Annex 4 Measurement Diagrams to
T E S T R E P O R T
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	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	CTIA Authorized Test Lab LAB CODE 20011130-00		
accredited according to DIN EN ISO/IEC 17025			

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Table of contents

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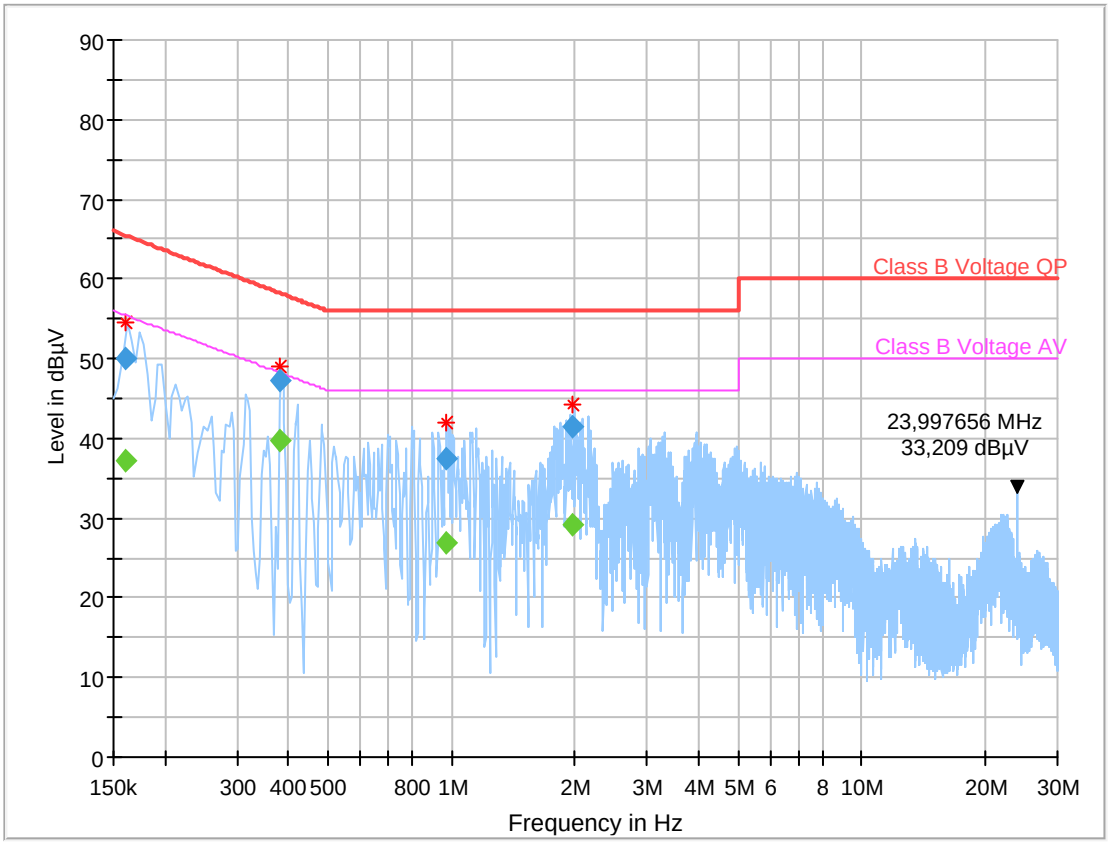
HW Version:	
SW Version:	myco-eng 4.4.2 daily_2014-12-11_eng daily_379_214-12-11 dev-keys
Serial Number:	T26105EA0D
Connected Interfaces:	1m USB cable + USB Charger (UNIFIVE Model:UBX305-0510)
Power Supply:	120VAC
Comments:	

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
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

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

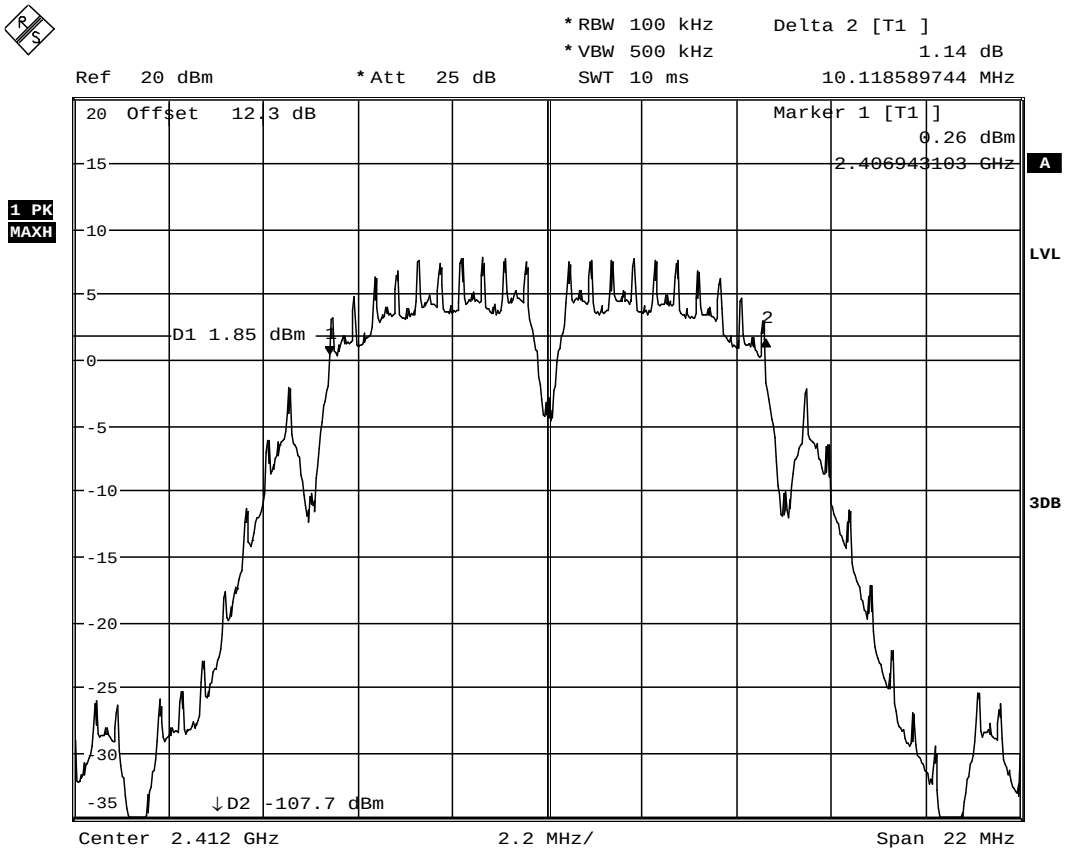
2.1.1. Channel 1, 6, 11

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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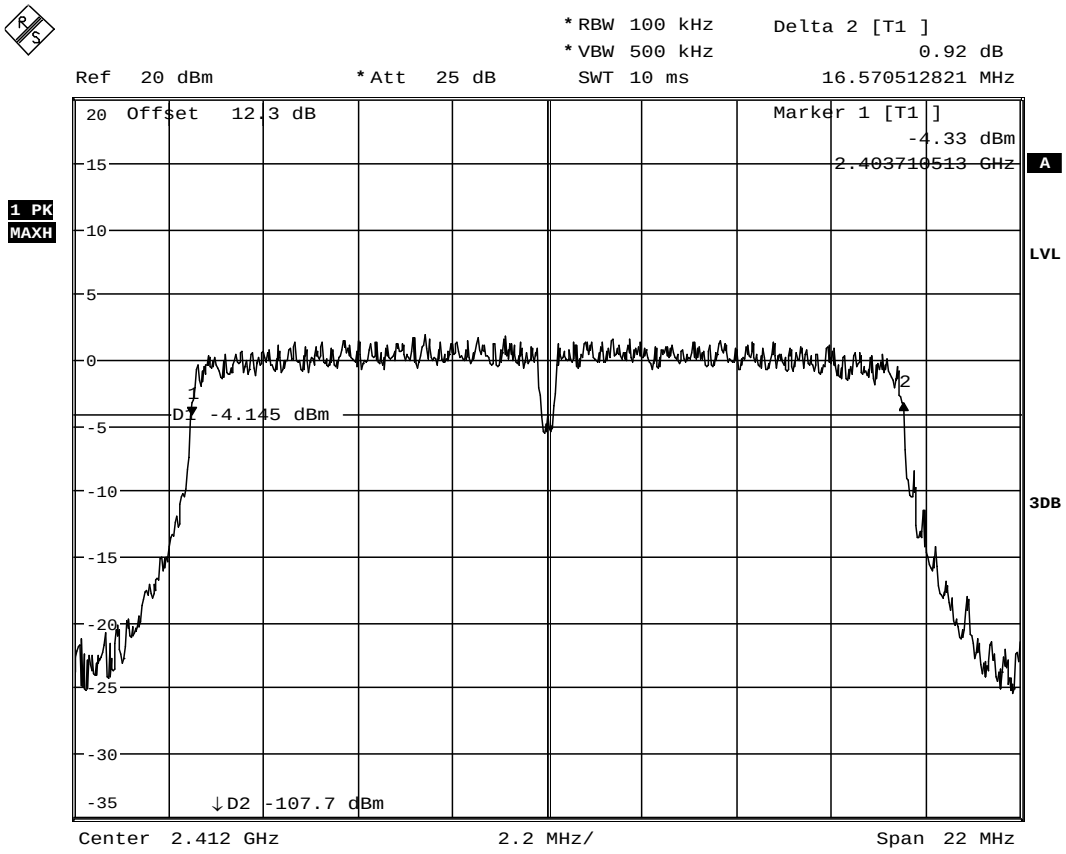

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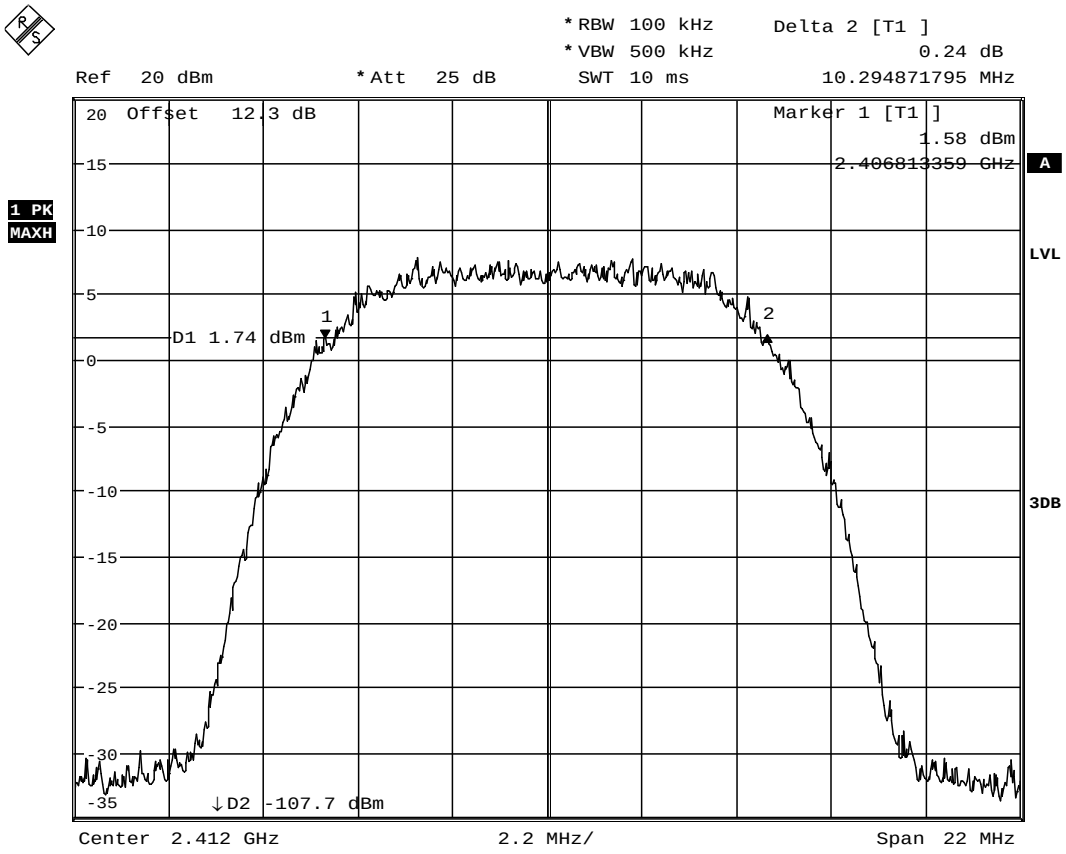
11Mbit



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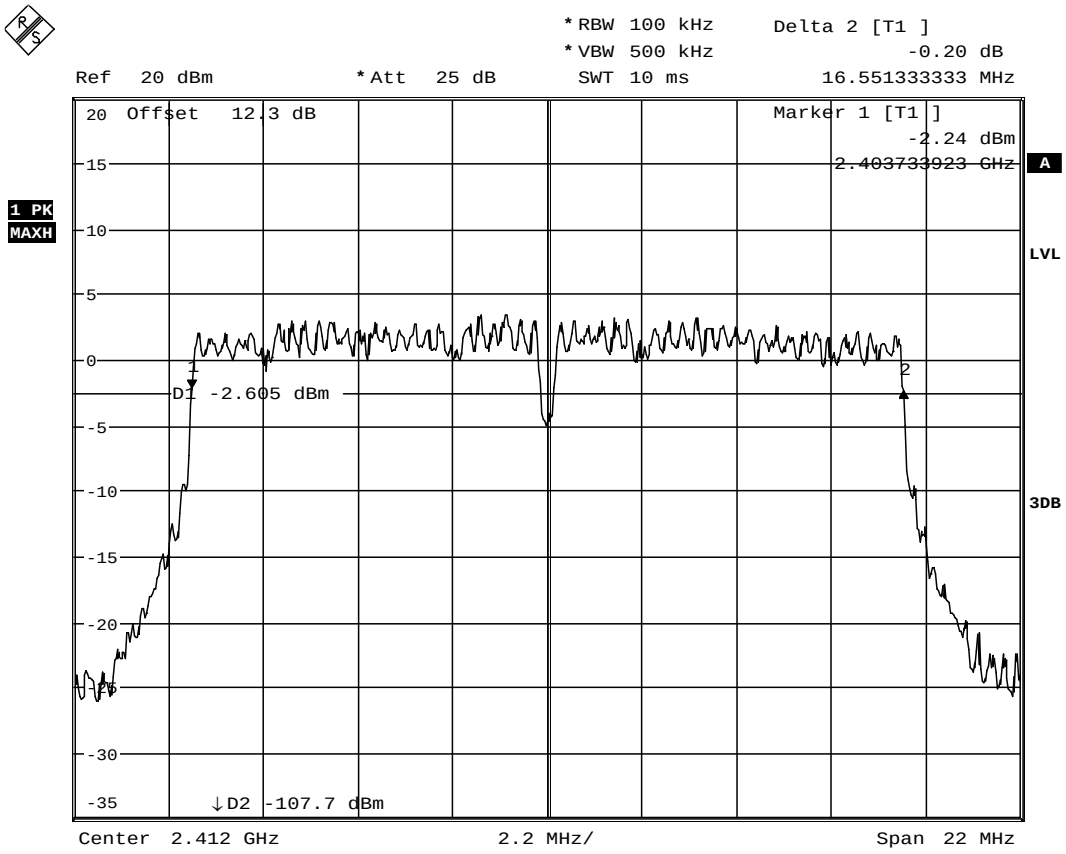
54Mbit



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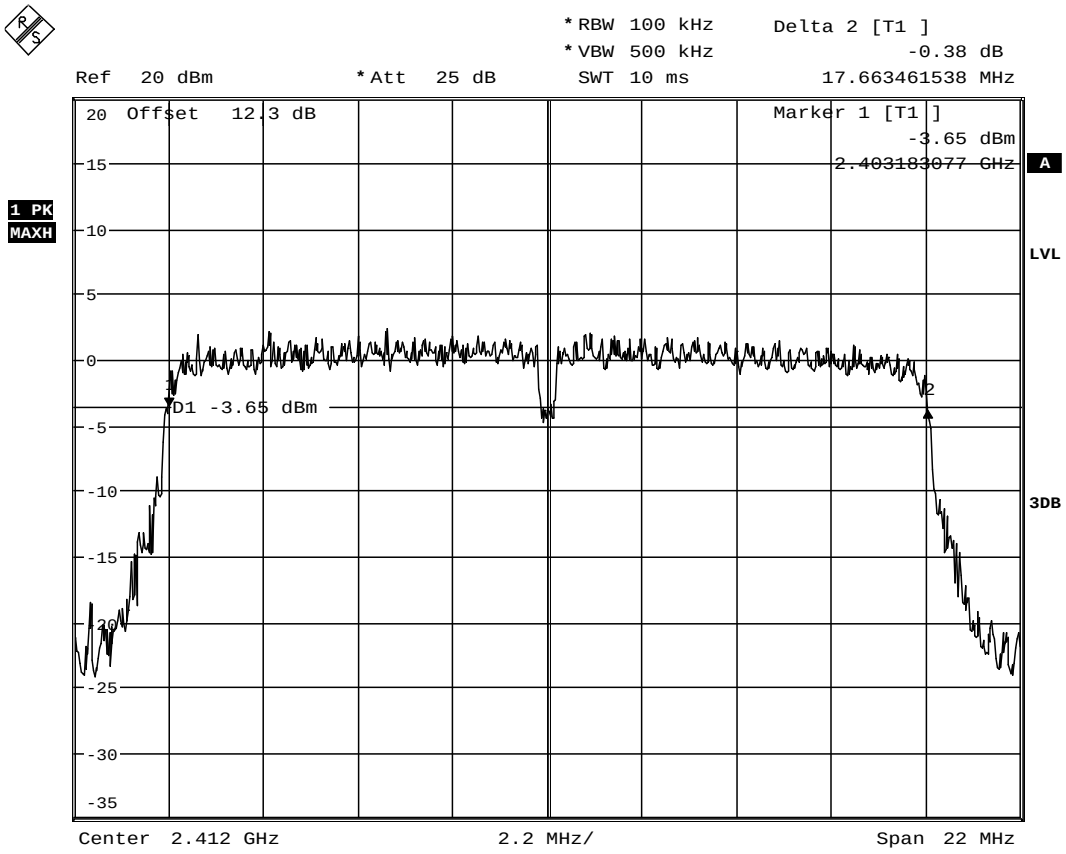
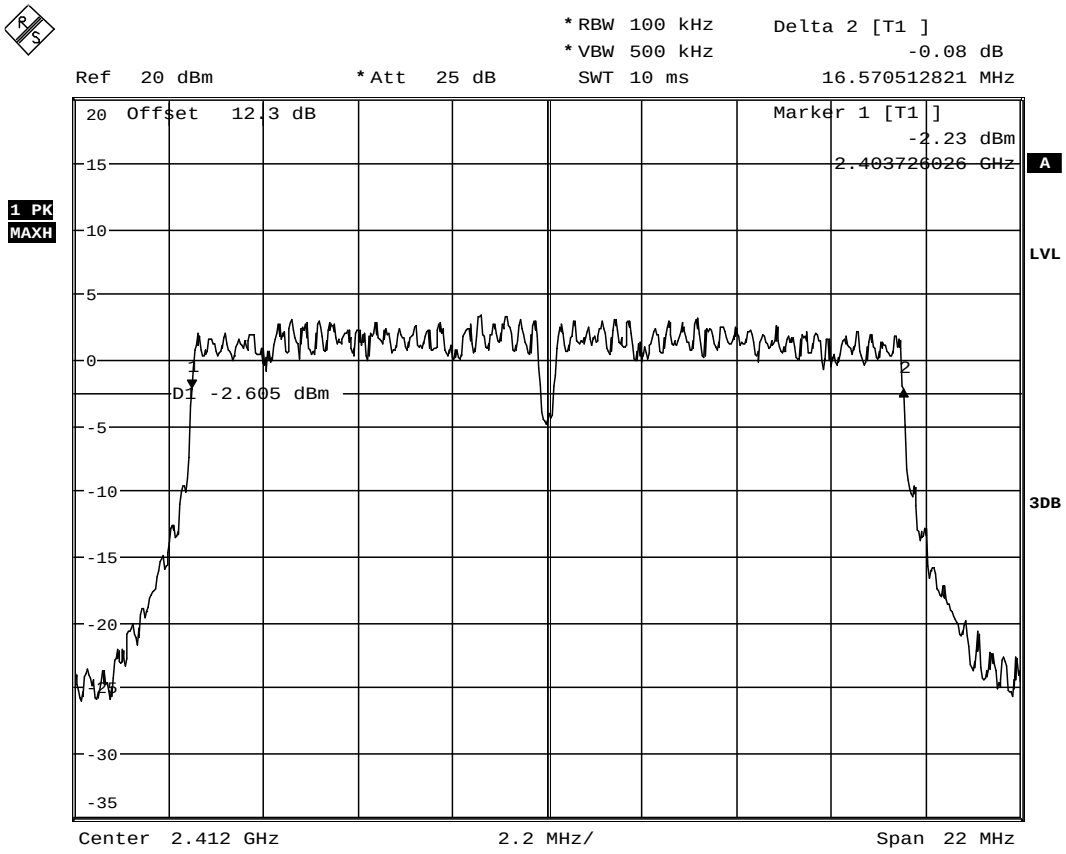


Date: 27.JAN.2015 11:29:08

MCS7



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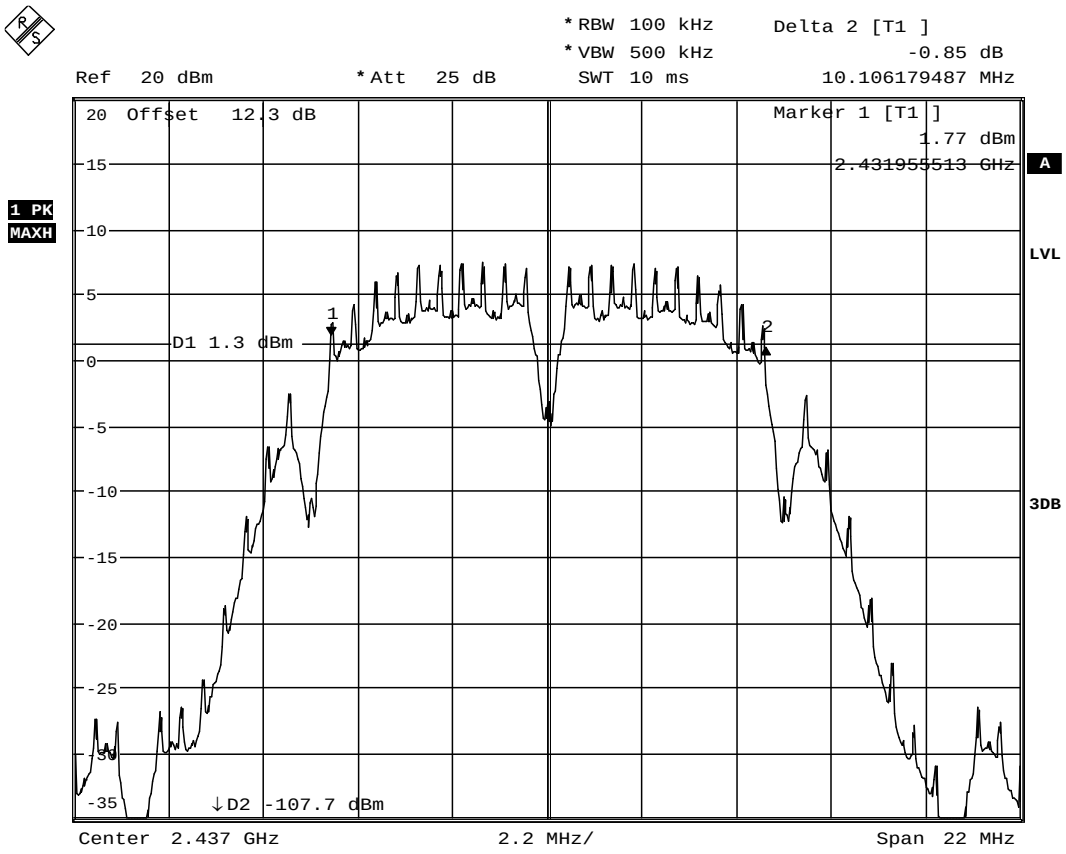
2.2.2. Channel 6

1Mbit



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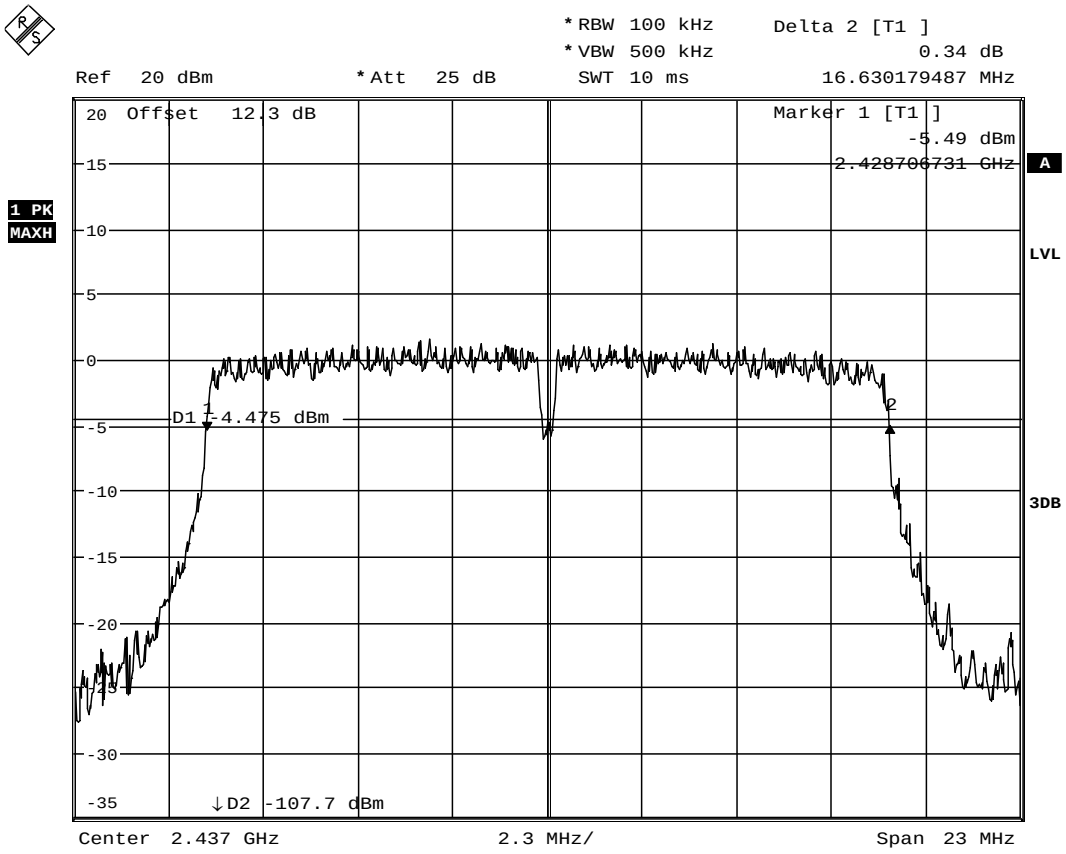

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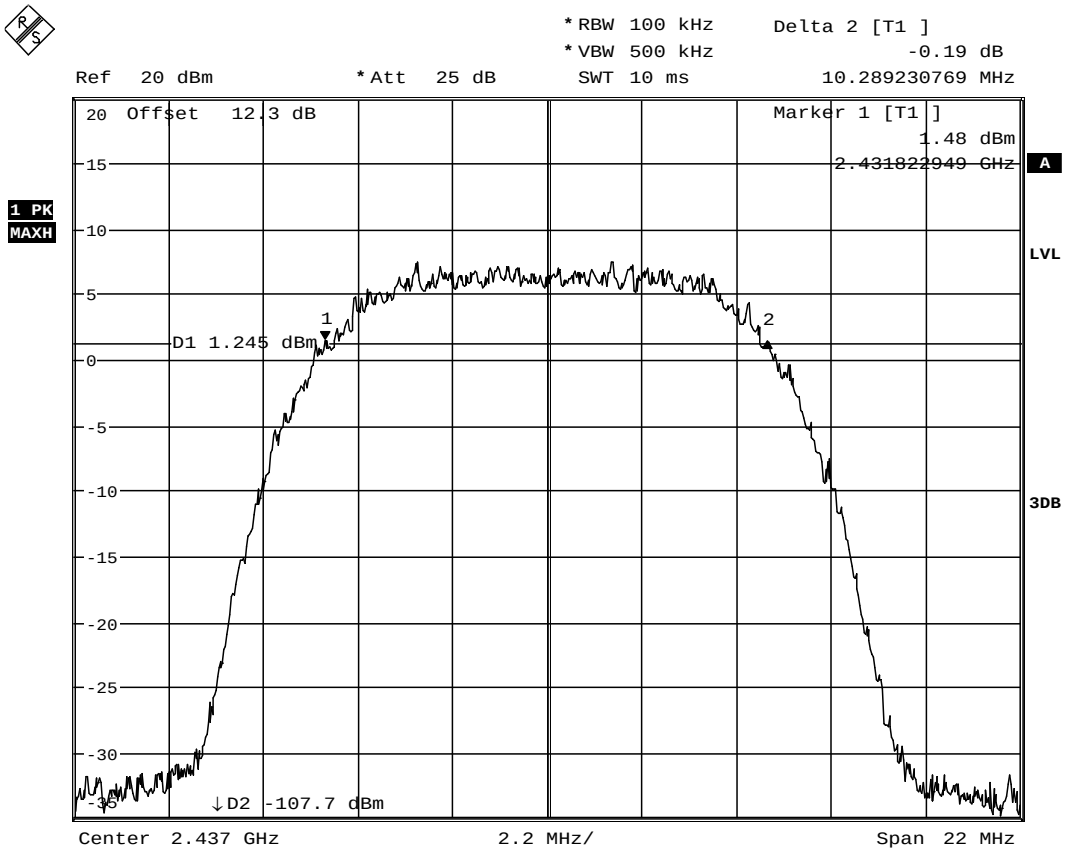

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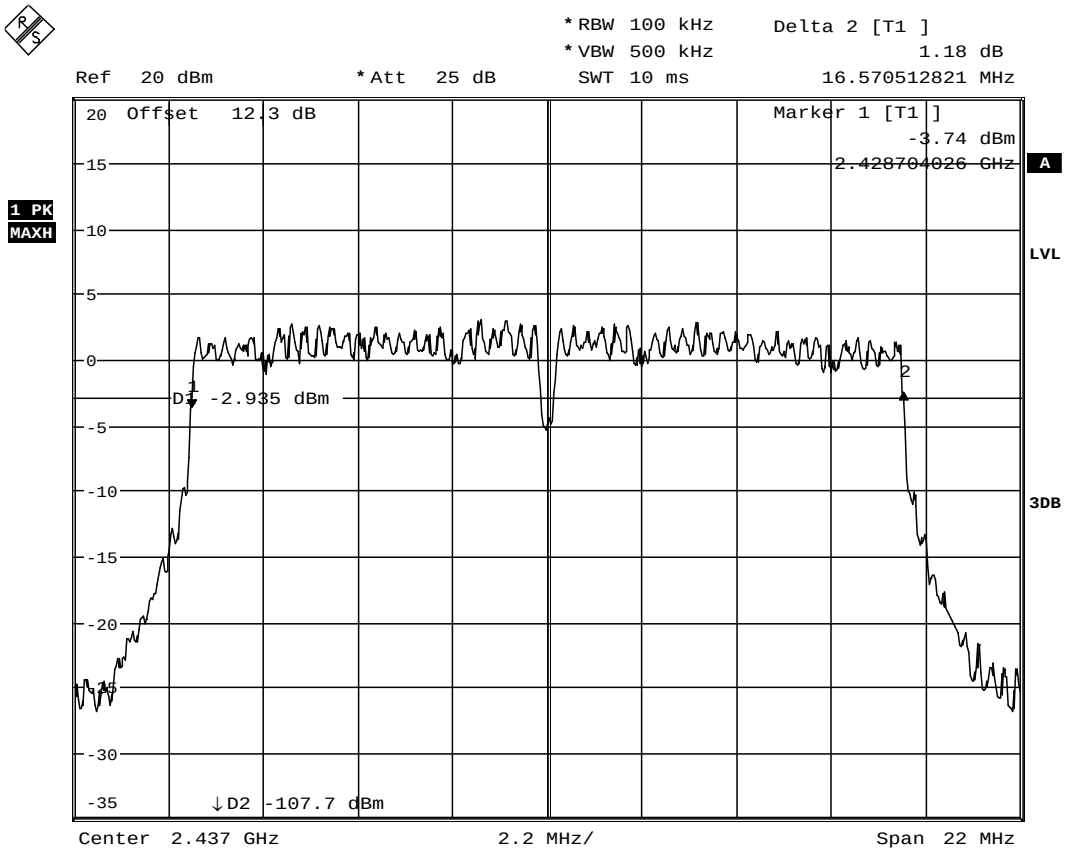
54Mbit



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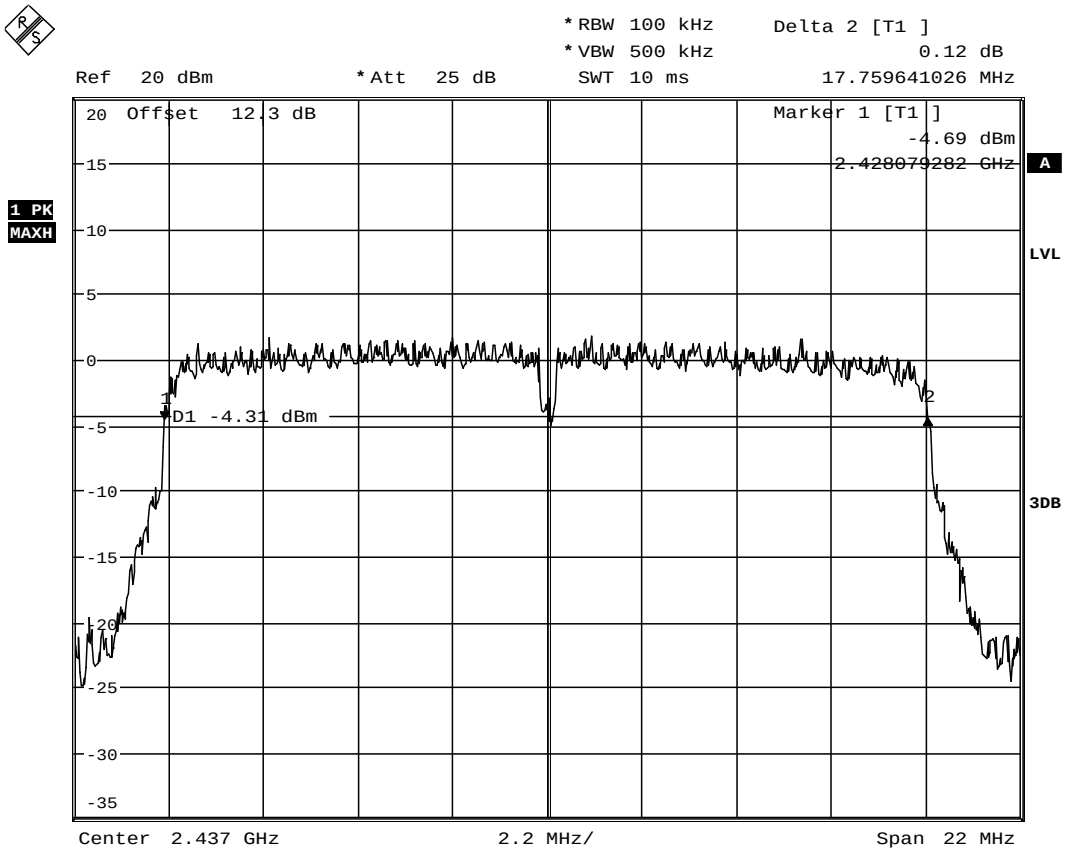

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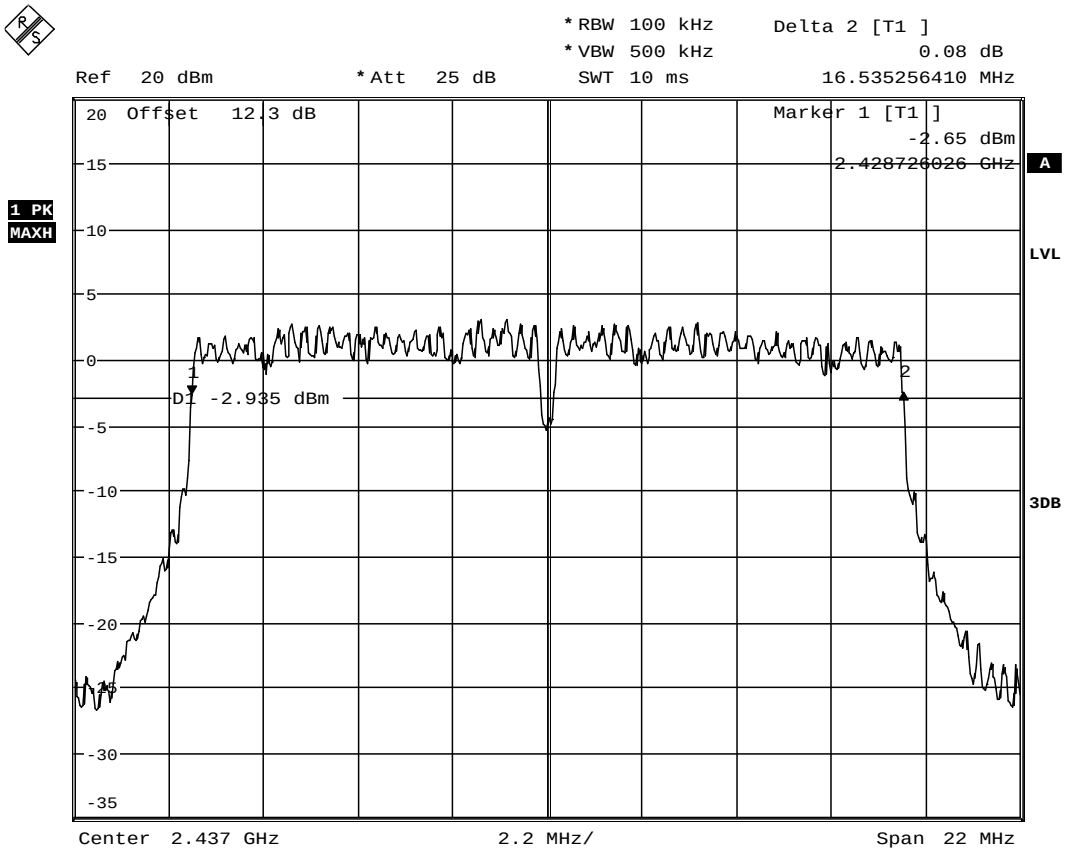
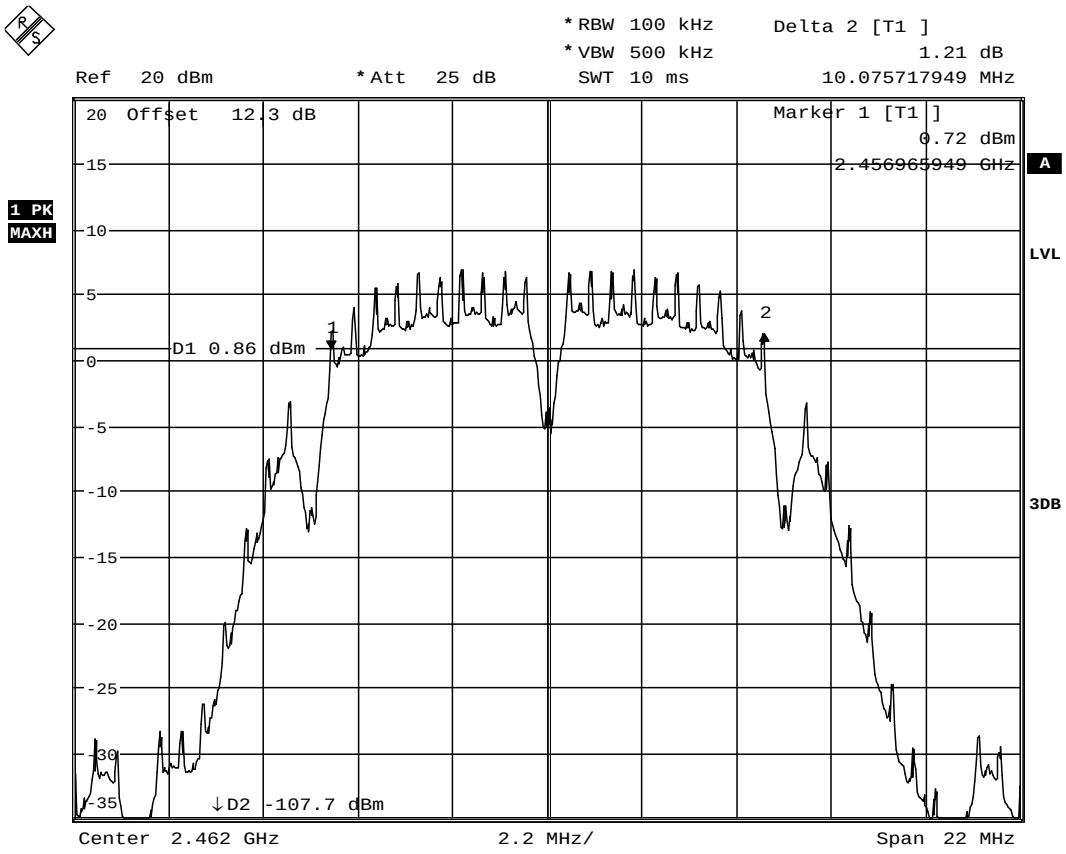

*RBW 100 kHz
*VBW 500 kHz
SWT 10 ms
Delta 2 [T1]
0.08 dB
16.535256410 MHz
Ref 20 dBm
*Att 25 dB
Offset 12.3 dB
Marker 1 [T1]
-2.65 dBm
2.428726026 GHz
1 PK
MAXH
A
LVL
3DB
D1 -2.935 dBm
Center 2.437 GHz
2.2 MHz/
Span 22 MHz
Date: 27.JAN.2015 11:44:58

2.2.3. Channel 11

1Mbit



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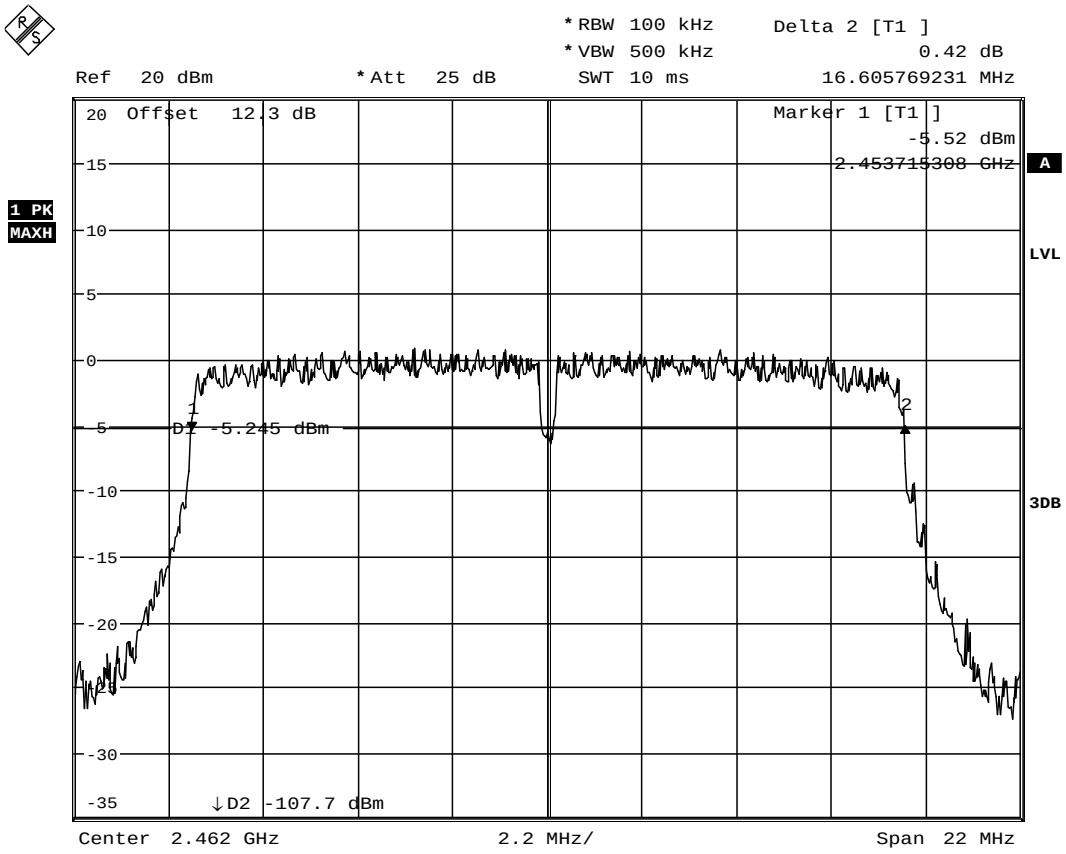
6Mbit



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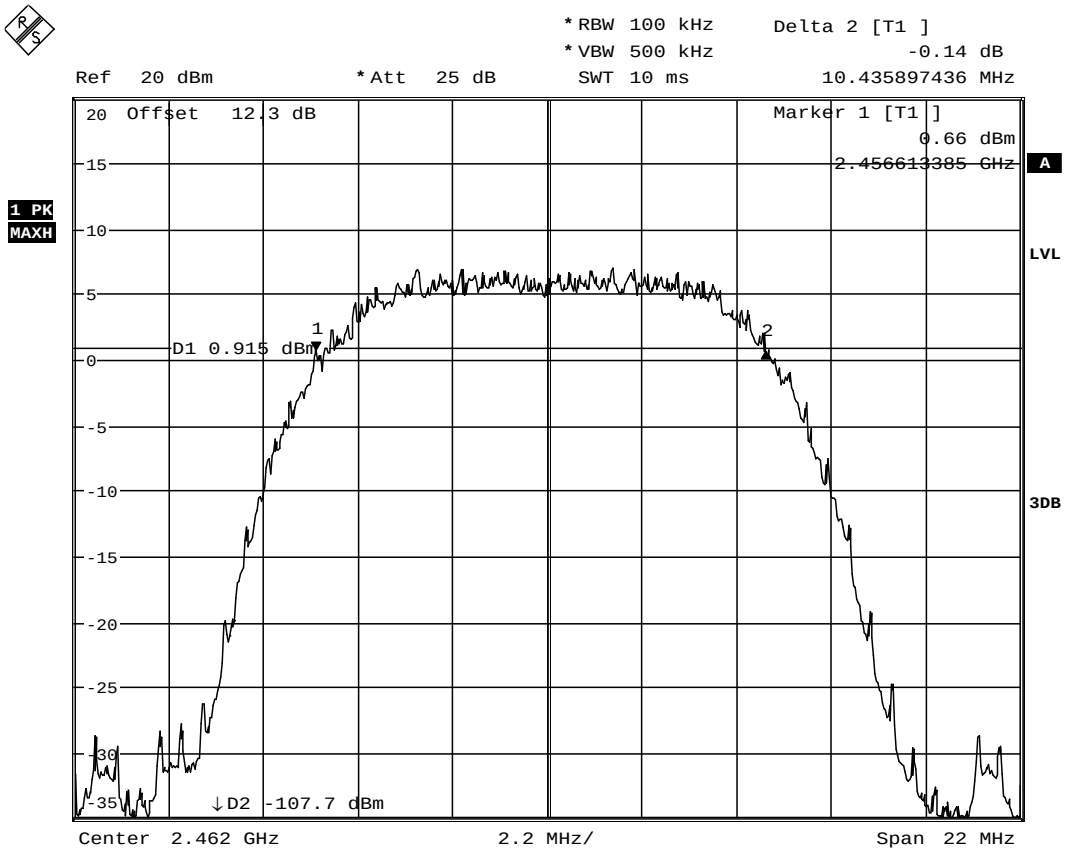
11Mbit



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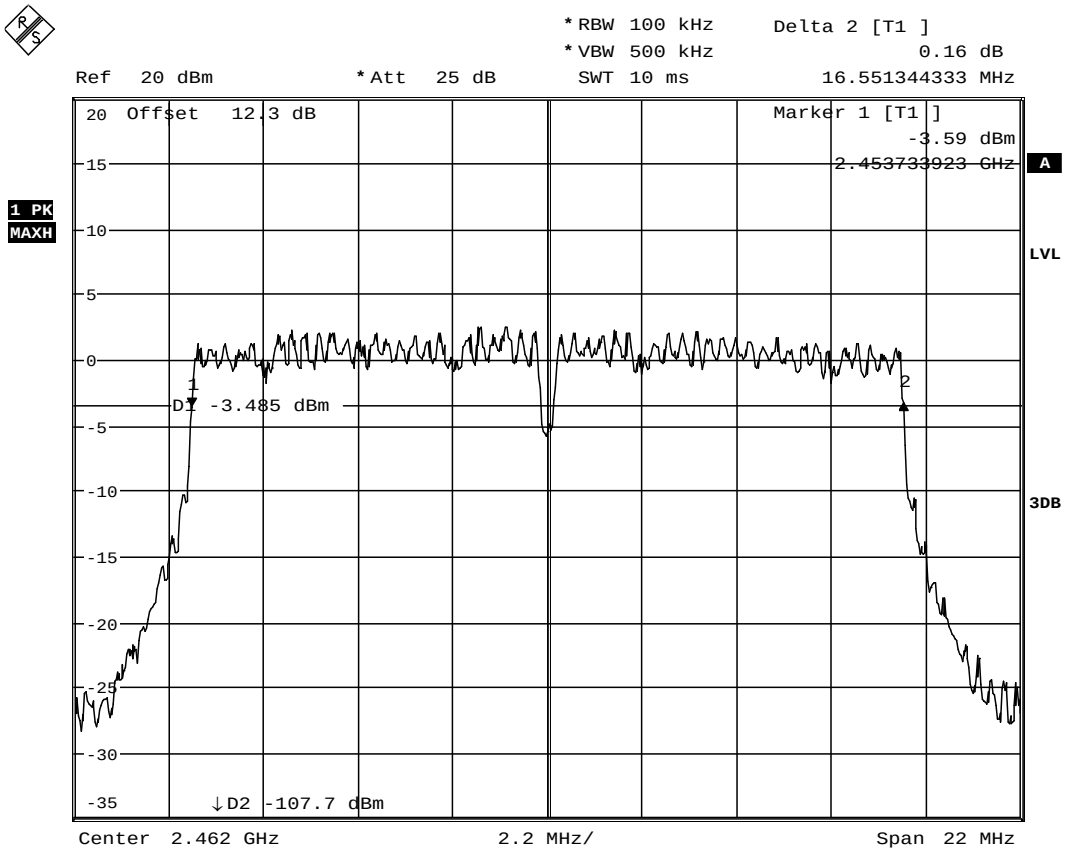

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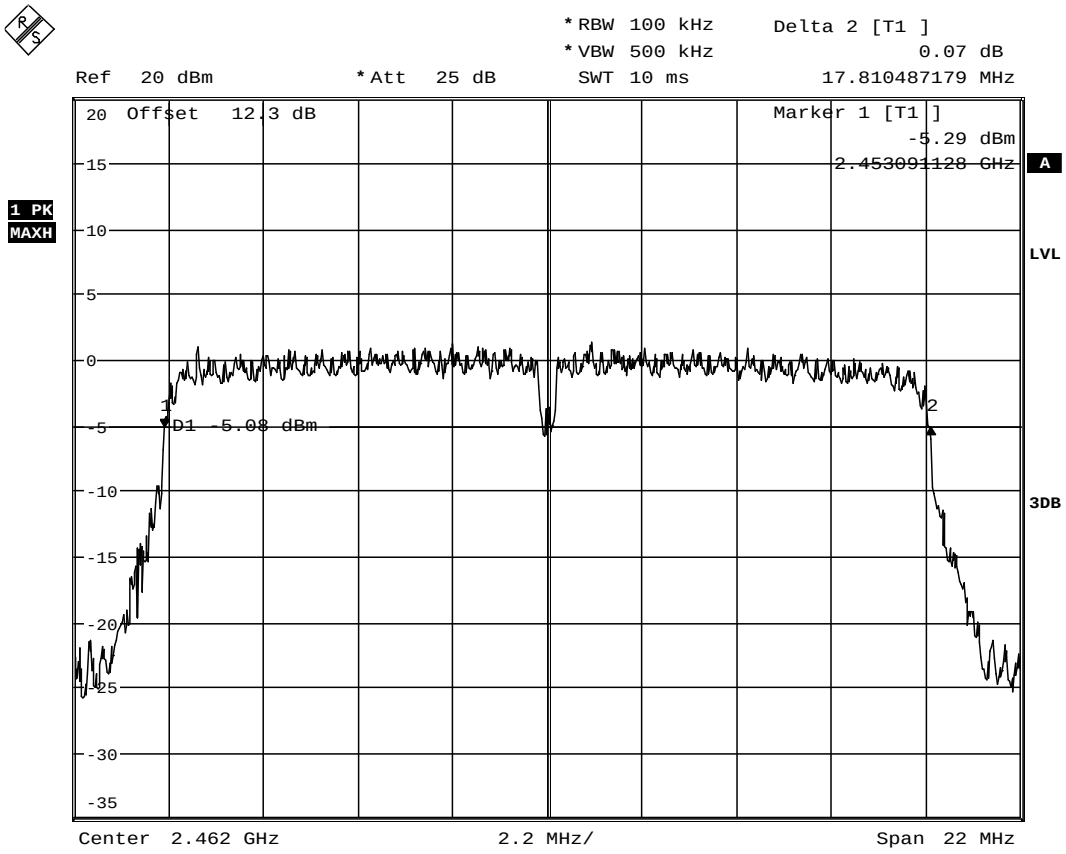

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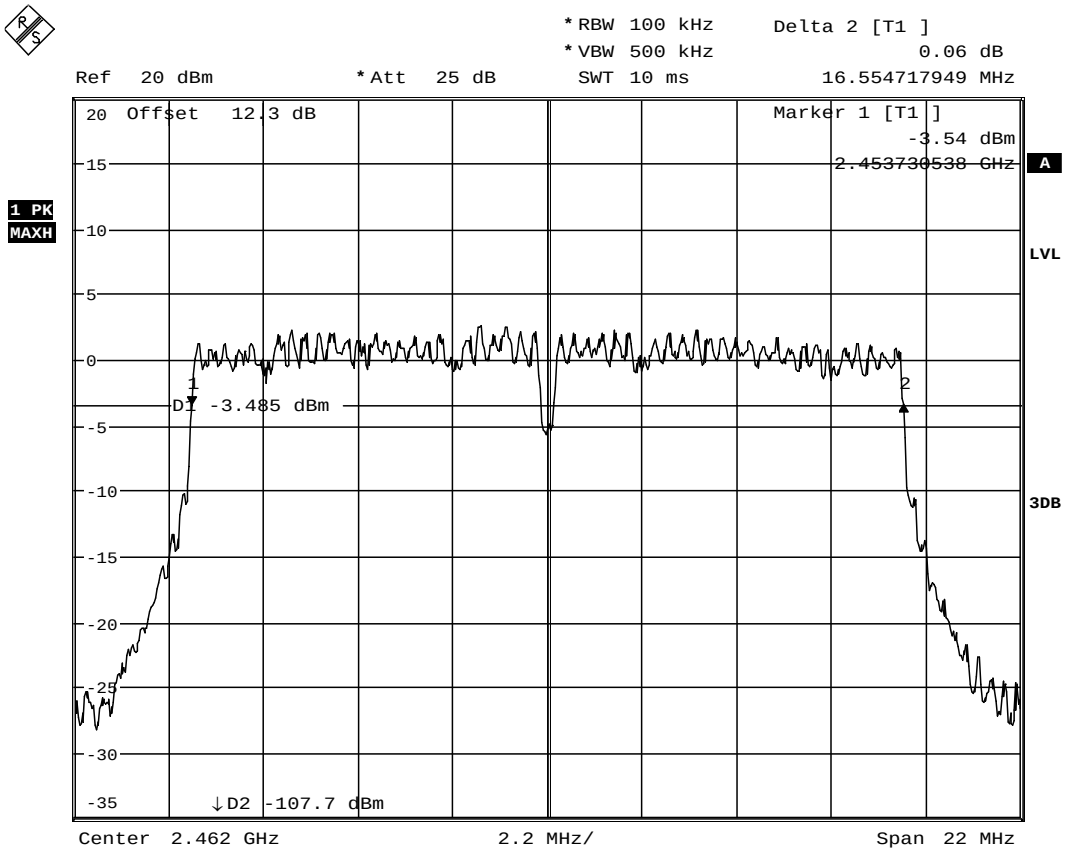

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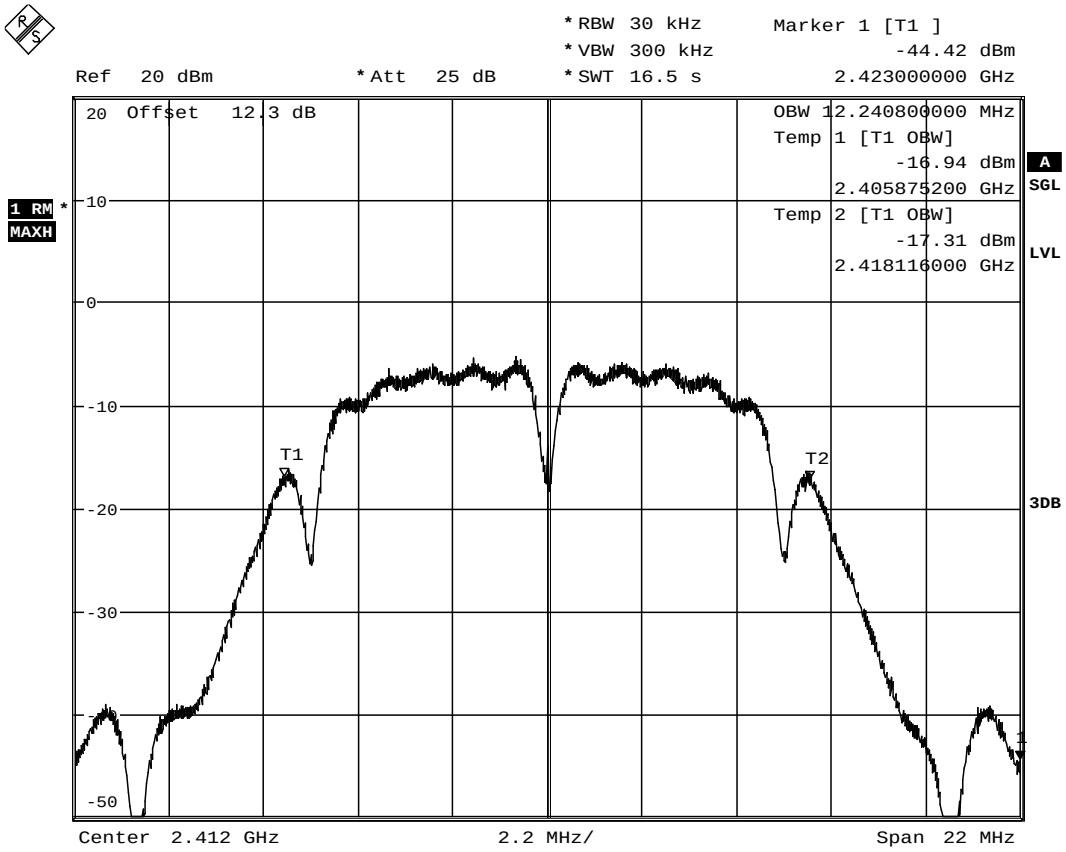
2.3. 99% Occupied Bandwidth

2.3.1. Channel 1

1Mbit



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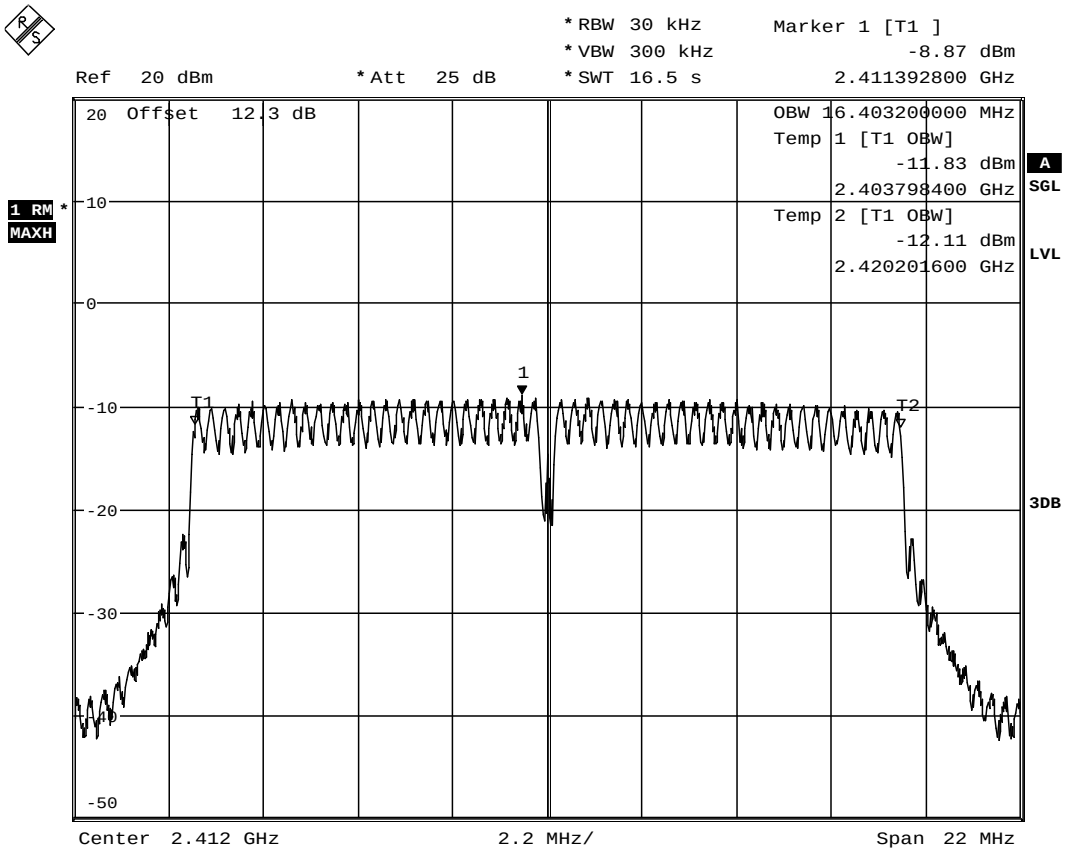

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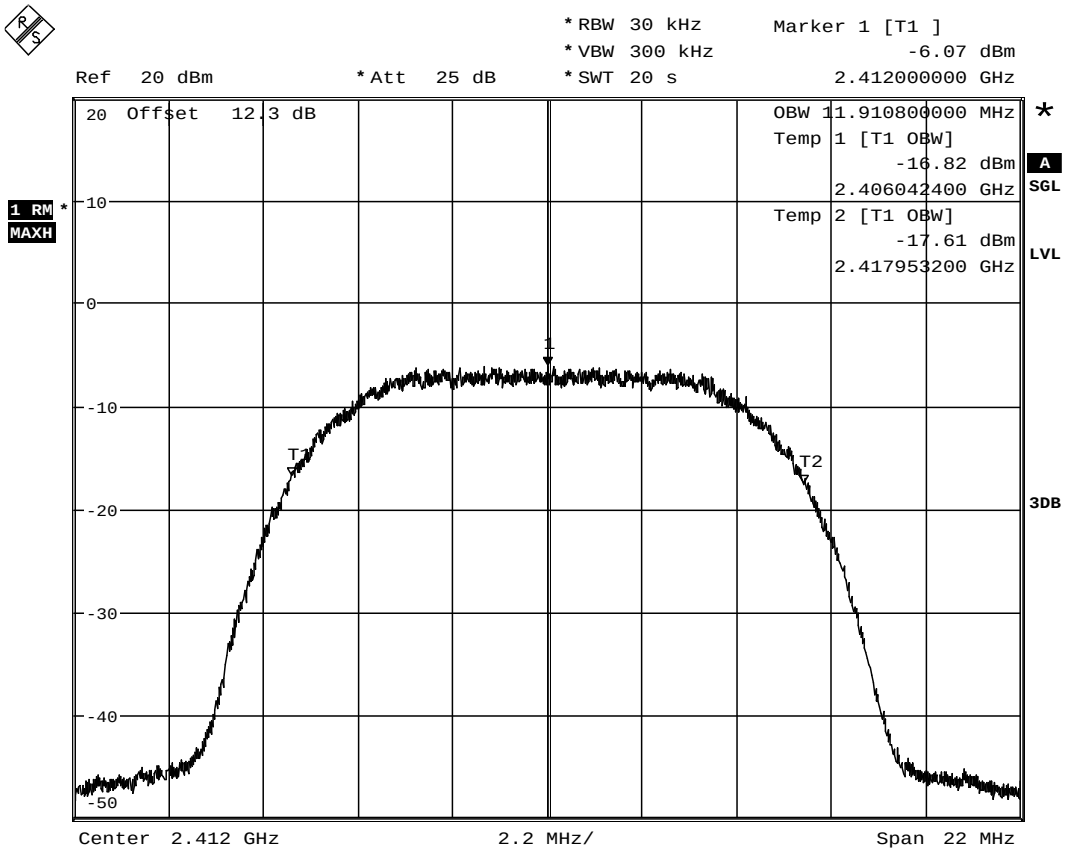

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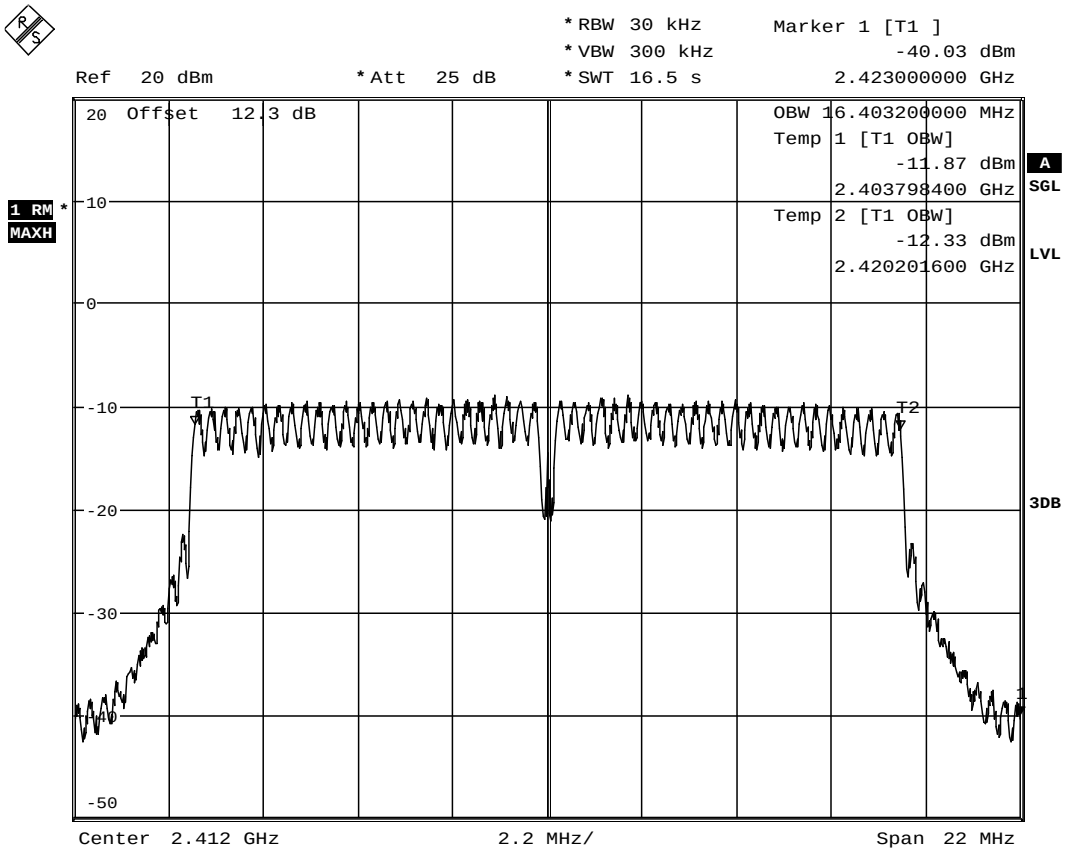

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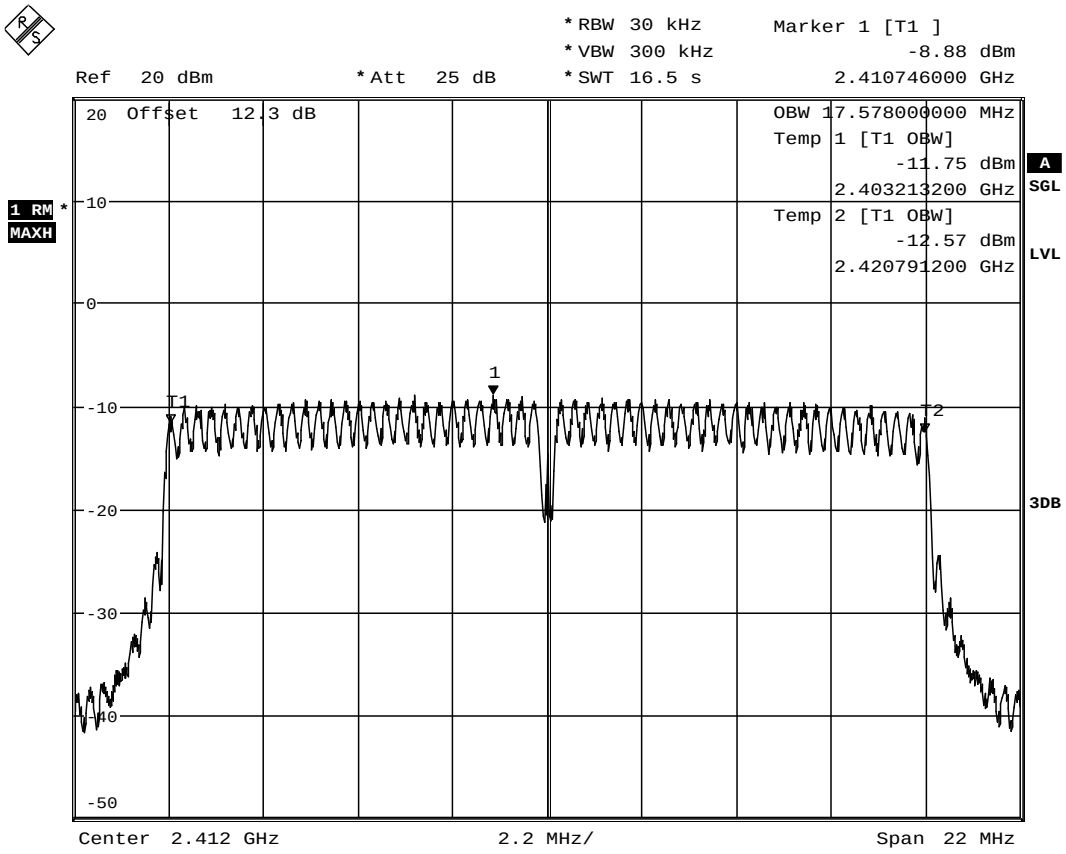

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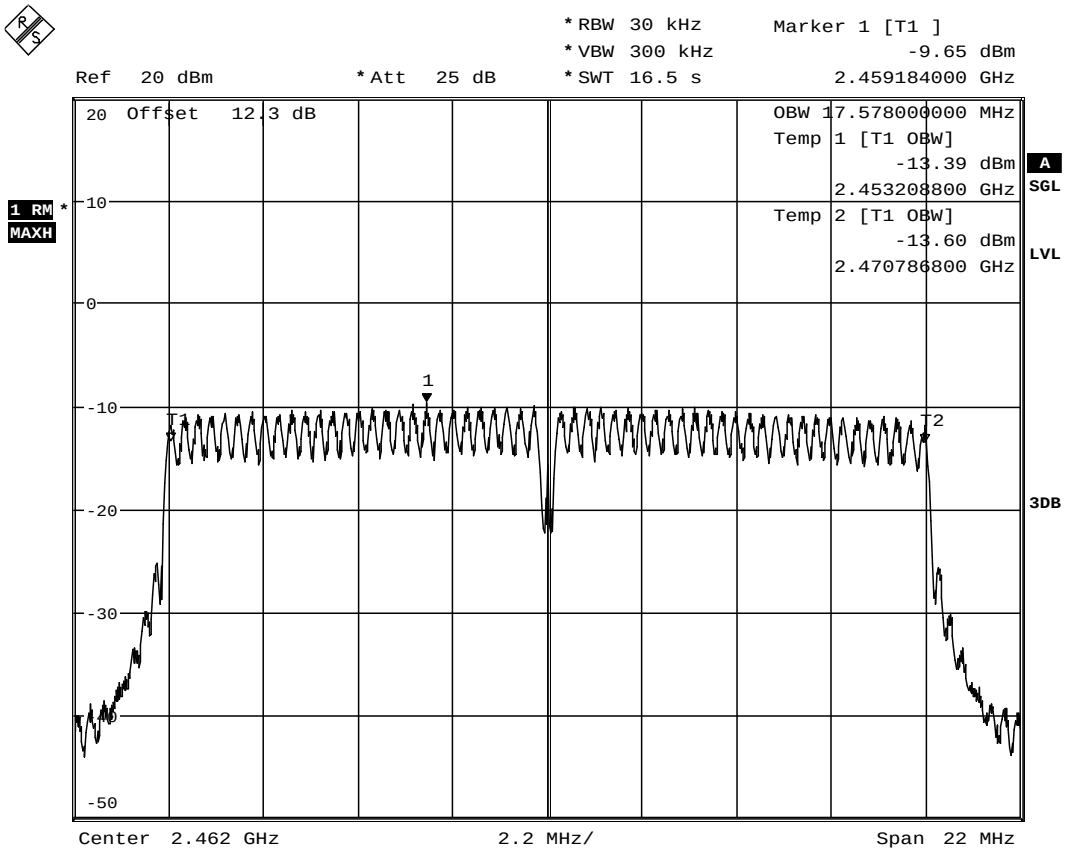
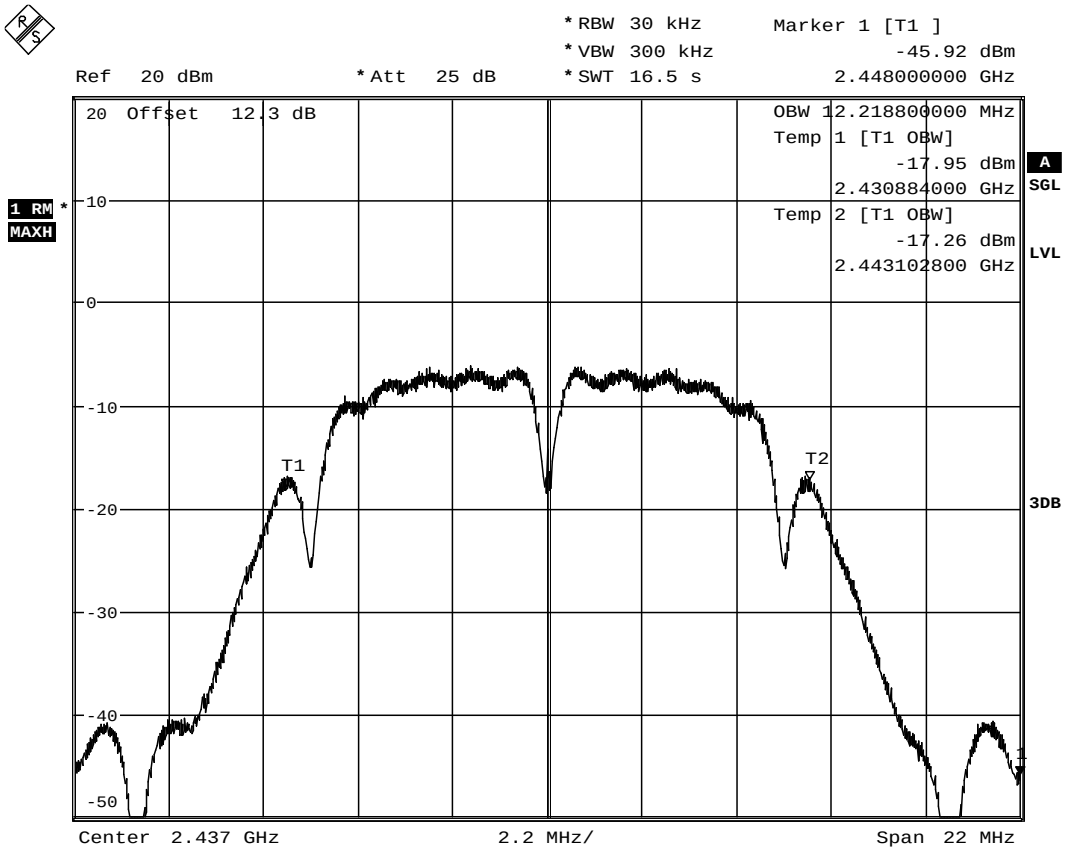


Date: 27.JAN.2015 14:36:26

2.3.2. Channel 6

1Mbit



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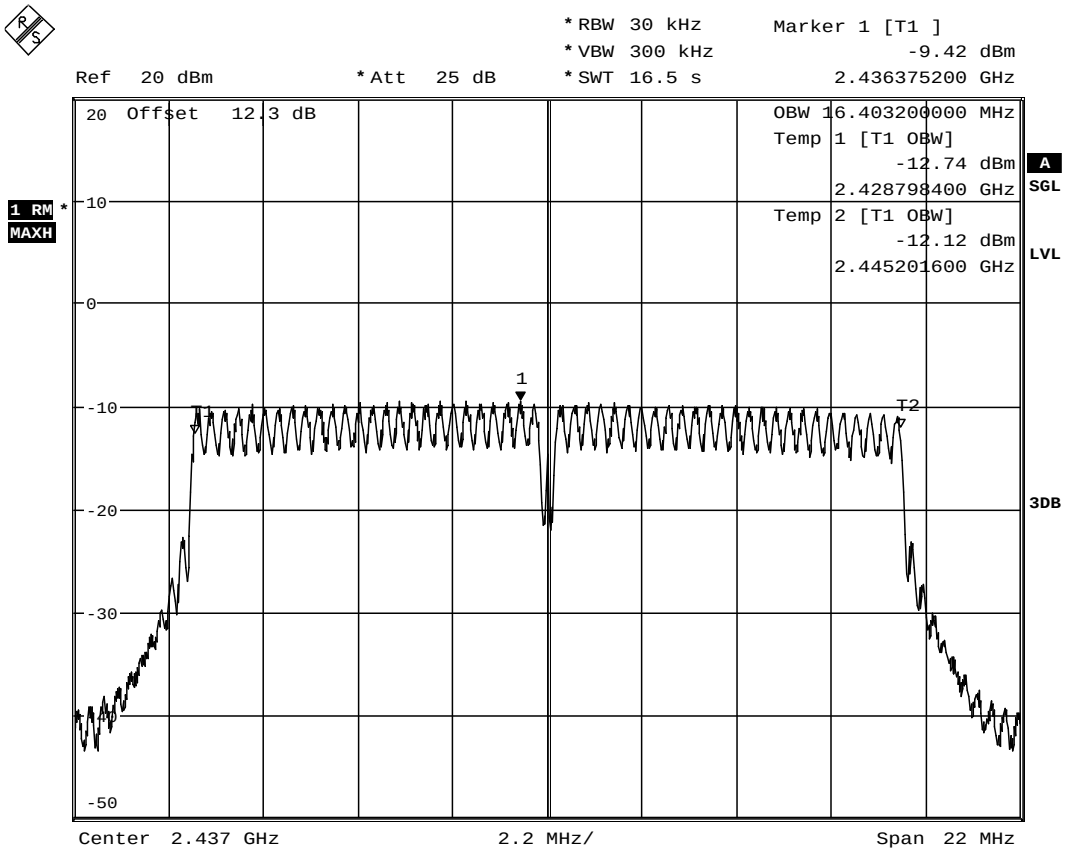

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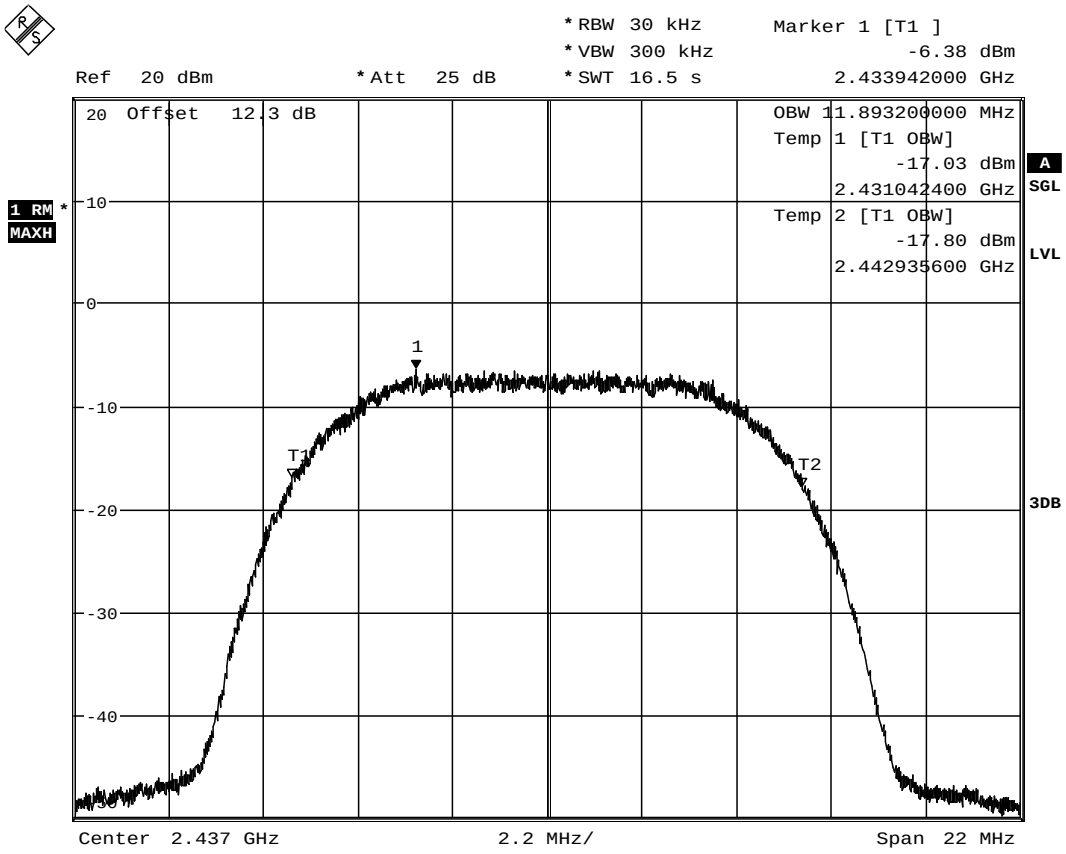

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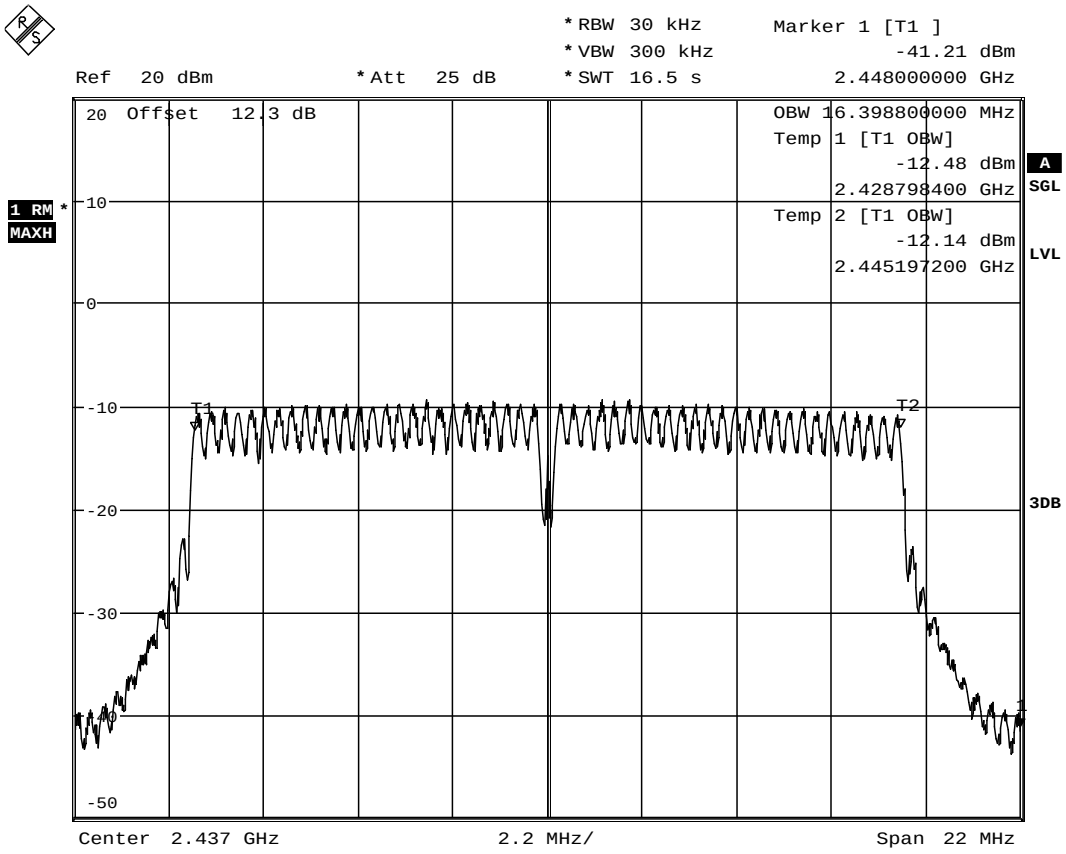

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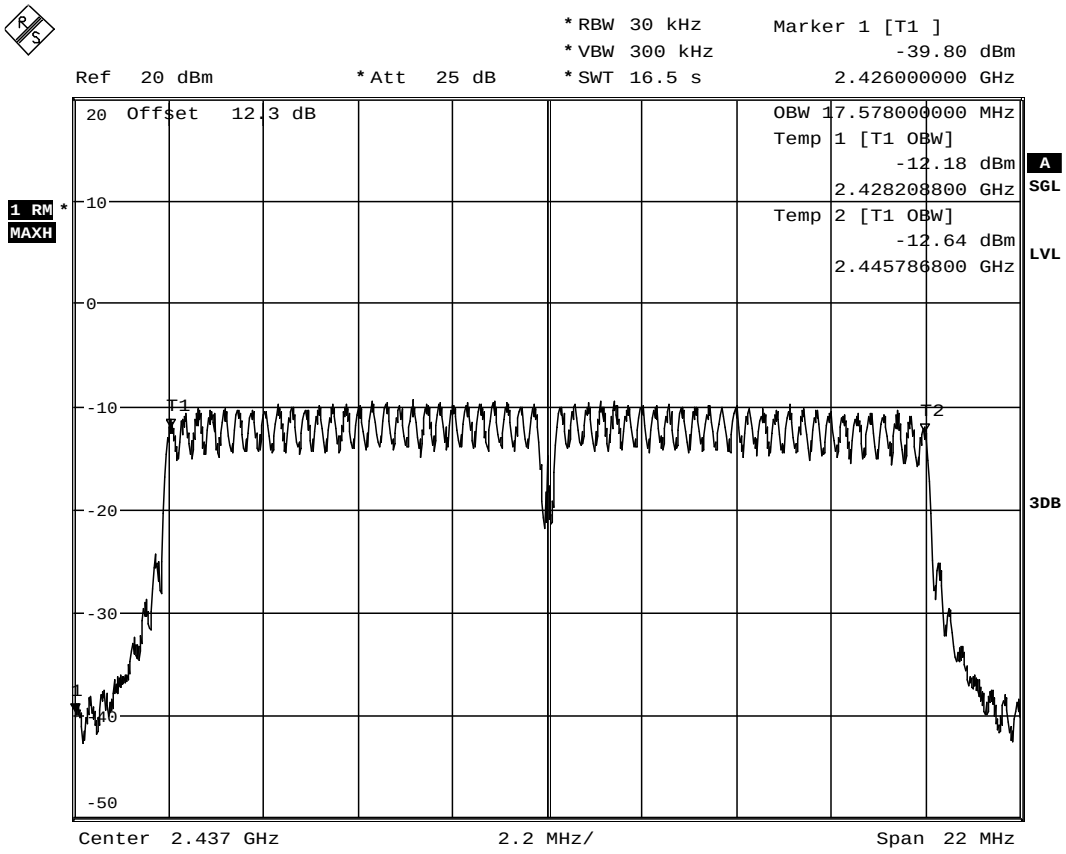

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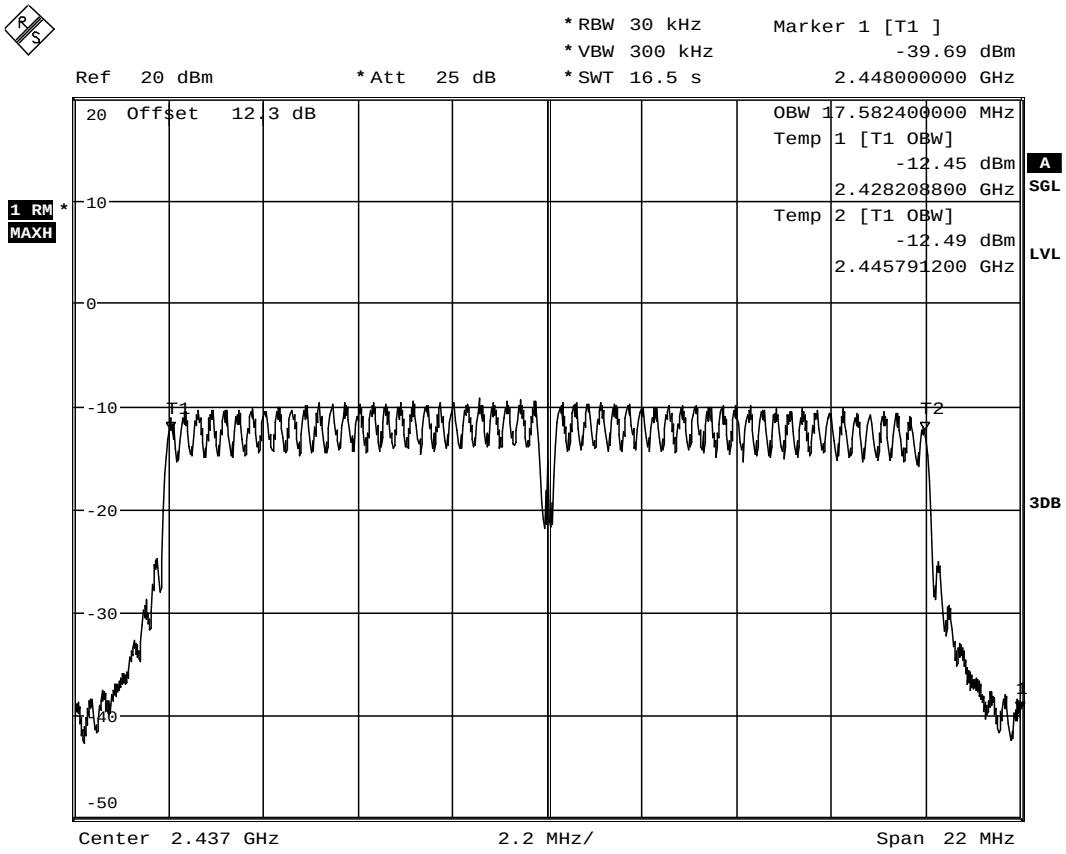

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2.3.3. Channel 11

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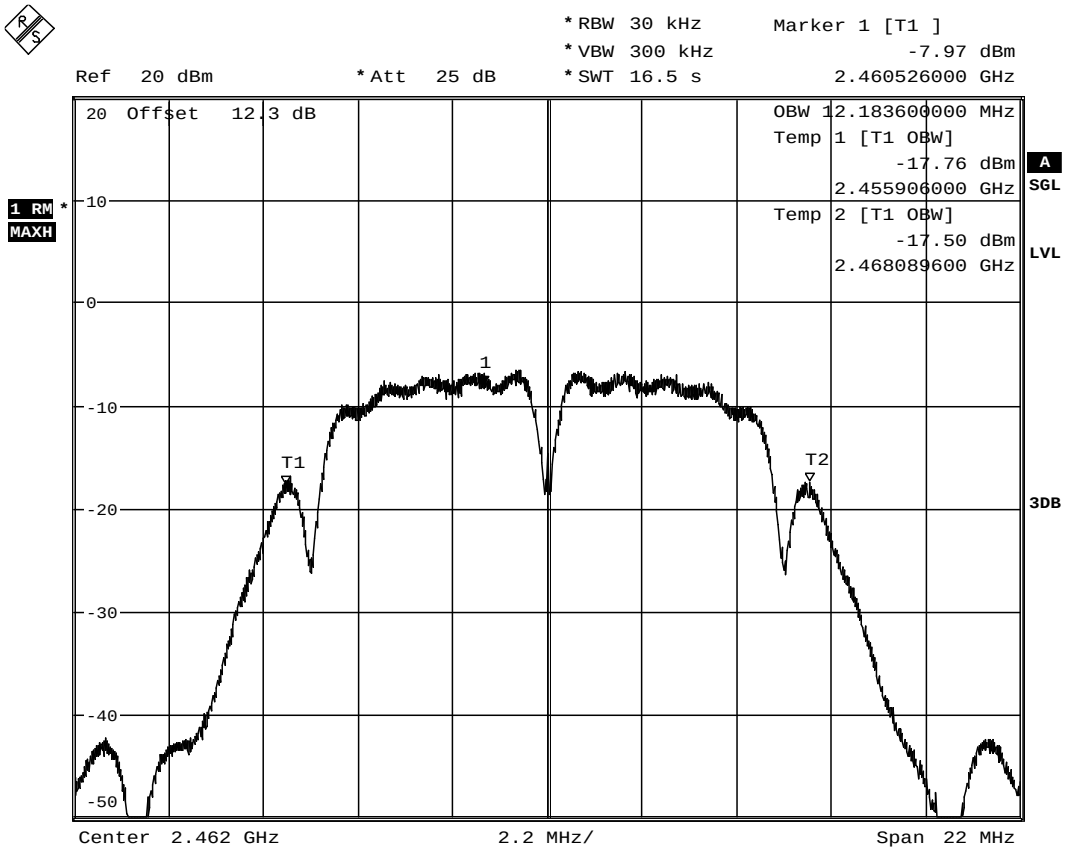

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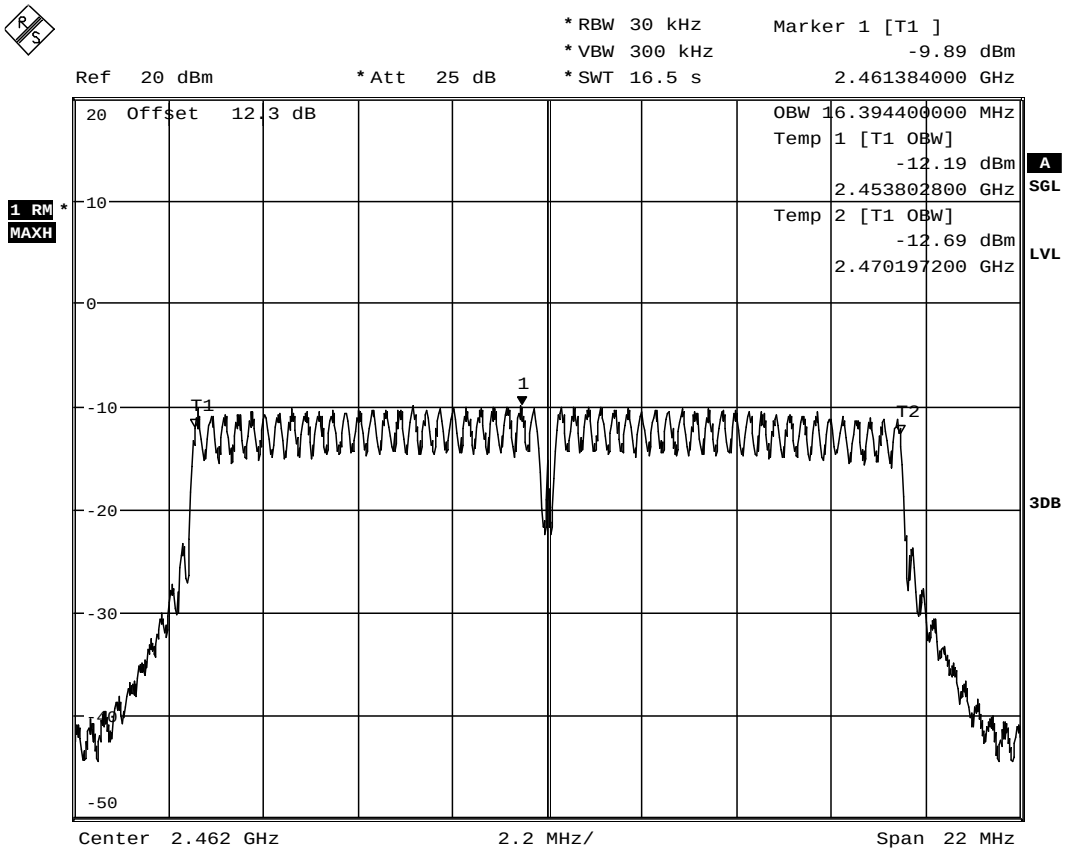

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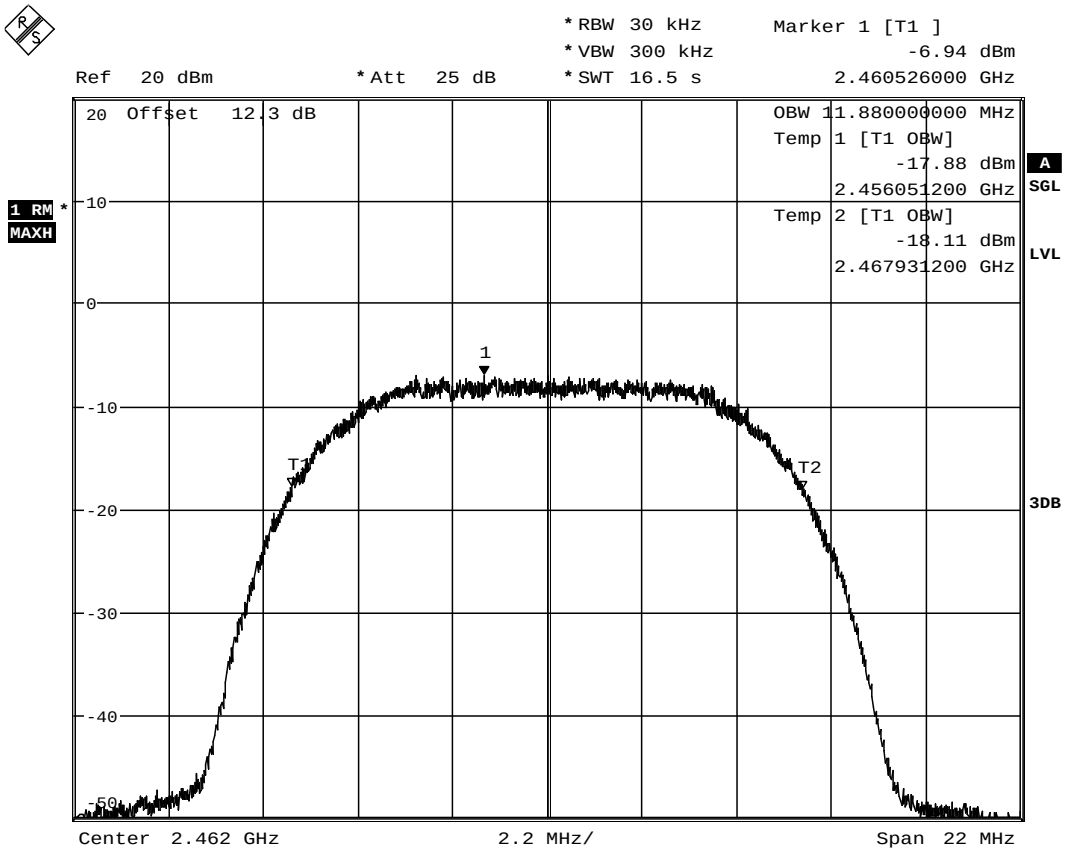

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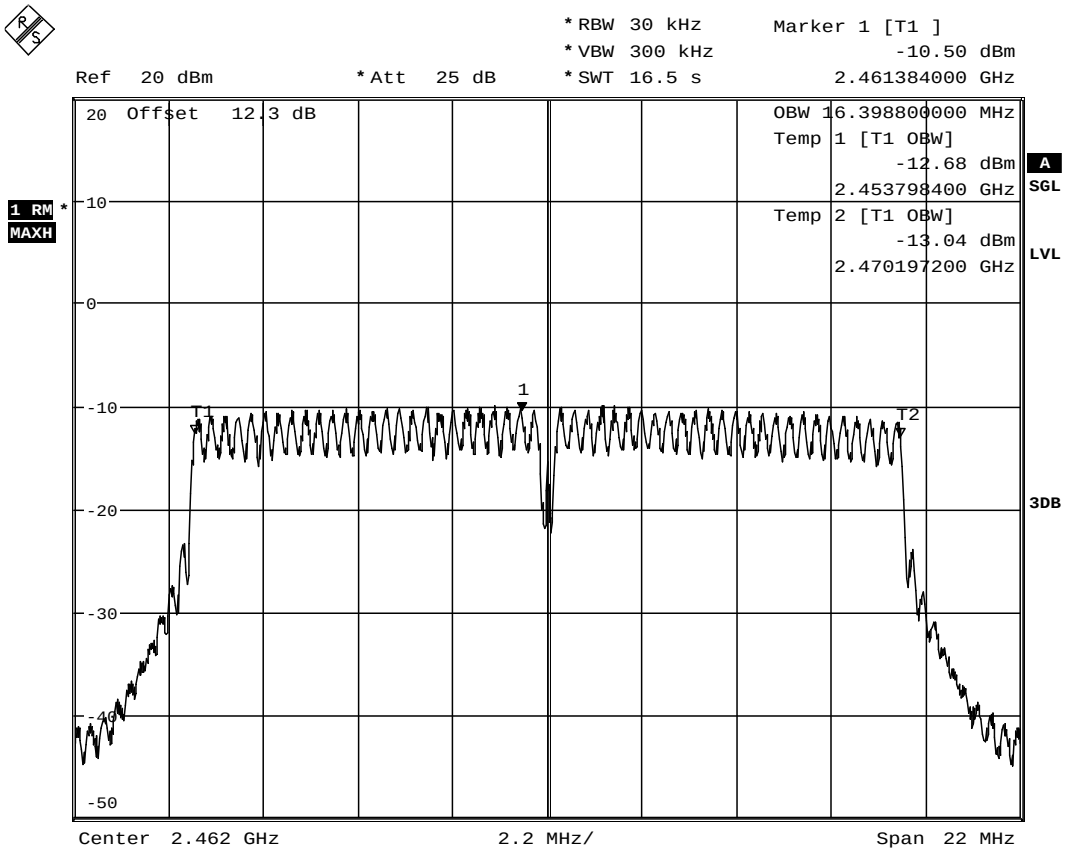

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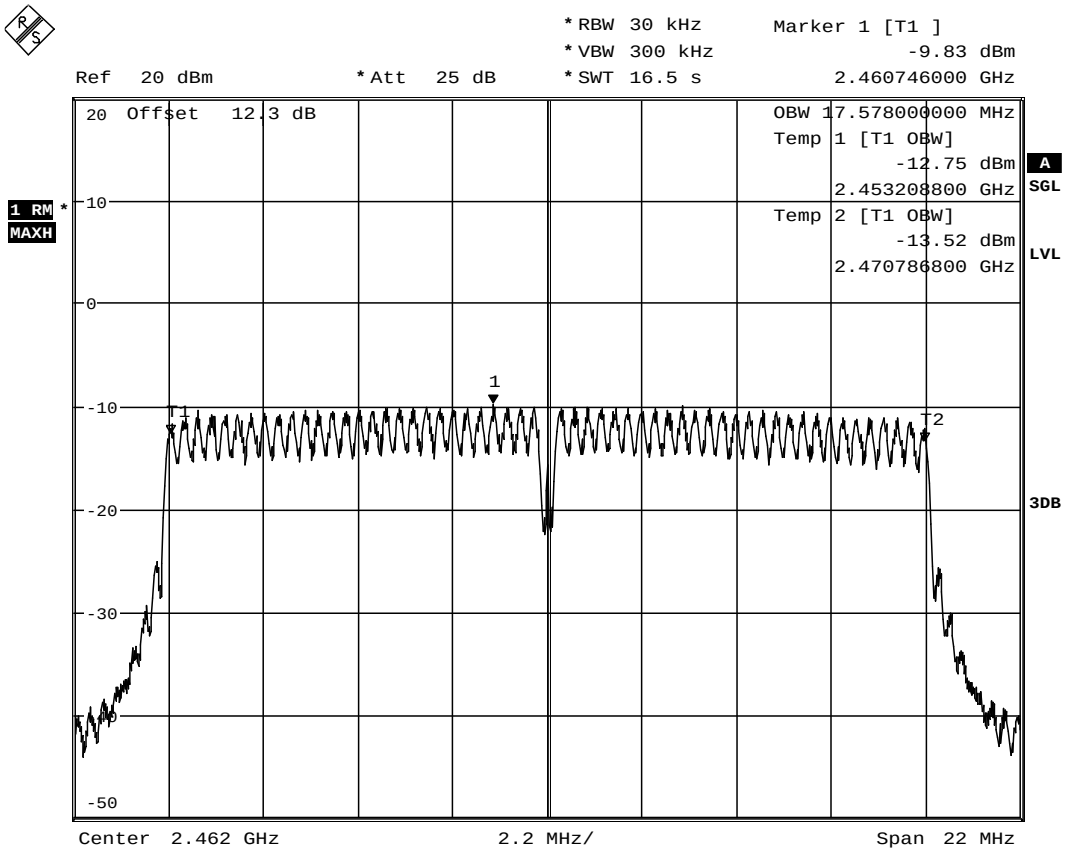

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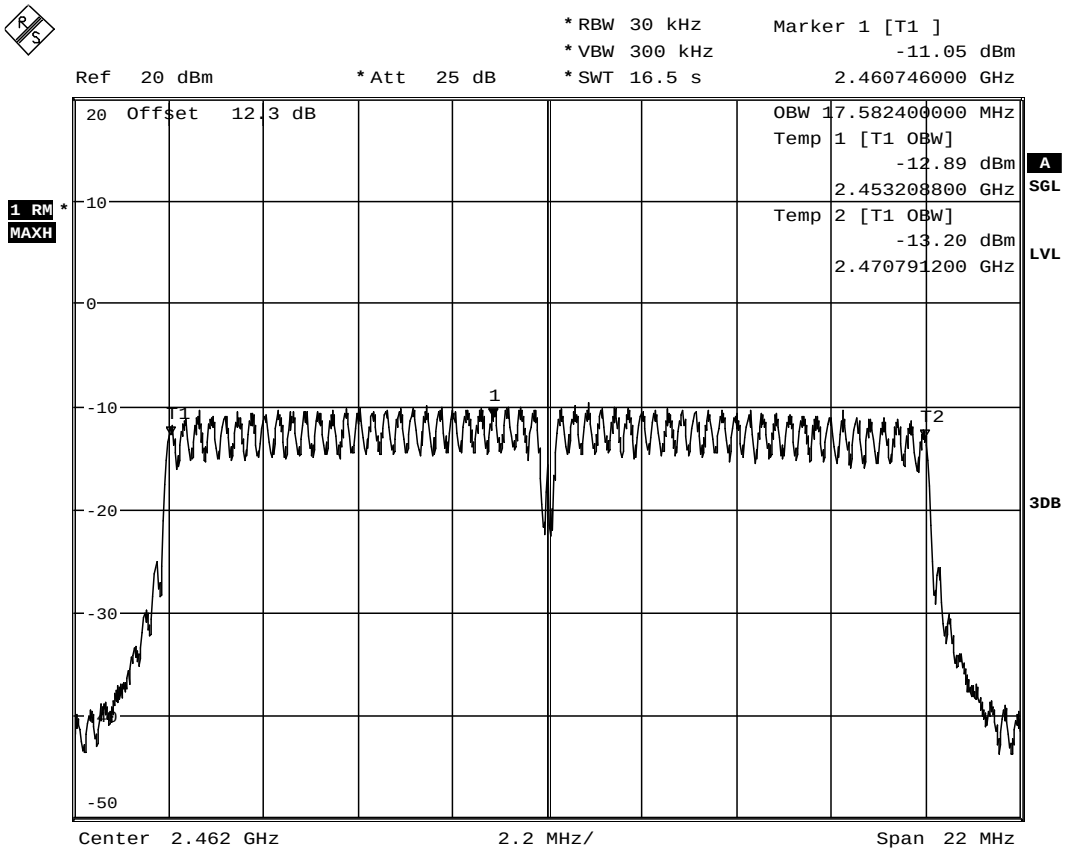

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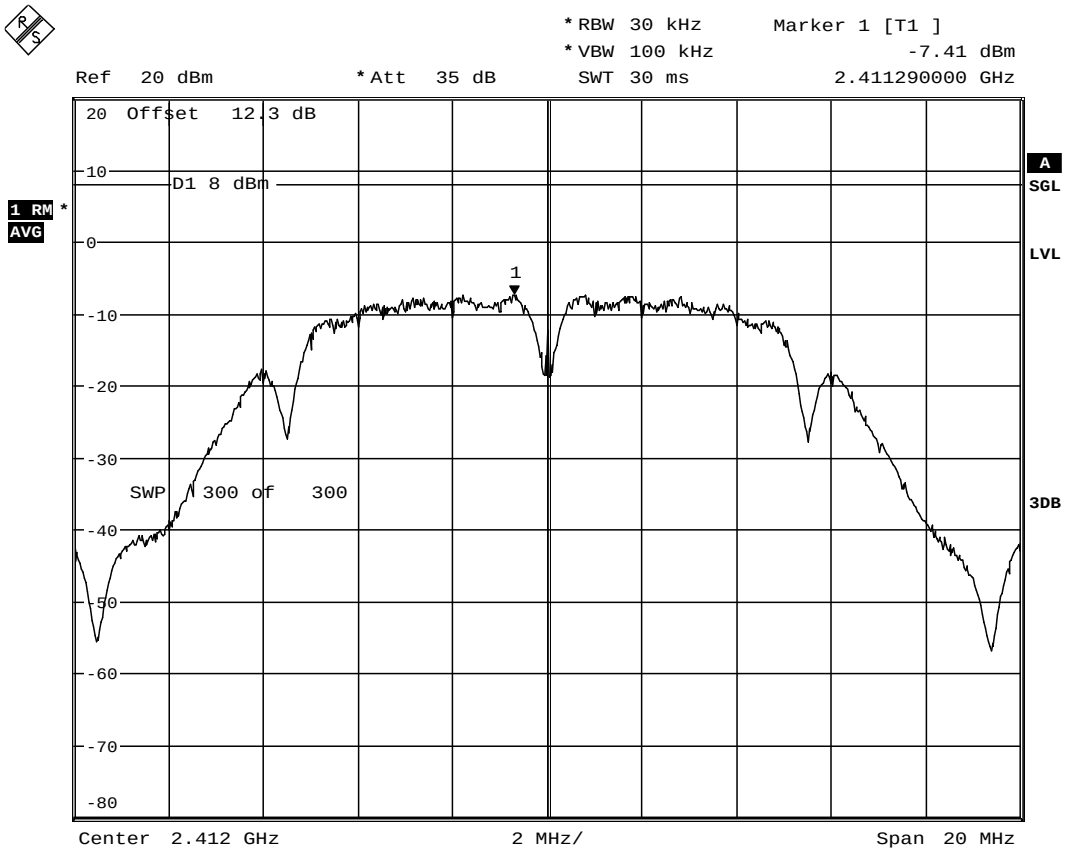
2.4. Power Spectral Density

Method §10.2

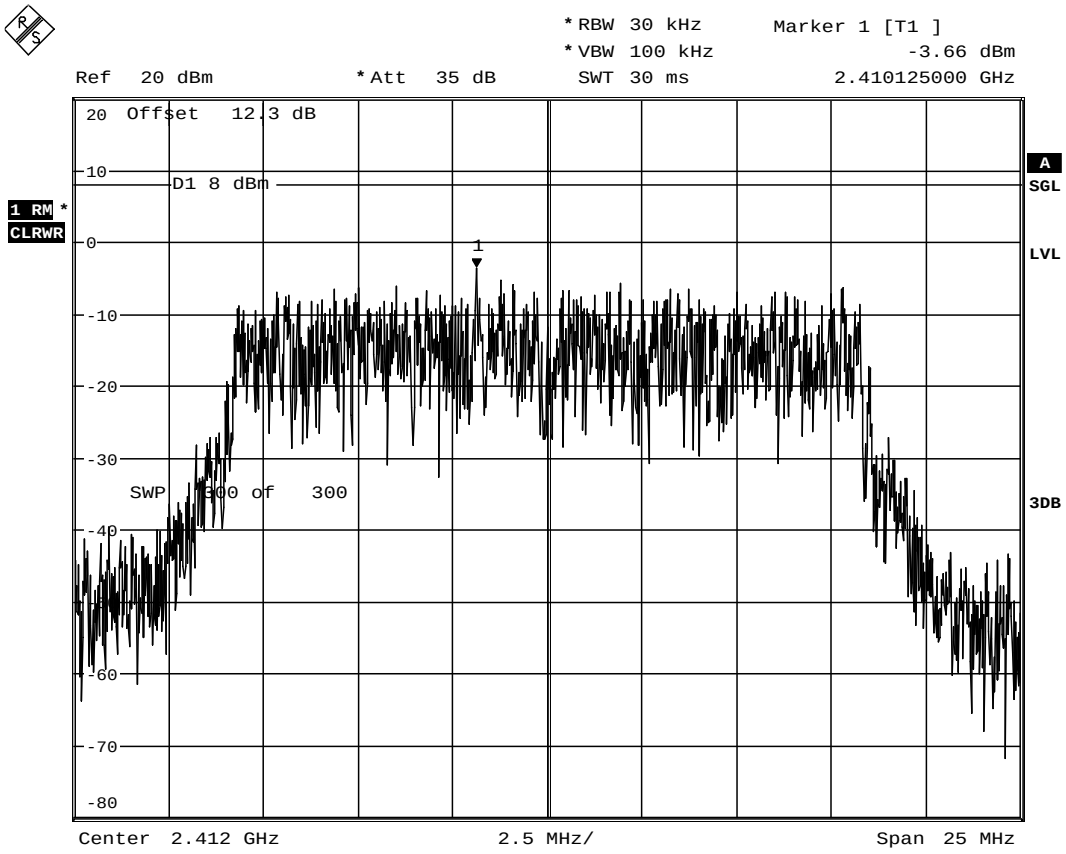
2.4.1. Channel 1

1Mbit



Date: 28.JAN.2015 09:33:26

6Mbit



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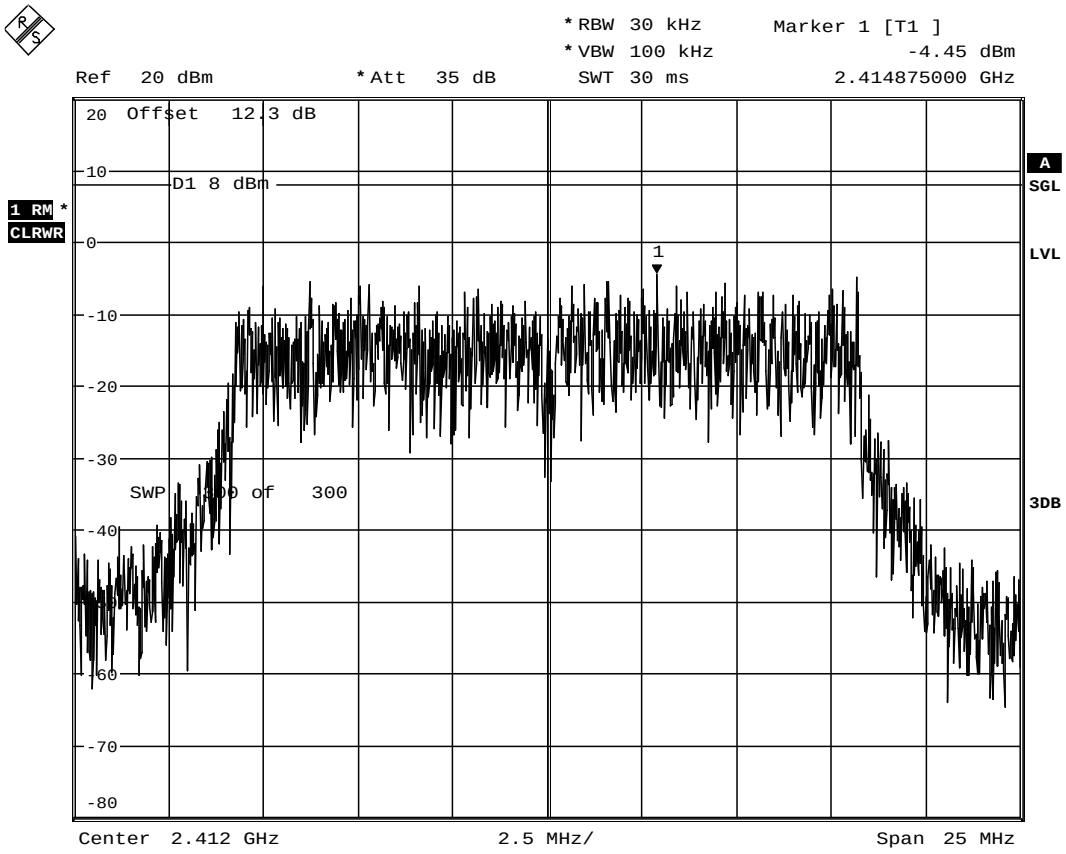
12Mbit



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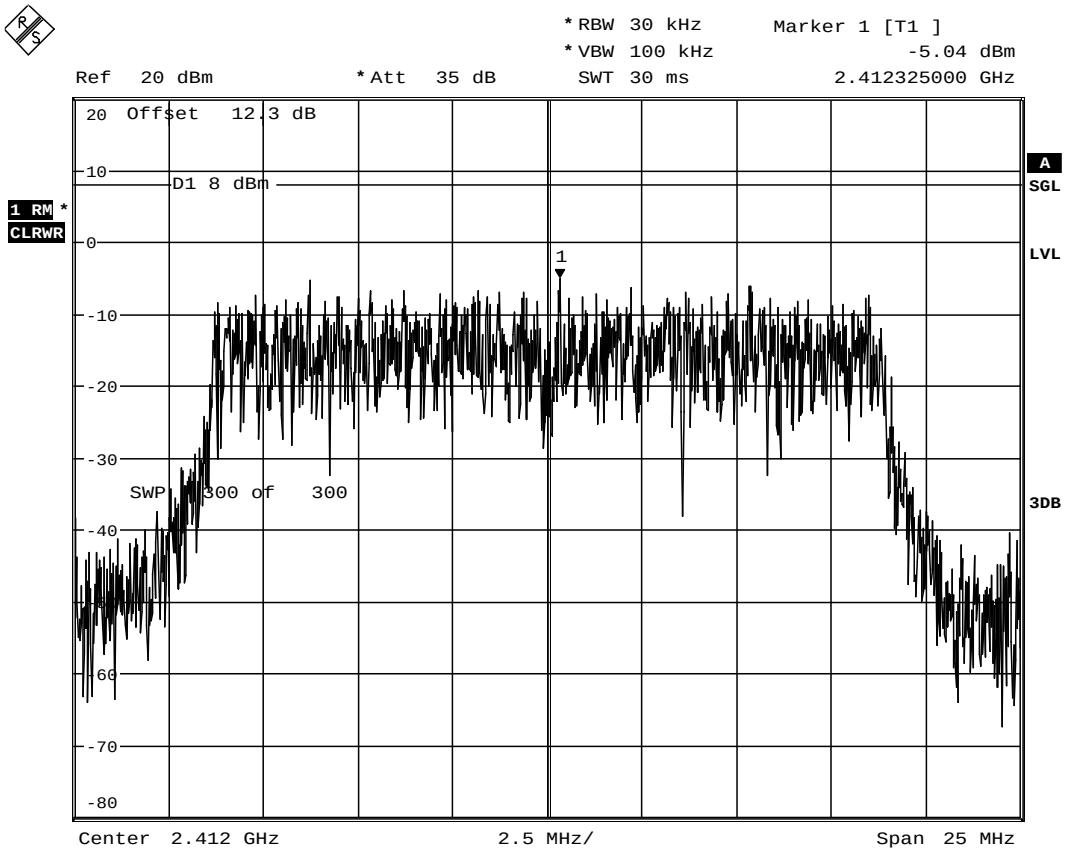

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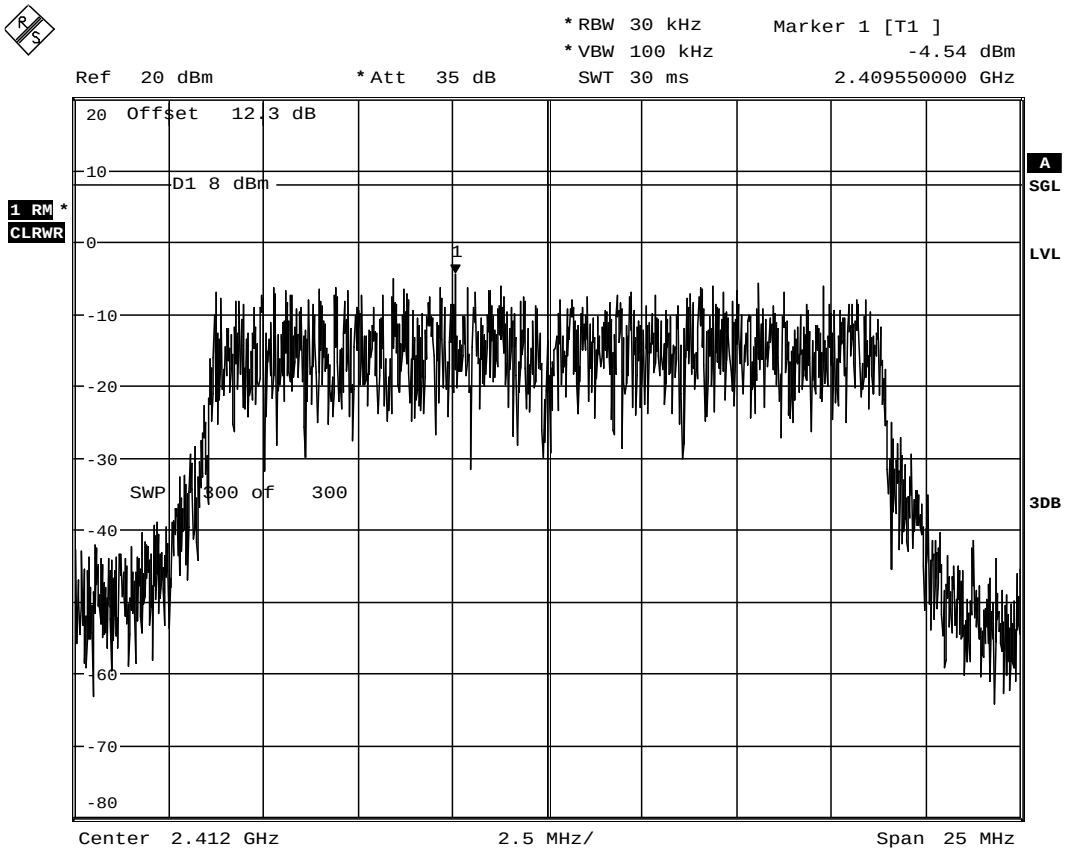
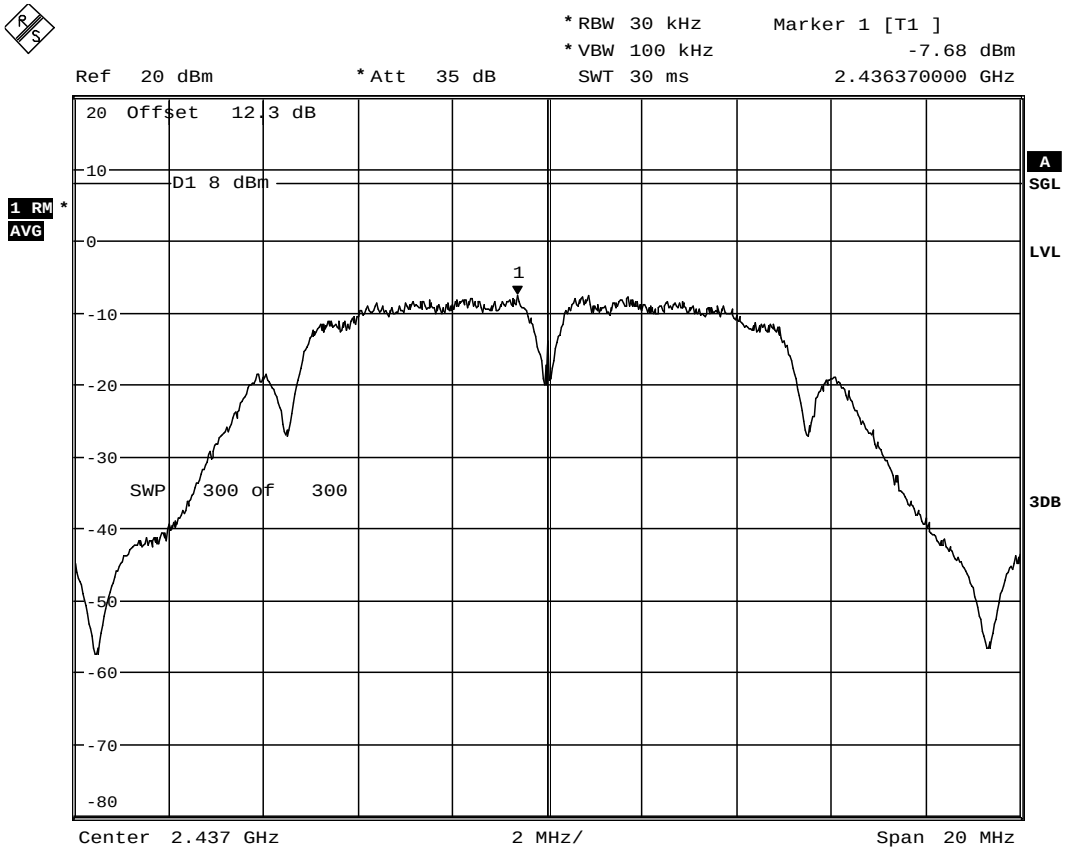


Date: 13.MAR.2015 15:30:35

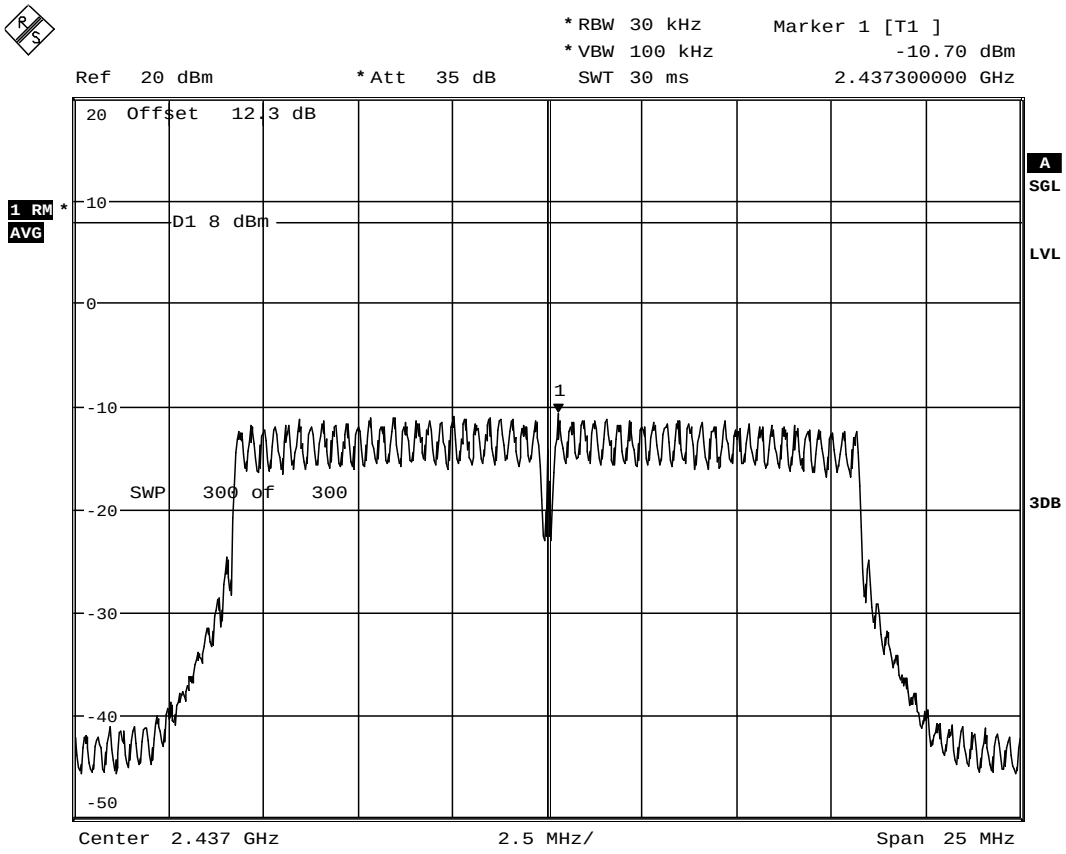
2.4.2. Channel 6

2Mbit



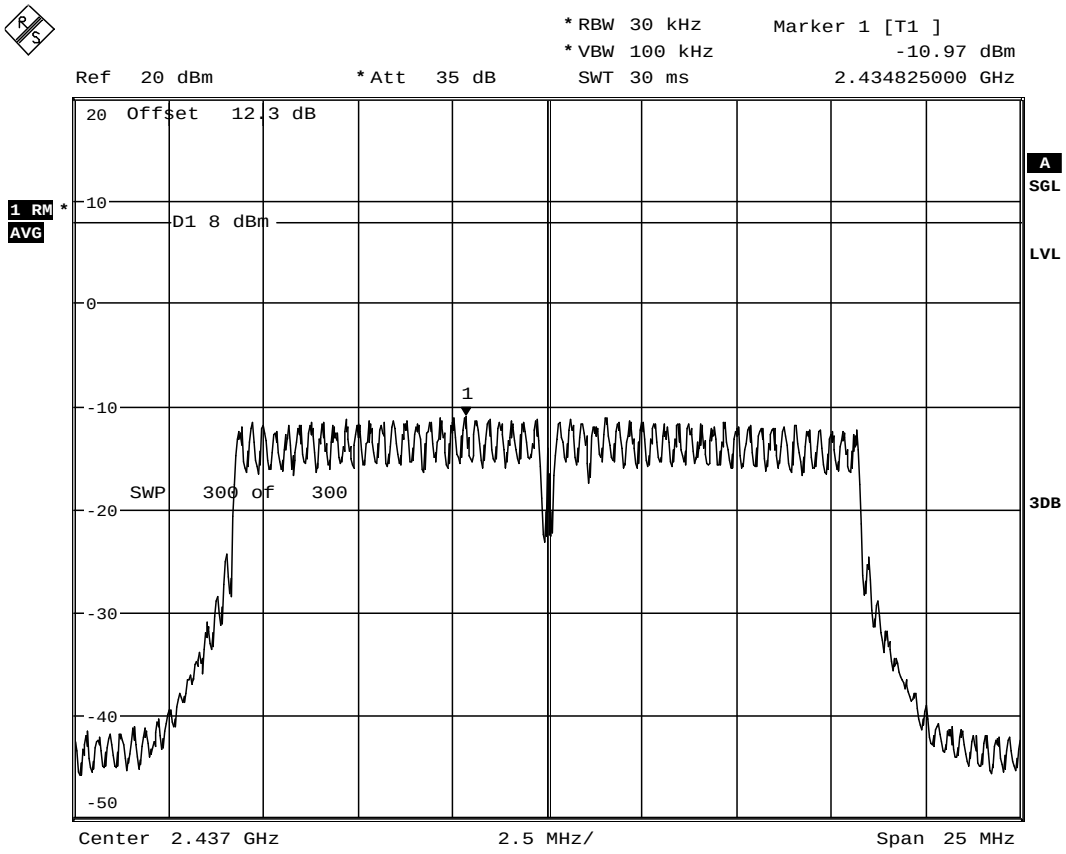
Date: 28.JAN.2015 09:39:38

6Mbit



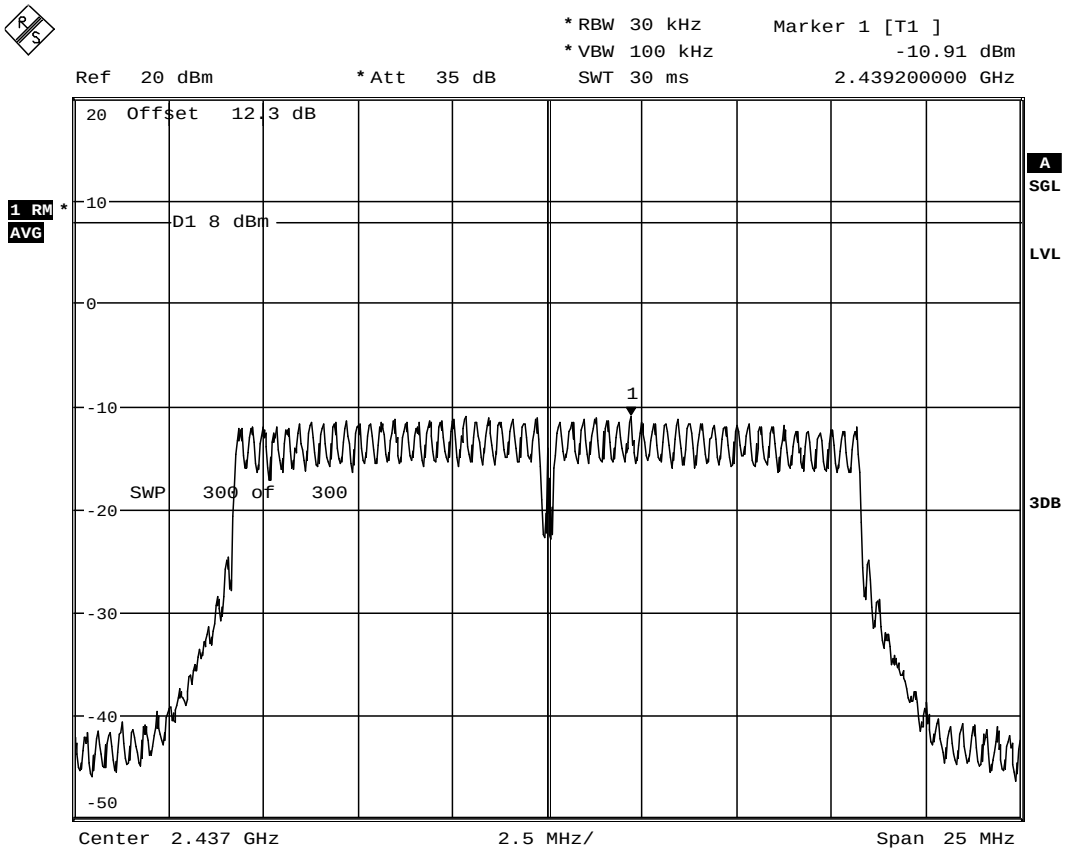
Date: 28.JAN.2015 10:20:46

9Mbit



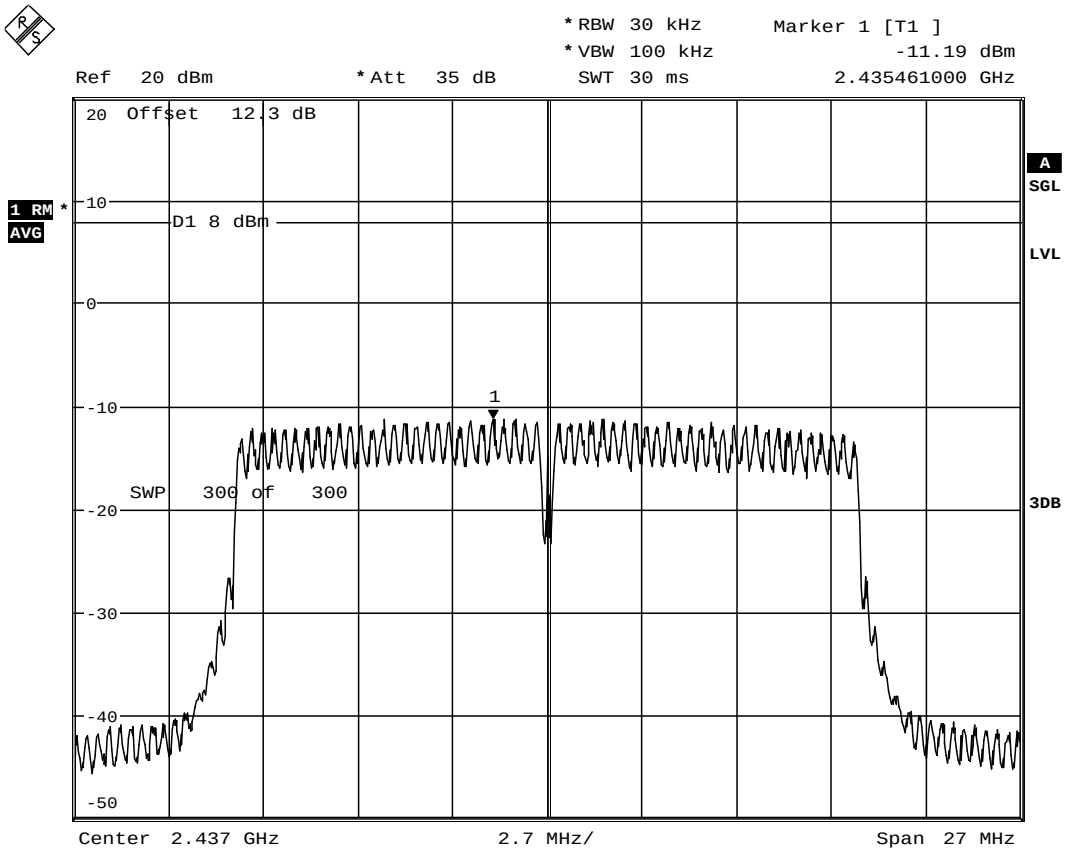
Date: 28.JAN.2015 10:18:10

18Mbit



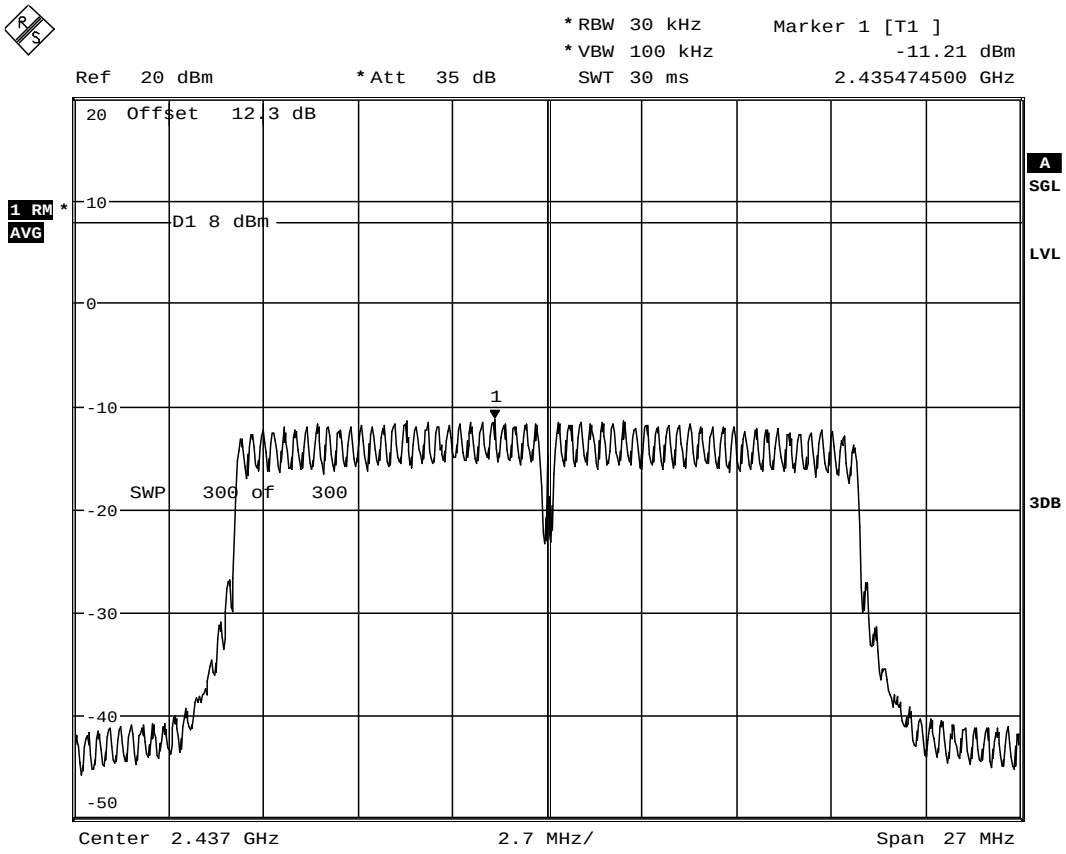
Date: 28.JAN.2015 10:13:58

MCS0



Date: 28.JAN.2015 10:50:14

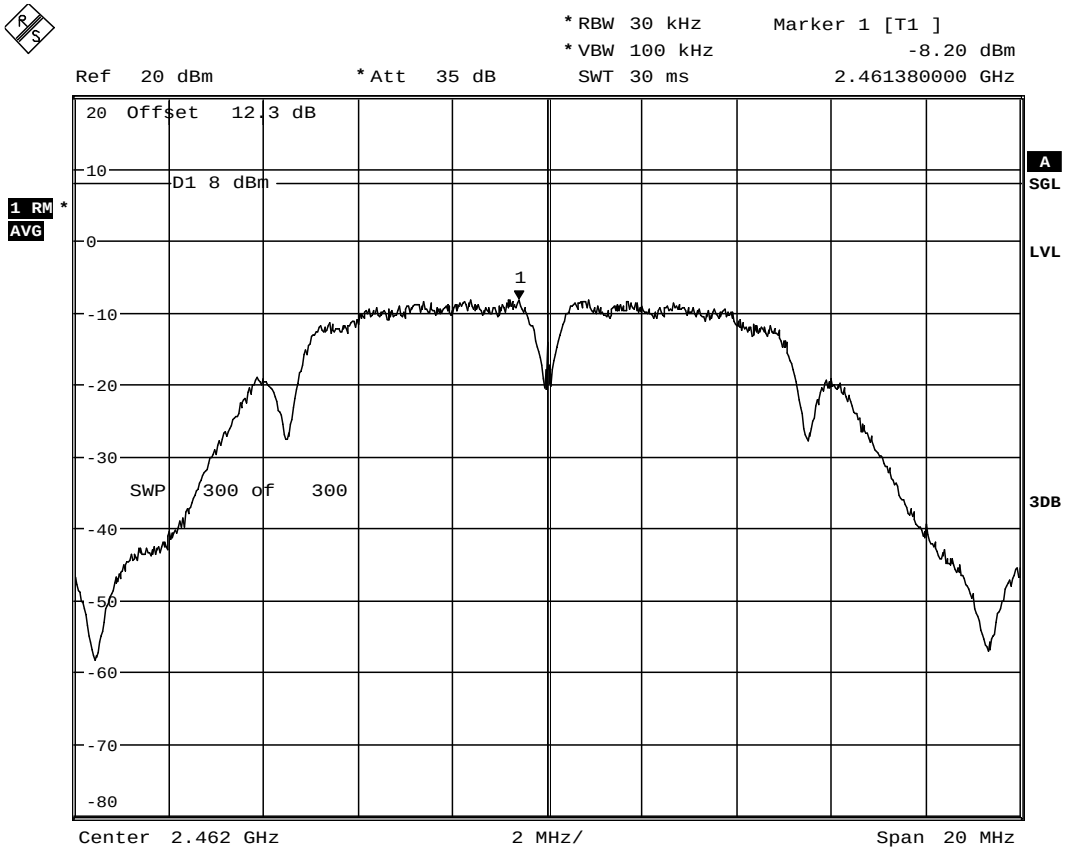
MCS7



Date: 28.JAN.2015 10:45:50

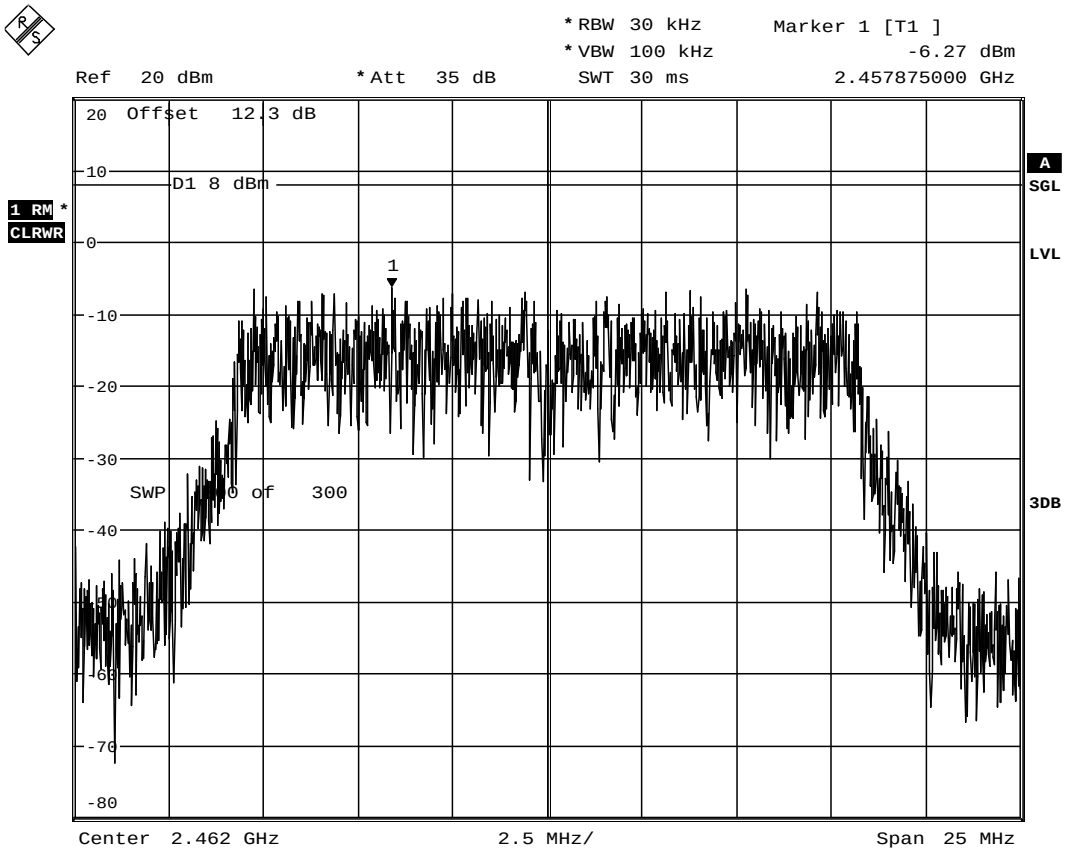
2.4.3. Channel 11

2Mbit



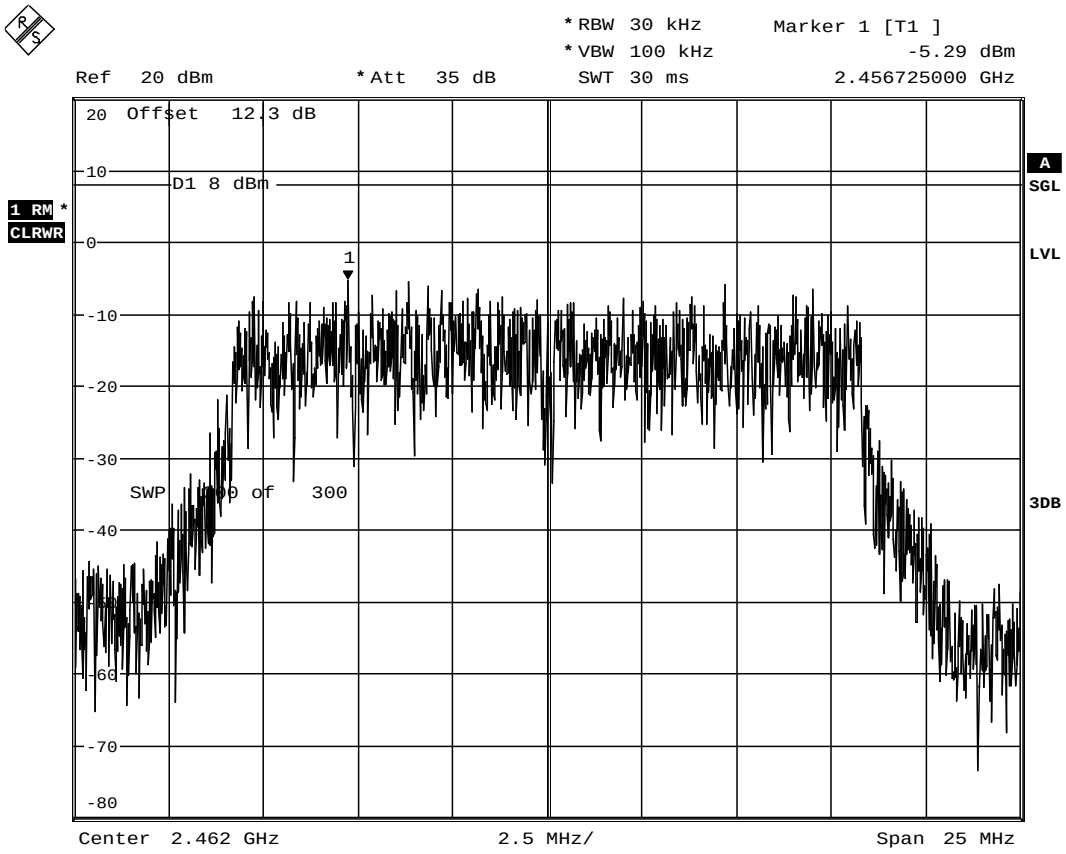
Date: 28.JAN.2015 09:41:47

6Mbit



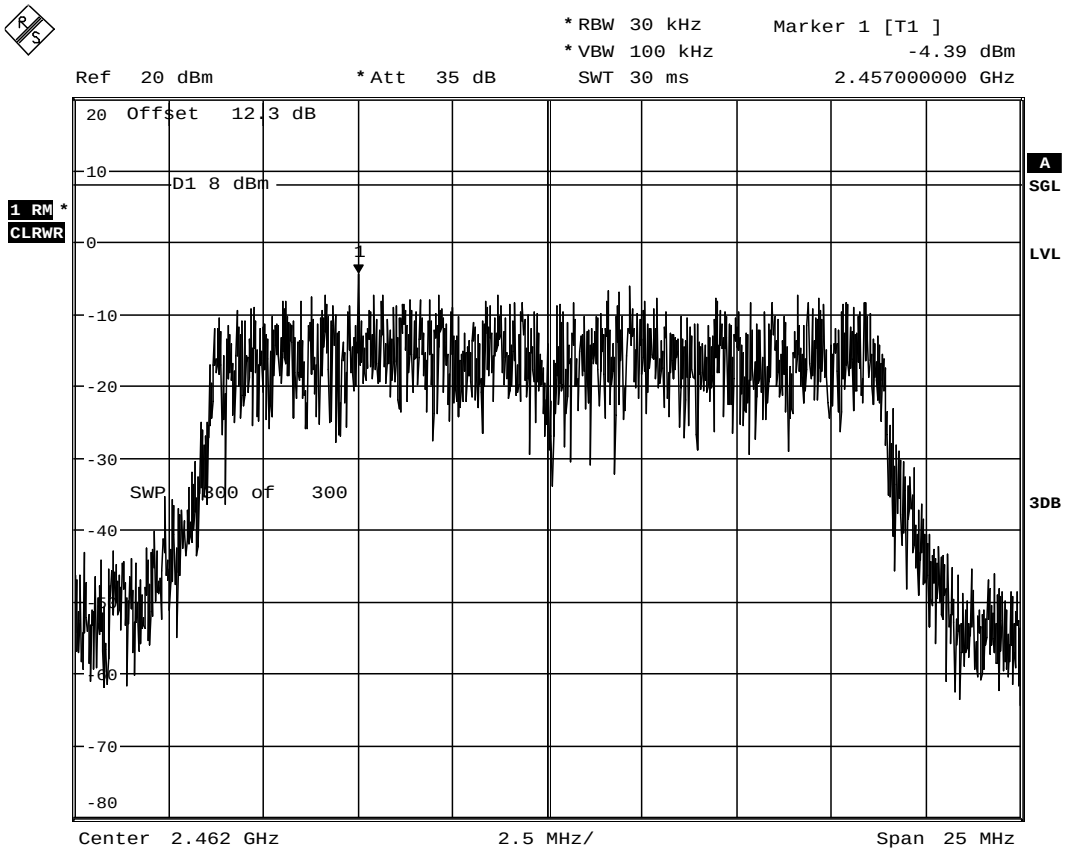
Date: 13.MAR.2015 15:37:17

54Mbit



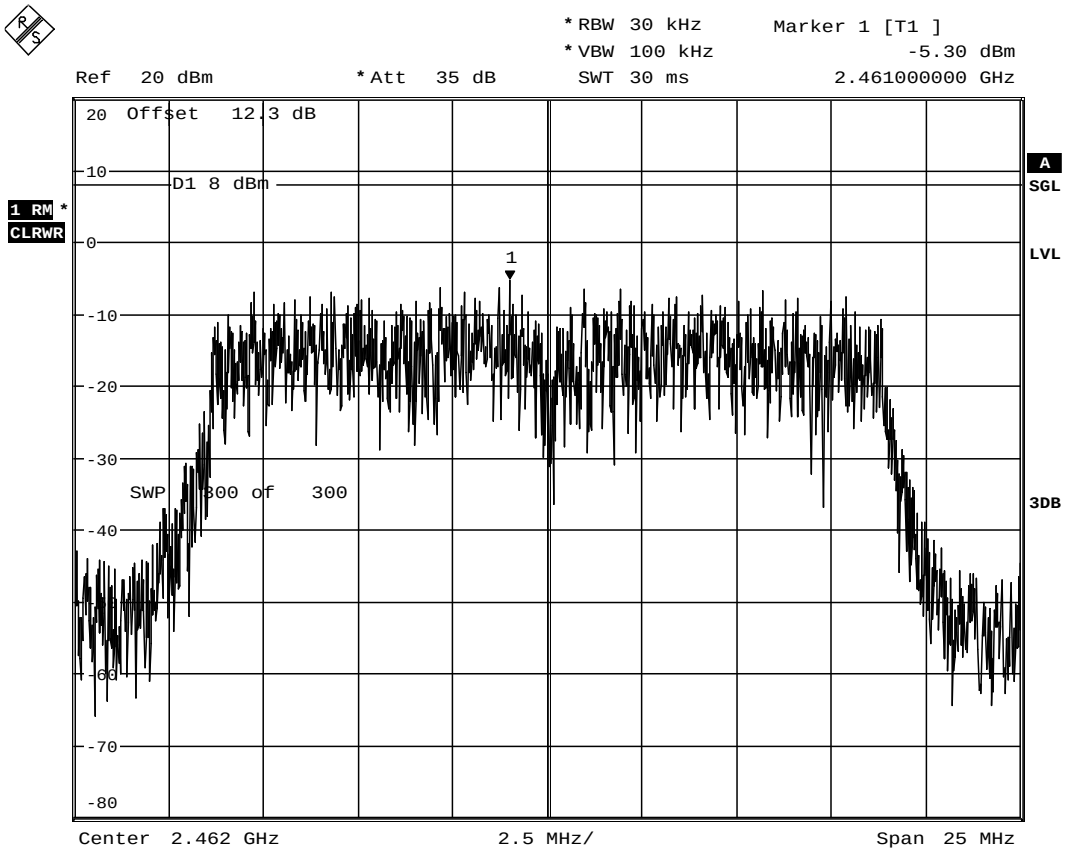
Date: 13.MAR.2015 15:35:51

MCS0



Date: 13.MAR.2015 15:33:54

MCS6

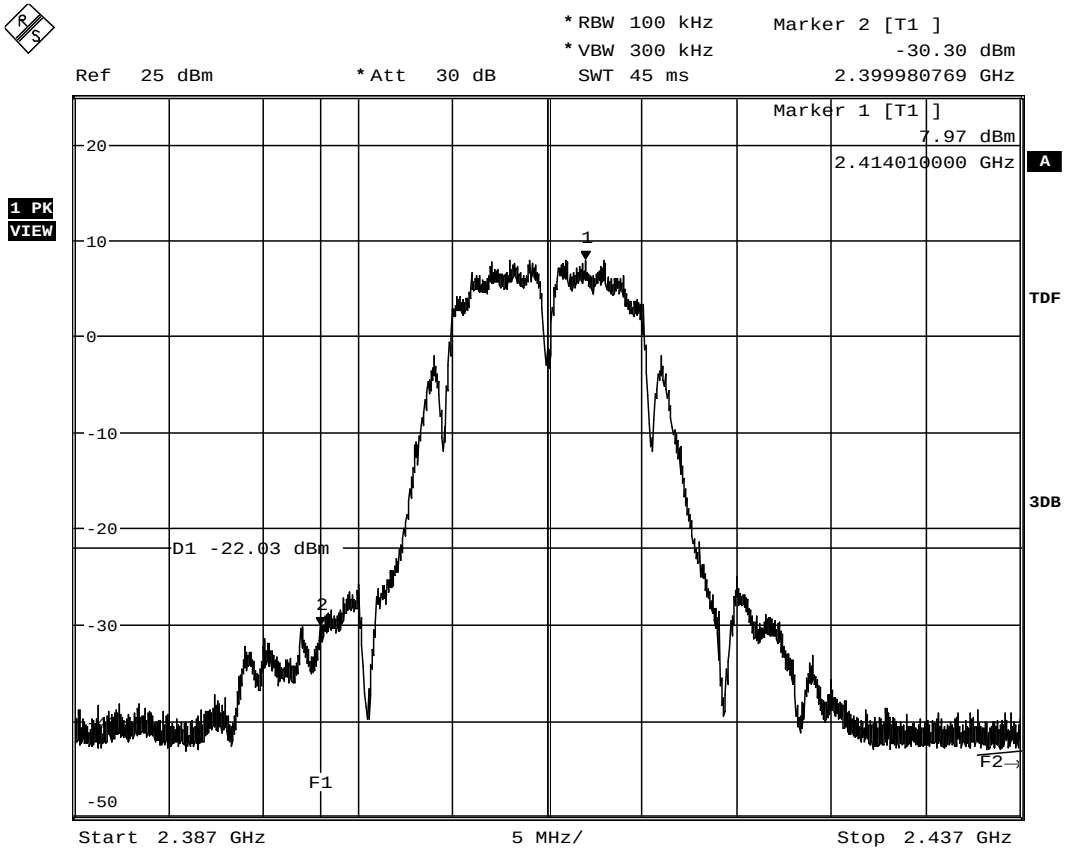


Date: 13.MAR.2015 15:32:41

2.5. 20dBc Emissions

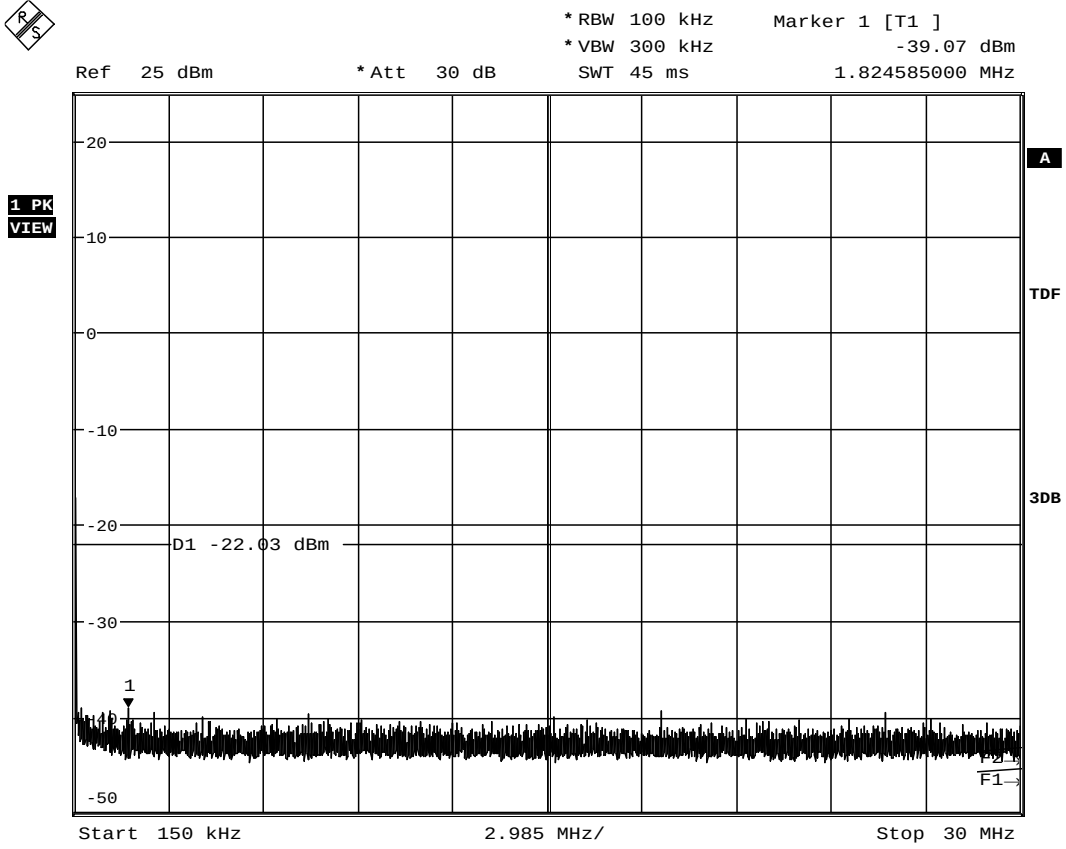
2.5.1. Channel 1, b-mode, 5.5Mbit

2.5.1.1. Channel 1 Reference



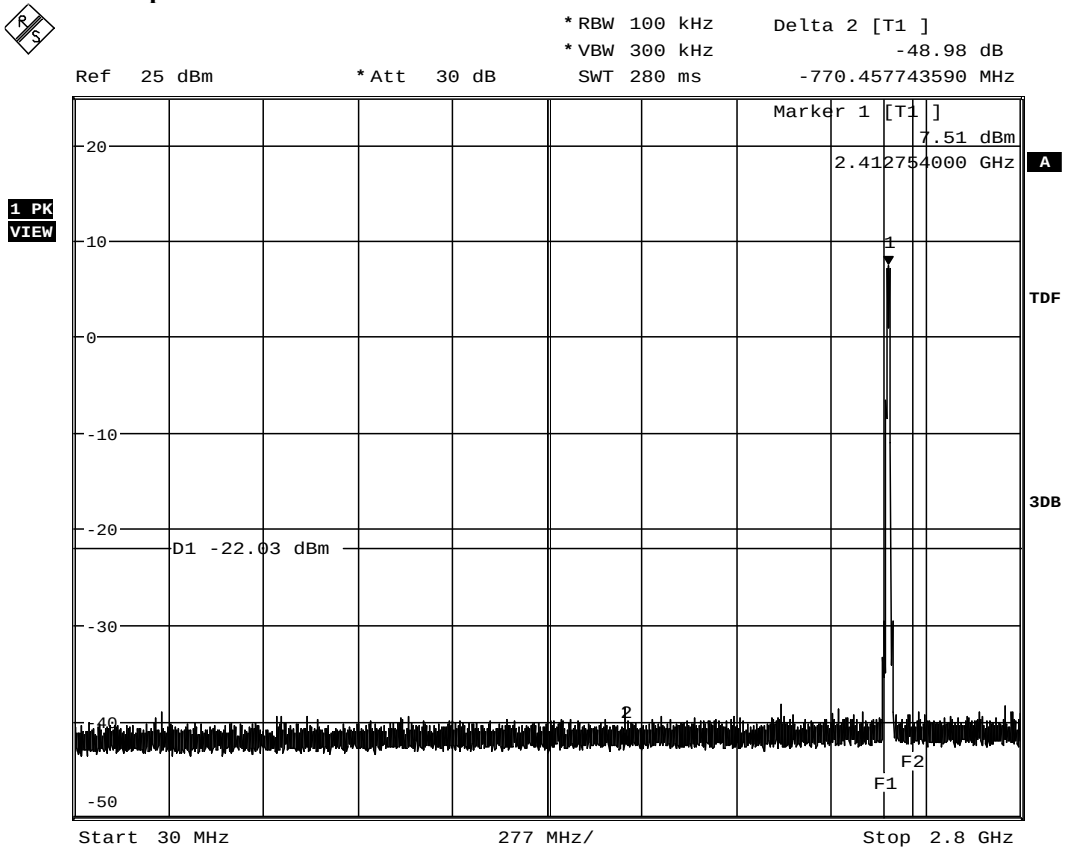
Date: 28.JAN.2015 13:33:21

2.5.1.2. Sweep 1: 150kHz to 30MHz



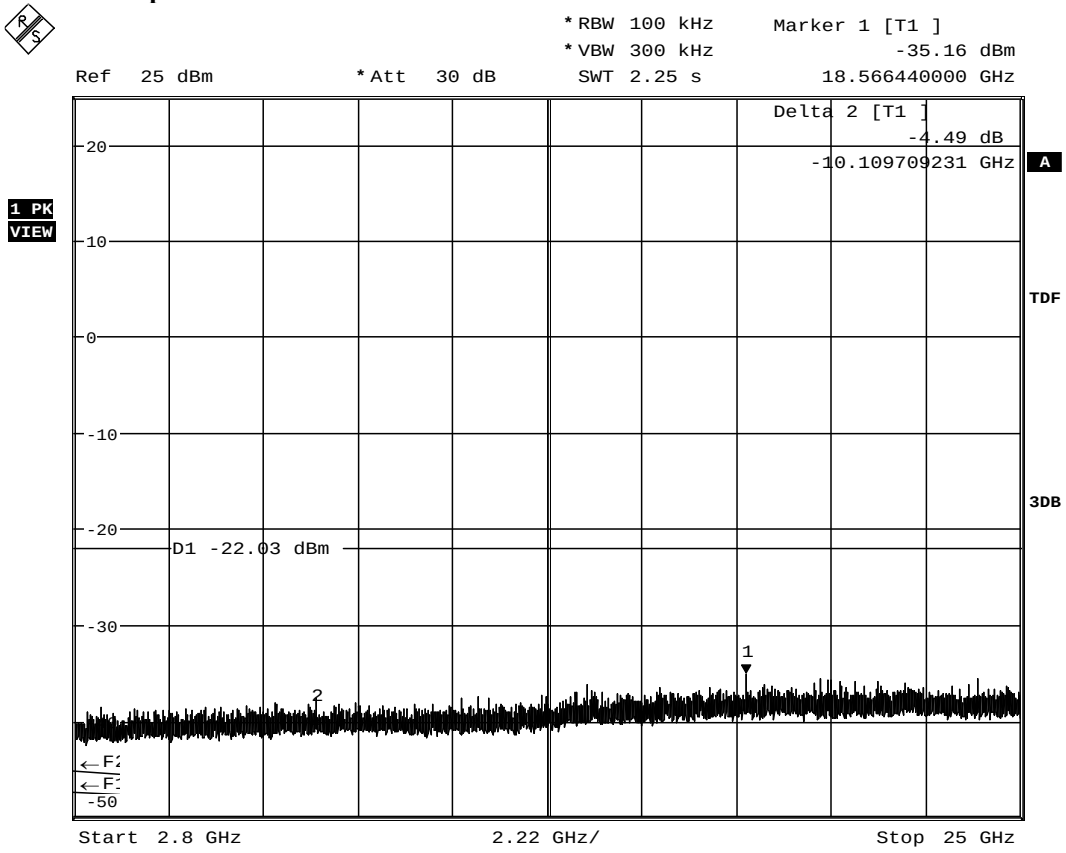
Date: 28.JAN.2015 13:36:36

2.5.1.3. Sweep 2: 30MHz to 2.8GHz



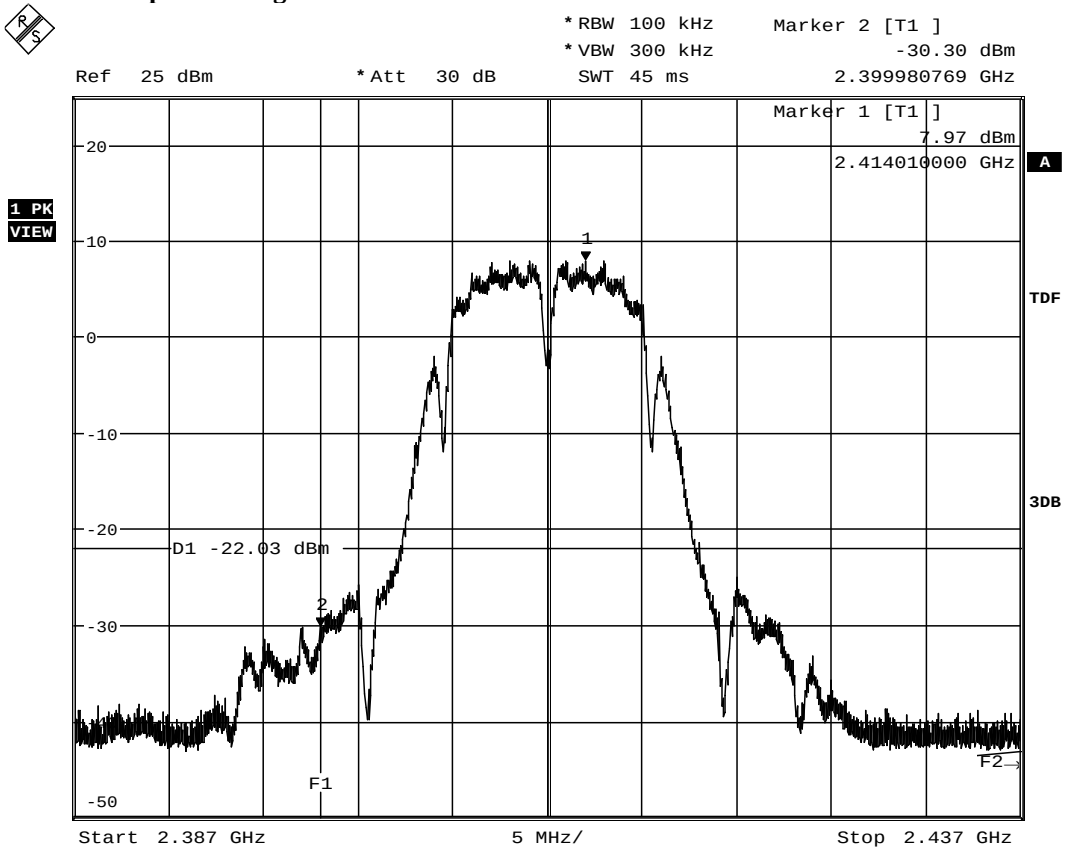
Date: 28.JAN.2015 13:40:46

2.5.1.4. Sweep 2: 2.8GHz to 25GHz



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

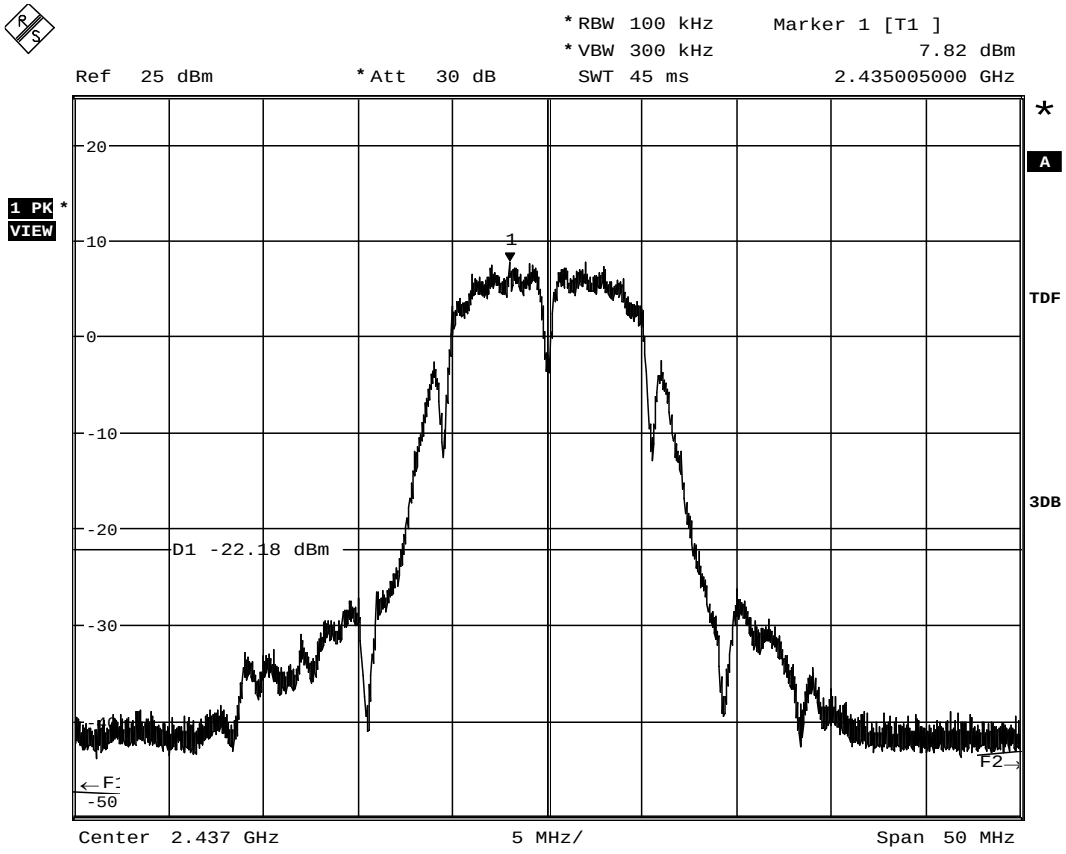
2.5.1.5. Sweep Band-Edge left at 2.4GHz



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

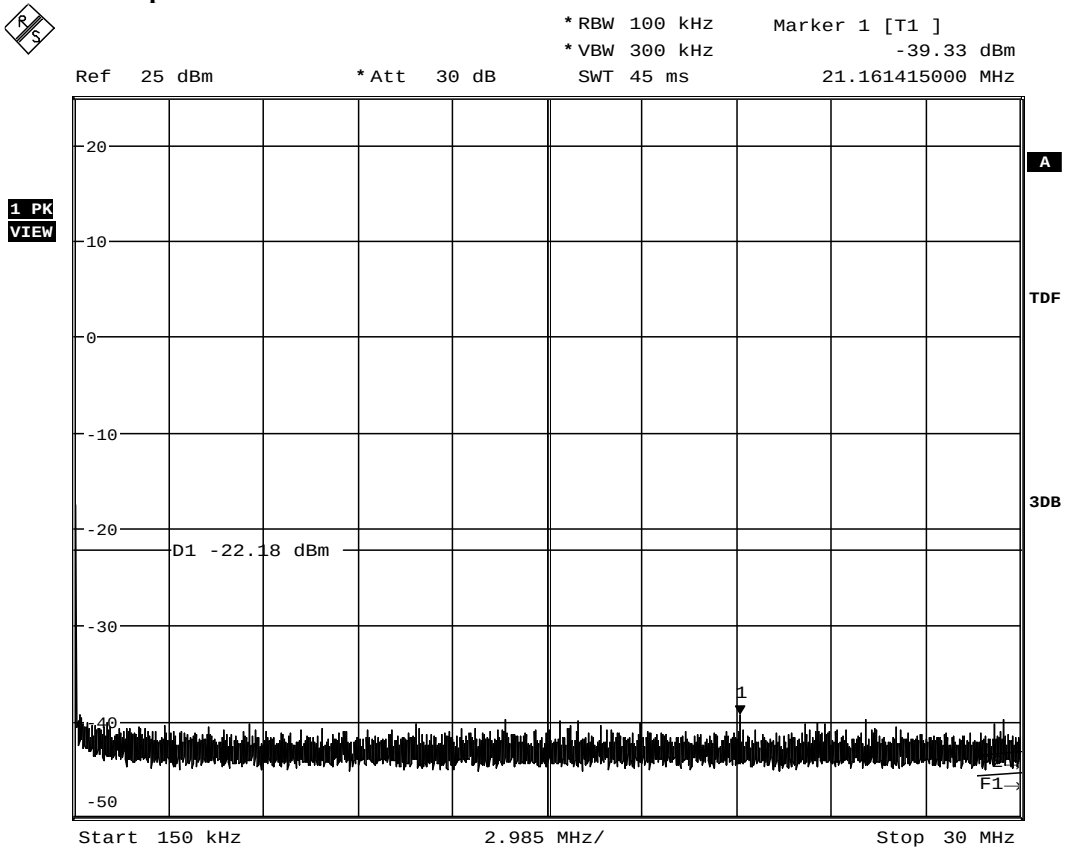
2.5.2. Channel 6, b-mode, 2Mbit

2.5.2.1. Channel 6 Reference



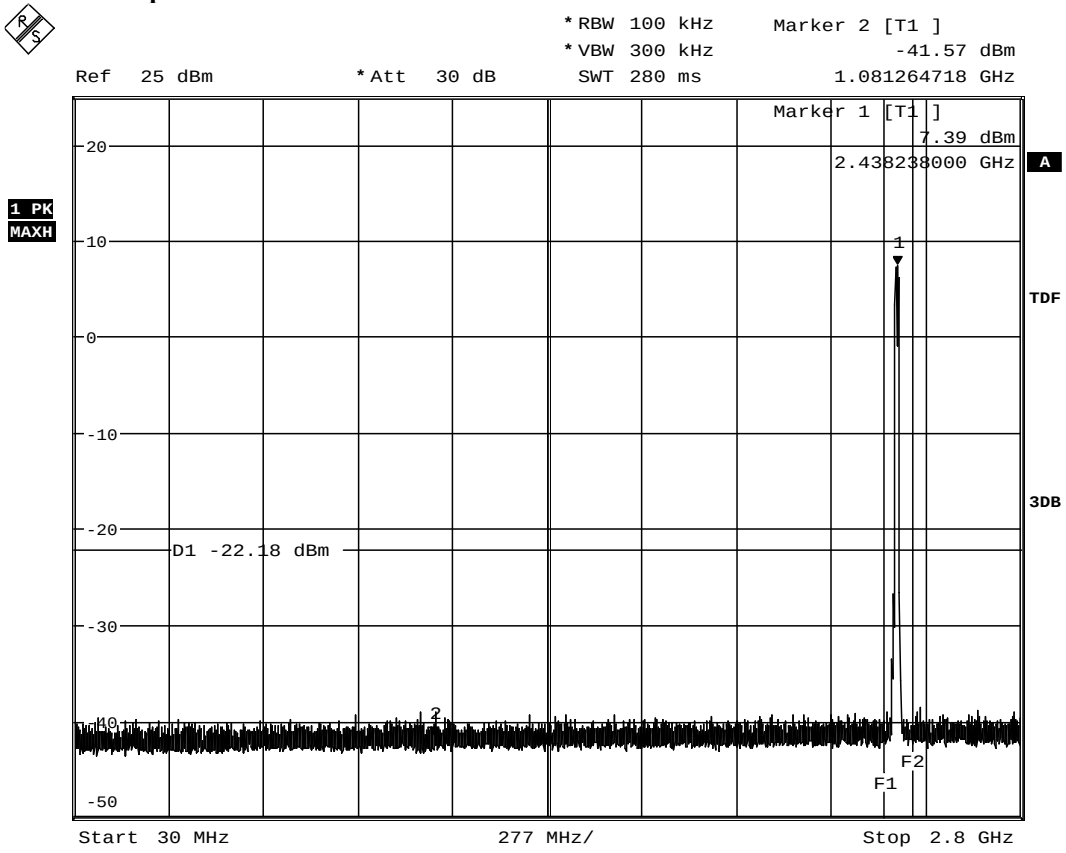
Date: 28.JAN.2015 13:16:40

2.5.2.2. Sweep 1: 150kHz to 30MHz



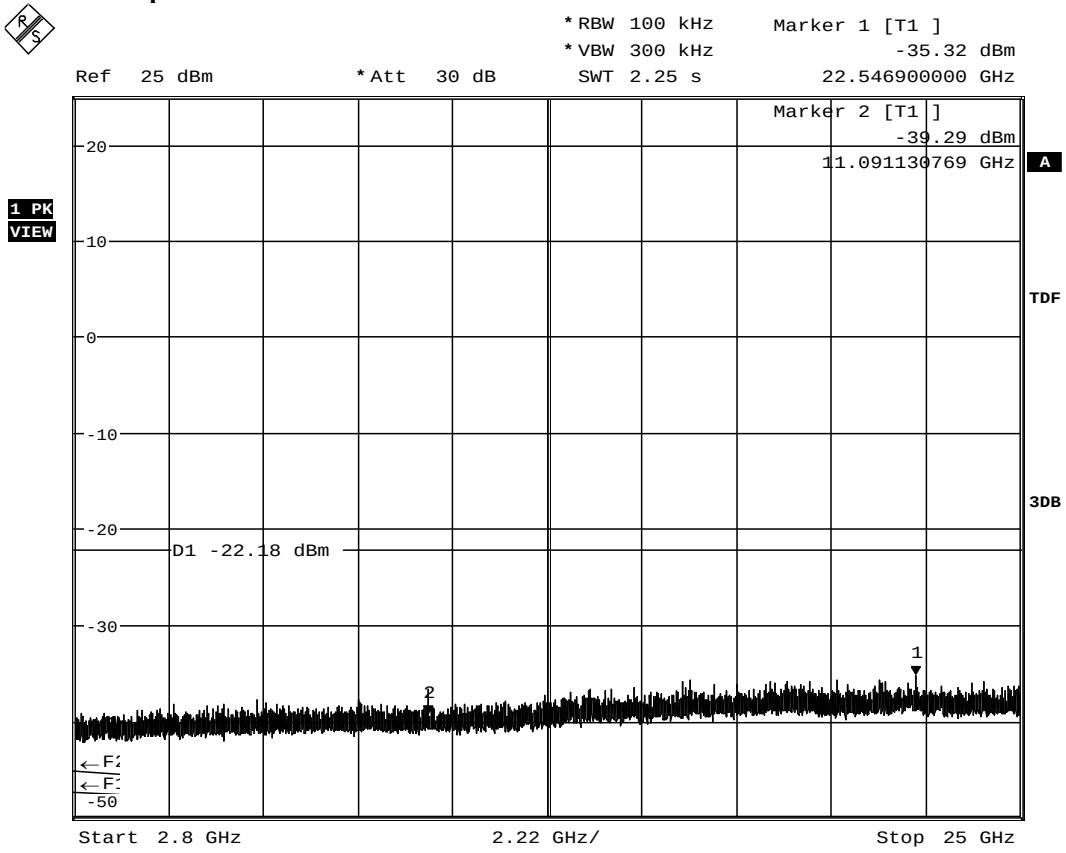
Date: 28.JAN.2015 13:18:39

2.5.2.3. Sweep 2: 30MGHz to 2.8GHz



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

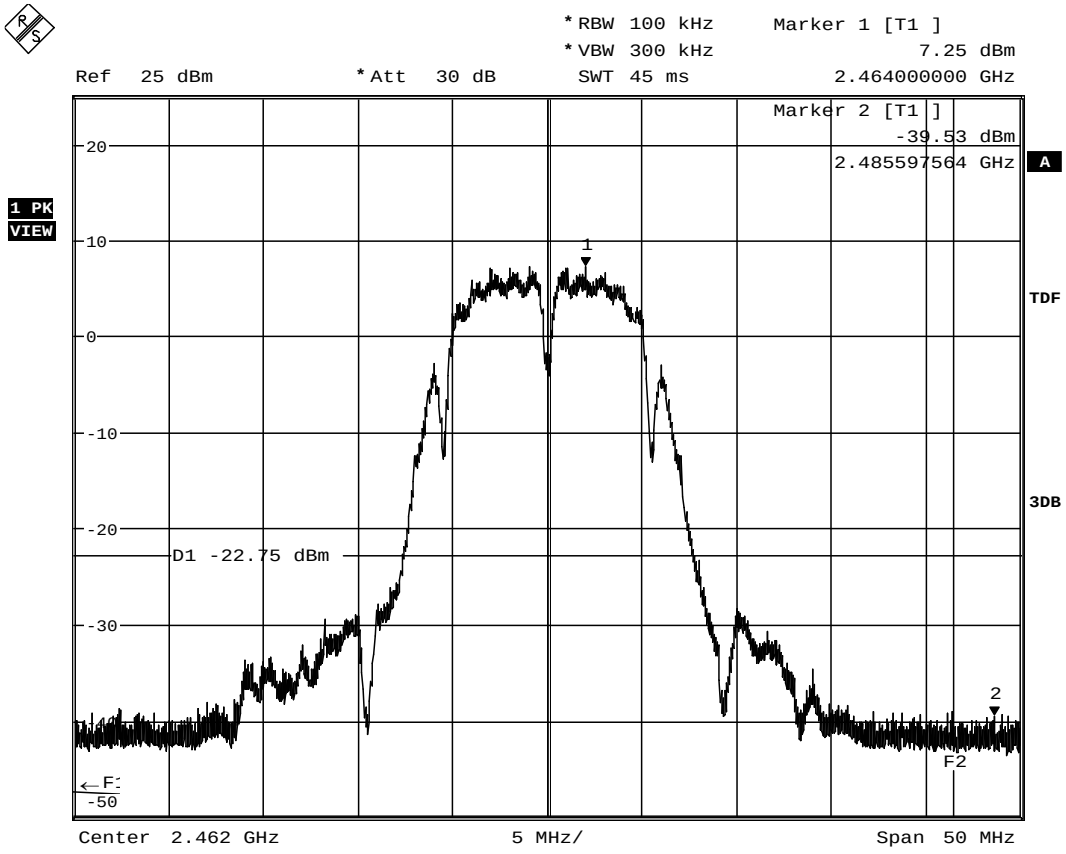
2.5.2.4. Sweep 3: 2.8GHz to 25GHz



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

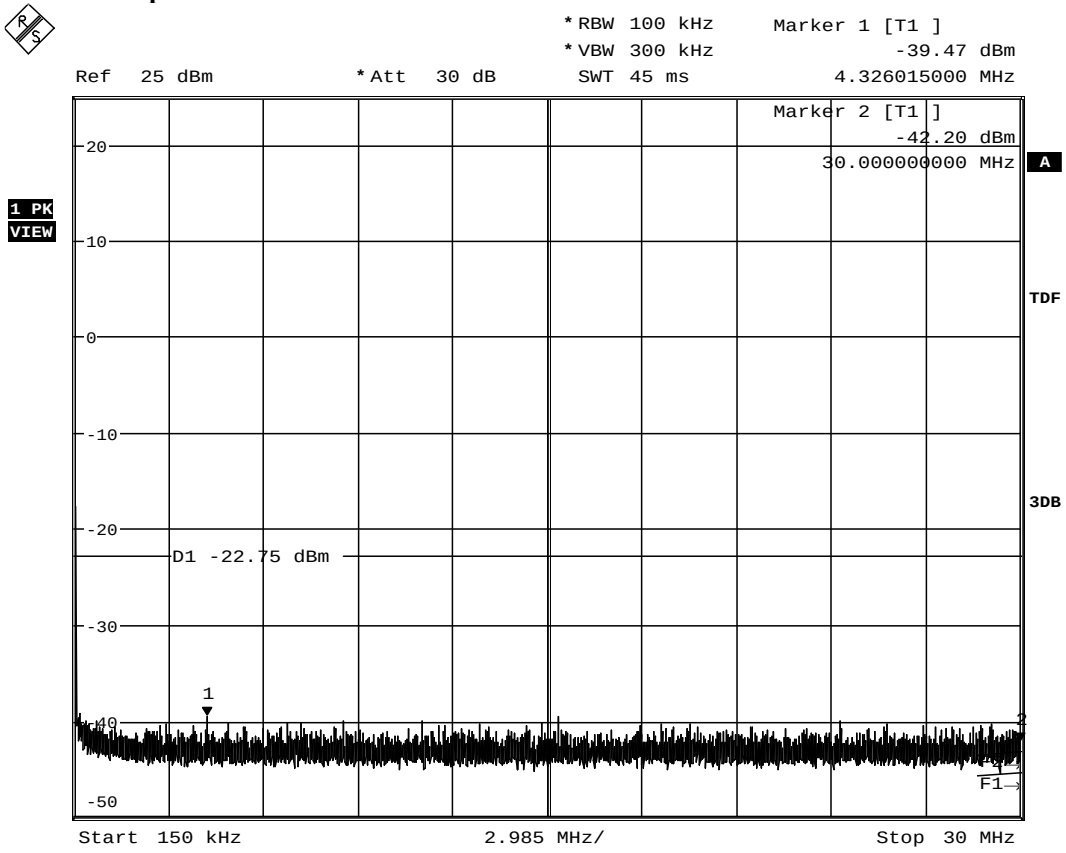
2.5.3. Channel 11, b-mode, 2Mbit

2.5.3.1. Channel 11 Reference



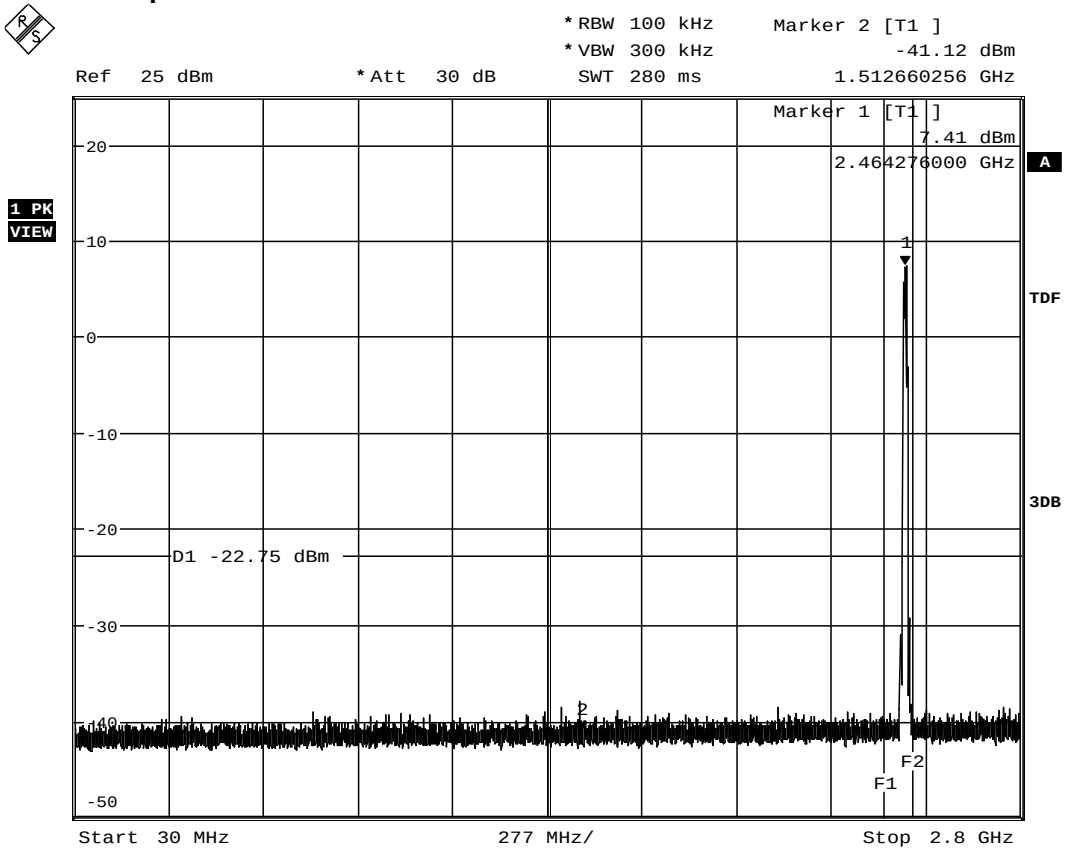
Date: 28.JAN.2015 12:19:08

2.5.3.2. Sweep 1: 150kHz to 30MHz



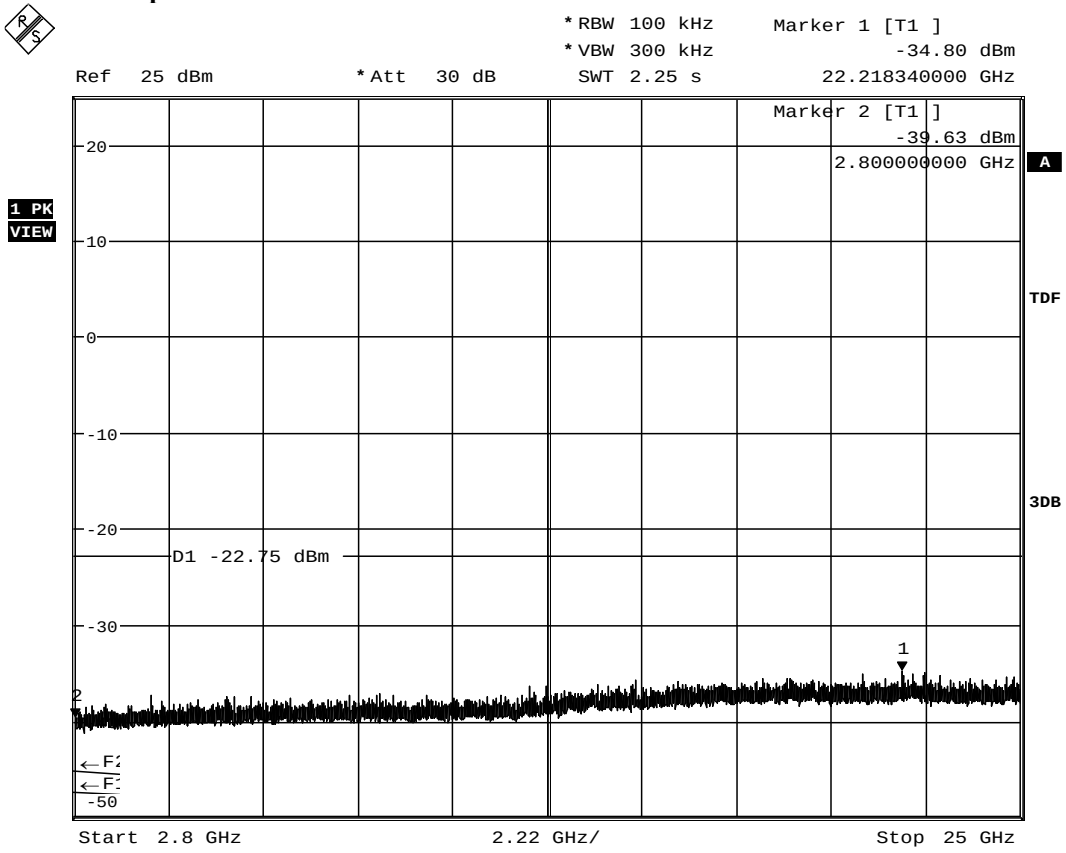
Date: 28.JAN.2015 12:24:56

2.5.3.3. Sweep 2: 30MHz to 2.8GHz



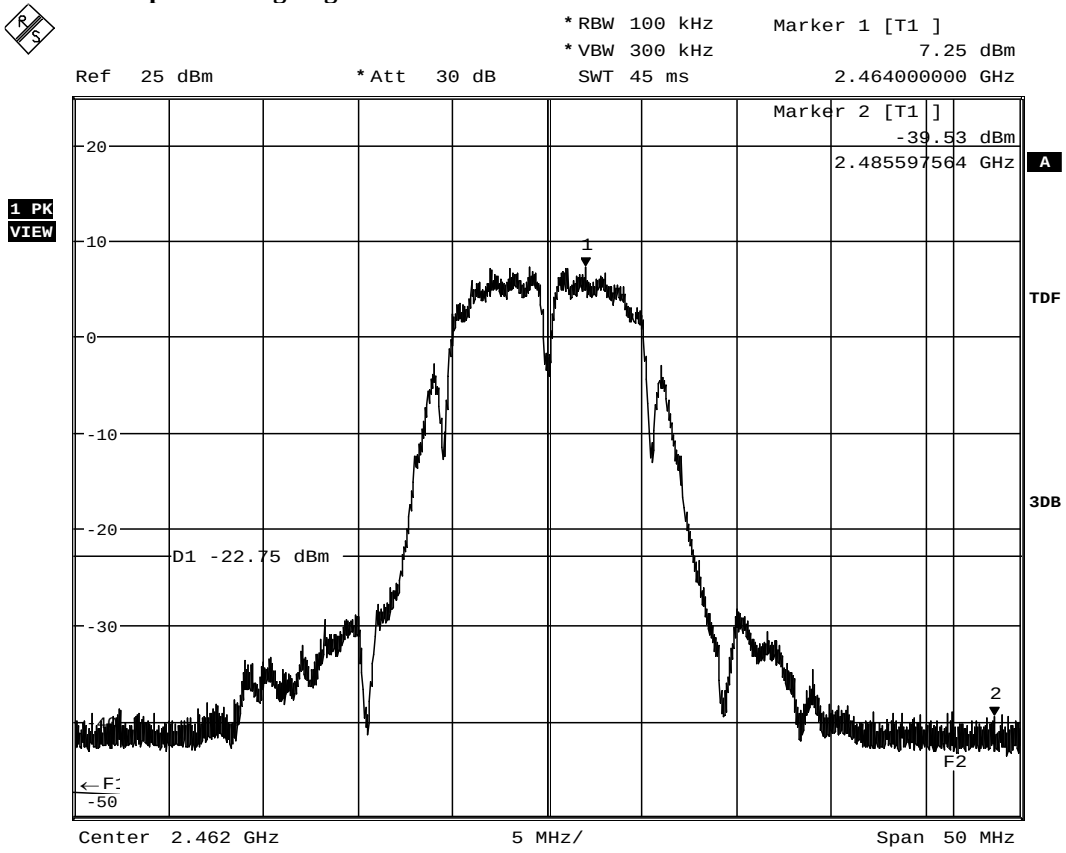
Date: 28.JAN.2015 13:10:34

2.5.3.4. Sweep 3: 2.8GHz to 25GHz



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

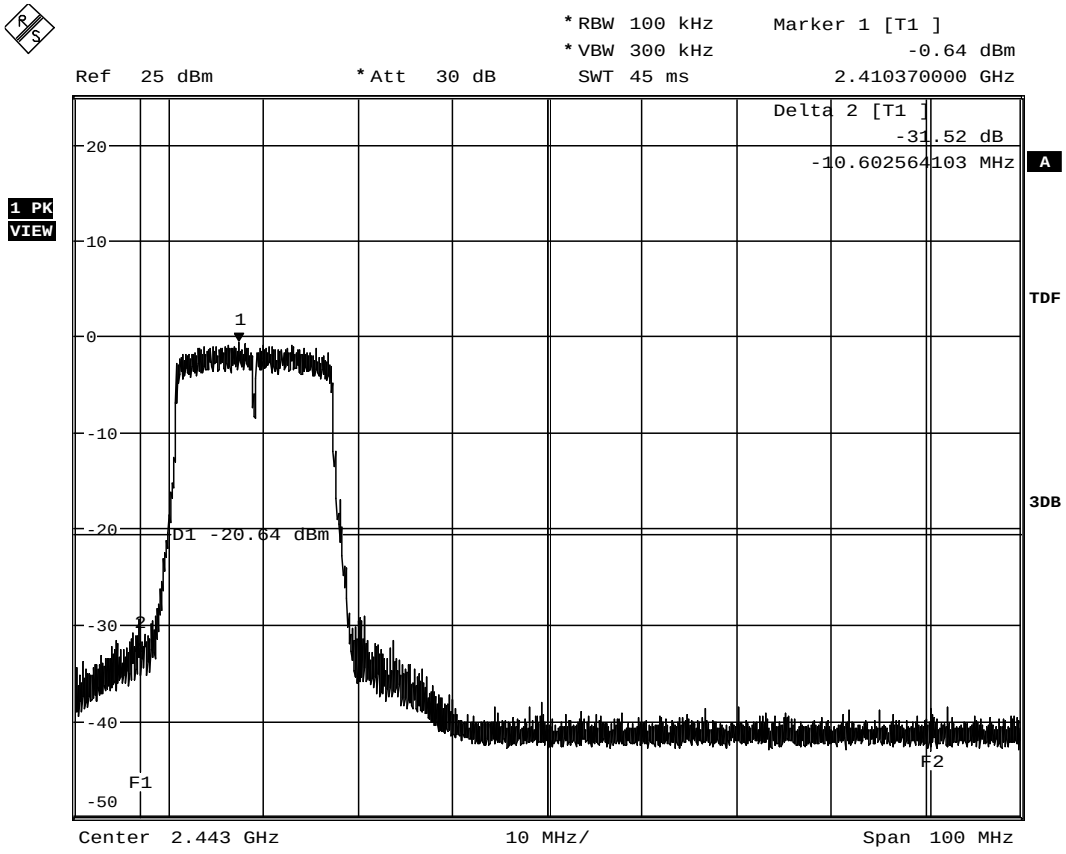
2.5.3.5. Sweep Band-Edge right at 2483.5GHz



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

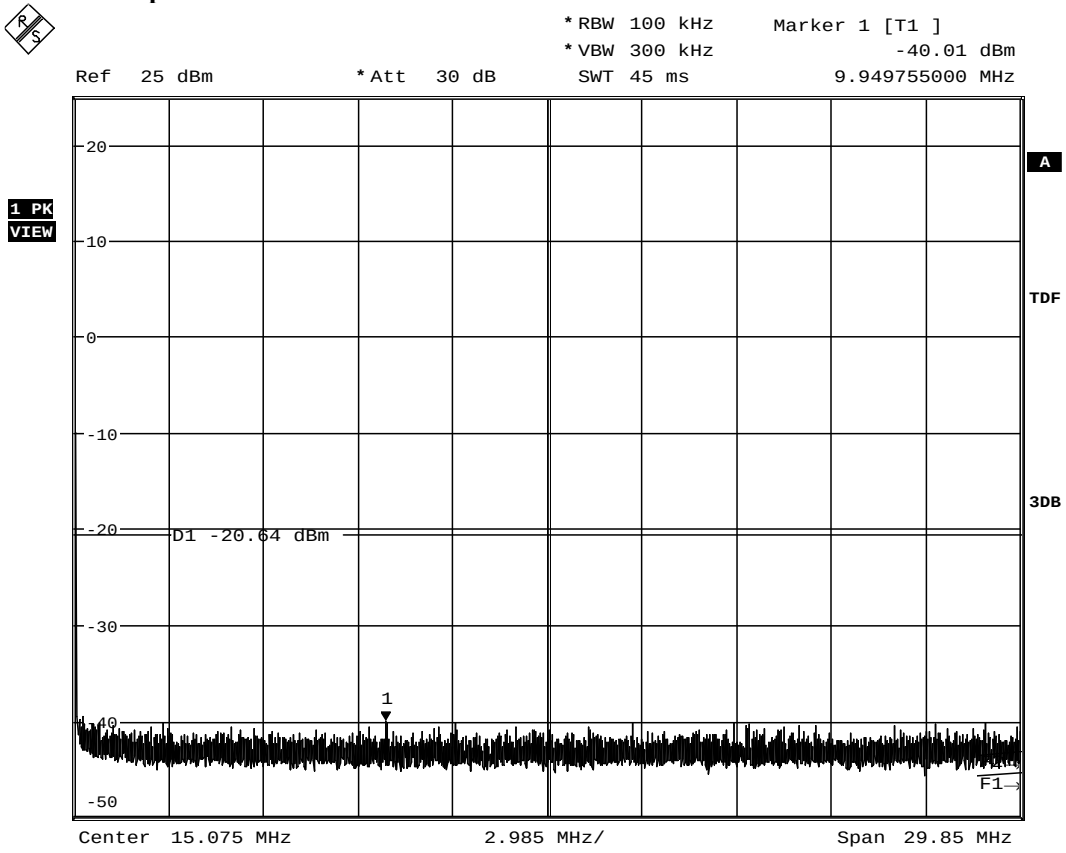
2.5.4. Channel 1, g-mode, 6Mbit

2.5.4.1. Channel 1 Reference



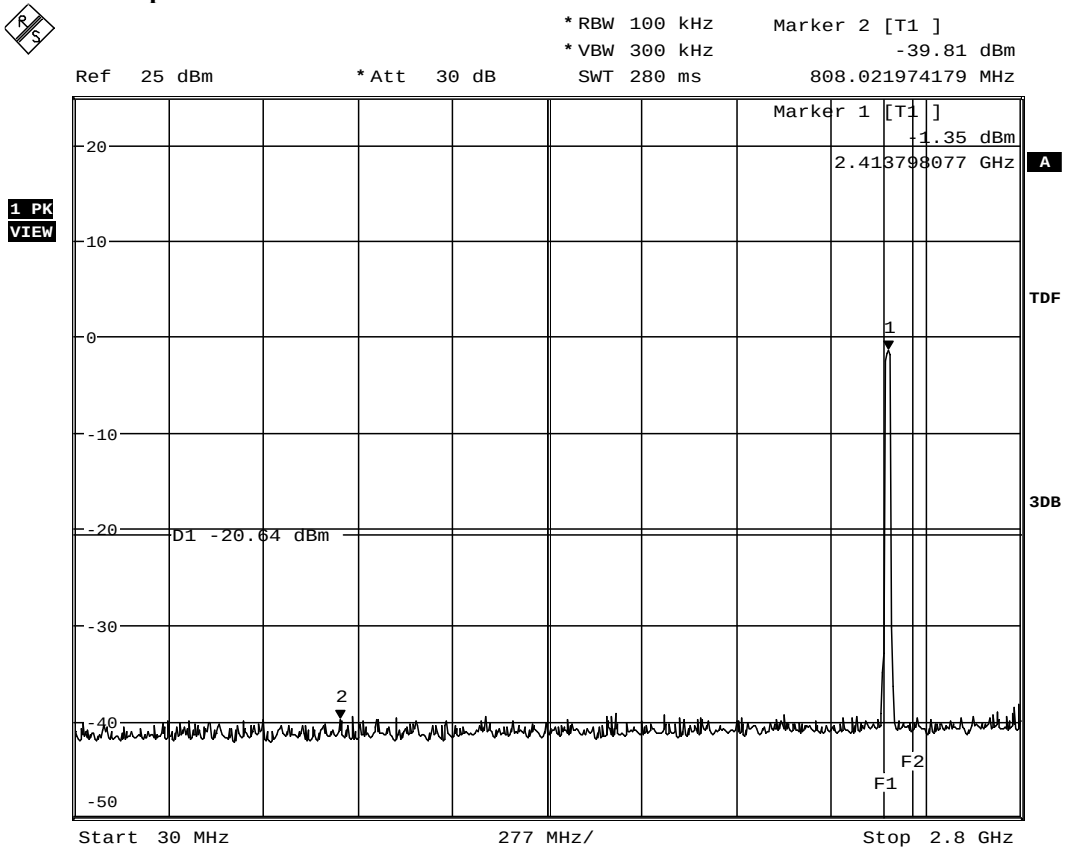
Date: 16.MAR.2015 14:54:02

2.5.4.2. Sweep 1: 150kHz to 30MHz



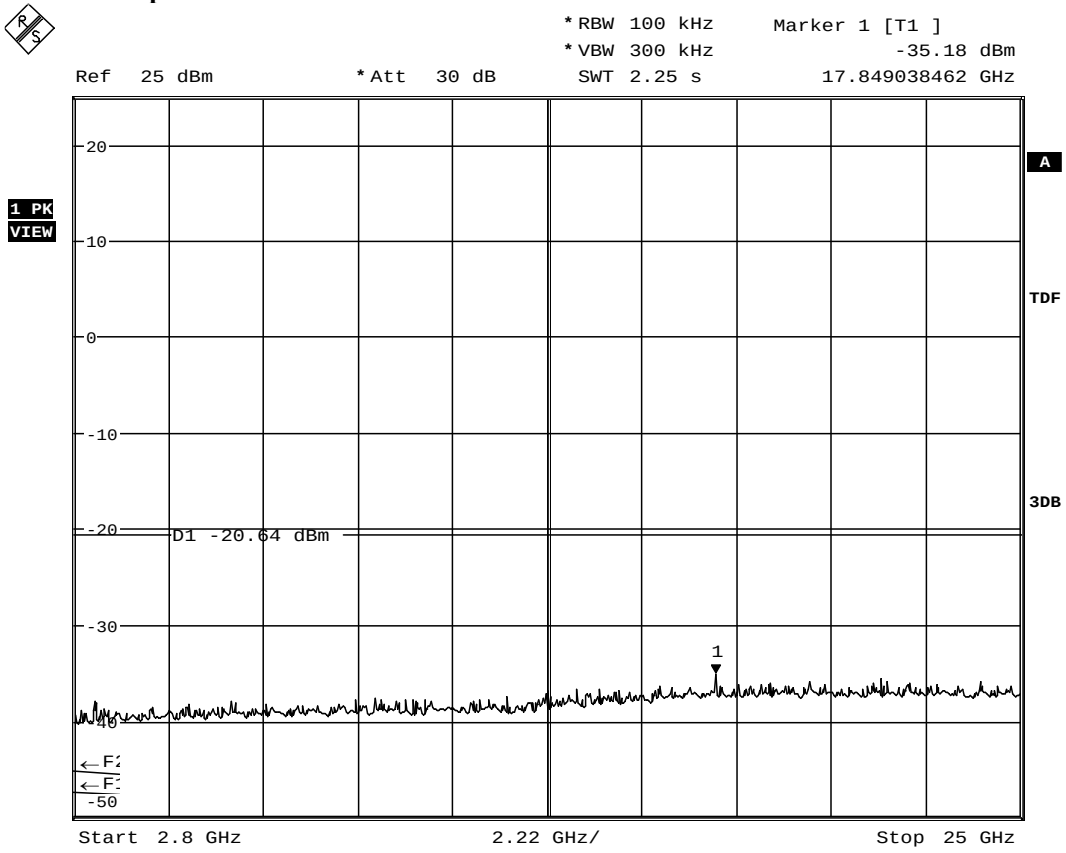
Date: 16.MAR.2015 15:00:52

2.5.4.3. Sweep 2: 30MHz to 2.8GHz



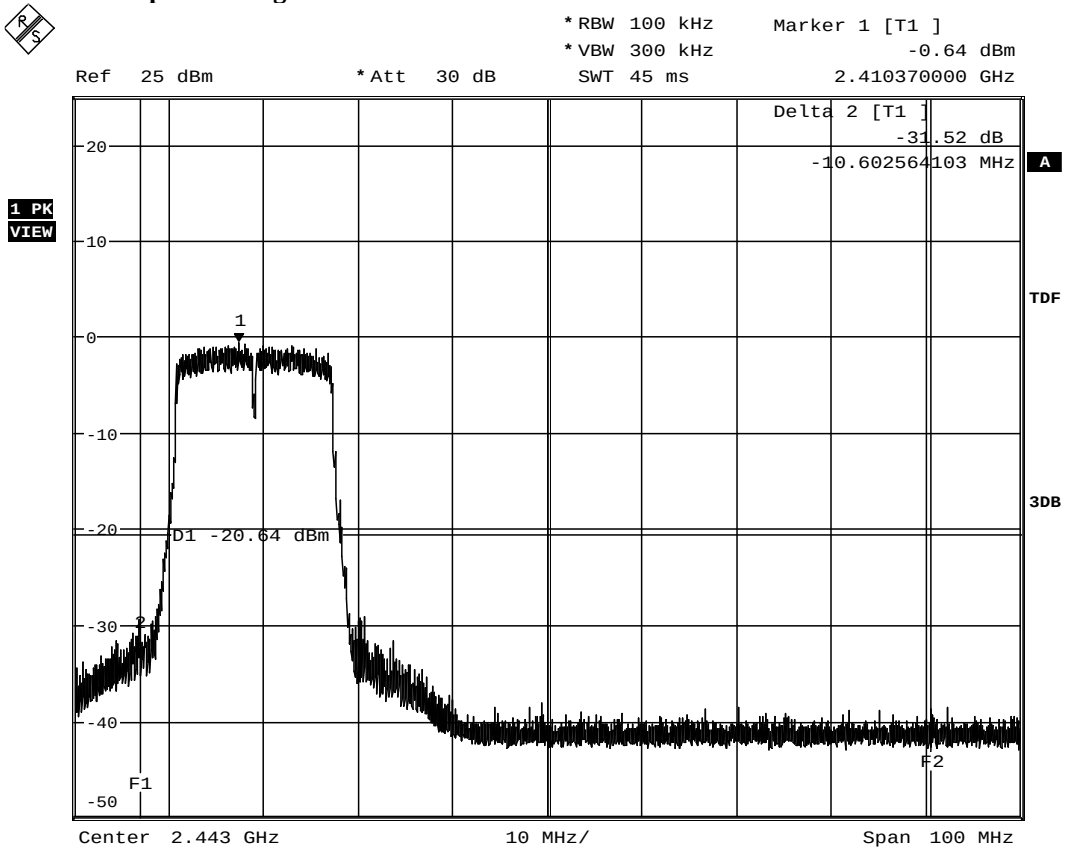
Date: 16.MAR.2015 15:05:22

2.5.4.4. Sweep 2: 2.8GHz to 25GHz



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

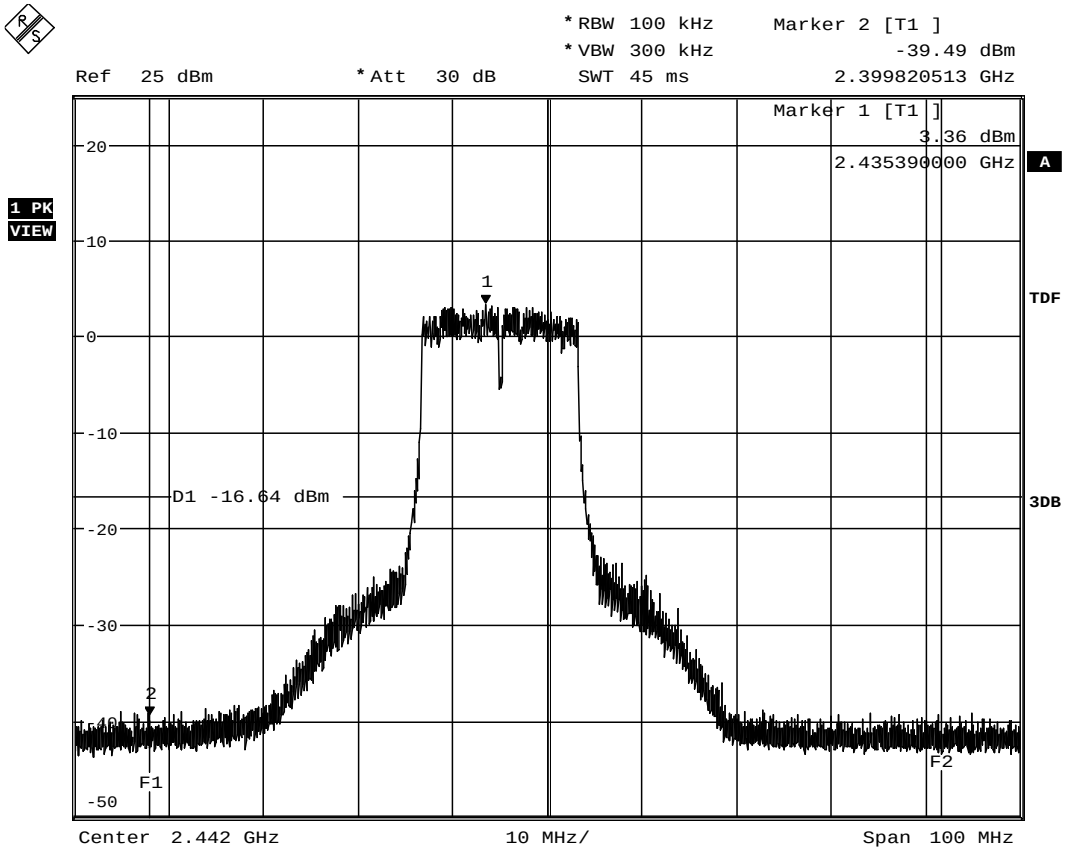
2.5.4.5. Sweep Band-Edge left at 2.4GHz



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

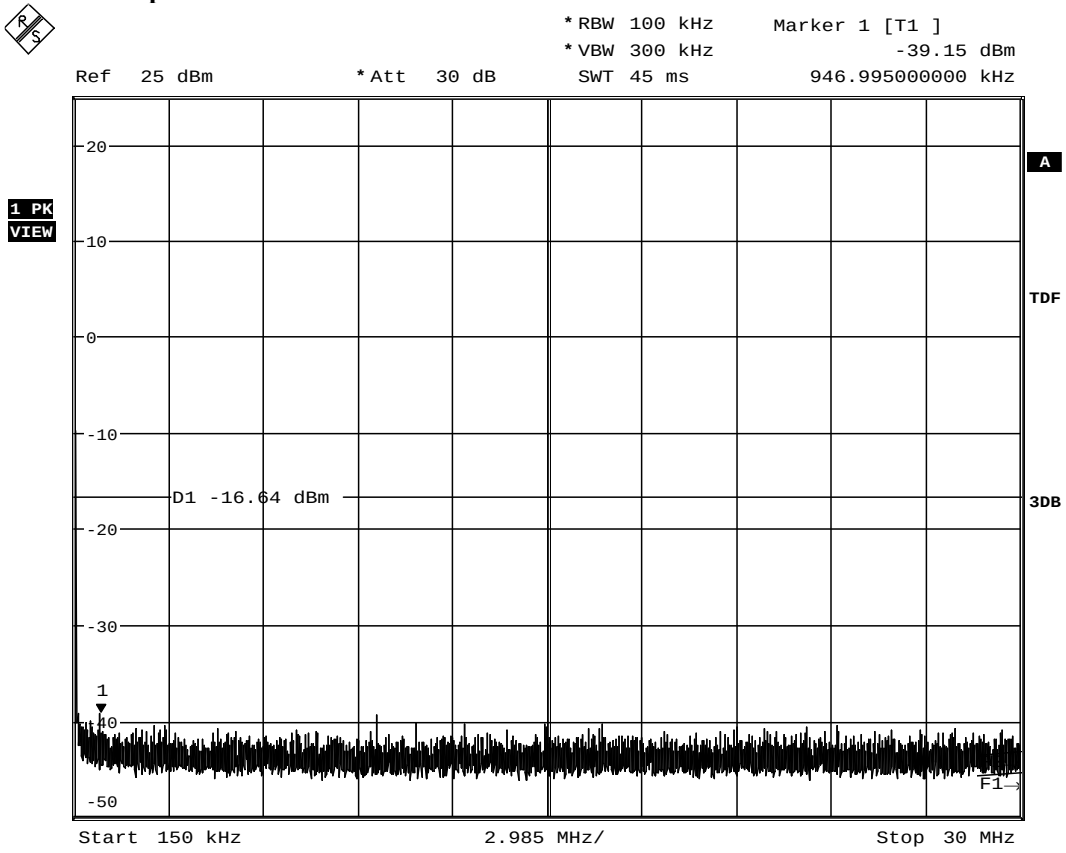
2.5.5. Channel 6, g-mode, 54Mbit

2.5.5.1. Channel 6 Reference



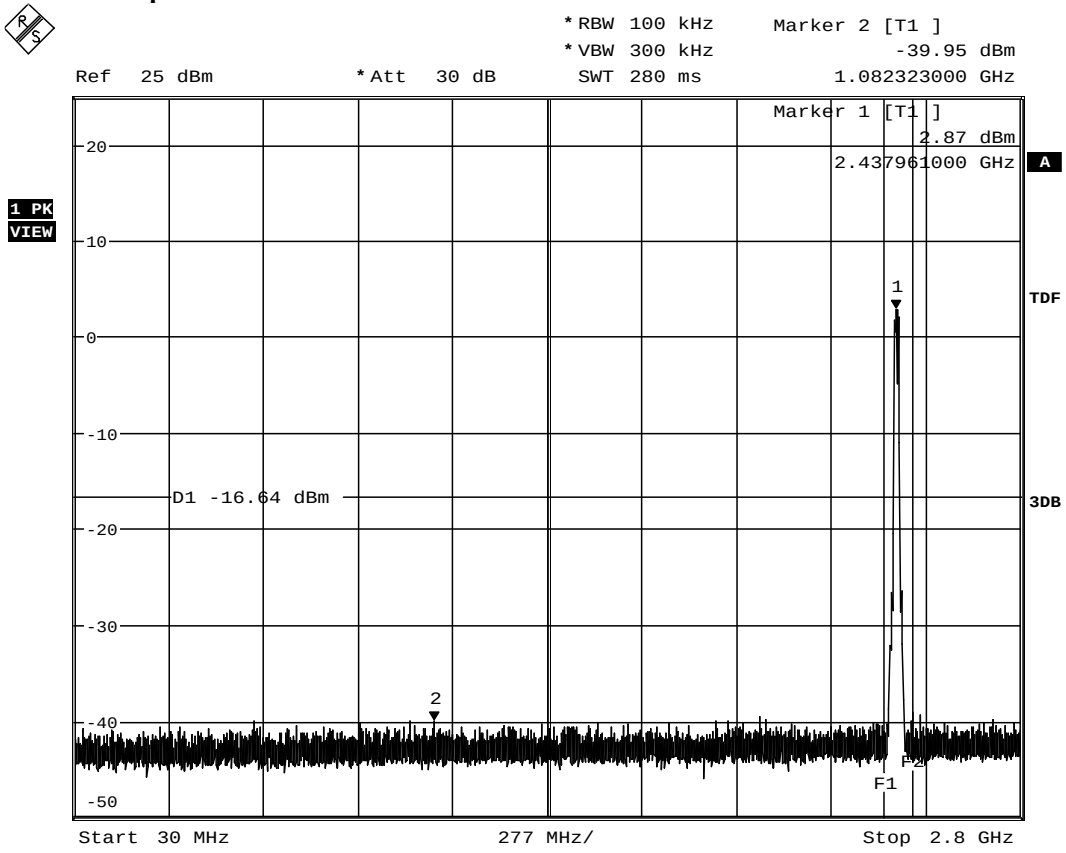
Date: 16.MAR.2015 15:20:16

2.5.5.2. Sweep 1: 150kHz to 30MHz



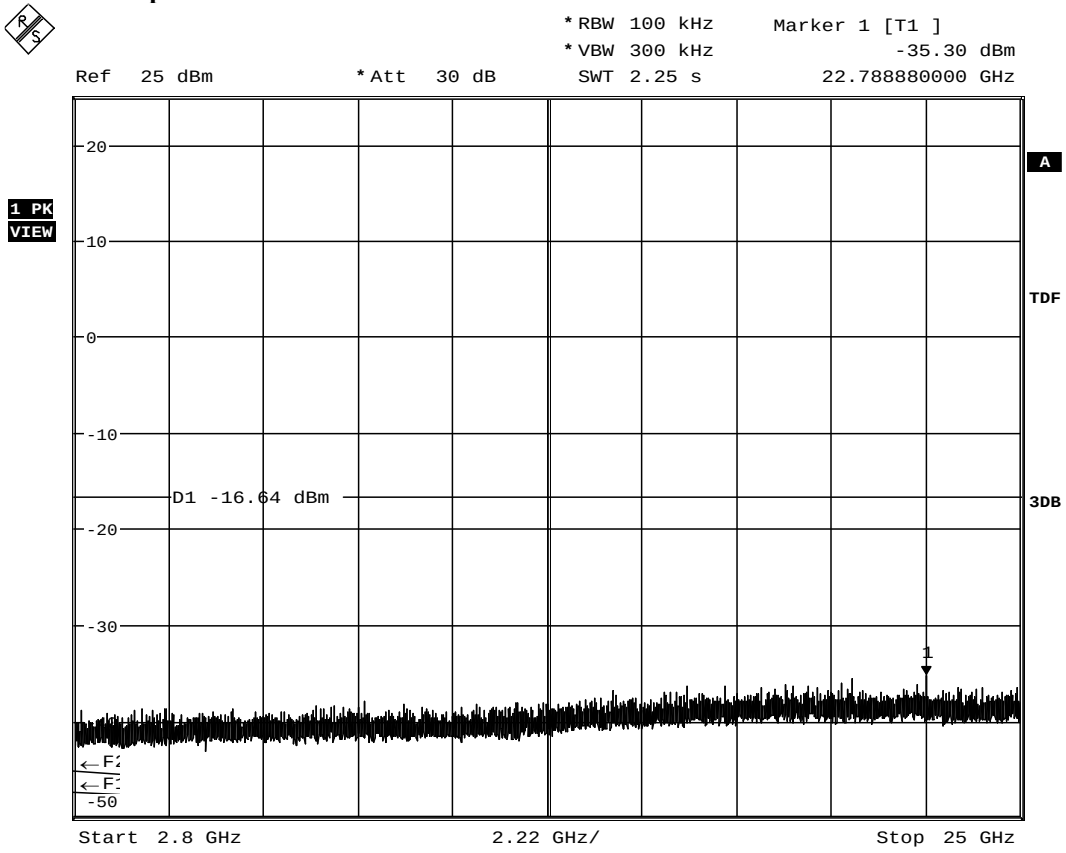
Date: 16.MAR.2015 15:26:06

2.5.5.3. Sweep 2: 30MGHz to 2.8GHz



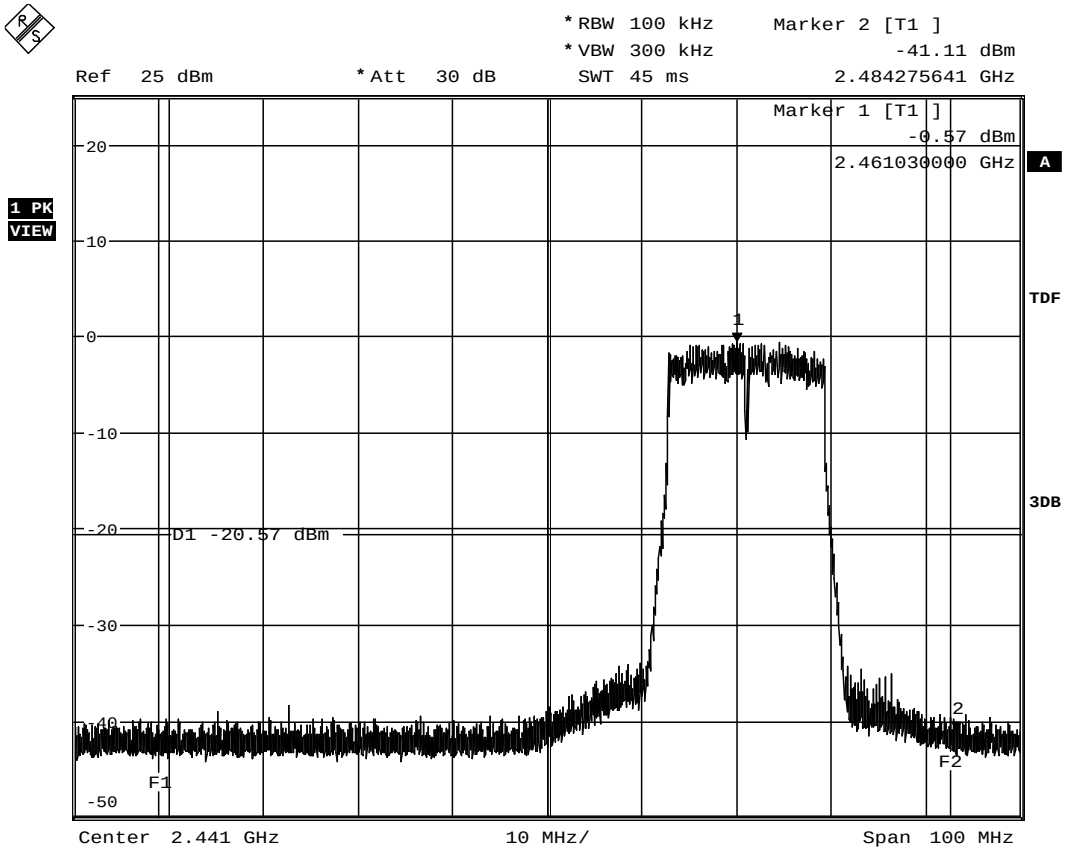
Date: 16.MAR.2015 15:29:31

2.5.5.4. Sweep 3: 2.8GHz to 25GHz



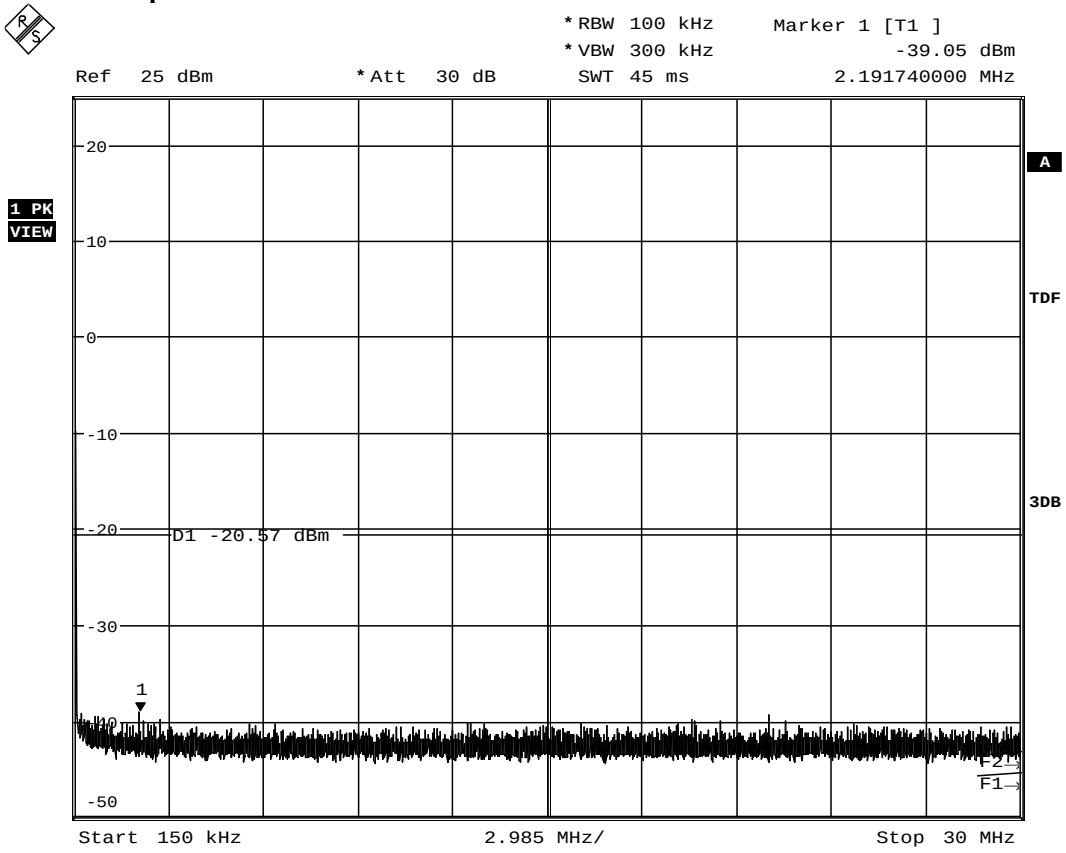
Date: 16.MAR.2015 15:31:54

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



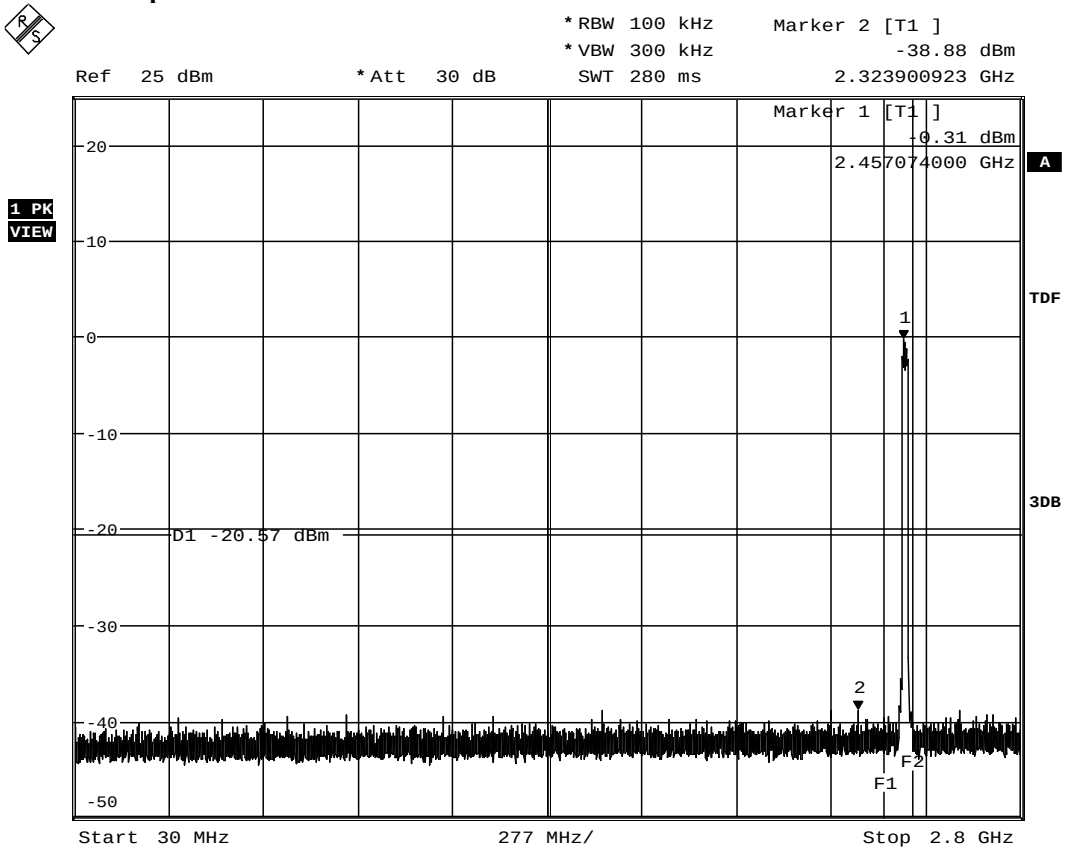
Date: 16.MAR.2015 15:35:57

2.5.6.2. Sweep 1: 150kHz to 30MHz



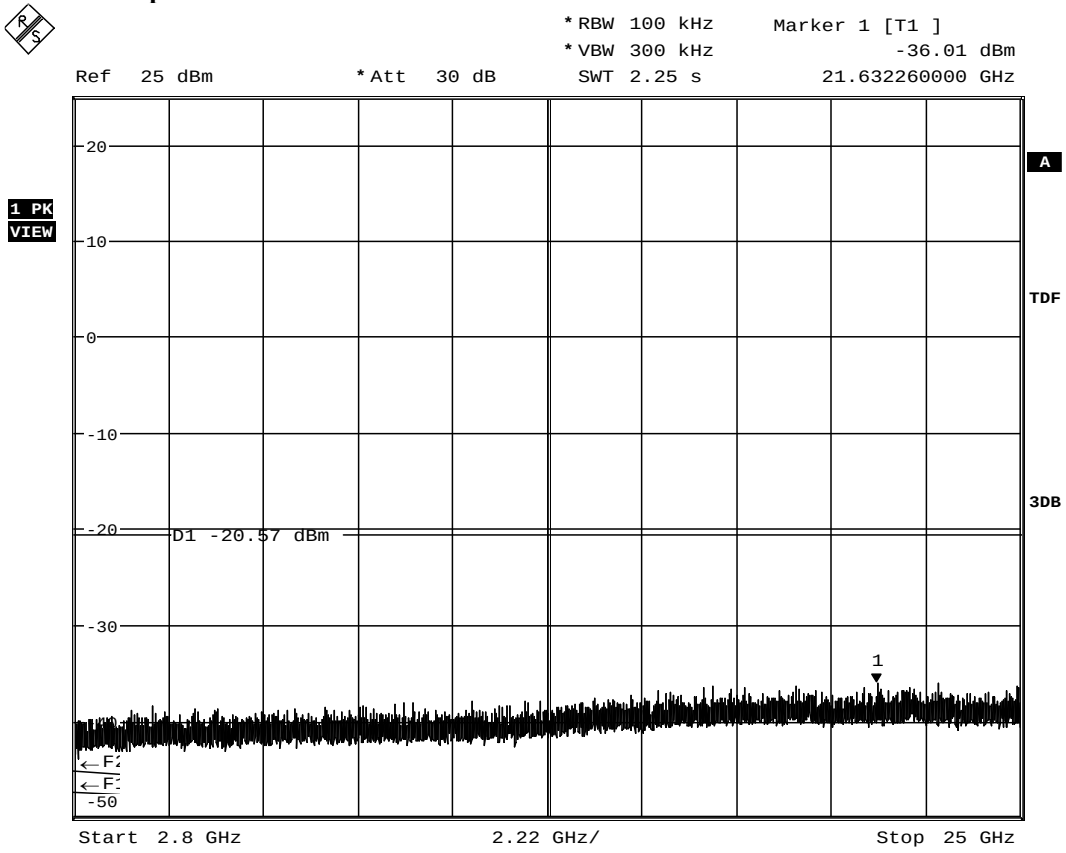
Date: 16.MAR.2015 15:41:16

2.5.6.3. Sweep 2: 30MHz to 2.8GHz



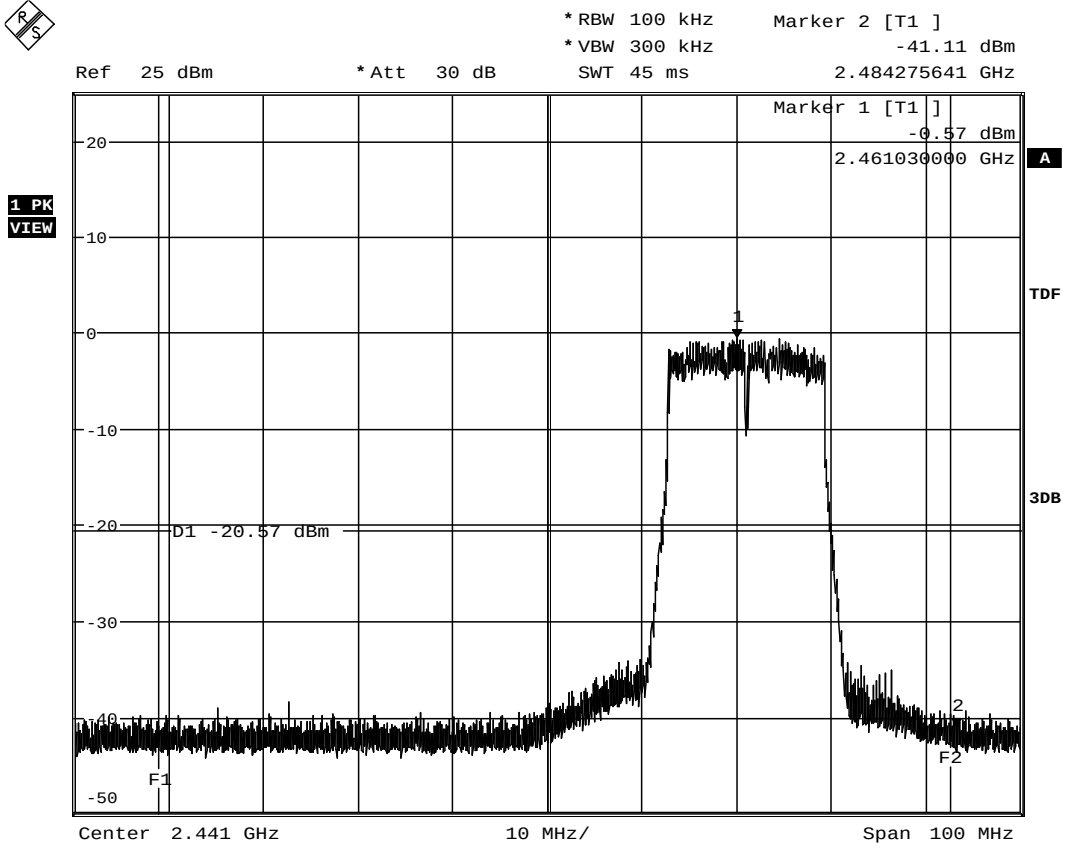
Date: 16.MAR.2015 15:43:53

2.5.6.4. Sweep 3: 2.8GHz to 25GHz



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

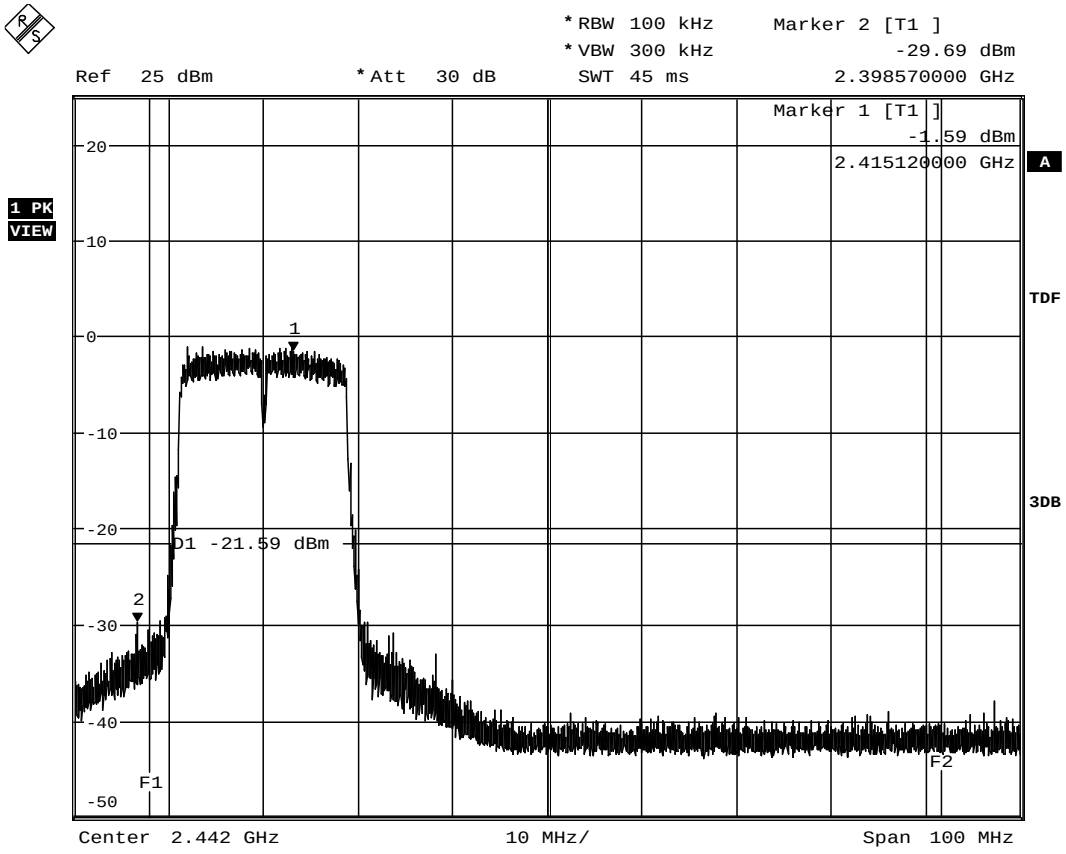
2.5.6.5. Sweep Band-Edge right at 2483.5GHz



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

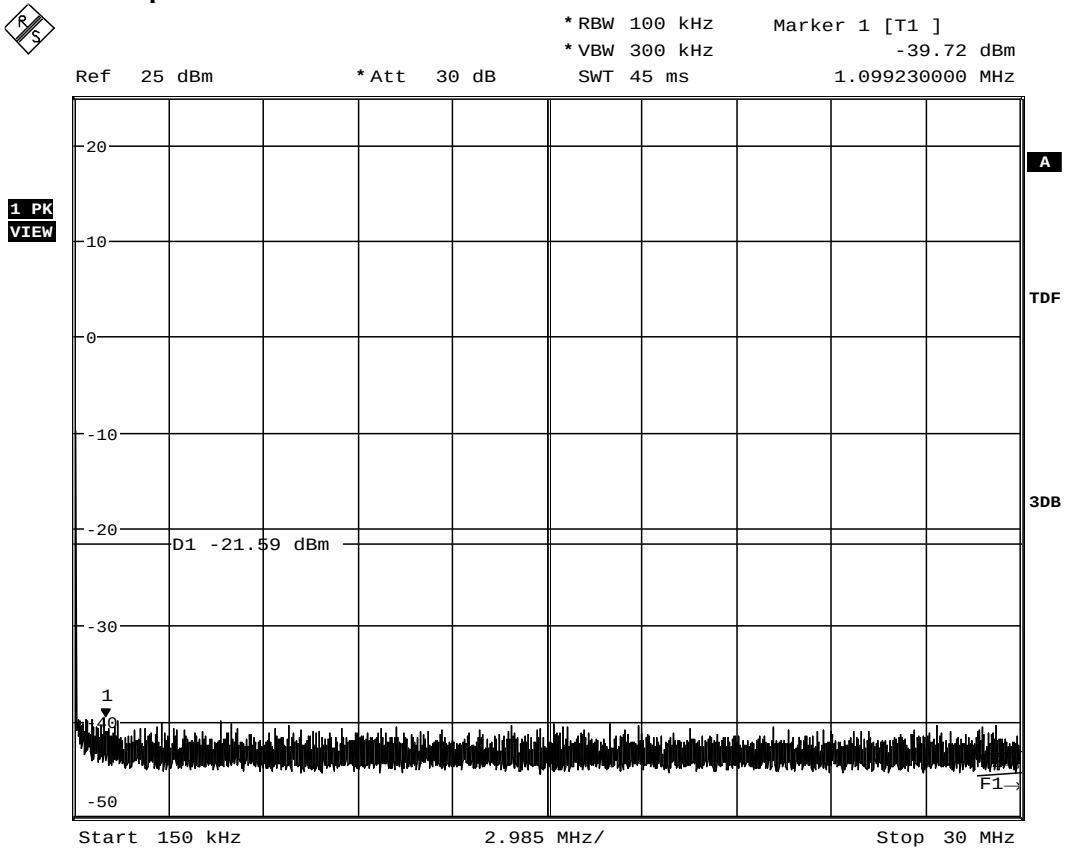
2.5.7. Channel 1, n-mode, MCS0

2.5.7.1. Channel 1 Reference



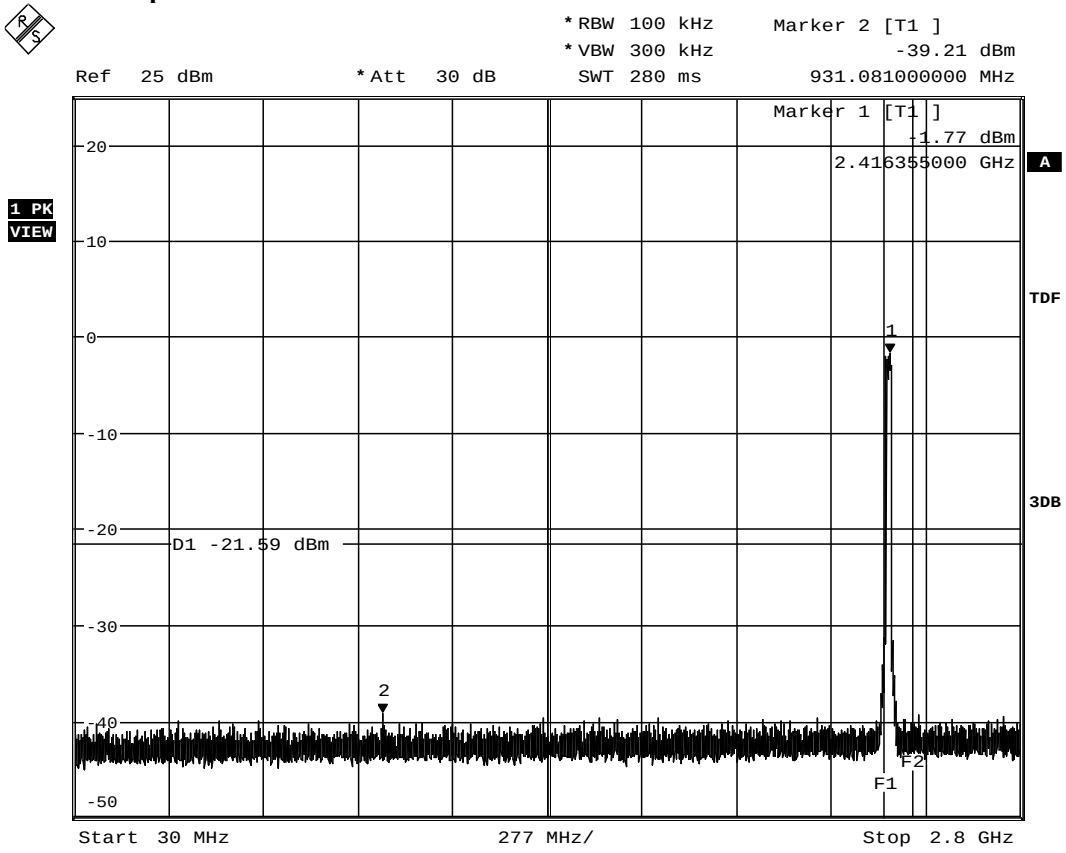
Date: 16.MAR.2015 15:55:35

2.5.7.2. Sweep 1: 150kHz to 30MHz



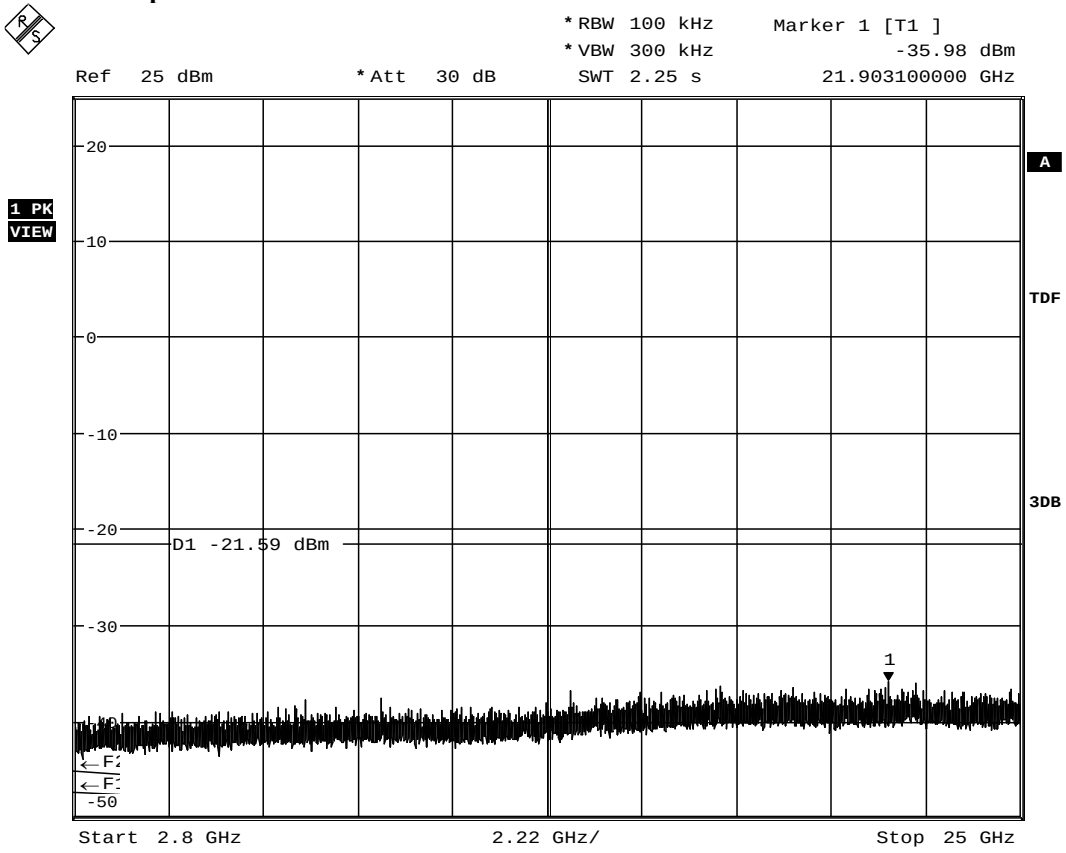
Date: 16.MAR.2015 15:58:08

2.5.7.3. Sweep 2: 30MHz to 2.8GHz



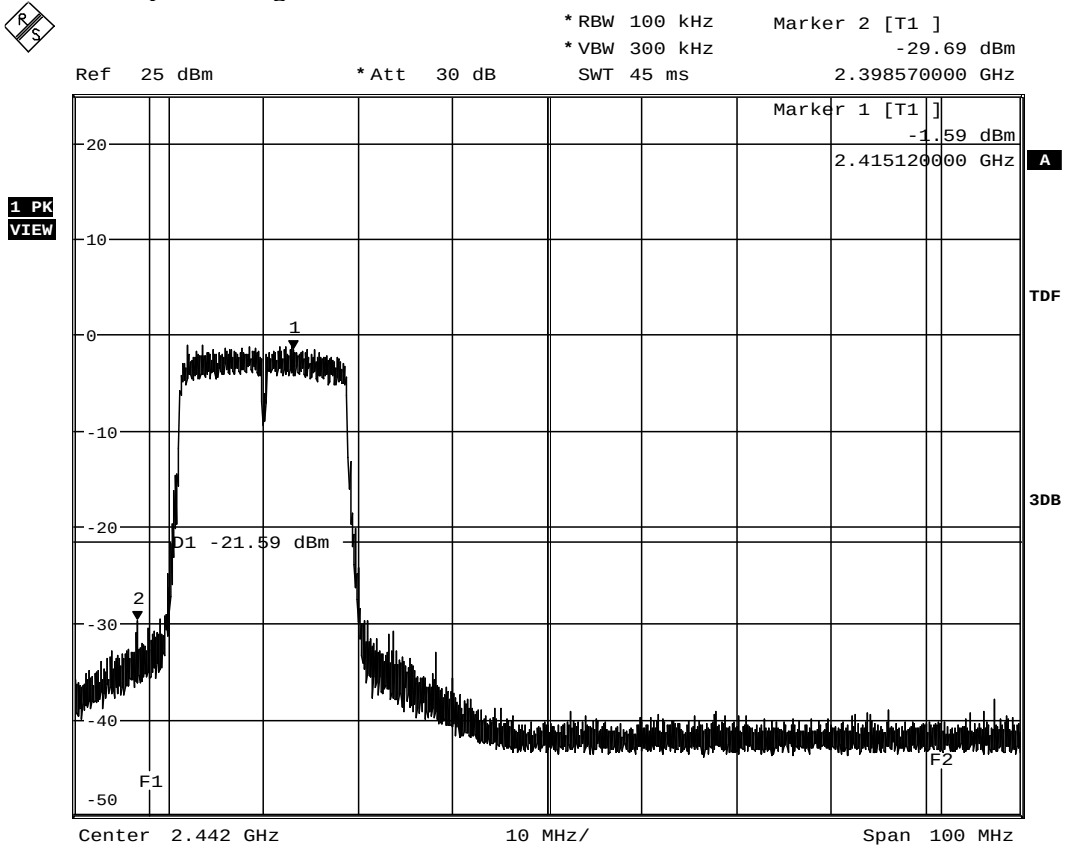
Date: 16.MAR.2015 16:00:28

2.5.7.4. Sweep 2: 2.8GHz to 25GHz



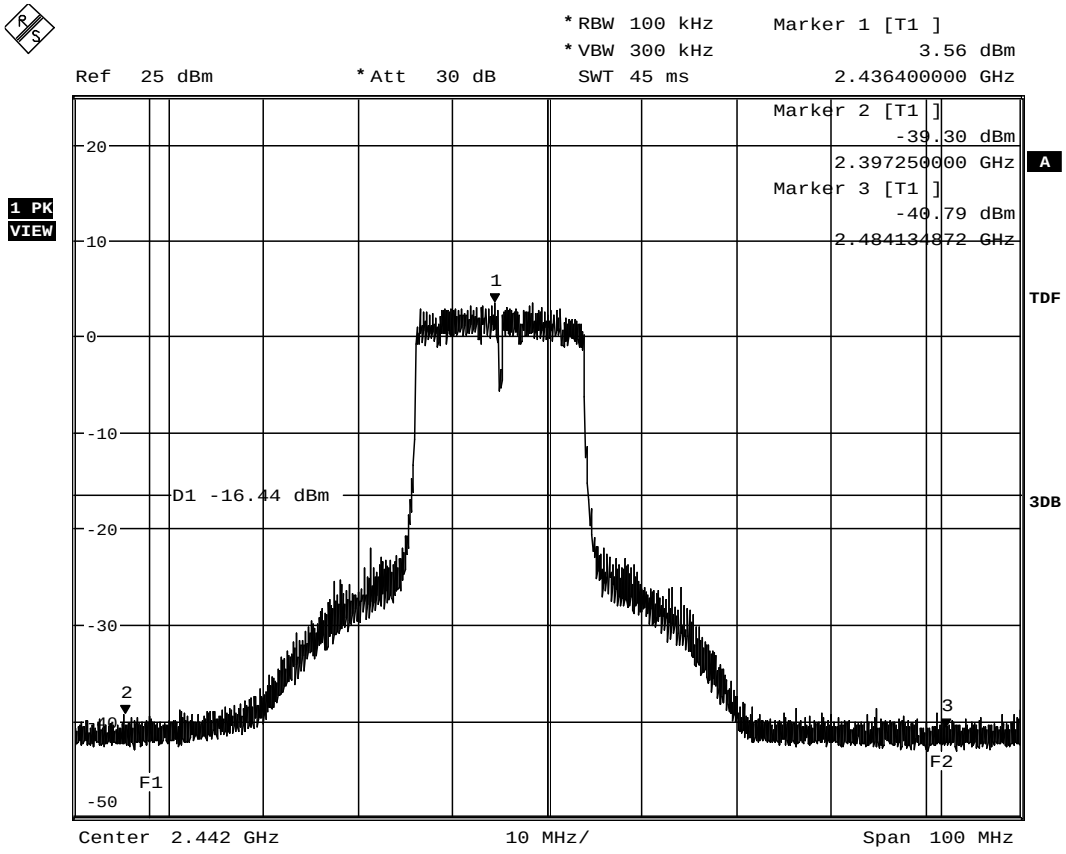
Date: 16.MAR.2015 16:01:50

2.5.7.5. Sweep Band-Edge left at 2.4GHz



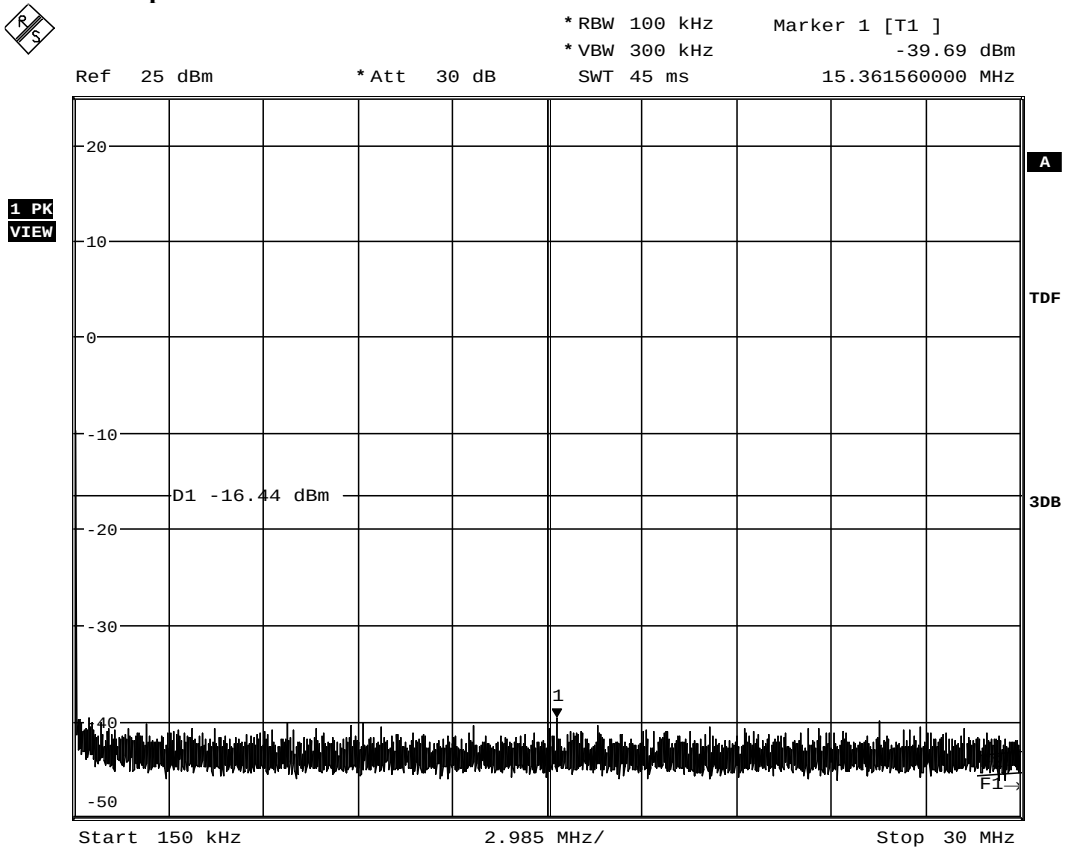
2.5.8. Channel 6, n-mode, MCS7

2.5.8.1. Channel 6 Reference



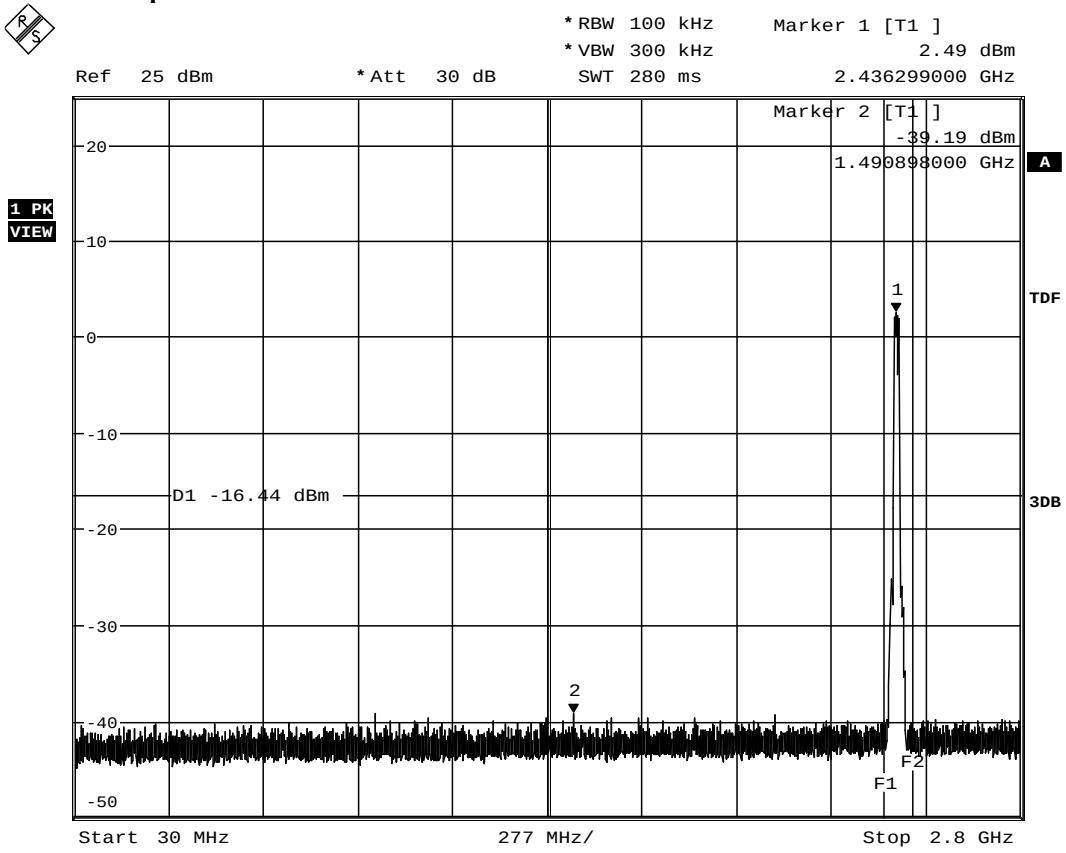
Date: 16.MAR.2015 16:10:09

2.5.8.2. Sweep 1: 150kHz to 30MHz



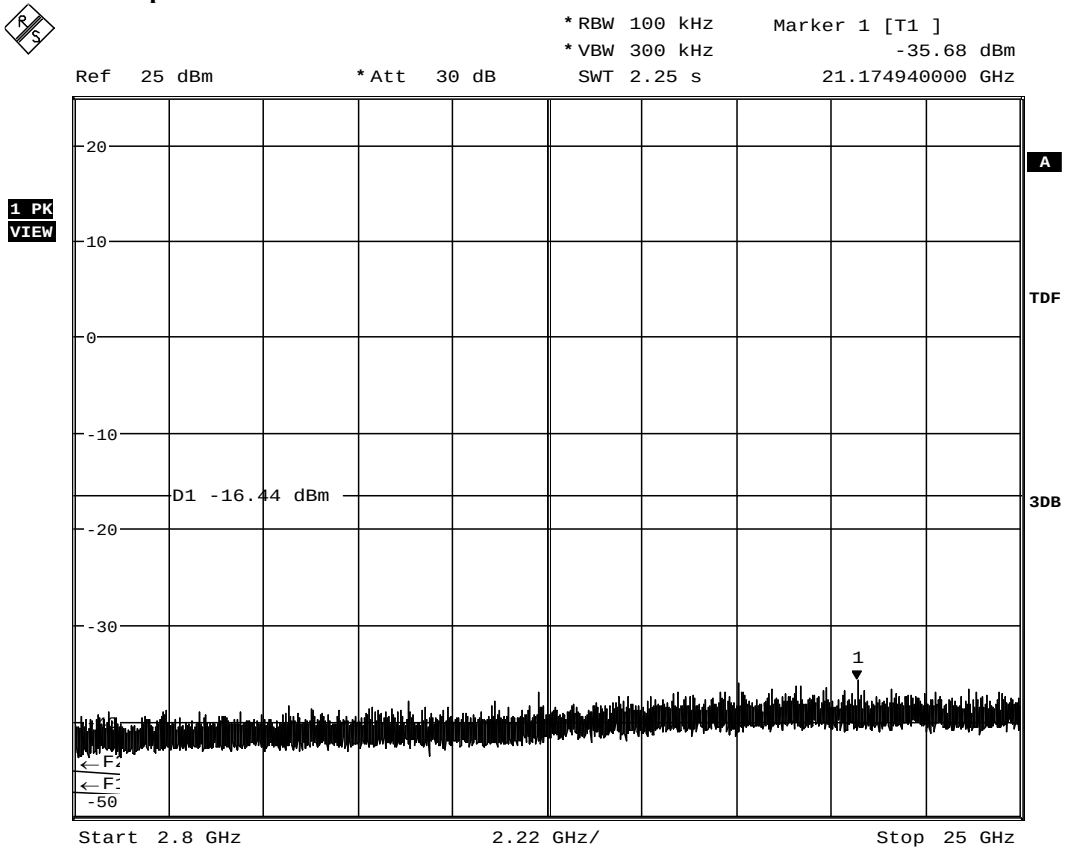
Date: 16.MAR.2015 16:11:58

2.5.8.3. Sweep 2: 30MGHz to 2.8GHz



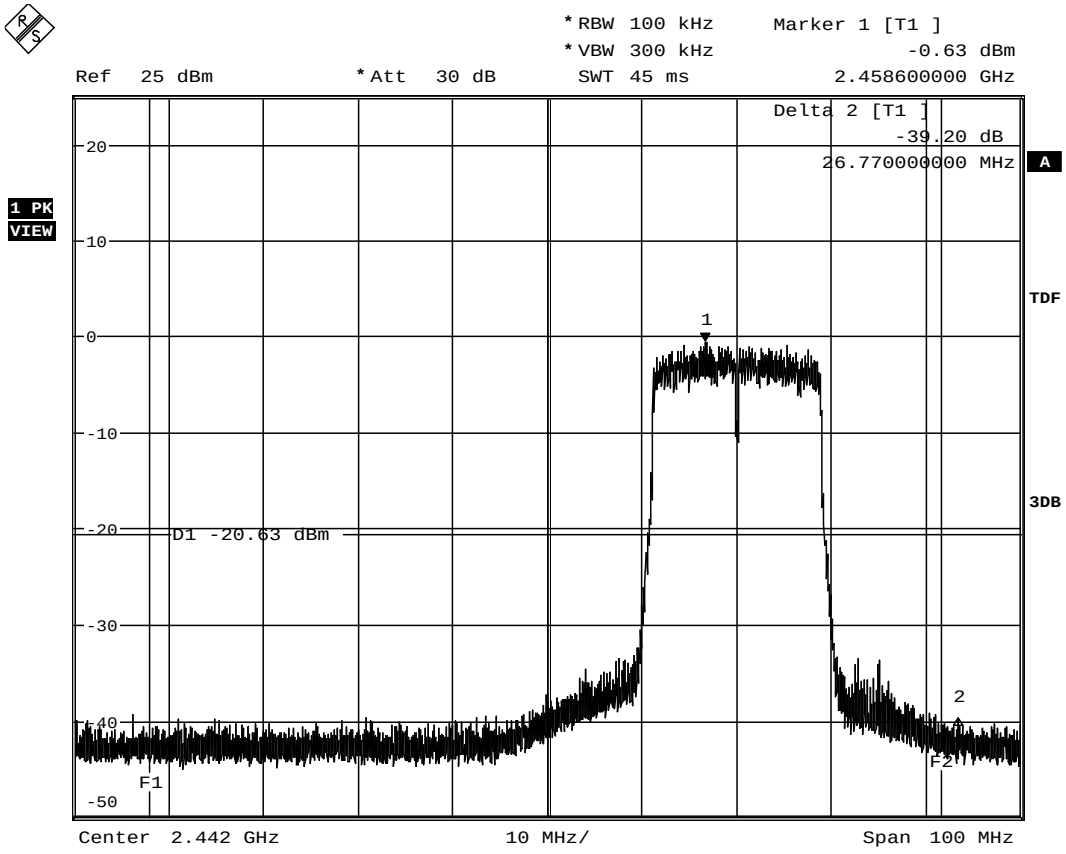
Date: 16.MAR.2015 16:14:14

2.5.8.4. Sweep 3: 2.8GHz to 25GHz



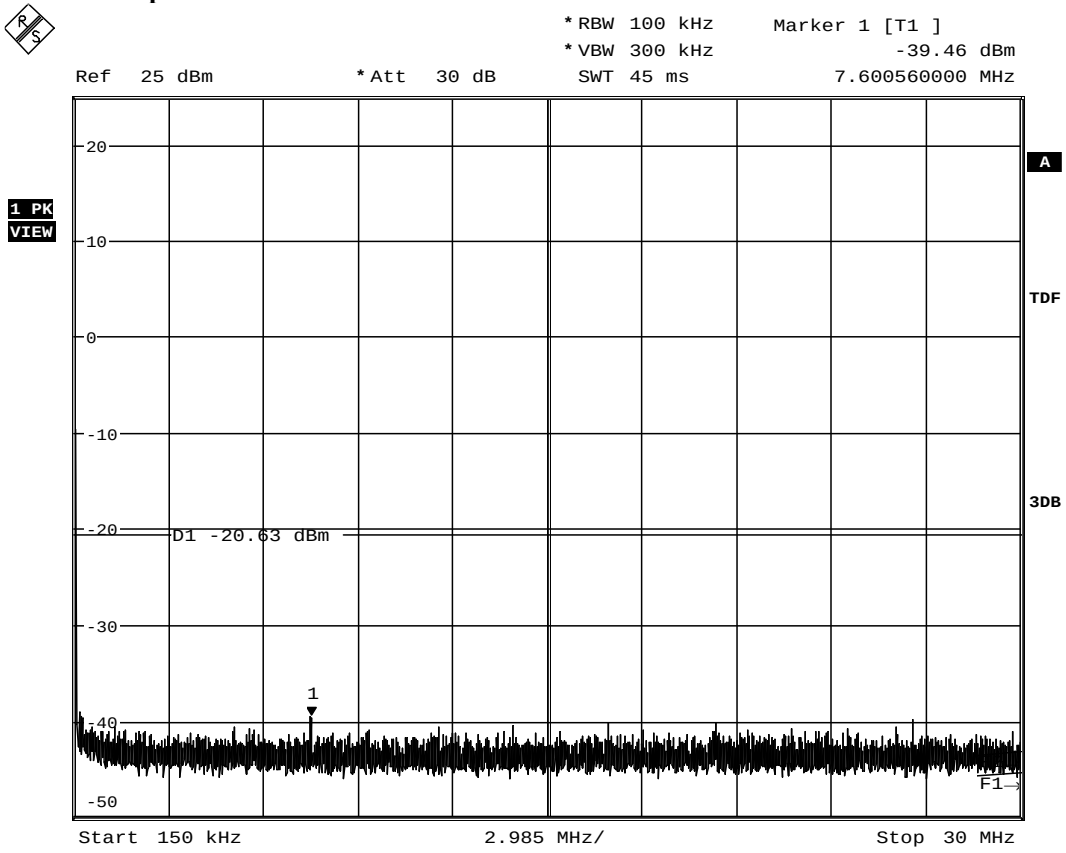
Date: 16.MAR.2015 16:15:32

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



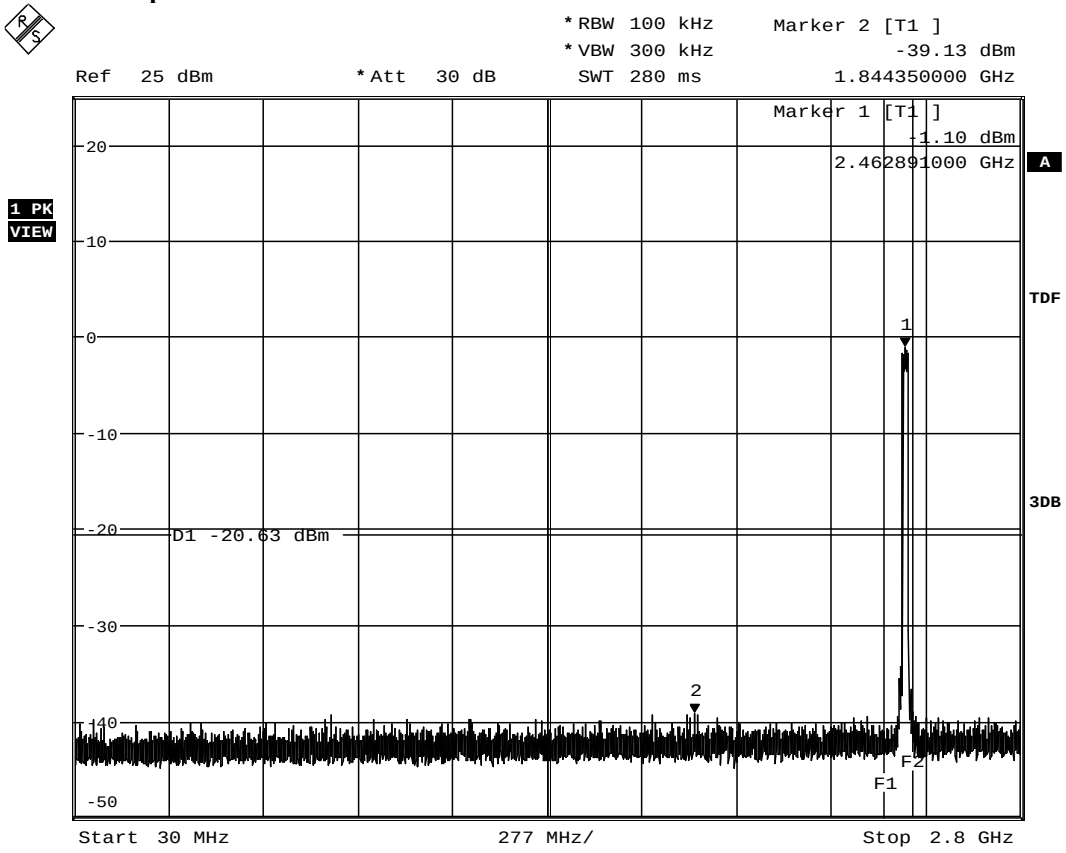
Date: 16.MAR.2015 16:21:21

2.5.9.2. Sweep 1: 150kHz to 30MHz



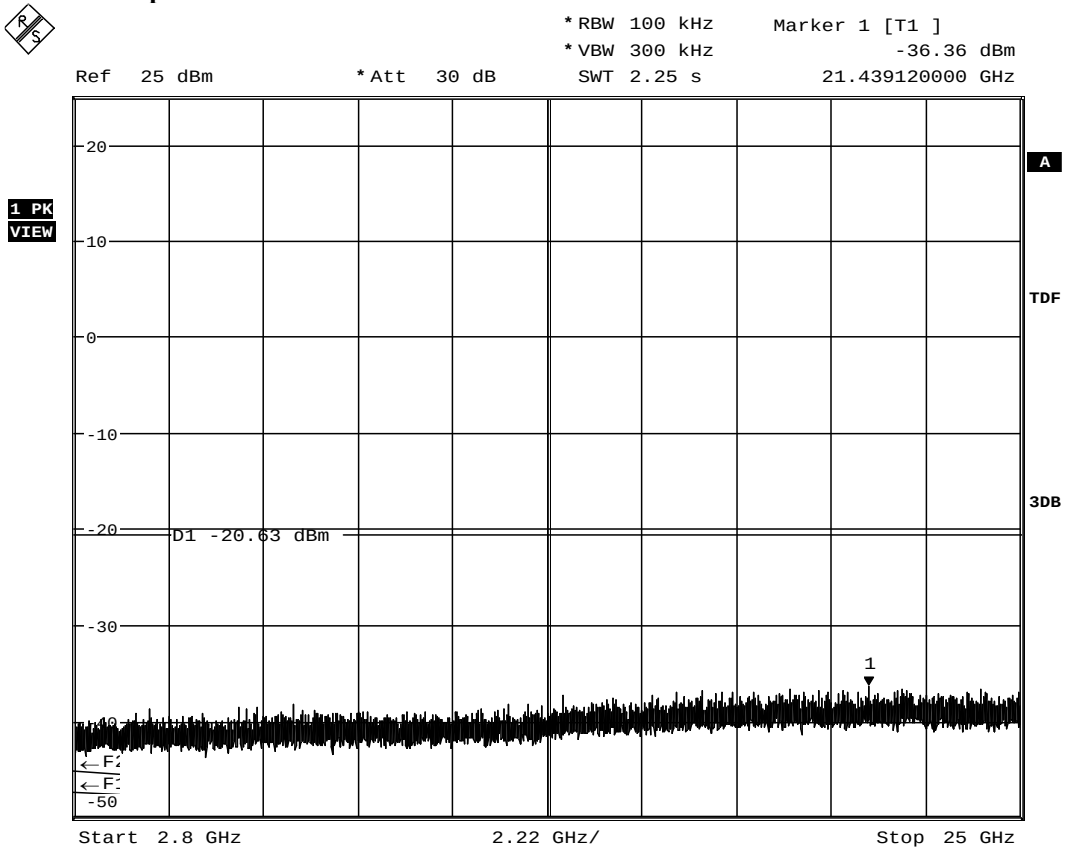
Date: 16.MAR.2015 16:22:54

2.5.9.3. Sweep 2: 30MHz to 2.8GHz



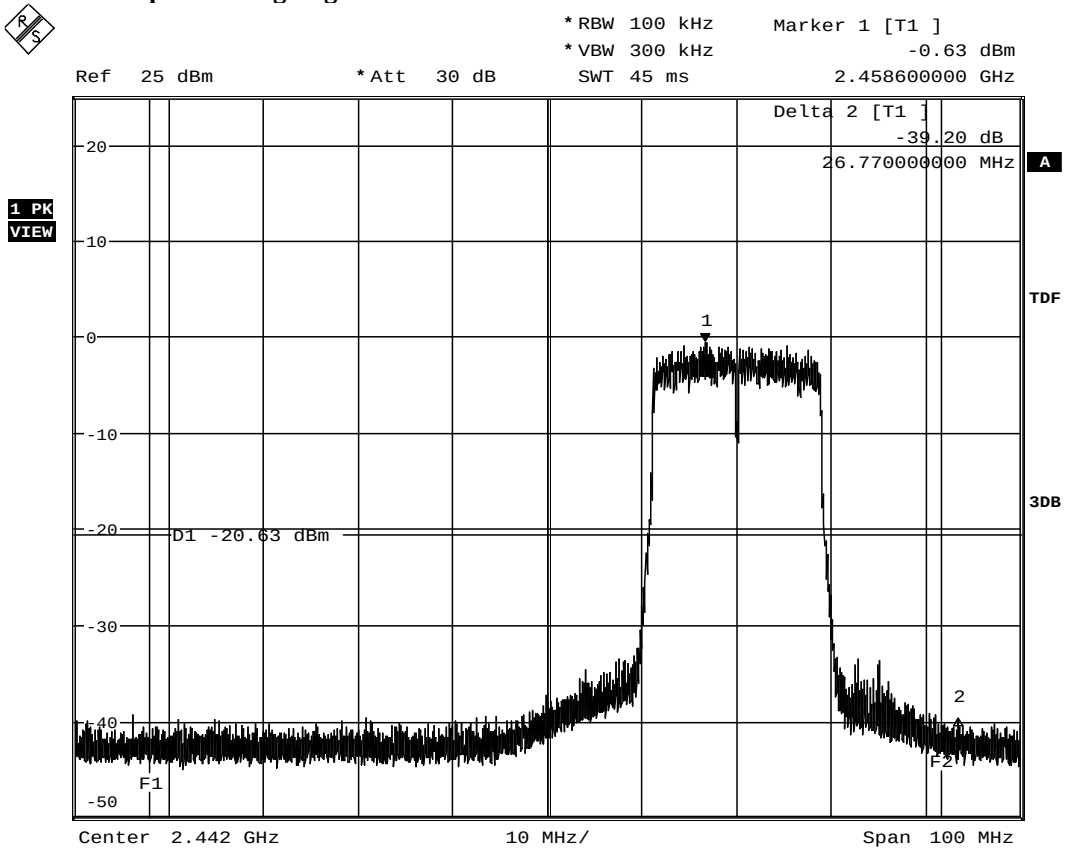
Date: 16.MAR.2015 16:25:02

2.5.9.4. Sweep 3: 2.8GHz to 25GHz



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

2.5.9.5. Sweep Band-Edge right at 2483.5GHz



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

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

3.1. Magnetic field measurements f<30MHz

3.1.1. b-Mode modulation

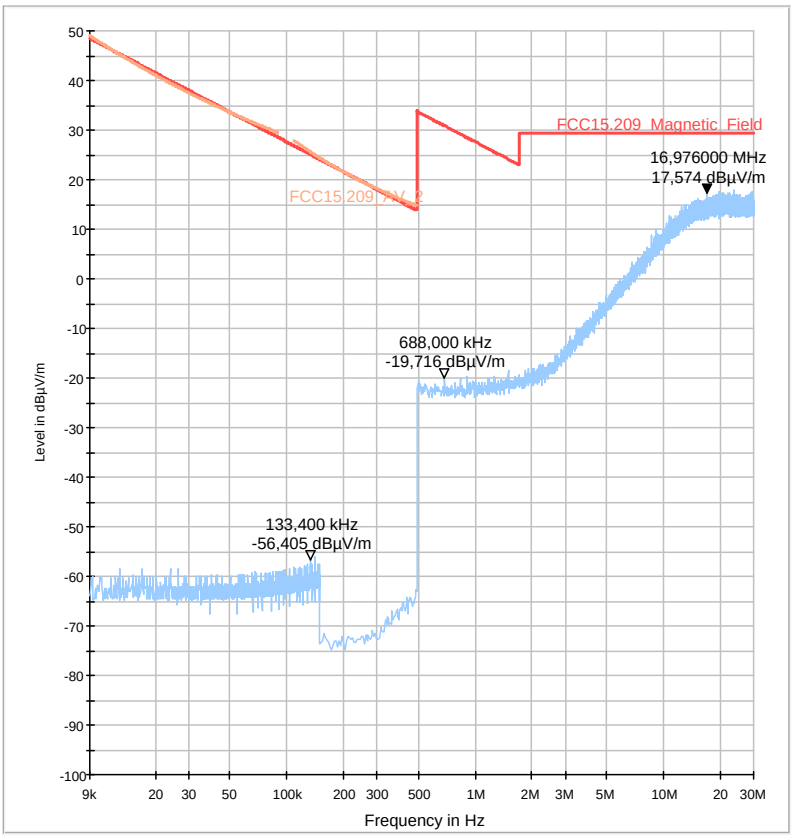
Diagram No. 2.01_Ch1_2Mbit

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

	Date: 04.03.
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:	Lor
Operating conditions:	TX-on , continuous, modulation on
Power during tests:	110V/60Hz
Comment 1:	Channel low=1
Comment 2:	2MBit, PWR Level=50

FCC15.209_magn hor+vert



3.1.2. g-Mode modulation

Diagram No. 2.02_Ch6_9Mbit

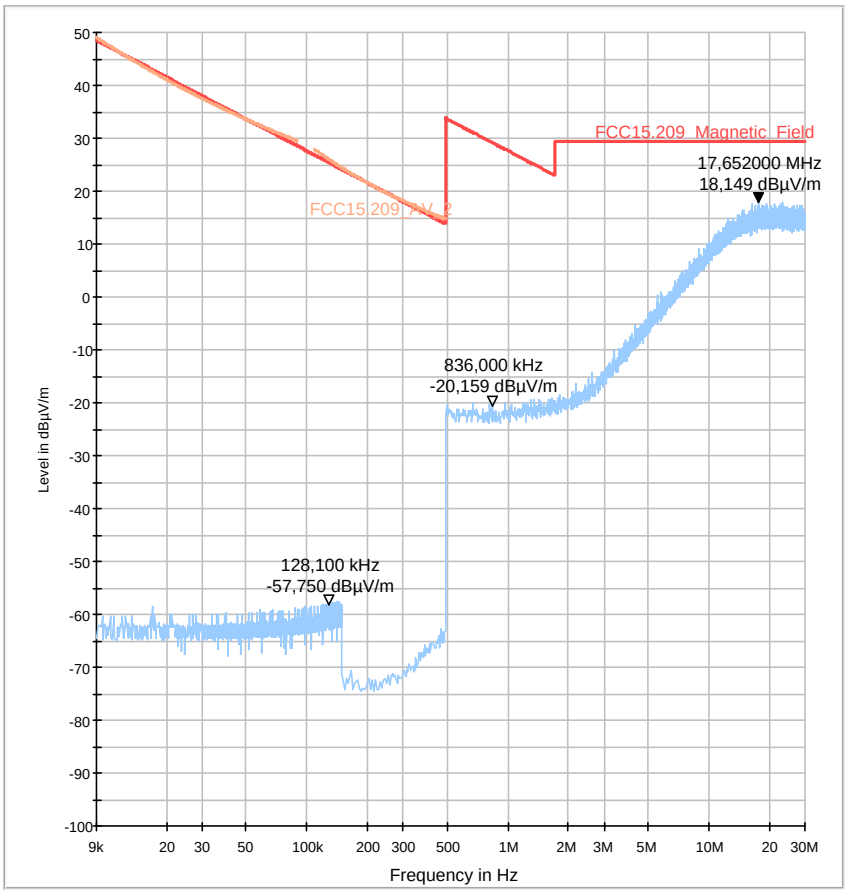
EUT Information

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

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,continious,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

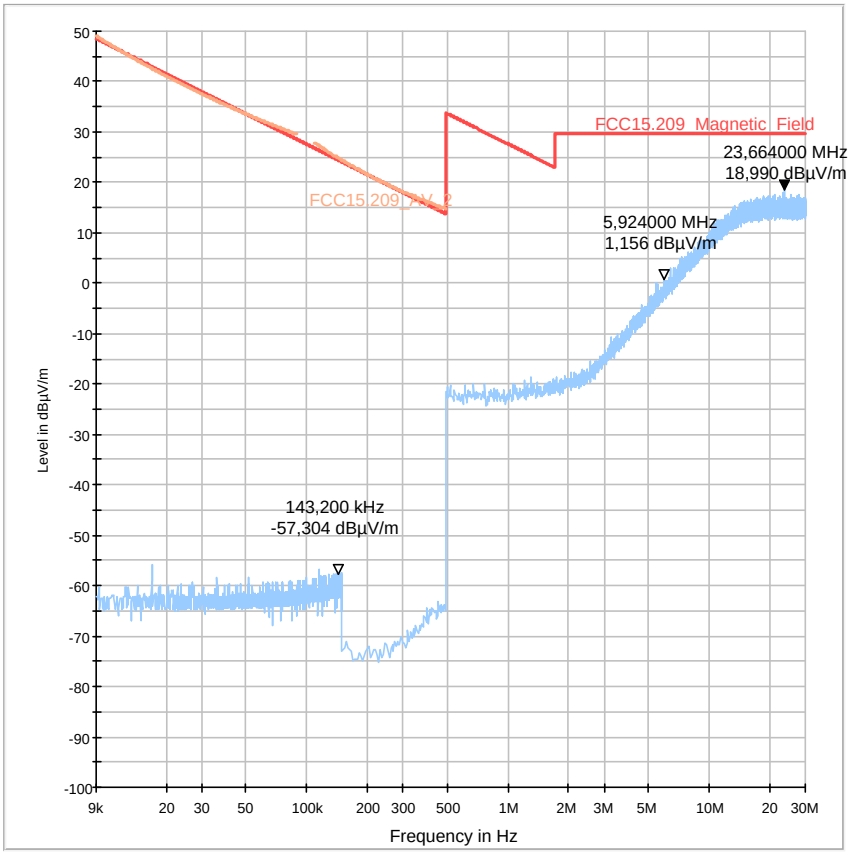
EUT Information

Manufacturer:	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

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,continious 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

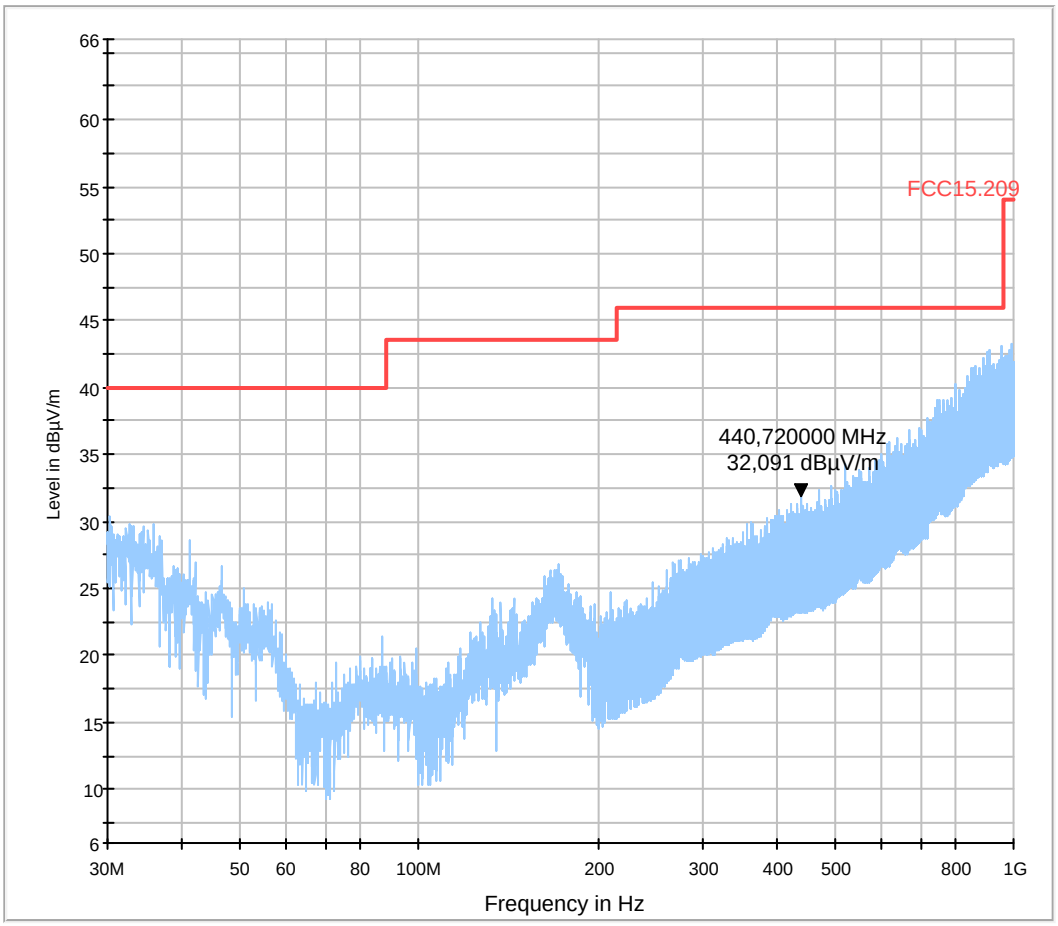
EUT Information

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

05.03.2015 Page 1 of 1

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 _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

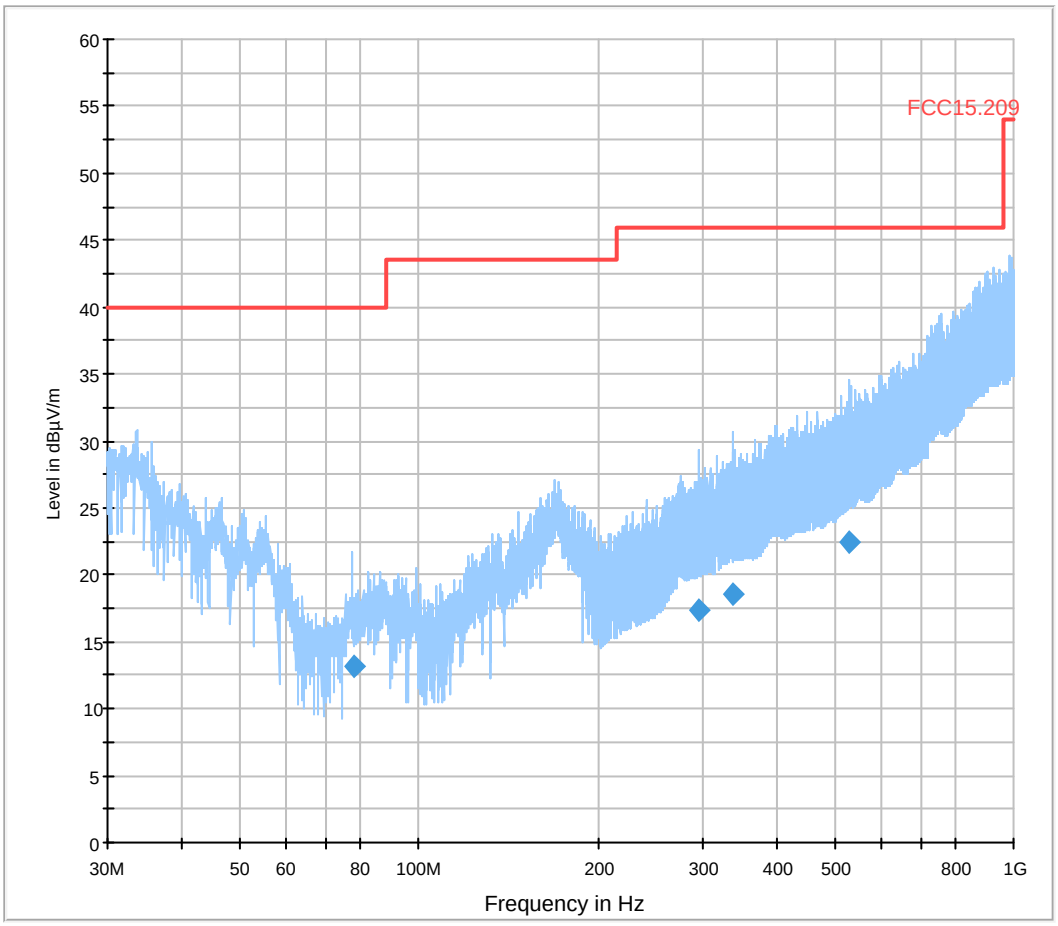
EUT Information

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

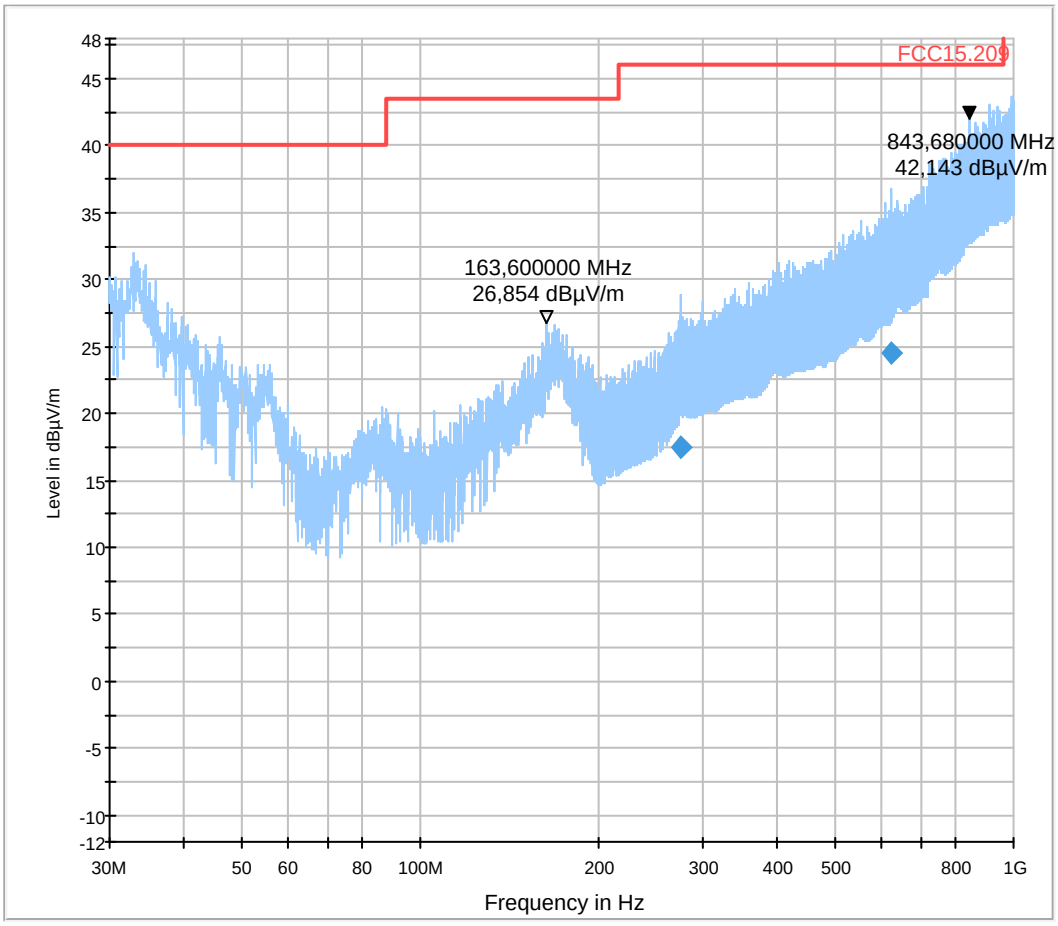
EUT Information

Manufacturer:	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:	230VAC

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 _MCS0-Ch11
Power during tests:	110V 60Hz

01_FCC15.209_hor+vert_kipp



Final Result 1

Frequency (MHz)	Quasi Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (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

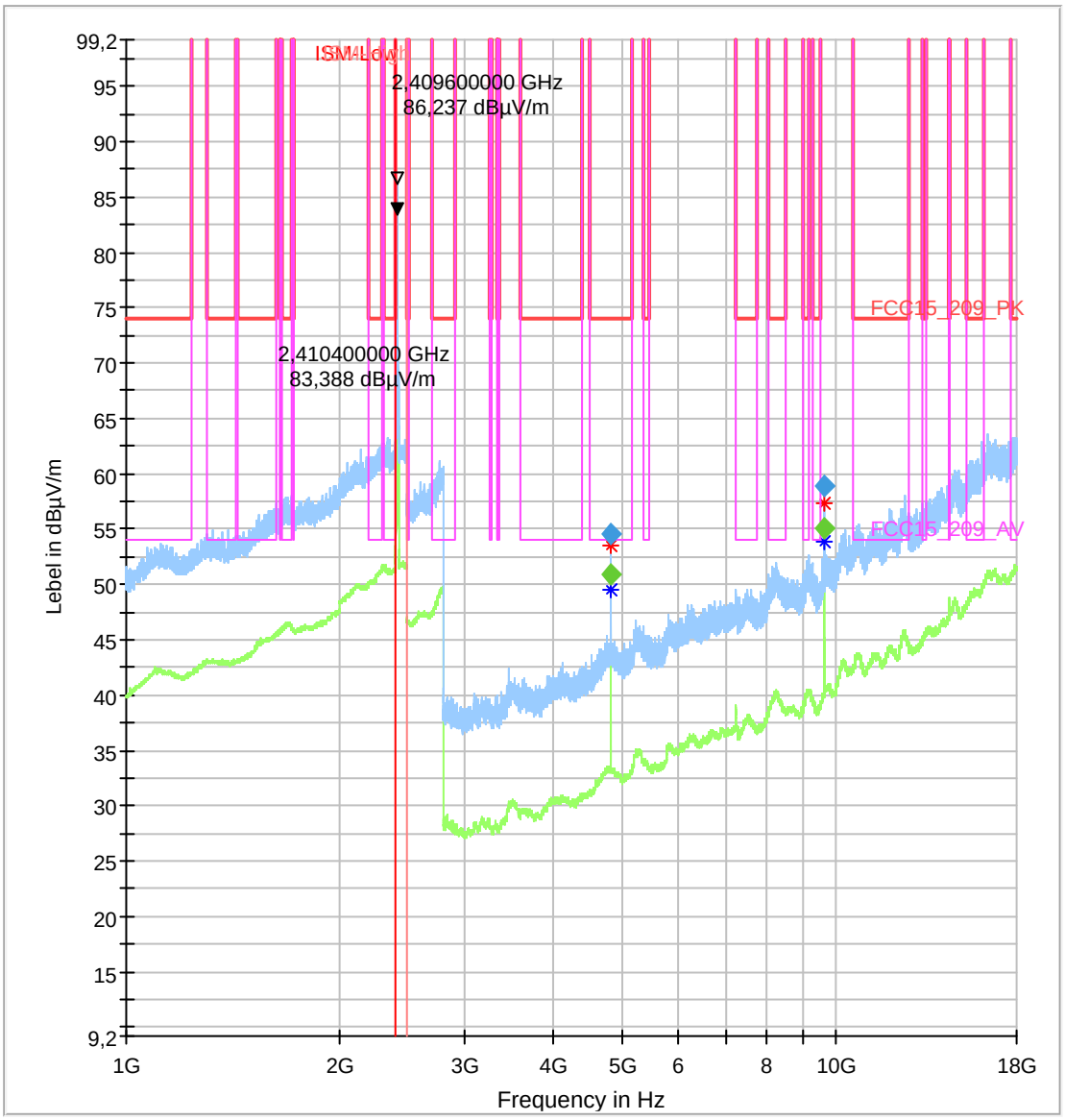
Diagram No.: 8.01_TX_b-Mode_Ch1_2Mbit

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)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	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)	Corr.	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

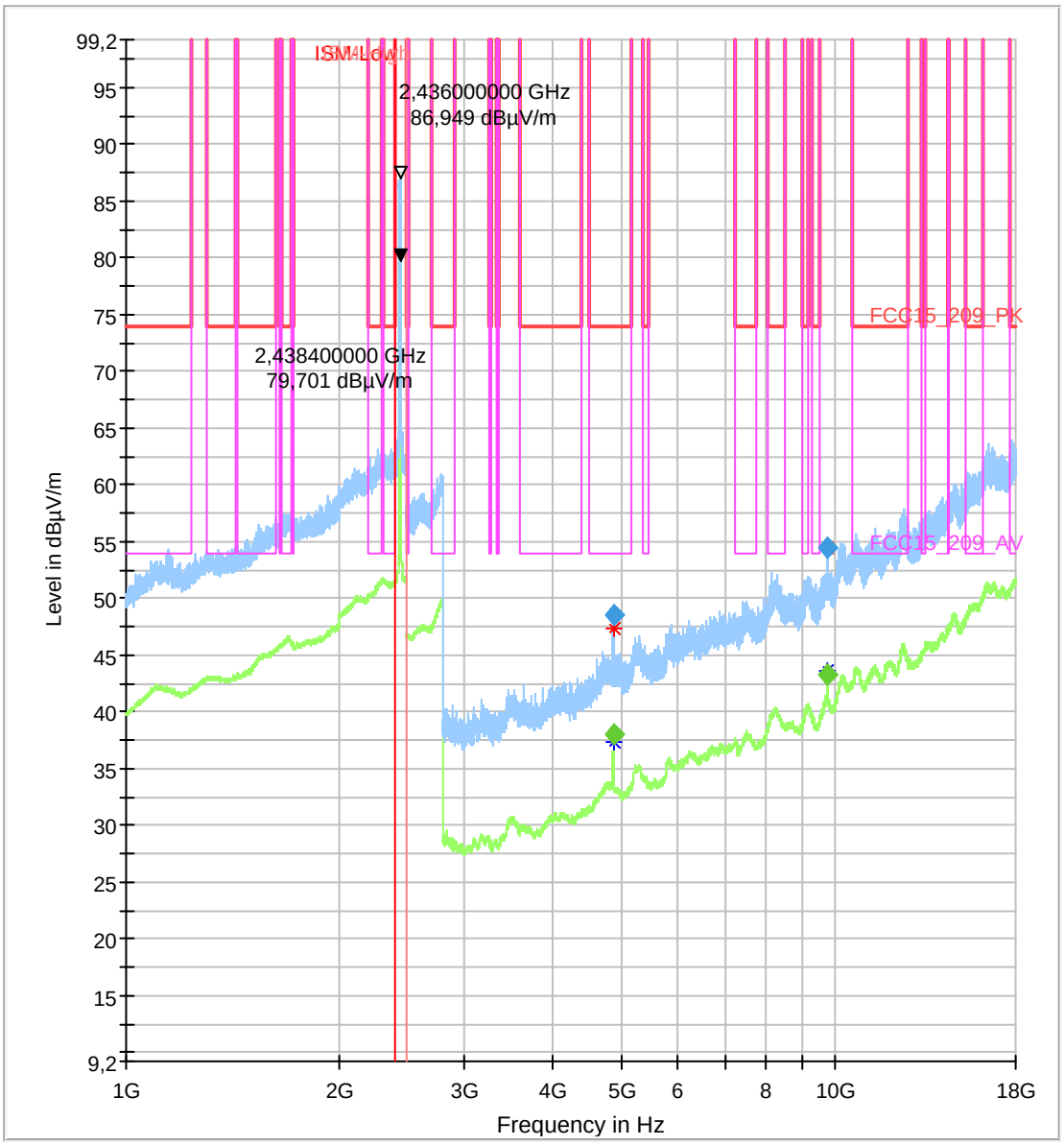
Diagram No.: 8.02_TX_g-Mode_ch6_9Mbit

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)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	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)	Corr.	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

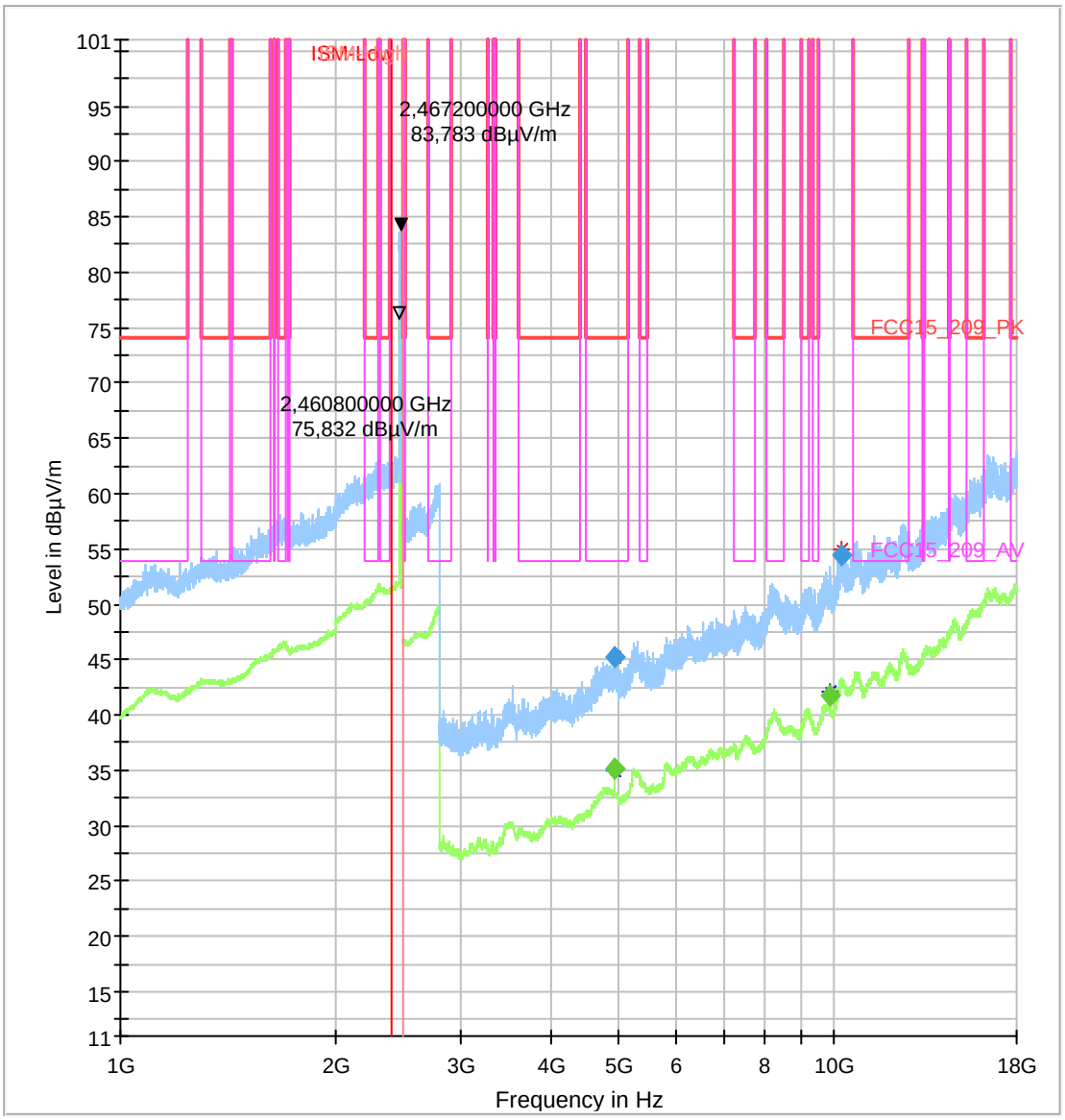
Diagram No:8.03_TX_n-Mode_Ch11_MCS0

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)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	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)	Corr.	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

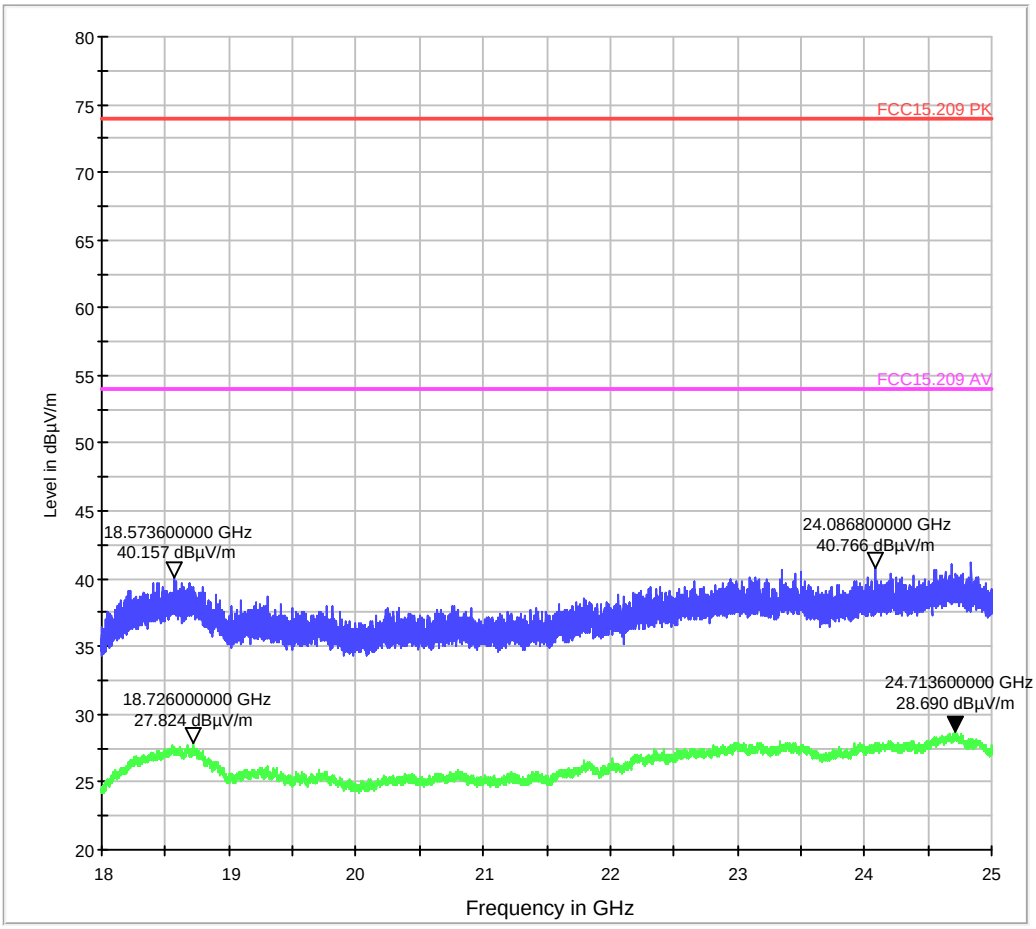
Common Information

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

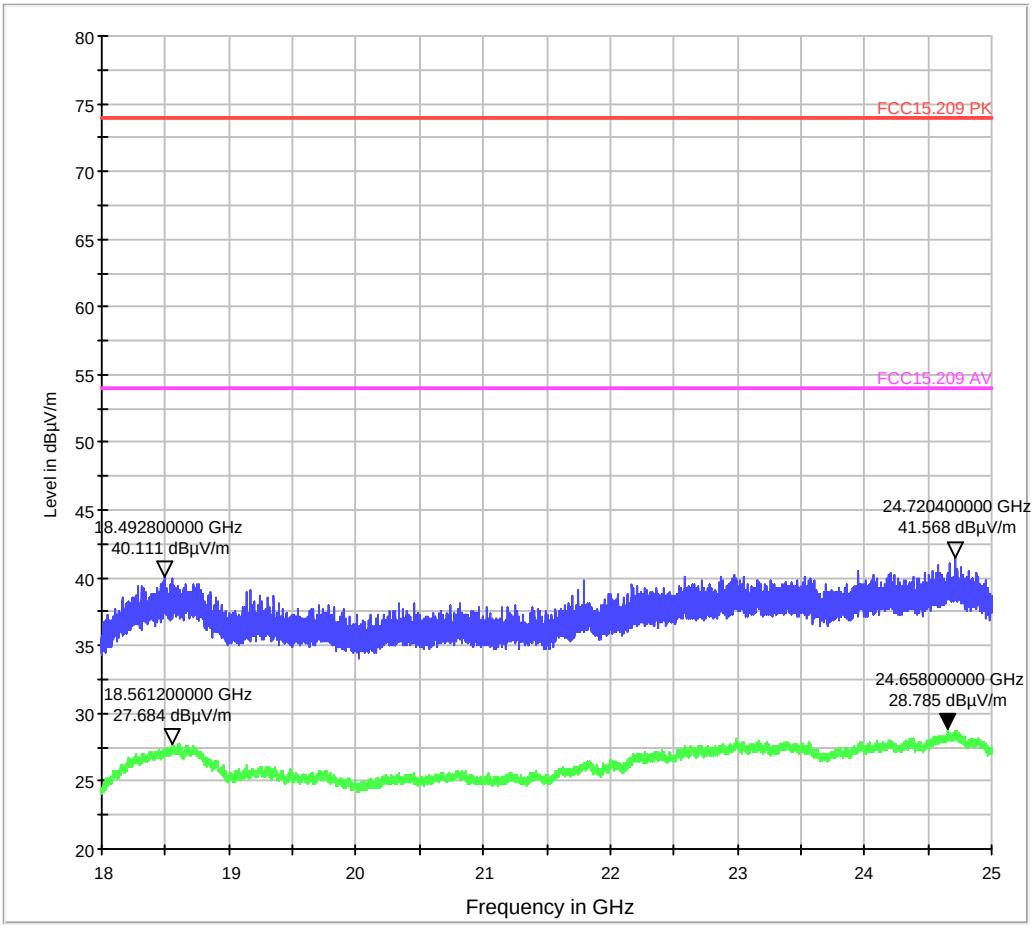
Common Information

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

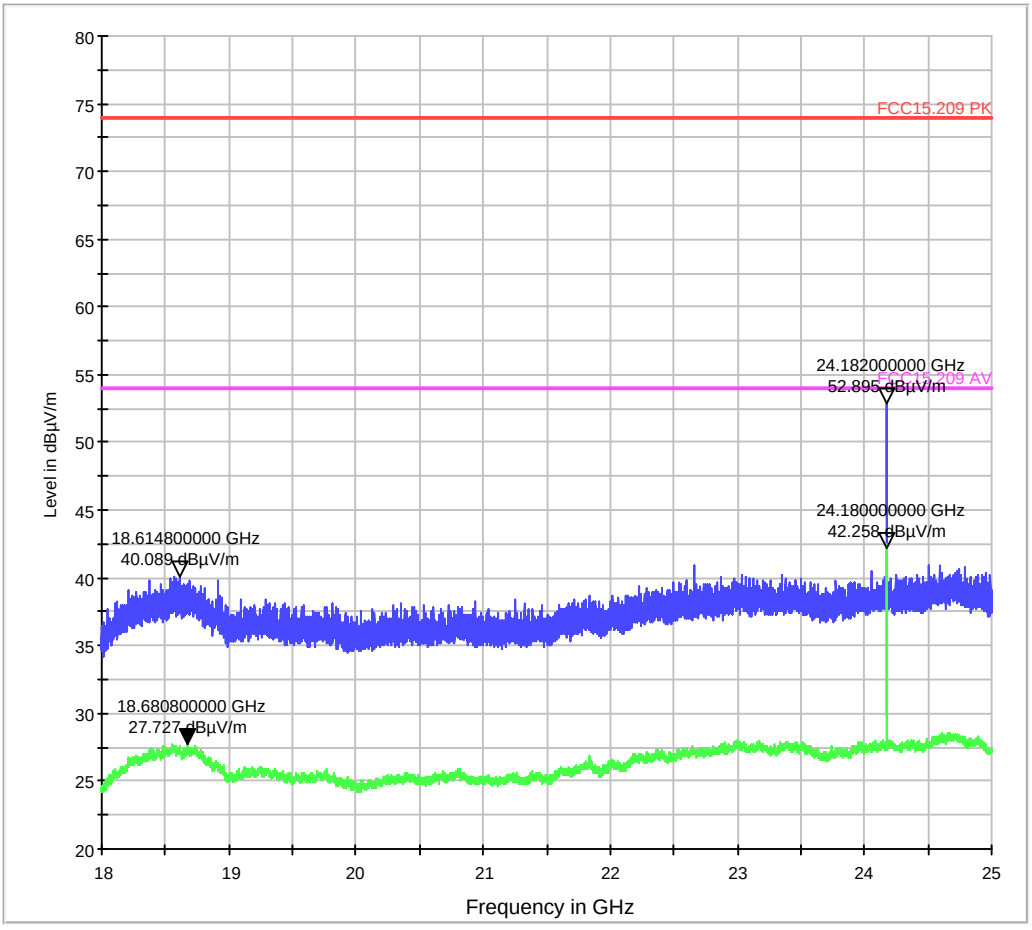
Common Information

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:	

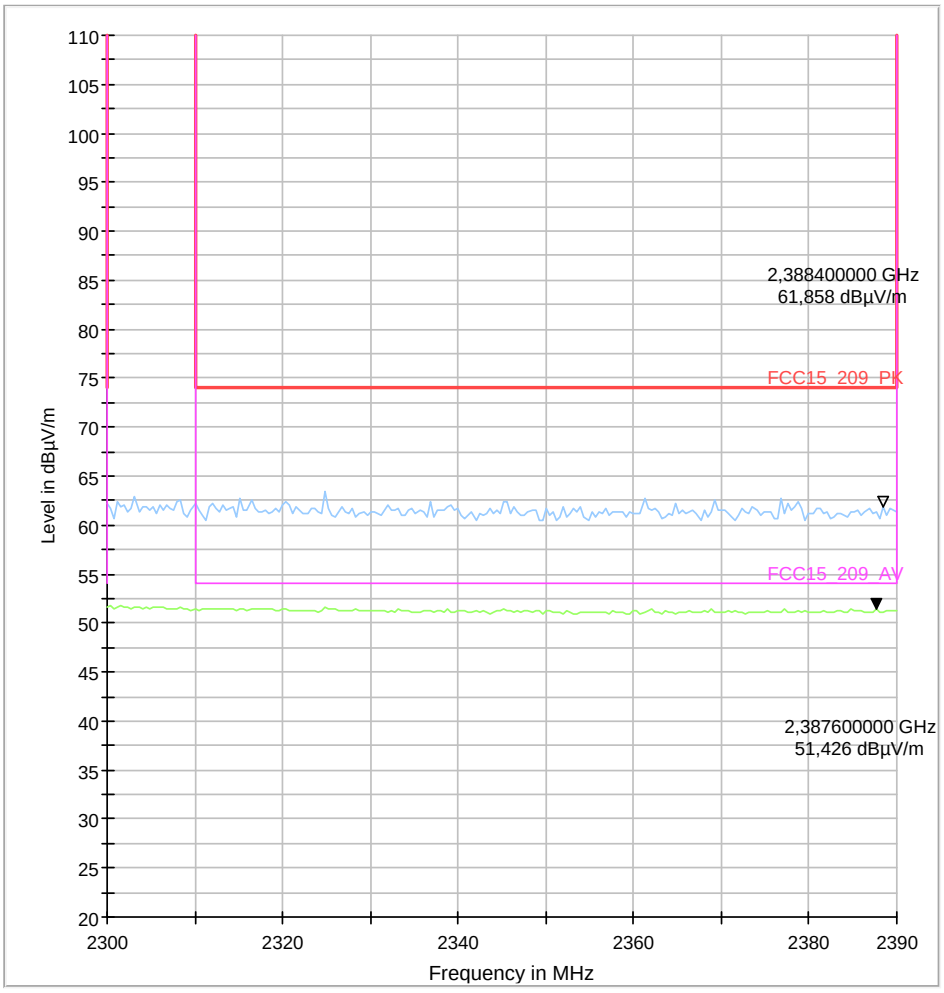


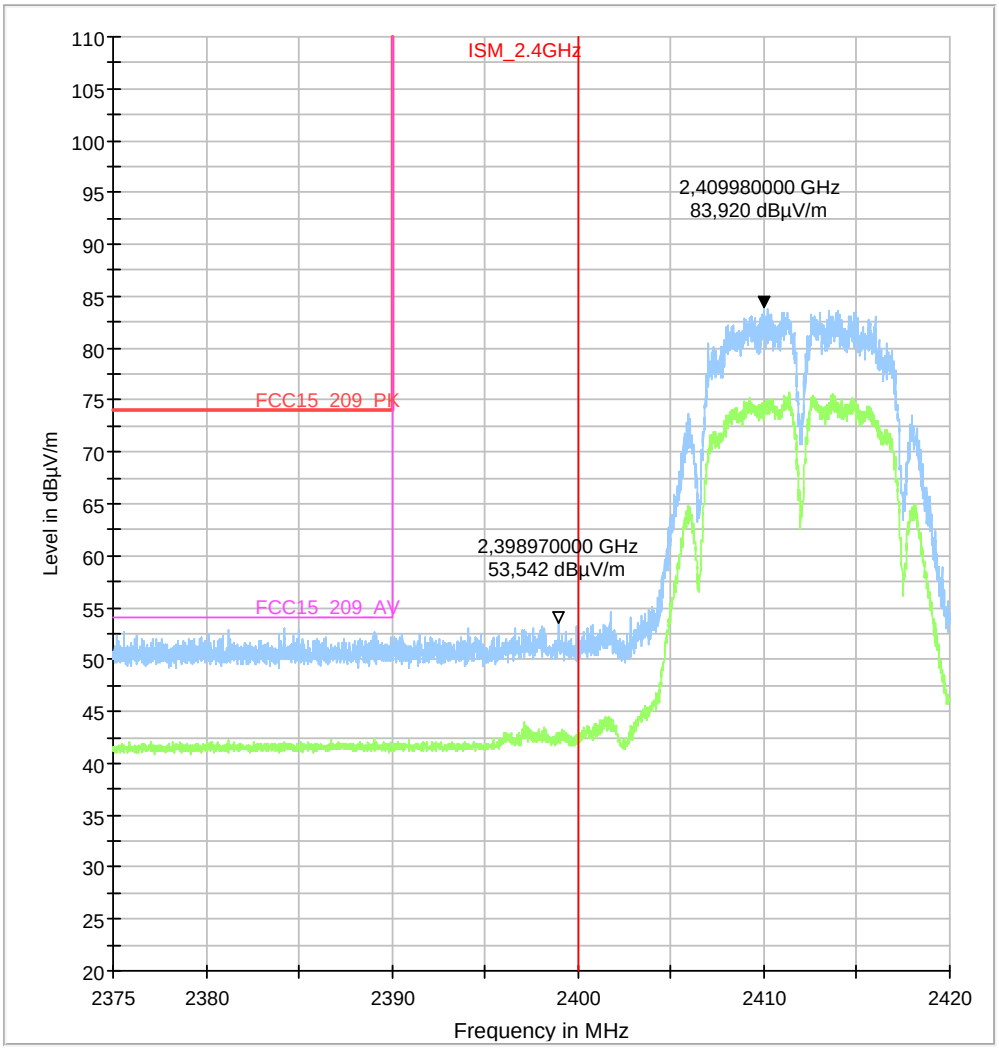
Diagram No.: 9.01b_BE_Ch1_2 Mbit_gc_58

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

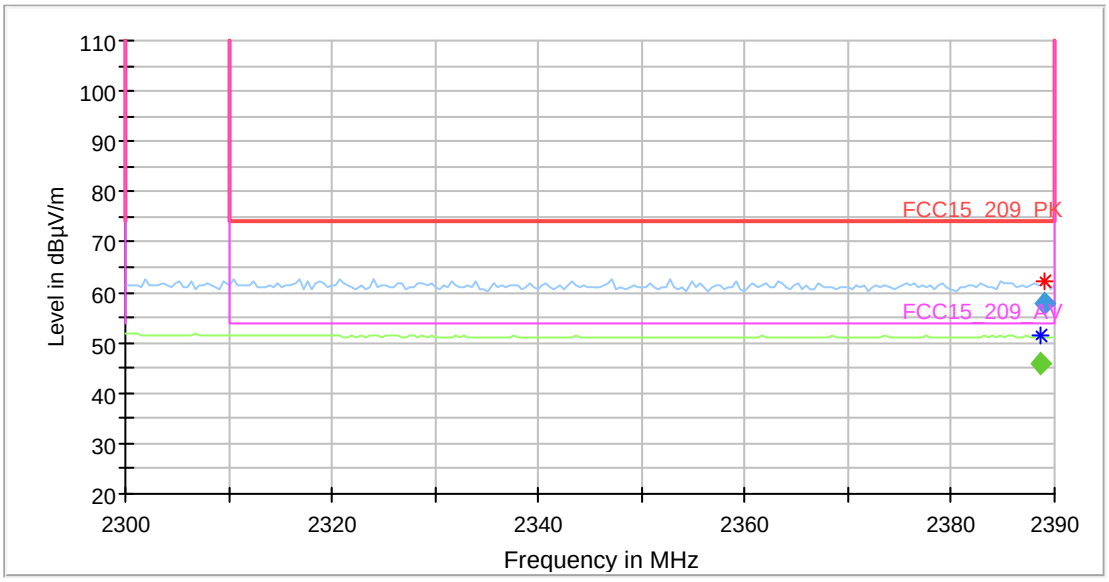
Diagram No.: 9.02a_BE_Ch1_9MBit_gc_50

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)	Pol	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)	Corr.	Comment
2388.720000	35.5	08:40:04 - 25.02.2015
2389.040000	35.5	08:38:38 - 25.02.2015

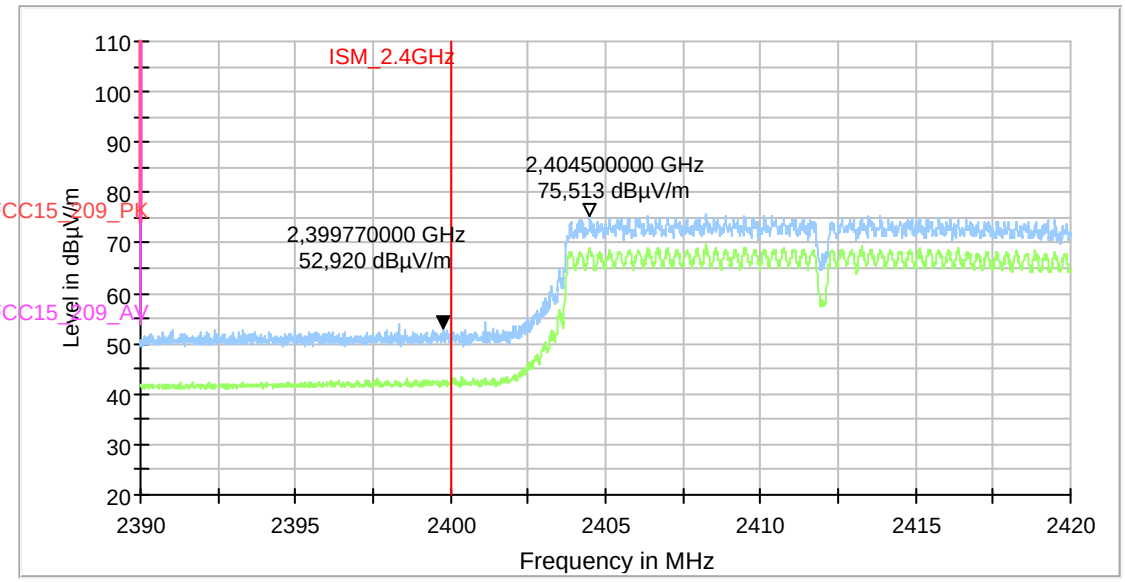
Diagram No.: 9.02b_BE_Ch1_9MBit_gc_50

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:	

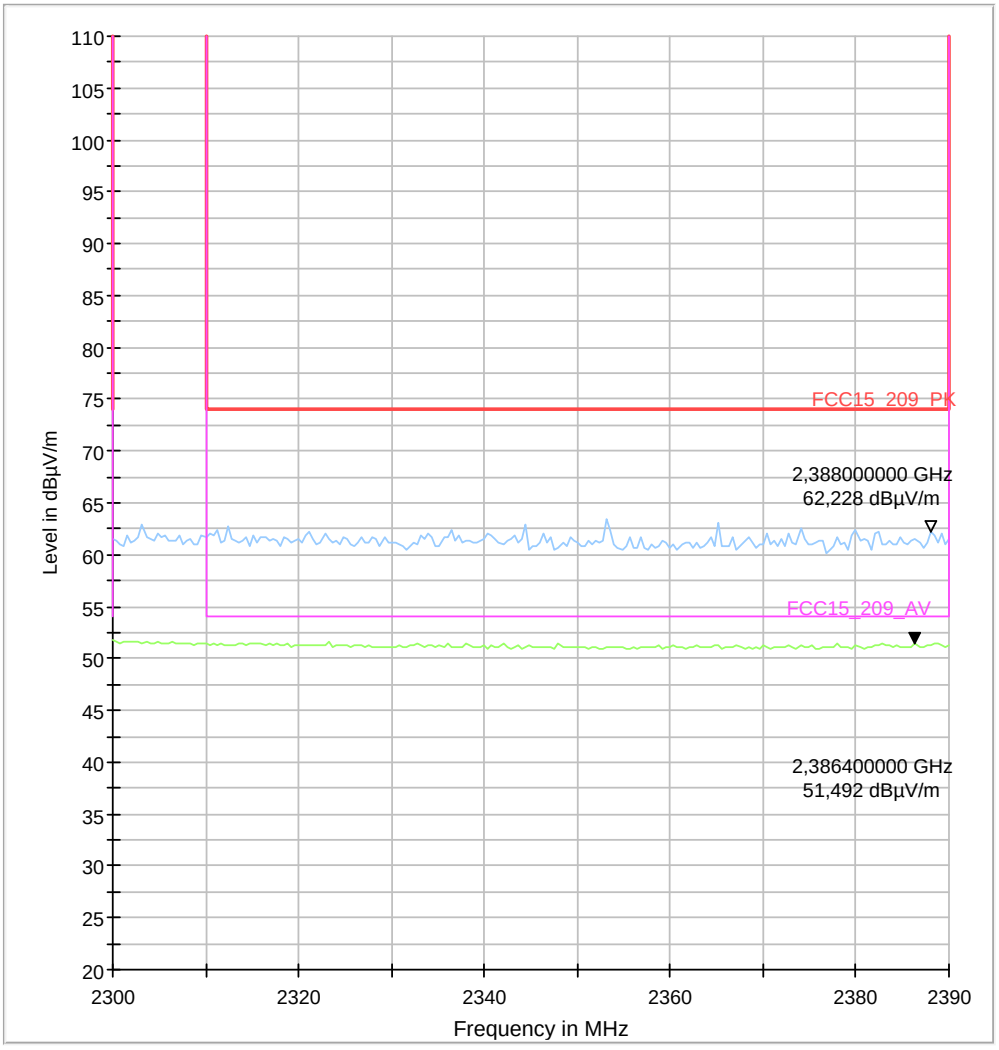


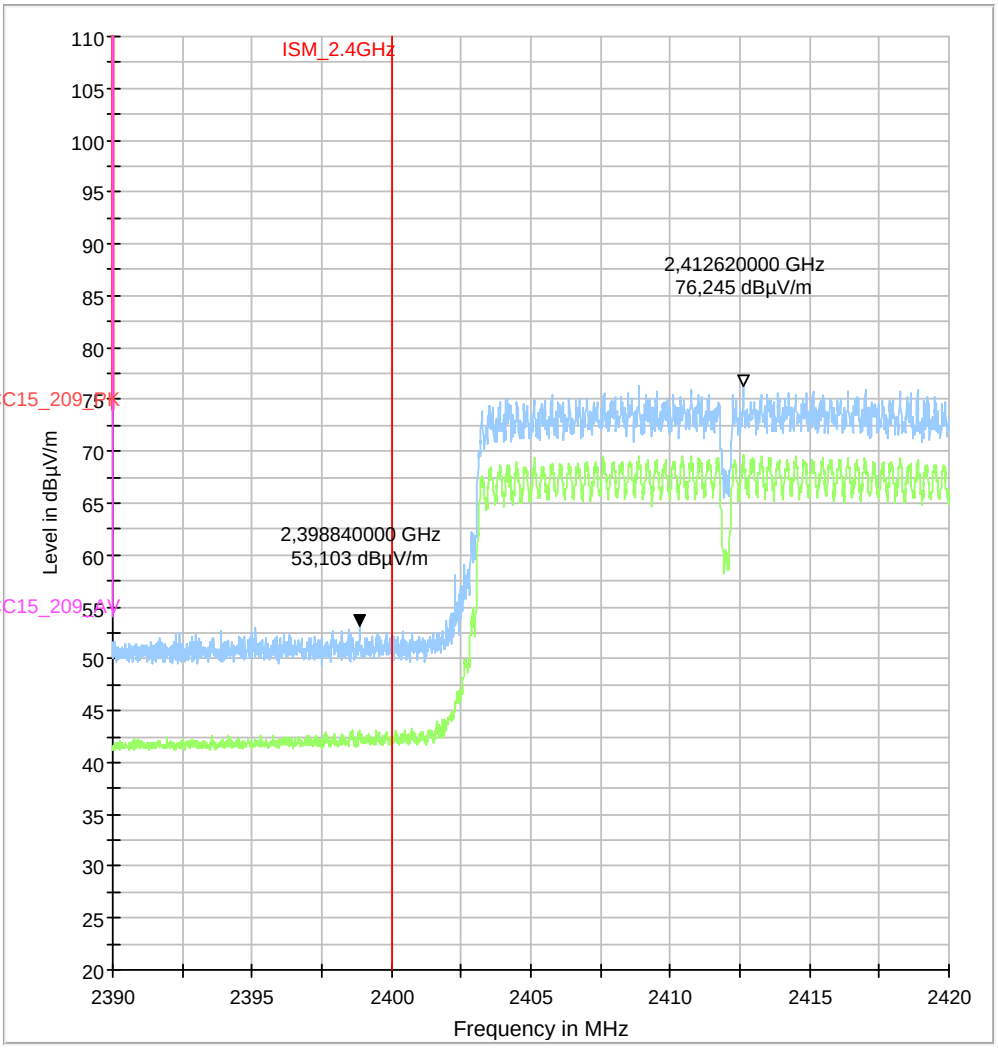
Diagram No.: 9.03b_BE_Ch1_MCS0_gc_50

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

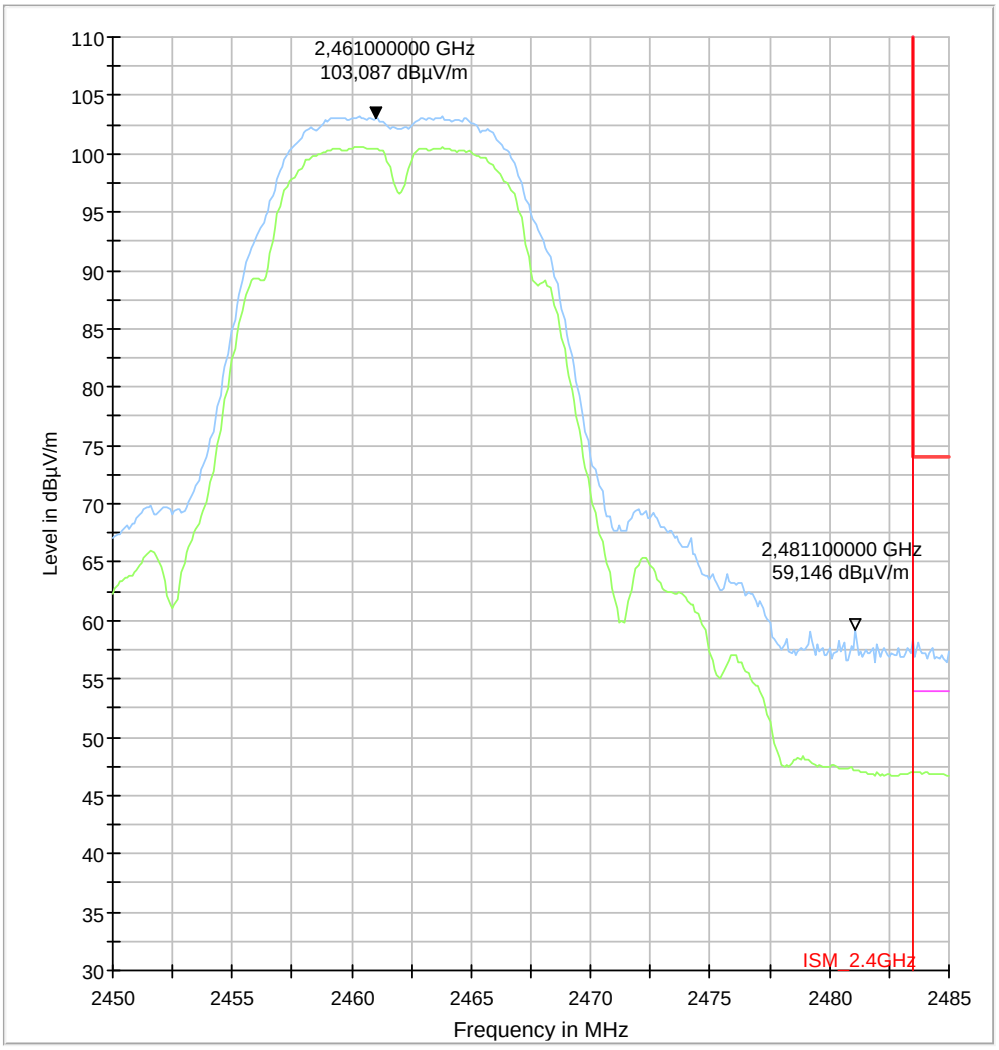
Diagram No.: 9.01c_BE_Ch11_2 Mbit_gc_58

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

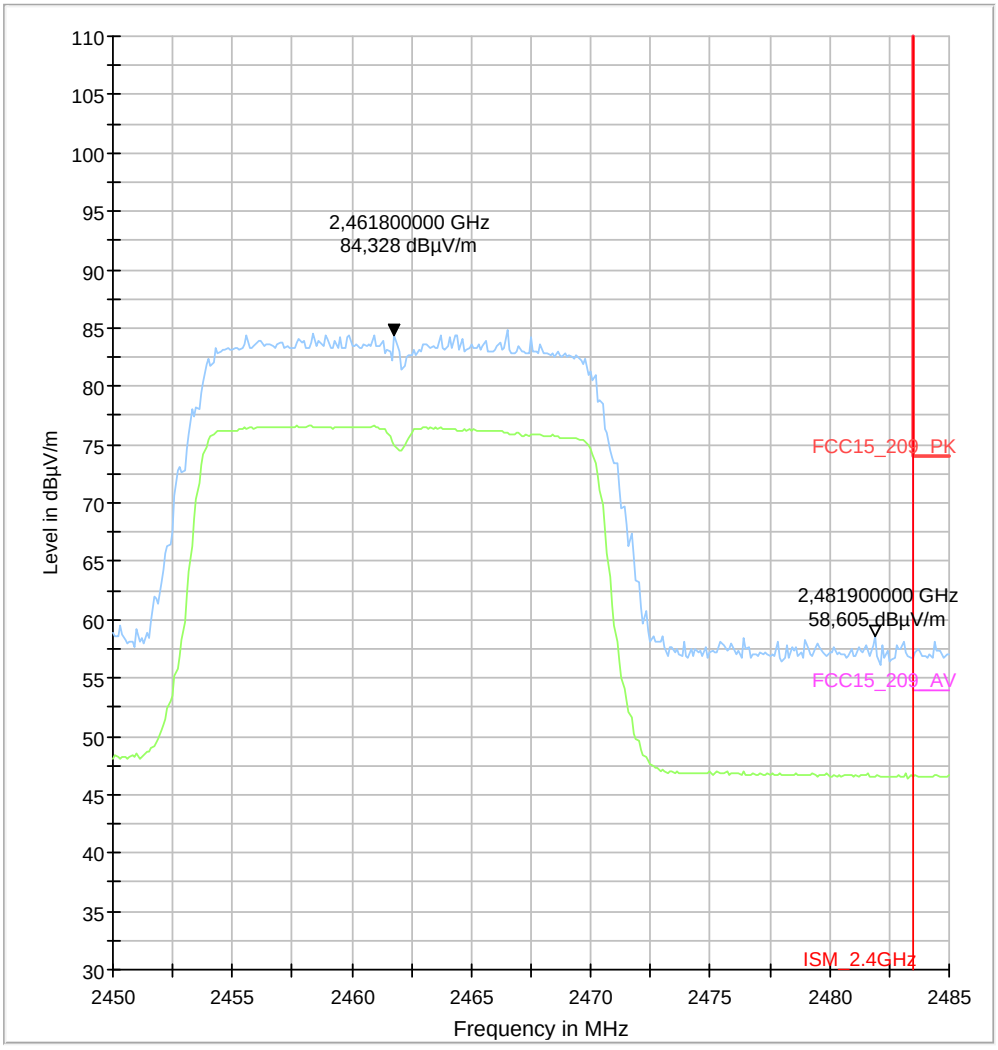
Diagram No.: 9.02c_BE_Ch11_9 Mbit_gc_50

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: