



**FCC 47CFR part 15C
Test Report
For
Jongo A2
A240**

Reference Standard: FCC 47CFR part 15C

Manufacturer: PURE

For type of equipment and serial number, refer to section 3

Report Number: 05-6879-6-13 Issue 01

Report Produced by: -

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Certificate of Test 6879-6

The unit noted below has been tested by **R.N. Electronics Limited** and, where appropriate, conforms to the relevant subpart of FCC 47CFR Part 15. This is a certificate of test only and should not be confused with an equipment authorisation. Other standards may also apply.

Equipment:	Jongo A2
Model Number:	A240
Proposed FCC ID:	X280068
Unique Serial Number(s):	PP1-17, PP1-10
Manufacturer:	PURE Imagination Technologies Home Park Industrial Estate Kings Langley Hertfordshire WD4 8LZ
Full measurement results are detailed in Report Number:	05-6879-6-13 Issue 01
Test Standards:	FCC 47CFR Part 15.247 effective date October 1st, 2012 Class DTS Intentional Radiator

NOTE:

Certain tests were not performed based upon manufacturer's declarations. For details refer to section 3 of this report.

DEVIATIONS:

Deviations from the standards have been applied. For details refer to section 4.2 of this report.

This certificate relates only to the unit tested as identified by a unique serial number and in the condition at the time it was tested. It does not relate to any other similar equipment and performance of the product before or after the test cannot be guaranteed. Whilst every effort is made to assure quality of testing, type tests are not exhaustive and although no non-conformances may be found, this doesn't exclude the possibility of unit not meeting the intentions of the standard or the requirements of the Directive, particularly under different conditions to those during testing. Any compliance statements are made reliant on (a) the application of the product and use of the assigned band being acceptable to one or more national authorities within the EU and (b) the modes of operation as instructed to us by the Customer based on their specific knowledge of the application and functionality of the EUT. Statements of compliance, where measurements were made, do not include the measurement uncertainty. The measurement uncertainty, where stated, is the expanded uncertainty based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

Date of Test:	May 2 nd to May 7 th , 2013
Test Engineer:	Daniel Sims
Approved By: Technical Director.	
Customer Representative:	

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2 Summary of test results

The **Jongo A2** was tested to the following standards: -

**FCC 47CFR Part 15.247 (effective date October 1st, 2012);
Class DTS Intentional Radiator**

Any compliance statements are made reliant on the modes of operation as instructed to us by the Manufacturer based on their specific knowledge of the application and functionality of the equipment tested. Whilst every effort is made to assure quality of testing, type tests are not exhaustive and although no non-conformances may be found, this doesn't exclude the possibility of equipment not meeting the intentions of the standard, particularly under different conditions to those during testing.

Title	Reference	Results
1. AC power line conducted emissions	FCC Part 15C §15.207	PASSED
2. Radiated emissions	FCC Part 15C §15.205, §15.209 and §15.247(d)	PASSED
3. Occupied bandwidth	FCC Part 15C §15.215(c), §15.247(a)(2)	PASSED
4. Maximum peak conducted output power	FCC Part 15C §15.247(b)	PASSED
5. Frequency tolerance	FCC Part 15C §15.215(c)	NOT APPLICABLE ¹
6. Duty cycle	FCC Part 15C §15.35(c)	NOT APPLICABLE ²
7. Power spectral density	FCC Part 15C §15.247(e)	PASSED
8. Band edge compliance	FCC Part 15C §15.205, §15.209 and §15.247	PASSED
9. FHSS parameters	FCC Part 15C §15.247(a)(1) Dwell time and Number of hopping channels Frequency separation	NOT APPLICABLE ³ NOT APPLICABLE ³

¹No limits apply, however the requirement to contain the designated bandwidth of the emission within the specified frequency band includes the frequency stability of the transmitter over expected variations in temperature and supply voltage.

²No limits apply.

³EUT does not employ FHSS technology.

3 Equipment Under Test (EUT)

3.1 Equipment specification

Applicant	PURE Imagination Technologies, Home Park Industrial Estate Kings Langley Hertfordshire WD4 8LZ
Manufacturer of EUT	PURE
Brand name of EUT	Jongo A2
Model number of EUT	A240
Serial number of EUT	PP1-17, PP1-10
Date when equipment was received by RN Electronics	April 29 th , 2013
Date of test:	May 2 nd – May 7 th , 2013
Visual description of EUT:	Small plastic enclosure with power/standby switch on the front, a Wi-Fi sync button on the bottom and all ports located on the rear. The unit comes supplied with a dedicated AC/DC adapter.
Main function of the EUT:	Wireless music streaming via Wi-Fi or Bluetooth. N.b. Bluetooth not under test.
Height	55.5mm
Width	108mm
Depth	106mm
Weight	0.22Kg
EUT supplied PSU:	
Manufacturer	PURE
Model number	KSAA0550100W1UV-1
Serial number	KS015775
Voltage input	100-240VAC
Current required from above voltage source	0.18A
Output	5.5V dc, 1.0A

3.2 EUT configurations for testing

General parameters	
EUT normal use position / classification	Desktop / mobile.
Choice of model(s) for type tests	Single variant
Antenna details	Wi-Fi inverted F PCB antenna
Antenna port	Integral antenna
Data port (yes/no)?	Yes
Highest signal generated in EUT	2462MHz (Wi-Fi TX channel 11)
Lowest signal generated in EUT	12MHz (USB clock)

TX parameters	
Alignment range – transmitter	2.412 - 2.462 GHz
EUT declared modulation parameters	DSSS: DBPSK; DQPSK; CCK (802.11b) OFDM: BPSK; QPSK; 16QAM; 64QAM (802.11g)
EUT declared power level	+16dBm
EUT declared signal bandwidths	20MHz
EUT declared channel spacings	5MHz
Declared frequency stability	+/-20ppm
RX parameters	
Alignment range – receiver	2.412 - 2.462 GHz
EUT declared RX signal bandwidth	20MHz

3.3 Functional description

Pure "Jongo A2, A240" is part of the range of Wi-Fi connected audio products and is the first Hi-Fi adapter in this product family. It is intended to be installed and connected to an existing loudspeaker system, delivering new content (streamed or stored on the user's smart device) to existing equipment by streaming over Wi-Fi or Bluetooth (using integral pre-approved Bluetooth module, not under test in this report) .

3.4 EUT Modes

Mode reference	Description	Used for testing
TX low channel	Constant TX modulated 2.412 GHz	Yes
TX mid channel	Constant TX modulated 2.437 GHz	Yes
TX high channel	Constant TX modulated 2.462 GHz	Yes
TX normal	Wi-Fi or Bluetooth packet transmission of audio data	No

All Transmit modes were 100% duty cycle, modulated (except where stated otherwise), and left on the default max power setting.

The Transmit modes referred to above were checked in combination with the following table of modulation/ data rate schemes to fulfil the test requirements:-

Mode	Rate
802.11B	1 Mbps
802.11B	2 Mbps
802.11B	5.5 Mbps
802.11B	11 Mbps
802.11G	
802.11G	6 Mbps
802.11G	9 Mbps
802.11G	12 Mbps
802.11G	18 Mbps
802.11G	24 Mbps
802.11G	36 Mbps
802.11G	48 Mbps
802.11G	54 Mbps

Description of ancillary equipment connected to the equipment under test, for the purpose of tests, can be found in Section 10.

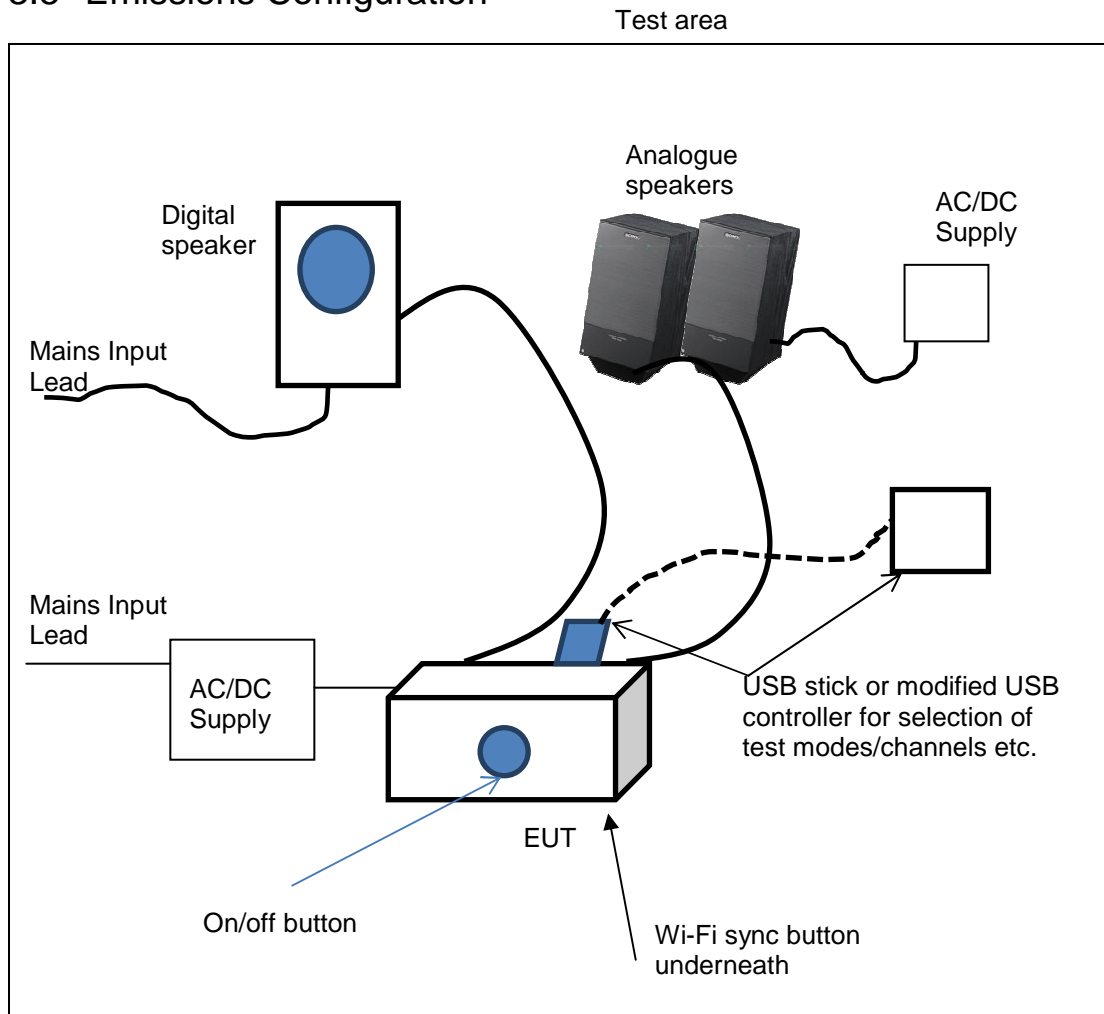
Any modifications made to the EUT, whilst under test, can be found in Section 11.

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The contents of this report, apart from the referenced ANSI C63.4-2003, are beyond the scope of UKAS Testing Laboratory No. 2360 accreditation.

3.5 Emissions Configuration



The unit was powered from the dedicated AC/DC adapter provided with the unit. For conducted RF tests a second unit was provided with the internal antenna unsoldered and an SMA connector fitted in its place.

The units were configured with engineering menus in software which were accessed via a specially modified USB device which allowed permanent transmit and receive modes of the device on the top, middle and bottom channels as stated within section 3.4 of this report. The transmit mode was 100% continuous with modulation and the power settings for each channel were left at the default settings (level 20) in the software.

For radiated and conducted emissions tests the unit was populated with typical peripherals. The digital speaker port was populated with a digital speaker, the analogue Left & Right were populated with a pair of Analogue speakers and the USB port was populated with the Special USB device for control of the test modes required for tests. A standard USB stick was also used/checked connected to the unit for Conducted AC emissions tests.

2 identical units were provided for test, these were: - S/n PP1-10 for all radiated RF TX tests (and Conducted AC emissions) and S/n PP1-17 for all Conducted RF TX tests. The AC/DC adapter was also placed on to the test table along with the main enclosure of the EUT.

A pre-approved Bluetooth USB dongle was permanently fitted inside the EUT enclosure and was powered/in operation during the course of the testing. The Bluetooth dongle was labelled FCC ID: **X2806M**.

4 Specifications

4.1 Relevant standards

The tests were performed by RN Electronics Engineer Daniel Sims who set up the tests, the test equipment, and operated it in accordance with the **R.N. Electronics Ltd** procedures manual and the basic standards listed below.

R.N. Electronics Ltd sites M and OATS are listed with the FCC. Registration Number 293246

Reference	Standard Number	Year	Description
4.1.1	FCC 47CFR15	2012	Electromagnetic compatibility and radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements
4.1.2	ANSI C63.10	2009	American National Standard for Testing Unlicensed Wireless Devices
4.1.3	ANSI C63.4	2003	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
4.1.4	KDB558074	2012	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247

4.2 Deviations

ANSI C63-10-2009 deviations:

The reference standard ANSI C63.4-2003 was used, not the latest ANSI C63.4-2009

FCC Part 15 deviations:

None.

4.3 Tests at extremes of temperature & voltage

Not Required.

N.b. for certain tests referenced to antenna port:

- A temporary internal RF port was used for testing.
- A test fixture was used for testing.
- A temporary RF port was created for testing.
- The equipment internal Antenna was used for testing.

4.4 Measurement uncertainties

Parameter	Uncertainty
Transmitter Tests	
Conducted RF power	<± 1.0 dB
Occupied bandwidth	± 1.9 %
Radiated RF power	± 3.5 dB
Radiated spurious emissions	30MHz - 1000MHz ±5.1dB
	1000MHz - 2000MHz ±4.5dB
	1 – 18 GHz ±3.5dB
	18 – 26.5 GHz ±3.9dB
AC power line conducted emissions	(For LISN) 150kHz to 30MHz ±3.6dB

5 Tests, methods and results

5.1 AC power line conducted emissions

5.1.1 Test Methods

Test Requirements FCC Part 15C, Reference (15.207)
Test Method: ANSI C63.10, Reference (6.2.)

5.1.2 Configuration Of EUT

The EUT and its AC/DC adapter were placed on a wooden table 0.8m above the ground plane and the adapter was connected to a LISN via a 1m mains cable.

Details of the Peripheral and Ancillary Equipment connected for this test is listed in section 11.

The EUT was operated in **TX low channel**, **TX mid channel** and **TX high channel** modes.

5.1.3 Test Procedure

Tests were made in accordance with FCC Part 15 using the measuring equipment noted in the 'Test Equipment Used' section. Measurements were made on the live and neutral conductors using both average and quasi-peak detection. At least 6 signals within 20dB and/or all signals within 10dB of the limit were investigated.

Tests were performed in Test Site F.

5.1.4 Test Equipment Used

E150, E035, E410, E411, E412, E465, E186, E010

See Section 10 for more details.

5.1.5 Test results

Ambient conditions.
Temperature: 20 °C Relative humidity: 27 %

No discernible difference was noted in emissions between channels (exploratory measurements), therefore the final measurements are presented for **TX mid channel** mode only.

Analyser plots showing Peak values can be found in Section 6.1 of this report.

Tables of signals measured.

Quasi-Peak and Average Live (TX mid channel)

Signal No.	Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	QP - Lim1 (dB)	AV Amp (dBuV)	AV - Lim1 (dB)
1	0.205	48.4	45.8	-17.6	31.2	-22.2
2	0.351	49.3	46.1	-12.8	29.0	-19.9
3	0.419	44.7	39.5	-18.0	22.3	-25.2
4	0.454	49.6	47.3	-9.5	29.2	-17.6
5	0.556	44.6	38.6	-17.4	20.8	-25.2

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Signal No.	Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	QP - Lim1 (dB)	AV Amp (dBuV)	AV - Lim1 (dB)
6	0.636	45.2	40.0	-16.0	20.4	-25.6
7	0.712	46.1	43.3	-12.7	24.9	-21.1
8	1.028	42.7	36.8	-19.2	21.7	-24.3
9	1.060	43.2	38.5	-17.5	22.1	-23.9
10	1.097	41.2	37.8	-18.2	21.1	-24.9
11	1.357	41.6	38.0	-18.0	22.0	-24.0

Quasi-Peak and Average Neutral (TX mid channel)

Signal No.	Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	QP - Lim1 (dB)	AV Amp (dBuV)	AV - Lim1 (dB)
1	0.452	50.4	47.4	-9.4	31.0	-15.8
2	0.531	46.3	41.4	-14.6	26.8	-19.2
3	0.577	46.2	38.7	-17.3	20.6	-25.4
4	0.597	44.9	39.8	-16.2	25.5	-20.5
5	0.711	46.1	43.1	-12.9	27.3	-18.7
6	0.777	46.2	40.2	-15.8	25.1	-20.9
7	1.081	43.4	38.7	-17.3	20.9	-25.1
8	1.081	44.3	38.7	-17.3	21.0	-25.0
9	1.121	42.7	38.7	-17.3	22.8	-23.2
10	1.237	42.8	37.4	-18.6	21.5	-24.5
11	1.352	42.9	39.4	-16.6	23.8	-22.2
12	1.370	40.9	37.4	-18.6	22.1	-23.9

These results show that the **EUT** has **PASSED** this test.

5.2 Radiated emissions

5.2.1 Test Methods

Test Requirements: FCC Part 15C, Reference (15.209)
Test Method: ANSI C63.4, Reference (8)

5.2.2 Configuration Of EUT

The EUT was placed on a 0.8 metres high turntable. The front edge of the EUT was initially positioned facing the antenna. The EUT was measured at a distance of 3 metres. The EUT was measured in its normal use position (mobile device).

The EUT was operated in **TX low channel**, **TX mid channel** and **TX high channel** modes.

5.2.3 Test Procedure

Tests were made in accordance with FCC Part 15 using the measuring equipment noted below.

Below 30MHz, measurements were made in a semi-anechoic chamber (pre-scan) with any final measurements required performed on an OATS without a ground plane. The antenna was placed 1m above the ground. The equipment and the antenna were rotated 360° to record the worst case emissions.

30MHz - 1GHz, measurements were made on a site listed with the FCC. The equipment was rotated 360° and the antenna scanned 1 – 4 metres in both horizontal and vertical polarisations to record the worst case emissions.

Above 1GHz, measurements were made in a semi-anechoic chamber with appropriate absorbing material for use in this range. Horn antennas were used at heights where the whole of the EUT was contained within the main beam. The EUT was rotated through 360° to record the worst case emissions.

At least 6 signals within 20dB and all signals within 10dB of the limit were investigated.

Radiated emissions tests were performed using Test Site M.

5.2.4 Test Equipment Used

N240, E268, E410, E411, E412, E429, E533, E534, E535, TMS78, TMS79, TMS81, TMS82, TMS933

See Section 10 for more details

5.2.5 Test Results

Ambient conditions
Temperature: 18-21 °C Relative humidity: 27-33 %

Analyser plots showing Peak values can be found in Section 6.2 of this report.

Note: EUT tested in a continuous transmit mode for ease of test.

No discernible difference was noted in emissions between channel settings in the test ranges 150k-30MHz and 30-1000MHz (exploratory measurements), therefore final measurements are presented for **TX mid channel** mode only for these test ranges.

The 1Mbps data rate was found to yield the highest emission amplitudes and has been used for final measurements.

5.2.5.1 Below 30MHz.

Plot references for Low Frequency Radiated emissions measurements
(150kHz to 30MHz)

Channel	Parallel Plots	Perpendicular Plots
Mid channel	6879-6 Parallel 150k-30MHz Mid channel TX	6879-6 Perpendicular 150k-30MHz Mid channel TX

5.2.5.2 30MHz - 1GHz.

Plot references for Radiated emissions measurements (30-1000MHz)

Frequency Range	Antenna Polarisation	Plot reference
30 – 300 MHz	Horizontal	6879-6 Rad 1 VHF Horiz
30 – 300 MHz	Vertical	6879-6 Rad 1 VHF Vert
300 – 1000 MHz	Horizontal	6879-6 Rad 1 UHF Horiz
300 – 1000 MHz	Vertical	6879-6 Rad 1 UHF Vert

Table of signals measured (TX mid channel)

Horizontal

Signal No.	Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	QP - Lim1 (dB)
1	120.003	30.7	28.6	-14.9
2	262.936	25.1	18.9	-27.1
3	264.026	33.0	25.4	-20.6
4	276.173	28.0	21.6	-24.4
5	287.995	27.9	22.1	-23.9
6	299.818	27.3	20.7	-25.3

Vertical

Signal No.	Freq (MHz)	Peak Amp (dBuV)	QP Amp (dBuV)	QP - Lim1 (dB)
1	30.444	36.6	33.2	-6.8
2	40.001	32.3	28.4	-11.6
3	60.005	22.6	18.7	-21.3
4	120.003	27.7	24.3	-19.2

5.2.5.3 Above 1GHz.

Radio Parameters 1

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	1 MBPS
Bottom channel	2412 MHz

Results relating to Radio Parameters 1

Spurious Frequency (MHz)	Measured Peak Level (dBµV/m)	Difference to Peak Limit (dB)	Measured Average Level (dBµV/m)	Difference to Average Limit (dB)	Antenna Polarisation	EUT Polarisation
3216	48.8	-25.2	43.6	-10.4	Vertical	Normal use
3216	47.4	-26.6	41.2	-12.8	Horizontal	Normal use
6432	50.7	-23.3	47.9	-6.1	Vertical	Normal use
6432	49	-25	45.5	-8.5	Horizontal	Normal use
12864	47.1	-26.9	42.3	-11.7	Vertical	Normal use
12864	44.3	-29.7	37.8	-16.2	Horizontal	Normal use
4824	50.9	-23.1	44.9	-9.1	Vertical	Normal use
4824	49.8	-24.2	43	-11	Horizontal	Normal use

Radio Parameters 2

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	1 MBPS
Middle channel	2437 MHz

Results relating to Radio Parameters 2

Spurious Frequency (MHz)	Measured Peak Level (dBµV/m)	Difference to Peak Limit (dB)	Measured Average Level (dBµV/m)	Difference to Average Limit (dB)	Antenna Polarisation	EUT Polarisation
3249	48.4	-25.6	42.3	-11.7	Vertical	Normal use
3249	47.5	-26.5	40.6	-13.4	Horizontal	Normal use
6498	50.5	-23.5	47.4	-6.6	Vertical	Normal use
6498	45.6	-28.4	39.9	-14.1	Horizontal	Normal use
12996	48.1	-25.9	44.1	-9.9	Vertical	Normal use
12996	44	-30	36.7	-17.3	Horizontal	Normal use
4874	51.5	-22.5	46.1	-7.9	Vertical	Normal use
4874	47.8	-26.2	38.3	-15.7	Horizontal	Normal use

Radio Parameters 3

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	1 MBPS
High channel	2462 MHz

Results relating to Radio Parameters 3

Spurious Frequency (MHz)	Measured Peak Level (dBµV/m)	Difference to Peak Limit (dB)	Measured Average Level (dBµV/m)	Difference to Average Limit (dB)	Antenna Polarisation	EUT Polarisation
3283	47.6	-26.4	41.3	-12.7	Vertical	Normal use
3283	47.2	-26.8	39.8	-14.2	Horizontal	Normal use
6565	51	-23	48.2	-5.8	Vertical	Normal use
6565	49.2	-24.8	45.5	-8.5	Horizontal	Normal use
13130	45.7	-28.3	40.8	-13.2	Vertical	Normal use
13130	44.4	-29.6	37.6	-16.4	Horizontal	Normal use
4924	49.3	-24.7	41.9	-12.1	Vertical	Normal use
4924	49.1	-24.9	41.9	-12.1	Horizontal	Normal use

Plot Table

Frequency Range	Antenna Polarisation	Plot reference
1-2GHz	Horizontal	6879-6 horizontal 1-2GHz mid channel
1-2GHz	Vertical	6879-6 vertical 1-2GHz mid channel
2-2.7GHz	Horizontal	6879-6 horizontal 2-2.7GHz mid channel
2-2.7GHz	Vertical	6879-6 vertical 2-2.7GHz mid channel
2.7GHz-5GHz	Horizontal	6879-6 horizontal 2.7-5GHz mid channel
2.7GHz-5GHz	Vertical	6879-6 vertical 2.7-5GHz mid channel
5-6GHz	Horizontal	6879-6 horizontal 5-6GHz mid channel
5-6GHz	Vertical	6879-6 vertical 5-6GHz mid channel
6-7.8GHz	Horizontal	6879-6 horizontal 6-7.8GHz Mid channel
6-7.8GHz	Vertical	6879-6 Vertical 6-7.8GHz Mid channel
7.8-10GHz	Horizontal	6879-6 horizontal 7.8-10GHz Mid channel
7.8-10GHz	Vertical	6879-6 Vertical 7.8-10GHz Mid channel
10-12.5GHz	Horizontal	6879-6 horizontal 10-12.5GHz Mid channel
10-12.5GHz	Vertical	6879-6 Vertical 10-12.5GHz Mid channel
12.5-15GHz	Horizontal	6879-6 Horizontal 12.5-15GHz Mid channel
12.5-15GHz	Vertical	6879-6 Vertical 12.5-15GHz Mid channel
15-18GHz	Horizontal	6879-6 Horizontal 15-18GHz Mid channel
15-18GHz	Vertical	6879-6 Vertical 15-18GHz Mid channel
18-21.5GHz	Horizontal	6879-6 Horizontal 18-21.5GHz Mid channel
18-21.5GHz	Vertical	6879-6 Vertical 18-21.5GHz Mid channel
21.5-25GHz	Horizontal	6879-6 Horizontal 21.5-25GHz Mid channel
21.5-25GHz	Vertical	6879-6 Vertical 21.5-25GHz Mid channel

Note: Whilst Low, Mid and High channels were tested, plots are for illustrative purposes only and only **Mid channel** plots are shown in this report.

LIMITS:

15.209 limits are applicable in the restricted bands of 15.205 with the relevant detector.
15.247(d) other emissions, outside the intentional band, must be attenuated by at least 20dB from the level of the fundamental / meet the general limits of 15.209.

n.b. the general limits of 15.209 are as drawn on the respective plots.

These show that the **EUT** has **PASSED** this test.

5.3 Occupied bandwidth

5.3.1 Test Methods

Test Requirements:
Test Method:

FCC Part 15C, Reference (15.215)
ANSI C63.10, Reference (6.9)

5.3.2 Configuration Of EUT

The EUT was tested on a bench. Measurements were made at the temporary internal RF port. The EUT was operated in **TX low channel** and **TX mid channel** and **TX high channel** modes.

5.3.3 Test Procedure

Tests were performed using Test Site A.
Tests were made in accordance with FCC Part 15 using the measuring equipment noted below. A 120kHz RBW, 3x VBW, auto sweep time and max hold settings were used for the 6dB bandwidth.

5.3.4 Test Equipment Used

E251, E252, E533, E534, E535

See Section 10 for more details.

5.3.5 Test Results

Ambient conditions.

Temperature: 24 °C Relative humidity: 30 % Pressure: 102 mbar

Analyser plots for the 6dB bandwidth can be found in Section 6.3 of this report.

Radio Parameter 1

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	1 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 1

	Low	Mid	High
6dB BW (MHz)	10.03	10.04	10.06
Plot reference	J6879-6, Plot 0001	J6879-6, Plot 0013	J6879-6, Plot 0025

Radio Parameter 2

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	2 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 2

	Low	Mid	High
6dB BW (MHz)	10.12	10.1	10.09
Plot reference	J6879-6, Plot 0002	J6879-6, Plot 0014	J6879-6, Plot 0026

Radio Parameter 3

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	5.5 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 3

	Low	Mid	High
6dB BW (MHz)	10.03	9.58	10.03
Plot reference	J6879-6, Plot 0003	J6879-6, Plot 0015	J6879-6, Plot 0027

Radio Parameter 4

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	11 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 4

	Low	Mid	High
6dB BW (MHz)	10.06	10.06	10.07
Plot reference	J6879-6, Plot 0004	J6879-6, Plot 0016	J6879-6, Plot 0028

Radio Parameter 5

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	6 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 5

	Low	Mid	High
6dB BW (MHz)	15.15	15.13	15.13
Plot reference	J6879-6, Plot 0005	J6879-6, Plot 0017	J6879-6, Plot 0029

Radio Parameter 6

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	9 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 6

	Low	Mid	High
6dB BW (MHz)	15.15	15.13	15.12
Plot reference	J6879-6, Plot 0006	J6879-6, Plot 0018	J6879-6, Plot 0030

Radio Parameter 7

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	12 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 7

	Low	Mid	High
6dB BW (MHz)	15.13	15.13	15.12
Plot reference	J6879-6, Plot 0007	J6879-6, Plot 0019	J6879-6, Plot 0031

Radio Parameter 8

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	18 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 8

	Low	Mid	High
6dB BW (MHz)	15.42	15.41	15.41
Plot reference	J6879-6, Plot 0008	J6879-6, Plot 0020	J6879-6, Plot 0032

Radio Parameter 9

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	24 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 9

	Low	Mid	High
6dB BW (MHz)	15.15	15.15	15.15
Plot reference	J6879-6, Plot 0009	J6879-6, Plot 0021	J6879-6, Plot 0033

Radio Parameter 10

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	36 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 10

	Low	Mid	High
6dB BW (MHz)	15.77	15.66	15.76
Plot reference	J6879-6, Plot 0010	J6879-6, Plot 0022	J6879-6, Plot 0034

Radio Parameter 11

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	48 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 11

	Low	Mid	High
6dB BW (MHz)	15.33	15.33	15.33
Plot reference	J6879-6, Plot 0011	J6879-6, Plot 0023	J6879-6, Plot 0035

Radio Parameter 12

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	54 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 12

	Low	Mid	High
6dB BW (MHz)	15.15	15.13	15.12
Plot reference	J6879-6, Plot 0012	J6879-6, Plot 0024	J6879-6, Plot 0036

LIMITS:

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

These results show that the EUT has **PASSED** this test.

5.4 Maximum peak conducted output power

5.4.1 Test Methods

Test Requirements
Test Method:

FCC Part 15C, Reference (15.247)
ANSI C63.10, Reference (6.10.2.1 b))

5.4.2 Configuration Of EUT

The EUT was measured on a bench using a spectrum analyser connected to the temporary internal RF port.

The EUT was operated in **TX low channel** and **TX mid channel** and **TX high channel** modes for this test.

The EUT was set to each mode and test signal in turn (see section 3.4) and highest power levels recorded.

5.4.3 Test Procedure

Tests were made in accordance with FCC Part 15 using the measuring equipment noted below. Peak stated reading is maximum power observed using a spectrum analyser channel power function over the 6dB bandwidth + 1MHz using a 1MHz RBW, per ANSI C63.10.

Measurements were made on a test bench in site A.

5.4.4 Test Equipment Used

E251, E266, E342, E252

See Section 10 for more details

5.4.5 Test results

Ambient conditions.
Temperature: 22 °C

Relative humidity: 40 %

Pressure: 101 mbar

Radio Parameter1

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	1 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 1

Test conditions		Carrier Power (mW)		
		Low	Mid	High
Temp Ambient	Volts Nominal	51.3	64.6	39.8
Maximum TX Power observed (mW)		64.6		

Radio Parameter2

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	2 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 2

Test conditions		Carrier Power (mW)		
		Low	Mid	High
Temp Ambient	Volts Nominal	55.0	66.1	40.7
Maximum TX Power observed (mW)		66.1		

Radio Parameter3

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	5.5 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 3

Test conditions		Carrier Power (mW)		
		Low	Mid	High
Temp Ambient	Volts Nominal	63.1	72.4	45.7
Maximum TX Power observed (mW)		72.4		

Radio Parameter4

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	11 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 4

Test conditions		Carrier Power (mW)		
		Low	Mid	High
Temp Ambient	Volts Nominal	69.2	81.3	50.1
Maximum TX Power observed (mW)		81.3		

Radio Parameter5

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	6 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 5

Test conditions		Carrier Power (mW)		
		Low	Mid	High
Temp Ambient	Volts Nominal	64.6	67.6	61.7
Maximum TX Power observed (mW)		67.6		

Radio Parameter6

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	9 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 6

Test conditions		Carrier Power (mW)		
		Low	Mid	High
Temp Ambient	Volts Nominal	69.2	72.4	66.1
Maximum TX Power observed (mW)		72.4		

Radio Parameter7

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	12 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 7

Test conditions		Carrier Power (mW)		
		Low	Mid	High
Temp Ambient	Volts Nominal	61.7	63.1	57.5
Maximum TX Power observed (mW)		63.1		

Radio Parameter8

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	18 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 8

Test conditions		Carrier Power (mW)		
		Low	Mid	High
Temp Ambient	Volts Nominal	60.3	61.7	57.5
Maximum TX Power observed (mW)		61.7		

Radio Parameter9

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	24 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 9

Test conditions		Carrier Power (mW)		
		Low	Mid	High
Temp Ambient	Volts Nominal	61.7	64.6	58.9
Maximum TX Power observed (mW)		64.6		

Radio Parameter10

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	36 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 10

Test conditions		Carrier Power (mW)		
		Low	Mid	High
Temp Ambient	Volts Nominal	64.6	67.6	61.7
Maximum TX Power observed (mW)		67.6		

Radio Parameter11

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	48 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 11

Test conditions		Carrier Power (mW)		
		Low	Mid	High
Temp Ambient	Volts Nominal	41.7	44.7	39.8
Maximum TX Power observed (mW)		44.7		

Radio Parameter12

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	54 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 12

Test conditions		Carrier Power (mW)		
		Low	Mid	High
Temp Ambient	Volts Nominal	41.7	43.7	39.8
Maximum TX Power observed (mW)		43.7		

LIMITS:

15.247(b)(3)

For systems using digital modulation in the 902-928, 2400-2483.5 or 5725-5850 MHz bands 1 Watt.

These results show that the EUT has **PASSED** this test.

5.5 Frequency tolerance

NOT APPLICABLE: No limits apply, however the requirement to contain the designated bandwidth of the emission within the specified frequency band includes the frequency stability of the transmitter over expected variations in temperature and supply voltage

5.6 Duty cycle

NOT APPLICABLE: There is no limit defined in the standard. It was, however, confirmed by observation that the continuous test mode provided was 100% duty.

5.7 Maximum power spectral density

5.7.1 Test Methods

Test Requirements: FCC Part 15C, Reference (15.247)
Test Method: KDB558074, PSD Option 1

5.7.2 Configuration Of EUT

The EUT was configured as for the peak conducted power test. The EUT was operated in **TX low channel** and **TX mid channel** and **TX high channel** modes for this test.

5.7.3 Test Procedure

Tests were performed using Test Site A.
Tests were made in accordance with FCC Part 15 using the measuring equipment noted below. The emission from the EUT was maximised before taking any plots. PEP was recorded in the required span and bandwidth. Measurements/plots were taken with the span set to 1.5 times the measured DTS bandwidth for each modulation scheme setting.

5.7.4 Test Equipment Used

E251, E533, E534, E535, E252

See Section 10 for more details.

5.7.5 Test results

Ambient conditions.
Temperature: 23°C Relative humidity: 42% Pressure: 101mbar

Radio Parameter 1

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	1 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 1

	Low	Mid	High
Antenna Gain (dB)	1.7	1.7	4.5
Duty Cycle (%)	100	100	100
dBm per 3kHz	-10.9	-10.6	-10.1
Plot reference	J6879-6, Plot 0040	J6879-6, Plot 0052	J6879-6, Plot 0064

Radio Parameter 2

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	2 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 2

	Low	Mid	High
Antenna Gain (dB)	1.7	1.7	4.5
Duty Cycle (%)	100	100	100
dBm per 3kHz	-8.7	-8.4	-7.7
Plot reference	J6879-6, Plot 0041	J6879-6, Plot 0053	J6879-6, Plot 0065

Radio Parameter 3

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	5.5 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 3

	Low	Mid	High
Antenna Gain (dB)	1.7	1.7	4.5
Duty Cycle (%)	100	100	100
dBm per 3kHz	-9.8	-8.9	-8.8
Plot reference	J6879-6, Plot 0042	J6879-6, Plot 0054	J6879-6, Plot 0066

Radio Parameter 4

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	11 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

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Results relating to Radio Parameters 4

	Low	Mid	High
Antenna Gain (dB)	1.7	1.7	4.5
Duty Cycle (%)	100	100	100
dBm per 3kHz	-9.7	-9.2	-8.6
Plot reference	J6879-6, Plot 0043	J6879-6, Plot 0055	J6879-6, Plot 0067

Radio Parameter 5

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	6 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 5

	Low	Mid	High
Antenna Gain (dB)	1.7	1.7	4.5
Duty Cycle (%)	100	100	100
dBm per 3kHz	-12.4	-12.8	-10.4
Plot reference	J6879-6, Plot 0044	J6879-6, Plot 0056	J6879-6, Plot 0068

Radio Parameter 6

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	9 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 6

	Low	Mid	High
Antenna Gain (dB)	1.7	1.7	4.5
Duty Cycle (%)	100	100	100
dBm per 3kHz	-9.6	-9.8	-7.5
Plot reference	J6879-6, Plot 0045	J6879-6, Plot 0057	J6879-6, Plot 0069

Radio Parameter 7

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	12 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 7

	Low	Mid	High
Antenna Gain (dB)	1.7	1.7	4.5
Duty Cycle (%)	100	100	100
dBm per 3kHz	-8.8	-9.1	-6.9
Plot reference	J6879-6, Plot 0046	J6879-6, Plot 0058	J6879-6, Plot 0070

Radio Parameter 8

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	18 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 8

	Low	Mid	High
Antenna Gain (dB)	1.7	1.7	4.5
Duty Cycle (%)	100	100	100
dBm per 3kHz	-8.1	-8.2	-6
Plot reference	J6879-6, Plot 0047	J6879-6, Plot 0059	J6879-6, Plot 0071

Radio Parameter 9

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	24 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 9

	Low	Mid	High
Antenna Gain (dB)	1.7	1.7	4.5
Duty Cycle (%)	100	100	100
dBm per 3kHz	-8.1	-8.1	-5.7
Plot reference	J6879-6, Plot 0048	J6879-6, Plot 0060	J6879-6, Plot 0072

Radio Parameter 10

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	36 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

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Results relating to Radio Parameters 10

	Low	Mid	High
Antenna Gain (dB)	1.7	1.7	4.5
Duty Cycle (%)	100	100	100
dBm per 3kHz	-5.6	-5.7	-3.5
Plot reference	J6879-6, Plot 0049	J6879-6, Plot 0061	J6879-6, Plot 0073

Radio Parameter 11

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	48 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 11

	Low	Mid	High
Antenna Gain (dB)	1.7	1.7	4.5
Duty Cycle (%)	100	100	100
dBm per 3kHz	-6.7	-6.9	-4.6
Plot reference	J6879-6, Plot 0050	J6879-6, Plot 0062	J6879-6, Plot 0074

Radio Parameter 12

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	54 MBPS
Low channel	2412 MHz
Mid channel	2437 MHz
High channel	2462 MHz

Results relating to Radio Parameters 12

	Low	Mid	High
Antenna Gain (dB)	1.7	1.7	4.5
Duty Cycle (%)	100	100	100
dBm per 3kHz	-7.8	-7.9	-5.6
Plot reference	J6879-6, Plot 0051	J6879-6, Plot 0063	J6879-6, Plot 0075

LIMITS:

15.247(e) +8dBm/3kHz.

Any Analyser plots can be found in Section 6.5 of this report.

These results show that the EUT has **PASSED** this test.

5.8 Band Edge Compliance

5.8.1 Test Methods

Test Requirements: FCC Part 15C, Reference (15.215 and 15.247)
Test Method: ANSI C63.10-2009, Reference clause 6.9.3

5.8.2 Configuration Of EUT

The EUT was placed on a 0.8 metres high turntable. The front edge of the EUT was initially positioned facing the antenna. The EUT was measured at a distance of 3 metres.

The EUT was operated in **TX low channel** and **TX high channel** modes.

5.8.3 Test Procedure

Tests were made in accordance with FCC Part 15 using the measuring equipment noted below. The emission from the EUT was maximised before taking the plots.

Tests were performed using Test Site M.

5.8.4 Test Equipment Used

E268, E411, E412, TMS82, E252

See Section 10 for more details.

5.8.5 Test results

Ambient conditions.

Temperature: 18-20 °C Relative humidity: 28-33 % Pressure: 101 mbar

Analyser plots for the Band Edge Compliance can be found in Section 6.4 of this report. These show the 20dBc requirement of 15.247(d) are met at the band edges of 2400 and 2483.5 MHz. Restricted band edge plots are also shown in section 6.4.

The following tables list the field strengths observed in the adjacent restricted bands, which are required to meet the tighter 15.209 limits:

Radio Parameter 1

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	1 MBPS
Low channel	2412 MHz
High channel	2462 MHz

Restricted Band Edge Results relating to Radio Parameters 1

	Low	High
Peak Level (dBμV/m)	56.4	52.9
Peak Plot reference	J6879-6, Band edge PK (1MRBW) Low chan 1MBPS	J6879-6, Band edge PK (1MRBW) High chan 1MBPS
Average Level (dBμV/m)	49.6	45.2
Average Plot reference	J6879-6, Band edge AV (1MRBW) Low chan 1MBPS	J6879-6, Band edge AV (1MRBW) High chan 1MBPS

Band Edge Results relating to Radio Parameters 1

	Low	High
Plot reference	J6879-6, Band edge PK (100kRBW) Low chan 1MBPS	J6879-6, Band edge PK (100kRBW) High chan 1MBPS

Radio Parameter 2

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	2 MBPS
Low channel	2412 MHz
High channel	2462 MHz

Restricted Band Edge Results relating to Radio Parameters 2

	Low	High
Peak Level (dBμV/m)	56.9	51.9
Peak Plot reference	J6879-6, Band edge PK (1MRBW) Low chan 2MBPS	J6879-6, Band edge PK (1MRBW) High chan 2MBPS
Average Level (dBμV/m)	51.5	45.2
Average Plot reference	J6879-6, Band edge AV (1MRBW) Low chan 2MBPS	J6879-6, Band edge AV (1MRBW) High chan 2MBPS

Band Edge Results relating to Radio Parameters 2

	Low	High
Plot reference	J6879-6, Band edge PK (100kRBW) Low chan 2MBPS	J6879-6, Band edge PK (100kRBW) High chan 2MBPS

Radio Parameter 3

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	5.5 MBPS
Low channel	2412 MHz
High channel	2462 MHz

Restricted Band Edge Results relating to Radio Parameters 3

	Low	High
Peak Level (dBμV/m)	58.3	51.6
Peak Plot reference	J6879-6, Band edge PK (1MRBW) Low chan 5.5MBPS	J6879-6, Band edge PK (1MRBW) High chan 5.5MBPS
Average Level (dBμV/m)	48.9	43.5
Average Plot reference	J6879-6, Band edge AV (1MRBW) Low chan 5.5MBPS	J6879-6, Band edge AV (1MRBW) High chan 5.5MBPS

Band Edge Results relating to Radio Parameters 3

	Low	High
Plot reference	J6879-6, Band edge PK (100kRBW) Low chan 5.5MBPS	J6879-6, Band edge PK (100kRBW) High chan 5.5MBPS

Radio Parameter 4

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	11 MBPS
Low channel	2412 MHz
High channel	2462 MHz

Restricted Band Edge Results relating to Radio Parameters 4

	Low	High
Peak Level (dBμV/m)	57.2	53.0
Peak Plot reference	J6879-6, Band edge PK (1MRBW) Low chan 11MBPS	J6879-6, Band edge PK (1MRBW) High chan 11MBPS
Average Level (dBμV/m)	48.8	43.5
Average Plot reference	J6879-6, Band edge AV (1MRBW) Low chan 11MBPS	J6879-6, Band edge AV (1MRBW) High chan 11MBPS

Band Edge Results relating to Radio Parameters 4

	Low	High
Plot reference	J6879-6, Band edge PK (100kRBW) Low chan 11MBPS	J6879-6, Band edge PK (100kRBW) High chan 11MBPS

Radio Parameter 5

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	6 MBPS
Low channel	2412 MHz
High channel	2462 MHz

Restricted Band Edge Results relating to Radio Parameters 5

	Low	High
Peak Level (dBμV/m)	59.4	57
Peak Plot reference	J6879-6, Band edge PK (1MRBW) Low chan 6MBPS	J6879-6, Band edge PK (1MRBW) High chan 6MBPS
Average Level (dBμV/m)	45.9	44.7
Average Plot reference	J6879-6, Band edge AV (1MRBW) Low chan 6MBPS	J6879-6, Band edge AV (1MRBW) High chan 6MBPS

Band Edge Results relating to Radio Parameters 5

	Low	High
Plot reference	J6879-6, Band edge PK (100kRBW) Low chan 6MBPS	J6879-6, Band edge PK (100kRBW) High chan 6MBPS

Radio Parameter 6

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	9 MBPS
Low channel	2412 MHz
High channel	2462 MHz

Restricted Band Edge Results relating to Radio Parameters 6

	Low	High
Peak Level (dBμV/m)	58.7	60
Peak Plot reference	J6879-6, Band edge PK (1MRBW) Low chan 9MBPS	J6879-6, Band edge PK (1MRBW) High chan 9MBPS
Average Level (dBμV/m)	46	45.2
Average Plot reference	J6879-6, Band edge AV (1MRBW) Low chan 9MBPS	J6879-6, Band edge AV (1MRBW) High chan 9MBPS

Band Edge Results relating to Radio Parameters 6

	Low	High
Plot reference	J6879-6, Band edge PK (100kRBW) Low chan 9MBPS	J6879-6, Band edge PK (100kRBW) High chan 9MBPS

Radio Parameter 7

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	12 MBPS
Low channel	2412 MHz
High channel	2462 MHz

Restricted Band Edge Results relating to Radio Parameters 7

	Low	High
Peak Level (dBµV/m)	60.8	56.7
Peak Plot reference	J6879-6, Band edge PK (1MRBW) Low chan 12MBPS	J6879-6, Band edge PK (1MRBW) High chan 12MBPS
Average Level (dBµV/m)	44.9	44.3
Average Plot reference	J6879-6, Band edge AV (1MRBW) Low chan 12MBPS	J6879-6, Band edge AV (1MRBW) High chan 12MBPS

Band Edge Results relating to Radio Parameters 7

	Low	High
Plot reference	J6879-6, Band edge PK (100kRBW) Low chan 12MBPS	J6879-6, Band edge PK (100kRBW) High chan 12MBPS

Radio Parameter 8

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	18 MBPS
Low channel	2412 MHz
High channel	2462 MHz

Restricted Band Edge Results relating to Radio Parameters 8

	Low	High
Peak Level (dBµV/m)	58	60.1
Peak Plot reference	J6879-6, Band edge PK (1MRBW) Low chan 18MBPS	J6879-6, Band edge PK (1MRBW) High chan 18MBPS
Average Level (dBµV/m)	46.5	44.1
Average Plot reference	J6879-6, Band edge AV (1MRBW) Low chan 18MBPS	J6879-6, Band edge AV (1MRBW) High chan 18MBPS

Band Edge Results relating to Radio Parameters 8

	Low	High
Plot reference	J6879-6, Band edge PK (100kRBW) Low chan 18MBPS	J6879-6, Band edge PK (100kRBW) High chan 18MBPS

Radio Parameter 9

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	24 MBPS
Low channel	2412 MHz
High channel	2462 MHz

Restricted Band Edge Results relating to Radio Parameters 9

	Low	High
Peak Level (dBμV/m)	56.4	57.6
Peak Plot reference	J6879-6, Band edge PK (1MRBW) Low chan 24MBPS	J6879-6, Band edge PK (1MRBW) High chan 24MBPS
Average Level (dBμV/m)	46.1	45
Average Plot reference	J6879-6, Band edge AV (1MRBW) Low chan 24MBPS	J6879-6, Band edge AV (1MRBW) High chan 24MBPS

Band Edge Results relating to Radio Parameters 9

	Low	High
Plot reference	J6879-6, Band edge PK (100kRBW) Low chan 24MBPS	J6879-6, Band edge PK (100kRBW) High chan 24MBPS

Radio Parameter 10

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	36 MBPS
Low channel	2412 MHz
High channel	2462 MHz

Restricted Band Edge Results relating to Radio Parameters 10

	Low	High
Peak Level (dBμV/m)	56.9	58.2
Peak Plot reference	J6879-6, Band edge PK (1MRBW) Low chan 36MBPS	J6879-6, Band edge PK (1MRBW) High chan 36MBPS
Average Level (dBμV/m)	45.6	43.8
Average Plot reference	J6879-6, Band edge AV (1MRBW) Low chan 36MBPS	J6879-6, Band edge AV (1MRBW) High chan 36MBPS

Band Edge Results relating to Radio Parameters 10

	Low	High
Plot reference	J6879-6, Band edge PK (100kRBW) Low chan 36MBPS	J6879-6, Band edge PK (100kRBW) High chan 36MBPS

Radio Parameter 11

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	48 MBPS
Low channel	2412 MHz
High channel	2462 MHz

Restricted Band Edge Results relating to Radio Parameters 11

	Low	High
Peak Level (dBμV/m)	54.2	52.8
Peak Plot reference	J6879-6, Band edge PK (1MRBW) Low chan 48MBPS	J6879-6, Band edge PK (1MRBW) High chan 48MBPS
Average Level (dBμV/m)	43	40.9
Average Plot reference	J6879-6, Band edge AV (1MRBW) Low chan 48MBPS	J6879-6, Band edge AV (1MRBW) High chan 48MBPS

Band Edge Results relating to Radio Parameters 11

	Low	High
Plot reference	J6879-6, Band edge PK (100kRBW) Low chan 48MBPS	J6879-6, Band edge PK (100kRBW) High chan 48MBPS

Radio Parameter 12

Band	2400-2483.5 MHz
Power level	16 dBm
Channel spacing	5 MHz
Mod scheme	54 MBPS
Low channel	2412 MHz
High channel	2462 MHz

Restricted Band Edge Results relating to Radio Parameters 12

	Low	High
Peak Level (dBμV/m)	53.5	52.1
Peak Plot reference	J6879-6, Band edge PK (1MRBW) Low chan 54MBPS	J6879-6, Band edge PK (1MRBW) High chan 54MBPS
Average Level (dBμV/m)	42.4	41.3
Average Plot reference	J6879-6, Band edge AV (1MRBW) Low chan 54MBPS	J6879-6, Band edge AV (1MRBW) High chan 54MBPS

Band Edge Results relating to Radio Parameters 12

	Low	High
Plot reference	J6879-6, Band edge PK (100kRBW) Low chan 54MBPS	J6879-6, Band edge PK (100kRBW) High chan 54MBPS

The band edge readings were performed with a peak detector (max held plot) and with the EUT set in a constant 100% transmit state.

Limits: AV = 54dBuV/m at band edges
PK = 74dBuV/m at band edges

The restricted band edges closest to the EUT frequency of 2400-2483.5MHz are 2390 & 2483.5MHz.

Further wider span plots have been taken to show the fact that there are no spurious emissions above the restricted limits of 15.209.

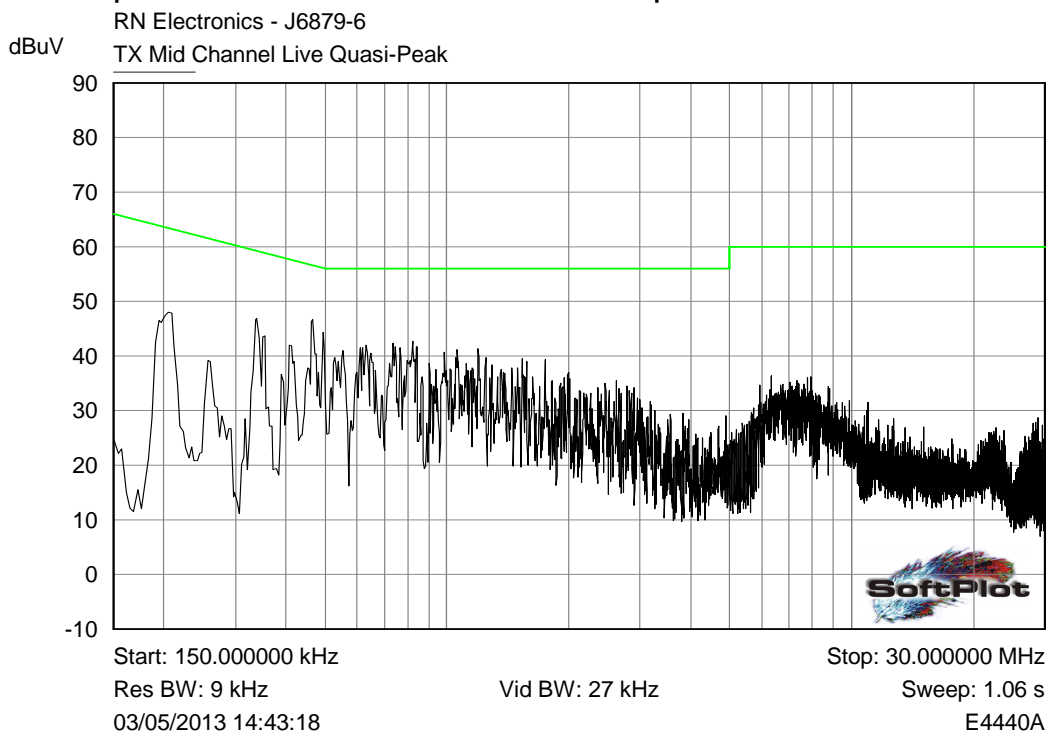
These results show that the **EUT** has **PASSED** this test.

5.9 FHSS Parameters

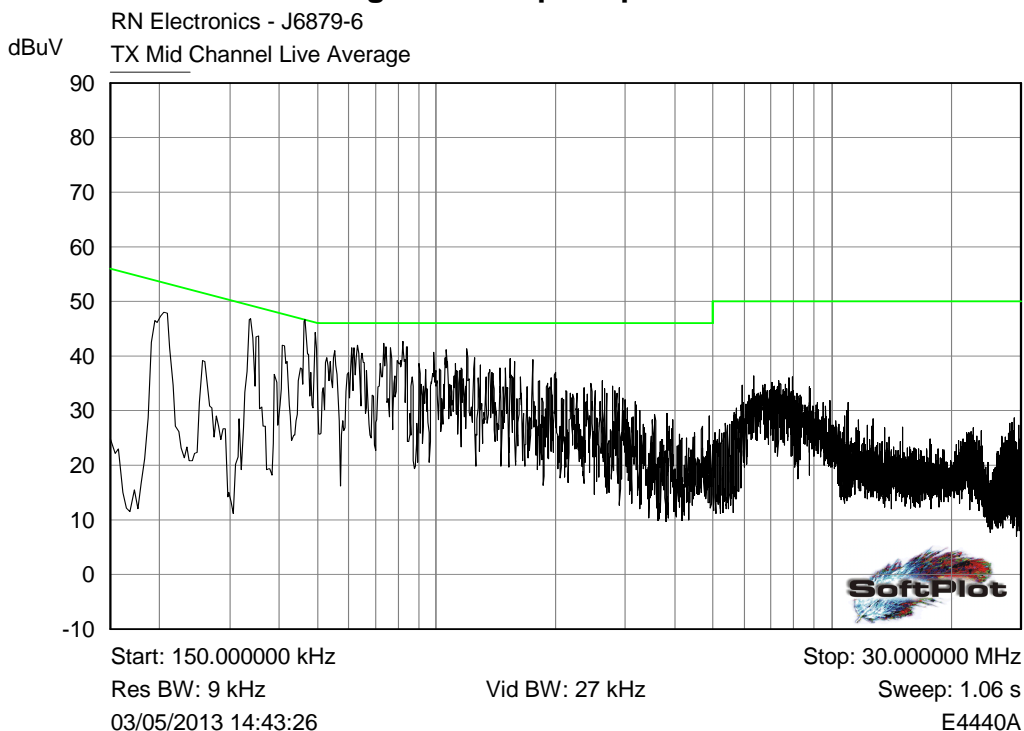
Not Applicable. EUT does not employ FHSS technology.

6 Plots and Results

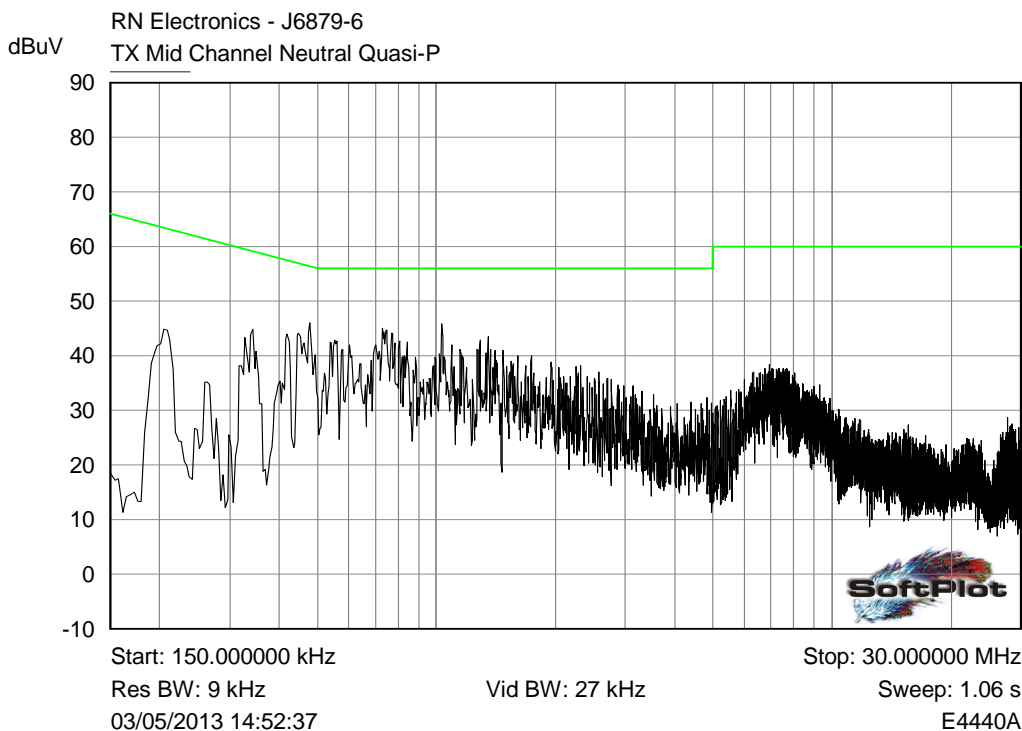
6.1 AC power line conducted emissions plots



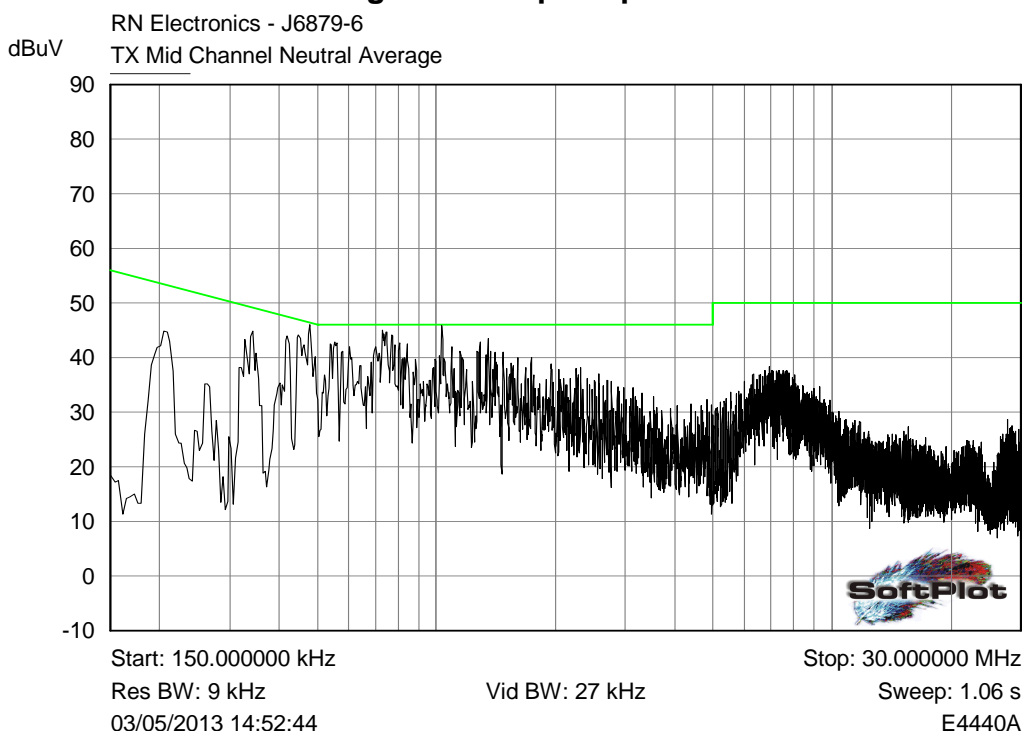
Plot of peak emissions 150kHz - 30MHz on the TX mid channel live terminal against the quasi-peak limit line.



Plot of peak emissions 150kHz - 30MHz on the TX mid channel live terminal against the average limit line.



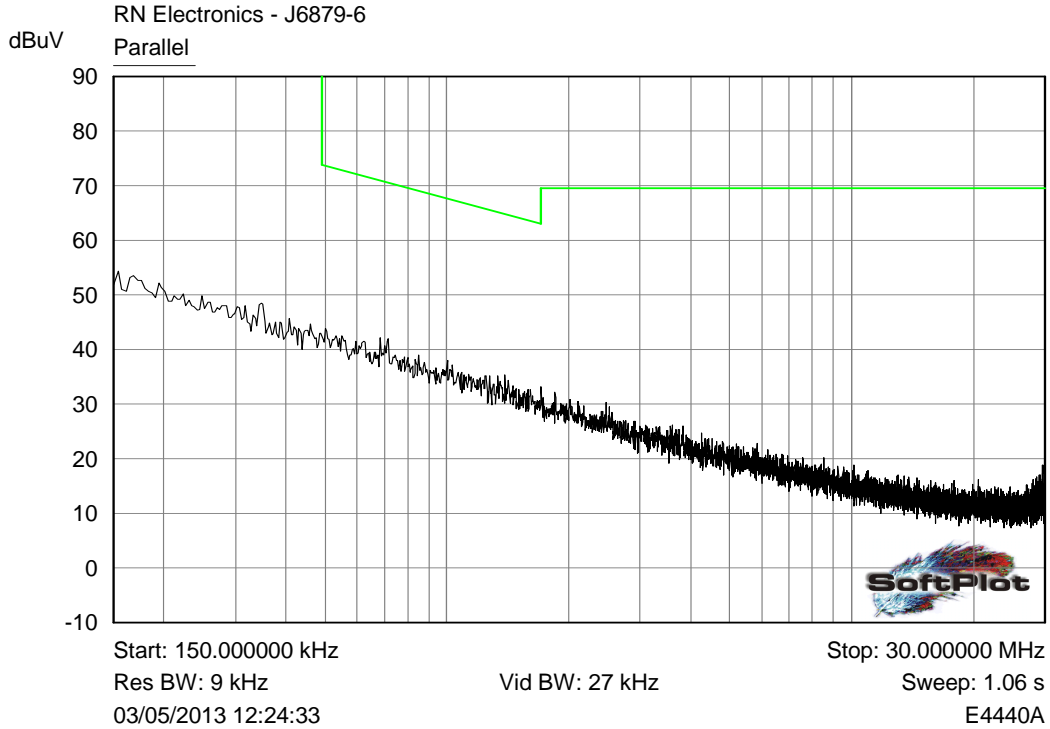
Plot of peak emissions 150kHz - 30MHz on the TX mid channel neutral terminal against the quasi-peak limit line.



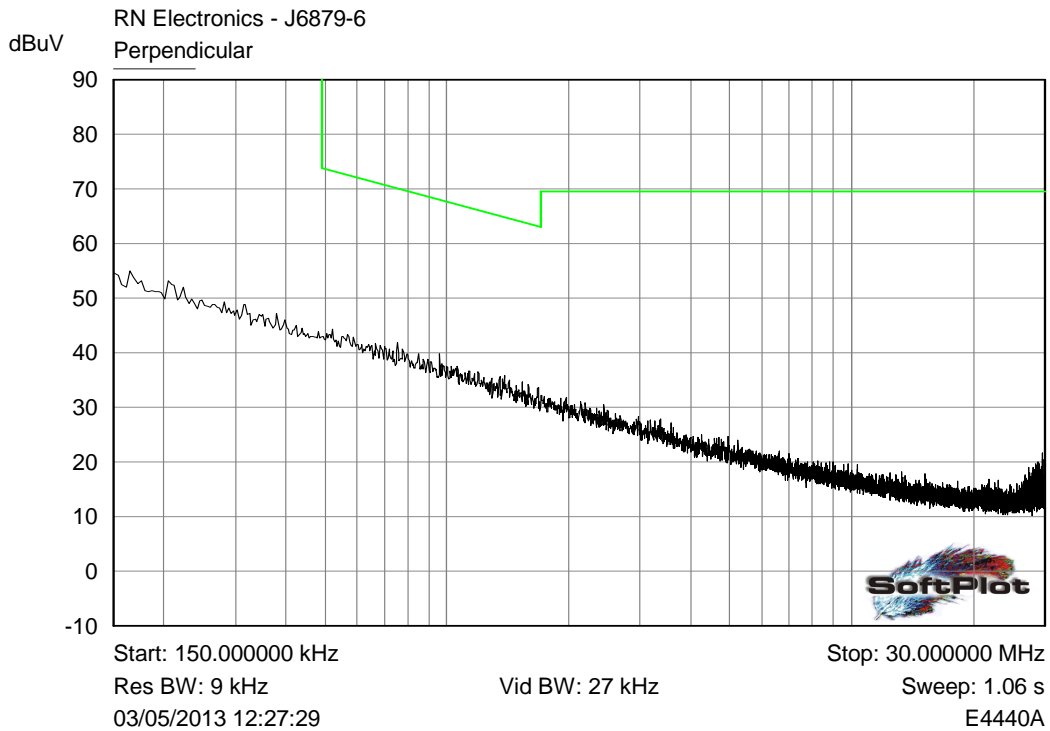
Plot of peak emissions 150kHz - 30MHz on the TX mid channel neutral terminal against the average limit line.

6.2 Radiated emissions plots

6.2.1 Low frequency radiated emissions plots

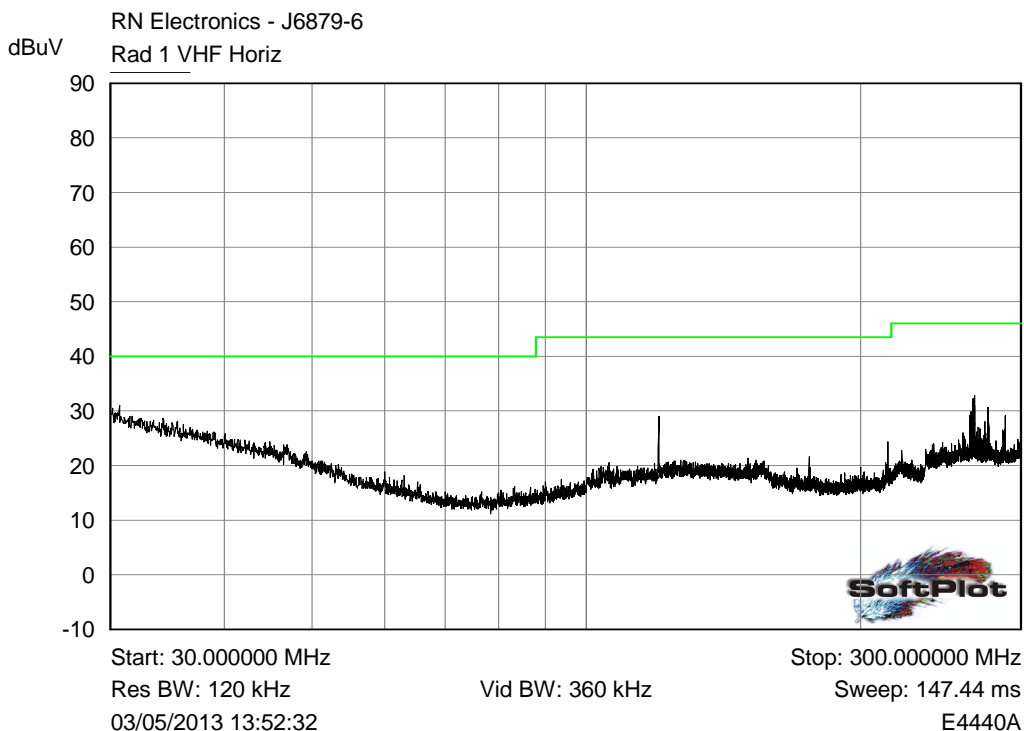


Mid Channel - Parallel Plot

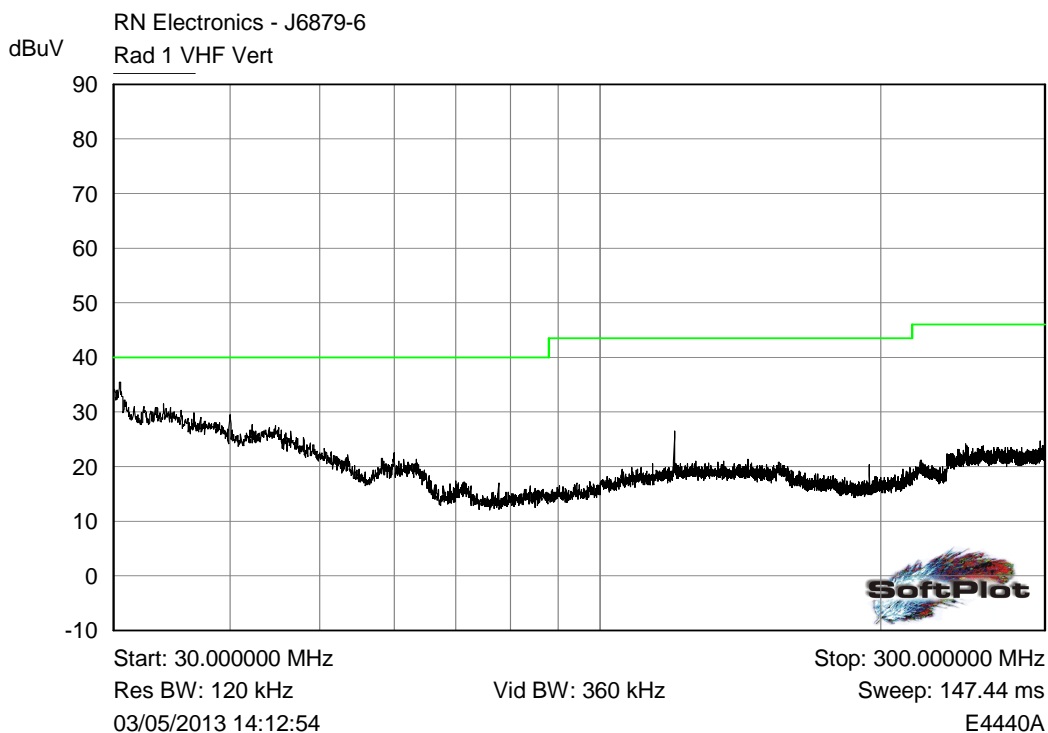


Mid Channel - Perpendicular Plot

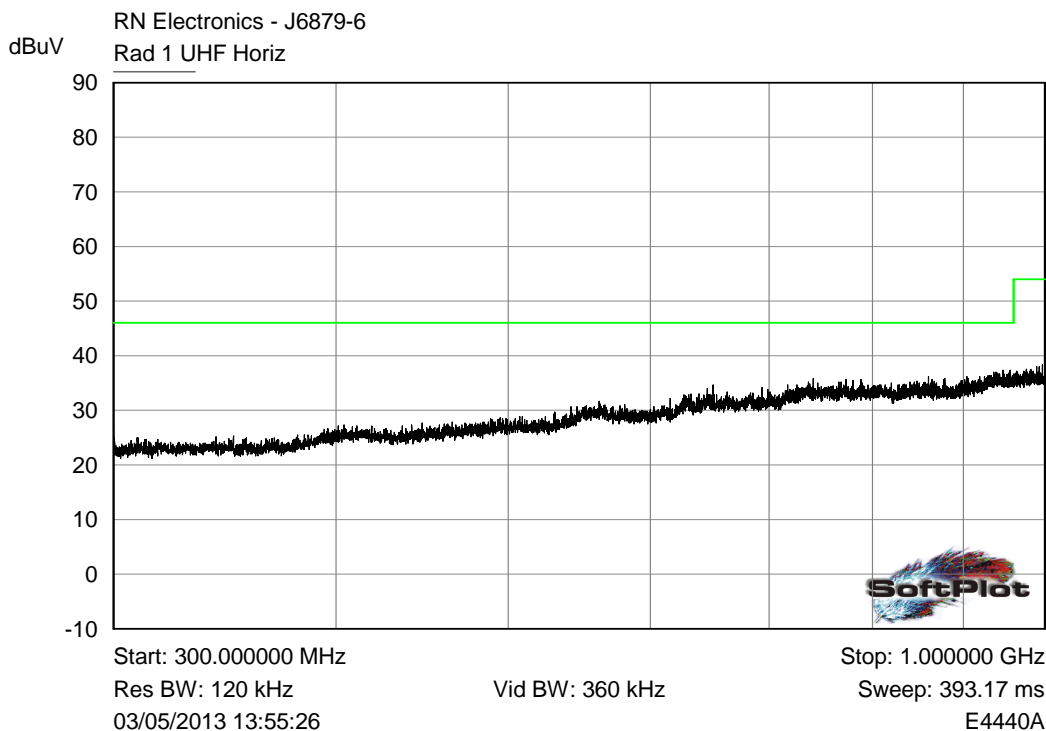
6.2.2 Radiated emissions - 30MHz - 1GHz



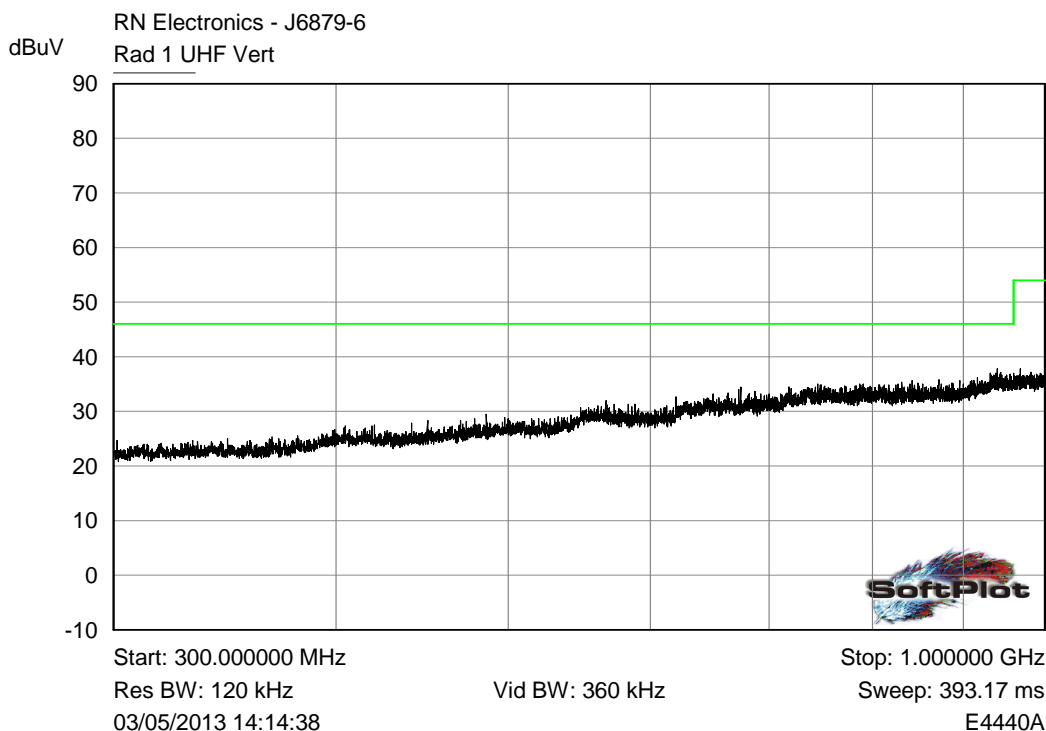
TX mid channel: Plot of peak horizontal emissions 30MHz - 300MHz against the quasi-peak limit line.



TX mid channel: Plot of peak vertical emissions 30MHz - 300MHz against the quasi-peak limit line.

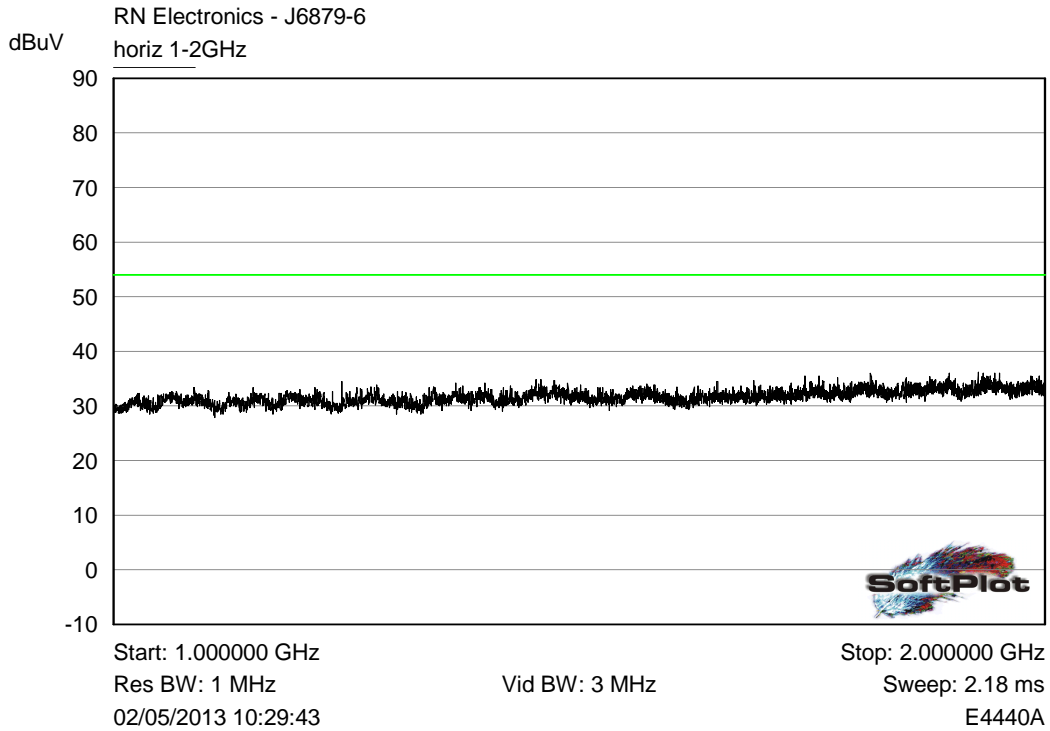


TX mid channel: Plot of peak horizontal emissions 300MHz - 1GHz against the quasi-peak limit line.

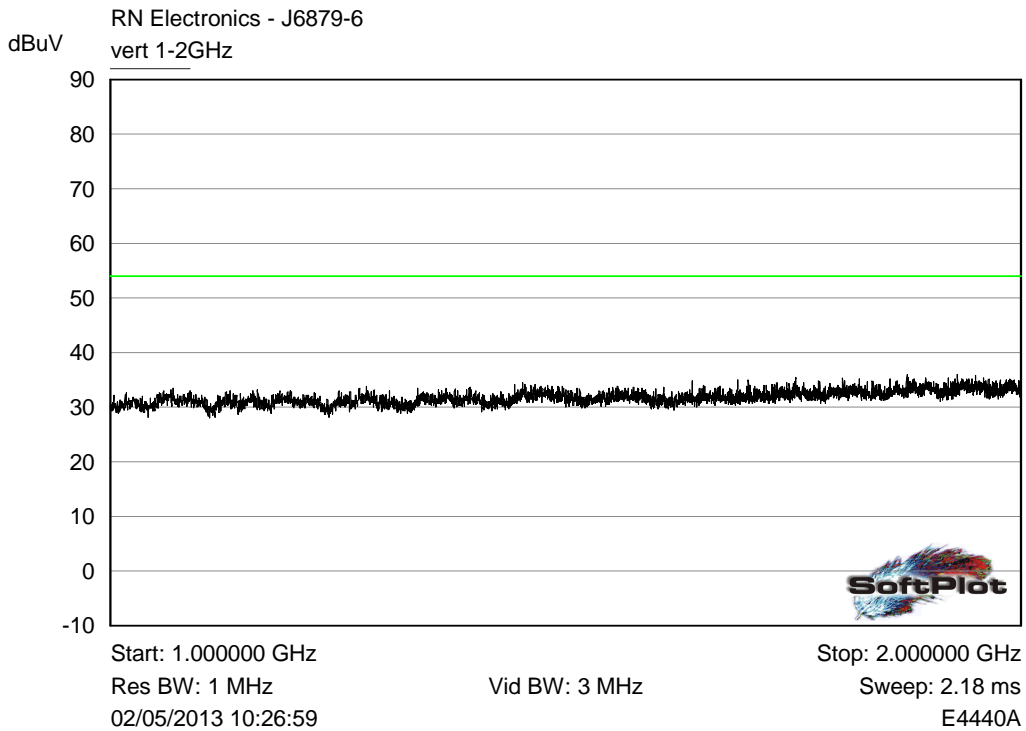


TX mid channel: Plot of peak vertical emissions 300MHz - 1GHz against the quasi-peak limit line.

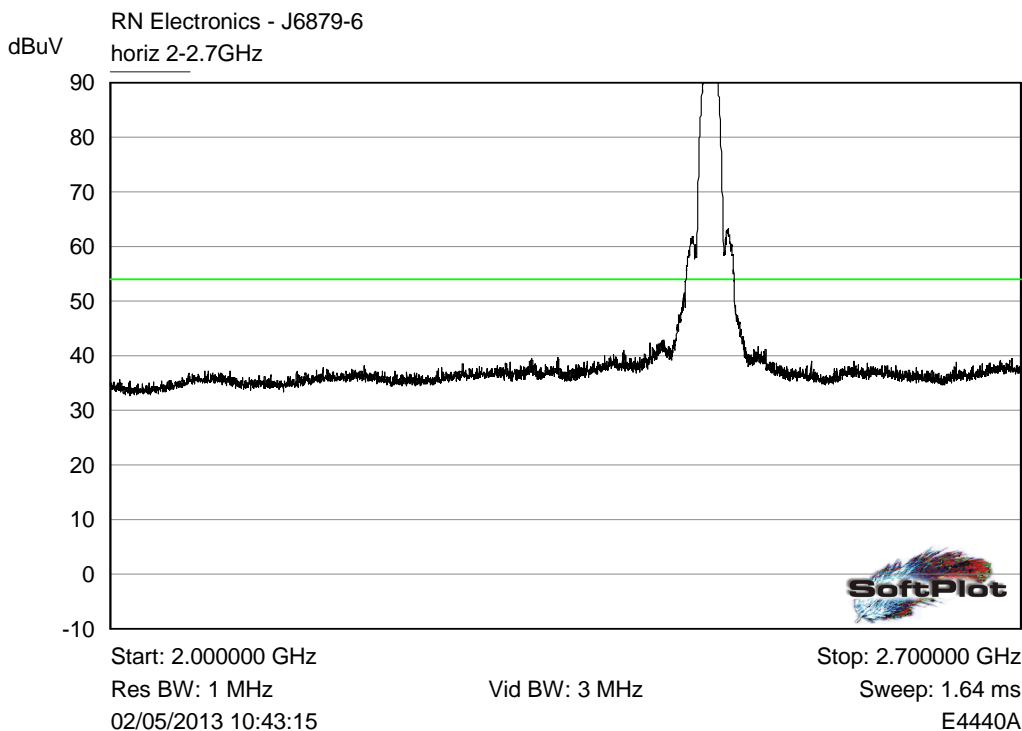
6.2.3 Radiated emissions Plots above 1GHz



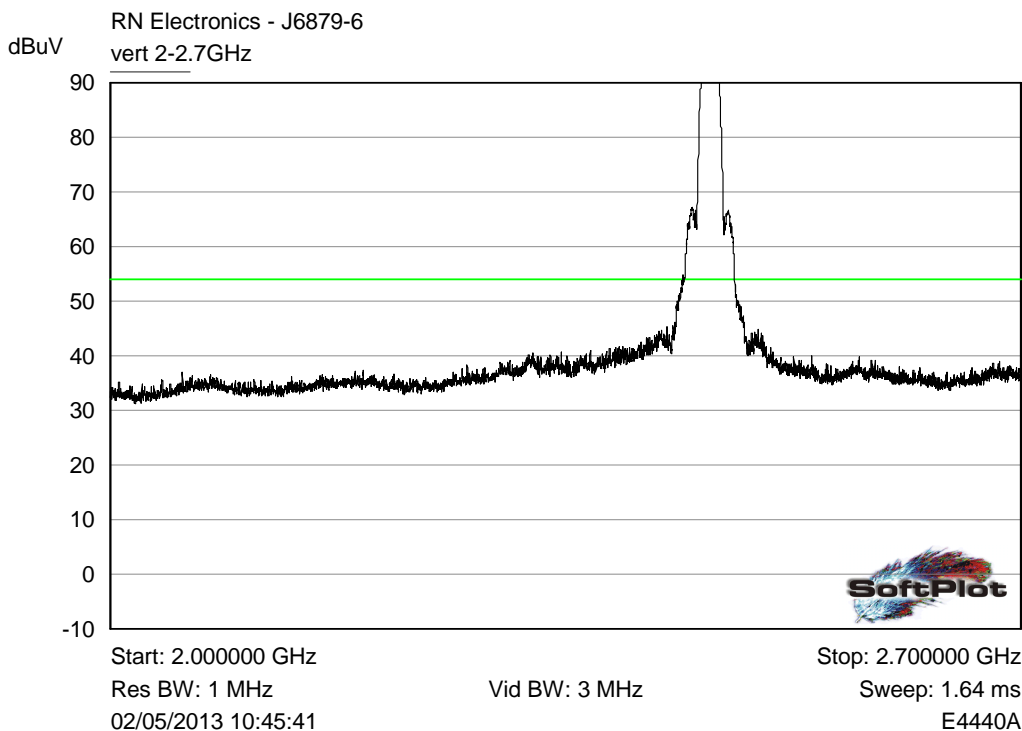
Middle channel (2437 MHz) - 1-2GHz - Horizontal



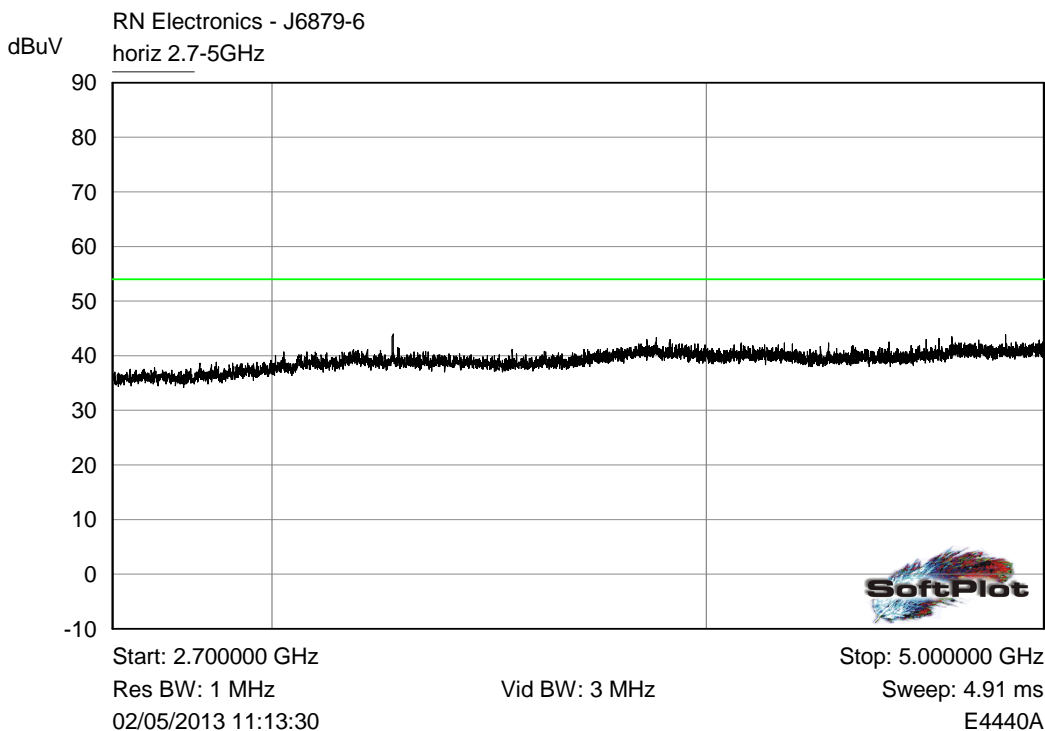
Middle channel (2437 MHz) - 1-2GHz - Vertical



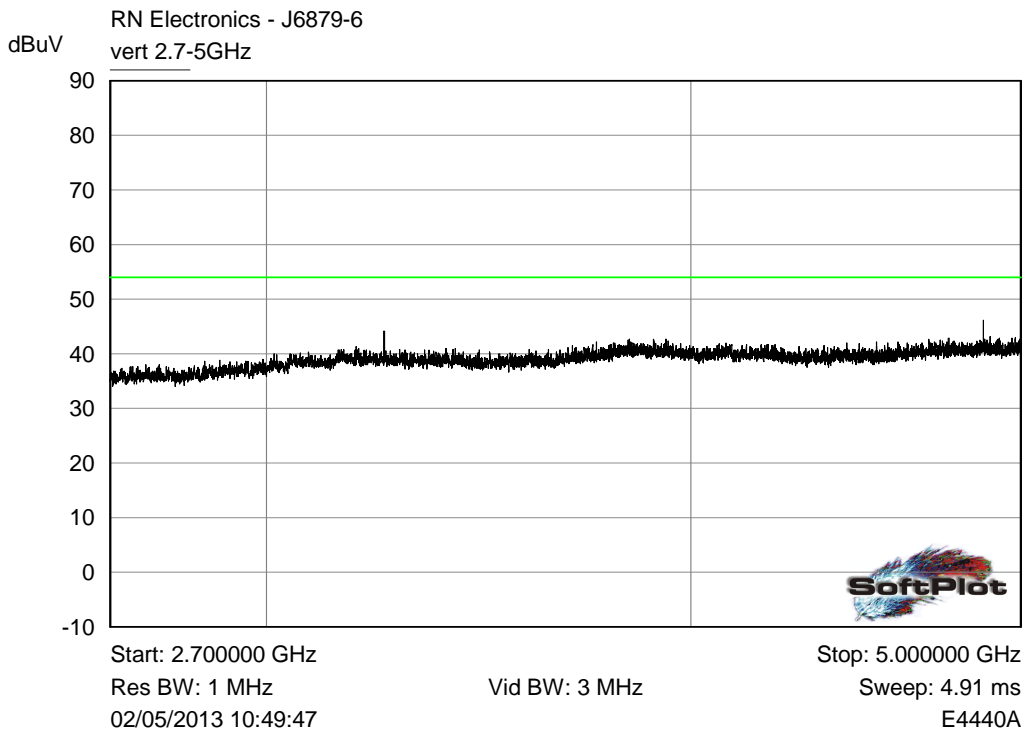
Middle channel (2437 MHz) - 2-2.7GHz - Horizontal



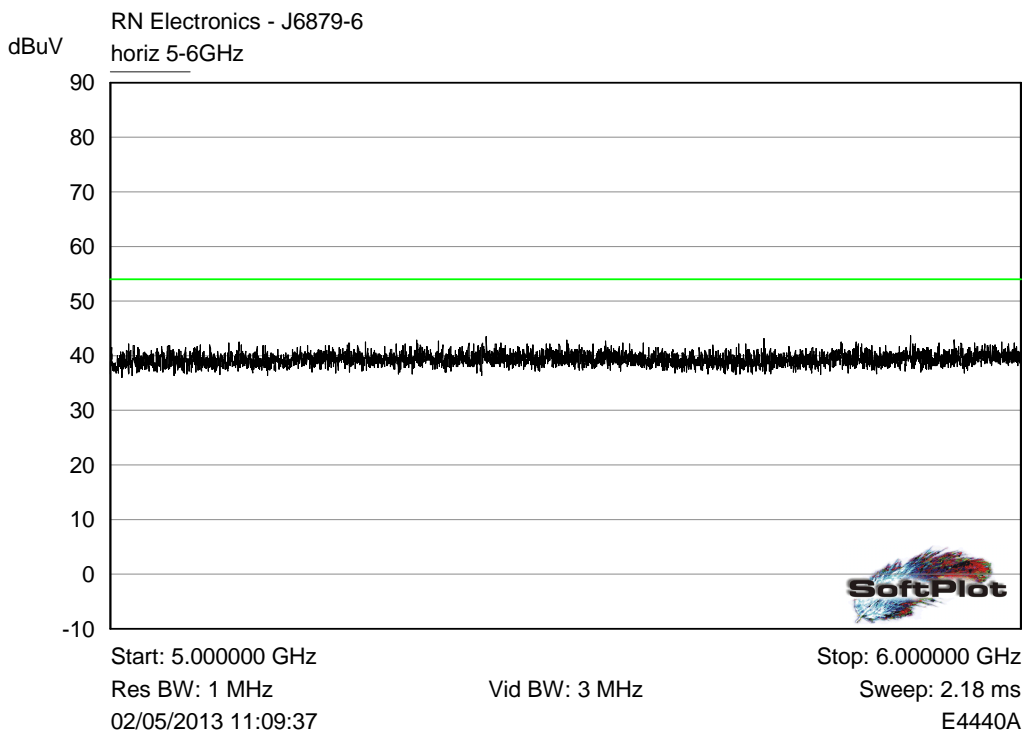
Middle channel (2437 MHz) - 2-2.7GHz - Vertical



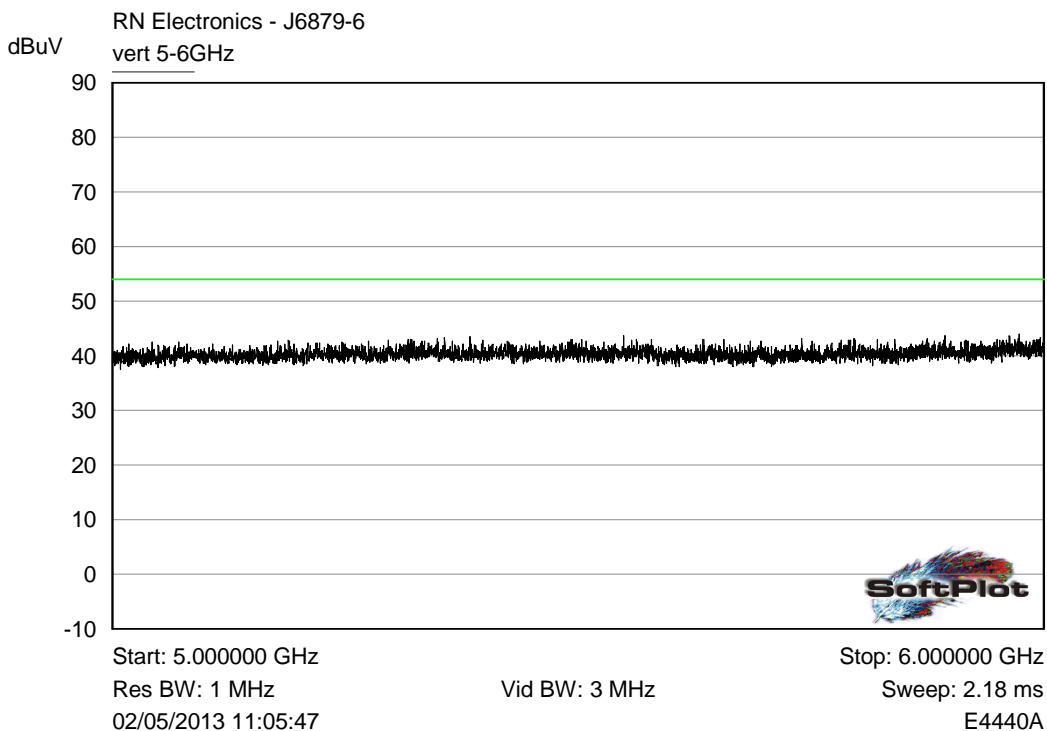
Middle channel (2437 MHz) - 2.7GHz-5GHz - Horizontal



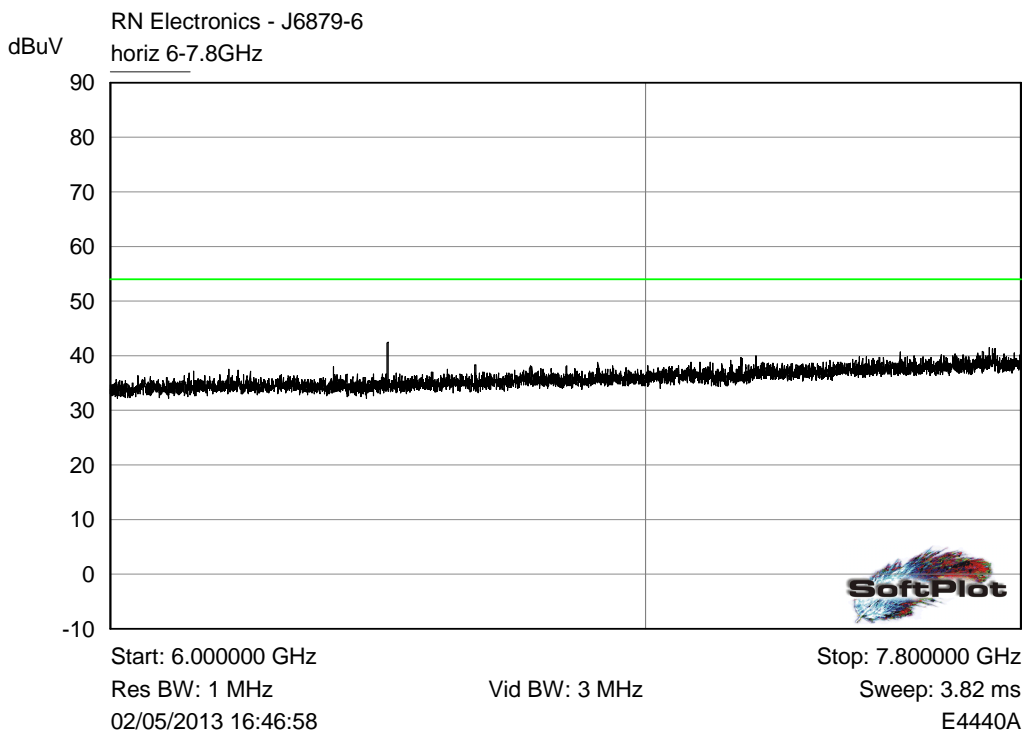
Middle channel (2437 MHz) - 2.7GHz-5GHz - Vertical



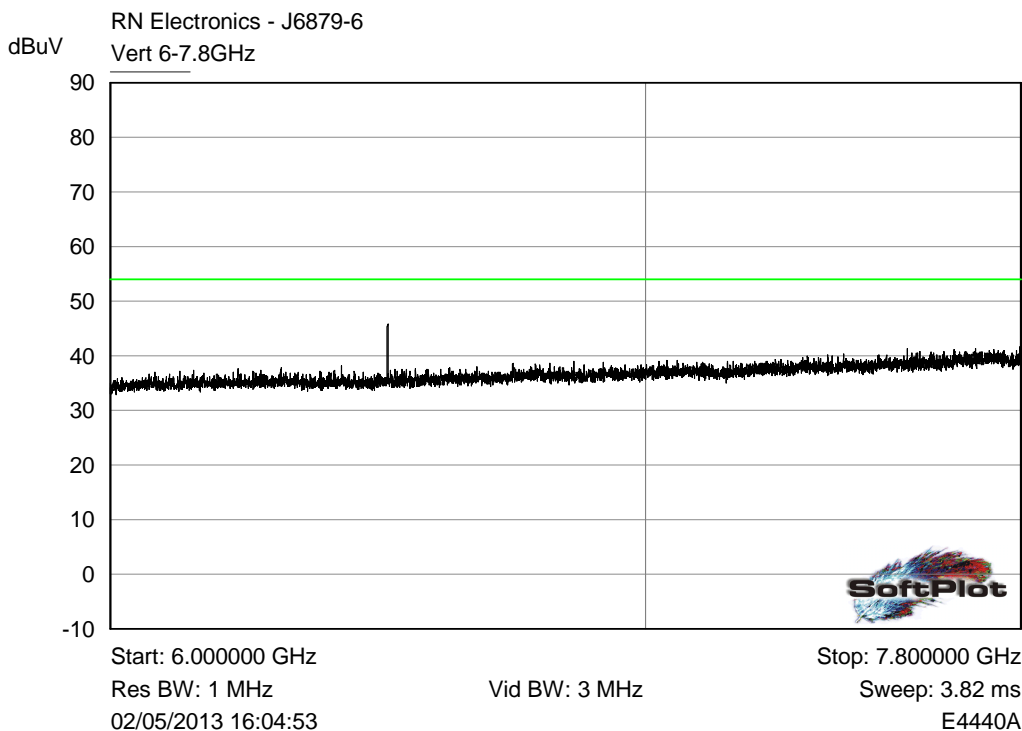
Middle channel (2437 MHz) - 5-6GHz - Horizontal



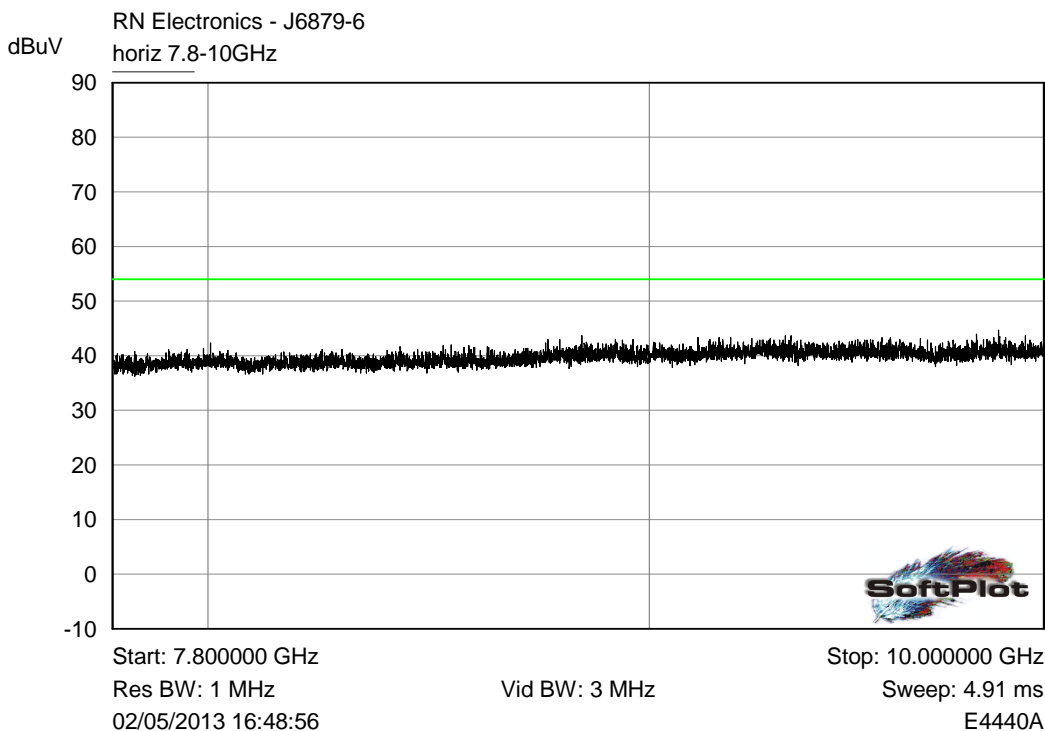
Middle channel (2437 MHz) - 5-6GHz - Vertical



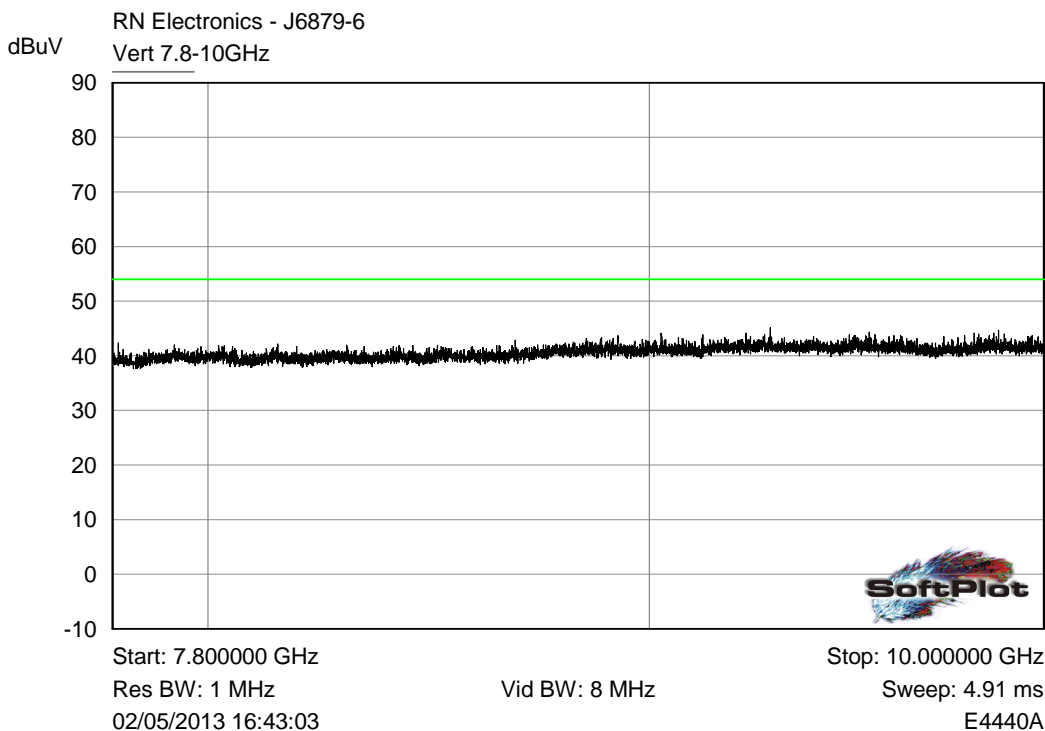
Middle channel (2437 MHz) - 6-7.8GHz - Horizontal



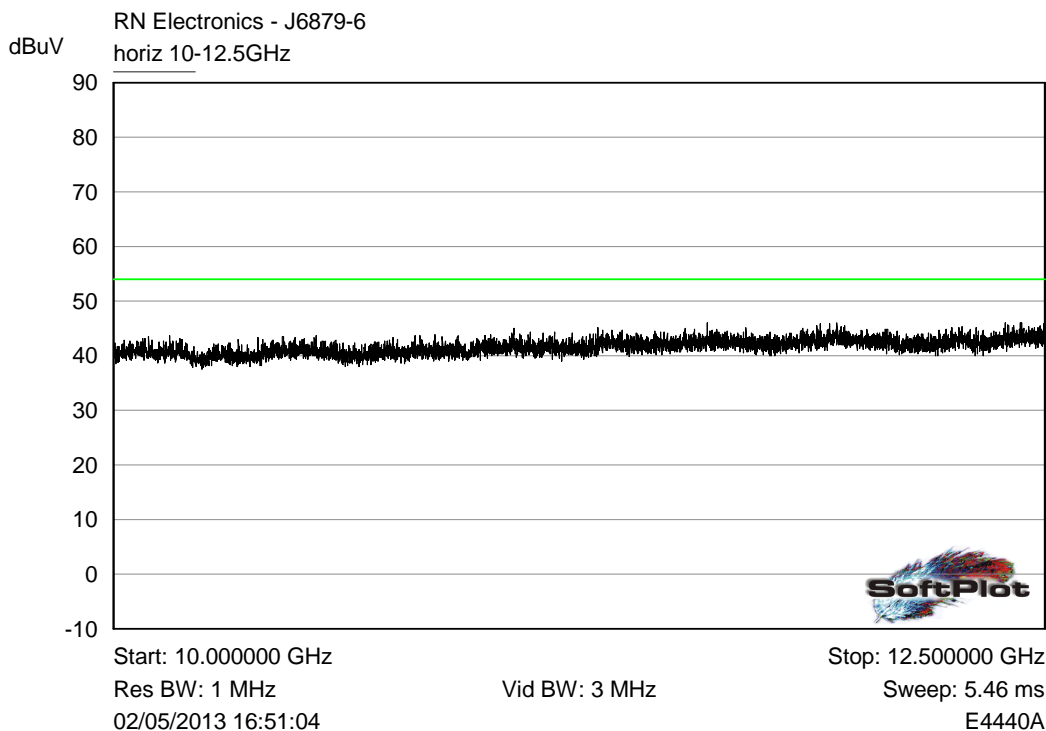
Middle channel (2437 MHz) - 6-7.8GHz - Vertical



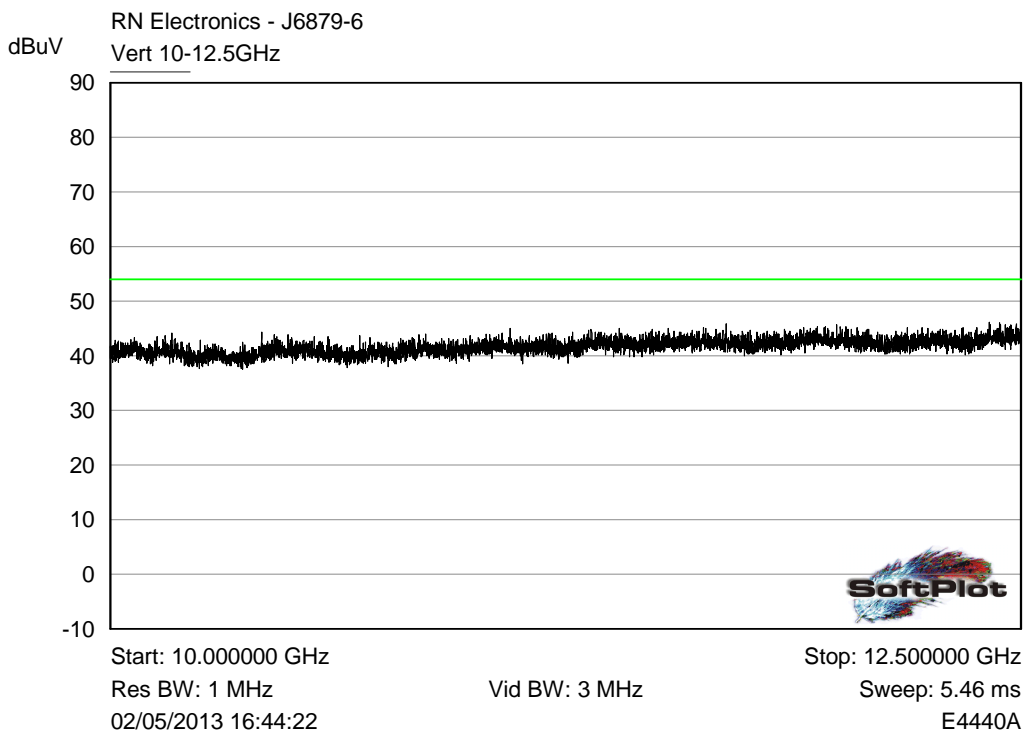
Middle channel (2437 MHz) - 7.8-10GHz - Horizontal



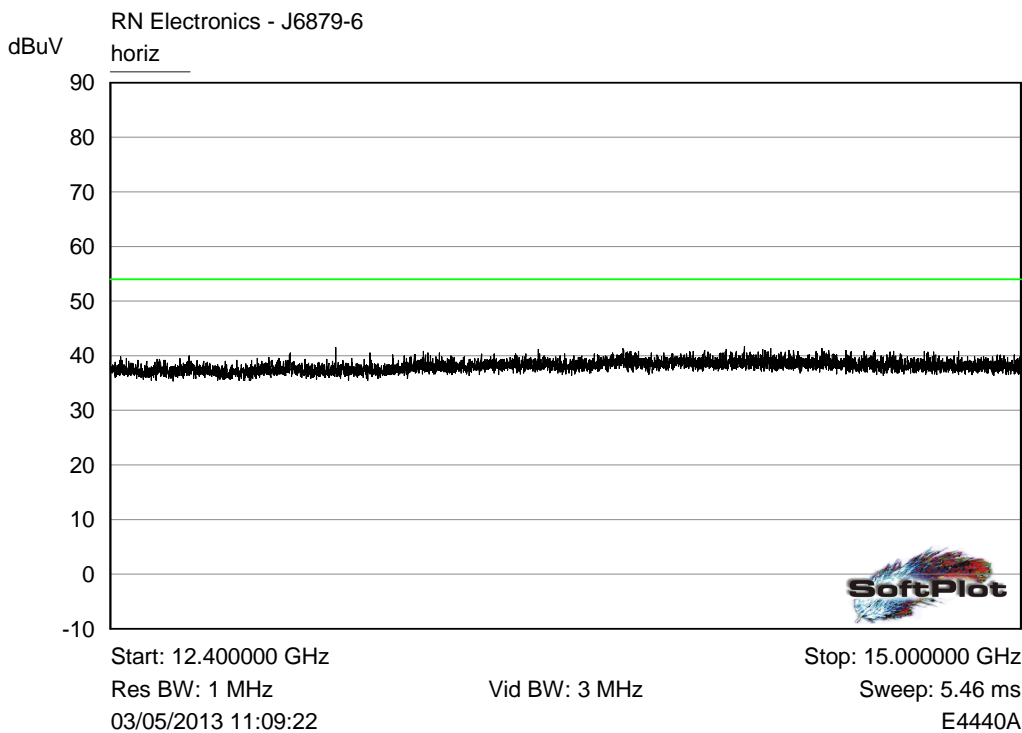
Middle channel (2437 MHz) - 7.8-10GHz - Vertical



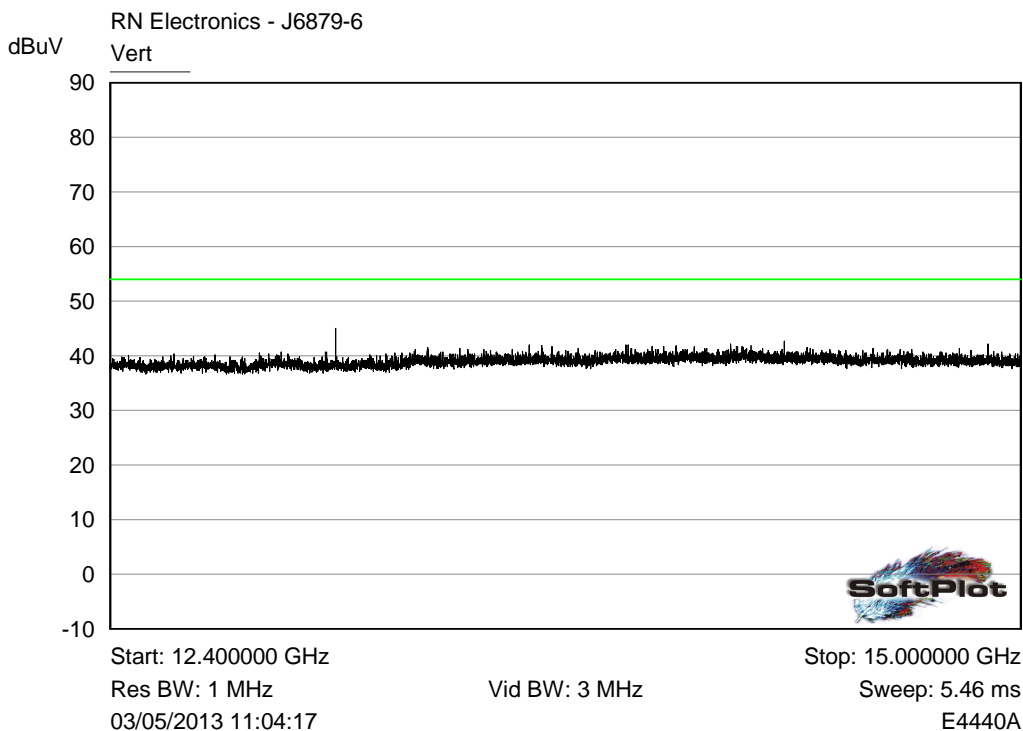
Middle channel (2437 MHz) - 10-12.5GHz - Horizontal



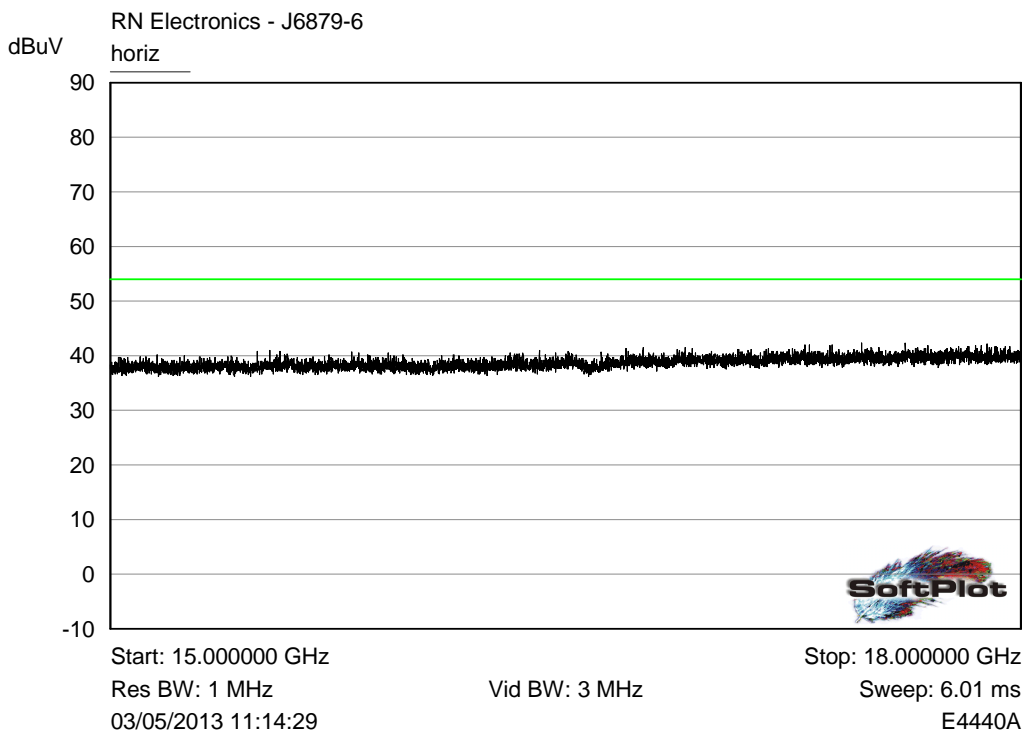
Middle channel (2437 MHz) - 10-12.5GHz - Vertical



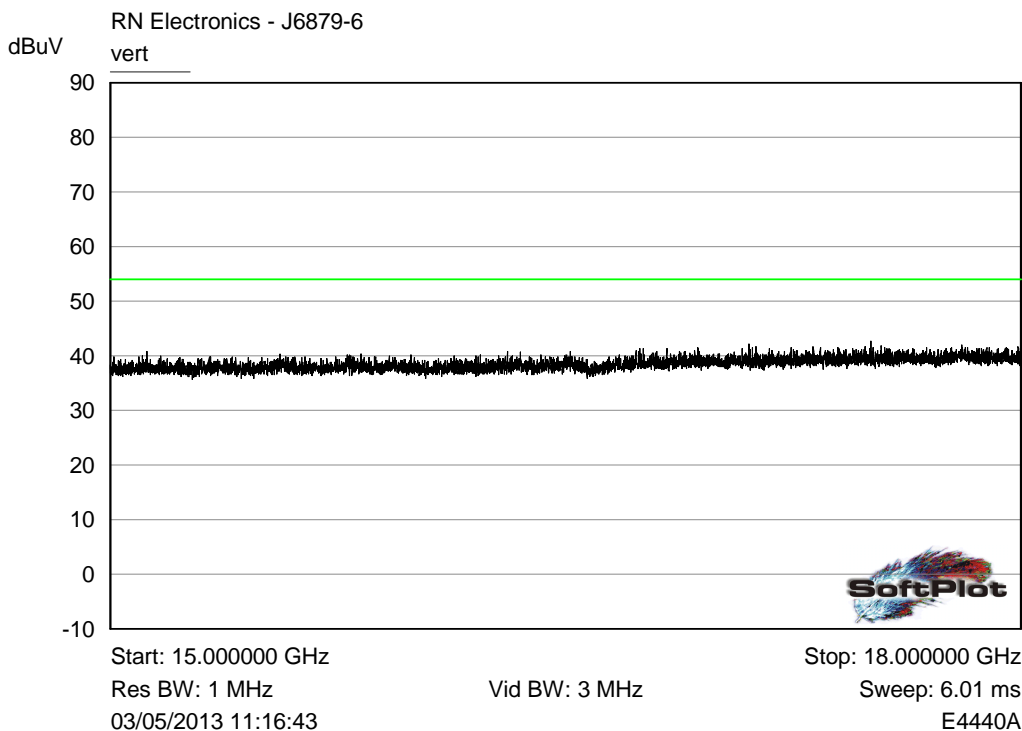
Middle channel (2437 MHz) - 12.5-15GHz - Horizontal



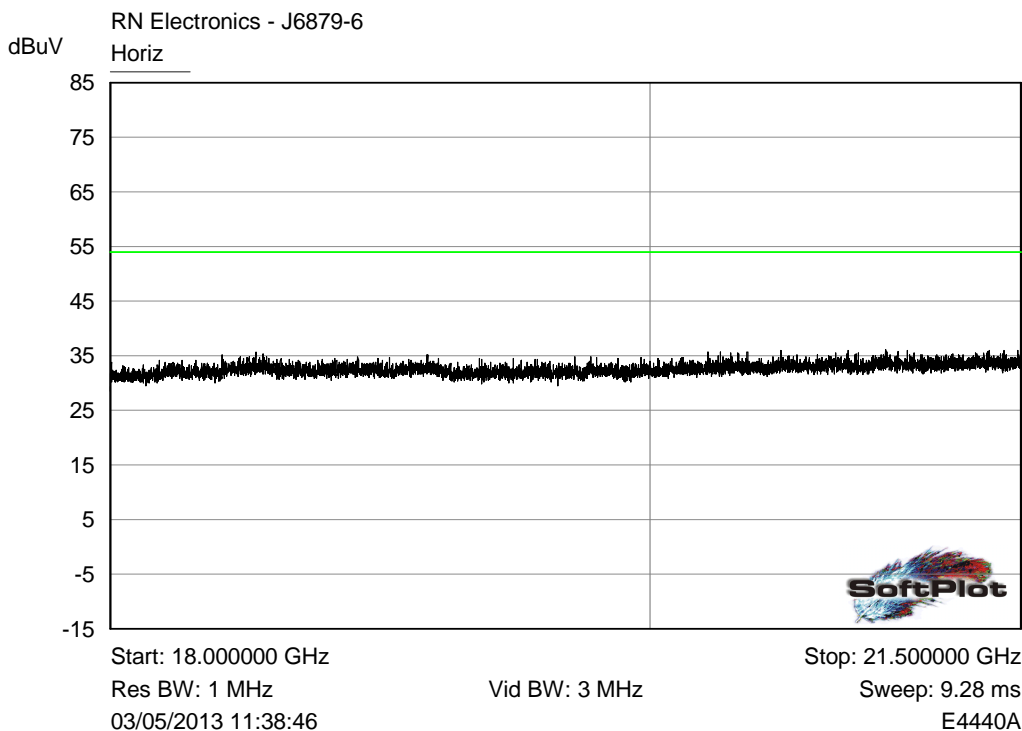
Middle channel (2437 MHz) - 12.5-15GHz - Vertical



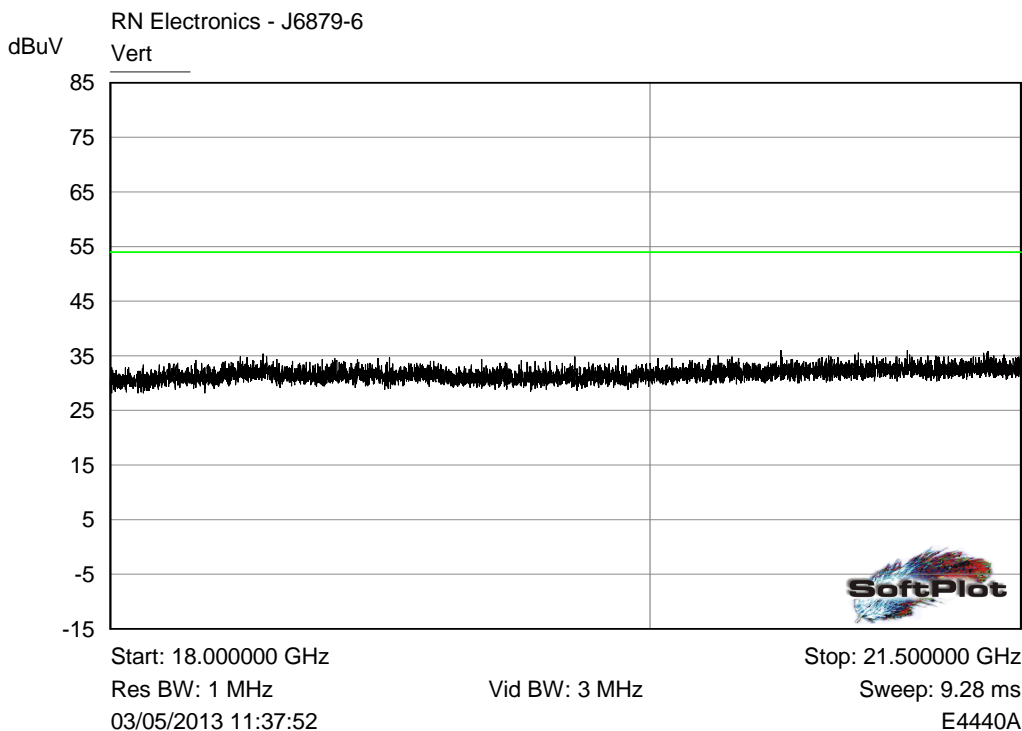
Middle channel (2437 MHz) - 15-18GHz - Horizontal



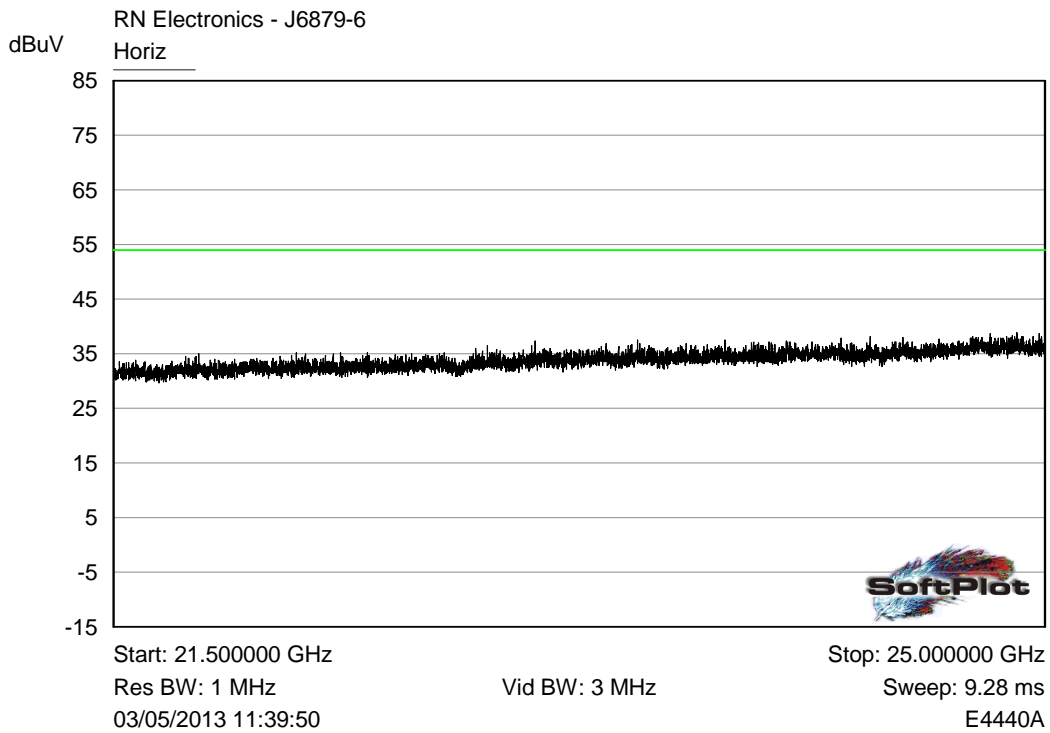
Middle channel (2437 MHz) - 15-18GHz - Vertical



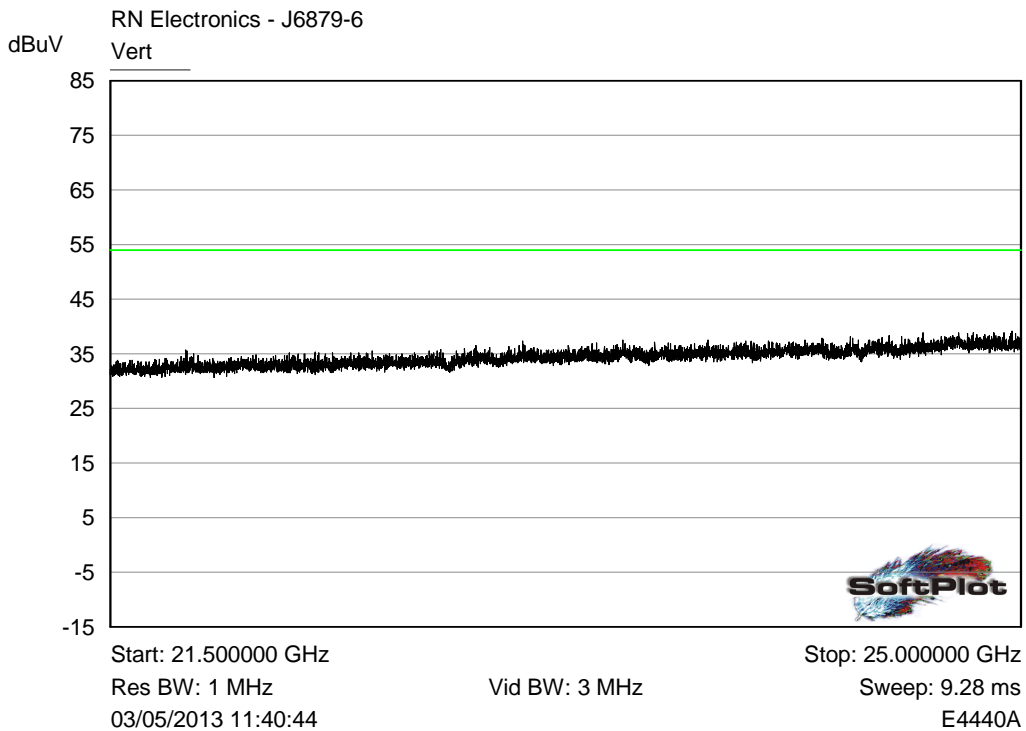
Middle channel (2437 MHz) - 18-21.5GHz - Horizontal



Middle channel (2437 MHz) - 18-21.5GHz - Vertical



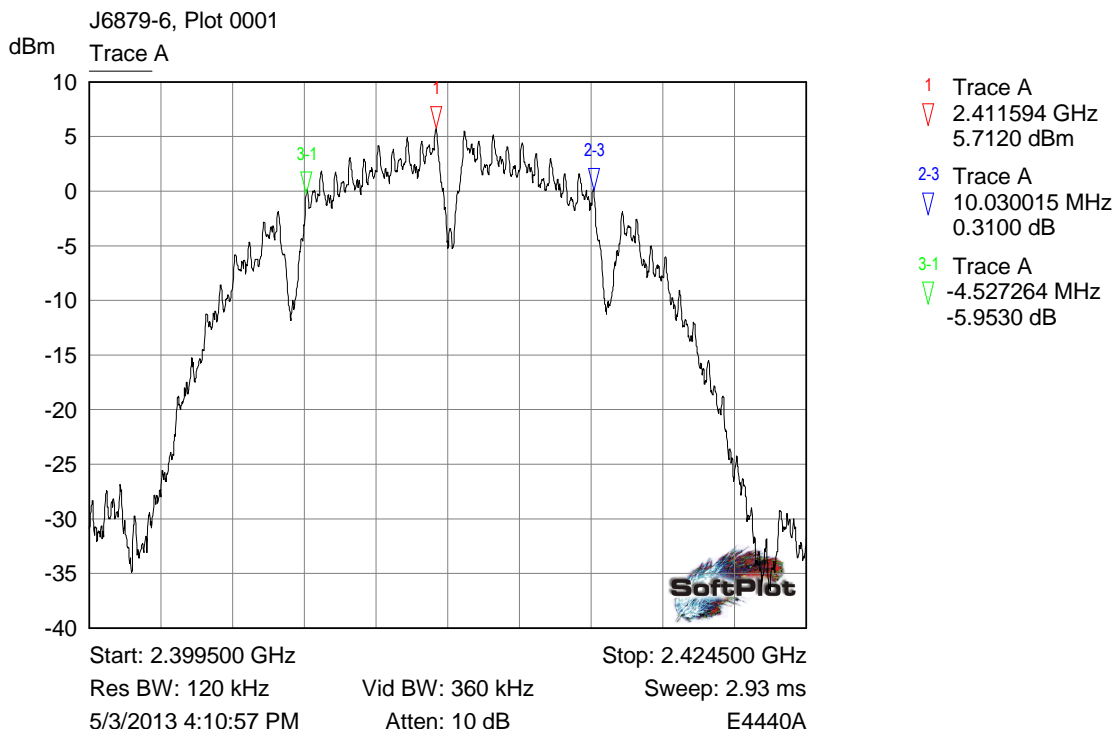
Middle channel (2437 MHz) - 21.5-25GHz - Horizontal



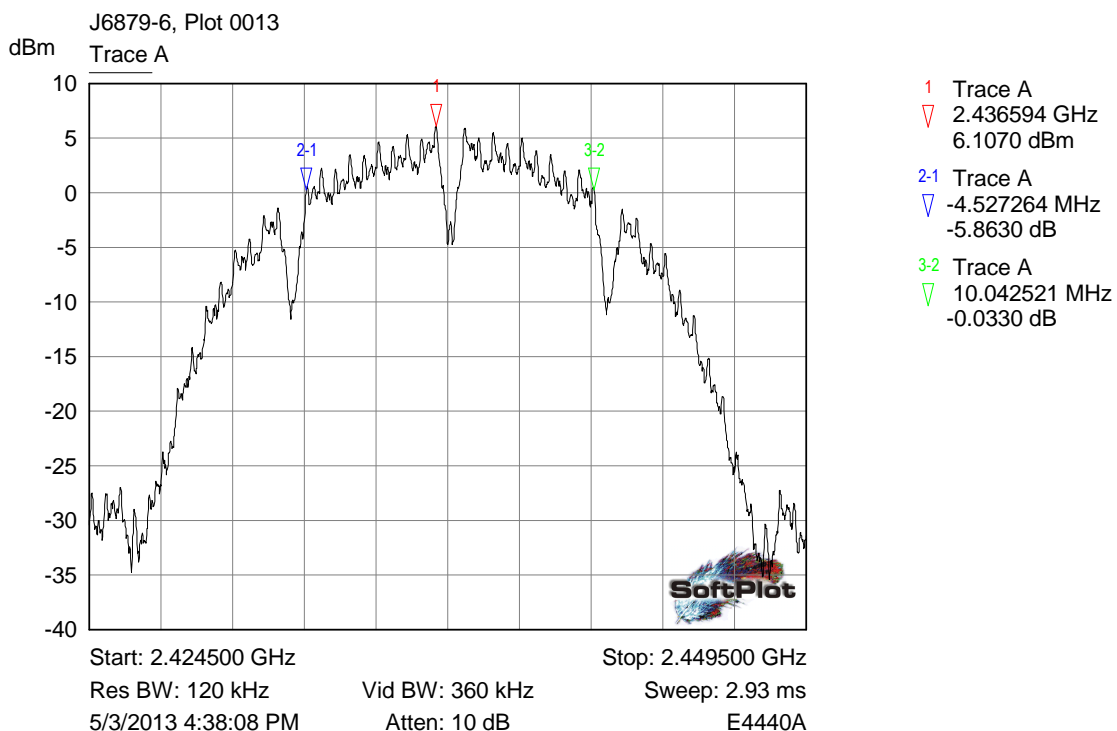
Middle channel (2437 MHz) - 21.5-25GHz - Vertical

6.3 6dB bandwidth / occupied bandwidth plots

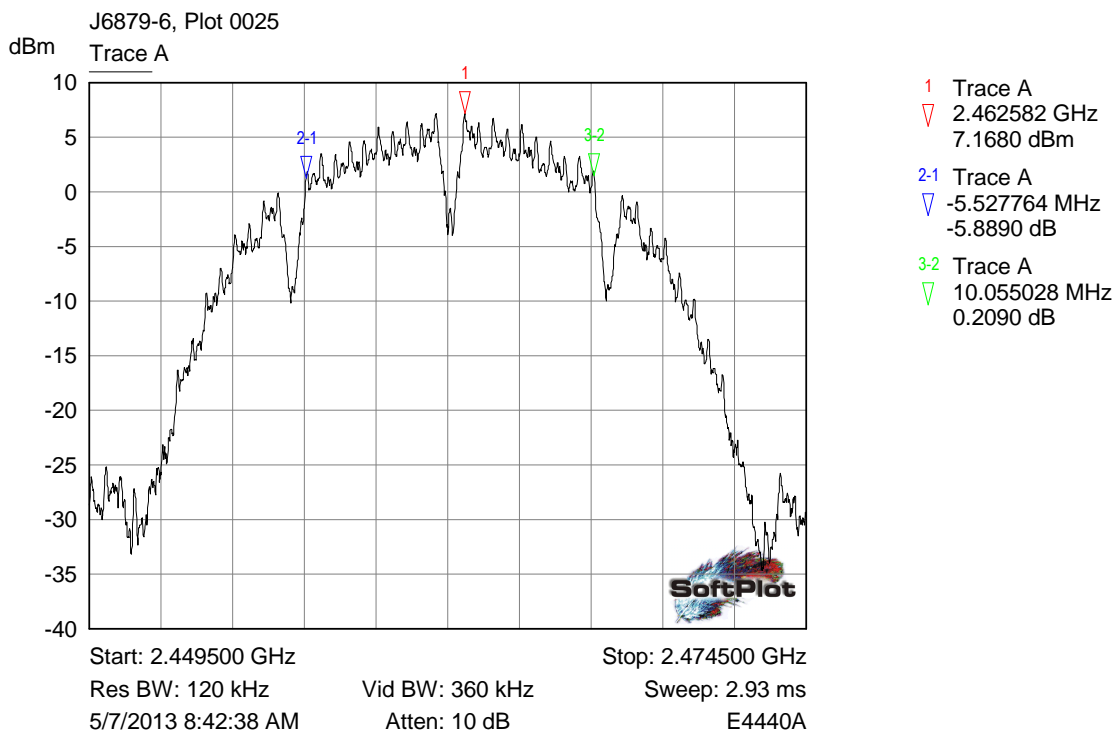
6.3.1 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 1 MBPS



Low channel

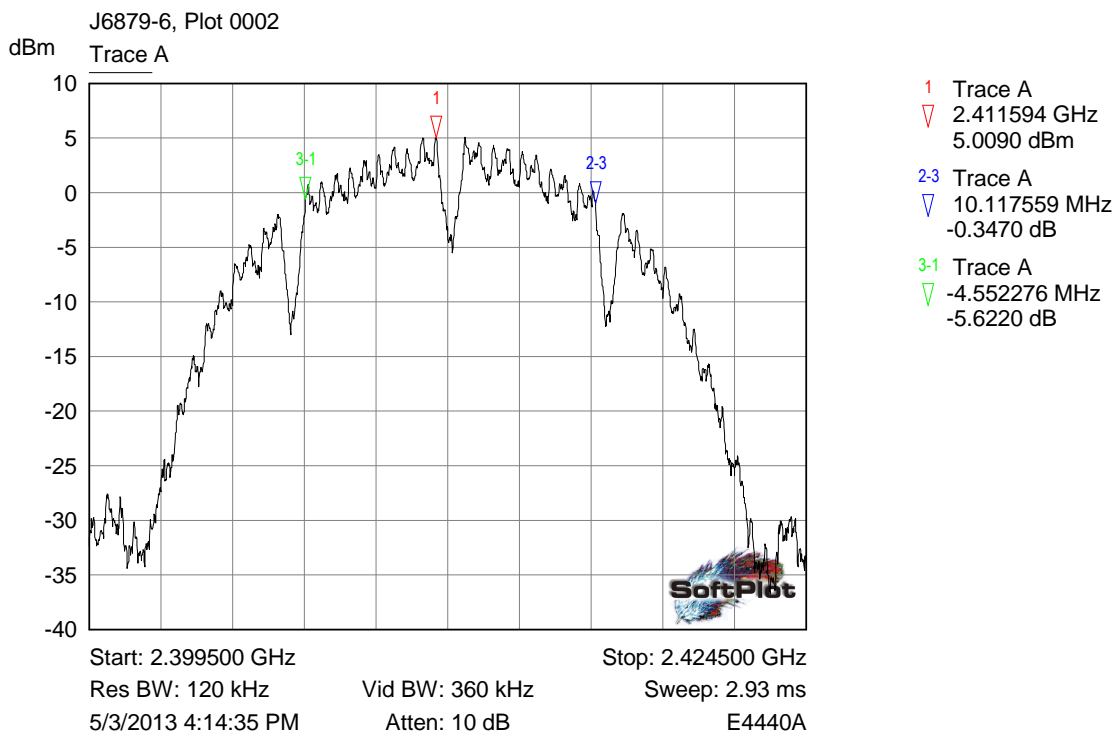


Mid channel

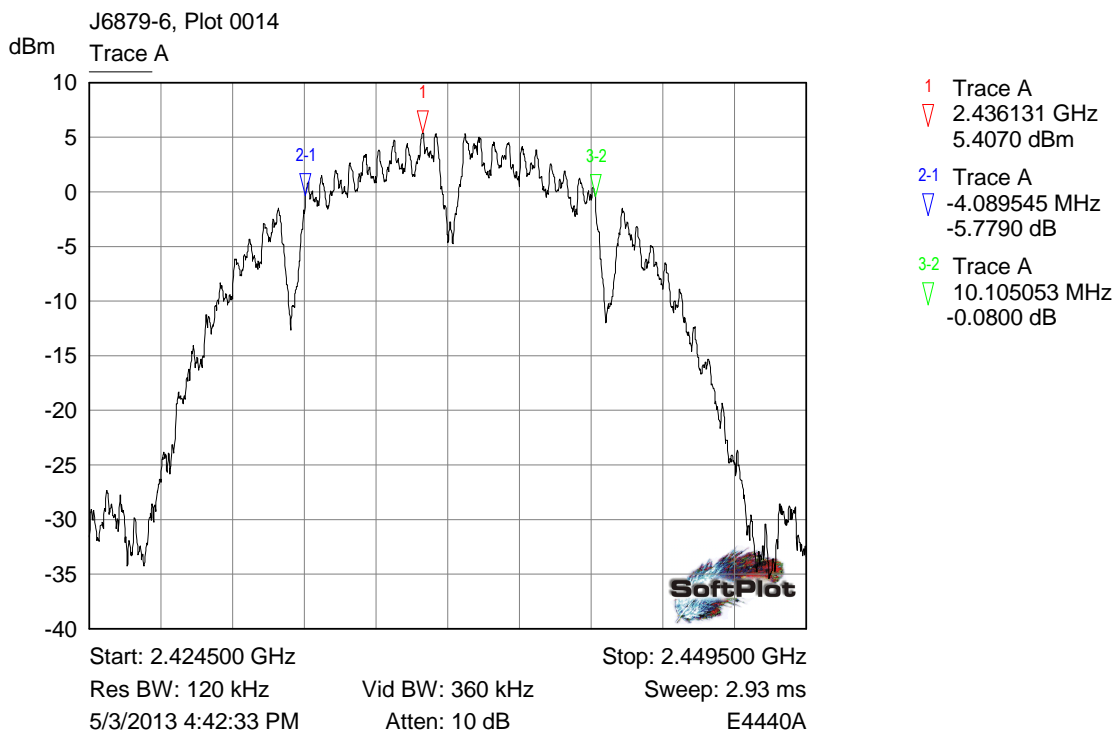


High channel

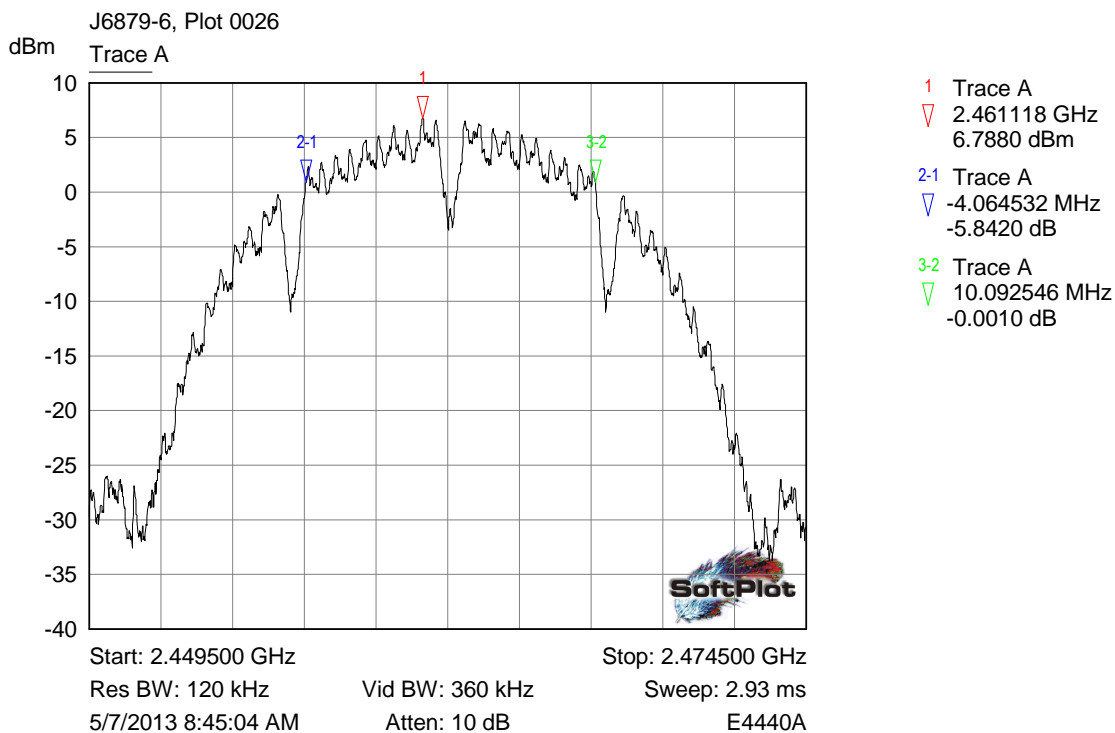
6.3.2 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 2 MBPS



Low channel

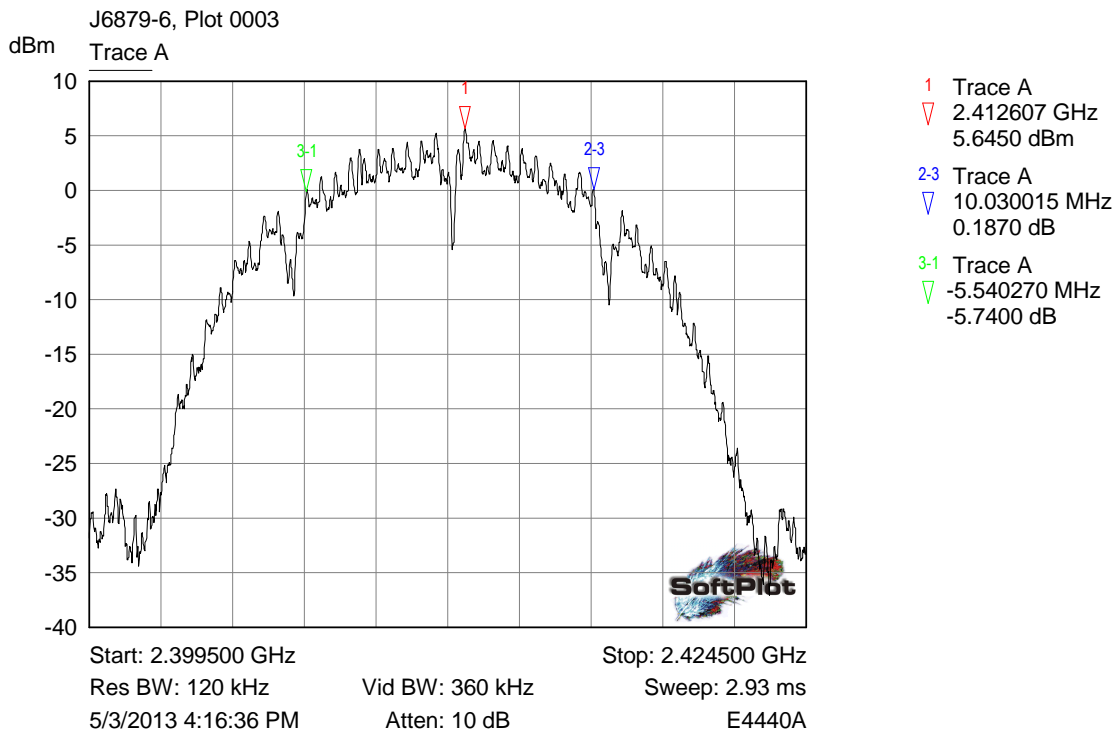


Mid channel

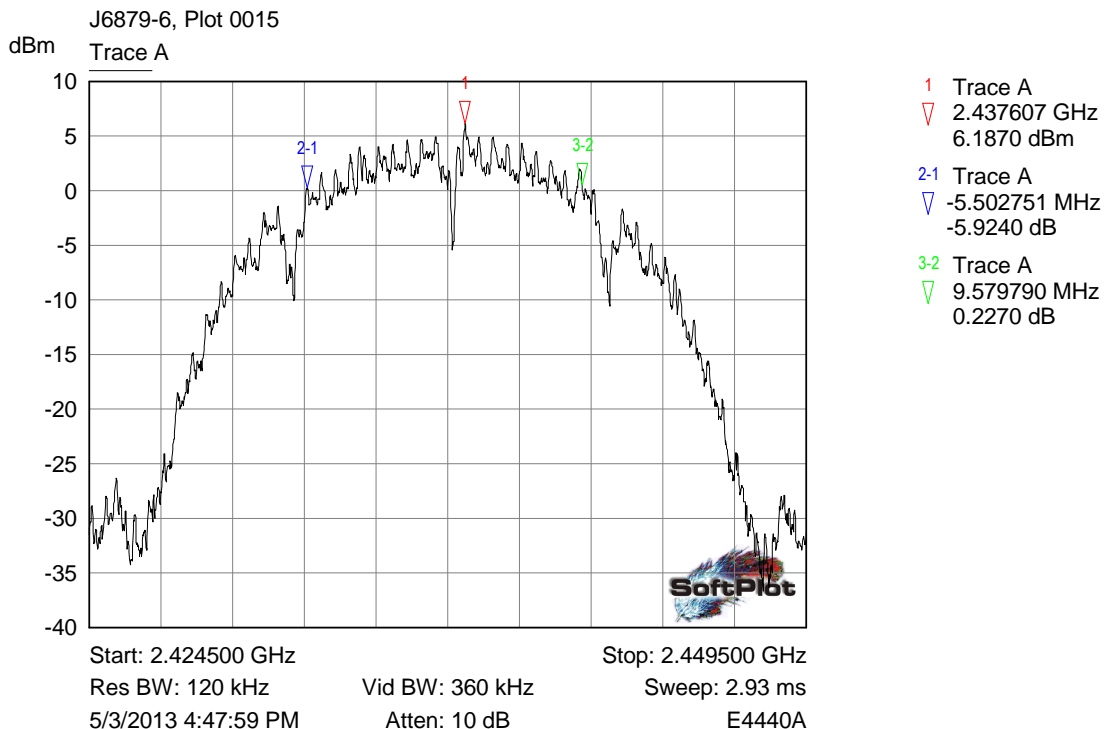


High channel

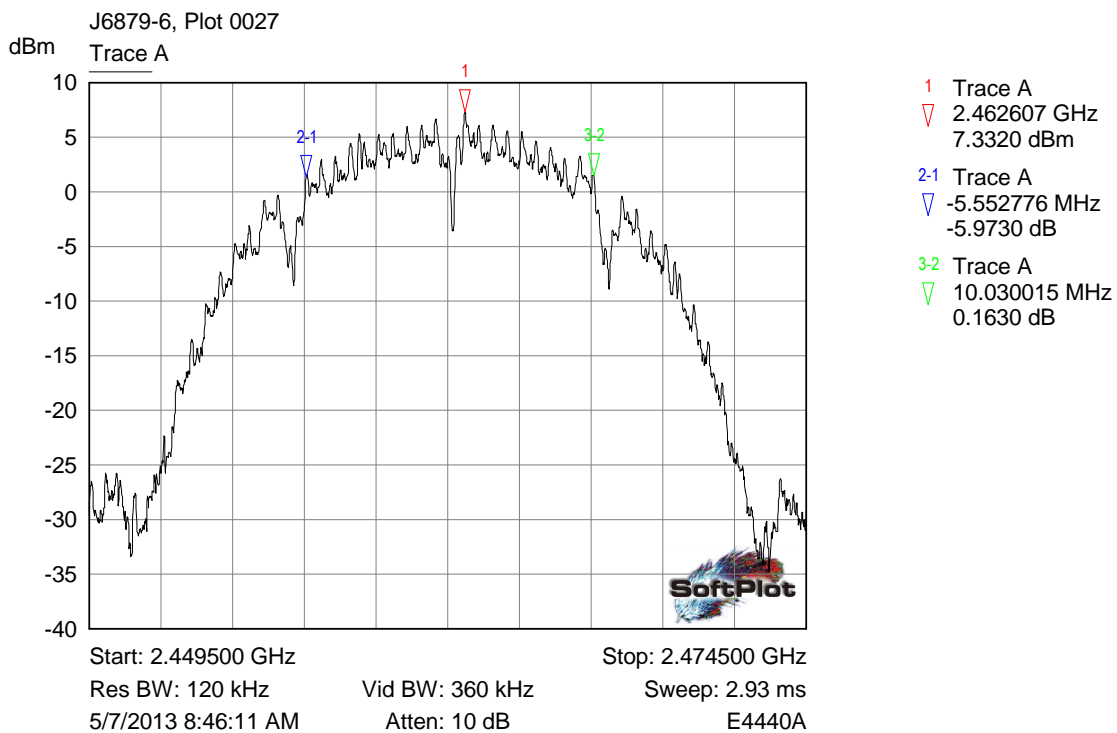
6.3.3 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 5.5 MBPS



Low channel

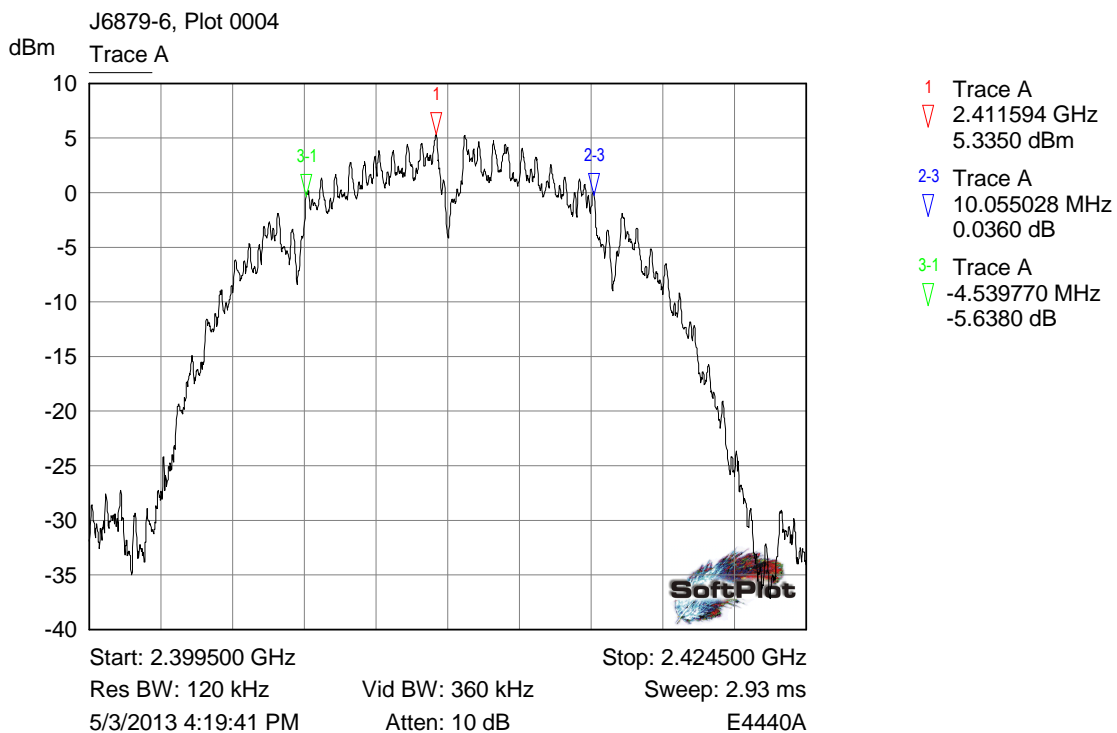


Mid channel

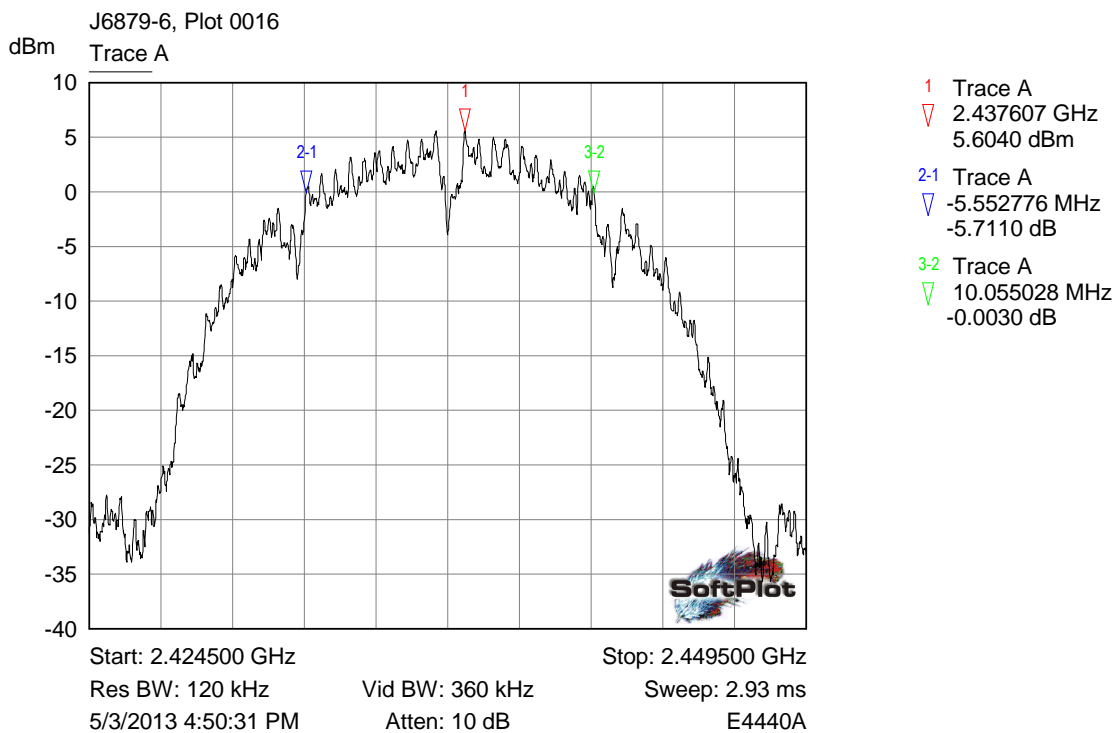


High channel

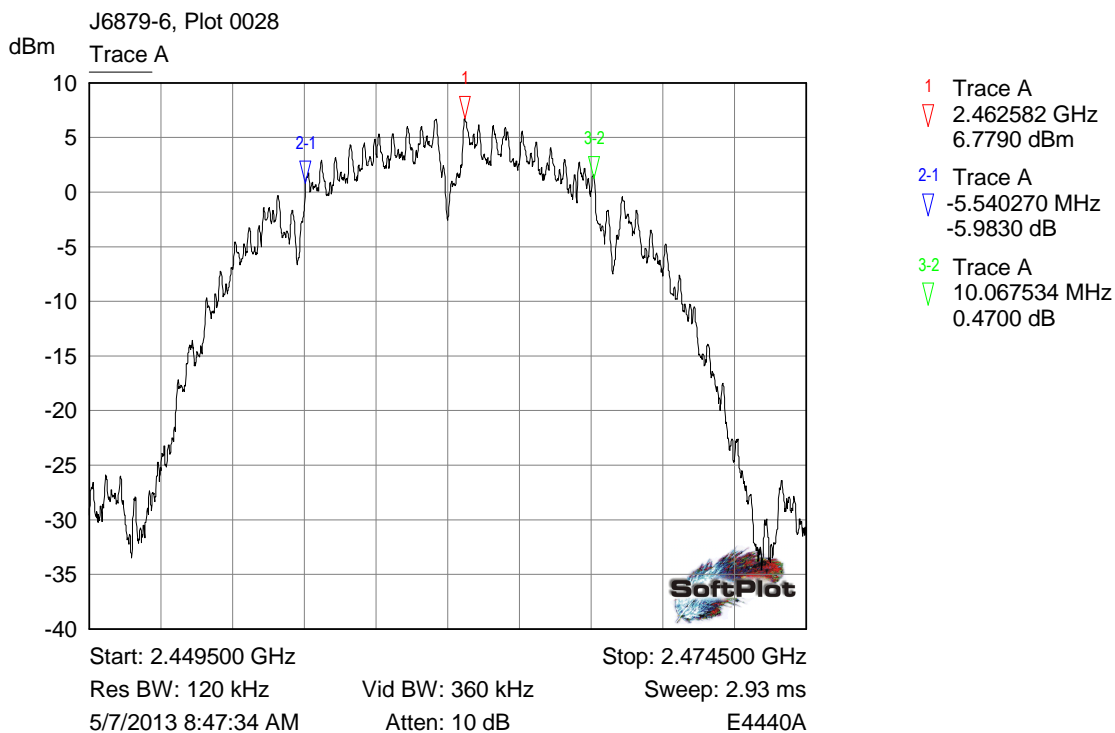
6.3.4 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 11 MBPS



Low channel



Mid channel

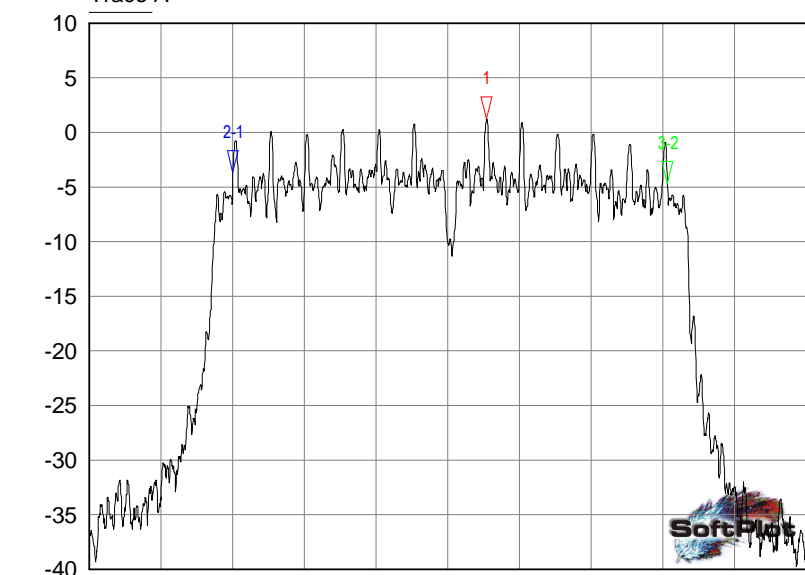


High channel

6.3.5 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 6 MBPS

J6879-6, Plot 0005

Trace A



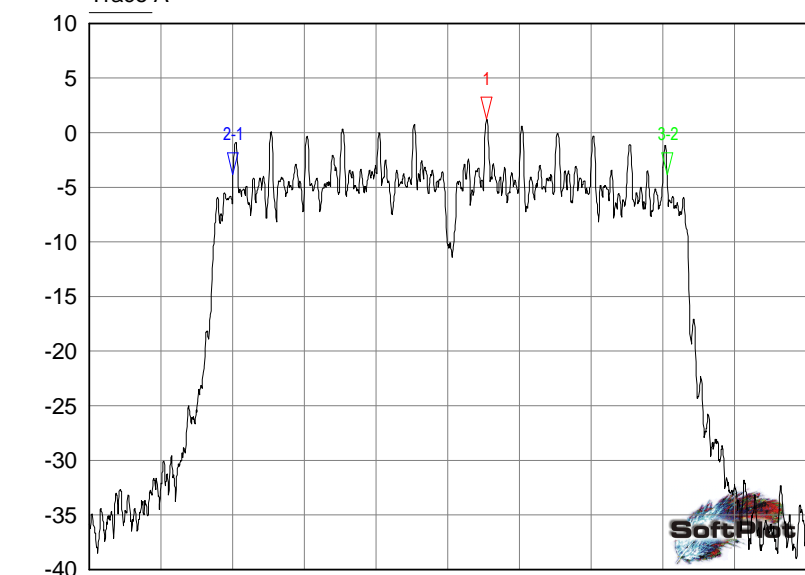
- 1 Trace A
▽ 2.413344 GHz
 1.2160 dBm
- 2-1 Trace A
▽ -8.829415 MHz
 -4.9020 dB
- 3-2 Trace A
▽ 15.145073 MHz
 -0.9630 dB

Start: 2.399500 GHz Stop: 2.424500 GHz
 Res BW: 120 kHz Vid BW: 360 kHz Sweep: 2.93 ms
 5/3/2013 4:22:23 PM Atten: 10 dB E4440A

Low channel

J6879-6, Plot 0017

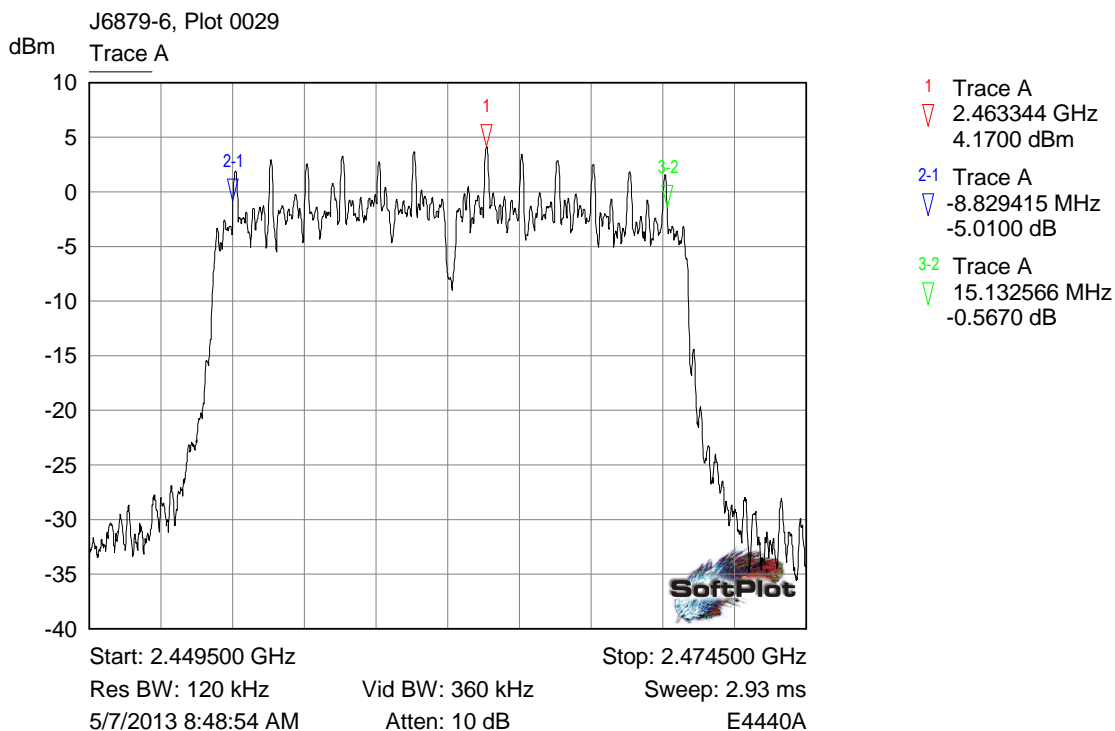
Trace A



- 1 Trace A
▽ 2.438344 GHz
 1.2180 dBm
- 2-1 Trace A
▽ -8.829415 MHz
 -5.0810 dB
- 3-2 Trace A
▽ 15.132566 MHz
 -0.0010 dB

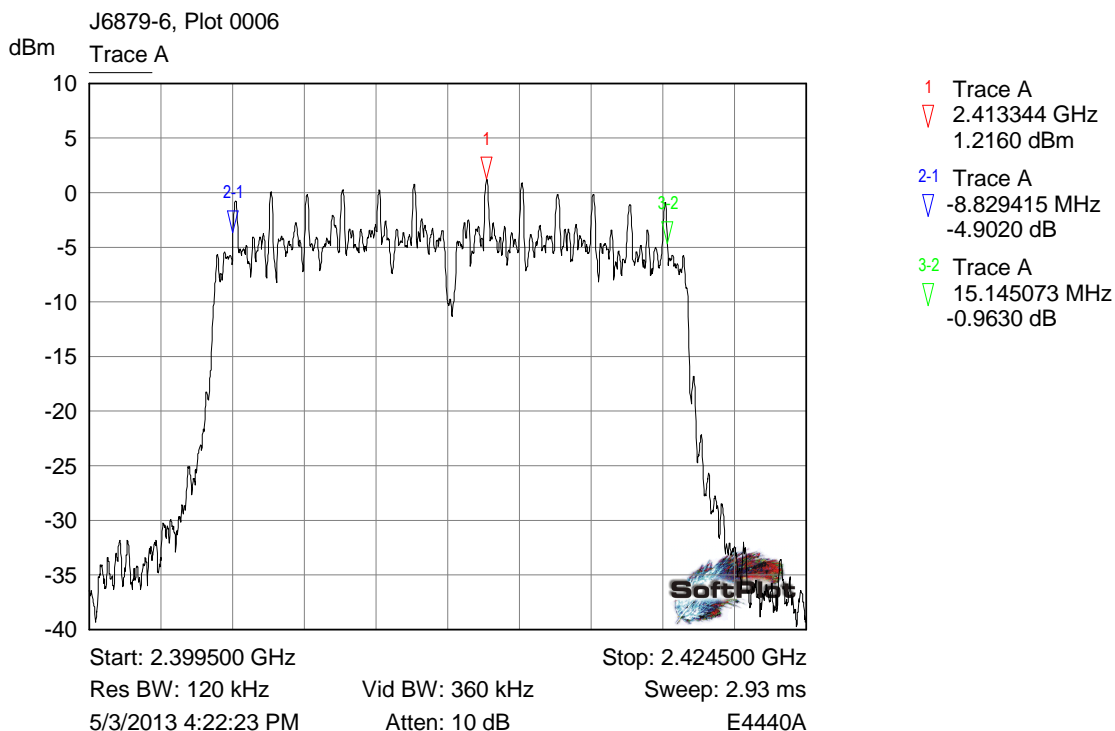
Start: 2.424500 GHz Stop: 2.449500 GHz
 Res BW: 120 kHz Vid BW: 360 kHz Sweep: 2.93 ms
 5/3/2013 4:52:14 PM Atten: 10 dB E4440A

Mid channel

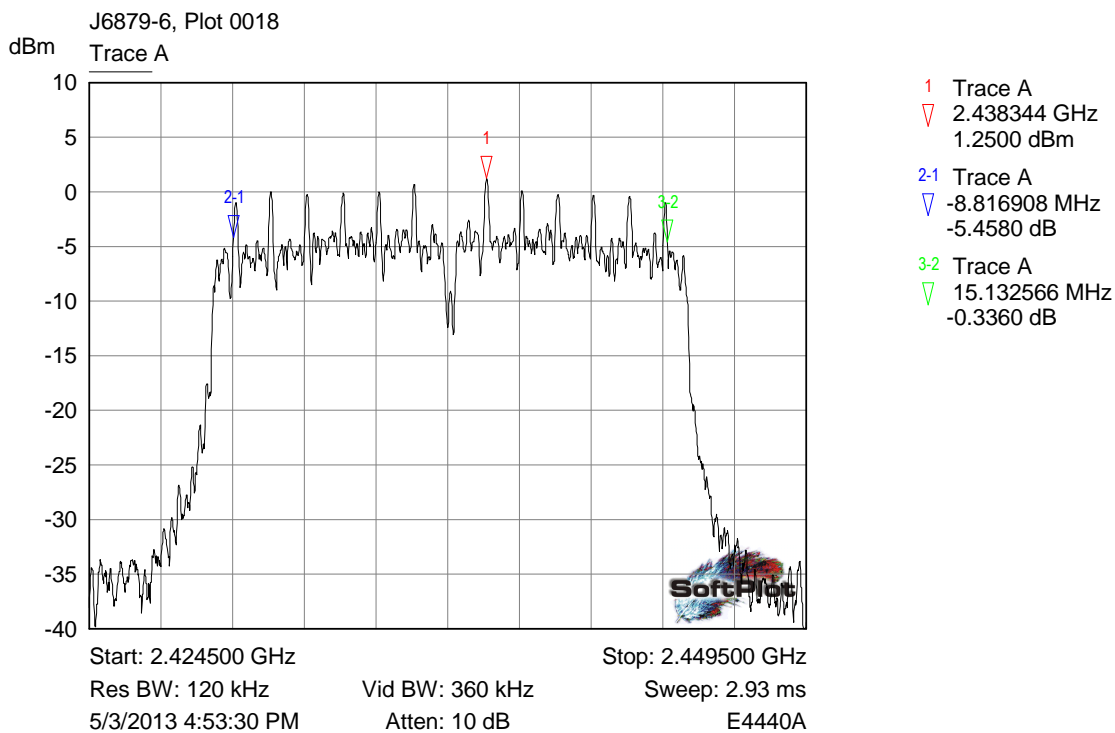


High channel

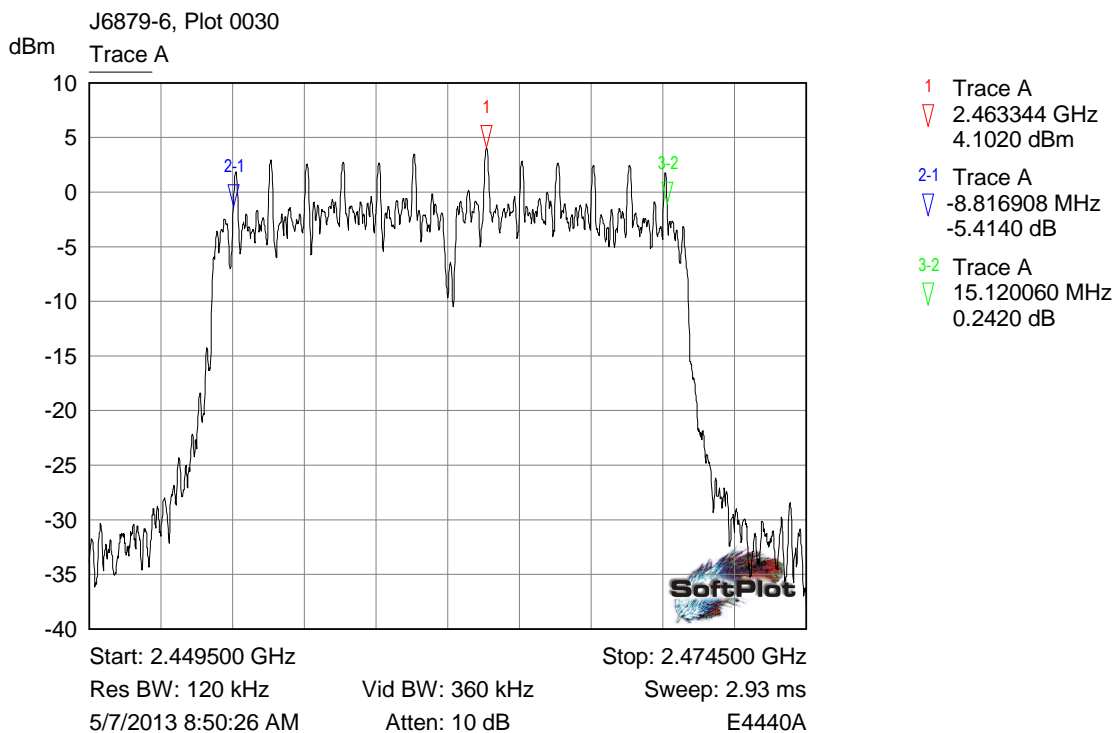
6.3.6 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 9 MBPS



Low channel

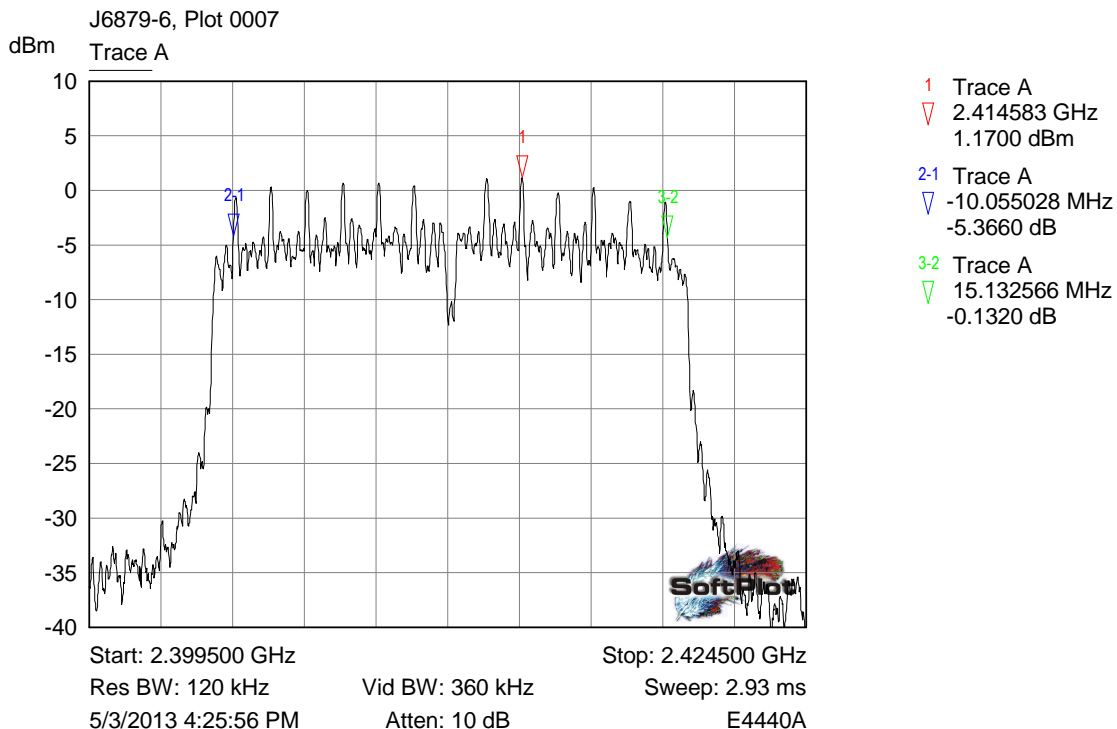


Mid channel

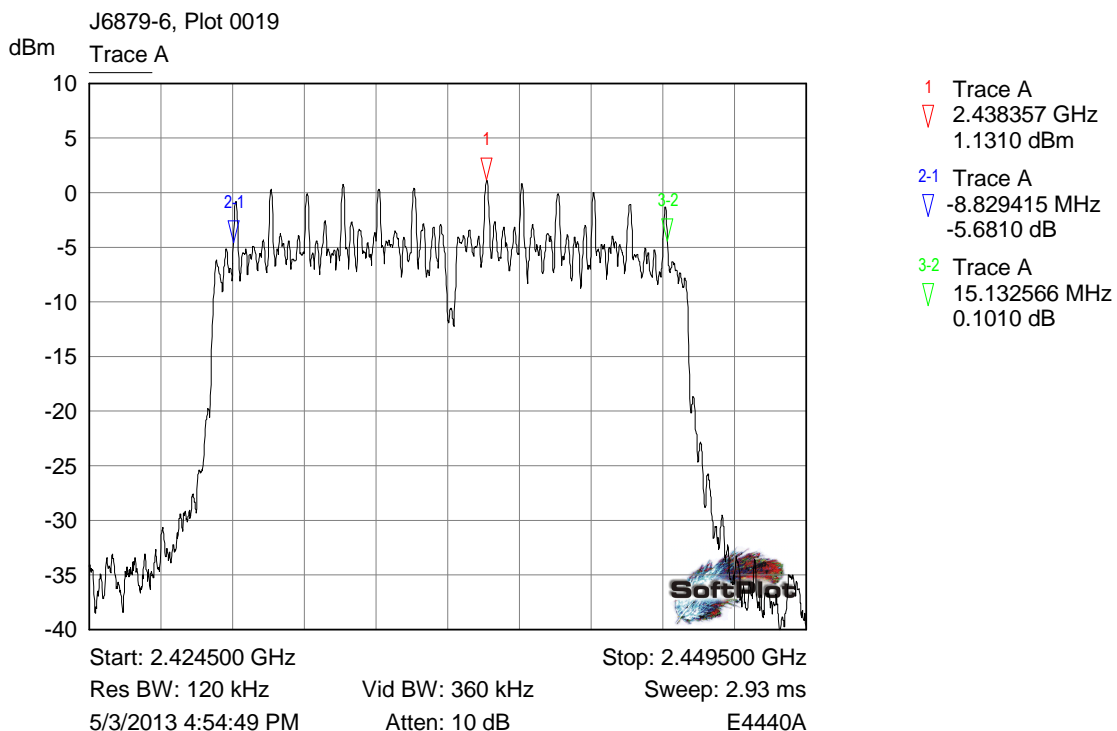


High channel

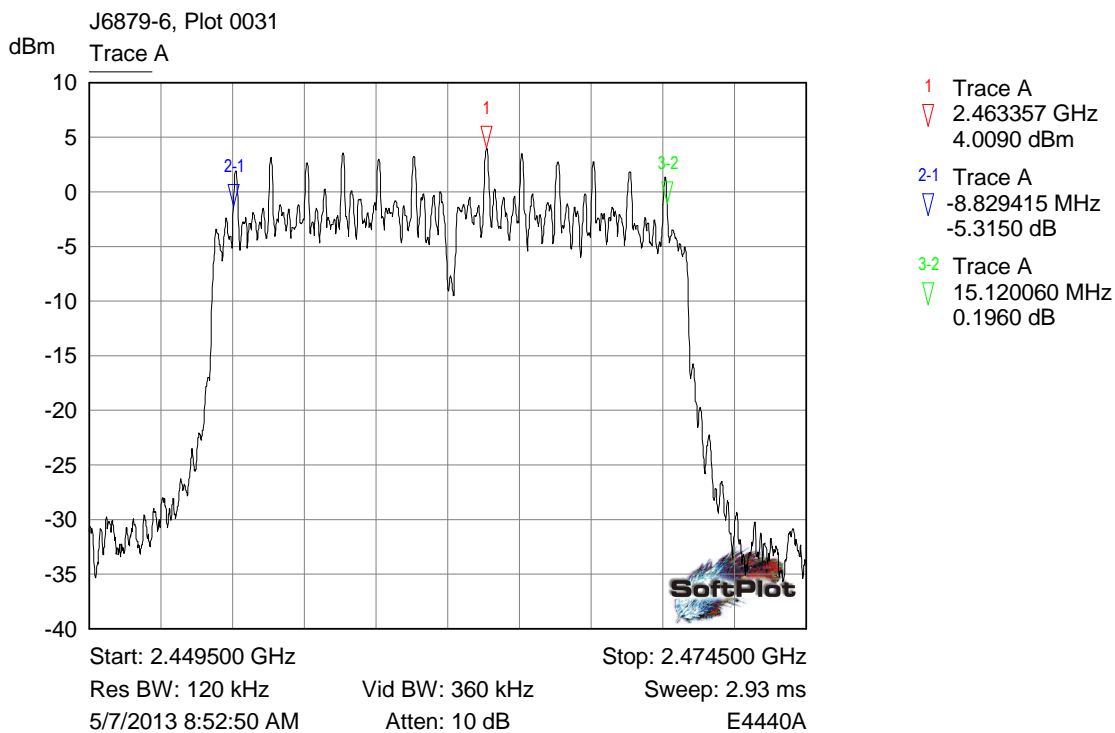
6.3.7 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 12 MBPS



Low channel

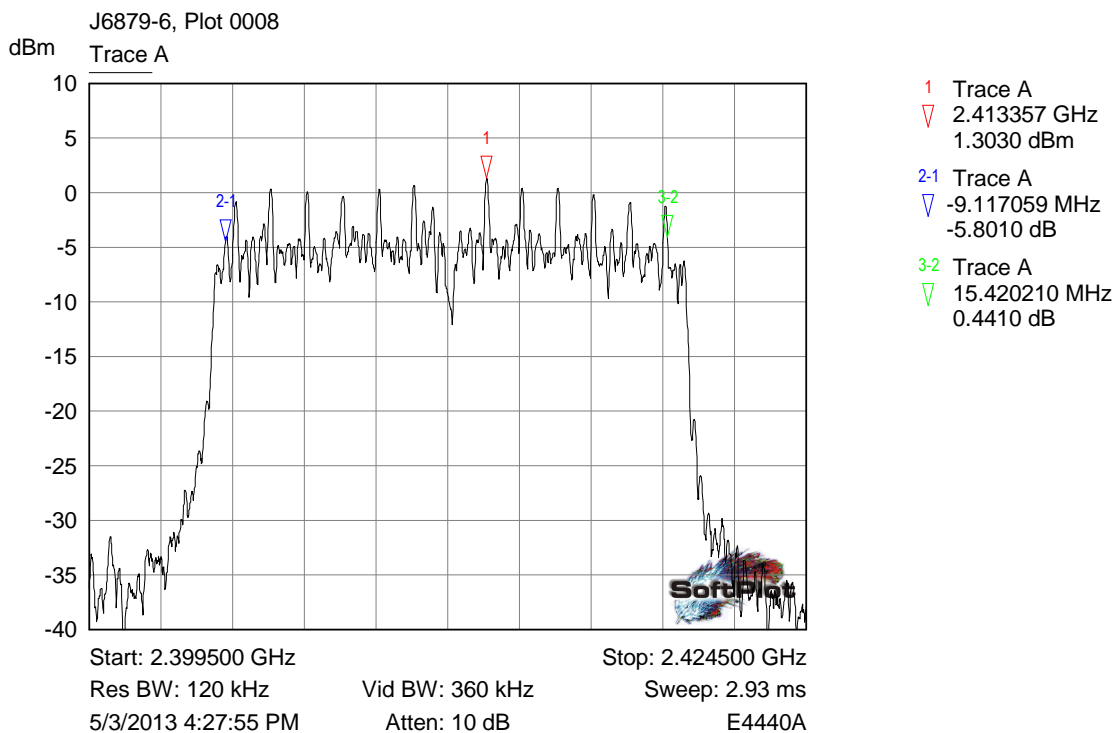


Mid channel

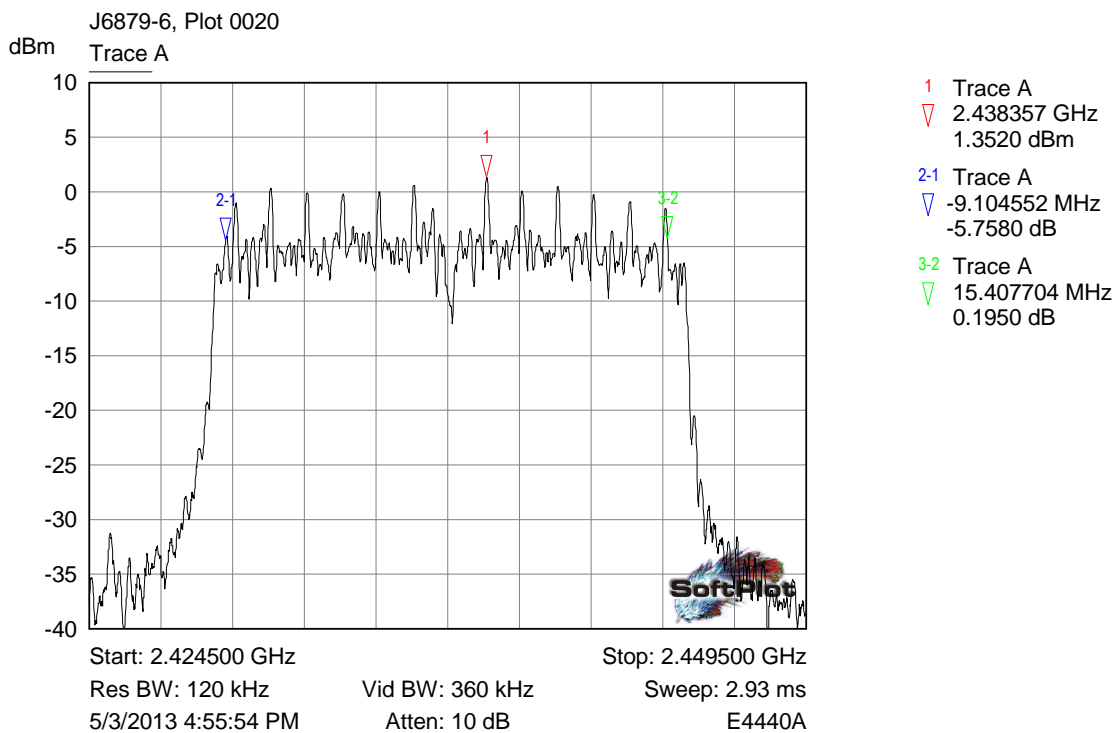


High channel

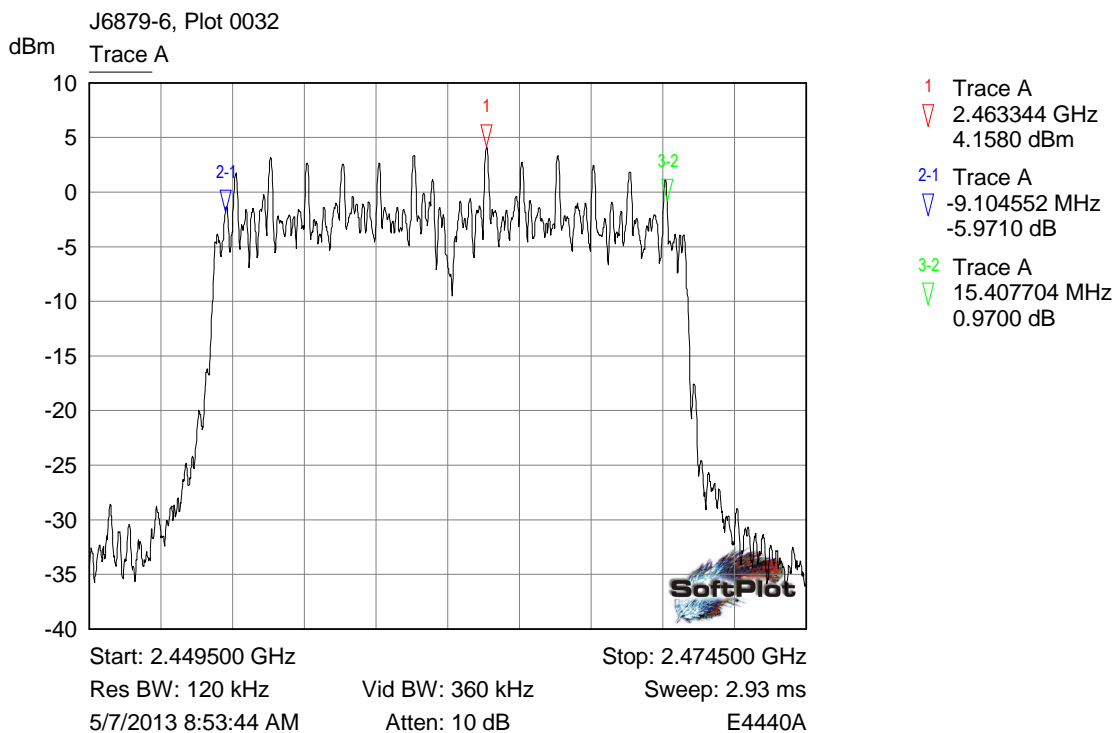
6.3.8 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 18 MBPS



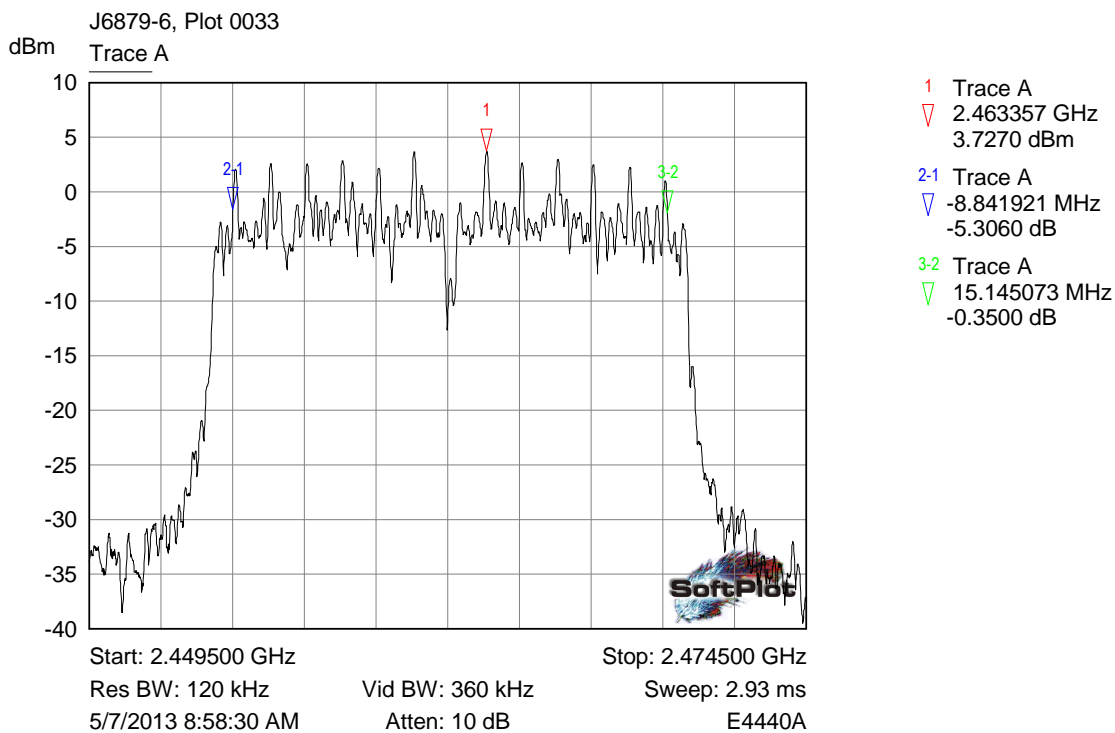
Low channel



Mid channel

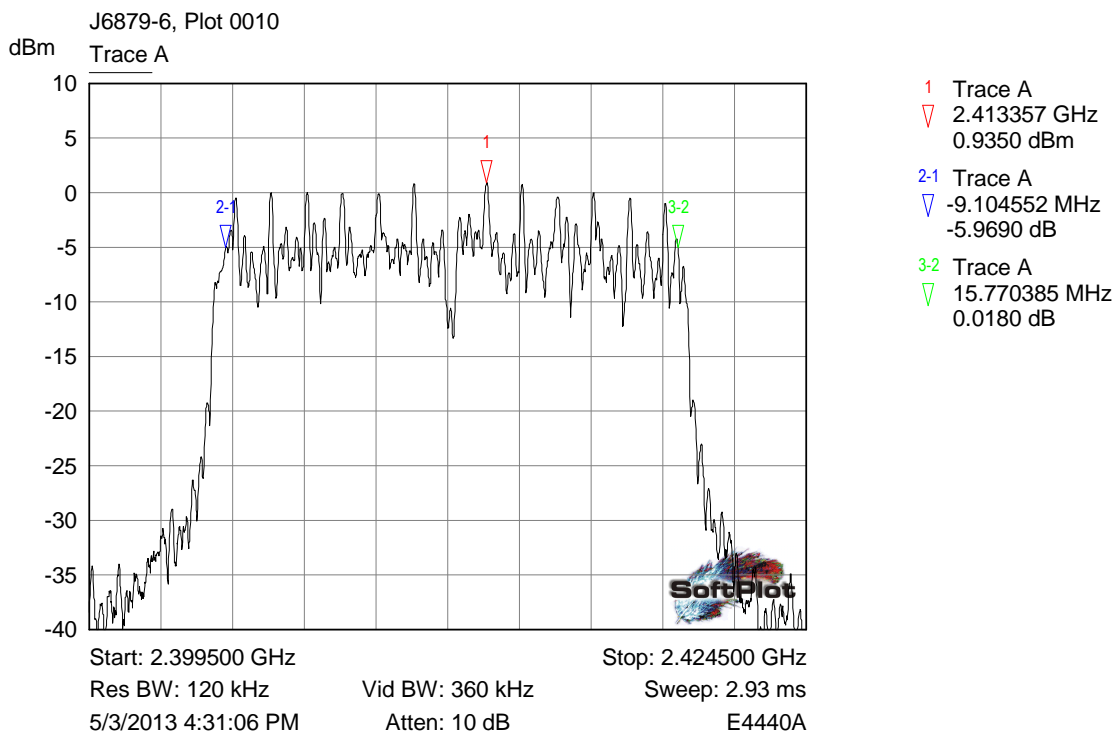


High channel

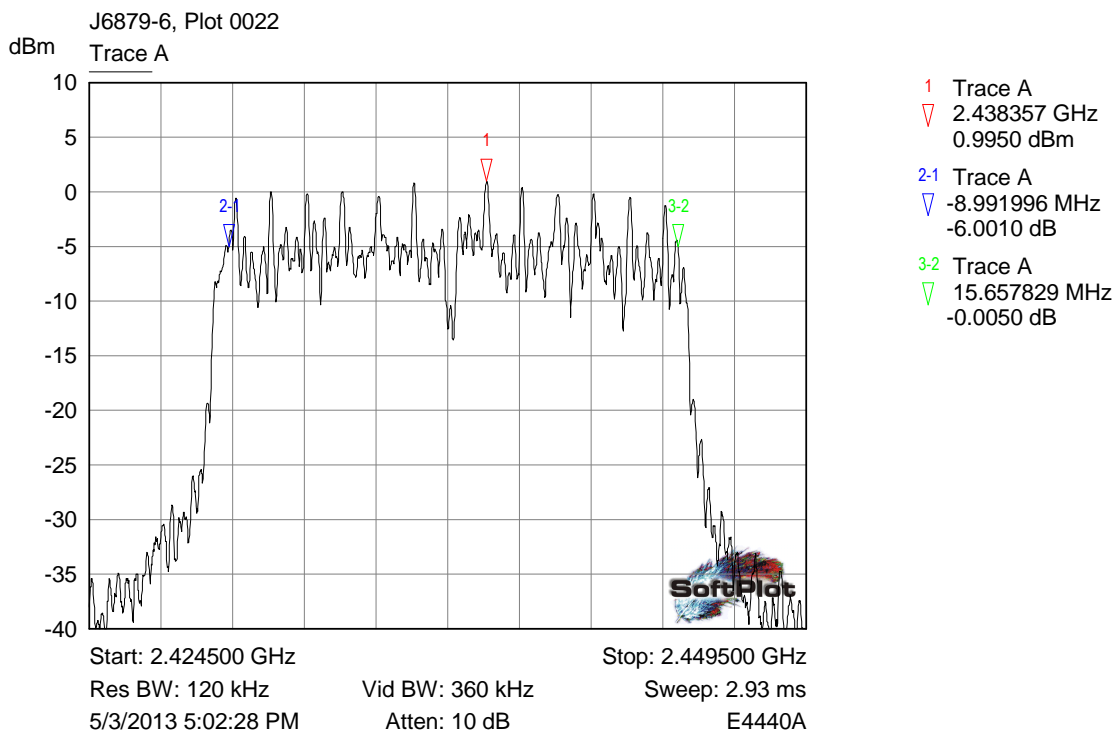


High channel

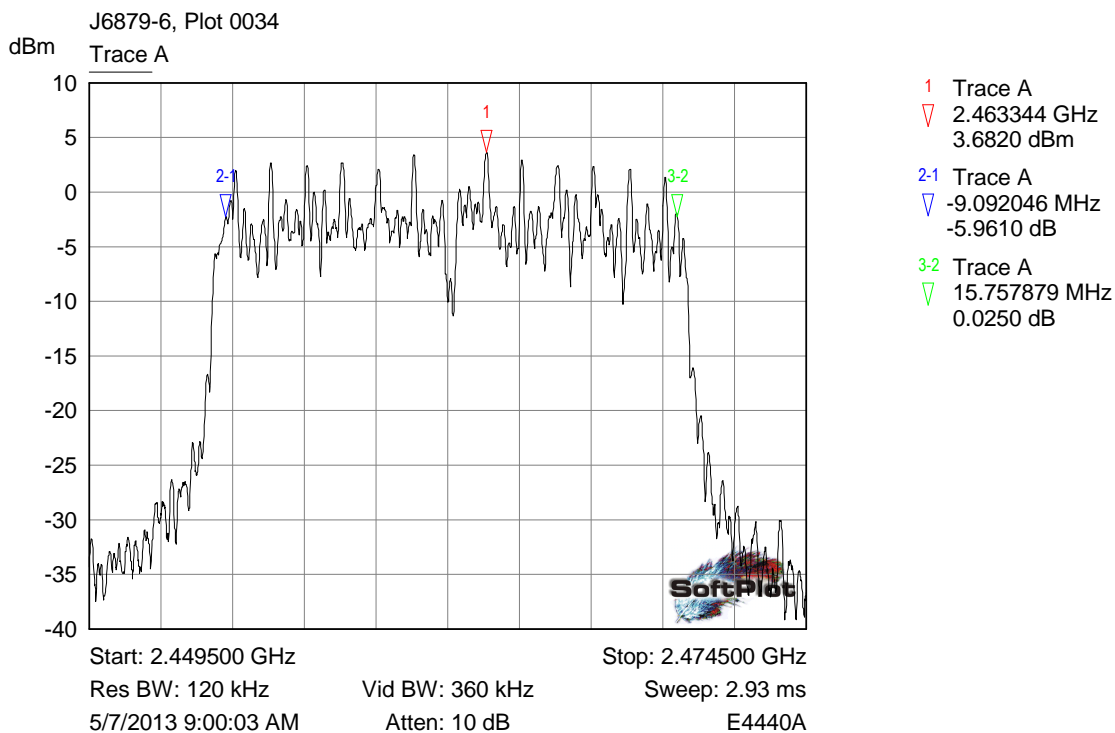
6.3.10 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 36 MBPS



Low channel

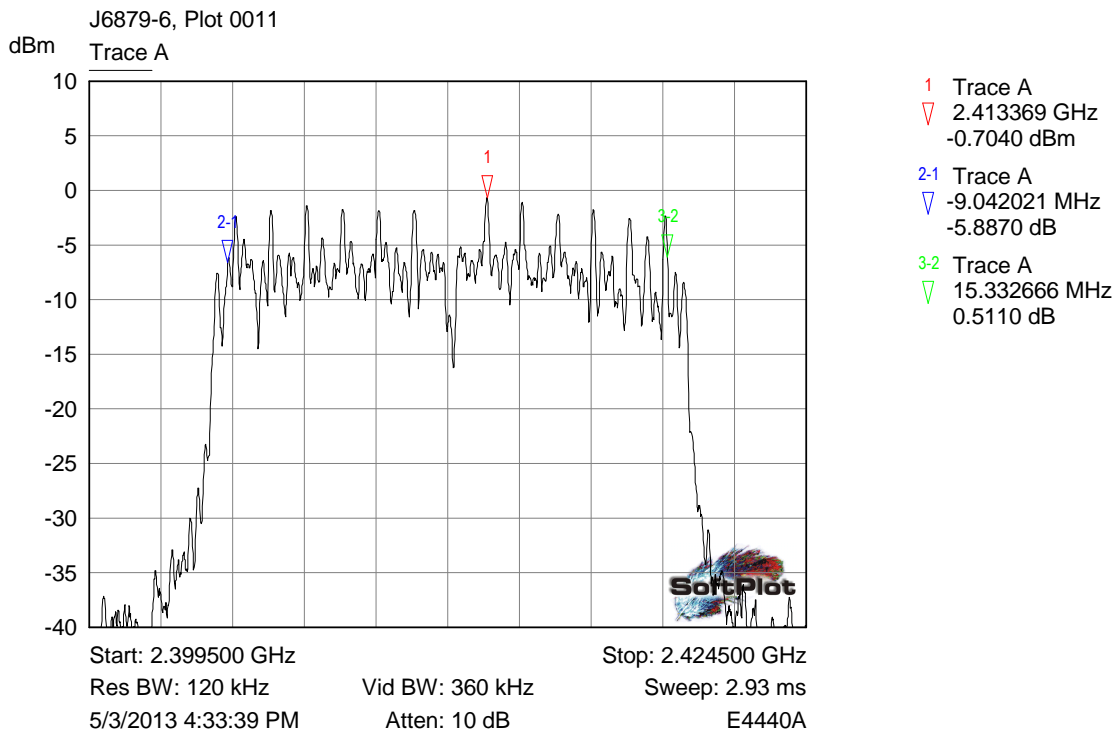


Mid channel

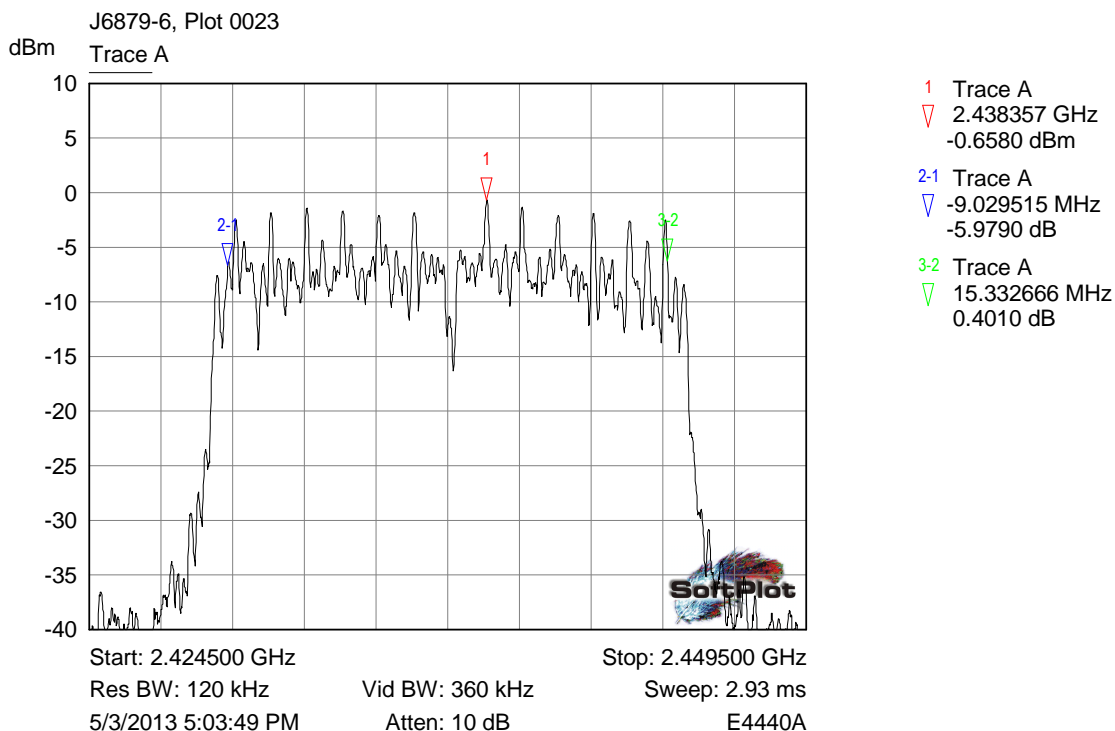


High channel

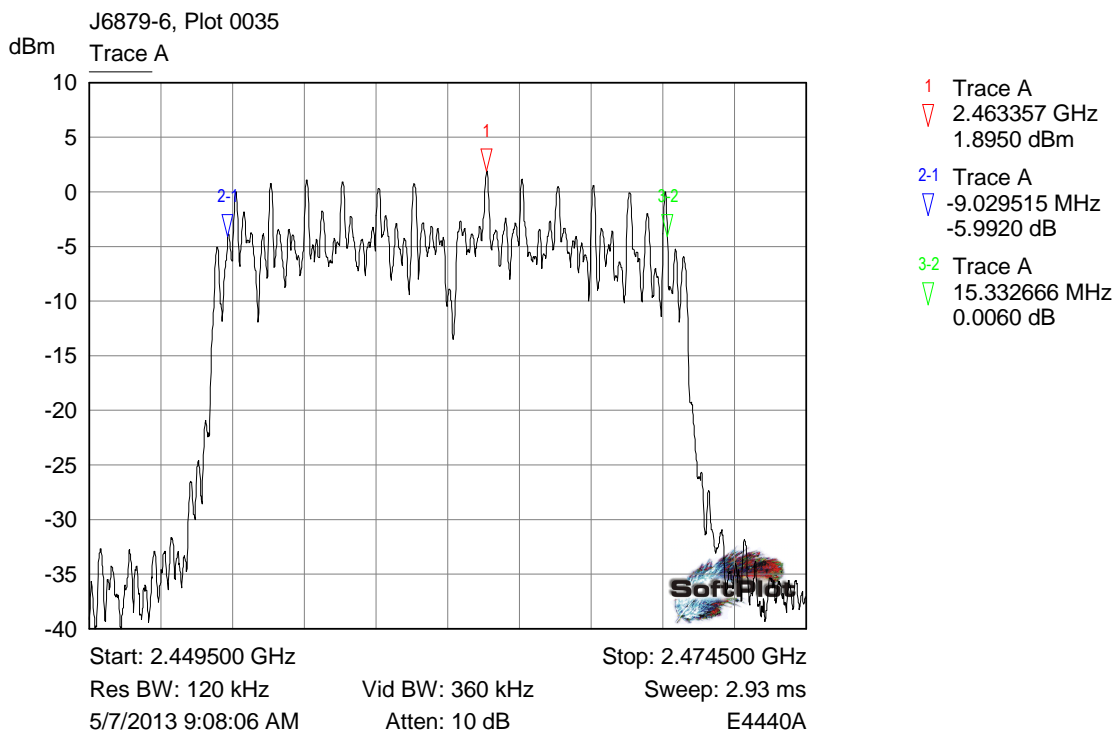
6.3.11 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 48 MBPS



Low channel

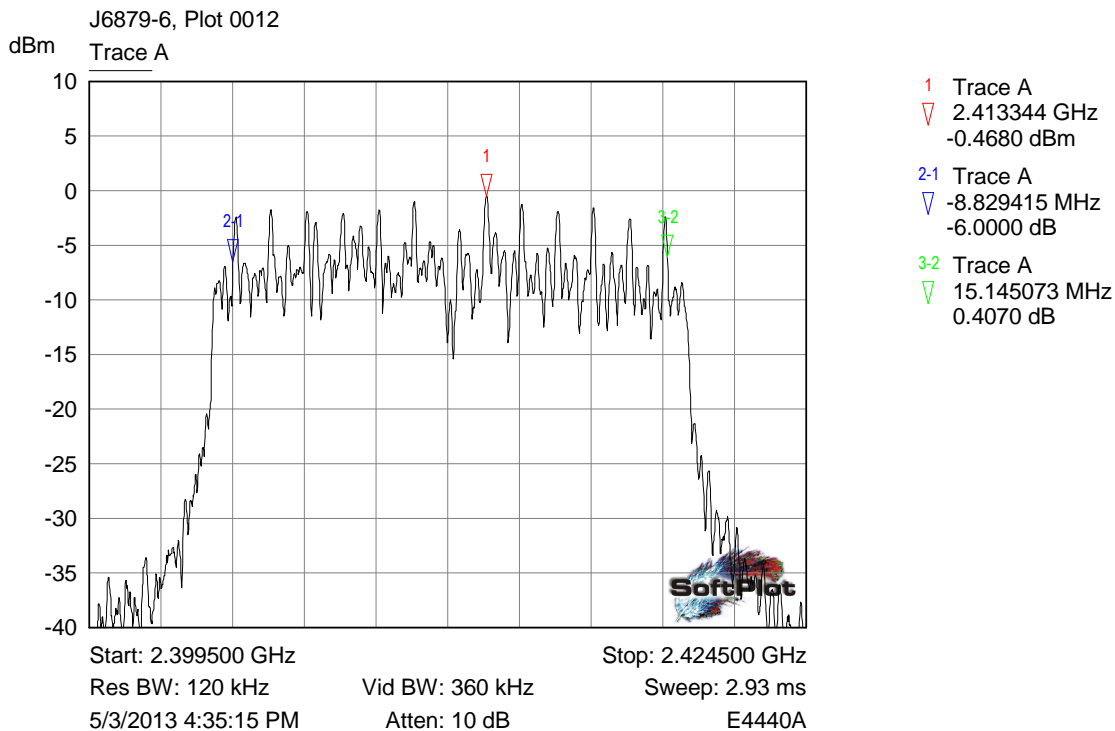


Mid channel

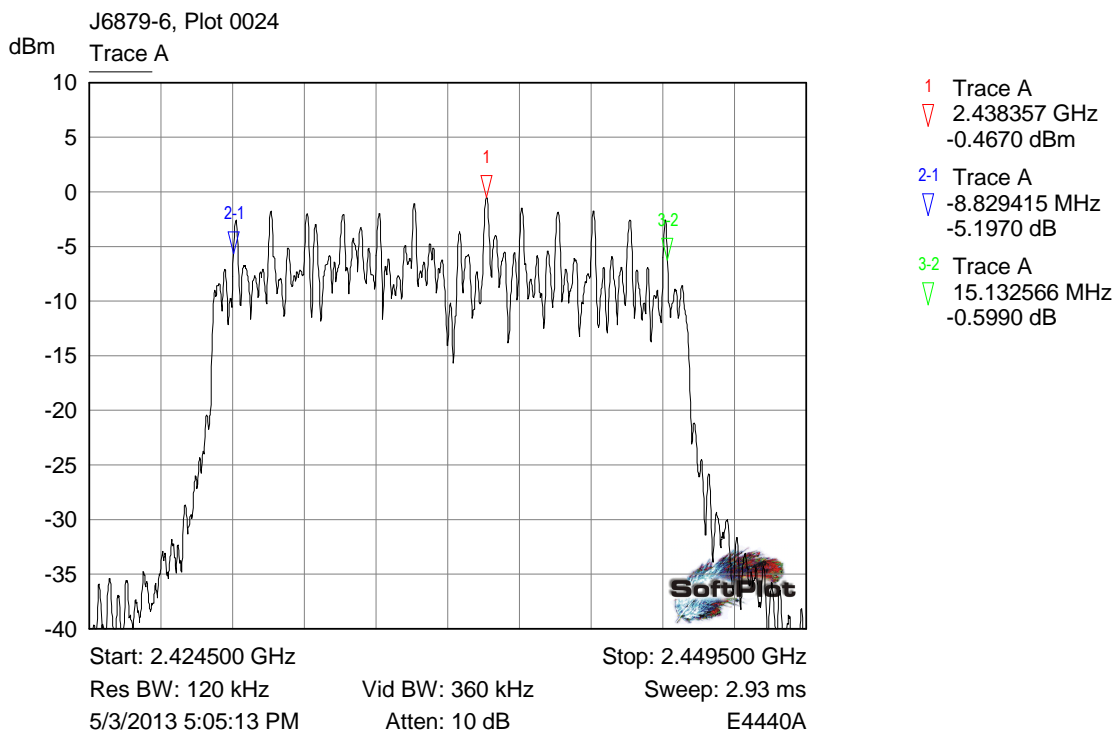


High channel

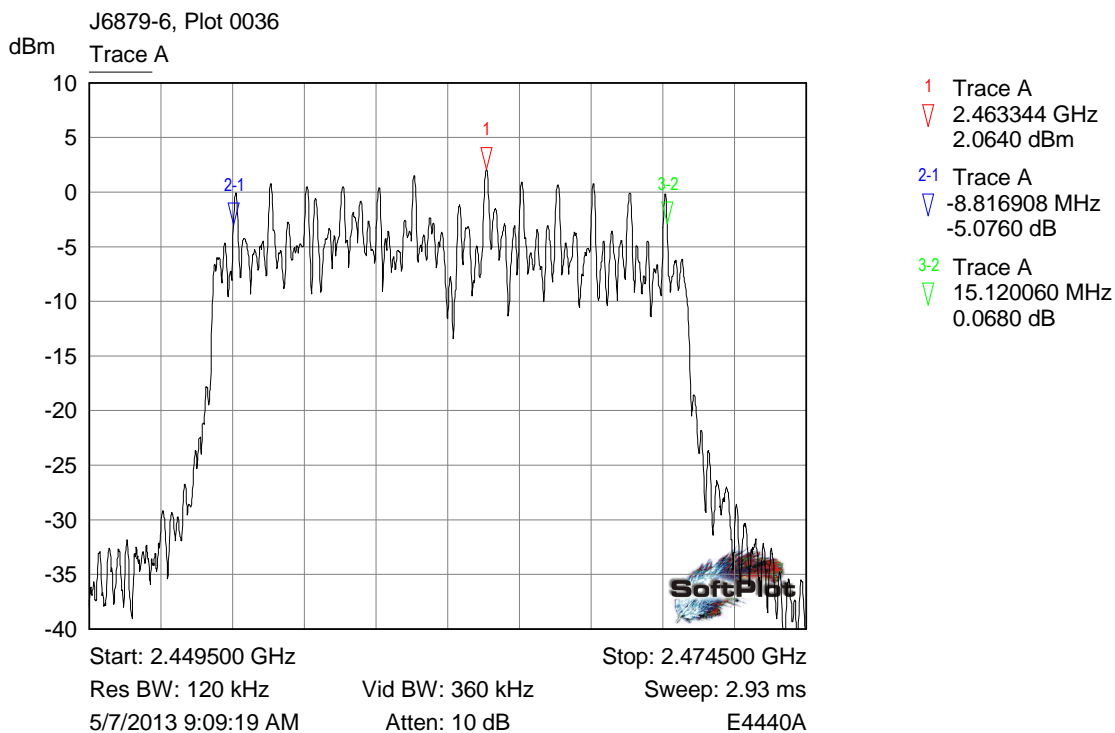
6.3.12 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 54 MBPS



Low channel



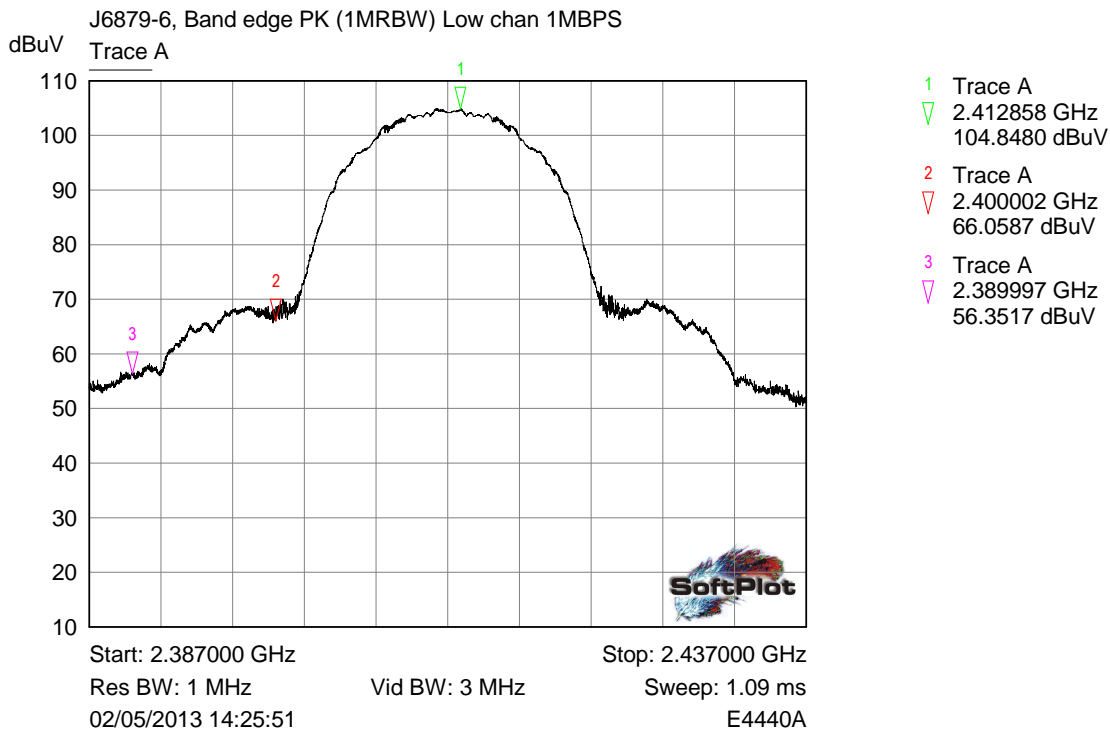
Mid channel



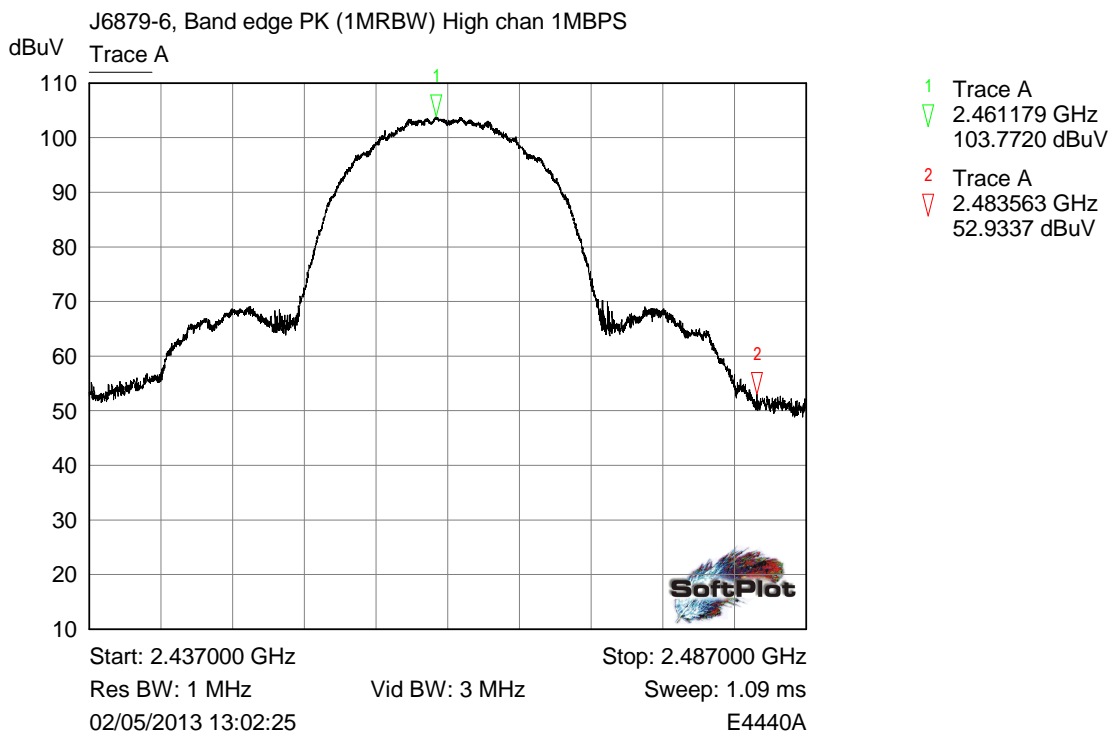
High channel

6.4 Band edge compliance plots

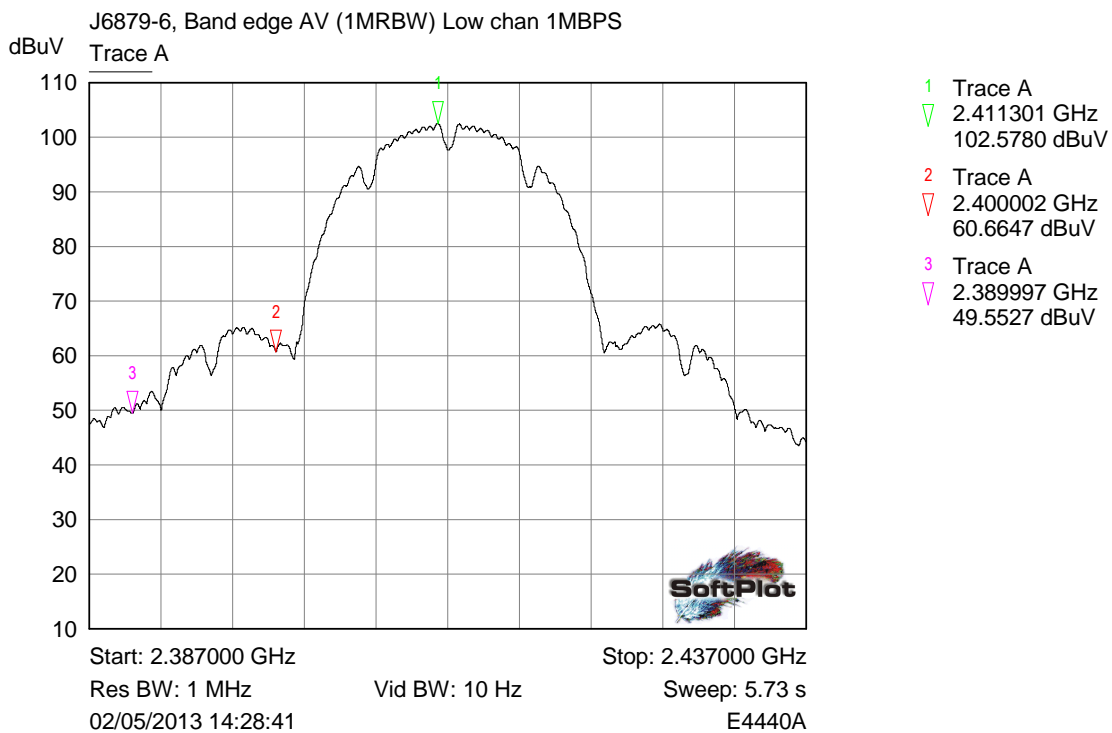
6.4.1 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 1 MBPS



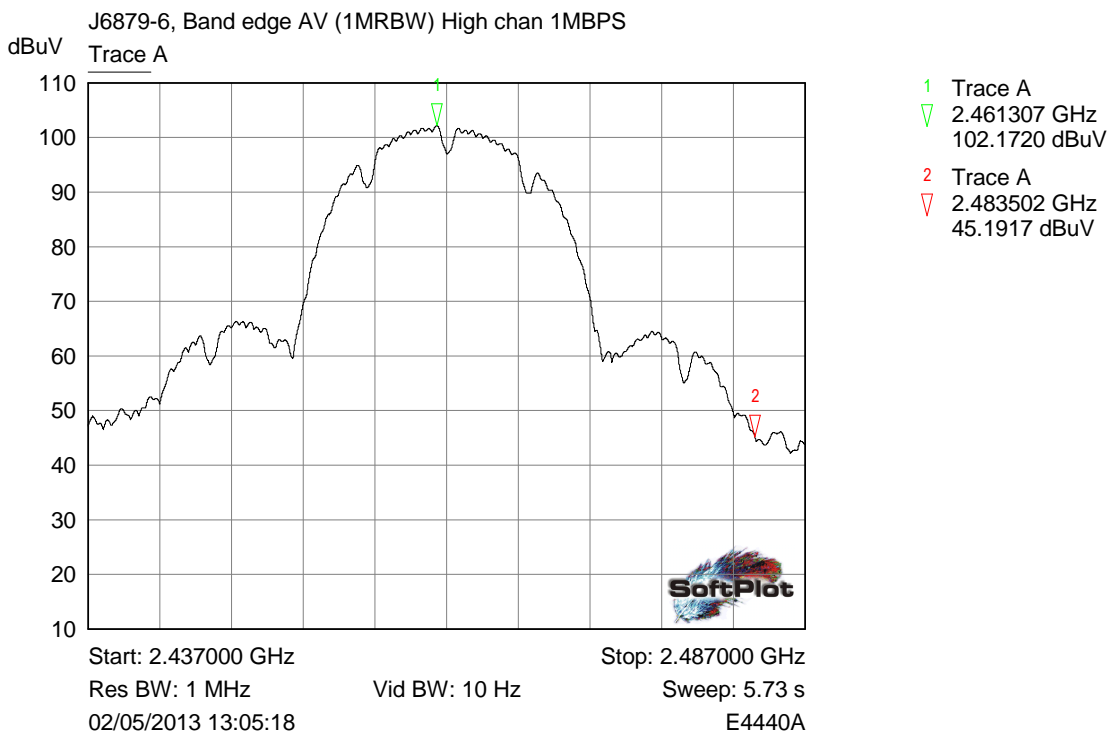
Restricted Band: Low channel Peak Plot



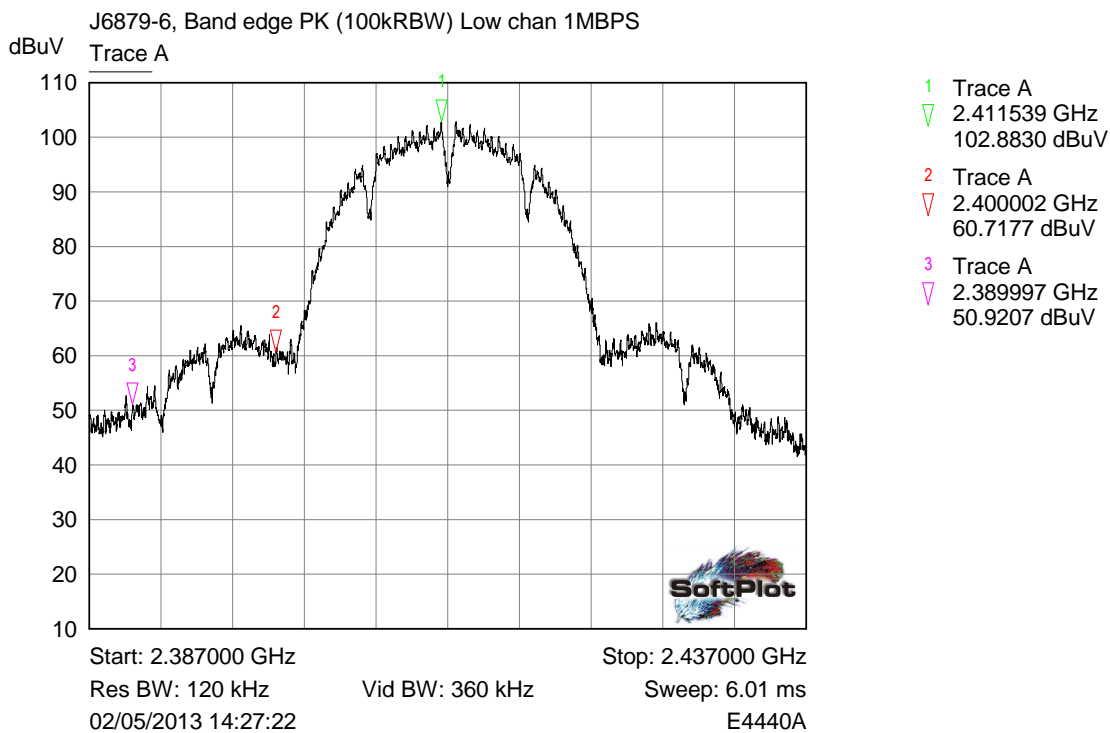
Restricted Band: High channel Peak Plot



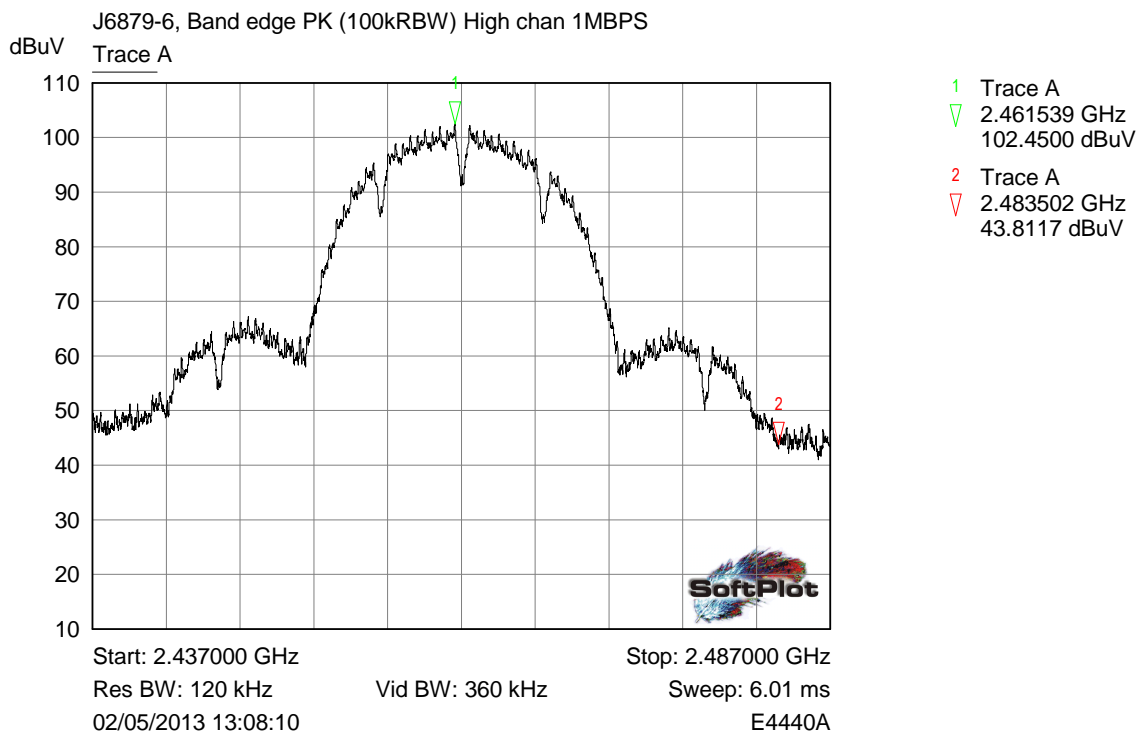
Restricted Band: Low channel Average Plot



Restricted Band: High channel Average Plot

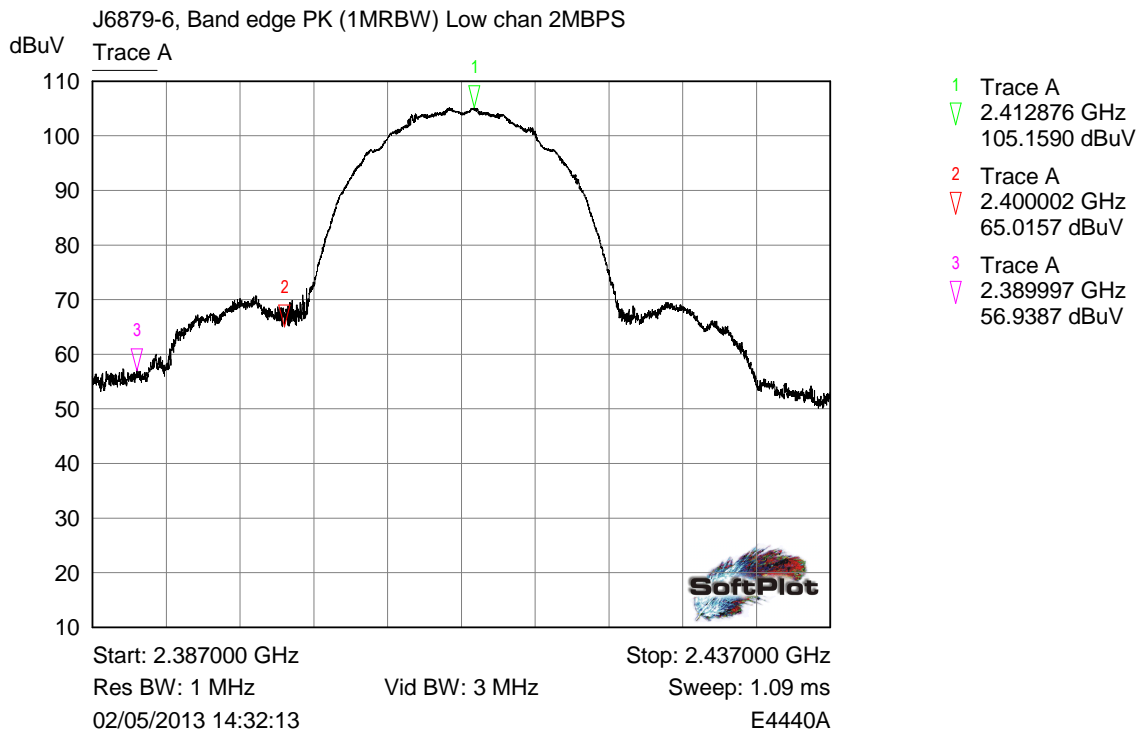


Band Edge: Low channel

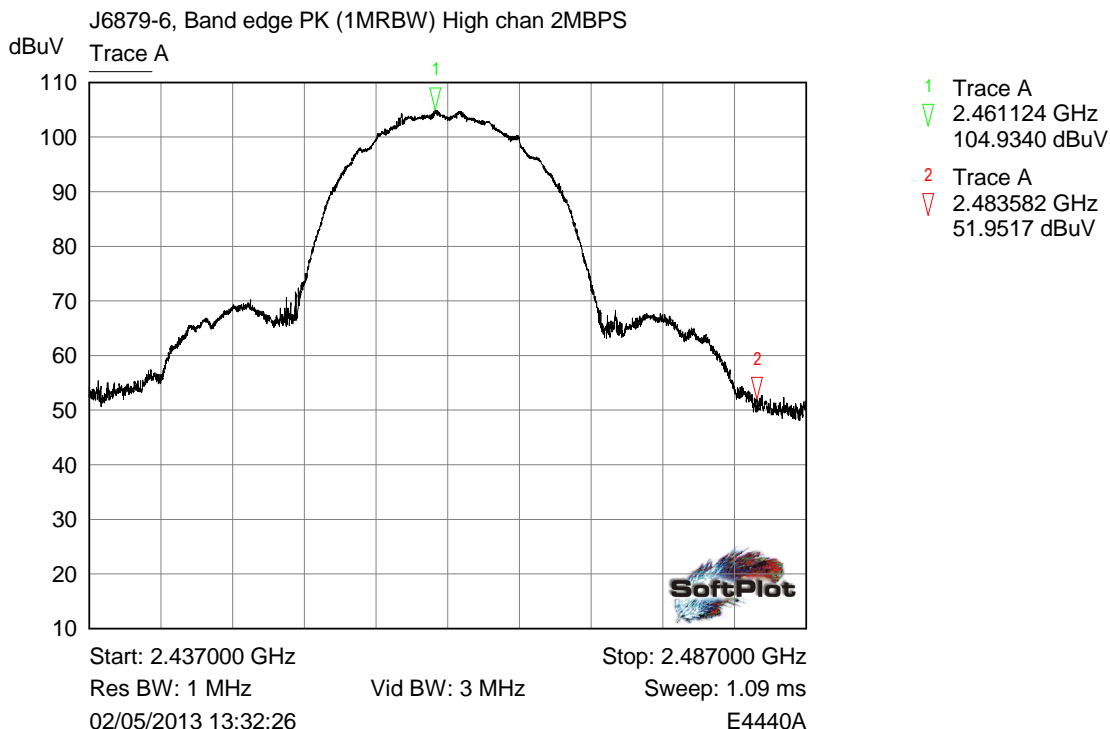


Band Edge: High channel

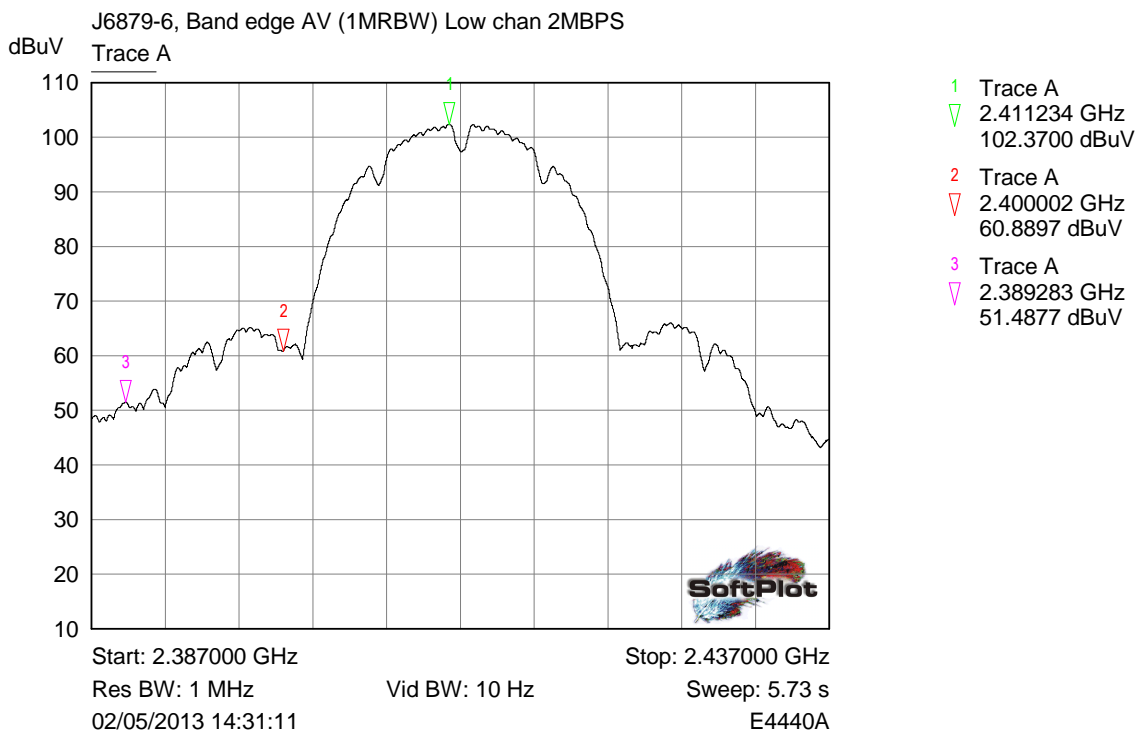
6.4.2 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 2 MBPS



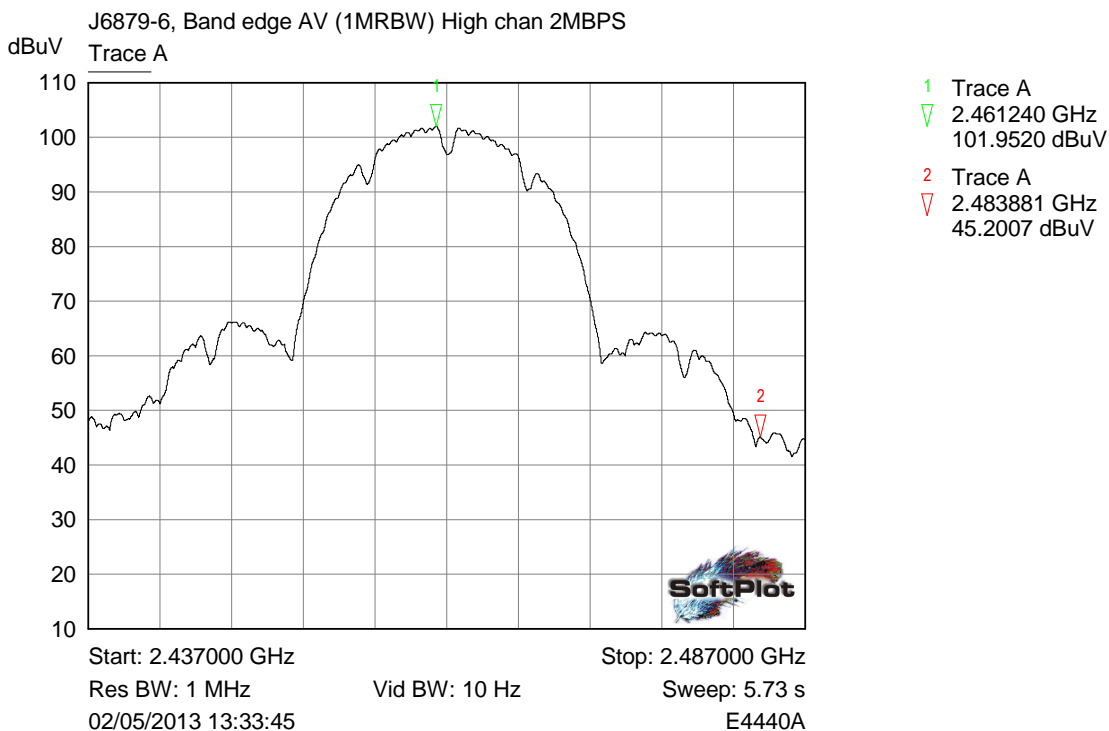
Restricted Band: Low channel Peak plot



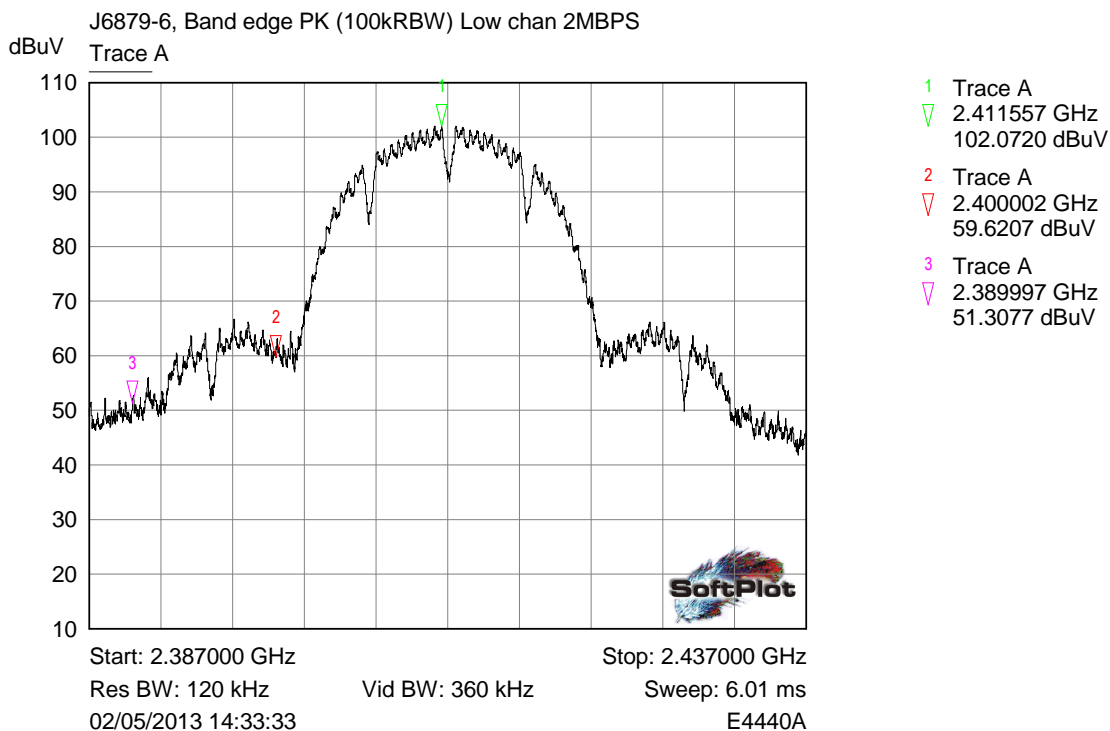
Restricted Band: High channel Peak plot



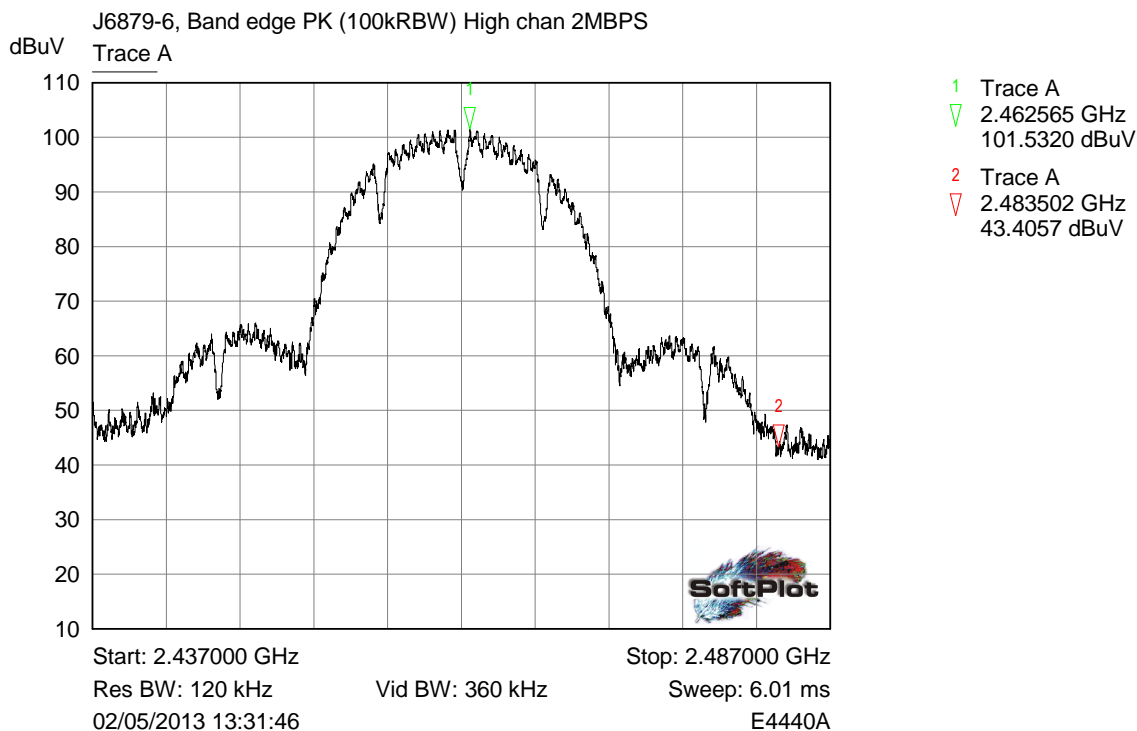
Restricted Band: Low channel Average plot



Restricted Band: High channel Average plot

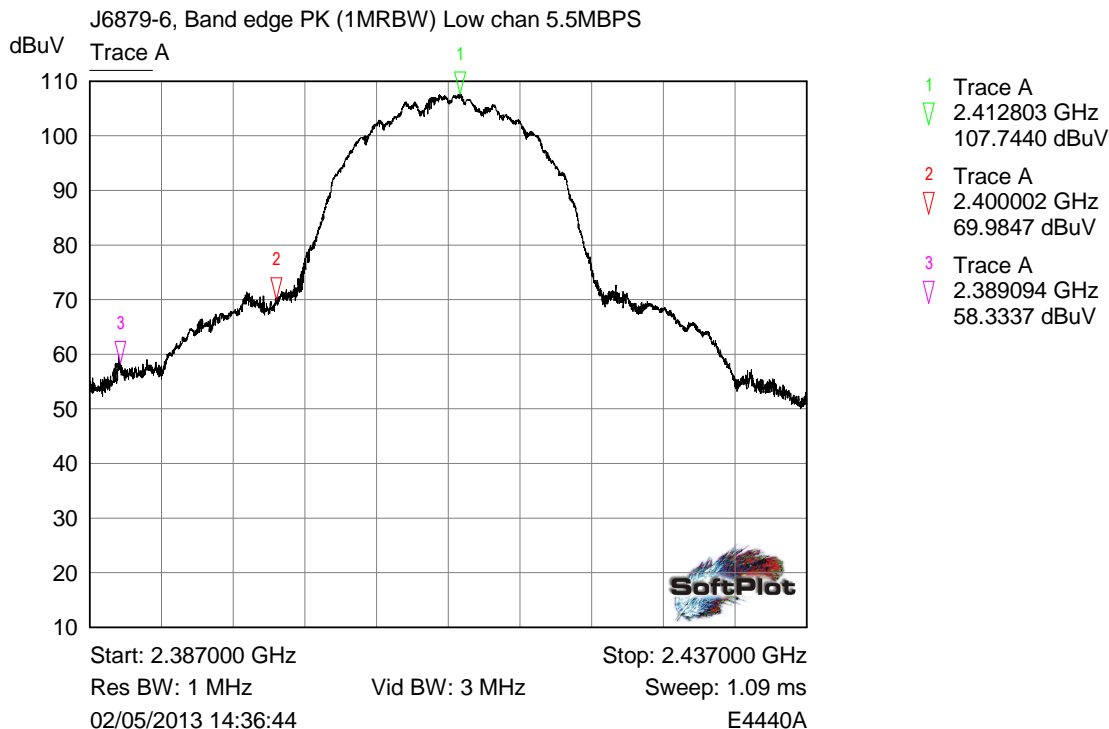


Band Edge: Low channel

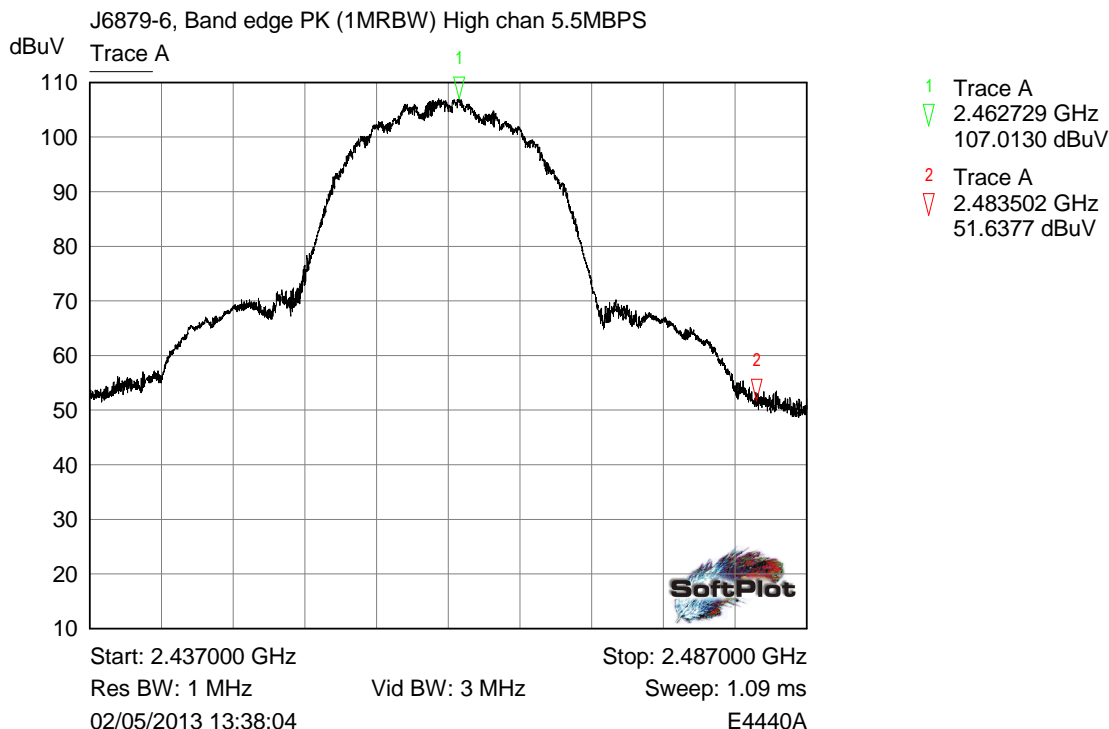


Band Edge: High channel

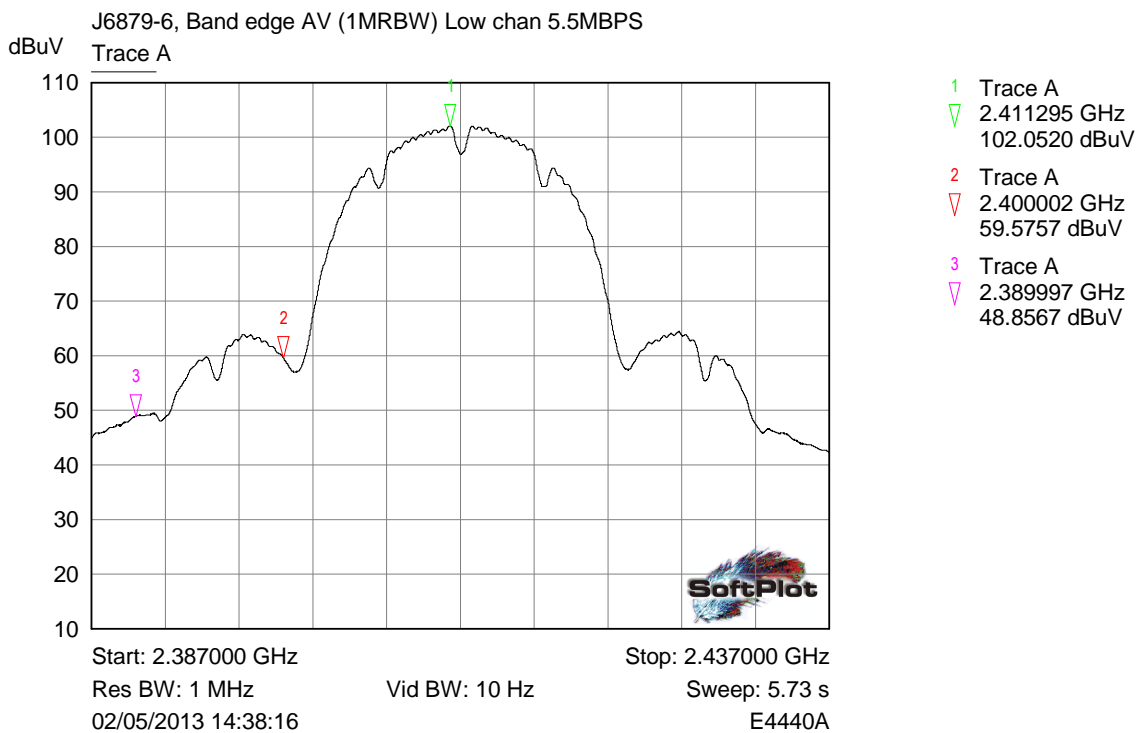
6.4.3 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 5.5 MBPS



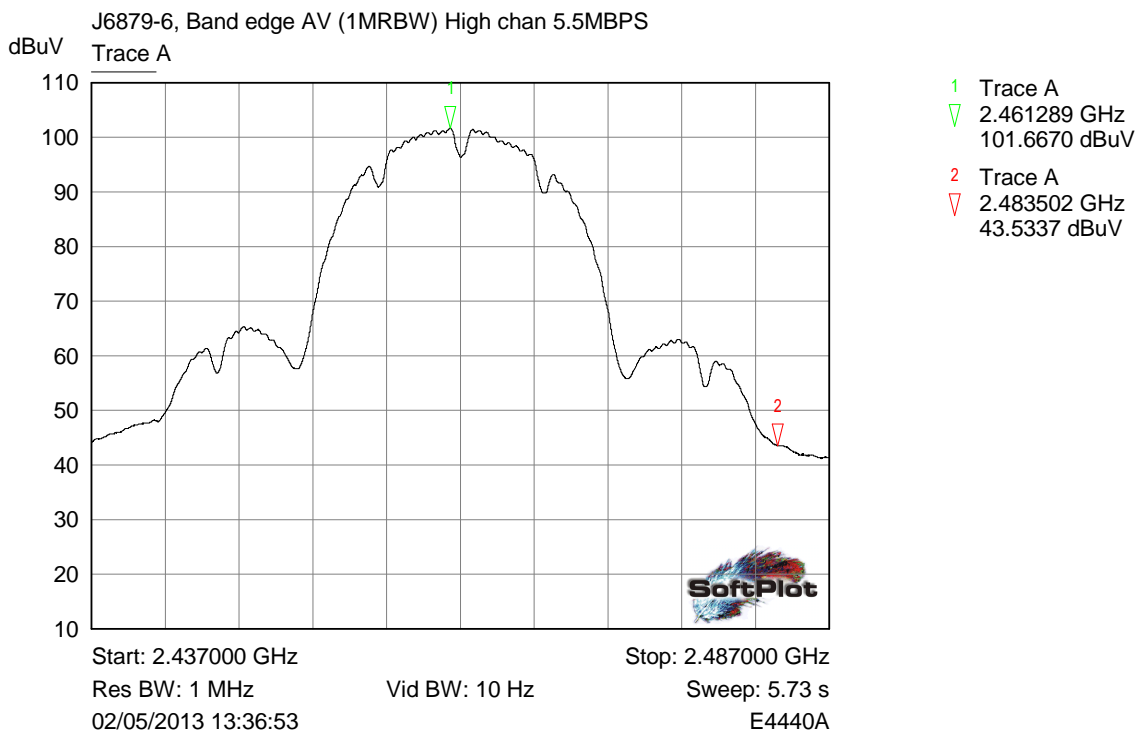
Restricted Band: Low channel Peak plot



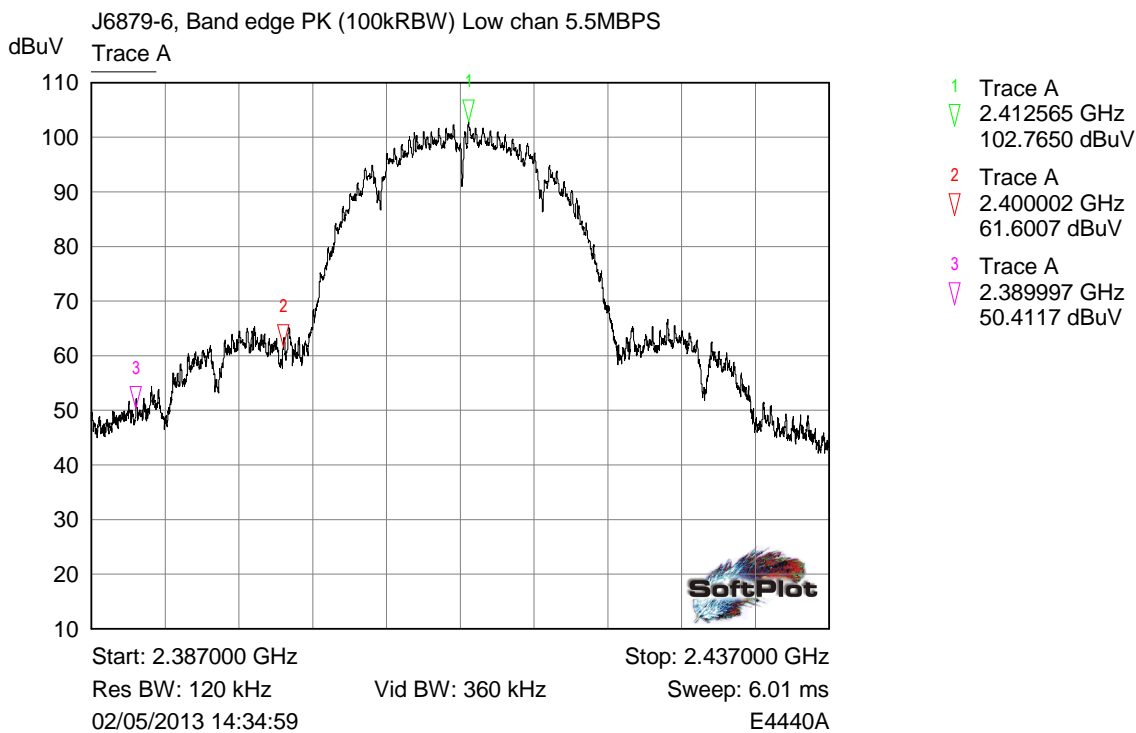
Restricted Band: High channel Peak plot



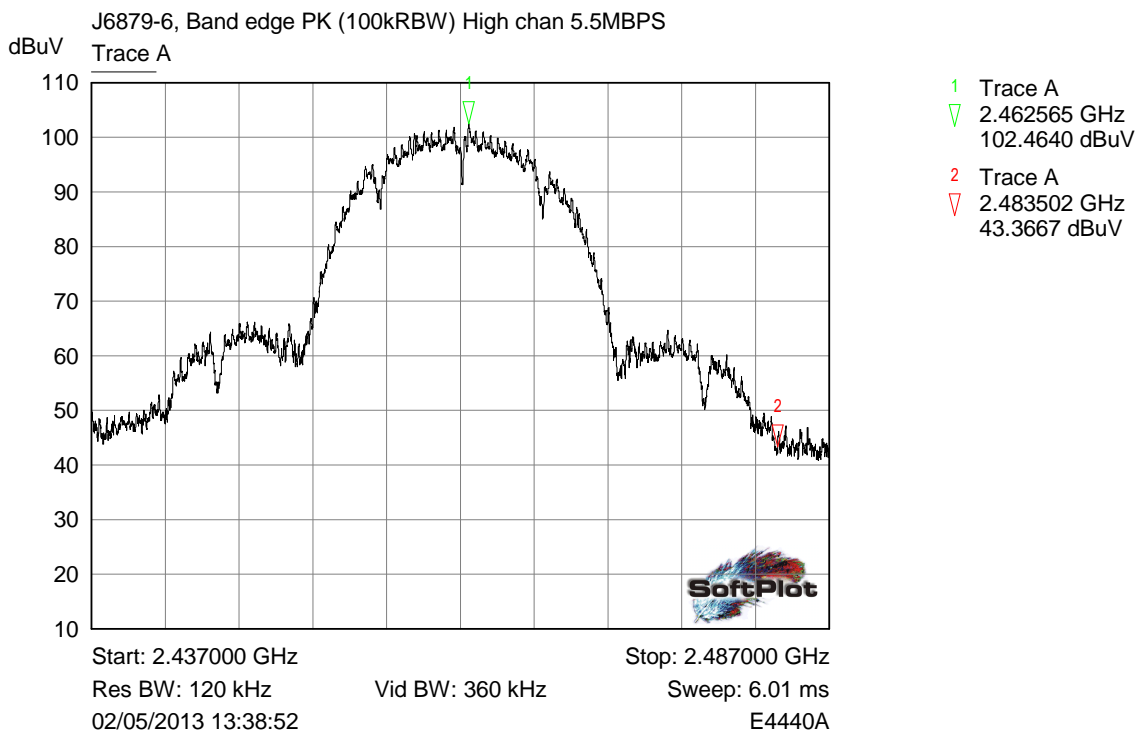
Restricted Band: Low channel Average plot



Restricted Band: High channel Average plot

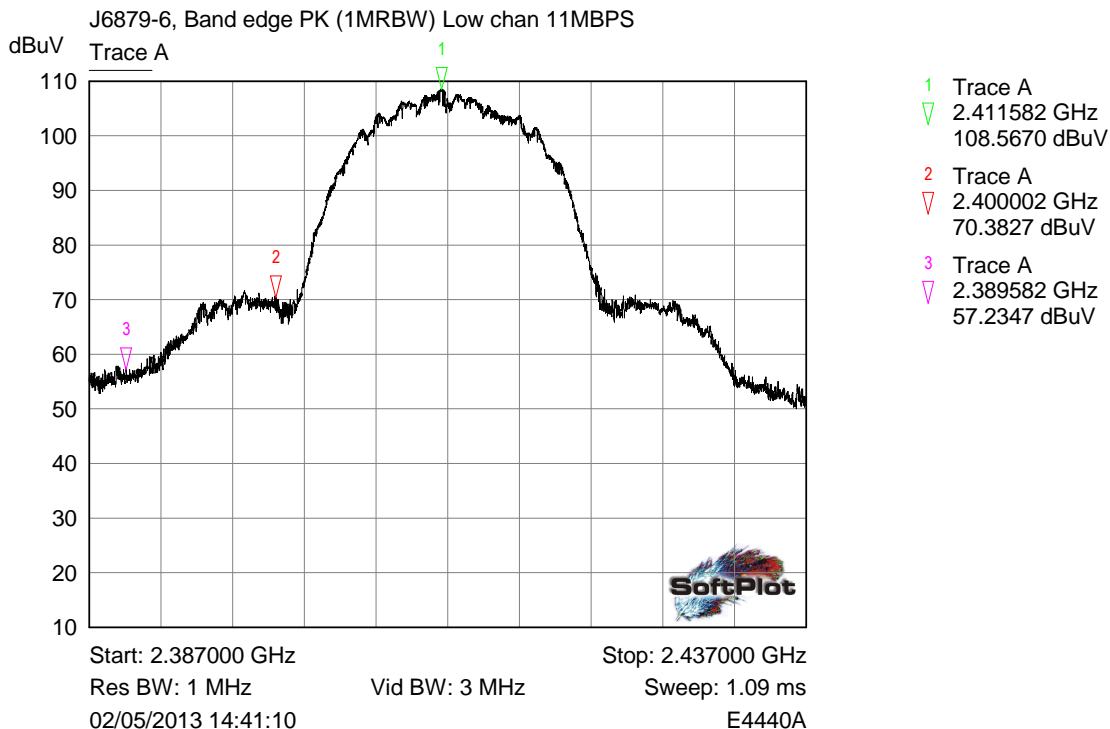


Band Edge: Low channel

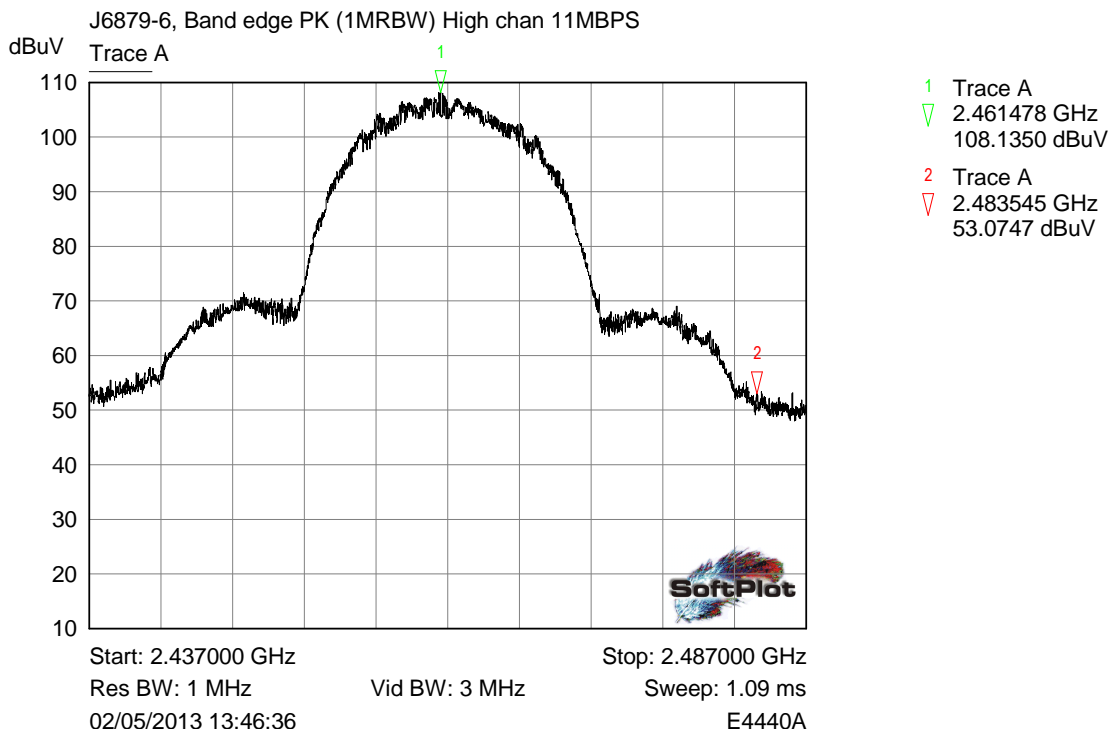


Band Edge: High channel

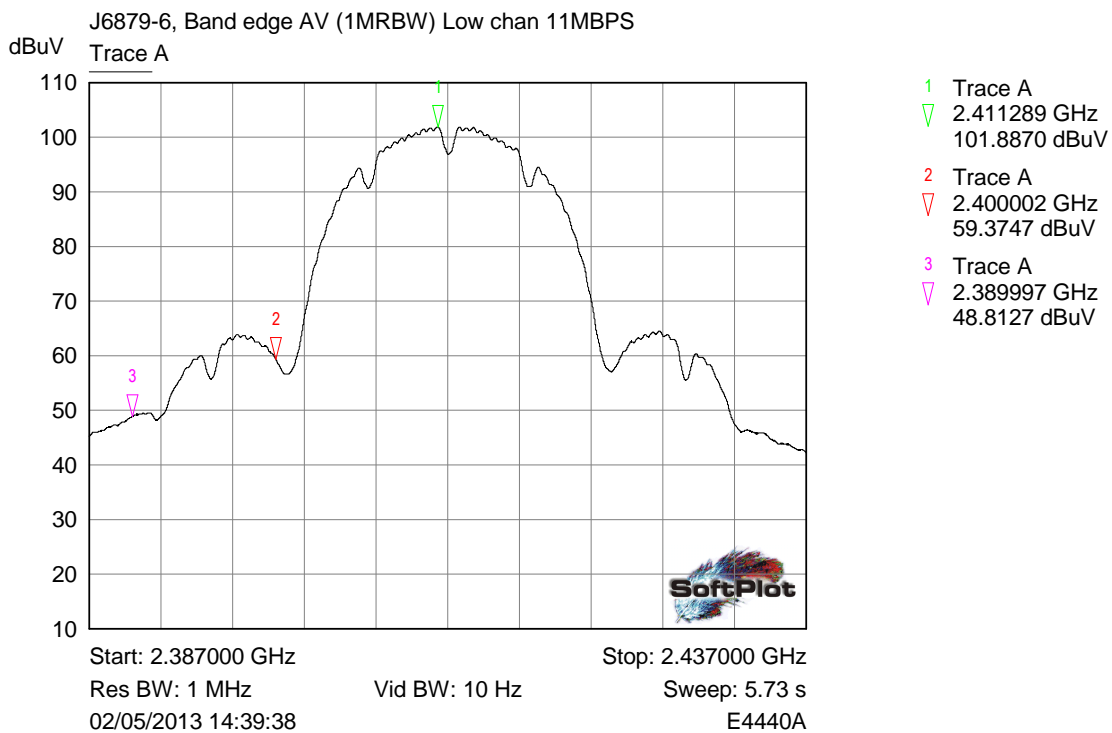
6.4.4 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 11 MBPS



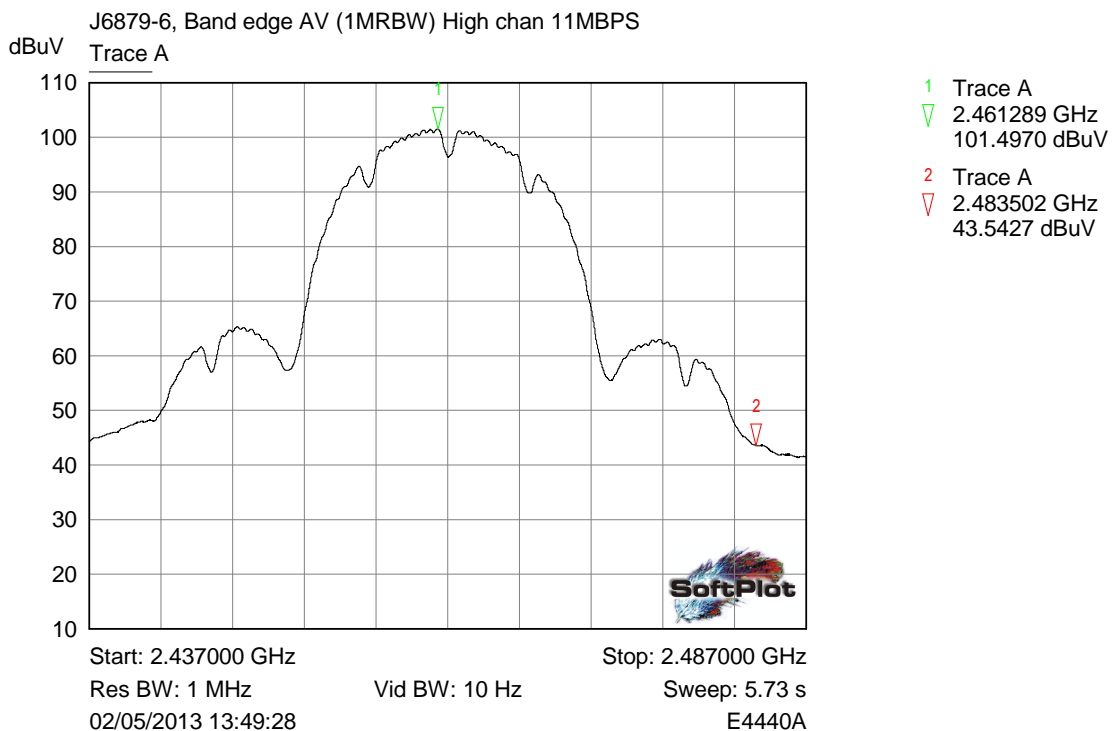
Restricted Band: Low channel Peak plot



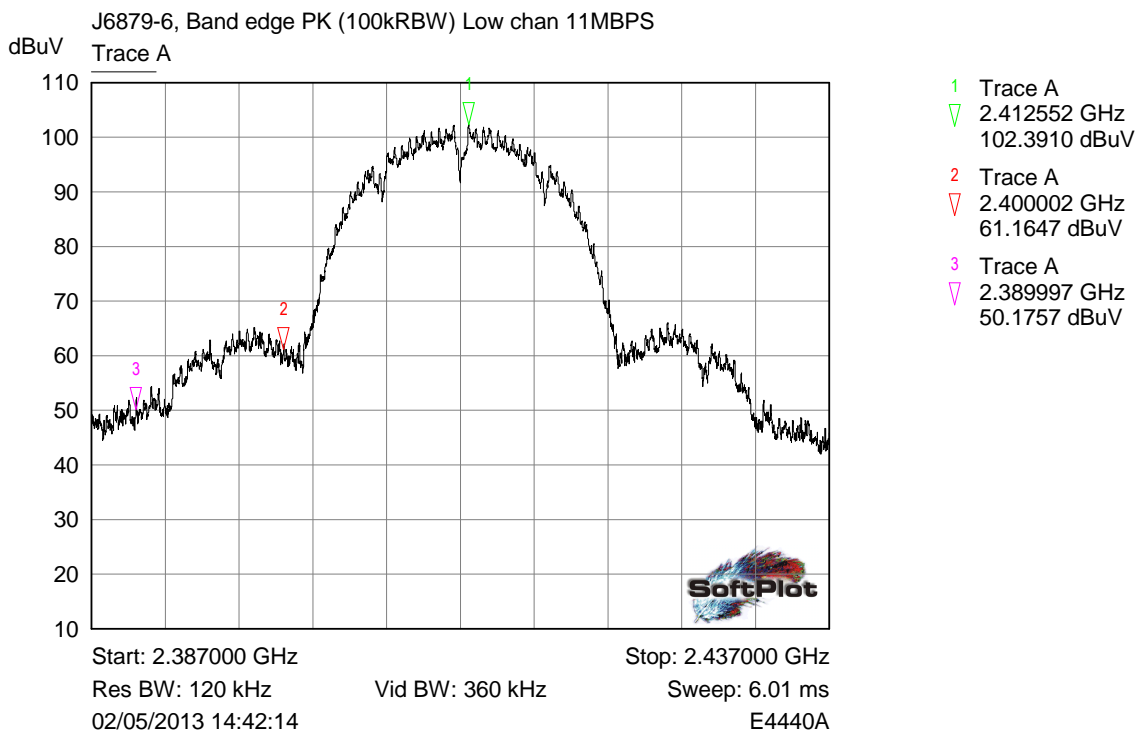
Restricted Band: High channel Peak plot



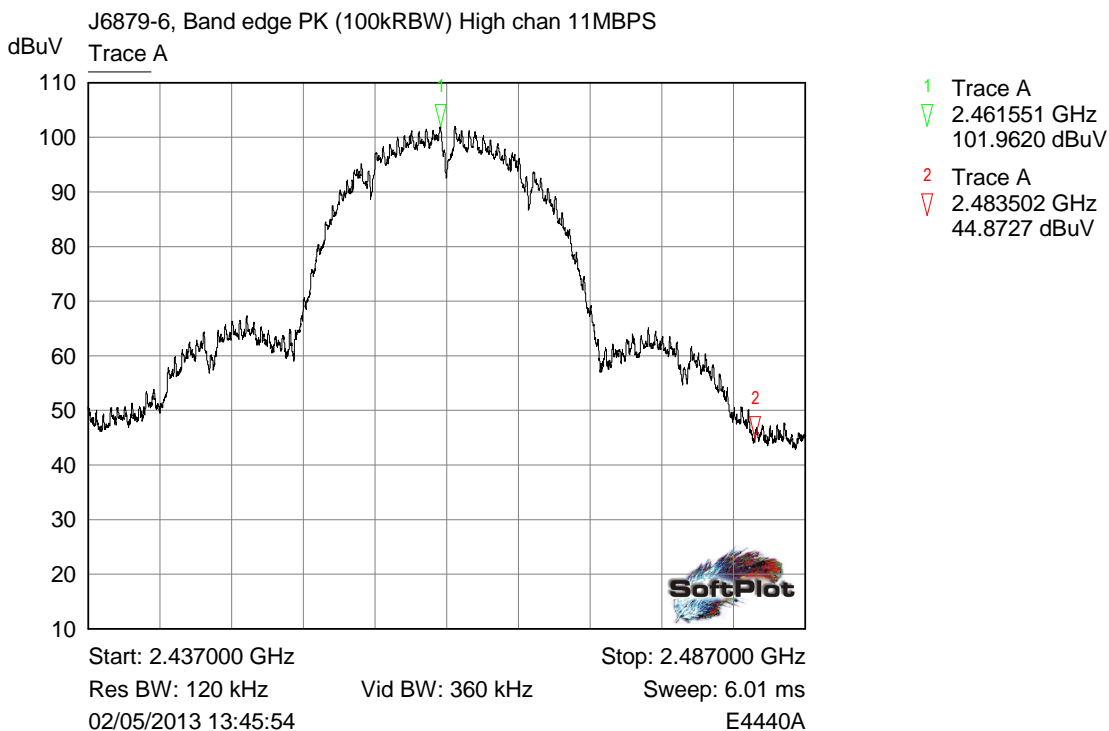
Restricted Band: Low channel Average plot



Restricted Band: High channel Average plot

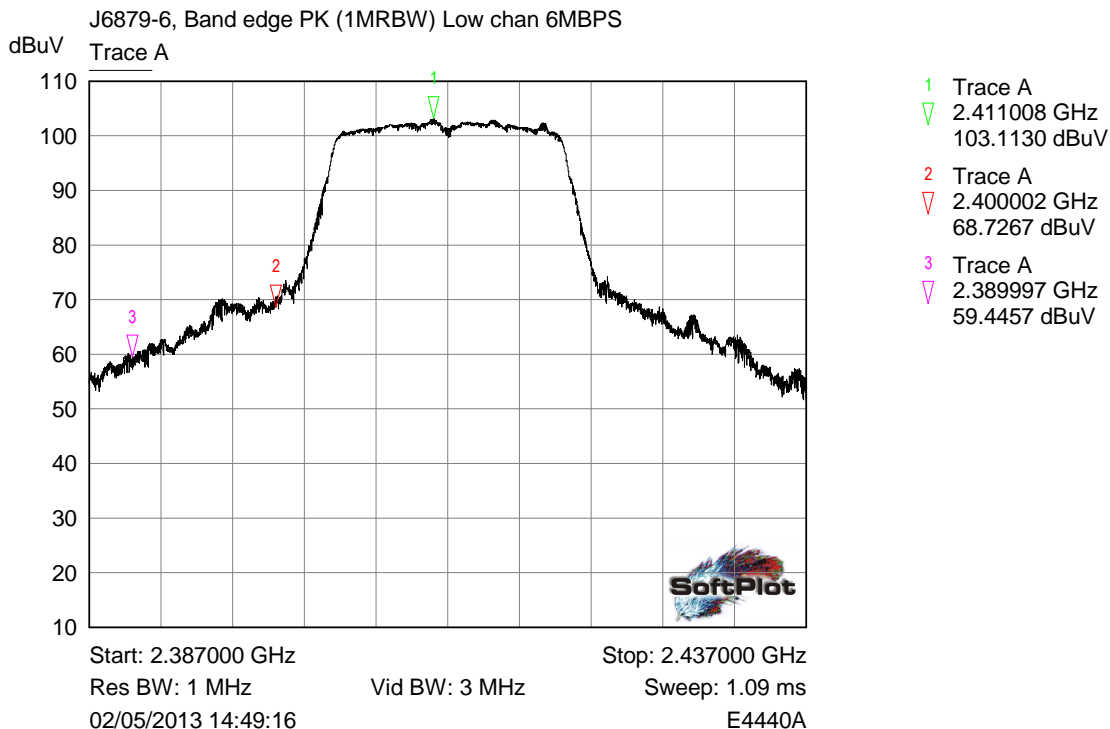


Band Edge: Low channel

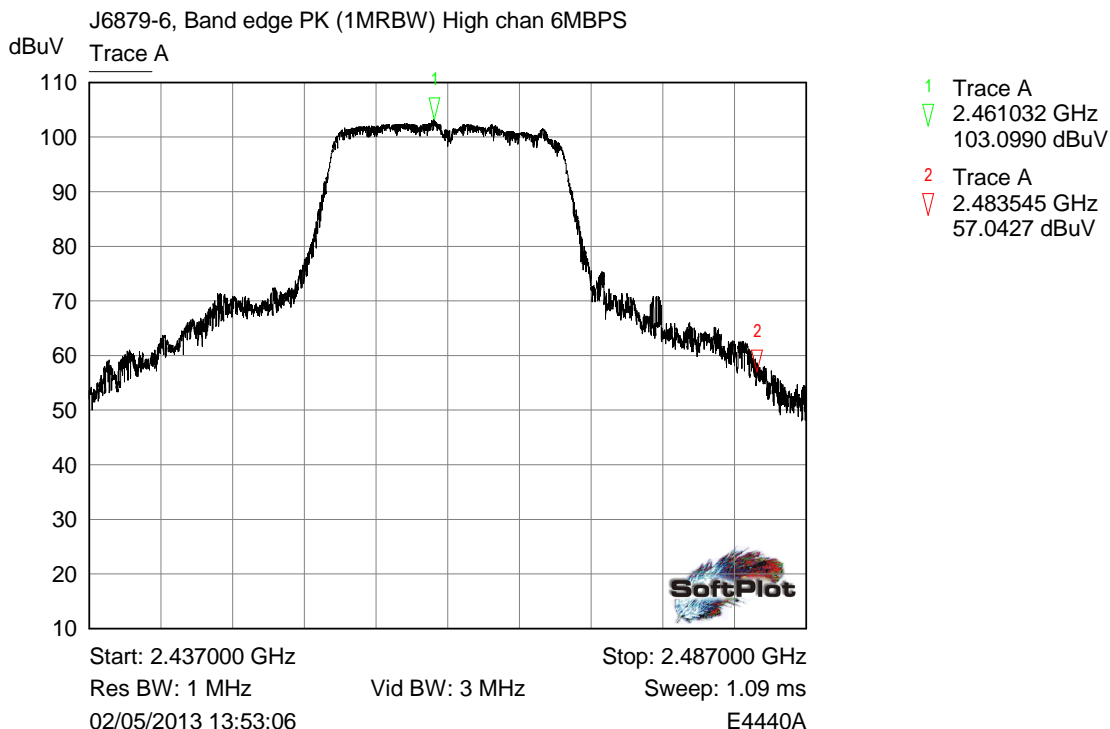


Band Edge: High channel

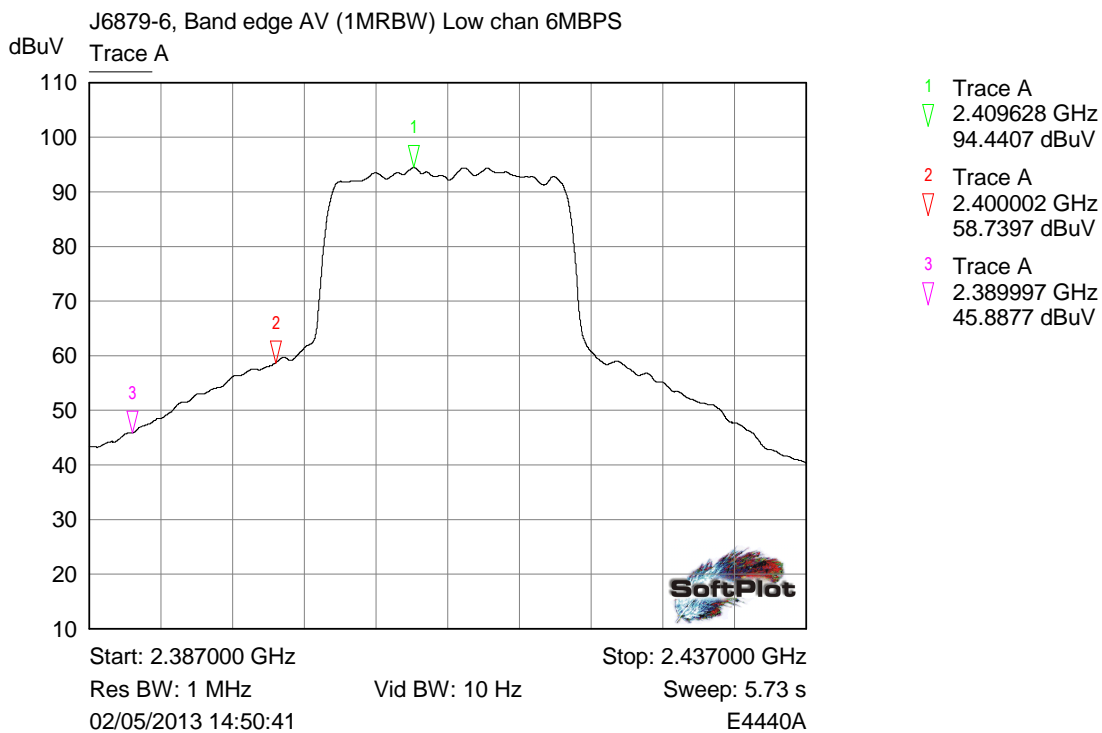
6.4.5 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 6 MBPS



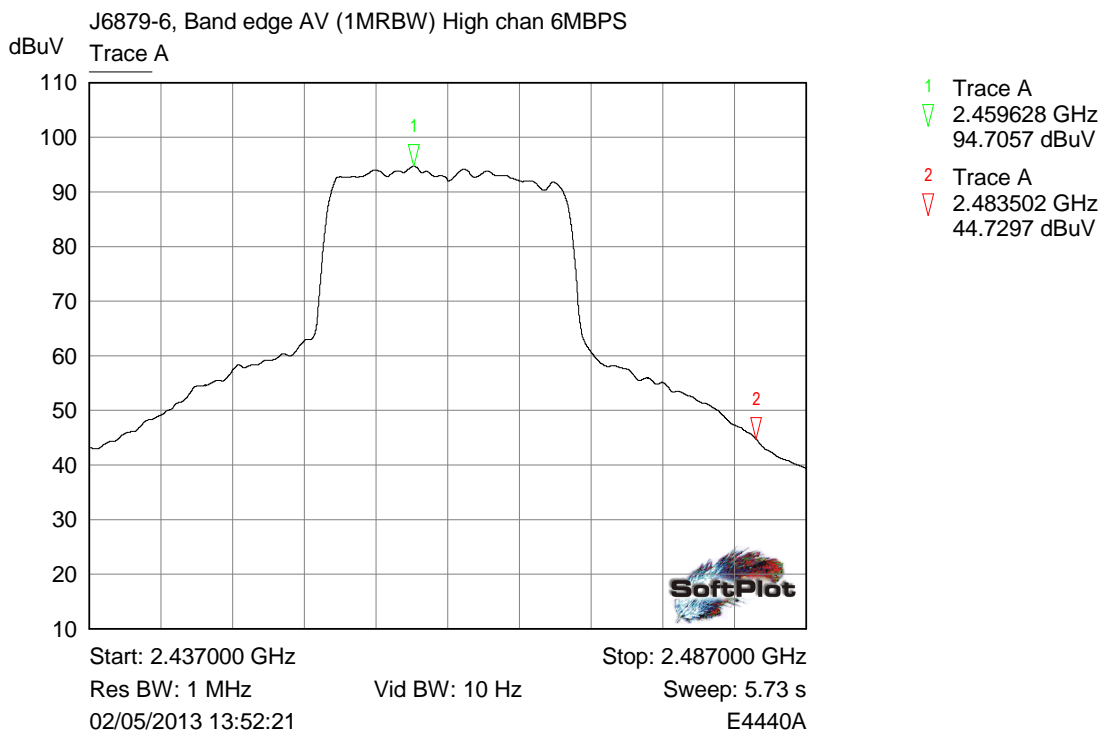
Restricted Band: Low channel Peak plot



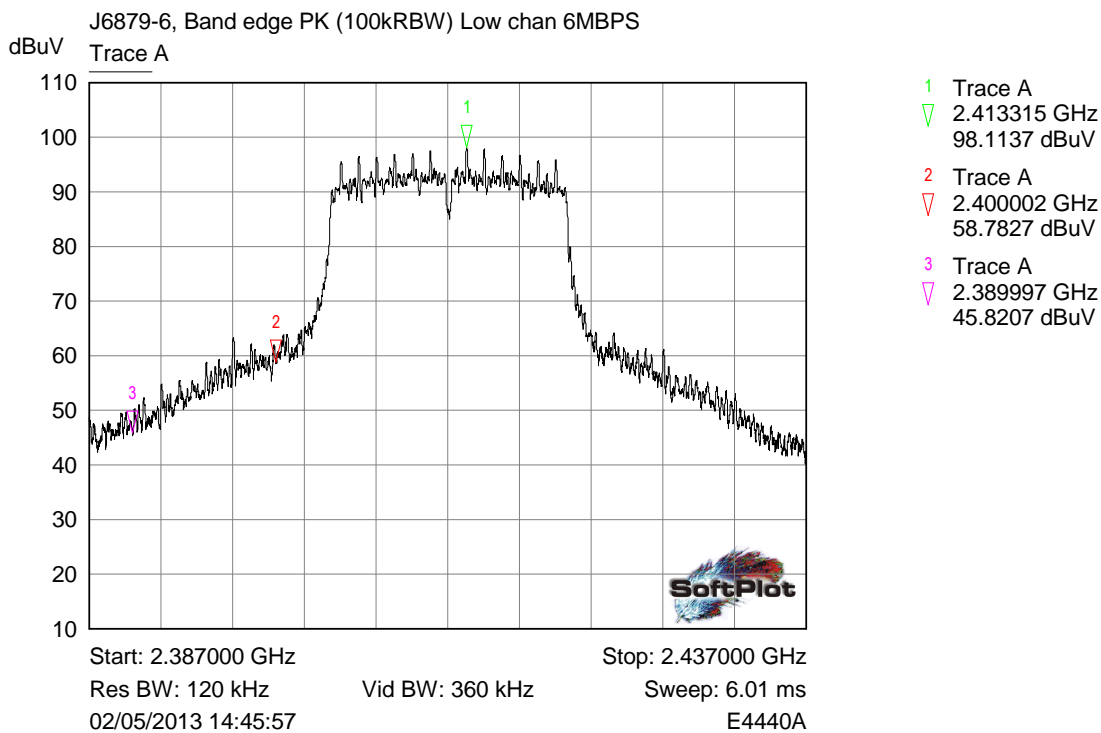
Restricted Band: High channel Peak plot



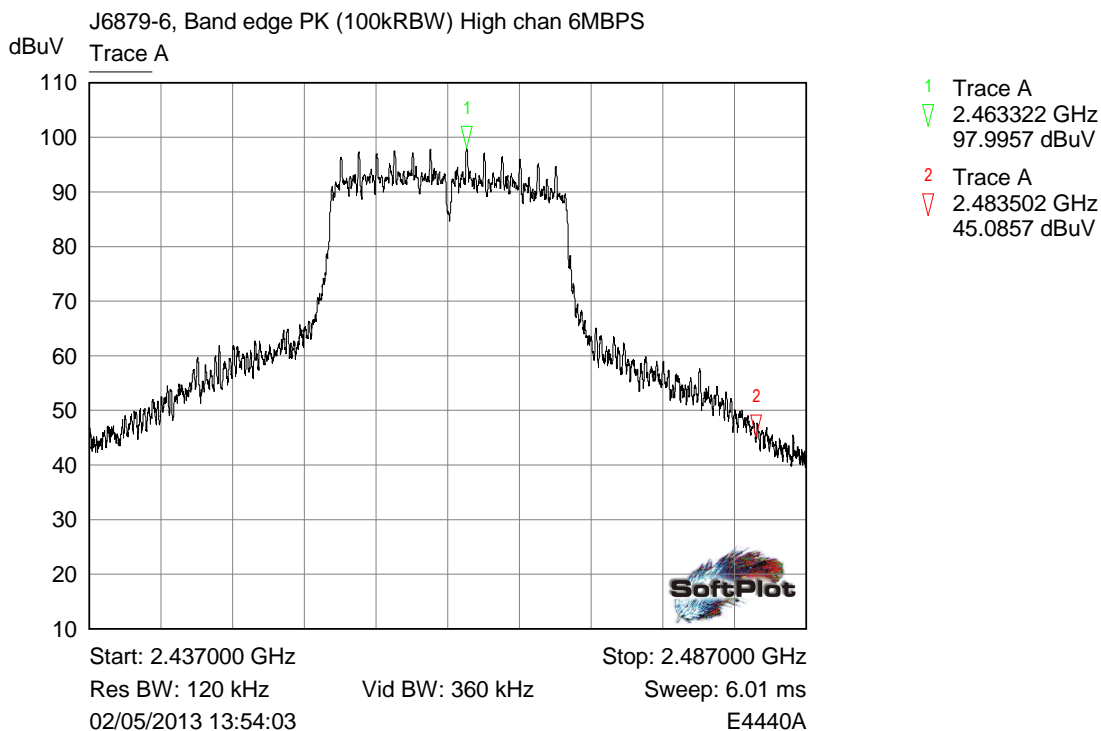
Restricted Band: Low channel Average plot



Restricted Band: High channel Average plot

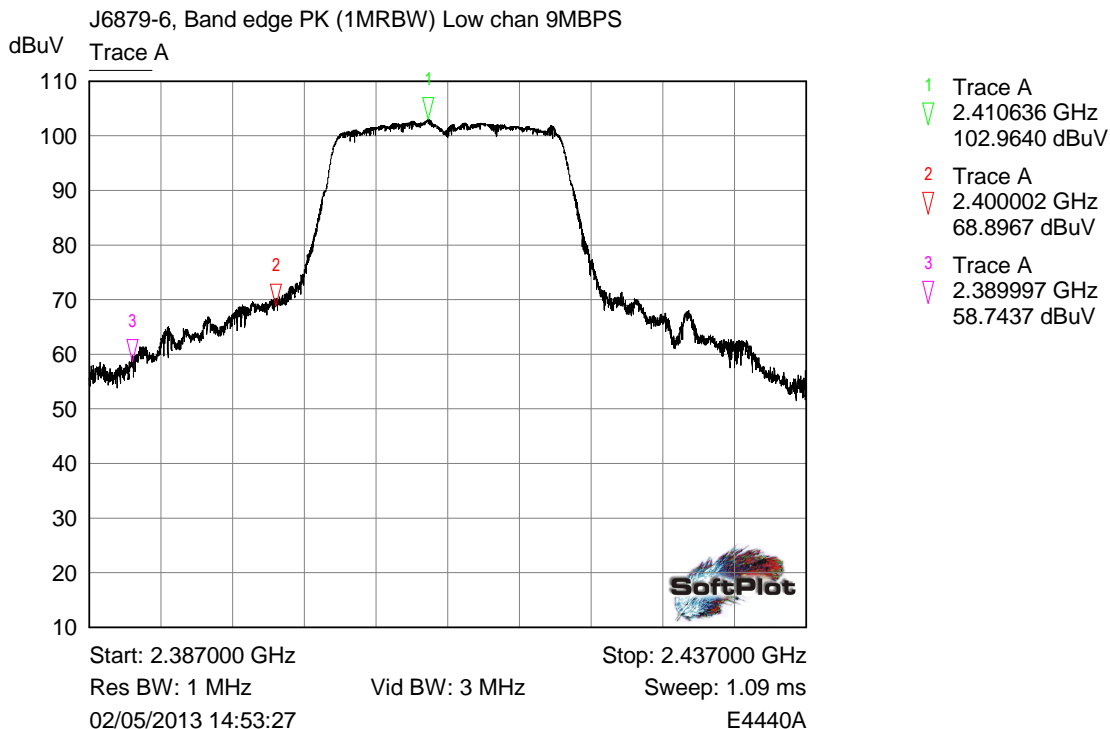


Band Edge: Low channel

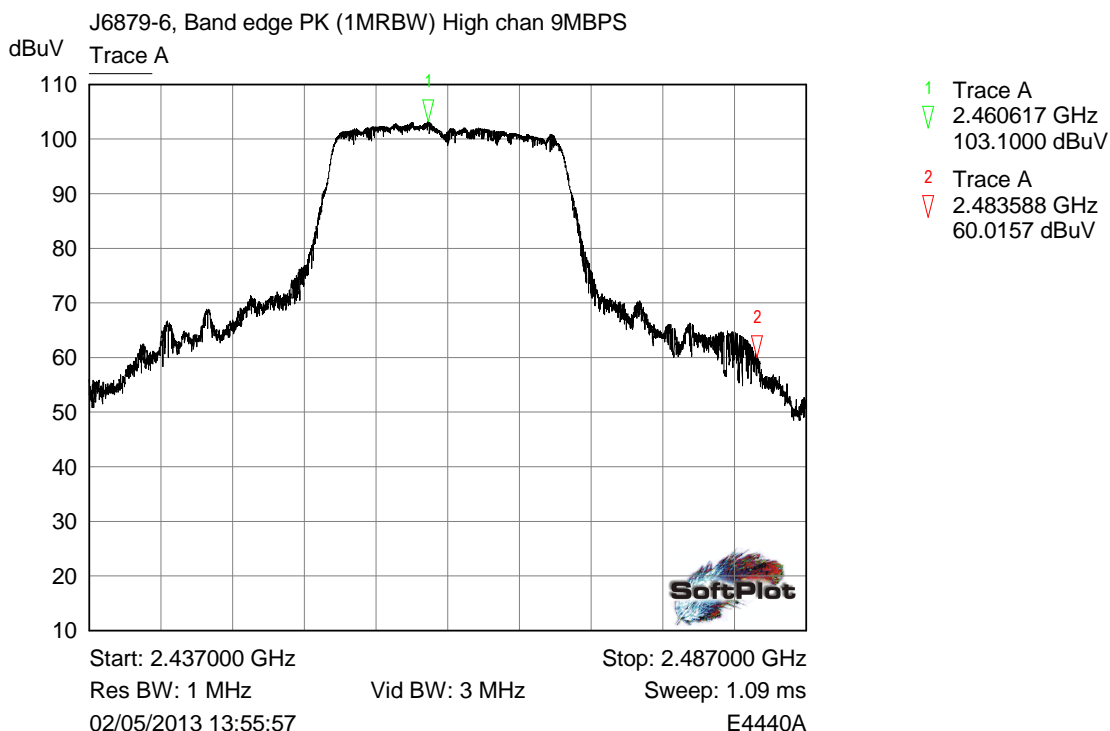


Band Edge: High channel

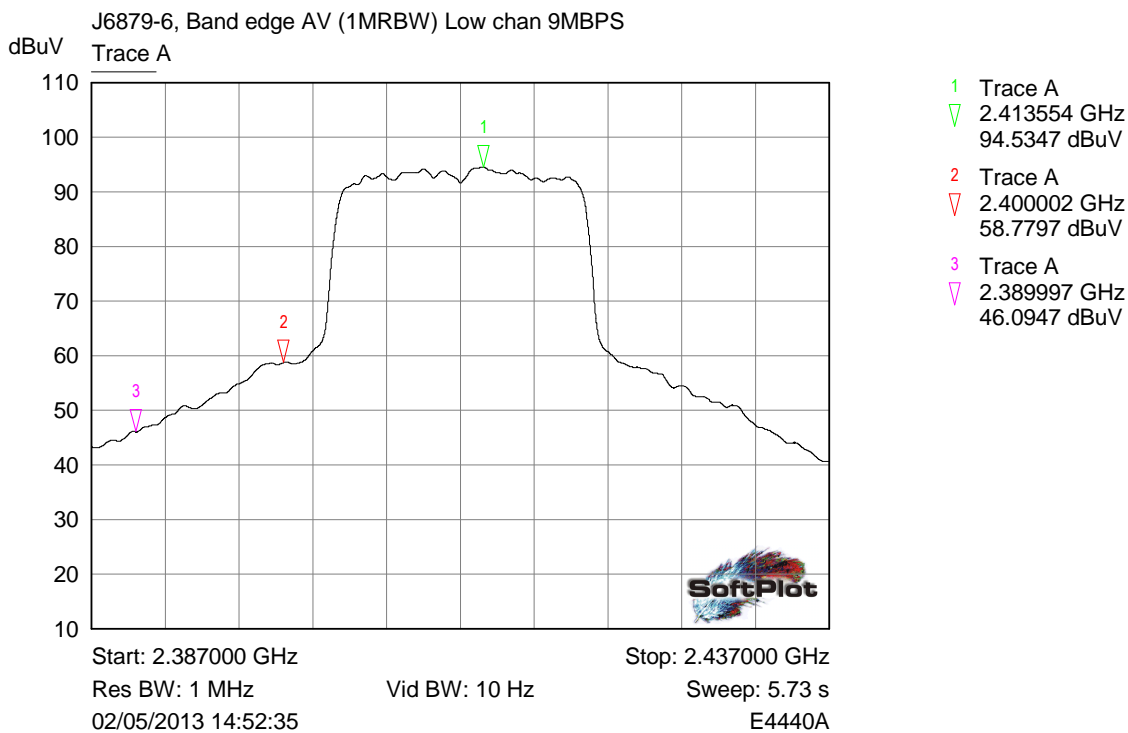
6.4.6 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 9 MBPS



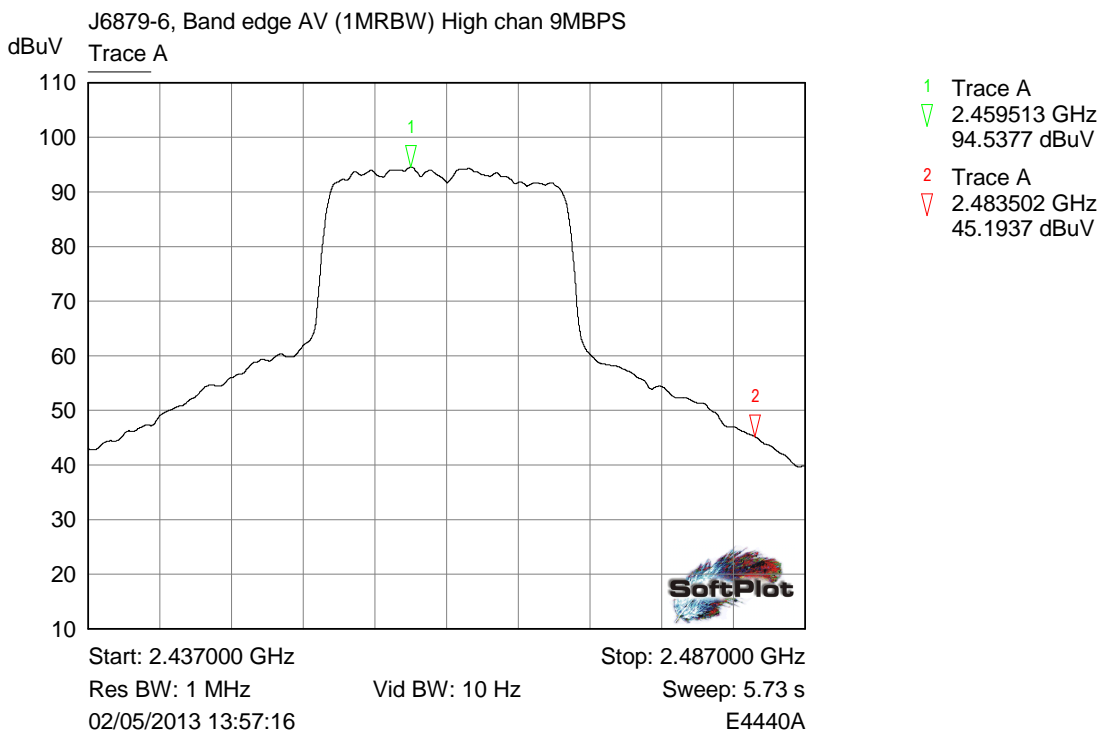
Restricted Band: Low channel Peak plot



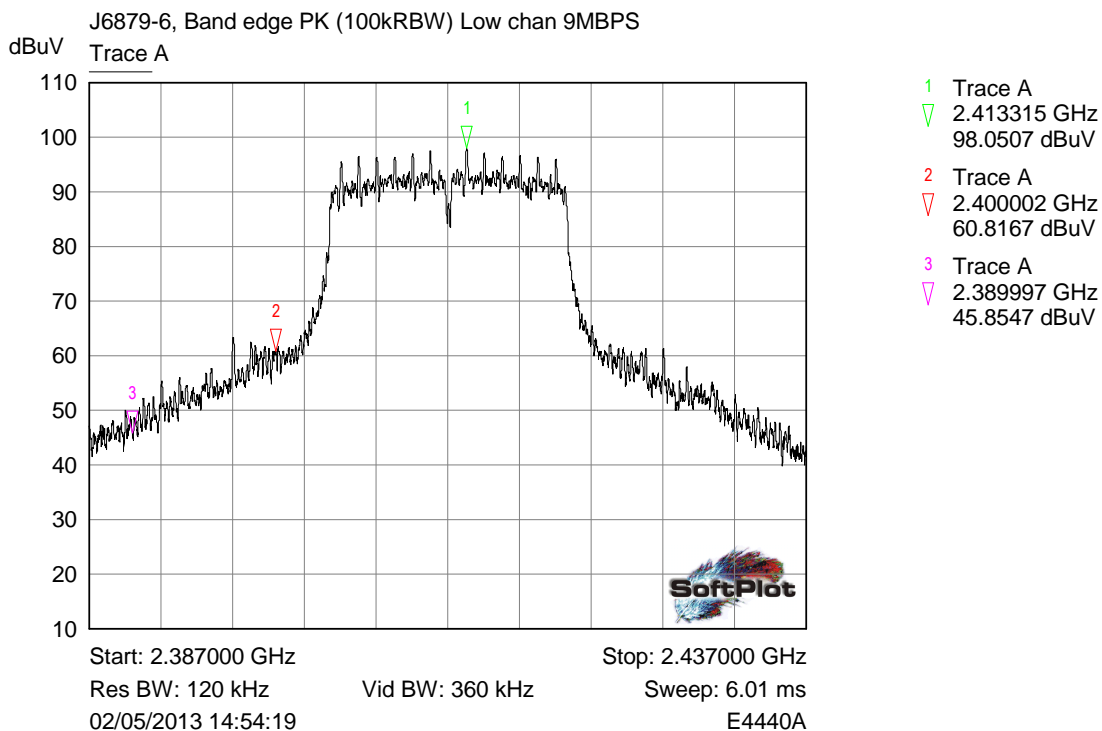
Restricted Band: High channel Peak plot



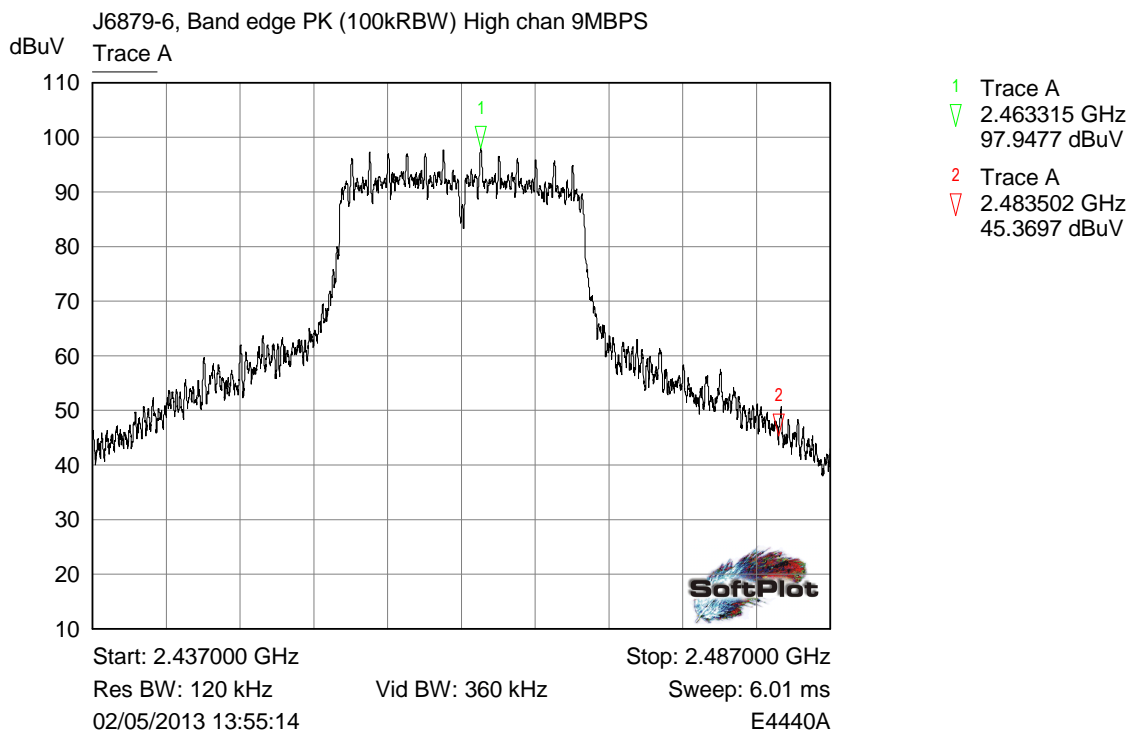
Restricted Band: Low channel Average plot



Restricted Band: High channel Average plot

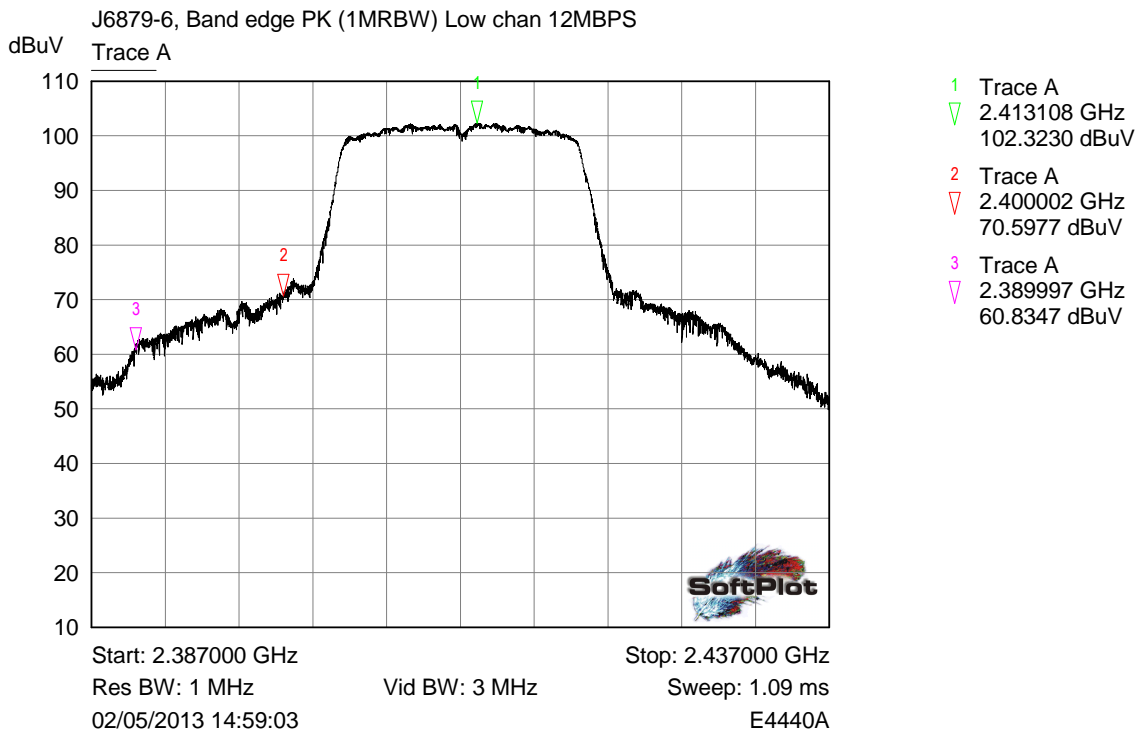


Band Edge: Low channel

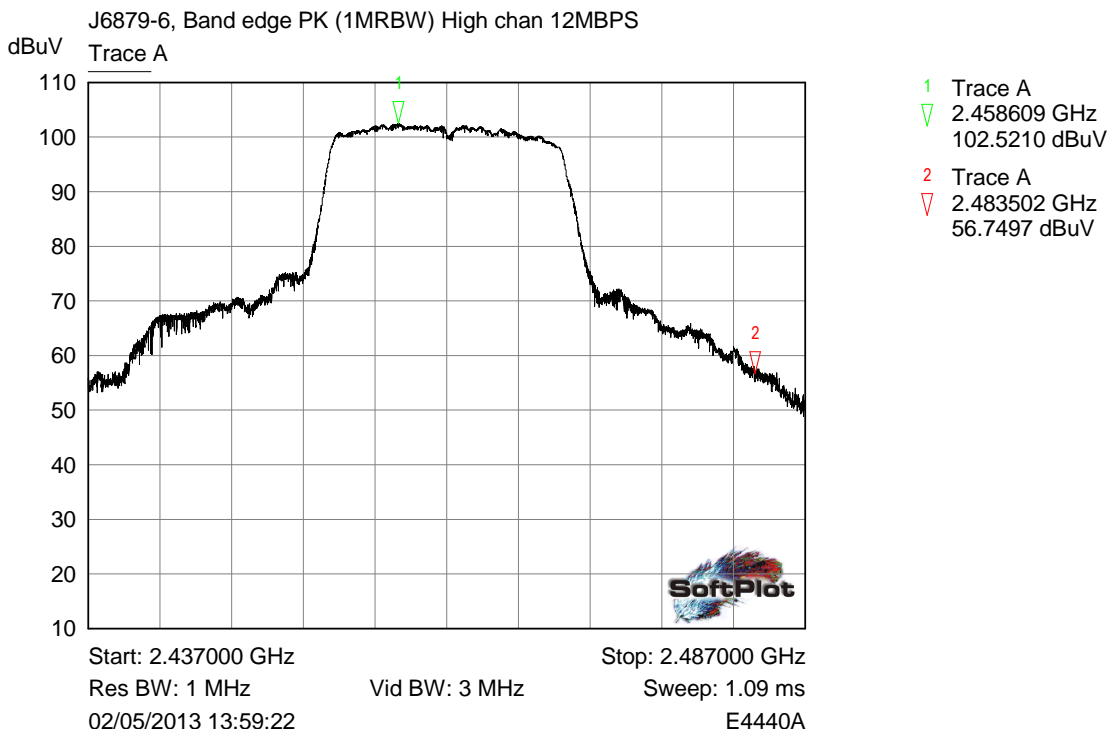


Band Edge: High channel

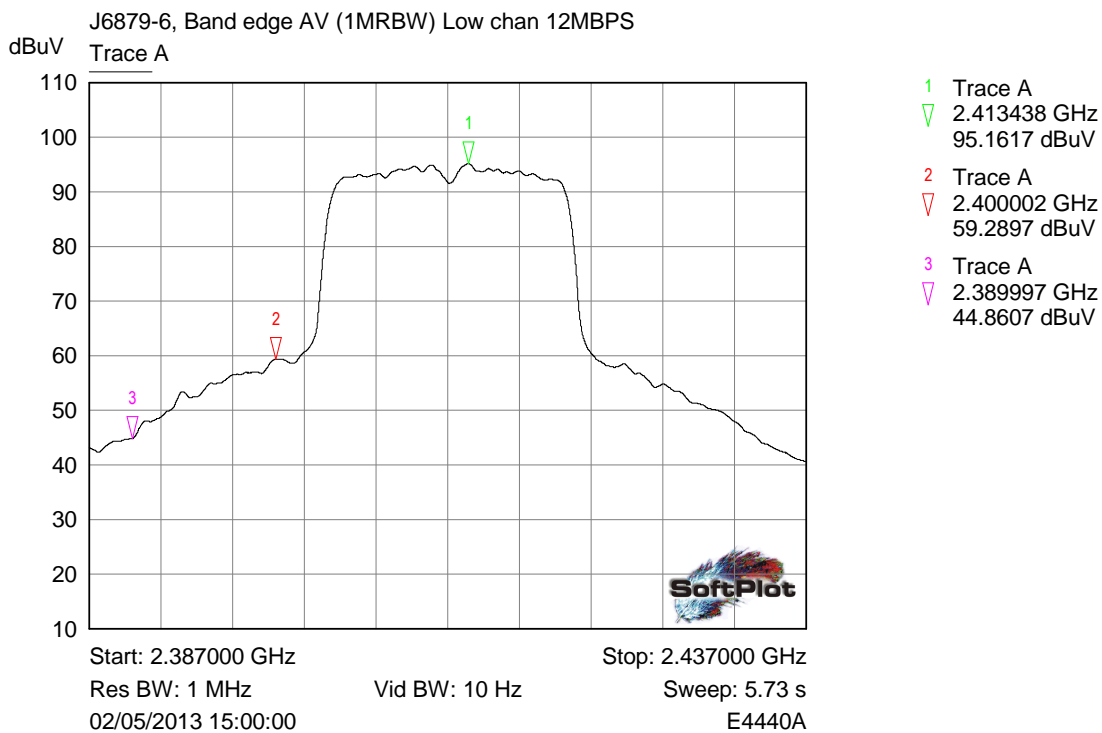
6.4.7 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 12 MBPS



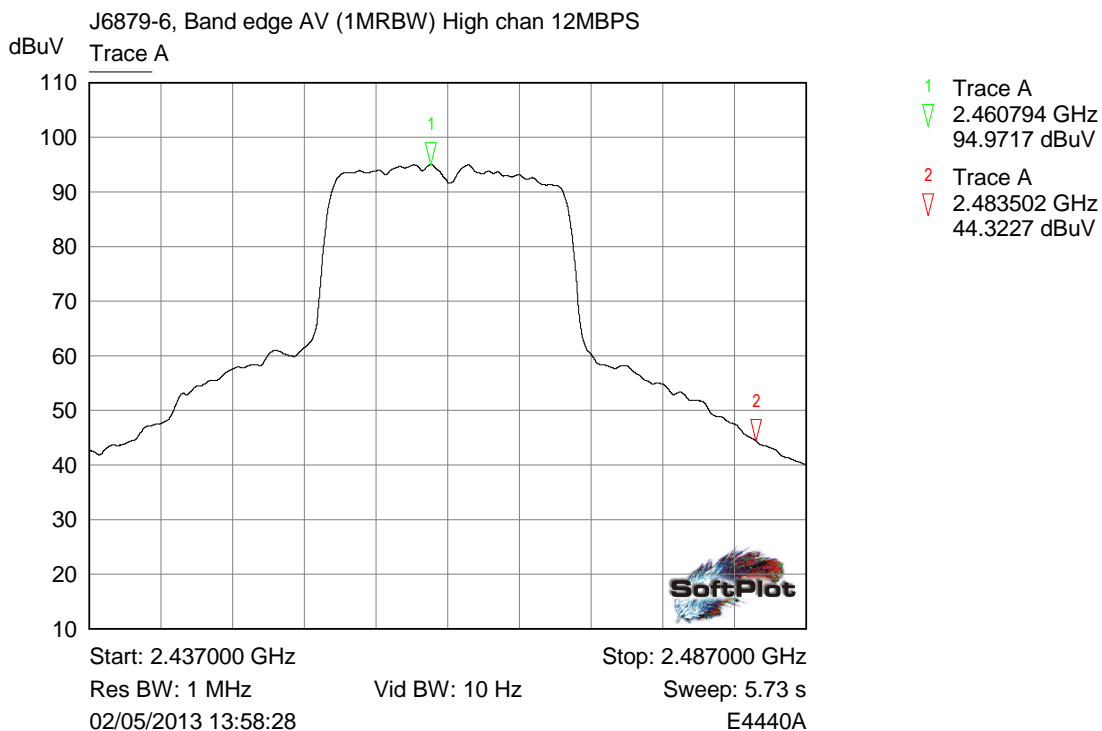
Restricted Band: Low channel Peak plot



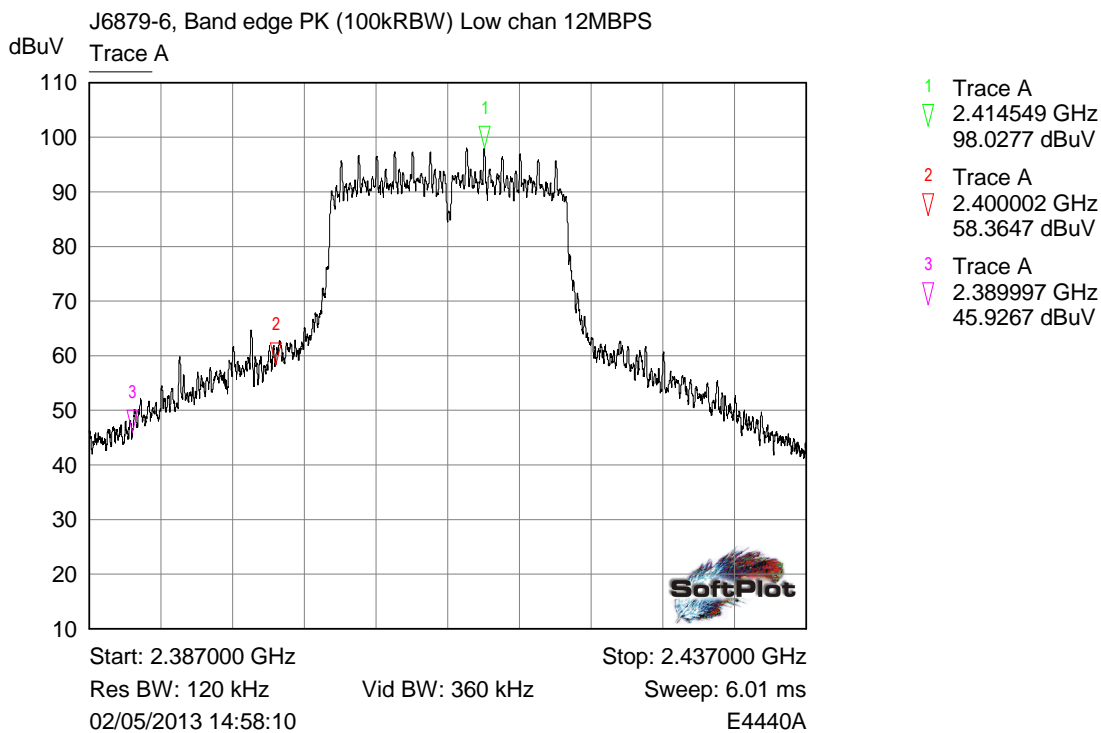
Restricted Band: High channel Peak plot



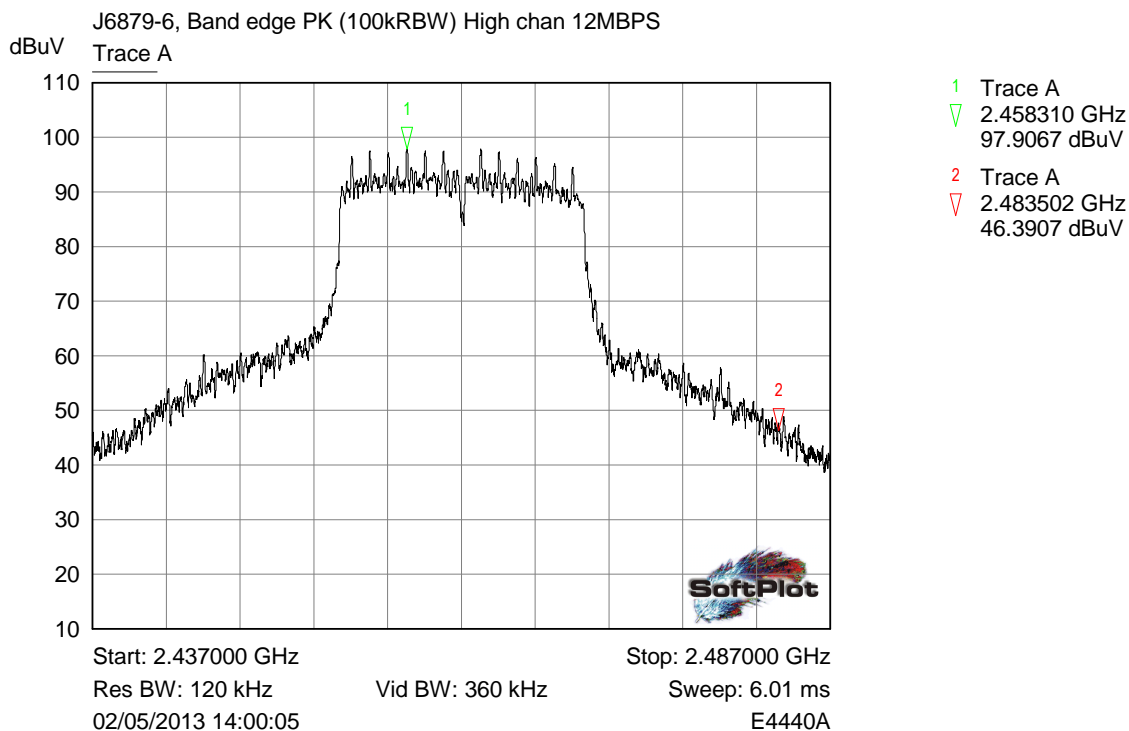
Restricted Band: Low channel Average plot



Restricted Band: High channel Average plot

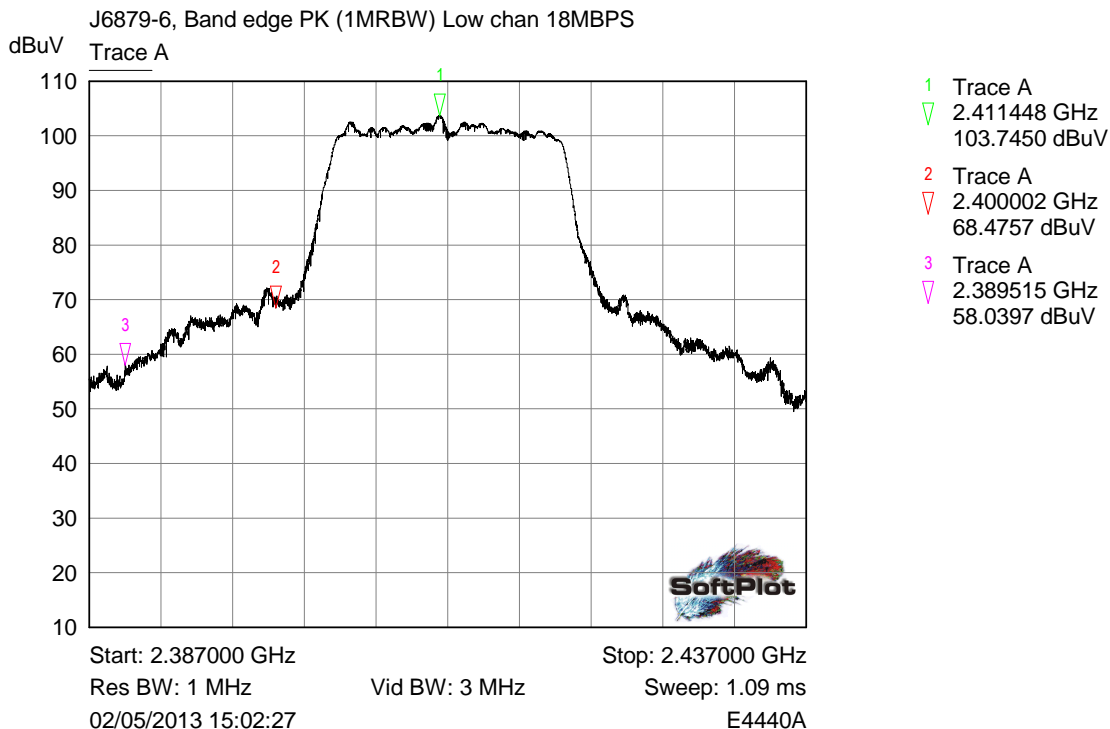


Band Edge: Low channel

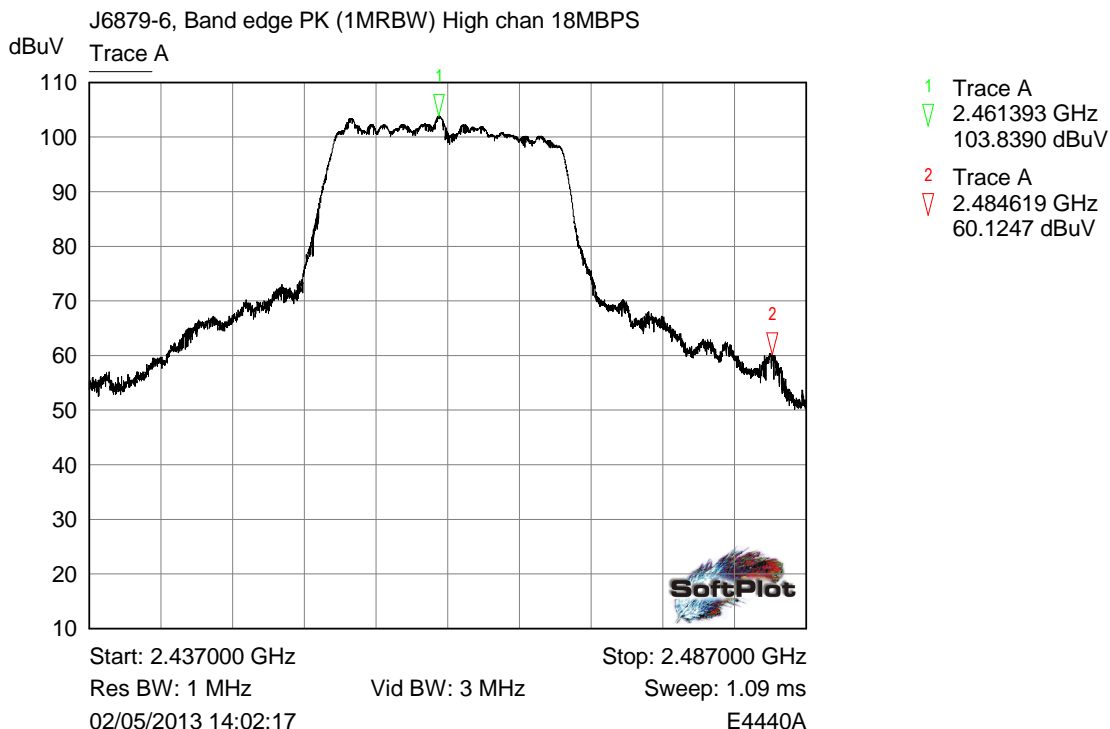


Band Edge: High channel

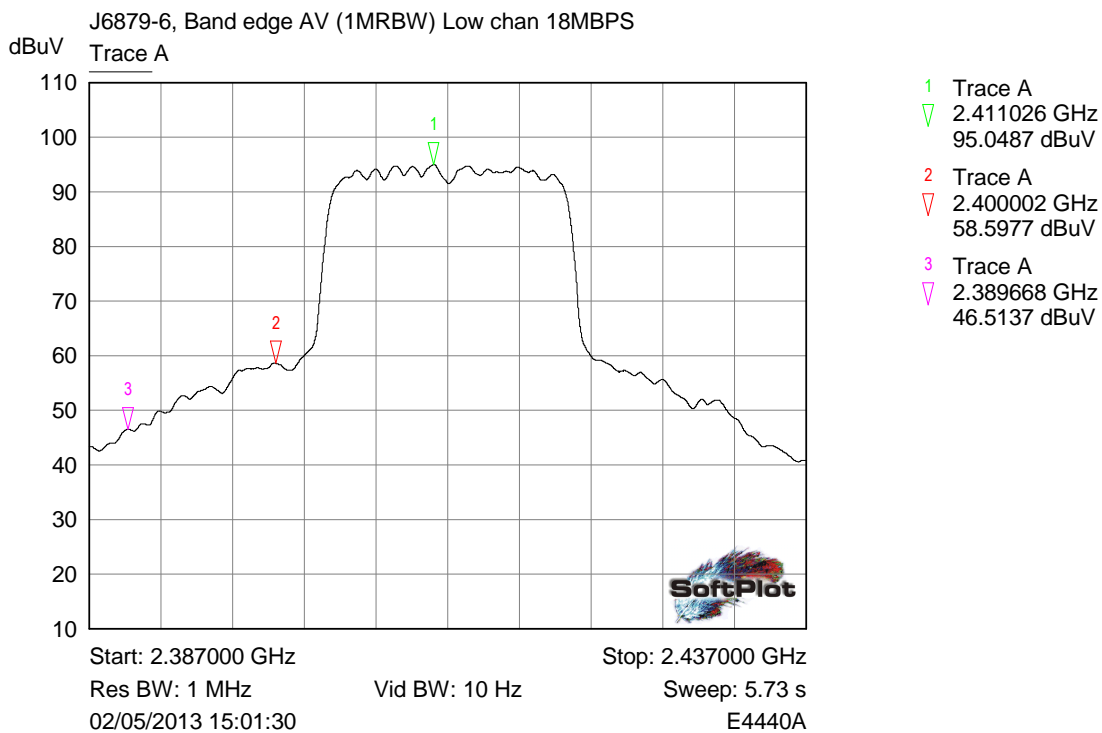
6.4.8 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 18 MBPS



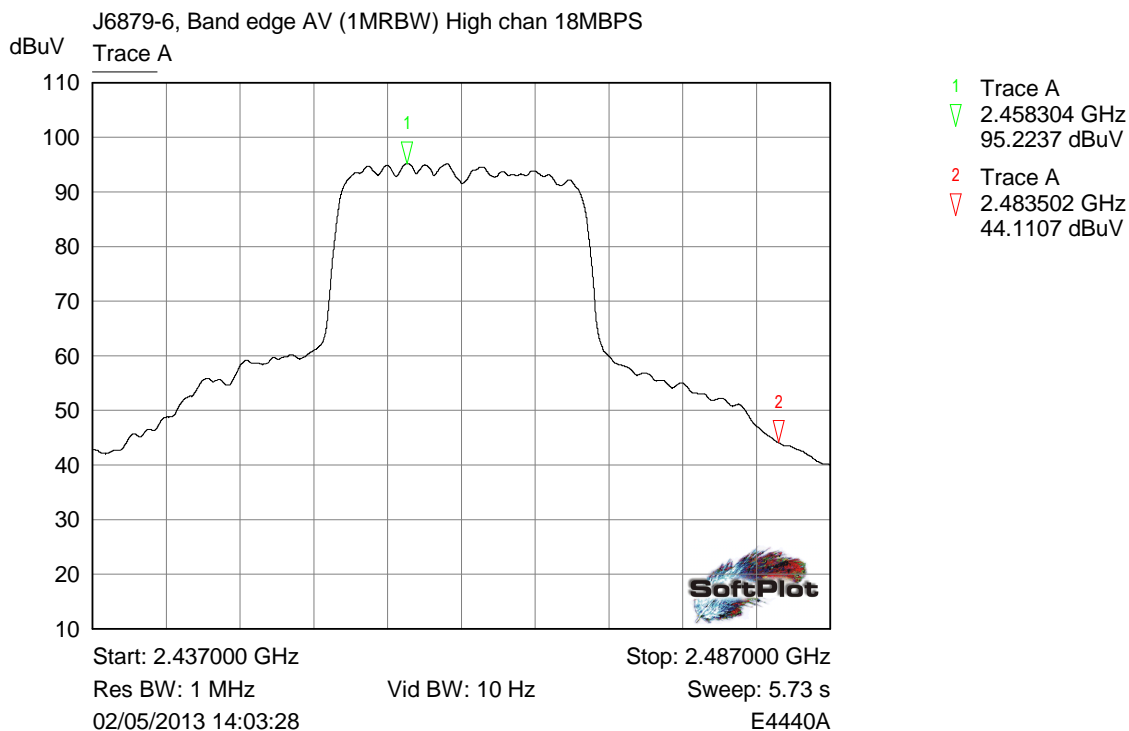
Restricted Band: Low channel Peak plot



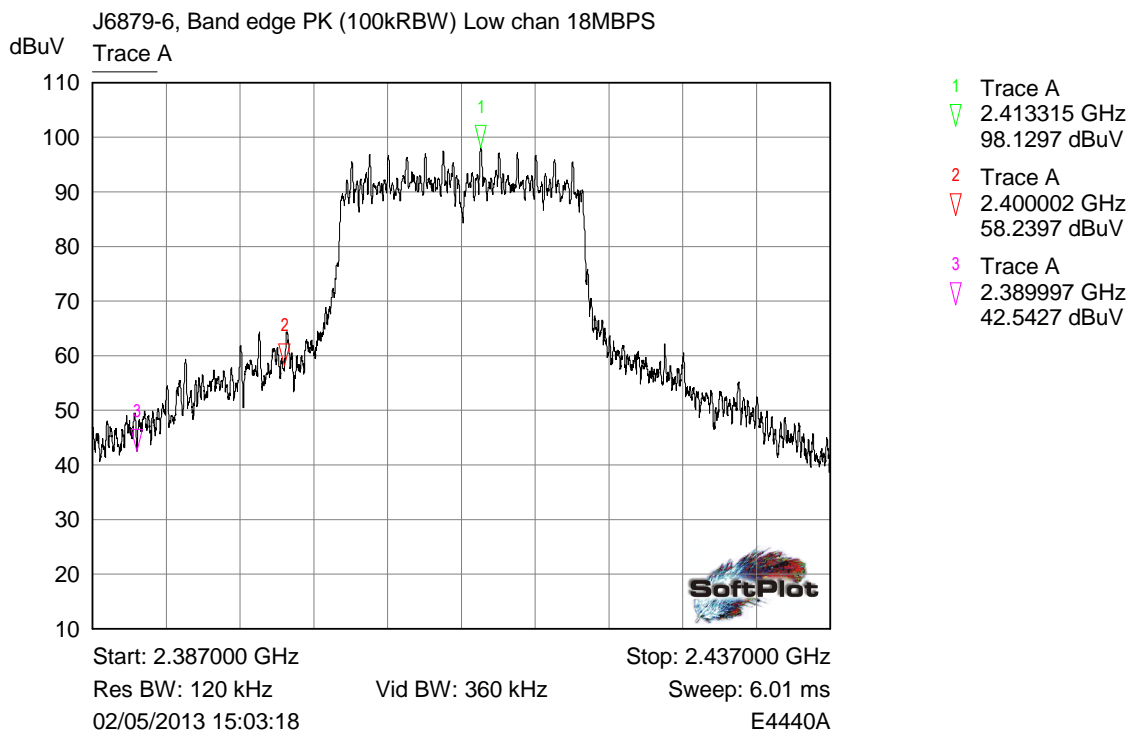
Restricted Band: High channel Peak plot



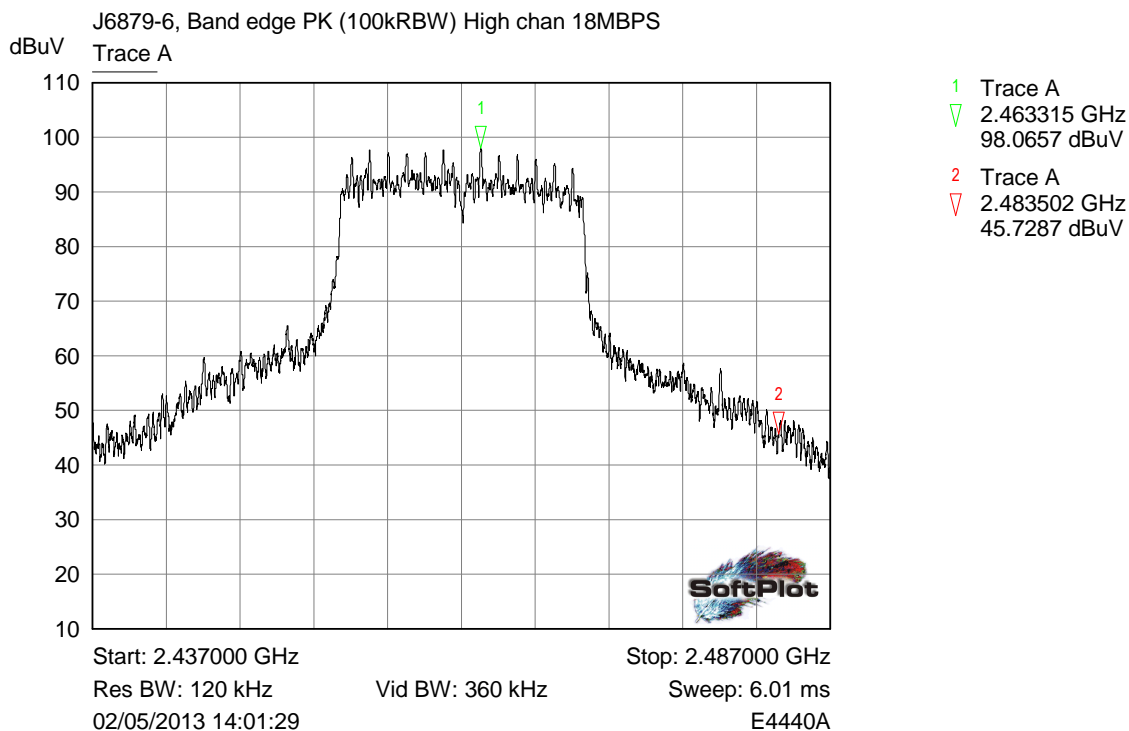
Restricted Band: Low channel Average plot



Restricted Band: High channel Average plot

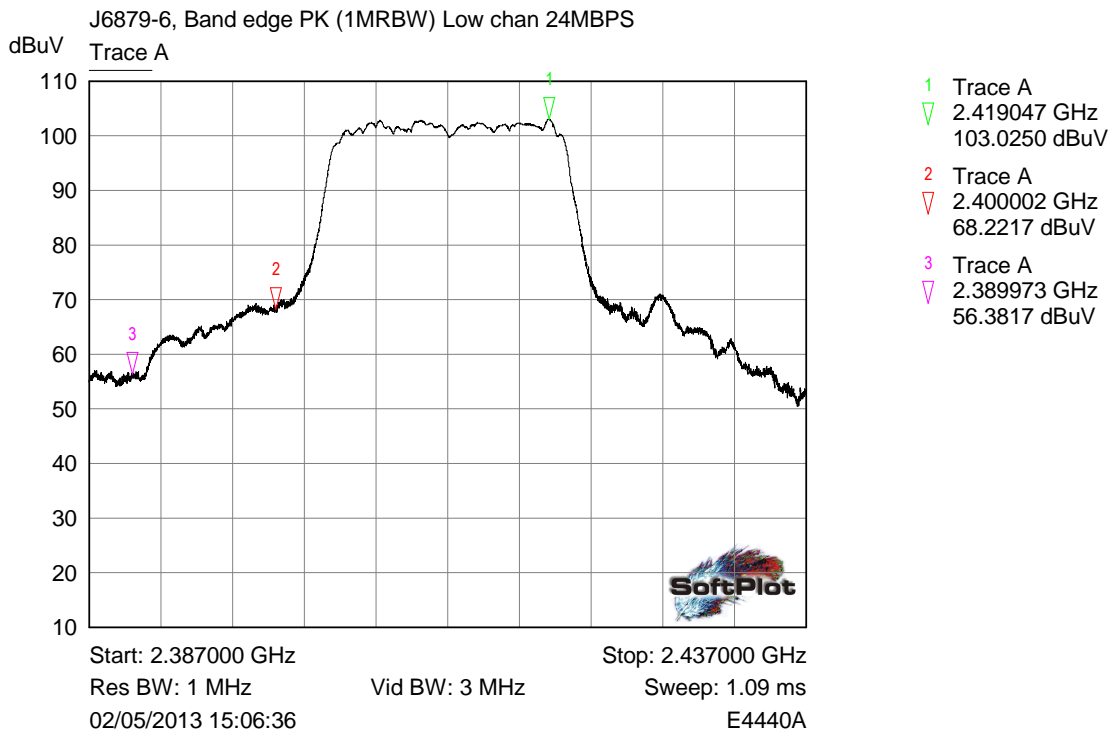


Band Edge: Low channel

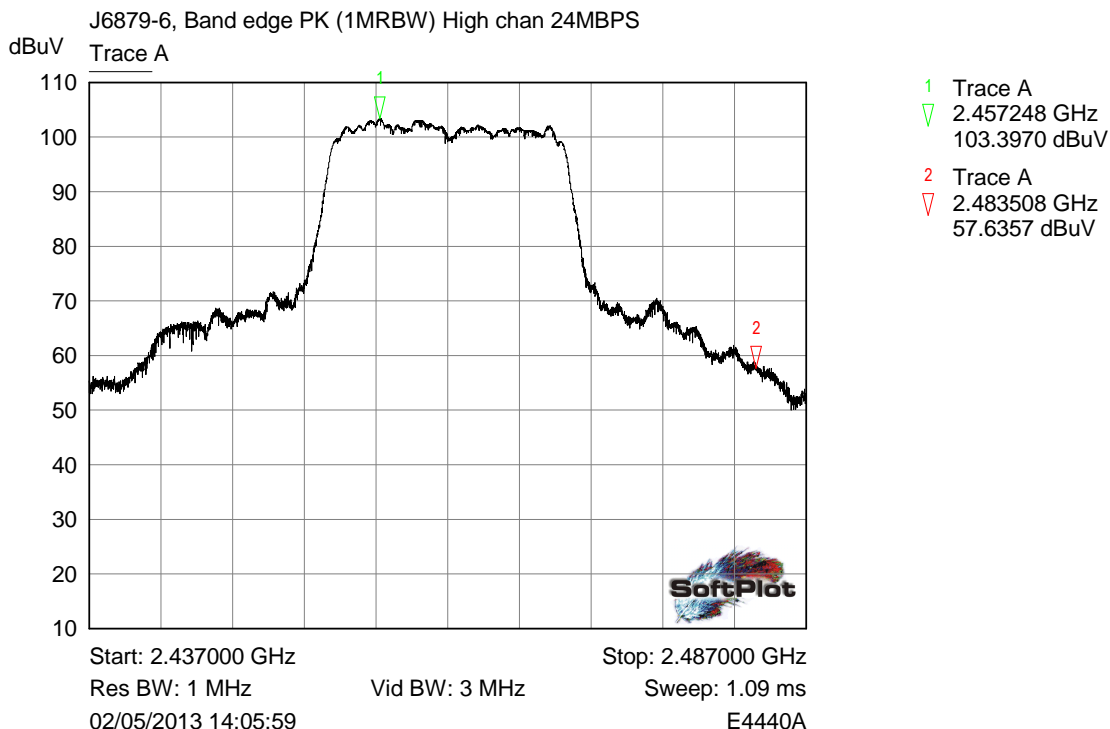


Band Edge: High channel

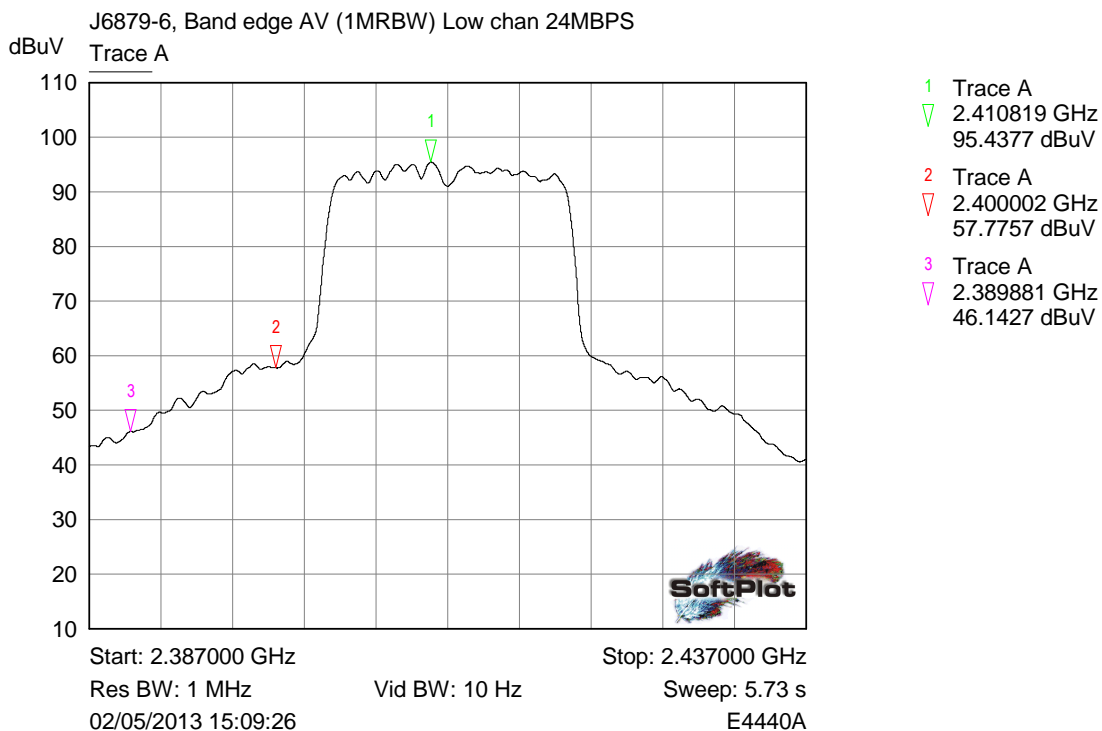
6.4.9 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 24 MBPS



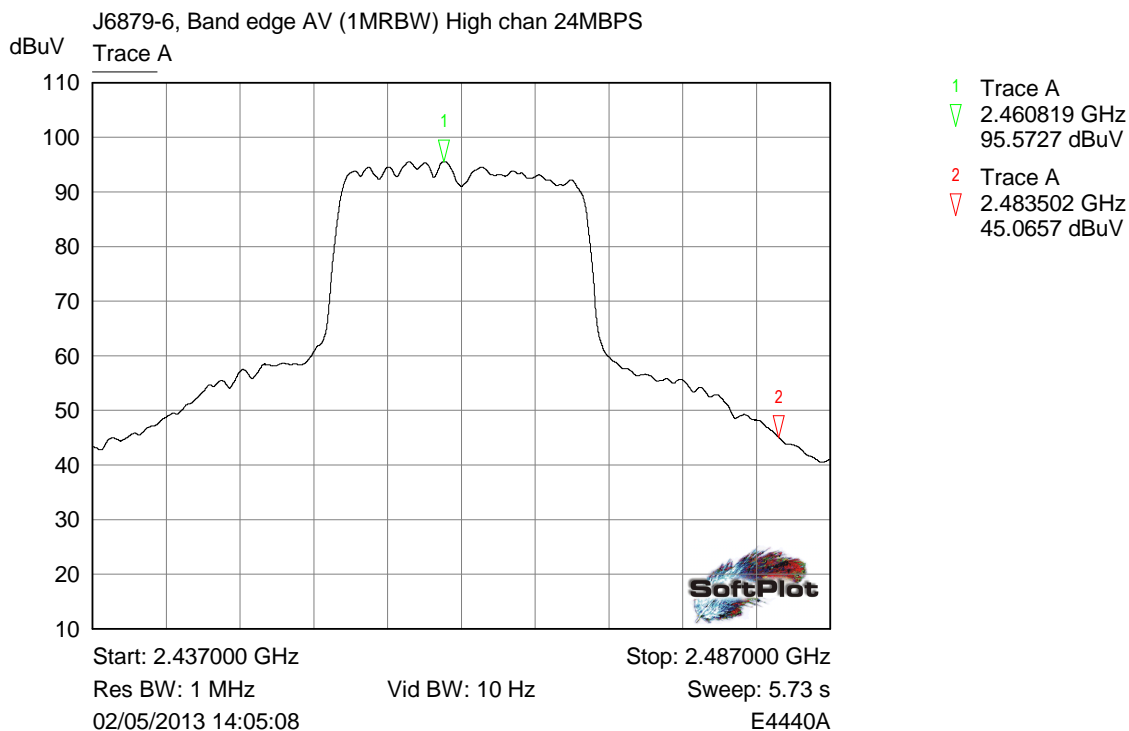
Restricted Band: Low channel Peak plot



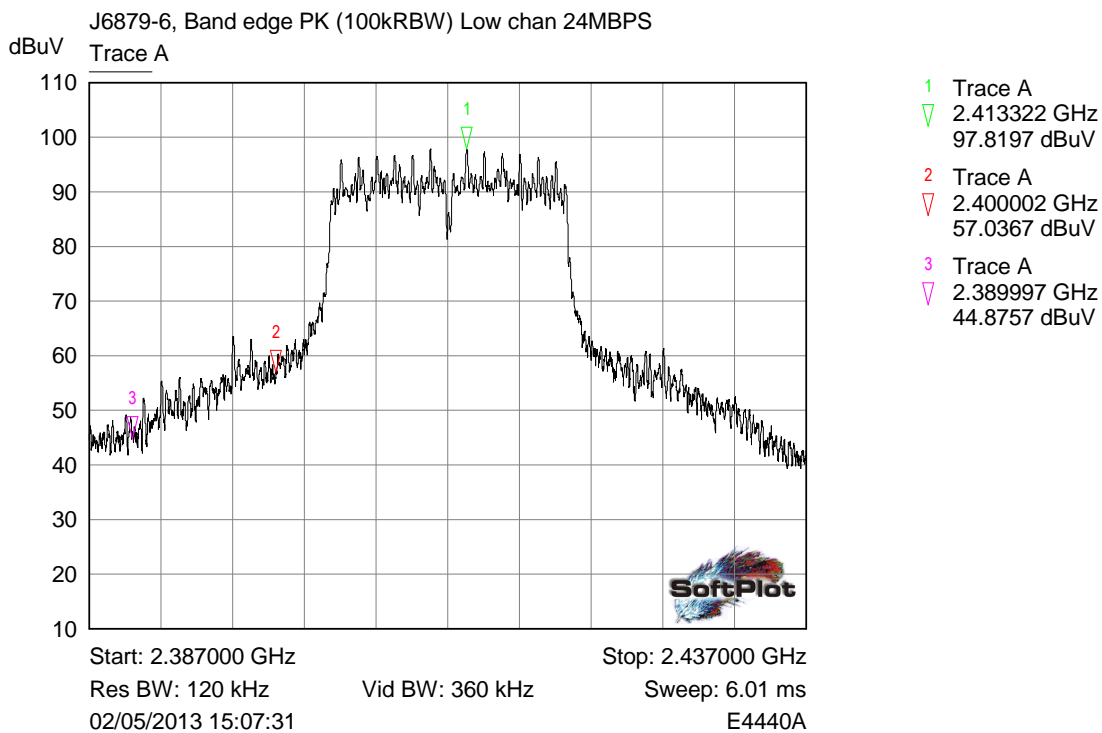
Restricted Band: High channel Peak plot



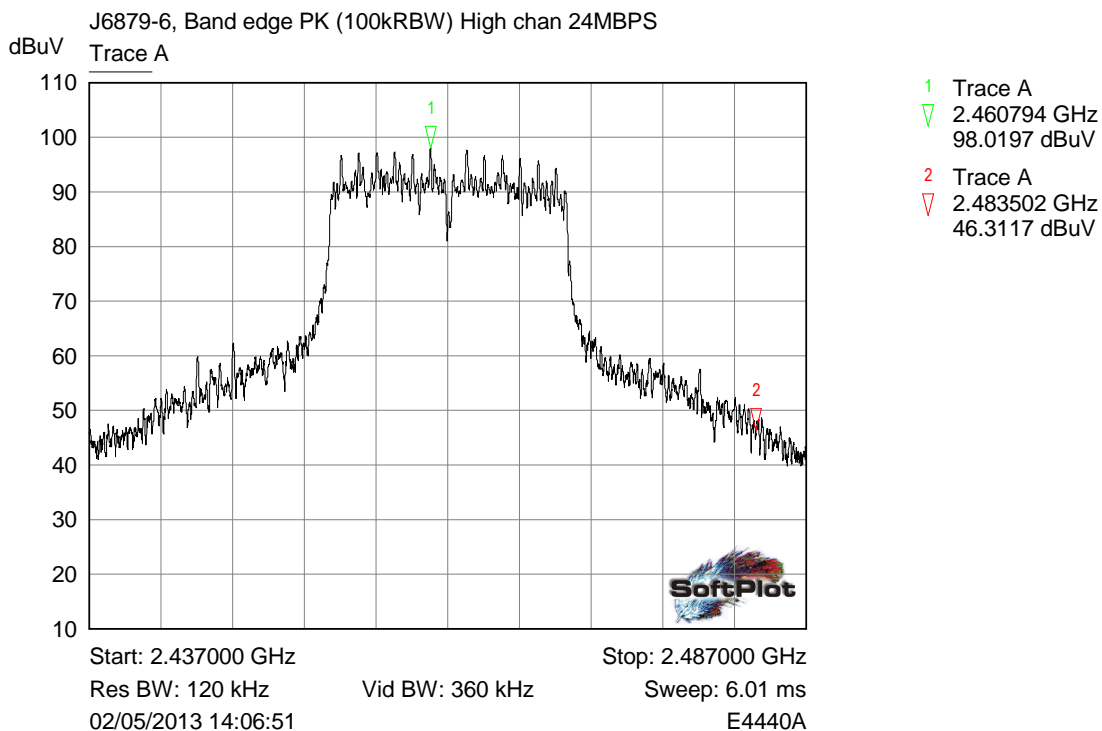
Restricted Band: Low channel Average plot



Restricted Band: High channel Average plot

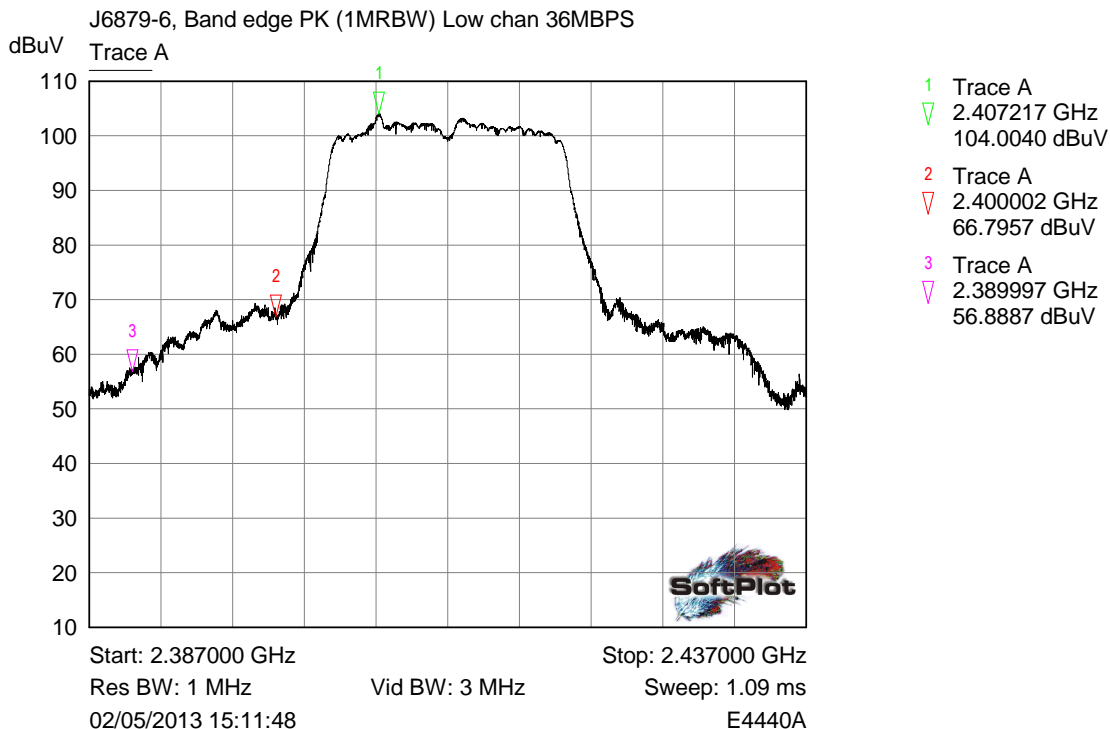


Band Edge: Low channel

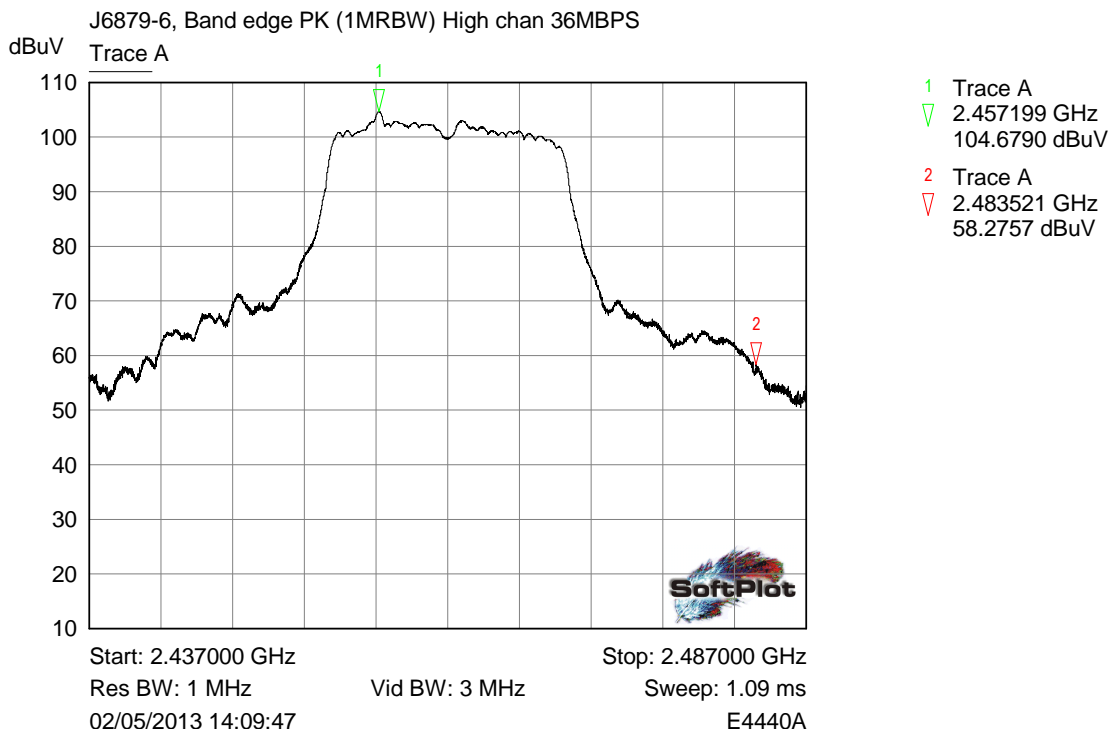


Band Edge: High channel

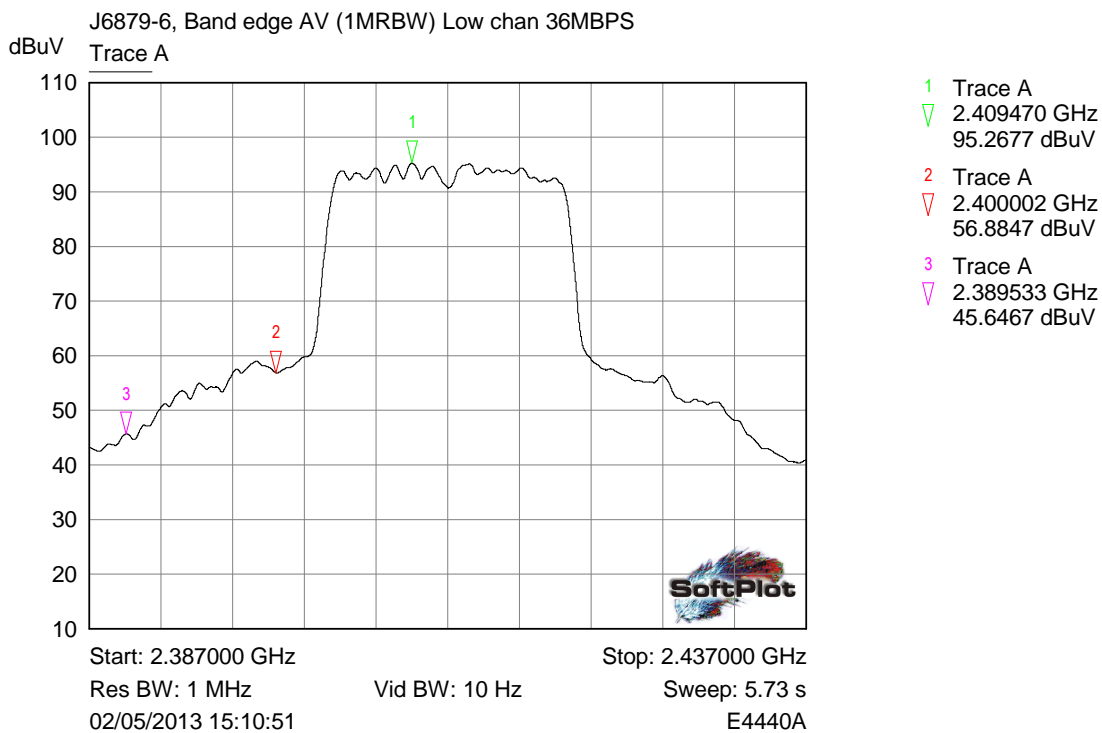
6.4.10 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 36 MBPS



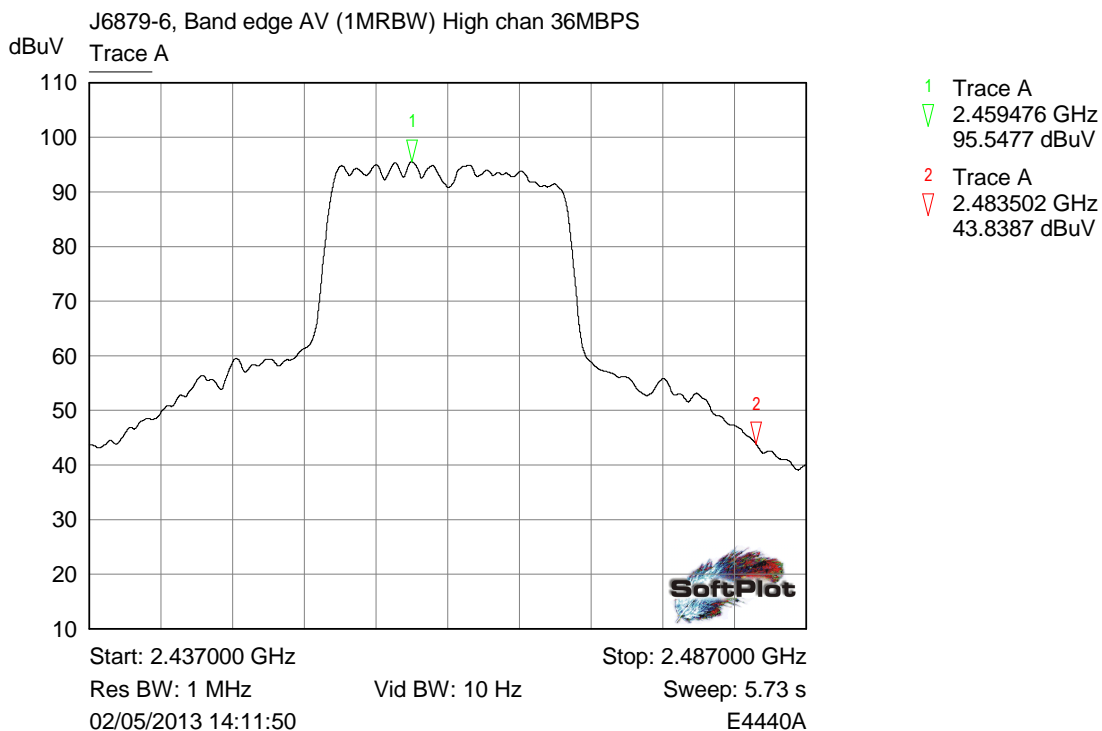
Restricted Band: Low channel Peak plot



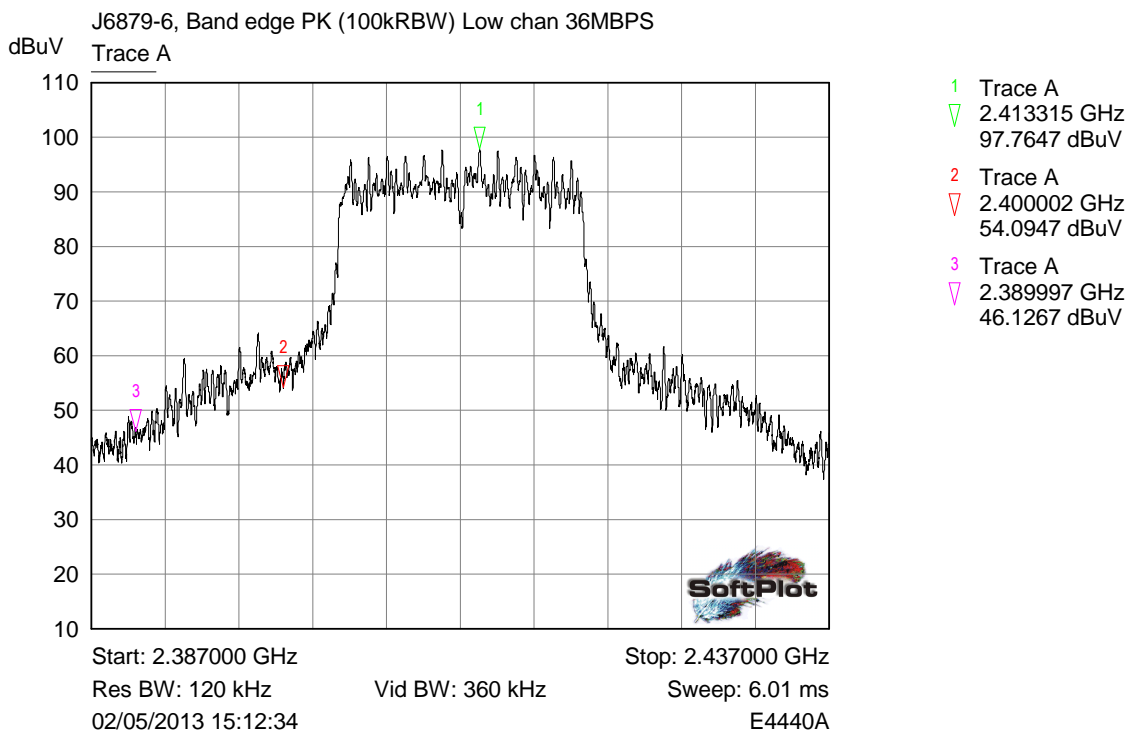
Restricted Band: High channel Peak plot



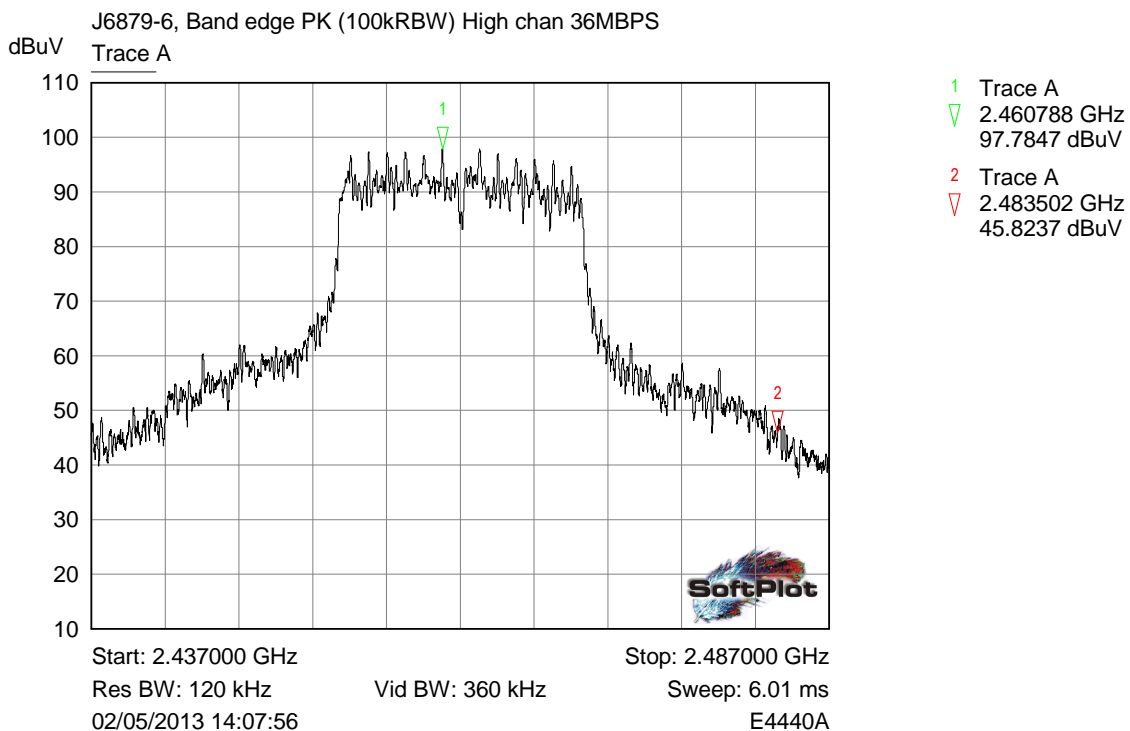
Restricted Band: Low channel Average plot



Restricted Band: High channel Average plot

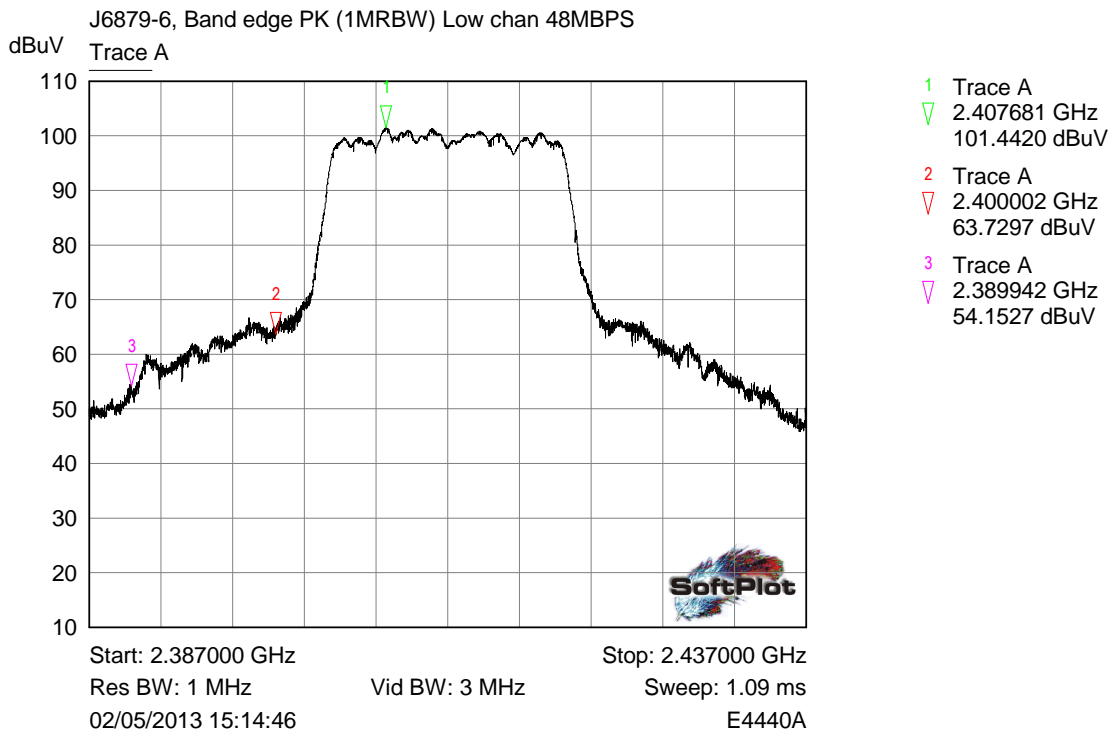


Band Edge: Low channel

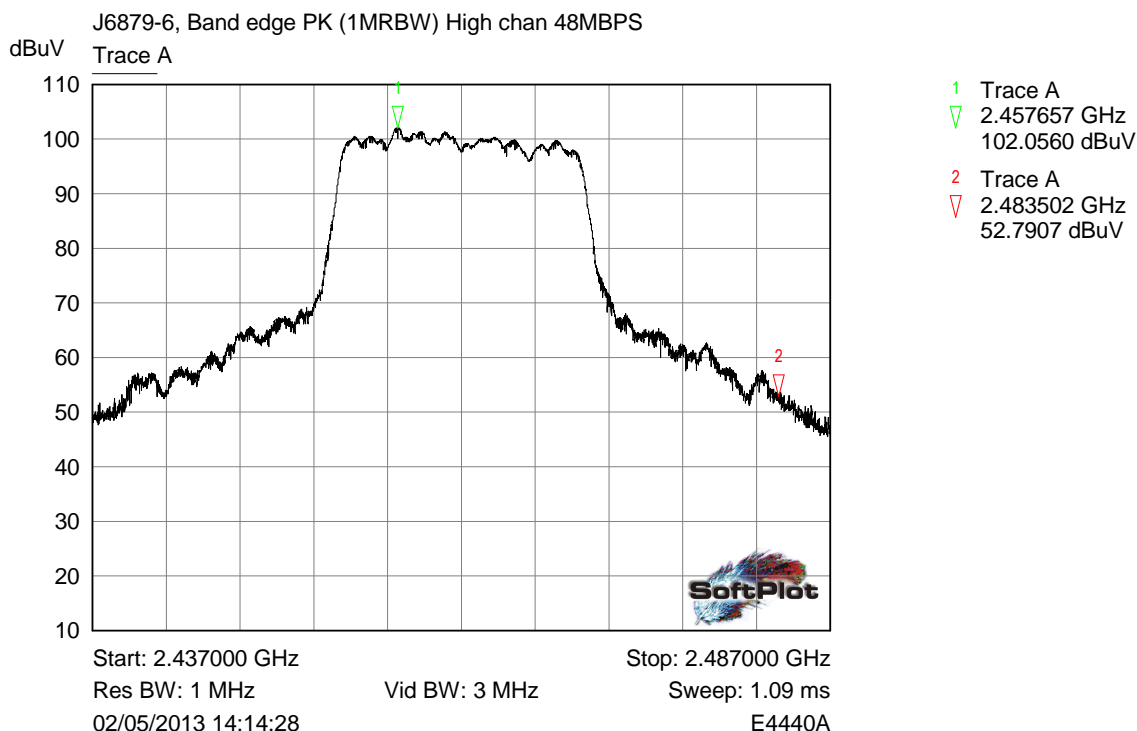


Band Edge: High channel

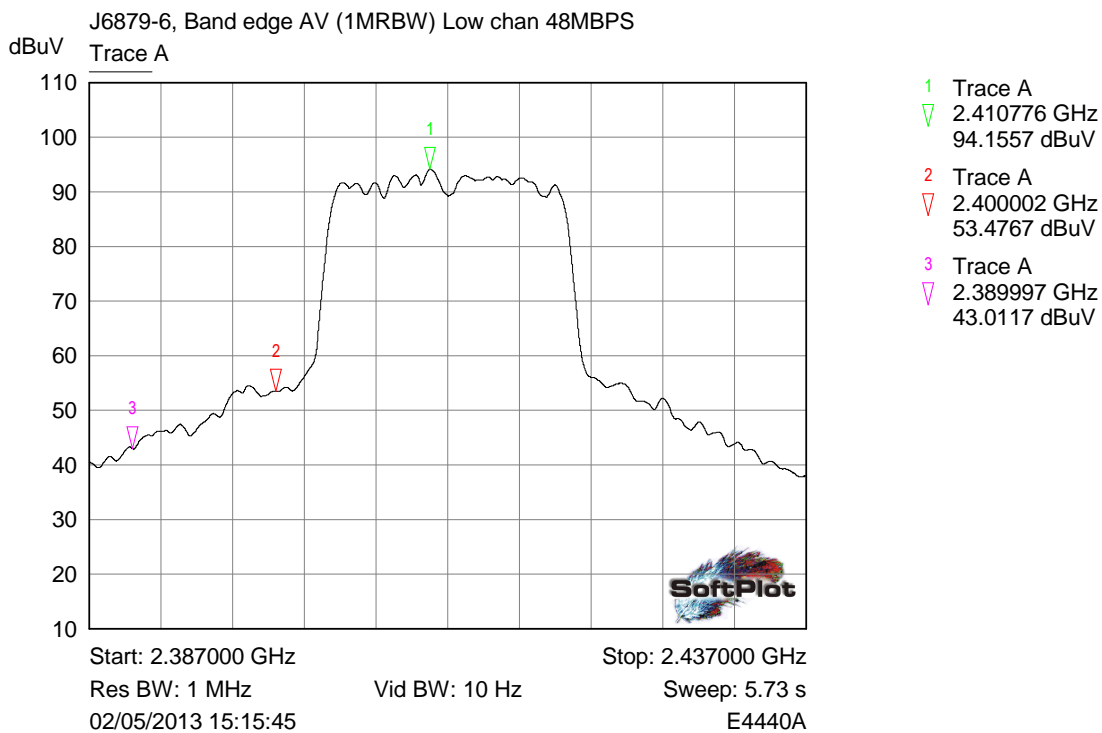
6.4.11 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 48 MBPS



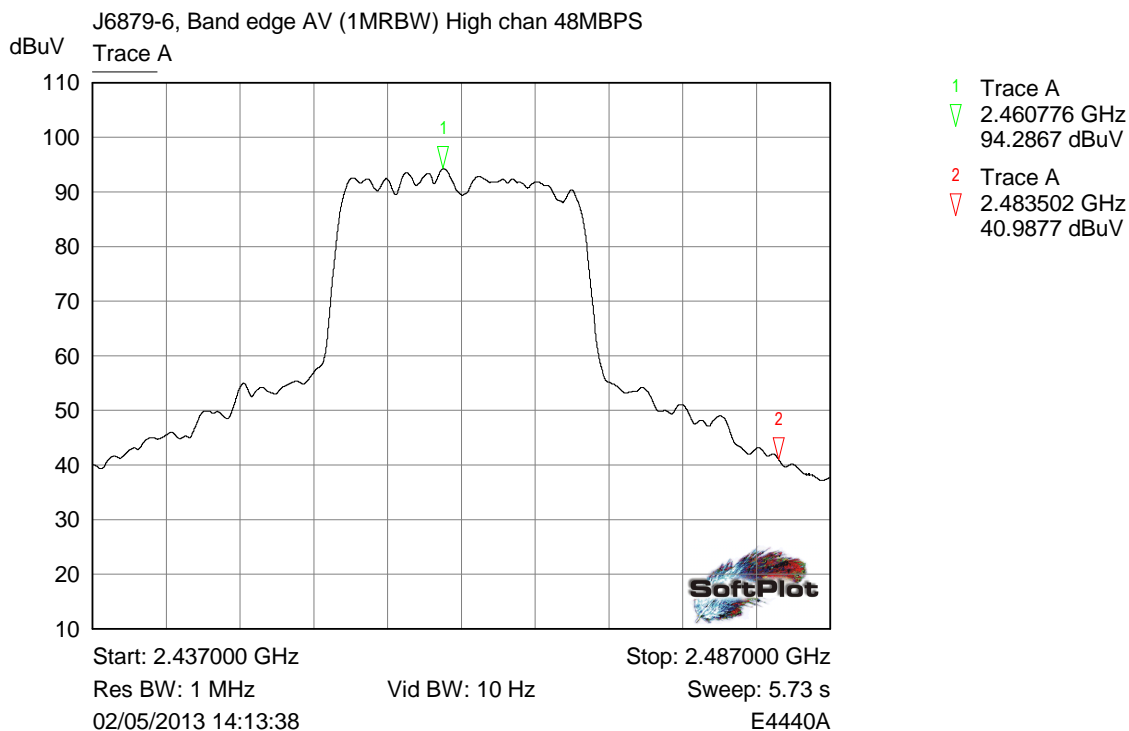
Restricted Band: Low channel Peak plot



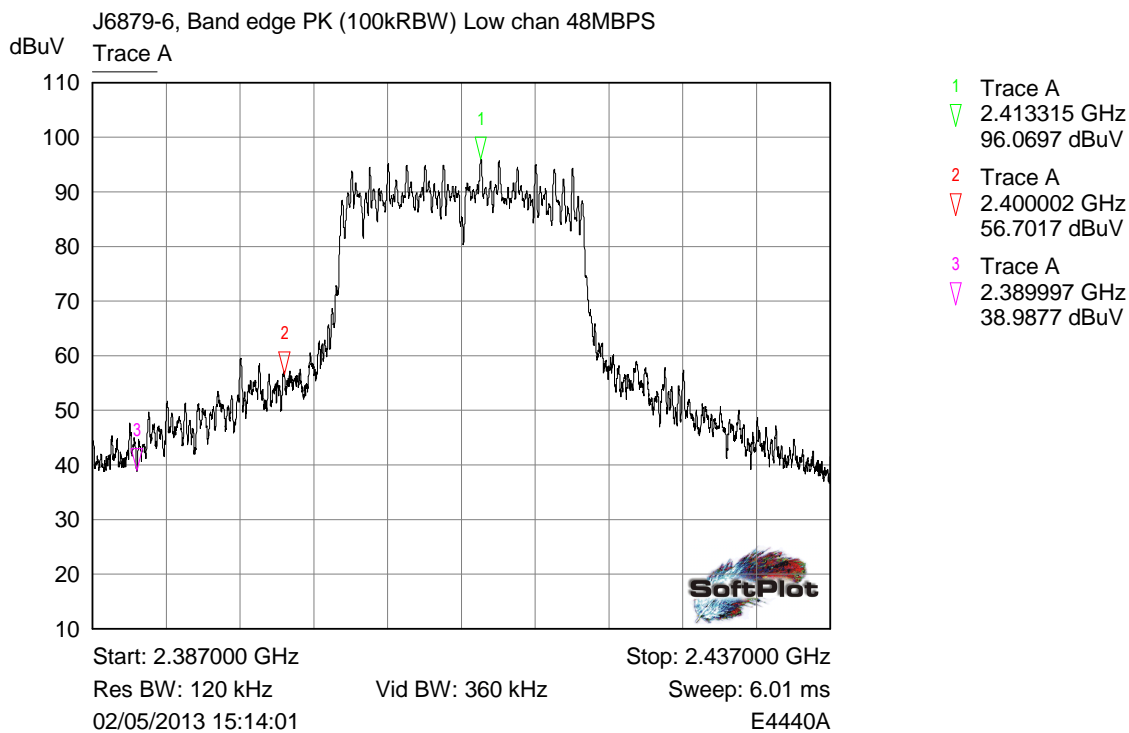
Restricted Band: High channel Peak plot



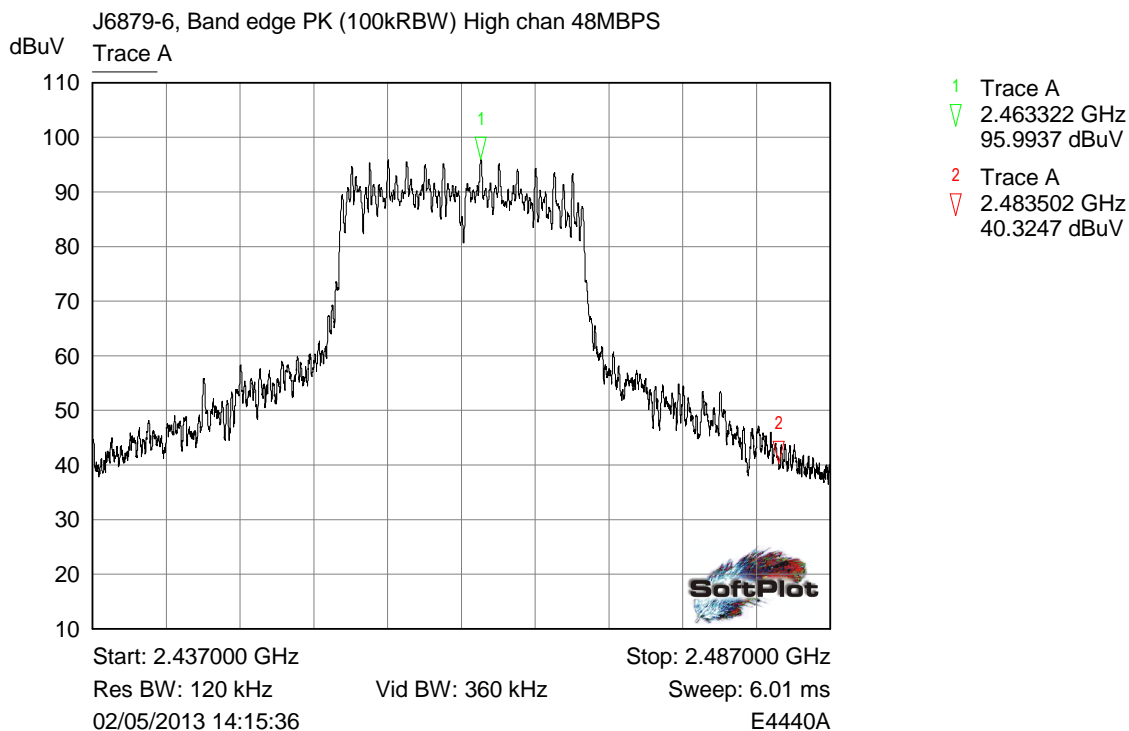
Restricted Band: Low channel Average plot



Restricted Band: High channel Average plot

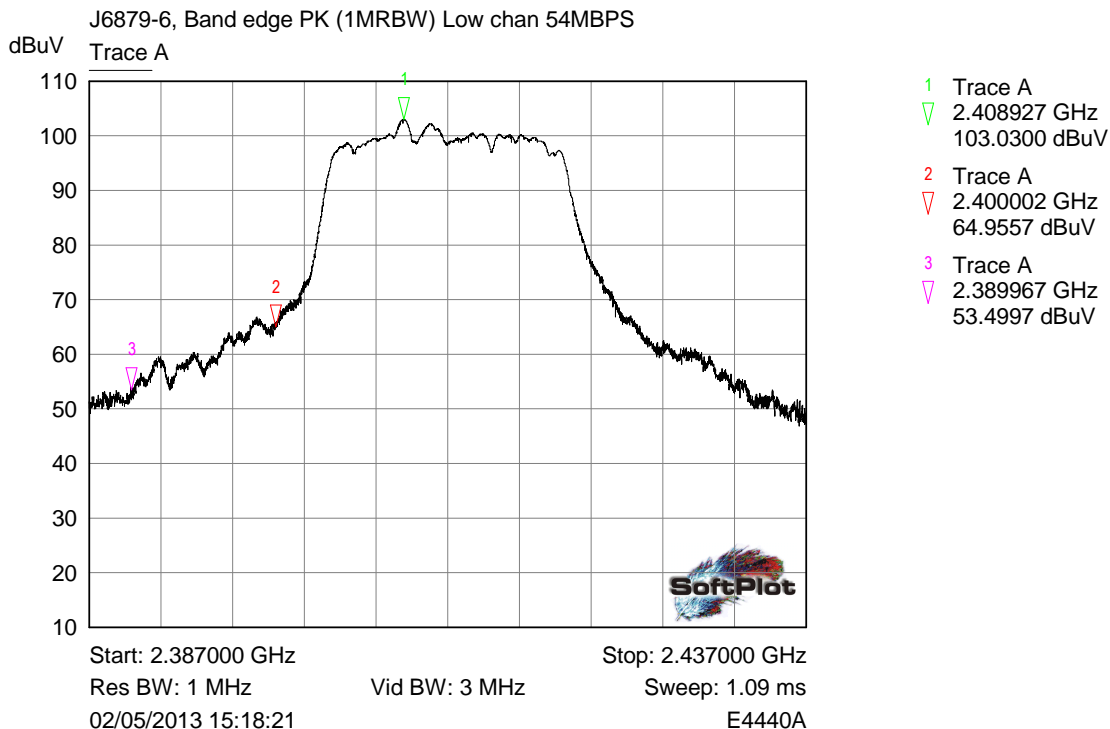


Band Edge: Low channel

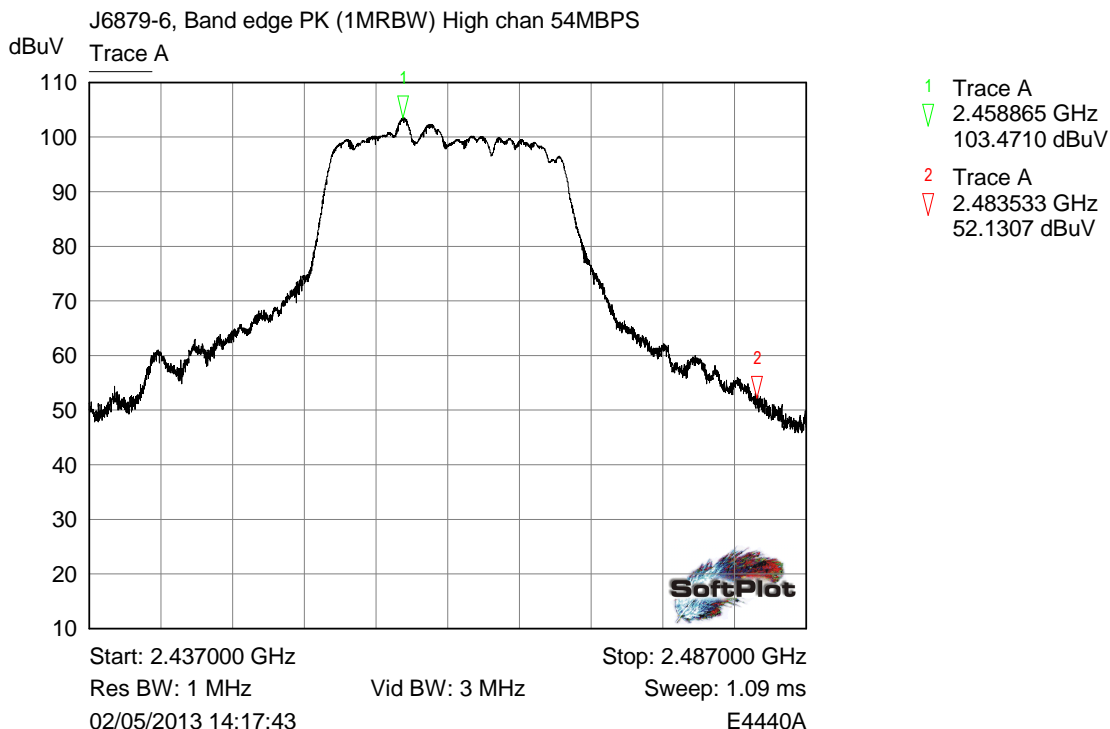


Band Edge: High channel

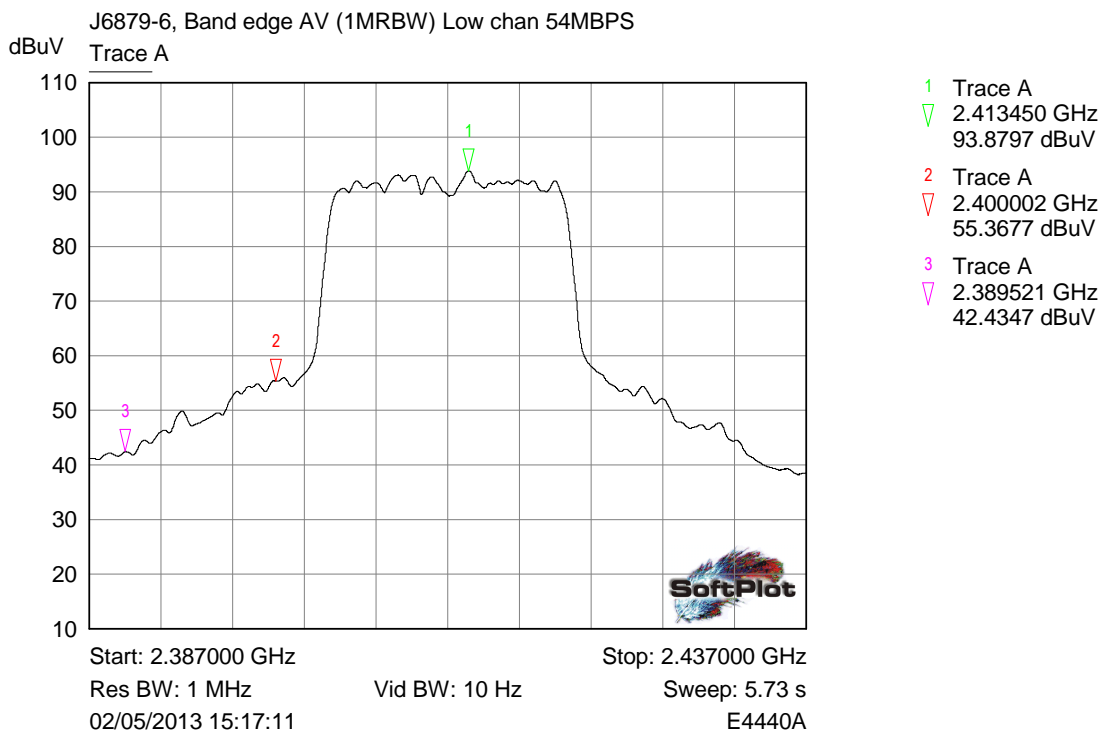
6.4.12 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 54 MBPS



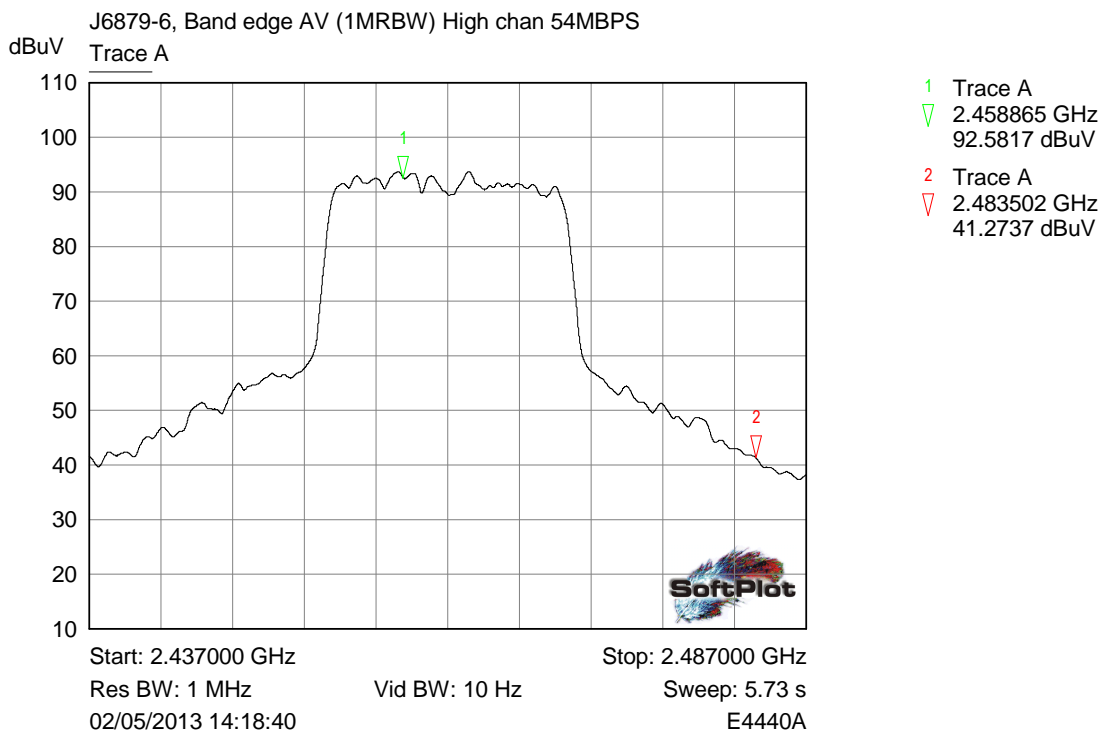
Restricted Band: Low channel Peak plot



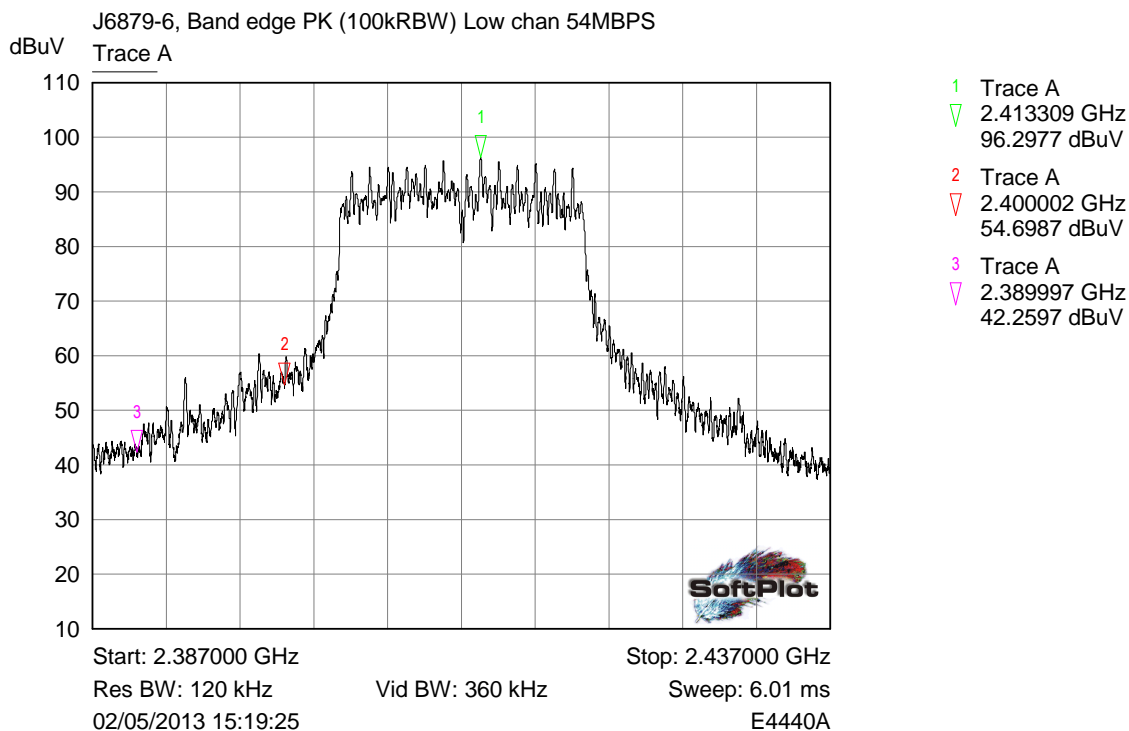
Restricted Band: High channel Peak plot



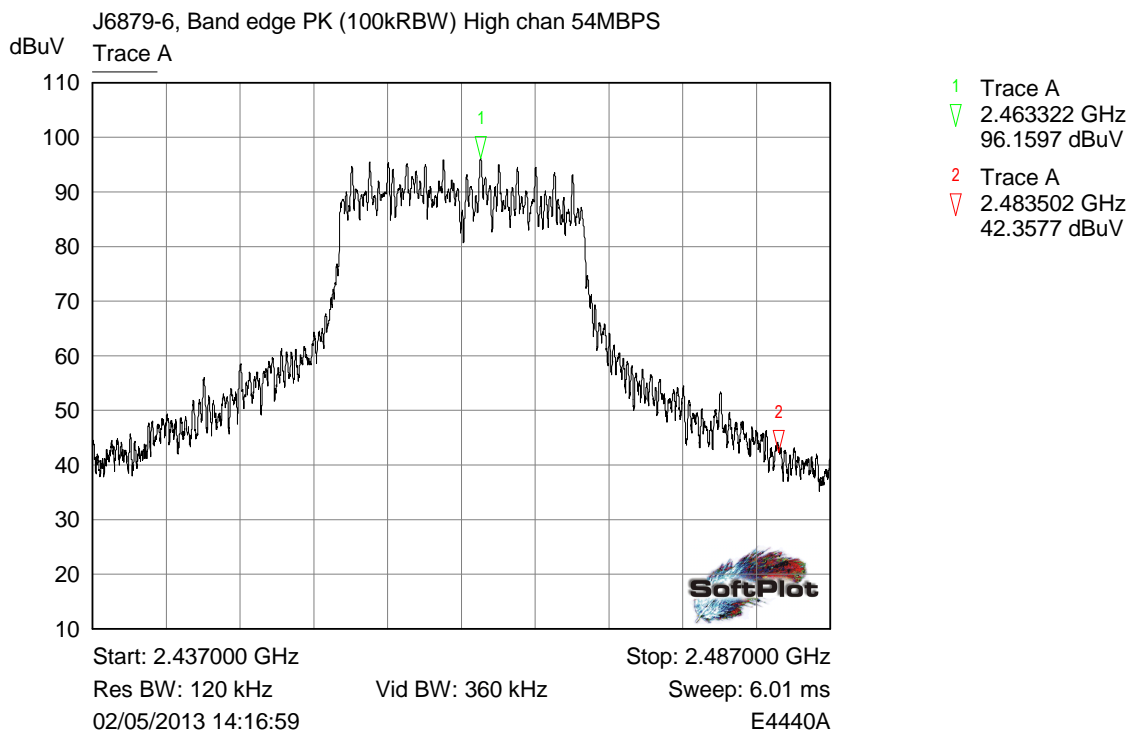
Restricted Band: Low channel Average plot



Restricted Band: High channel Average plot



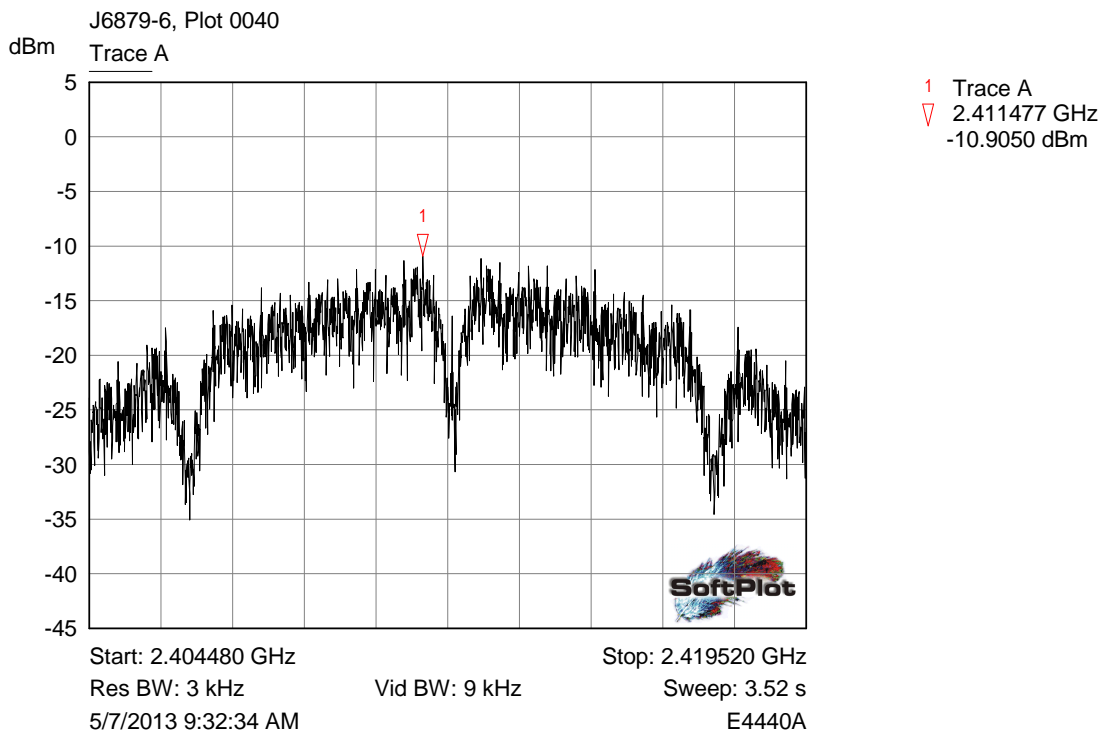
Band Edge: Low channel



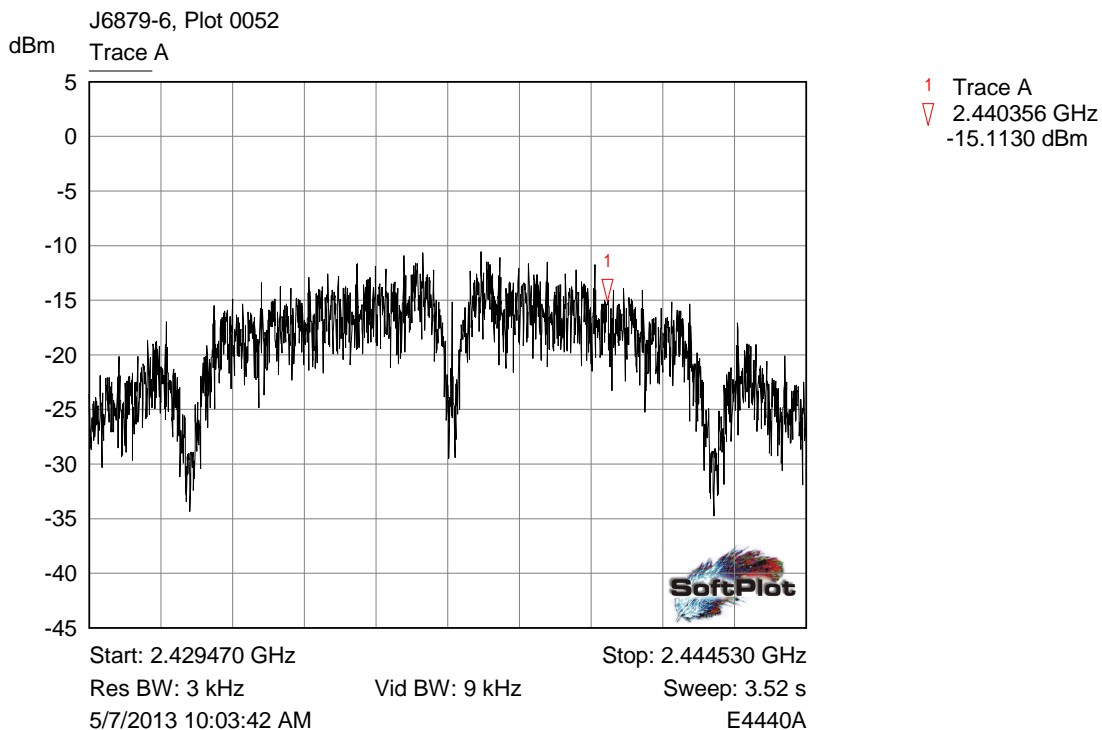
Band Edge: High channel

6.5 Power spectral density plots

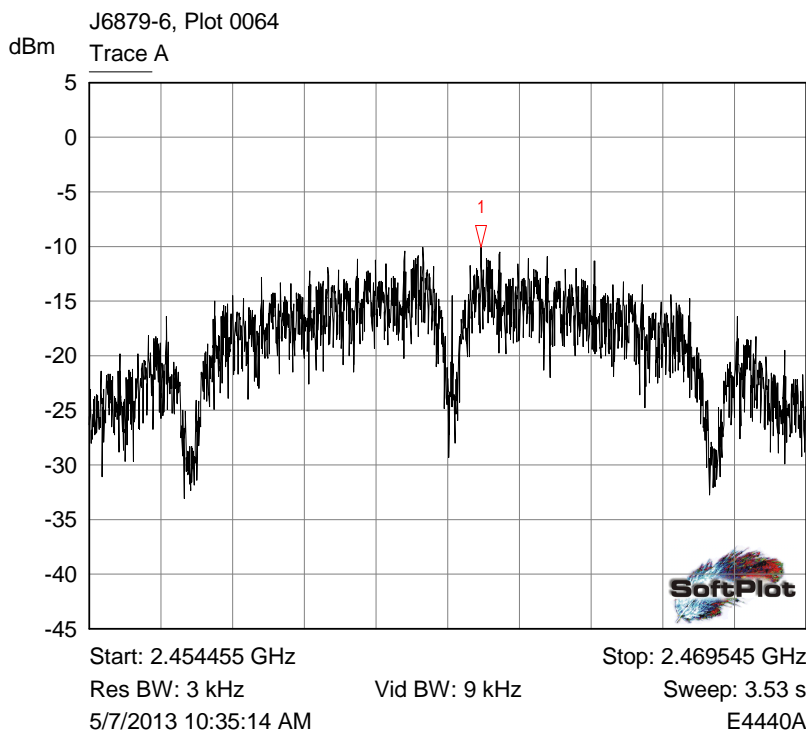
6.5.1 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 1 MBPS



Low channel

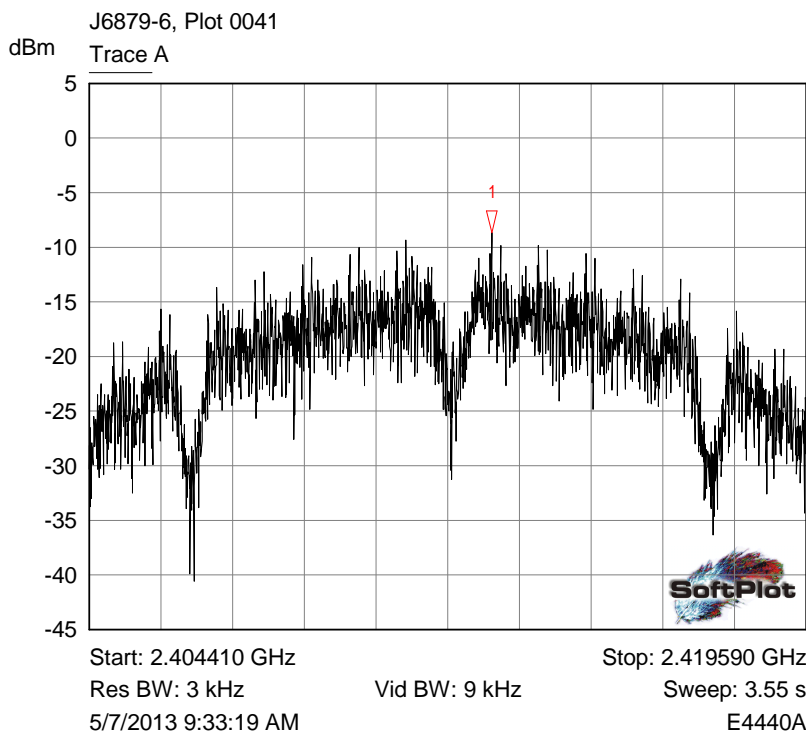


Mid channel



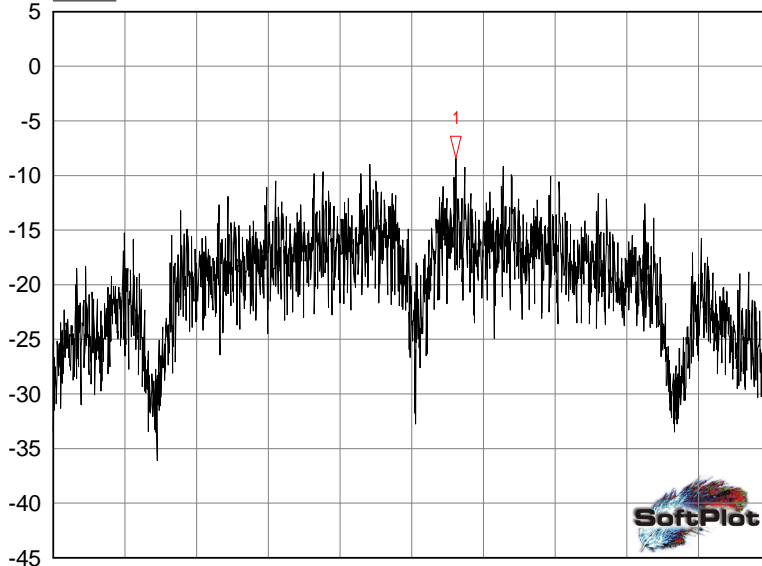
High channel

6.5.2 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 2 MBPS



Low channel

J6879-6, Plot 0053
dBm Trace A

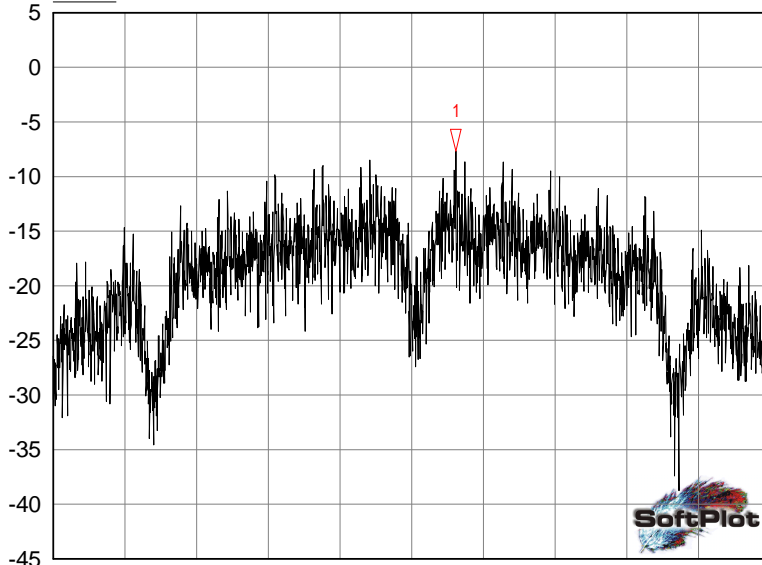


1 Trace A
2.437928 GHz
-8.4100 dBm

Start: 2.429425 GHz Stop: 2.444575 GHz
Res BW: 3 kHz Vid BW: 9 kHz Sweep: 3.54 s
5/7/2013 10:04:52 AM E4440A

Mid channel

J6879-6, Plot 0065
dBm Trace A

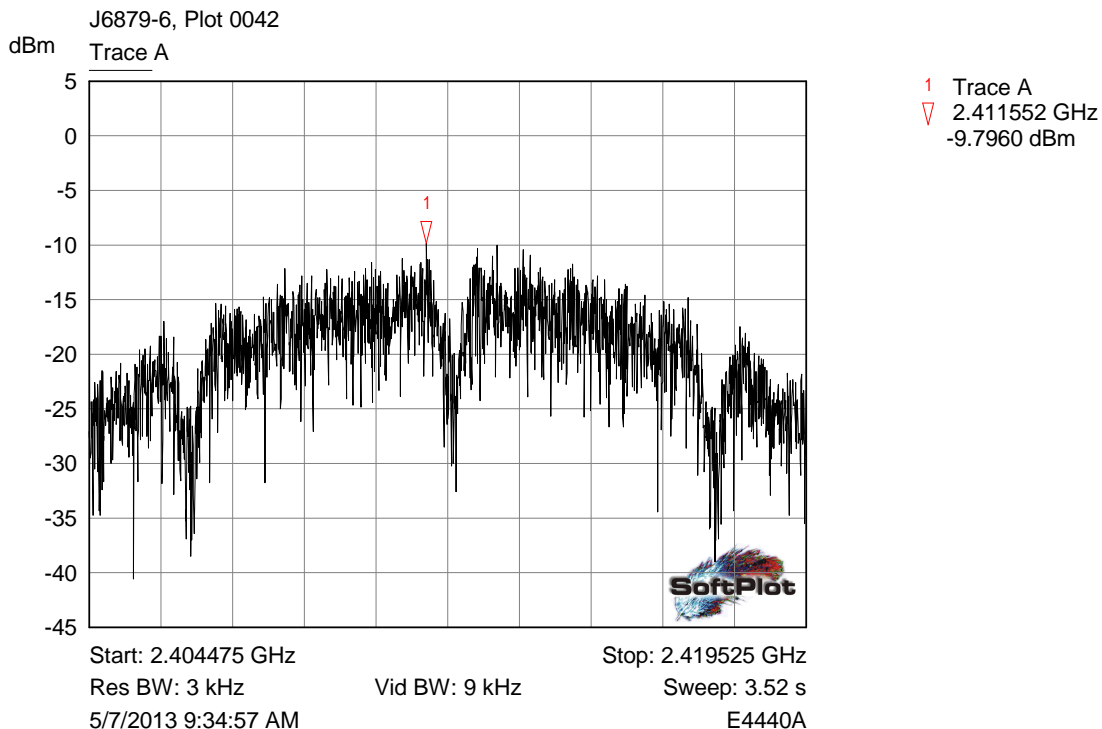


1 Trace A
2.462927 GHz
-7.6520 dBm

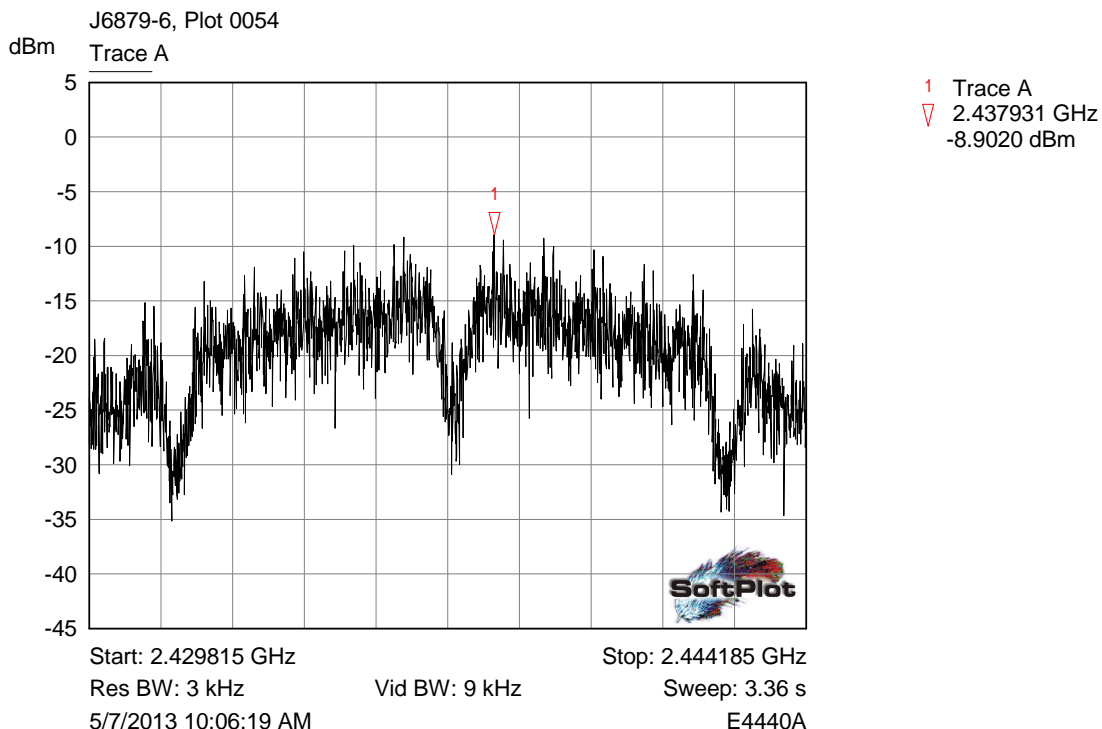
Start: 2.454433 GHz Stop: 2.469568 GHz
Res BW: 3 kHz Vid BW: 9 kHz Sweep: 3.54 s
5/7/2013 10:37:04 AM E4440A

High channel

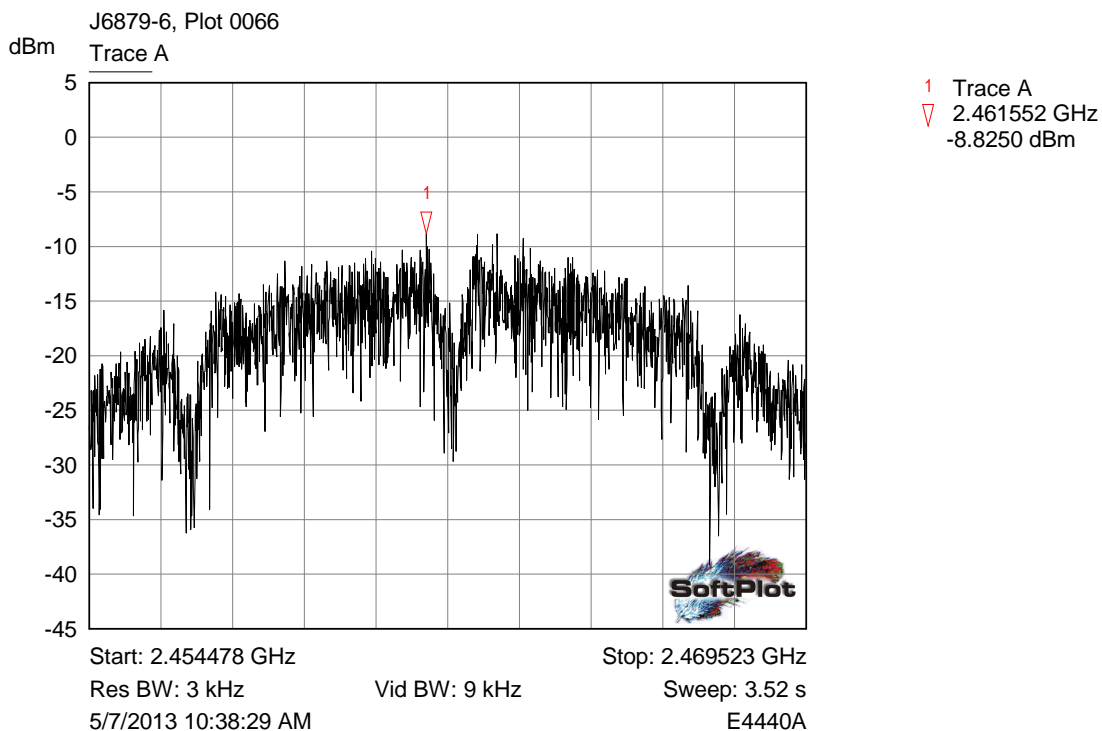
6.5.3 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 5.5 MBPS



Low channel

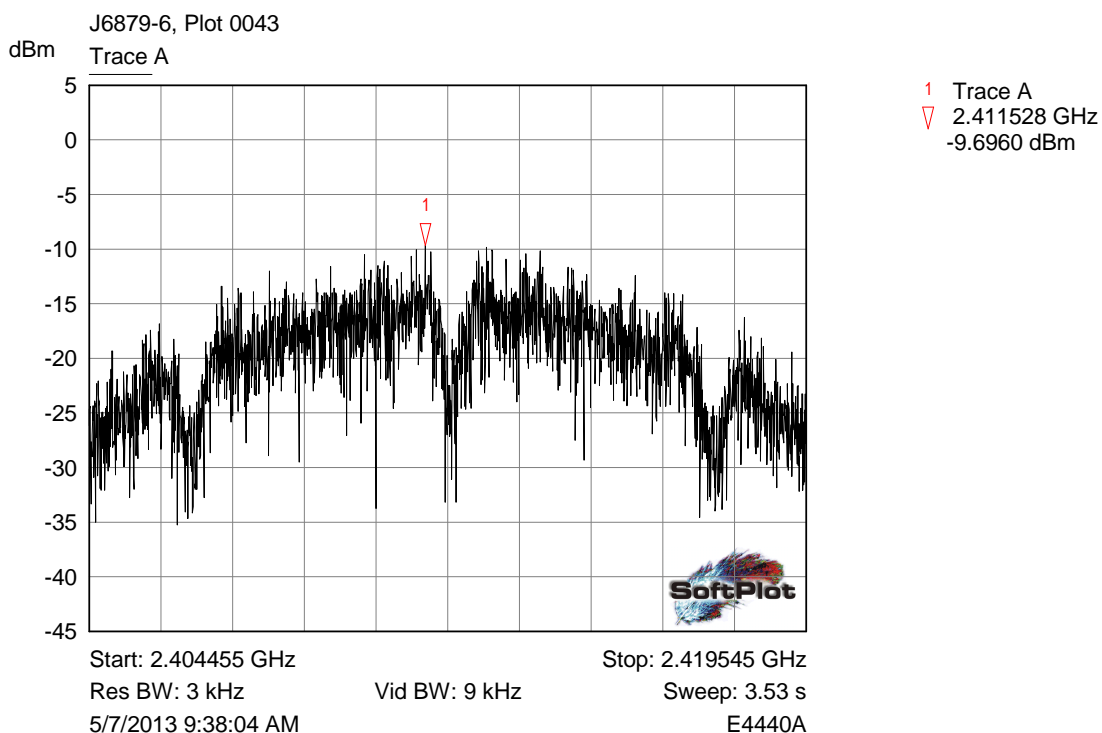


Mid channel

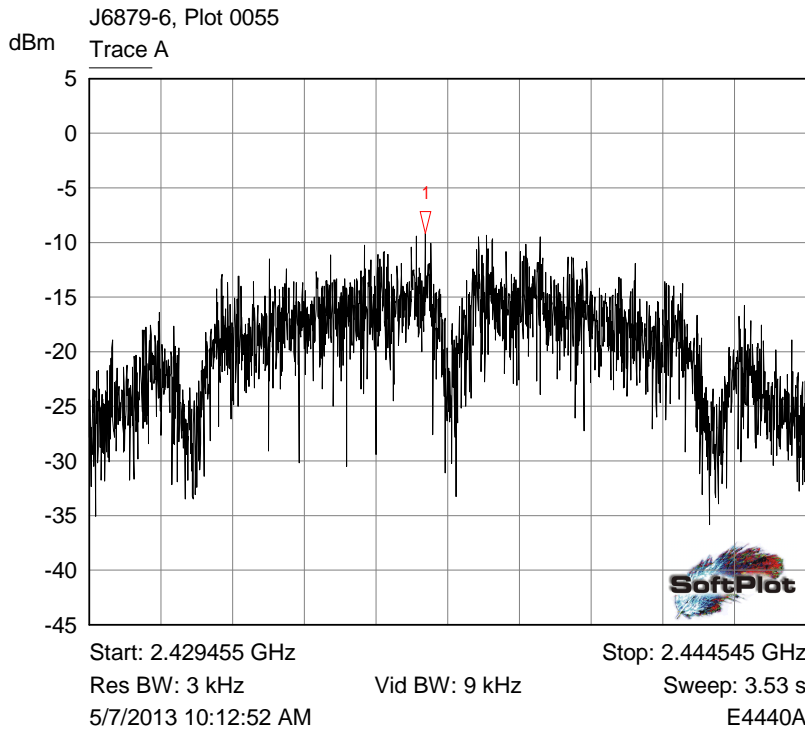


High channel

6.5.4 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 11 MBPS

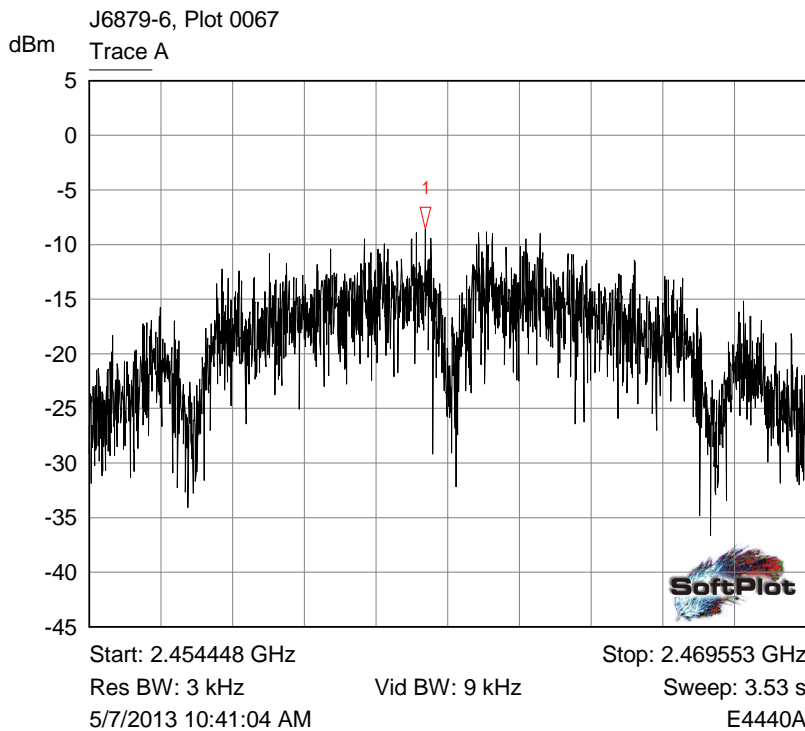


Low channel



1 Trace A
2.436528 GHz
-9.1840 dBm

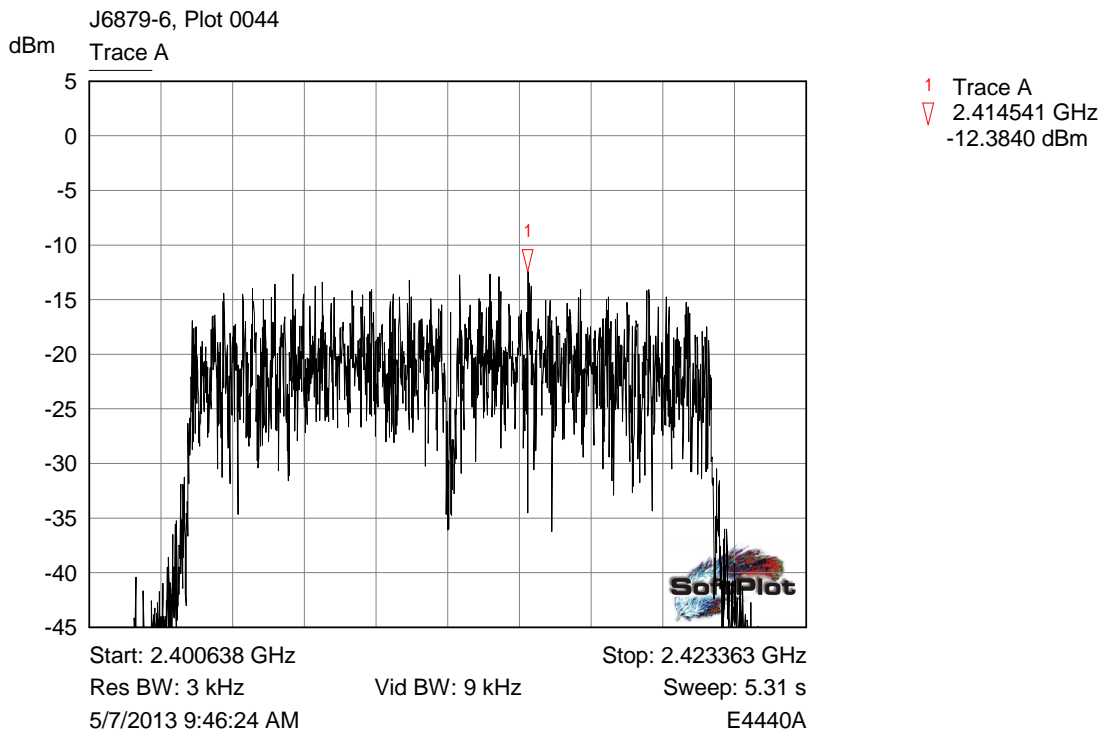
Mid channel



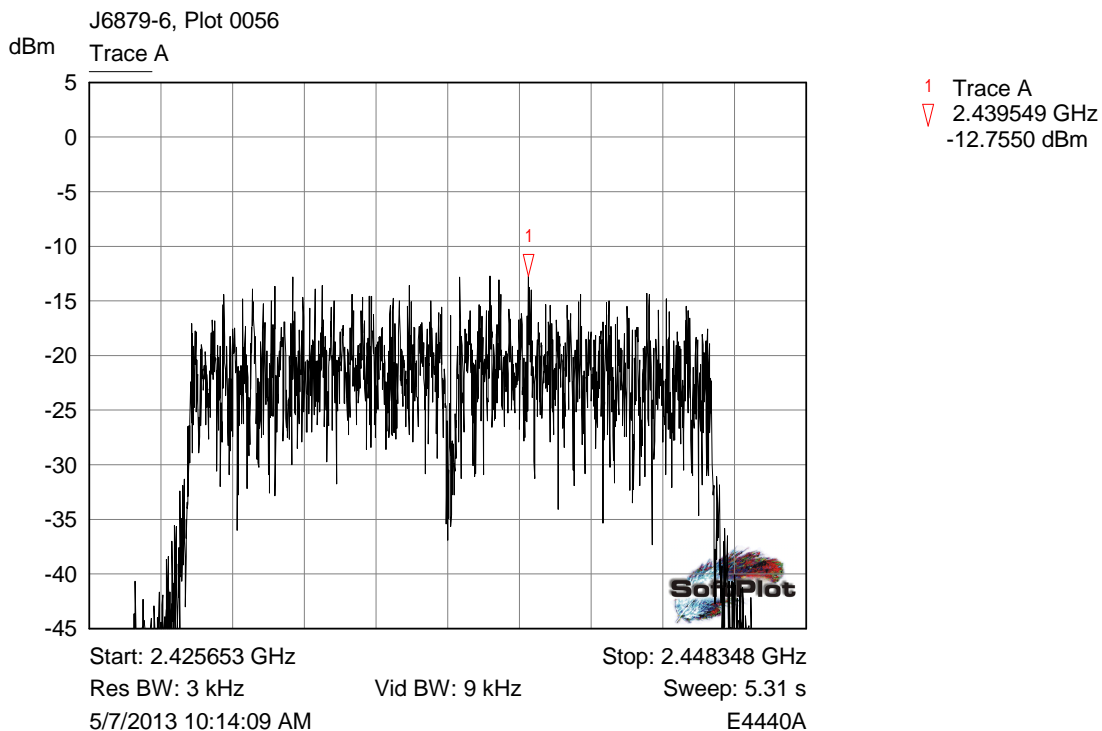
1 Trace A
2.461528 GHz
-8.5640 dBm

High channel

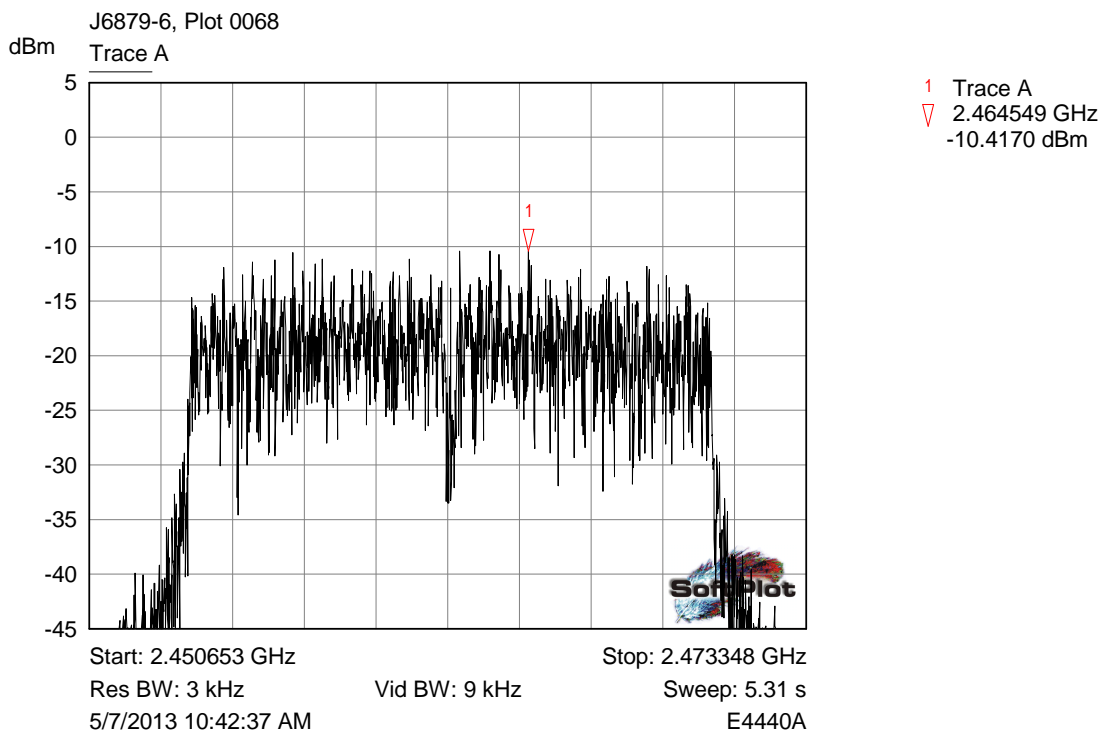
6.5.5 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 6 MBPS



Low channel

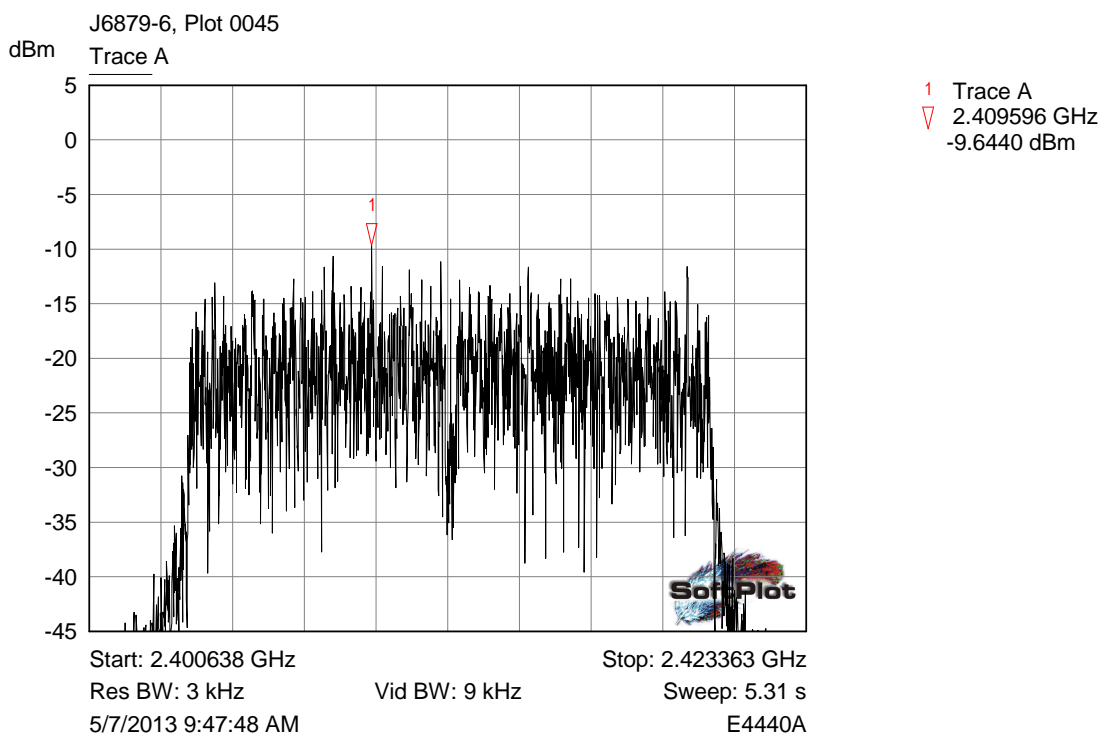


Mid channel



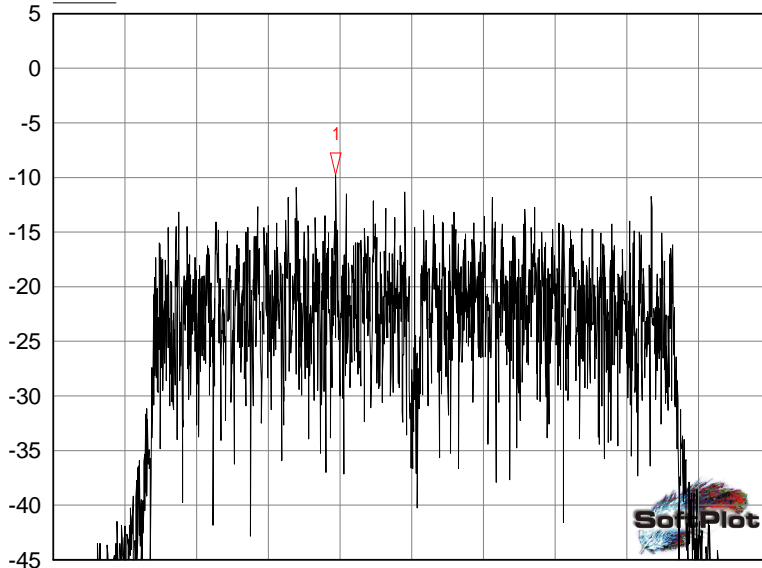
High channel

6.5.6 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 9 MBPS



Low channel

J6879-6, Plot 0057
dBm Trace A

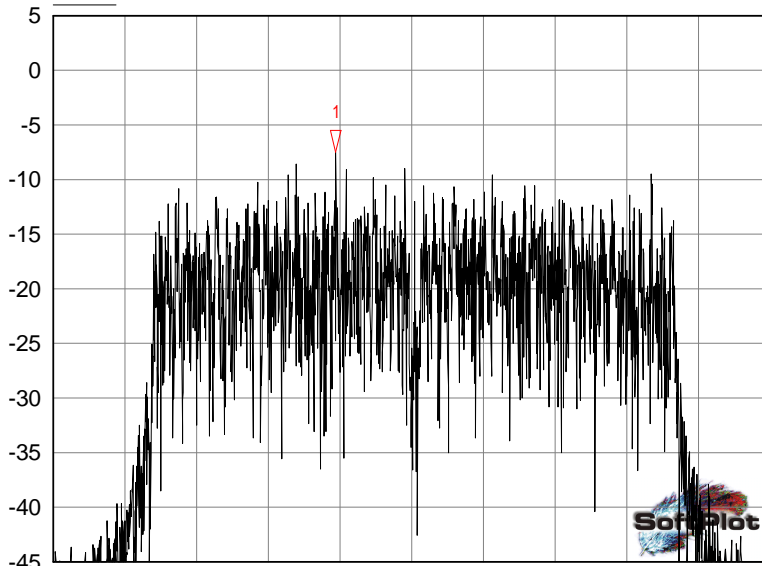


1 Trace A
2.434599 GHz
-9.7910 dBm

Start: 2.425653 GHz Stop: 2.448348 GHz
Res BW: 3 kHz Vid BW: 9 kHz Sweep: 5.31 s
5/7/2013 10:15:19 AM E4440A

Mid channel

J6879-6, Plot 0069
dBm Trace A

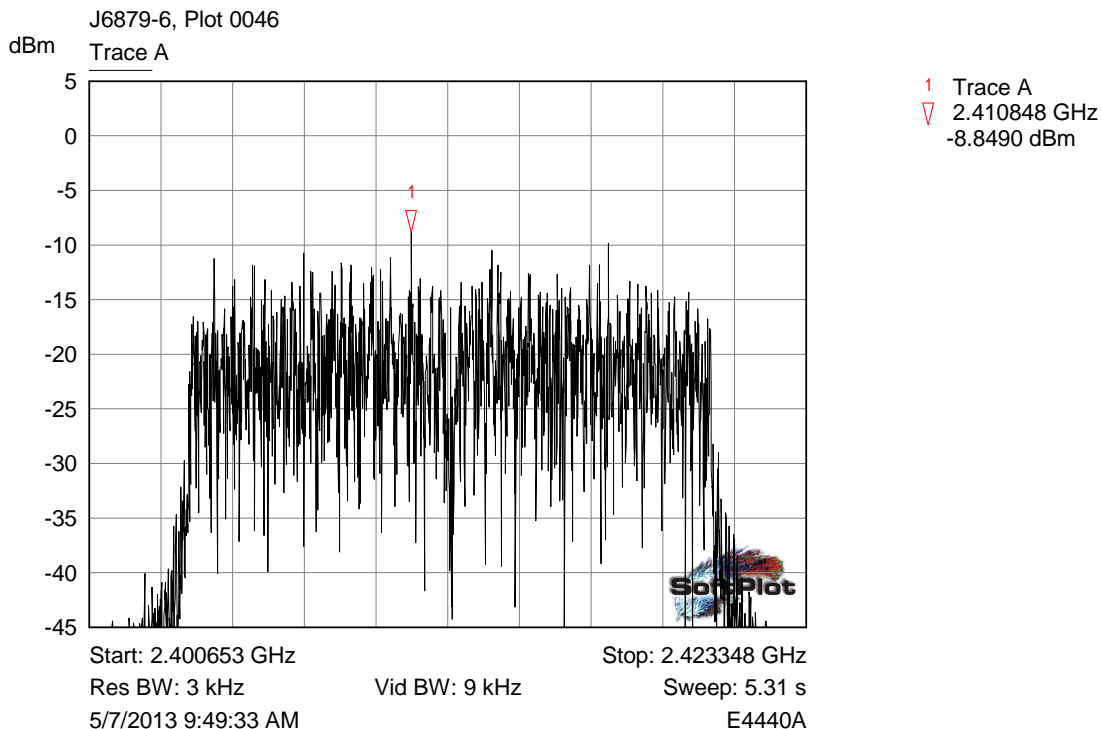


1 Trace A
2.459600 GHz
-7.5340 dBm

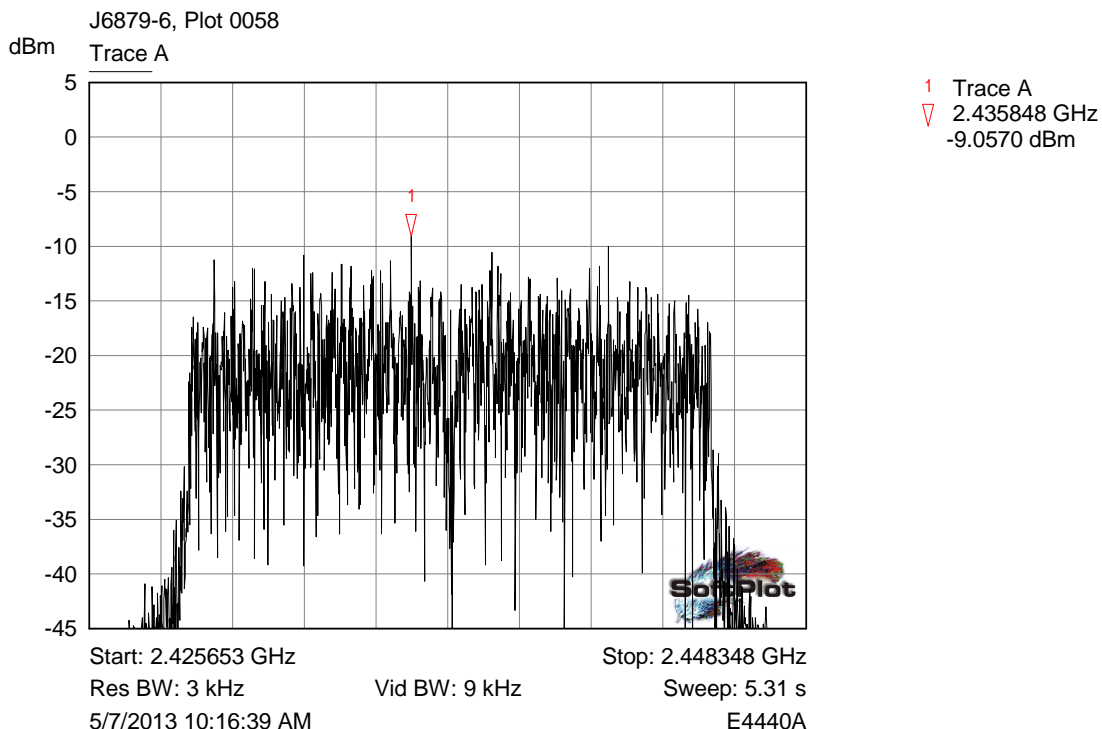
Start: 2.450660 GHz Stop: 2.473340 GHz
Res BW: 3 kHz Vid BW: 9 kHz Sweep: 5.30 s
5/7/2013 10:43:59 AM E4440A

High channel

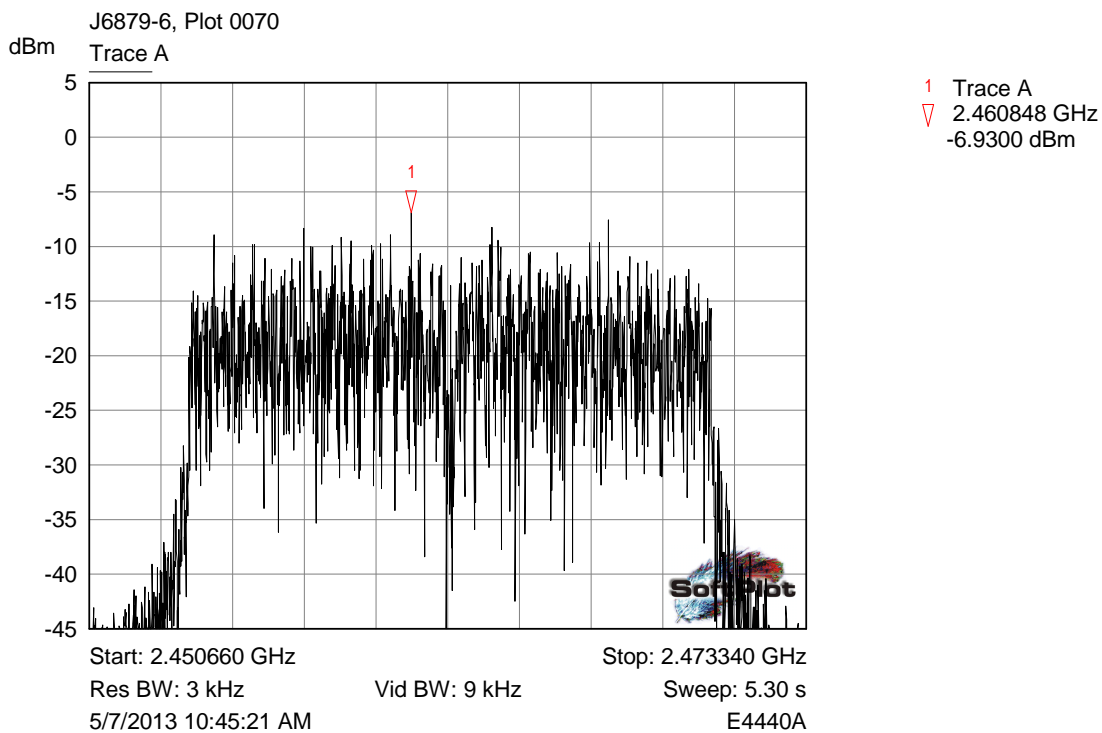
6.5.7 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 12 MBPS



Low channel

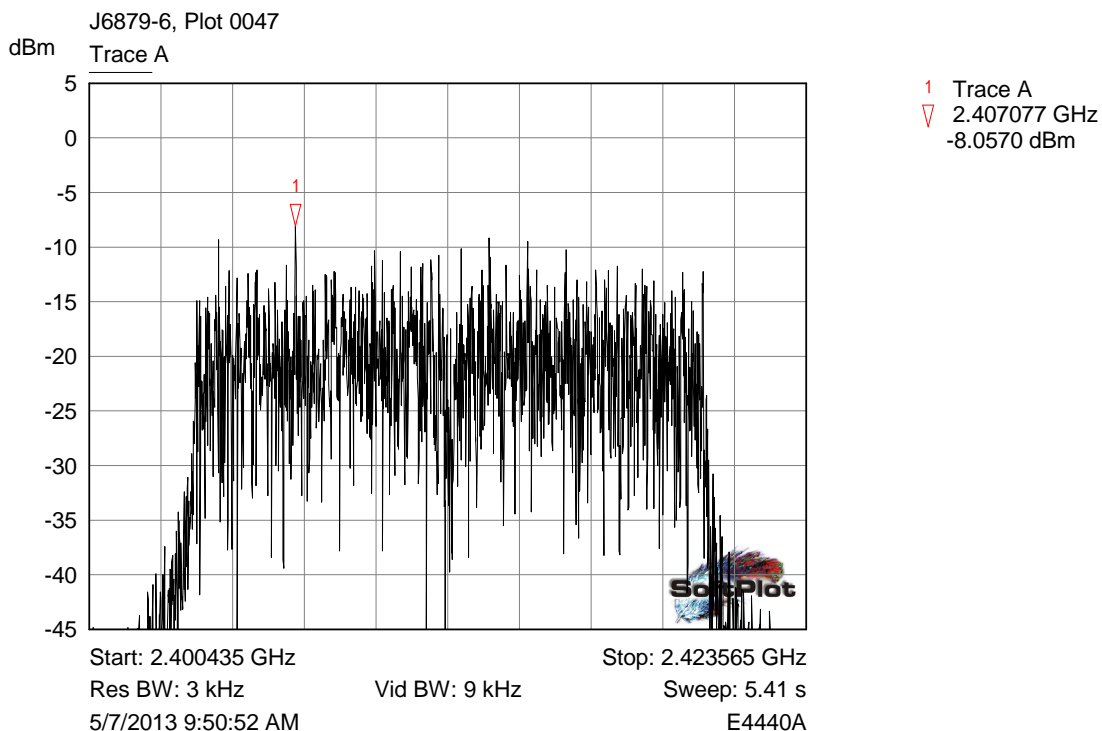


Mid channel

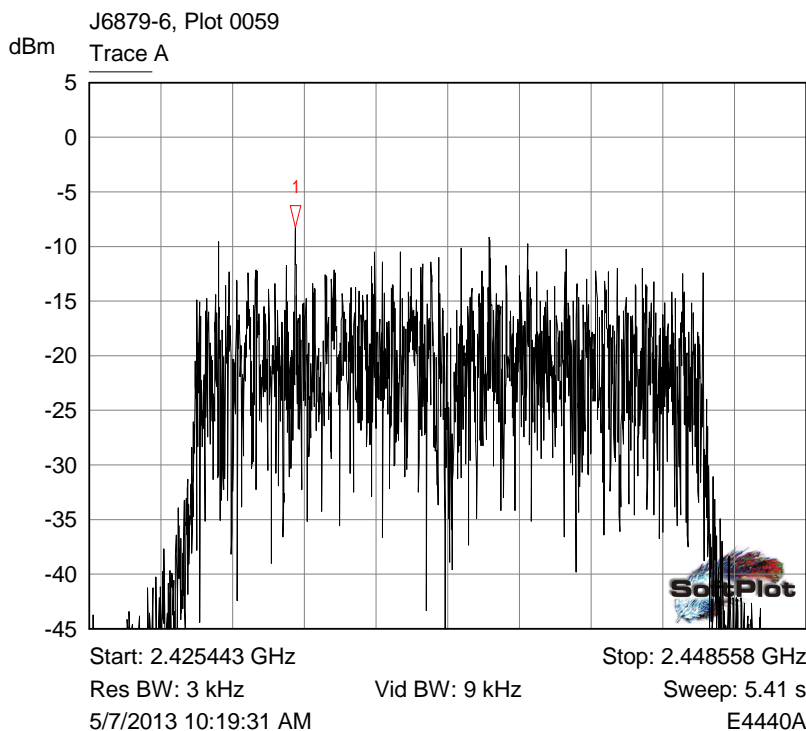


High channel

6.5.8 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 18 MBPS

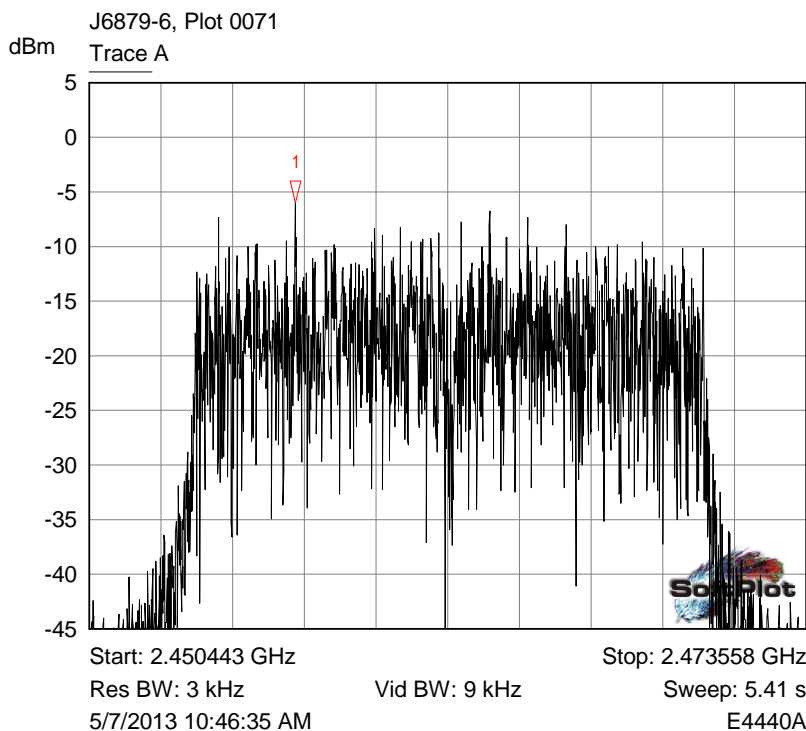


Low channel



1 Trace A
2.432080 GHz
-8.2350 dBm

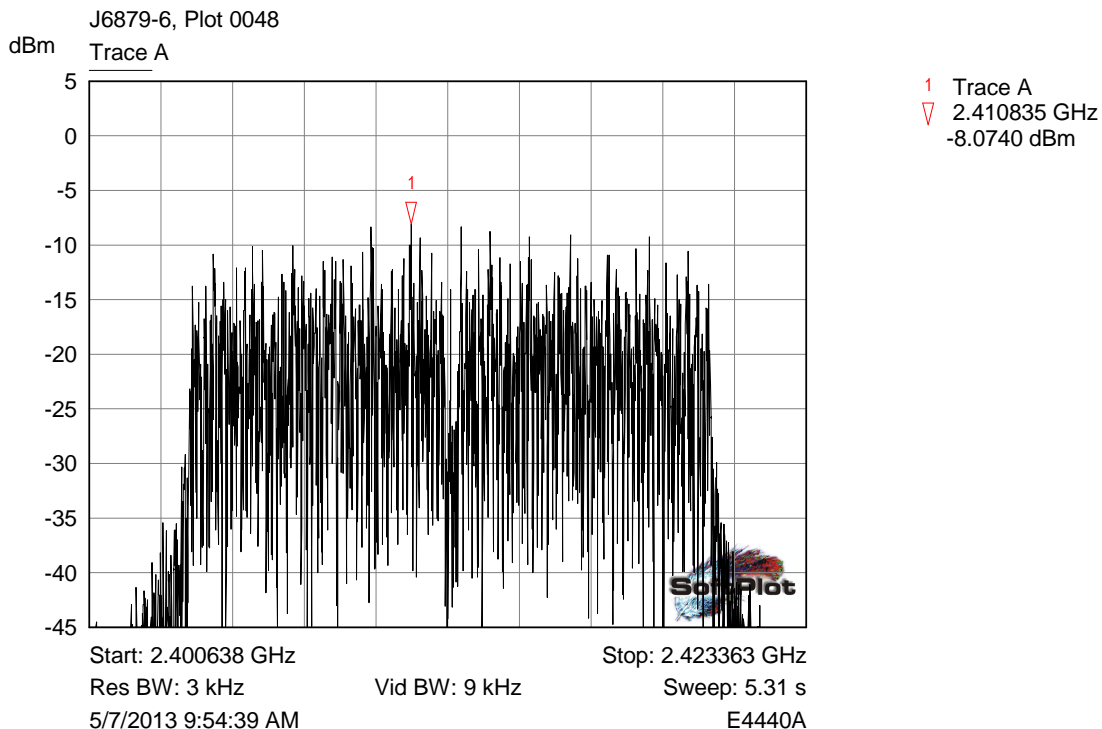
Mid channel



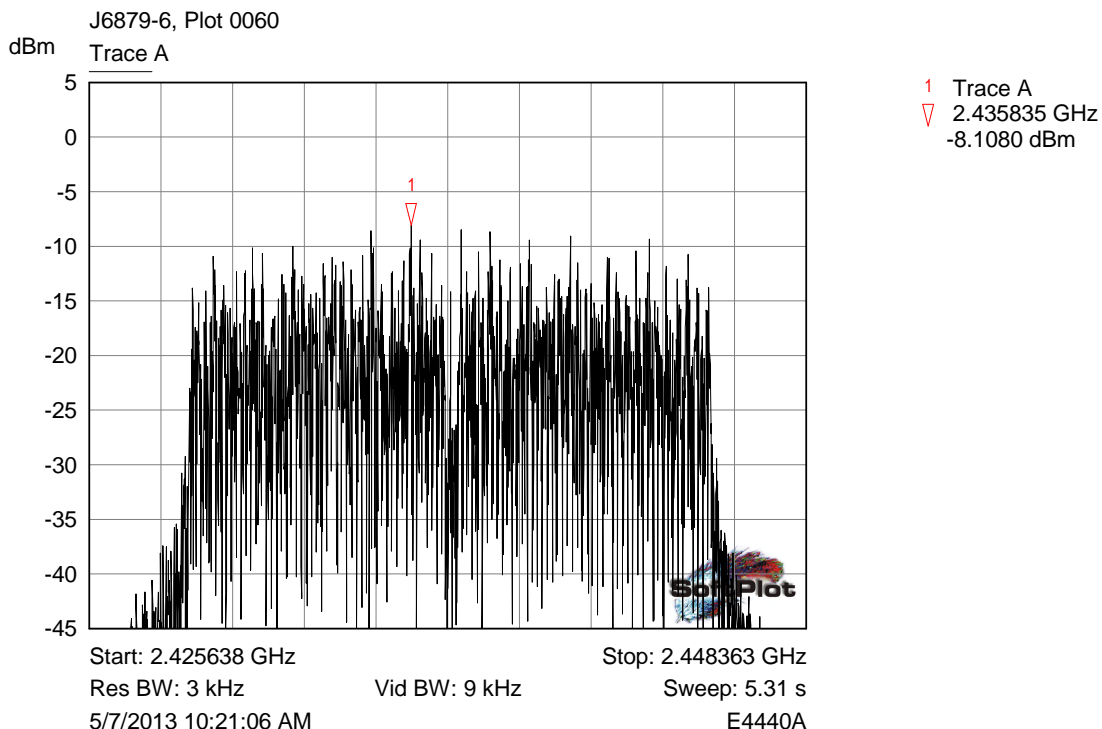
1 Trace A
2.457080 GHz
-6.0000 dBm

High channel

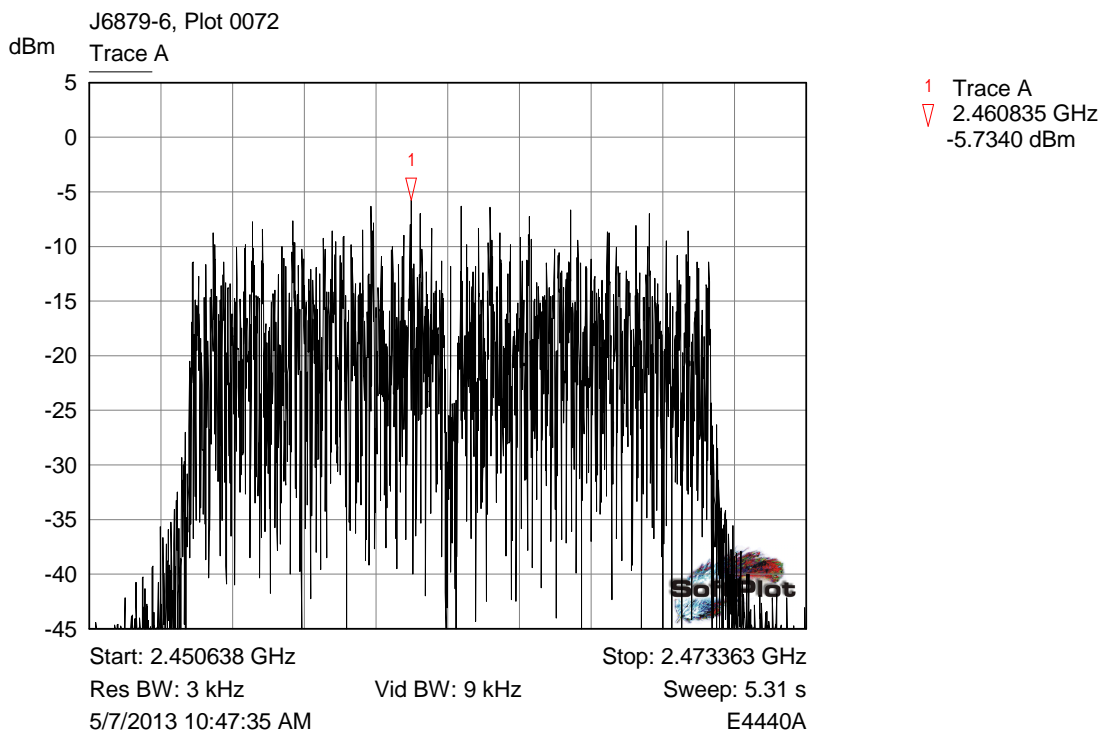
6.5.9 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 24 MBPS



Low channel

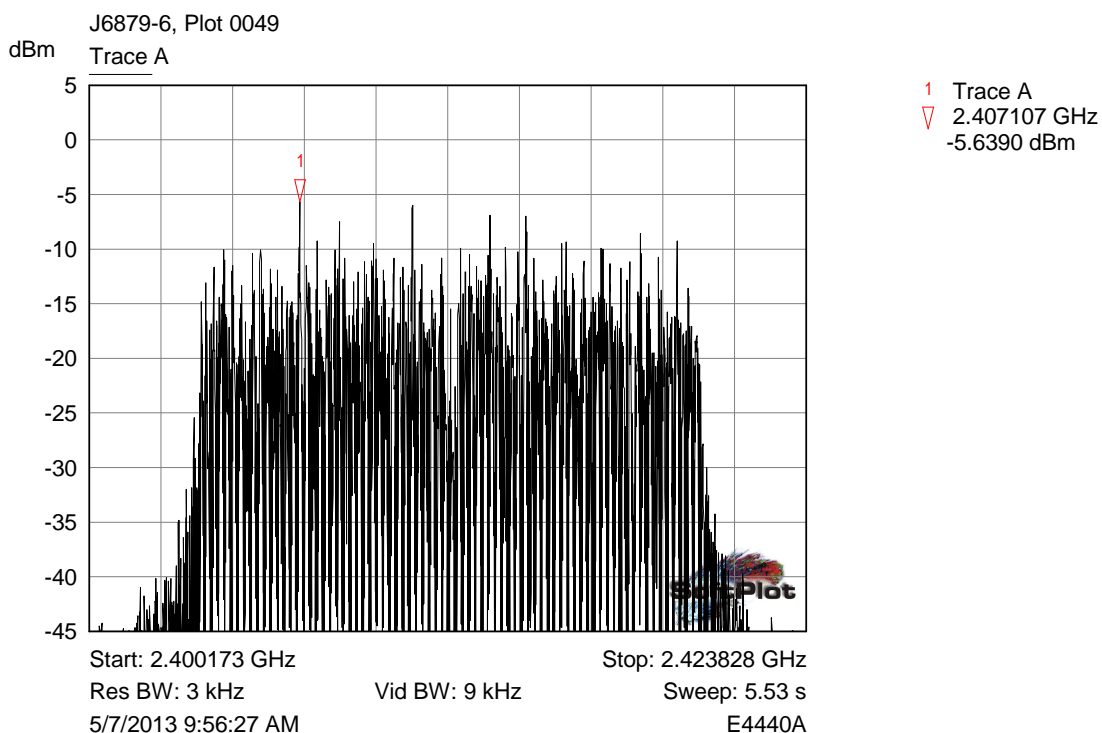


Mid channel

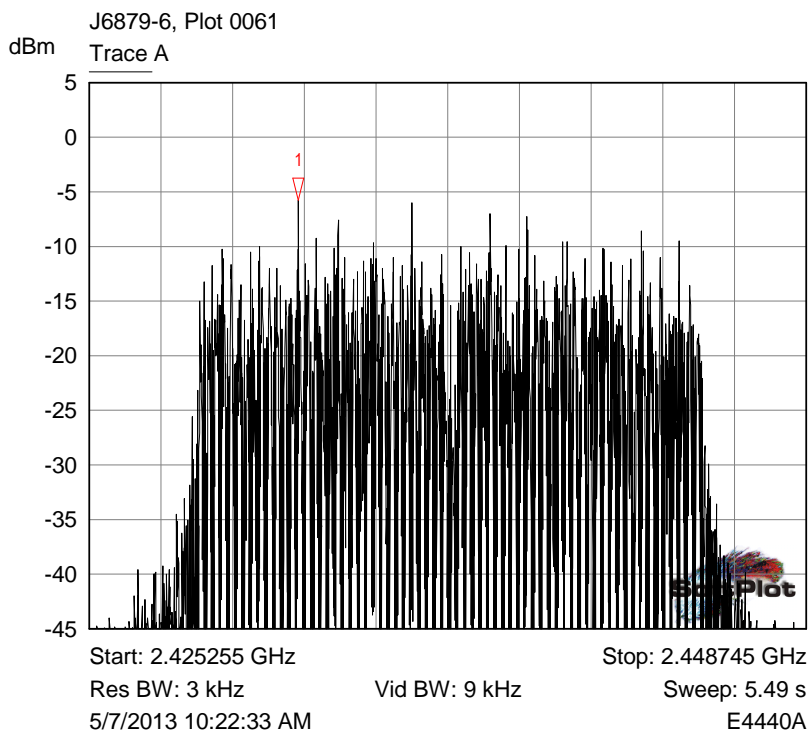


High channel

6.5.10 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 36 MBPS

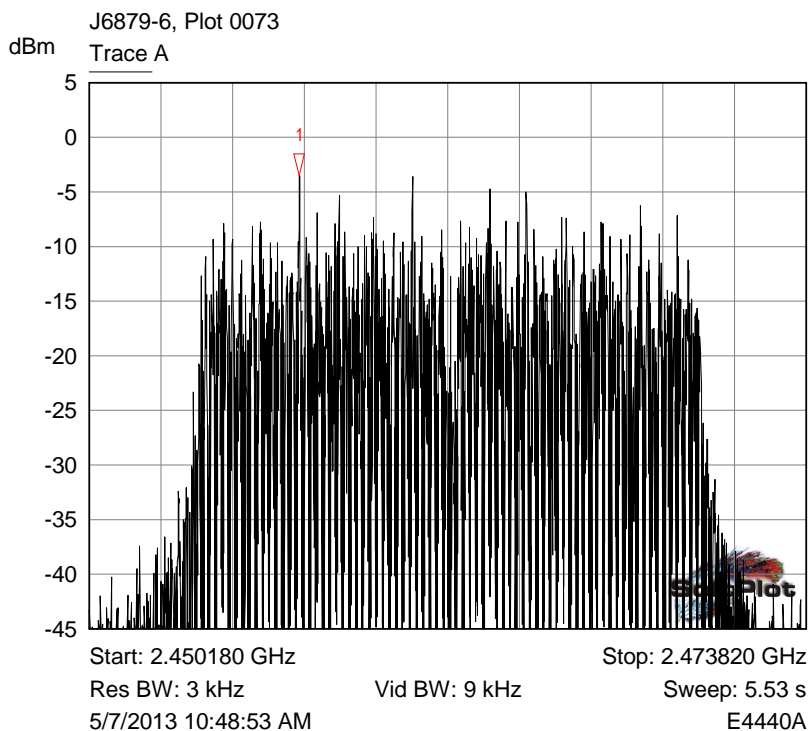


Low channel



1 Trace A
2.432106 GHz
-5.7410 dBm

Mid channel

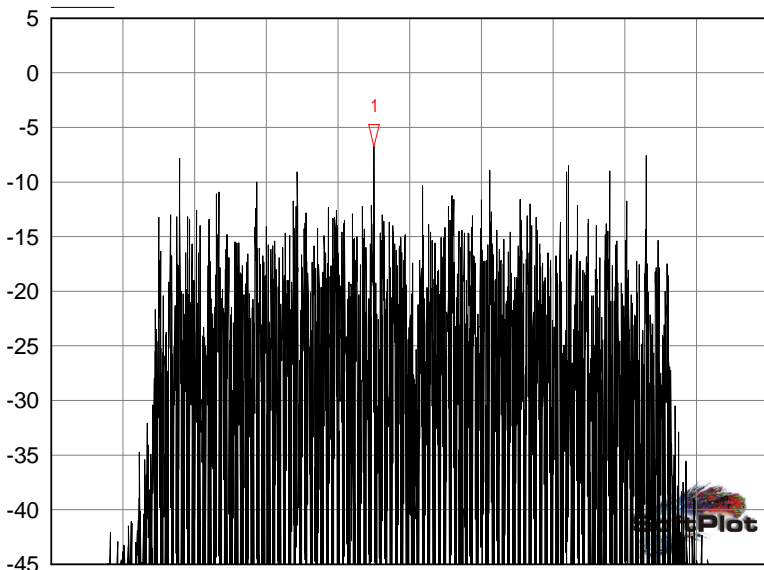


1 Trace A
2.457098 GHz
-3.4950 dBm

High channel

6.5.11 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 48 MBPS

J6879-6, Plot 0050
dBm Trace A

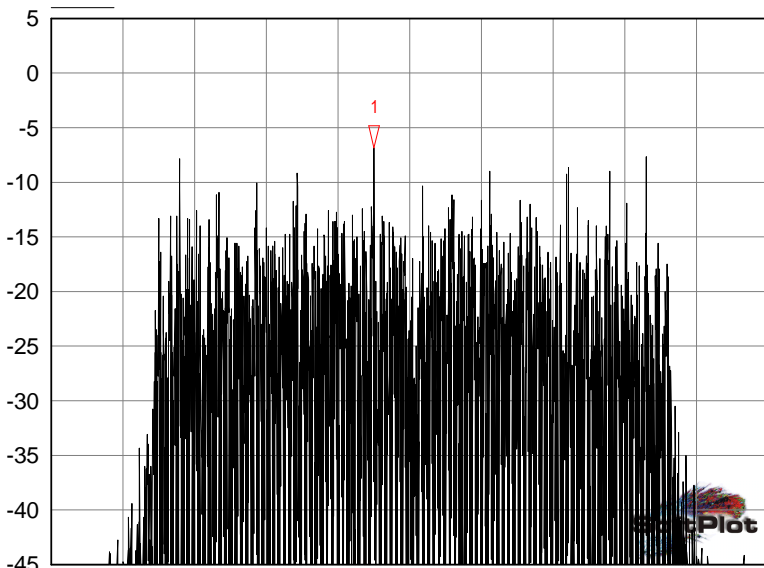


1 Trace A
2.410855 GHz
-6.7280 dBm

Start: 2.400503 GHz Stop: 2.423498 GHz
Res BW: 3 kHz Vid BW: 9 kHz Sweep: 5.38 s
5/7/2013 9:58:26 AM E4440A

Low channel

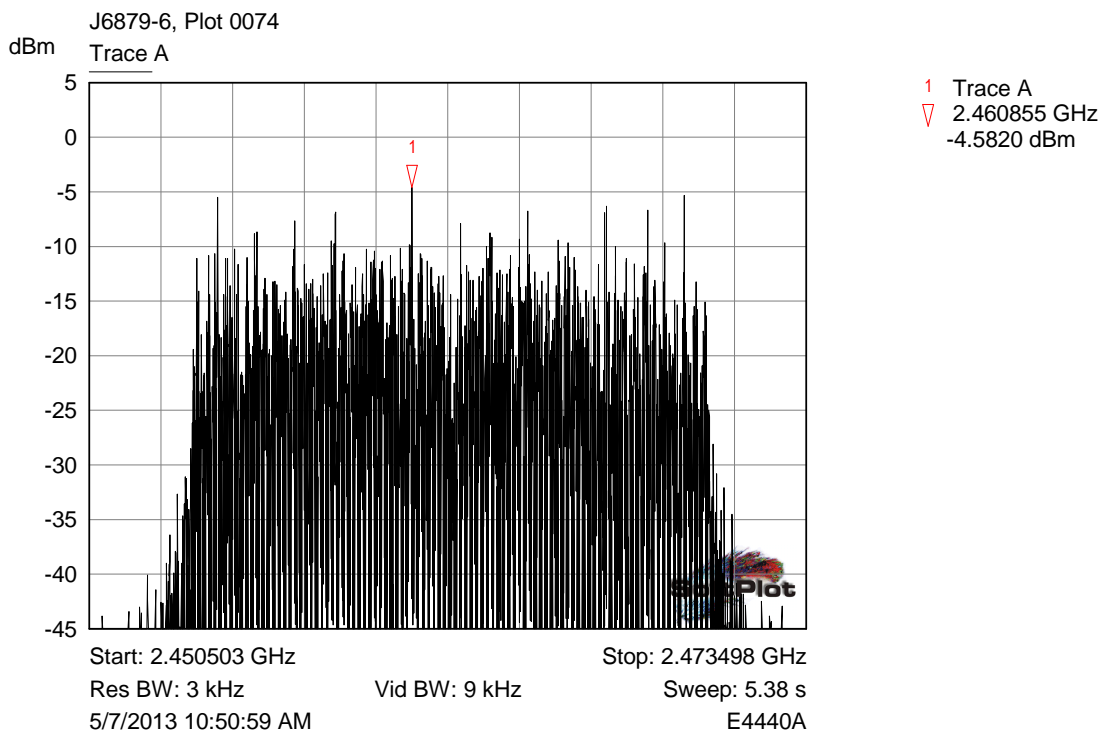
J6879-6, Plot 0062
dBm Trace A



1 Trace A
2.435855 GHz
-6.8700 dBm

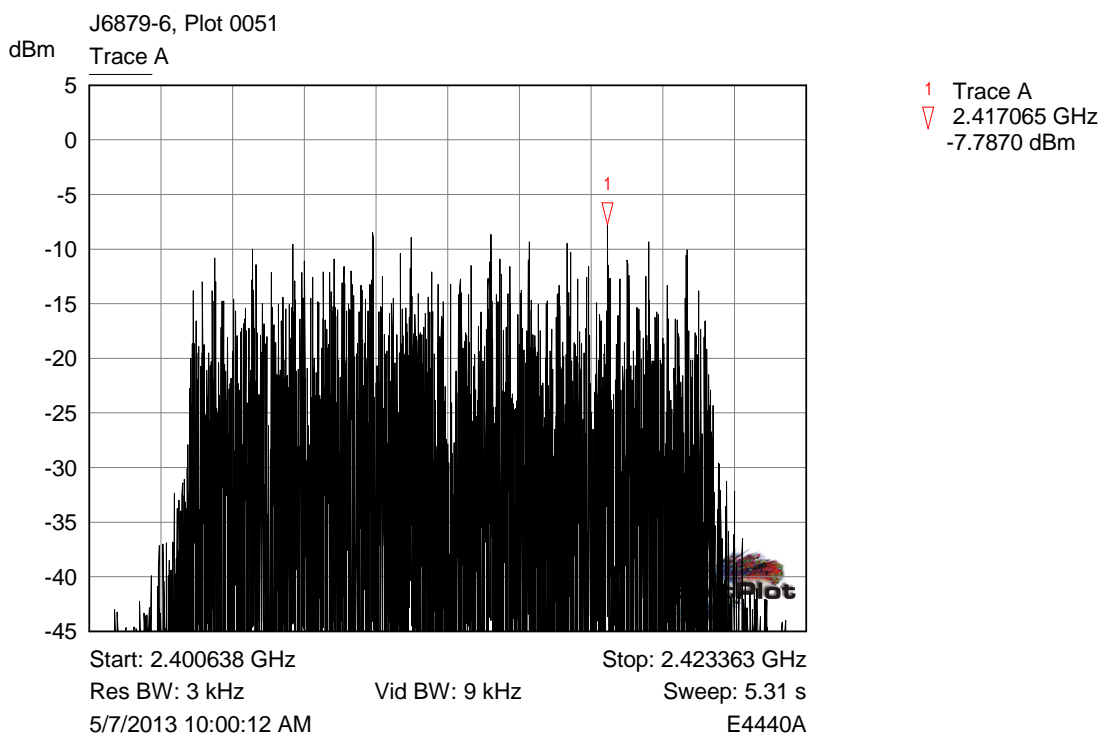
Start: 2.425503 GHz Stop: 2.448498 GHz
Res BW: 3 kHz Vid BW: 9 kHz Sweep: 5.38 s
5/7/2013 10:26:32 AM E4440A

Mid channel

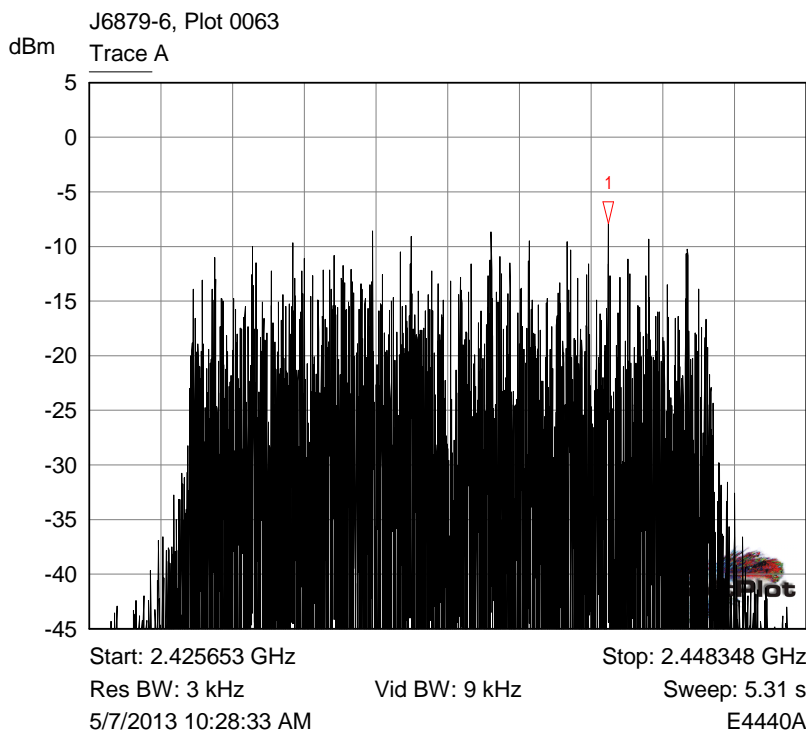


High channel

6.5.12 Plots for Band 2400-2483.5 MHz, Power 16 dBm, Spacing 5 MHz, and Modulation 54 MBPS

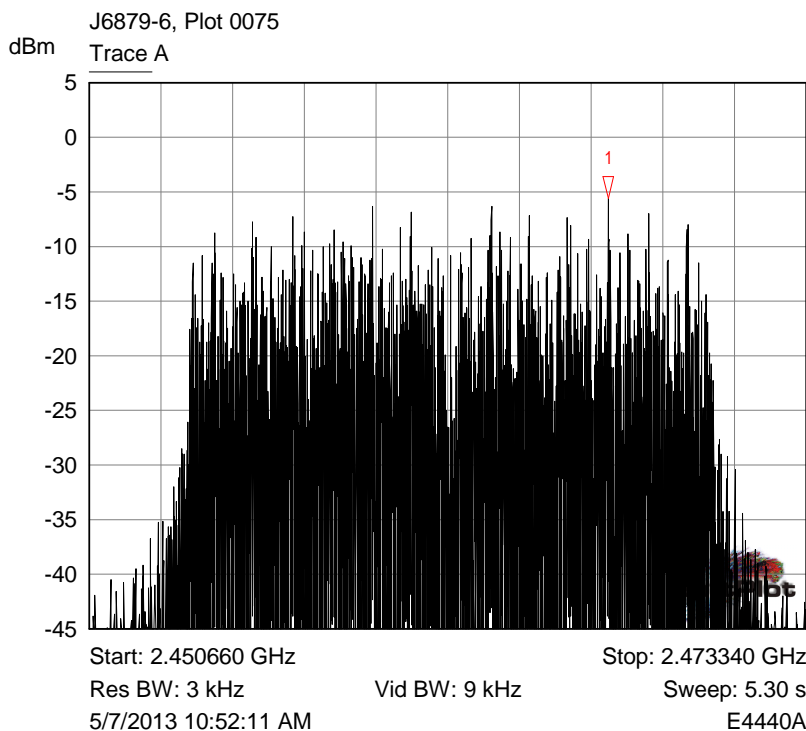


Low channel



1 Trace A
▽ 2.442069 GHz
-7.9120 dBm

Mid channel



1 Trace A
▽ 2.467066 GHz
-5.6020 dBm

High channel

7 Explanatory Notes

7.1 Explanation of Table of Signals Measured

Measurements are made as required by the standard. These measurements are made and recorded using detectors, either peak, quasi peak or average dependant on the test. A table of results has been given following the relevant plots. This table looks similar to the one illustrated below dependant on the measurements required by the test: -

Signal No.	Freq (MHz)	Peak Amp (dB μ V)	Pk - Lim 1 (dB)	QP Amp (dB μ V)	QP - Lim1 (dB)	Av Amp (dB μ V)	Av - Lim1 (dB)
1	12345	54.9	-10.5	48.0	-12.6	37.6	-14.4

Column One - Labelled Signal No. is an incremental number that the receiver has given to each signal that has been measured.

Column Two - Labelled Freq (MHz) is the approximate frequency of the signal received.

Column Three - Labelled Peak Amp (dB μ V) is the level of received signal that was measured in dB above 1 μ V using the peak detector.

Column Four - Labelled Pk - Lim1 (dB) is the difference in level from the peak signal given to the active limit line. If this column appears in the table the peak detector measurement is required by the standard for this test. The results entered in this column indicate the signal level relative to the compliance limit required. Negative numbers indicate that the product is compliant.

Column Five - Labelled QP Amp (dB μ V) is the level of received signal that was measured in dB above 1 μ V using the quasi-peak detector.

Column Six - Labelled QP - Lim1 (dB) is the difference in level from the quasi-peak signal given to the active limit line. If this column appears in the table the quasi-peak detector measurement is required by the standard for this test. The results entered in this column indicate the signal level relative to the compliance limit required. Negative numbers indicate that the product is compliant.

Column Seven - Labelled Av Amp (dB μ V) is the level of received signal that was measured in dB above 1 μ V using the average detector.

Column Eight - Labelled Av - Lim1 (dB) is the difference in level from the average signal given to the active limit line. If this column appears in the table the average detector measurement is required by the standard for this test. The results entered in this column indicate the signal level relative to the compliance limit required. Negative numbers indicate that the product is compliant.

Only signals highlighted in red are deemed to exceed the limit of the detector required.

7.2 Explanation of limit line calculations for radiated measurements

The limits given in the test standard are normally expressed as absolute values (e.g. in $\mu\text{V}/\text{m}$ at a specified distance), whereas the measured values are expressed as peak, quasi peak or average values in $\text{dB}\mu\text{V}/\text{m}$ referenced to the measuring instrument inputs. RN Electronics calibrate the test set-up to account for any path losses, antenna gains, etc. so that the value read at the receiver relates directly to the absolute value required, except that it is expressed in dB relative to one microVolt and may need to take account of any alternative measuring distance used. Examples:

- (a) limit of $500 \mu\text{V}/\text{m}$ equates to $20.\log(500) = 54 \text{ dB } \mu\text{V}/\text{m}$.
- (b) limit of $300 \mu\text{V}/\text{m}$ at 10m equates to $20.\log(300 \cdot 10/3) = 60 \text{ dB } \mu\text{V}/\text{m}$ at 3m
- (c) limit of $30 \mu\text{V}/\text{m}$ at 30m, but below 30MHz, equates to $20.\log(30) + 40.\log(30/3) = 69.5 \text{ dB}\mu\text{V}/\text{m}$ at 3m, as extrapolation factor below 30MHz is 40dB/decade per 15.31(f)(2).

8 Photographs

8.1 EUT Front View



8.2 EUT Rear View



8.3 EUT supplied PSU



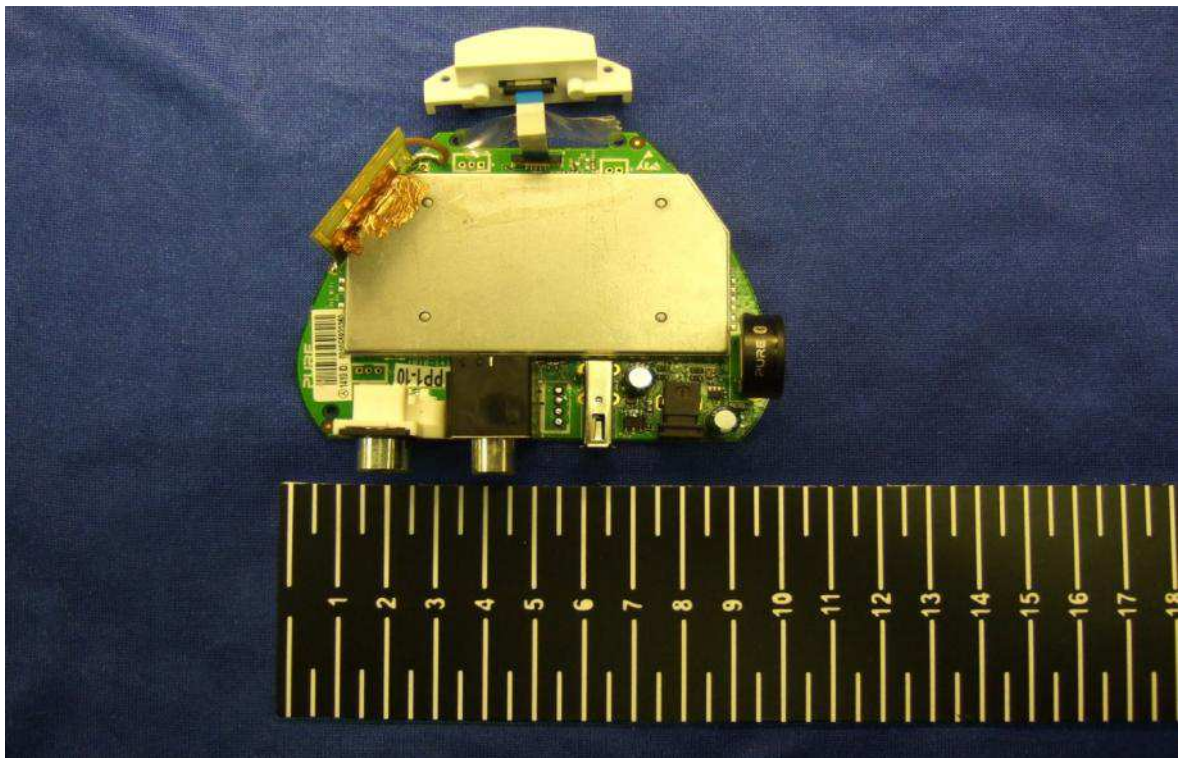
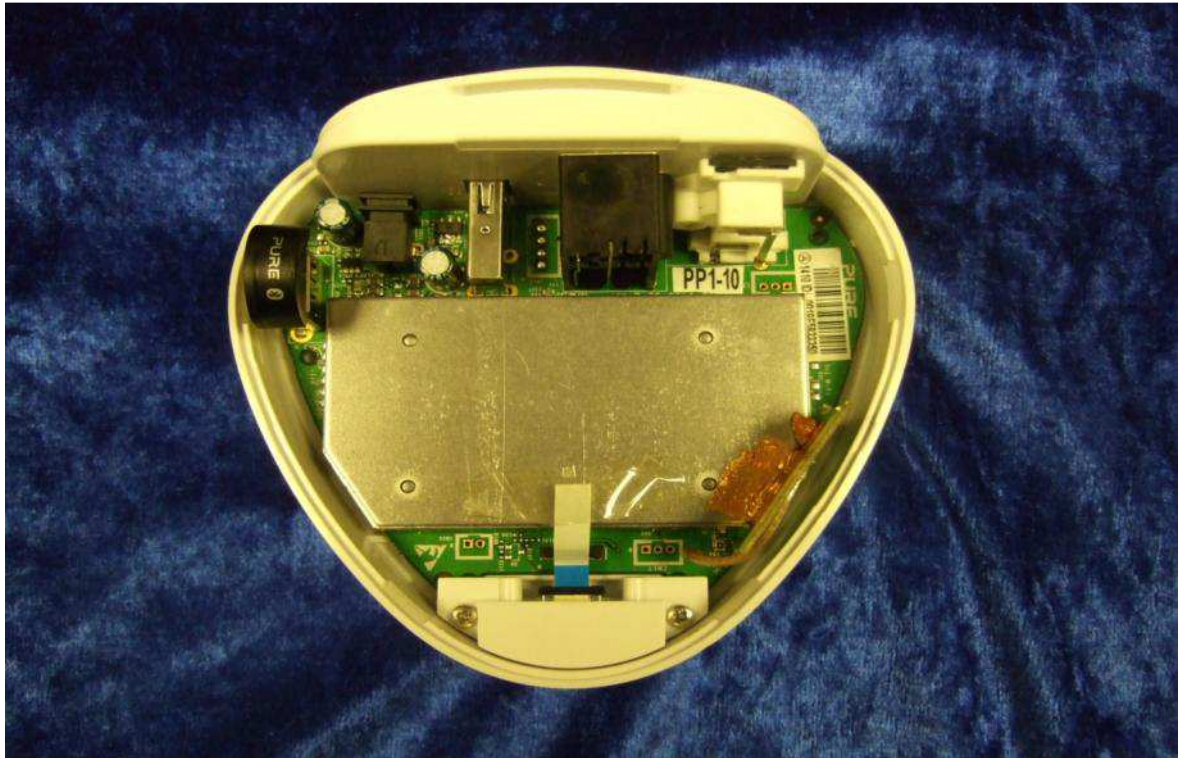
8.4 Antenna Connector Port

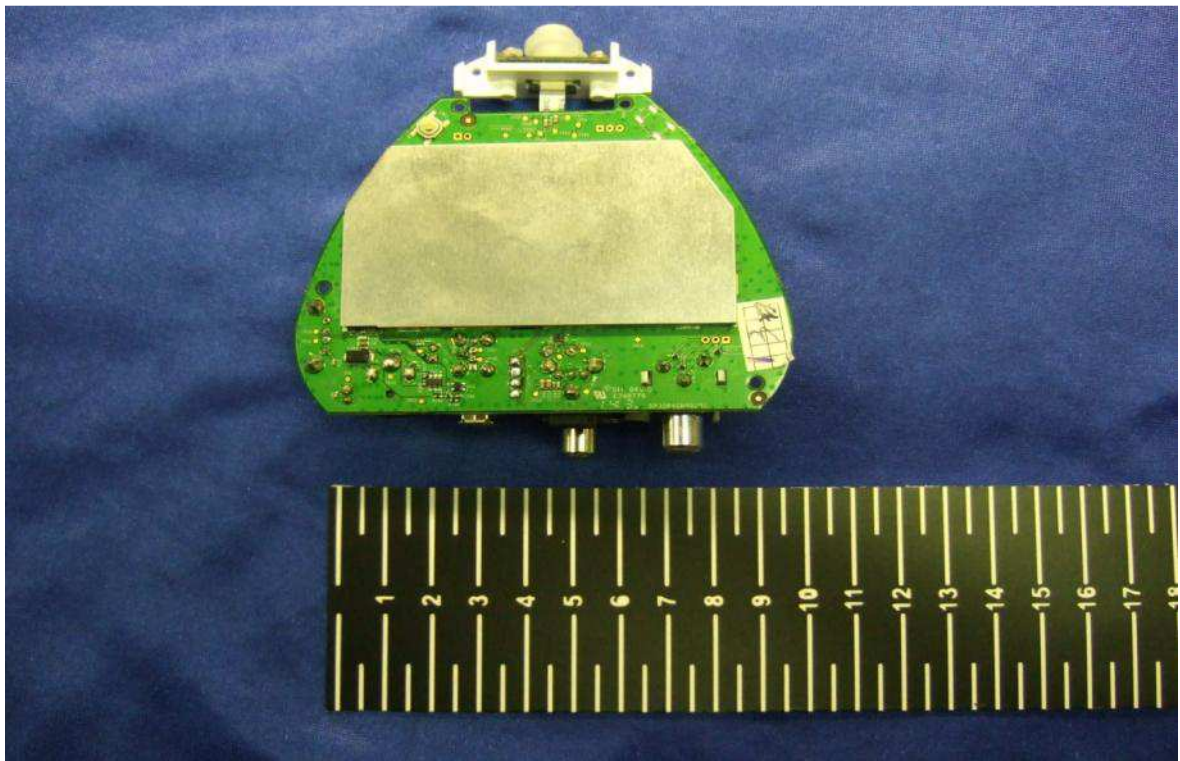


8.5 EUT Display / Controls

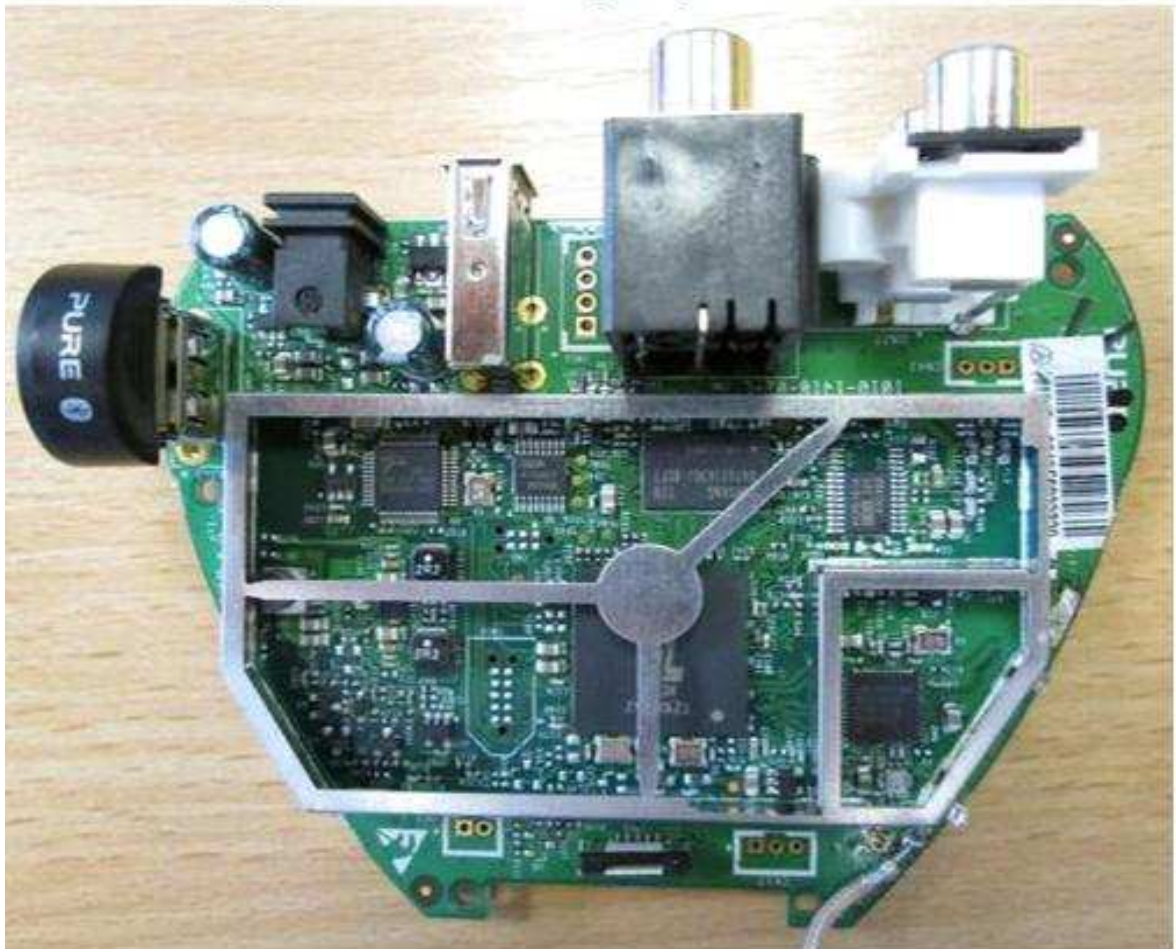


8.6 EUT Internal Construction





Main PCB top (without screening can)



File name PURE.6879-6 ISSUE 01.DOCX

The contents of this report, apart from the referenced ANSI C63.4-2003, are beyond the scope of UKAS Testing Laboratory No. 2360 accreditation.

QMF21J – 3; 47CFR15.247, RNE ISSUE 01 SEP 2012

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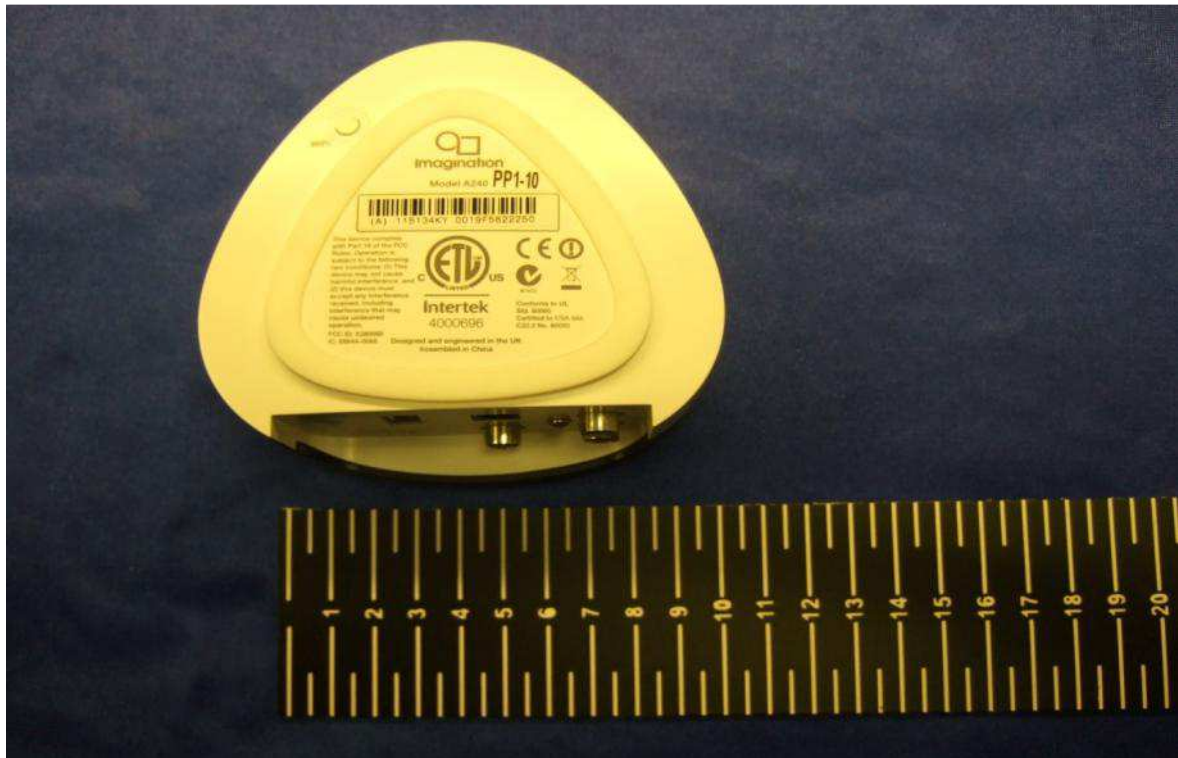
Main PCB bottom (without screening can)



8.7 EUT Identification Label



8.8 EUT Chassis





8.9 Test set-ups, spurious emissions

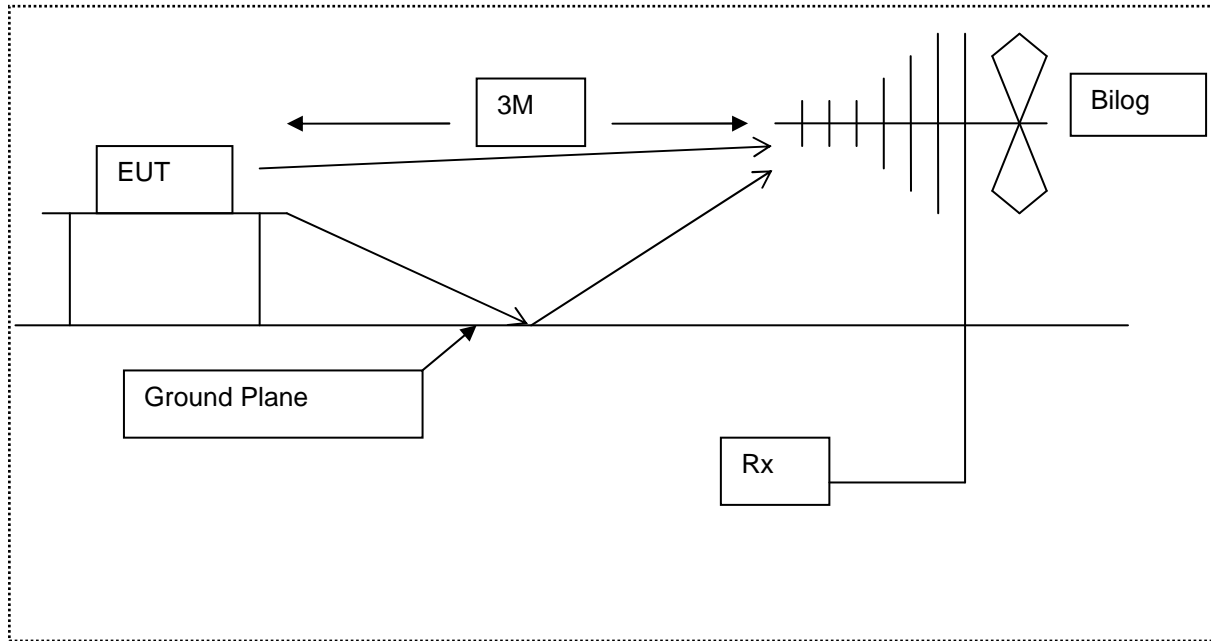
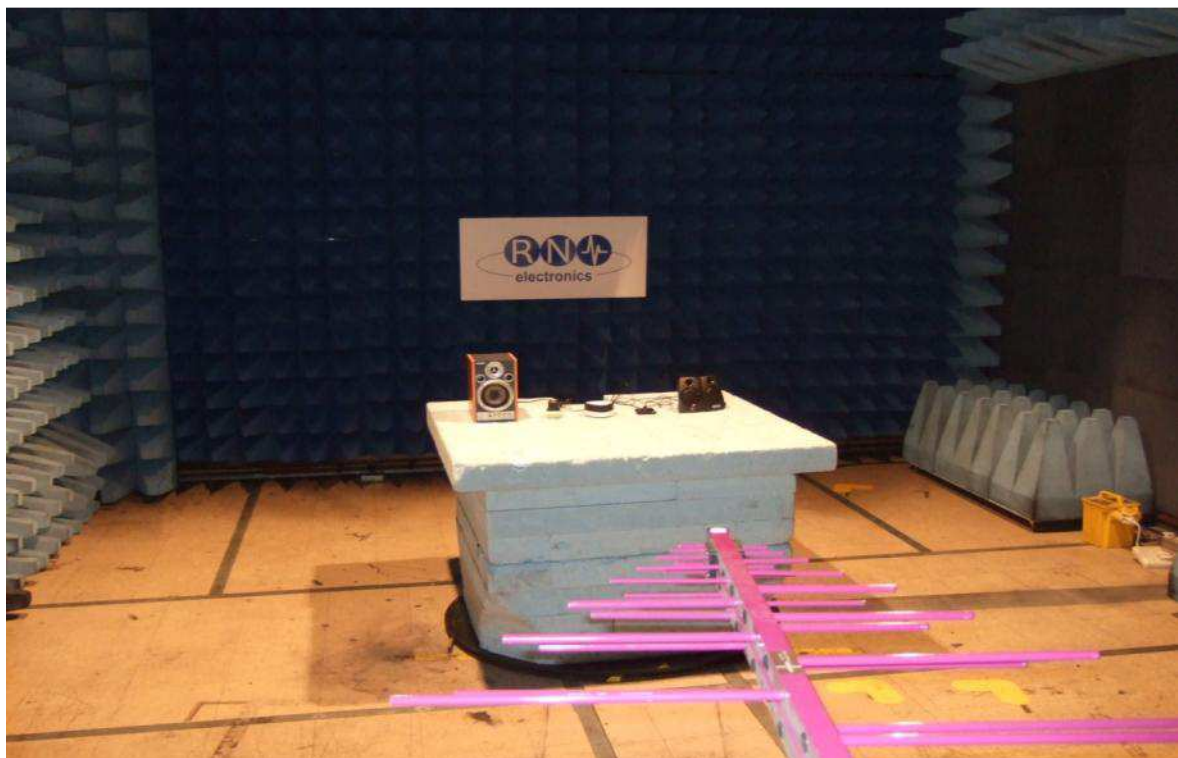
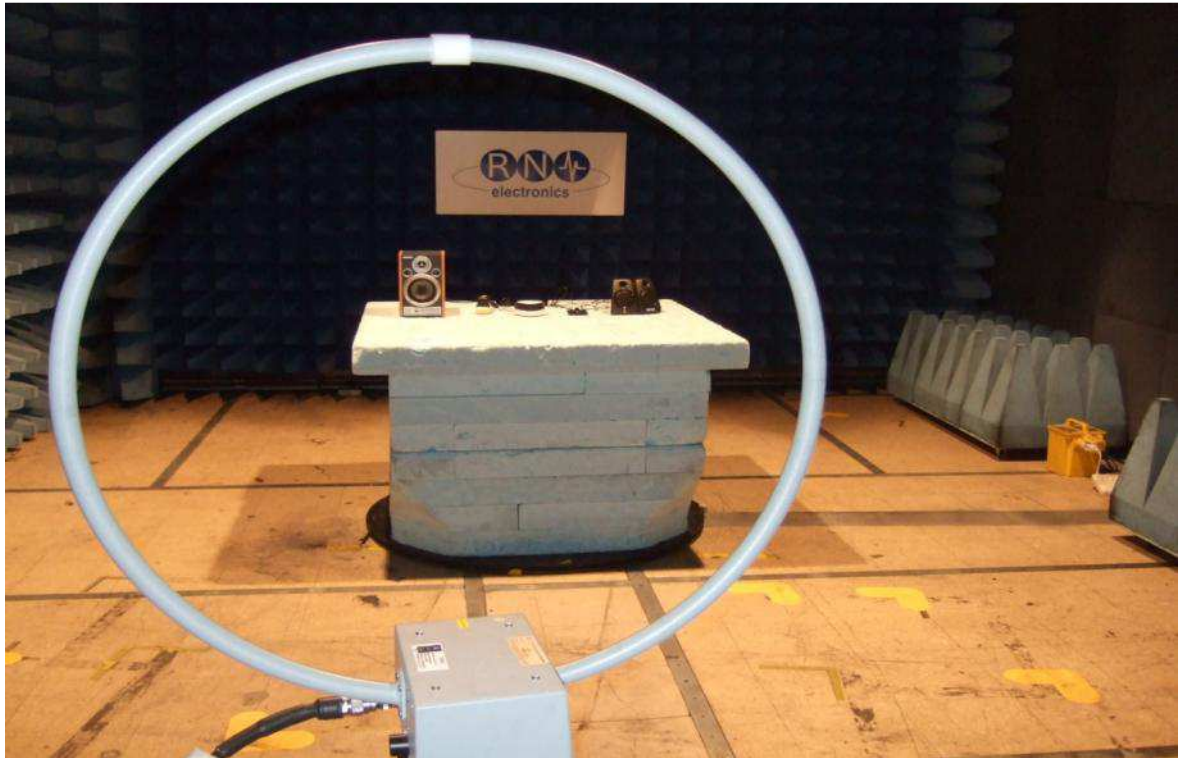


Diagram of the radiated emissions test setup.









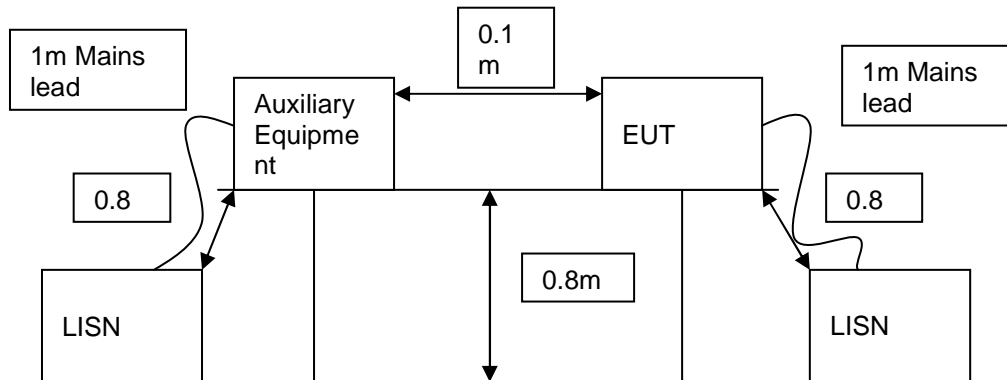


Diagram of the AC power line conducted emissions test setup.



Photograph of the EUT as viewed from screened room (AC power line conducted emissions)

9 Signal Leads

Port Name	Cable Type	Connected
AC/DC brick to DC	AC plug to 2 core DC lead	Yes
USB	standard USB	Yes
L audio	coax	Yes
R audio	coax	Yes
Digital audio out	coax	Yes
Digital optical out	Fibre optic	No

10 Test Equipment Calibration list

The following table lists the Test Equipment Used, last calibration date and calibration interval. All Test Equipment Used has been maintained within the calibration requirements of **R.N. Electronics Ltd.** test facility quality system. Calibration intervals are regularly reviewed dependent on equipment manufacturer's recommendations and actual usage of the equipment.

RN No.	Model	Description	Manufacturer	Last calibrated	Period
E010	MN2050	LISN 13A	Chase	OCT-02-2012	12
E035	HP11947A	Transient Limiter + 10dB Atten.	Hewlett Packard	FEB-11-2013	6
E150	MN2050	LISN 13A	Chase	OCT-02-2012	12
E186	11593A	50 Ohm Load	Hewlett Packard	JAN-15-2013	12
E251	6806.19.A	6dB Attenuator	Suhner	NOV-02-2012	12
E252	6810.19.A	10 dB Attenuator	Suhner	MAY-09-2013 ¹	12
E266	2032	5.4GHz Signal Generator	Marconi Instruments	JUN-28-2012	24
E268	BHA 9118	1-18 GHz Horn Antenna	Schaffner	APR-14-2013	60
E290	6914	Power Sensor	Marconi Instruments	AUG-23-2011	24
E342	8563E	Spectrum Analyser 26.5 GHz	HP	MAY-28-2013 ¹	24
E397	6960B	RF Power Meter	Marconi Instruments	JUL-16-2011	24
E410	N5181A	3 GHz MXG Signal Generator	Agilent Technologies	OCT-26-2011	36
E411	N9039A	9 kHz - 1 GHz RF Filter Section	Agilent Technologies	OCT-18-2012	12
E412	E4440A	3 Hz - 26.5 GHz PSA	Agilent Technologies	OCT-18-2012	12
E429	-	5 Switch Filter Box 0.91 GHz - 16.3 GHz	RN Electronics	NOV-20-2012	12
E465	PCR2000LA	AC Power Supply	KIKUSUI	MAY-09-2013 ¹	12
E533	N5182A	6 GHz MXG Signal Generator	Agilent Technologies	FEB-26-2013	36
E534	E4440A	3 Hz - 26.5 GHz PSA	Agilent Technologies	FEB-22-2013	36
E535	N9039A	9 kHz - 1 GHz RF Filter Section	Agilent Technologies	FEB-22-2013	36
N240	CRT700/3/2C	100v Transformer		N/A	N/A
TMS10	TH200	ThermoHygrometer	RS Components	SEP-14-2012	24
TMS57	2534	Digital Multimeter	Philips	JAN-24-2013	24
TMS78	3160-08	Std Gain Horn Antenna 12.4-18 GHz	ETS Systems	JUN-07-2013 ¹	24
TMS79	3160-09	Std Gain Horn Antenna 18-26.5 GHz	ETS Systems	JUN-07-2013 ¹	24
TMS81	6502	Active Loop Antenna	EMCO	OCT-24-2012	24
TMS82	8449B	Pre Amplifier 1 - 26 GHz	Agilent	NOV-19-2012	12
TMS933	CBL6141A	Bilog Antenna 30MHz - 2GHz	York EMC	SEP-09-2010	36

¹ Calibrated since test and 12/24 months prior, as appropriate.

11 Auxiliary equipment

11.1 Customer supplied Equipment

Auxiliary equipment used for the purpose of test supplied by the above has been listed below

Item No.	Model No.	Description	Manufacturer	Serial No.
1	D300i	Modified USB controller	Pure	Not stated
2	MA-15D	Digital speakers	EDIROL	AU40641J

11.2 Supplied by RN Electronics Limited

Auxiliary equipment used for the purpose of test supplied by the above has been listed below

RN No.	Model No.	Description	Manufacturer	Serial No
N505	Z130	Stereo Speakers	Logitech	302
-	-	256MB USB stick	RN	-

12 Modifications

In order for the EUT to produce the results shown within this report the following modifications, if any, were implemented.

12.1 Modifications before test

There were no modifications made by R.N. Electronics Ltd before testing commenced.

12.2 Modifications during test

There were no modifications made by R.N. Electronics Ltd during testing.

13 Compliance information

Products subject to the Declaration of Conformity procedure are required to be supplied with a compliance information statement. A copy of this statement may be included here:

CERTIFIED equipment – DoC not required².

² n.b. the EUT USB port does not connect to a PC, hence it is not a PC peripheral either.

14 Description of Test Sites

Site A	Radio / Calibration Laboratory and anechoic chamber
Site B	Semi-anechoic chamber & control room
Site C	Transient Laboratory
Site D	Screened Room (Conducted Immunity)
Site E	Screened Room (Control Room for Site D)
Site F	Screened Room (Conducted Emissions) VCCI Registration No. C-2823
Site G	Screened Room (Control Room for Site H)
Site H	3m Semi-anechoic chamber (indoor OATS)
Site J	Screened Room
Site K	Screened Room (Control Room for Site M)
Site M	3m Semi-anechoic chamber (indoor OATS) FCC Registration No. 293246
Site Q	Fully-anechoic chamber
Site OATS	3m and 10m Open Area Test Site FCC Registration No. 293246 IC Registration No. 5612A-1 VCCI Registration No. R-2580
Site R	Screened Room (Conducted Immunity)
Site S	Safety Laboratory
Site T	Transient Laboratory

15 Abbreviations and Units

%	Percent	Hz	Hertz
µV	microVolts	IF	Intermediate Frequency
µW	microWatts	kHz	kiloHertz
AC	Alternating Current	LO	Local Oscillator
ALSE	Absorber Lined Screened Enclosure	mA	milliAmps
AM	Amplitude Modulation	max	maximum
Amb	Ambient	mbar	milliBars
ANSI	American National Standards Institute	MHz	Megahertz
°C	Degrees Celsius	min	minimum
CFR	Code of Federal Regulations	mm	millimetres
CS	Channel Spacing	ms	milliseconds
CW	Continuous Wave	mW	milliWatts
dB	decibels	NA	Not Applicable
dBµV	decibels relative to 1µV	nom	Nominal
dBc	decibels relative to Carrier	nW	nanoWatt
dBm	decibels relative to 1mW	OATS	Open Area Test Site
DC	Direct Current	OFDM	Orthogonal Frequency Division Multiplexing
EIRP	Equivalent Isotropic Radiated Power	ppm	Parts per million
ERP	Effective Radiated Power	QAM	Quadrature Amplitude Modulation
EUT	Equipment Under Test	QPSK	Quadrature Phase Shift Keying
FCC	Federal Communications Commission	Ref	Reference
FM	Frequency Modulation	RF	Radio Frequency
FSK	Frequency Shift Keying	RTP	Room Temperature and Pressure
g	Grams	s	Seconds
GHz	GigaHertz	Tx	Transmitter
		V	Volts