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CERTIFICATION TEST REPORT

Report Number: 2011 05175152 FCC2

Project Number: 1028680

Nex Number: 175152

Applicant: MICROPOWER TECHNOLOGIES
4225 EXECUTIVE SQUARE, SUITE 430
La Jolla, CA 92037


Equipment Under Test (EUT): WIRELESS DIGITAL CAMERA SYSTEM

Model2: MPT-2700

FCC ID: ZHXMPT2700

In Accordance With: FCC Part 15 Subpart C, 15.247

Tested By: Nemko USA Inc.
11696 Sorrento Valley Road, Suite F
San Diego, CA 92121

Authorized By: 
ALAN LAUDANI, EMC/RF Test Engineer

Date: MAY 13, 2011

Total Number of Pages: 41



Section1: Summary of Test Results

1.1 General

All measurements are traceable to national standards

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 15; Subpart C. Radiated tests were conducted in accordance with ANSI C63.4-2003. Radiated emissions are made on an open area test site. A description of the test facility is on file with the FCC.

The assessment summary is as follows:

Apparatus Assessed: Wireless Digital Camera System

Model: MPT-2700

Specification: FCC Part 15 Subpart C, 15.247

Date Received in Laboratory: May 5, 2011

Compliance Status: Complies

Exclusions: None

Non-compliances: None



1.2 Report Release History

Revision	Date	Comments
-	May 13, 2011	Prepared By: Alan Laudani
-	May 13, 2011	Initial Release: Alan Laudani

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025.

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TESTED BY:  Date: May 13, 2011
ALAN LAUDANI, EMC Test Engineer



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Section 2: Equipment Under Test

2.1 Product Identification

The Equipment Under Test was identified as follows:

DEVICE	MANUFACTURER MODEL # SERIAL #	POWER CABLE
EUT - Wireless Digital Camera System Hub	MicroPower Technologies Model: MPT-2700 Serial #: E001CBFC738ED	Hub power supply cable
EUT – Hub Power Supply	Delta Electronics, Inc. Model: ADP-90SB BD Serial: 809W0B100B6	1m, unshielded, 18 AWG, 3-wire, IEC connector
Support – Hub Mouse	DELL Model #: M-UK Serial #: NCD6047985	NA
Support – Hub Keyboard	DELL Model #: RT7D50 Serial #: CN-OW7658-37172-62K-0HDP	NA
Support – Hub Display	LENOVA Model #: L1700PC Serial #: VNA2V43	1.5m, unshielded, 18 AWG, 3-wire, IEC connector

Connection	I/O Cable
EUT Hub to Unterminated	Ethernet, 2.5m, unshielded, 26AWG, CAT 5 cable
EUT Hub to Unterminated	Serial, 2 m
EUT Hub to Unterminated	USB, 1 m (3)
EUT Hub to Unterminated	Stereo Audion (6)
EUT Hub to Unterminated	eSATA Cable, 1 m
EUT Hub to Unterminated	HDMI, Cable, 1 m, Shielded



2.2 Theory of Operation

The MPT-2500 and MPT-2700 comprise a Wireless Digital Camera System. Control commands communicate through the 902 to 928 MHz band radio and the Camera Data communicate through the 2400 to 2483.5 MHz band radio. The camera MPT-2500 is powered by a battery charged by Solar panels and the Hub MPT-2500 is powered by the AC mains (120 VAC 60 Hz) and connects to a network via Ethernet. The hub may have a display, mouse and serial cable when in setup or operation.

The EUT's performance during test was evaluated against the performance criterion specified by applicable test standards. Performance results are detailed in the test results section of this report.

This test report is for the MPT-2700 Hub communication system section of the system. The hub's transmitters were set into a test mode for testing. The third radio, FCC ID: PD9WM3945ABG, in the hub is used for receive mode only.



2.3 Technical Specifications of the EUT

Manufacturer:	MicroPower Technologies
Operating Frequency:	909.798 MHz to 920.596 MHz in the 902 -928 MHz Band 2412.0 MHz to 2462.0 MHz in the 2400 -2483.5 MHz Band
Rated Power:	Low band: 0.020 W High band: 0.071 W
Modulation:	Low band: GFSK, High band: Digital
Antenna Connector:	Type "Reverse SMA", professionally installed
Power Source:	120 VAC 60 Hz



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Section 3: Test Conditions

3.1 Specifications

The apparatus was assessed against the following specifications:

FCC Part 15 Subpart C, 15.247

Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5850 MHz and 24.0-24.25 GHz bands.

3.3 Test Environment

All tests were performed under the following environmental conditions:

Temperature range	16-22°C
Humidity range	39-45%
Pressure range	102.0 – 102.3 kPa
Power supply range	120VAC nominal



3.4 Test Equipment

Nemko ID	Device	Manufacturer	Model	Serial Number	Cal Date	Cal Due Date
--	DC power supply	Micronta	--	--	NCR	NCR
115	Antenna, Bicon	EMCO	3104	3020	9/28/2010	9/28/2011
317	Preamplifier	HP	8449A	2749A00167	5/7/2010	5/7/2011
384	LISN	Solar	9348-50-R-24-BNC	941716	9/16/2010	9/16/2011
574	High Pass Filter	Solar	7801-5.0	853135	8/10/2010	8/10/2011
625	Antenna, Dbl Ridge Horn	EMCO	3116	2325	2/1/2010	2/1/2012
674	Spectrum Analyzer	HP	8568B	2007A00910	5/14/2010	5/14/2011
675	Spectrum Analyzer Display	HP	85662A	2005A01282	5/14/2010	5/14/2011
676	Quasi-Peak Adapter	HP	85650A	2430A00576	5/14/2010	5/14/2011
681	Transient Limiter	HP	11947A	3107A02634	10/27/2010	10/27/2011
755	Antenna, LPA	EMCO	3147	1246	7/23/2009	7/23/2011
805	LISN	Solar	9348-50-R-24-BNC	992823	2/7/2011	2/7/2012
813	Multimeter	Fluke	111	78130060	9/16/2009	9/16/2011
835	Spectrum Analyzer	Rohde & Schwarz	RHDFSEK	829058/005	7/12/2010	7/12/2011
877	Antenna, DRG Horn, .7-18GHz	AH Systems	SAS-571	688	8/16/2010	8/16/2012
898	EMI Receiver & filter set	HP	8546A	3625A00348	6/22/2010	6/22/2011
899	Filter Section	HP	85460A	3448A00288	6/22/2010	6/22/2011
946	Peak Power Sensor	HP	84815A	3318A01726	9/28/2010	9/28/2011
947	Peak Power Analyzer	HP	8991A	3621A00906	9/28/2010	9/28/2011

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Registration of the OATS are on file with the Federal Communications Commission, and are also registered with Industry Canada under Site Numbers 2040B-1 and 2040B-2.



Section 4: Observations

4.1 Modifications Performed During Assessment

No modifications were performed during assessment.

4.2 Record Of Technical Judgements

No technical judgements were made during the assessment.

4.3 EUT Parameters Affecting Compliance

The user of the apparatus could not alter parameters that would affect compliance.

4.4 Deviations From Laboratory Test Procedures

No deviations from Laboratory Test Procedure

4.5 Test Deleted

No Tests were deleted from this assessment.

4.6 Additional Observations

There were no additional observations made during this assessment.





Section 5: Results Summary

This section contains the following:

FCC Part 15 Subpart C:

The column headed “Required” indicates whether the associated clauses were invoked for the apparatus under test. The following abbreviations are used:

N No: not applicable / not relevant

Y Yes: Mandatory i.e. the apparatus shall conform to these tests.

N/T Not Tested, mandatory but not assessed. (See section 4.4 Test deleted)

The results contained in this section are representative of the operation of the apparatus as originally submitted.

5.1 Test Results

Part 15C	Test Description	Required	Result
15.207 (a)	Conducted Emission Limit	Y	Pass
15.215(c)	20 dB & 99% Bandwidth	Y	Pass
15.247(a)(2)	Minimum 6dB RF Bandwidth	Y	Pass
15.247(b)(3)	Peak Output Power	Y	Pass
15.247(d)	Band-edge Compliance of RF Conducted Emissions	Y	Pass
15.247 (d)	Spurious RF Conducted Emissions	Y	Pass
15.247 (d)	Spurious Radiated Emissions	Y	Pass
15.247(e)	Power Spectral Density for Digitally Modulated Devices	Y	Pass





Appendix A: Test Results

Power Line Conducted Emissions

15.207(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

*Decreases with the logarithm of the frequency.

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Test Conditions:

Sample Number:	MPT-2700	Temperature:	21°C
Date:	May 10, 2011	Humidity:	39 %
Modification State:	Low, Mid and High Channel	Tester:	Alan Laudani
		Laboratory:	Nemko SR2

Test Results: EUT complies

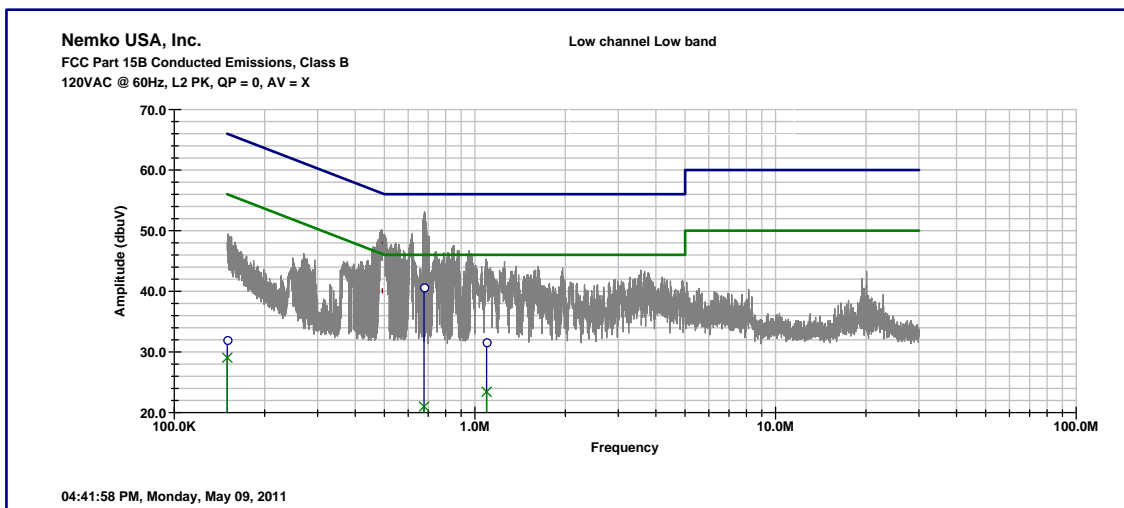
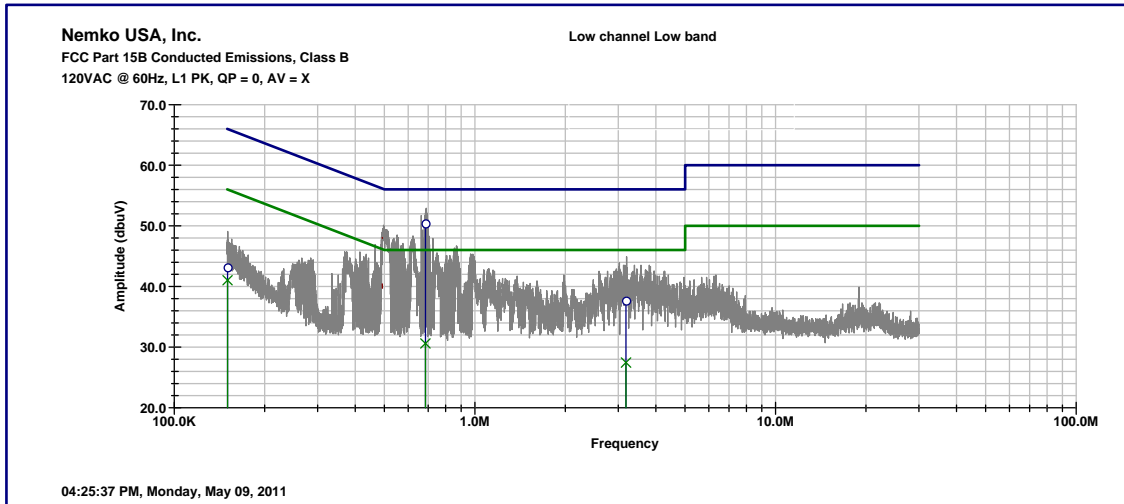
See attached plots

Additional Observations:

- EUT was tested using the following modes: Low channel, Mid channel, High channel
- Green limit line is Average limit and blue limit line is Quasi-peak limit.
- O represents final quasi peak measurements while X represent final average measurements.
- Instrumentation settings are 9kHz RBW/30kHz VBW for Average measurements and 100kHz RBW/100kHz VBW for Peak measurements.

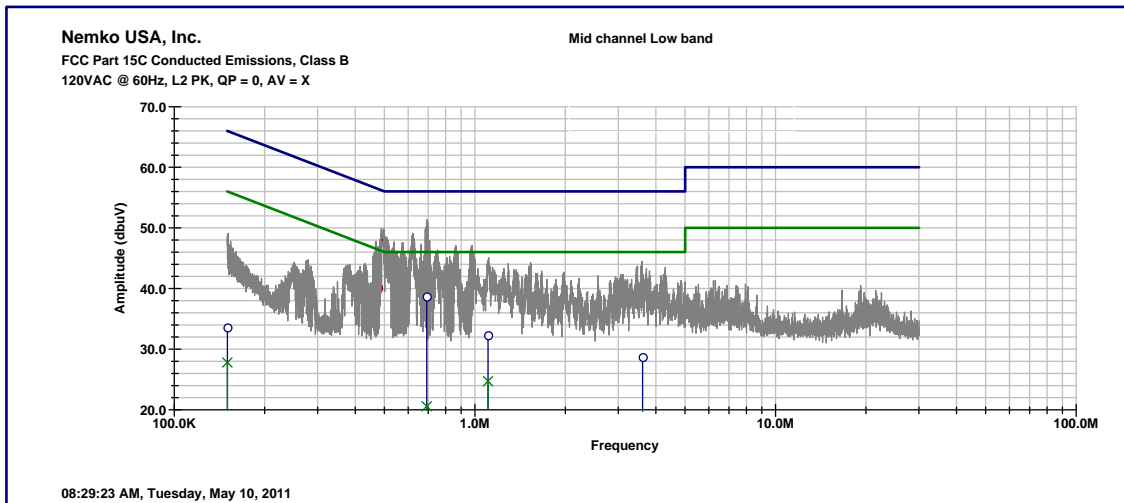
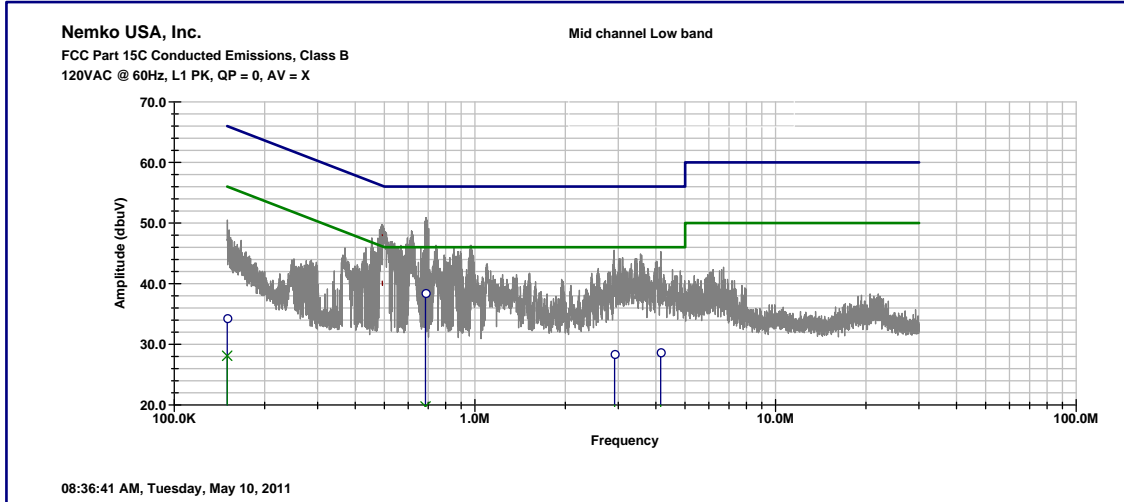


Low Band; Low transmit frequency

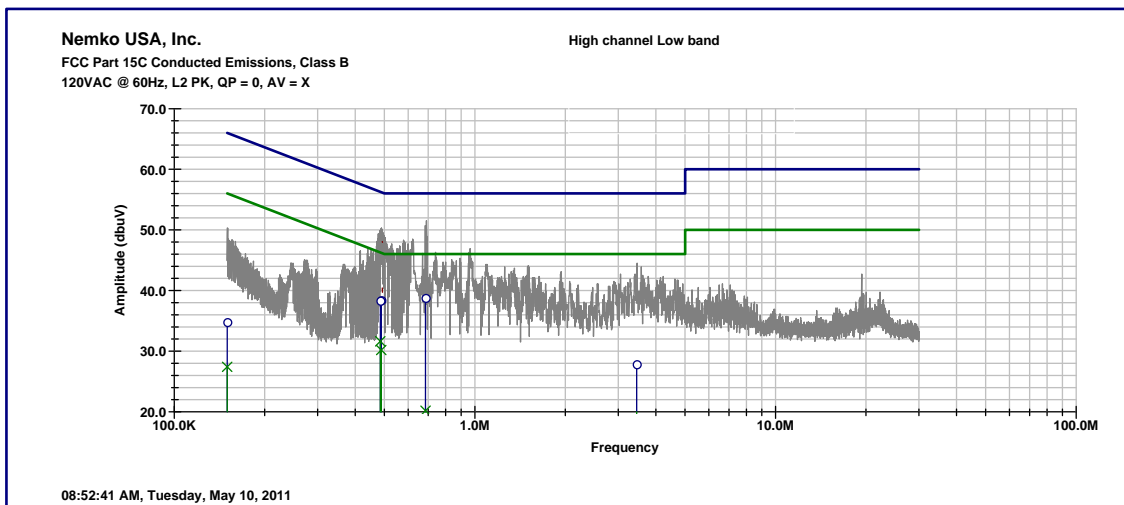
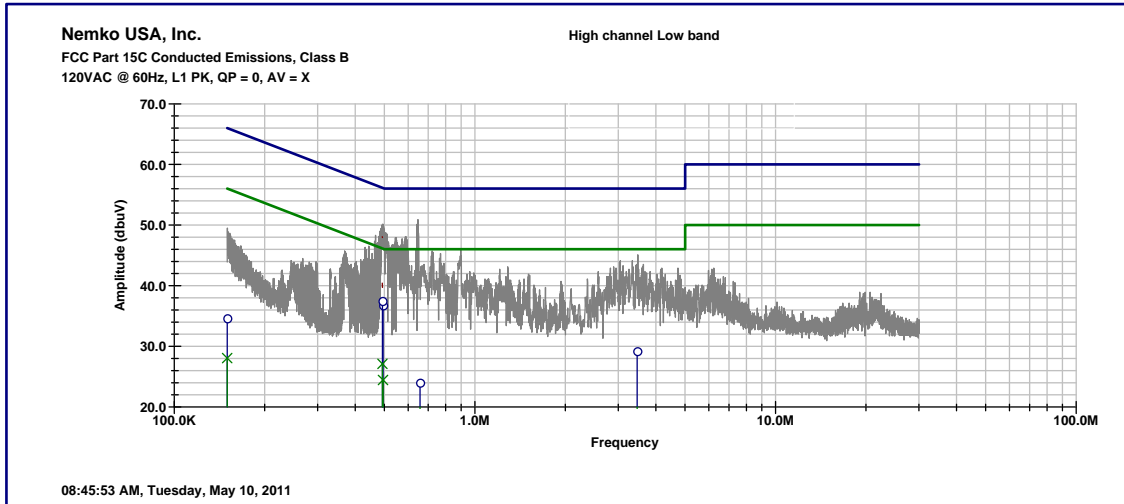


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Mid transmit frequency

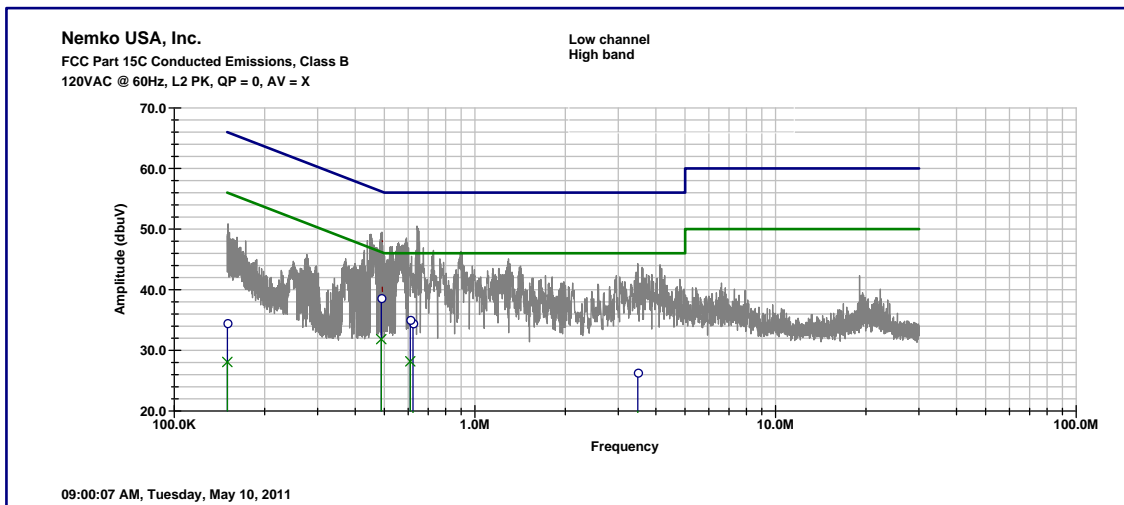
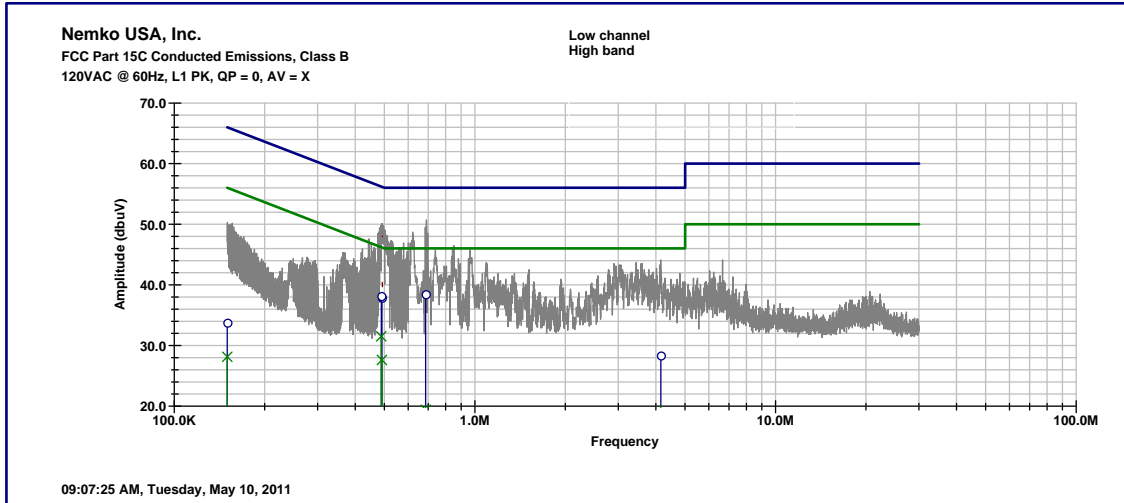


High transmit frequency



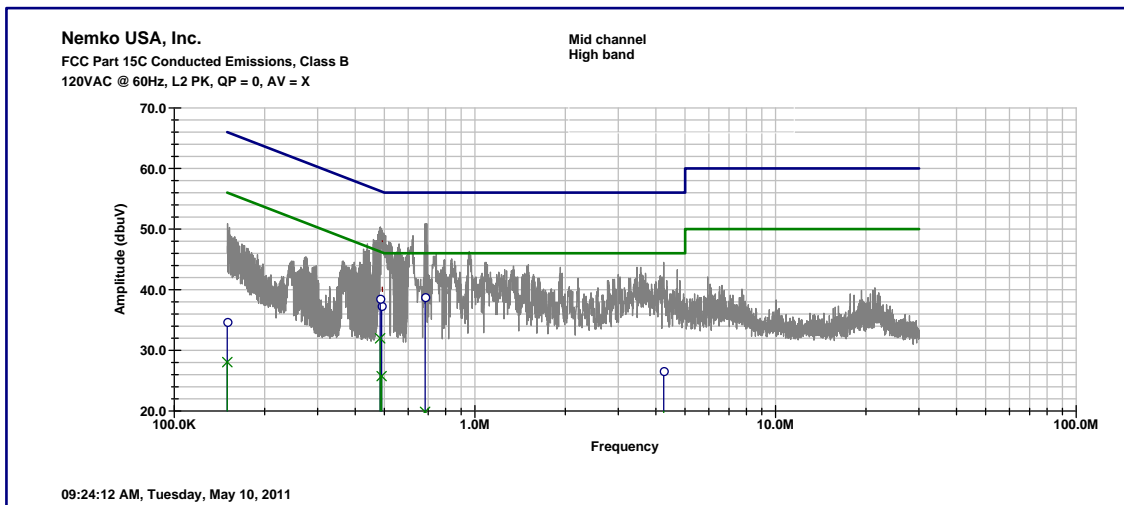
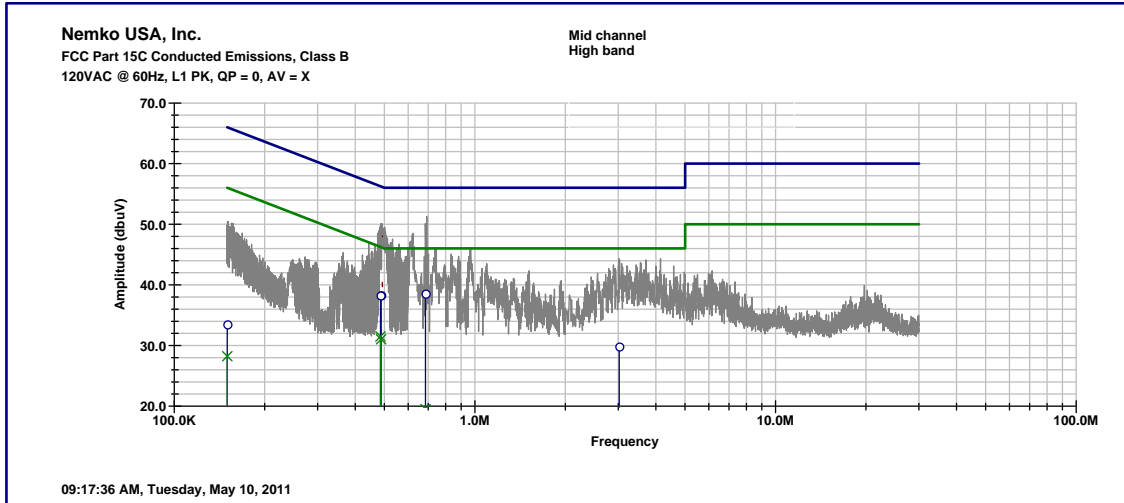
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High Band; Low transmit frequency

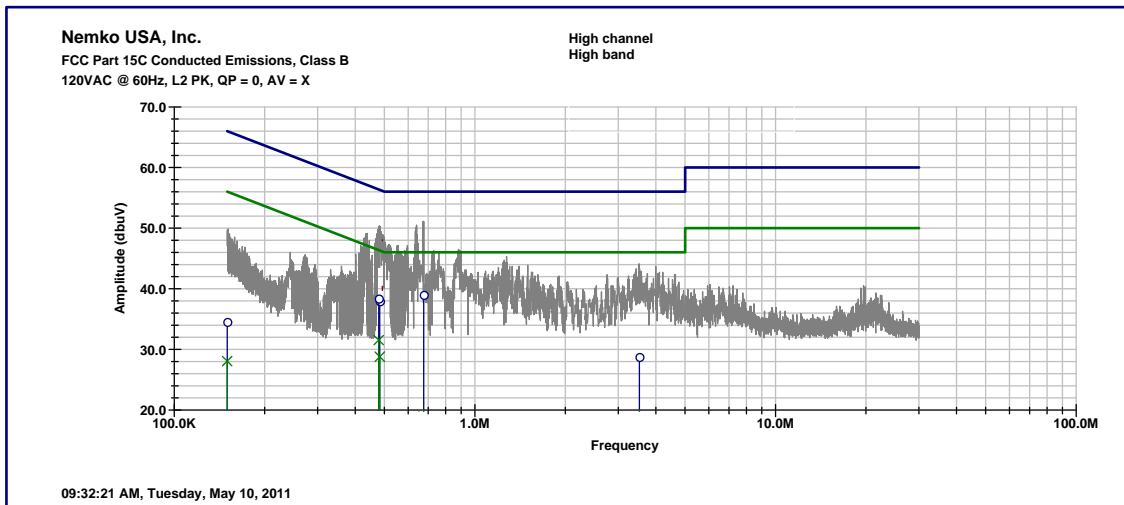
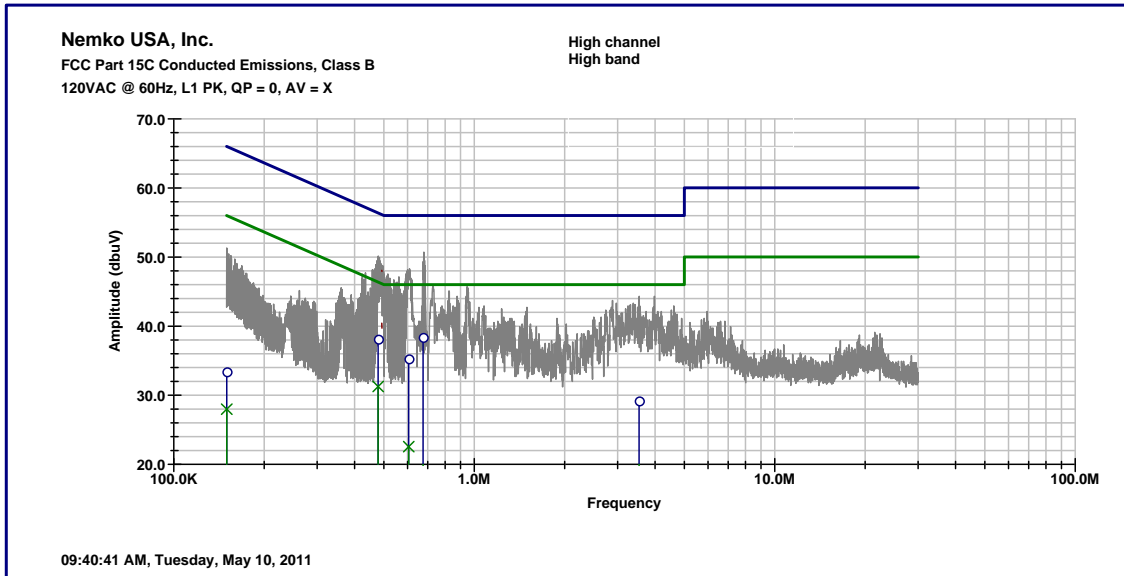


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Mid transmit frequency



High transmit frequency





20 dB Bandwidth

(c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

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Test Conditions:

Sample Number:	MPT-2700	Temperature:	22°C
Date:	May 9, 2011	Humidity:	43%
Modification State:	Low , Mid and High Channel	Tester:	Alan Laudani
		Laboratory:	Nemko

Test Results: See attached plots.

Additional Observations:

- This was a conducted test.
- Span is wide enough to capture the channel transmission
- RBW is 1% of the span
- VBW is 3X RBW
- Sweep is auto
- Detector is Peak
- Trace is Max Hold
- Used Spectrum Analyzer's programmed function.

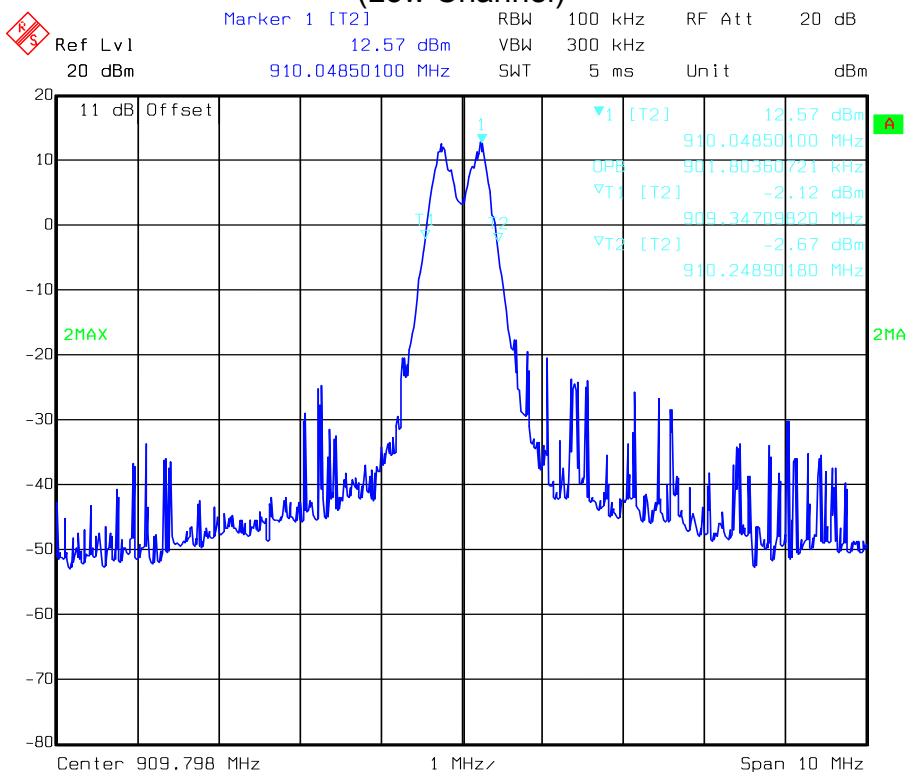
Channel Range	Observed 20 dB bandwidth
Low (909.798 MHz)	910 kHz
Mid (914.596 MHz)	882 kHz
High (920.595 MHz)	902 kHz

Channel Range	Observed 20 dB bandwidth
Low (2412.0 MHz)	13.0 MHz
Mid (2437.0 MHz)	10.3 MHz
High (2462.0 MHz)	12.9 MHz



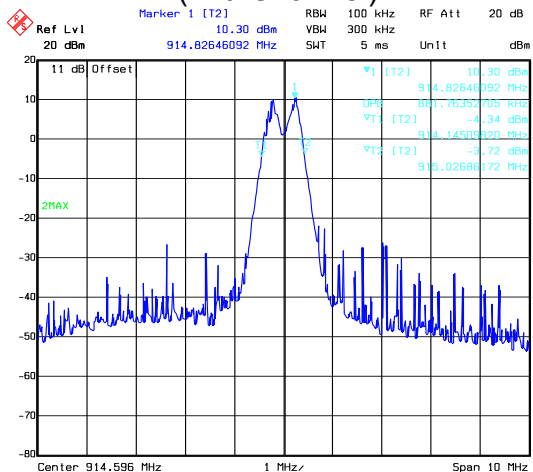
Low Band
 20 dB Band Width

(Low Channel)



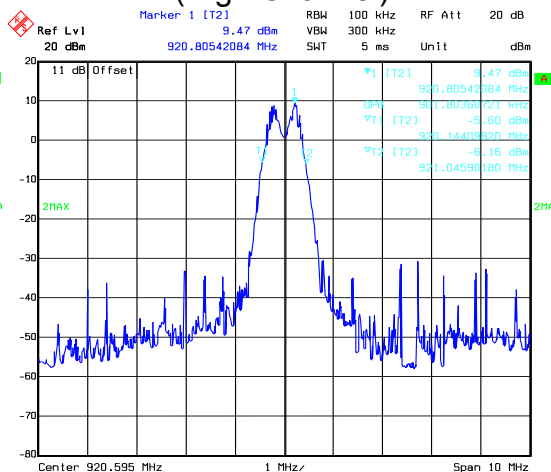
Date: 12.MAY 2011 15:46:34

(Mid Channel)



Date: 12.MAY 2011 15:49:33

(High Channel)

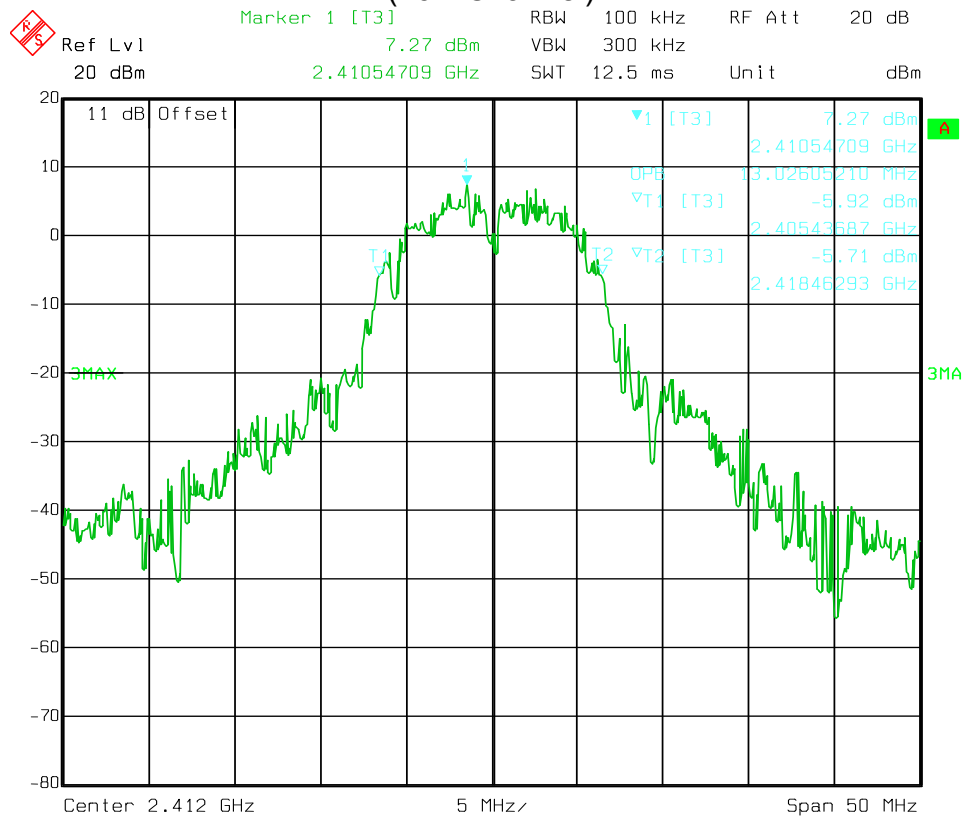


Date: 12.MAY 2011 16:23:17

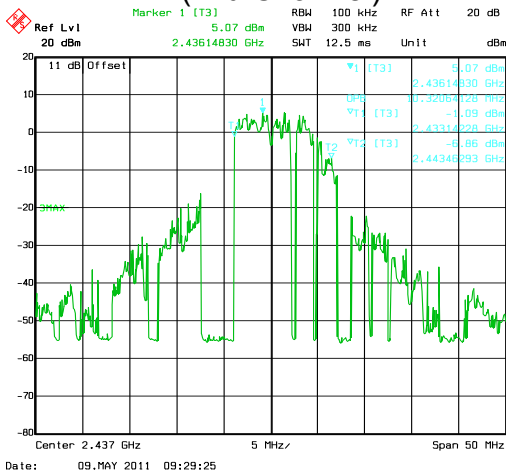
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High band
 20 dB Band Width

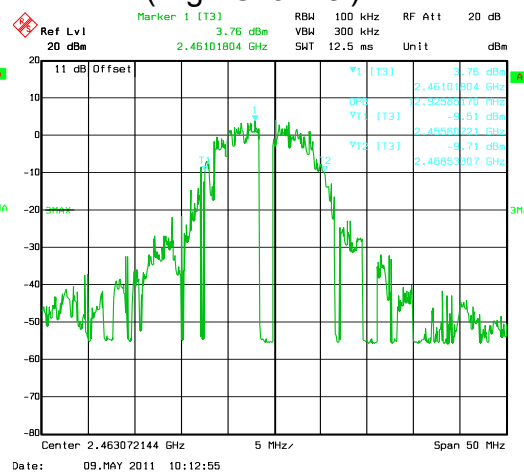
(Low Channel)



(Mid Channel)



(High Channel)



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Minimum 6dB RF Bandwidth

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 500 kHz.

Test Conditions:

Sample Number:	MPT-2700	Temperature:	21°C
Date:	May 12, 2011	Humidity:	39%
Modification State:	Low ,Mid and High Channel	Tester:	Alan Laudani
		Laboratory:	Nemko

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Test Results: EUT complies, See attached plots.

Additional Observations:

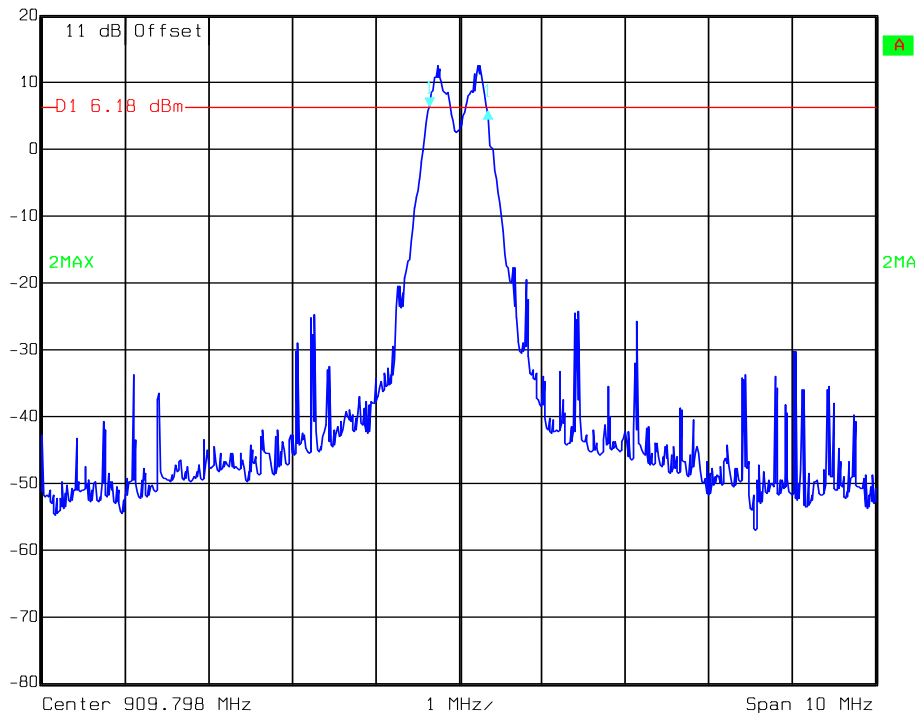
- This is a conducted test
- RBW is set to 100kHz
- VBW is 3X RBW
- Sweep is auto
- Detector is Peak
- Trace is Max Hold
- For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was plotted; a DISPLAY line was drawn 6 dB lower than PEAK level. The 6 dB bandwidth was determined from where the channel output spectrum intersected the display line.
- EUT complies as 6 dB BW > 500 kHz

Channel Range	Observed 6 dB bandwidth
Low (909.798 MHz)	701 kHz
Mid (914.596 MHz)	721 kHz
High (920.595 MHz)	701 kHz

Channel Range	Observed 6 dB bandwidth
Low (2412.0 MHz)	10.4 MHz
Mid (2437.0 MHz)	9.4 MHz
High (2462.0 MHz)	10.6 MHz

(Low Channel) 6 dB Bandwidth is 701 kHz

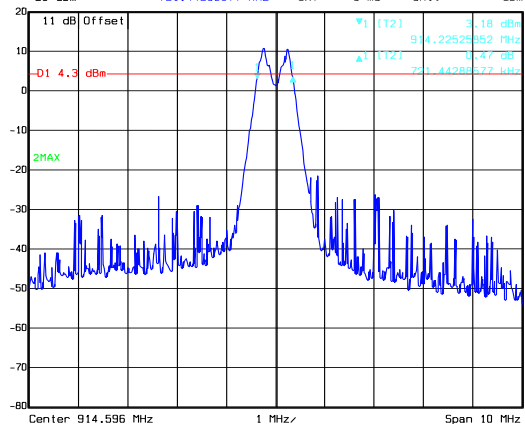
	Ref Lvl	Delta 1 [T2]	RBW	100 kHz	RF Att	20 dB
	20 dBm	-0.48 dB	VBW	300 kHz		
		701.40280561 kHz	SWT	5 ms	Unit	dBm



Date: 12.MAY 2011 15:45:28

(Mid Channel) 721 kHz

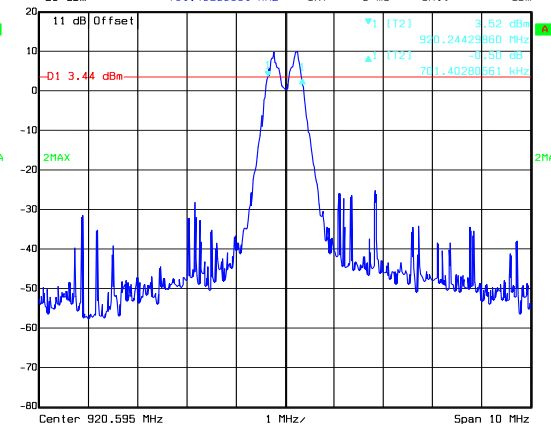
	Ref Lvl	Delta 1 [T2]	RBW	100 kHz	RF Att	20 dB
	20 dBm	0.47 dB	VBW	300 kHz		
		721.44288577 kHz	SWT	5 ms	Unit	dBm



Date: 12.MAY 2011 15:50:23

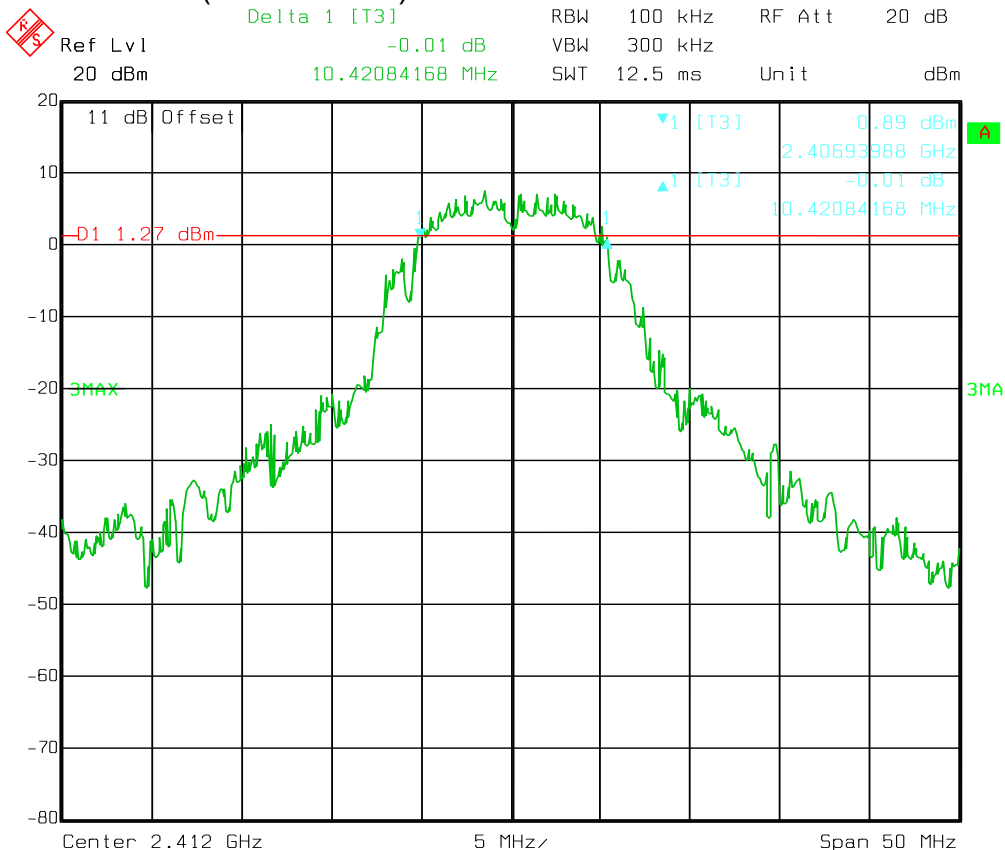
(High Channel) 701 kHz

	Ref Lvl	Delta 1 [T2]	RBW	100 kHz	RF Att	20 dB
	20 dBm	-0.50 dB	VBW	300 kHz		
		701.40280561 kHz	SWT	5 ms	Unit	dBm



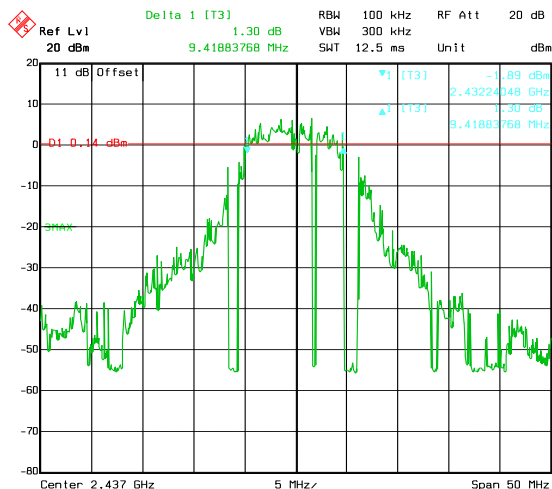
Date: 12.MAY 2011 16:21:35

(Low Channel) 6 dB Bandwidth is 10.4 MHz



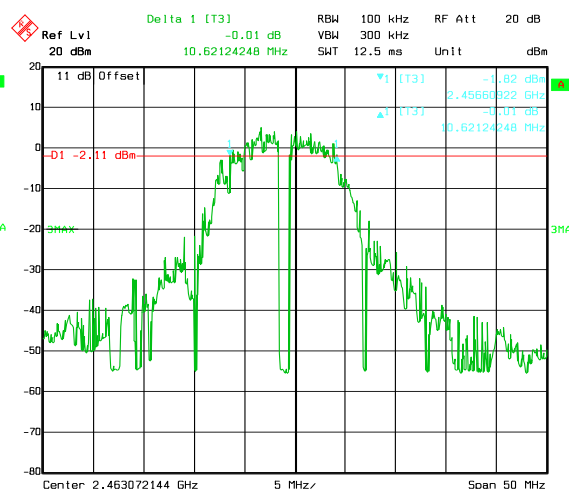
Date: 09.MAY 2011 08:48:41

(Mid Channel) 9.4 MHz



Date: 09.MAY 2011 09:31:14

(High Channel) 10.6 MHz



Date: 09.MAY 2011 10:13:47

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Peak Output Power

(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.

Test Conditions:

Sample Number:	MPT-2700	Temperature:	22°C
Date:	May 9, 2011	Humidity:	41%
Modification State:	Low ,Mid and High Channel	Tester:	Alan Laudani
		Laboratory:	Nemko

Test Results: See Table below

Additional Observations:

- This is a conducted test. 11 dB was offset for the attenuator and cable used.
- Input voltage to the EUT was varied +/-15% and monitored by a calibrated multimeter.
- Peak Power meter used.

Channel Range	Voltage	dBm	Watts
Low (909.798 MHz)	102 VAC	12.97	0.020
	120 VAC	12.97	0.020
	138 VAC	12.97	0.020
Mid (914.596 MHz)	102 VAC	11.2	0.013
	120 VAC	11.2	0.013
	138 VAC	11.2	0.013
High (920.595 MHz)	102 VAC	10.2	0.010
	120 VAC	10.2	0.010
	138 VAC	9.98	0.010
Channel Range	Voltage	dBm	Watts
Low (2412.0 MHz)	102 VAC	18.4	0.069
	120 VAC	18.0	0.063
	138 VAC	18.5	0.071
Mid (2437.0 MHz)	102 VAC	18.2	0.066
	120 VAC	18.2	0.066
	138 VAC	18.2	0.066
High (2462.0 MHz)	102 VAC	16.4	0.044
	120 VAC	16.5	0.045
	138 VAC	16.5	0.045

Band-edge Compliance of RF Conducted /Radiated Emissions

(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 a 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 §15.209(a) is not required. In addition, 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)).

Test Conditions:

Sample Number:	MPT-2700	Temperature:	21°C
Date:	May 10, 2011	Humidity:	44%
Modification State:	Low and High Channel	Tester:	Alan Laudani
		Laboratory:	Nemko

Test Results:

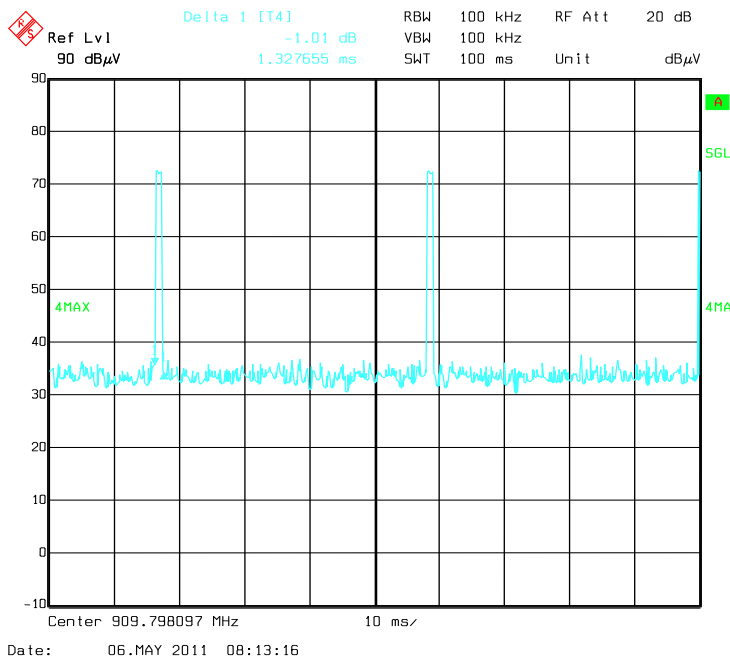
See attached plots.

Additional Observations:

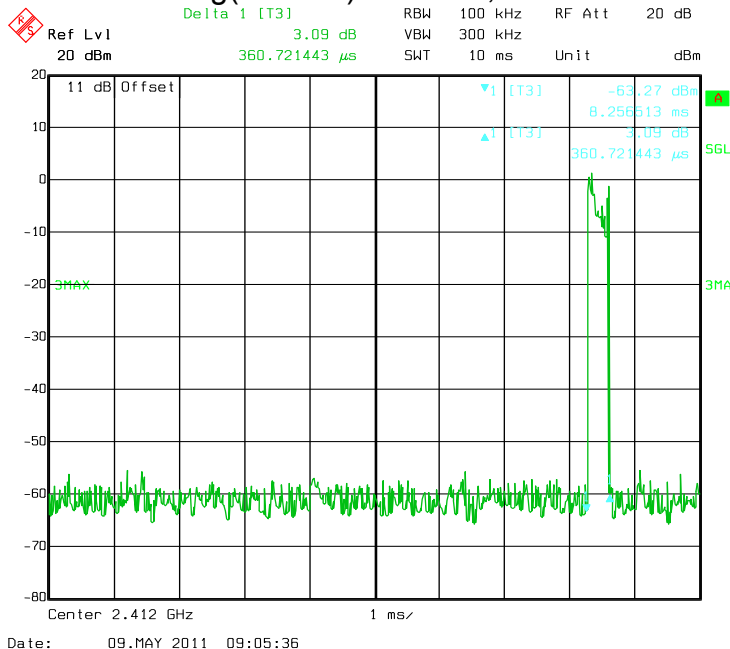
- This is a Radiated Emissions test.
- Span is wide enough to capture the peak level of the emission operating on the channel closest to the band edges (Lower and Upper).
- For Lower bandedge (no restricted zone) RBW is 100kHz
- For Lower bandedge, the peak level reading was taken and a display line was drawn 20 dBc below this level, which will be the limit for this test.
- For Upper bandedge (restricted zone) RBW is 1MHz
- For Upper bandedge (restricted zone) Limit is 74 dBuV/m peak @ 3m
- For Upper bandedge (restricted zone) Limit is 54 dBuV/m average @ 3m
- VBW is 3X RBW
- Sweep is auto.
- Detector is Peak, Trace is Max Hold
- Average = Peak + Duty Cycle Factor

Duty Cycle = -20dB

transmits 1.3 microseconds x 2 times = 2.6 milliseconds/100 milliseconds
 $DCF = 20 \times \log(2.6/100) < -20 \text{ dB}$, limited to -20dB

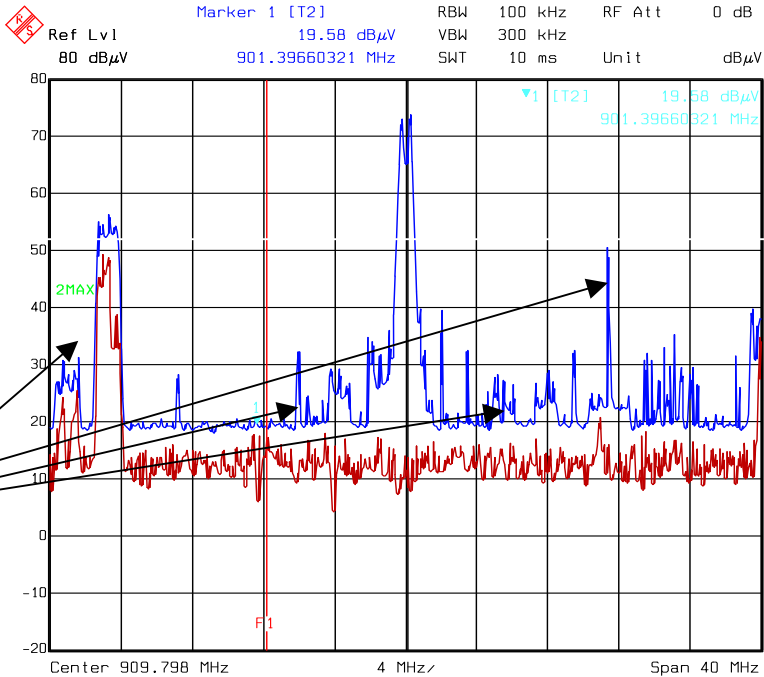


transmits 0.366 microseconds x 1 time = 0.366 milliseconds/100 milliseconds
 $DCF = 20 \times \log(0.3/100) < -20 \text{ dB}$, limited to -20dB



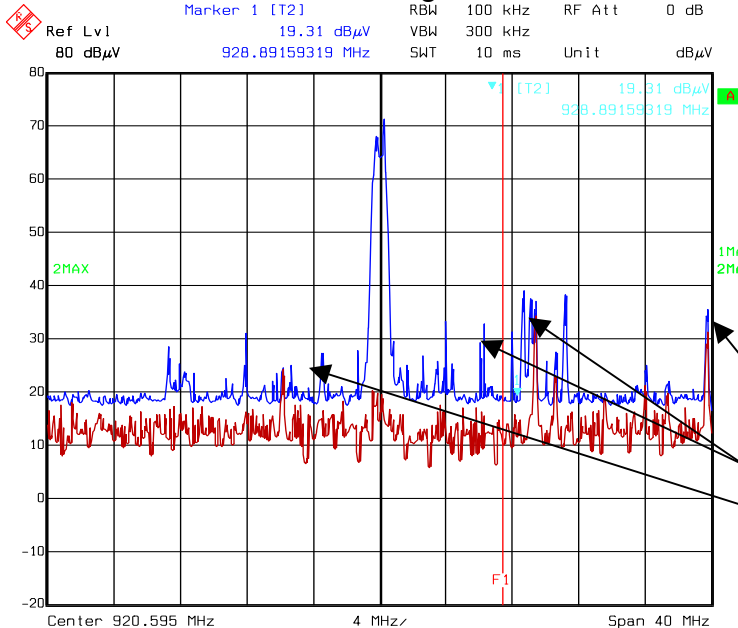


Low band:
Scan centered at Lowest channel



Date: 10.MAY 2011 10:17:19

Scan centered at Highest channel

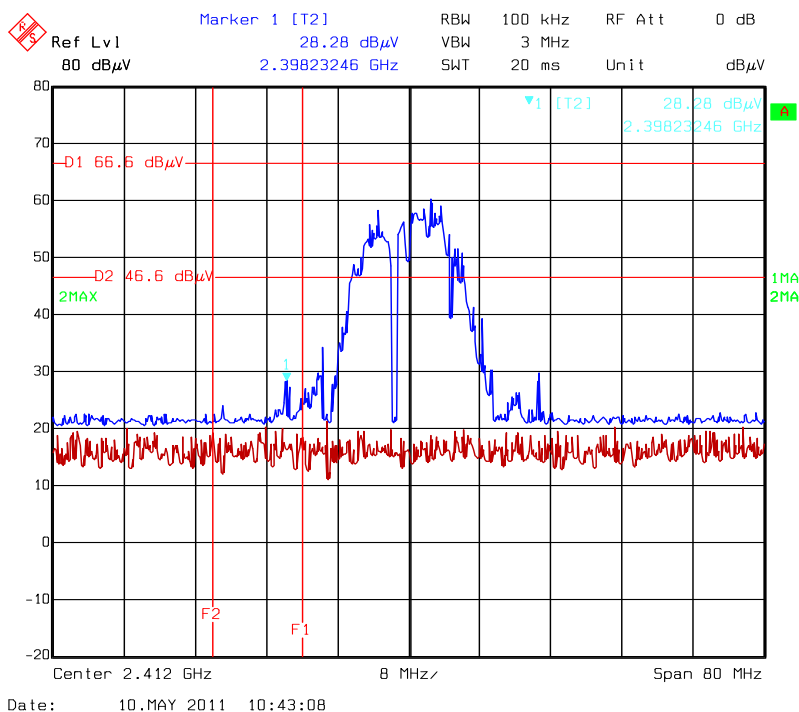


Date: 10.MAY 2011 10:14:44

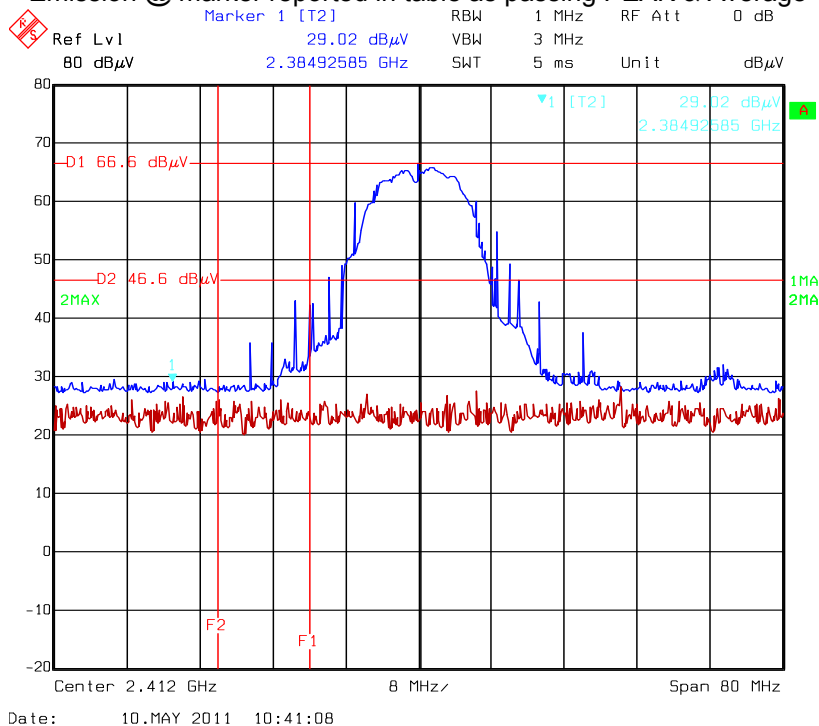
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Low Channel centered at 2412 MHz
 Higher display line drawn with peak measured at 1 MHz RBW
 Emission @ marker reported in table as passing PEAK & Average



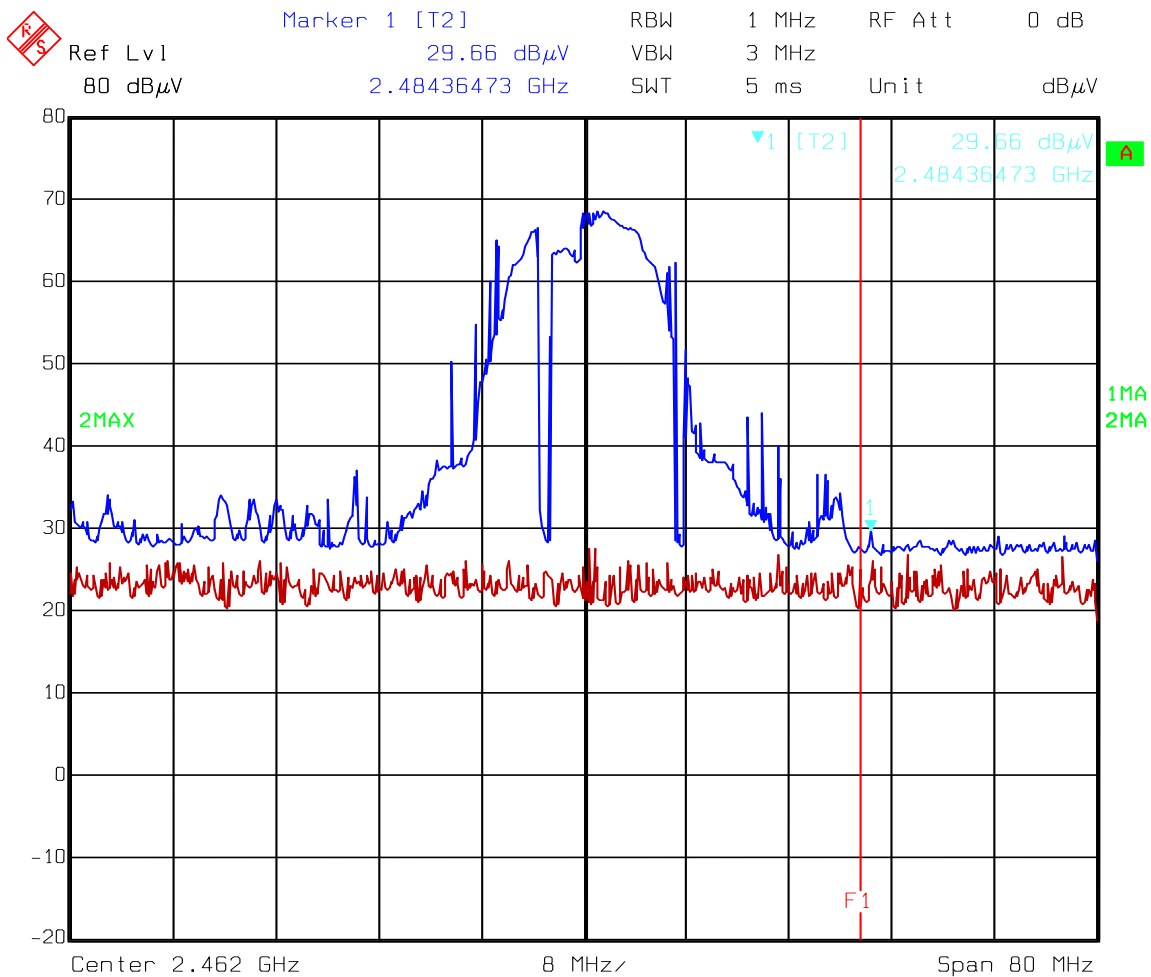
Emission @ marker reported in table as passing PEAK & Average



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High Channel centered at 2462 MHz

Emission @ marker reported in table as passing Peak & Average



Date: 10.MAY 2011 10:49:05

Emissions Table

Radiated Emissions Data

Job # : 1028680 Date : 5-10-2011
 NEX # : 175152 Time : PM
 Staff : AAL
 Client Name : MICROPOWER TECHNOLOGIES
 EUT Name : WIRELESS HUB
 EUT Model # : MPT-2700
 EUT Serial # : E001CBFC738ED
 EUT Config : transmit

Page 1 of 1
 EUT Voltage : 120
 EUT Frequency : 60
 Phase : 1
 NOATS :
 SOATS : X
 Distance < 1000 MHz : 3 m
 Distance > 1000 MHz : 3 m

Specification : CFR47 Part 15, Subpart C
 Loop Ant. # : NA
 Bicon Ant.# : 115 3m Temp. (°C) : 21
 Log Ant.# : 110 3m Humidity (%) : 44
 DRG Ant. # : 877 Spec An.# : 898 835
 Cable LF# : SOATS Spec An. Display # : 898 835
 Cable HF# : SOATS QP # : 898
 Preamp LF# : NA PreSelect# : 899
 Preamp HF# : 919

Quasi-Peak	RBW: 120 kHz
	Video Bandwidth 300 kHz
Peak	RBW: 1 MHz
	Video Bandwidth 3 MHz
Average = Peak + DCF	

Measurements below 1 GHz are Quasi-Peak values, unless otherwise stated.
 Measurements above 1 GHz are Average values, unless otherwise stated.

Meas. Freq. (MHz)	Meter Reading Vertical	Meter Reading Horizontal	Det.	EUT Side F/L/R/B	Ant. Height m	Max. Reading (dBµV)	Corrected Reading (dBµV/m)	Spec. limit (dBµV/m)	CR/SL Diff. (dB)	Pass Fail	Comment
											Transmit
902.0	5.1	6.0	Q	-	1.0	6	33.7	46.0	-12.4	Pass	band edge
928.0	5.3	6.3	Q	-		6.3	34.0	46.0	-12.1	Pass	band edge
2385.0	29.0	28.7	P	-	1.0	29	62.0	74.0	-12.0	Pass	band edge restricted
2385.0	9.0	8.7	A	-	1.0	9	42.0	54.0	-12.0	Pass	band edge restricted
2400.0	28.8	26.3	P	-	1.0	28.8	63.7	81.5	-17.8	Pass	100 kHz rbw
2400.0	8.8	6.3	A	-	1.0	8.8	43.7	61.5	-17.8	Pass	100 kHz rbw
2412.0	66.6		P	-	1.0	66.6	101.5				1 MHz rbw
2483.5	29.7	27.8	P	-	1.0	29.7	64.6	74.0	-9.4	Pass	band edge
2483.5	9.7	7.8	A	-	1.0	9.7	44.6	54.0	-9.4	Pass	DCF = -20

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Spurious RF Conducted Emissions

(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 §15.209(a) is not required. In addition, 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)).

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Test Conditions:

Sample Number:	MPT-2700	Temperature:	21°C
Date:	May 10, 2011	Humidity:	44%
Modification State:	Low, Mid and High Channel	Tester:	Alan Laudani
		Laboratory:	Nemko

Test Results:

See attached plots.

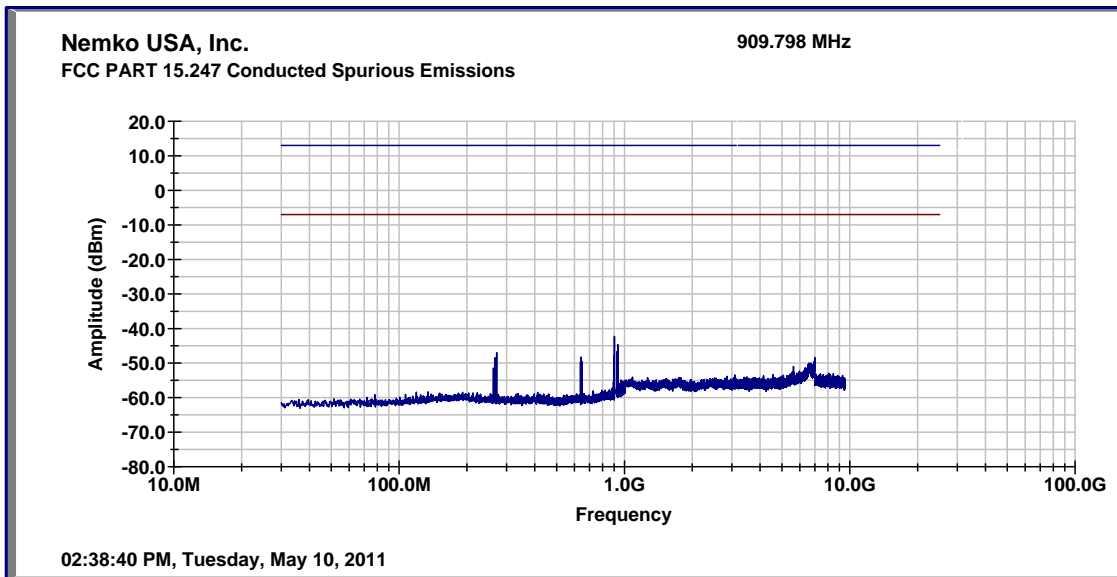
Additional Observations:

- This is a conducted test. 11.0 dB was offset for the cable used.
- The peak level reading was taken at the carrier frequency with the peak power meter (blue line), then a display line was drawn 20 dBc below this level (red line) which will be the limit for this test.
- RBW is 100 kHz
- VBW is 3X RBW
- Sweep is auto.
- Detector is Peak, Trace is Max Hold
- Emissions were searched from 30 MHz to 902 MHz and 928 MHz to 9,500 MHz.
- Emissions were searched from 30 MHz to 2400 MHz and from 2483.5 MHz to 25000 MHz.
- EUT complies.



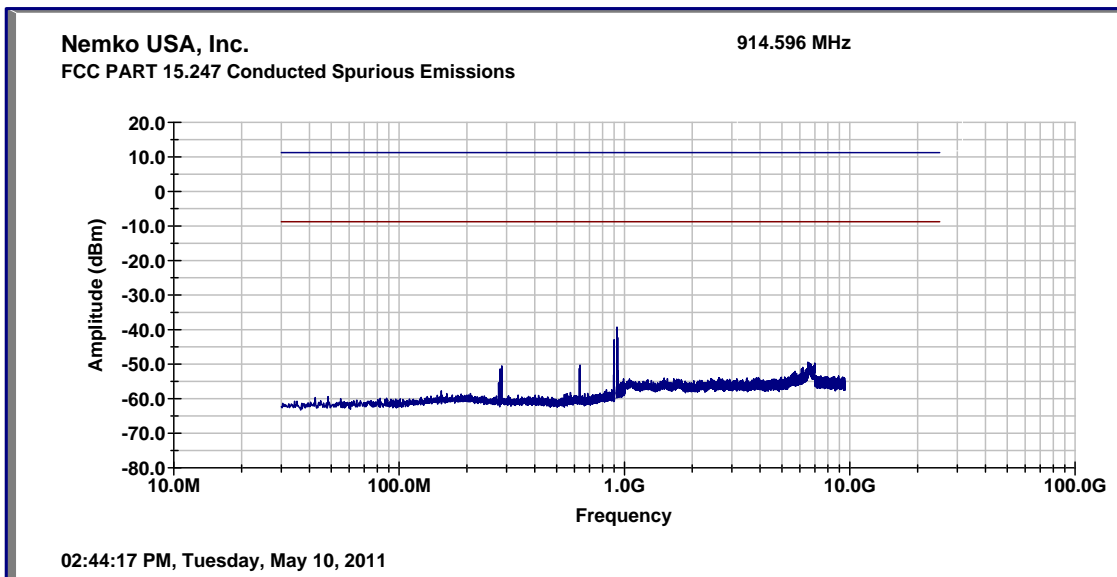


Low band:
Low Channel



901.3 MHz -42.3 dBm

Mid Channel

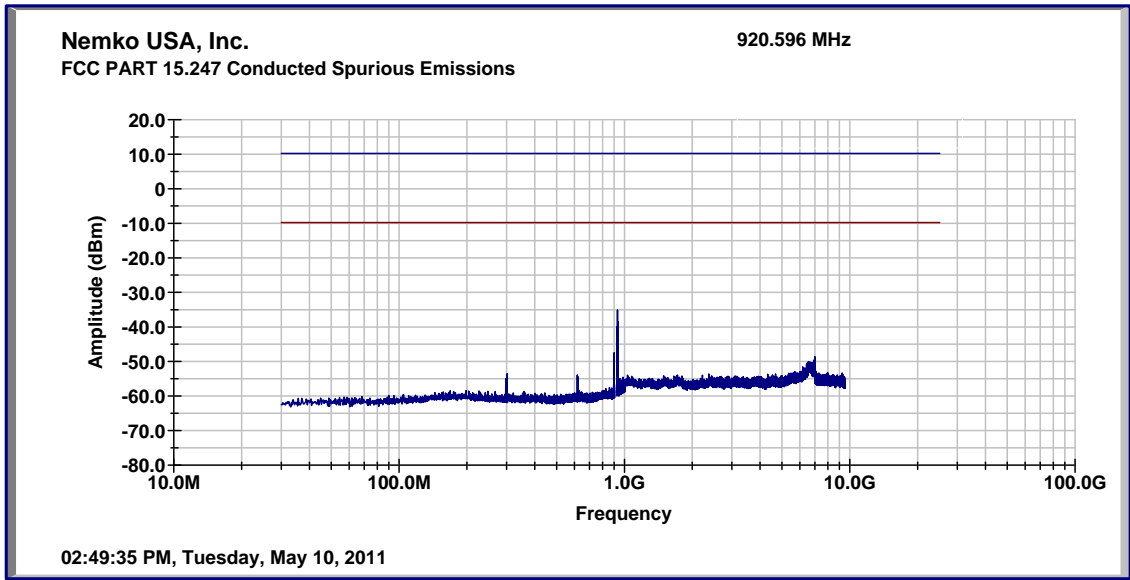


926.3 MHz -39.3 dBm

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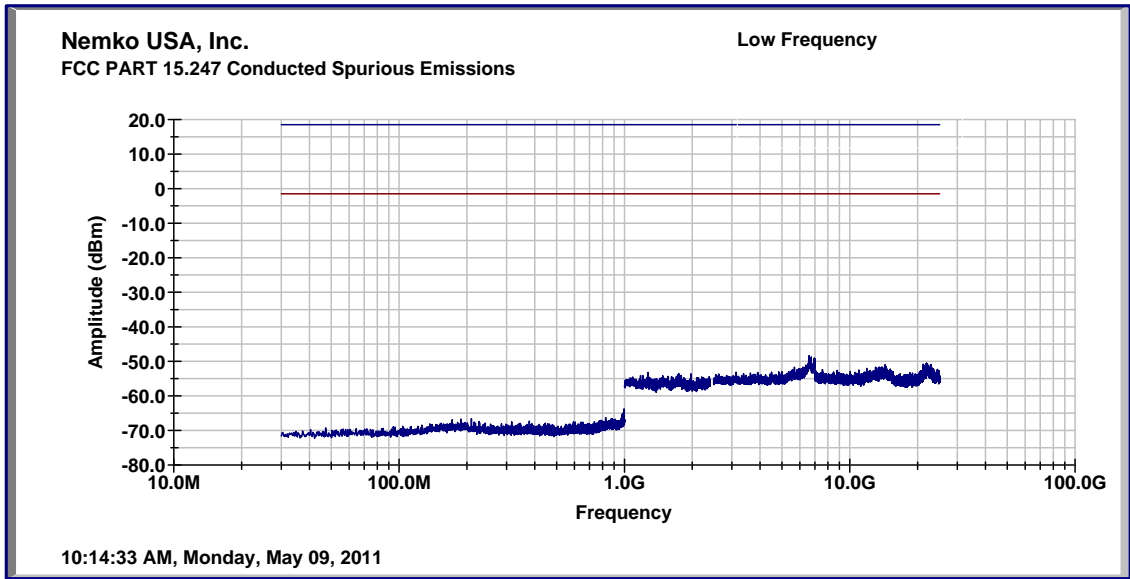


High Channel



930.3 MHz -35.1 dBm

High Band:
Low Channel



6.574 GHz -48.5 dBm

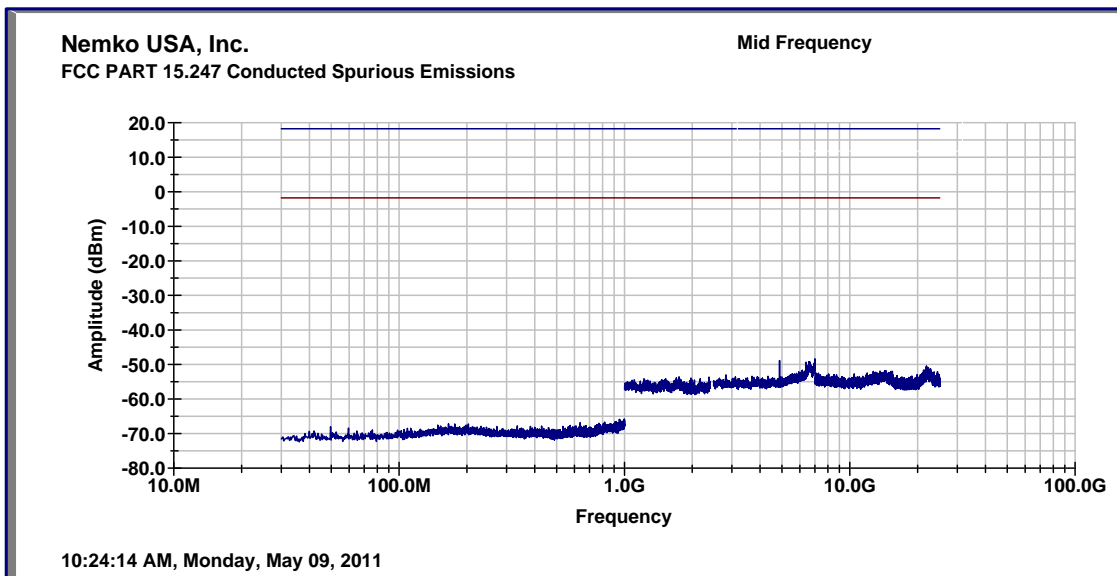


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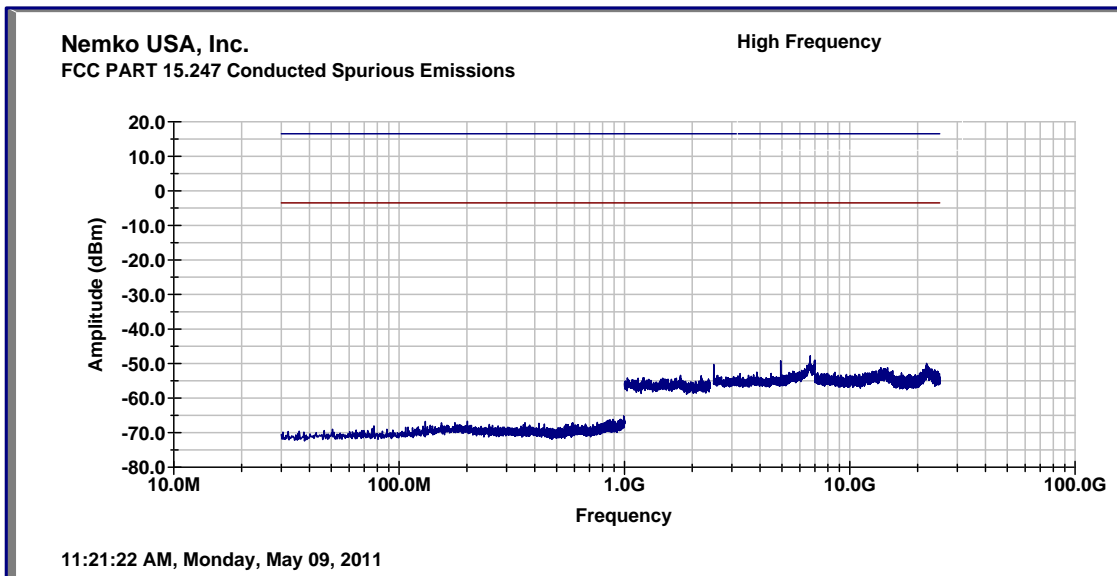


Mid Channel



6.995 GHz -48.4 dBm

High Channel



6.666 GHz -47.8 dBm

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Spurious Radiated Emissions

(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 §15.209(a) is not required. In addition, 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)).

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Test Conditions:

Sample Number:	MPT-2700	Temperature:	19°C
Date:	May 13, 2011	Humidity:	47%
Modification State:	Transmit with modulation	Tester:	Alan Laudani
		Laboratory:	Nemko

Test Results: EUT complies.

- Emissions were searched from 30 MHz to 25000 MHz
- No other emissions within 20 dB of the limit were detected.
- No harmonics of the transmit frequencies were detected.
- The digital emissions did not vary when the transmitter channels were changed. Worst case emissions presented below.
- Transmitter channels were investigated at low, mid and high channels; low and high band.



Radiated Emissions Data

Job #: 1028680 Date: 5-12-2011 Page 1 of 1
 NEX #: 175152 Time: PM
 Staff: AAL
 Client Name: MICROPOWER TECHNOLOGIES EUT Voltage: 120
 EUT Name: WIRELESS HUB EUT Frequency: 60
 EUT Model #: MPT-2700 Phase: 1
 EUT Serial #: E001CBFC738ED NOATS
 EUT Config.: transmit SOATS X
 Distance < 1000 MHz: 3 m
 Distance > 1000 MHz: 3 m

Specification: CFR47 Part 15, Subpart C
 Loop Ant. #: NA
 Bicon Ant.#: 115_3m Temp. (°C): 19
 Log Ant.#: 110_3m Humidity (%): 47
 DRG Ant. #: 877 Spec An.#: 897
 Cable LF#: SOATS Spec An. Display #: 897
 Cable HF#: SOATS QP #: 897
 Preamp LF#: 902 PreSelect#:
 Preamp HF#: 919

Quasi-Peak	RBW: 120 kHz
	Video Bandwidth 300 kHz
Peak	RBW: 1 MHz
	Video Bandwidth 3 MHz
Average	RBW: 1 MHz
	Video Bandwidth 10 Hz

Measurements below 1 GHz are Quasi-Peak values, unless otherwise stated.
 Measurements above 1 GHz are Average values, unless otherwise stated.

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Meas. Freq. (MHz)	Meter Reading Vertical	Meter Reading Horizontal	Det.	EUT Side F/L/R/B	Ant. Height m	Max. Reading (dBµV)	Corrected Reading (dBµV/m)	Spec. limit (dBµV/m)	CR/SL Diff. (dB)	Pass Fail	Comment
											digital emissions
40.0	44.8	45.8	Q	-	1.0	45.8	24.7	40.0	-15.3	Pass	
60.0	47.8	43.9	Q	-	1.0	47.8	28.1	40.0	-11.9	Pass	
80.0	45.2	45.6	Q	-	2.0	45.6	21.5	40.0	-18.5	Pass	
240.0	42.4	41.6	Q	-	1.0	42.4	24.0	46.0	-22.0	Pass	
360.0	35.5	31.0	Q	-	1.0	35.5	21.3	46.0	-24.7	Pass	
640.0	40.2	40.6	Q	-	1.0	40.6	32.1	46.0	-13.9	Pass	



Power Spectral Density for Digitally Modulated Devices

(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. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

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Test Conditions:

Sample Number:	MPT-2700	Temperature:	22°C
Date:	May 12, 2011	Humidity:	35%
Modification State:	Low ,Mid and High Channel	Tester:	Alan Laudani
		Laboratory:	Nemko

Test Results:

See attached plots.

Additional Observations:

- This is a conducted test. 11.0 dB was offset for the attenuator and cable used.
- RBW is 3kHz
- VBW is 10kHz
- Span is set to 1.5 MHz
- Sweep is set to 1.5MHz/3kHz or 500 seconds
- Trace is set to Peak, Max hold.
- Limit is 8 dBm
- EUT complies

Frequency	PSD (dBm)
910.027959 MHz	4.59
914.323955 MHz	2.14
920.821953 MHz	1.89

Frequency	PSD (dBm)
2412.853707 MHz	-7.70
2438.053608 MHz	-8.71
2460.557110 MHz	-9.27





Low Band, Low Channel – Max level is 4.59 dBm



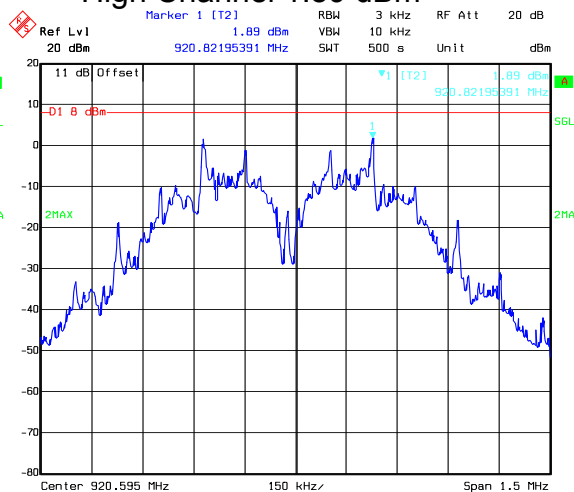
Date: 12.MAY 2011 15:41:40

Mid Channel 2.14 dBm



Date: 12.MAY 2011 16:04:13

High Channel 1.89 dBm

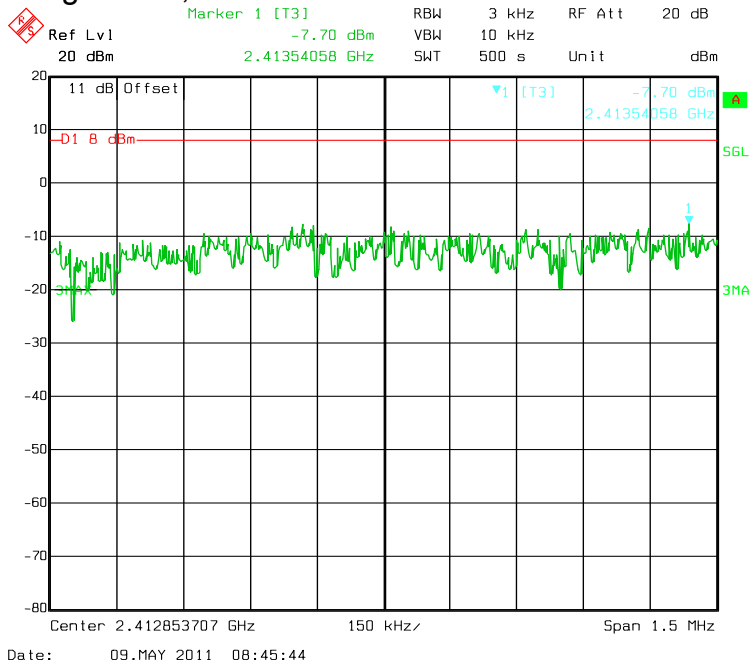


Date: 12.MAY 2011 16:19:50

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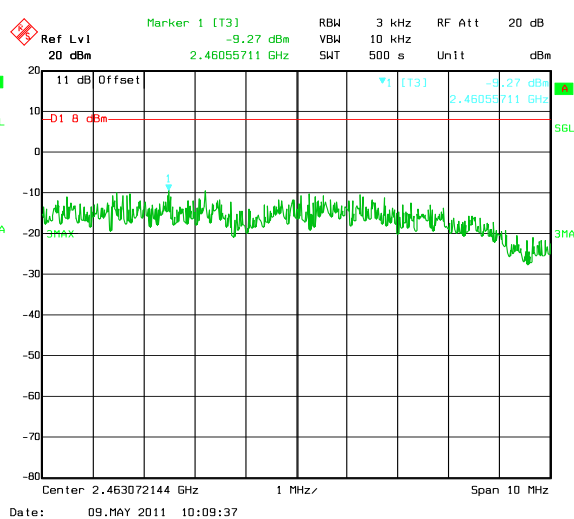
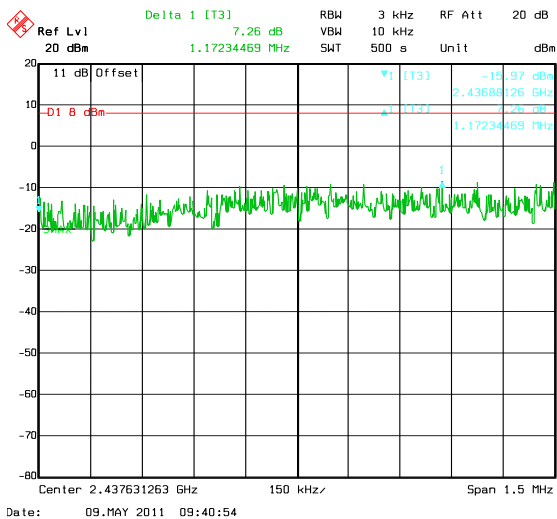


High Band, Low Channel – Max level is -7.7 dBm



Mid Channel -8.71 dBm

High Channel -9.27 dBm



Marker 1- marker 2 = -8.71 dBm
 Center - 1.5/2 +Marker2 = 2438.053608 MHz