Test Report

FCC Part 15.407
Industry Canada RSS210

UNII Devices

Elektrobit Wireless Communications, Ltd.
Automaatiotie 1
FI-90460 OULUNSALO
FINLAND

Product Name: Integrated Service Access Point

FCC: V27-DT40ISAP
IC: 3282B-DT40ISAP

TEST REPORT #: EMC_CETEC_030_15.407
DATE: 2008-6-10

Certificate # 2135.01

Bluetooth Qualification Test Facility (BQTF)

LAB CODE 20020328-00

FCC listed: A2LA accredited

IC recognized # 3462B

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

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1 Assessment

The following is in compliance with the applicable criteria specified in FCC rules Part 15.407 of the Code of Federal Regulations.

Company	Product Name
Elektrobit Wireless Communications, Ltd.	**Integrated Service Access Point**

This report is reviewed by:

2008-6-10	**EMC & Radio**	**Val Tankov (EMC Project Engineer)**	Ivaylo Tankov I am approving this document
Date	**Section**	**Name**	**Signature**

This report is prepared by:

2008-6-10	**EMC & Radio**	**Peter Mu (EMC Project Engineer)**	Peter Mu I am the author of this document
Date	**Section**	**Name**	**Signature**

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

Company Name:	**CETECOM Inc.**
Department:	**EMC**
Address:	**411 Dixon Landing Road Milpitas, CA 95035 U.S.A.**
Telephone:	**+1 (408) 586 6200**
Fax:	**+1 (408) 586 6299**
Responsible Test Lab Manager:	**Lothar Schmidt**
Responsible Project Leader:	**Peter Mu**
Date of test:	**2008-4-17 to 2008-6-10**

2.2 Identification of the Client

APPLICANT	
Applicant (Company Name)	**Elektrobit Wireless Communications, Ltd.**
Street Address	**Automaatiotie 1**
City/Zip Code	**FI-90460 OULUNSALO**
Country	**FINLAND**
Contact Person	**Jussi Harju**
Telephone	**+41 55 253 2055**
Fax	**+41 55 253 2070**
e-mail	**jussi.harju@elektrobit.com**

2.3 Identification of the Manufacturer

Same as above applicant.

3 Equipment under Test (EUT)

3.1 Specification of the Equipment under Test

EUT	
Marketing Name of EUT (if not same as Model No.):	**Integrated Service Access Point**
Description:	Wireless LAN Access Point
Model No:	ISAP
FCC ID:	V27-DT40ISAP
IC ID:	3282B-DT40ISAP

Frequency Range:	5180-5250MHz, 5250-5350MHz, 5470-5725MHz
Type(s) of Modulation:	OFDM
Antenna Type:	Whip 2.6dBi
Max Output Power:	Sub-band 1: 5150-5250MHz HT20 mode: EIRP: 19.3dBm, (84.75mW). Conducted: 16.7dBm (46.58mW) Sub-band 2: 5250-5350MHz HT20 mode: EIRP: 22.3dBm (171mW). Conducted: 19\.7dBm (93.85mW) Sub-band 3: 5470-5725MHz HT20 mode: EIRP: 18.3dBm (67.57mW). conducted: 15.7dBm (37.13mW) Sub-band 1: 5150-5250MHz HT40 mode: EIRP: 19.4dBm, (87.57mW). Conducted: 16.8dBm (48.12mW) Sub-band 2: 5250-5350MHz HT40 mode: EIRP: 22.4dBm (175.75mW). Conducted: 19.8dBm (96.58mW) Sub-band 3: 5470-5725MHz HT40 mode: EIRP: 25.3dBm (341.95mW). conducted: 22.7dBm (187.92mW)
Specified Operating Temperature Range:	-10C to +50C

3.2 Identification of the Equipment under Test (EUT)

EUT #	**TYPE**	**MANF.**	**MODEL**	**SERIAL #**
1	EUT	Elektrobit	ISAP	009
2	EUT	Elektrobit	ISAP	015

3.3 Identification of Accessory equipment

None

4 Subject Of Investigation

All testing was performed on the product referred to in Section 3 as EUT. EUT operates in the band 5150-5250MHz, 5250-5350MHz, and 5470-5725MHz in 802.11na 20MHz (HT20) and 802.11na 40MHz (HT40) mode. The EUT has three transmit and receive antenna ports and implements a 3x3 spacial multiplexing MIMO scheme. However no beam forming technique is used. All three ports are measured during testing and ports with worse case performance are reported here to show compliance to applicable standards.

The objective of the measurements done by Cetecom Inc. was to measure the performance of the EUT operating under all operating modes as specified by requirements listed in FCC rules Part 15.407 of Title 47 of the Code of Federal Regulations. The maximization of portable equipment is conducted in accordance with ANSI C63.4

5 Radiated Measurements

5.1 Maximum Peak Output Power § 15.407 (Radiated)

EIRP is calculated from conducted peak power with the following formula:

Conducted Output Power for each chain is measured with a power meter with 100% duty cycle. The powers are then summed in watts and expressed in dBm.

EIRP = Conducted Output Power + Directional Antenna Gain (G)

Directional Antenna Gain = Max Stated Antenna Gain = 2.6dBi

5.1.1 FCC Limits:

Conducted Output Power is defined as the following (reduced if directional gain > 6dBi):

Sub-band 1: 5150-5250MHz: 15.407(a)(1): 50mW or 4dBm + 10log(B),
Sub-band 2: 5250-5350MHz: 15.407(a)(2): 250mW or 11dBm + 10log(B)
Sub-band 3: 5470-5725MHz: 15.407(a)(2): 250mW or 11dBm + 10log(B)

B is the 26–dB emission bandwidth in MHz.

Directional gain is 2.6dBi < 6dBi so EIRP limit = Conducted Limit + 6dBm.

802.11na HT20 Mode

Channel Frequency	Conducted Output Power Limit (dBm)			EIRP Limit (dBm)
	Stated	Calculated	Applicable	
5180	17.0	17.2	17.0	23.0
5220	17.0	17.3	17.0	23.0
5240	17.0	17.3	17.0	23.0
5260	24.0	24.3	24.0	30.0
5300	24.0	24.4	24.0	30.0
5320	24.0	24.2	24.0	30.0
5500	24.0	24.2	24.0	30.0
5600	24.0	24.1	24.0	30.0
5700	24.0	24.3	24.0	30.0

802.11na HT40 Mode

Channel Frequency	Conducted Output Power Limit (dBm)			EIRP Limit (dBm)
	Stated	Calculated	Applicable	
5190	17.0	20.0	17.0	23.0
5230	17.0	20.1	17.0	23.0
5270	24.0	27.2	24.0	30.0
5310	24.0	27.2	24.0	30.0
5510	24.0	27.1	24.0	30.0
5590	24.0	27.0	24.0	30.0
5690	24.0	27.6	24.0	30.0

5.1.2 **IC Limits**

Sub-band 1: 5150-5250MHz: RSS-210 A9.2(1): 200 mW or 10 + 10 log(B)
Sub-band 2: 5250-5350MHz: RSS-210 A9.2(2): 1W or 17dBm + 10log(B)
Sub-band 3: 5470-5725MHz: RSS-210 A9.2(2): 1W or 17dBm + 10log(B)

B is the 99% emission bandwidth in MHz

802.11na HT20 Mode

Channel Frequency	EIRP Limit (mW)		
	Stated	Calculated	Applicable
5180	200.00	180.00	180.00
5220	200.00	178.40	178.40
5240	200.00	180.80	180.80
5260	1000.00	906.15	906.15
5300	1000.00	898.13	898.13
5320	1000.00	906.15	906.15
5500	1000.00	898.13	898.13
5600	1000.00	898.13	898.13
5700	1000.00	898.13	898.13

802.11na HT40 Mode

Channel Frequency	EIRP Limit (mW)		
	Stated	Calculated	Applicable
5190	200.00	364.80	200.00
5230	200.00	366.40	200.00
5270	1000.00	1828.33	1000.00
5310	1000.00	1828.33	1000.00
5510	1000.00	1828.33	1000.00
5590	1000.00	1844.37	1000.00
5690	1000.00	1836.35	1000.00

5.1.3 **Measurement Results**

EIRP 802.11na HT20 MODE:

TEST CONDITIONS T_{nom}(23)°C, V_{nom}VDC	Channel Frequency	EIRP (dBm)	EIRP (mW)	FCC Margin (dBm)	IC Margin (mW)
Sub-band 1: 5150-5250MHz	5180	19.3	84.75	3.7	95.25
	5220	18.9	78.18	4.1	100.22
	5240	19.2	82.75	3.8	98.05
Sub-band 2: 5250-5350MHz	5260	22.3	170.77	7.7	735.37
	5300	22.3	170.56	7.7	727.57
	5320	21.9	156.54	8.1	749.60
Sub-band 3: 5470-5725MHz	5500	18.0	62.87	12.0	835.25
	5600	18.3	67.57	11.7	830.55
	5700	17.8	60.39	12.2	837.74

EIRP 802.11na HT40 MODE:

TEST CONDITIONS T_{nom}(23)°C, V_{nom}VDC	Channel Frequency	EIRP (dBm)	EIRP (mW)	FCC Margin (dBm)	IC Margin (mW)
Sub-band 1: 5150-5250MHz	5190	19.4	87.57	3.6	112.43
	5230	18.7	74.99	4.3	125.01
Sub-band 2: 5250-5350MHz	5270	22.4	175.75	7.6	824.25
	5310	19.1	81.63	10.9	918.37
Sub-band 3: 5470-5725MHz	5510	25.7	372.99	4.3	627.01
	5590	18.2	65.67	11.8	934.33
	5690	25.3	341.95	4.7	658.05

5.2 Restricted Band Edge Compliance §15.407(b)/15.205

5.2.1 Limits

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

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

***PEAK LIMIT= 74dBuV/m**
***AVG. LIMIT= 54dBuV/m**

Test conducted in radiated mode with all three antenna ports transmitting.

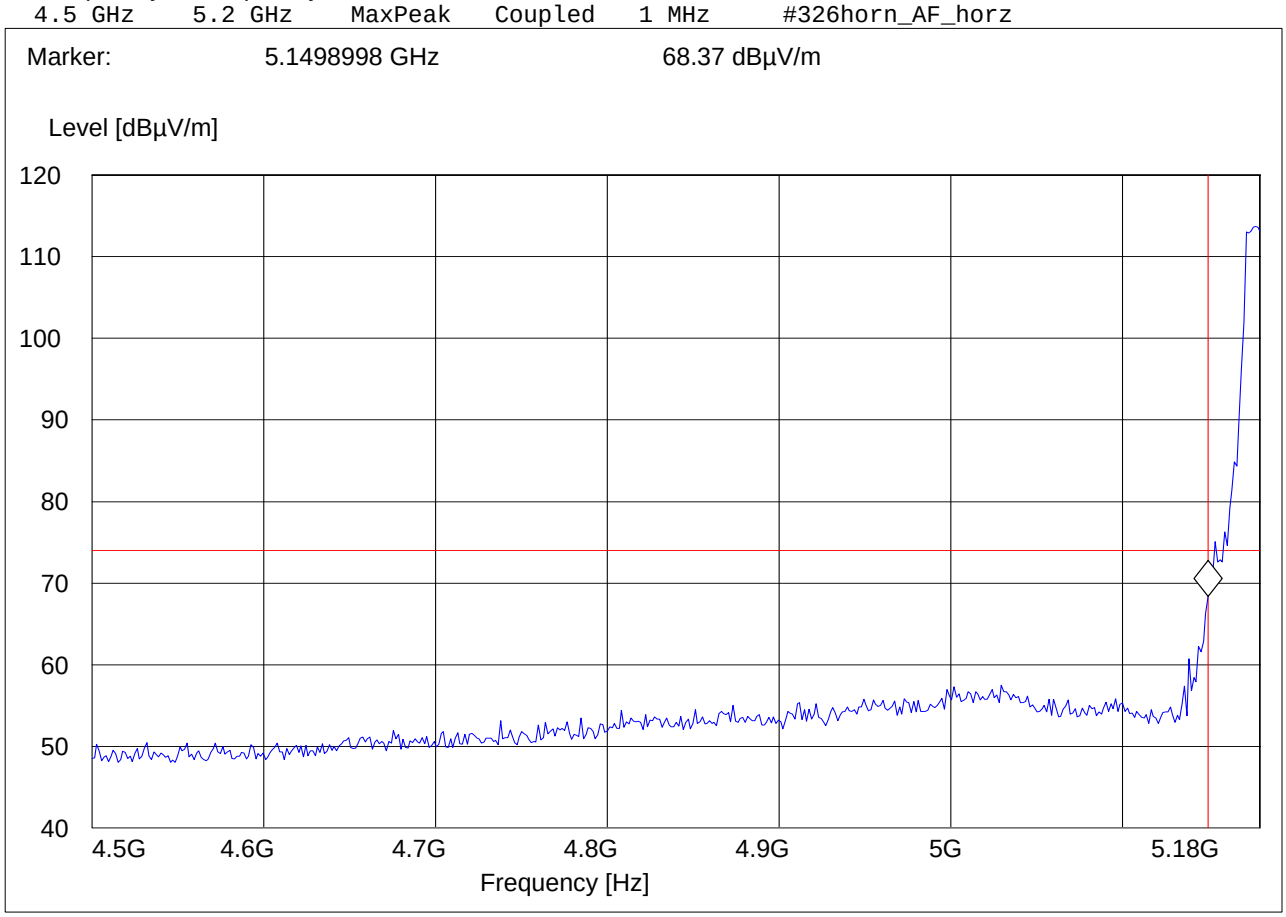
5.2.2 Sub-band 1, 802.11 (na) HT20 MODE

5180MHz Lower band edge PEAK

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.36; 5180MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.407 A_LBE_PK"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
4.5 GHz	5.2 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz

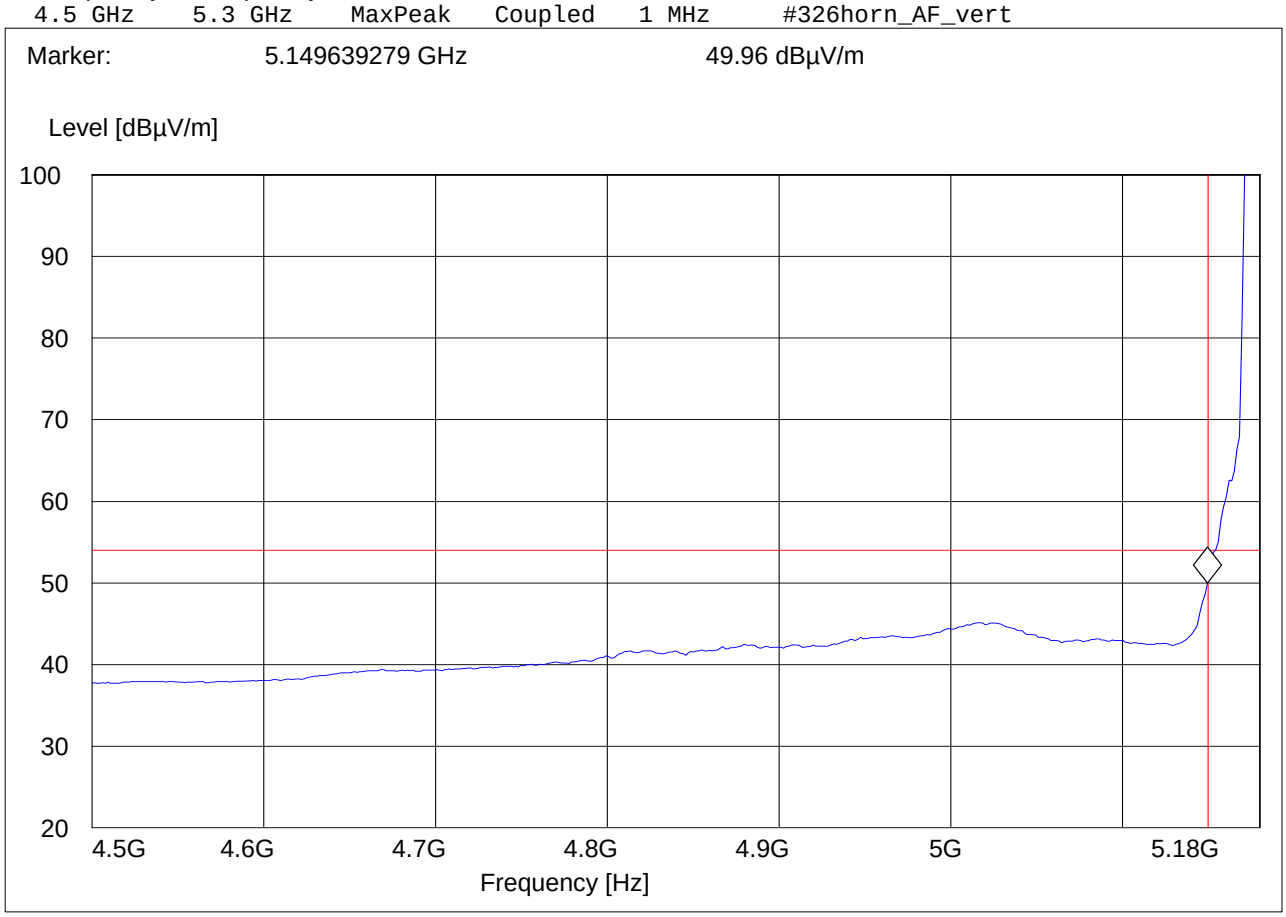


5180MHz, Lower band edge AVG

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.36; 5180MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.407 A_LBE_AVG"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
4.5 GHz	5.3 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert



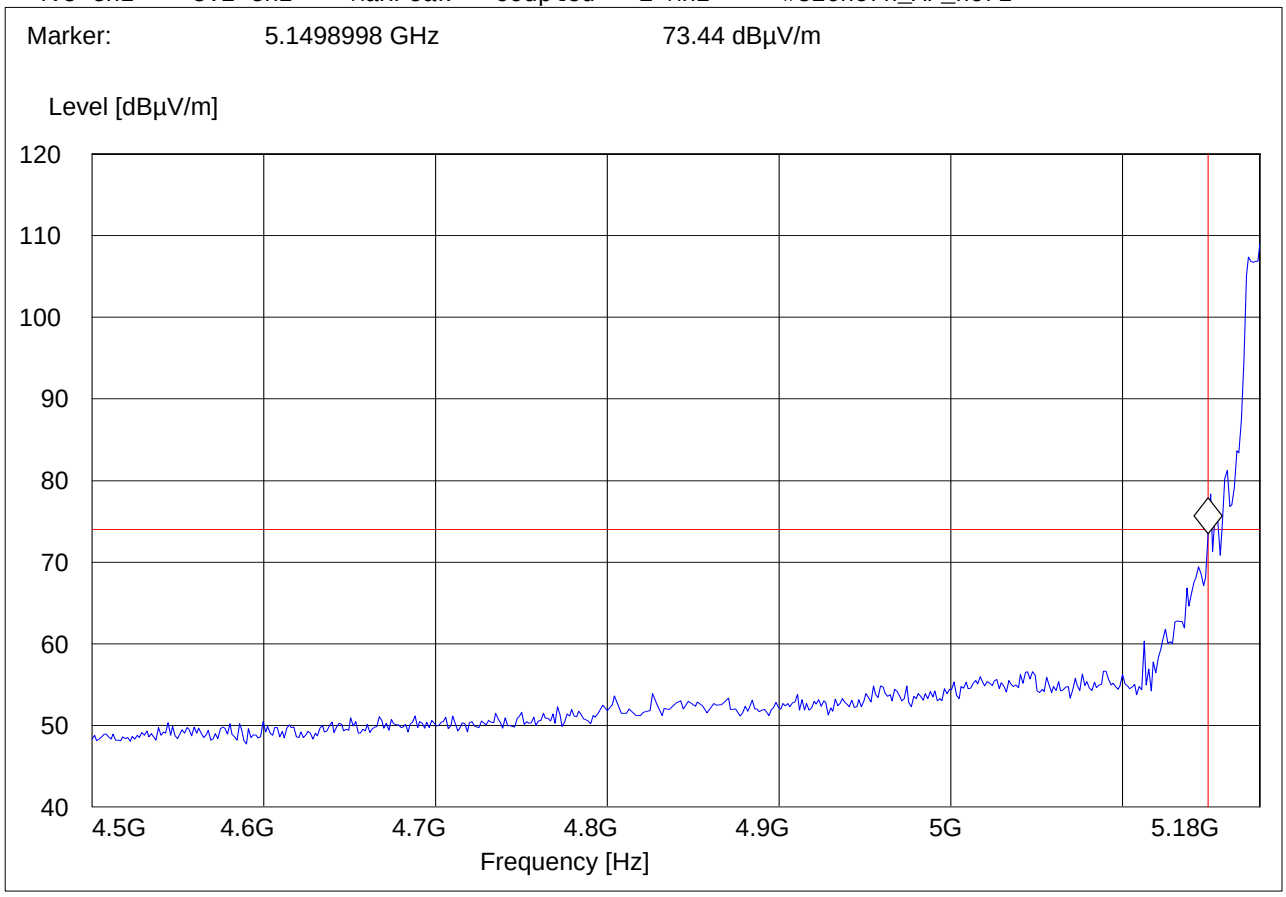
5.2.3 **Sub-band 1. 802.11 (na) HT40 MODE**

5190MHz, Lower band edge PEAK

```
EUT:             isap
Customer::       EB
Test Mode:       Ch.36; 5190MHz; 40 MHz
ANT Orientation: V
EUT Orientation: H
Test Engineer:   Chris
Voltage:         AC
Comments:
```

SWEEP TABLE: "FCC15.407 A_LBE_PK"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
4.5 GHz	5.2 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz

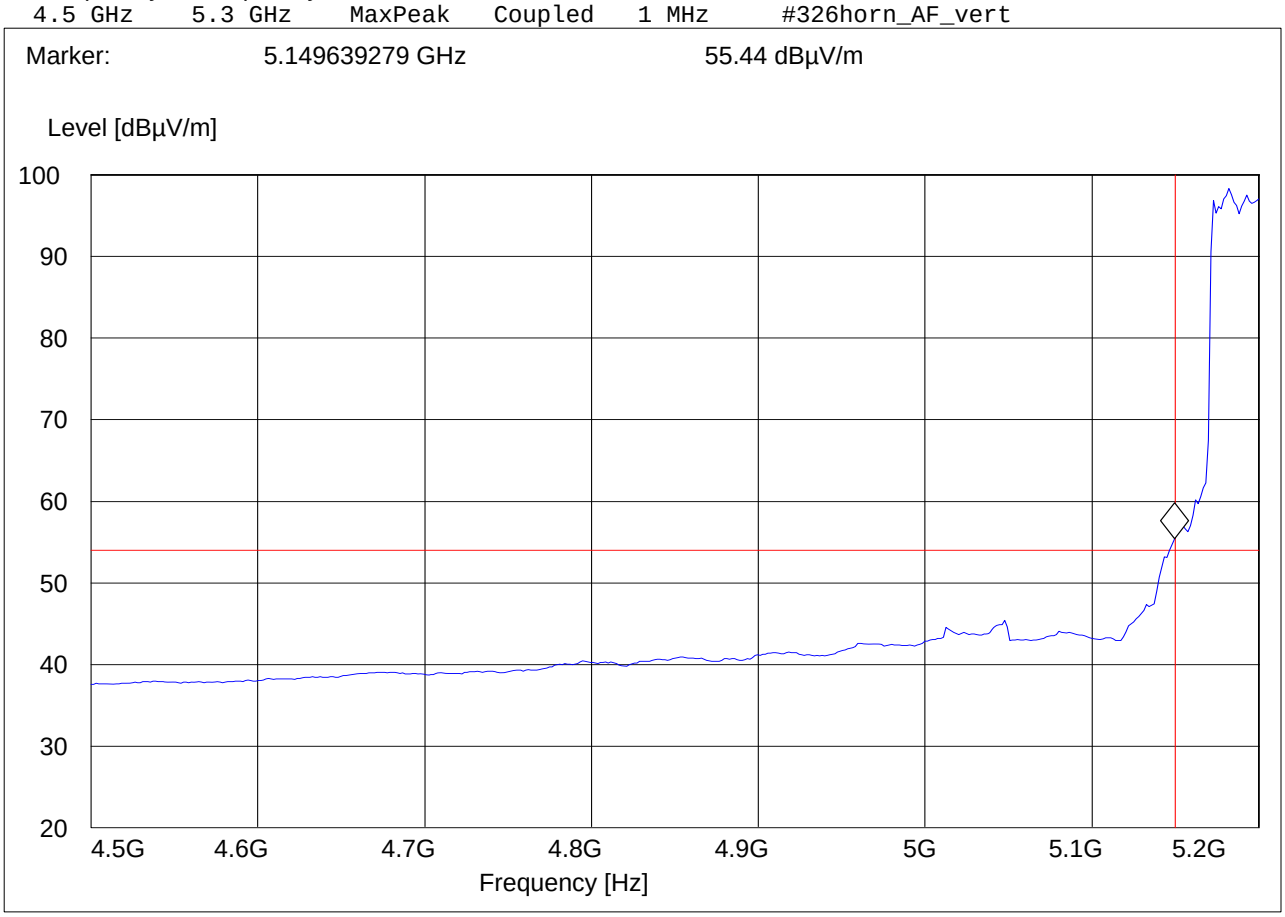


5190MHz, Lower band edge AVG

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.36; 5190MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.407 A_LBE_AVG"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
4.5 GHz	5.3 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_vert



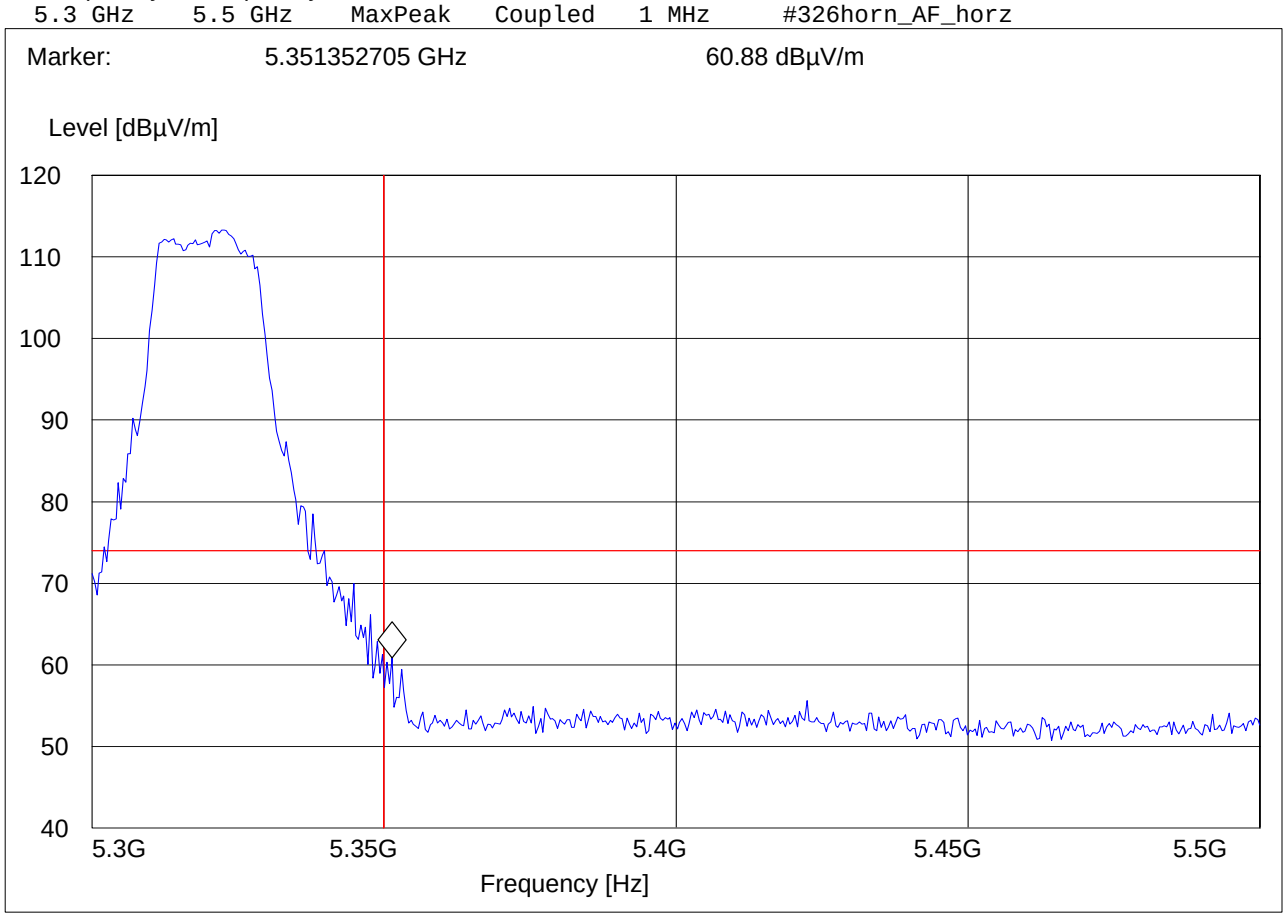
5.2.4 **Sub-band 2. 802.11 (na) HT20 MODE**

5320MHz, Higher band edge PEAK

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.64; 5320MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.407 B_HBE_PK"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
5.3 GHz	5.5 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz

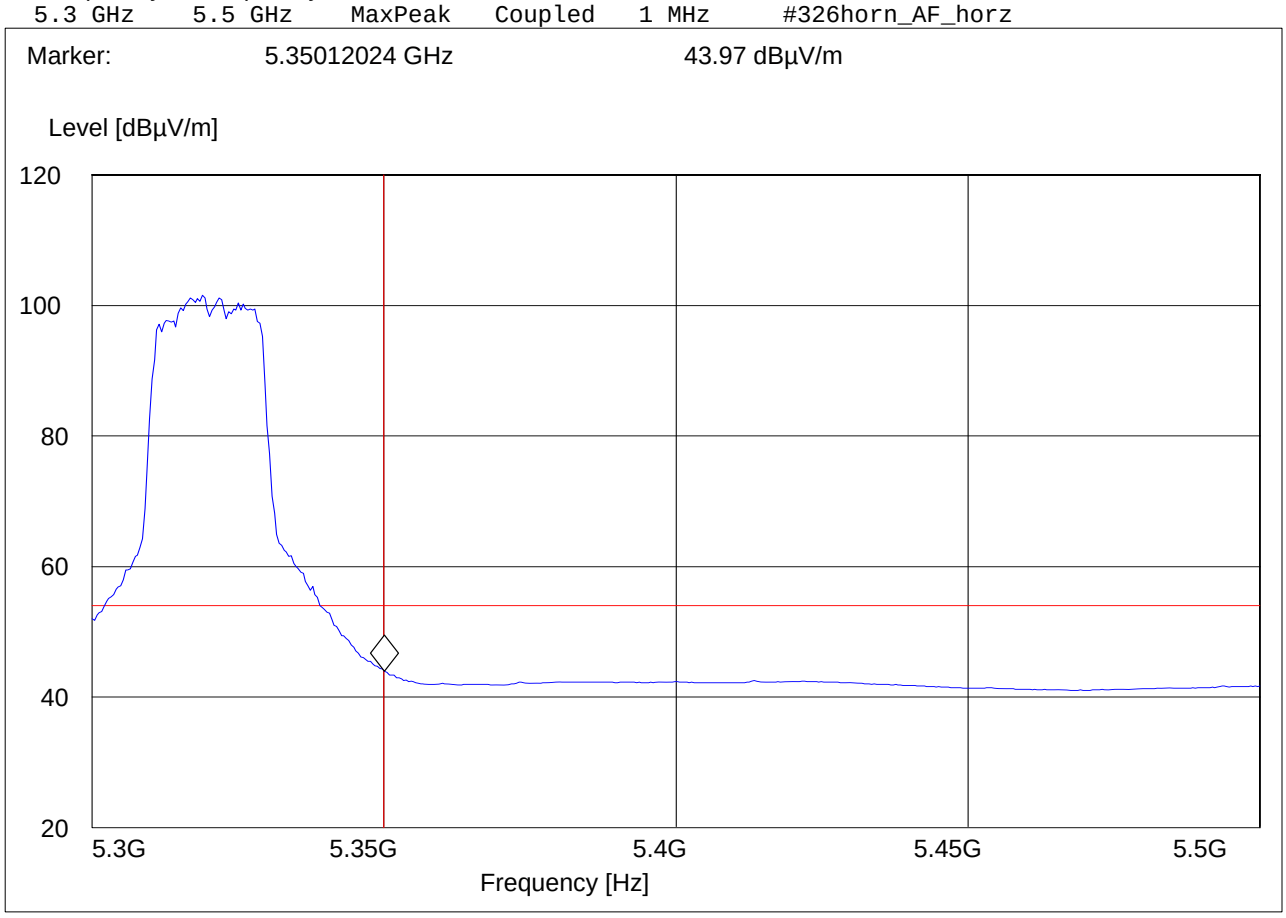


5320MHz, Higher band edge AVERAGE

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.64; 5320MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.407 B_HBE_AVG"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
5.3 GHz	5.5 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz



5.2.5 **Sub-band 2. 802.11 (na) HT40 MODE**

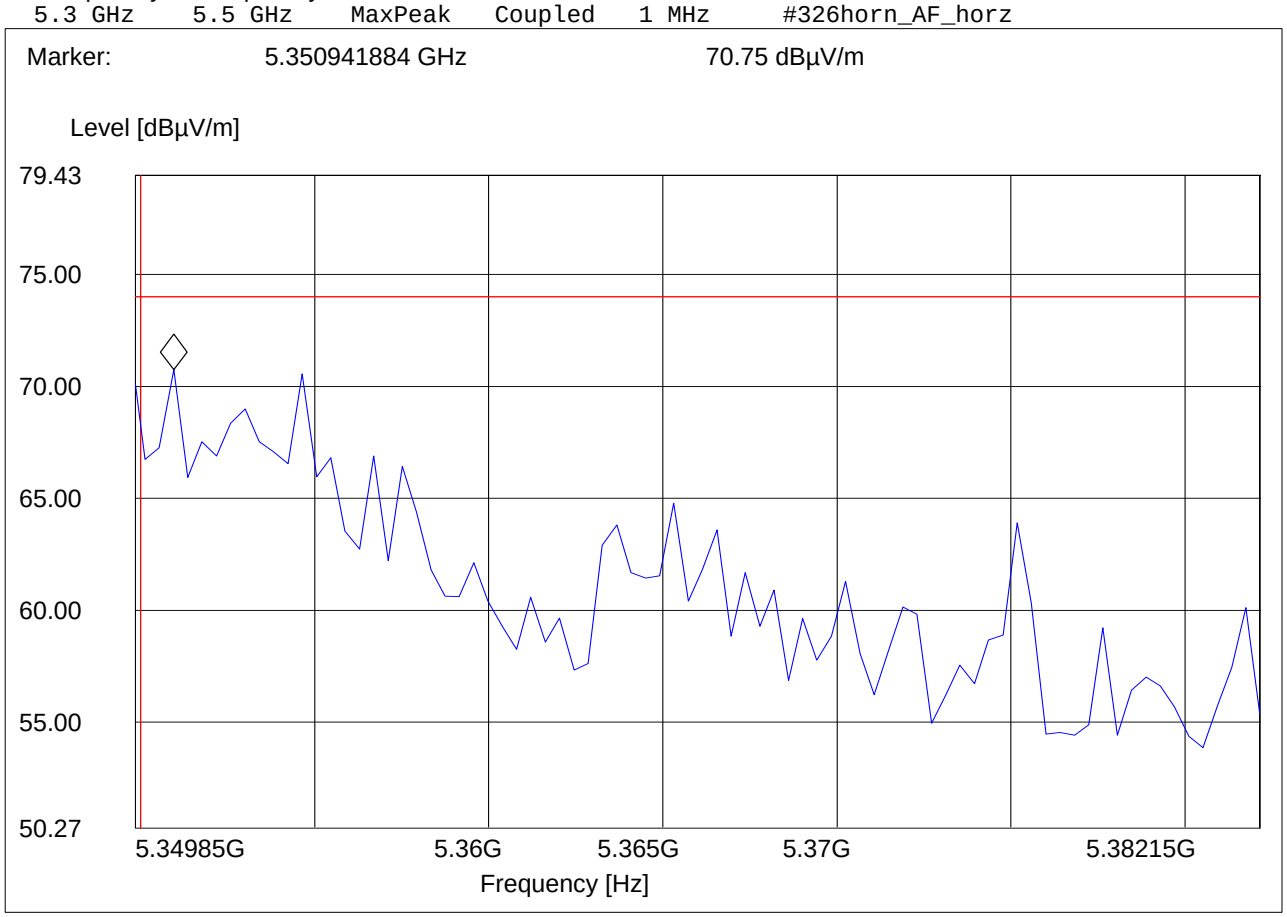
5310MHz, Higher band edge PEAK

This is a zoomed-in plot showing that the worst measurable emission is below the limit.

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.64; 5310MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.407 B_HBE_PK"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
5.3 GHz	5.5 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz

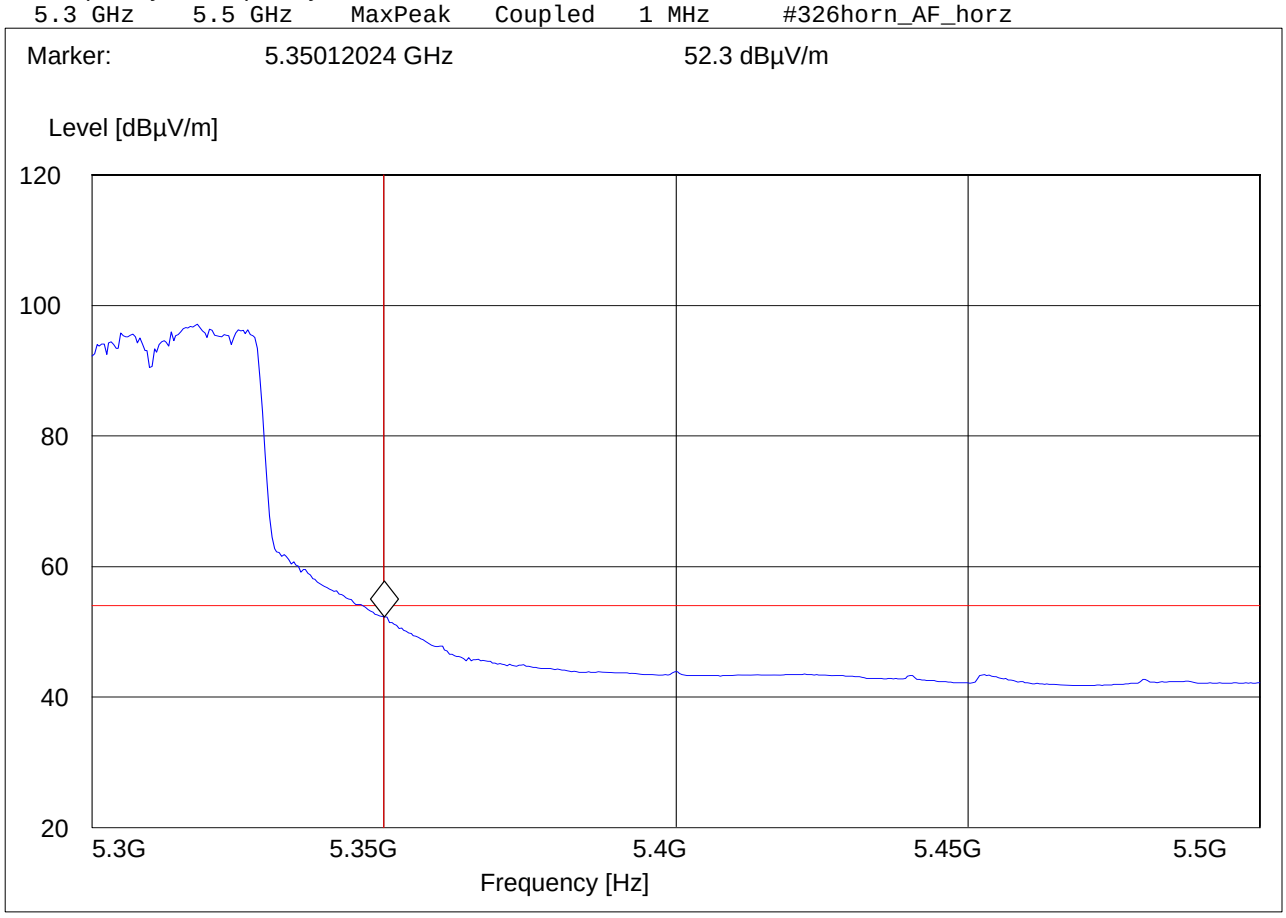


5310MHz, Higher band edge AVERAGE

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.64; 5310MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.407 B_HBE_AVG"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
5.3 GHz	5.5 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz



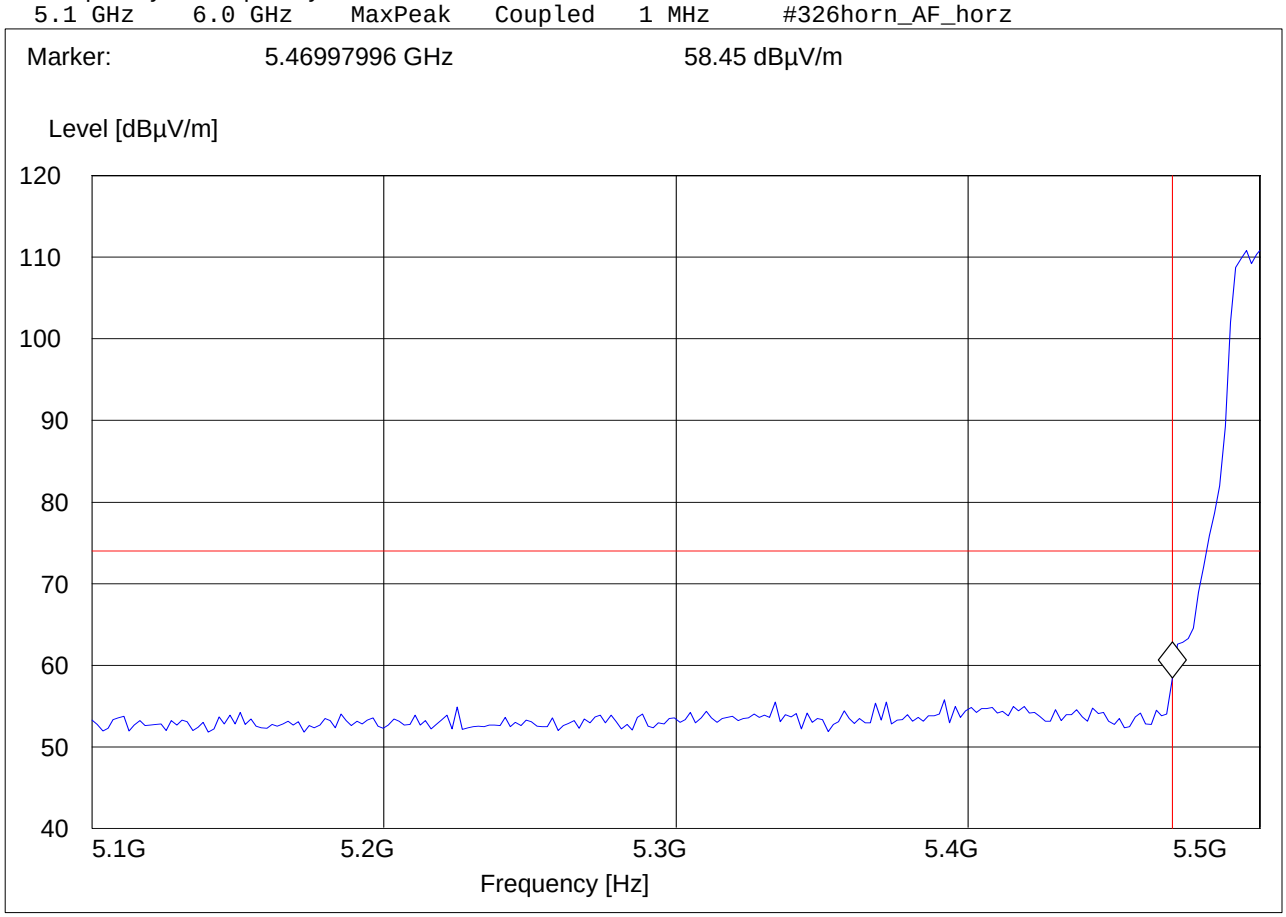
5.2.6 **Sub-band 3. 802.11 (na) HT20 MODE**

5500MHz, Lower band edge PEAK

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.100; 5500MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.407 C_LBE_PK"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
5.1 GHz	6.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz

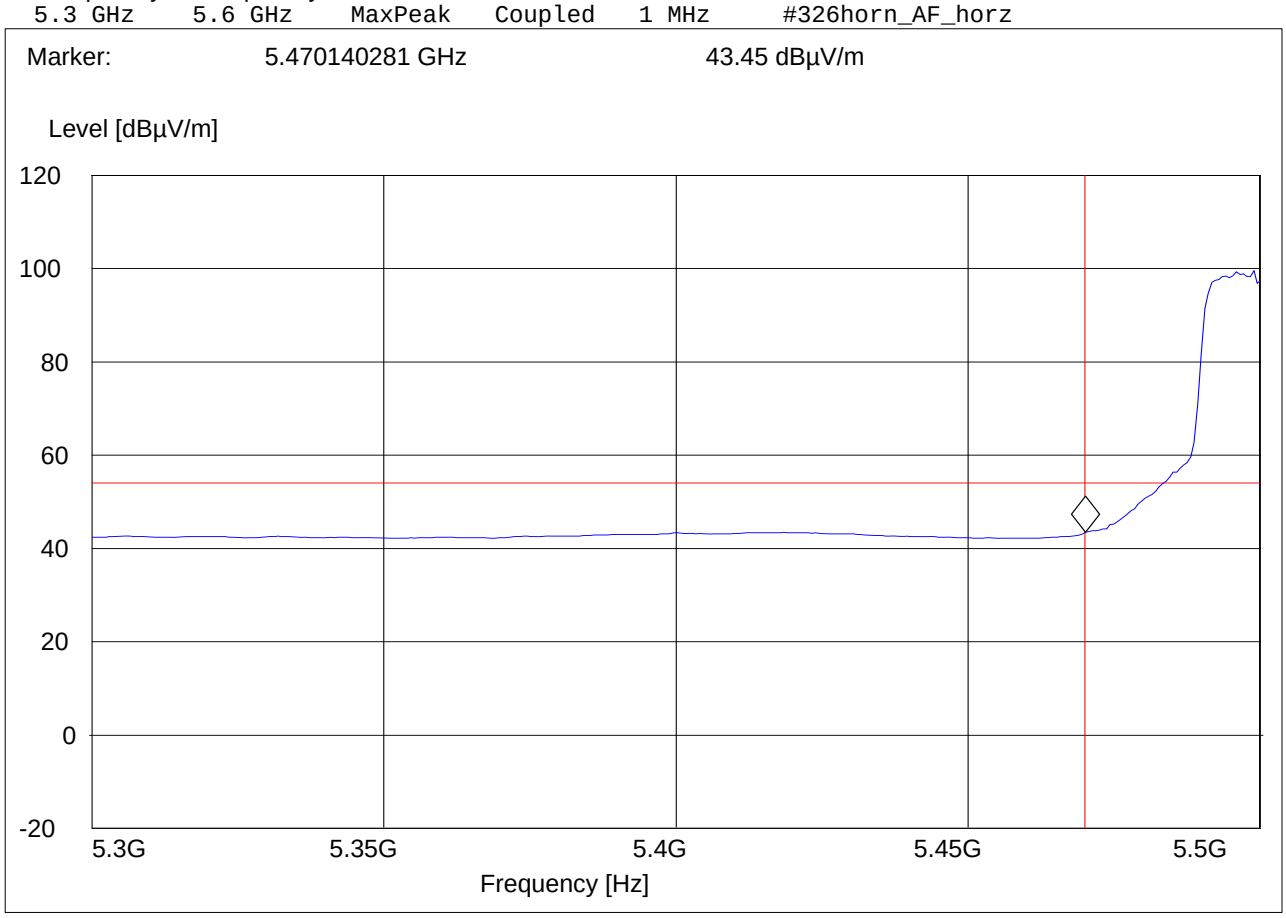


5500MHz, Lower band edge AVERAGE

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.100; 5500MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.407 C_LBE_AVG"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
5.3 GHz	5.6 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz



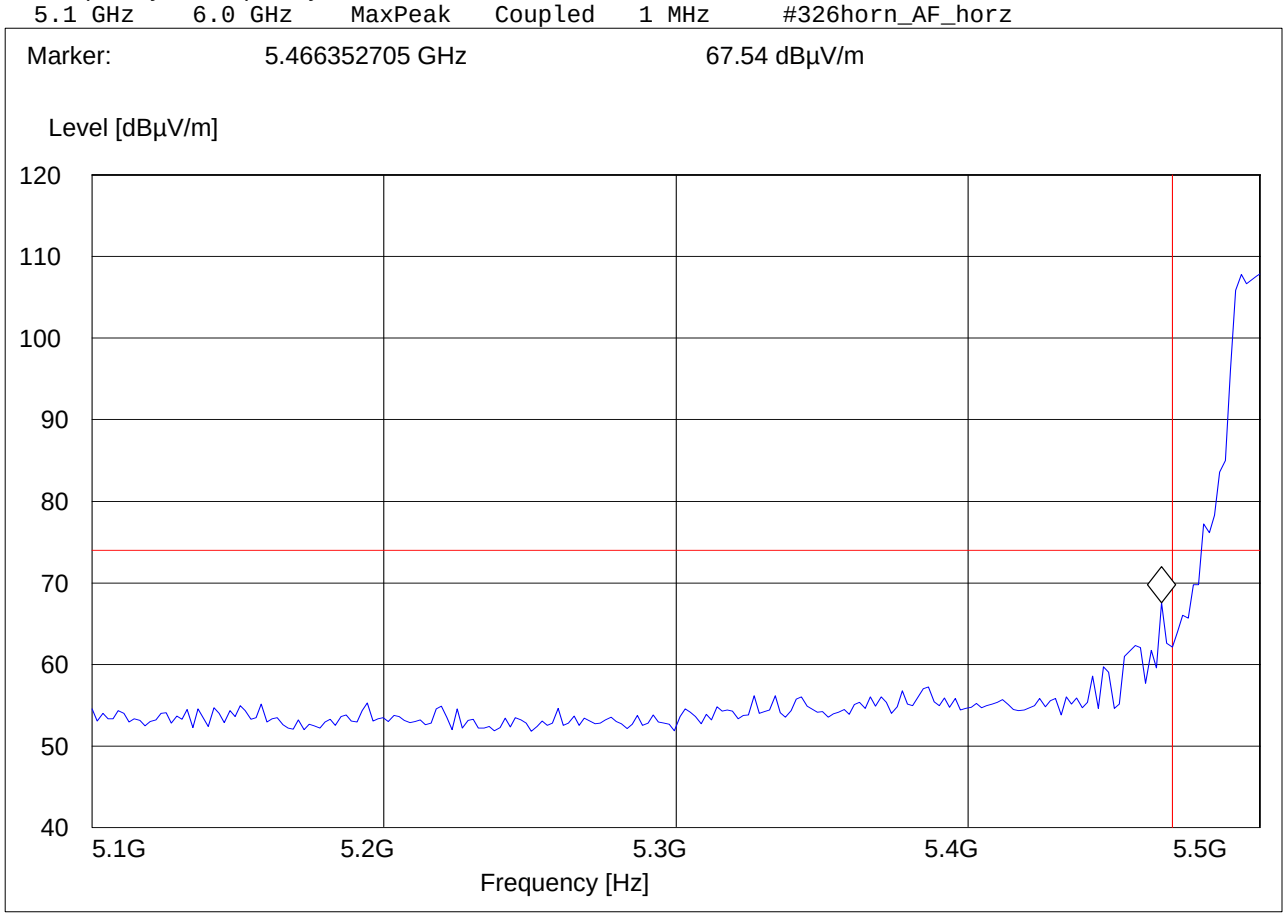
5.2.7 Sub-band 3. 802.11 (na) HT40 MODE

5510MHz, Lower band edge PEAK

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.100; 5510MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.407 C_LBE_PK"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
5.1 GHz	6.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz

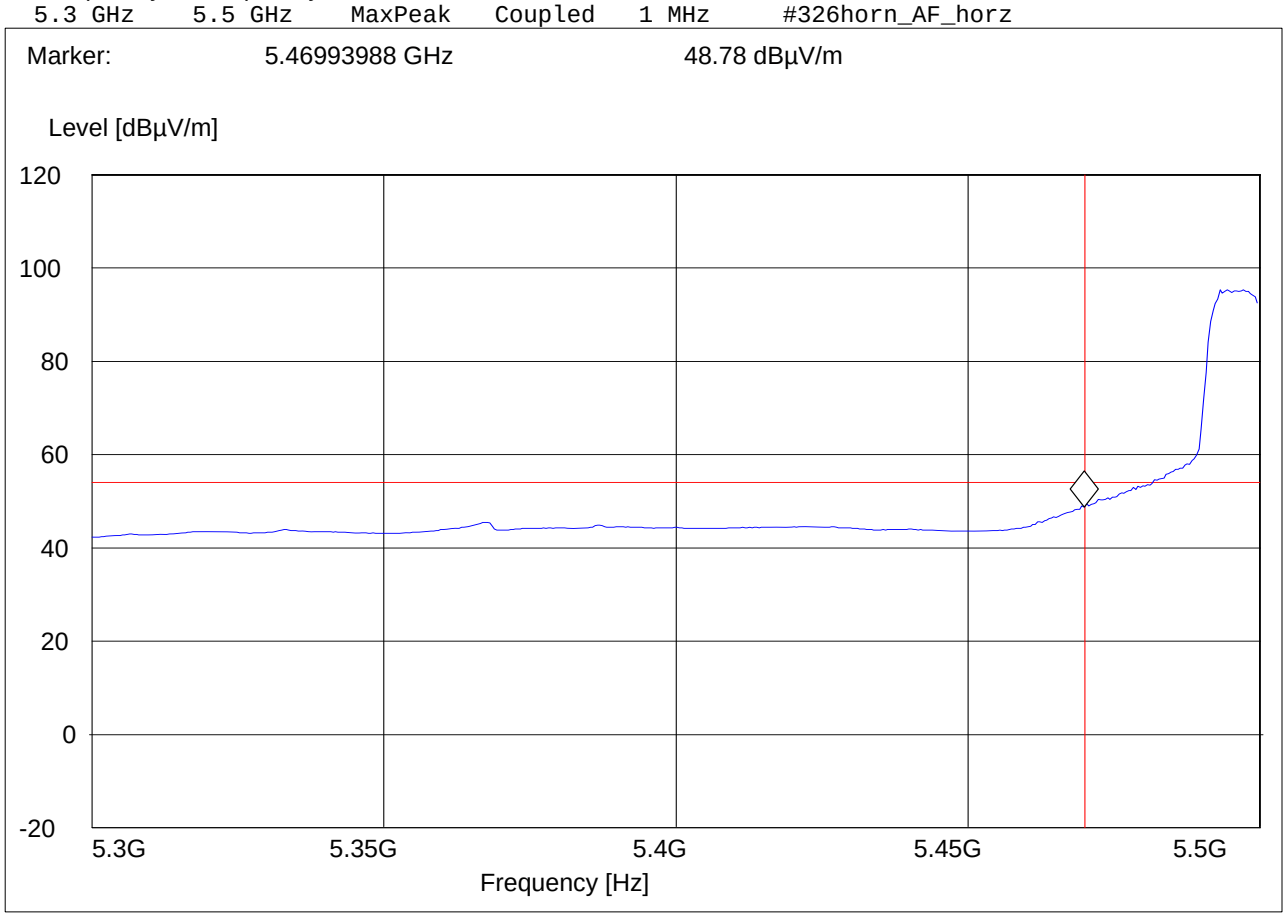


5510MHz, Lower band edge AVERAGE

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.100; 5510MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.407 C_LBE_AVG"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
5.3 GHz	5.5 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz



5.3 Transmiter Spurious Emission § 15.407(b)/15.205/15.209

5.3.1 Limits

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

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

***PEAK LIMIT= 74dBuV/m for spurious in restricted bands**
***AVG. LIMIT= 54dBuV/m for spurious in restricted bands**
***PEAK LIMIT= 68.2dBuV/m for spurious NOT in restricted bands**

NOTE:
1. The radiated emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels. In the range between 3 and 25 GHz very short cable connections to the antenna was used to minimize the noise level.

2. All measurements are done in peak mode using an average limit, unless specified with the plots.

Results for the radiated measurements below 30MHz according § 15.33

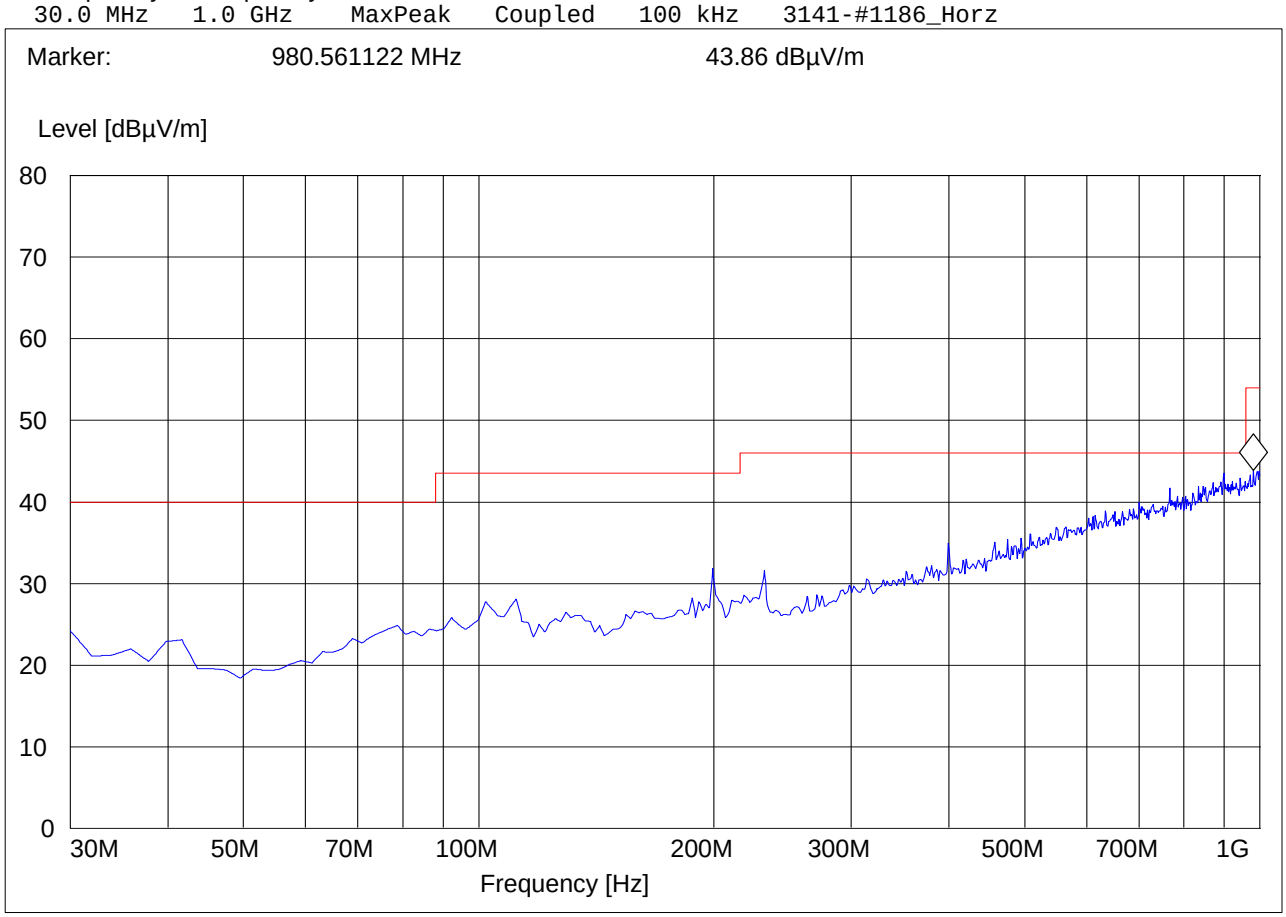
Frequency	**Measured values**	**Remarks**
9KHz – 30MHz	No emissions found, caused by the EUT	This is valid for all the tested channels

5.3.2 **Sub-band 1 802.11 (na) HT20 MODE**
30MHz – 1GHz, Antenna: Horizontal
Note: This plot is valid for low, mid, high channels (worst-case plot).

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.44; 5220MHz; 20 MHz
ANT Orientation:  H
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.247_30M-1G_Hor"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Horz



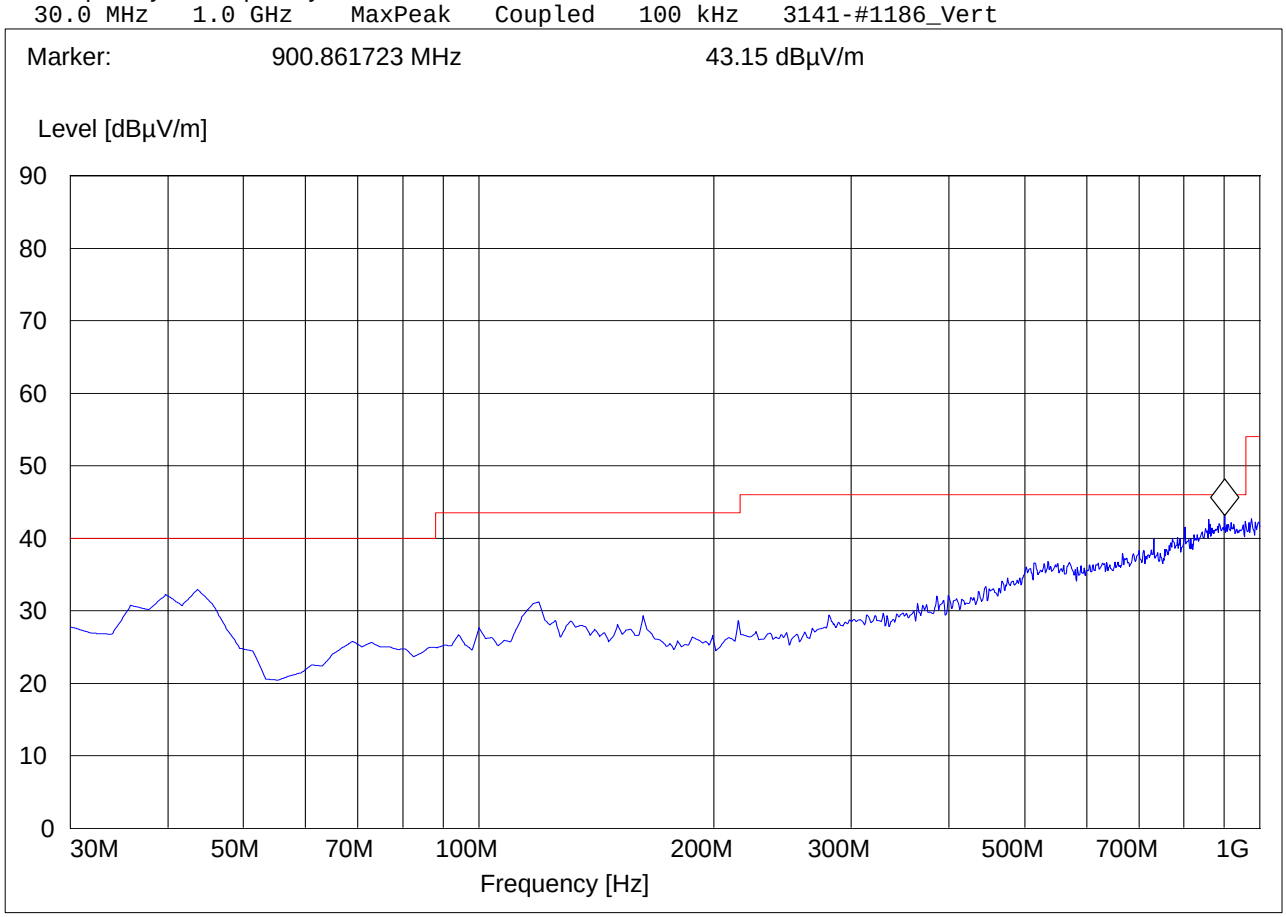
30MHz – 1GHz, Antenna: Vertical

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

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.44; 5220MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.247_30M-1G_Ver"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Vert



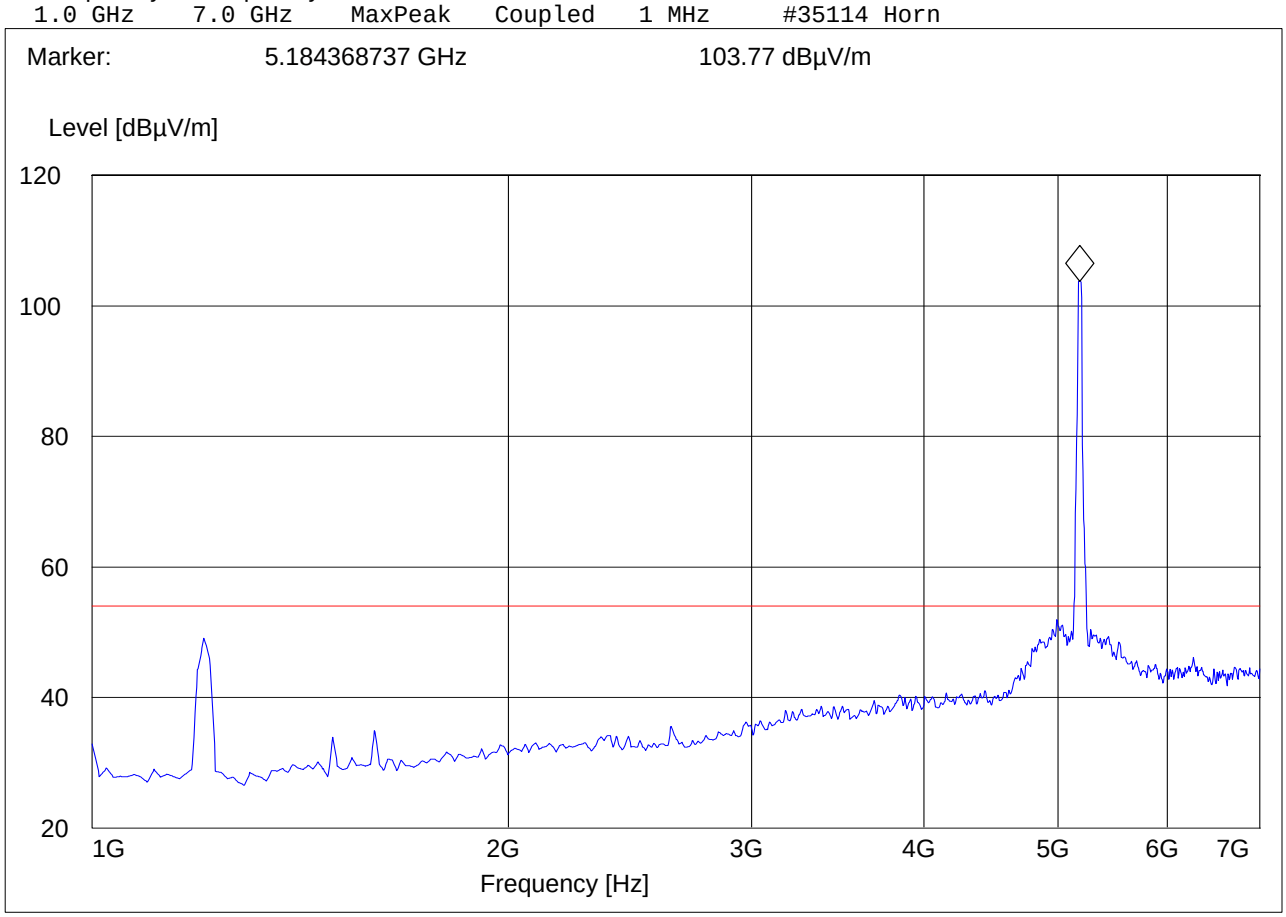
1-7GHz (5180MHz)

Note: The peak above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.36; 5180MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn



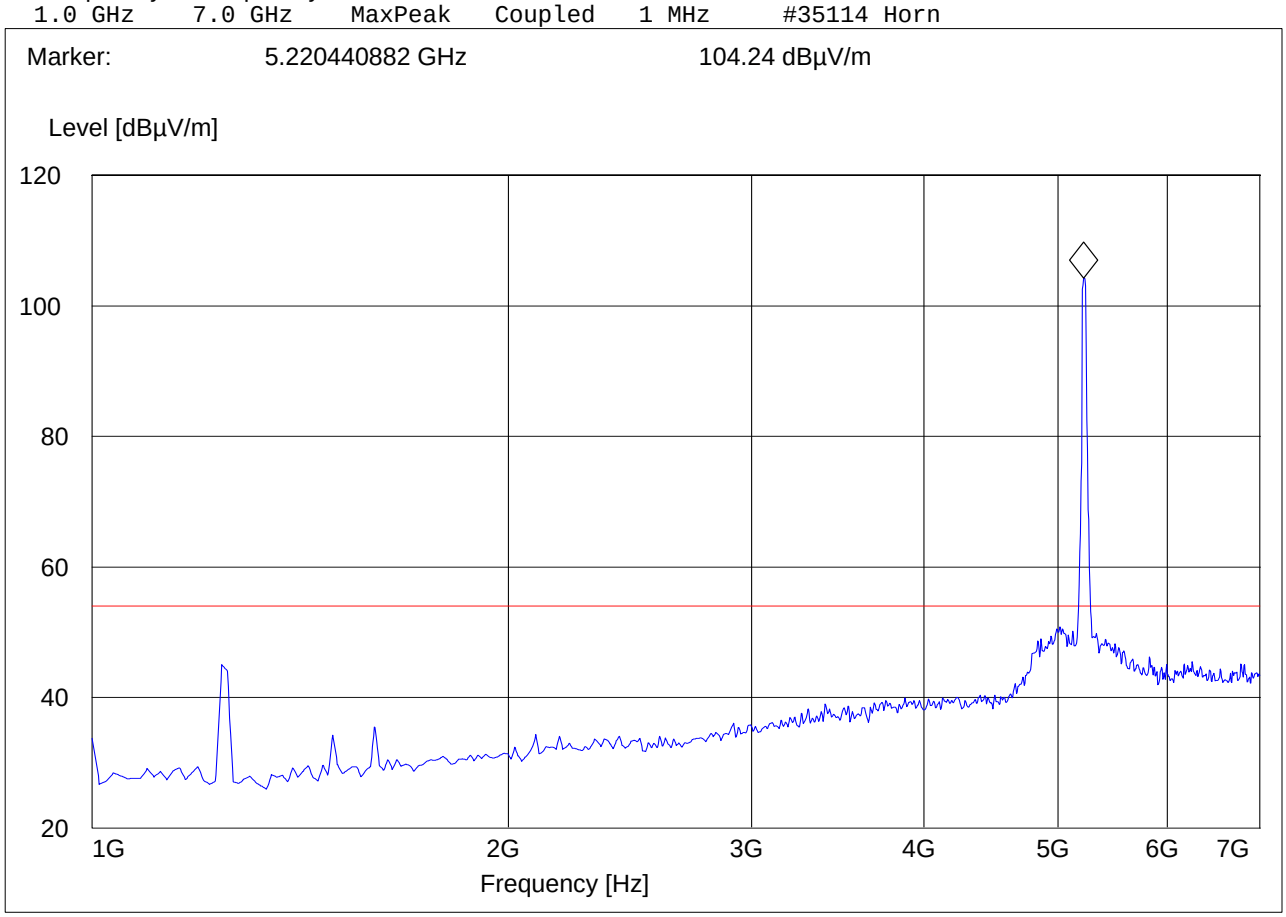
1-7GHz (5220MHz)

Note: The peak above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.44; 5220MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn



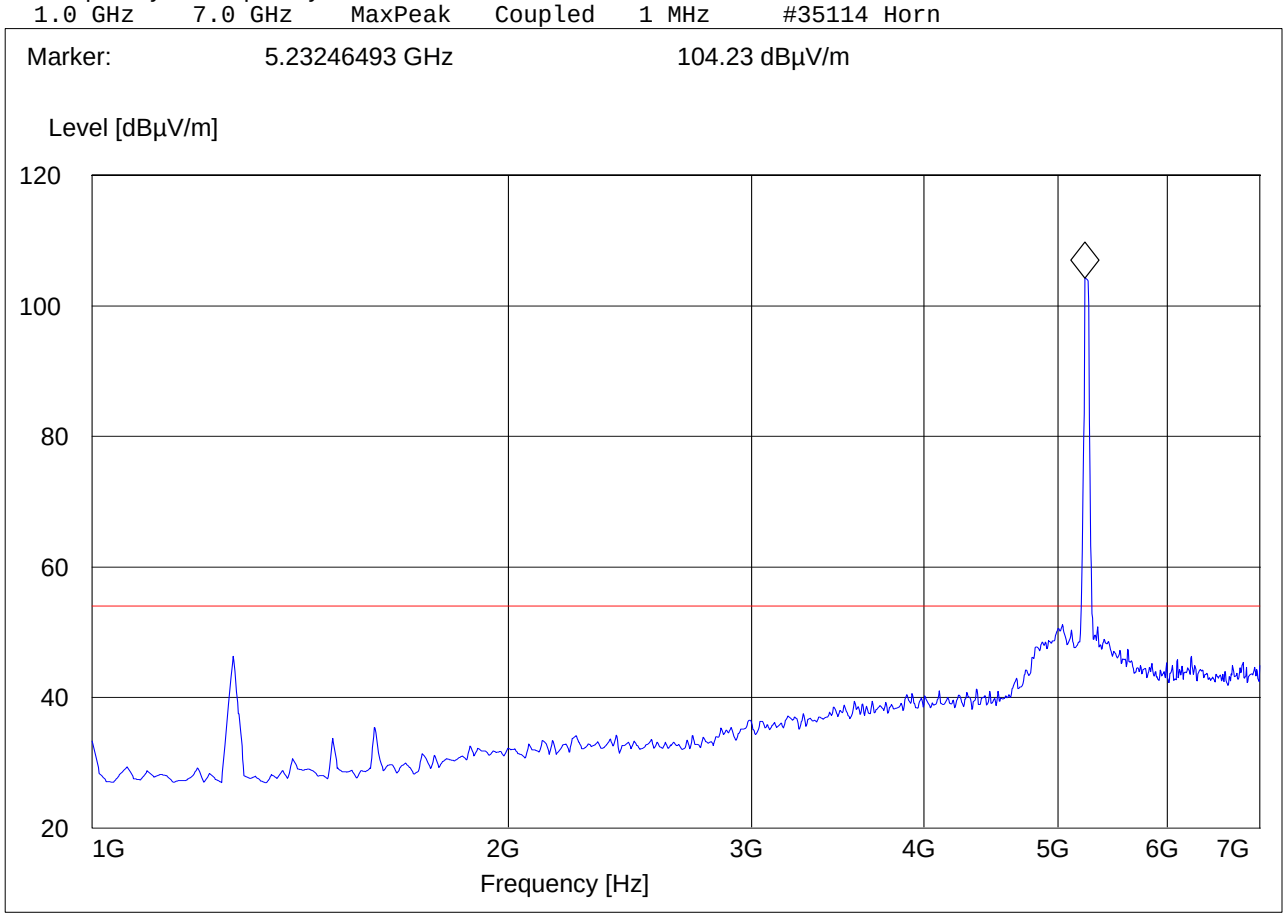
1-7GHz (5240MHz)

Note: The peak above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.48; 5240MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn



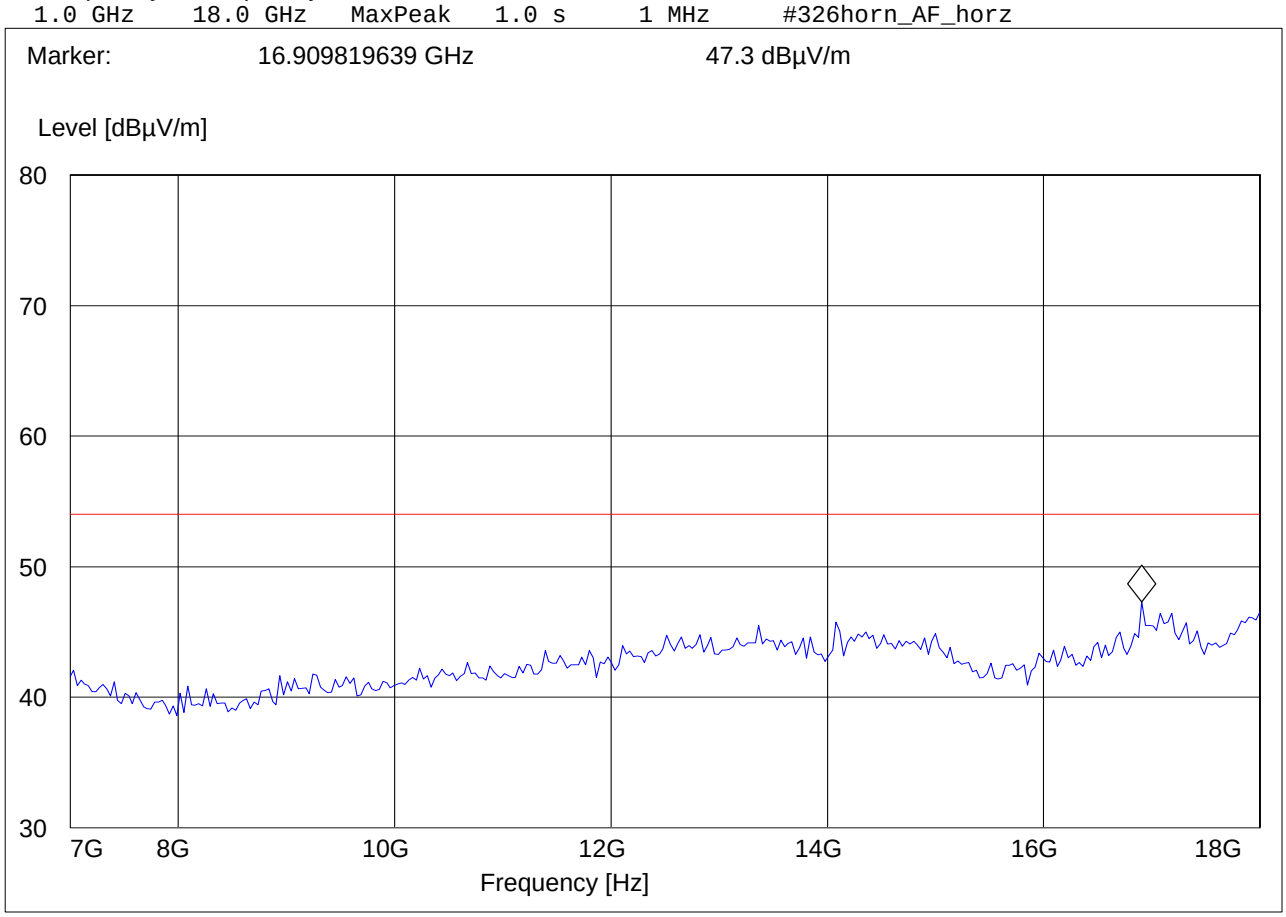
7-18GHz (5180MHz)

Note: Peak Reading vs. Average limit

```
EUT:             isap
Customer::       EB
Test Mode:       Ch.36; 5180MHz; 20 MHz
ANT Orientation: V
EUT Orientation: H
Test Engineer:   SAM
Voltage:         AC
Comments:
```

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz



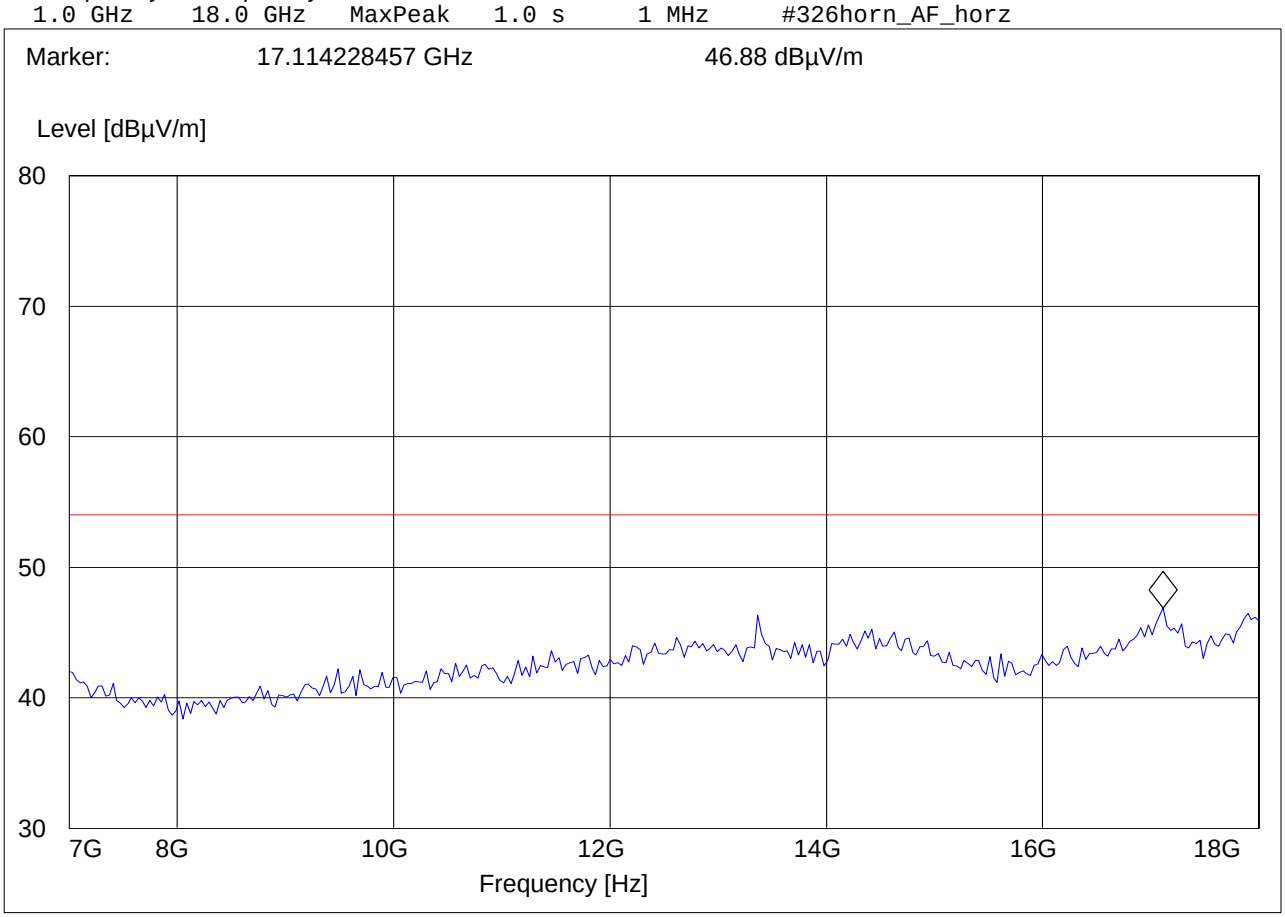
7-18GHz (5220MHz)

Note: Peak Reading vs. Average limit

```
EUT:             isap
Customer::       EB
Test Mode:       Ch.44; 5220MHz; 20 MHz
ANT Orientation: V
EUT Orientation: H
Test Engineer:   SAM
Voltage:         AC
Comments:
```

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz



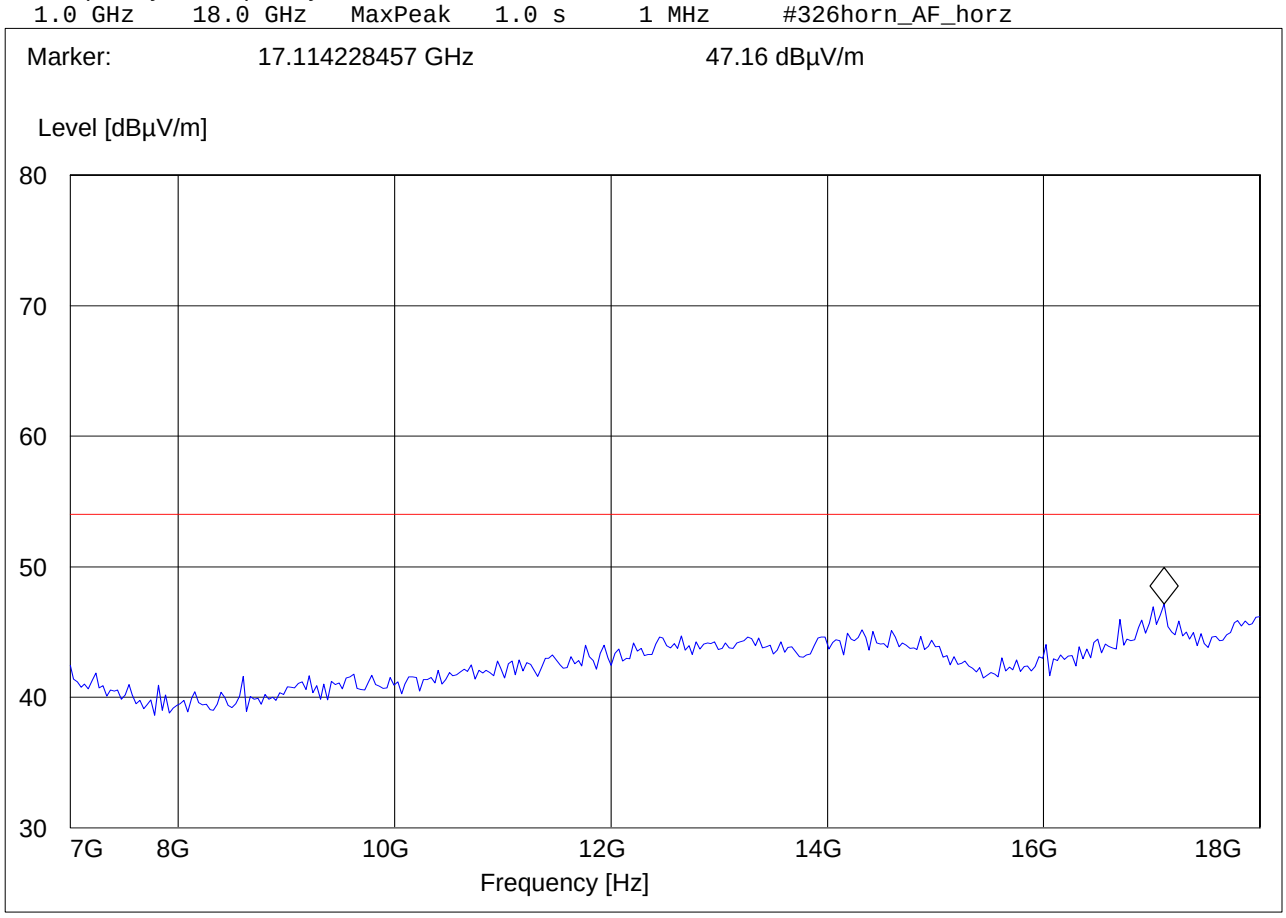
7-18GHz (5240MHz)

Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.48; 5240MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz



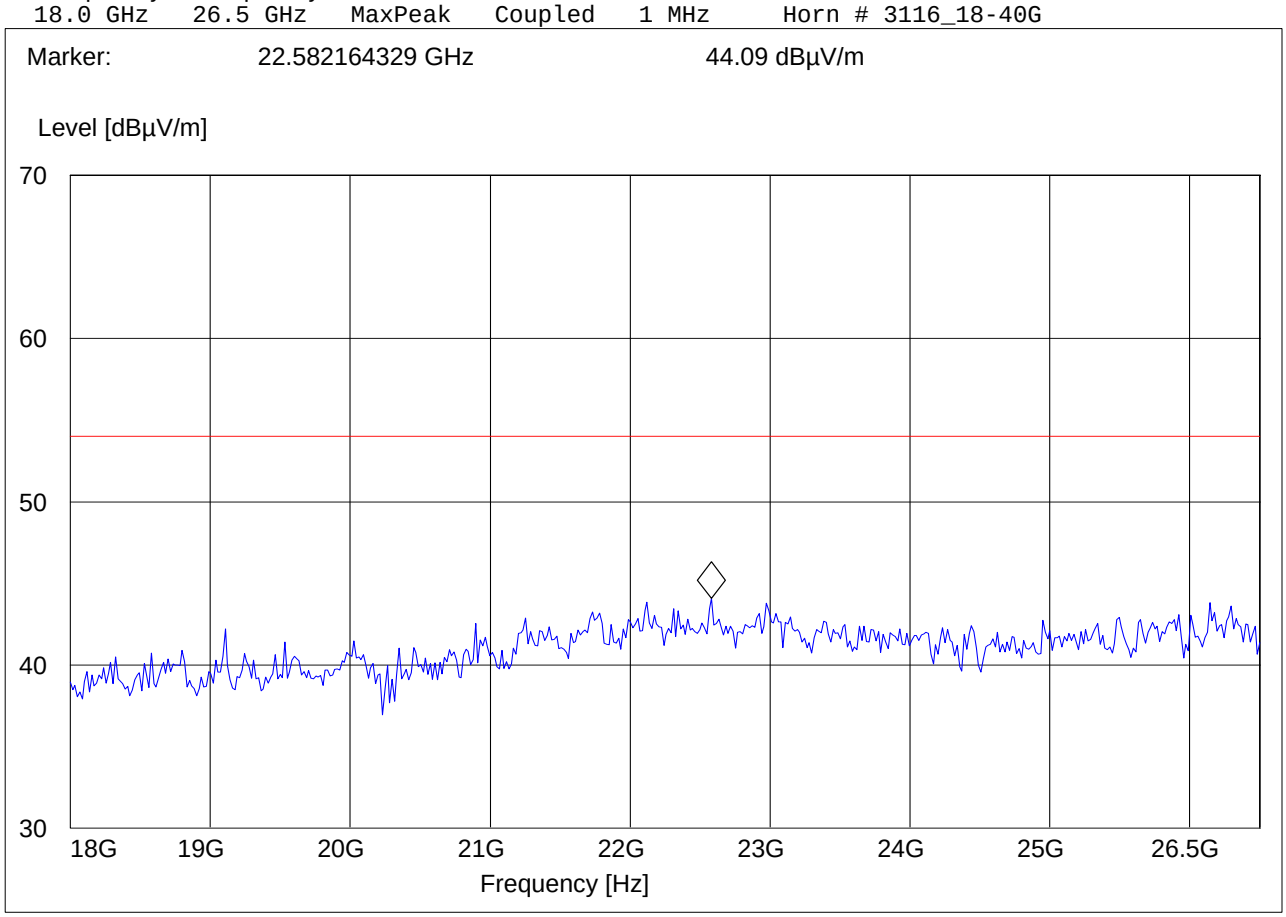
18-26.5GHz

Note: Peak Reading vs. Average limit
Note: This plot is valid for low, mid, high channels (worst-case plot).

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.48; 5240MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 18-26.5G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	26.5 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G



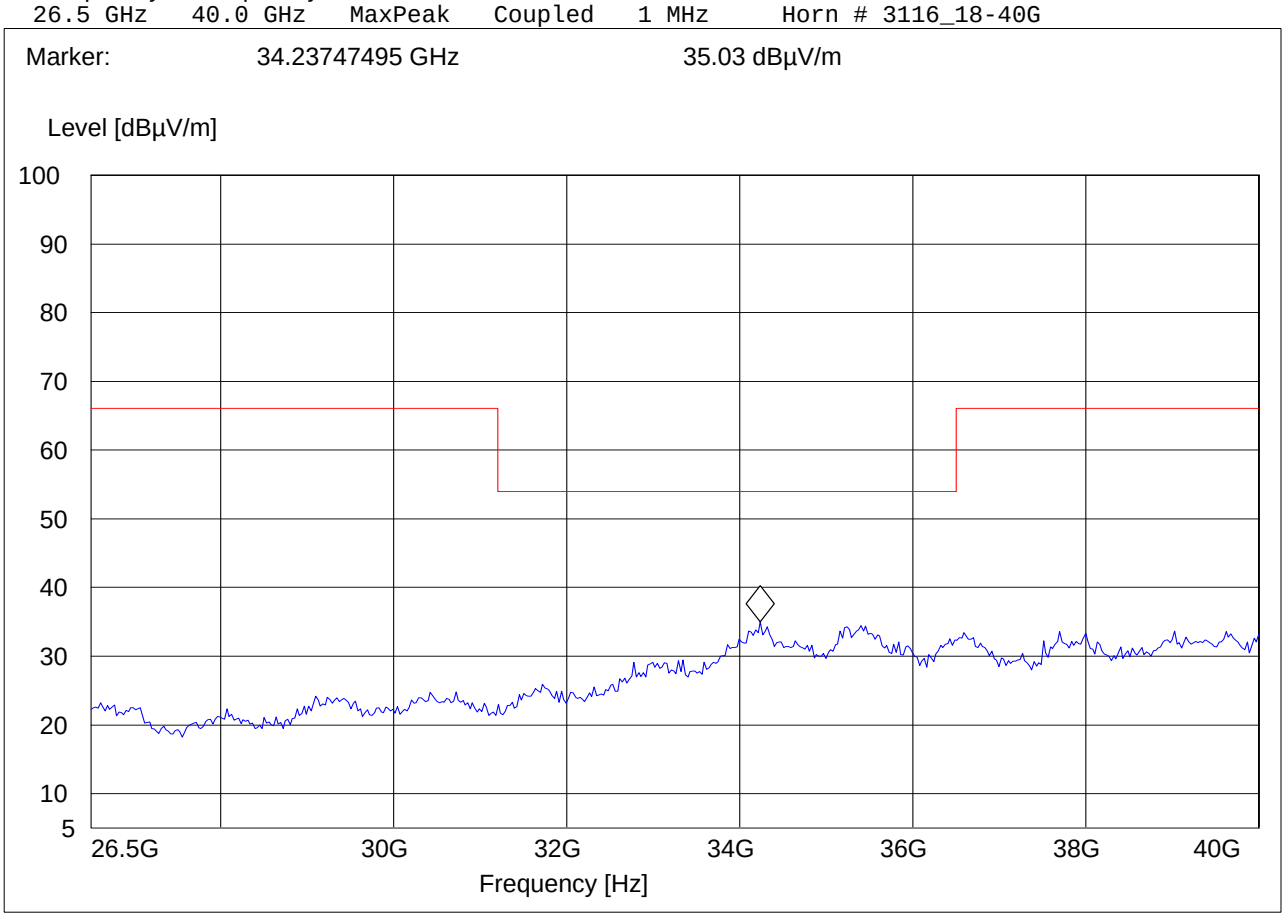
26.5-40GHz

Note: This plot is valid for low, mid, high channels (worst-case plot)
Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.48; 5240MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 26.5-40G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
26.5 GHz	40.0 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G



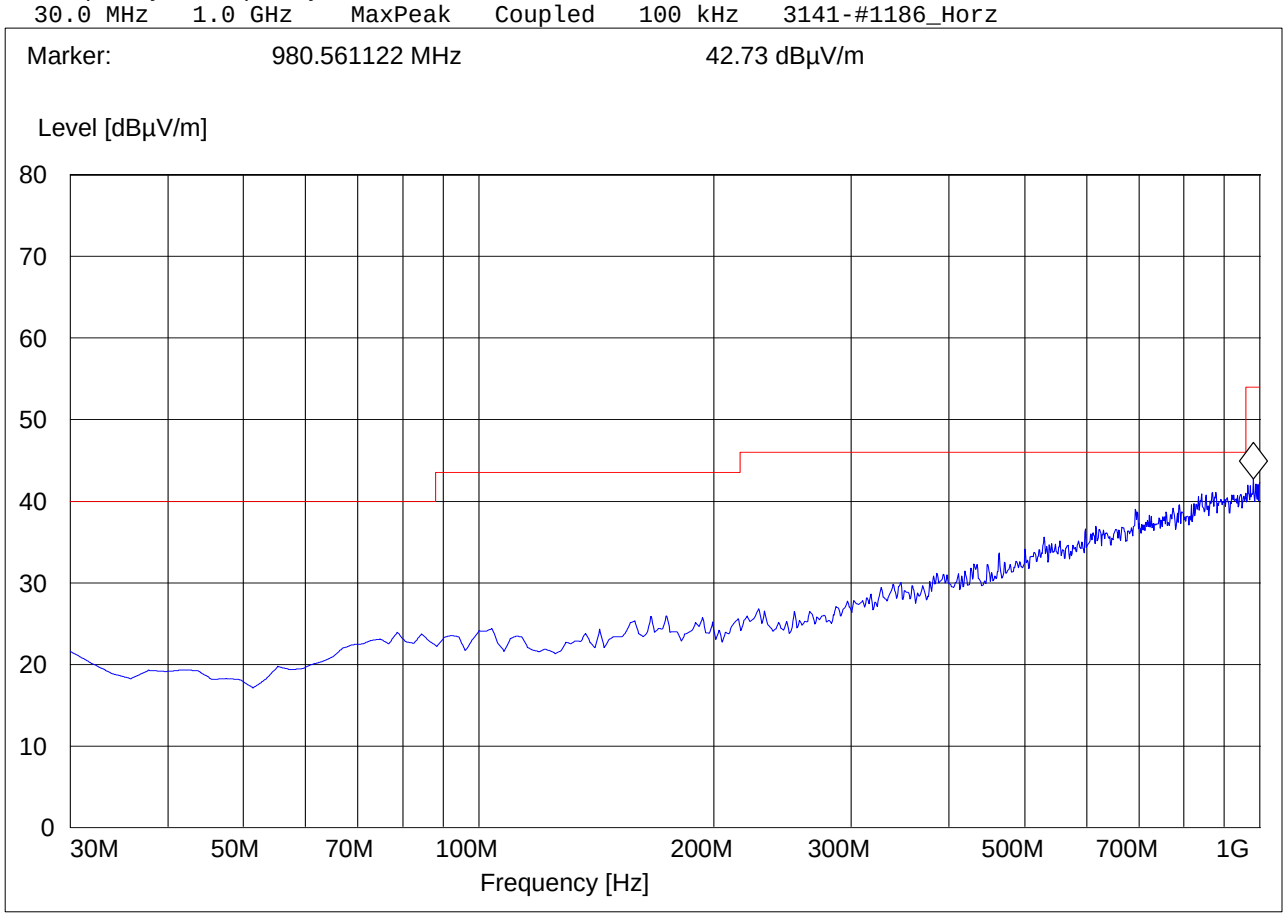
5.3.3 **Sub-band 1 802.11 (na) HT40 MODE**

30MHz – 1GHz, Antenna: Horizontal
Note: This plot is valid for low, mid, high channels (worst-case plot).

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.44; 5230MHz; 40 MHz
ANT Orientation:  H
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.247_30M-1G_Hor"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Horz



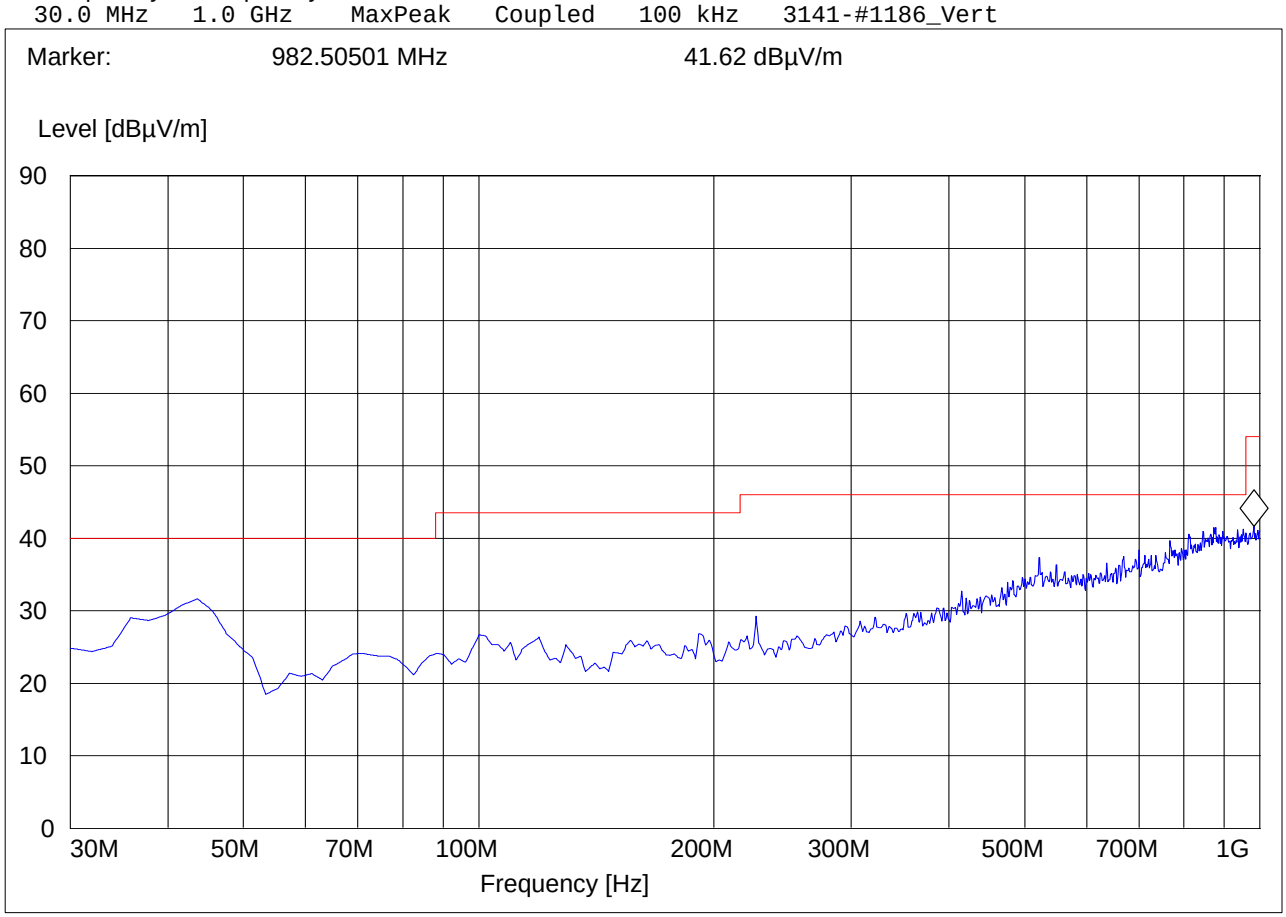
30MHz – 1GHz, Antenna: Vertical

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

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.44; 5230MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.247_30M-1G_Ver"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Vert



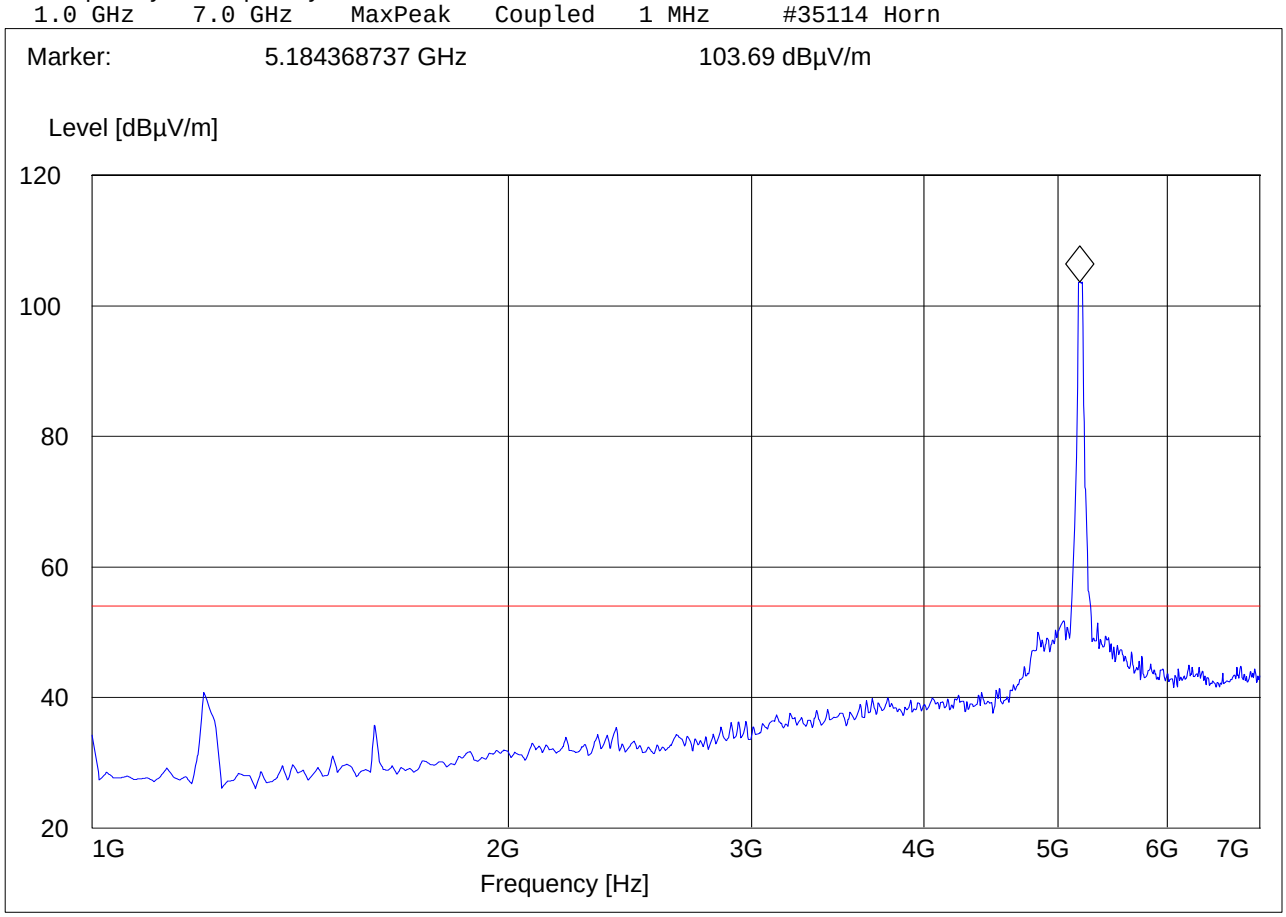
1-7GHz (5190MHz)

Note: The peak above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.36; 5190MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn



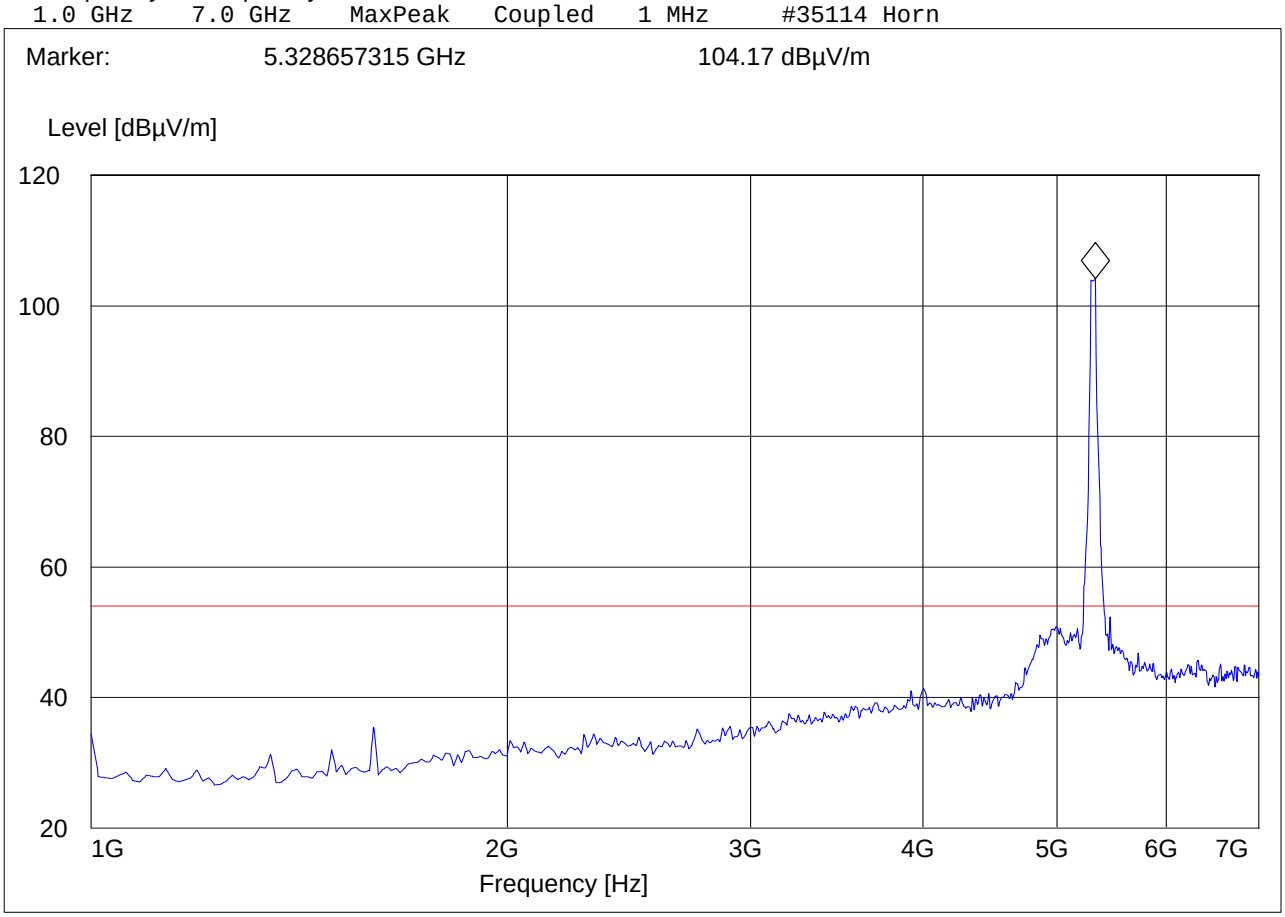
1-7GHz (5230MHz)

Note: The peak above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.60; 5310MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn



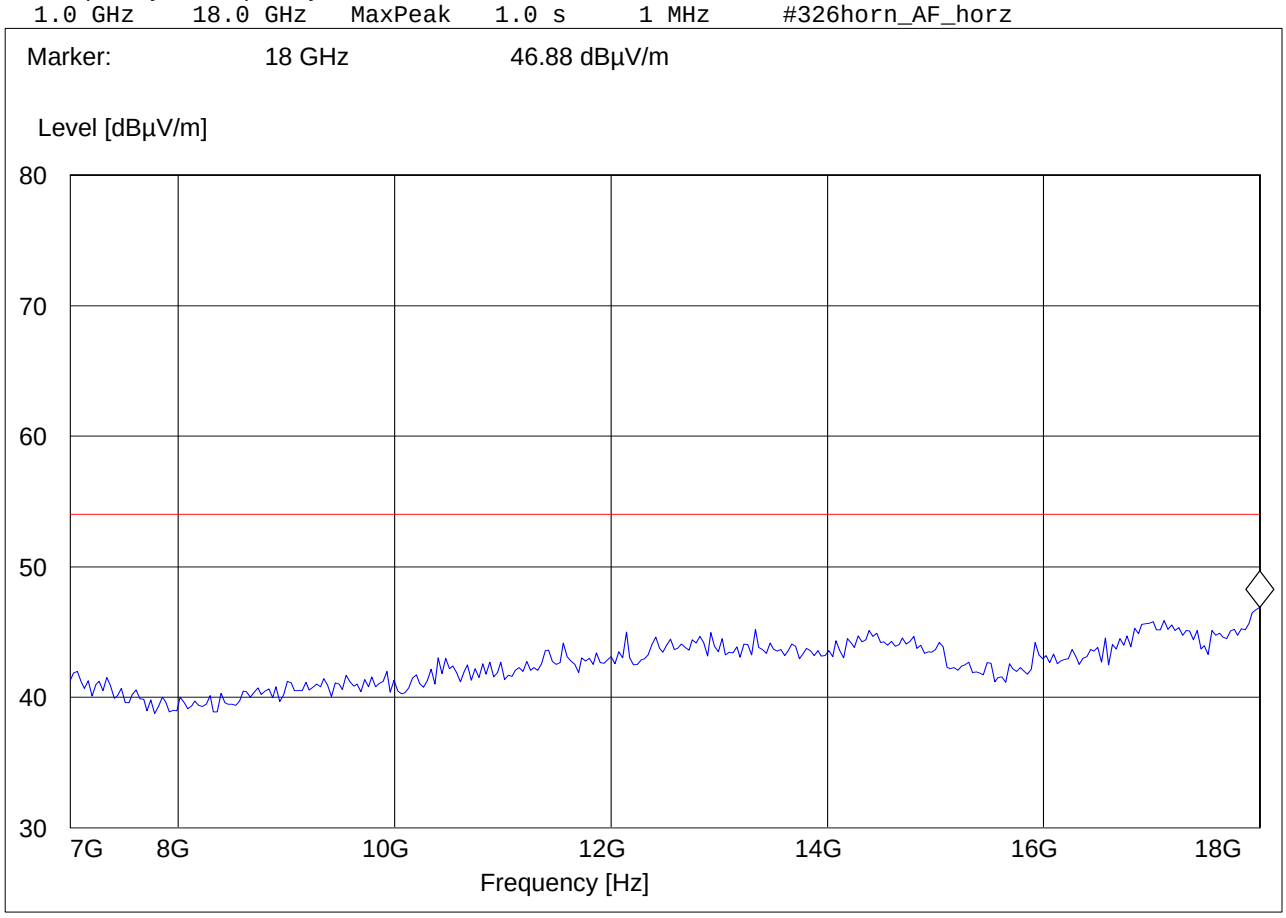
7-18GHz (5190MHz)

Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.36; 5190MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz



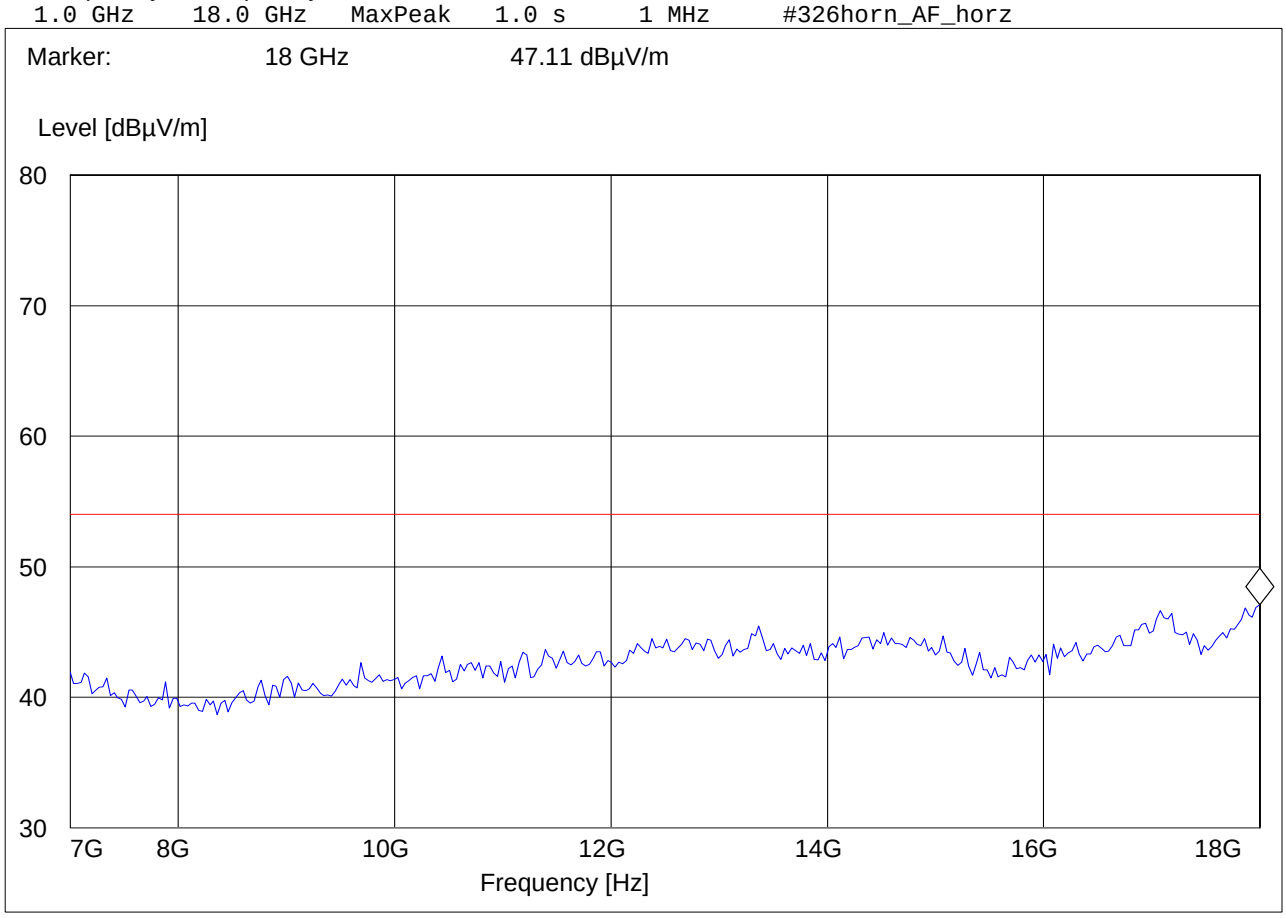
7-18GHz (5230MHz)

Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.44; 5230MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz



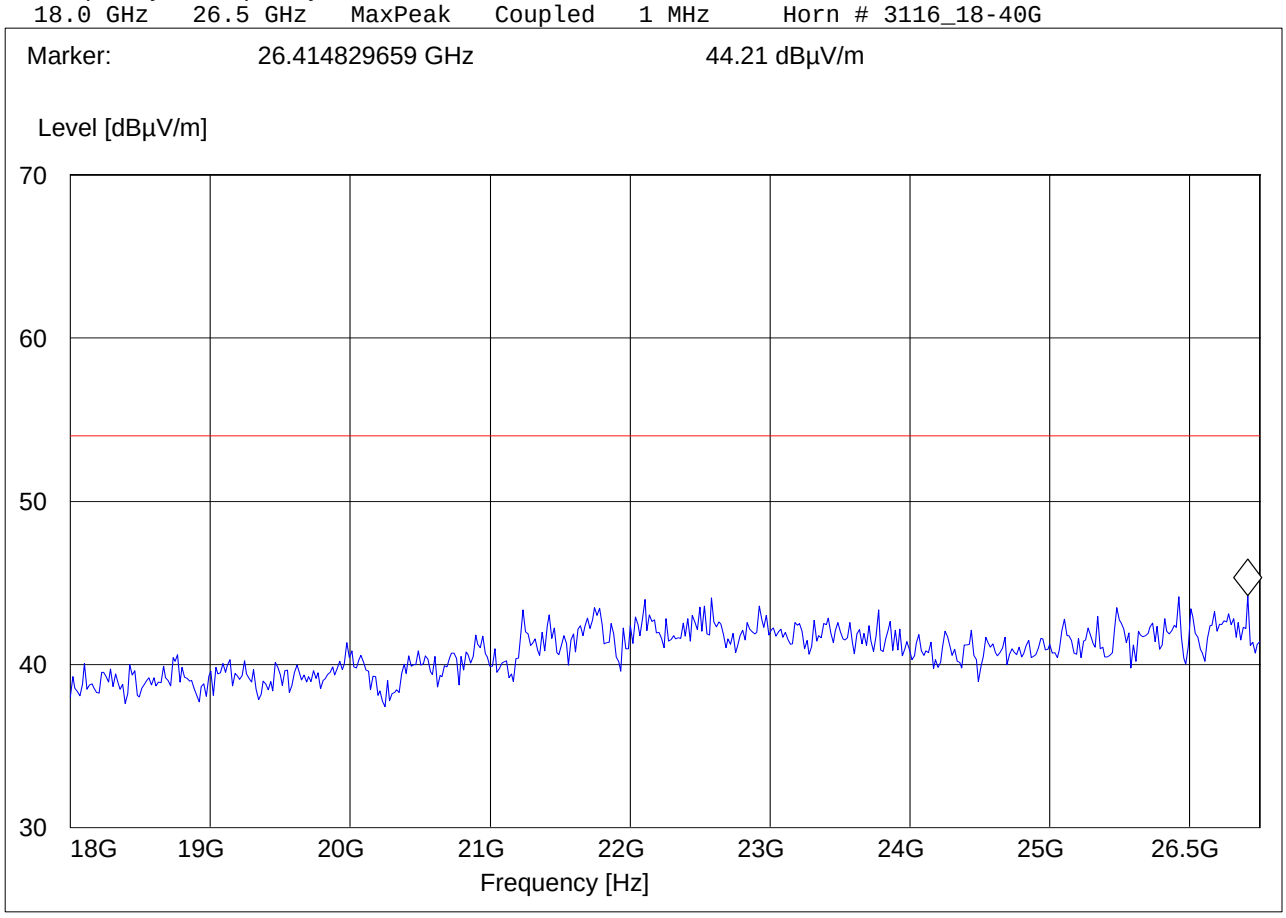
18-26.5GHz

Note: Peak Reading vs. Average limit
Note: This plot is valid for low, mid, high channels (worst-case plot).

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.44; 5230MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 18-26.5G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	26.5 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G



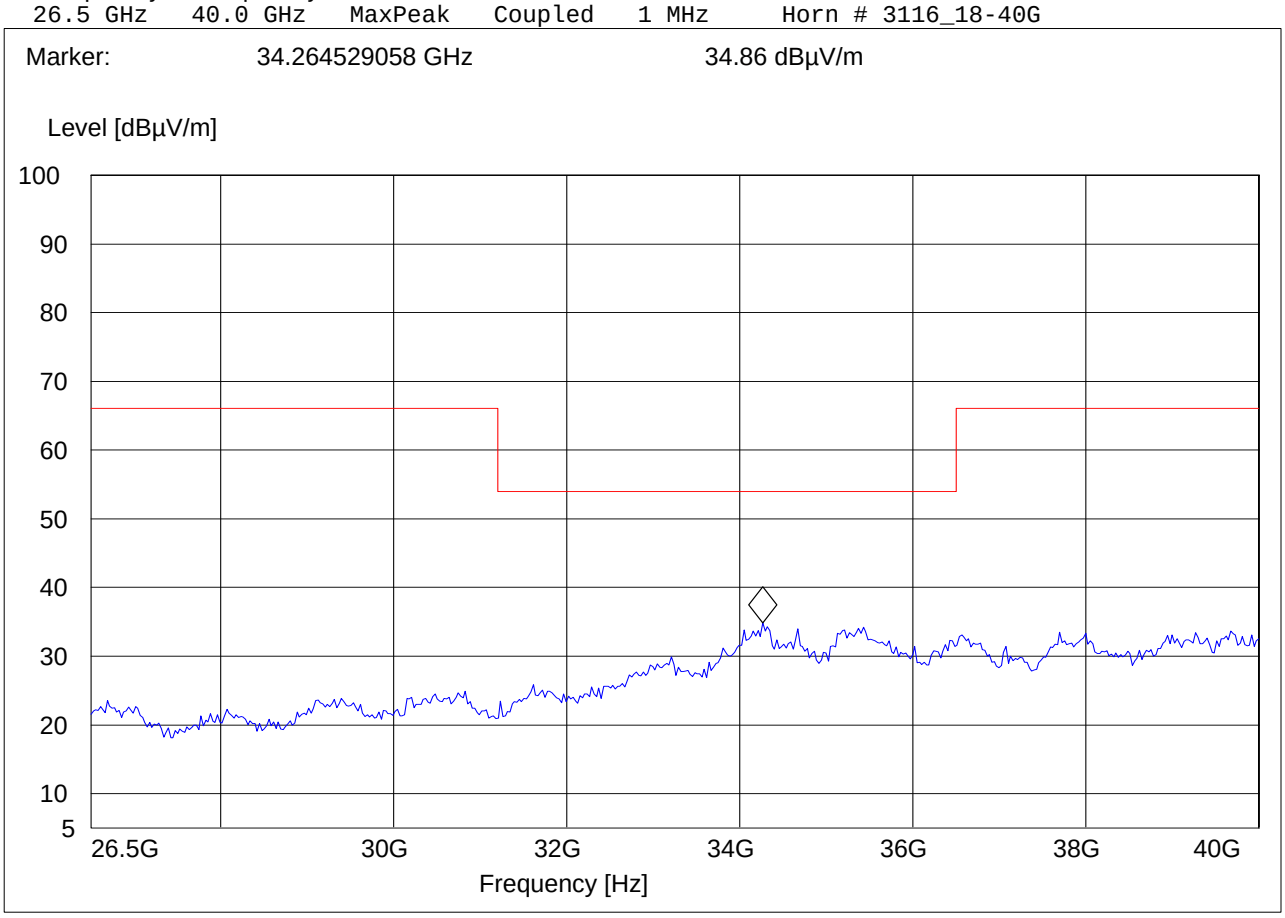
26.5-40GHz

Note: This plot is valid for low, mid, high channels (worst-case plot)
Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.44; 5230MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 26.5-40G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
26.5 GHz	40.0 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G

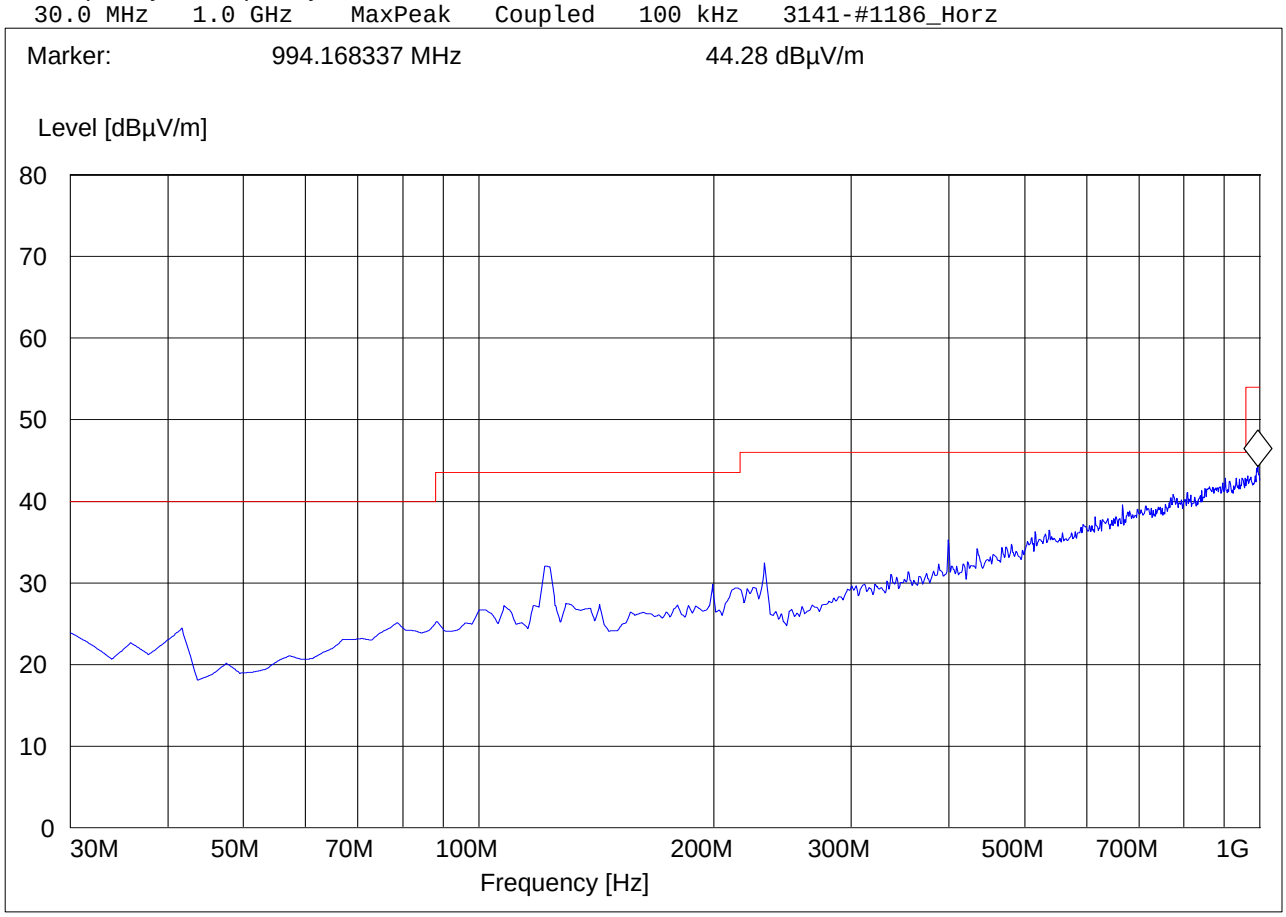


5.3.4 Sub-band 2 802.11 (na) HT20 MODE
30MHz – 1GHz, Antenna: Horizontal
Note: This plot is valid for low, mid, high channels (worst-case plot).

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.60; 5300MHz; 20 MHz
ANT Orientation:  H
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.247_30M-1G_Hor"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Horz



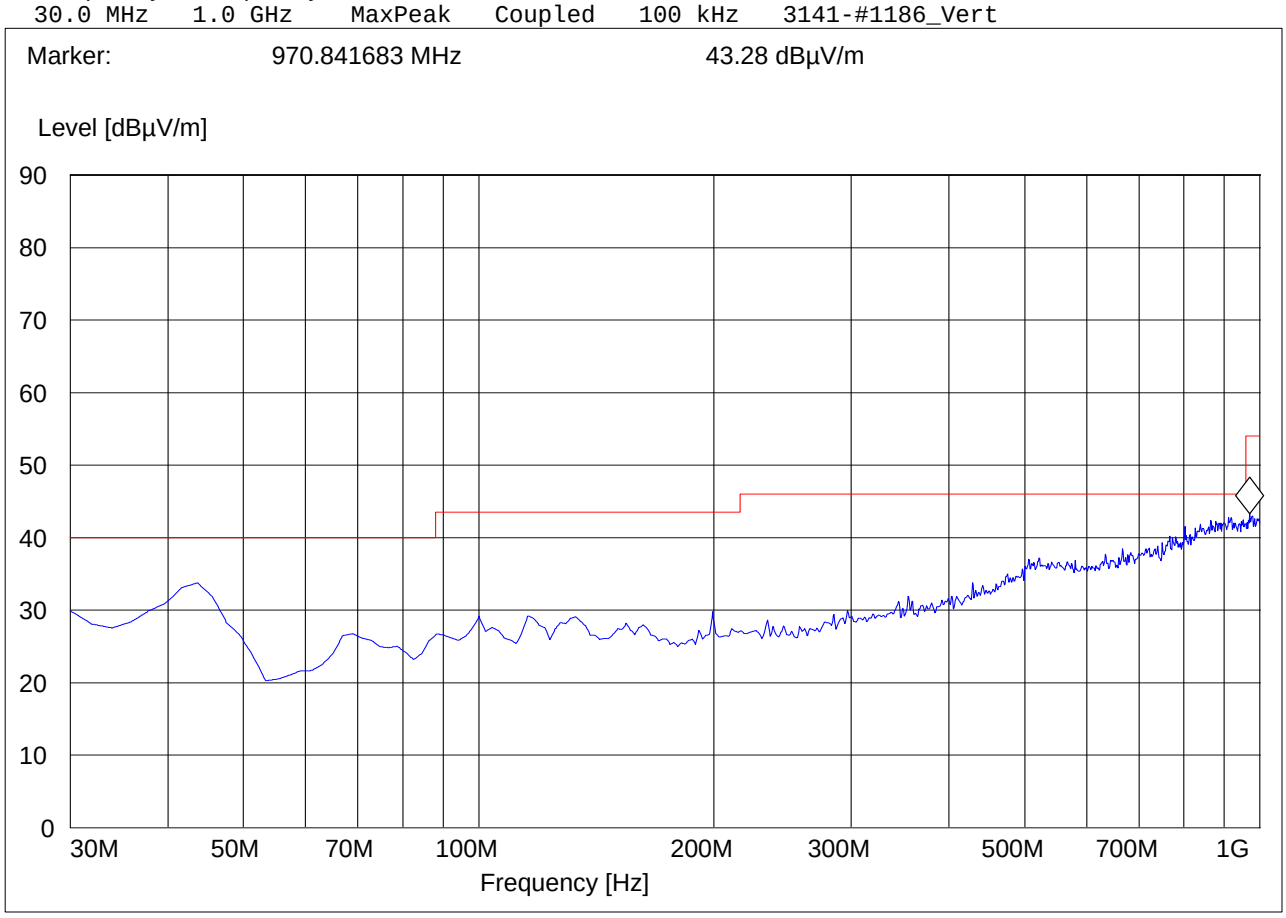
30MHz – 1GHz, Antenna: Vertical

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

```
EUT:             isap
Customer::       EB
Test Mode:       Ch.60; 5300MHz; 20 MHz
ANT Orientation: V
EUT Orientation: H
Test Engineer:   Chris
Voltage:         AC
Comments:
```

SWEEP TABLE: "FCC15.247_30M-1G_Ver"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Vert



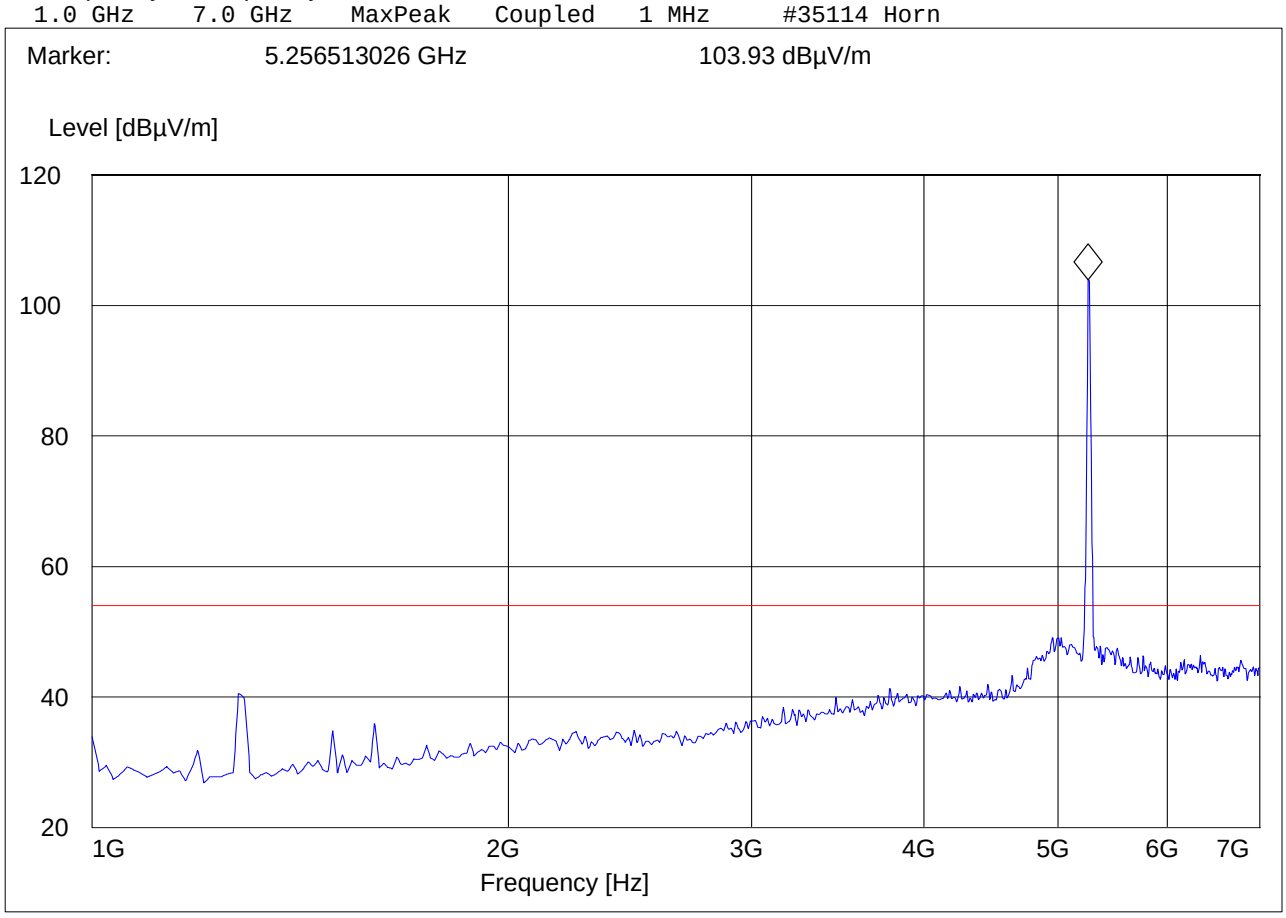
1-7GHz (5260MHz)

Note: The peak above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.52; 5260MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn



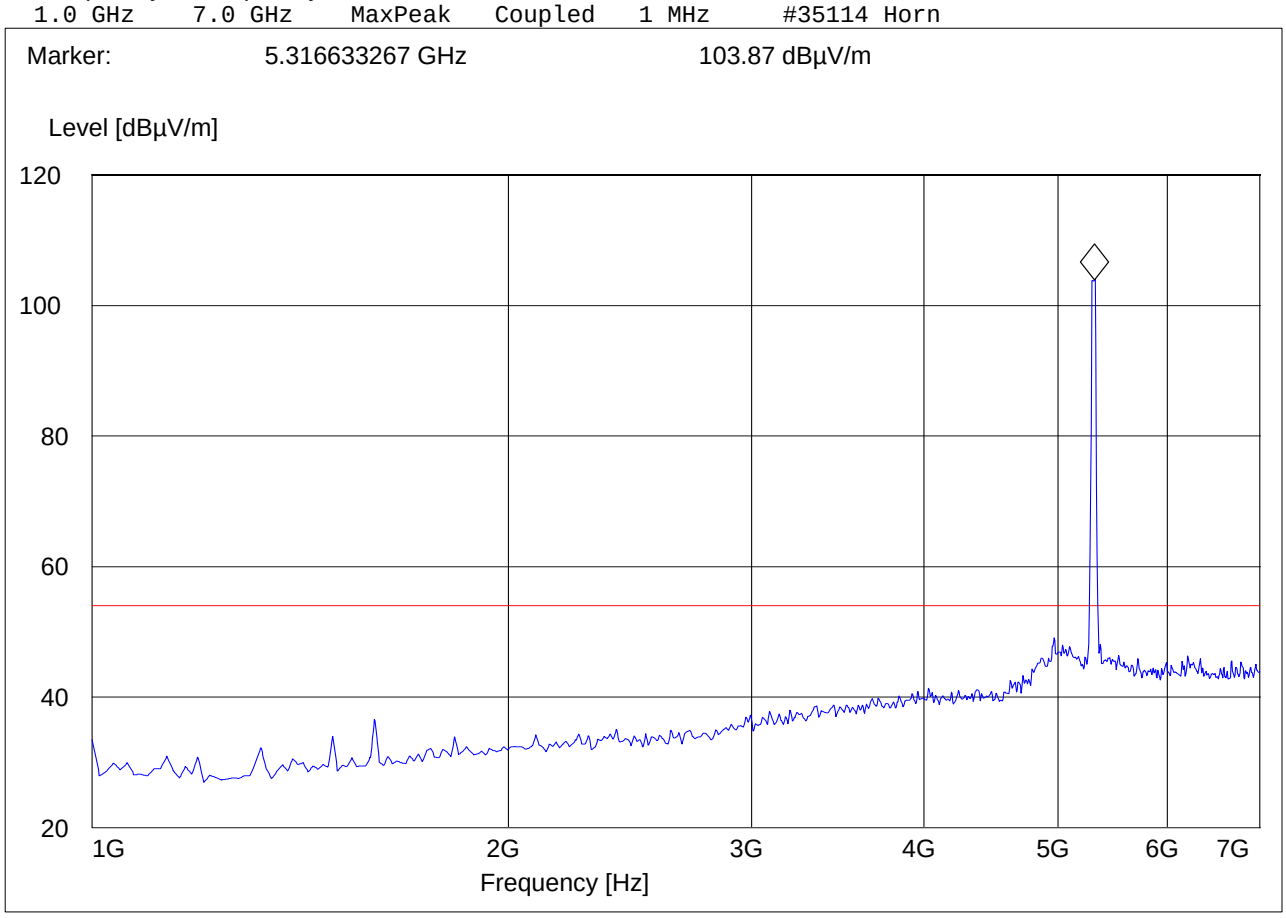
1-7GHz (5300MHz)

Note: The peak above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.60; 5300MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn



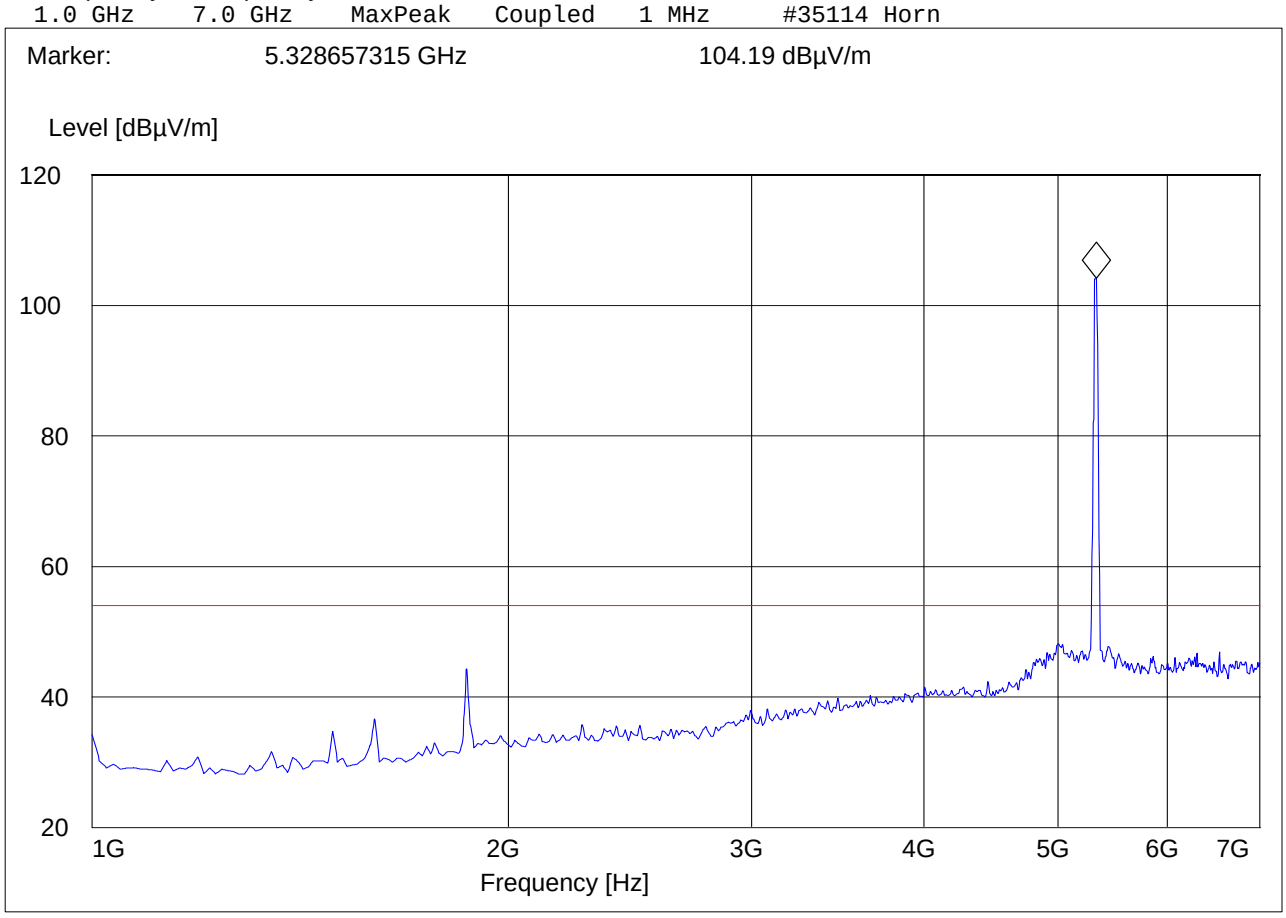
1-7GHz (5320MHz)

Note: The peak above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:             isap
Customer::       EB
Test Mode:       Ch.64; 5320MHz; 20 MHz
ANT Orientation: V
EUT Orientation: H
Test Engineer:   SAM
Voltage:         AC
Comments:
```

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn



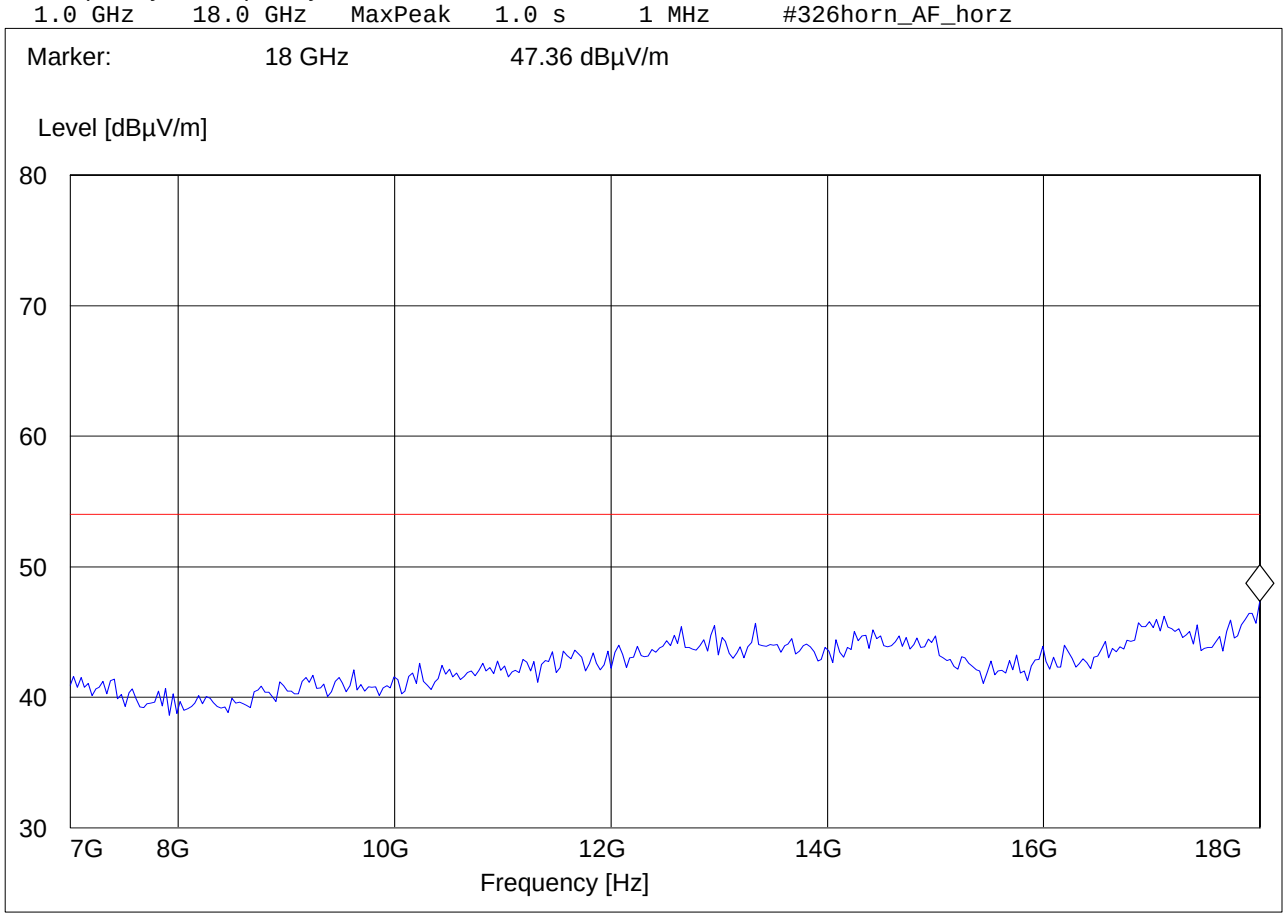
7-18GHz (5260MHz)

Note: Peak Reading vs. Average limit

```
EUT:             isap
Customer::       EB
Test Mode:       Ch.52; 5260MHz; 20 MHz
ANT Orientation: V
EUT Orientation: H
Test Engineer:   SAM
Voltage:         AC
Comments:
```

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz



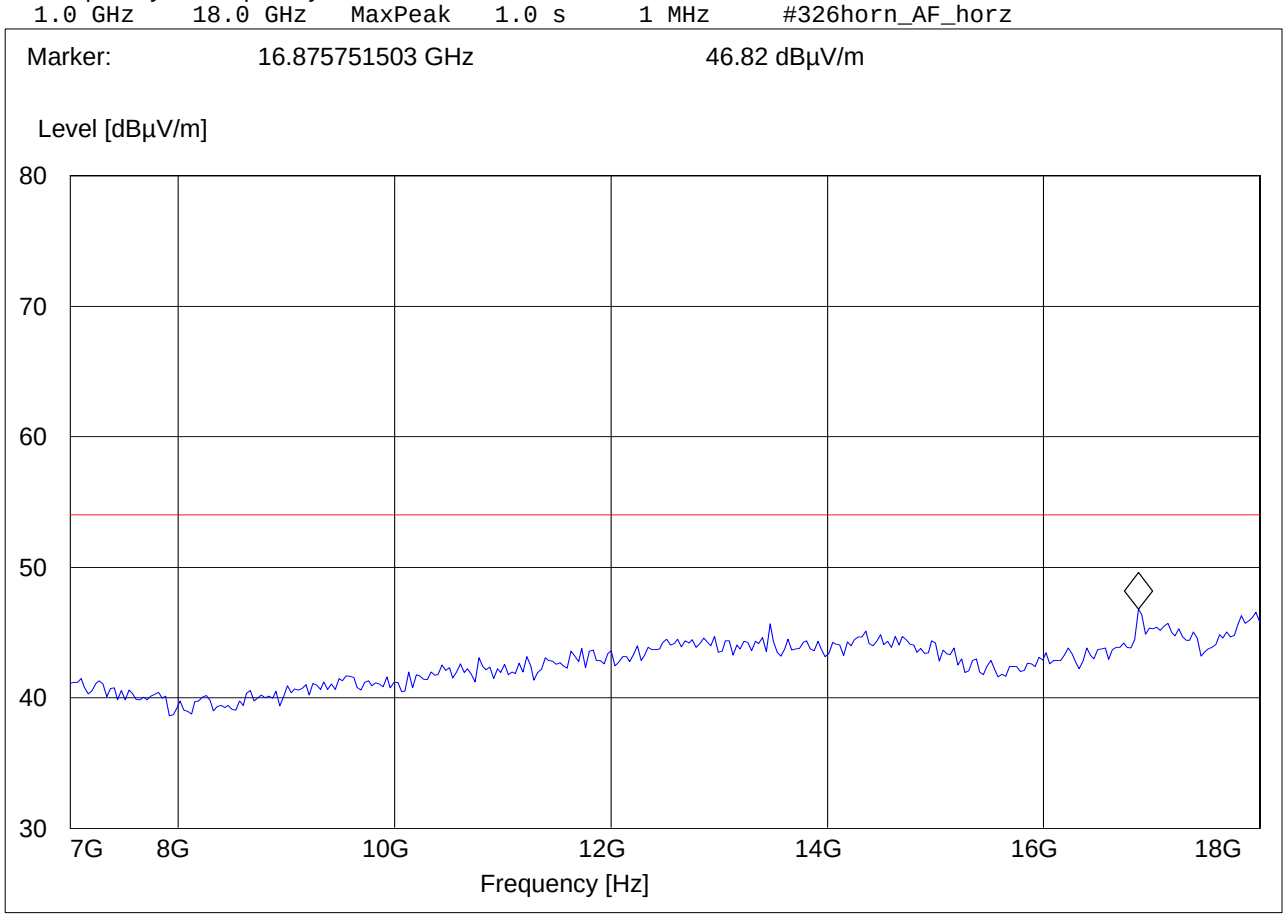
7-18GHz (5300MHz)

Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.60; 5300MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz



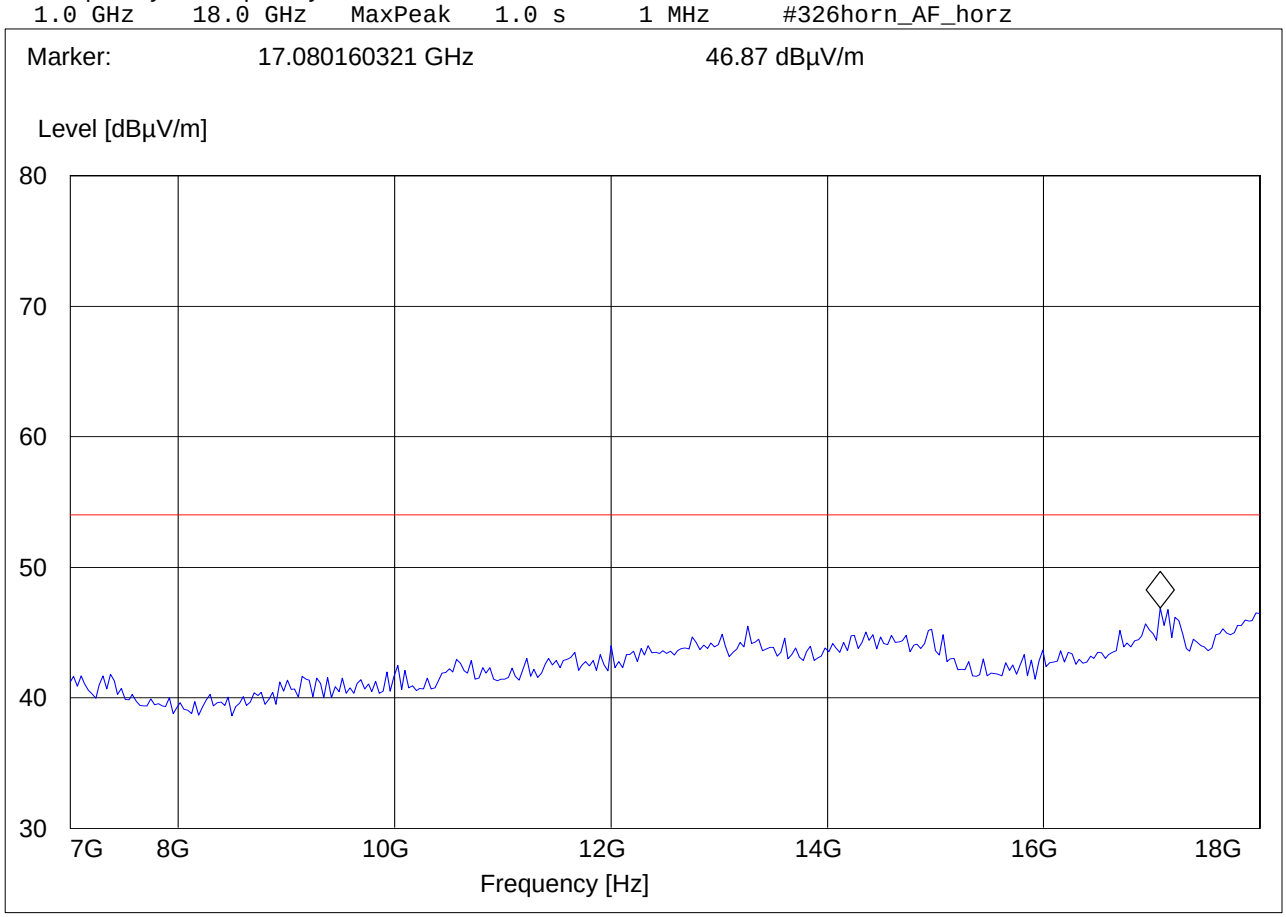
7-18GHz (5320MHz)

Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.64; 5320MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz



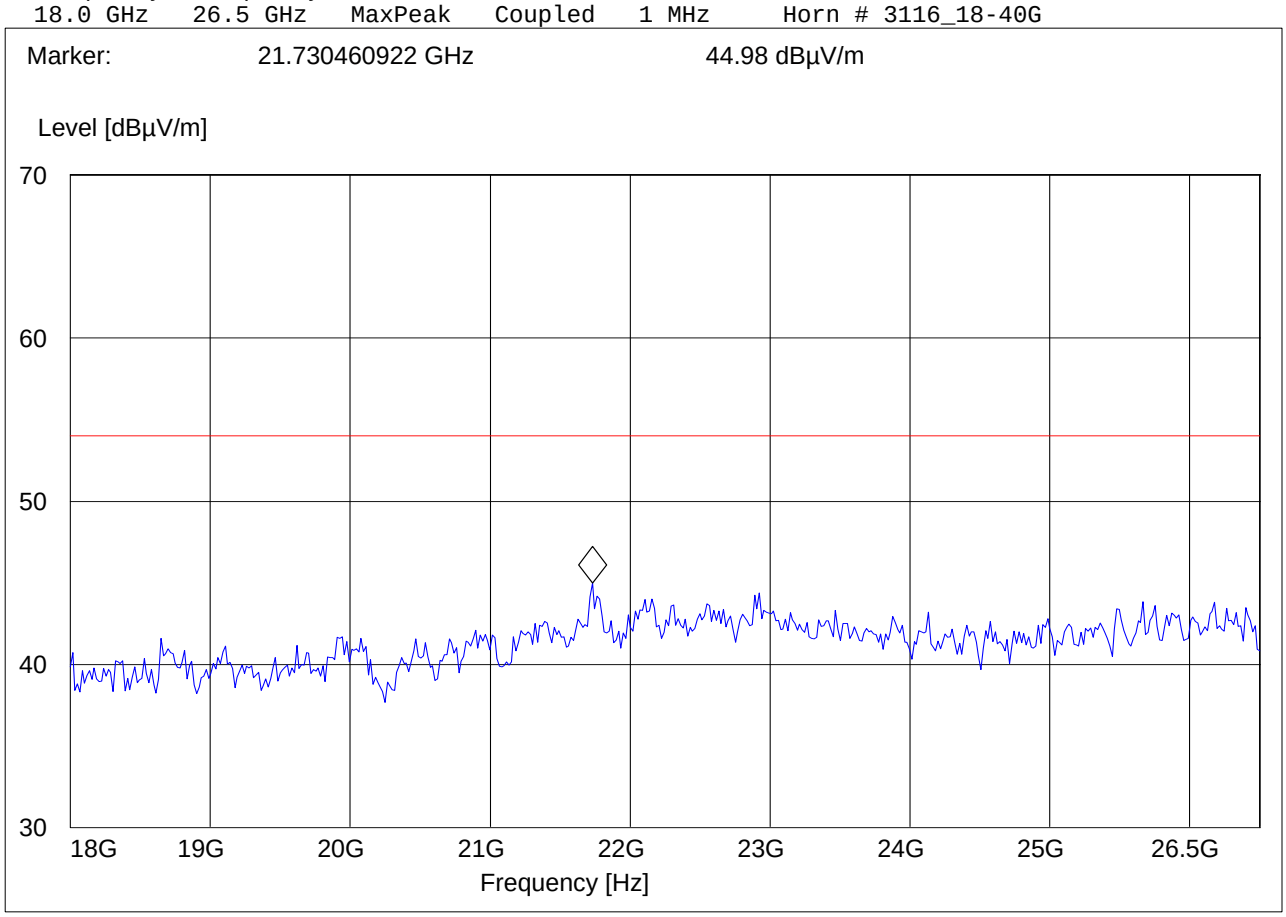
18-26.5GHz

Note: Peak Reading vs. Average limit
Note: This plot is valid for low, mid, high channels (worst-case plot).

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.52; 5260MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 18-26.5G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	26.5 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G



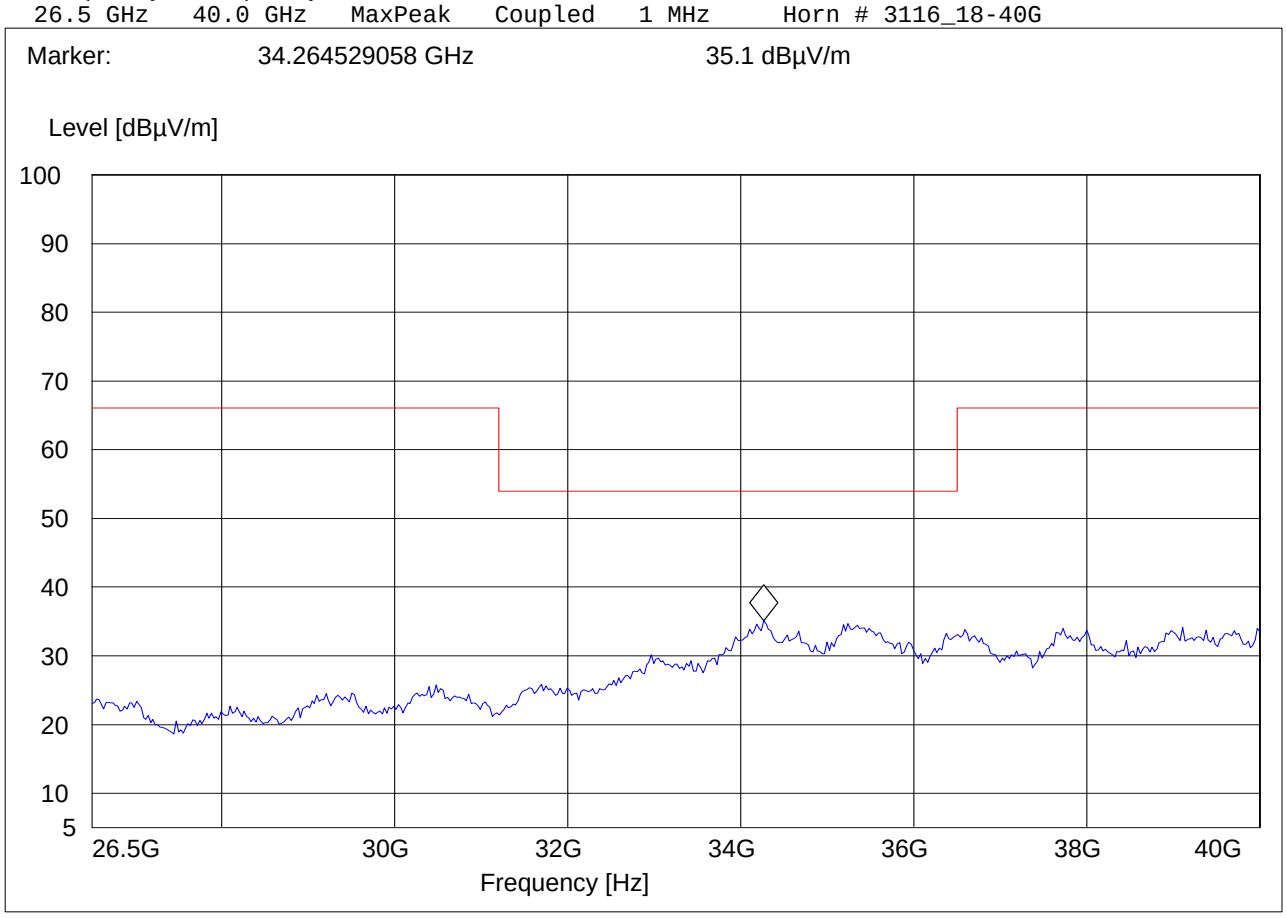
26.5-40GHz

Note: This plot is valid for low, mid, high channels (worst-case plot)
Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.52; 5260MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 26.5-40G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
26.5 GHz	40.0 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G



5.3.5 Sub-band 2 802.11 (na) HT40 MODE

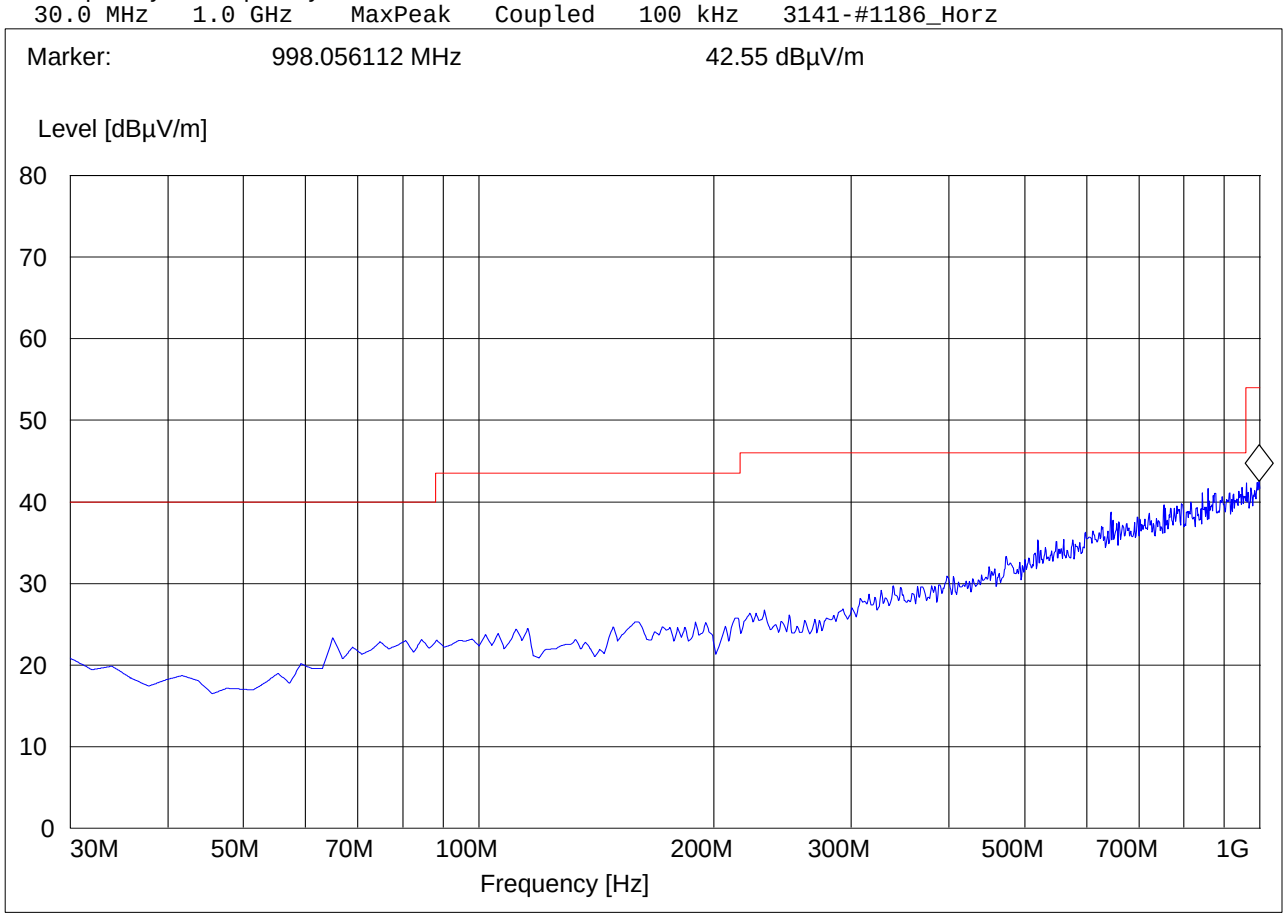
30MHz – 1GHz, Antenna: Horizontal

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

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.60; 5310MHz; 40 MHz
ANT Orientation:  H
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.247_30M-1G_Hor"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Horz



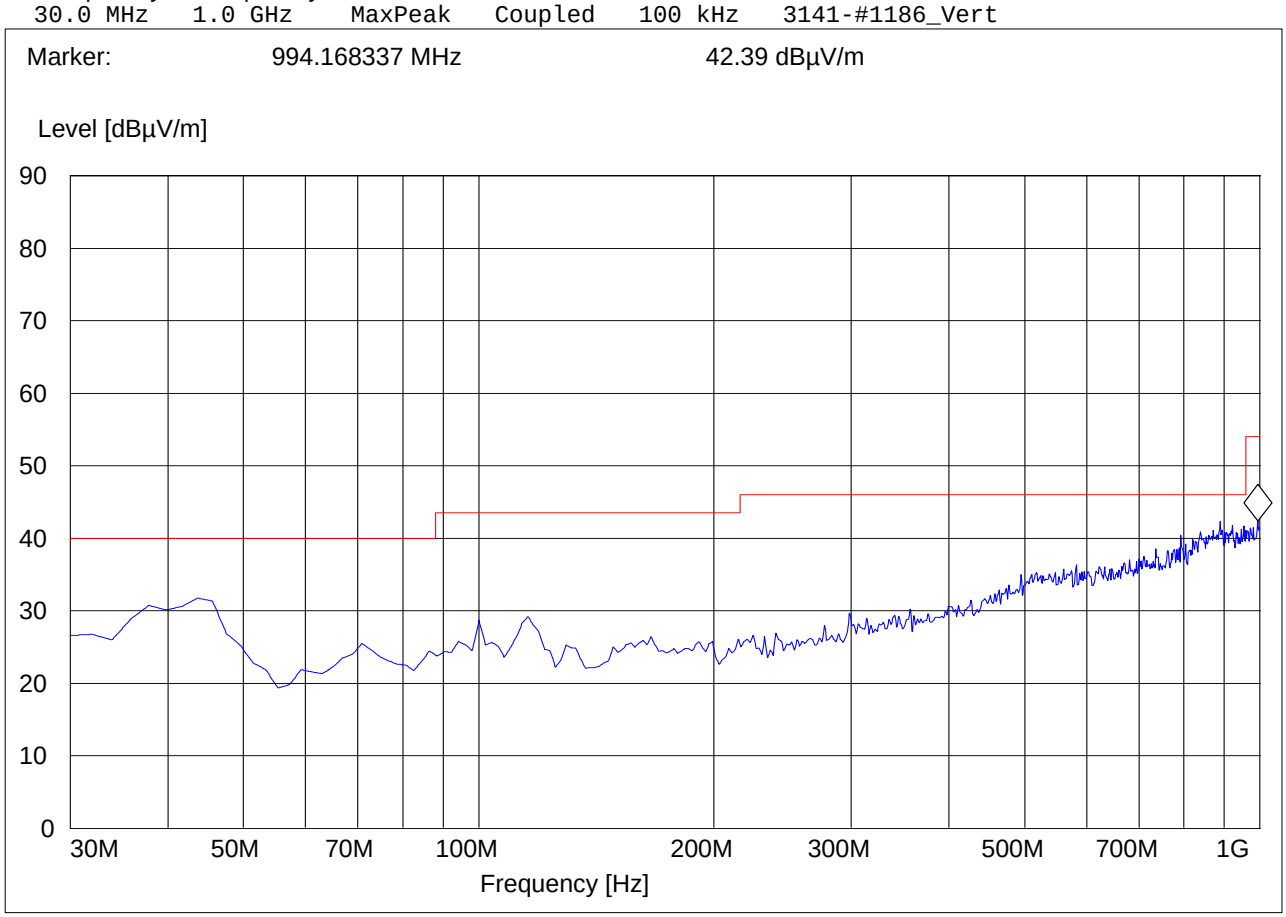
30MHz – 1GHz, Antenna: Vertical

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

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.60; 5310MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.247_30M-1G_Ver"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Vert



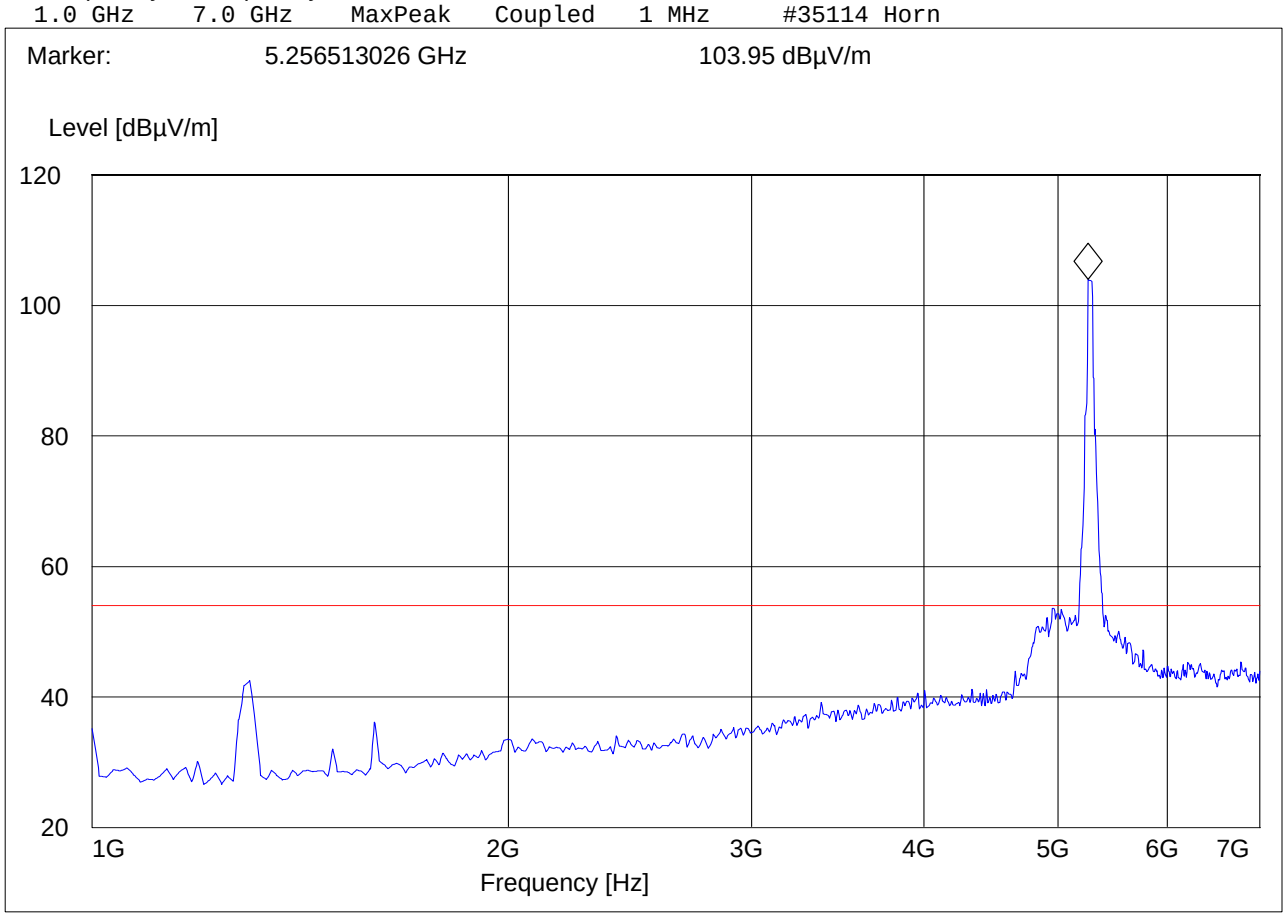
1-7GHz (5270MHz)

Note: The peak above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.52; 5270MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn



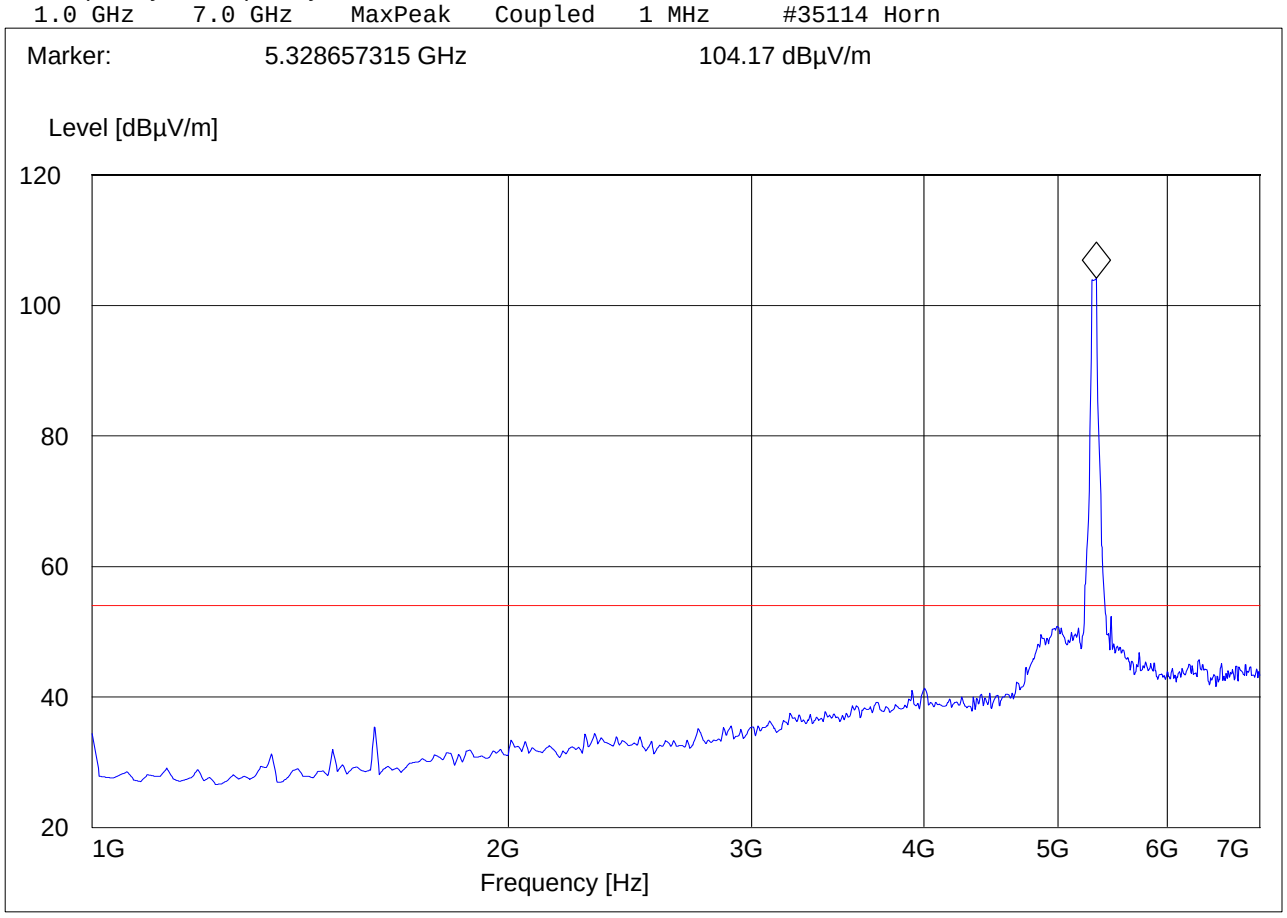
1-7GHz (5310MHz)

Note: The peak above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.60; 5310MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn



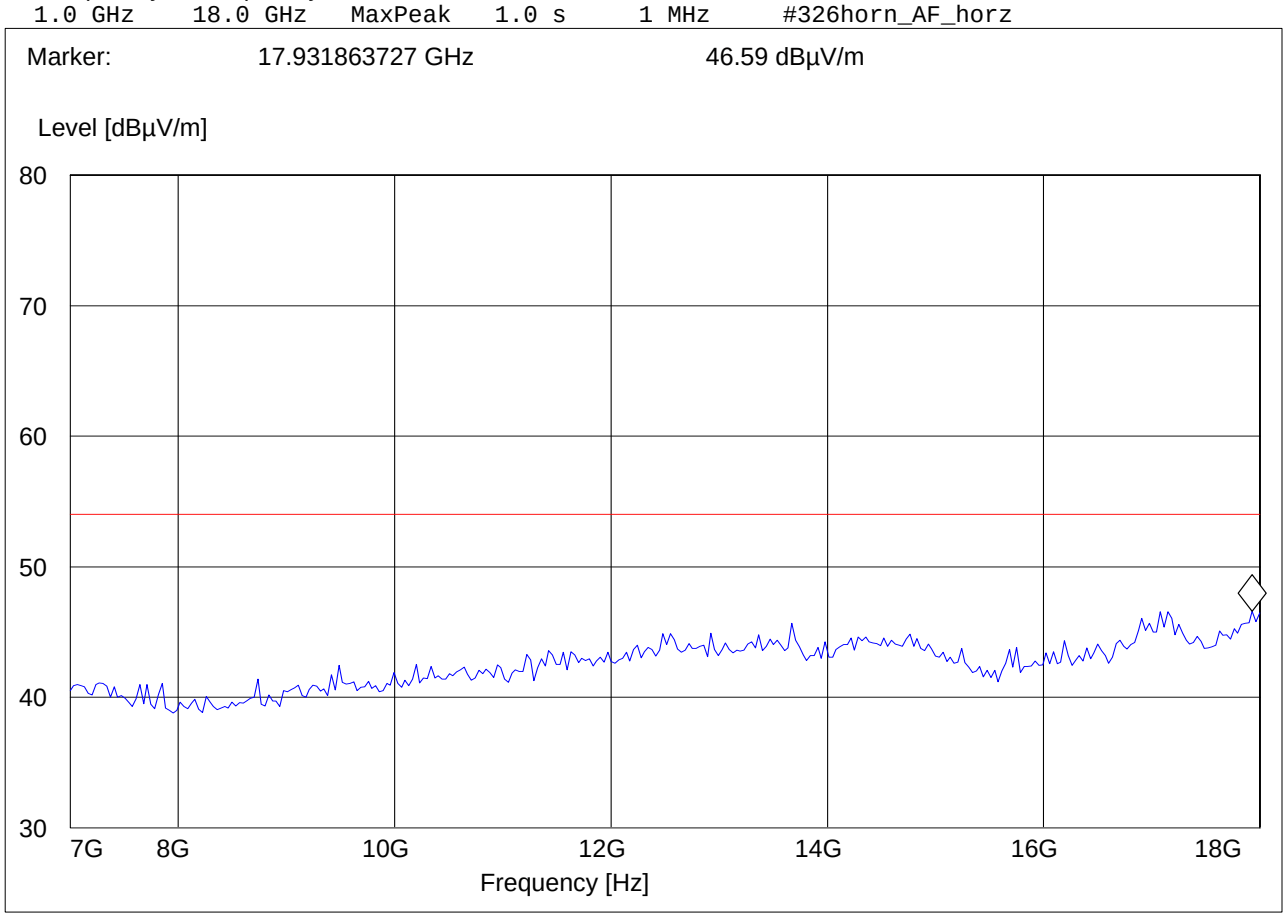
7-18GHz (5270MHz)

Note: Peak Reading vs. Average limit

```
EUT:             isap
Customer::       EB
Test Mode:       Ch.52; 5270MHz; 40 MHz
ANT Orientation: V
EUT Orientation: H
Test Engineer:   SAM
Voltage:         AC
Comments:
```

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz



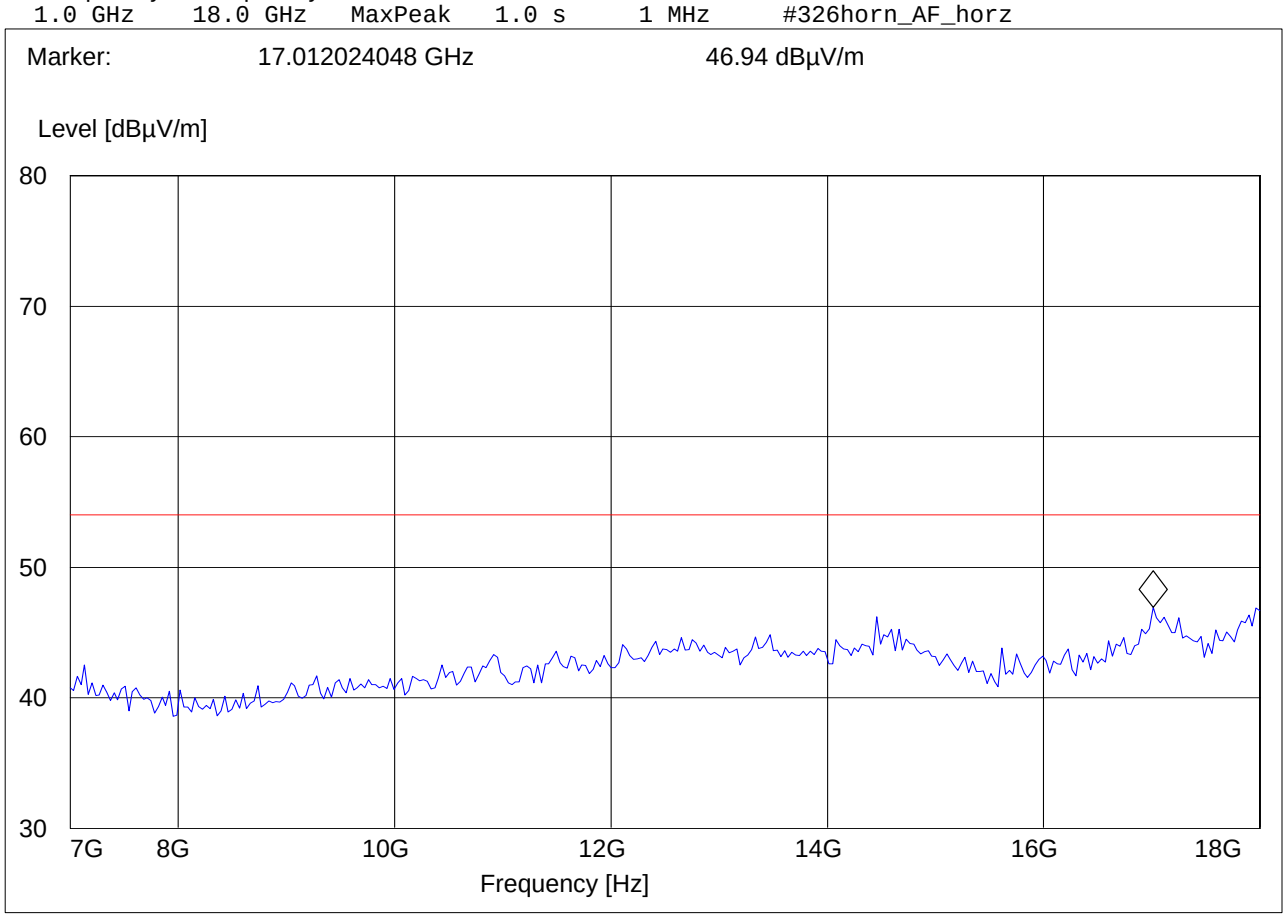
7-18GHz (5310MHz)

Note: Peak Reading vs. Average limit

EUT: isap
Customer:: EB
Test Mode: Ch.60; 5310MHz; 40 MHz
ANT Orientation: V
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz



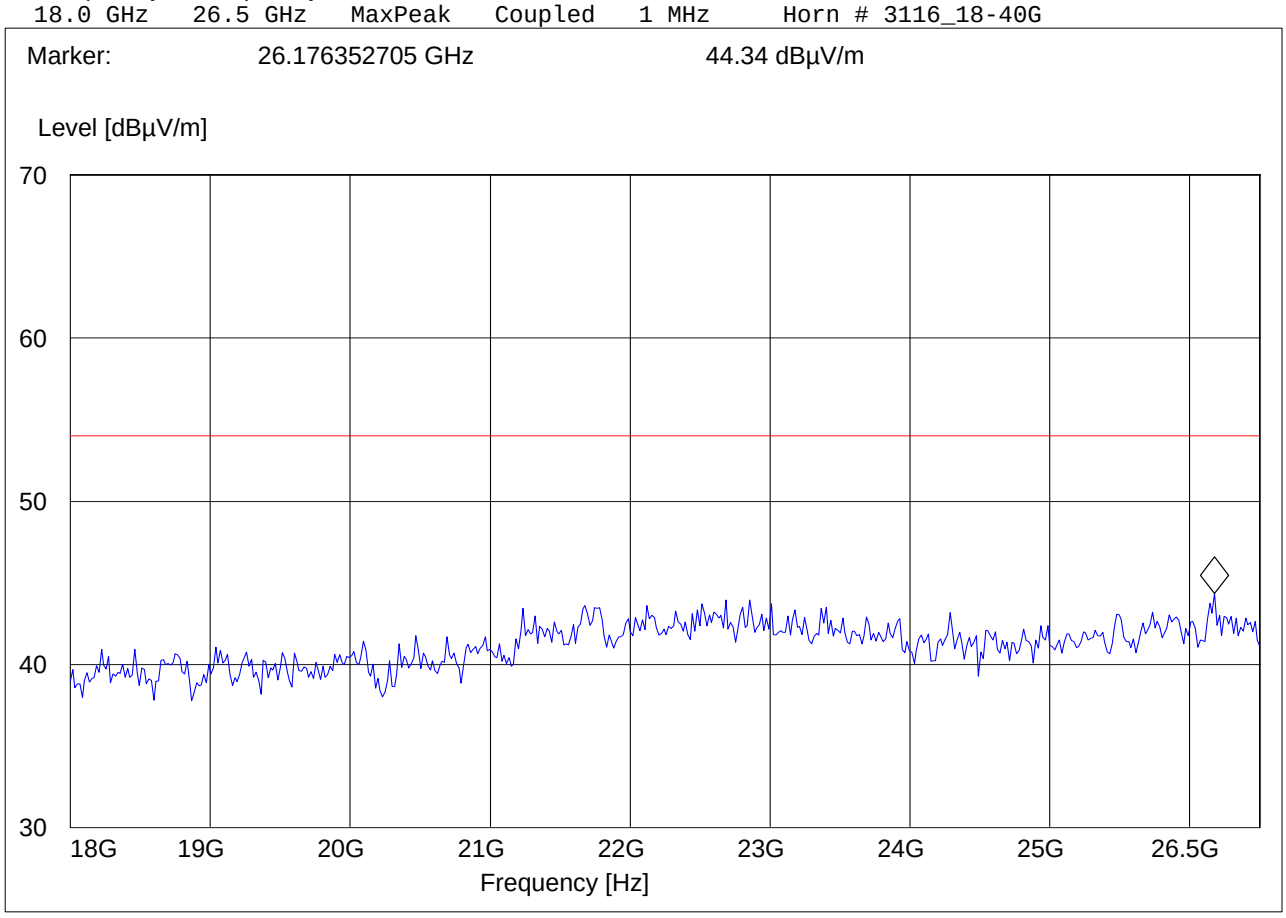
18-26.5GHz

Note: Peak Reading vs. Average limit
Note: This plot is valid for low, mid, high channels (worst-case plot).

```
EUT:             isap
Customer::       EB
Test Mode:       Ch.52; 5270MHz; 40 MHz
ANT Orientation: V
EUT Orientation: H
Test Engineer:   SAM
Voltage:         AC
Comments:
```

SWEEP TABLE: "FCC 15.407 18-26.5G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	26.5 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G



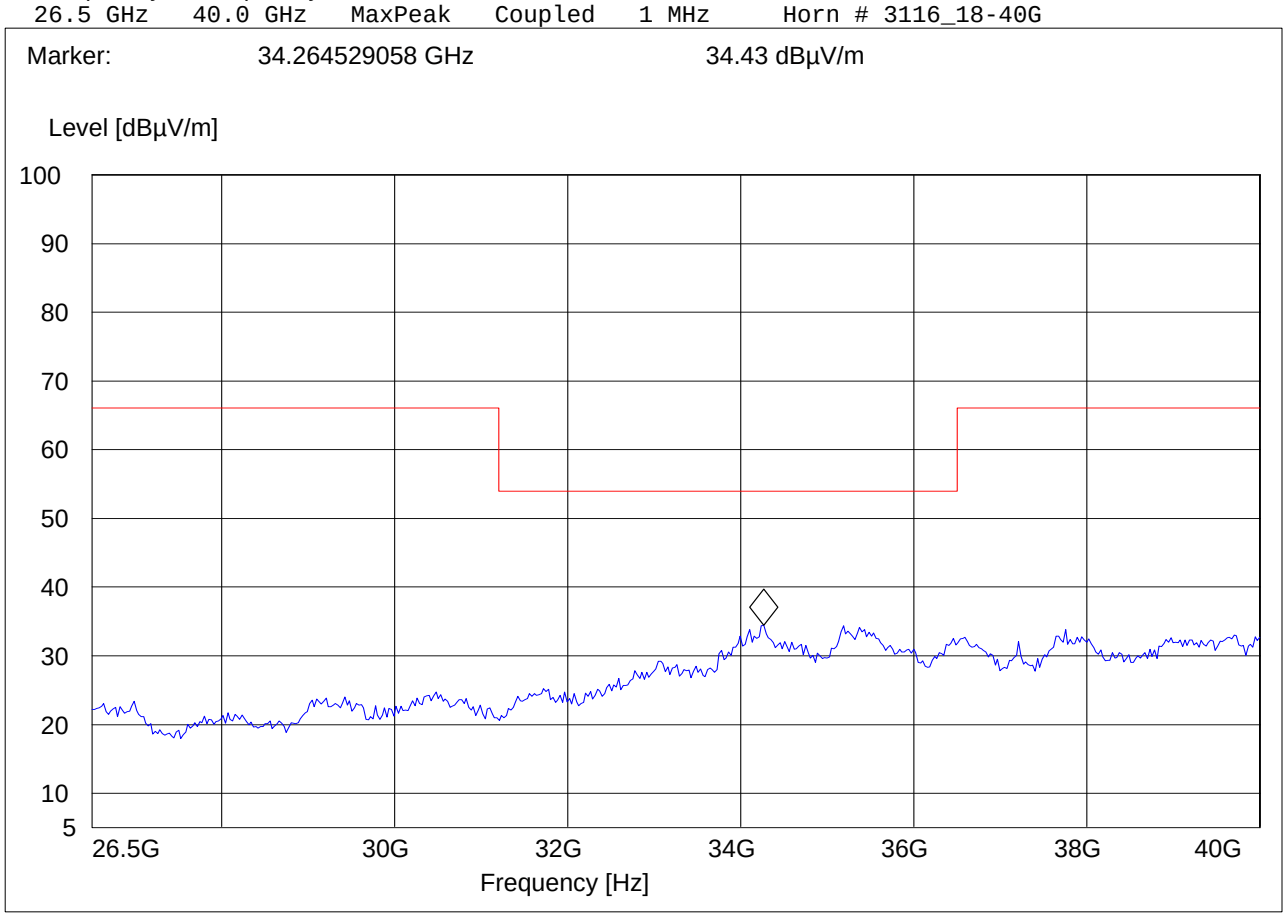
26.5-40GHz

Note: This plot is valid for low, mid, high channels (worst-case plot)
Note: Peak Reading vs. Average limit

EUT: isap
Customer:: EB
Test Mode: Ch.60; 5310MHz; 40 MHz
ANT Orientation: V
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 26.5-40G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
26.5 GHz	40.0 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G

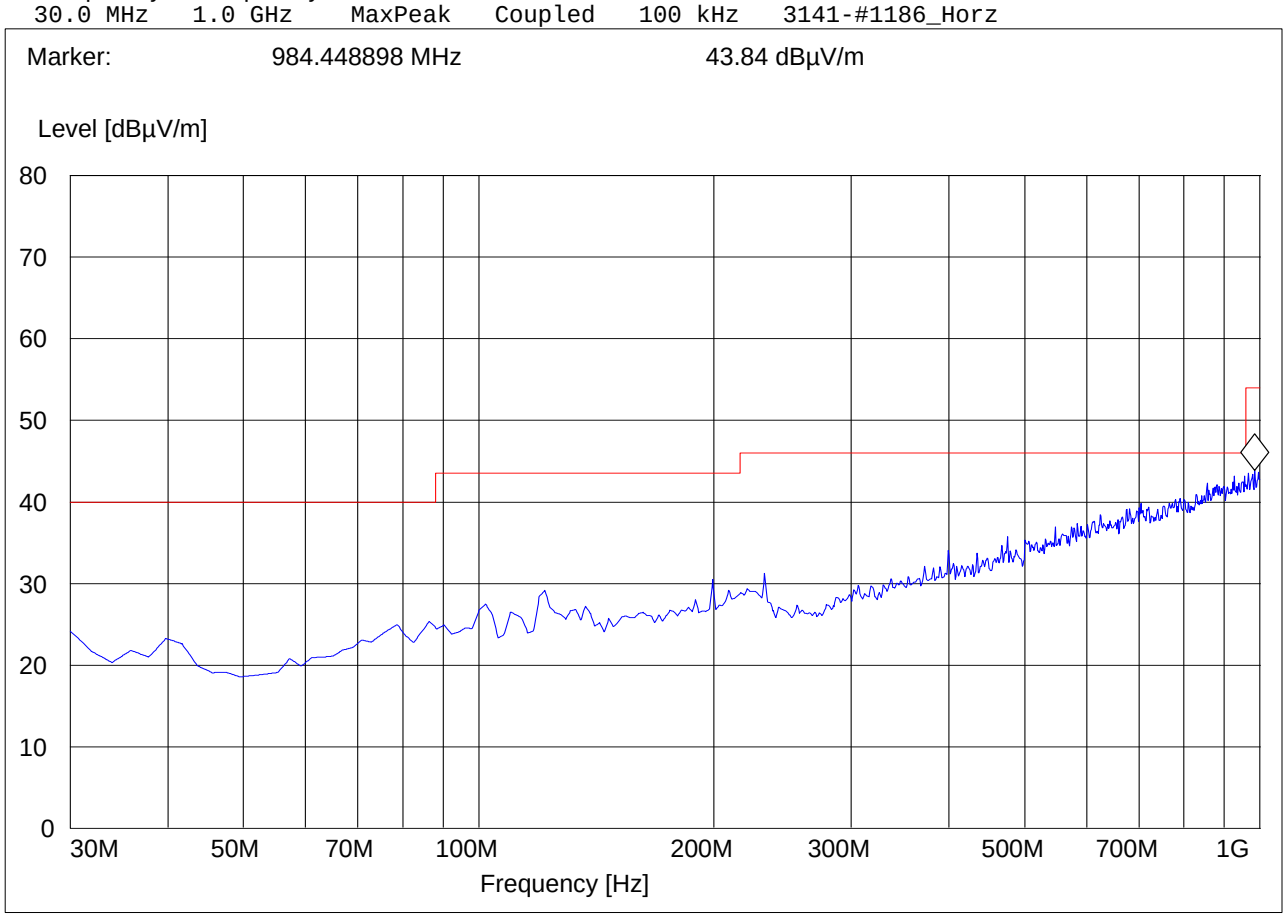


5.3.6 **Sub-band 3 802.11 (na) HT20 MODE**
30MHz – 1GHz, Antenna: Horizontal
Note: This plot is valid for low, mid, high channels (worst-case plot).

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.120; 5600MHz; 20 MHz
ANT Orientation:  H
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.247_30M-1G_Hor"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Horz



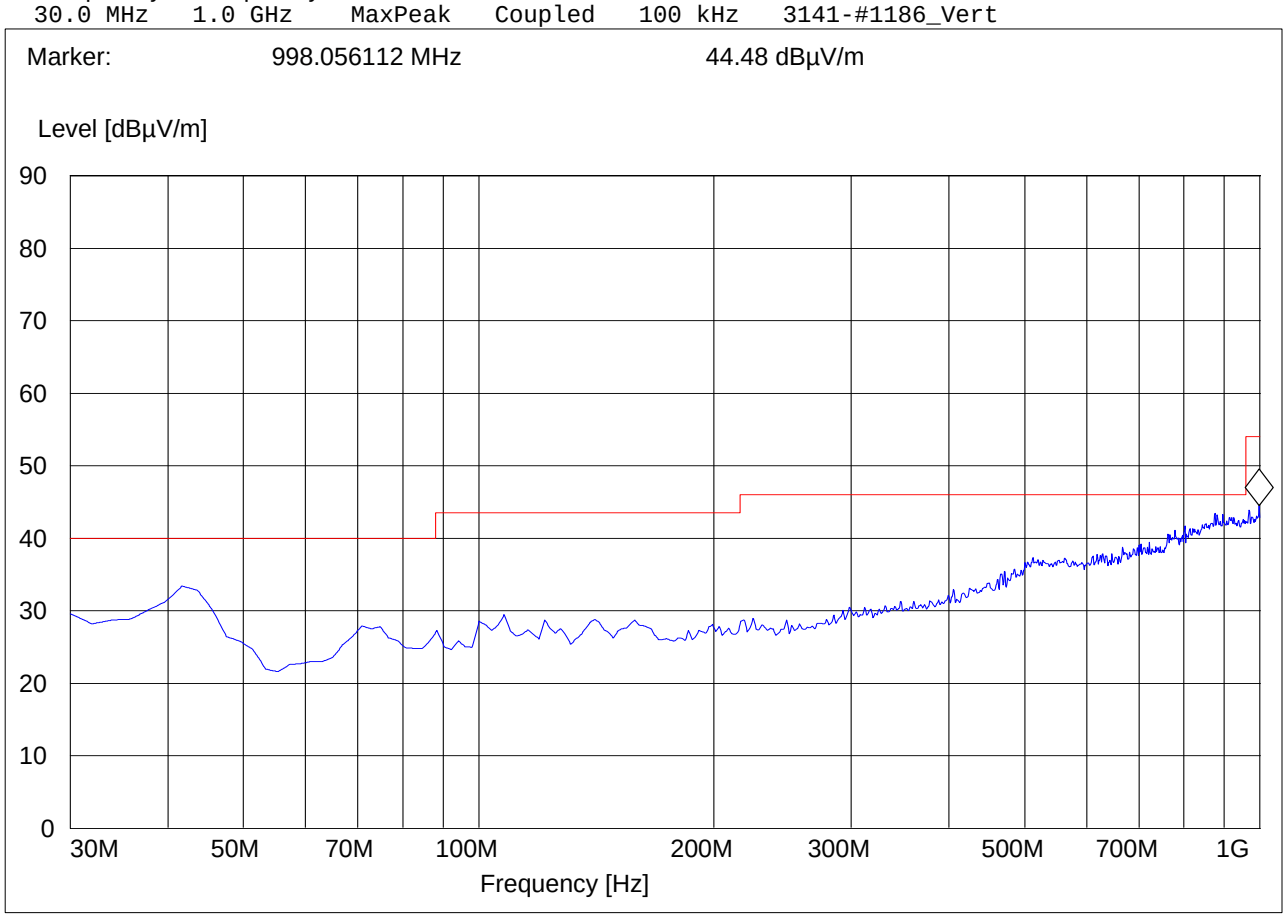
30MHz – 1GHz, Antenna: Vertical

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

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.120; 5600MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    Chris
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.247_30M-1G_Ver"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Vert



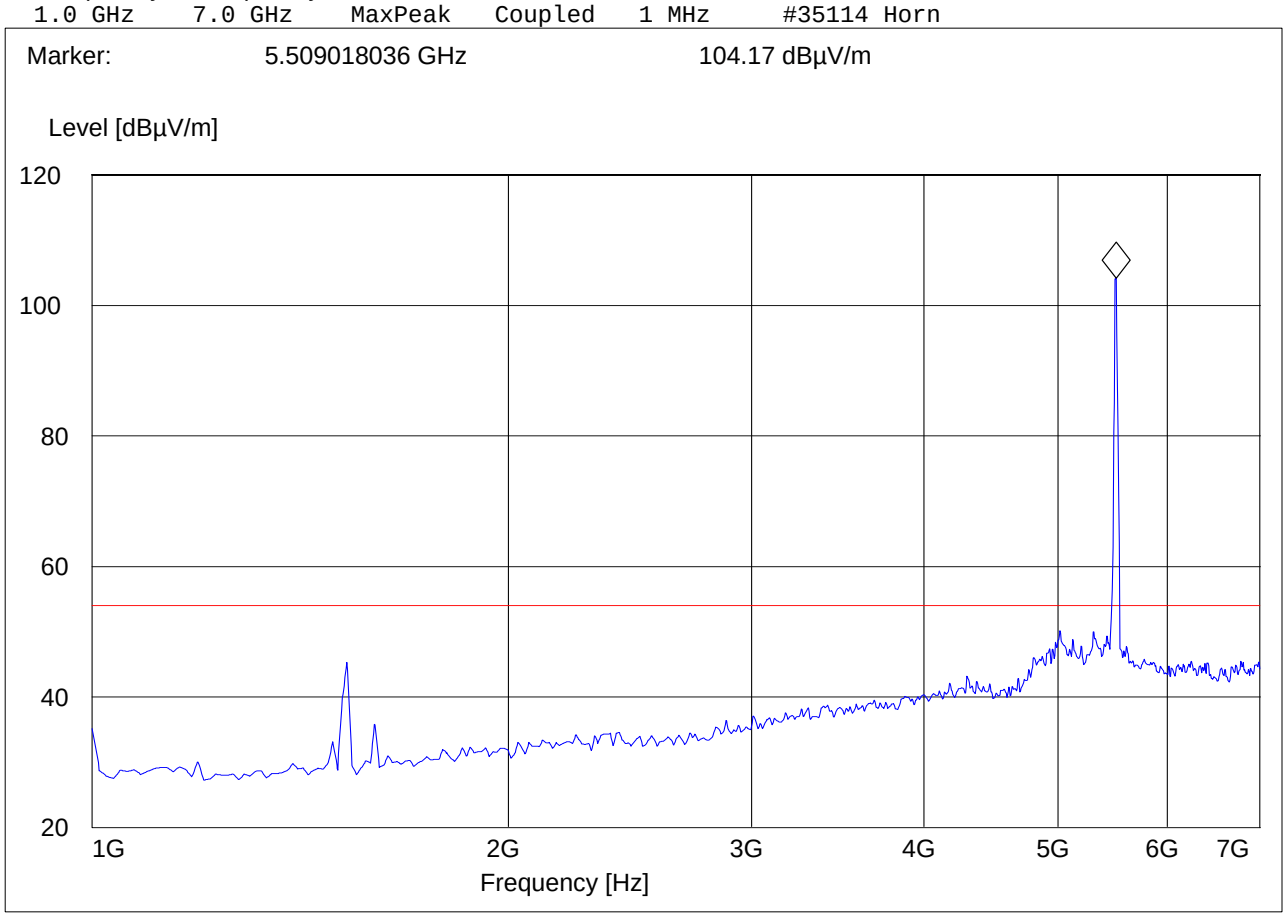
1-7GHz (5500MHz)

Note: The peak above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:             isap
Customer::       EB
Test Mode:       Ch.100; 5500MHz; 20 MHz
ANT Orientation: V
EUT Orientation: H
Test Engineer:   SAM
Voltage:         AC
Comments:
```

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn



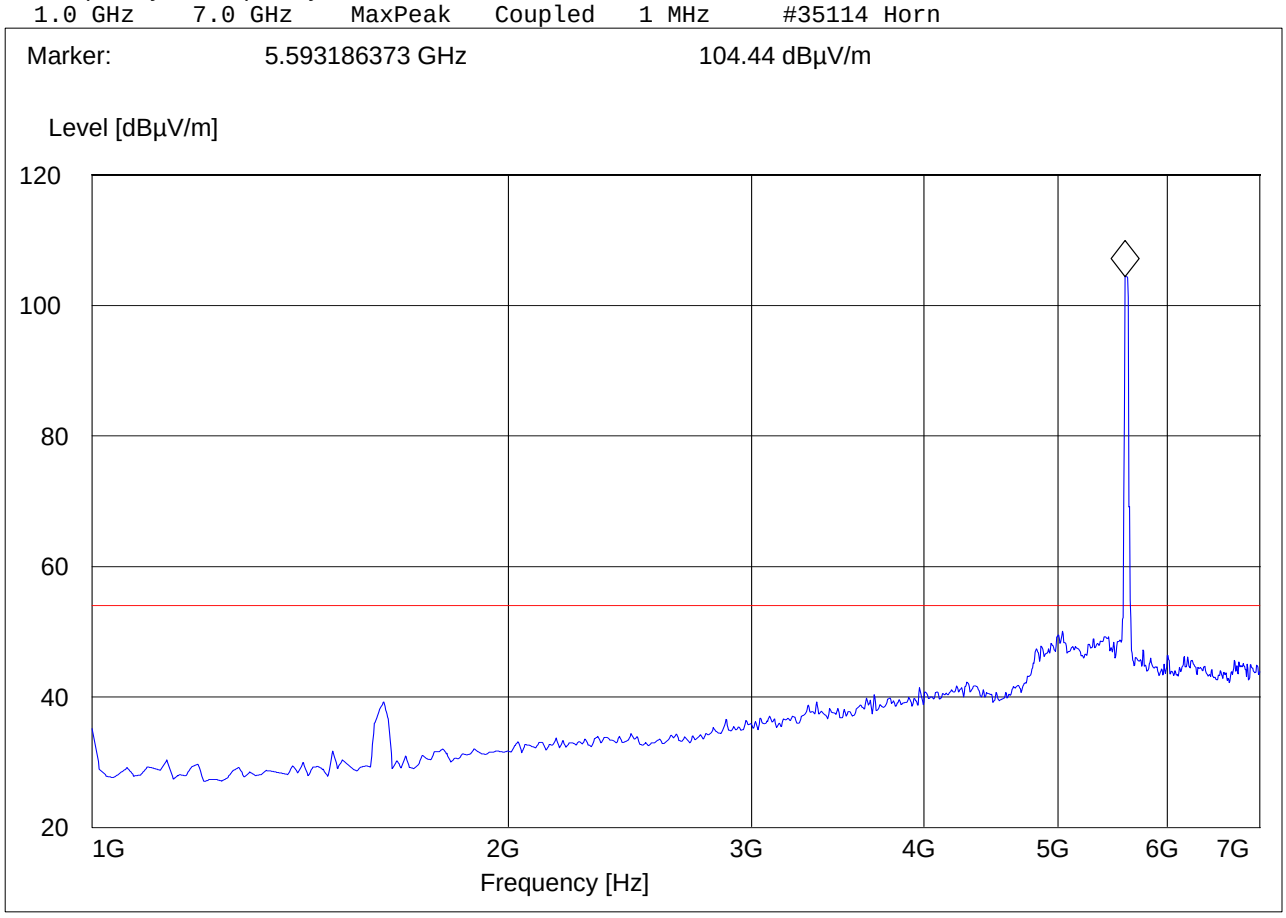
1-7GHz (5600MHz)

Note: The peak above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.120; 5600MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn



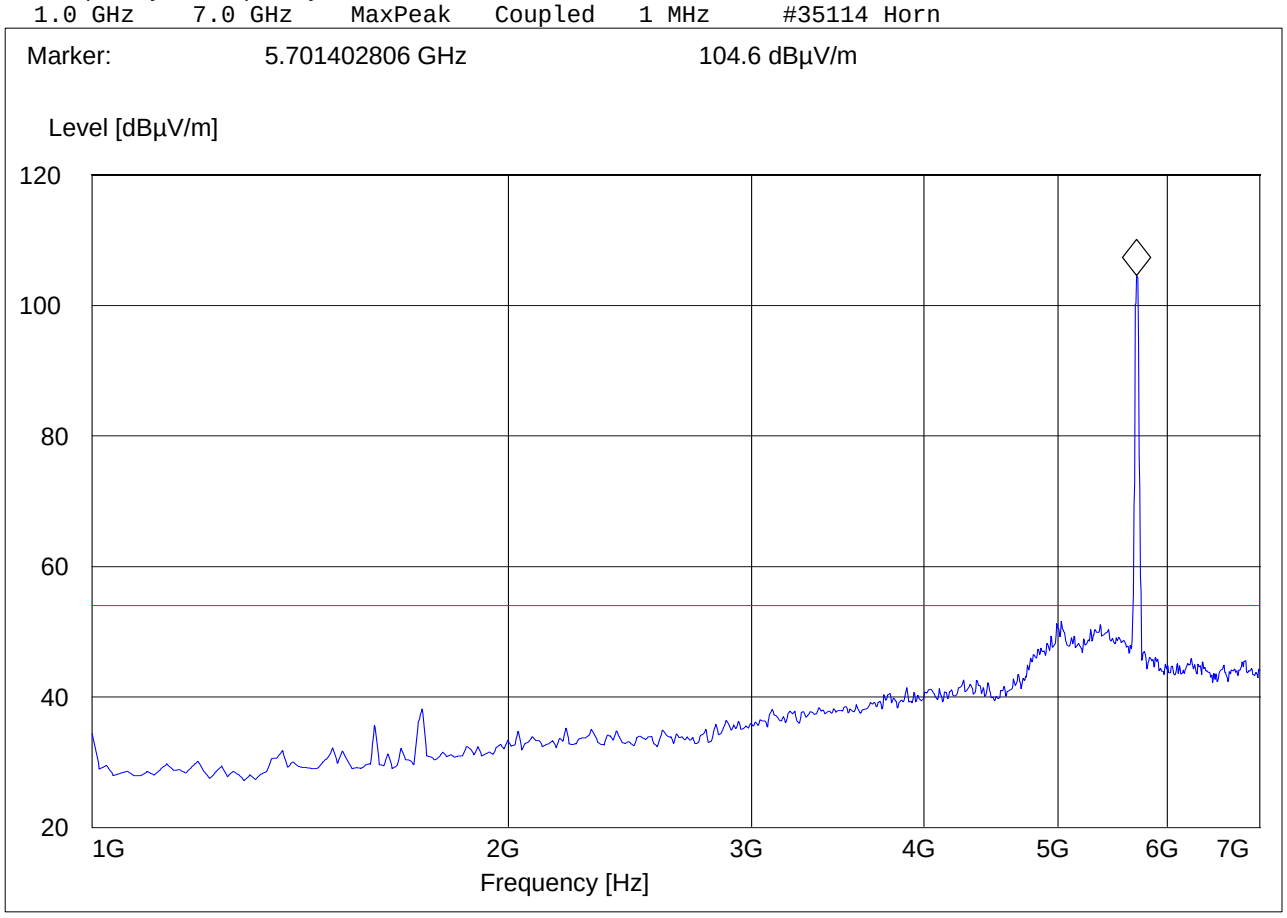
1-7GHz (5700MHz)

Note: The peak above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.140; 5700MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn



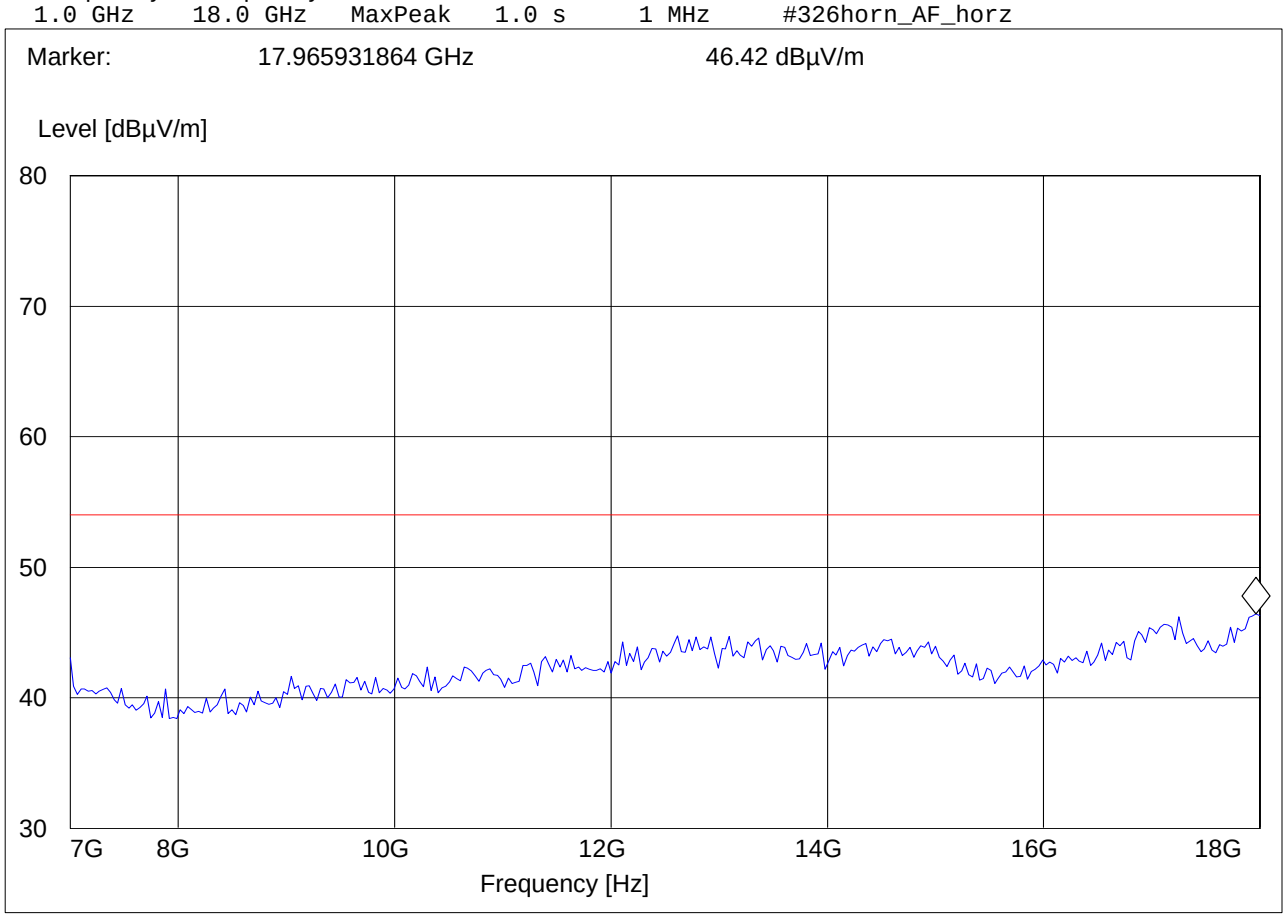
7-18GHz (5500MHz)

Note: Peak Reading vs. Average limit

EUT: isap
Customer:: EB
Test Mode: Ch.100; 5500MHz; 20 MHz
ANT Orientation: V
EUT Orientation: H
Test Engineer: SAM
Voltage: AC
Comments:

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz



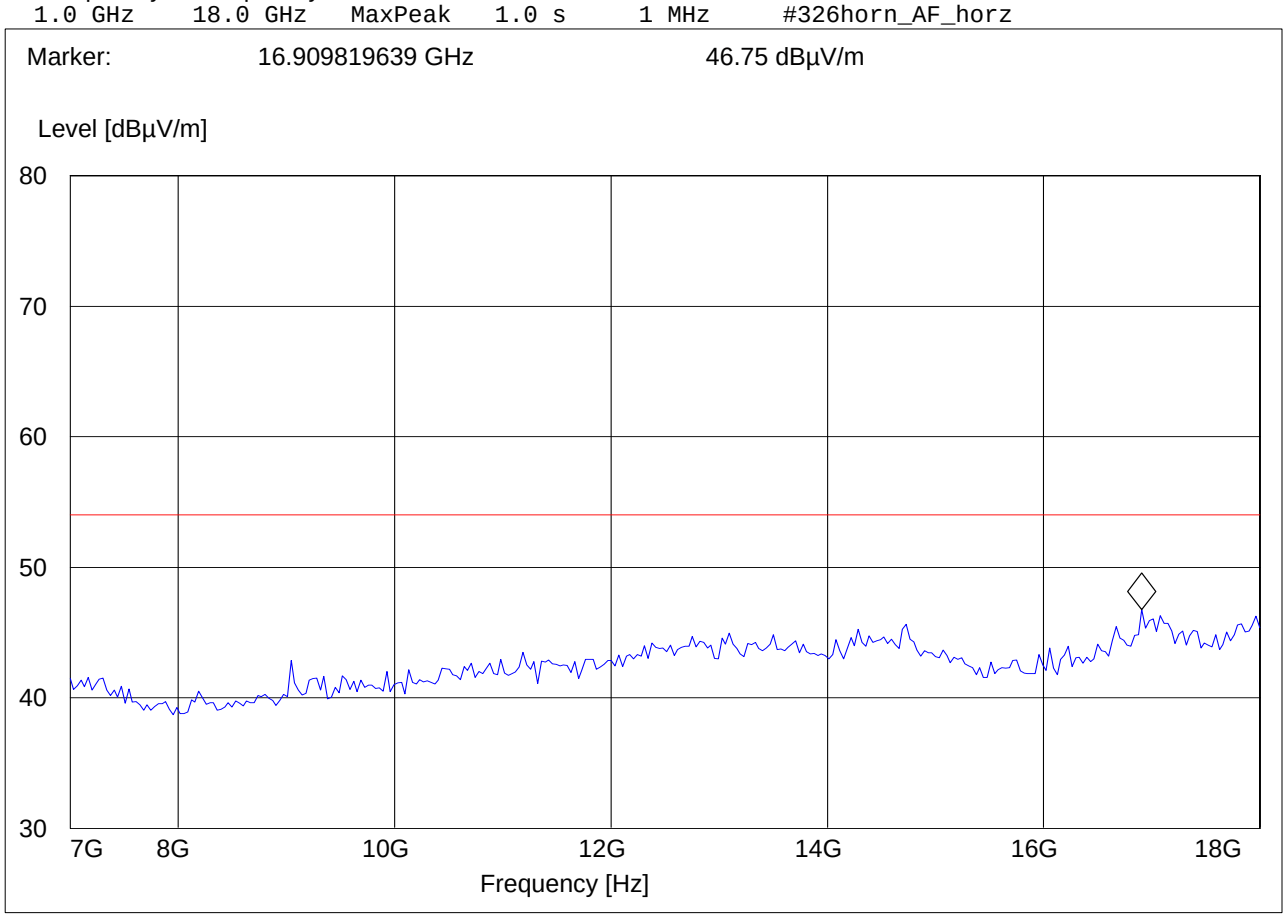
7-18GHz (5600MHz)

Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.120; 5600MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz



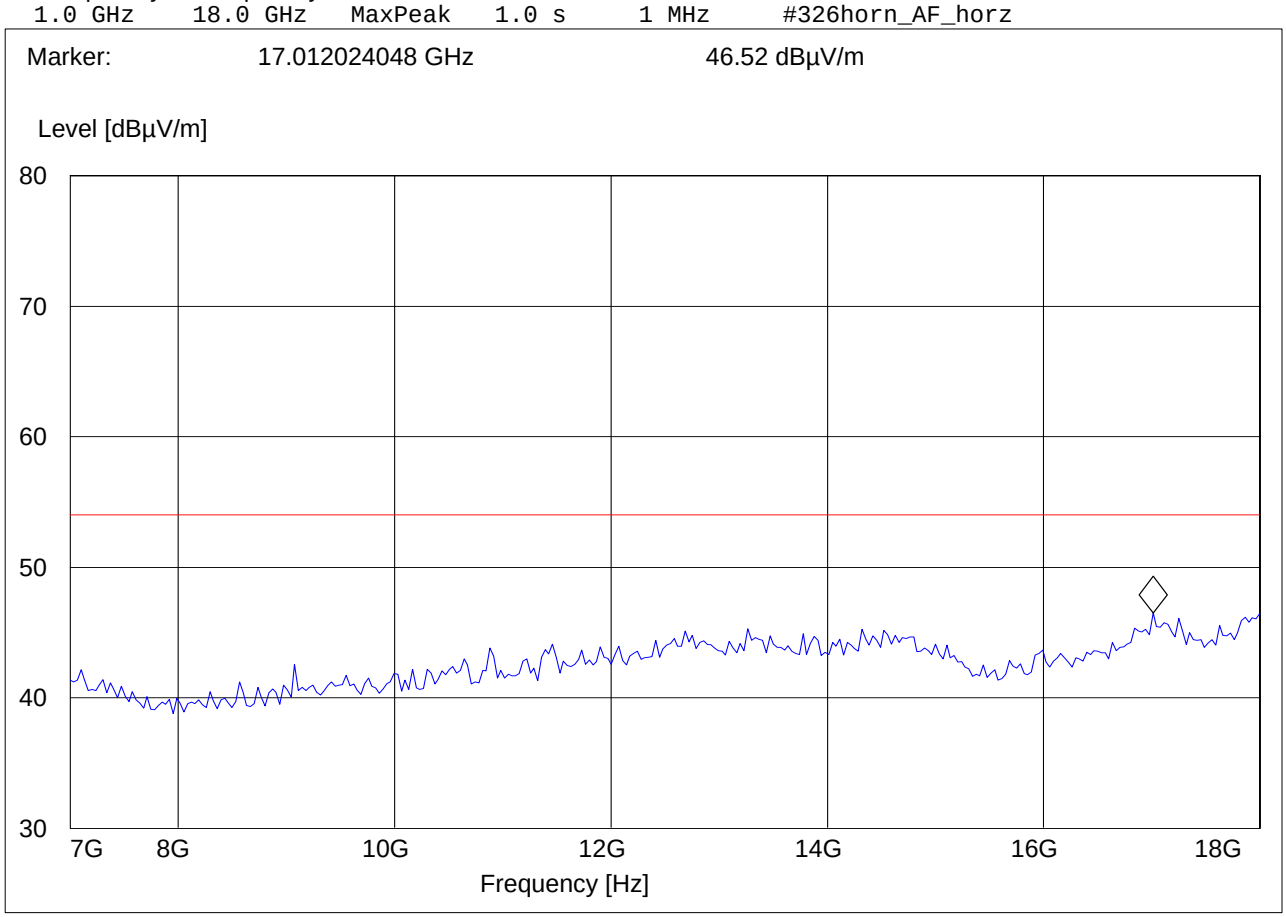
7-18GHz (5700MHz)

Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.140; 5700MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz



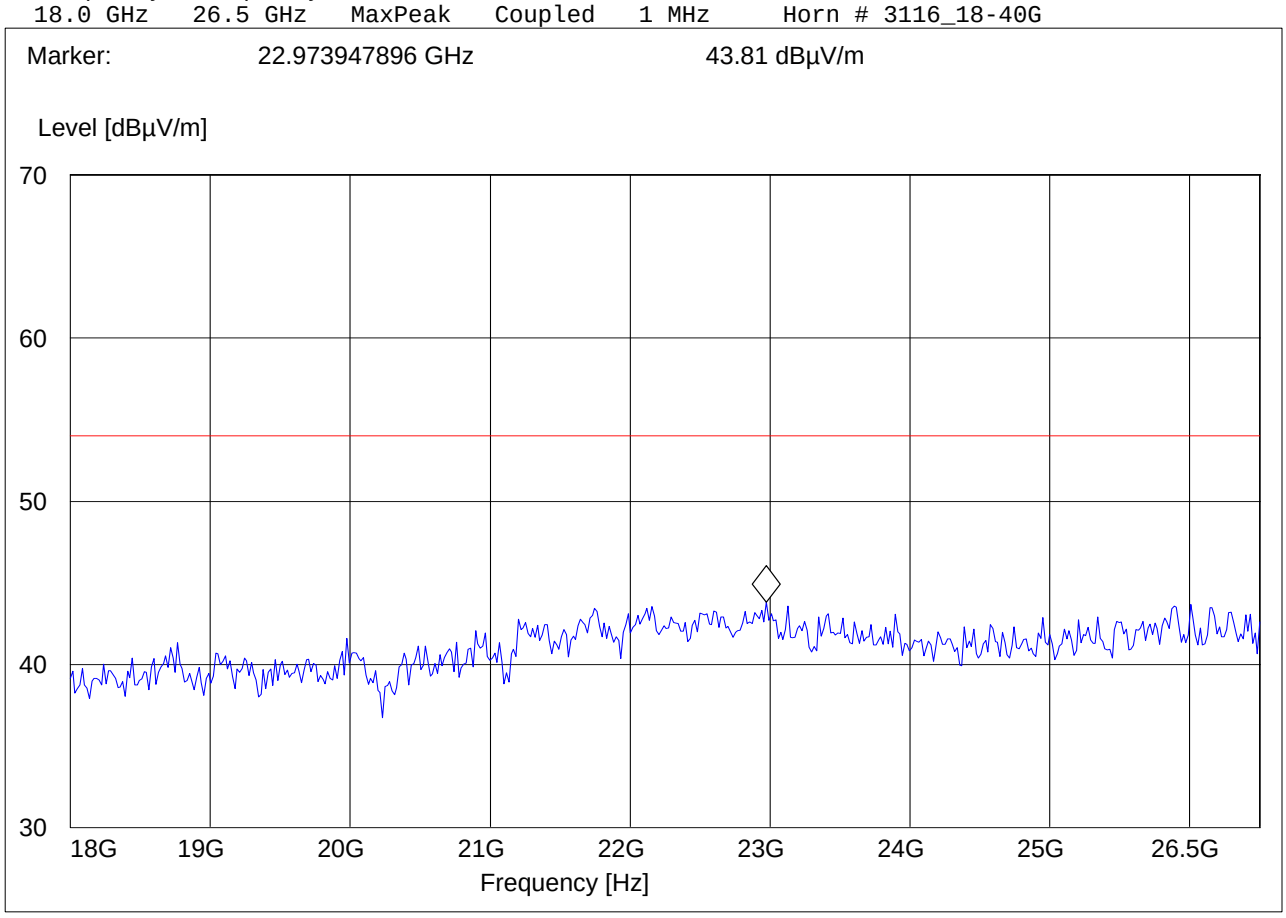
18-26.5GHz

Note: Peak Reading vs. Average limit
Note: This plot is valid for low, mid, high channels (worst-case plot).

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.100; 5500MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 18-26.5G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	26.5 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G



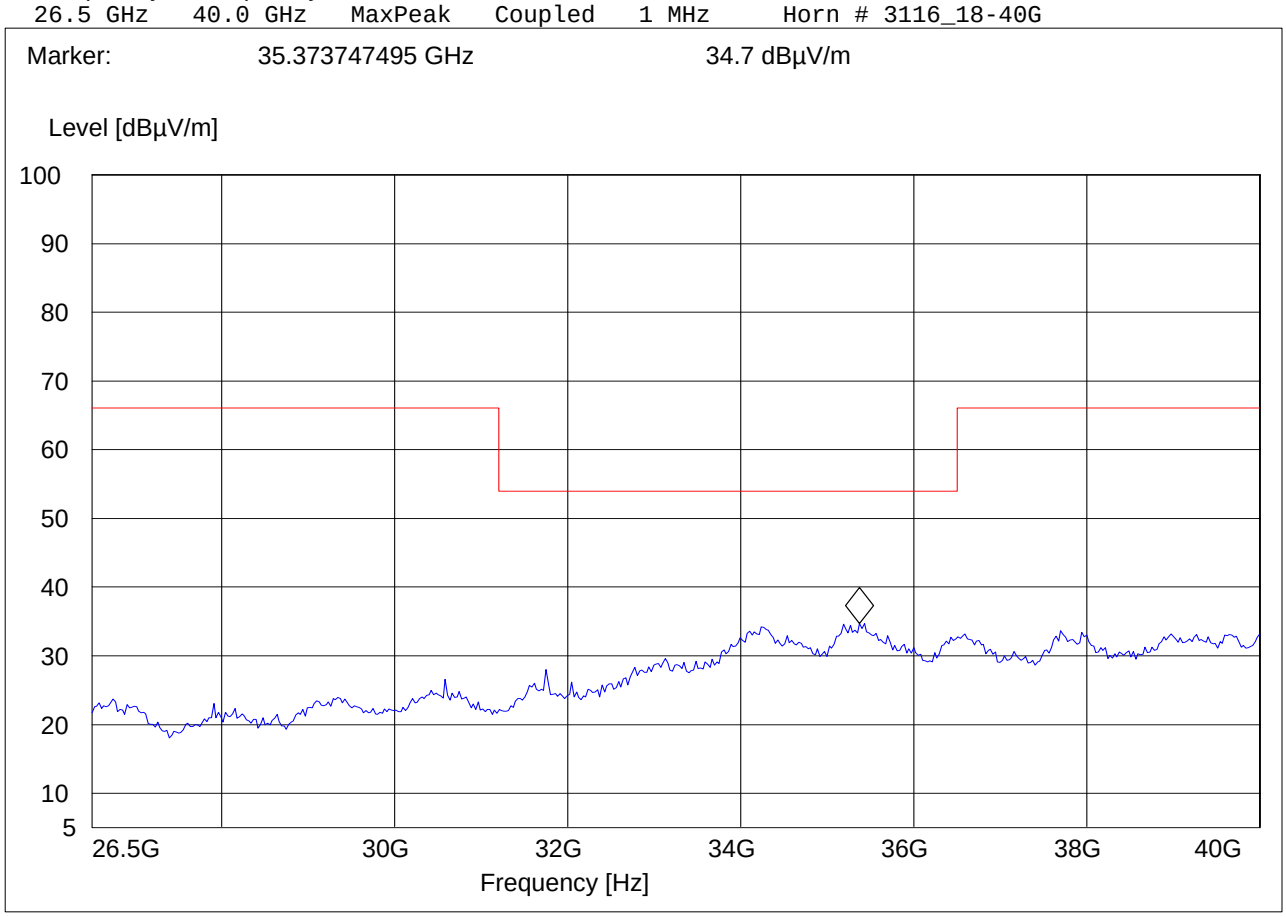
26.5-40GHz

Note: This plot is valid for low, mid, high channels (worst-case plot)
Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.100; 5500MHz; 20 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 26.5-40G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
26.5 GHz	40.0 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G



5.3.7 **Sub-band 3 802.11 (na) HT40 MODE**

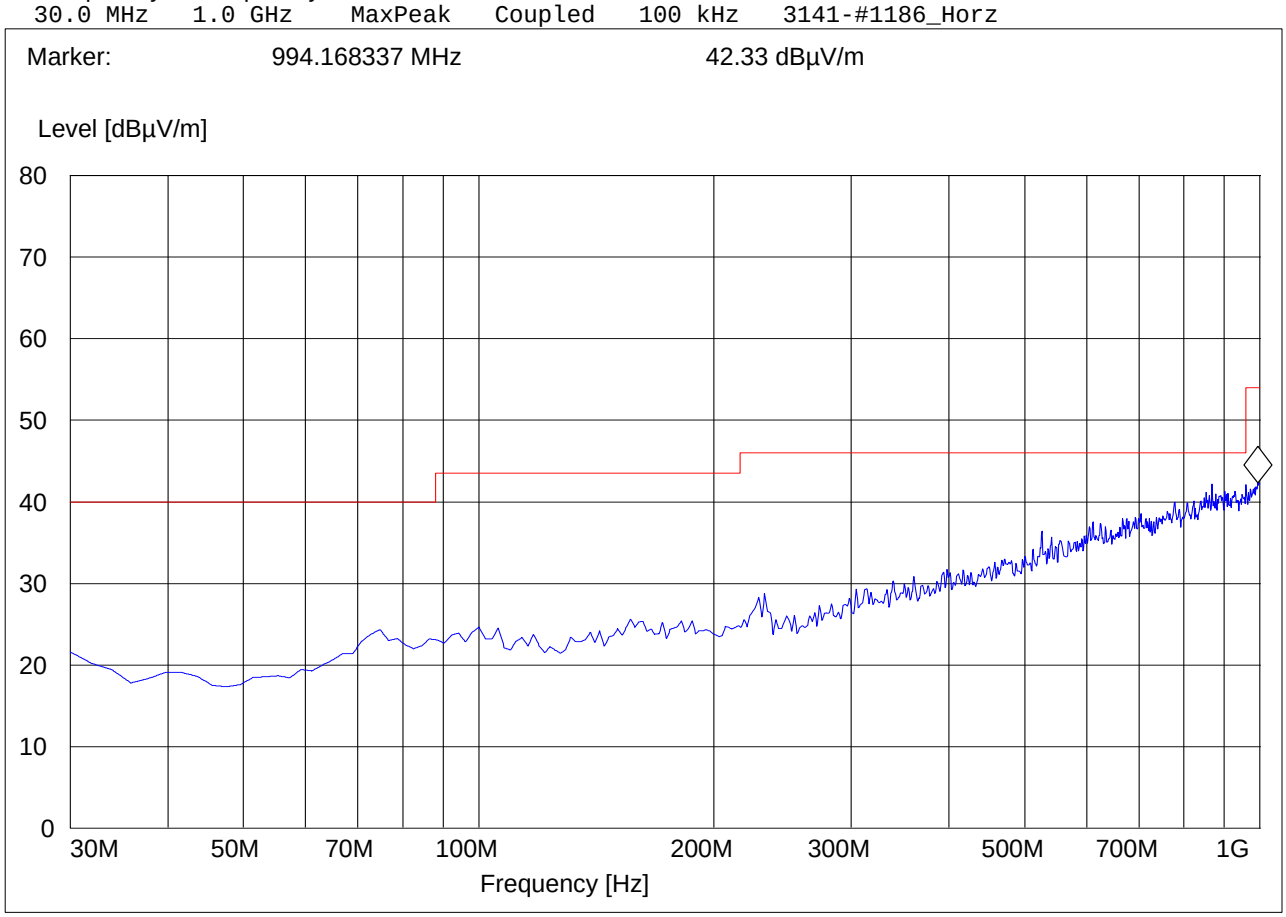
30MHz – 1GHz, Antenna: Horizontal

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

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.116; 5590MHz; 40 MHz
ANT Orientation:  H
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.247_30M-1G_Hor"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Horz



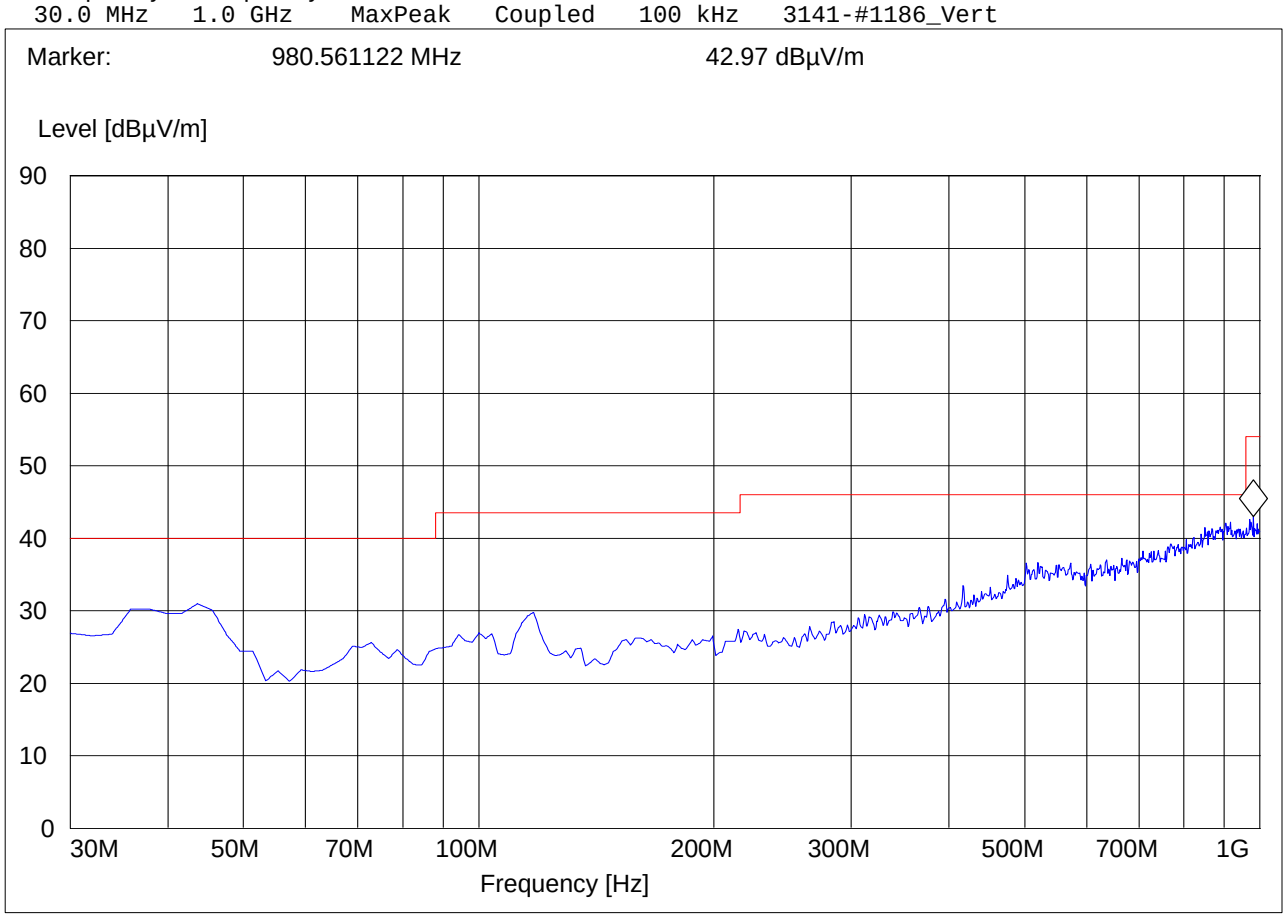
30MHz – 1GHz, Antenna: Vertical

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

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.116; 5590MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC15.247_30M-1G_Ver"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Vert



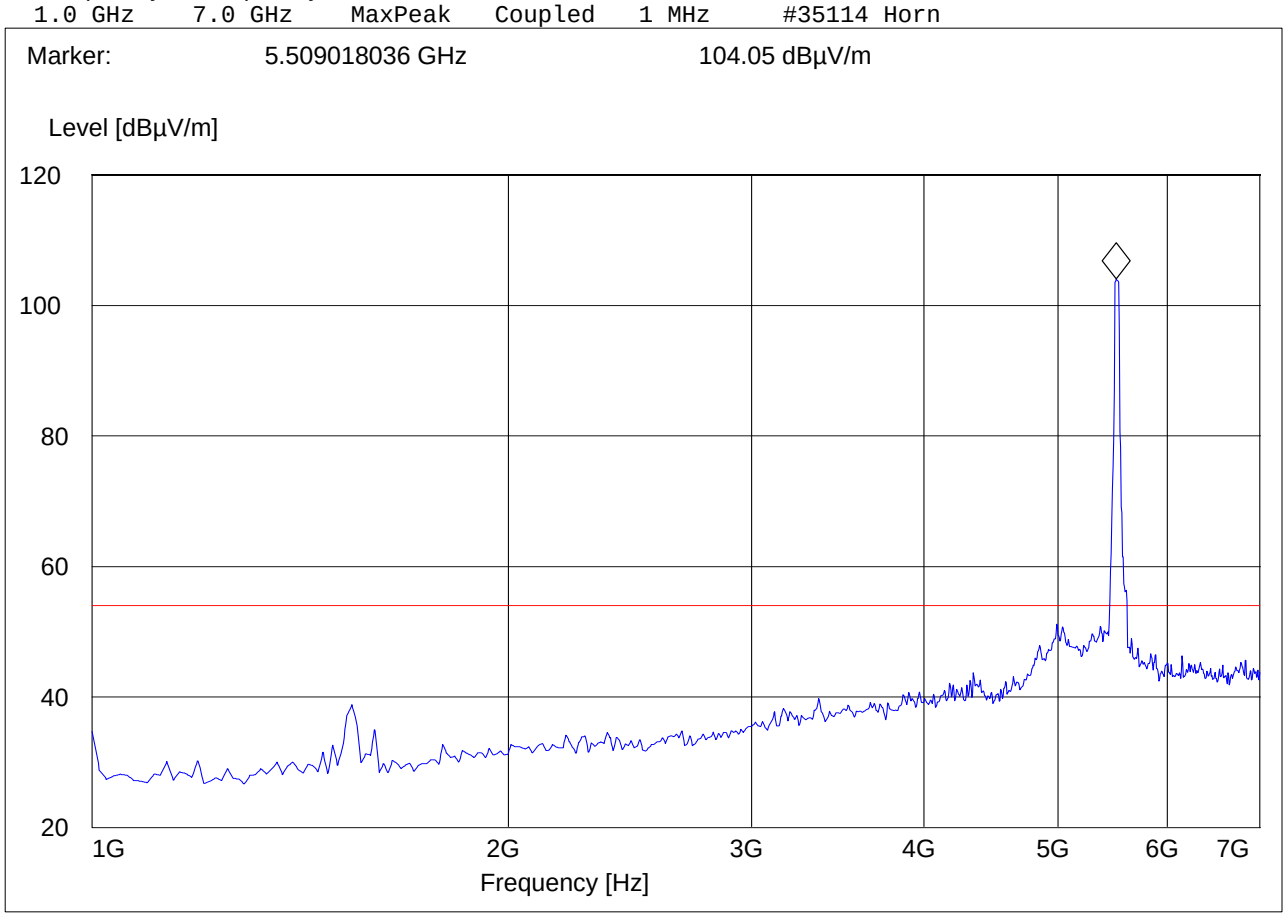
1-7GHz (5510MHz)

Note: The peak above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.100; 5510MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn



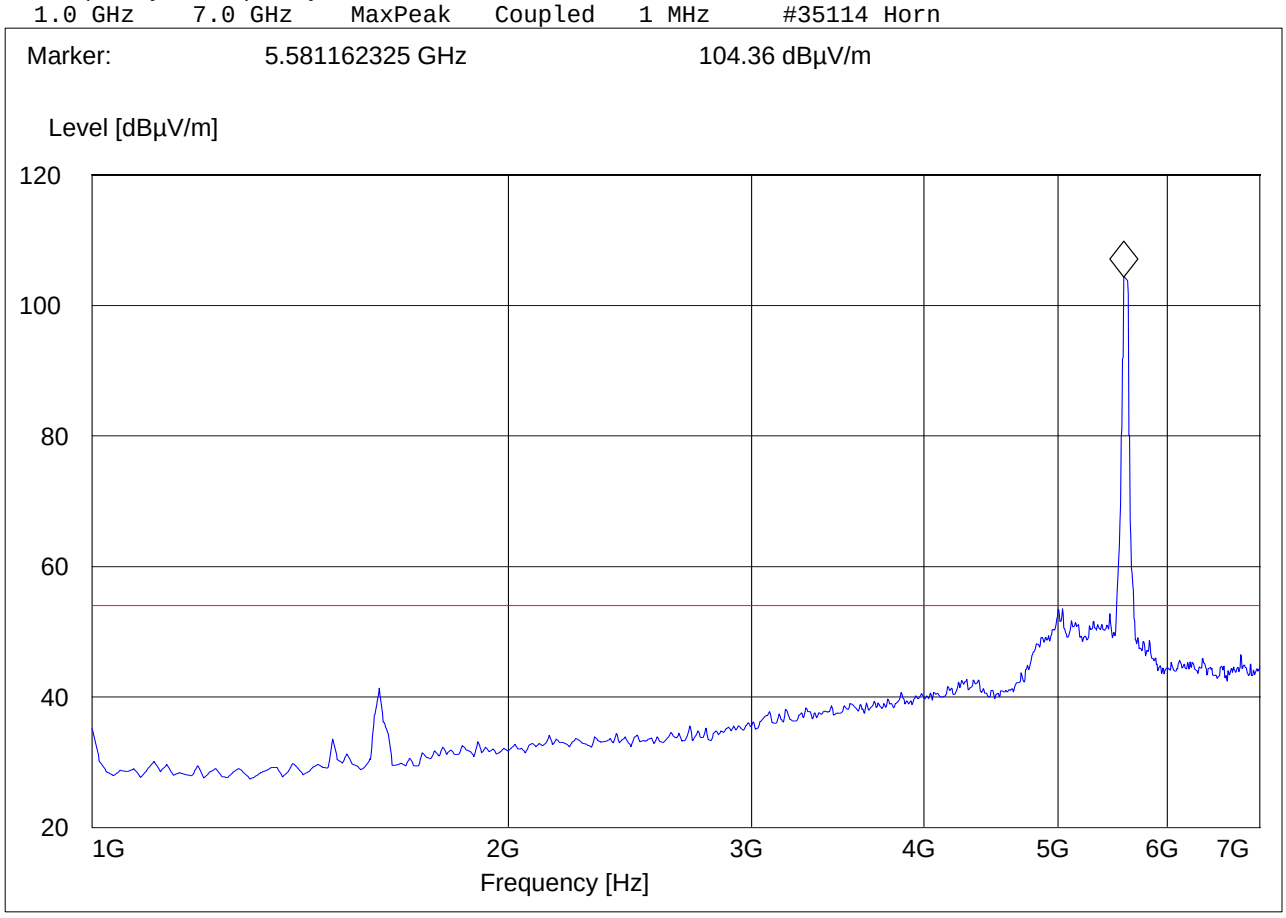
1-7GHz (5590MHz)

Note: The peak above the limit line is the carrier freq.
Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.116; 5590MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn



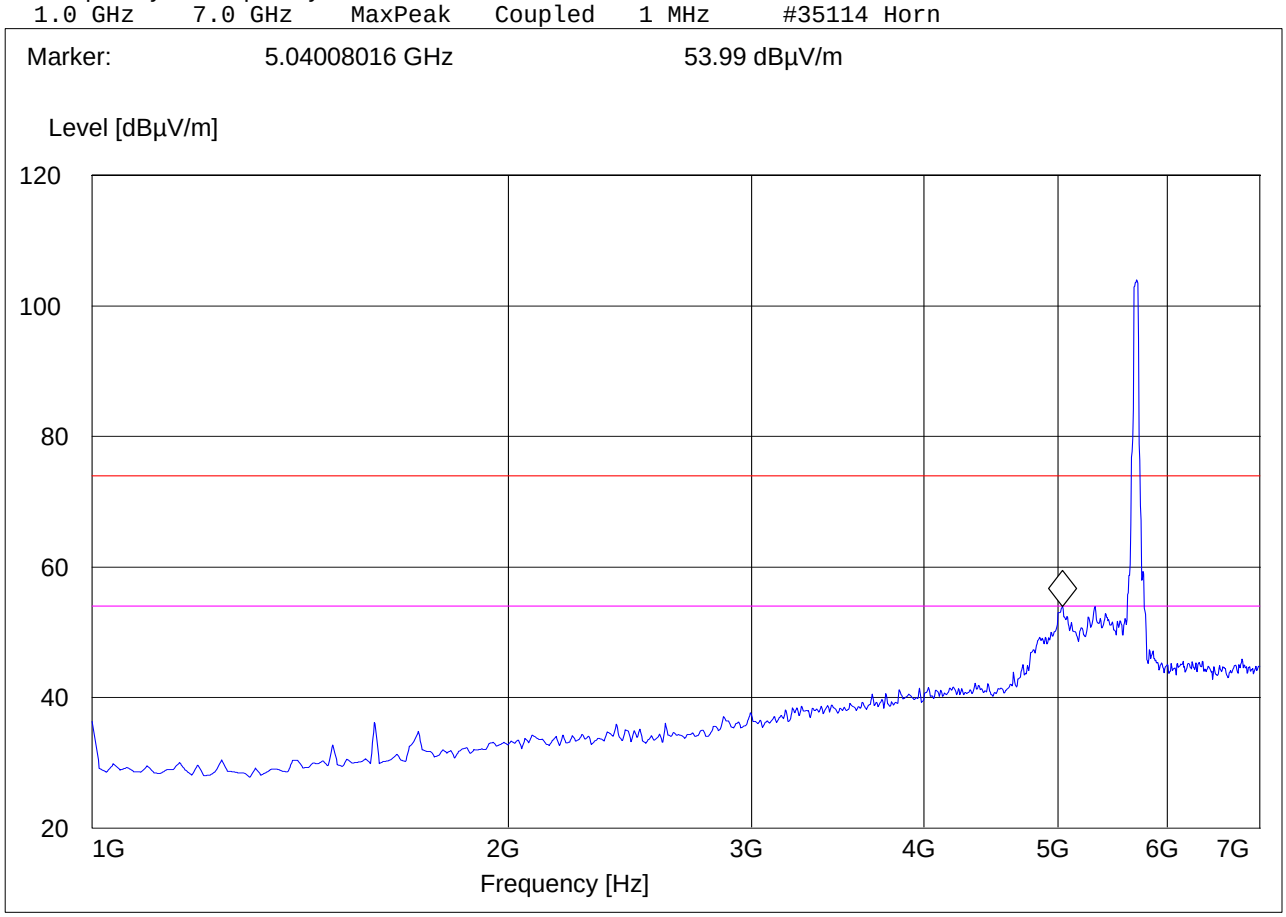
1-7GHz (5690MHz) PEAK

Note: The peak above the limit line is the carrier freq.
Note: Peak measurement over average limit (pink) but below peak limit (red)

```
EUT:            isap
Customer::       EB
Test Mode:       NA_HT40
ANT Orientation: V
EUT Orientation: H
Test Engineer:   peter
Voltage:         ac
Comments:
```

SWEEP TABLE: "FCC 15.407 1-7G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	MaxPeak	Coupled	1 MHz	#35114 Horn



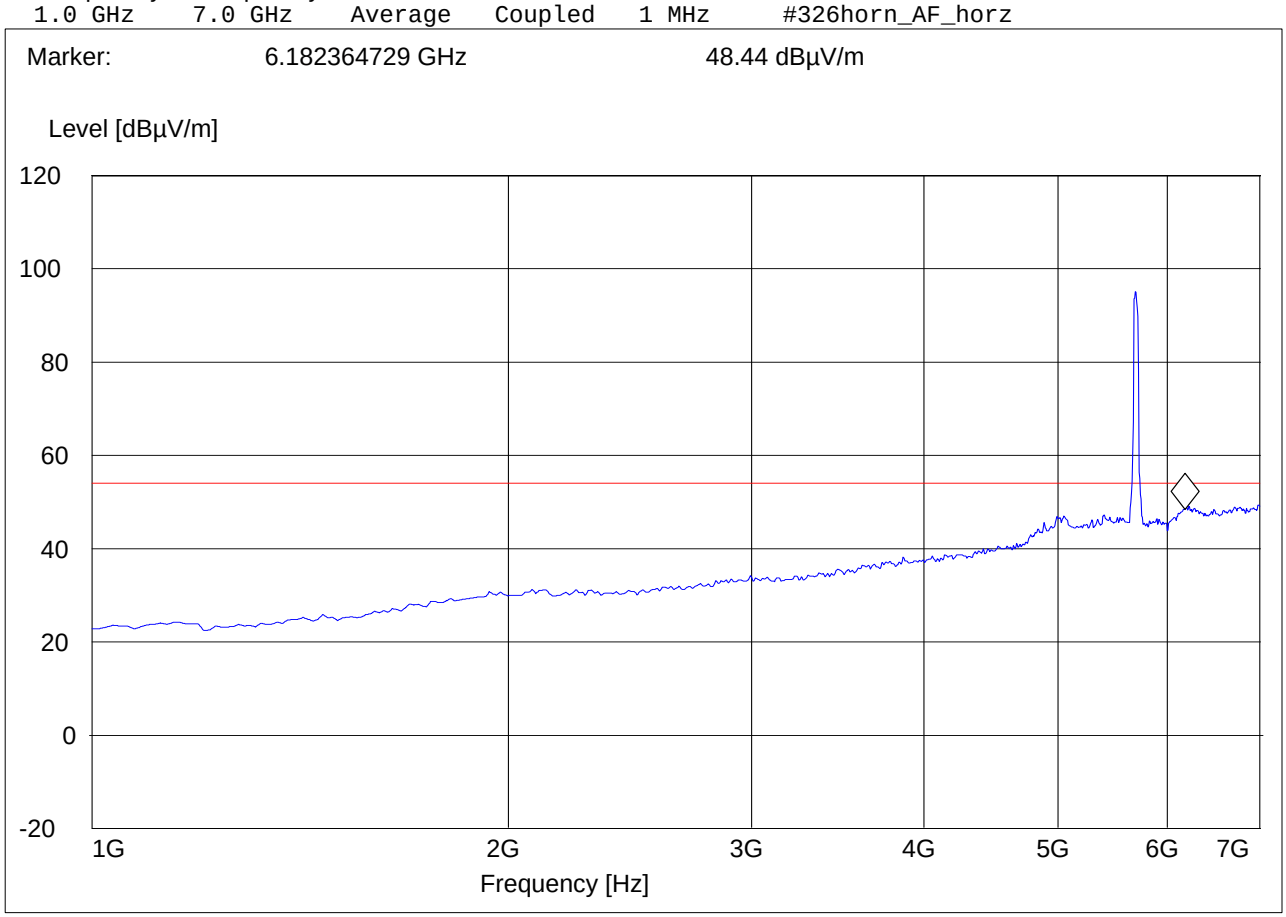
1-7GHz (5690MHz) AVERAGE

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

EUT: isap
Customer:: EB
Test Mode: NA_HT40
ANT Orientation: V
EUT Orientation: H
Test Engineer: peter
Voltage: ac
Comments:

SWEEP TABLE: "FCC 15.407 1-7G_Avg"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	7.0 GHz	Average	Coupled	1 MHz	#326horn_AF_horz



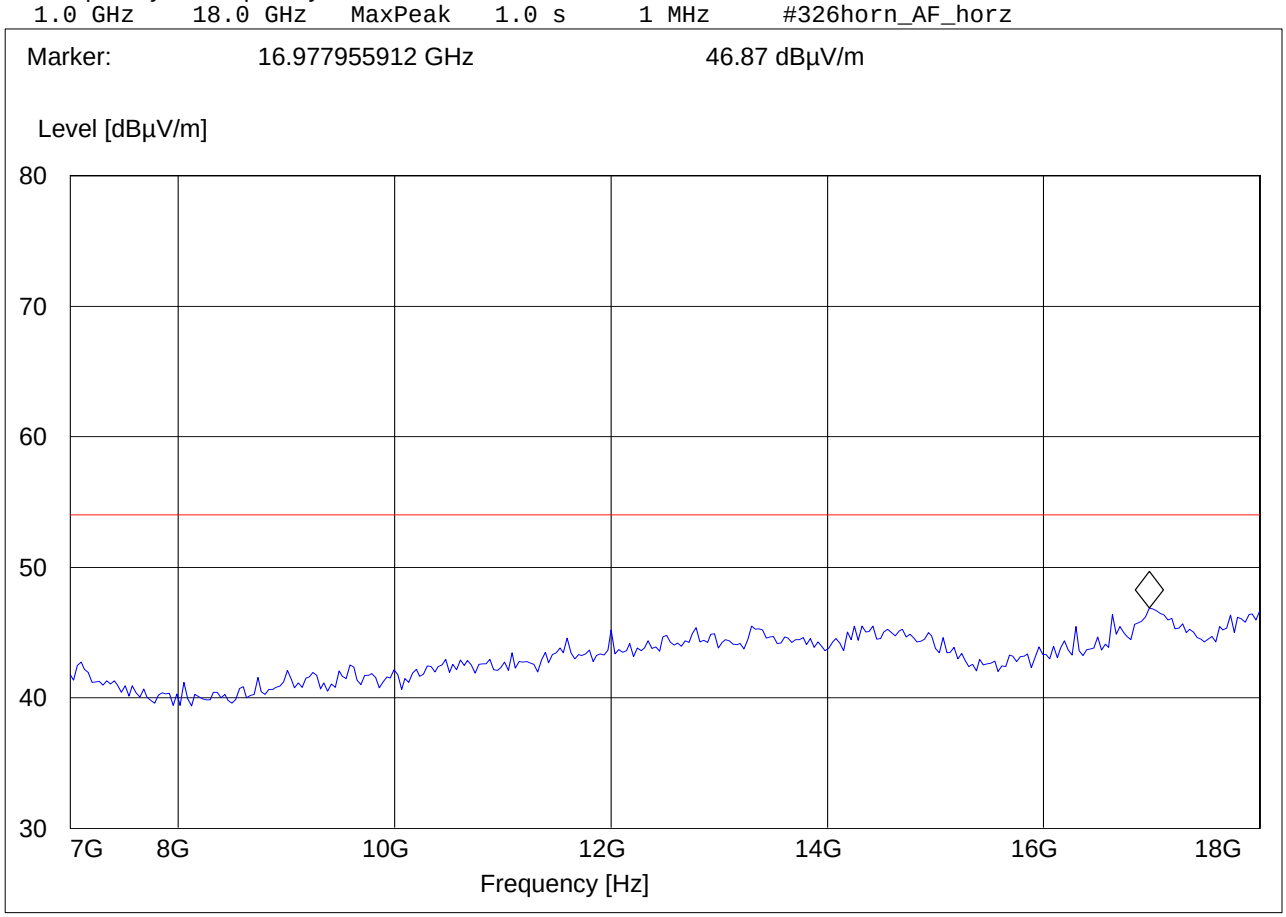
7-18GHz (5510MHz)

Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.100; 5510MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz



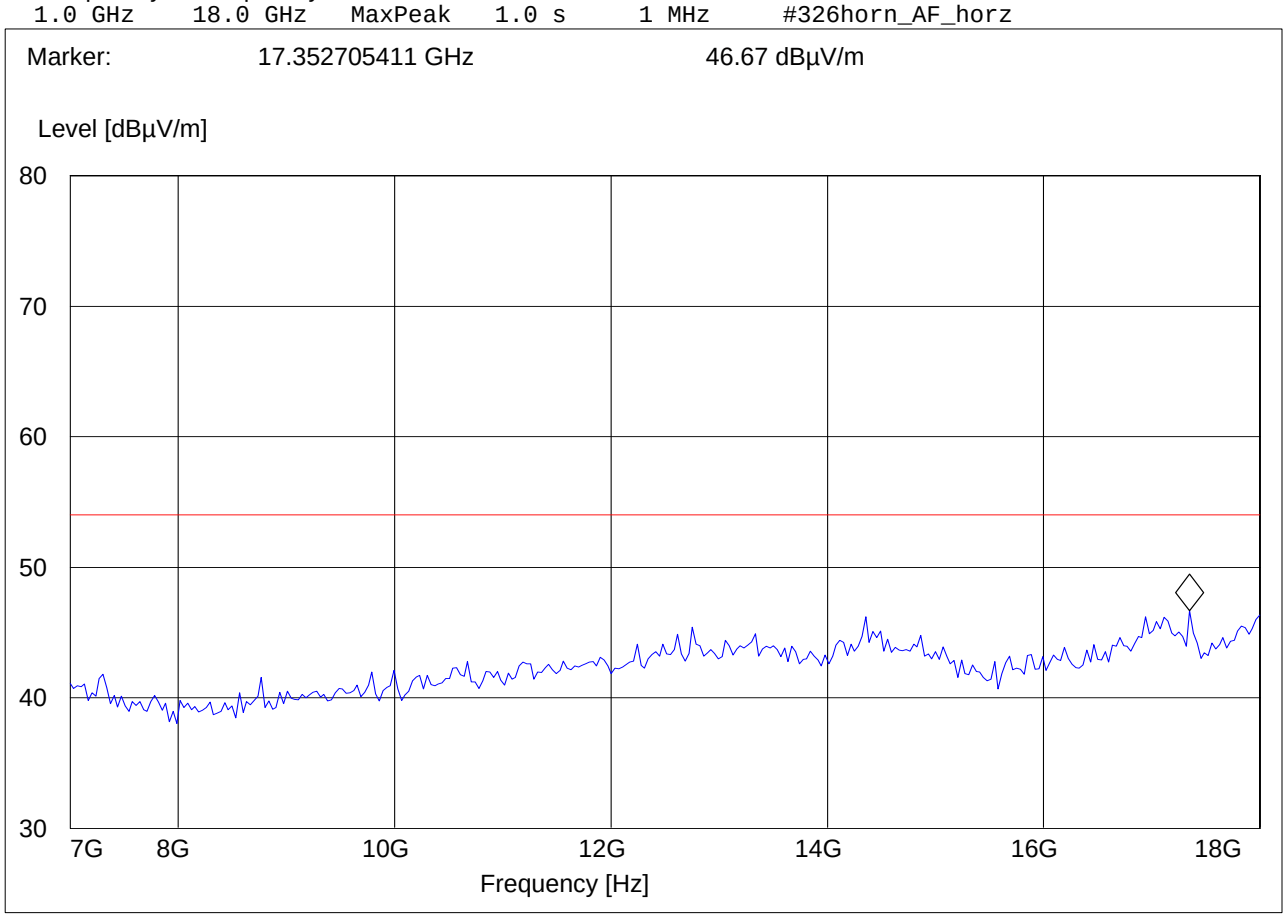
7-18GHz (5590MHz)

Note: Peak Reading vs. Average limit

```
EUT:             isap
Customer::       EB
Test Mode:       Ch.116; 5590MHz; 40 MHz
ANT Orientation: V
EUT Orientation: H
Test Engineer:   SAM
Voltage:         AC
Comments:
```

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz



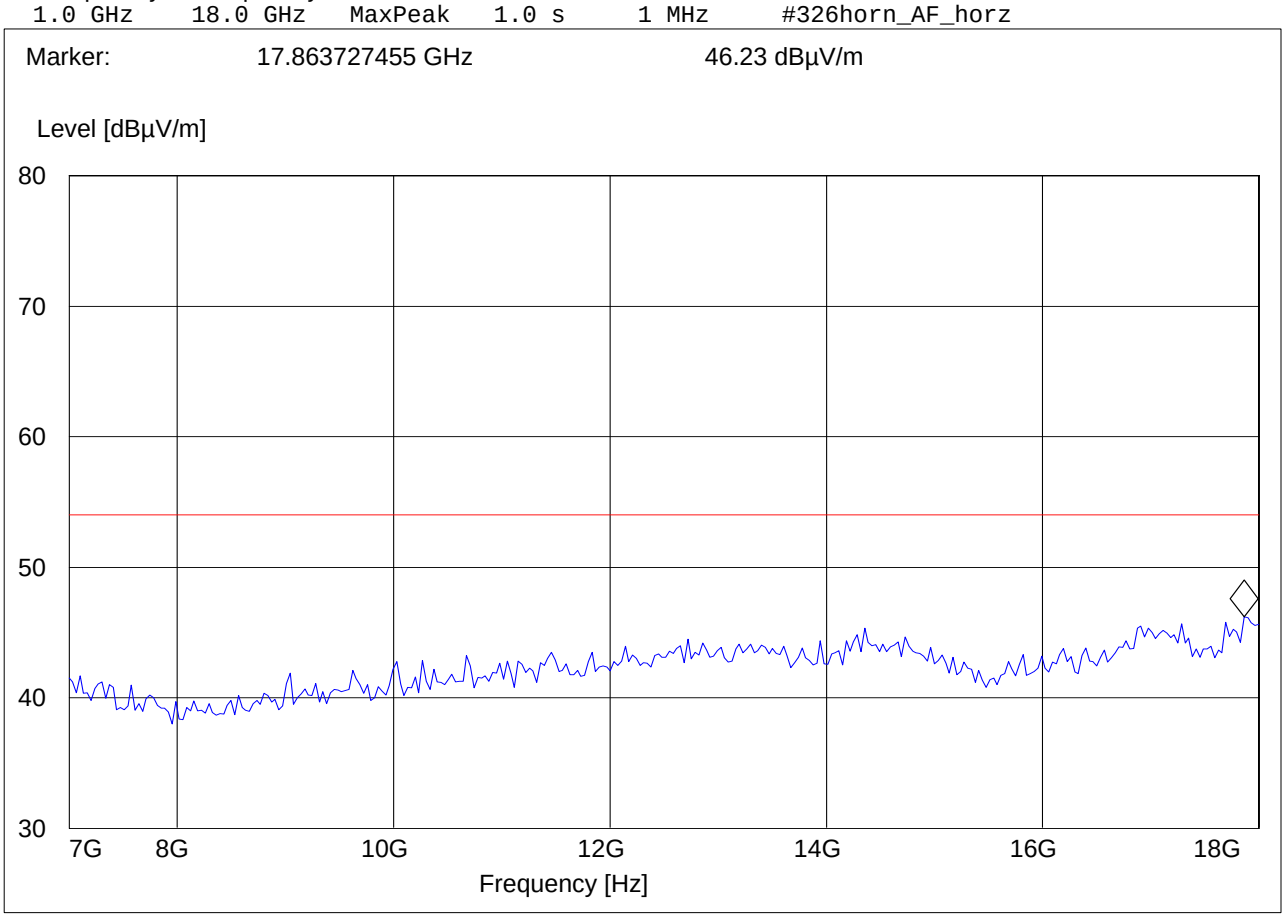
7-18GHz (5690MHz)

Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.116; 5690MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 7-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	1.0 s	1 MHz	#326horn_AF_horz



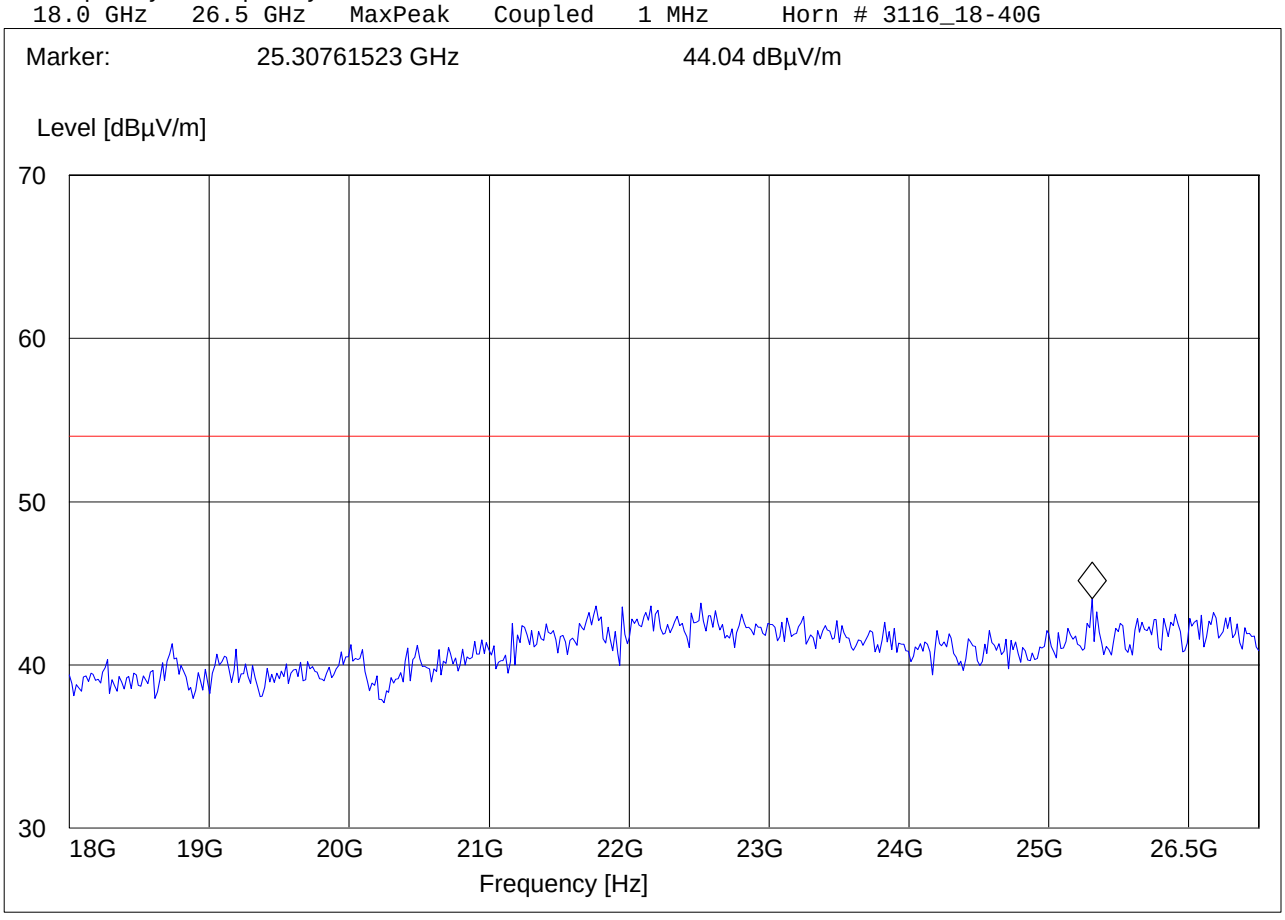
18-26.5GHz

Note: Peak Reading vs. Average limit
Note: This plot is valid for low, mid, high channels (worst-case plot).

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.116; 5690MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 18-26.5G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	26.5 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G



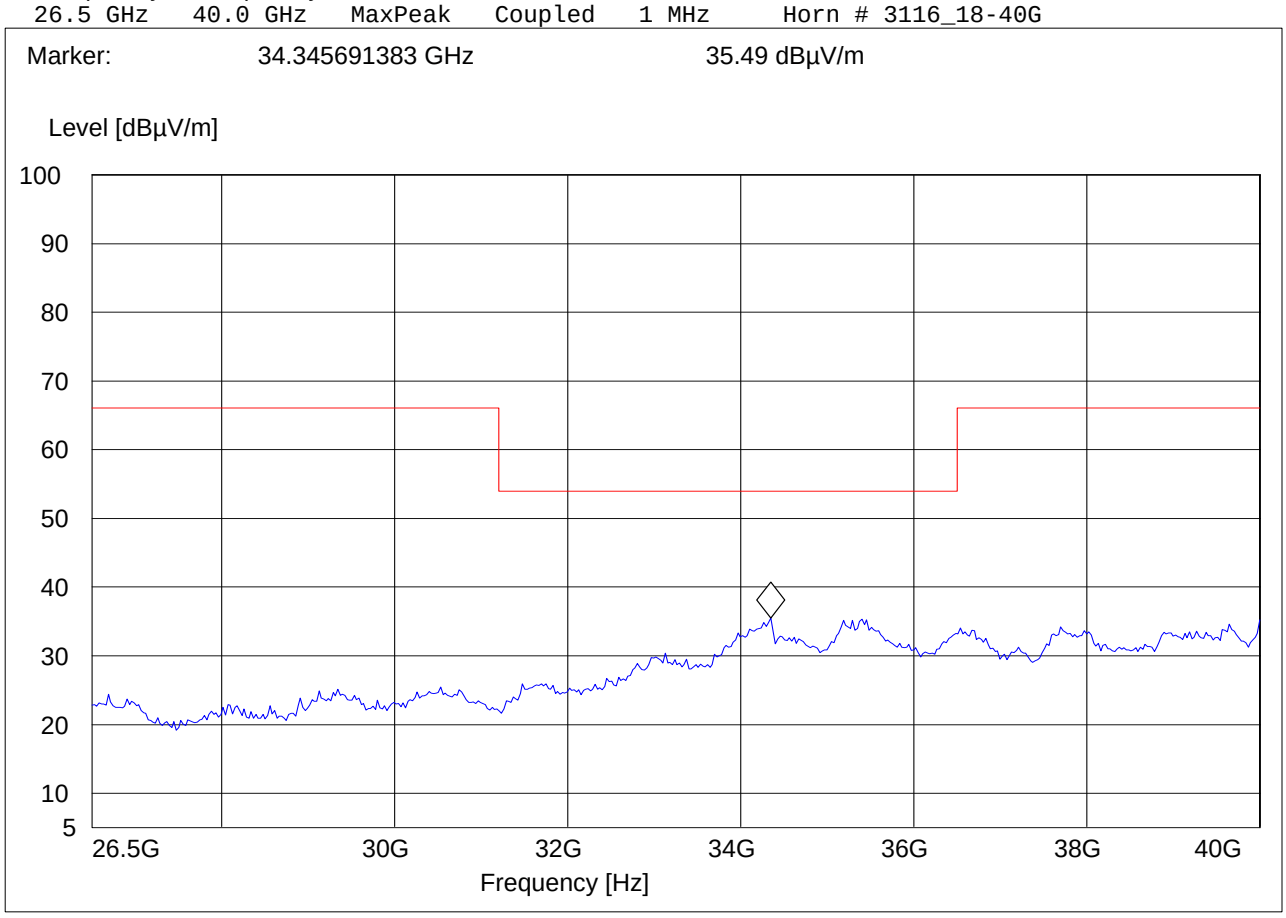
26.5-40GHz

Note: This plot is valid for low, mid, high channels (worst-case plot)
Note: Peak Reading vs. Average limit

```
EUT:              isap
Customer::        EB
Test Mode:        Ch.116; 5690MHz; 40 MHz
ANT Orientation:  V
EUT Orientation:  H
Test Engineer:    SAM
Voltage:          AC
Comments:
```

SWEEP TABLE: "FCC 15.407 26.5-40G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
26.5 GHz	40.0 GHz	MaxPeak	Coupled	1 MHz	Horn # 3116_18-40G



5.4 Receiver Spurious Emission § 15.209/RSS210

5.4.1 **Limits**

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

NOTE:
1. The radiated emissions were done with different settings, using the relevant pre-amplifiers for the relevant frequency ranges. This is the reason that the graphs show different noise levels. In the range between 3 and 25 GHz very short cable connections to the antenna was used to minimize the noise level.

2. All measurements are done in peak mode using an average limit unless specified with the plots.

3. There are no measurable emissions up to 18GHz in Rx mode.

5.4.2 802.11 (na) HT20 MODE

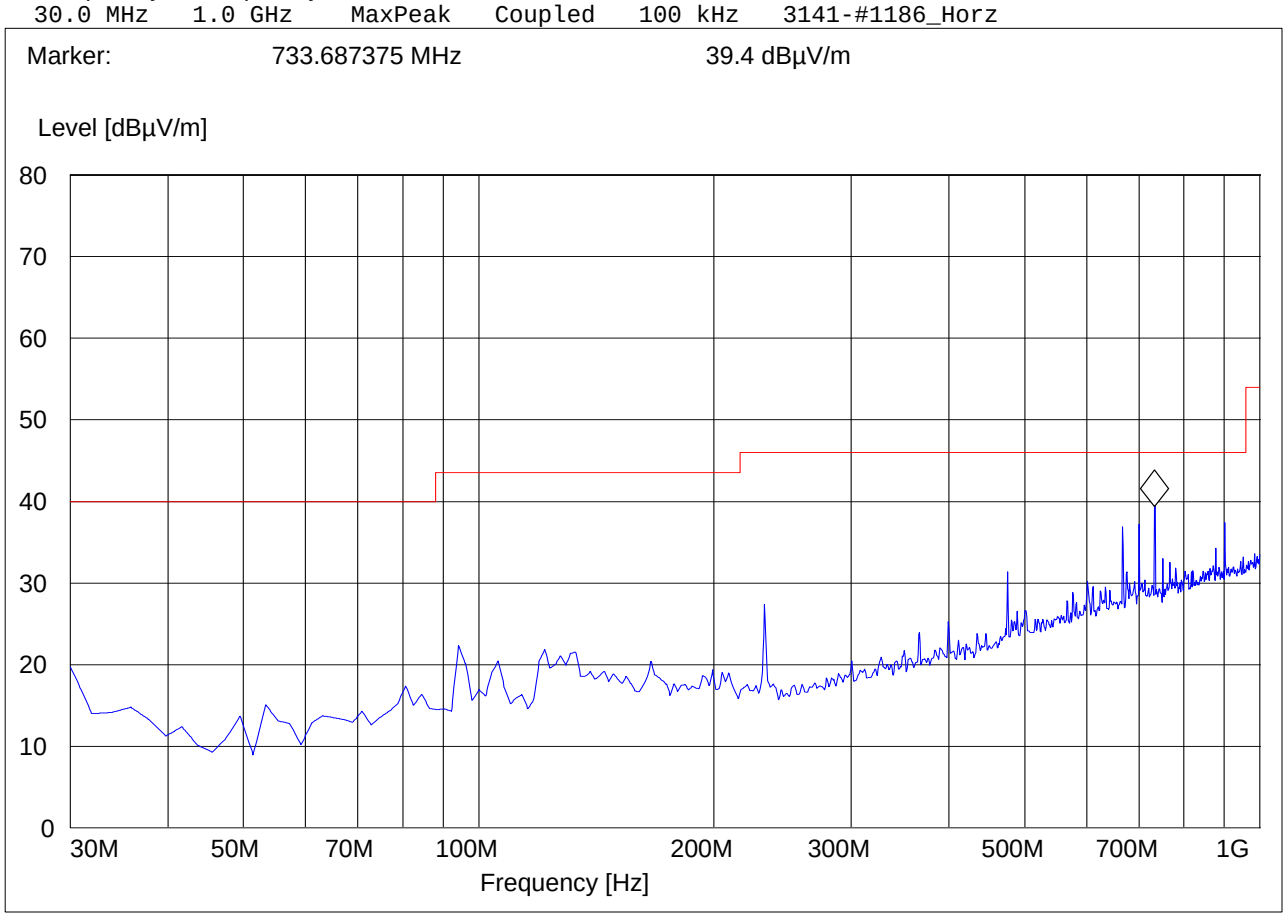
30MHz – 1GHz, Antenna: Horizontal

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

```
EUT:              isap
Customer::        Elektrobit
Test Mode:        RX mode; 20 MHz BW
ANT Orientation:  H
EUT Orientation:  H
Test Engineer:    Satya
Voltage:          Power Cable
Comments:
```

SWEEP TABLE: "FCC15.247_30M-1G_Hor"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Horz



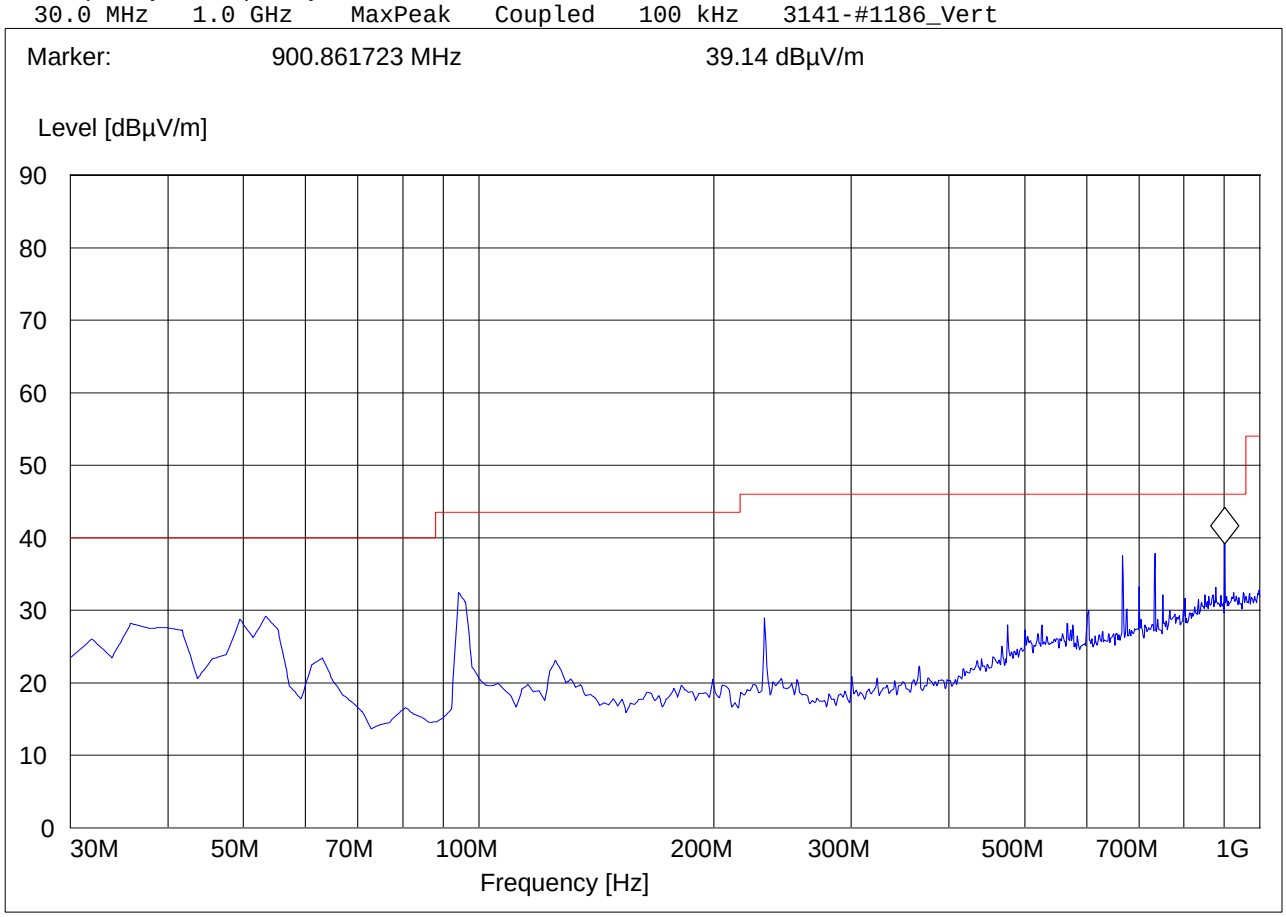
30MHz – 1GHz, Antenna: Vertical

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

EUT: isap
Customer:: Elektrobit
Test Mode: RX mode; 20 MHz BW
ANT Orientation: V
EUT Orientation: H
Test Engineer: Satya
Voltage: Power Cable
Comments:

SWEEP TABLE: "FCC15.247_30M-1G_Ver"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Vert



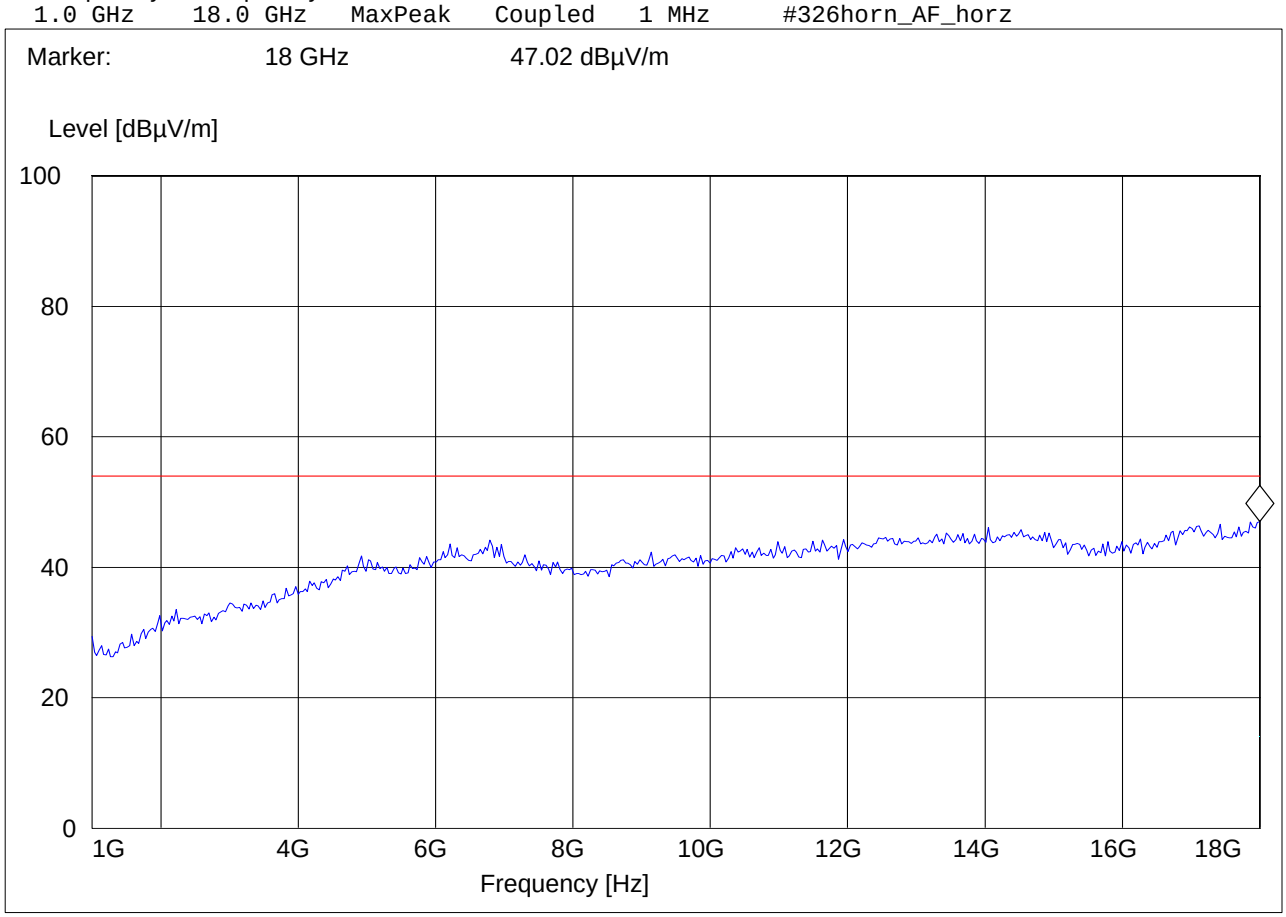
1-18GHz

Note: Peak Reading vs. Average limit

```
EUT / Description: isap
Manufacturer:      Elektrobit
Operation Mode:    Ch. 5220, Rx
ANT Orientation: : H
EUT Orientation::  H
Test Engineer:     Chris
Voltage:           Power cable
Comments::
```

SWEEP TABLE: "FCC 15.407 1-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz



5.4.3 802.11 (na) HT40 MODE

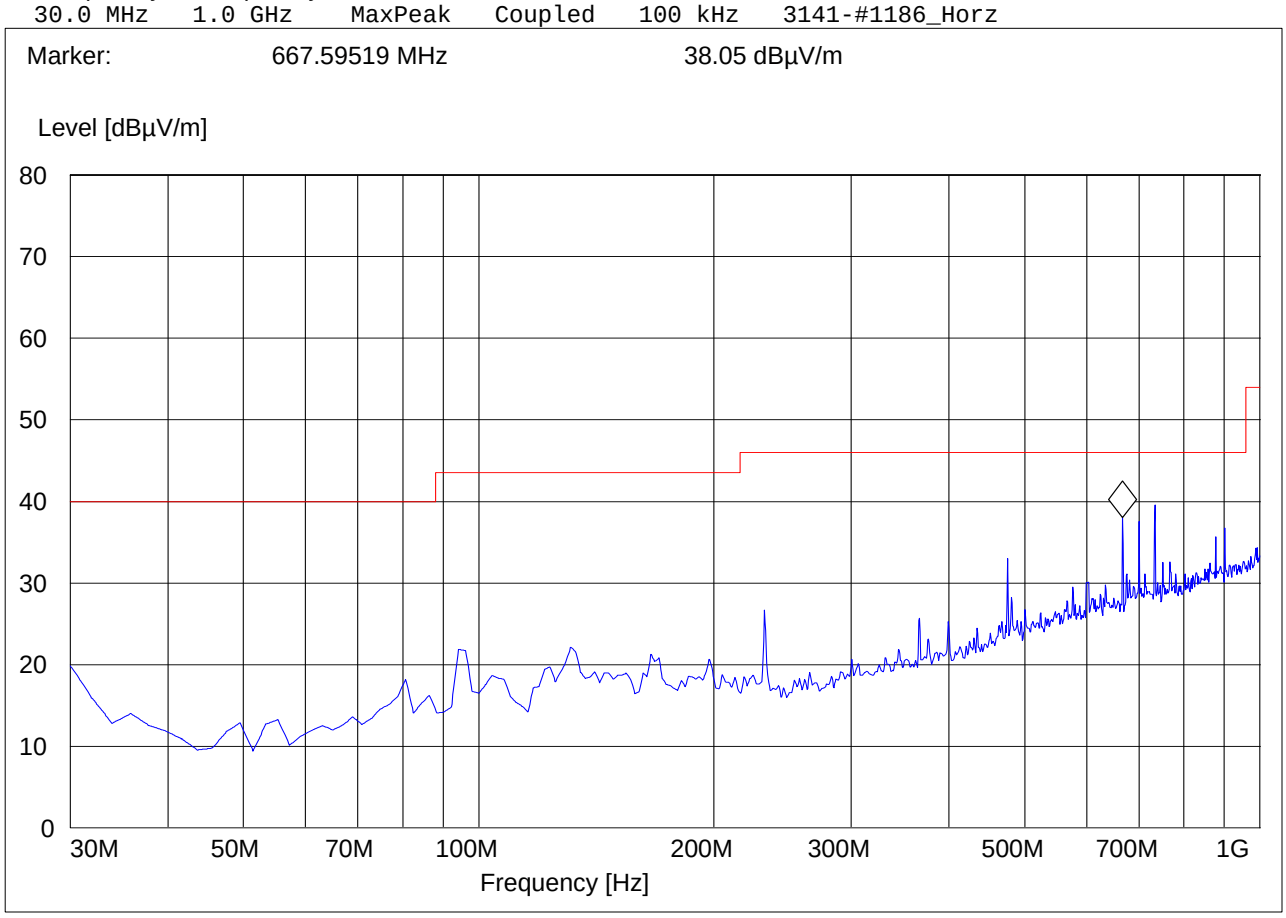
30MHz – 1GHz, Antenna: Horizontal

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

```
EUT:              isap
Customer::        Elektrobit
Test Mode:        RX mode
ANT Orientation:  H
EUT Orientation:  H
Test Engineer:    Satya
Voltage:          Power Cable
Comments:
```

SWEEP TABLE: "FCC15.247_30M-1G_Hor"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Horz



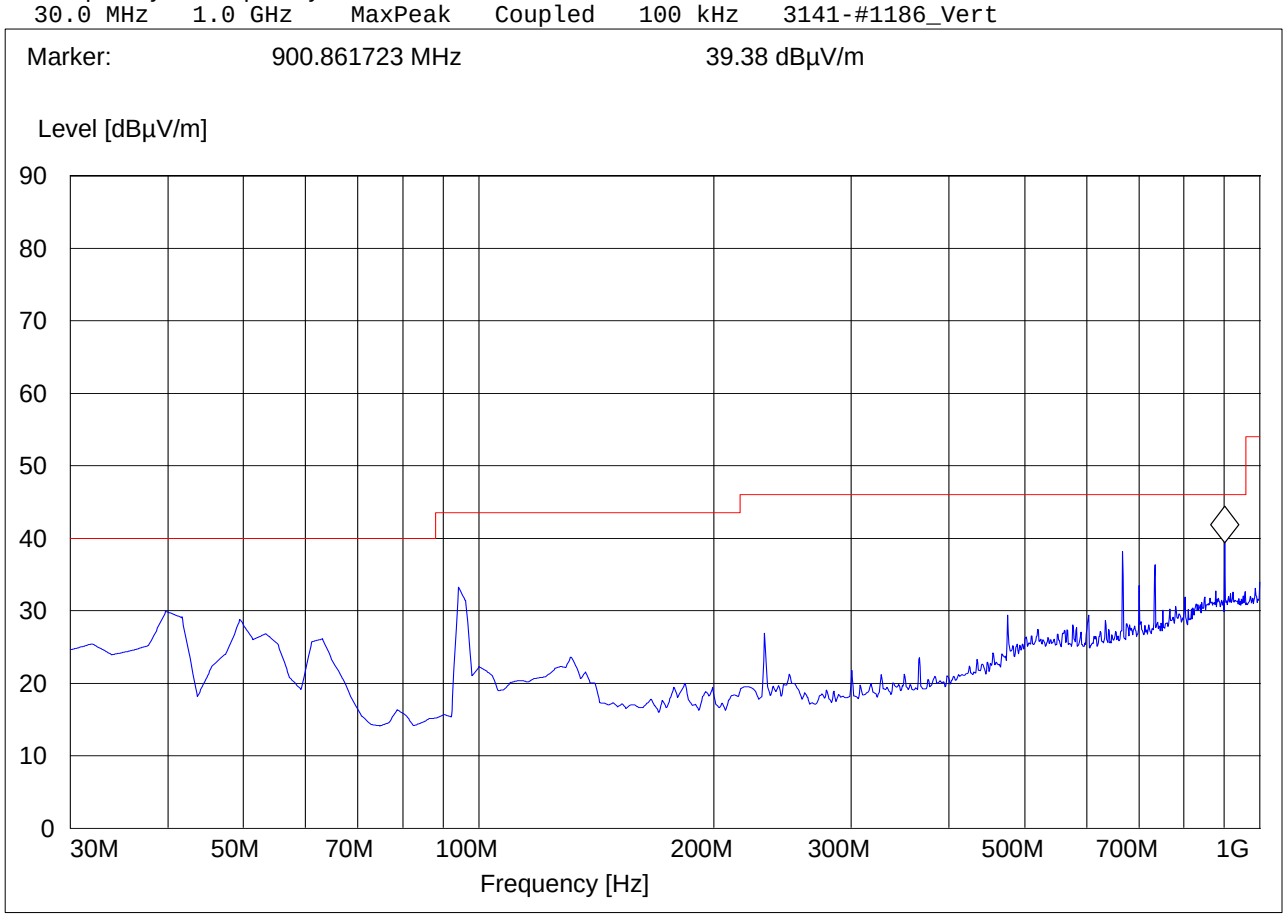
30MHz – 1GHz, Antenna: Vertical

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

```
EUT:             isap
Customer::       Elektrobit
Test Mode:       RX mode
ANT Orientation: V
EUT Orientation: H
Test Engineer:   Satya
Voltage:         Power Cable
Comments:
```

SWEEP TABLE: "FCC15.247_30M-1G_Ver"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	3141-#1186_Vert



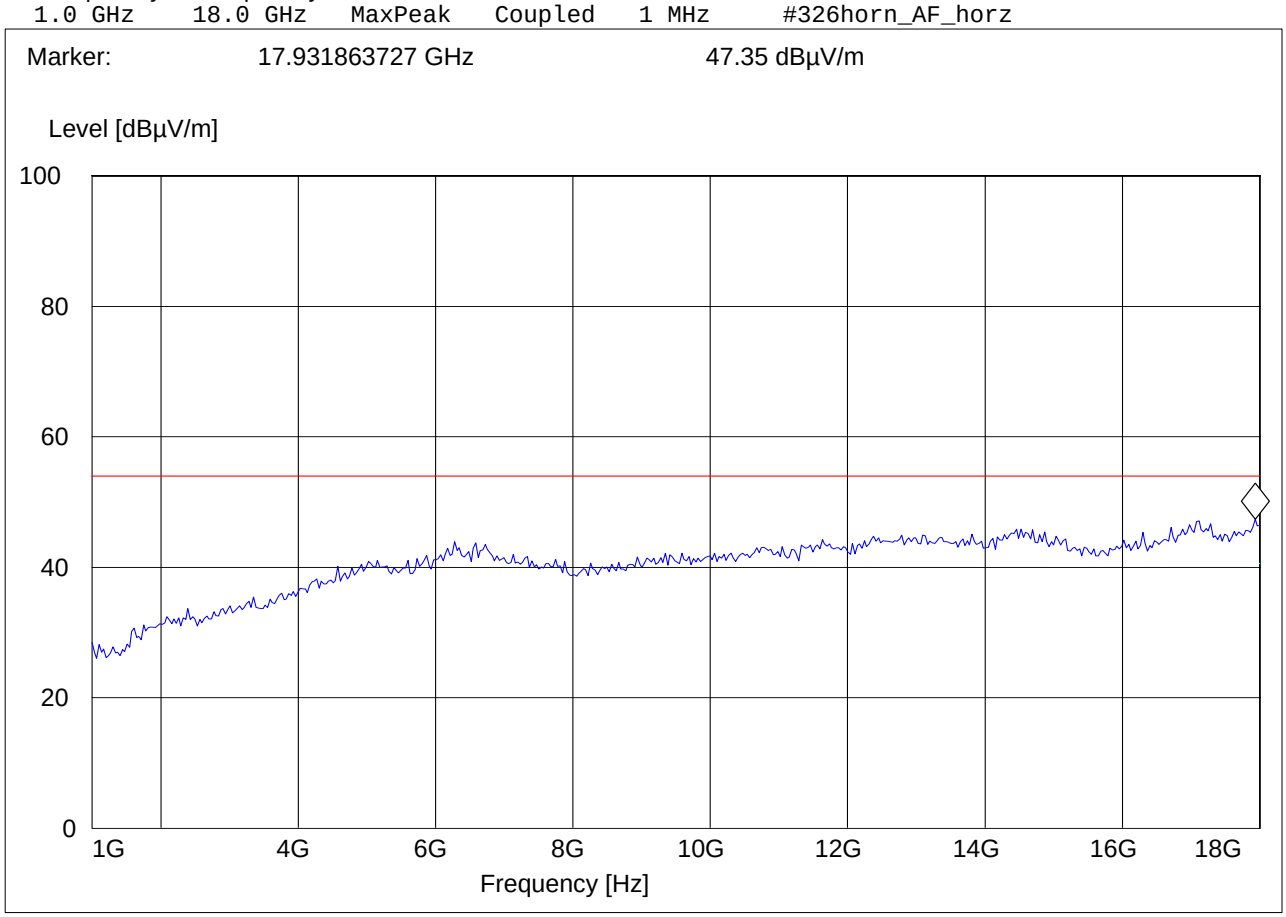
1-18GHz

Note: Peak Reading vs. Average limit

```
EUT / Description: isap
Manufacturer:      Elektrobit
Operation Mode:    Rx Mode
ANT Orientation: : H
EUT Orientation::  H
Test Engineer:     Satya
Voltage:           Power cable
Comments::
```

SWEEP TABLE: "FCC 15.407 1-18G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
1.0 GHz	18.0 GHz	MaxPeak	Coupled	1 MHz	#326horn_AF_horz



6 Conducted Measurements

6.1 26dB bandwidth and 99% bandwidth.

6.1.1 Limit

None. Measurement procedure per FCC Public Notice DA02-2138. All three antenna ports are

6.1.2 802.11na HT20 MODE:

TEST CONDITIONS T_{nom}(23)°C, V_{nom}VDC	Channel Frequency	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Sub-band 1: 5150-5250MHz	5180	20.96	18.00
	5220	21.41	17.84
	5240	21.47	18.08
Sub-band 2: 5250-5350MHz	5260	21.47	18.08
	5300	21.86	17.92
	5320	21.03	18.08
Sub-band 3: 5470-5725MHz	5500	20.90	17.92
	5600	20.58	17.92
	5700	21.47	17.92

6.1.3 802.11na HT40 MODE:

TEST CONDITIONS T_{nom}(23)°C, V_{nom}VDC	Channel Frequency	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Sub-band 1: 5150-5250MHz	5190	40.13	36.48
	5230	40.77	36.64
Sub-band 2: 5250-5350MHz	5270	41.92	36.48
	5310	42.05	36.48
Sub-band 3: 5470-5725MHz	5510	41.15	36.48
	5590	40.13	36.80
	5690	45.60	36.64

6.2 Conducted Power Measurement

6.2.1 **FCC Limits:**

Conducted Output Power is defined as the following (reduced if directional gain > 6dBi):

Sub-band 1: 5150-5250MHz: 15.407(a)(1): 50mW or 4dBm + 10log(B),
Sub-band 2: 5250-5350MHz: 15.407(a)(2): 250mW or 11dBm + 10log(B)
Sub-band 3: 5470-5725MHz: 15.407(a)(2): 250mW or 11dBm + 10log(B)

B is the 26–dB emission bandwidth in MHz.

802.11na HT20 Mode

Channel Frequency	Conducted Output Power Limit (dBm)		
	Stated	Calculated	Applicable
5180	17.0	17.2	17.0
5220	17.0	17.3	17.0
5240	17.0	17.3	17.0
5260	24.0	24.3	24.0
5300	24.0	24.4	24.0
5320	24.0	24.2	24.0
5500	24.0	24.2	24.0
5600	24.0	24.1	24.0
5700	24.0	24.3	24.0

802.11na HT40 Mode

Channel Frequency	Conducted Output Power Limit (dBm)		
	Stated	Calculated	Applicable
5190	17.0	20.0	17.0
5230	17.0	20.1	17.0
5270	24.0	27.2	24.0
5310	24.0	27.2	24.0
5510	24.0	27.1	24.0
5590	24.0	27.0	24.0
5690	24.0	27.6	24.0

6.2.2 **IC Limits**

Sub-band 1: 5150-5250MHz: Not defined.
Sub-band 2: 5250-5350MHz: RSS-210 A9.2(2): 250mW or 11dBm + 10log(B)
Sub-band 3: 5470-5725MHz: RSS-210 A9.2(2): 250mW or 11dBm + 10log(B)

B is the 99% emission bandwidth in MHz

802.11na HT20 Mode

Channel Frequency	Conducted Output Power Limit (mW)		
	Stated	Calculated	Applicable
5180	N/A	N/A	N/A
5220	N/A	N/A	N/A
5240	N/A	N/A	N/A
5260	250.00	227.61	227.61
5300	250.00	225.60	225.60
5320	250.00	227.61	227.61
5500	250.00	225.60	225.60
5600	250.00	225.60	225.60
5700	250.00	225.60	225.60

802.11na HT40 Mode

Channel Frequency	Conducted Output Power Limit (mW)		
	Stated	Calculated	Applicable
5190	N/A	N/A	N/A
5230	N/A	N/A	N/A
5270	250.00	459.26	250.00
5310	250.00	459.26	250.00
5510	250.00	459.26	250.00
5590	250.00	463.28	250.00
5690	250.00	461.27	250.00

6.2.3 **Measurement Results**

802.11na HT20 MODE:

TEST CONDITIONS T_{nom}(23)°C, V_{nom}VDC	Channel Frequency	Conducted Output Power (dBm)	Conducted Output Power (mW)	FCC Margin (dBm)	IC Margin (mW)
Sub-band 1: 5150-5250MHz	5180	16.7	46.58	0.3	N/A
	5220	16.3	42.96	0.7	N/A
	5240	16.6	45.47	0.4	N/A
Sub-band 2: 5250-5350MHz	5260	19.7	93.85	4.3	133.77
	5300	19.7	93.73	4.3	131.87
	5320	19.3	86.03	4.7	141.59
Sub-band 3: 5470-5725MHz	5500	15.4	34.55	8.6	191.05
	5600	15.7	37.13	8.3	188.46
	5700	15.2	33.19	8.8	192.41

802.11na HT40 MODE:

TEST CONDITIONS T_{nom}(23)°C, V_{nom}VDC	Channel Frequency	Conducted Output Power (dBm)	Conducted Output Power (mW)	FCC Margin (dBm)	IC Margin (mW)
Sub-band 1: 5150-5250MHz	5190	16.8	48.12	0.2	N/A
	5230	16.1	41.21	0.9	N/A
Sub-band 2: 5250-5350MHz	5270	19.8	96.58	4.2	153.42
	5310	16.5	44.86	7.5	205.14
Sub-band 3: 5470-5725MHz	5510	23.1	204.97	0.9	45.03
	5590	15.6	36.09	8.4	213.91
	5690	22.7	187.92	1.3	62.08

6.3 Power Spectral Density

6.3.1 FCC Limit

Sub-band 1: 5150-5250MHz 15.407(a) (1): 4dBm in any 1–MHz band
Sub-band 2: 5250-5350MHz 15.407(a) (2): 11dBm in any 1–MHz band
Sub-band 3: 5470-5725MHz 15.407(a) (2): 11dBm in any 1–MHz band

6.3.2 IC Limit

Sub-band 1: 5150-5250MHz RSS-210 A9.2(1): 10dBm in any 1–MHz band
Sub-band 2: 5250-5350MHz RSS-210 A9.2(2): 11dBm in any 1–MHz band
Sub-band 3: 5470-5725MHz RSS-210 A9.2(2): 11dBm in any 1–MHz band

6.3.3 Results

The peak conducted power is measured with a combiner, spectrum analyzer and method 1 specified in FCC public knowledge DA-02-2138A1. The EUT is set to transmit at 100% duty cycle. The EUT does not support TPC.

802.11na HT20 MODE:

TEST CONDITIONS T_{nom}(23)°C, V_{nom}VDC	Channel Frequency	Power Spectral Density (dBm)	EIRP (dBm)	FCC Margin (dBm)	IC Margin (dBm)
Sub-band 1: 5150-5250MHz	5180	1.03	3.6	2.97	6.4
	5220	1.15	3.8	2.85	6.2
	5240	3.01	5.6	0.99	4.4
Sub-band 2: 5250-5350MHz	5260	5.56	8.2	5.44	2.8
	5300	4.23	6.8	6.77	4.2
	5320	4.32	6.9	6.68	4.1
Sub-band 3: 5470-5725MHz	5500	0.68	3.3	10.32	7.7
	5600	0.43	3.0	10.57	8.0
	5700	0.29	2.9	10.71	8.1

802.11na HT40 MODE:

TEST CONDITIONS T_{nom}(23)°C, V_{nom}VDC	Channel Frequency	Power Spectral Density (dBm)	EIRP (dBm)	FCC Margin (dBm)	IC Margin (dBm)
Sub-band 1: 5150-5250MHz	5190	1.10	2.90	3.7	6.3
	5230	2.52	1.48	5.1	4.9
Sub-band 2: 5250-5350MHz	5270	4.36	6.64	7.0	4.0
	5310	4.09	6.91	6.7	4.3
Sub-band 3: 5470-5725MHz	5510	0.53	10.47	3.1	7.9
	5590	0.71	10.29	3.3	7.7
	5690	-0.73	11.73	1.9	9.1

6.4 Peak Excursion

6.4.1 Limit

FCC15.407 (A)(6): The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

6.4.2 Results

The peak conducted power is measured with a spectrum analyzer and method 1 specified in FCC public knowledge DA-02-2138A1. The EUT is set to transmit at 100% duty cycle and powers from all three transmit ports are measured. The EUT does not support TPC.

802.11na HT20 MODE:

Channel Frequency (MHz)	Chain	Peak Excursion (dBm)	Margin (dBm)
5180	A	11.57	1.4
	B	8.50	4.5
	C	9.26	3.7
5220	A	9.29	3.7
	B	7.63	5.4
	C	9.35	3.7
5240	A	9.16	3.8
	B	9.48	3.5
	C	8.62	4.4
5260	A	8.53	4.5
	B	9.63	3.4
	C	8.57	4.4
5300	A	8.61	4.4
	B	9.20	3.8
	C	8.55	4.5
5320	A	8.19	4.8
	B	8.59	4.4
	C	9.12	3.9
5500	A	10.04	3.0
	B	9.07	3.9
	C	8.64	4.4
5600	A	9.11	3.9
	B	9.11	3.9
	C	7.81	5.2

5700	A	8.69	4.3
	B	9.33	3.7
	C	8.79	4.2

802.11na HT40 MODE:

Channel Frequency (MHz)	Chain	Peak Excursion (dBm)	Margin (dBm)
5190	A	9.57	3.4
	B	9.69	3.3
	C	8.93	4.1
5230	A	9.77	3.2
	B	9.93	3.1
	C	9.66	3.3
5270	A	8.88	4.1
	B	9.51	3.5
	C	9.06	3.9
5310	A	9.55	3.5
	B	9.54	3.5
	C	10.19	2.8
5510	A	9.97	3.0
	B	9.98	3.0
	C	8.72	4.3
5590	A	9.45	3.6
	B	9.60	3.4
	C	9.64	3.4
5690	A	10.05	3.0
	B	10.11	2.9
	C	9.30	3.7

6.5 Conducted Spurious Emission

6.5.1 Limit

As specified in 15.407 (b)(1)(2)(3)(4) and RSS-210 (A9.3)(1)(2)(3)(4).

6.5.2 Results:

Measurement conducted on all transmit antenna ports with a combiner.

No measurable emission over the limit. See plots for details.

6.6 AC Power Line Conducted Emissions § 15.107/207

6.6.1 LIMITS

Technical specification: 15.107 / 15.207 (Revised as of August 20, 2002)

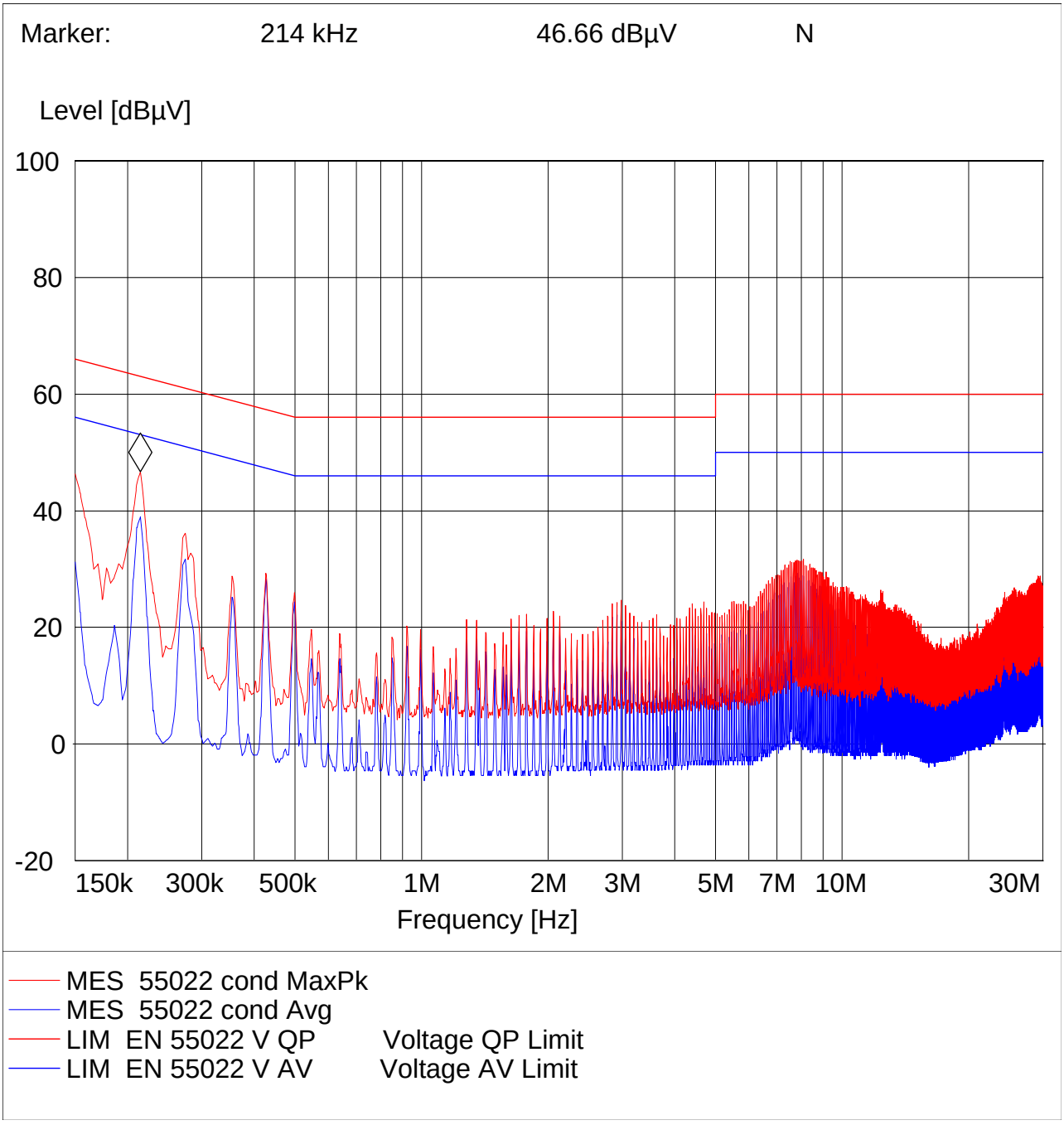
Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	Quasi-Peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50
* Decreases with logarithm of the frequency		

ANALYZER SETTINGS: RBW = 10KHz VBW = 10KHz

6.6.2 **RESULTS 802.11na HT20 Mode**

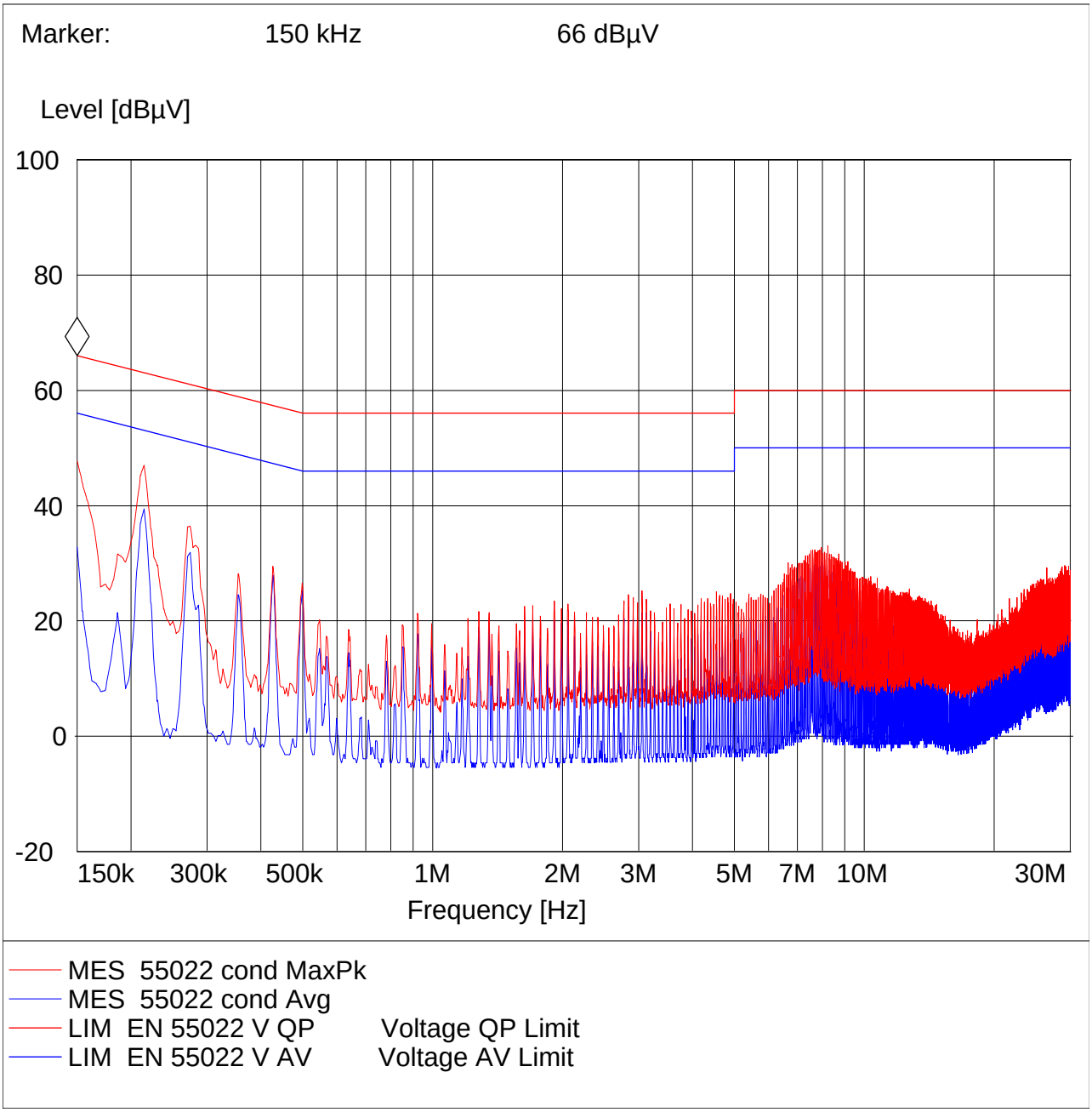
Line:

```
EUT:              isap
Manufacturer:     Elektrobit
Test Mode:        Ch. 5220
ANT Orientation:: Conducted
EUT Orientation:: H
Test Engineer::   Chris
Power Supply: :   Power Cable
Comments:  :      LINE
```



Neutral:

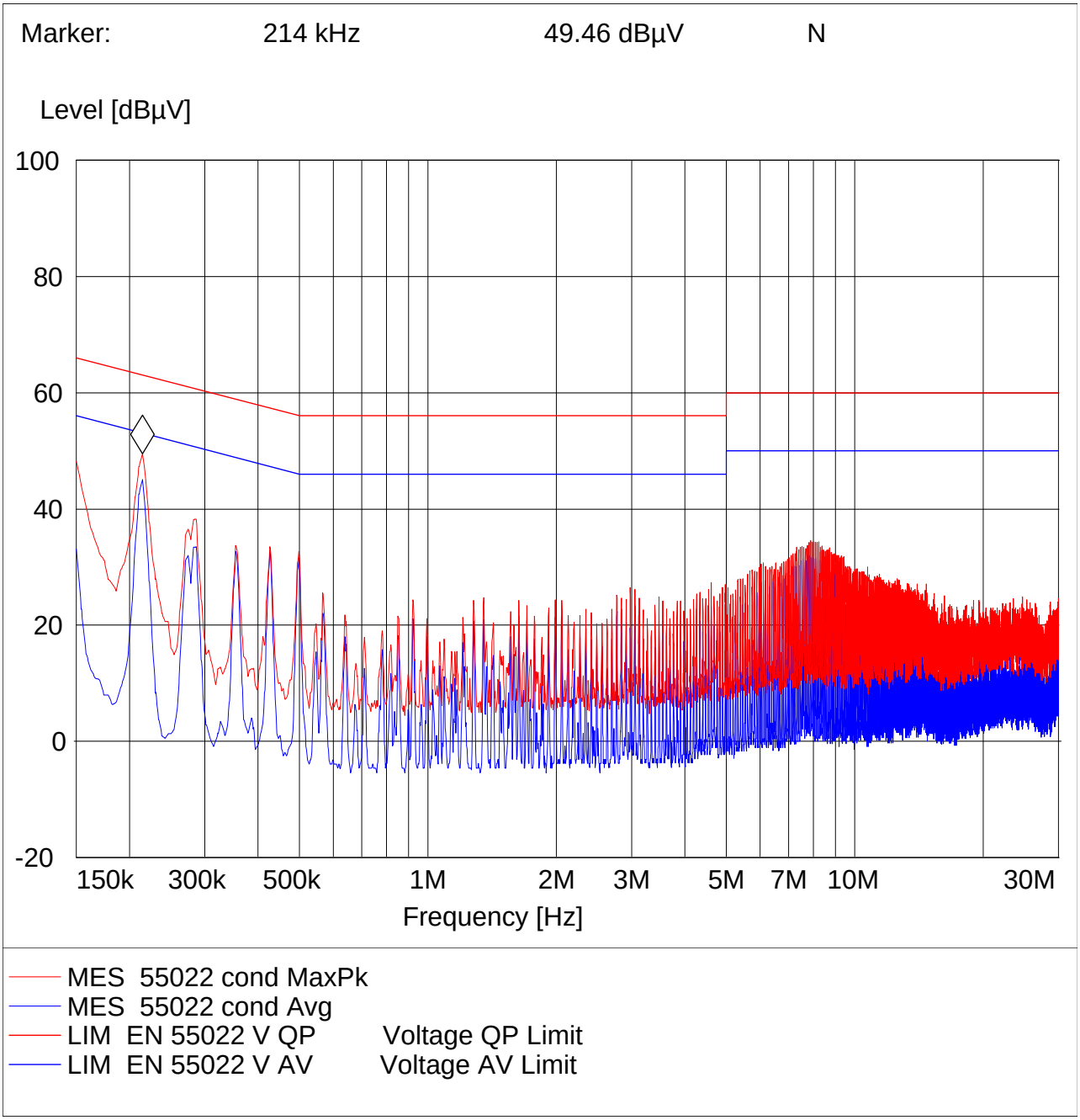
```
EUT:               isap
Manufacturer:      Elektrobit
Test Mode:         Ch. 5220
ANT Orientation:: Conducted
EUT Orientation:: H
Test Engineer::    Chris
Power Supply: :    Power Cable
Comments:  :       NEUTRAL
```



6.6.3 **RESULTS 802.11na HT40 Mode**

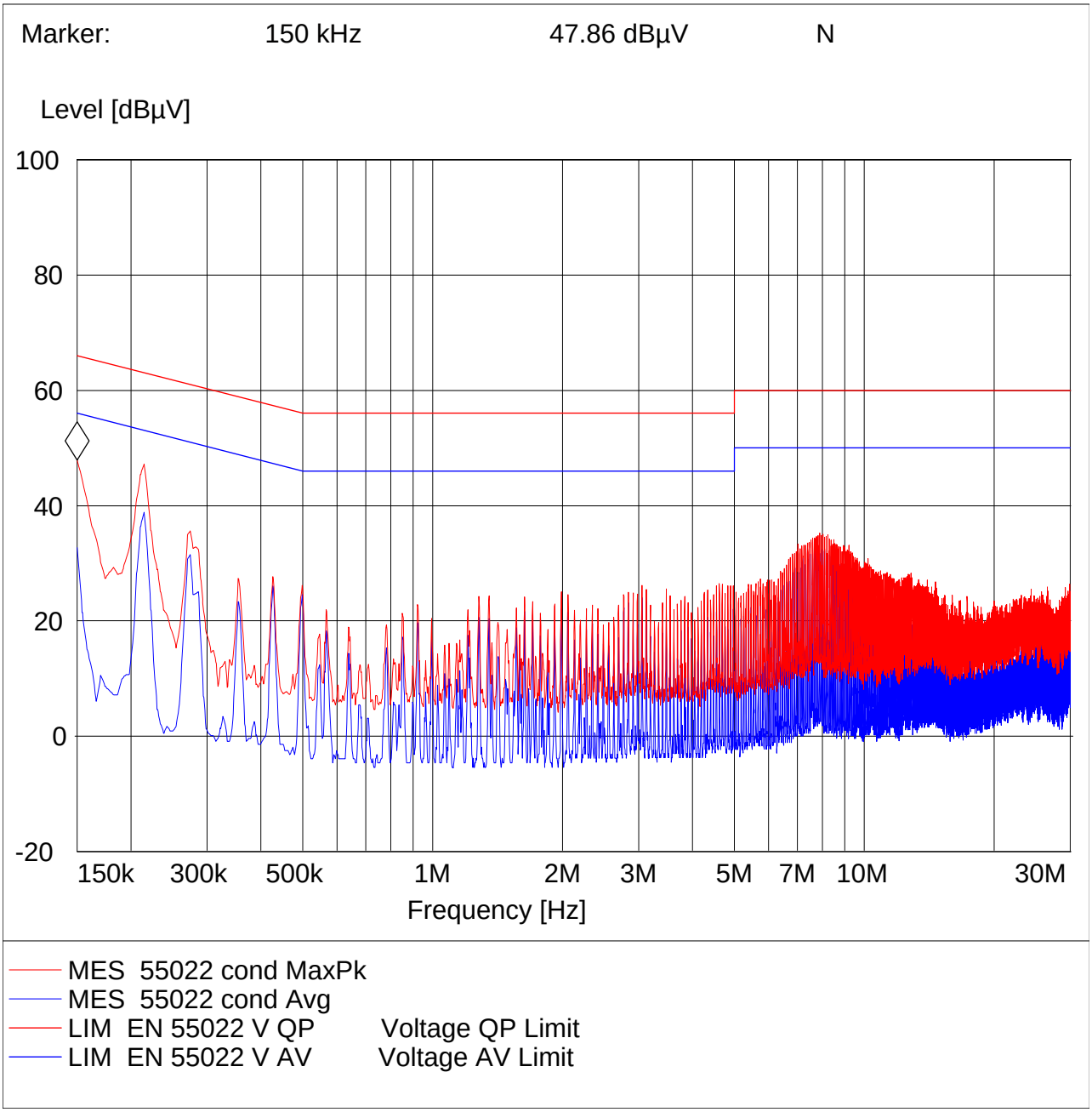
Line:

```
EUT:              isap
Manufacturer:     Elektrobit
Test Mode:        5190 MHz; 40 MHz Bandwidth
ANT Orientation:: Conducted
EUT Orientation:: H
Test Engineer::   Satya
Power Supply: :   Power Cable
Comments:  :      Line
```



Neutral:

```
EUT:               isap
Manufacturer:      Elektrobit
Test Mode:         40 MHz Bandwidth; 5190 MHz
ANT Orientation:: Conducted
EUT Orientation:: H
Test Engineer::    Satya
Power Supply: :    Power Cable
Comments:  :       Neutral
```

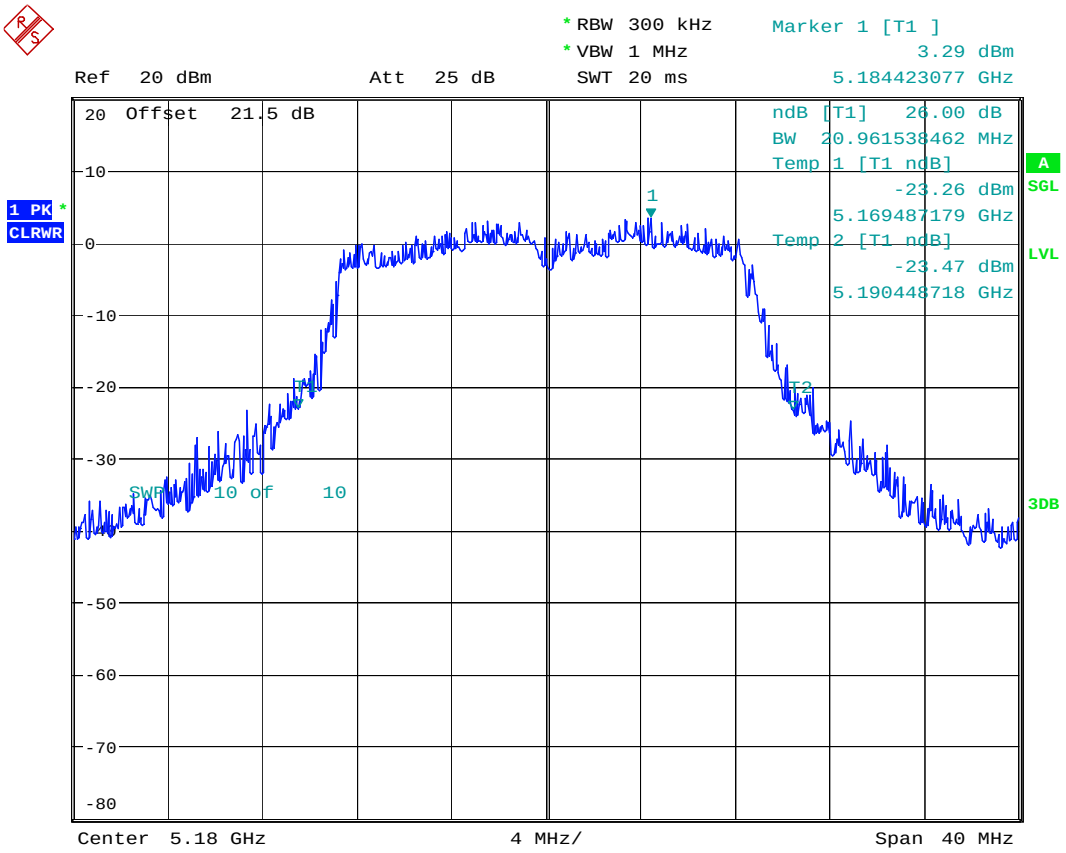


6.7 Conducted Measurement Plots

6.7.1 **26dB Bandwidth**

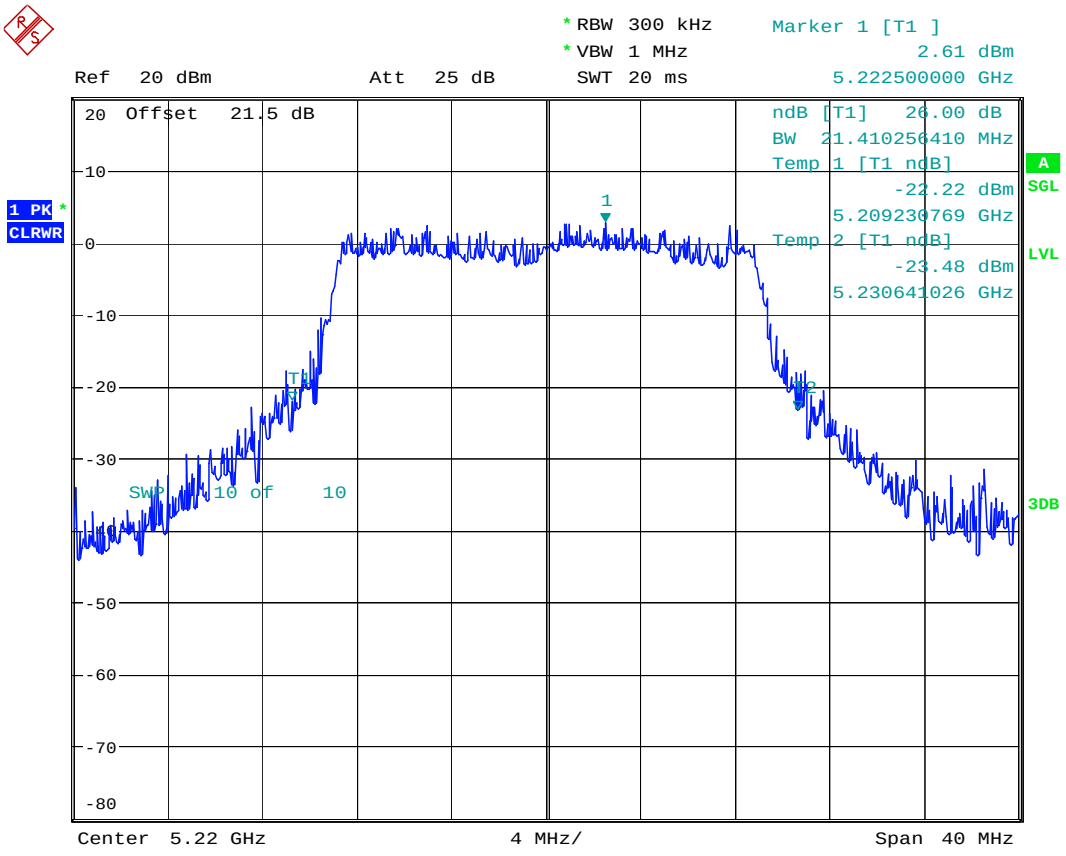
6.7.1.1 Sub-band 1 802.11na HT20 Mode

5180MHz



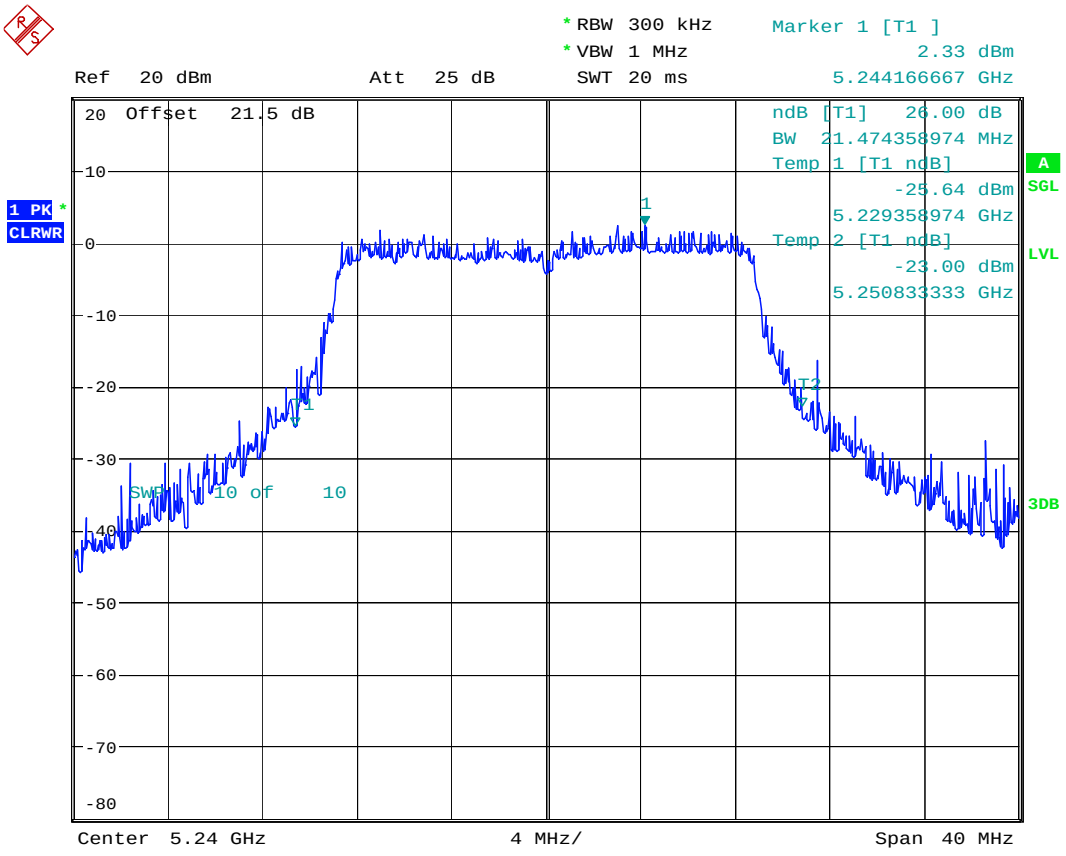
Date: 17.APR.2008 14:54:07

5220MHz



Date: 17.APR.2008 14:55:19

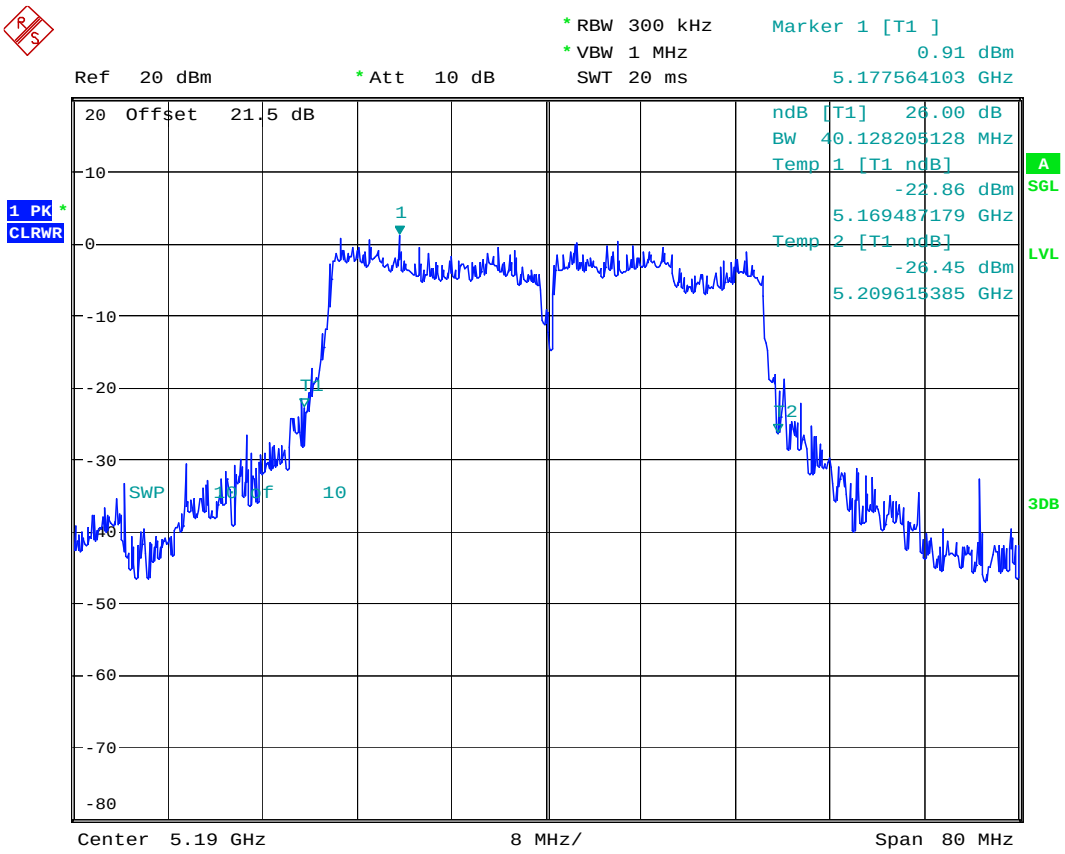
5240MHz



Date: 17.APR.2008 14:58:59

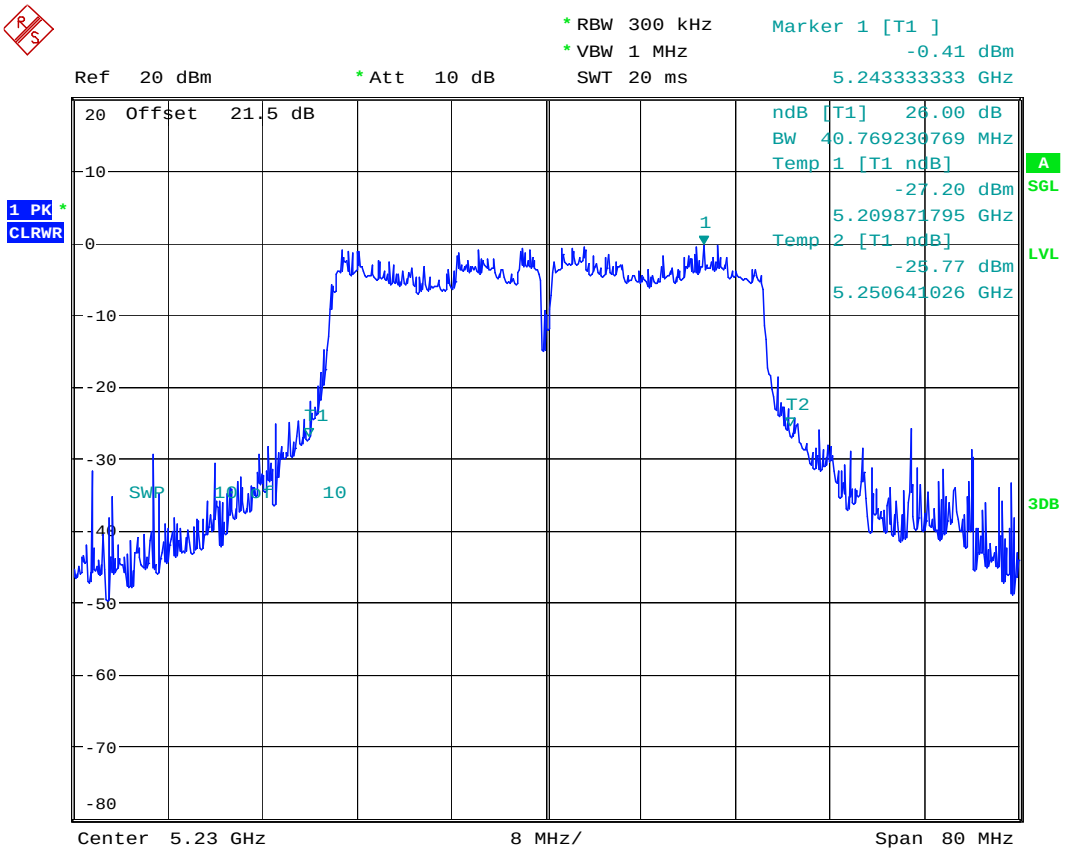
6.7.1.2 Sub-band 1 802.11na HT40 Mode

5190MHz



Date: 17.APR.2008 15:45:45

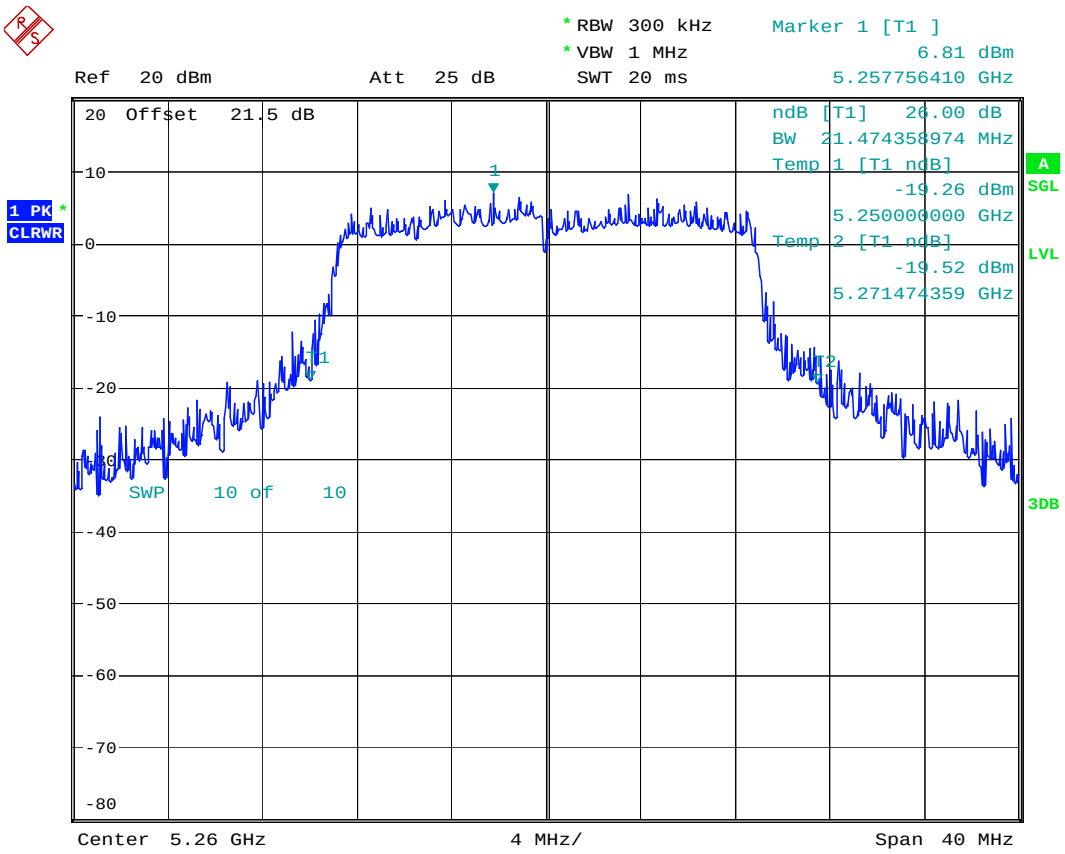
5230MHz



Date: 17.APR.2008 15:47:17

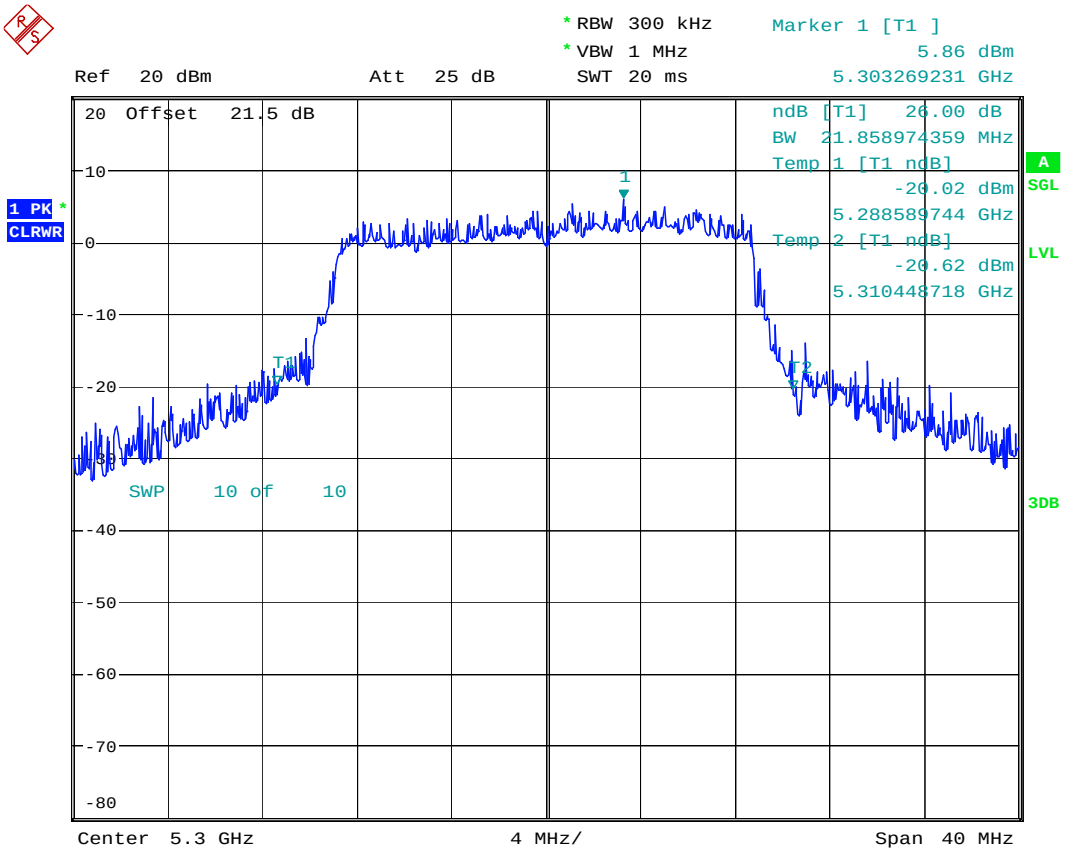
6.7.1.3 Sub-band 2 802.11na HT20 Mode

5260MHz



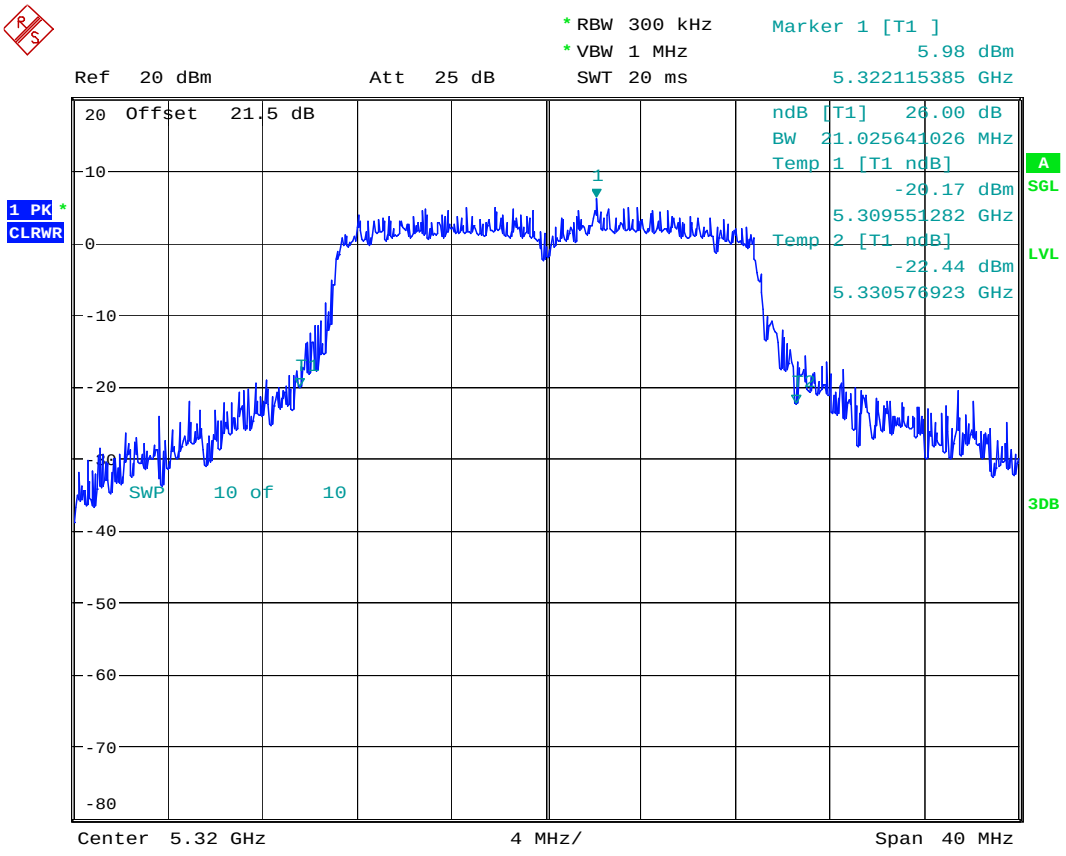
Date: 17.APR.2008 15:00:38

5300MHz



Date: 17.APR.2008 15:02:22

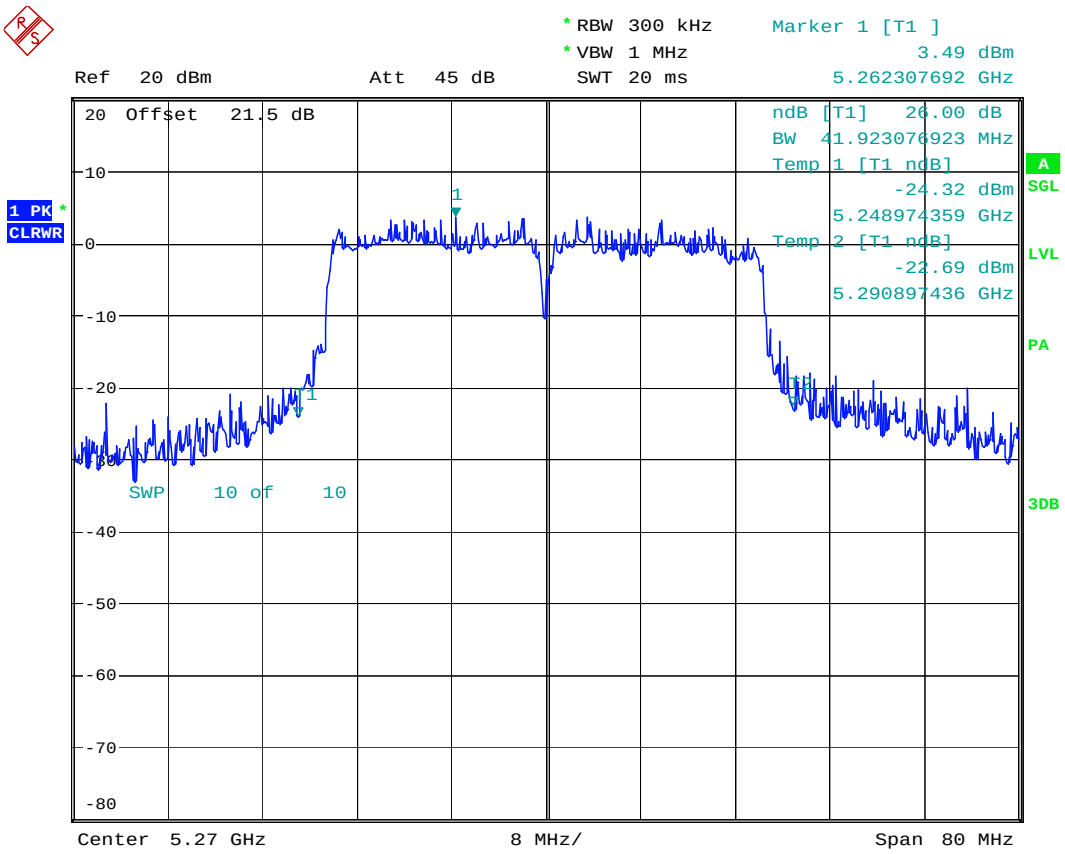
5320MHz



Date: 17.APR.2008 15:03:16

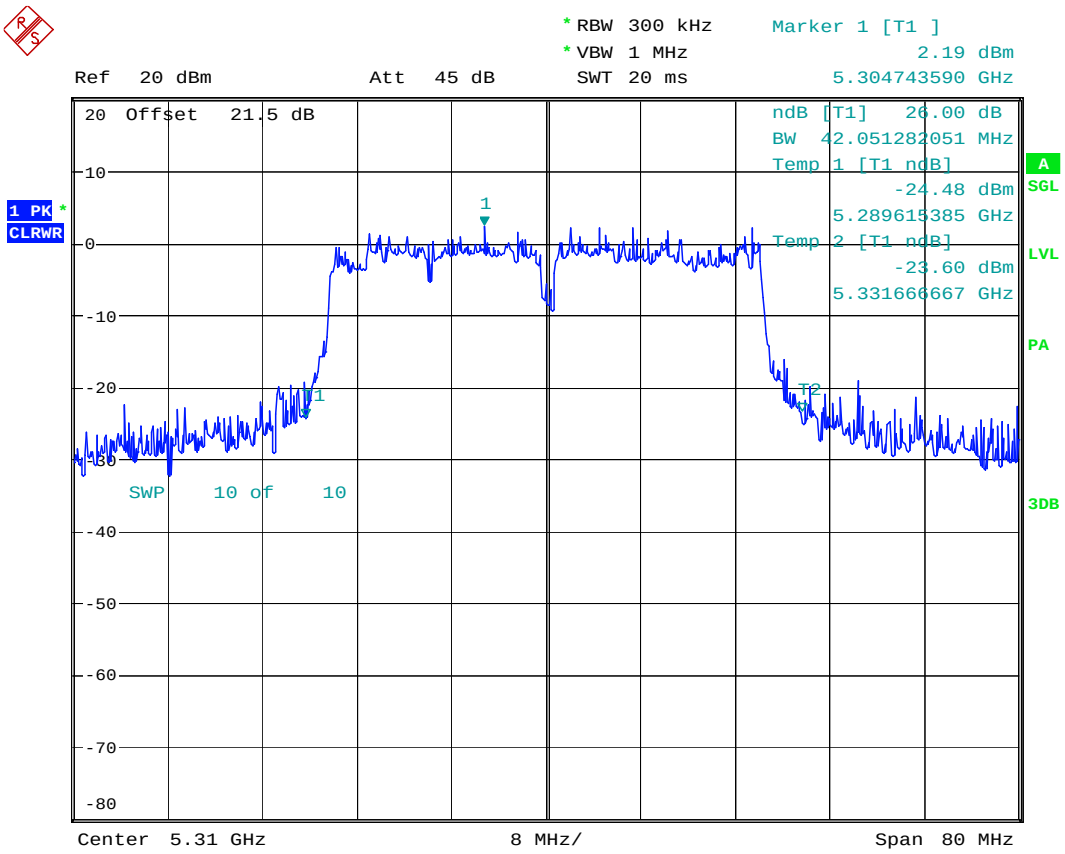
6.7.1.4 Sub-band 2 802.11na HT40 Mode

5270MHz



Date: 17.APR.2008 17:08:15

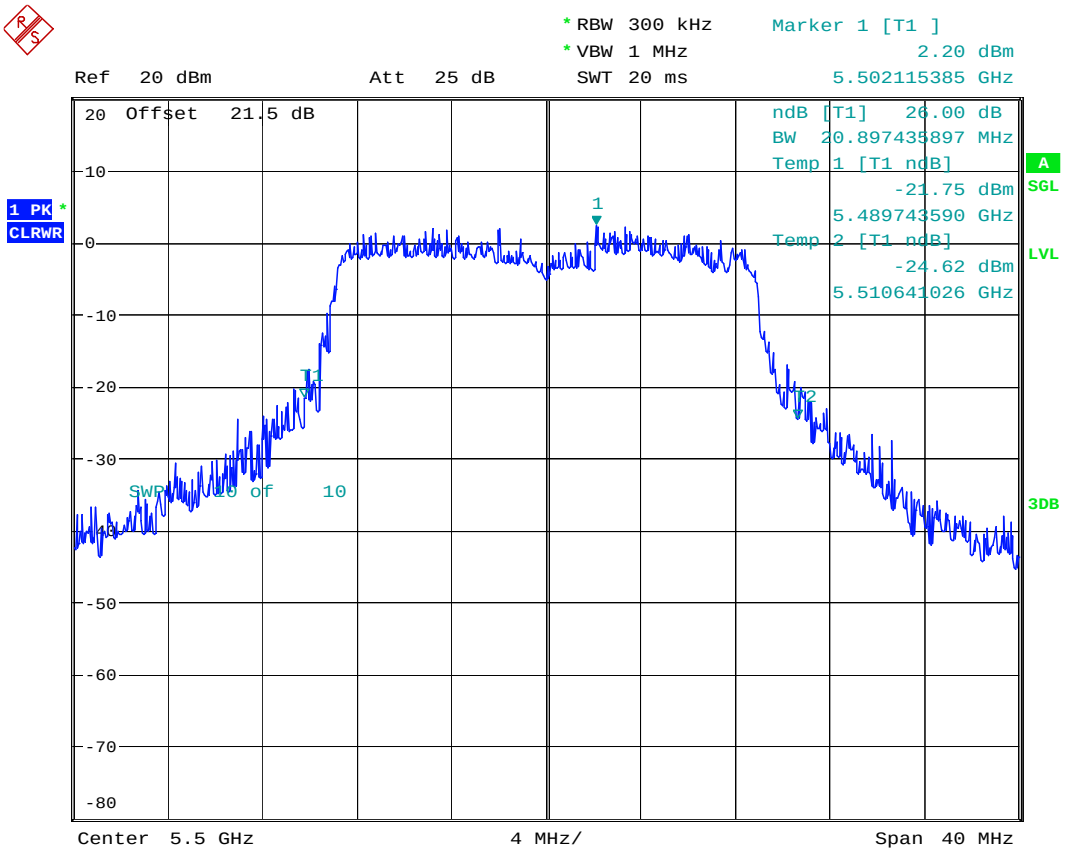
5310MHz



Date: 17.APR.2008 17:09:47

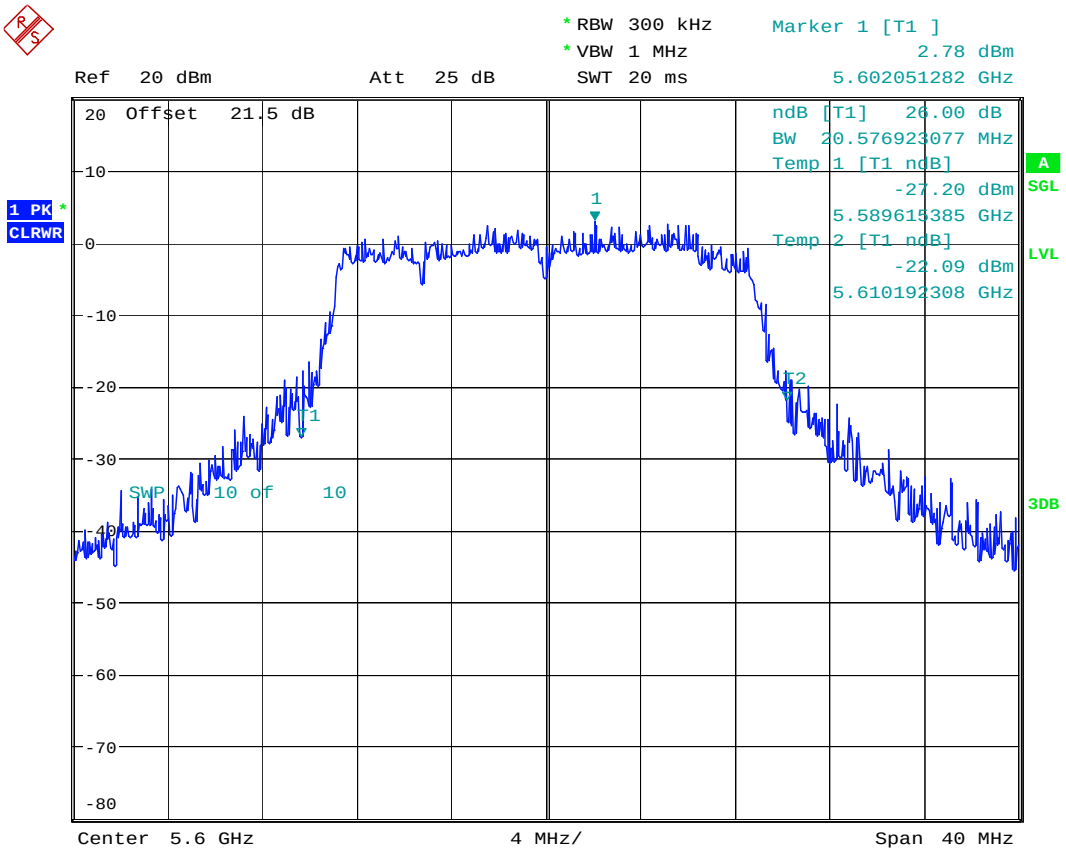
6.7.1.5 Sub-band 3 802.11na HT20 Mode

5500MHz



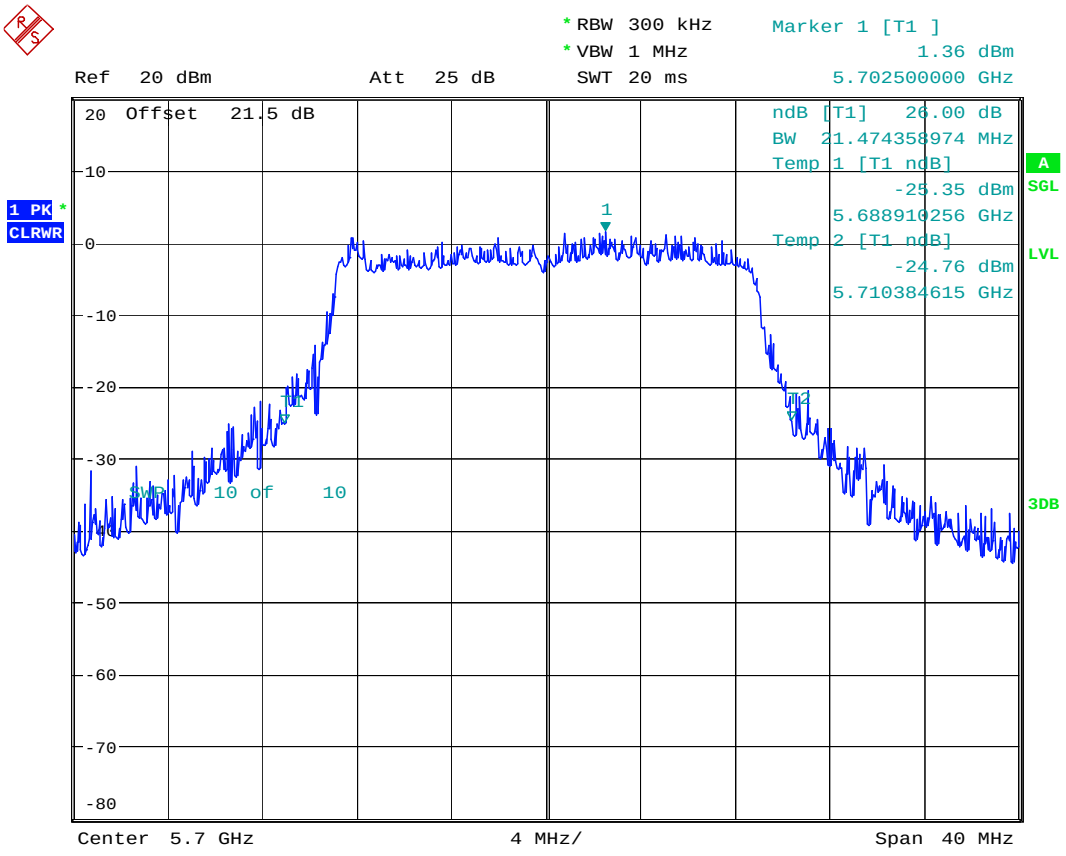
Date: 17.APR.2008 15:16:26

5600MHz



Date: 17.APR.2008 15:17:09

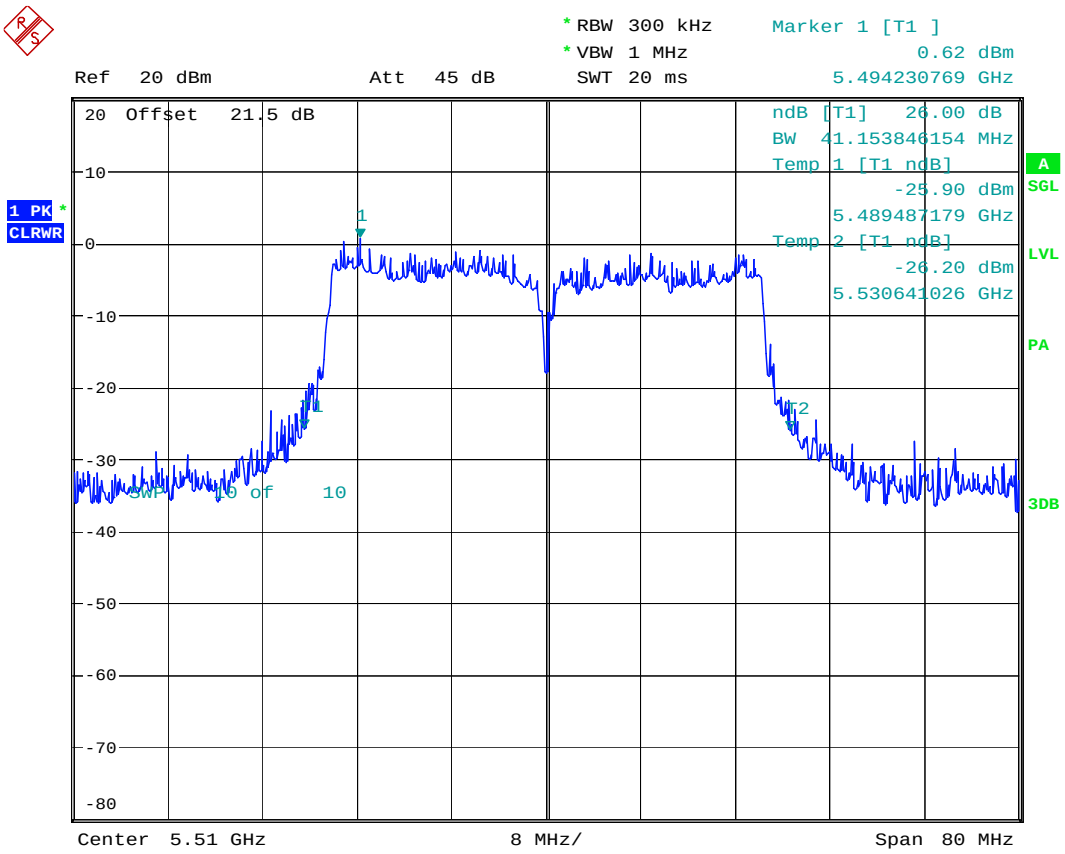
5700MHz



Date: 17.APR.2008 15:18:11

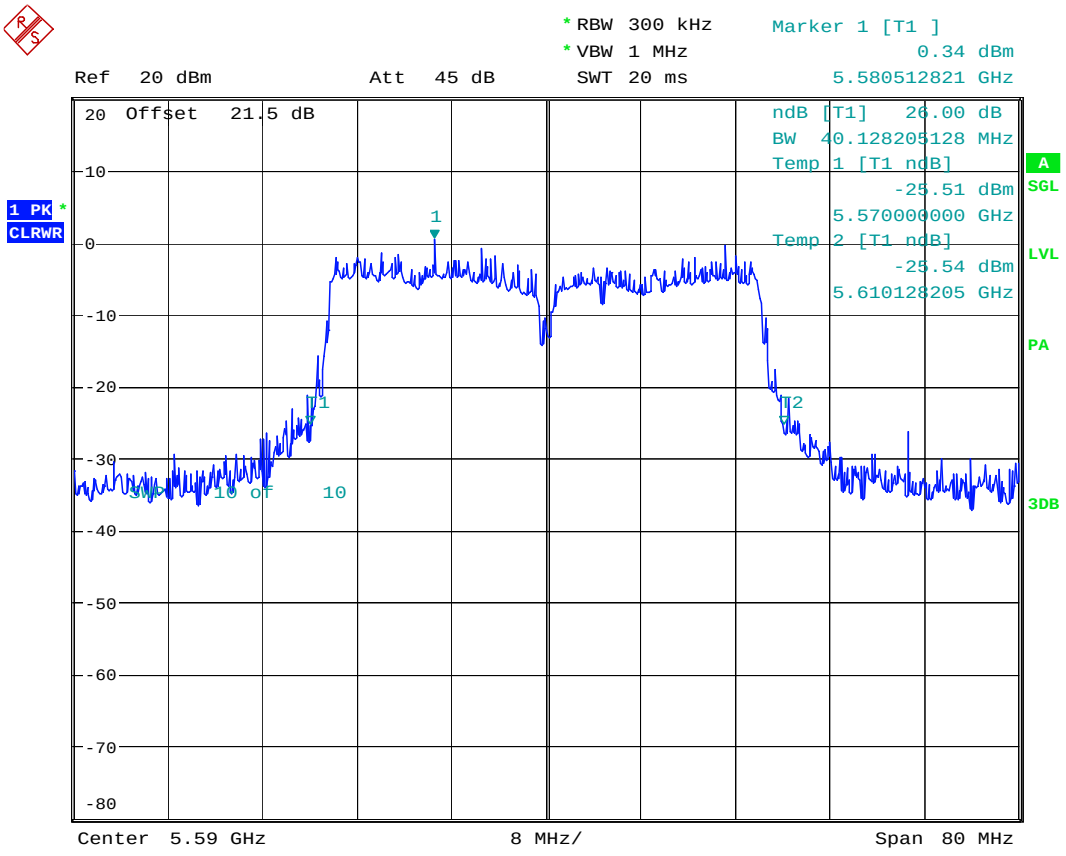
6.7.1.6 Sub-band 3 802.11na HT40 Mode

5510MHz



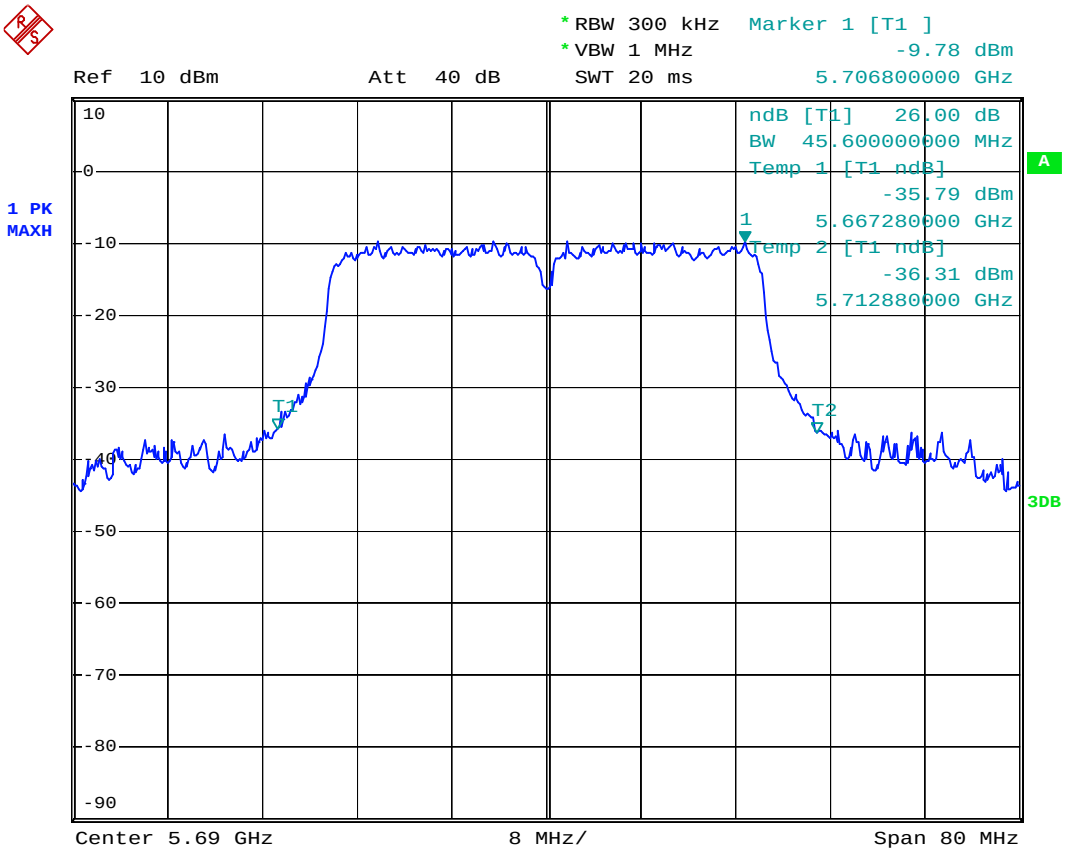
Date: 17.APR.2008 17:10:33

5590MHz



Date: 17.APR.2008 17:11:51

5690MHz

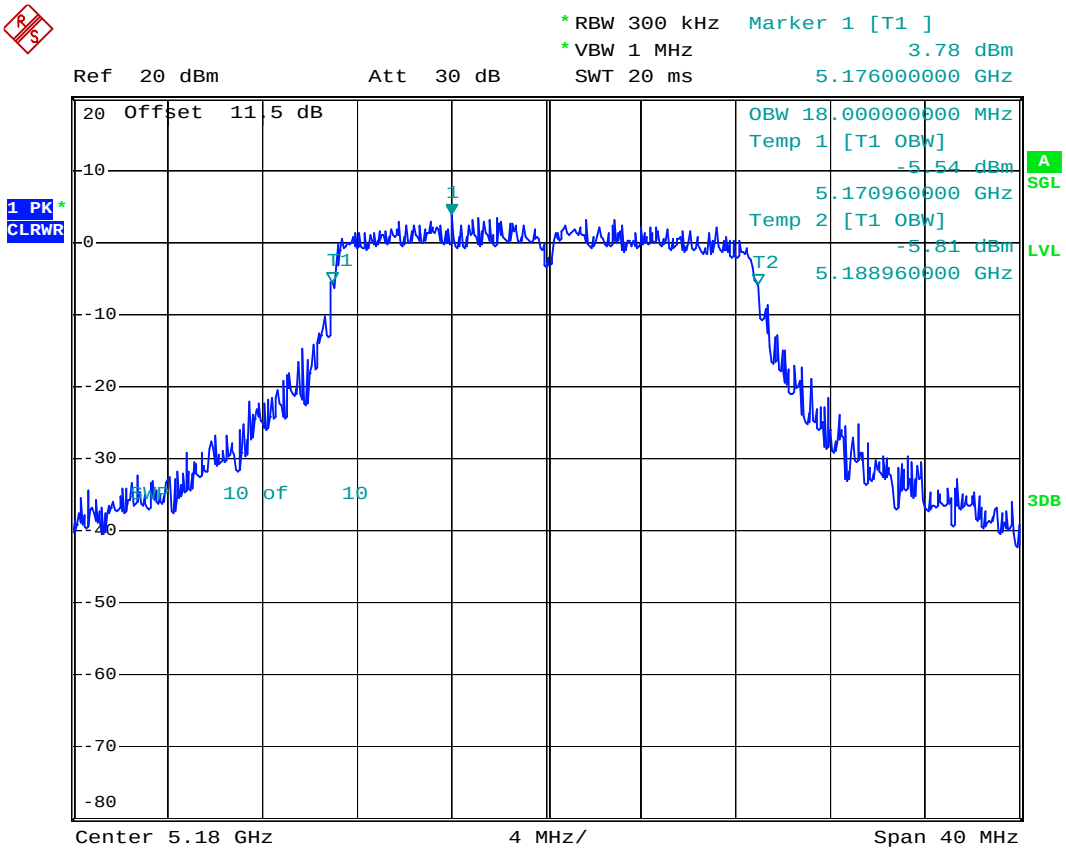


Date: 5.APR.2008 14:27:49

6.7.2 **99% Bandwidth**

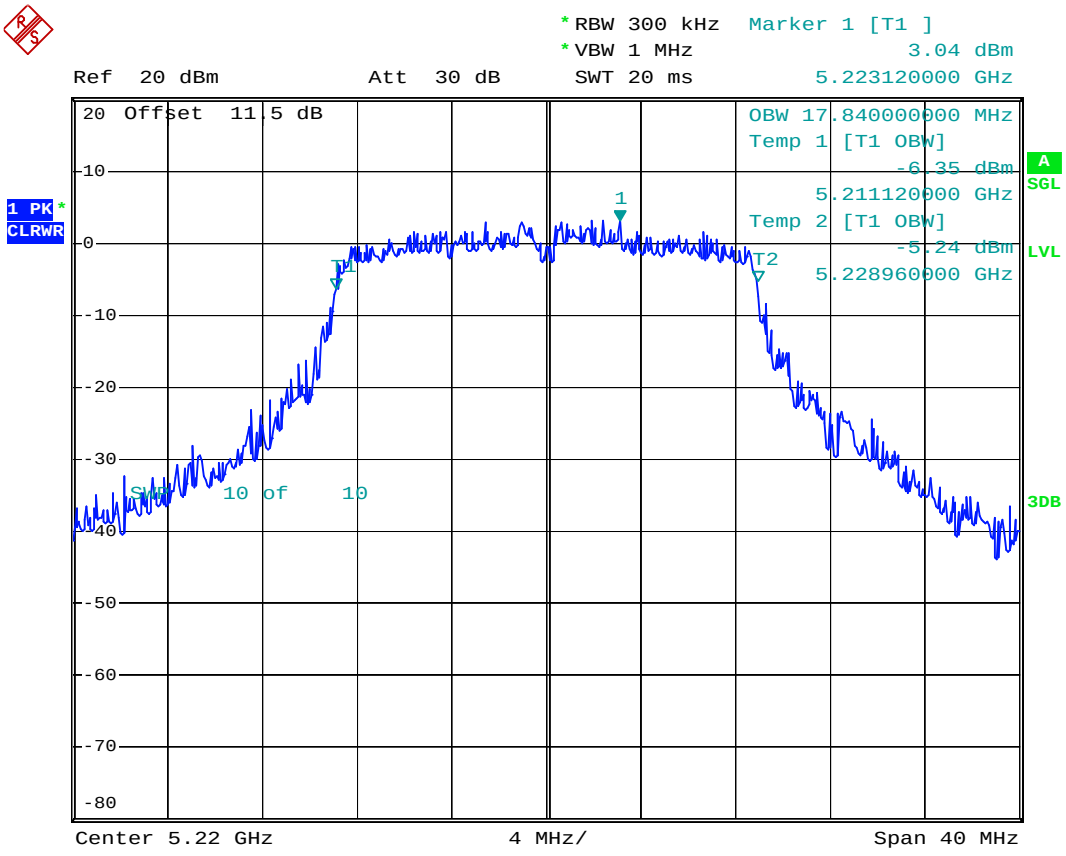
6.7.2.1 Sub-band 1 802.11na HT20 Mode

5180MHz



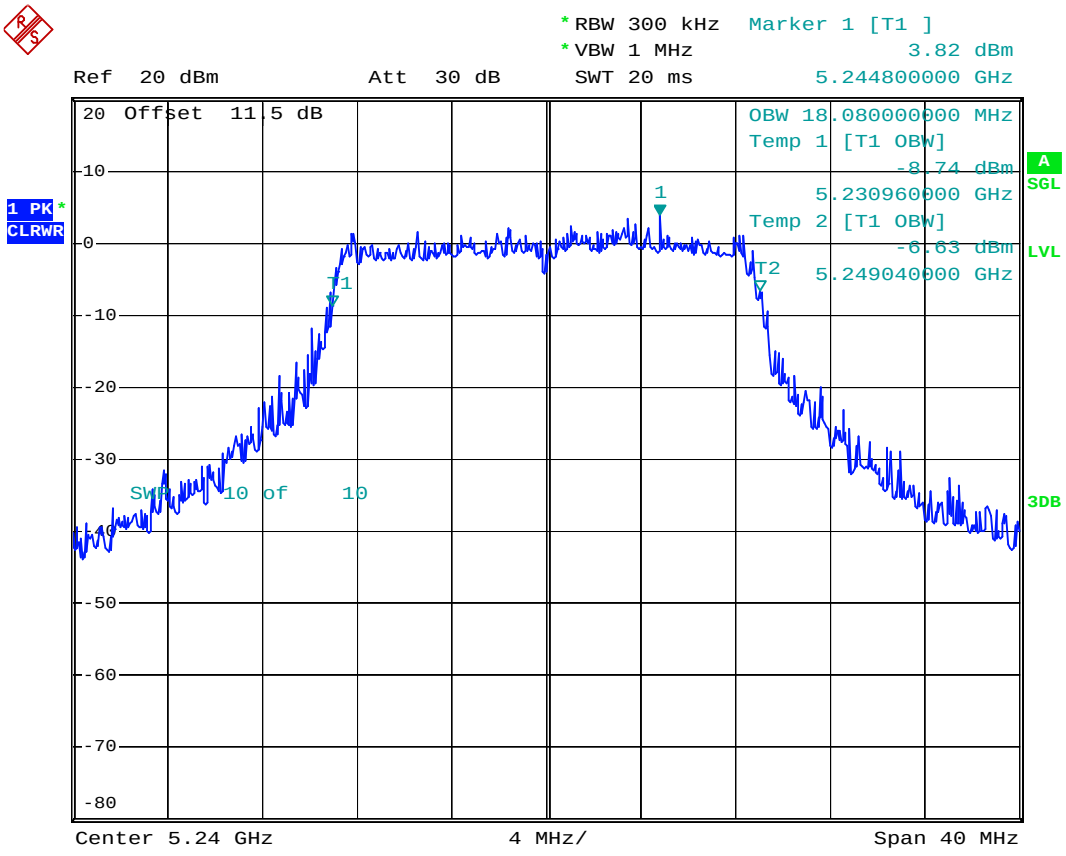
Date: 1.APR.2008 14:29:29

5220MHz



Date: 1.APR.2008 14:28:49

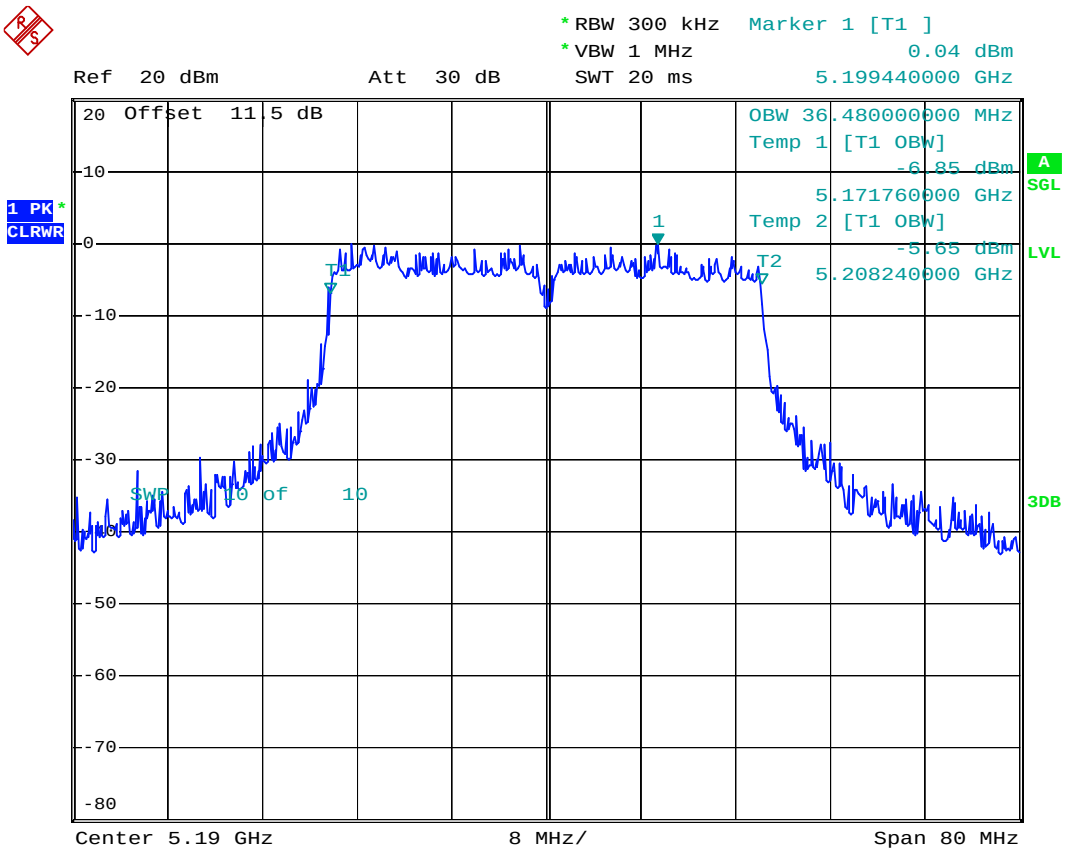
5240MHz



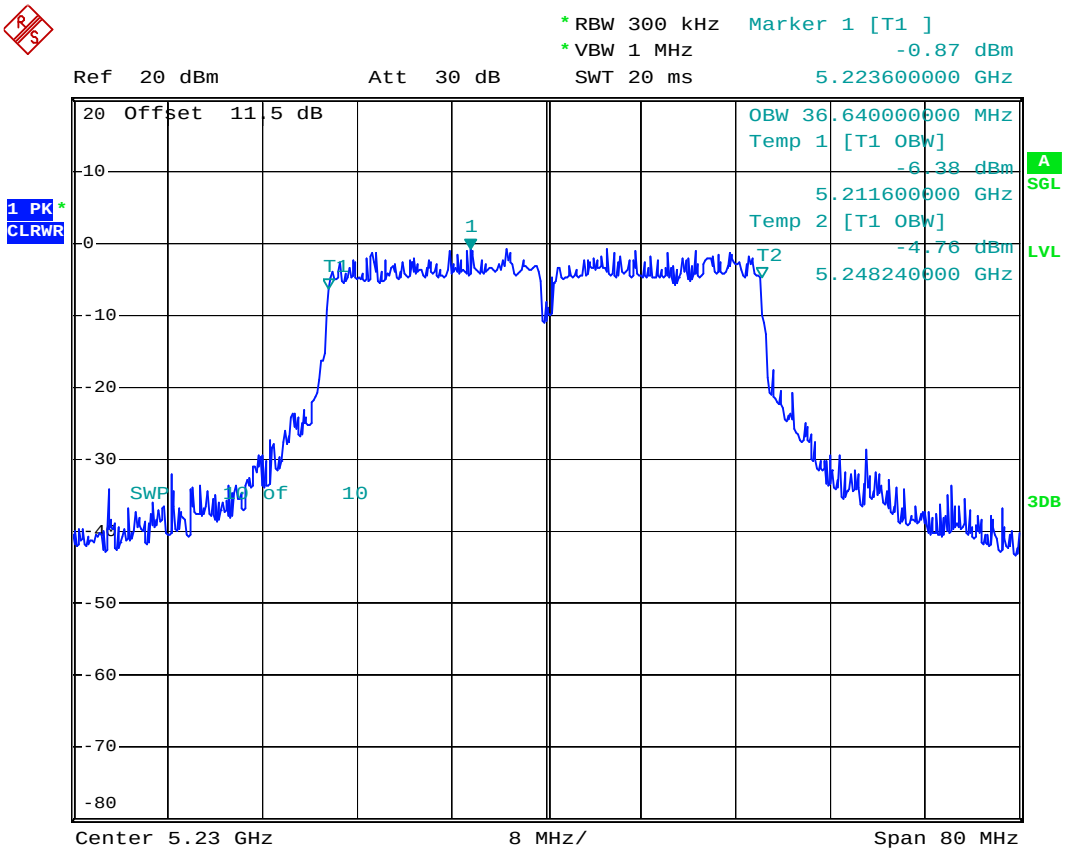
Date: 1.APR.2008 14:30:22

6.7.2.2 Sub-band 1 802.11na HT40 Mode

5190MHz



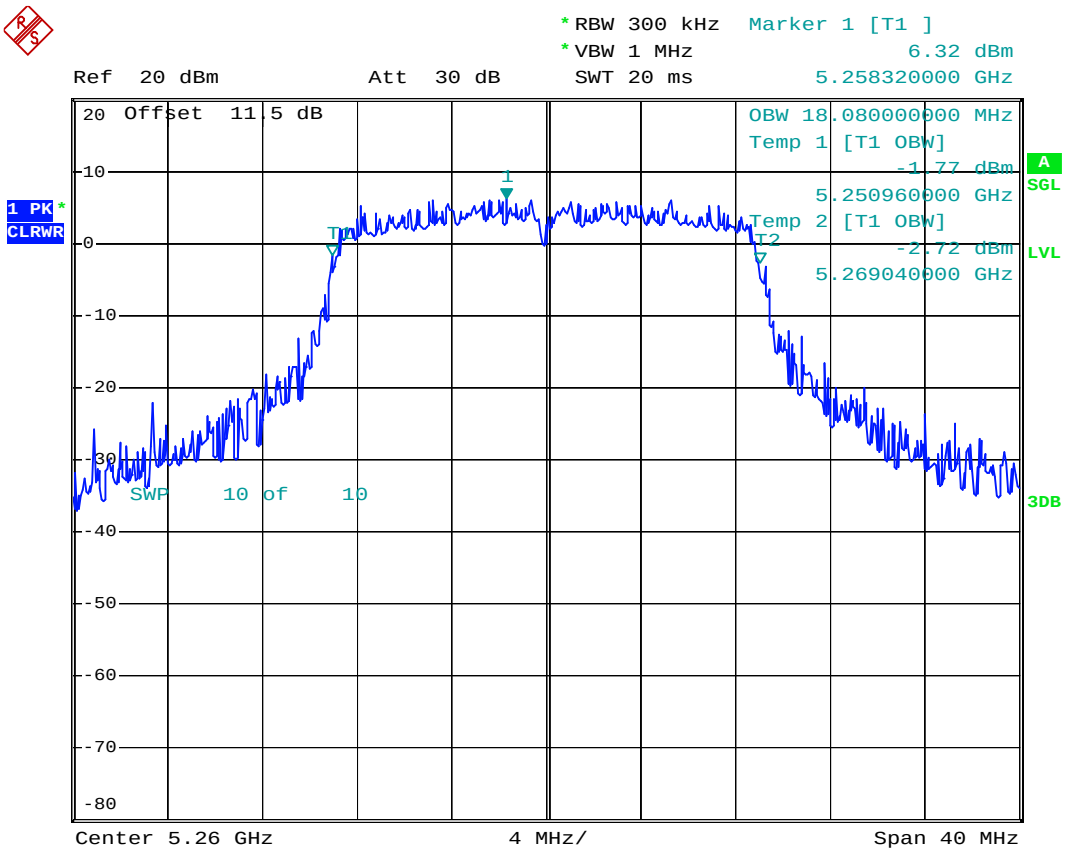
5230MHz



Date: 1.APR.2008 15:18:40

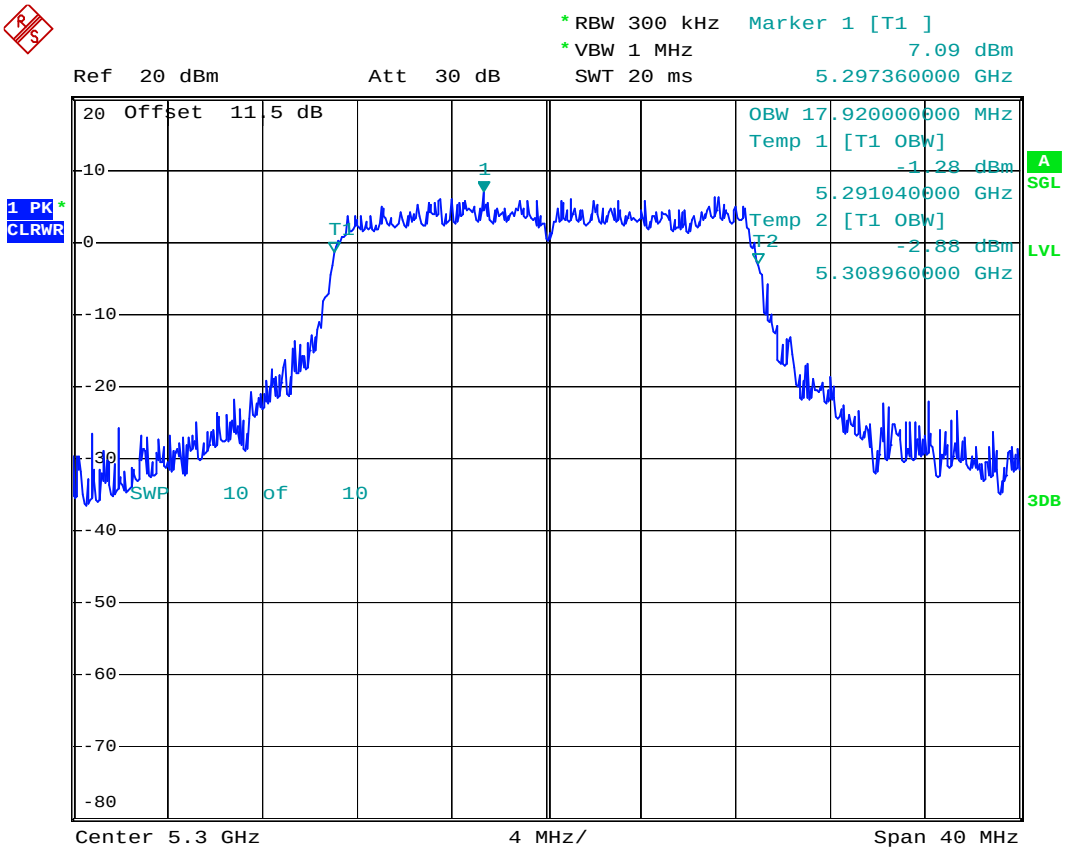
6.7.2.3 Sub-band 2 802.11na HT20 Mode

5260MHz



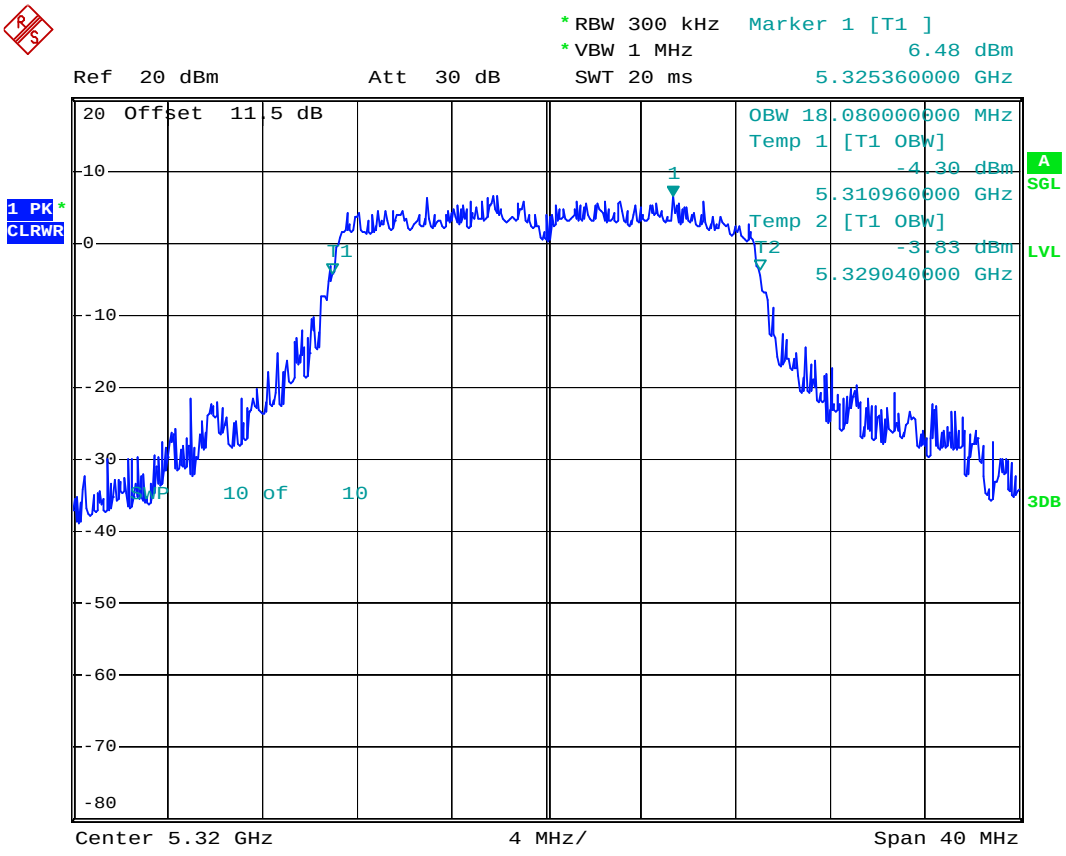
Date: 1.APR.2008 14:32:42

5300MHz



Date: 1.APR.2008 14:33:44

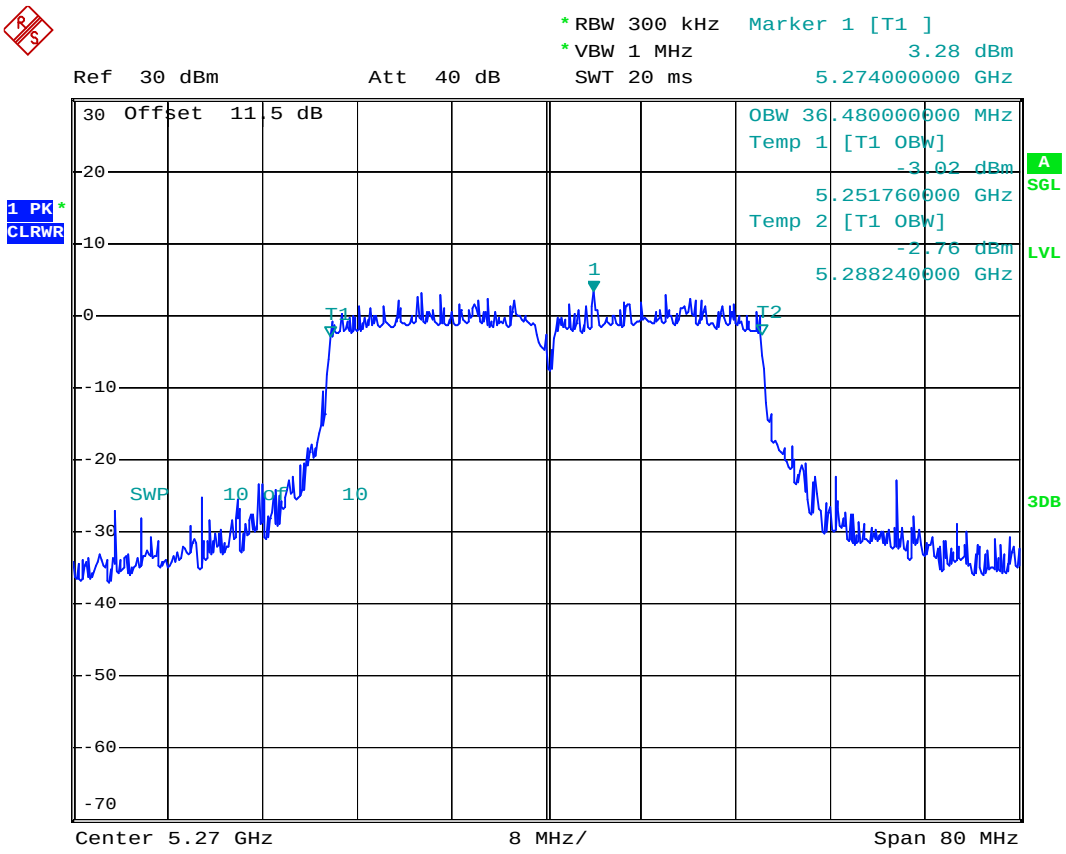
5320MHz



Date: 1.APR.2008 14:35:11

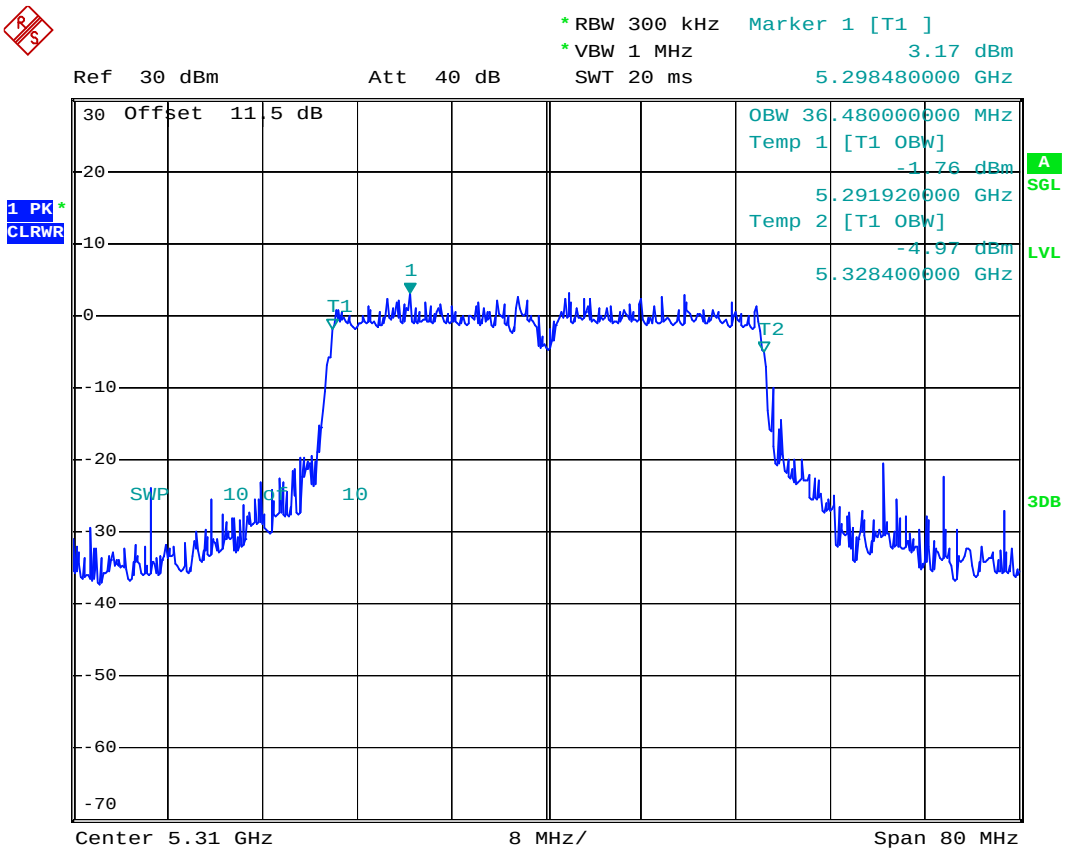
6.7.2.4 Sub-band 2 802.11na HT40 Mode

5270MHz



Date: 1.APR.2008 16:40:14

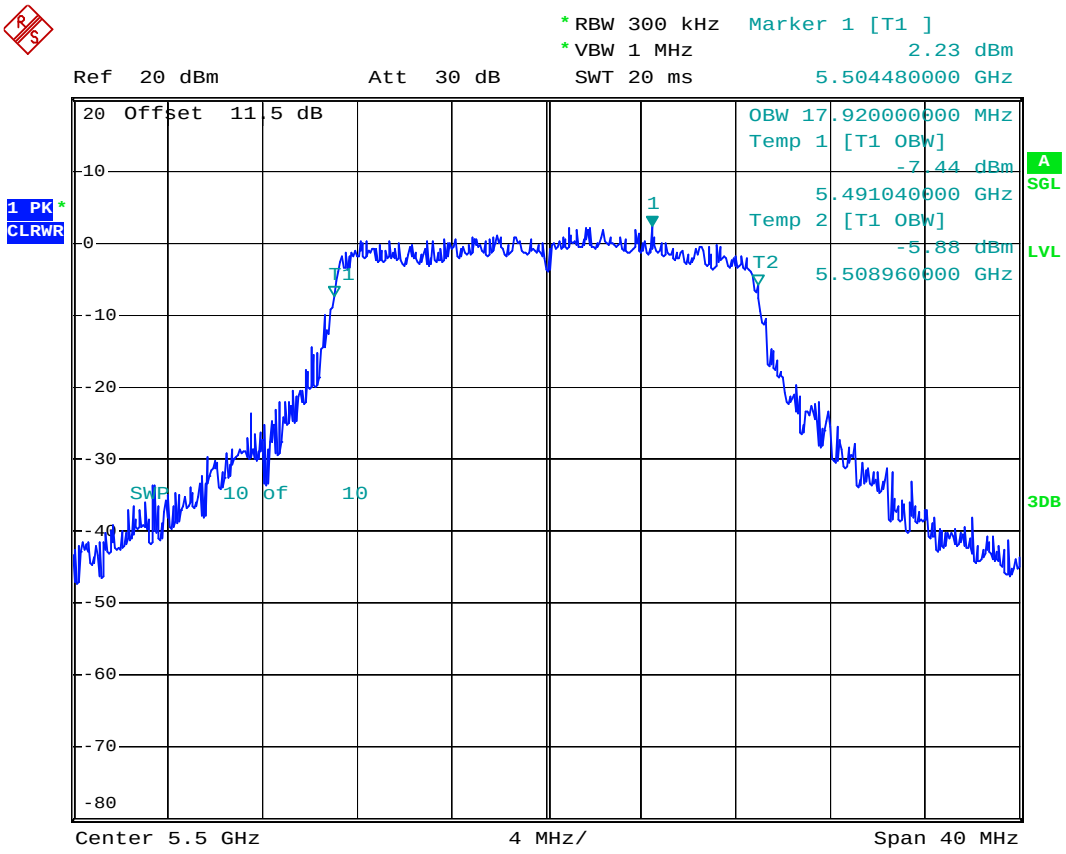
5310MHz



Date: 1.APR.2008 16:41:12

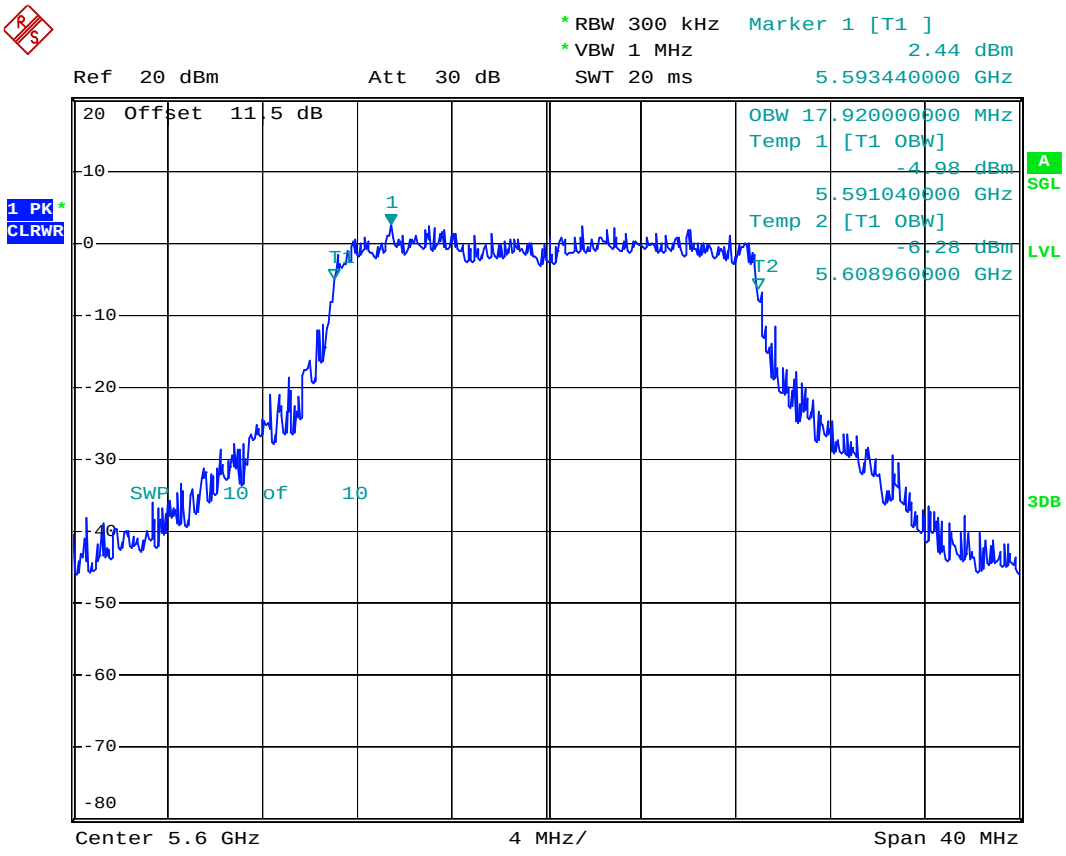
6.7.2.5 Sub-band 3 802.11na HT20 Mode

5500MHz



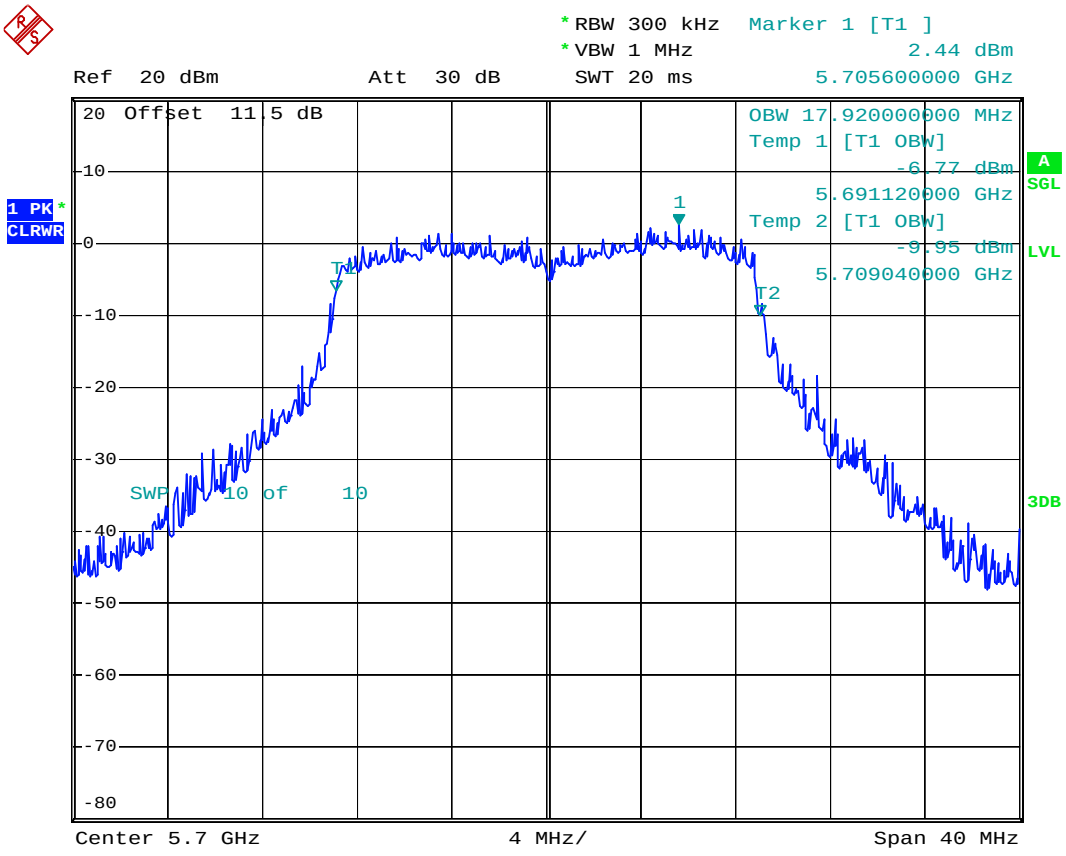
Date: 1.APR.2008 14:47:55

5600MHz



Date: 1.APR.2008 14:49:03

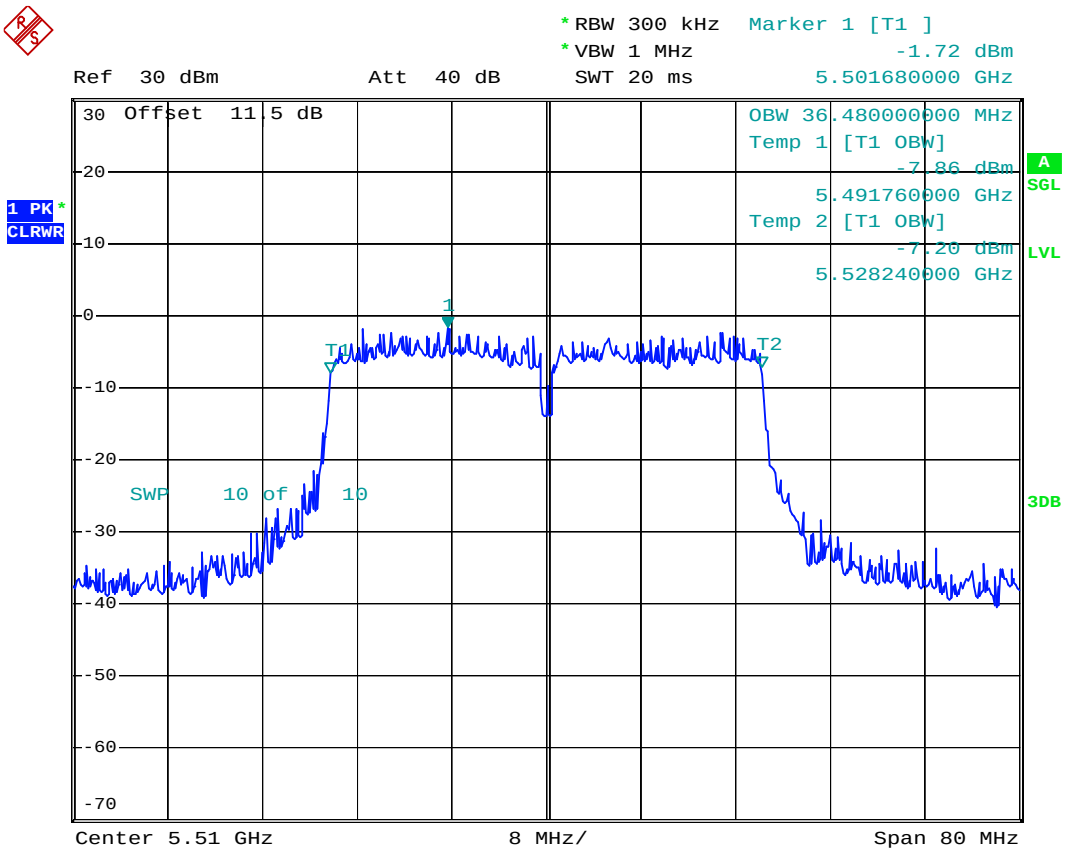
5700MHz



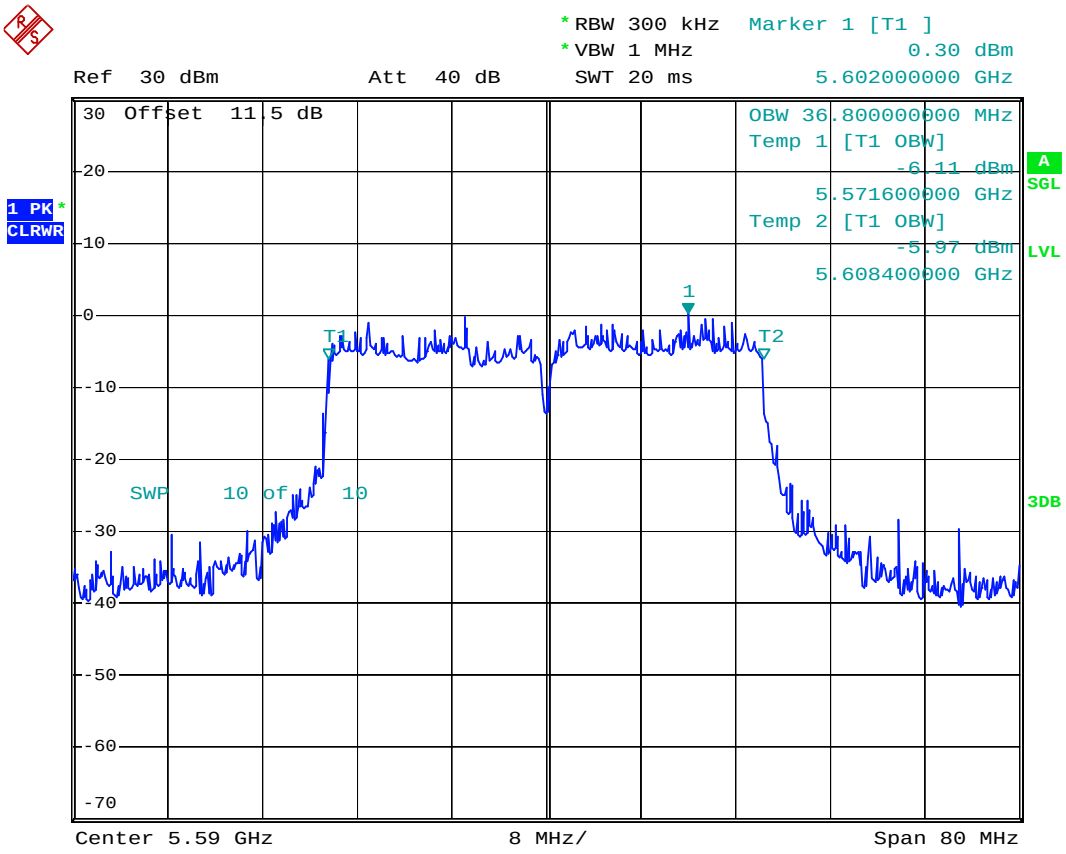
Date: 1.APR.2008 14:49:39

6.7.2.6 Sub-band 3 802.11na HT40 Mode

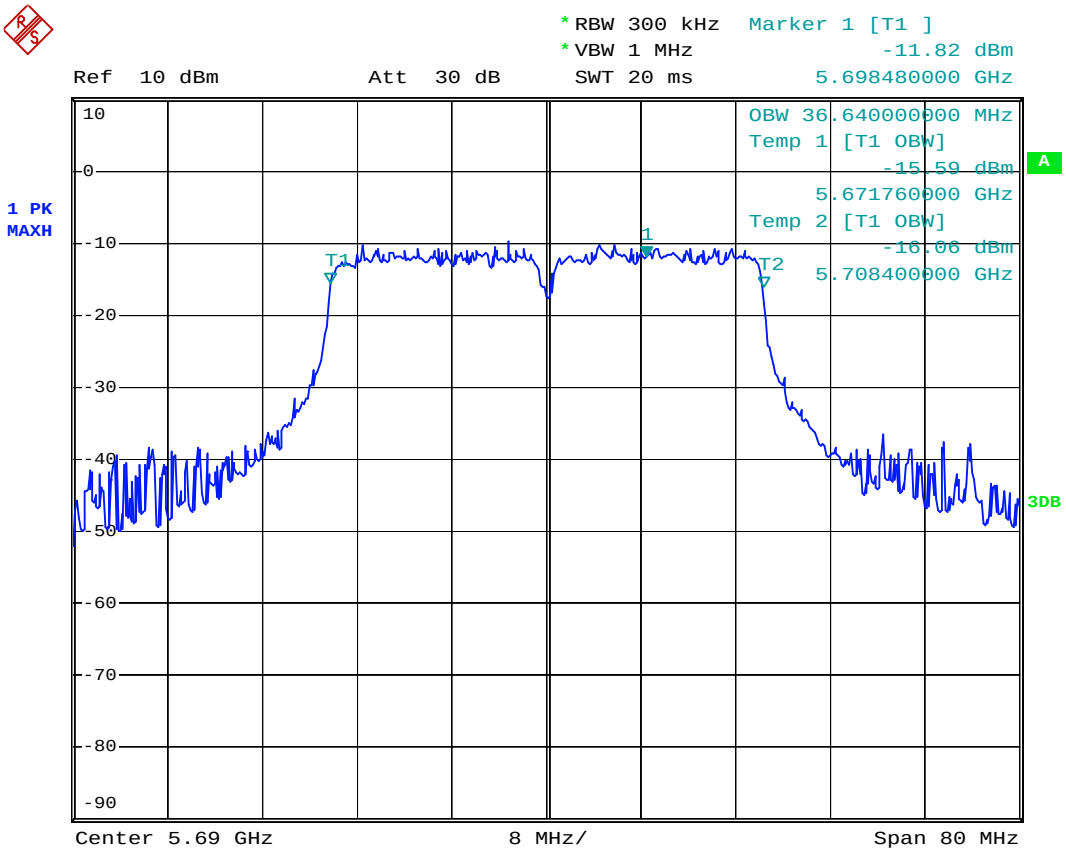
5510MHz



5590MHz


*RBW 300 kHz
*VBW 1 MHz
Ref 30 dBm
Att 40 dB
SWT 20 ms
Marker 1 [T1]
0.30 dBm
5.602000000 GHz
OBW 36.800000000 MHz
Temp 1 [T1 OBW]
-6.11 dBm
5.571600000 GHz
Temp 2 [T1 OBW]
-5.97 dBm
5.608400000 GHz
30 Offset 11.5 dB
1 PK
CLRWR
A
SGL
LVL
3DB
SWP 10 of 10
Center 5.59 GHz
8 MHz/
Span 80 MHz
Date: 1.APR.2008 16:43:17

5690MHz

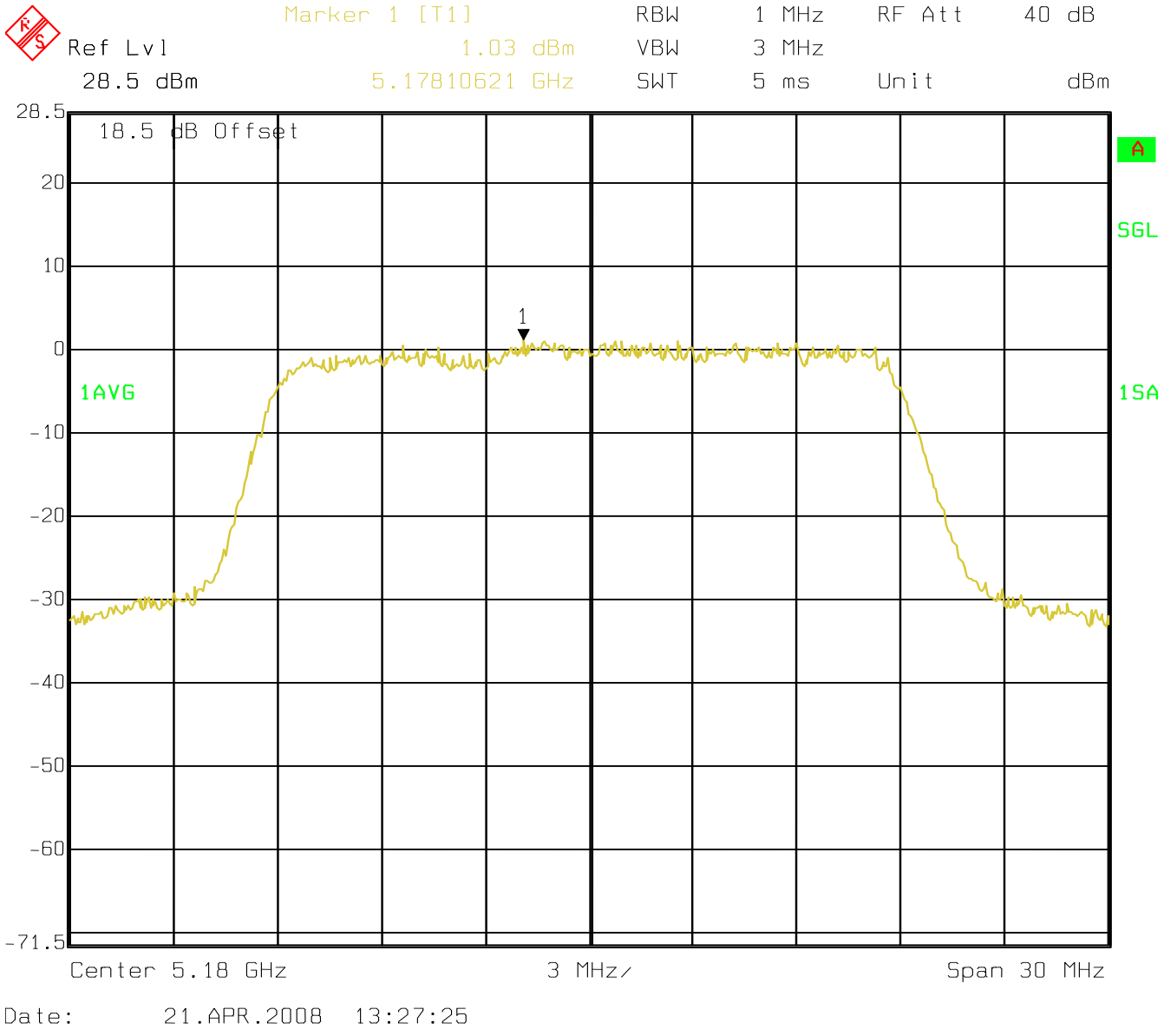


Date: 5.APR.2008 14:26:01

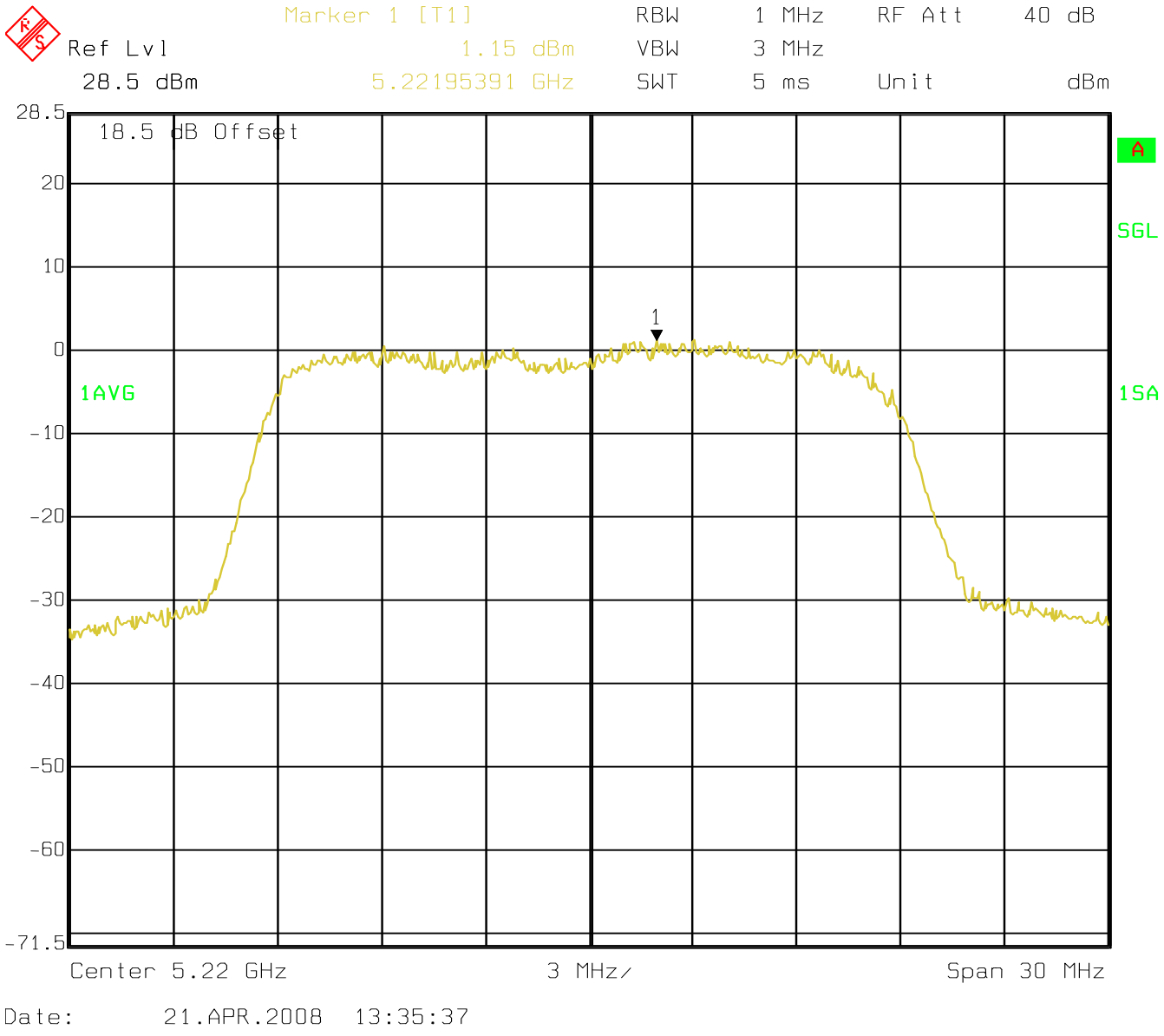
6.7.3 **Power Spectral Density**

6.7.3.1 Sub-band 1 802.11na HT20 mode

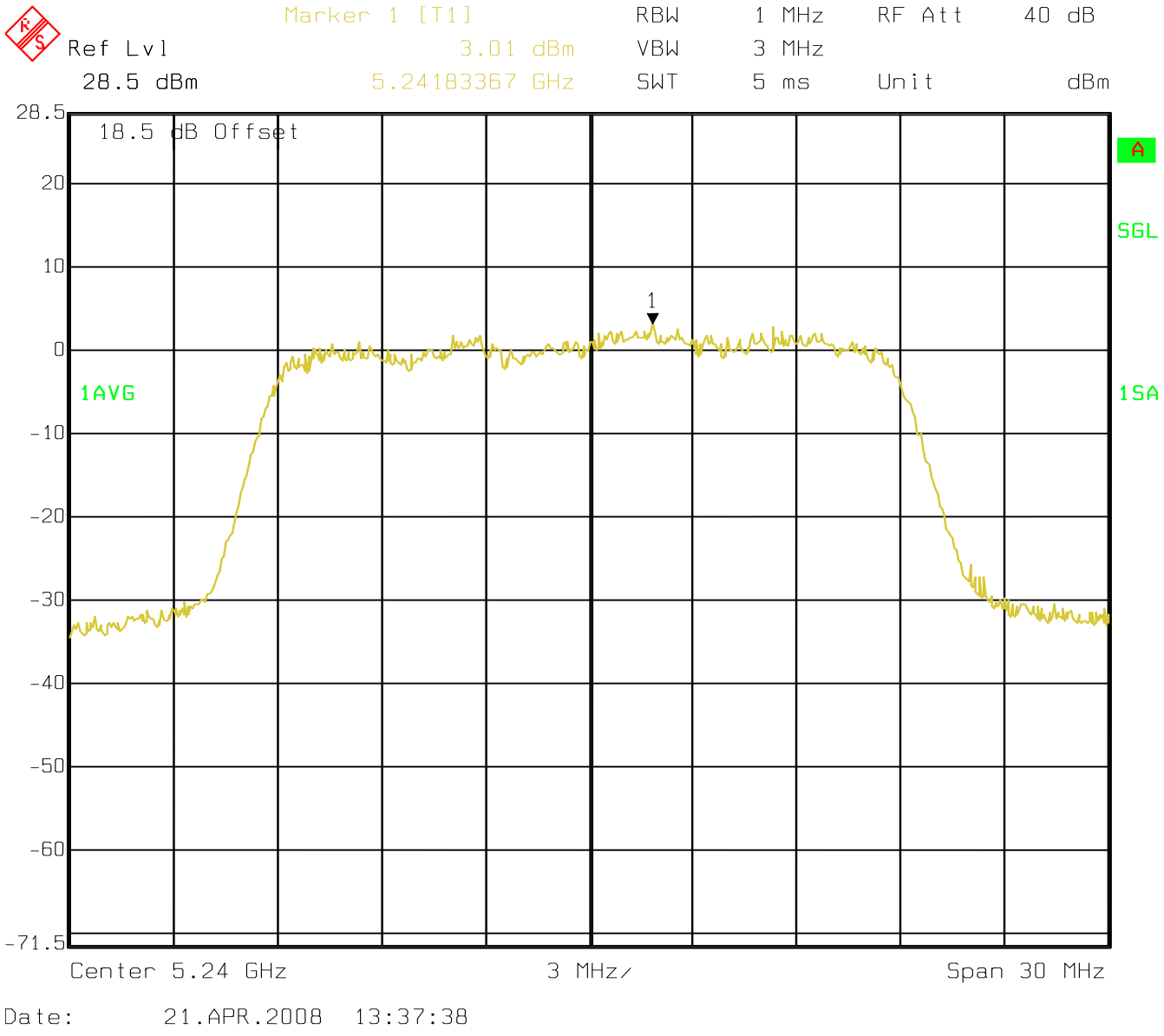
5180MHz



5220 MHz

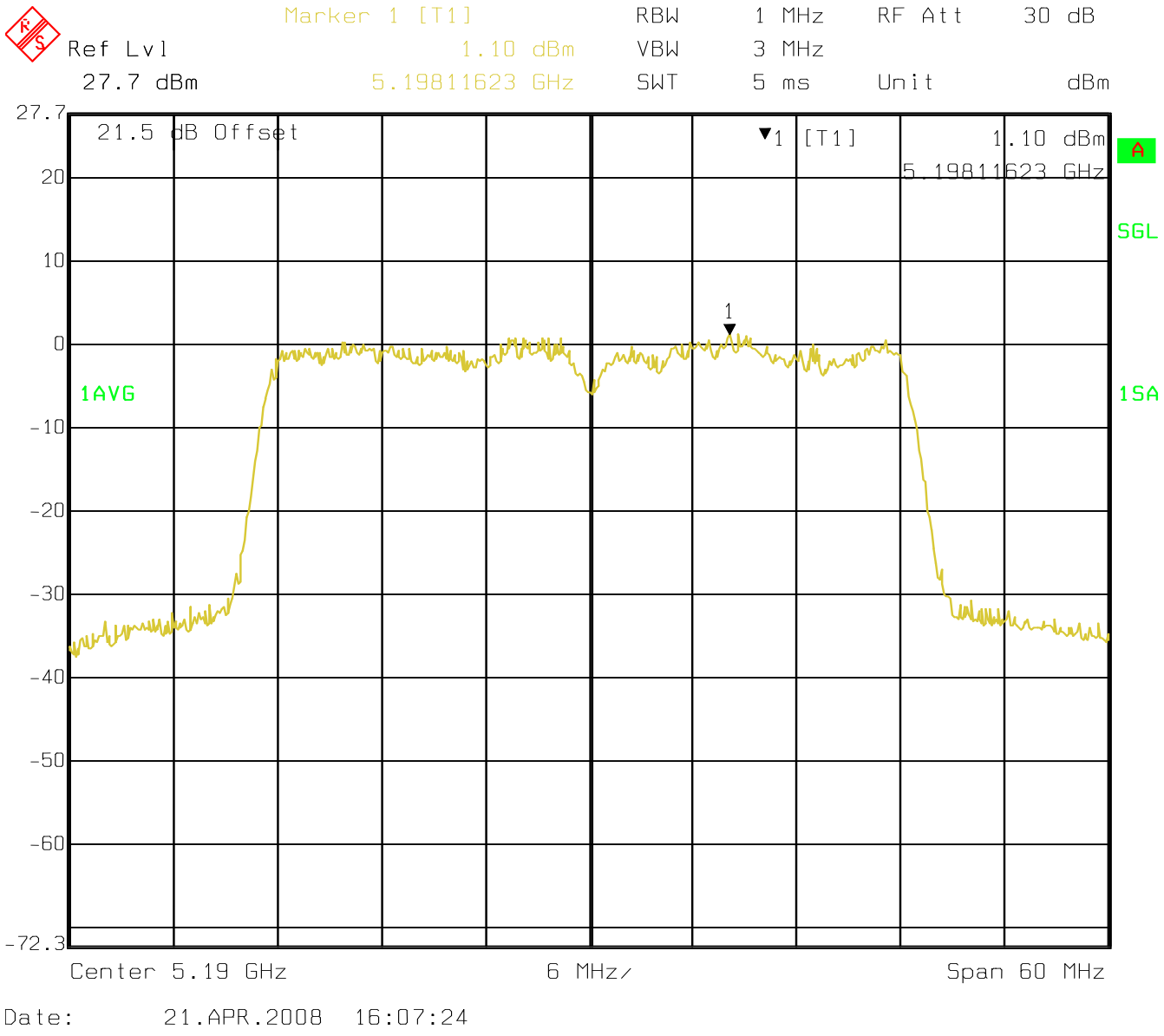

Marker 1 [T1]
1.15 dBm
5.22195391 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 40 dB
Unit dBm
Ref Lvl
28.5 dBm
18.5 dB Offset
28.5
20
10
0
-10
-20
-30
-40
-50
-60
-71.5
1AVG
1SA
SGL
A
1
Center 5.22 GHz
3 MHz/
Span 30 MHz
Date: 21.APR.2008 13:35:37

5240 MHz

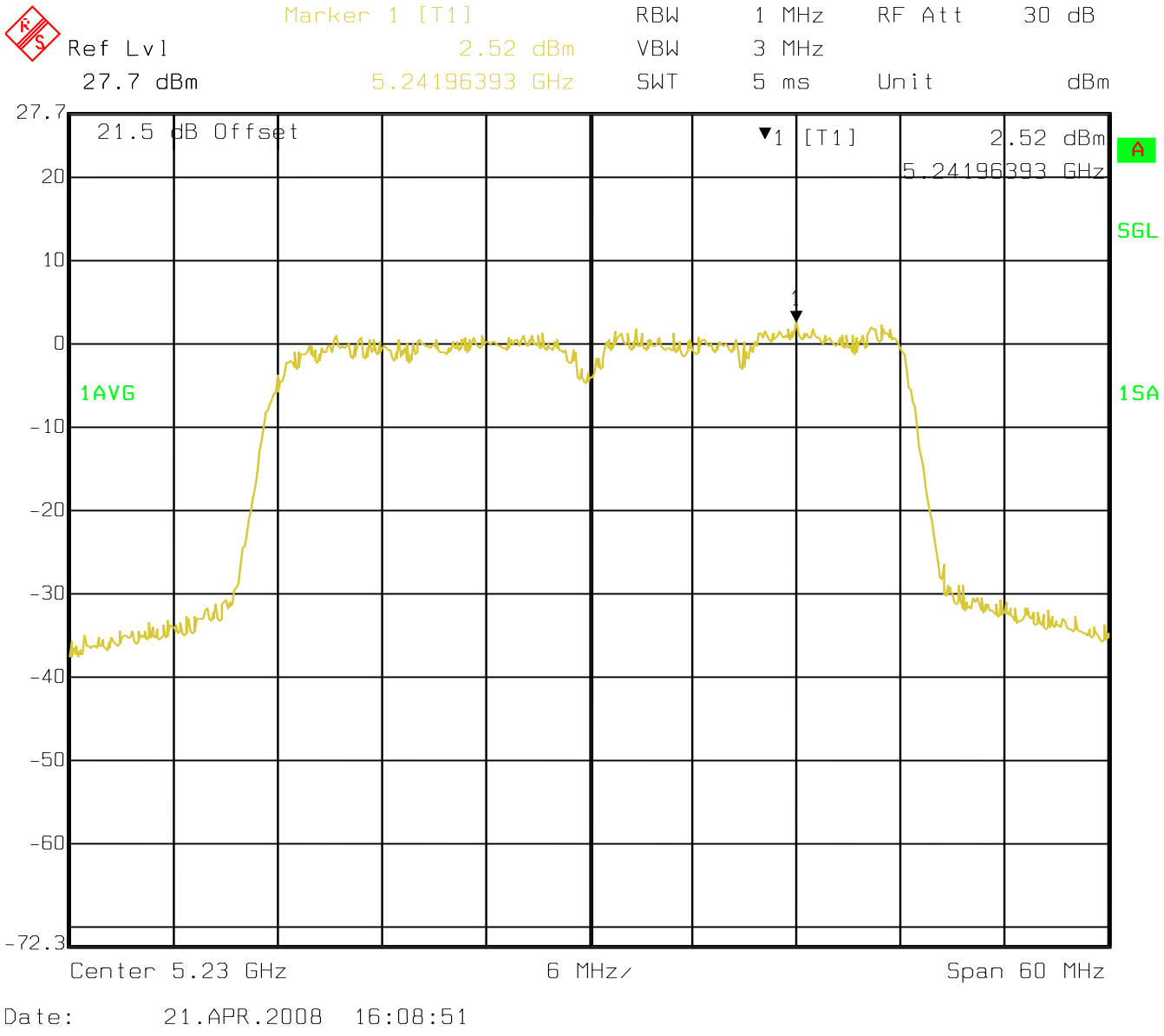

Marker 1 [T1]
Ref Lvl
28.5 dBm
3.01 dBm
5.24183367 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 40 dB
Unit dBm
18.5 dB Offset
1AVG
SGL
1SA
Center 5.24 GHz
3 MHz/
Span 30 MHz
Date: 21.APR.2008 13:37:38

6.7.3.2 Sub-band 1 802.11na HT40 mode

5190 MHz

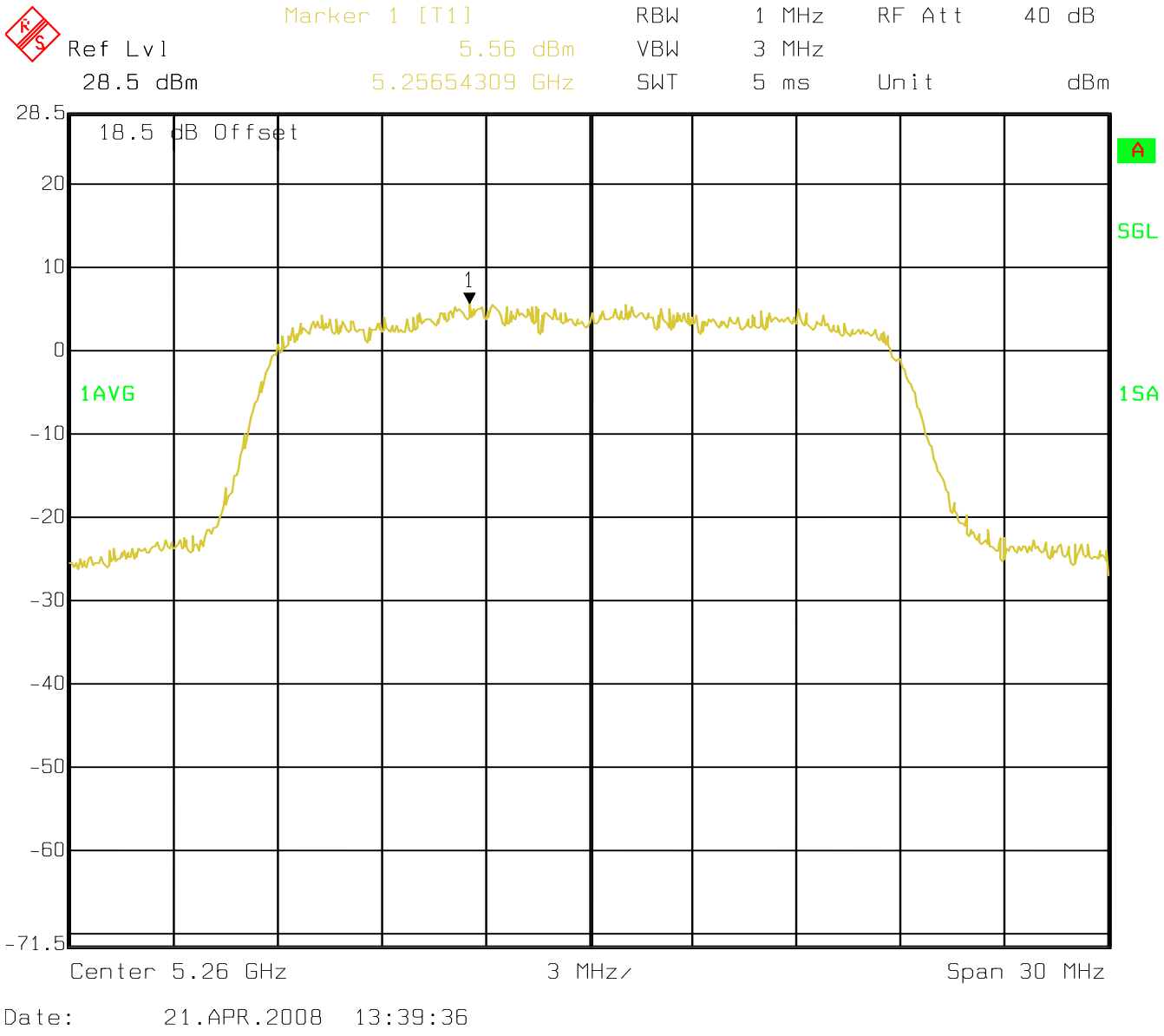


5230MHz

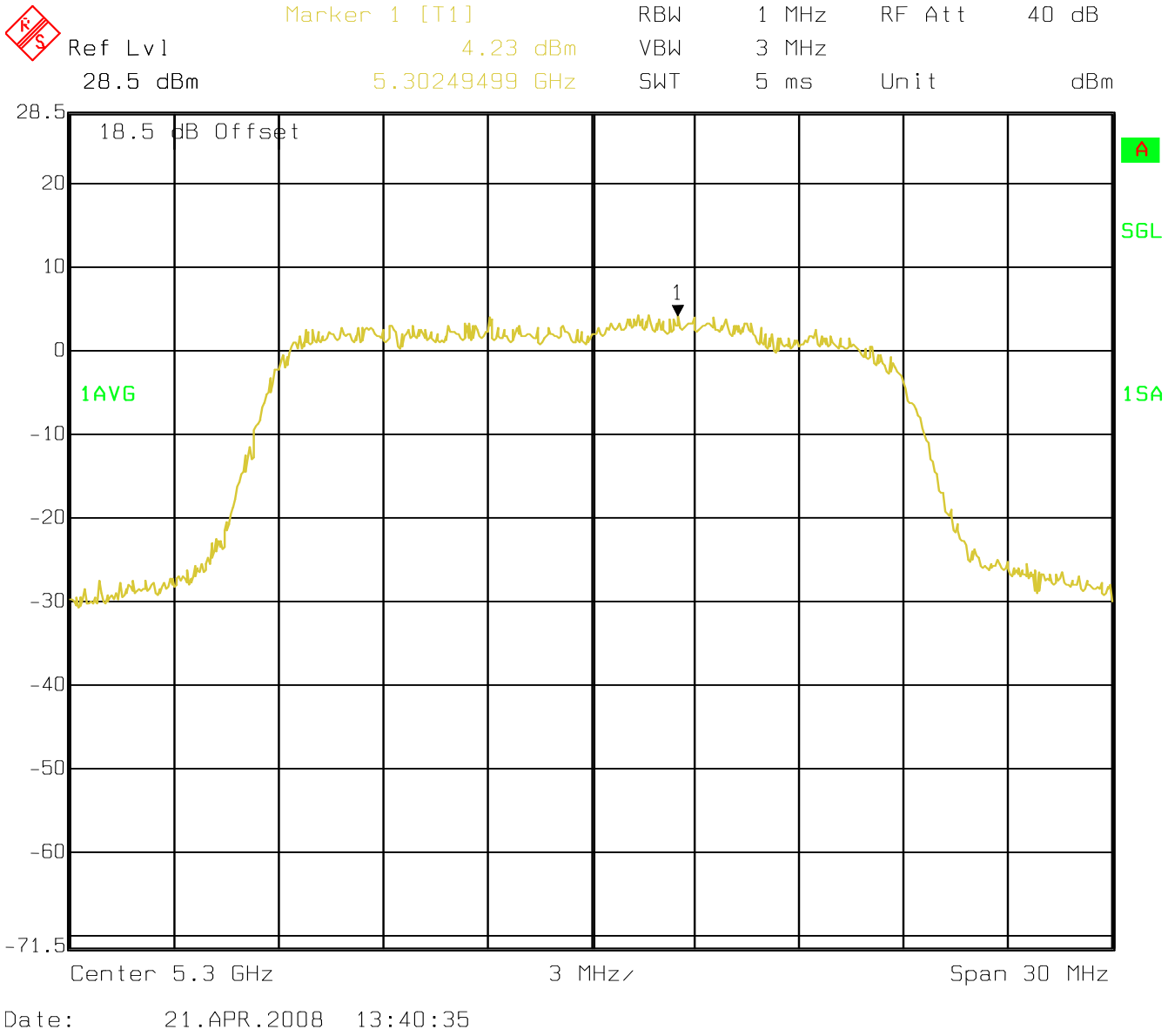

Marker 1 [T1]
RBW 1 MHz
RF Att 30 dB
Ref Lvl
2.52 dBm
VBW 3 MHz
27.7 dBm
5.24196393 GHz
SWT 5 ms
Unit dBm
27.7
21.5 dB Offset
▼1 [T1]
2.52 dBm
5.24196393 GHz
A
20
SGL
10
0
1AVG
1SA
-10
-20
-30
-40
-50
-60
-72.3
Center 5.23 GHz
6 MHz/
Span 60 MHz
Date: 21.APR.2008 16:08:51

6.7.3.3 Sub-band 2 802.11na HT20 mode

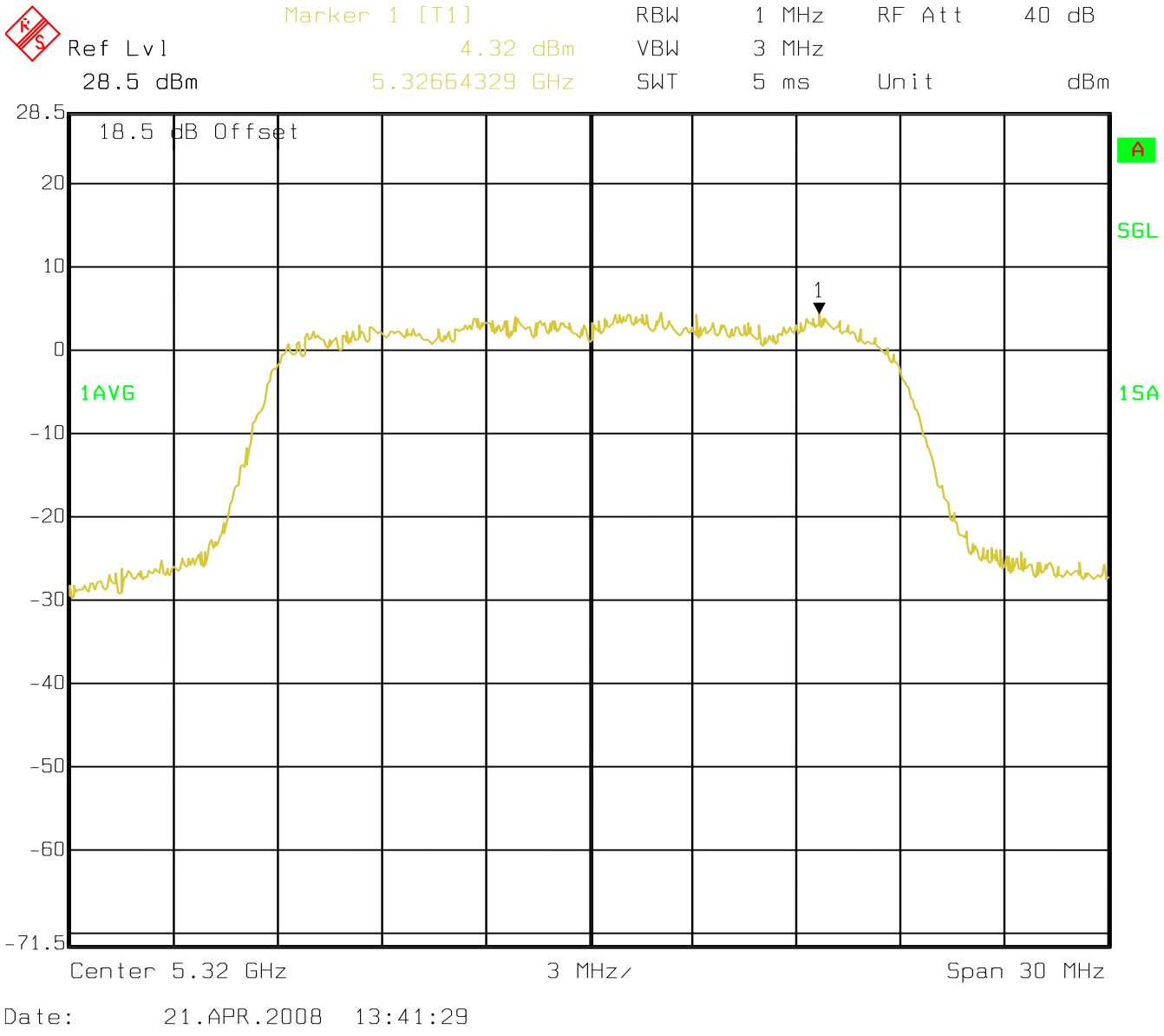
5260MHz



5300MHz

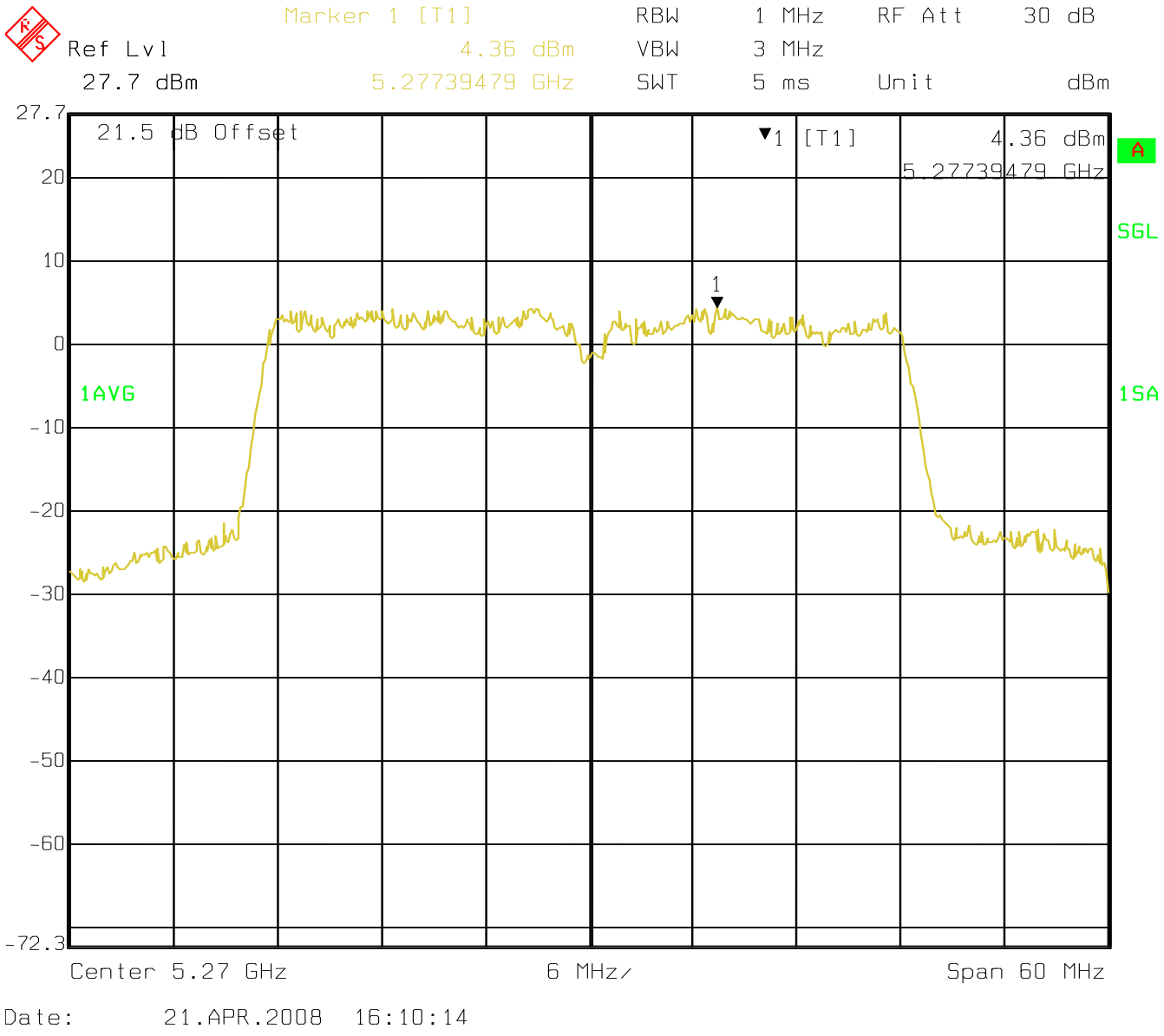

Marker 1 [T1]
Ref Lvl
28.5 dBm
4.23 dBm
5.30249499 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 40 dB
Unit dBm
18.5 dB Offset
28.5
20
10
0
-10
-20
-30
-40
-50
-60
-71.5
1AVG
A
SGL
1SA
Center 5.3 GHz
3 MHz/
Span 30 MHz
Date: 21.APR.2008 13:40:35

5320MHz

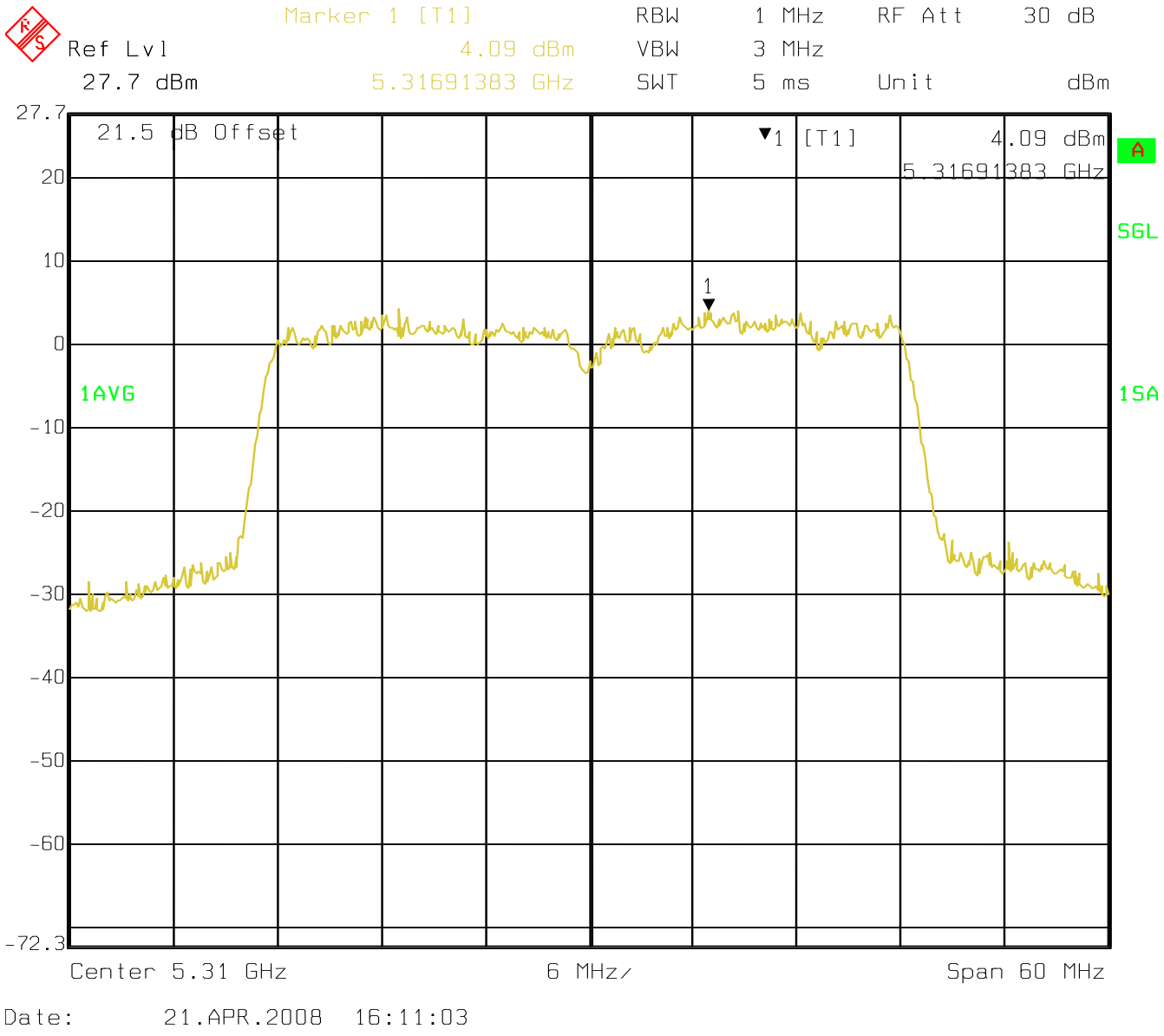

Marker 1 [T1]
Ref Lvl
28.5 dBm
4.32 dBm
5.32664329 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 40 dB
Unit dBm
18.5 dB Offset
1AVG
SGL
1SA
Center 5.32 GHz
3 MHz/
Span 30 MHz
Date: 21.APR.2008 13:41:29

6.7.3.4 Sub-band 2 802.11na HT40 mode

5270MHz

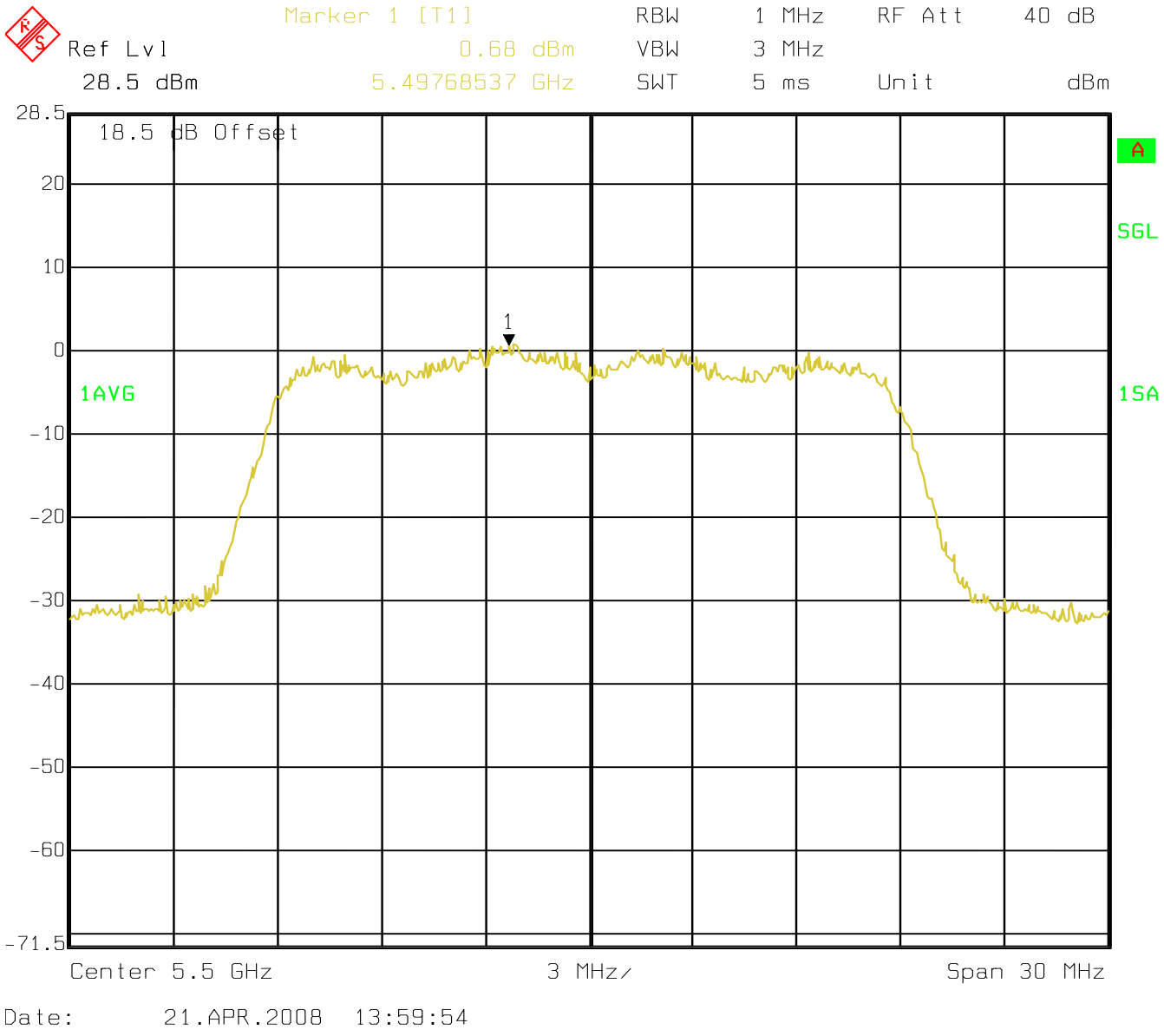


5310MHz

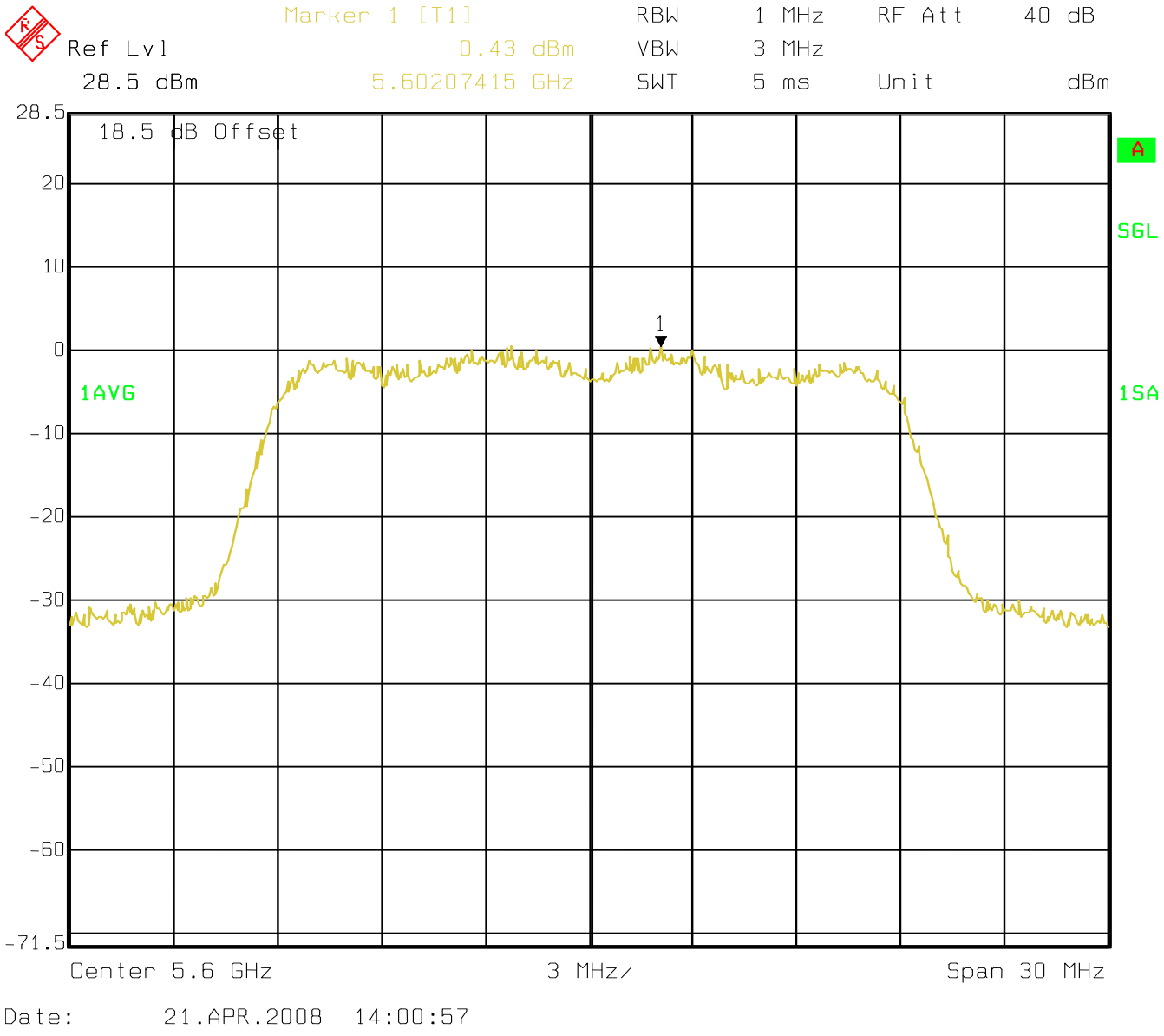

Marker 1 [T1]
RBW 1 MHz
RF Att 30 dB
Ref Lvl
4.09 dBm
VBW 3 MHz
27.7 dBm
5.31691383 GHz
SWT 5 ms
Unit dBm
21.5 dB Offset
1 [T1]
4.09 dBm
5.31691383 GHz
A
SGL
1AVG
1SA
27.7
20
10
0
-10
-20
-30
-40
-50
-60
-72.3
Center 5.31 GHz
6 MHz/
Span 60 MHz
Date: 21.APR.2008 16:11:03

6.7.3.5 Sub-band 3 802.11na HT20 mode

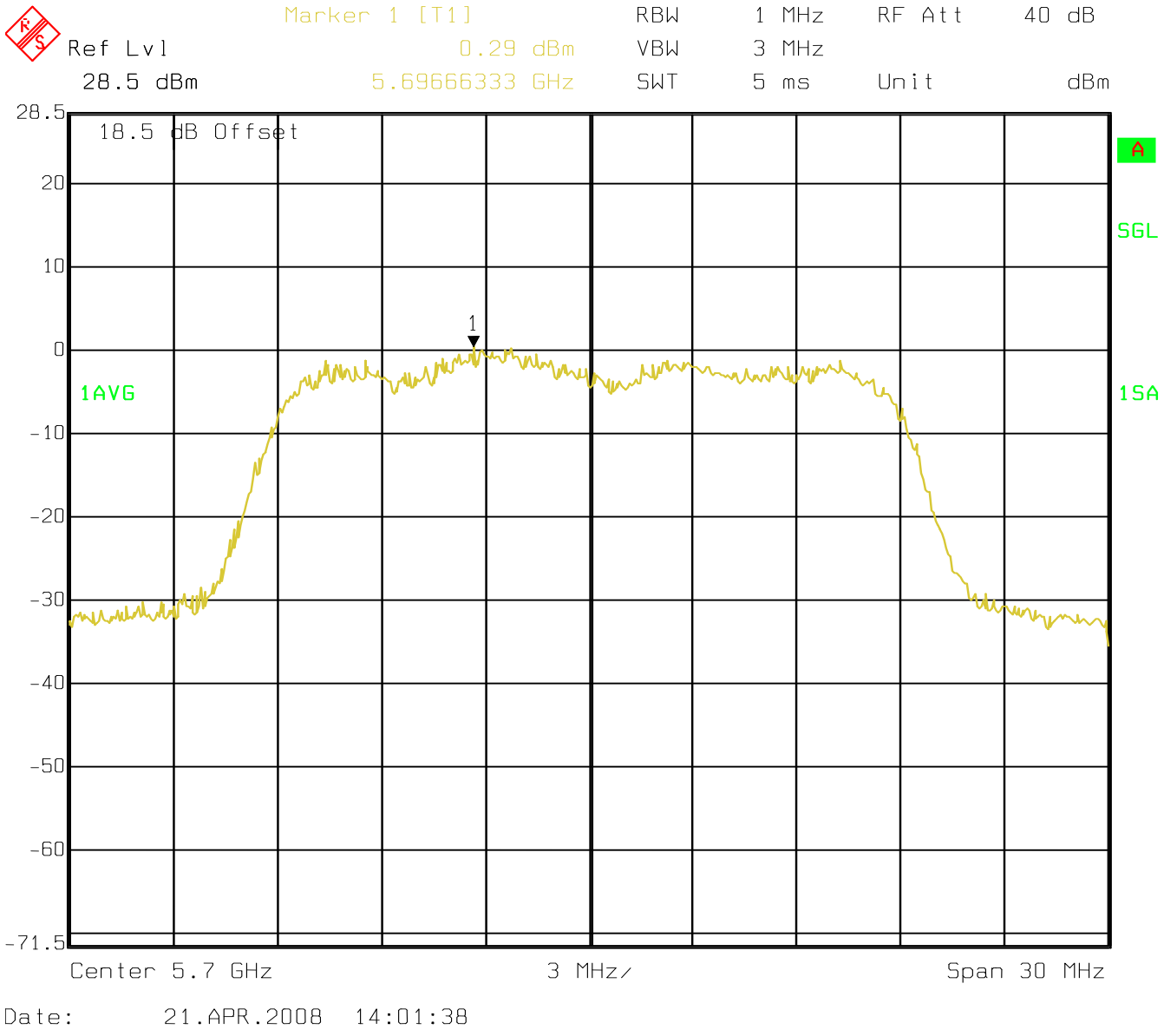
5500MHz



5600MHz

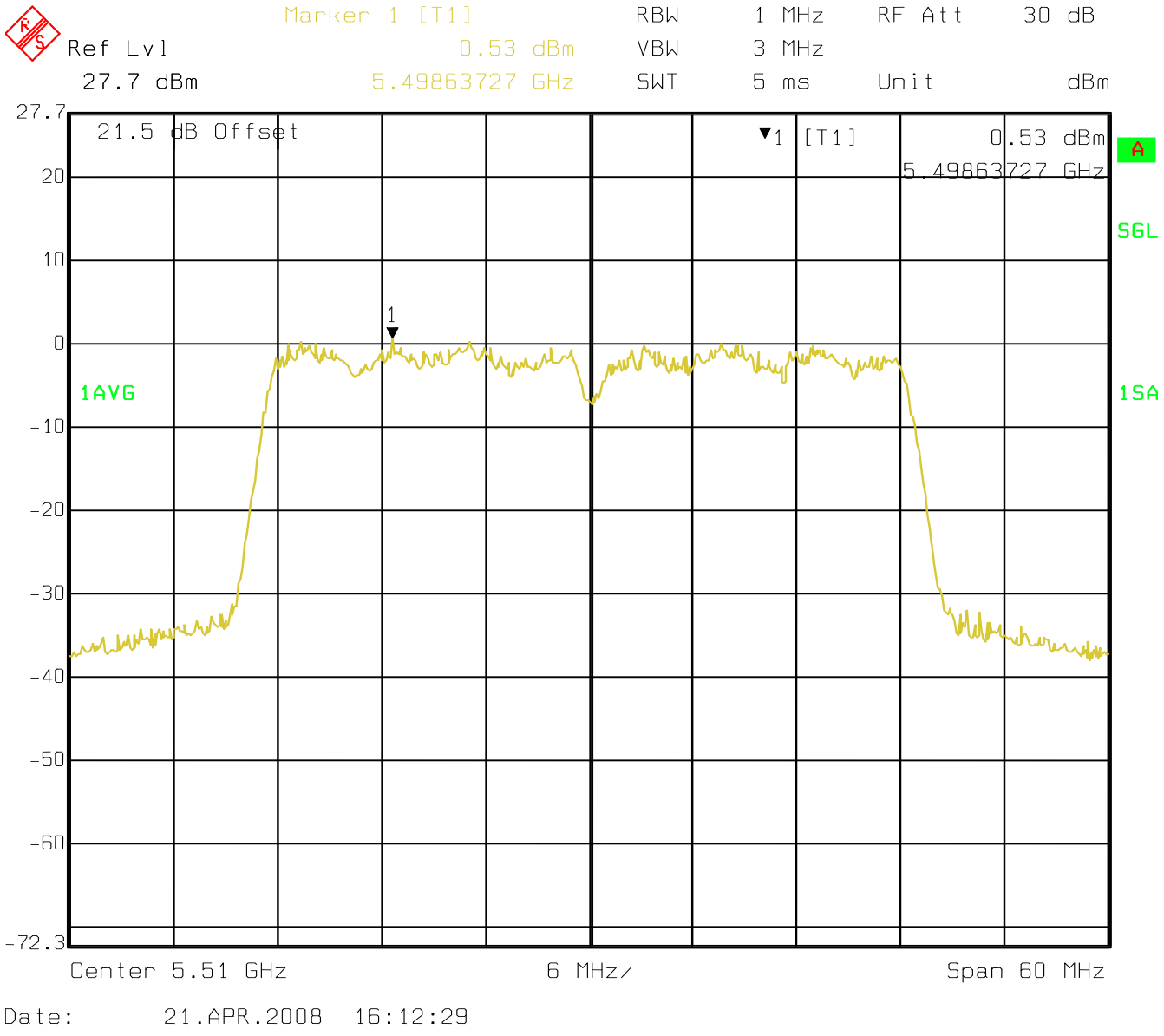

Marker 1 [T1]
0.43 dBm
5.60207415 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 40 dB
Unit dBm
Ref Lvl
28.5 dBm
18.5 dB Offset
28.5
20
10
0
-10
-20
-30
-40
-50
-60
-71.5
1AVG
1SA
SGL
A
1
Center 5.6 GHz
3 MHz/
Span 30 MHz
Date: 21.APR.2008 14:00:57

5700MHz

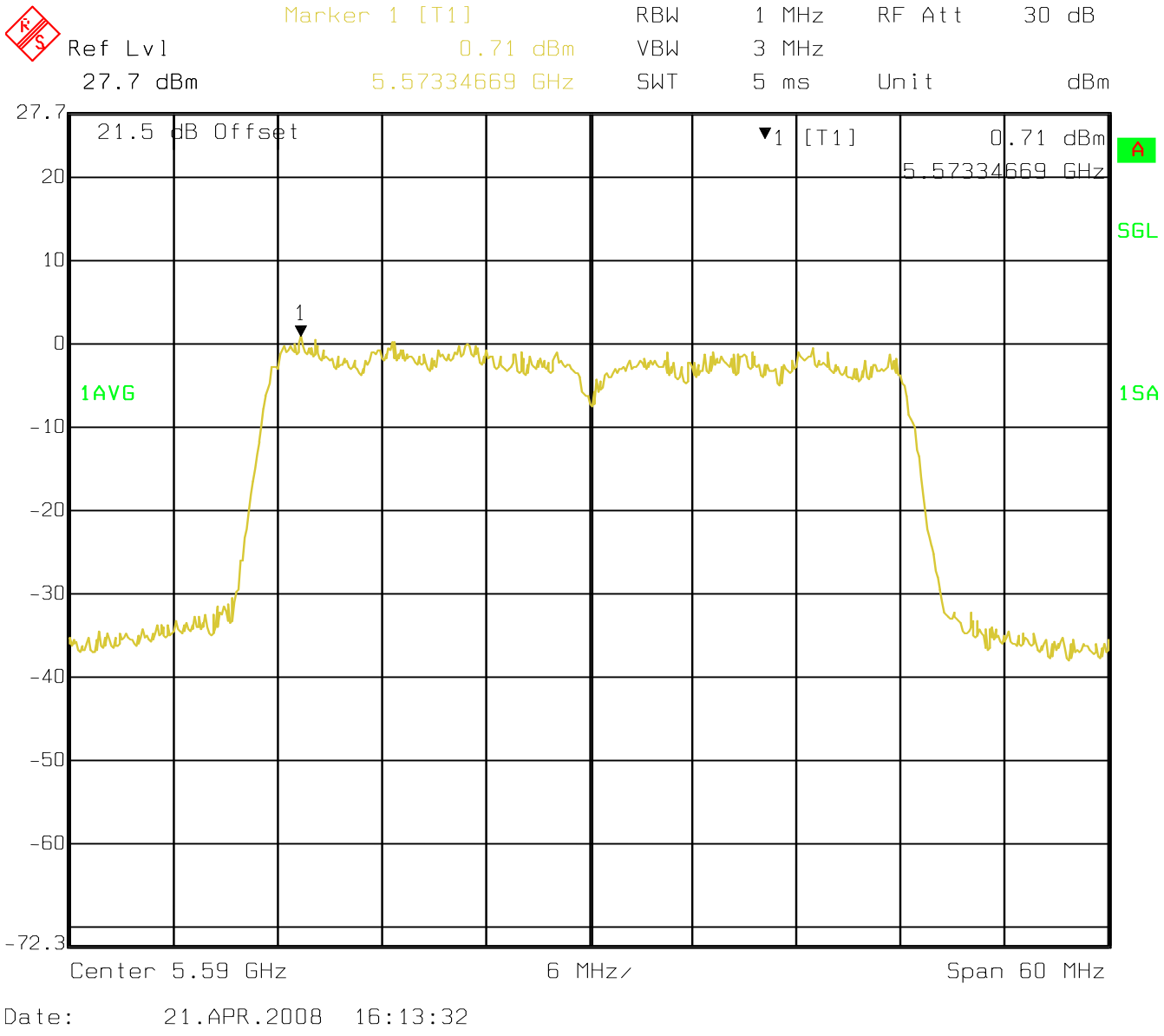

Marker 1 [T1]
Ref Lvl
28.5 dBm
0.29 dBm
5.69666333 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 40 dB
Unit dBm
18.5 dB Offset
28.5
20
10
0
-10
-20
-30
-40
-50
-60
-71.5
1AVG
SGL
A
1SA
Center 5.7 GHz
3 MHz/
Span 30 MHz
Date: 21.APR.2008 14:01:38

6.7.3.6 Sub-band 3 802.11na HT40 mode

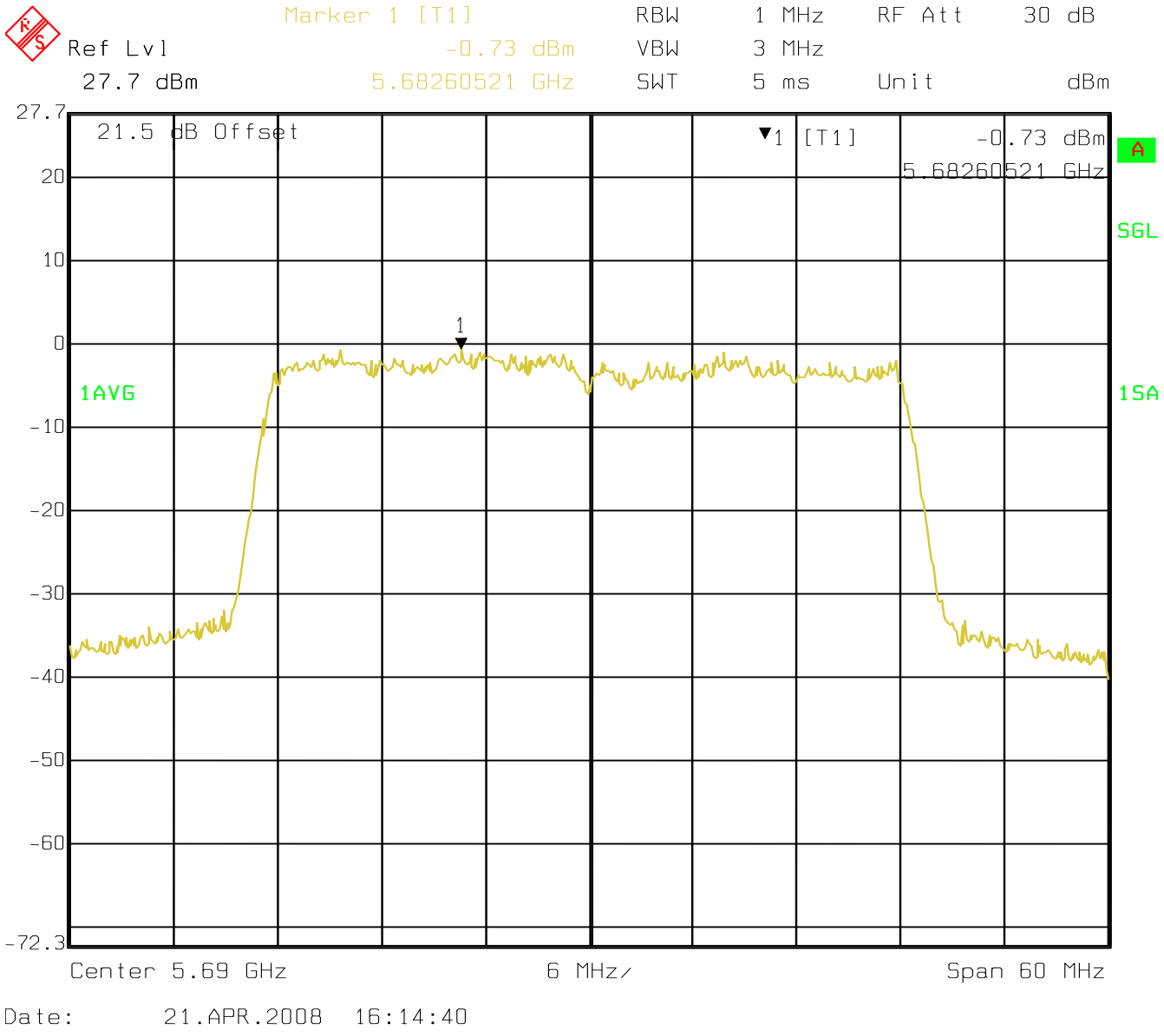
5510MHz



5590MHz


Marker 1 [T1]
RBW 1 MHz
RF Att 30 dB
Ref Lvl
0.71 dBm
VBW 3 MHz
27.7 dBm
5.57334669 GHz
SWT 5 ms
Unit dBm
21.5 dB Offset
1 [T1]
0.71 dBm
5.57334669 GHz
A
SGL
1AVG
1SA
27.7
20
10
0
-10
-20
-30
-40
-50
-60
-72.3
Center 5.59 GHz
6 MHz/
Span 60 MHz
Date: 21.APR.2008 16:13:32

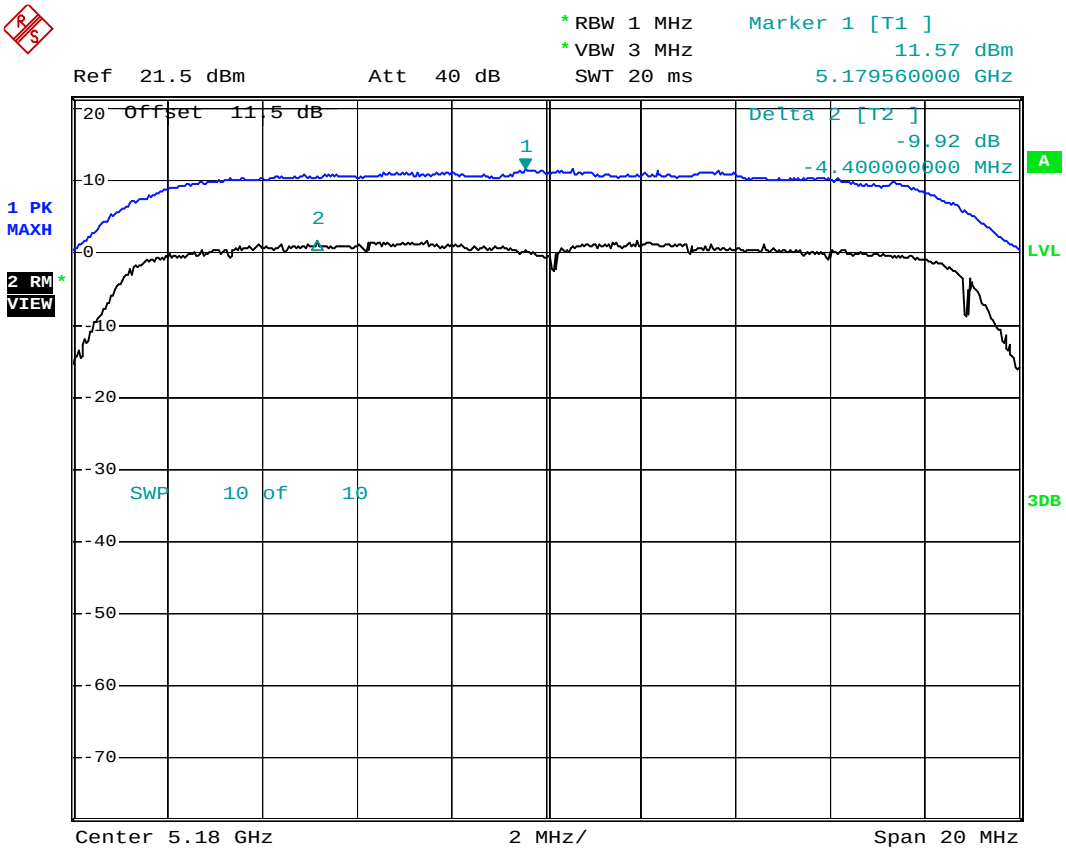
5690MHz


Marker 1 [T1]
-0.73 dBm
5.68260521 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
27.7 dBm
21.5 dB Offset
▼1 [T1]
-0.73 dBm
5.68260521 GHz
A
SGL
1AVG
1SA
27.7
20
10
0
-10
-20
-30
-40
-50
-60
-72.3
Center 5.69 GHz
6 MHz/
Span 60 MHz
Date: 21.APR.2008 16:14:40

6.7.4 **Peak Excursion**

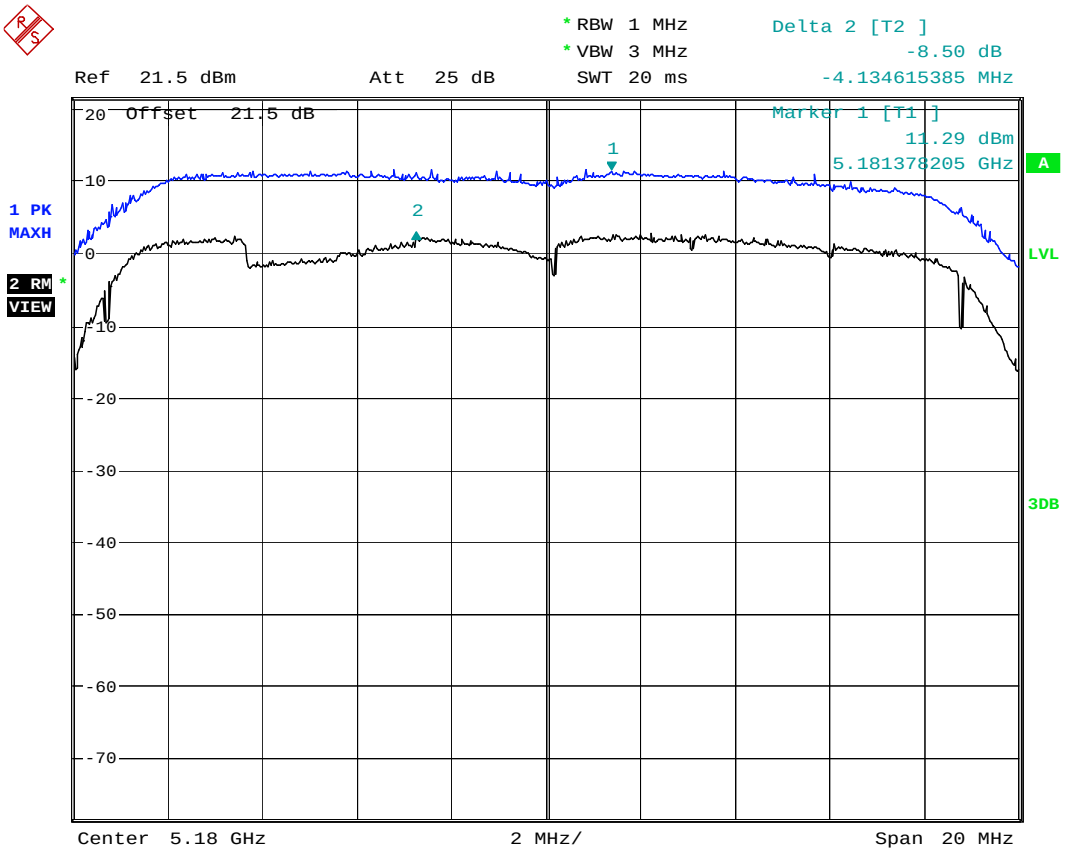
6.7.4.1 Sub-band 1 802.11na HT20 mode

5180MHz Chain A



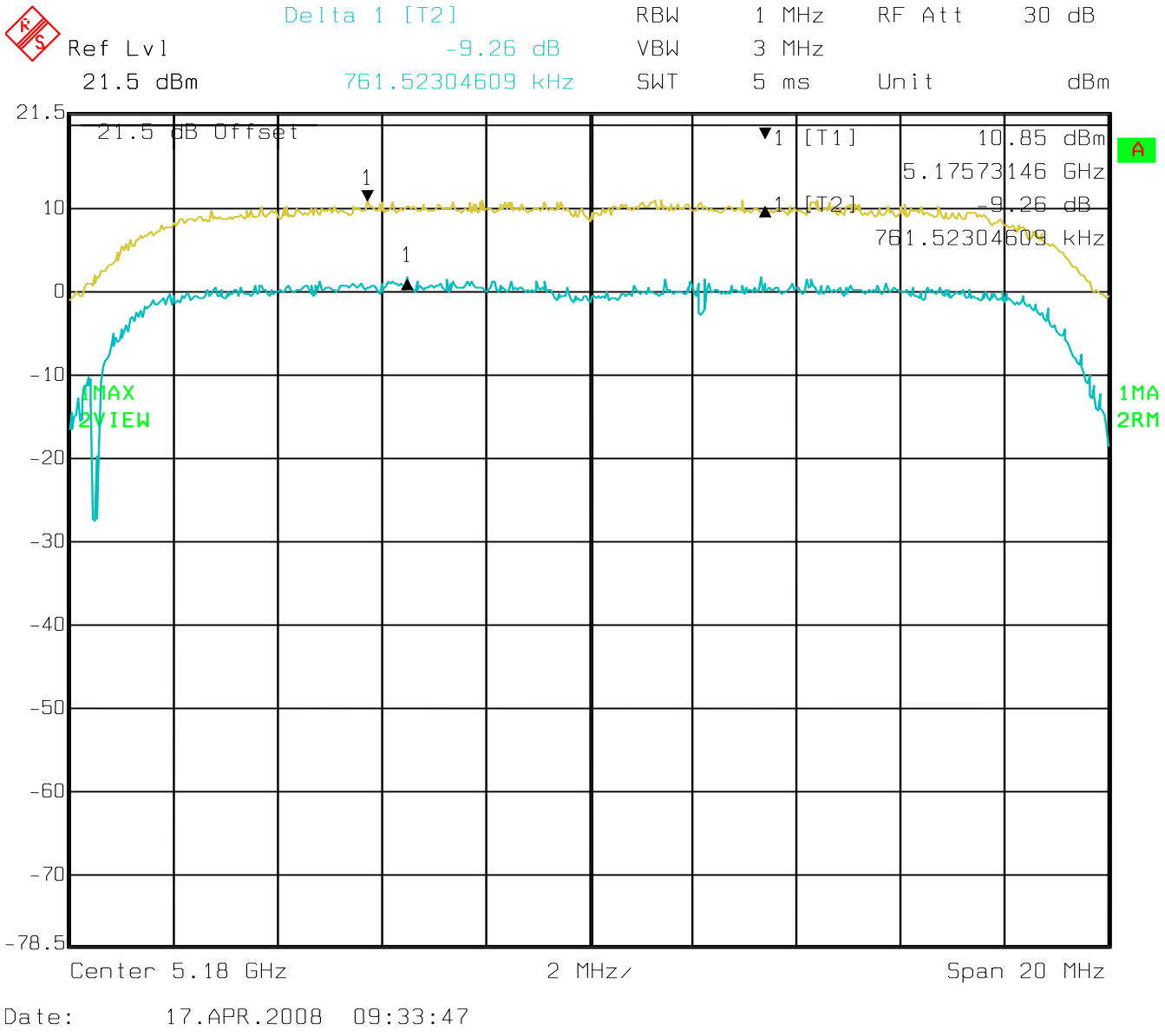
Date: 2.APR.2008 09:46:33

5180MHz Chain B

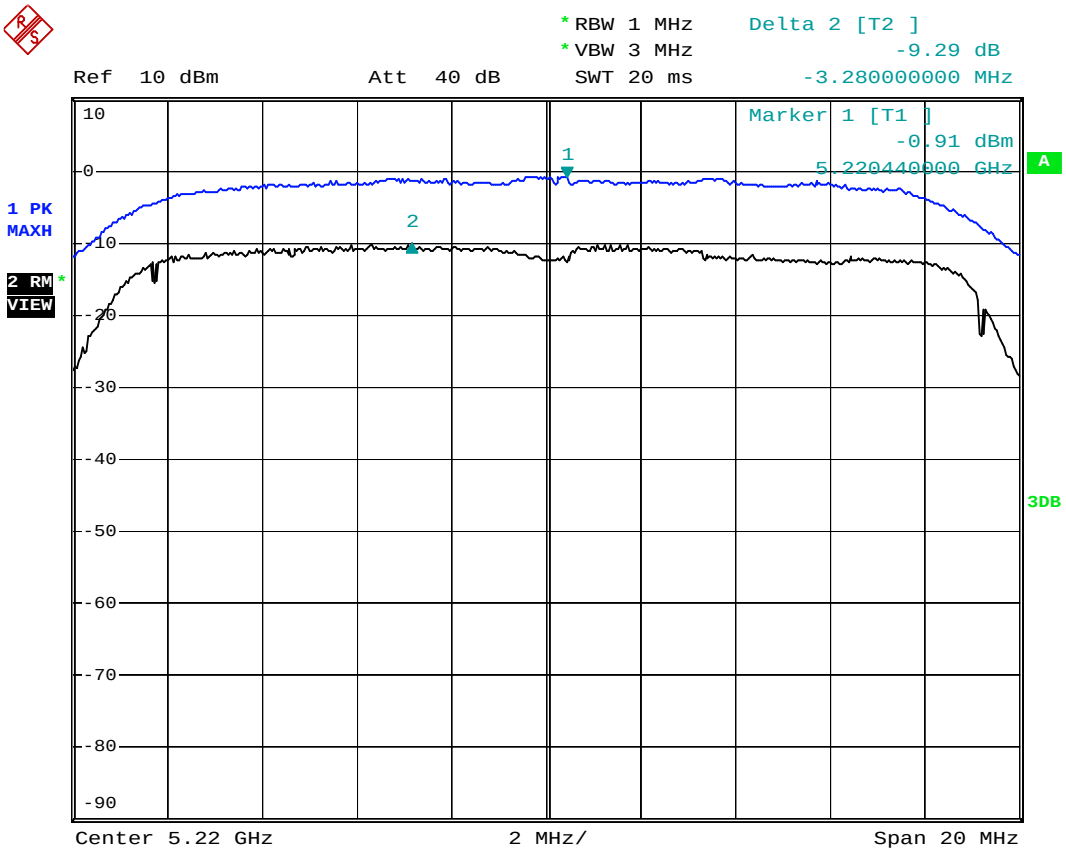


Date: 18.APR.2008 10:14:27

5180MHz Chain C

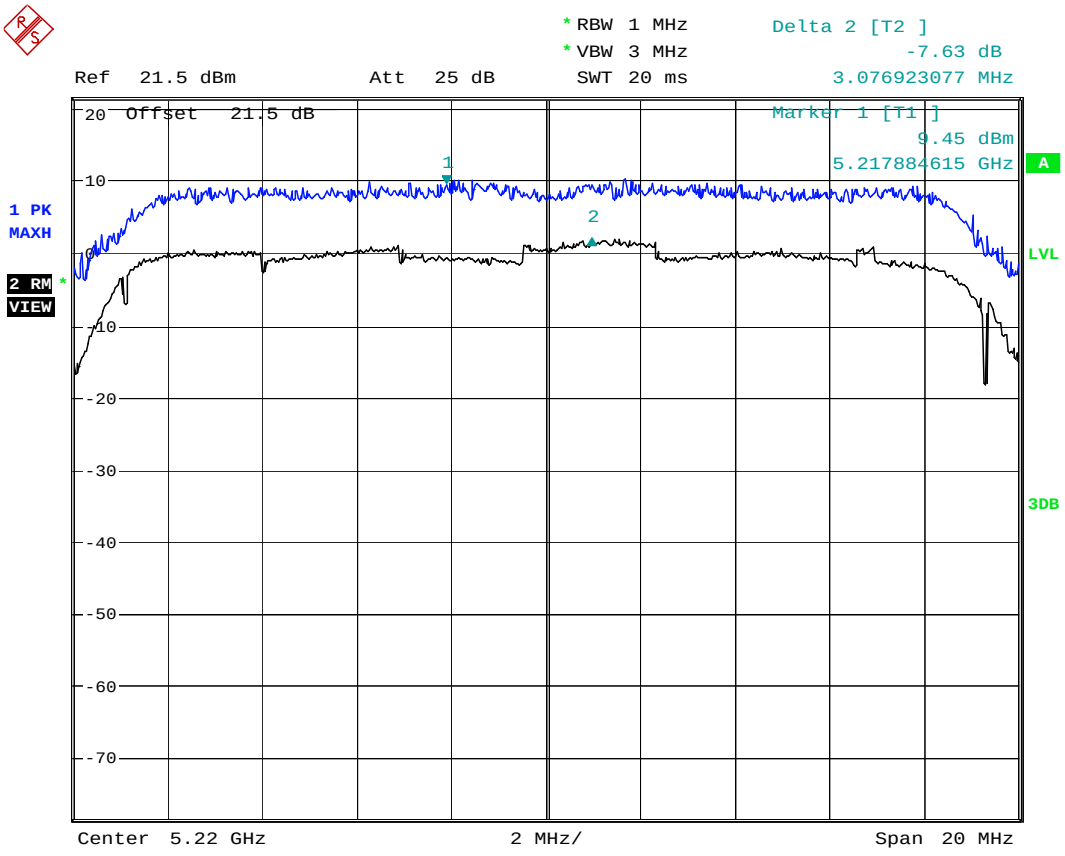


5220MHz Chain A



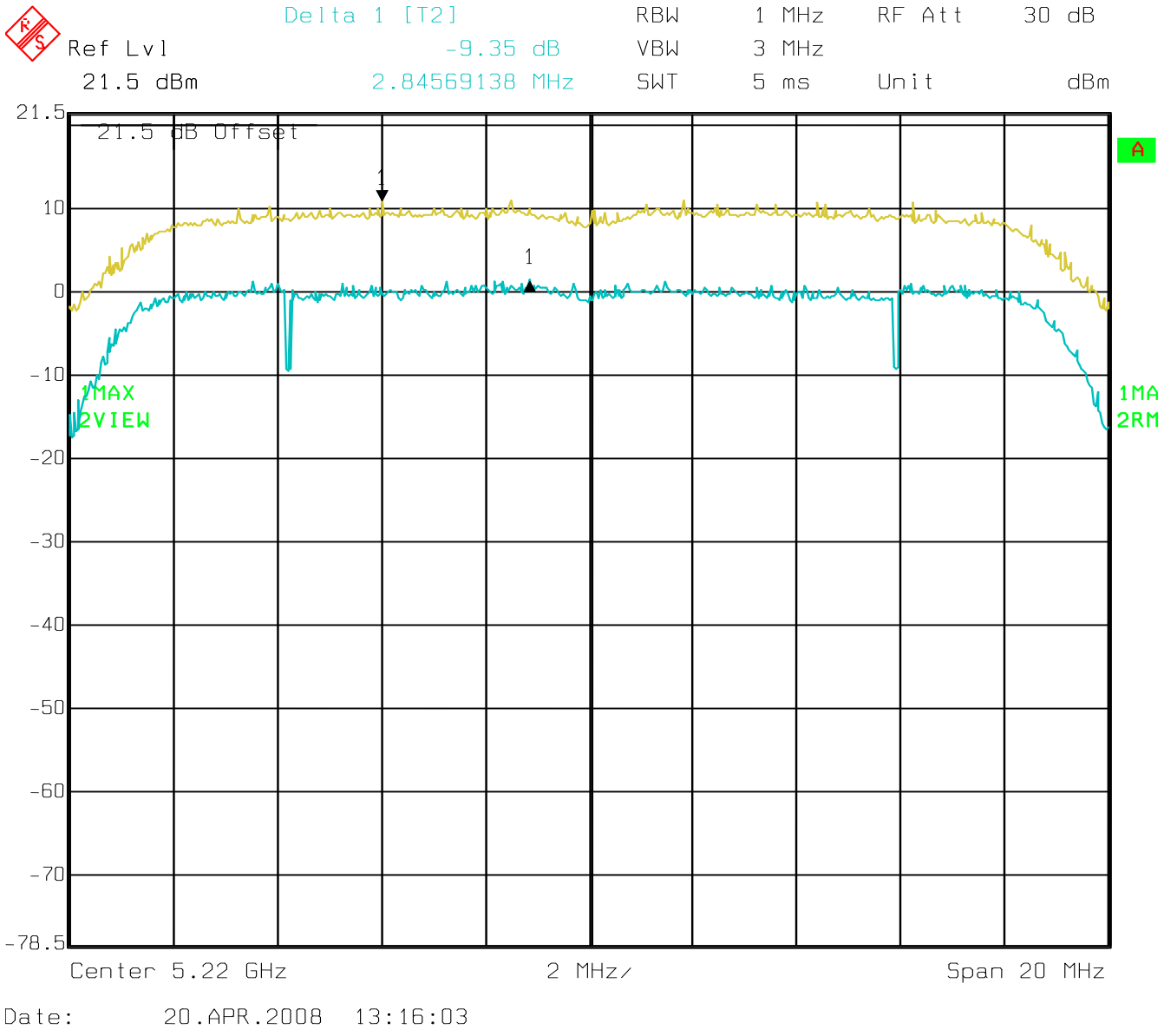
Date: 5.APR.2008 12:40:43

5220MHz Chain B

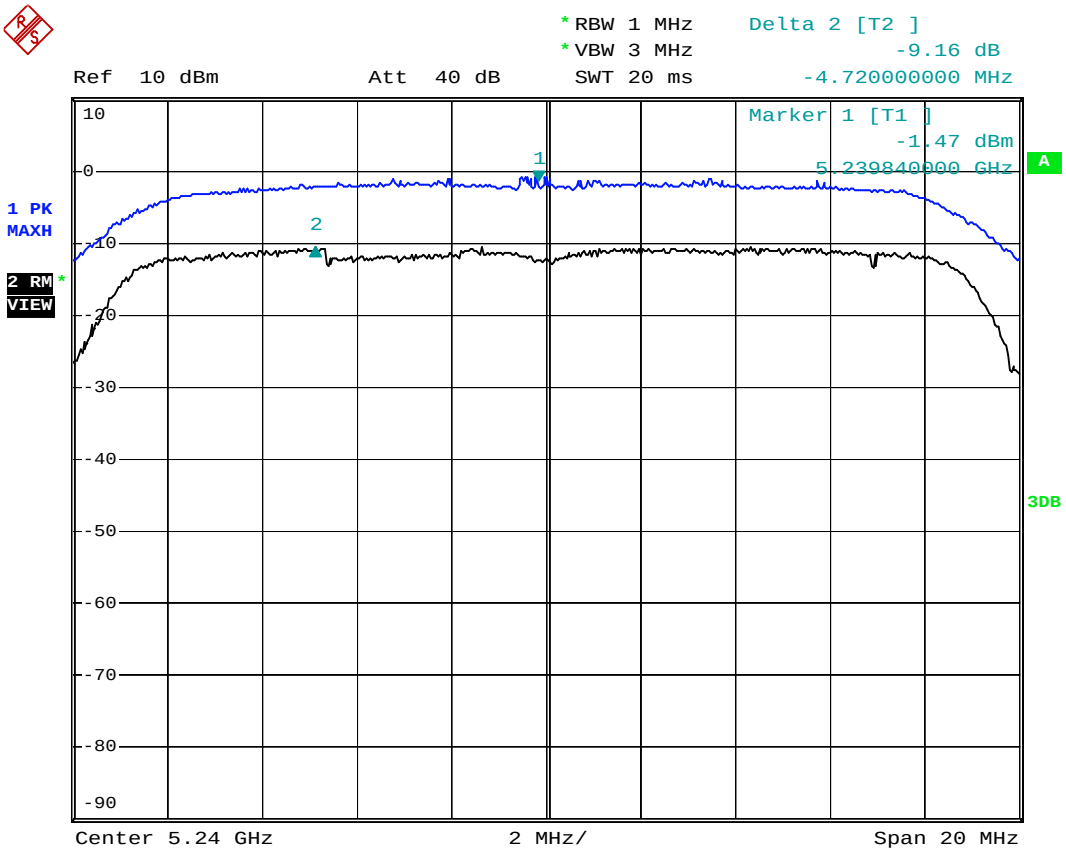


Date: 21.APR.2008 13:09:23

5220MHz Chain C

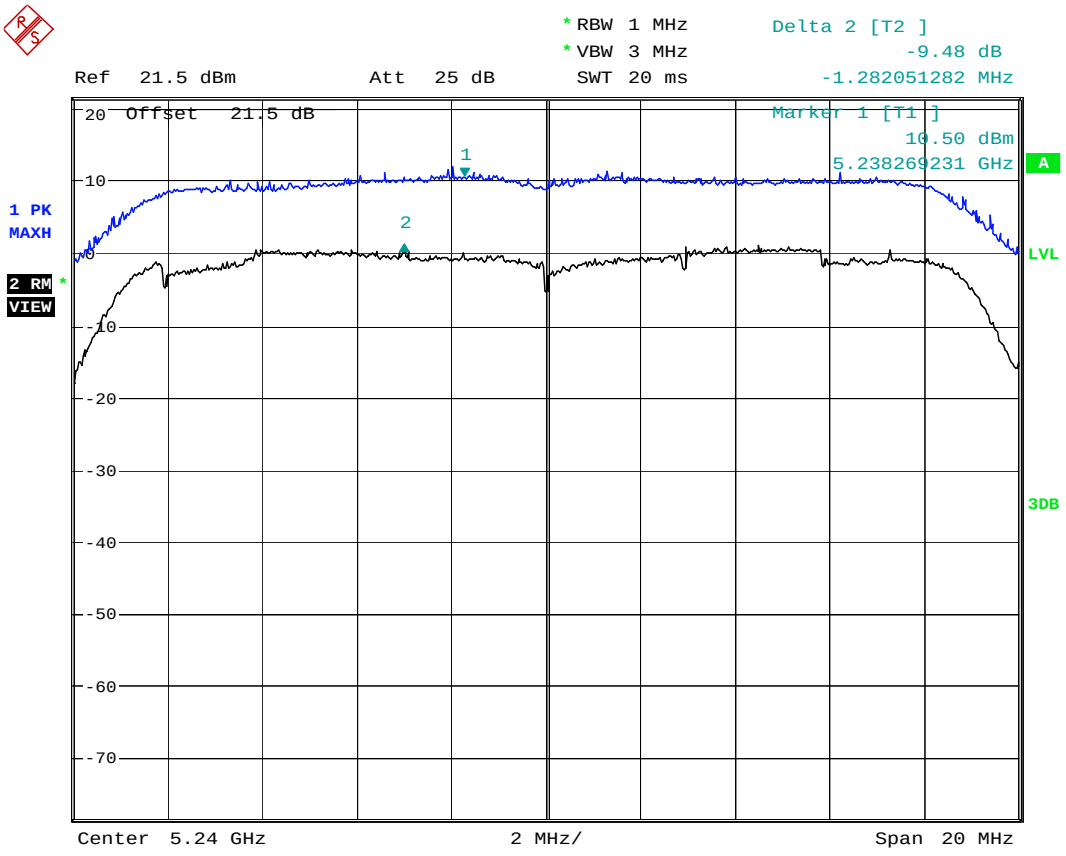


5240MHz Chain A



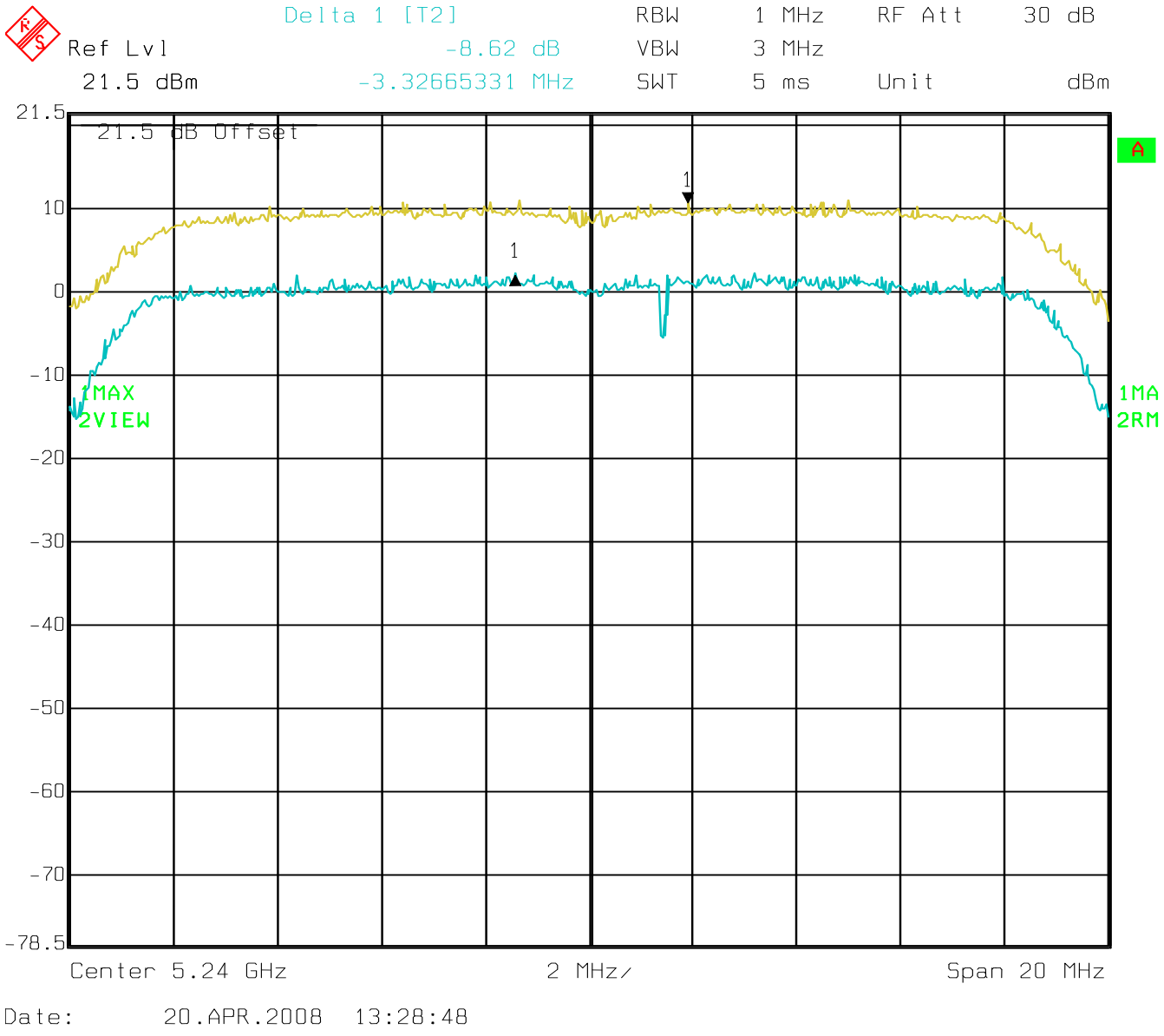
Date: 5.APR.2008 12:49:24

5240MHz Chain B



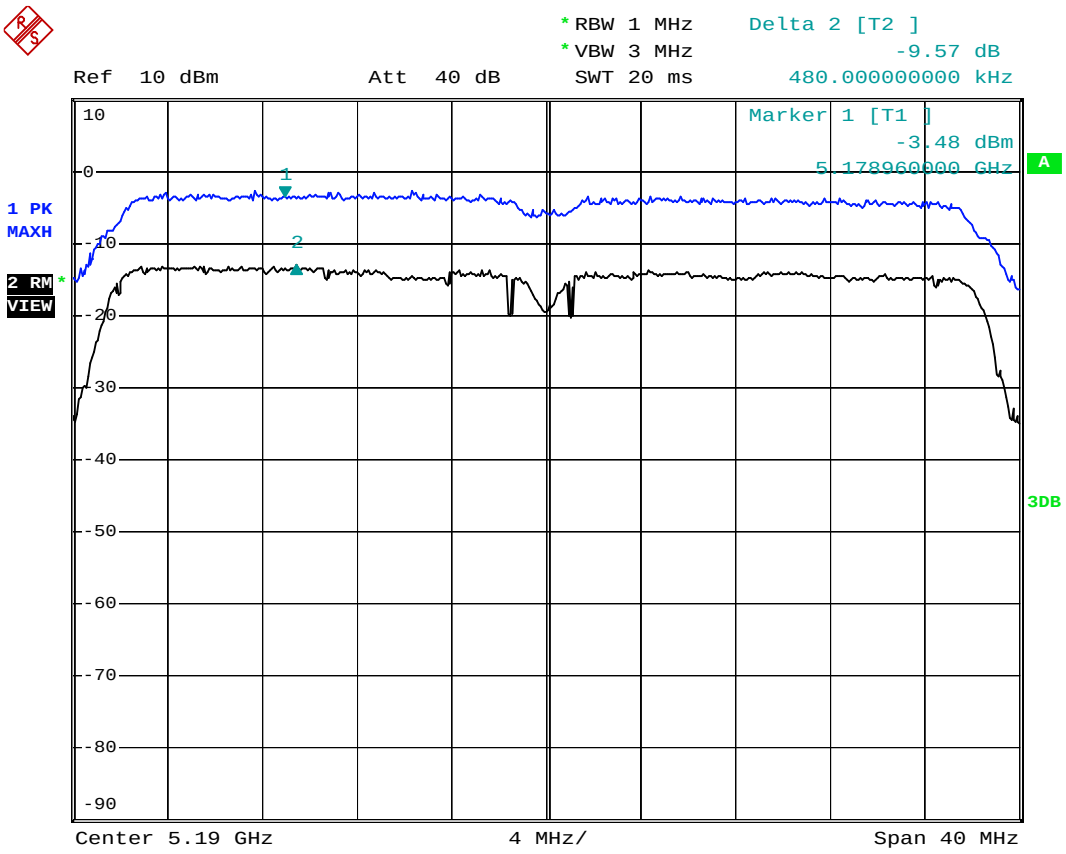
Date: 21.APR.2008 13:17:10

5240MHz Chain C



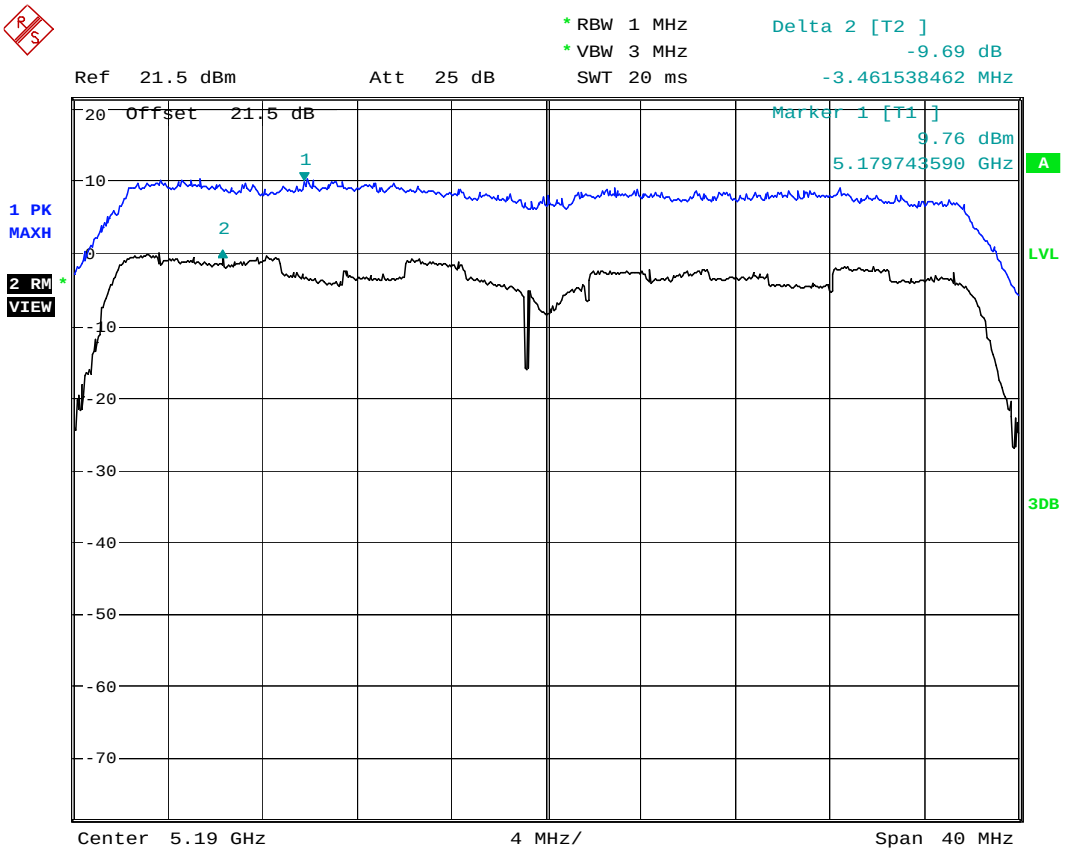
6.7.4.2 Sub-band -1 802.11na HT40 mode

5190MHz Chain A



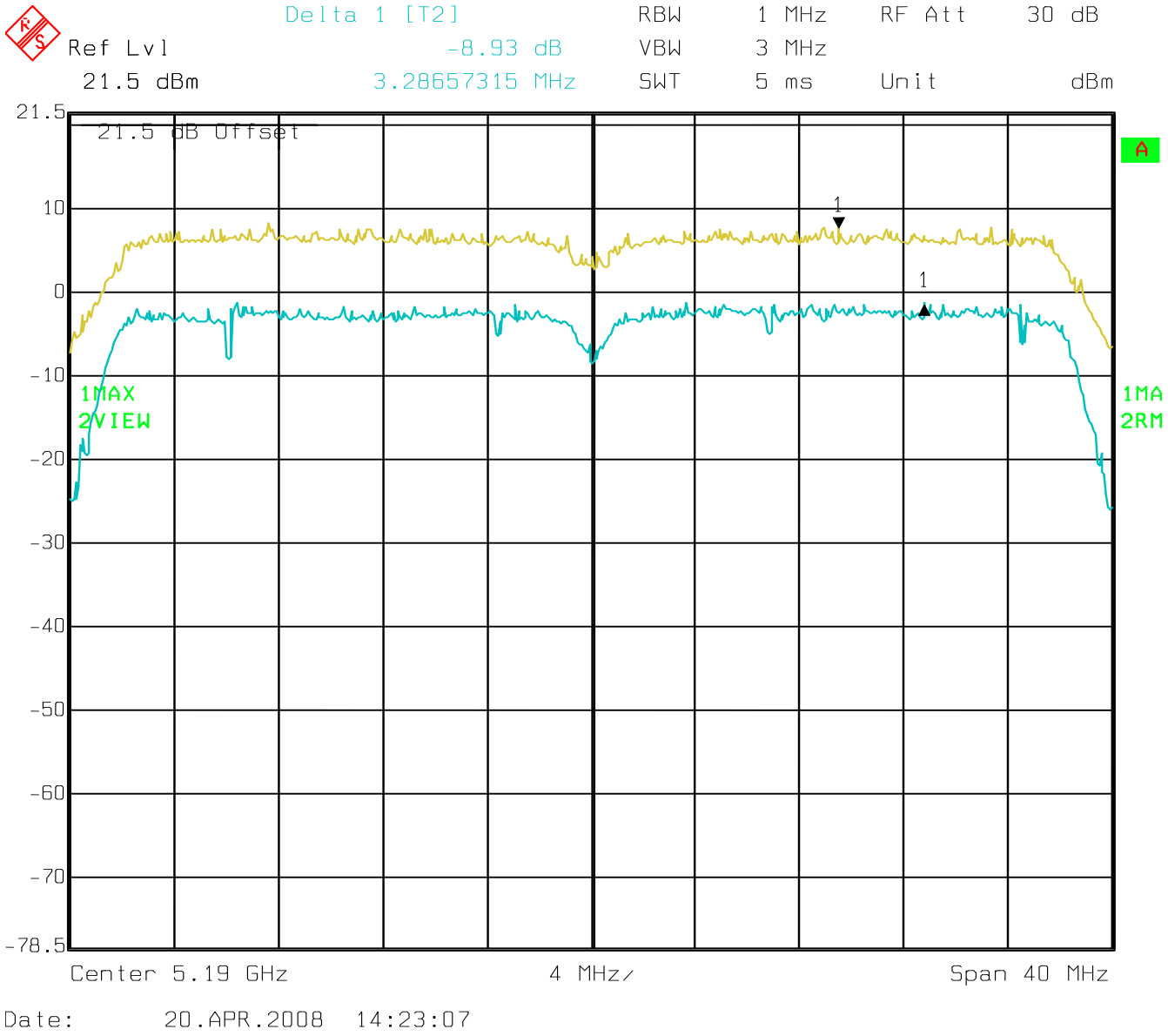
Date: 5.APR.2008 13:59:02

5190MHz Chain B

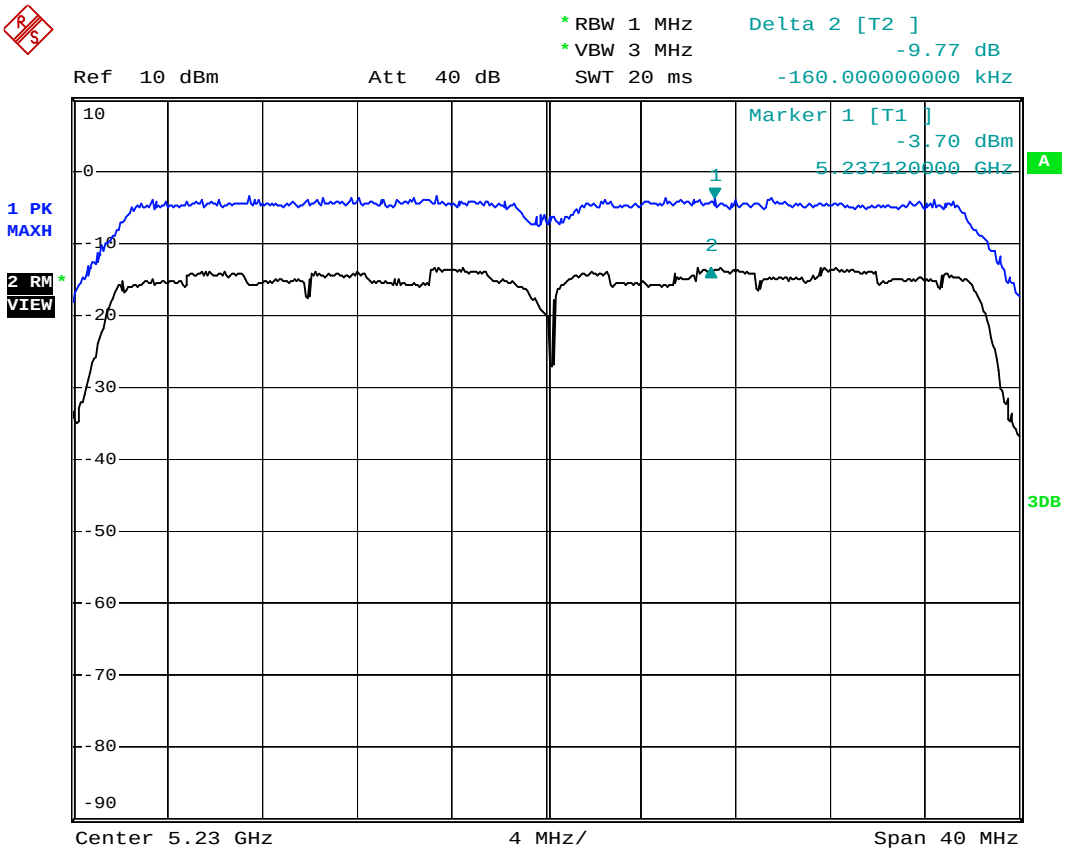


Date: 21.APR.2008 14:26:46

5190MHz Chain C

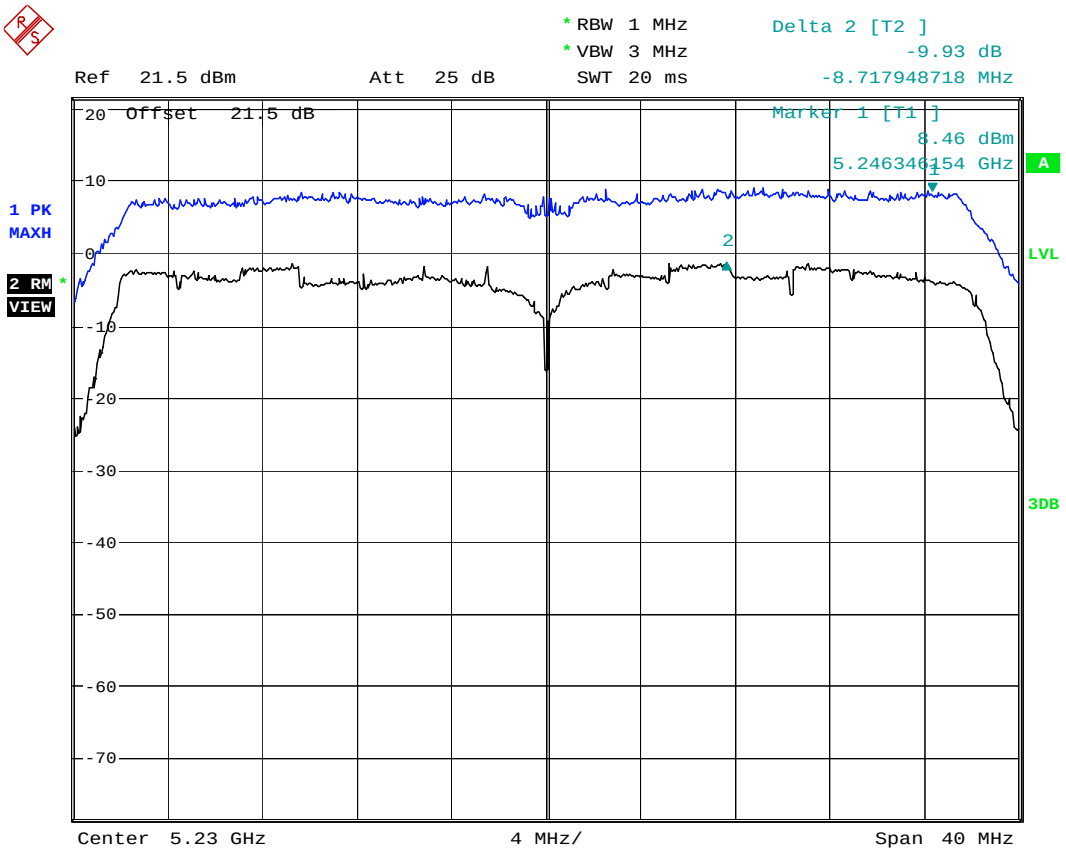


5230MHz Chain A



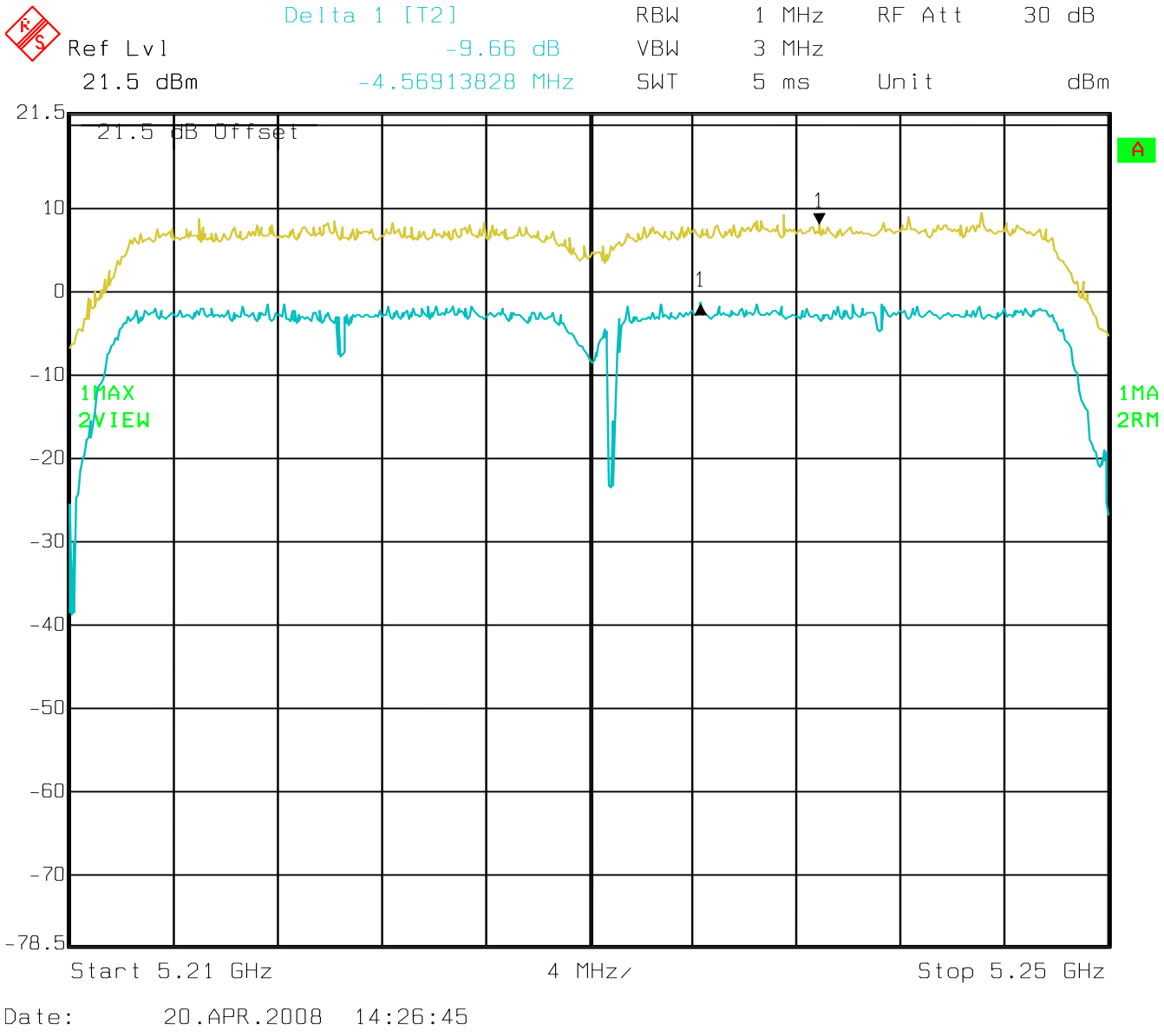
Date: 5.APR.2008 14:00:32

5230MHz Chain B



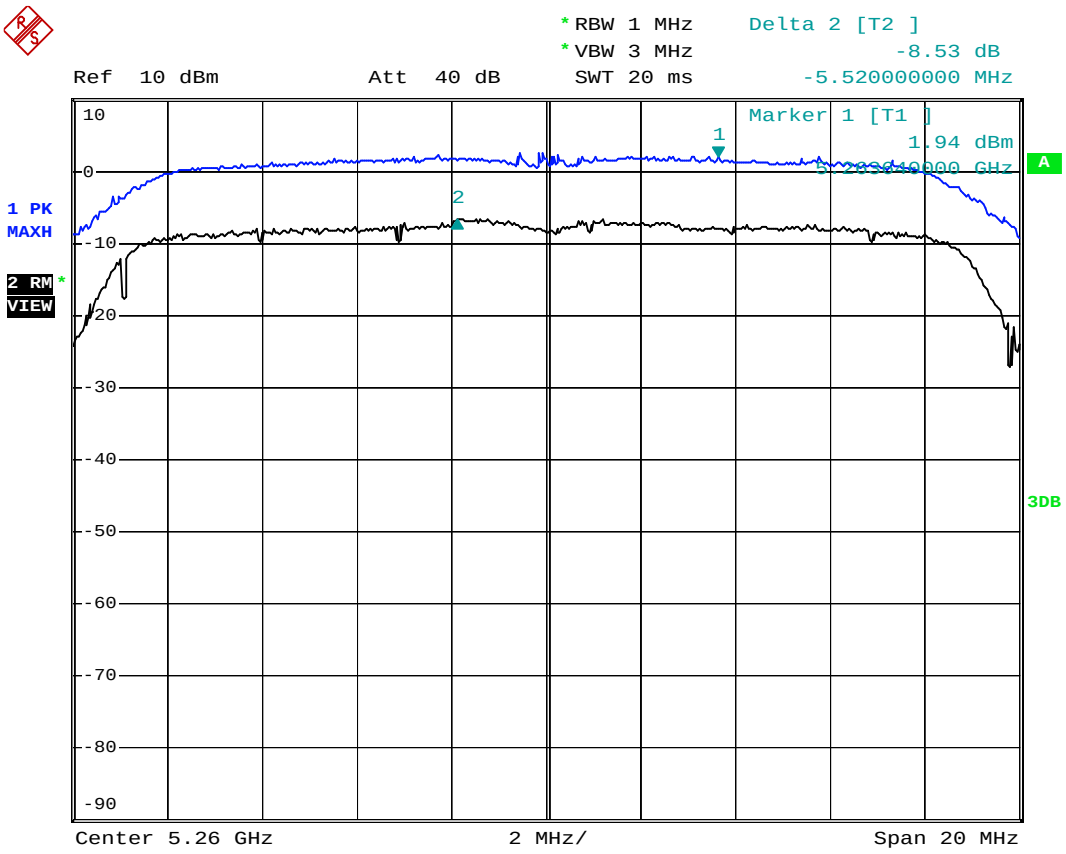
Date: 21.APR.2008 14:28:44

5230MHz Chain C



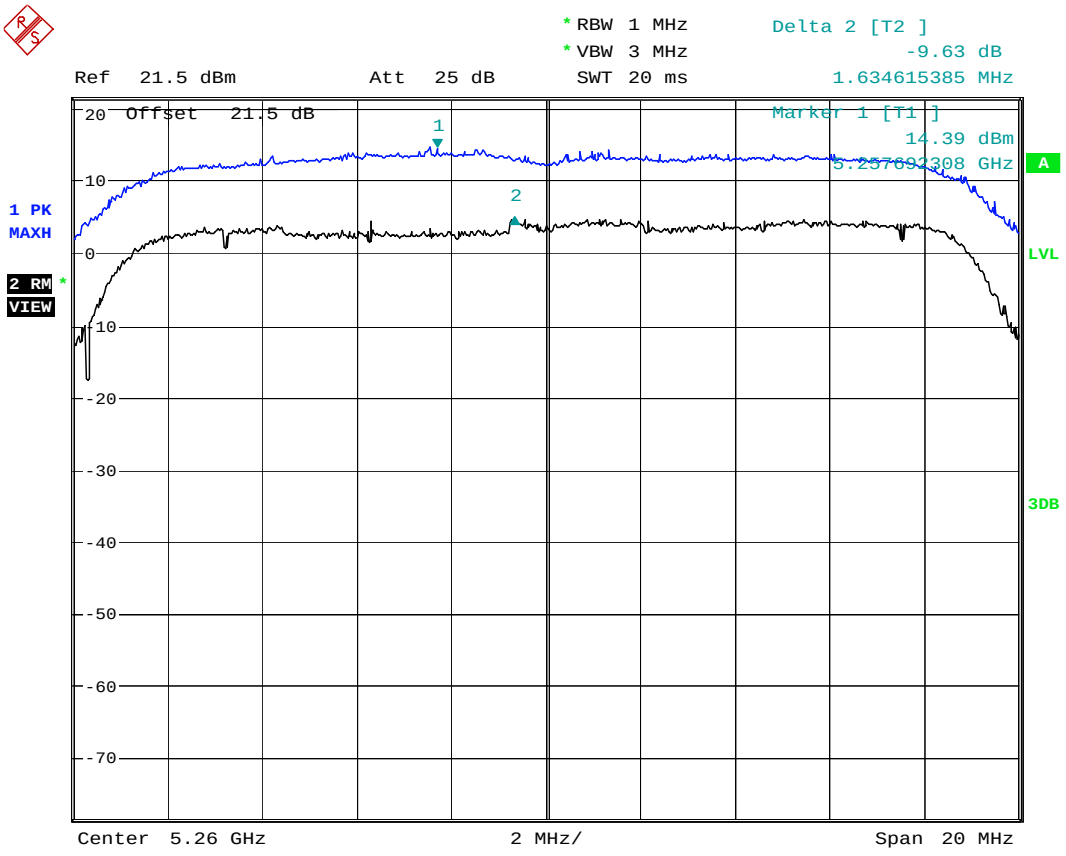
6.7.4.3 Sub-band 2 802.11na HT20 mode

5260MHz Chain A



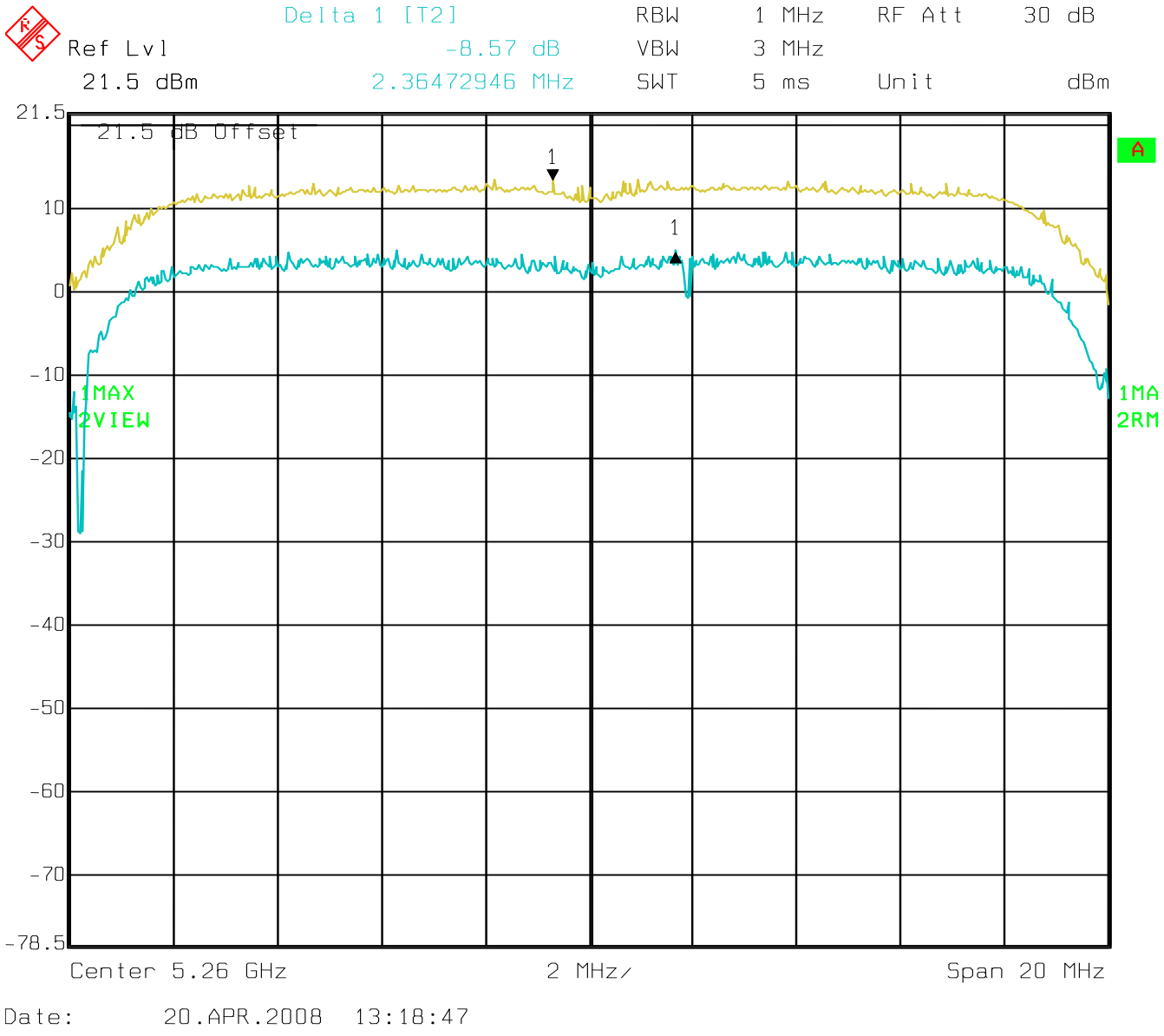
Date: 5.APR.2008 13:01:37

5260MHz Chain B

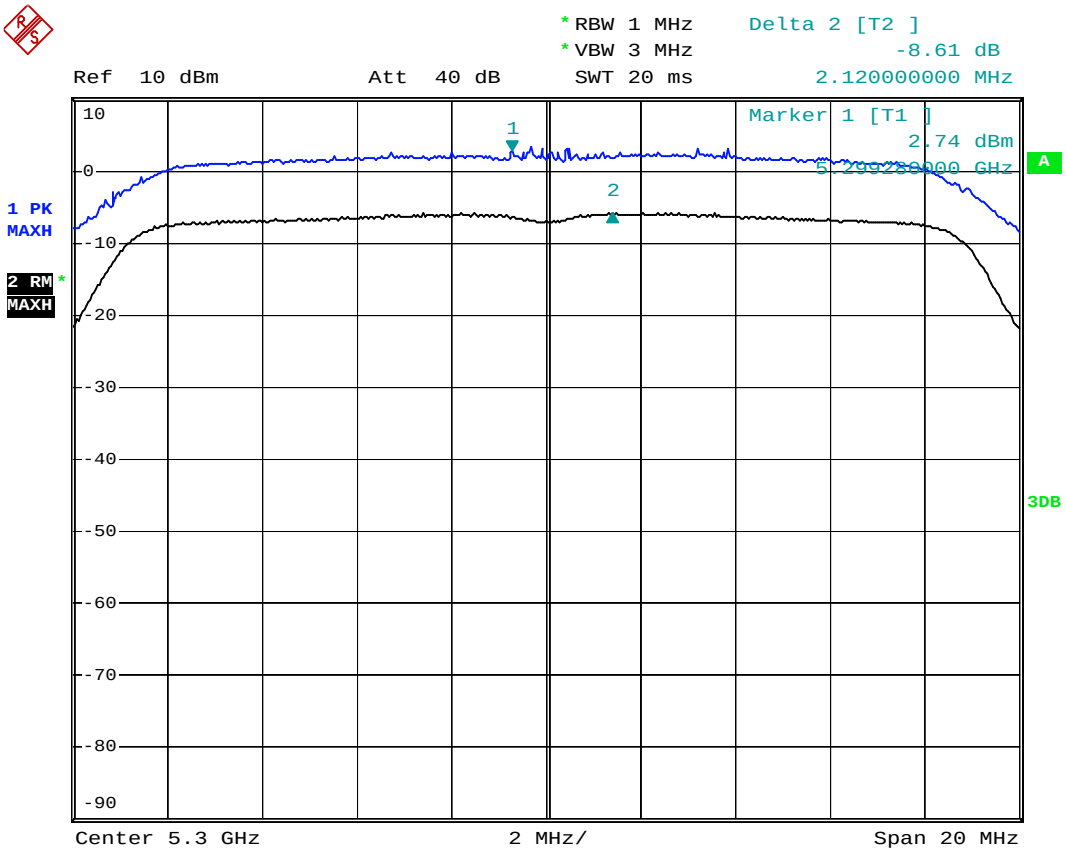


Date: 21.APR.2008 13:21:24

5260MHz Chain C

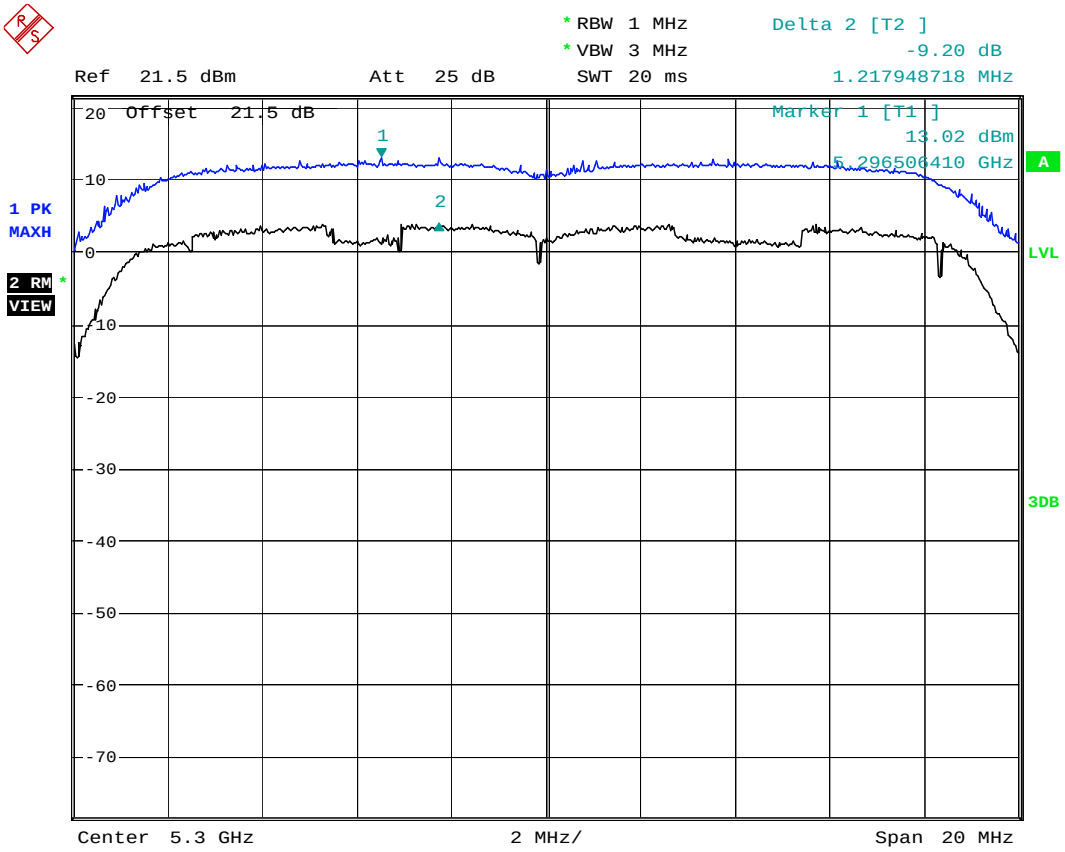


5300MHz Chain A



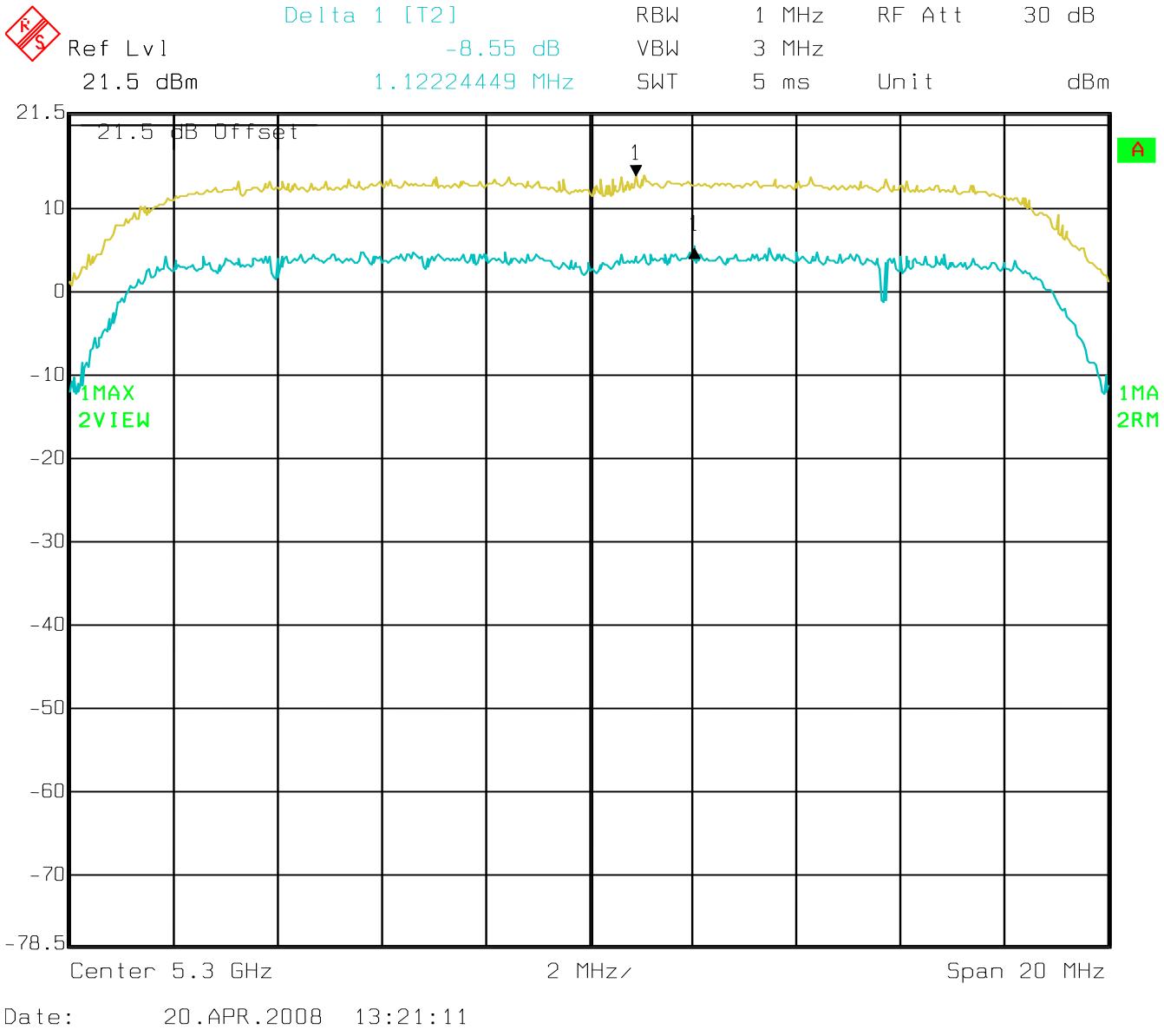
Date: 5.APR.2008 12:54:55

5300MHz Chain B

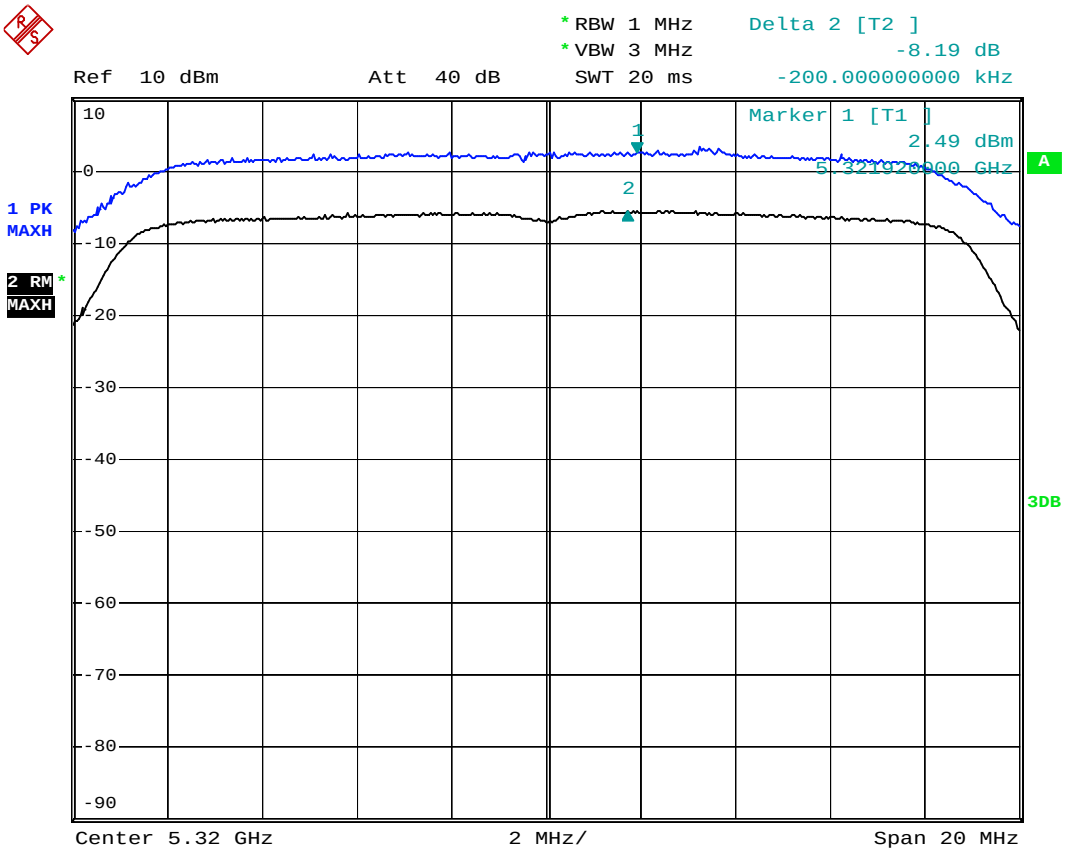


Date: 21.APR.2008 13:27:56

5300MHz Chain C

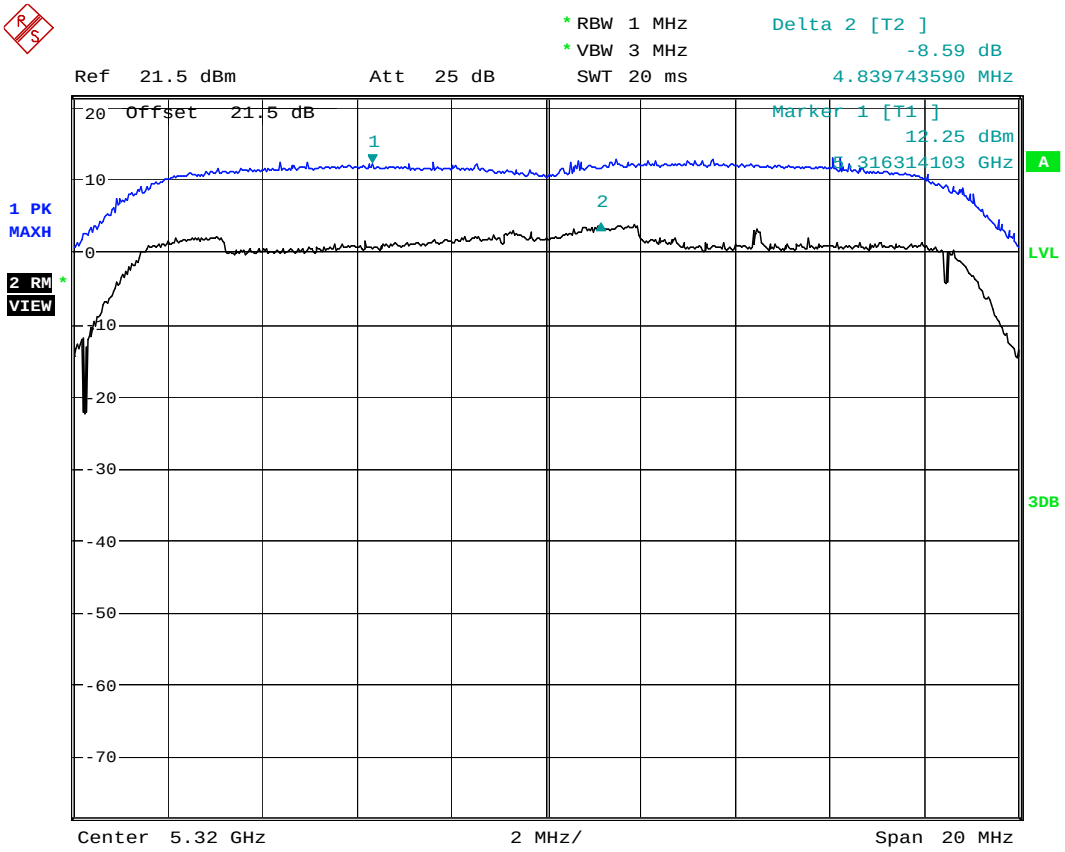


5320MHz Chain A



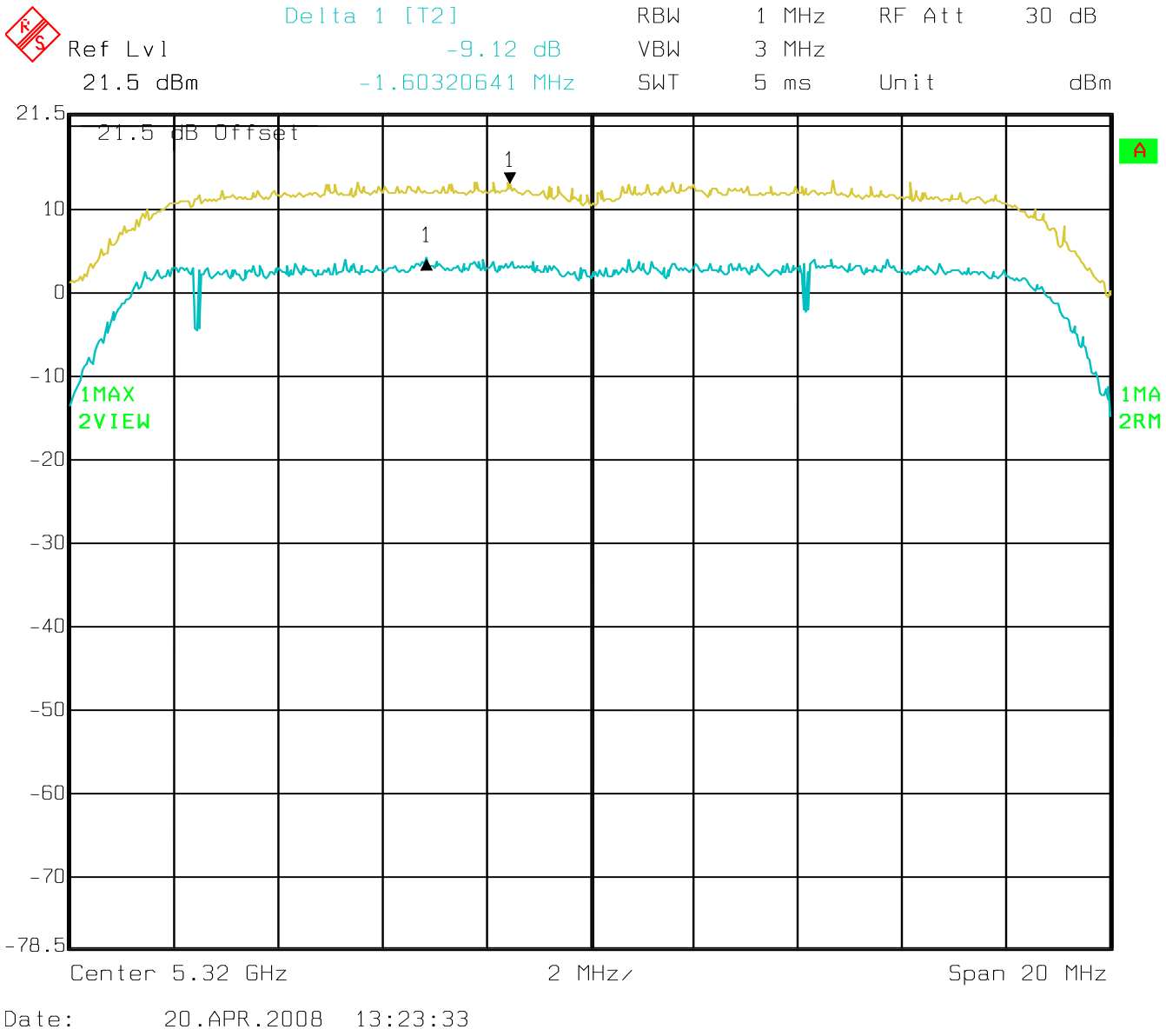
Date: 5.APR.2008 12:58:27

5320MHz Chain B



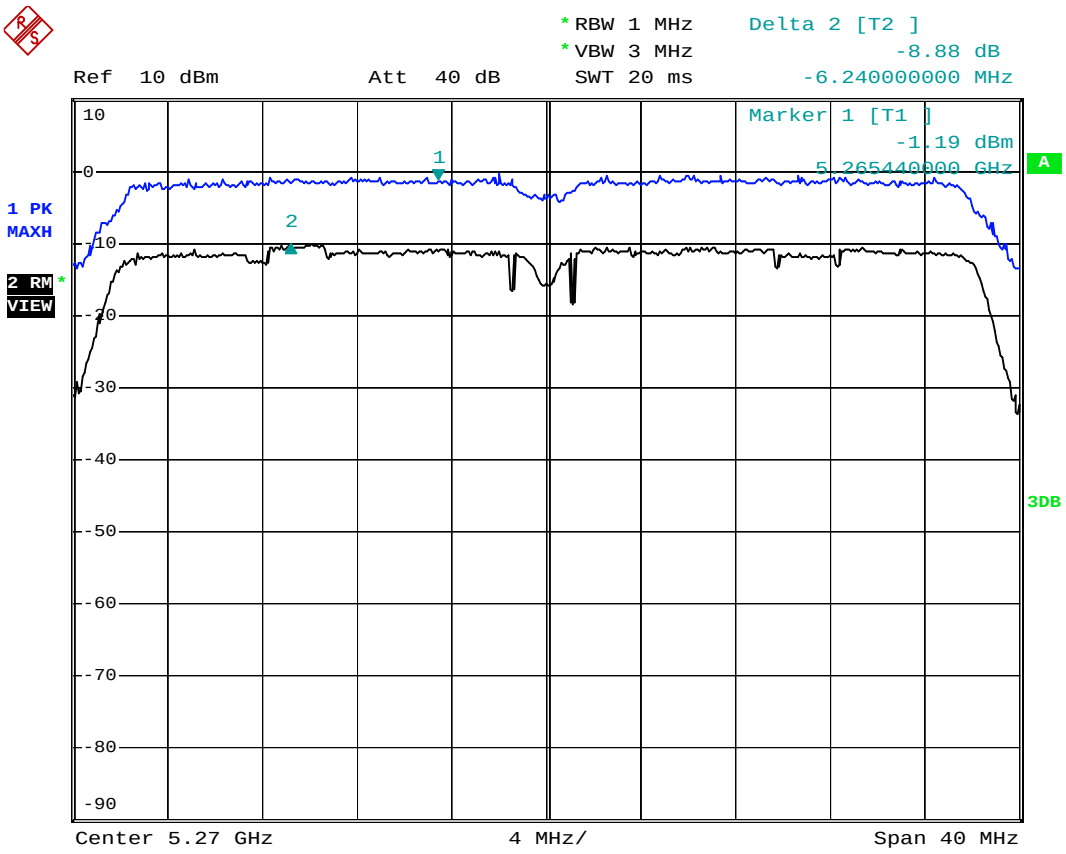
Date: 21.APR.2008 13:26:11

5320MHz Chain C



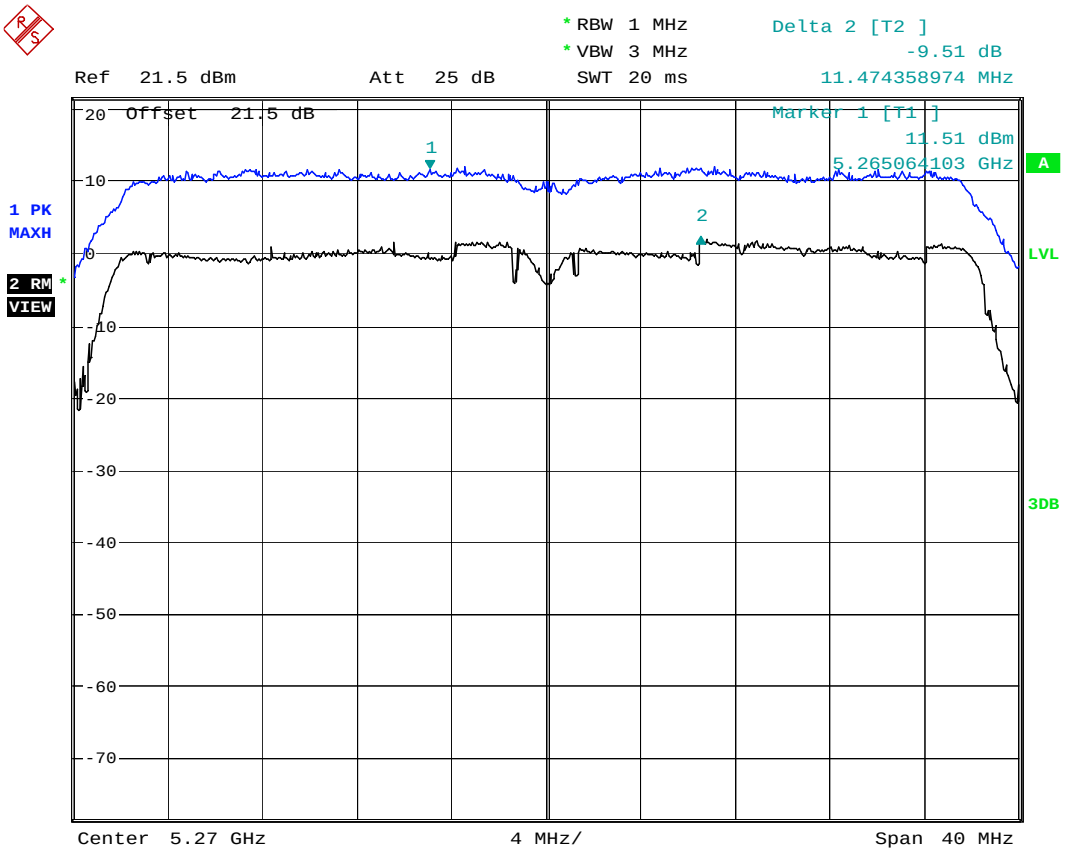
6.7.4.4 Sub-band -2 802.11na HT40 mode

5270MHz Chain A



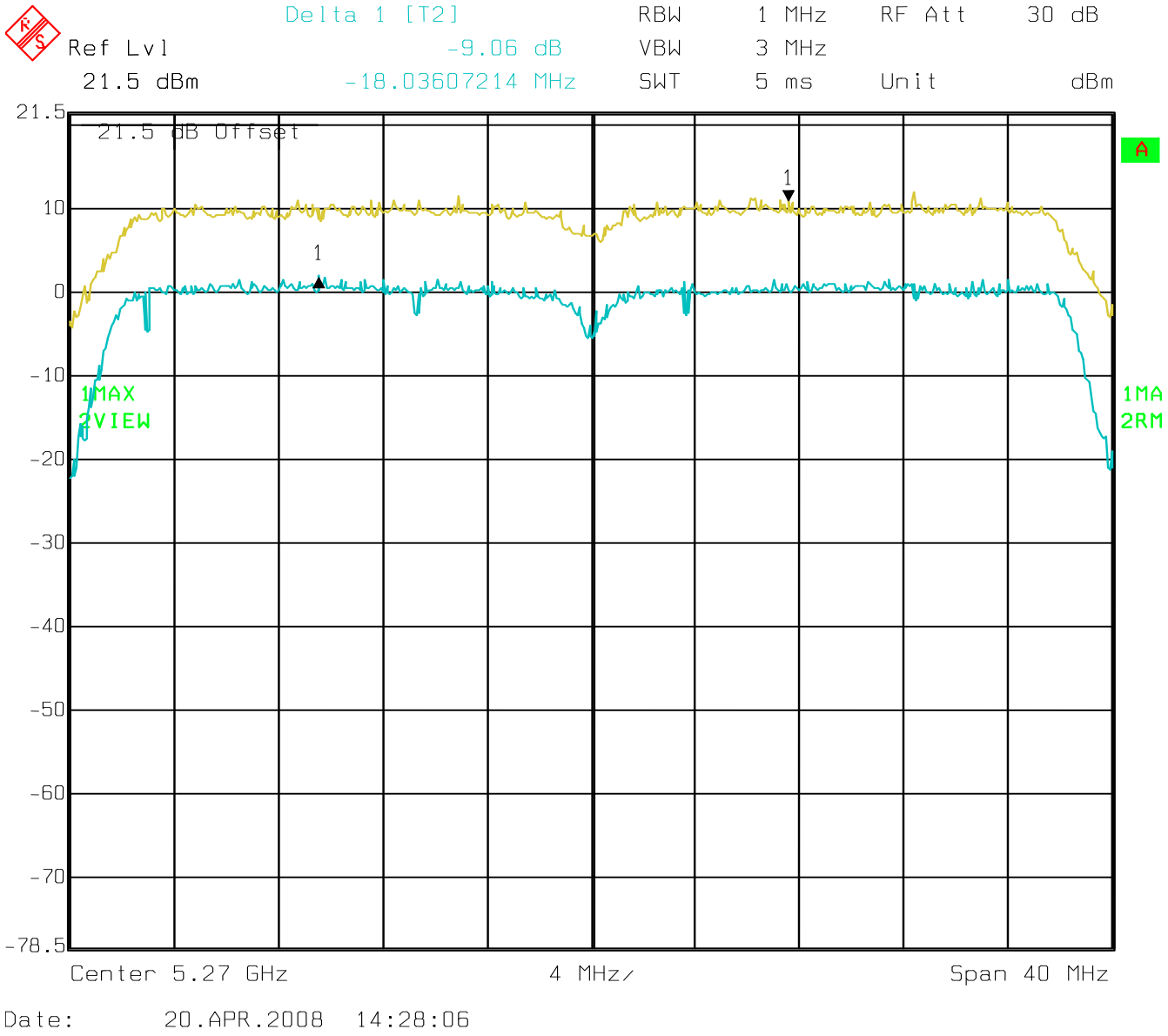
Date: 5.APR.2008 14:03:22

5270MHz Chain B

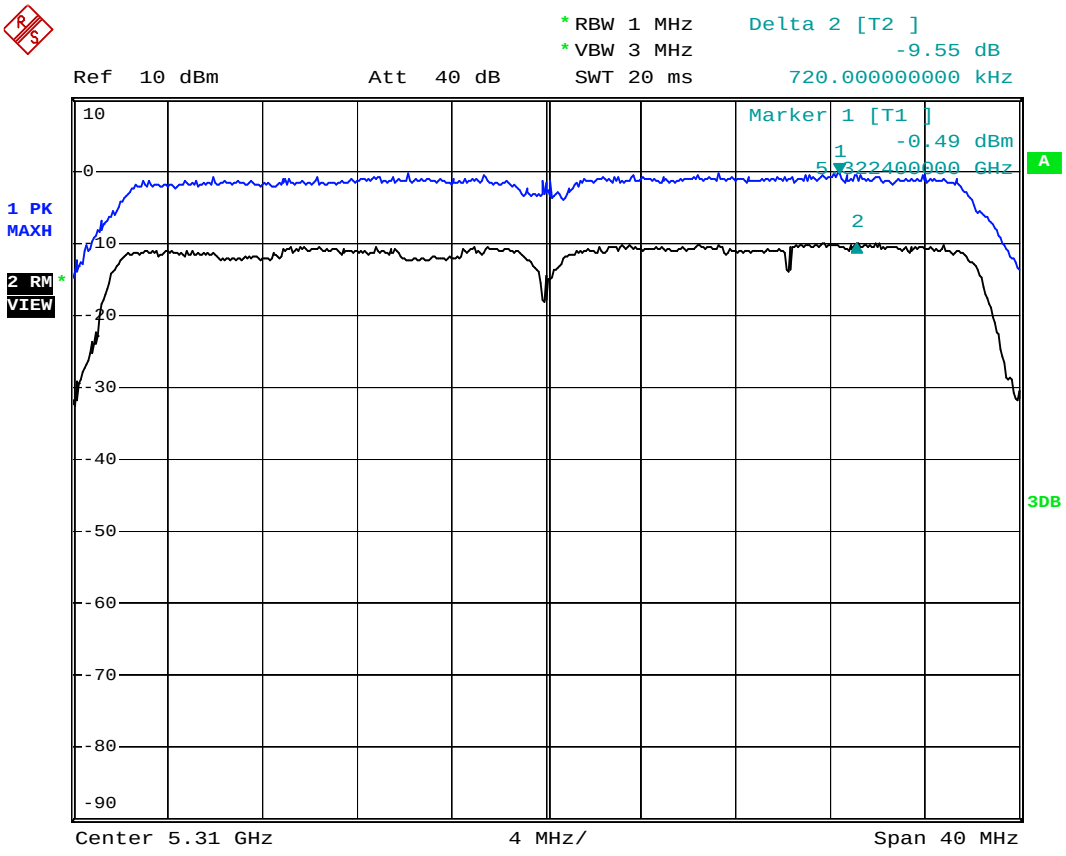


Date: 21.APR.2008 14:30:51

5270MHz Chain C

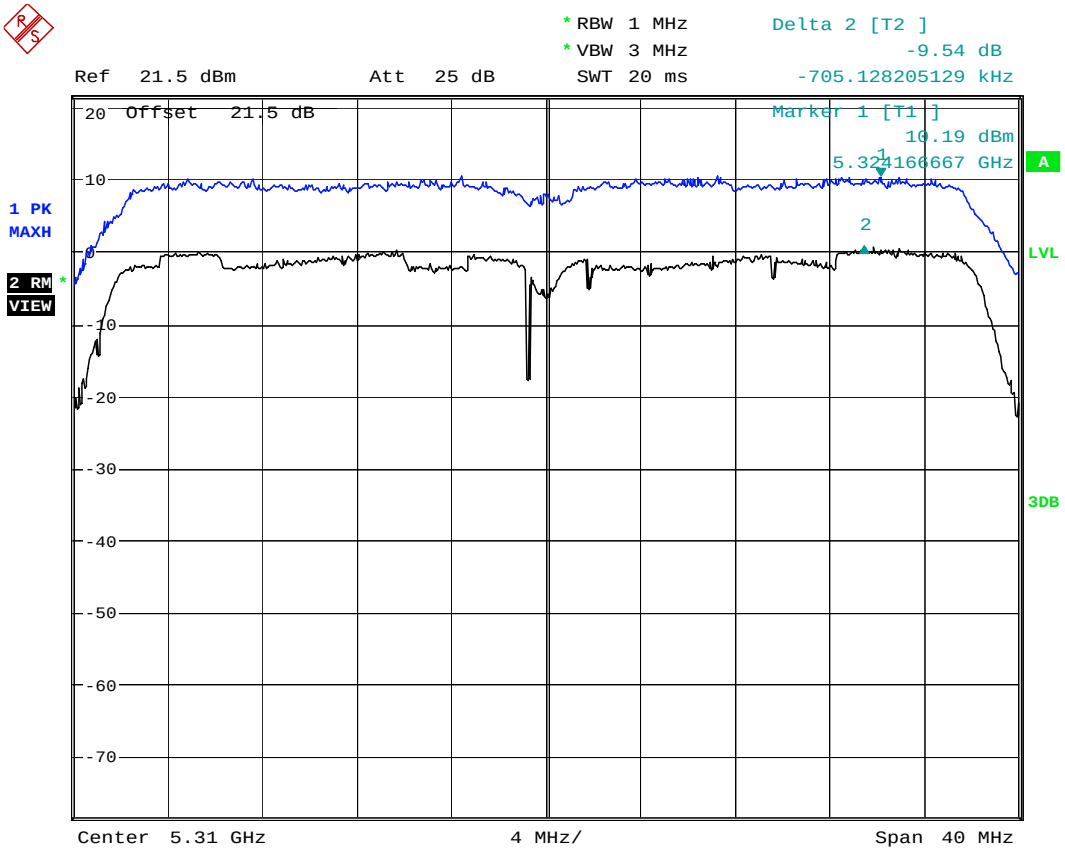


5310MHz Chain A



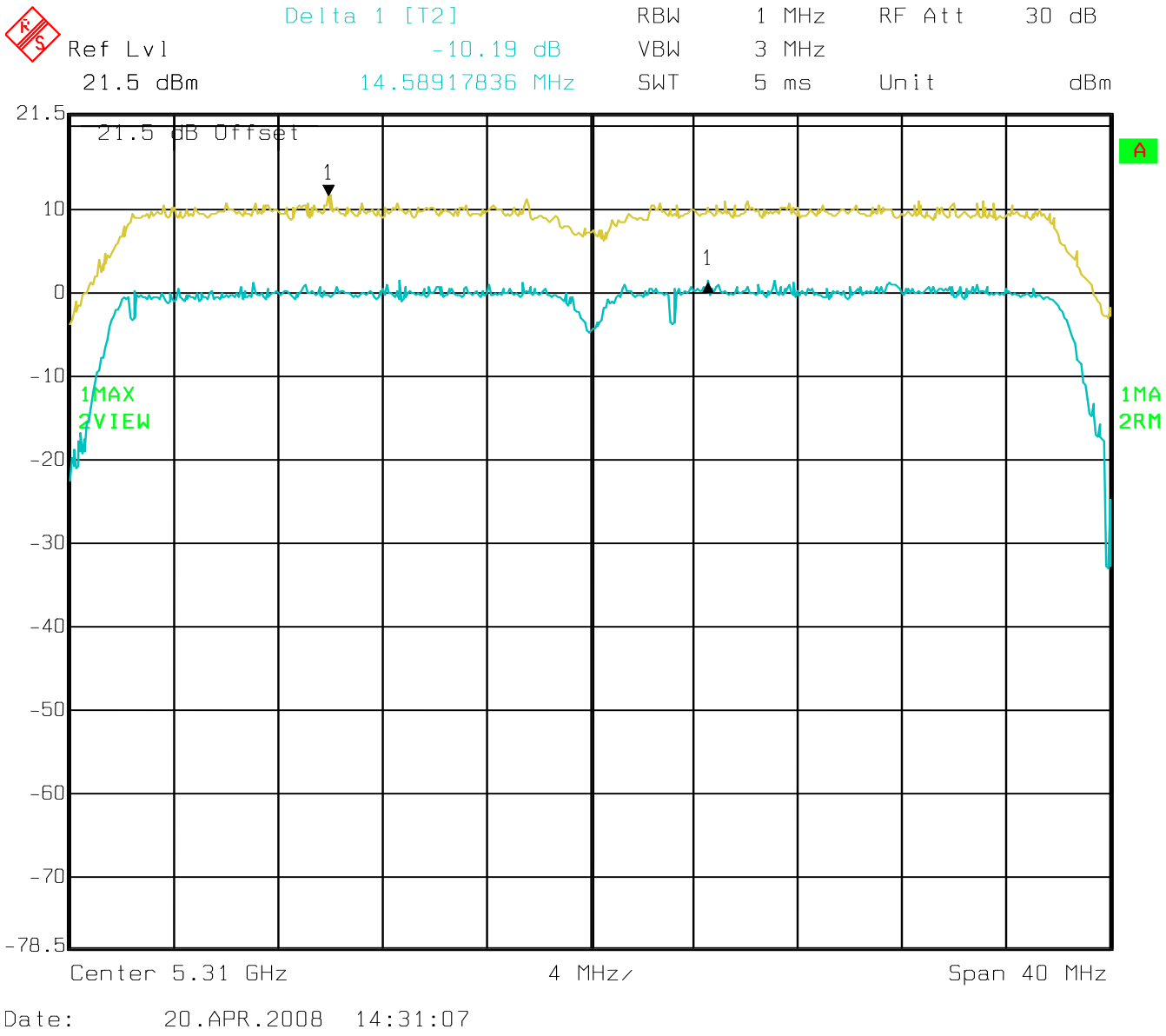
Date: 5.APR.2008 14:04:46

5310MHz Chain B



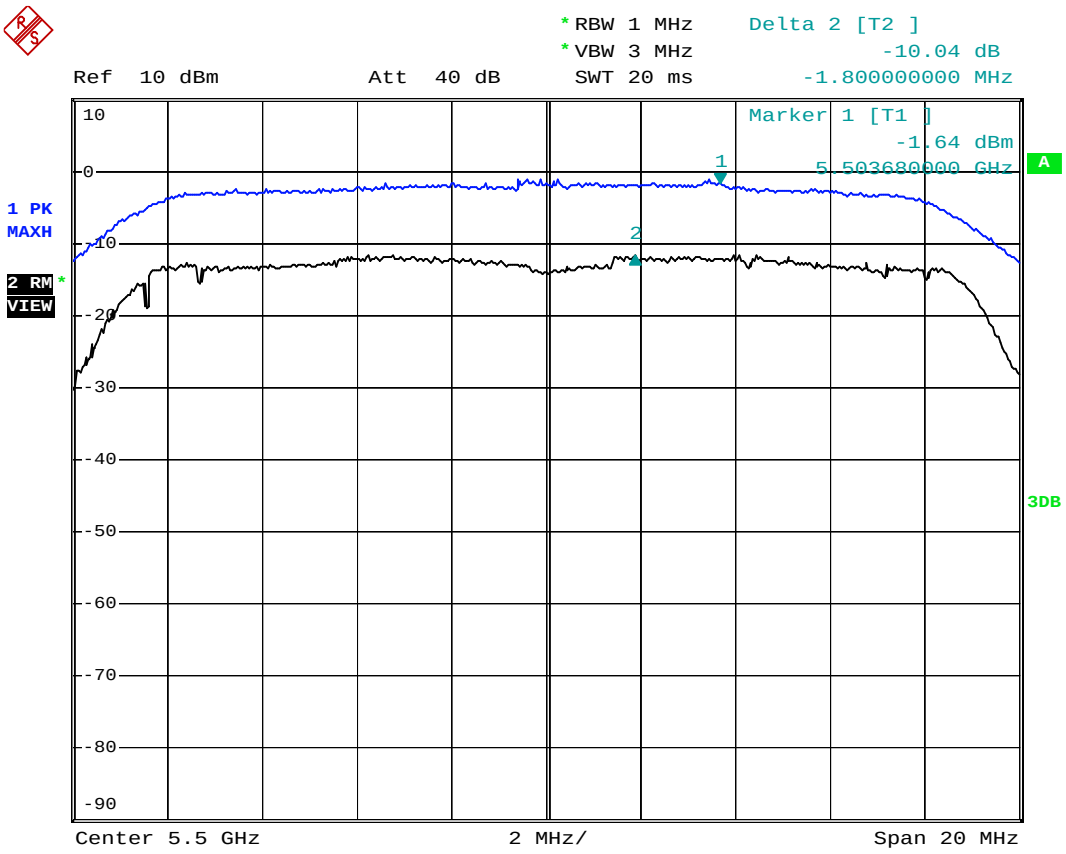
Date: 21.APR.2008 14:32:59

5310MHz Chain C



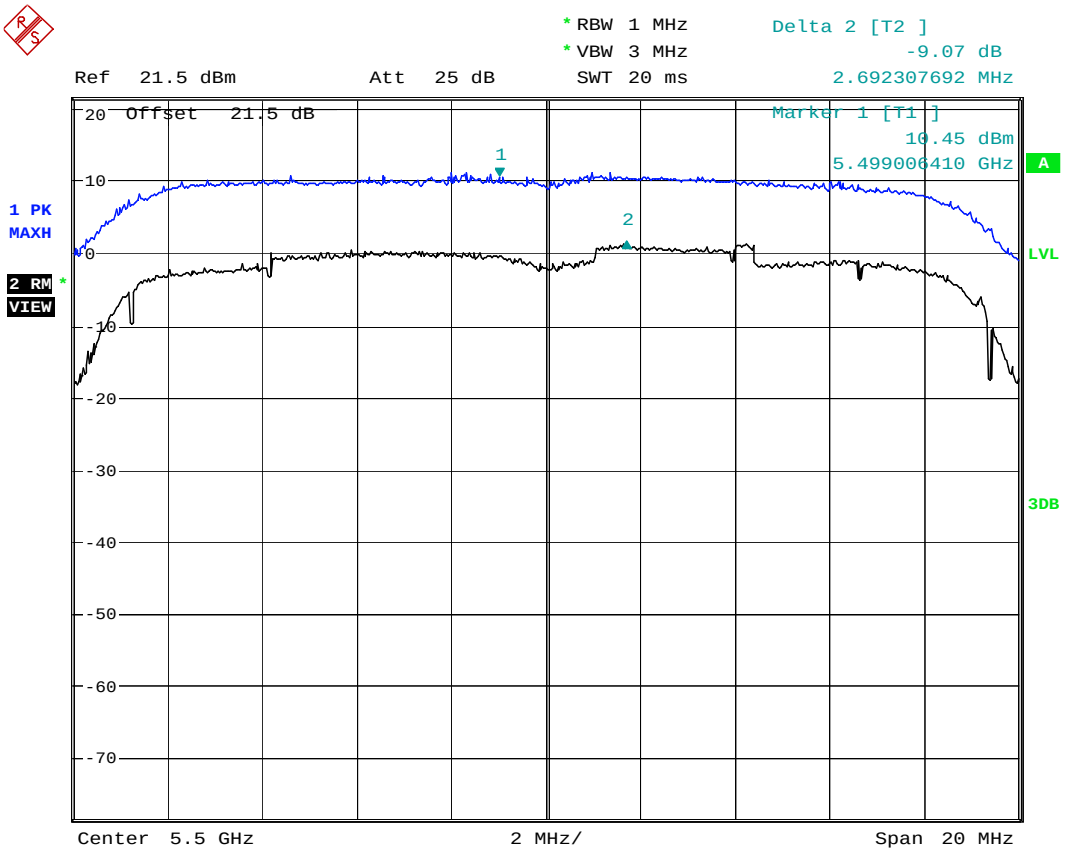
6.7.4.5 Sub-band 3 802.11na HT20 mode

5500MHz Chain A



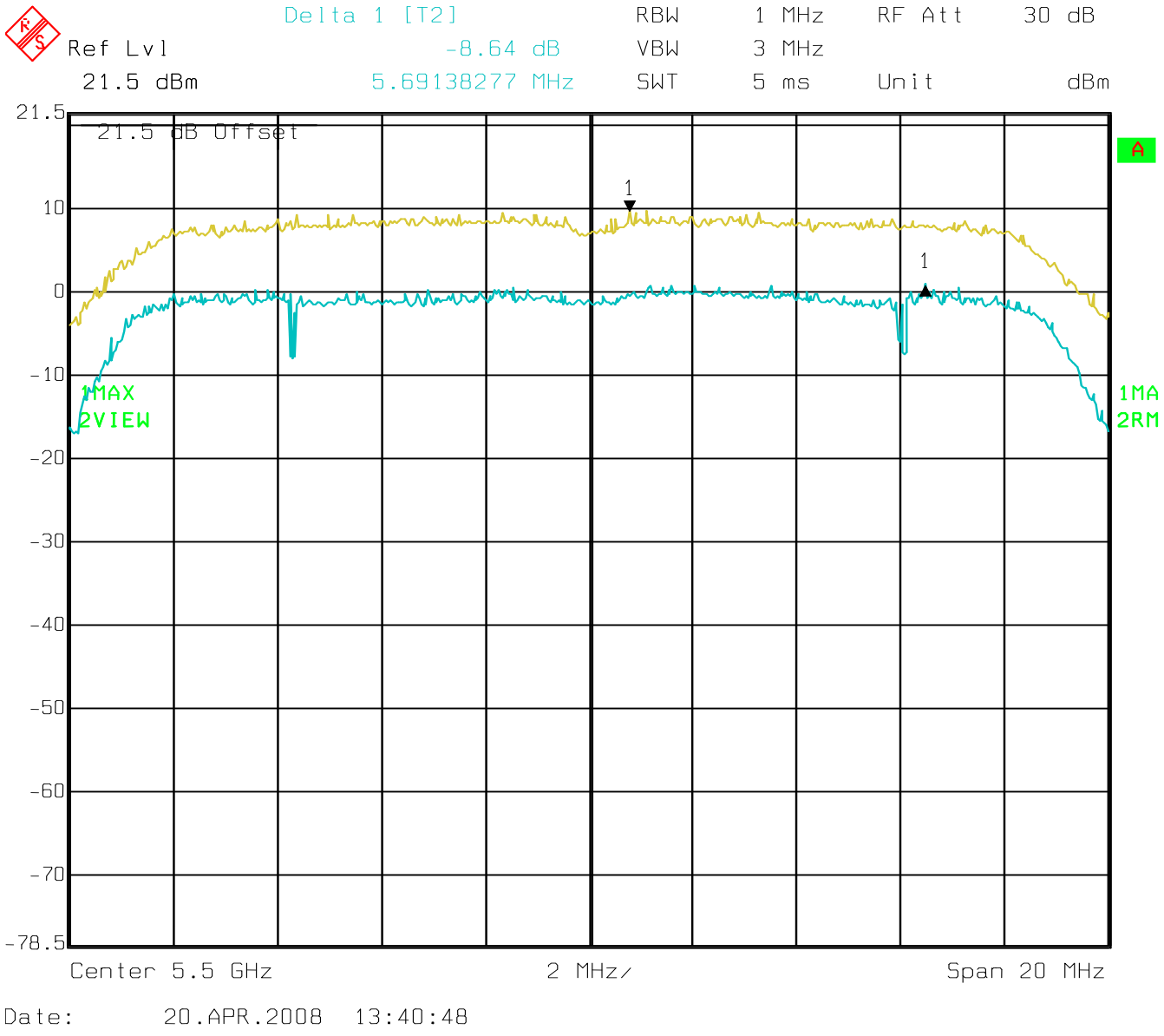
Date: 5.APR.2008 13:15:39

5500MHz Chain B

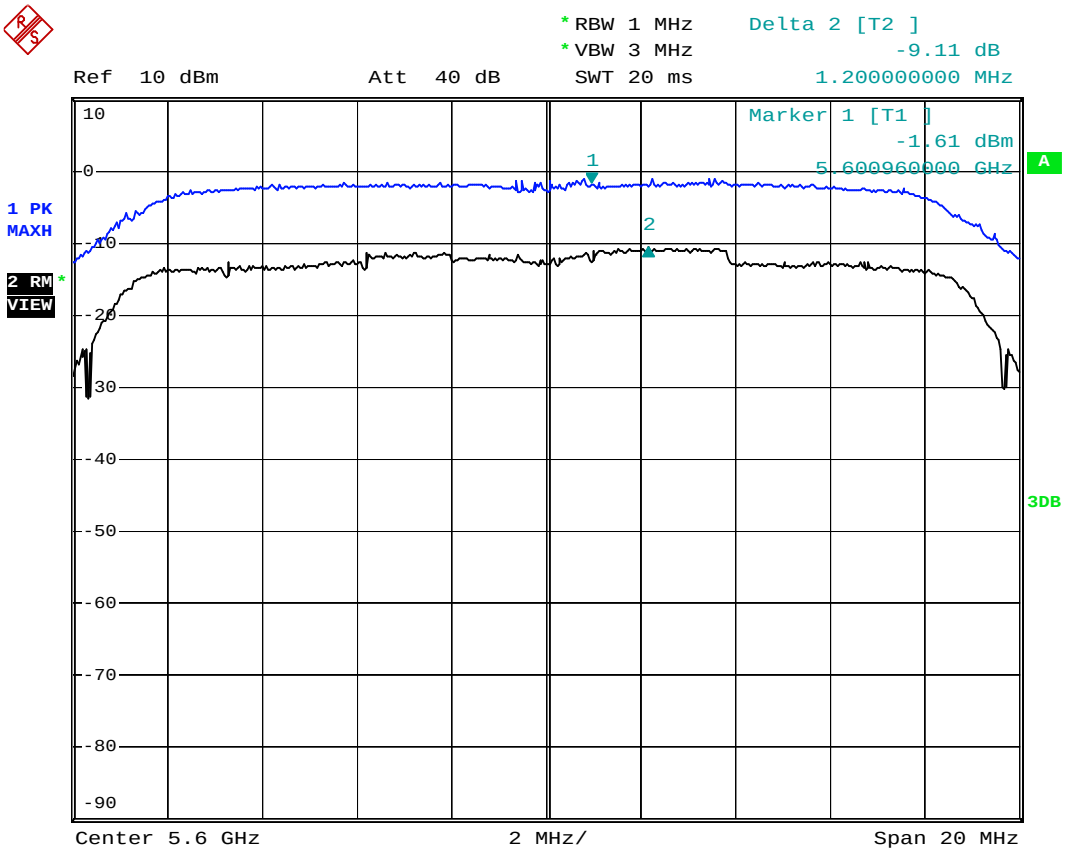


Date: 21.APR.2008 13:43:27

5500MHz Chain C

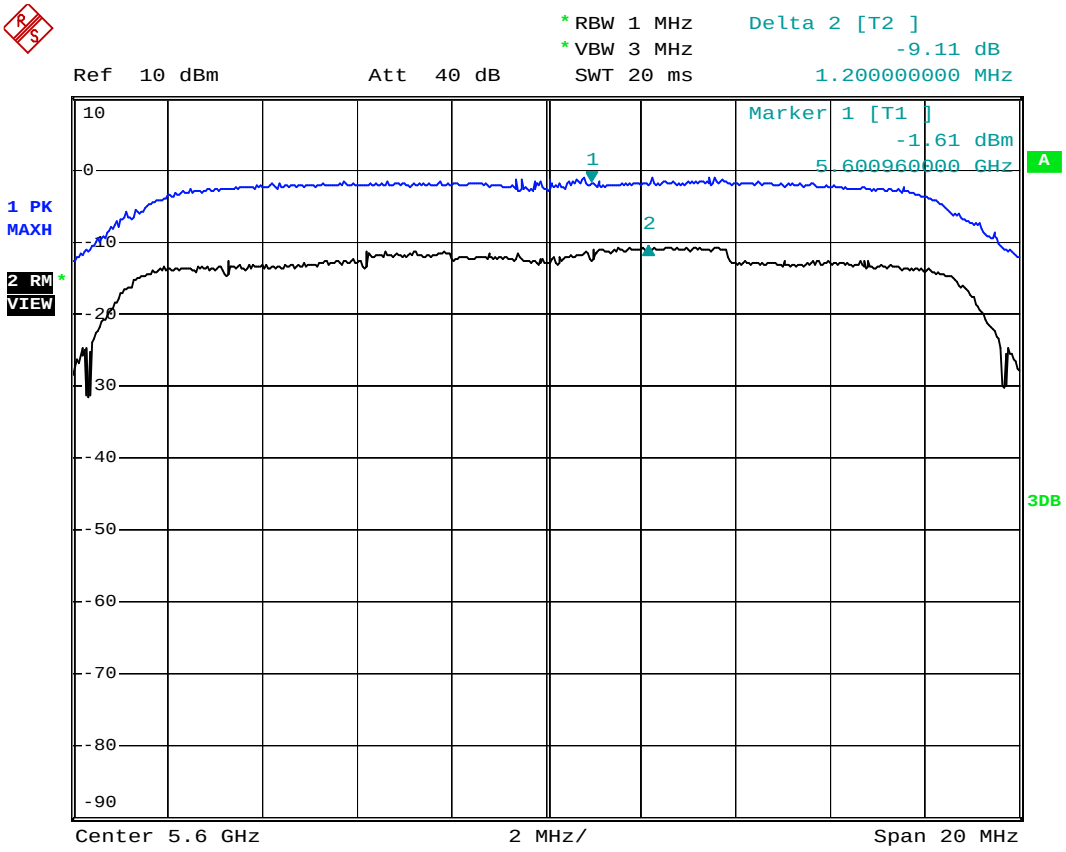


5600MHz Chain A



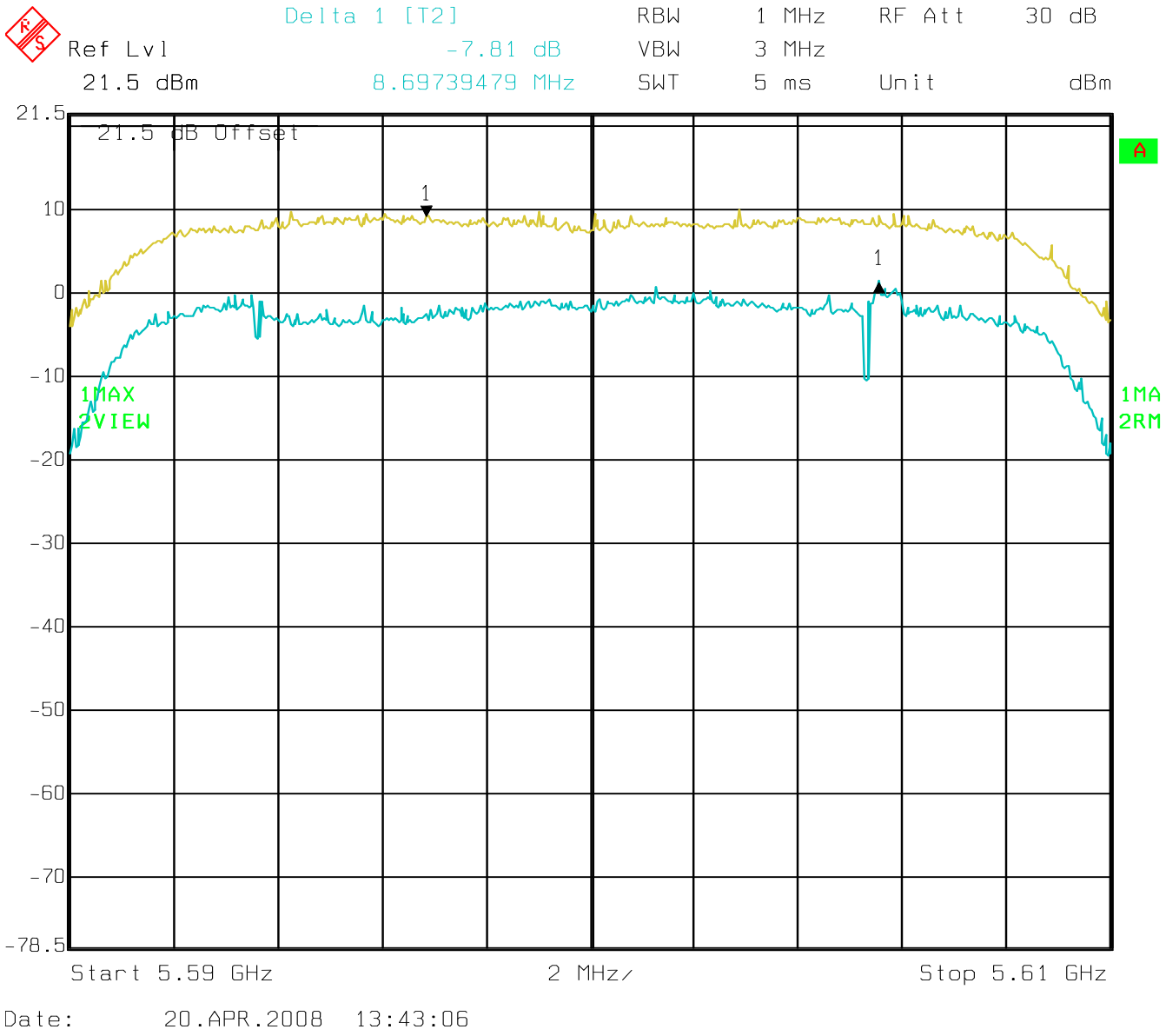
Date: 5.APR.2008 13:16:51

5600MHz Chain B

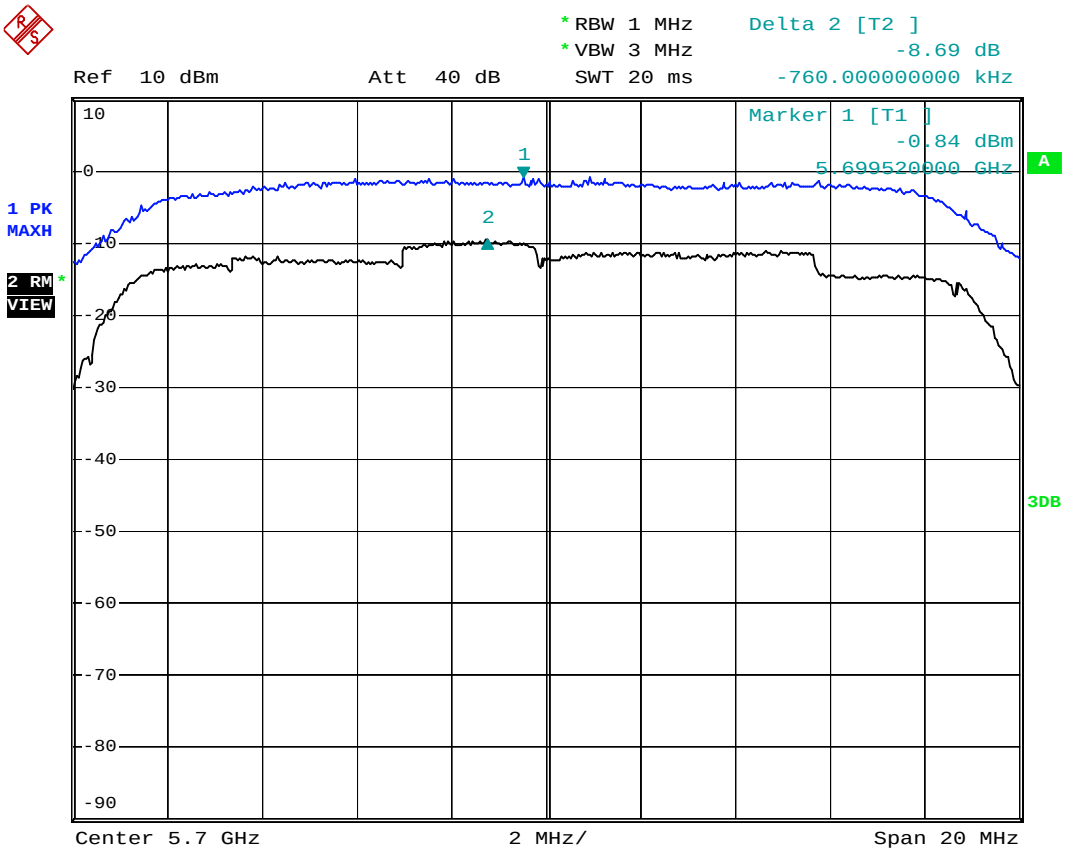


Date: 5.APR.2008 13:16:51

5600MHz Chain C

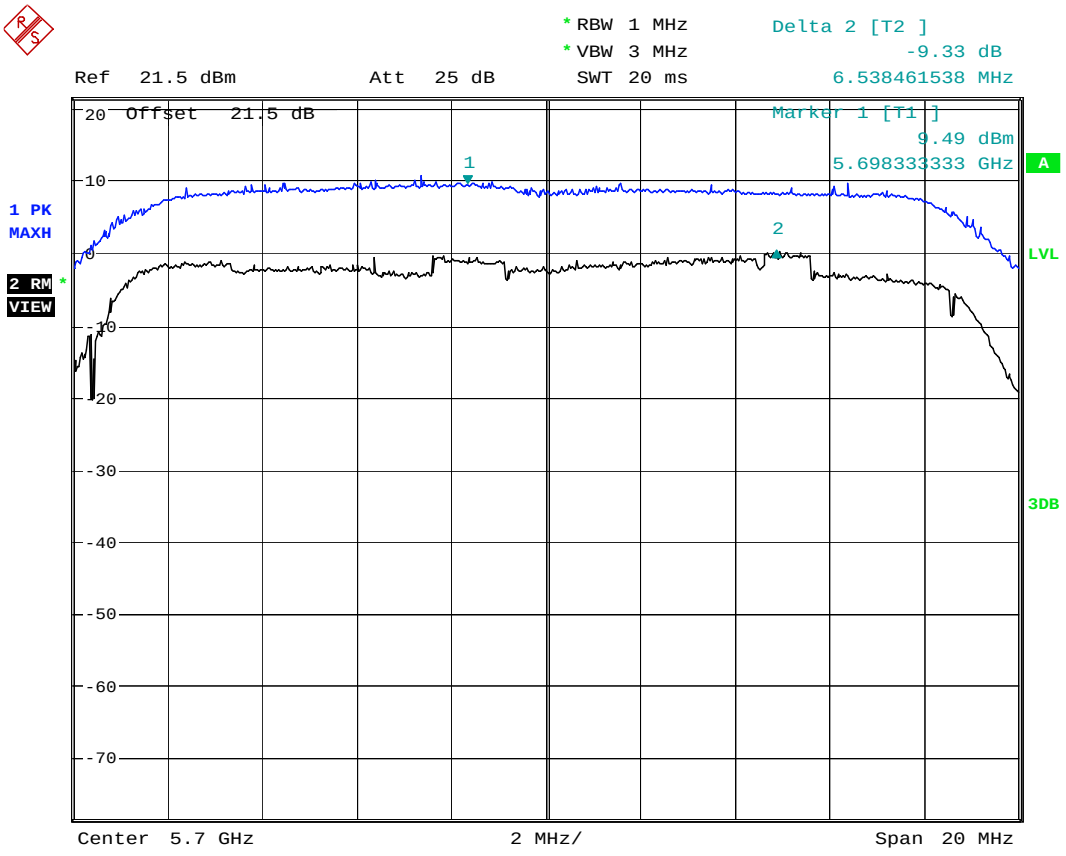


5700MHz Chain A



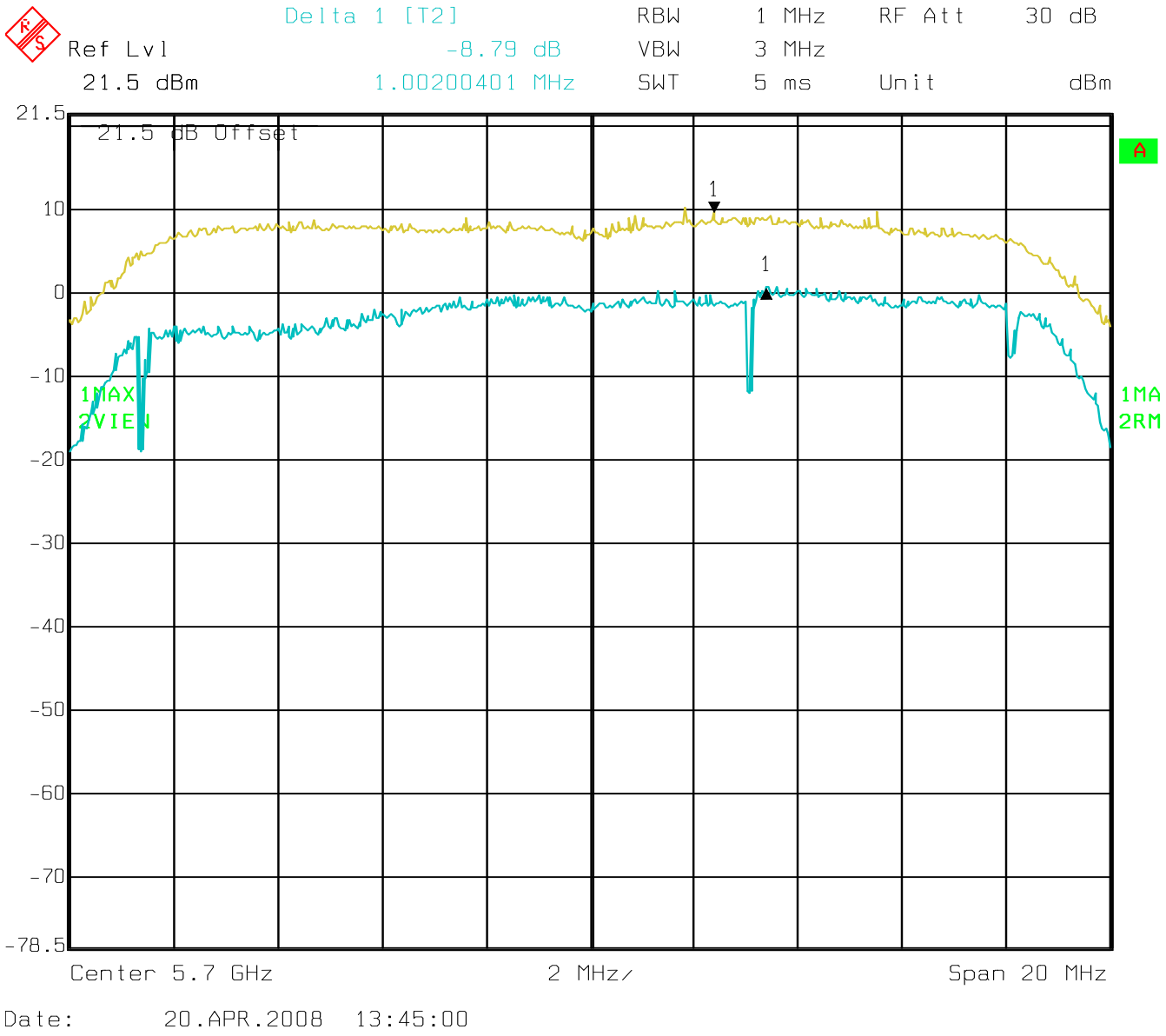
Date: 5.APR.2008 13:19:49

5700MHz Chain B



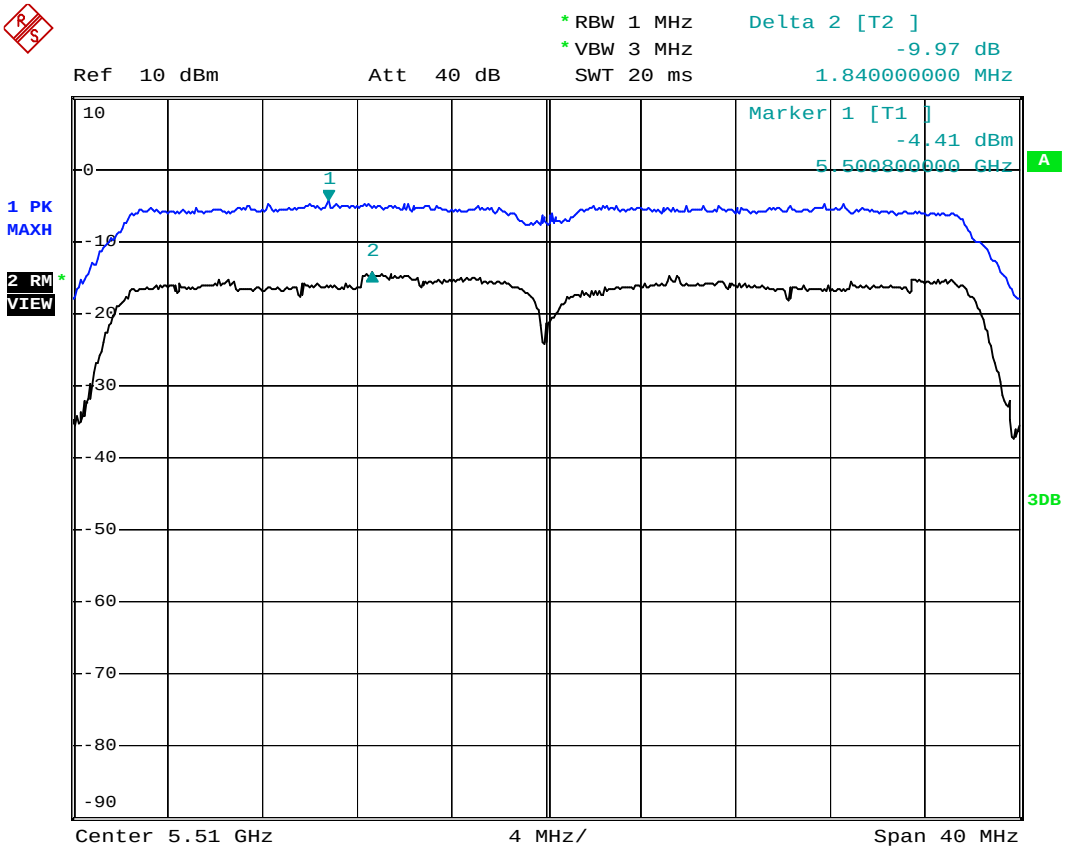
Date: 21.APR.2008 13:47:36

5700MHz Chain C



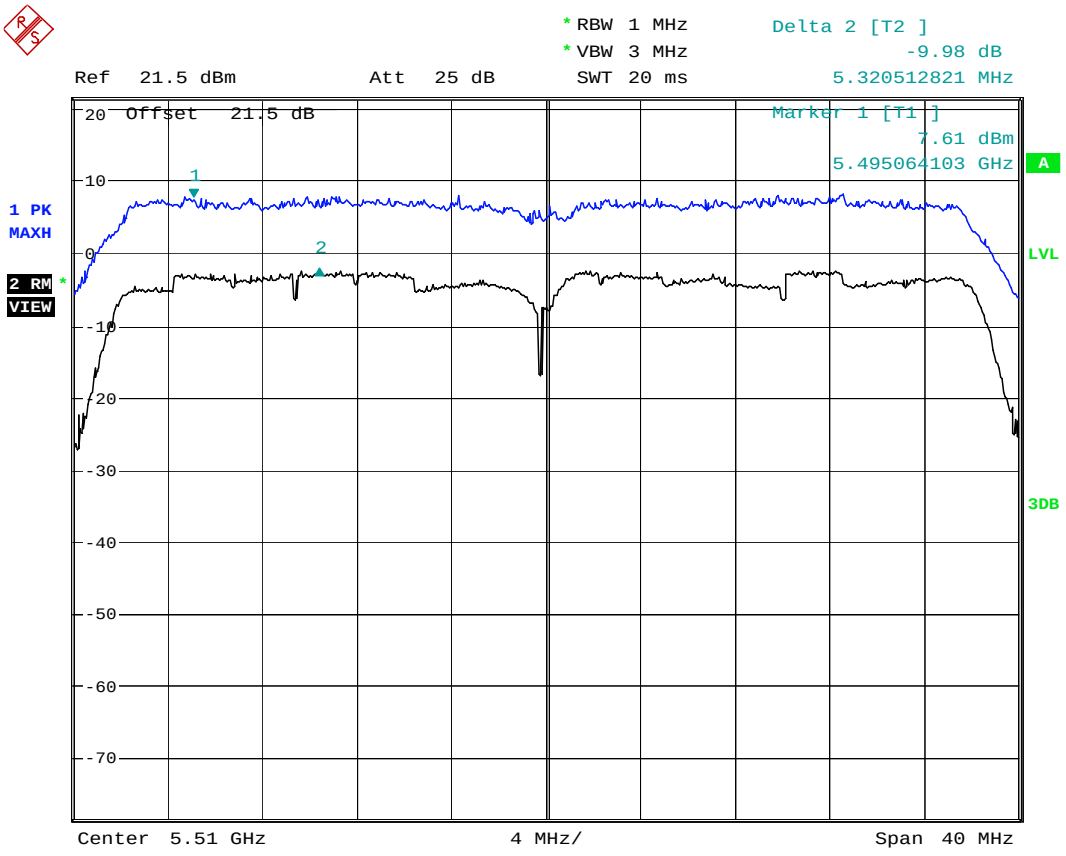
6.7.4.6 Sub-band 3 802.11na HT40 mode

5510MHz Chain A



Date: 5.APR.2008 14:08:21

5510MHz Chain B



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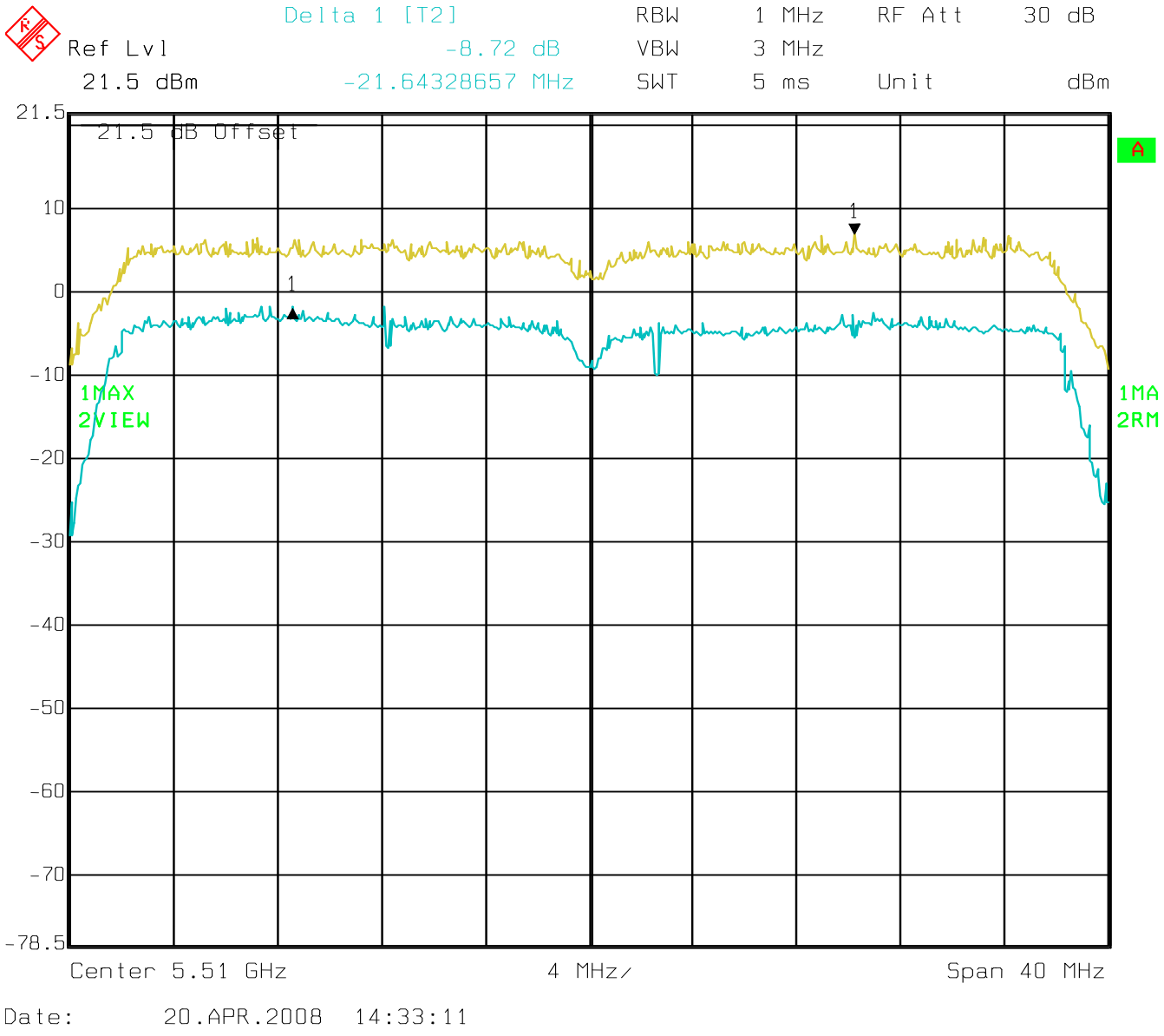
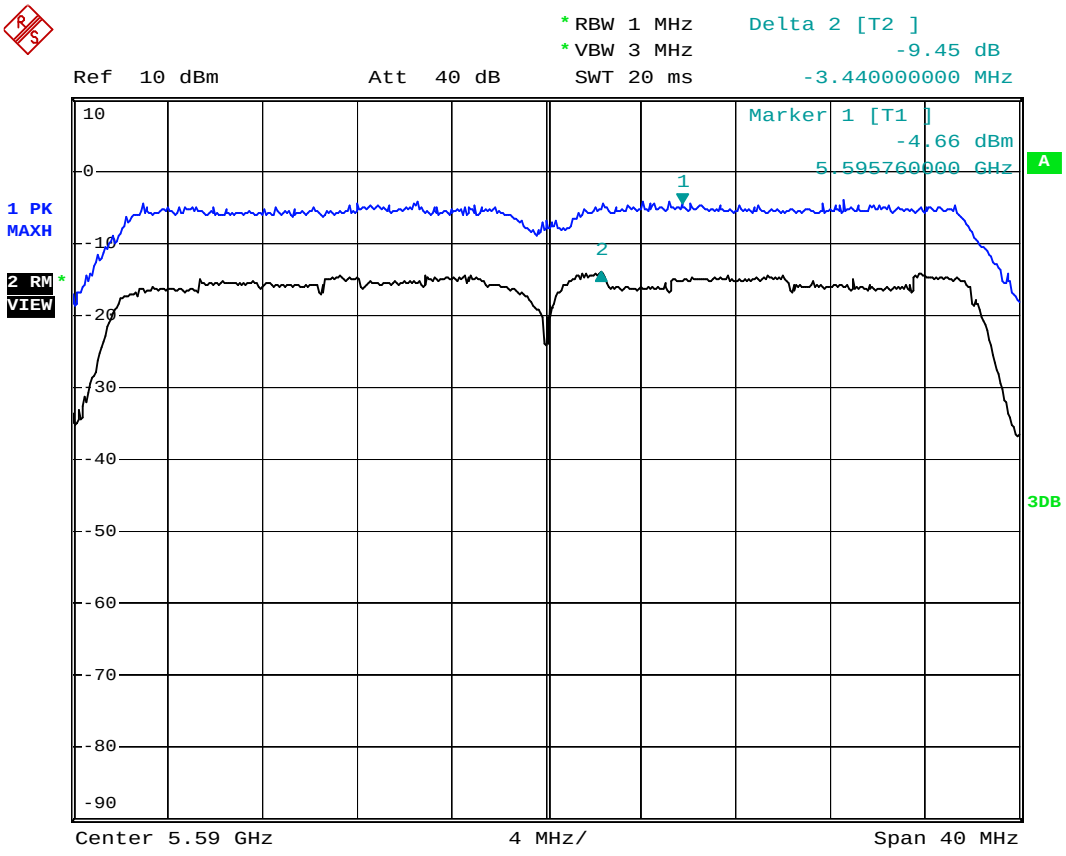
5510MHz Chain C



5590MHz Chain A



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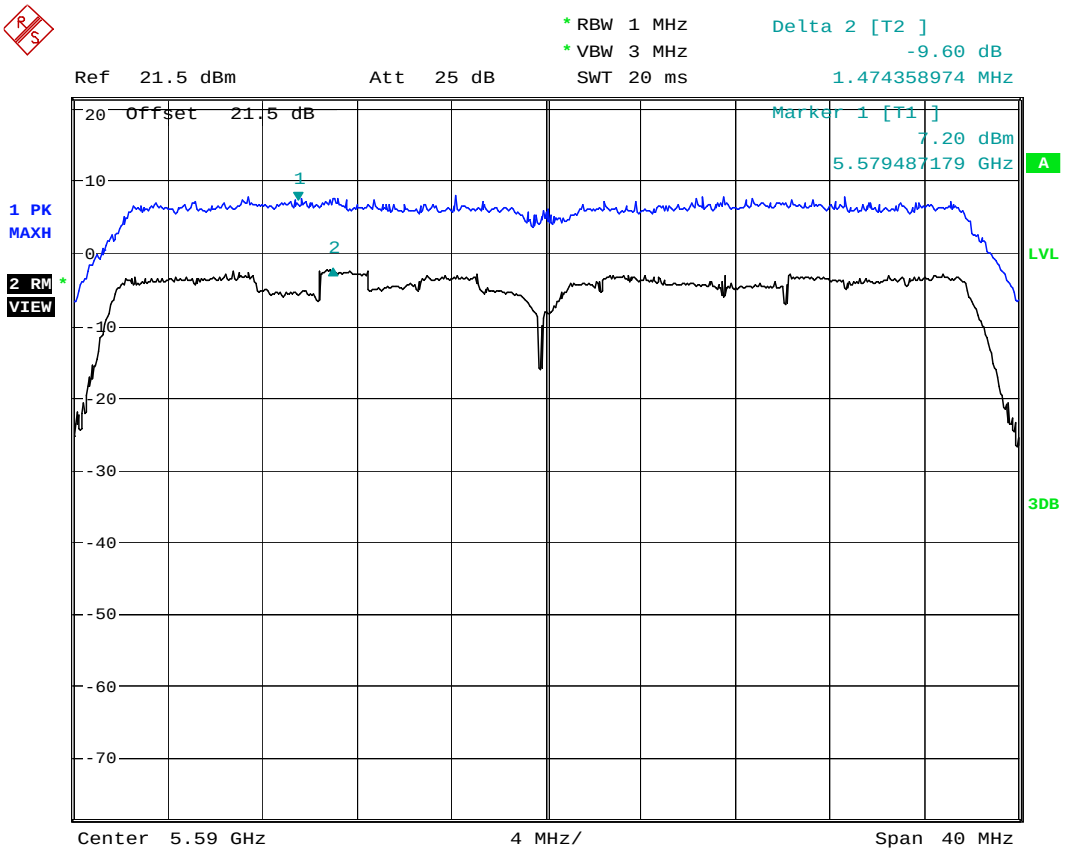
5590MHz Chain B



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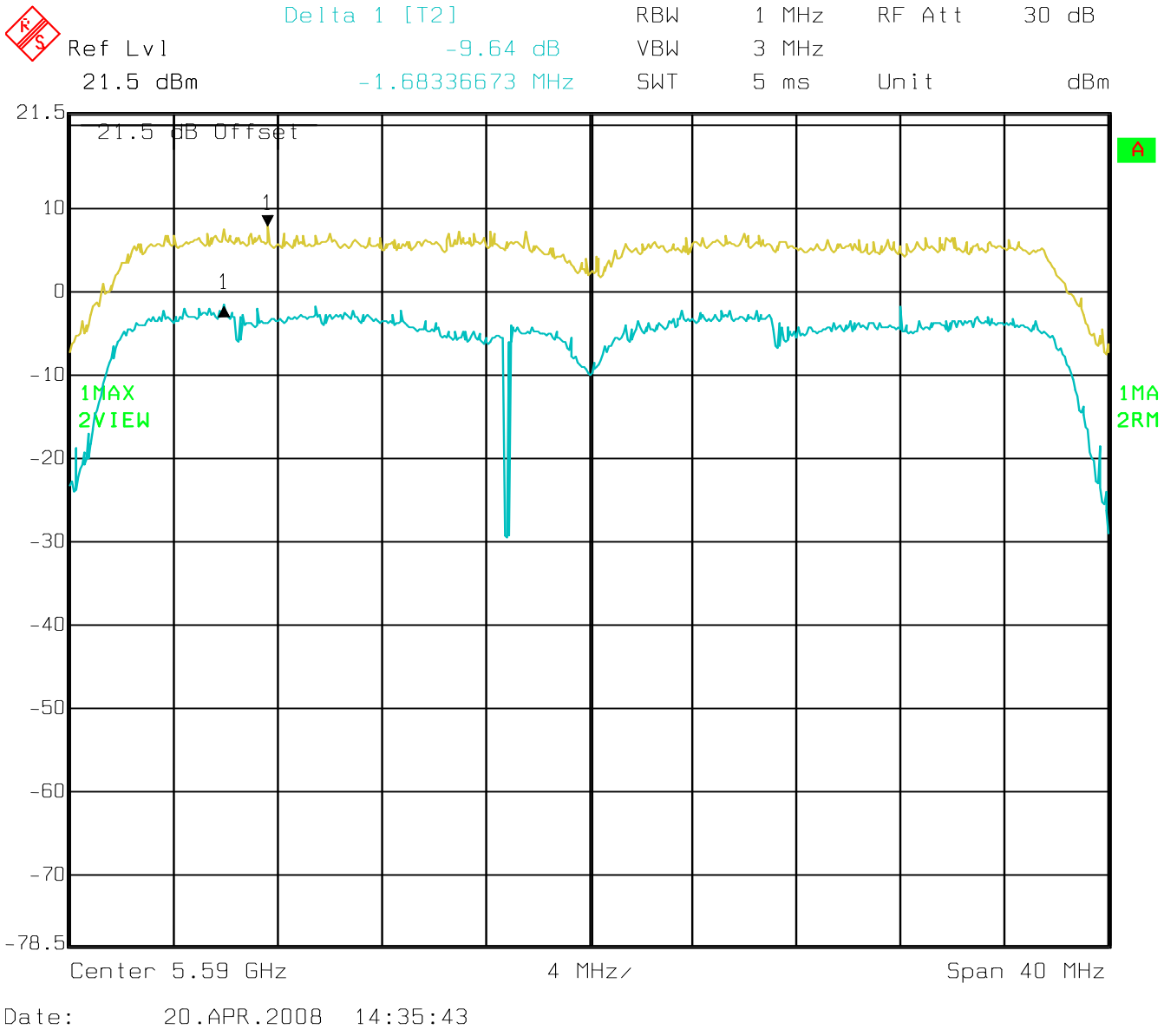
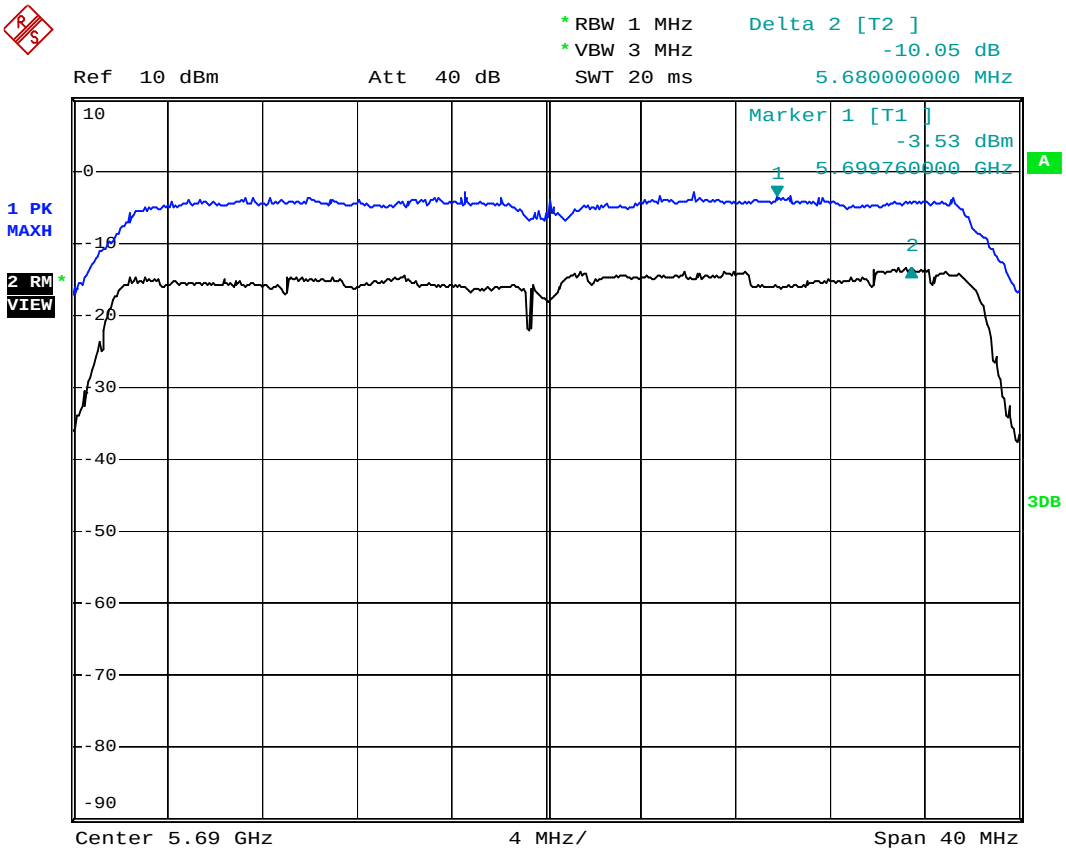
5590MHz Chain C



5690MHz Chain A



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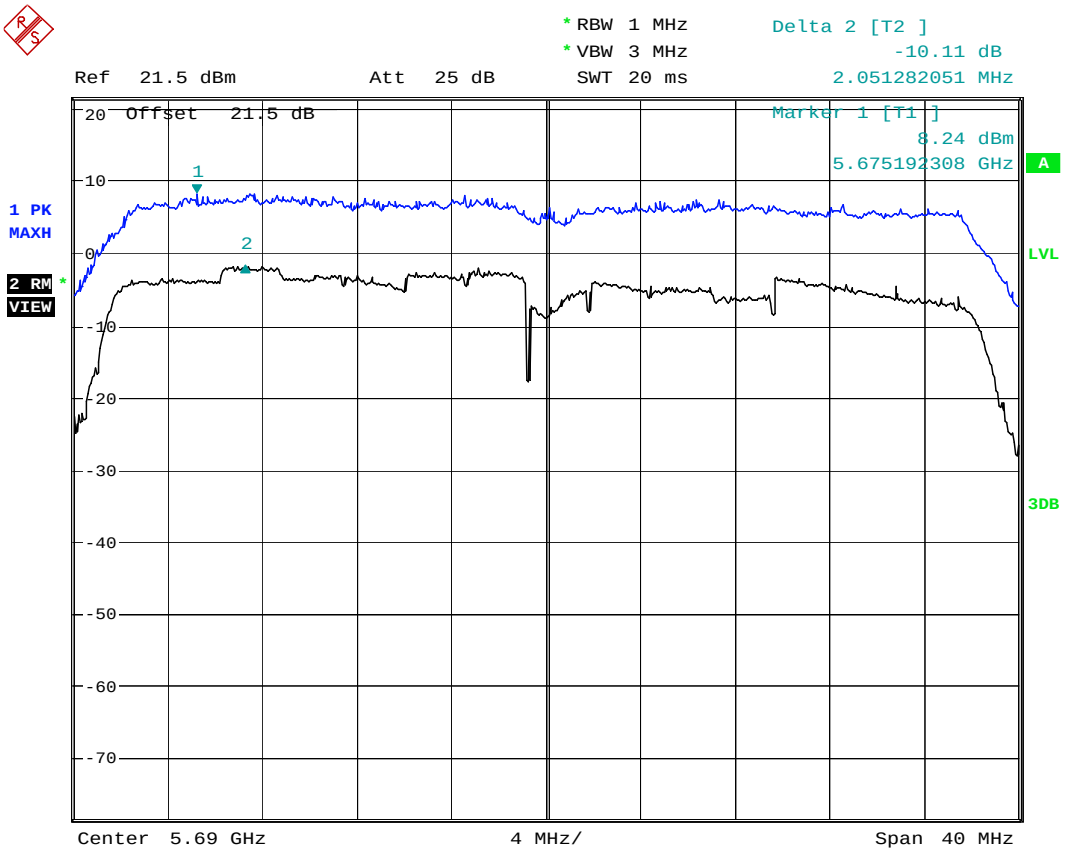
5690MHz Chain B



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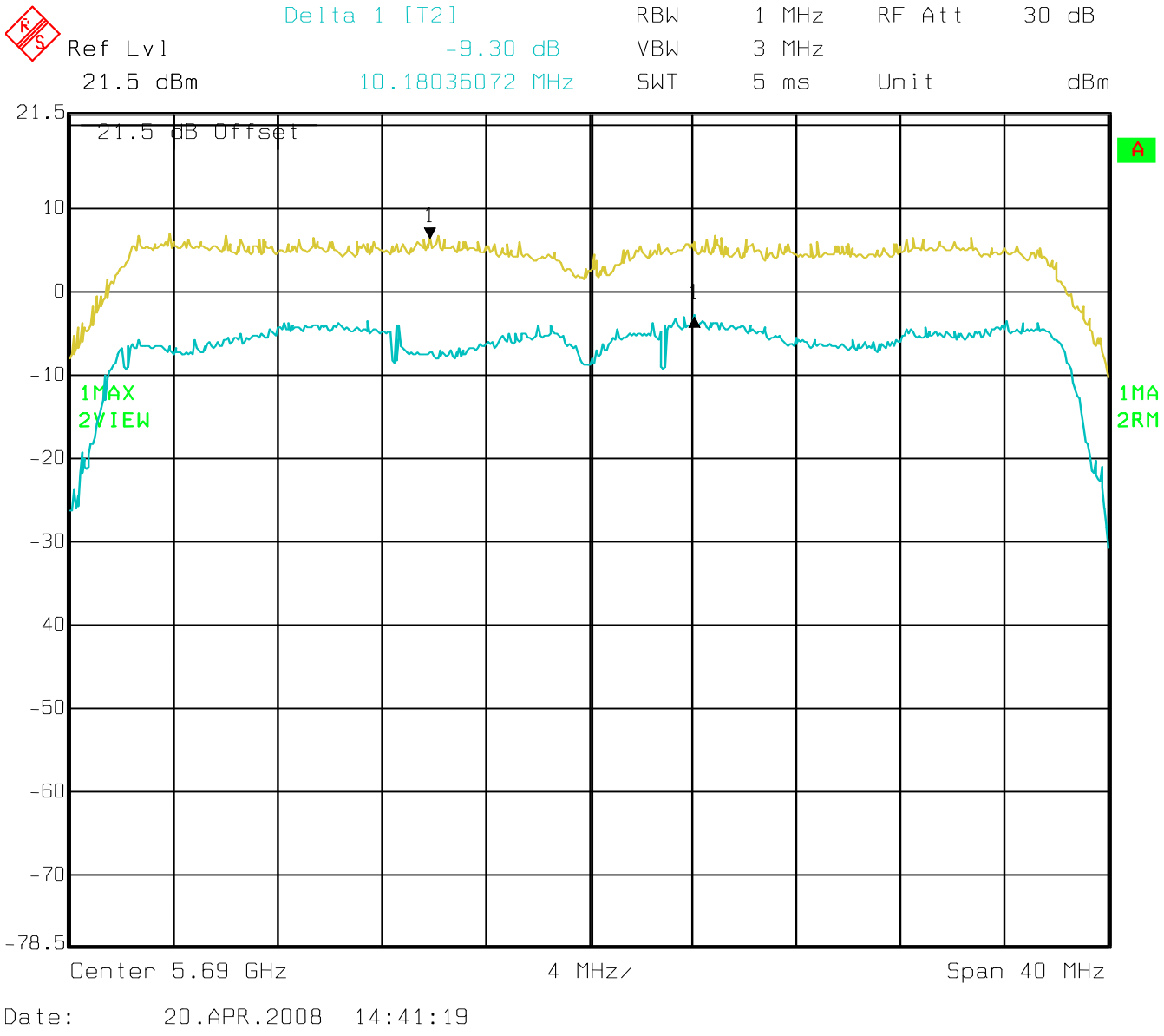
5690MHz Chain C

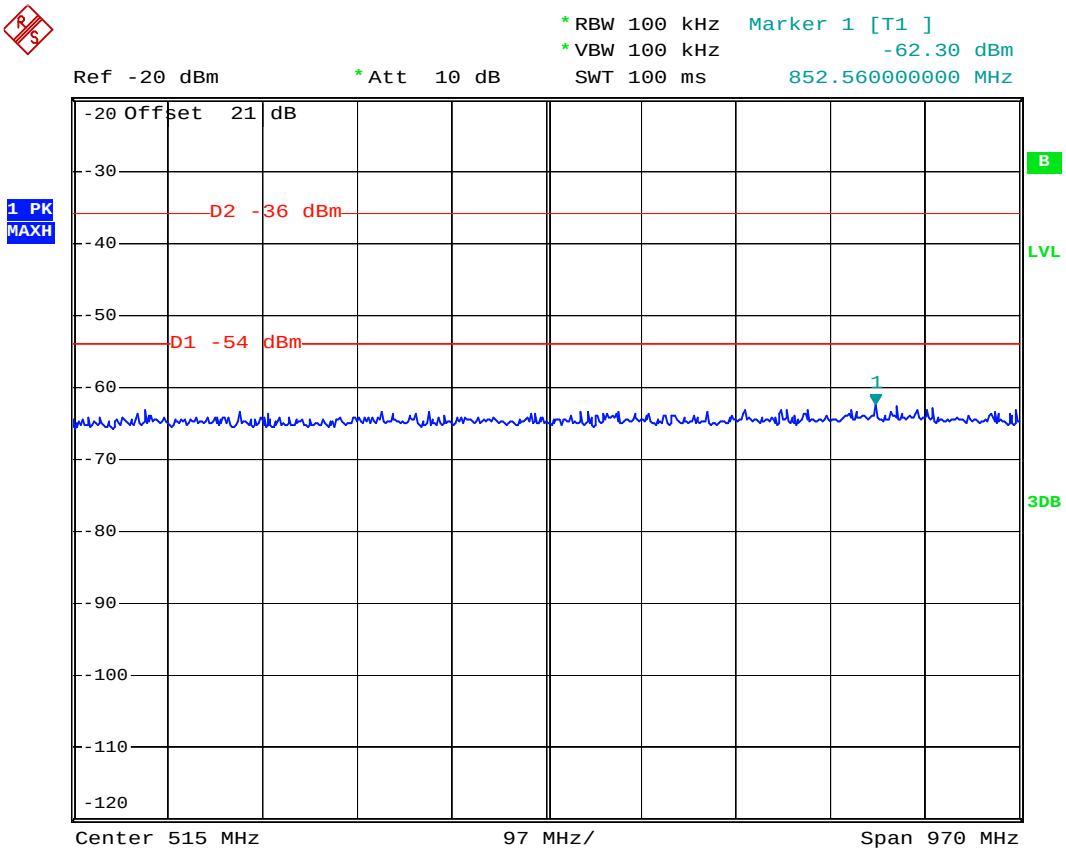


6.7.5 **Conducted Spurious Emissions**

6.7.5.1 802.11na HT20 Mode

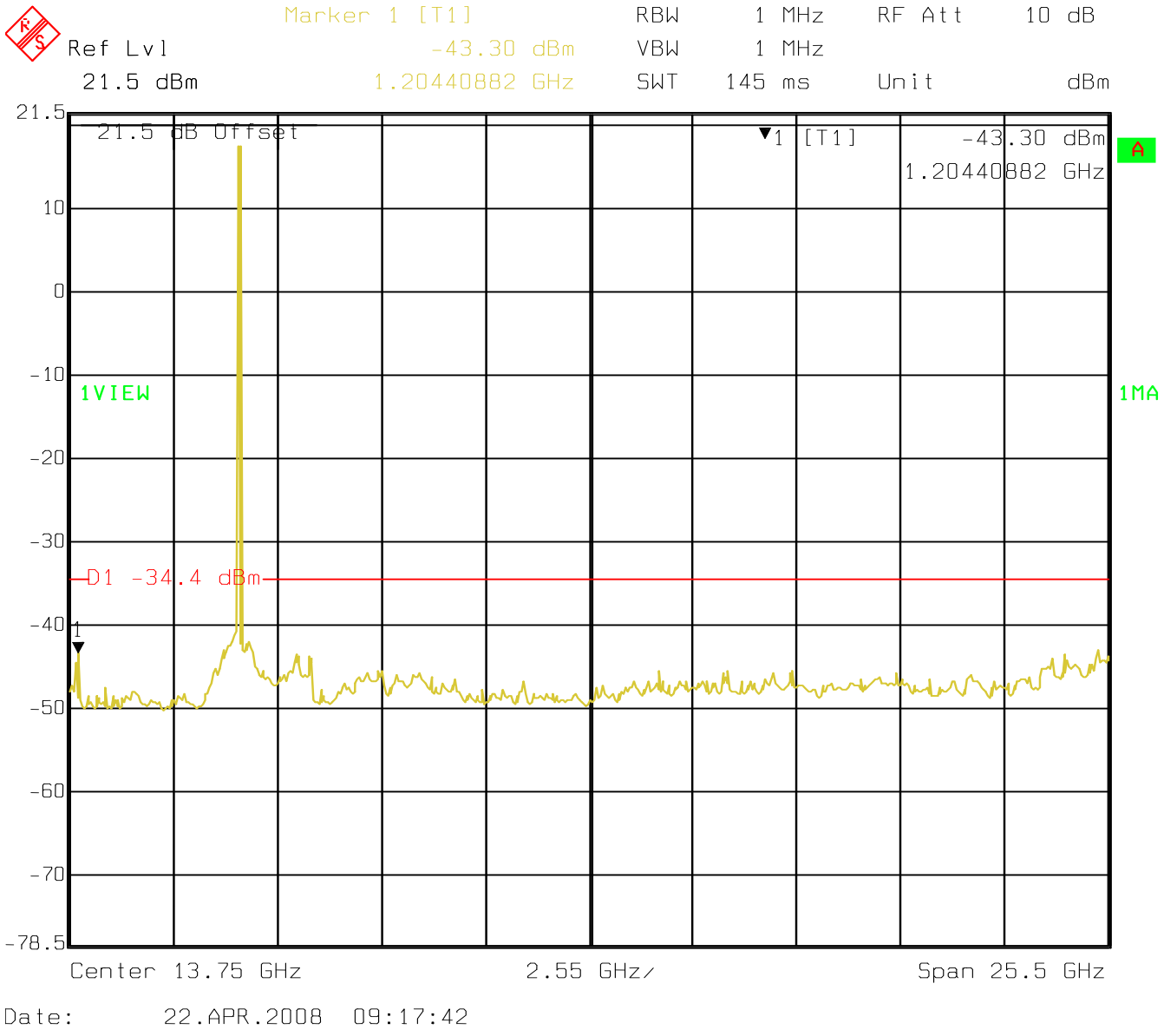
30M-1GHz

This plot shows worse case emission for all transmit antenna chains under HT20 operation mode. No measurable emissions captured.

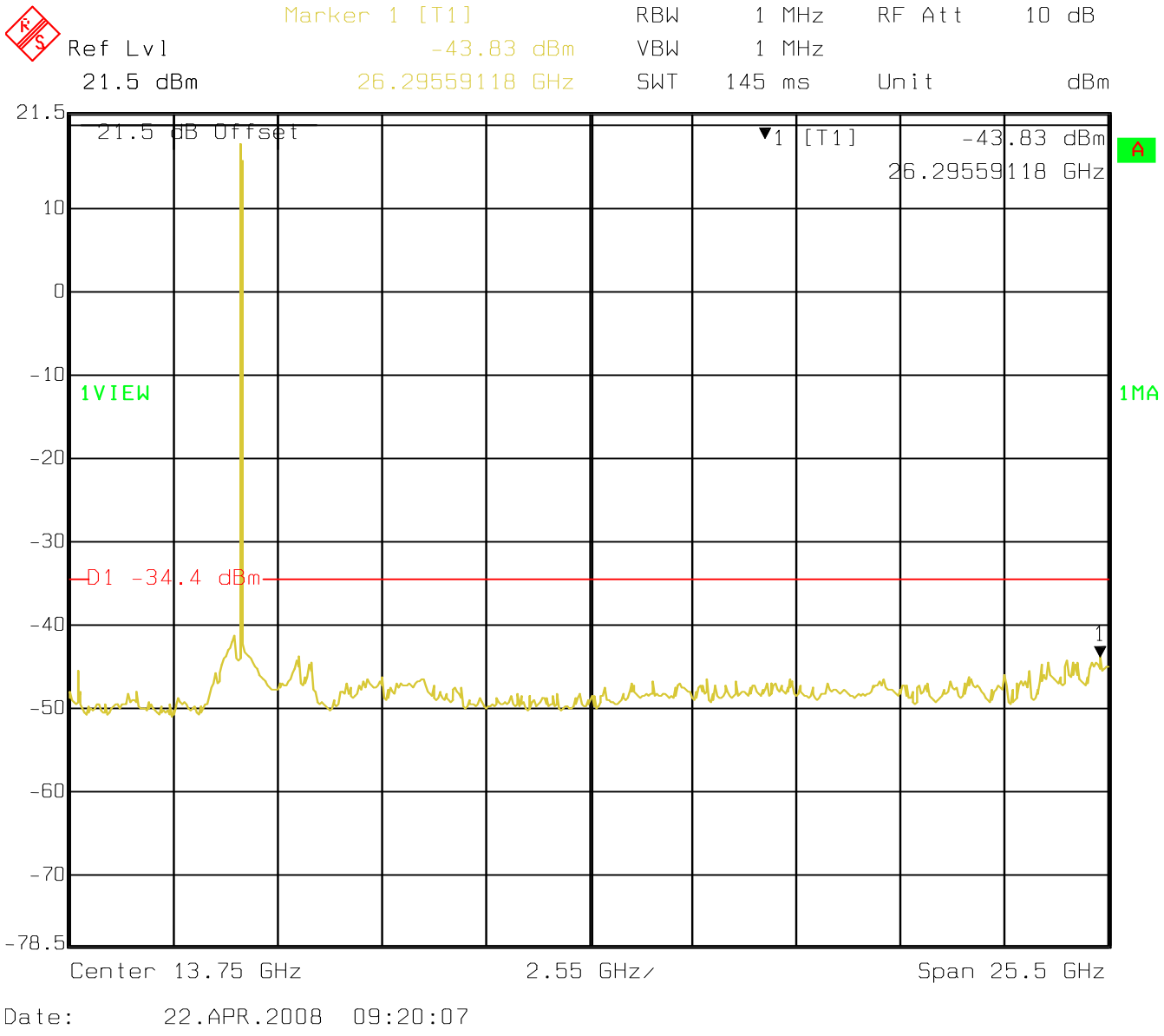


Date: 5.MAR.2008 23:03:30

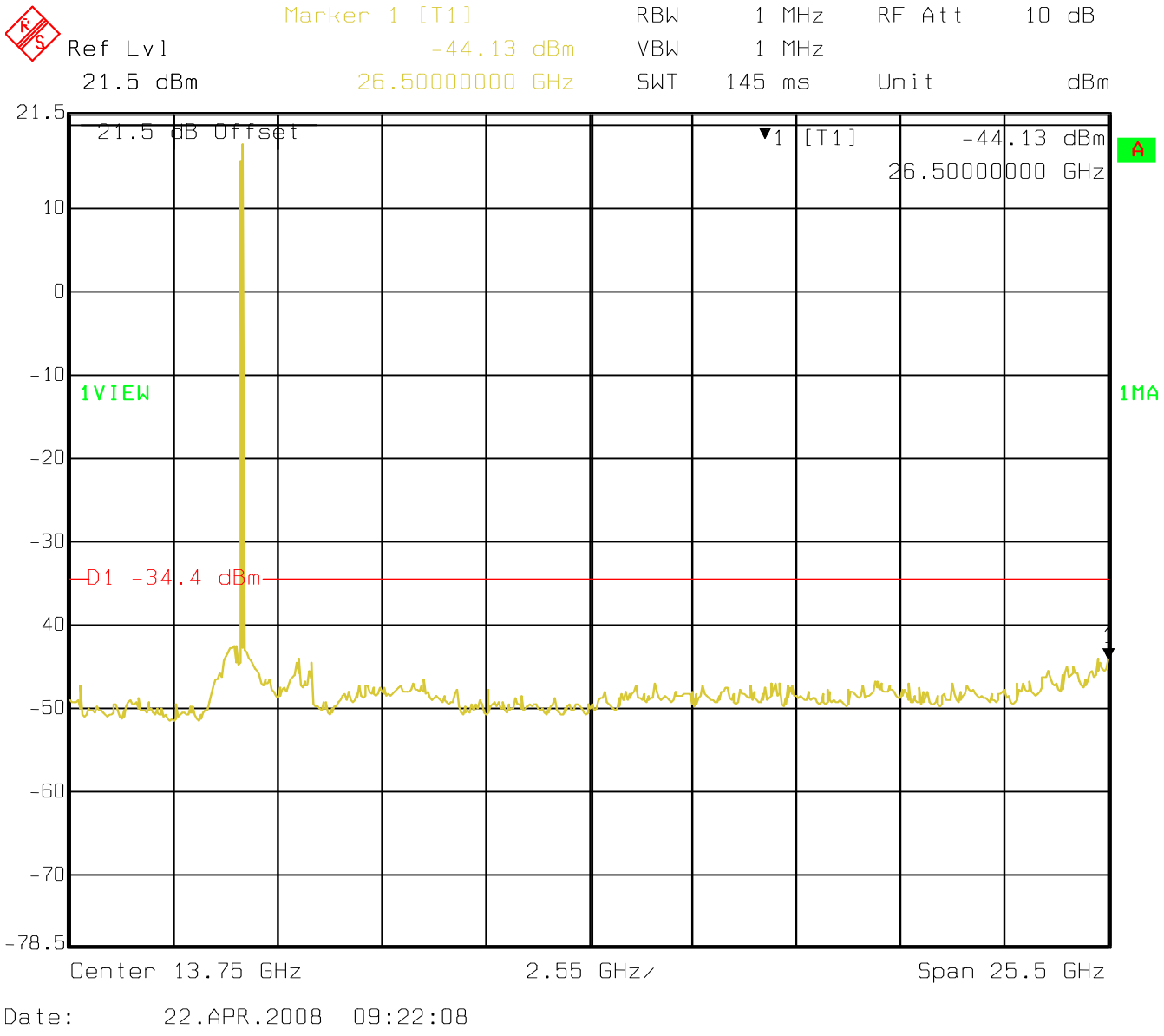
5180MHz, 1-26.5GHz



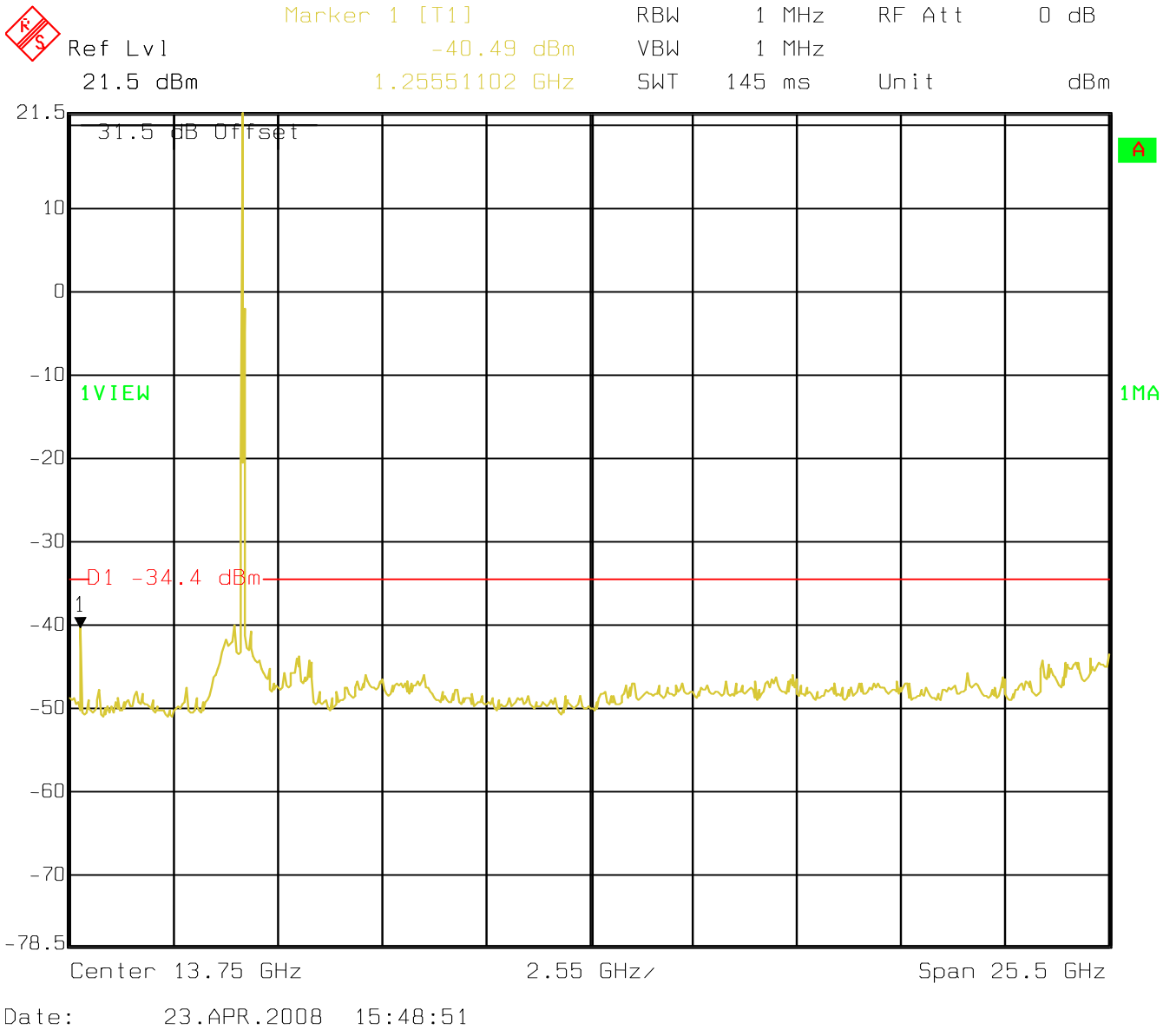
5220MHz, 1-26.5GHz



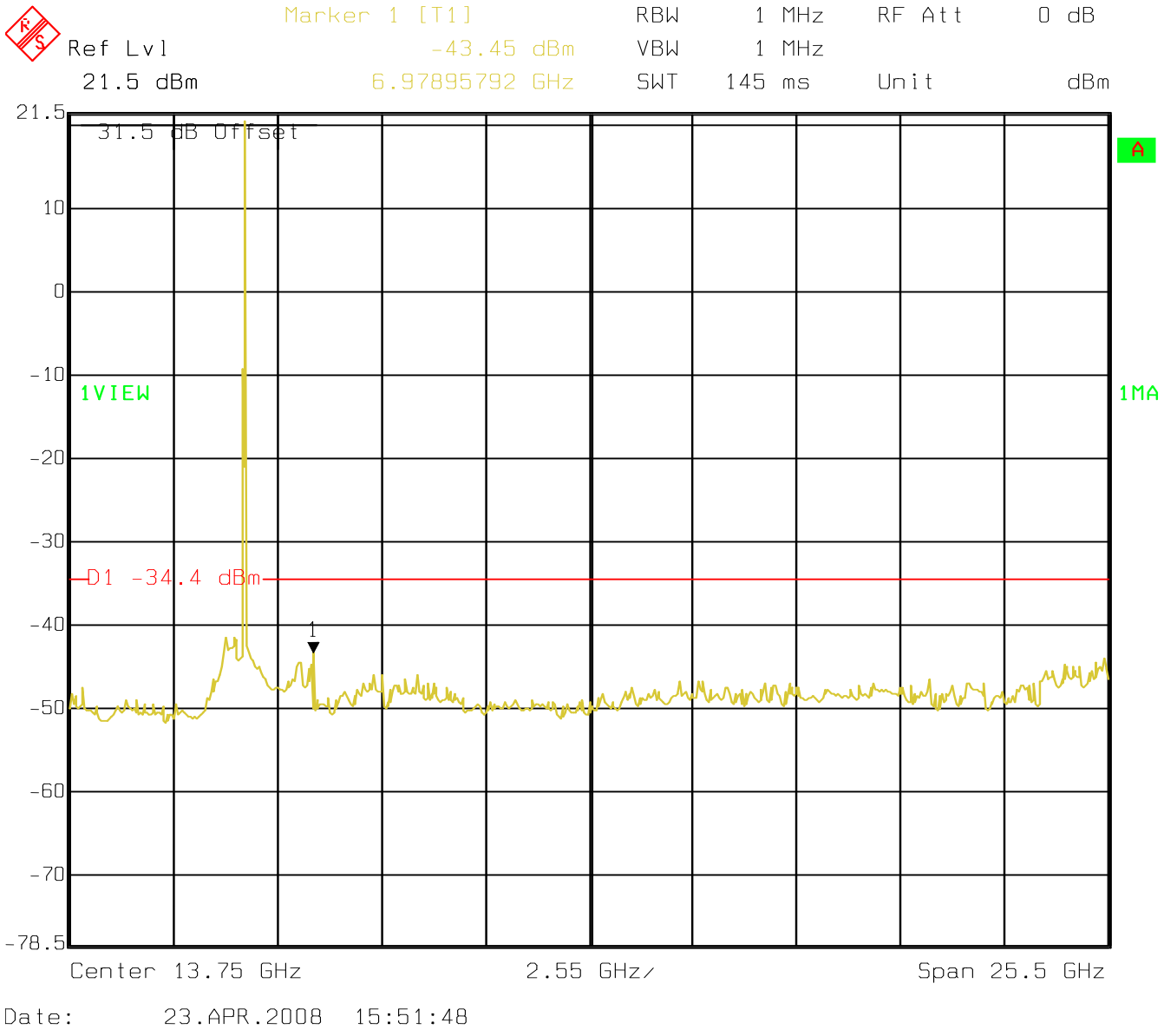
5240MHz, 1-26.5GHz



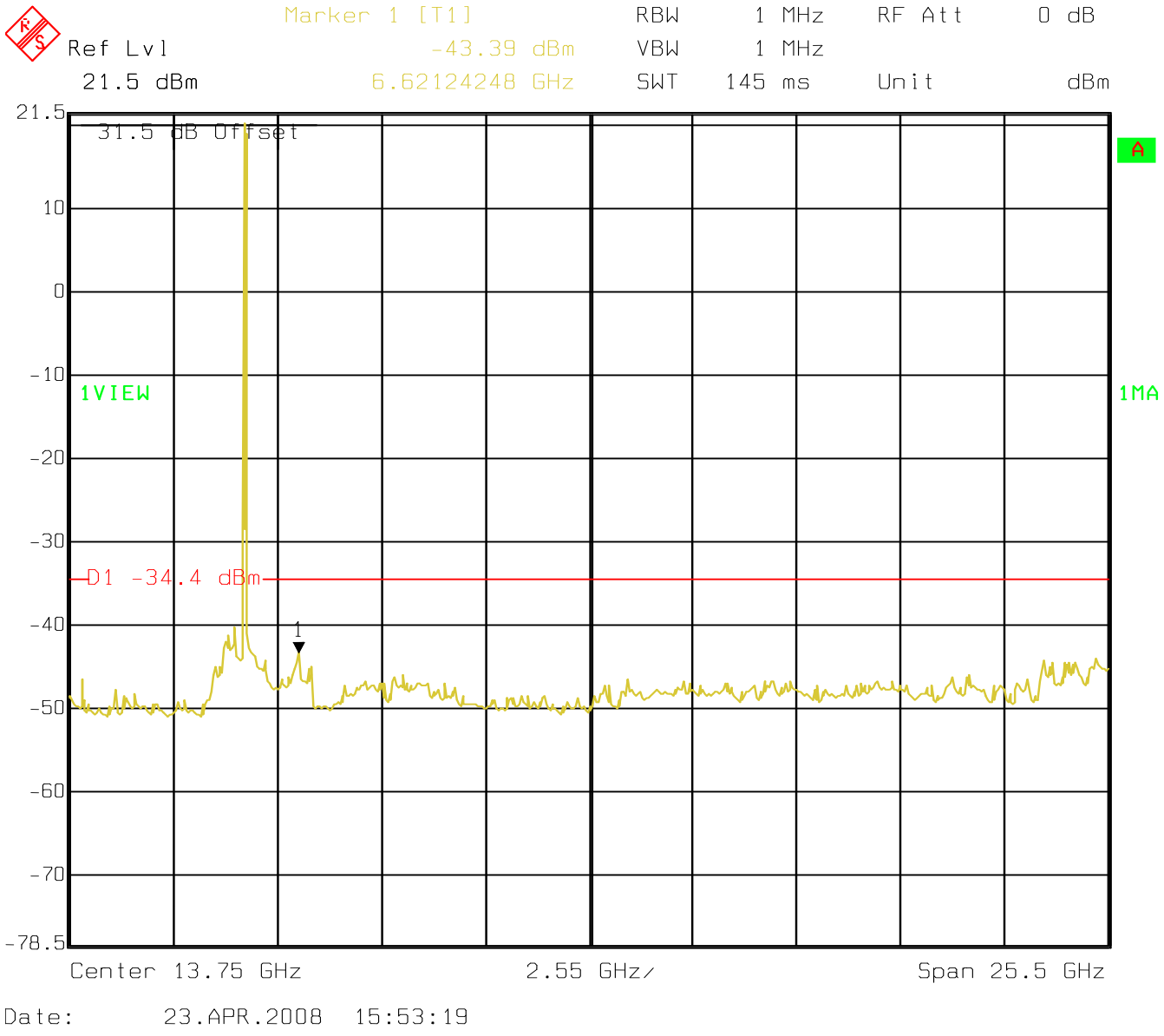
5260MHz, 1-26.5GHz



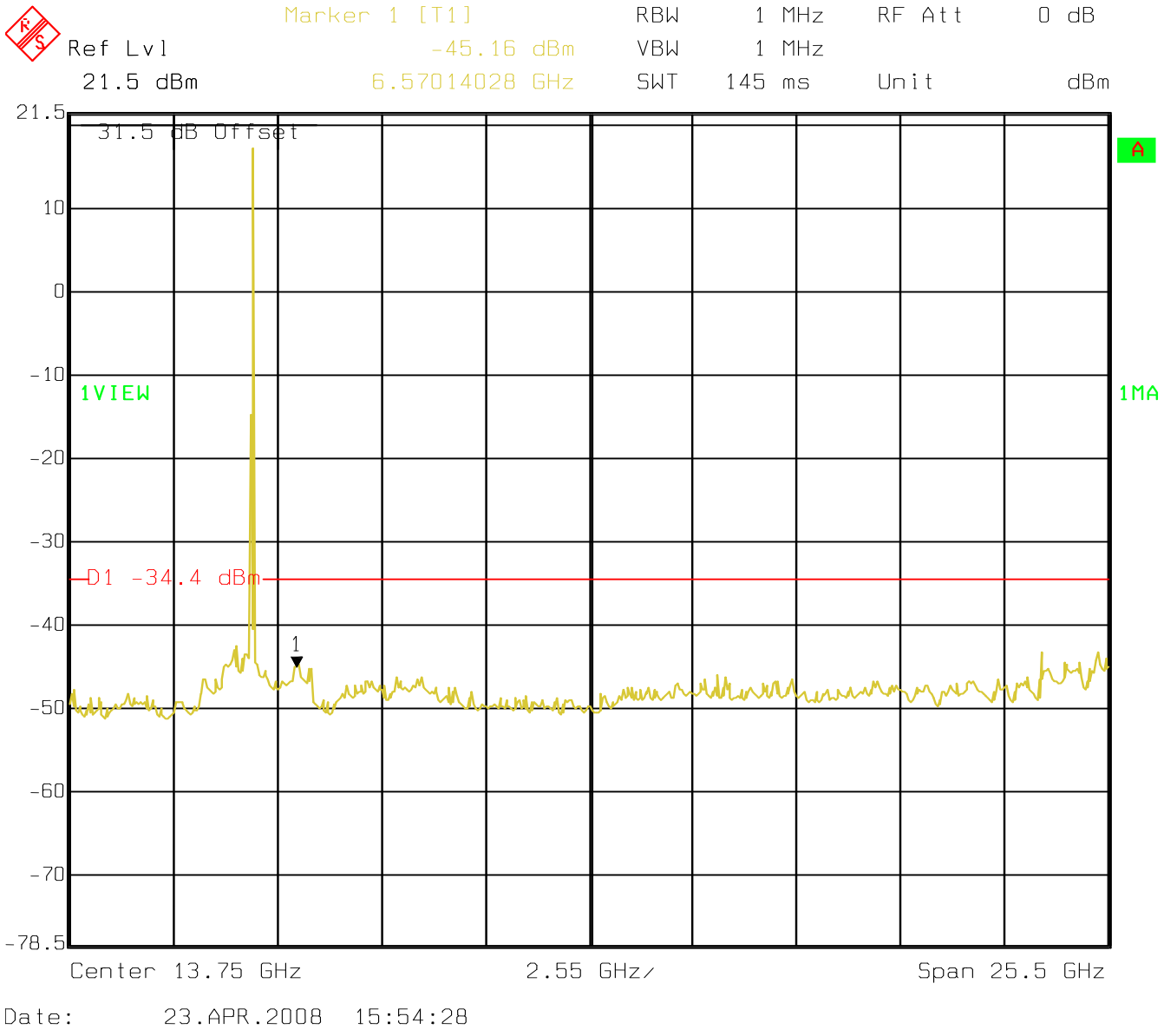
5300MHz, 1-26.5GHz



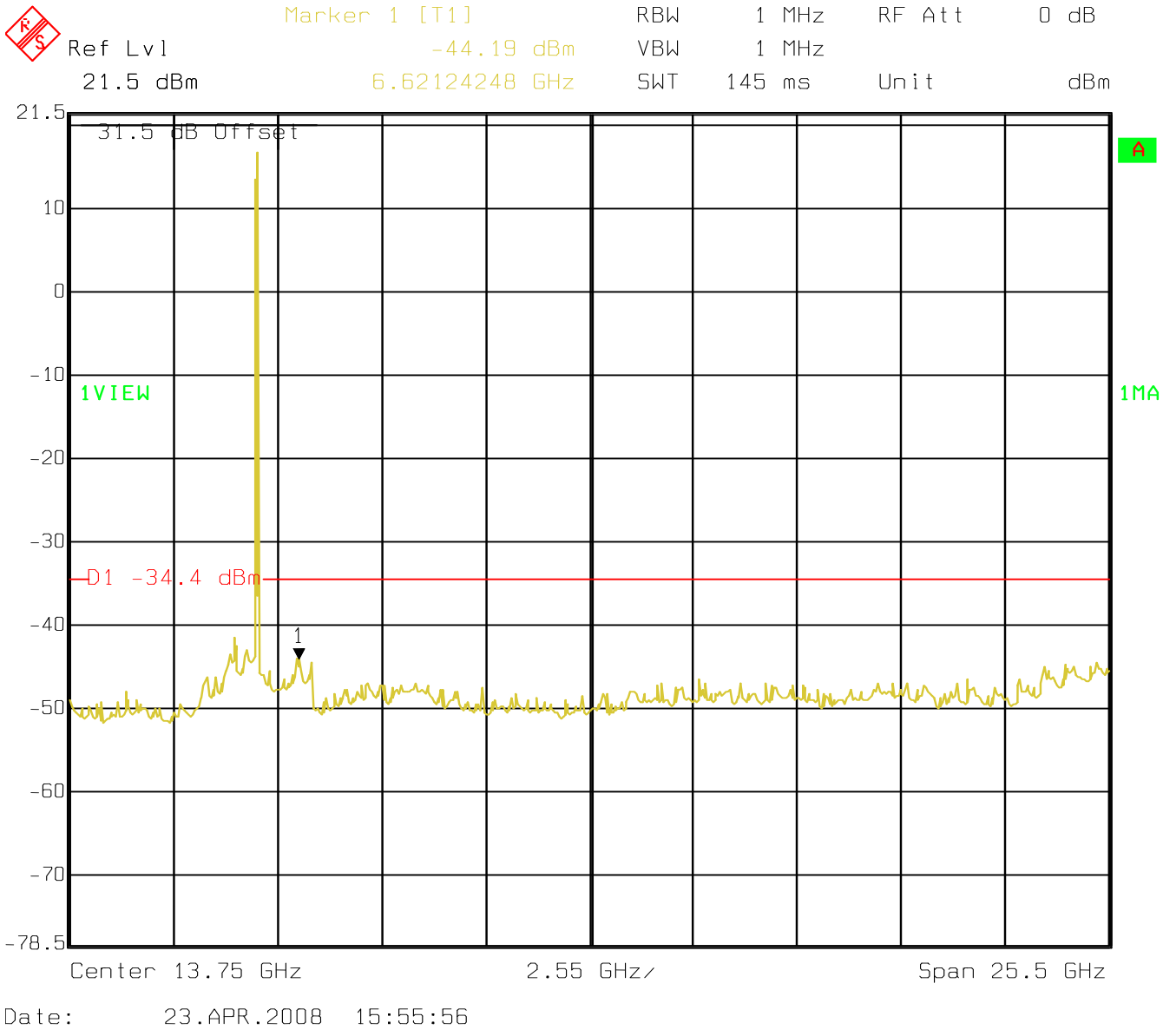
5320MHz, 1-26.5GHz



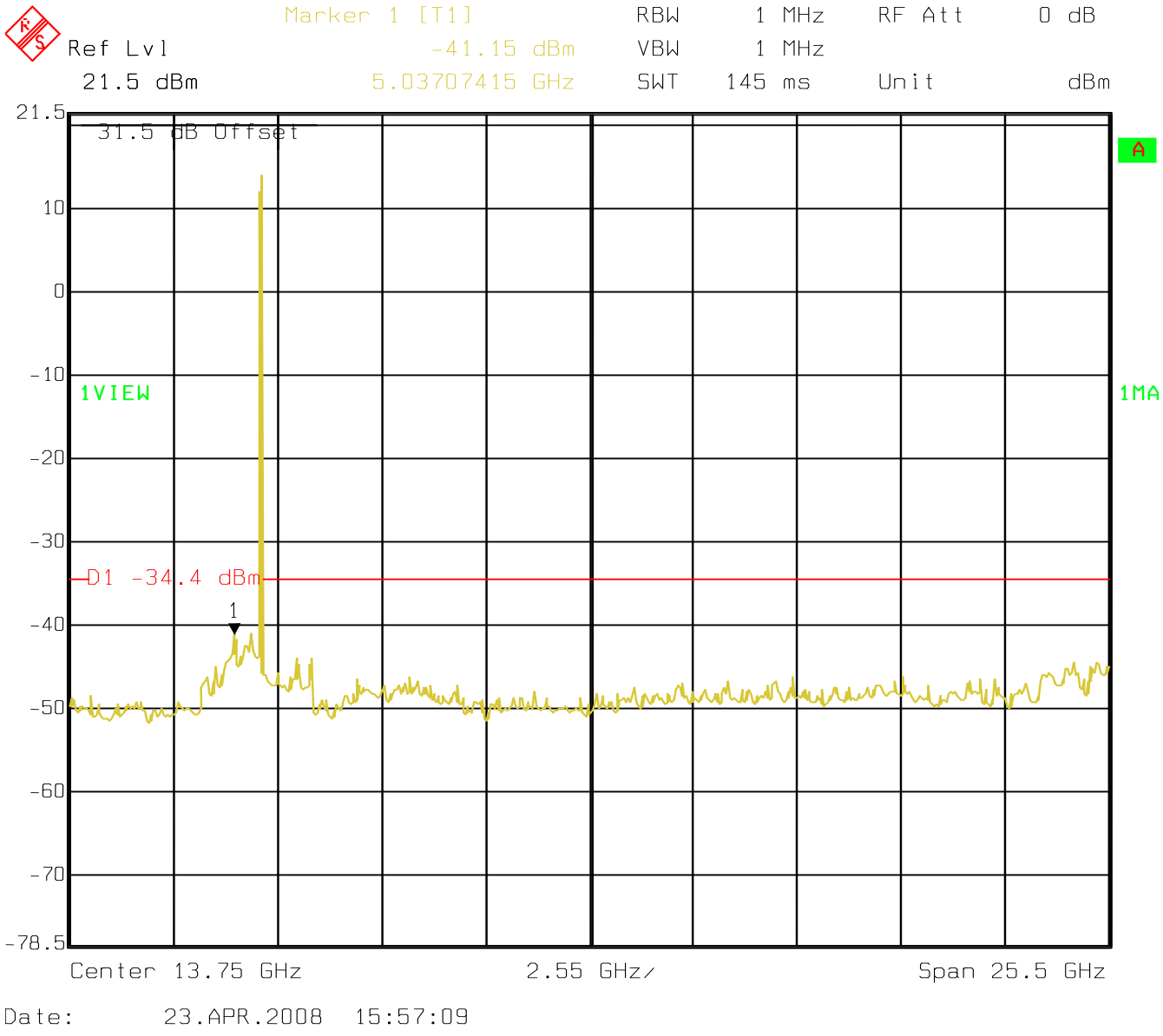
5500MHz, 1-26.5GHz



5600MHz, 1-26.5GHz



5700MHz, 1-26.5GHz

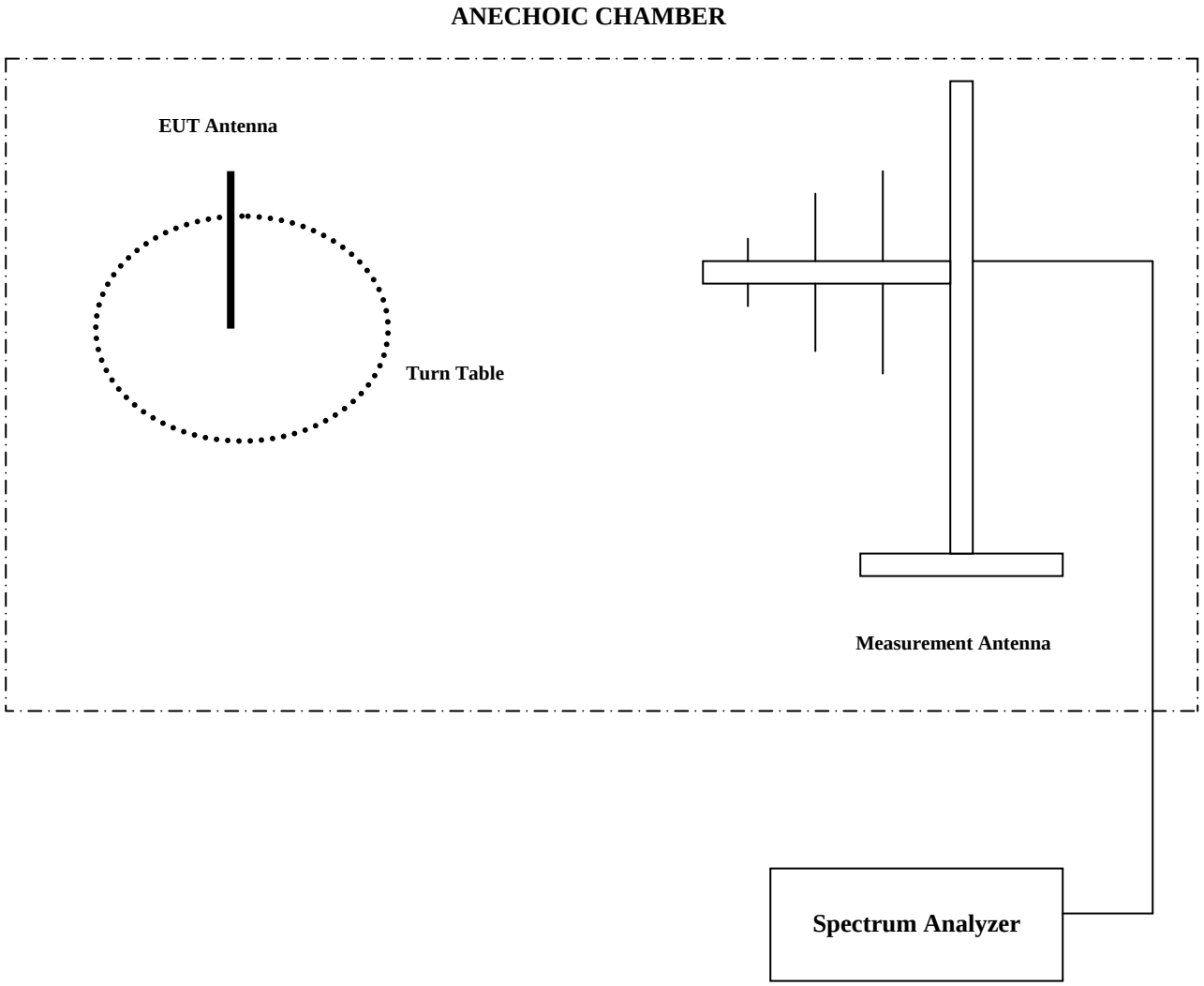


7 TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

No	Instrument/Ancillary	Type	Manufacturer	Serial No.	Cal Due	Interval
01	Spectrum Analyzer	ESIB 40	Rohde & Schwarz	100107	May 2009	1 year
02	Spectrum Analyzer	FSEM 30	Rohde & Schwarz	100017	August 2009	1 year
03	Signal Generator	SMY02	Rohde & Schwarz	836878/011	May 2009	1 year
04	Power-Meter	NRVD	Rohde & Schwarz	0857.8008.02	May 2009	1 year
05	Biconilog Antenna	3141	EMCO	0005-1186	June 2009	1 year
06	Horn Antenna (1-18GHz)	SAS-200/571	AH Systems	325	June 2009	1 year
07	Horn Antenna (18-26.5GHz)	3160-09	EMCO	1240	June 2009	1 year
08	Power Splitter	11667B	Hewlett Packard	645348	n/a	n/a
09	Climatic Chamber	VT4004	Voltsch	G1115	May 2009	1 year
10	High Pass Filter	5HC2700	Trilithic Inc.	9926013	n/a	n/a
11	High Pass Filter	4HC1600	Trilithic Inc.	9922307	n/a	n/a
12	Pre-Amplifier	JS4-001isap00	Miteq	00616	May 2009	1 year
13	Power Sensor	URV5-Z2	Rohde & Schwarz	DE30807	May 2009	1 year
14	Digital Radio Comm. Tester	CMD-55	Rohde & Schwarz	847958/008	May 2009	1 year
15	Universal Radio Comm. Tester	CMU 200	Rohde & Schwarz	832221/06	May 2009	1 year
16	LISN	ESH3-Z5	Rohde & Schwarz	836679/003	May 2009	1 year
17	Loop Antenna	6512	EMCO	00049838	July 2009	2 years

8 BLOCK DIAGRAMS

Radiated Testing



9 Revision History

2008-6-10: First Issue