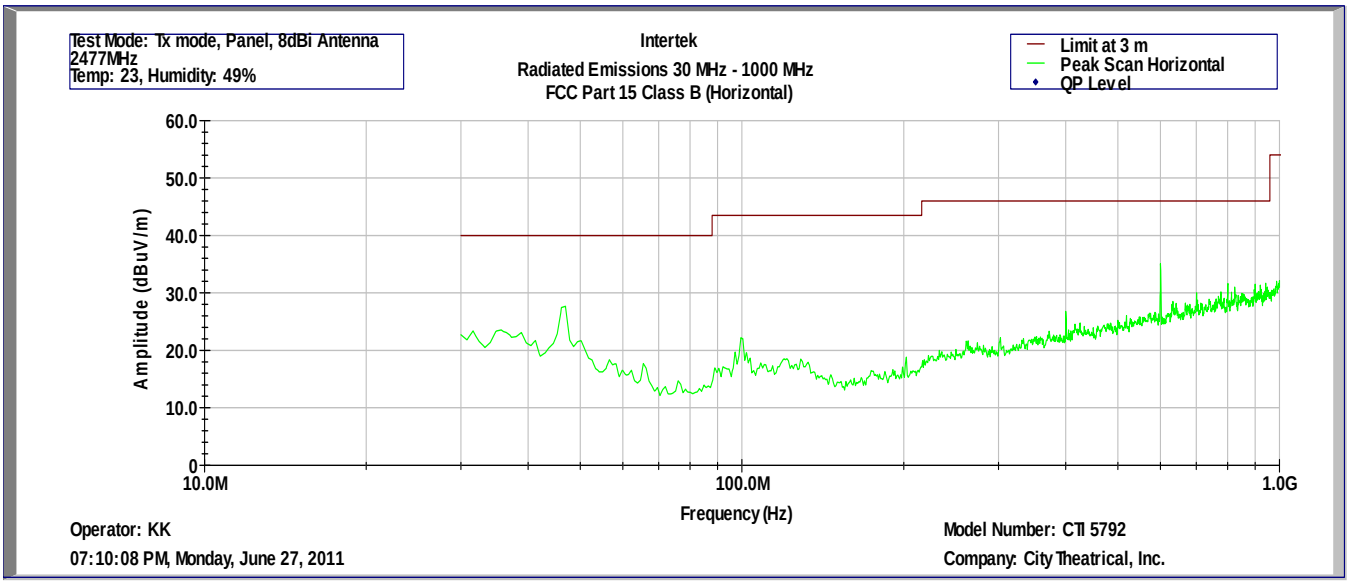
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency (Hz)	Peak FS dB(uV/m)	Limit@3m dB(uV/m)	Margin dB	RA db(uV)	CF dB	AG dB	DCF dB	AF dB(1/m)
3.16E+07	28.3	40.0	-11.7	31.5	0.6	31.8	10.5	17.4
4.70E+07	31.2	40.0	-8.8	36.6	0.8	31.9	10.5	15.2
1.00E+08	30.6	43.5	-12.9	41.1	1.2	32.1	10.5	9.9
2.02E+08	23.9	43.5	-19.6	33.9	1.7	31.9	10.5	9.8
6.01E+08	30.5	46.0	-15.5	31.0	2.9	32.0	10.5	18.1
7.61E+08	33.8	46.0	-12.2	31.9	3.3	32.0	10.5	20.1
7.65E+08	33.7	46.0	-12.3	31.4	3.3	32.0	10.5	20.5
9.98E+08	32.8	54.0	-21.2	26.2	3.8	30.9	10.5	23.2

Test Mode: Tx mode, Panel, 8dBi Antenna
2440MHz
Temp: 23, Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz - 1000 MHz
FCC Part 15 Class B (Pk-Horizontal)

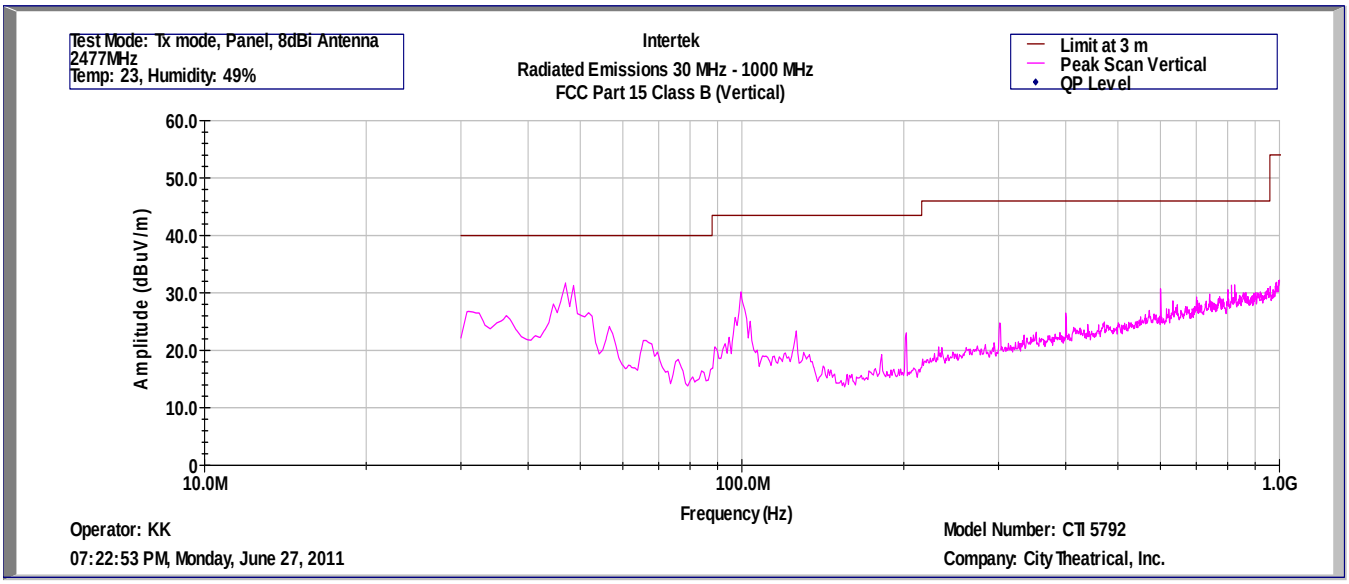
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency	Peak FS	Limit@3m	Margin	RA	CF	AG	DCF	AF
(Hz)	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB	dB	dB	dB(1/m)
4.70E+07	27.7	40.0	-12.3	33.1	0.8	31.9	10.5	15.2
9.95E+07	22.2	43.5	-21.3	32.9	1.2	32.1	10.5	9.7
6.01E+08	35.1	46.0	-10.9	35.6	2.9	32.0	10.5	18.1
9.99E+08	32.1	54.0	-21.9	25.5	3.8	30.9	10.5	23.2

Test Mode: Tx mode, Panel, 8dBi Antenna
2477MHz
Temp: 23, Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz- 1000 MHz
FCC Part 15 Class B (Pk-Vertical)

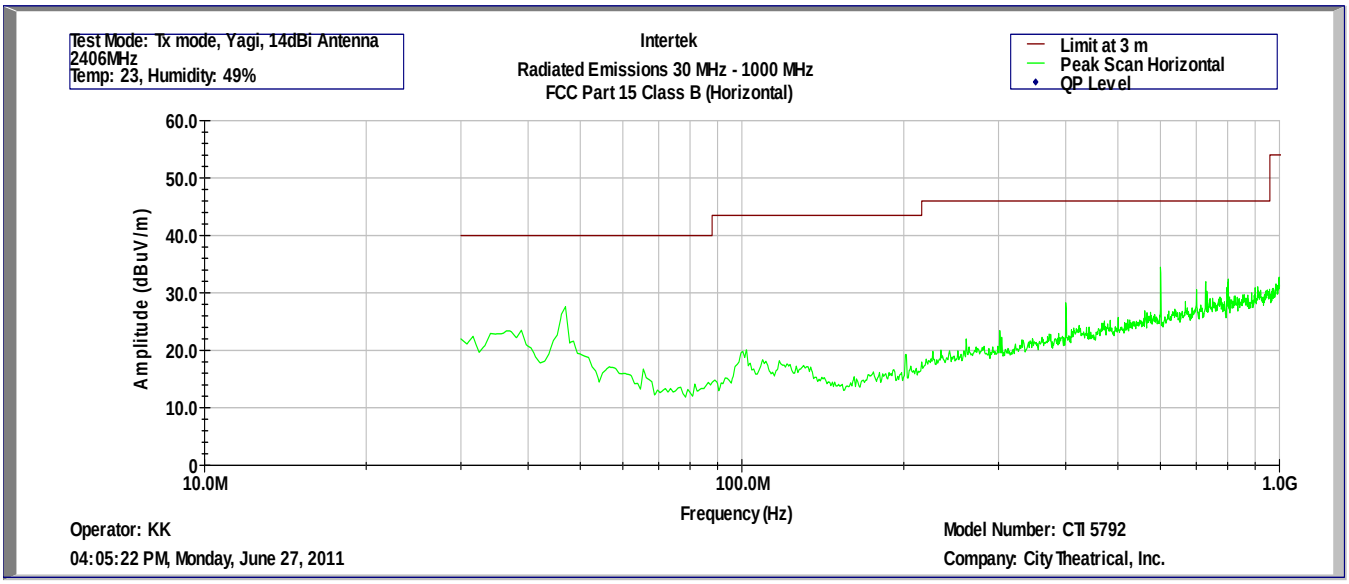
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency	Peak FS	Limit@3m	Margin	RA	CF	AG	DCF	AF
(Hz)	dB(uV/m)	dB(uV/m)	dB	db(uV)	dB	dB	dB	dB(1/m)
4.70E+07	31.7	40.0	-8.3	37.1	0.8	31.9	10.5	15.2
9.95E+07	30.1	43.5	-13.4	40.8	1.2	32.1	10.5	9.7
1.26E+08	23.4	43.5	-20.1	32.1	1.3	31.9	10.5	11.4
2.02E+08	23.0	43.5	-20.5	33.0	1.7	31.9	10.5	9.8
6.01E+08	30.7	46.0	-15.3	31.3	2.9	32.0	10.5	18.1
1.00E+09	32.2	54.0	-21.8	25.8	3.8	30.9	10.5	23.1

Test Mode: Tx mode, Panel, 8dBi Antenna
2477MHz
Temp: 23, Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz - 1000 MHz
FCC Part 15 Class B (Pk-Horizontal)

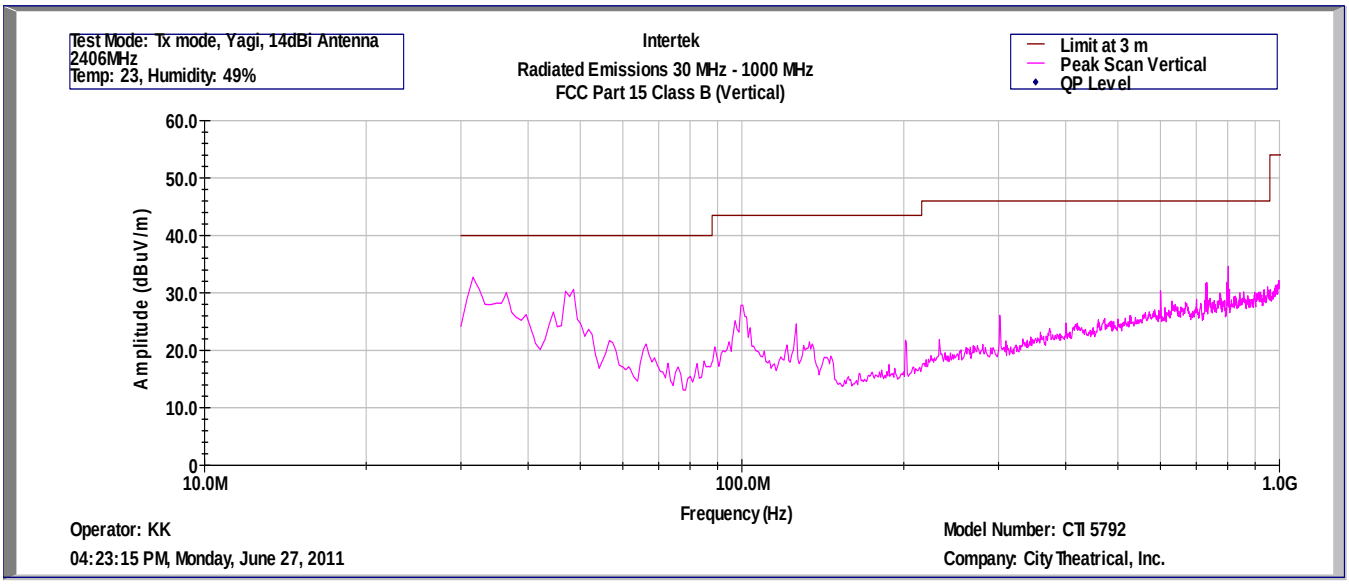
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency	Peak FS	Limit@3m	Margin	RA	CF	AG	DCF	AF
(Hz)	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB	dB	dB	dB(1/m)
4.70E+07	27.6	40.0	-12.4	33.0	0.8	31.9	10.5	15.2
1.02E+08	20.1	43.5	-23.4	29.9	1.2	32.1	10.5	10.6
4.00E+08	28.3	46.0	-17.7	32.3	2.4	31.9	10.5	15.0
6.01E+08	34.5	46.0	-11.5	35.0	2.9	32.0	10.5	18.1
7.29E+08	32.0	46.0	-14.0	30.5	3.2	32.1	10.5	19.9
9.98E+08	32.8	54.0	-21.2	26.1	3.8	30.9	10.5	23.3

Test Mode: Tx mode, Yagi, 14dBi Antenna
2406MHz
Temp: 23, Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz- 1000 MHz
FCC Part 15 Class B (Pk-Vertical)

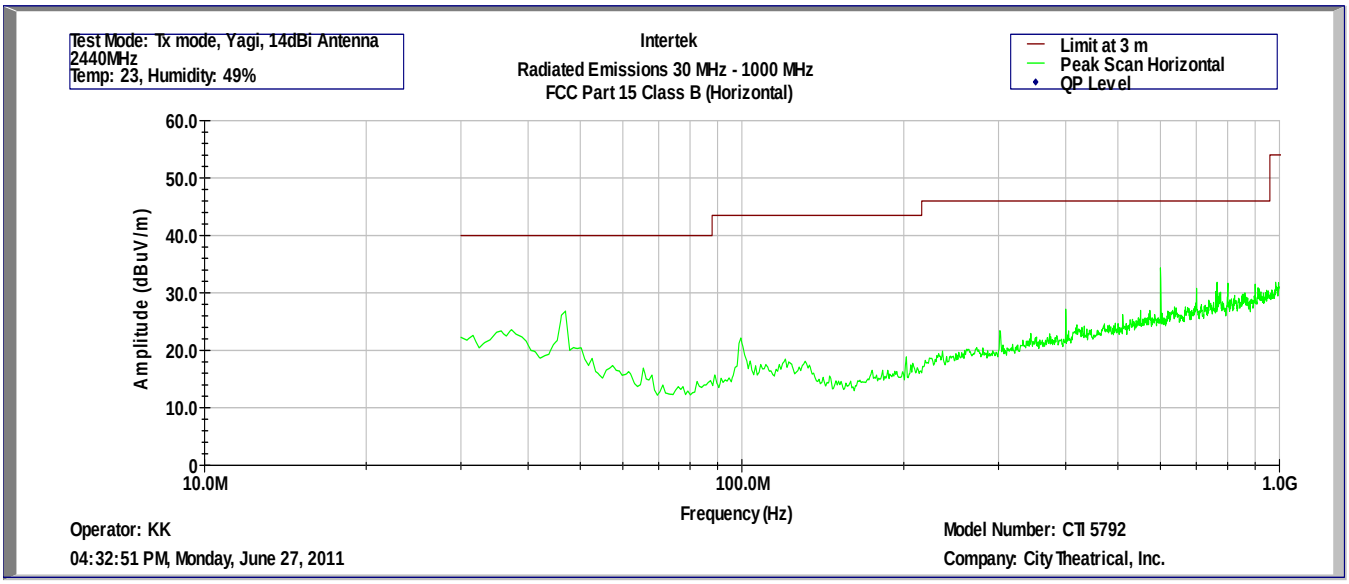
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency (Hz)	Peak FS dB(uV/m)	Limit@3m dB(uV/m)	Margin dB	RA db(uV)	CF dB	AG dB	DCF dB	AF dB(1/m)
3.16E+07	32.7	40.0	-7.3	36.0	0.6	31.8	10.5	17.4
4.86E+07	30.6	40.0	-9.4	36.5	0.8	31.9	10.5	14.8
6.64E+07	21.1	40.0	-18.9	33.7	0.9	32.1	10.5	8.1
9.95E+07	27.8	43.5	-15.7	38.5	1.2	32.1	10.5	9.7
1.26E+08	24.6	43.5	-18.9	33.3	1.3	31.9	10.5	11.4
2.01E+08	21.8	43.5	-21.7	31.8	1.7	31.9	10.5	9.8
3.02E+08	26.1	46.0	-19.9	32.3	2.0	31.9	10.5	13.1
8.03E+08	34.6	46.0	-11.4	32.3	3.4	32.0	10.5	20.4

Test Mode: Tx mode, Yagi, 14dBi Antenna
2406MHz
Temp: 23, Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz - 1000 MHz
FCC Part 15 Class B (Pk-Horizontal)

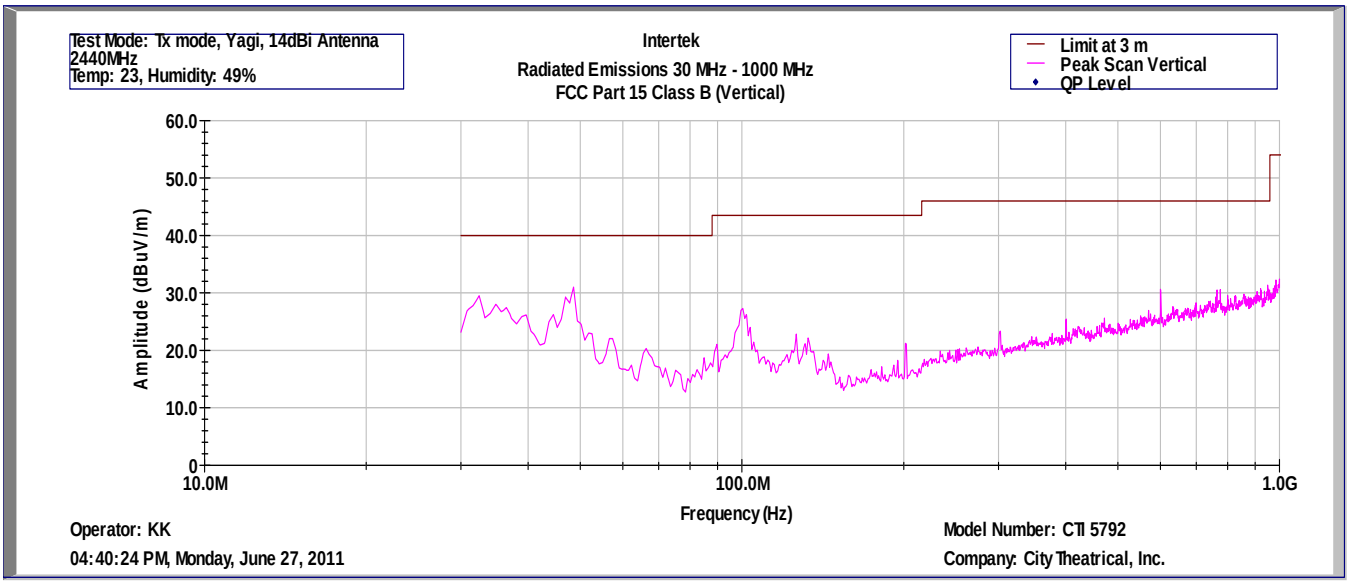
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency (Hz)	Peak FS dB(uV/m)	Limit@3m dB(uV/m)	Margin dB	RA dB(uV)	CF dB	AG dB	DCF dB	AF dB(1/m)
4.70E+07	26.8	40.0	-13.2	32.2	0.8	31.9	10.5	15.2
9.95E+07	22.1	43.5	-21.4	32.8	1.2	32.1	10.5	9.7
4.00E+08	27.2	46.0	-18.8	31.2	2.4	31.9	10.5	15.0
6.01E+08	34.3	46.0	-11.7	34.9	2.9	32.0	10.5	18.1
7.65E+08	31.9	46.0	-14.1	29.6	3.3	32.0	10.5	20.5

Test Mode: Tx mode, Yagi, 14dBi Antenna
2440MHz
Temp: 23, Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz- 1000 MHz
FCC Part 15 Class B (Pk-Vertical)

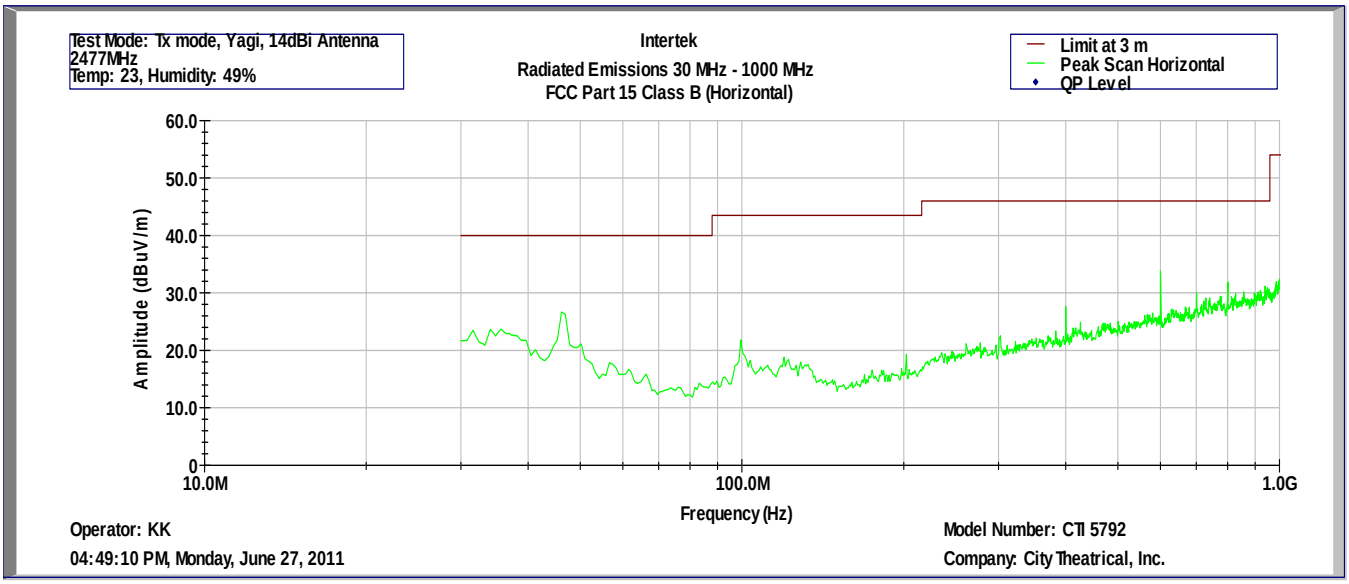
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency (Hz)	Peak FS dB(uV/m)	Limit@3m dB(uV/m)	Margin dB	RA db(uV)	CF dB	AG dB	DCF dB	AF dB(1/m)
3.24E+07	29.5	40.0	-10.5	32.9	0.7	31.8	10.5	17.3
4.86E+07	31.0	40.0	-9.0	36.8	0.8	31.9	10.5	14.8
1.00E+08	27.3	43.5	-16.2	37.8	1.2	32.1	10.5	9.9
1.26E+08	22.8	43.5	-20.7	31.6	1.3	31.9	10.5	11.4
2.01E+08	21.2	43.5	-22.3	31.2	1.7	31.9	10.5	9.8
6.01E+08	30.6	46.0	-15.4	31.1	2.9	32.0	10.5	18.1
9.99E+08	32.4	54.0	-21.6	25.8	3.8	30.9	10.5	23.2

Test Mode: Tx mode, Yagi, 14dBi Antenna
2440MHz
Temp: 23, Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz - 1000 MHz
FCC Part 15 Class B (Pk-Horizontal)

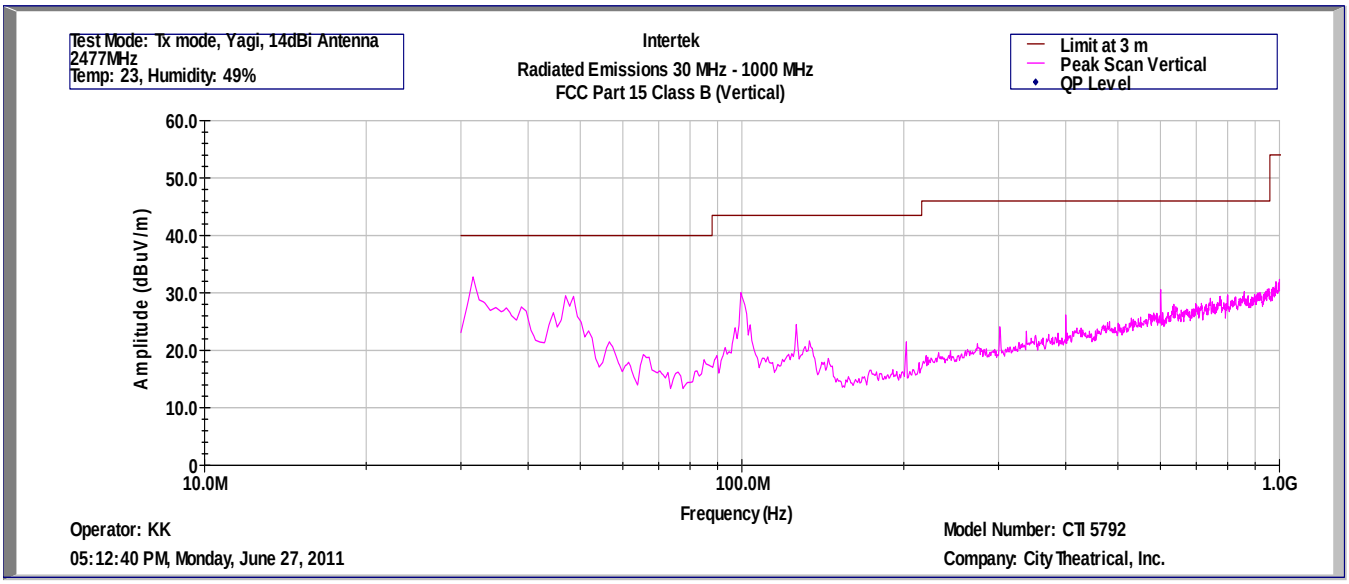
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency	Peak FS	Limit@3m	Margin	RA	CF	AG	DCF	AF
(Hz)	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB	dB	dB	dB(1/m)
4.62E+07	26.6	40.0	-13.4	31.8	0.8	31.9	10.5	15.4
9.95E+07	21.8	43.5	-21.7	32.5	1.2	32.1	10.5	9.7
4.00E+08	27.6	46.0	-18.4	31.6	2.4	31.9	10.5	15.0
6.01E+08	33.8	46.0	-12.2	34.3	2.9	32.0	10.5	18.1
1.00E+09	32.4	54.0	-21.6	25.9	3.8	30.9	10.5	23.1

Test Mode: Tx mode, Yagi, 14dBi Antenna
2477MHz
Temp: 23, Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz- 1000 MHz
FCC Part 15 Class B (Pk-Vertical)

Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency (Hz)	Peak FS dB(uV/m)	Limit@3m dB(uV/m)	Margin dB	RA db(uV)	CF dB	AG dB	DCF dB	AF dB(1/m)
3.16E+07	32.8	40.0	-7.2	36.1	0.6	31.8	10.5	17.4
4.70E+07	29.5	40.0	-10.5	34.9	0.8	31.9	10.5	15.2
9.95E+07	30.0	43.5	-13.5	40.7	1.2	32.1	10.5	9.7
1.26E+08	24.5	43.5	-19.0	33.3	1.3	31.9	10.5	11.4
2.02E+08	21.4	43.5	-22.1	31.4	1.7	31.9	10.5	9.8
6.01E+08	30.6	46.0	-15.4	31.1	2.9	32.0	10.5	18.1
9.99E+08	32.4	54.0	-21.6	25.8	3.8	30.9	10.5	23.2

Test Mode: Tx mode, Yagi, 14dBi Antenna
2477MHz
Temp: 23, Humidity: 49%

Note: Measurements made at 10 meters distance.

Test Result	
FCC Part 15.247 Radiated Emission in Restricted Bands	
Temperature: 22C	City Theatrical, Inc.
Humidity: 51%	Model: 5792
Test distance = 3 m	EUT with 5dBi Antenna
Test date: June 28, 2011	

Frequency MHz	Detector	SA reading dB(uV)	Ant. Factor dB(1/m)	Correction Factor dB	Duty* cycle dB	Field Strength dB(uV/m)	Limit dB(uV/m)	Margin dB
Tx at 2406 MHz								
4812	Peak	46.2	32.8	29.4	--	49.6	74.0	-24.4
12030	Peak	35.5	38.6	26.1	--	48.0	74.0	-26.0
4804	Aver	43.3	32.8	29.4	20.0	26.7	54.0	-27.3
12030	Aver	22.3	38.6	26.1	20.0	14.8	54.0	-39.2
Tx at 2440 MHz								
4880	Peak	47.7	32.8	29.4	--	51.1	74.0	-22.9
7320	Peak	36.4	37.5	25.9	--	48.0	74.0	-26.0
12200	Peak	35.6	38.6	26.2	--	48.0	74.0	-26.0
4880	Aver	44.6	32.8	29.4	20.0	28.0	54.0	-26.0
7320	Aver	22.8	37.5	25.9	20.0	14.4	54.0	-39.6
12200	Aver	22.4	38.6	26.2	20.0	14.8	54.0	-39.2
Tx at 2477 MHz								
4954	Peak	45.0	32.9	29.3	--	48.6	74.0	-25.4
7431	Peak	39.3	37.5	26.1	--	50.7	74.0	-23.3
12385	Peak	36.1	38.6	25.9	--	48.8	74.0	-25.2
4954	Aver	40.3	32.9	29.3	20.0	23.9	54.0	-30.1
7431	Aver	29.8	37.5	26.1	20.0	21.2	54.0	-32.8
12385	Aver	22.9	38.6	25.9	20.0	15.6	54.0	-38.4

* See Appendix A for Duty cycle measurement.

a) RBW = 1 MHz, VBW = 1 MHz - for peak measurements
   RBW = 1MHz, VBW = 100 Hz - for average measurements
b) Correction Factor: Pre-amplifier gain + Cable loss + HP-Filter loss
c) All other emissions are 20 dB below the limit.

Note: Measurements made at 3 meters distance.

Test Result	
FCC Part 15.247 Radiated Emission in Restricted Bands	
Temperature: 22C	City Theatrical, Inc.
Humidity: 51%	Model: 5792
Test distance = 3 m	EUT with 8dBi Antenna
Test date: June 28, 2011	

Frequency MHz	Detector	SA reading dB(uV)	Ant. Factor dB(1/m)	Correction Factor dB	Duty* cycle dB	Field Strength dB(uV/m)	Limit dB(uV/m)	Margin dB
Tx at 2406 MHz								
4812	Peak	47.2	32.8	29.4	--	50.6	74.0	-23.4
12030	Peak	35.5	38.6	26.1	--	48.0	74.0	-26.0
4804	Aver	44.8	32.8	29.4	20.0	28.2	54.0	-25.8
12030	Aver	22.1	38.6	26.1	20.0	14.6	54.0	-39.4
Tx at 2440 MHz								
4880	Peak	49.4	32.8	29.4	--	52.8	74.0	-21.2
7320	Peak	39.4	37.5	25.9	--	51.0	74.0	-23.0
12200	Peak	35.8	38.6	26.2	--	48.2	74.0	-25.8
4880	Aver	47.4	32.8	29.4	20.0	30.8	54.0	-23.2
7320	Aver	33.4	37.5	25.9	20.0	25.0	54.0	-29.0
12200	Aver	22.3	38.6	26.2	20.0	14.7	54.0	-39.3
Tx at 2477 MHz								
4954	Peak	45.7	32.9	29.3	--	49.3	74.0	-24.7
7431	Peak	40.3	37.5	26.1	--	51.7	74.0	-22.3
12385	Peak	36.1	38.6	25.9	--	48.8	74.0	-25.2
4954	Aver	42.3	32.9	29.3	20.0	25.9	54.0	-28.1
7431	Aver	33.8	37.5	26.1	20.0	25.2	54.0	-28.8
12385	Aver	22.8	38.6	25.9	20.0	15.5	54.0	-38.5

* See Appendix A for Duty cycle measurement.

a) RBW = 1 MHz, VBW = 1 MHz - for peak measurements
   RBW = 1MHz, VBW = 100 Hz - for average measurements
b) Correction Factor: Pre-amplifier gain + Cable loss + HP-Filter loss
c) All other emissions are 20 dB below the limit.

Note: Measurements made at 3 meters distance.

Test Result	
FCC Part 15.247 Radiated Emission in Restricted Bands	
Temperature: 22C	City Theatrical, Inc.
Humidity: 51%	Model: 5792
Test distance = 3 m	EUT with 14dBi Antenna
Test date: June 28, 2011	

Frequency MHz	Detector	SA reading dB(uV)	Ant. Factor dB(1/m)	Correction Factor dB	Duty* cycle dB	Field Strength dB(uV/m)	Limit dB(uV/m)	Margin dB
Tx at 2406 MHz								
4812	Peak	47.5	32.8	29.4	--	50.9	74.0	-23.1
12030	Peak	35.5	38.6	26.1	--	48.0	74.0	-26.0
4804	Aver	44.8	32.8	29.4	20.0	28.2	54.0	-25.8
12030	Aver	22.2	38.6	26.1	20.0	14.7	54.0	-39.3
Tx at 2440 MHz								
4880	Peak	50.5	32.8	29.4	--	53.9	74.0	-20.1
7320	Peak	39.3	37.5	25.9	--	50.9	74.0	-23.1
12200	Peak	35.7	38.6	26.2	--	48.1	74.0	-25.9
4880	Aver	48.7	32.8	29.4	20.0	32.1	54.0	-21.9
7320	Aver	32.8	37.5	25.9	20.0	24.4	54.0	-29.6
12200	Aver	22.2	38.6	26.2	20.0	14.6	54.0	-39.4
Tx at 2477 MHz								
4954	Peak	45.7	32.9	29.3	--	49.3	74.0	-24.7
7431	Peak	39.5	37.5	26.1	--	50.9	74.0	-23.1
12385	Peak	35.9	38.6	25.9	--	48.6	74.0	-25.4
4954	Aver	42	32.9	29.3	20.0	25.6	54.0	-28.4
7431	Aver	33	37.5	26.1	20.0	24.4	54.0	-29.6
12385	Aver	22.7	38.6	25.9	20.0	15.4	54.0	-38.6

* See Appendix A for Duty cycle measurement.

a) RBW = 1 MHz, VBW = 1 MHz - for peak measurements
   RBW = 1MHz, VBW = 100 Hz - for average measurements
b) Correction Factor: Pre-amplifier gain + Cable loss + HP-Filter loss
c) All other emissions are 20 dB below the limit.

Note: Measurements made at 3 meters distance.

Emissions in the restricted bands near the operating band

Frequency	Detector	Field Strength @ fundamental	Delta**	Duty cycle dB*	Corrected Field Strength	Limit	Margin
MHz		dB(uV/m)	dB	dB	dB(uV/m)	dB(uV/m)	dB
14dBi Antenna							
2390	Peak	121.0	52.7	--	68.3	74.0	-5.7
2483.5	Peak	121.8	53.2	--	68.6	74.0	-5.4
2390	Average	119.9	52.7	20.0	47.2	54.0	-6.8
2483.5	Average	120.7	53.2	20.0	47.5	54.0	-6.5
8dBi Antenna							
2390	Peak	117.6	52.7	--	64.9	74.0	-9.1
2483.5	Peak	116.5	53.2	--	63.3	74.0	-10.7
2390	Average	116.5	52.7	20.0	43.8	54.0	-10.2
2483.5	Average	115.4	53.2	20.0	42.2	54.0	-11.8
5dBi Antenna							
2390	Peak	115.4	52.7	--	62.7	74.0	-11.3
2483.5	Peak	114.1	53.2	--	60.9	74.0	-13.1
2390	Average	114.2	52.7	20.0	41.5	54.0	-12.5
2483.5	Average	113.0	53.2	20.0	39.8	54.0	-14.2

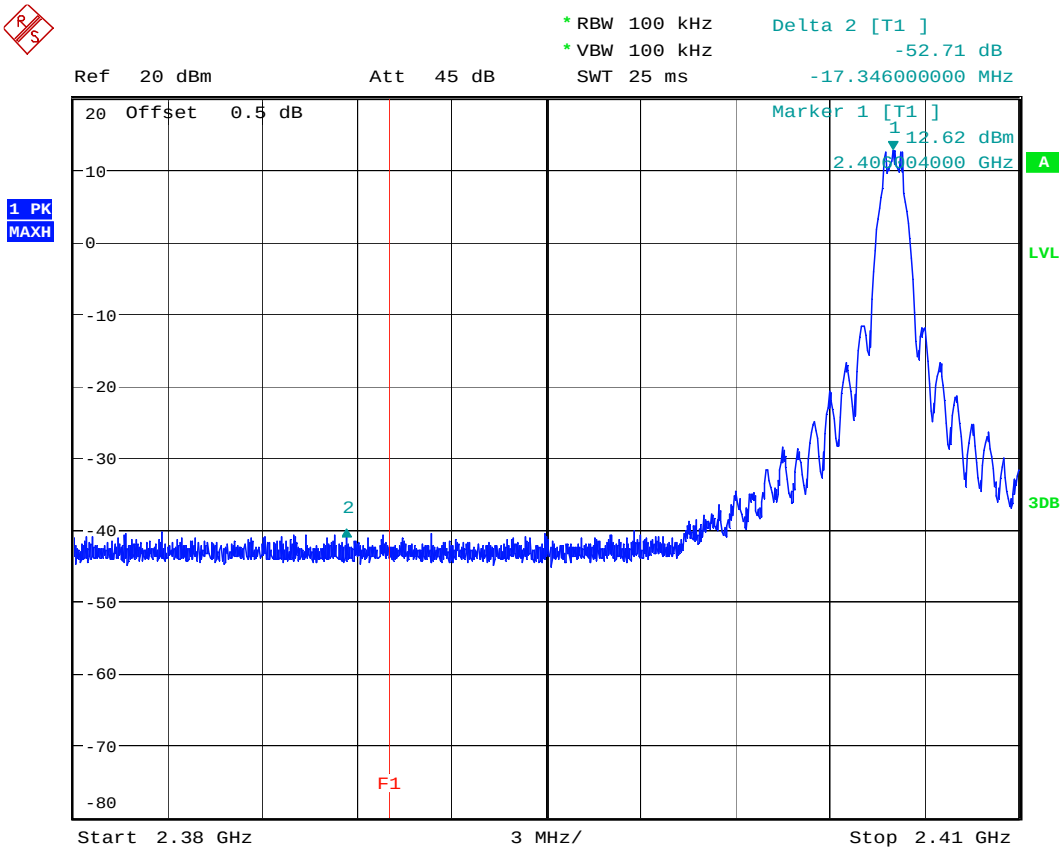
**See plots 7.1 and 7.2 for Delta measurement

* See Appendix A for Duty cycle measurement.

a) RBW = 1 MHz, VBW = 1 MHz - for peak measurements
   RBW = 1MHz, VBW = 100 Hz - for average measurements
b) Field Strength at Fundamental: Spectrum Analyzer reading + Cable loss + Antenna Factor
c) Delta: peak at fundamental - spurious emissions peak reading in the restricted band
d) Corrected Field Strength: FS at Fundamental – Delta – Duty Cycle
e) All other emissions are 20 dB below the limit.

Note: Measurements made at 3 meters distance.

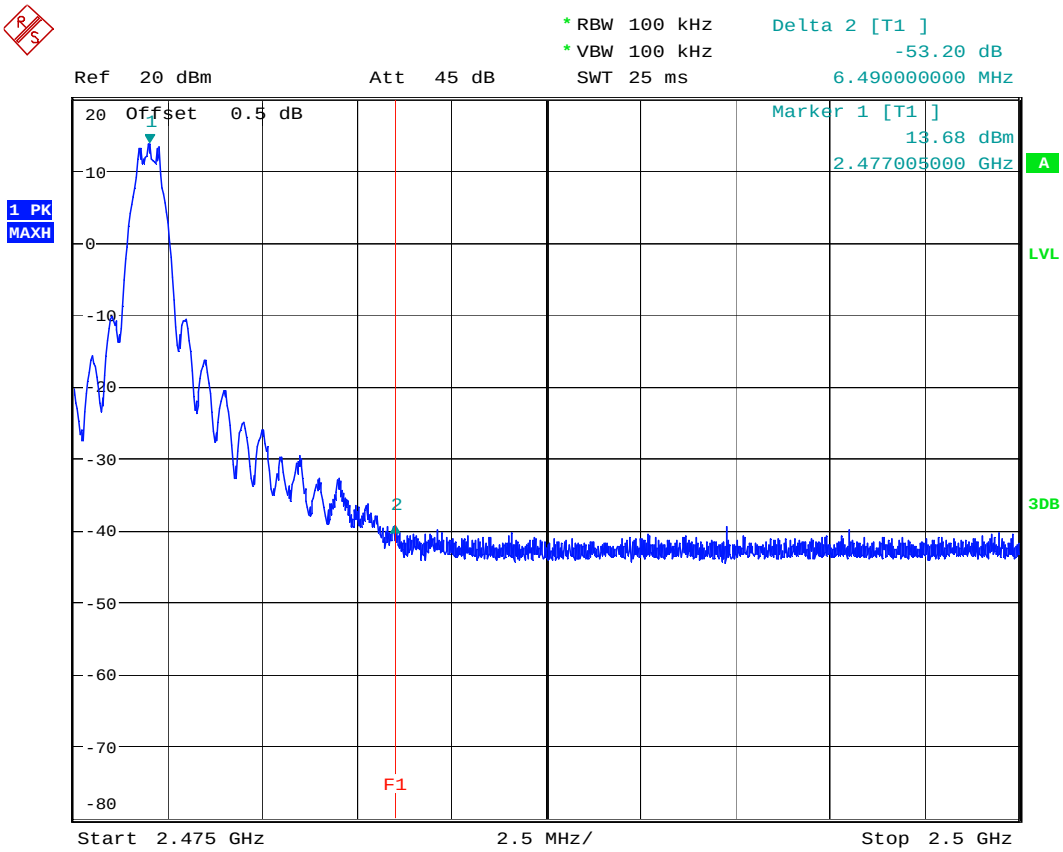
Plot 7.1



Emissions on band-edge, freq 2406MHz

Date: 30.JUN.2011 10:36:05

Plot 7.2



Emissions on band-edge, freq 2477MHz

Date: 30.JUN.2011 10:40:48

Test Setup Photographs

Test Setup Photographs

4.8 Radiated Emissions from Digital Parts and Receiver
FCC Ref: 15.109

Test Limit

Limits for Electromagnetic Radiated Emissions, FCC Section 15.109(b) and ICES 003 *

Frequency (MHz)	**Class A at 10m dB(µV/m)**	**Class B at 3m dB(µV/m)**
30-88	39	40.0
88-216	43.5	43.5
216-960	46.4	46.0
Above 960	49.5	54.0

* According to FCC Part 15.109(g) an alternative to the radiated emission limits shown above, digital devices may be shown to comply with the limit of CISPR Pub. 22

Test Procedure

Measurements are conducted with a quasi-peak detector instrument in the frequency range of 30 MHz to 1000 MHz and with the average detector instrument in the frequency range above 1000 MHz. The measuring receiver meets the requirements of Section One of CISPR 16 and the measuring antenna correlates to a balanced dipole.

Measurements of the radiated field are made with the antenna located at a distance of 10 meters from the EUT. If the field-strength measurements at 10m cannot be made because of high ambient noise level or for other reasons, measurements of Class B equipment may be made at a closer distance, for example 3m. An inverse proportionality factor of 20 dB per decade should be used to normalize the measured data to the specified distance for determining compliance.

The antenna is adjusted between 1m and 4m in height above the ground plane for maximum meter reading at each test frequency.

The antenna-to-EUT azimuth is varied during the measurement to find the maximum field-strength readings.

The antenna-to-EUT polarization (horizontal and vertical) is varied during the measurements to find the maximum field-strength readings.

The EUT, where intended for tabletop use, is placed on a table whose top is 0.8m above the ground plane. The table is constructed of non-conductive materials. Its dimensions are 1m by 1.5m, but may be extended for a larger EUT.

Floor standing EUTs are placed on a horizontal metal ground plane and isolated from the ground plane by 3 to 12 mm of insulating material.

Equipment setup for radiated disturbance tests followed the guidelines of ANSI C63.4 (2003).

Example Field Strength Calculation

For measurements made at 10 meters distance

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

The field strength is calculated by adding the Antenna Factor and Cable Factor and the Distance Correction Factor; and subtracting the Amplifier Gain from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF – AG + DCF

Where FS = Field Strength in dB(μV/m)
RA = Receiver Amplitude (including preamplifier) in dB(μV)
AF = Antenna Factor in dB(1/m)
CF = Cable Attenuation Factor in dB
AG = Amplifier Gain in dB
DCF = Distance Correction Factor in dB for measurements made at 10 meters distance

Assume a receiver reading of 52.5 dB(μV) is obtained. The antennas factor of 7.4 dB(1/m) and cable factor of 1.6 dB is added. The amplifier gain of 29 dB and Distance Correction Factor (for measurements made at 10 meters distance) of 10.5 dB is subtracted, giving field strength of 22 dB(μV/m). This value in dB(μV/m) was converted to its corresponding level in μV/m.
RA = 52.5 dB(μV)
AF = 7.4 dB(1/m)
CF = 1.6 dB
AG = 29.0 dB
DCF = 10.5 dB
FS = 52.5+7.4+1.6-29.0+10.5 = 43 dB(μV/m).
Level in μV/m = Common Antilogarithm [(43 dBμV/m)/20] = 141.3 μV/m.

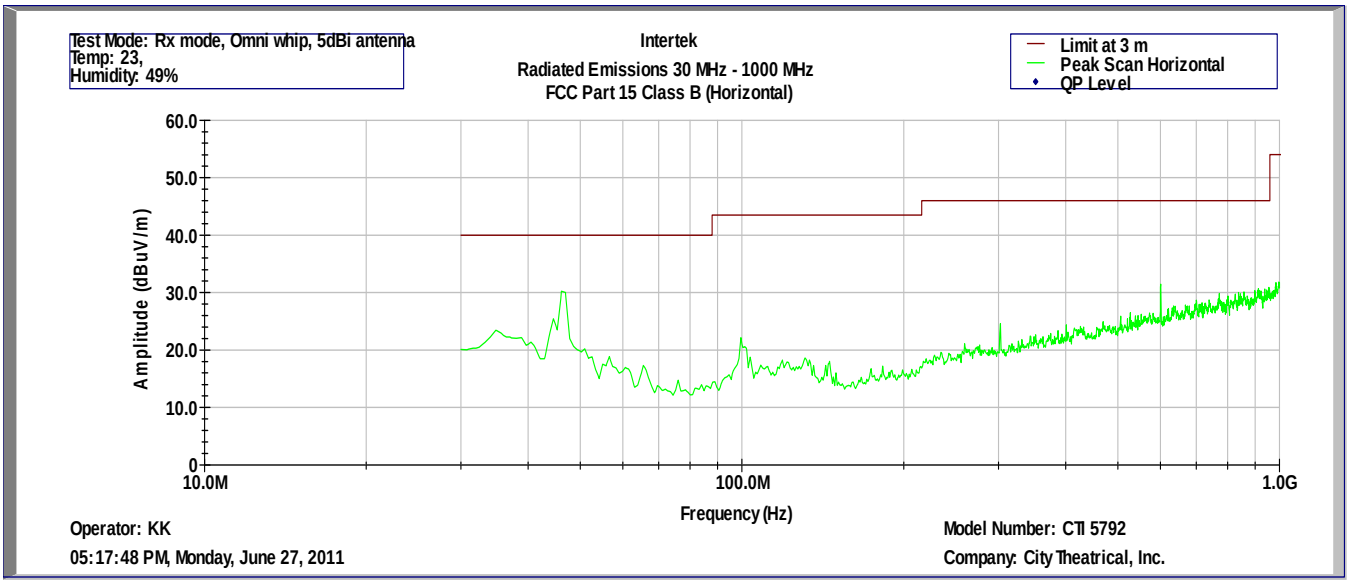
For measurements made at 3 meters distance

The field strength is calculated by following the example above *for measurements made at 10 meters distance* except the Distance Correction Factor in dB is not applied.

Test Results

Radiated emission measurements were performed from 30 MHz to 1000 MHz. Spectrum Analyzer Resolution Bandwidth is 100 kHz or greater below 1000 MHz and 1 MHz - above 1000 MHz.

The EUT passed by 8.3 dB for Class B.



Intertek Testing Services
Radiated Emissions 30 MHz - 1000 MHz
FCC Part 15 Class B (Pk-Horizontal)

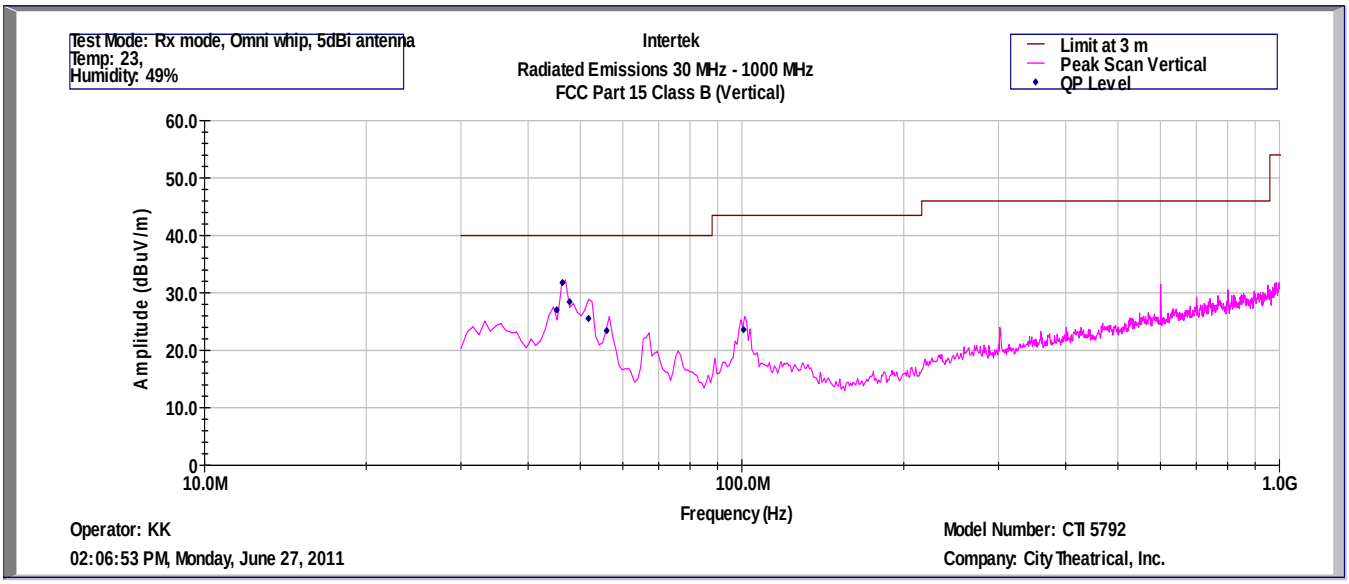
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency (Hz)	Peak FS dB(uV/m)	Limit@3m dB(uV/m)	Margin dB	RA dB(uV)	CF dB	AG dB	DCF dB	AF dB(1/m)
4.62E+07	30.2	40.0	-9.8	35.4	0.8	31.9	10.5	15.4
9.95E+07	22.1	43.5	-21.4	32.8	1.2	32.1	10.5	9.7
6.01E+08	31.4	46.0	-14.6	32.0	2.9	32.0	10.5	18.1
9.97E+08	31.8	54.0	-22.2	25.1	3.8	30.9	10.5	23.4

Test Mode: Rx mode, Omni whip, 5dBi antenna
Temp: 23,
Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz - 1000 MHz
FCC Part 15 Class B (QP-Vertical)

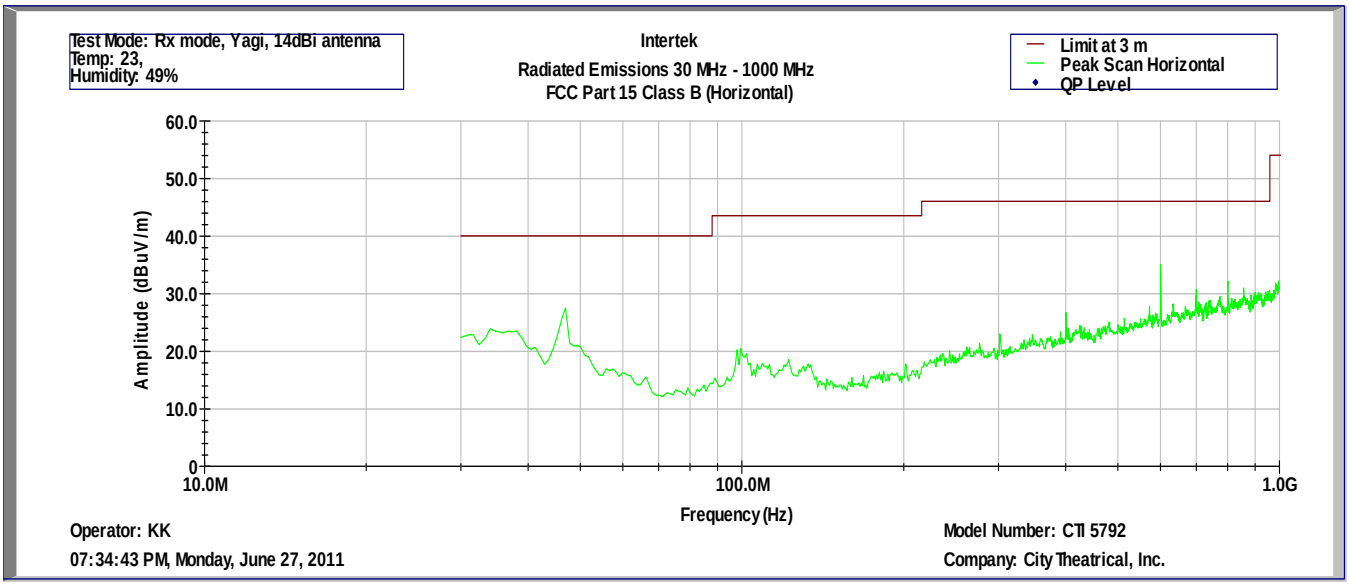
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency	Quasi Pk FS	Limit@3m	Margin	RA	Cable	AG	DCF	AF
Hz	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB	dB	dB	dB(1/m)
4.53E+07	27.0	40.0	-13.0	32.0	0.8	31.9	10.5	15.6
4.64E+07	31.8	40.0	-8.2	37.0	0.8	31.9	10.5	15.4
4.78E+07	28.4	40.0	-11.6	34.0	0.8	31.9	10.5	15.0
5.18E+07	25.5	40.0	-14.5	32.4	0.8	31.9	10.5	13.7
5.60E+07	23.4	40.0	-16.6	32.0	0.9	32.0	10.5	12.0
1.01E+08	23.6	43.5	-19.9	34.0	1.2	32.1	10.5	10.0

Test Mode: Rx mode, Omni whip, 5dBi antenna
Temp: 23,
Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz - 1000 MHz
FCC Part 15 Class B (Pk-Horizontal)

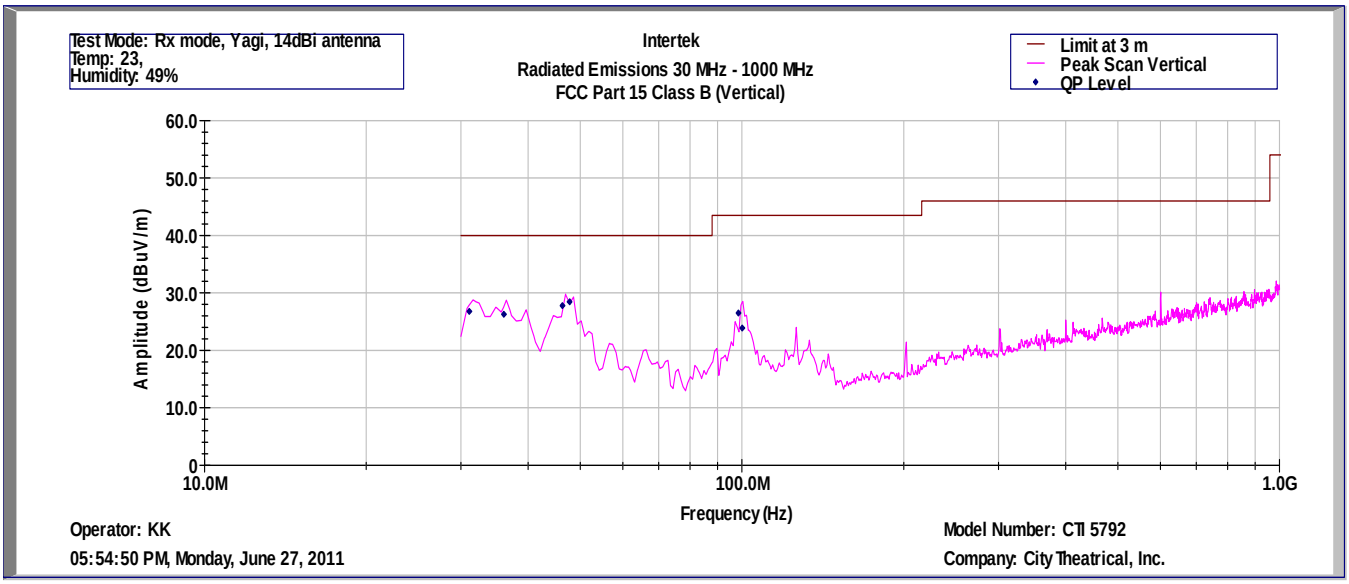
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency	Peak FS	Limit@3m	Margin	RA	CF	AG	DCF	AF
(Hz)	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB	dB	dB	dB(1/m)
3.40E+07	23.9	40.0	-16.1	27.5	0.7	31.9	10.5	17.1
4.70E+07	27.5	40.0	-12.5	32.9	0.8	31.9	10.5	15.2
9.95E+07	20.5	43.5	-23.0	31.2	1.2	32.1	10.5	9.7
6.01E+08	35.0	46.0	-11.0	35.5	2.9	32.0	10.5	18.1
9.96E+08	32.2	54.0	-21.8	25.4	3.8	30.9	10.5	23.4

Test Mode: Rx mode, Yagi, 14dBi antenna
Temp: 23,
Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz - 1000 MHz
FCC Part 15 Class B (QP-Vertical)

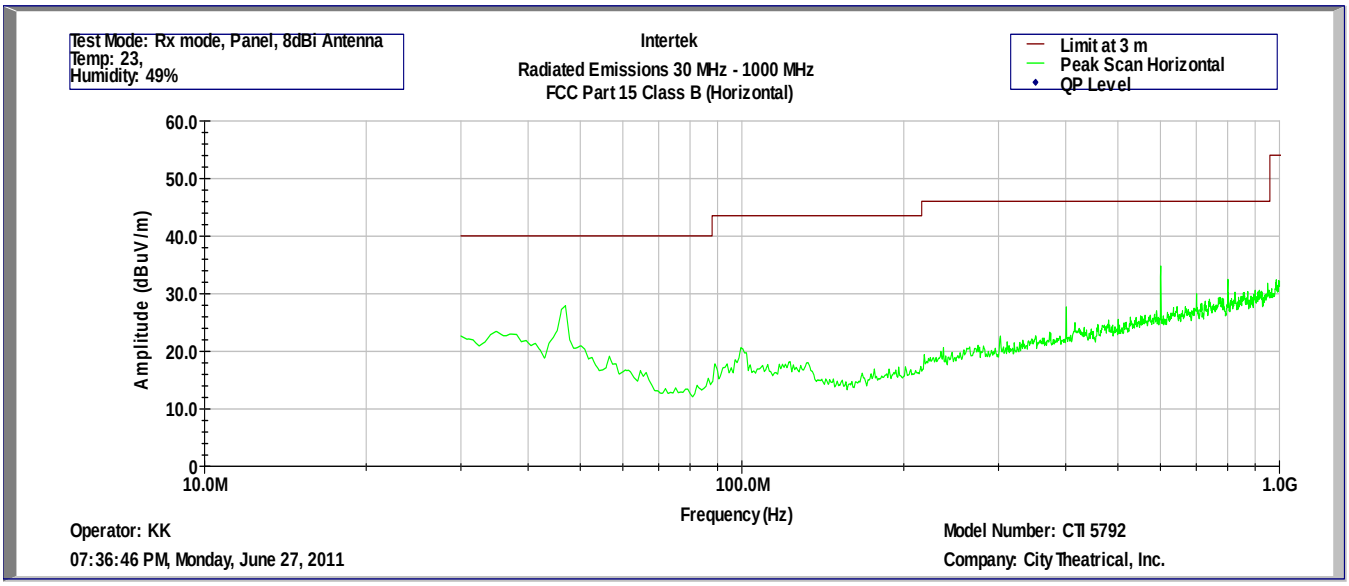
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency	Quasi Pk FS	Limit@3m	Margin	RA	Cable	AG	DCF	AF
Hz	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB	dB	dB	dB(1/m)
3.11E+07	26.8	40.0	-13.2	29.9	0.6	31.8	10.5	17.6
3.61E+07	26.2	40.0	-13.8	30.0	0.7	31.9	10.5	16.9
4.64E+07	27.8	40.0	-12.2	33.0	0.8	31.9	10.5	15.4
4.78E+07	28.4	40.0	-11.6	34.0	0.8	31.9	10.5	15.0
9.85E+07	26.5	43.5	-17.0	37.4	1.1	32.1	10.5	9.5
1.00E+08	23.8	43.5	-19.7	34.4	1.2	32.1	10.5	9.8

Test Mode: Rx mode, Yagi, 14dBi antenna
Temp: 23,
Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz - 1000 MHz
FCC Part 15 Class B (Pk-Horizontal)

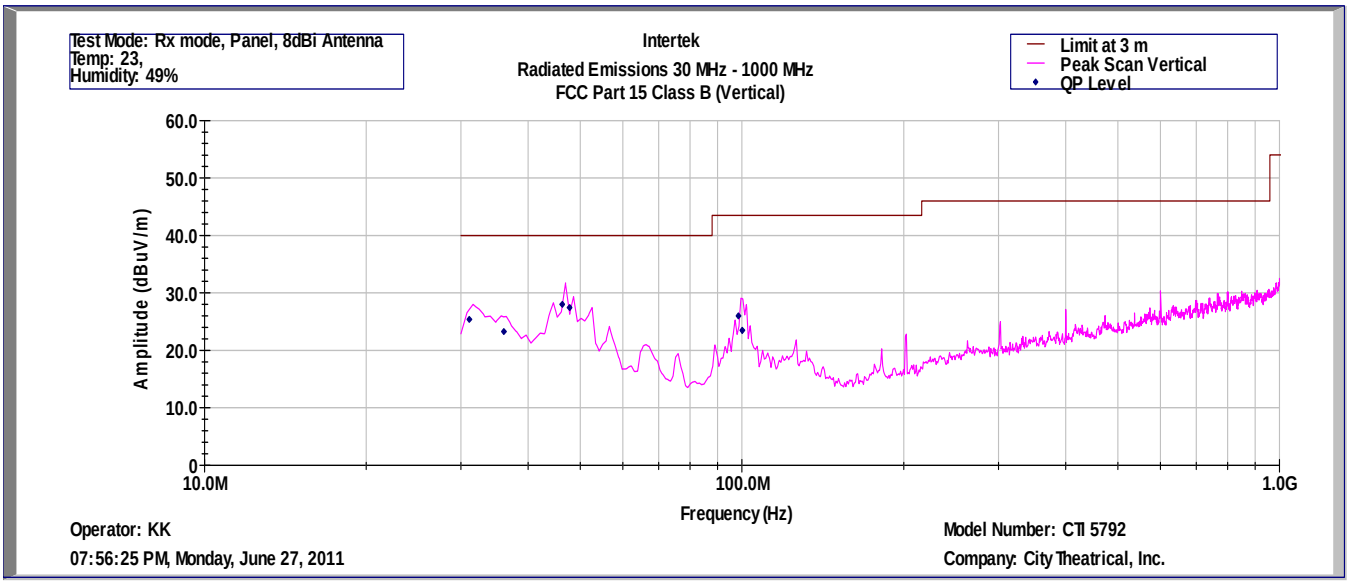
Operator: KK
27-Jun-11

Model Number: 5792
Company: City Theatrical, Inc.

Frequency	Peak FS	Limit@3m	Margin	RA	CF	AG	DCF	AF
(Hz)	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB	dB	dB	dB(1/m)
4.70E+07	27.9	40.0	-12.1	33.3	0.8	31.9	10.5	15.2
9.95E+07	20.7	43.5	-22.8	31.4	1.2	32.1	10.5	9.7
4.01E+08	27.7	46.0	-18.3	31.7	2.4	31.9	10.5	15.0
6.01E+08	34.8	46.0	-11.2	35.3	2.9	32.0	10.5	18.1
8.01E+08	32.5	46.0	-13.5	30.3	3.4	32.0	10.5	20.3

Test Mode: Rx mode, Panel, 8dBi Antenna
Temp: 23,
Humidity: 49%

Note: Measurements made at 10 meters distance.



Intertek Testing Services
Radiated Emissions 30 MHz- 1000 MHz
FCC Part 15 Class B (Pk-Vertical)

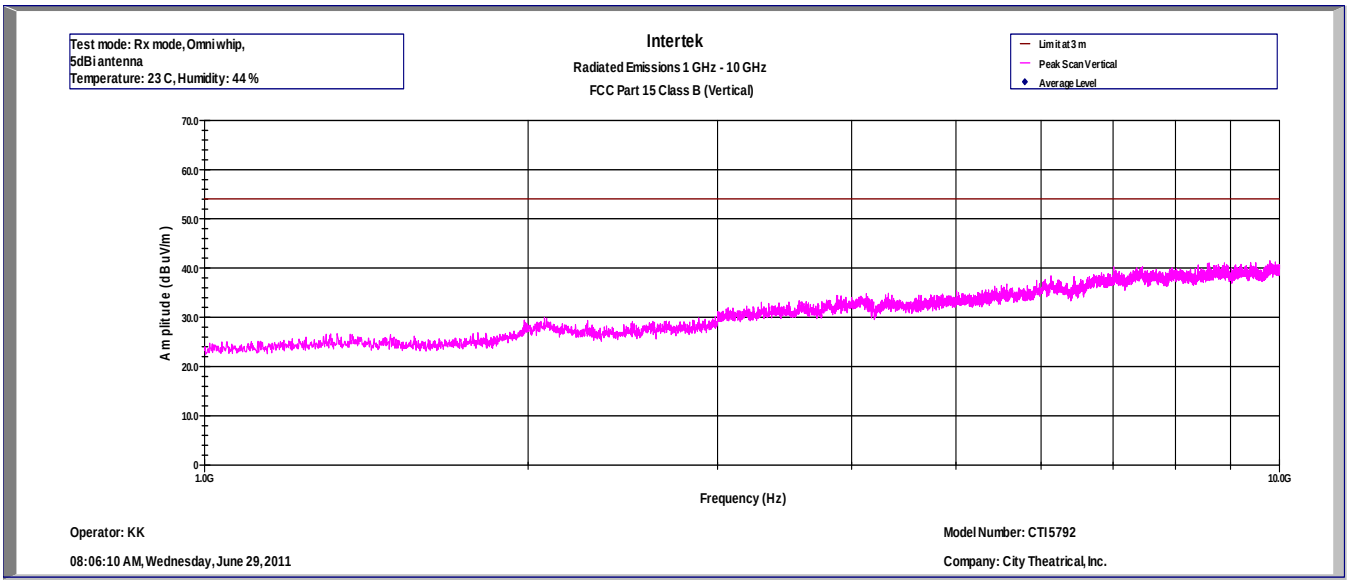
Operator: KK
27-Jun-11

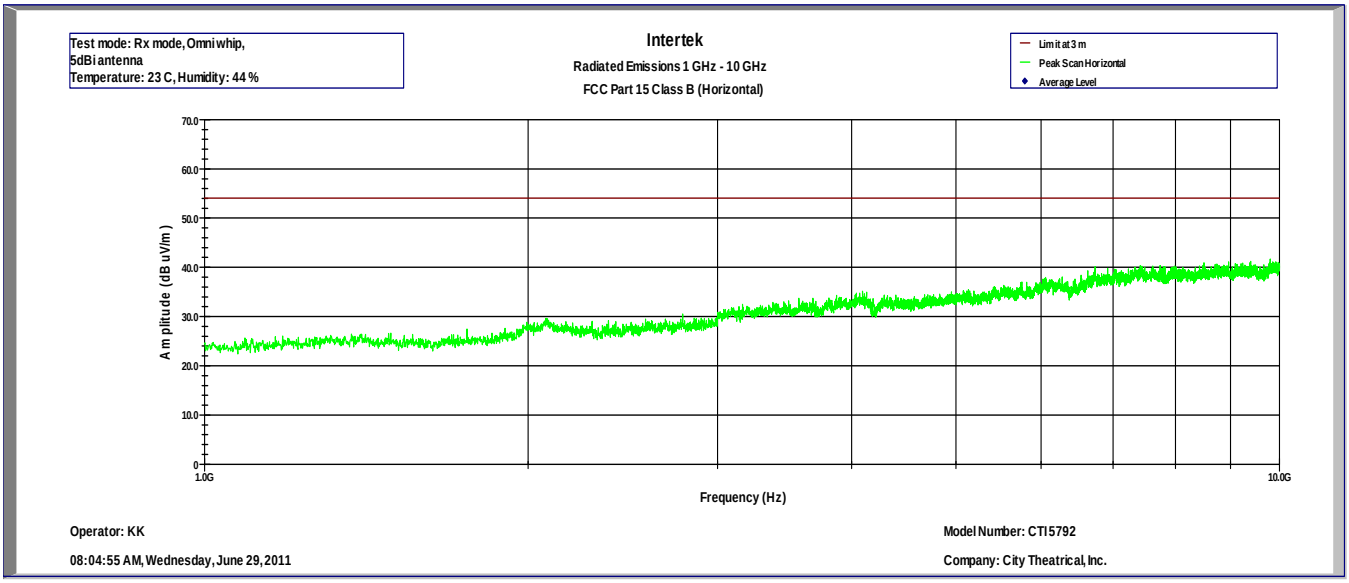
Model Number: 5792
Company: City Theatrical, Inc.

Frequency (Hz)	Peak FS dB(uV/m)	Limit@3m dB(uV/m)	Margin dB	RA db(uV)	CF dB	AG dB	DCF dB	AF dB(1/m)
3.16E+07	28.0	40.0	-12.0	31.3	0.6	31.8	10.5	17.4
4.70E+07	31.7	40.0	-8.3	37.1	0.8	31.9	10.5	15.2
9.95E+07	29.1	43.5	-14.4	39.8	1.2	32.1	10.5	9.7
2.02E+08	22.8	43.5	-20.7	32.8	1.7	31.9	10.5	9.8
1.00E+09	32.5	54.0	-21.5	26.0	3.8	30.9	10.5	23.1

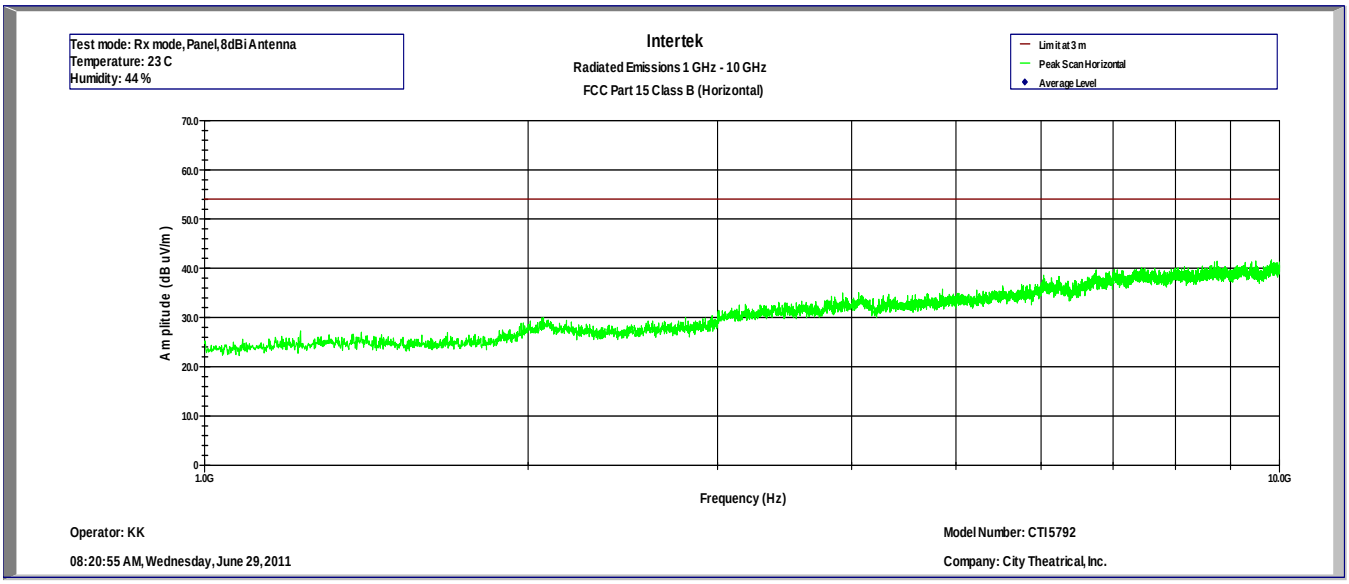
Test Mode: Rx mode, Panel, 8dBi Antenna
Temp: 23,
Humidity: 49%

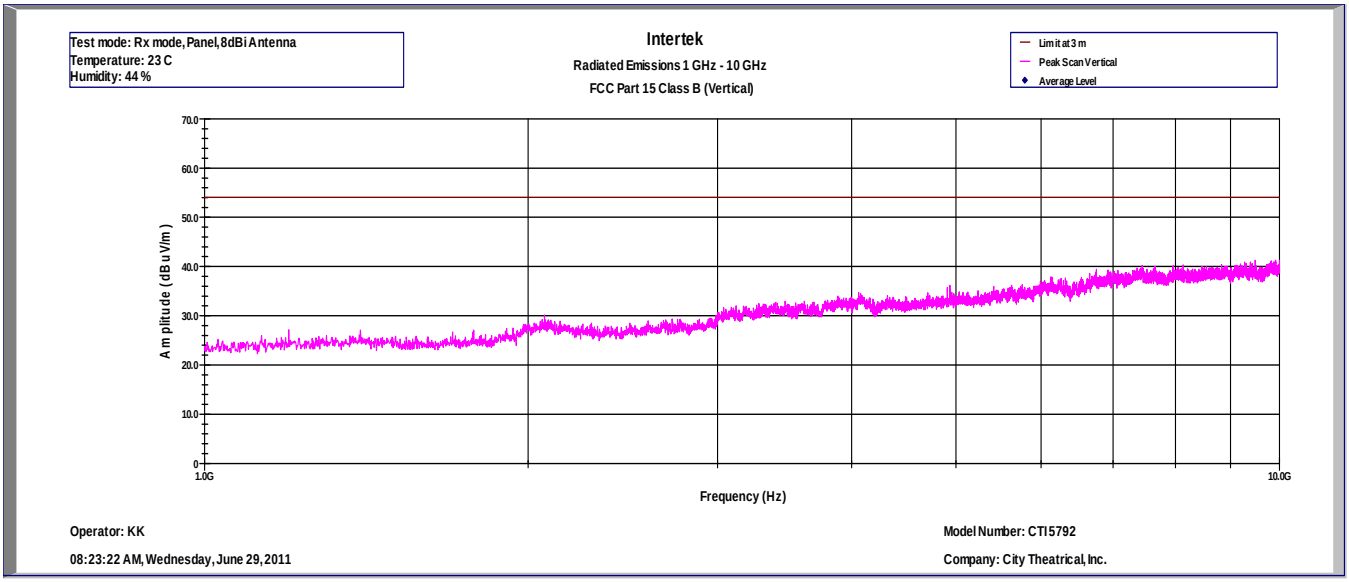
Note: Measurements made at 10 meters distance.



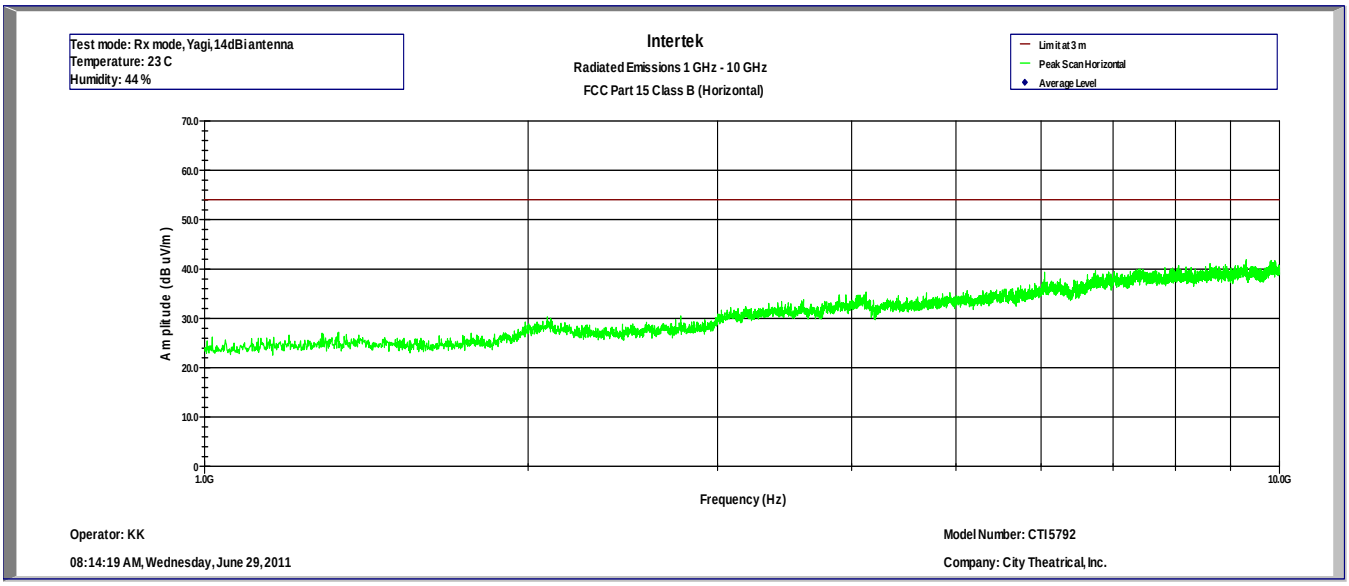


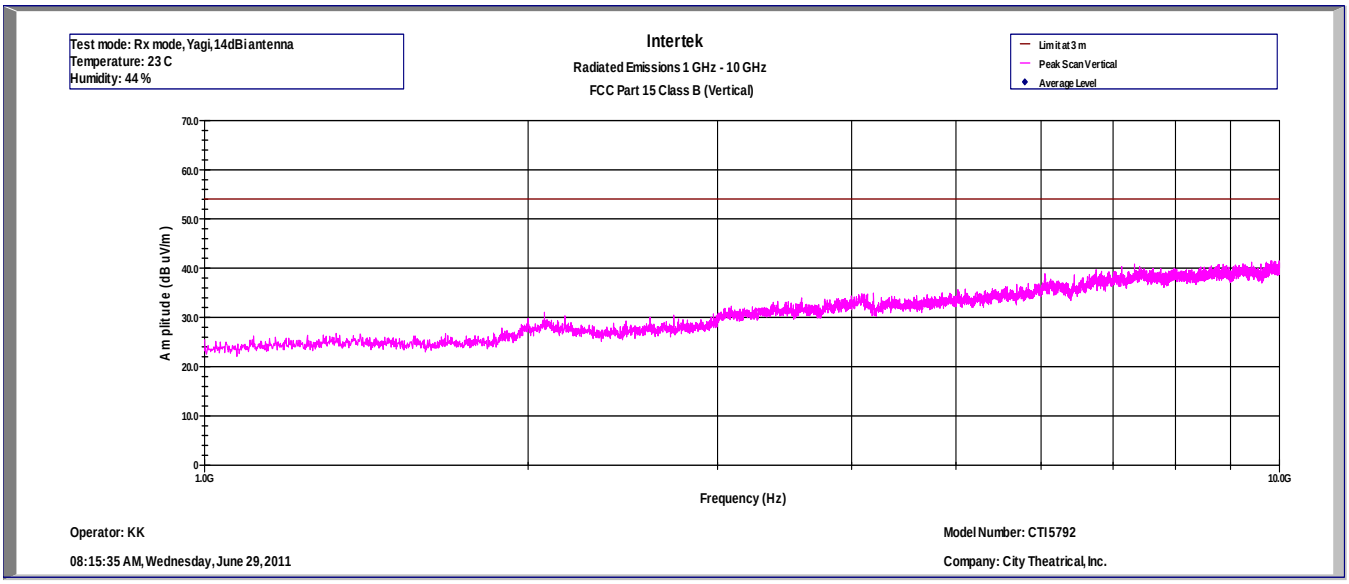
Note: Measurements made at 3 meters distance.





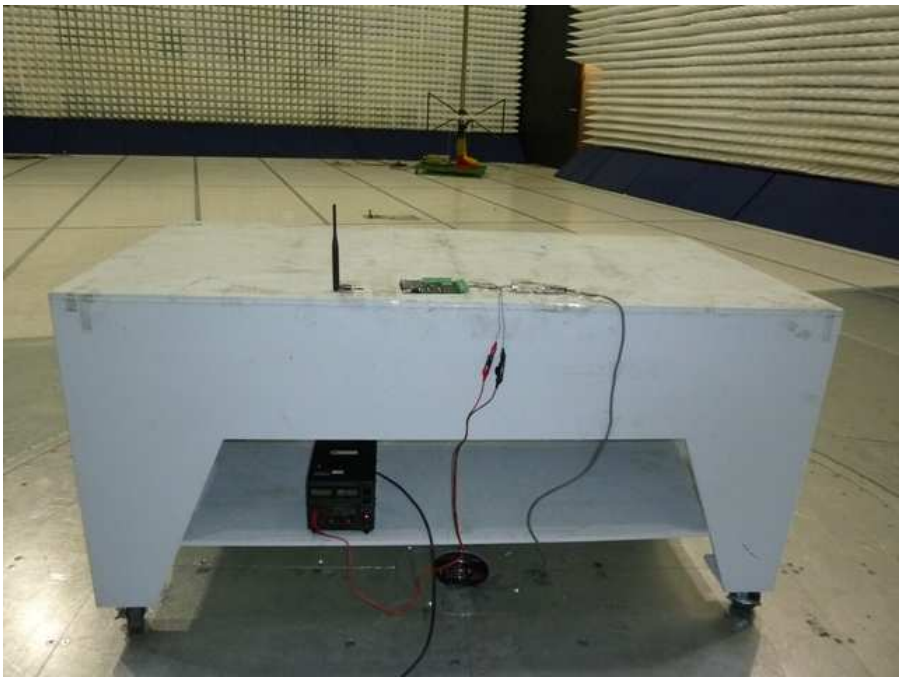
Note: Measurements made at 3 meters distance.



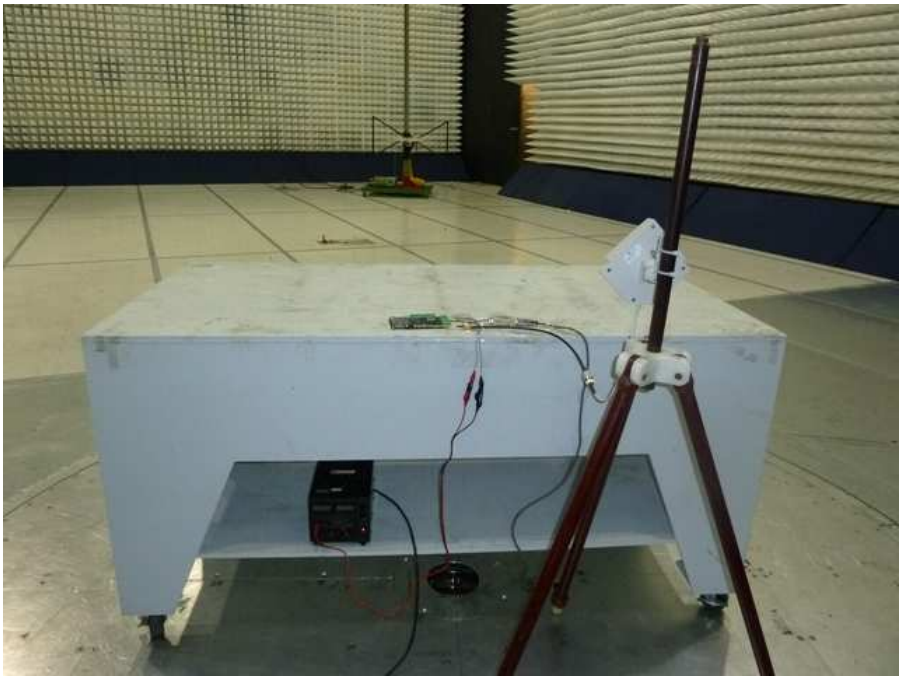


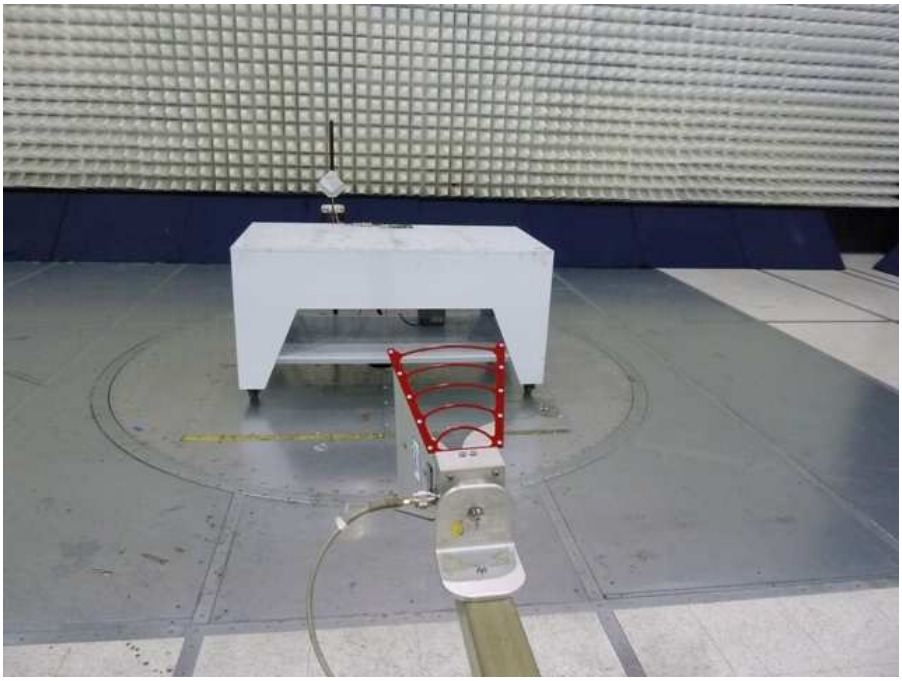
Note: Measurements made at 3 meters distance.

Test Setup Photographs



Test Setup Photographs





4.9 AC Line Conducted Emission
FCC 15.207:

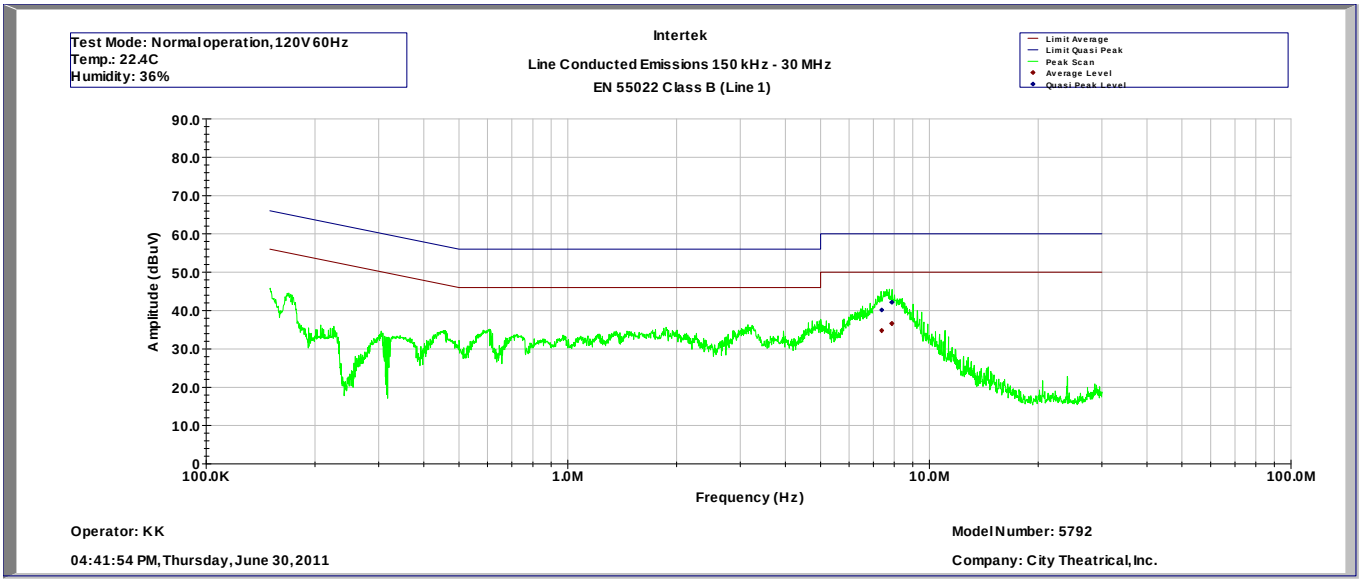
4.9.1 Procedure

AC line conducted emission test was performed according the ANSI C63.4 standard. The EUT was connected to AC Line through the LISN.

4.9.2 Test Result

Results	**Complies** by 8.5dB

Conducted Disturbance at AC Mains



Intertek Testing Services
Line Conducted Emissions 150 kHz - 30 MHz
EN 55022 Class B (Line 1)

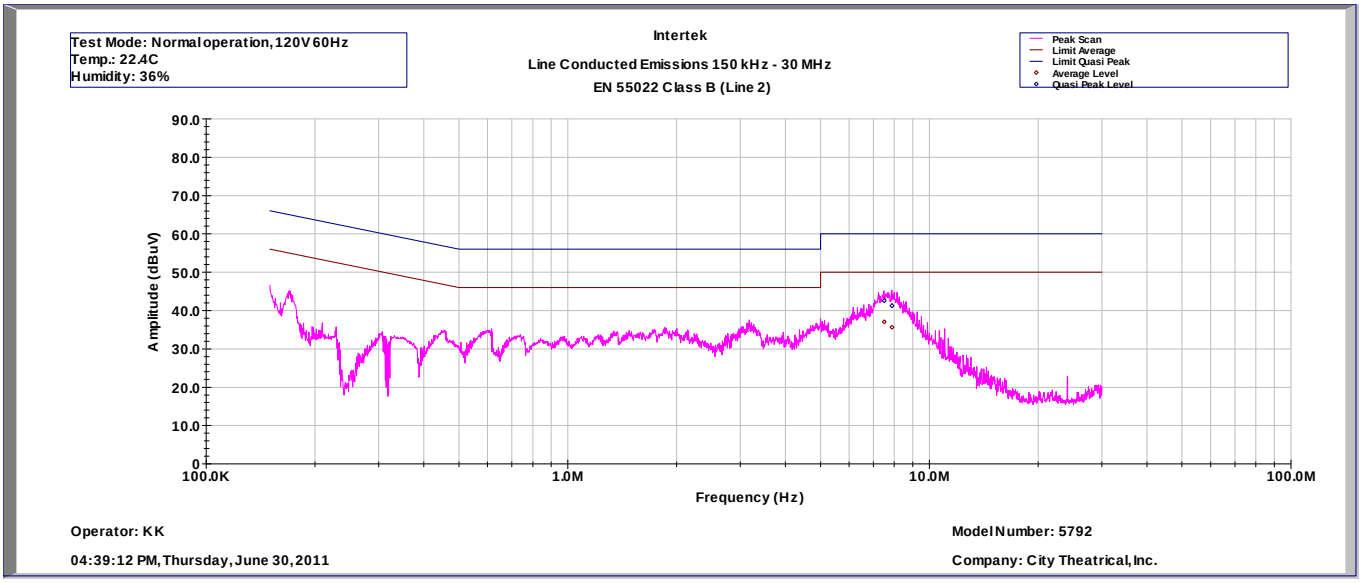
Operator: KK
04:41:54 PM, Thursday, June 30, 2011

Model Number: 5792
Company: City Theatrical, Inc.

Frequency	Av Level	QP Level	Av Limit	QP Limit	Av Margin	QP Margin
Hz	dBuV	dBuV	dBuV	dBuV	dB	dB
7376000	34.8	40.2	50.0	60.0	-15.2	-19.8
7870580	36.6	42.1	50.0	60.0	-13.4	-17.9
7376000	34.8	40.2	50.0	60.0	-15.2	-19.8

Test Mode: Normal operation, 120V 60Hz
Temp.: 22.4C
Humidity: 36%

Conducted Disturbance at AC Mains



Intertek
Line Conducted Emissions 150 kHz - 30 MHz
EN 55022 Class B (Line 2)

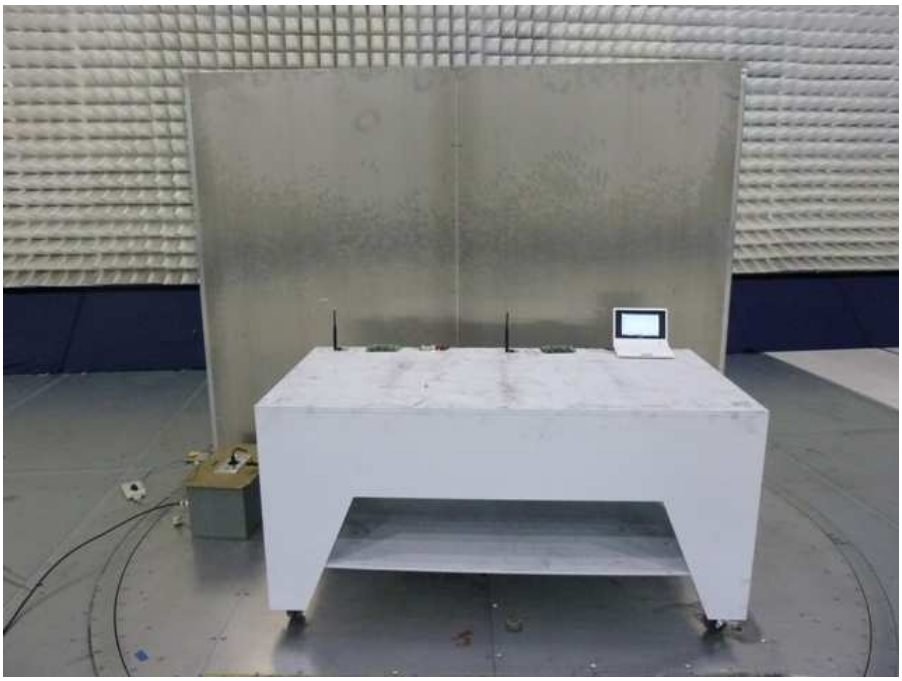
Operator: KK
04:39:12 PM, Thursday, June 30, 2011

Model Number: 5792
Company: City Theatrical, Inc.

Frequency	Av Level	QP Level	Av Limit	QP Limit	Av Margin	QP Margin
Hz	dBuV	dBuV	dBuV	dBuV	dB	dB
7498150	37.1	42.6	50.0	60.0	-12.9	-17.4
7876860	35.6	41.3	50.0	60.0	-14.4	-18.7
7498150	37.1	42.6	50.0	60.0	-12.9	-17.4

Test Mode: Normal operation, 120V 60Hz
Temp.: 22.4C
Humidity: 36%

Test Setup Photographs



5.0 RF Exposure Evaluation

The EUT is a device used in mobile applications, at least 20 cm from any body part of the user or near by persons.

The maximum conducted power is 14.1dBm (25.7 mW); the antenna is fix-mounted with 14dBi gain; therefore, to comply with the requirements for RF Exposure, the MPE is calculated.

The maximum Peak EIRP calculated is as 28.1 dBm or 645.7 mW.

The Power Density can be calculated using the formula

$$S = EIRP/ 4\pi D^2$$

Where: S is Power Density in W/m^2
D is the distance from the antenna.

It is considered that 20cm is the minimum distance that a user can go near the EUT which is installed inside a host.

At 0.2 m, S = 1.2846 W/m^2, which is below the MPE Limit of 10 W/m^2

6.0 List of Test Equipment

Measurement equipment used for emission compliance testing utilized the equipment on the following list:

Equipment	Manufacturer	Model/Type	Serial #	Cal Int	Cal Due
RF Filter Section	Hewlett Packard	85460A	3448A00267	12	12/08/11
EMI Receiver	Hewlett Packard	8546A	3710A00373	12	12/08/11
Spectrum Analyzer	Rohde&Schwarz	FSP40	036612004	12	11/04/11
BI-Log Antenna	ARA	LPB-2513/A	1154	12	06/29/11
Pre-Amplifier	Sonoma	310N	185634	12	12/01/11
Pre-Amplifier	Sonoma	310N	293620	12	11/02/11
Pre-Amplifier	Miteq	AMF-4D-001180-24-10P	799159	12	08/05/11
Spectrum Analyzer	Rohde&Schwarz	FSU	200482	12	03/23/12
Horn Antenna	EMCO	3115	9170-3712	12	11/09/11
Horn Antenna	EMCO	3115	00126795	12	10/28/11
Signal Generator	Hewlett Packard	SMR40	100445	12	08/27/11
LISN	FCC	FCC-LISN-50-50-M-H	2011	12	09/07/11

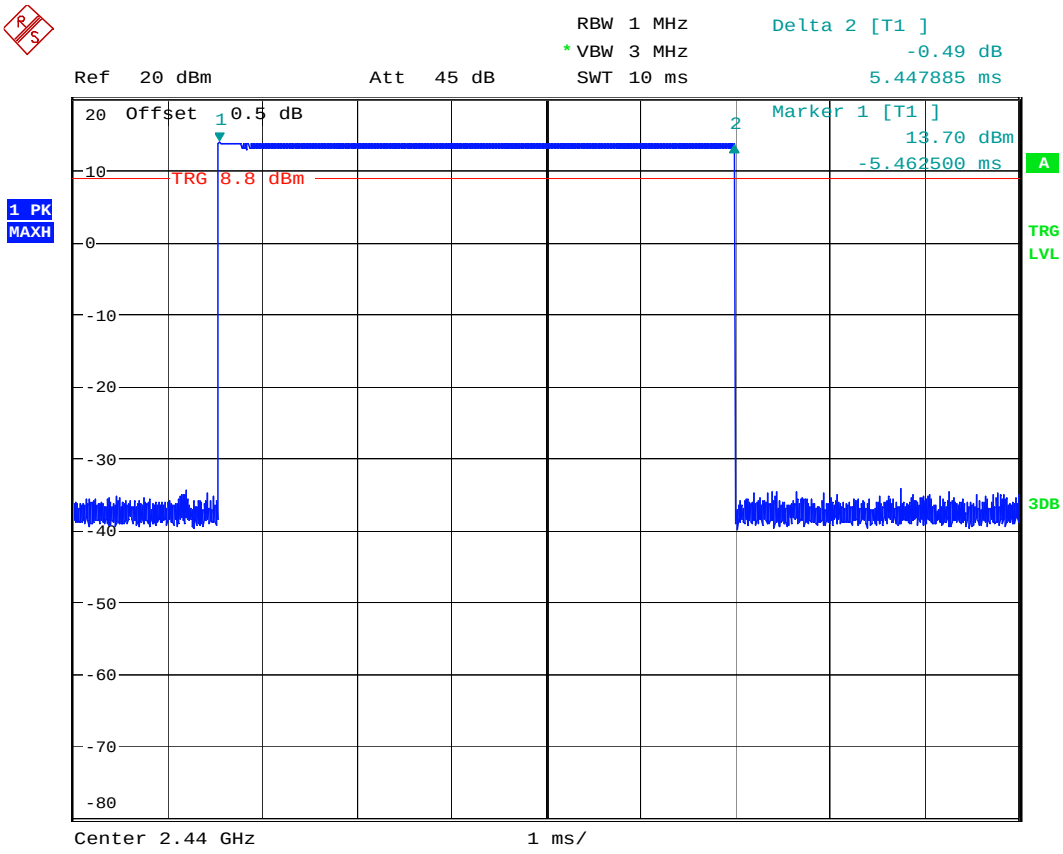
No Calibration required

7.0 Document History

Revision/ Job Number	Writer Initials	Date	Change
1.0 / G100404100	KK	July 05, 2011	Original document

8.0 Appendix A – Graphs for Duty Cycle Measurement

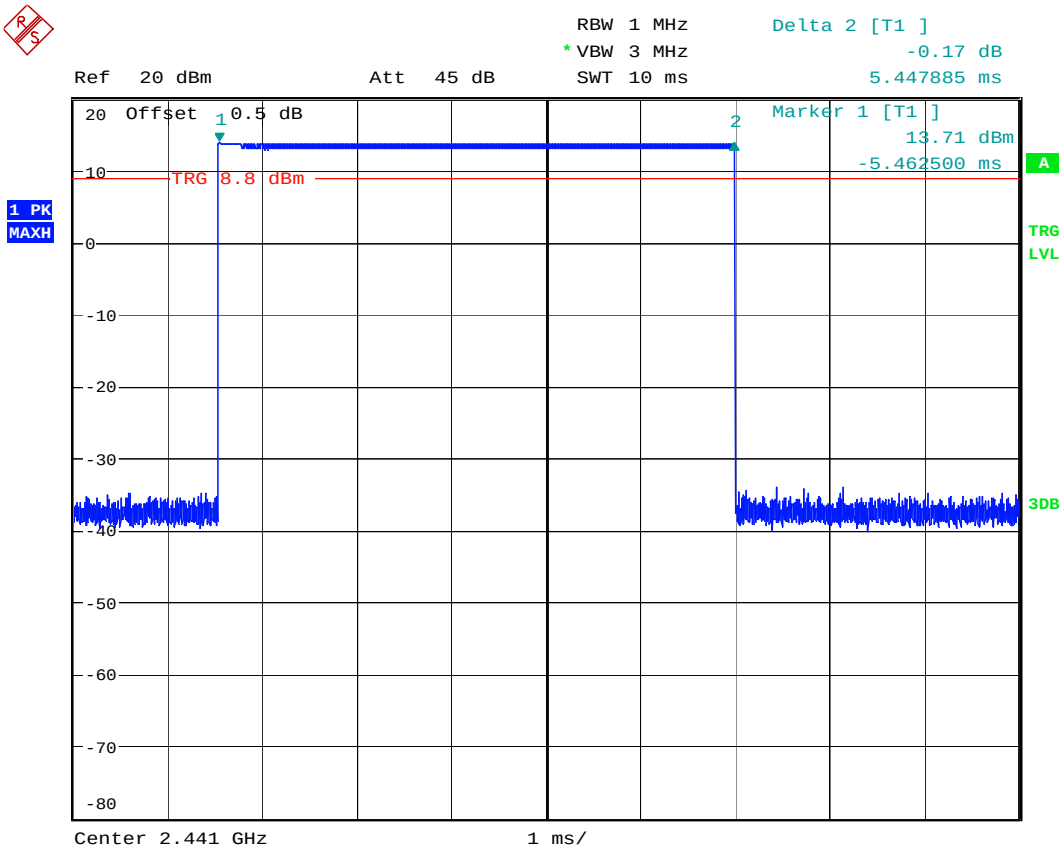
Plot A1. 1



Dwell time, Legacy mode

Date: 24.JUN.2011 15:10:13

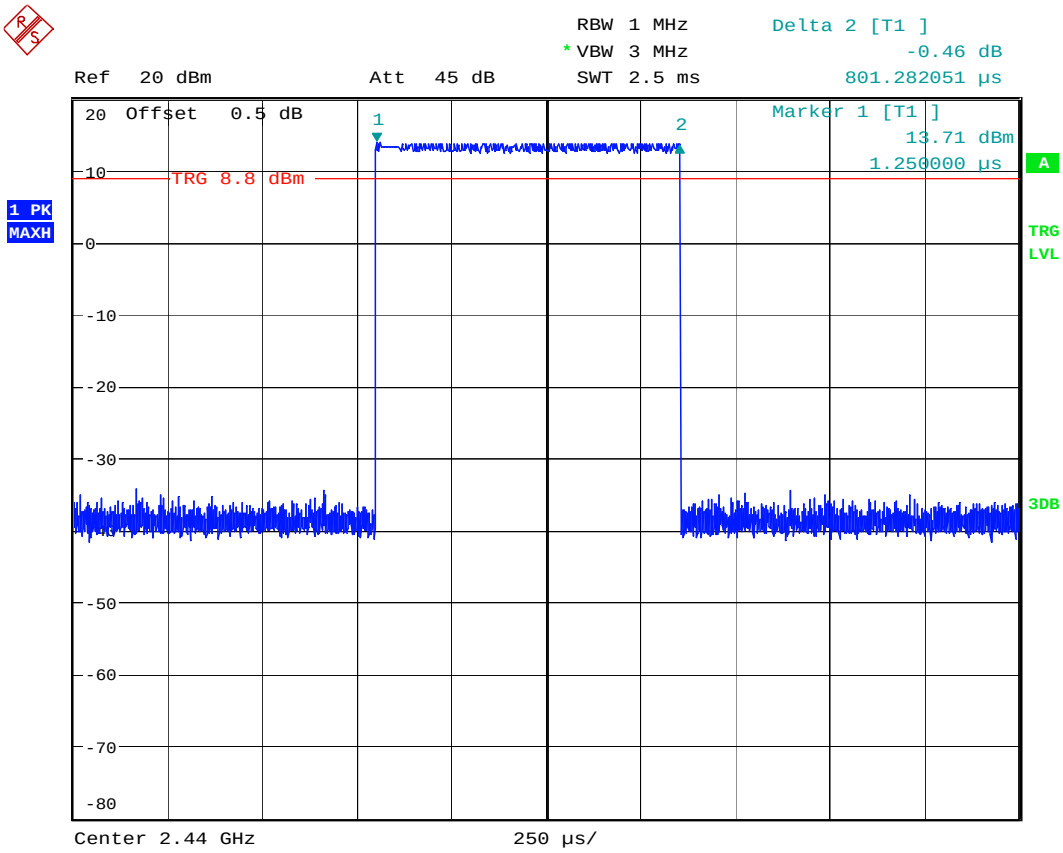
Plot A1. 2



Dwell time, Legacy mode

Date: 24.JUN.2011 15:13:17

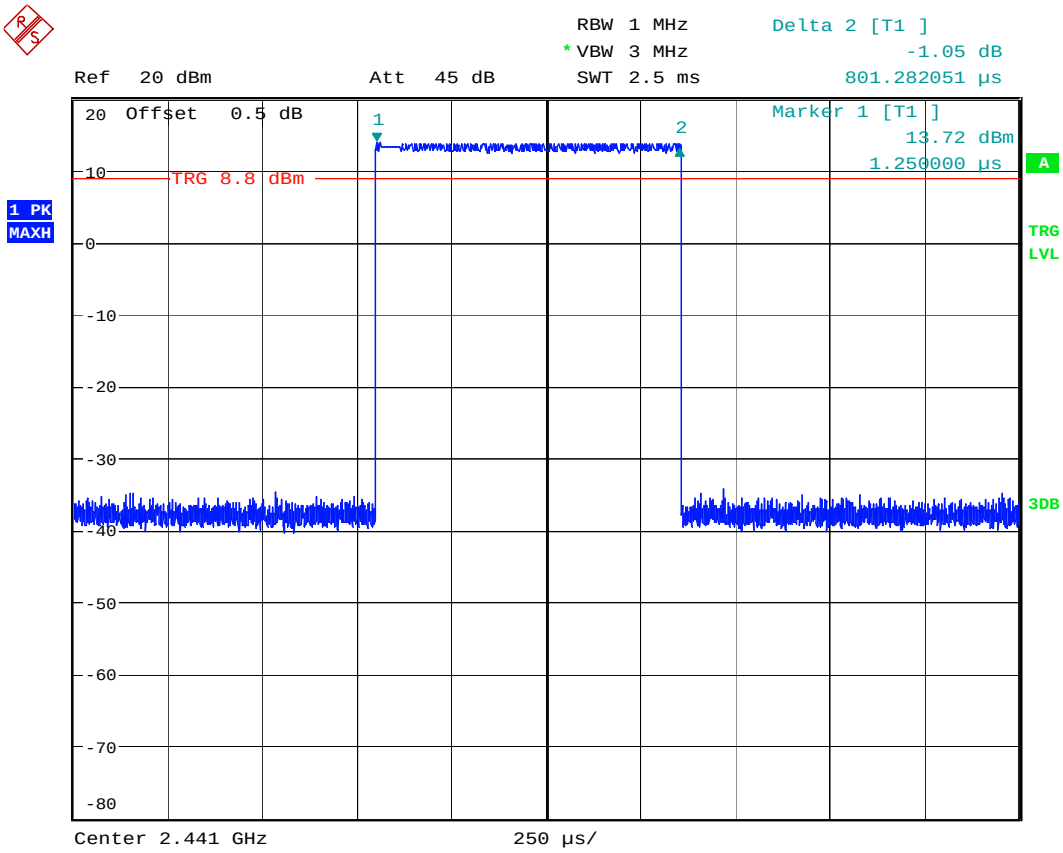
Plot A1. 3



Dwell time, Nemesis mode

Date: 24.JUN.2011 15:17:55

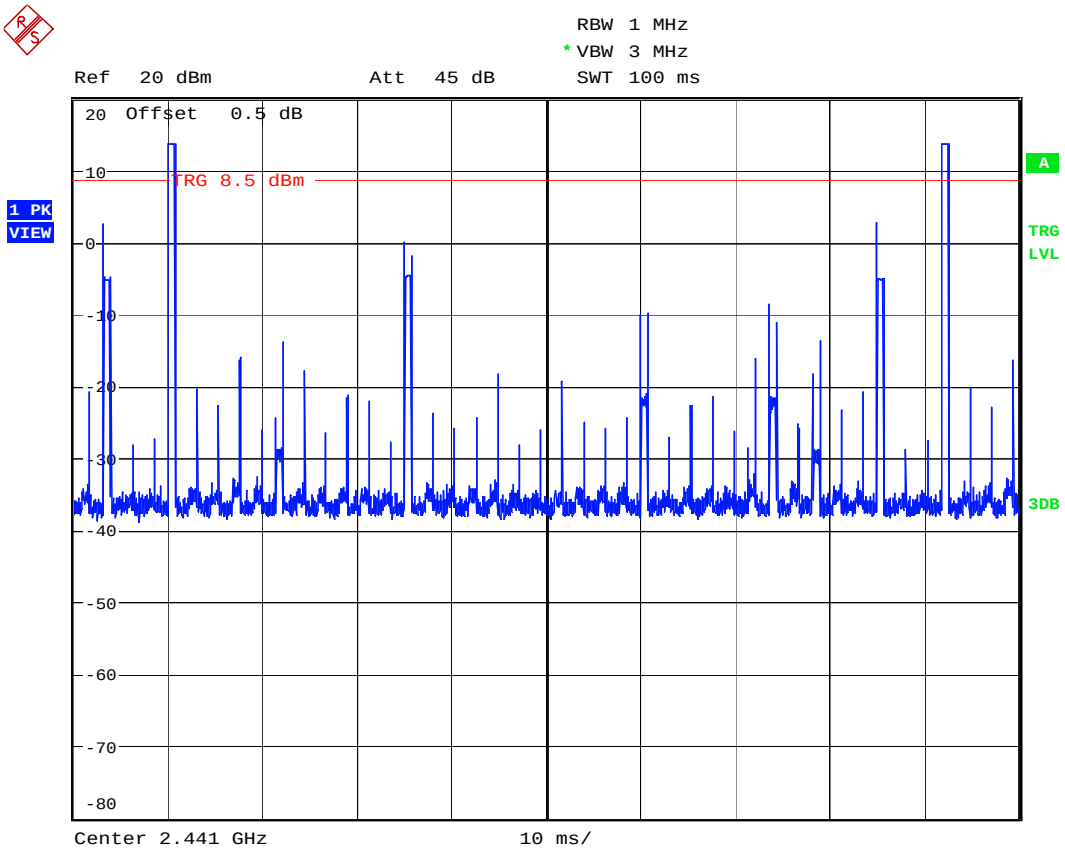
Plot A1. 4



Dwell time, Nemesis mode

Date: 24.JUN.2011 15:18:38

Plot A1. 5

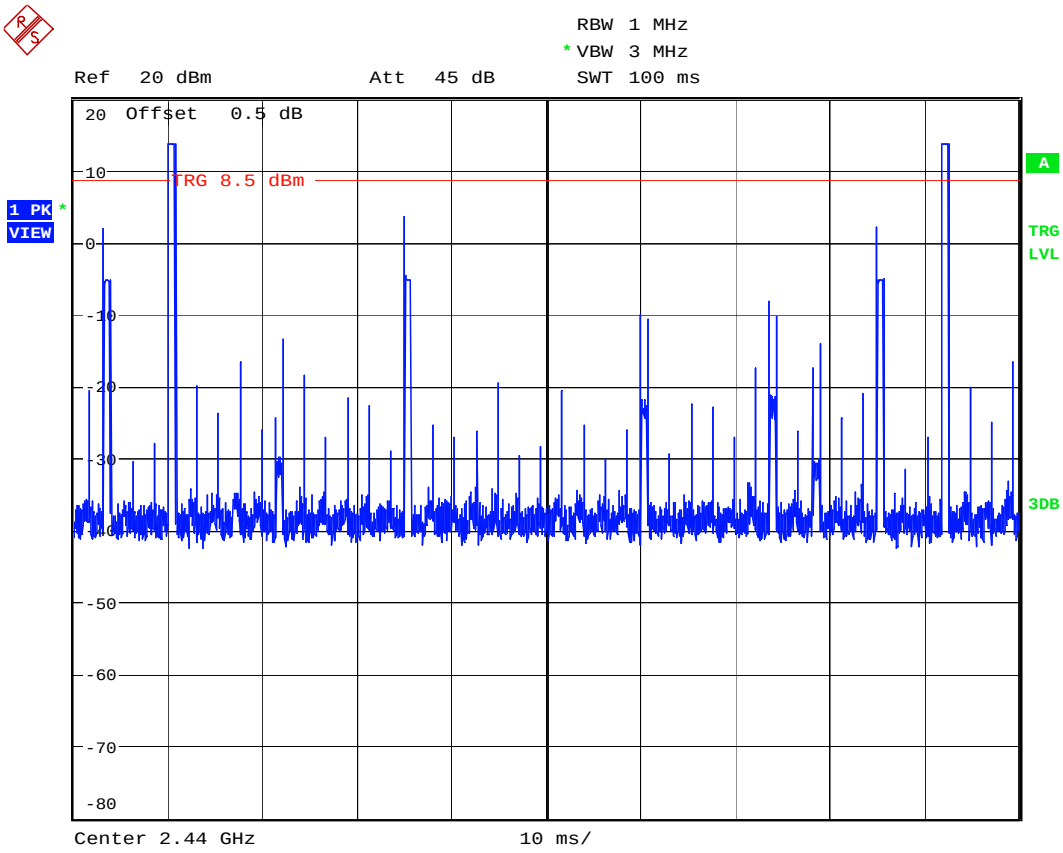


Duty cycle, Nemesis mode
Date: 30.JUN.2011 10:04:58

Duty Cycle Calculation = 20 log ((0.802*2)/100) = -35.9dB : Nemesis mode

Maximum duty cycle allowed is 20dB. Hence 20dB duty cycle factor was used during calculations.

Plot A1. 6

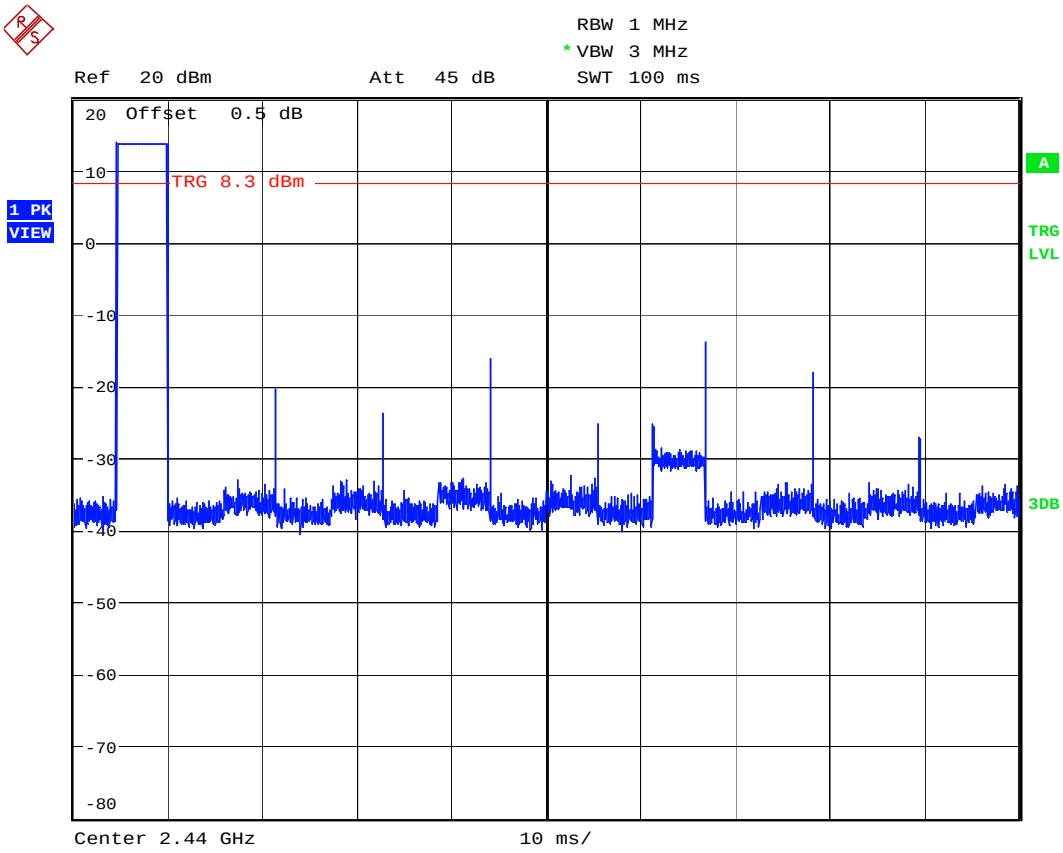


Duty cycle, Nemesis mode
Date: 30.JUN.2011 10:04:14

Duty Cycle Calculation = 20 log ((0.802*2)/100) = -35.9dB : Nemesis mode

Maximum duty cycle allowed is 20dB. Hence 20dB duty cycle factor was used during calculations.

Plot A1. 7

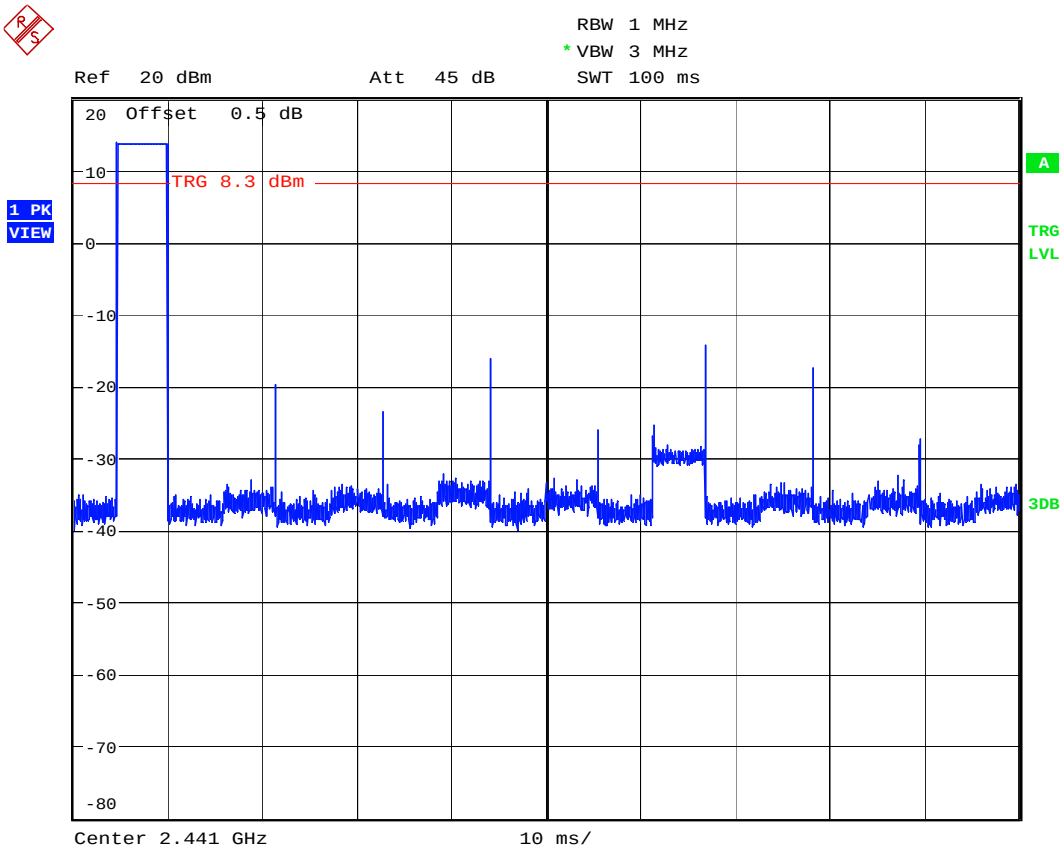


Duty cycle, Legacy mode
Date: 30.JUN.2011 10:07:47

Duty Cycle Calculation = 20 log (5.44/100) = -25.3dB : Legacy mode

Maximum duty cycle allowed is 20dB. Hence 20dB duty cycle factor was used during calculations.

Plot A1. 8



Duty cycle, Legacy mode
Date: 30.JUN.2011 10:24:45

Duty Cycle Calculation = 20 log (5.44/100) = -25.3dB : Legacy mode

The maximum duty cycle allowed is 20dB. 20dB duty cycle factor was used during calculations.