Annex 1: Measurement diagrams
to
T E S T R E P O R T
No.: 6-0520-14-1-7b

According to:
FCC Regulations
Part 15.207 / 15.209
Part 15.247

for

Leica Camera AG

Digital Camera Leica S (Typ 007)

FCC-ID: N5AS007

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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1. Measurement diagrams

1.1. Conducted EMI measurements on AC-mains port according 15.207

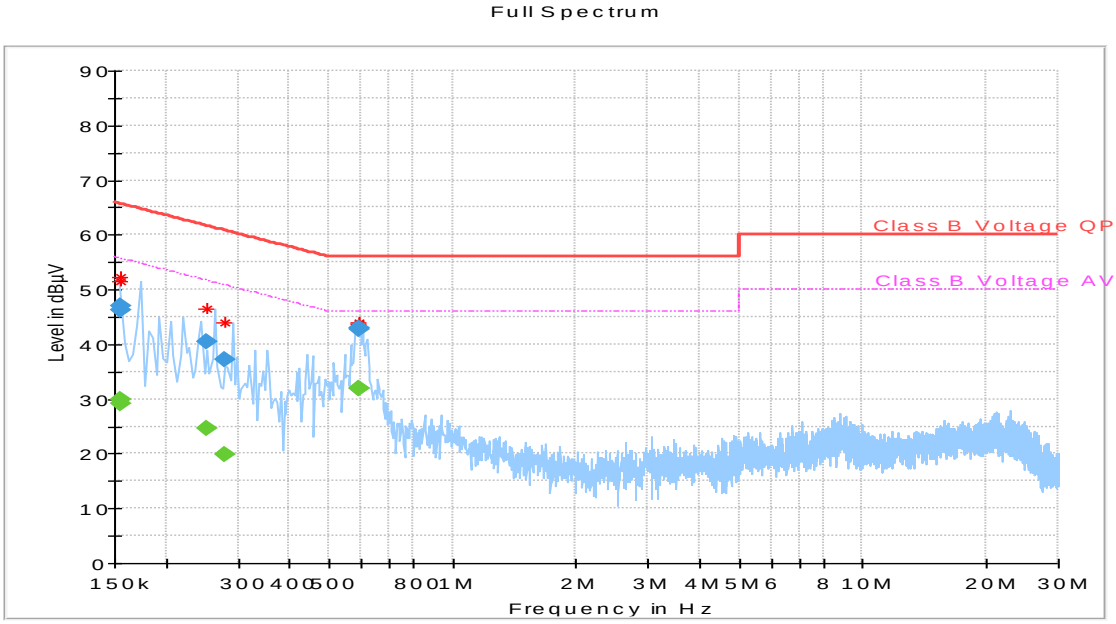
Diagram 1.01

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 15.207
Operating Mode:	WLAN
Measured on line:	N/L1
Diagram details:	Shows the peak values as a sum of measured ports in maxhold mode
Environmental Conditions:	Humidity: 31%rH; Temperature: 22°C
Operator:	HLa
Comments:	b-mode, 5.5 Mbit

EUT Information

Manufacturer:	Leica Camera AG
EuT:	Digital Camera Leica S (Typ 007)
---	---
Serial Number:	P-108 (#RAD2)
Connected Interfaces:	
Power Supply:	120V / 60Hz



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)
0.155000	---	29.07	55.73
0.155000	46.31	---	65.73
0.155938	---	29.86	55.68
0.155938	47.00	---	65.68
0.250781	40.50	---	61.73
0.250781	---	24.67	51.73
0.278125	---	19.97	50.87
0.278125	37.30	---	60.87
0.592188	---	32.05	46.00
0.592188	42.87	---	56.00
0.592813	42.85	---	56.00
0.592813	---	32.03	46.00

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)
0.155000	---	29.07	55.73
0.155000	46.31	---	65.73
0.155938	---	29.86	55.68
0.155938	47.00	---	65.68
0.250781	40.50	---	61.73
0.250781	---	24.67	51.73
0.278125	---	19.97	50.87
0.278125	37.30	---	60.87
0.592188	---	32.05	46.00
0.592188	42.87	---	56.00
0.592813	42.85	---	56.00
0.592813	---	32.03	46.00

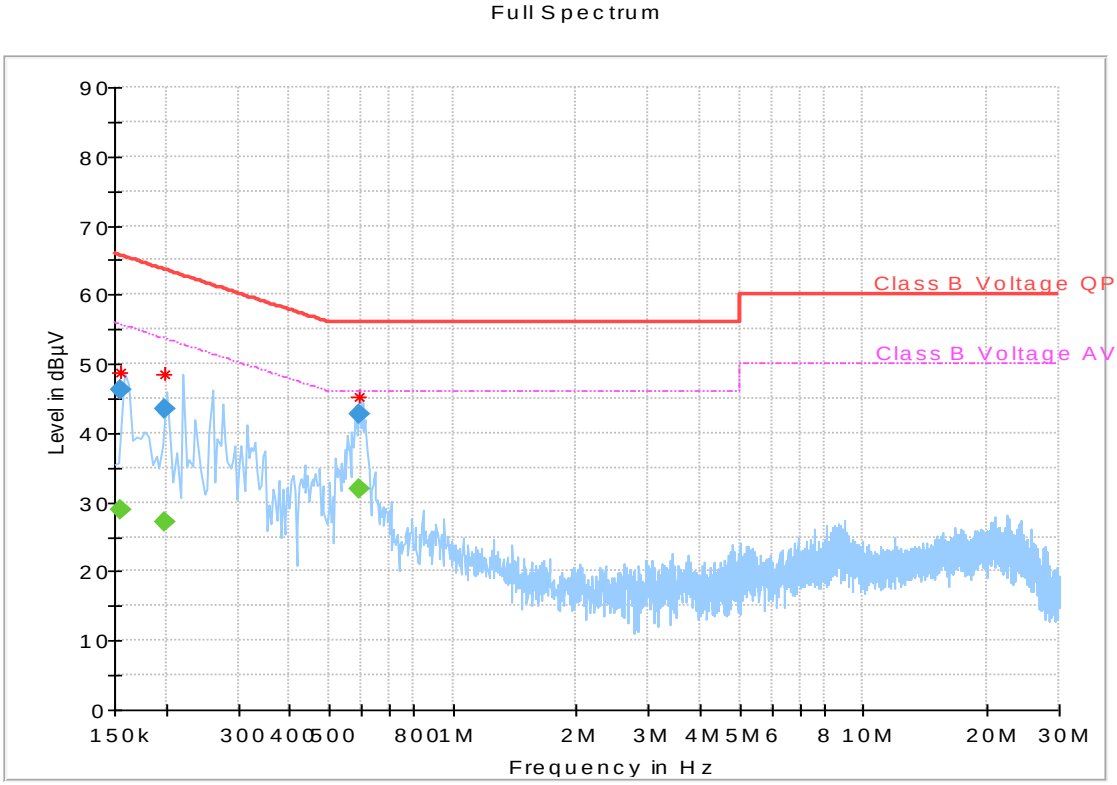
Diagram 1.02

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 15.207
Operating Mode:	WLAN
Measured on line:	N/L1
Diagram details:	Shows the peak values as a sum of measured ports in maxhold mode
Environmental Conditions:	Humidity: 31%rH; Temperature: 22°C
Operator:	HLa
Comments:	g-mode, 6 Mbit

EUT Information

Manufacturer:	Leica Camera AG
EuT:	Digital Camera Leica S (Typ 007)
---	---
Serial Number:	P-108 (#RAD2)
Connected Interfaces:	--
Power Supply:	120V / 60Hz
Comments:	--



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)
0.155000	46.33	---	65.73
0.155000	---	28.93	55.73
0.197813	43.55	---	63.70
0.197813	---	27.03	53.70
0.591719	---	31.97	46.00
0.591719	42.77	---	56.00

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)
0.155000	46.33	---	65.73
0.155000	---	28.93	55.73
0.197813	43.55	---	63.70
0.197813	---	27.03	53.70
0.591719	---	31.97	46.00
0.591719	42.77	---	56.00

Diagram 1.03

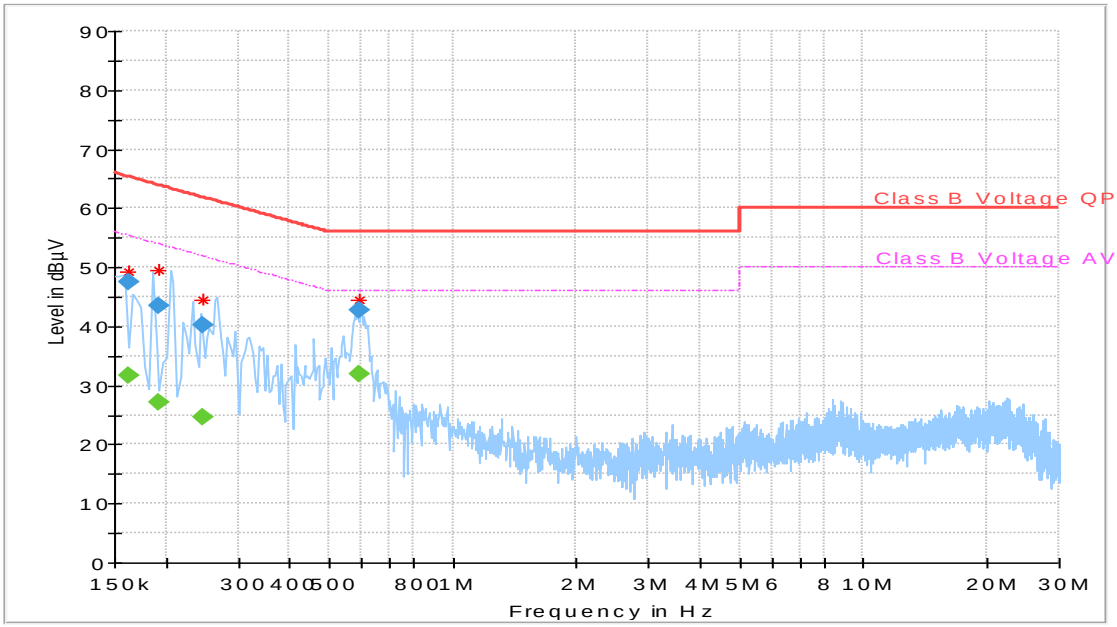
Common Information

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 15.207
Operating Mode:	WLAN
Measured on line:	N/L1
Diagram details:	Shows the peak values as a sum of measured ports in maxhold mode
Environmental Conditions:	Humidity: 31%rH; Temperature: 22°C
Operator:	HLa
Comments:	n-mode, MCS0

EUT Information

Manufacturer:	Leica Camera AG
EuT:	Digital Camera Leica S (Typ 007)
---	---
Serial Number:	P-108 (#RAD2)
Connected Interfaces:	--
Power Supply:	120V / 60Hz
Comments:	--

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)
0.162656	47.49	---	65.33
0.162656	---	31.60	55.33
0.192188	43.38	---	63.94
0.192188	---	27.19	53.94
0.245781	40.34	---	61.90
0.245781	---	24.63	51.90
0.592813	42.65	---	56.00
0.592813	---	31.81	46.00

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)
0.162656	47.49	---	65.33
0.162656	---	31.60	55.33
0.192188	43.38	---	63.94
0.192188	---	27.19	53.94
0.245781	40.34	---	61.90
0.245781	---	24.63	51.90
0.592813	42.65	---	56.00
0.592813	---	31.81	46.00

1.2. Magnetic field measurements f<30MHz

1.2.1. b-Mode Modulation

Diagram 2.01a_Ch1_b_Mode_1MBit

Common Information

Test Description:	Magnetic Fieldstrength Measurement related to 30/300 m distance
Test site and distance:	Semi Anechoic Room (SAR); CETECOM GmbH Essen
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 Part 15.247(15.209)
Operator:	HLa
Operating conditions:	Ch1, bMode, 1MBit
Power During test:	full loaded battery
Remark:	Standing

EUT Information

Manufacturer:	Leica Camera AG
EuT:	Digital Camera Leica S (Typ 007)
---	---
Serial Number:	P-108 (#RAD2)
Connected Interfaces:	
Power Supply:	120V / 60Hz

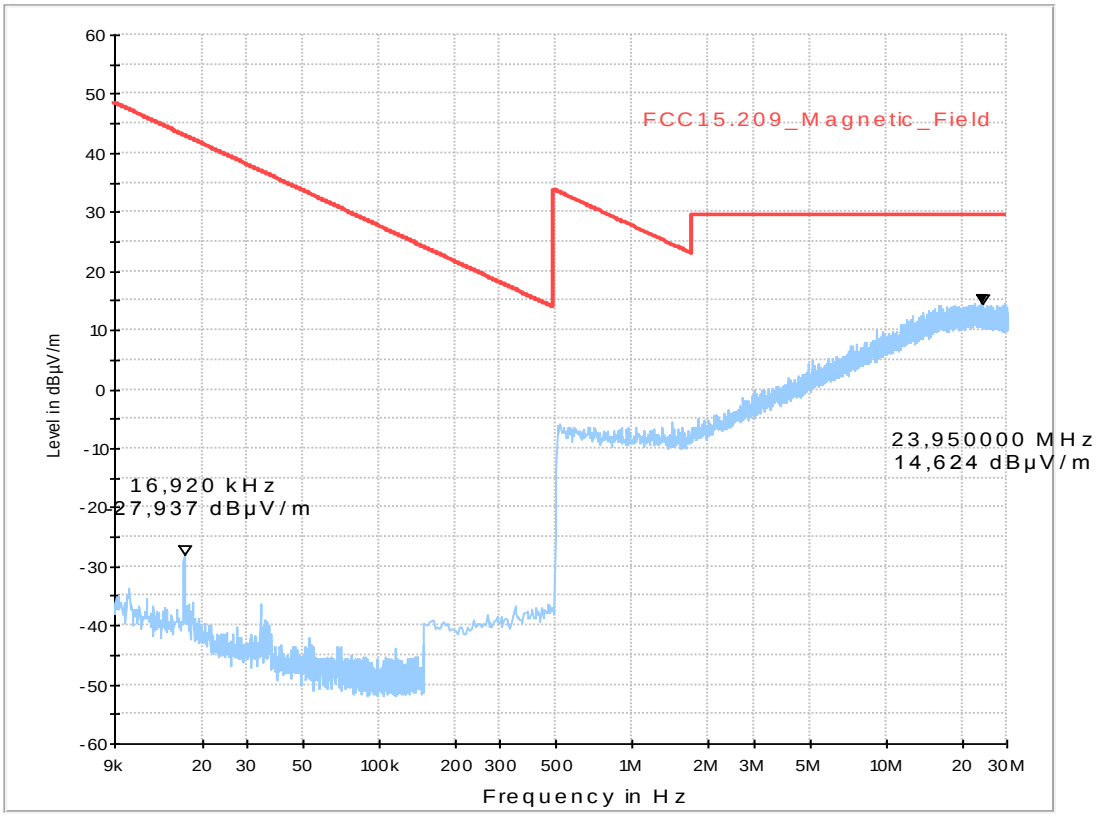


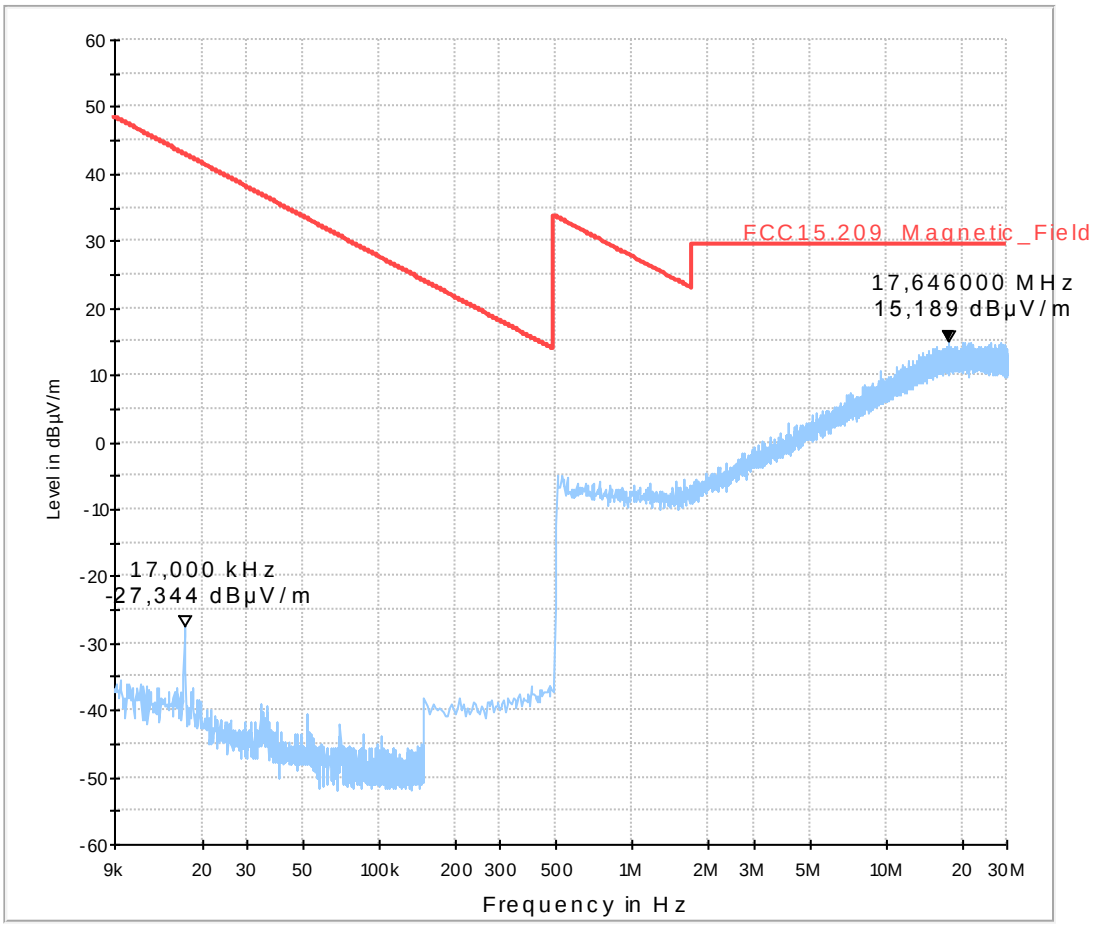
Diagram 2.01b_Ch1_b_Mode_1MBit

Common Information

Test Description:	Magnetic Fieldstrength Measurement related to 30/300 m distance
Operating Conditions:	Semi Anechoic Room (SAR); CETECOM GmbH Essen
Operator Name:	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 Part 15.247(15.209)
Operator:	HLa
Operating conditions:	Ch1, bMode, 1MBit
Power During test:	full loaded battery
Remark:	laying

EUT Information

Manufacturer:	Leica Camera AG
EuT:	Digital Camera Leica S (Typ 007)
---	---
Serial Number:	P-108 (#RAD2)
Connected Interfaces:	
Power Supply:	full Battery



1.2.2. g-Mode Modulation

Diagram No. 2.02a_TX_Ch6_g-mode_54Mbit

Date: 24.04.2015 Page 1 of 1

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 Part 15.247(15.209)
Operator:	HLa
Operating conditions:	Ch6, g-Mode, 54MBit
Power during tests:	full loaded battery
Comment 1:	standing
Comment 2:	

EUT Information

Manufacturer:	Leica Camera AG
EuT:	Digital Camera Leica S (Typ 007)
---	---
Serial Number:	P-108 (#RAD2)
Connected Interfaces:	--
Power Supply:	full Battery

3

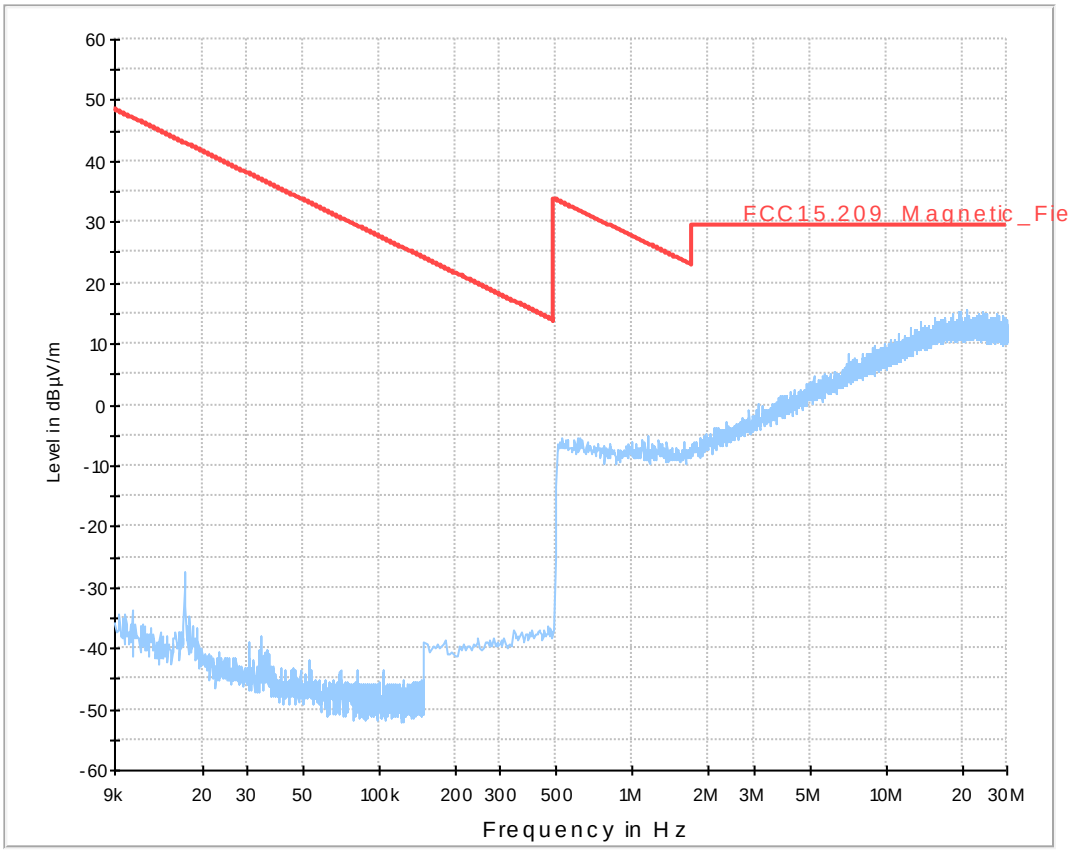
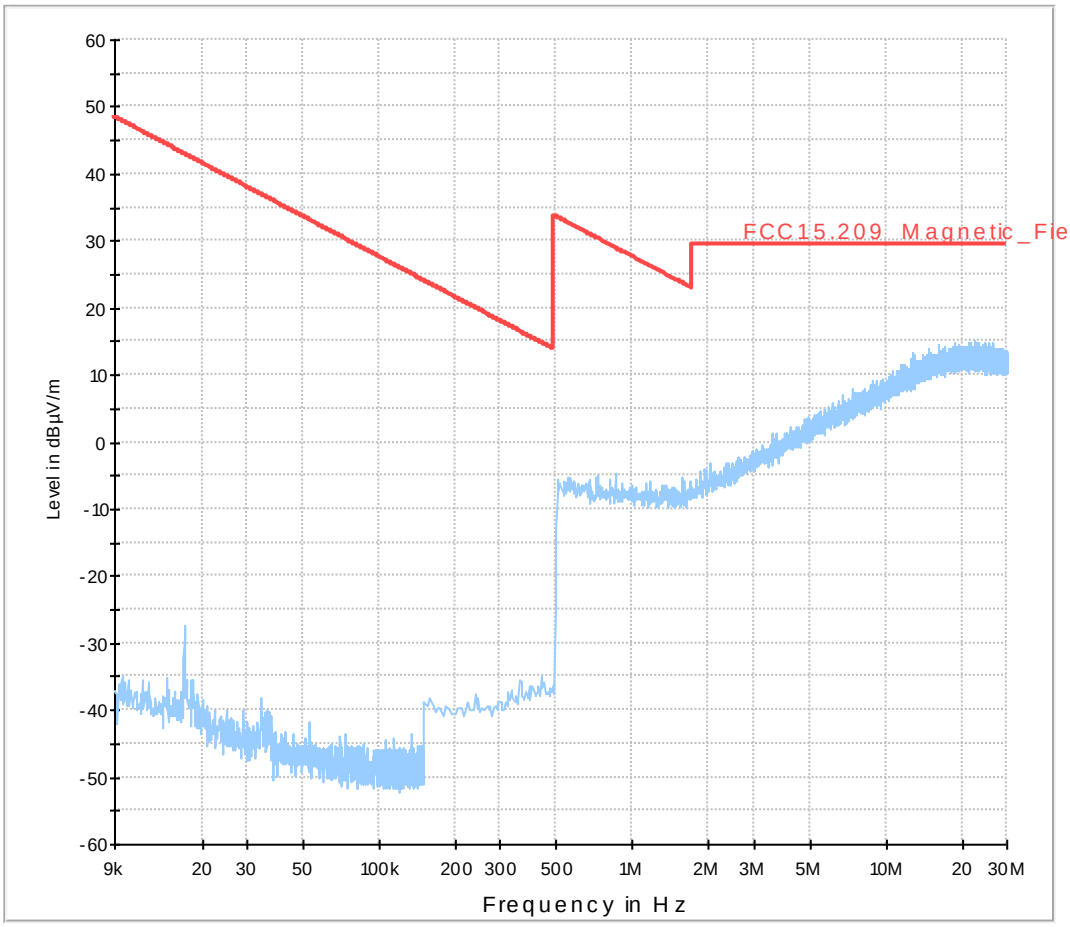


Diagram No. 2.02b_TX_Ch6_g-mode_54Mbit

Test Description:	Date: 24.04.2015 Page 1 of 1
Test site and distance:	Magnetic Field Strength Measurement related to 30/300 m distance
Version of Testsoftware:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Distance correction:	EMC32 V8.51.0
Technical Data:	used accord. table, pls. see test report
Rec. antenna (pre-scan):	Please see page 2 for detailed data of measurement setup
Used filter:	height 1.00 m, parallel and 90° to EUT polarisation
Test specification:	FCC Part 15.247(15.209)
Operator:	HLa
Operating conditions:	Ch6, g-Mode, 54MBit
Power during tests:	full loaded battery
Comment 1:	laying

EUT Information

Manufacturer:	Leica Camera AG
EuT:	Digital Camera Leica S (Typ 007)
---	---
Serial Number:	P-108 (#RAD2)
Connected Interfaces:	--
Power Supply:	full Battery



1.2.3. n-Mode Modulation

Diagram No. 2.03a_TX_Ch11_n-mode_MCS6

Date: 24.04.2015 Page 1 of 1

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 Part 15.247(15.209)
Operator:	HLa
Operating conditions:	Ch:11, n-mode, MCS6
Power during tests:	full loaded battery
Comment 1:	standing

EUT Information

Manufacturer:	Leica Camera AG
EuT:	Digital Camera Leica S (Typ 007)
---	---
Serial Number:	P-108 (#RAD2)
Connected Interfaces:	--
Power Supply:	full Battery

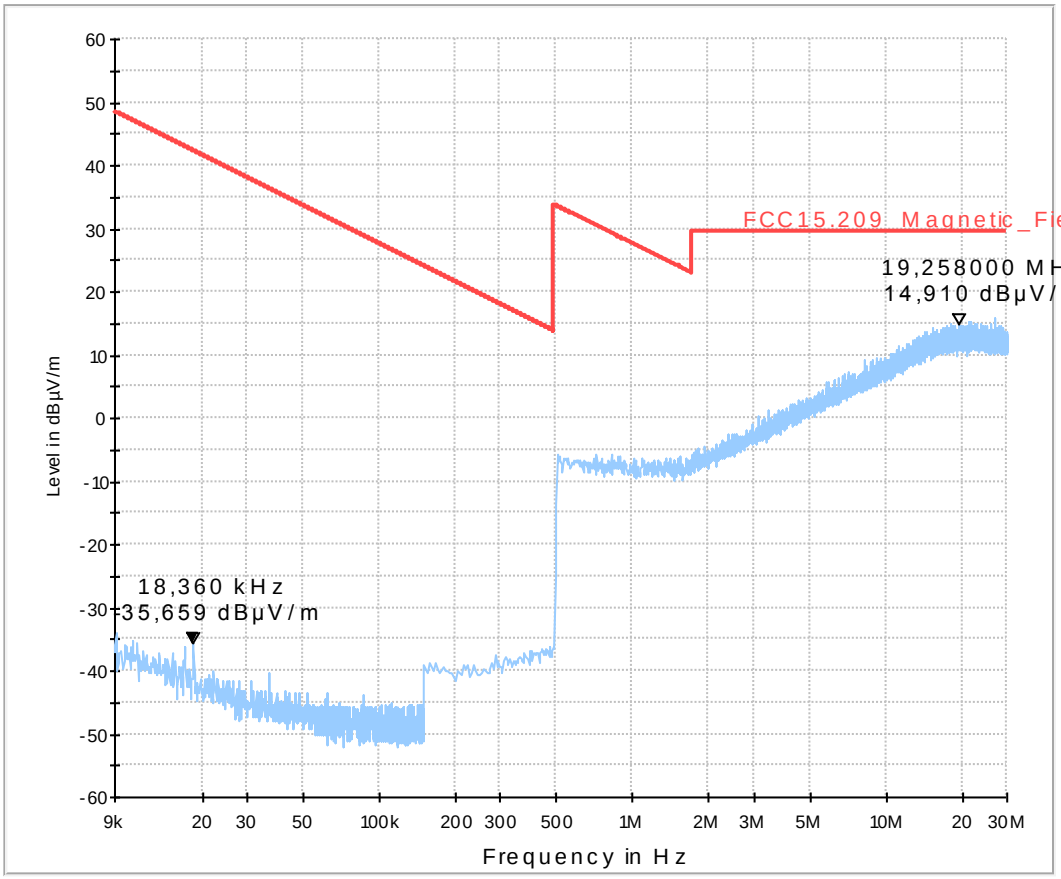


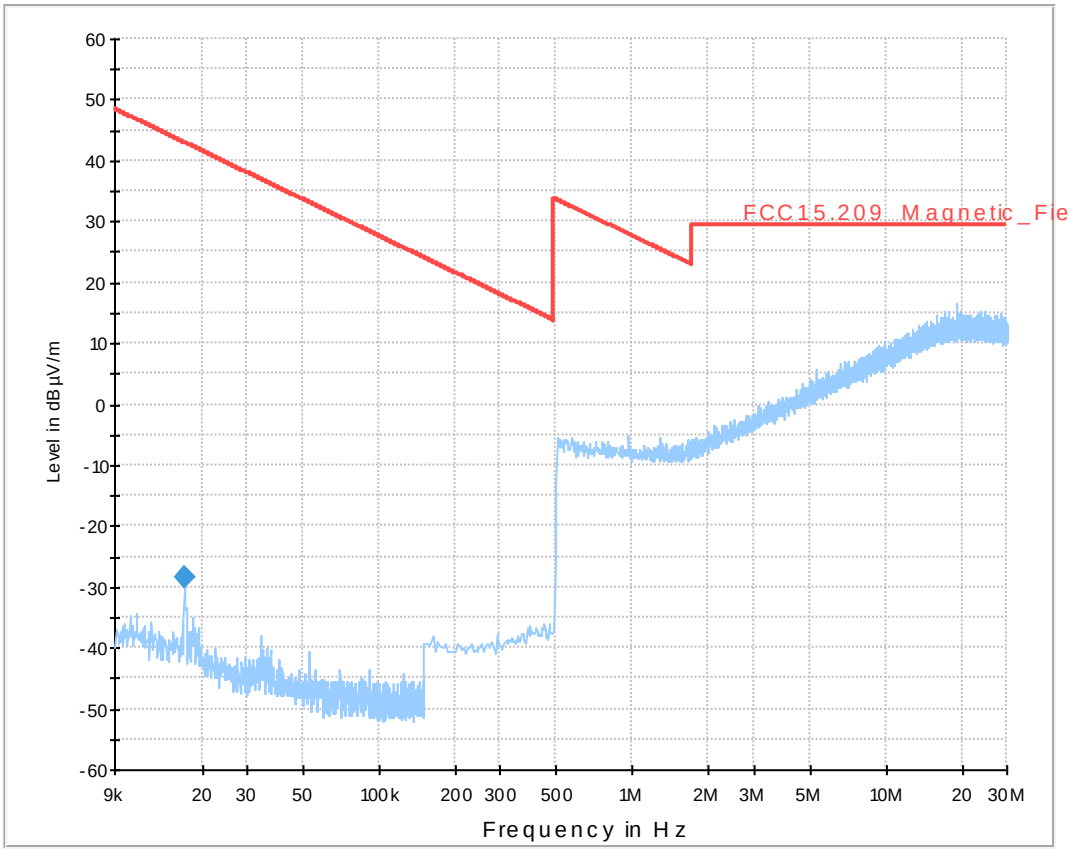
Diagram No. 2.03b_TX_Ch11_n-mode_MCS6

Date: 24.04.2015 Page 1 of 1

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 Part 15.247(15.209)
Operator:	HLa
Operating conditions:	Ch:11, n-Mode, MCS6
Power during tests:	full loaded battery
Comment 1:	laying
Comment 2:	

EUT Information

Manufacturer:	Leica Camera AG
EuT:	Digital Camera Leica S (Typ 007)
---	---
Serial Number:	P-108 (#RAD2)
Connected Interfaces:	--
Power Supply:	full Battery



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

1.3.1. b-Mode Modulation

Diagram No. 3.01_TX_Ch1_b-mode_1Mbit

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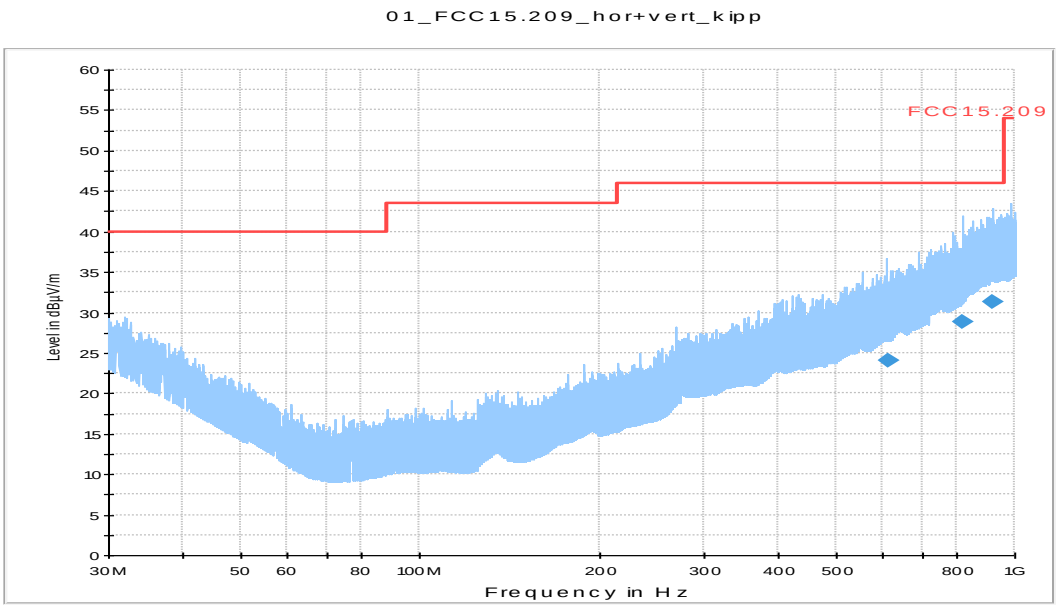
Test description:	Electric Field Strength Measurement
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V8.51.0
Distance correction:	not used
Used filter:	not used
Technical Data:	please see page 2 for detailed data of measurement setup
Test specification.:	FCC 15.247/15.209
Operator:	AHo
Operating conditions:	W-LAN, Channel 1, 1MBit, b-Mode
Power during tests:	full battery
Comment 1:	laying+ standing

EUT Information

Manufacturer:	Leica Camera AG
EuT:	Digital Camera Leica S (Typ 007)
---	---
Serial Number:	P-108 (#RAD2)
Connected Interfaces:	--
Power Supply:	full Battery



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)
611.280000	24.0	1000.0	120.000	116.0	H	232.0	0.0	22.4	22.00
817.480000	28.9	1000.0	120.000	282.0	H	270.0	90.0	25.6	17.10
919.970000	31.3	1000.0	120.000	332.0	V	185.0	0.0	27.1	14.70

(continuation of the "Final Result 1" table from column 10 ...)

Frequency (MHz)	Limit (dBµV/m
611.280000	46.00
817.480000	46.00
919.970000	46.00

1.3.2. g-Mode Modulation

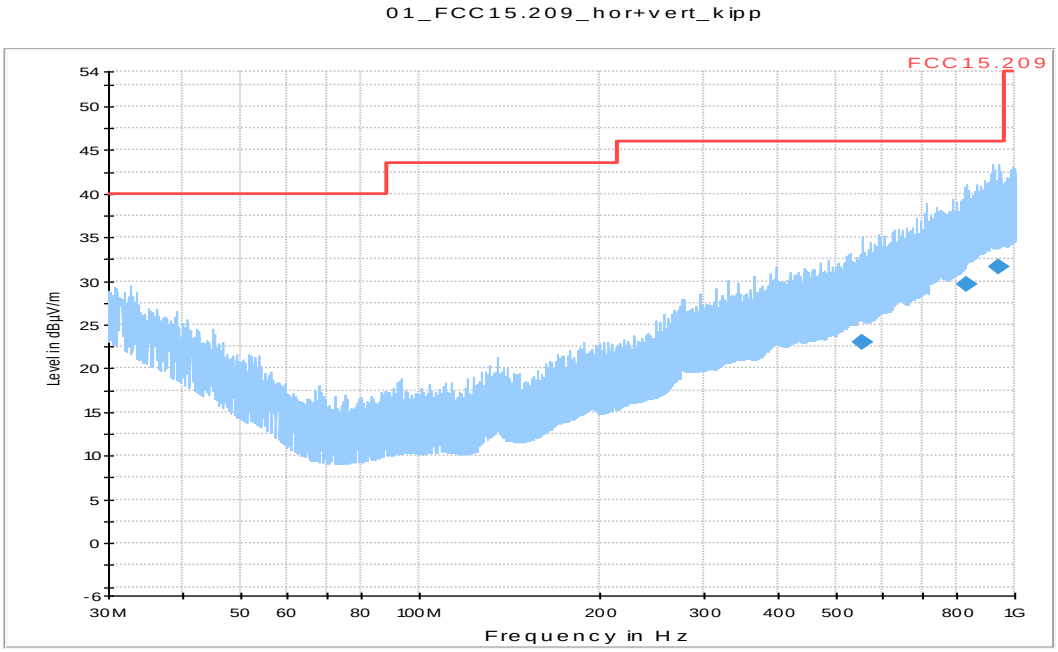
Diagram No. 3.02_TX_Ch6_g-mode_54Mbit

11.05.2015 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 15.247/15.209
Operator:	AHo
Operating conditions:	W-LAN, Channel 6, 54MBit, g-Mode
Power during tests:	full battery
Comment 1:	laying+ standing

EUT Information

Manufacturer:	Leica Camera AG
EuT:	Digital Camera Leica S (Typ 007)
---	---
Serial Number:	P-108 (#RAD2)
Connected Interfaces:	--
Power Supply:	full Battery



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)
555.160000	23.1	1000.0	120.000	116.0	V	67.0	90.0	21.8	22.90
830.240000	29.7	1000.0	120.000	124.0	H	300.0	90.0	26.0	16.30
942.520000	31.6	1000.0	120.000	323.0	V	352.0	90.0	27.2	14.40

(continuation of the "Final Result 1" table from column 10 ...)

Frequency (MHz)	Limit (dBµV/m
555.160000	46.00
830.240000	46.00
942.520000	46.00

1.3.3. n-Mode Modulation

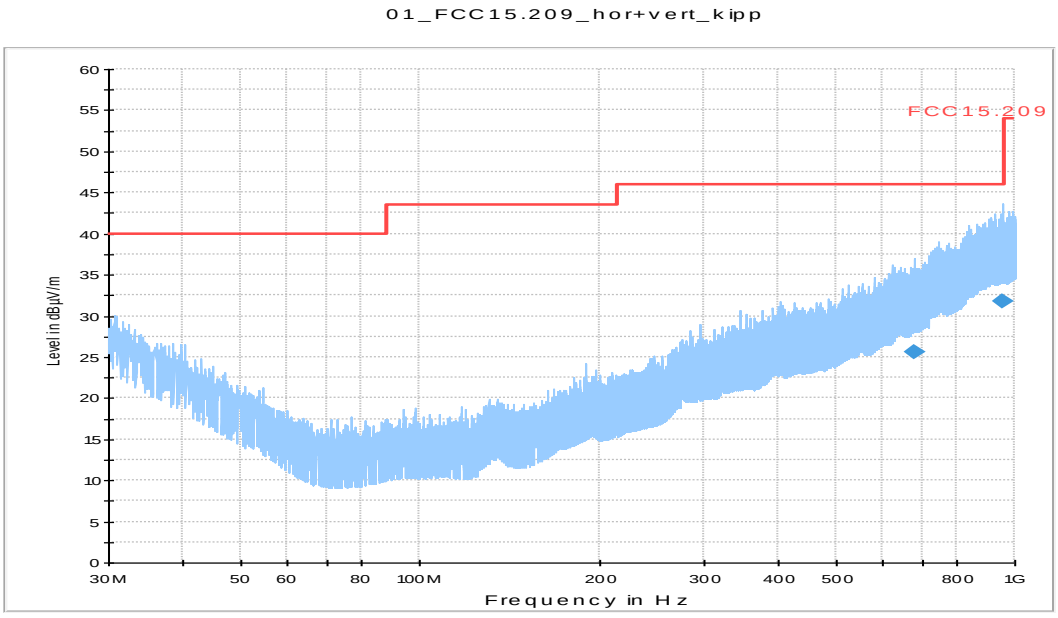
Diagram No. 3.03_TX_Ch11_n-mode_MCS6

11.05.2015 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 15.247/15.209
Operator:	AHo
Operating conditions:	W-LAN, Channel 11, MCS6, n-Mode
Power during tests:	full battery
Comment 1:	laying+ standing

EUT Information

Manufacturer:	Leica Camera AG
EuT:	Digital Camera Leica S (Typ 007)
---	---
Serial Number:	P-108 (#RAD2)
Connected Interfaces:	--
Power Supply:	full Battery



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Elevation (deg)	Corr. (dB)	Margin (dB)
680.470000	25.6	1000.0	120.000	305.0	V	216.0	0.0	23.5	20.40
953.410000	31.8	1000.0	120.000	115.0	V	69.0	0.0	27.5	14.20

(continuation of the "Final Result 1" table from column 10 ...)

Frequency (MHz)	Limit (dBµV/m
680.470000	46.00
953.410000	46.00

1.4. Field strength measurements f < 18GHz

1.4.1. b-Mode Modulation

Diagram No.: 4.04_TX_Ch1_b-Mode_1Mbit

Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.247&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous
Operator Name:	Lor/HLa
Comment:	Channel no. low=1, bMode, 1MBit

EUT Information

Manufacturer:	Leica Camera AG
EuT:	Digital Camera Leica S (Typ 007)
---	---
Serial Number:	P-108 (#RAD2)
Connected Interfaces:	--
Power Supply:	full Battery

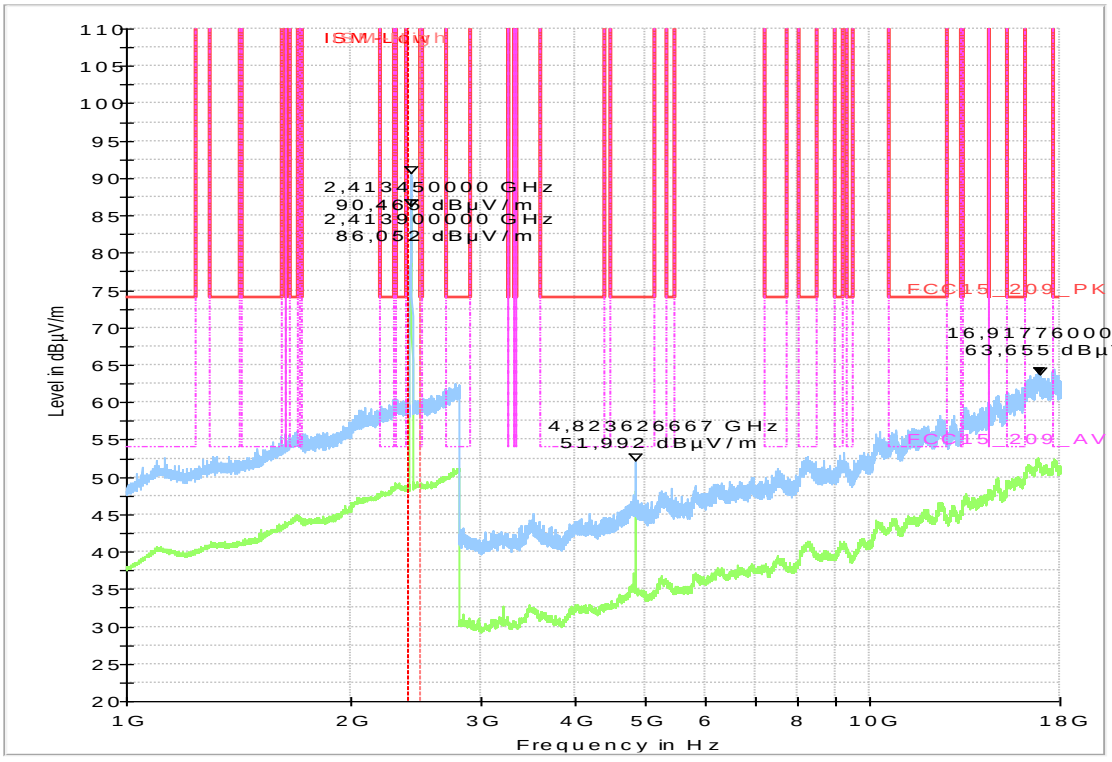
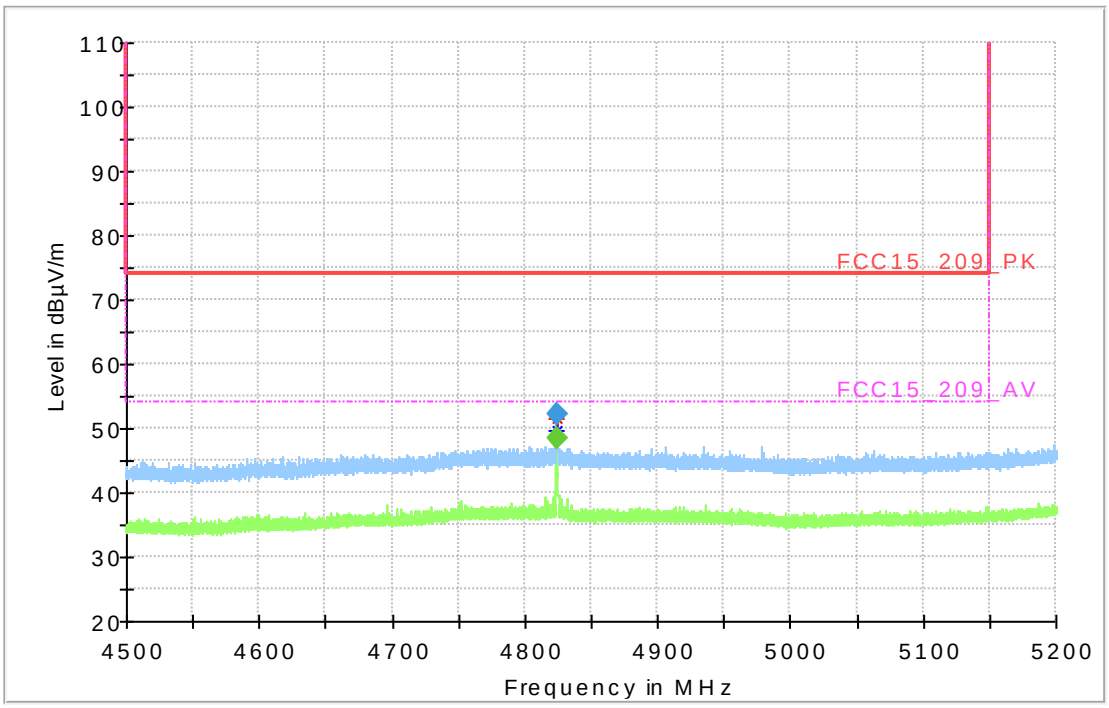


Diagram No.: 4.04a_TX_Ch1_b-Mode_1Mbit



Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)
4823.985000	---	48.47	54.00	5.53	100.0	1000.000	155.0	V	34.0	0.0
4824.020000	52.26	---	74.00	21.74	100.0	1000.000	155.0	V	35.0	0.0

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

Frequency (MHz)	Corr.	Comment
4823.985000	4.8	11:43:52 - 08.05.2015
4824.020000	4.8	11:40:56 - 08.05.2015

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)
4823.985000	---	48.47	54.00	5.53	100.0	1000.000	155.0	V	34.0	0.0
4824.020000	52.26	---	74.00	21.74	100.0	1000.000	155.0	V	35.0	0.0

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

Frequency (MHz)	Corr.	Comment
4823.985000	4.8	11:43:52 - 08.05.2015
4824.020000	4.8	11:40:56 - 08.05.2015

1.4.2. g-Mode Modulation

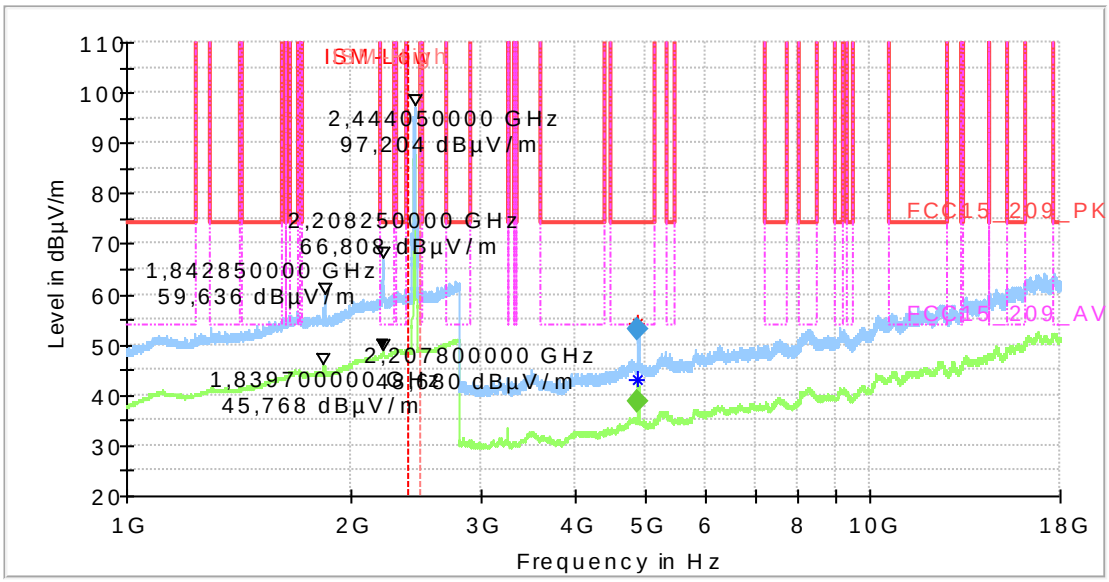
Diagram No.: 4.05a_TX_Ch6_g-Mode_54Mbit

Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.247&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous
Operator Name:	HLa
Comment:	Channel no. mid=6, g-Mode, 54MBit

EUT Information

Manufacturer:	Leica Camera AG
EuT:	Digital Camera Leica S (Typ 007)
---	---
Serial Number:	P-108 (#RAD2)
Connected Interfaces:	--
Power Supply:	full Battery
Comments:	



Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)
4868.380000	53.24	---	74.00	20.76	100.0	1000.000	155.0	V	39.0	0.0
4870.846667	---	38.57	54.00	15.43	100.0	1000.000	155.0	V	38.0	0.0

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

Frequency (MHz)	Corr.
4868.380000	4.7
4870.846667	4.7

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)
4868.380000	53.24	---	74.00	20.76	100.0	1000.000	155.0	V	39.0	0.0
4870.846667	---	38.57	54.00	15.43	100.0	1000.000	155.0	V	38.0	0.0

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

Frequency (MHz)	Corr.
4868.380000	4.7
4870.846667	4.7

1.4.3. n-Mode Modulation

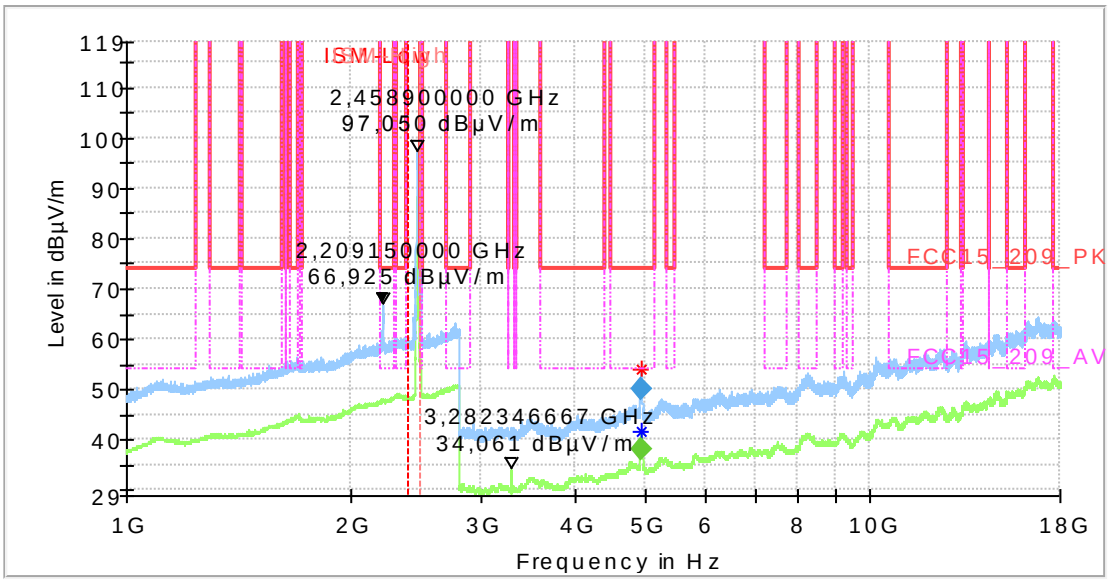
Diagram No.: 4.06a_TX_Ch11_n-Mode_MCS6

Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.247&15.209 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operation mode:	TX, continuous
Operator Name:	Lor
Comment:	Channel no. high=11

EUT Information

Manufacturer:	Leica Camera AG
EuT:	Digital Camera Leica S (Typ 007)
---	---
Serial Number:	P-108 (#RAD2)
Connected Interfaces:	--
Power Supply:	full Battery
Comments:	--



Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)
4918.020000	---	38.31	54.00	15.69	100.0	1000.000	155.0	V	33.0	0.0
4925.233333	49.96	---	74.00	24.04	100.0	1000.000	155.0	H	144.0	0.0

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

Frequency (MHz)	Corr.	Comment
4918.020000	4.5	13:45:32 - 09.05.2015
4925.233333	4.4	13:42:16 - 09.05.2015

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)
4918.020000	---	38.31	54.00	15.69	100.0	1000.000	155.0	V	33.0	0.0
4925.233333	49.96	---	74.00	24.04	100.0	1000.000	155.0	H	144.0	0.0

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

Frequency (MHz)	Corr.	Comment
4918.020000	4.5	13:45:32 - 09.05.2015
4925.233333	4.4	13:42:16 - 09.05.2015

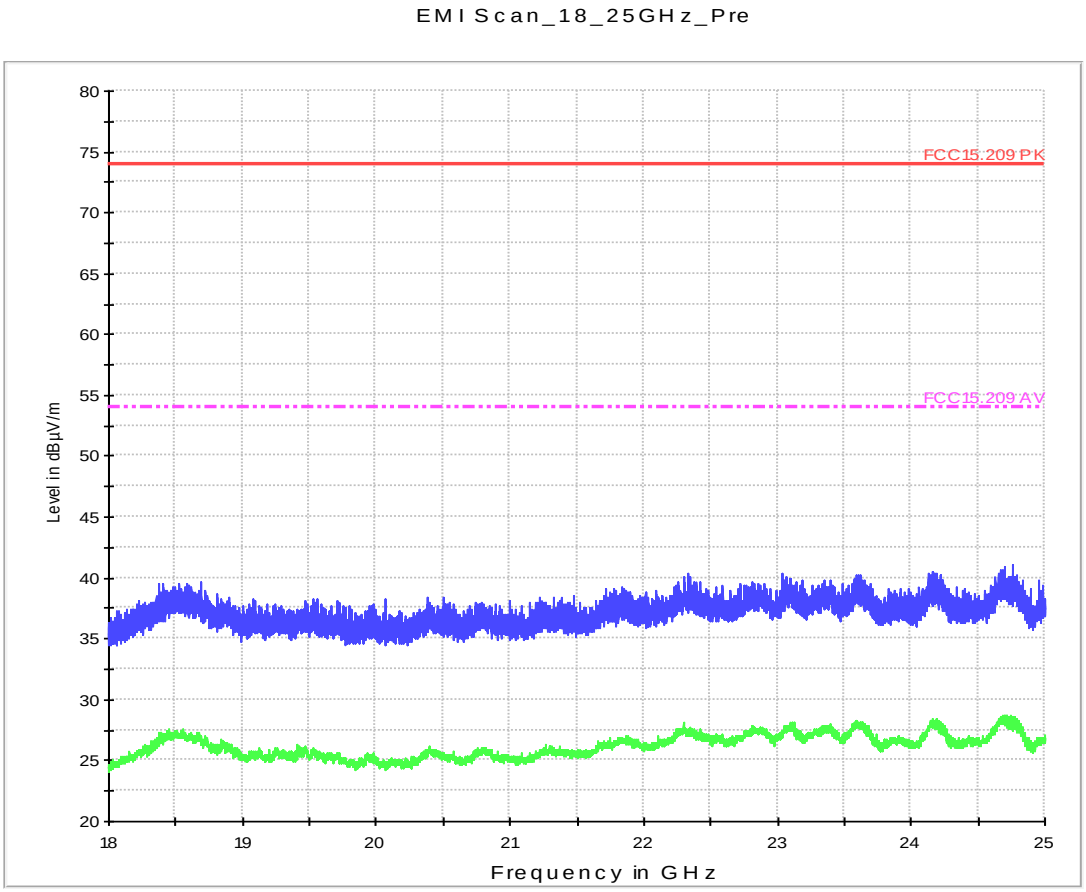
1.5. Field strength measurements 18GHz < f < 25GHz

1.5.1. b-Mode Modulation

Diagram No.: 4.04b_TX_Ch1_bMode_1MBits

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:	Aho
Comment:	Channel no. Low=1, 1 MBits



Scan Setup: EMI Scan_18_25GHz_Pre [EMI radiated]

Hardware Setup:	HW05_ESU_18-40GHz_Preamp_Miteq_SN_1750117_dBuV_1m
Receiver:	[ESU 40]
Level Unit:	dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
18 GHz - 25 GHz	400 kHz	PK+; AVG	1 MHz	0.0003 s	0 dB

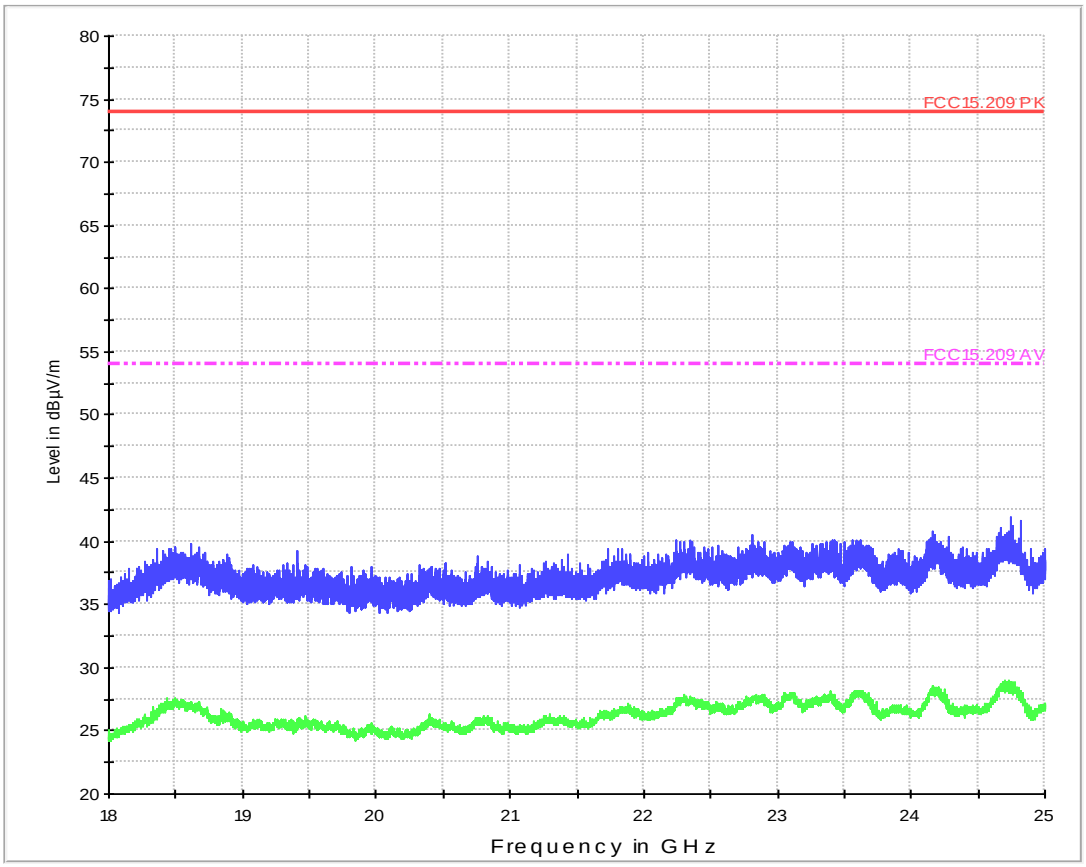
1.5.2. g-Mode Modulation

Diagram No.: 4.05b_TX_Ch6_gMode_MBits

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:	Aho
Comment:	Channel no. middle=6, 54 MBits

EMI Scan_18_25GHz_Pre



Scan Setup: EMI Scan_18_25GHz_Pre [EMI radiated]

Hardware Setup:	HW05_ESU_18-40GHz_Preamp_Miteq_SN_1750117_dBuV_1m
Receiver:	[ESU 40]
Level Unit:	dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
18 GHz - 25 GHz	400 kHz	PK+; AVG	1 MHz	0.0003 s	0 dB

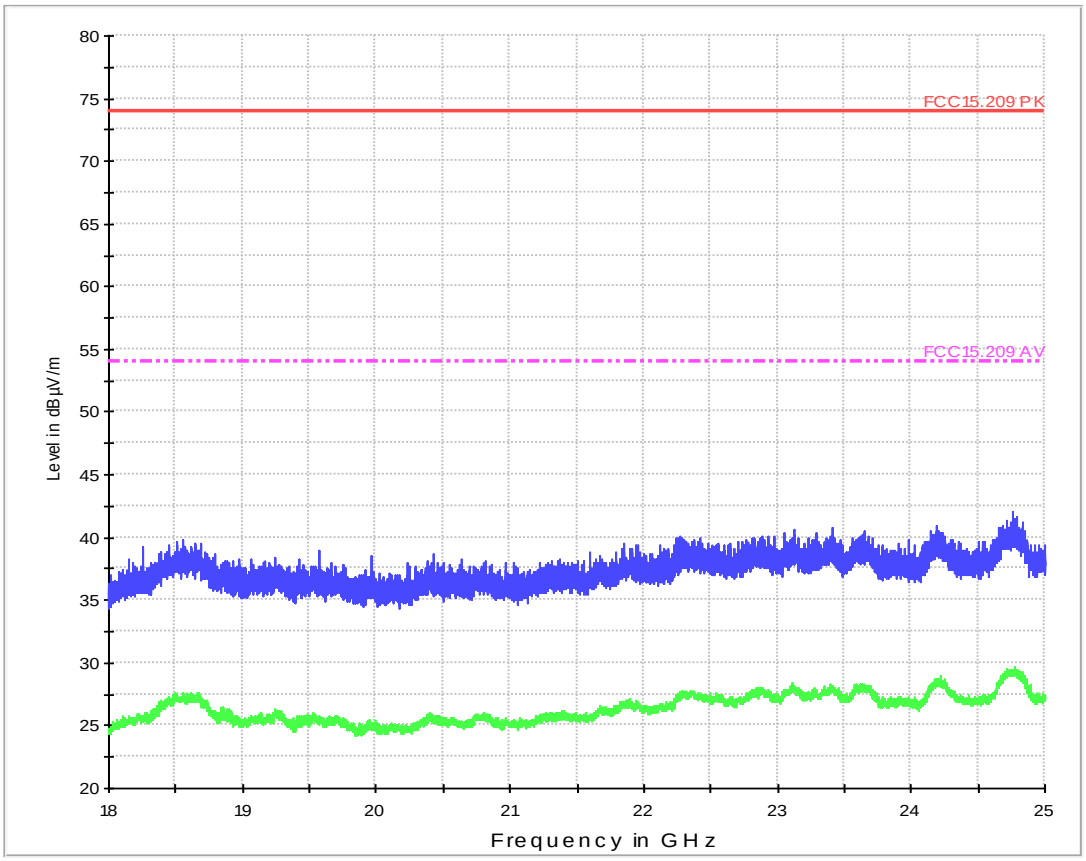
1.5.3. n-Mode Modulation

Diagram No.: 4.06b_CM_TX_Ch11_nMode_MCS6

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:	Aho
Comment:	Channel no. high=11, MCS6

EMI Scan_18_25GHz_Pre



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

1.6.1. Channel 1 (left band edge)

Diagram No.: 9.01b_BE_left_Ch1_b-Mode_1Mbit

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=1, b-Mode, 1MBit

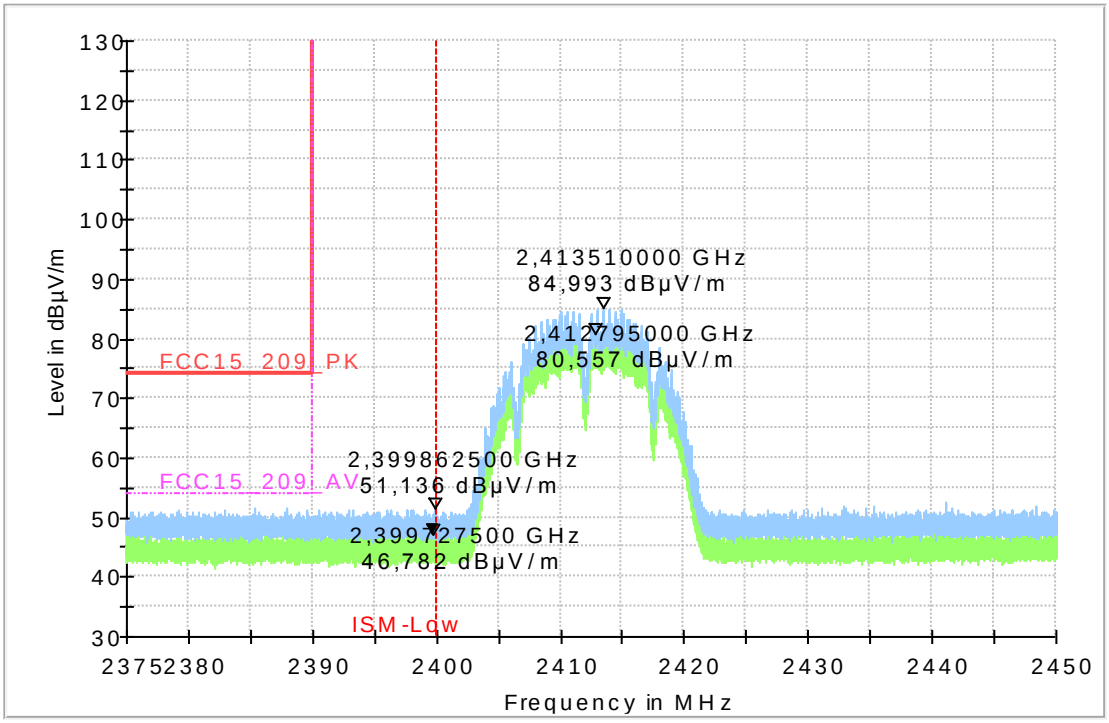


Diagram No.: 9.05_BE_left_Ch1_gMode_54Mbit

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=1, gMode, 54MBit

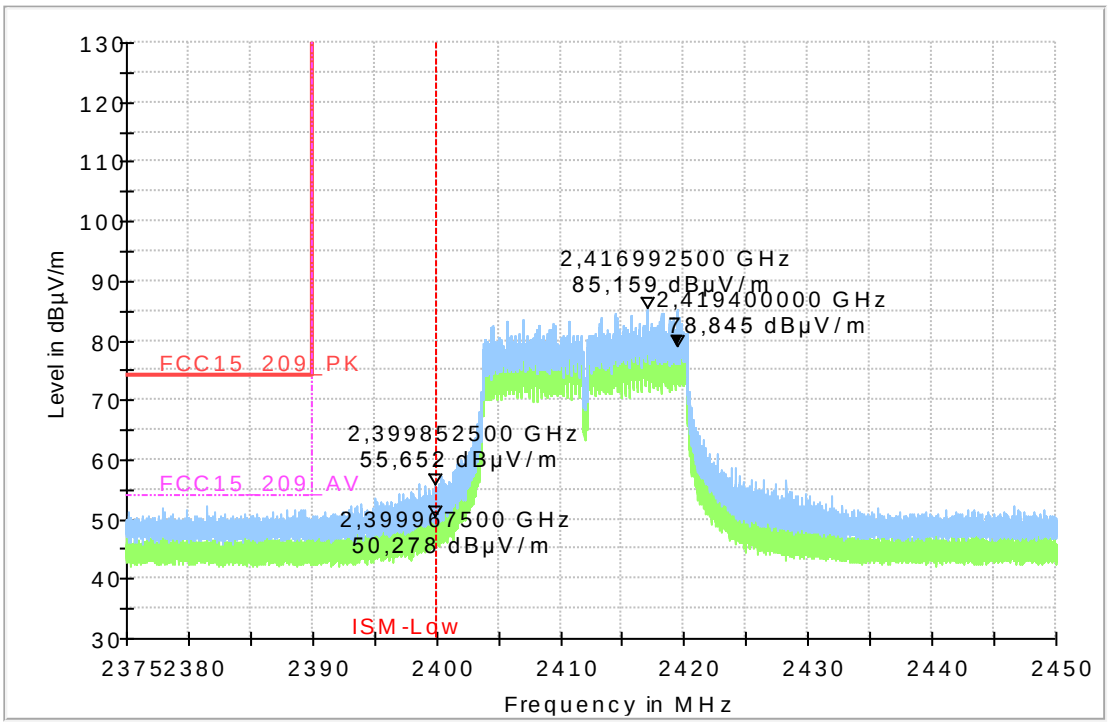
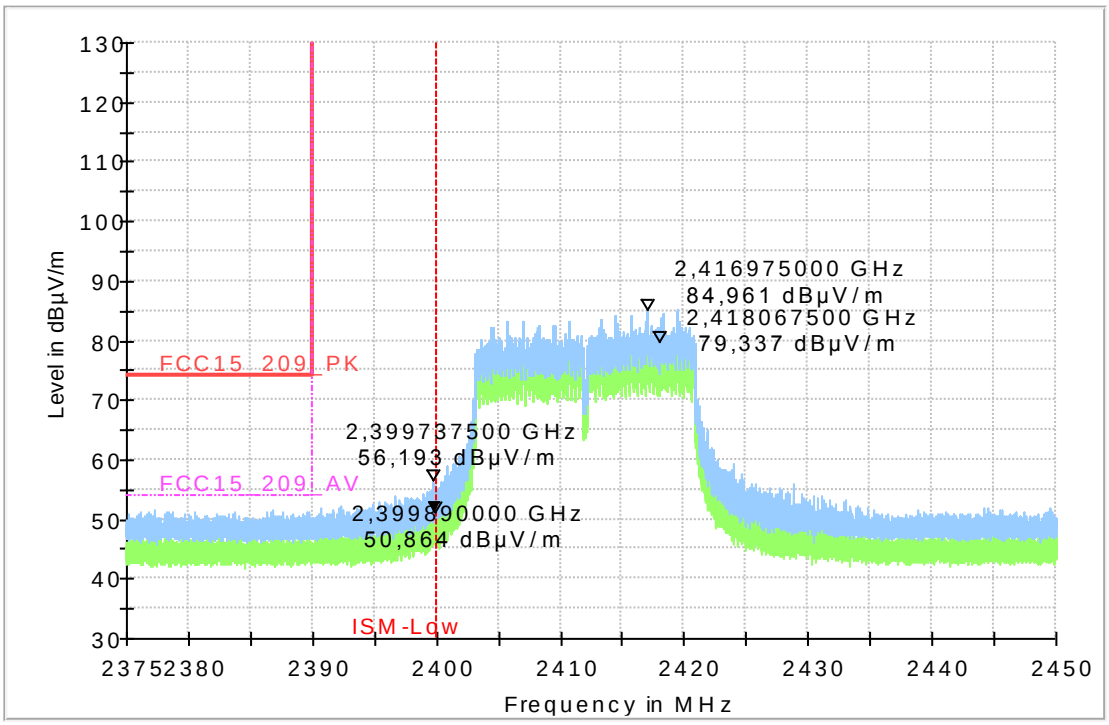


Diagram No.: 9.06_BE_left_Ch1_nMode_MCS6

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=1, n-Mode, MCS6



1.6.2. Channel 11 (right band edge)

Diagram No.: 9.02b_BE_right_Ch11_n-Mode_MCS6_ReTest

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. high=11, n-Mode, MCS6

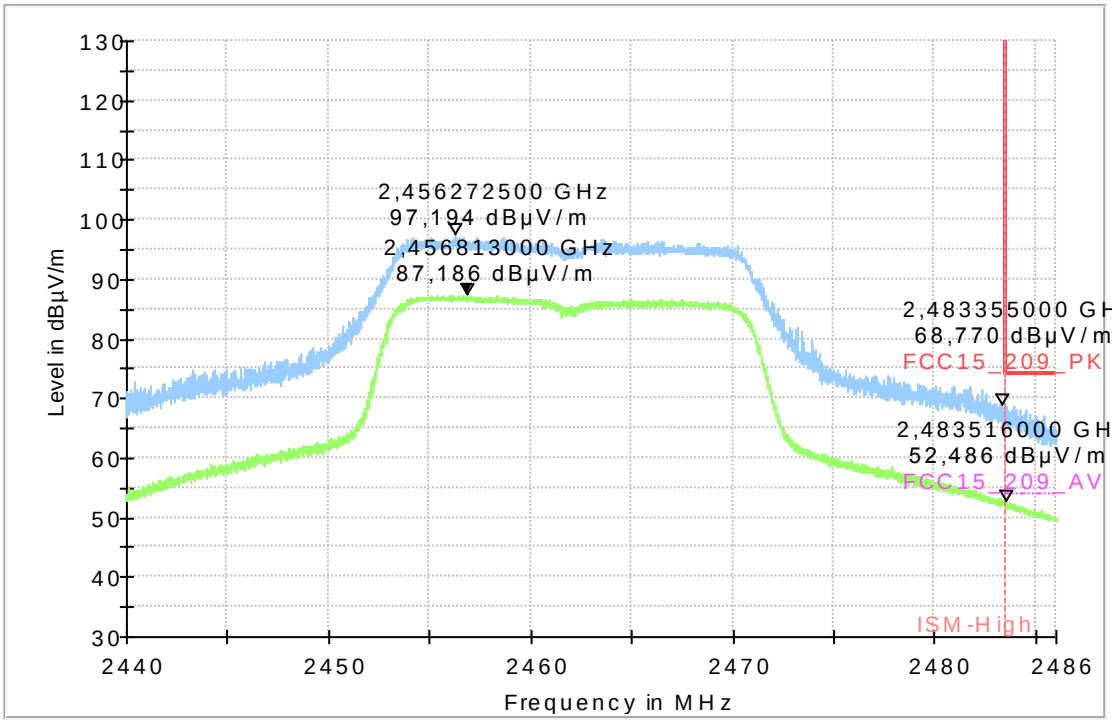


Diagram No.: 9.03_BE_right_Ch11_gMode_54Mbit

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. high=11, gMode, 54MBit

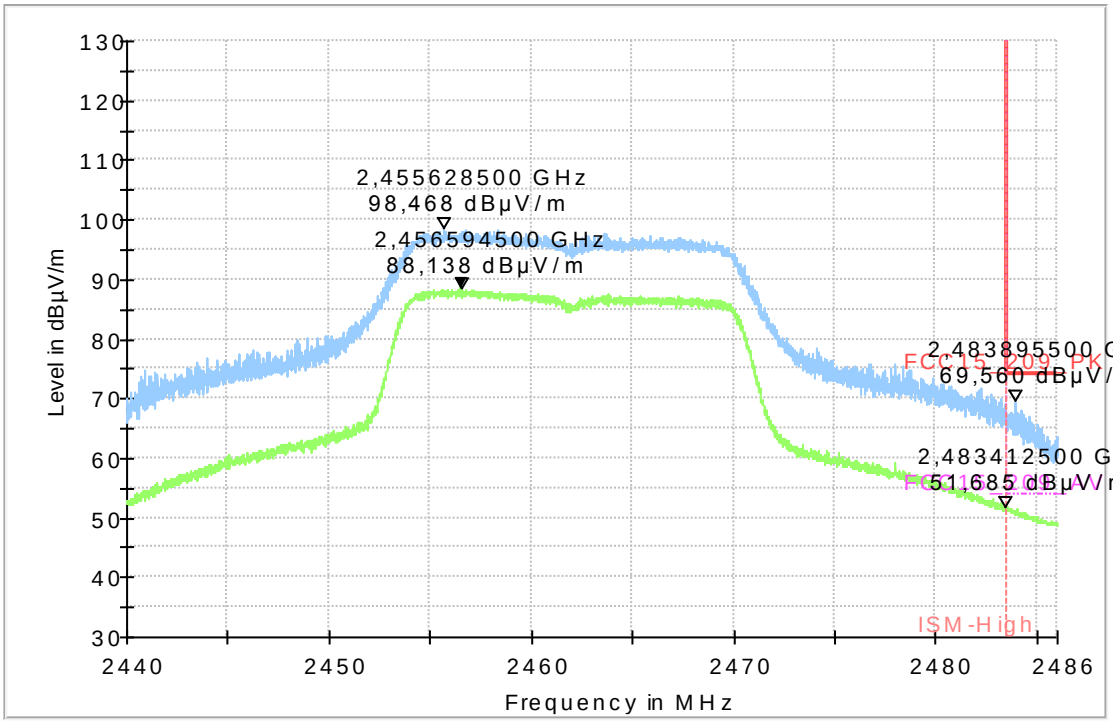
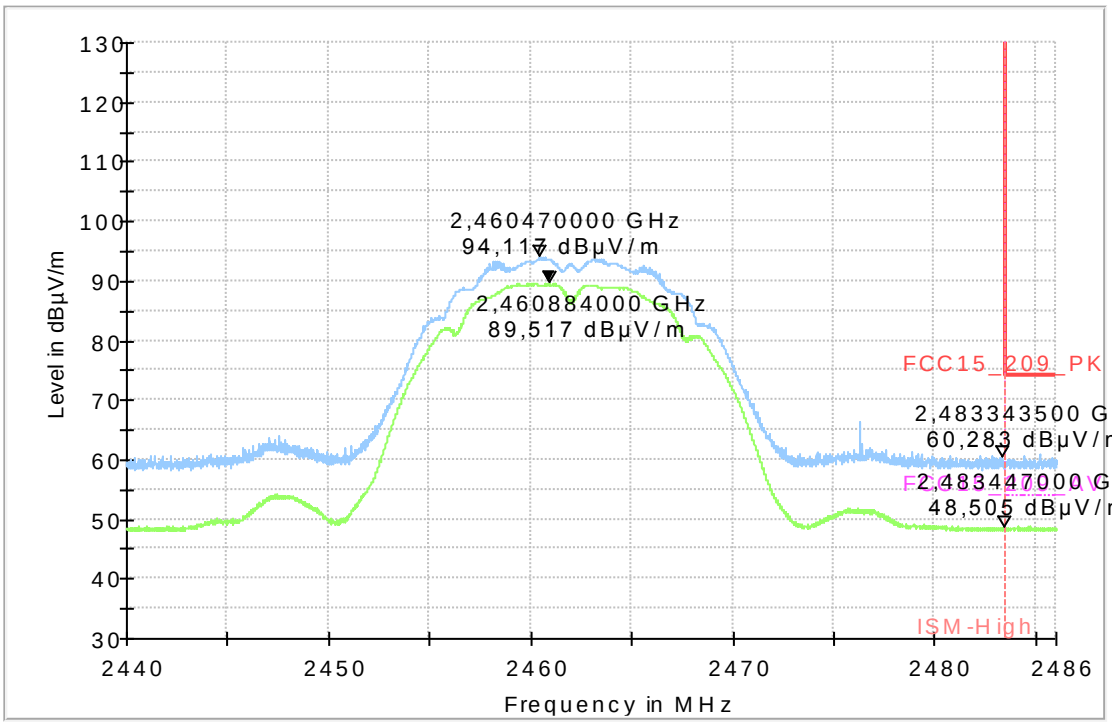


Diagram No.: 9.04_BE_right_Ch11_bMode_1Mbit

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. high=11, b-Mode, 1MBit



1.7. Conducted RF-measurements on antenna port

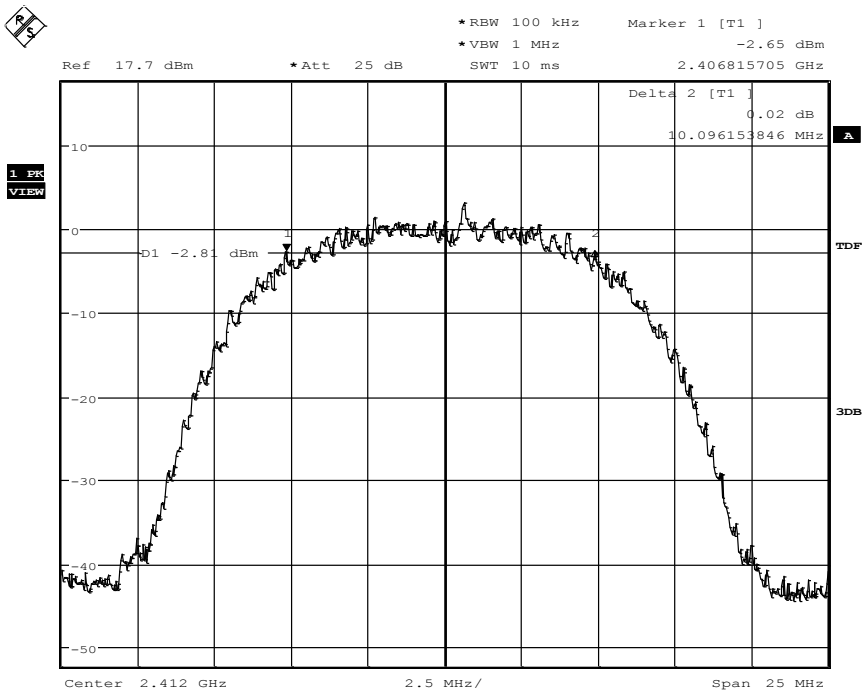
1.7.1. Conducted RF-power

b-mode		Power value (PK) [dBm]			Max-Value	Max.-Value among all modulations
		Channel no.				
Data rate	Modulation	1	6	11		
1MBit	DBPSK	11,76	15,24	14,47	15,24	17,15
2Mbit	DQPSK	11,70	15,19	14,38		
5.5Mbit	CCK/PBCC	11,65	15,19	14,44		
11MBit	ERP-PBCC	11,65	15,23	14,49		
g-Mode		Power value (PK) [dBm]			Max.-Value	
		Channel no.				
Data rate	Modulation	1,00	6,00	11,00		
6Mbit	BPSK	13,18	16,45	16,00	17,15	
9Mbit	BPSK	--	--	--		
12Mbit	QPSK	13,09	16,45	16,02		
18Mbit	QPSK	13,10	16,50	16,06		
24Mbit	16-QAM	13,19	16,60	16,13		
36Mbit	16-QAM	14,43	17,15	16,80		
48Mbit	64-QAM	14,48	17,02	16,65		
54MBit	64-QAM	14,39	16,98	16,67		
n-Mode HT20 (1 spatial stream: 1SS)		Power value (PK) [dBm]			Max.-Value	
		Channel no.				
Data rate	Modulation	1,00	6,00	11,00		
MCS0 -6.5Mbps	BPSK	13,15	16,48	15,86	16,98	
MCS1 - 13Mbps	QPSK	13,27	16,45	15,85		
MCS2 - 19.5Mbps	QPSK	13,27	16,50	15,92		
MCS3 - 26Mbps	QAM16	13,28	16,62	16,07		
MCS4 -39Mbps	QAM16	13,17	16,49	16,11		
MCS5 - 52MBps	QAM64	14,65	16,95	16,63		
MCS6 - 58.5MBps	QAM64	14,64	16,98	16,57		
MCS7 - 65MBps	QAM64	14,66	16,96	16,49		

1.8. 6-dB Bandwidth

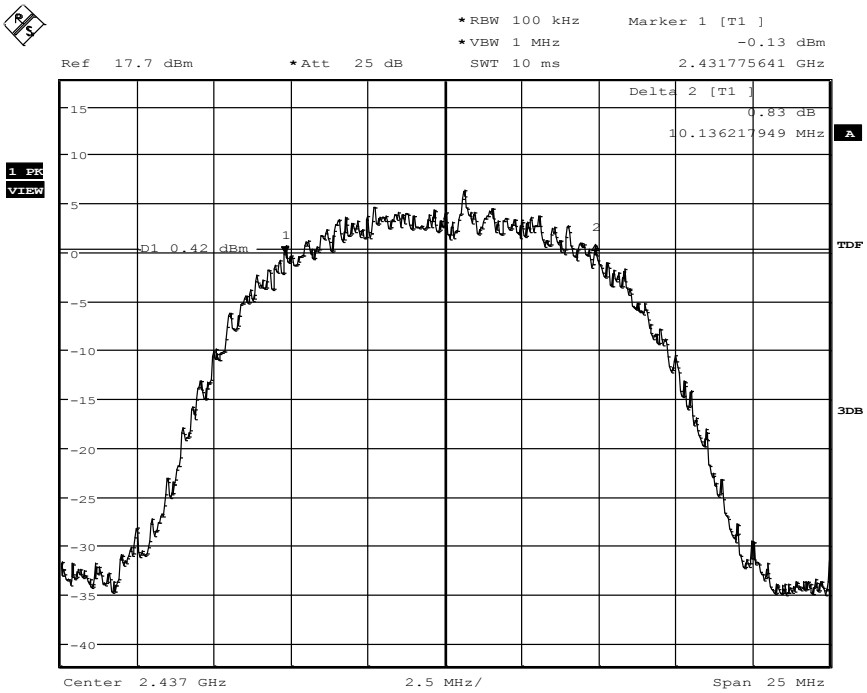
1.8.1. 6-dB Bandwidth (b-Mode)

b-mode		6dB-BW [MHz]			Max-Value
		Channel no.			
Data rate	Modulation	1	6	11	
1MBit	DBPSK	10,096153846	10,096153846	10,118585744	10,153846154
2Mbit	DQPSK	10,096153846	10,136217949	10,118589744	
5.5Mbit	CCK/PBCC	10,016025641	10,056085744	10,048076923	
11MBit	ERP-PBCC	10,096153846	10,136217949	10,153846154	



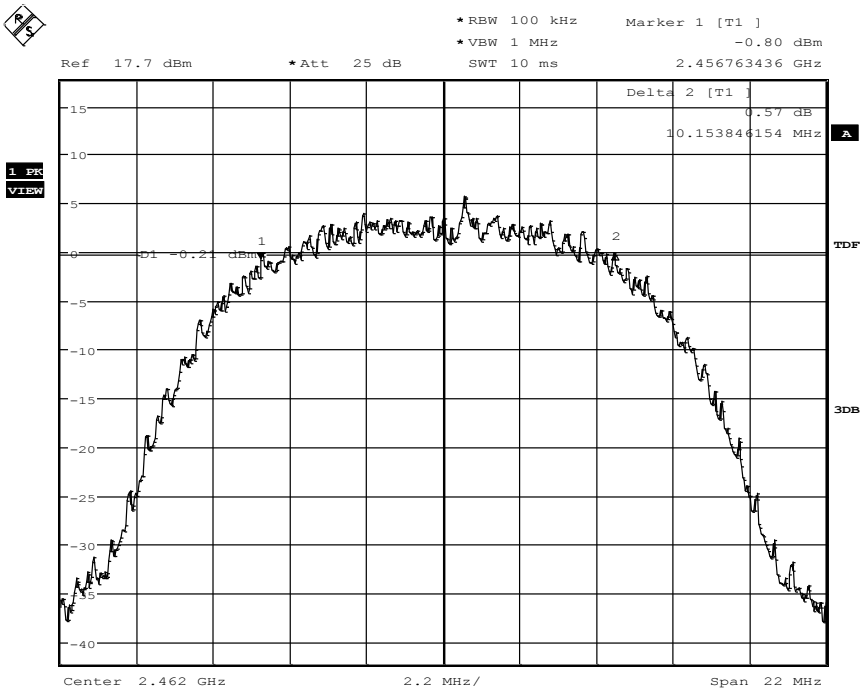
Date: 16.JUN.2015 10:22:08

Channel 1 - Worst-Case 6dB-Bandwidth



Date: 16.JUN.2015 10:43:59

Channel 6 - Worst-Case 6dB-Bandwidth

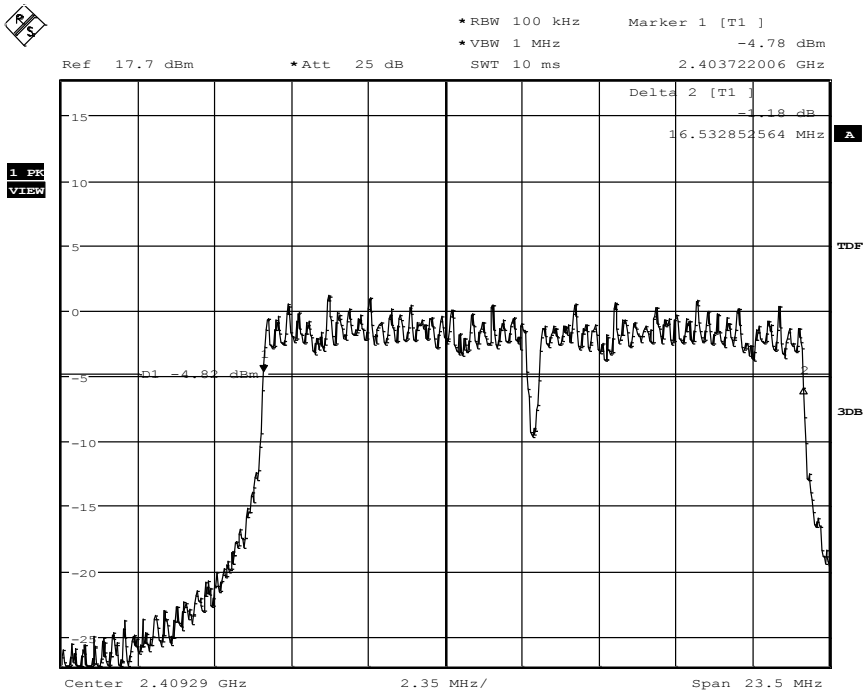


Date: 16.JUN.2015 11:10:14

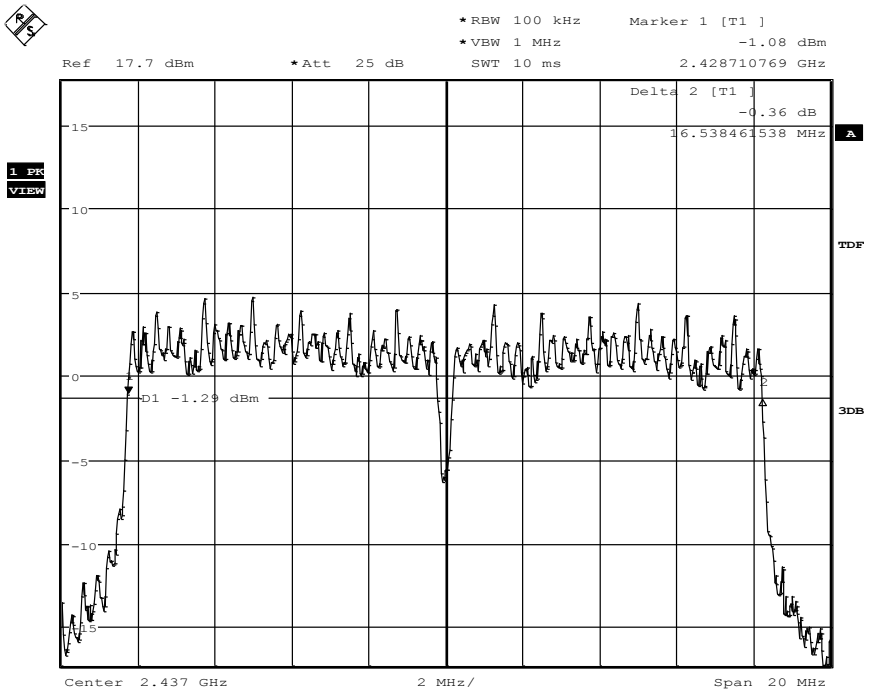
Channel 11 - Worst-Case 6dB-Bandwidth

1.8.2. 6-dB Bandwidth (g-Mode)

g-Mode		6dB-BW [MHz]			Max-Value
		Channel no.			
Data rate	Modulation	1	6	11	
6Mbit	BPSK	16,356538462	16,346153846	16,346153846	16,538461538
9Mbit	BPSK	--	--	--	
12Mbit	QPSK	16,457532051	16,474358974	16,442307692	
18Mbit	QPSK	16,457532051	16,442307692	16,442307692	
24Mbit	QAM16	16,532852564	16,506410256	16,506410256	
36Mbit	QAM16	16,495192308	16,506410256	16,474358974	
48Mbit	QAM64	16,532852564	16,474358974	16,506410256	
54MBit	QAM64	16,532852564	**16,538461538**	16,506410256	

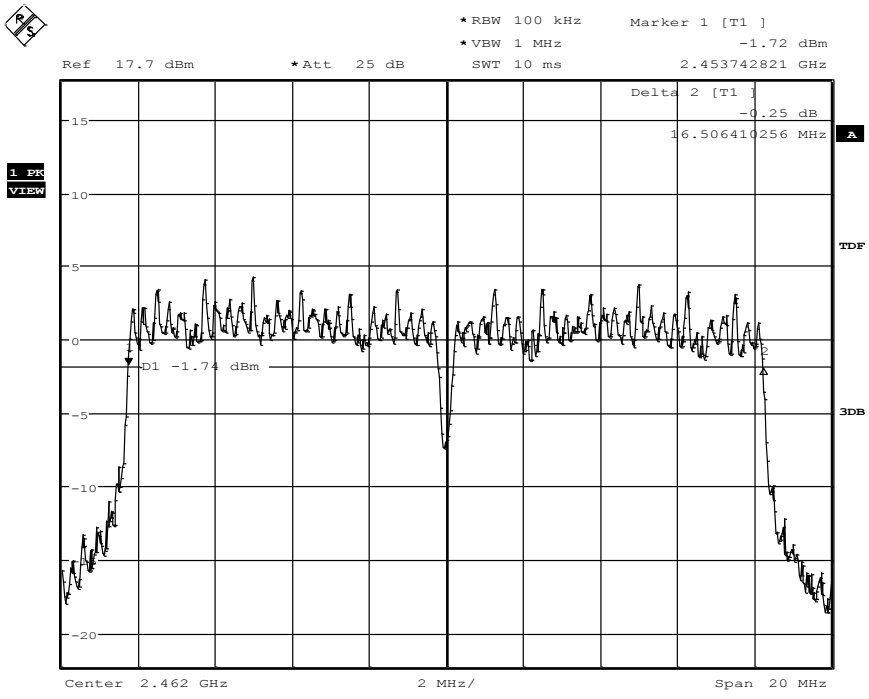


Channel 1 - Worst-Case 6dB-Bandwidth



Date: 16.JUN.2015 12:15:15

Channel 6 - Worst-Case 6dB-Bandwidth

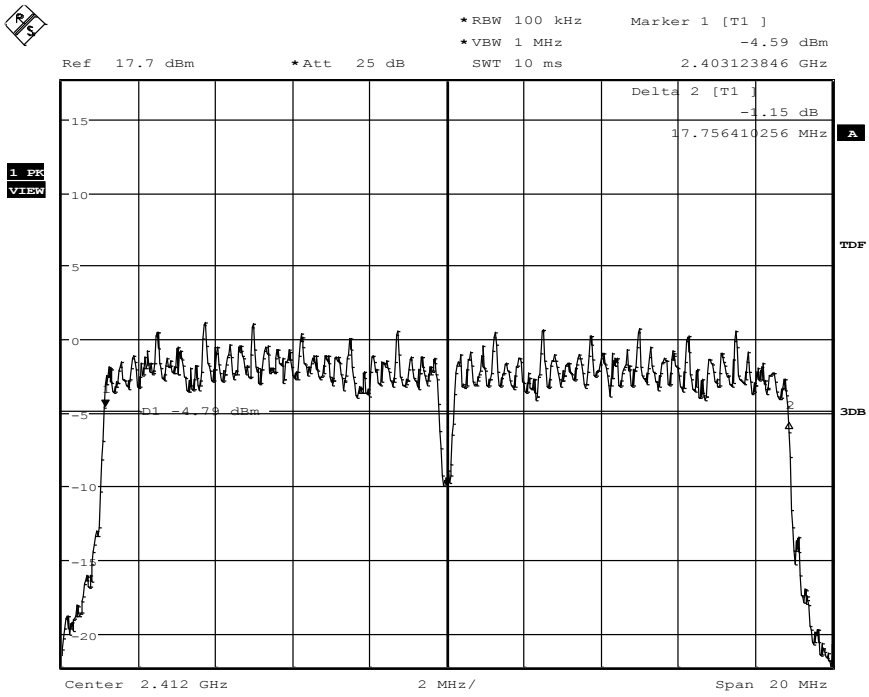


Date: 16.JUN.2015 12:40:20

Channel 11 - Worst-Case 6dB-Bandwidth

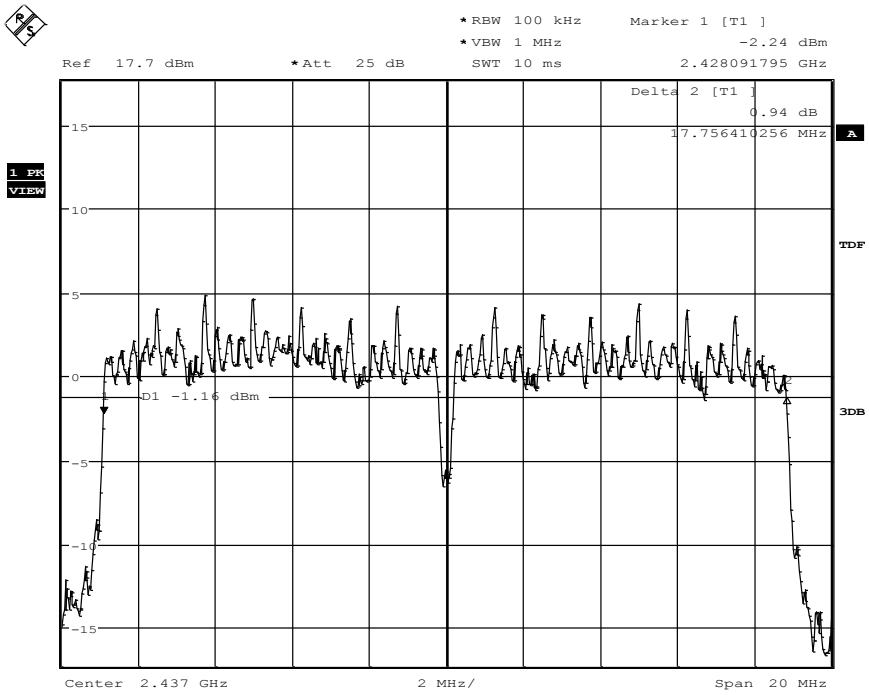
1.8.3. 6-dB Bandwidth (n-Mode)

n-Mode HT20 (1 spatial stream: 1SS)		6dB-BW [MHz]			Max-Value
		Channel no.			
Data rate	Modulation	1	6	11	
MCS0 -6.5Mbps	BPSK	17,532051282	17,564102564	17,564102564	17,756410256
MCS1 - 13Mbps	QPSK	17,628205128	17,596153846	17,596153846	
MCS2 - 19.5Mbps	QPSK	17,660256410	17,628205128	17,596153846	
MCS3 - 26Mbps	QAM16	17,756410256	17,724358974	17,724358974	
MCS4 -39Mbps	QAM16	17,724358974	17,724358974	17,724358974	
MCS5 - 52MBps	QAM64	17,756410256	17,756410256	17,724358974	
MCS6 - 58.5MBps	QAM64	17,756410256	17,756410256	17,724358974	
MCS7 - 65MBps	QAM64	17,756410256	**17,756410256**	17,756410256	



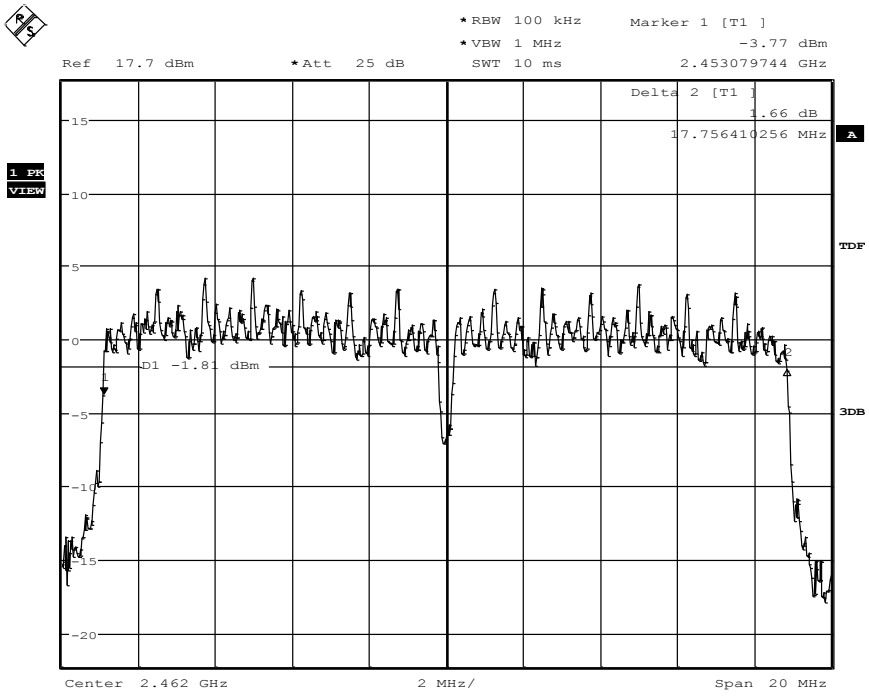
Date: 16.JUN.2015 13:52:02

Channel 1 - Worst-Case 6dB-Bandwidth



Date: 16.JUN.2015 14:32:58

Channel 6 - Worst-Case 6dB-Bandwidth

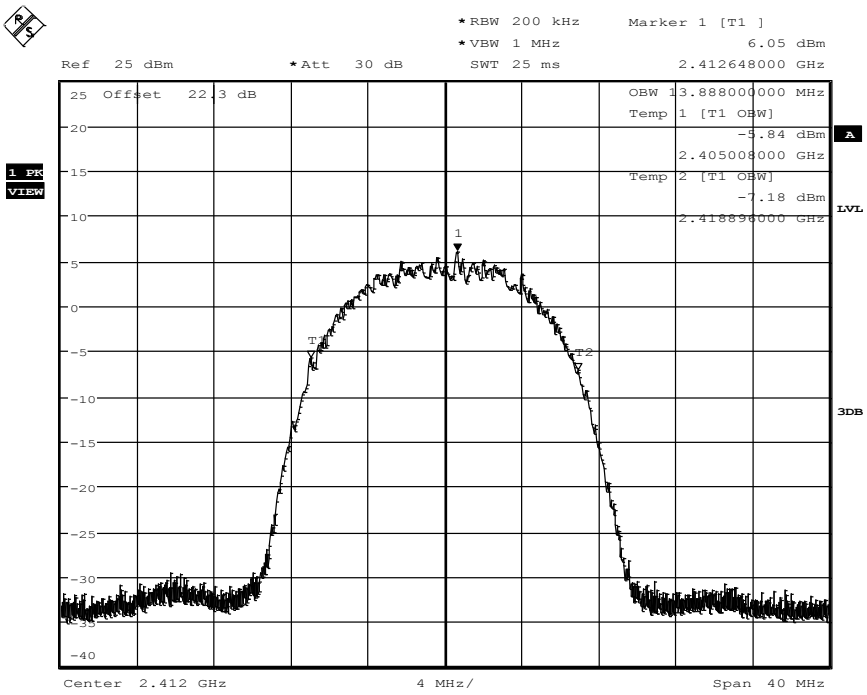


Date: 16.JUN.2015 13:21:44

Channel 11 - Worst-Case 6dB-Bandwidth

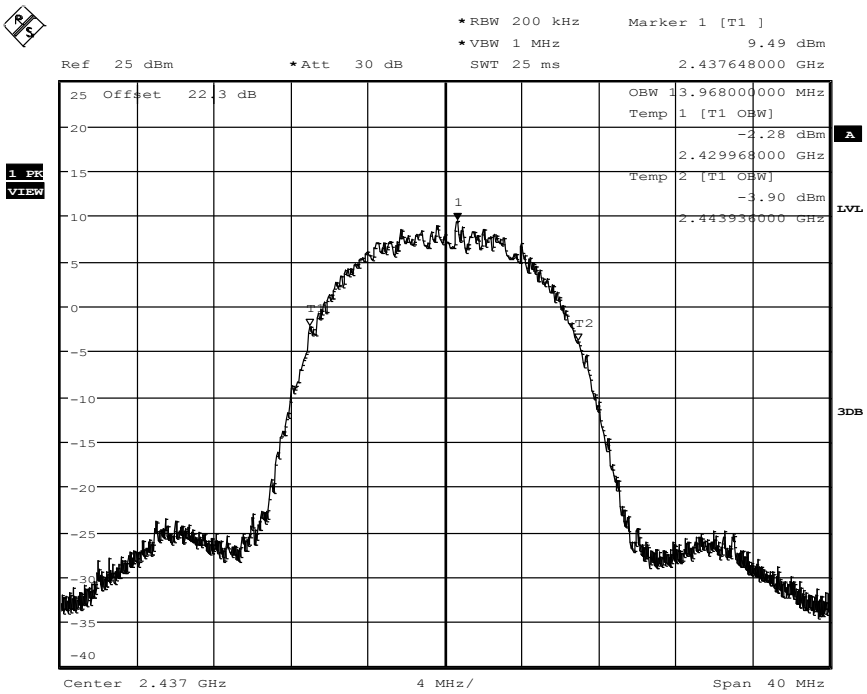
1.9. 99% Occupied Bandwidth

1.9.1. OBW - Bandwidth (b-Mode, 11MBit)



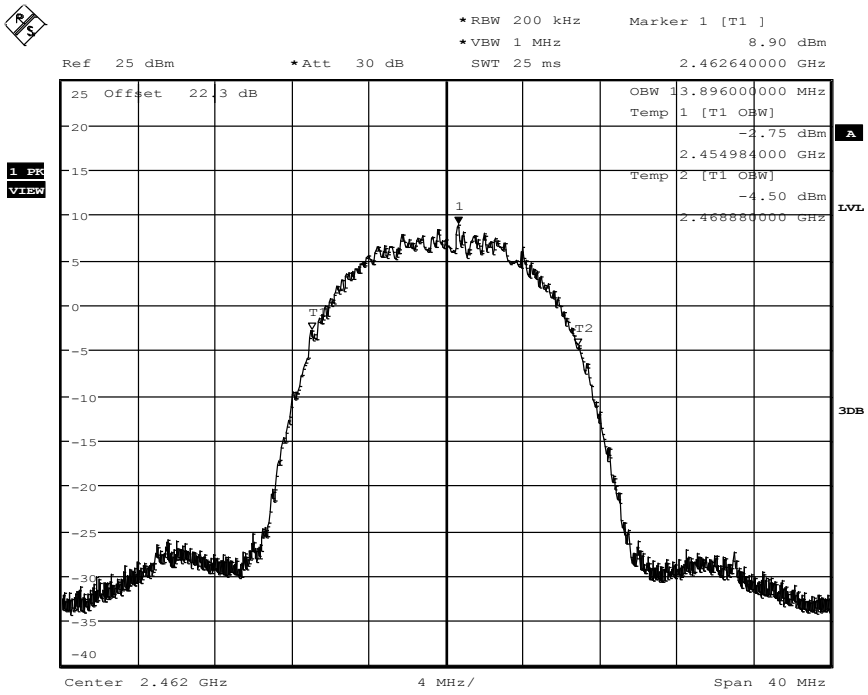
Date: 22.JUL.2015 11:01:02

Channel 1



Date: 22.JUL.2015 10:58:21

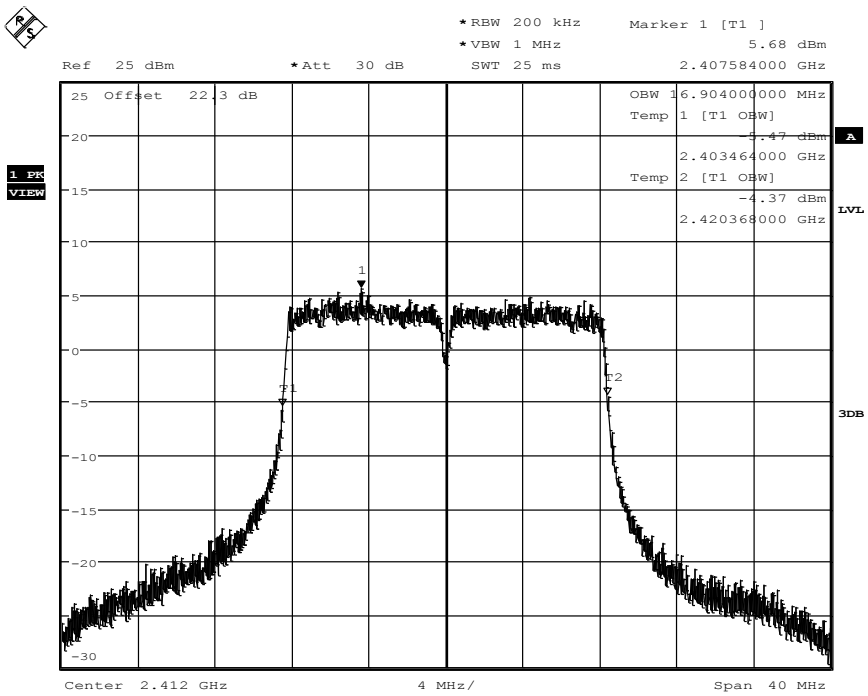
Channel 6



Date: 22.JUL.2015 10:53:37

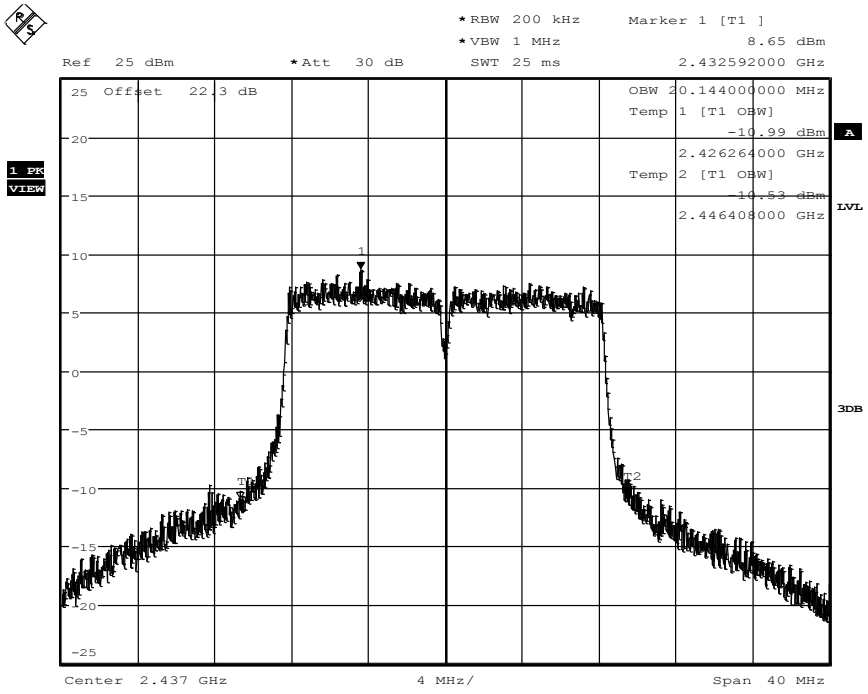
Channel 11

1.9.2. OBW - Bandwidth (g-Mode, 54MBit)



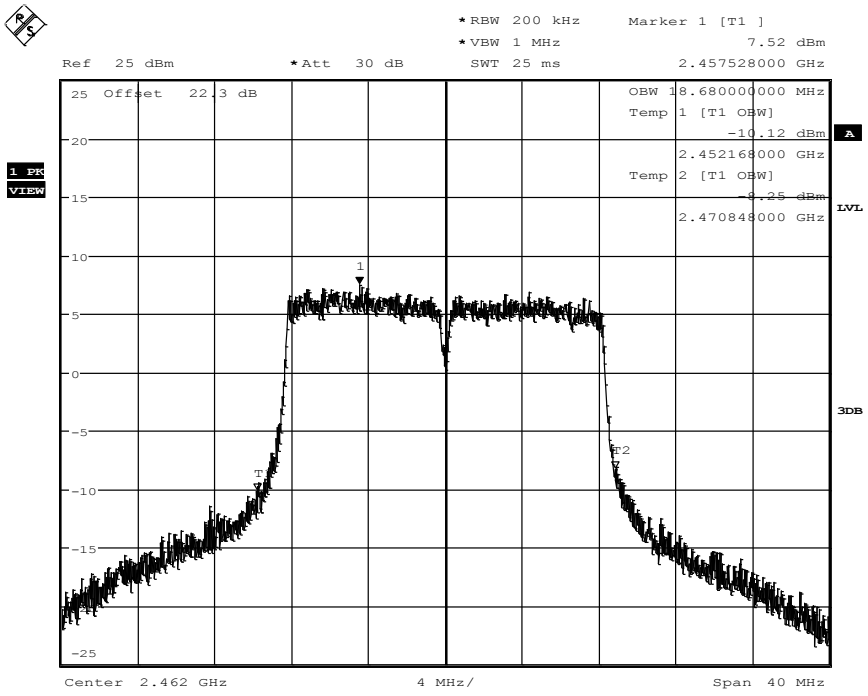
Date: 22.JUL.2015 10:36:52

Channel 1



Date: 22.JUL.2015 10:40:29

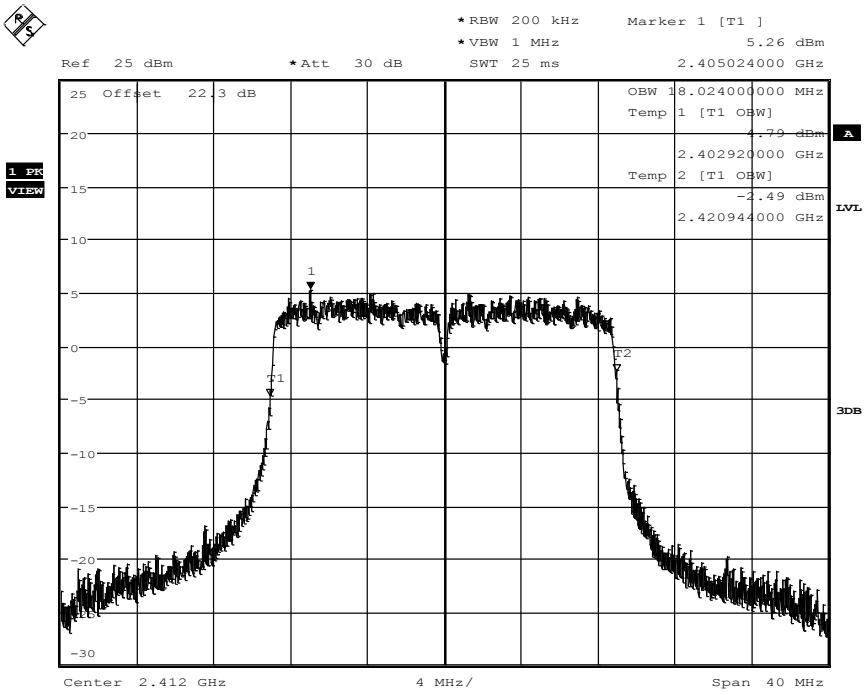
Channel 6



Date: 22.JUL.2015 10:45:41

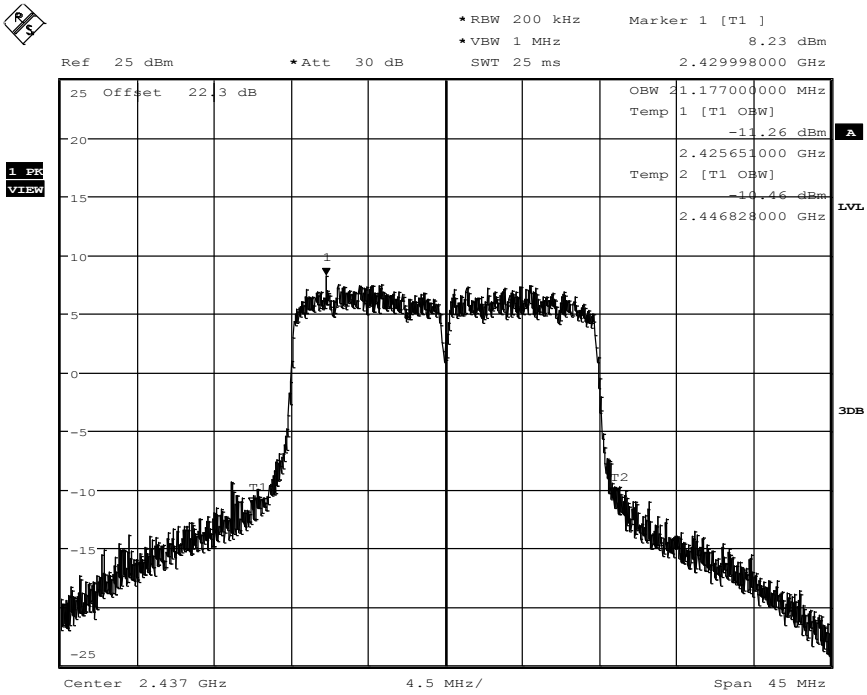
Channel 11

1.9.3. OBW - Bandwidth (n-Mode, MCS7)



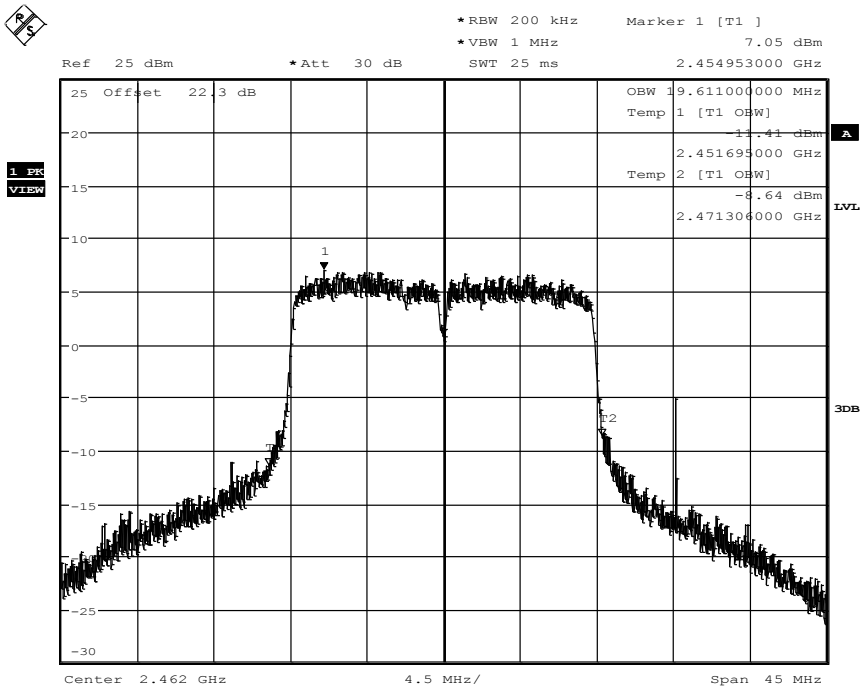
Date: 22.JUL.2015 10:18:05

Channel 1



Date: 22.JUL.2015 10:28:34

Channel 6



Date: 22.JUL.2015 10:33:13

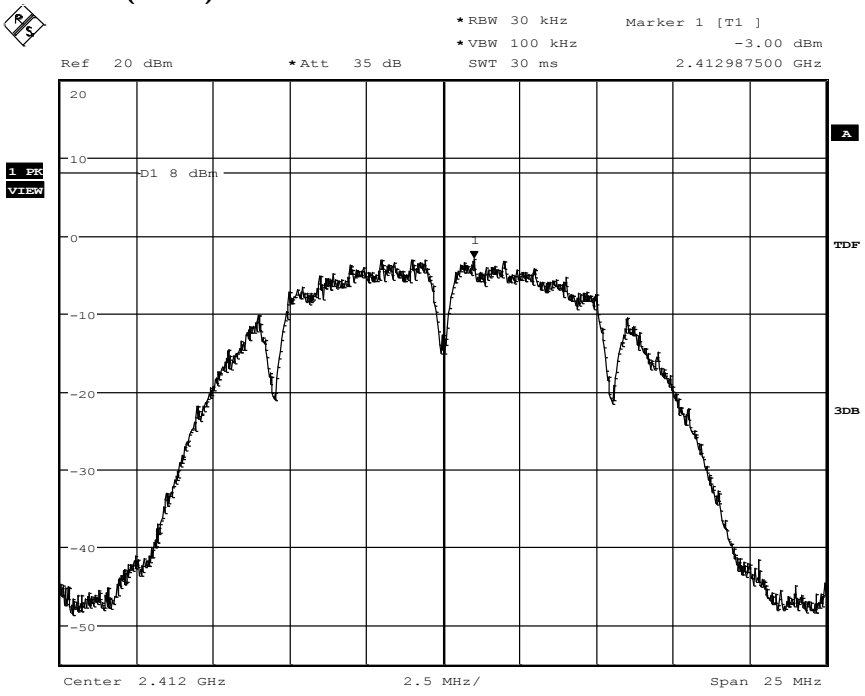
Channel 11

1.10. Power Spectral Density

Method §10.2

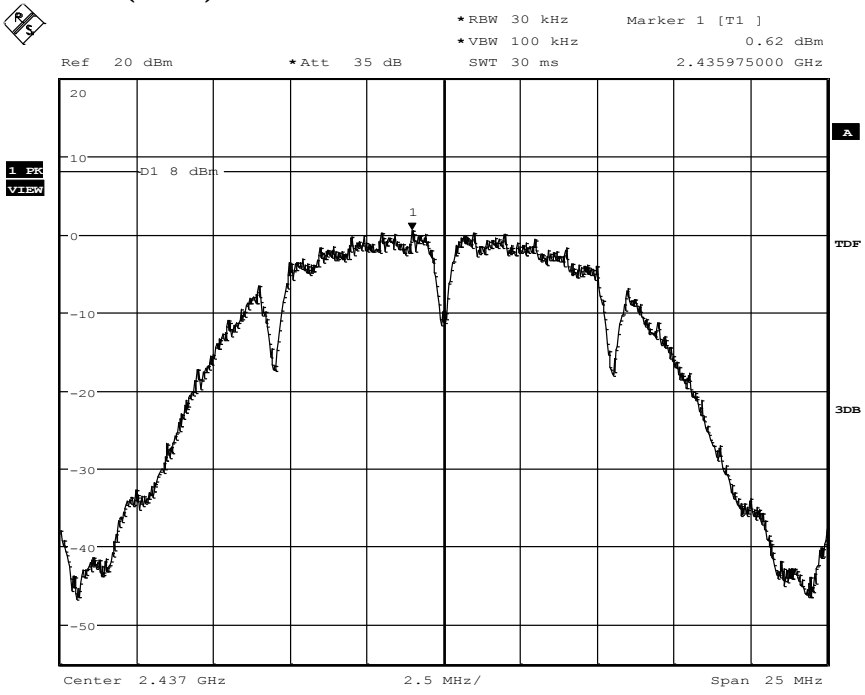
1.10.1. PSD (b-Mode)

Channel 1 (1Mbit)



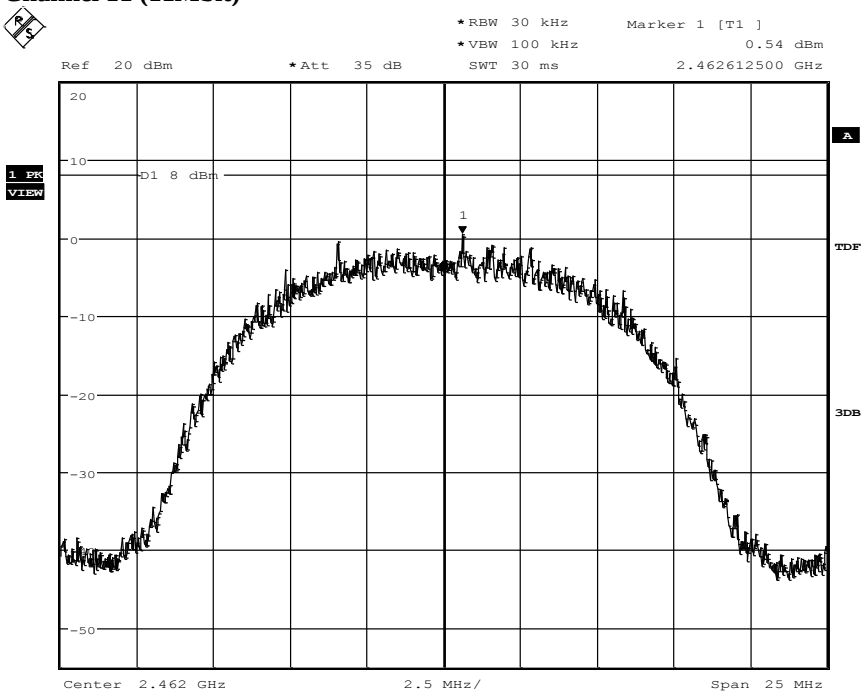
Date: 16.JUN.2015 15:16:36

Channel 6 (1Mbit)



Date: 16.JUN.2015 15:21:08

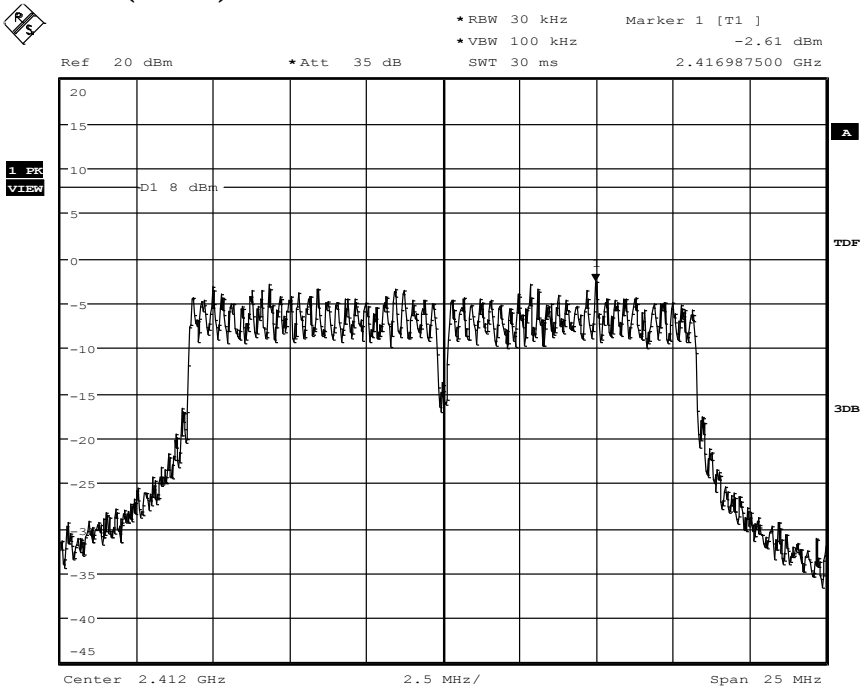
Channel 11 (11Mbit)



Date: 16.JUN.2015 15:29:37

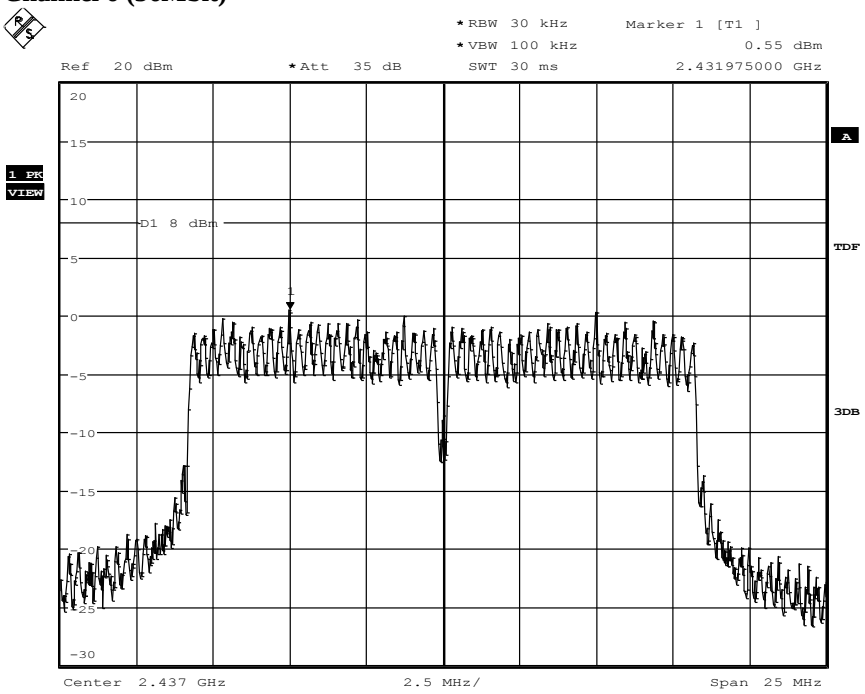
1.10.2. PSD (g-Mode)

Channel 1 (48Mbit)



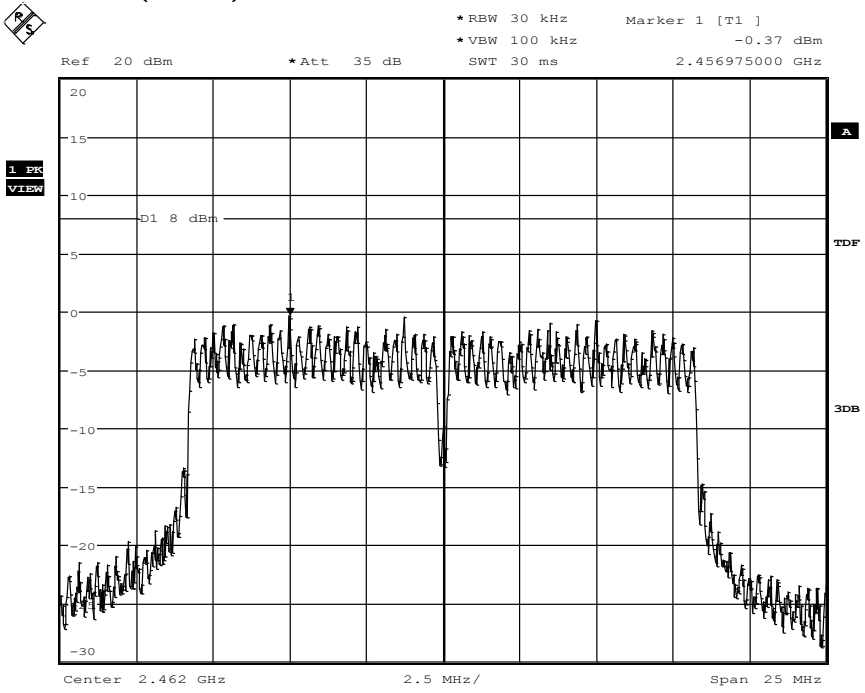
Date: 16.JUN.2015 15:35:45

Channel 6 (36Mbit)



Date: 16.JUN.2015 15:40:47

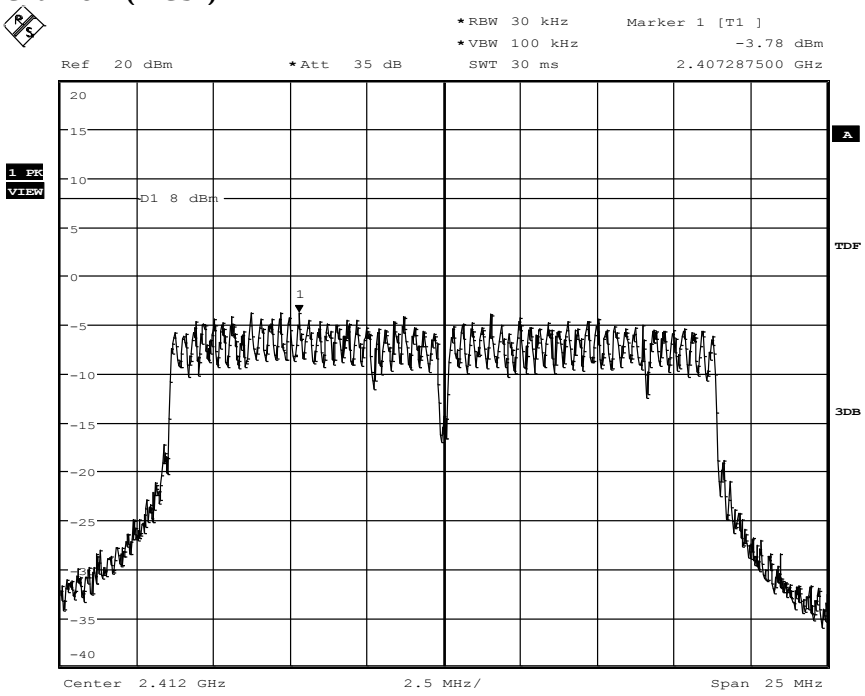
Channel 11 (36Mbit)



Date: 16.JUN.2015 15:44:14

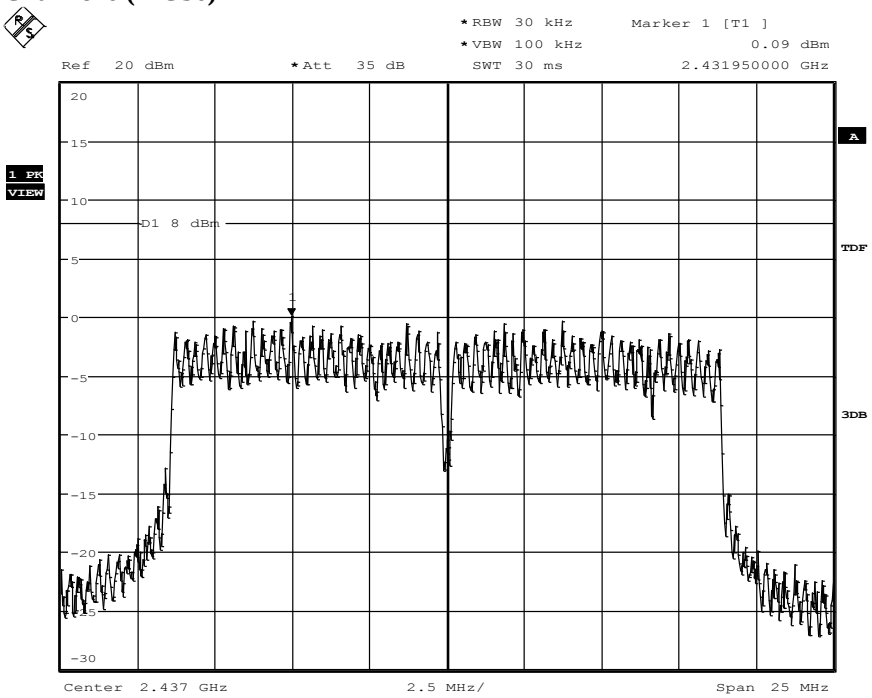
1.10.3. PSD (n-Mode)

Channel 1 (MCS7)



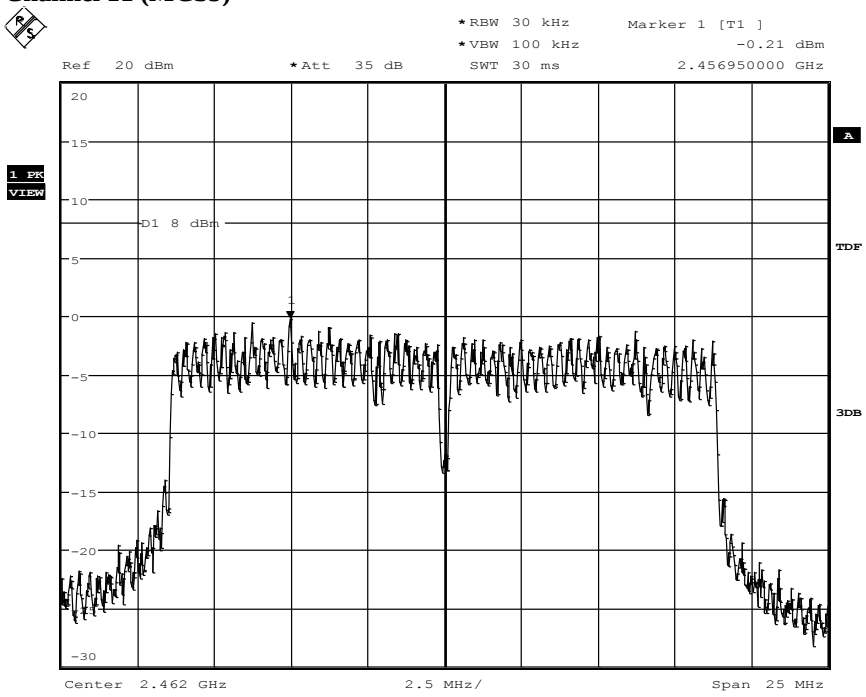
Date: 16.JUN.2015 15:47:33

Channel 6 (MCS6)



Date: 16.JUN.2015 15:51:27

Channel 11 (MCS5)

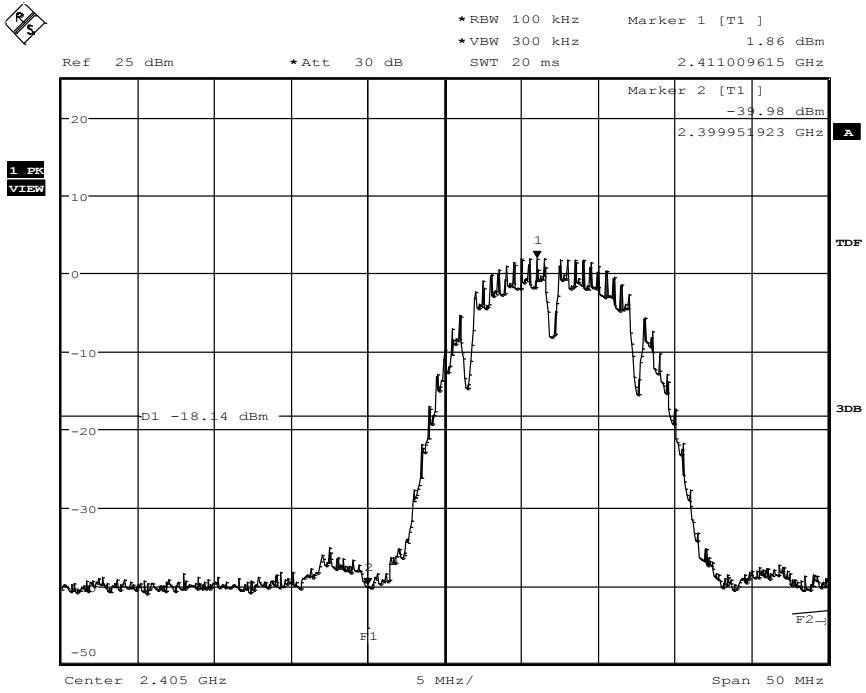


Date: 16.JUN.2015 15:56:53

1.11. 20dBc Emissions

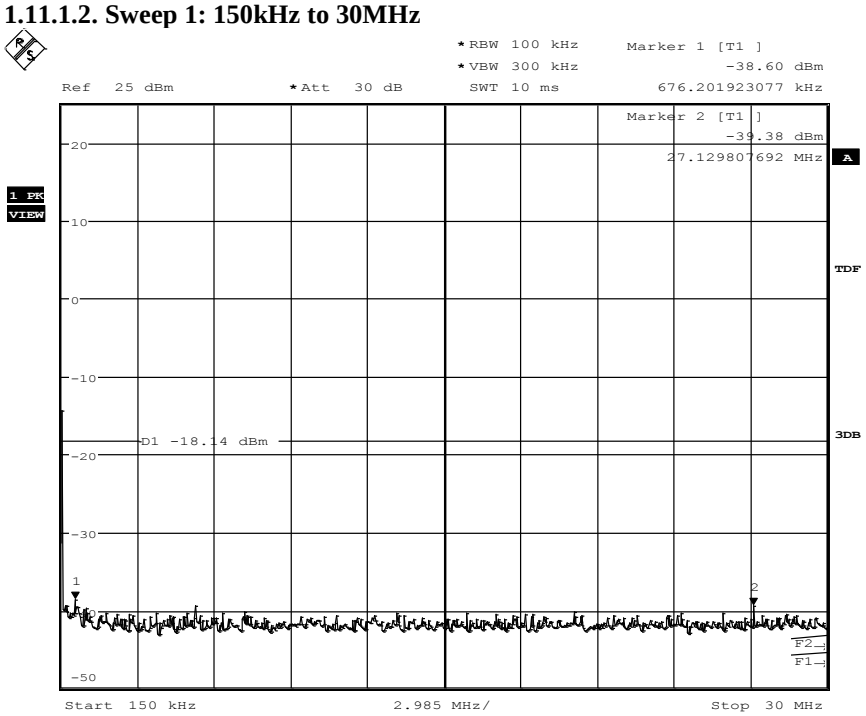
1.11.1. b-Mode Channel 1

1.11.1.1. Channel 1 Reference



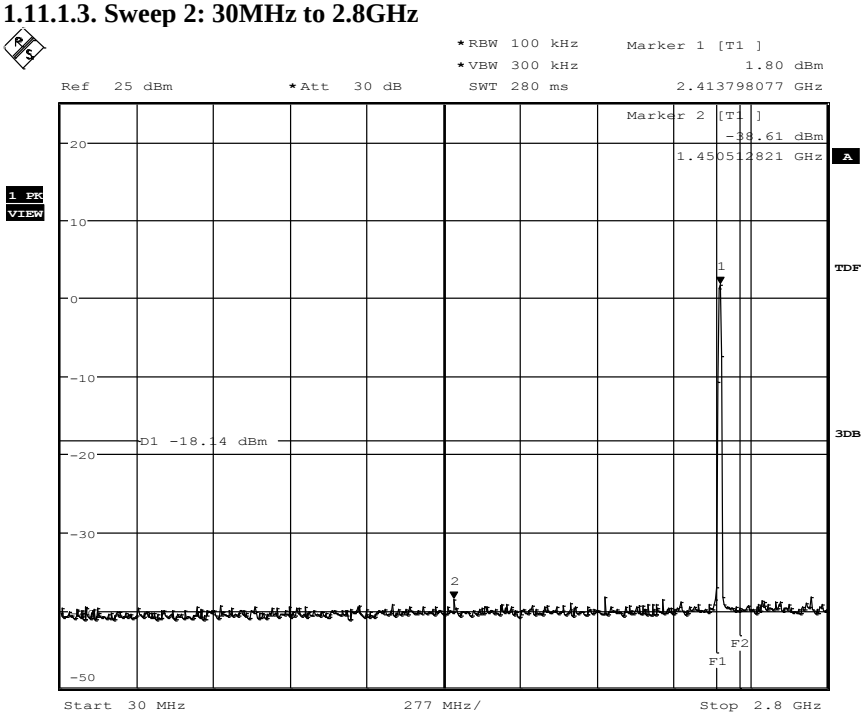
Date: 15.JUN.2015 14:08:55

1.11.1.2. Sweep 1: 150kHz to 30MHz



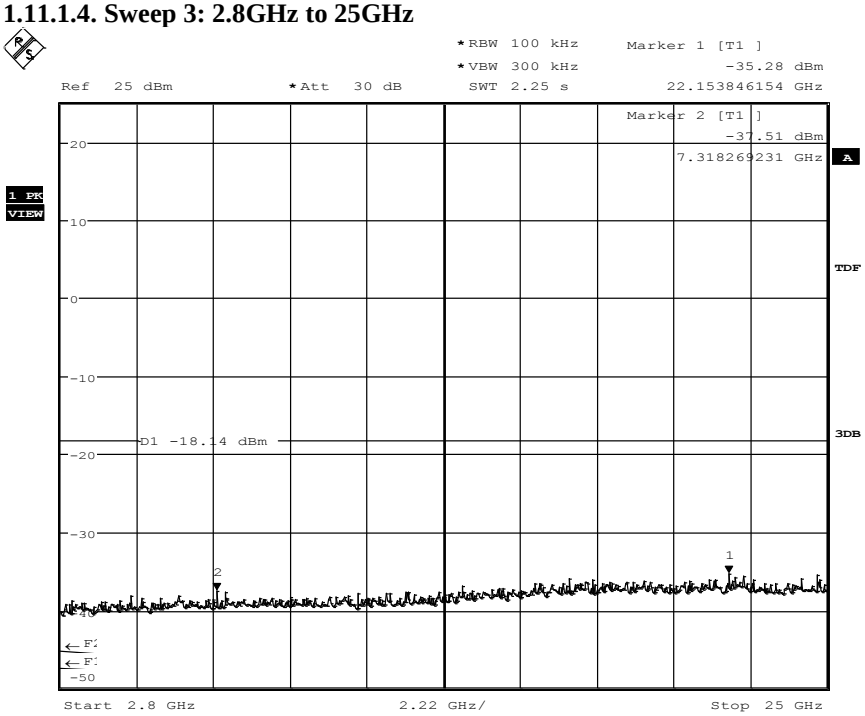
Date: 15.JUN.2015 14:13:56

1.11.1.3. Sweep 2: 30MHz to 2.8GHz



Date: 15.JUN.2015 14:20:20

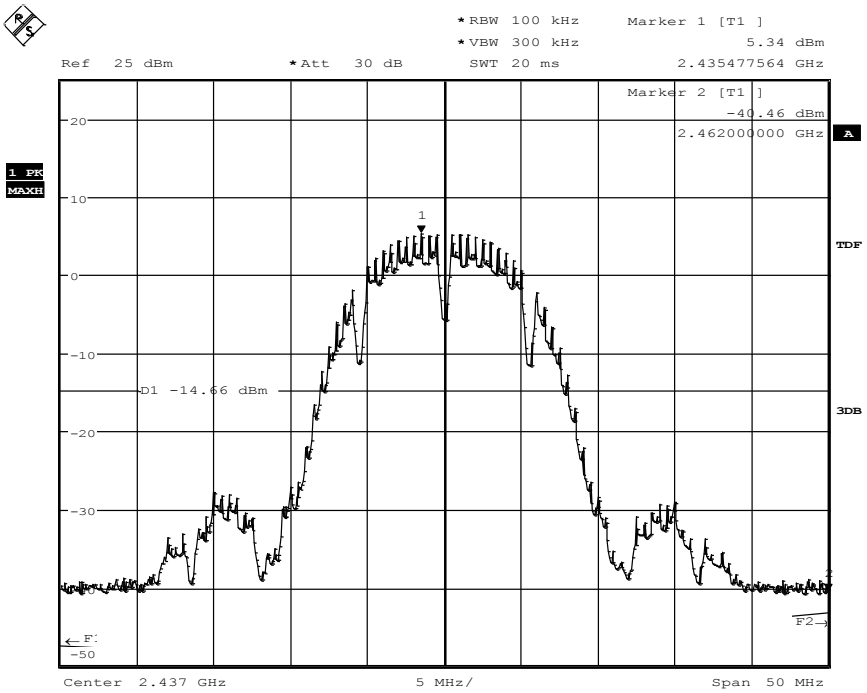
1.11.1.4. Sweep 3: 2.8GHz to 25GHz



Date: 15.JUN.2015 14:24:55

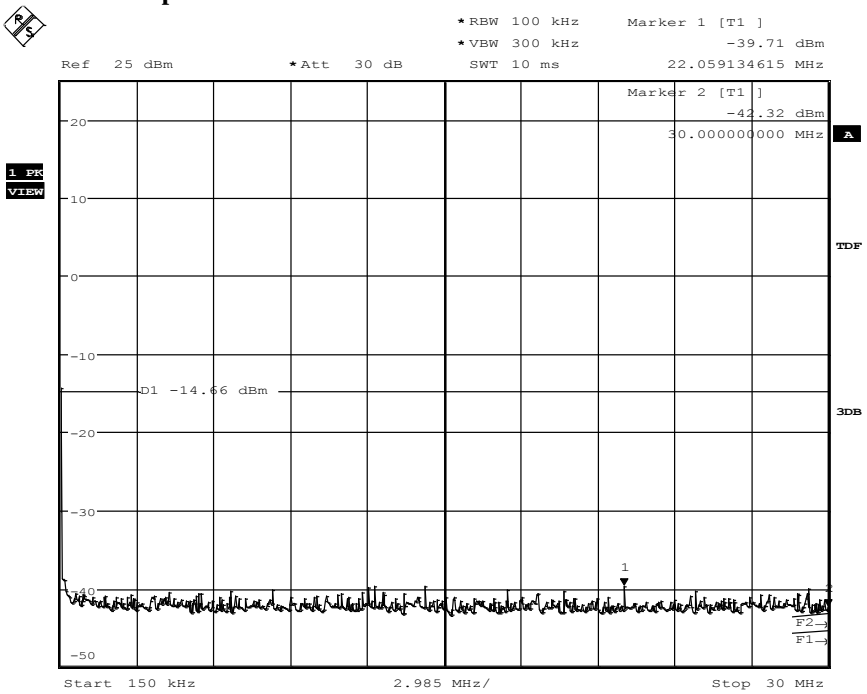
1.11.2. b-Mode Channel 6

1.11.2.1. Channel 6 Reference



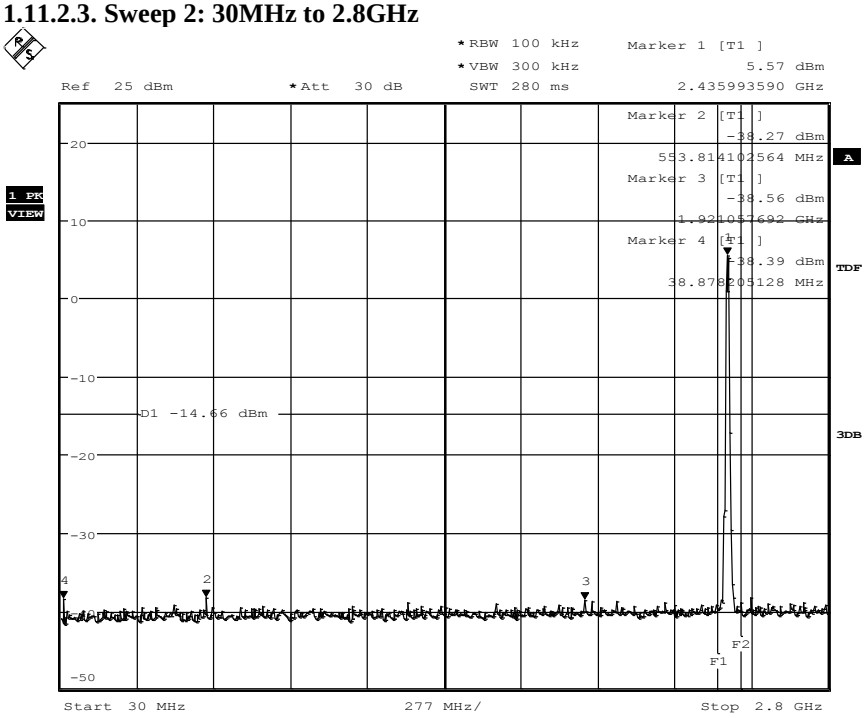
Date: 15.JUN.2015 14:29:10

1.11.2.2. Sweep 1: 150kHz to 30MHz



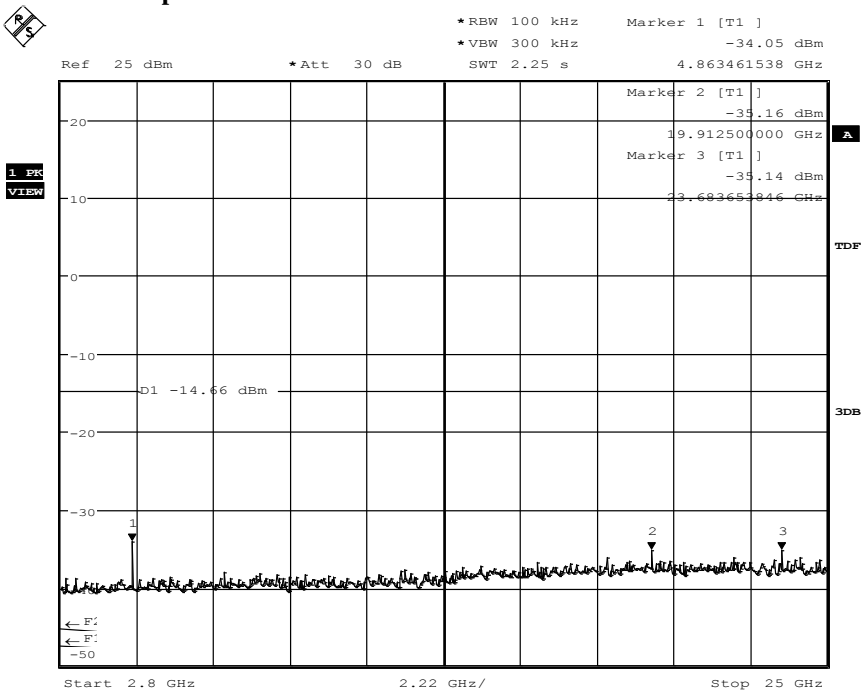
Date: 15.JUN.2015 14:31:56

1.11.2.3. Sweep 2: 30MHz to 2.8GHz



Date: 15.JUN.2015 14:37:17

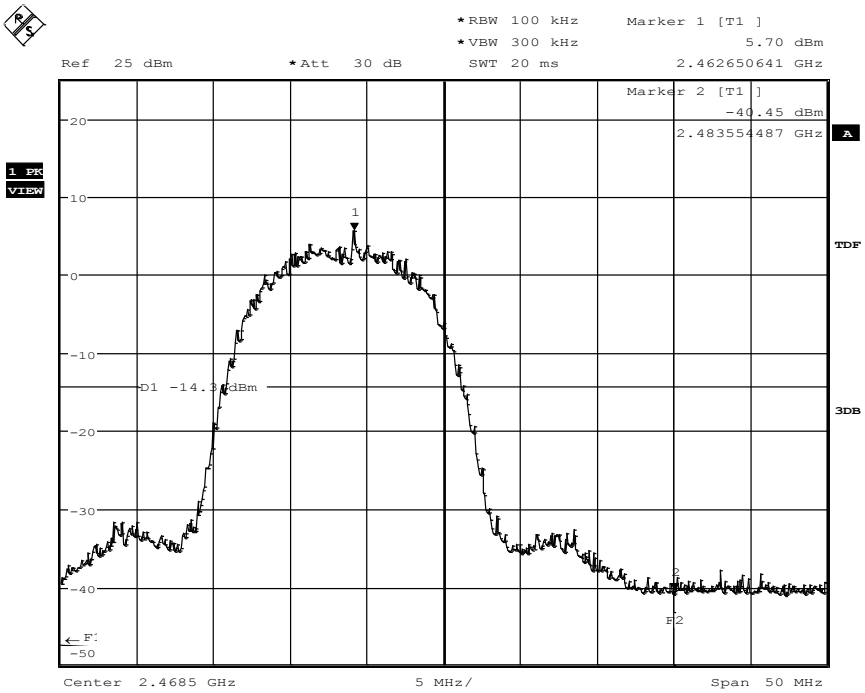
1.11.2.4. Sweep 3: 2.8GHz to 25GHz



Date: 15.JUN.2015 14:39:45

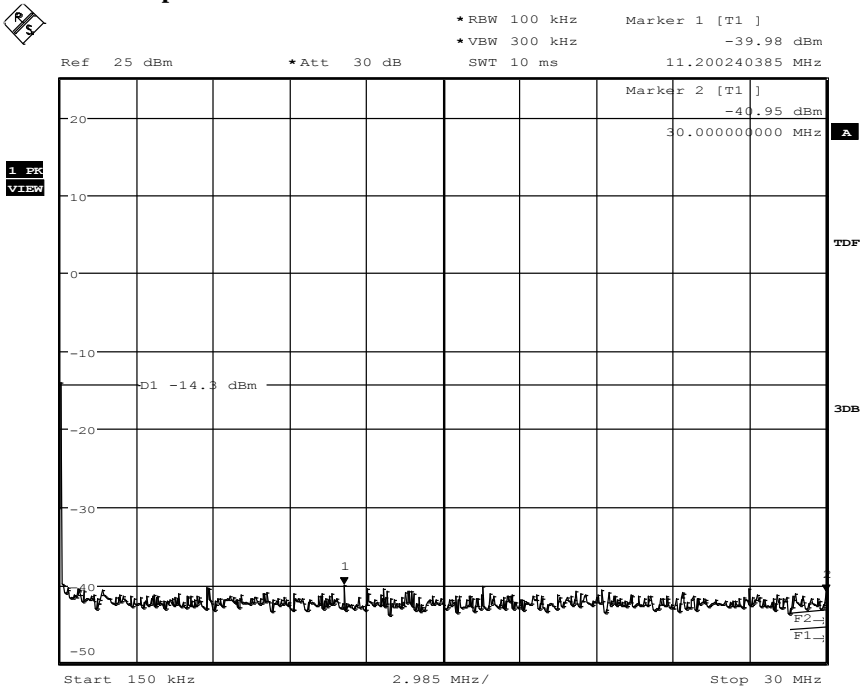
1.11.3. b-Mode Channel 11

1.11.3.1. Channel 11 Reference



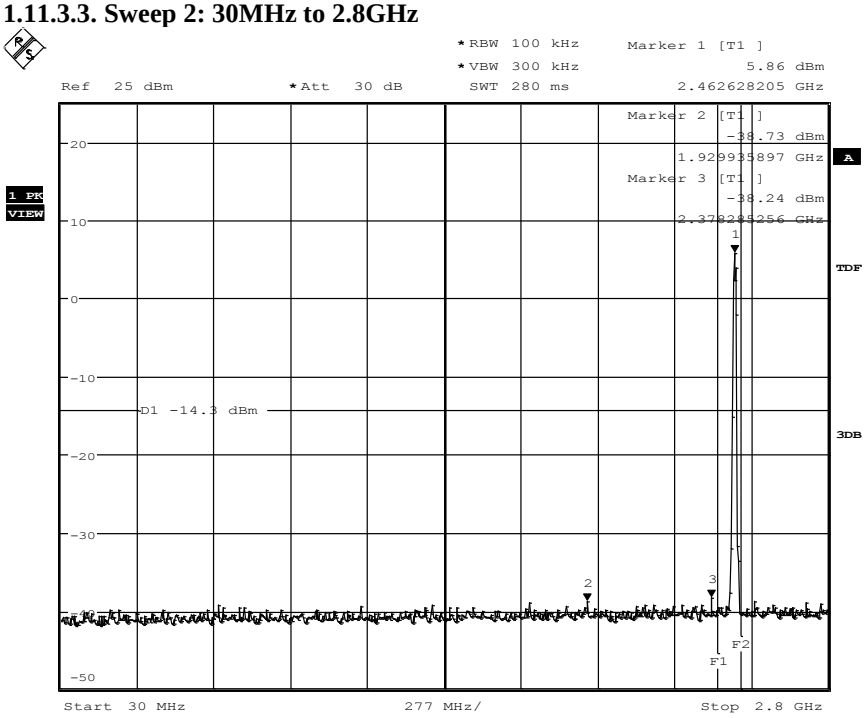
Date: 15.JUN.2015 14:45:18

1.11.3.2. Sweep 1: 150kHz to 30MHz



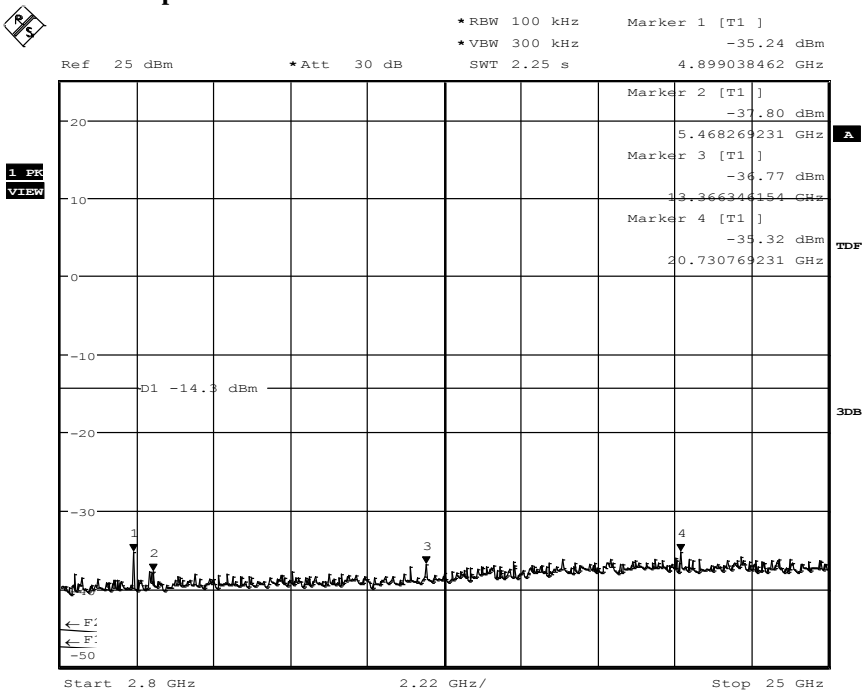
Date: 15.JUN.2015 14:47:27

1.11.3.3. Sweep 2: 30MHz to 2.8GHz



Date: 15.JUN.2015 14:50:10

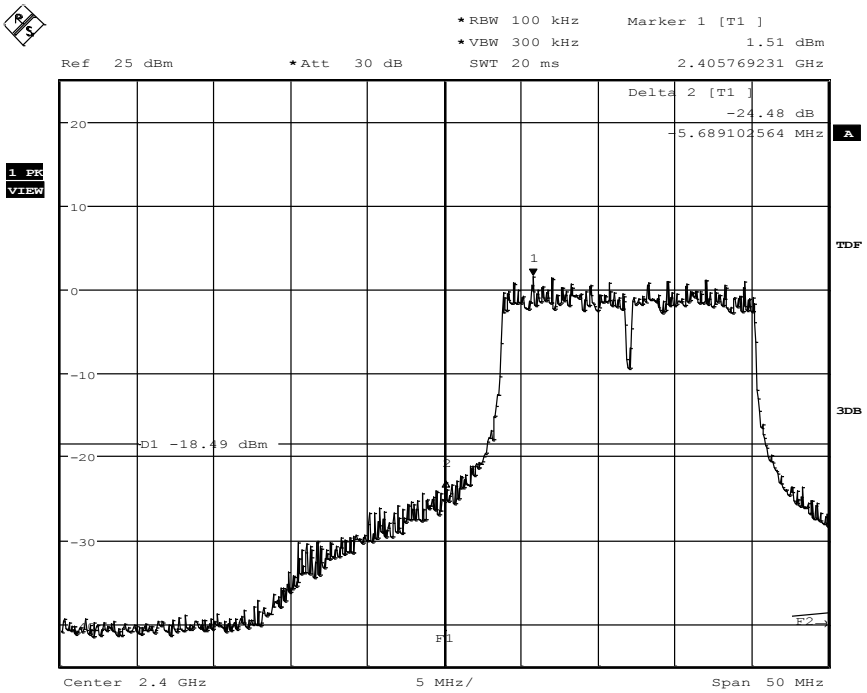
1.11.3.4. Sweep 3: 2.8GHz to 25GHz



Date: 15.JUN.2015 14:54:25

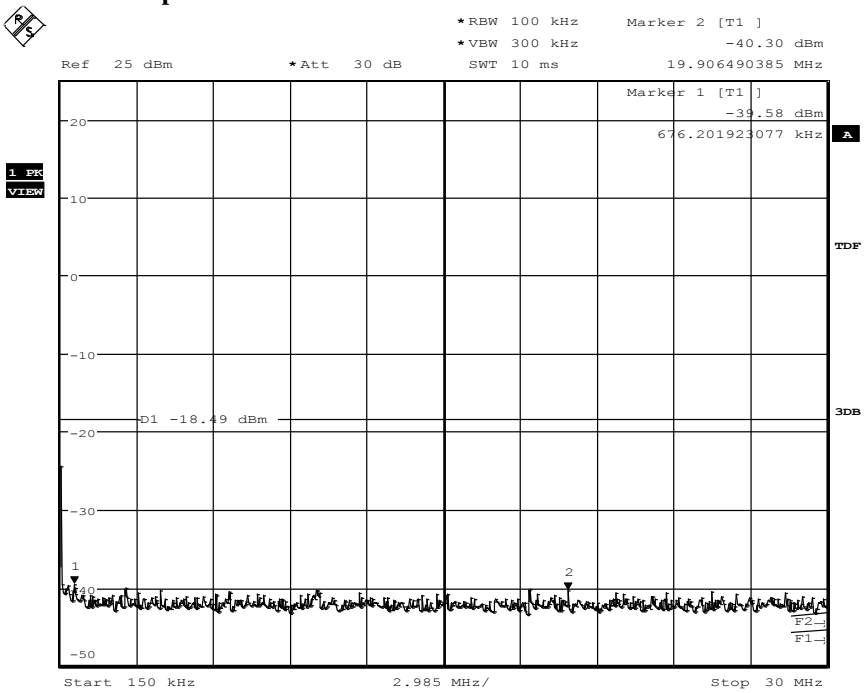
1.11.4. g-Mode Channel 1

1.11.4.1. Channel 1 Reference



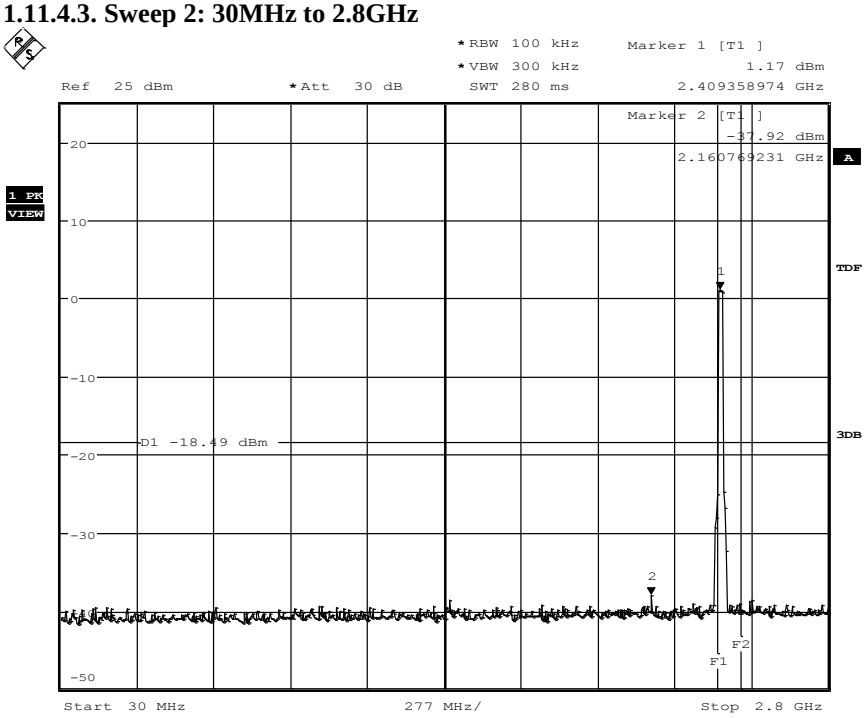
Date: 11.JUN.2015 10:07:58

1.11.4.2. Sweep 1: 150kHz to 30MHz



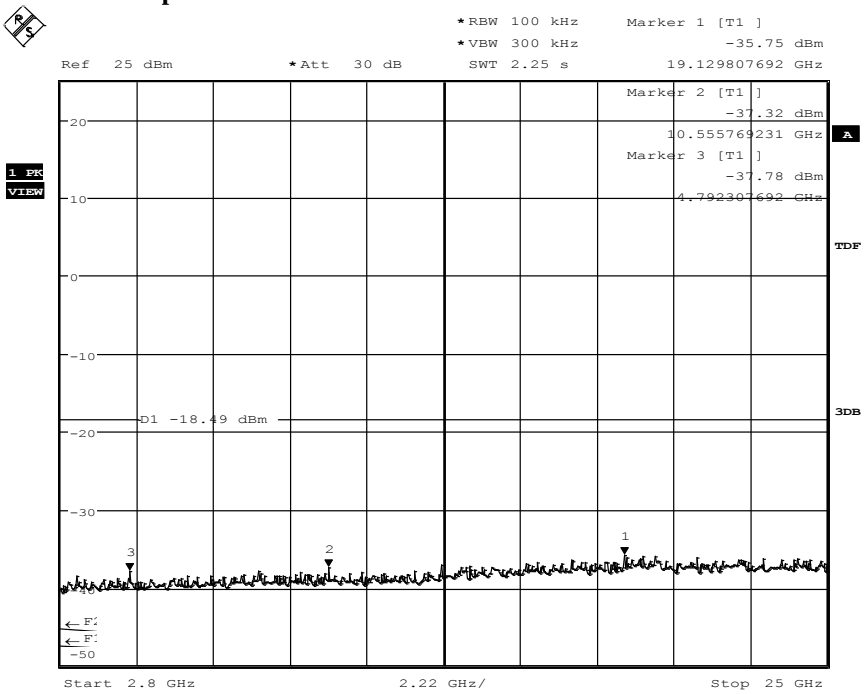
Date: 15.JUN.2015 12:14:10

1.11.4.3. Sweep 2: 30MHz to 2.8GHz



Date: 15.JUN.2015 12:17:57

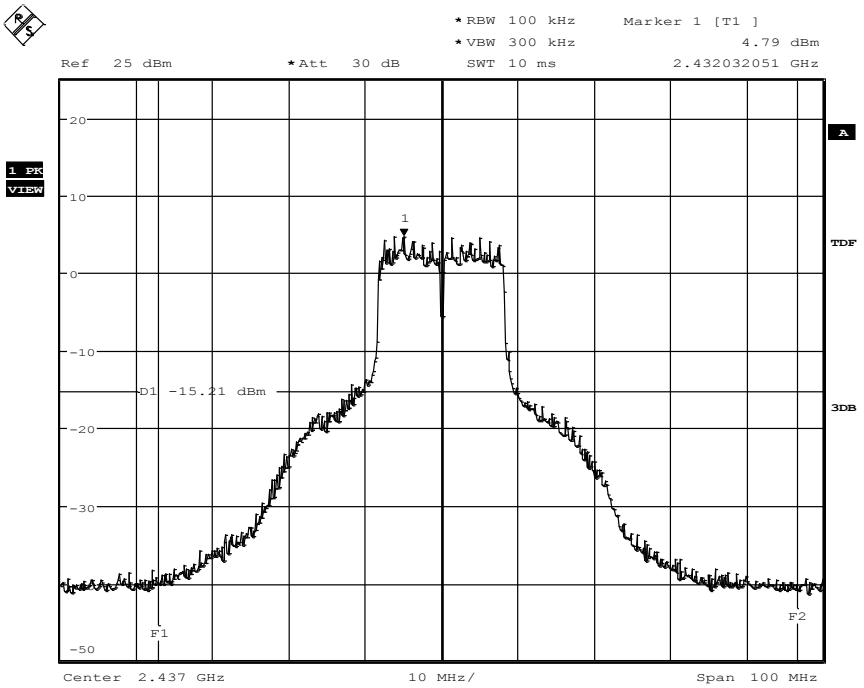
1.11.4.4. Sweep 3: 2.8GHz to 25GHz



Date: 15.JUN.2015 12:22:20

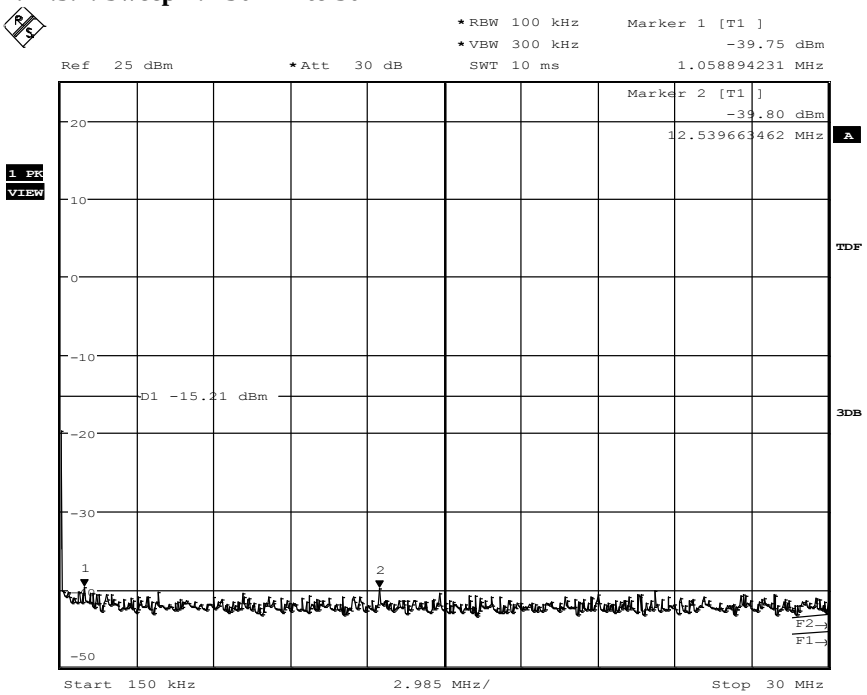
1.11.5. g-Mode Channel 6

1.11.5.1. Channel 6 Reference



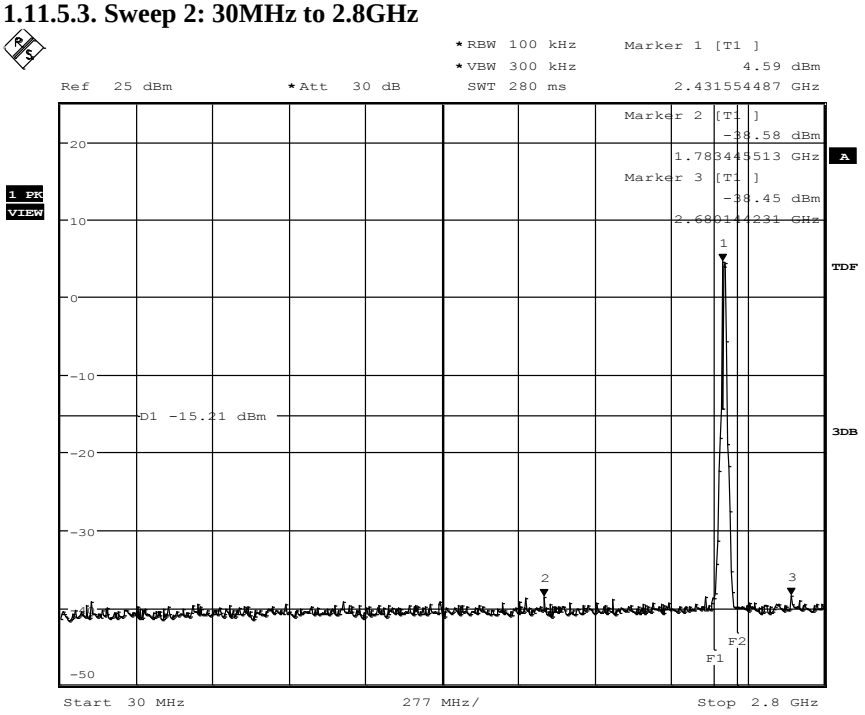
Date: 15.JUN.2015 12:26:04

1.11.5.2. Sweep 1: 150kHz to 30MHz



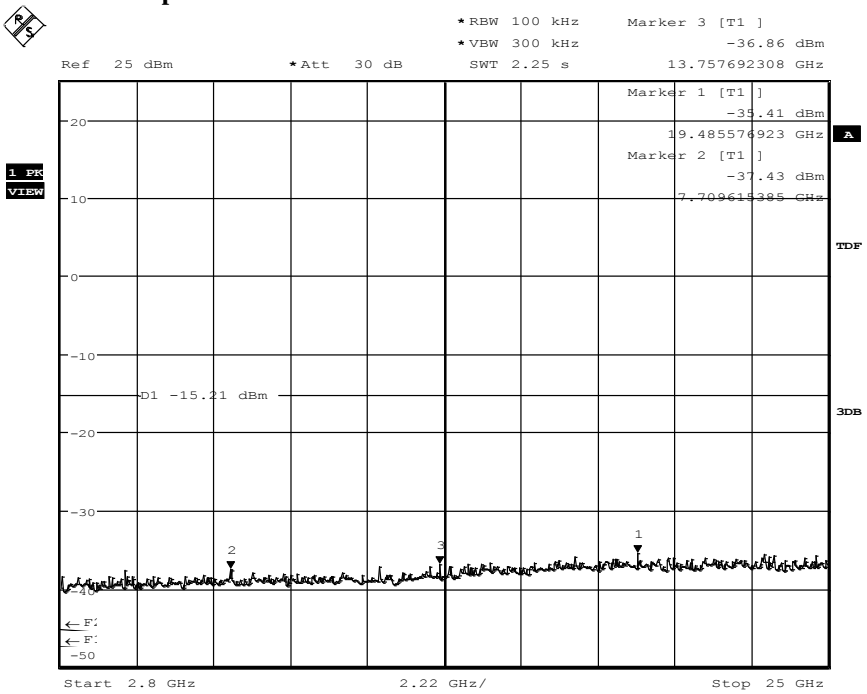
Date: 15.JUN.2015 12:29:10

1.11.5.3. Sweep 2: 30MHz to 2.8GHz



Date: 15.JUN.2015 12:33:20

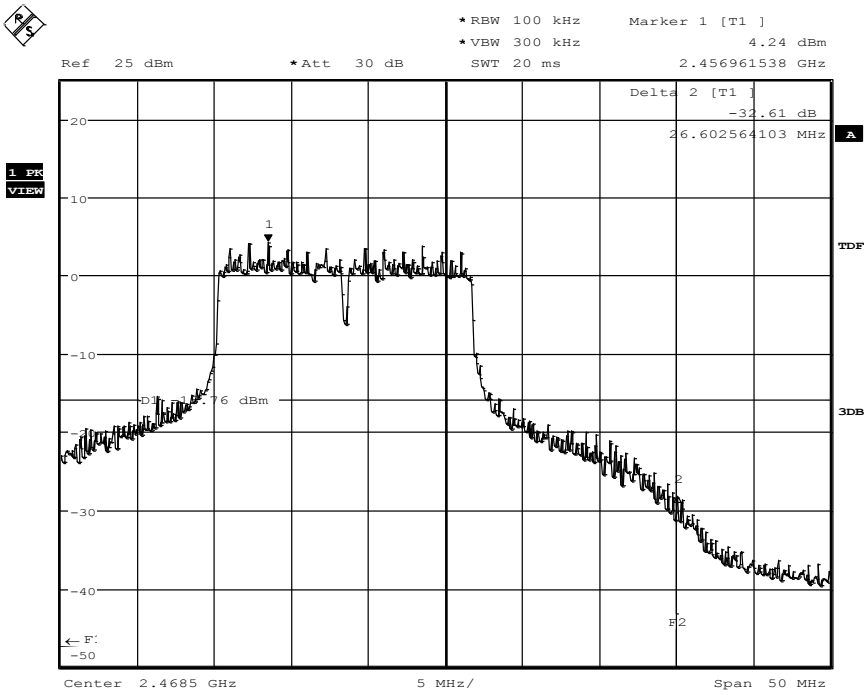
1.11.5.4. Sweep 3: 2.8GHz to 25GHz



Date: 15.JUN.2015 12:41:02

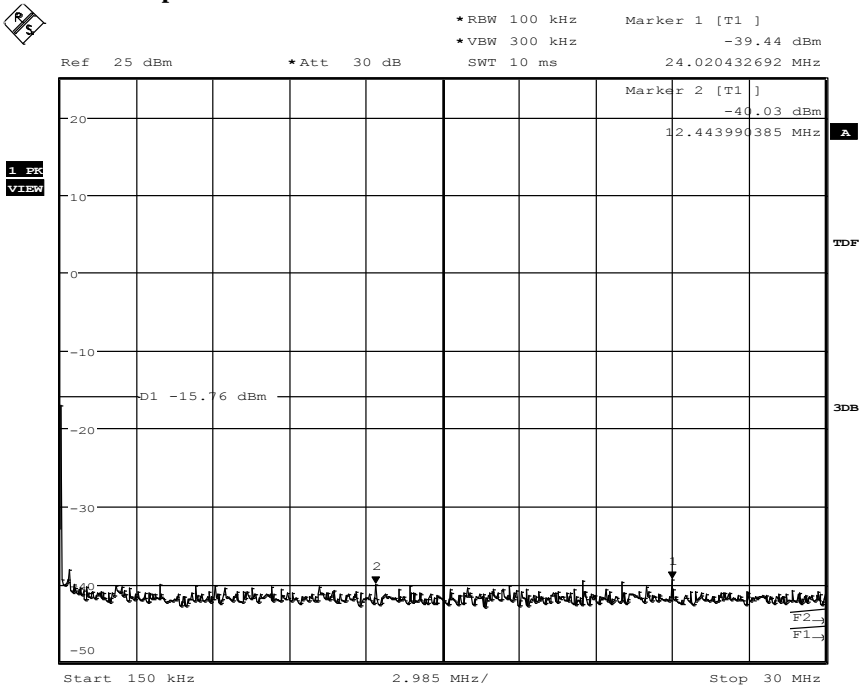
1.11.6. g-Mode Channel 11

1.11.6.1. Channel 11 Reference



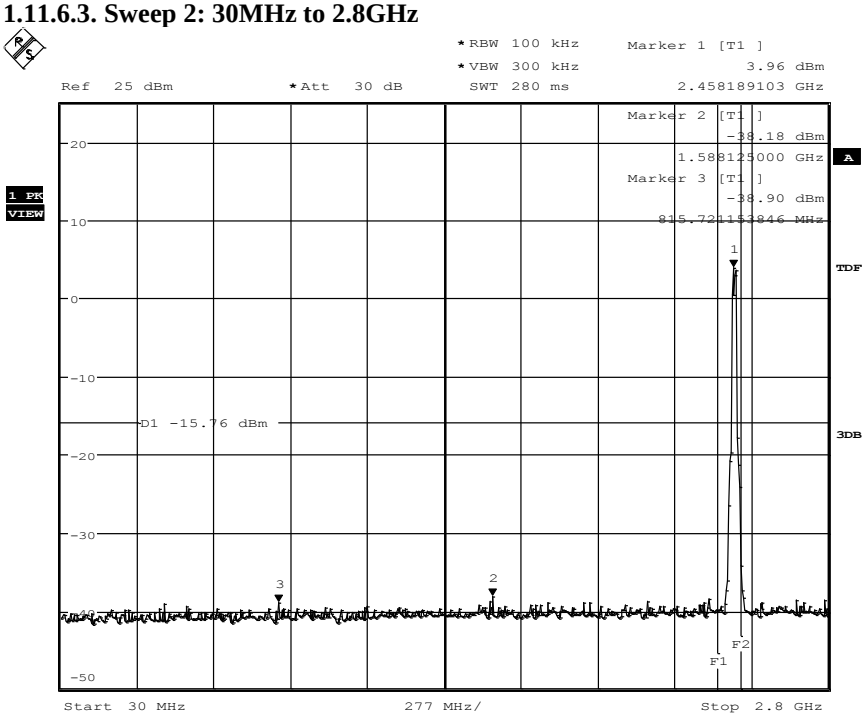
Date: 15.JUN.2015 12:46:34

1.11.6.2. Sweep 1: 150kHz to 30MHz



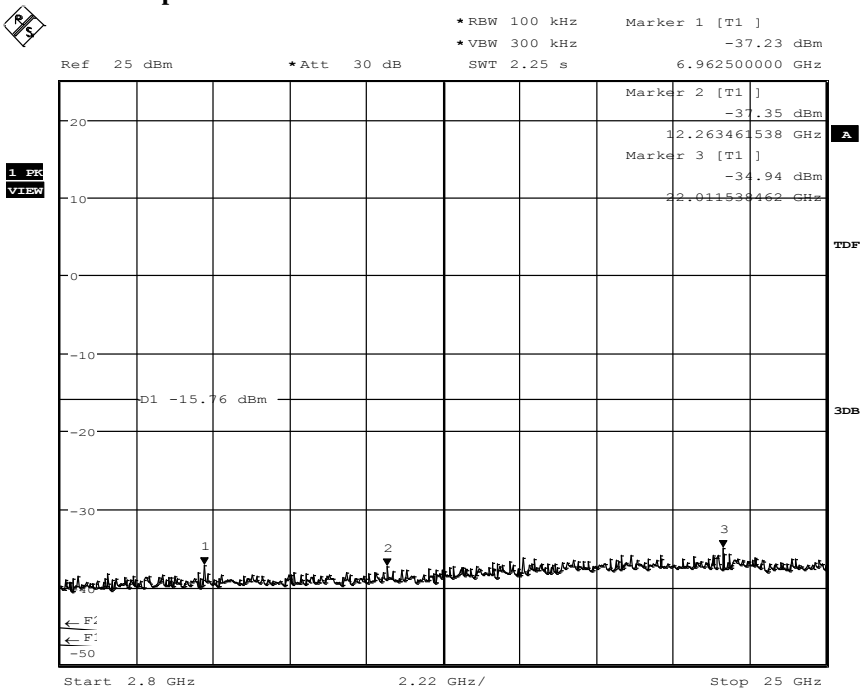
Date: 15.JUN.2015 12:51:35

1.11.6.3. Sweep 2: 30MHz to 2.8GHz



Date: 15.JUN.2015 12:56:33

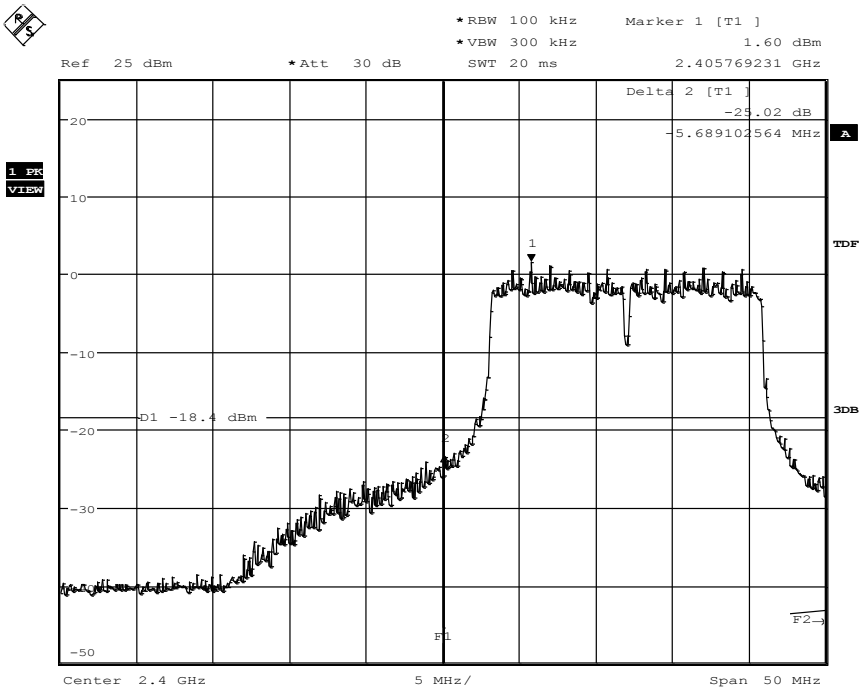
1.11.6.4. Sweep 3: 2.8GHz to 25GHz



Date: 15.JUN.2015 13:00:32

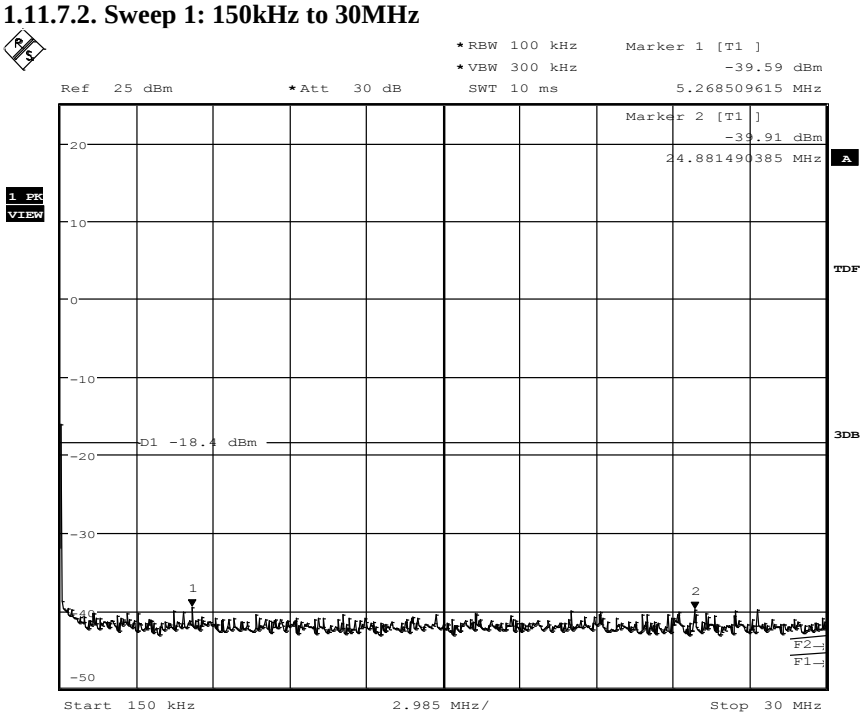
1.11.7. n-Mode Channel 1

1.11.7.1. Channel 1 Reference



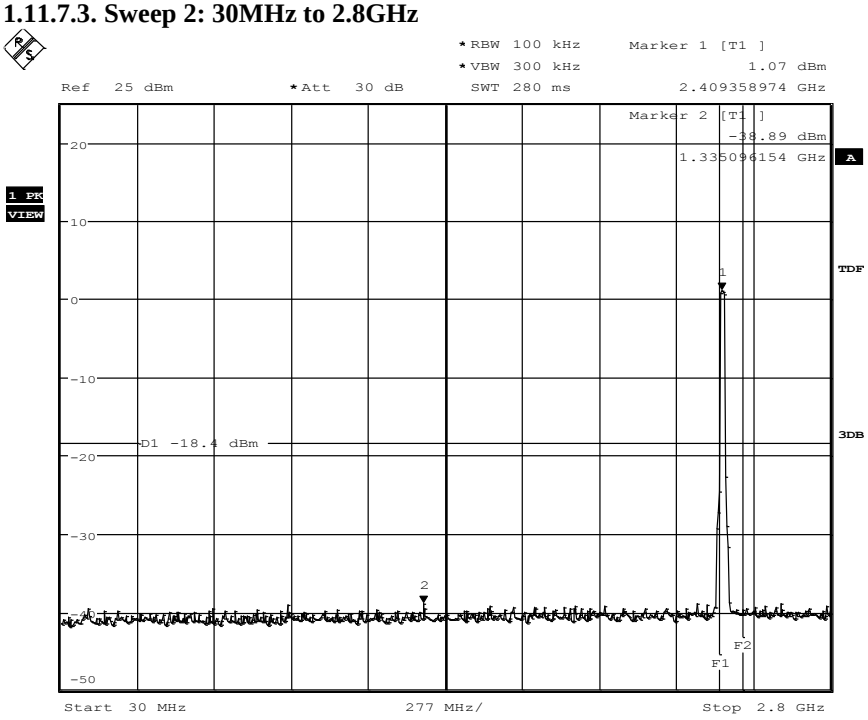
Date: 15.JUN.2015 13:08:36

1.11.7.2. Sweep 1: 150kHz to 30MHz



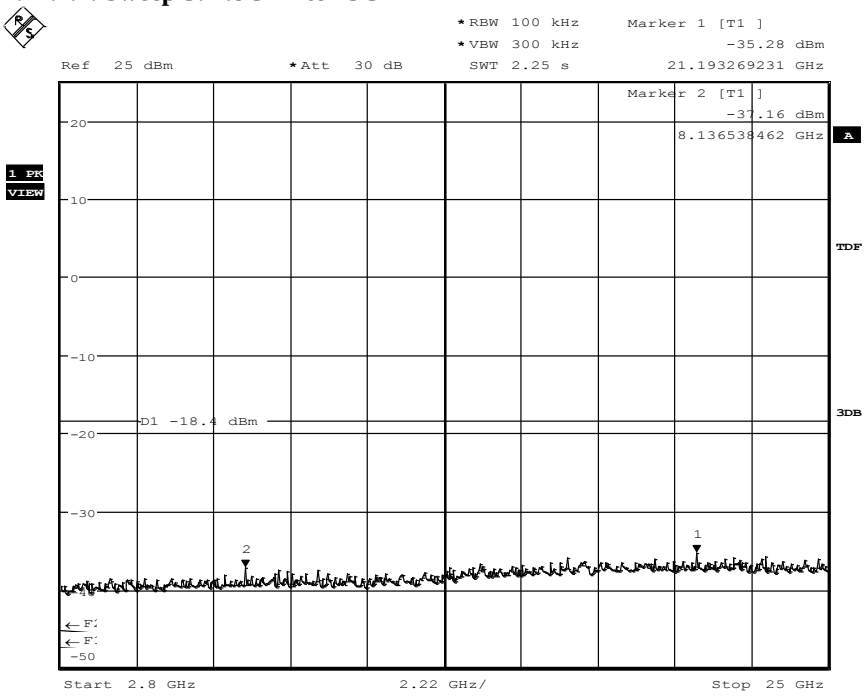
Date: 15.JUN.2015 13:12:22

1.11.7.3. Sweep 2: 30MHz to 2.8GHz



Date: 15.JUN.2015 13:15:46

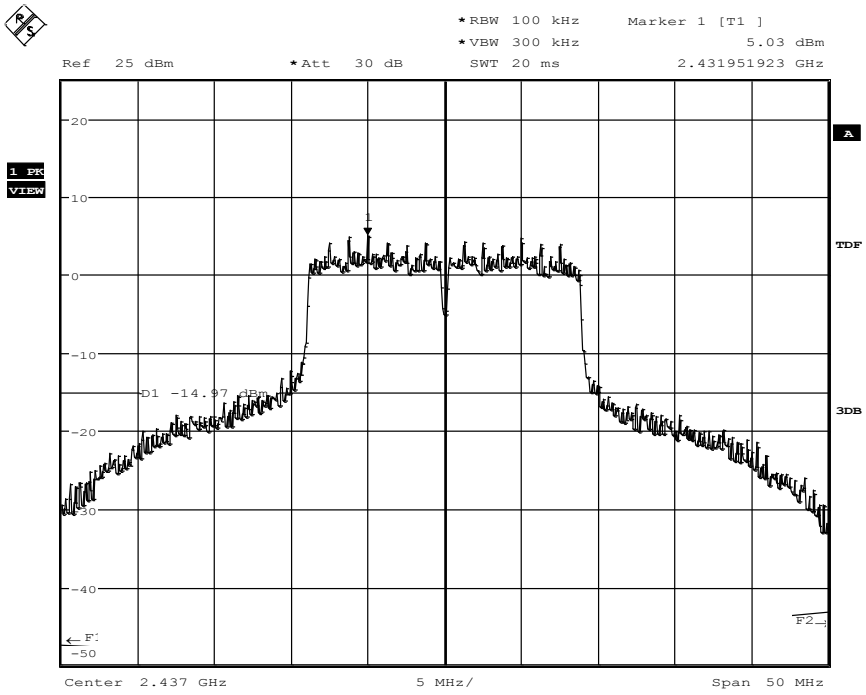
1.11.7.4. Sweep 3: 2.8GHz to 25GHz



Date: 15.JUN.2015 13:20:56

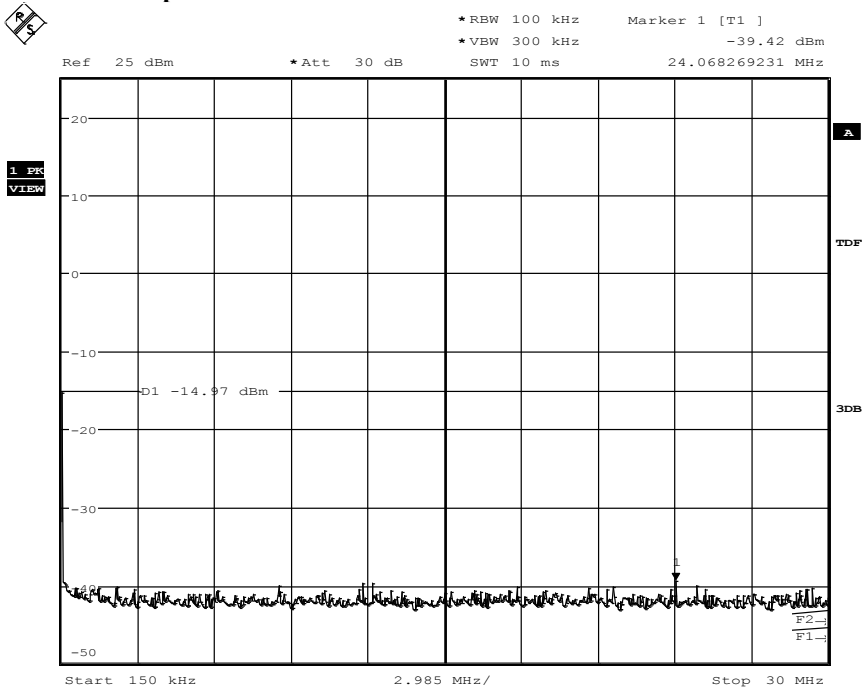
1.11.8. n-Mode Channel 6

1.11.8.1. Channel 6 Reference



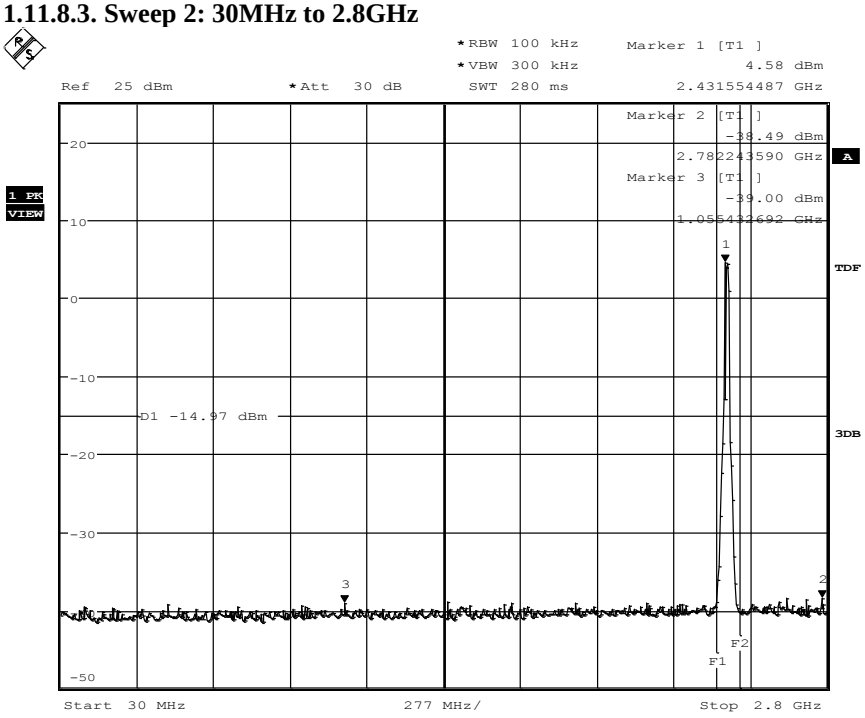
Date: 15.JUN.2015 13:24:54

1.11.8.2. Sweep 1: 150kHz to 30MHz



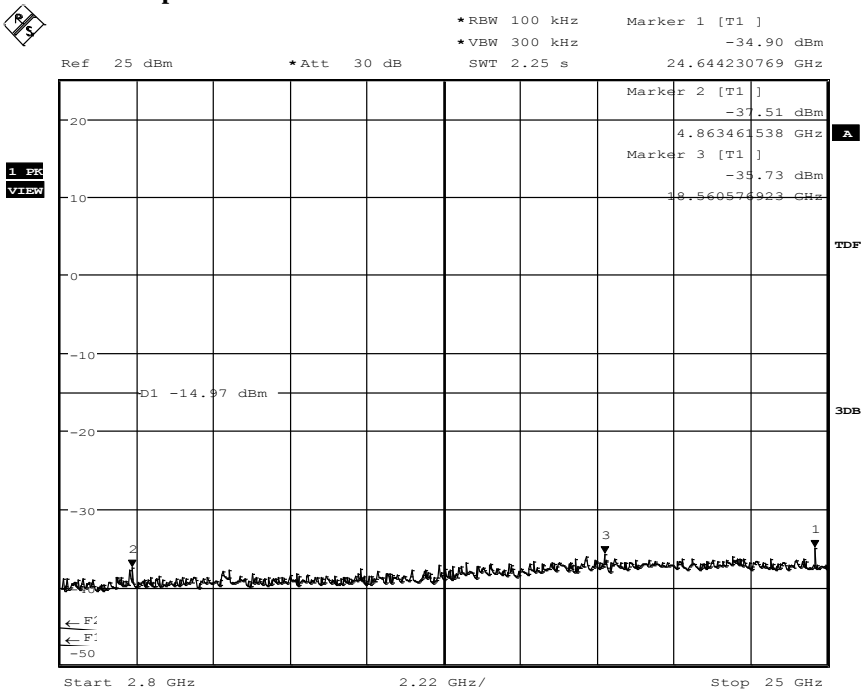
Date: 15.JUN.2015 13:29:04

1.11.8.3. Sweep 2: 30MHz to 2.8GHz



Date: 15.JUN.2015 13:33:29

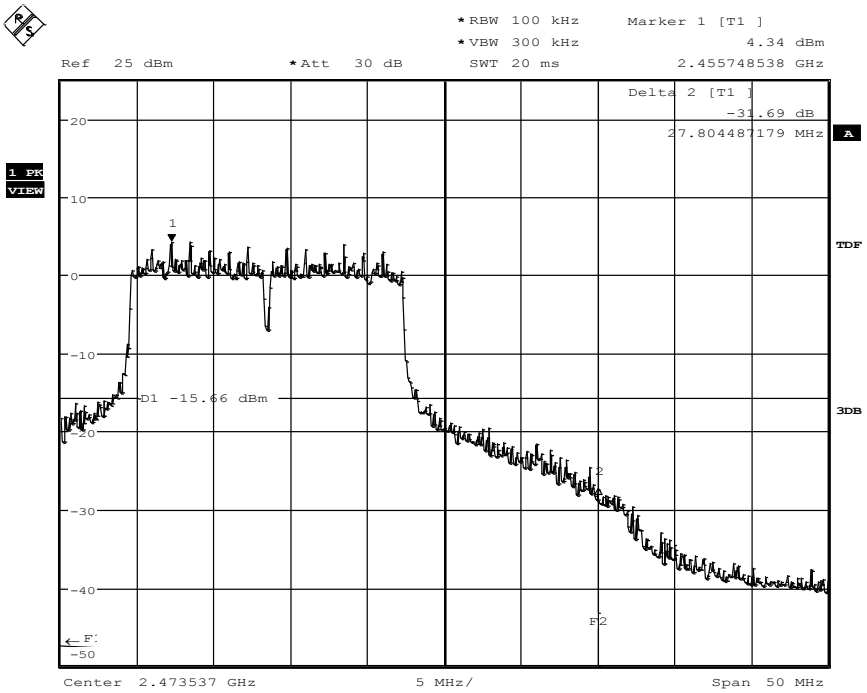
1.11.8.4. Sweep 3: 2.8GHz to 25GHz



Date: 15.JUN.2015 13:37:50

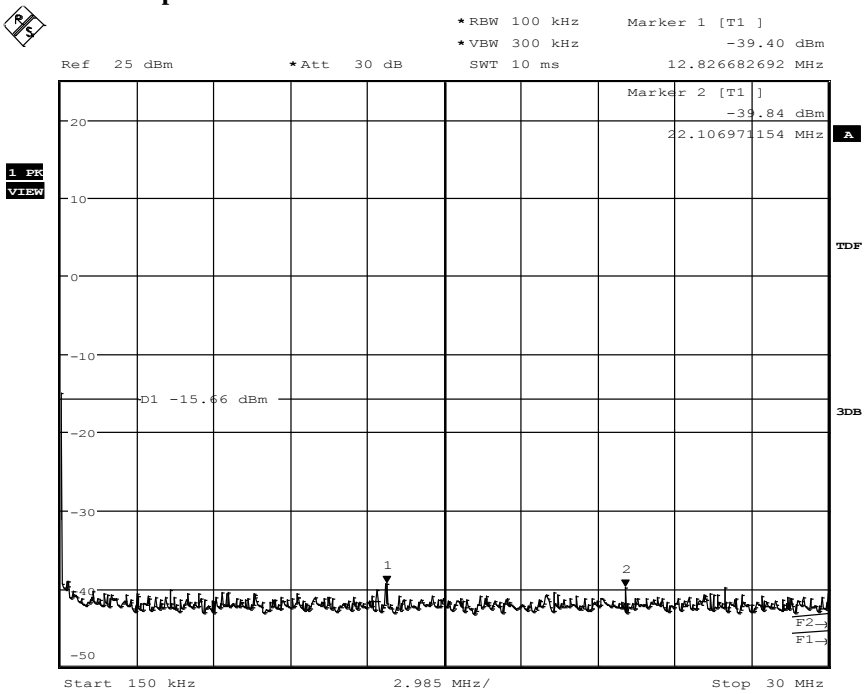
1.11.9. n-Mode Channel 11

1.11.9.1. Channel 11 Reference



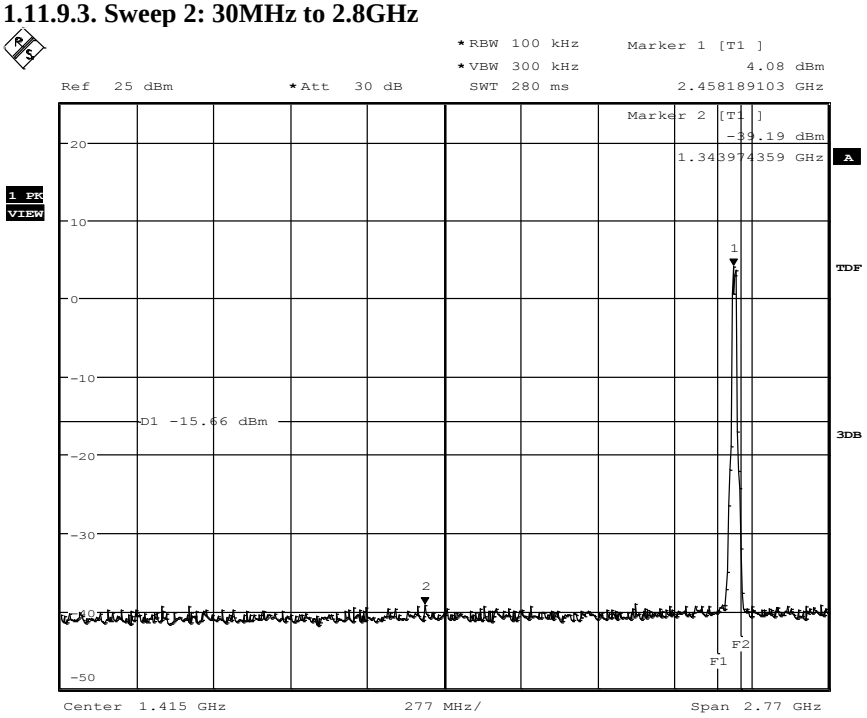
Date: 15.JUN.2015 13:49:51

1.11.9.2. Sweep 1: 150kHz to 30MHz



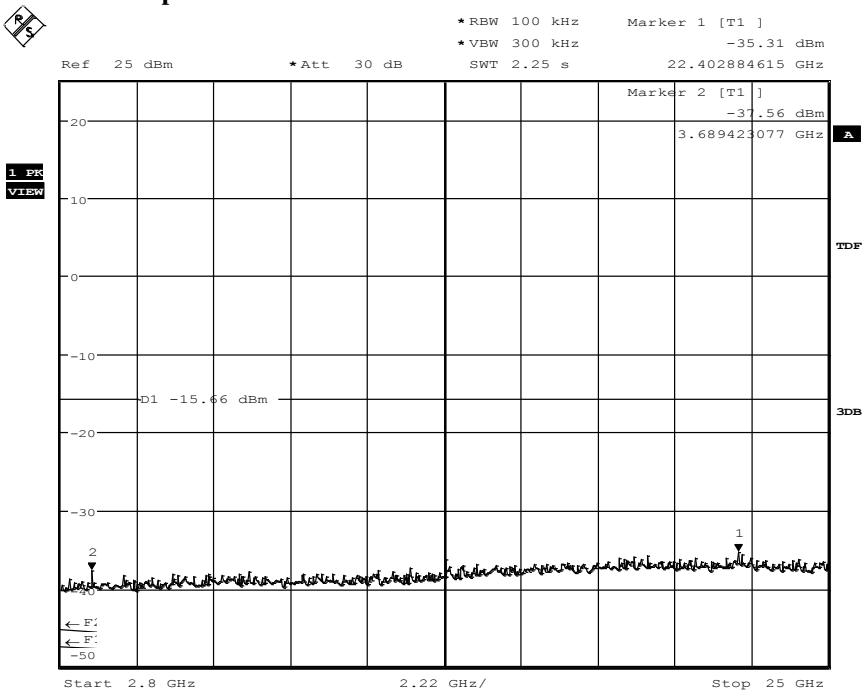
Date: 15.JUN.2015 13:53:09

1.11.9.3. Sweep 2: 30MHz to 2.8GHz



Date: 15.JUN.2015 13:56:02

1.11.9.4. Sweep 3: 2.8GHz to 25GHz



Date: 15.JUN.2015 14:01:57