

Annex 4 Measurement Diagrams to
TEST REPORT
No.: 6-0592-14-2-10a

According to:

FCC Part 15.247

for

ASCOM AB

SH1-ACAA
Cellular/Wi-Fi Smartphone
(WLAN 2.4GHz)

FCC ID: BXZSH1C

Laboratory Accreditation and Listings			
 DAkkS Deutsche Akkreditierungsstelle D-PL-12047-01-01	 FEDERAL COMMUNICATIONS COMMISSION • USA • MRA US-EU 0003	 Industry Canada Reg. No.: 3462D-1 Reg. No.: 3462D-2 Reg. No.: 3462D-3	 Voluntary Controls for Electromagnetic Emissions Reg. No.: R-2666 C-2914, T-1967, G-301
 Wi-Fi ALLIANCE AUTHORIZED RF LABORATORY	 Authorized Test Lab LAB CODE 20011130-00		
accredited according to DIN EN ISO/IEC 17025			
CETECOM GmbH Laboratory Radio Communications & Electromagnetic Compatibility Im Teelbruch 116 • 45219 Essen • Germany Registered in Essen, Germany, Reg. No.: HRB Essen 8984 Tel.: + 49 (0) 20 54 / 95 19-954 • Fax: + 49 (0) 20 54 / 95 19-964 E-mail: info@cetecom.com • Internet: www.cetecom.com			

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1. Conducted EMI measurements on AC-mains port according 15.207, class B

1.04

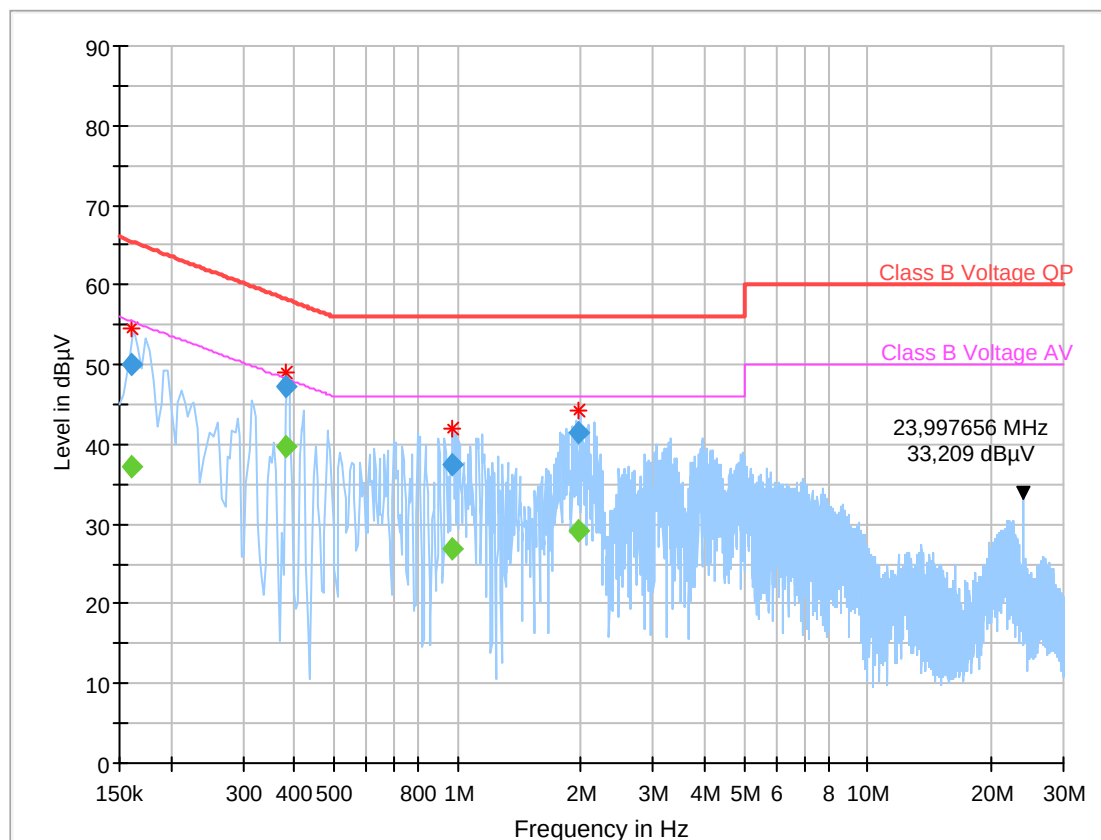
Common Information

Test Description:	Conducted Voltage Measurement Class B
Test Site & Location:	Conducted Emission, CETECOM GmbH Essen
Test Software:	R&S EMC32 v9.15
Test Specification:	FCC 15.107, FCC 15.207
Operating Mode:	WLAN 2.4GHz ping
Measured on line:	N/L1
Diagram details:	Shows the peak values as a sum of measured ports in maxhold mode
Environmental Conditions:	Humidity: 43%rH; Temperature: 21°C
Operator:	npe
Comments:	

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF
HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EA0D
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	120VAC
Comments:	

Full Spectrum



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)
0.160000	---	37.25	55.46
0.160000	49.95	---	65.46
0.381875	---	39.77	48.24
0.381875	47.16	---	58.24
0.975625	---	26.91	46.00
0.975625	37.36	---	56.00
1.982344	---	29.04	46.00
1.982344	41.56	---	56.00

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)
0.160000	---	37.25	55.46
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0.381875	---	39.77	48.24
0.381875	47.16	---	58.24
0.975625	---	26.91	46.00
0.975625	37.36	---	56.00
1.982344	---	29.04	46.00
1.982344	41.56	---	56.00

2. Conducted RF-measurements on antenna port

2.1. Conducted RF-power

Method: §9.1.3

Tnom=20,4°C, 36% Feuchte,

NRV-Z32, Ref#602

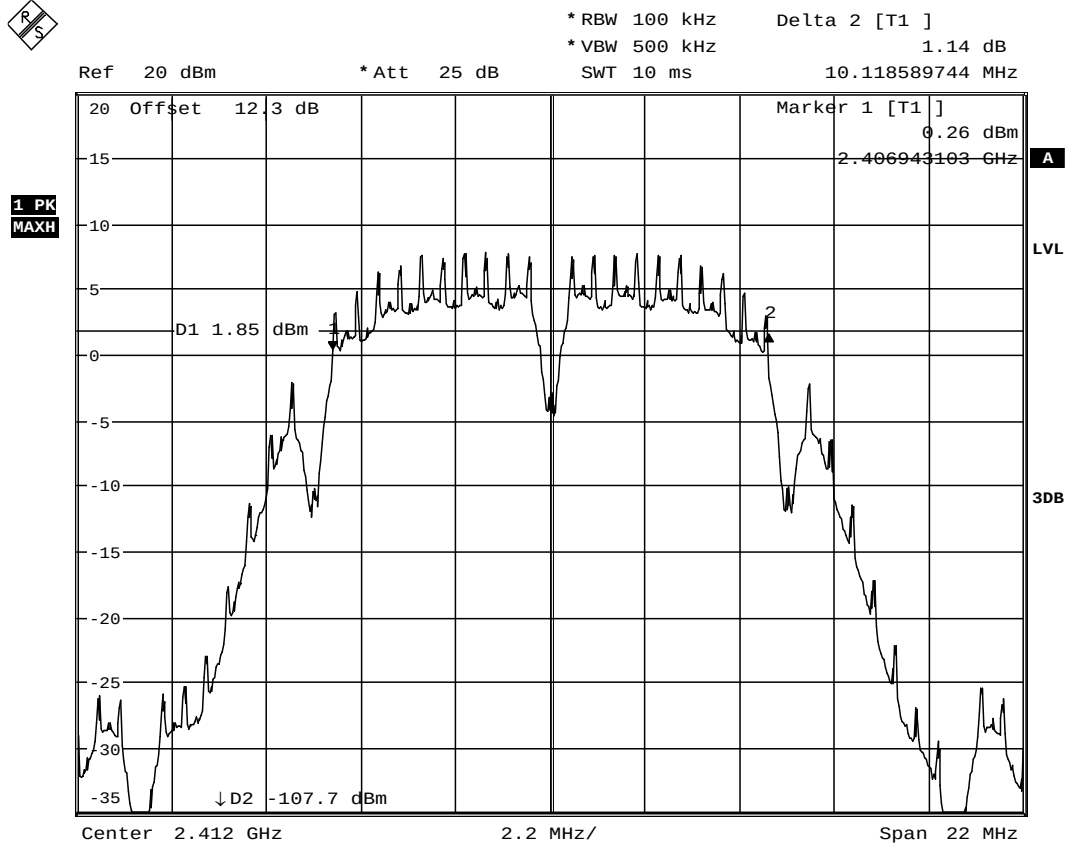
2.1.1. Channel 1, 6, 11

Peak Measurement				
b-mode		Channel no.		
Data rate	Modulation	1, gc=58	6, gc=58	11, gc=58
1Mbit	DBPSK	17,78	17,41	17,04
2Mbit	DQPSK	17,73	17,37	16,97
5.5Mbit	CCK	16,92	16,52	16,11
11Mbit	CCK	17,37	17,03	16,58
MAX-Value		17,78	17,41	17,04
g-Mode		Channel no.		
Data rate	Modulation	1, gc=50	6, gc=58	11, gc=50
6Mbit	BPSK	14,18	16,95	12,90
9Mbit	BPSK	14,12	16,91	12,84
12Mbit	QPSK	14,13	16,97	12,87
18Mbit	QPSK	13,99	16,90	12,78
24Mbit	16QAM	14,05	16,97	12,84
36Mbit	16QAM	14,01	16,93	12,82
48Mbit	64QAM	14,01	17,02	12,84
54Mbit	64QAM	14,08	17,08	12,90
MAX-Value		14,18	17,08	12,9
n-Mode HT20 (1 spatial stream: 1SS)		Channel no.		
Data rate	Modulation	1	6	11
MCS0 - 6.5Mbps	BPSK	14,22	17,20	13,06
MCS1 - 13Mbps	QPSK	14,15	17,16	13,00
MCS2 - 19.5Mbps	QPSK	14,16	17,18	13,03
MCS3 - 26Mbps	QAM16	14,16	17,21	13,02
MCS4 - 39Mbps	QAM16	14,13	17,19	13,01
MCS5 - 52Mbps	QAM64	14,22	17,24	13,11
MCS6 - 58.5Mbps	QAM64	14,22	17,29	13,16
MCS7 - 65Mbps	QAM64	14,15	17,27	13,06
MAX-Value		14,22	17,29	13,16

2.2. 6-dB Bandwidth

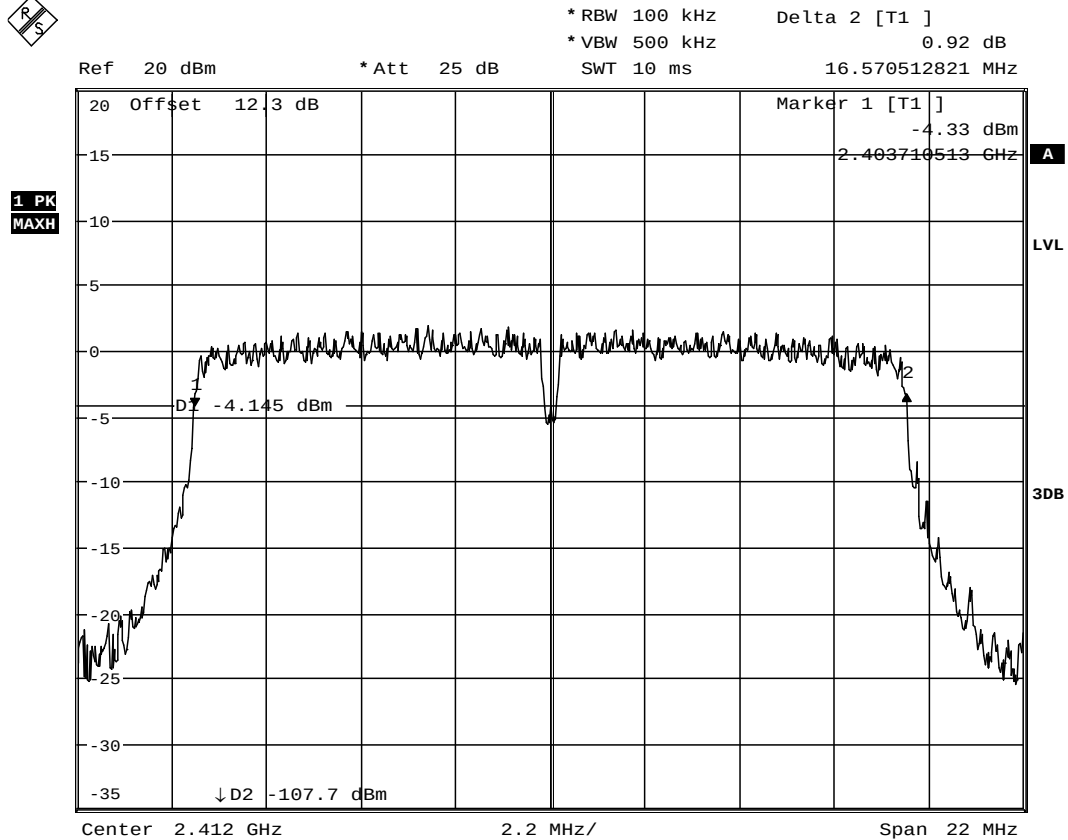
2.2.1. Channel 1

1Mbit



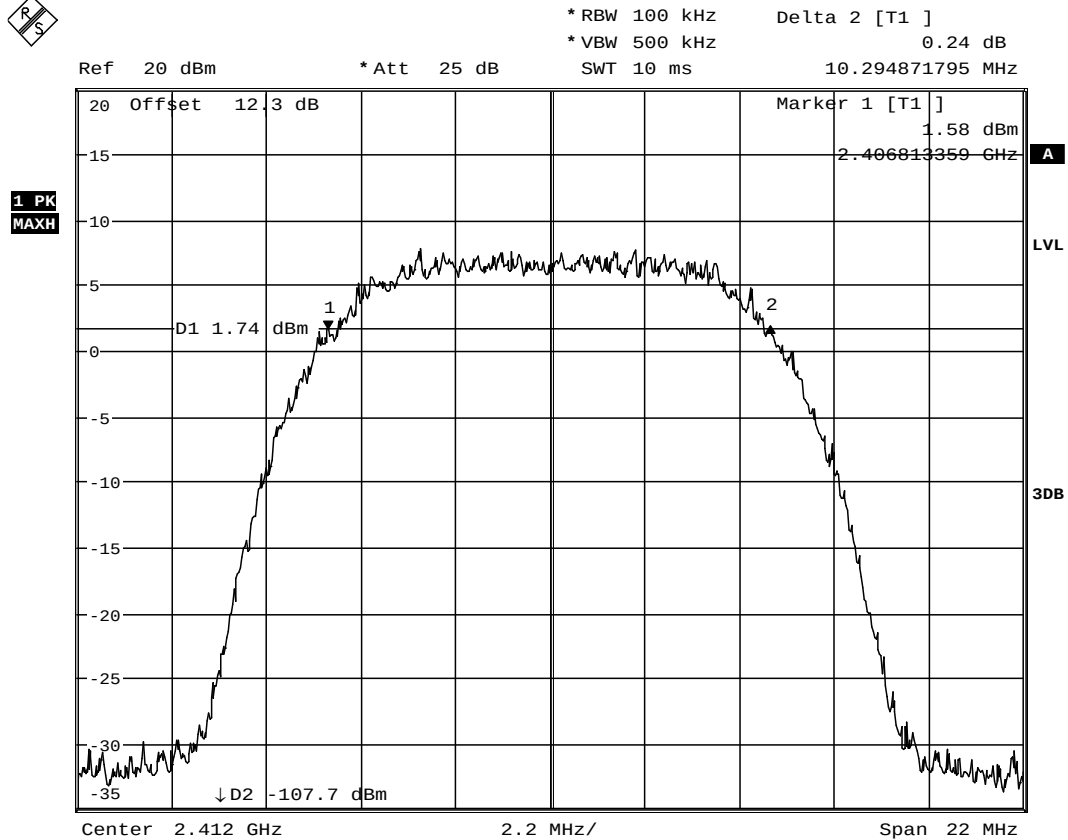
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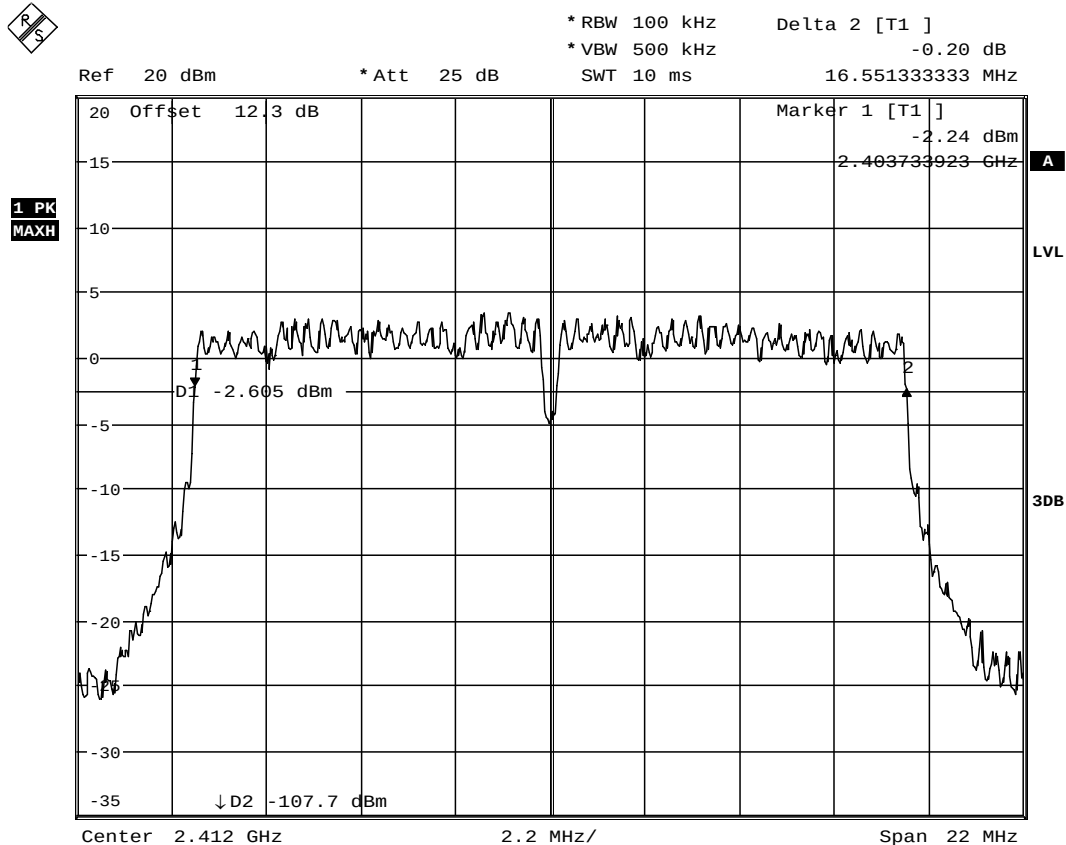
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11Mbit



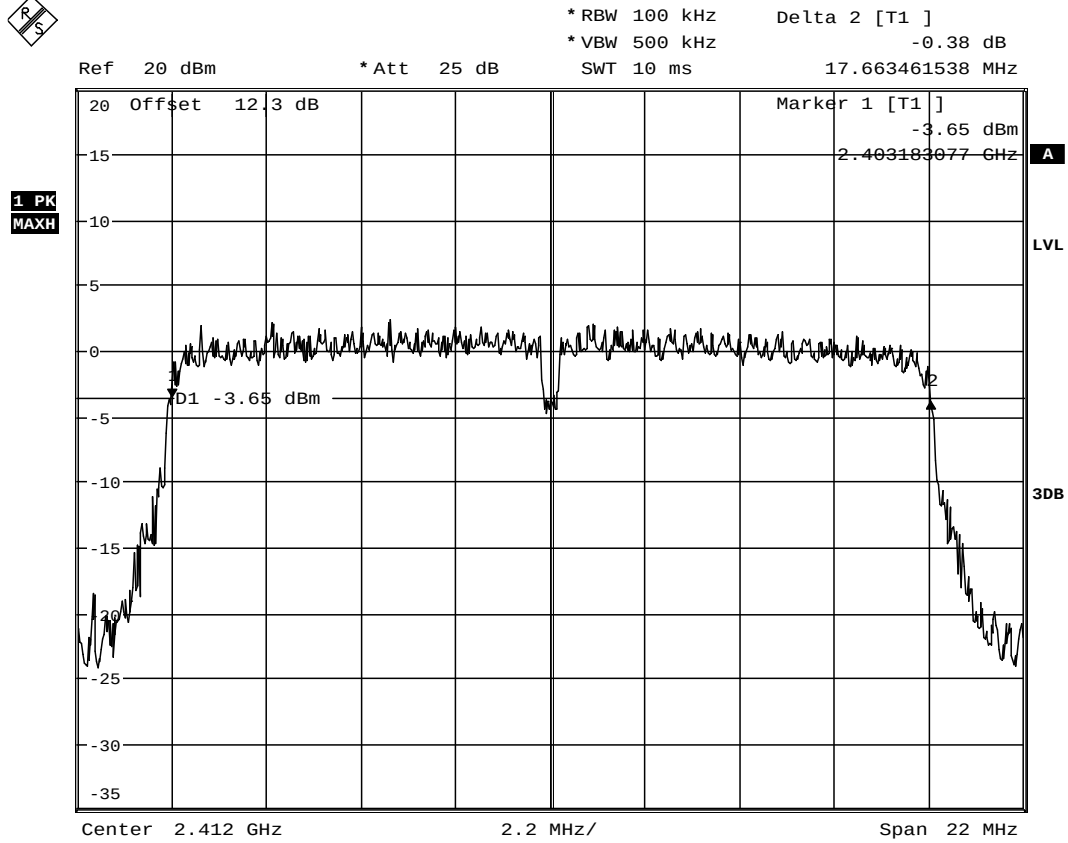
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54Mbit



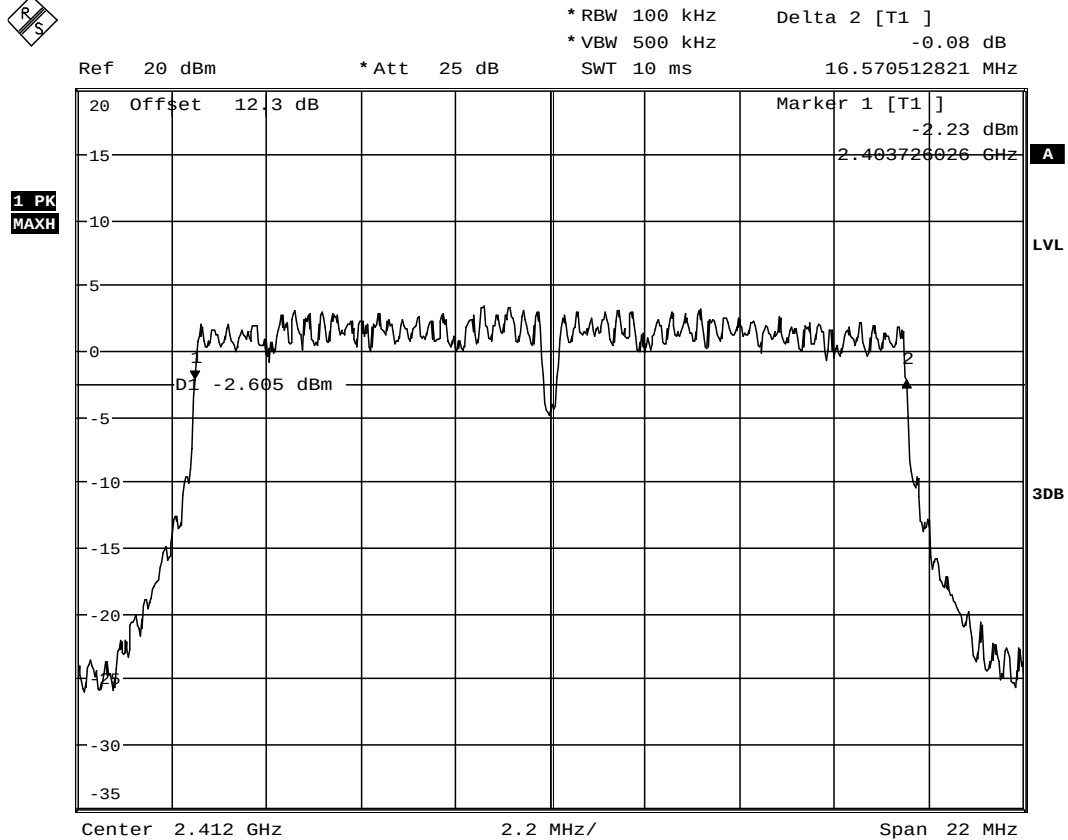
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MCS0



Date: 27.JAN.2015 11:29:08

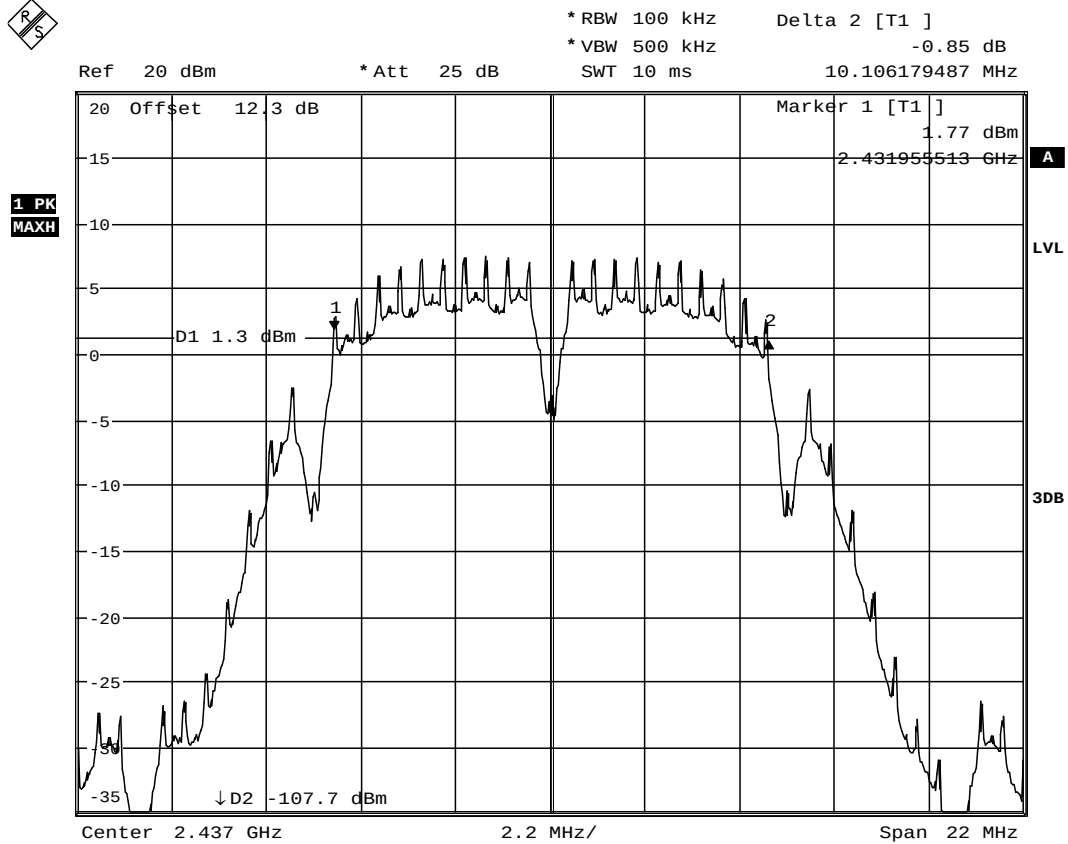
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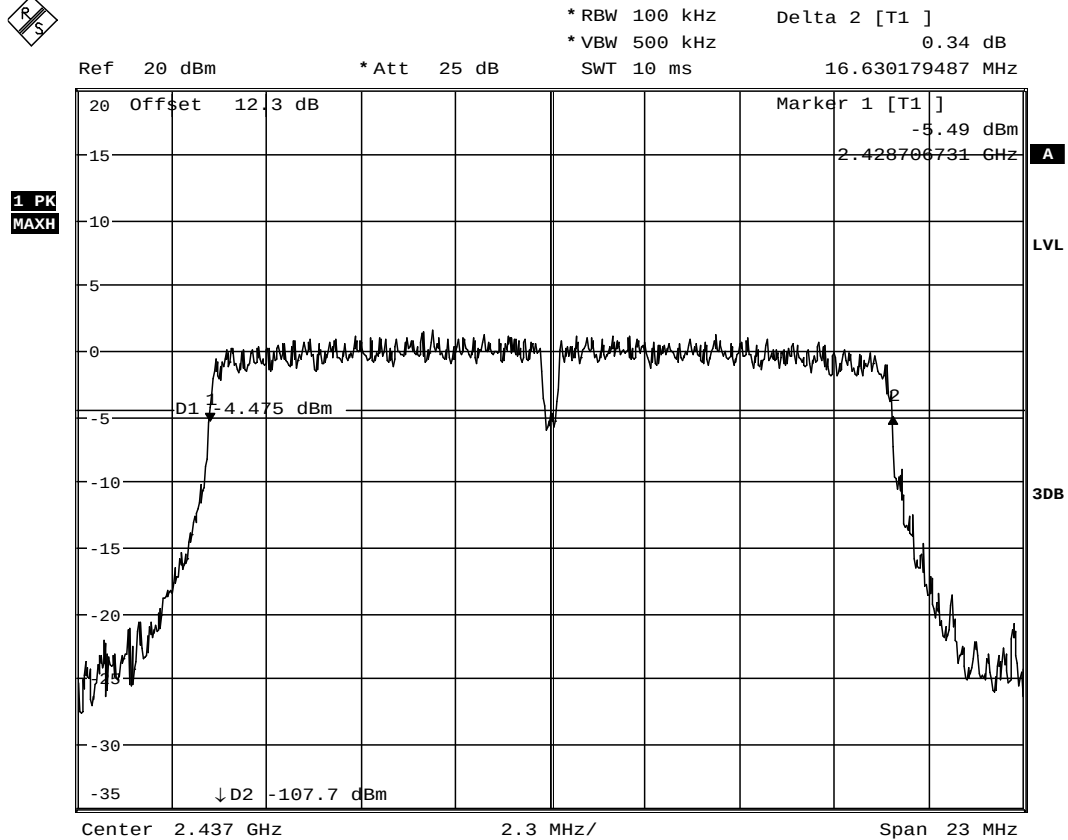
2.2.2. Channel 6

1Mbit



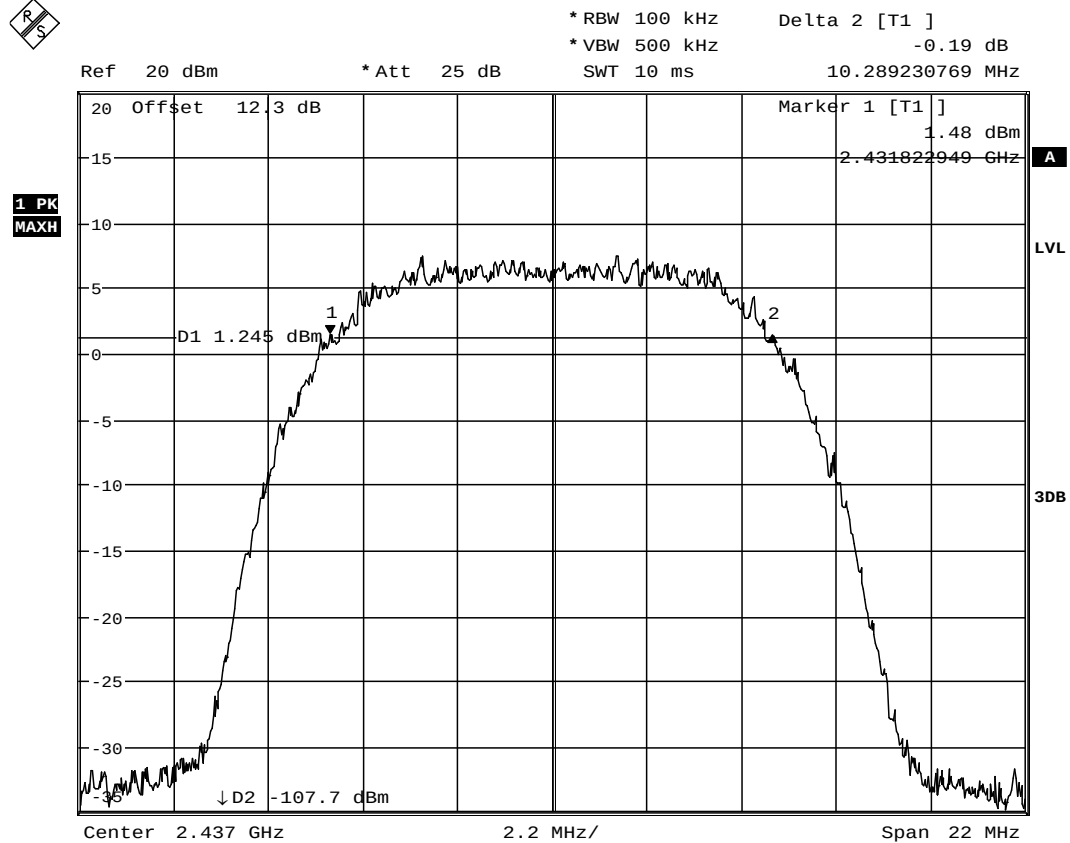
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6Mbit



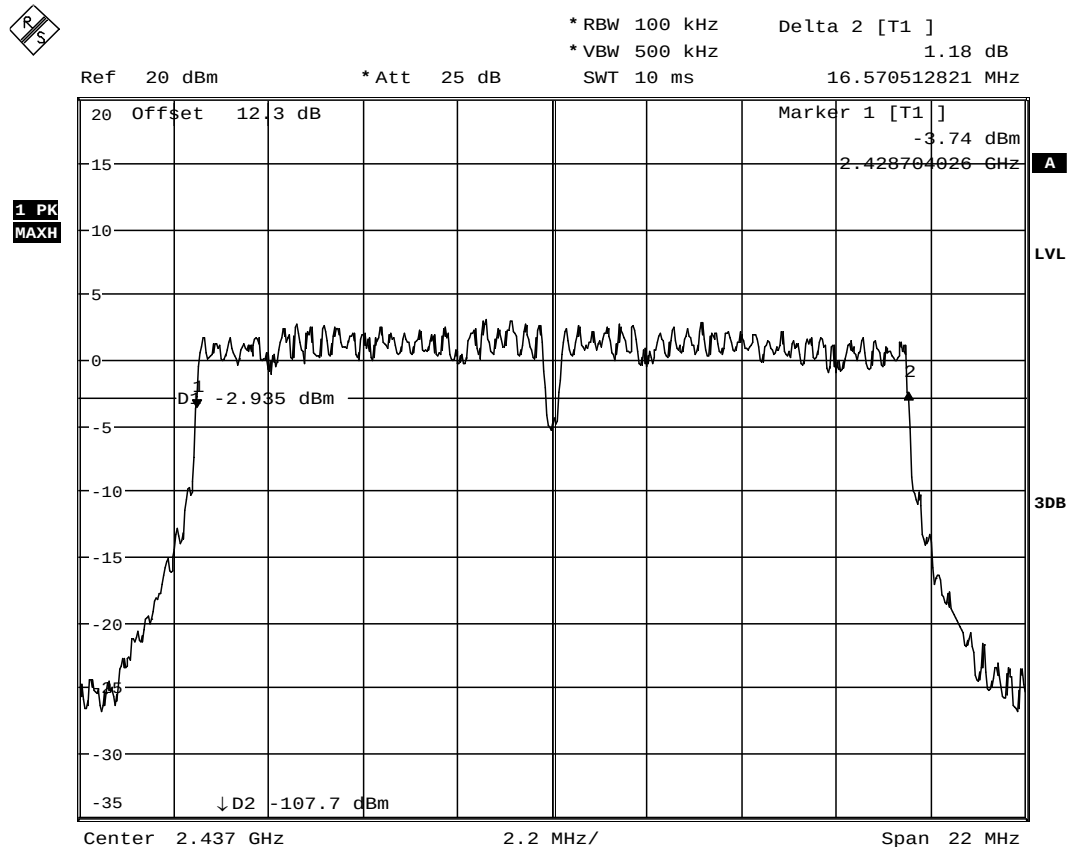
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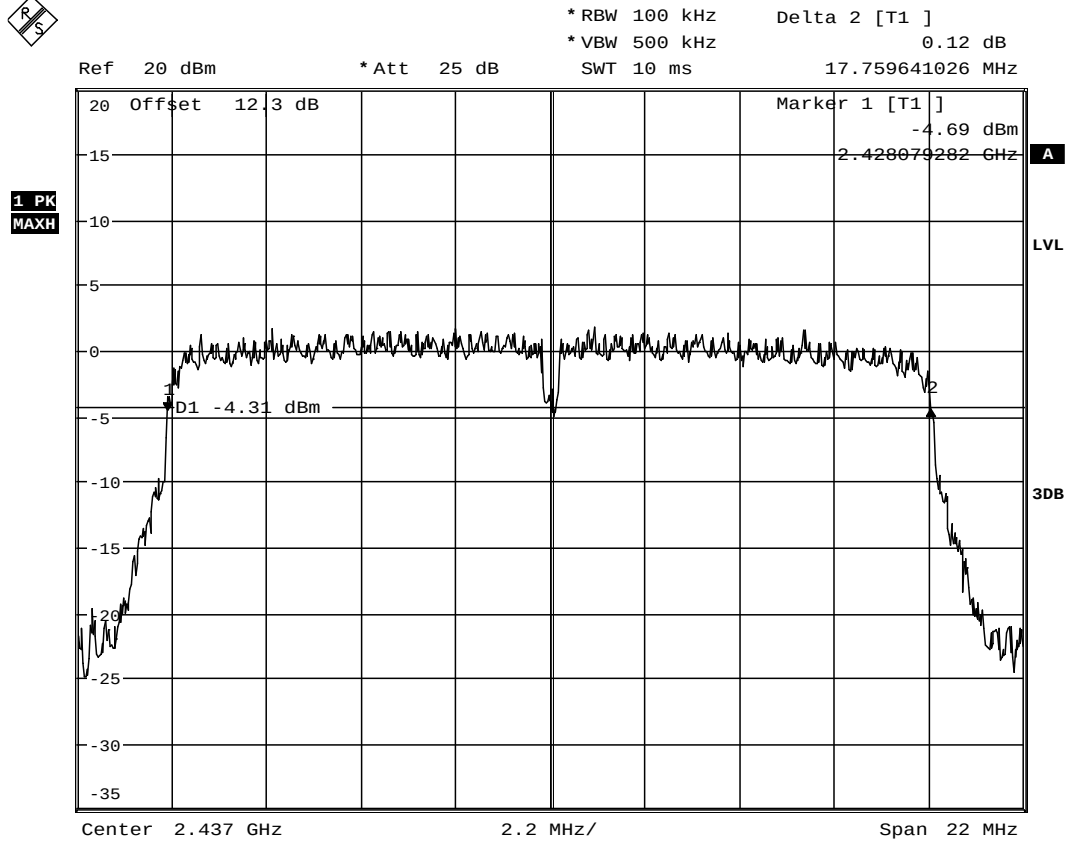
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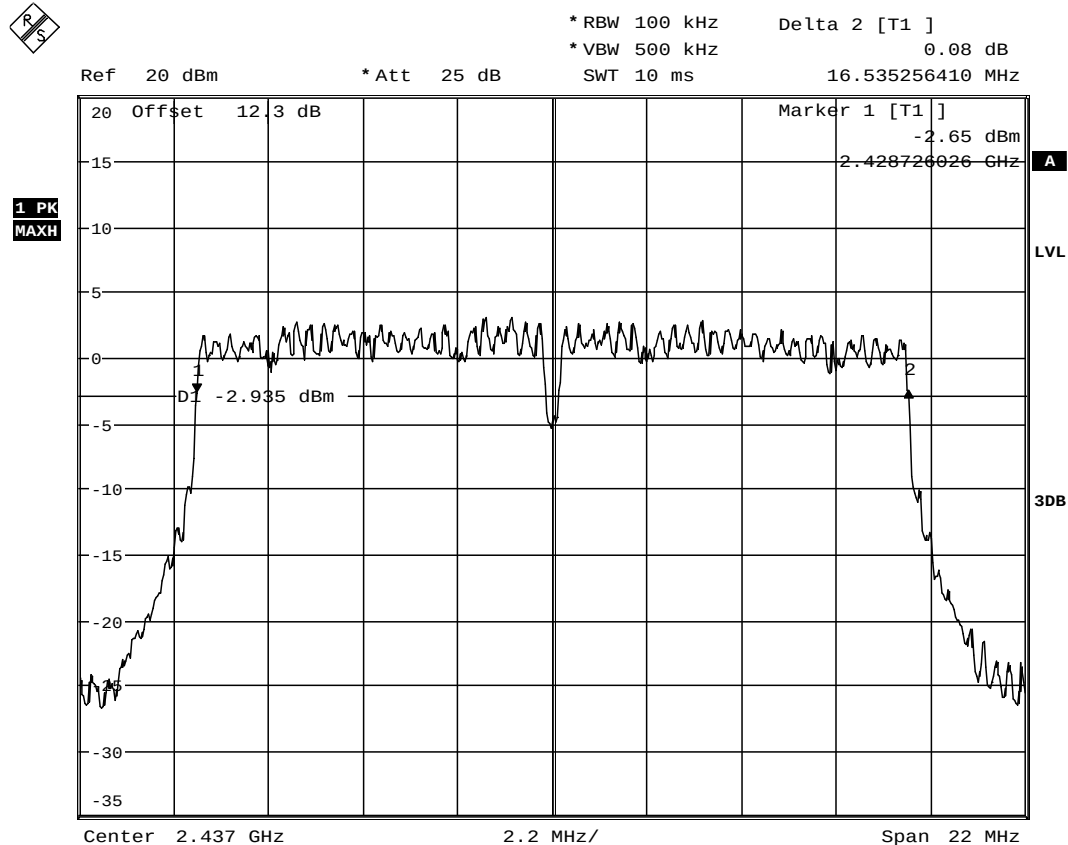
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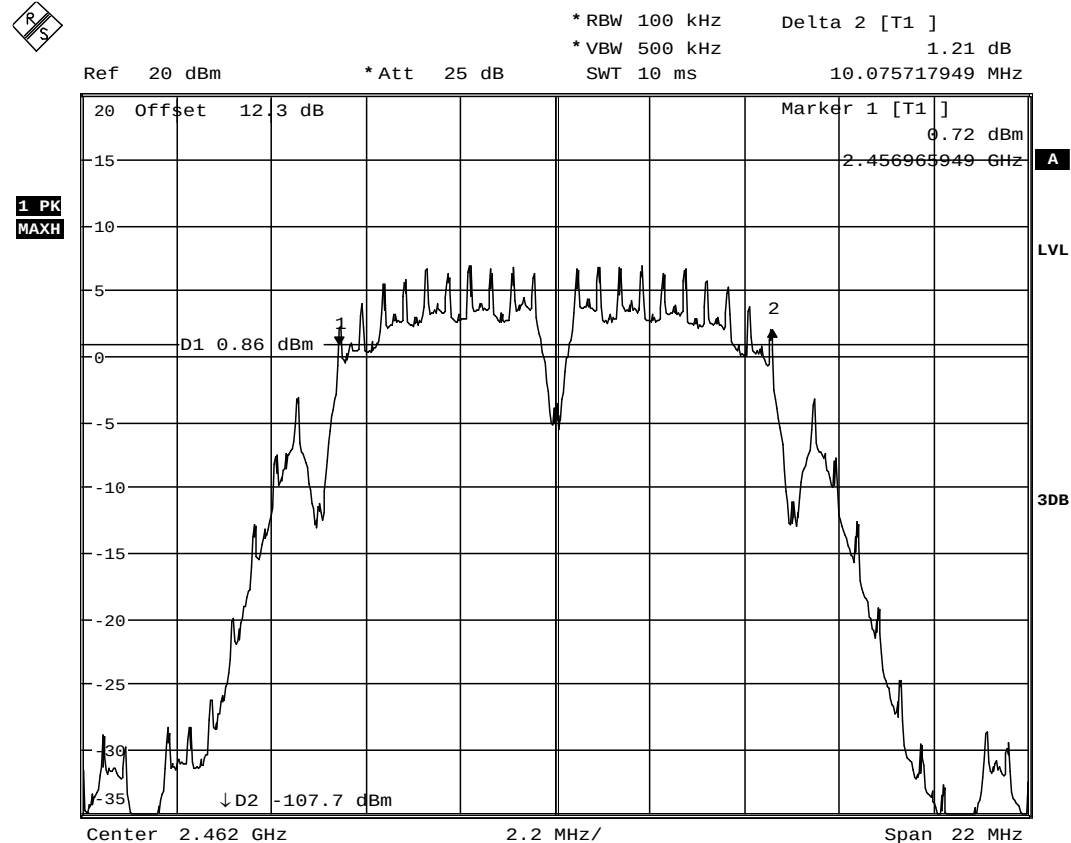
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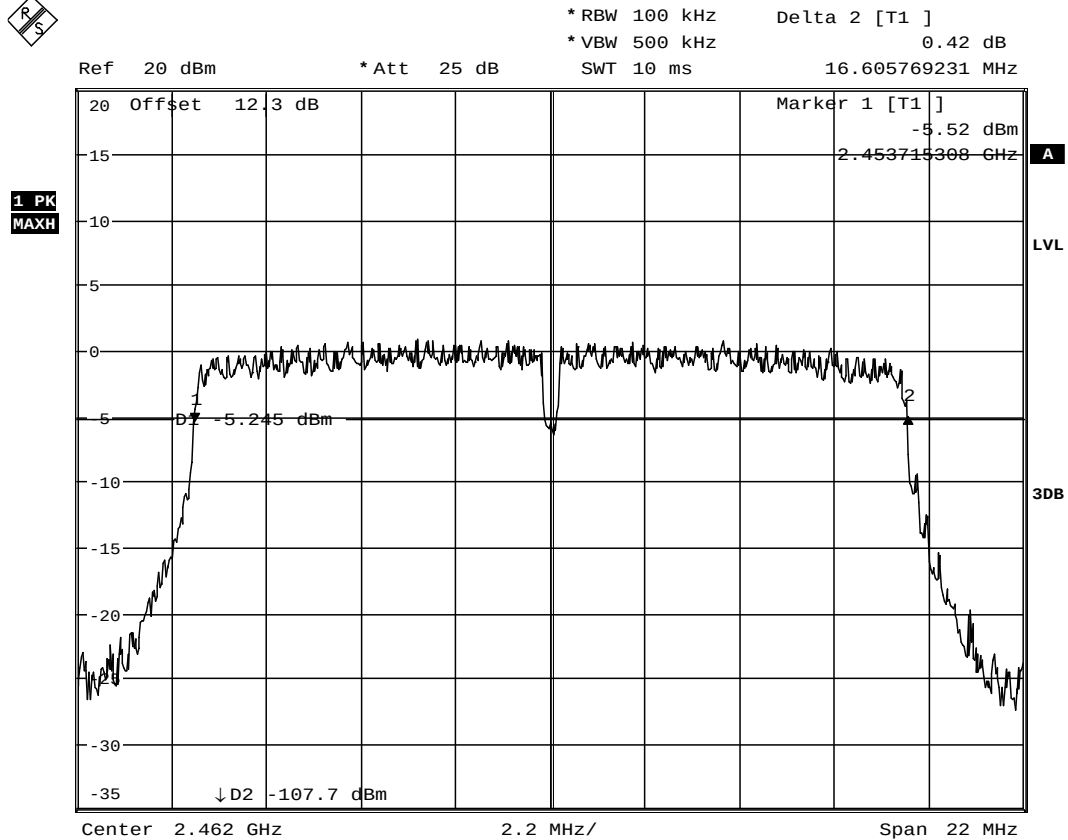
2.2.3. Channel 11

1Mbit



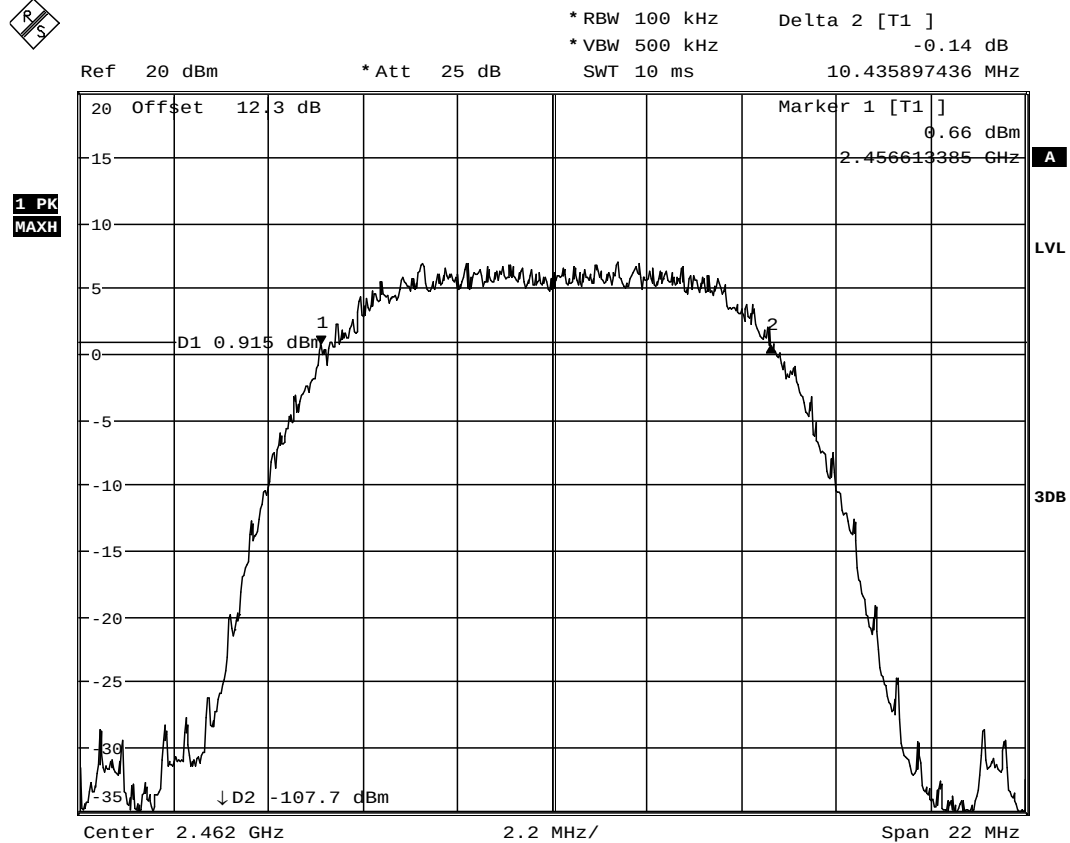
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6Mbit



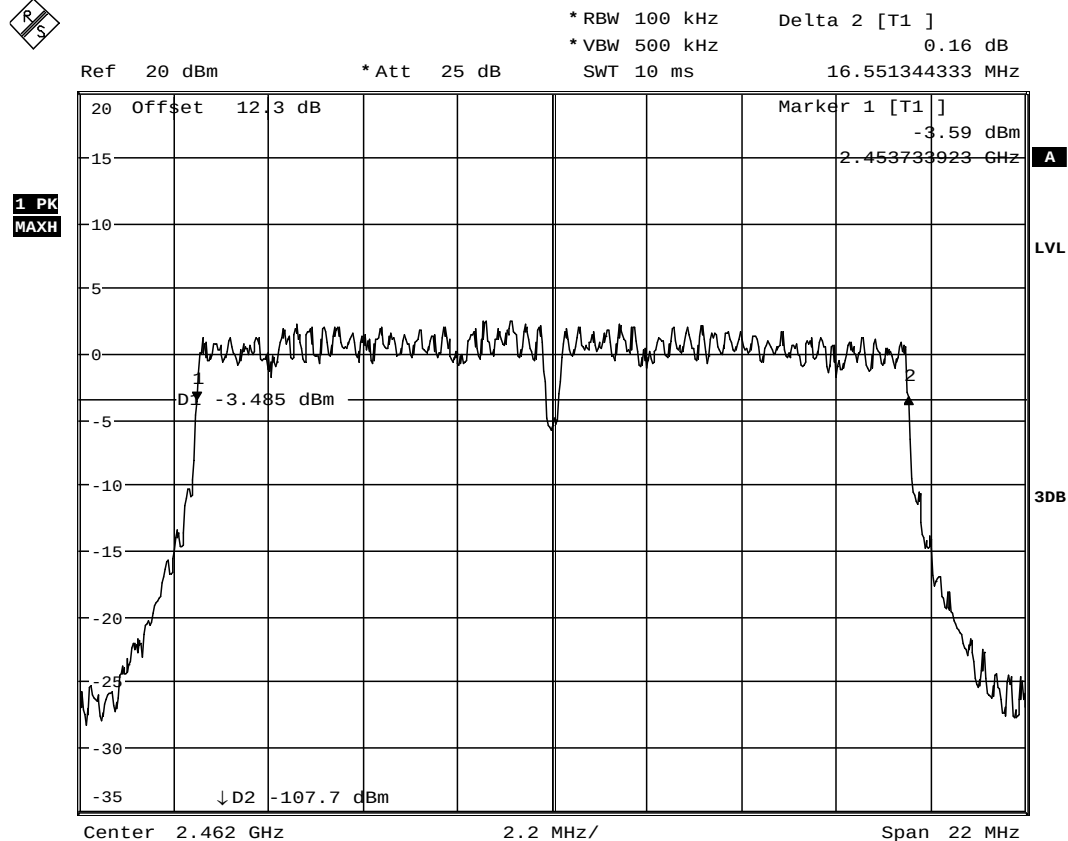
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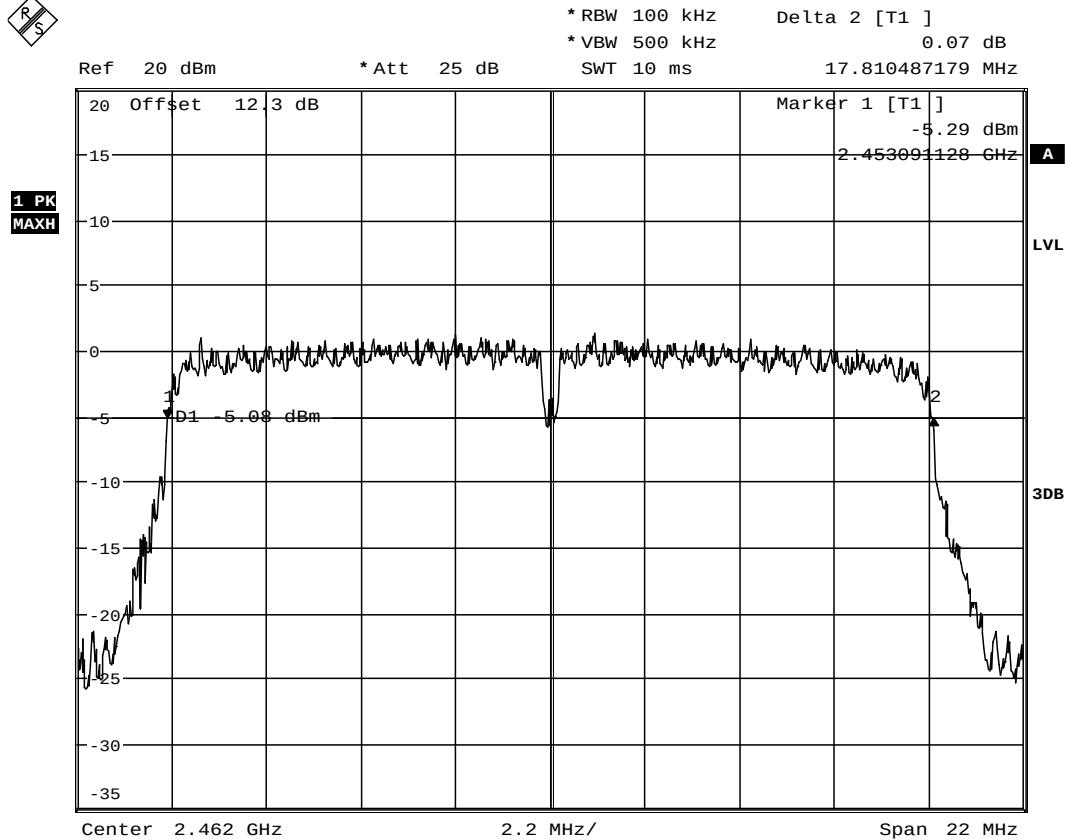
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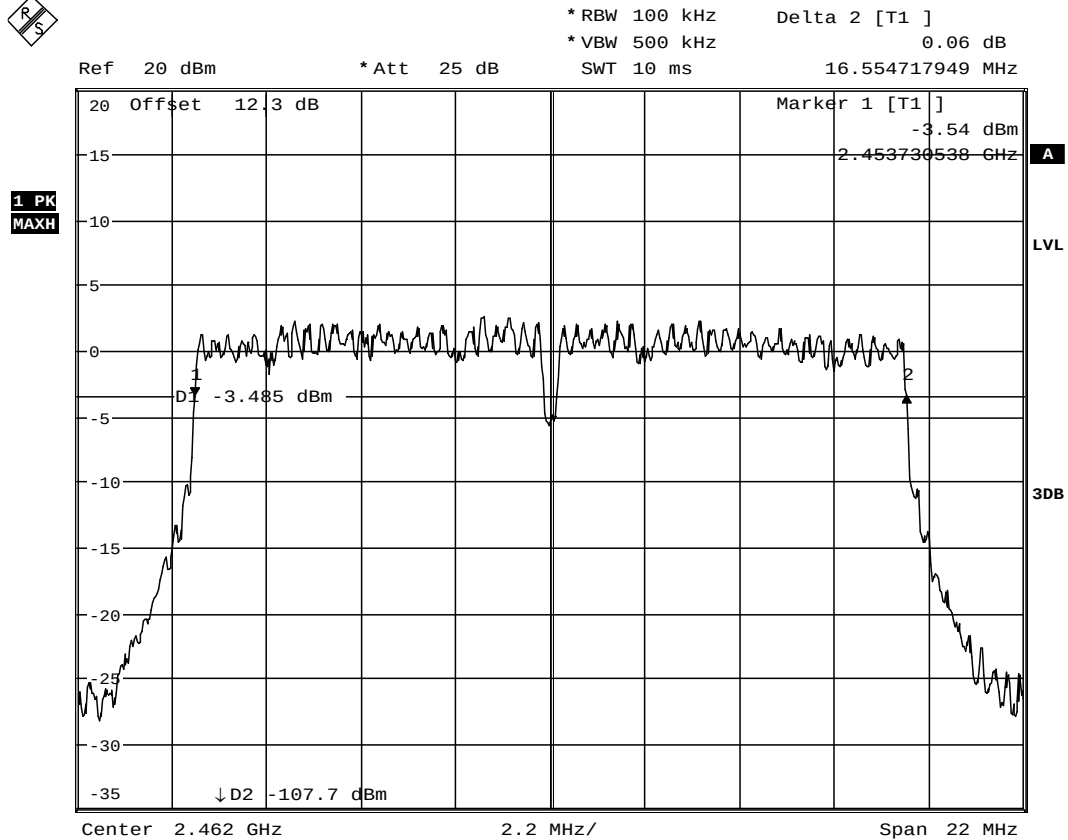
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MCS0



Date: 27.JAN.2015 11:12:33

MCS7

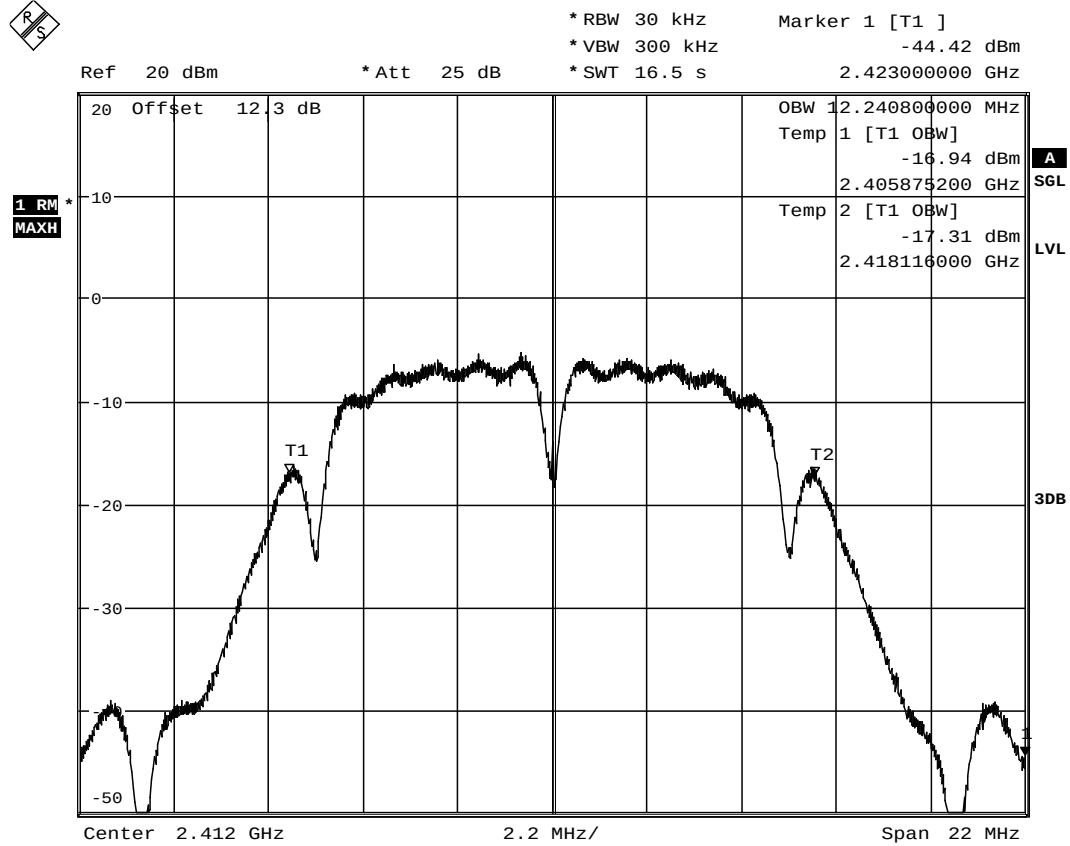


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2.3. 99% Occupied Bandwidth

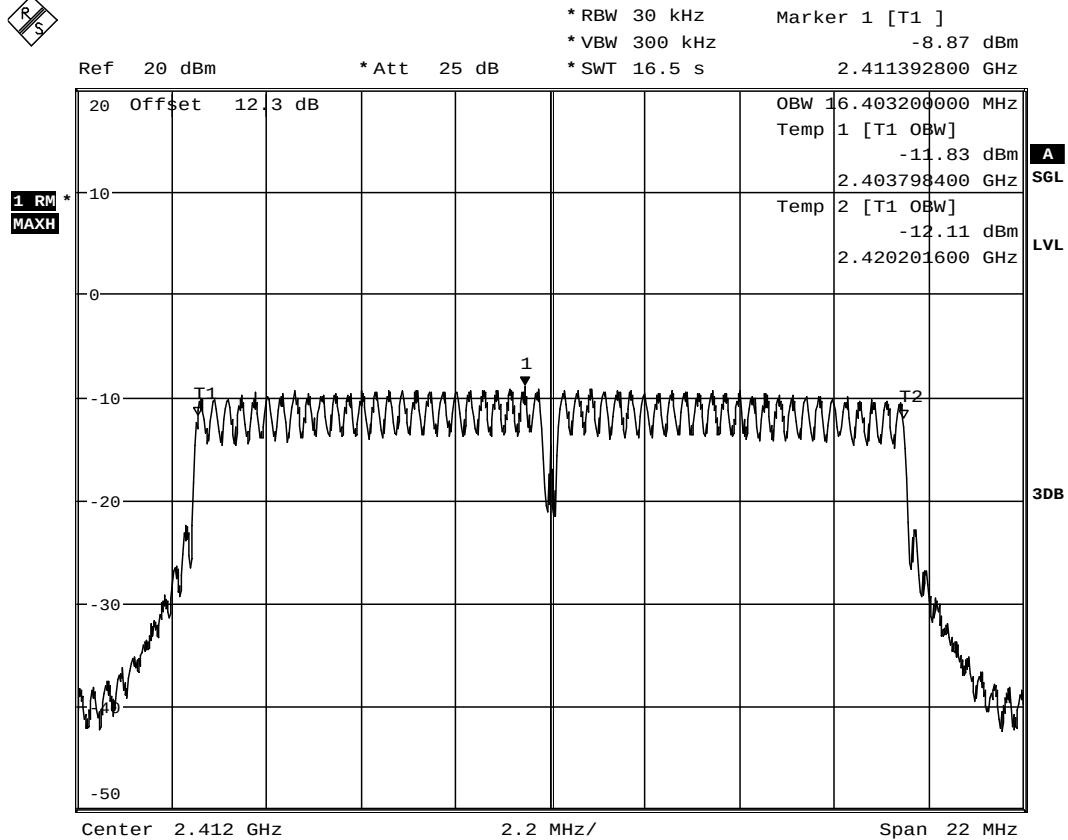
2.3.1. Channel 1

1Mbit



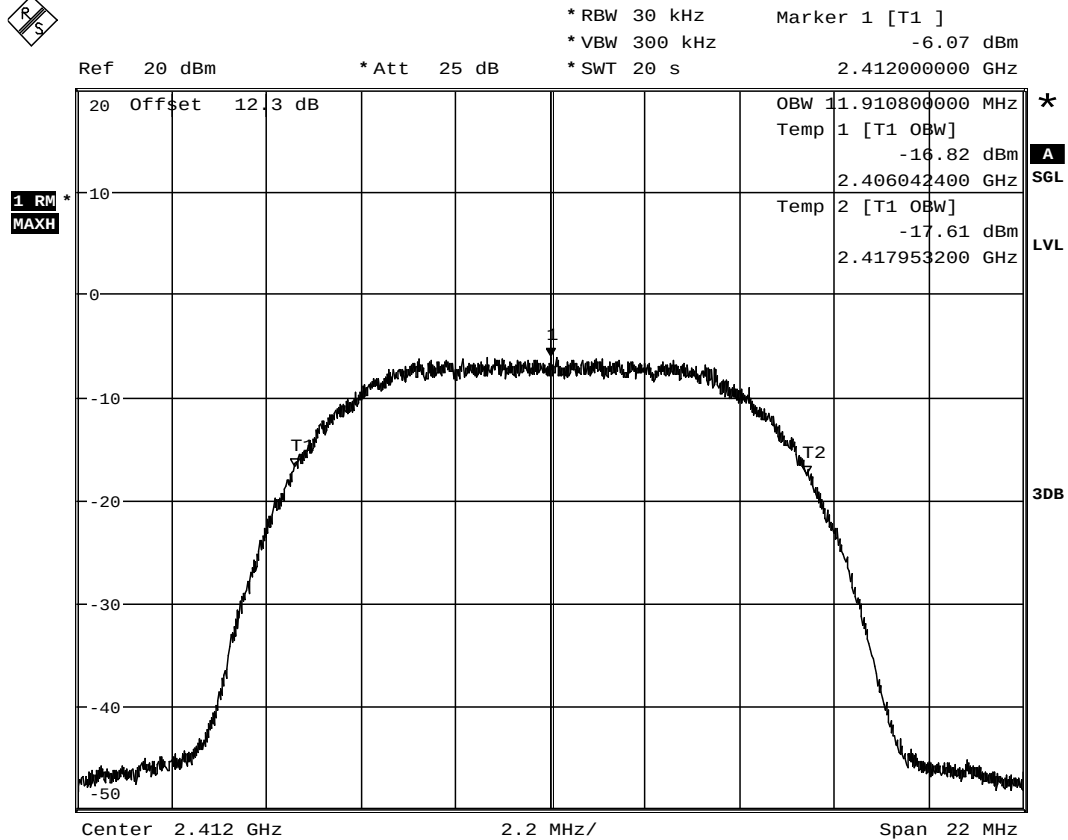
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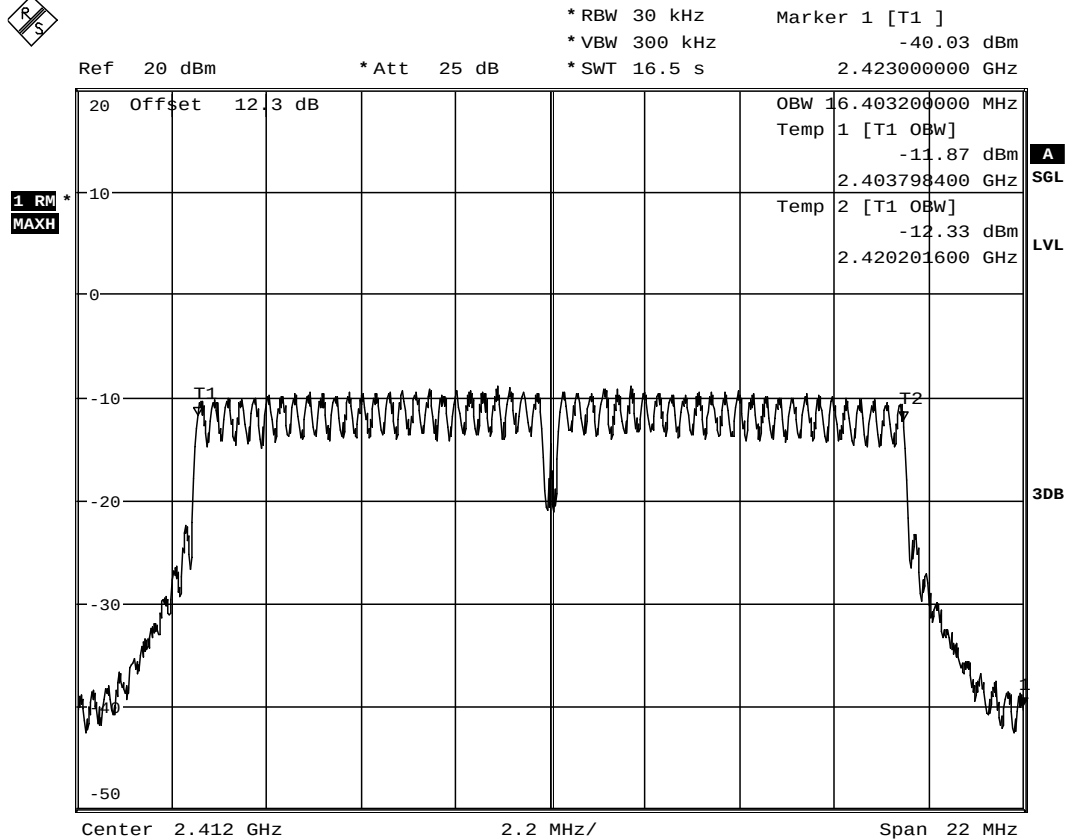
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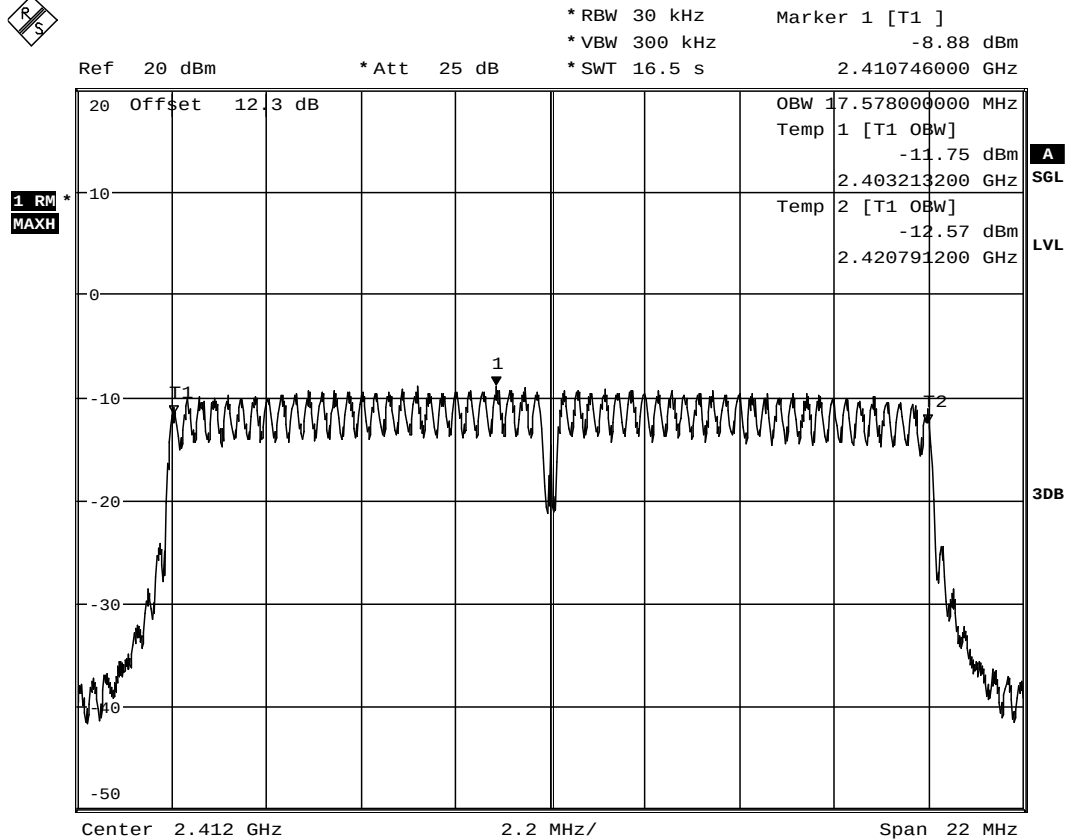
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54Mbit



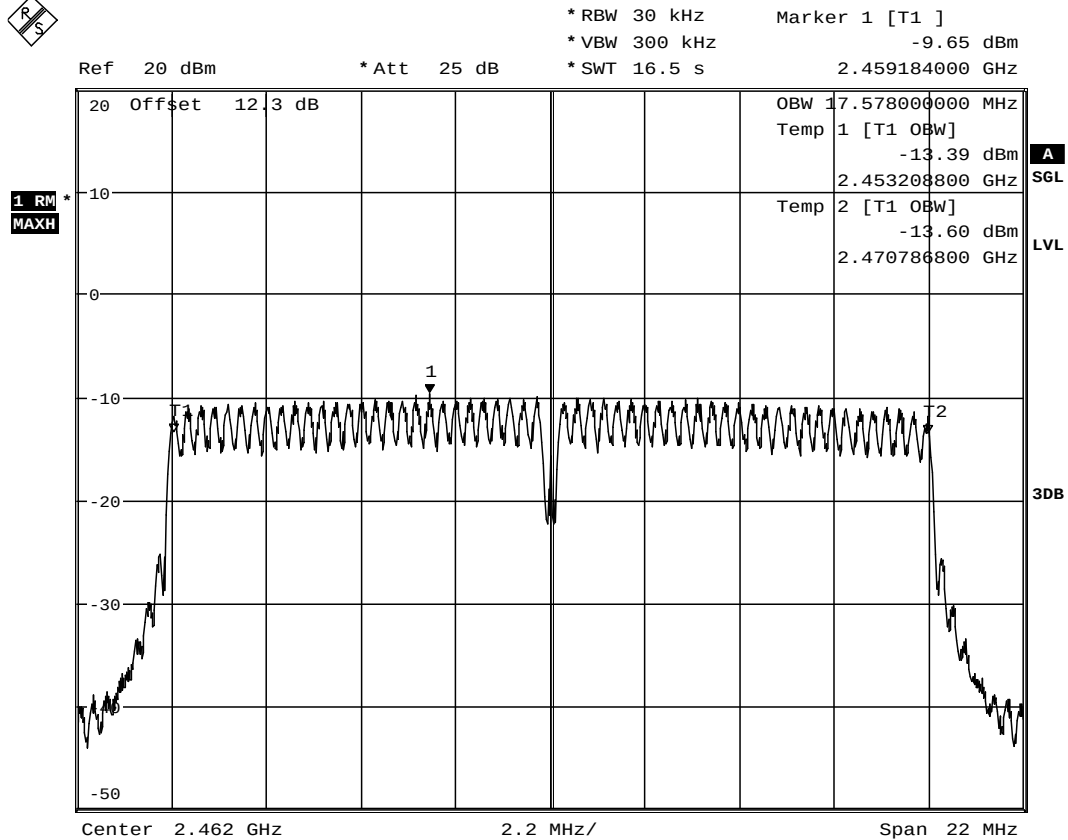
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MCS0



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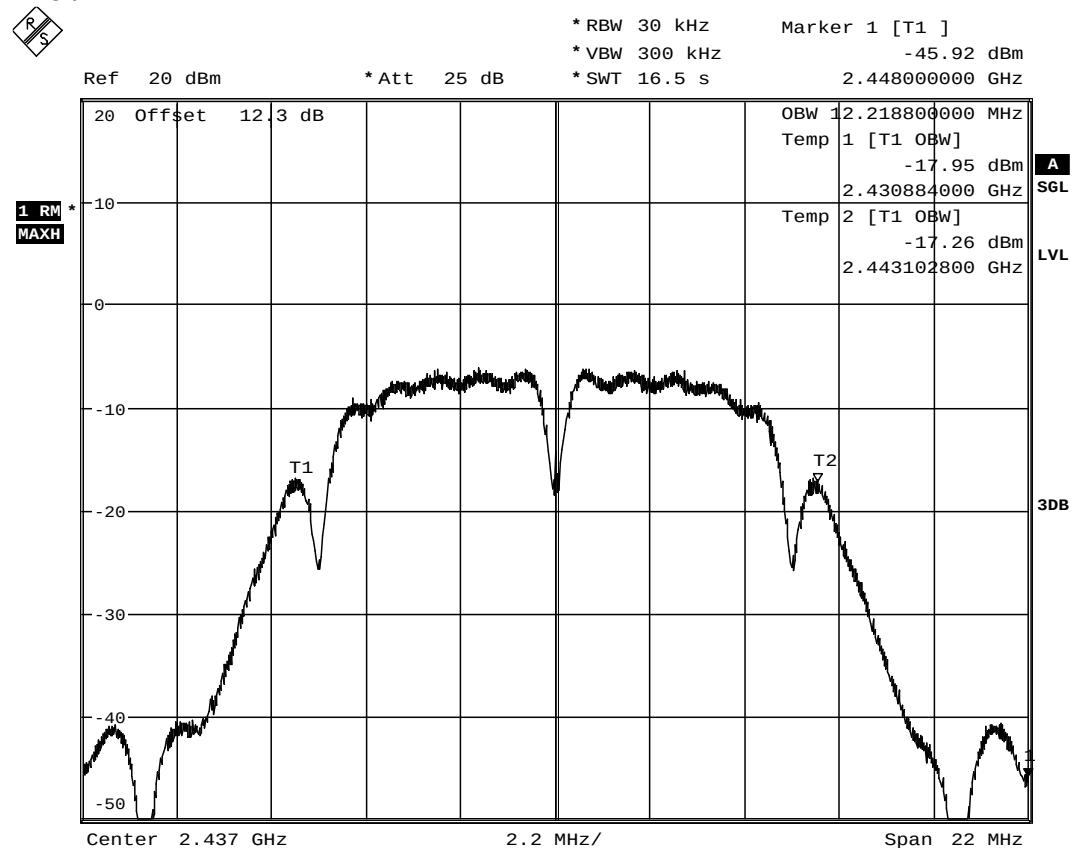
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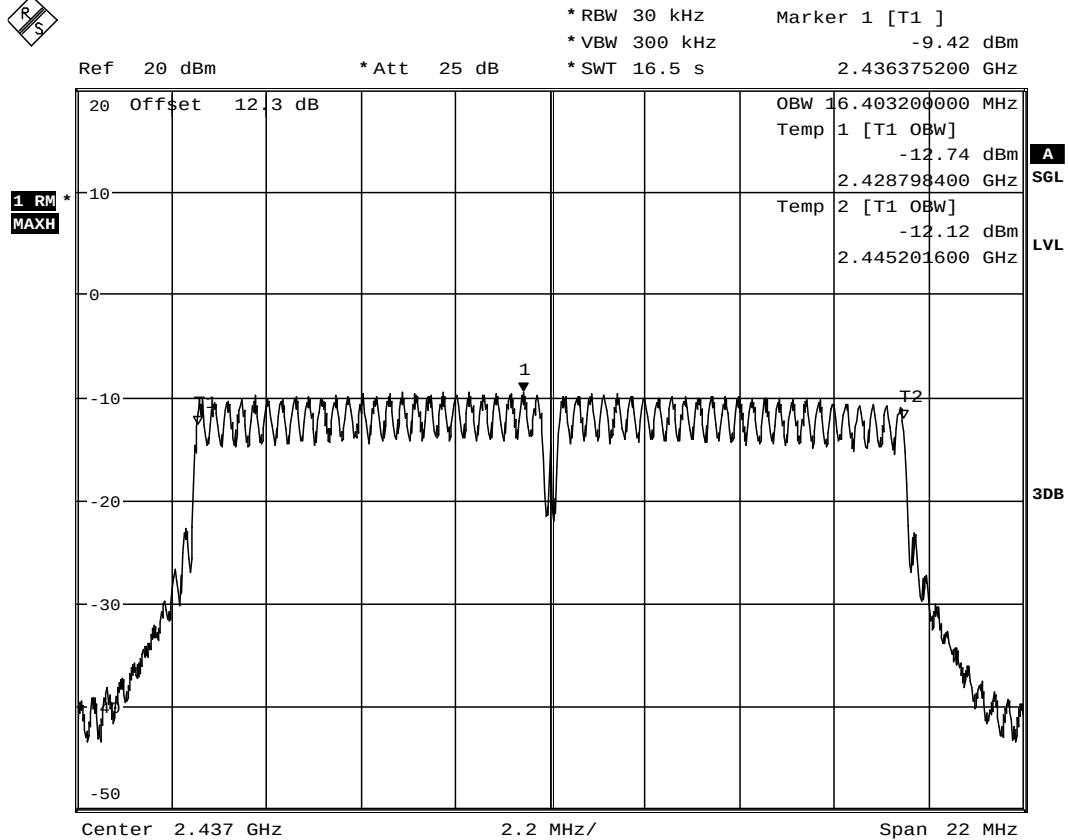
2.3.2. Channel 6

1Mbit



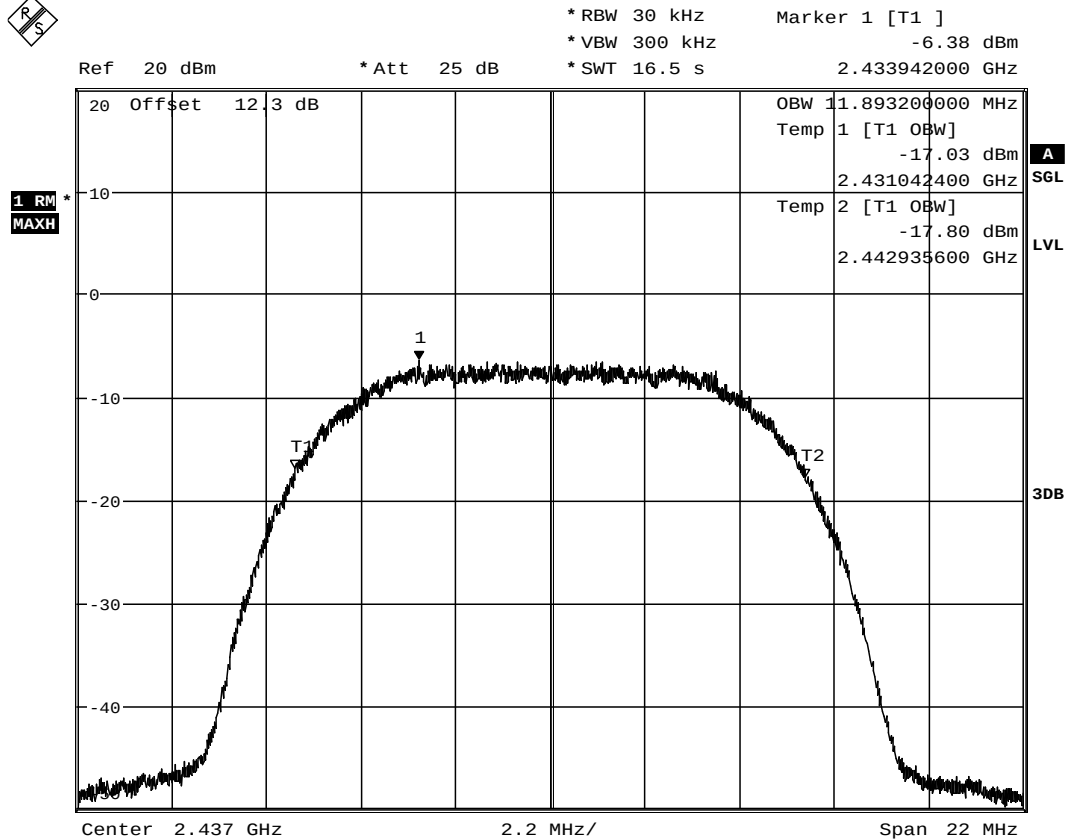
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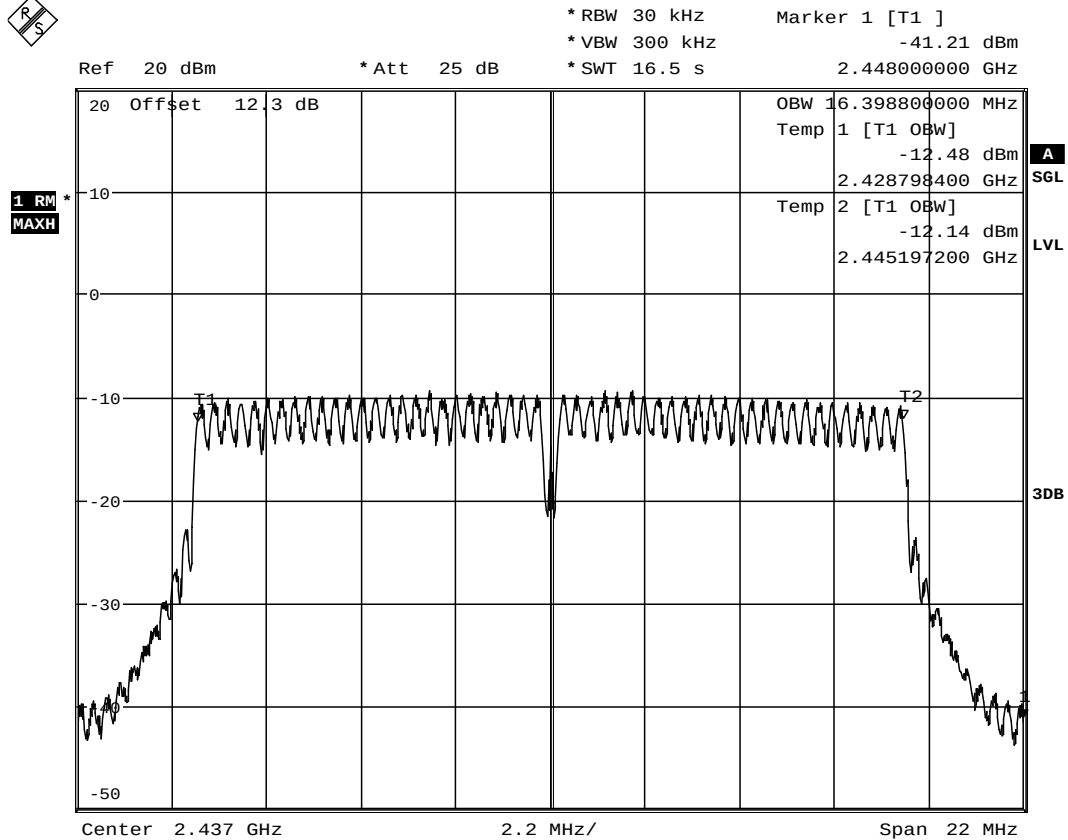
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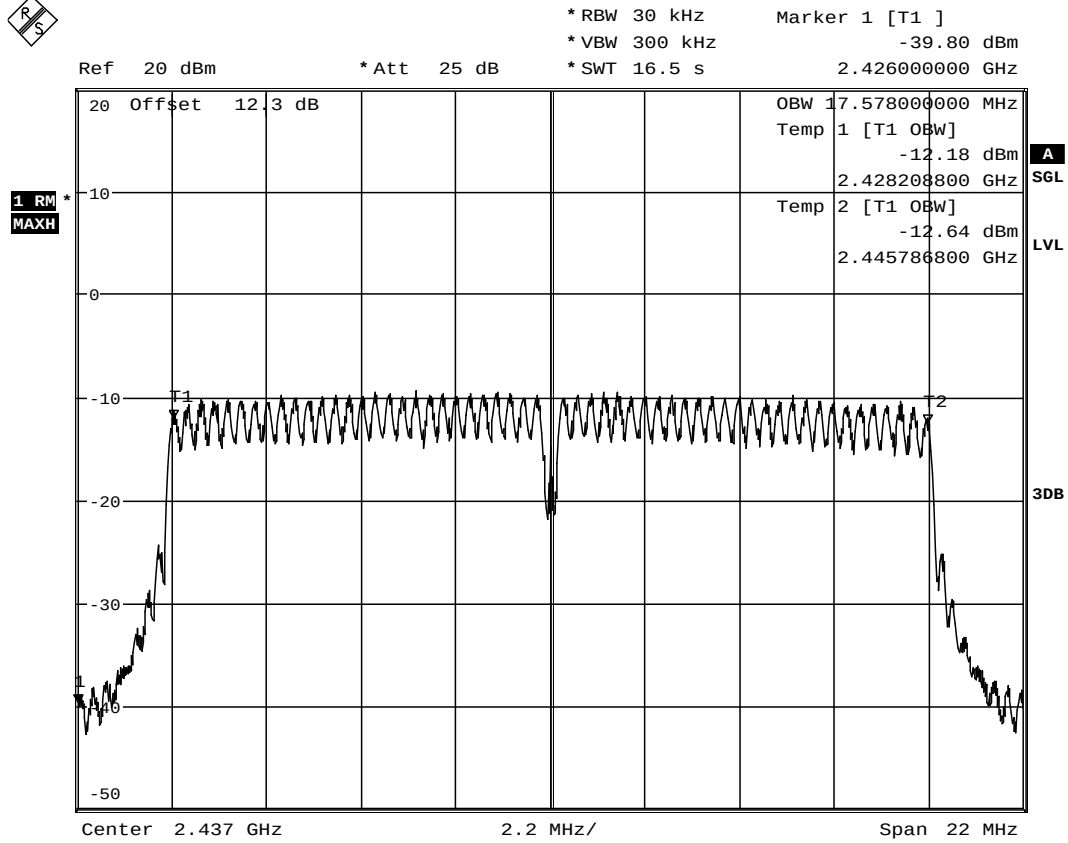
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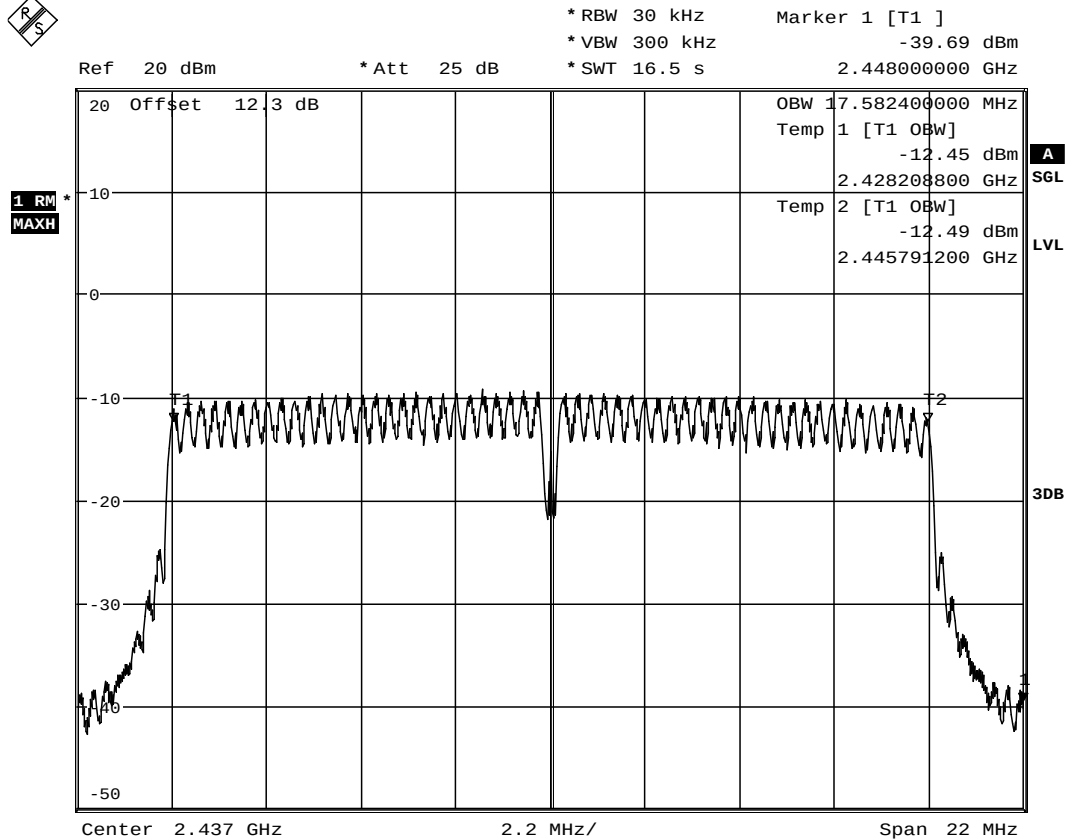
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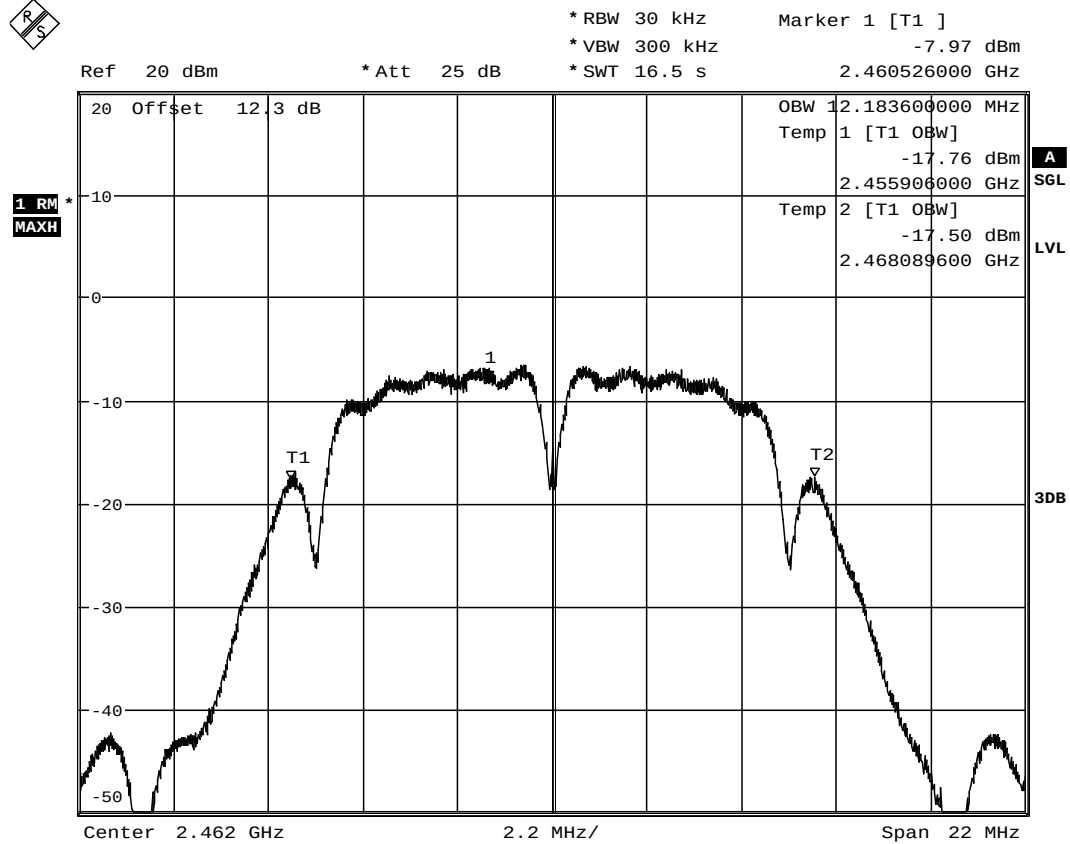
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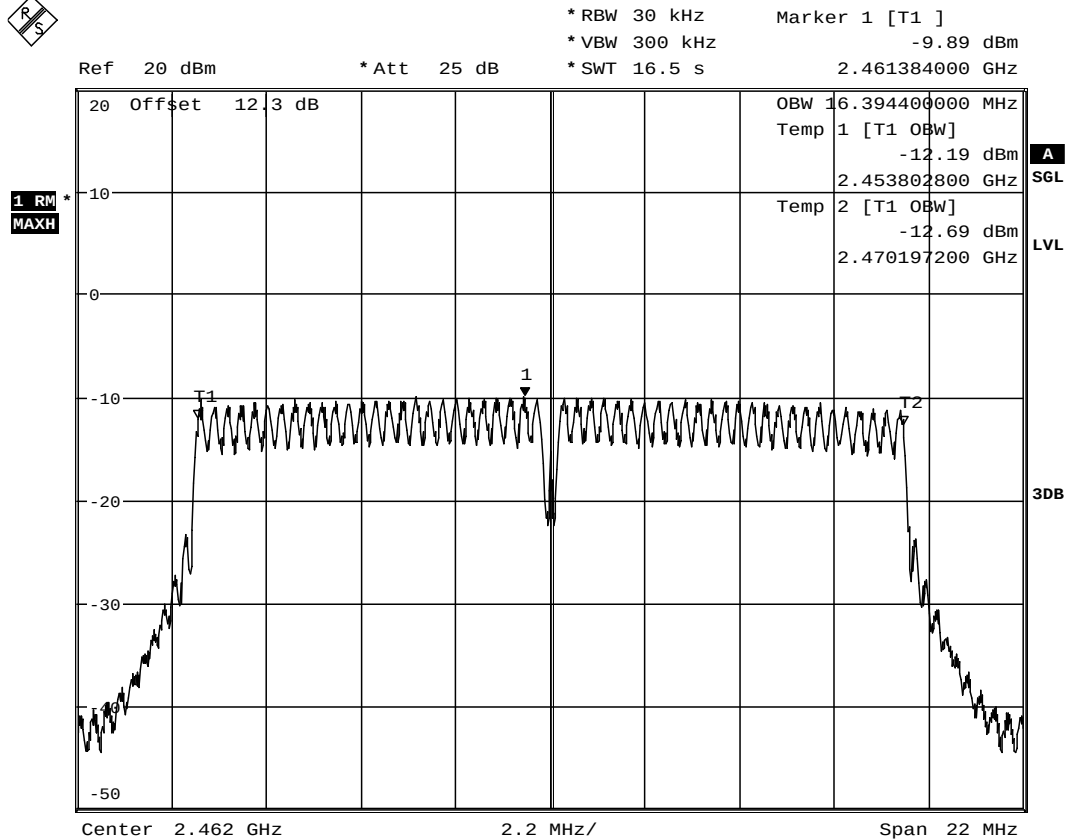
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1Mbit



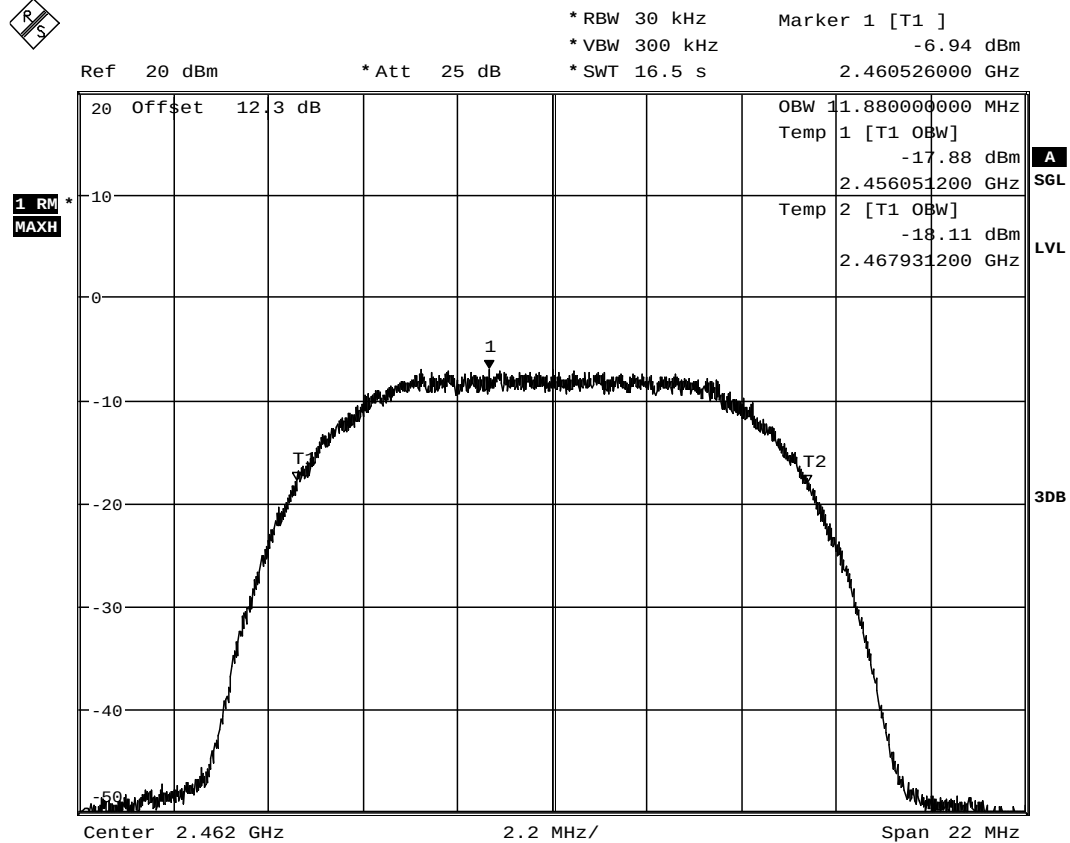
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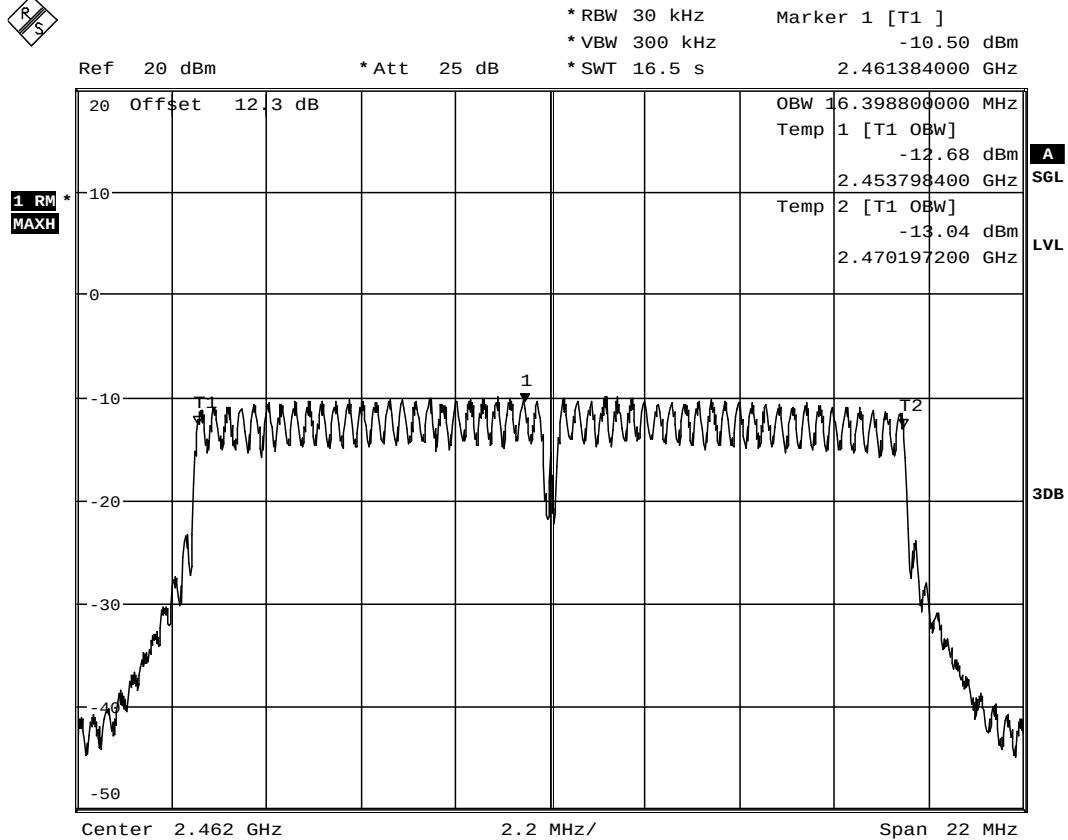
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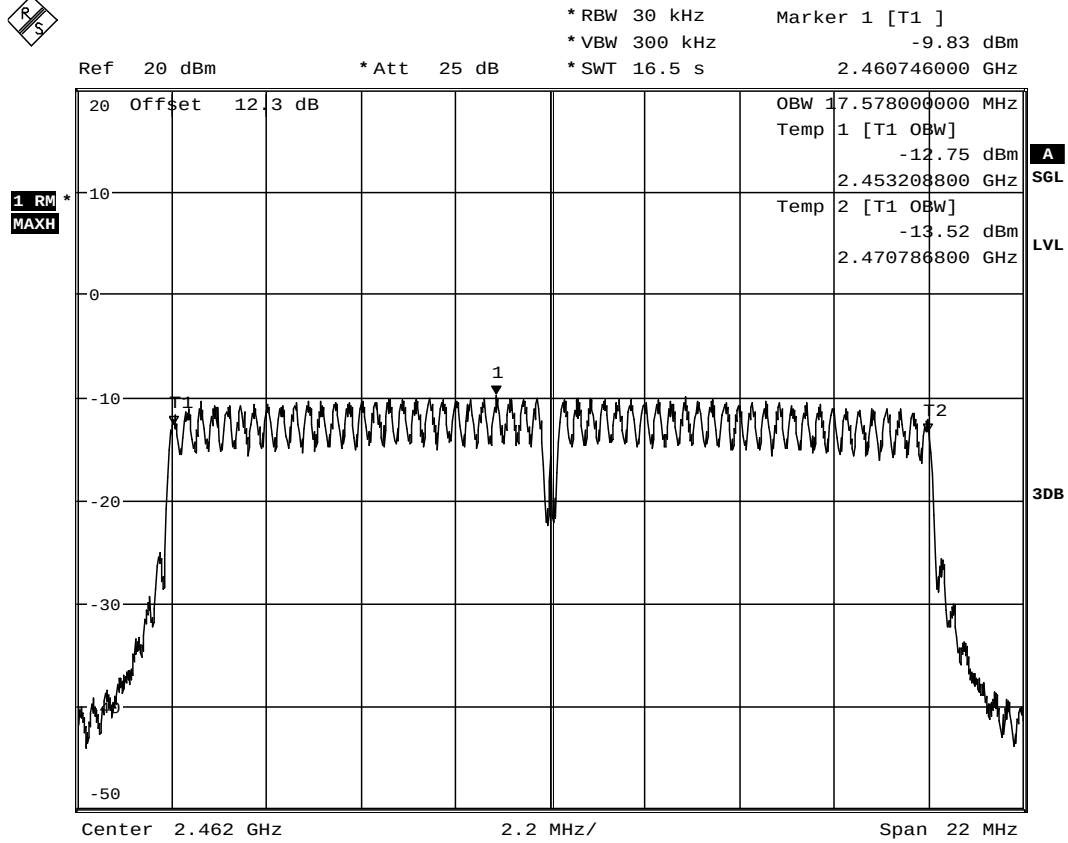
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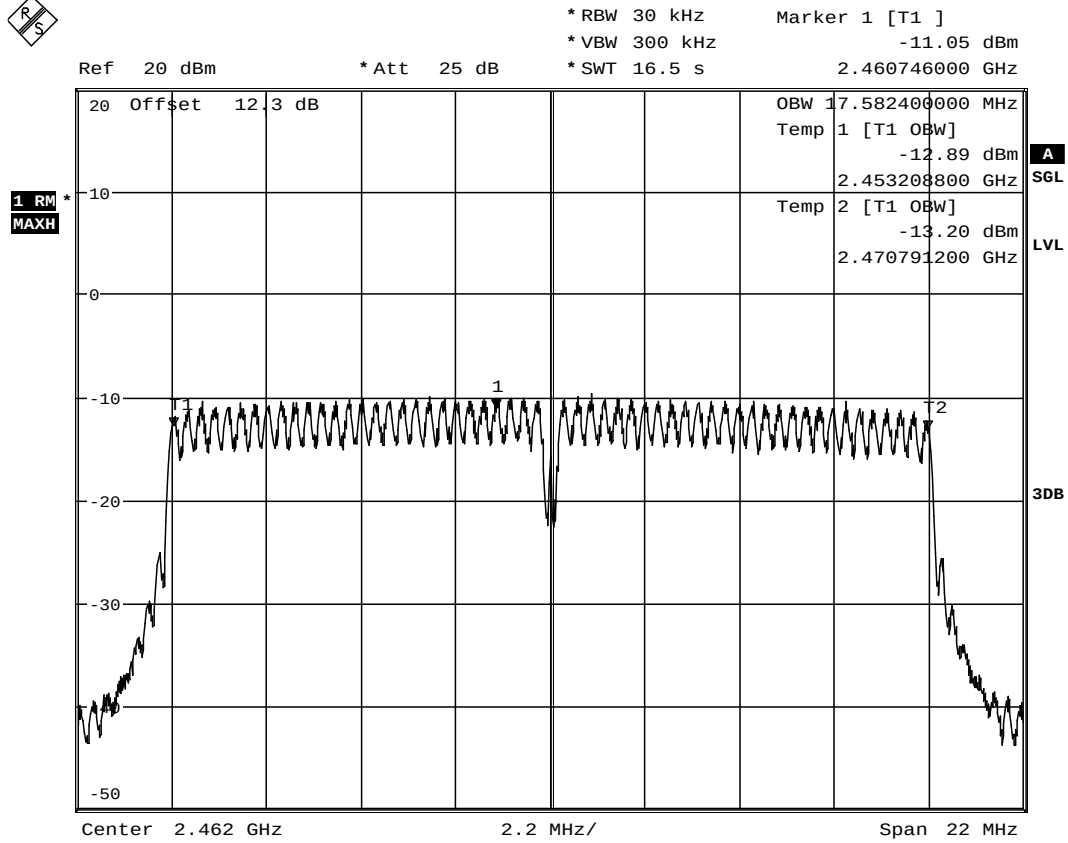
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MCS0



Date: 27.JAN.2015 14:28:20

MCS7



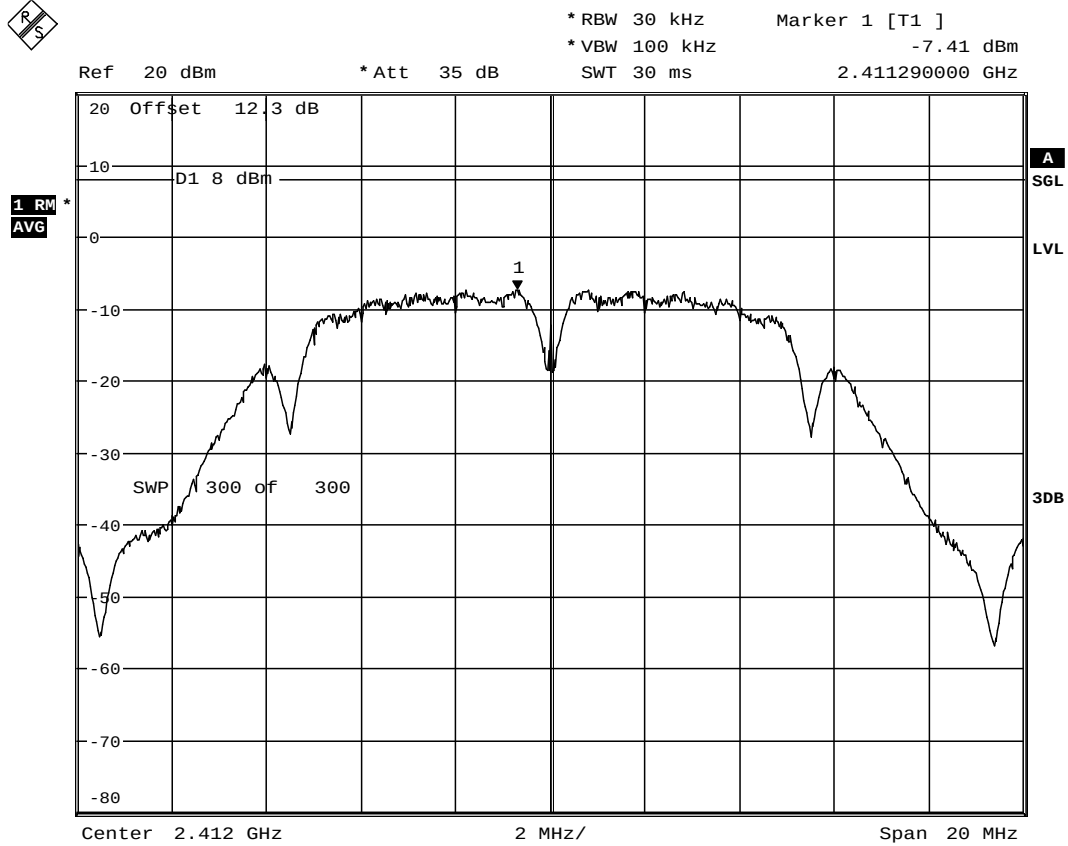
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2.4. Power Spectral Density

Method §10.2

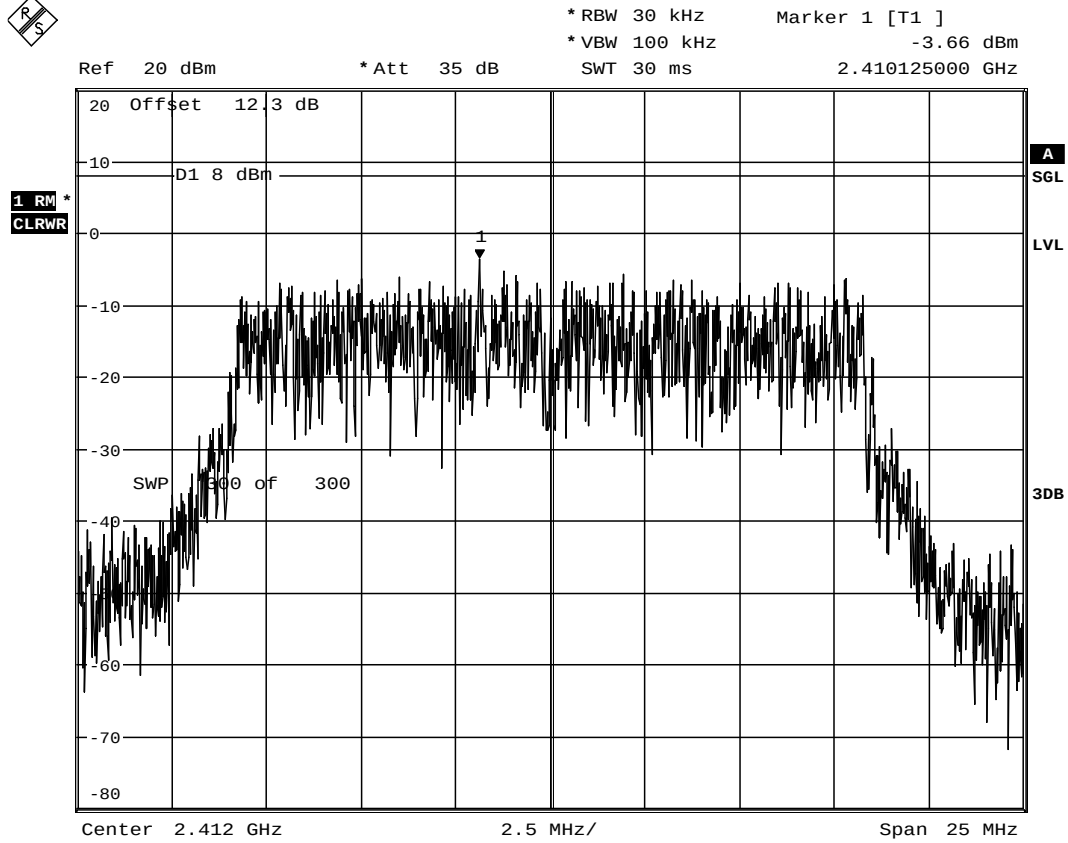
2.4.1. Channel 1

1Mbit



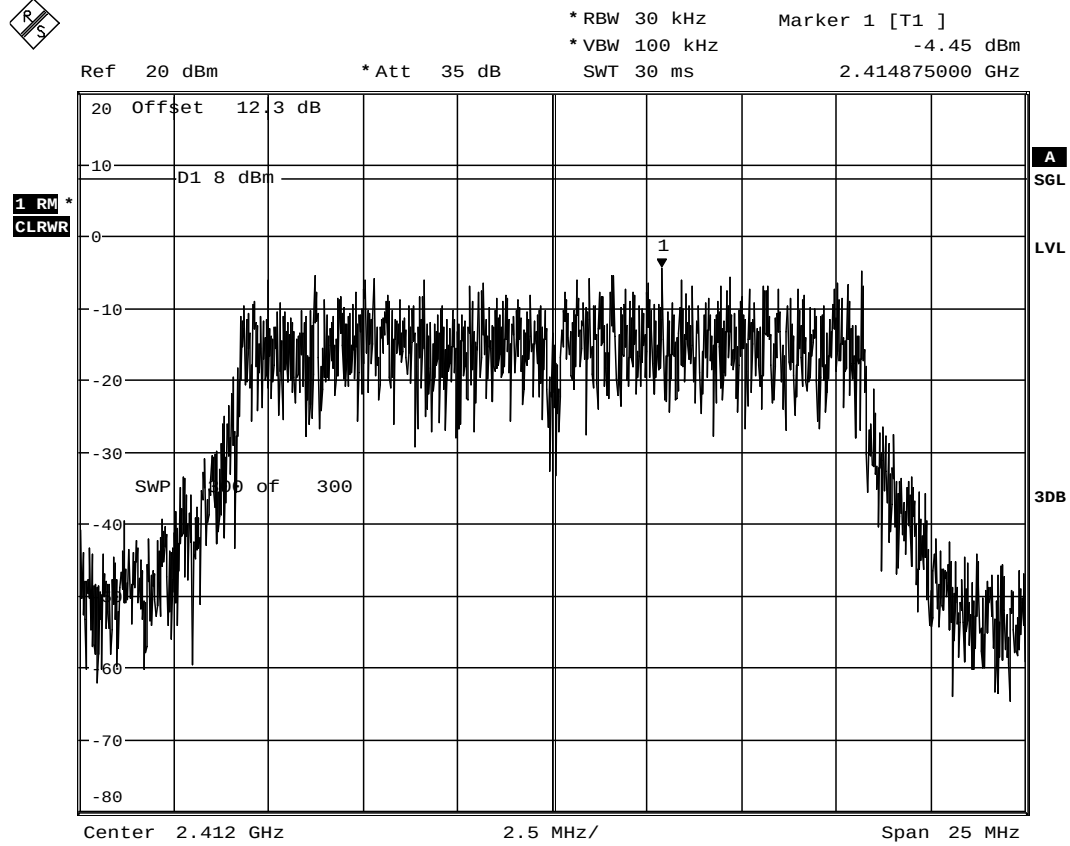
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6Mbit



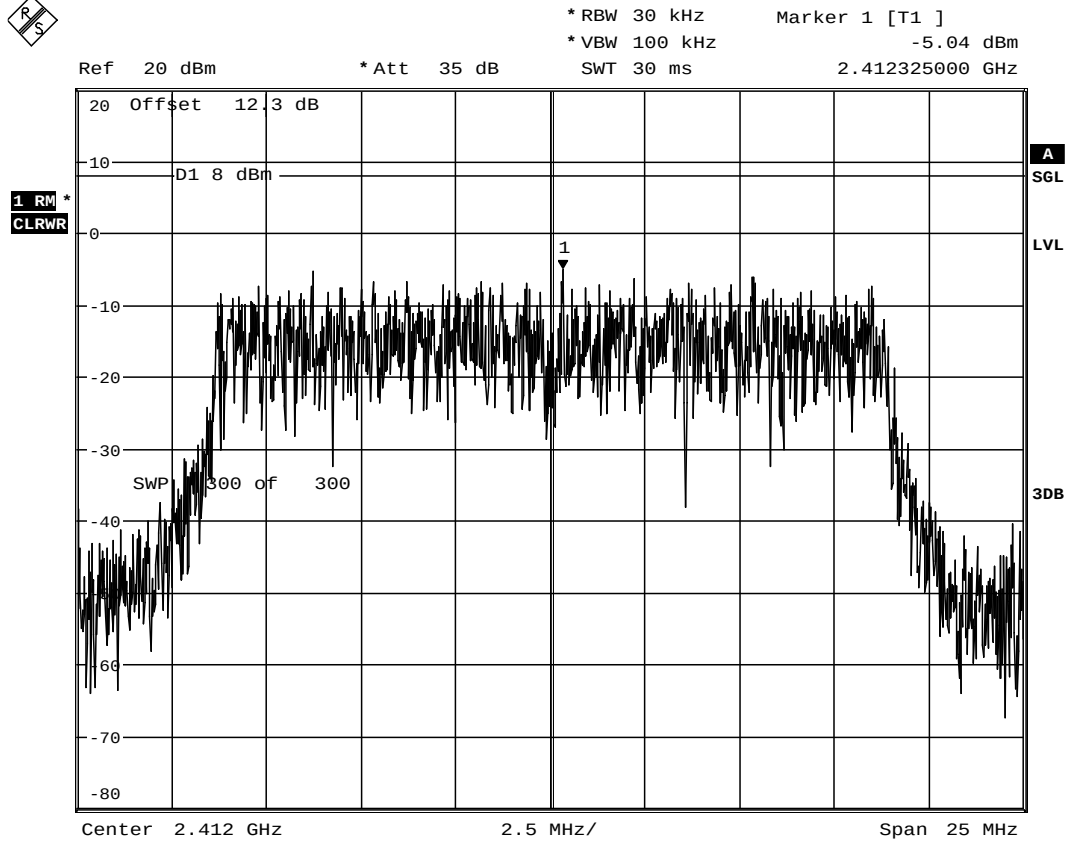
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12Mbit



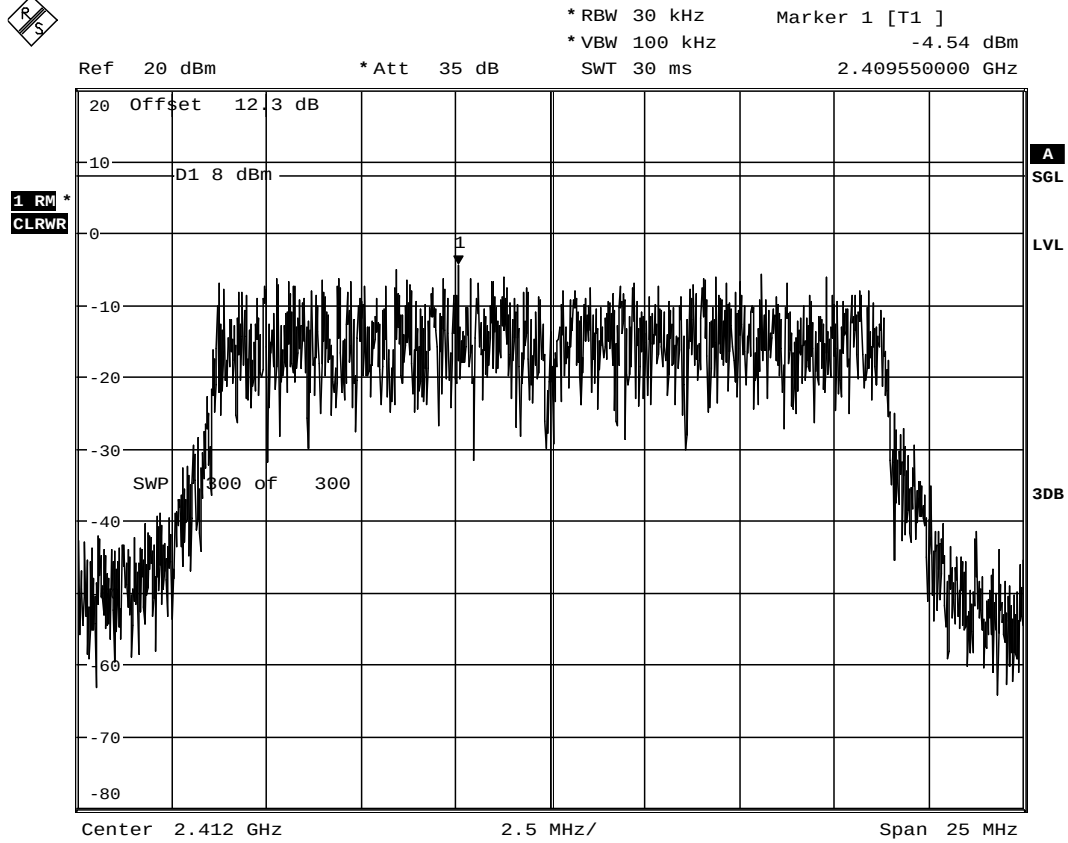
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MCS0



Date: 13.MAR.2015 15:29:21

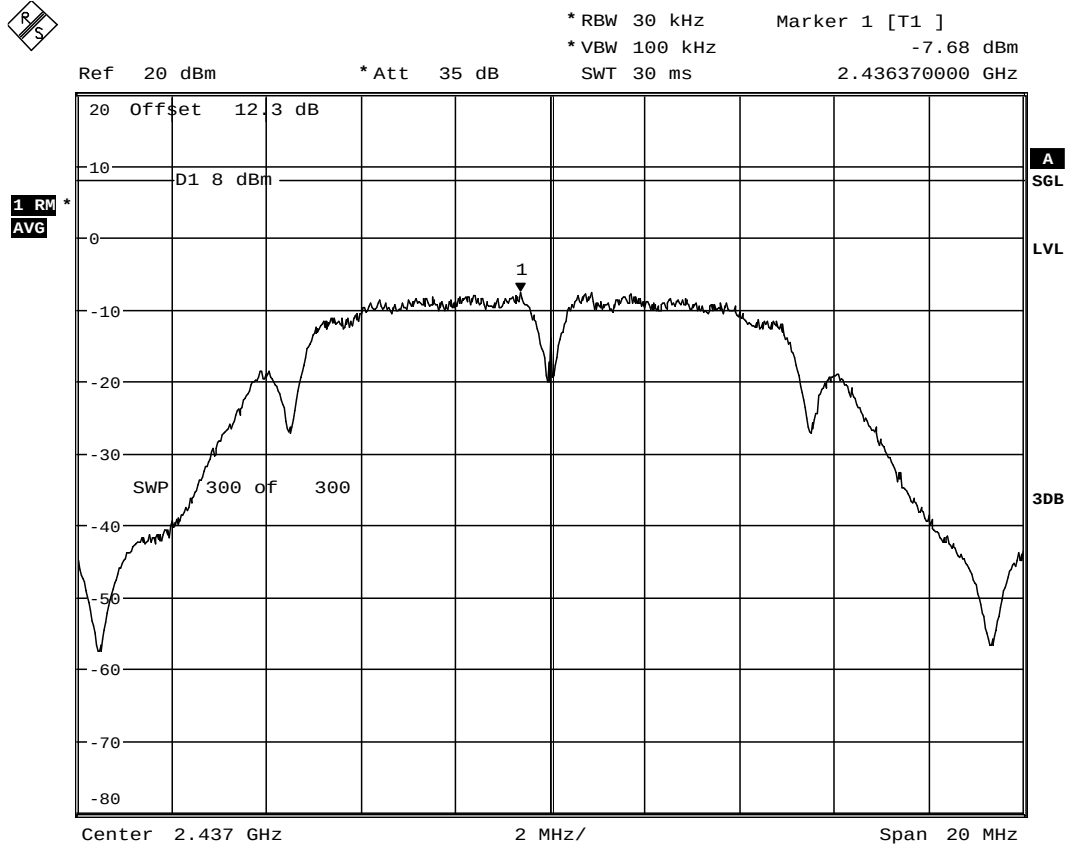
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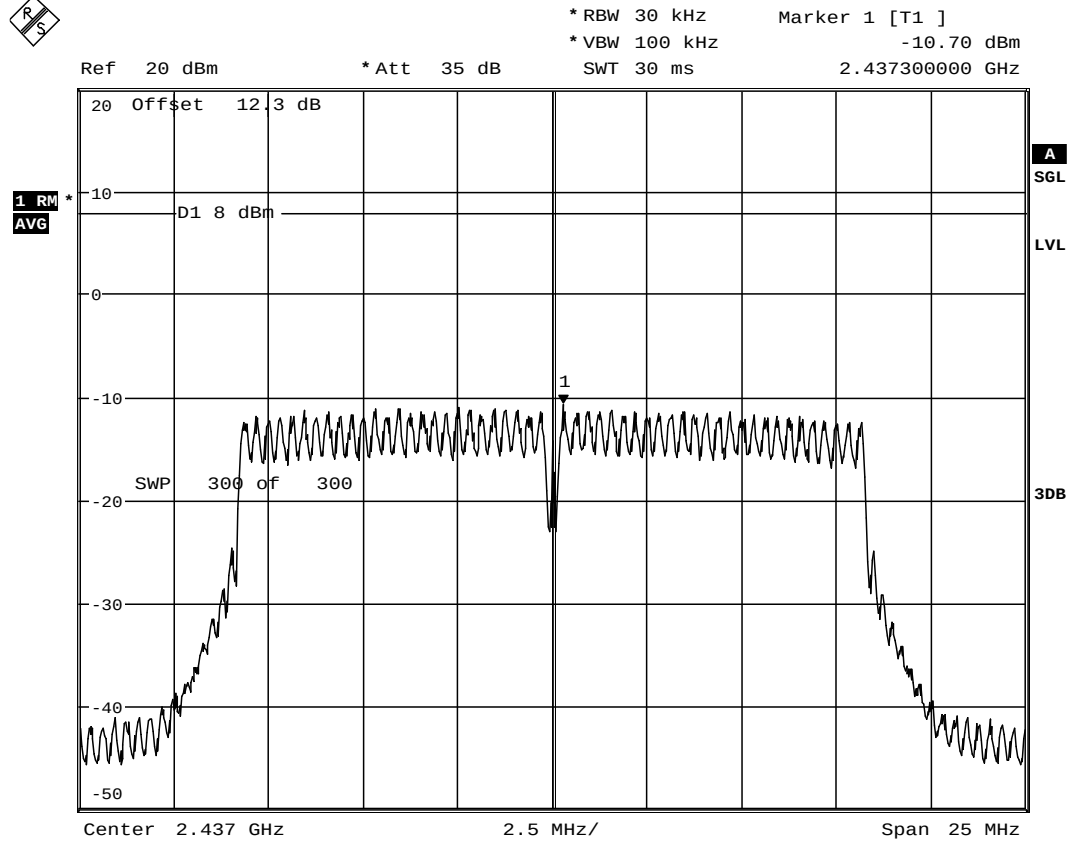
2.4.2. Channel 6

2Mbit



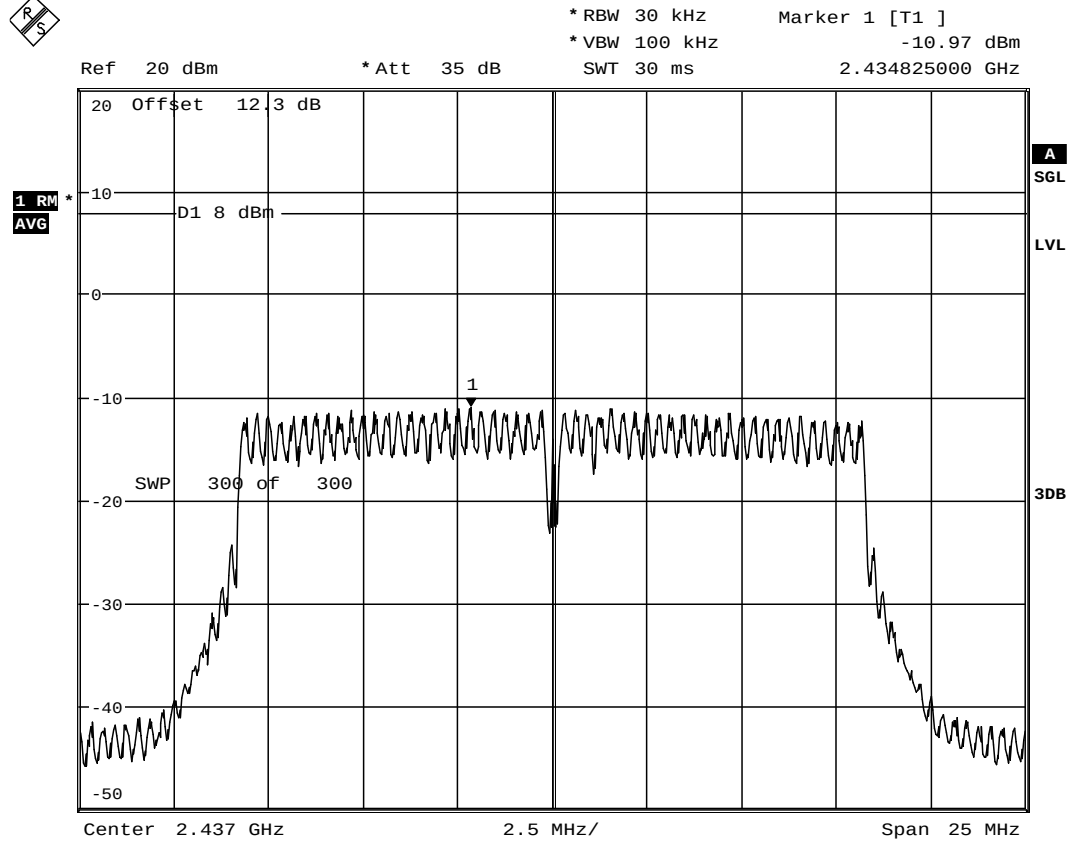
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6Mbit



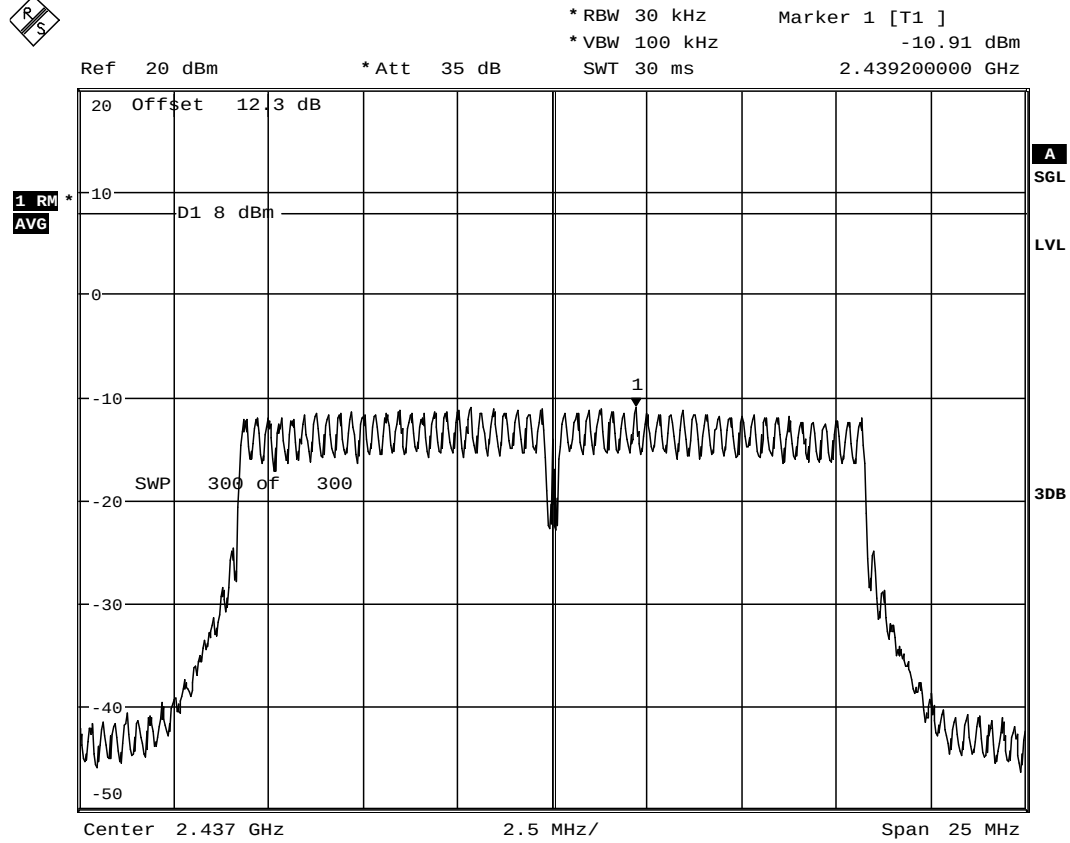
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9Mbit



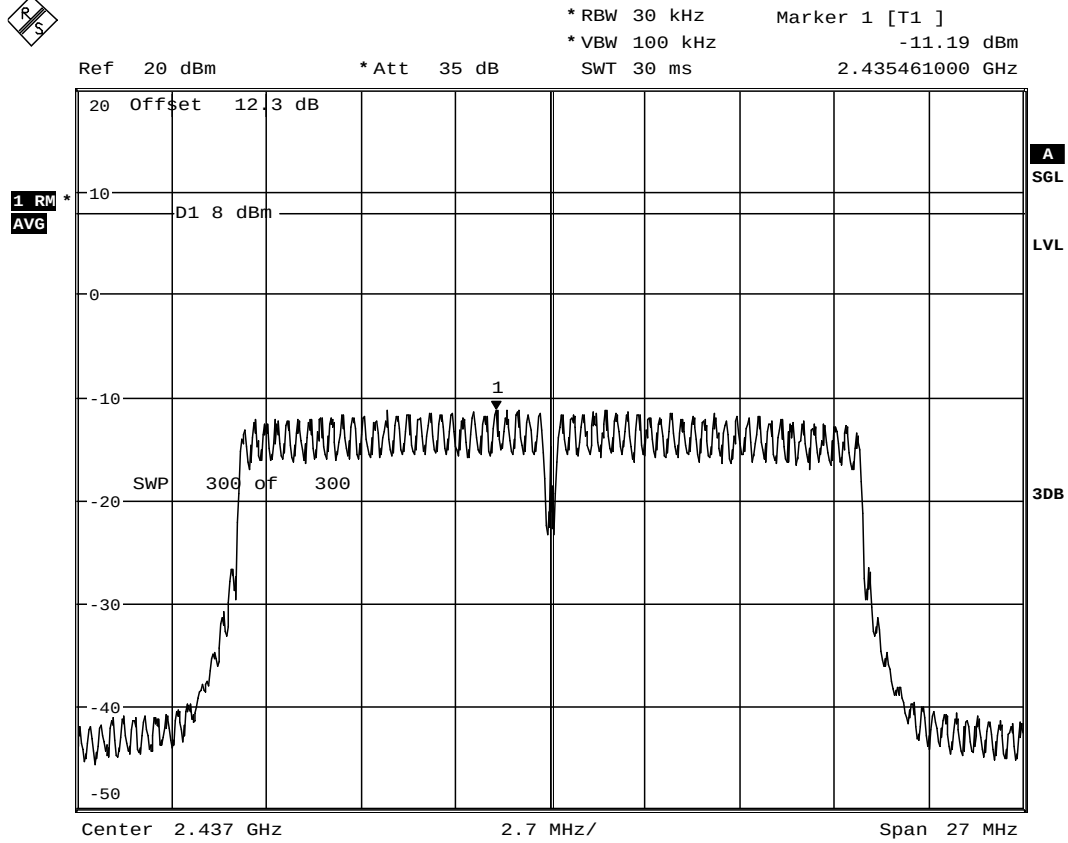
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18Mbit



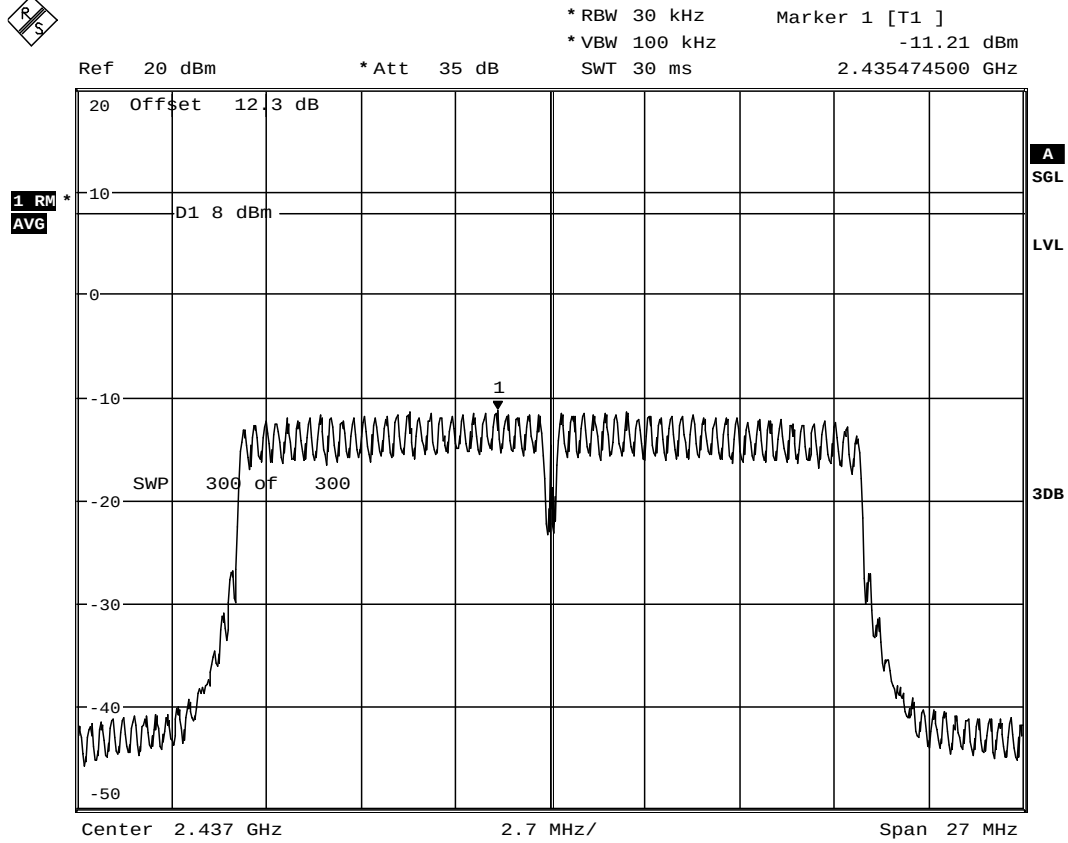
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MCS0



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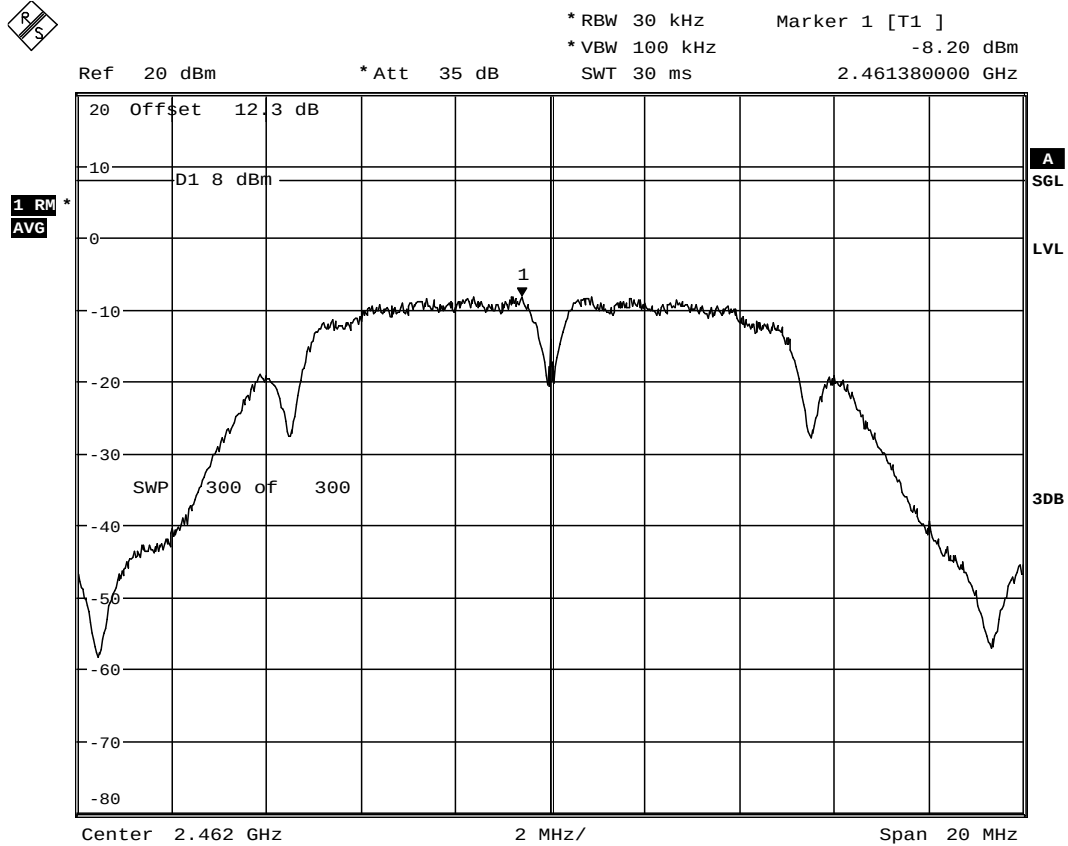
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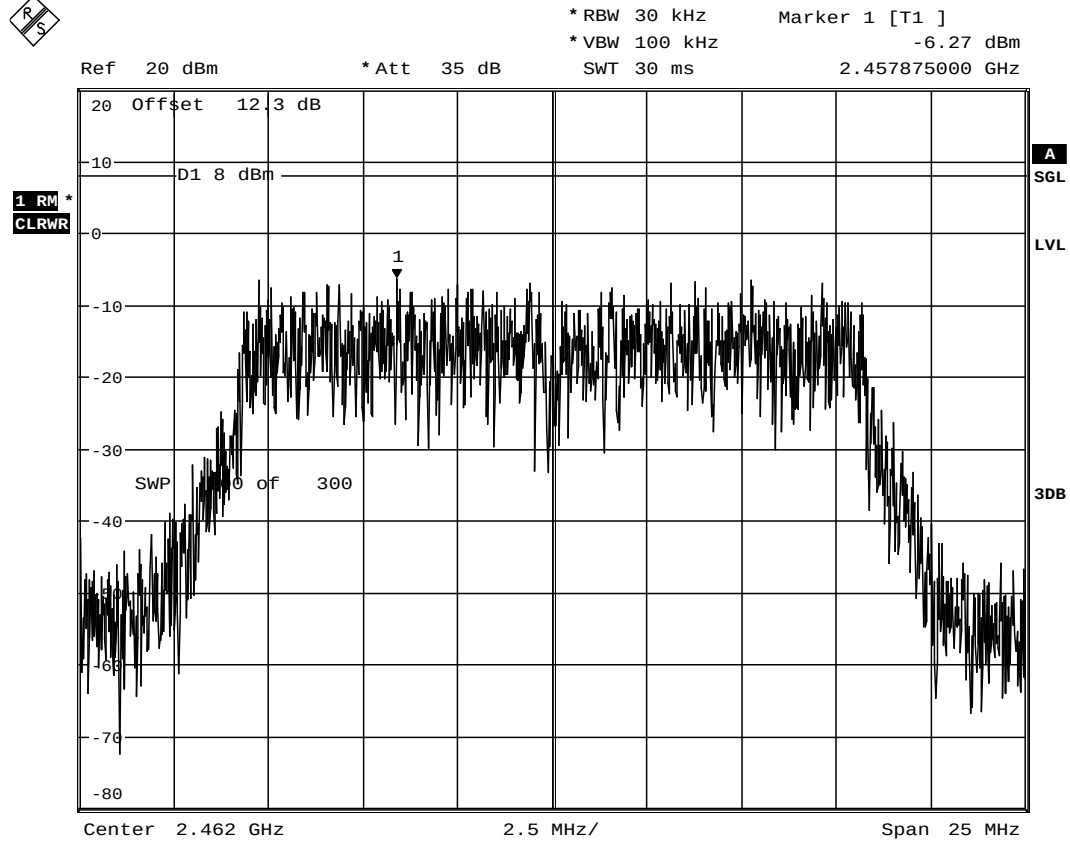
2.4.3. Channel 11

2Mbit



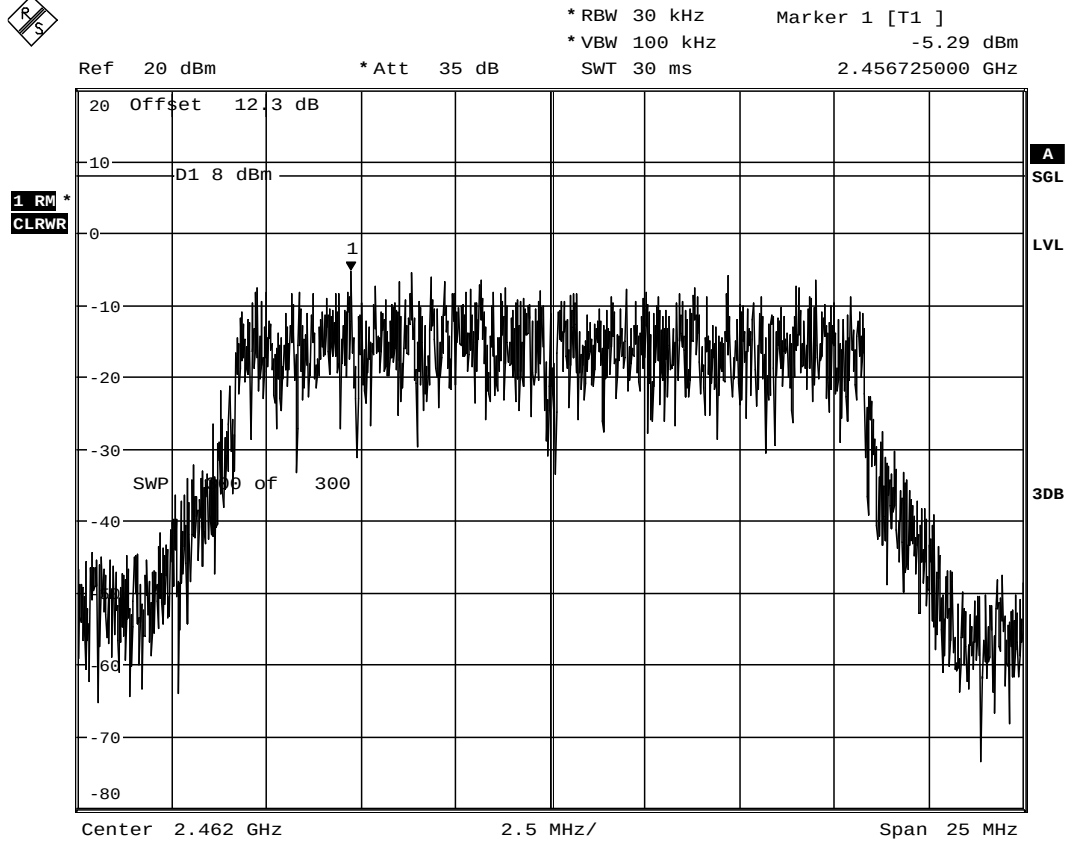
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6Mbit



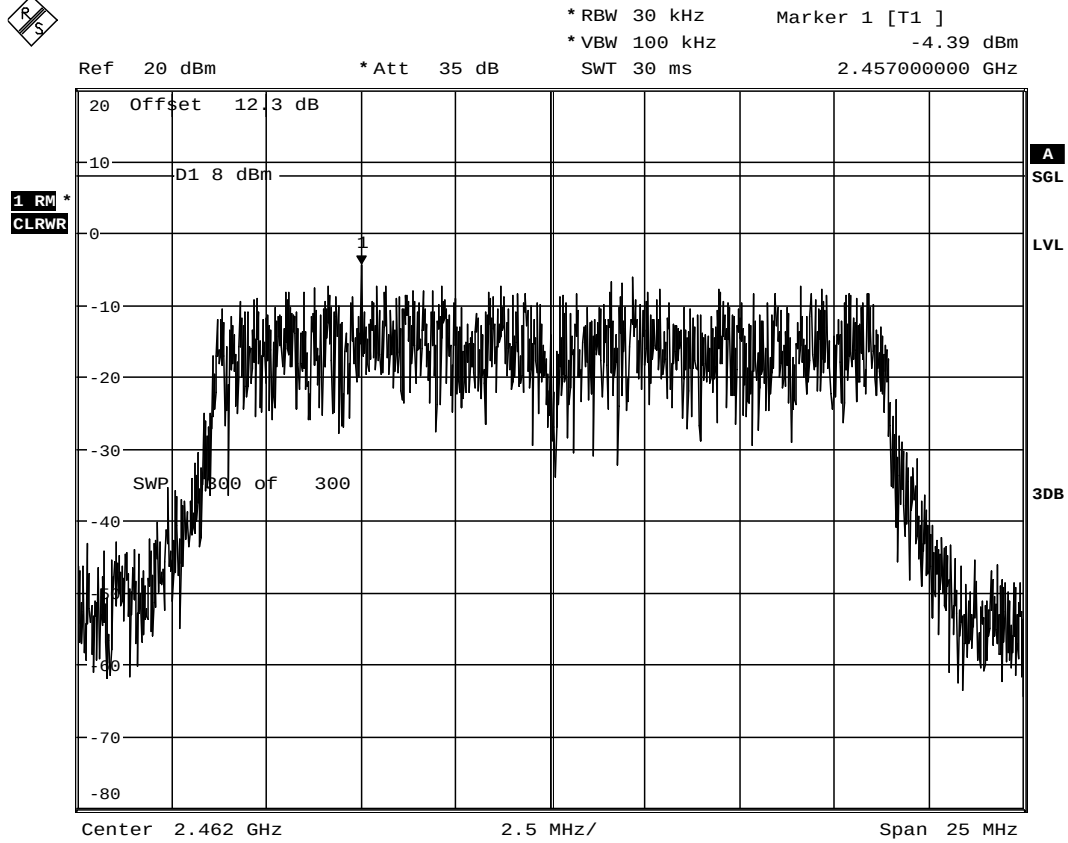
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54Mbit



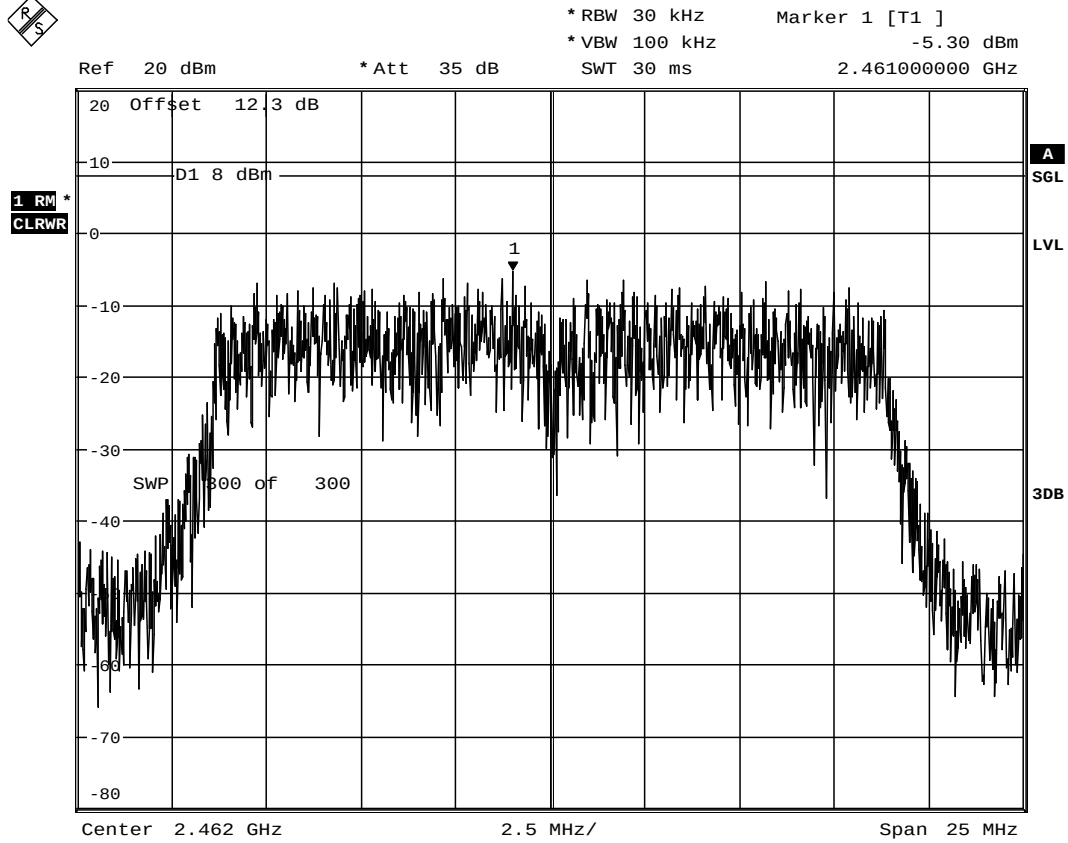
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MCS0



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MCS6

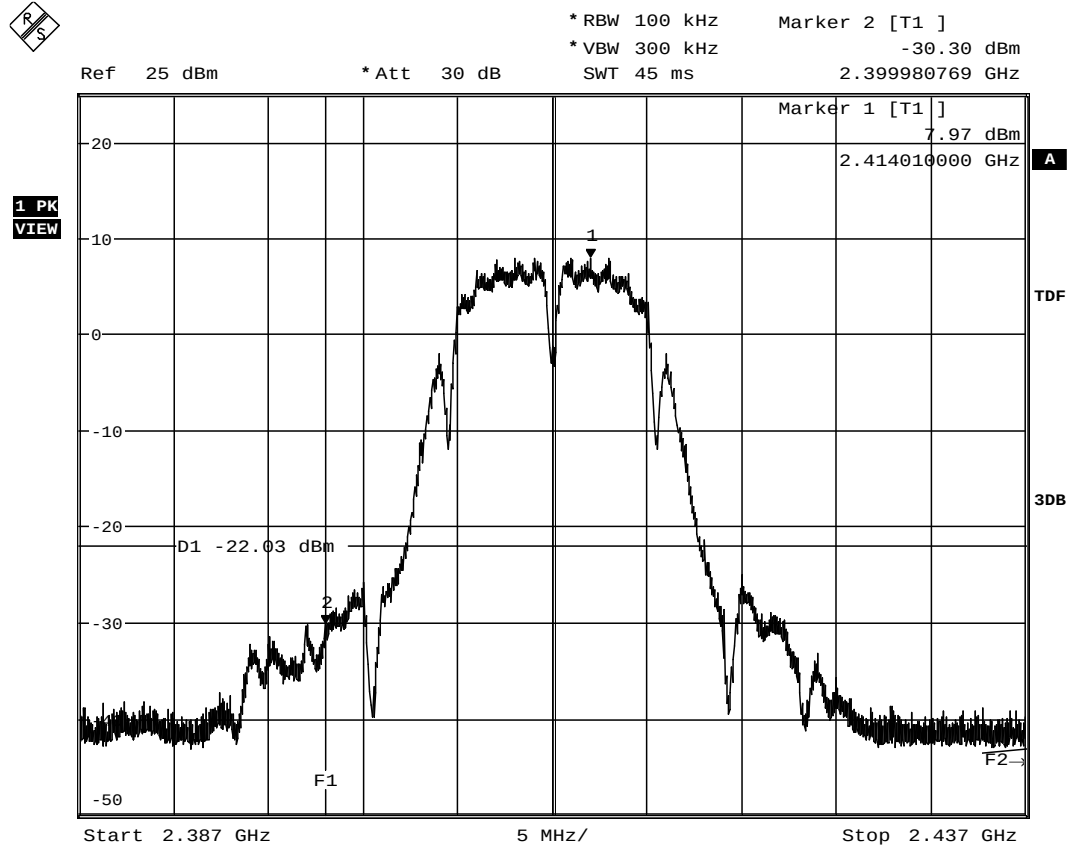


Date: 13.MAR.2015 15:32:41

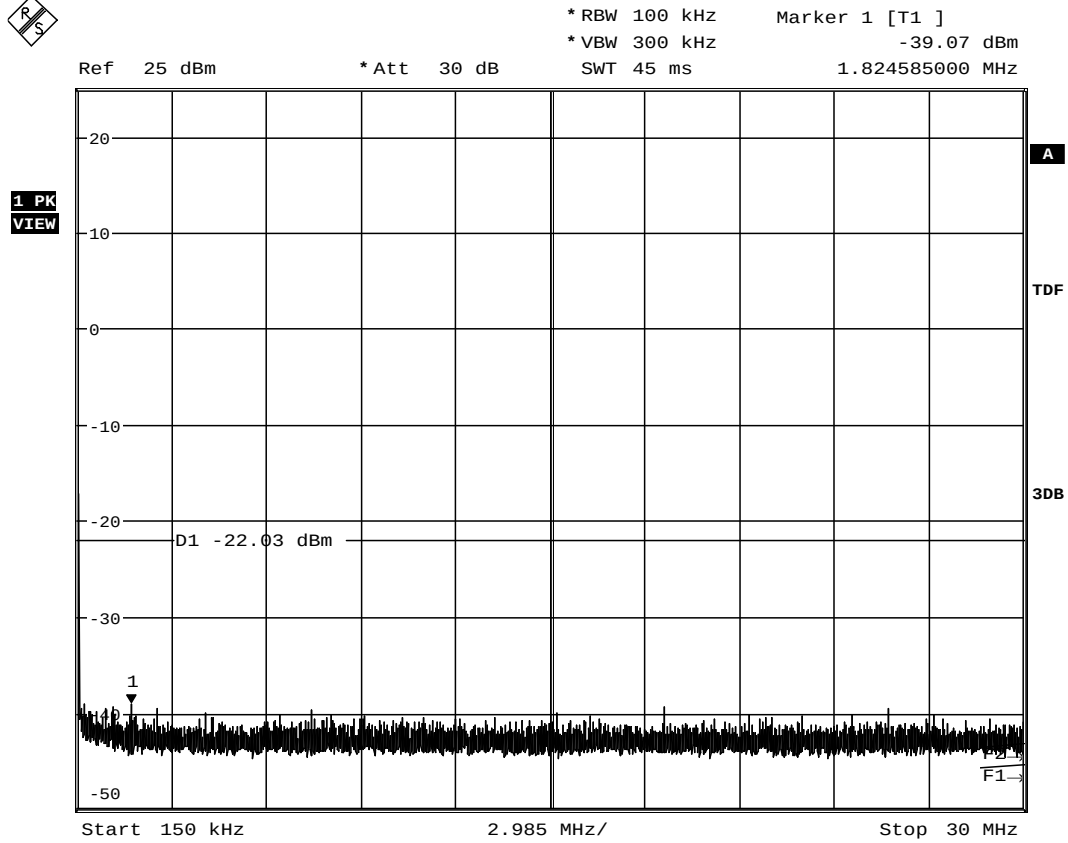
2.5. 20dBc Emissions

2.5.1. Channel 1, b-mode, 5.5Mbit

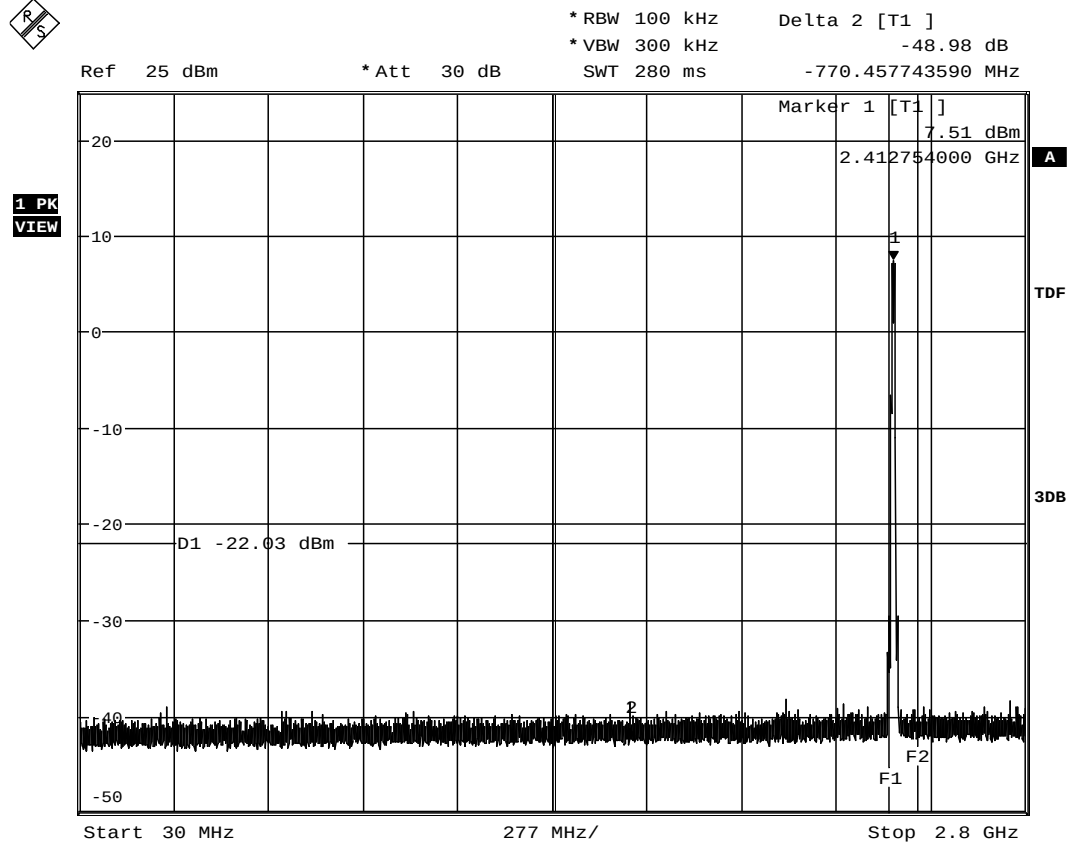
2.5.1.1. Channel 1 Reference



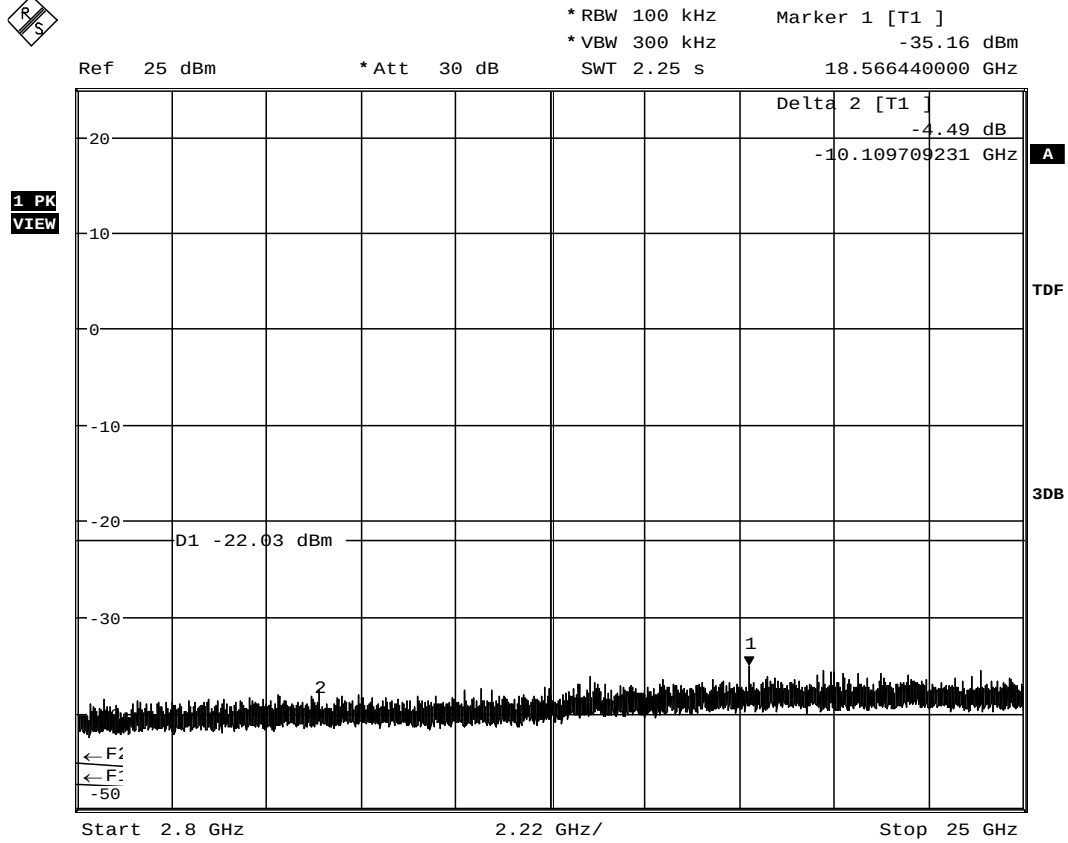
Date: 28.JAN.2015 13:33:21

2.5.1.2. Sweep 1: 150kHz to 30MHz

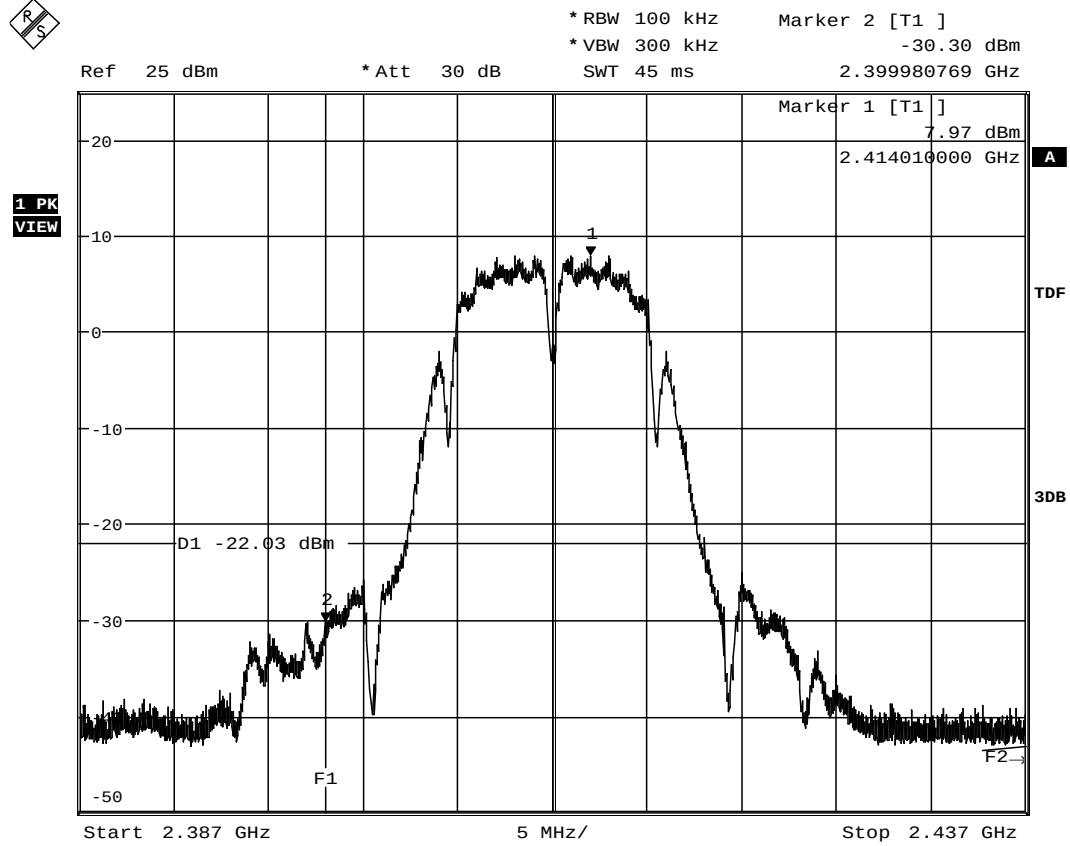
Date: 28.JAN.2015 13:36:36

2.5.1.3. Sweep 2: 30MHz to 2.8GHz

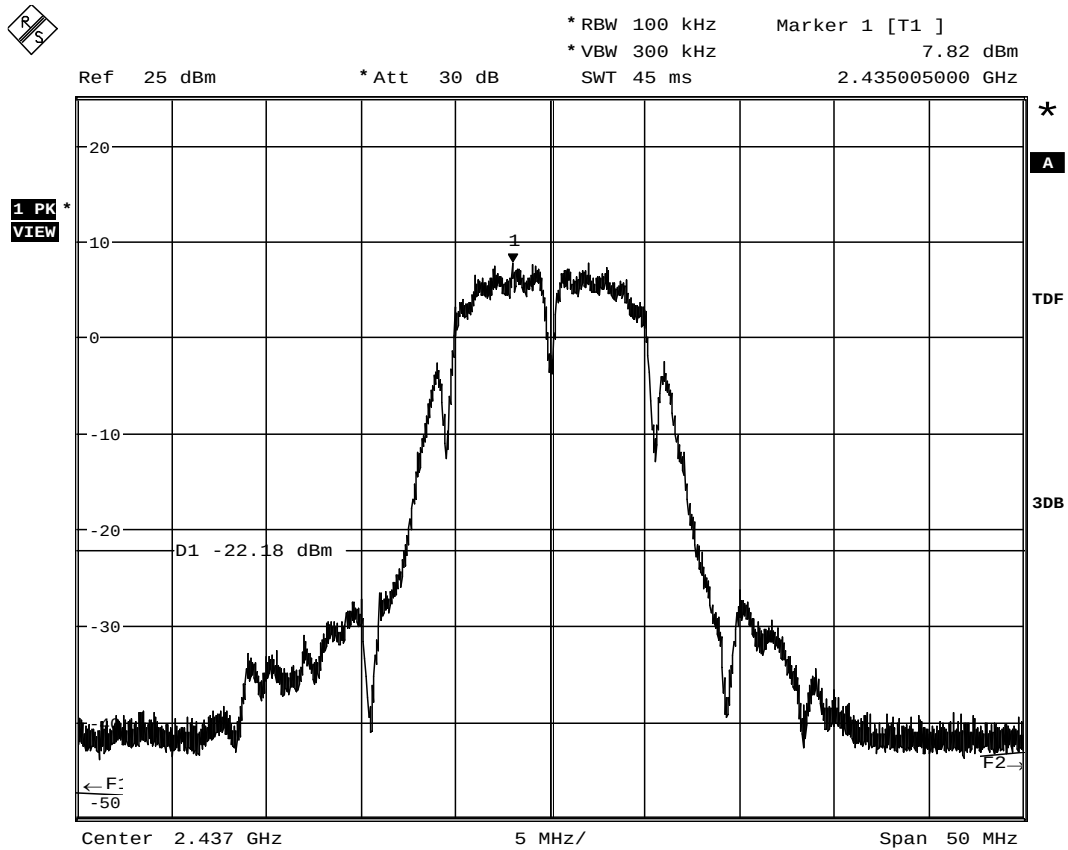
Date: 28.JAN.2015 13:40:46

2.5.1.4. Sweep 2: 2.8GHz to 25GHz

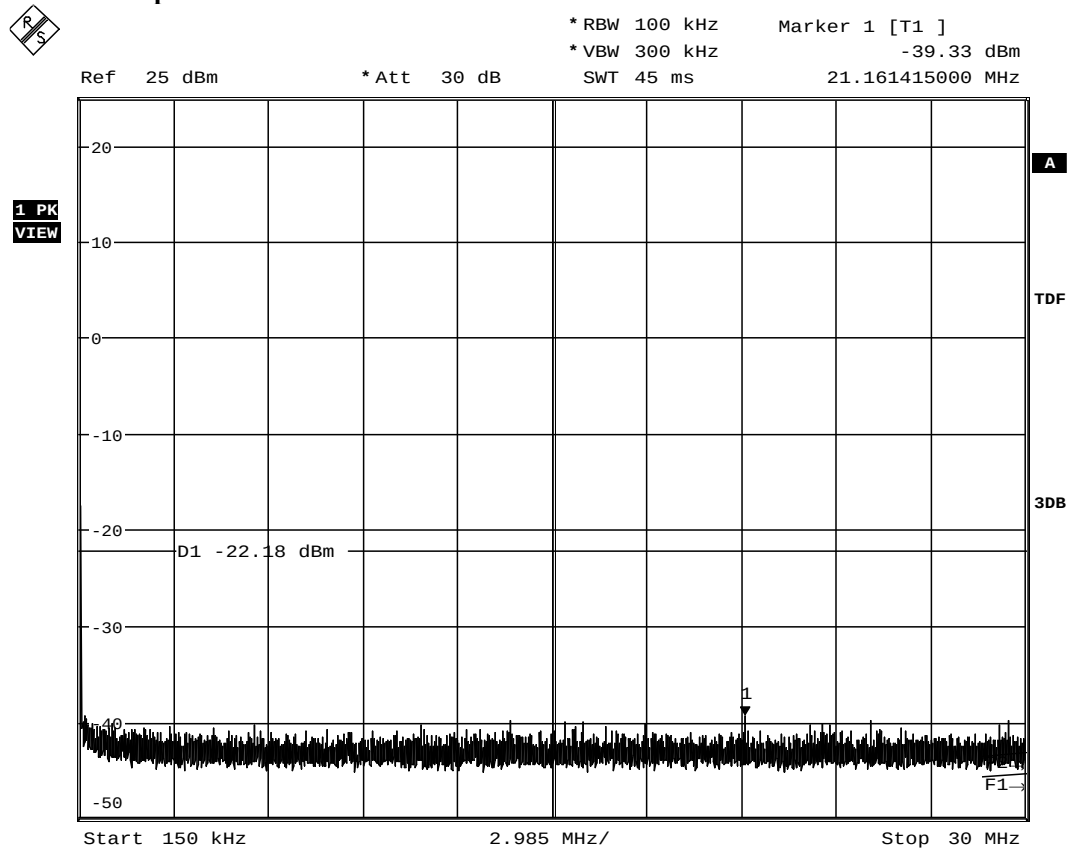
Date: 28.JAN.2015 13:44:29

2.5.1.5. Sweep Band-Edge left at 2.4GHz

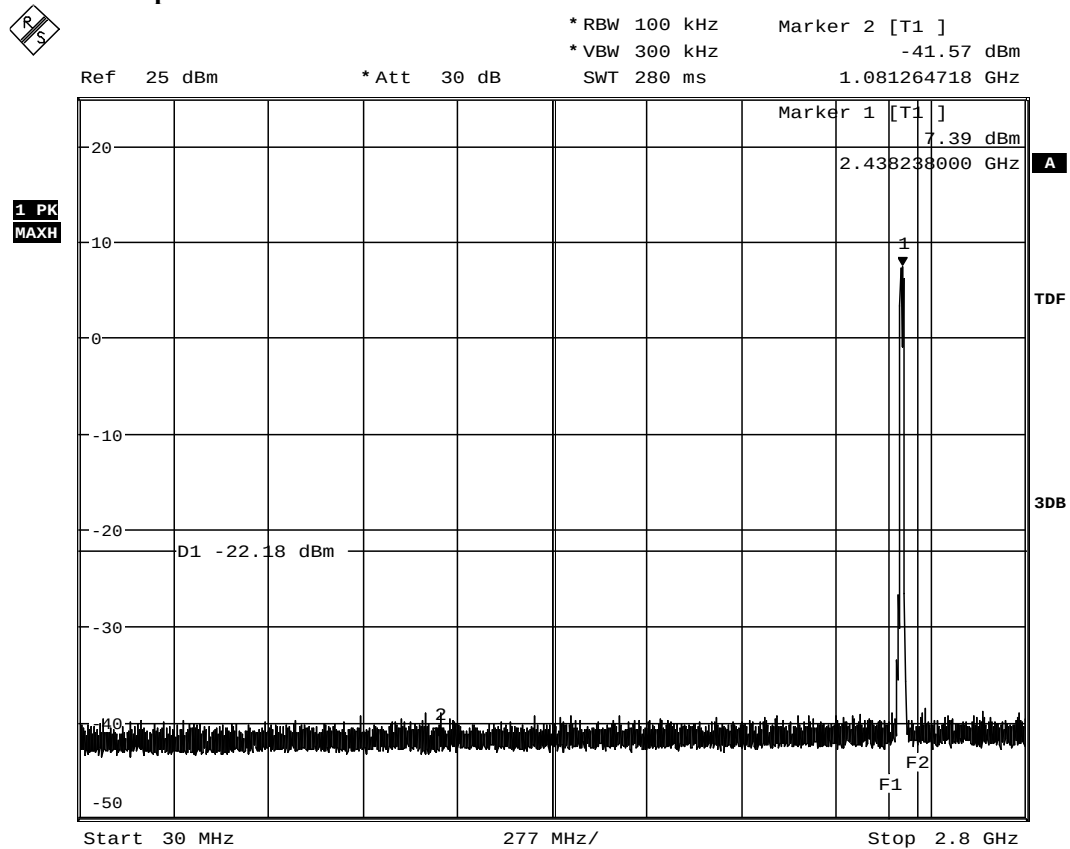
Date: 28.JAN.2015 13:33:21

2.5.2. Channel 6, b-mode, 2Mbit**2.5.2.1. Channel 6 Reference**

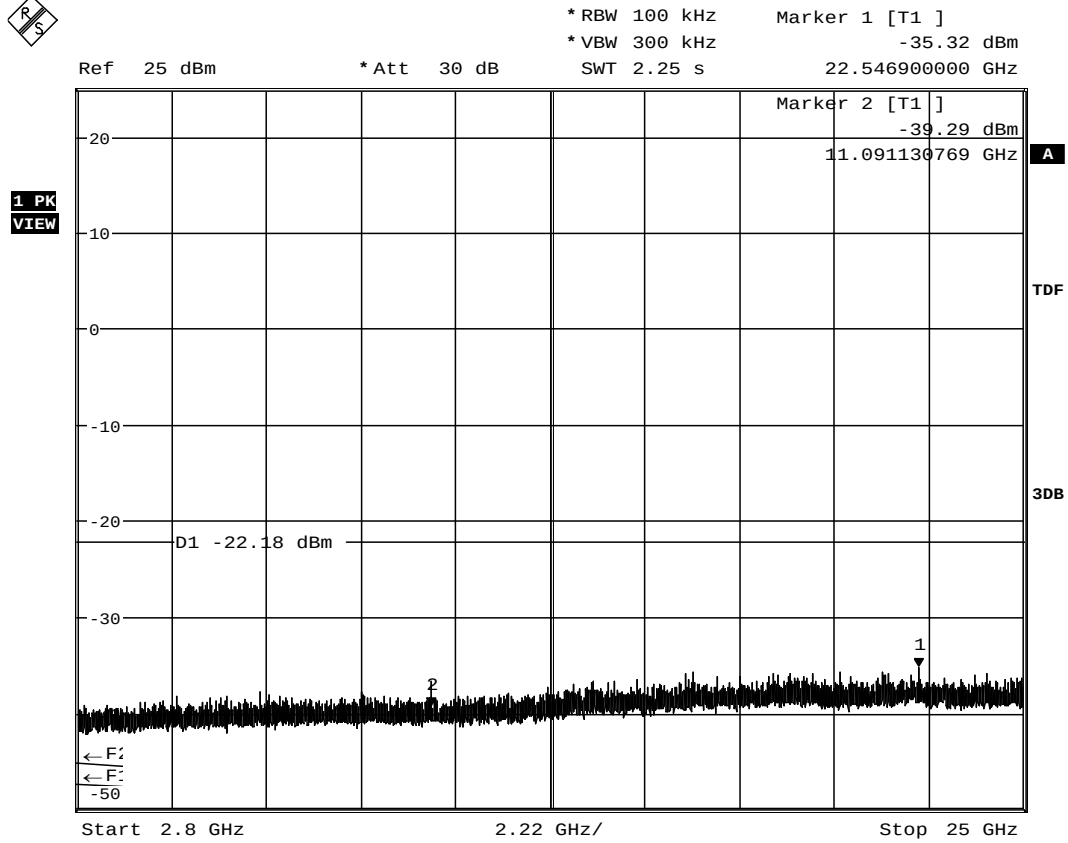
Date: 28.JAN.2015 13:16:40

2.5.2.2. Sweep 1: 150kHz to 30MHz

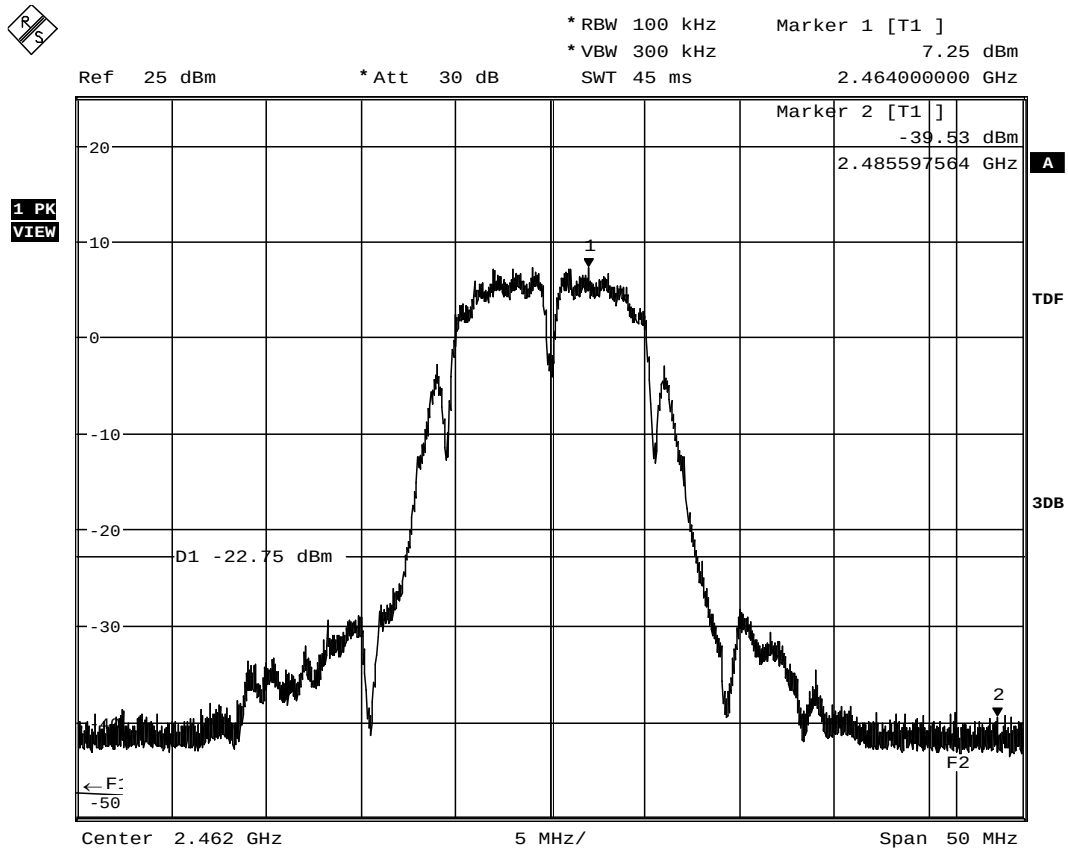
Date: 28.JAN.2015 13:18:39

2.5.2.3. Sweep 2: 30MHz to 2.8GHz

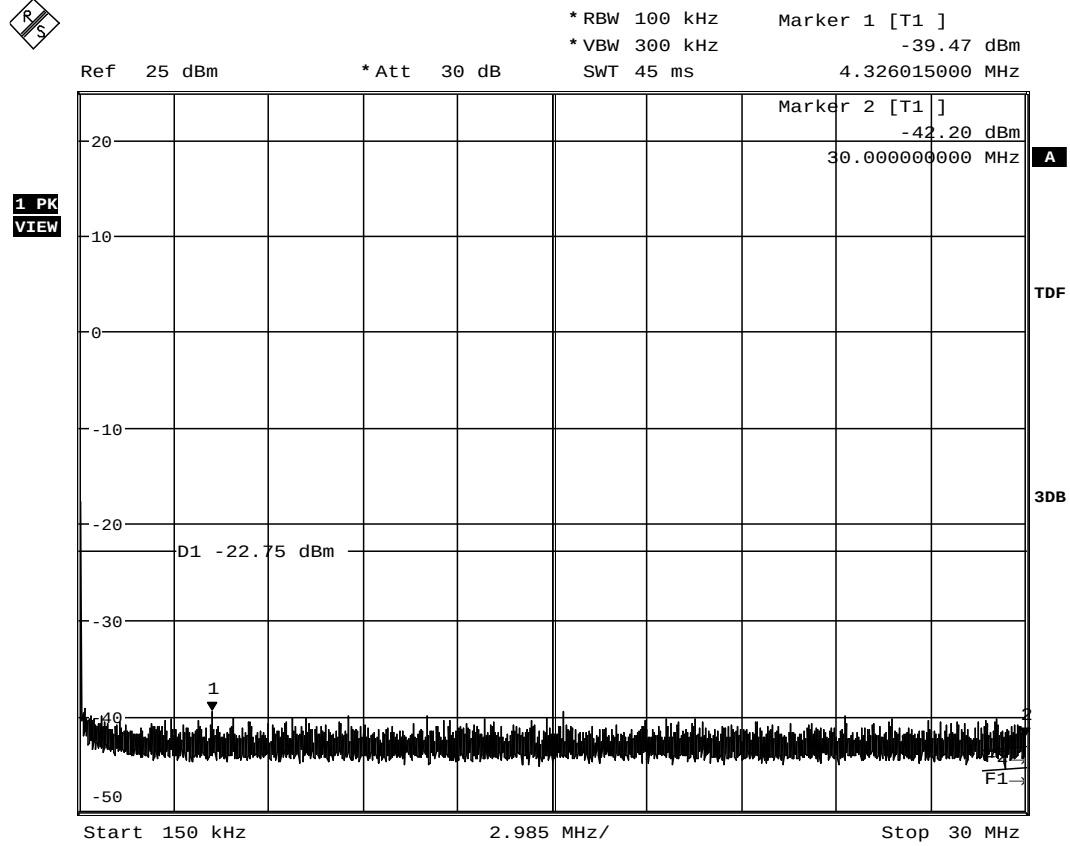
Date: 28.JAN.2015 13:22:13

2.5.2.4. Sweep 3: 2.8GHz to 25GHz

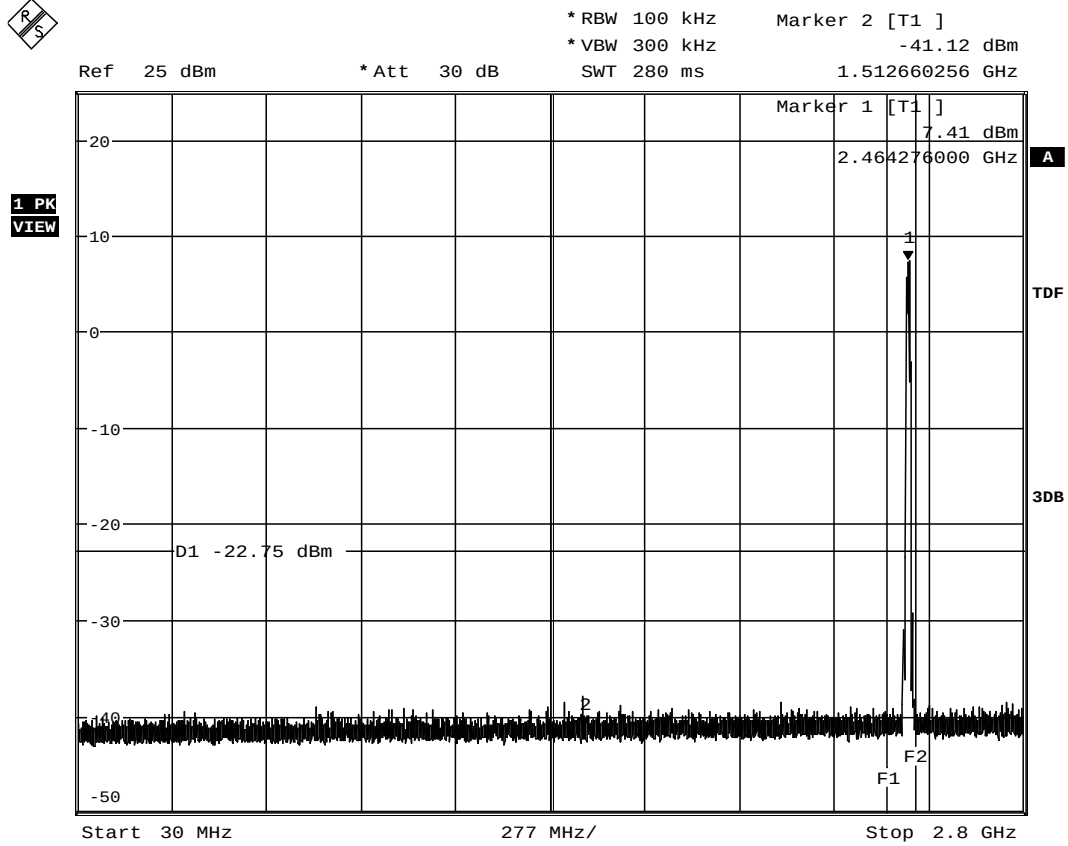
Date: 28.JAN.2015 13:27:14

2.5.3. Channel 11, b-mode, 2Mbit**2.5.3.1. Channel 11 Reference**

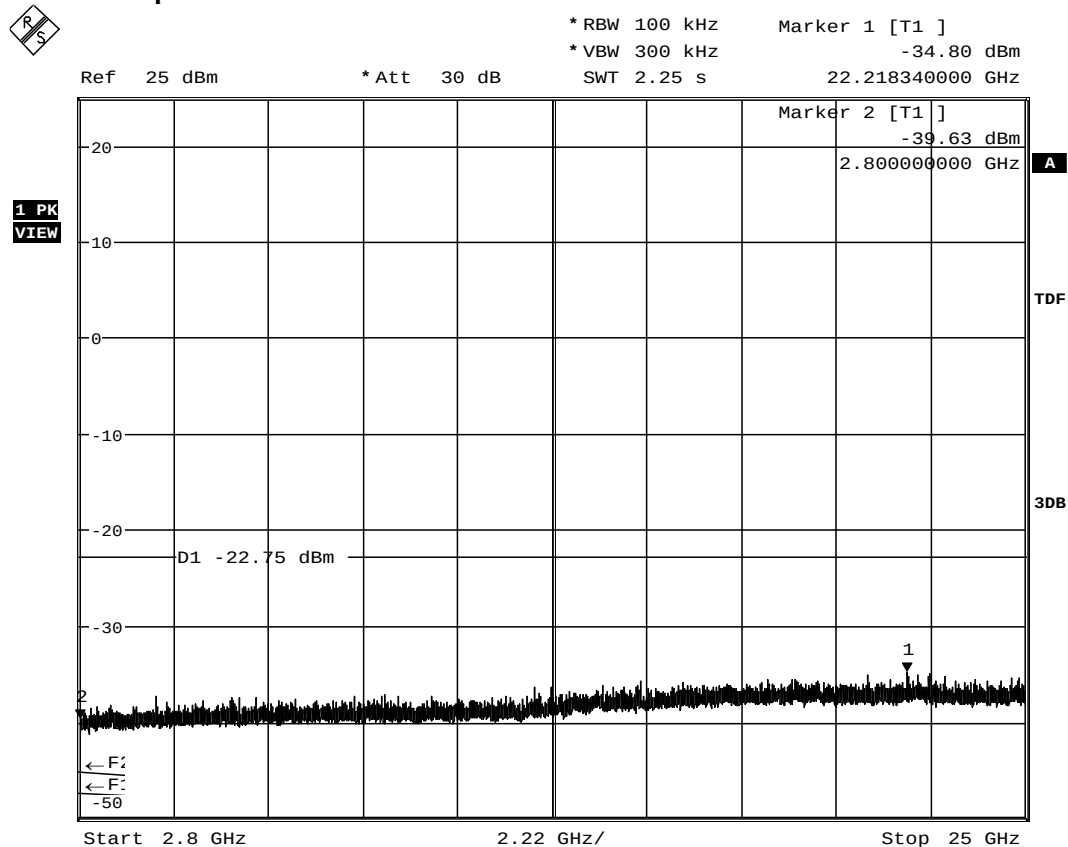
Date: 28.JAN.2015 12:19:08

2.5.3.2. Sweep 1: 150kHz to 30MHz

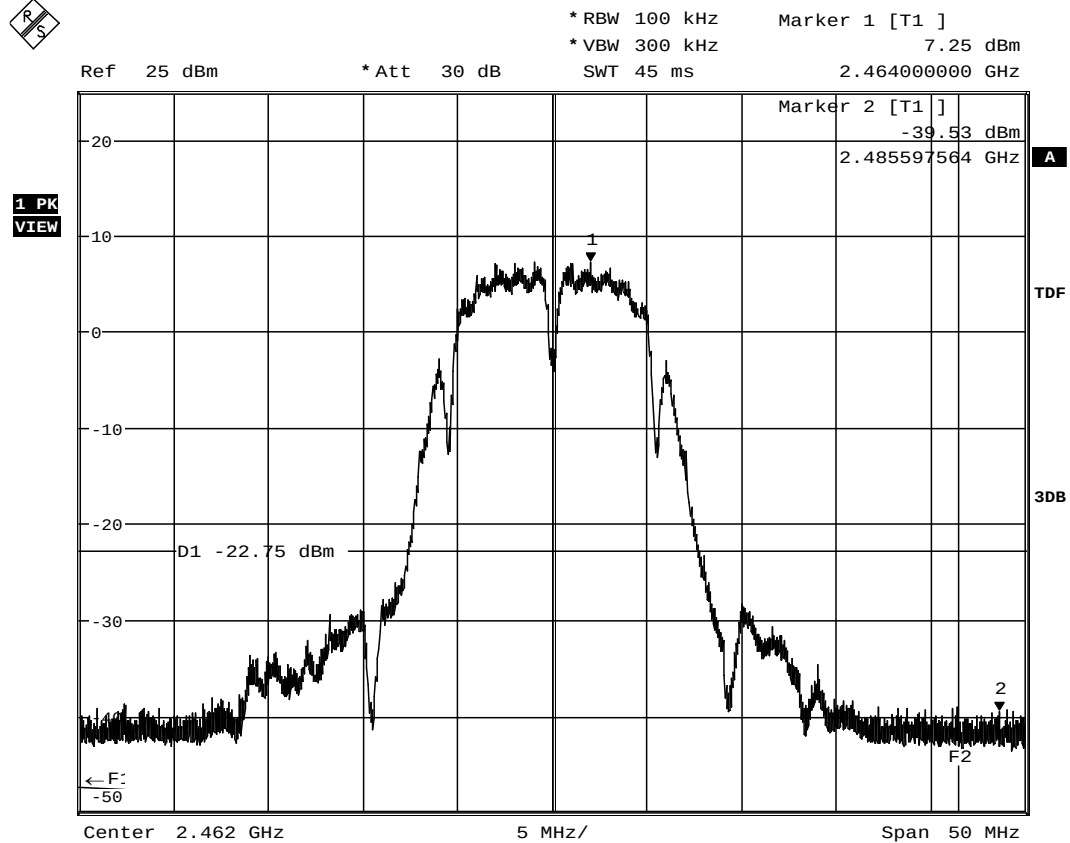
Date: 28.JAN.2015 12:24:56

2.5.3.3. Sweep 2: 30MHz to 2.8GHz

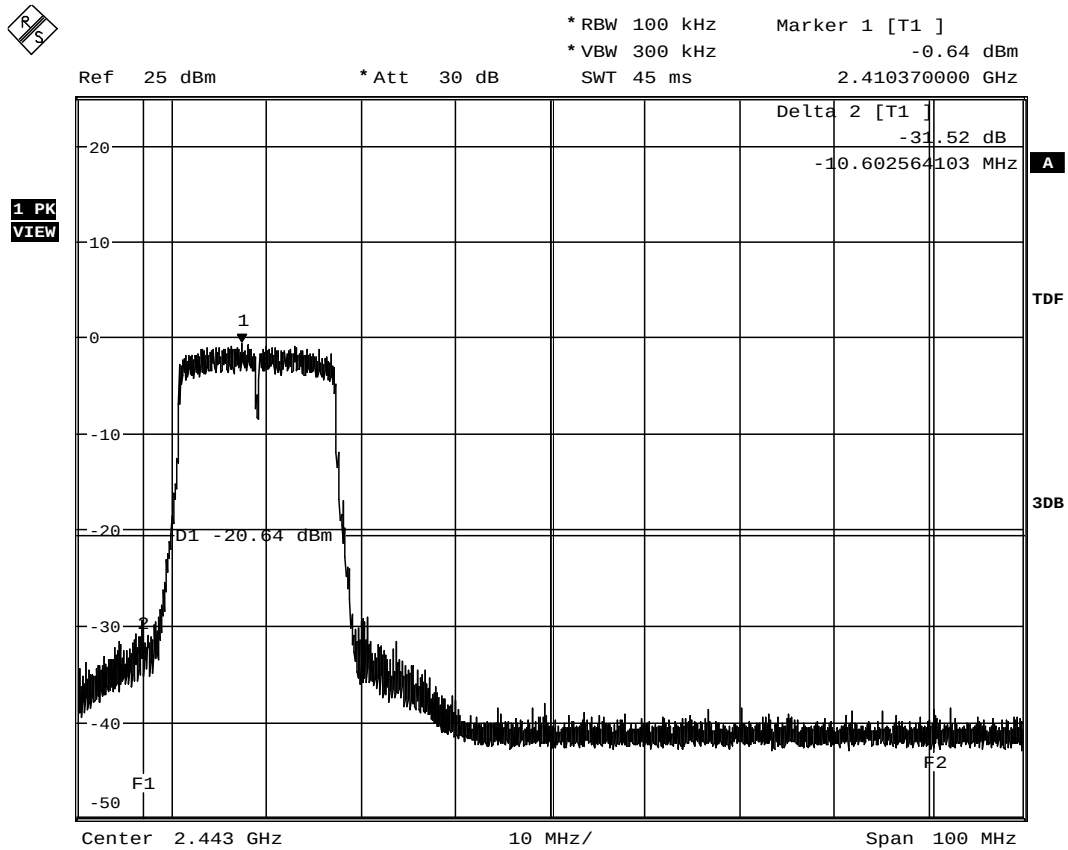
Date: 28.JAN.2015 13:10:34

2.5.3.4. Sweep 3: 2.8GHz to 25GHz

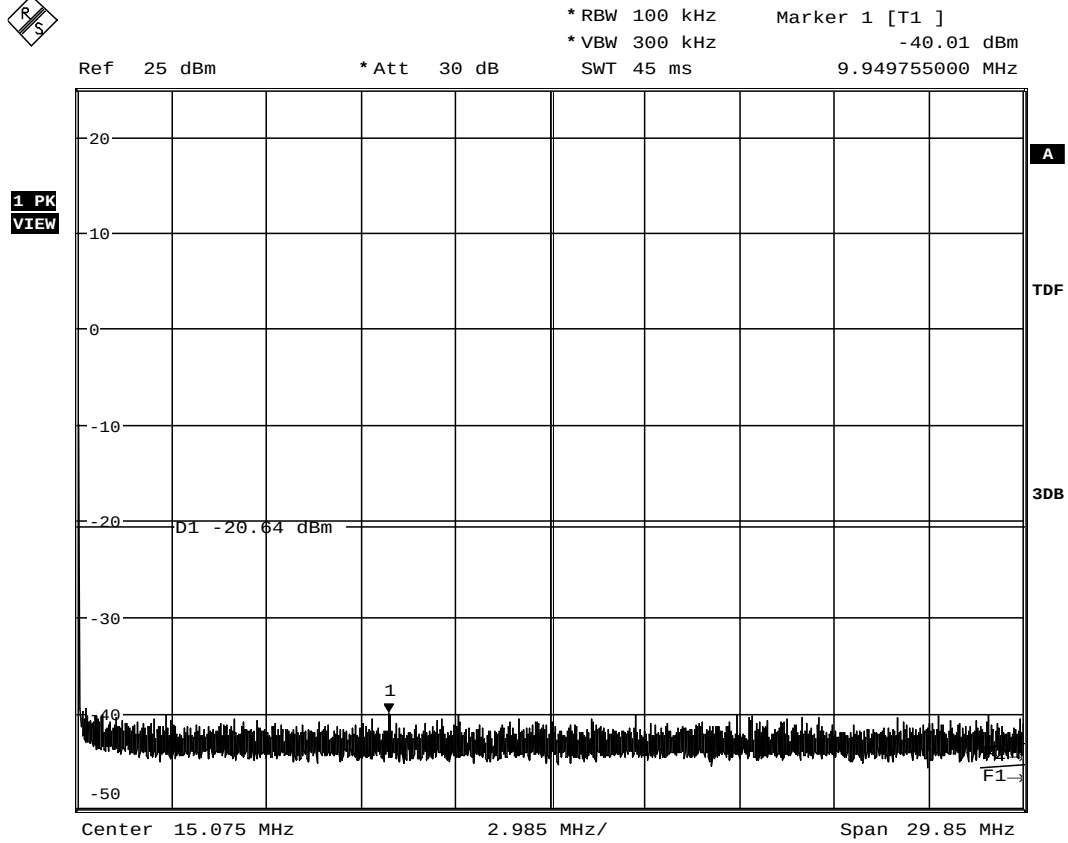
Date: 28.JAN.2015 13:03:26

2.5.3.5. Sweep Band-Edge right at 2483.5GHz

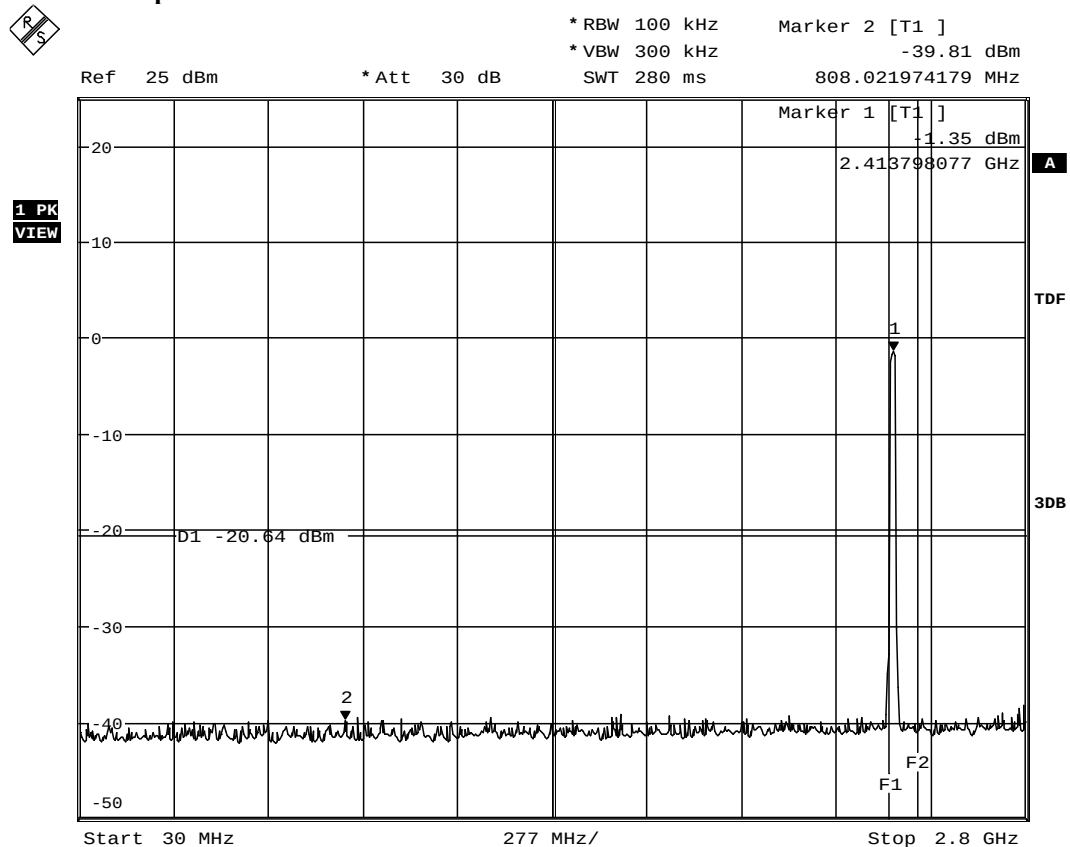
Date: 28.JAN.2015 12:19:08

2.5.4. Channel 1, g-mode, 6Mbit**2.5.4.1. Channel 1 Reference**

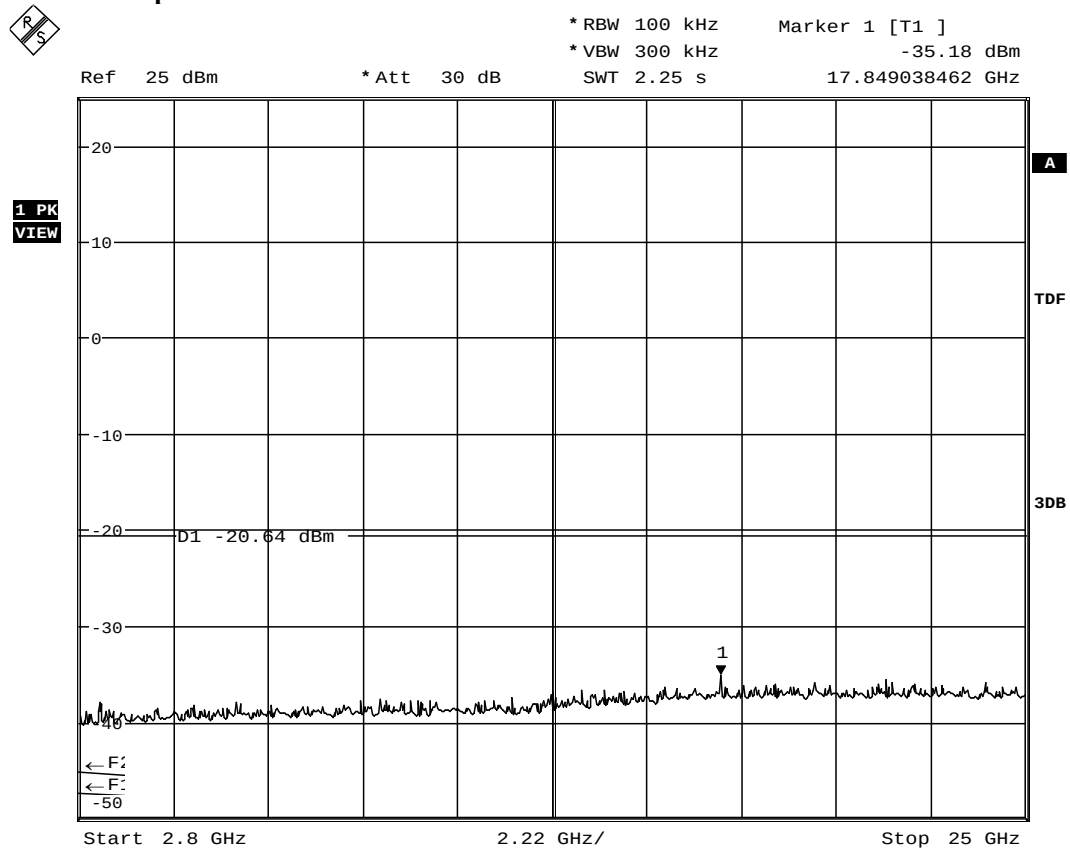
Date: 16.MAR.2015 14:54:02

2.5.4.2. Sweep 1: 150kHz to 30MHz

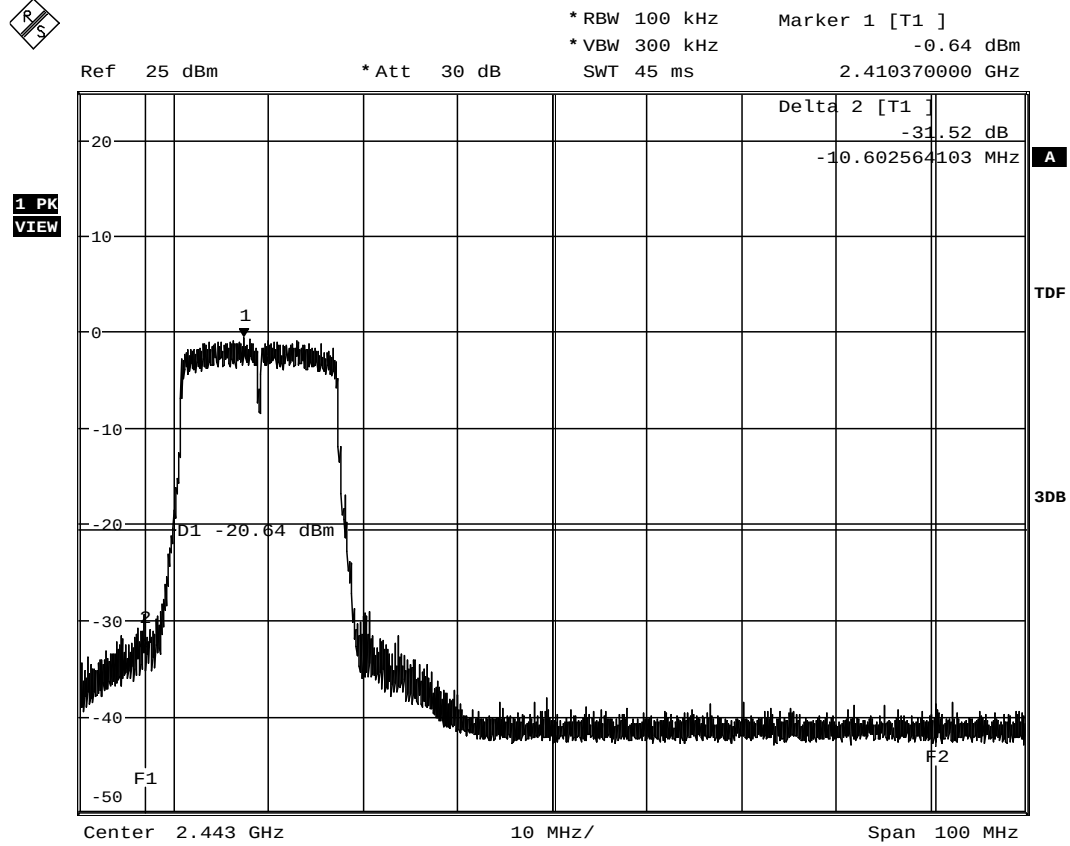
Date: 16.MAR.2015 15:00:52

2.5.4.3. Sweep 2: 30MHz to 2.8GHz

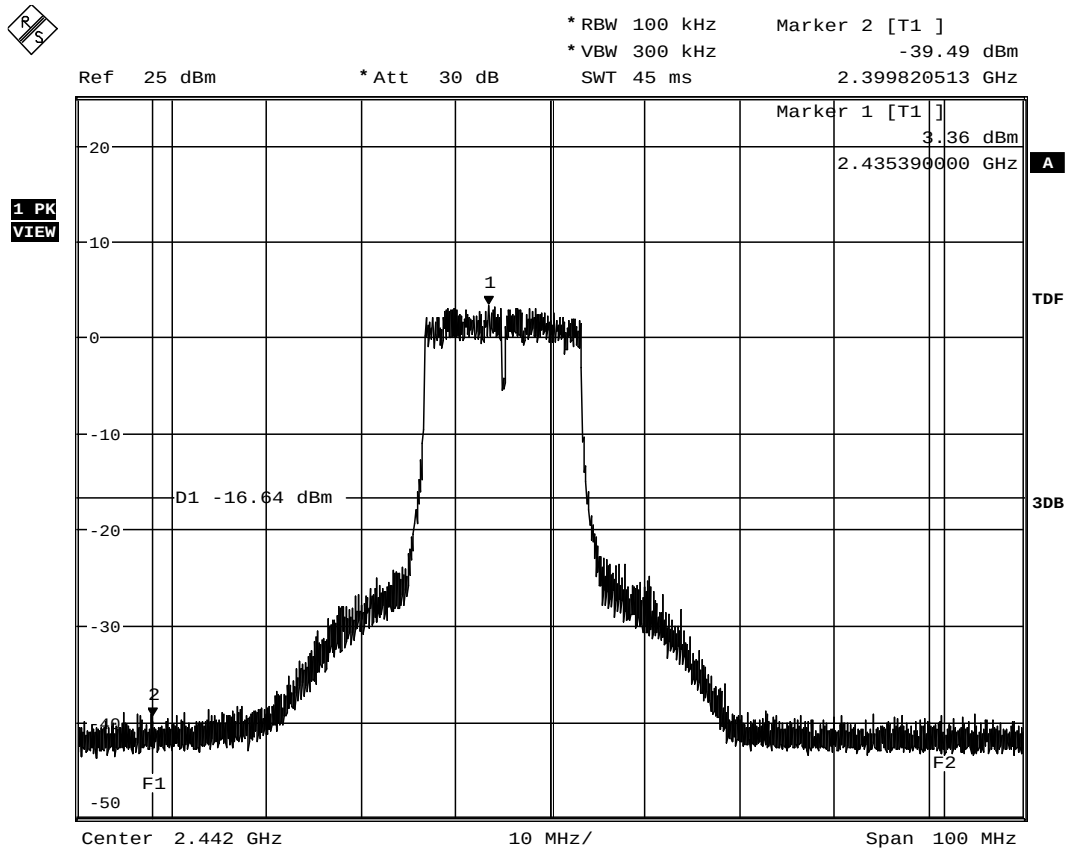
Date: 16.MAR.2015 15:05:22

2.5.4.4. Sweep 2: 2.8GHz to 25GHz

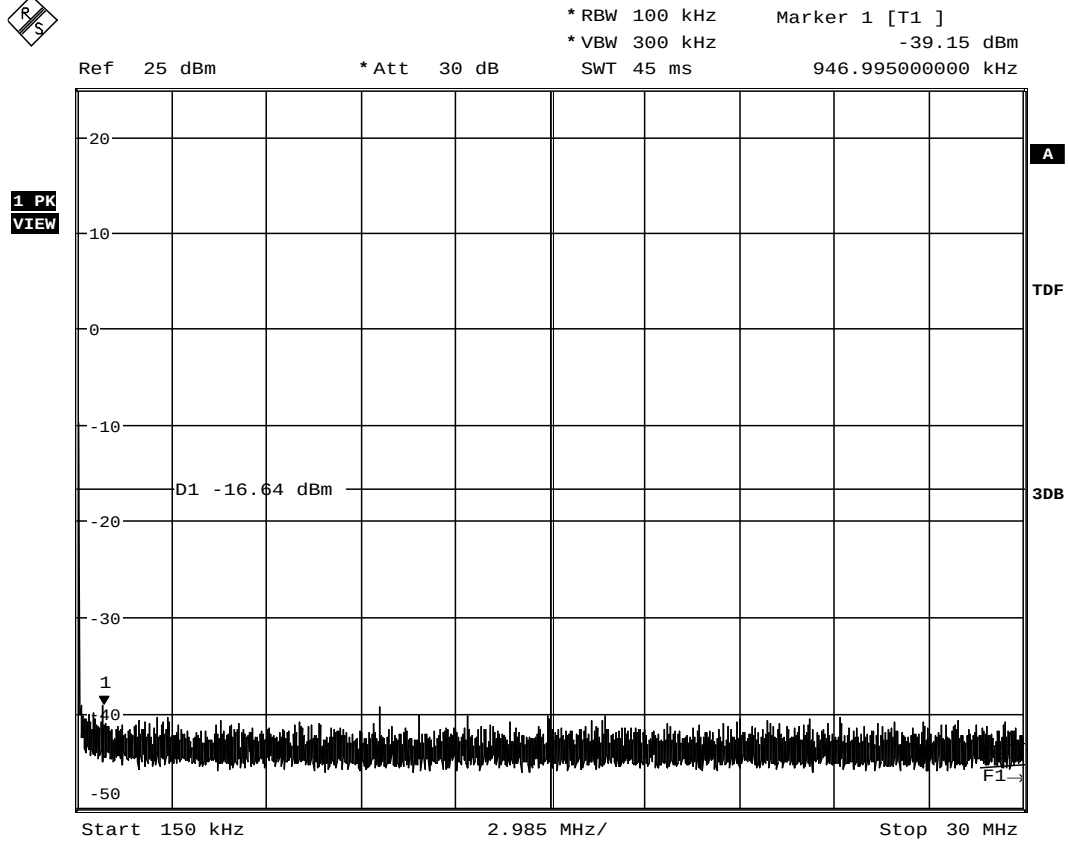
Date: 16.MAR.2015 15:14:05

2.5.4.5. Sweep Band-Edge left at 2.4GHz

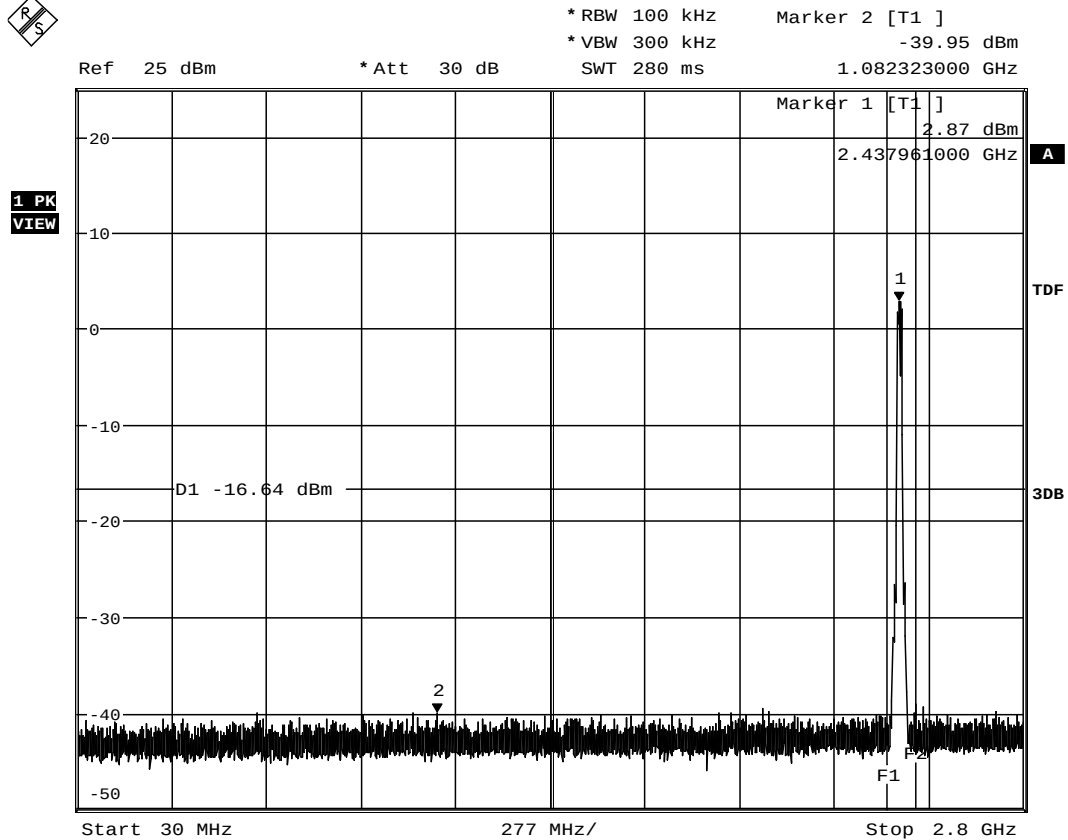
Date: 16.MAR.2015 14:54:02

2.5.5. Channel 6, g-mode, 54Mbit**2.5.5.1. Channel 6 Reference**

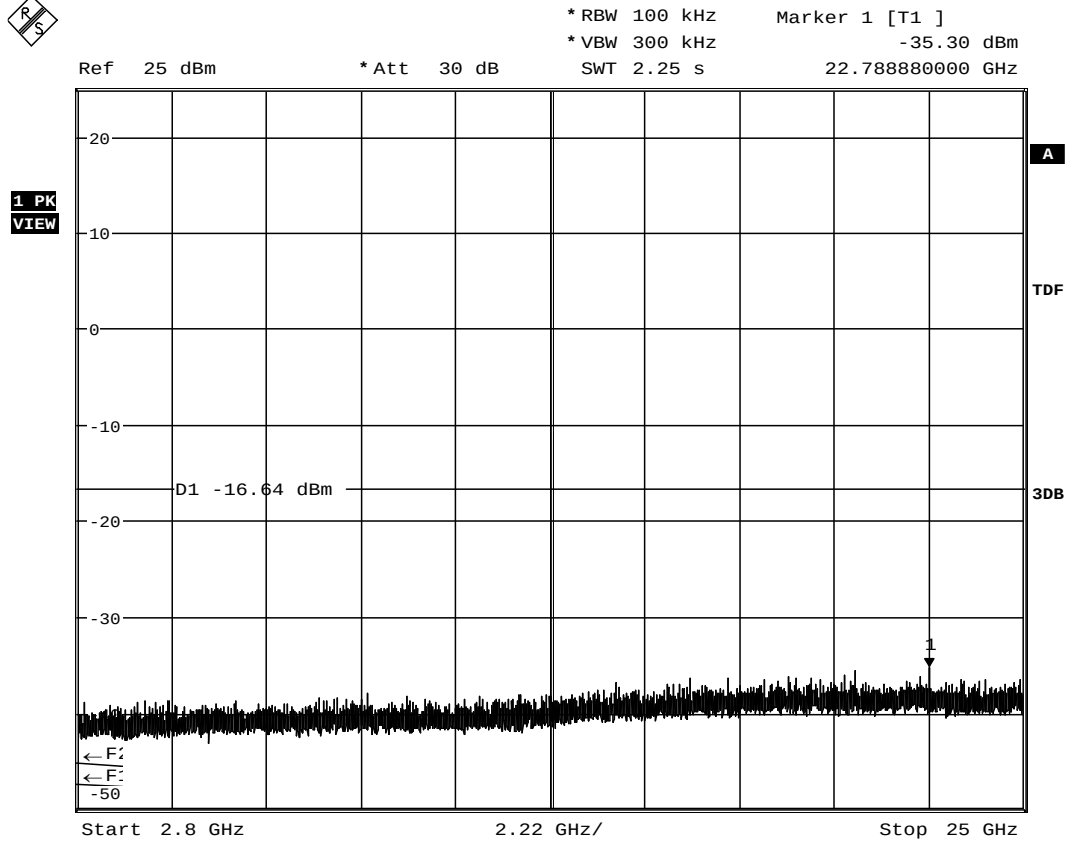
Date: 16.MAR.2015 15:20:16

2.5.5.2. Sweep 1: 150kHz to 30MHz

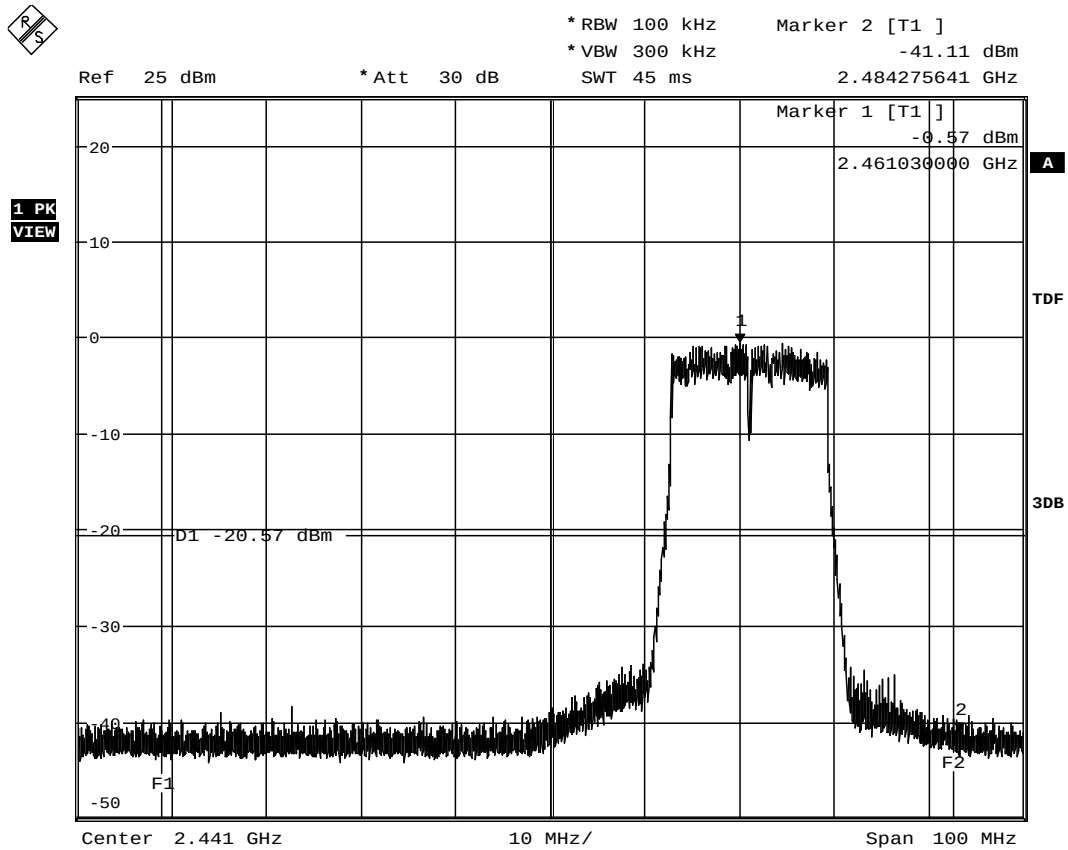
Date: 16.MAR.2015 15:26:06

2.5.5.3. Sweep 2: 30MHz to 2.8GHz

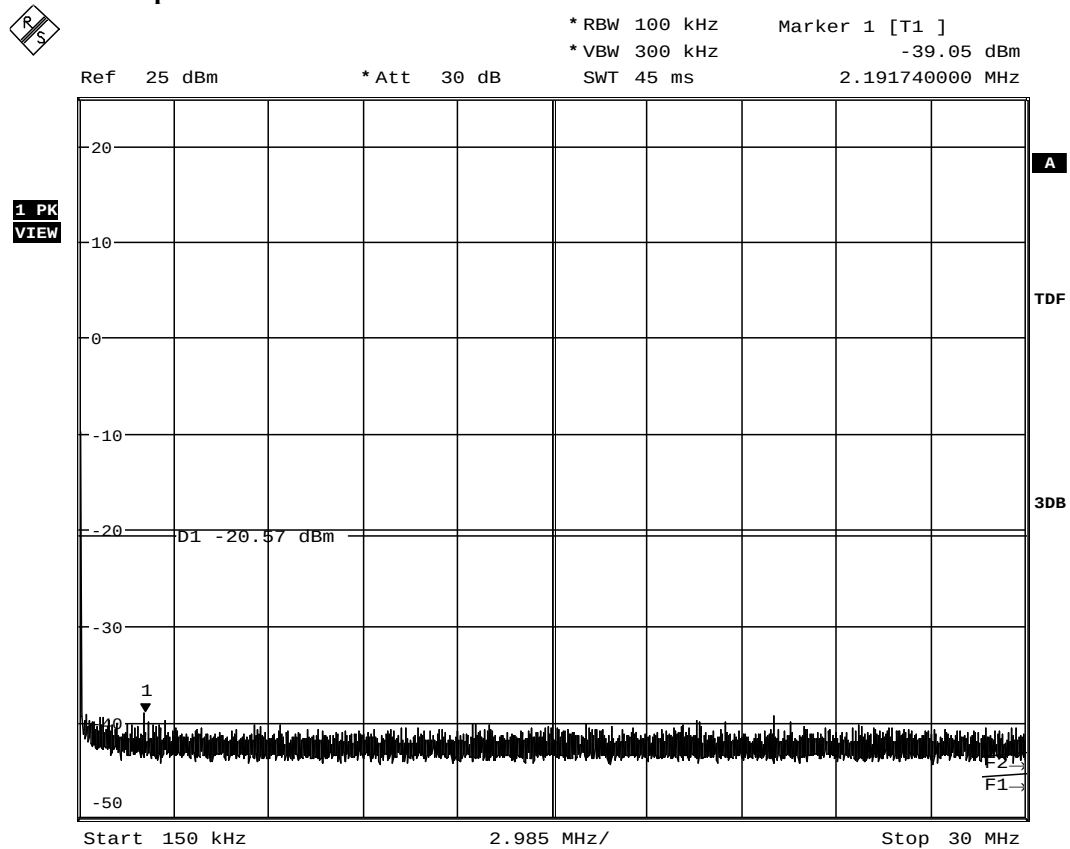
Date: 16.MAR.2015 15:29:31

2.5.5.4. Sweep 3: 2.8GHz to 25GHz

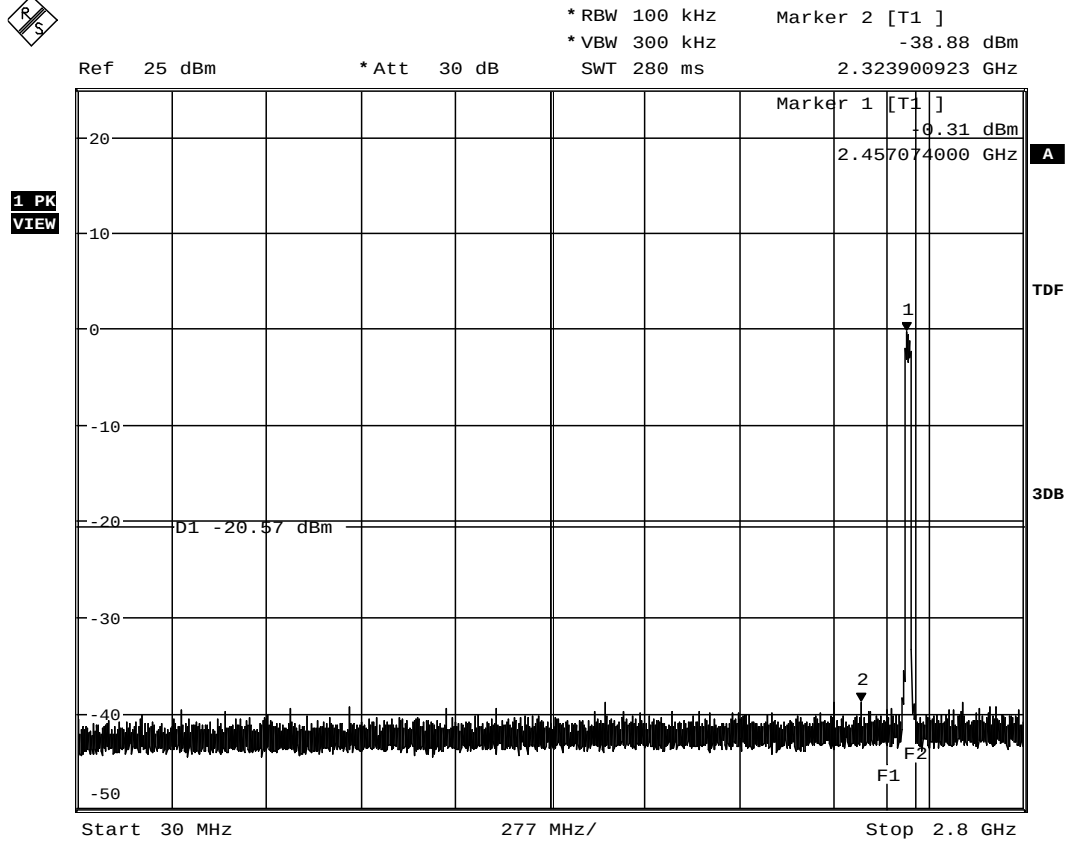
Date: 16.MAR.2015 15:31:54

2.5.6. Channel 11, g-mode, 54Mbit**2.5.6.1. Channel 11 Reference**

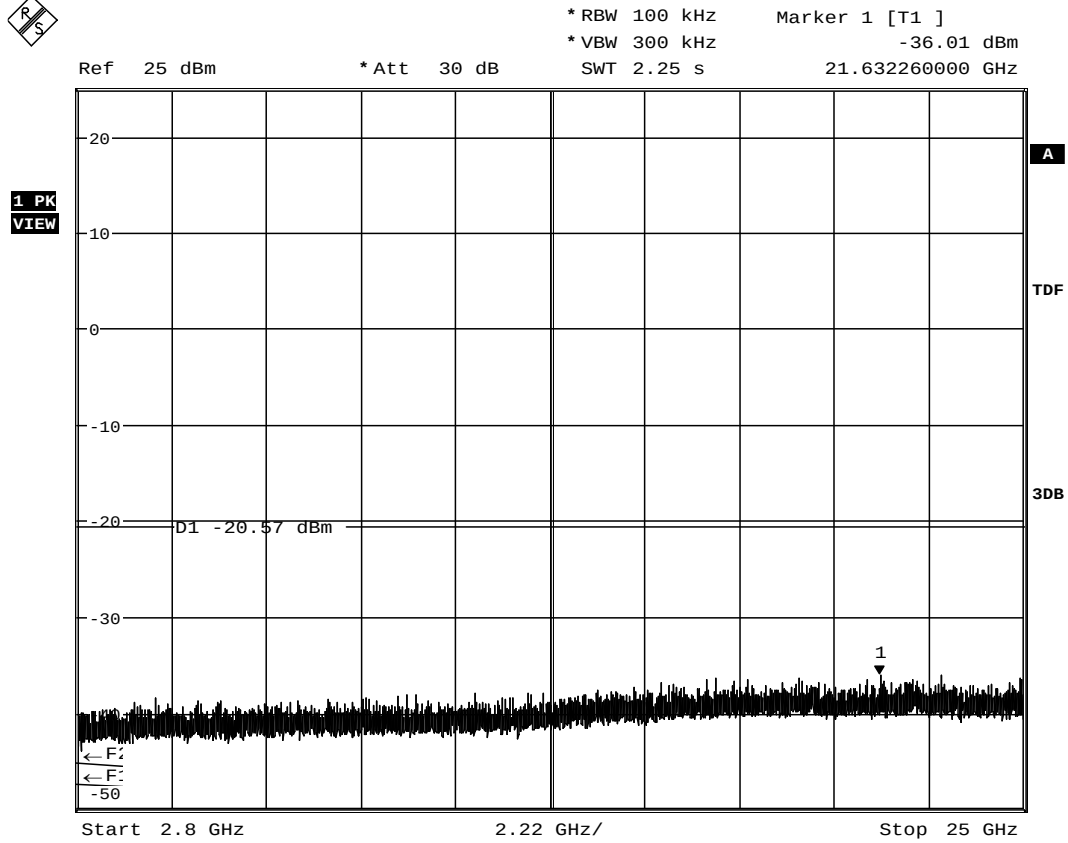
Date: 16.MAR.2015 15:35:57

2.5.6.2. Sweep 1: 150kHz to 30MHz

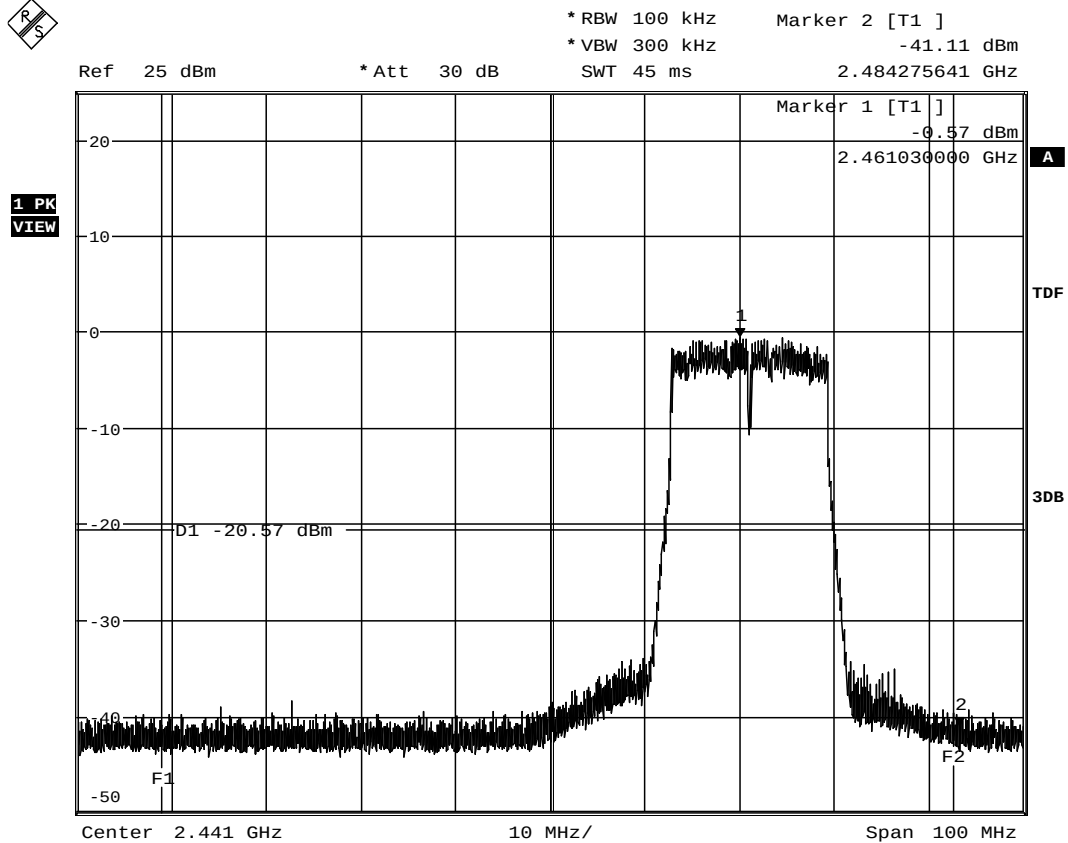
Date: 16.MAR.2015 15:41:16

2.5.6.3. Sweep 2: 30MHz to 2.8GHz

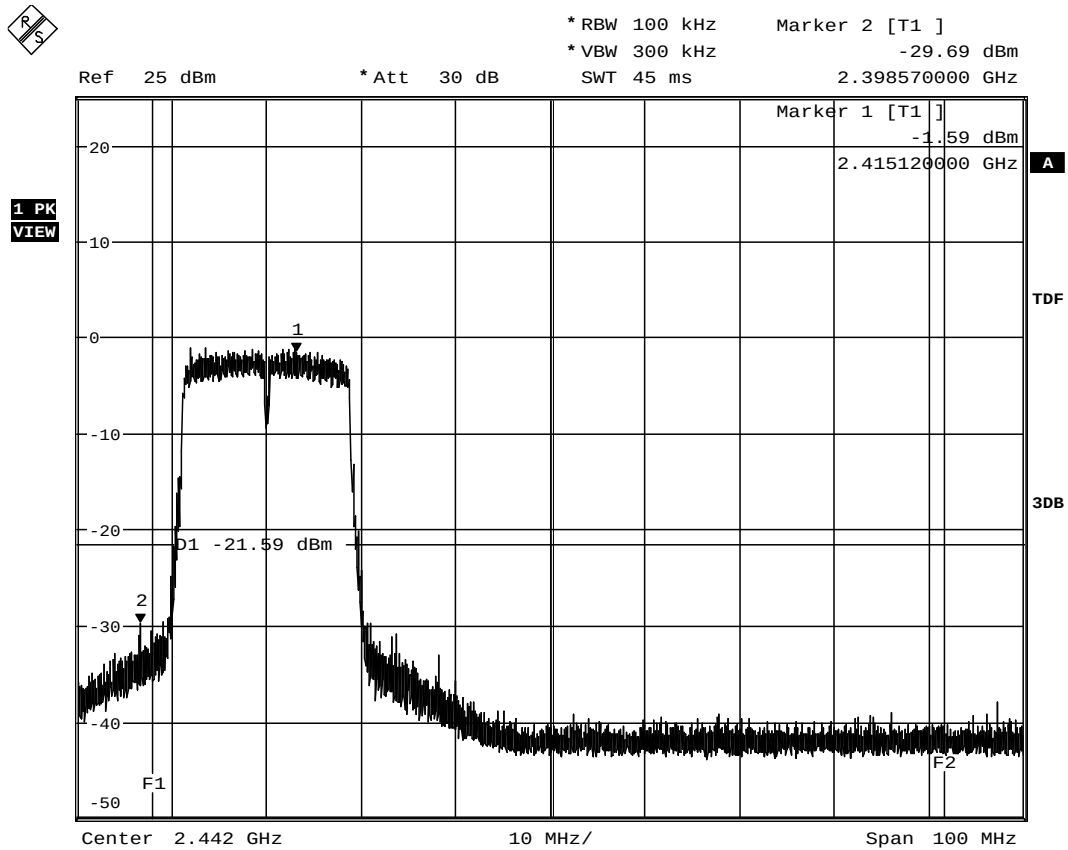
Date: 16.MAR.2015 15:43:53

2.5.6.4. Sweep 3: 2.8GHz to 25GHz

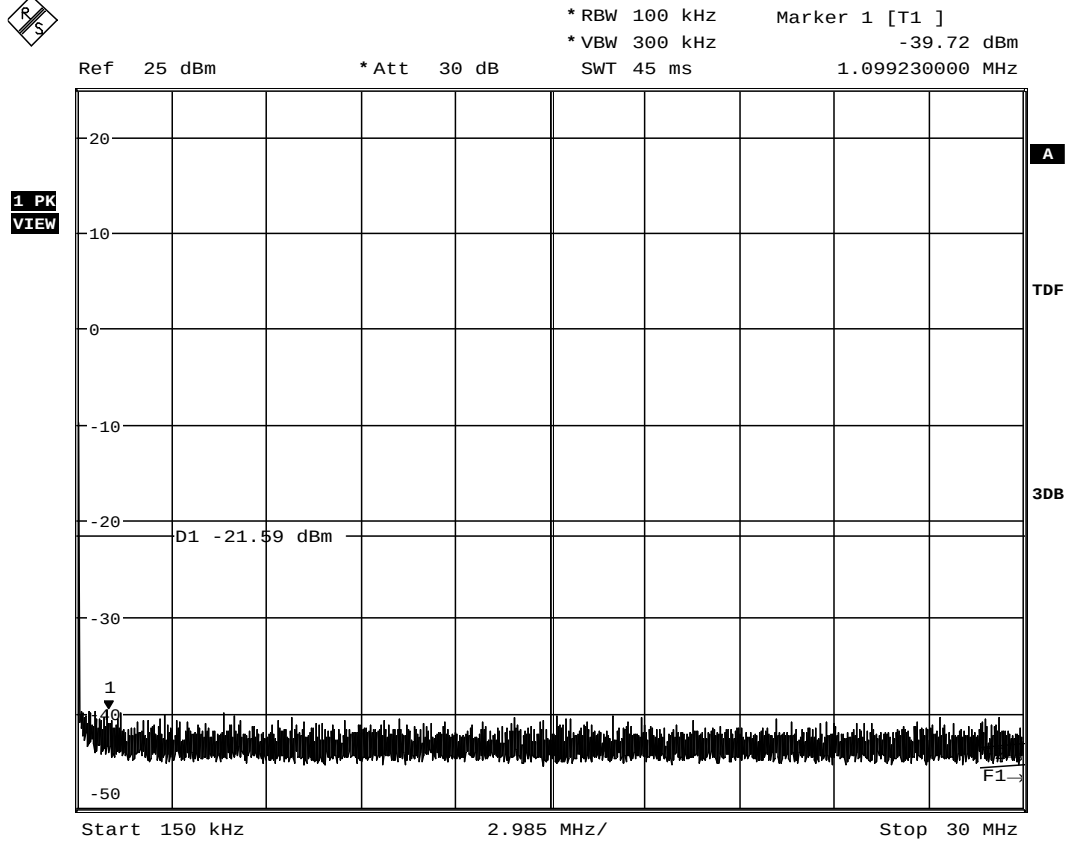
Date: 16.MAR.2015 15:45:32

2.5.6.5. Sweep Band-Edge right at 2483.5GHz

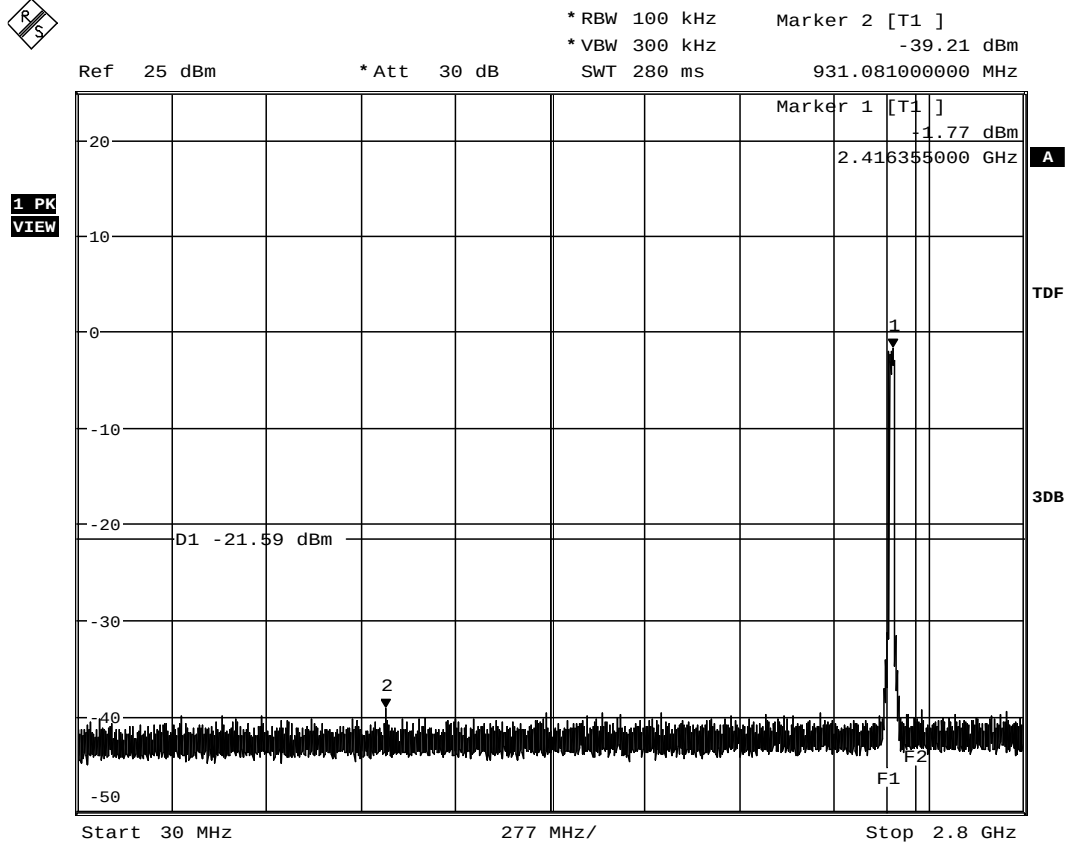
Date: 16.MAR.2015 15:35:57

2.5.7. Channel 1, n-mode, MCS0**2.5.7.1. Channel 1 Reference**

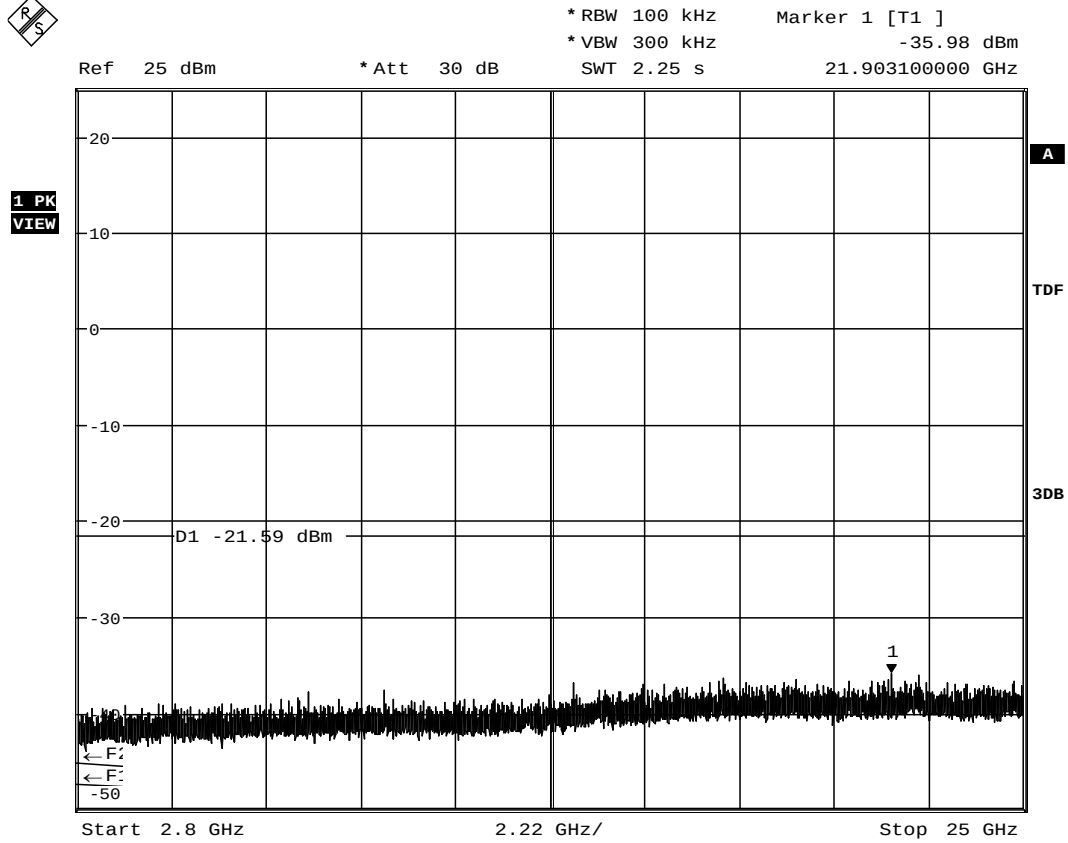
Date: 16.MAR.2015 15:55:35

2.5.7.2. Sweep 1: 150kHz to 30MHz

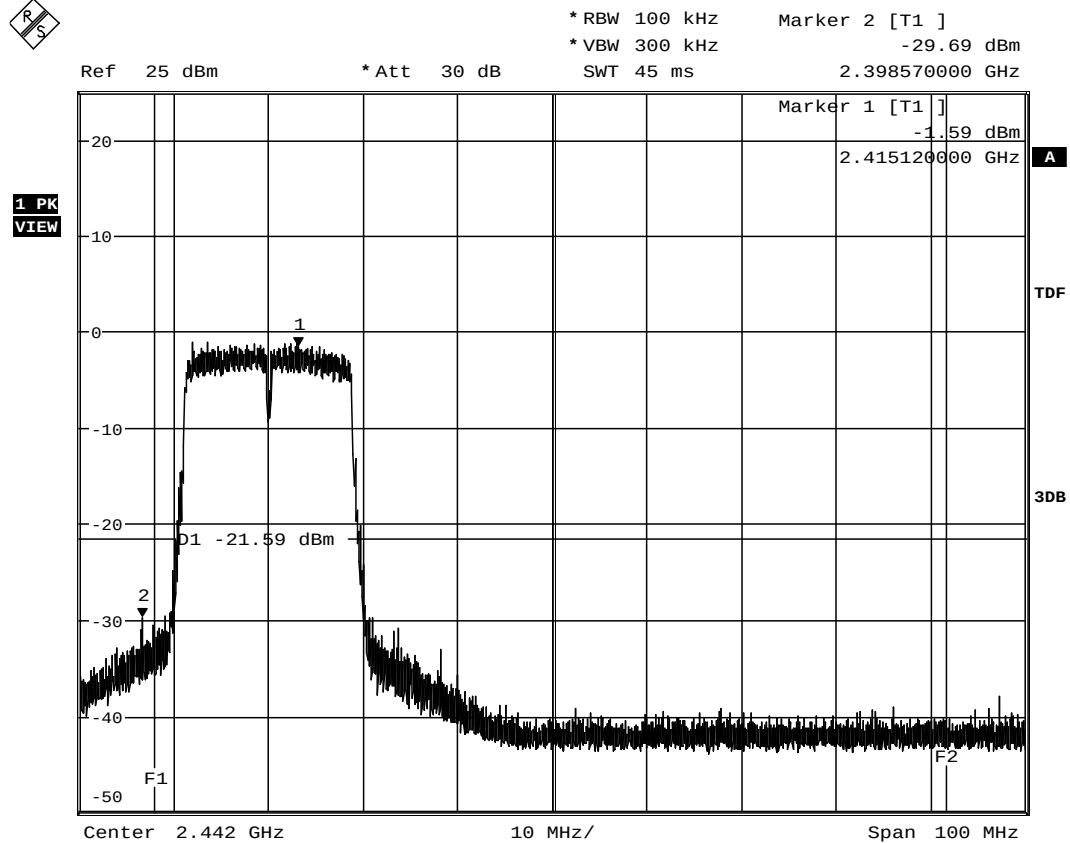
Date: 16.MAR.2015 15:58:08

2.5.7.3. Sweep 2: 30MHz to 2.8GHz

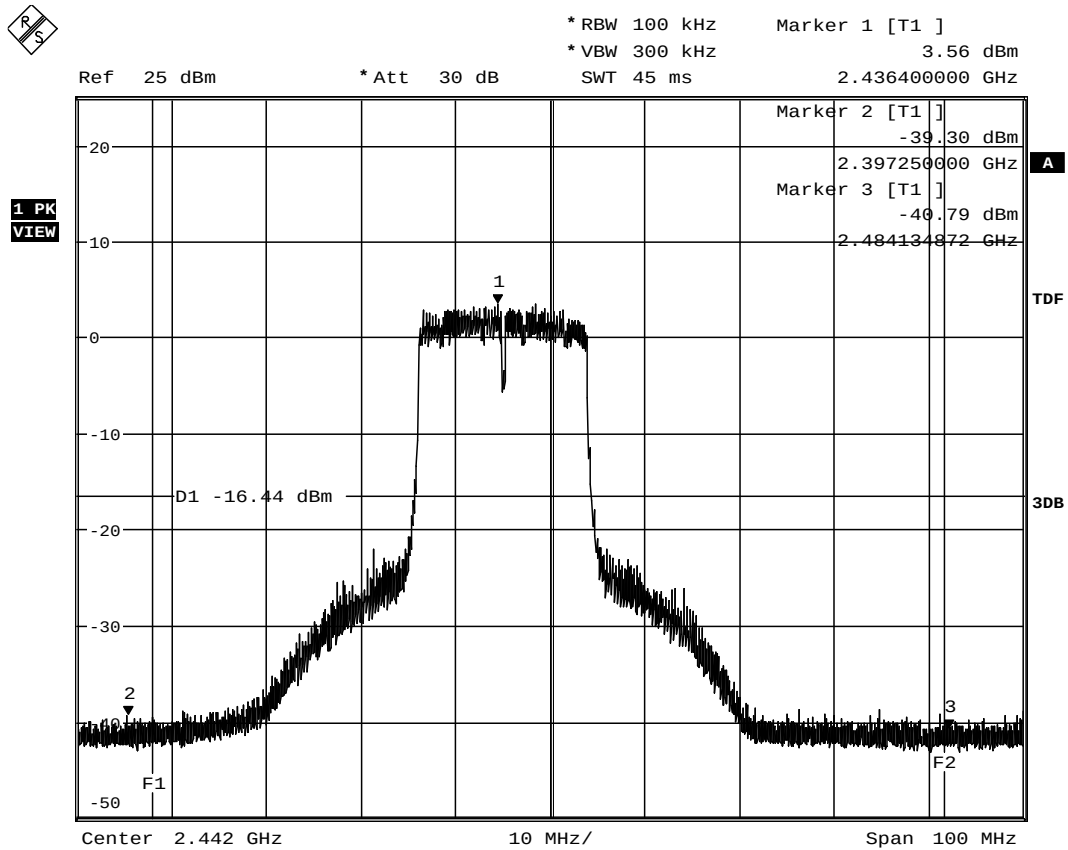
Date: 16.MAR.2015 16:00:28

2.5.7.4. Sweep 2: 2.8GHz to 25GHz

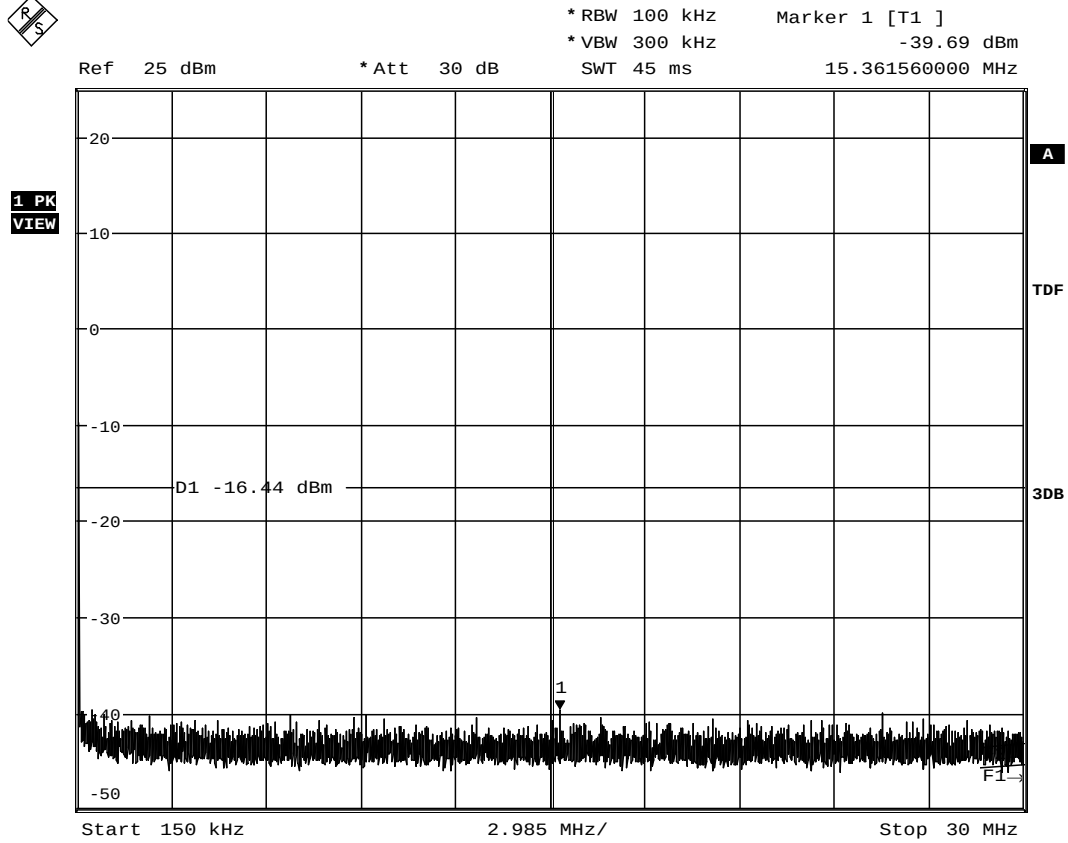
Date: 16.MAR.2015 16:01:50

2.5.7.5. Sweep Band-Edge left at 2.4GHz

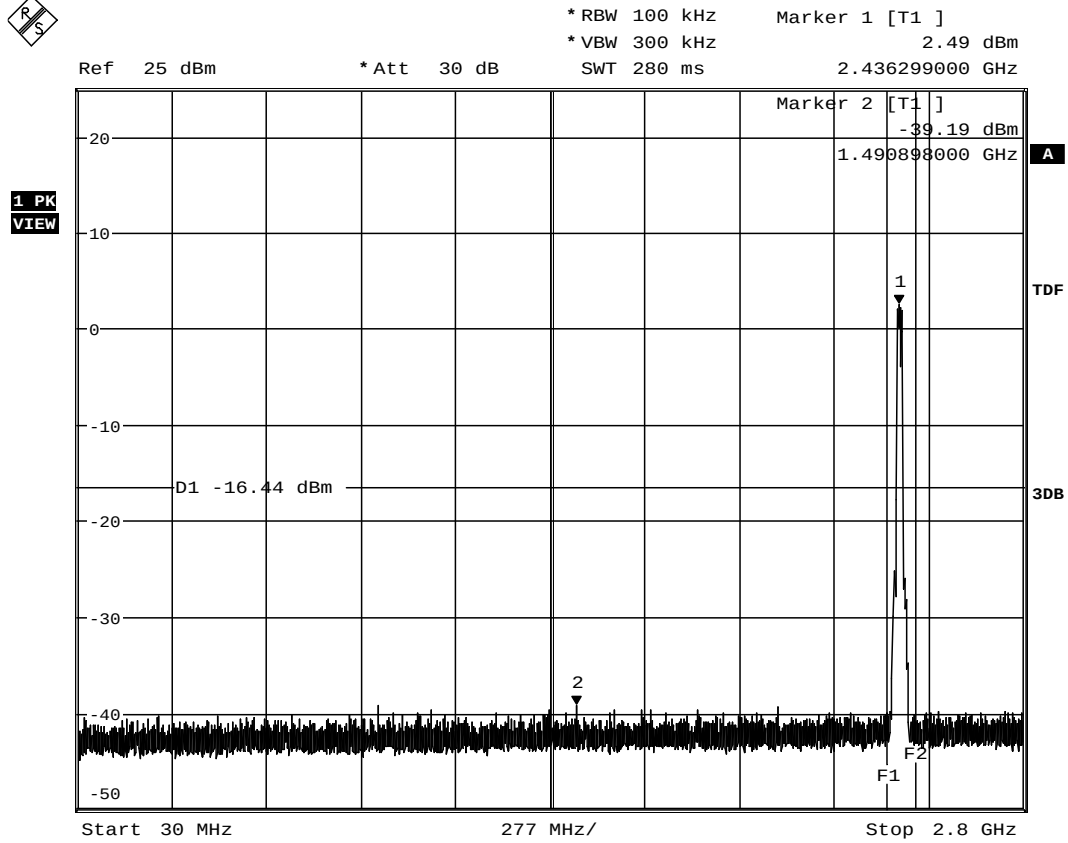
Date: 16.MAR.2015 15:55:35

2.5.8. Channel 6, n-mode, MCS7**2.5.8.1. Channel 6 Reference**

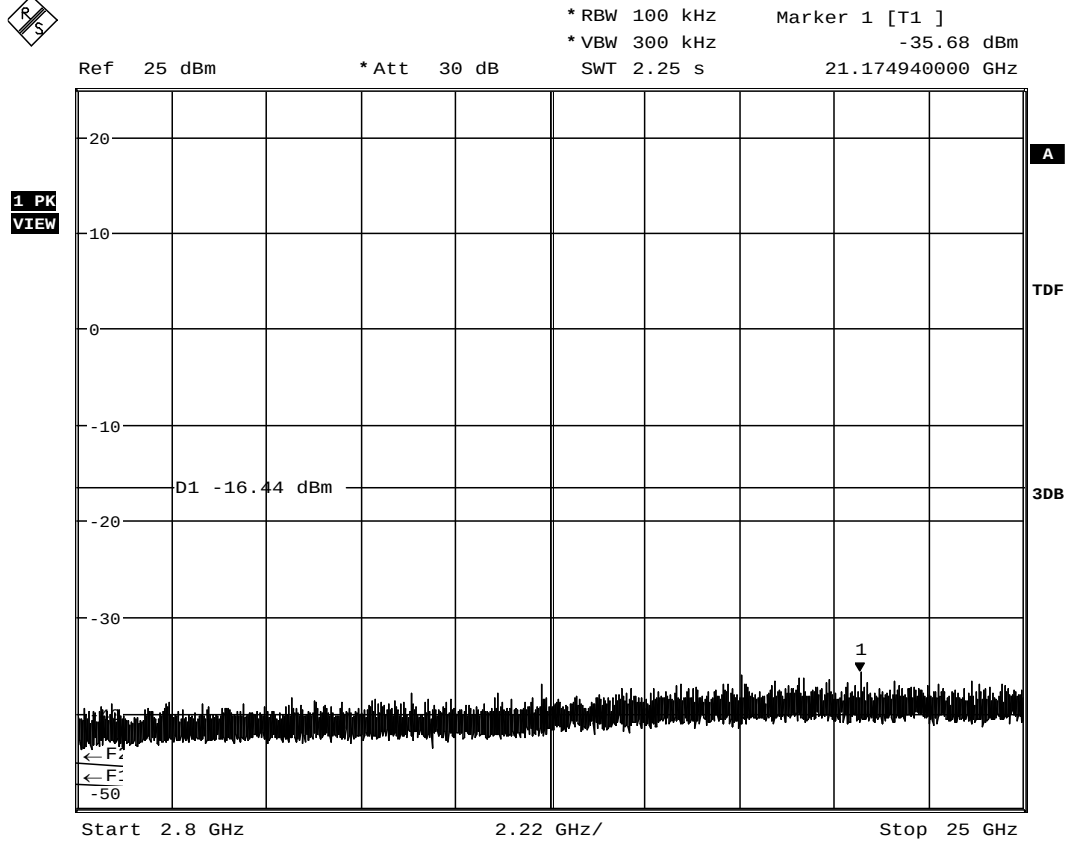
Date: 16.MAR.2015 16:10:09

2.5.8.2. Sweep 1: 150kHz to 30MHz

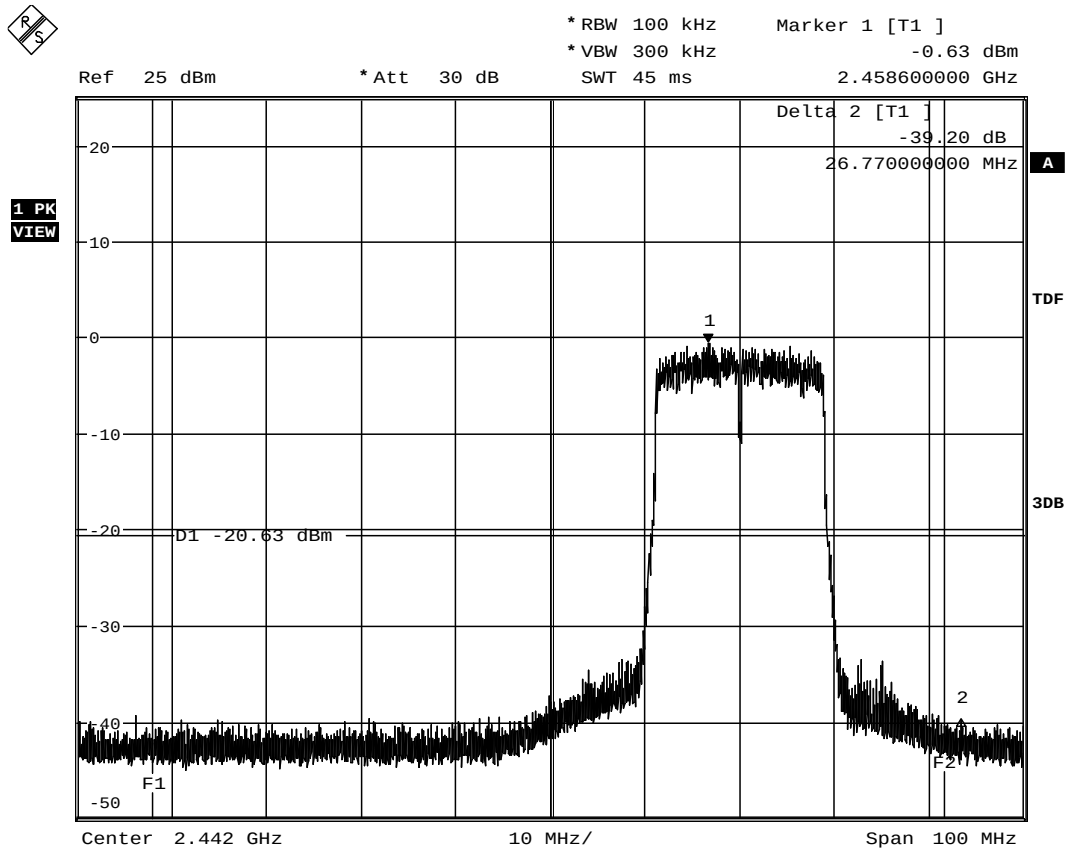
Date: 16.MAR.2015 16:11:58

2.5.8.3. Sweep 2: 30MHz to 2.8GHz

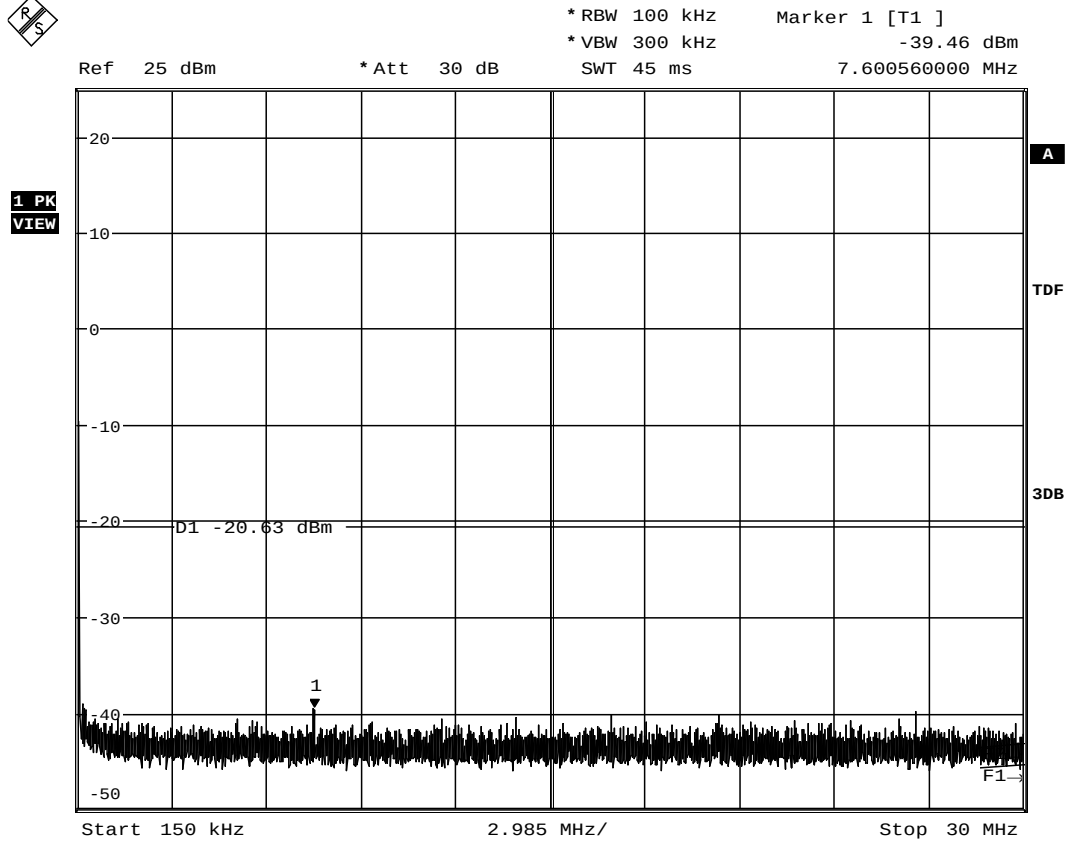
Date: 16.MAR.2015 16:14:14

2.5.8.4. Sweep 3: 2.8GHz to 25GHz

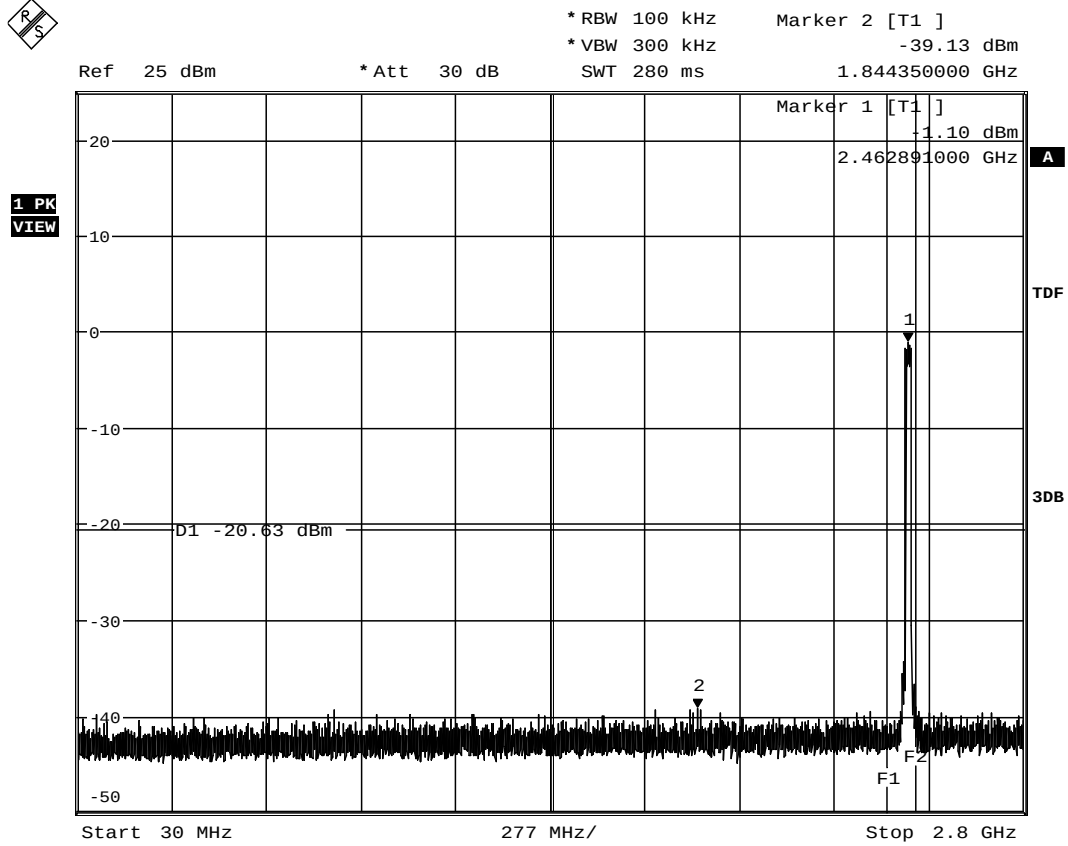
Date: 16.MAR.2015 16:15:32

2.5.9. Channel 11,n-mode, MCS6**2.5.9.1. Channel 11 Reference**

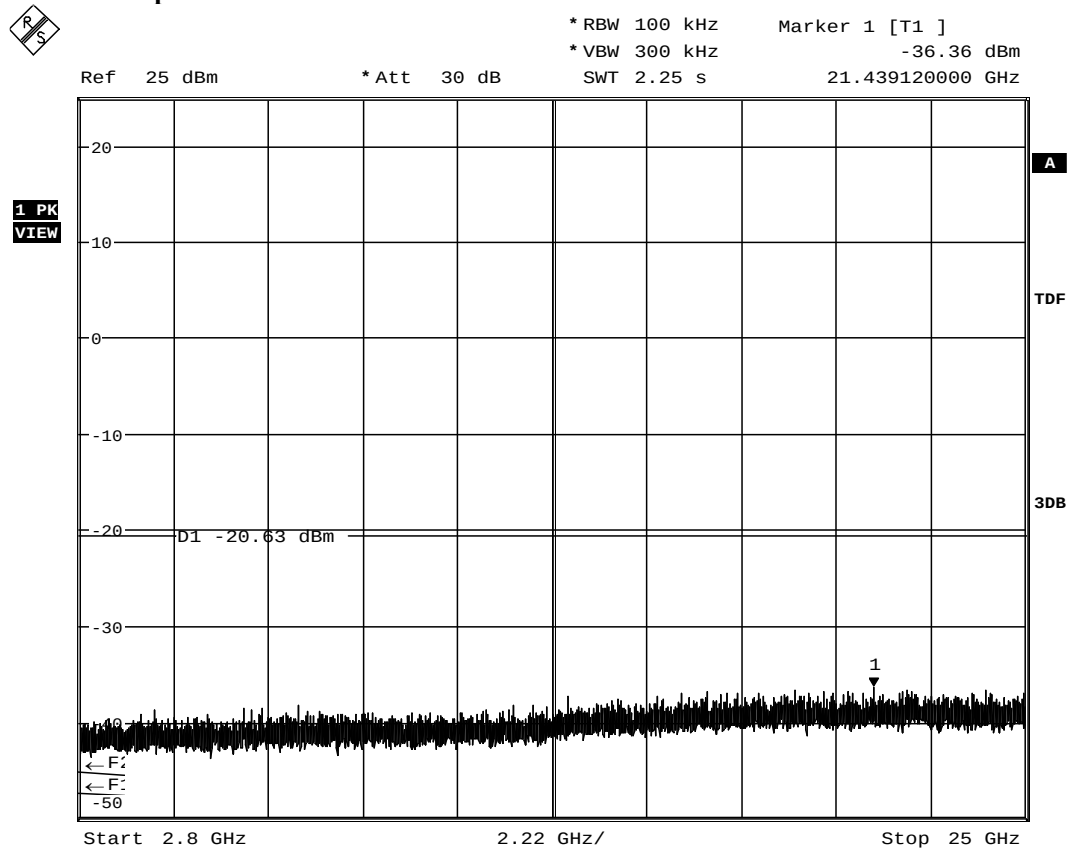
Date: 16.MAR.2015 16:21:21

2.5.9.2. Sweep 1: 150kHz to 30MHz

Date: 16.MAR.2015 16:22:54

2.5.9.3. Sweep 2: 30MHz to 2.8GHz

Date: 16.MAR.2015 16:25:02

2.5.9.4. Sweep 3: 2.8GHz to 25GHz

Date: 16.MAR.2015 16:26:15



TR6-0592-14-2-10a-A4

3. Radiated field strength measurements accord. §15.209&15.205

3.1. Magnetic field measurements $f < 30\text{MHz}$

3.1.1. b-Mode modulation

Diagram No. 2.01_Ch1_2Mbit

EUT Information

Manufacturer:
EuT:

Ascom AB
SH1-ACAA/PF

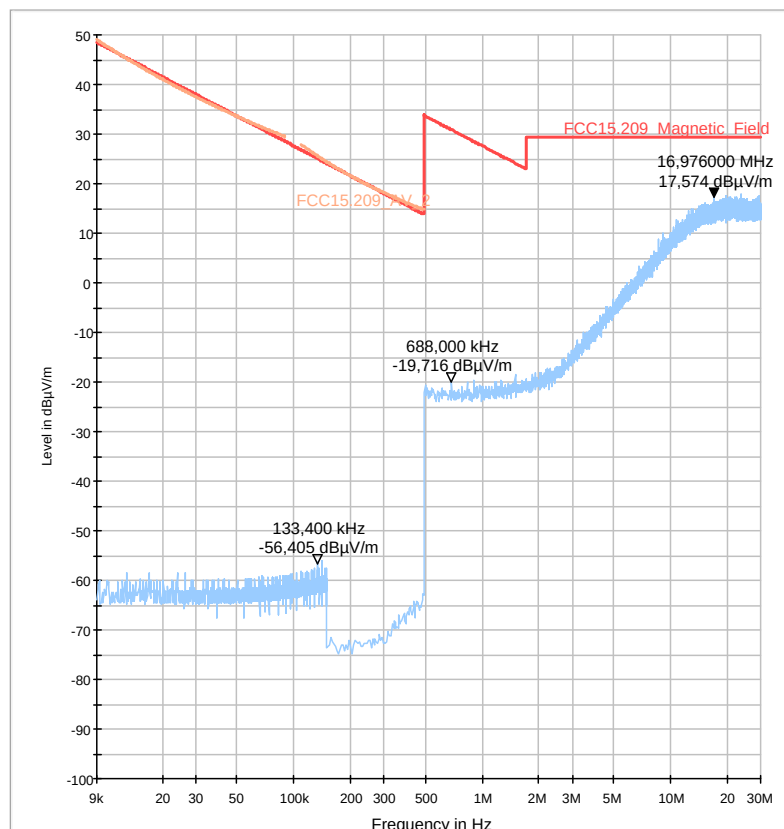
HW Version:
SW Version:
Serial Number:
Connected Interfaces:
Power Supply:

myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
T26105EA0D
1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
120V AC 60 Hz

Test description:
Test site and distance:
Version of Testsoftware:
Distance correction:
Technical Data:
Rec. antenna (pre-scan):
Used filter:
Test specification:
Operator:
Operating conditions:
Power during tests:
Comment 1:
Comment 2:

Date: 04.03.
Magnetic Field Strength Measurement related to 30/300 m distance
Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
EMC32 V8.51.0
used accord. table, pls. see test report
Please see page 2 for detailed data of measurement setup
height 1.00 m, parallel and 90° to EUT polarisation
bypass
FCC 15.205 § 15.209; RSS-Gen: Issue 3
Lor
TX-on , continuous, modulation on
110V/60Hz
Channel low=1
2MBit, PWR Level=50

FCC15.209_magn hor+vert



3.1.2. g-Mode modulation

Diagram No. 2.02_Ch6_9Mbit

EUT Information

Manufacturer:
EuT:

Ascom AB
SH1-ACAA/PF

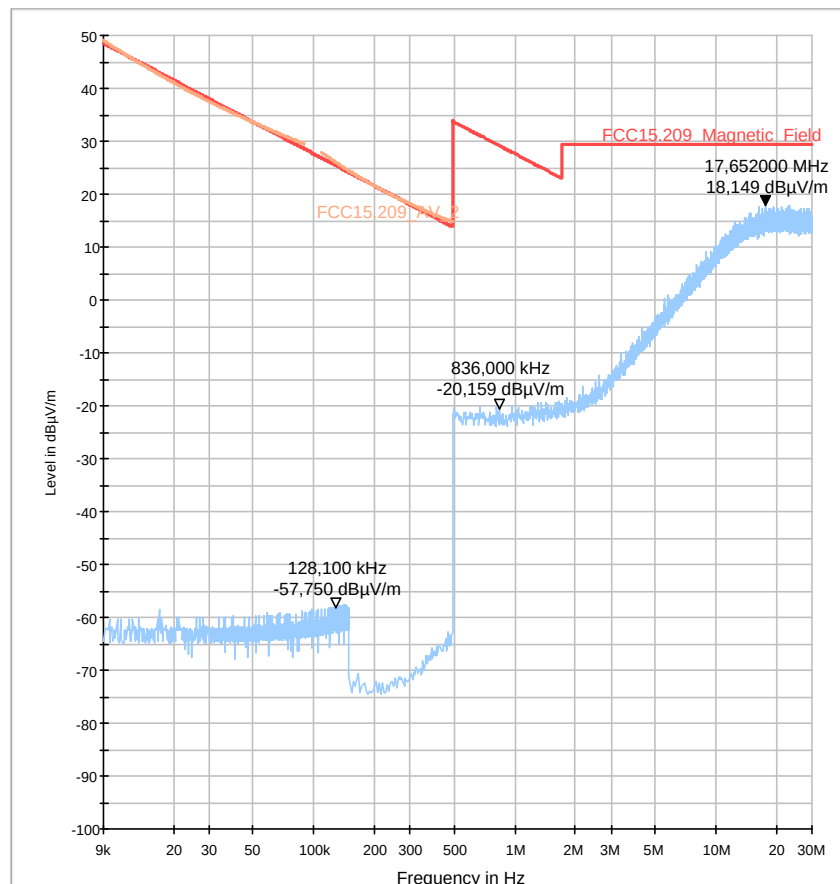
HW Version:
SW Version:
Serial Number:
Connected Interfaces:
Power Supply:

myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
T26105EA0D
1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
120V AC 60 Hz

Date: 04.03.2015 Page 1 of 2

Test description: Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance: Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware: EMC32 V8.51.0
Distance correction: used accord. table, pls. see test report
Technical Data: Please see page 2 for detailed data of measurement setup
Rec. antenna (pre-scan): height 1.00 m, parallel and 90° to EUT polarisation
Used filter: bypass
Test specification: FCC 15.205 § 15.209; RSS-Gen: Issue 3
Operator: AHo
Operating conditions: TX-on, continuous, modulation on
Power during tests: 12V DC, 110V/60Hz
Comment 1: Channel Low=6
Comment 2: 9 Mbit, PWR Level=58

FCC15.209_magn hor+vert



3.1.3. n-Mode modulation

Diagram No. 2.03_Ch11_MCS0

EUT Information

Manufacturer:
EuT:

Ascom AB
SH1-ACAA/PF

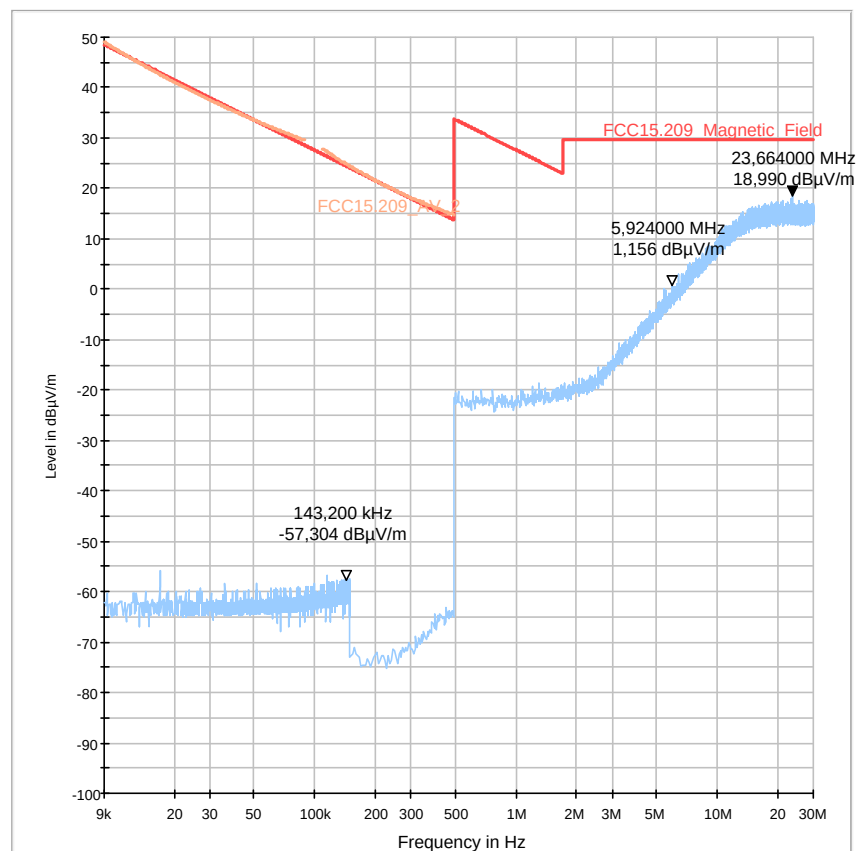
HW Version:
SW Version:
Serial Number:
Connected Interfaces:
Power Supply:

myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
T26105EA0D
1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
120V AC 60 Hz

Date: 04.03.2015 Page 1 of 2
Test description: Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance: Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware: EMC32 V8.51.0
Distance correction: used accord. table, pls. see test report
Technical Data: Please see page 2 for detailed data of measurement setup
Rec. antenna (pre-scan): height 1.00 m, parallel and 90° to EUT polarisation
Used filter: bypass
Test specification: FCC 15.205 § 15.209; RSS-Gen: Issue 3

Operator: AHo
Operating conditions: TX-on, continuous mode
Power during tests: 12V DC, 110V/60Hz, full loaded batteries
Comment 1: Channel Low=11
Comment 2: MCS0, PWR Level =50

FCC15.209_magn hor+vert



3.2. Field strength measurements 30MHz < f < 1GHz

3.2.1. b-Mode modulation

Diagram No. 3.01_ch1_2MBit

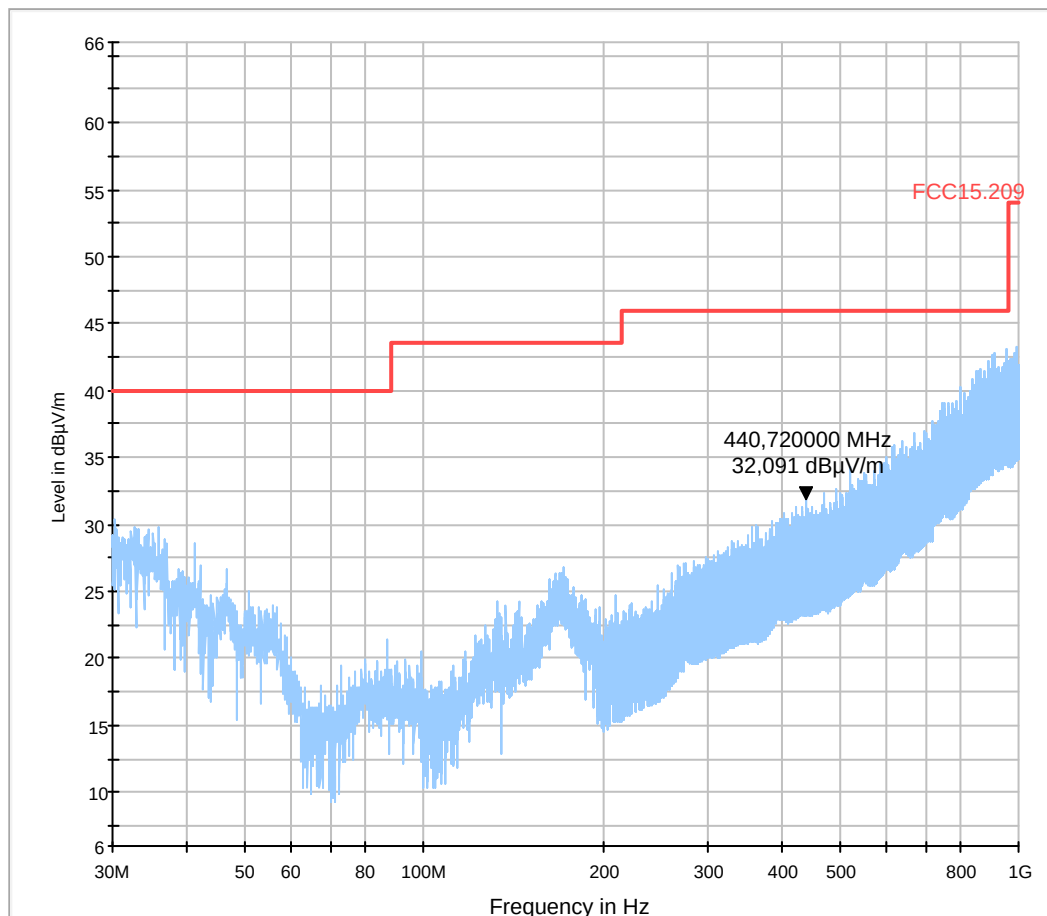
EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF

HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EA0D
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	120V AC 60 Hz

Test description:	05.03.2015 Page 1 of 1 Electric Field Strength Measurement
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V8.51.0
Distance correction:	not used
Used filter:	not used
Technical Data:	please see page 2 for detailed data of measurement setup
Test specification.:	FCC 15.209; RSS-Gen: Issue 3
Operator:	MFr
Operating conditions:	WLAN B_mode_2MBit-Ch01
Power during tests:	110V 60Hz

01_FCC15.209_hor+vert_kipp



3.2.2. g-Mode modulation

Diagram No. 3.02_ch6_9MBit

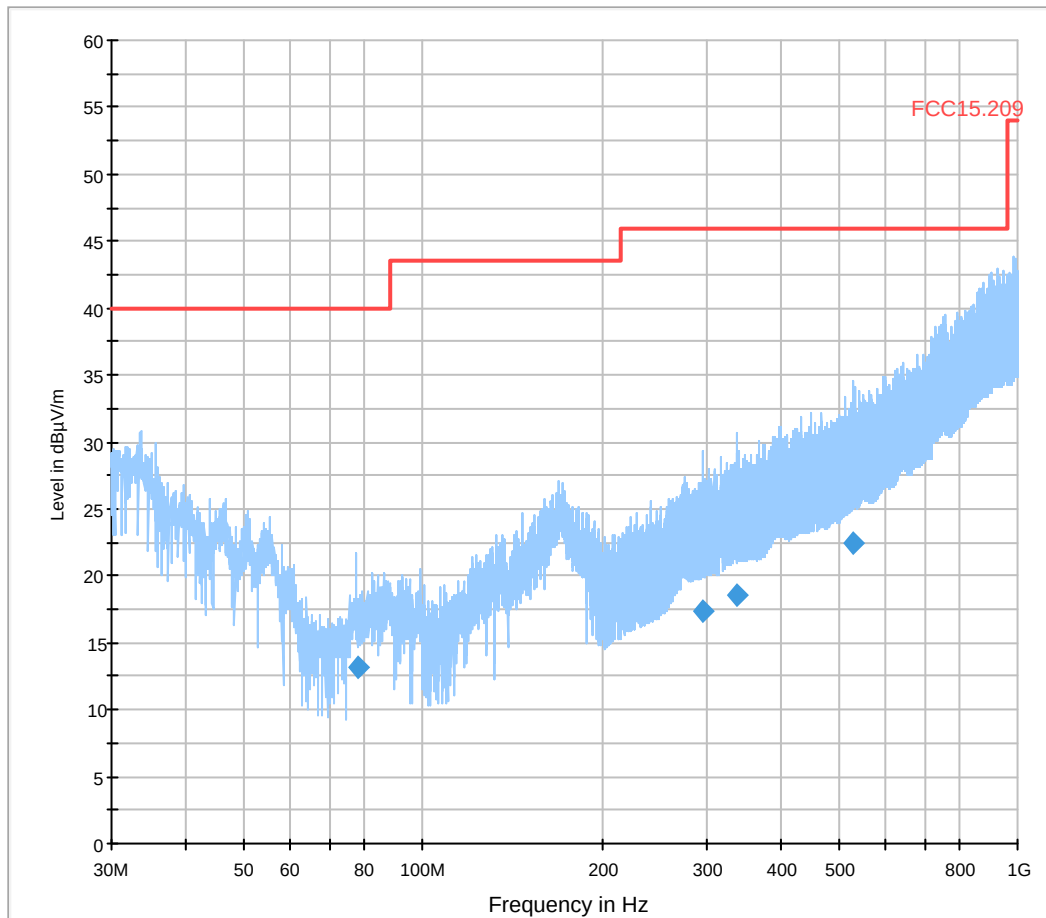
EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF

HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EA0D
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	120V AC 60 Hz

	05.03.2015 Page 1 of 2
Test description:	Electric Field Strength Measurement
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V8.51.0
Distance correction:	not used
Used filter:	not used
Technical Data:	please see page 2 for detailed data of measurement setup
Test specification.:	FCC 15.209; RSS-Gen: Issue 3
Operator:	MFr
Operating conditions:	WLAN B_mode_9MBit-Ch06
Power during tests:	110V 60Hz

01_FCC15.209_hor+vert_kipp

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBµ)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)
78.110000	13.1	1000.0	120.000	132.0	V	191.0	90.0	7.9	26.90	40.00
296.090000	17.4	1000.0	120.000	132.0	H	94.0	90.0	15.1	28.60	46.00
337.090000	18.6	1000.0	120.000	165.0	V	0.0	90.0	16.5	27.40	46.00
528.770000	22.4	1000.0	120.000	332.0	H	0.0	0.0	20.9	23.60	46.00

3.2.3. n-Mode modulation

Diagram No. 3.03_ch11_MCS0_rc_50

EUT Information

Manufacturer:
EuT:

Ascom AB
SH1-ACAA/PF

HW Version:
SW Version:
Serial Number:
Connected Interfaces:
Power Supply:

myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
T26105EA0D
1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
230VAC

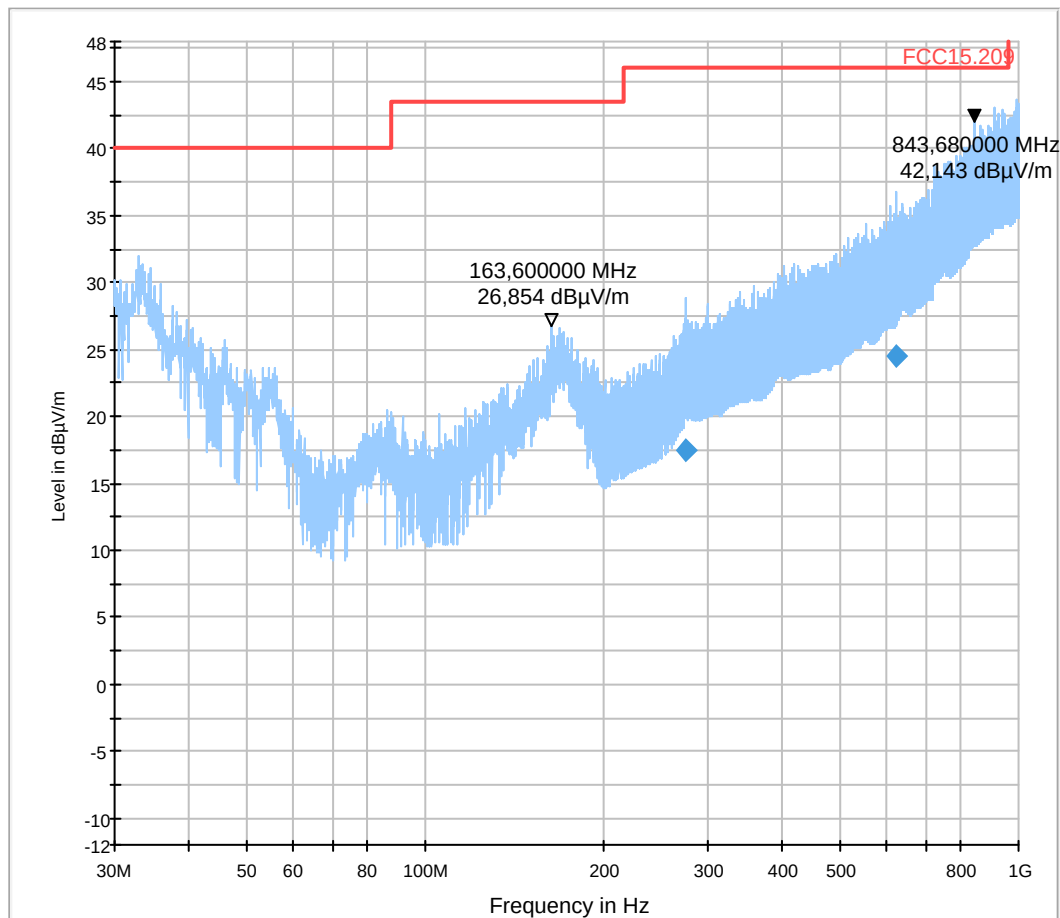
Test description:
Test site and distance:
Version of Testsoftware:
Distance correction:
Used filter:
Technical Data:
Test specification.:

05.03.2015 Page 1 of 2
Electric Field Strength Measurement
Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
EMC32 V8.51.0
not used
not used
please see page 2 for detailed data of measurement setup
FCC 15.209; RSS-Gen: Issue 3

Operator:
Operating conditions:
Power during tests:

MFr
WLAN B_mode _MCS0-Ch11
110V 60Hz

01_FCC15.209_hor+vert_kipp



Final Result 1

Frequency (MHz)	Quasi Peak (dBμ V/m)	Meas. Time (ms)	Bandwid th (kHz)	Heigh t (cm)	Pola rizati on	Azimut h (deg)	Elevatio n (deg)	Corr . (dB)	Margi n (dB)	Limit (dBμV/m)
274.170000	17.4	1000.0	120.000	210.0	H	328.0	90.0	14.9	28.60	46.00
624.150000	24.5	1000.0	120.000	105.0	V	105.0	90.0	22.7	21.50	46.00

3.3. Field strength measurements 1GHz < f < 18GHz

3.3.1. b-Mode modulation

Diagram No.: 8.01_TX_b-Mode_Ch1_2Mbit

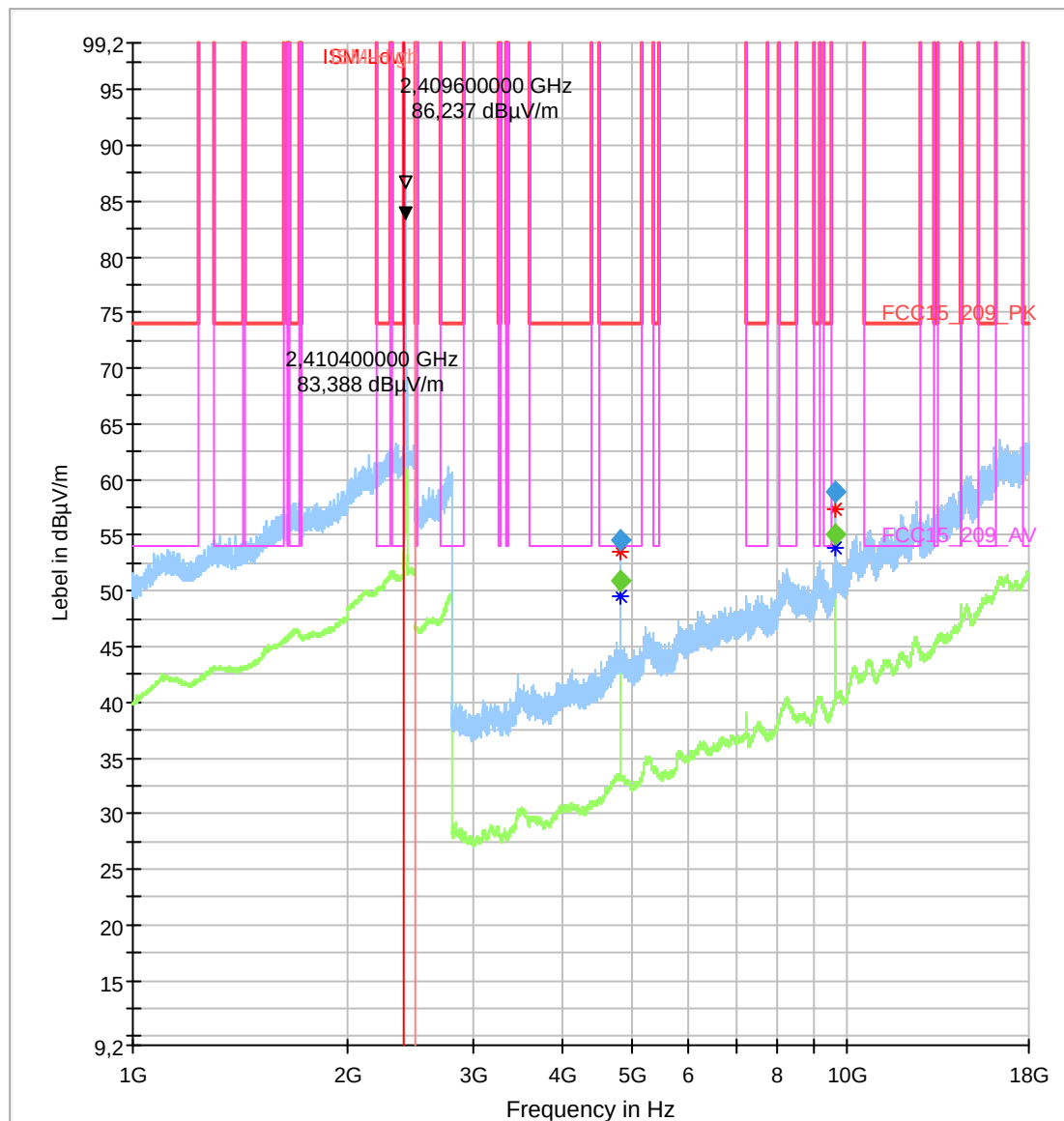
Common Information

Test Description:	Radiated Band-Edge Emissions in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous
Operator Name:	AHo
Comment:	Channel 01; 02 Mbit

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF

HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EB77
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	110VAC
Comments:	



Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	RMS (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Measurement Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)
4824.000000	---	50.90	54.00	3.10	100.0	1000.000	155.0	H	230.0	90.0
4824.000000	54.60	---	74.00	19.40	100.0	1000.000	155.0	V	332.0	0.0
9648.000000	---	55.10	150.00	94.90	100.0	1000.000	155.0	V	320.0	0.0
9648.000000	58.92	---	150.00	91.08	100.0	1000.000	155.0	V	321.0	0.0

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Correction	Comment
4824.000000	4.8	12:47:37 - 27.02.2015
4824.000000	4.8	12:44:46 - 27.02.2015
9648.000000	14.2	12:49:12 - 27.02.2015
9648.000000	14.2	12:46:00 - 27.02.2015

3.3.2. g-Mode modulation

Diagram No.: 8.02_TX_g-Mode_ch6_9Mbit

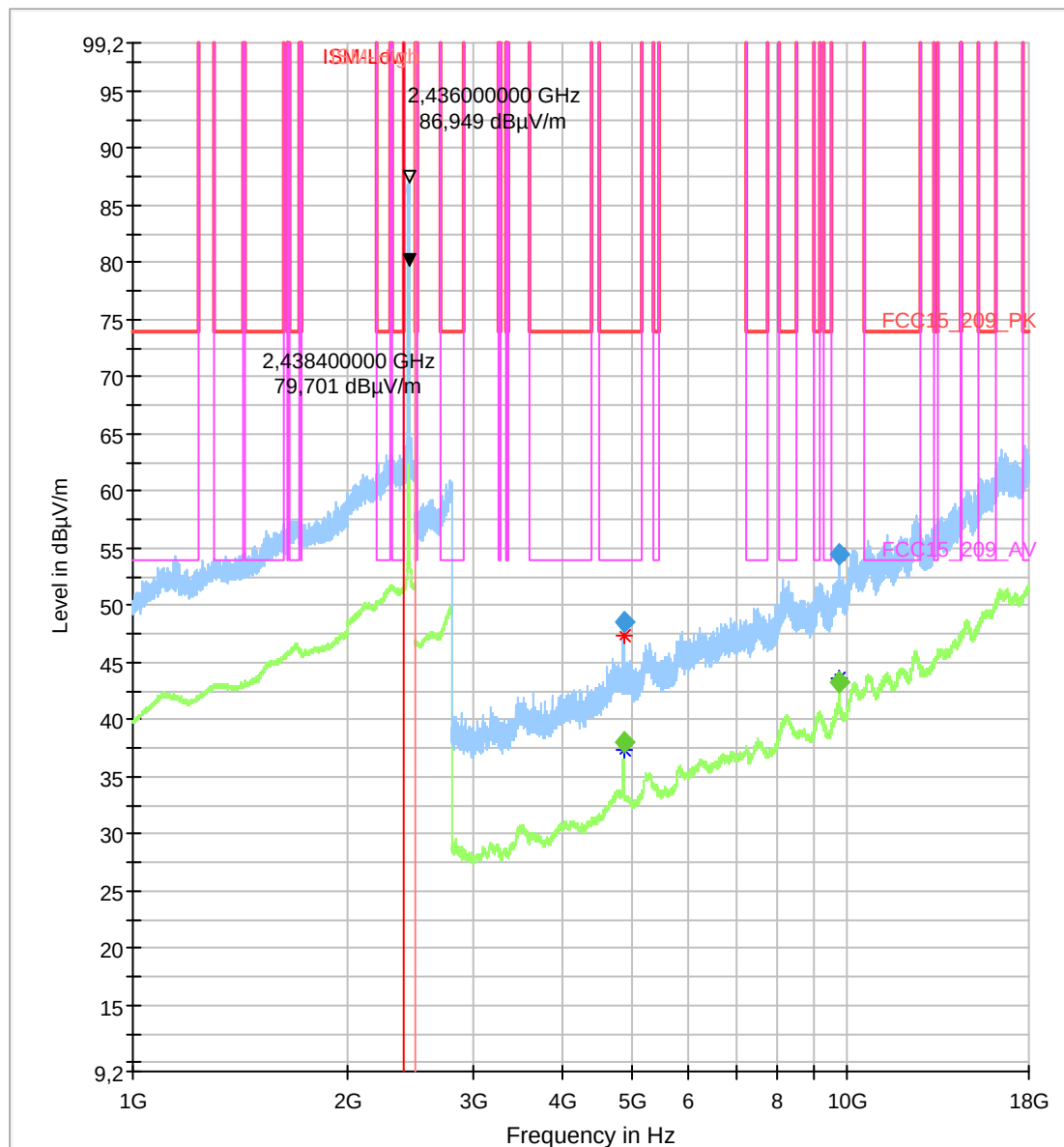
Common Information

Test Description:	Radiated Band-Edge Emissions in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous
Operator Name:	AHo/YZh

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF

HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EB77
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	110VAC
Comments:	


Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	RMS (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Measurement Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)
4867.760000	48.49	---	74.00	25.51	100.0	1000.000	155.0	H	42.0	0.0
4872.480000	---	37.97	54.00	16.03	100.0	1000.000	155.0	H	265.0	90.0
9748.000000	---	43.30	150.00	106.70	100.0	1000.000	155.0	H	136.0	90.0
9750.520000	54.39	---	150.00	95.61	100.0	1000.000	155.0	V	333.0	0.0

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Correction	Comment
4867.760000	4.7	15:20:10 - 25.02.2015
4872.480000	4.7	15:25:43 - 25.02.2015
9748.000000	14.6	15:24:06 - 25.02.2015
9750.520000	14.6	15:22:07 - 25.02.2015

3.3.3. n-Mode modulation

Diagram No:8.03_TX_n-Mode_Ch11_MCS0

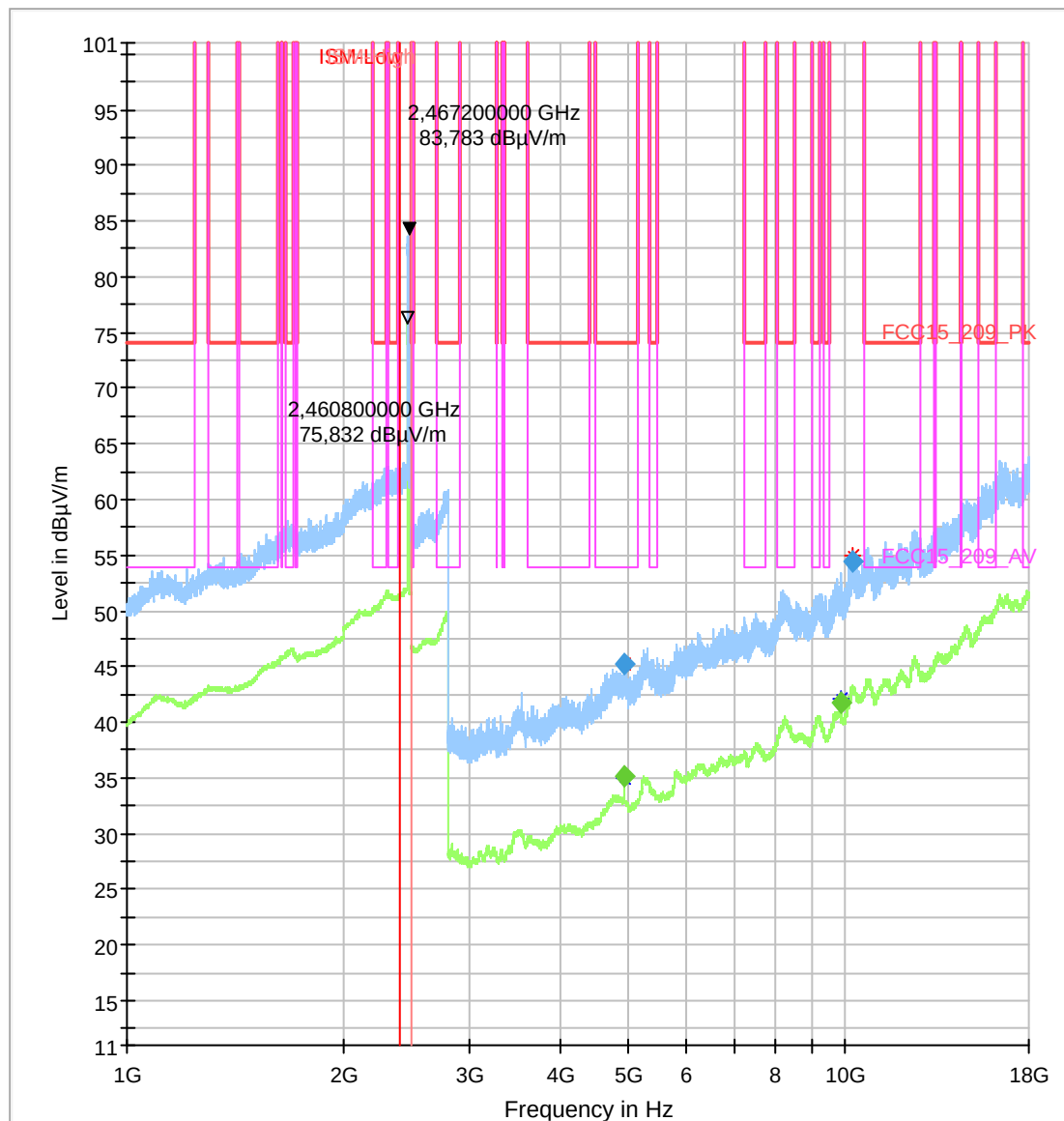
Common Information

Test Description:	Radiated Band-Edge Emissions in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous
Operator Name:	AHo
Comments:	Channel 11; MCS0

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF

HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EB77
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	110VAC
Comments:	



Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	RMS (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Measurement Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)
4920.000000	45.21	---	74.00	28.79	100.0	1000.000	155.0	H	235.0	0.0
4924.000000	---	35.08	54.00	18.92	100.0	1000.000	155.0	H	43.0	0.0
9843.320000	---	41.73	150.00	108.27	100.0	1000.000	155.0	H	108.0	90.0
10225.080000	54.40	---	150.00	95.60	100.0	1000.000	155.0	H	213.0	0.0

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Correction	Comment
4920.000000	4.5	13:50:54 - 27.02.2015
4924.000000	4.4	13:52:25 - 27.02.2015
9843.320000	14.4	13:53:45 - 27.02.2015
10225.080000	17.3	13:49:32 - 27.02.2015

3.4. Field strength measurements 18GHz < f < 25GHz

3.4.1. b-Mode modulation

Diagram No.: 8.01b_b-mode_ch01_2Mbit

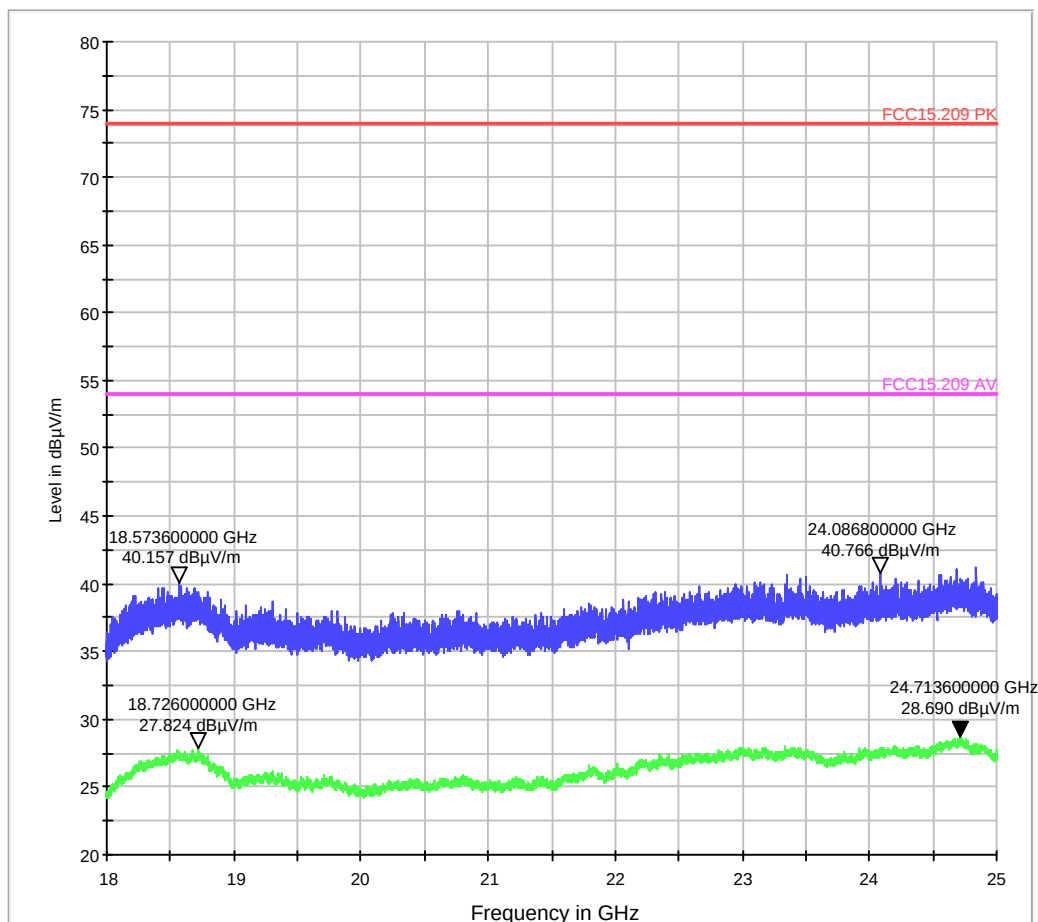
Common Information

Test Description:	Radiated field strength emission in 1m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.247, 15.205&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Distance correction factor	3 to 1m: -10.5 dB applying to measurement results
SW-Version:	EMC32 V8.53.0
Operation mode:	TX mode continuous
Operator Name:	MFr
Comment:	ch1, 2Mbit

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF
HW Version:	
SW Version:	myco-eng 4.4.2 daily_2015-02-20_eng daily_448_2015-02-20 dev-keys
Serial Number:	T26105GL8N
Connected Interfaces:	
Power Supply:	

EMI Scan_18_25GHz_Pre



3.4.2. g-Mode modulation

Diagram No.: 8.02b_g-mode_ch06_9Mbit

Common Information

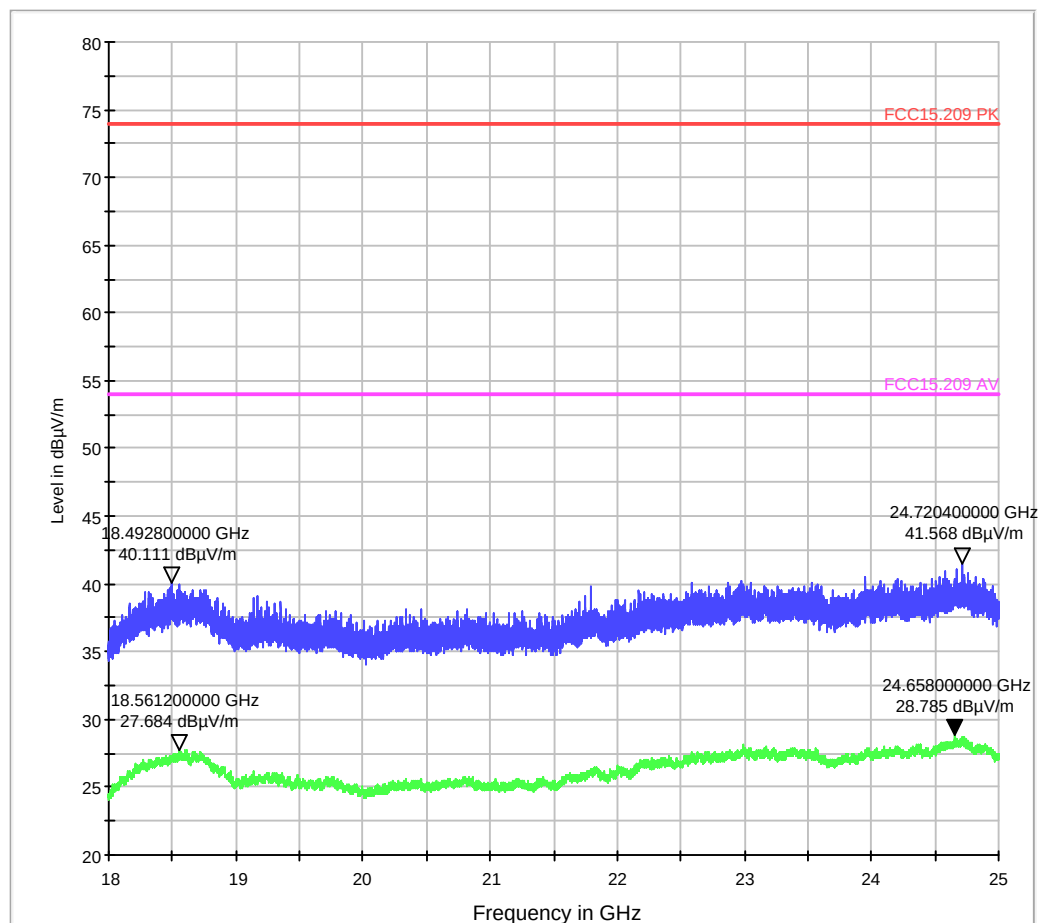
Test Description:	Radiated field strength emission in 1m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.247, 15.205&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Distance correction factor	3 to 1m: -10.5 dB applying to measurement results
SW-Version:	EMC32 V8.53.0
Operation mode:	TX mode continuous
Operator Name:	MFr
Comment:	ch1, 2Mbit

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF

HW Version:	
SW Version:	myco-eng 4.4.2 daily_2015-02-20_eng daily_448_2015-02-20 dev-keys
Serial Number:	T26105GL8N
Connected Interfaces:	
Power Supply:	

EMI Scan_18_25GHz_Pre



3.4.3. n-Mode modulation

Diagram No.: 8.03b_n-mode_ch11_MCS0

Common Information

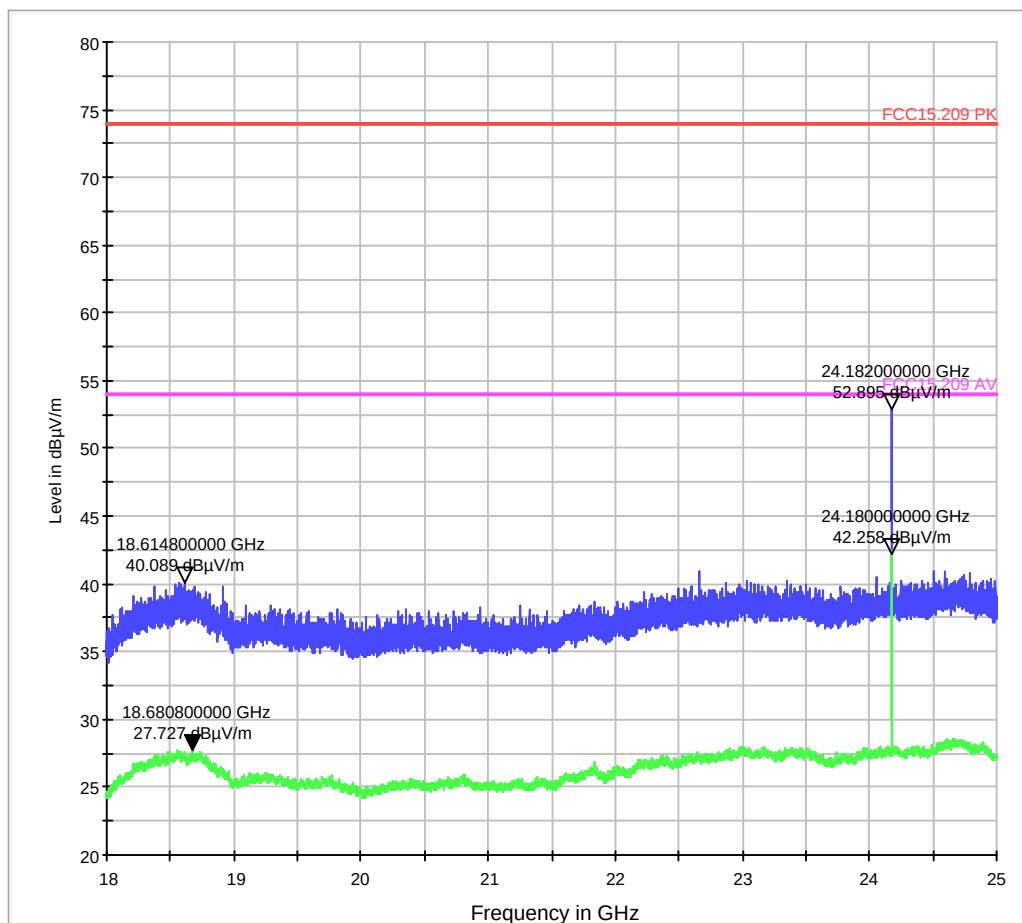
Test Description:	Radiated field strength emission in 1m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.247, 15.205&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Distance correction factor	3 to 1m: -10.5 dB applying to measurement results
SW-Version:	EMC32 V8.53.0
Operation mode:	TX mode continuous
Operator Name:	MFr
Comment:	ch11, MCS0

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF

HW Version:	
SW Version:	myco-eng 4.4.2 daily_2015-02-20_eng daily_448_2015-02-20 dev-keys
Serial Number:	T26105GL8N
Connected Interfaces:	
Power Supply:	

EMI Scan_18_25GHz_Pre



4. Radiated band-edge measurements accord. §15.209 & §15.205 (§15.247)

4.1. Channel 1 (left band edge)

b-mode

Diagram No.: 9.01a_BE_Ch1_2 Mbit_gc_58

Common Information

Test Description:	Radiated Band-Edge Emissions in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous
Operator Name:	AHo/YZh
Comment:	Channel 1; 2 Mbit

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF

HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EB77
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	110VAC
Comments:	

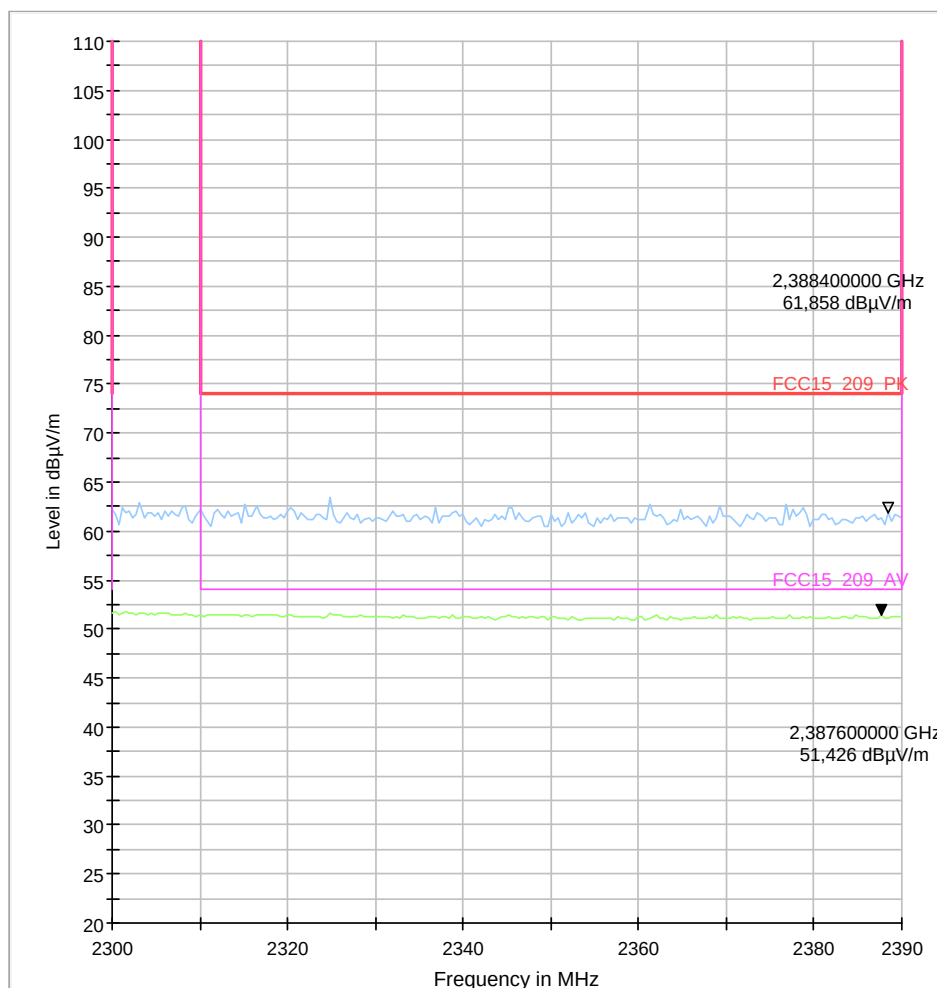


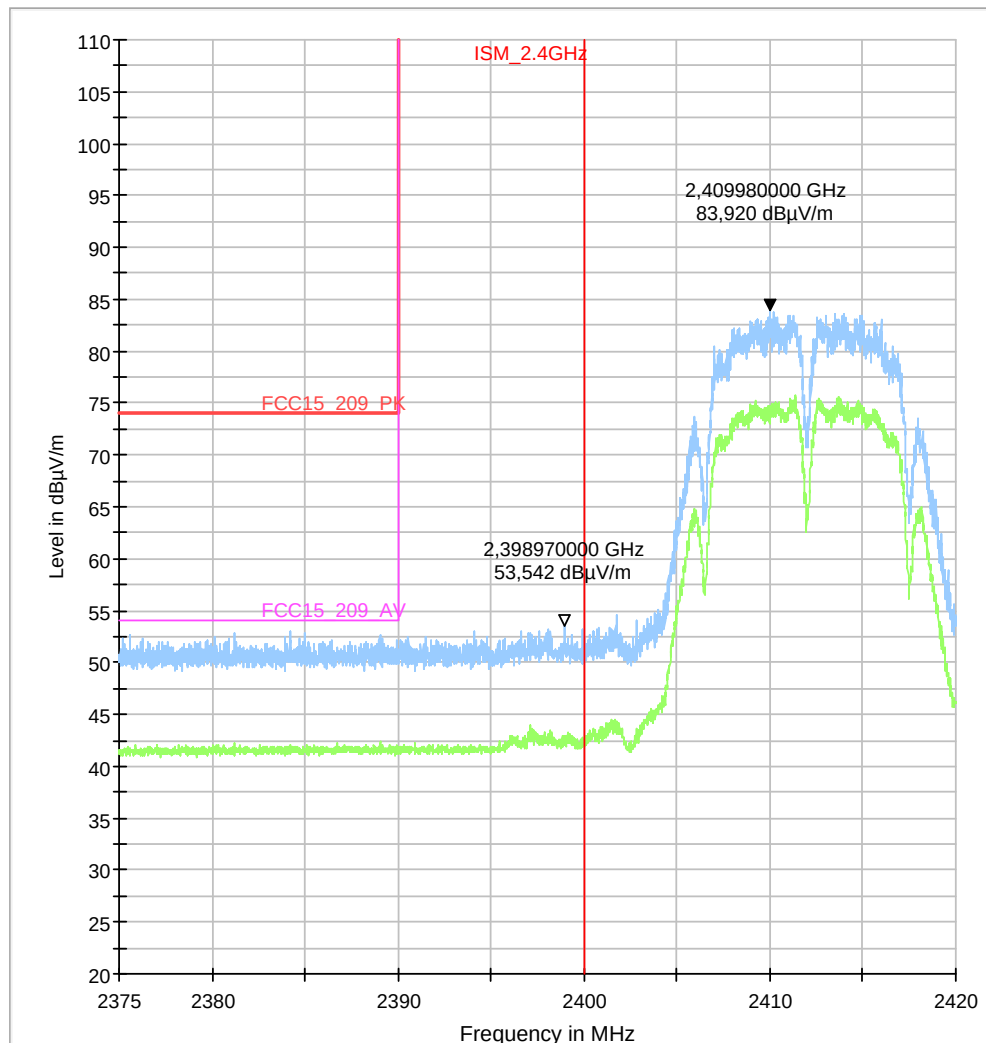
Diagram No.: 9.01b_BE_Ch1_2 Mbit_gc_58

Common Information

Test Description:	Radiated Band-Edge Emissions in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous
Operator Name:	AHo/YZh
Comment:	Channel 1; 2 Mbit

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF
HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EB77
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	110VAC
Comments:	



g-mode

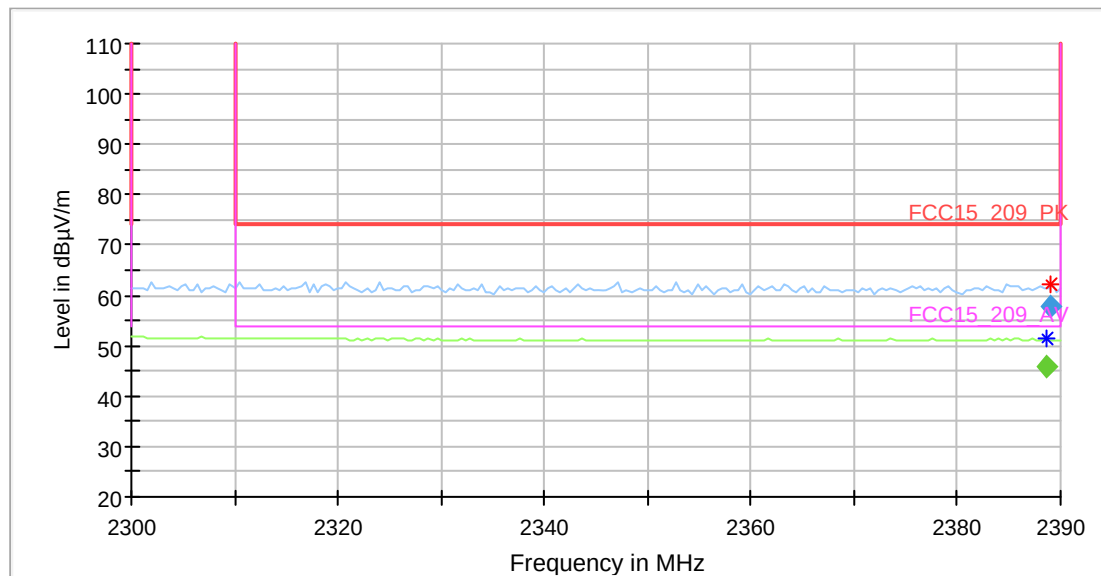
Diagram No.: 9.02a_BE_Ch1_9MBit_gc_50

Common Information

Test Description:	Radiated Band-Edge Emissions in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous
Operator Name:	aho/npe
Comment:	Channel 1, 9Mbit

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF
HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EB77
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	230VAC
Comments:	



Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)
2388.720000	---	45.80	54.00	8.20	100.0	1000.000	155.0	H	37.0	0.0
2389.040000	57.66	---	74.00	16.34	100.0	1000.000	155.0	H	281.0	0.0

(continuation of the "Final_Result" table from column 16 ...)

Frequency (MHz)	Correction	Comment
2388.720000	35.5	08:40:04 - 25.02.2015
2389.040000	35.5	08:38:38 - 25.02.2015

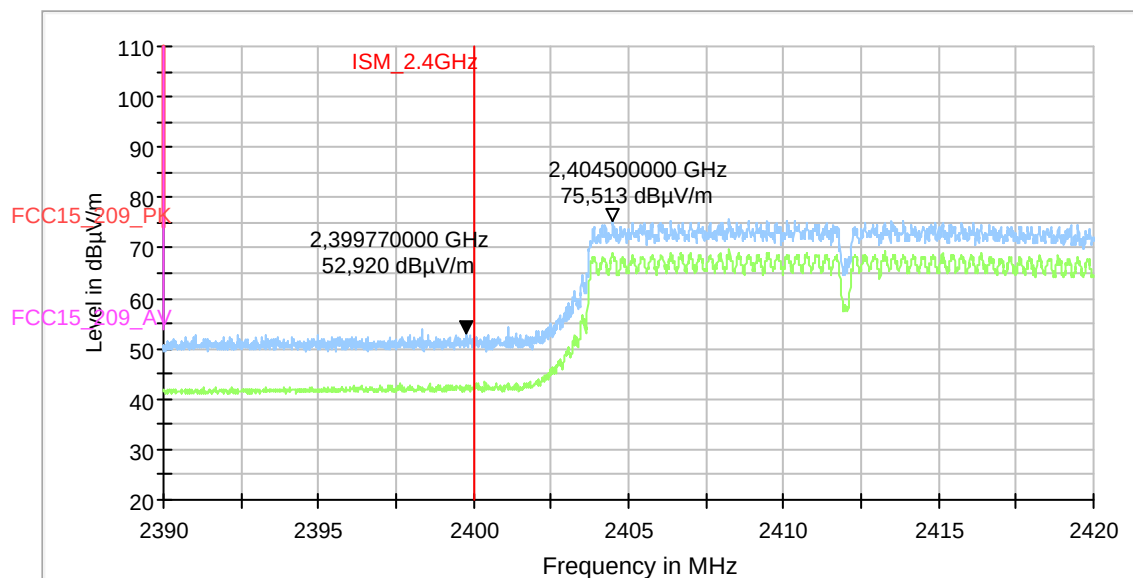
Diagram No.: 9.02b_BE_Ch1_9MBit_gc_50

Common Information

Test Description:	Radiated Band-Edge Emissions in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous
Operator Name:	Lor
Comment:	Channel no. low/high

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF
HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EB77
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	230VAC
Comments:	



n-mode

Diagram No.: 9.03a_BE_Ch1_MCS0_gc_50

Common Information

Test Description:	Radiated Band-Edge Emissions in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous
Operator Name:	AHo/YZh
Comment:	Channel 1; MCS0; QPSK

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF
HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EB77
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	230VAC
Comments:	

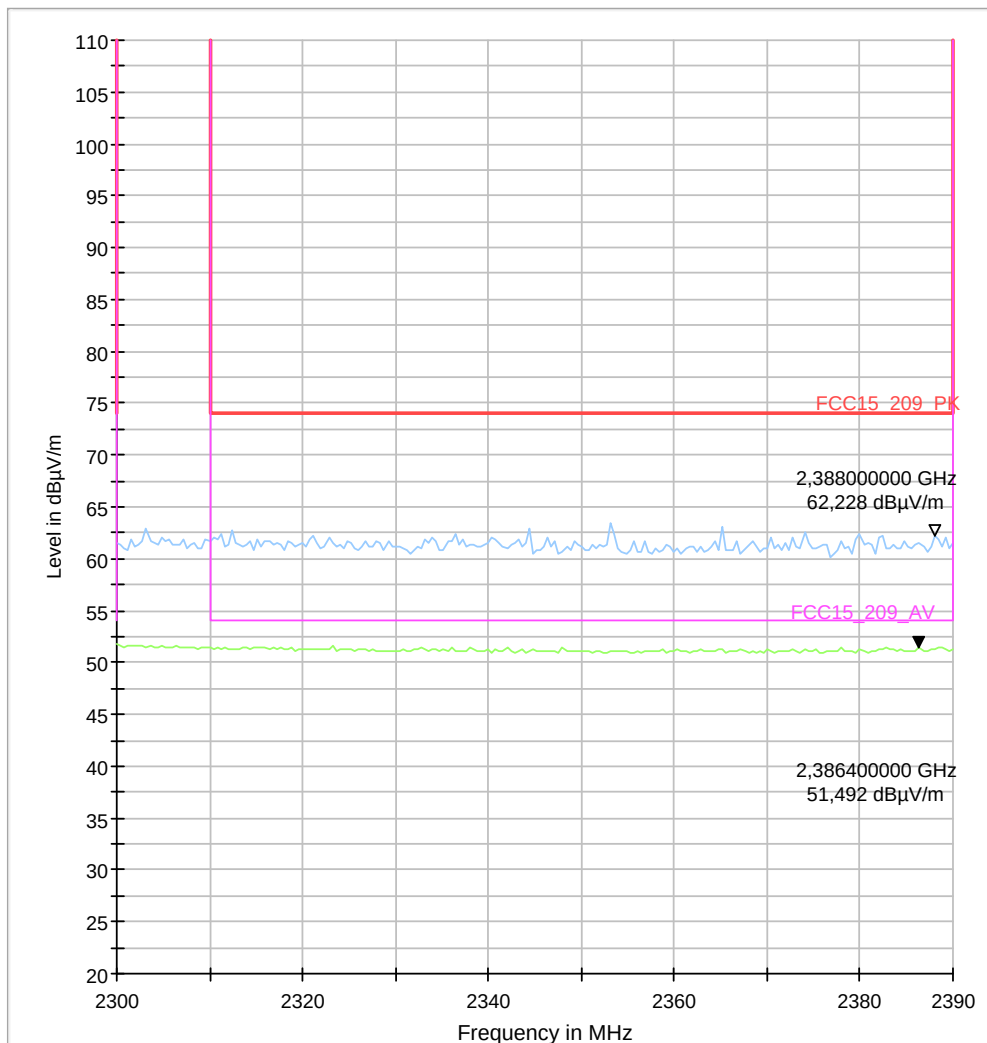


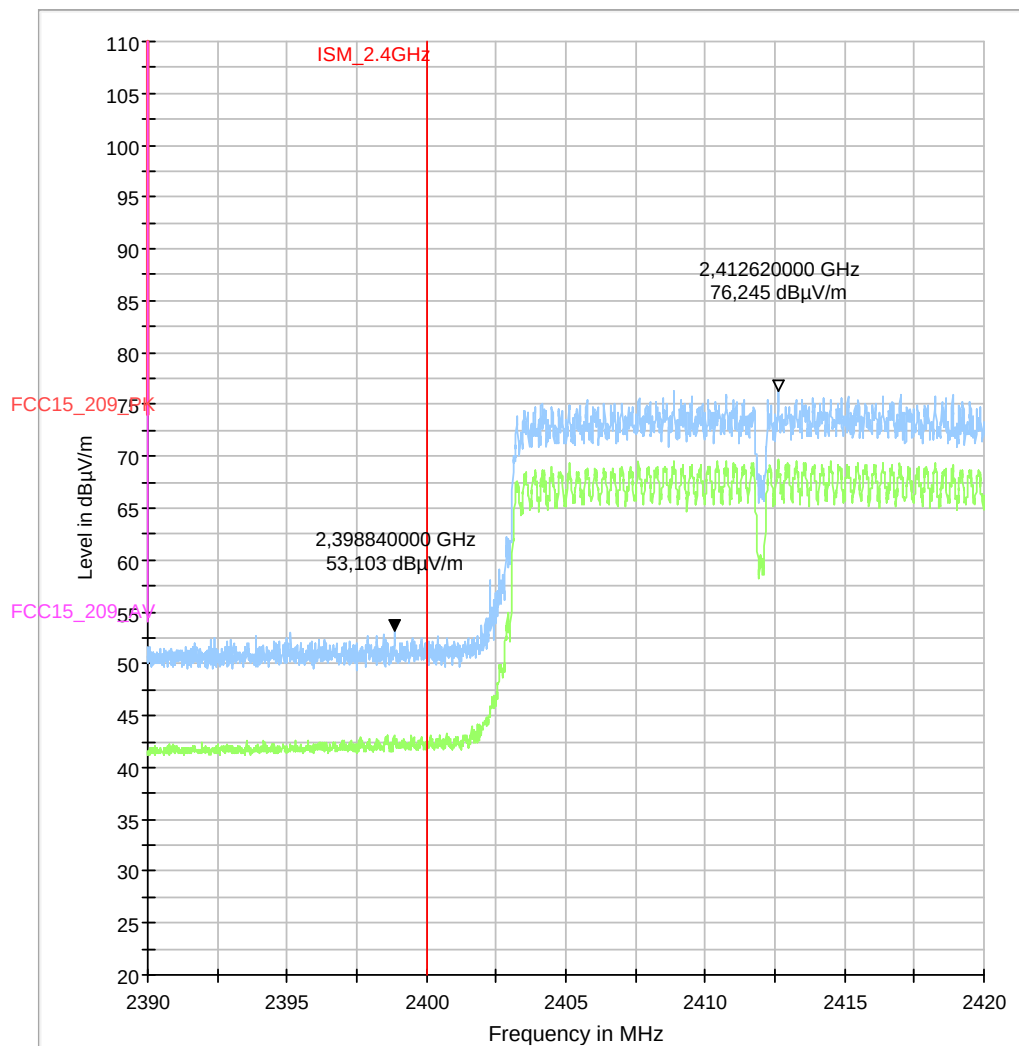
Diagram No.: 9.03b_BE_Ch1_MCS0_gc_50**Common Information**

Test Description:	Radiated Band-Edge Emissions in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous
Operator Name:	AHo/YZh
Comment:	Channel 1; MCS0; QPSK

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF

HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EB77
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	230VAC
Comments:	



4.2. Channel 11 (right band edge)

b-mode

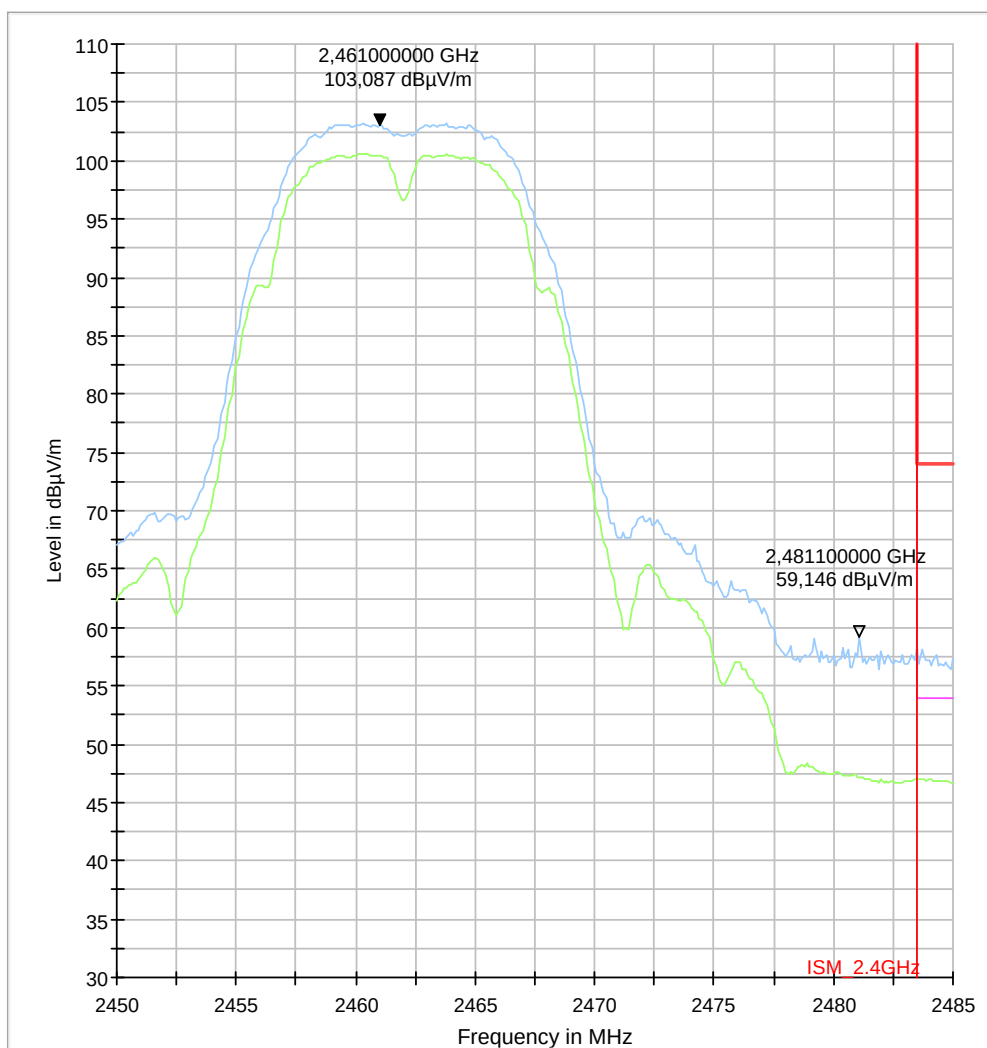
Diagram No.: 9.01c_BE_Ch11_2 Mbit_gc_58

Common Information

Test Description:	Radiated Band-Edge Emissions in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous
Operator Name:	AHo/YZh
Comment:	Channel 11; 2 Mbit

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF
HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EB77
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	110VAC
Comments:	



g-mode

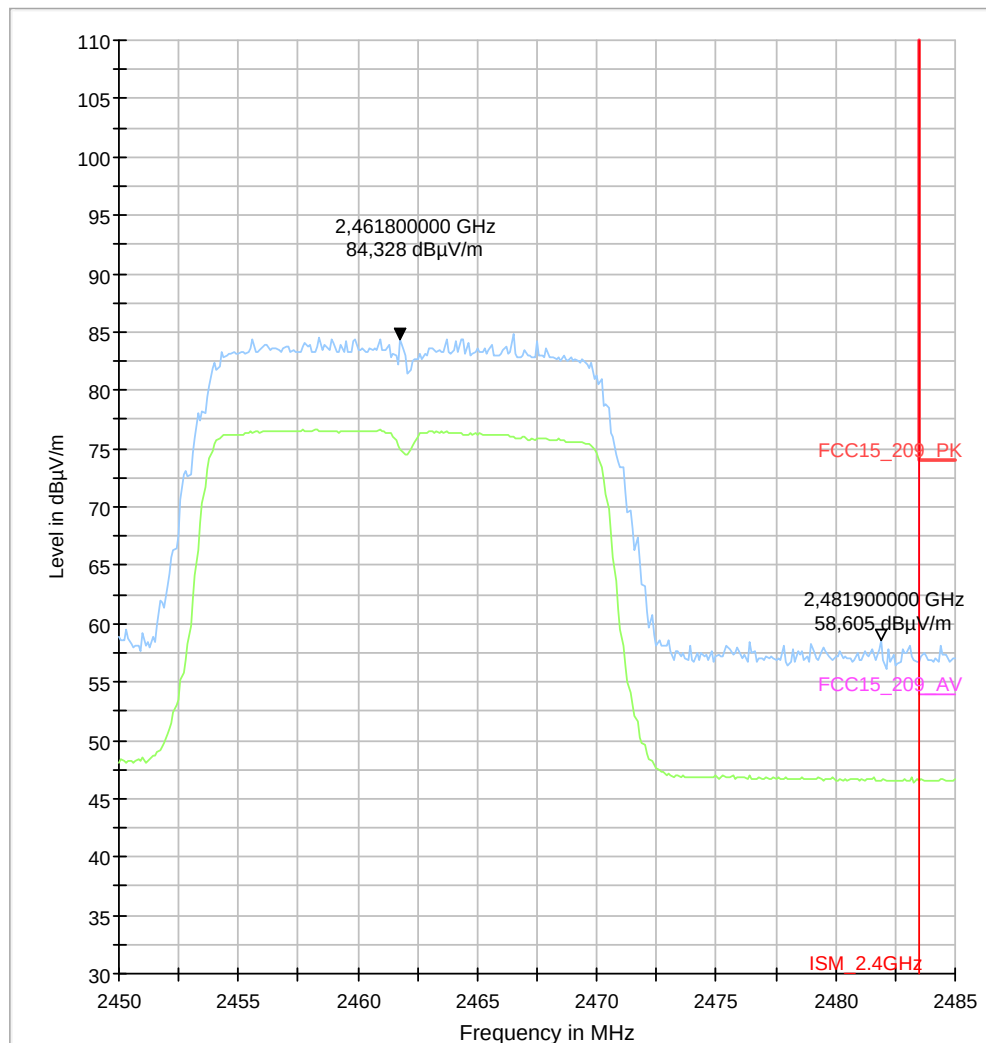
Diagram No.: 9.02c_BE_Ch11_9 Mbit_gc_50

Common Information

Test Description:	Radiated Band-Edge Emissions in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous
Operator Name:	AHo/YZh
Comment:	Channel 11; 9 Mbit

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF
HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EB77
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	110VAC
Comments:	



n-mode

Diagram No.: 9.03c_BE_Ch11_6MBit_gc_50

Common Information

Test Description:	Radiated Band-Edge Emissions in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous
Operator Name:	Lor
Comment:	Channel no. low/high

EUT Information

Manufacturer:	Ascom AB
EuT:	SH1-ACAA/PF
HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EB77
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	110VAC
Comments:	

