



Test Report

FCC Part 15.247

Industry Canada RSS210

DTS Devices operating in range 2400-2483.5MHz

FOR:

Model Name: P121UNA

FCC ID: O8F-PIXUW

IC ID: 3905A-PIXUW

TEST REPORT #: EMC_PALMO_070_09001_15.247_WLAN_rev1

DATE: 2010-02-12



**Bluetooth Qualification
Test Facility
(BQTF)**



**FCC listed:
A2LA
accredited**

**IC recognized #
3462B**

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Board of Directors: Dr. Harald Ansorge, Dr. Klaus Matkey, Hans Peter May

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1 Assessment

The following is in compliance with the applicable criteria specified in FCC rules Part 15.247 of the Code of Federal Regulations.

Company	Description	Model #
Palm, Inc	GSM/UMTS Phone with 802.11 b/g and Bluetooth	P121UNA

This report is reviewed by:

Marc Douat

2010-02-12 EMC & Radio

(Test Lab Manager)

Date

Section

Name

Signature

This report is prepared by:

Josie Sabado

2010-02-12 EMC & Radio

(EMC Project Engineer)

Date

Section

Name

Signature

The test results of this test report relate exclusively to the test item specified in Identification of the Equipment under Test. The CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM Inc USA.

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

Company Name:	CETECOM Inc.
Department:	Compliance
Address:	411 Dixon Landing Road Milpitas, CA 95035 U.S.A.
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
Responsible Test Lab Manager:	Heiko Strehlow
Responsible Project Leader:	Josie Sabado

2.2 Identification of the Client

Applicant's Name:	Palm, Inc.
Street Address:	950 W. Maude Ave
City/Zip Code	Sunnyvale, CA 94085-2801
Country	USA
Contact Person:	Julia Luke
Phone No.	(408) 617-8597
e-mail:	Julia.Luke@palm.com

2.3 Identification of the Manufacturer

Same as above client.

3 Equipment under Test (EUT)

3.1 Specification of the Equipment under Test

Model No:	P121UNA
Product Type:	GSM/UMTS Cellular Phone
Hardware Revision :	DVT2B
Software Revision :	Utility Software Build: 920
FCC-ID:	O8F-PIXUW
IC-ID :	3905A-PIXUW
Frequency:	2400-2483.5 MHz
Type(s) of Modulation:	CCK, OFDM
Number of channels:	11
Antenna Type:	Integral
Equipment Classification:	☐ Fixed ☐ Vehicular ☒ Portable ☐ Module

3.2 Identification of the Equipment under Test (EUT)

EUT #	Serial Number	HW Version	SW Version	Comments
1	PD2BNBR98115	DVT2B	Utility Software Build: 920	Radiated sample
2	PD2BNBR98112	DVT2B	Utility Software Build: 920	Conducted sample

3.3 Identification of Accessory equipment

AE #	Type	Manufacturer	Model	Serial Number	Part Number
1	Battery	Palm	N/A	D298AW18D1BDC090810	157-10119-00
2	Inductive Charging Dock	Palm	N/A	N/A	157-10123-00
3	Inductive Back Cover	Palm	N/A	P29BJ0L4C4A	180-10763-00
4	Headset	Palm	N/A	N/A	180-10632-00
5	AC Adapter #24	Palm	N/A	2B9840MTP2A	157-10124-00
6	AC Adapter #30	Palm	N/A	F298R03TP34	157-10130-00
7	USB Cable	Palm	N/A	N/A	180-10646-00

4 Subject Of Investigation

All testing was performed on the product referred to in Section 3 as EUT. EUT operates in the band 2400-2483.5MHz in 802.11b/g mode. All measurements were made with transmit power set to 13.

The objective of the measurements done by Cetecom Inc. was to measure the performance of the EUT operating under all operating modes as per requirements listed in FCC rules Part 15.247 of Title 47 of the Code of Federal Regulations. The maximization of portable equipment is conducted in accordance with ANSI C63.4

Replace report number EMC_PALMO_070_09001_15.247_WLAN.

5 Conducted Measurements

5.1 6dB bandwidth and 99% bandwidth

5.1.1 Limit

FCC15.247(a)(2) Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

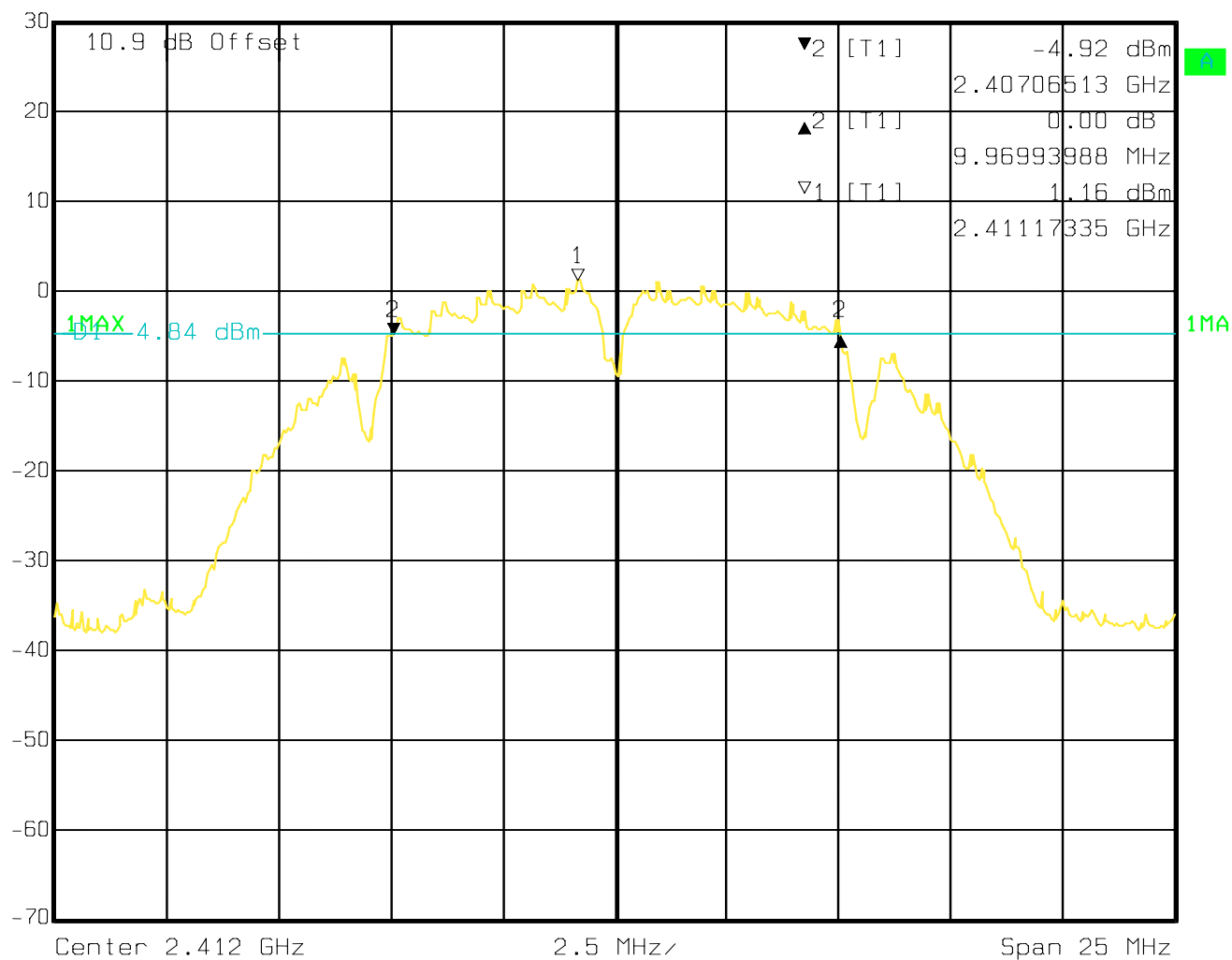
RSS210 A8.2 (a): The minimum 6 dB bandwidth shall be at least 500 kHz.

5.1.2 Measurement Result:

	Channel Frequency (MHz)	6dB Bandwidth (MHz)	20dB/99% Bandwidth (MHz)
2400-2483.5 MHz (802.11 b)	2412	9.97	13.83
	2437	10.17	13.73
	2462	10.12	13.78
2400-2483.5 MHz (802.11 g)	2412	16.63	16.78
	2437	16.63	16.78
	2462	16.68	16.78

5.1.3 Plots:**6dB bandwidth, 802.11 b, Channel 1**

 Delta 2 [T1] RBW 100 kHz RF Att 40 dB
Ref Lvl 0.00 dB VBW 100 kHz
30 dBm 9.96993988 MHz SWT 6.5 ms Unit dBm

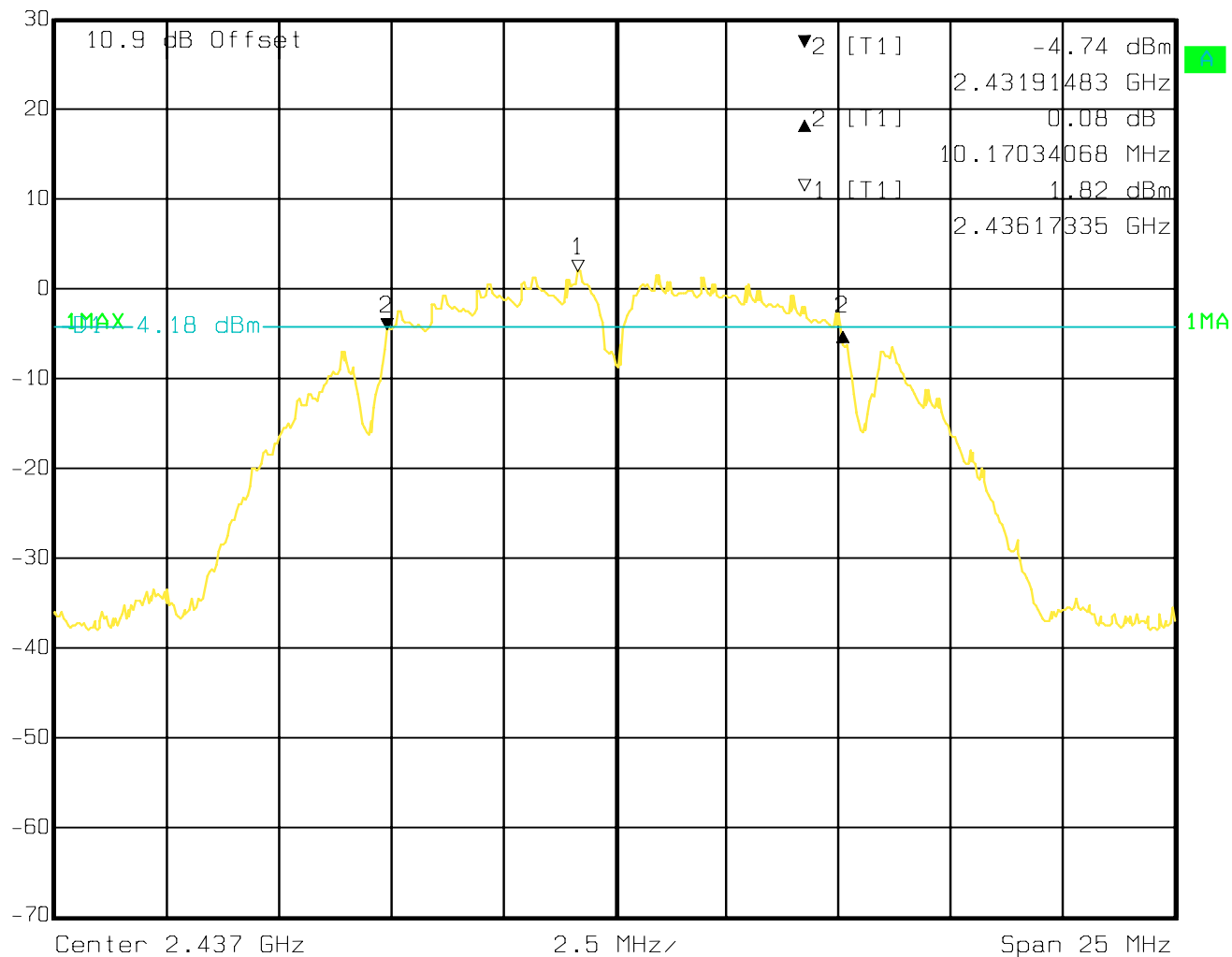


Date: 13.JAN.2010 16:19:10

6dB bandwidth, 802.11 b, Channel 6



Ref Lvl 30 dBm
 Delta 2 [T1] 0.08 dB
 10.17034068 MHz
 RBW 100 kHz RF Att 40 dB
 VBW 100 kHz
 SWT 6.5 ms Unit dBm

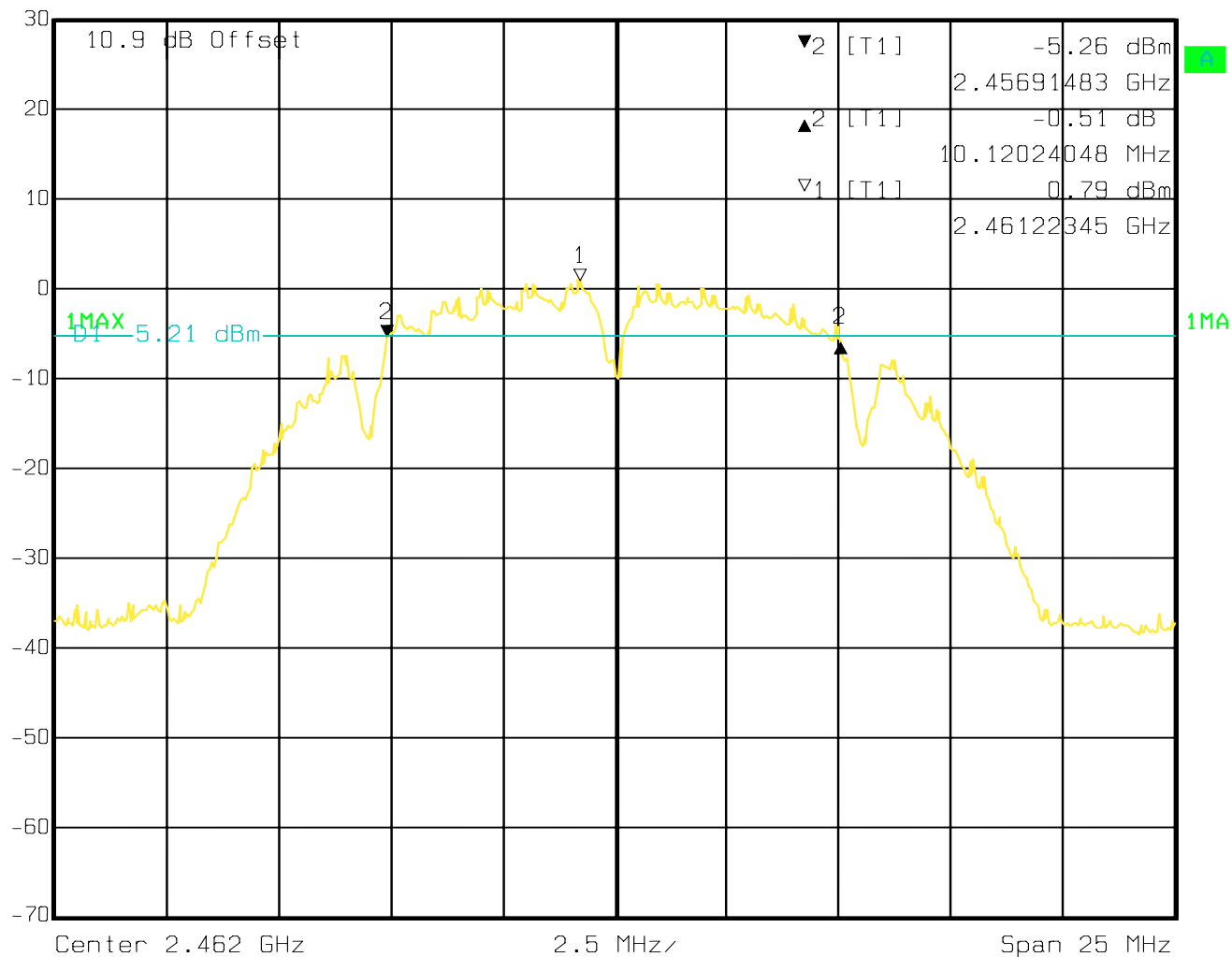


Date: 13.JAN.2010 16:16:40

6dB Bandwidth, 802.11 b, Channel 11



Ref Lvl 30 dBm
 Delta 2 [T1] -0.51 dB
 10.12024048 MHz
 RBW 100 kHz RF Att 40 dB
 VBW 100 kHz
 SWT 6.5 ms Unit dBm

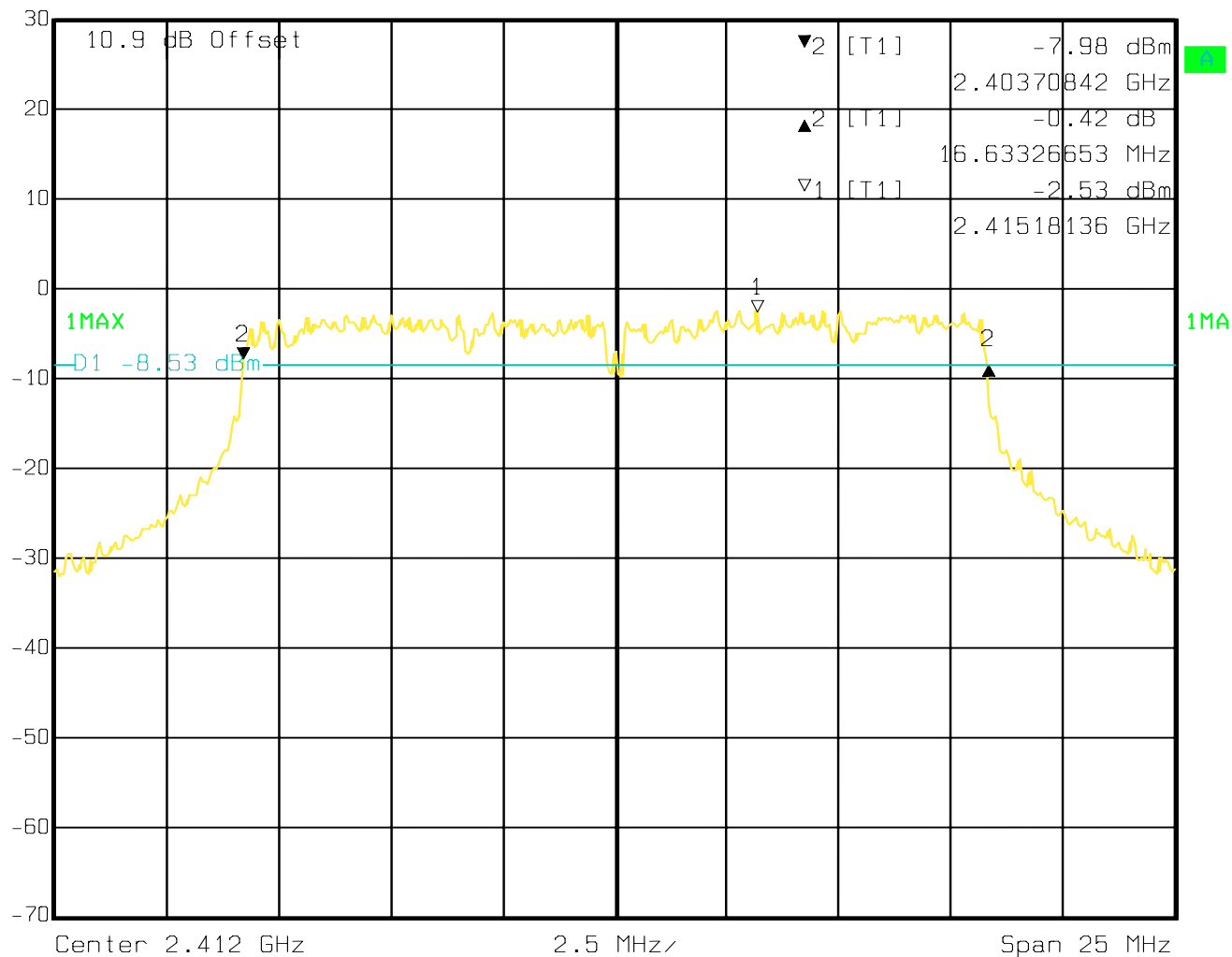


Date: 13.JAN.2010 16:13:50

6dB Bandwidth, 802.11 g, Channel 1

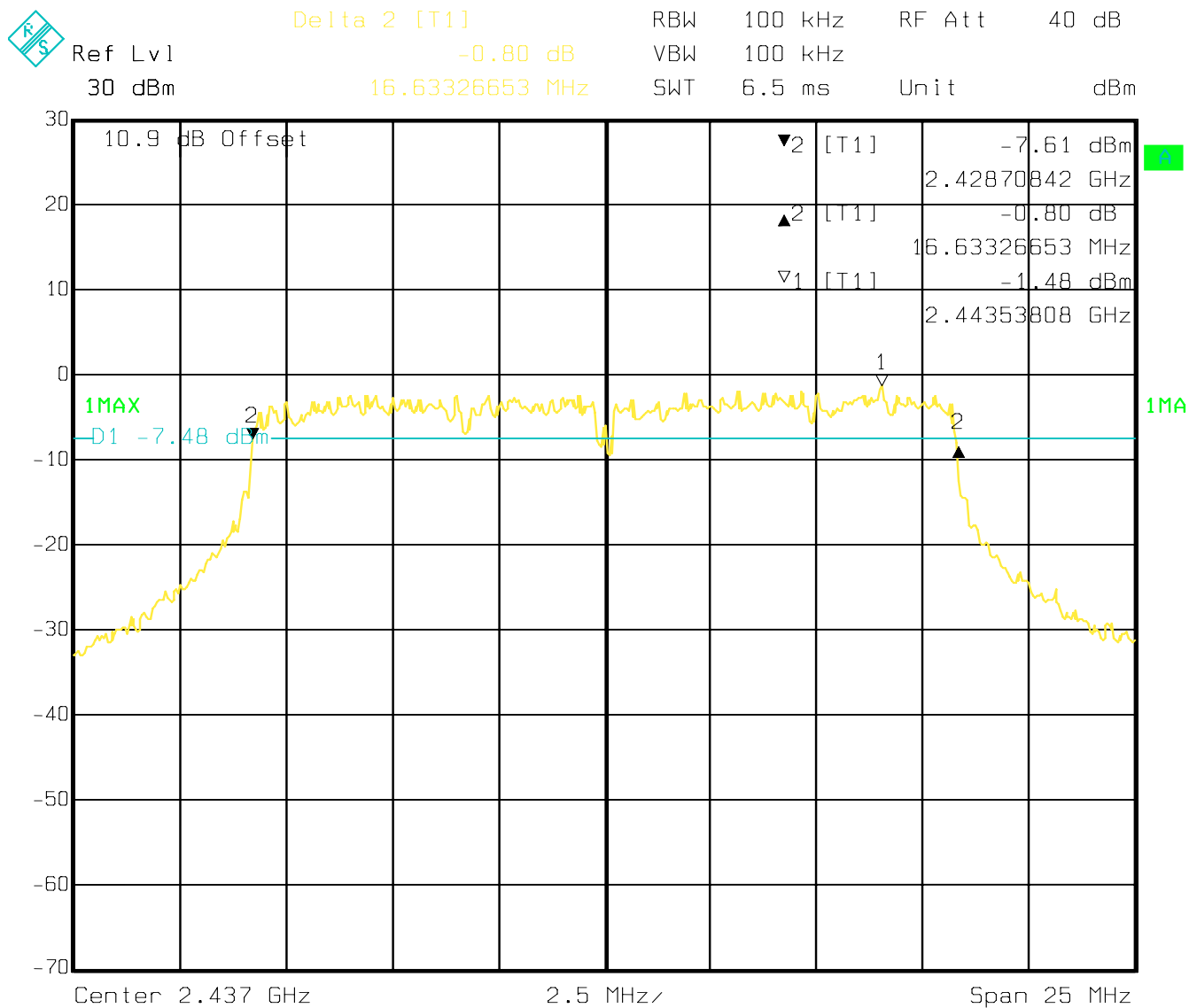


Ref Lvl 30 dBm
 Delta 2 [T1] -0.42 dB
 16.63326653 MHz
 RBW 100 kHz RF Att 40 dB
 VBW 100 kHz
 SWT 6.5 ms Unit dBm



Date: 13.JAN.2010 16:22:07

6dB Bandwidth, 802.11 g, Channel 6



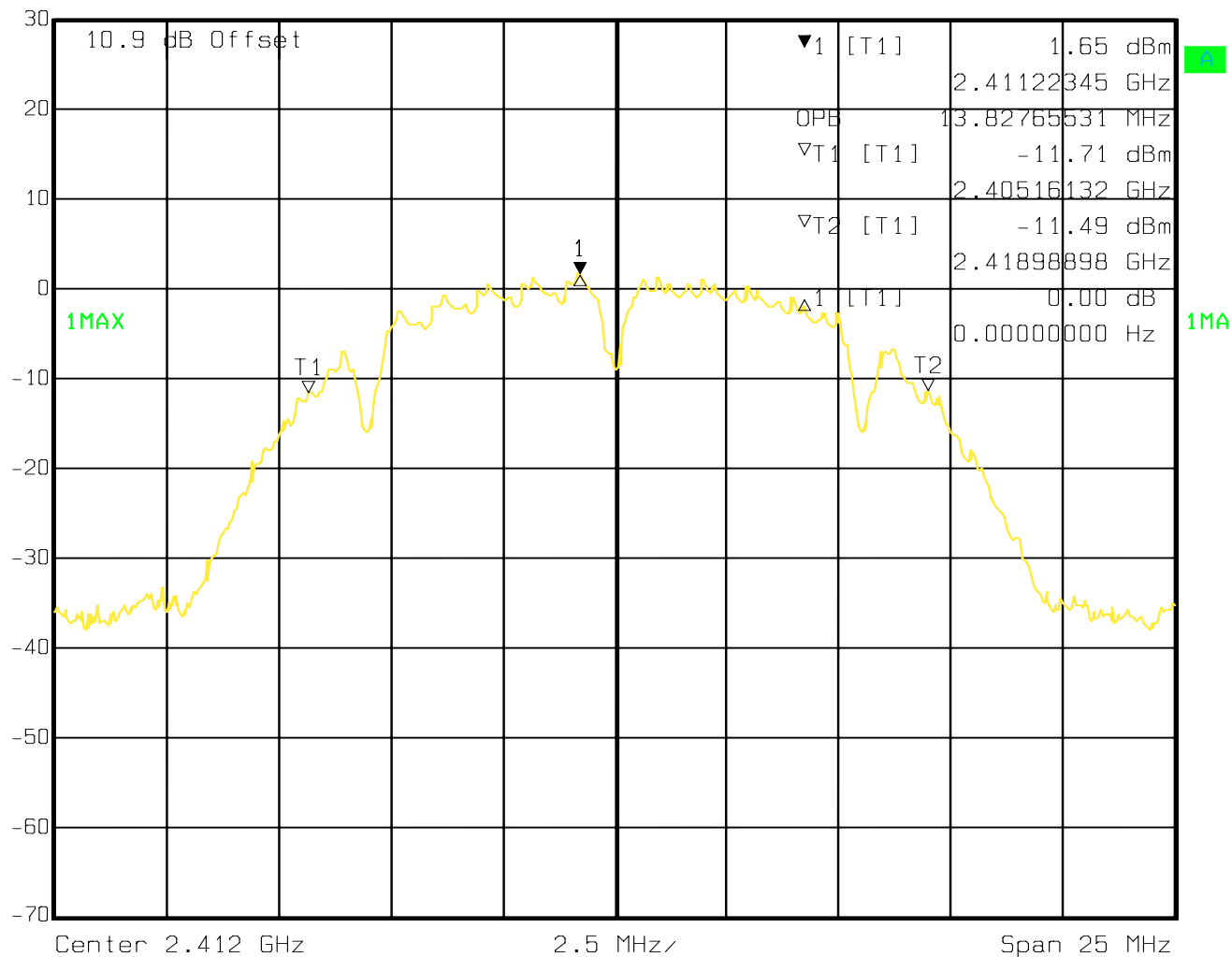
Date: 13.JAN.2010 16:24:24

Date: 13.JAN.2010 16:26:53

99% Bandwidth, 802.11 b, Channel 1



Ref Lvl 30 dBm
 Marker 1 [T1] 1.65 dBm
 2.41122345 GHz
 RBW 100 kHz RF Att 40 dB
 VBW 300 kHz
 SWT 6.5 ms Unit dBm

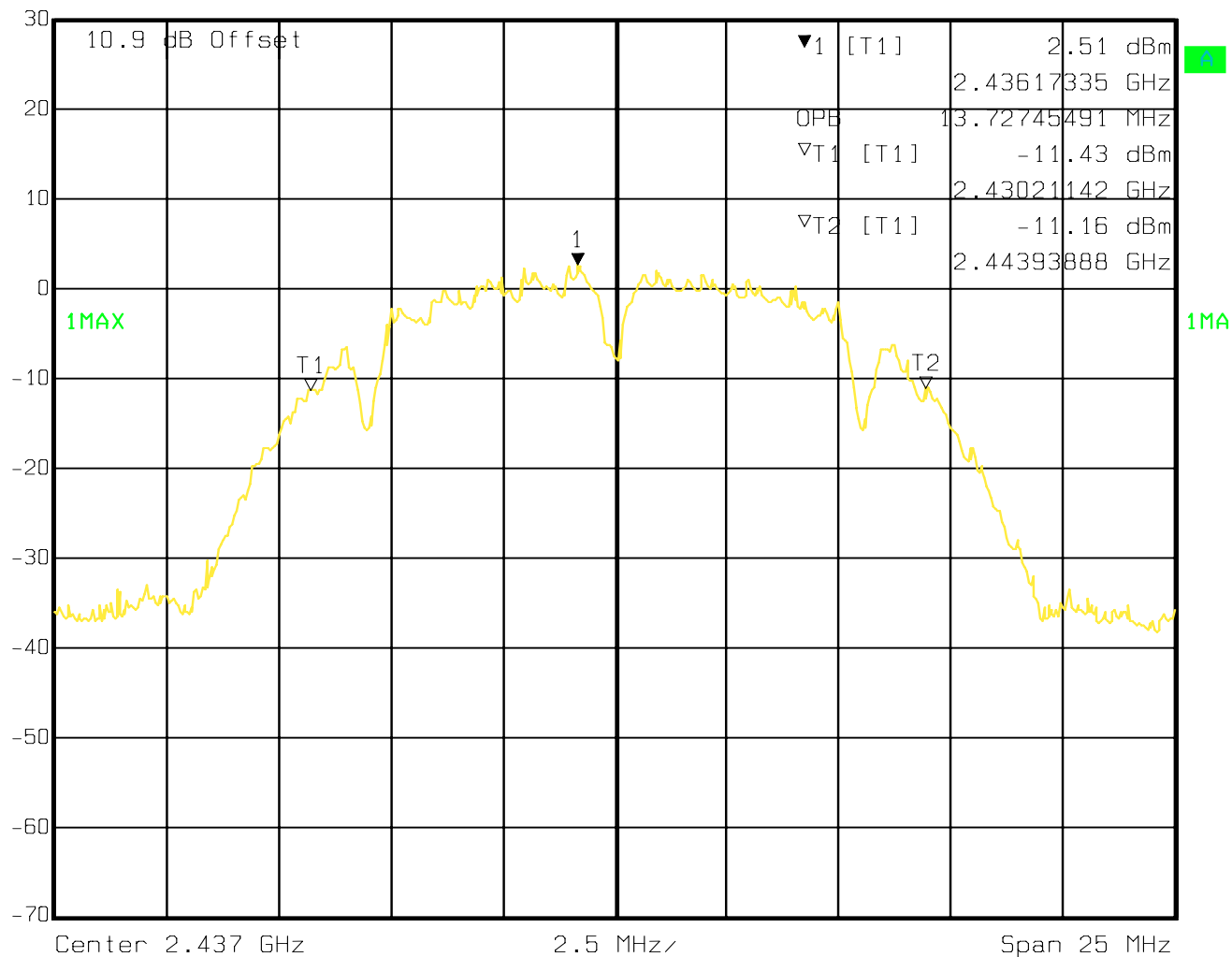


Date: 13.JAN.2010 16:30:12

99% Bandwidth, 802.11 b, Channel 6



Ref Lvl 30 dBm
 Marker 1 [T1] 2.51 dBm
 2.43617335 GHz
 RBW 100 kHz RF Att 40 dB
 VBW 300 kHz
 SWT 6.5 ms Unit dBm

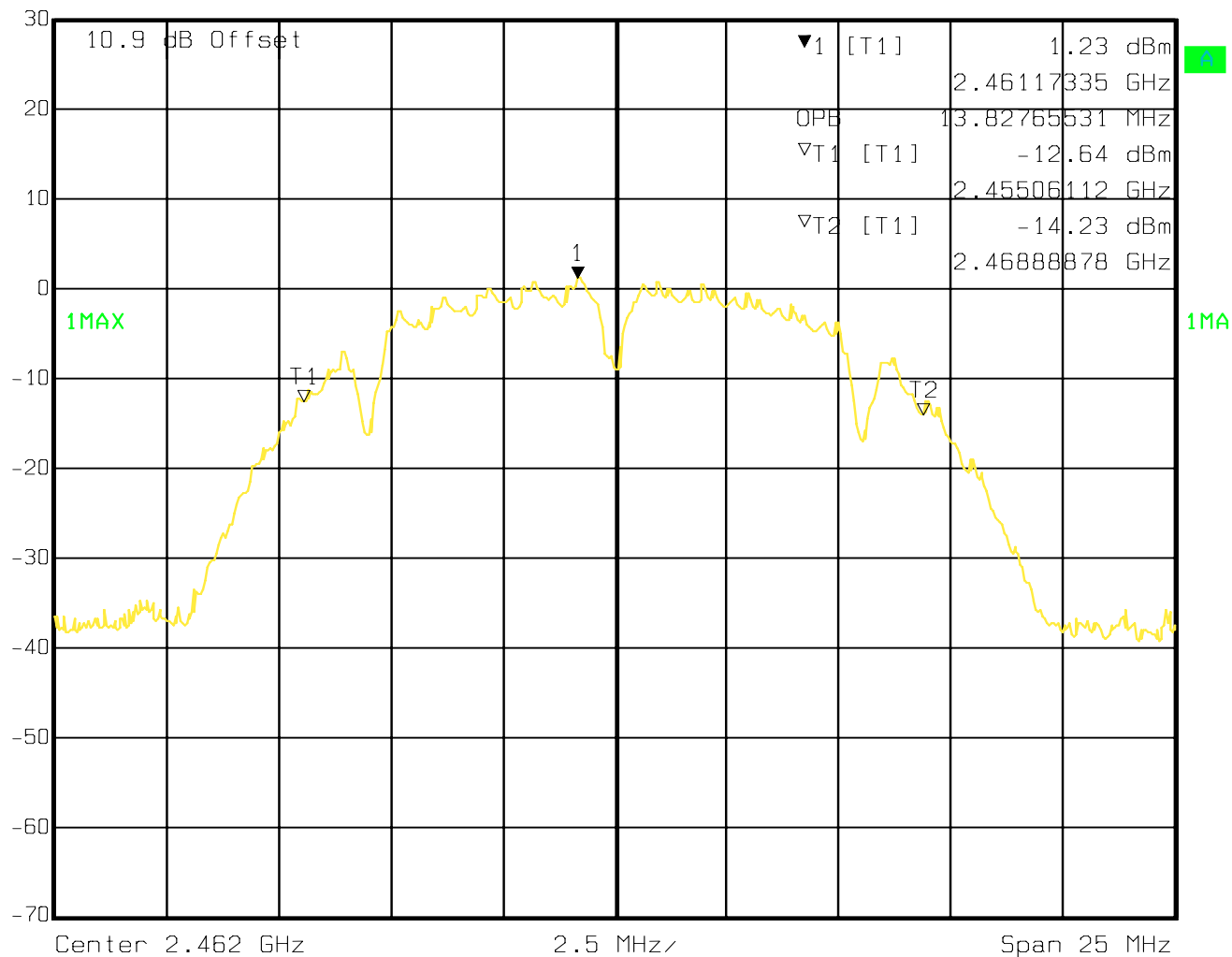


Date: 13.JAN.2010 16:32:03

99% Bandwidth, 802.11 b, Channel 11



Ref Lvl 30 dBm
 Marker 1 [T1] 1.23 dBm
 2.46117335 GHz
 RBW 100 kHz RF Att 40 dB
 VBW 300 kHz
 SWT 6.5 ms Unit dBm

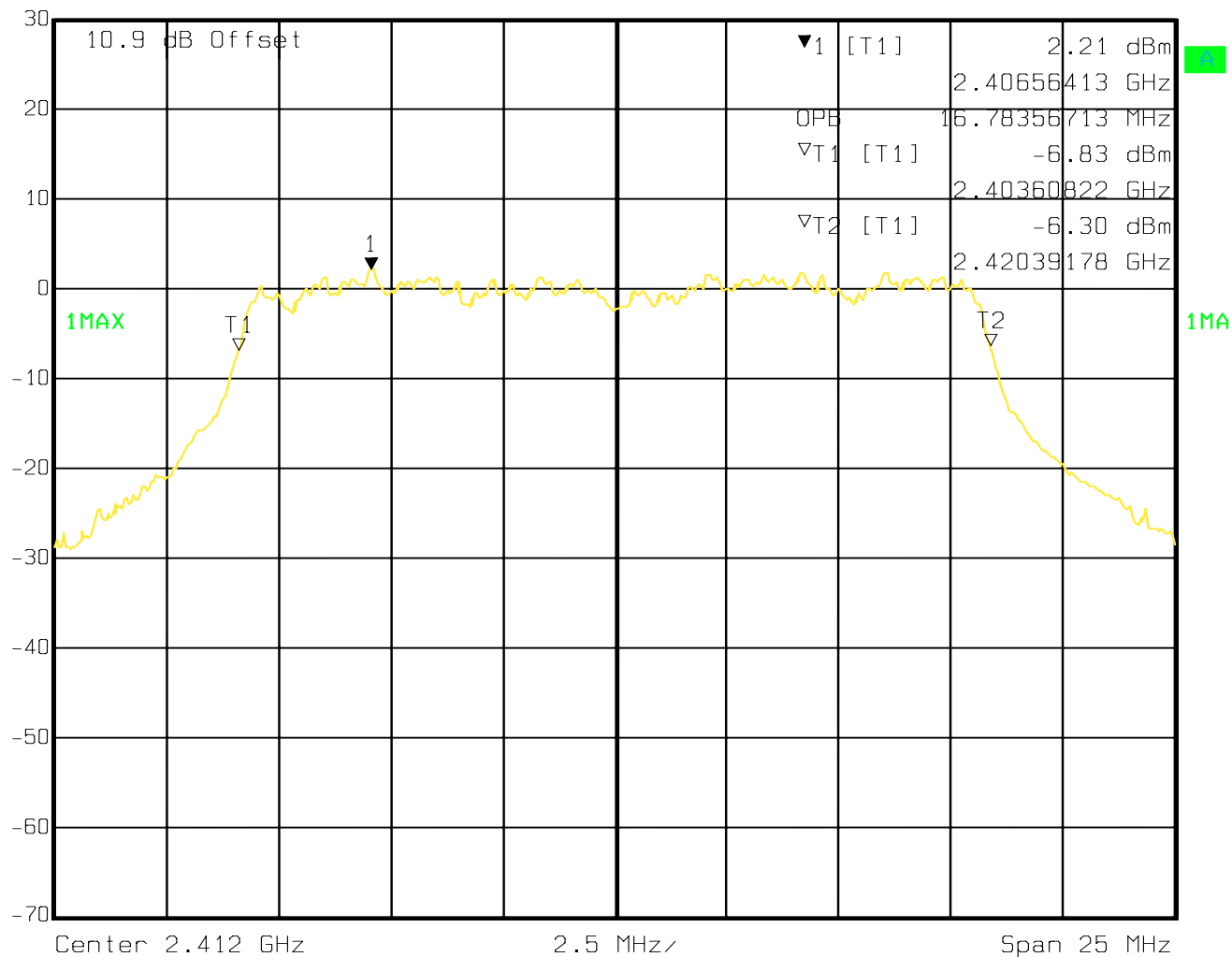


Date: 13.JAN.2010 16:33:32

99% Bandwidth, 802.11 g, Channel 1



Ref Lvl 30 dBm
 Marker 1 [T1] 2.21 dBm
 2.40656413 GHz
 RBW 200 kHz RF Att 40 dB
 VBW 1 MHz
 SWT 5 ms Unit dBm

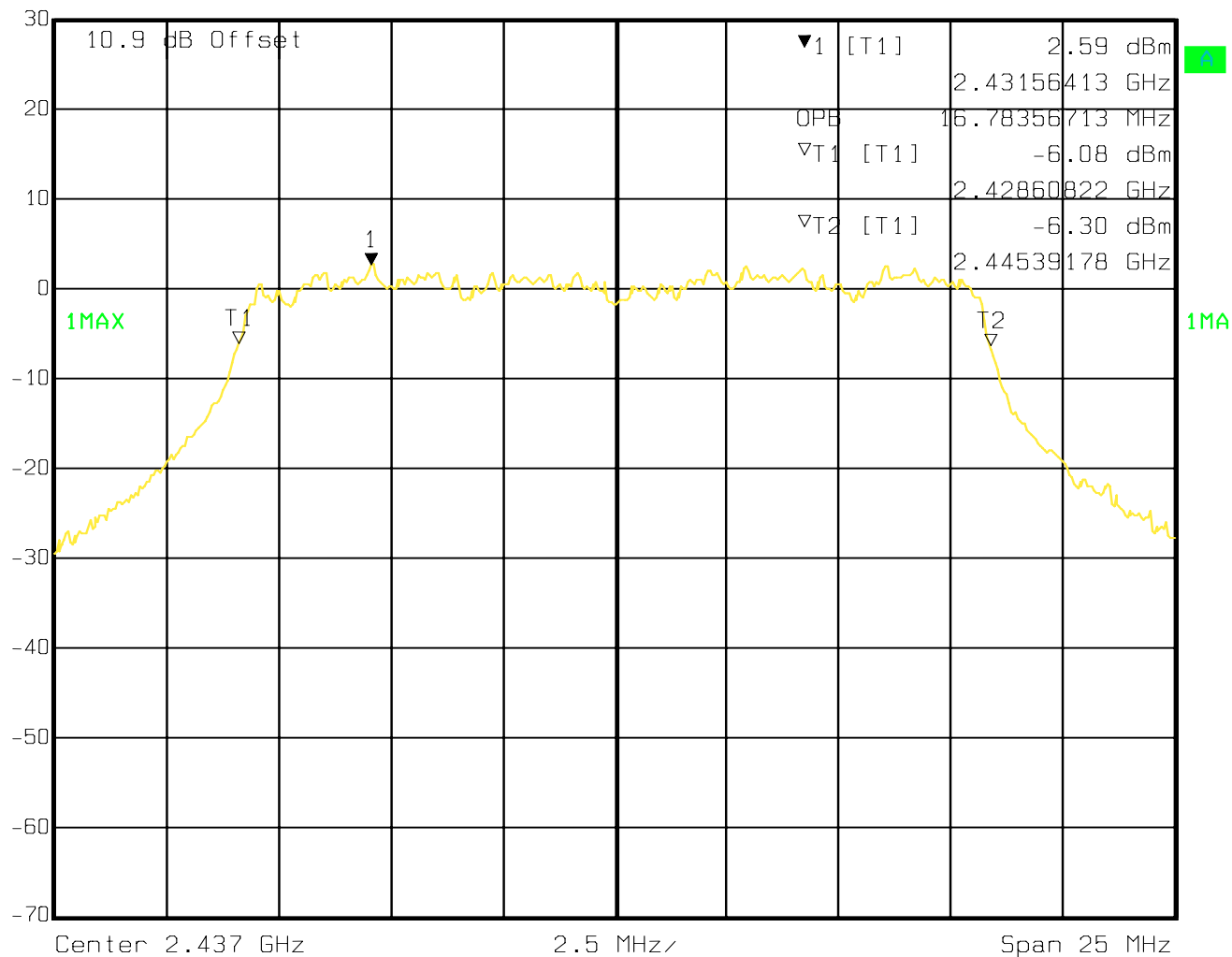


Date: 13.JAN.2010 16:39:13

99% Bandwidth, 802.11 g, Channel 6



Ref Lvl 30 dBm
 Marker 1 [T1] 2.59 dBm
 2.43156413 GHz
 RBW 200 kHz RF Att 40 dB
 VBW 1 MHz
 SWT 5 ms Unit dBm

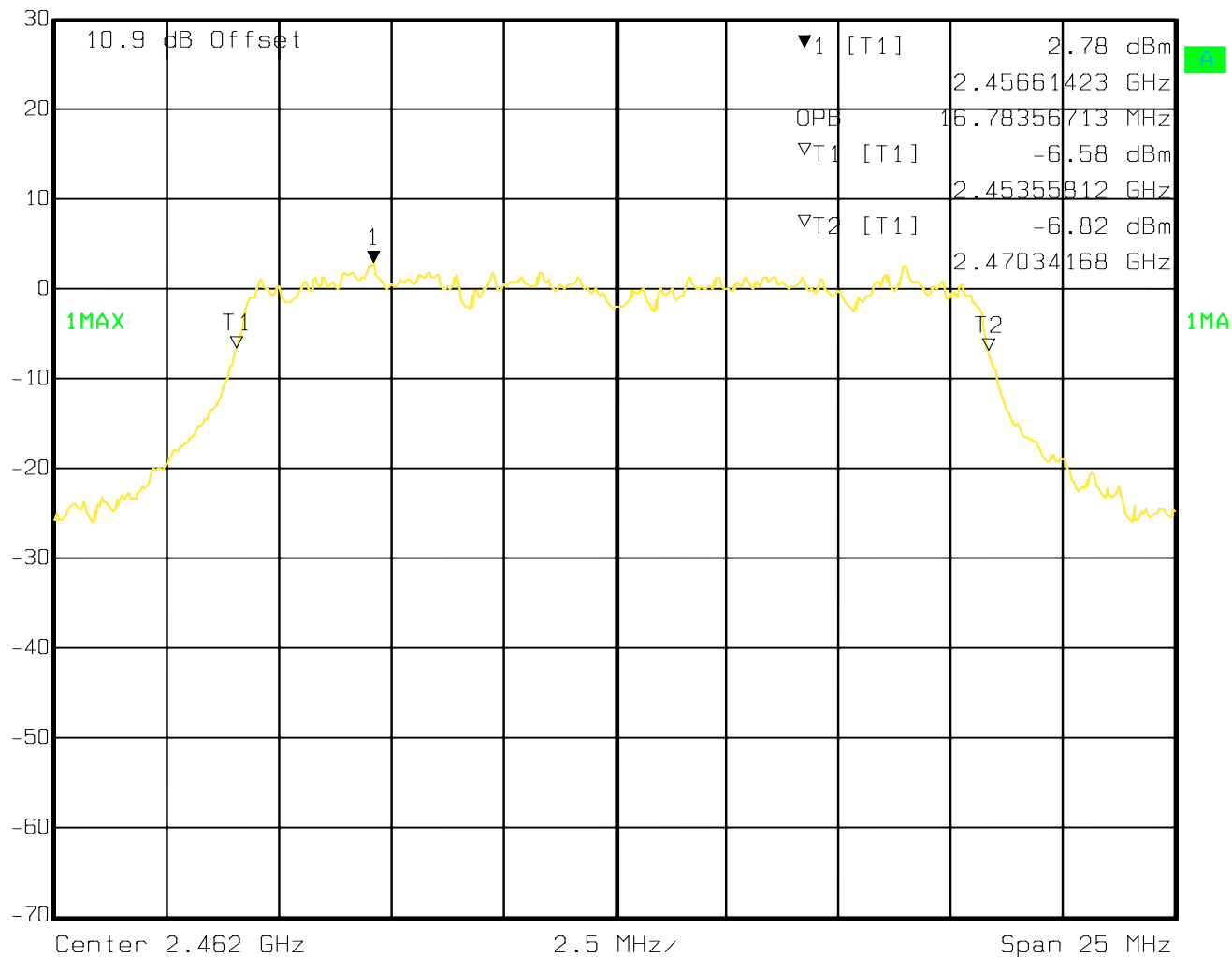


Date: 13.JAN.2010 16:37:55

99% Bandwidth, 802.11 g, Channel 11



Ref Lvl 30 dBm
 Marker 1 [T1] 2.78 dBm
 2.45661423 GHz
 RBW 200 kHz RF Att 40 dB
 VBW 1 MHz
 SWT 5 ms Unit dBm



Date: 13.JAN.2010 16:36:32

5.2 Conducted Power Measurement

5.2.1 Limit

FCC15.247 (b)(3): For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt

RSS210 A8.4(4): For systems employing digital modulation techniques operating in the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz, the maximum peak conducted output power shall not exceed 1 W. Except as provided in Section A8.4(5), the e.i.r.p. shall not exceed 4 W.

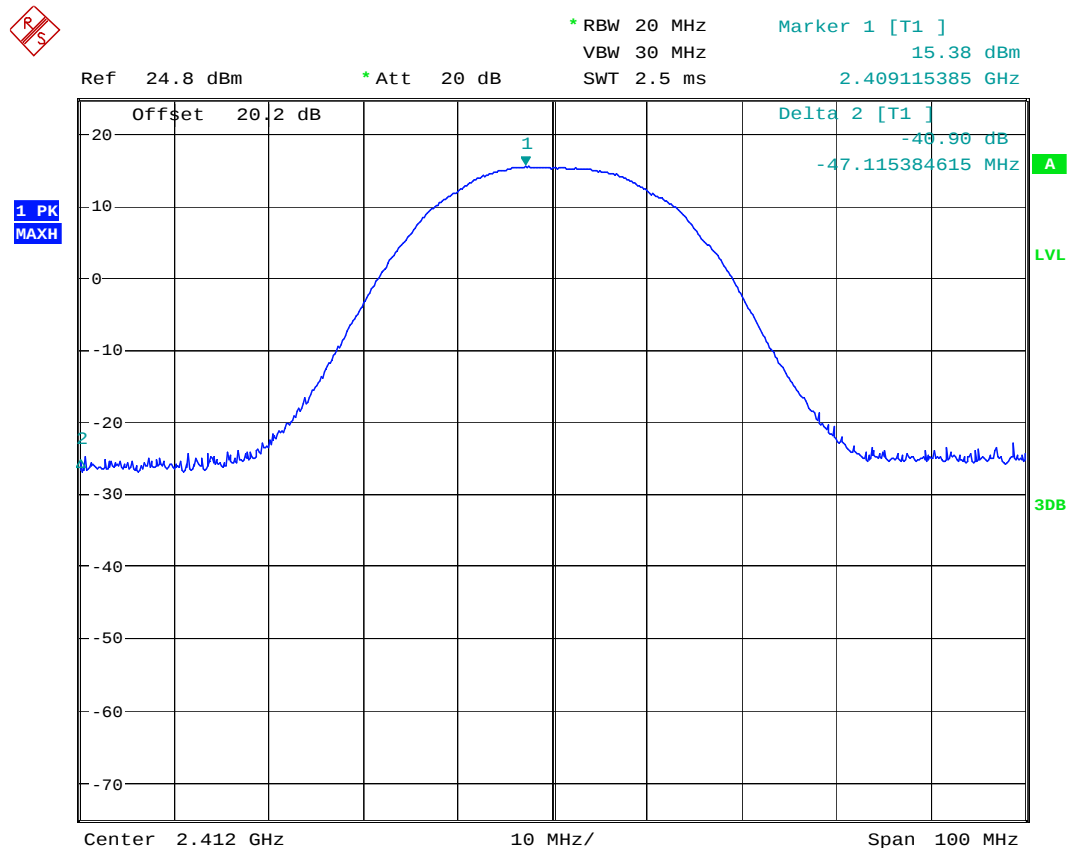
5.2.2 Results

Conducted power measurements were made using a spectrum analyzer and a peak power meter.

TEST CONDITIONS $T_{nom}(23)^{\circ}C$, $V_{nom}VDC$	Channel Frequency	Peak (dBm)	Peak (mW)	Verdict
Sub-band 1: 2400-2483.5MHz (802.11b)	2412	15.38	34.51	PASS
	2437	16.33	42.95	PASS
	2462	15.45	35.08	PASS
Sub-band 1: 2400-2483.5MHz (802.11g)	2412	20.60	114.82	PASS
	2437	21.28	134.28	PASS
	2462	20.21	104.95	PASS

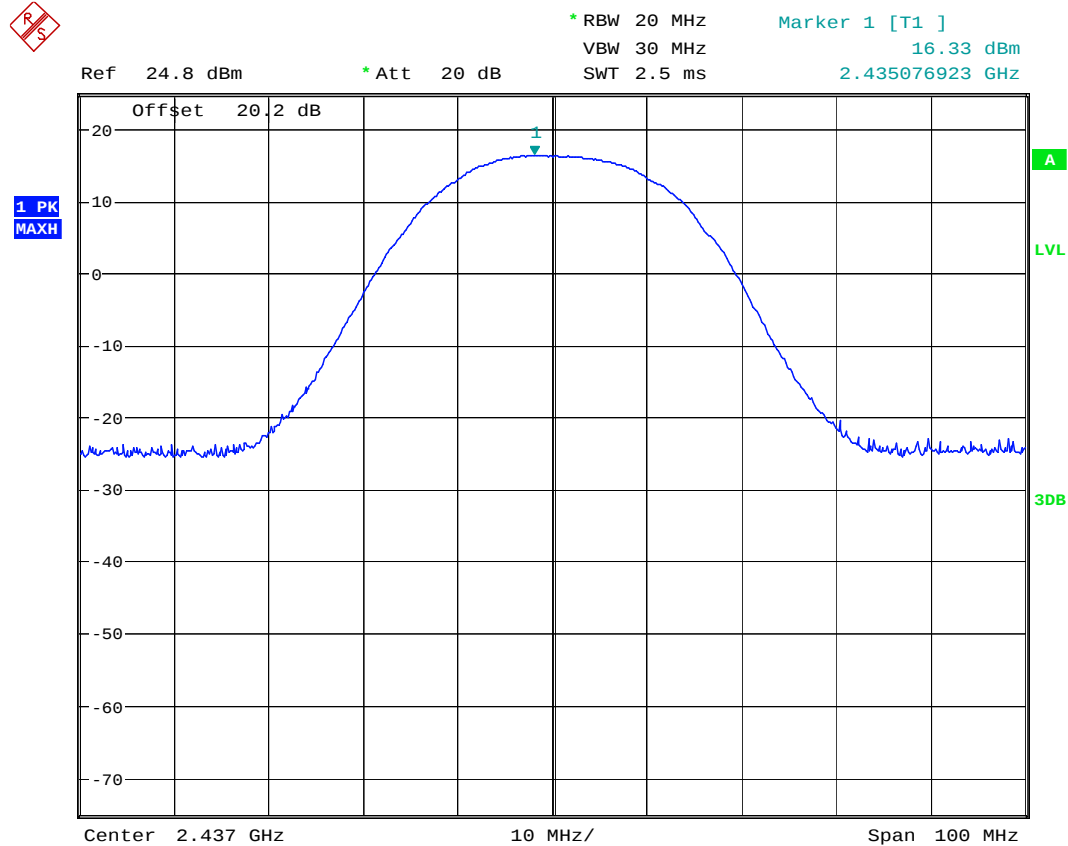
5.2.3 Test Plots:

802.11b 2412MHz



Date: 9.FEB.2010 10:20:18

802.11b 2437MHz

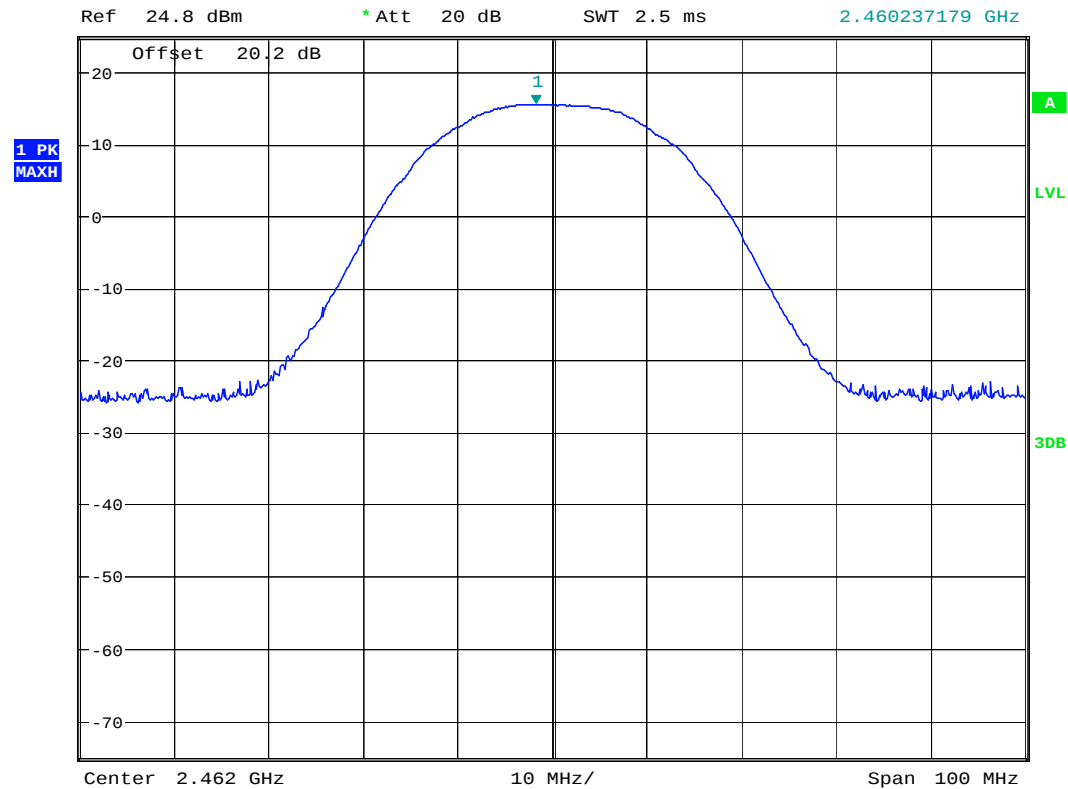


Date: 9.FEB.2010 10:22:17

802.11b 2462MHz



* RBW 20 MHz Marker 1 [T1]
 VBW 30 MHz 15.45 dBm
 SWT 2.5 ms 2.460237179 GHz



Date: 9.FEB.2010 10:23:17

802.11g 2412MHz



* RBW 20 MHz

Marker 1 [T1]

VBW 30 MHz

20.60 dBm

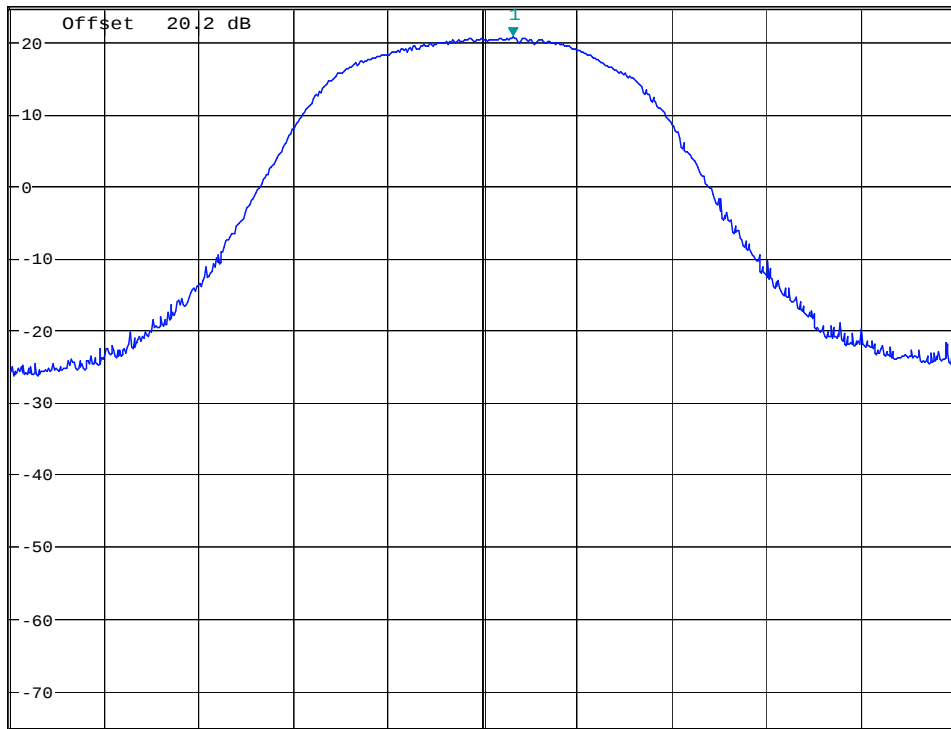
SWT 2.5 ms

2.415205128 GHz

Ref 24.8 dBm

* Att 20 dB

1 PK
MAXH



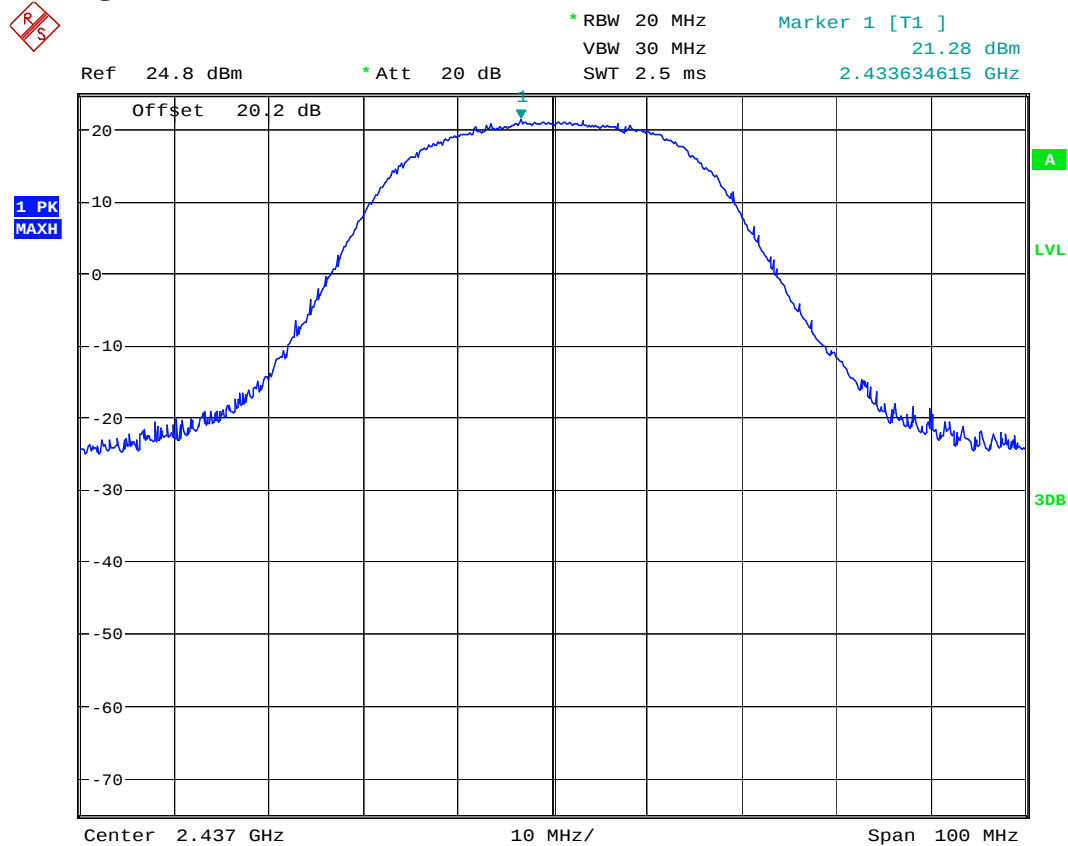
Center 2.412 GHz

10 MHz/

Span 100 MHz

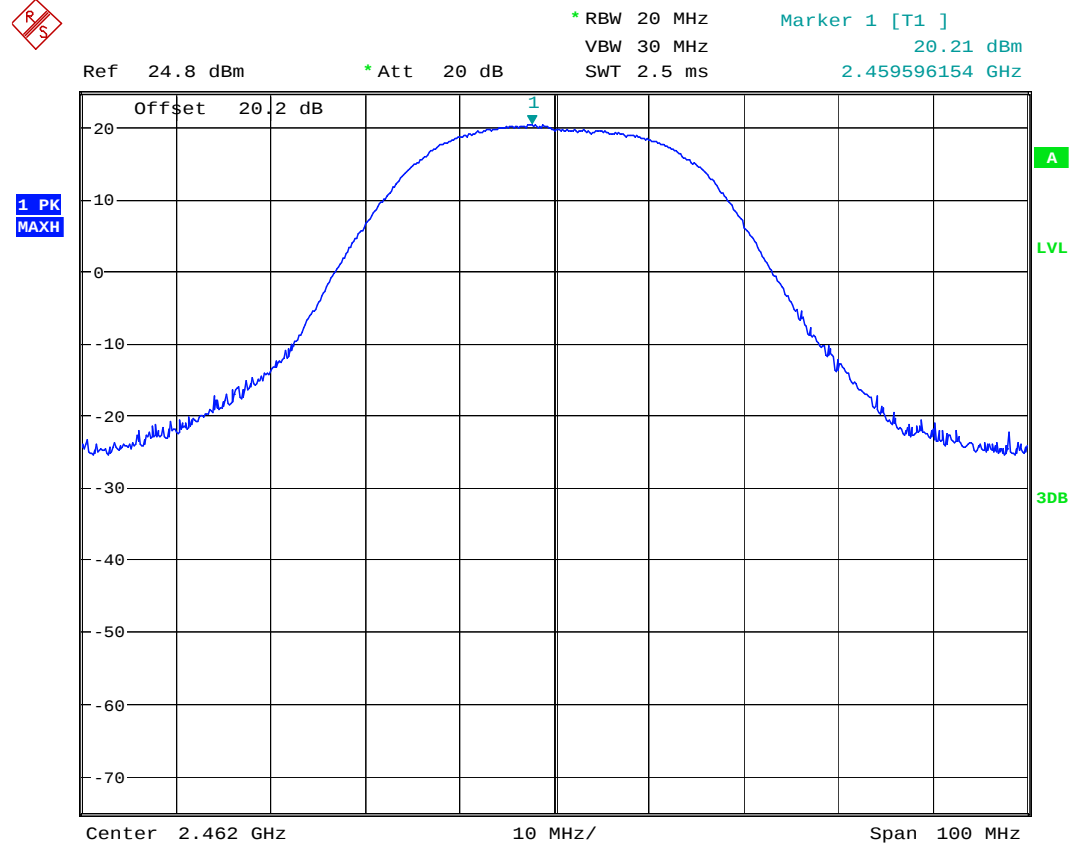
Date: 9.FEB.2010 10:25:21

802.11g 2437MHz



Date: 9.FEB.2010 10:24:41

802.11g 2462MHz



Date: 9.FEB.2010 10:24:13

5.3 Power Spectral Density

5.3.1 Limit

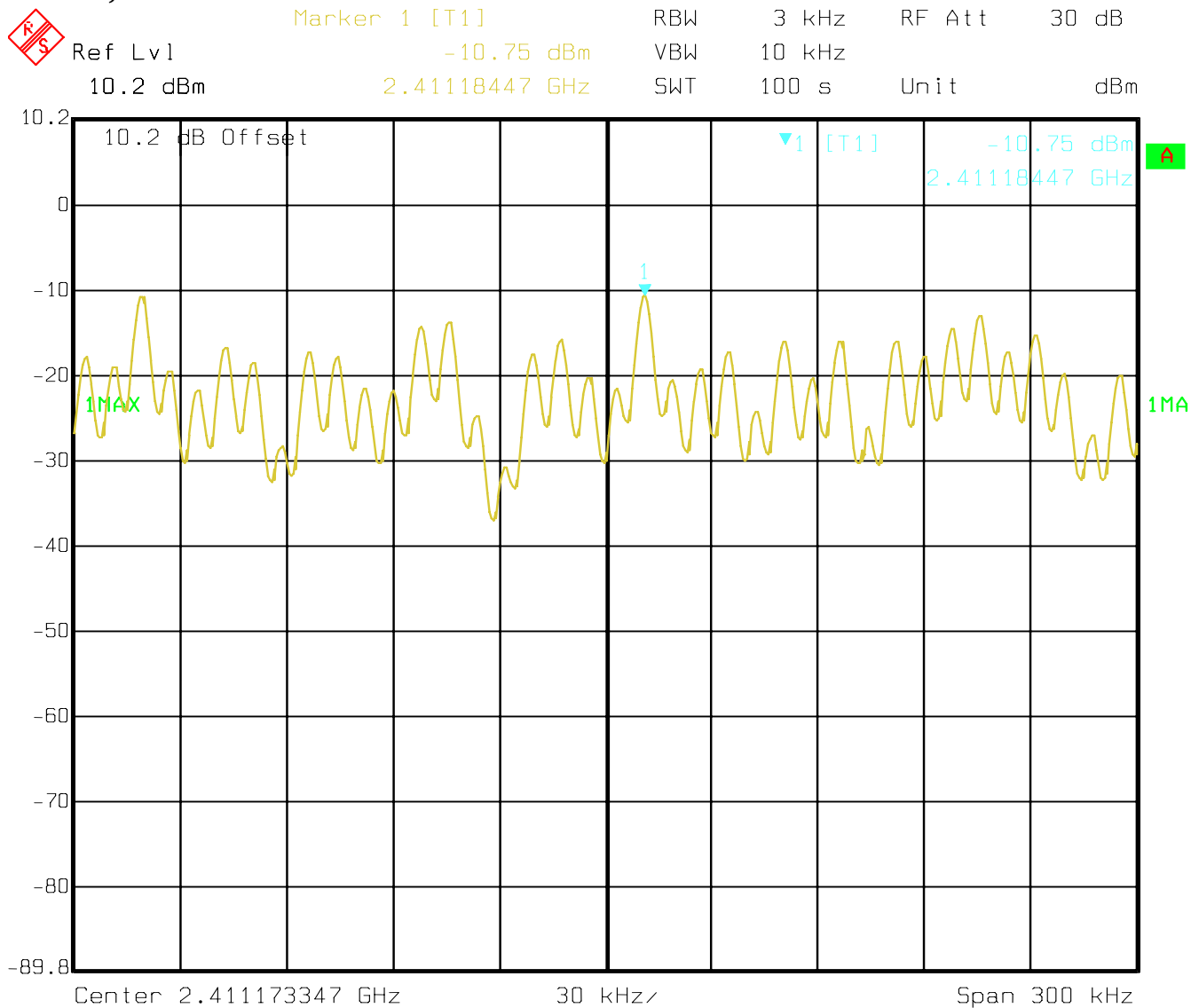
FCC 15.247 (e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

5.3.2 Results

TEST CONDITIONS $T_{nom}(23)^{\circ}C$, $V_{nom}VDC$	Channel Frequency	PSD (dBm)	Verdict
Sub-band 1: 2400-2483.5MHz (802.11b)	2412	-10.75	PASS
	2437	-9.83	PASS
	2462	-10.85	PASS
Sub-band 1: 2400-2483.5MHz (802.11g)	2412	-16.39	PASS
	2437	-17.58	PASS
	2462	-17.70	PASS

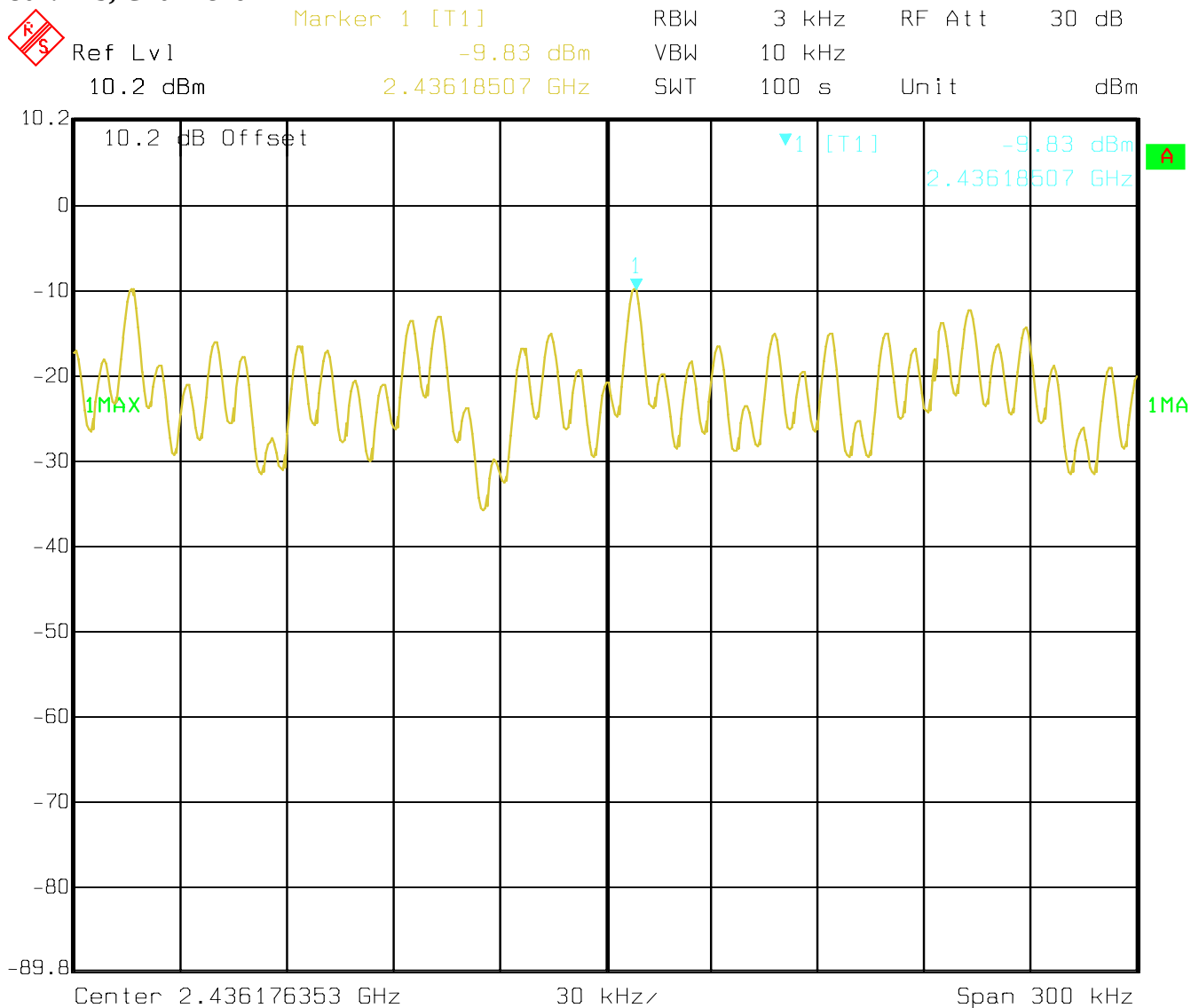
5.3.3 Plots

802.11 b, Channel 1



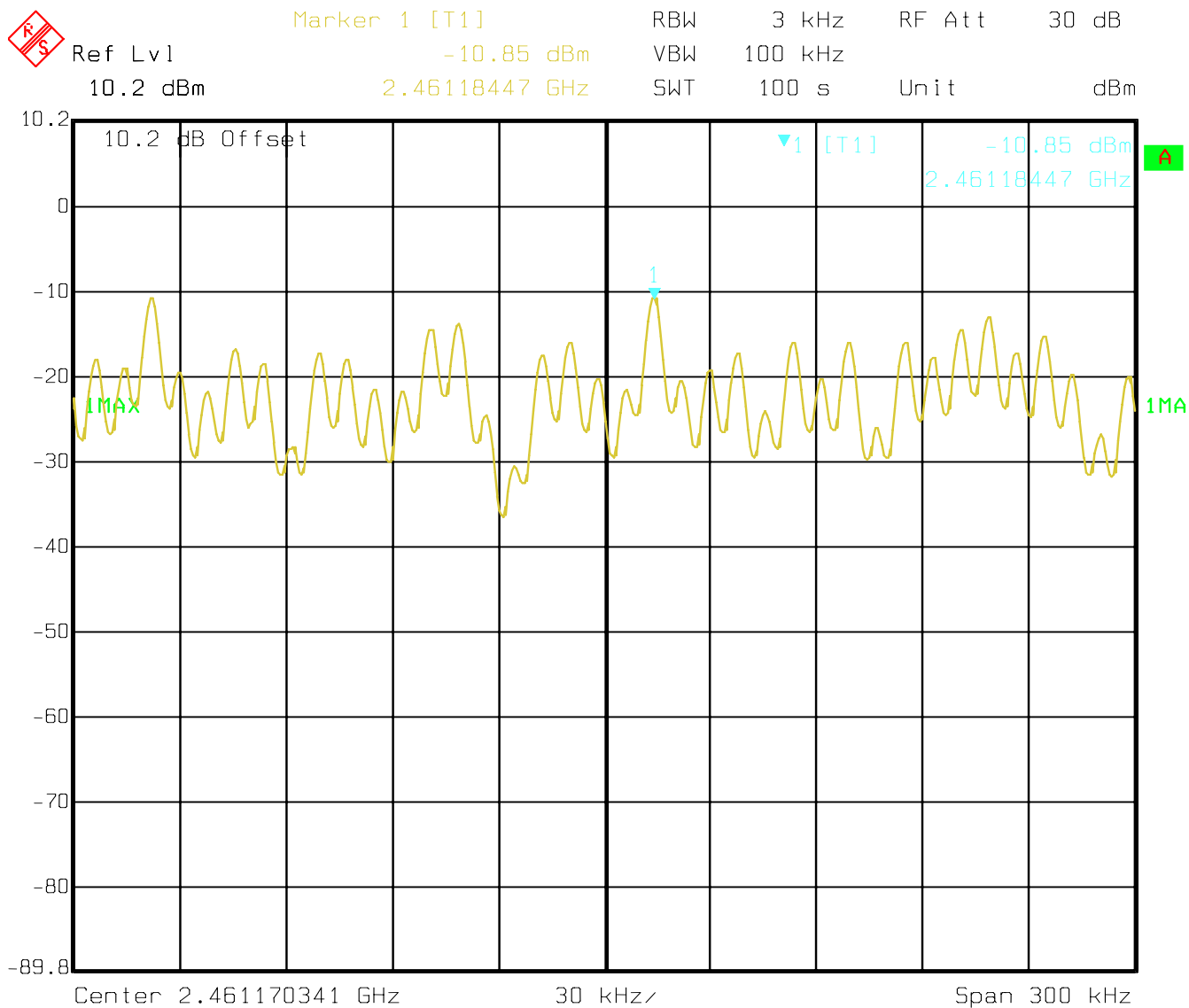
Date: 12.FEB.2010 15:13:44

802.11 b, Channel 6



Date: 12.FEB.2010 15:38:34

802.11 b, Channel 11

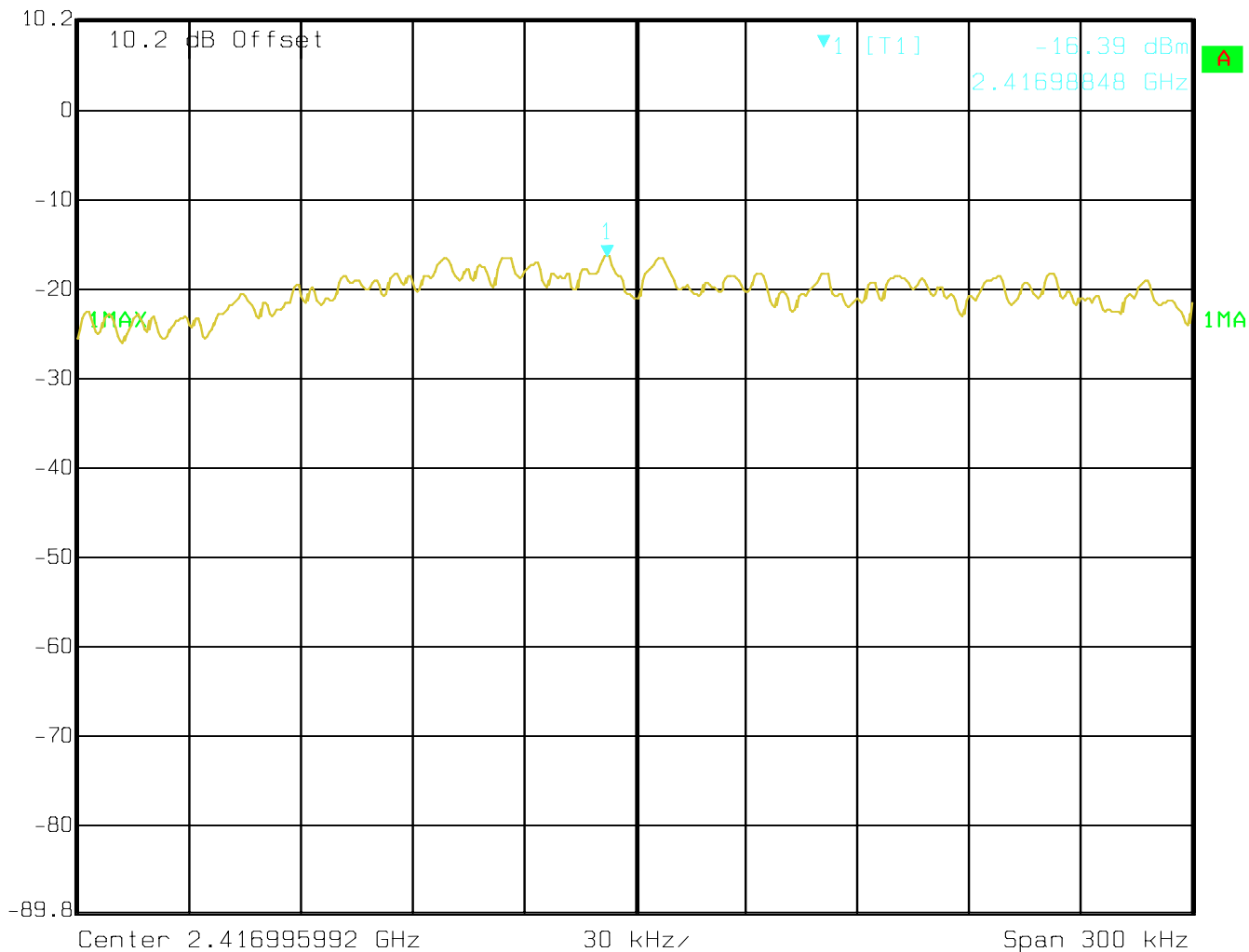


Date: 12.FEB.2010 15:46:07

802.11 g, Channel 1

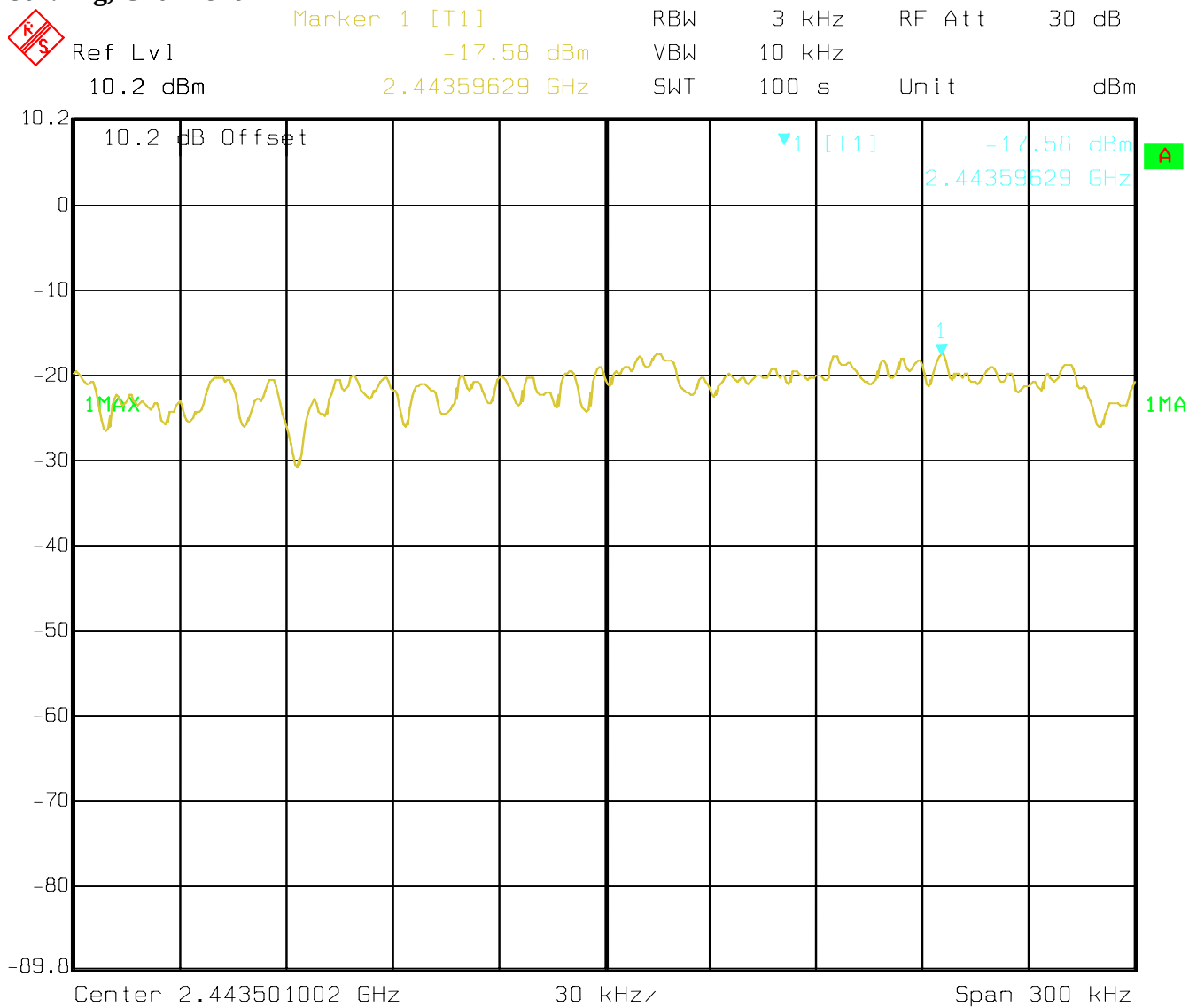


Marker 1 [T1] RBW 3 kHz RF Att 30 dB
 Ref Lvl -16.39 dBm VBW 10 kHz
 10.2 dBm 2.41698848 GHz SWT 100 s Unit dBm



Date: 12.FEB.2010 15:20:33

802.11 g, Channel 6

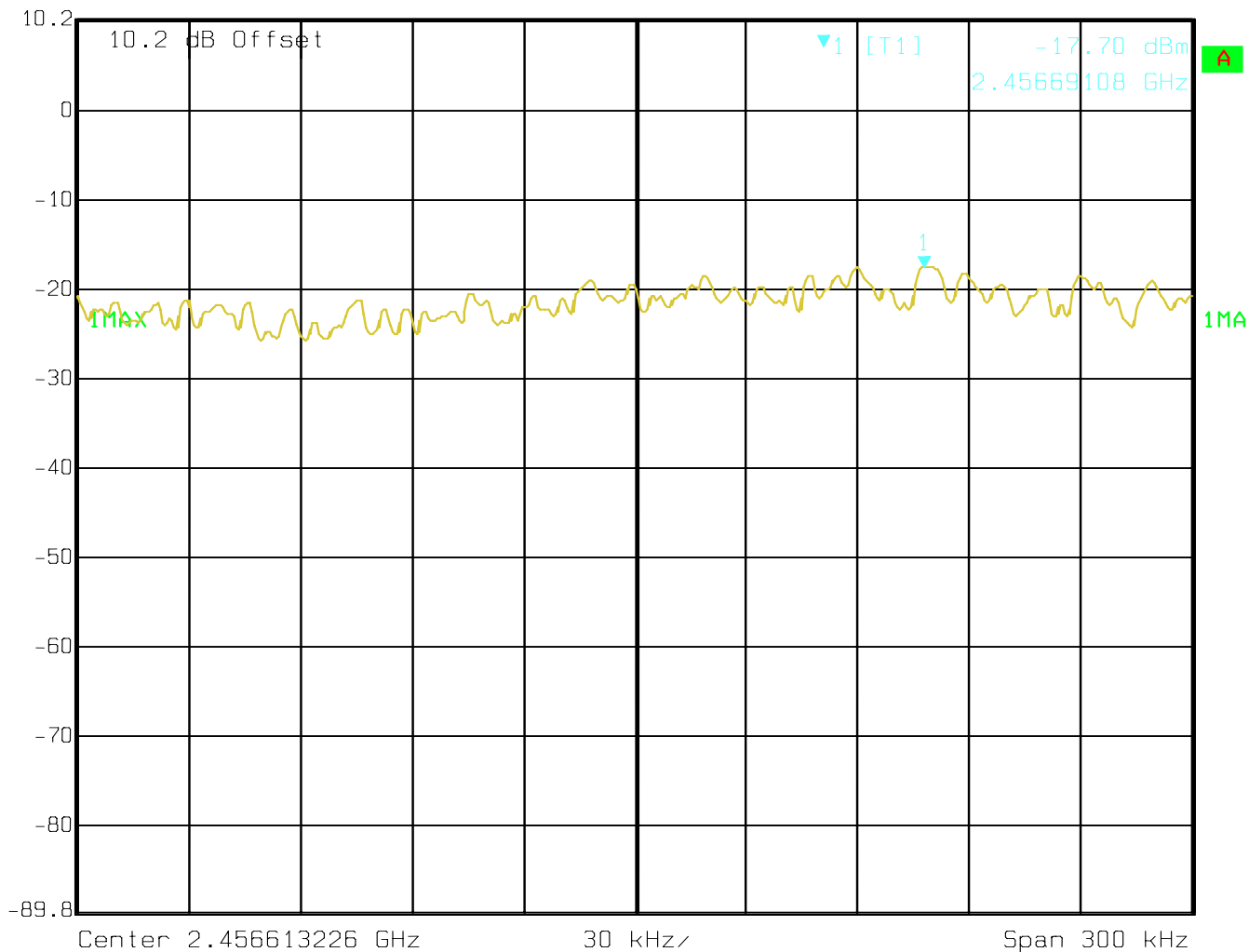


Date: 12.FEB.2010 15:31:09

802.11 g, Channel 11



Ref Lvl 10.2 dBm
 Marker 1 [T1] -17.70 dBm
 2.45669108 GHz
 RBW 3 kHz RF Att 30 dB
 VBW 10 kHz
 SWT 100 s Unit dBm



Date: 12.FEB.2010 15:52:42

5.4 Conducted Spurious Emission

5.4.1 Limit

§15.247(d) & RSS-210 (A8.5): -30dBc

5.4.2 Results:

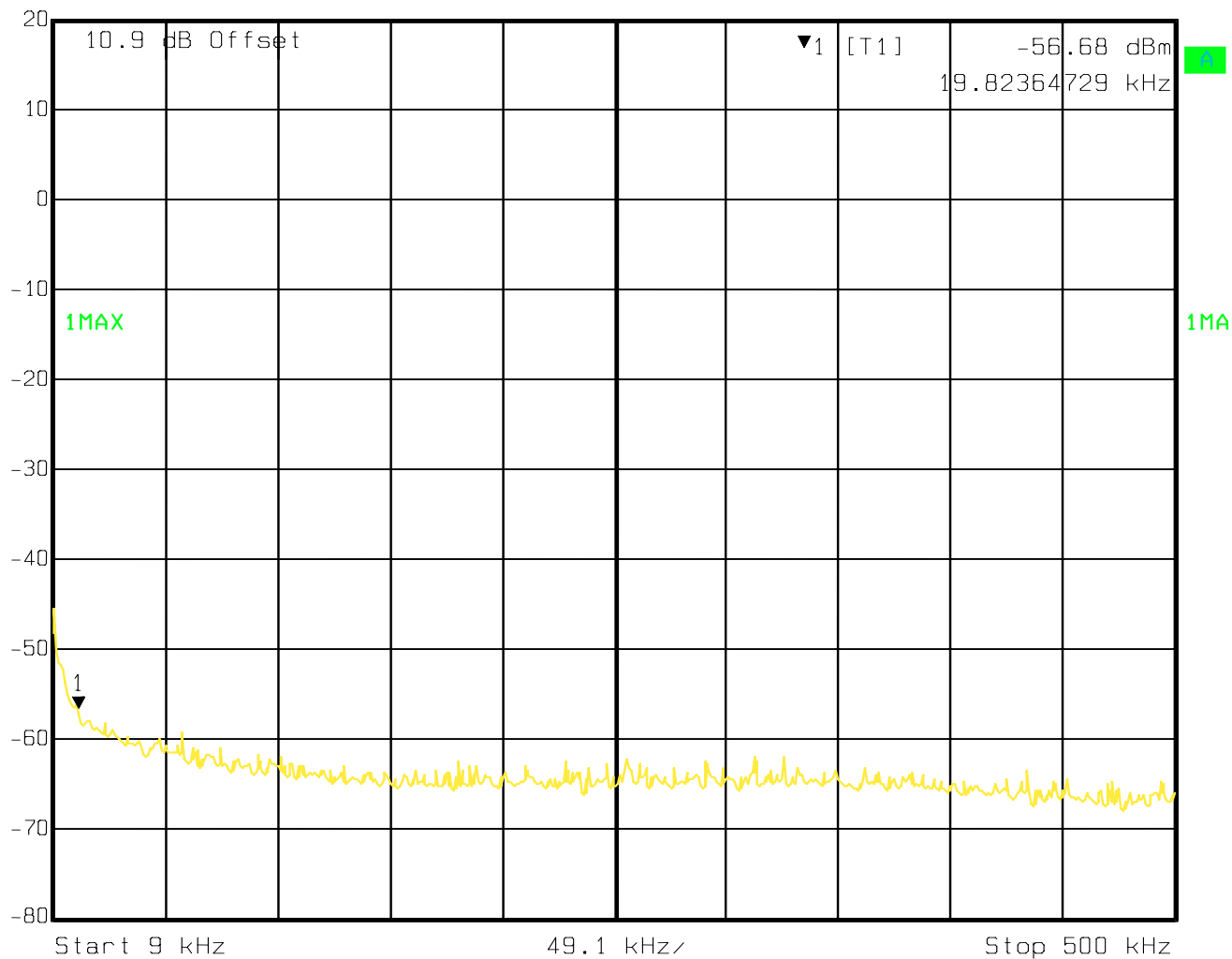
TEST CONDITIONS $T_{nom}(23)^{\circ}C$, $V_{nom}VDC$	Channel Frequency	Verdict
Sub-band 1: 2400-2483.5MHz (802.11g)	2412	PASS
	2437	PASS
	2462	PASS
Co-location with Bluetooth	BT: 2442 WLAN: 2412	PASS

Plots represent worst case of all modes.

5.4.3 Plots

802.11 g, Channel 1, 9kHz-500kHz

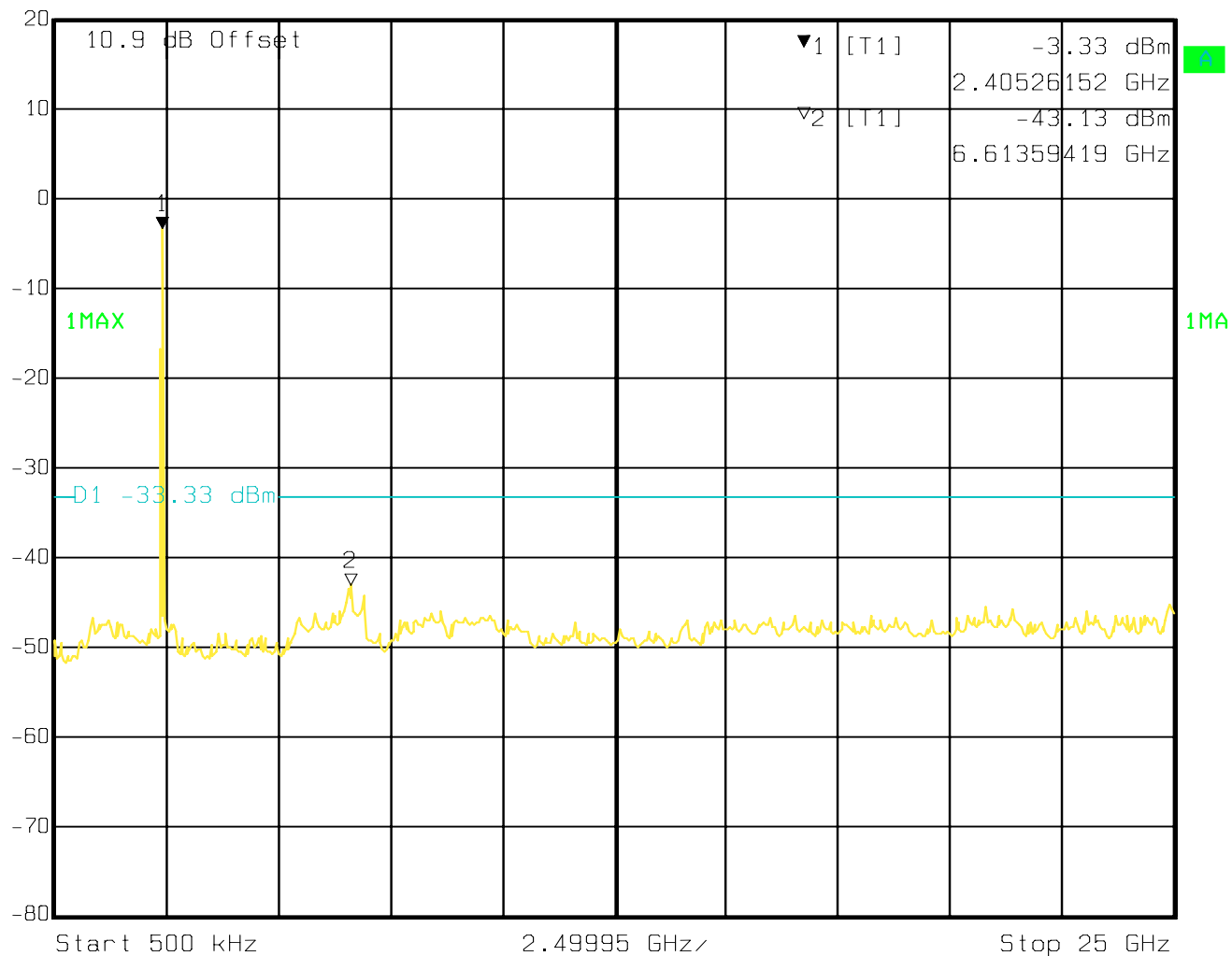

 Marker 1 [T1] RBW 3 kHz RF Att 30 dB
 Ref Lvl -56.68 dBm VBW 30 kHz
 20 dBm 19.82364729 kHz SWT 140 ms Unit dBm



Date: 13.JAN.2010 17:55:55

802.11 g, Channel 1, 500kHz-25GHz


 Ref Lvl 20 dBm
 Marker 1 [T1] -3.33 dBm
 2.40526152 GHz
 RBW 100 kHz RF Att 30 dB
 VBW 100 kHz
 SWT 6.4 s Unit dBm

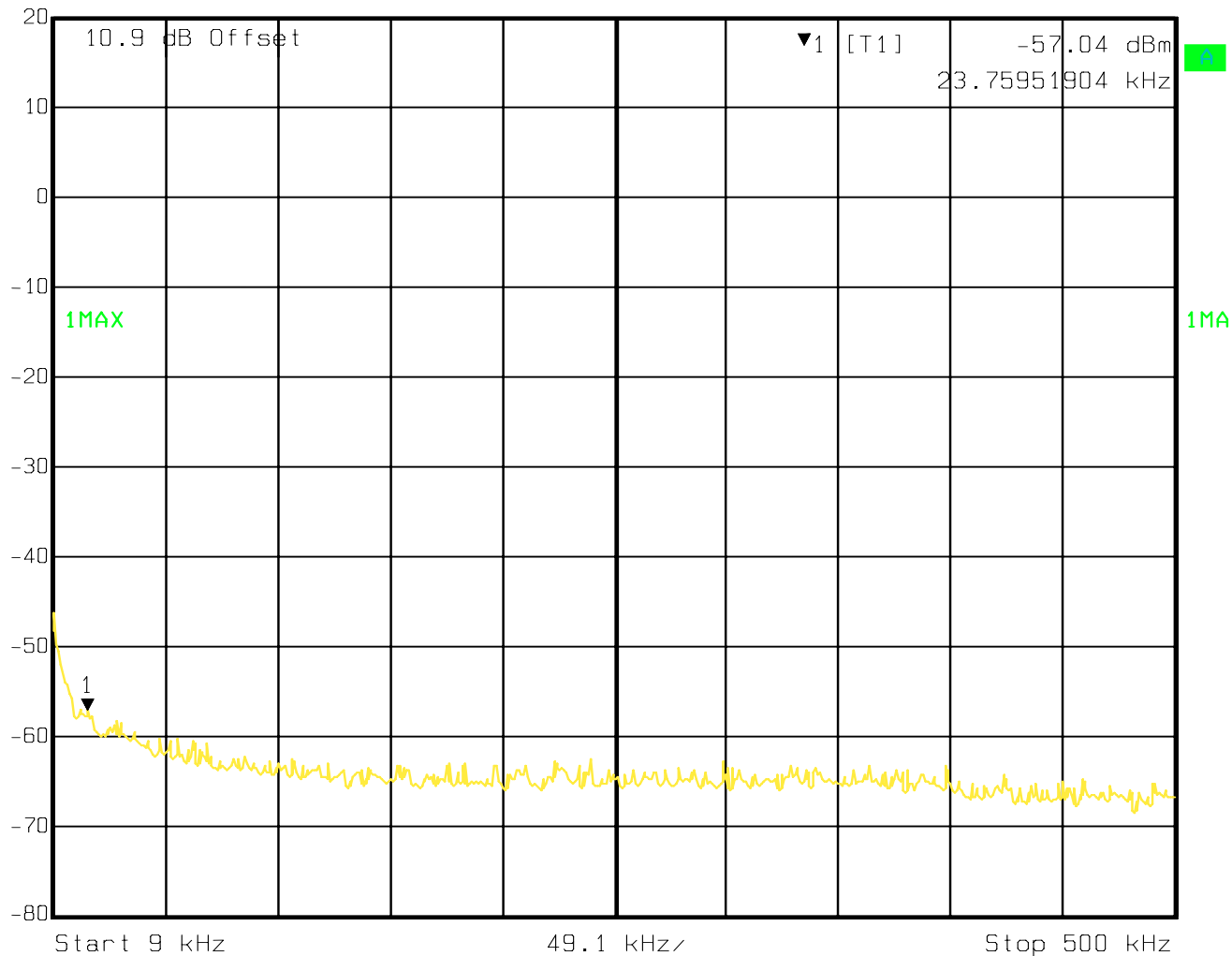


Date: 13.JAN.2010 17:53:53

802.11 g, Channel 6, 9kHz-500kHz



Ref Lvl 20 dBm
 Marker 1 [T1] -57.04 dBm
 23.75951904 kHz
 RBW 3 kHz RF Att 30 dB
 VBW 30 kHz
 SWT 140 ms Unit dBm

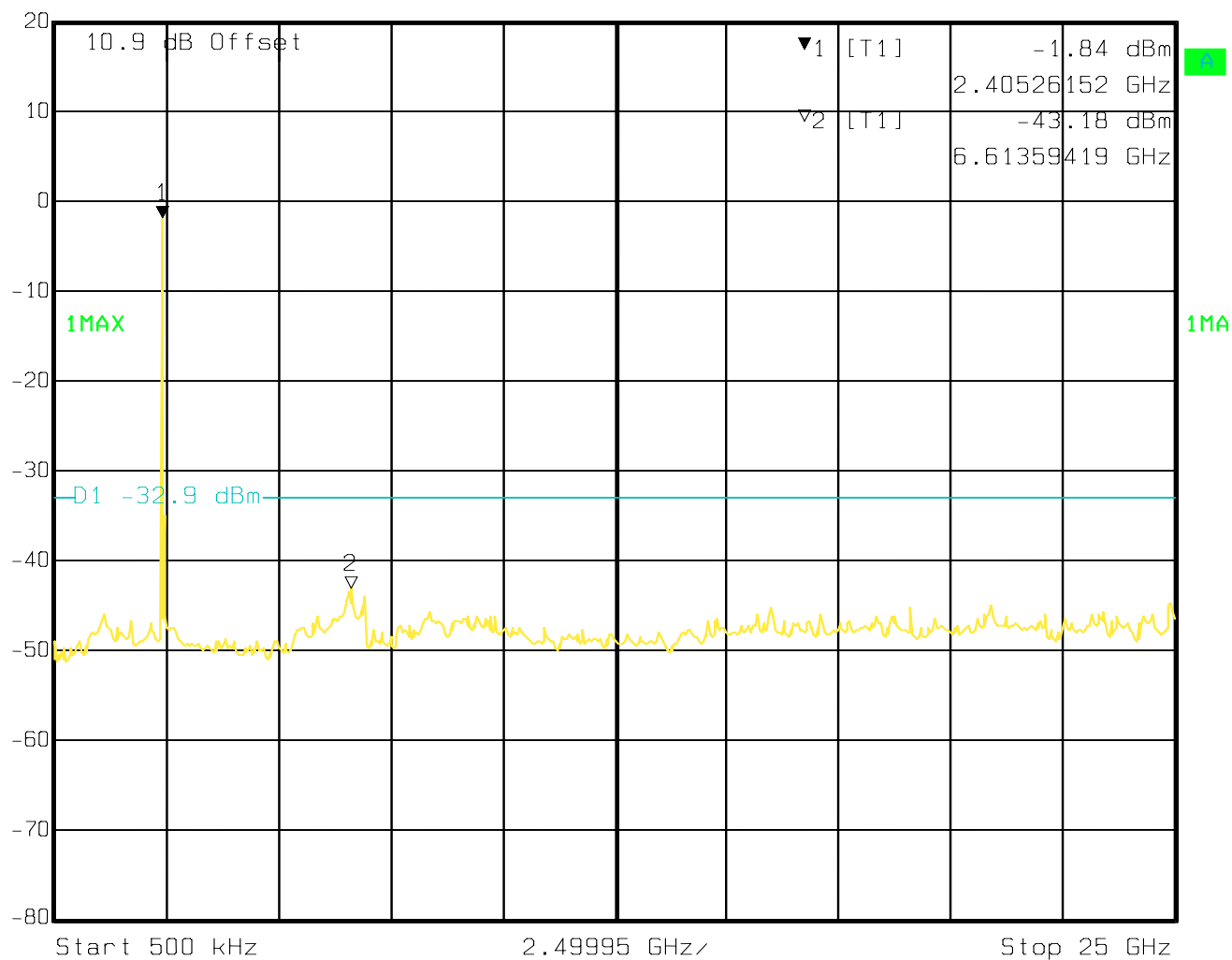


Date: 13.JAN.2010 17:57:12

802.11 g, Channel 6, 500kHz-25GHz



Marker 1 [T1] RBW 100 kHz RF Att 30 dB
 Ref Lvl -1.84 dBm VBW 100 kHz
 20 dBm 2.40526152 GHz SWT 6.4 s Unit dBm

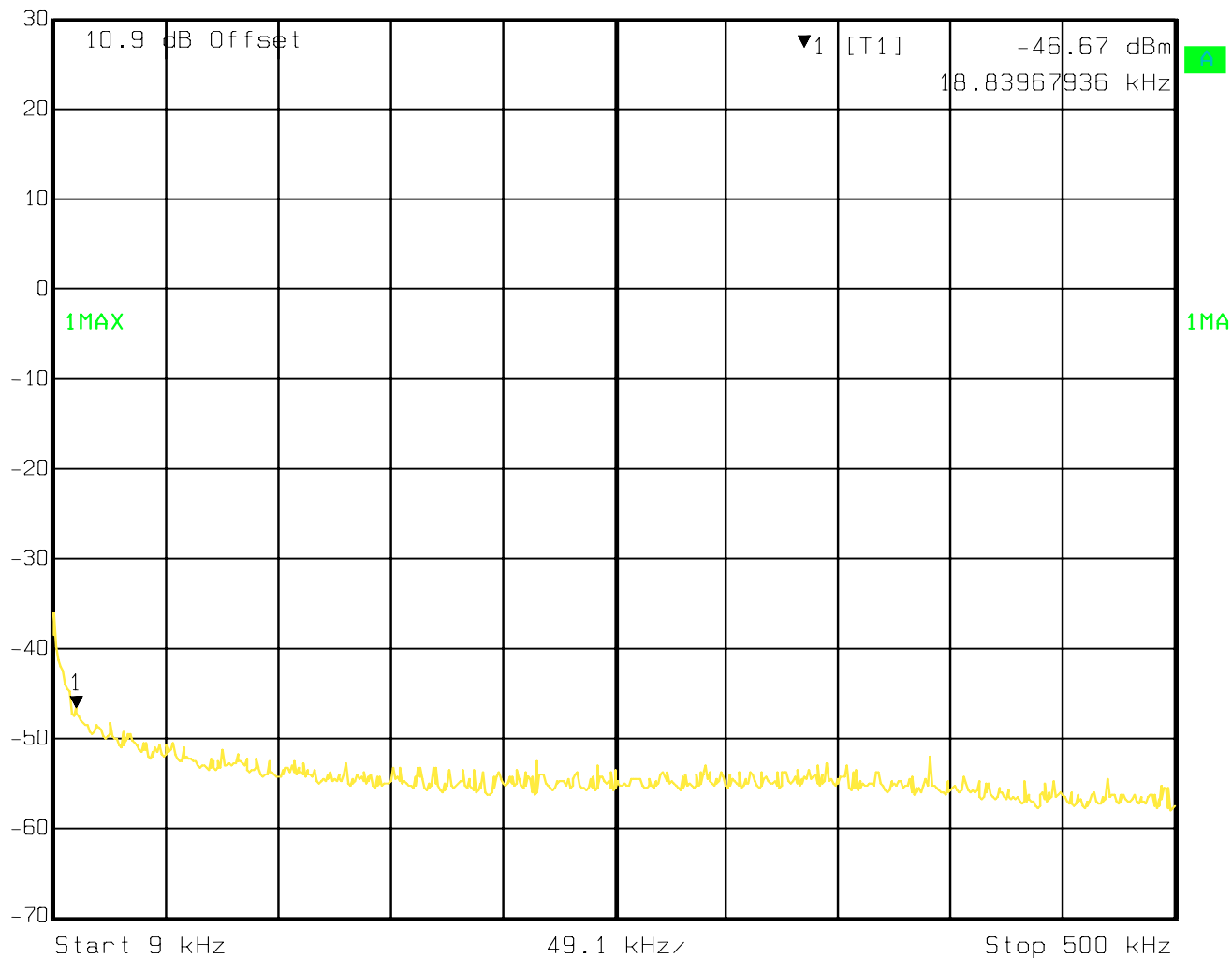


Date: 13.JAN.2010 17:51:27

802.11 g, Channel 11, 9kHz-500kHz



Ref Lvl 30 dBm
 Marker 1 [T1] -46.67 dBm
 18.83967936 kHz
 RBW 3 kHz RF Att 40 dB
 VBW 30 kHz
 SWT 140 ms Unit dBm

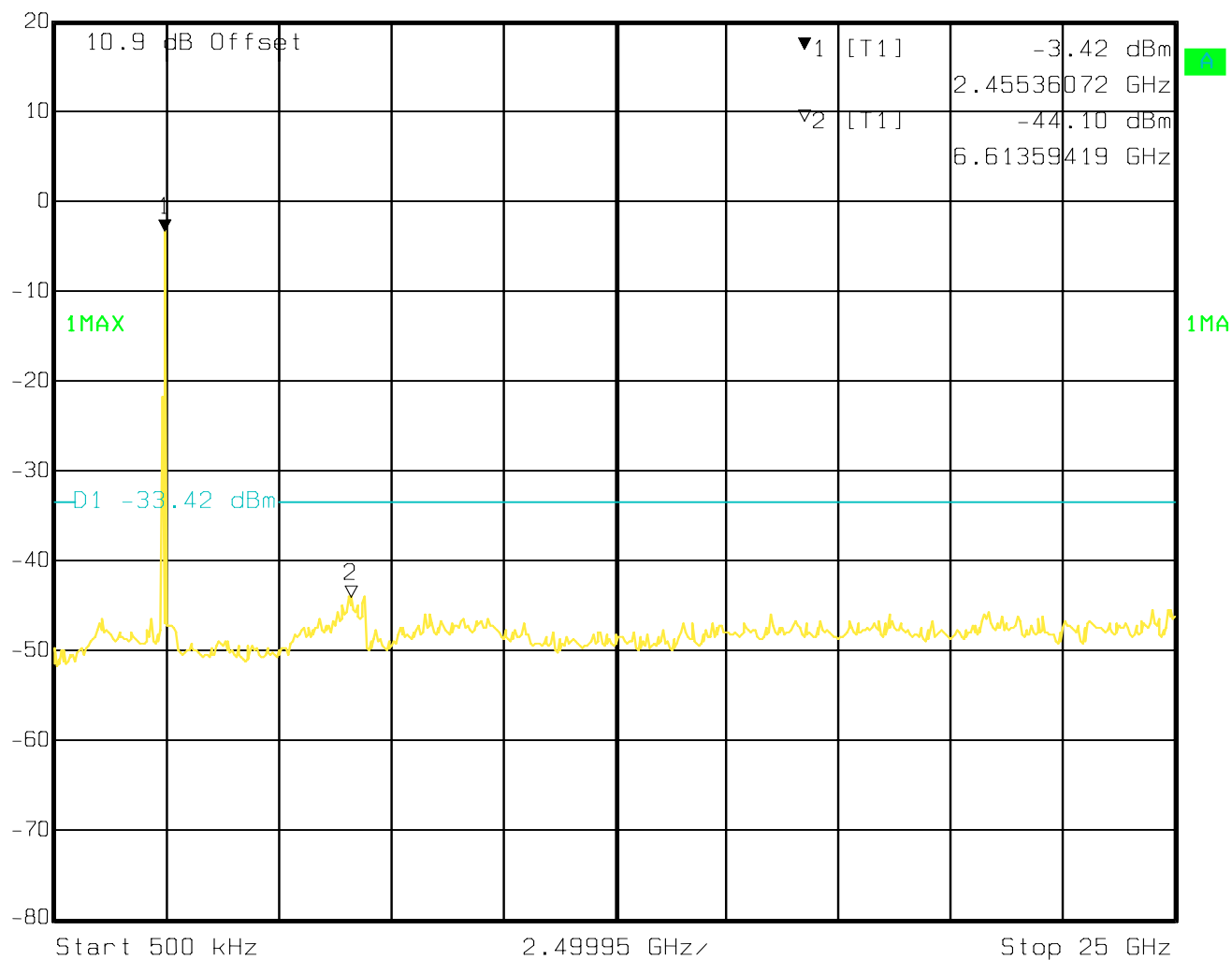


Date: 13.JAN.2010 17:44:38

802.11 g, Channel 11, 500kHz-25GHz

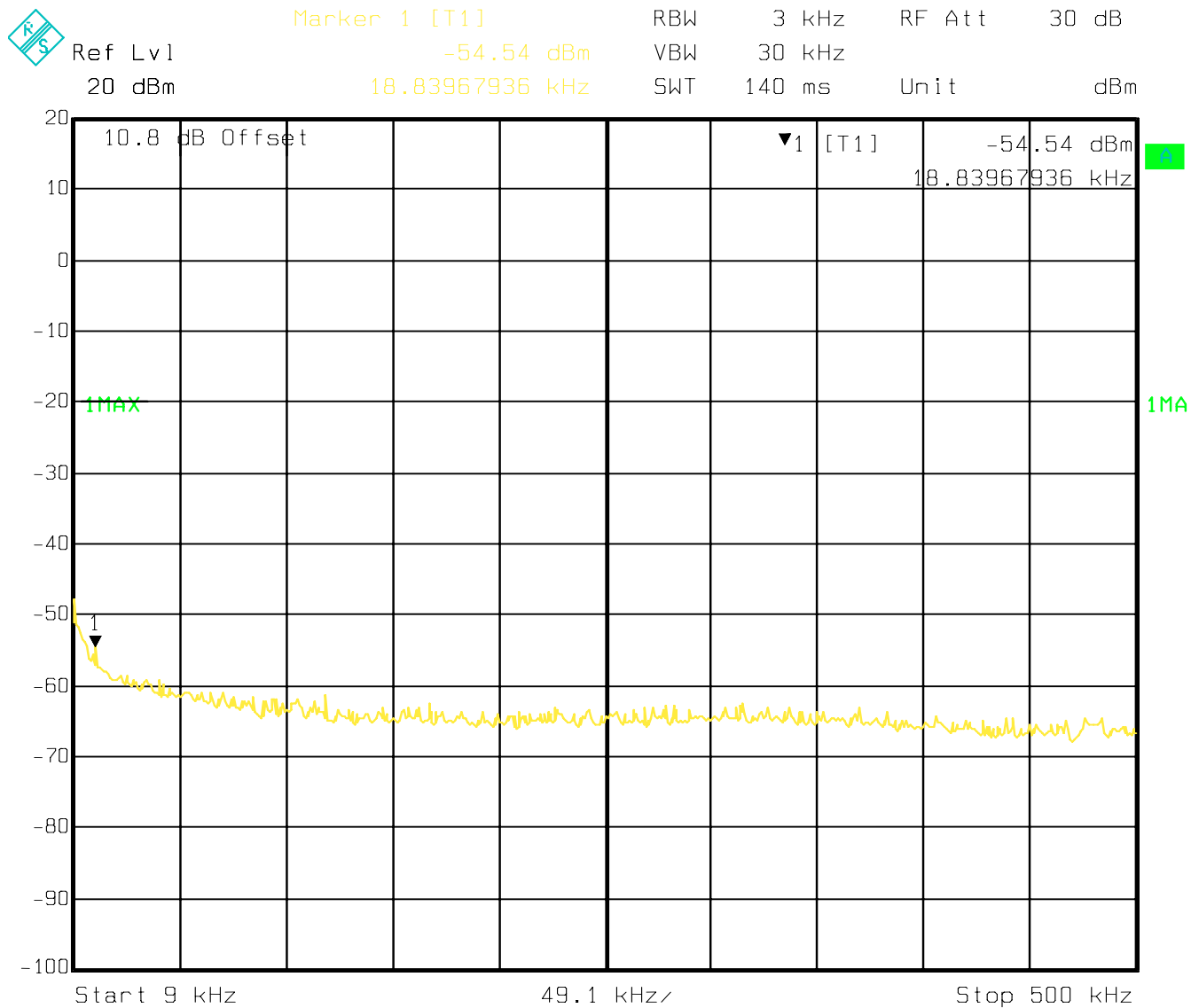


Marker 1 [T1] RBW 100 kHz RF Att 30 dB
 Ref Lvl -3.42 dBm VBW 100 kHz
 20 dBm 2.45536072 GHz SWT 6.4 s Unit dBm



Date: 13.JAN.2010 17:52:43

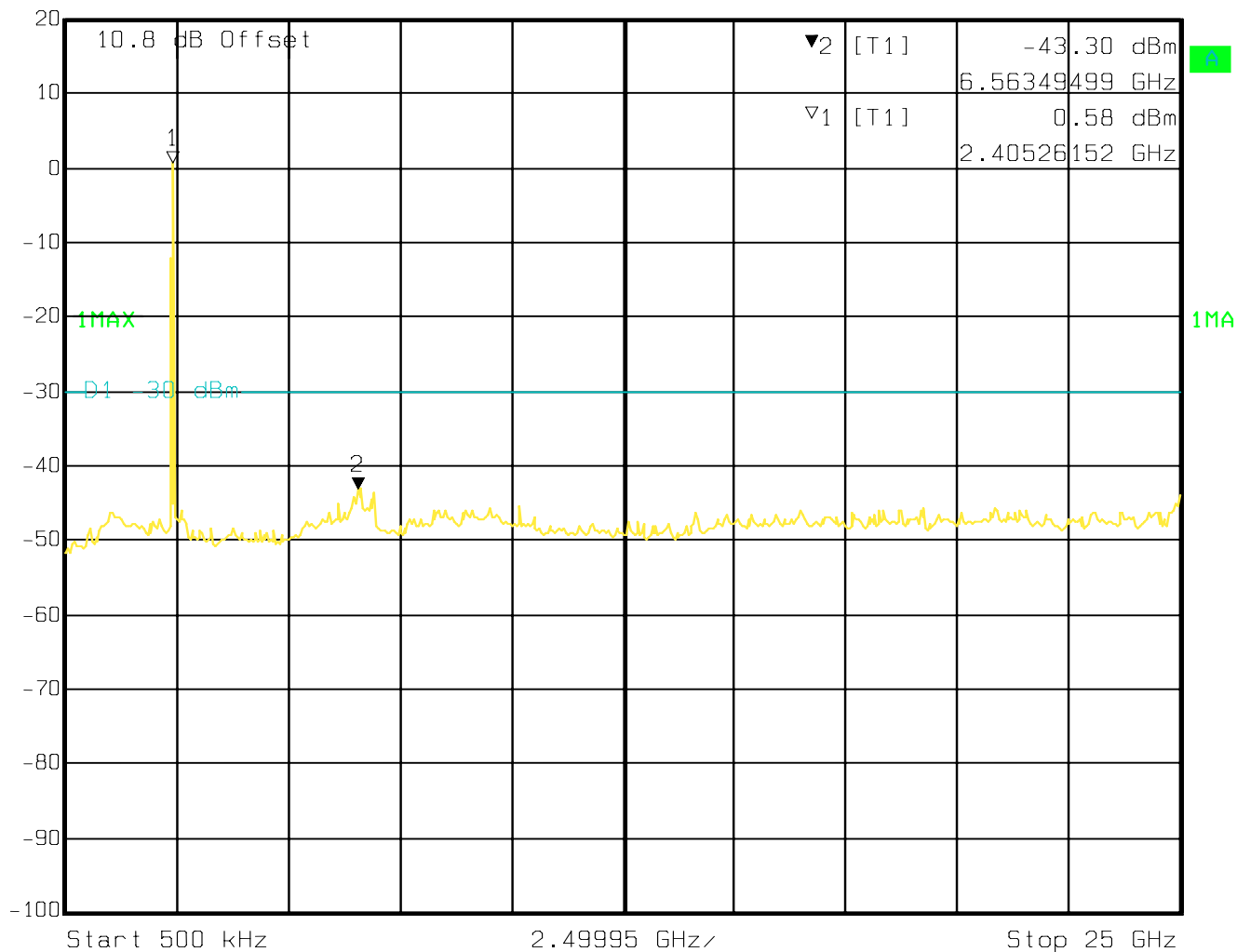
Co-location, BT: 2442 MHz, WLAN 2412 MHz, 9kHz-500kHz



Date: 22.JAN.2010 07:51:54

Co-location, BT: 2442 MHz, WLAN 2412 MHz, 500kHz-25GHz


 Ref Lvl 20 dBm
 Marker 2 [T1] -43.30 dBm
 6.56349499 GHz
 RBW 100 kHz RF Att 30 dB
 VBW 100 kHz
 SWT 6.4 s Unit dBm



Date: 22.JAN.2010 07:54:28

5.5 AC POWER LINE CONDUCTED EMISSIONS § 15.107/207**5.5.1 LIMITS****Technical specification: 15.107 / 15.207 (Revised as of August 20, 2002)**

§15.107 (a) Except for Class A digital devices, for equipment 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 µH/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.

Limit

Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	Quasi-Peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50
* Decreases with logarithm of the frequency		

ANALYZER SETTINGS: RBW = 10KHz**VBW = 10KHz**

Note: AC Line Conducted Emission reported here are the worse cases among all operating modes.

5.5.2 RESULT:

No significant emissions measurable. Plots reported here represent the worse case emissions for all modes.

5.5.3 PLOTS

Standard Cover with AC Adapter #24

EMI Auto Test(1)

1 / 1

EMI Auto Test(1)

EUT Information

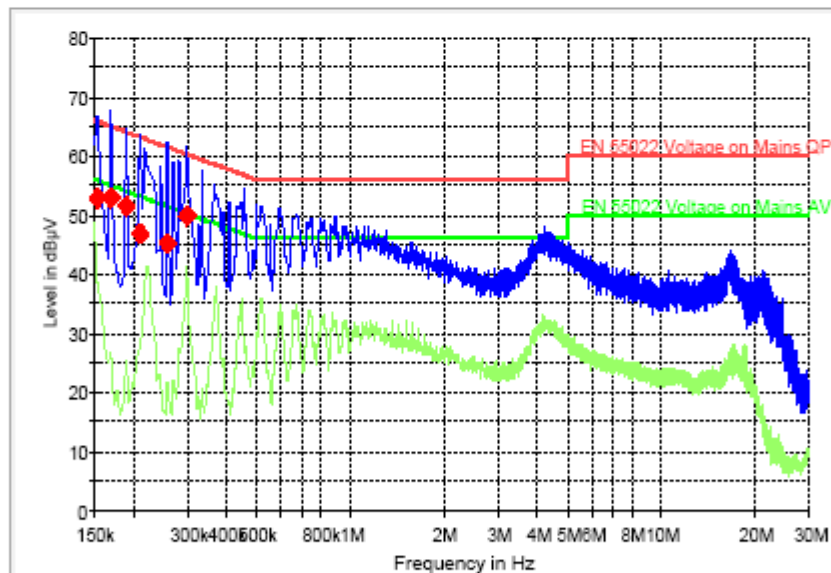
Description:

EUT Name: GSM/UMTS Phone
Manufacturer: Palm
Serial Number: (FCC 15.247 Sample)
Configuration: Standard Cover and AC adapter #24
Comment: Wi-Fi and BT Enabled

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.154000	52.9	5000.000	9.000	GND	N	1.0	12.9	65.8	
0.170000	52.9	5000.000	9.000	GND	N	1.0	12.1	65.0	
0.190000	51.5	5000.000	9.000	GND	L1	0.9	12.5	64.0	
0.210000	46.9	5000.000	9.000	GND	N	0.9	16.3	63.2	
0.258000	45.1	5000.000	9.000	GND	N	0.8	16.4	61.5	
0.298000	50.0	5000.000	9.000	GND	L1	0.6	10.3	60.3	

CISPR 22 Mains Conducted



— EN 55022 Voltage on Mains QP Limit Line
— Preview Result 1
◆ Final Result 1

— EN 55022 Voltage on Mains AV Limit Line
— Preview Result 2

Standard Cover with AC Adapter #30

EMI Auto Test(1)

1 / 1

EMI Auto Test(1)**EUT Information**

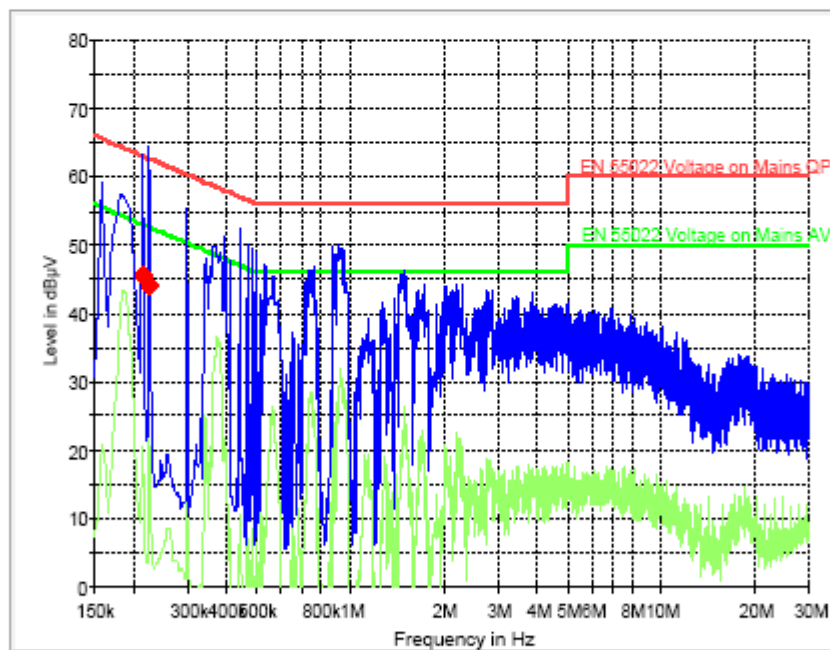
Description:

EUT Name: GSM/UMTS Phone
Manufacturer: Palm
Serial Number: (FCC 15.247 Sample)
Configuration: Standard Cover and AC adapter #30
Comment: Wi-Fi and BT Enabled

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.214000	45.6	5000.000	9.000	GND	N	0.9	17.4	63.0	
0.226000	44.1	5000.000	9.000	GND	N	0.8	18.5	62.6	

CISPR 22 Mains Conducted



— EN 55022 Voltage on Mains QP Limit Line
— EN 55022 Voltage on Mains AV Limit Line
— Preview Result 1
— Preview Result 2
◆ Final Result 1

Inductive Cover with Inductive Dock and AC Adapter #24

EMI Auto Test(1)

1 / 1

EMI Auto Test(1)**EUT Information**

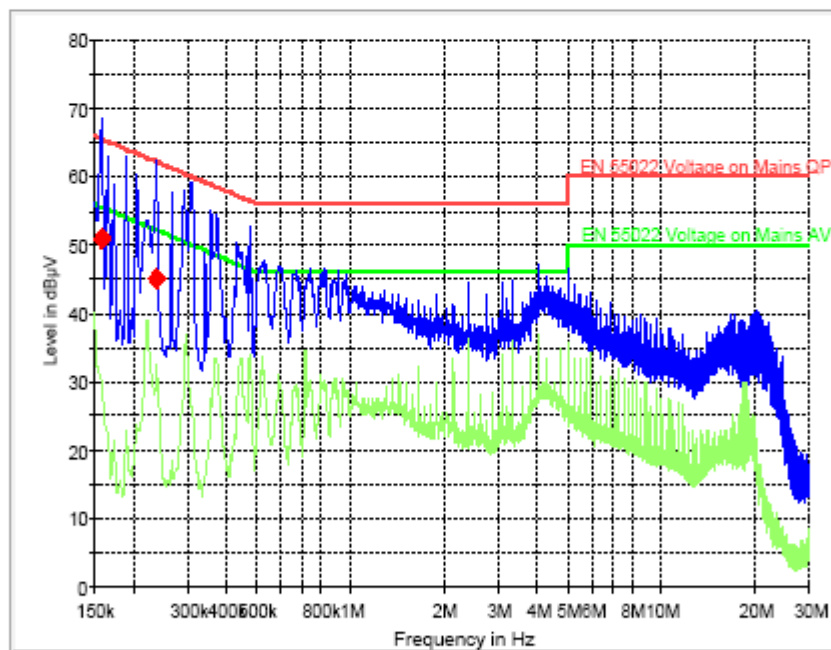
Description:

EUT Name: GSM/UMTS Phone
Manufacturer: Palm
Serial Number: (FCC 15.247 Sample)
Configuration: Inductive Cover with Inductive Dock and AC adapter #24
Comment: Wi-Fi and BT Enabled

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.158000	51.0	5000.000	9.000	GND	L1	1.0	14.6	65.6	
0.238000	45.1	5000.000	9.000	GND	N	0.8	17.1	62.2	

CISPR 22 Mains Conducted



EN 55022 Voltage on Mains QP Limit Line
Preview Result 1
Final Result 1

EN 55022 Voltage on Mains AV Limit Line
Preview Result 2

Inductive Cover with Inductive Dock and AC Adapter #30

EMI Auto Test(1)

1 / 1

EMI Auto Test(1)**EUT Information**

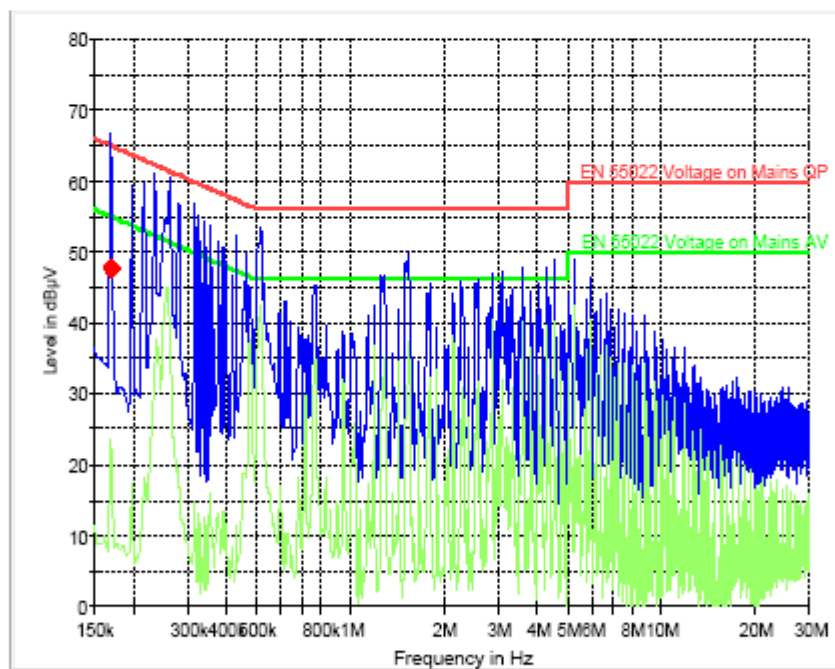
Description:

EUT Name: GSM/UMTS Phone
Manufacturer: Palm
Serial Number: (FCC 15.247 Sample)
Configuration: Inductive Cover with Inductive Dock and AC adapter #30
Comment: Wi-Fi and BT Enabled

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.170000	47.7	5000.000	9.000	GND	N	1.0	17.3	65.0	

CISPR 22 Mains Conducted



— EN 55022 Voltage on Mains GP LimitLine
— Preview Result 1
◆ Final Result 1

— EN 55022 Voltage on Mains AV LimitLine
— Preview Result 2

Idle Mode – Inductive Cover with AC adapter #30**This represents worst case emissions of all configurations.**

RX_Inductive Cover; dock; ac 30

1 / 1

RX_Inductive Cover; dock; ac 30**EUT Information**

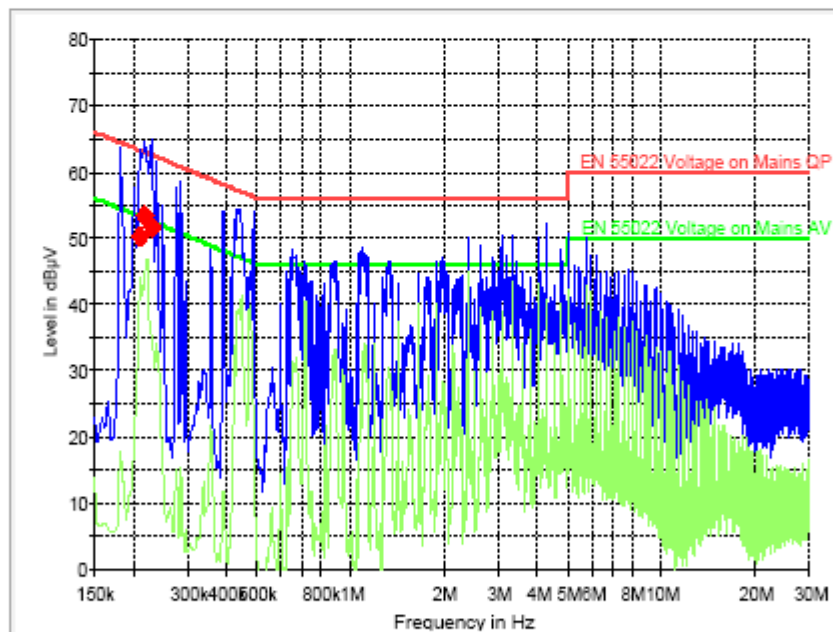
Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	GSM/UMTS SAMPLE
Configuration:	Inductive Cover w dock and AC adapter #30
Comment:	RX

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.210000	50.2	5000.000	9.000	GND	L1	0.9	13.0	63.2	
0.218000	53.4	5000.000	9.000	GND	L1	0.9	9.5	62.9	
0.230000	51.7	5000.000	9.000	GND	N	0.8	10.7	62.4	

CISPR 22 Mains Conducted



— EN 55022 Voltage on Mains QP LimitLine
— Preview Result 1
◆ Final Result 1

— EN 55022 Voltage on Mains AV LimitLine
— Preview Result 2

6 Radiated Measurements

6.1 Maximum Peak Output Power § 15.247 (b)(1) (Radiated)

6.1.1 Limits

FCC15.247 (b) (1): 4W (36dBm), with antenna gain < 6dBi.

RSS-210 A8.4 (4): 4W (36dBm)

6.1.2 Results:

EIRP 802.11 b/g Mode:

TEST CONDITIONS T _{nom} (23)°C, V _{nom} VDC	Channel Frequency	EIRP (dBm)	EIRP (mW)	Verdict
Sub-band 1: 2400-2483.5MHz (802.11b)	2412	12.971	19.820	PASS
	2437	13.563	22.714	PASS
	2462	12.299	16.979	PASS
Sub-band 1: 2400-2483.5MHz (802.11g)	2412	20.180	104.232	PASS
	2437	20.804	120.337	PASS
	2462	18.605	72.527	PASS

6.1.3 Plots: b mode Channel 1

CH1

1 / 1

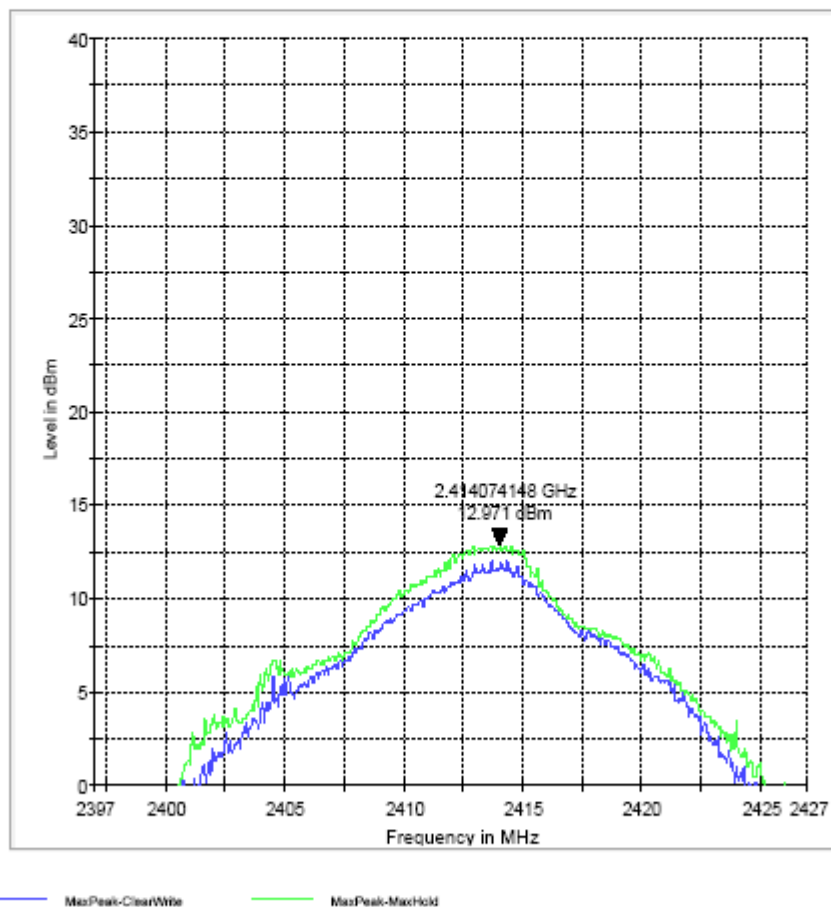
EMC32 Report

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	(FCC 15.247 Sample2)
Configuration:	Standard Cover and AC adapter #30
Comment:	Ant H 119.8cm; TT 223.5; EUT H; TX PWR @ 13

EIRP 2412 20MHz



b mode Channel 6

CH 6_H

1 / 1

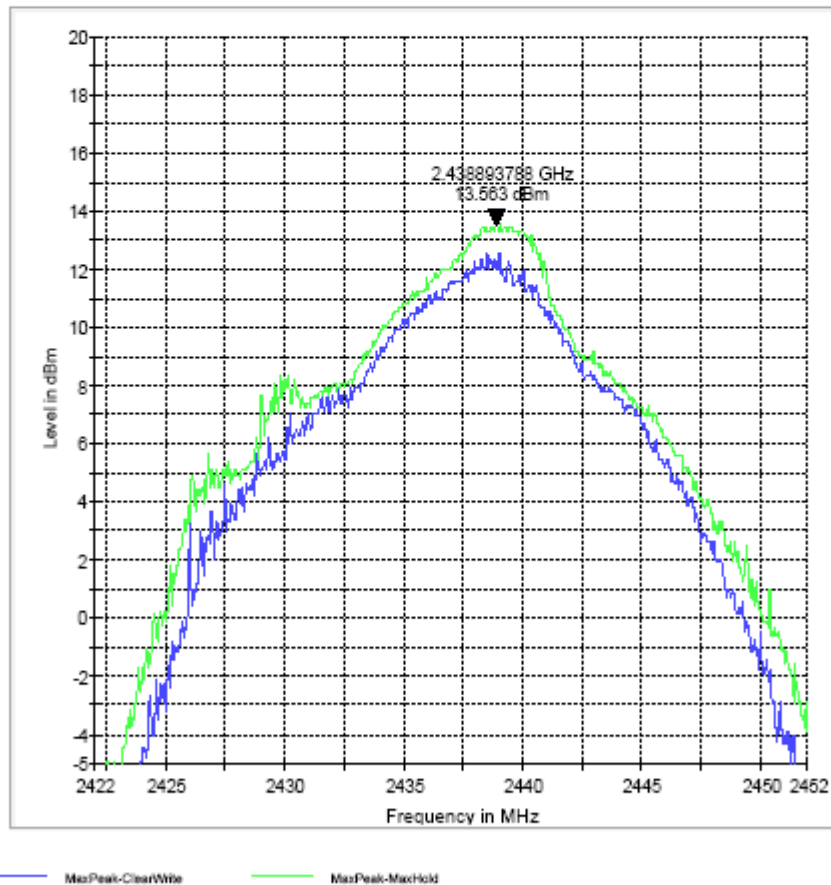
CH 6_H

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	WLAN SAMPLE
Configuration:	Standard Cover and AC adapter #30
Comment:	b mode ch 6; tt@ 200° ant-117

EIRP 2437 20MHz



b mode Channel 11

CH11

1 / 1

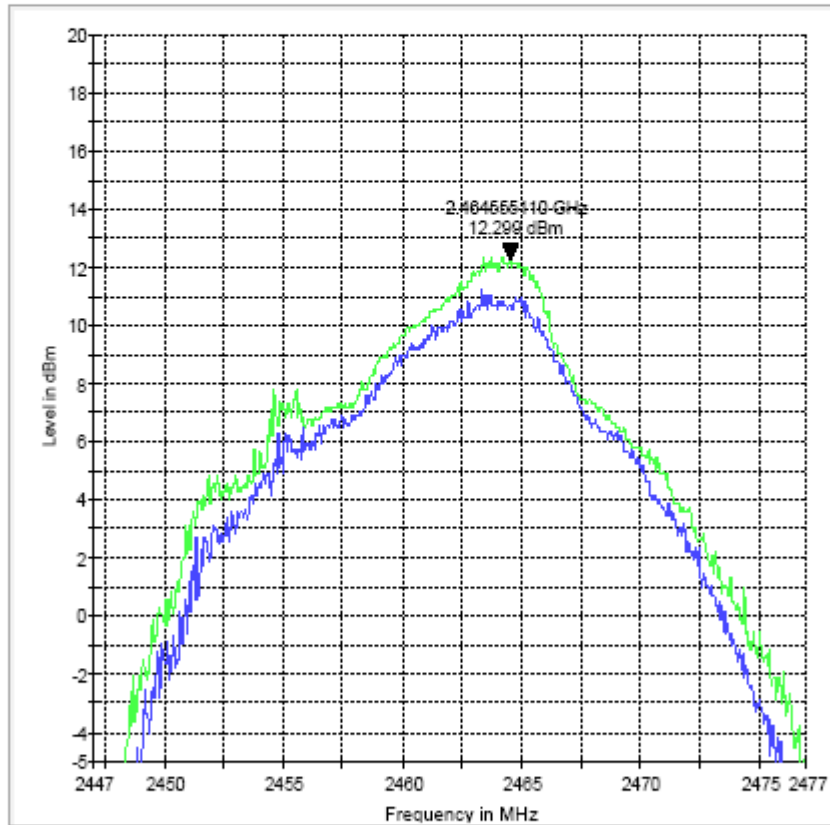
CH11

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	WLAN SAMPLE
Configuration:	Standard Cover and AC adapter #30
Comment:	b mode ch 11

EIRP 2462 20MHz



MaxPeak-CleanWrite

MaxPeak-MaxHold

g mode Channel 1

Test

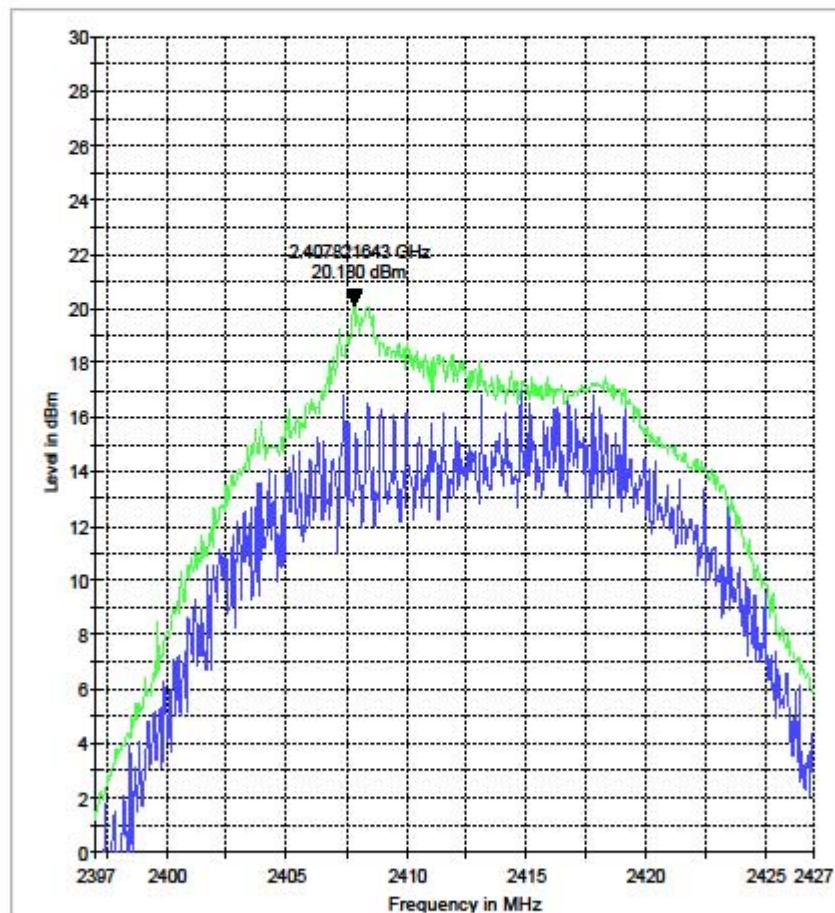
1 / 1

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	WLAN SAMPLE
Configuration:	Standard Cover and AC adapter #30
Comment:	g mode ch 1

EIRP 2412 20MHz



MaxPeak-ClearWrite

MaxPeak-MaxHold

g mode Channel 6

Test

1/1

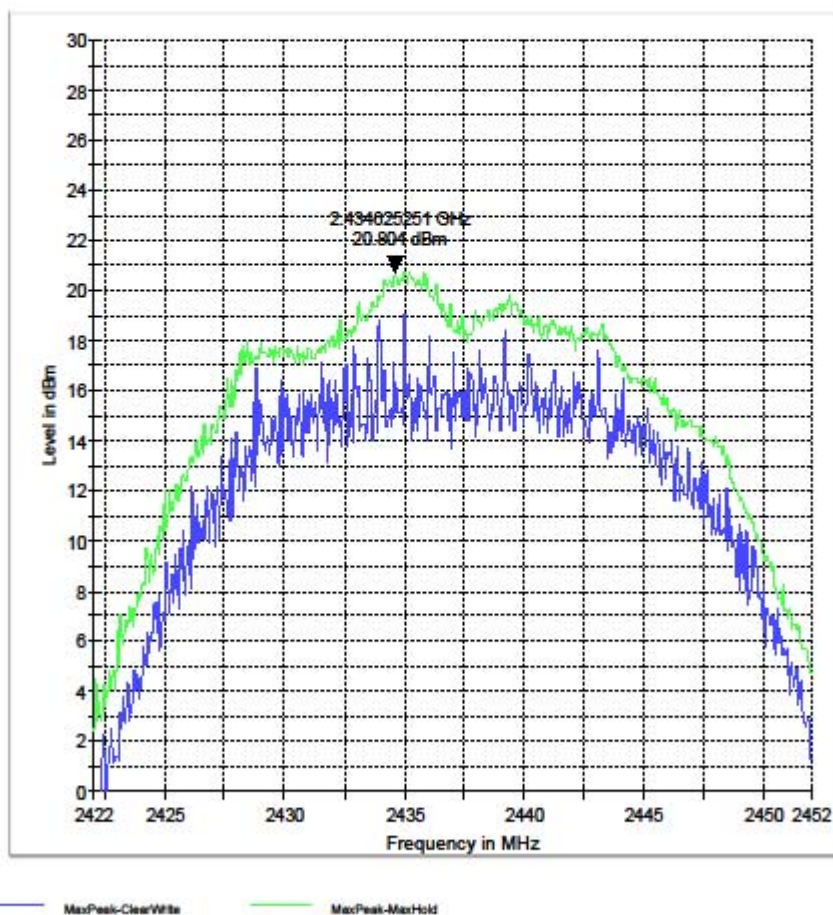
EMC32 Report

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	WLAN SAMPLE
Configuration:	Standard Cover and AC adapter #30
Comment:	g mode ch 6; tt@ 195° ant-117

EIRP 2437 20MHz



g mode Channel 11

EIRP-CH 11

1 / 1

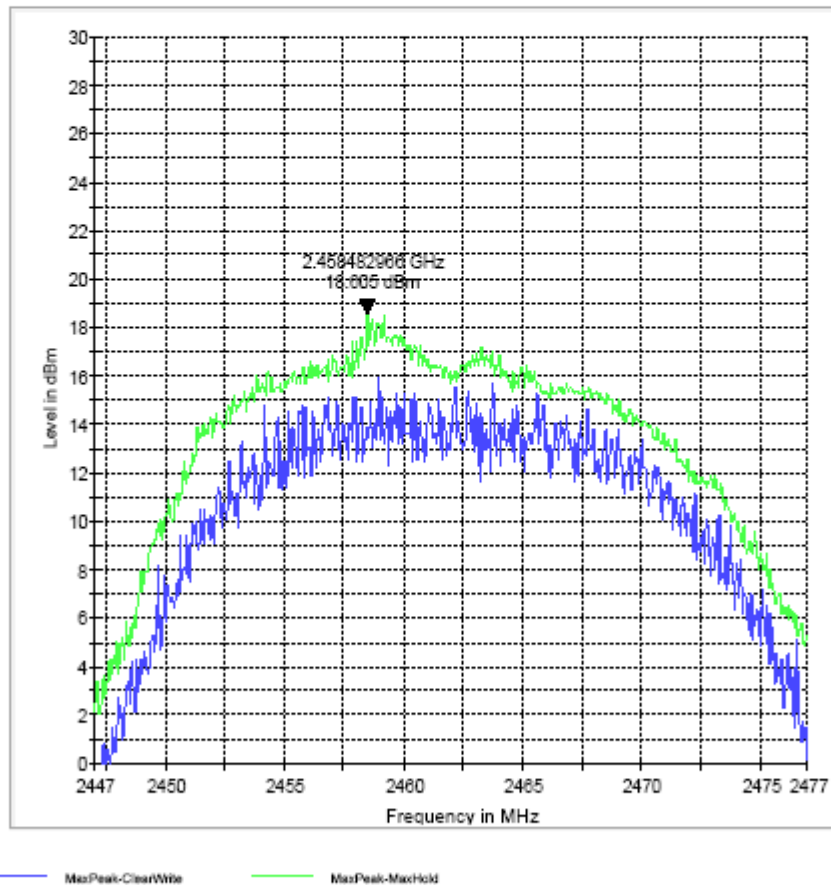
EIRP-CH 11

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	WLAN SAMPLE
Configuration:	Standard Cover and AC adapter #30
Comment:	g mode ch 11

EIRP 2462 20MHz



6.2 Restricted Band Edge Compliance §15.247/15.205

6.2.1 Limits

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

***PEAK LIMIT= 74dBuV/m**

***AVG. LIMIT= 54dBuV/m**

Notes:

1. Radiated emissions are maximized by rotating the EUT 360° at 0.5 meter height increments between 1 and 4 meters.
2. Measurements were performed with the EUT in X, Y and Z orientations with the measurement antenna in both horizontal and vertical polarity. The plots below show the results of the worst case orientation and polarity.

6.2.2 Sub-band 1 802.11b

Lower band edge PEAK

LBE PK

1 / 1

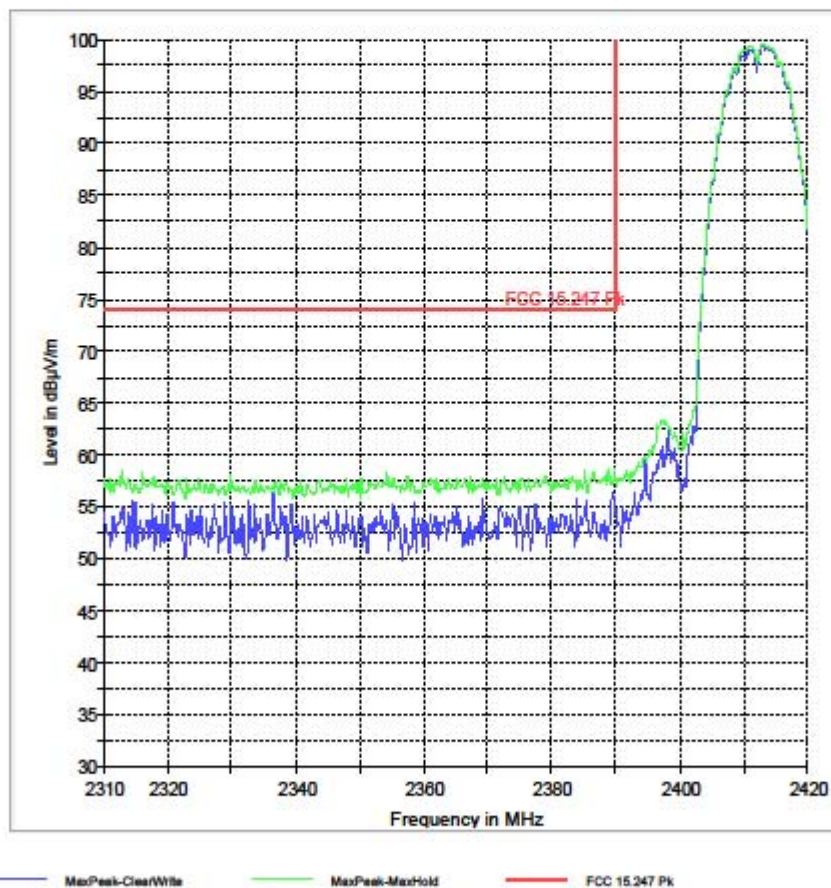
LBE PK

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	GSM/UMTS SAMPLE
Configuration:	Standard Cover and AC adapter #30
Comment:	b mode; Ant H 119.6 cm, TT 38.6

FCC 15.247 LBE Pk 3m



Lower band edge Average

LBE AV

1 / 1

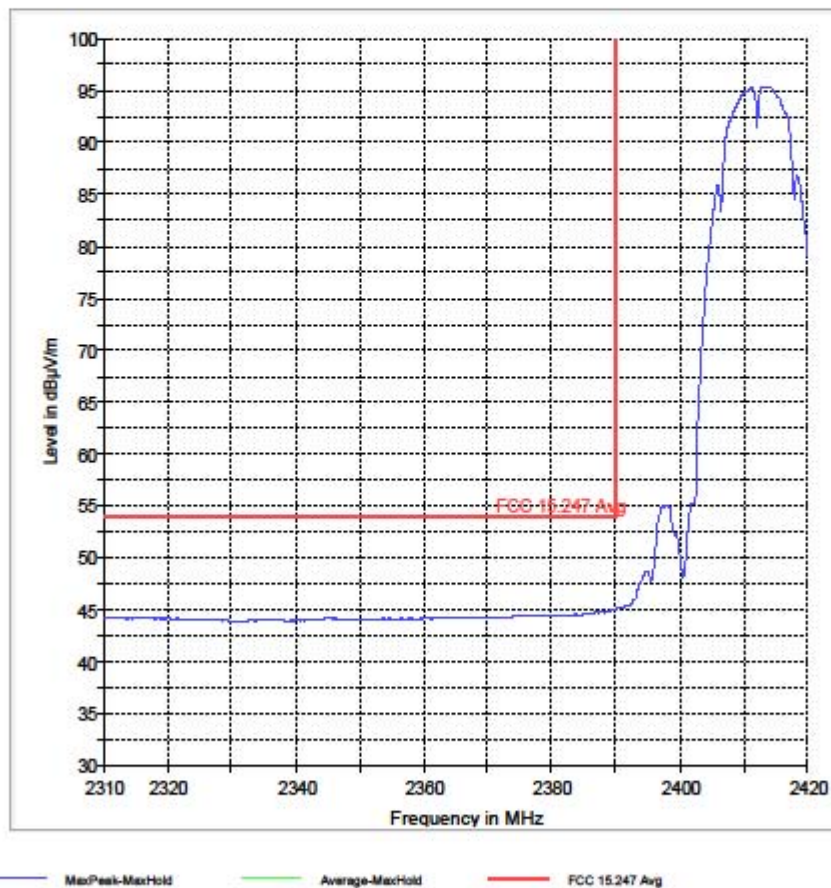
LBE AV

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	GSM/UMTS SAMPLE
Configuration:	Standard Cover and AC adapter #30
Comment:	b mode; Ant H 119.6 cm, TT 38.6

FCC 15.247 LBE Avg 3m



High band edge PEAK

HBE PK

1 / 1

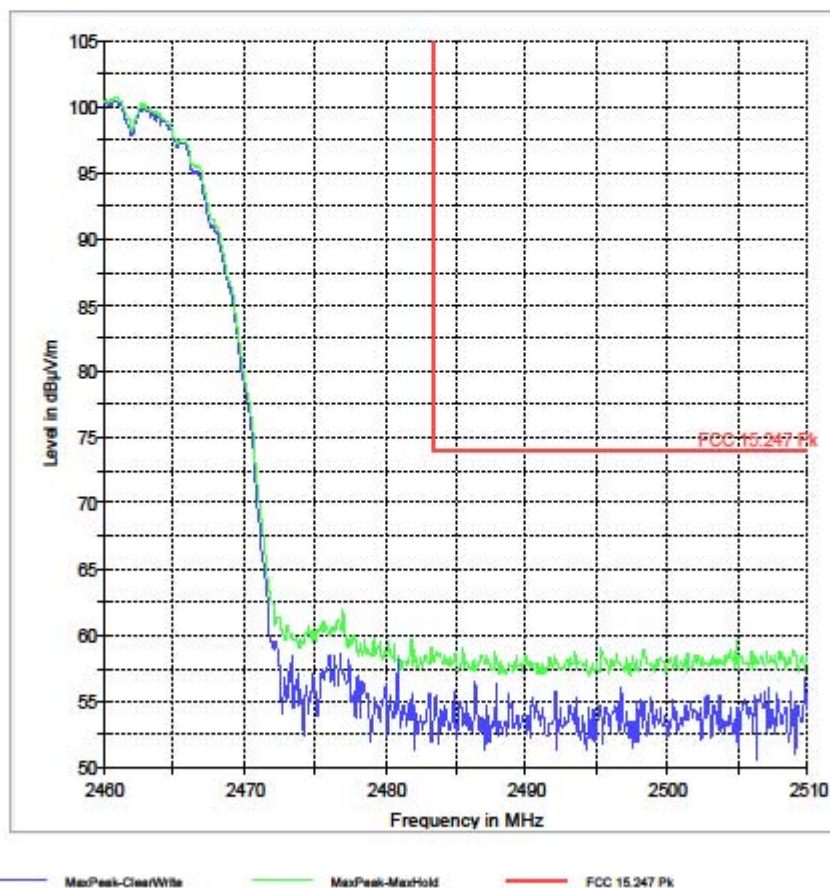
HBE PK

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	(FCC 15.247 Sample)
Configuration:	Standard Cover and AC adapter #30
Comment:	b mode; Ant H 119.6 cm, TT 38.6

FCC 15.247 HBE Pk 3m



High band edge Average

HBE AV

1 / 1

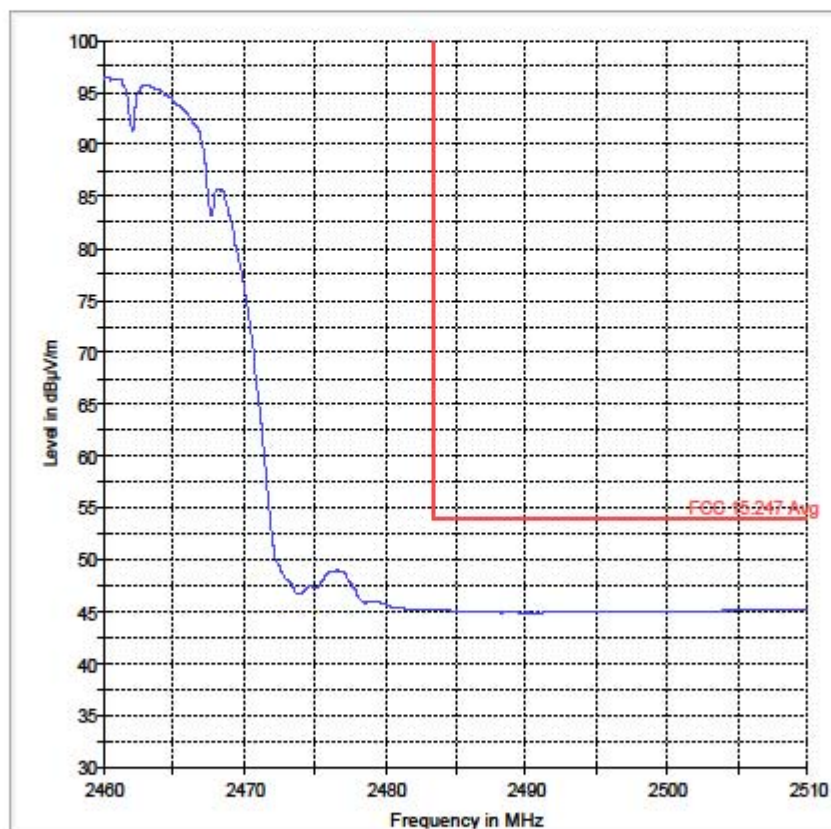
HBE AV

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	GSM/UMTS SAMPLE
Configuration:	Standard Cover and AC adapter #30
Comment:	b mode; Ant H 119.6 cm, TT 38.6

FCC 15.247 HBE Avg 3m



MaxPeak-MaxHold

FCC 15.247 Avg

6.2.3 Sub-band 1 802.11g

Lower band edge PEAK

LBE_PK

1 / 1

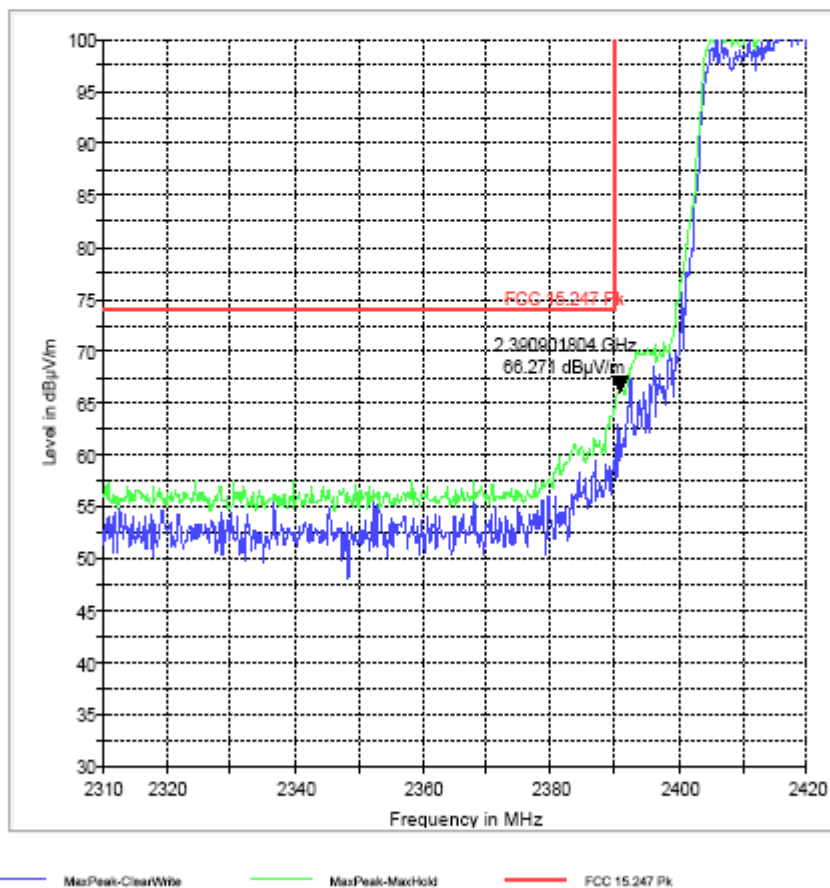
LBE_PK

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	WLAN SAMPLE
Configuration:	Standard Cover and AC adapter #30
Comment:	g mode ch 1

FCC 15.247 LBE Pk 3m



Lower band edge Average

LBE_AVG

1 / 1

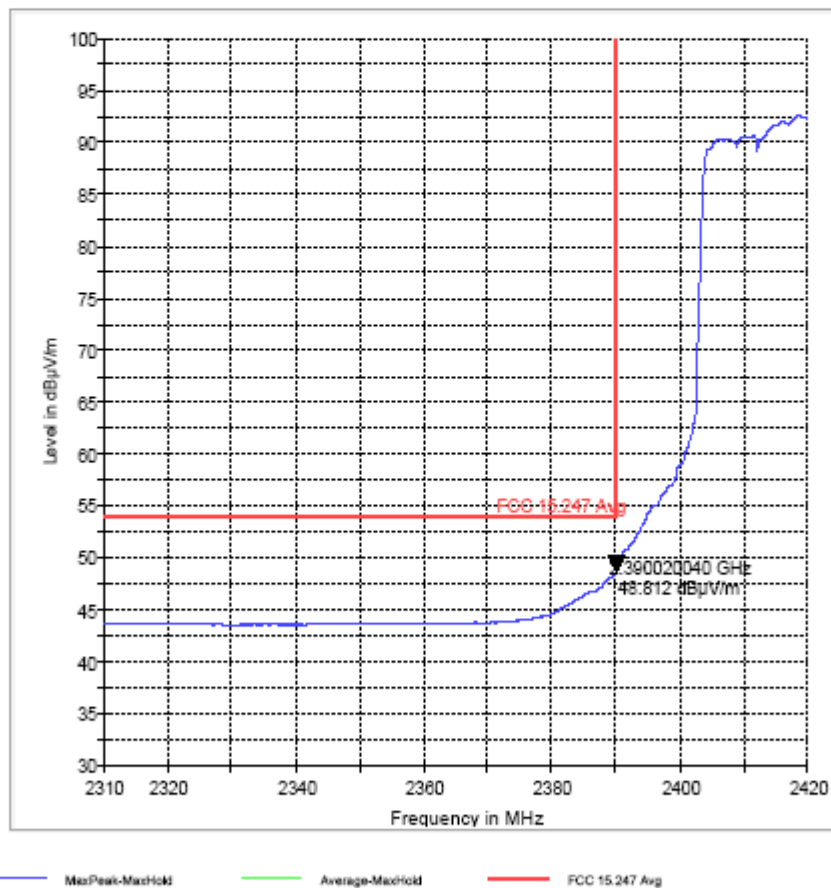
LBE_AVG

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	WLAN SAMPLE
Configuration:	Standard Cover and AC adapter #30
Comment:	g mode ch 1

FCC 15.247 LBE Avg 3m



High band edge PEAK

HBE_PK

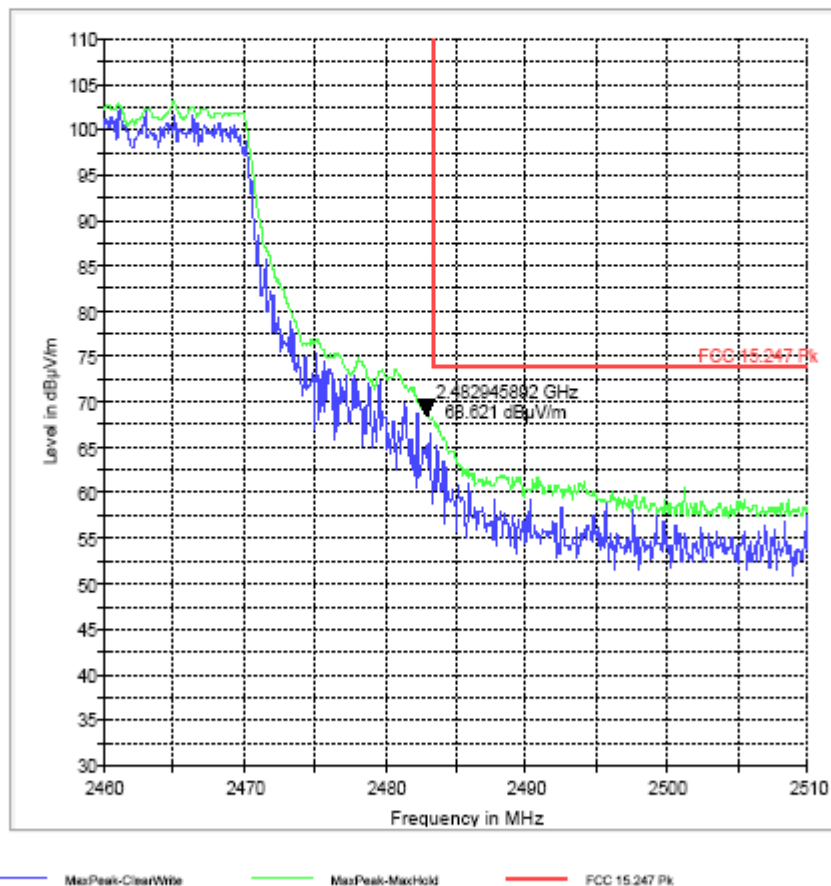
1 / 1

HBE_PK

EUT Information

Description:	
EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	WLAN SAMPLE
Configuration:	Standard Cover and AC adapter #30
Comment:	g mode ch 11

FCC 15.247 HBE Pk 3m



High band edge Average

HBE_AVG

1 / 1

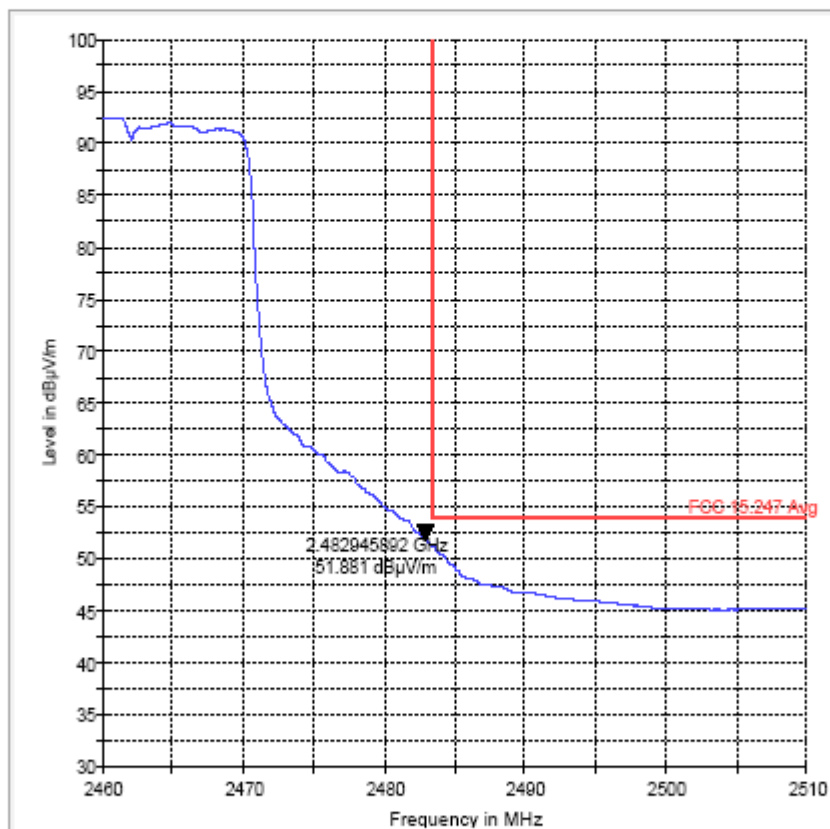
HBE_AVG

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	WLAN SAMPLE
Configuration:	Standard Cover and AC adapter #30
Comment:	g mode ch 11

FCC 15.247 HBE Avg 3m



MaxPeak-MaxHold

FCC 15.247 Avg

6.3 Transmitter Spurious Emission § 15.247/15.205/15.209

6.3.1 Limits

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

***PEAK LIMIT= 74dBuV/m**

***AVG. LIMIT= 54dBuV/m**

Notes:

1. The radiated emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels. In the range between 3 and 25 GHz very short cable connections to the antenna was used to minimize the noise level.
2. All measurements are done in peak mode using an average limit , unless specified with the plots.
3. Radiated emissions are maximized by rotating the EUT 360° at 0.5 meter height increments between 1 and 4 meters.
4. Measurements were performed with the EUT in X, Y and Z orientations with the measurement antenna in both horizontal and vertical polarity. The plots below show the results of the worst case orientation and polarity

Results for the radiated measurements below 30MHz according § 15.33

Frequency	Measured values	Remarks
9KHz – 30MHz	No emissions found, caused by the EUT	This is valid for all the tested channels

6.3.2 RESULTS Sub-band 1 802.11b/g MODE: Standard Cover with AC Adapter #30

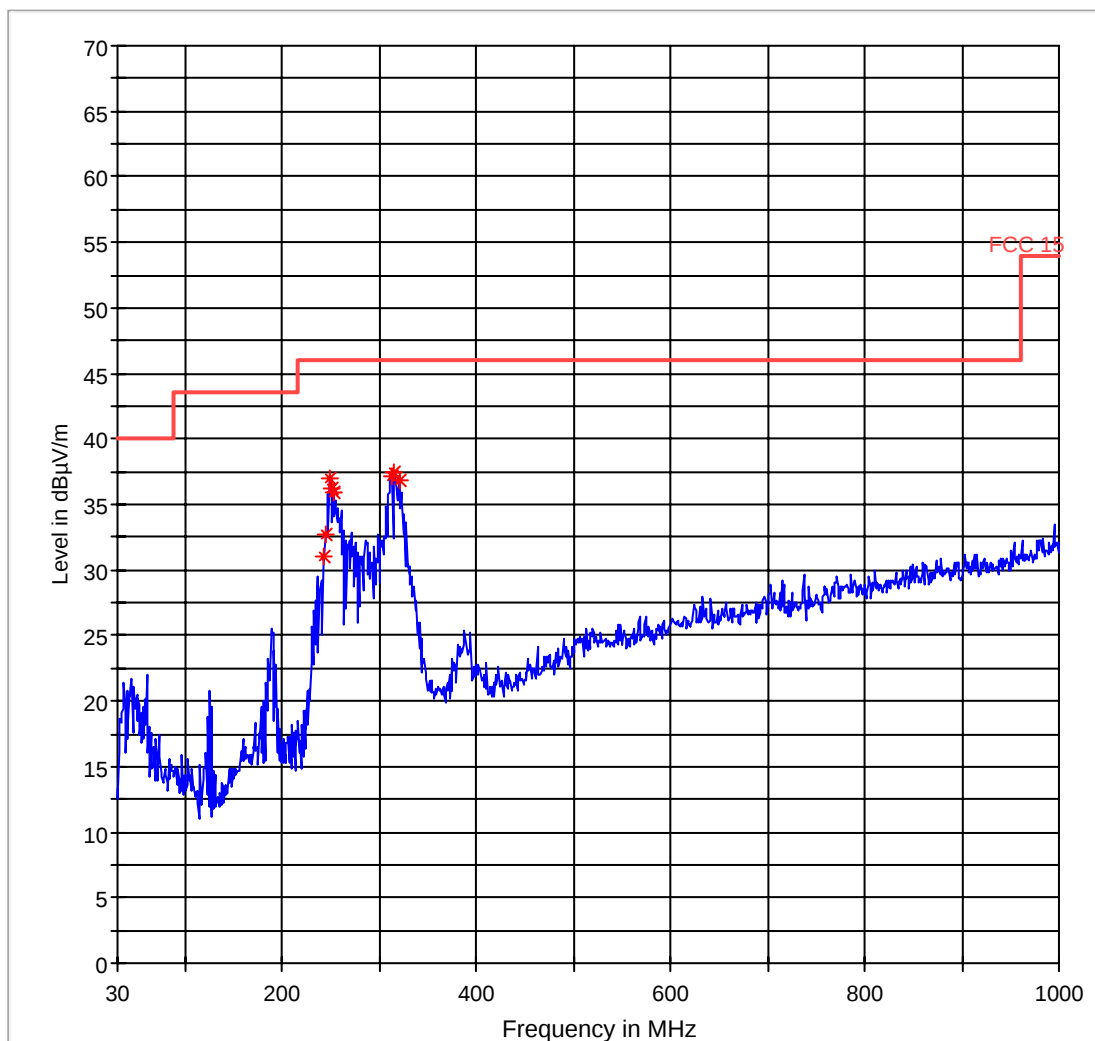
Emissions reported here are worse cases emissions for all operation modes.
30MHz – 1GHz, Channel 1

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	WLAN SAMPLE
Configuration:	Standard Cover and AC adapter #30
Comment:	g mode ch 1

FCC 15 30-1000MHz



— FCC 15.LimitLine

— Preview Result 1

*

Data Reduction 1 [1]

30MHz – 1GHz, Channel 6

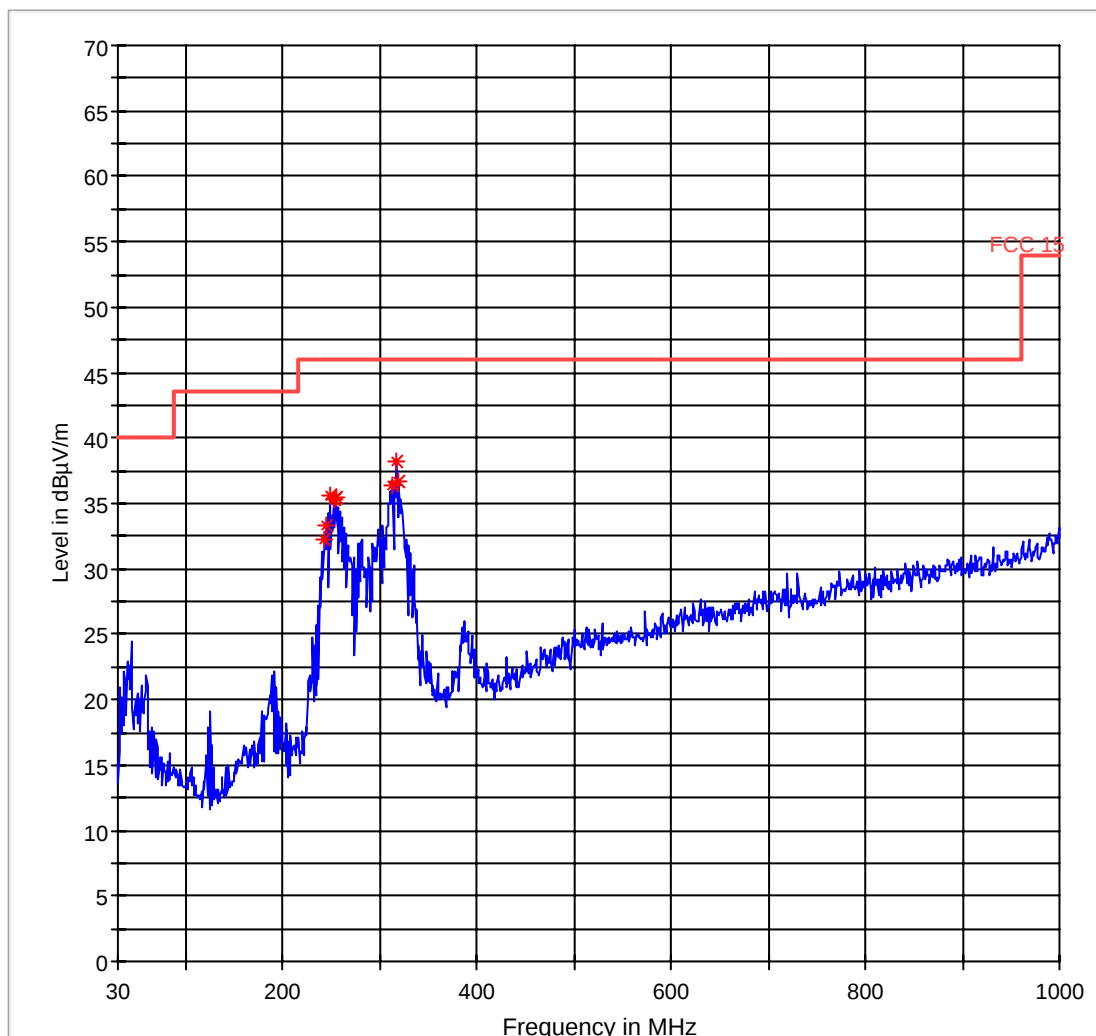
30-1 CH 6

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	WLAN SAMPLE
Configuration:	Standard Cover and AC adapter #30
Comment:	g mode ch 6

FCC 15 30-1000MHz



30MHz – 1GHz, Channel 11

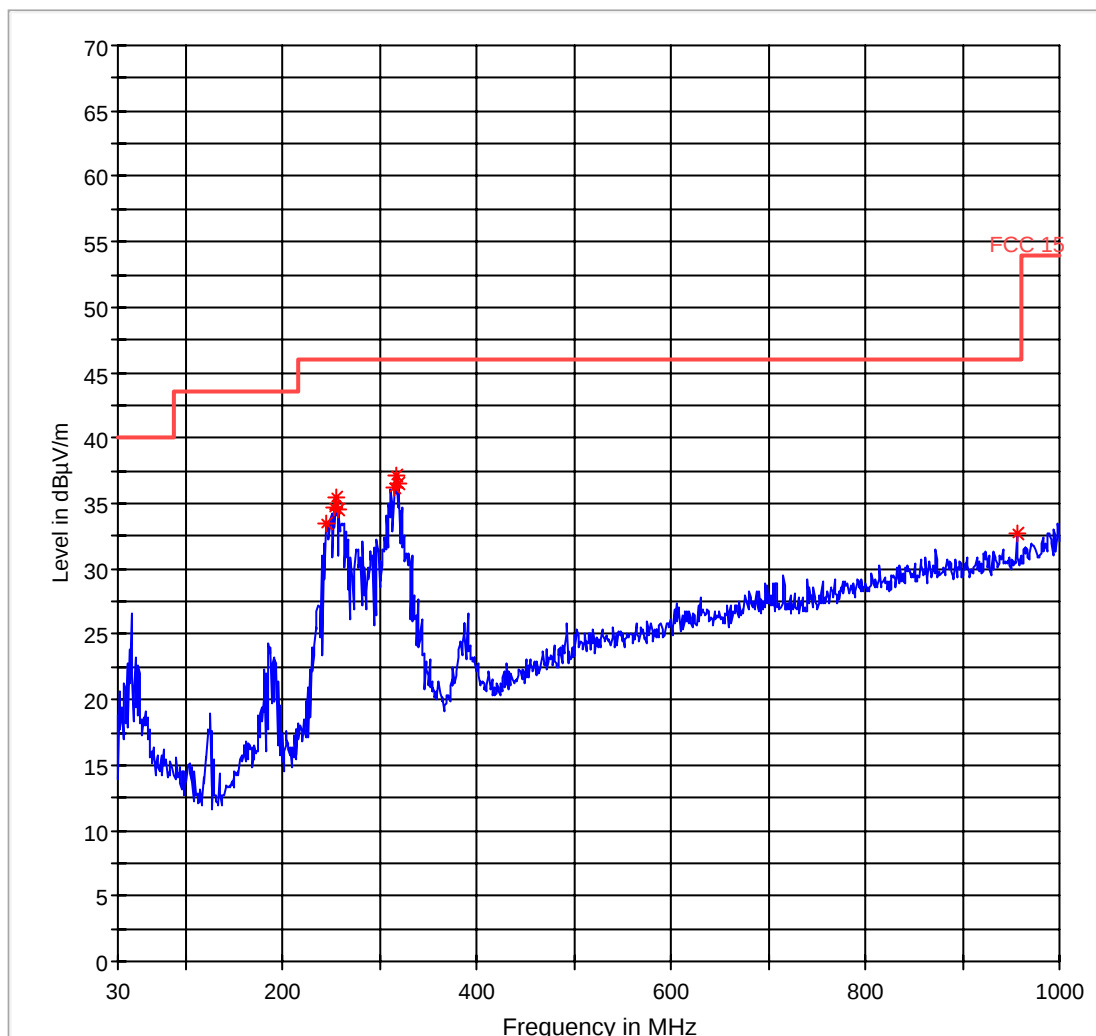
30-1 CH 11

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	WLAN SAMPLE
Configuration:	Standard Cover and AC adapter #30
Comment:	g mode ch 11

FCC 15 30-1000MHz



1-18GHz Channel 1

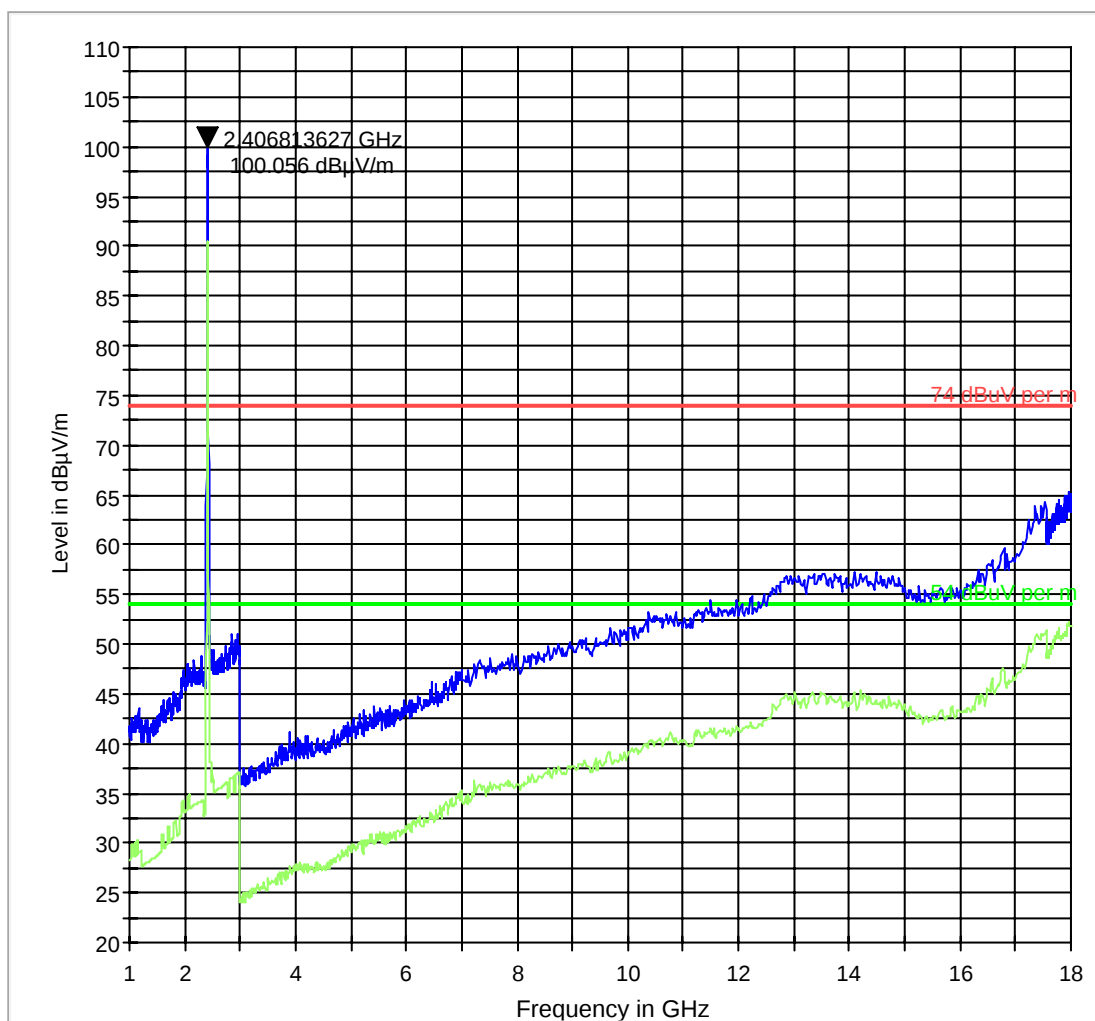
Note: The peak above the limit line is the carrier freq.

1-18 CH 1**EUT Information**

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	WLAN SAMPLE
Configuration:	Standard Cover and AC adapter #30
Comment:	g mode ch 1

FCC 15 1-18GHz



74 dBµV per m.LimitLine
Preview Result 1

54 dBµV per m.LimitLine
Preview Result 2

1-18GHz Channel 6

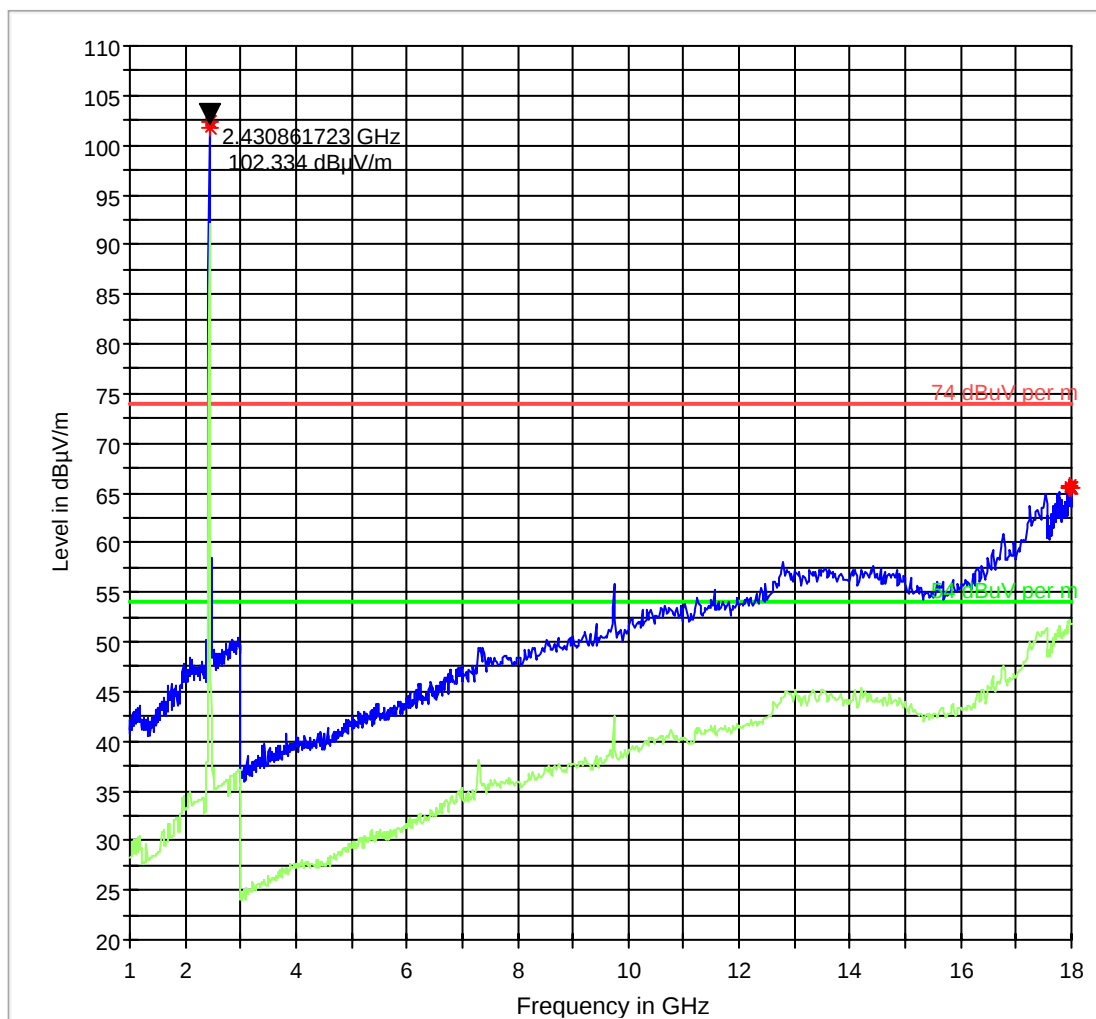
Note: The peak above the limit line is the carrier freq.

1-18 CH 6**EUT Information**

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	WLAN SAMPLE
Configuration:	Standard Cover and AC adapter #30
Comment:	g mode ch 6

FCC 15 1-18GHz



74 dBμV per m.LimitLine
Preview Result 2

54 dBμV per m.LimitLine
Data Reduction 1 [2]

Preview Result 1

1-18GHz Channel 11

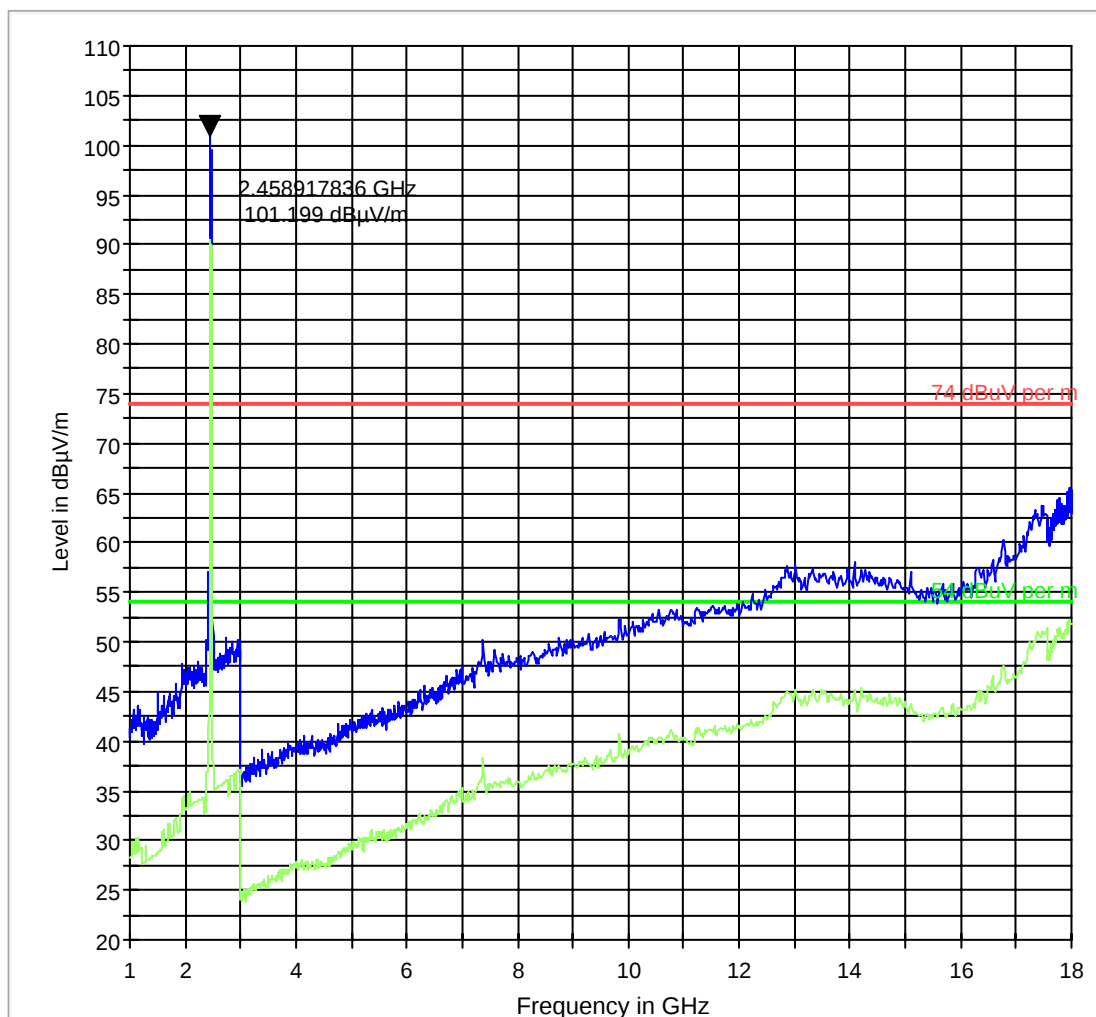
Note: The peak above the limit line is the carrier freq.

1-18 CH 11**EUT Information**

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	WLAN SAMPLE
Configuration:	Standard Cover and AC adapter #30
Comment:	g mode ch 11

FCC 15 1-18GHz



74 dBµV per m.LimitLine
Preview Result 1

54 dBµV per m.LimitLine
Preview Result 2

18-26.5GHz

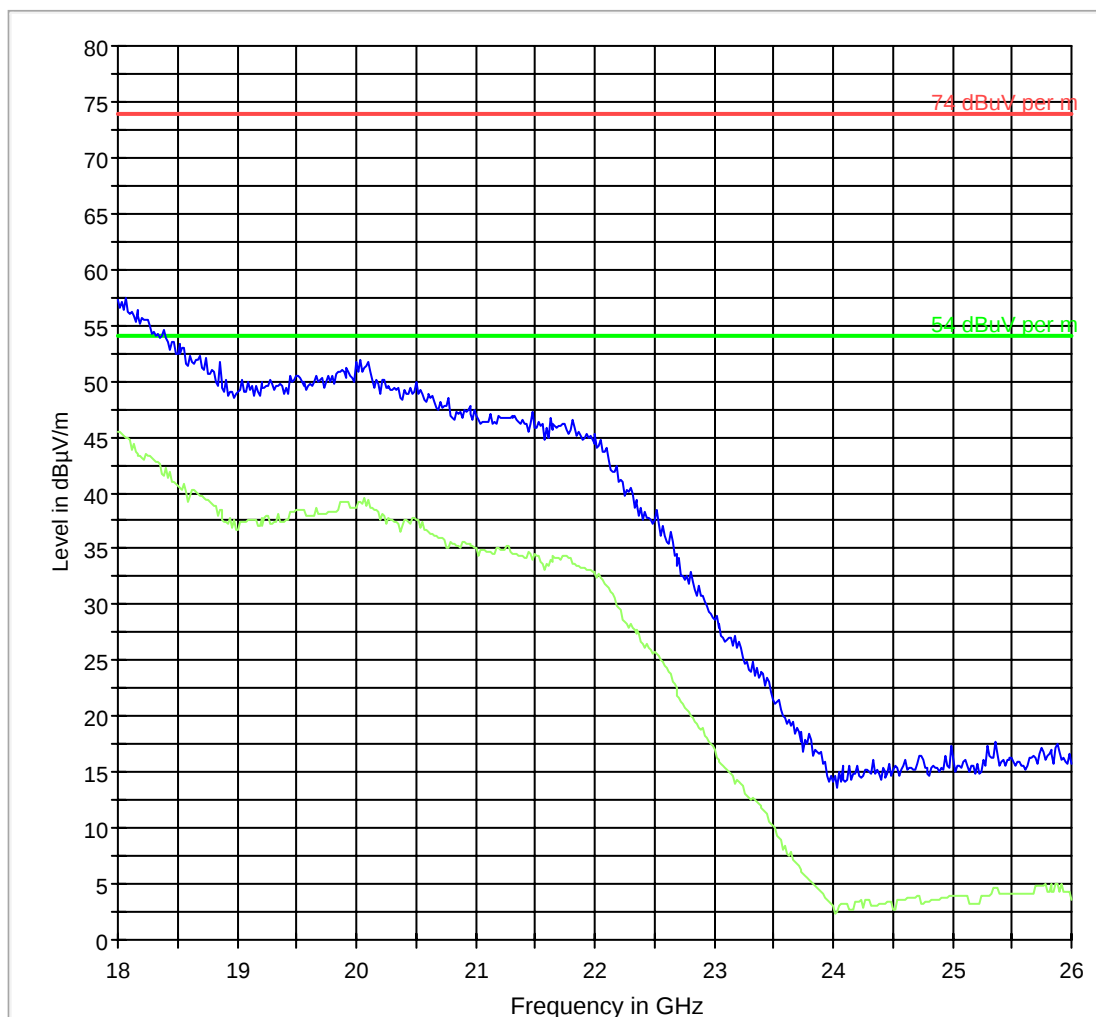
Note: This plot is valid for low, mid, high channels (worst-case plot).

18-25 CH 6**EUT Information**

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	WLAN SAMPLE
Configuration:	Standard Cover and AC adapter #30
Comment:	g mode ch 6

FCC 15 18-26GHz



74 dBμV per m.LimitLine
Preview Result 1

54 dBμV per m.LimitLine
Preview Result 2

6.3.3 RESULTS Sub-band 1 802.11b/g MODE: Inductive Cover with Inductive Dock and AC Adapter #30

Emissions reported here are worse cases emissions for all operation modes.

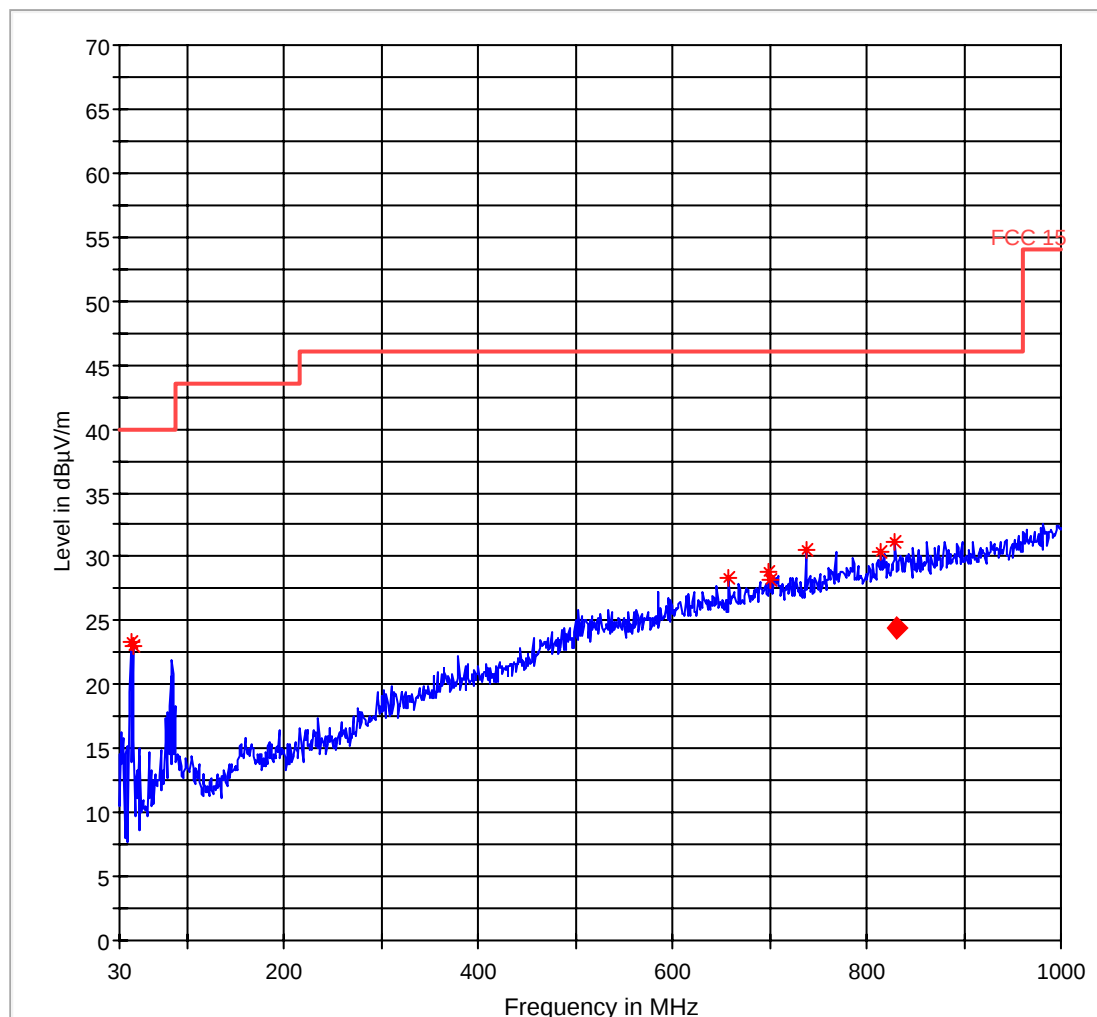
30MHz – 1GHz, Channel 1

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	WLAN SAMPLE
Configuration:	Inductive Cover w dock and AC adapter #30
Comment:	g mode ch 1

FCC 15 30-1000MHz



— FCC 15.LimitLine
* Data Reduction 1 [1]

— Preview Result 1
◆ Final Measurement Result 1

30MHz – 1GHz, Channel 6

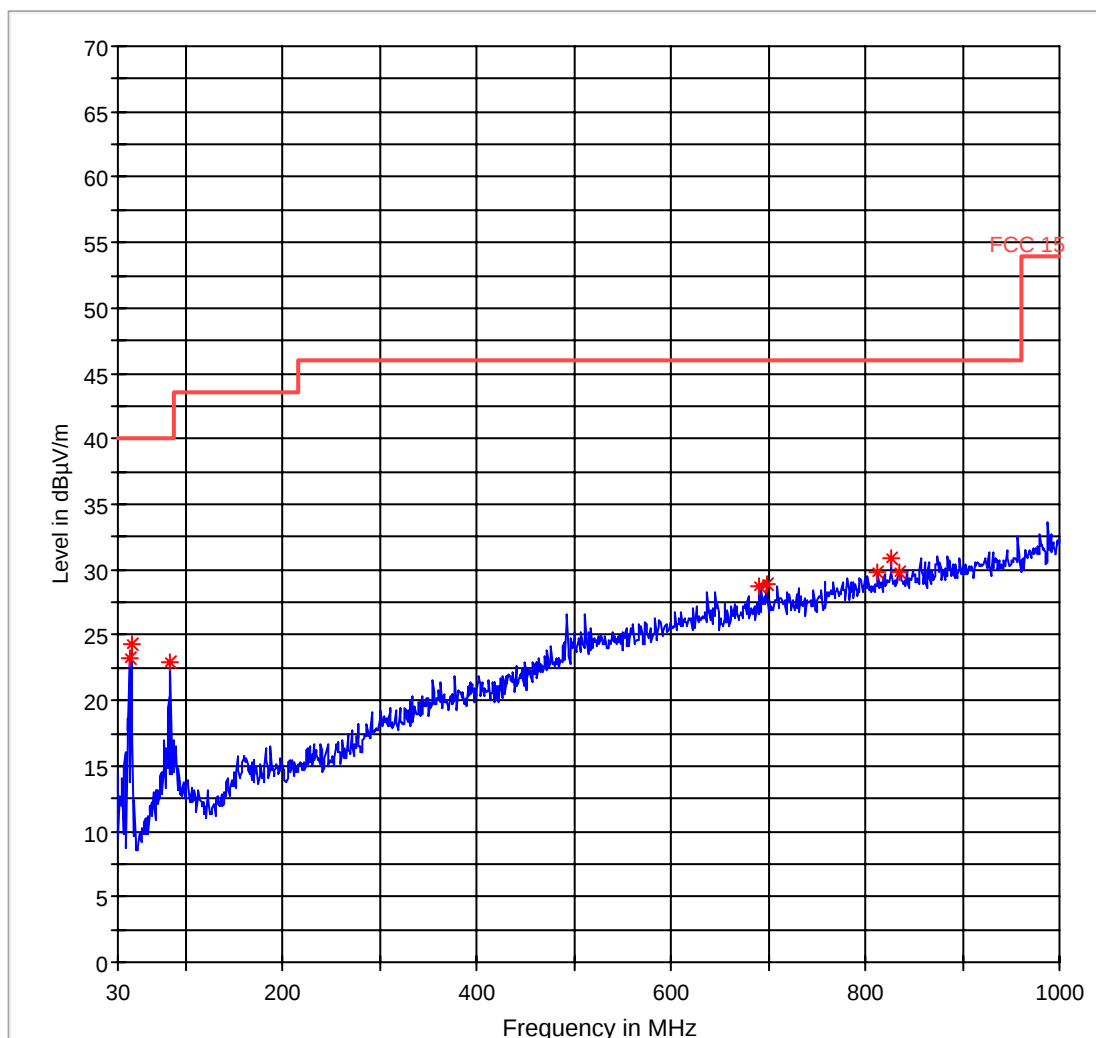
30-1 CH 6

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	WLAN SAMPLE
Configuration:	Inductive Cover w dock and AC adapter #30
Comment:	g mode ch 6

FCC 15 30-1000MHz



30MHz – 1GHz, Channel 11

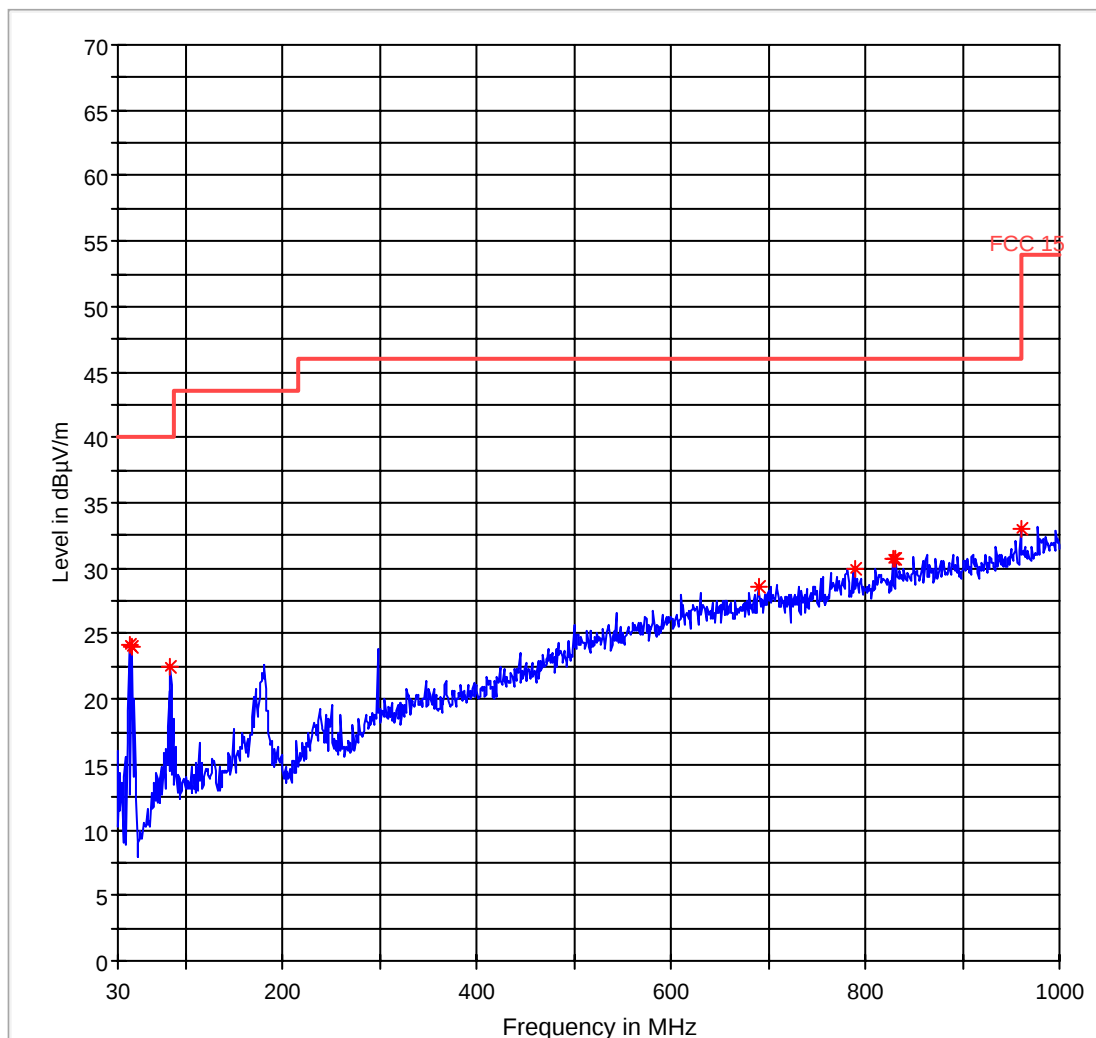
30-1 CH 11

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	WLAN SAMPLE
Configuration:	Inductive Cover w dock and AC adapter #30
Comment:	g mode ch 11

FCC 15 30-1000MHz



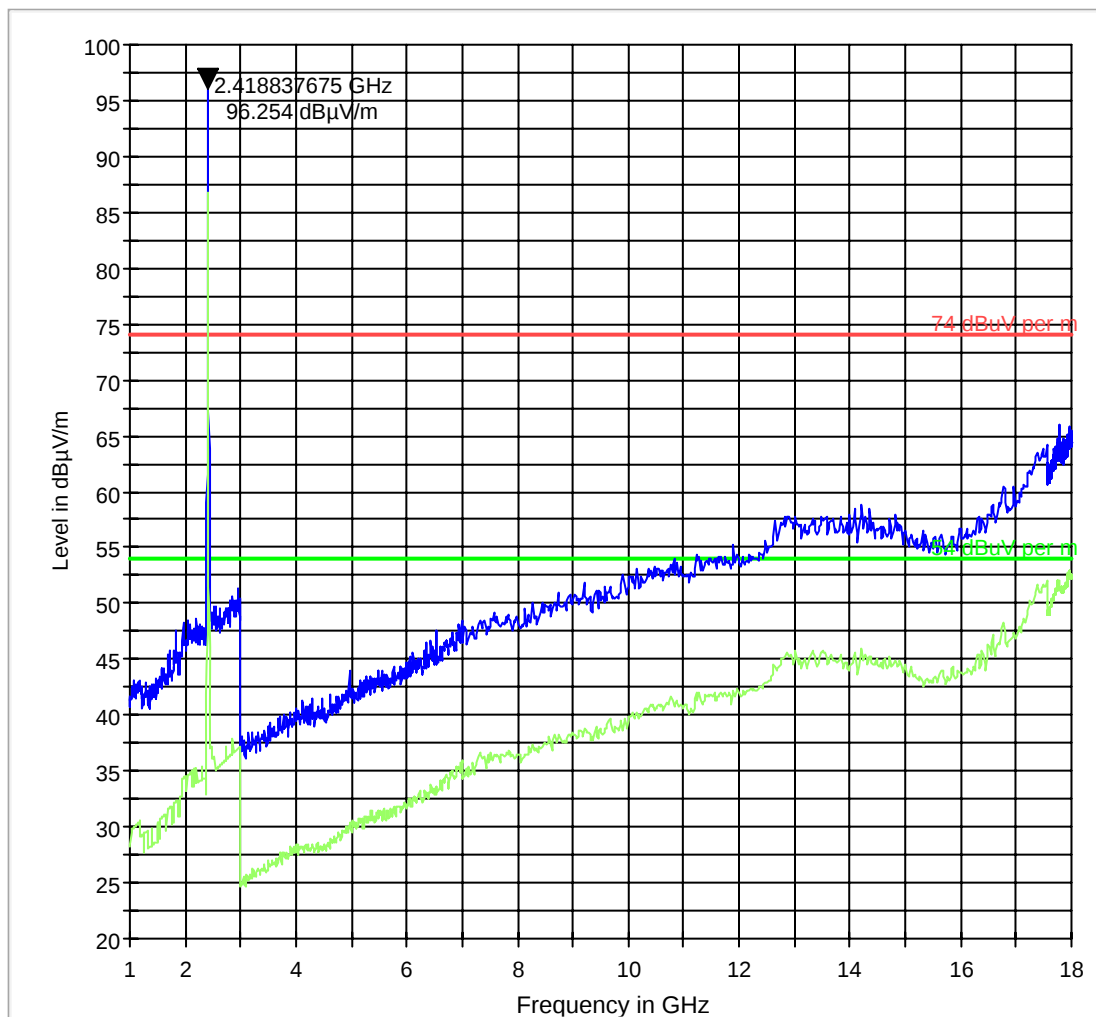
1GHz – 18GHz, Channel 1

1-18 CH 1**EUT Information**

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	WLAN SAMPLE
Configuration:	Inductive Cover w dock and AC adapter #30
Comment:	g mode ch 1

FCC 15 1-18GHz



74 dBμV per m.LimitLine
Preview Result 1

54 dBμV per m.LimitLine
Preview Result 2

1GHz – 18GHz, Channel 6

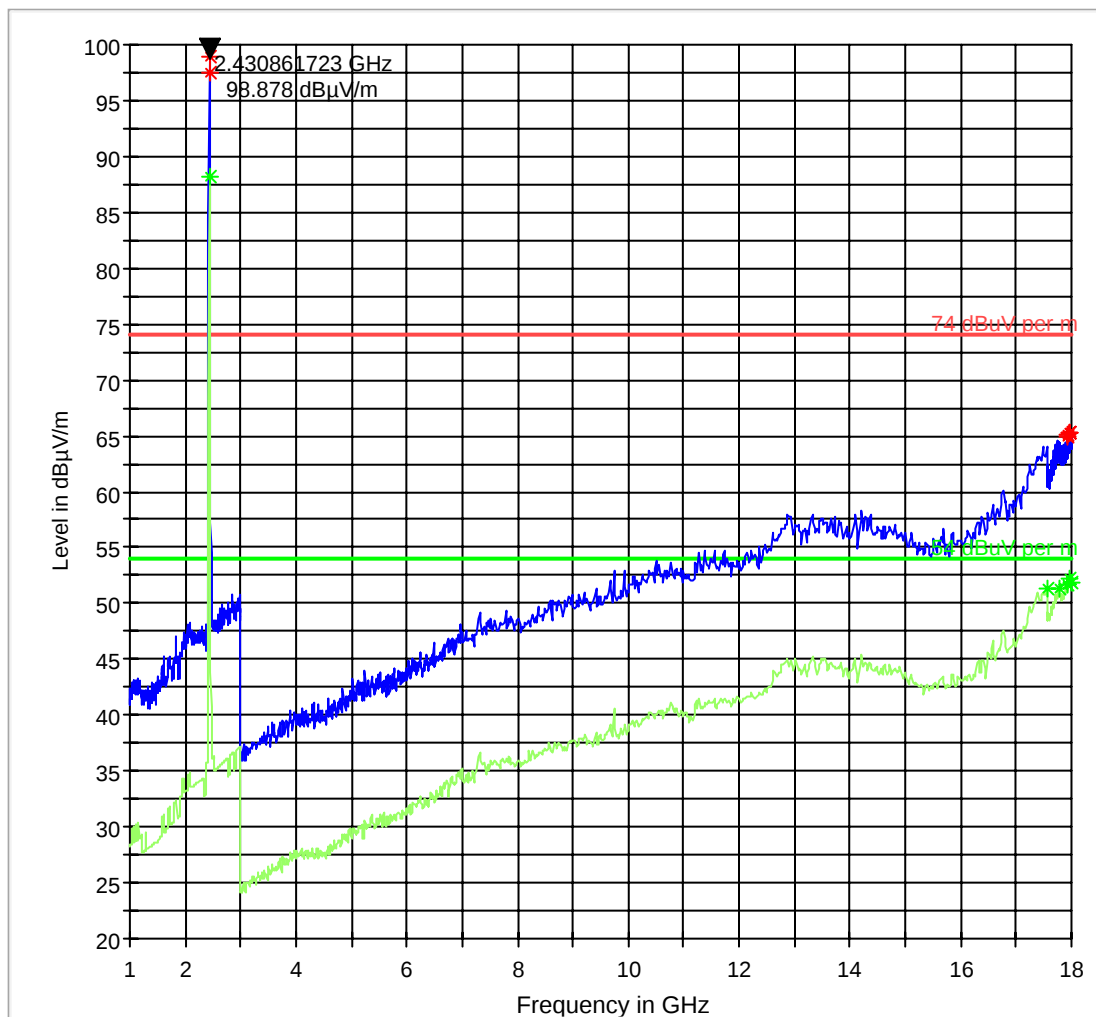
1-18 CH 6

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	(FCC 15.247 Sample)
Configuration:	Inductive Cover with Inductive Dock and AC adapter #30
Comment:	

FCC 15 1-18GHz



74 dBuV per m.LimitLine
Preview Result 2

54 dBuV per m.LimitLine
Data Reduction 1 [2]

Preview Result 1
Data Reduction 2 [2]

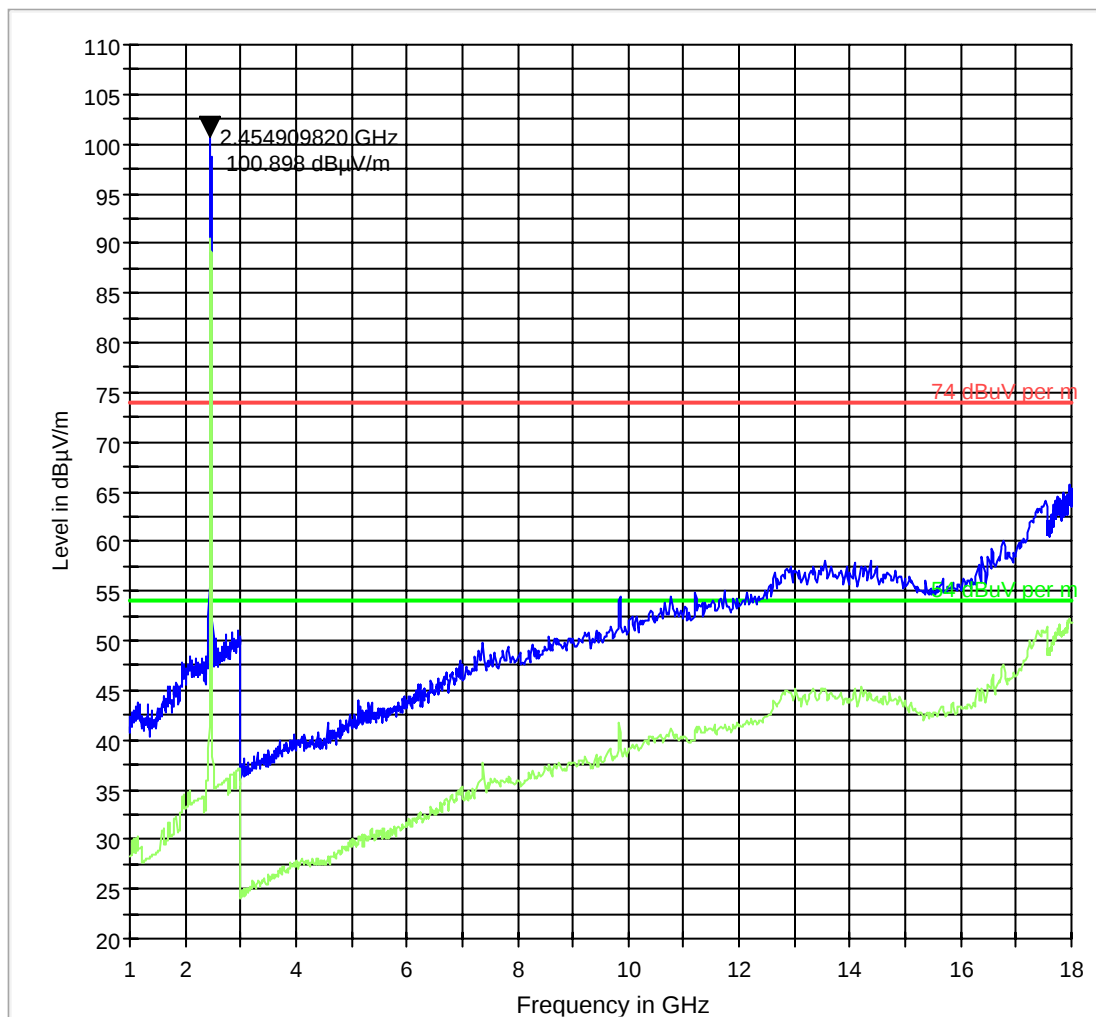
1GHz – 18GHz, Channel 11

1-18 CH 11**EUT Information**

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	(FCC 15.247 Sample)
Configuration:	Inductive Cover with Inductive Dock and AC adapter #24
Comment:	

FCC 15 1-18GHz



74 dBuV per m.LimitLine
Preview Result 1

54 dBuV per m.LimitLine
Preview Result 2

18GHz - 26GHz**Note: This plot represents worst case for all channels.**

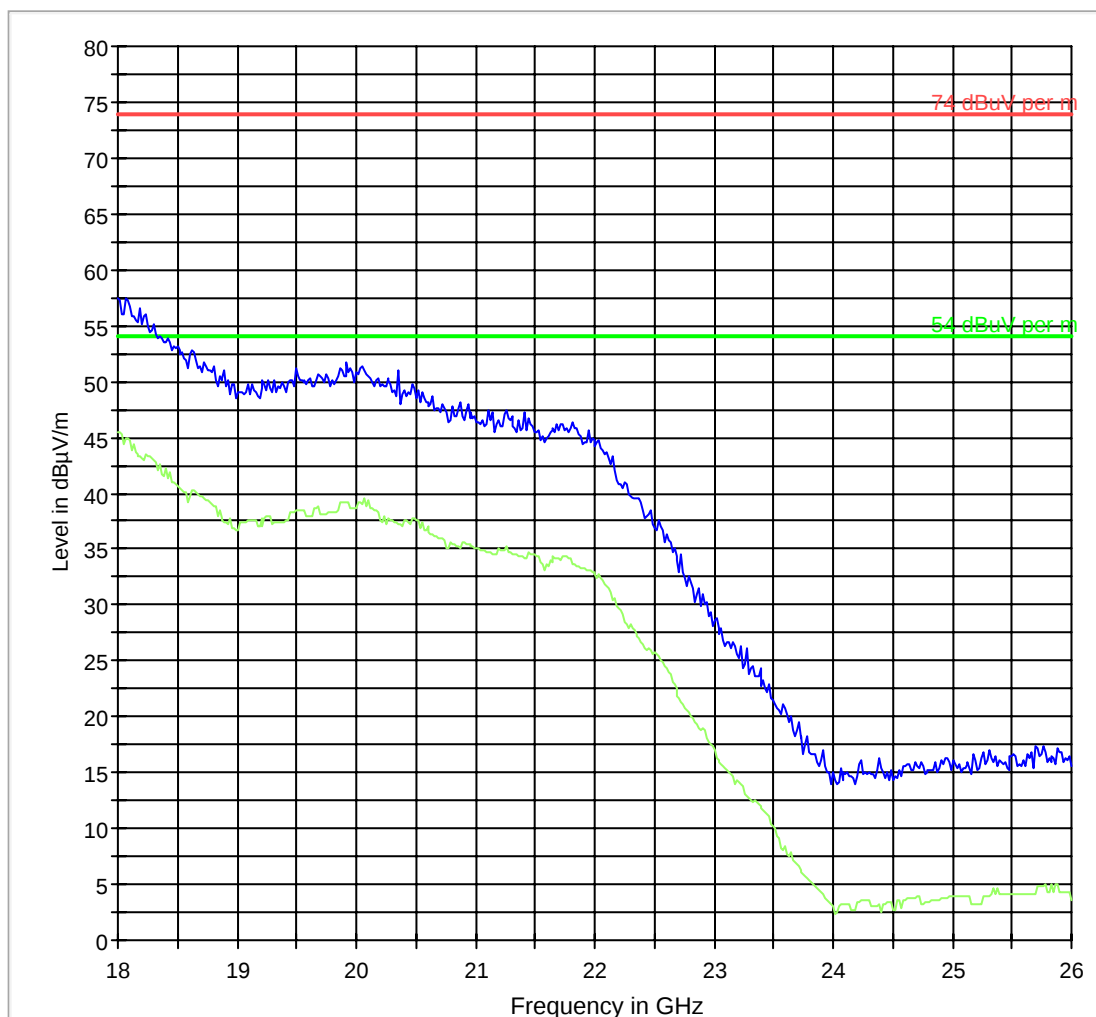
18-25 CH 6

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	WLAN SAMPLE
Configuration:	Inductive Cover w dock and AC adapter #30
Comment:	g mode ch 6

FCC 15 18-26GHz



— 74 dBuV per m.LimitLine
— Preview Result 1

— 54 dBuV per m.LimitLine
— Preview Result 2

6.3.4 RESULTS Co-location: Inductive Cover with Inductive Dock and AC Adapter #30

NOTE: Plots represent worst case for all operating modes, channels, and configurations.
30MHz – 1GHz: BT 2442MHz, WLAN 2412 MHz

30-1

1 / 1

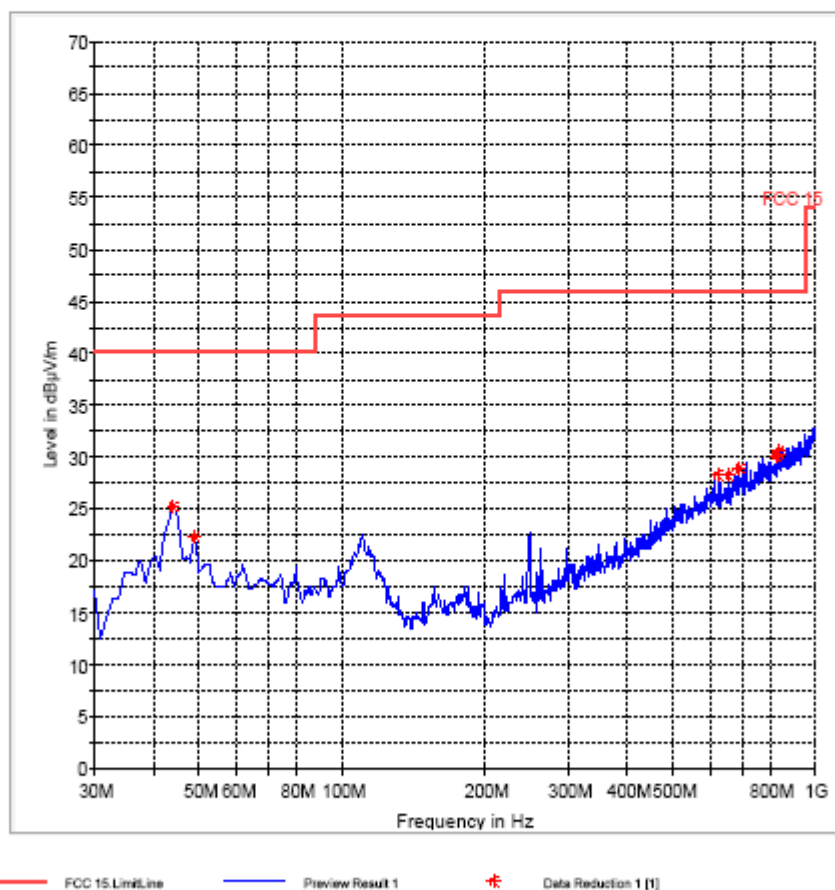
30-1

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	GSM/UMTS SAMPLE
Configuration:	Inductive Cover with Inductive Dock and AC adapter #30
Comment:	Co-location

FCC 15 30-1000MHz



1Hz – 18GHz: BT 2442MHz, WLAN 2412 MHz

1-18

1 / 1

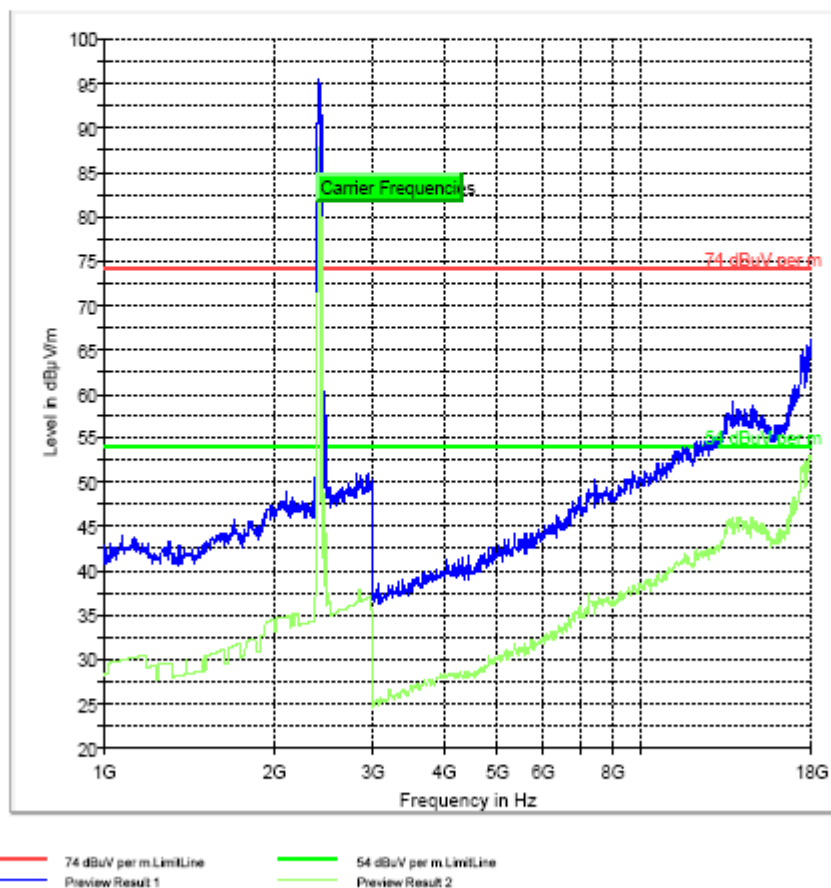
1-18

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	(FCC 15.247 Sample)
Configuration:	Inductive Cover with Inductive Dock and AC adapter #30
Comment:	Co-location

FCC 15 1-18GHz



18GHz – 26GHz: BT 2442MHz, WLAN 2412 MHz

EMI Auto Test(1)

1 / 1

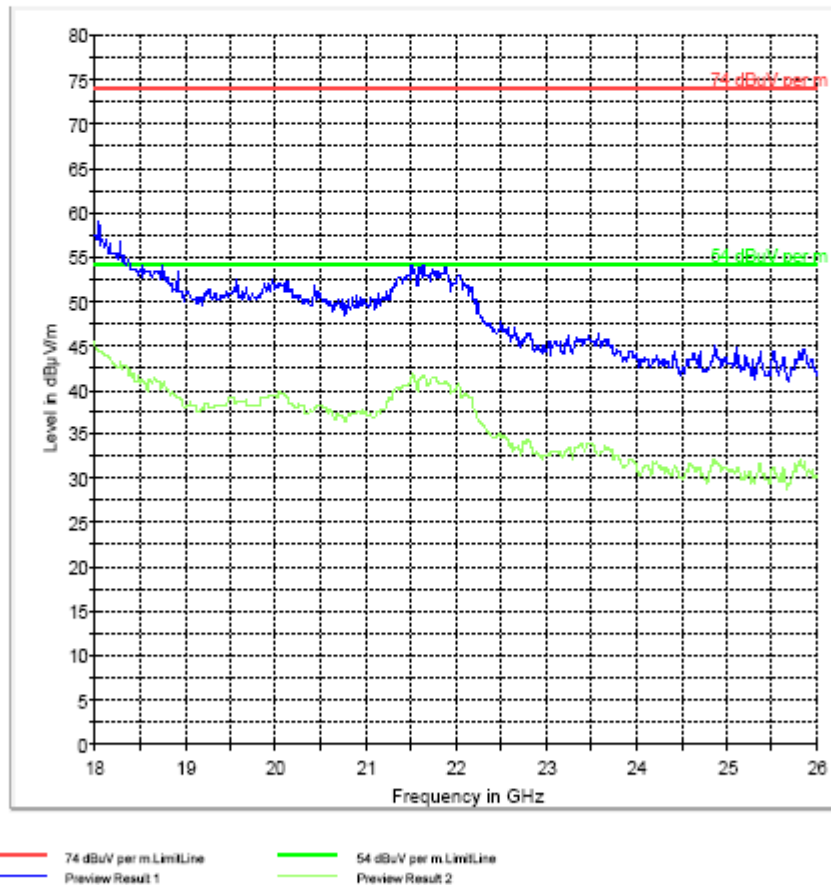
EMI Auto Test(1)

EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	GSM/UMTS SAMPLE
Configuration:	Inductive Cover with Inductive Dock and AC adapter #30
Comment:	Co-location

FCC 15 18-26GHz



6.4 Receiver Spurious Emission § 15.209/RSS210**6.4.1 Limits**

Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
above 960	500	3

NOTE:

1. The radiated emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels. In the range between 3 and 25 GHz very short cable connections to the antenna was used to minimize the noise level.
2. All measurements are done in peak mode using an average limit unless specified with the plots.
3. There are no measurable emissions up to 18GHz in Rx mode.
4. Receiver spurious emissions reported here are the worse case emissions for all receiver modes and between two receiving chains.

6.4.2 RESULTS

30MHz – 1GHz

Note: This plot is valid for low, mid, high channels (worst-case plot).

EMI Auto Test(1)

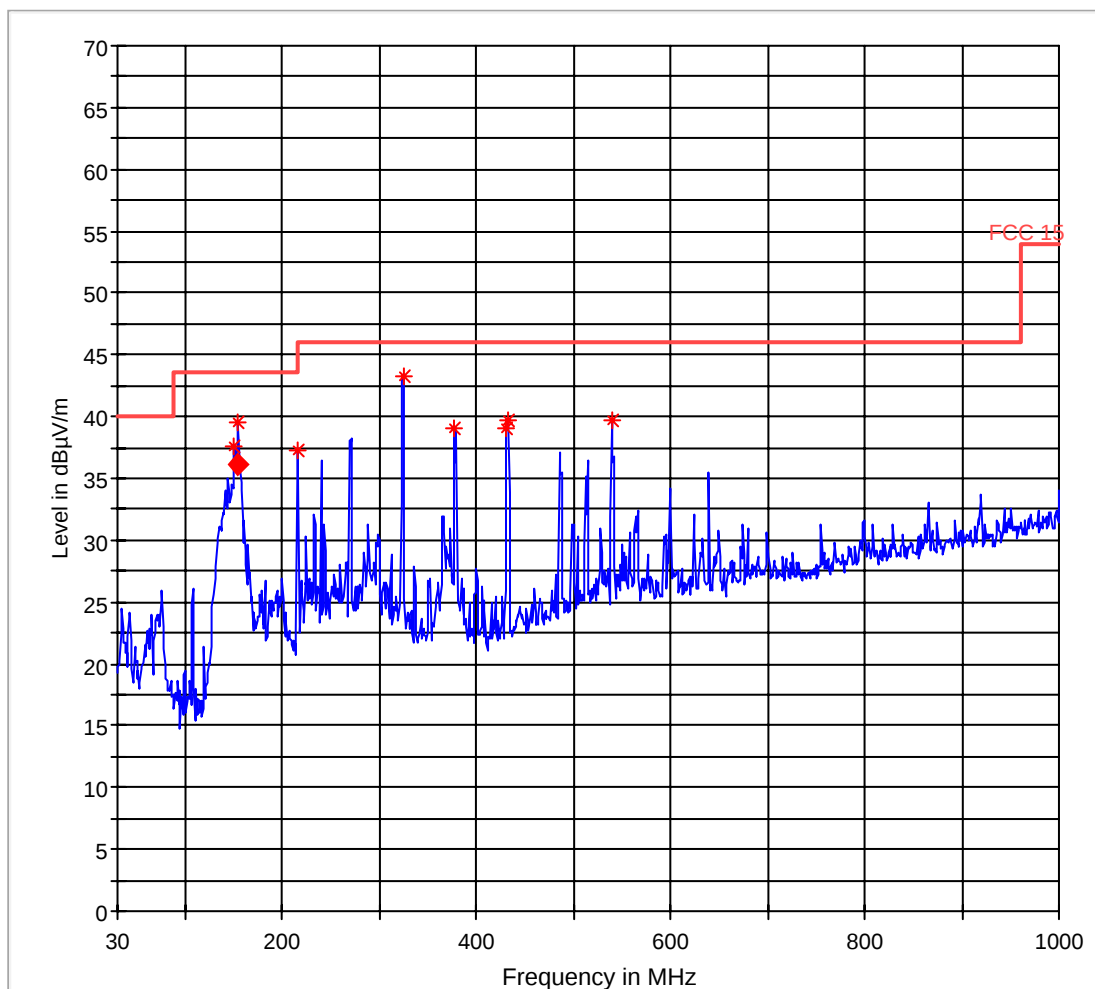
EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	(GSM/UMTS Sample)
Configuration:	Inductive Cover with Inductive Dock with AC Adapter #24 with Laptop

Comment:

FCC 15 30-1000MHz



— FCC 15.LimitLine
* Data Reduction 1 [1]

— Preview Result 1
◆ Final Measurement Result 1

1-18GHz

EMI Auto Test(1)

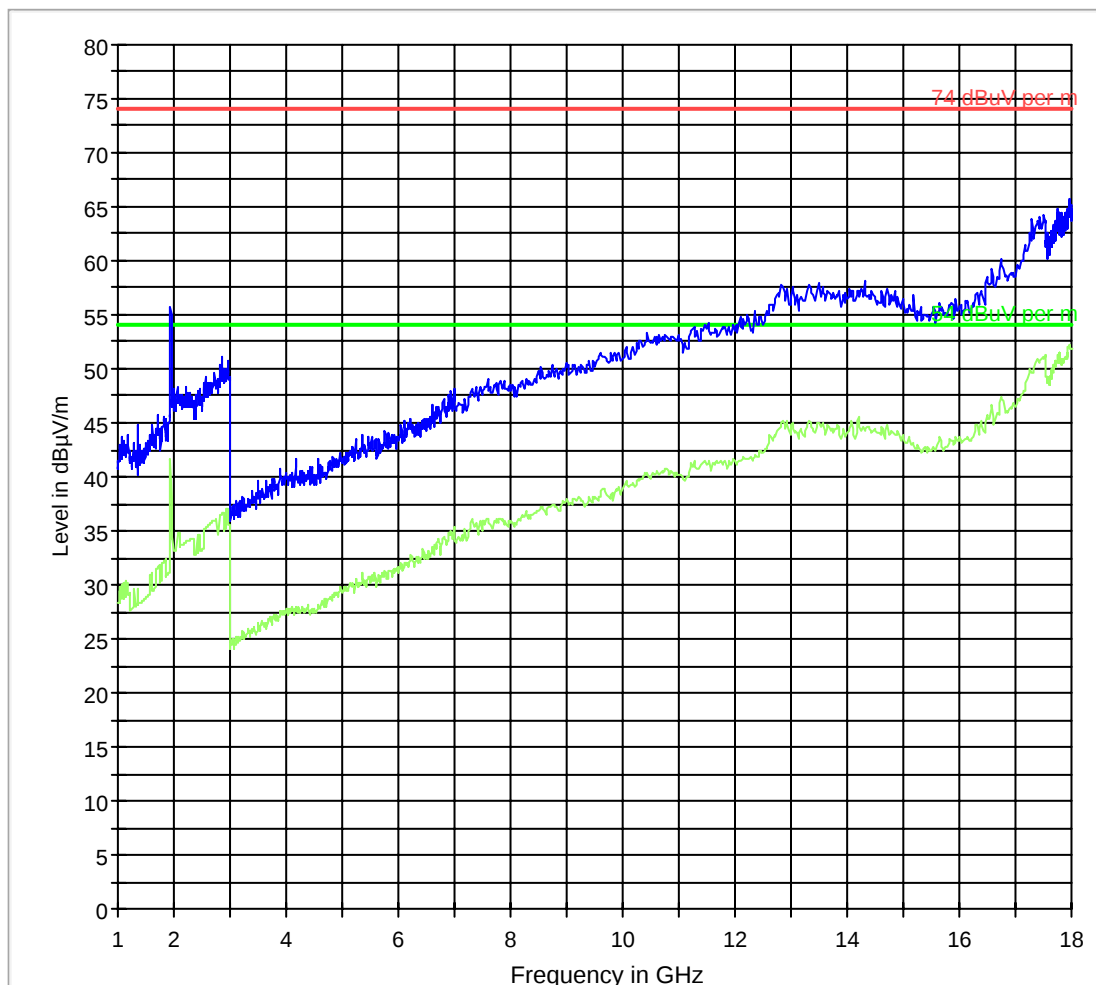
EUT Information

Description:

EUT Name:	GSM/UMTS Phone
Manufacturer:	Palm
Serial Number:	(GSM/UMTS Sample)
Configuration:	Inductive Cover with Inductive Dock with AC Adapter #24 with Laptop

Comment:

FCC 15 1-18GHz



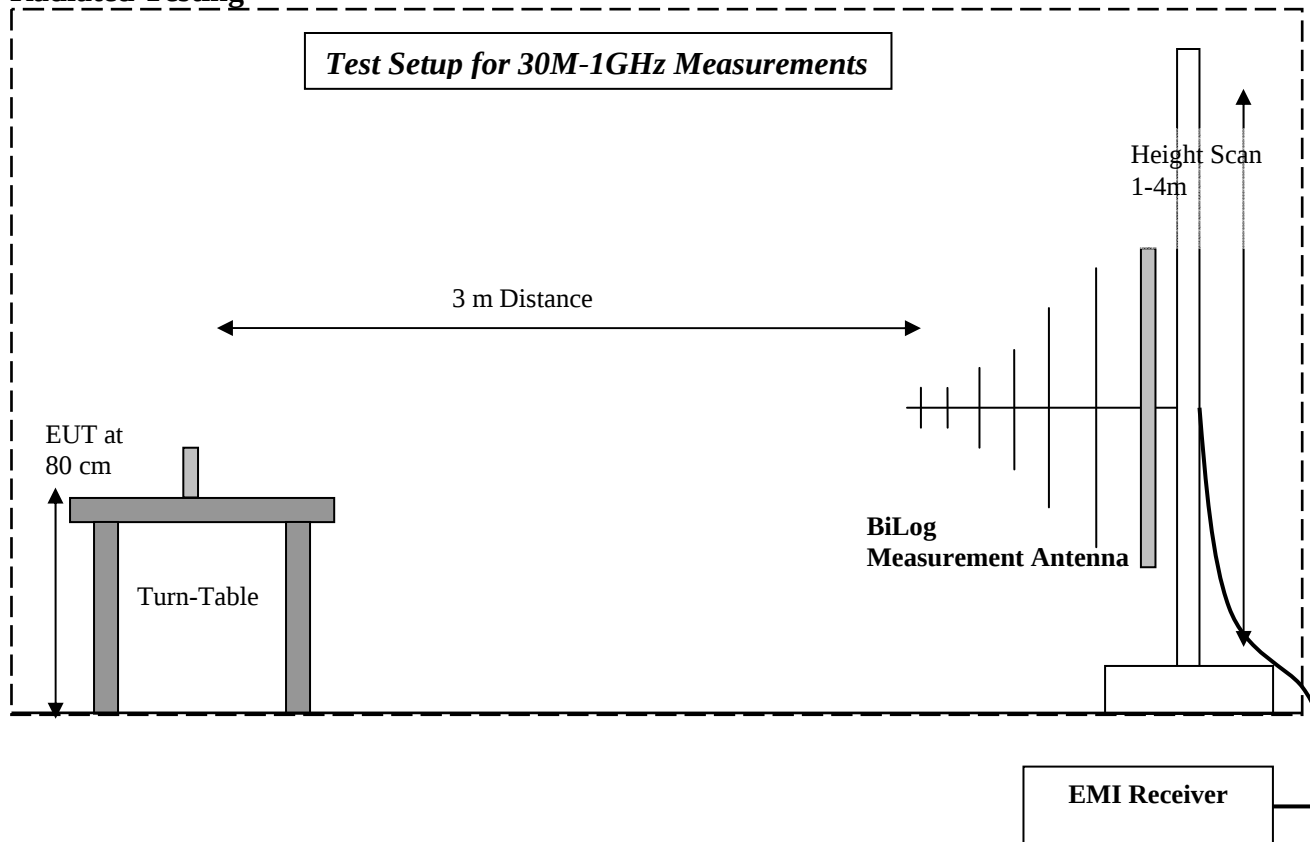
— 74 dBuV per m.LimitLine	— 54 dBuV per m.LimitLine
— Preview Result 1	— Preview Result 2

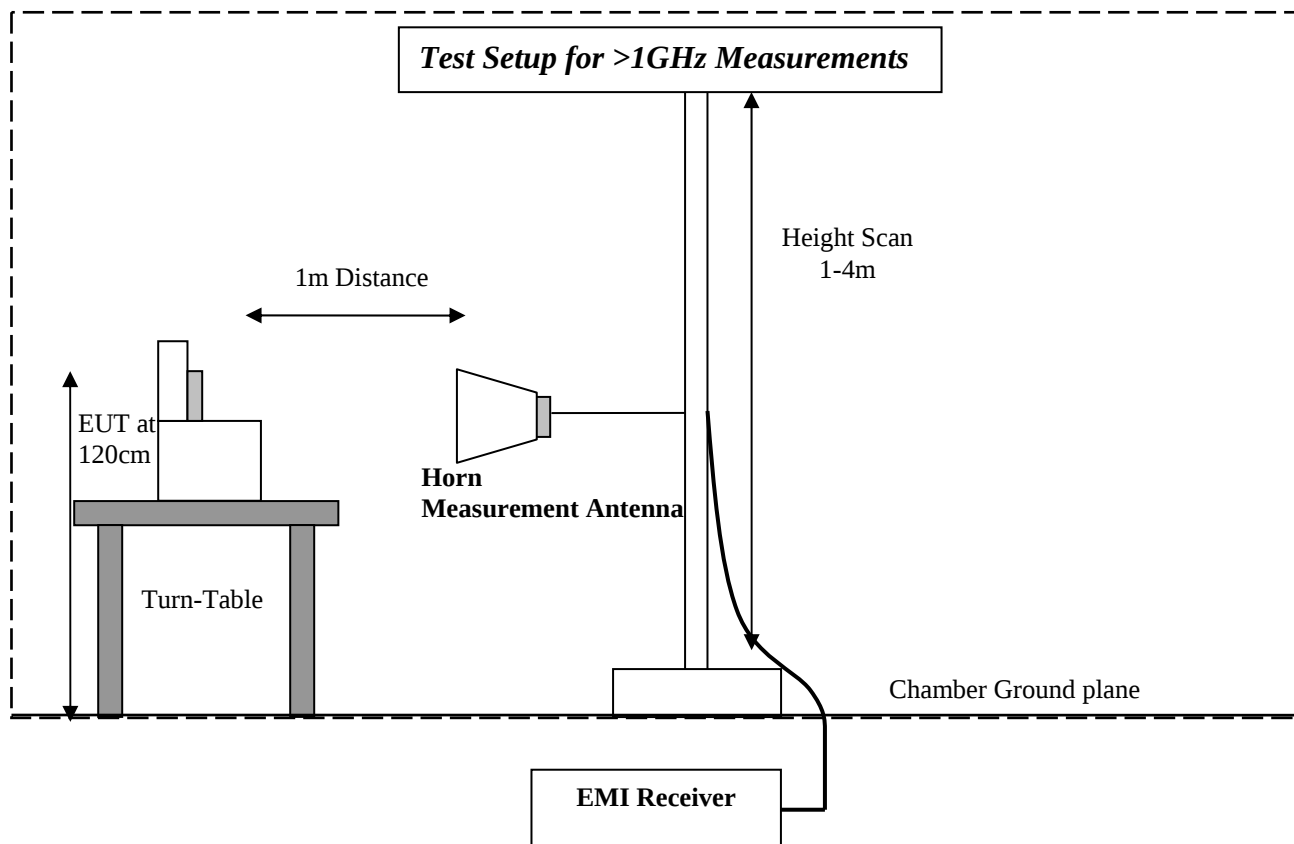
7 TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

No	Instrument/Ancillary	Type	Manufacturer	Serial No.	Cal Due	Interval
01	Spectrum Analyzer	ESIB 40	Rohde & Schwarz	100107	May 2010	1 year
02	Spectrum Analyzer	FSEM 30	Rohde & Schwarz	100017	August 2010	1 year
03	Signal Generator	SMY02	Rohde & Schwarz	836878/011	May 2010	1 year
04	Power-Meter	NRVD	Rohde & Schwarz	0857.8008.02	May 2010	1 year
05	Biconilog Antenna	3141	EMCO	0005-1186	June 2010	1 year
06	Horn Antenna (1-18GHz)	SAS-200/571	AH Systems	325	June 2010	1 year
07	Horn Antenna (18-26.5GHz)	3160-09	EMCO	1240	June 2010	1 year
08	Power Splitter	11667B	Hewlett Packard	645348	n/a	n/a
09	Climatic Chamber	VT4004	Voltsch	G1115	May 2010	1 year
10	High Pass Filter	5HC2700	Trilithic Inc.	9926013	n/a	n/a
11	High Pass Filter	4HC1600	Trilithic Inc.	9922307	n/a	n/a
12	Pre-Amplifier	JS4-00102600	Miteq	00616	May 2010	1 year
13	Power Sensor	URV5-Z2	Rohde & Schwarz	DE30807	May 2010	1 year
14	Digital Radio Comm. Tester	CMD-55	Rohde & Schwarz	847958/008	May 2010	1 year
15	Universal Radio Comm. Tester	CMU 200	Rohde & Schwarz	832221/06	May 2010	1 year
16	LISN	ESH3-Z5	Rohde & Schwarz	836679/003	May 2010	1 year
17	Loop Antenna	6512	EMCO	00049838	July 2011	2 years

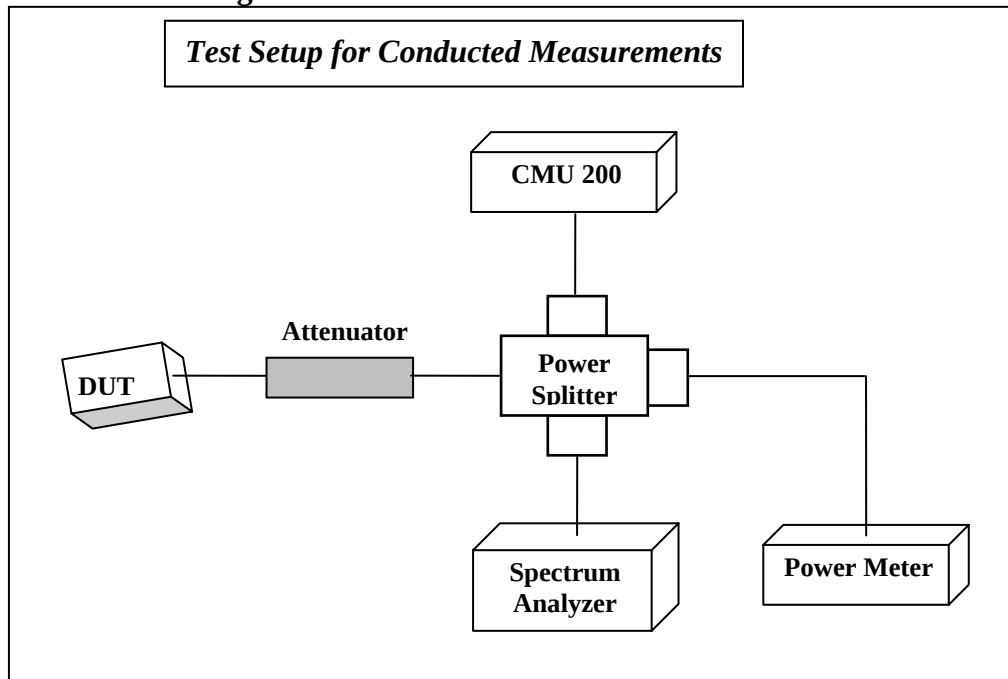
8 BLOCK DIAGRAMS

Radiated Testing





Conducted Testing



9 Revision History

2010-01-22: First Issue

2010-02-12: Updated conducted power measurements and PSD measurements. Replaces previous report number.