Electromagnetic Compatibility Test Report

Test Report No: EGT 230505
Issued on: May 23, 2005

Product Name

iMedia (FCC ID: TEA-IMC-001),
iMedia RF Controller (FCC ID: TEA-IRF-001)

Tested According to
47 CFR, Part 15, Subparts B & C

Tests Performed for
SkipJam Corp.

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168 Irving Ave #500G
Port Chester, NY, USA , 10573

QualiTech EMC Laboratory
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Petah-Tikva, 49130, Israel
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Test Facility description

The tests were performed at the QualiTech EMC Laboratory.

Address: 30, Hasivim St., Petah Tikva, Israel.
Tel: 972-3-926-8443

Semi Anechoic Chamber:

Measurement distance	3m
Chamber dimensions	9.5m x 6.5m x 5.2m
Antenna height	1 - 4m
Shielding Effectiveness	Magnetic field ≥80dB at 15 kHz ≥90dB at 100 kHz Electric field >120dB from 1MHz to 1GHz >110dB from 1GHz to 10GHz
Absorbing material	Ferrite tiles on the walls and ceiling Frankonia hybrid absorbing material in selected positions on the walls
Normalized Site Attenuation measured at 5 positions	±3.49dB, 30MHz to 1GHz
Transmission Loss measured at 5 positions, at 1.5m height	±3dB, 1GHz to 18GHz

Test Report details:

Test commencement date: 01.05.2005

Test completion date: 04.05.2005

Customer's Representative: Erez Segev

Issued on: **23.05.2005**

Assessment information:

This report contained an assessment of the EUT against Electromagnetic Compatibility based upon tests carried out on the samples submitted. The results contained in this report relate only to the items tested. Manufactured products will not necessarily give identical results due to production and measurement tolerances. QualiTech, EMC Lab does not assume responsibility for any conclusion and generalization drawn from the test results with regards to other specimens or samples of type of the equipment represented by test item.

The EUT was set up and exercised using the configuration, modes of operation and arrangements defined in this report only.

Modifications:

Modifications made to the EUT

The following changes were made in order to achieve compliance with the limits requirements.

Galvanic connection was improved by the following means:

1. Adding copper tape between:
   - Rear panel and LAN connector,
   - RF Antenna connector and rear panel.
   - Front Panel and connectors.
2. EMI Fingers were added between front panel and cover.
3. Conductive foam SiL-CON 022, 1.5 mm thick linear MT x 560 mm was inserted between rear panel and connectors.
4. Two capacitors (820pF and 22nF) were added on the power connector.

Modifications made to the Test Standard

No modifications were made to the Test Standard.

Summary of Compliance Status

Test Spec. Clause	Test Case	Remarks	Notes
§15.203	Antenna Connector requirement	**Pass**	*iMedia RF Controller*
§15.247 (a) (1)	Carrier Frequency Separation	**Pass**	*iMedia*
§15.247 (a) (1)(ii)	Number of Hopping Channels	**Pass**	*iMedia*
§15.247 (a) (1)(ii)	Time Occupancy (Dwell Time)	**Pass**	*iMedia*
§15.247 (a) (1) (ii)	Spectrum Bandwidth of a FHSS system/20dB BW	**Pass**	*iMedia*
§15.247 (b) (1)	Maximum Output Power	**Pass**	*iMedia*
§15.247 (c)	Band-Edge compliance of RF Conducted Emission (Transmitter)	**Pass**	*iMedia*
§15.205	Band-Edge compliance of Radiated Emission, Restricted Bands	**Pass**	*iMedia + iMedia RF Controller*
§15.247 (c)	Spurious Emission Conducted (Transmitter)	**Pass**	*iMedia*
§15.247 (c)	Spurious Emission Radiated (Transmitter)	**Pass**	*iMedia + iMedia RF Controller*
§15.109	Radiated Emission (receiver)	**Pass**	*iMedia + iMedia RF Controller*
§15.107/207	Conducted Emission (receiver)	**Pass**	*iMedia*

Note: Both iMedia and iMedia RF Controller (handset) employ the same transceiver device,

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1. General Description

1.1. Description of the EUT system/test Item:

Product name: *iMedia + iMedia RF Controller (handset)*

S/N: # 0001

FCC ID: TEA-IMC-001 & TEA-IRF-001

Description: Video and Audio distribution

Maximum rated Power: 25dBm

H/W status: Prototype

S/W status: Prototype

Antenna: integral for controller 2dBi Gain, and an external antenna for i media 2.2dBi Gain.

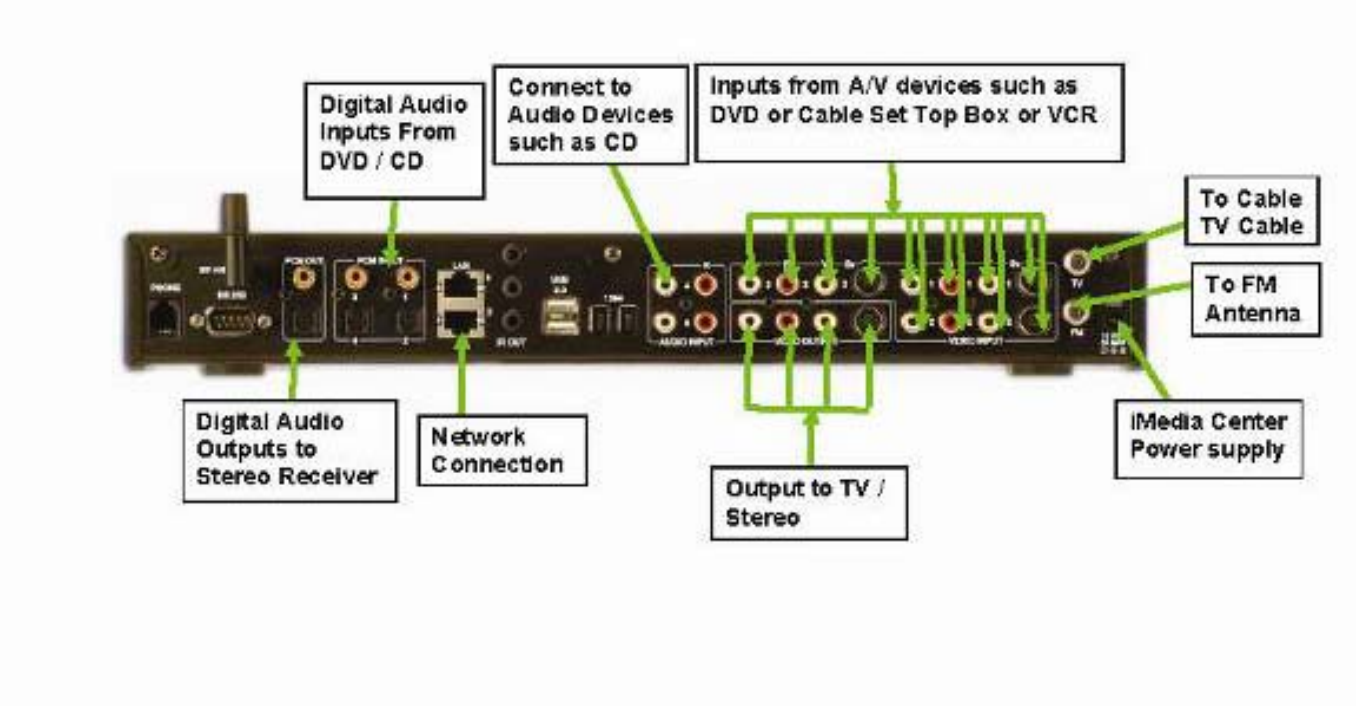
Power-Supply: This product is intended to be supplied by a Listed Direct Plug-In Power Unit marked "Class 2" and rated 12V dc, 2.5Amp to 3.0Amps

Temp. Range: -30ºc to +50ºc

CVM 2.4 GHz – RADIO PART RF SPEC (on both**,** *iMedia + iMedia RF Controlle)r* **:**

- Receive Sensitivity DCT (2G4) Minimum: -89dBm,Typically: -92dBm to -94dBm,Maximum: -96dBm@BER = 0.001
- Receive IIP3 DCT (2G4) -21dBm to -19dBm,
- Transmit Power (NTP) DCT (2G4) Minimum: 20dBm,Typically: 22dBm to 24dBm,Maximum: 25dBm, Approx. 200mW
- Signaling Bit-rate DCT (2G4) 576Kbit/sec
- Modulation DCT (2G4) GFSK Bandwidth 20dB <0,864MHz
- Channels DCT (2G4) 95 Channel spacing: 0.864MHz
- RX/TX slots DCT (2G4)
- Antenna Diversity DCT (2G4) Control signals are available from the module

1.2. EUT Configuration



The SkipJam iMedia operates as a network hub for Audio & Video devices with remote control capabilities. The iMedia converts analog input signals to digital form suitable for transmission over a network. These signals can then be sent over the network and recorded to a network hard drive, or transmitted to another iMedia which can convert the signals back to analog form for display on a TV at the destination. The remote control system includes a 2.4GHz RF link to a mobile handset which includes a data display.

2. Method of Measurements

Conducted measurements:

The RF output of the transmitter under test was directly connected to the input of the Spectrum analyzer through a specialized antenna connector provided by the manufacturer, and a 10dB attenuator. The measurements readings were corrected by the set-up loss.

Radiated Emission measurements:

Measurements were performed at a 3-meter measurement distance in the semi-anechoic chamber in order to evaluate the radiated electromagnetic interference characteristics of the EUT. The EUT was placed on a non-metallic table, 0.8m above the turntable, was configured, arranged and operated in a manner consistent with typical application and load conditions. The test program of exercising the equipment ensured that various parts of the EUT were exercised to permit detection of all EUT disturbances.
An appropriate antenna depending upon the frequency range, per ANSI C63.4-2003 clause 4.1.5 was used. While the turntable was being rotated, the height of the antenna was varied from 1 to 4m for the frequency range of 30MHz to 1GHz. The highest radiated emission was detected by manipulating the system cables to the worst-case position. This process was repeated for both antenna polarizations.
The amplitudes of worst-case emission were measured with the detector modes and resolution bandwidths over various frequency ranges according to the requirements of C63.4-2003 clause 4.2.

3. Report of Measurements and examinations

3.1. Antenna Connector Requirements

Reference document:	**47 CFR §15.203**	
Test Requirements:	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with provisions of this section.	
Test Result:	The iMedia employs an RP-SMA (Antenna Factor) connector, which meets the requirements for a unique antenna coupler. The iMedia RF Controller employs an internal PCB antenna without any connector.	**Pass**

3.2. Carrier Frequency Separation

Reference document:	**47 CFR §15.247 (a) (1) & DA 00-705**		
Test Requirements:	Hopping channels carrier frequencies separated by a minimum of 25kHz or 20dB Bandwidth of the hopping channel, whichever is greater.		
Date of Test:	26.04.2005	**Pass**	
Test setup:	Setup 1		
Operating conditions:	Under normal test conditions		
Method of testing:	Conducted		
S.A. Settings:	RBW: 100kHz, VBW: 100kHz		
Hopping function:	Enabled		
Environment conditions:	Ambient Temperature: 22°c	Relative Humidity: 48%	Atmospheric Pressure: 1011.4 hPa
Test Result:	Carrier separation: 850kHz – 860kHz	See Plot 1 – Plot 4	

3.3. Number of Hopping Channels,

Reference document:	**47 CFR §15.247 (a) (1)(ii) & DA 00-705**		
Test Requirements:	Hopping system shall use at least 15 non-overlapping channels.		
Date of Test:	26.04.2005	**Pass**	
Test setup:	Setup 1		
Operating conditions:	Under normal test conditions		
Method of testing:	Conducted		
S.A. Settings:	RBW: 300kHz, VBW: 1MHz		
Hopping function:	Enabled		
Environment conditions:	Ambient Temperature: 22°c	Relative Humidity: 48%	Atmospheric Pressure: 1011.4 hPa
Test Result:	95 hopping channels	See Plot 5 – Plot 7	

3.4. Time of Occupancy (Dwell Time),

Reference document:	**47 CFR §15.247 (a) (1) (ii) & DA 00-705**		
Test Requirements:	The average time of occupancy on any channel shall not be greater than 0.4seconds within a period of 30 second period.		
Date of Test:	25/26.04.2005	**Pass**	
Test setup:	Setup 1		
Operating conditions:	Under normal test conditions		
Method of testing:	Conducted		
S.A. Settings:	RBW: 1MHz, VBW: 3MHz, Span:0 centered on hopping channel		
Hopping function:	Disabled		
Environment conditions:	Ambient Temperature: 22°c	Relative Humidity: 48%	Atmospheric Pressure: 1011.4 hPa
Test Result:	See below	See Plot 8 – Plot 13	

Test results:

Channel	Frequency [GHz]	Duty Cycle	Dwell time [msec]	Limit [Sec]	Reference
00	2.401	0.08625	27.24	0.4	Plot 8 – Plot 9
48	2.443	0.09188	29.01	0.4	Plot 10 – Plot 11
94	2.482	0.090277	28.51	0.4	Plot 12 – Plot 13

Dwell-Time =(Duty-Cycle / # of hopping frequencies)*30seconds

3.5. Spectrum Bandwidth of FHSS/ 20dB Bandwidth

Reference document:	**47 CFR §15.247 (a) (1)(ii) & DA 00-705**		
Test Requirements:	Maximum 20dB BW of the hopping channels shall be 1MHz.		
Date of Test:	25.04.2005	**Pass**	
Test setup:	Setup 1		
Operating conditions:	Under normal test conditions		
Method of testing:	Conducted		
S.A. Settings:	RBW: 10kHz, VBW: 100kHz, Span: 2MHz		
Hopping function:	Disabled		
Environment conditions:	Ambient Temperature: 22°c	Relative Humidity: 48%	Atmospheric Pressure: 1011.4 hPa
Test Result:	See below	See Plot 14 – Plot 16	

Test results:

Channel	Frequency [GHz]	20dB BW [kHz]	Standard [MHz]	Measured Channel Separation [kHz]	Reference	Result
00	2.401	670	<1MHz	850÷860 >20dB BW	Plot 14	Pass
48	2.443	660	<1MHz	850÷860 >20dB BW	Plot 15	Pass
94	2.482	670	<1MHz	850÷860 >20dB BW	Plot 16	Pass

3.6. Maximum Output Power

Reference document:	**47 CFR §15.247 (b) (1) & DA 00-705**		
Test Requirements:	The maximum peak output power shall not exceed 1Watt (30dBm)		
Date of Test:	25.04.2005	**Pass**	
Test setup:	Setup 1		
Operating conditions:	Under normal test conditions		
Method of testing:	Conducted		
S.A. Settings:	RBW: 1MHz, VBW: 3MHz, Span: 3.5MHz		
Hopping function:	Disabled		
Environment conditions:	Ambient Temperature: 22°c	Relative Humidity: 48%	Atmospheric Pressure: 1011.4 hPa
Test Result:	See below	See Plot 17 – Plot 19	

Test results:

Channel	Frequency [GHz]	External cable Loss [dB]	Max. Peak Output power* [dBm]	Max. Peak Output power* mW	Reference
00	2.401	0.45	22.31	170.21	Plot 17
48	2.443	0.45	22.46	176.19	Plot 18
94	2.482	0.45	22.44	175.38	Plot 19

*Corrected for external attenuations

3.7. Band-edge compliance of RF Conducted Emission

Reference document:	**47 CFR §15.247 (c) & DA 00-705**		
Test Requirements and limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in section 15.209(a) (See section 5.205(c).		
Date of Test:	25.04.2005	**Pass**	
Test setup:	Setup 1		
Operating conditions:	Under normal test conditions		
Method of testing:	Conducted		
S.A. Settings:	RBW: 100kHz, VBW: 100kHz, Span: 10MHz		
Hopping function:	Disabled/disabled		
Environment conditions:	Ambient Temperature: 22°c	Relative Humidity: 48%	Atmospheric Pressure: 1011.4 hPa
Test Result:	See below	See Plot 20 – Plot 23	

Test results of *iMedia*:

Activity	Delta value [dB]	Reference
Hopping off, lowest frequency	-57.42	Plot 20
Hopping on, lowest frequency	-54.66	Plot 21
Hopping off, highest frequency	-57.71	Plot 22
Hopping on, highest frequency	-58.73	Plot 23

3.8. Band-edge compliance of Radiated Emission, restricted Bands

Reference document:	**47 CFR §15.205 & DA 00-705**		
Test Requirements:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in section 15.209(a) (See section 5.205(c).		
Limit:	54dBµV/m	**Pass**	
Date of Test:	11.05.2005		
Test setup:	Setup 1		
Operating conditions:	Under normal test conditions		
Method of testing:	Radiated		
S.A. Settings:	RBW: 1MHz, VBW: 3MHz,		
Hopping function:	Disabled		
Environment conditions:	Ambient Temperature: 22°c	Relative Humidity: 48%	Atmospheric Pressure: 1011.4 hPa
Test Result:	See below	See Plot 24 – 31	

Test results:

iMedia

Channel	Max. Measured (Average detector) in restricted band at 3m [dBµV/m]	Dwell time correction factor [dB]	Calculated Value [dBµV/m]	Limit [dBµV/m]	Reference	Result
00	39.56	-11.30	28.26	54	Plot 24-25	Pass
94	40.31	-10.90	29.41	54	Plot 26-27	Pass

iMedia RF Controller

Channel	Max. Measured (Average detector) in restricted band at 3m [dBµV/m]	Dwell time correction factor [dB]	Calculated Value [dBµV/m]	Limit [dBµV/m]	Reference	Result
00	36.37	-11.30	25.07	54	Plot 28-29	Pass
94	37.23	-10.90	26.33	54	Plot 30-31	Pass

3.9. Spurious Emission- Conducted (Transmitter)

Reference document:	**47 CFR §15.247 (c) & DA 00-705**		
Test Requirements:	In any 100 kHz bandwidth outside the frequency band at least 20 dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c))		
Date of Test:	01.05.2005	**Pass**	
Test setup:	Setup 1		
Operating conditions:	Under normal test conditions		
Method of testing:	Conducted		
S.A. Settings:	RBW: 100kHz, VBW: 100kHz,		
Hopping function:	Disabled		
Environment conditions:	Ambient Temperature: 22°c	Relative Humidity: 48%	Atmospheric Pressure: 1011.4 hPa
Test Result:	See below	See Plot 32 – Plot 34	

Test results:

Frequency [GHz]	Spurious Frequency [GHz]	Limit: Max. Allowed emission power	Delta spurious emission below frequency of operation [dBc]	Result	Reference
2.401	1.24	-20dBc	-49.48	Pass	Plot 32
	3.63		-51.23	Pass	
2.443	1.24		-49.17	Pass	Plot 33
	3.63		-53.79	Pass	
2.482	1.4		-45.37	Pass	Plot 34

3.10. Spurious Emission- Radiated (Transmitter)

Reference document:	**47 CFR §15.247 (c) & DA 00-705**		
Test Requirements:	In any 100 kHz bandwidth outside the frequency band at least 20 dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c))		
Date of Test:	01.05.2005	**Pass**	
Test setup:	Setup 1		
Operating conditions:	Under normal test conditions		
Method of testing:	Radiated		
S.A. Settings:	F <1GHz: RBW: 120kHz,VBW: 1MHz F >1GHz: RBW: 1MHz, VBW: 3MHz		
Hopping function:	Disabled (lowest, middle, and highest)		
Environment conditions:	Ambient Temperature: 22°c	Relative Humidity: 48%	Atmospheric Pressure: 1011.4 hPa
Test Result:	See below	See Plot 35 – Plot 95	

Test results of *iMedia*:

Lowest channel, 2.401					
Frequency [MHz]	Detector	Spurious level [dBµV/m]	Limit [dBµV/m]	Result	Reference
95.99	QP	38.2	43.5	Pass	Plot 35 –Plot 44
100.00	QP	36.5	43.5	Pass	
48.00	QP	30.5	40	Pass	
323.96	QP	42.3	46	Pass	
351.00	QP	42	46	Pass	
497.04	QP	41.2	46	Pass	
695.9	QP	37.9	46	Pass	
994.17	QP	42	54	Pass	
971.93	QP	29.8	54	Pass	
1255	AV	36.6	54	Pass	
2510	AV	39.2	54	Pass	
3565	AV	42.5	54	Pass	

Middle channel, 2.443					
Frequency [MHz]	Detector	Spurious level [dBµV/m]	Limit [dBµV/m]	Result	Reference
95.99	QP	34.5	43.5	Pass	Plot 45 –Plot 54
107.9	QP	35.2	43.5	Pass	
48.00	QP	30.5	40	Pass	
323.96	QP	40.7	46	Pass	
350.99	QP	41.7	46	Pass	
994.17	QP	39.5	54	Pass	
971.93	QP	42.2	54	Pass	
1255	AV	38.7	54	Pass	
2510	AV	42.3	54	Pass	
3654	AV	44.7	54	Pass	

Highest channel, 2.482					
Frequency [MHz]	Detector	Spurious level [dBµV/m]	Limit [dBµV/m]	Result	Reference
95.99	QP	38	43.5	Pass	Plot 55–Plot 64
107.99	QP	35.8	43.5	Pass	
48.00	QP	29.7	40	Pass	
323.96	QP	39.8	46	Pass	
350.99	QP	34.7	46	Pass	
994.17	QP	37.3	54	Pass	
971.93	QP	42.9	54	Pass	
1255	AV	37.5	54	Pass	
2510	AV	41.9	54	Pass	
3654	AV	43.8	54	Pass	

Test results of *iMedia RF Controller*:

Lowest channel, 2.401					
Frequency [MHz]	Detector	Spurious level [dBµV/m]	Limit [dBµV/m]	Result	Reference
1221	AV	31.73	54	Pass	Plot 65 –Plot 75
3546	AV	40.29	54	Pass	
4802	AV	46.29	54	Pass	
7094	AV	45.97	54	Pass	

Middle channel, 2.443					
Frequency [MHz]	Detector	Spurious level [dBµV/m]	Limit [dBµV/m]	Result	Reference
1221	AV	30.45	54	Pass	Plot 76 –Plot 85
3634	AV	37.57	54	Pass	
4885	AV	48.75	54	Pass	
7281	AV	45.37	54	Pass	
9770	AV	38.56	54	Pass	

Highest channel, 2.482					
Frequency [MHz]	Detector	Spurious level [dBµV/m]	Limit [dBµV/m]	Result	Reference
1221	AV	30.76	54	Pass	Plot 86 –Plot 95
3676	AV	34.34	54	Pass	
4964	AV	43.29	54	Pass	
7346	AV	48.94	54	Pass	
9928	AV	40.10	54	Pass	

3.11. Radiated Emission- (Receiver)

Reference document:	**47 CFR §15.109**		
Test Requirements:	Emission Level shall not exceed §15.109 limits		
Date of Test:	04/15.05.2005	**Pass**	
Test setup:	Setup 2		
Operating conditions:	Under normal test conditions		
Method of testing:	Radiated		
S.A. Settings:	F <1GHz: RBW: 120kHz,VBW: 1MHz F >1GHz: RBW: 1MHz, VBW: 3MHz		
Mode of operation:	Receive		
Environment conditions:	Ambient Temperature: 22°c	Relative Humidity: 48%	Atmospheric Pressure: 1011.4 hPa
Test Result:	See below	See Plot 96- Plot 116	

Test results of *iMedia*:

Frequency [MHz]	Detector	Emission level [dBµV/m]	Limit [dBµV/m]	Result	Reference
47.991000	QP	35.4	40	Pass	Plot 96 –Plot 106
198.830800	QP	33.9	43.5	Pass	
107.982800	QP	32.7	43.5	Pass	
491.8	QP	41.5	46	Pass	
647.97	QP	38.3	46	Pass	
972.00	QP	31.7	54	Pass	

Test results *iMedia RF Controller*:

Frequency [MHz]	Detector	Emission level [dBµV/m]	Limit [dBµV/m]	Result	Reference
All readings were at least 20 db below the limit.					Plot 107–Plot 116

3.12. Conducted Emission- (Receiver)

Reference document:	**47 CFR §15.107/207**		
Test Requirements:	Emission Level shall not exceed §15.107/207 limits		
Date of Test:	26.01.2005	**Pass**	
Test setup:	Setup 3		
Operating conditions:	Under normal test conditions		
Method of testing:	Radiated		
S.A. Settings:	RBW: 9kHz,VBW: 30 kHz,		
Mode of operation:	Receive		
Environment conditions:	Ambient Temperature: 21°c	Relative Humidity: 48%	Atmospheric Pressure: 1011.4 hPa
Test Result:	See below	See Plot 117 – Plot 118	

Test results of I media:

"Phase" Lead

Frequency [MHz]	Measured Result [dBµV]		Class B Limit [dBµV]		Margin [dB]		Pass/Fail
	QP	AVR	QP	AVR	QP	AVR	
0.175841	58.9	26.3	64.68	54.68	-5.78	-28.38	**Pass**
0.20851	55.4	23.9	63.26	53.26	-7.86	-29.36	**Pass**
0.239335	49.8	18	62.12	52.12	-12.32	-34.12	**Pass**
0.444184	36.8	34.6	56.98	46.98	-20.18	-12.38	**Pass**
0.885753	34.4	32.5	56.00	46.00	-21.60	-13.50	**Pass**
6.087554	34.5	29.2	60.00	50.00	-25.50	-20.80	**Pass**

"Neutral" Lead

Frequency [MHz]	Measured Result [dBµV]		Class B Limit [dBµV]		Margin [dB]		Pass/Fail
	QP	AVR	QP	AVR	QP	AVR	
0.188981	52.1	44.3	64.08	54.08	-11.98	-9.78	**Pass**
0.252617	42.8	38.4	61.67	51.67	-18.87	-13.27	**Pass**
0.377182	35.1	34.4	58.34	48.34	-23.24	-13.94	**Pass**
0.444184	34.9	34.2	56.98	46.98	-22.08	-12.78	**Pass**
0.885753	36.4	34.9	56.00	46.00	-19.60	-11.10	**Pass**
6.087554	32.8	24.2	60.00	50.00	-27.20	-25.80	**Pass**

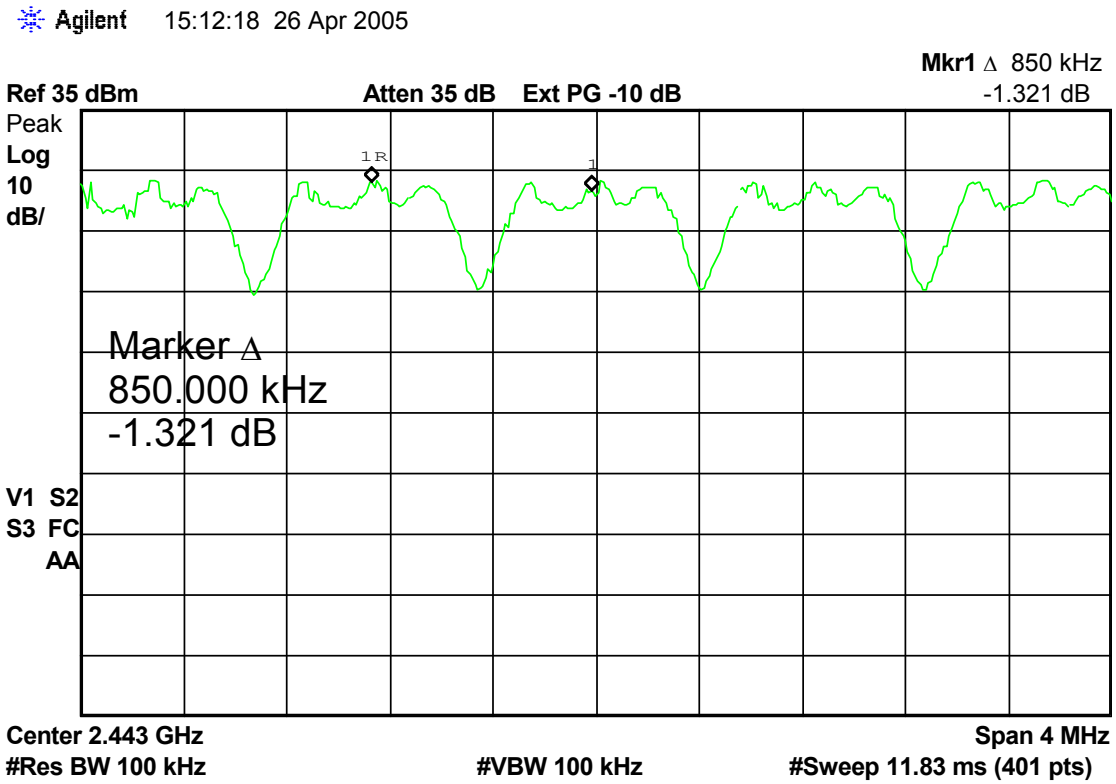
4. Appendix

Appendix A: List of Measuring Equipment used:

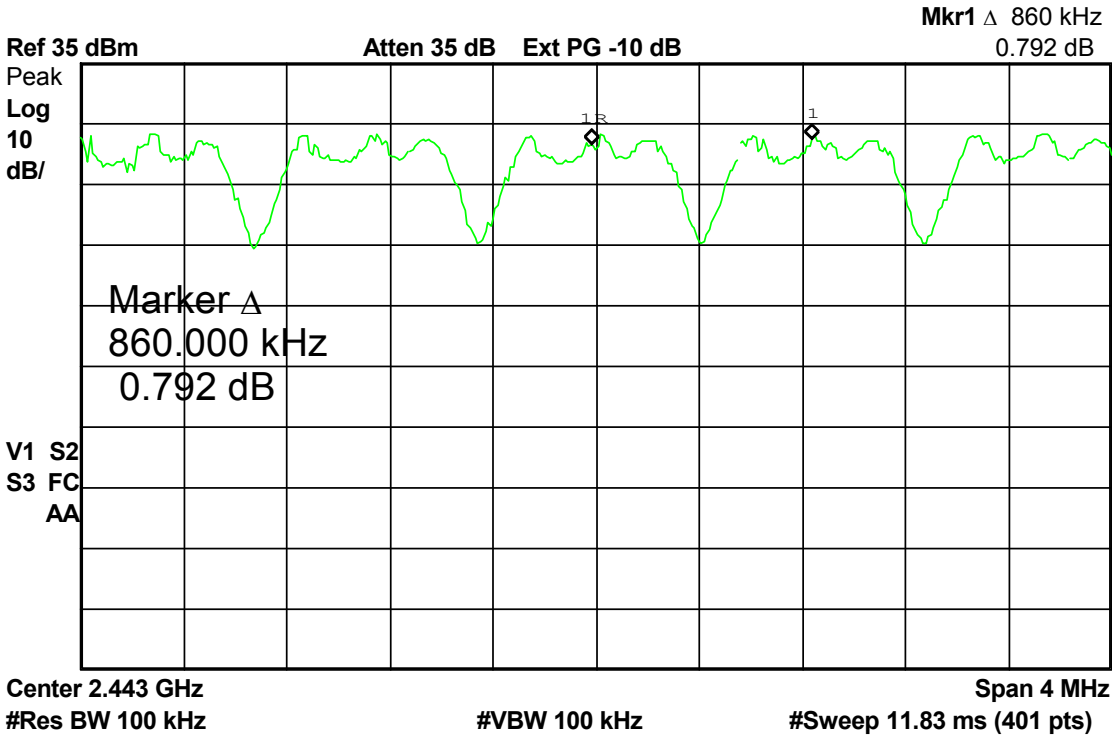
Equipment	Manufacturer/ Model	Serial Number	Due date
CISPR16 EMI Receiver	HP8546A	3710A00392	30-06-05
Spectrum Analyzer 9kHz ÷ 22 GHz	HP 8593EM	3536A00131	30-06-05
Spectrum Analyzer 100 Hz ÷ 26.5 GHz	Agilent E7405A	US41160436	30-06-05
LNA Amplifier 1 GHz ÷ 18 GHz	AMP – 5D-010180-30-10P-GW	618653	01-01-06
Dual Ridged Guide Ant.1-18 GHz	EMCO 3115	9602-4677	01-01-06
Antenna 18 GHz ÷ 26.5 GHz	Alpha Industry 861A/599	505	01-01-06
Turn table	HD100	100/693	-
Antenna Mast	HD 100	100/693	-
Biconical 20 –200 MHz	Schwarzbeck VHBB9124	9124/0255	16-05-06
Log-Periodic 200 – 1000 MHz	Schwarzbeck VUSLP9111	VUSLP9111184	16-05-06
Pre-Amplifier	MiTeq, AMF-5F-18002650-30-10P	945372	01-01-06
LISN	Fischer 50/250-25-2	-	30-06-05
Transient Limiter	HP11947A	-	30-06-05
Notch Filter	Micro-Tronics BRM50702-05	0001	01-01-2006

Appendix B: Plots

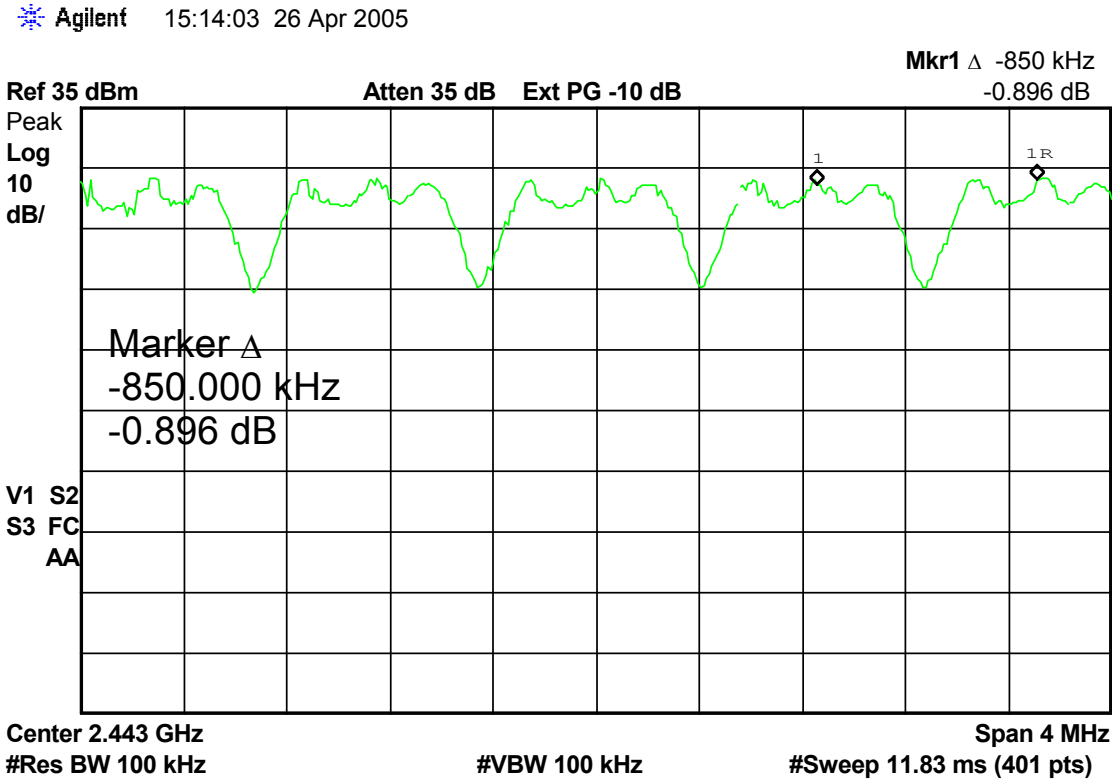
Plot 1



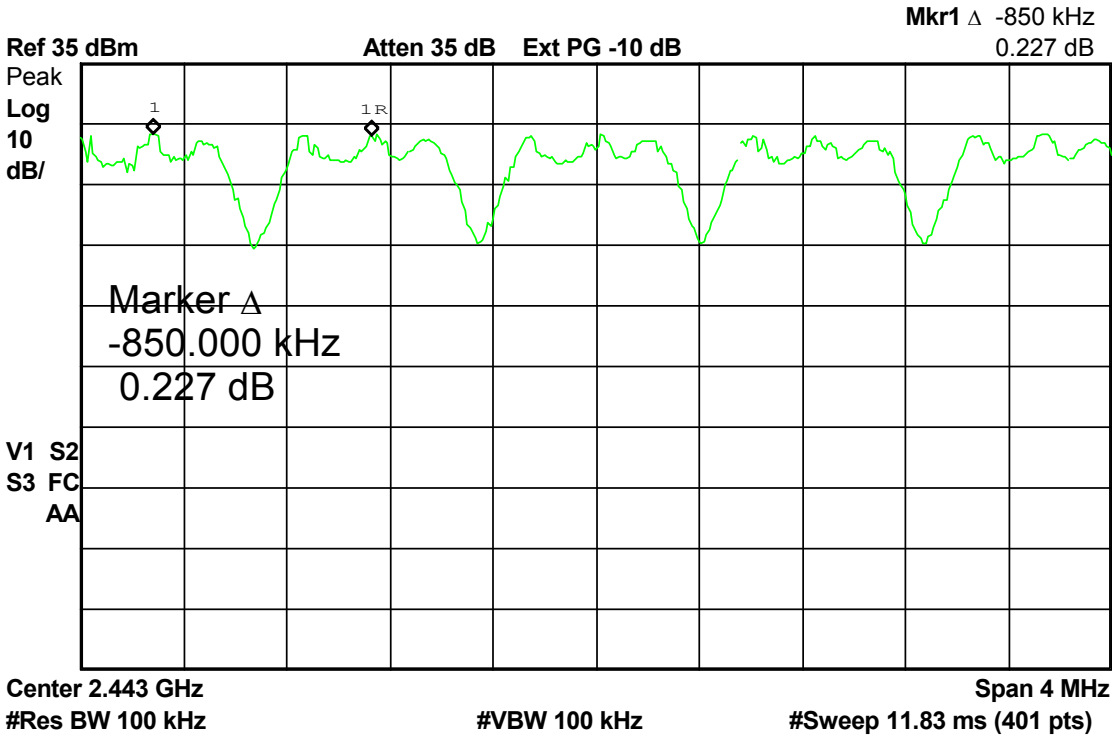
Plot 2



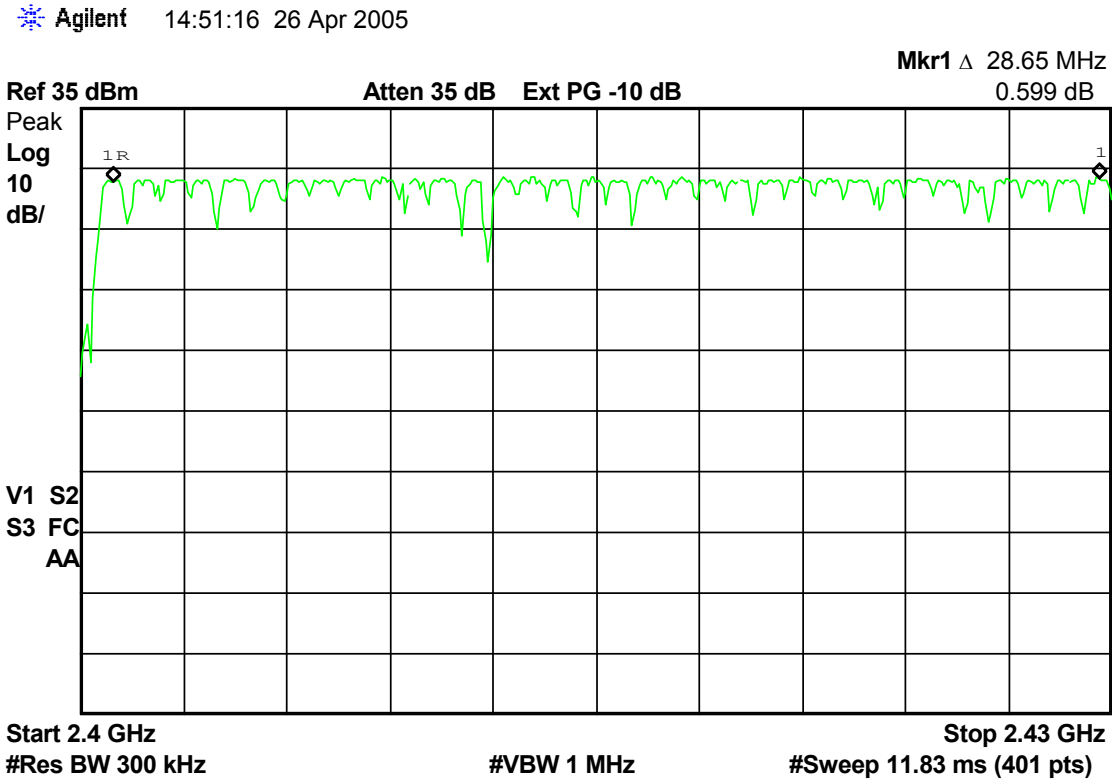
Plot 3


Agilent 15:14:03 26 Apr 2005
Mkr1 Δ -850 kHz
-0.896 dB
Ref 35 dBm
Atten 35 dB
Ext PG -10 dB
Peak
Log
10
dB/
1
1R
Marker Δ
-850.000 kHz
-0.896 dB
V1 S2
S3 FC
AA
Center 2.443 GHz
Span 4 MHz
#Res BW 100 kHz
#VBW 100 kHz
#Sweep 11.83 ms (401 pts)

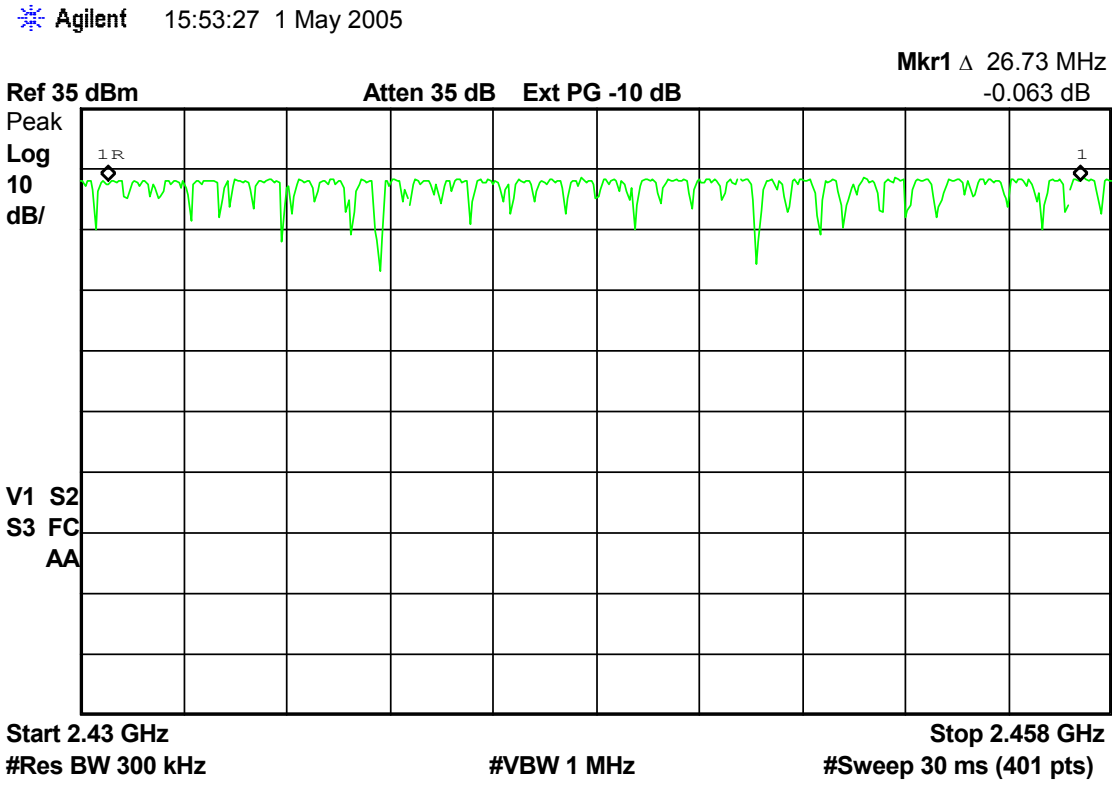
Plot 4


Agilent 15:14:39 26 Apr 2005
Mkr1 Δ -850 kHz
0.227 dB
Ref 35 dBm
Atten 35 dB
Ext PG -10 dB
Peak
Log
10
dB/
1
1R
Marker Δ
-850.000 kHz
0.227 dB
V1 S2
S3 FC
AA
Center 2.443 GHz
Span 4 MHz
#Res BW 100 kHz
#VBW 100 kHz
#Sweep 11.83 ms (401 pts)

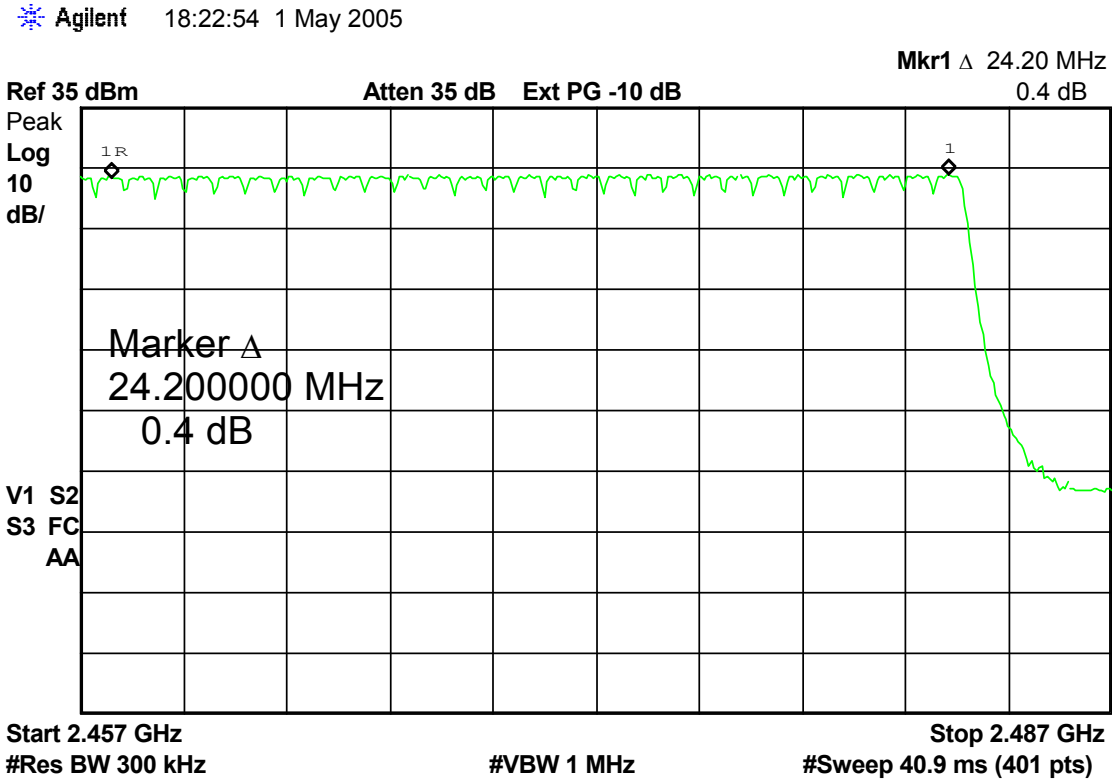
Plot 5


Agilent 14:51:16 26 Apr 2005
Mkr1 Δ 28.65 MHz
Ref 35 dBm
Atten 35 dB
Ext PG -10 dB
0.599 dB
Peak
Log
10
dB/
1R
1
V1 S2
S3 FC
AA
Start 2.4 GHz
Stop 2.43 GHz
#Res BW 300 kHz
#VBW 1 MHz
#Sweep 11.83 ms (401 pts)

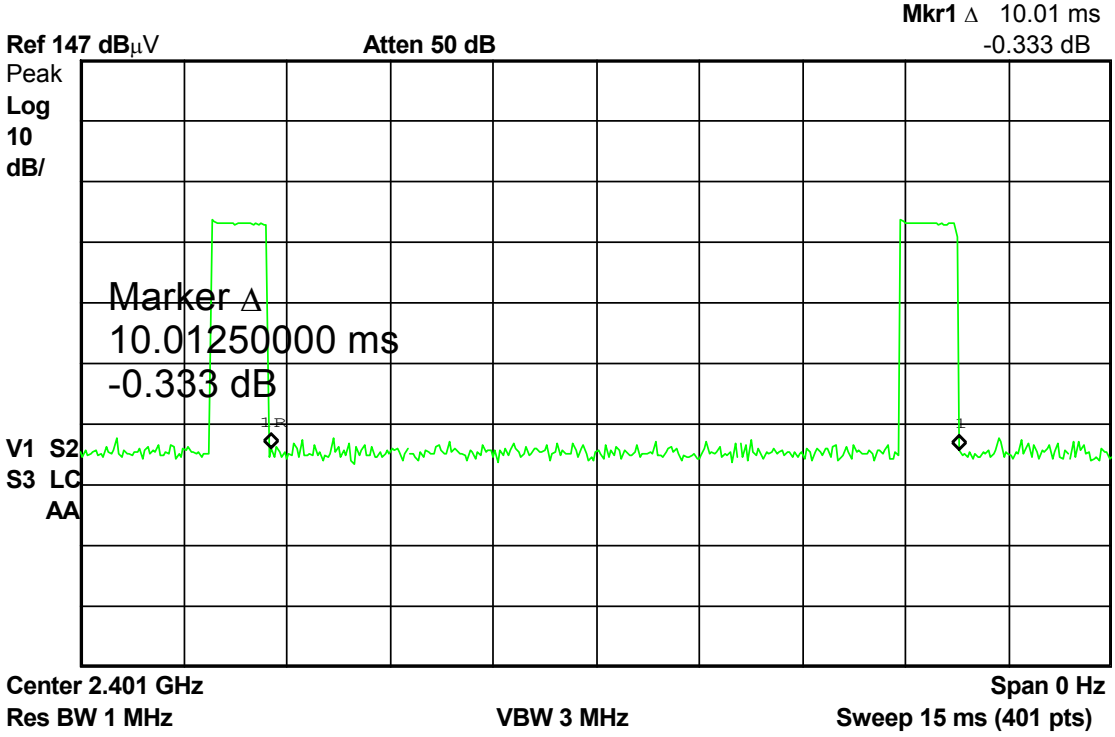
Plot 6


Agilent 15:53:27 1 May 2005
Mkr1 Δ 26.73 MHz
Ref 35 dBm
Atten 35 dB
Ext PG -10 dB
-0.063 dB
Peak
Log
10
dB/
1R
1
V1 S2
S3 FC
AA
Start 2.43 GHz
Stop 2.458 GHz
#Res BW 300 kHz
#VBW 1 MHz
#Sweep 30 ms (401 pts)

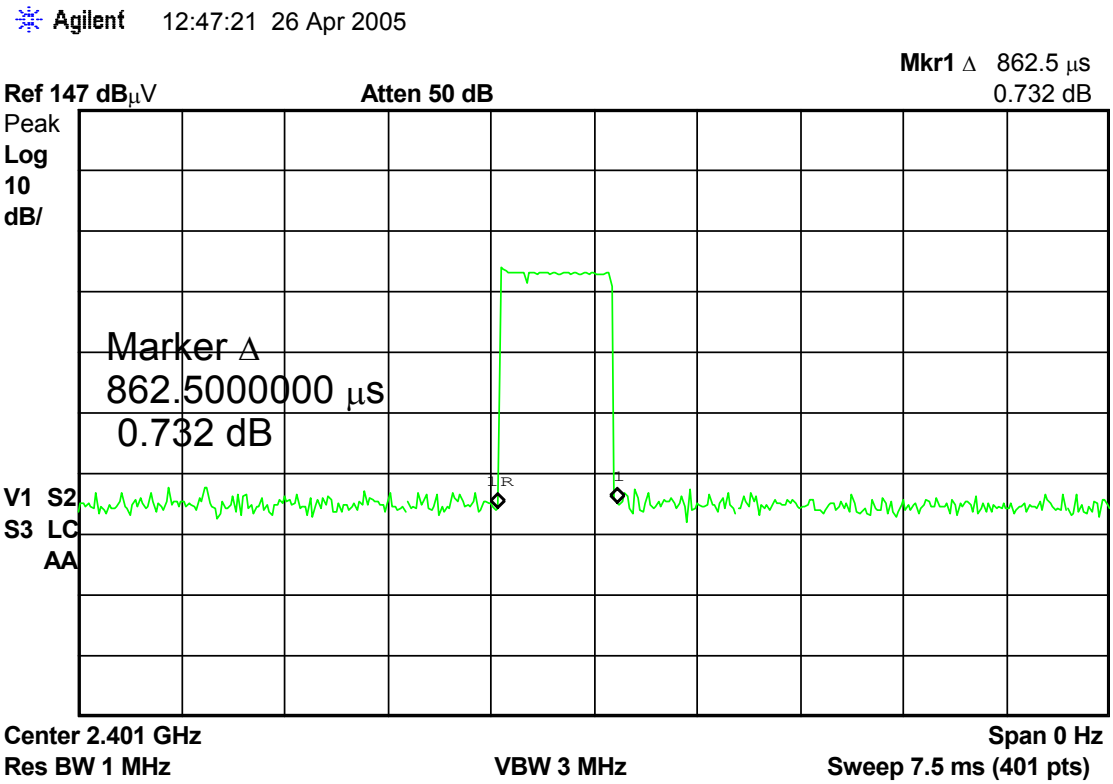
Plot 7


Agilent 18:22:54 1 May 2005
Mkr1 Δ 24.20 MHz
Ref 35 dBm
Atten 35 dB
Ext PG -10 dB
0.4 dB
Peak
Log
10
dB/
1R
1
Marker Δ
24.200000 MHz
0.4 dB
V1 S2
S3 FC
AA
Start 2.457 GHz
Stop 2.487 GHz
#Res BW 300 kHz
#VBW 1 MHz
#Sweep 40.9 ms (401 pts)

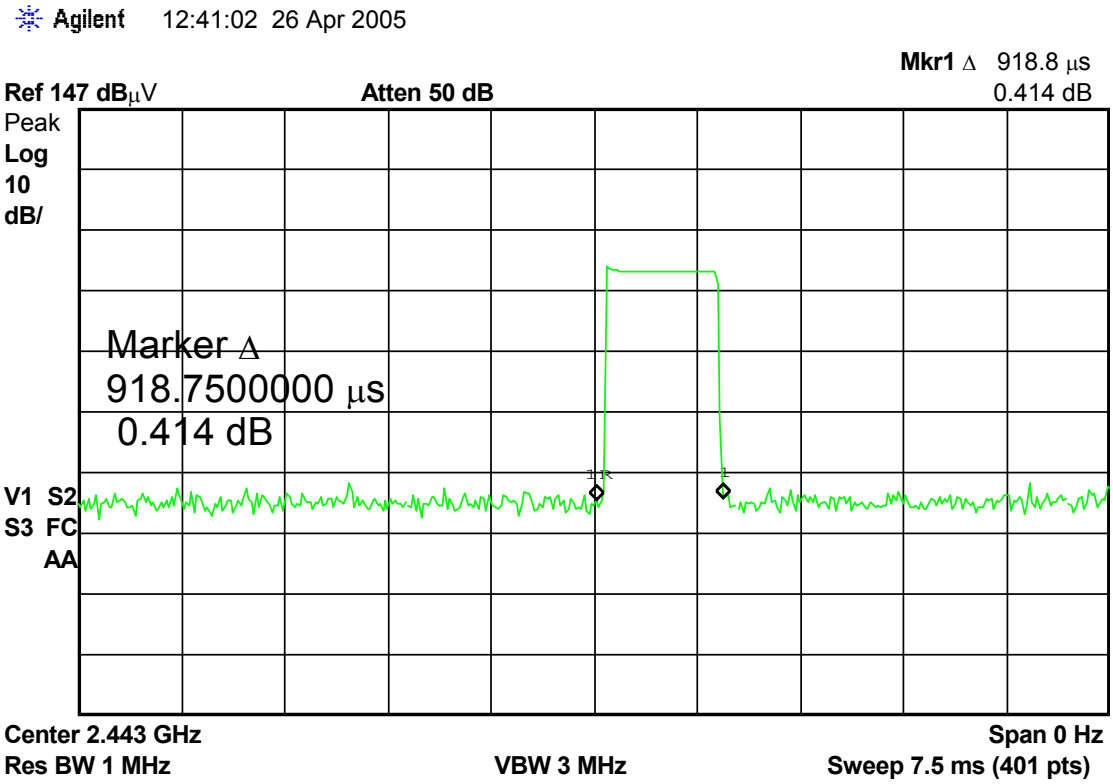
Plot 8


Agilent 12:45:32 26 Apr 2005
Mkr1 Δ 10.01 ms
Ref 147 dBμV
Atten 50 dB
-0.333 dB
Peak
Log
10
dB/
Marker Δ
10.01250000 ms
-0.333 dB
1R
1
V1 S2
S3 LC
AA
Center 2.401 GHz
Span 0 Hz
Res BW 1 MHz
VBW 3 MHz
Sweep 15 ms (401 pts)

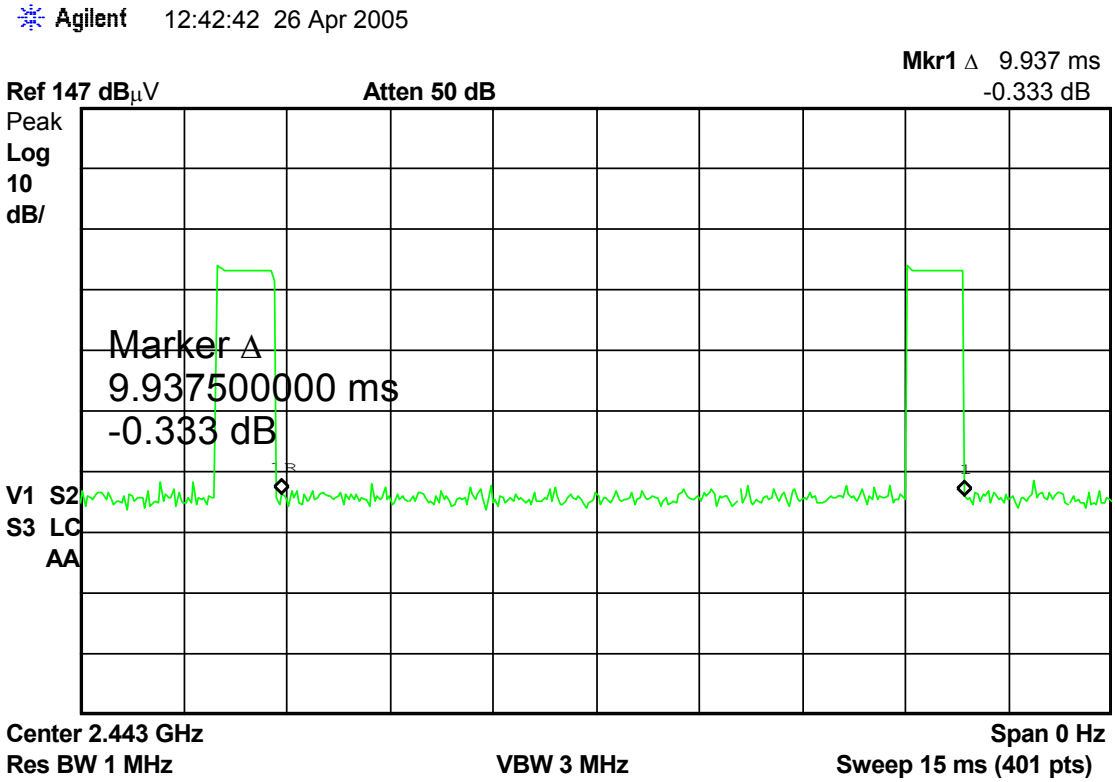
Plot 9



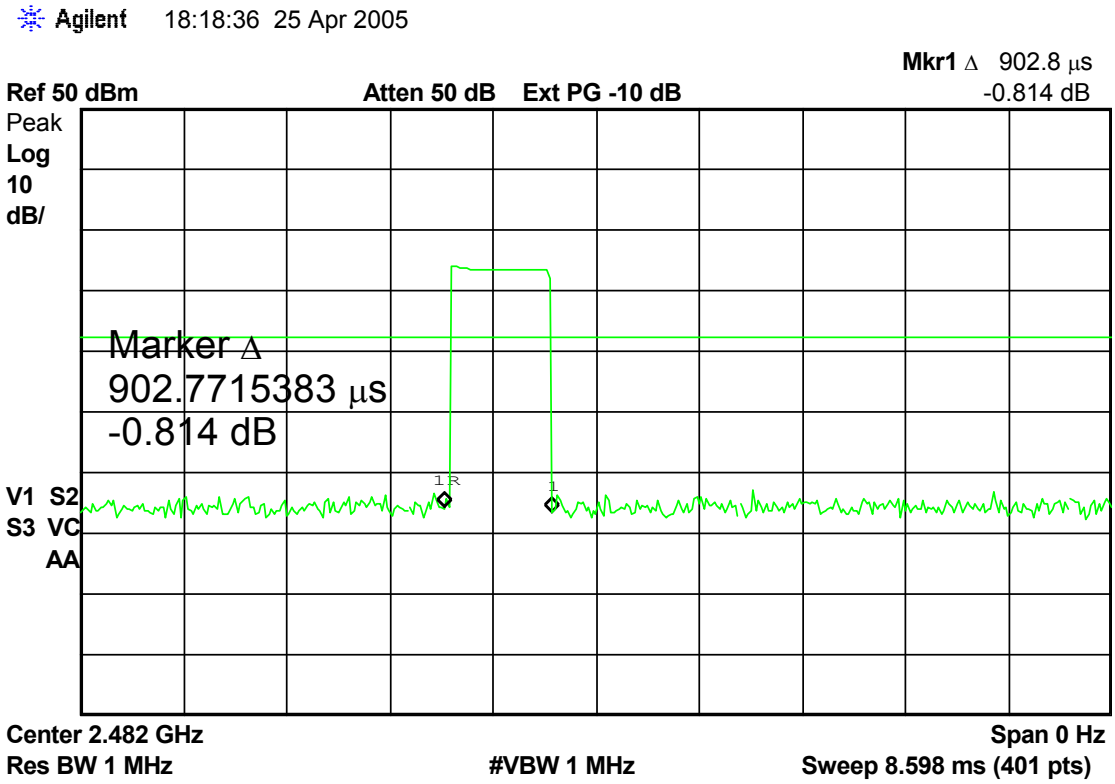
Plot 10



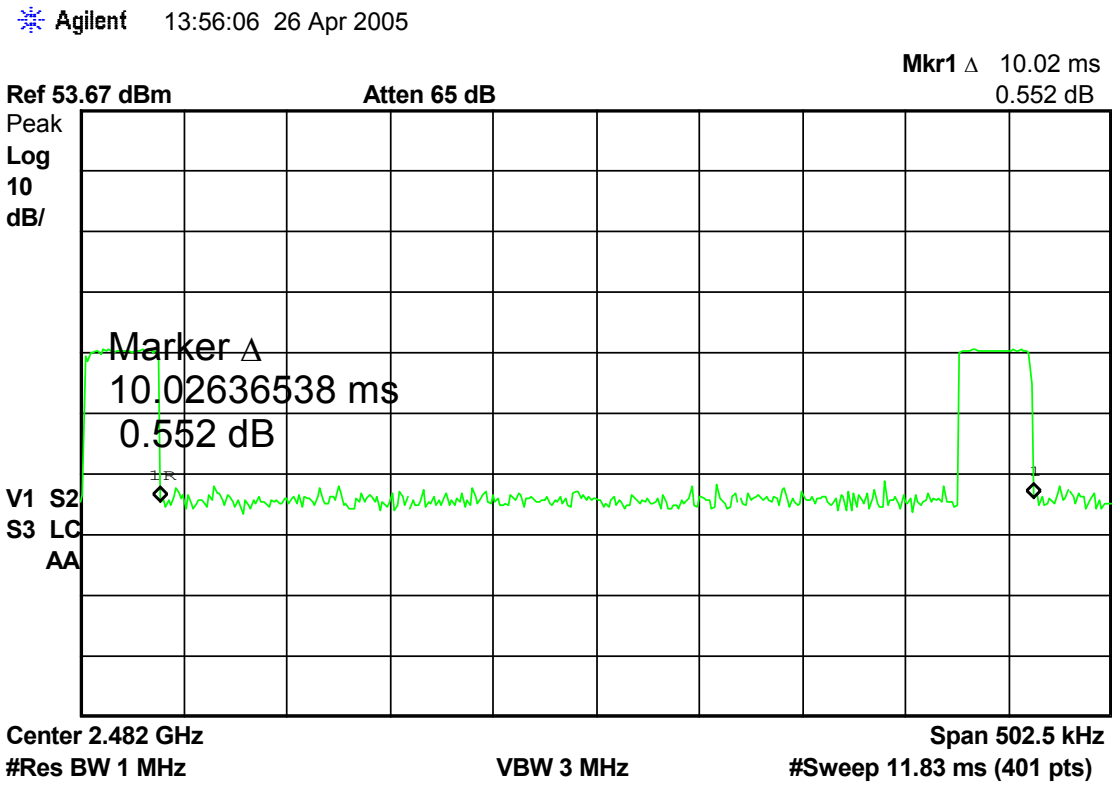
Plot 11



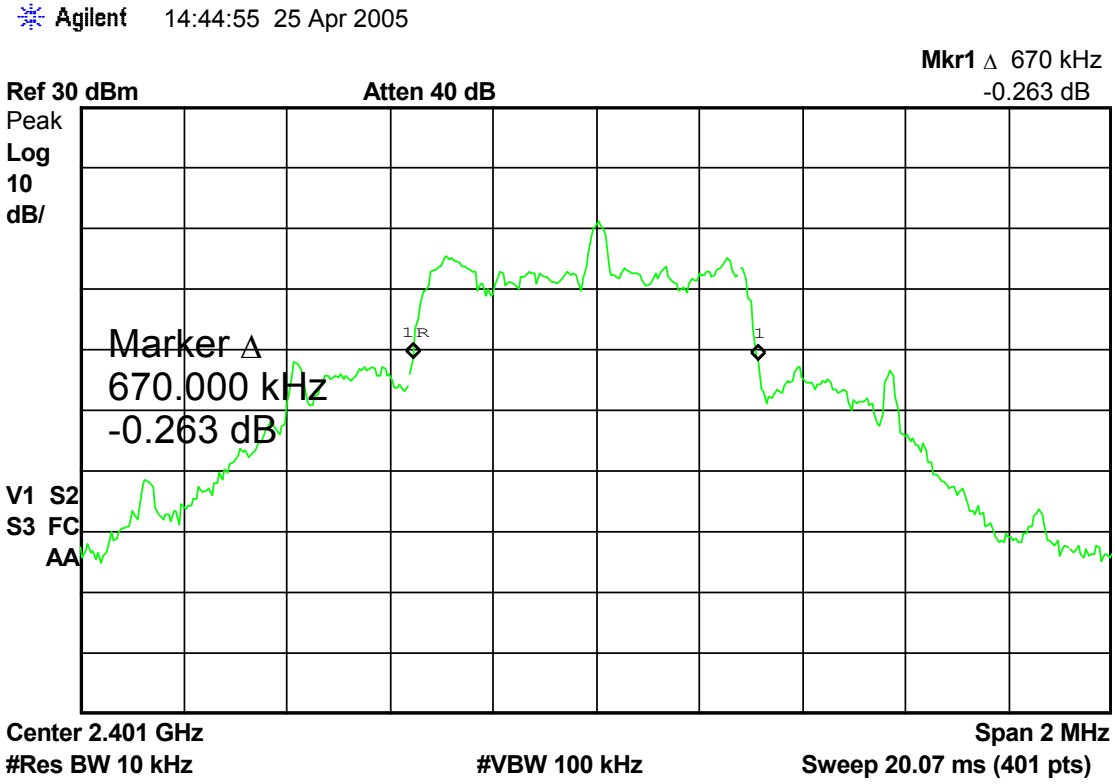
Plot 12



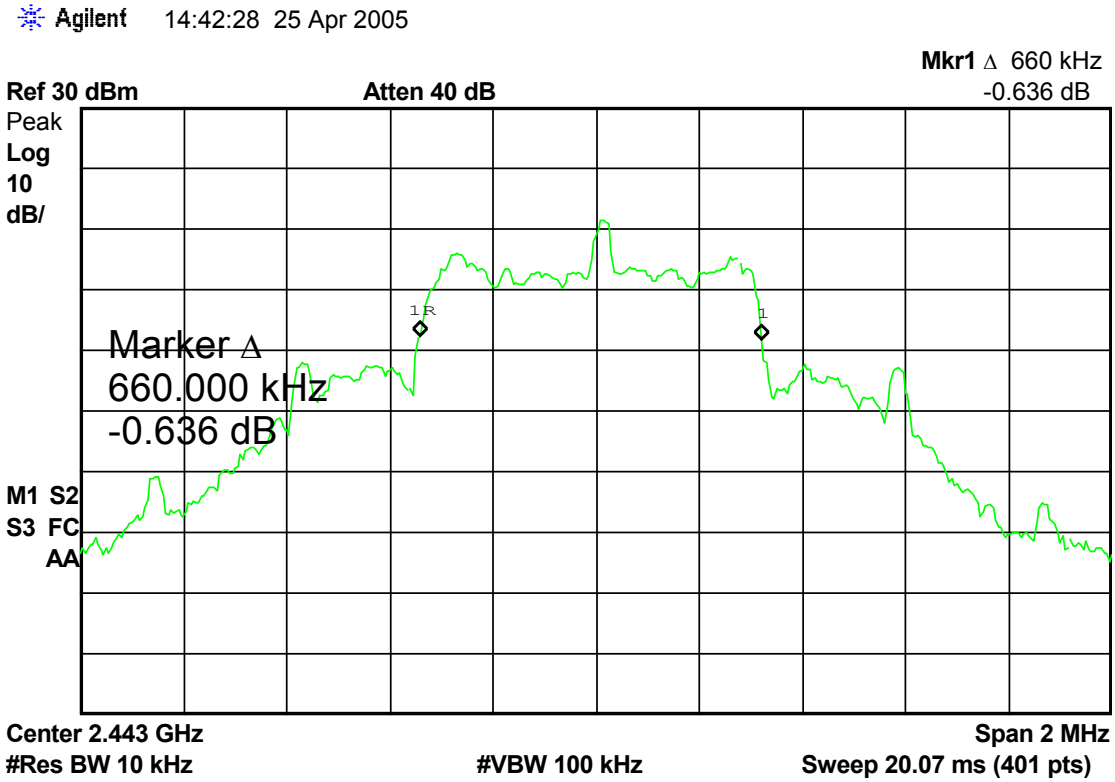
Plot 13



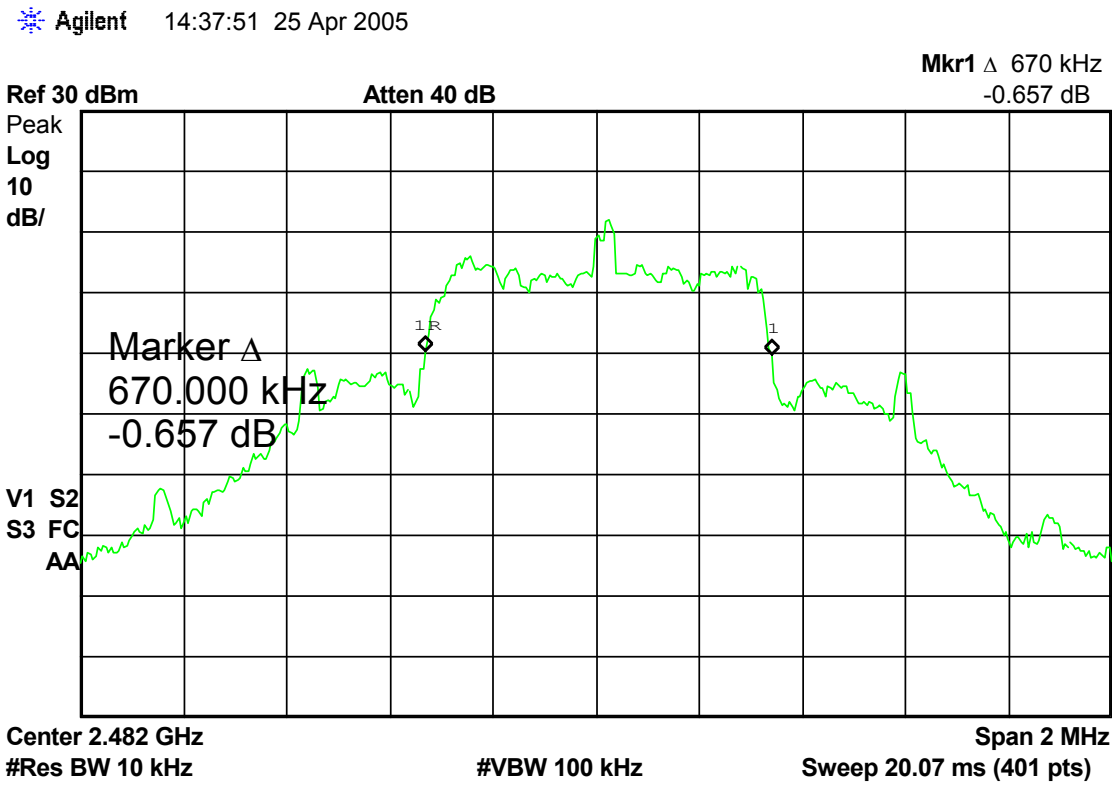
Plot 14



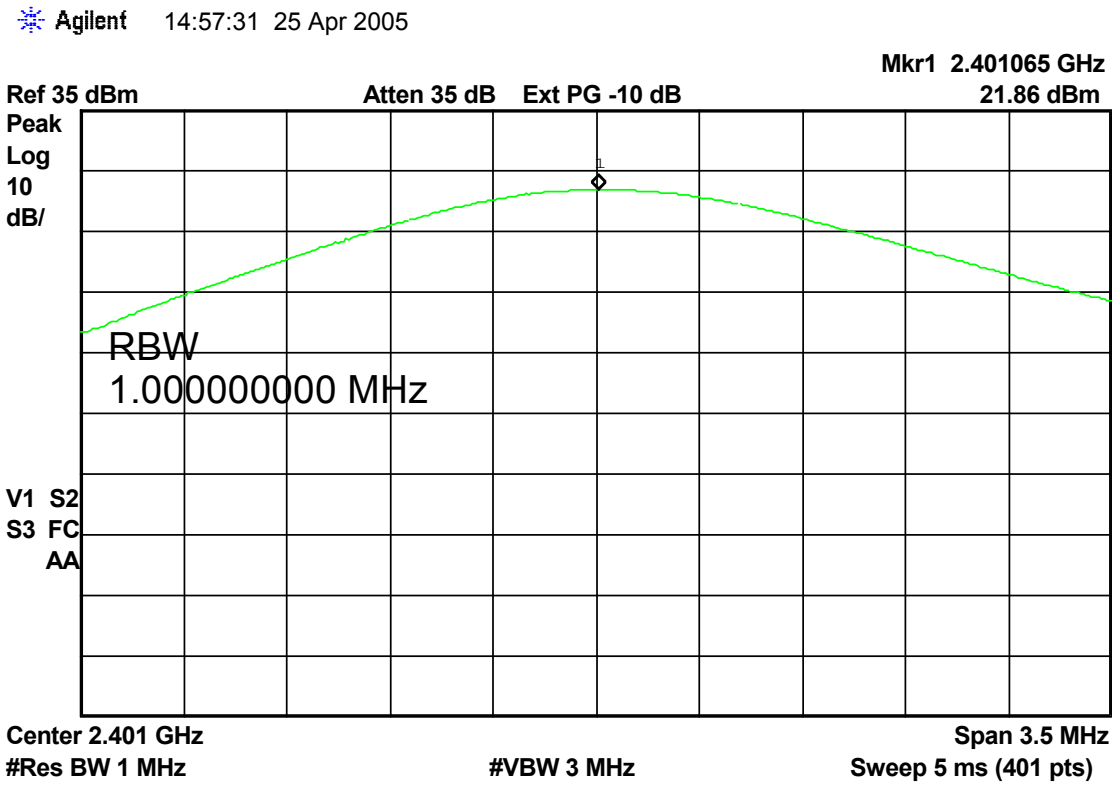
Plot 15



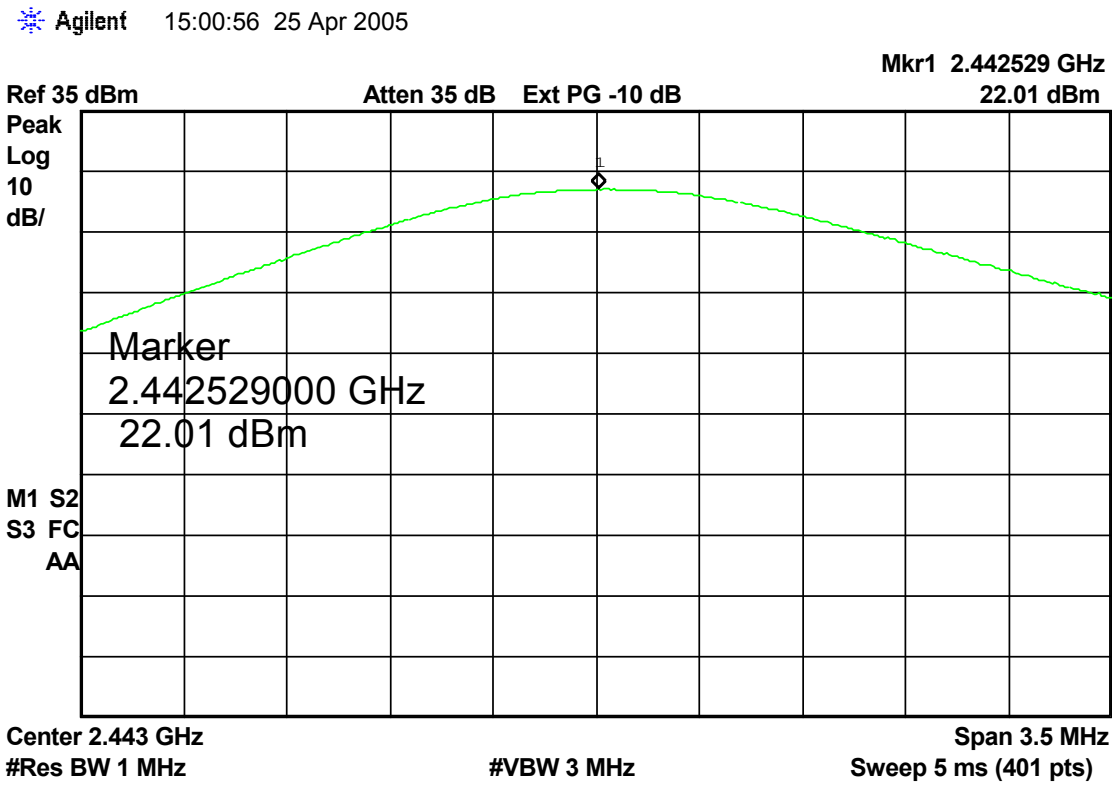
Plot 16



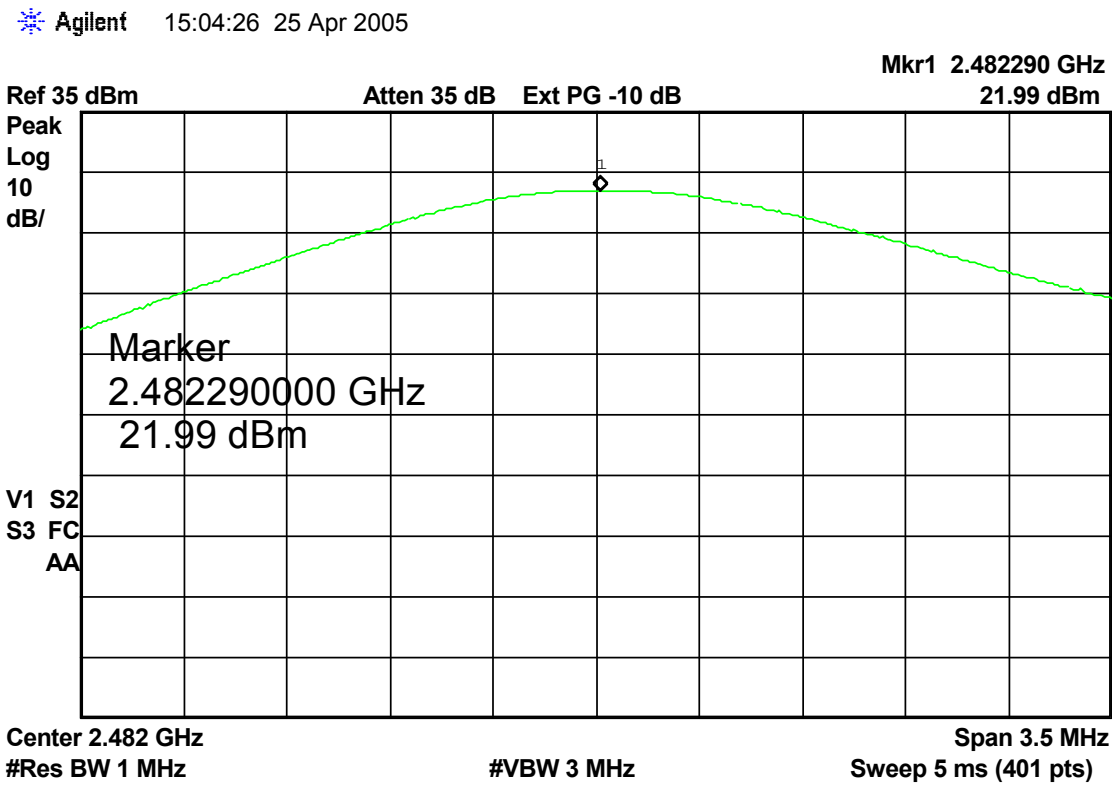
Plot 17



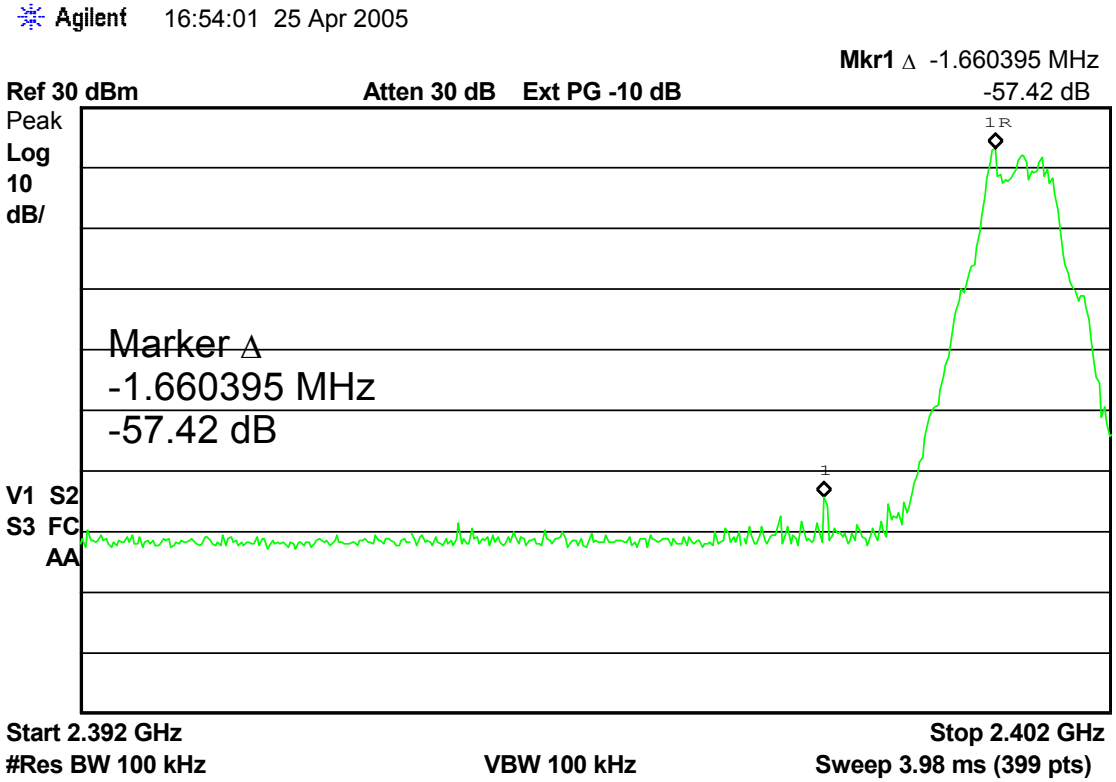
Plot 18



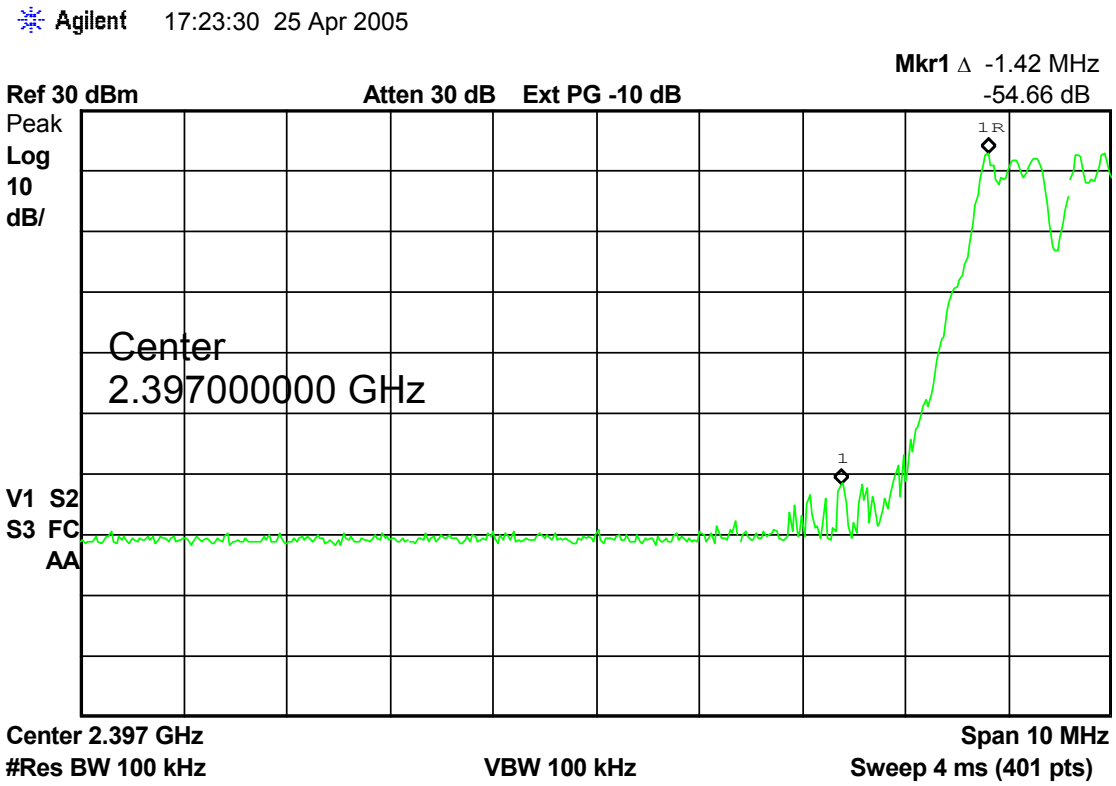
Plot 19



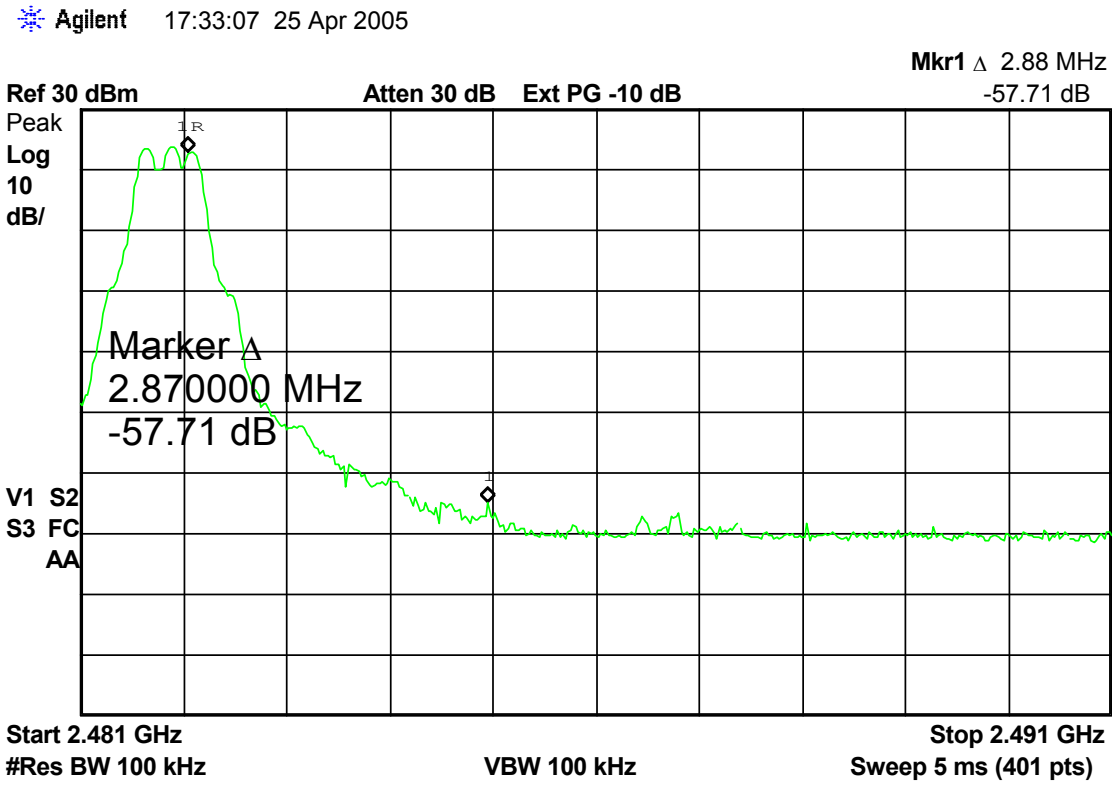
Plot 20



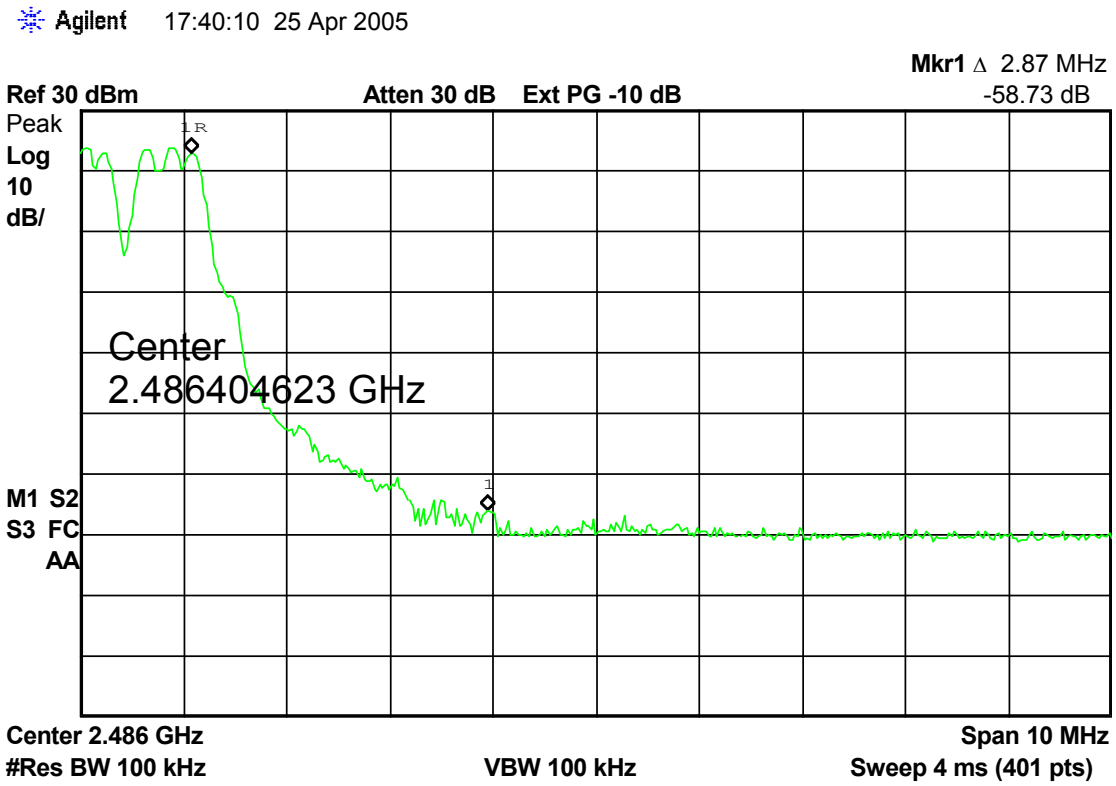
Plot 21



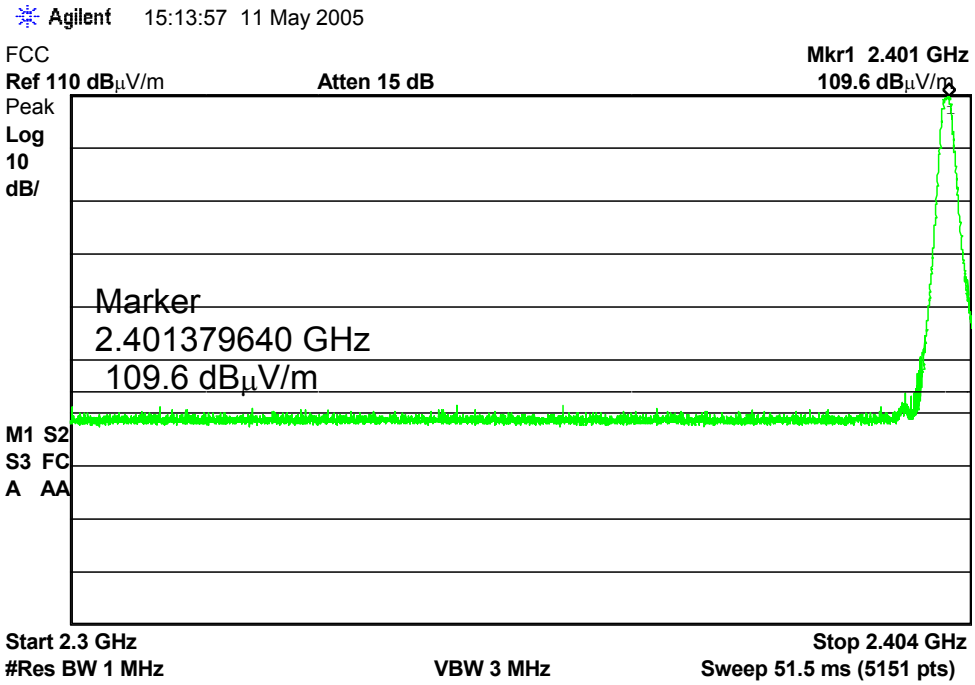
Plot 22



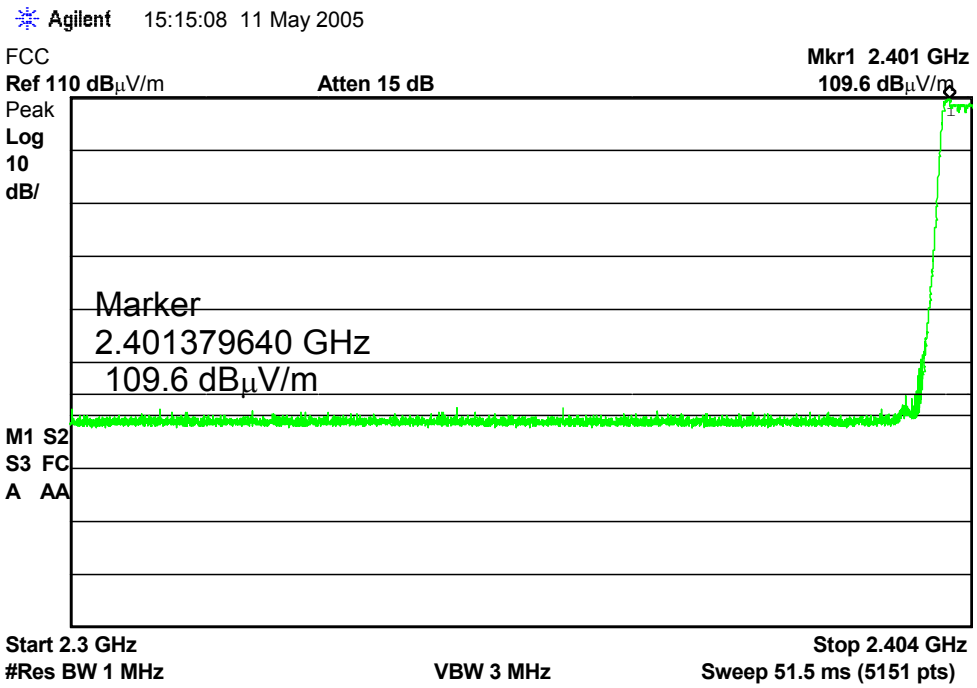
Plot 23



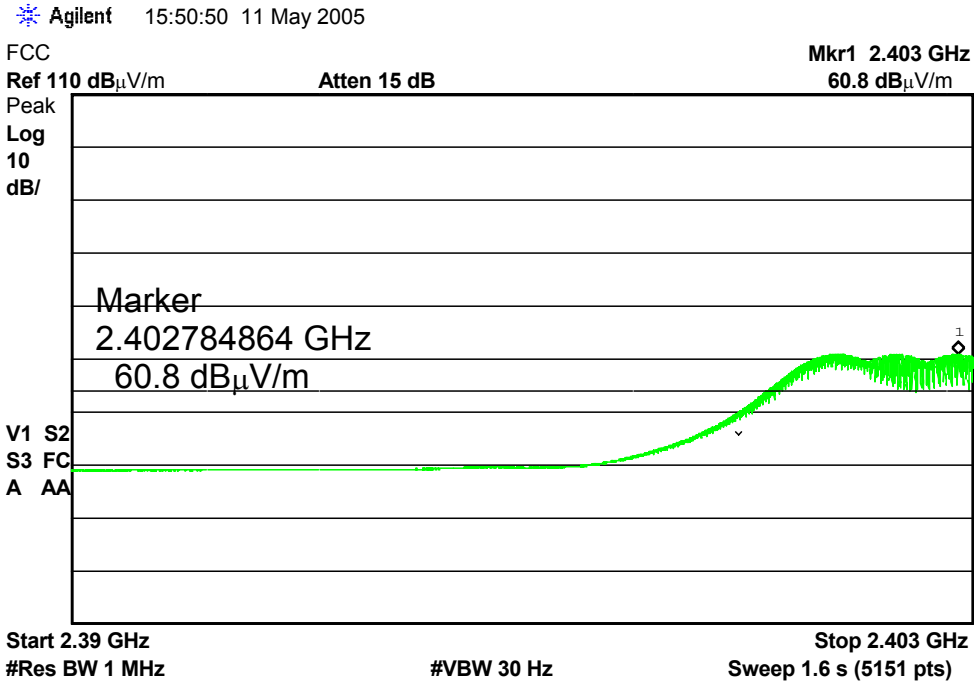
Plot 24



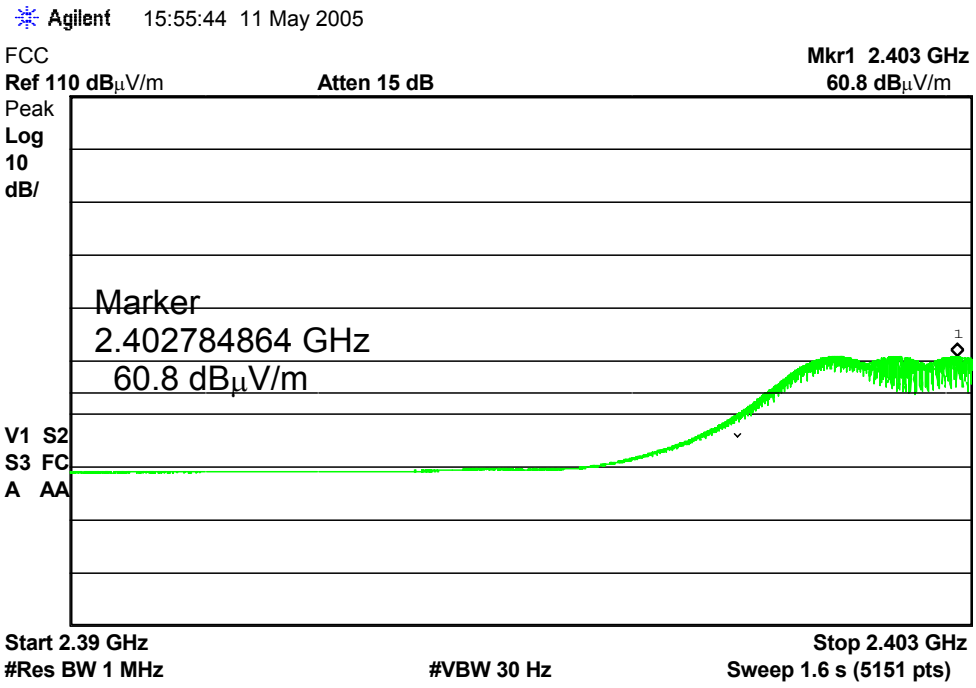
Plot 25



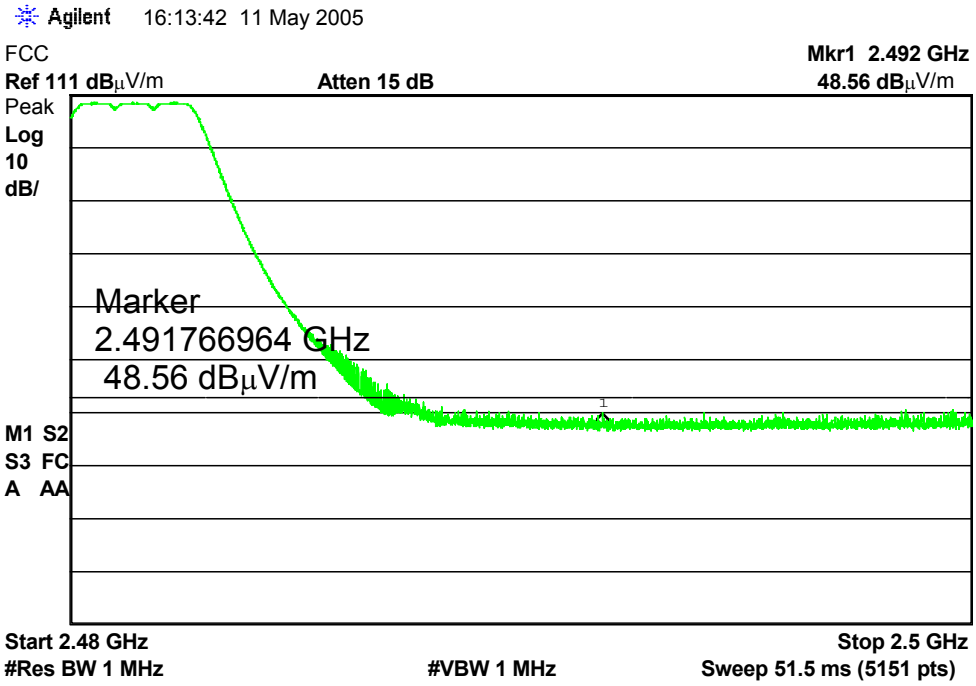
Plot 26



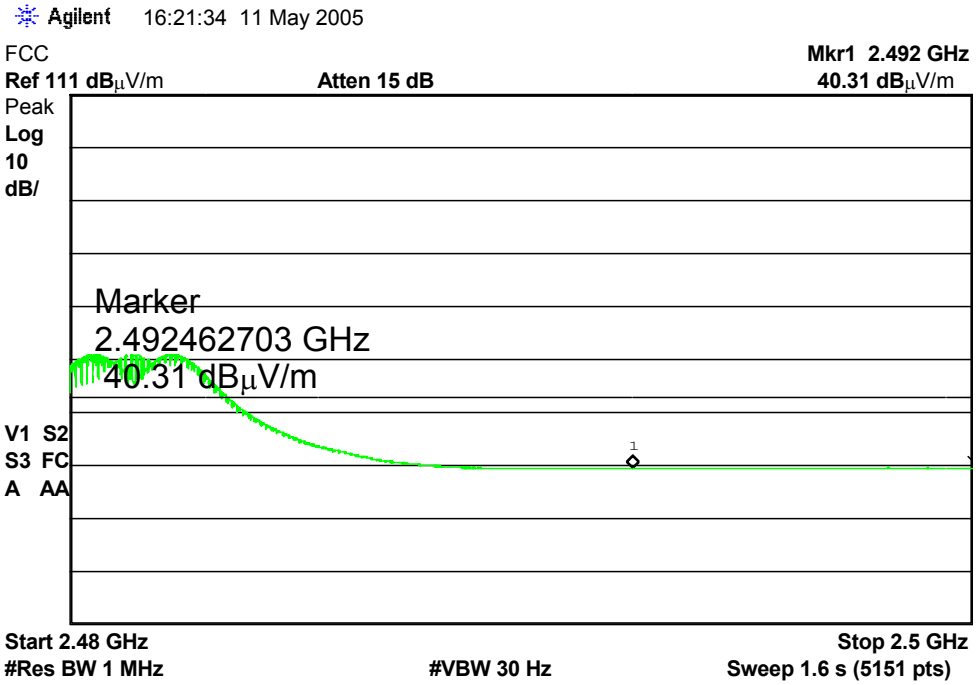
Plot 27



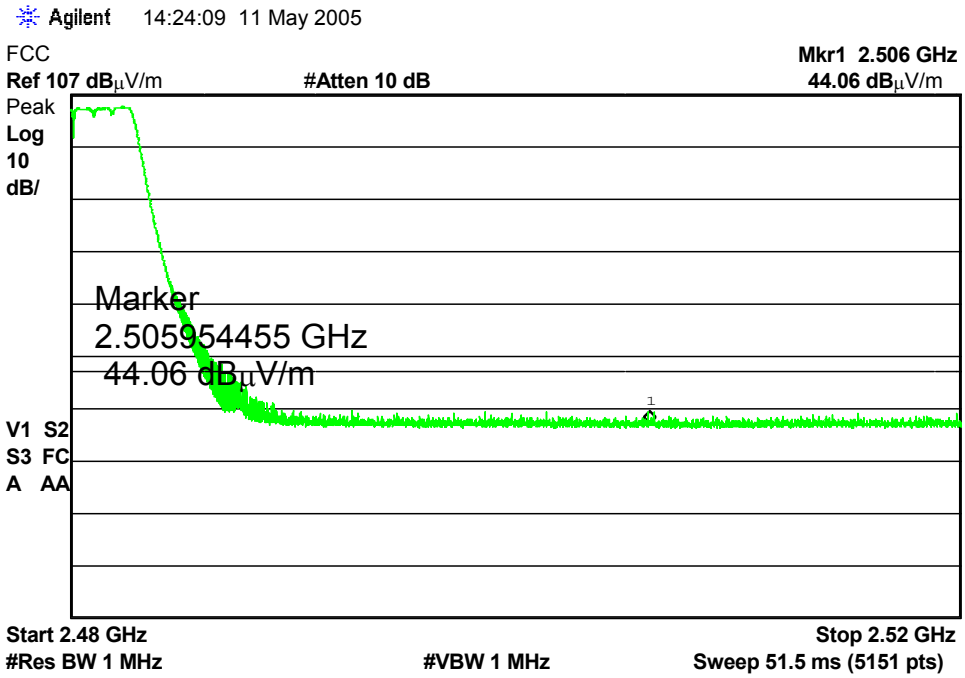
Plot 28



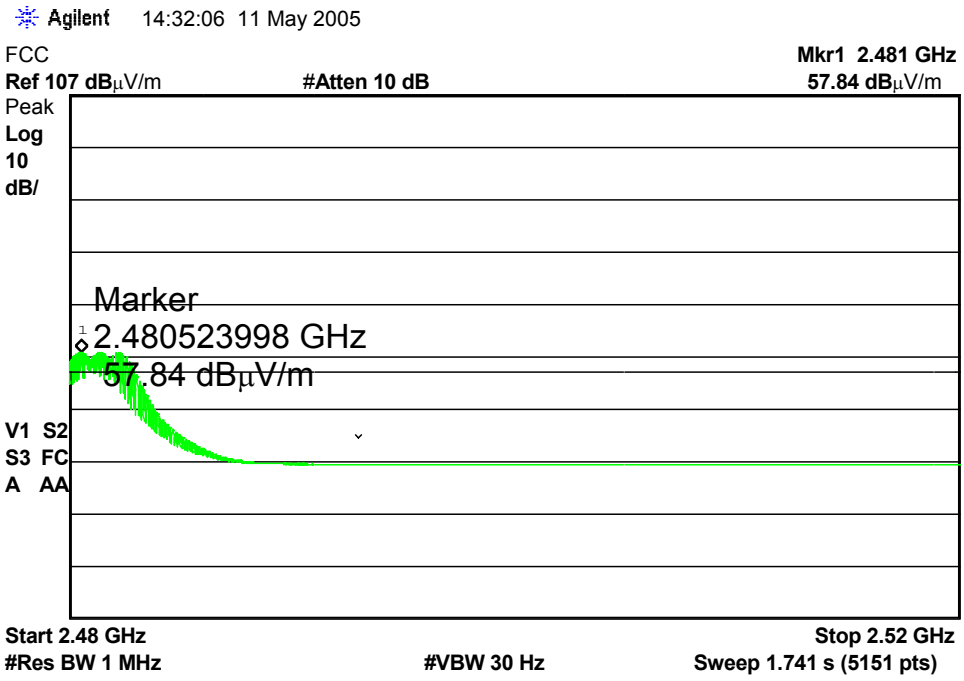
Plot 29



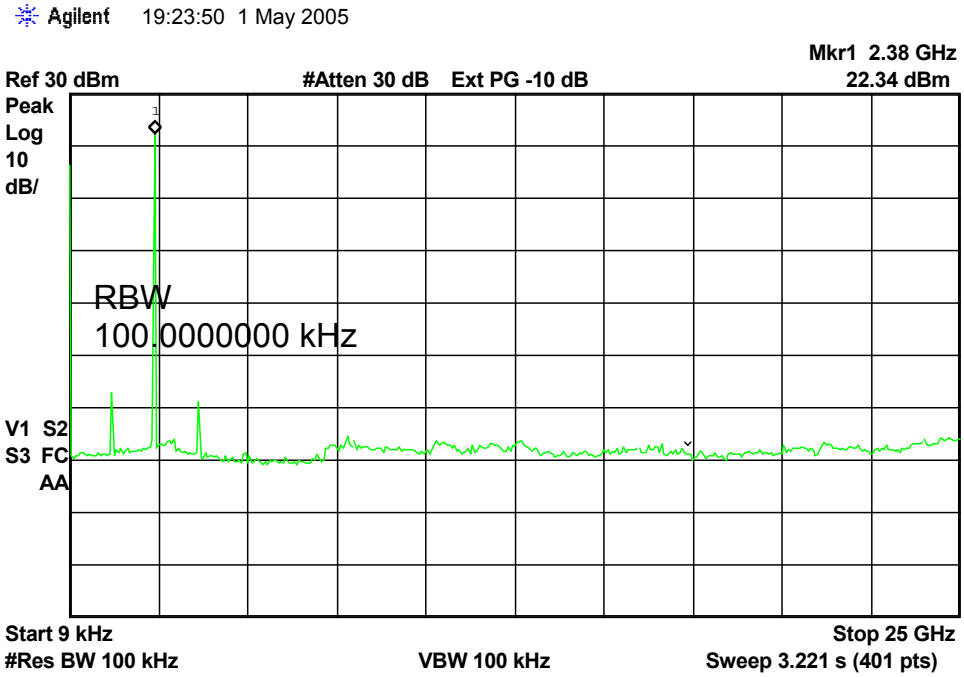
Plot 30



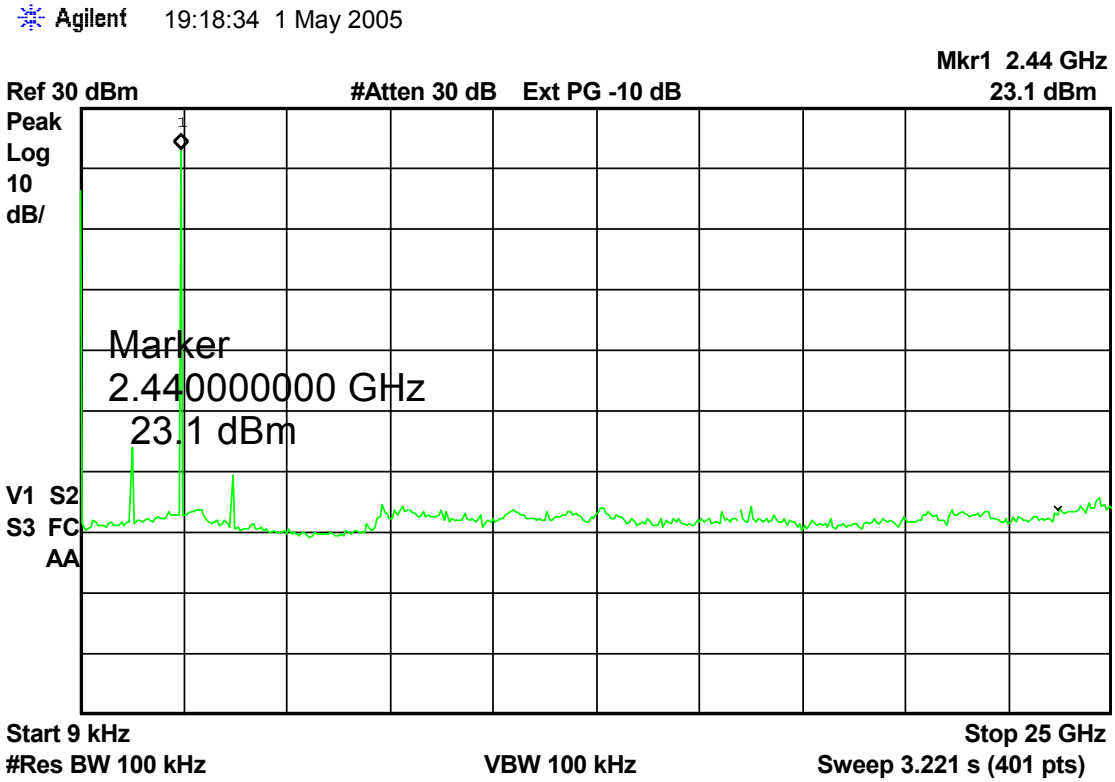
Plot 31



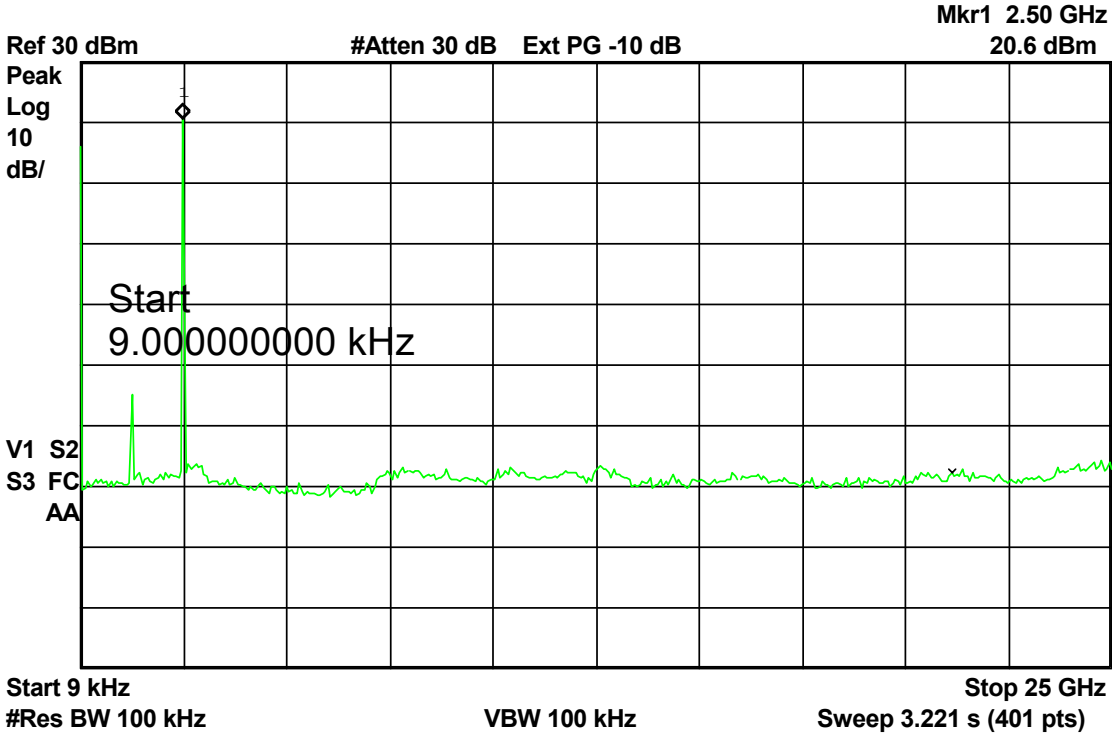
Plot 32



Plot 33

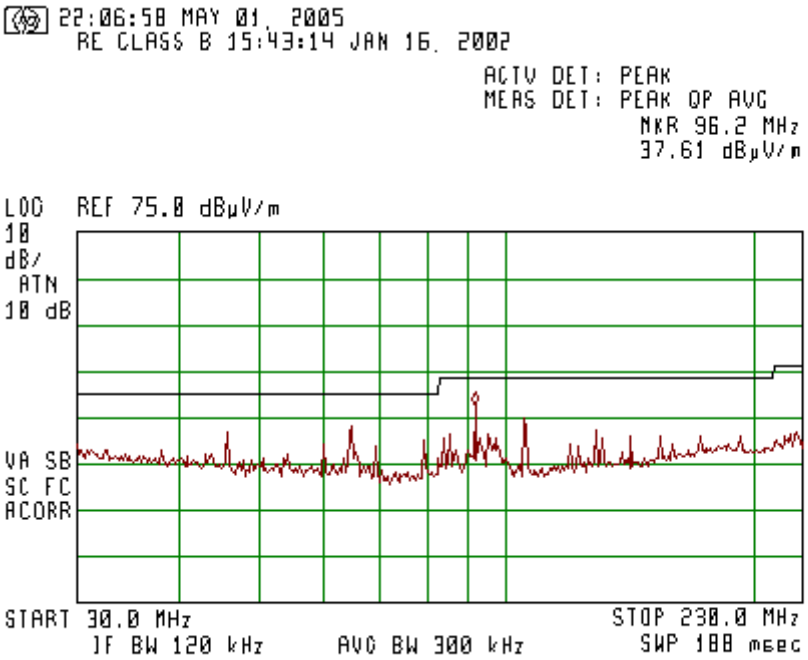


Plot 34

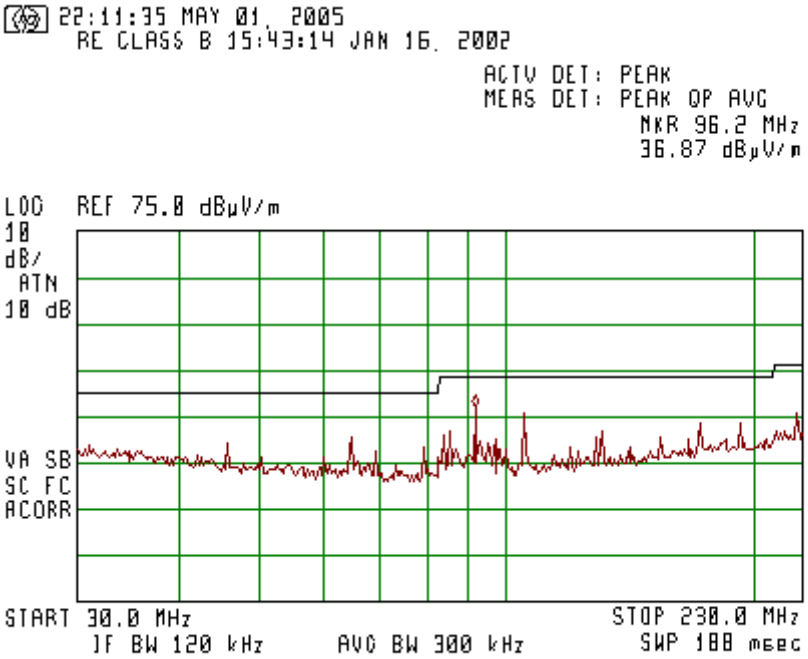


iMedia

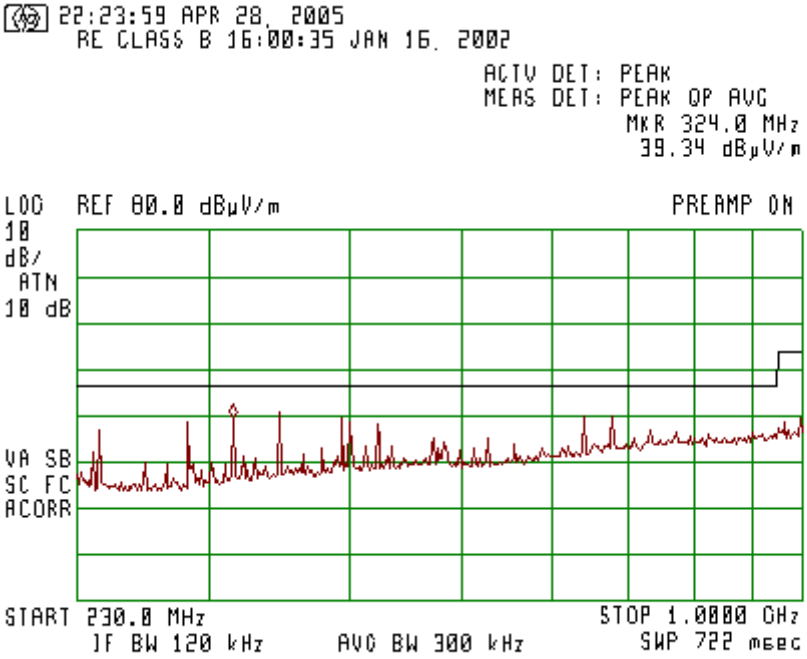
Lowest
Plot 35
Horizontal Polarization



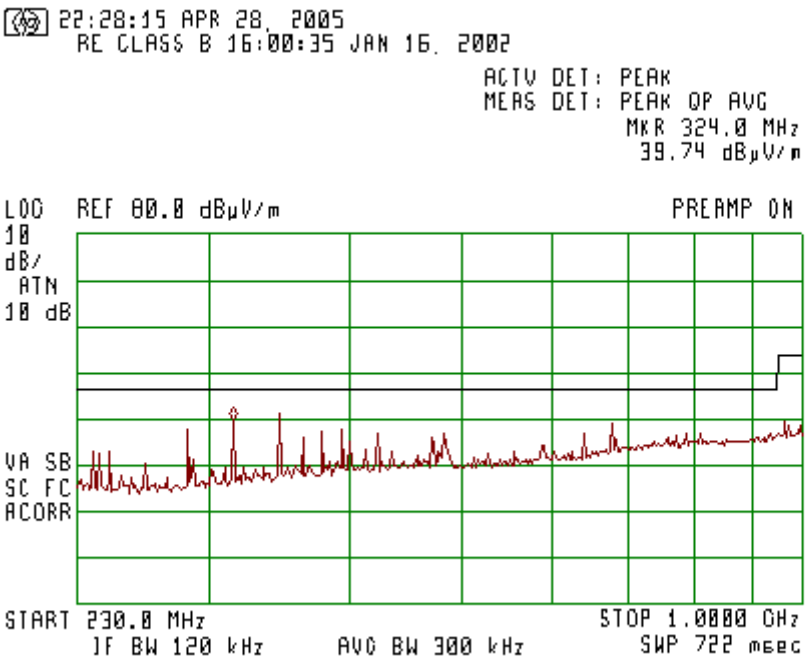
Plot 36
Vertical Polarization



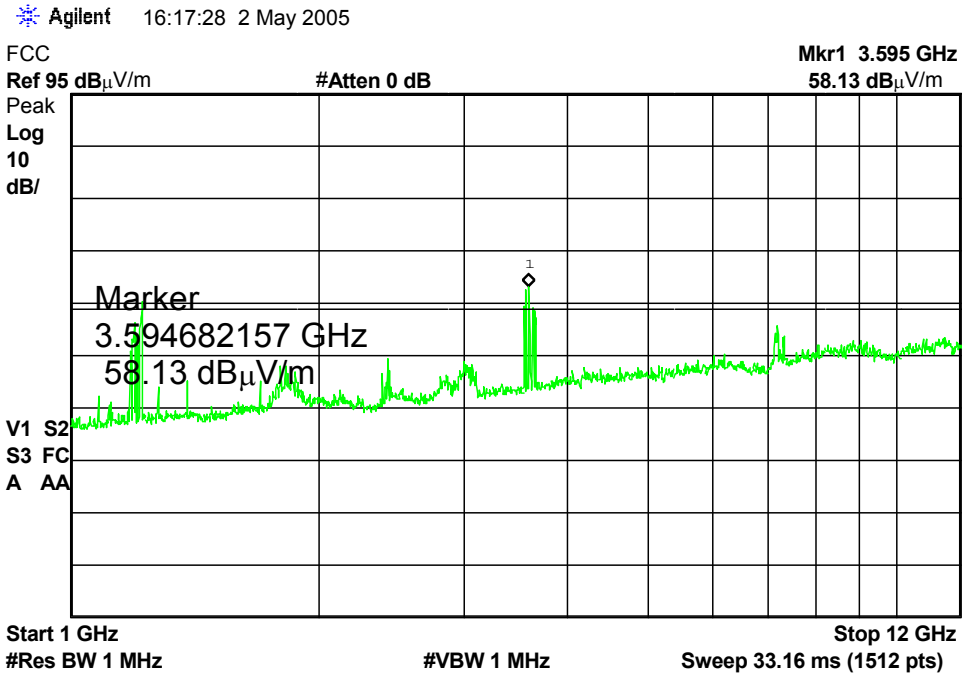
Plot 37
Horizontal Polarization



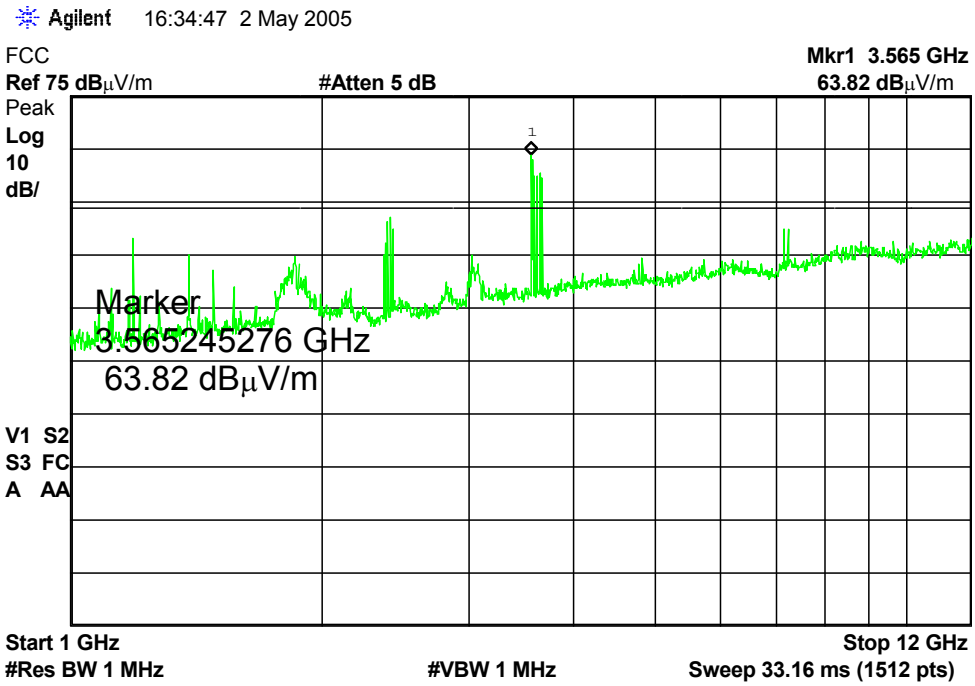
Plot 38
Vertical Polarization



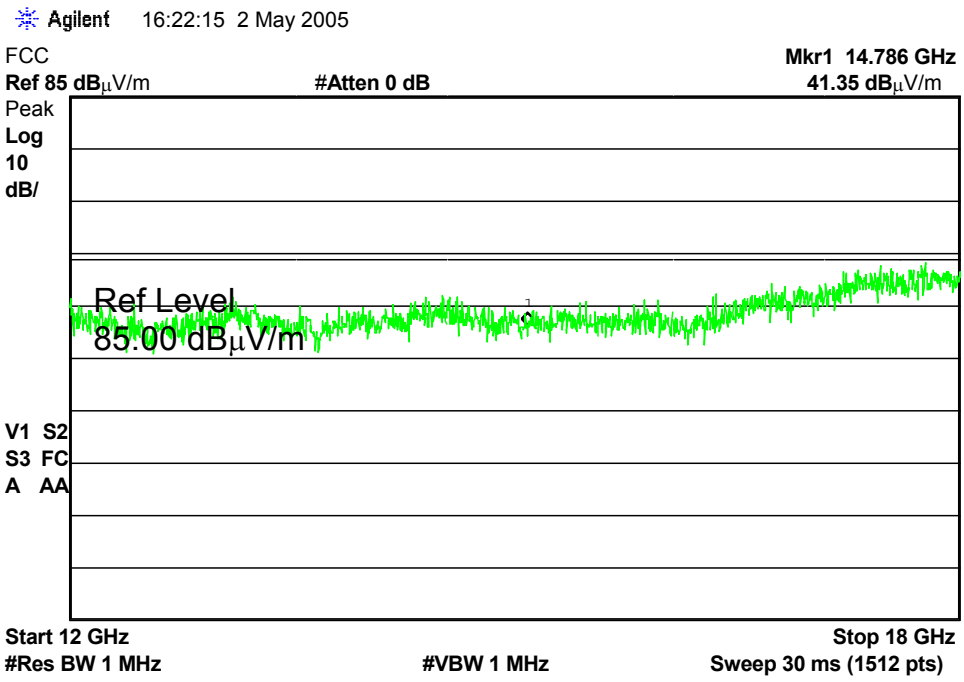
Plot 39
Horizontal Polarization



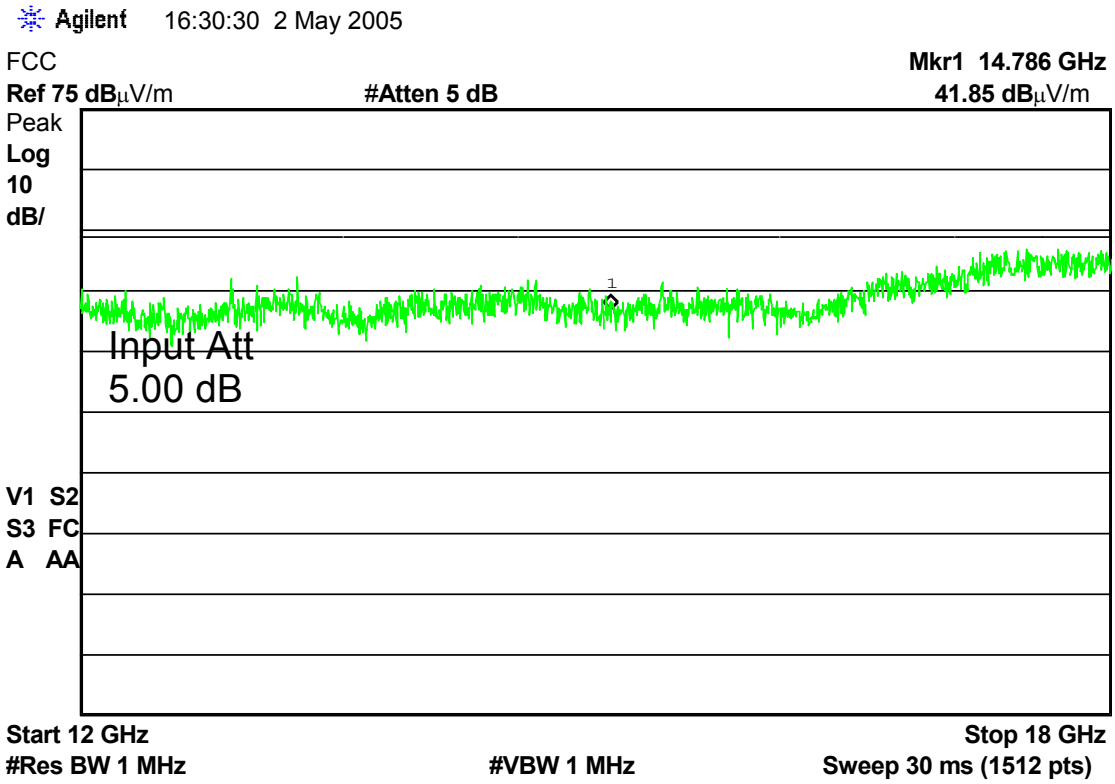
Plot 40
Vertical Polarization



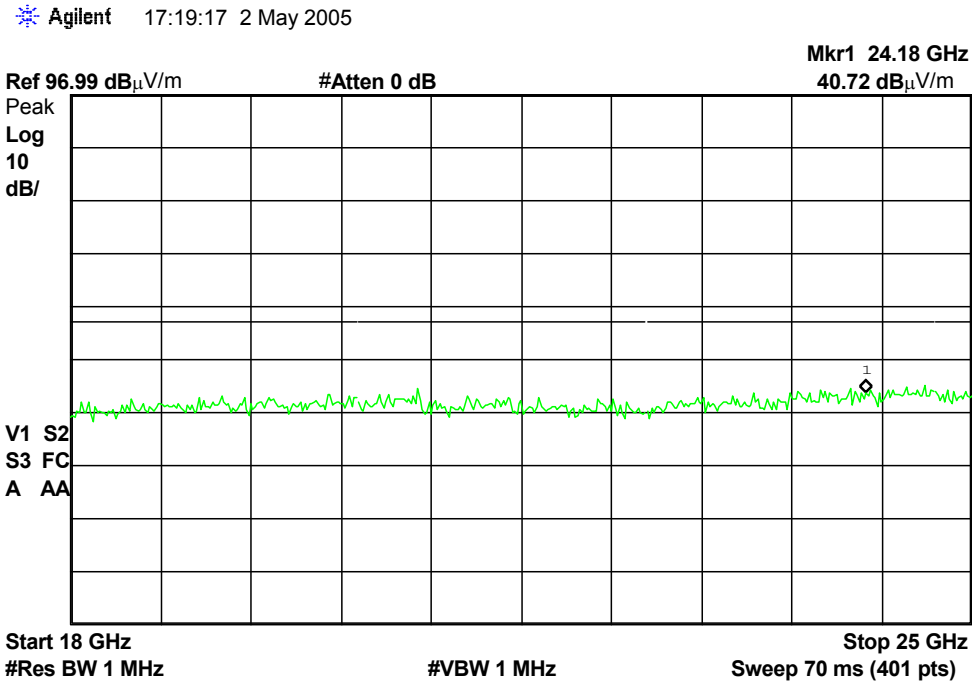
Plot 41
Horizontal Polarization



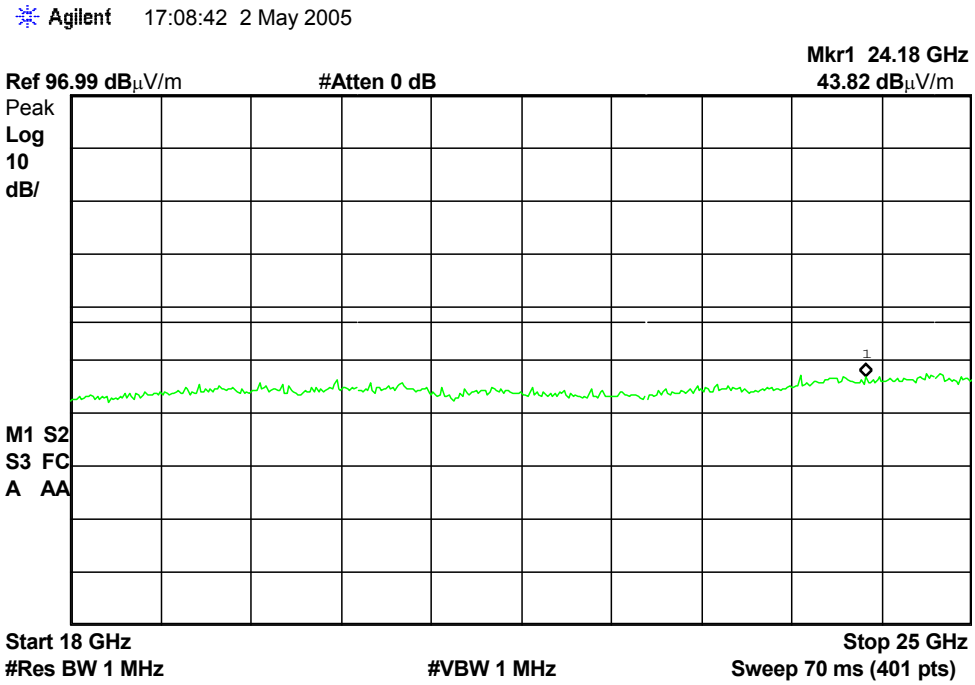
Plot 42
Vertical Polarization



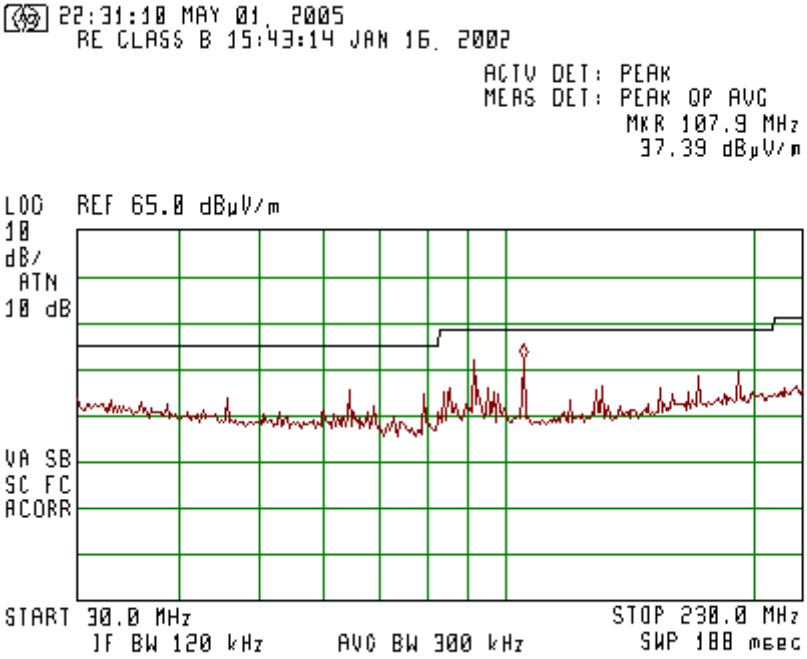
Plot 43
Horizontal Polarization



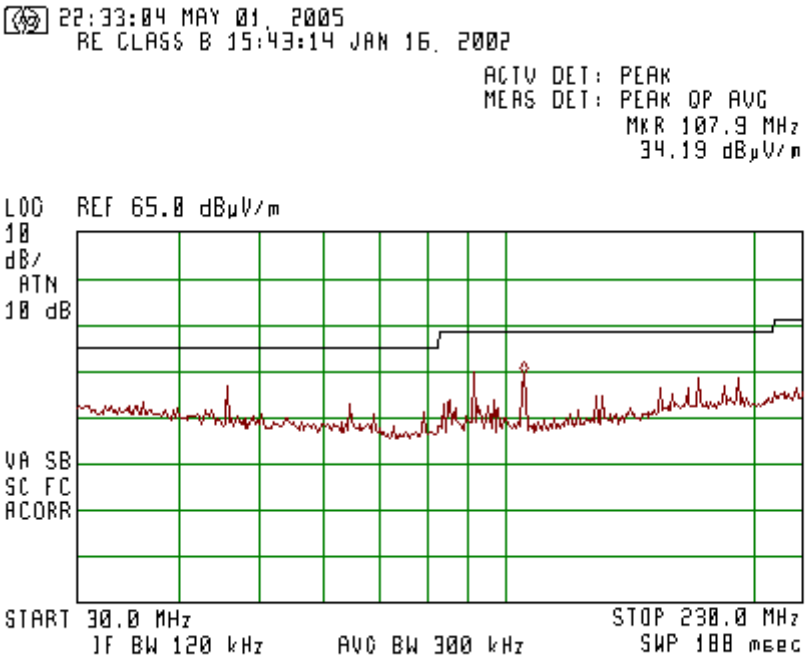
Plot 44
Vertical Polarization



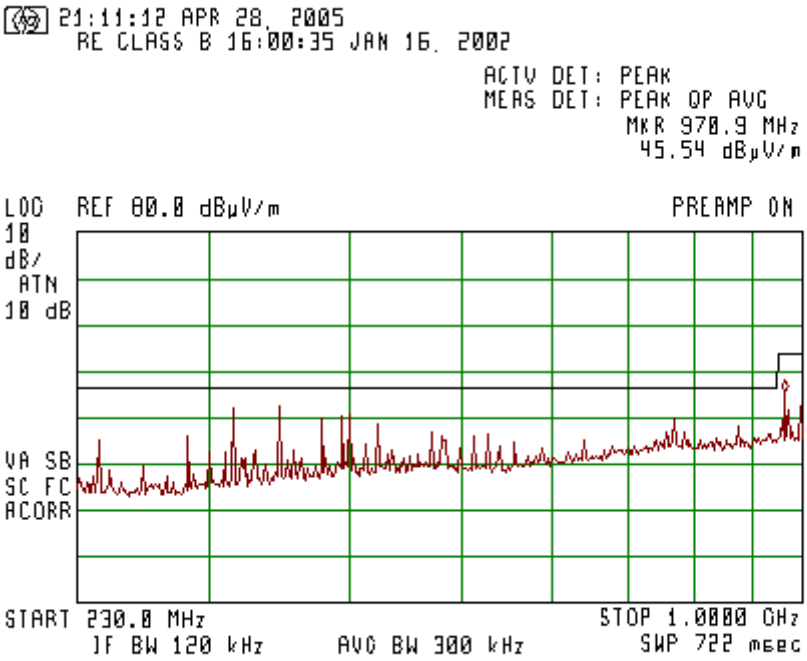
Middle
Plot 45
Horizontal Polarization



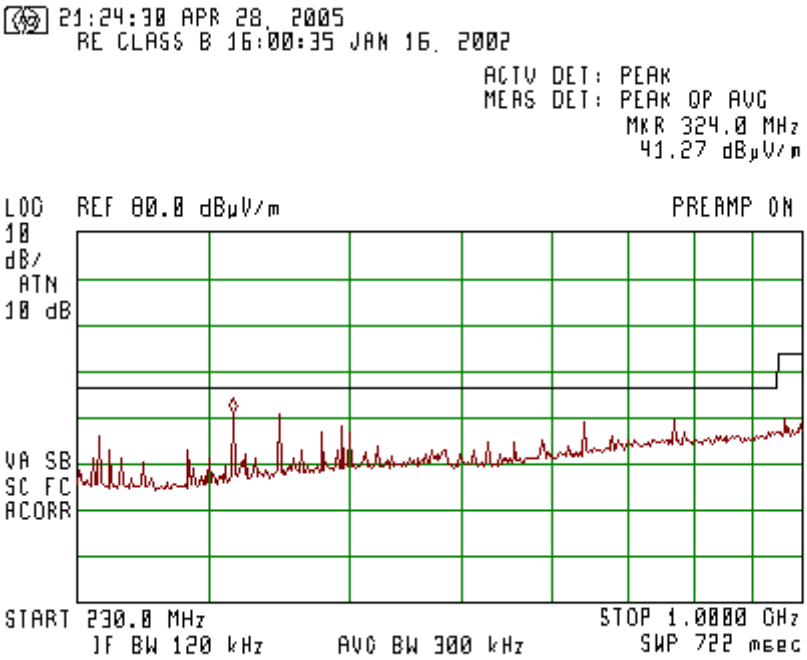
Plot 46
Vertical Polarization



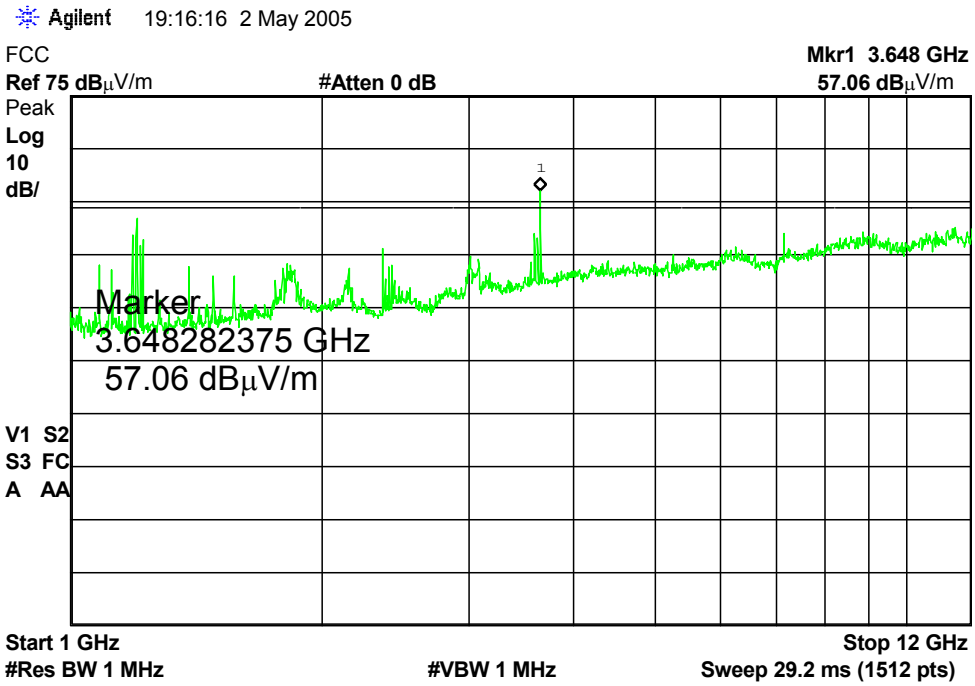
Plot 47
Horizontal Polarization



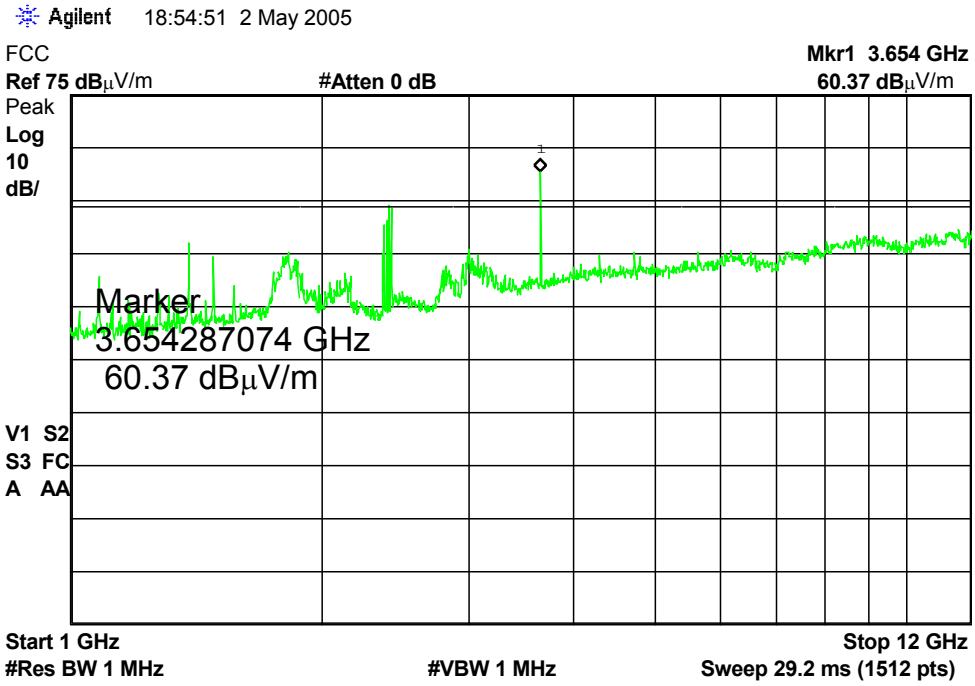
Plot 48
Vertical Polarization



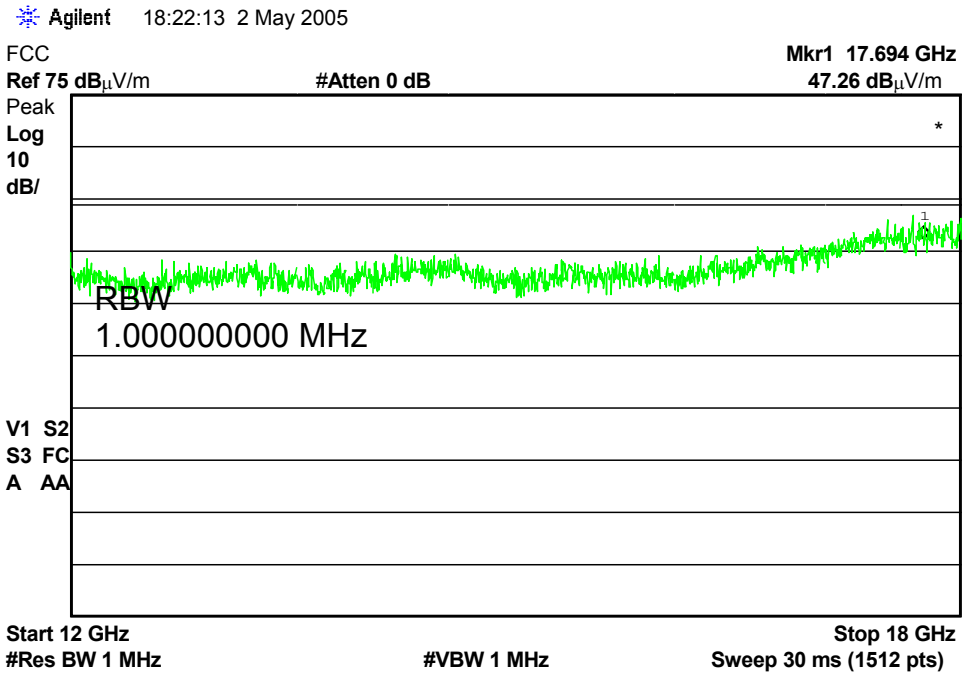
Plot 49
Horizontal Polarization



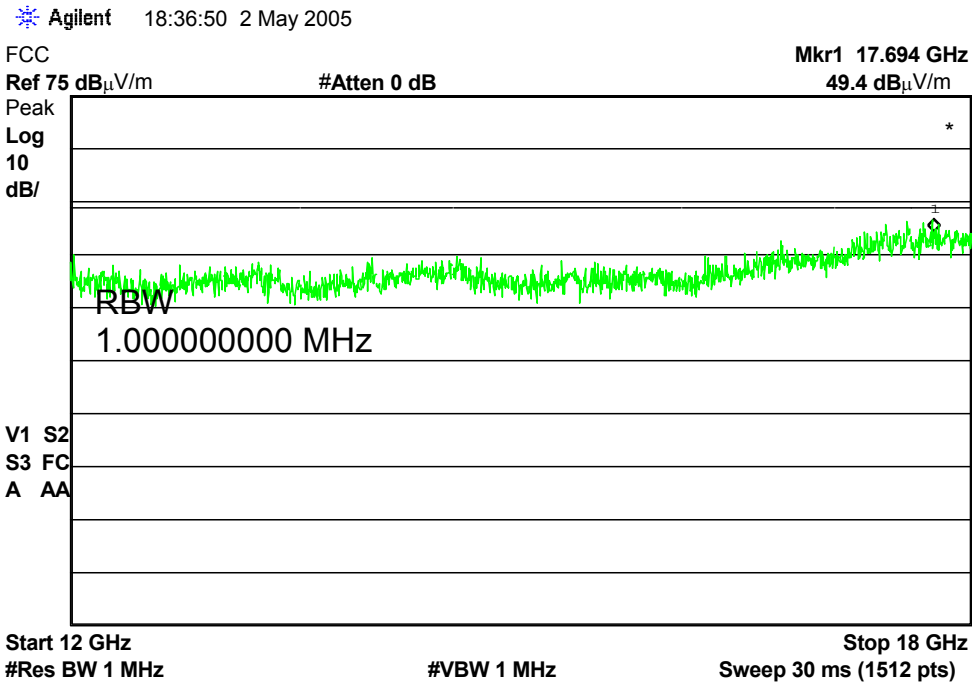
Plot 50
Vertical Polarization



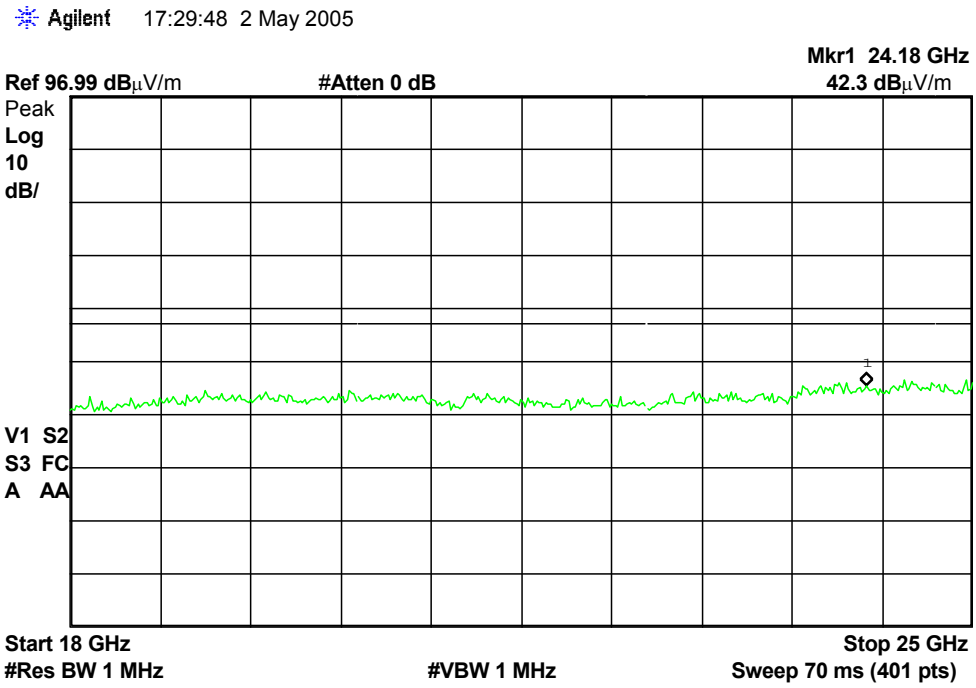
Plot 51
Horizontal Polarization



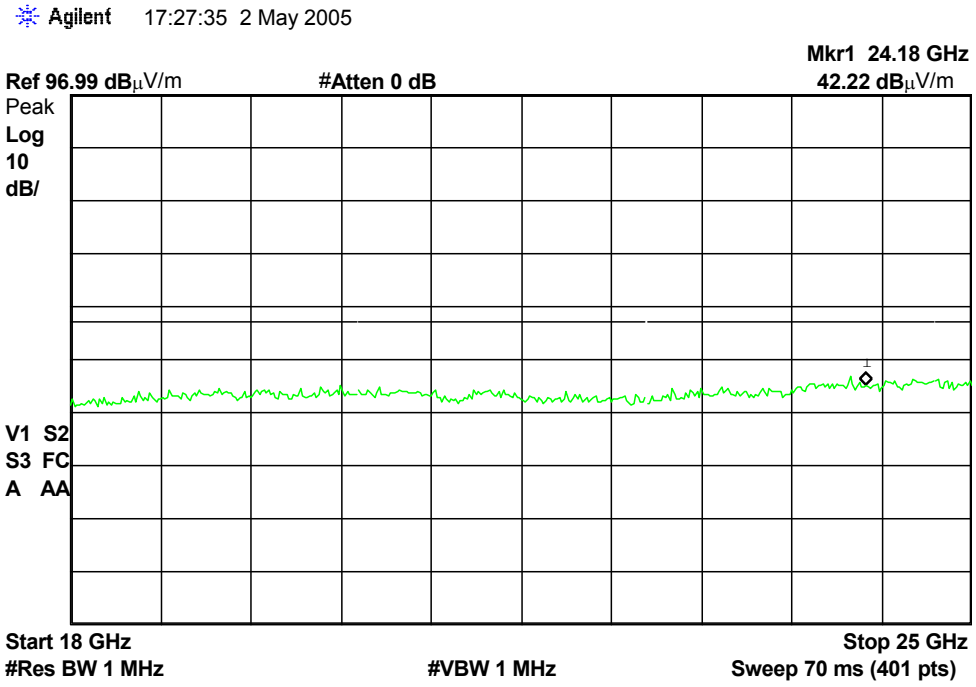
Plot 52
Vertical Polarization



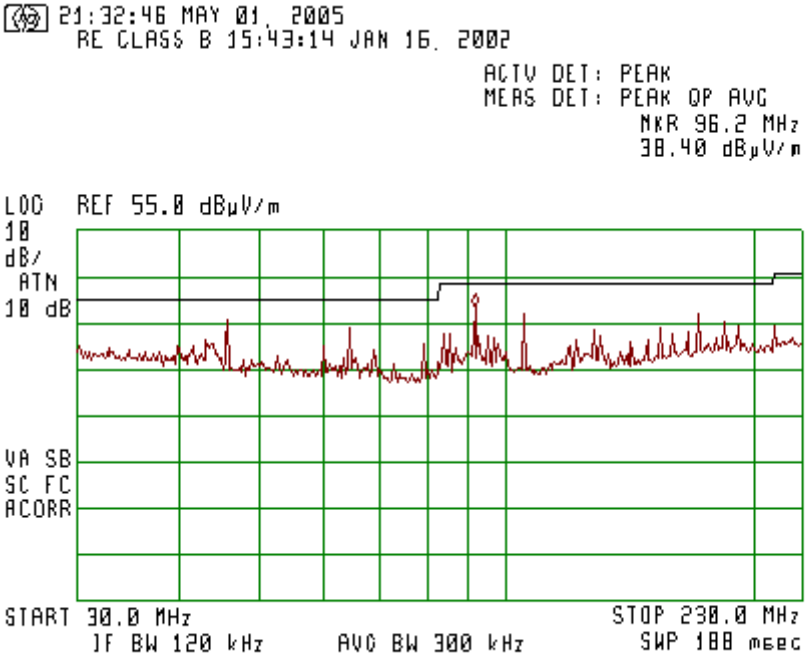
Plot 53
Horizontal Polarization



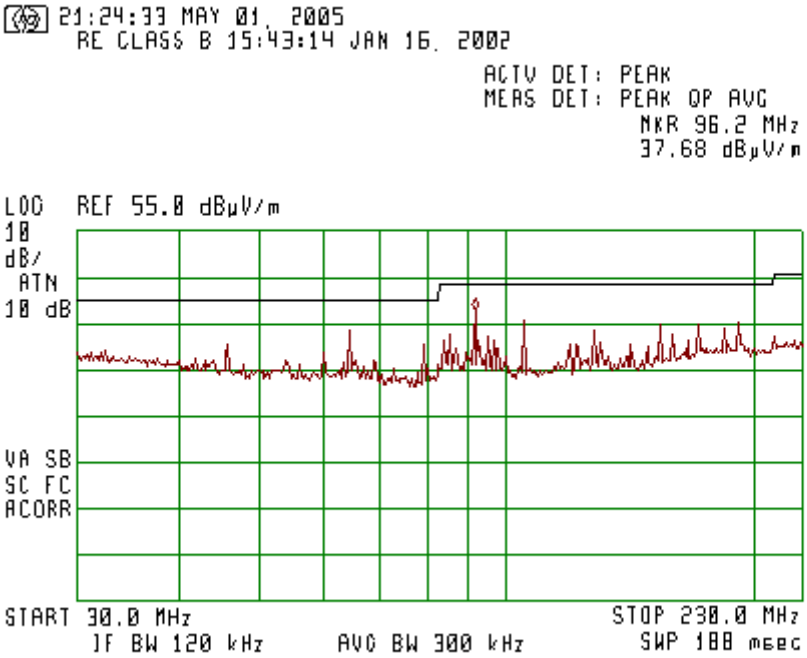
Plot 54
Vertical Polarization



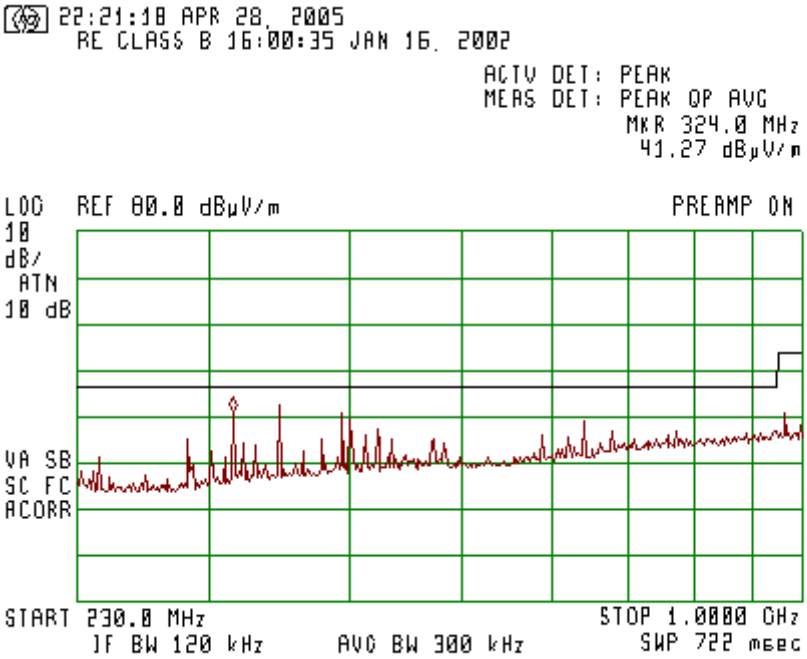
Highest
Plot 55
Horizontal Polarization



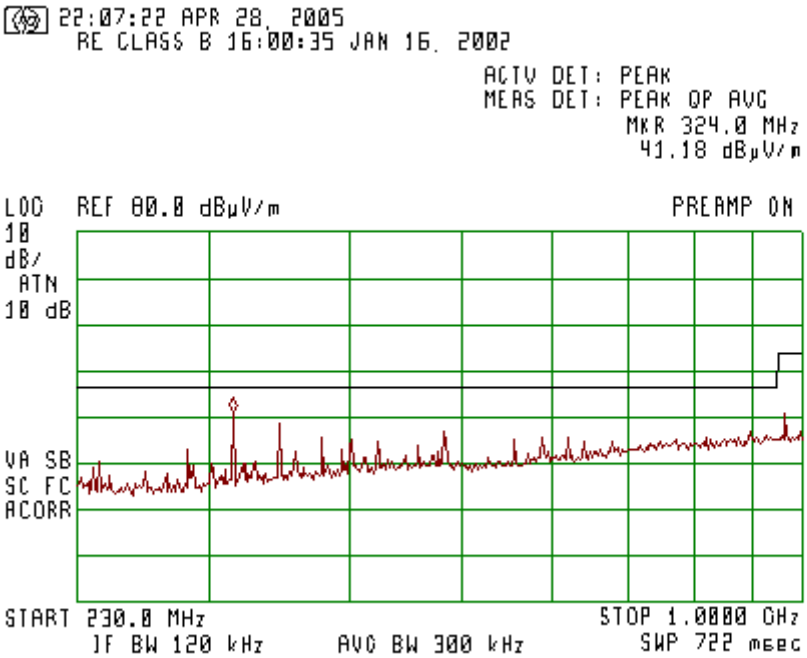
Plot 56
Vertical polarization



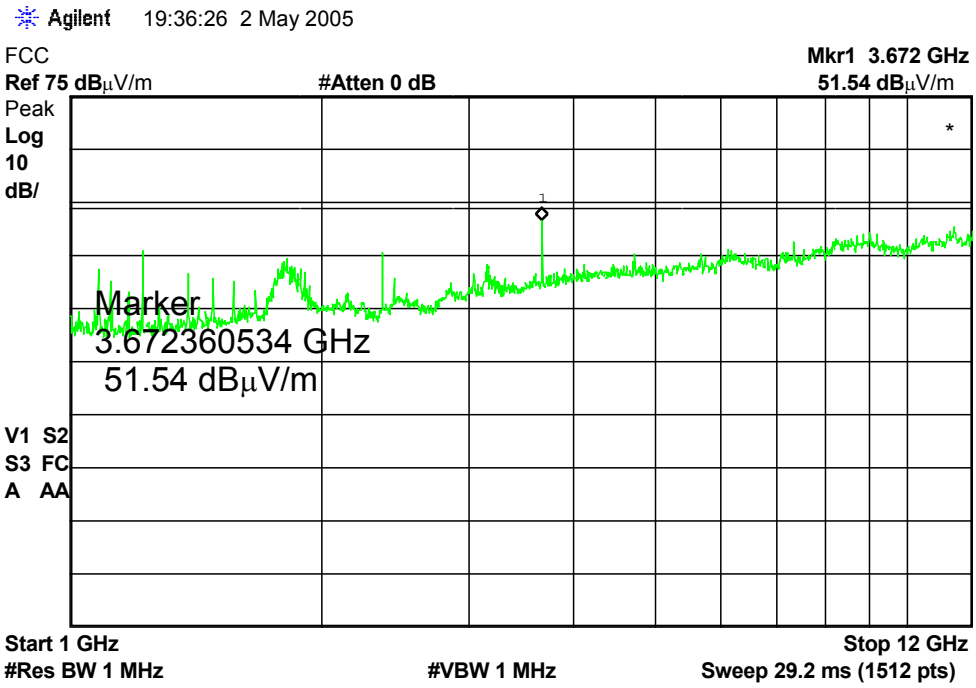
Plot 57
Horizontal Polarization



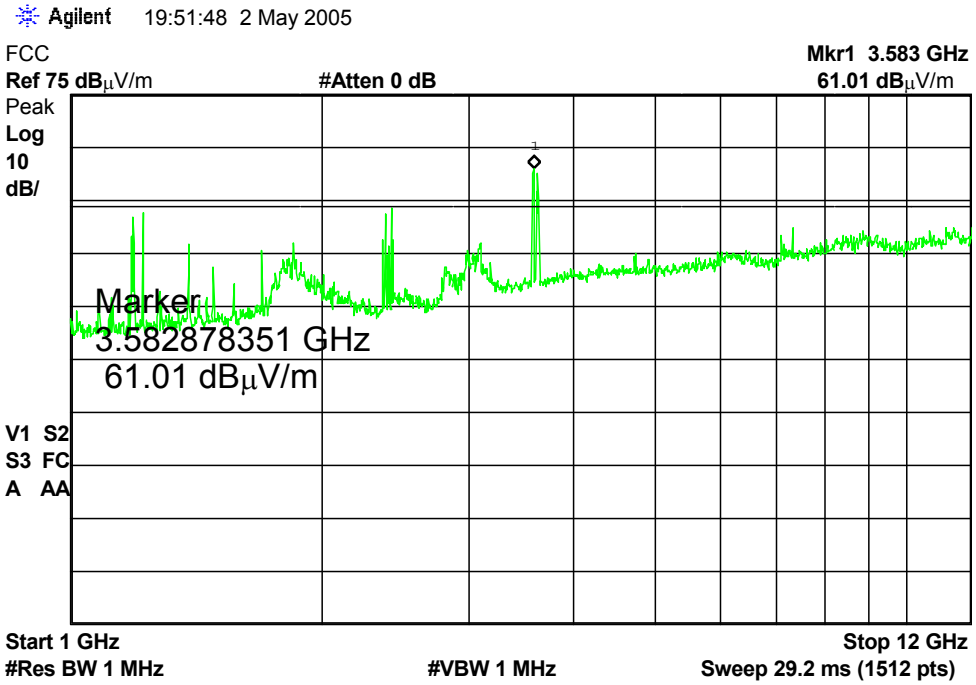
Plot 58
Vertical polarization



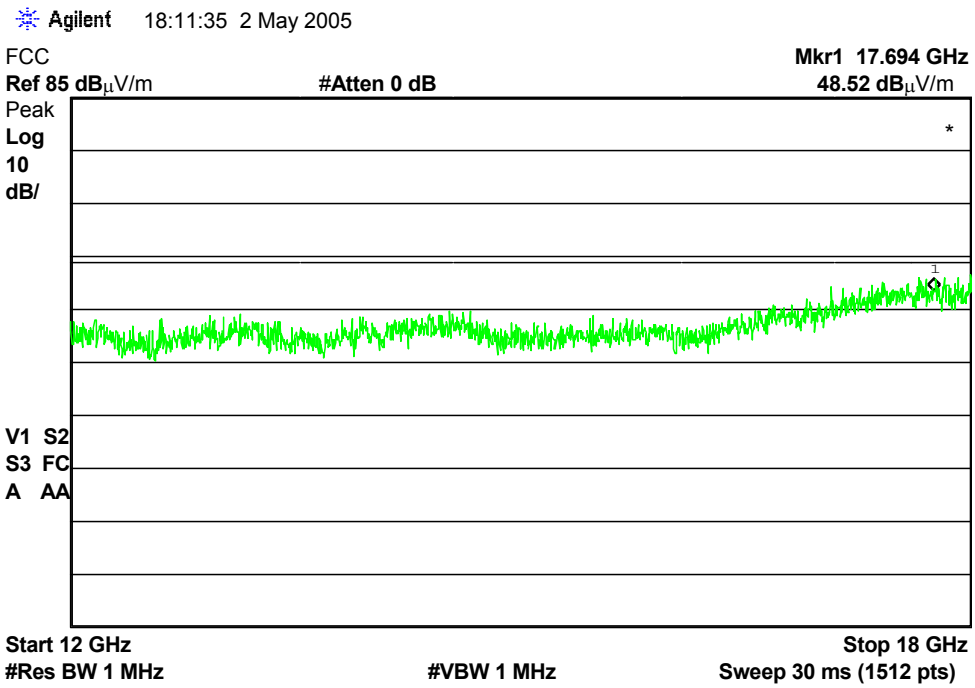
Plot 59
Horizontal Polarization



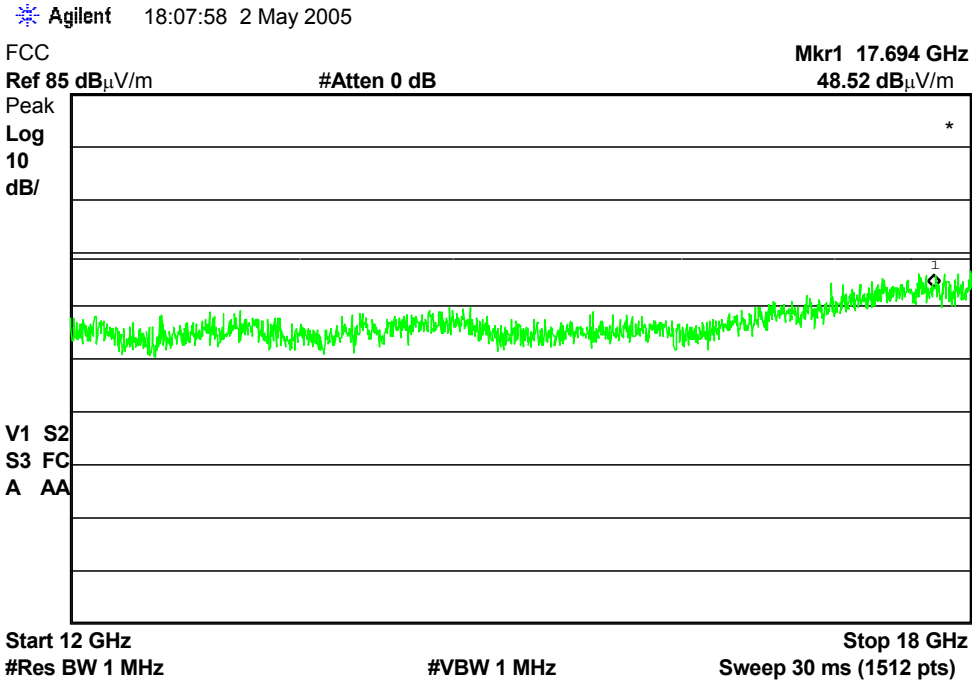
Plot 60
Vertical polarization



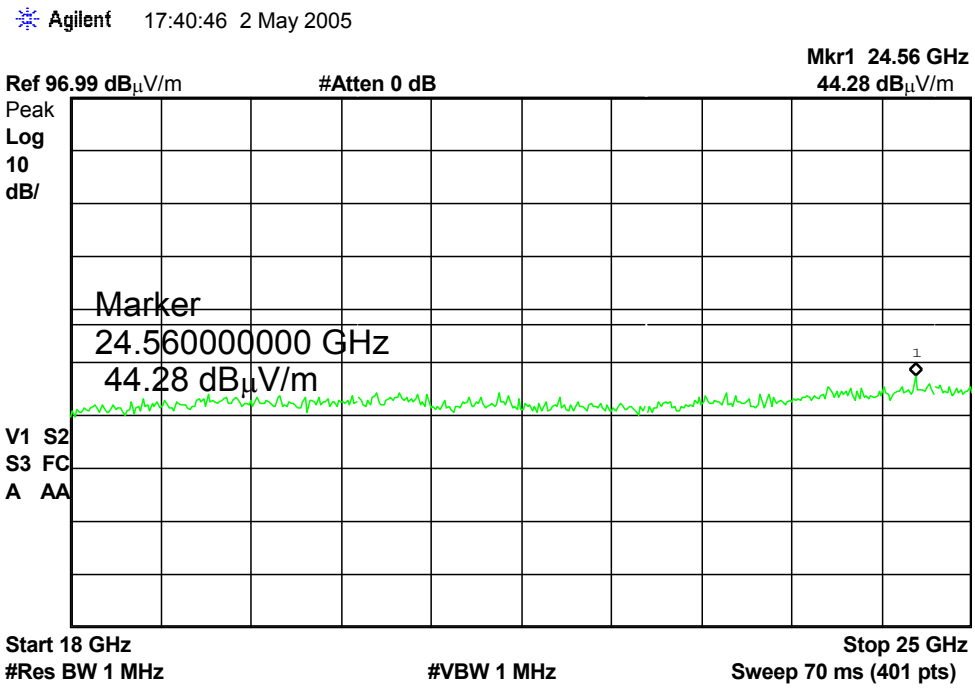
Plot 61
Horizontal Polarization



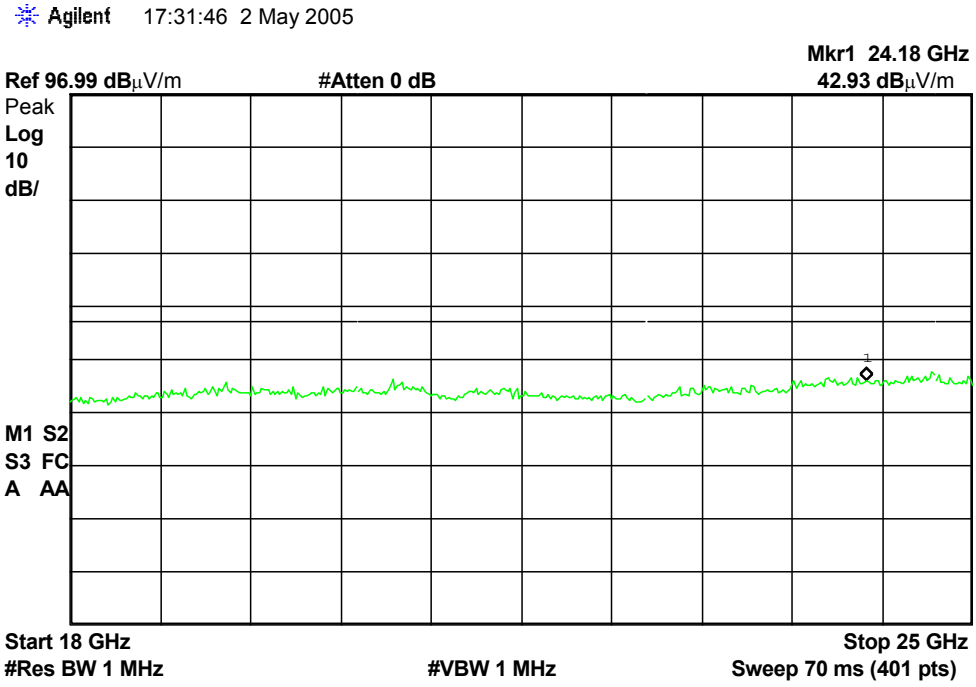
Plot 62
Vertical polarization



Plot 63
Horizontal Polarization

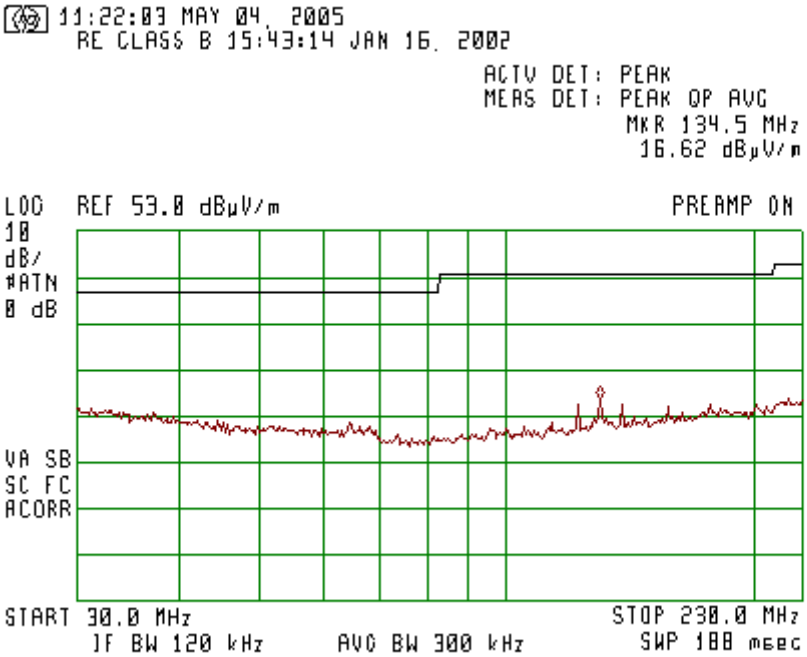


Plot 64
Vertical polarization

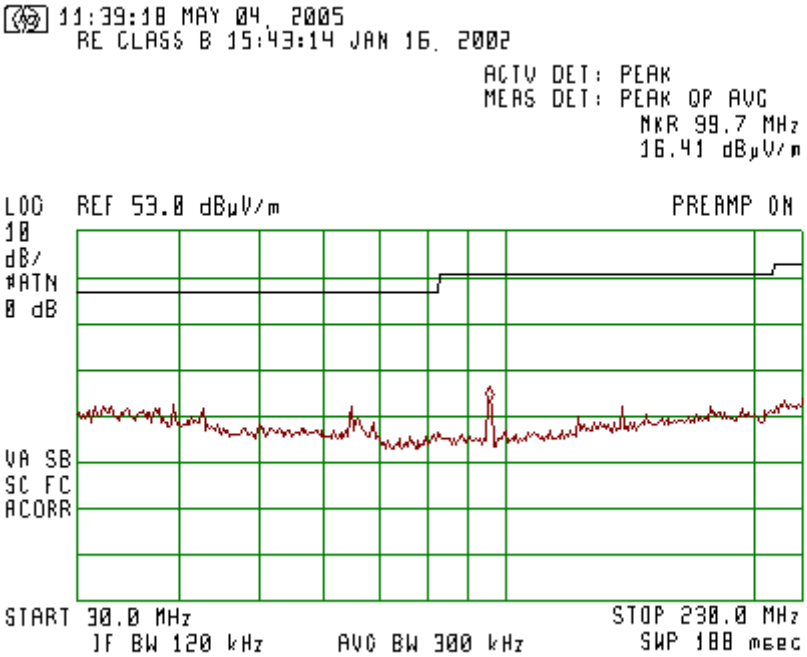


iMedia RF Controller

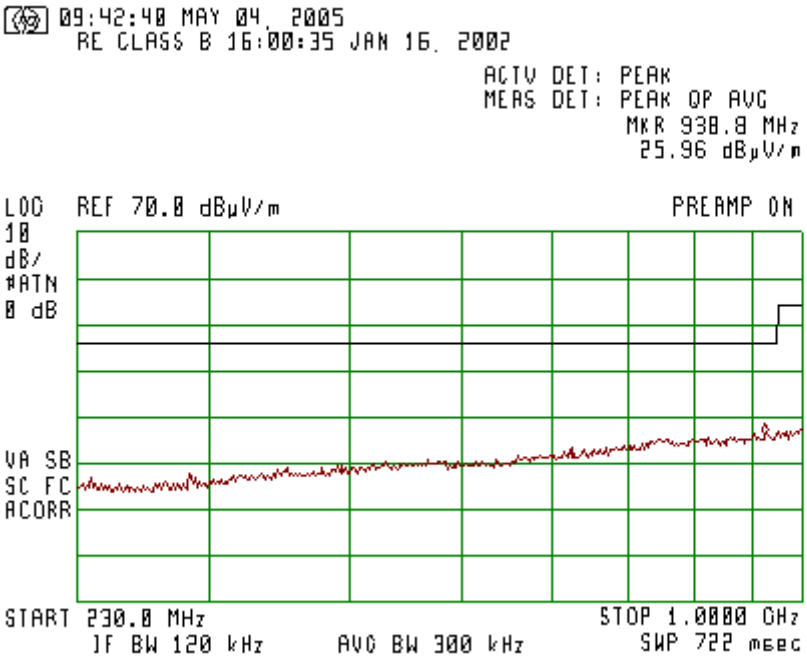
Lowest
Plot 65
Horizontal Polarization



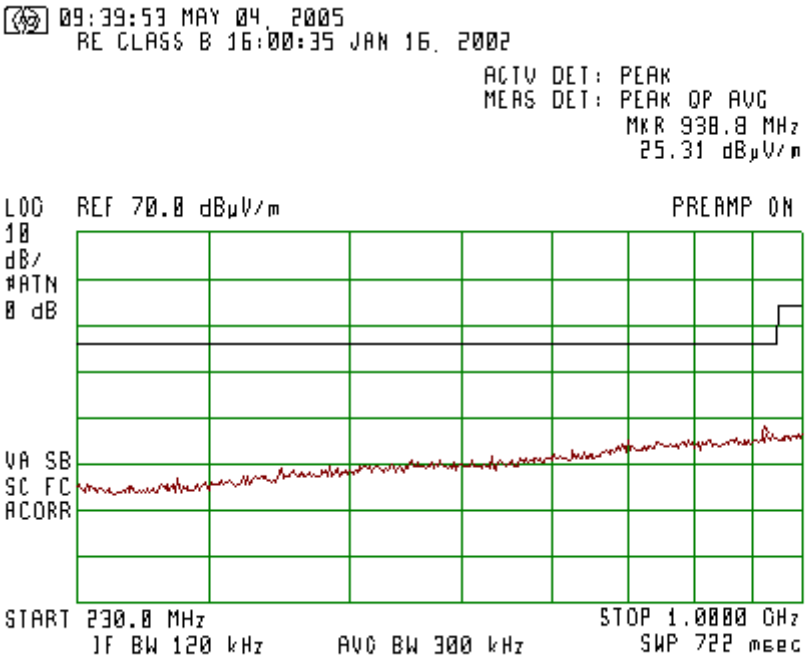
Plot 67
Vertical Polarization



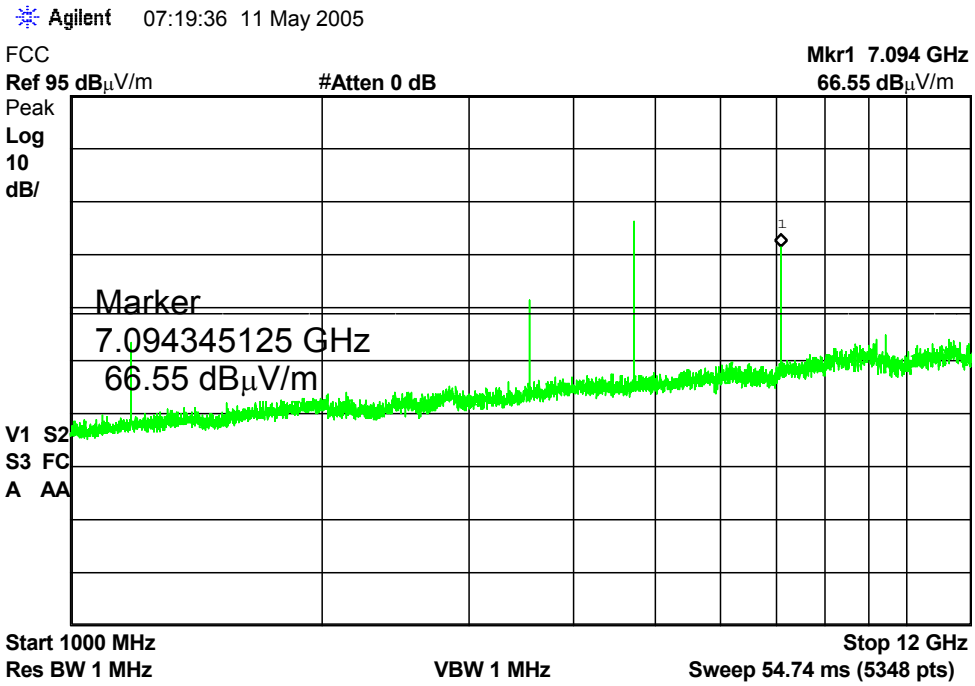
Plot 68
Horizontal Polarization



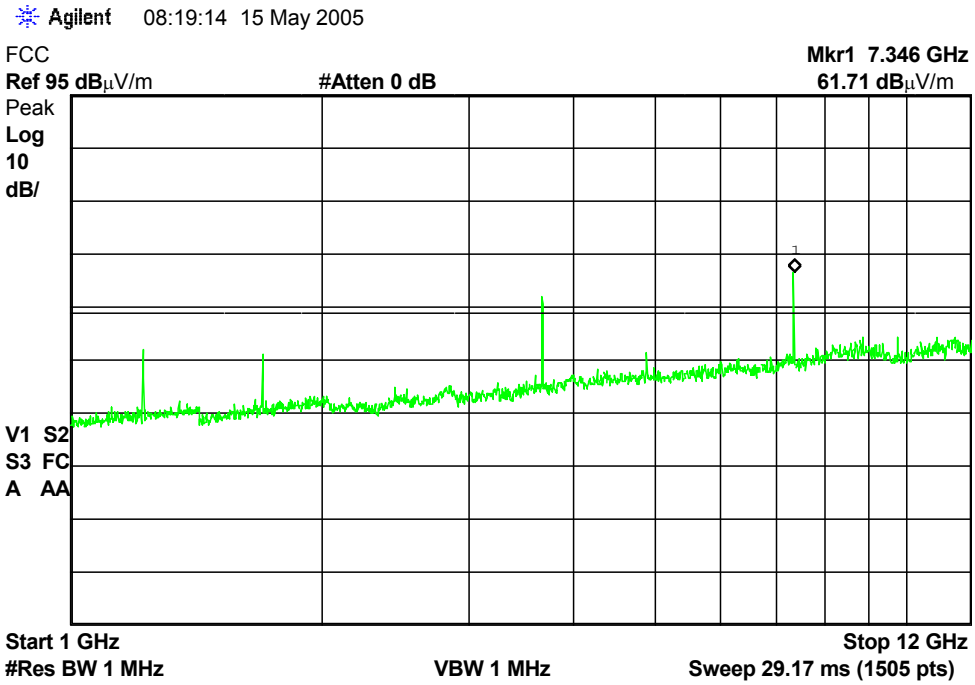
Plot 69
Vertical Polarization



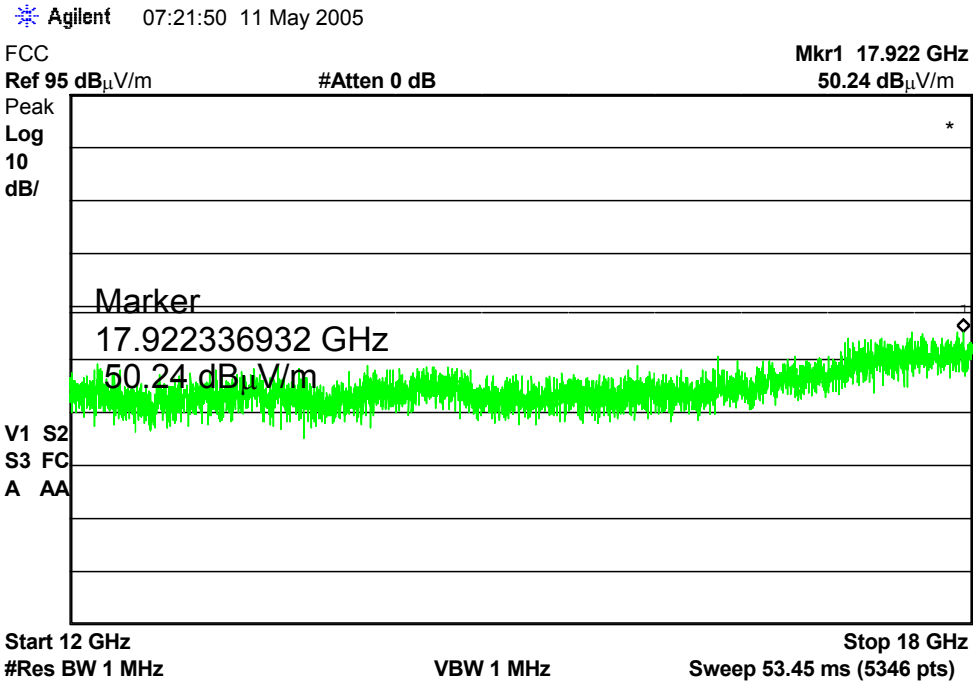
Plot 70
Horizontal Polarization



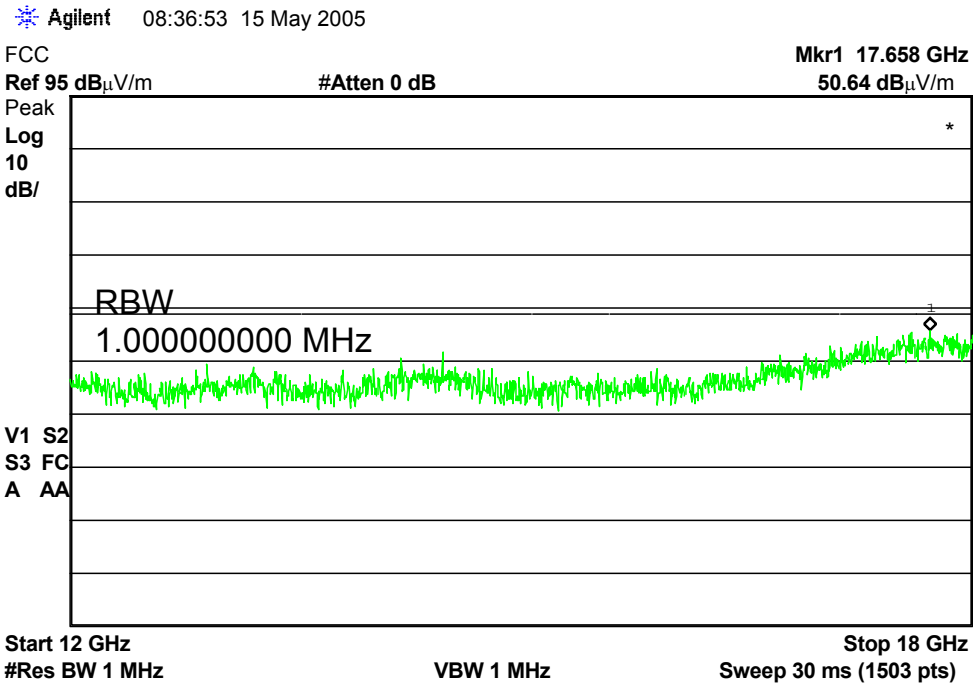
Plot 71
Vertical Polarization



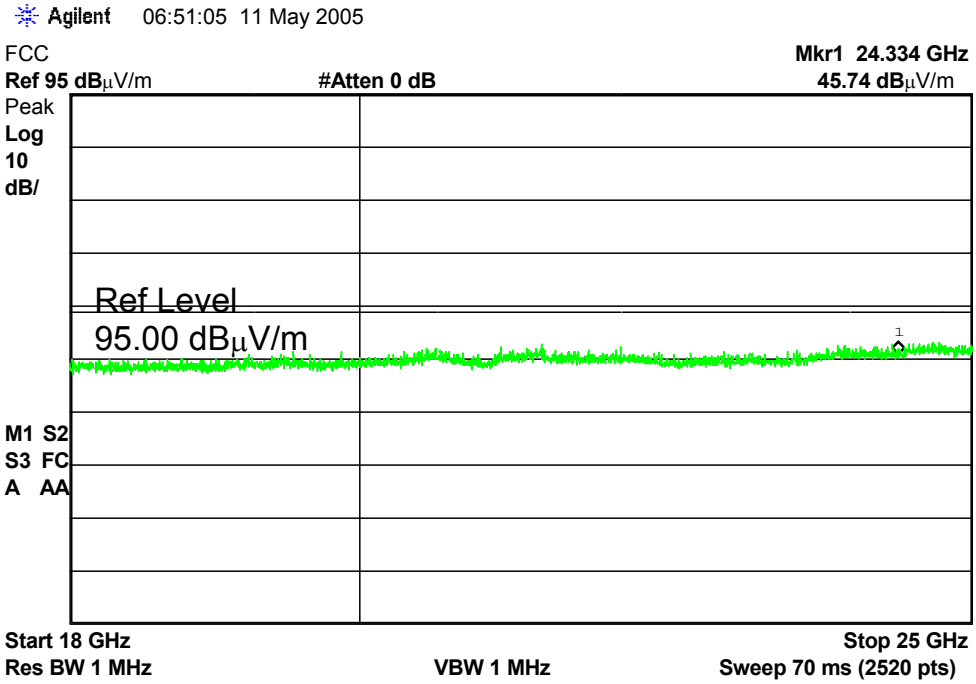
Plot 72
Horizontal Polarization



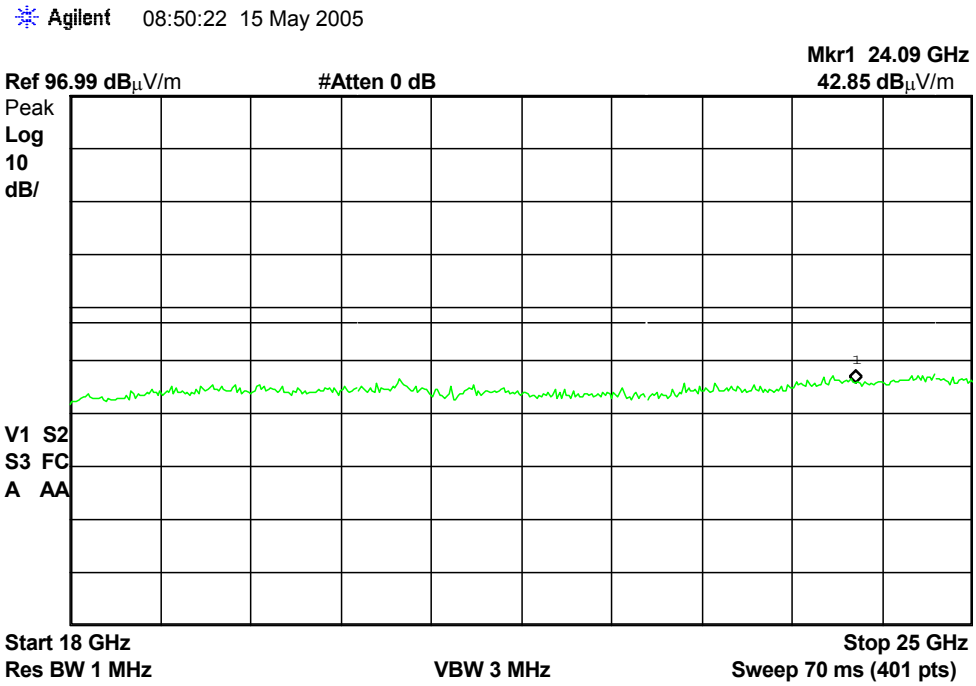
Plot 73
Vertical Polarization



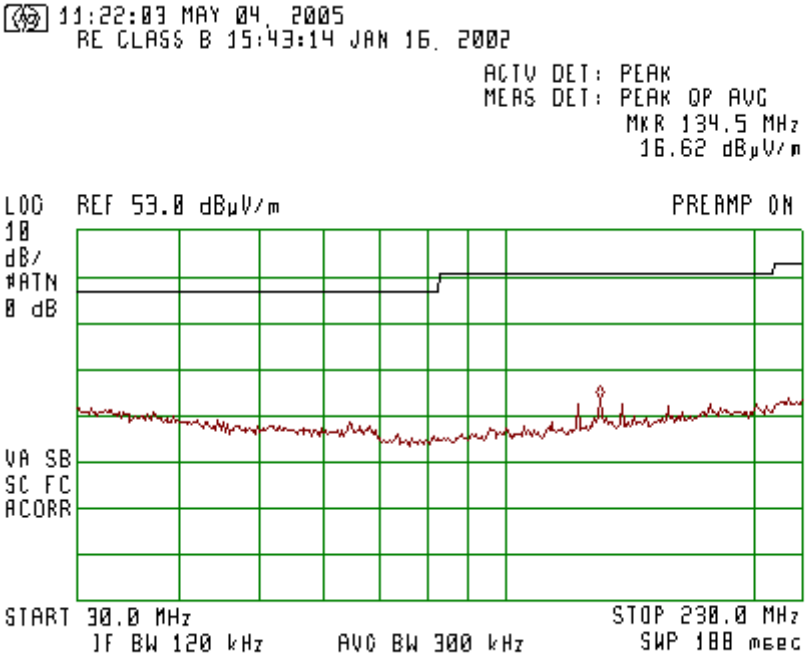
Plot 74
Horizontal Polarization



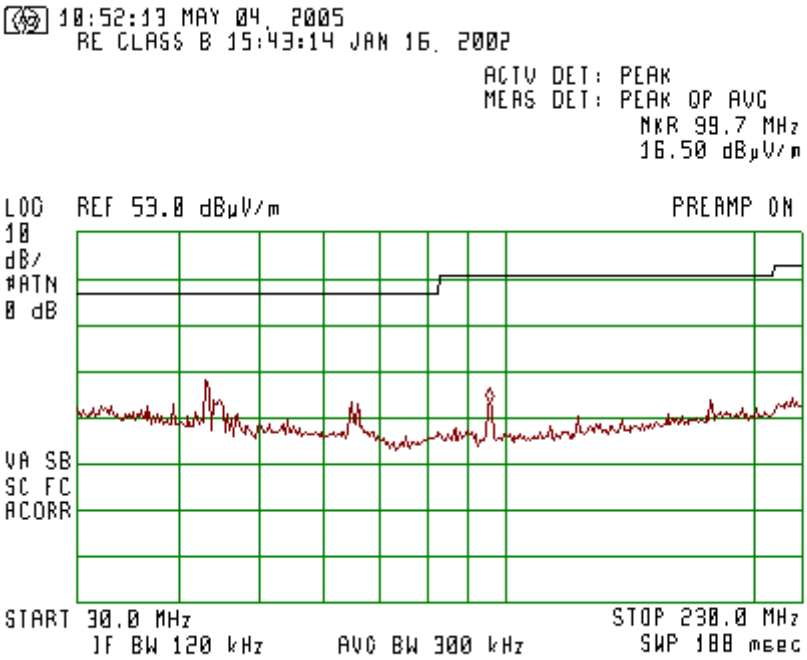
Plot 75
Vertical Polarization



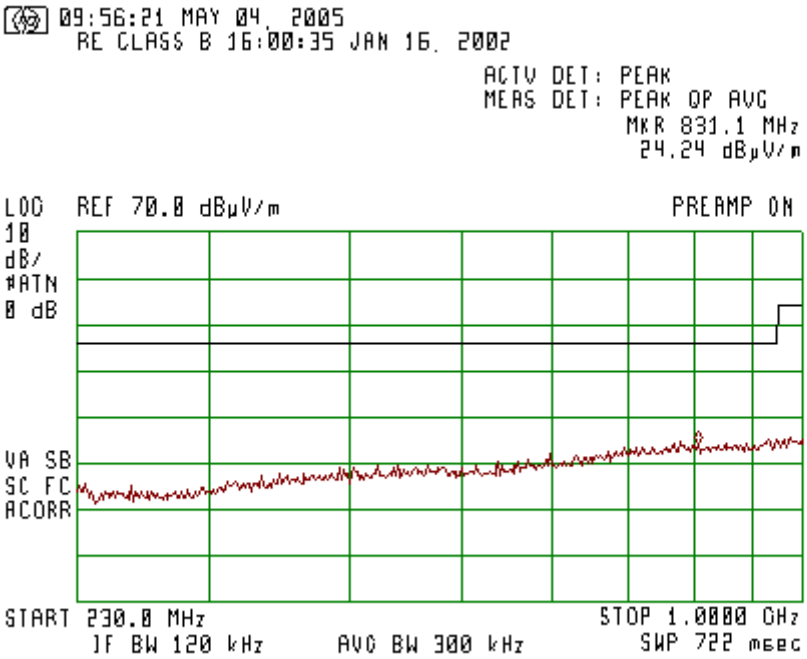
Middle
Plot 76
Horizontal Polarization



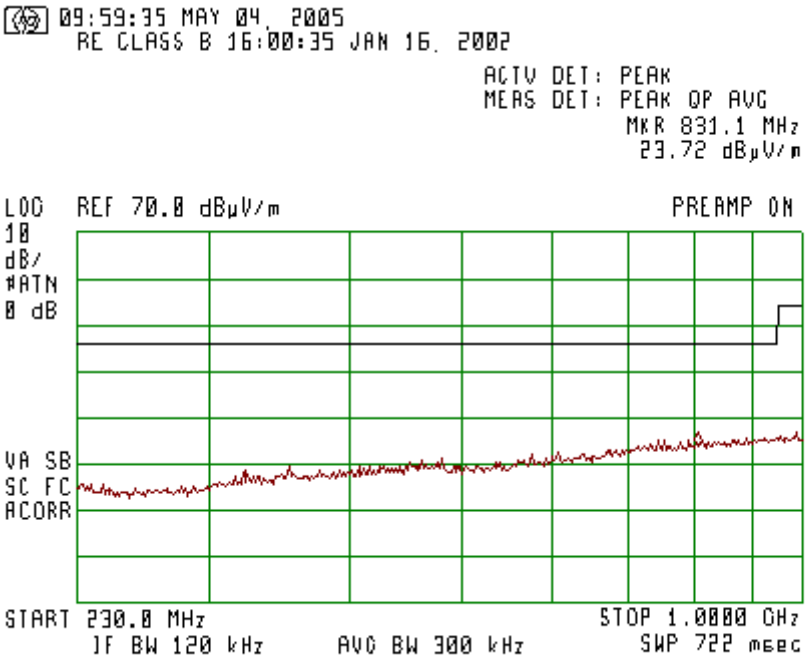
Plot 77
Vertical Polarization



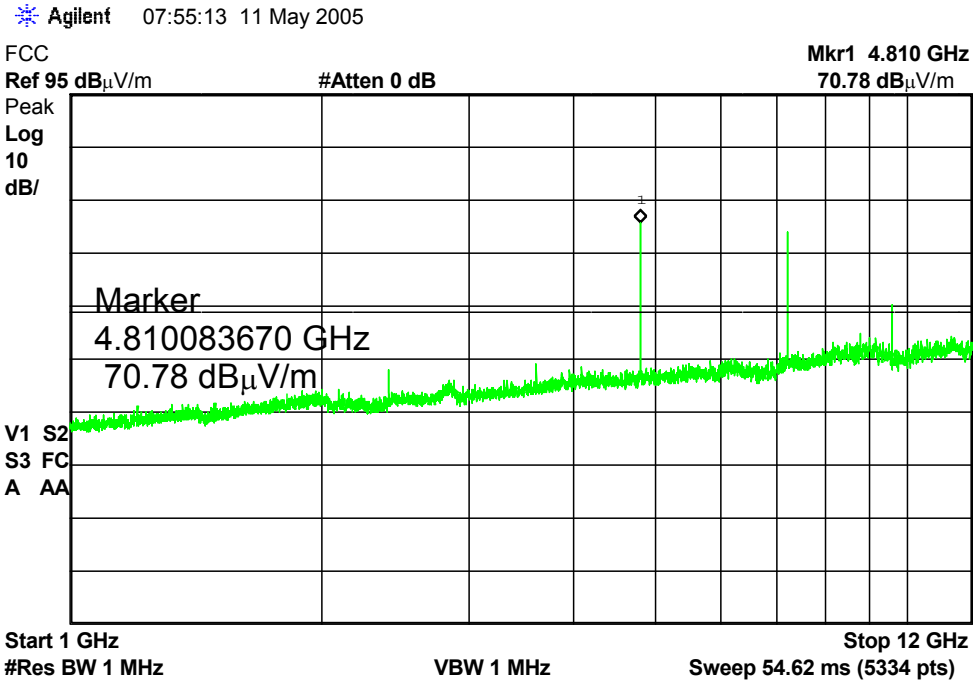
Plot 78
Horizontal Polarization



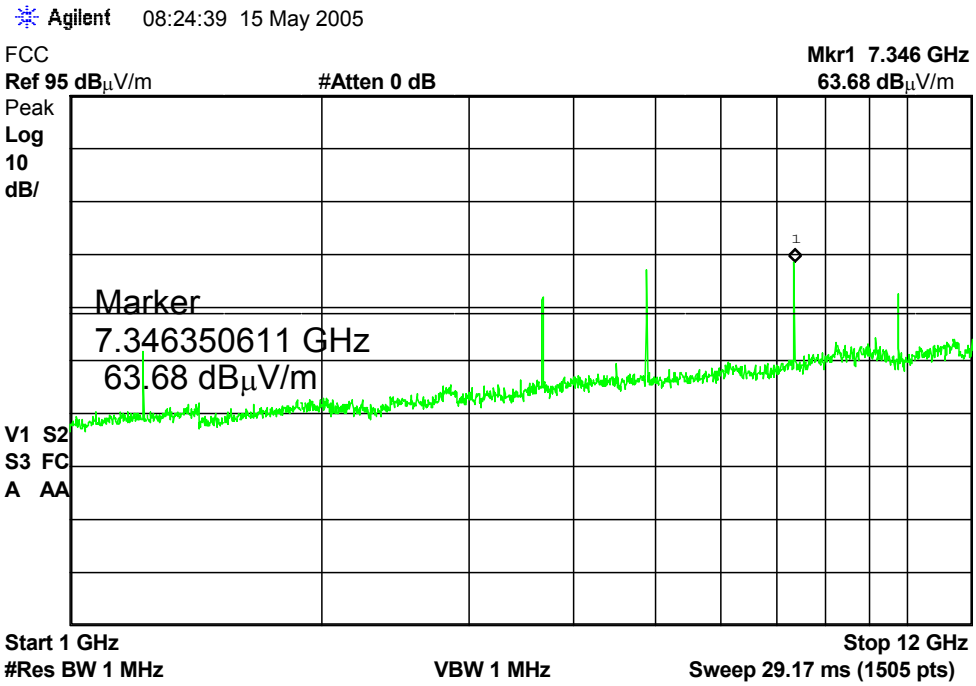
Plot 79
Vertical Polarization



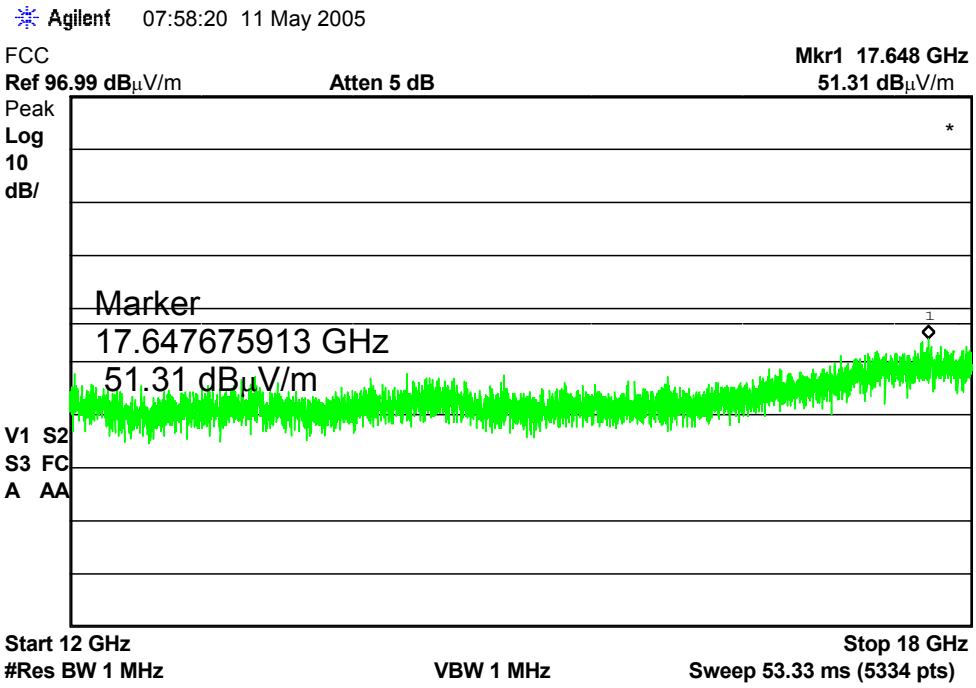
Plot 80
Horizontal Polarization



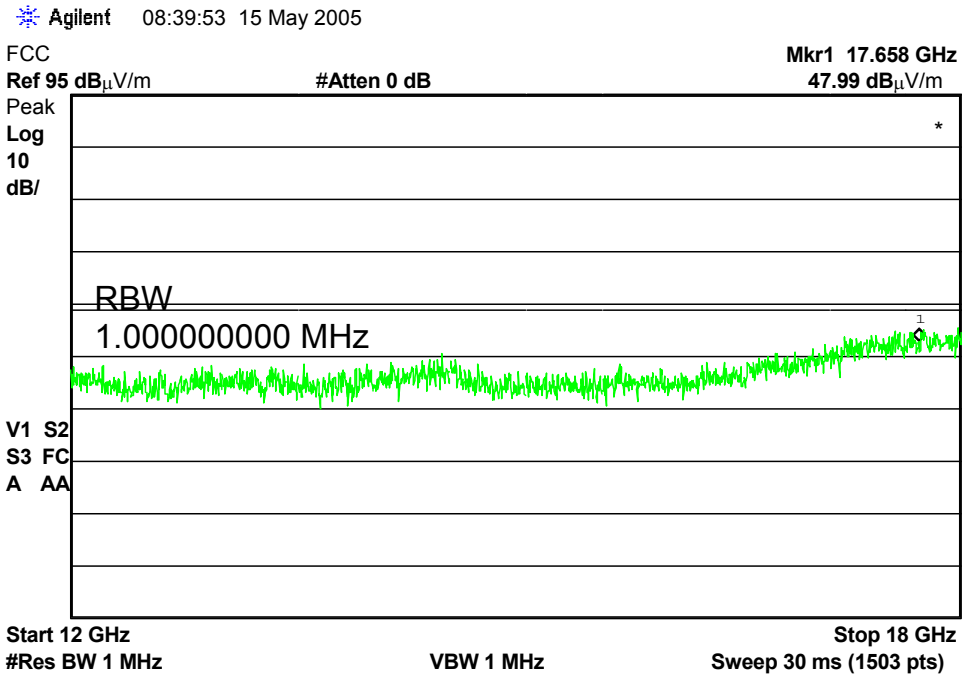
Plot 81
Vertical Polarization



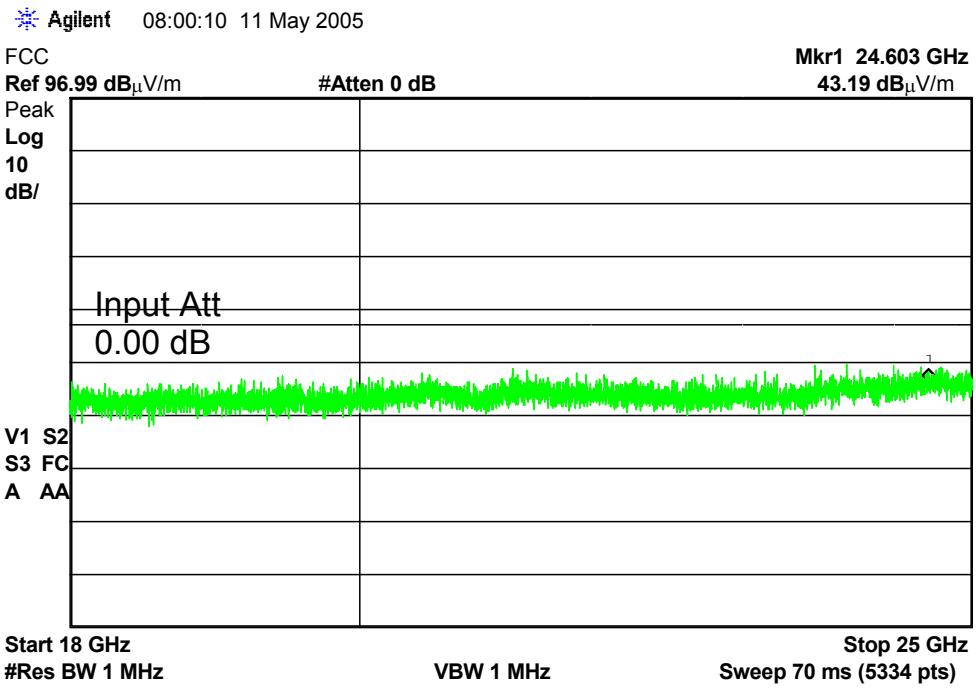
Plot 82
Horizontal Polarization



Plot 83
Vertical Polarization

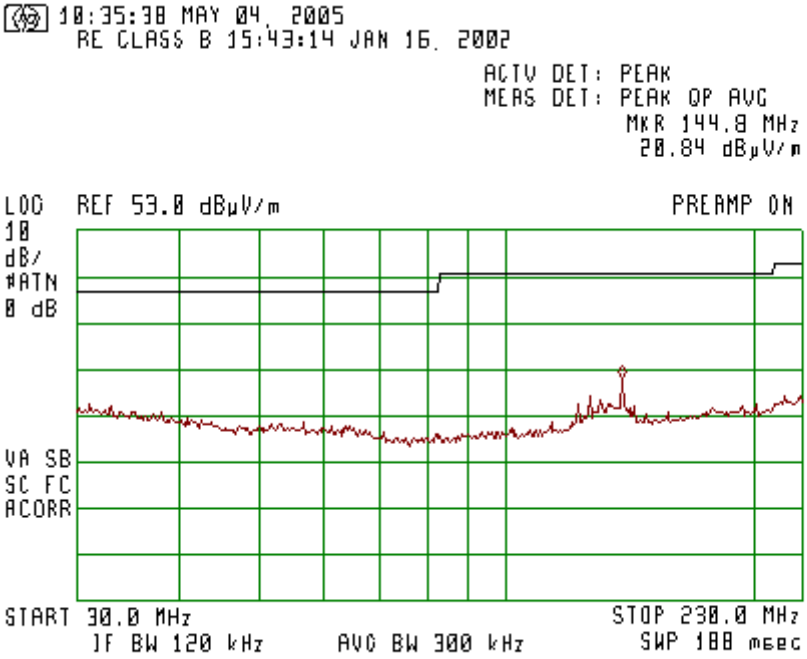


Plot 84
Horizontal Polarization

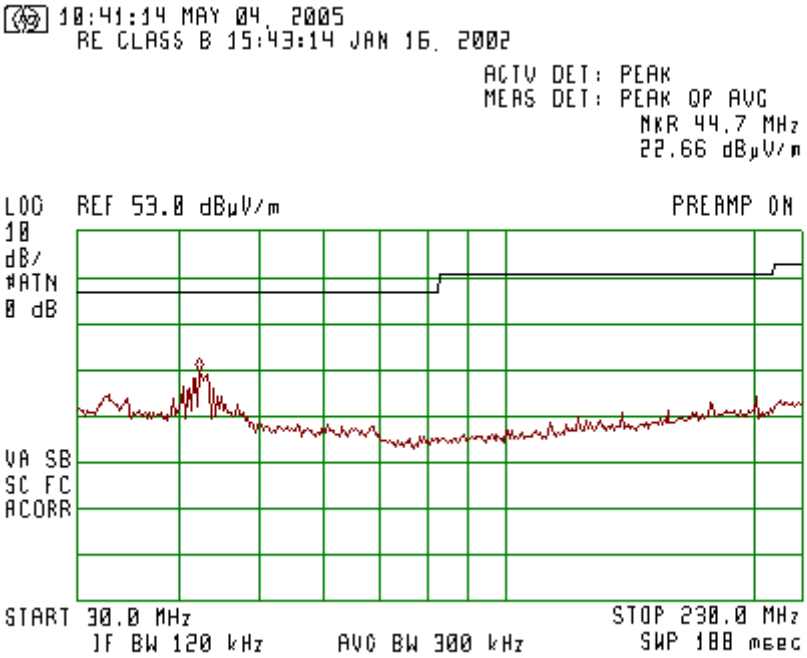


Plot 85
Vertical Polarization

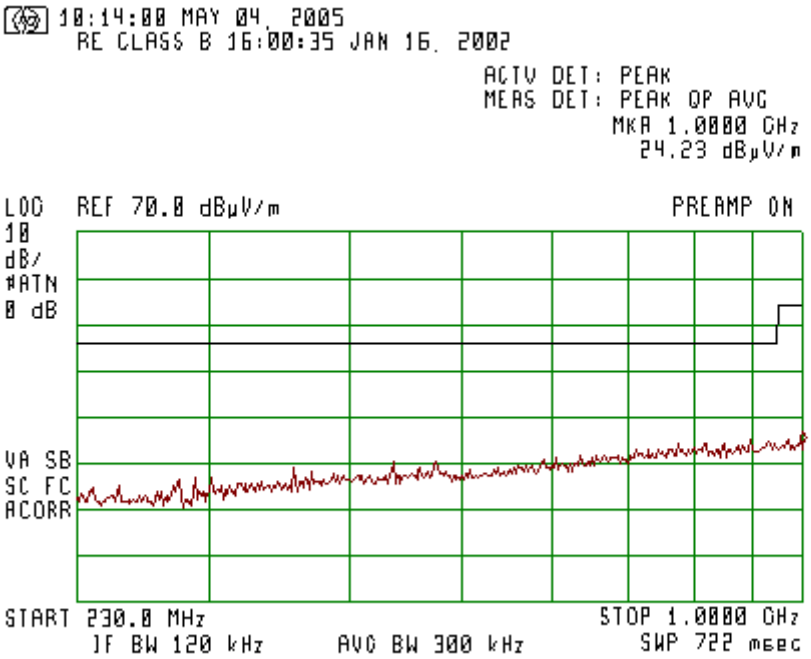
Highest
Plot 86
Horizontal Polarization



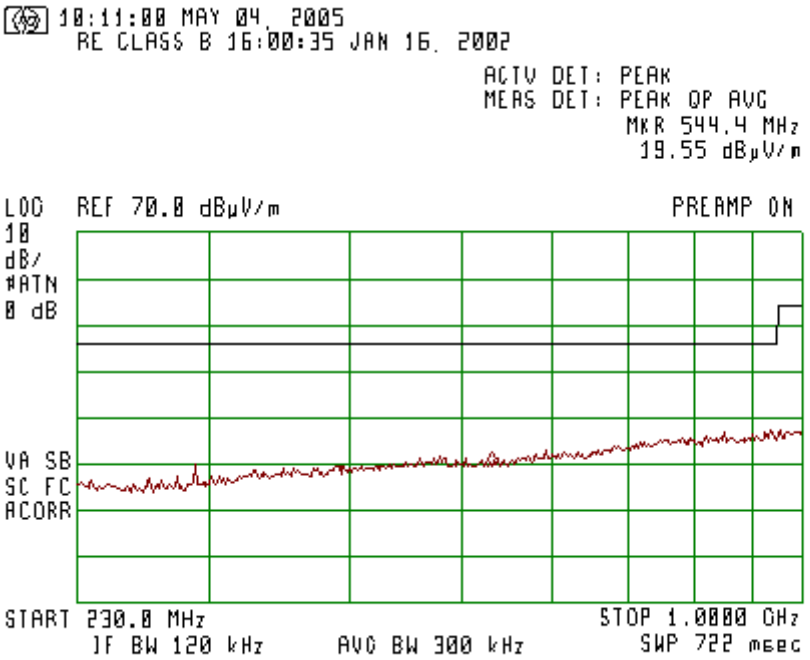
Plot 87
Vertical polarization



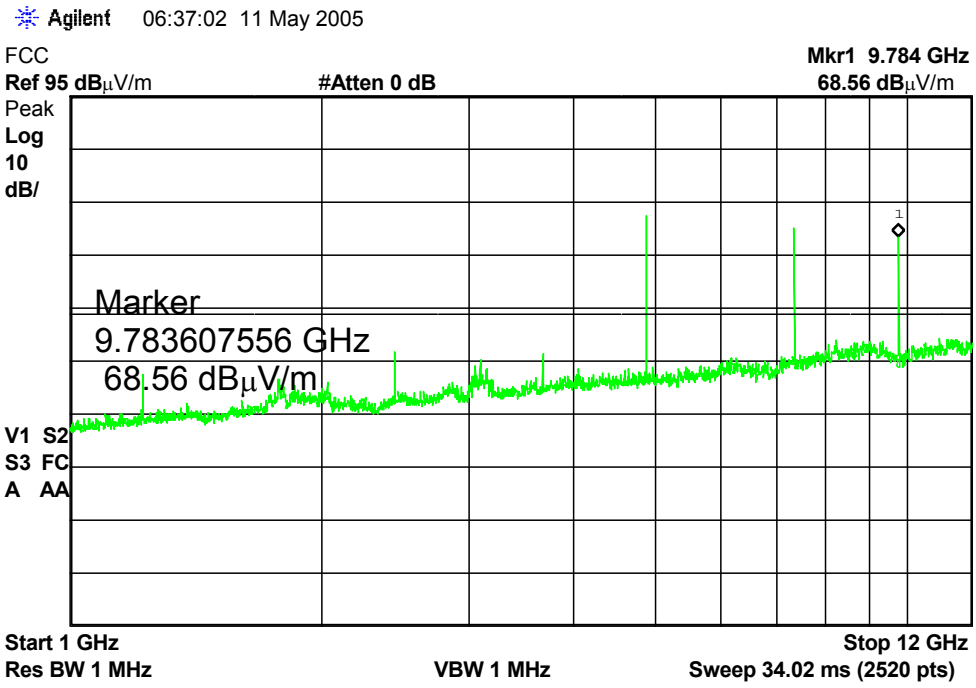
Plot 88
Horizontal Polarization



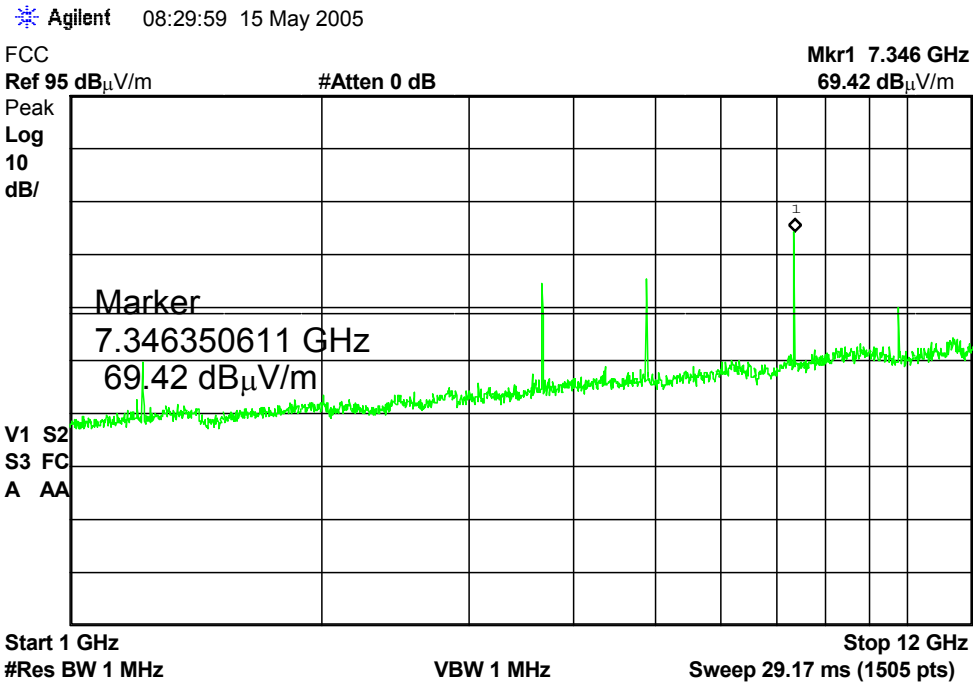
Plot 89
Vertical polarization



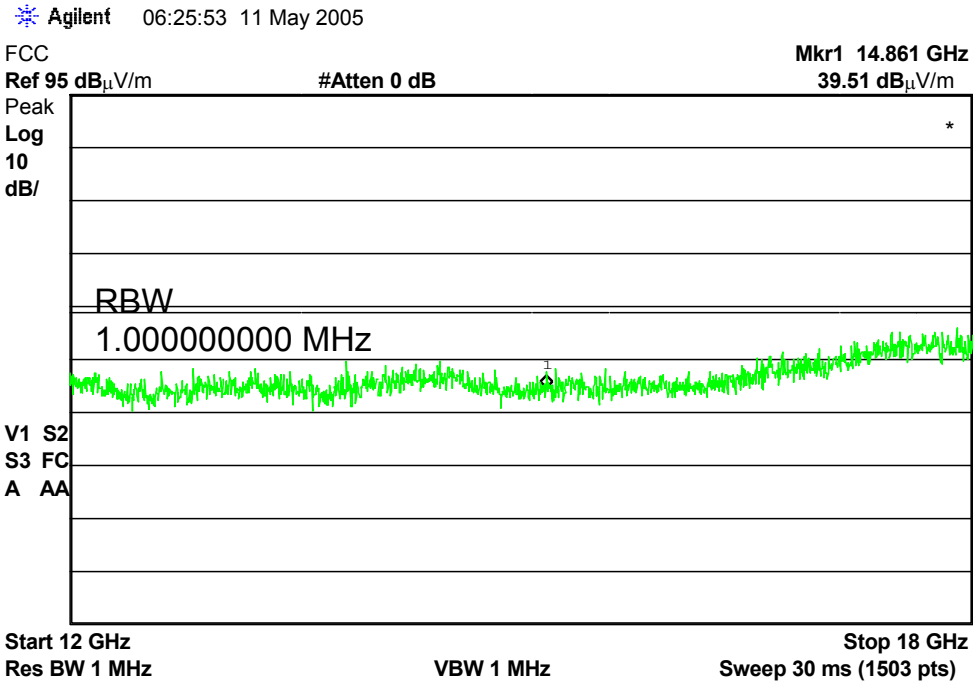
Plot 90
Horizontal Polarization



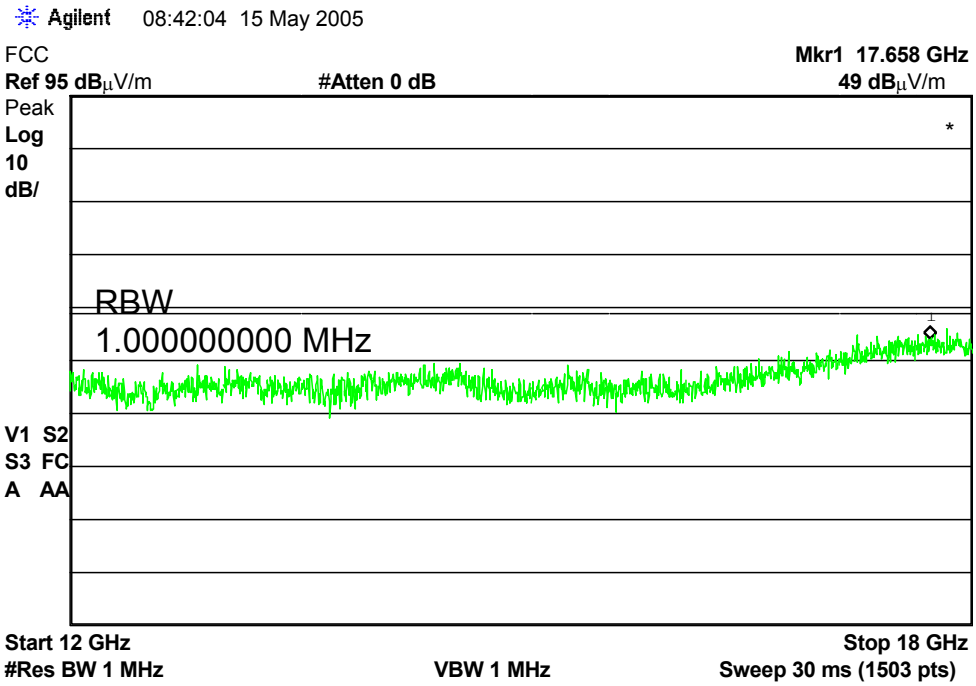
Plot 91
Vertical polarization



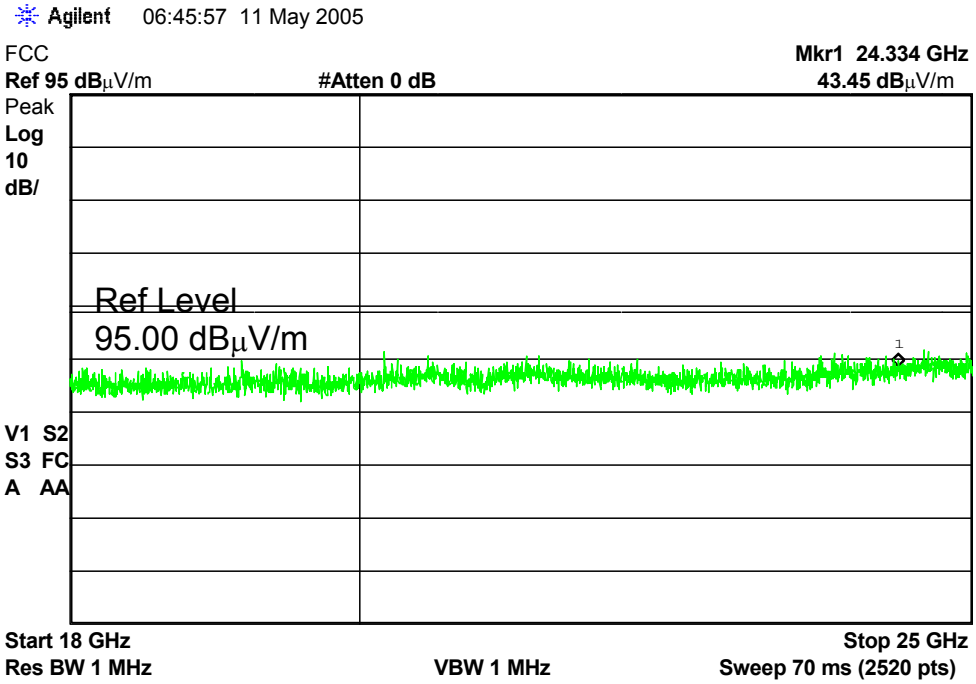
Plot 92
Horizontal Polarization



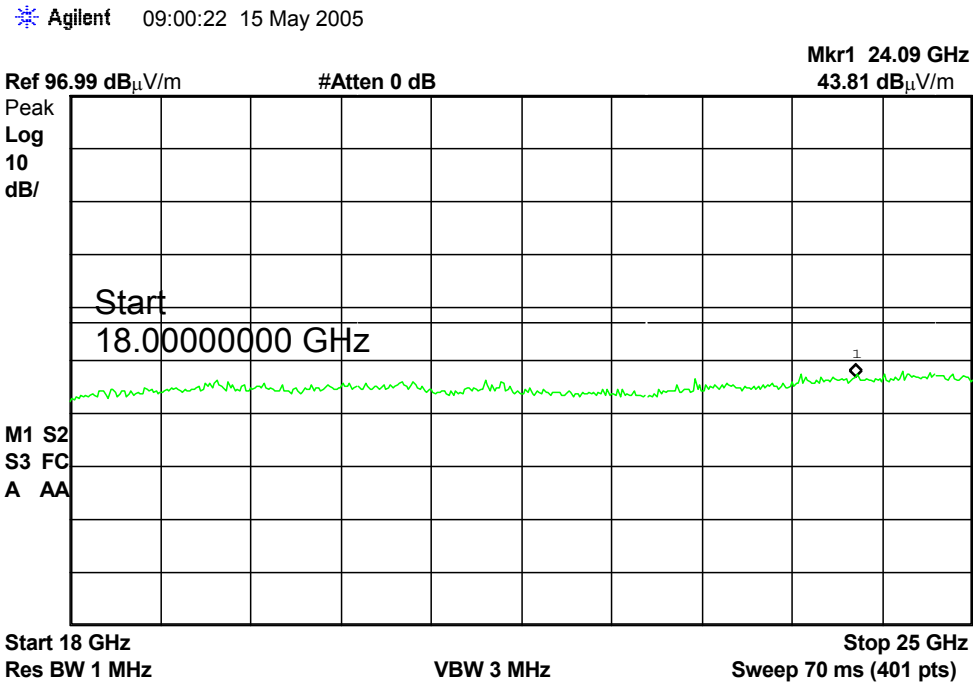
Plot 93
Vertical polarization



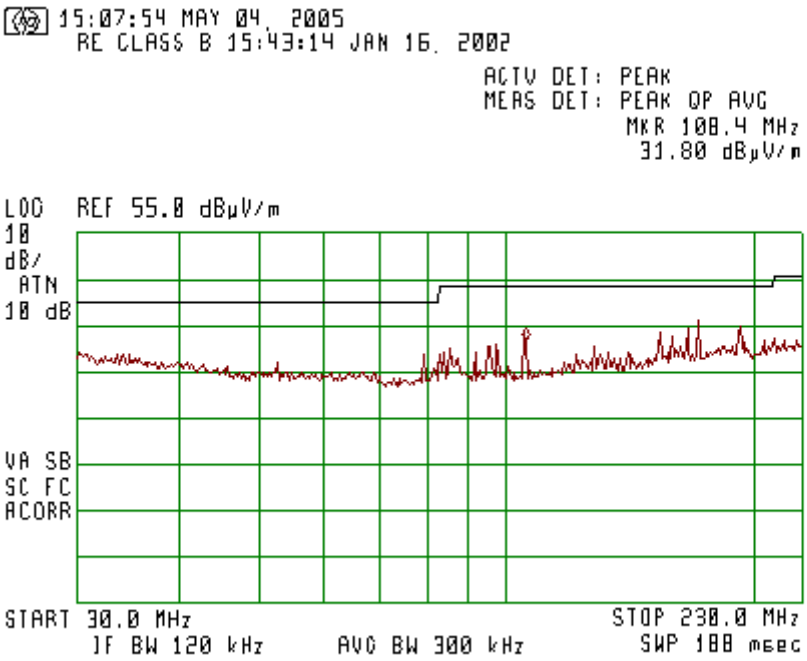
Plot 94
Horizontal Polarization



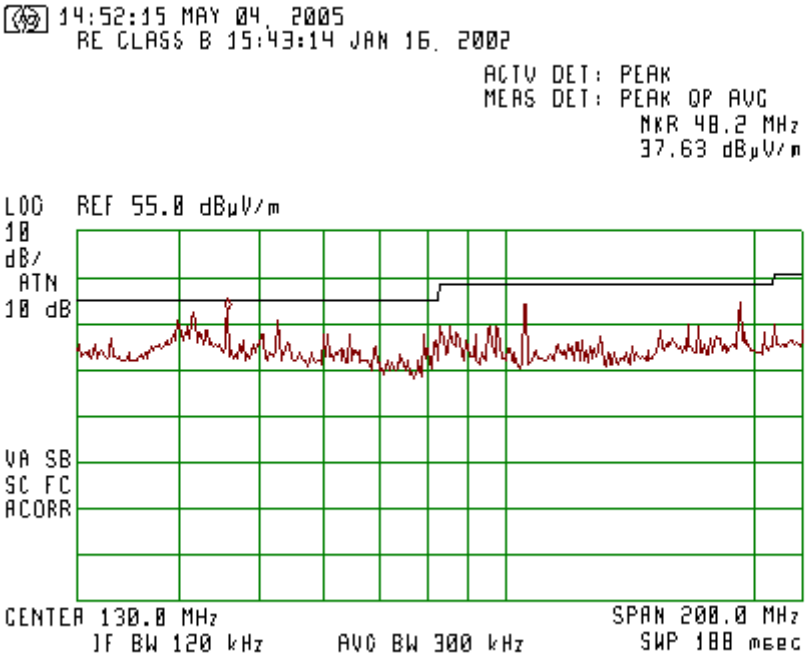
Plot 95
Vertical polarization



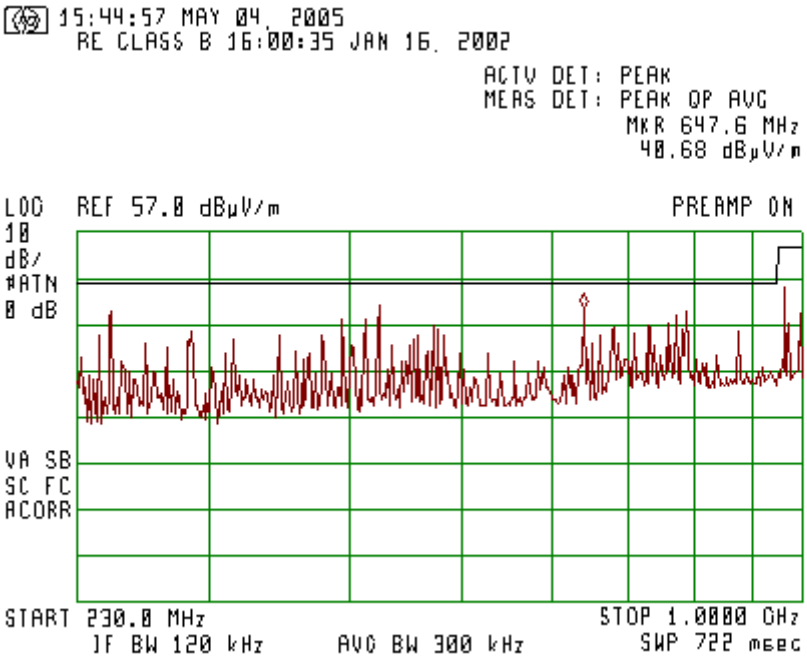
Plot 96
Horizontal Polarization



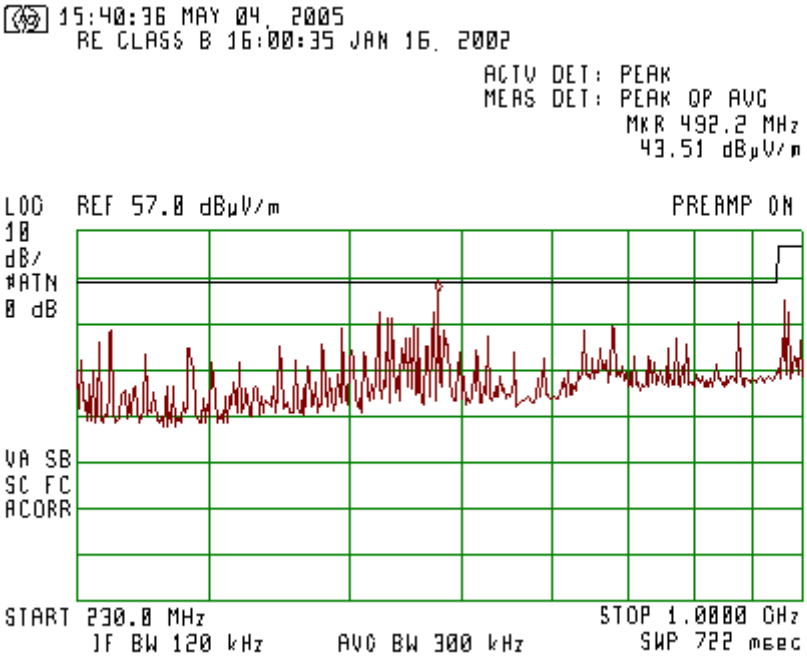
Plot 97
Vertical Polarization



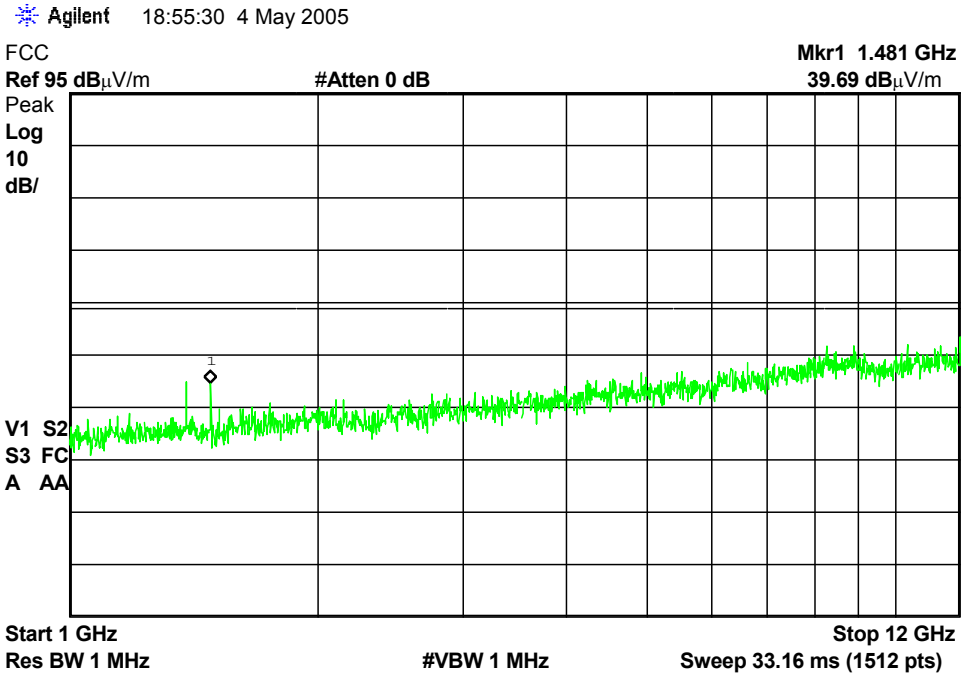
Plot 98
Horizontal Polarization



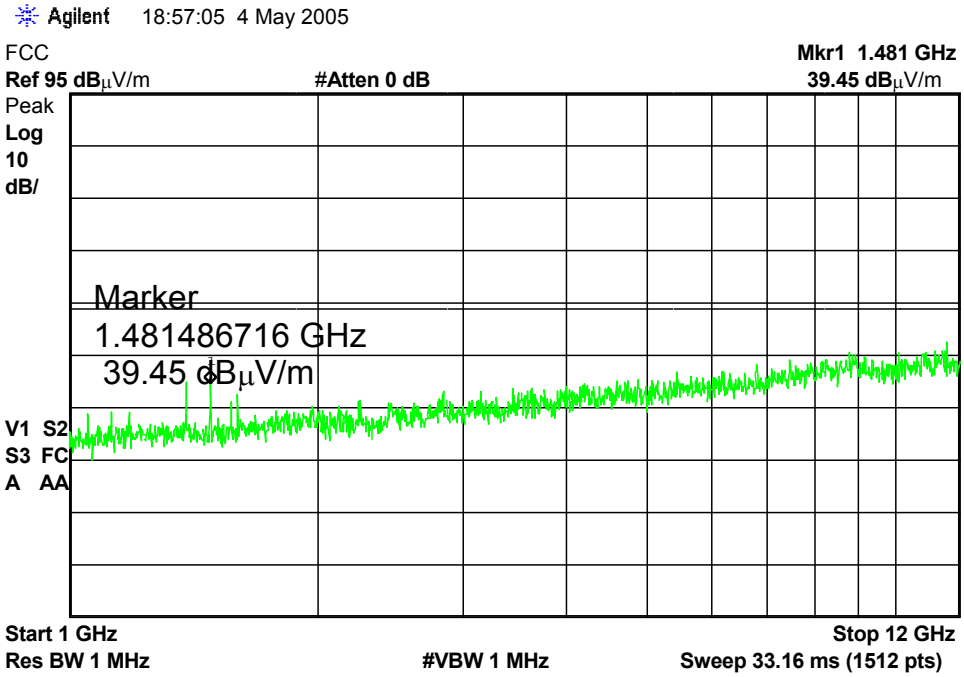
Plot 99
Vertical Polarization



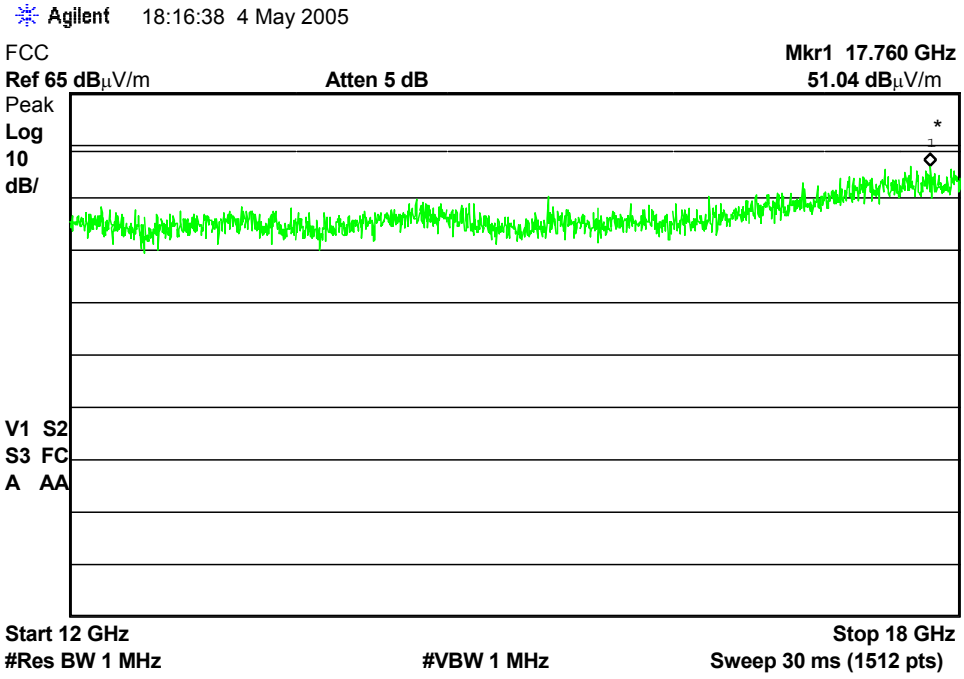
Plot 100
Horizontal Polarization



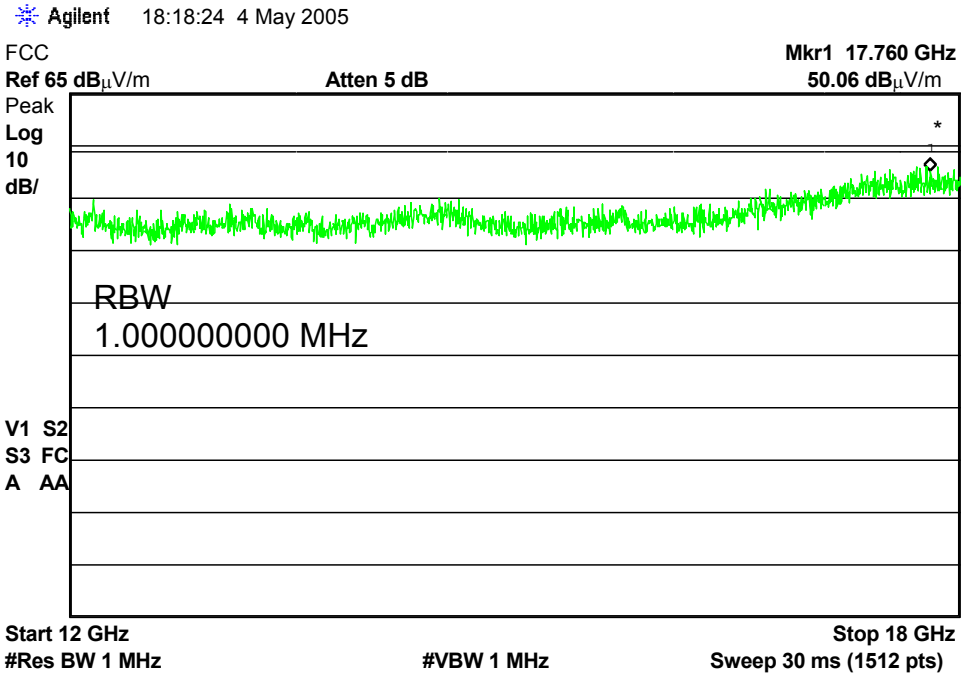
Plot 102
Vertical Polarization



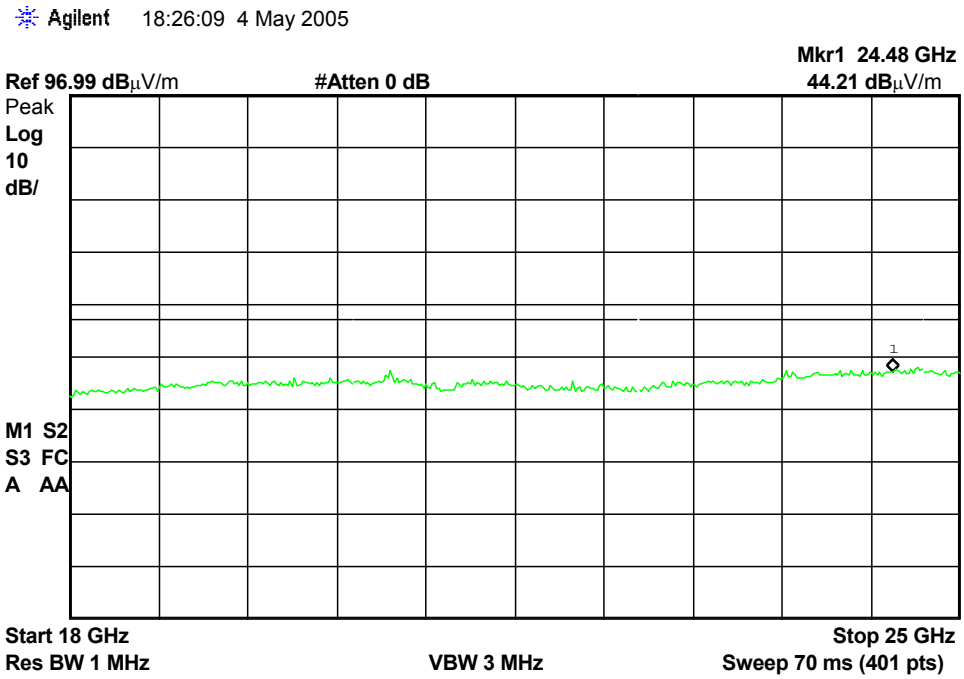
Plot 103
Horizontal Polarization



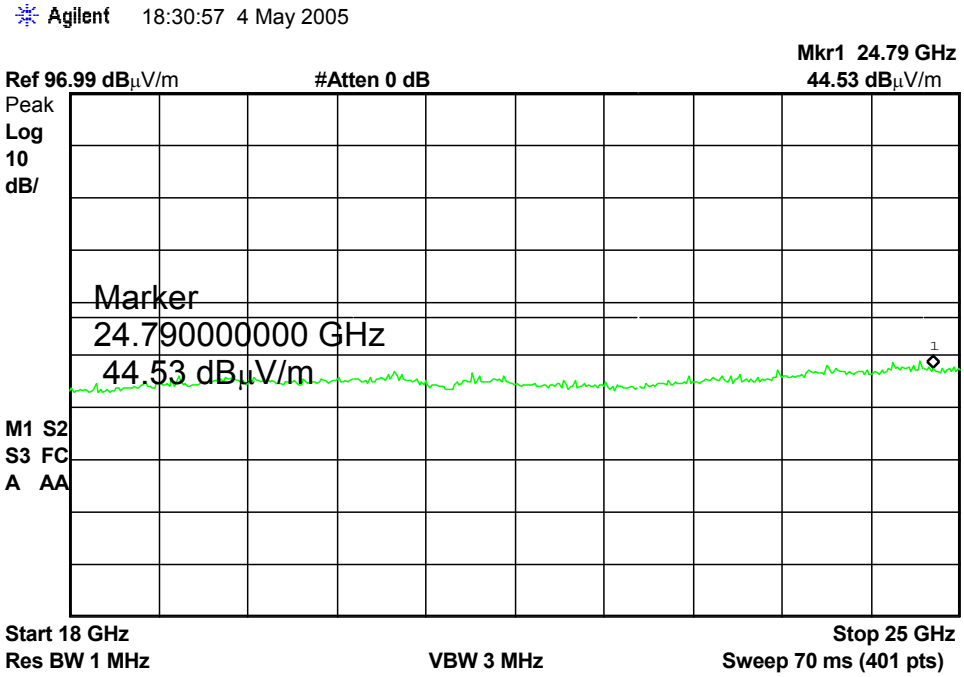
Plot 104
Vertical Polarization



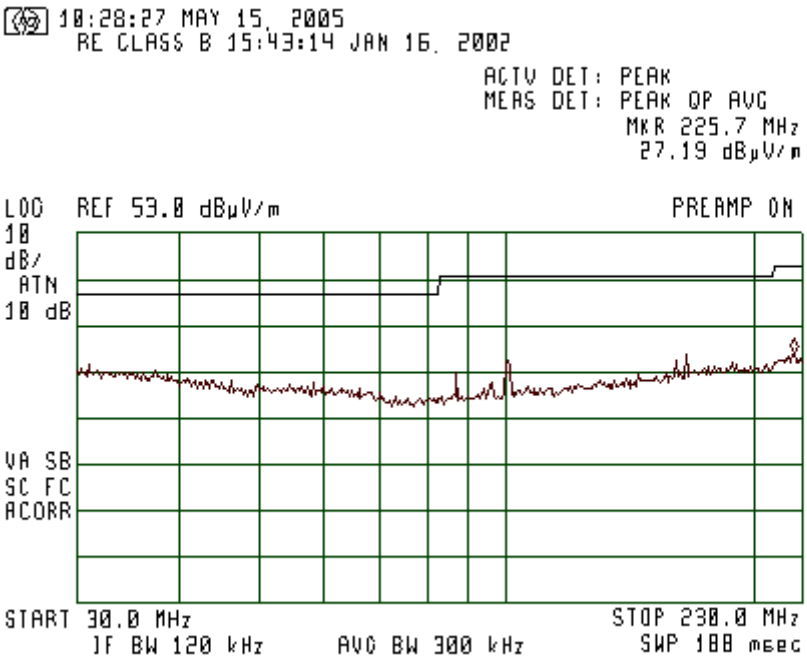
Plot 105
Horizontal Polarization



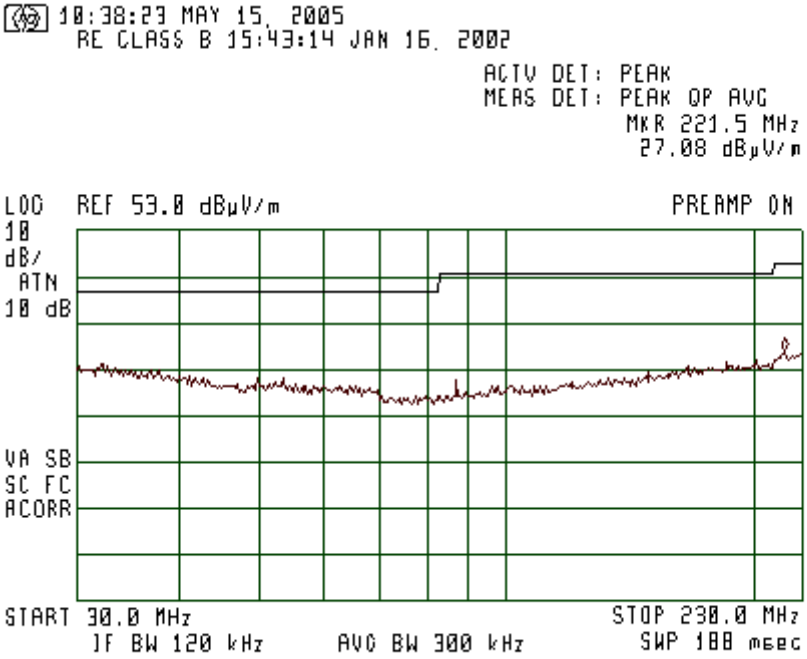
Plot 106
Vertical Polarization



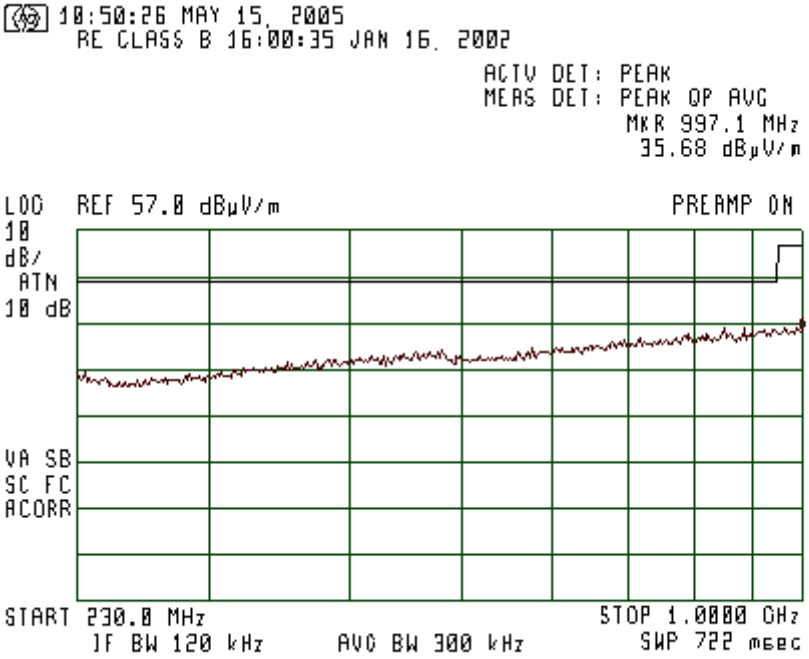
Plot 107
Horizontal Polarization



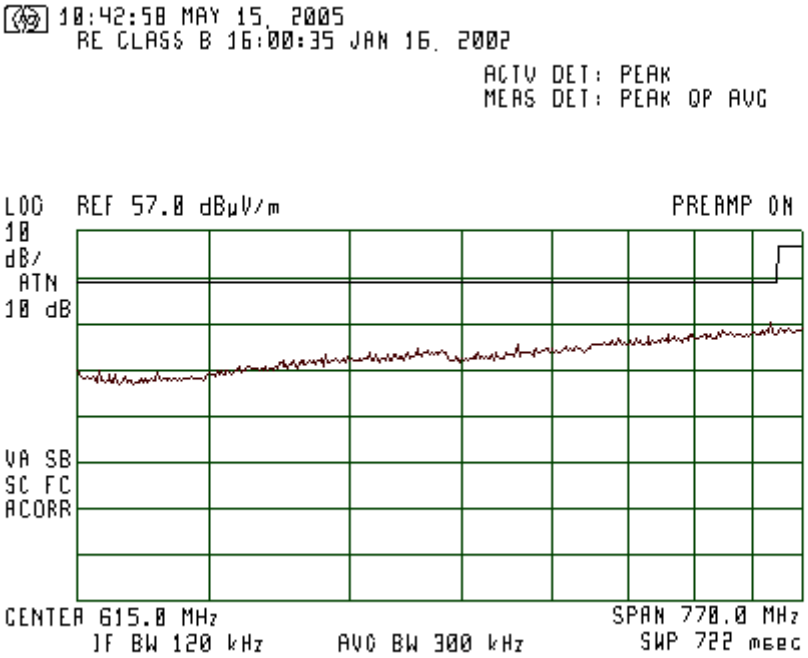
Plot 108
Vertical Polarization



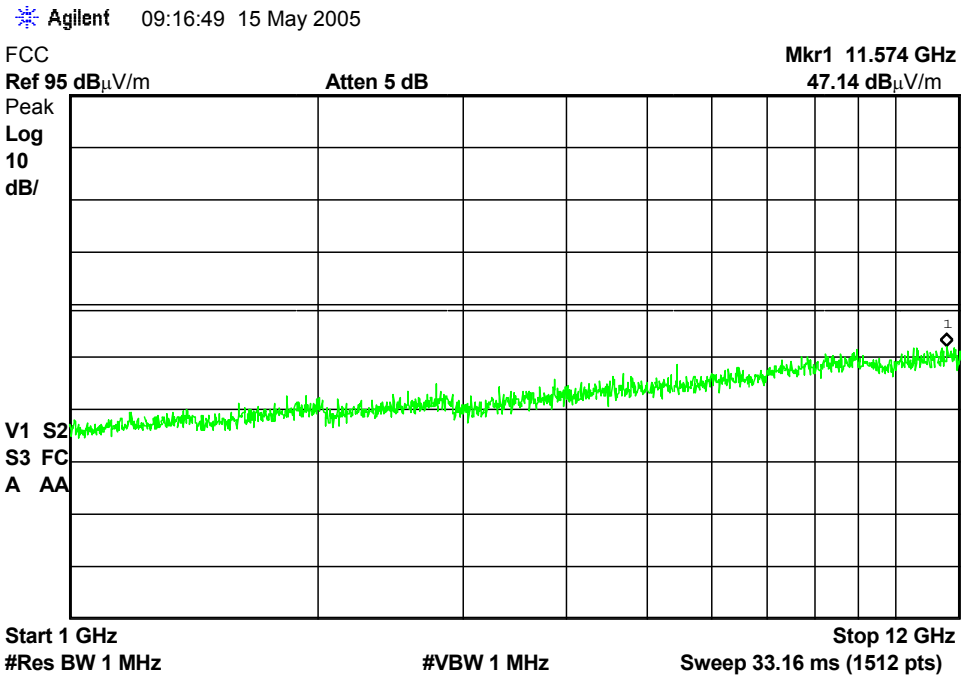
Plot 109
Horizontal Polarization



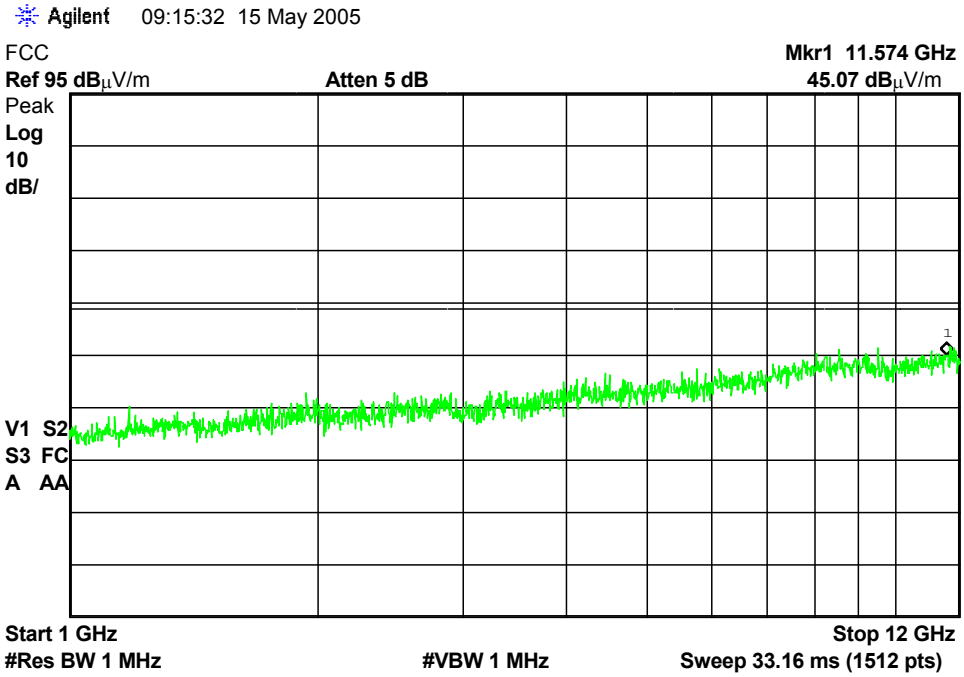
Plot 110
Vertical Polarization



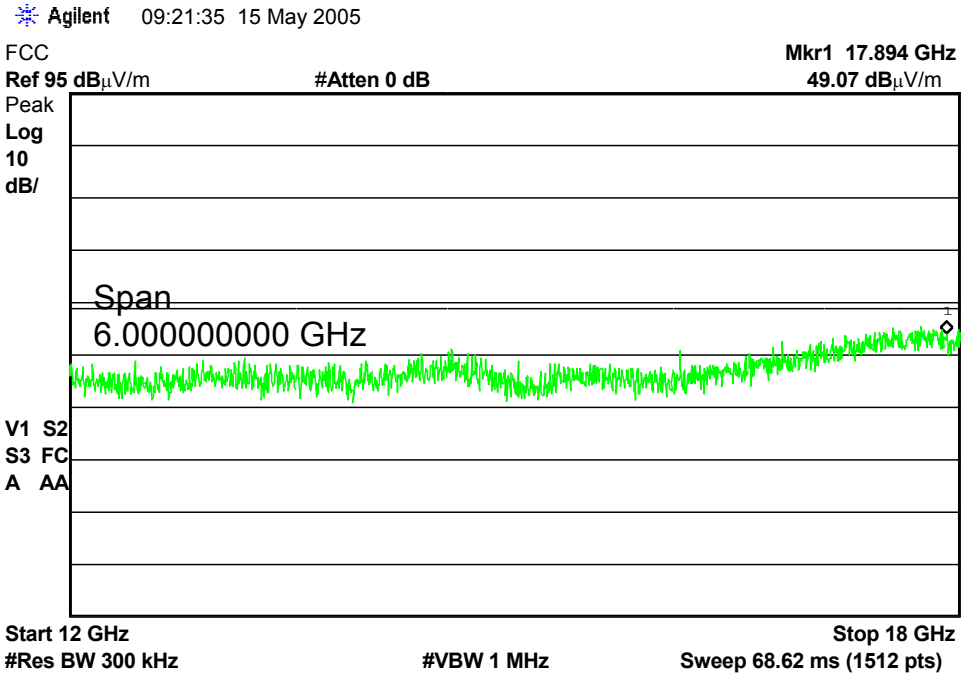
Plot 111
Horizontal Polarization



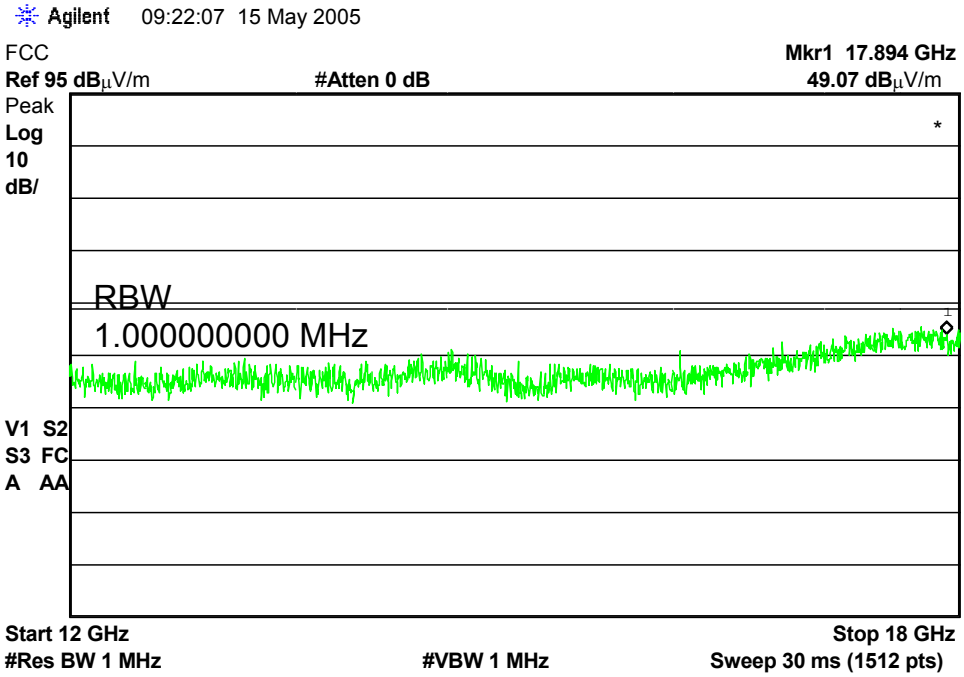
Plot 112
Vertical Polarization



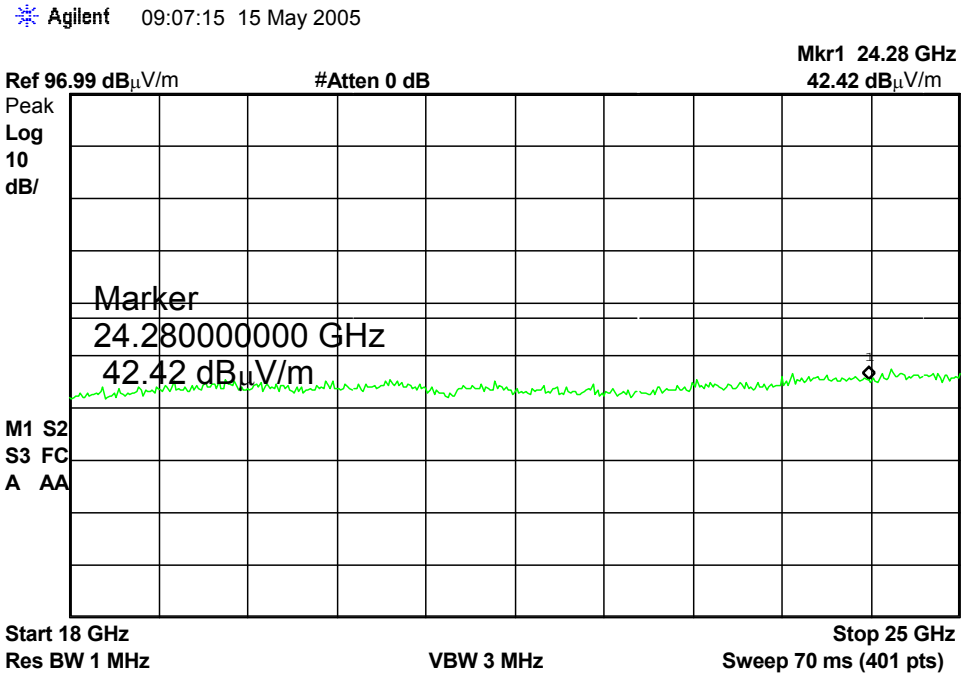
Plot 113
Horizontal Polarization



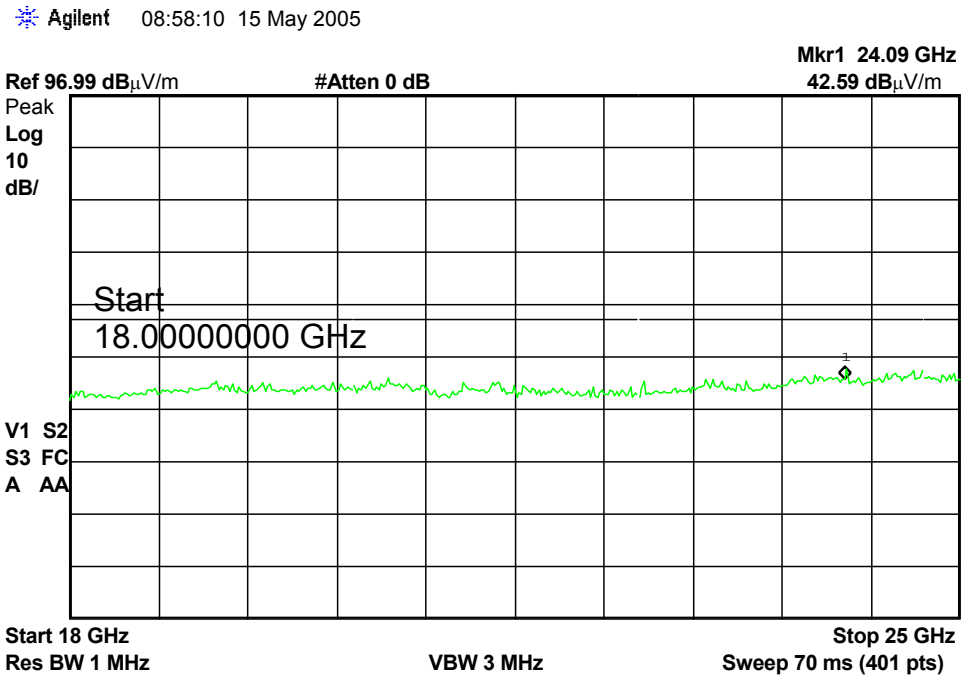
Plot 114
Vertical Polarization



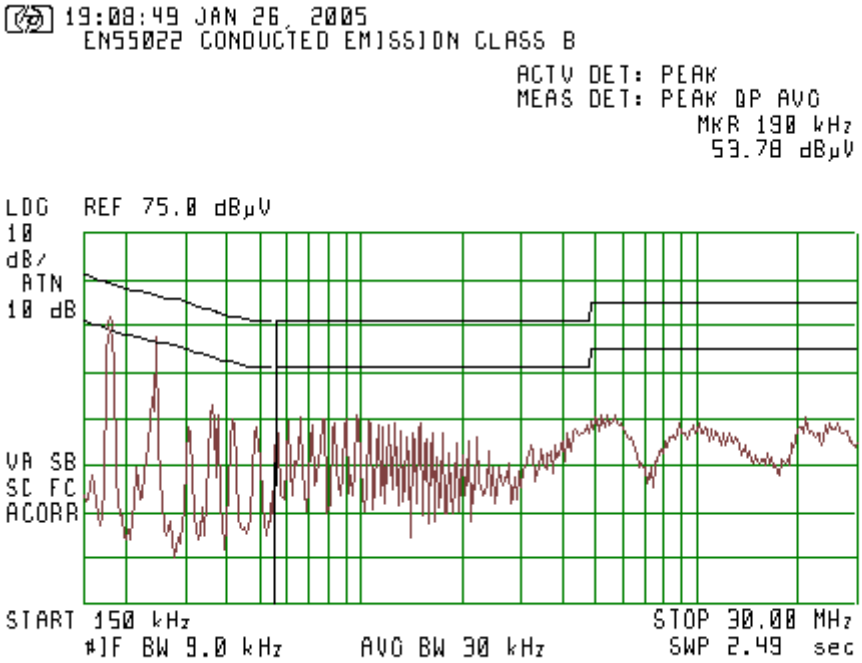
Plot 115
Horizontal Polarization



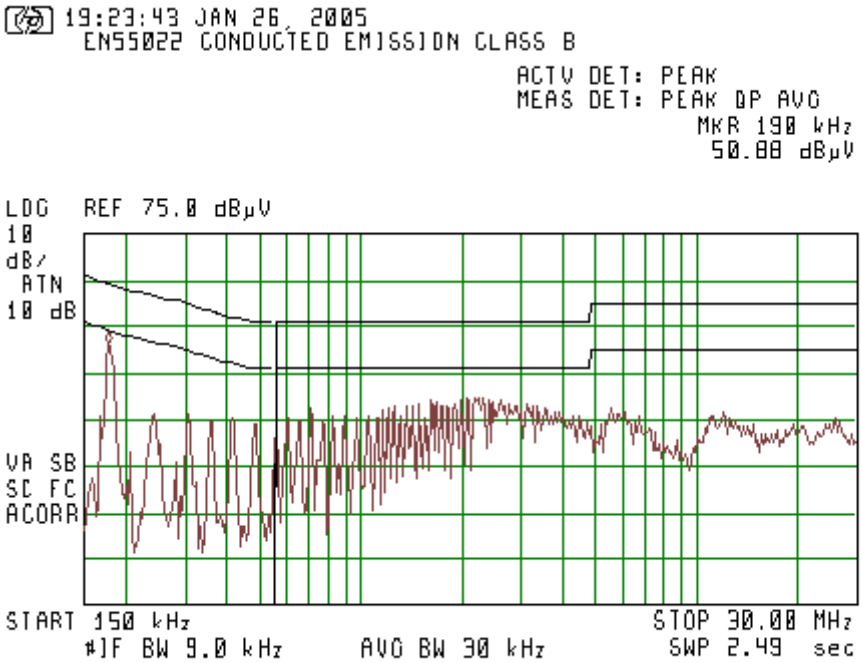
Plot 116
Vertical Polarization



Plot 117
"Phase" Lead

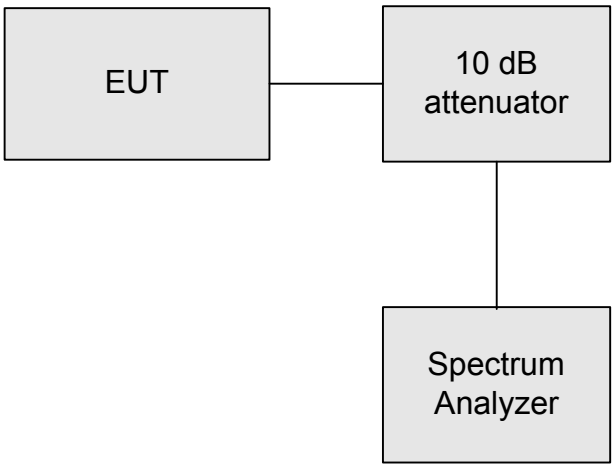


Plot 118
"Neutral" Lead

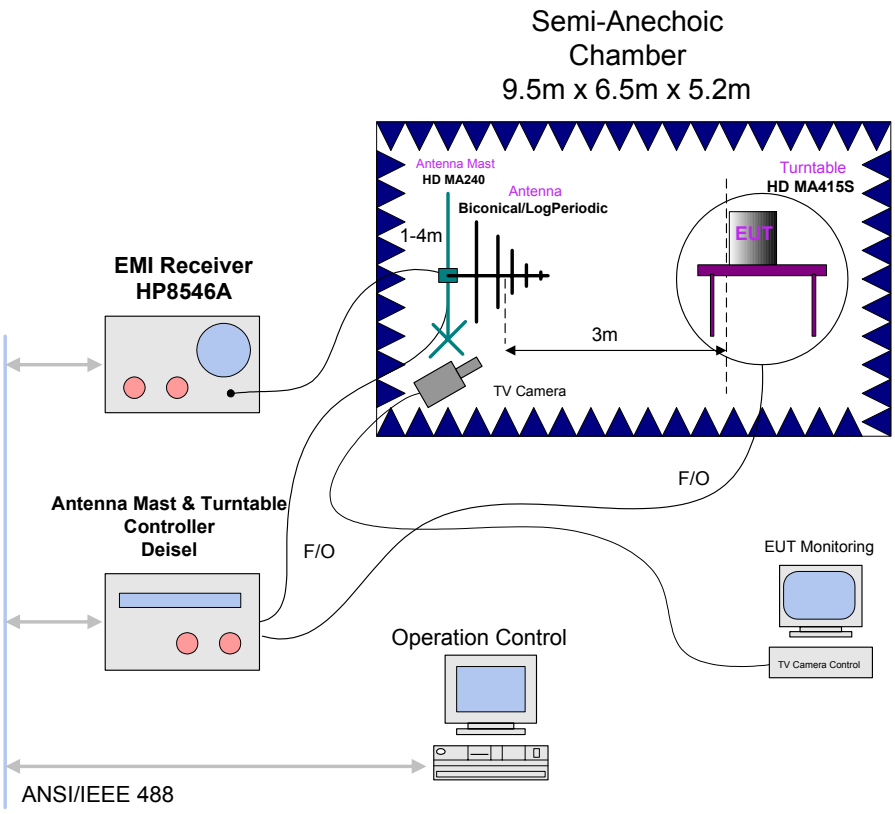


Appendix C: Test setups

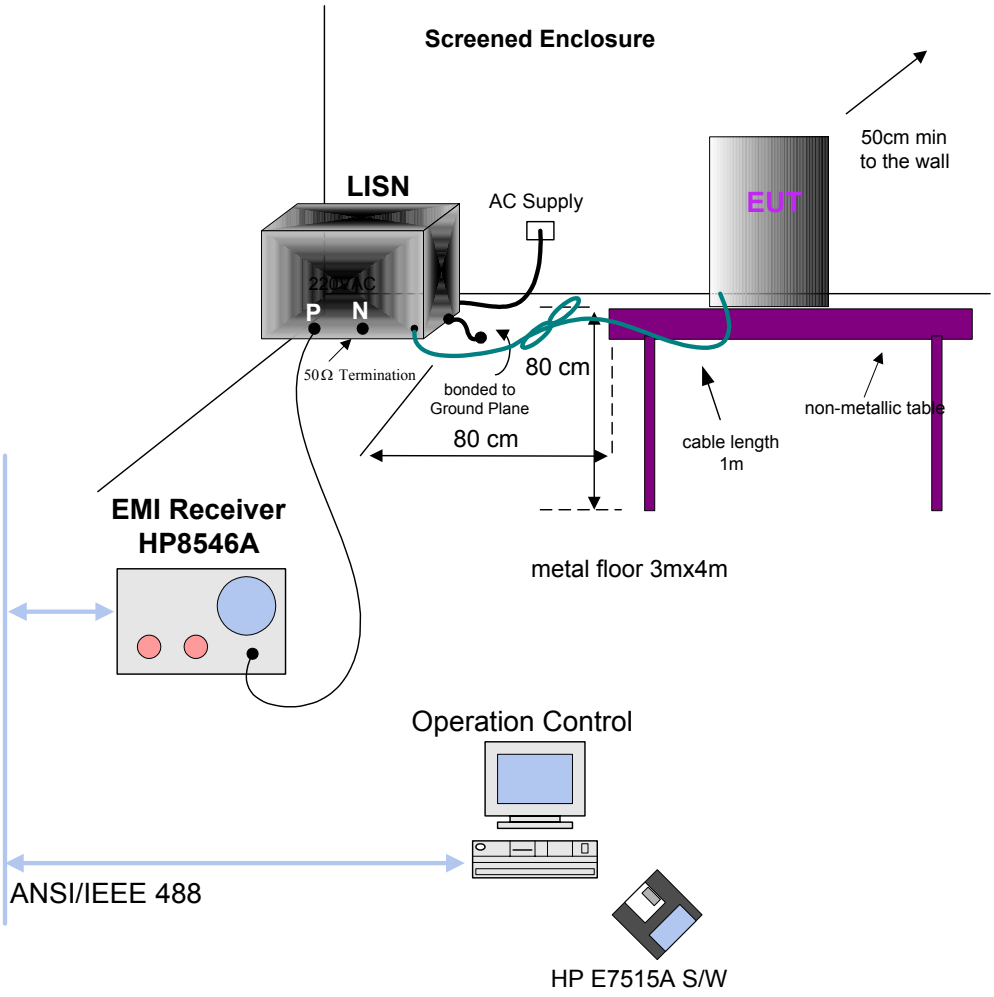
Setup 1



Setup 2



Setup 3


Screened Enclosure
50cm min
to the wall
LISN
AC Supply
EUT
220V AC
P
N
50Ω Termination
bonded to
Ground Plane
80 cm
80 cm
cable length
1m
non-metallic table
EMI Receiver
HP8546A
metal floor 3mx4m
Operation Control
ANSI/IEEE 488
HP E7515A S/W

End of the Test Report