THE STANDARDS INSTITUTION OF ISRAEL Telematics Laboratory

Test Report No. 8612303651 Rev.1

For Alvarion Ltd.

Equipment Under Test:

Broadband Wireless Access BreezeACCESS VL 5.3 System and Point to Point BreezeNET B system Rev C

From The Standards Institution
Of Israel
Industry Division
Telematics Laboratory
EMC Section

ACCREDITED

Certificate No. 1487-01

42 Chaim Levanon St. Tel-Aviv 69977 Tel: 972-3-646-7800 Fax: 972-3-646-7779 www.sii.org.il

Test Report No.: 8612303651 Rev.1 **Page 1 of 164 Pages**

Title: Test on Broadband Wireless Access system:
BreezeACCESS VL 5.3 System and Point to Point BreezeNET B system RevC
FCC ID: LKT-VL-53C

Order placed by:	Alvarion Ltd.
Address:	21A Habarzel str, Tel-Aviv, 69710, Israel
Sample for test selected by:	The customer
The date of test:	14/12 - 28/12/2005

Description of Equipment Under Test (EUT): BreezeACCESS VL 5.3 System and Point to Point BreezeNET B system RevC

Manufactured by: Alvarion Ltd.

Reference Documents:

- CFR 47 FCC: Rules and Regulations; Part 15. “Radio frequency devices”; Subpart C: “Intentional radiators”, Subpart E: “UNII devices”

Test Results: The EUT was found meeting with the relevant requirements of CFR 47 FCC Part 15 Sections: 15.205, 15.207, 15.209, and 15.407.

This Test Report contains 164 pages and may be used only in full.	This Test Report applies only to the specimen tested and may not be applied to other specimens of the same product.

Table of Contents

1. Scope

Test item: BreezeACCESS VL 5.3 System and Point to Point BreezeNET B system .

Manufacturer: Alvarion LTD

Types (Models): Base Station

IDU:	BS-SH-VL (Generic) shelf
BS-AU-VL	Plugged-in card
BS-PS-AC-VL	AC Power supply
ODU: AU-D-BS-5.3-ODU	Radio unit

Subscribe unit:
SU-A-5.3-6/54-B/1D-VL Complete system
IDU: Universal indoor unit, Model: PS1065/1073

Base station Stand-alone unit and Subscriber unit are identical hardware units and system construction. The two configurations are distinguished by software application only.

BreezeNET B system hardware configuration and system construction is identical to the following BreezeAccess VL units:

BU-B14/28D-5.3 system configuration is identical to subscriber unit SU-A-5.3-6/54-B/1D-VL.
The two systems are distinguished by software application only.
RB-B14/28D-5.3 system configuration is identical to subscriber unit SU-A-5.3-6/54-B/1D-VL.
The two systems are distinguished by software application only

2. System content

2.1. BreezeACCESS VL system and BreezeNETB system

Base station	
AU-D-BS-5.3-90/120-VL	Complete system
BS-SH-VL (Generic)	Shelf
BS-PS-AC-VL	Power supply AC
BS-PS-DC-VL	Power supply DC
BS-AU-VL	Indoor card
AU-D-BS-5.3 -ODU-90/120	Outdoor unit with detached antenna
Base station Stand alone	
AU-D-SA-5.3-60/90/120-VL	Complete system with detached antenna
Subscriber unit	
SU-A-5.3-6/54-B/1D-VL	Complete system with integrated antenna
BreezeNETB p-to-p system	
RB-B14/28D-5.3[1]	Remote bridge D: antenna detached
BU-B14/28D-5.3[1]	Base unit D: antenna detached

Comments:
[1] D can be blank or D

2.2. Applicant information

Company:	Alvarion LTD
P.O.B.:	13139
Postal code:	61131
City:	Tel Aviv
Country:	Israel
Telephone number:	+972 3 6456262
Telefax number:	+972 3 6456222

2.3. Test performance

Location:	SII EMC Section Alvarion LTD
Purpose of test:	Apparatus compliance verification in according with CFR 47 FCC Requirement
Test specification:	CFR 47 FCC Part 15 Sections: 15.205, 15.207, 15.209, 15.407

Test performed by: Mr. Michael Feldman, test technician

Test report approved by: Mr.Yuri Rozenberg, Head of EMC Branch

3. General description

BreezeACCESS VL is a high capacity, IP services oriented Broadband Wireless Access system.
The BreezeAccess VL is digital modulated TDD system operating in the 5250 MHz up to 5350 MHz band. The system contains a base station unit and a subscriber unit.
The system is operating with software selectable bandwidth of 10MHz, 20MHz, and 40MHz.

The base station and subscriber radio are identical radio hardware.
The basic system configuration is a two-box configuration that contains

1. Indoor unit that contains a power supply and an Ethernet 10Base-T bypass.
2. Outdoor unit containing the entire radio and digital section.
3. A single CAT5 cable connecting the indoor and outdoor unit carrying the DC power and the data.

The subscriber indoor unit is a single power supply (55VDC) and Ethernet 10Base-T bypass. The base station indoor unit is a 19" rack containing several indoor units cards were there is one main power supply for all units or a single power supply supporting only one outdoor unit.
The subscriber unit is typically supplied with a 21dBi antenna or a high gain antenna for point-to-point application.
The Base station unit is typically supplied with a 16dBi antenna for point to multi point application or with a high gain antenna for point-to-point application.
The measurements are done for the worst-case high output power for the subscriber and base station applications. For high gain antenna the output power is attenuated automatically to maintain the 30dBm EIRP limit.

Photo # 1. Radio Unit. PWB component side

Photo # 2. Radio Unit. PCB component side

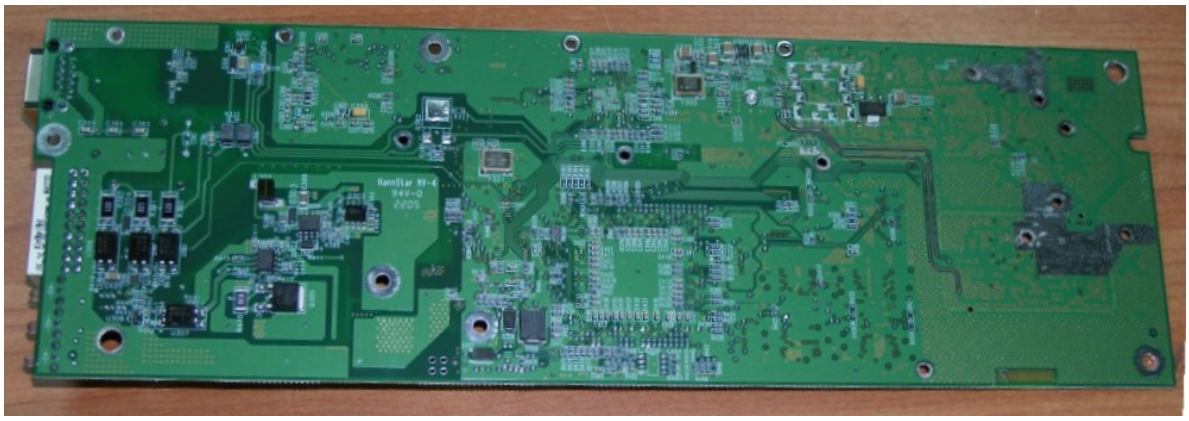
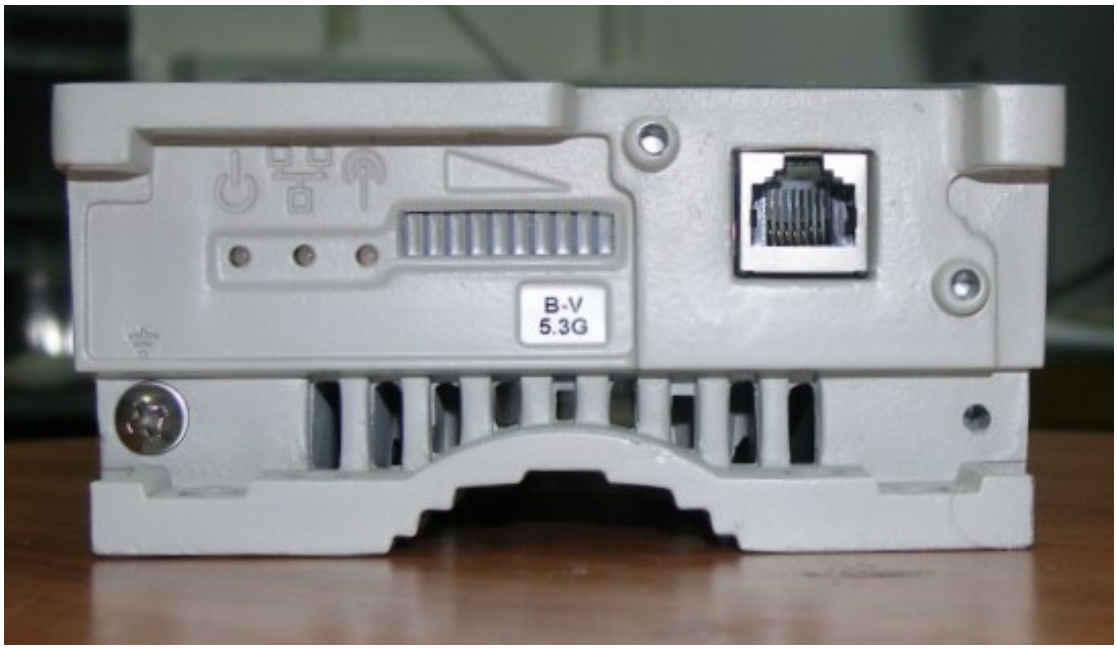


Photo # 3. Radio Unit. PCB print side



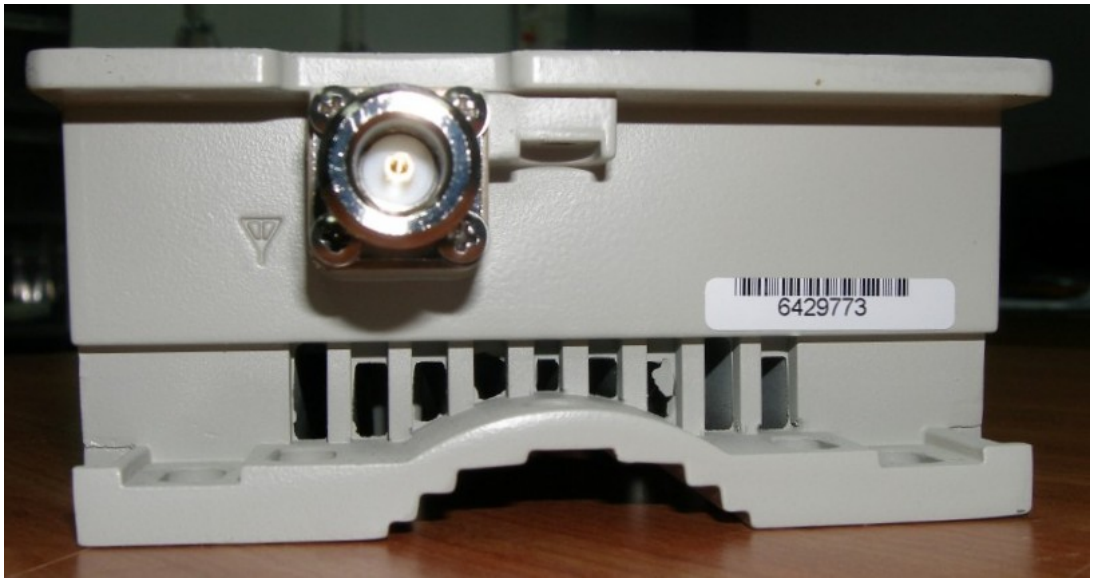


Photo # 4. Radio unit. RF & RJ45 connectors view

4. Test configuration:

1. For Radiated emission measurements per sec. 15.407 requirements the Subscriber Unit and the Base Station Unit were configured for tests as shown in Figures 1, 2.

2. For Radiated emission measurements per sec. 15.407 requirements the Radio unit was tested with three various antennas, as shown in table:

	Name	Freq. Range [GHz]	Gain dBi	P/N or Model	Type
1	MTI (AU)	5.15 - 5.875	16	AN 1152	Sector antenna MT-484033/NV
2	UNI-28-4 (SU)	5.15 - 5.875	28	AN 1230	Planar Array MT 4860001 Unidirectional antenna
3	MA-WA50-1X (SU)	5.15 - 5.875	21	AN 1248	Integrated antenna

Environmental evaluation and exposure limit according to FCC CFR 47part 1, §1.1307, §1.1310
Limit for power density for general population/uncontrolled exposure is 1 mW/cm2.

The power density P (mW/cm2) = $Pt/4\pi .r2$

Where:

PT - The transmitted power (EIRP) (mW)
r - The distance from the unit. (cm)

The 1(mW/cm2) limit can be calculated from the above based on the following data:
Pt = 30dBm (maximum EIRP) 1000mW

$r = SQRT(1000/4\pi) = 8.92cm$

The allowed distance “r”, where RF exposure limits may not be exceeded, is 8.92 cm from the unit antenna main lobe.

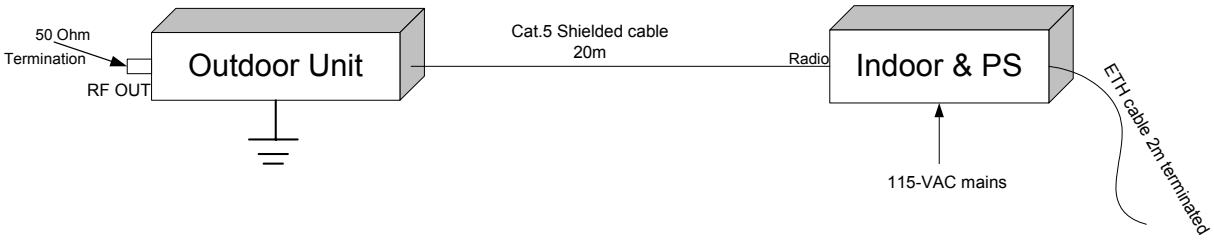


Figure 1. Subscriber Unit test setup

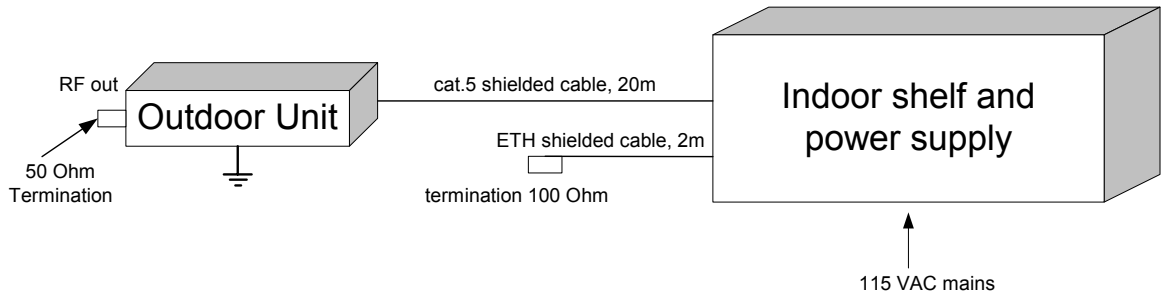


Figure 2. Base Station test setup

5. Test specification, Methods and Procedures

Test Specification:

- CFR 47 FCC: Rules and Regulations; Part 15. “Radio frequency devices”; Subpart E: “Intentional radiators” (2002)

Methods and Procedures:

- ANSI C63.4:2003: "American National Standard for Method of Measurement of Radio Noise Emissions from Low Voltage Electrical and Electronic Equipment in the Range 9 kHz to 40 GHz".

6. Measurements, examinations and derived results

6.1. Location of the Test Site:

The tests were conducted in the EMC laboratory of the Standards Institution of Israel in Tel-Aviv and at open test site located at Kibbutz Native Halamed Hai in Emek HaEla, Israel.

6.2. Normal test condition:

Temperature: 22 °C
Humidity: 50 %

6.3. Conducted emission test (per Section 15.207):

6.3.1. Requirements:

EUTs conducted emission within the band 150 kHz to 30 MHz shall not exceed value required in section 15.207 (a).

6.3.2. Tested units:

The measurements were performed on:
- Subscriber Unit - on Universal Indoor unit AC power adaptor PS 1073
- Base Station Unit - on AC input.

6.3.3. Test procedure:

Each EUT was placed on a non-metallic table in a shielded chamber at a height of 80 cm from the floor and 40 cm from the nearest wall.

The EUT was operated to transmitting through the customer software.
First, initial scans were performed. Final measurements were performed at the frequencies where emission exceeded the tolerance limit.

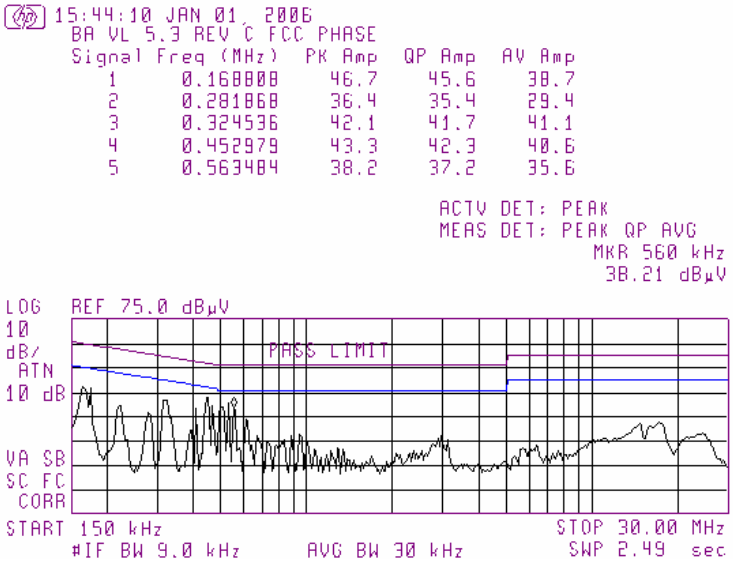
Test equipment (EMI receiver) setup was as follow:

Initial scan:	
Detector type	Peak
Mode	Max hold
Bandwidth	9 kHz
Step size	Continuous sweep
Sweep time	>100 msec
Measurements	
Detector type	Quasi-peak, Avg (CISPR)
Bandwidth	9 kHz
Measurement time	200 seconds/MHz
Observation	>15 seconds

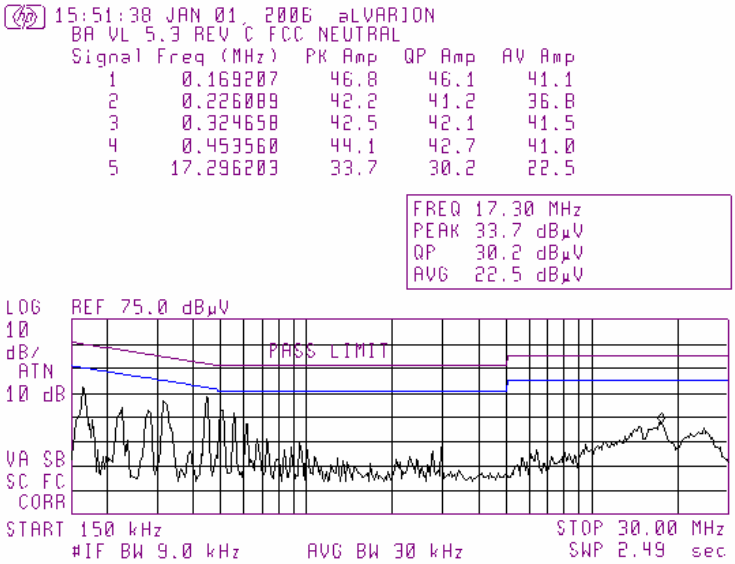
6.3.4. Test results:

Subscriber Unit. Test results are shown in Plots #1, 2.

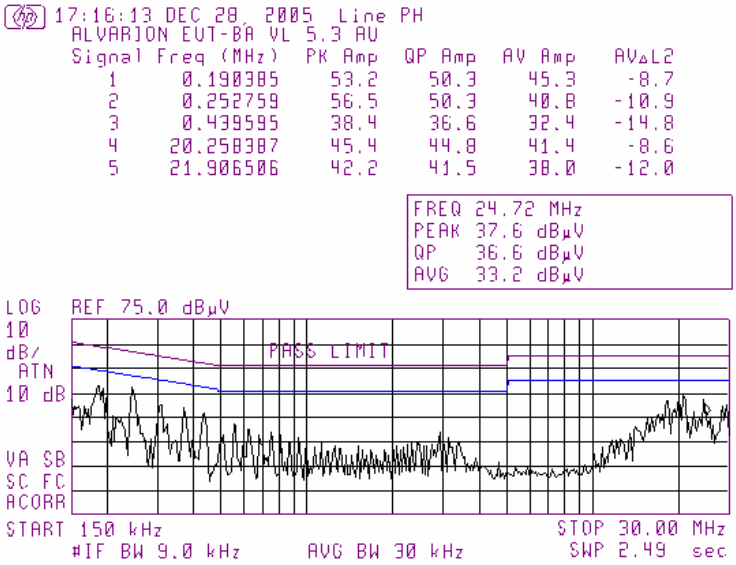
AU. Test results are shown in Plots #3, 4



Plot 1. Subscriber Unit
Conducted emissions measurement result on 120 VAC power line: phase

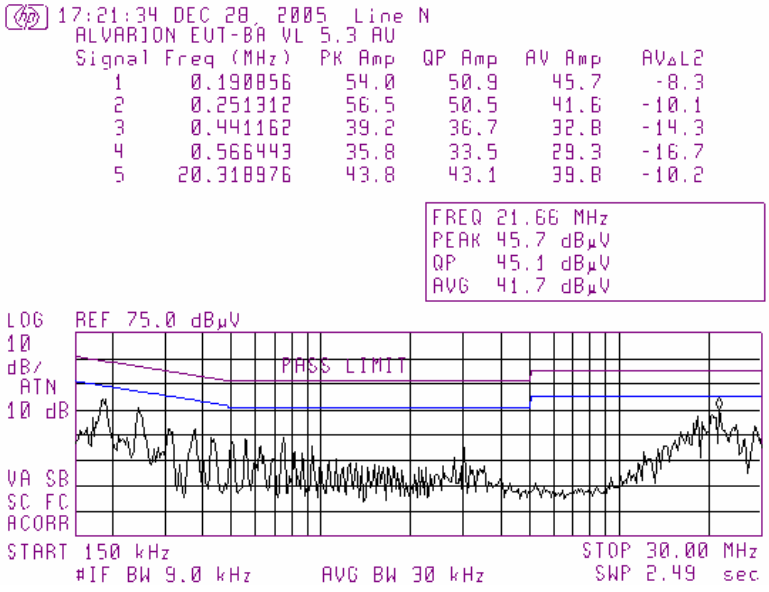


Plot 2. Subscriber Unit
Conducted emissions measurement result on 120 VAC power line: neutral



Plot 3.

AU (Base station)
Conducted emissions measurement result on 120 VAC power line: phase



Plot 4.

AU (Base station)
Conducted emissions measurement result on 120 VAC power line: neutral

6.4. Radiated emission test, general requirements (per section 15.209):

6.4.1. Requirements:

EUT's radiated emission shall not exceed value required in section 15.209.

6.4.2. Test description:

The measurements were performed at the Open Area Test Site.
The test configuration is shown in Fig.1, 2.

The EUT was arranged on a non-metallic table 0.8 m placed on the turn-table.
The measurements were performed at a 10 m measurement distance.

The Biconilog 30 MHz-2 GHz antenna was used.

The frequency range was investigated from 30 MHz to 2 GHz.

The measurements were performed at each frequency at which the signal was 10 dB below the limit or less.

The level were maximized by initially rotating turntable through 360°, varying the antenna height between 1 m and 4 m, rerouting EUT cables and changing antenna polarization from vertical to horizontal. The measuring equipment settings were:

Initial scan:	
Detector type	Peak
Mode	Max hold
Bandwidth	120 kHz
Step size	Continuous sweep
Sweep time	>1 seconds/MHz
Measurements:	
Detector type	Quasi-peak (CISPR 16)
Bandwidth	120 kHz
Measurement time	20 seconds/MHz
Observation	>15 seconds

6.4.3. Radiated emission test results:

Test results are presented in Table 1.

Table 1. Radiated emission test results
EUT: BreezeACCESS VL 5.3 System

Frequency (MHz)	Turn-table Angle (°)	Antenna Polariz.	Antenna Height (m)	Emission Level Note 1 (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin Note 2 (dB)	Results
79.5	V	1.00	80	25.8	40.0	14.2	Complies
81.2	V	1.00	51	24.4	40.0	15.6	Complies
82.6	V	1.00	299	23.6	40.0	16.4	Complies
124.6	V	1.00	130	27.8	43.5	15.7	Complies
175.0	V	1.00	279	26.9	43.5	16.6	Complies
250.0	H	2.28	78	37.3	46.0	8.7	Complies
375.0	H	2.20	354	30.7	46.0	15.3	Complies

Note 1: Emission level = E Reading (dBμV) + Cable loss (dB) + Antenna Factor (dB/m) + 10 dB

Where 10 dB is an extrapolation distance factor.
For Cable Loss and Antenna Factor refer to Appendix 2.

Note 2: Margin (dB) = Limit (dBμV/m) – Emission level (dBμV/m)

6.5. Radiated emission test on Radio Unit – spurious (per Section 15.209):

6.5.1. Requirements:

The levels of any unwanted emission shall not exceed value required in section 15.209.

6.5.2. EUT configuration:

The radio unit was tested with antennas:
- Sector antenna, AN 1152 for Base Station (AU)
- Unidirectional antenna AN 1230 for Subscriber unit (SU)

6.5.3. Test procedure:

The measurements were performed in the anechoic chamber.
The EUT was arranged on a non-metallic table 0.8 m placed on the turntable.
Measuring antennas used: Up to 18 GHz - Double Ridge **EMCO** model 3115
above 18 GHz - Alpha TRG model A361
Antenna height = 1 m.
Polarization: Vertical/Horizontal
Measurement distance = 1m.
The frequency range was investigated up to 40 GHz.
The measurements were performed in vertical and horizontal polarization, the maximum reading recorded.
Measuring detector function and bandwidths:

Detector type	Peak
Resolution bandwidth	1MHz
Video bandwidth	1 MHz
Detector type	Average
Resolution bandwidth	1MHz
Video bandwidth	3 kHz*

6.5.4. Radiated emission test results and calculation ratio:

The test results are shown in Tables ## 2-3.
The emission level was calculated as:
E Reading (dBμV) + measuring cable loss (dB) + measuring antenna factor (dB/m) + Distance correction factor
For measuring cable loss and measuring antenna factor refer to Appendix 2.
Distance correction factor = 9.5 dB (an extrapolation reading from 1 m measuring distance to 3m specified distance)

Table 2. Spurious emissions test results

AU Unit. Antenna used: P/N: AN 1152

Frequency (GHz)	Emission Level (dBμV/m)		Limit @ 1m (dBμV/m)		Margin (dB)		Results
	Average	Peak	Average	Peak	Average	Peak	
LOW 5.270 GHz							
10.54	57.3	68.3	64	84	6.7	15.7	Complies
15.81	58.1	70.0			5.9	14.0	Complies
21.08	Noise floor	Noise floor			-	-	Complies
26.35	Noise floor	Noise floor			-	-	Complies
31.62	Noise floor	Noise floor			-	-	Complies
36.89	Noise floor	Noise floor			-	-	Complies
MIDDLE 5.300 GHz							
10.6	57.2	68.9	64	84	6.8	15.1	Complies
15.9	58.3	70.2			5.7	13.8	Complies
21.2	Noise floor	Noise floor			-	-	Complies
26.5	Noise floor	Noise floor			-	-	Complies
31.8	Noise floor	Noise floor			-	-	Complies
37.1	Noise floor	Noise floor			-	-	Complies
HIGH 5.330 GHz							
10.66	57.1	69.9	64	84	6.9	14.1	Complies
15.99	58.4	70.3			5.6	13.7	Complies
21.32	Noise floor	Noise floor			-	-	Complies
26.65	Noise floor	Noise floor			-	-	Complies
31.98	Noise floor	Noise floor			-	-	Complies
37.31	Noise floor	Noise floor			-	-	Complies

Table 3. Spurious emissions test results

SU unit. Antenna used: P/N: AN 1230

Frequency (GHz)	Emission Level (dBμV/m)		Limit @ 1m (dBμV/m)		Margin (dB)		Results
	Average	Peak	Average	Peak	Average	Peak	
LOW 5.290 GHz							
10.58	57.4	68.2	64	84	6.6	15.8	Complies
15.87	58.9	71.8			5.1	12.2	Complies
21.16	Noise floor	Noise floor			-	-	Complies
26.45	Noise floor	Noise floor			-	-	Complies
37.03	Noise floor	Noise floor			-	-	Complies
MIDDLE 5.300 GHz							
10.6	57.2	70.4	64	84	6.8	15.1	Complies
15.9	58.2	71.5			5.8	12.5	Complies
21.2	Noise floor	Noise floor			-	-	Complies
26.5	Noise floor	Noise floor			-	-	Complies
31.8	Noise floor	Noise floor			-	-	Complies
37.1	Noise floor	Noise floor			-	-	Complies
HIGH 5.310 GHz							
10.62	60.8	72.7	64	84	3.2	17.2	Complies
15.93	58.4	70.3			5.6	13.7	Complies
21.24	Noise floor	Noise floor			-	-	Complies
26.55	Noise floor	Noise floor			-	-	Complies
31.86	Noise floor	Noise floor			-	-	Complies
37.17	Noise floor	Noise floor			-	-	Complies

6.6. Radiated emission test on Radio Unit - restricted bands (per Section 15.205):

6.6.1. Requirements:

Radiated emission in restricted bands should meet the requirements sec. 15.205.
The following frequency bands should be measured:

	Frequency, GHz	Restricted band to be tested
LOW 5.270 GHz	15.78	15.35 – 16.2
	21.04	17.7 – 21.4
	31.56	31.2 – 31.8
MIDDLE 5.300 GHz	15.87	15.35 – 16.2
	21.16	17.7 – 21.4
	31.74	31.2 – 31.8
HIGH 5.330 GHz	10.64	10.6 – 12.7
	15.96	15.35 – 16.2
	21.28	17.7 – 21.4

6.6.2. EUT configuration:

The measurements were performed with four various antennas.

6.6.3. Test procedure:

The measurements were performed in the anechoic chamber.
The EUT was arranged on a non-metallic table 0.8 m placed on the turntable.
Measuring antennas used: Up to 18 GHz - Double Ridge **EMCO** model 3115
above 18 GHz - Alpha TRG model A361
Antenna height = 1 m.
Measurement distance = 1m.
Measuring detector function and bandwidths:

Detector type	Peak
RBW	1MHz
VBW	3 MHz

All measurements were taken with peak detector and the readings were compared with the limit line.

6.6.4. Test results and calculation ratio:

The test results are shown in Plots #212 to #253 , see tables below:

AU, Antenna 16 dBi

	Harmonic Frequency, GHz	Restricted band	Antenna name
			AN 1152
LOW 5.270 GHz	15.81	15.35 – 16.2	#212, 213
	21.08	17.7 – 21.4	#214
MIDDLE 5.300 GHz	10.6	10.6 – 12.7	#219, 220
	15.9	15.35 – 16.2	#221
	21.2	17.7 – 21.4	#222
HIGH 5.330 GHz231	10.66	10.6 – 12.7	#227, 228
	15.99	15.35 – 16.2	#229
	21.32	17.7 – 21.4	#230

SU, Antenna 28 dBi

	Harmonic Frequency, GHz	Restricted band	Antenna name
			AN 1230
LOW 5.290 GHz	15.87	15.35 – 16.2	#235,236
	21.16	17.7 – 21.4	#237
MIDDLE 5.300 GHz	10.6	10.6 – 12.7	#242, 243
	15.9	15.35 – 16.2	#244
	21.2	17.7 – 21.4	#245
HIGH 5.310 GHz	10.62	10.6 – 12.7	#250, 251
	15.93	15.35 – 16.2	#252
	21.24	17.7 – 21.4	#253

Notes: The AVG limit line 64 dBµV/m (at 1m distance) is not shown in the plots. All measurements in restricted bands on frequency ranges above 21.5 GHz not exceed the SA noise floor level.

7. Base station configuration measurements 15.407

7.1. Maximum peak transmit power

7.1.1. Requirements:

The peak transmit power shall not exceed the lesser of 250mW or 11dBm+10logB, where B is the 26-dB emission bandwidth in MHz. as required in sec. 15.407 (a) (2).
Calculated limit is 24-(16-6) = 14 dBm

7.1.2. Test results:

The peak output power is measured according to method #3 as defined in the measurement procedure updated for peak transmit power in the unlicensed national information
Infrastructure (U-NII) bands; Public Notice Aut-30-2002.
The measured maximum peak power is:

Low channel (5265MHz): 10.88dBm
Middle channel (5300MHz): 12.39dBm
High channel (5335MHz): 12.31dBm

7.1.3. Test results:

The measured results are shown in Appendix 3, clause 12.2 – for antenna 16 dBi.

7.2. The peak emissions outside of the frequency bands of operation.

7.2.1. Requirements:

All emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz as required in sec. 15.407 (b)-(2)(4).

7.2.2. Test results:

The measured results are shown in Appendix 3, clause 12.11.

7.3. 26dB bandwidth

7.3.1. Requirements:

The signal bandwidth is defined at the –26dBc points from the signal peak in section 15.403 (c).

7.3.2. Test results:

The measured results are shown in clause 12.

7.4. Peak power spectral density

7.4.1. Requirements:

The peak power spectral density shall not exceed 11dBm with antenna directional gain no grate than 6 dBi in any 1MHz band as required in section 15.407 (a) (2).
For antenna gain 16 dBi 11-(16-6) = 1 dBm

7.4.2. Test results:

All measurements were found under the limit.
The measured results are shown in Appendix 3, clause 12.5 - for AU unit, Antenna 16 dBi.

7.5. Peak excursion

7.5.1. Requirements:

The ratio of the peak excursion of the modulation envelope to the peak transmit power shall not exceed 13dB across any 1MHz bandwidth or the emission bandwidth whichever is less. as required in sec. 15.407 (a) (6).

7.5.2. Test results:

The peak excursion is measured according to method as defined in the guidelines for assessing unlicensed national information infrastructure (U-NII) Devices-part 15,subpart E.
The measured results are shown in Appendix 3:
clause 12.8 - BA VL transmitter time duration for the ratio of the Peak Execution measurements;
clause 12.9 – for AU, Antenna 16 dBi

8. Subscriber unit configuration measurements 15.407

The base station and subscriber have an identical outdoor unit. The difference is the output power according to the antenna gain. This section repeats the measurements that are output power dependent for the 21dBi subscriber unit antenna gain.

8.1. Maximum peak transmit power

8.1.1. Requirements:

The peak transmit power shall not exceed the lesser of 250mW or 11dBm+10logB, where B is the 26-dB emission bandwidth in MHz. as required in sec. 15.407 (a) (2).
Calculated limit is 24-(21-6) = 9 dBm for antenna 21 dBi and 24-(28-6) = 2 dBm for antenna 28 dBi.

8.1.2. Test results:

The peak output power is measured according to method #3 as defined in the measurement procedure updated for peak transmit power in the unlicensed national information
Infrastructure (U-NII) bands; Public Notice Aut-30-2002.
The measured maximum peak power for antenna 21 dBi is:

Low channel (5265MHz): 6.24dBm
Middle channel (5300MHz): 8.48dBm
High channel (5335MHz): 6.33dBm

The measured results are shown in Appendix 3:
clause 12.3 – for Antenna 21 dBi;
clause 12.4 - for Antenna 28 dBi.
.

8.2. The peak emissions outside of the frequency bands of operation.

8.2.1. Requirements:

All emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz as required in sec. 15.407 (b)-(2)(4).

8.2.2. Test results:

The measured results are shown in Appendix 3, clause 12.12.

8.3. 26dB bandwidth

8.3.1. Requirements:

The signal bandwidth is defined at the –26dBc points from the signal peak in section 15.403 (c).

8.3.2. Test results:

The measured results are shown in clause 12.

8.4. Peak power spectral density

8.4.1. Requirements:

The peak power spectral density shall not exceed 11dBm in any 1MHz band with antenna directional gain no grate than 6 dBi as required in section 15.407 (a) (2). For antenna gain 21 dBi 11-(21-6) = -4 dBm and 11-(28-6) = -11 dBm for antenna gain 28 dBi.

8.4.2. Test results:

The measured results are shown in Appendix 3, clause 12.6 – for Antenna 21 dBi and clause 12.7 - for Antenna 28 dBi.

8.5. Peak excursion

8.5.1. Requirements:

The ratio of the peak excursion of the modulation envelope to the peak transmit power shall not exceed 13dB across any 1MHz bandwidth or the emission bandwidth whichever is less as required in sec. 15.407 (a) (6).

8.5.2. Test results:

The peak excursion is measured according to method as defined in the guidelines for assessing unlicensed national information infrastructure (U-NII) Devices-part 15,subpart E. This measurement is modulation dependent.
The measured results are shown in Appendix 3, clause 12.10 – for Antenna 21 dBi and 28 dBi

9. Compliance with specification

Test	FCC Part 15	Test result
Radiated emissions in restricted bands	Sec.15.205	Complies
Conducted emission	Sec.15.207	Complies
Radiated emission – general requirements	Sec.15.109, 209	Complies
Maximum peak output power	Sec.15.407	Complies
Conducted spurious	Sec.15.407	Complies
Peak power density	Sec.15.407	Complies
Peak excursion	Sec 15.407	Complies

Telematics Laboratory

7 June 2006

Approved by: Yuri Rozenberg

Position: Head of EMC Branch

Tested by: Michael Feldman

Position: Testing Technician

10. Appendix 1: Test equipment used

All measurements equipment is on SII calibration schedule with a recalibration interval not exceeding one year.

Instrument	Manufac-turer	Model	Serial No.	Last calibration date	Next calibration date
Spectrum analyzer 10 KHz-26.5 GHz	HP	E7405a	SII 4944	04/05	04/06
Spectrum analyzer 9 KHz-50 GHz	HP	8565E	720A0069	09/05	09/06
Spectrum analyzer 9 KHz-26.5 GHz	Adjilent	E4407B	US40241729	07/05	07/06
Antenna Double Ridge 1-18 GHz	EMCO	3115	SII4873	03/05	03/06
Antenna Standard Gain Horn 18-40 GHz	WILTRON	Alpha TRG A361	861A/590	01/05	01/06
LISN 9 kHz – 30 MHz	FCC	LISN-50/250-32-4-16	SII 5023	05/05	05/06
Transient limiter 0.009-200 MHz	HP	11947A	31074A3105	05/05	05/06
Attenuator 20 dB DC – 18 GHz	HP	8491B	3929M50394	05/05	05/06

11. Appendix 2: Antenna Factor and Cable Loss

Antenna Factor
Standard Gain Horn 26 – 40 GHz Alpha TRG Model A361

Point	Frequency (MHz)	Antenna Factor (dB/m)
1	26000	35.22
2	27000	35.40
3	28000	35.52
4	29000	35.64
5	30000	35.76
6	31000	35.90
7	32000	36.07
8	33000	36.16
9	34000	36.31
10	35000	36.46
11	36000	36.60
12	37000	36.74
13	38000	36.93
14	39000	37.21
15	40000	37.28

ETS

Gain and Antenna Factors for Double Ridged Guide Antenna
Manufactured by EMC Test Systems
Model Number: 3115 Serial Number: 5802
1.0 Meter Calibration Polarization: Horizontal

Frequency (MHz)	Antenna Factor (dB/m)	Gain Numeric	Gain dBi
1000	24.3	3.86	5.9
1500	25.6	6.48	8.1
2000	27.9	6.83	8.3
2500	28.9	8.43	9.3
3000	30.7	7.97	9.0
3500	32.0	8.06	9.1
4000	33.0	8.38	9.2
4500	32.9	10.91	10.4
5000	34.1	10.16	10.1
5500	34.8	10.51	10.2
6000	35.2	11.38	10.6
6500	35.4	12.79	11.1
7000	36.4	11.83	10.7
7500	37.3	10.90	10.4
8000	37.5	12.05	10.8
8500	37.9	12.36	10.9
9000	38.2	12.86	11.1
9500	38.3	14.04	11.5
10000	38.7	14.25	11.5
10500	38.5	16.26	12.1
11000	38.8	16.87	12.3
11500	39.5	15.41	11.9
12000	39.3	17.96	12.5
12500	39.1	20.03	13.0
13000	40.2	16.83	12.3
13500	41.2	14.53	11.6
14000	41.9	13.20	11.2
14500	41.3	16.27	12.1
15000	39.6	26.07	14.2
15500	38.1	39.49	16.0
16000	38.4	39.12	15.9
16500	39.8	29.81	14.7
17000	41.6	20.97	13.2
17500	44.8	10.55	10.2
18000	46.5	7.57	8.8

Specification compliance testing factor (1.0 meter spacing) to be added to receiver meter reading in dBV to convert to field intensity in dBV/meter. Calibrated 07 Oct 02 (DD/MM/YYYY). Calibration per ARP 958.

ETS

Gain and Antenna Factors for Double Ridged Guide Antenna
Manufactured by EMC Test Systems
Model Number: 3115 Serial Number: 5802
1.0 Meter Calibration Polarization: Vertical

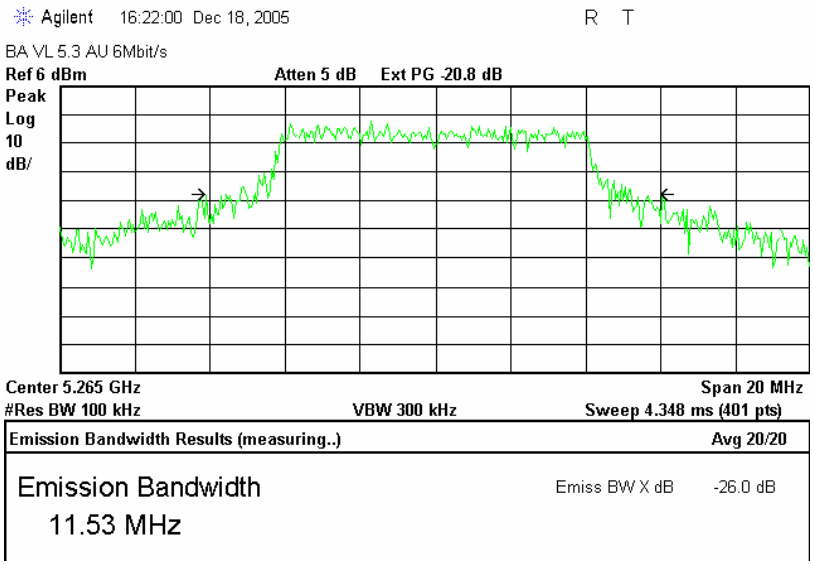
Frequency (MHz)	Antenna Factor (dB/m)	Gain Numeric	Gain dBi
1000	24.1	4.11	6.1
1500	25.6	6.48	8.1
2000	27.9	6.83	8.3
2500	28.9	8.47	9.3
3000	30.6	8.18	9.1
3500	31.9	8.24	9.2
4000	33.0	8.45	9.3
4500	32.8	11.14	10.5
5000	34.0	10.34	10.1
5500	34.8	10.40	10.2
6000	35.1	11.67	10.7
6500	35.4	12.86	11.1
7000	36.3	11.92	10.8
7500	37.3	10.95	10.4
8000	37.4	12.15	10.8
8500	37.8	12.58	11.0
9000	38.2	13.01	11.1
9500	38.2	14.21	11.5
10000	38.5	14.79	11.7
10500	38.6	16.05	12.1
11000	38.8	16.93	12.3
11500	39.3	16.19	12.1
12000	39.1	18.46	12.7
12500	39.1	20.28	13.1
13000	40.1	17.19	12.4
13500	41.1	14.85	11.7
14000	41.8	13.55	11.3
14500	41.3	16.25	12.1
15000	39.6	25.78	14.1
15500	38.0	39.54	16.0
16000	38.3	39.73	16.0
16500	39.6	31.52	15.0
17000	41.3	22.72	13.6
17500	44.5	11.49	10.6
18000	46.5	7.69	8.9

Specification compliance testing factor (1.0 meter spacing) to be added to receiver meter reading in dBV to conve
to field intensity in dBV/meter. Calibrated 07 Oct 02 (DD/MM/YYYY). Calibration per ARP 958.

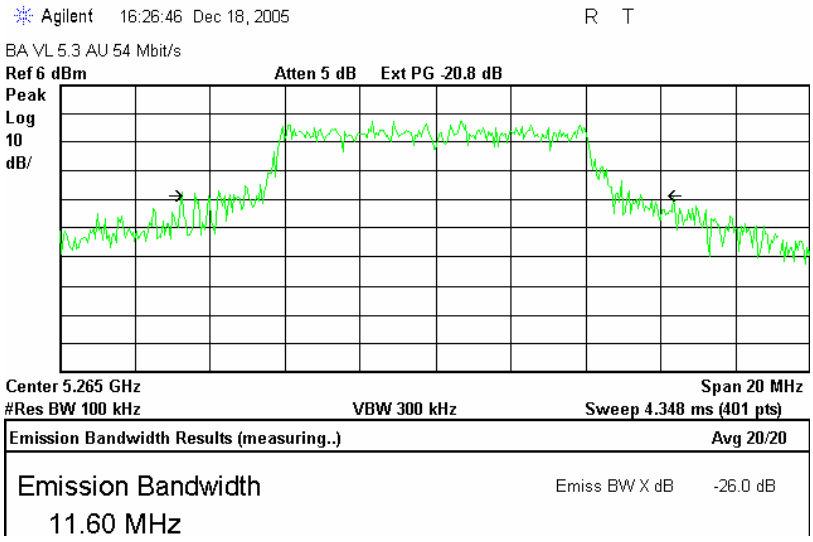
12. Appendix 3: Test results (plots)

AU Unit 26 dB - Emissions bandwidth test 15.407 a(2)

Carrier Frequency 5.265 GHz, EBW 10 MHz, PRBS 6 Mbit/s

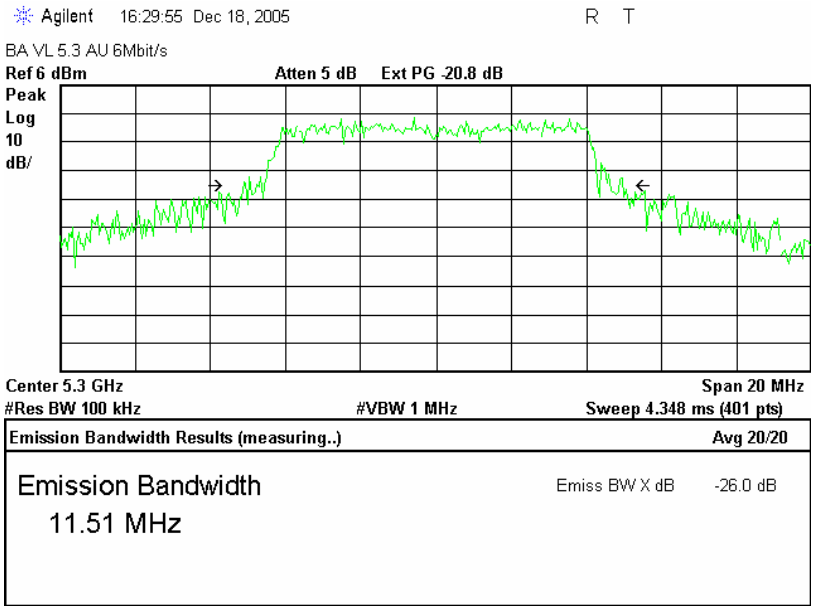


Carrier Frequency 5.265 GHz , EBW 10 MHz, PRBS 54 Mbit/s

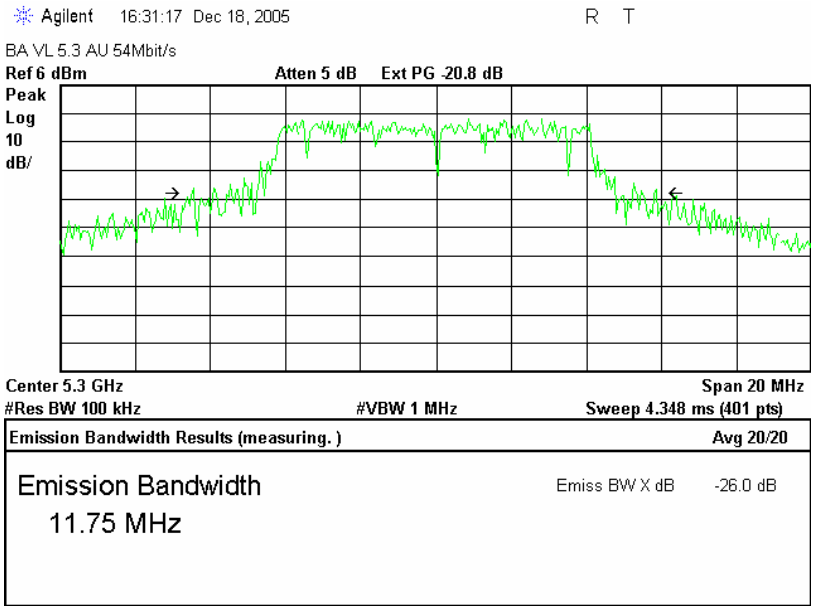


Plot 5.

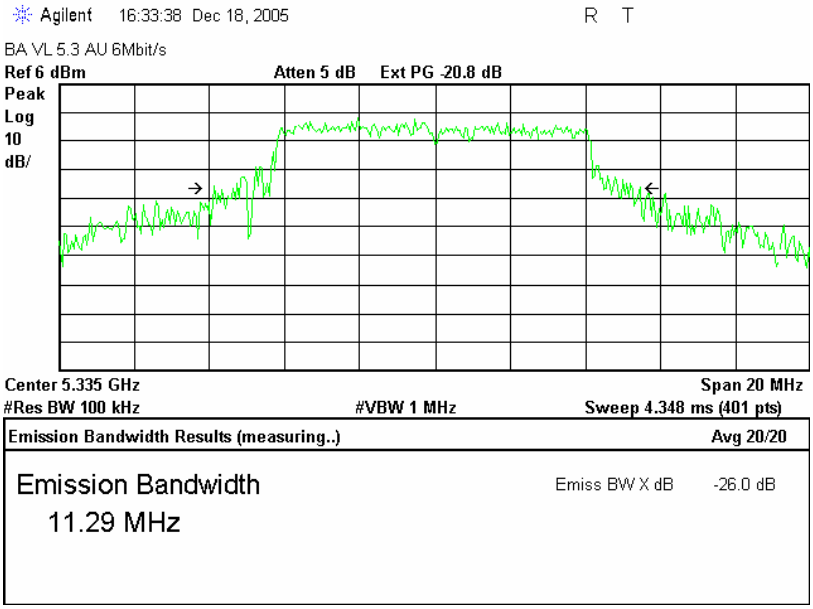
Plot 6.
Carrier Frequency 5.300 GHz, EBW 10 MHz, PRBS 6 Mbit/s



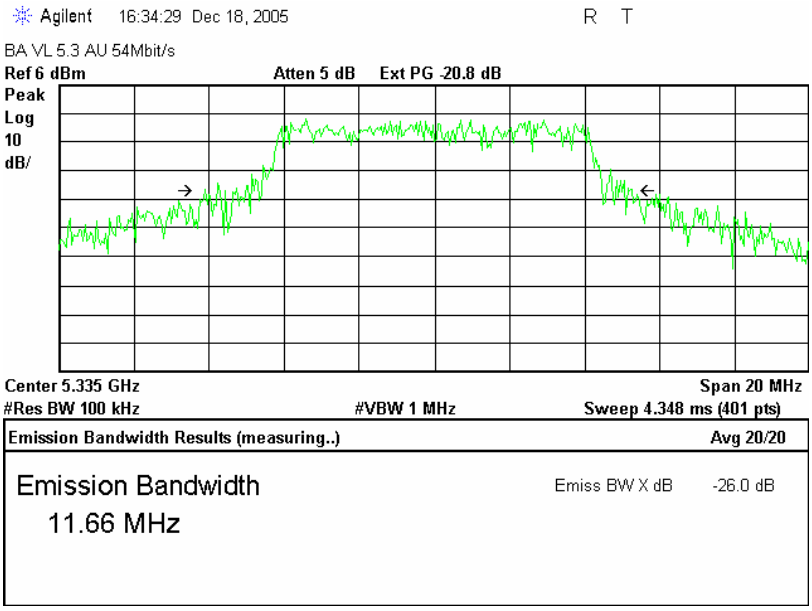
Plot 7.
Carrier Frequency 5.300 GHz, EBW 10 MHz, PRBS 54 Mbit/s



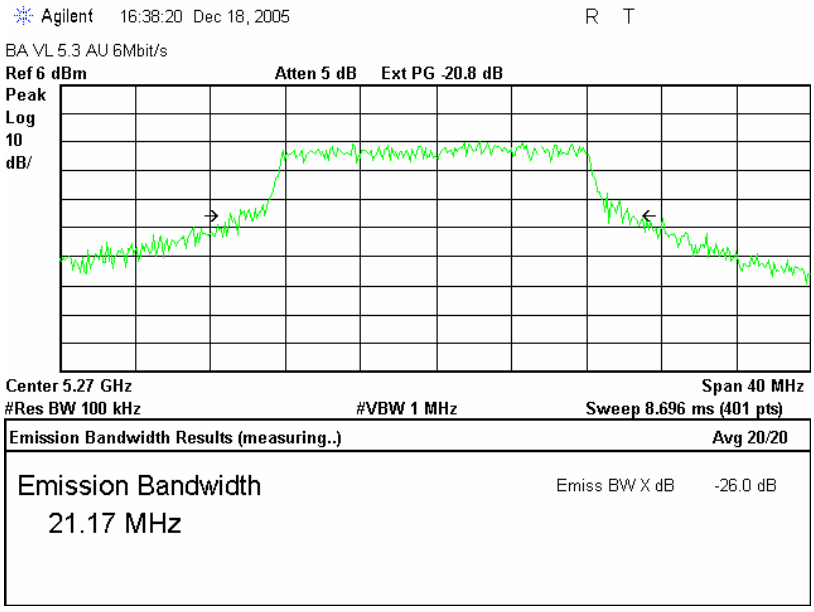
Plot 8.
Carrier Frequency 5.335 GHz, EBW 10 MHz, PRBS 6 Mbit/s



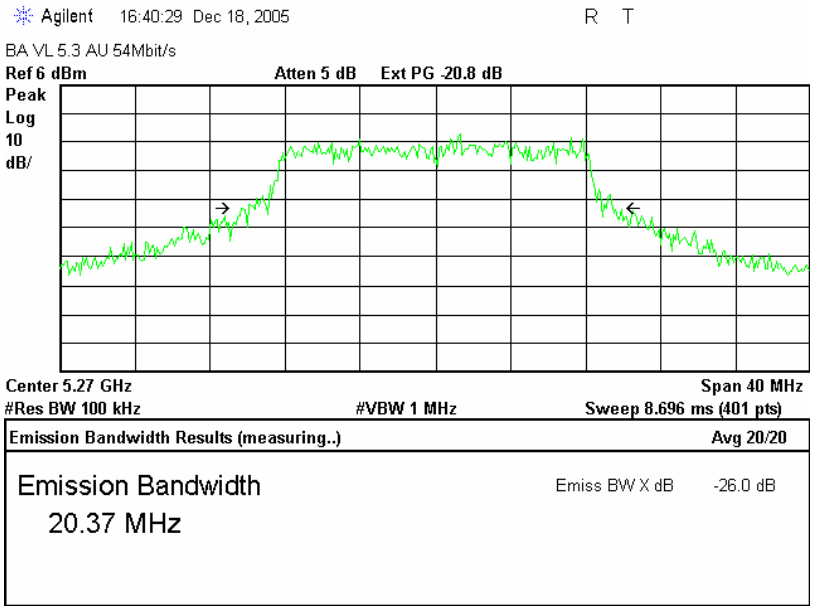
Plot 9.
Carrier Frequency 5.335 GHz, EBW 10 MHz, PRBS 54 Mbit/s



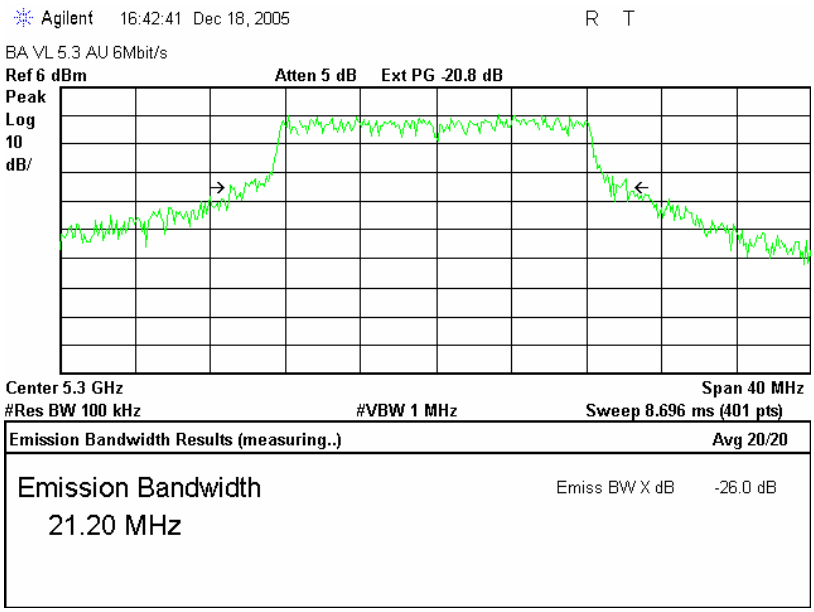
Plot 10.
Carrier Frequency 5.270 GHz, EBW 20 MHz, PRBS 6 Mbit/s



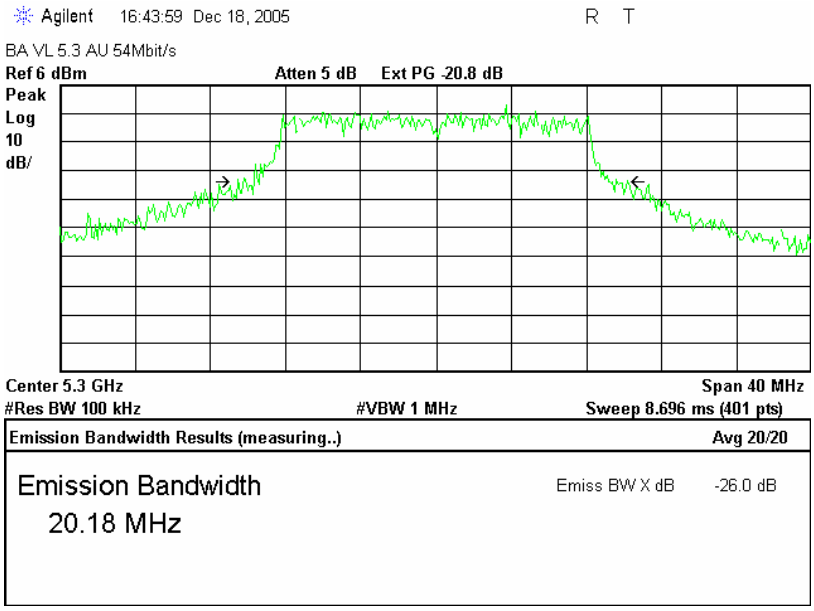
Plot 11.
Carrier Frequency 5.270 GHz, EBW 20 MHz, PRBS 54 Mbit/s



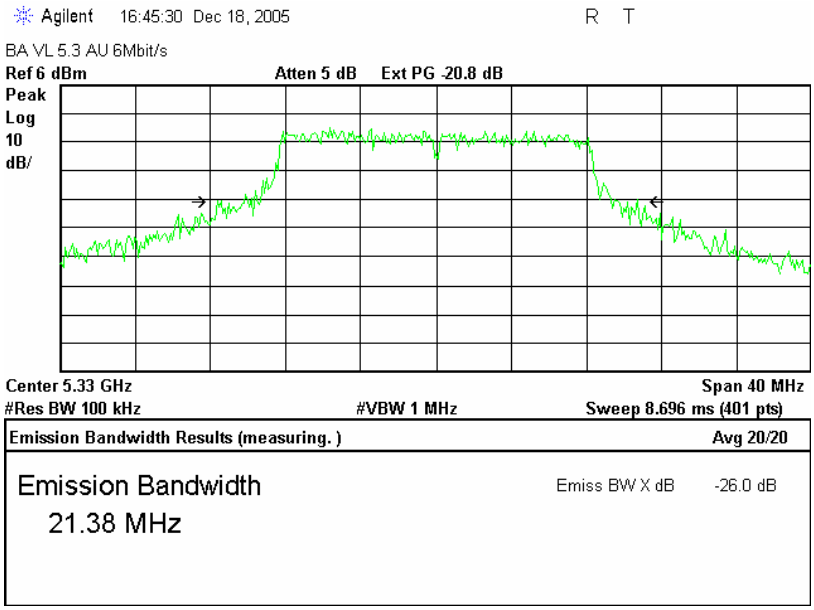
Plot 12.
Carrier Frequency 5.300 GHz, EBW 20 MHz, PRBS 6 Mbit/s



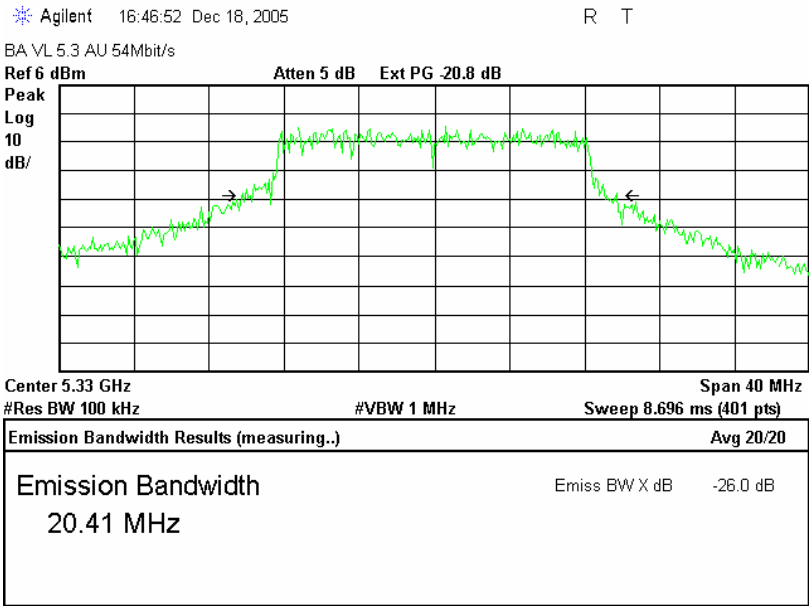
Plot 13.
Carrier Frequency 5.300 GHz, EBW 20 MHz, PRBS 54 Mbit/s



Plot 14.
Carrier Frequency 5.330 GHz, EBW 20 MHz, PRBS 6 Mbit/s

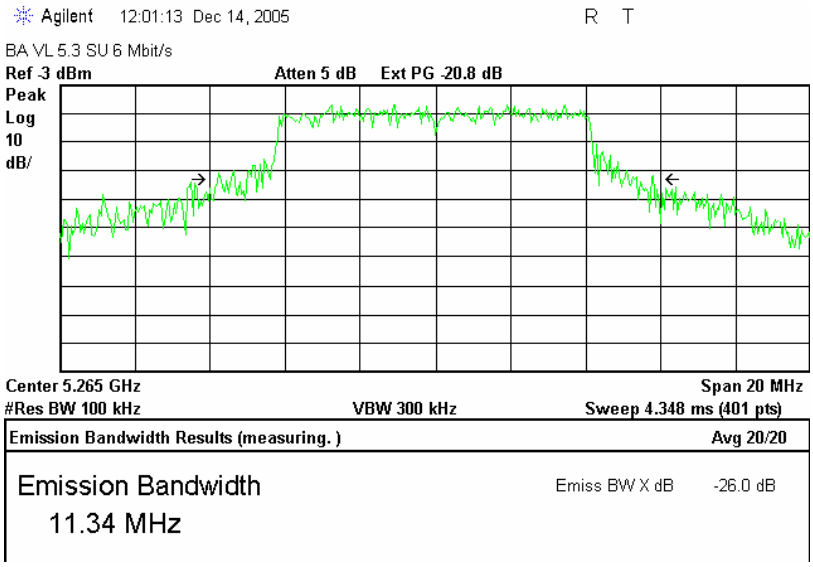


Plot 15.
Carrier Frequency 5.330 GHz, EBW 20 MHz, PRBS 54 Mbit/s

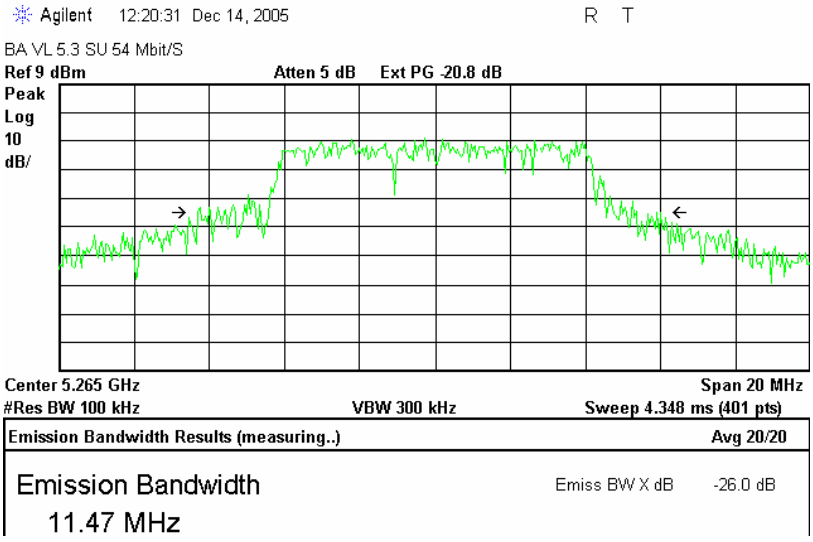


12.1. SU Unit 26 dB - Emissions bandwidth test 15.407 a(2)

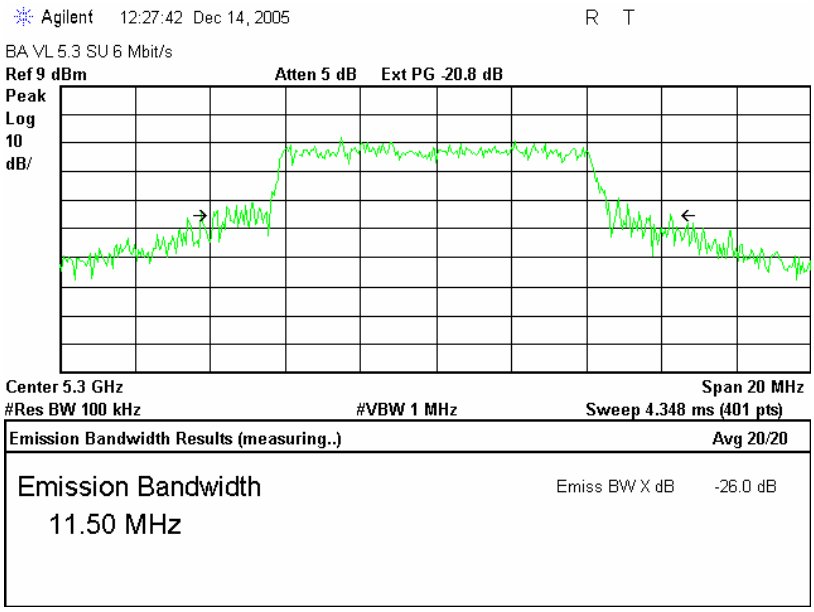
Plot 16.
Carrier Frequency 5.265 GHz, EBW 10 MHz, PRBS 6 Mbit/s



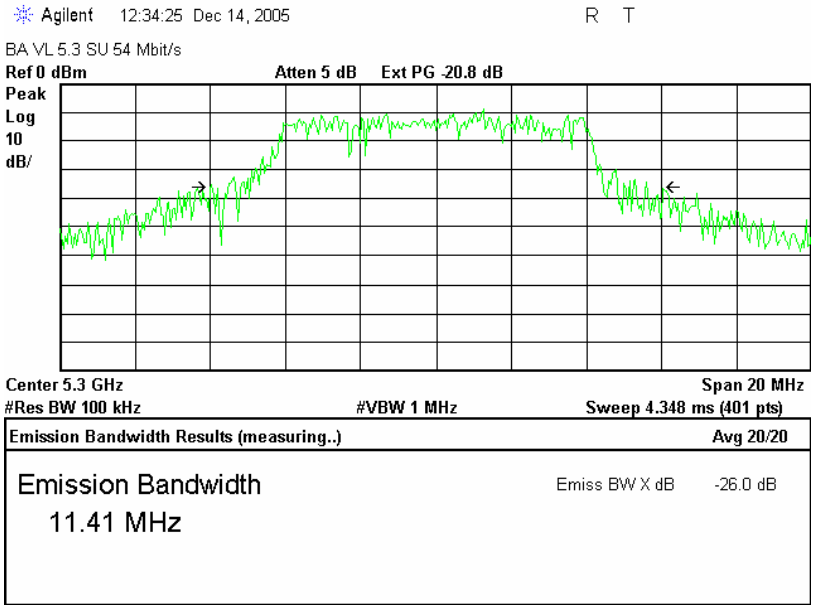
Plot 17.
Carrier Frequency 5.265 GHz, EBW 10 MHz, PRBS 54 Mbit/s



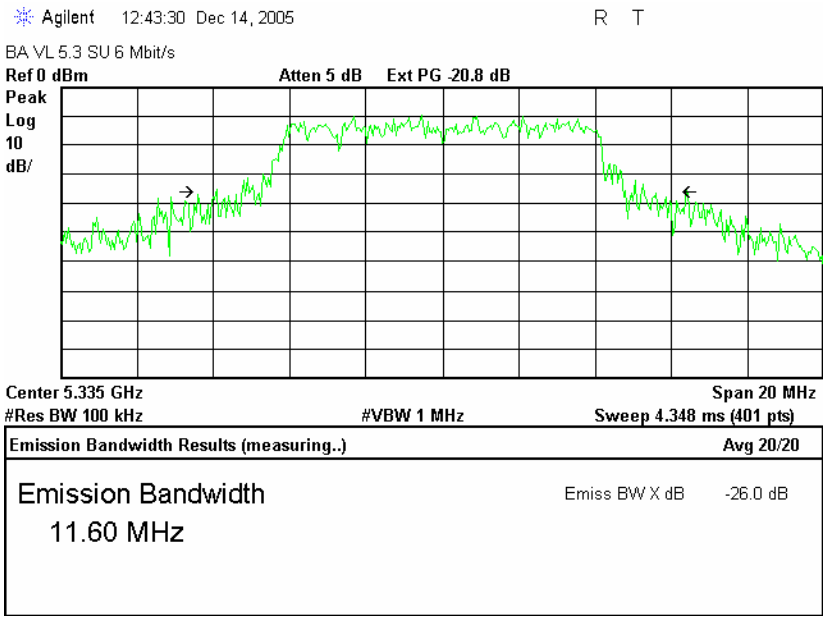
Plot 18.
Carrier Frequency 5.300 GHz, EBW 10 MHz, PRBS 6 Mbit/s



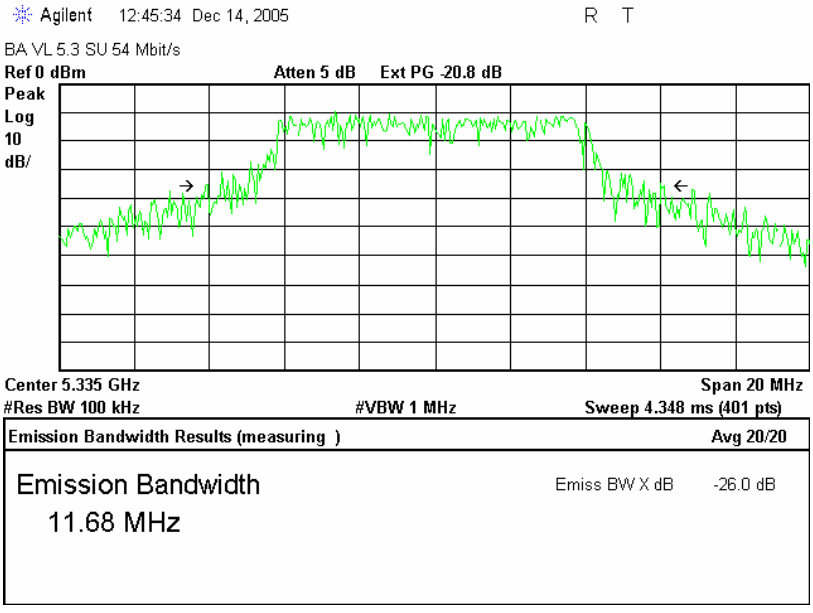
Plot 19.
Carrier Frequency 5.300 GHz, EBW 10 MHz, PRBS 54 Mbit/s



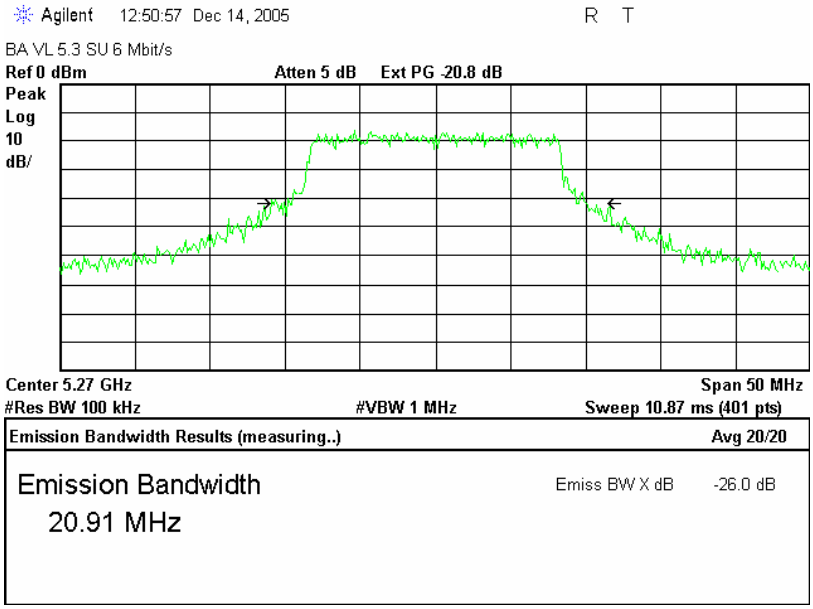
Plot 20.
Carrier Frequency 5.335 GHz, EBW 10 MHz, PRBS 6 Mbit/s



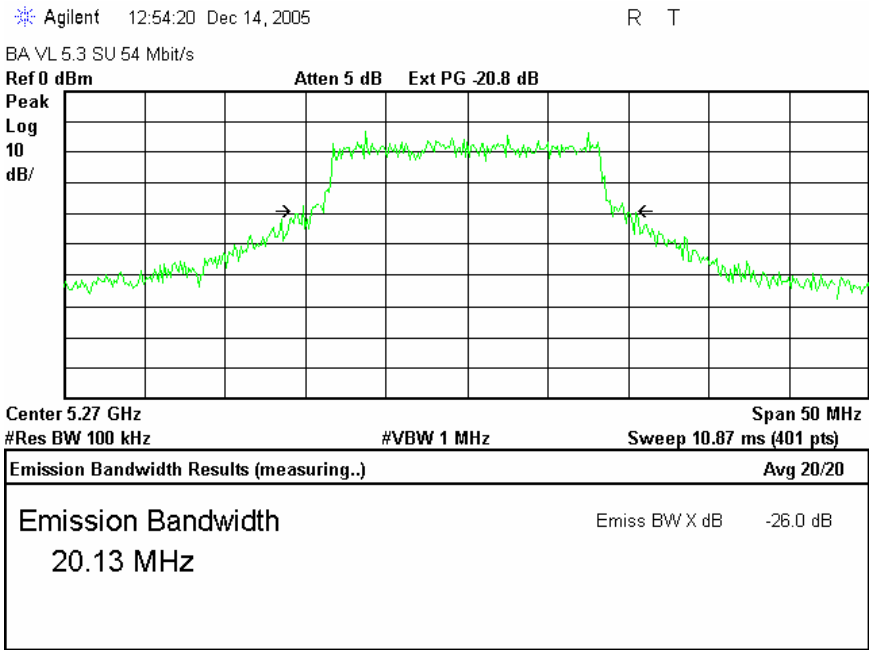
Plot 21.
Carrier Frequency 5.335 GHz, EBW 10 MHz, PRBS 54 Mbit/s



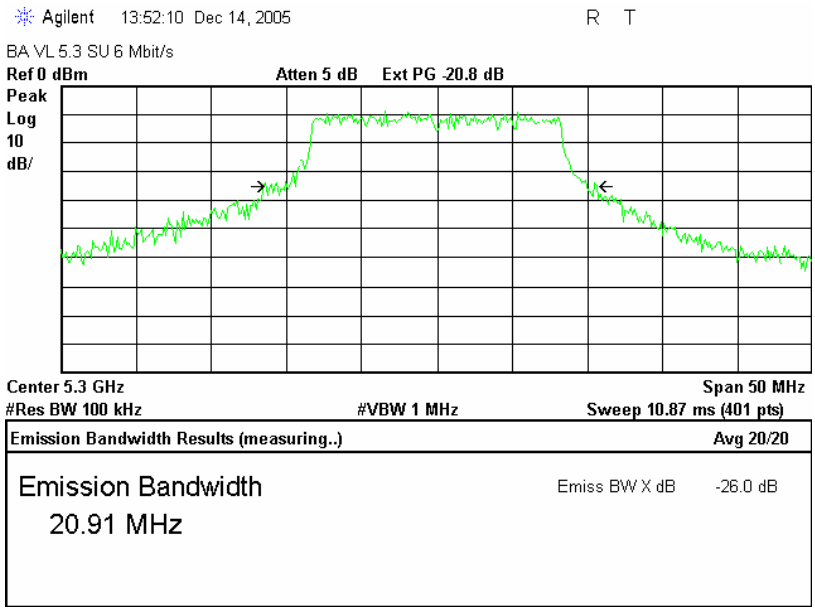
Plot 22.
Carrier Frequency 5.270 GHz, EBW 20 MHz, PRBS 6 Mbit/s



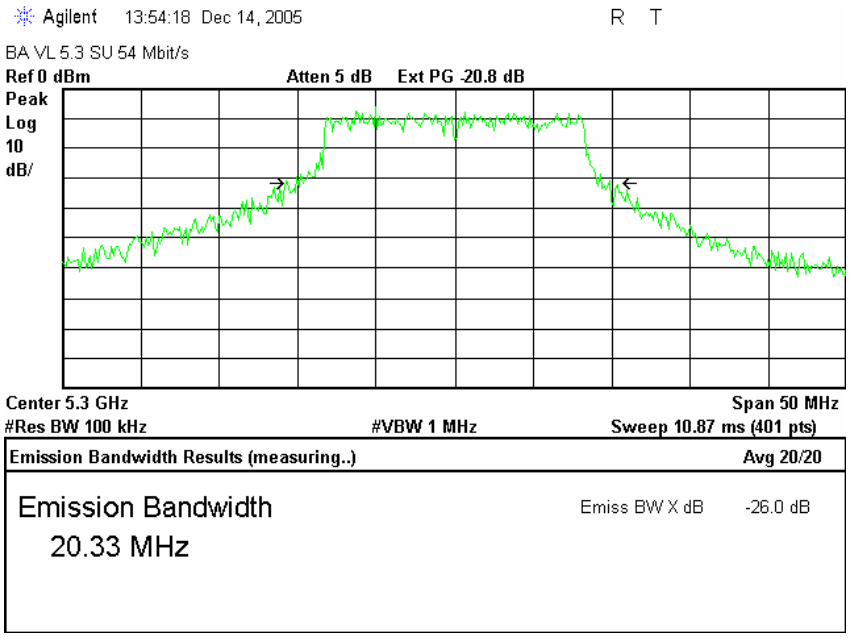
Plot 23.
Carrier Frequency 5.270 GHz, EBW 20 MHz, PRBS 54 Mbit/s



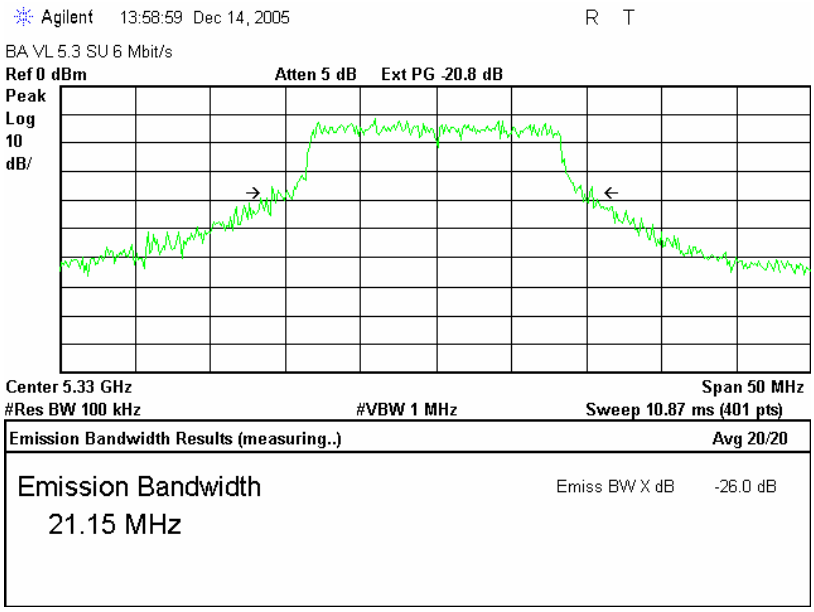
Plot 24.
Carrier Frequency 5.300 GHz, EBW 20 MHz, PRBS 6 Mbit/s



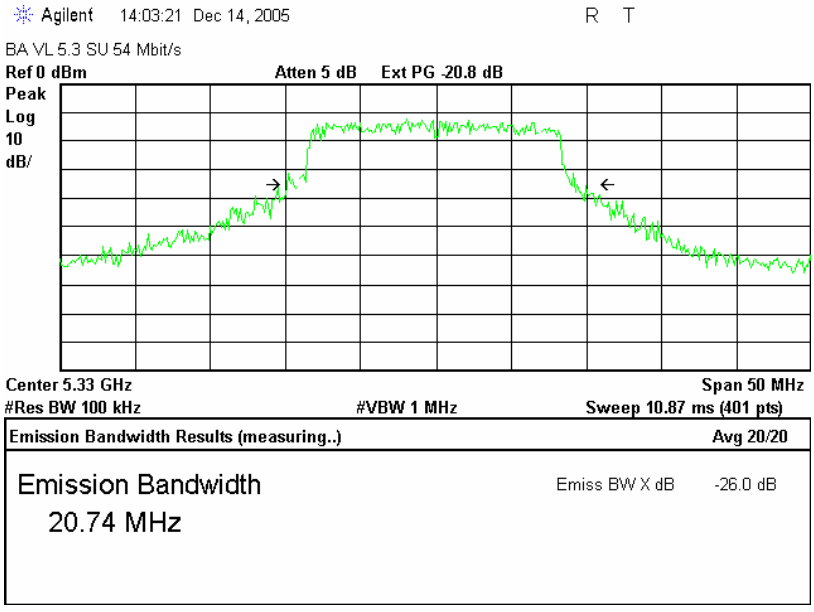
Plot 25.
Carrier Frequency 5.300 GHz, EBW 20 MHz, PRBS 54 Mbit/s



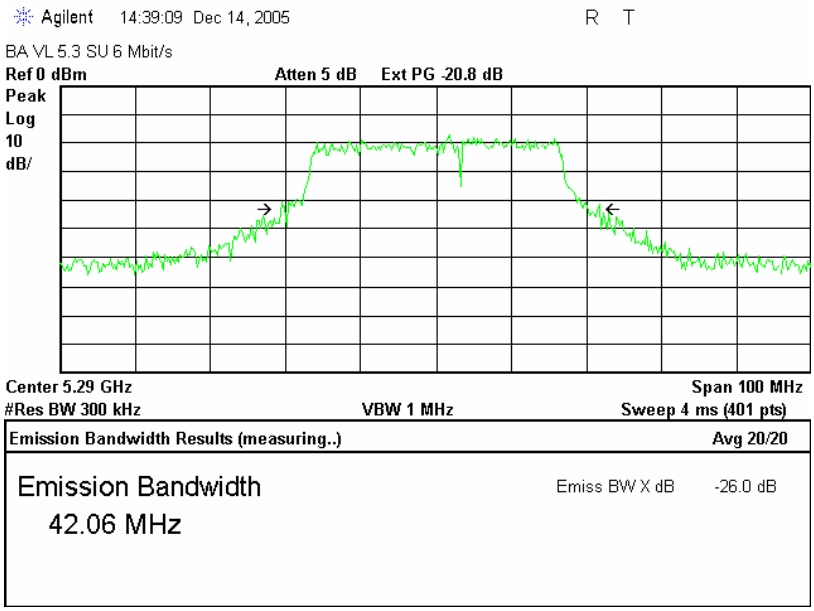
Plot 26.
Carrier Frequency 5.330 GHz, EBW 20 MHz, PRBS 6 Mbit/s



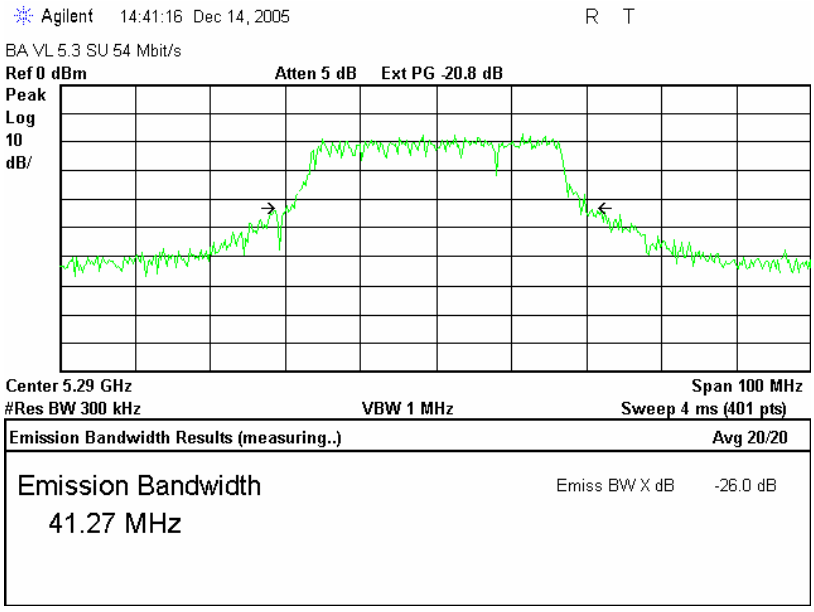
Plot 27.
Carrier Frequency 5.330 GHz, EBW 20 MHz, PRBS 54 Mbit/s



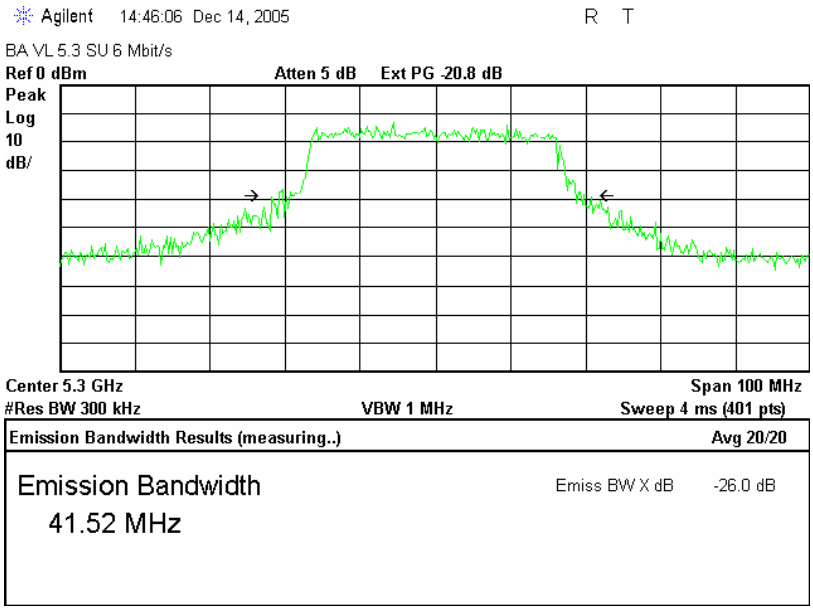
Plot 28.
Carrier Frequency 5.290 GHz, EBW 40 MHz, PRBS 6 Mbit/s



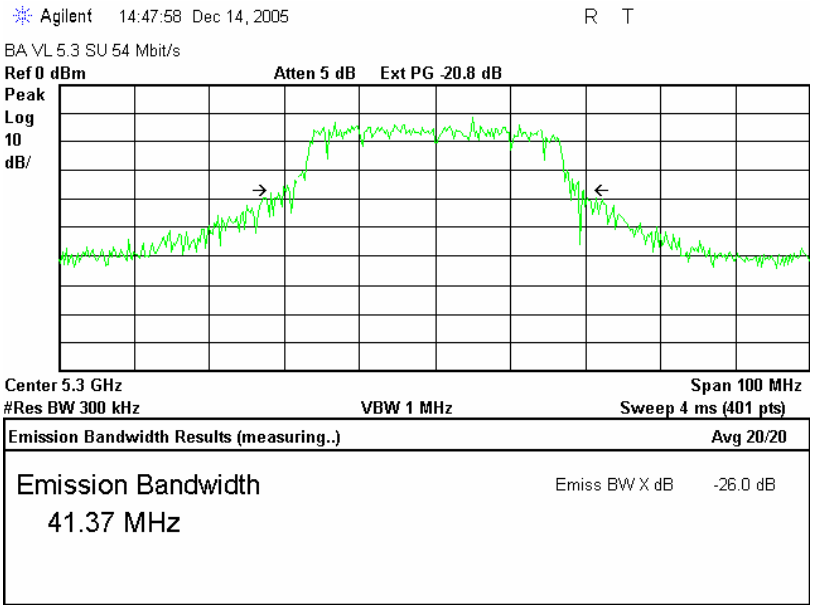
Plot 29.
Carrier Frequency 5.290 GHz, EBW 40 MHz, PRBS 54 Mbit/s



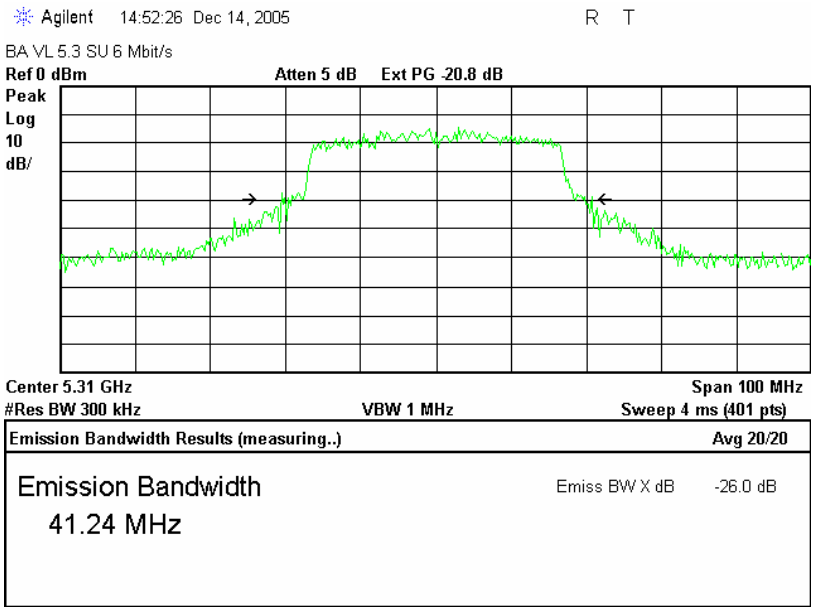
Plot 30.
Carrier Frequency 5.300 GHz, EBW 40 MHz, PRBS 6 Mbit/s



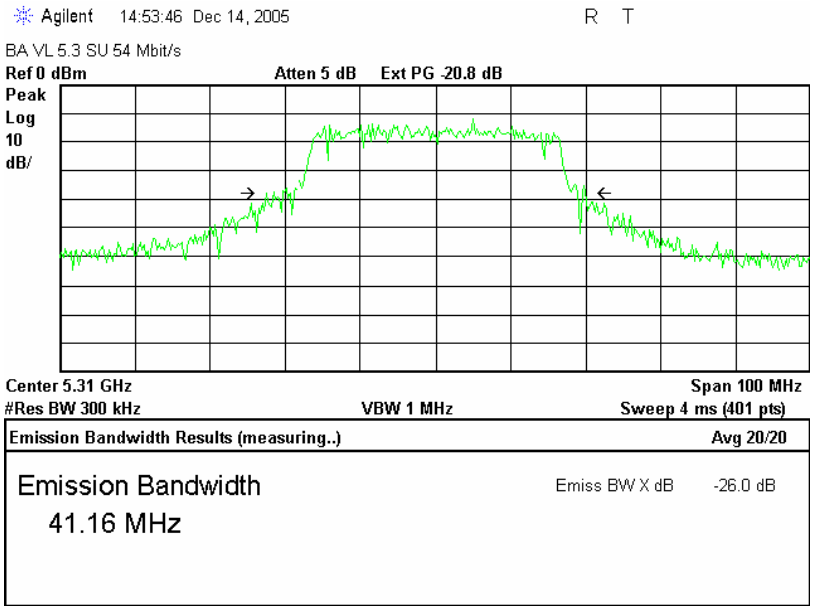
Plot 31.
Carrier Frequency 5.300 GHz, EBW 40 MHz, PRBS 54 Mbit/s



Plot 32.
Carrier Frequency 5.310 GHz, EBW 40 MHz, PRBS 6 Mbit/s

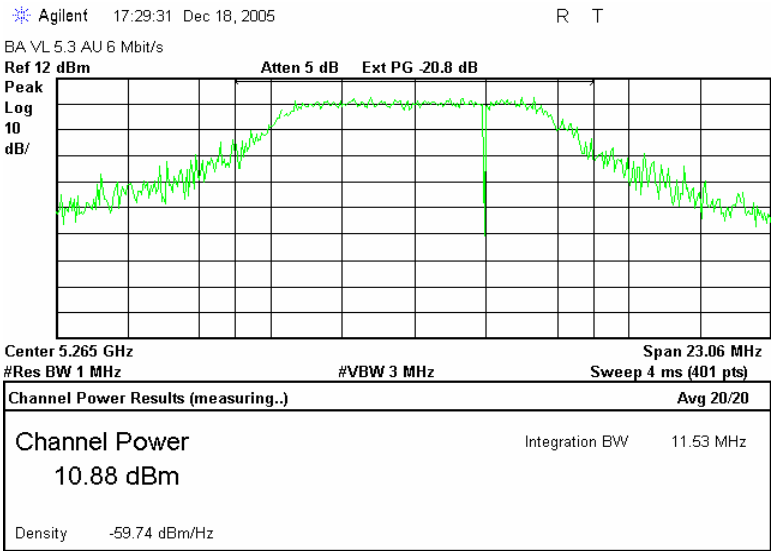


Plot 33.
Carrier Frequency 5.310 GHz, EBW 40 MHz, PRBS 54 Mbit/s

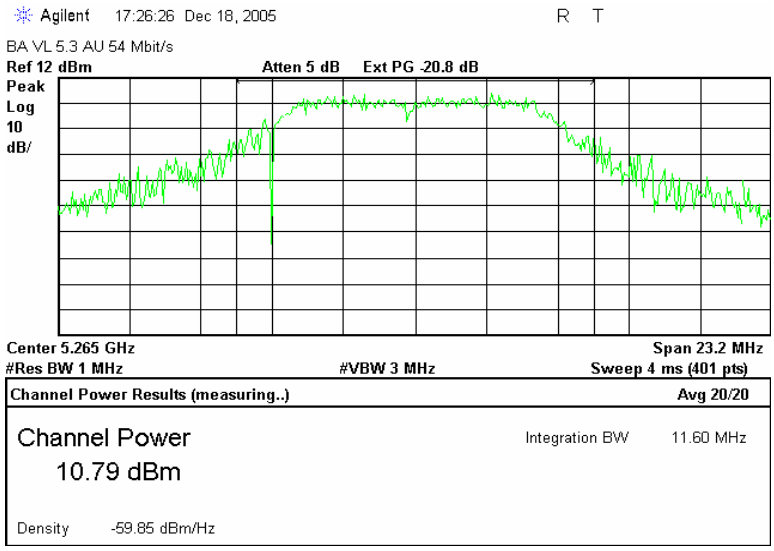


12.2. AU Unit. Antenna 16 dBi - Peak Transmit Power test 15.407a (2)

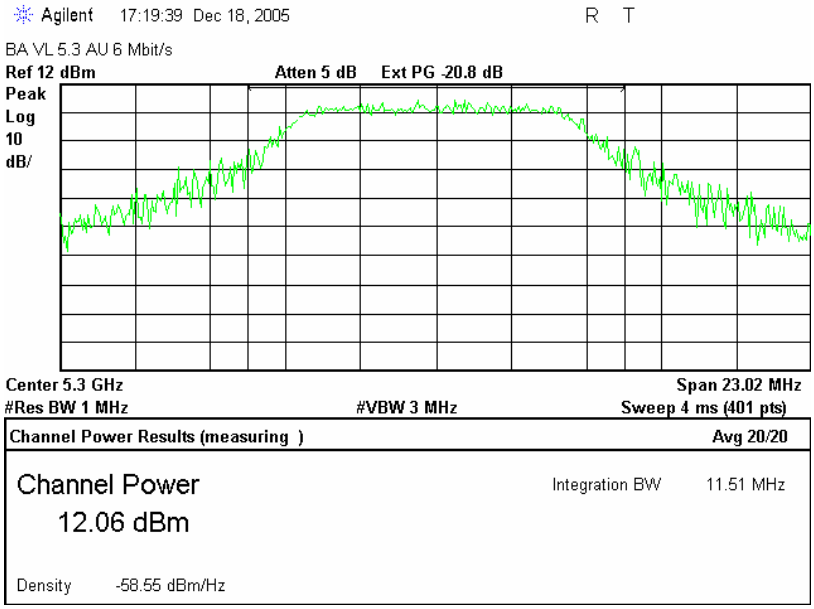
Plot 34.
Carrier Frequency 5.265 GHz, EBW-10 MHz, PRBS 6 Mbit/s



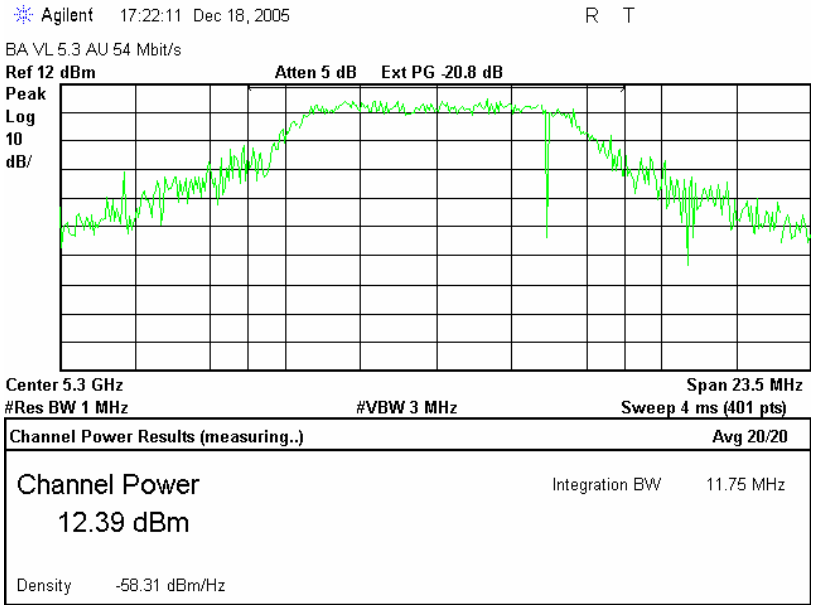
Plot 35.
Carrier Frequency 5.265 GHz, EBW- 10 MHz, PRBS 54 Mbit/s



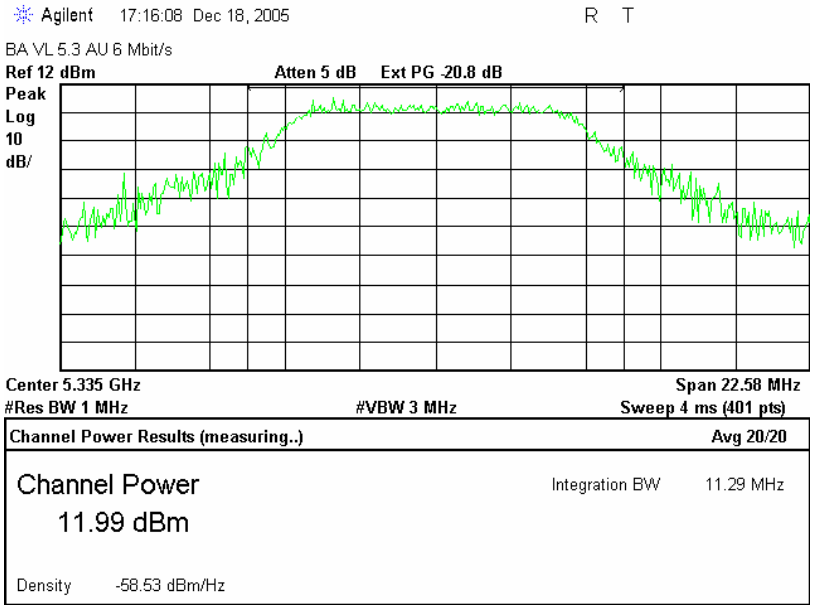
Plot 36.
Carrier Frequency 5.300 GHz, EBW- 10 MHz, PRBS 6 Mbit/s



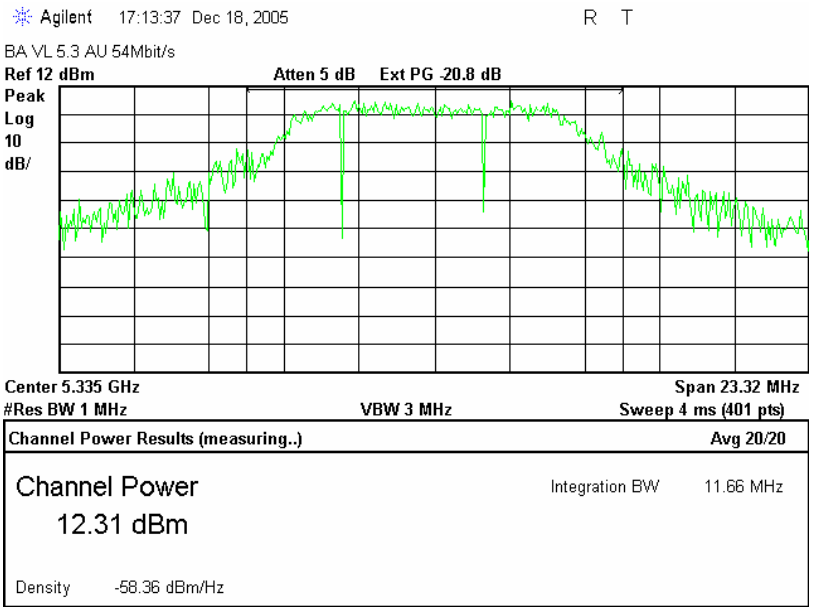
Plot 37.
Carrier Frequency 5.300 GHz, EBW-10 MHz, PRBS 54 Mbit/s



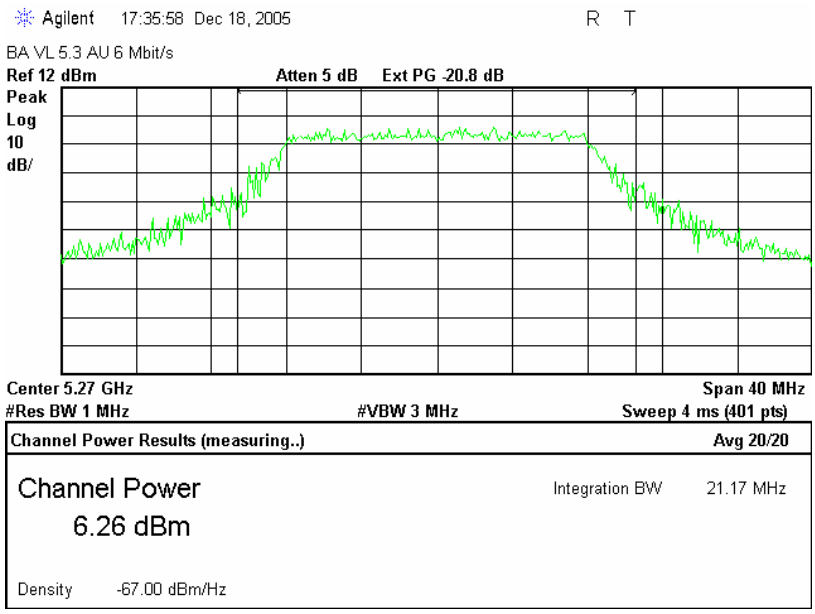
Plot 38.
Carrier Frequency 5.335 GHz. EBW- 10 MHz, PRBS 6 Mbit/s



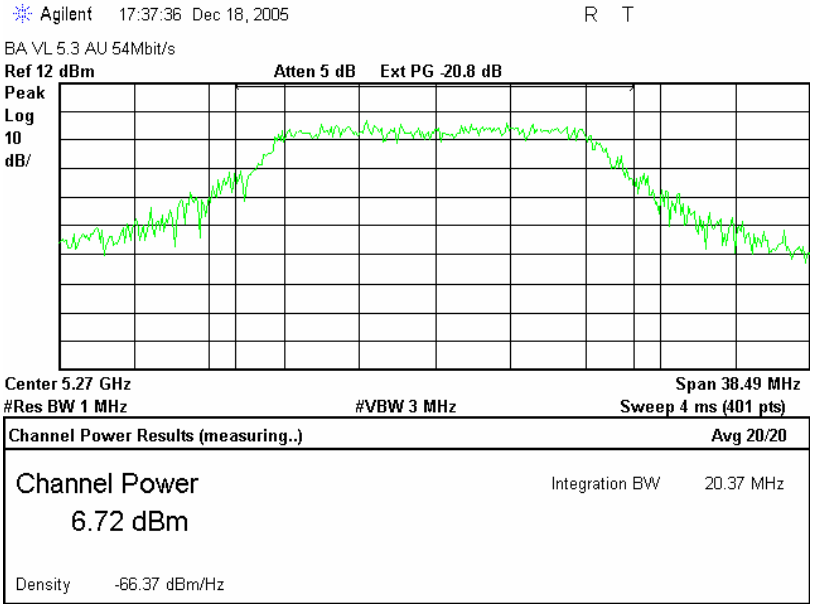
Plot 39.
Carrier Frequency 5.335 GHz. EBW- 10 MHz, PRBS 54 Mbit/s



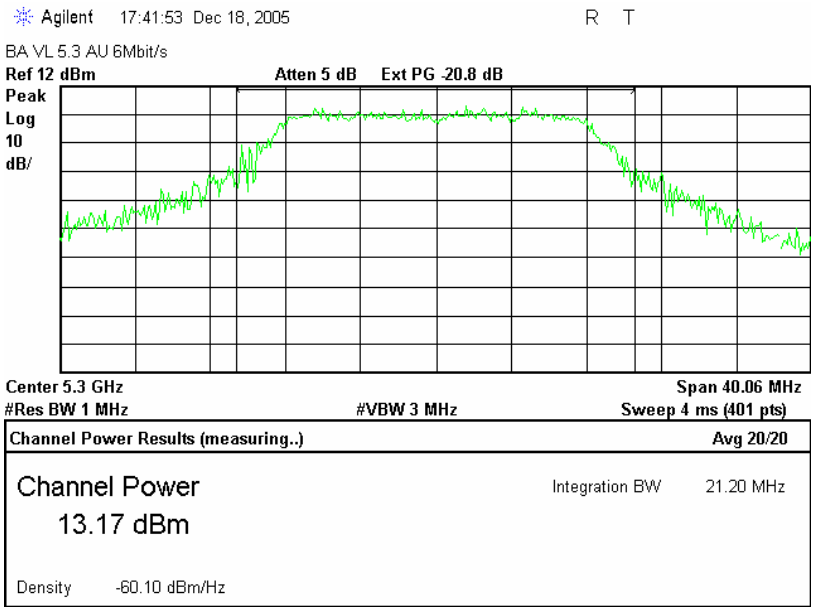
Plot 40.
Carrier Frequency 5.270 GHz, EBW-20 MHz, PRBS 6 Mbit/s



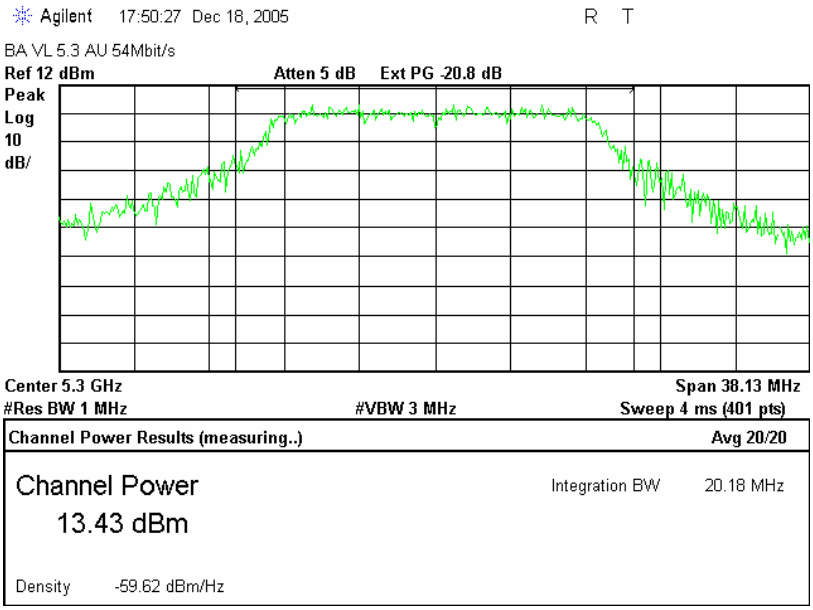
Plot 41.
Carrier Frequency 5.270 GHz, EBW-20MHz, PRBS 54 Mbit/s



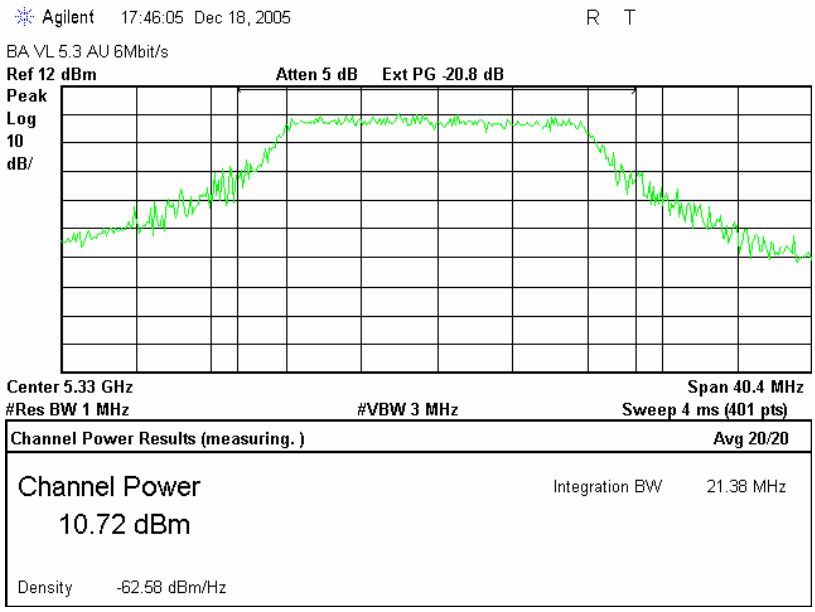
Plot 42.
Carrier Frequency 5.300 GHz, EBW-20 MHz, PRBS 6 Mbit/s



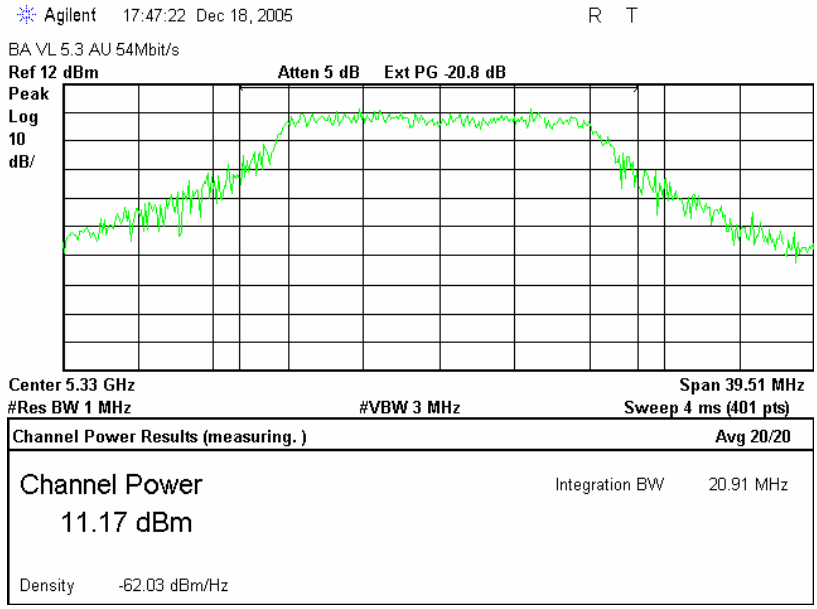
Plot 43.
Carrier Frequency 5.300 GHz, EBW-20 MHz, PRBS 54 Mbit/s



Plot 44.
Carrier Frequency 5.330 GHz, EBW-20 MHz, PRBS 6 Mbit/s

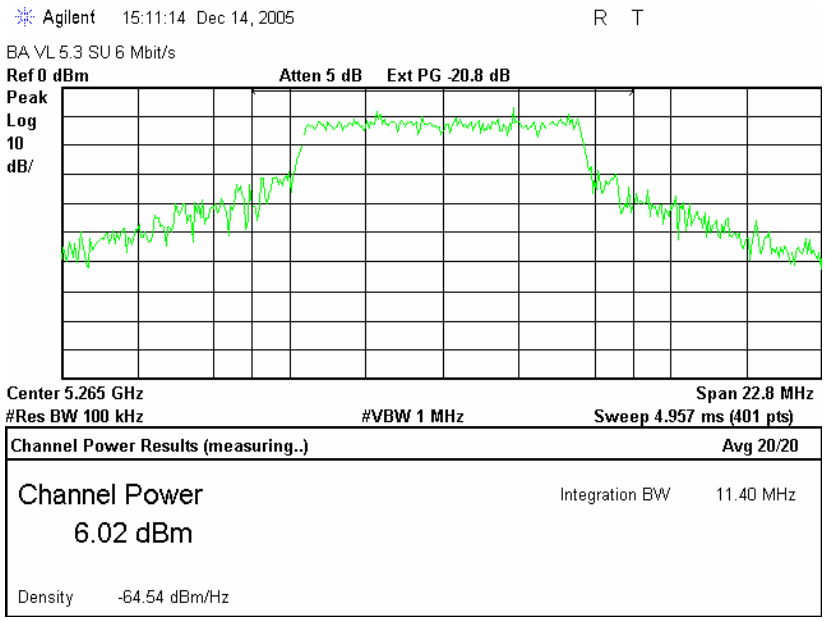


Plot 45.
Carrier Frequency 5.330 GHz, EBW-20MHz, PRBS 54 Mbit/s

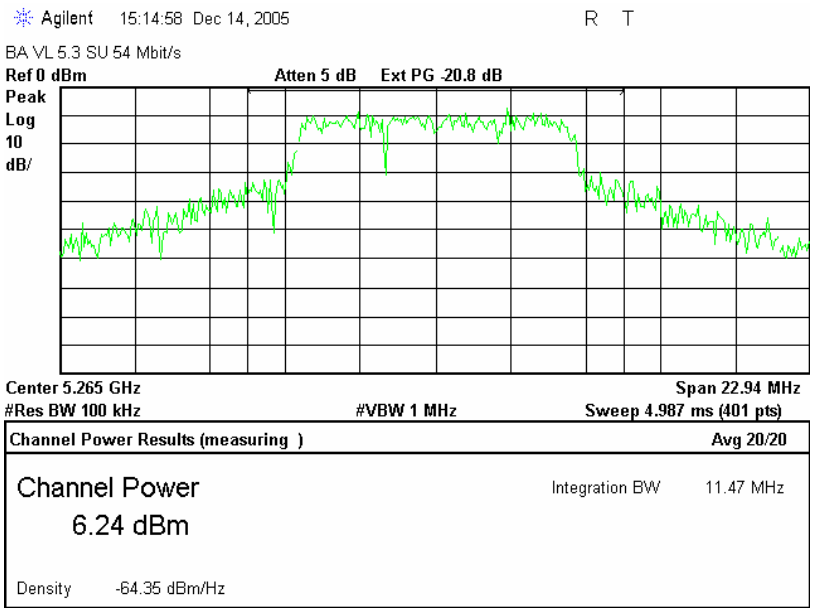


12.3. SU Unit. Antenna 21 dBi - Peak Transmit Power test 15.407a (2)

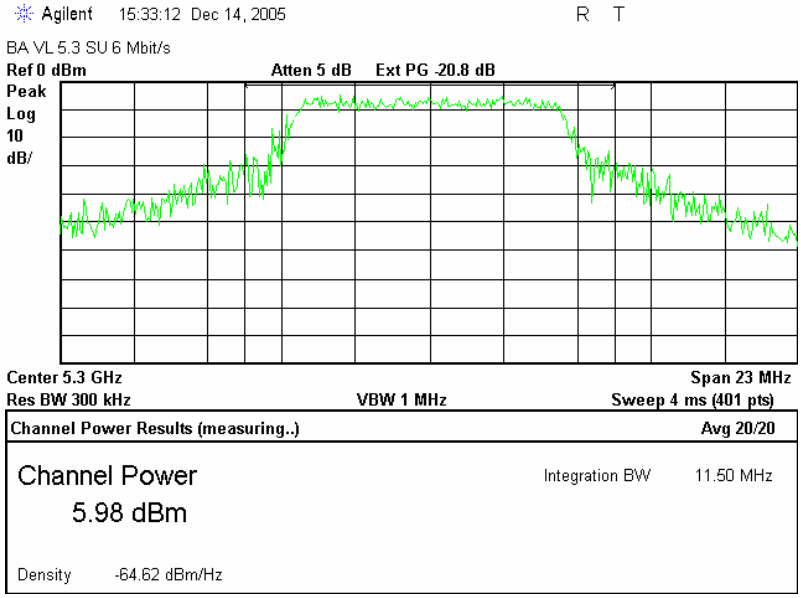
Plot 46.
Carrier Frequency 5.265 GHz, EBW-10 MHz, PRBS 6 Mbit/s



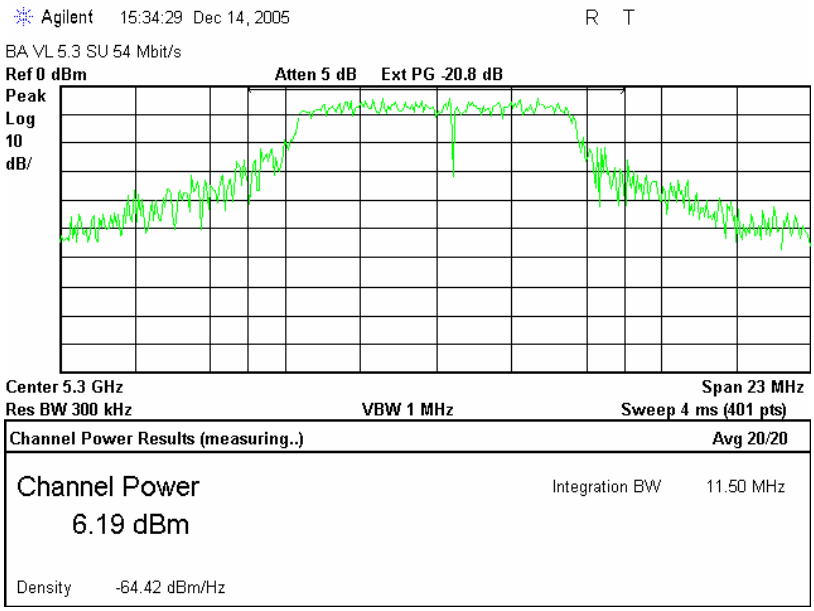
Plot 47.
Carrier Frequency 5.265 GHz, EBW-10MHz, PRBS 54 Mbit/s



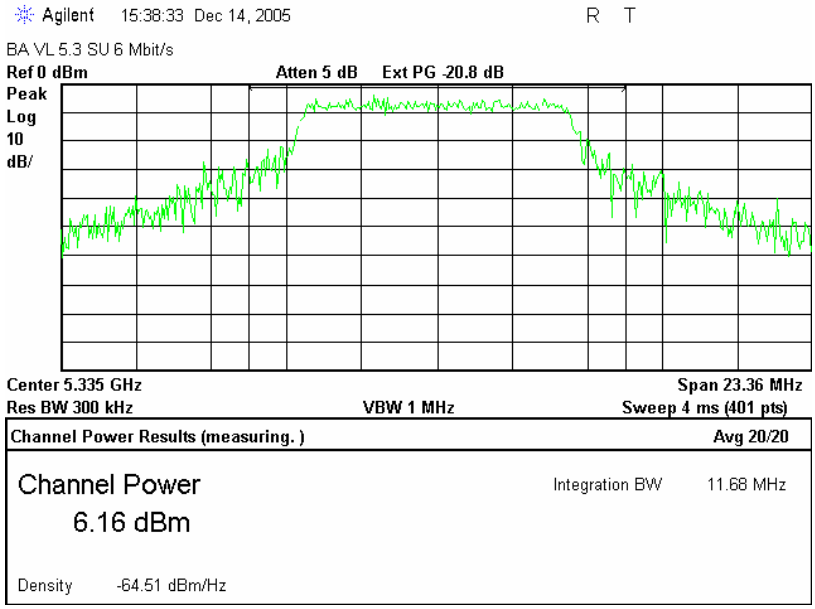
Plot 48.
Carrier Frequency 5.300 GHz, EBW-10 MHz, PRBS 6 Mbit/s



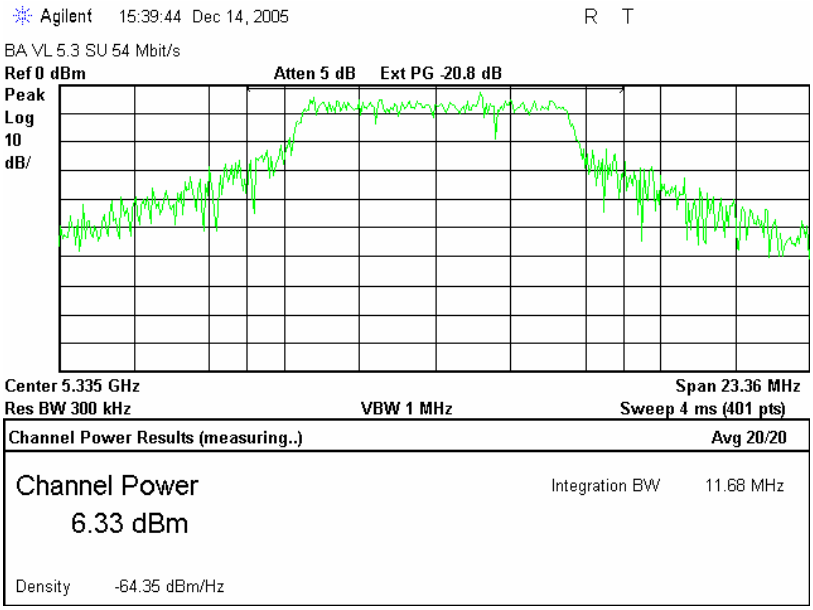
Plot 49.
Carrier Frequency 5.300 GHz, EBW-10MHz, PRBS 54 Mbit/s



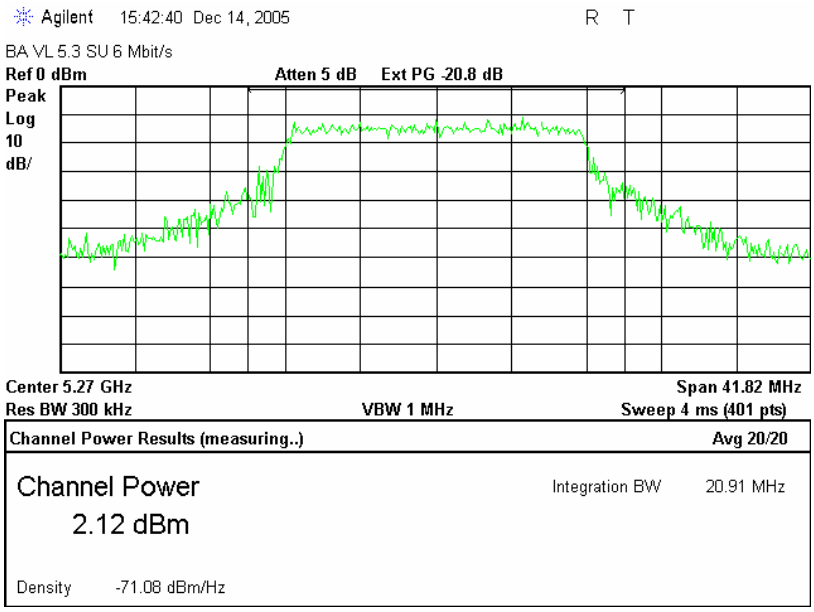
Plot 50.
Carrier Frequency 5.335 GHz, EBW-10 MHz, PRBS 6 Mbit/s



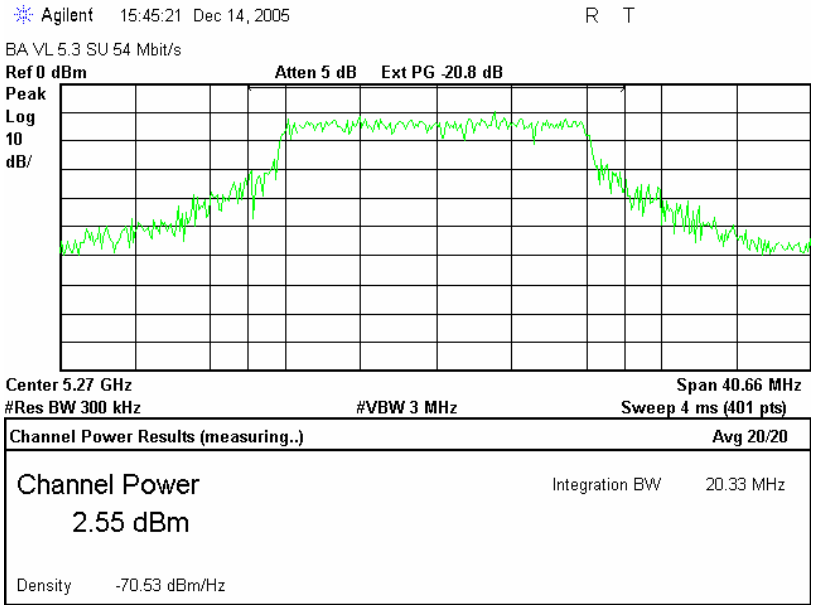
Plot 51.
Carrier Frequency 5.335 GHz, EBW-10MHz, PRBS 54 Mbit/s



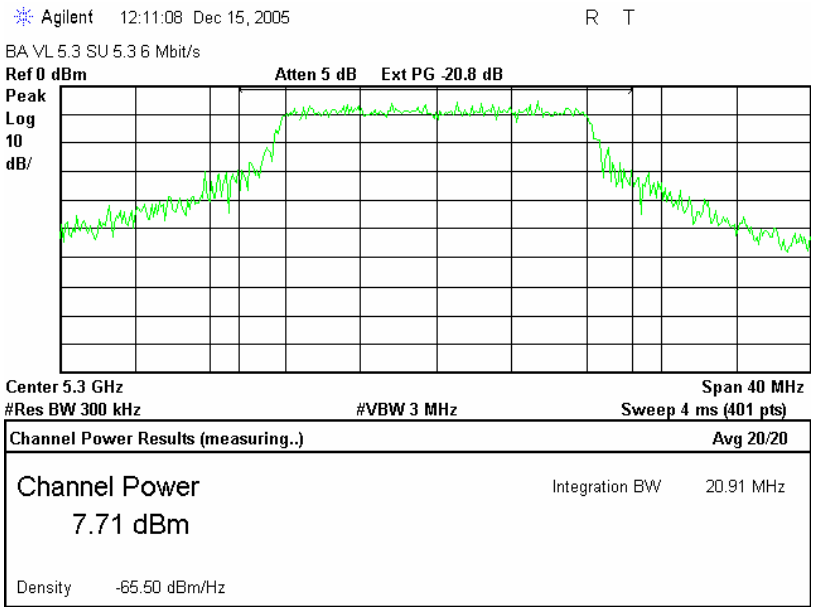
Plot 52.
Carrier Frequency 5.270 GHz, EBW-20 MHz, PRBS 6 Mbit/s



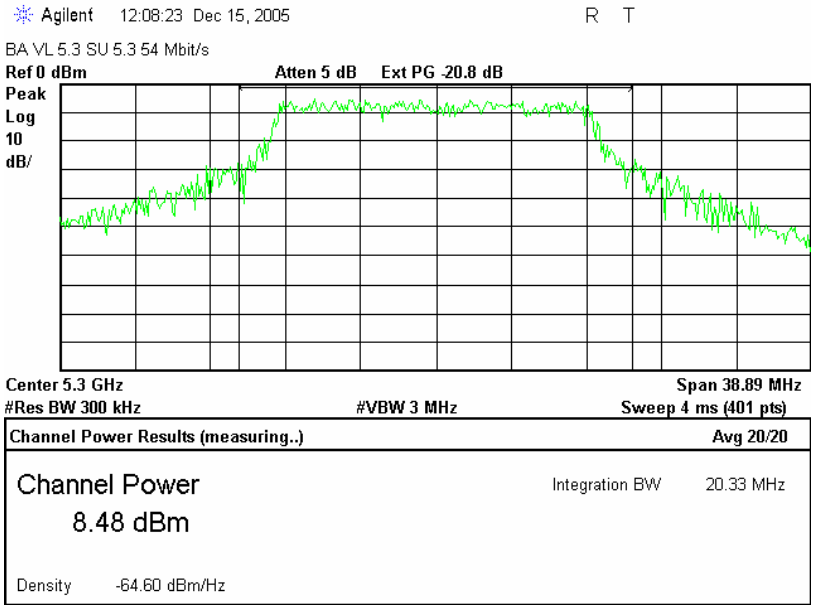
Plot 53.
Carrier Frequency 5.270 GHz, EBW-20MHz, PRBS 54 Mbit/s



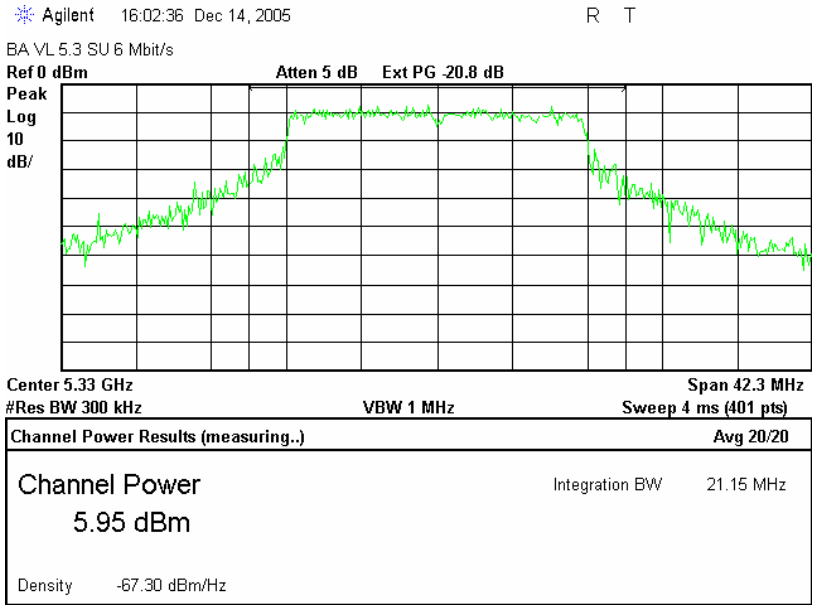
Plot 54.
Carrier Frequency 5.300 GHz, EBW-20 MHz, PRBS 6 Mbit/s



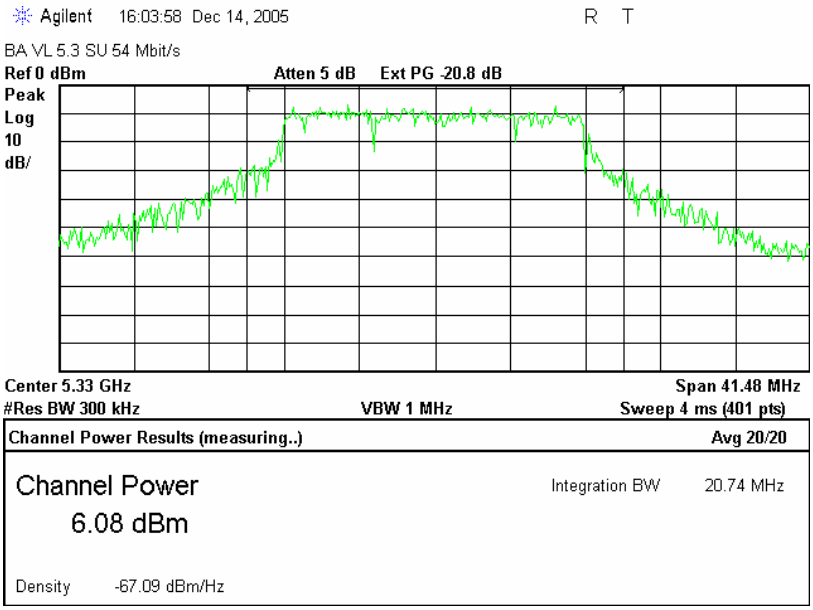
Plot 55.
Carrier Frequency 5.300 GHz, EBW-20MHz, PRBS 54 Mbit/s



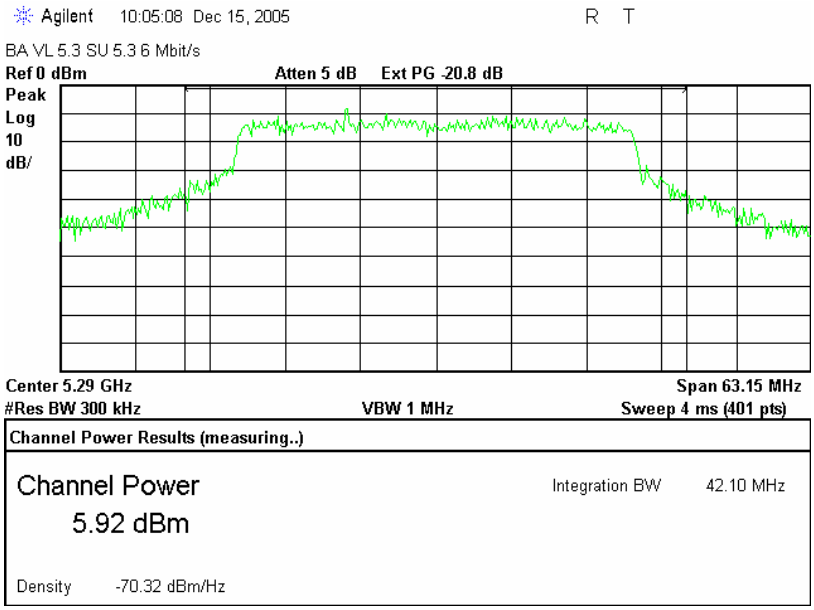
Plot 56.
Carrier Frequency 5.330 GHz, EBW-20 MHz, PRBS 6 Mbit/s



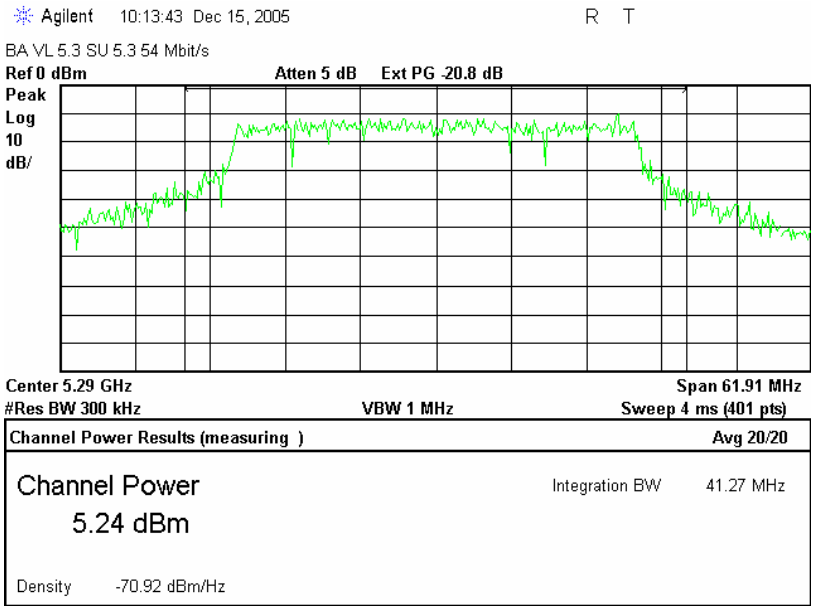
Plot 57.
Carrier Frequency 5.330 GHz, EBW-20MHz, PRBS 54 Mbit/s



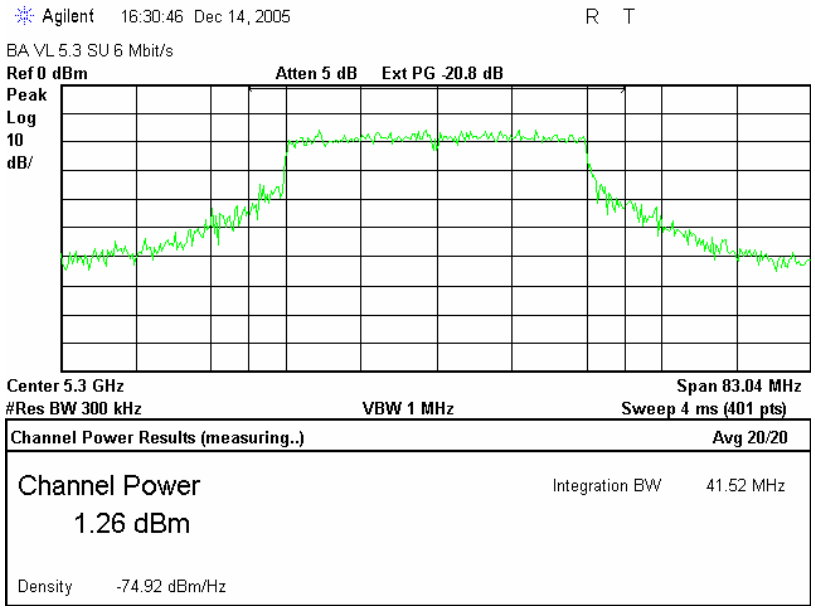
Plot 58.
Carrier Frequency 5.290 GHz, EBW-40 MHz, PRBS 6 Mbit/s



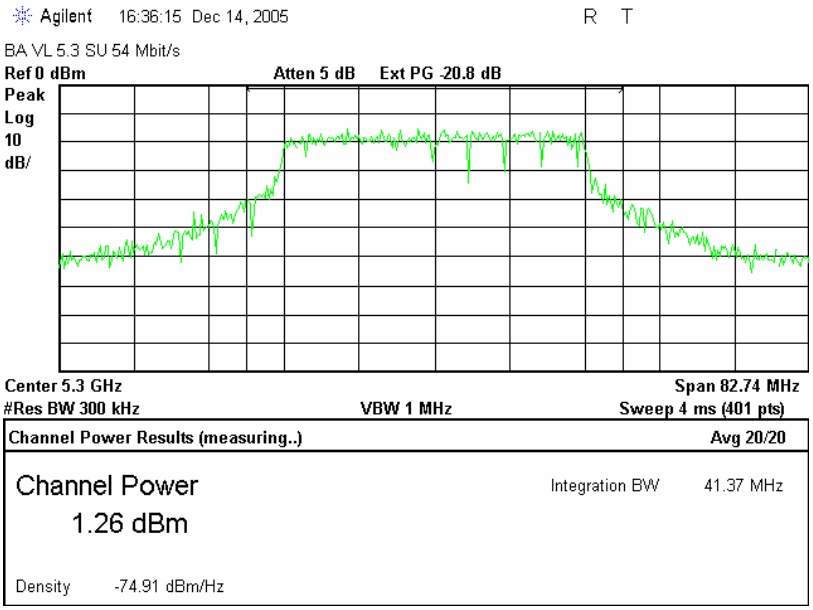
Plot 59.
Carrier Frequency 5.290 GHz, EBW-40 MHz, PRBS 54 Mbit/s



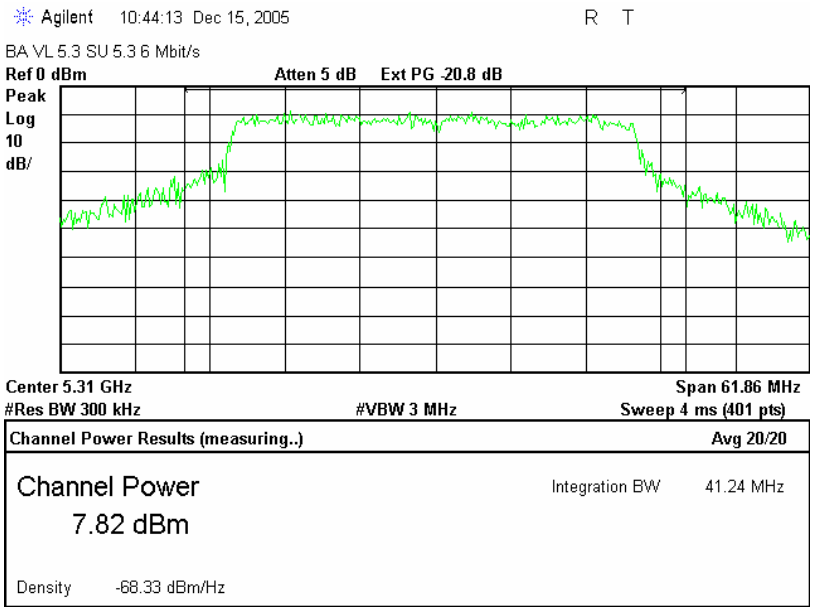
Plot 60.
Carrier Frequency 5.300 GHz, EBW-40 MHz, PRBS 6 Mbit/s



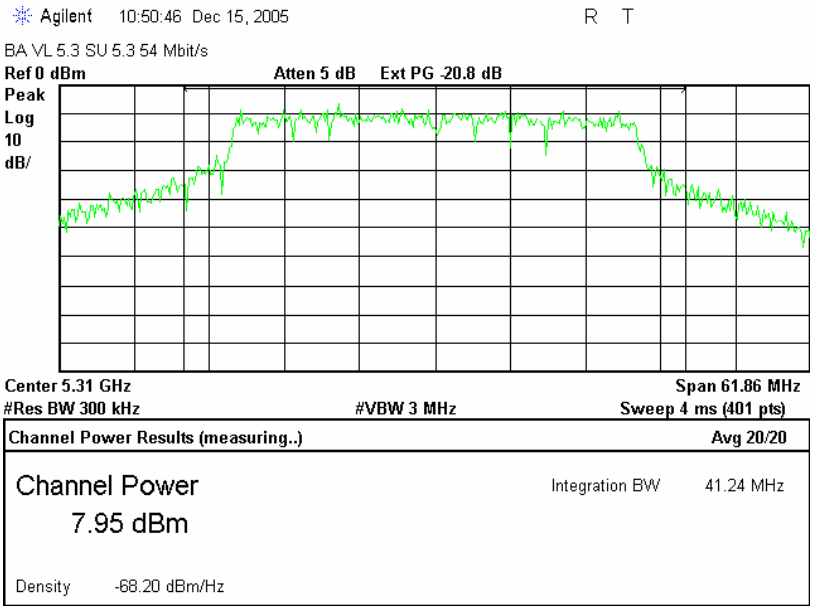
Plot 61.
Carrier Frequency 5.300 GHz, EBW-40 MHz, PRBS 54 Mbit/s



Plot 62.
Carrier Frequency 5.310 GHz, EBW-40 MHz, PRBS 6 Mbit/s

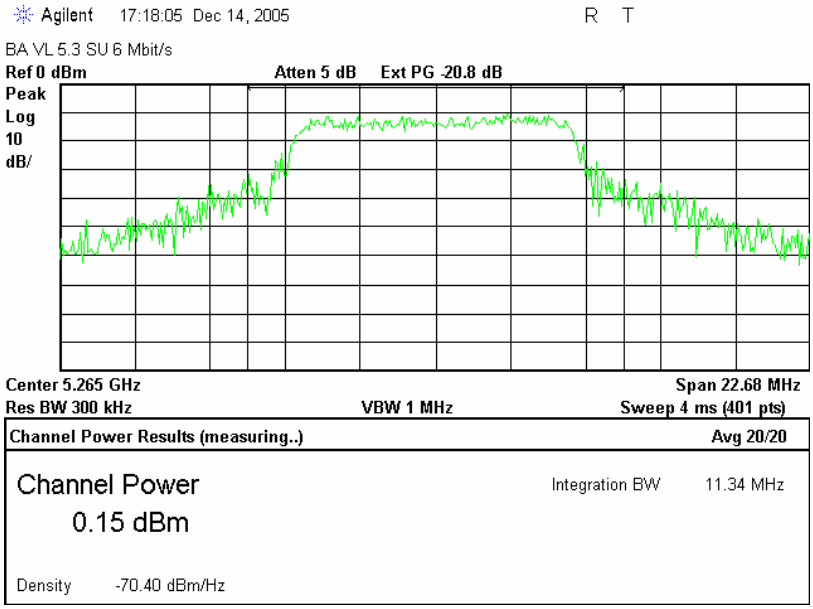


Plot 63.
Carrier Frequency 5.310 GHz, EBW-40 MHz, PRBS 54 Mbit/s

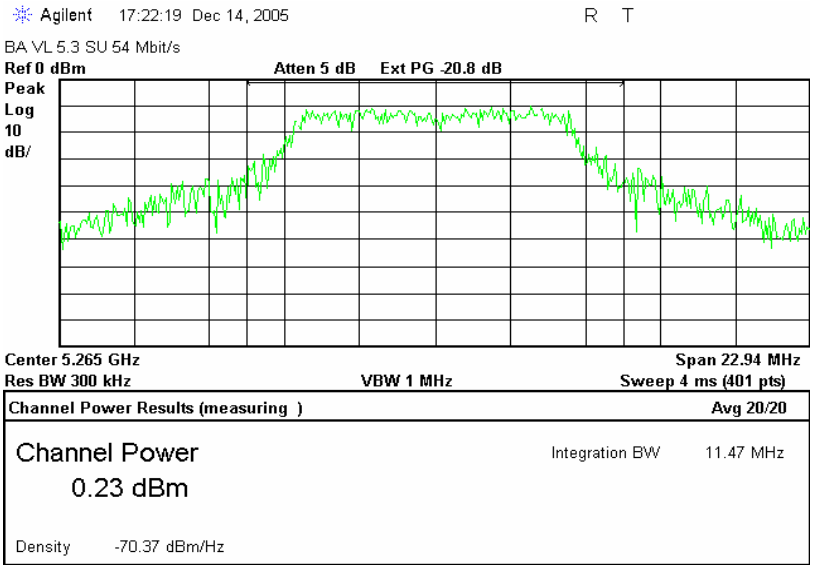


12.4. SU Unit. Antenna 28 dBi - Peak Transmit Power test 15.407a (2)

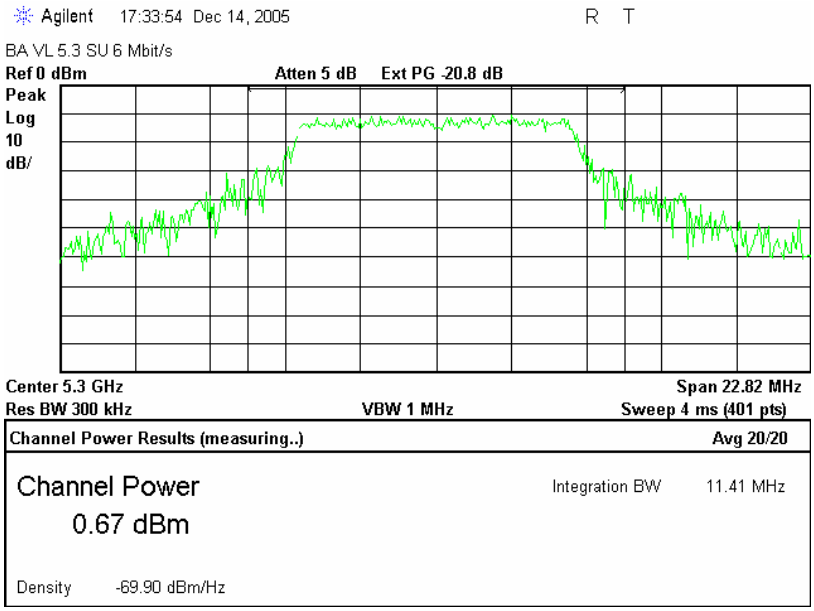
Plot 64.
Carrier Frequency 5.265 GHz, EBW-10 MHz, PRBS 6 Mbit/s



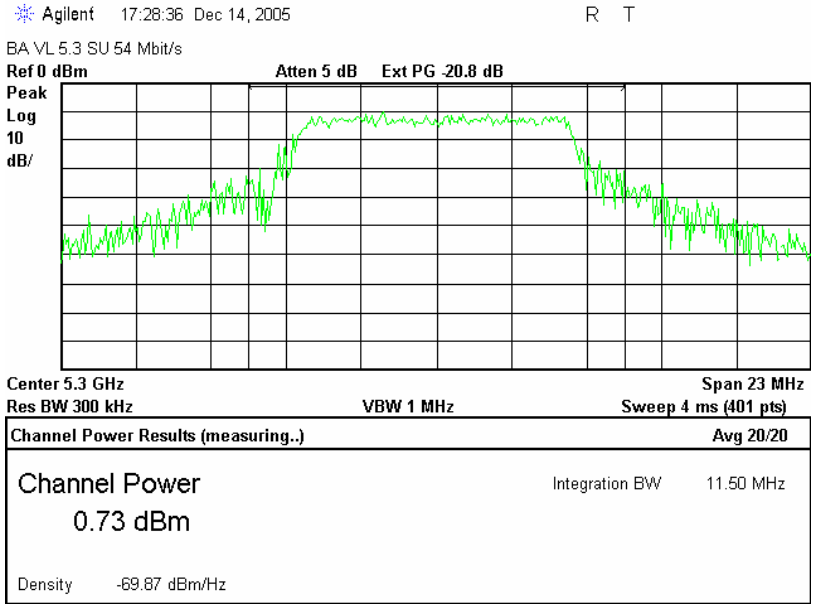
Plot 65.
Carrier Frequency 5.265 GHz, EBW-10 MHz, PRBS 54 Mbit/s



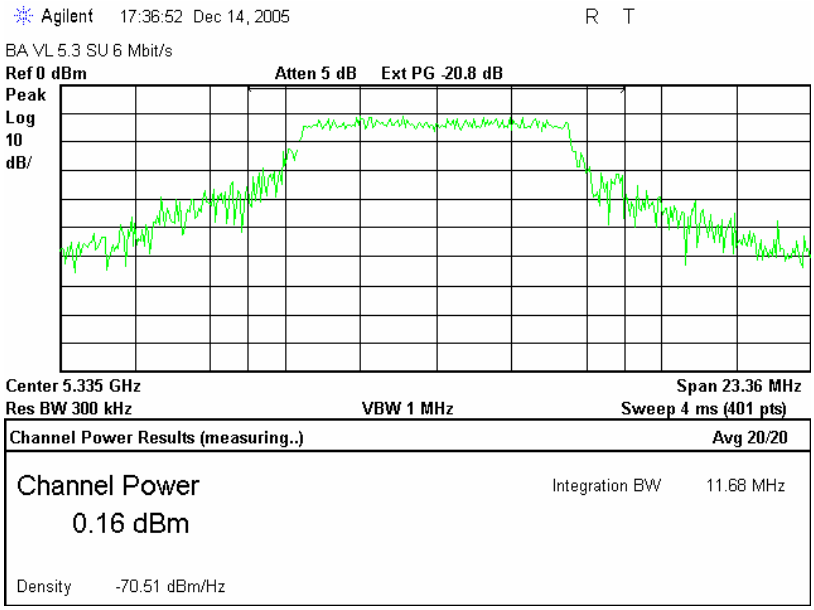
Plot 66.
Carrier Frequency 5.300 GHz, EBW-10 MHz, PRBS 6 Mbit/s



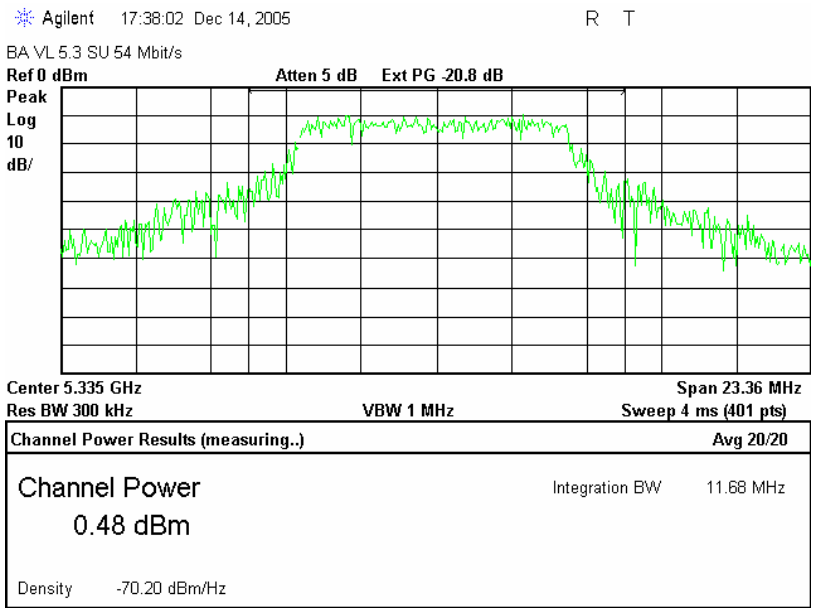
Plot 67.
Carrier Frequency 5.300 GHz, EBW-10 MHz, PRBS 54 Mbit/s



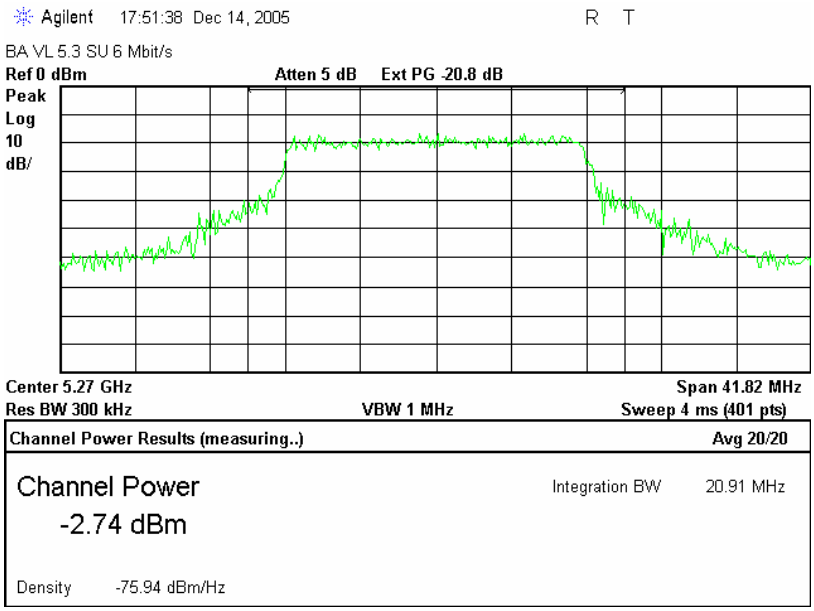
Plot 68.
Carrier Frequency 5.335 GHz, EBW-10 MHz, PRBS 6 Mbit/s



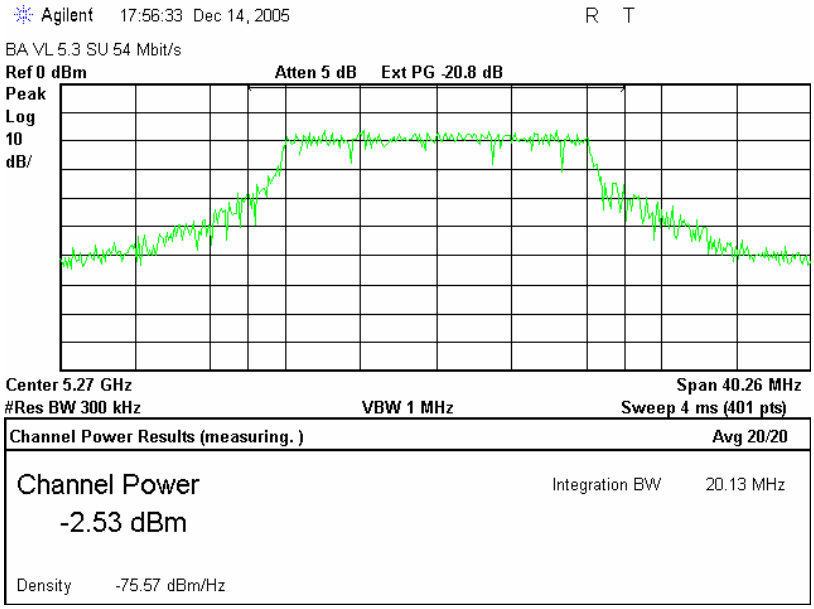
Plot 69.
Carrier Frequency 5.335 GHz, EBW-10 MHz, PRBS 54 Mbit/s



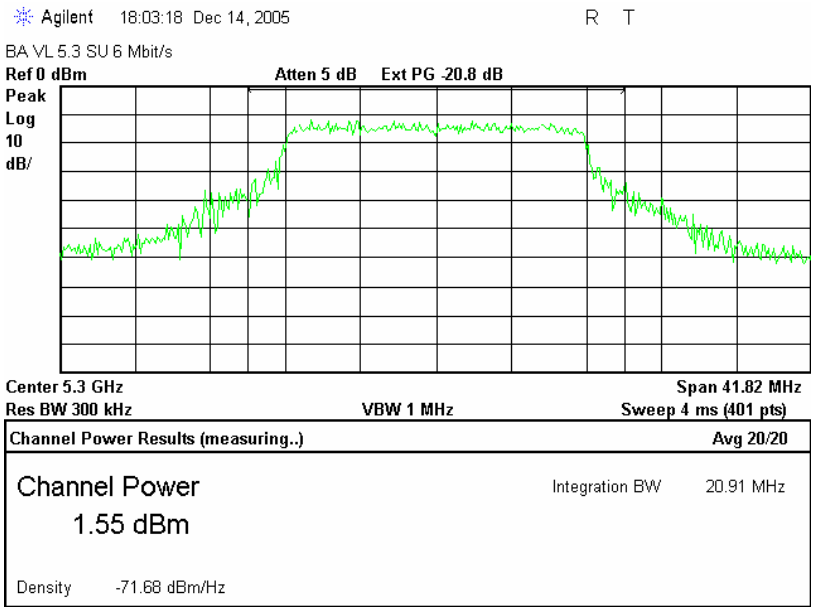
Plot 70.
Carrier Frequency 5.270 GHz, EBW-20 MHz, PRBS 6 Mbit/s



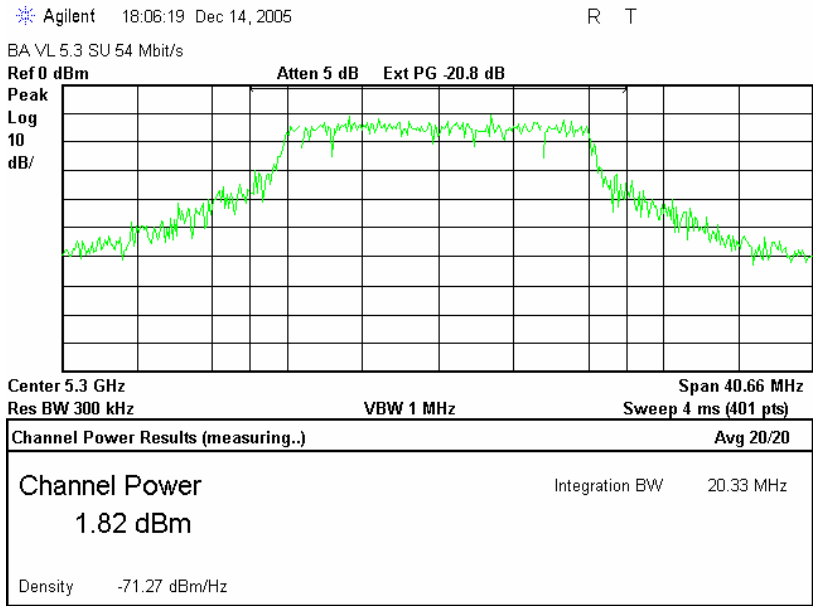
Plot 71.
Carrier Frequency 5.270 GHz, EBW-20 MHz, PRBS 54 Mbit/s



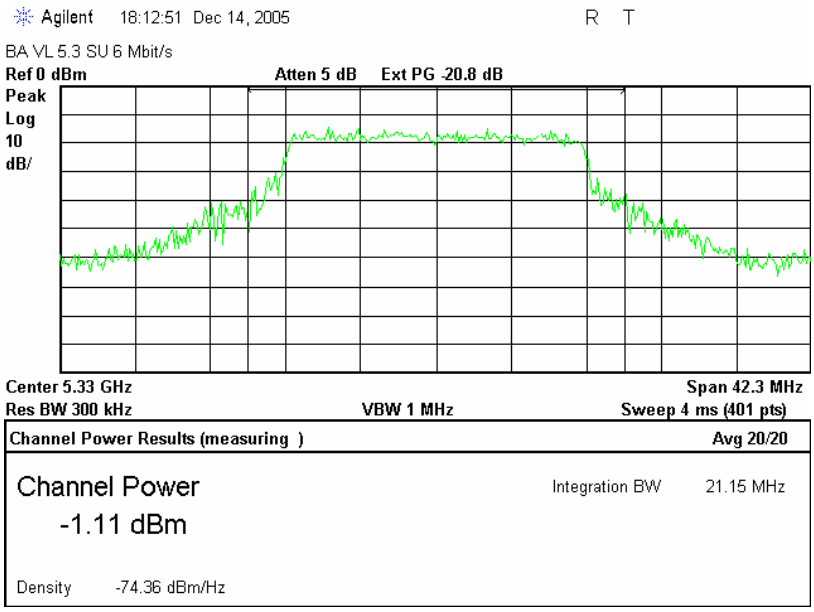
Plot 72.
Carrier Frequency 5.300 GHz, EBW-20 MHz, PRBS 6 Mbit/s



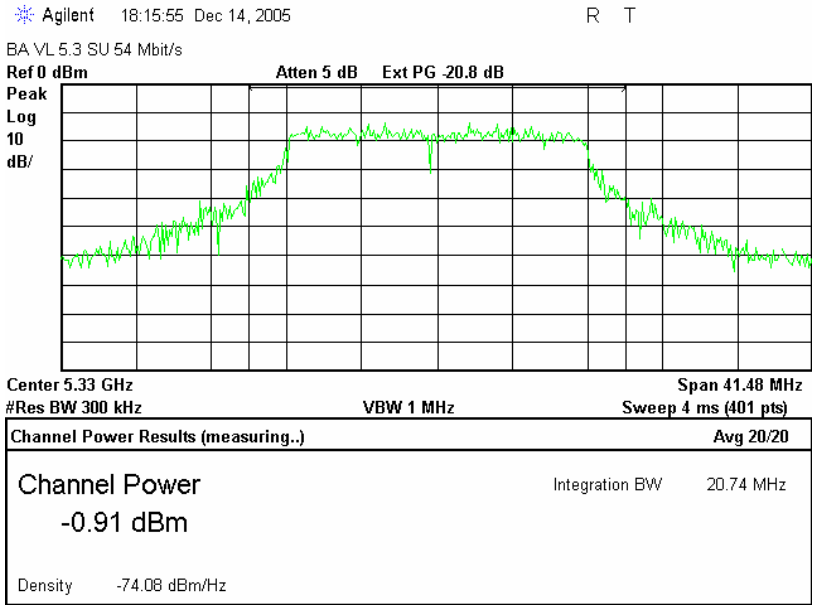
Plot 73.
Carrier Frequency 5.300 GHz, EBW-20 MHz, PRBS 54 Mbit/s



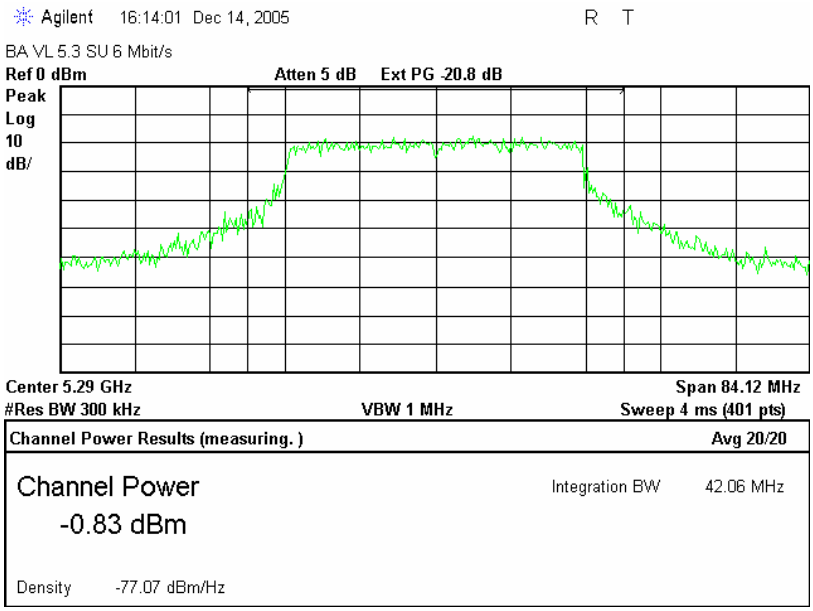
Plot 74.
Carrier Frequency 5.330 GHz, EBW-20 MHz, PRBS 6 Mbit/s



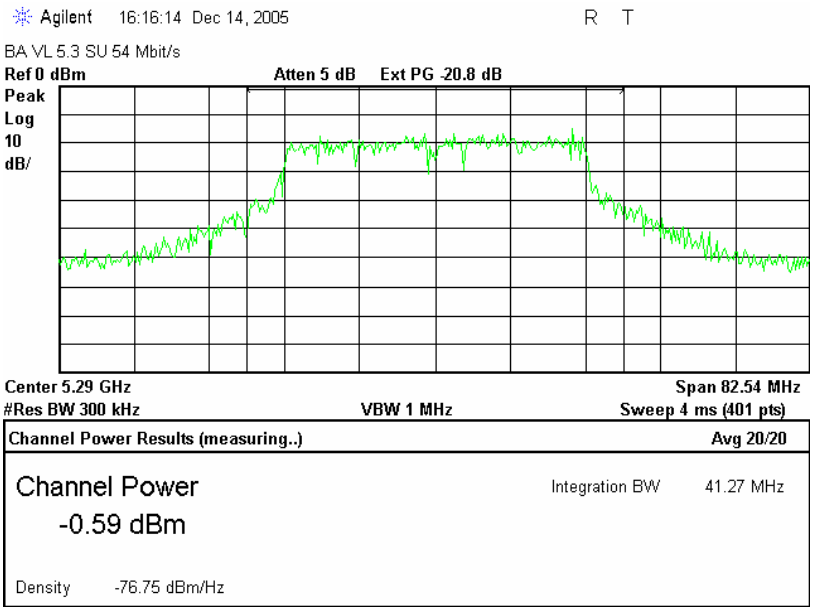
Plot 75.
Carrier Frequency 5.330 GHz, EBW-20 MHz, PRBS 54 Mbit/s



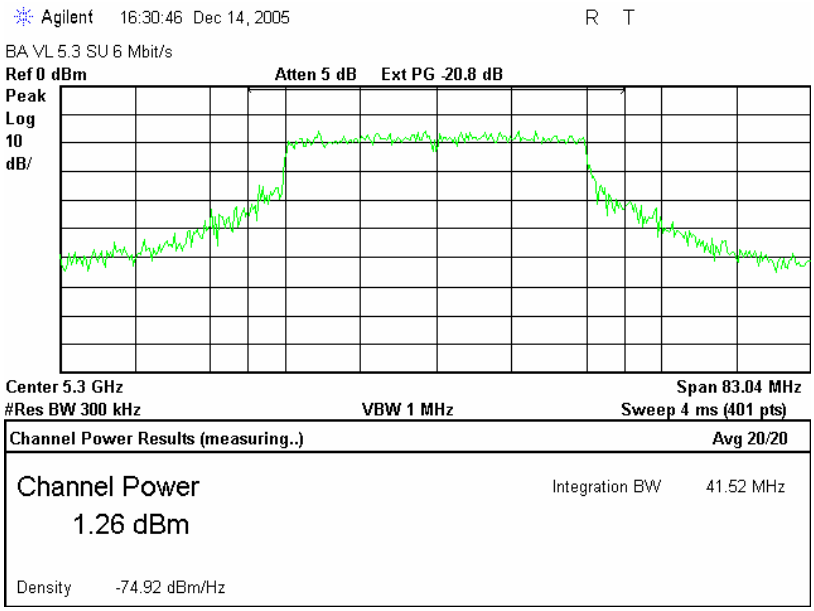
Plot 76.
Carrier Frequency 5.300 GHz, EBW-40 MHz, PRBS 6 Mbit/s



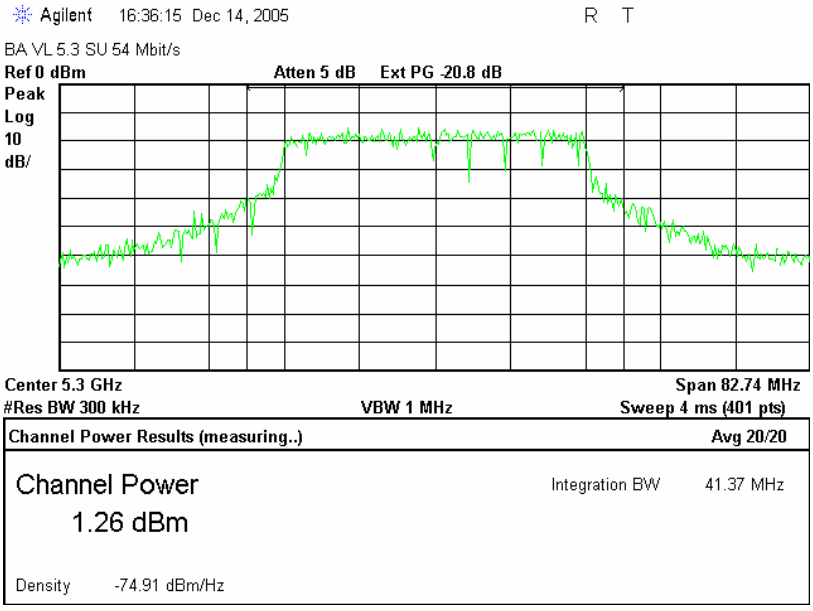
Plot 77.
Carrier Frequency 5.300 GHz, EBW-40 MHz, PRBS 54 Mbit/s



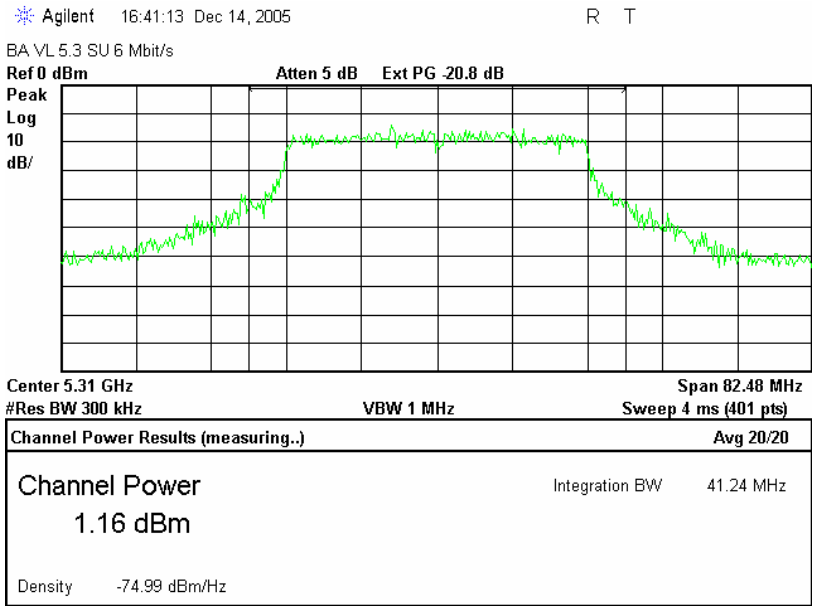
Plot 78.
Carrier Frequency 5.300 GHz, EBW-40 MHz, PRBS 6 Mbit/s



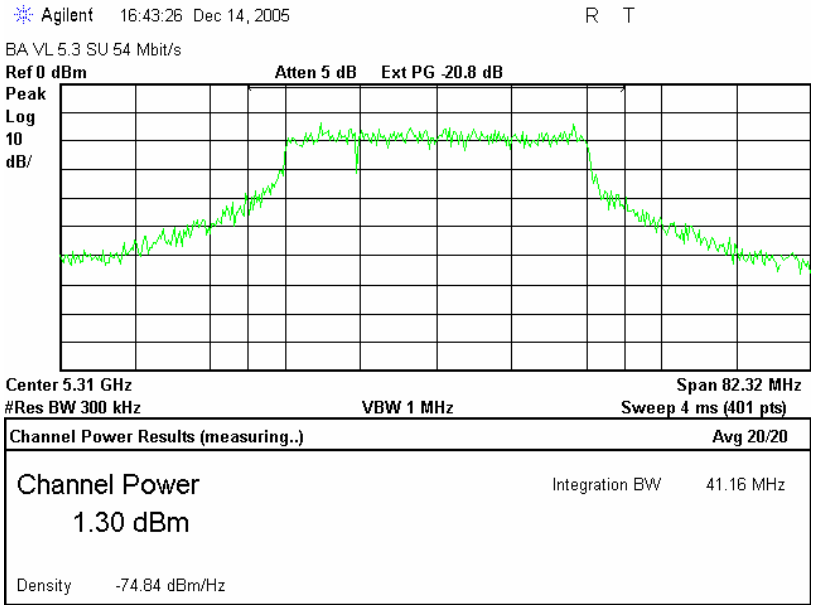
Plot 79.
Carrier Frequency 5.300 GHz, EBW-40 MHz, PRBS 54 Mbit/s



Plot 80.
Carrier Frequency 5.310 GHz, EBW-40 MHz, PRBS 6 Mbit/s

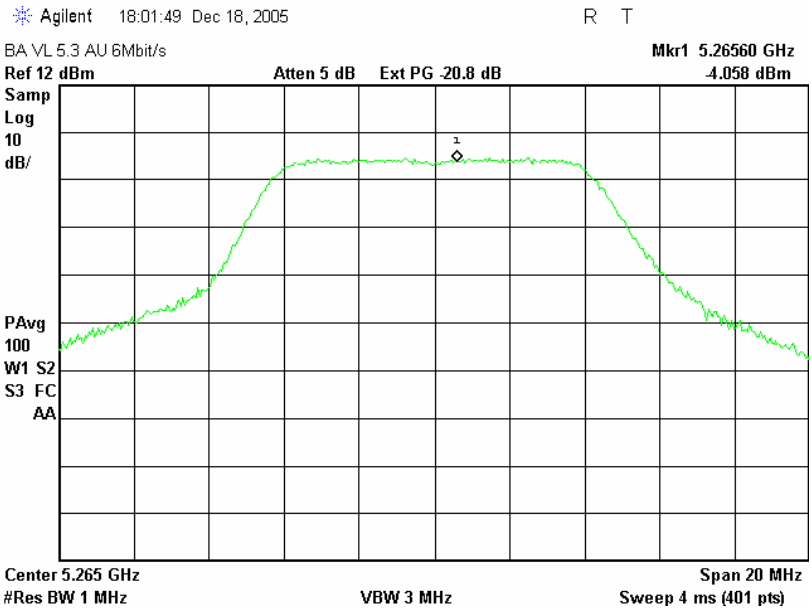


Plot 81.
Carrier Frequency 5.310 GHz, EBW-40 MHz, PRBS 54 Mbit/s

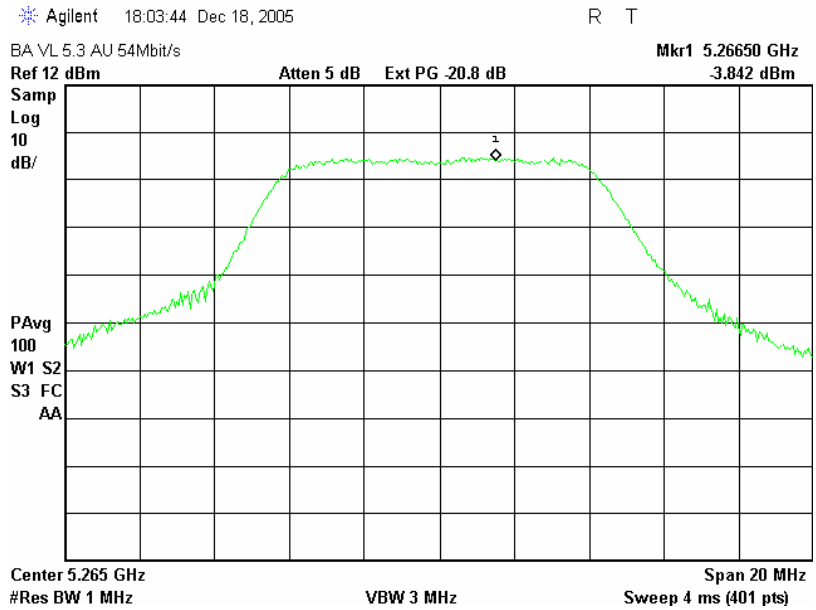


12.5. AU Unit. Antenna 16 dBi - Peak Power Spectral Density 15.407a (2)

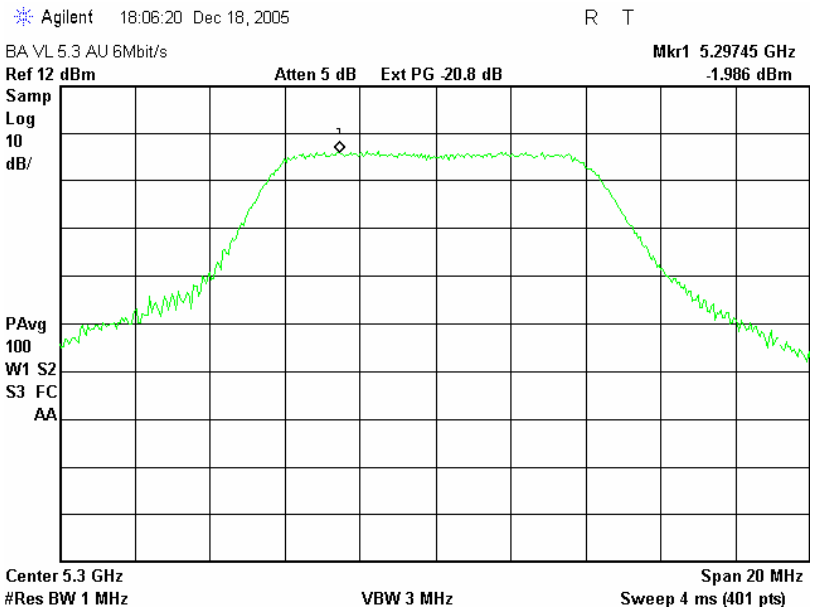
Plot 82.
Carrier Frequency 5.265 GHz. EBW 10 MHz. PRBS 6 Mbit/s



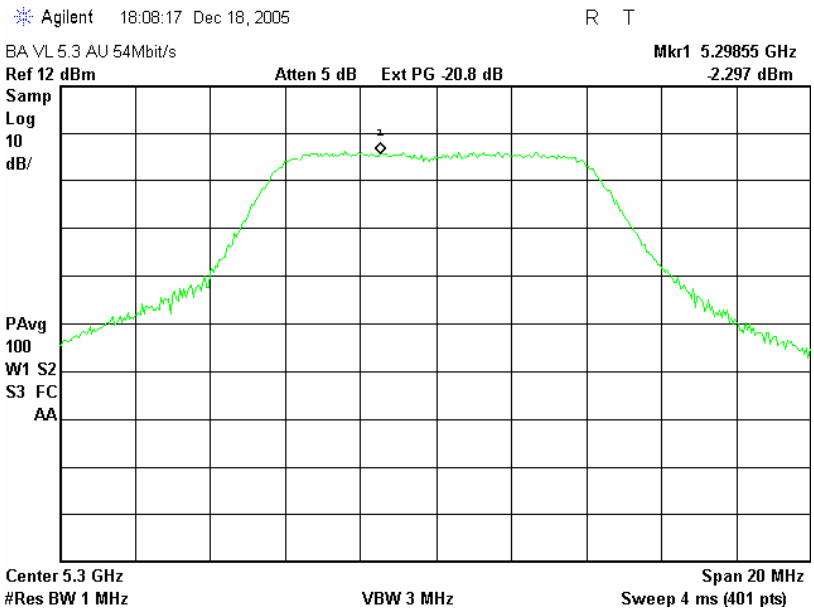
Plot 83.
Carrier Frequency 5.265 GHz. EBW 10 MHz. PRBS 54 Mbit/s



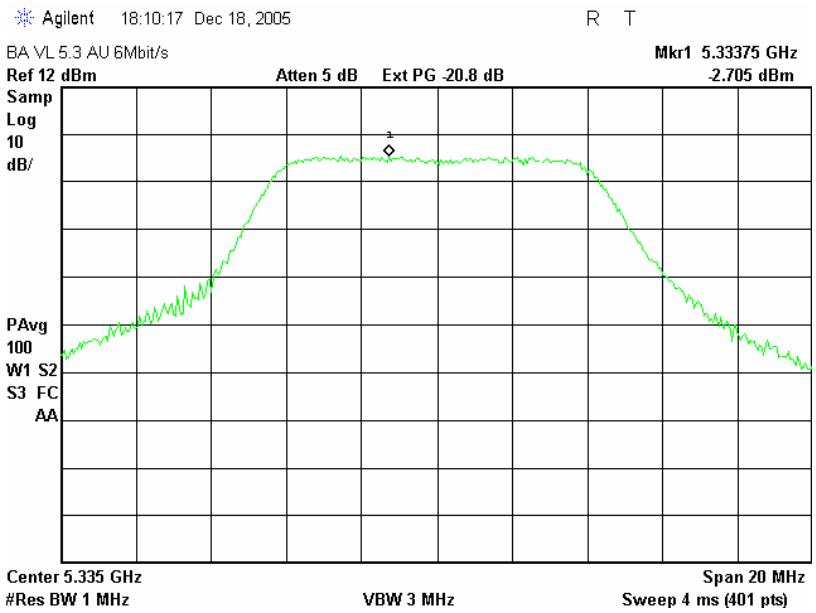
Plot 84.
Carrier Frequency 5.300 GHz. EBW 10 MHz. PRBS 6 Mbit/s



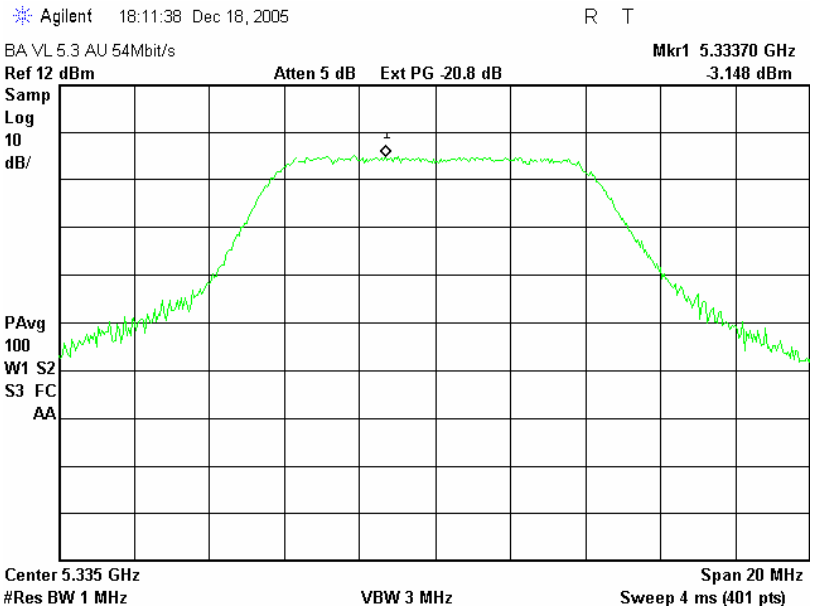
Plot 85.
Carrier Frequency 5.300 GHz. EBW 10 MHz. PRBS 54 Mbit/s



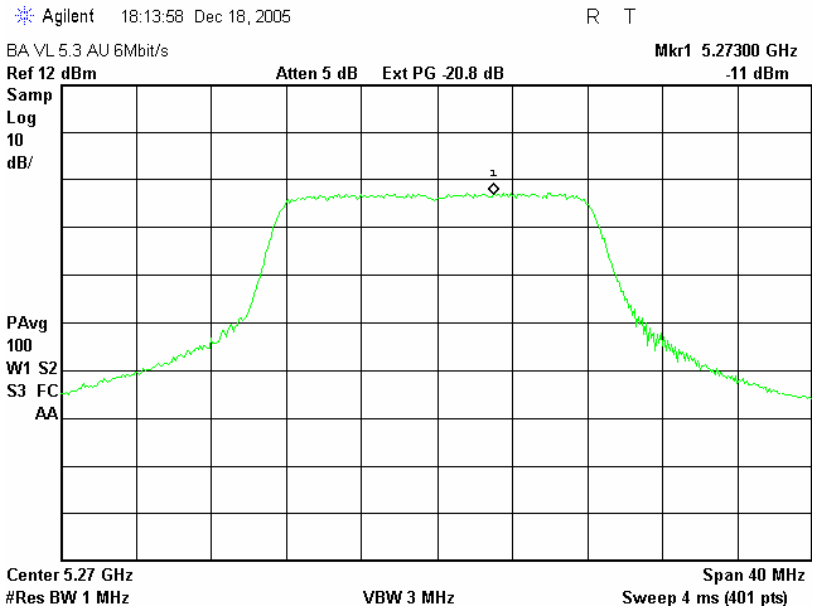
Plot 86.
Carrier Frequency 5.335 GHz. EBW 10 MHz. PRBS 6 Mbit/s



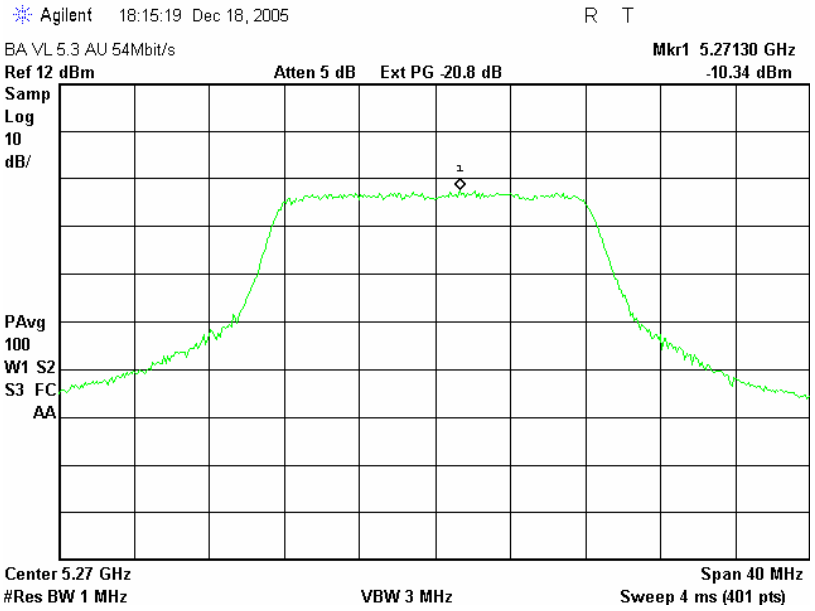
Plot 87.
Carrier Frequency 5.335 GHz. EBW 10 MHz. PRBS 54 Mbit/s



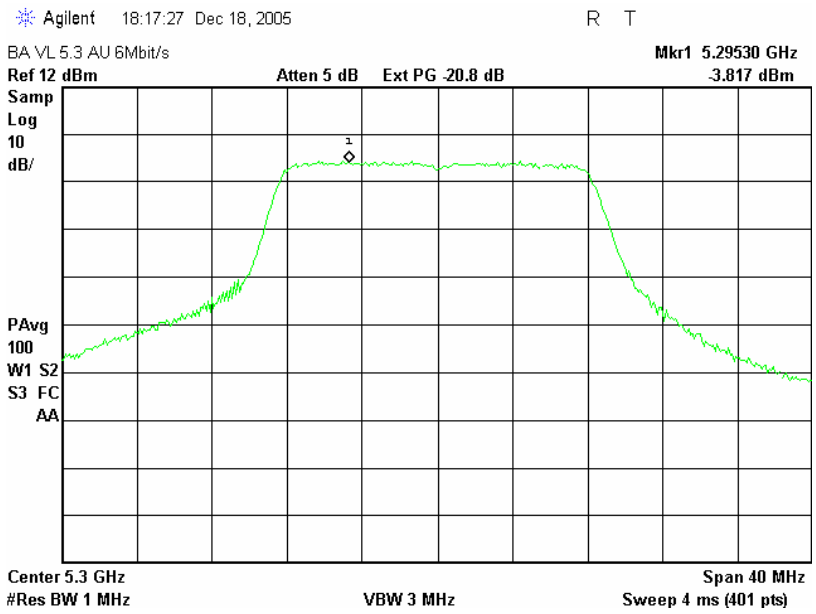
Plot 88.
Carrier Frequency 5.270 GHz. EBW 20 MHz. PRBS 6 Mbit/s



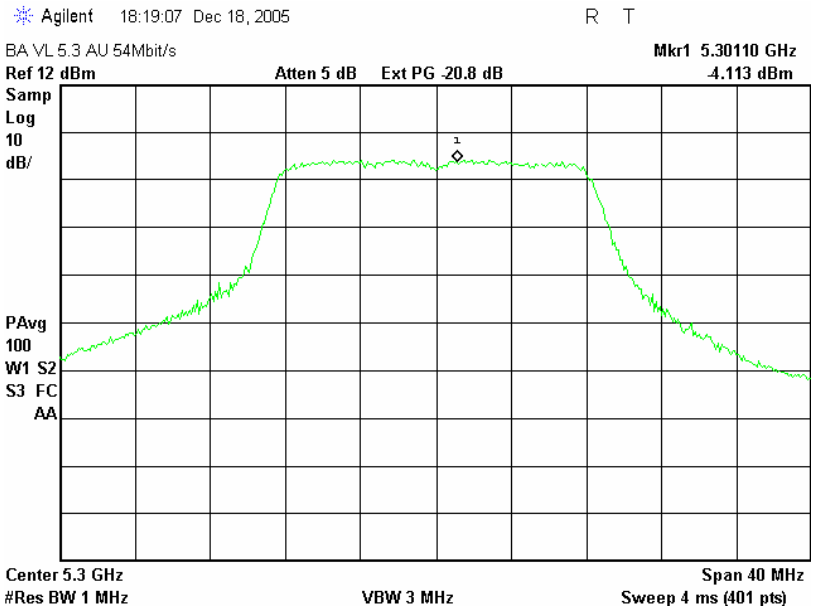
Plot 89.
Carrier Frequency 5.270 GHz. EBW 20 MHz. PRBS 54 Mbit/s



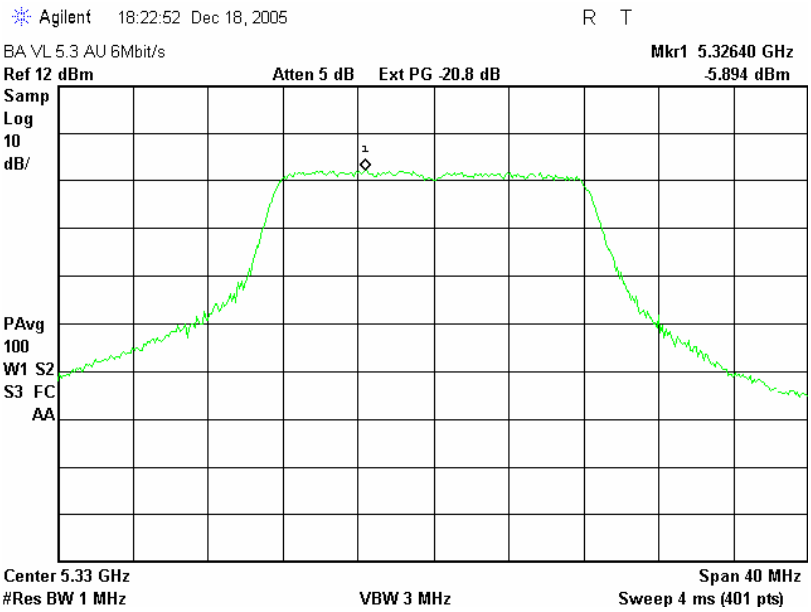
Plot 90.
Carrier Frequency 5.300 GHz. EBW 20 MHz. PRBS 6 Mbit/s



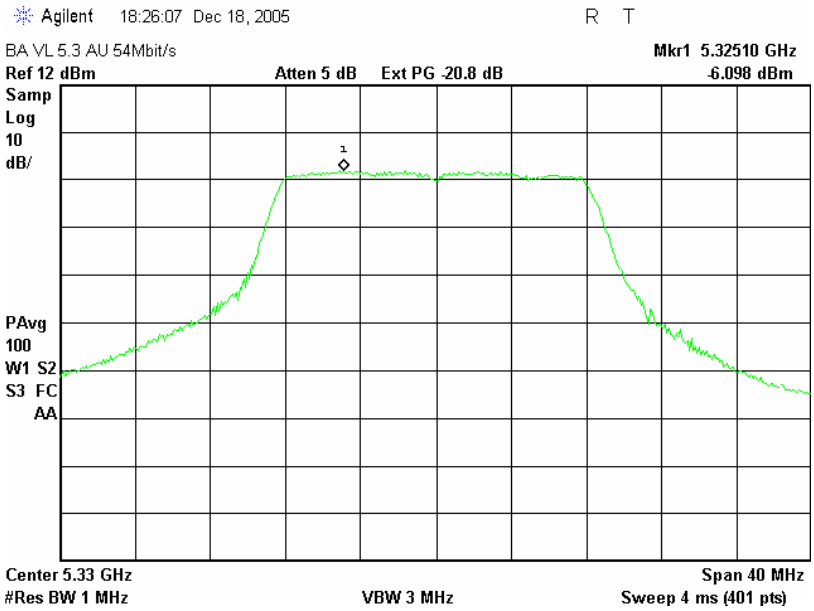
Plot 91.
Carrier Frequency 5.300 GHz. EBW 20 MHz. PRBS 54 Mbit/s



Plot 92.
Carrier Frequency 5.330 GHz. EBW 20 MHz. PRBS 6 Mbit/s

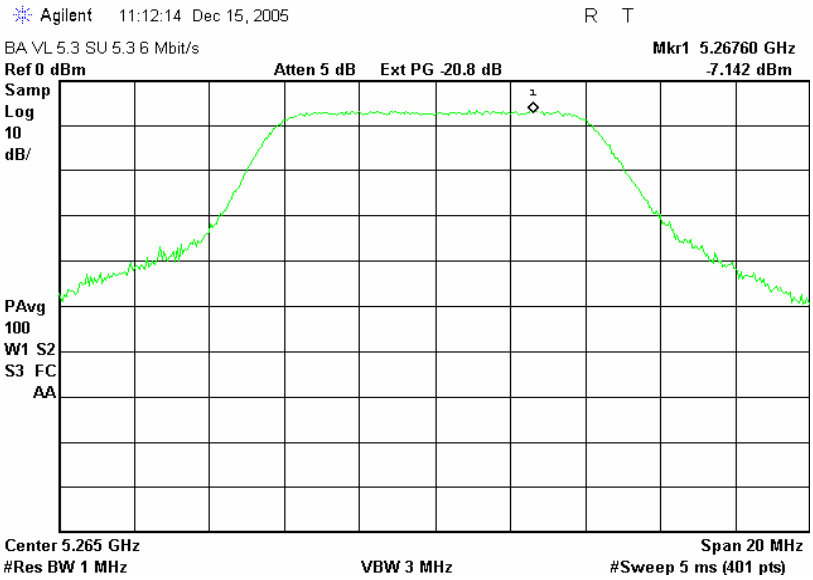


Plot 93.
Carrier Frequency 5.330 GHz. EBW 20 MHz. PRBS 54 Mbit/s

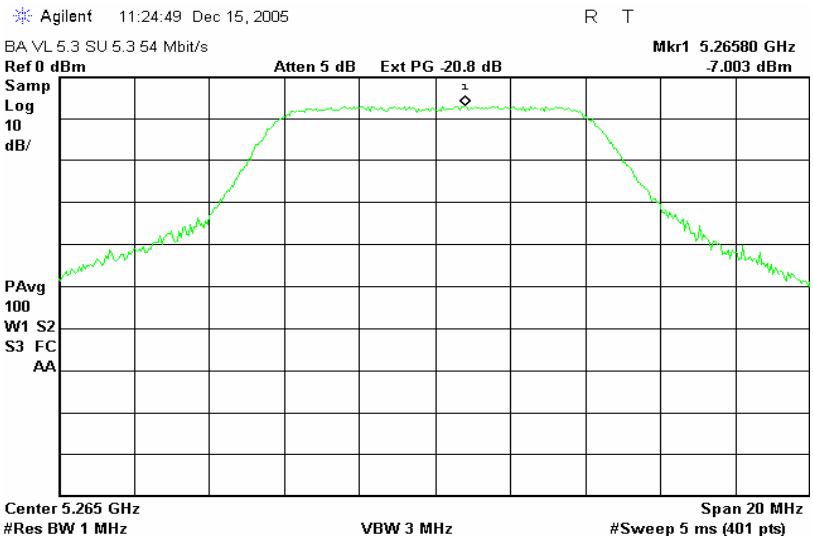


12.6. SU Unit. Antenna 21 dBi - Peak Power Spectral Density 15.407a (2)

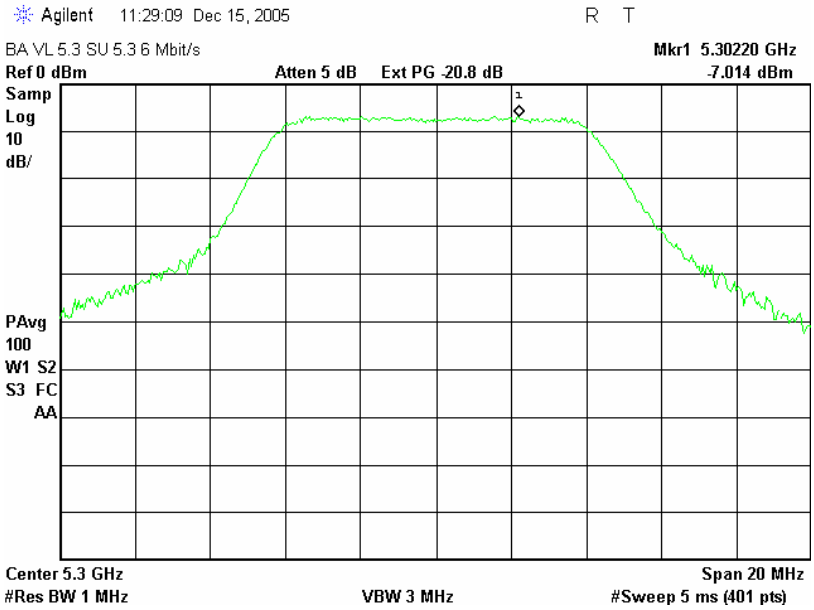
Plot 94.
Carrier Frequency 5.265 GHz. EBW 10 MHz. PRBS 6 Mbit/s



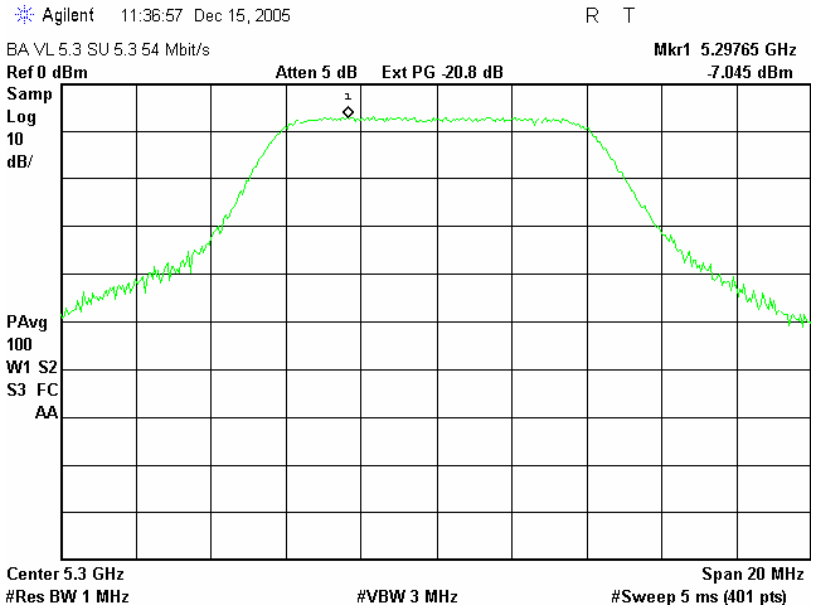
Plot 95.
Carrier Frequency 5.265 GHz. EBW 10 MHz. PRBS 54 Mbit/s



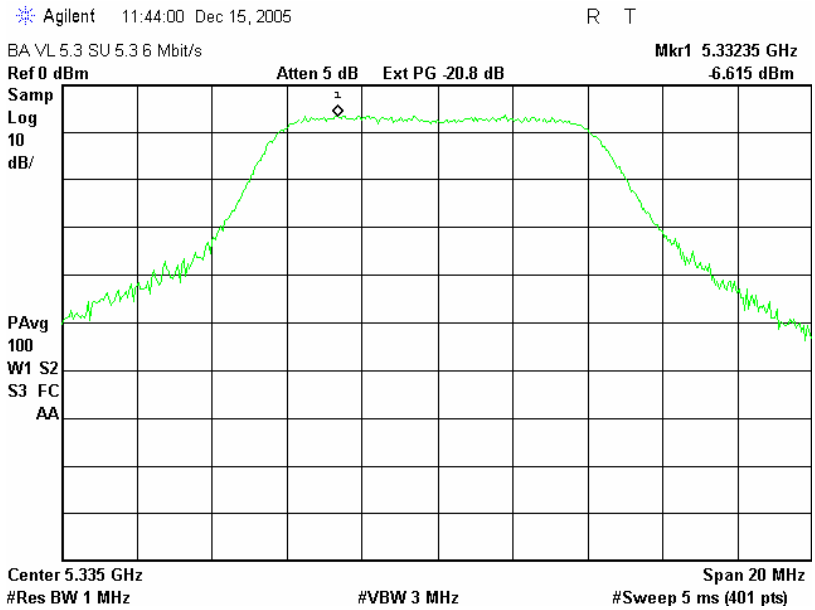
Plot 96.
Carrier Frequency 5.300 GHz. EBW 10 MHz. PRBS 6 Mbit/s



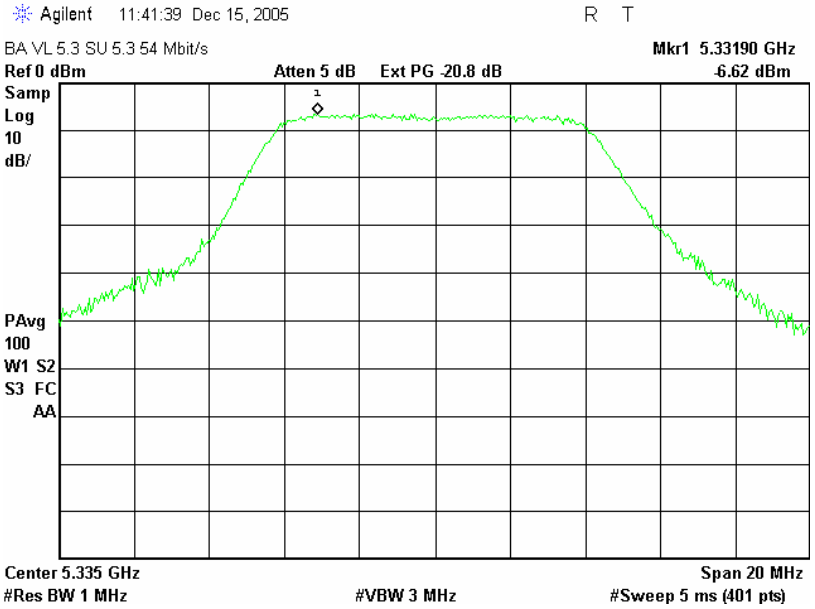
Plot 97.
Carrier Frequency 5.300 GHz. EBW 10 MHz. PRBS 54 Mbit/s



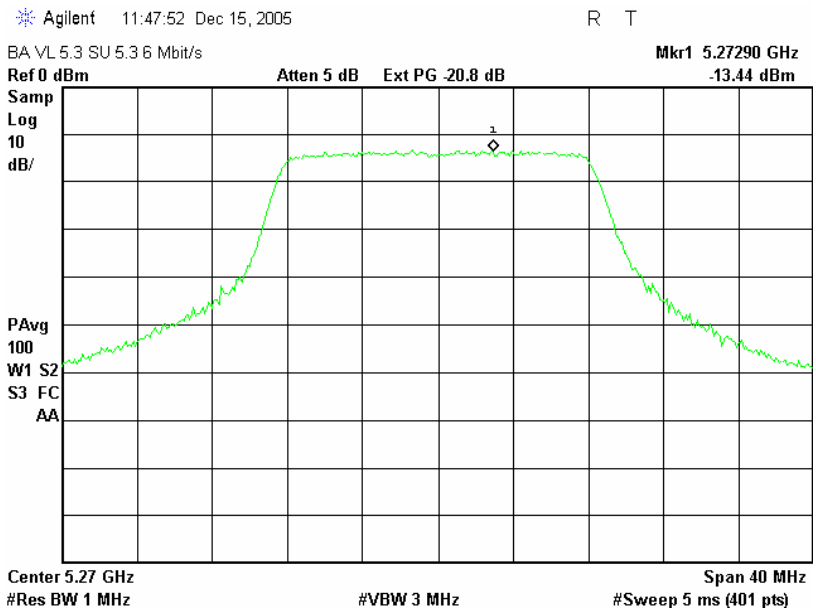
Plot 98.
Carrier Frequency 5.335 GHz. EBW 10 MHz. PRBS 6 Mbit/s



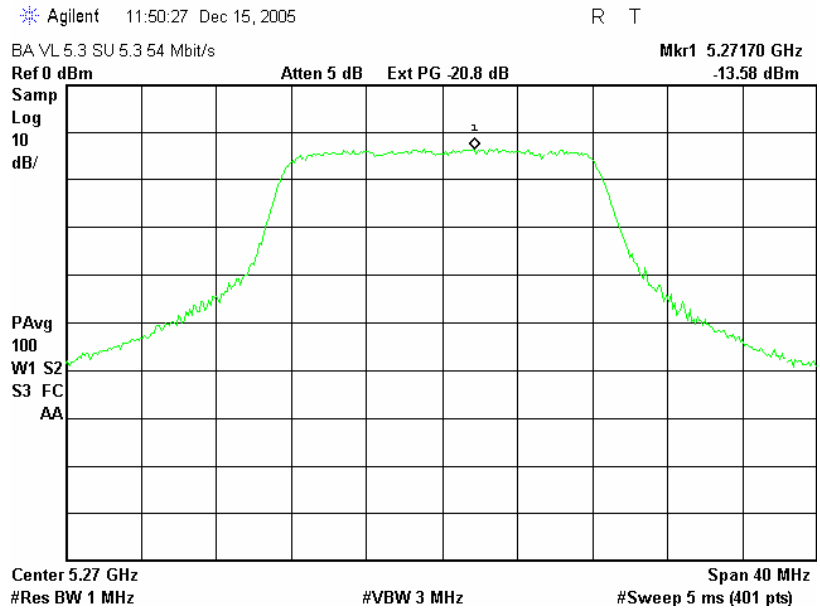
Plot 99.
Carrier Frequency 5.335 GHz. EBW 10 MHz. PRBS 54 Mbit/s



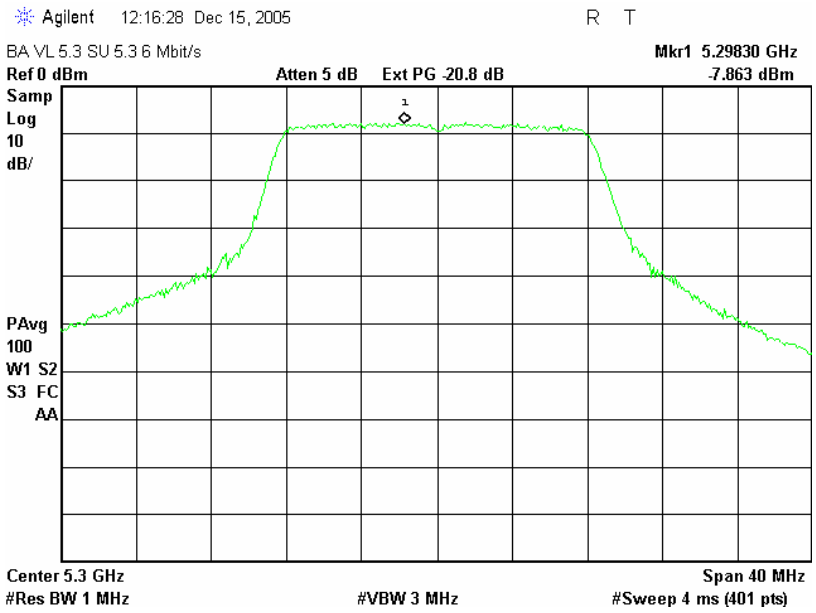
Plot 100.
Carrier Frequency 5.270 GHz. EBW 20 MHz. PRBS 6 Mbit/s



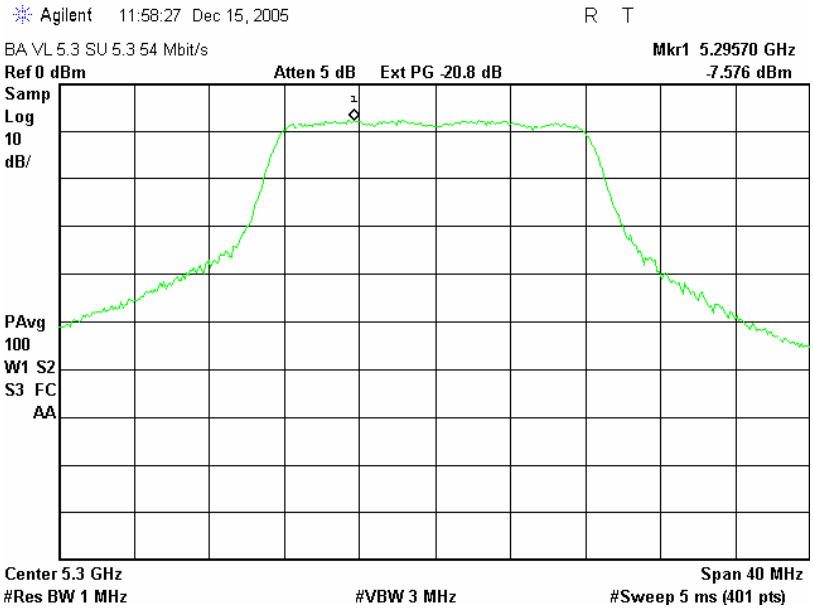
Plot 101.
Carrier Frequency 5.270 GHz. EBW 20 MHz. PRBS 54 Mbit/s



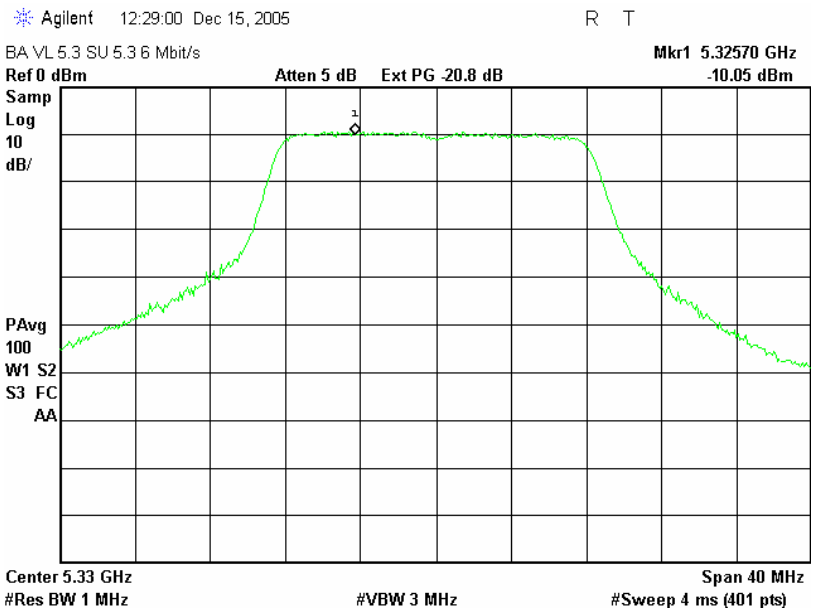
Plot 102.
Carrier Frequency 5.300 GHz. EBW 20 MHz. PRBS 6 Mbit/s



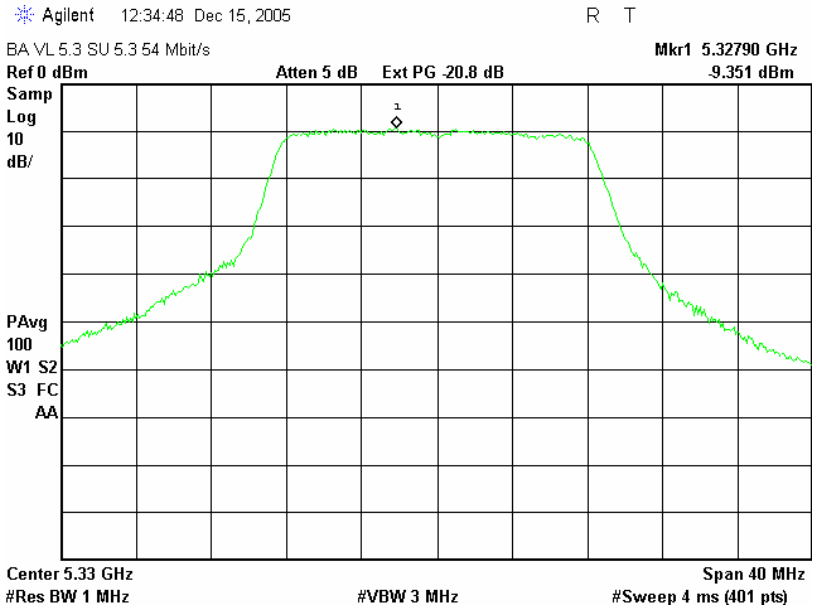
Plot 103.
Carrier Frequency 5.300 GHz. EBW 20 MHz. PRBS 54 Mbit/s



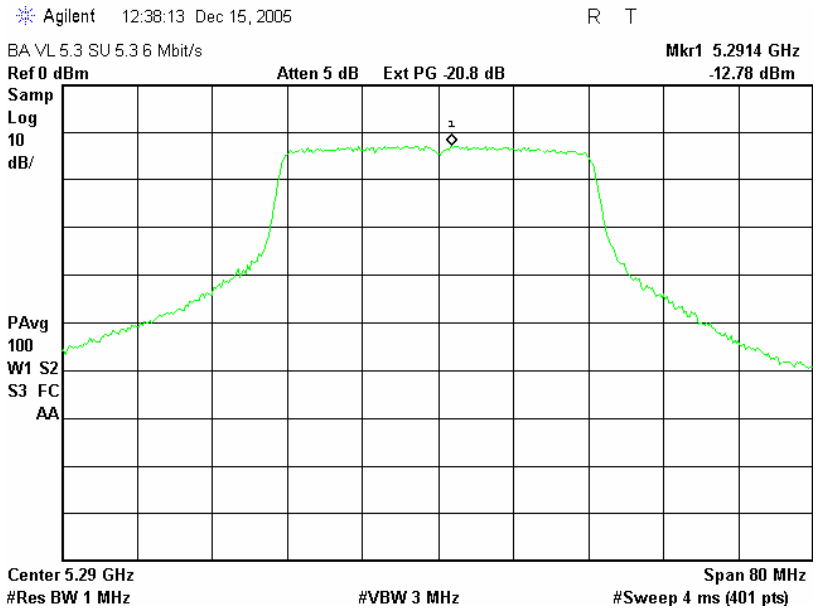
Plot 104.
Carrier Frequency 5.330 GHz. EBW 20 MHz. PRBS 6 Mbit/s



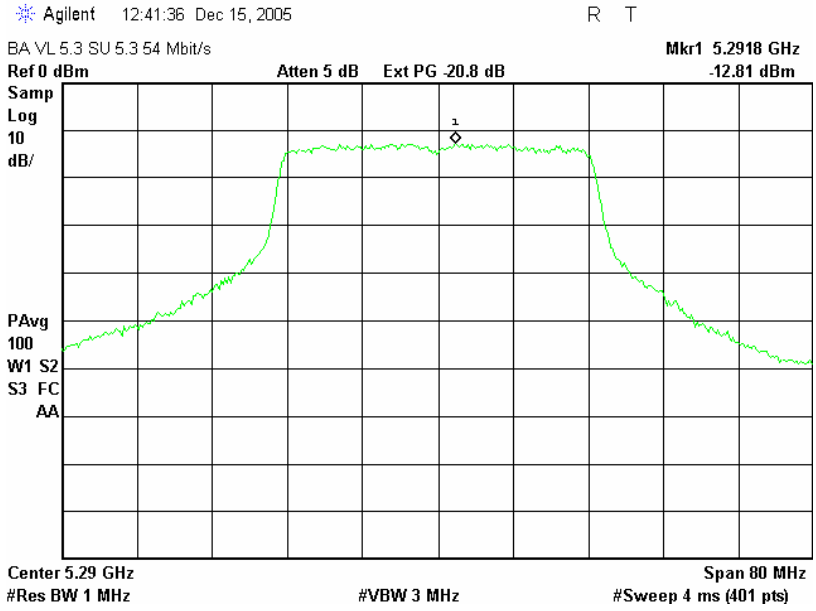
Plot 105.
Carrier Frequency 5.330 GHz. EBW 20 MHz. PRBS 54 Mbit/s



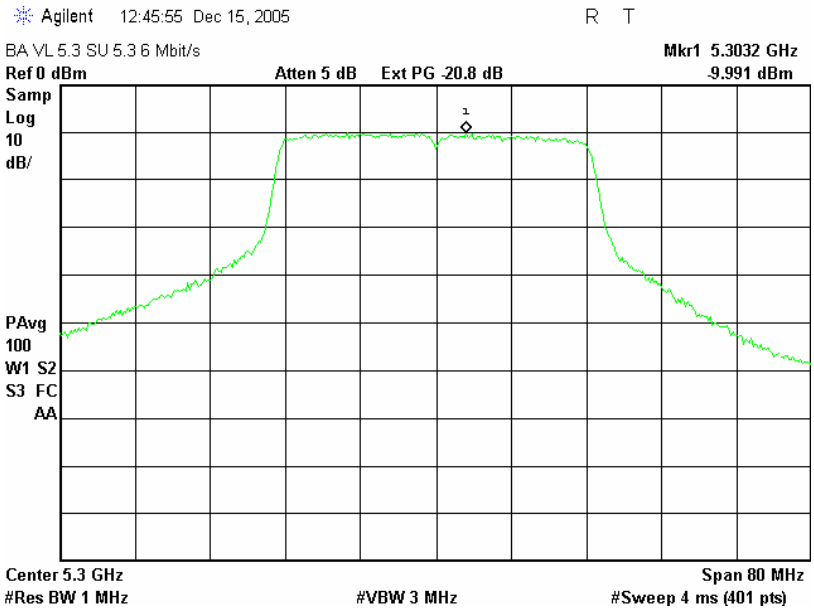
Plot 106.
Carrier Frequency 5.290 GHz. EBW 40 MHz. PRBS 6 Mbit/s



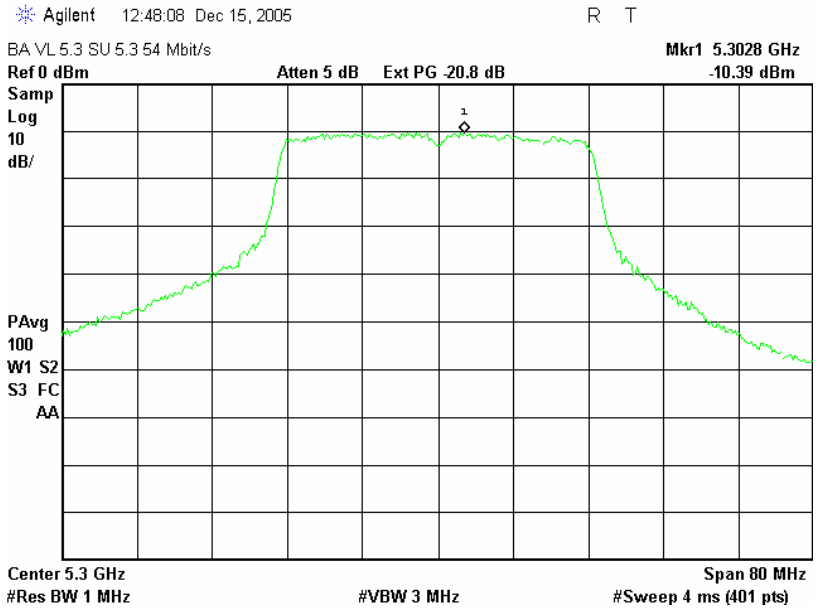
Plot 107.
Carrier Frequency 5.290 GHz. EBW 40 MHz. PRBS 54 Mbit/s



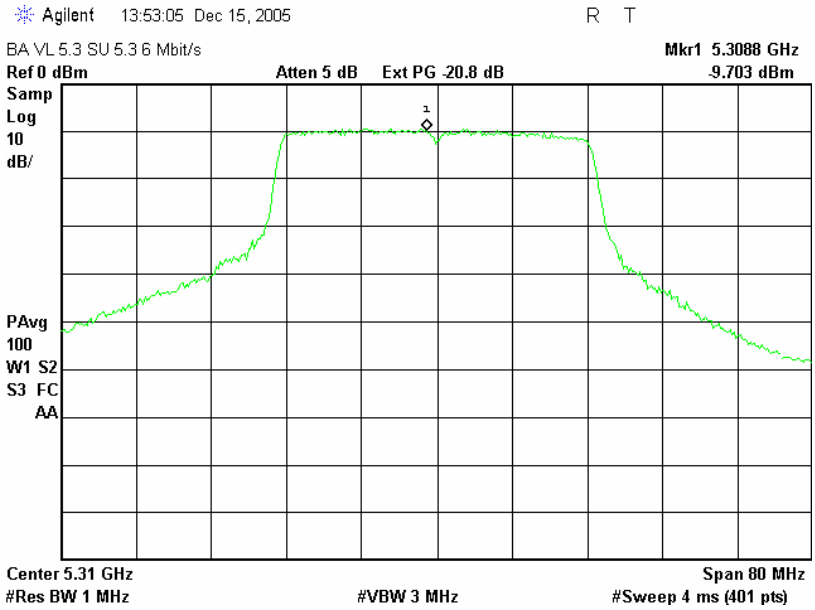
Plot 108.
Carrier Frequency 5.300 GHz. EBW 40 MHz. PRBS 6 Mbit/s



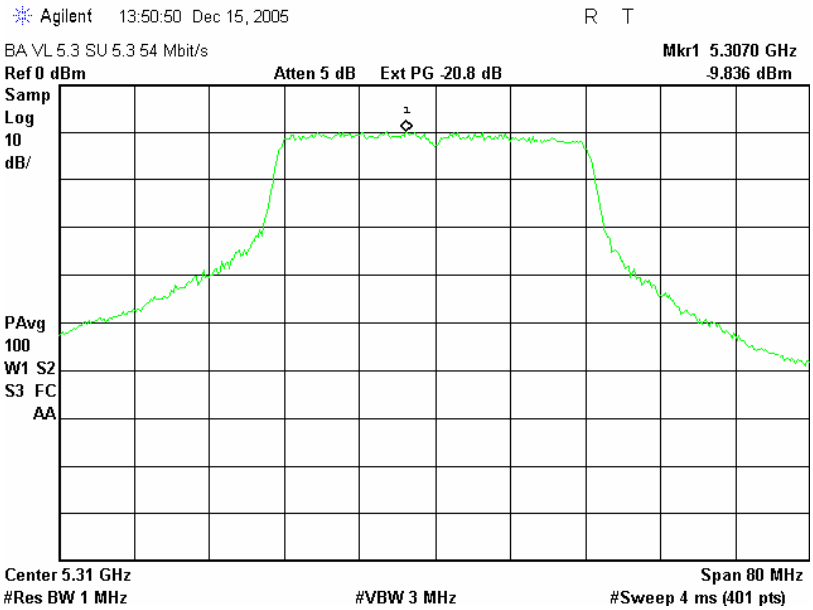
Plot 109.
Carrier Frequency 5.300 GHz. EBW 40 MHz. PRBS 54 Mbit/s



Plot 110.
Carrier Frequency 5.310 GHz. EBW 40 MHz. PRBS 6 Mbit/s

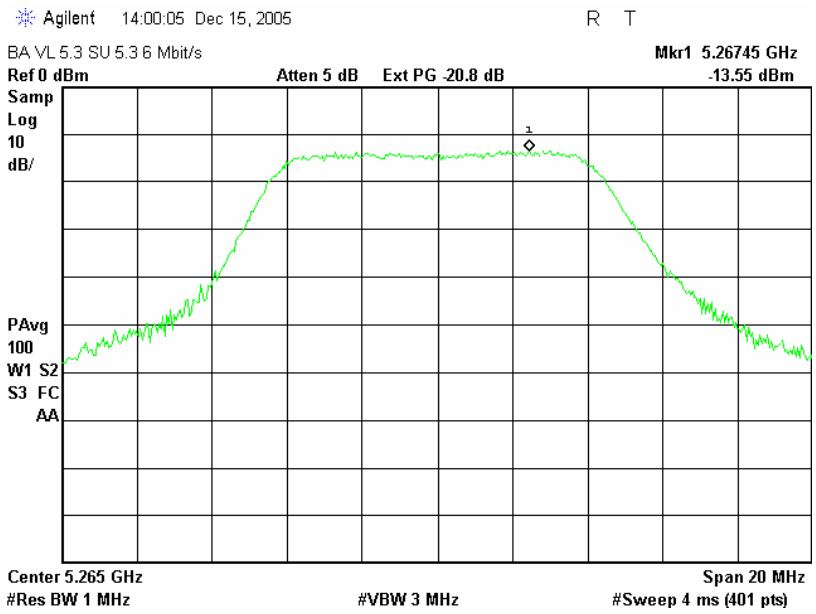


Plot 111.
Carrier Frequency 5.310 GHz. EBW 40 MHz. PRBS 54 Mbit/s

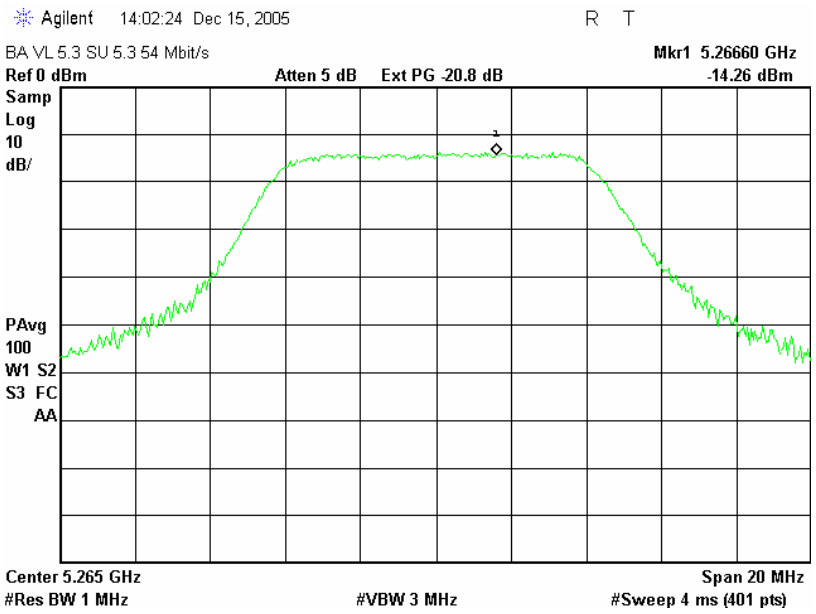


12.7.SU Unit. Antenna 28 dBi - Peak Power Spectral Density 15.407a (2)

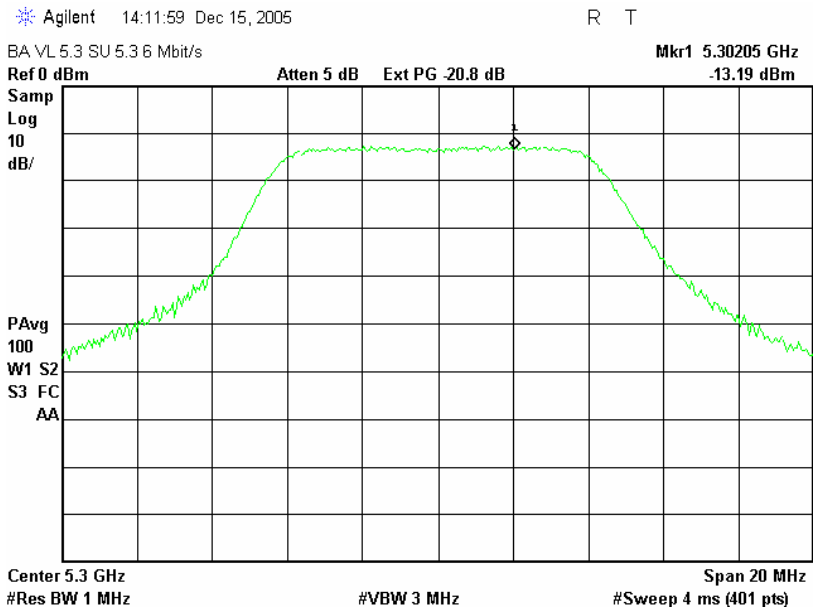
Plot 112.
Carrier Frequency 5.265 GHz. EBW 10 MHz. PRBS 6 Mbit/s



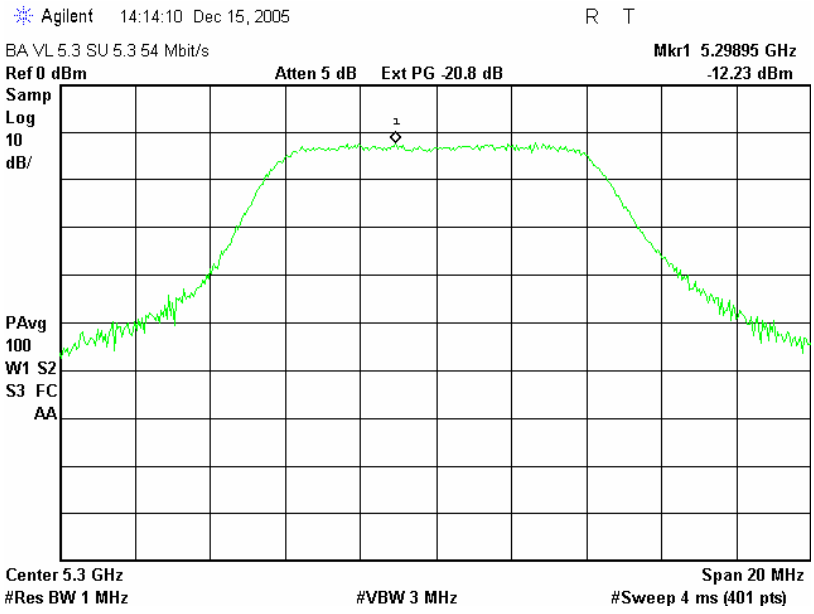
Plot 113.
Carrier Frequency 5.265 GHz. EBW 10 MHz. PRBS 54 Mbit/s



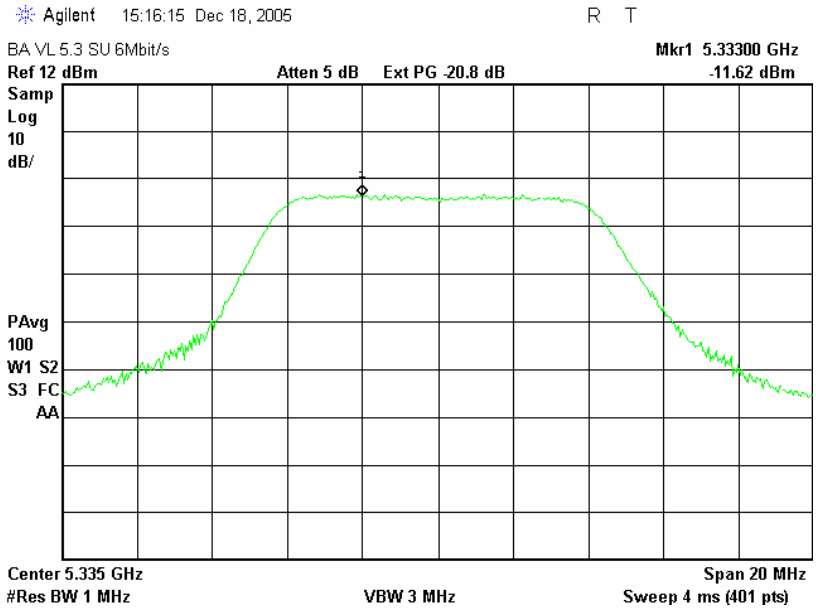
Plot 114.
Carrier Frequency 5.300 GHz. EBW 10 MHz. PRBS 6 Mbit/s



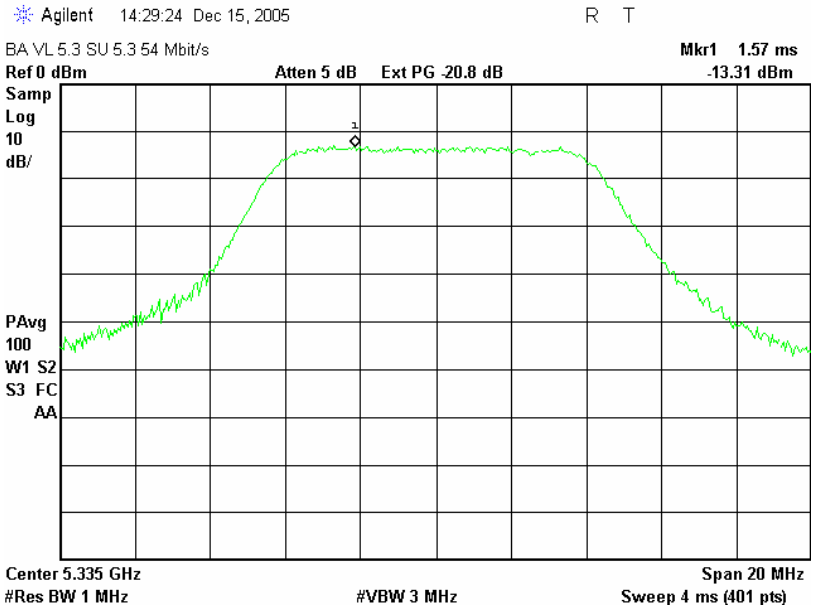
Plot 115.
Carrier Frequency 5.300 GHz. EBW 10 MHz. PRBS 54 Mbit/s



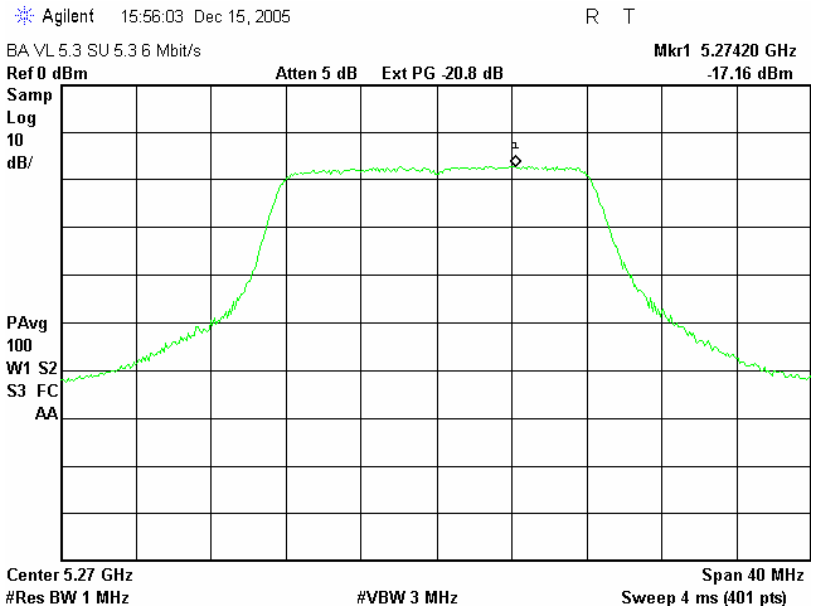
Plot 116.
Carrier Frequency 5.335 GHz. EBW 10 MHz. PRBS 6 Mbit/s



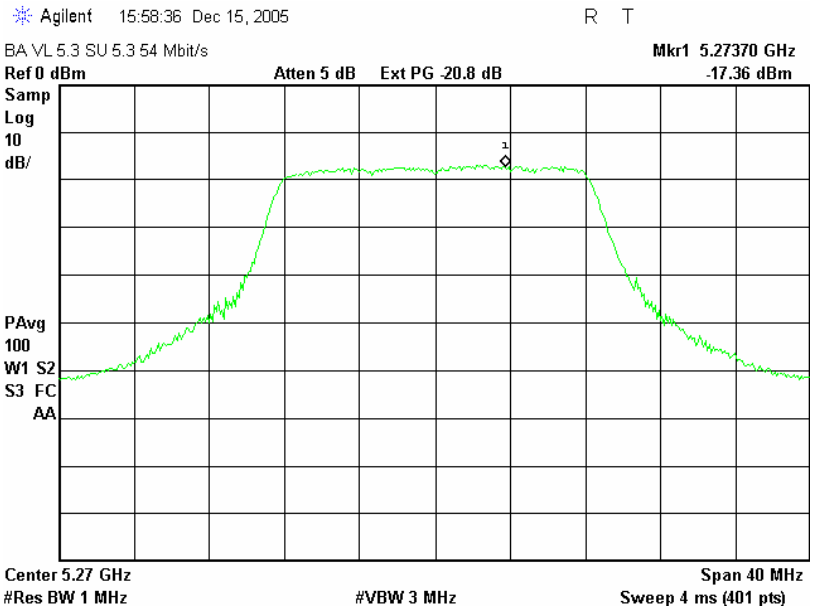
Plot 117.
Carrier Frequency 5.335 GHz. EBW 10 MHz. PRBS 54 Mbit/s



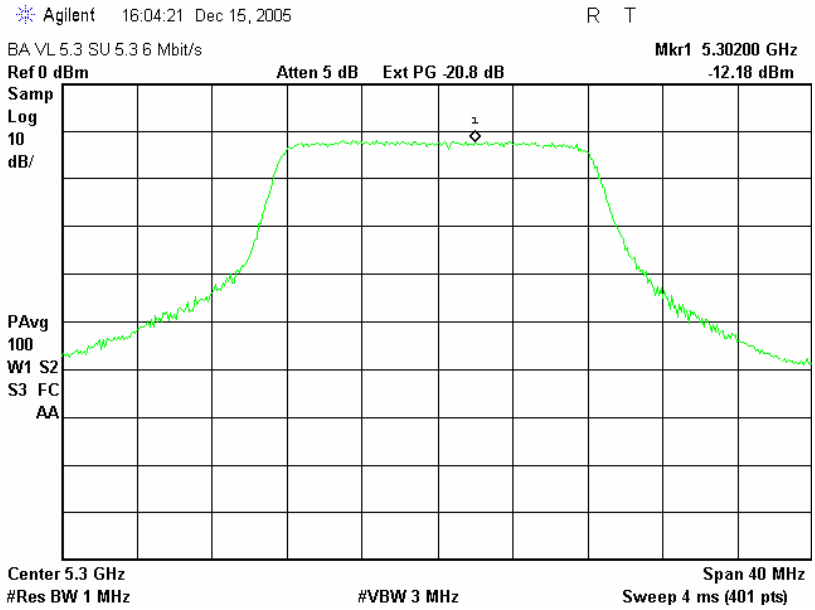
Plot 118.
Carrier Frequency 5.270 GHz. EBW 20 MHz. PRBS 6 Mbit/s



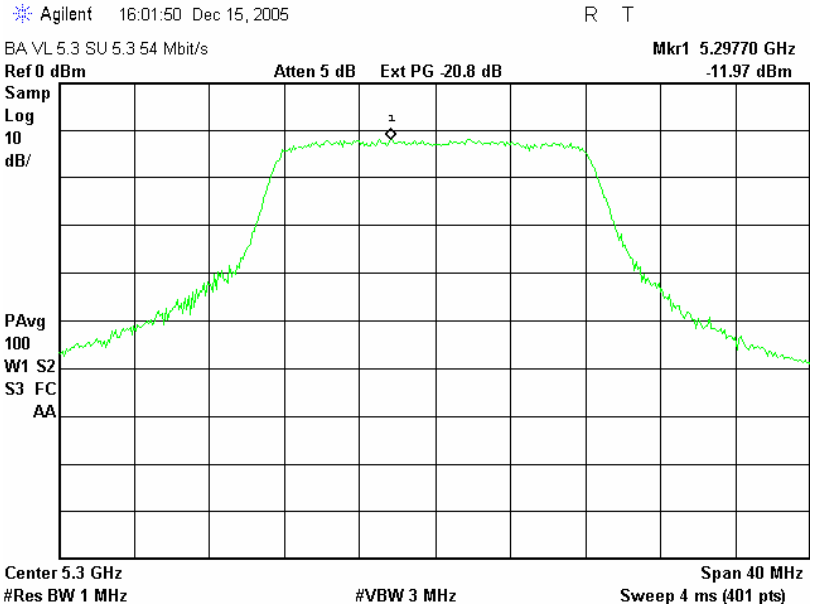
Plot 119.
Carrier Frequency 5.270 GHz. EBW 20 MHz. PRBS 54 Mbit/s



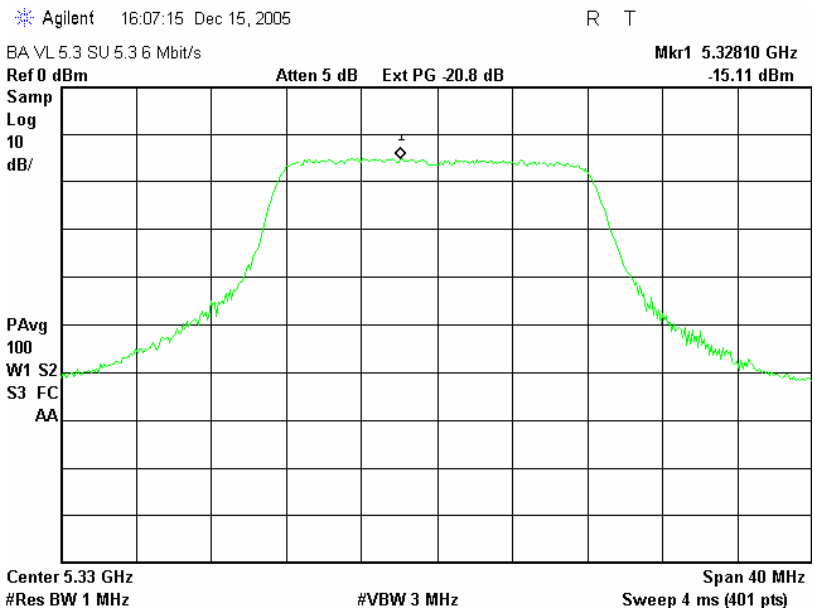
Plot 120.
Carrier Frequency 5.300 GHz. EBW 20 MHz. PRBS 6 Mbit/s



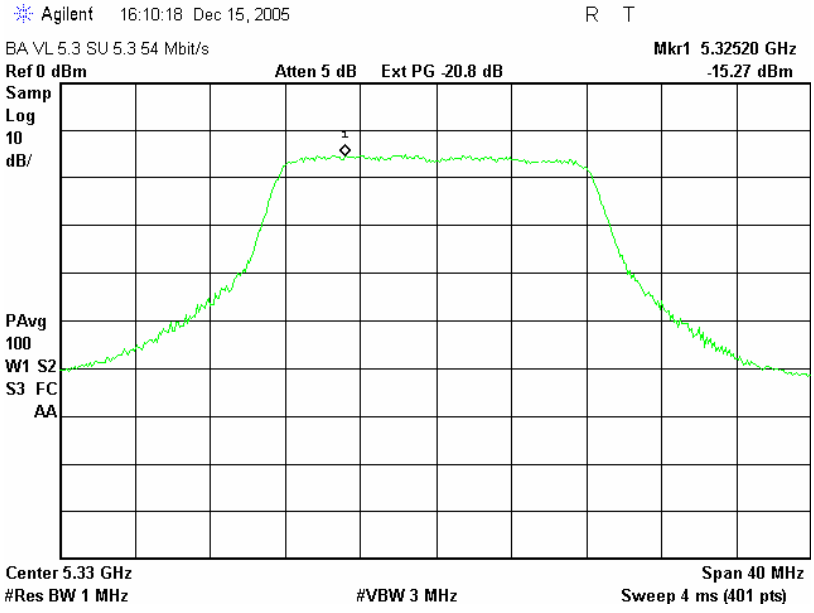
Plot 121.
Carrier Frequency 5.300 GHz. EBW 20 MHz. PRBS 54 Mbit/s



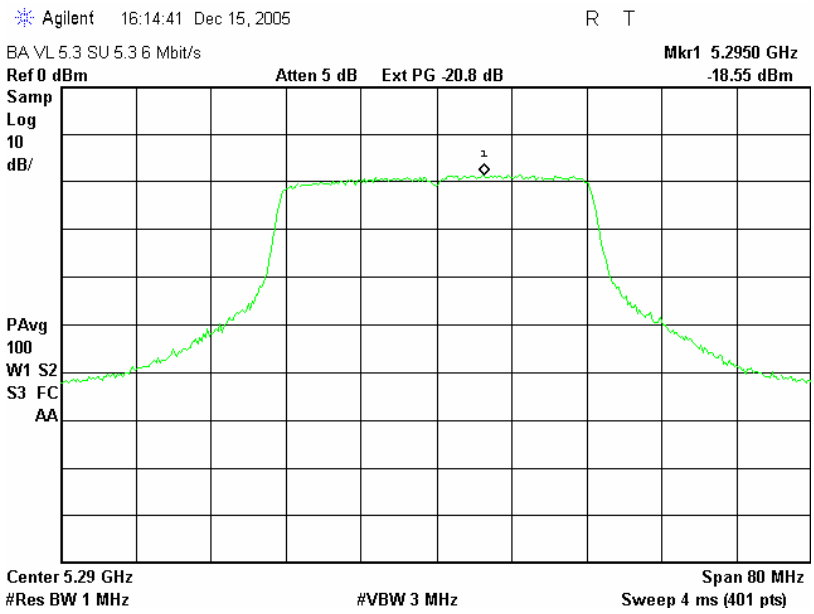
Plot 122.
Carrier Frequency 5.330 GHz. EBW 20 MHz. PRBS 6 Mbit/s



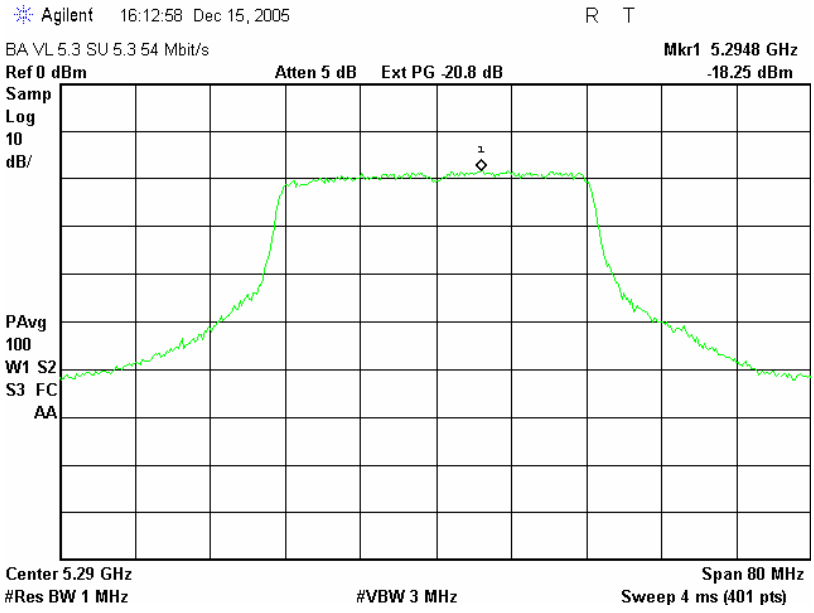
Plot 123.
Carrier Frequency 5.330 GHz. EBW 20 MHz. PRBS 54 Mbit/s



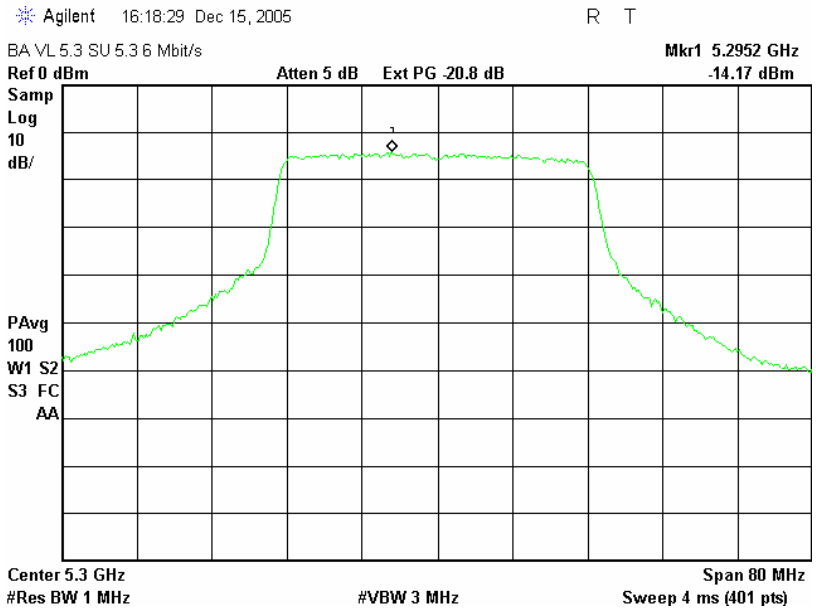
Plot 124.
Carrier Frequency 5.290 GHz. EBW 40 MHz. PRBS 6 Mbit/s



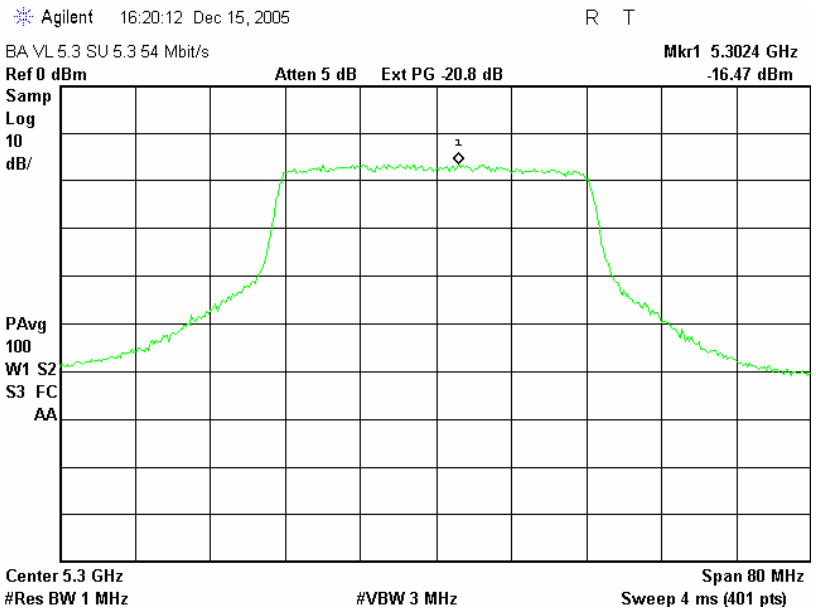
Plot 125.
Carrier Frequency 5.290 GHz. EBW 40 MHz. PRBS 54 Mbit/s



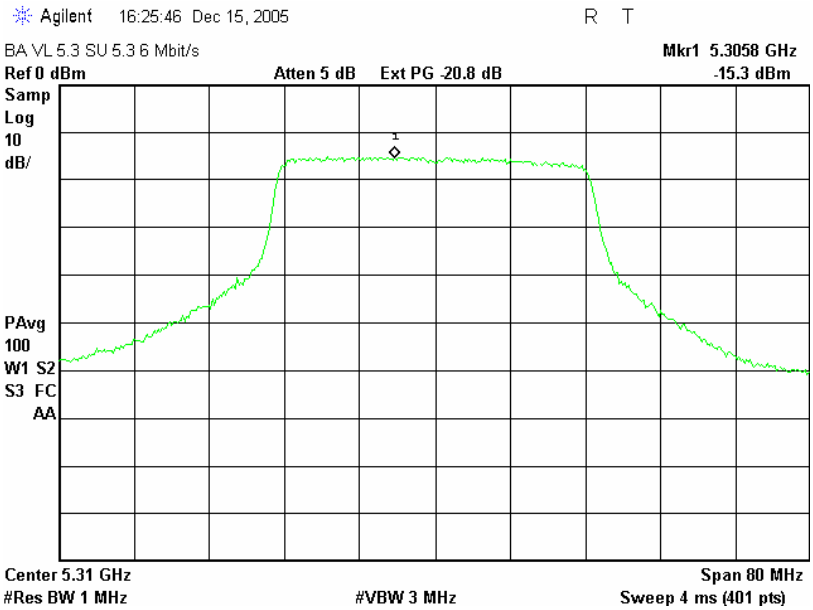
Plot 126.
Carrier Frequency 5.300 GHz. EBW 40 MHz. PRBS 6 Mbit/s



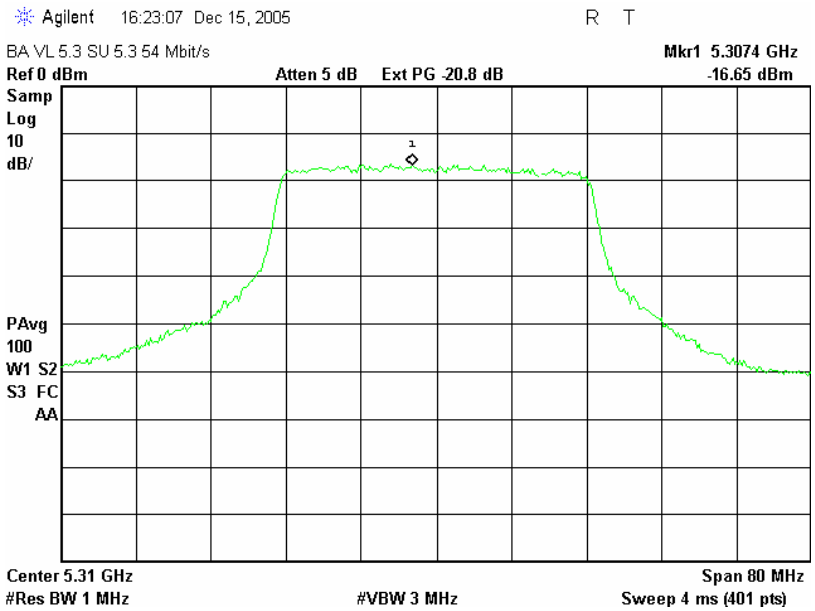
Plot 127.
Carrier Frequency 5.300 GHz. EBW 40 MHz. PRBS 54 Mbit/s



Plot 128.
Carrier Frequency 5.310 GHz. EBW 40 MHz. PRBS 6 Mbit/s

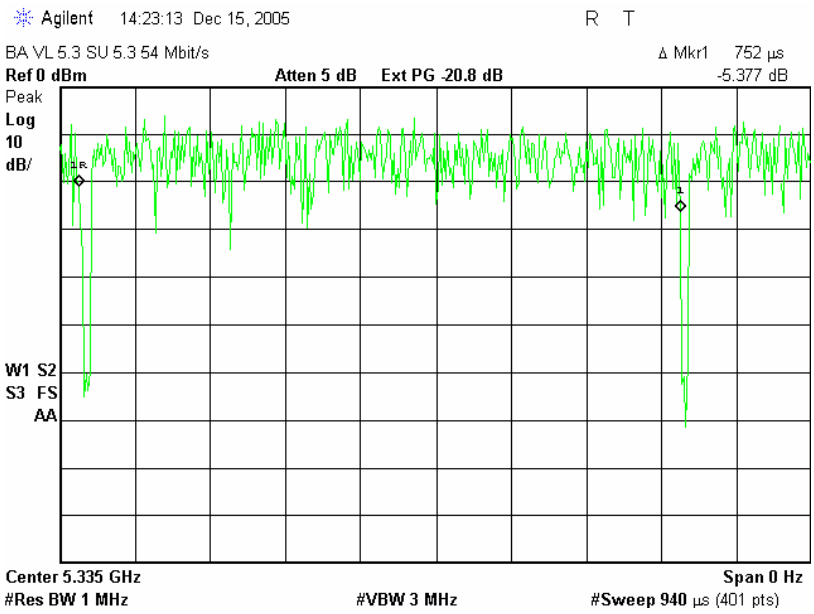


Plot 129.
Carrier Frequency 5.310 GHz. EBW 40 MHz. PRBS 54 Mbit/s



12.8. BA VL transmitter time duration for the ratio of the Peak Execution measurements 15.407a (6)

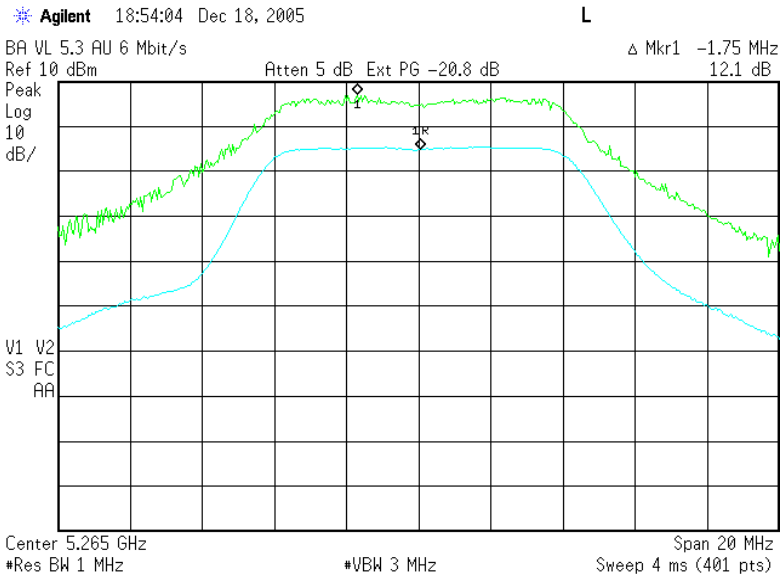
Plot 130.



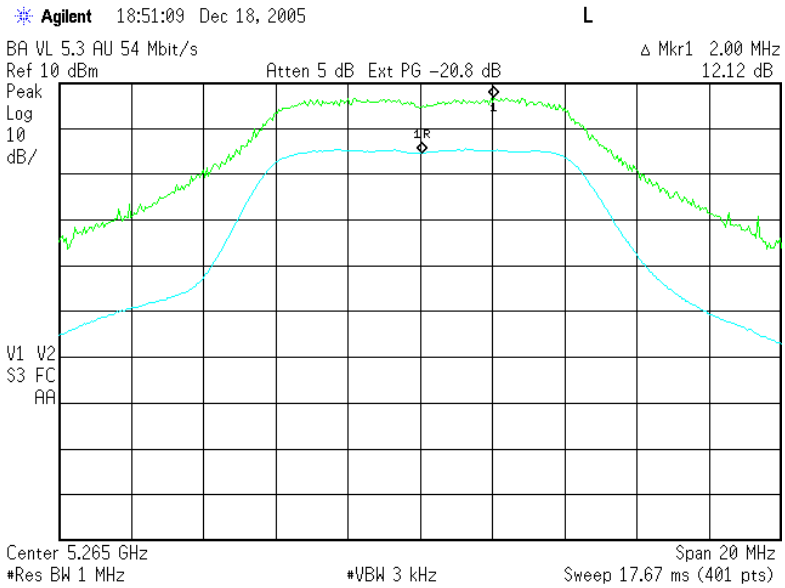
Video bandwidth was calculated from maximum usable pulse duration T, shown in plot
VBW ≥ 1/T=1/0.752 ms = 1.3 kHz. Calculated VBW = 3 kHz

12.9. AU Unit. Antenna 16 dBi - Ratio of the Peak Execution 15.407a (6)

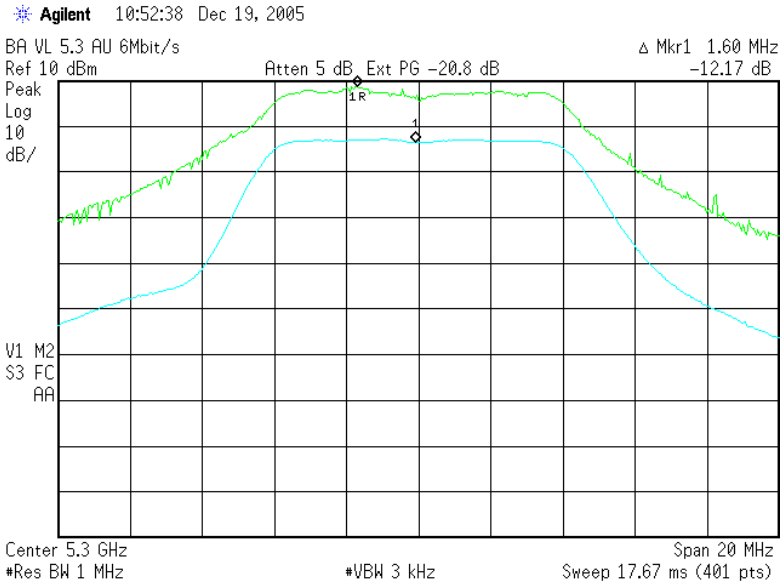
Plot 131.
Carrier Frequency 5.265 GHz. EBW 10 MHz. PRBS 6 Mbit/s



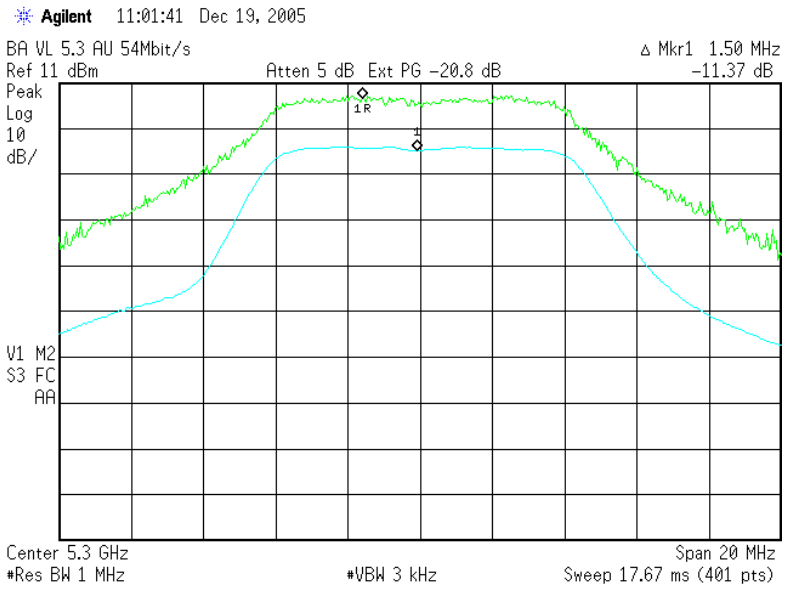
Plot 132.
Carrier Frequency 5.265 GHz. EBW 10 MHz. PRBS 54 Mbit/s



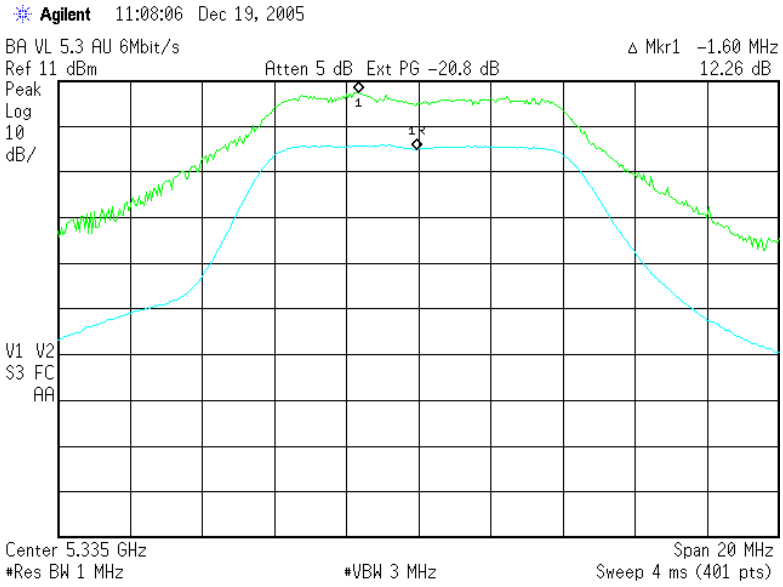
Plot 133.
Carrier Frequency 5.300 GHz. EBW 10 MHz. PRBS 6 Mbit/s



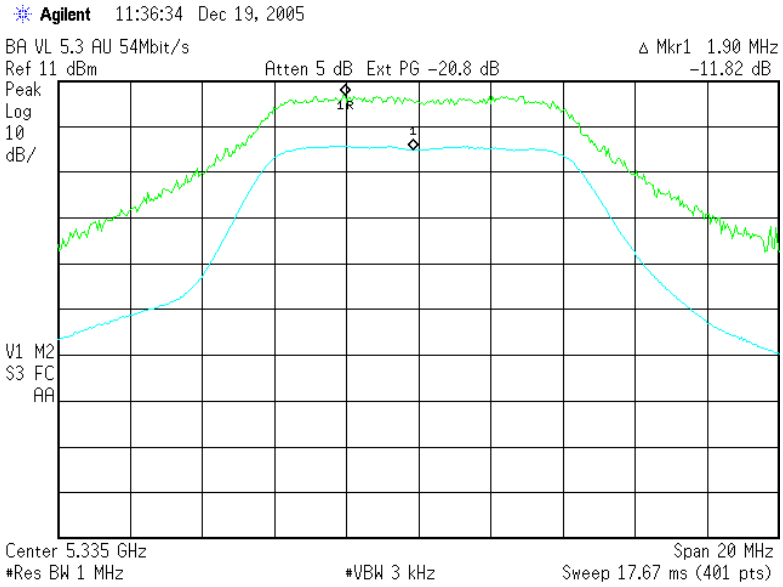
Plot 134.
Carrier Frequency 5.300 GHz. EBW 10 MHz. PRBS 54 Mbit/s



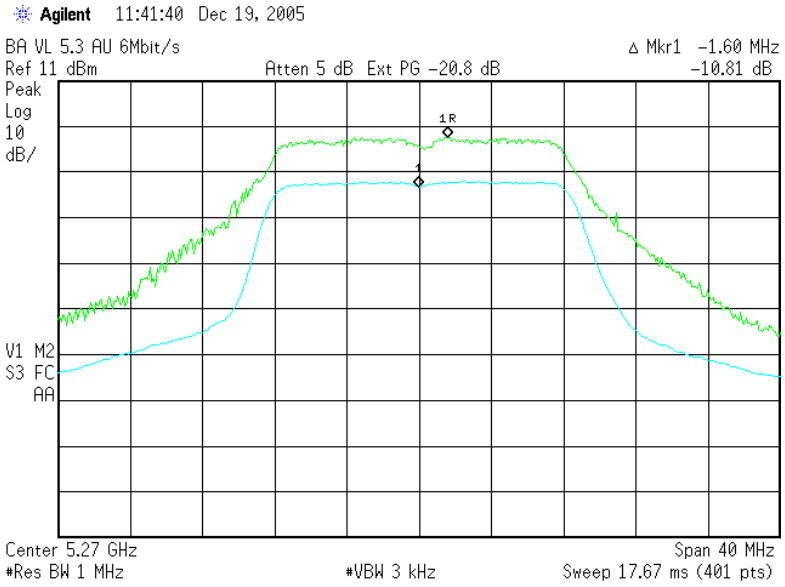
Plot 135.
Carrier Frequency 5.335 GHz. EBW 10 MHz. PRBS 6 Mbit/s



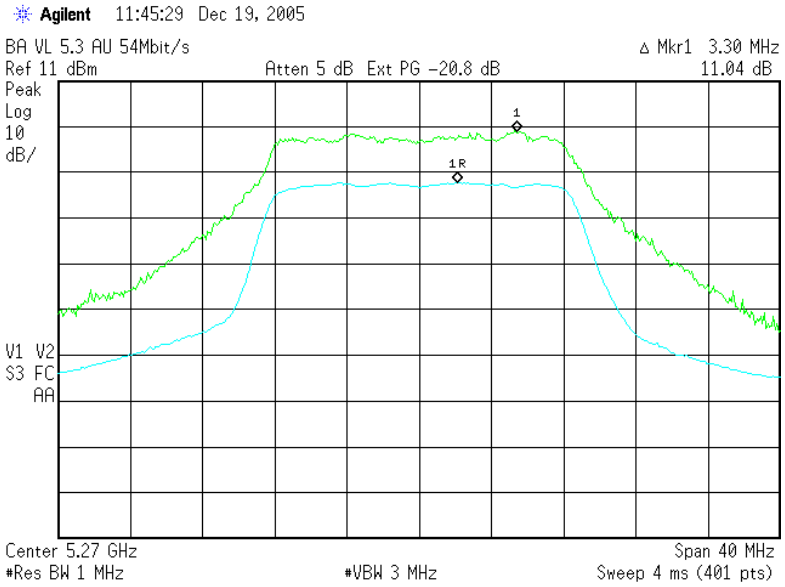
Plot 136.
Carrier Frequency 5.335 GHz. EBW 10 MHz. PRBS 54 Mbit/s



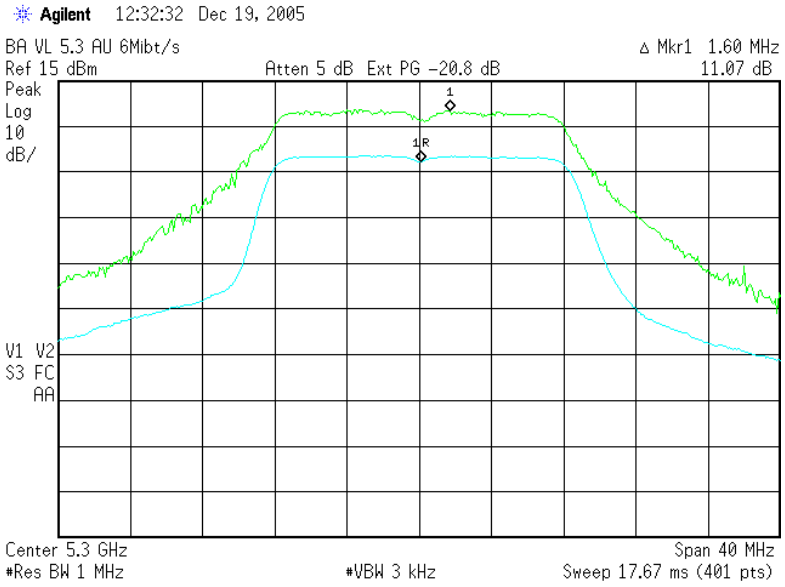
Plot 137.
Carrier Frequency 5.270 GHz. EBW 20 MHz. PRBS 6 Mbit/s



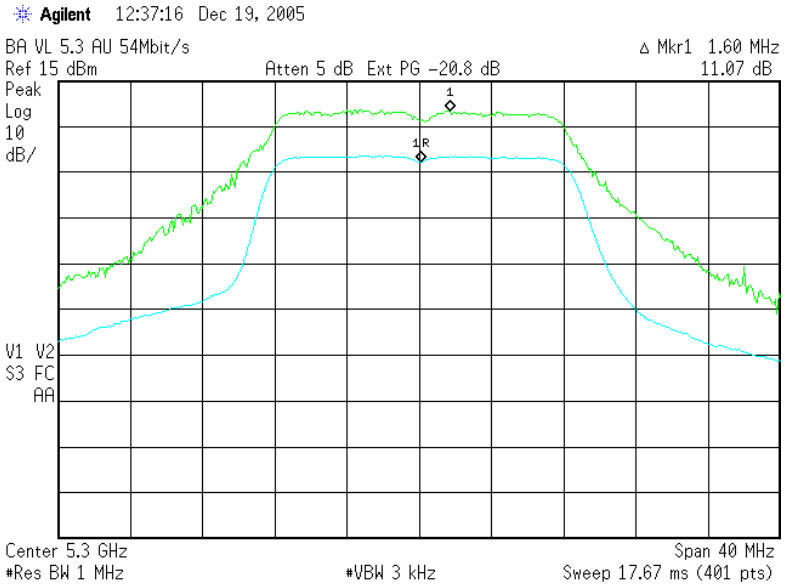
Plot 138.
Carrier Frequency 5.270 GHz. EBW 20 MHz. PRBS 54 Mbit/s



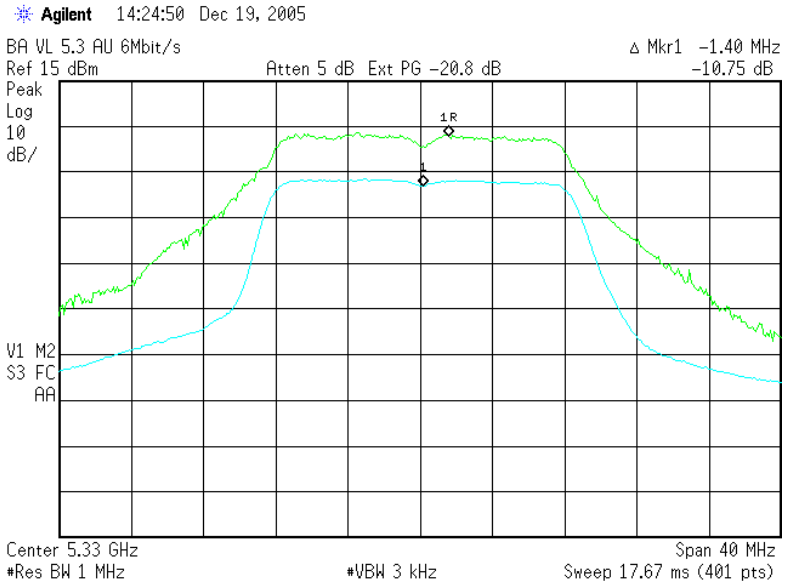
Plot 139.
Carrier Frequency 5.300 GHz. EBW 20 MHz. PRBS 6 Mbit/s



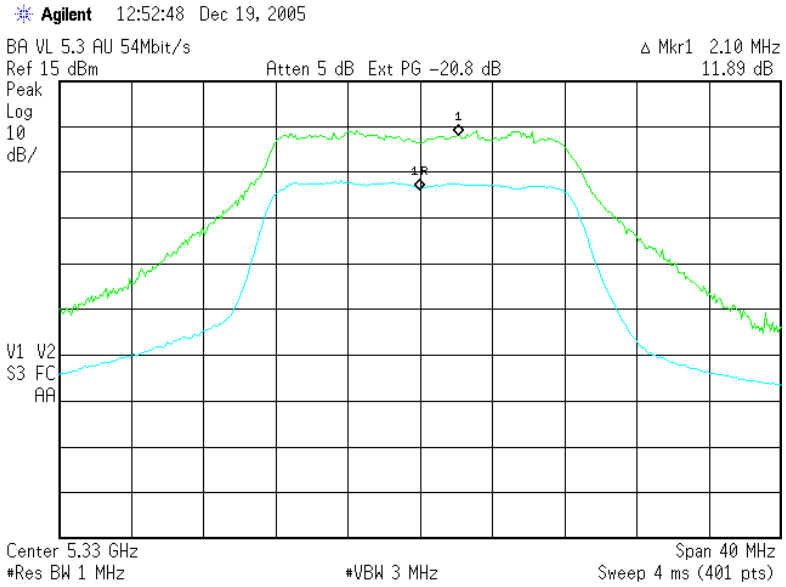
Plot 140.
Carrier Frequency 5.300 GHz. EBW 20 MHz. PRBS 54 Mbit/s



Plot 141.
Carrier Frequency 5.330 GHz. EBW 20 MHz. PRBS 6 Mbit/s

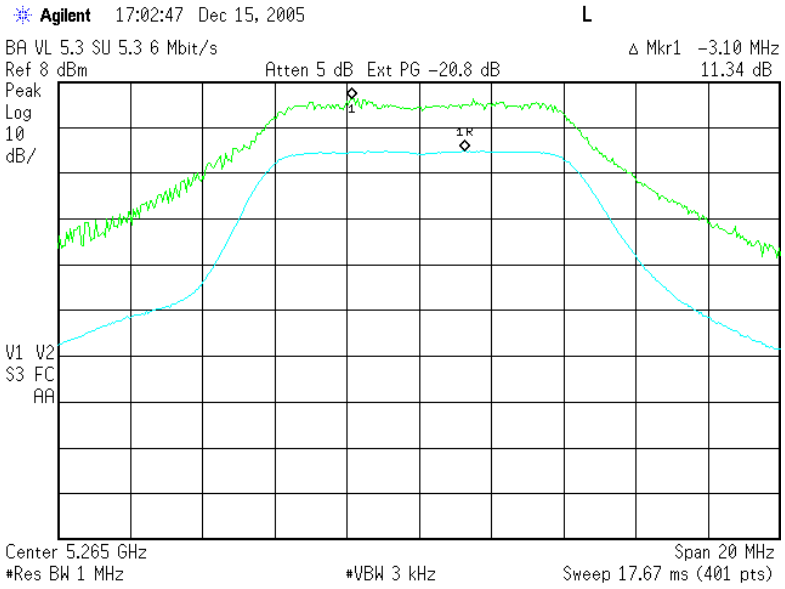


Plot 142.
Carrier Frequency 5.330 GHz. EBW 20 MHz. PRBS 54 Mbit/s

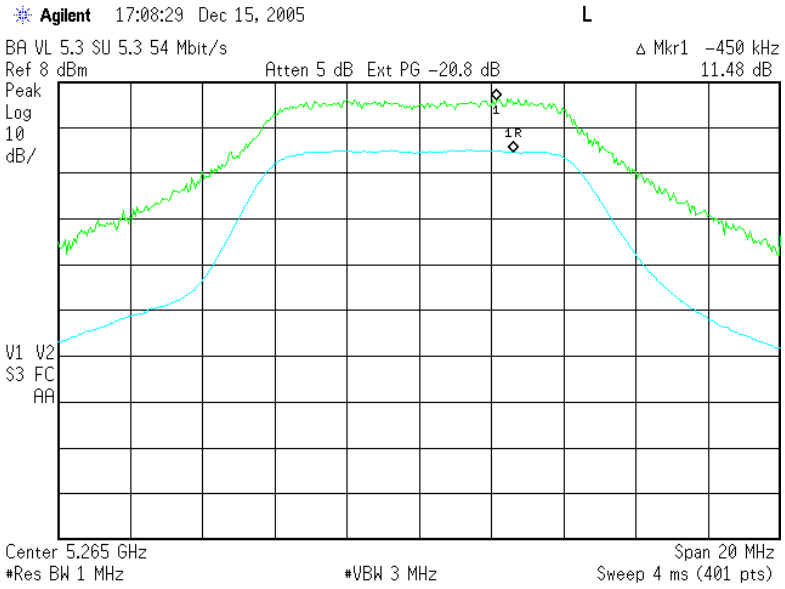


12.10. SU Unit. Antenna 21 dBi - Ratio of the Peak Execution 15.407a (6)

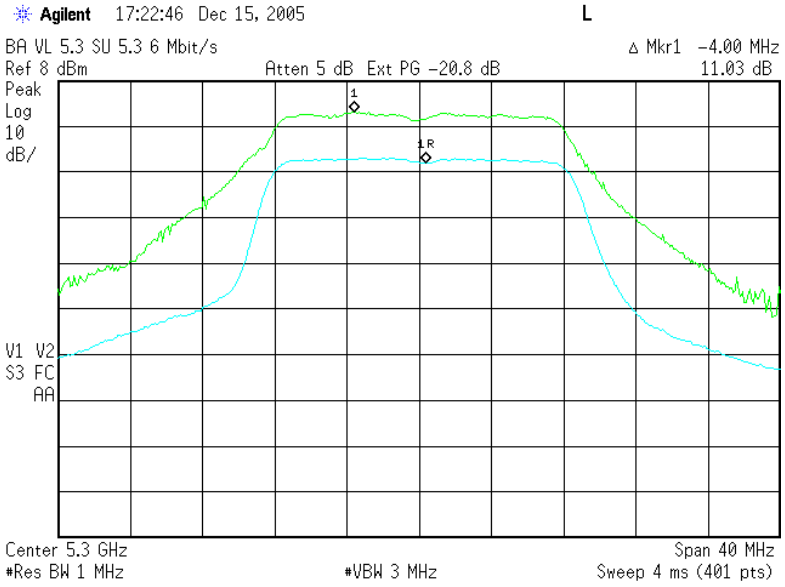
Plot 143.
Carrier Frequency 5.265 GHz. EBW 10 MHz. PRBS 6 Mbit/s



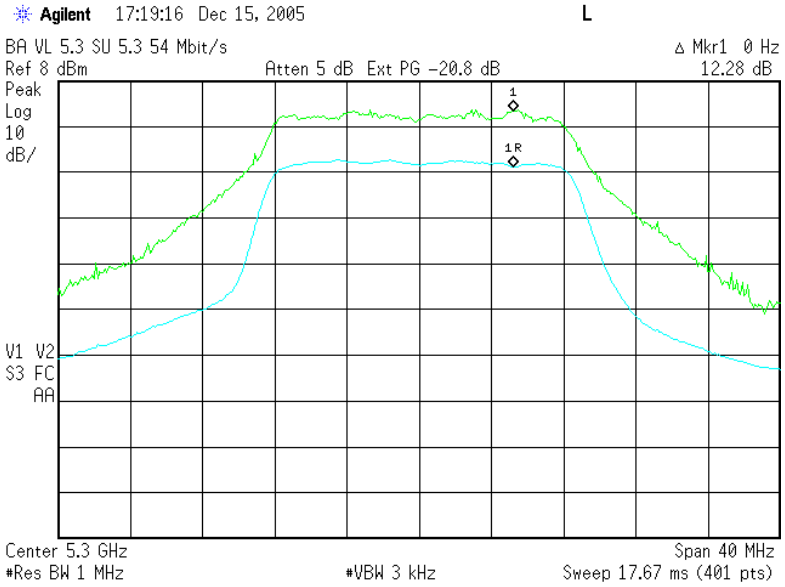
Plot 144.
Carrier Frequency 5.265 GHz. EBW 10 MHz. PRBS 54 Mbit/s



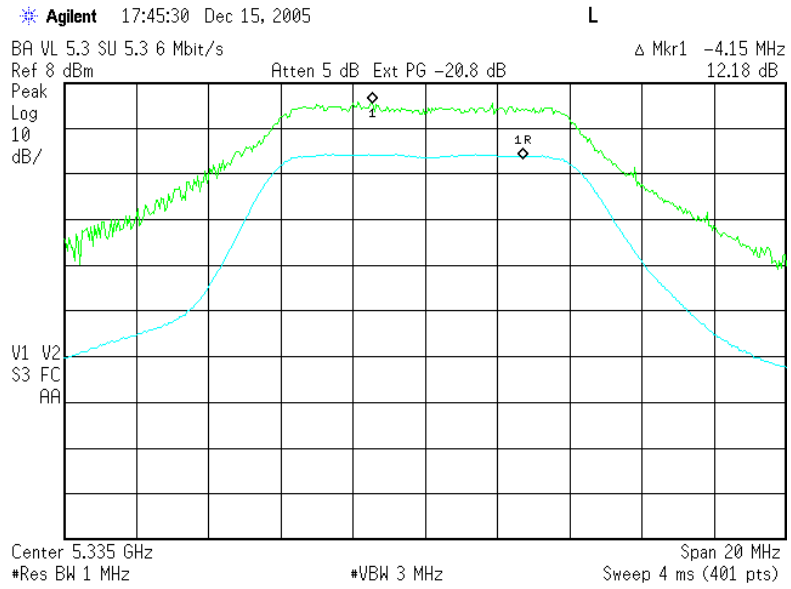
Plot 145.
Carrier Frequency 5.300 GHz. EBW 10 MHz. PRBS 6 Mbit/s



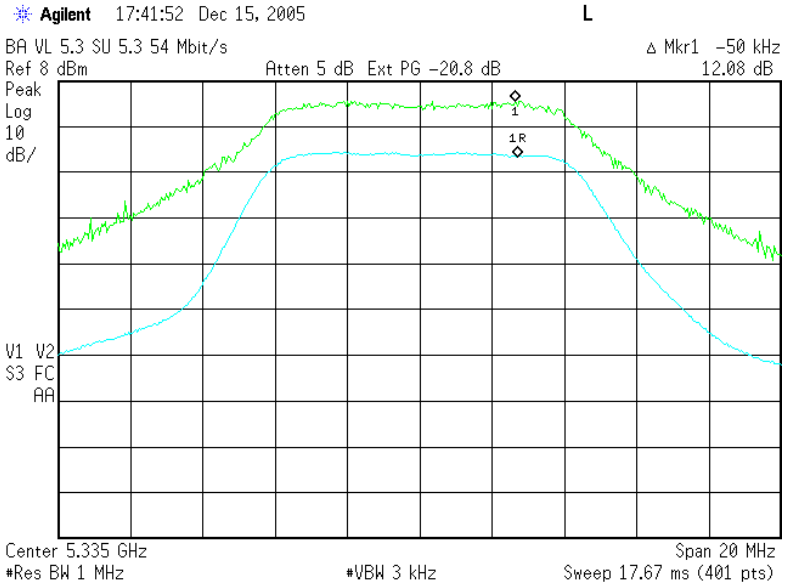
Plot 146.
Carrier Frequency 5.300 GHz. EBW 10 MHz. PRBS 54 Mbit/s



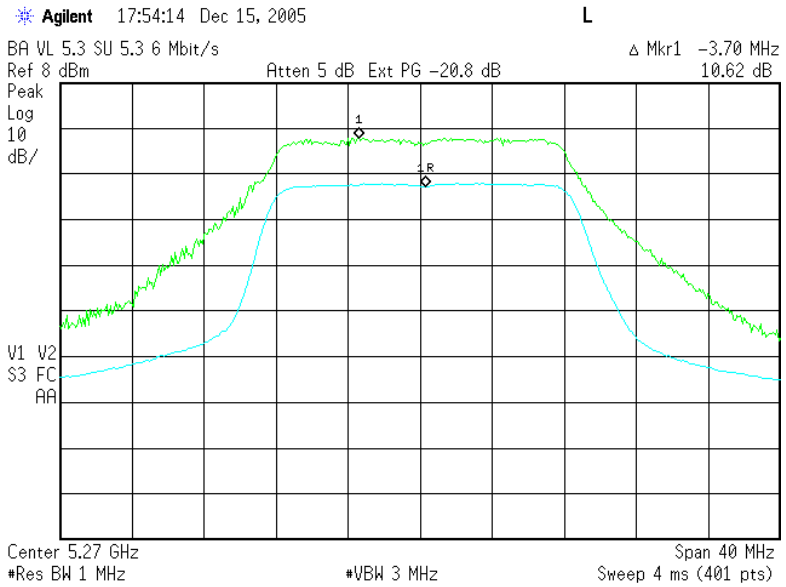
Plot 147.
Carrier Frequency 5.335 GHz. EBW 10 MHz. PRBS 6 Mbit/s



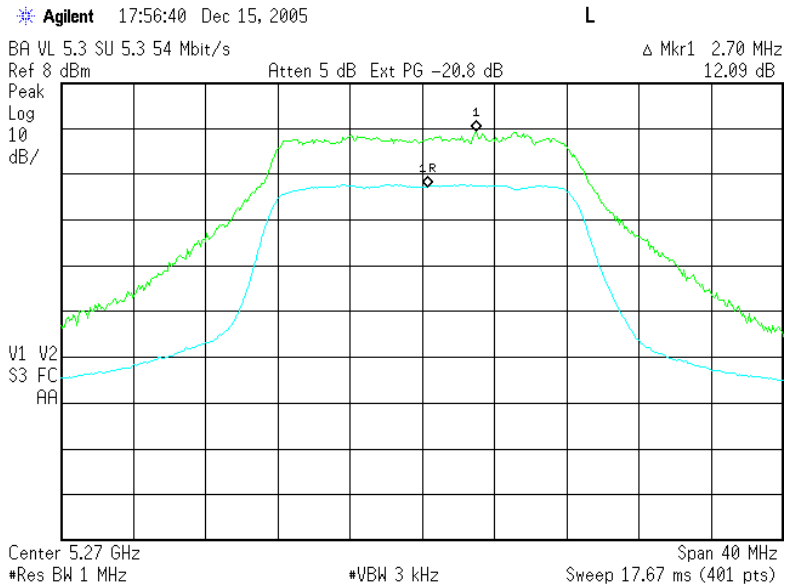
Plot 148.
Carrier Frequency 5.335 GHz. EBW 10 MHz. PRBS 54 Mbit/s



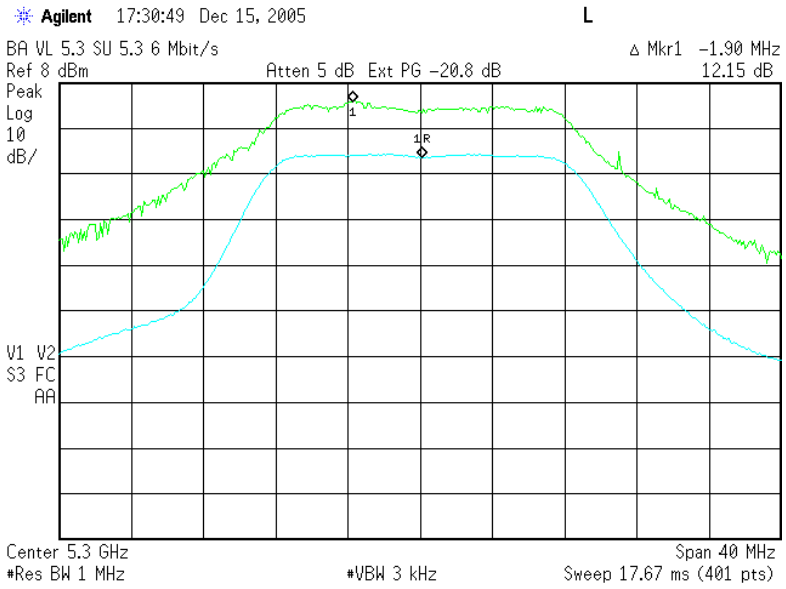
Plot 149.
Carrier Frequency 5.270 GHz. EBW 20 MHz. PRBS 6 Mbit/s



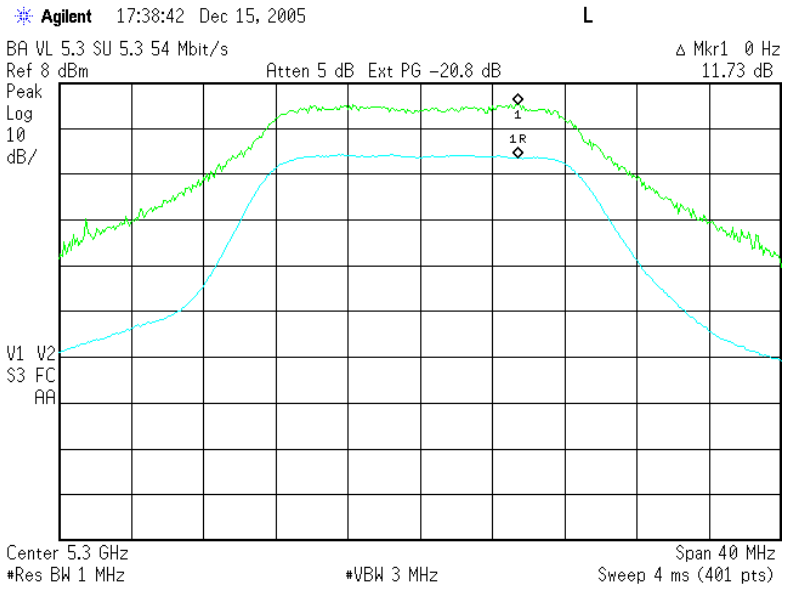
Plot 150.
Carrier Frequency 5.270 GHz. EBW 20 MHz. PRBS 54 Mbit/s



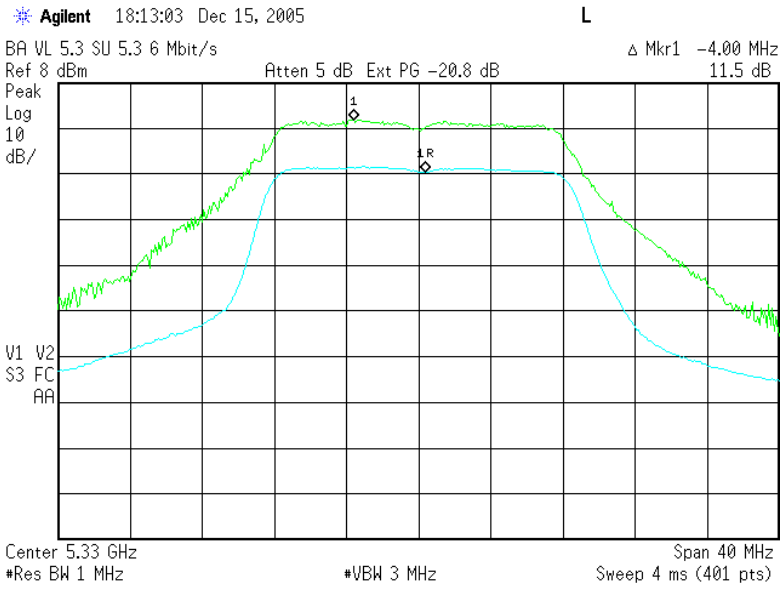
Plot 151.
Carrier Frequency 5.300 GHz. EBW 20 MHz. PRBS 6 Mbit/s



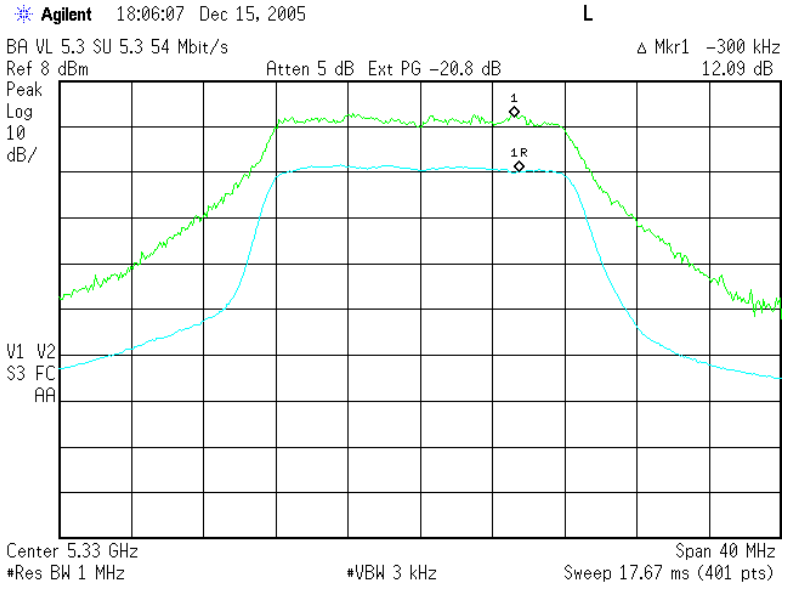
Plot 152.
Carrier Frequency 5.300 GHz. EBW 20 MHz. PRBS 54 Mbit/s



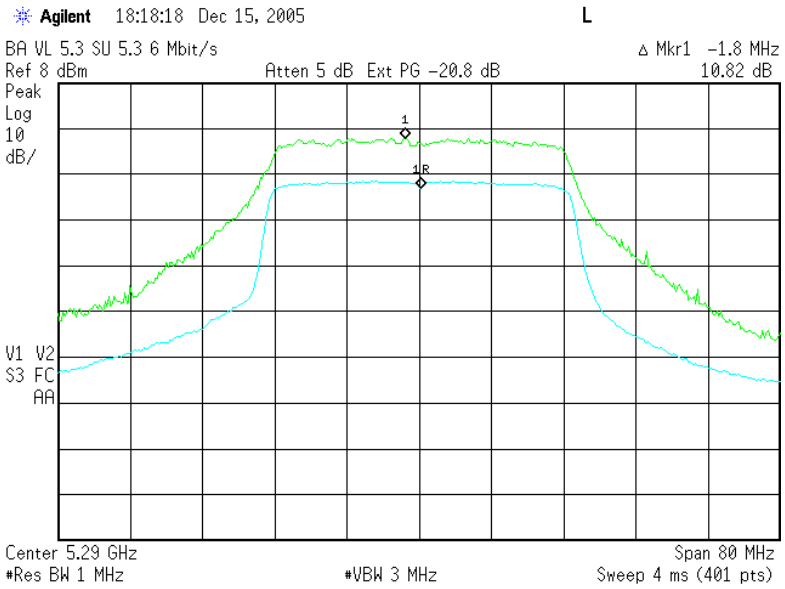
Plot 153.
Carrier Frequency 5.330 GHz. EBW 20 MHz. PRBS 6 Mbit/s



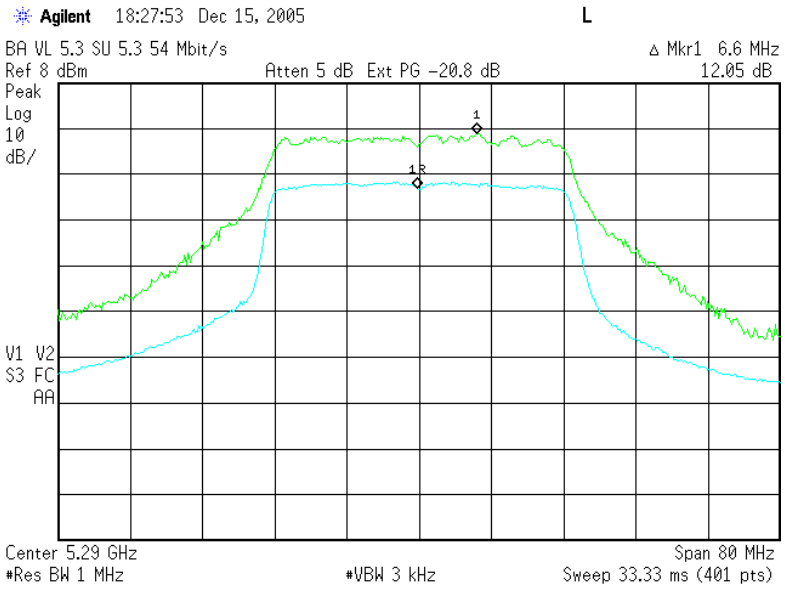
Plot 154.
Carrier Frequency 5.330 GHz. EBW 10 MHz. PRBS 54 Mbit/s



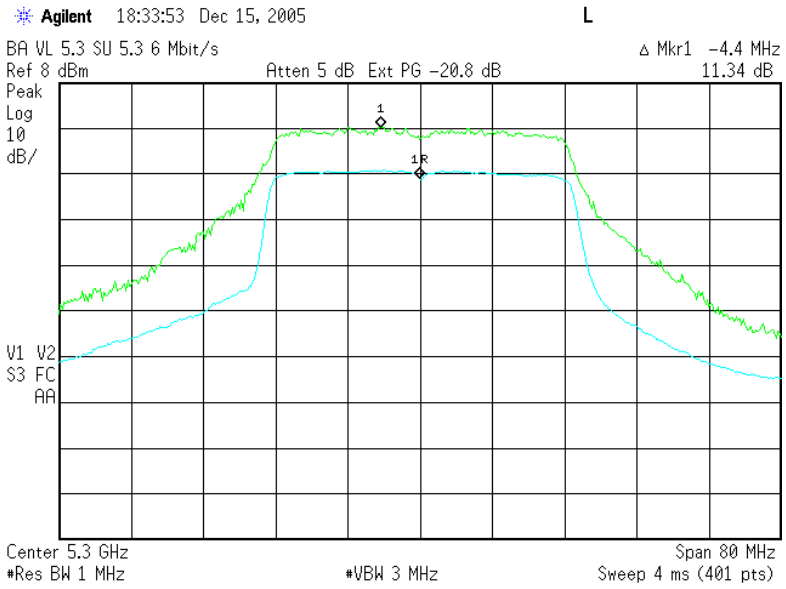
Plot 155.
Carrier Frequency 5.290 GHz. EBW 40 MHz. PRBS 6 Mbit/s



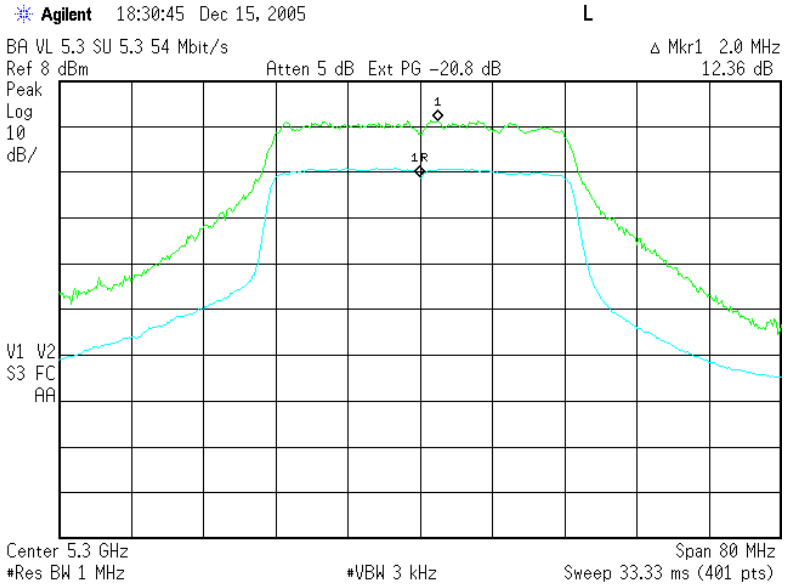
Plot 156.
Carrier Frequency 5.290 GHz. EBW 40 MHz. PRBS 54 Mbit/s



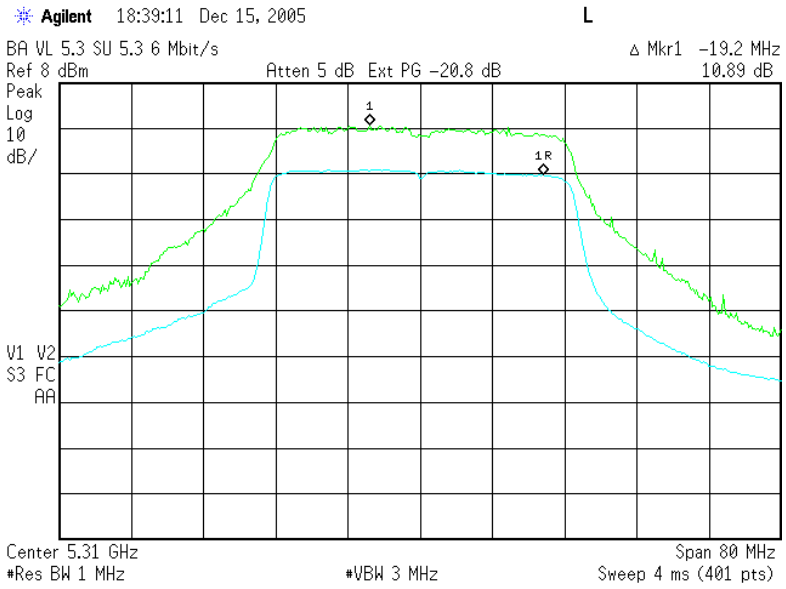
Plot 157.
Carrier Frequency 5.300 GHz. EBW 40 MHz. PRBS 6 Mbit/s



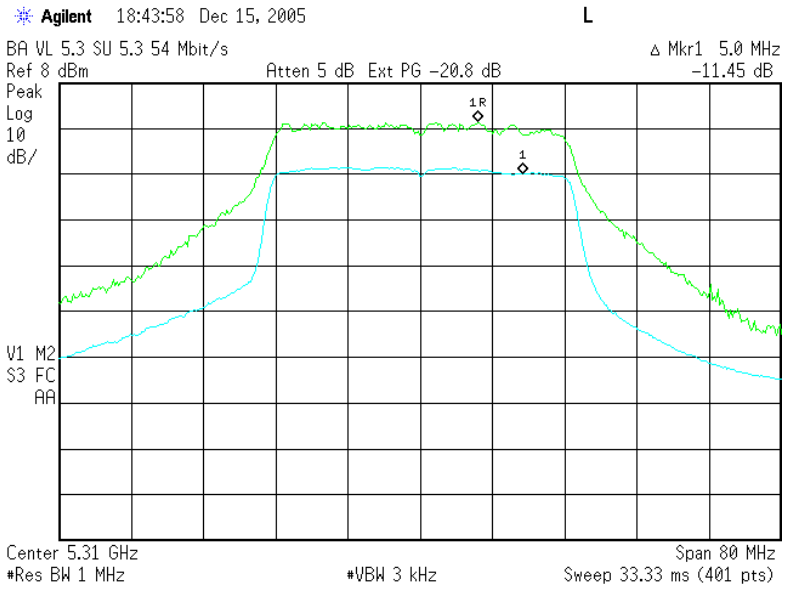
Plot 158.
Carrier Frequency 5.300 GHz. EBW 40 MHz. PRBS 54 Mbit/s



Plot 159.
Carrier Frequency 5.310 GHz. EBW 40 MHz. PRBS 6 Mbit/s



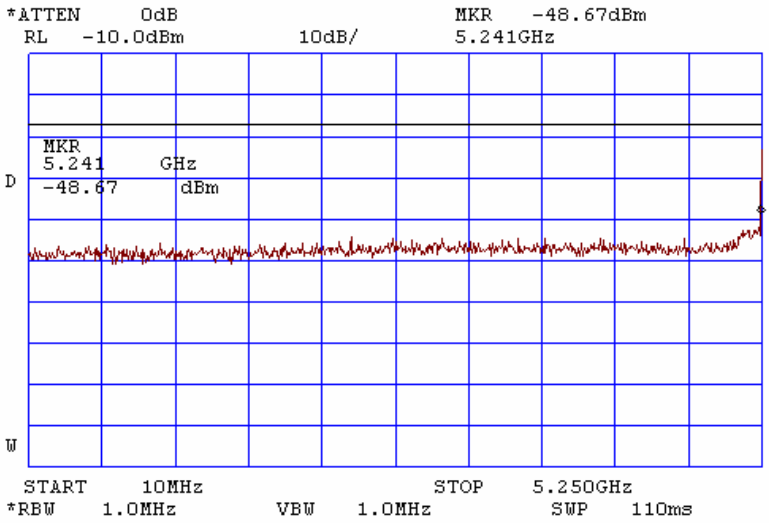
Plot 160.
Carrier Frequency 5.310 GHz. EBW 40 MHz. PRBS 54 Mbit/s



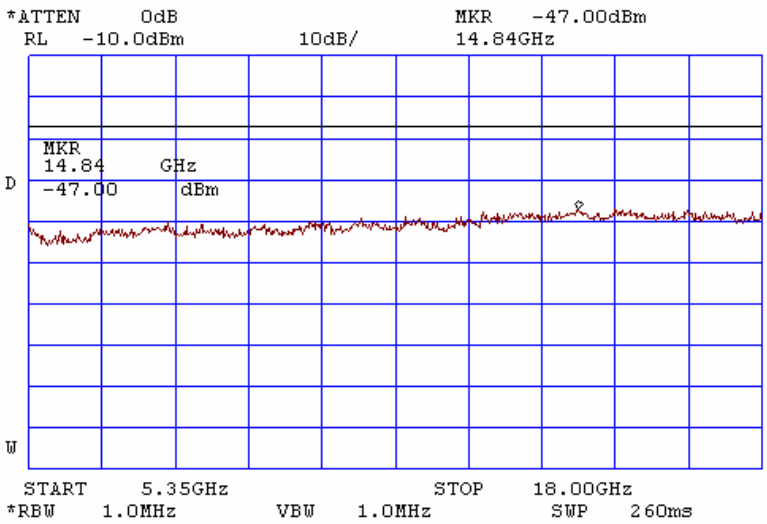
12.11. *AU Unit. Peak Emissions outside of the frequency band 15.407b (2).*

Limit line - -27 dBm/MHz

Plot 161.
Carrier Frequency 5.265 GHz. EBW-10 MHz. Output power 9 dBm.

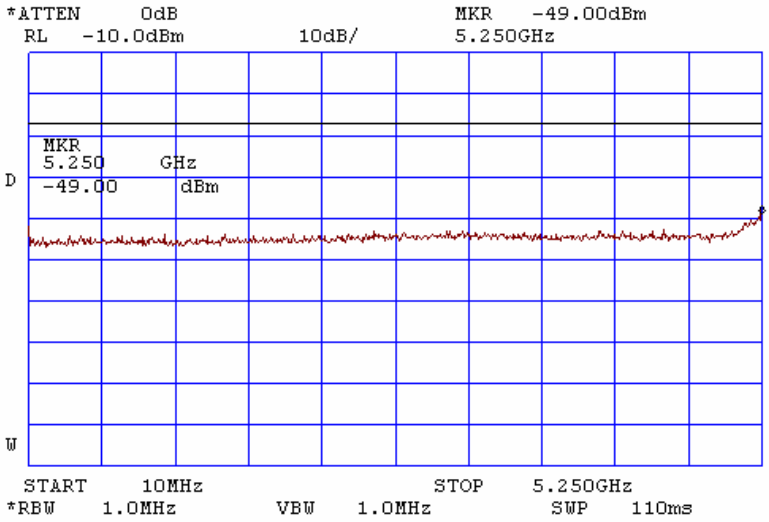


Plot 162.

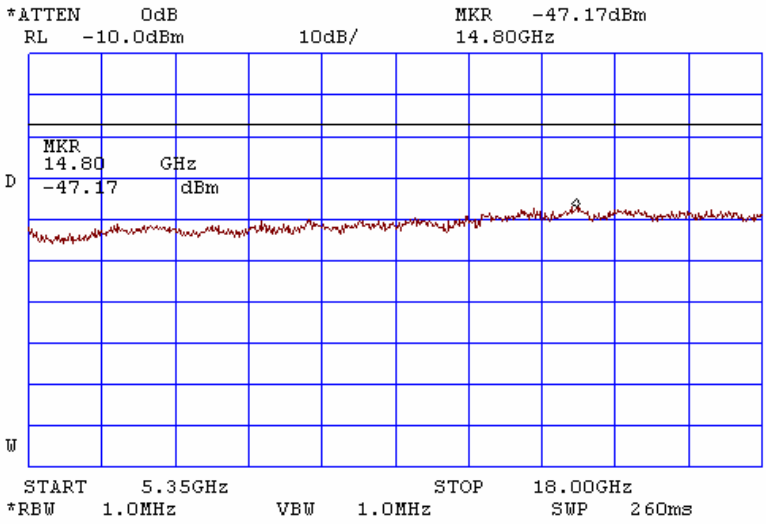


Plot 163.
Carrier Frequency 5.265 GHz. EBW-10 MHz. Output power 9 dBm.

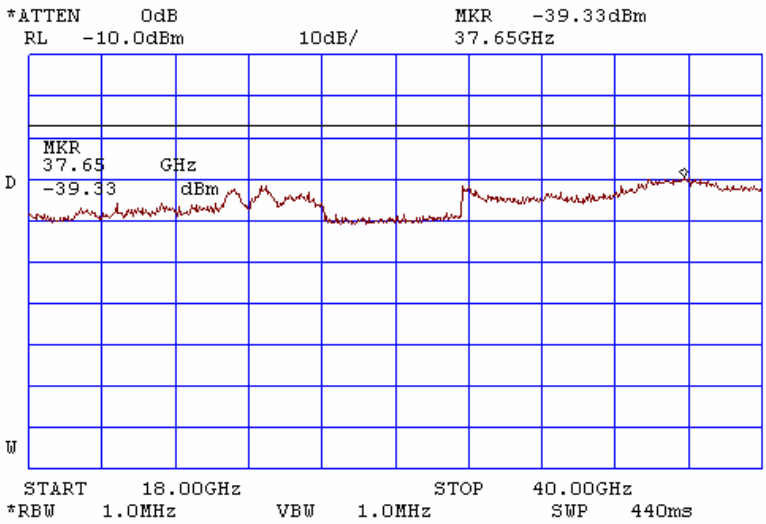
Plot 164.
Carrier Frequency 5.300 GHz. EBW-10 MHz. Output power 11 dBm.



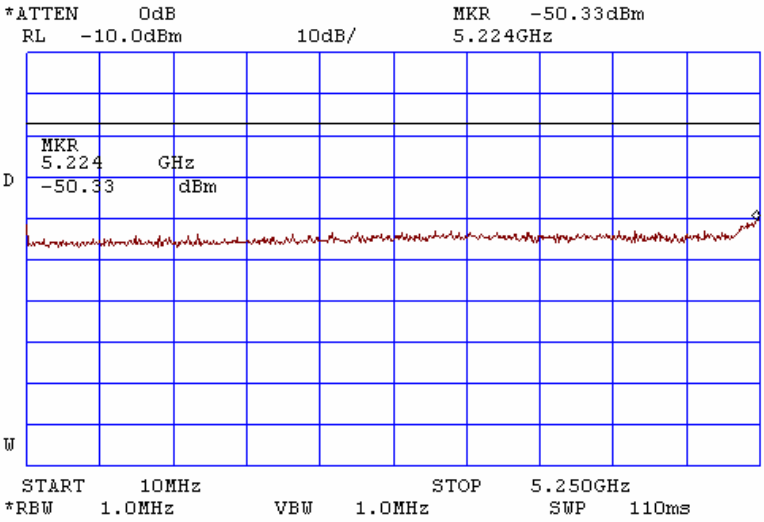
Plot 165.
Carrier Frequency 5.300 GHz. EBW-10 MHz. Output power 11 dBm.



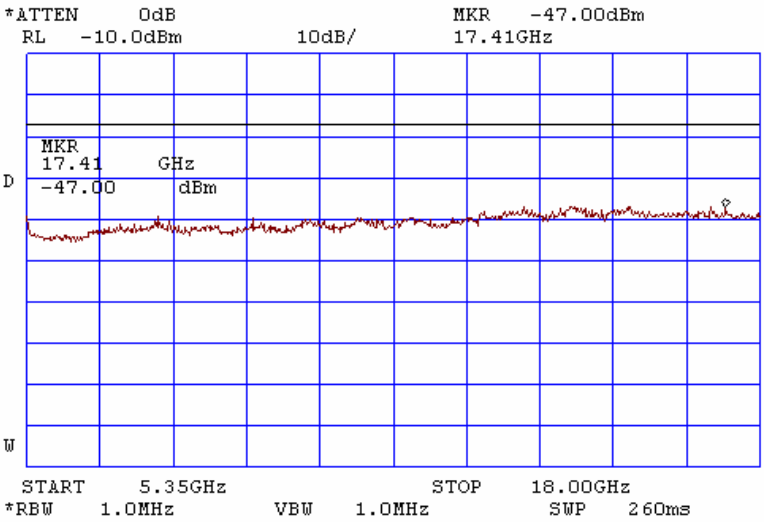
Plot 166.



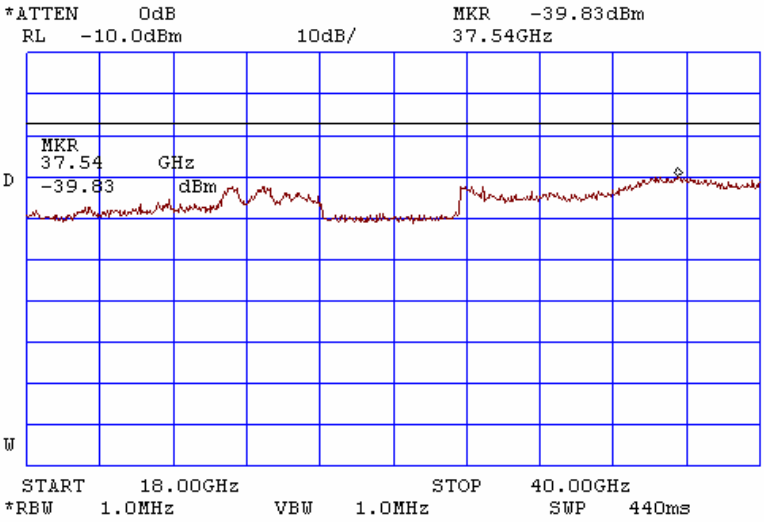
Plot 167.
Carrier Frequency 5.335 GHz. EBW-10 MHz. Output power 11 dBm.



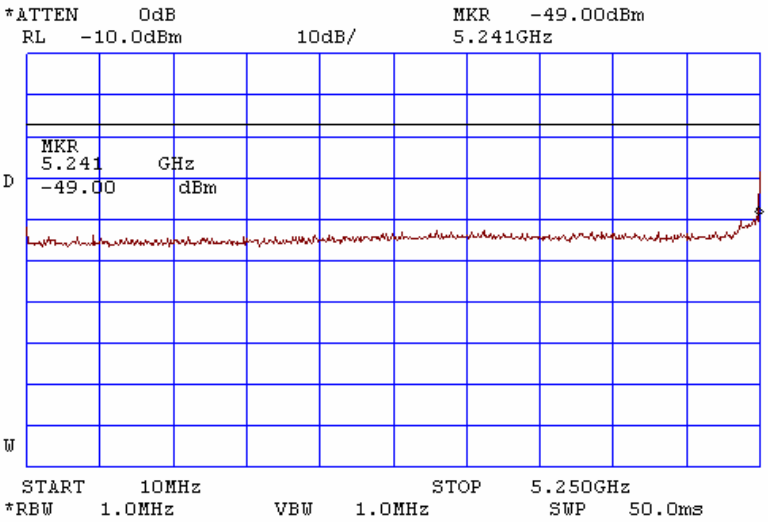
Plot 168.



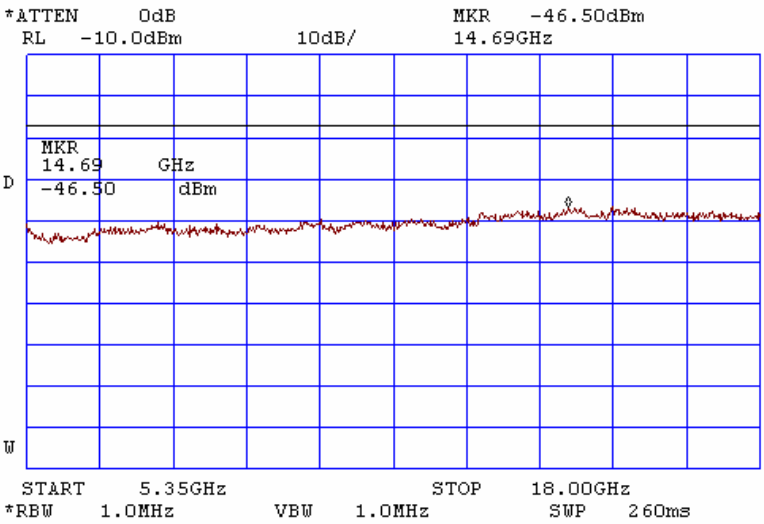
Plot 169.
Carrier Frequency 5.335 GHz. EBW-10 MHz. Output power 11 dBm.



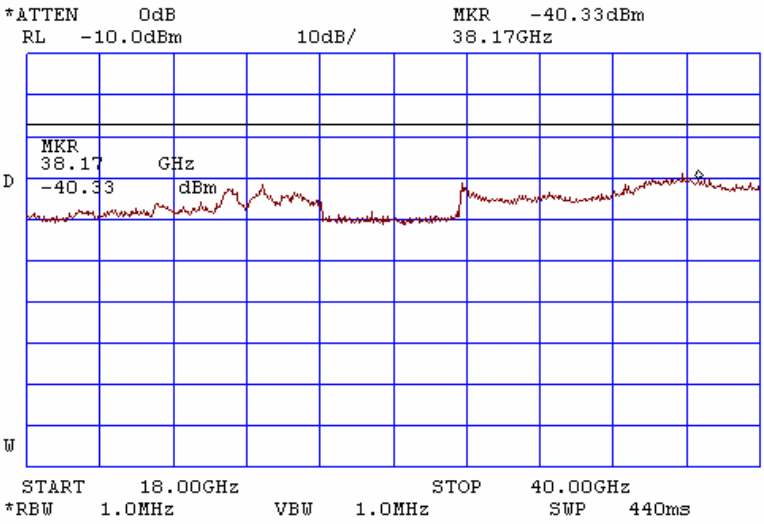
Plot 170.
Carrier Frequency 5.270 GHz. EBW-20 MHz. Output power 4 dBm.



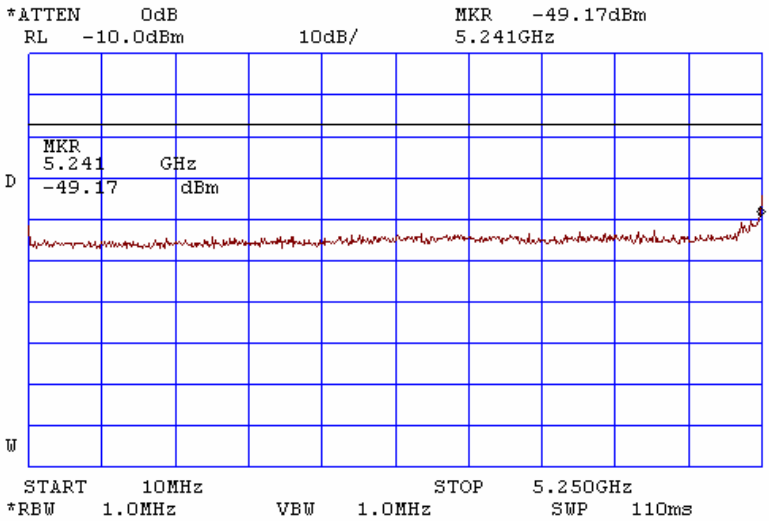
Plot 171.
Carrier Frequency 5.270 GHz. EBW-20 MHz. Output power 4 dBm.



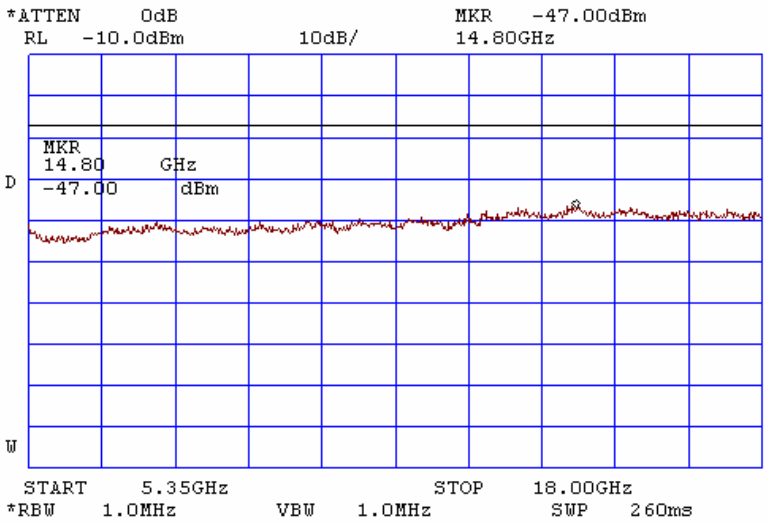
Plot 172.



Plot 173.
Carrier Frequency 5.300 GHz. EBW-20 MHz. Output power 11 dBm

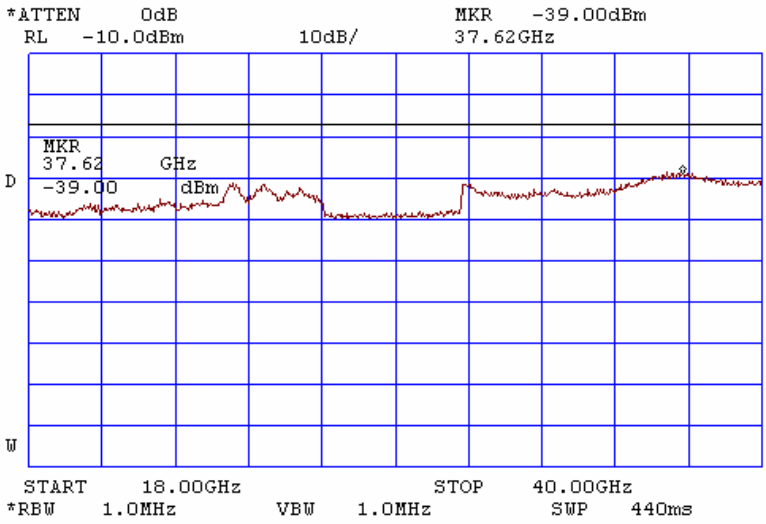


Plot 174.

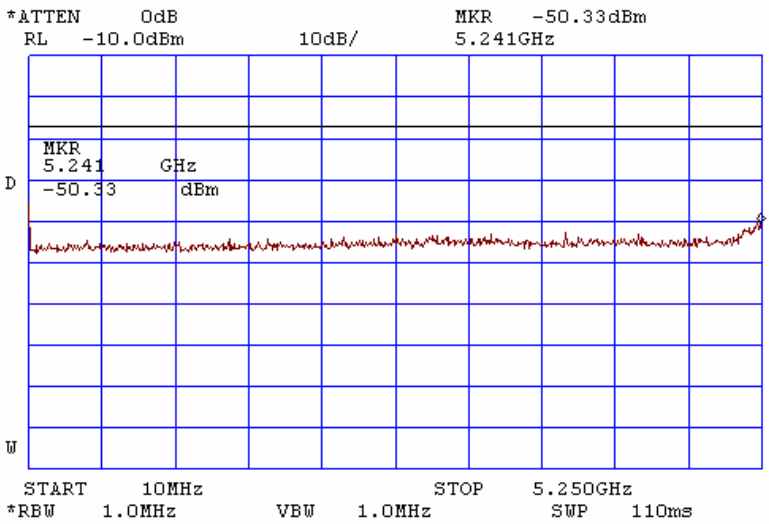


Plot 175.

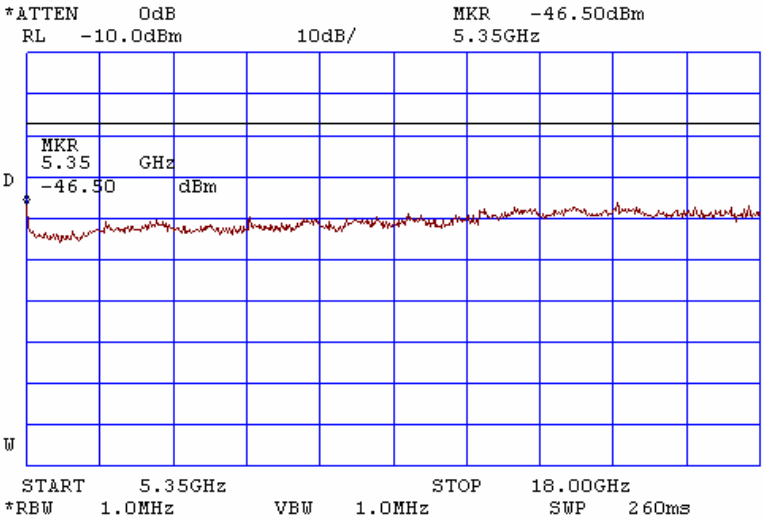
Carrier Frequency 5.300 GHz. EBW-20 MHz. Output power 11 dBm



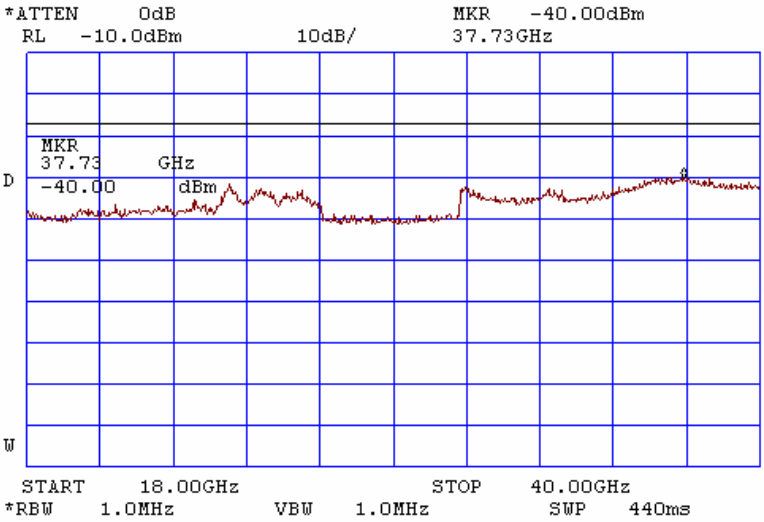
Plot 176.
Carrier Frequency 5.330 GHz. EBW-20 MHz. Output power 9 dBm



Plot 177.
Carrier Frequency 5.330 GHz. EBW-20 MHz. Output power 9 dBm



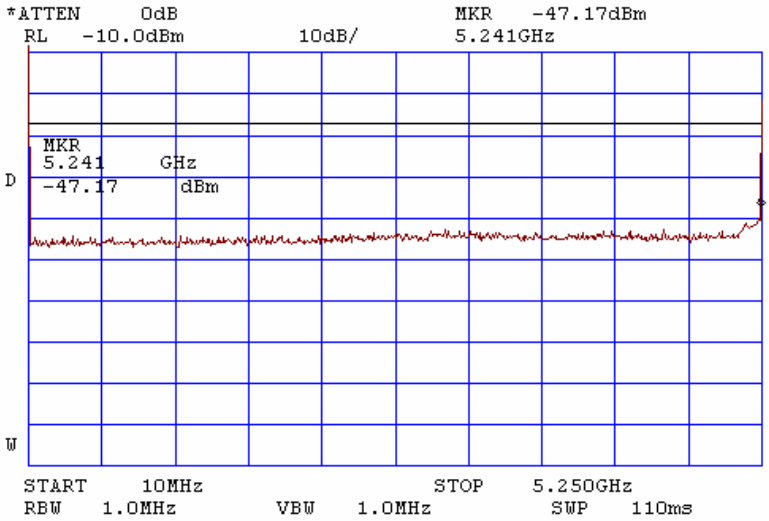
Plot 178.



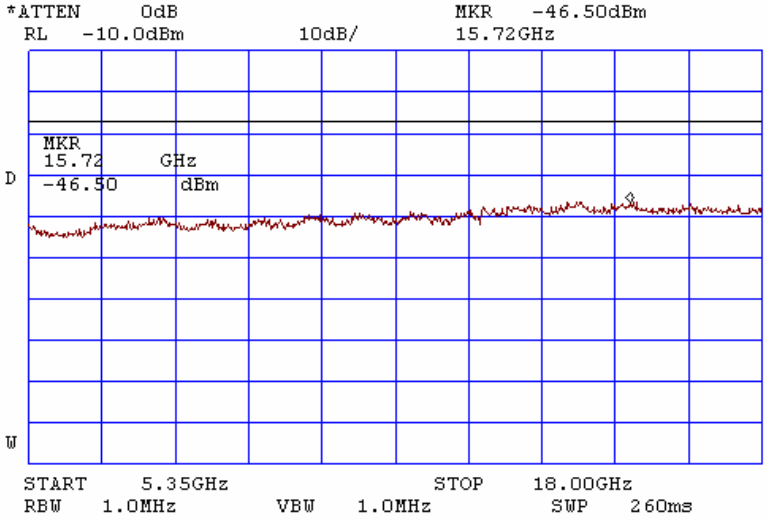
12.12. *SU Unit. Peak Emissions outside of the frequency band 15.407b (2).*

Limit line - -27 dBm/MHz

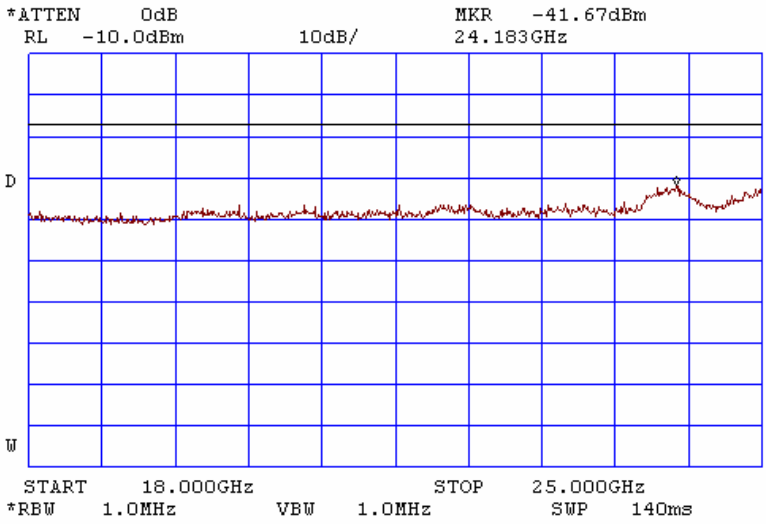
Plot 179.
Carrier Frequency 5.265 GHz. EBW-10 MHz. Output power 6 dBm



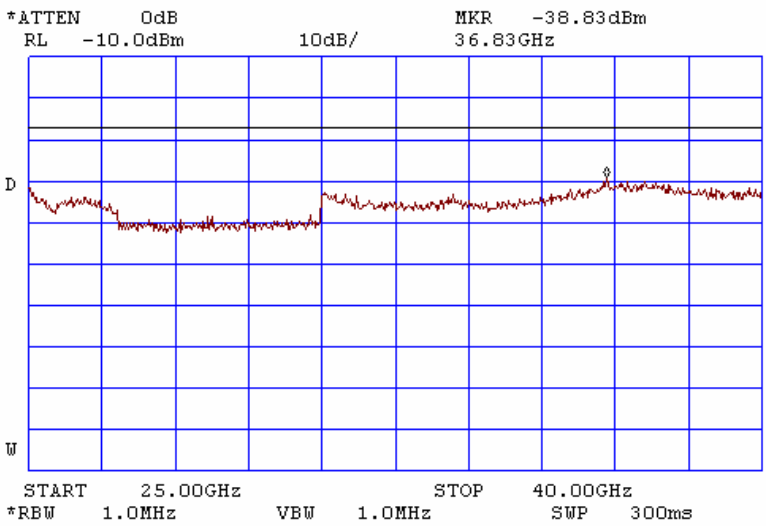
Plot 180.



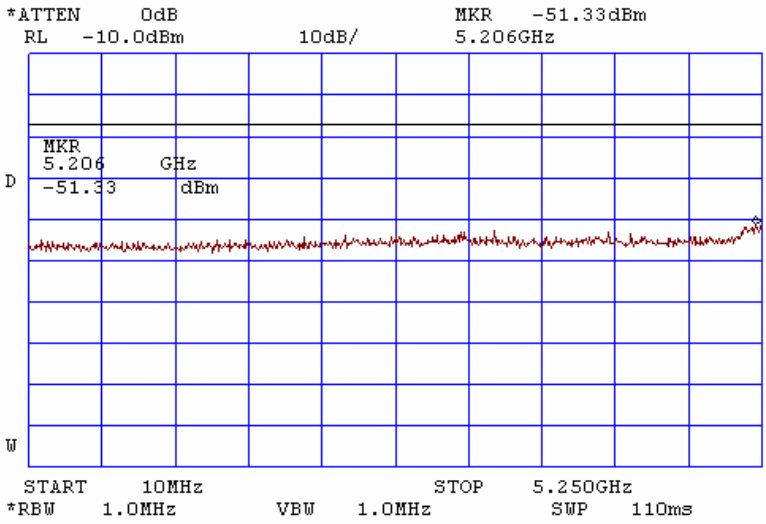
Plot 181.
Carrier Frequency 5.265 GHz. EBW-10 MHz. Output power 6 dBm



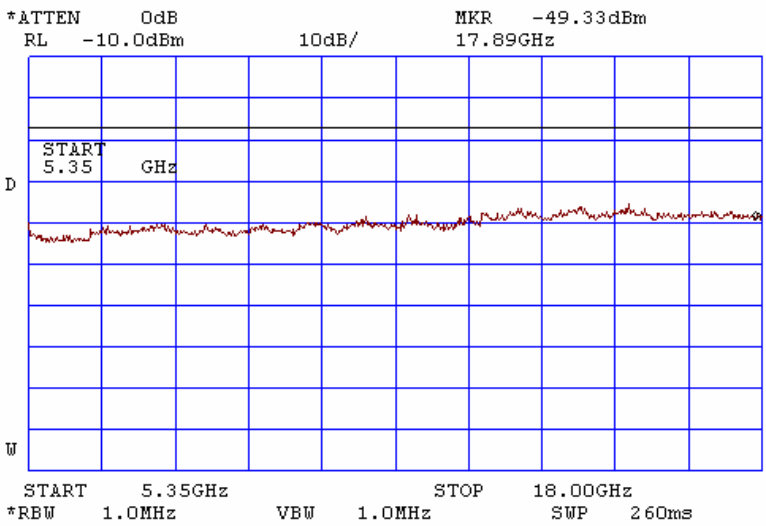
Plot 182.



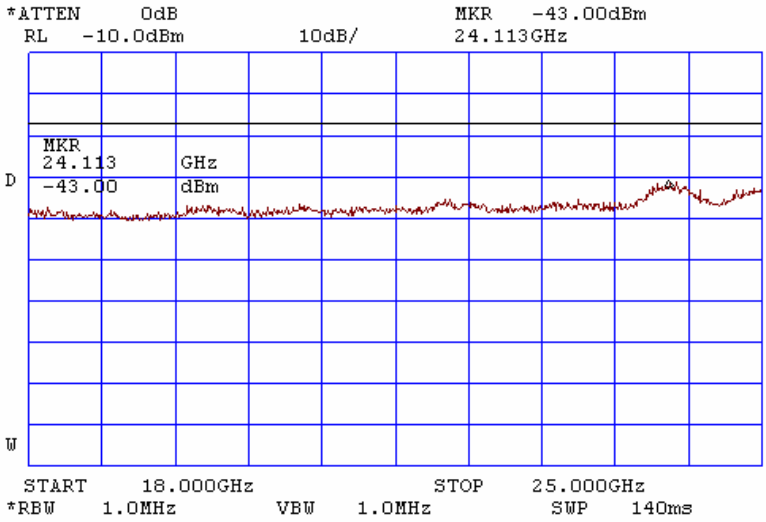
Plot 183.
Carrier Frequency 5.300 GHz. EBW-10 MHz. Output power 6 dBm



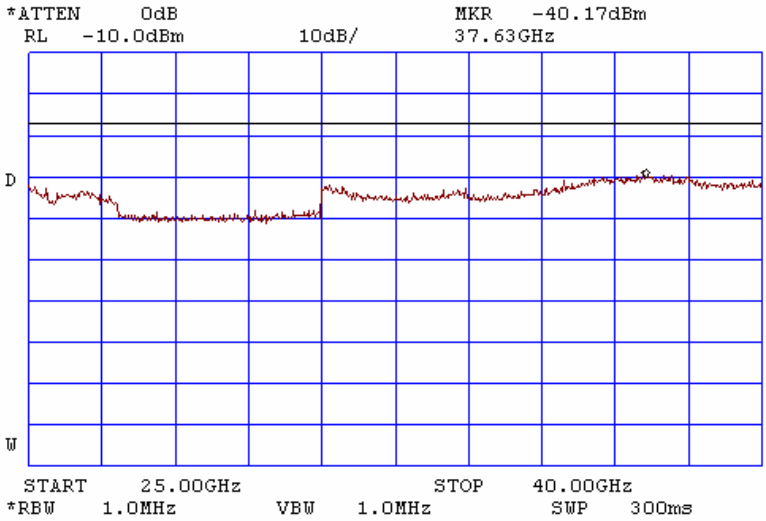
Plot 184.



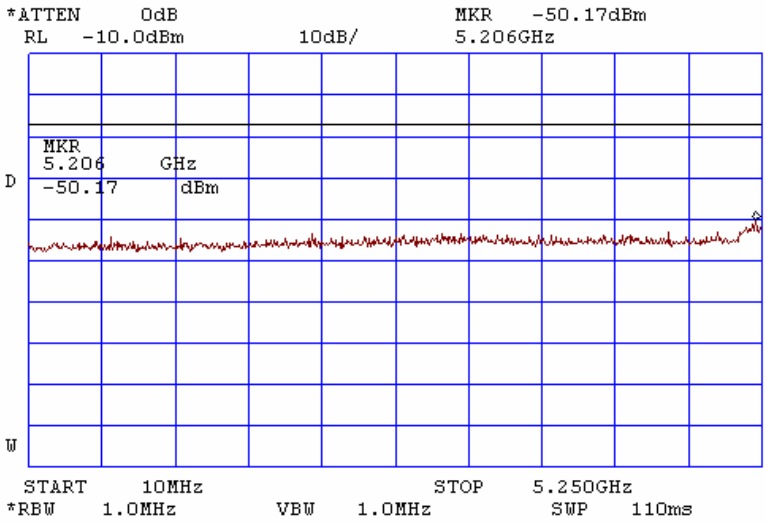
Plot 185.
r Frequency 5.300 GHz. EBW-10 MHz. Output power 6 dBm



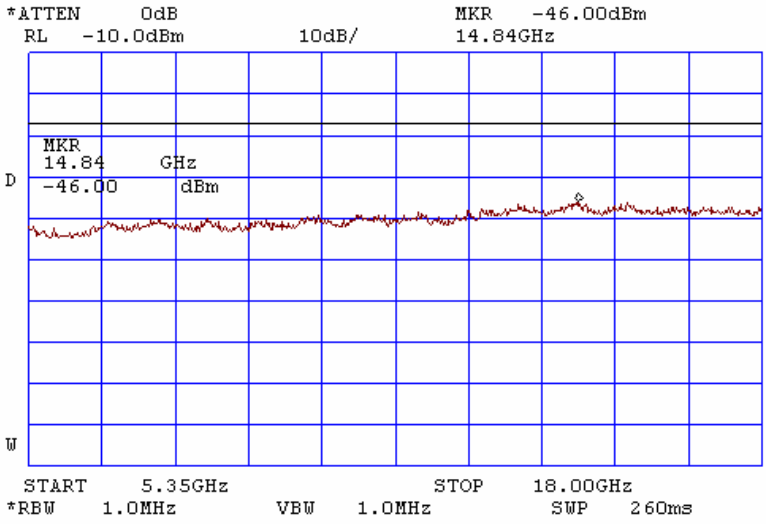
Plot 186.



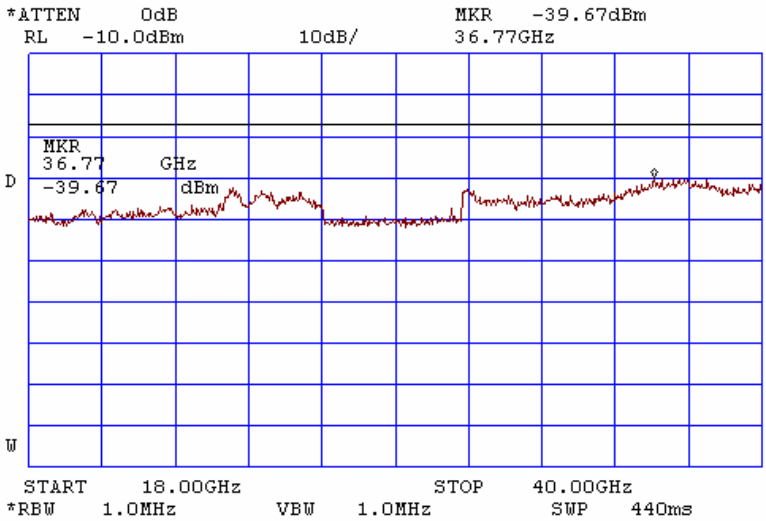
Plot 187.
Carrier Frequency 5.335 GHz. EBW-10 MHz. Output power 6 dBm



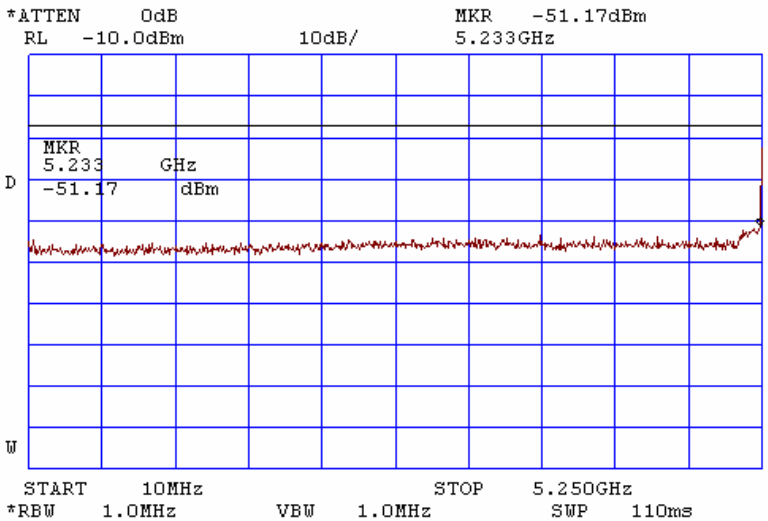
Plot 188.



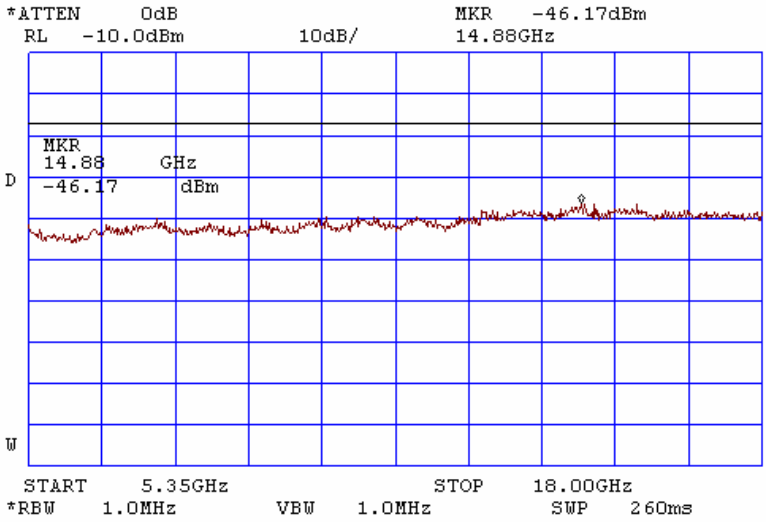
Plot 189.
Carrier Frequency 5.335 GHz. EBW-10 MHz. Output power 6 dBm



Plot 190.
Carrier Frequency 5.270 GHz. EBW-20 MHz. Output power 1 dBm

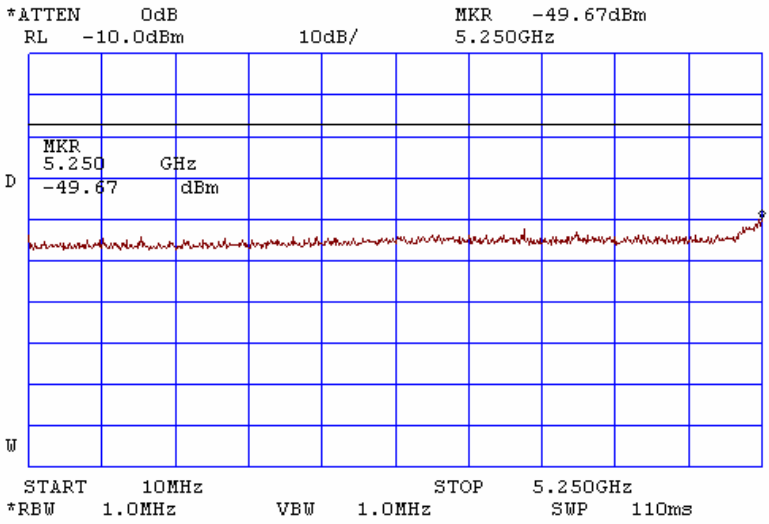


Plot 191.
Carrier Frequency 5.270 GHz. EBW-20 MHz. Output power 1 dBm

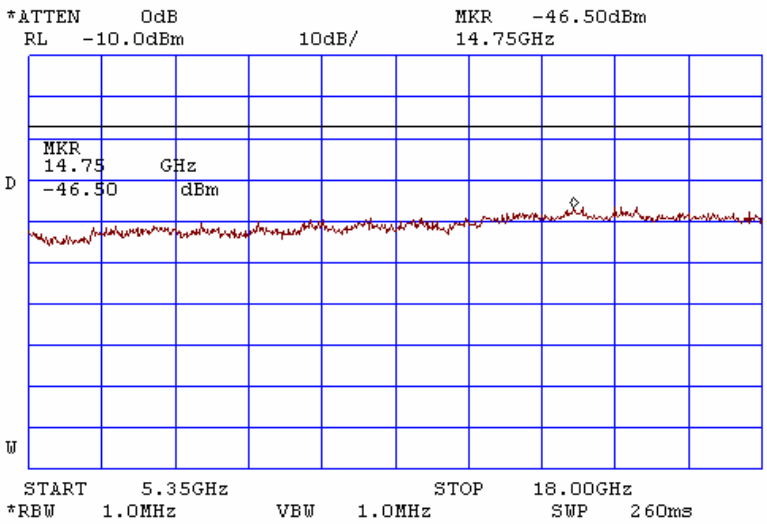


Plot 192.

Plot 193.
Carrier Frequency 5.300 GHz. EBW-20 MHz. Output power 9 dBm

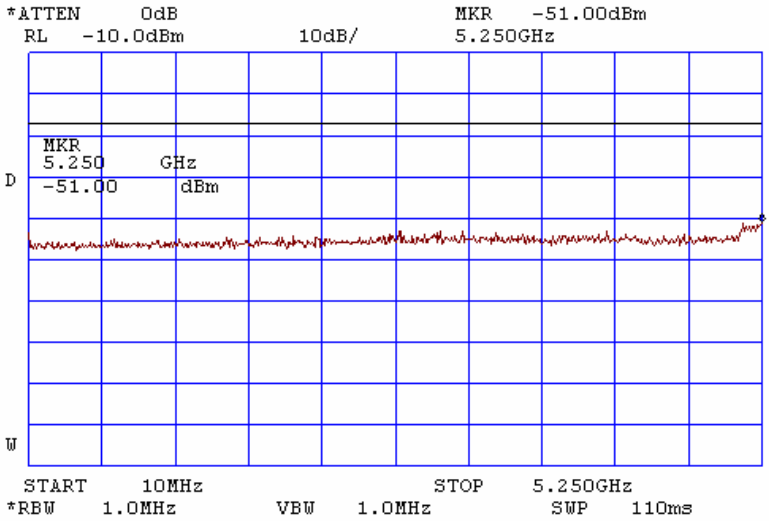


Plot 194.

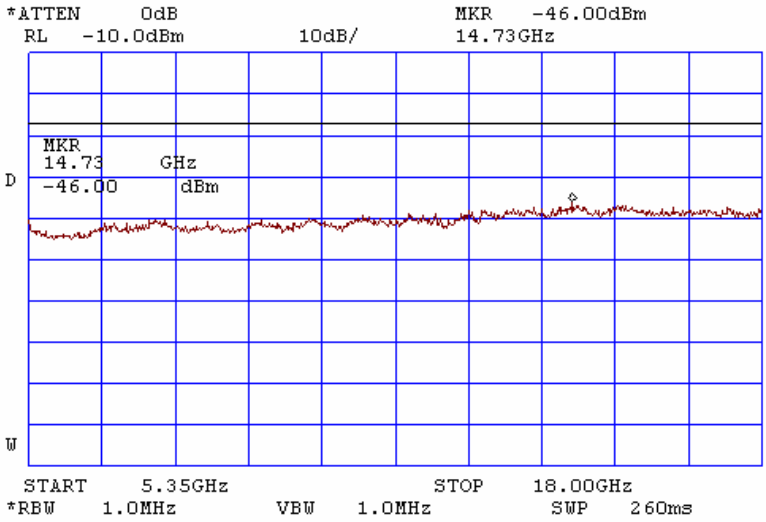


Plot 195.
Carrier Frequency 5.300 GHz. EBW-20 MHz. Output power 9 dBm

Plot 196.
Carrier Frequency 5.330 GHz. EBW-20 MHz. Output power 5 dBm

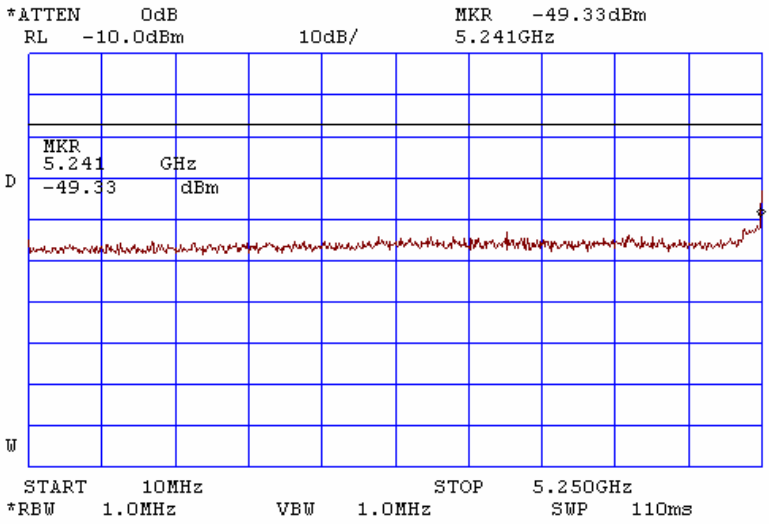


Plot 197.
Carrier Frequency 5.330 GHz. EBW-20 MHz. Output power 5 dBm

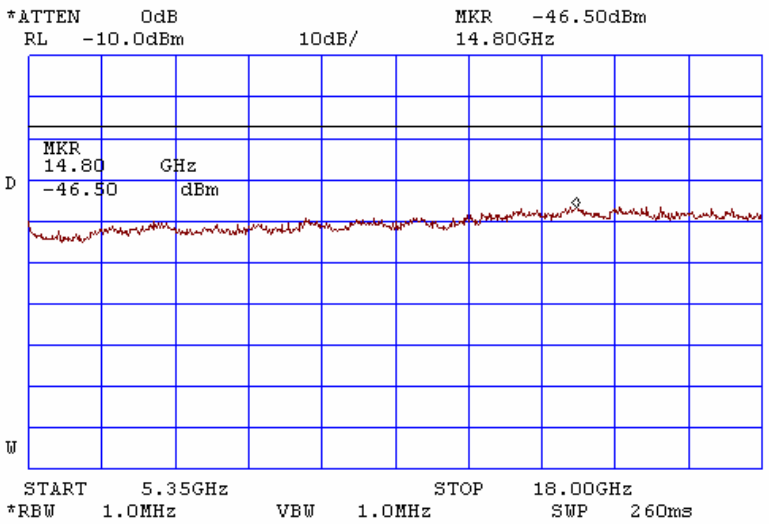


Plot 198.

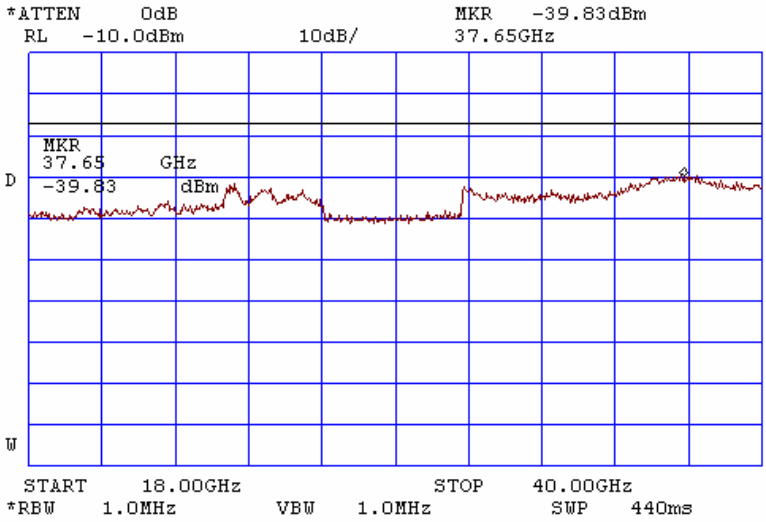
Plot 199.
Carrier Frequency 5.290 GHz. EBW-40 MHz. Output power 4 dBm



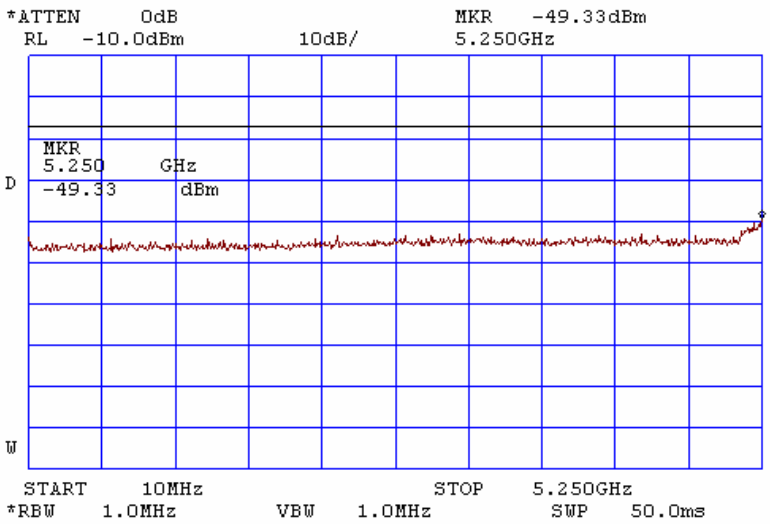
Plot 200.



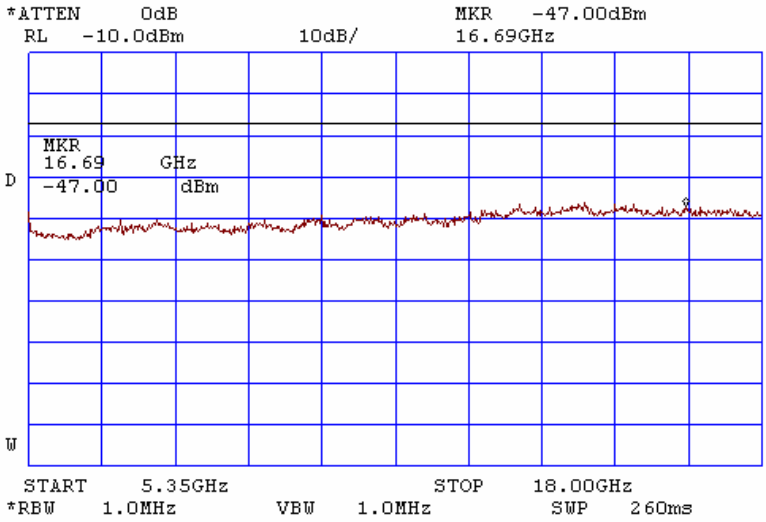
Plot 201.
Carrier Frequency 5.290 GHz. EBW-40 MHz. Output power 4 dBm



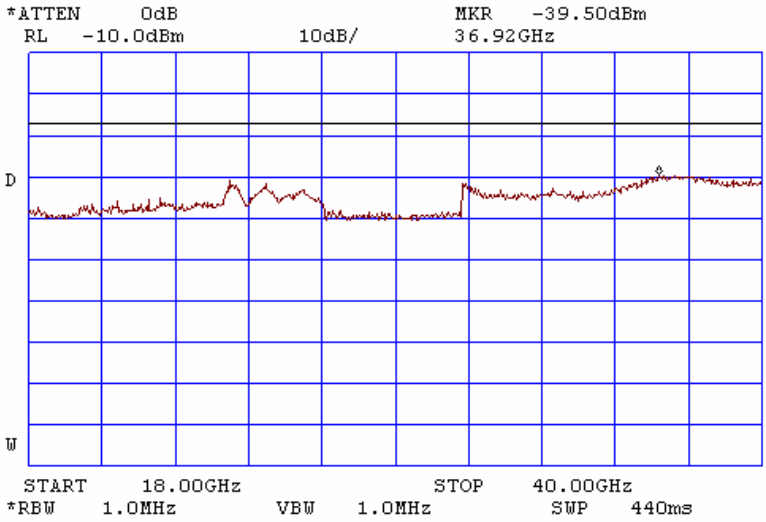
Plot 202.
Carrier Frequency 5.300 GHz. EBW-40 MHz. Output power 9 dBm



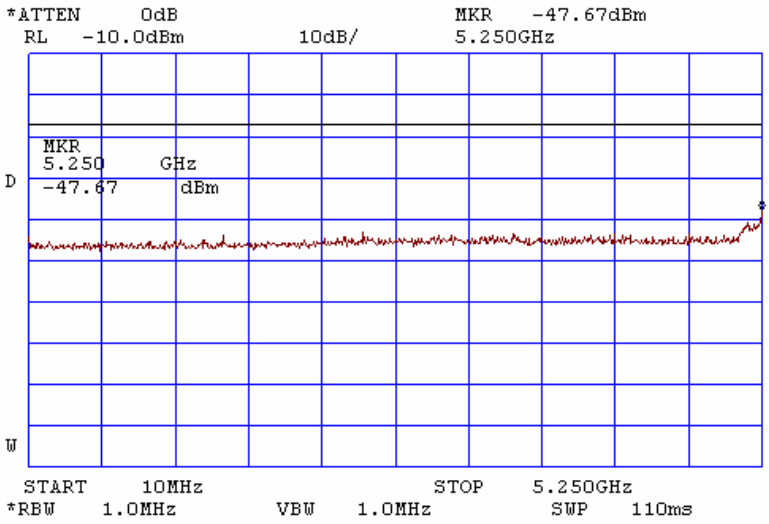
Plot 203.
arrier Frequency 5.300 GHz. EBW-40 MHz. Output power 9 dBm



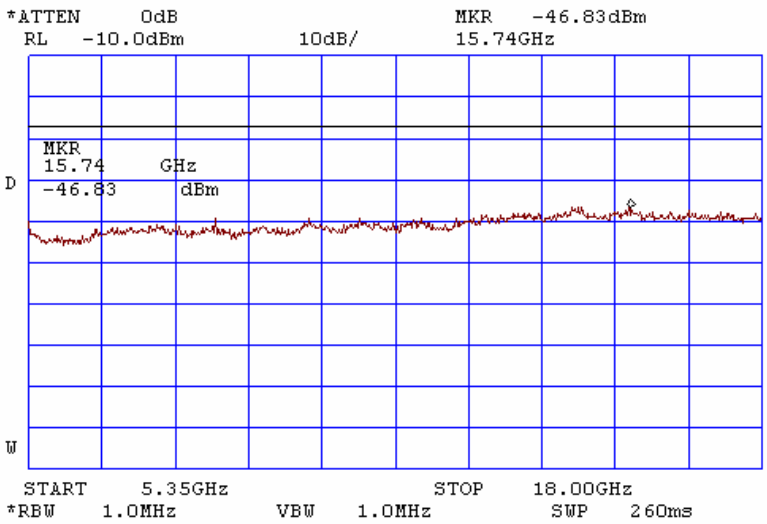
Plot 204.



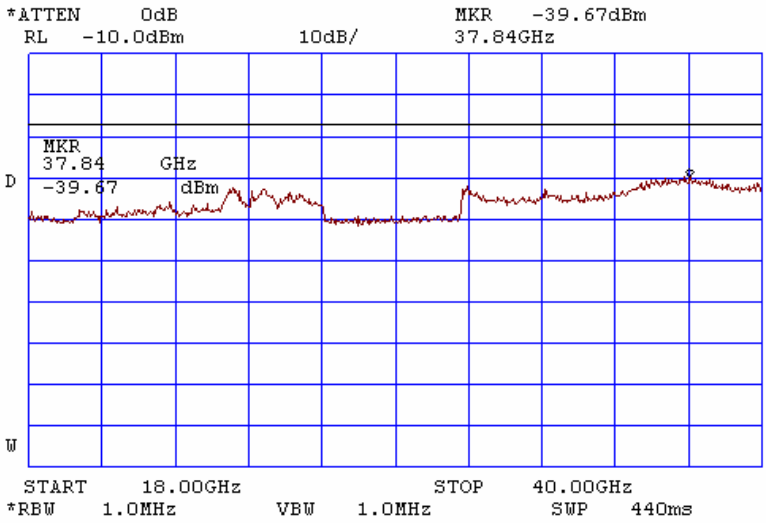
Plot 205.
Carrier Frequency 5.310 GHz. EBW-40 MHz. Output power 8 dBm



Plot 206.

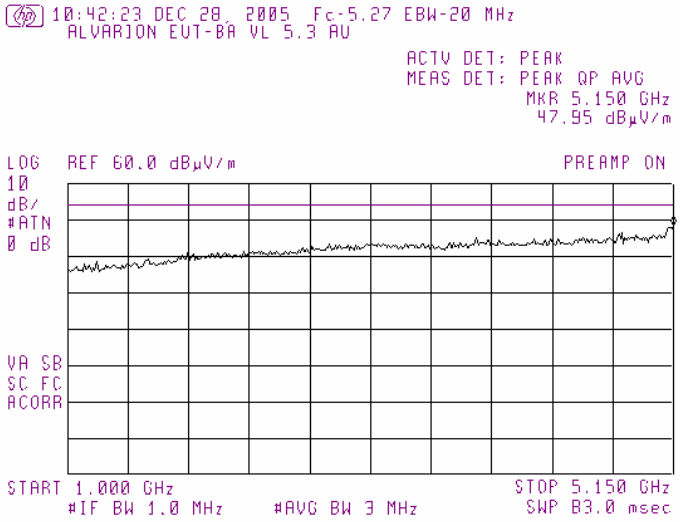


Plot 207.
Carrier Frequency 5.310 GHz. EBW-40 MHz. Output power 8 dBm

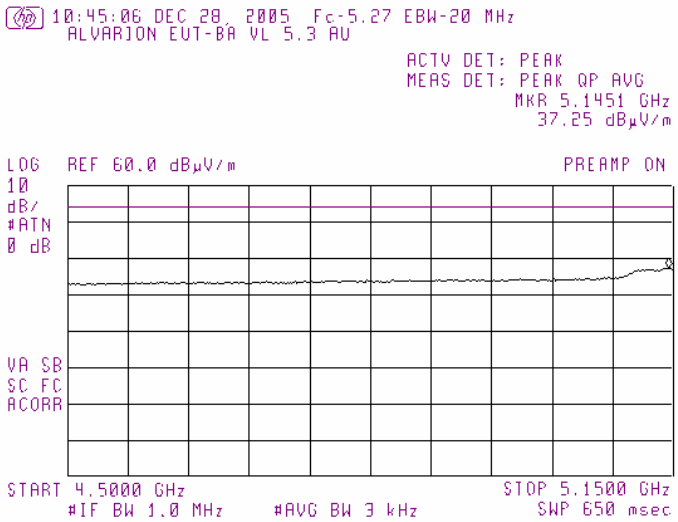


12.13. AU Unit. Radiated Spurious Emissions 15.407b (6)

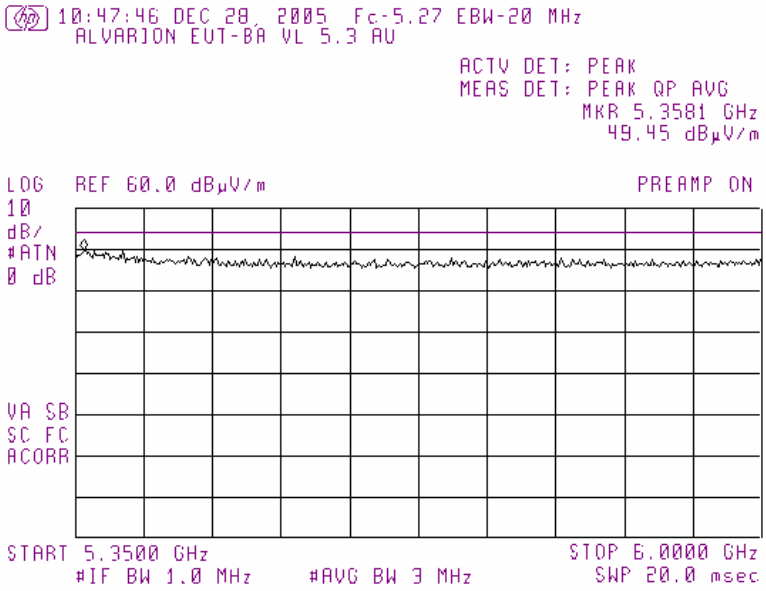
Plot 208.
Carrier Frequency 5.270 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector peak



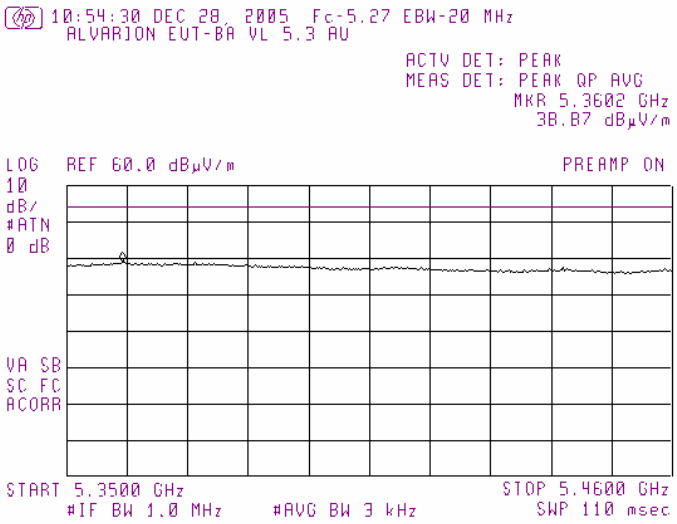
Plot 209.
Carrier Frequency 5.270 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector average



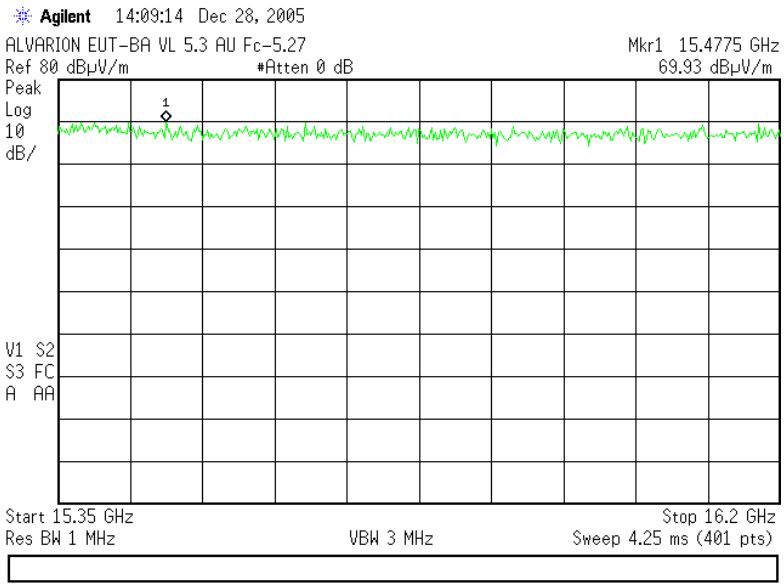
Plot 210.
Carrier Frequency 5.270 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector peak



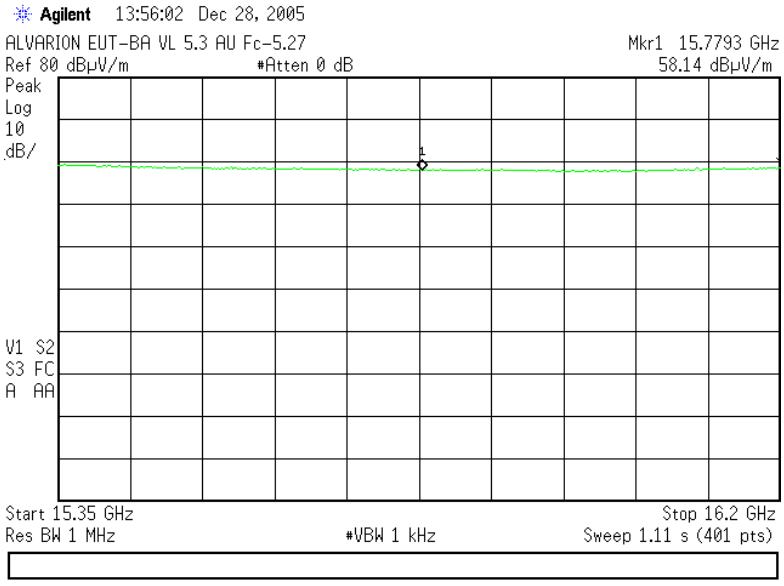
Plot 211.
Carrier Frequency 5.270 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector average



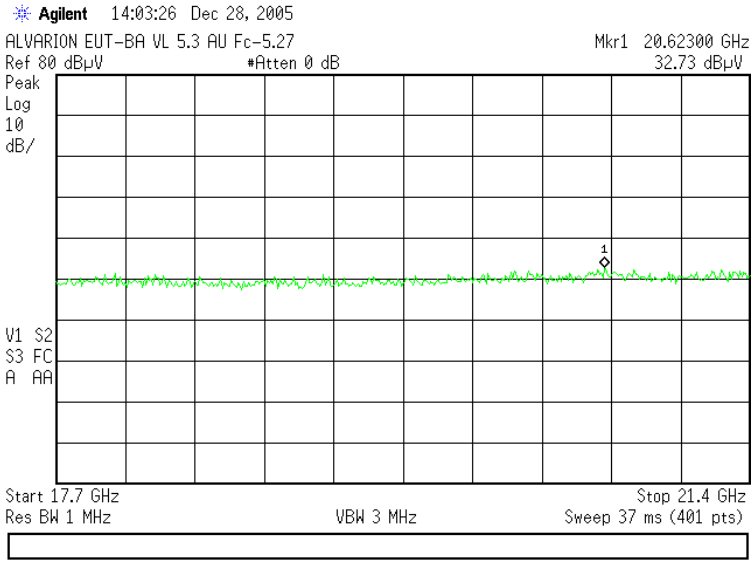
Plot 212.
Carrier Frequency 5.270 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector peak



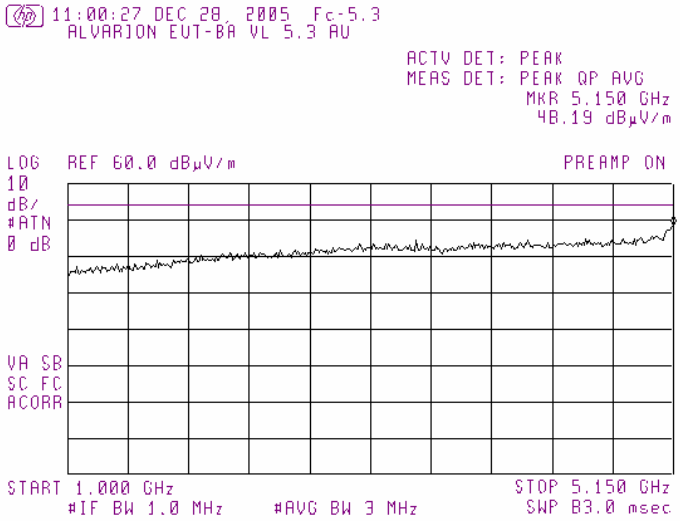
Plot 213.
Carrier Frequency 5.270 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector average



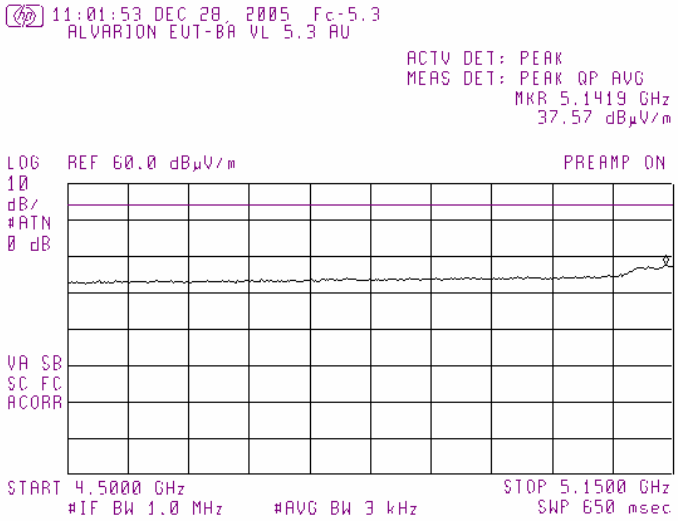
Plot 214.
Carrier Frequency 5.270 GHz. EBW-20 MHz. Antenna – 16 dBi



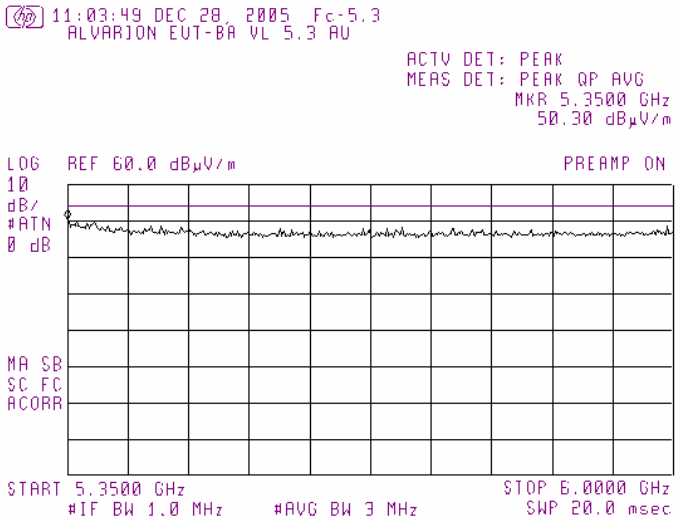
Plot 215.
Carrier Frequency 5.300 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector peak



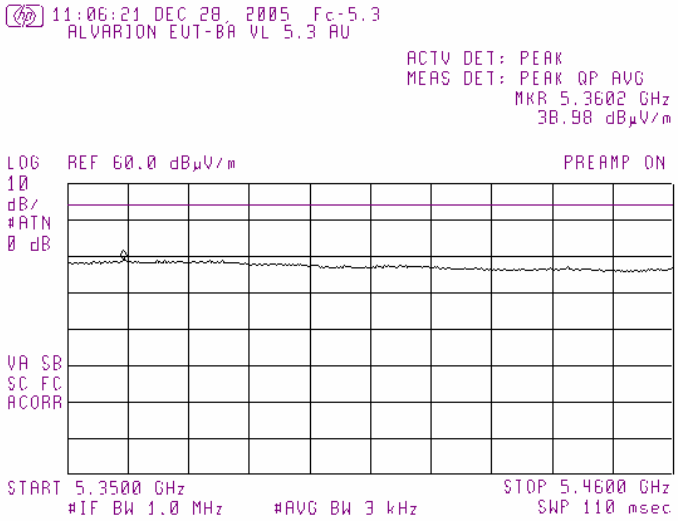
Plot 216.
Carrier Frequency 5.300 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector average



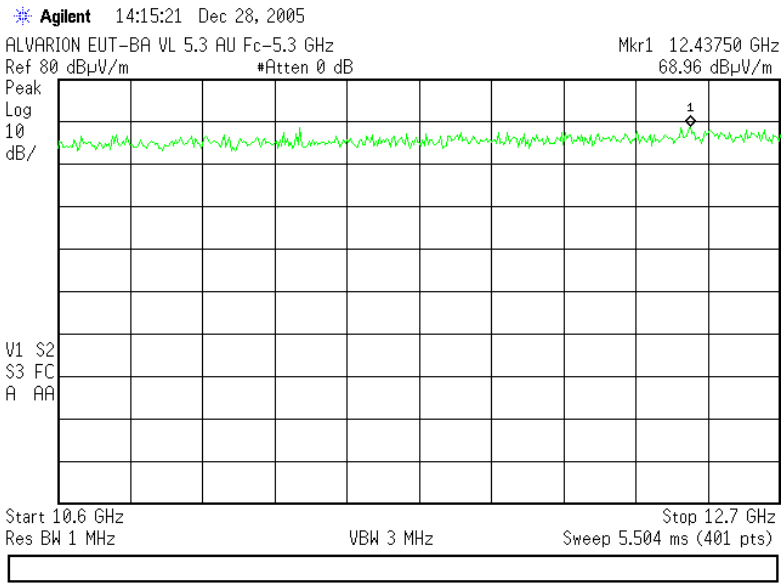
Plot 217.
Carrier Frequency 5.300 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector peak



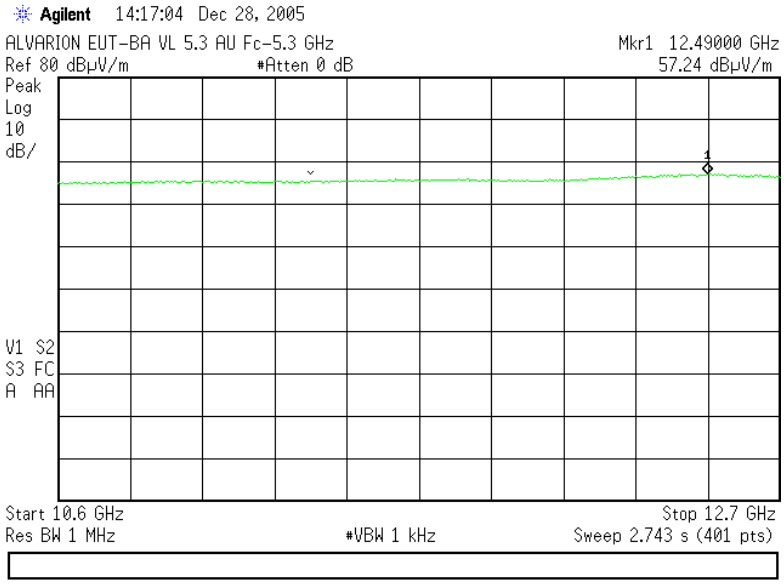
Plot 218.
Carrier Frequency 5.300 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector average



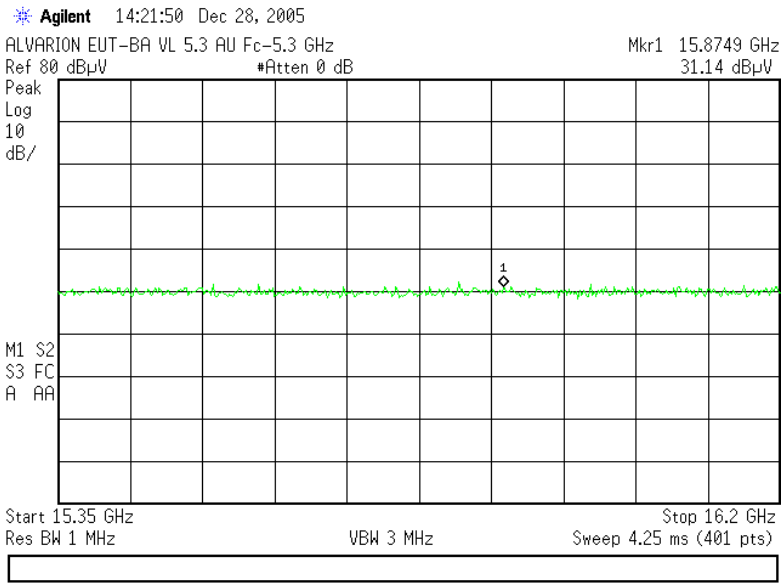
Plot 219.
Carrier Frequency 5.300 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector peak



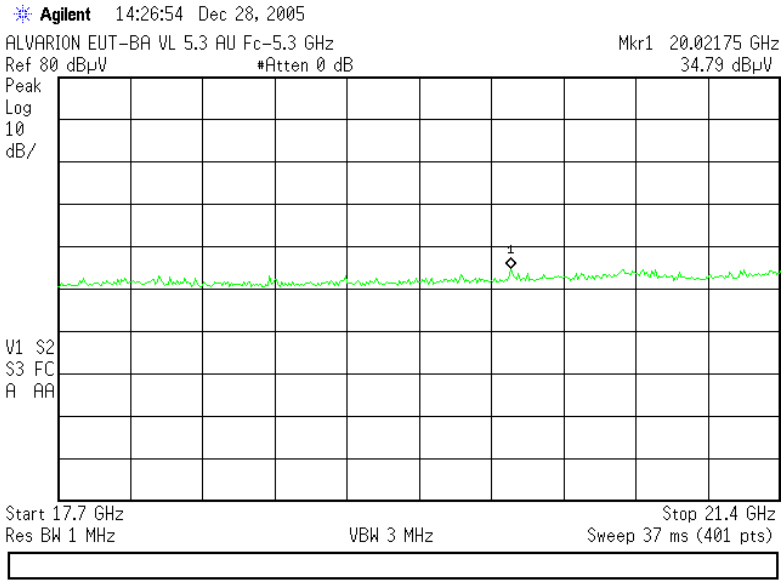
Plot 220.
Carrier Frequency 5.300 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector average



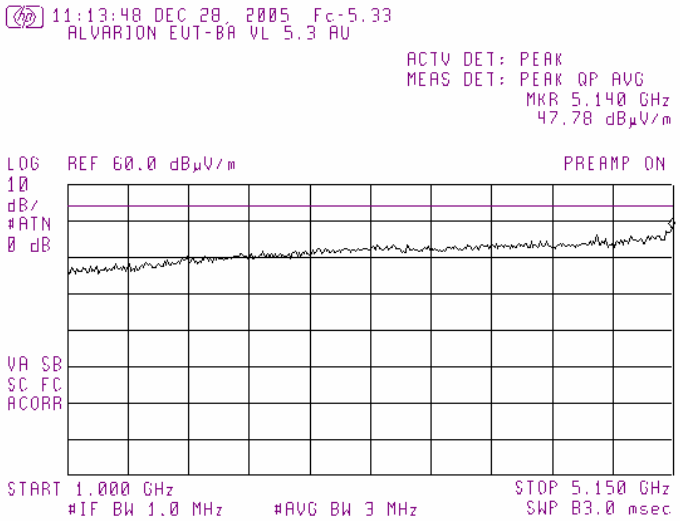
Plot 221.
Carrier Frequency 5.300 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector peak



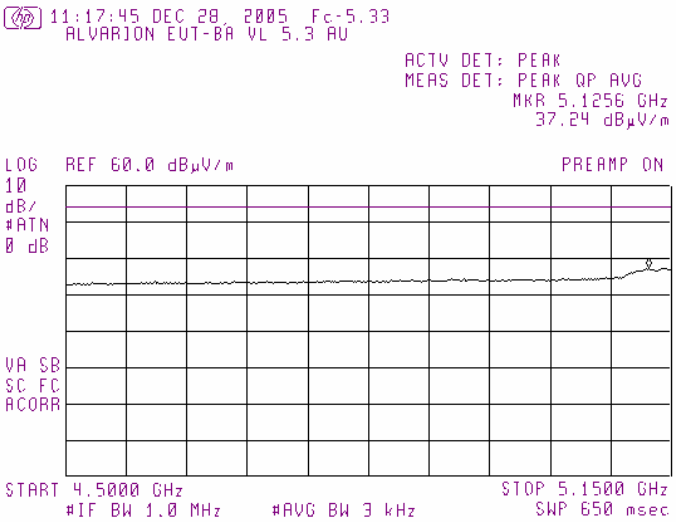
Plot 222.
Carrier Frequency 5.300 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector peak



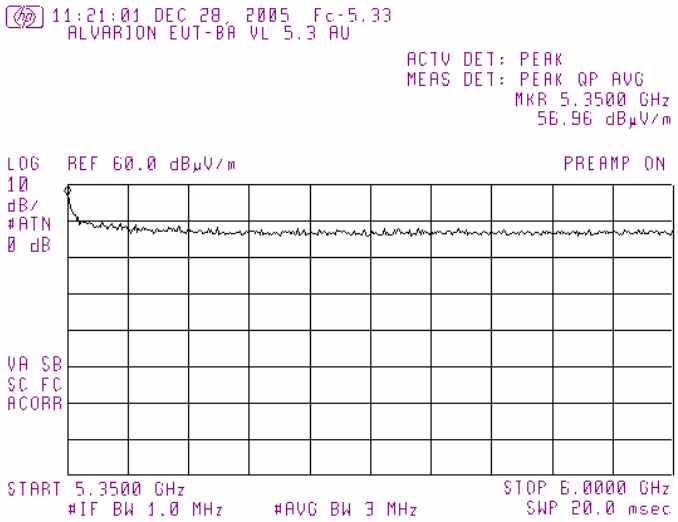
Plot 223.
Carrier Frequency 5.330 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector peak



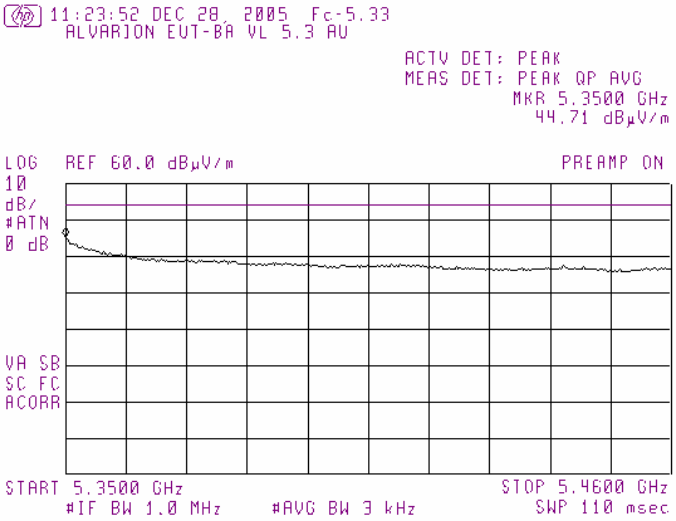
Plot 224.
Carrier Frequency 5.330 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector average



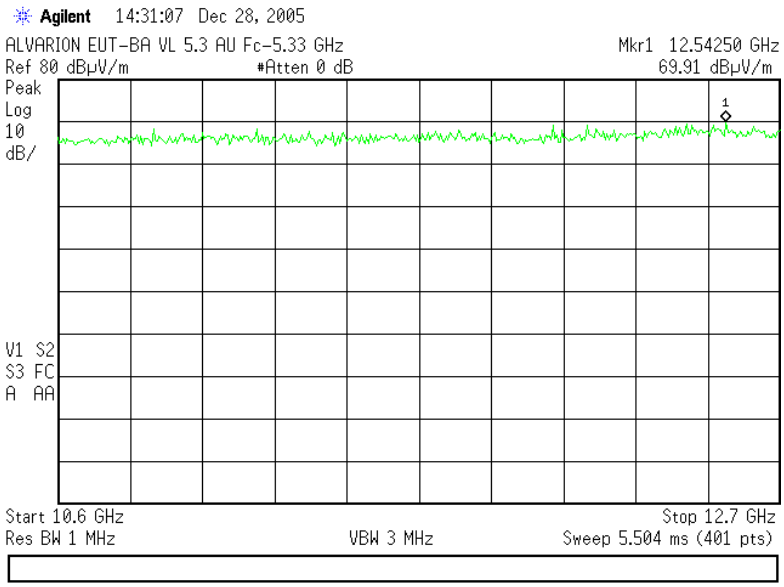
Plot 225.
Carrier Frequency 5.330 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector peak



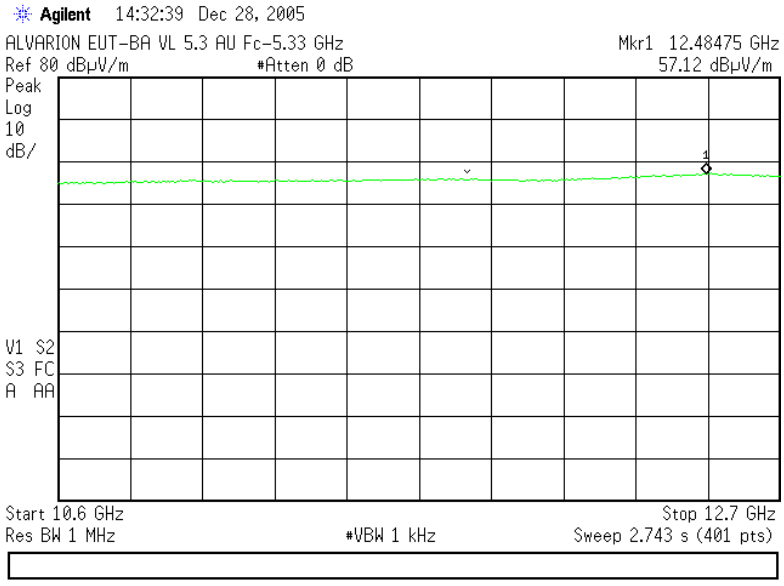
Plot 226.
Carrier Frequency 5.330 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector average



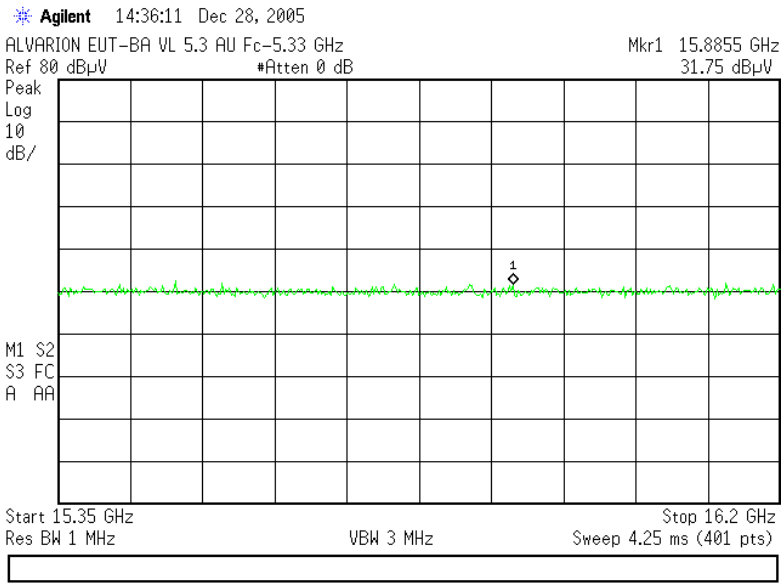
Plot 227.
Carrier Frequency 5.330 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector peak



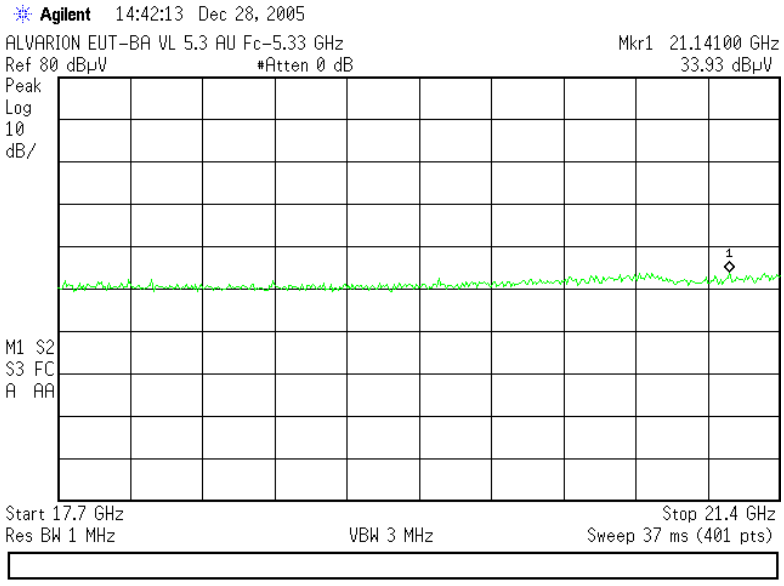
Plot 228.
Carrier Frequency 5.330 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector average



Plot 229.
Carrier Frequency 5.330 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector peak

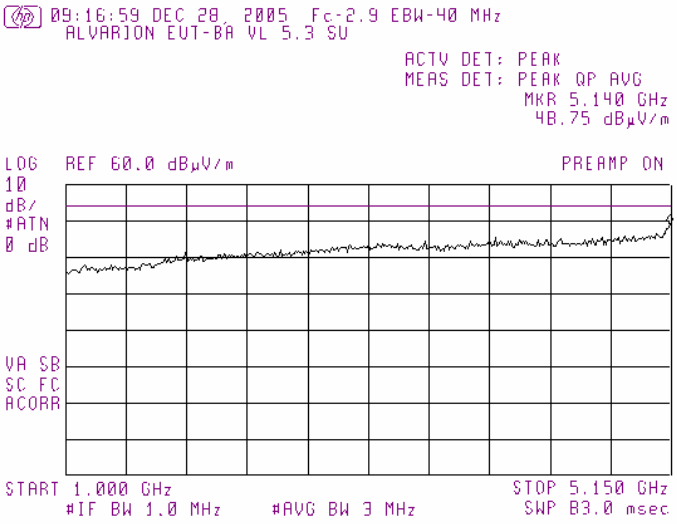


Plot 230.
Carrier Frequency 5.330 GHz. EBW-20 MHz. Antenna – 16 dBi.
Detector peak

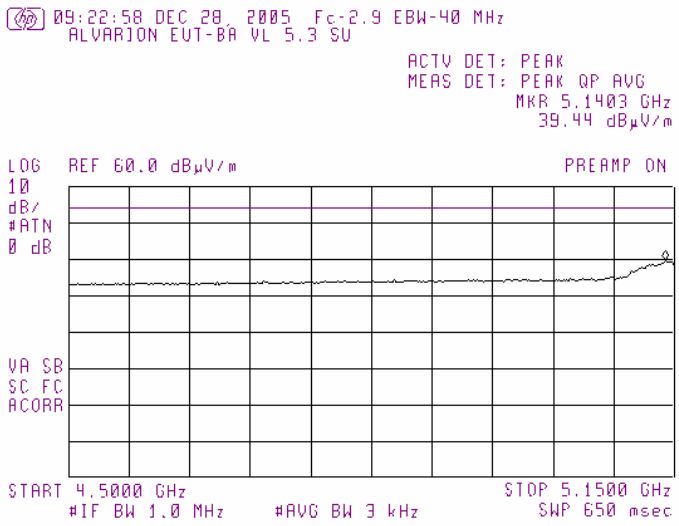


12.14. SU Unit. Radiated Spurious Emissions 15.407b (6)

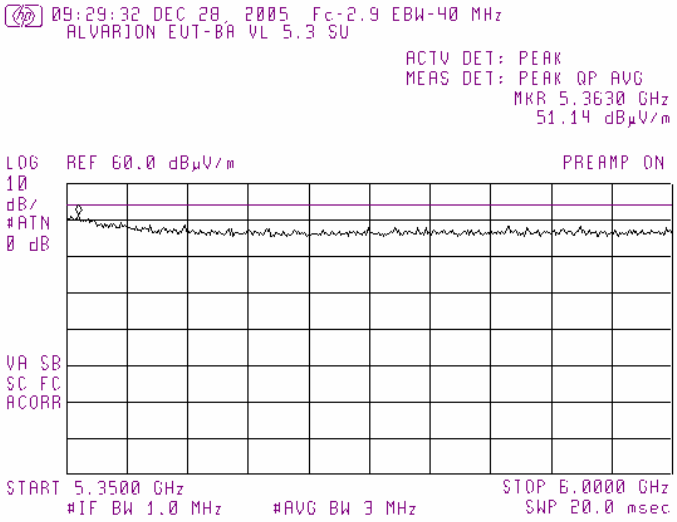
Plot 231.
Carrier Frequency 5.290 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector peak



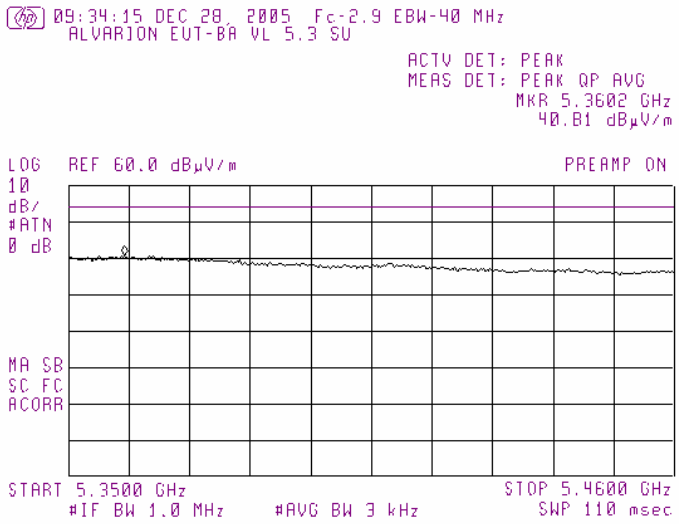
Plot 232.
Carrier Frequency 5.290 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector average



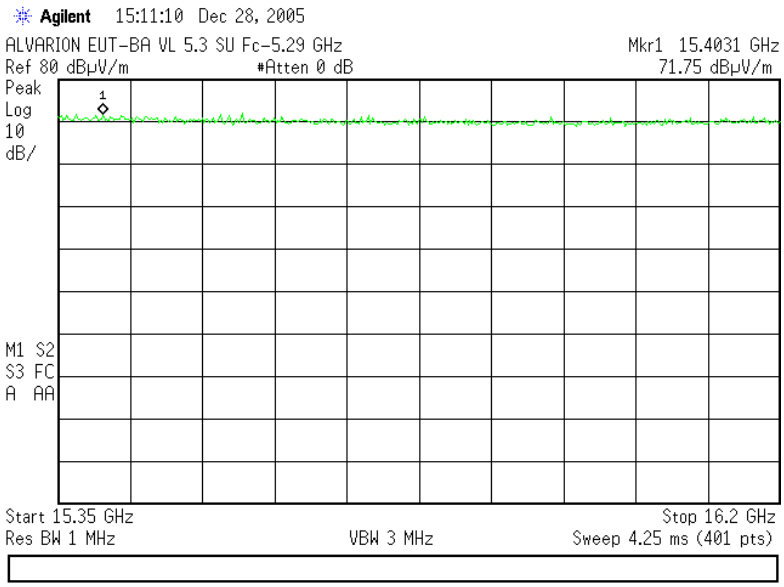
Plot 233.
Carrier Frequency 5.290 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector peak



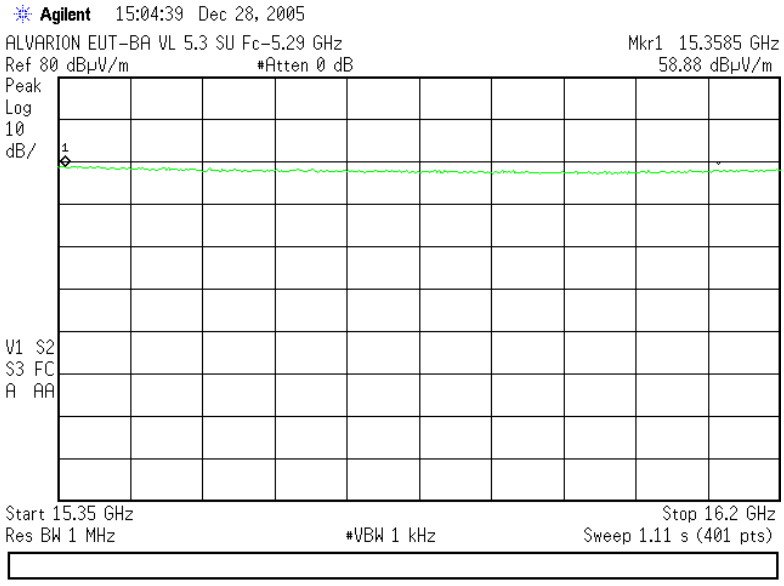
Plot 234.
Carrier Frequency 5.290 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector average



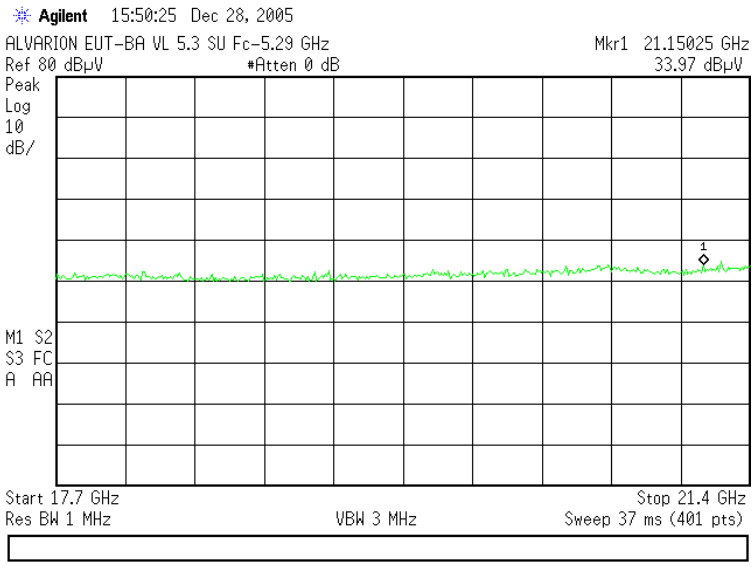
Plot 235.
Carrier Frequency 5.290 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector peak



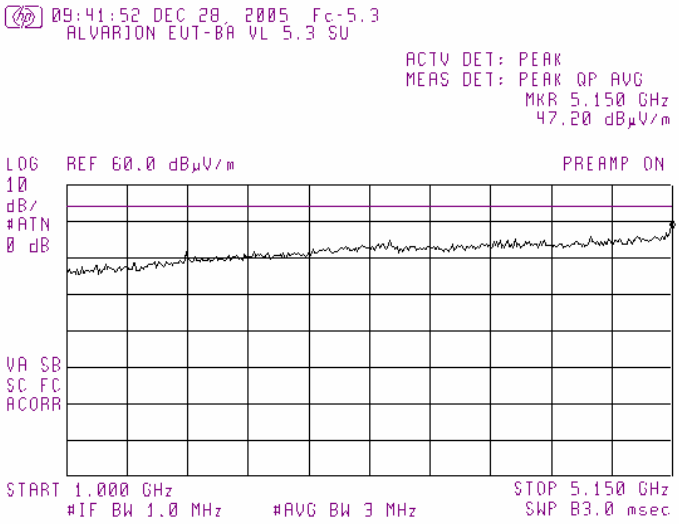
Plot 236.
Carrier Frequency 5.290 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector average



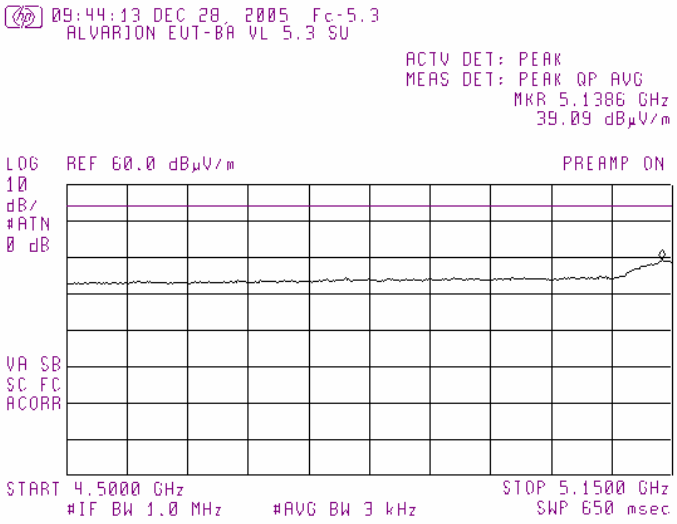
Plot 237.
Carrier Frequency 5.290 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector peak



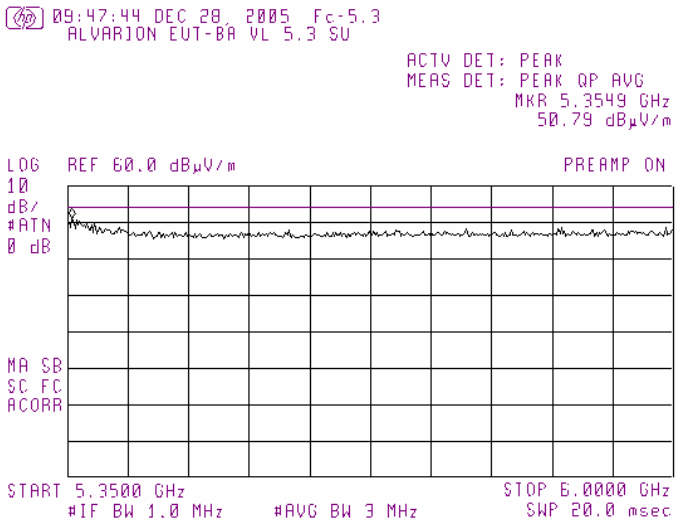
Plot 238.
Carrier Frequency 5.300 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector peak



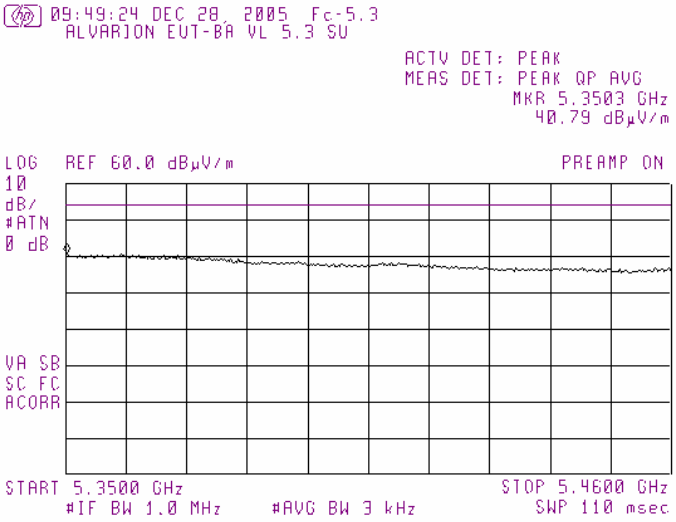
Plot 239.
Carrier Frequency 5.300 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector average



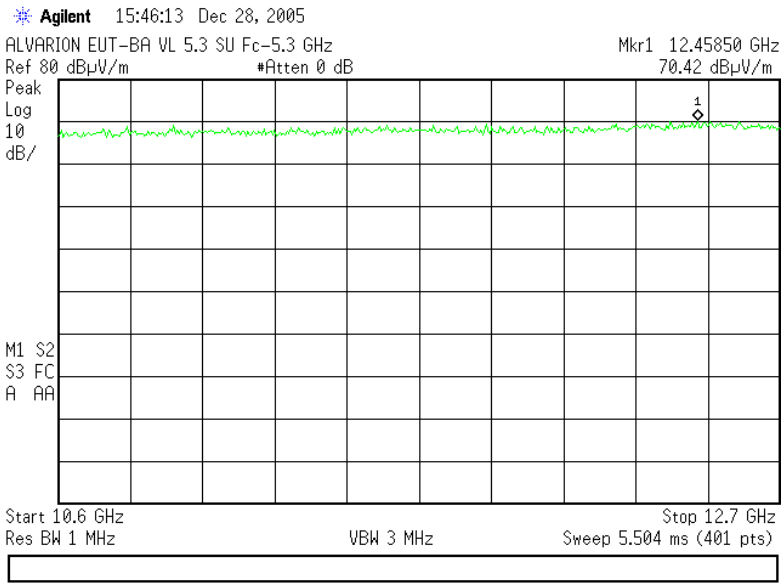
Plot 240.
Carrier Frequency 5.300 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector peak



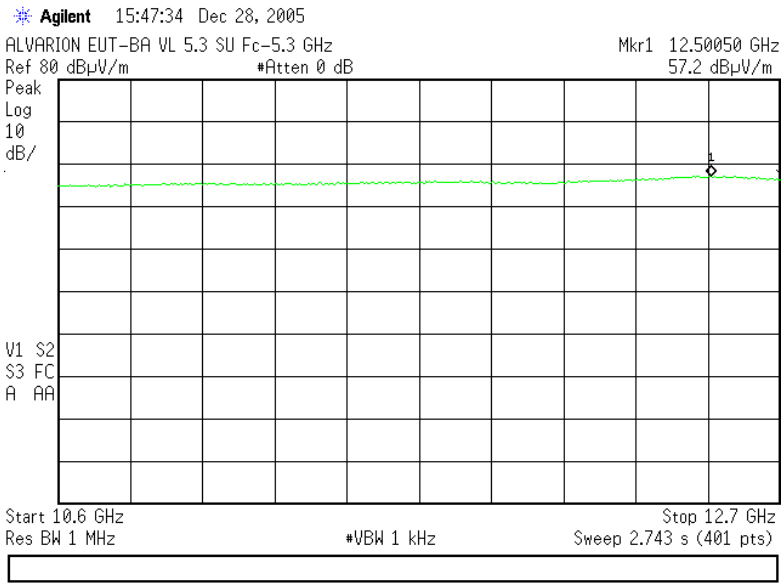
Plot 241.
Carrier Frequency 5.300 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector average



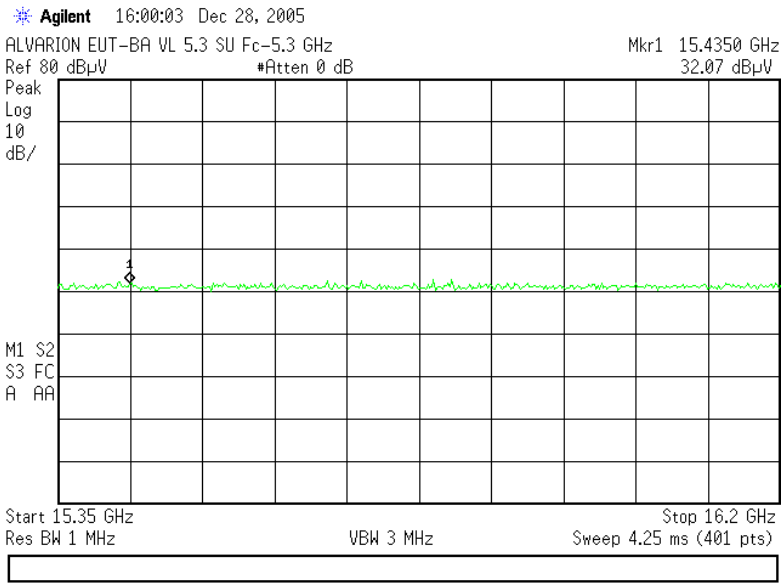
Plot 242.
Carrier Frequency 5.300 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector peak



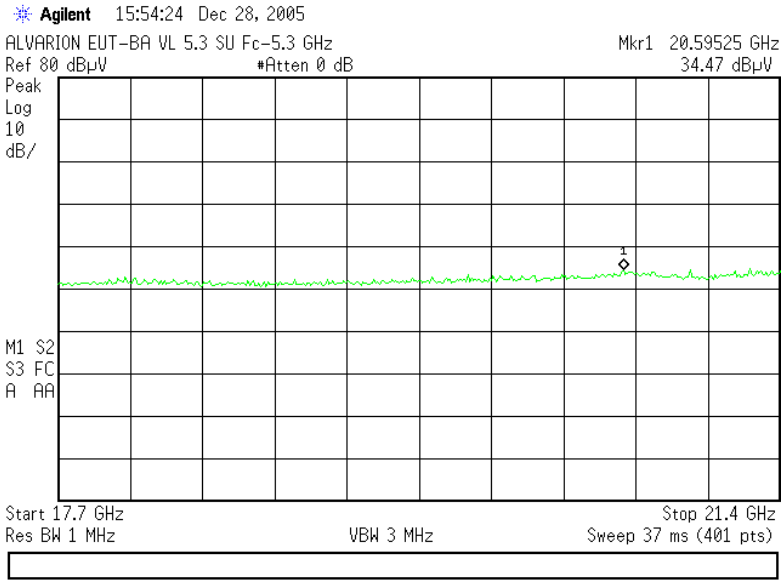
Plot 243.
Carrier Frequency 5.300 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector average



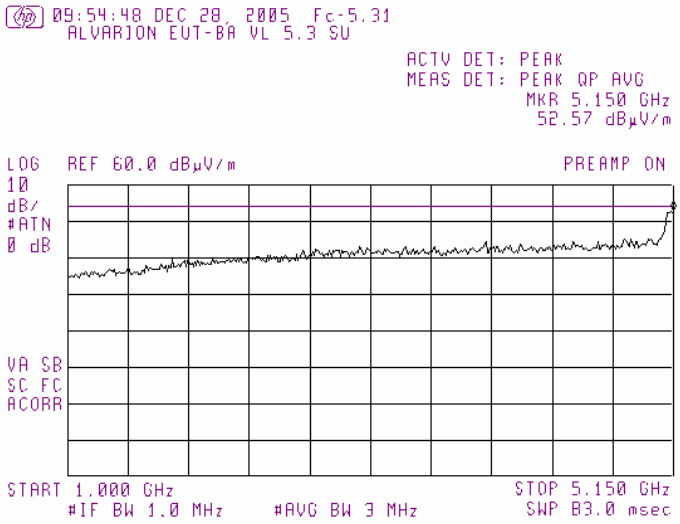
Plot 244.
Carrier Frequency 5.300 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector peak



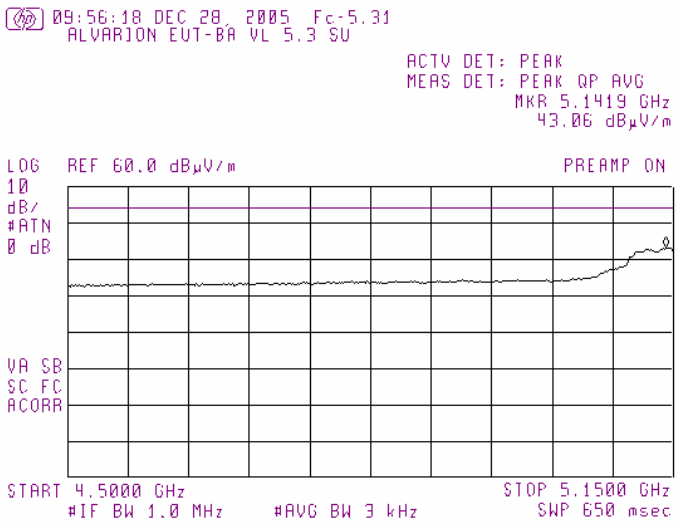
Plot 245.
Carrier Frequency 5.300 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector peak



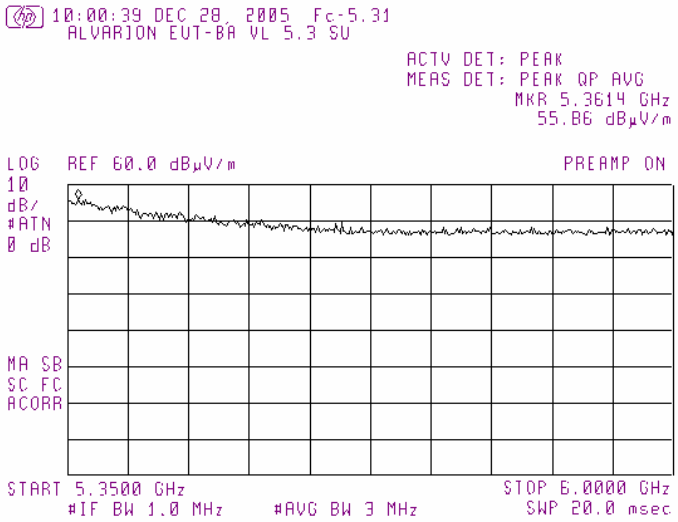
Plot 246.
Carrier Frequency 5.310 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector peak



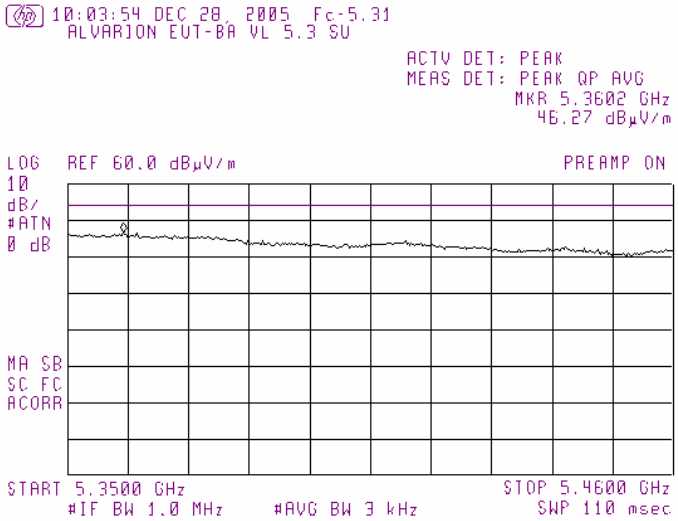
Plot 247.
Carrier Frequency 5.310 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector average



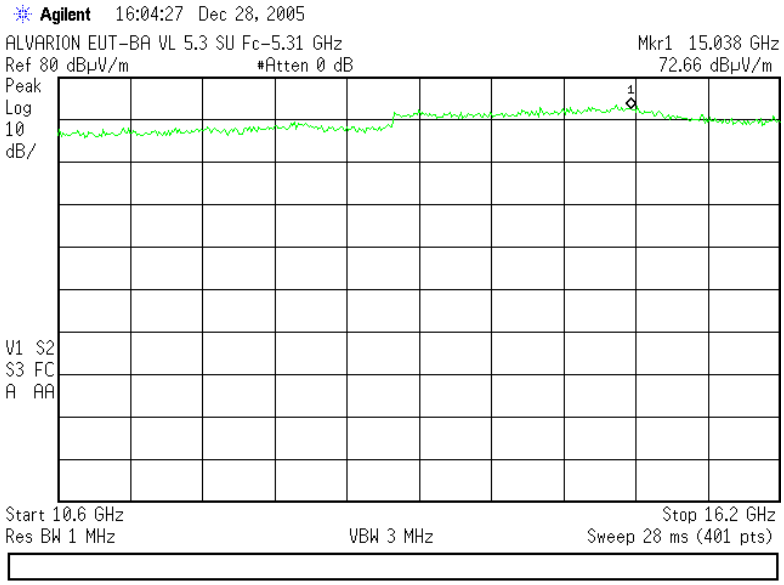
Plot 248.
Carrier Frequency 5.310 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector peak



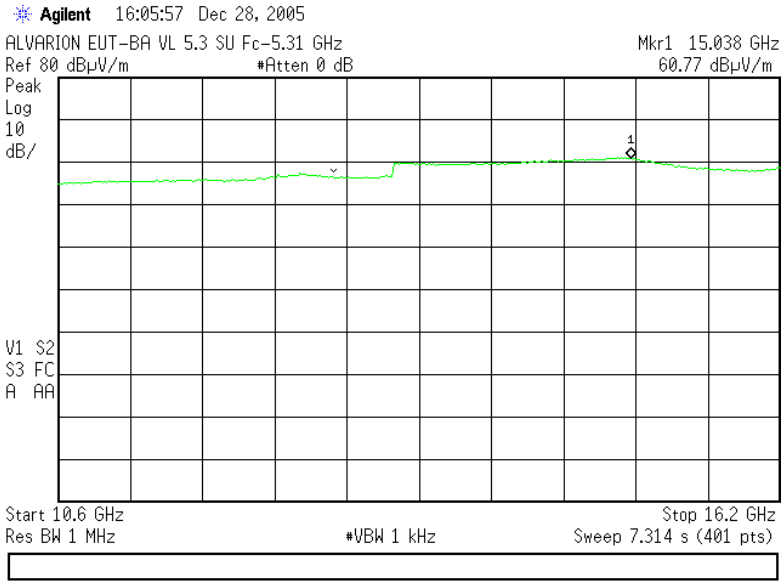
Plot 249.
Carrier Frequency 5.310 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector average



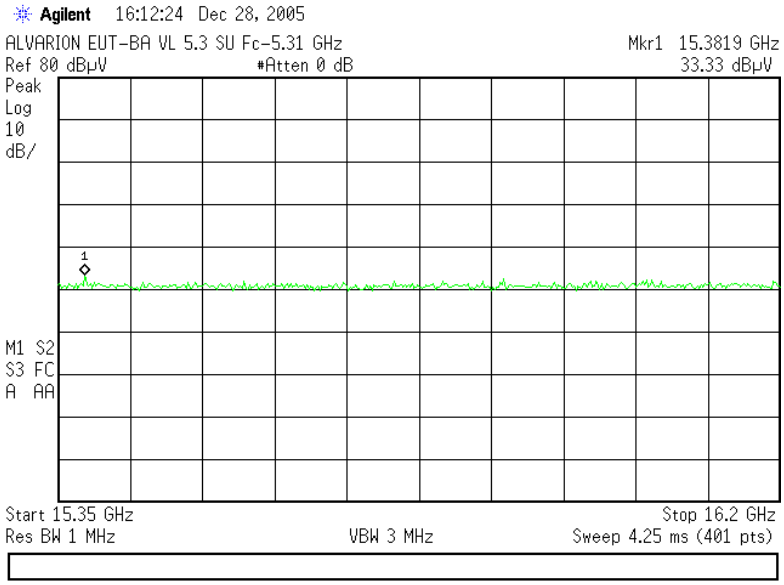
Plot 250.
Carrier Frequency 5.310 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector peak



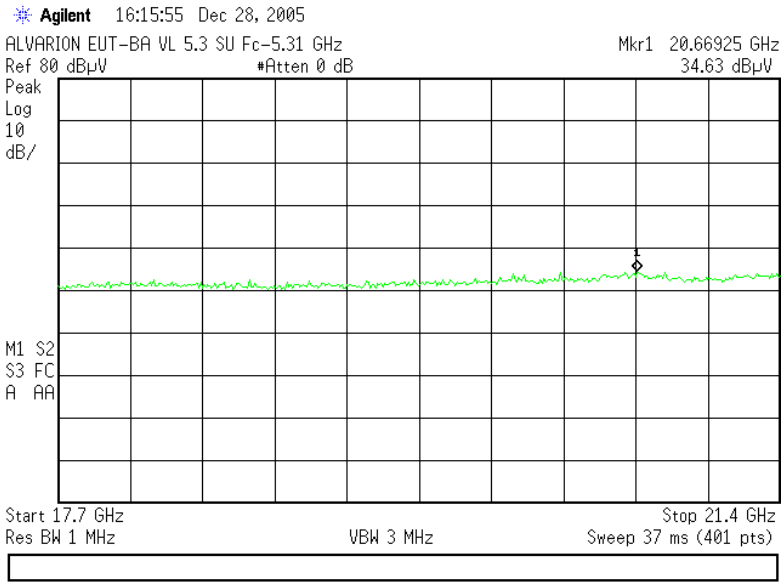
Plot 251.
Carrier Frequency 5.310 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector average



Plot 252.
Carrier Frequency 5.310 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector peak



Plot 253.
Carrier Frequency 5.310 GHz. EBW-40 MHz. Antenna – 28 dBi.
Detector peak



13. Appendix 4: Test configuration illustration

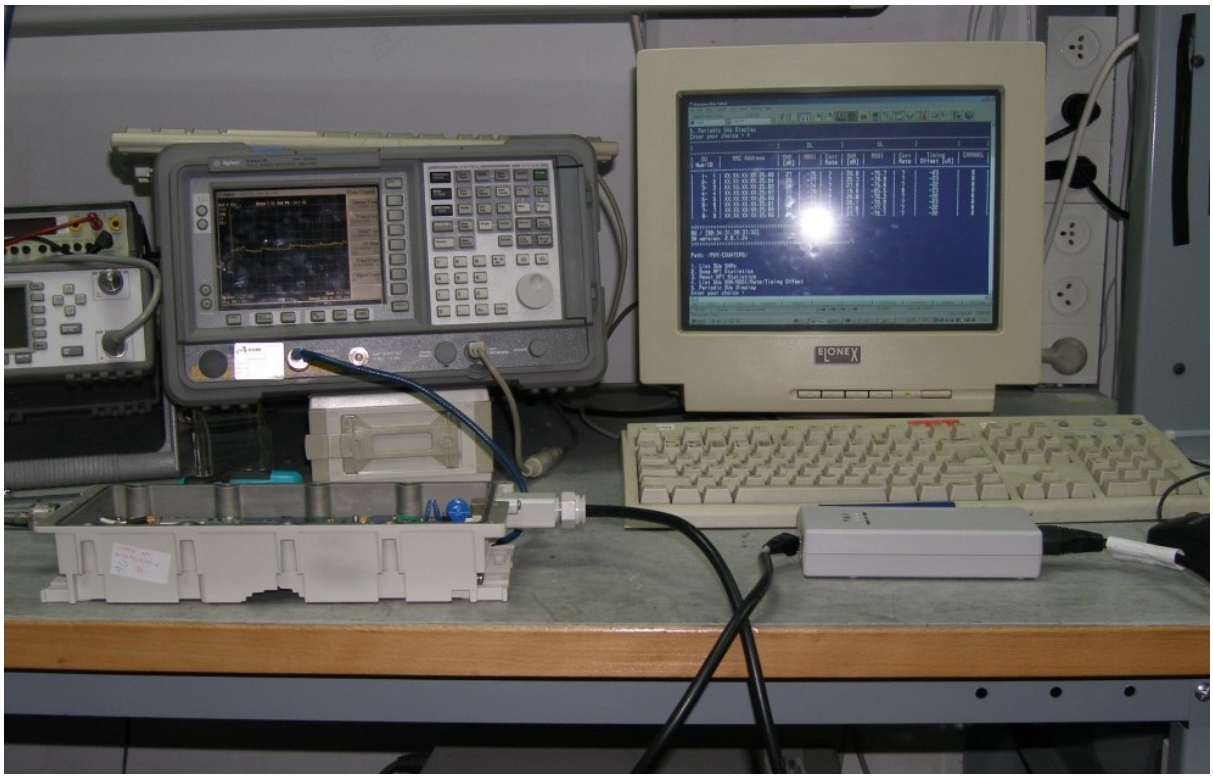


Photo # 5.
Subscriber Unit
Setup

Photo # 6.
Base Station + Subscriber Unit
Radiated emission test on open site

Photo # 7.
Base Station + Subscriber Unit
Radiated emission test on open site

Photo # 8.
Base Station + Subscriber Unit
Radiated emission test on open site

Photo # 9.

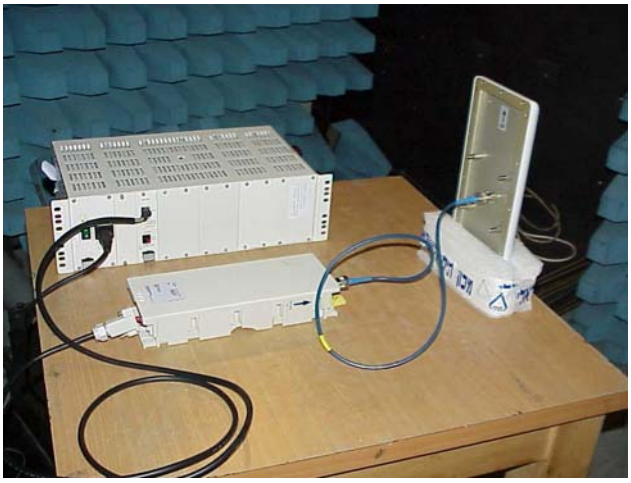


Photo # 10.
Radio unit with MTI sector antenna P/N AN1152.
Spurious emission test

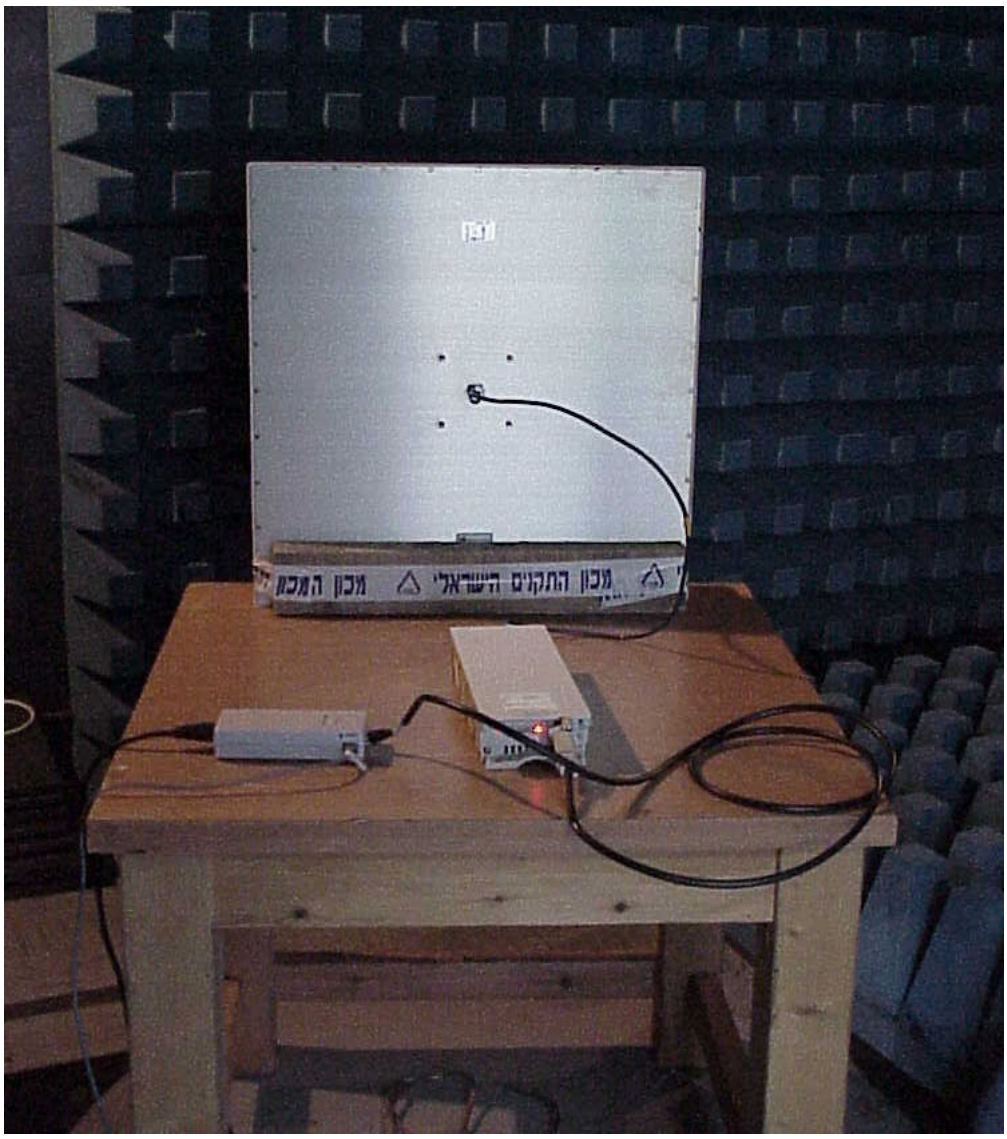


Photo # 11.
Radio unit with Unidirectional antenna UNI-28-4 P/N AN1230
Spurious emission test