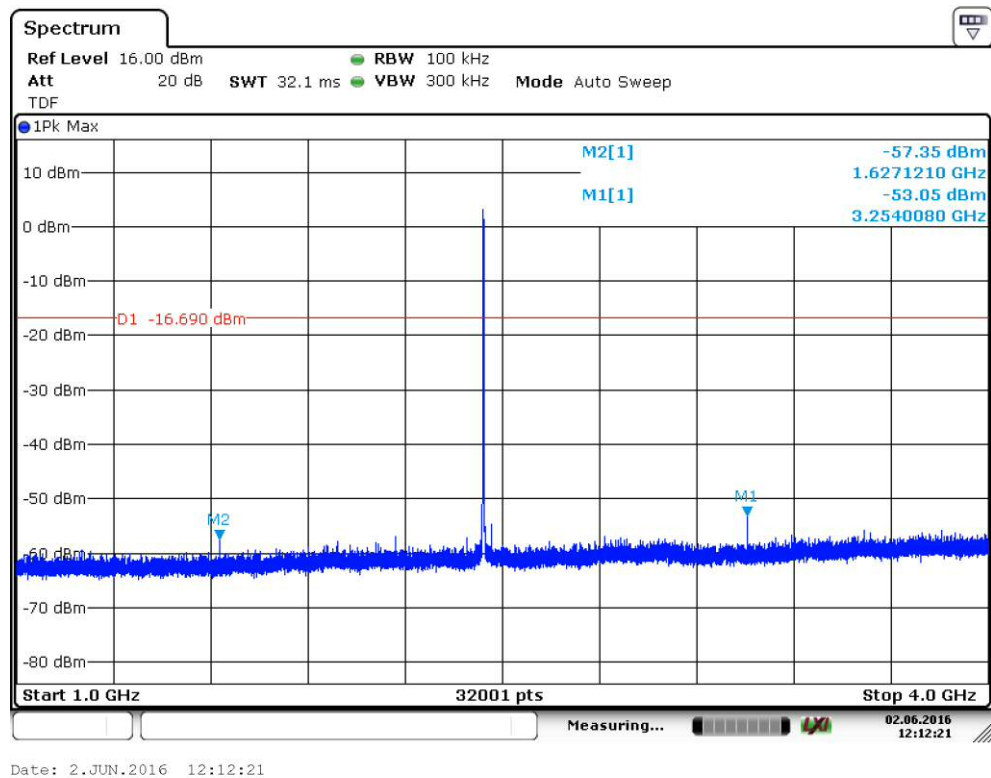
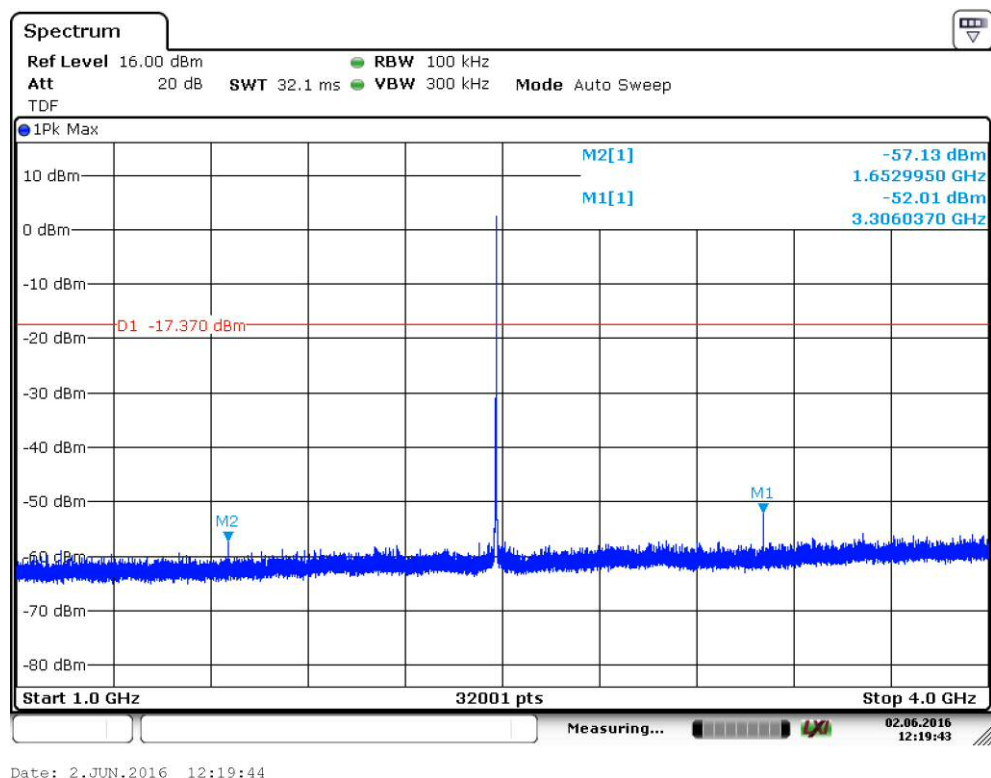


## Conducted Spurious Emission 30 MHz to 26.5 GHz and Band Edge

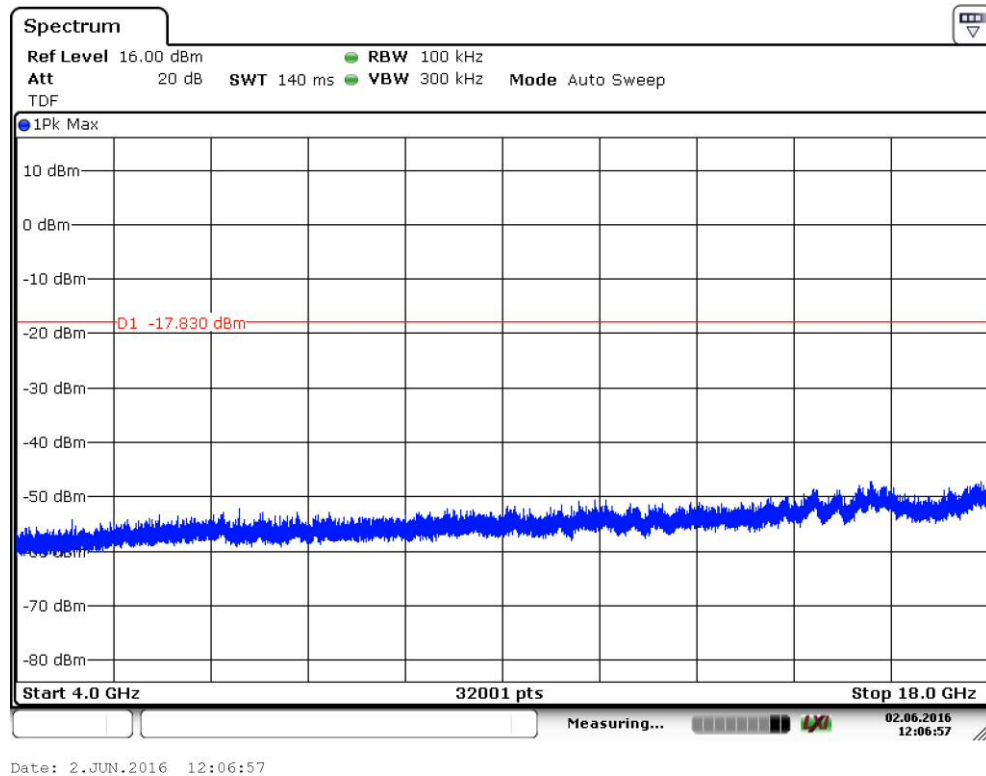


**Figure 45.** Mid channel conducted emission 1 GHz to 4 GHz (2 Mbps).

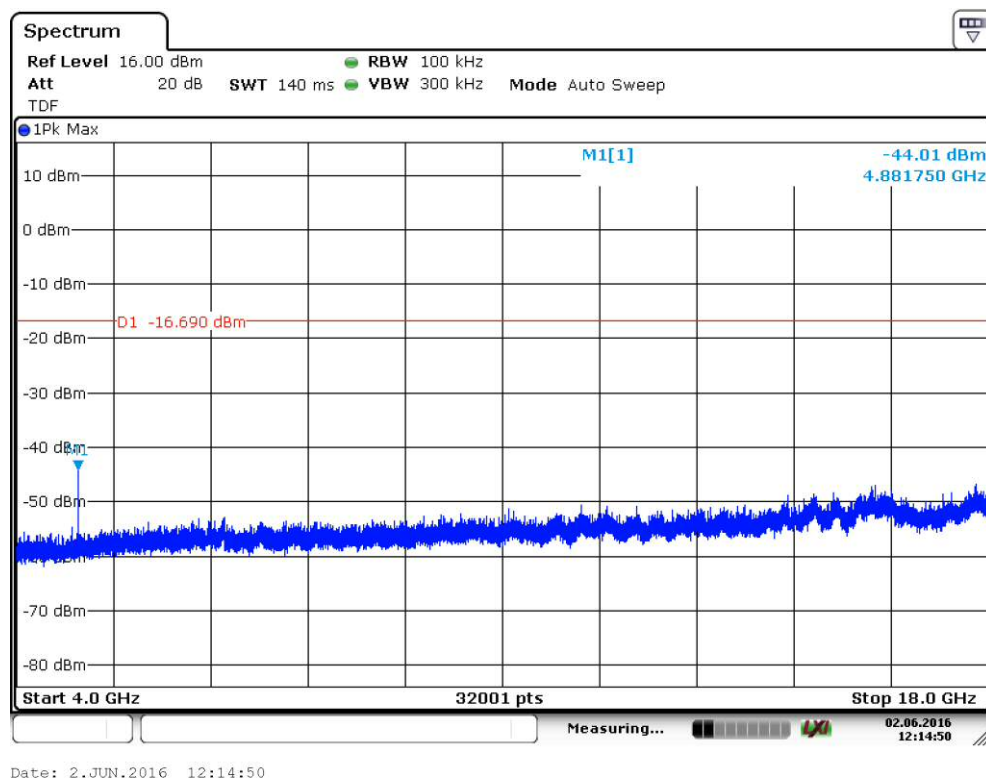


**Figure 46.** High channel conducted emission 1 GHz to 4 GHz (2 Mbps).

## Conducted Spurious Emission 30 MHz to 26.5 GHz and Band Edge

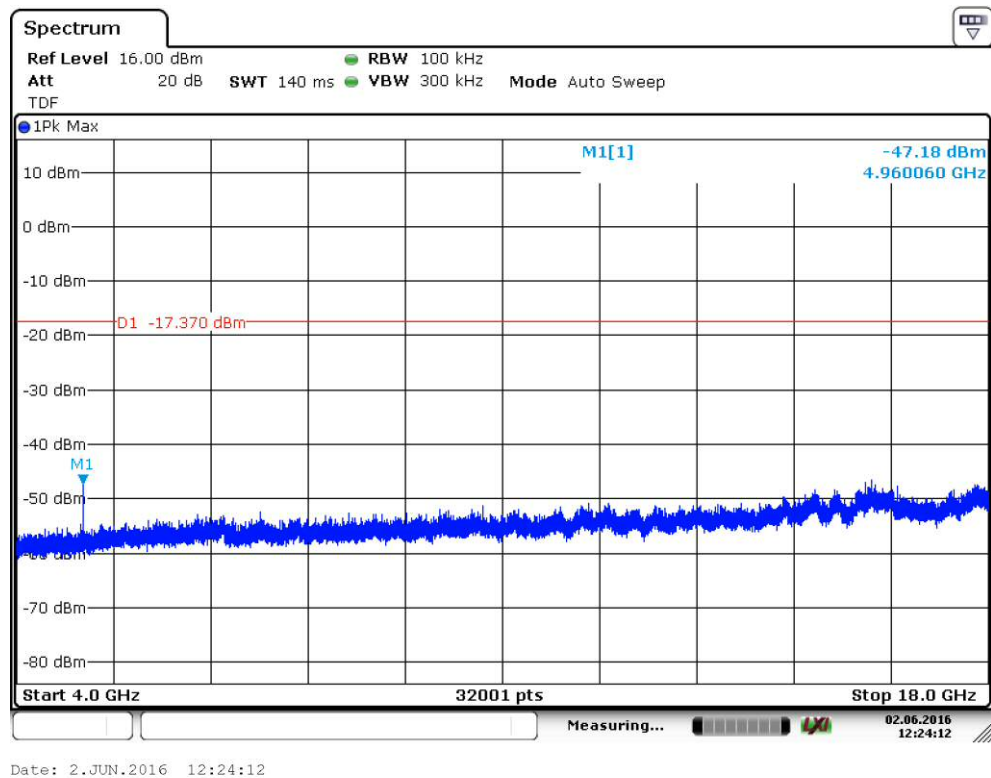


**Figure 47.** Low channel conducted emission 4 GHz to 18 GHz (2 Mbps).

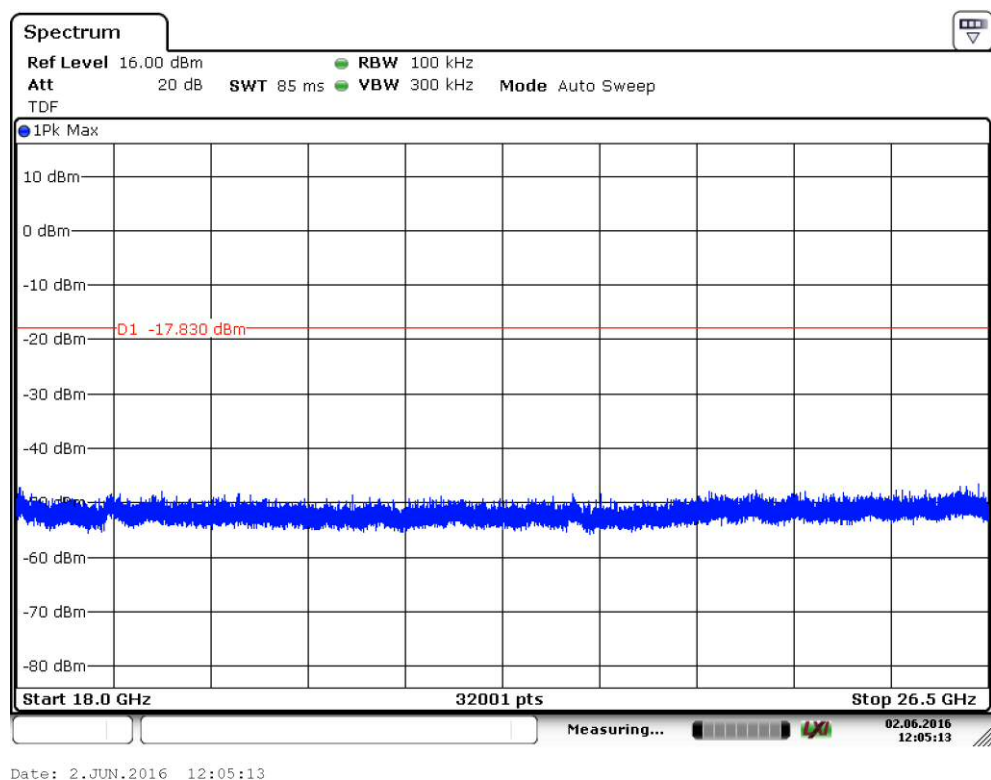


**Figure 48.** Mid channel conducted emission 4 GHz to 18 GHz (2 Mbps).

## Conducted Spurious Emission 30 MHz to 26.5 GHz and Band Edge

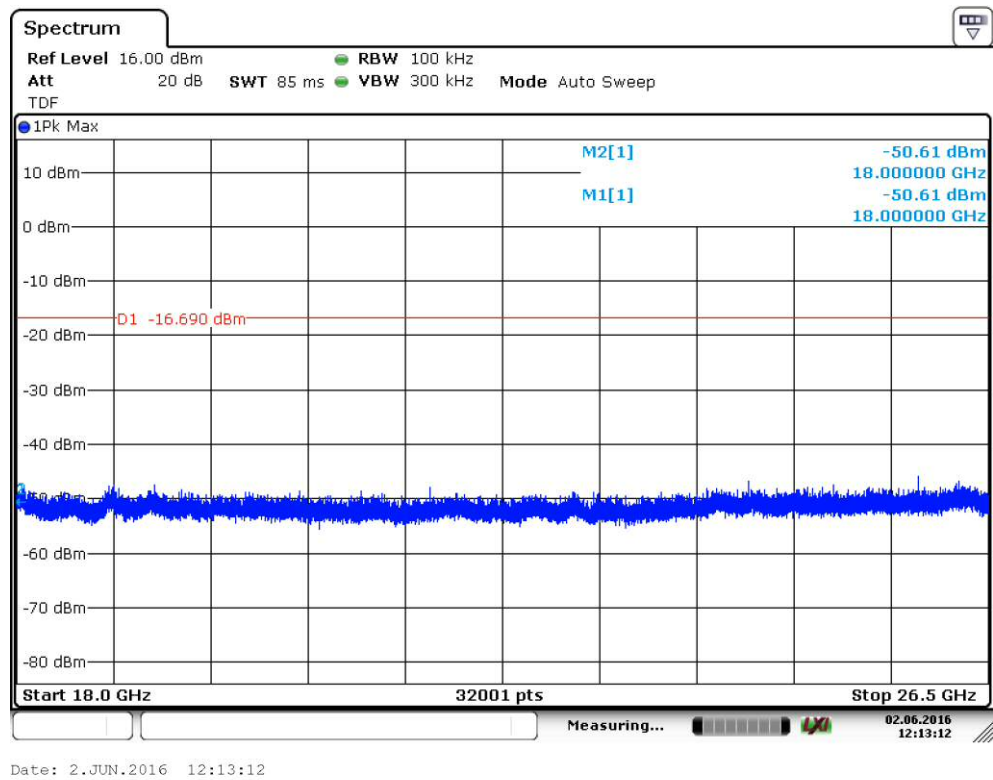


**Figure 49.** High channel conducted emission 4 GHz to 18 GHz (2 Mbps).

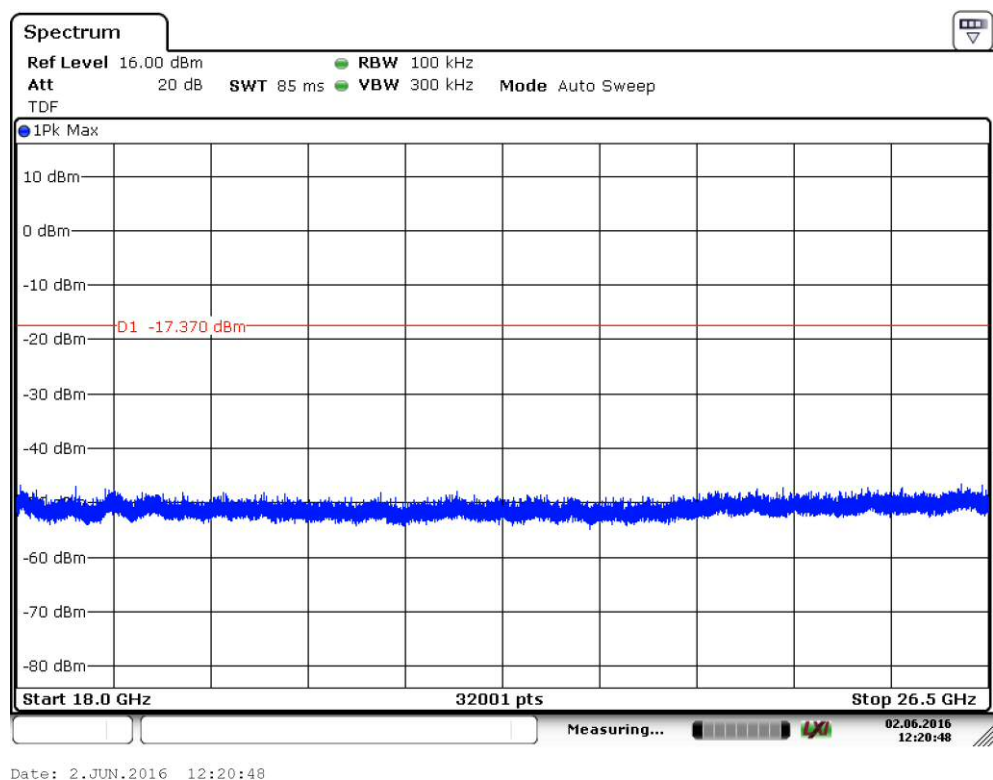


**Figure 50.** Low channel conducted emission 18 GHz to 26.5 GHz (2 Mbps).

## Conducted Spurious Emission 30 MHz to 26.5 GHz and Band Edge



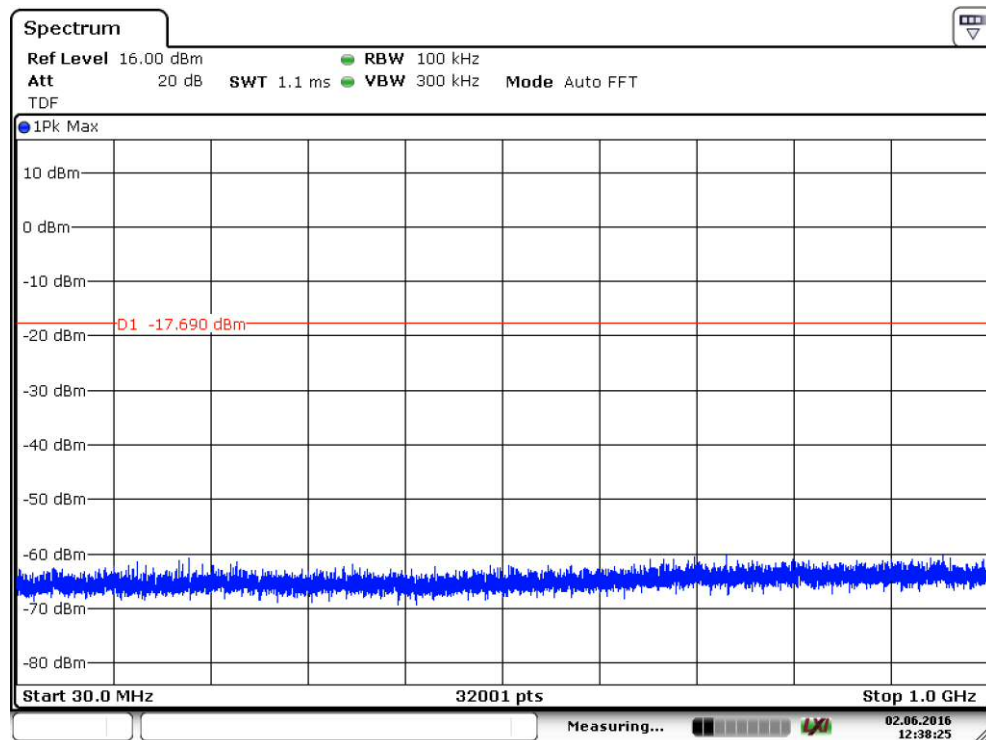
**Figure 51.** Mid channel conducted emission 18 GHz to 26.5 GHz (2 Mbps).



**Figure 52.** High channel conducted emission 18 GHz to 26.5 GHz (2 Mbps).

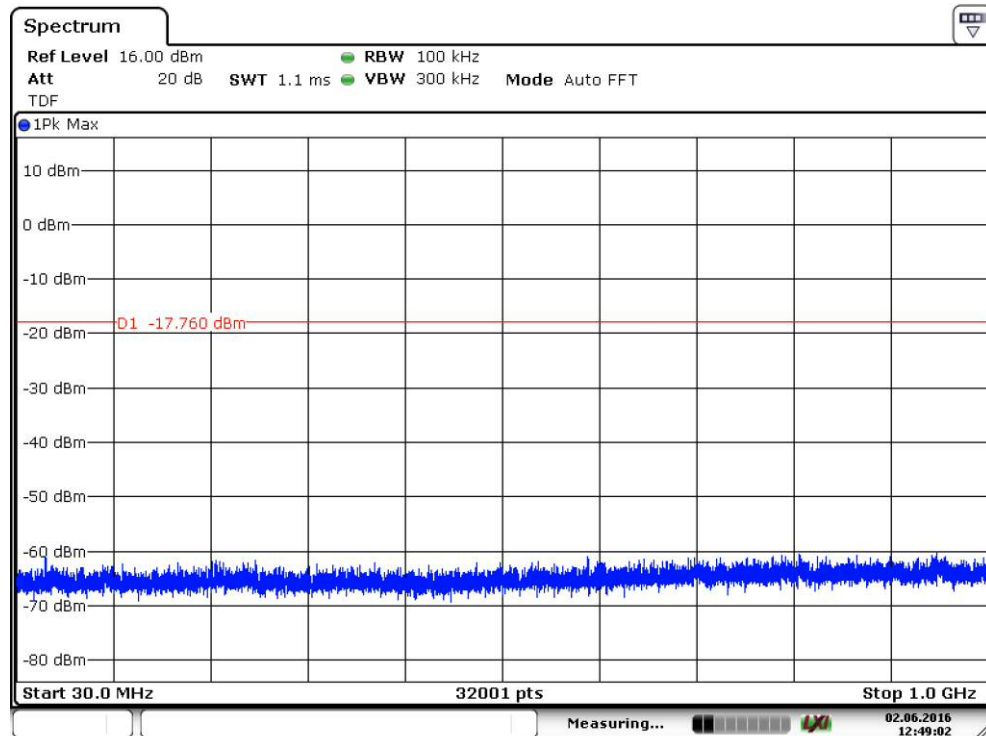
## Conducted Spurious Emission 30 MHz to 26.5 GHz and Band Edge

Data rate 3 Mbps



Date: 2.JUN.2016 12:38:26

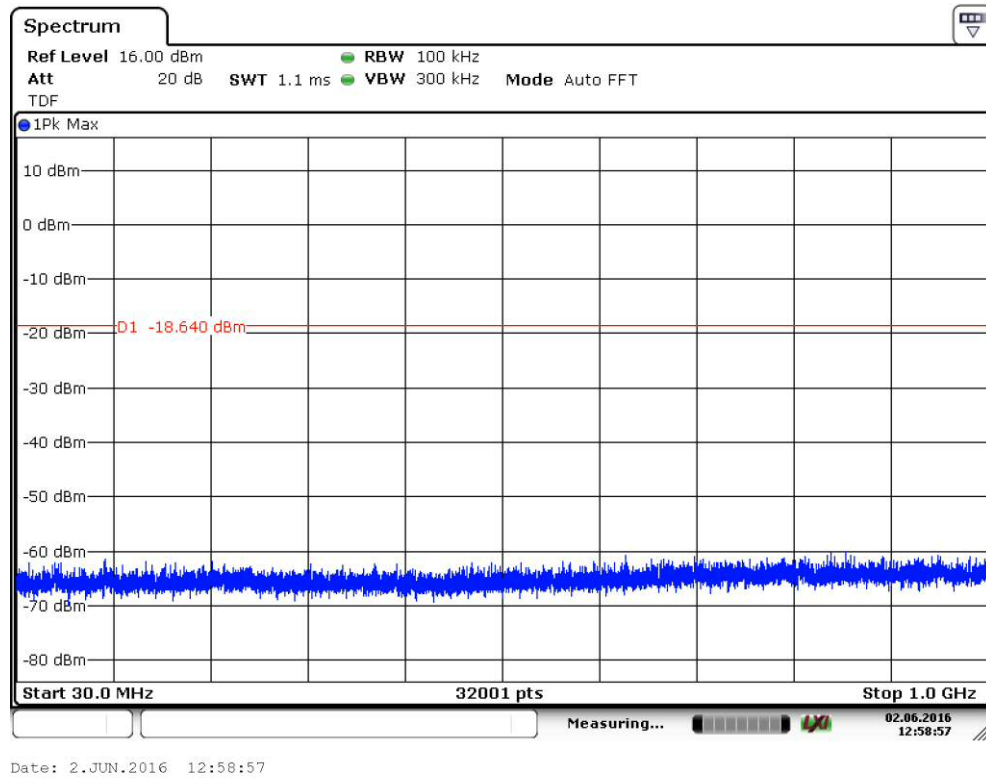
**Figure 53.** Low channel conducted emission 30 MHz to 1000 MHz (3 Mbps).



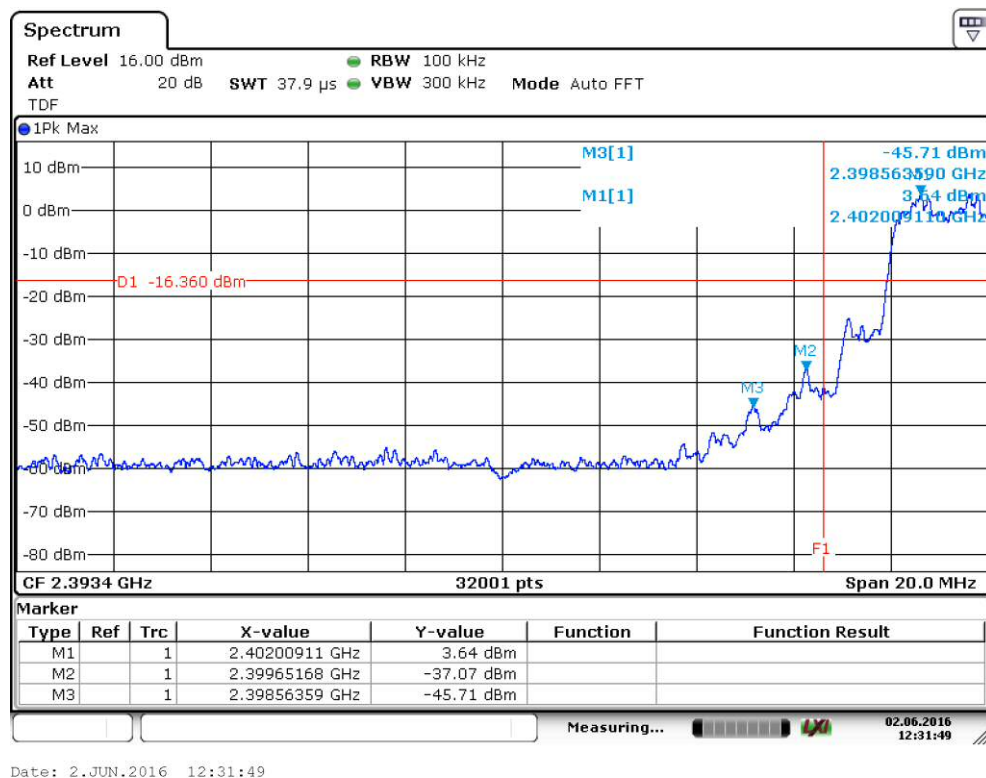
Date: 2.JUN.2016 12:49:02

**Figure 54.** Mid channel conducted emission 30 MHz to 1000 MHz (3 Mbps).

## Conducted Spurious Emission 30 MHz to 26.5 GHz and Band Edge

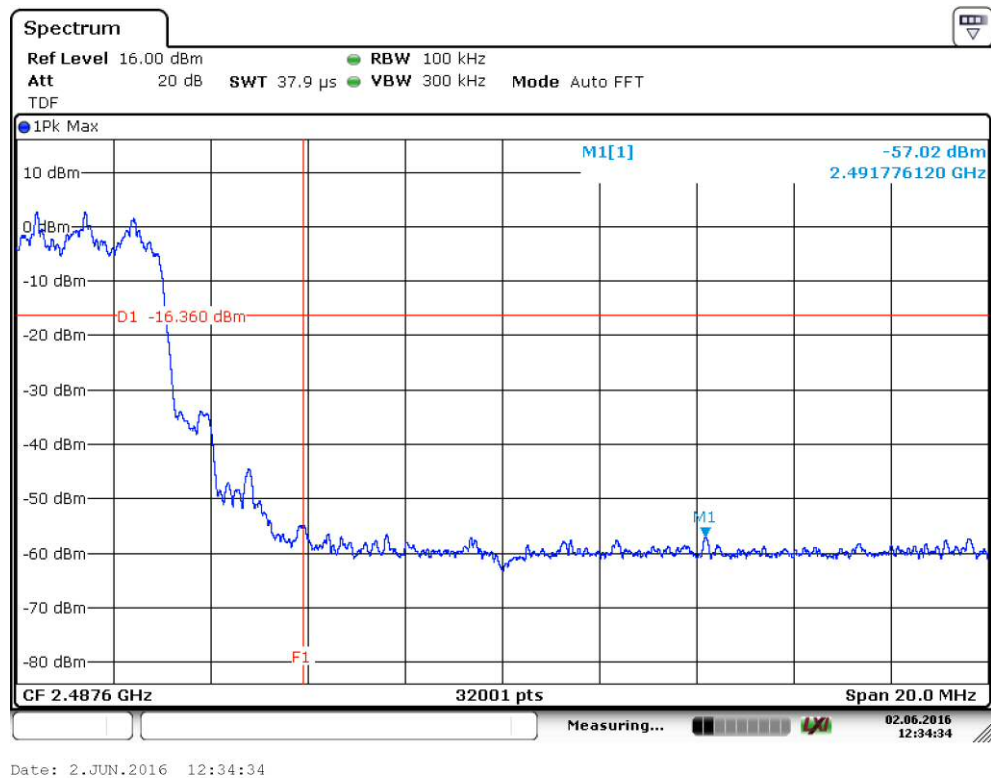


**Figure 55.** High channel conducted emission 30 MHz to 1000 MHz (3 Mbps).

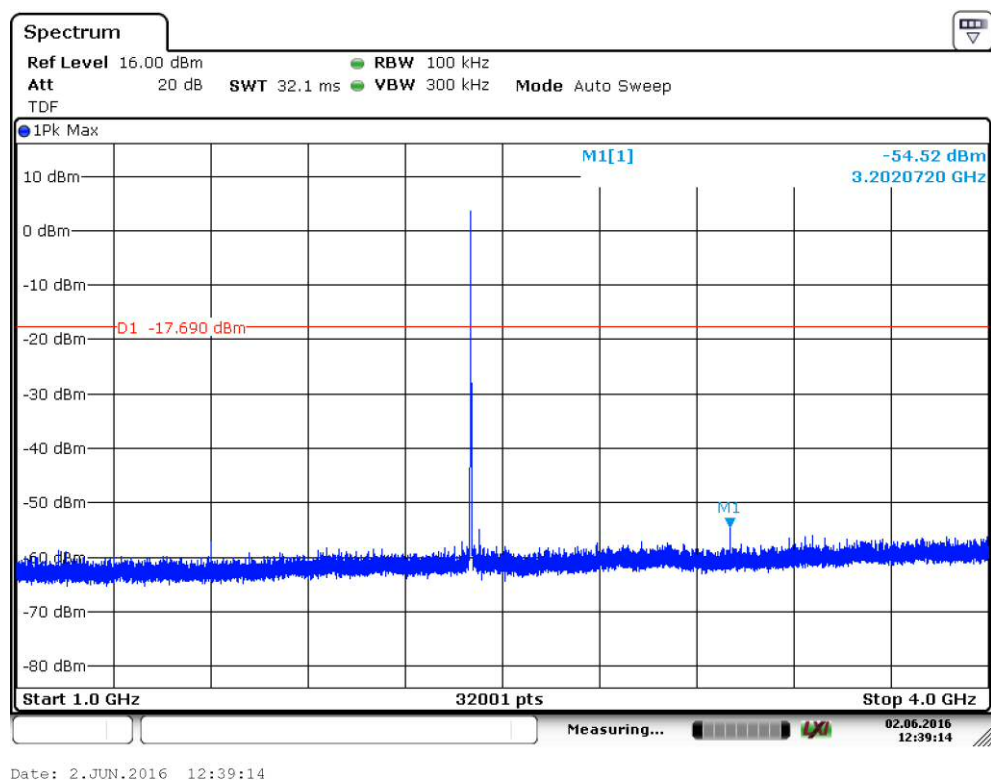


**Figure 56.** Low channel conducted emission at low band edge hopping enabled (3 Mbps).

## Conducted Spurious Emission 30 MHz to 26.5 GHz and Band Edge



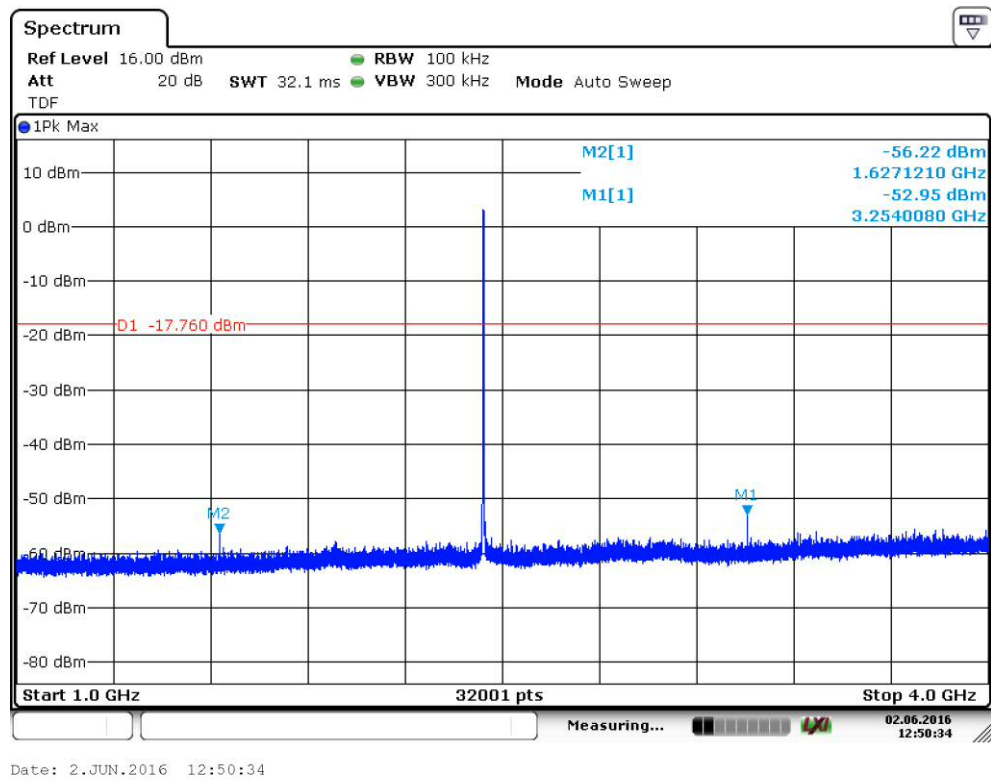
**Figure 57.** High channel conducted emission at high band edge hopping enabled (3 Mbps).



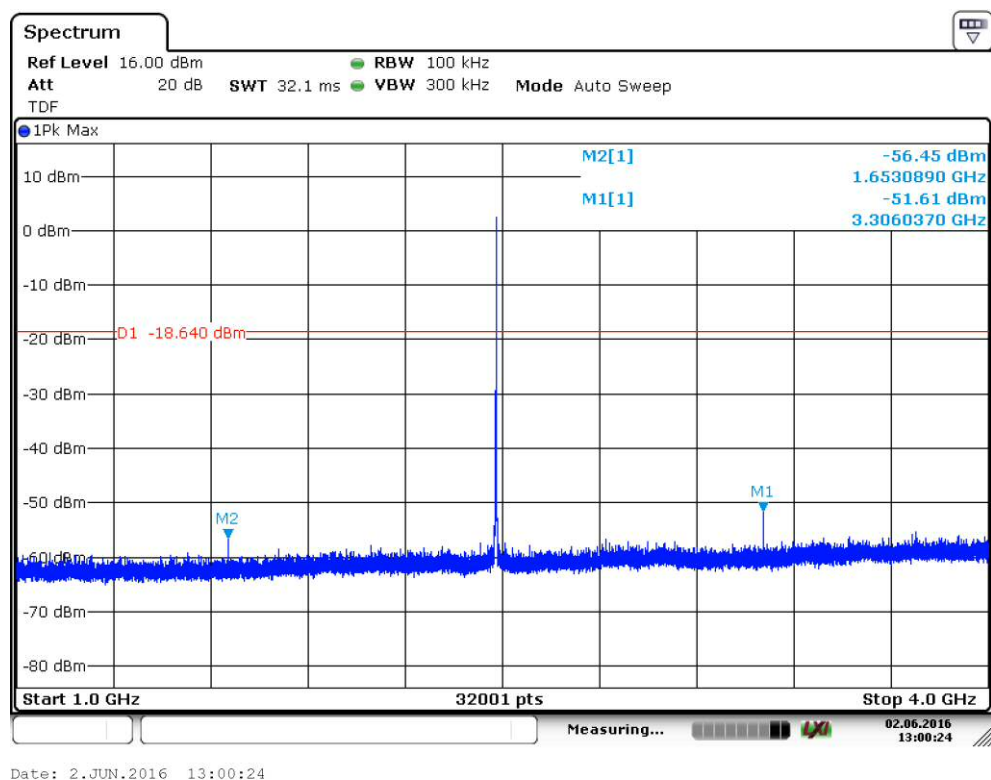
**Figure 58.** Low channel conducted emission 1 GHz to 4 GHz (3 Mbps).



## Conducted Spurious Emission 30 MHz to 26.5 GHz and Band Edge



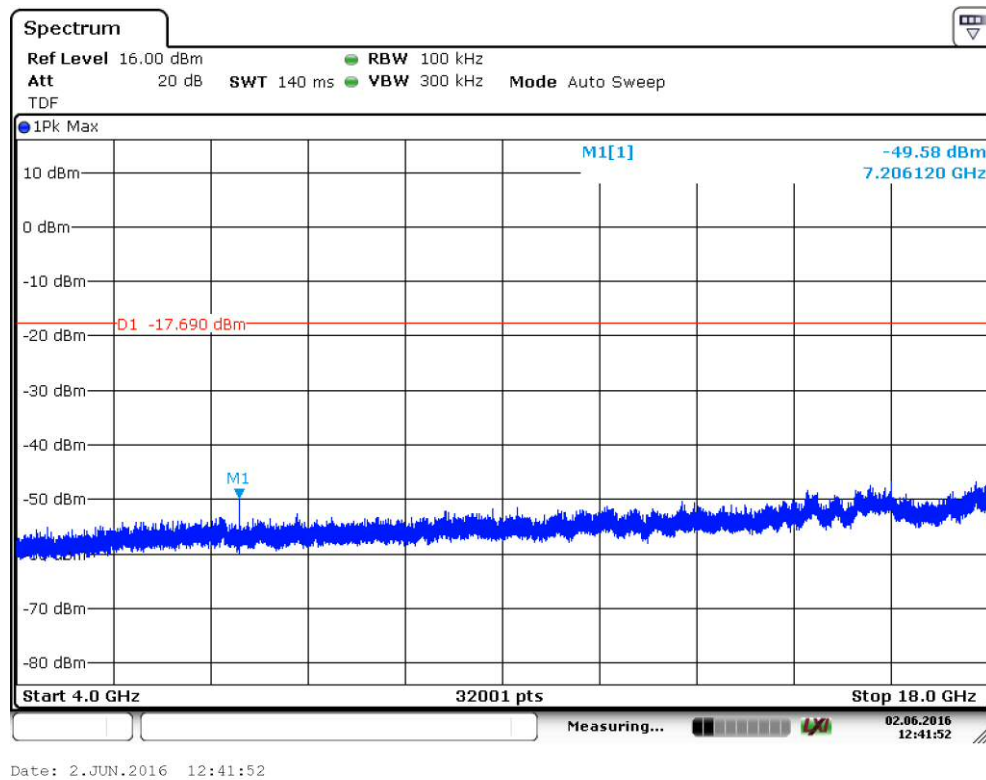
**Figure 59.** Mid channel conducted emission 1 GHz to 4 GHz (3 Mbps).



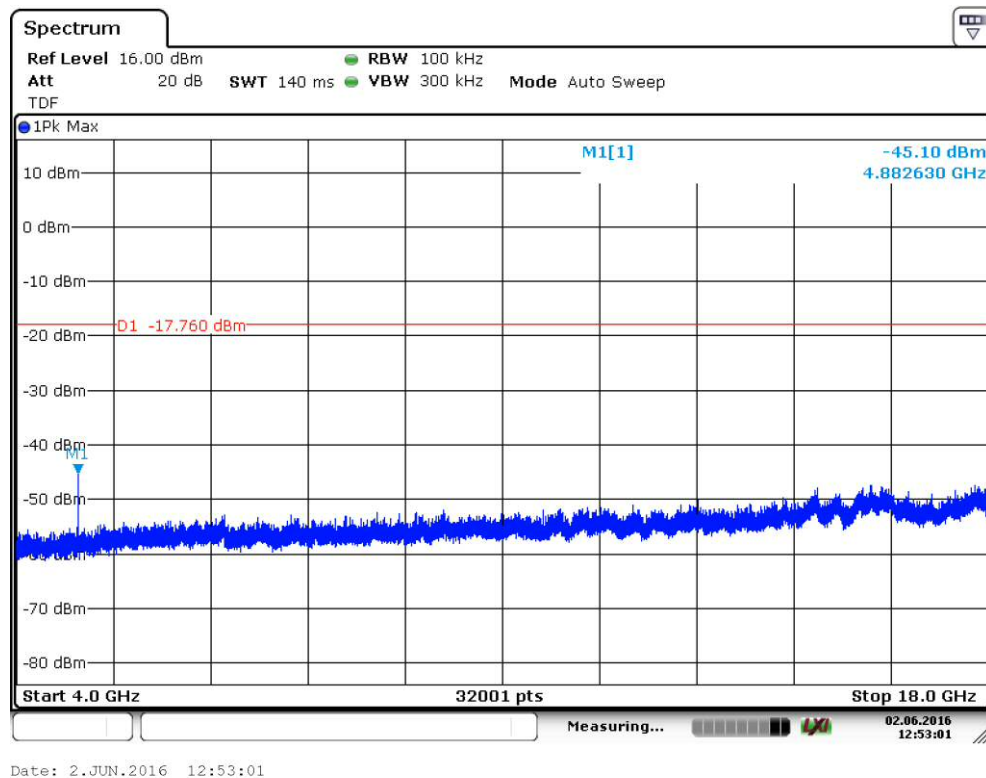
**Figure 60.** High channel conducted emission 1 GHz to 4 GHz (3 Mbps).



## Conducted Spurious Emission 30 MHz to 26.5 GHz and Band Edge

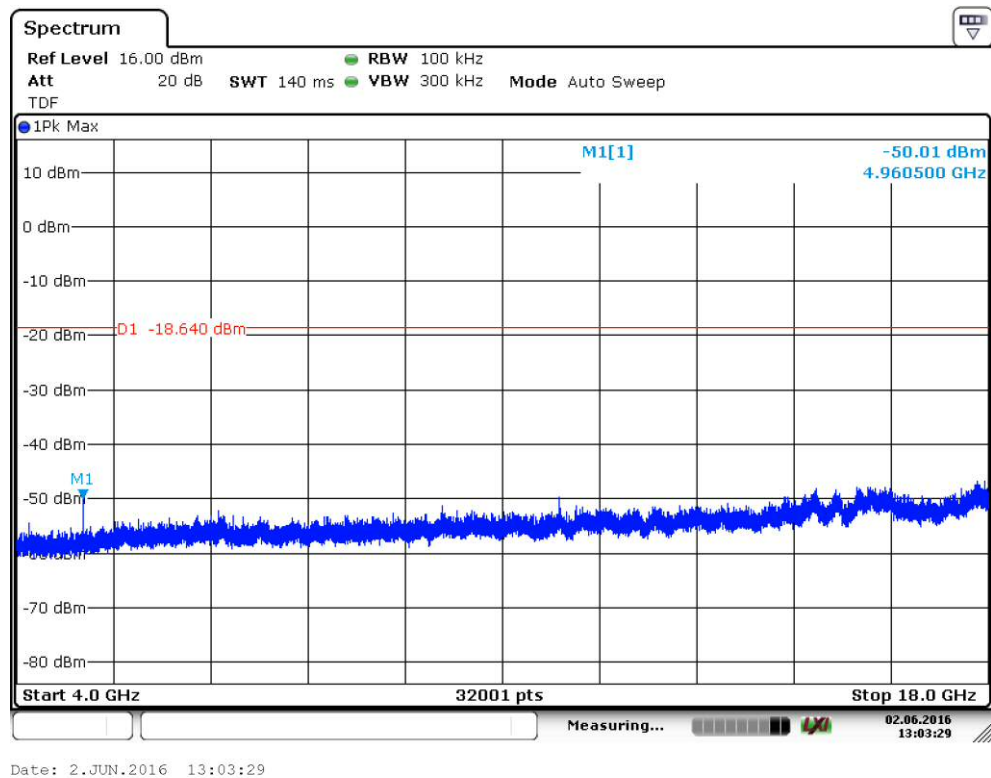


**Figure 61.** Low channel conducted emission 4 GHz to 18 GHz (3 Mbps).

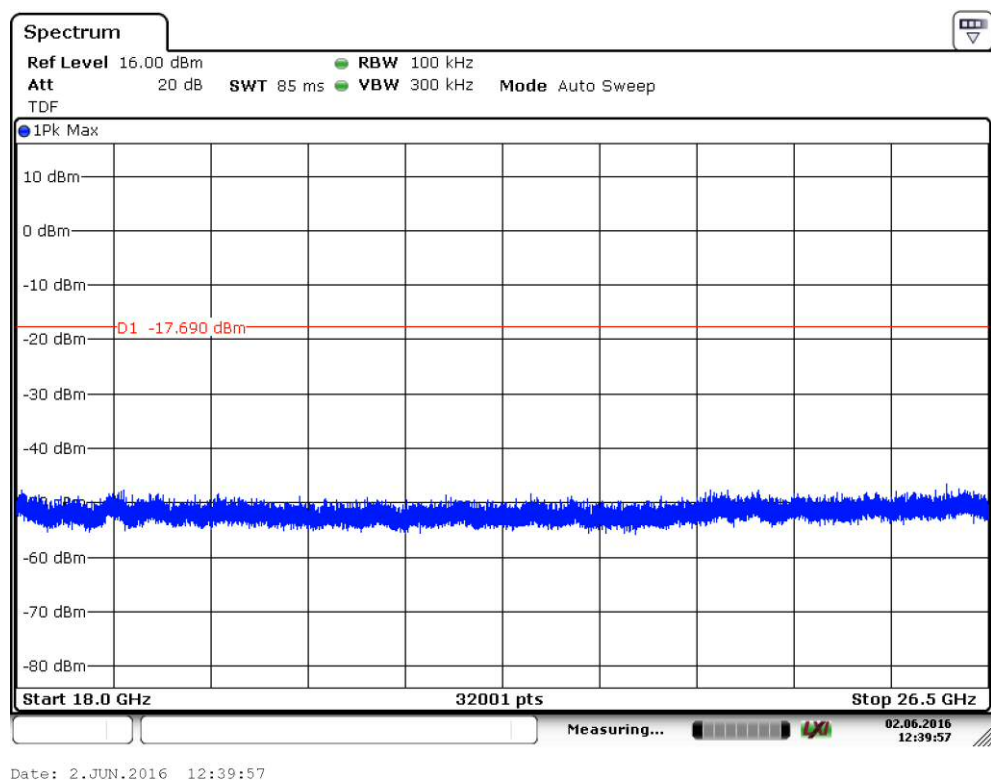


**Figure 62.** Mid channel conducted emission 4 GHz to 18 GHz (3 Mbps).

## Conducted Spurious Emission 30 MHz to 26.5 GHz and Band Edge

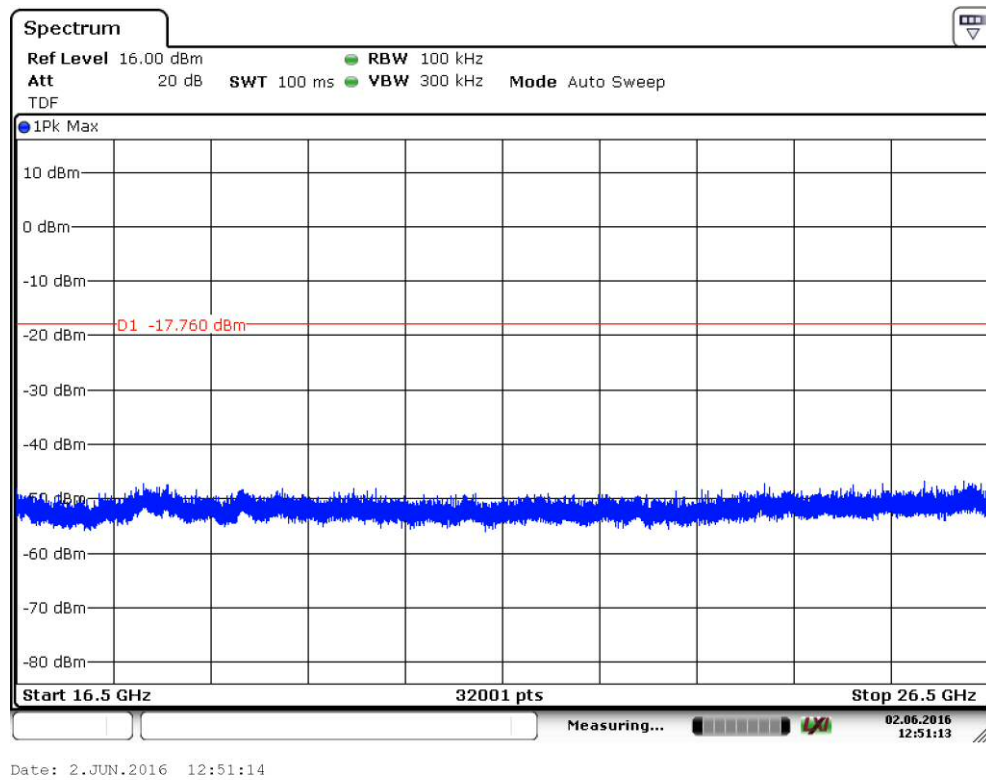


**Figure 63.** High channel conducted emission 4 GHz to 18 GHz (3 Mbps).

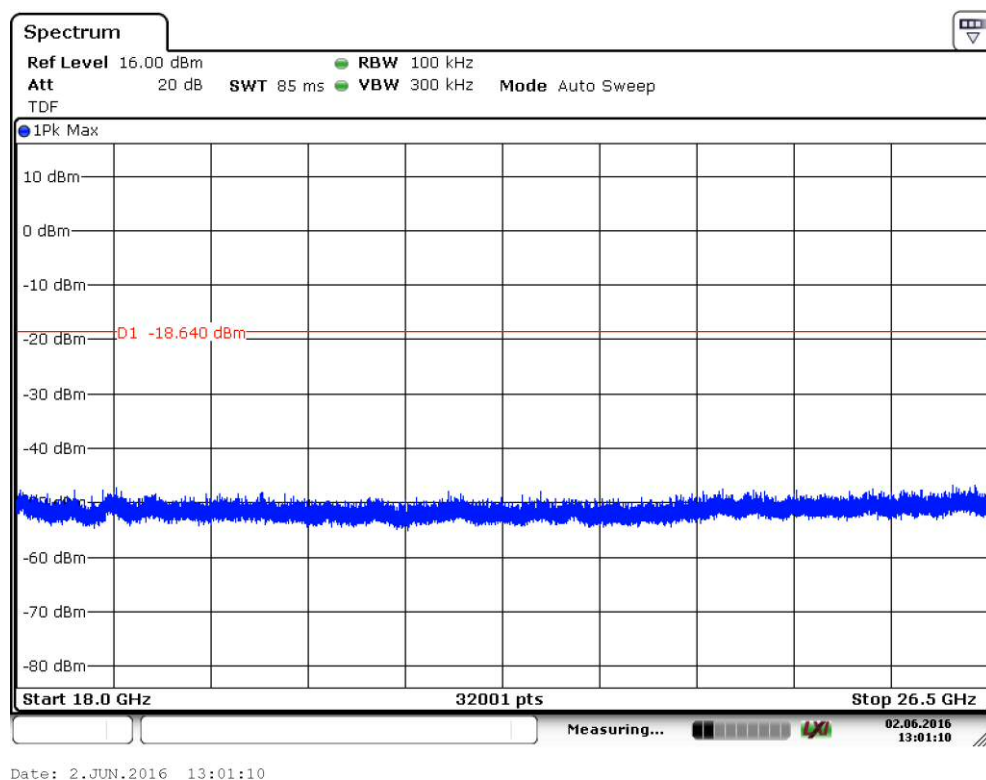


**Figure 64.** Low channel conducted emission 18 GHz to 26.5 GHz (3 Mbps).

## Conducted Spurious Emission 30 MHz to 26.5 GHz and Band Edge



**Figure 65.** Mid channel conducted emission 18 GHz to 26.5 GHz (3 Mbps).



**Figure 66.** High channel conducted emission 18 GHz to 26.5 GHz (3 Mbps).

## 20 dB Bandwidth of the Hopping Channel

**Standard:** ANSI C63.10 (2013)  
**Tested by:** RRE  
**Date:** 2 June 2016  
**Temperature:** 23 °C  
**Humidity:** 37 % RH

**FCC Rule:** §15.247(a)(1)  
**RSS-247 5.1(2)**

### Results:

#### 1 Mbps

**Table 15.** 20 dB bandwidth test results 1 Mbps.

Channel	20 dB BW [kHz]
Low	1117.2
Mid	1111.4
High	1117.2

#### 2 Mbps

**Table 16.** 20 dB bandwidth test results 2 Mbps

Channel	20 dB BW [kHz]
Low	1400.9
Mid	1395.1
High	1395.1

#### 3 Mbps

**Table 17.** 20 dB bandwidth test results 3 Mbps

Channel	20 dB BW [kHz]
Low	1406.7
Mid	1400.9
High	1395.1

## 20 dB Bandwidth of the Hopping Channel

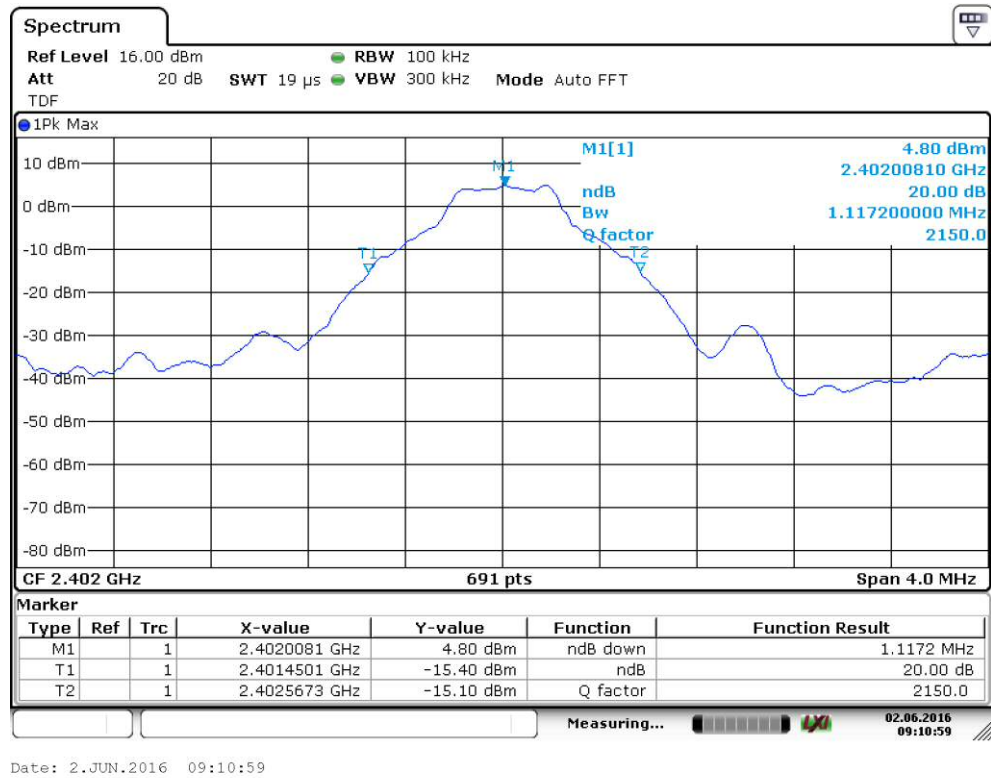


Figure 67. 20 dB channel BW. 1 Mbps Channel LOW.

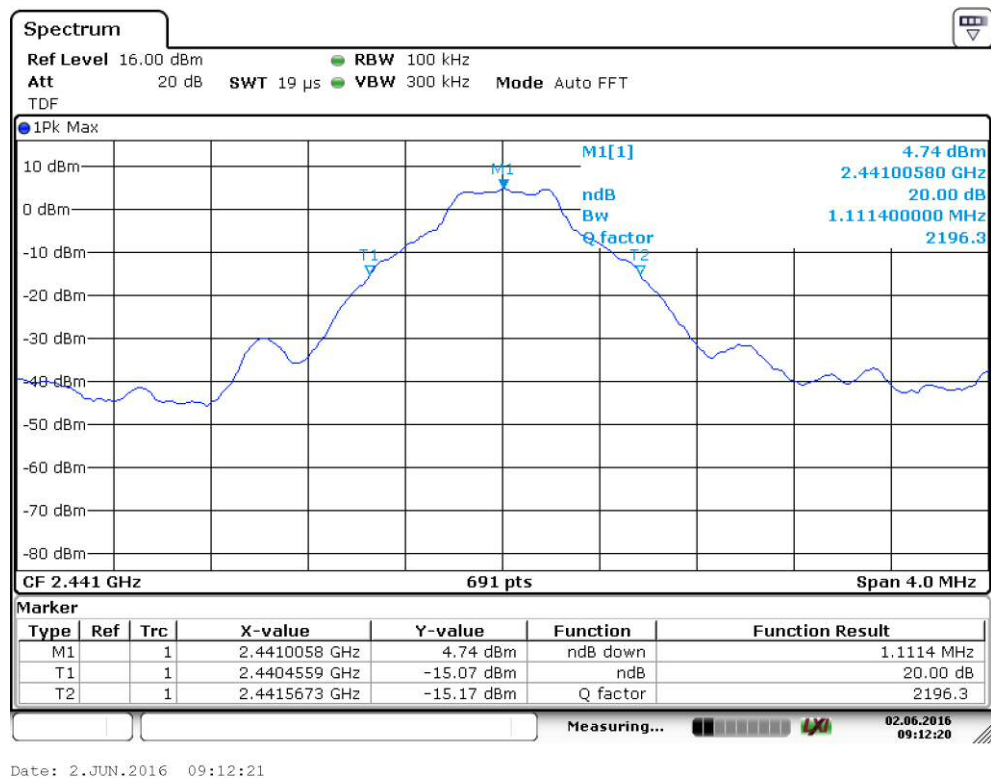
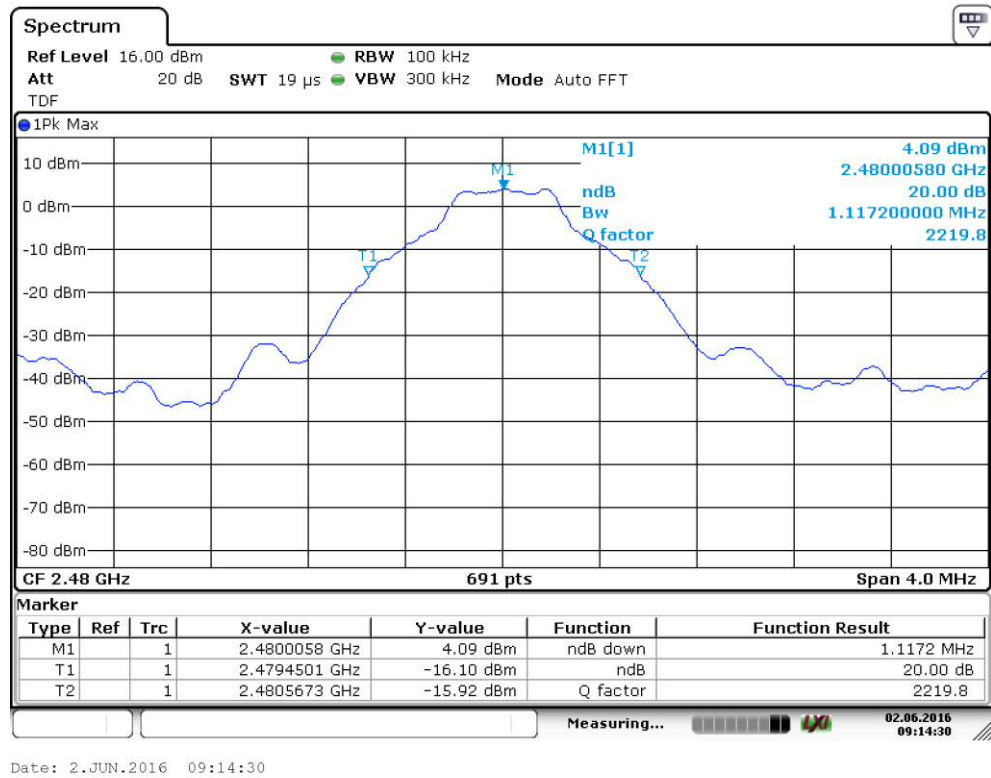


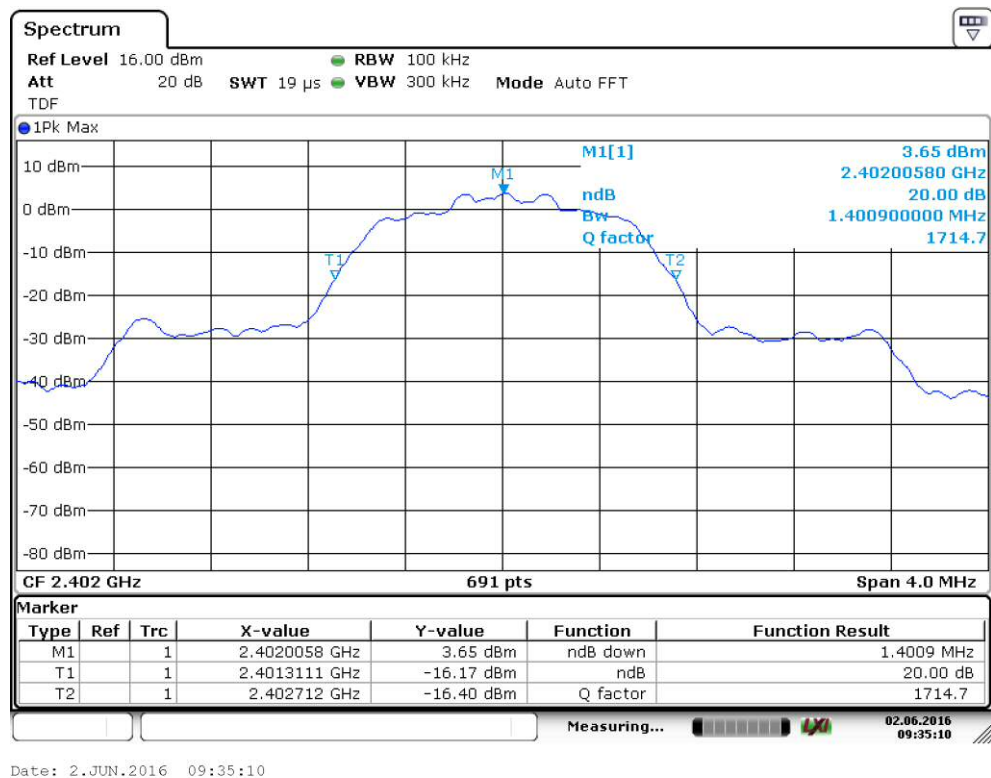
Figure 68. 20 dB channel BW. 1 Mbps Channel MID.

## 20 dB Bandwidth of the Hopping Channel



Date: 2.JUN.2016 09:14:30

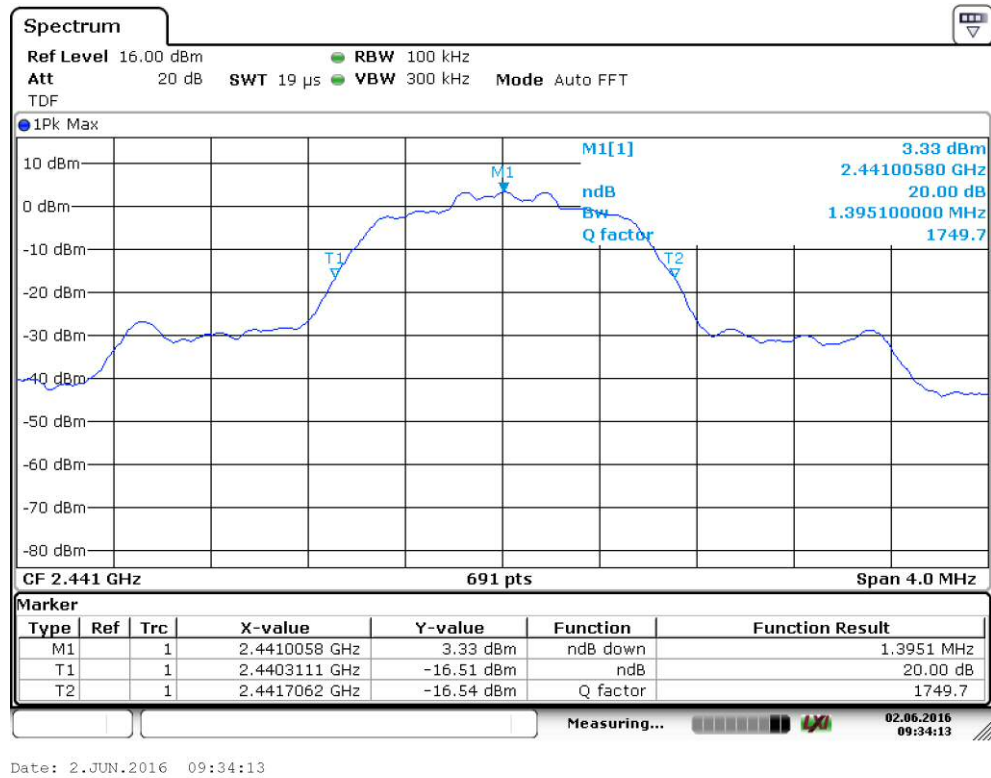
**Figure 69.** 20 dB channel BW. 1 Mbps Channel HIGH.



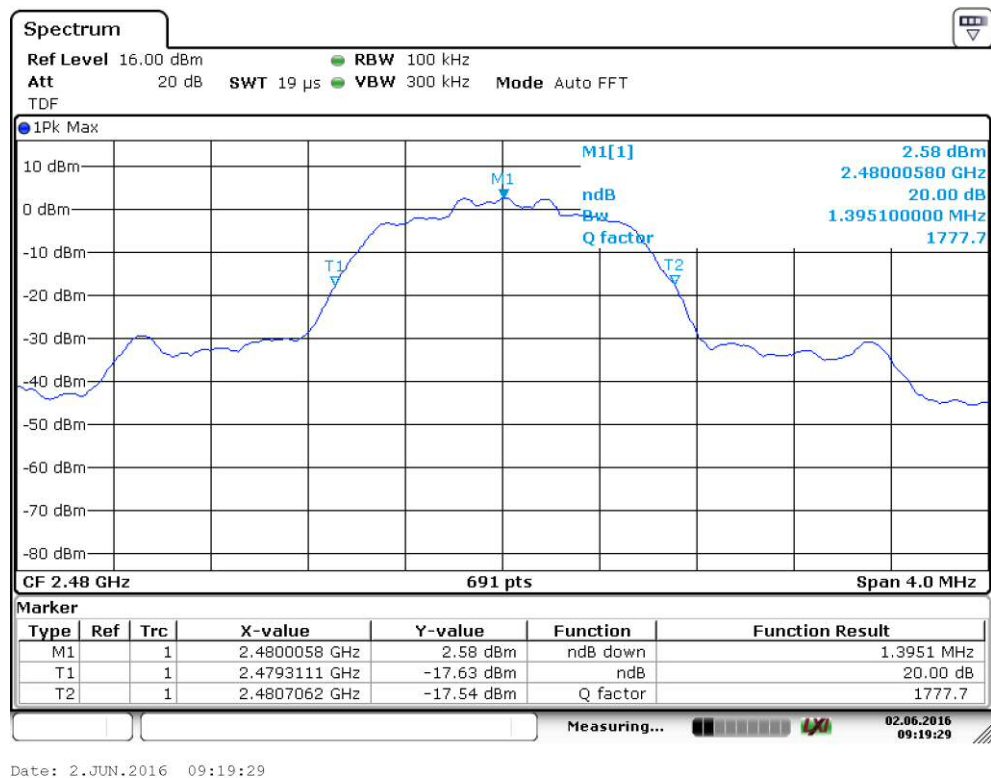
Date: 2.JUN.2016 09:35:10

**Figure 70.** 20 dB channel BW. 2 Mbps Channel LOW.

## 20 dB Bandwidth of the Hopping Channel



**Figure 71.** 20 dB channel BW. 2 Mbps Channel MID.



**Figure 72.** 20 dB channel BW. 2 Mbps Channel HIGH.



## 20 dB Bandwidth of the Hopping Channel

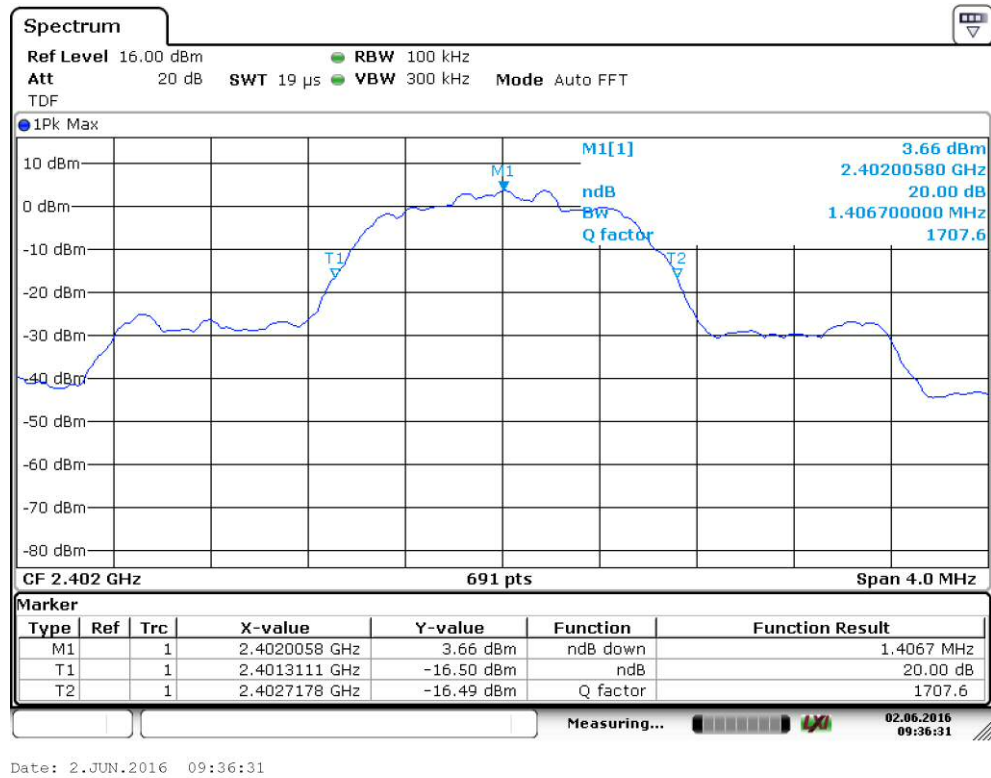


Figure 73. 20 dB channel BW. 3 Mbps Channel LOW.

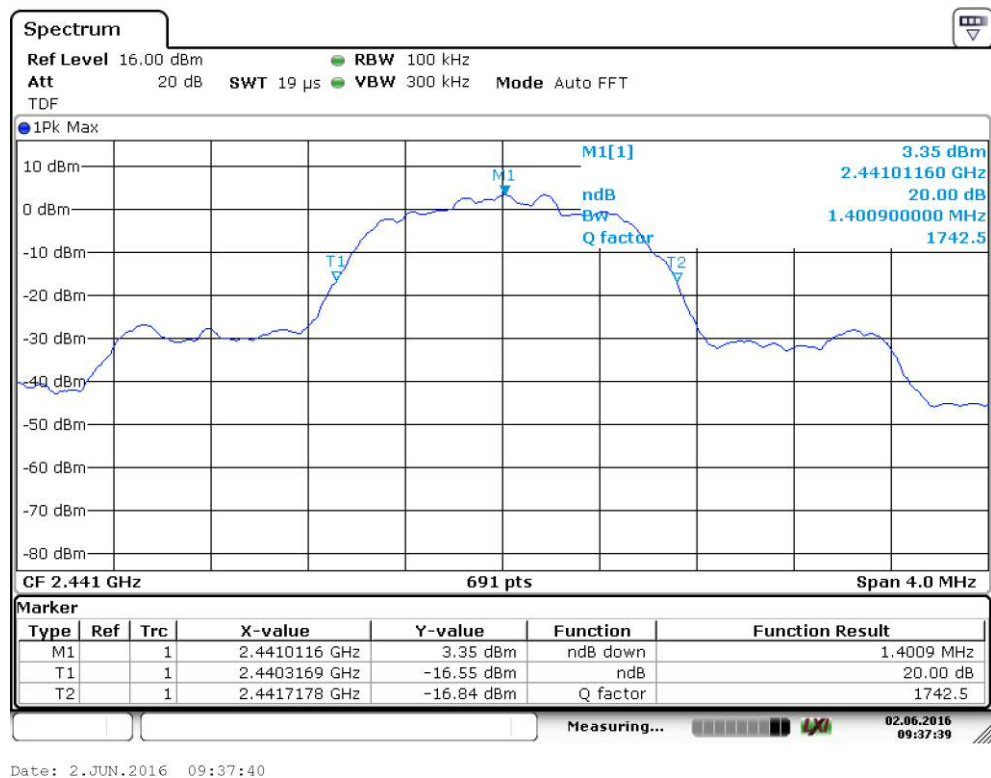
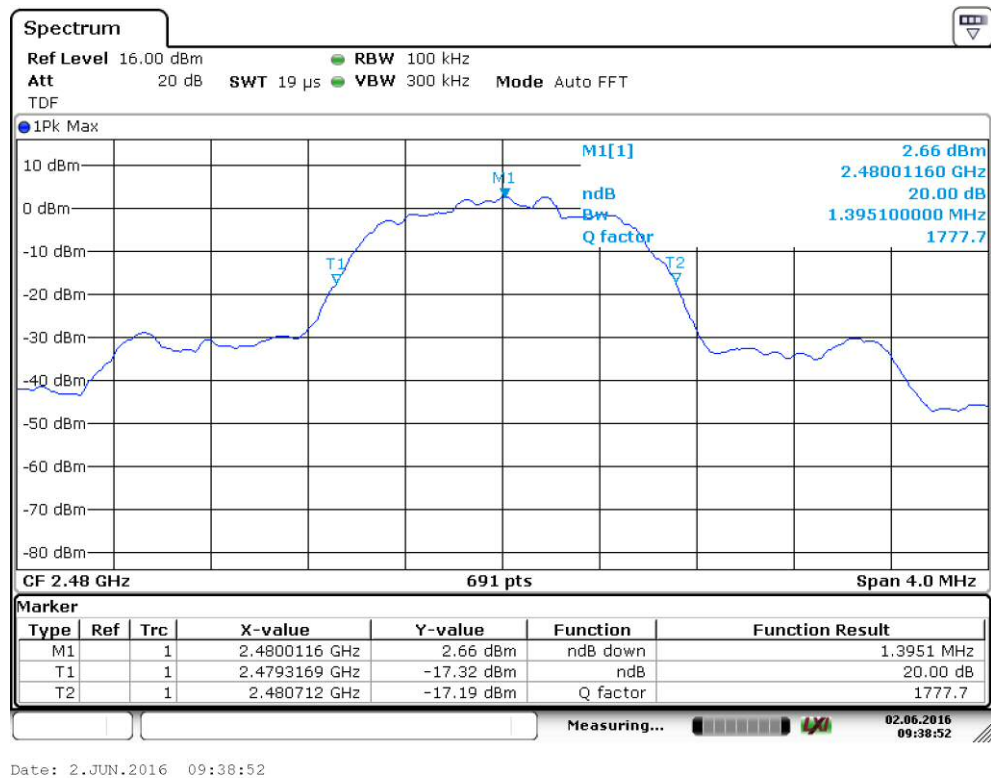


Figure 74. 20 dB channel BW. 3 Mbps Channel MID.

## 20 dB Bandwidth of the Hopping Channel



Date: 2.JUN.2016 09:38:52

**Figure 75.** 20 dB channel BW. 3 Mbps Channel HIGH.

## Hopping Channel Carrier Frequencies Separation

### Hopping Channel Carrier Frequencies Separation

**Standard:** ANSI C63.10 (2013)  
**Tested by:** RRE  
**Date:** 2 June 2016  
**Temperature:** 23 °C  
**Humidity:** 37 % RH

**FCC Rule:** §15.247(a)(1)  
**RSS-247 5.1(2)**

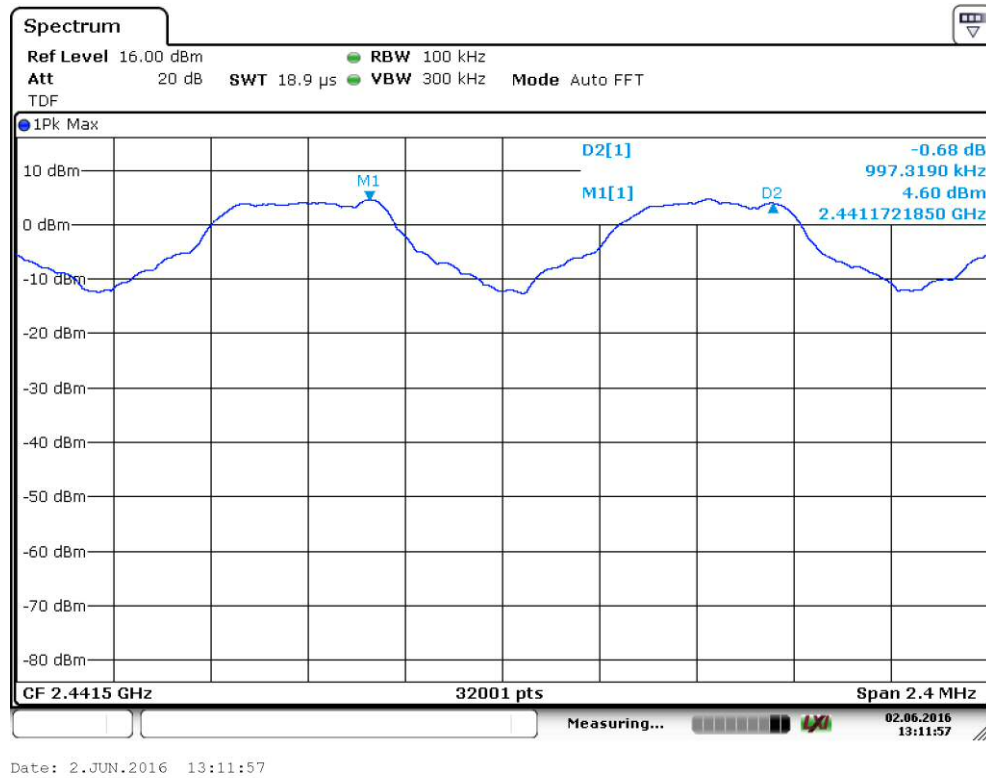
Frequency hopping systems with an output power less than 125mW shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or 2/3 of the 20 dB bandwidth of the hopping channel, whichever is greater.

#### Test result

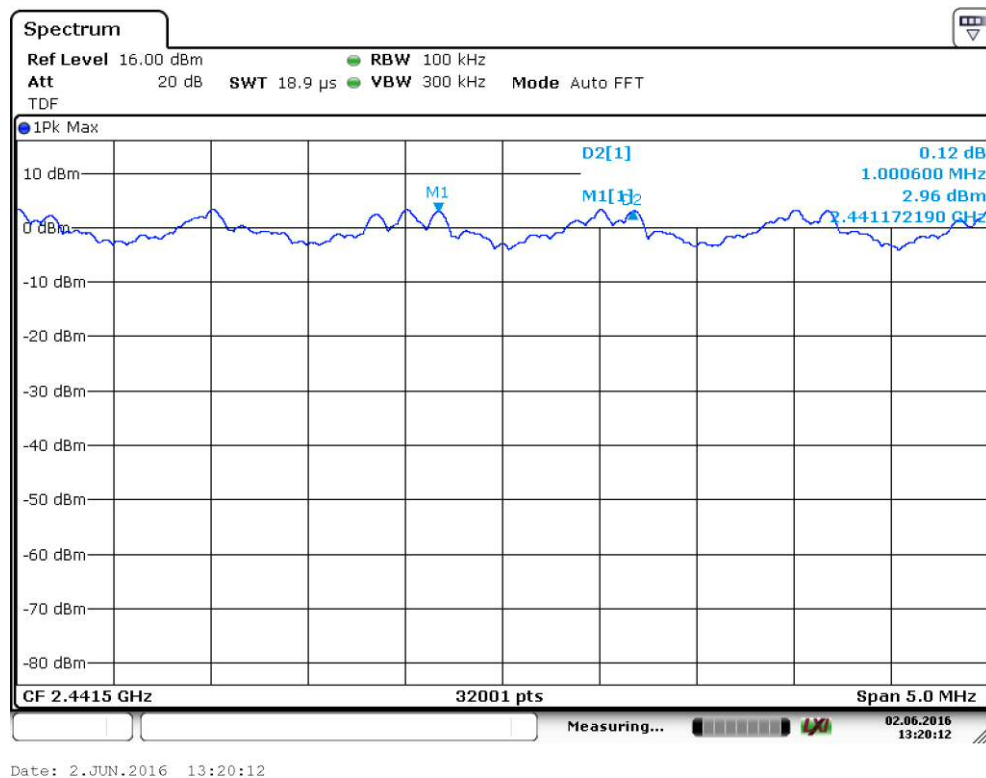
**Table 18.** Hopping channel carrier frequencies separation test result.

Data rate	Measured separation	Limit	Result
1 Mbps	997.32 kHz	930.07 kHz	PASS
2 Mbps	1000.60 kHz	740.93 kHz	PASS
3 Mbps	999.08 kHz	933.93 kHz	PASS

## Hopping Channel Carrier Frequencies Separation

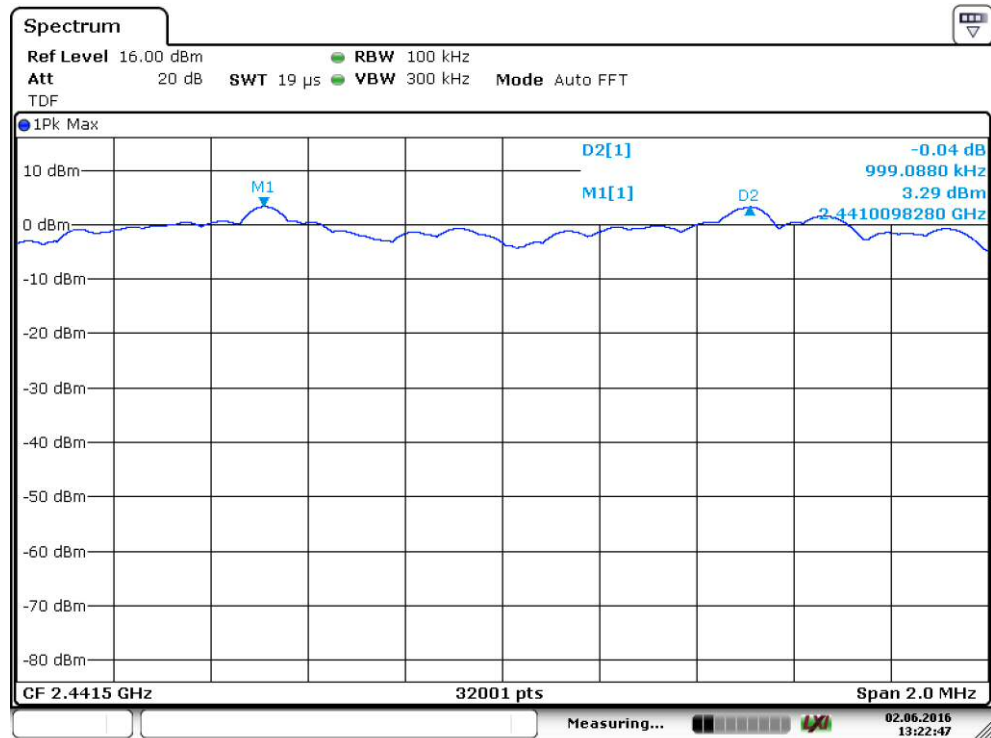


**Figure 76.** Measured hopping channels carrier frequency separation 1 Mbps.



**Figure 77.** Measured hopping channels carrier frequency separation 2 Mbps.

## Hopping Channel Carrier Frequencies Separation



Date: 2.JUN.2016 13:22:47

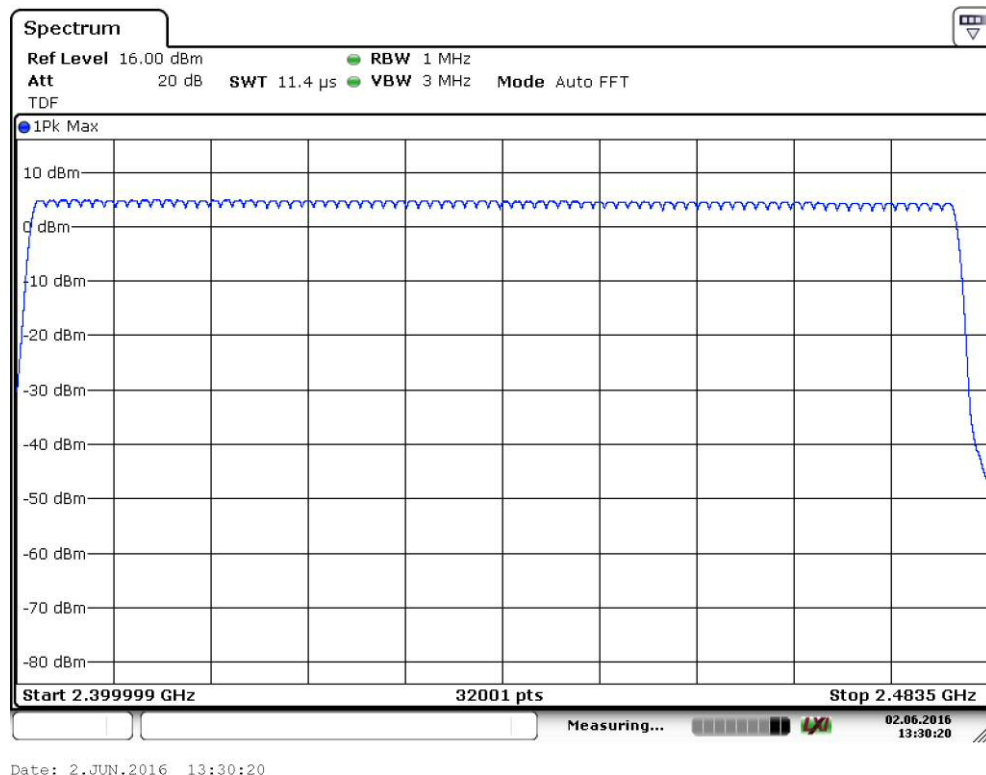
**Figure 78.** Measured hopping channels carrier frequency separation 3 Mbps.

## Number of Hopping Channels

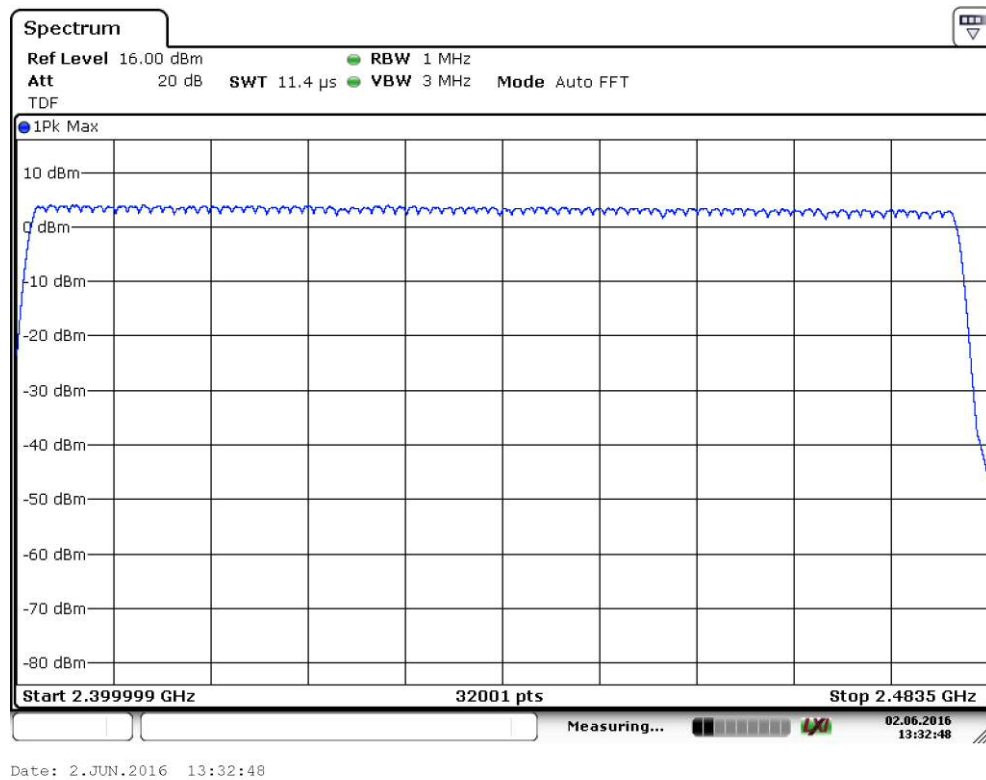
**Standard:** ANSI C63.10 (2013)  
**Tested by:** RRE  
**Date:** 2 June 2016  
**Temperature:** 23 °C  
**Humidity:** 37 % RH

**FCC Rule: §15.247(a)(1)(iii)**  
**RSS-247 5.1(4)**

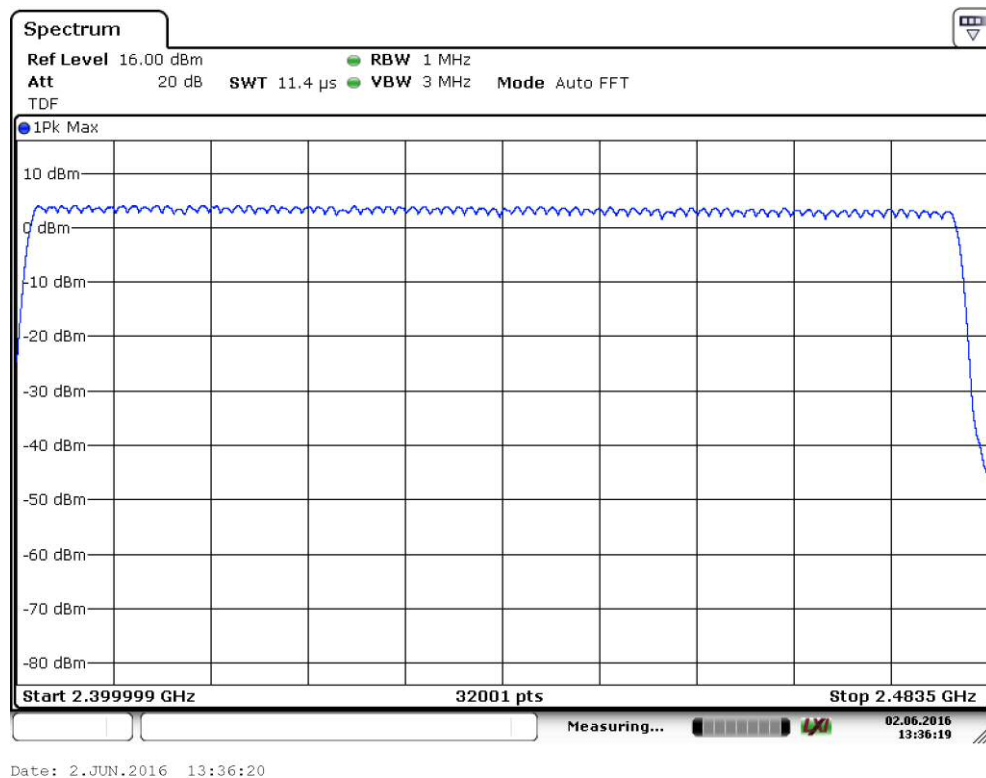
For frequency hopping systems operating in the 2400 – 2483.5 MHz band shall use at least 15 channels.



**Figure 79.** 79 hopping channels 1 Mbps.



**Figure 80.** 79 hopping channels 2 Mbps.



**Figure 81.** 79 hopping channels 3 Mbps.



## Average Time of Occupancy of Hopping Frequency

### Average Time of Occupancy of Hopping Frequency

**Standard:** ANSI C63.10 (2013)  
**Tested by:** RRE  
**Date:** 2 June 2016  
**Temperature:** 23 °C  
**Humidity:** 37 % RH

**FCC Rule: §15.247(a)(1)(iii)**  
**RSS-247 5.1(4)**

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

Test was performed in each data rate mode to insure that the all modes are identical.

Time of occupancy calculation:

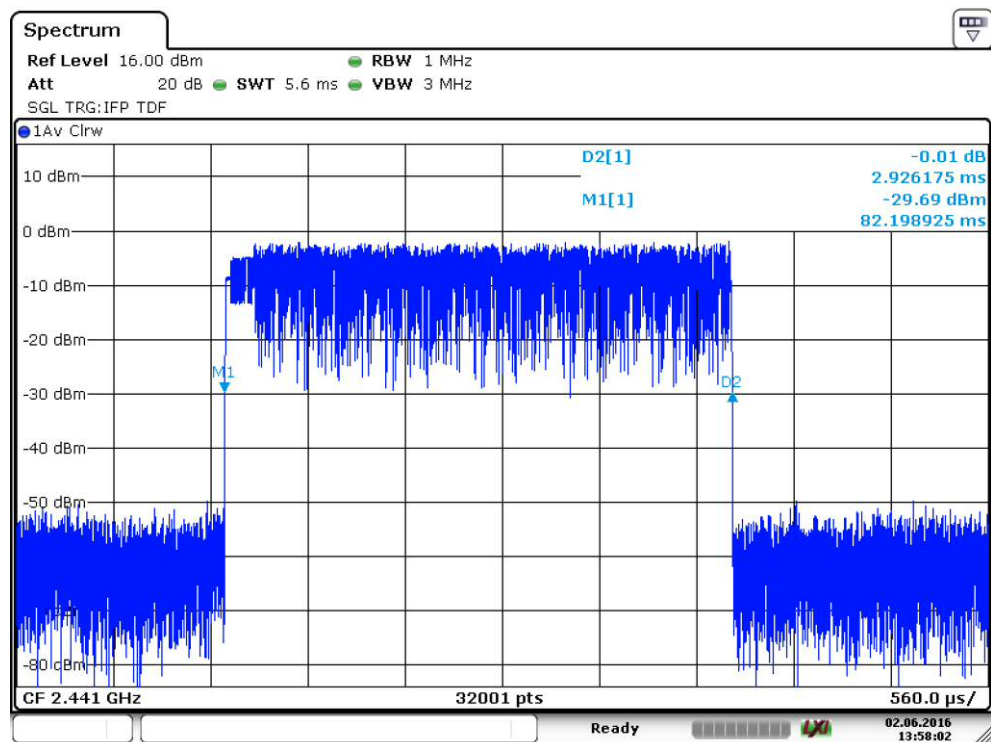
Number of channels = 79

Measurement period = 0.4 s x 79 = 31.6 s

One channel occupancy time = 303.9 ms

Number of transmission cycles in measurement period = 31.6 / 0.30348 = 104.1

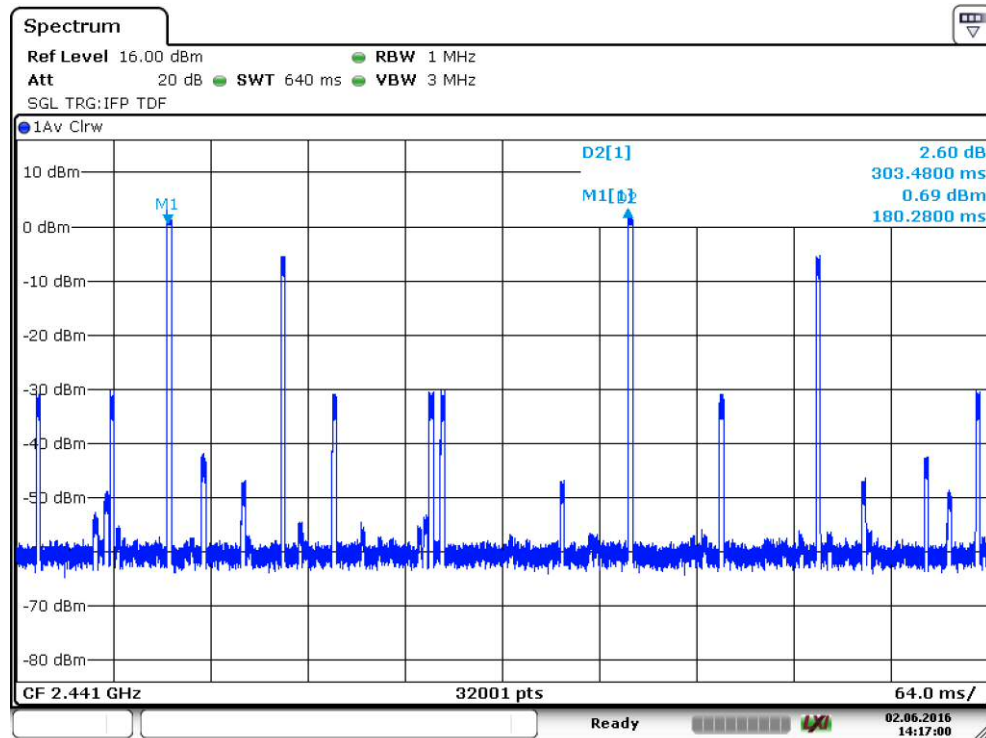
Time of occupancy = (single duration) x (repetition) = 2.926175 ms x 104.1 times = 304.7 ms



Date: 2.JUN.2016 13:58:03

Figure 82. One channel dwell time.

## Average Time of Occupancy of Hopping Frequency



Date: 2.JUN.2016 14:17:00

**Figure 83.** Measured repetition of the channel occupancy

## 99% Occupied Power Bandwidth

### 99% Occupied Power Bandwidth

**Standard:** RSS-GEN (2014)  
**Tested by:** RRE  
**Date:** 2 June 2016  
**Temperature:** 23 °C  
**Humidity:** 37 % RH

#### RSS-GEN 6.6

**Table 19.** Data rate 1 Mbps

Channel	99% BW [MHz]	Limit	Result
Low	0.969609261940	-	PASS
Mid	0.969609261940	-	PASS
High	0.969609261940	-	PASS

**Table 20.** Data rate 2 Mbps

Channel	99% BW [MHz]	Limit	Result
Low	1.244573082	-	PASS
Mid	1.244573082	-	PASS
High	1.230101302	-	PASS

**Table 21.** Data rate 3 Mbps

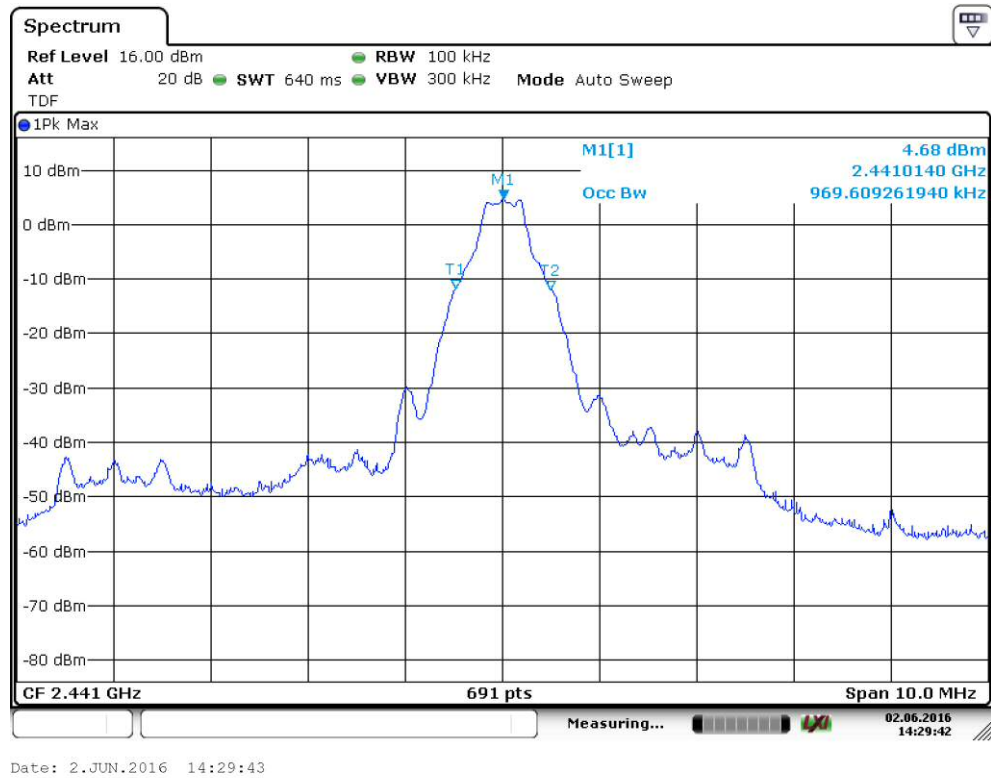
Channel	99% BW [MHz]	Limit	Result
Low	1.259044863	-	PASS
Mid	1.244573082	-	PASS
High	1.230101302	-	PASS



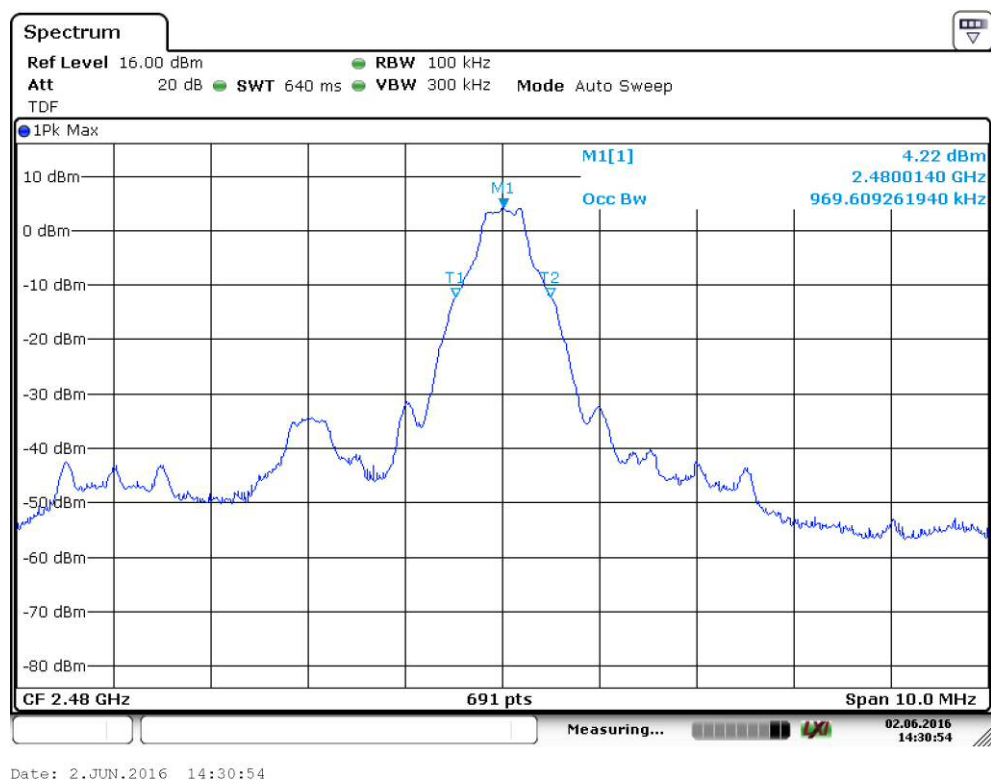
Date: 2.JUN.2016 14:27:53

**Figure 84.** Low channel 99% Occupied Power Bandwidth (1 Mbps).

## 99% Occupied Power Bandwidth

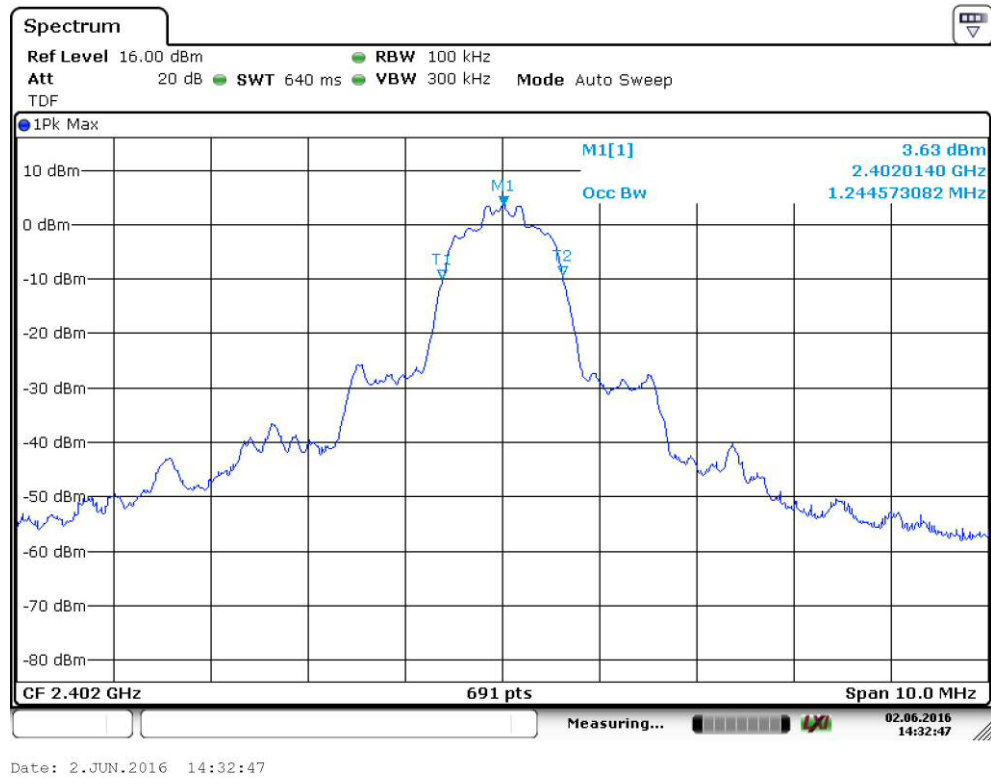


**Figure 85.** Mid channel 99% Occupied Power Bandwidth (1 Mbps).

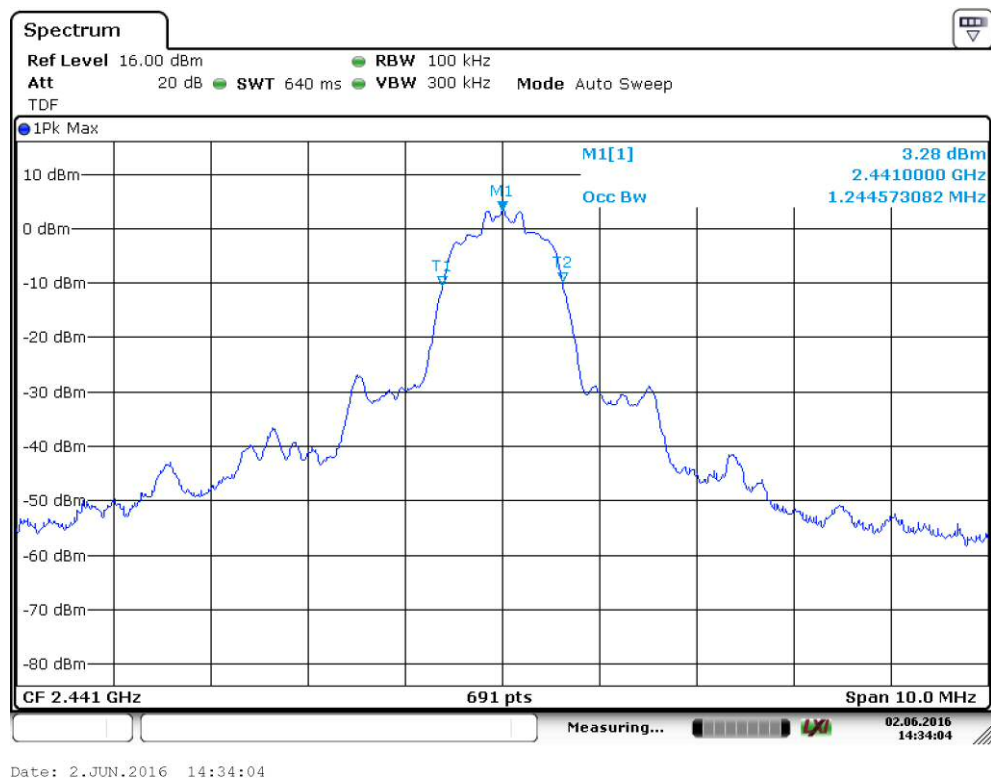


**Figure 86.** High channel 99% Occupied Power Bandwidth (1 Mbps).

## 99% Occupied Power Bandwidth

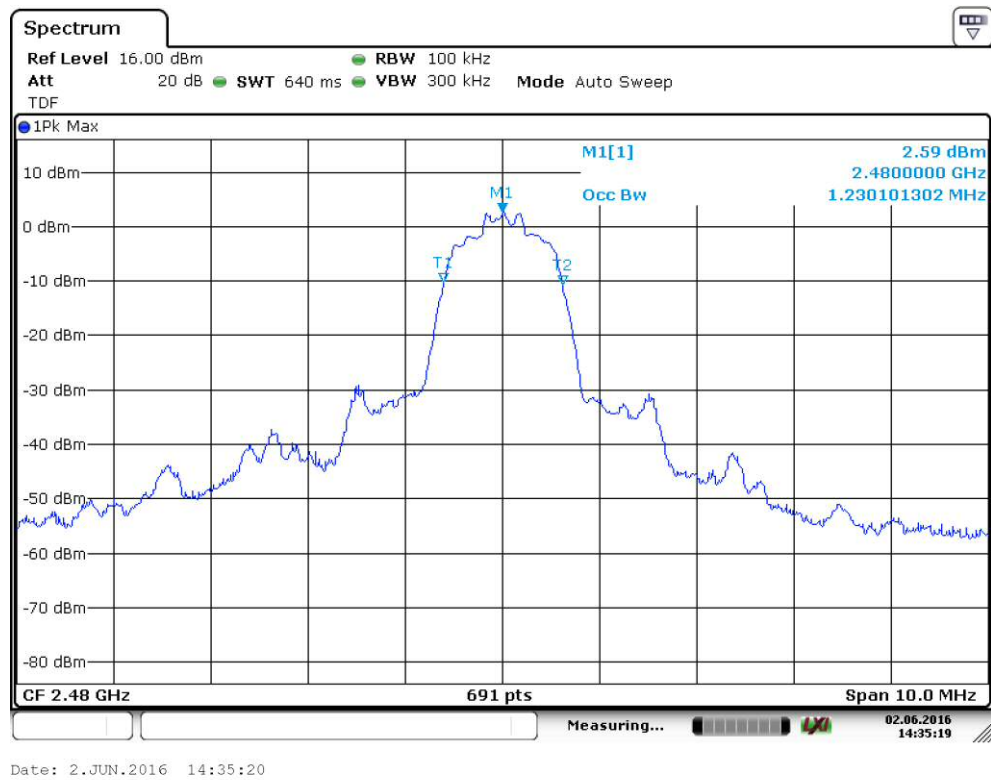


**Figure 87.** Low channel 99% Occupied Power Bandwidth (2 Mbps).

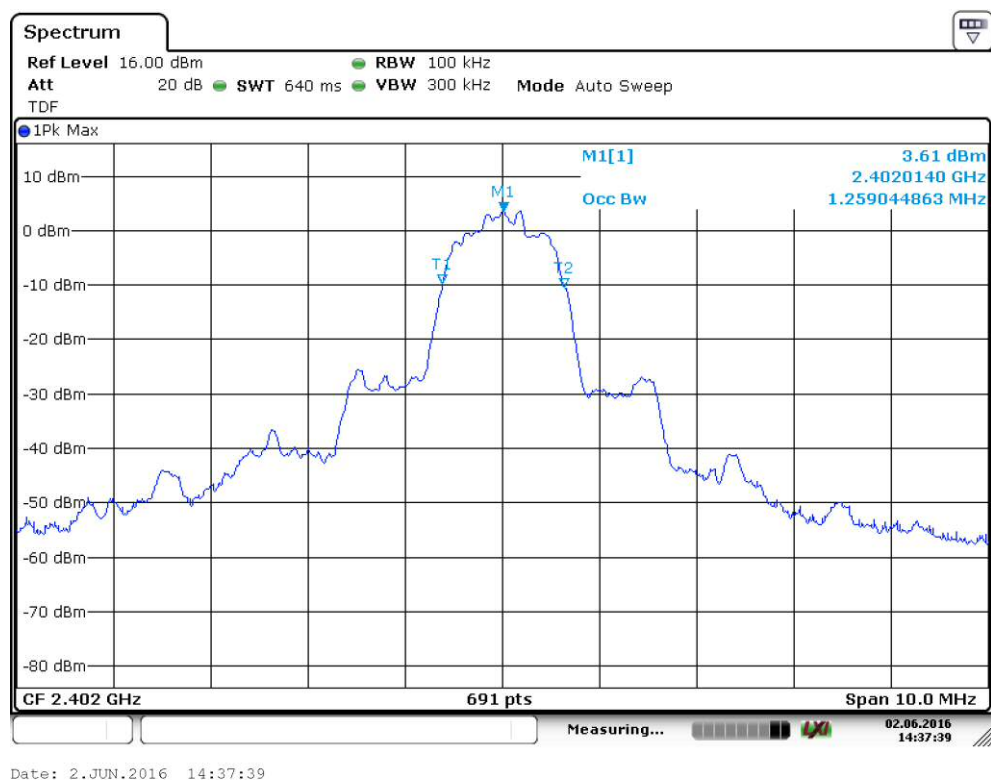


**Figure 88.** Mid channel 99% Occupied Power Bandwidth (2 Mbps).

## 99% Occupied Power Bandwidth

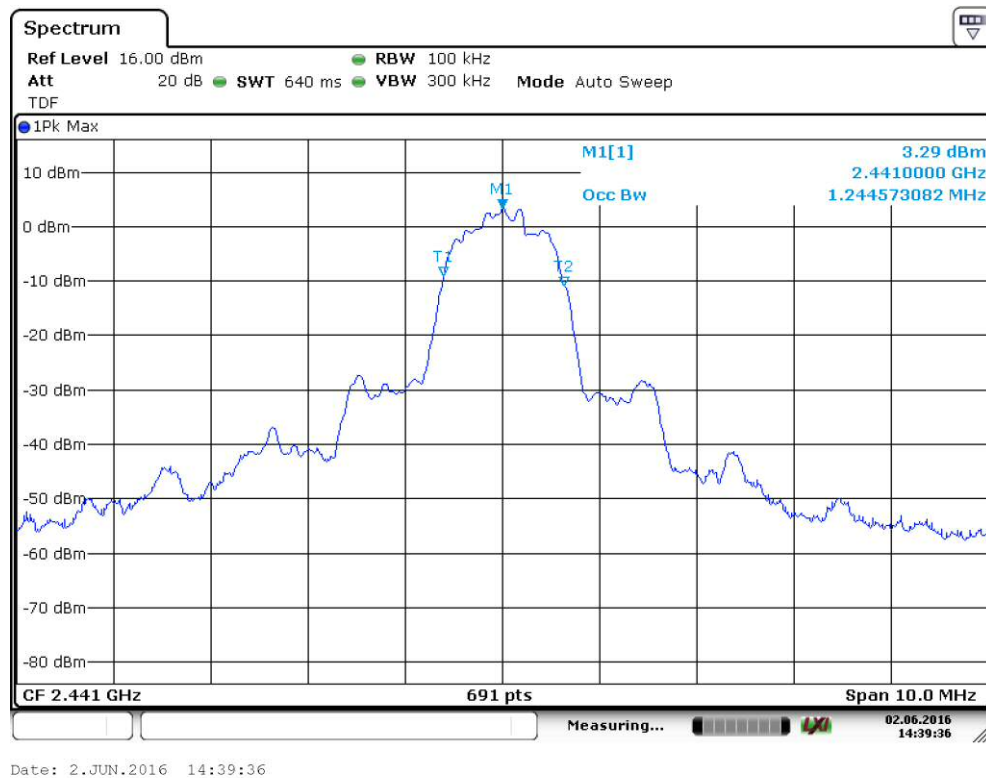


**Figure 89.** High channel 99% Occupied Power Bandwidth (2 Mbps).



**Figure 90.** Low channel 99% Occupied Power Bandwidth (3 Mbps).

## 99% Occupied Power Bandwidth



**Figure 91.** Mid channel 99% Occupied Power Bandwidth (3 Mbps).



**Figure 92.** High channel 99% Occupied Power Bandwidth (3 Mbps).



## TEST EQUIPMENT

## RF-Test Equipment

Equipment	Manufacturer	Type	Inv or serial	Prev Calib	Next Calib
MONITORING ANTENNA	A.H. SYSTEMS	SAS-200/518	inv:7873	-	-
MONITORING SPECTRUM ANALYZER	AGILENT	E7405A	inv:9746	2016-01-07	2018-01-07
TURNTABLE	DEISEL	DS 430	sn:430/447/97	-	-
MAST & TURNTABLE CONTROLLER	DEISEL	HD-100	sn:100/544	-	-
MAST & TURNTABLE CONTROLLER	MATURO	NCD	inv:10183	-	-
ANTENNA MAST	DEISEL	MA 240	inv:7896	-	-
ANTENNA	EMCO	3117	inv:7293	2016-03-16	2018-03-06
ANTENNA	EMCO	3160-09	inv:7294	2016-03-16	2017-03-16
PREAMPLIFIER	HEWLETT PACKARD	83017A (25 dB)	inv:5226	2016-02-03	2017-02-03
BLUETOOTH TEST SET	ROHDE & SCHWARZ	CMU200	inv:9237	2013-02-27	-
BLUETOOTH TEST SET	ROHDE & SCHWARZ	CBT	ID:1153.9000K35-100868-xL	-	-
TEST SOFTWARE	ROHDE & SCHWARZ	EMC-32	-	-	-
EMI TEST RECEIVER	ROHDE & SCHWARZ	ESU 26	inv:8453	2015-07-01	2016-07-01
SIGNAL ANALYZER	ROHDE & SCHWARZ	FSV40	inv:9093	2015-07-01	2016-07-01
ANTENNA	SCHWARZBECK	VULB 9168	inv:8911	2014-11-04	2016-11-04
HIGH PASS FILTER	WAINWRIGHT	WHKX4.0/18G-10SS	sn:10	2016-01-22	2017-01-22
ATT SMAM/F 50 Ω 18 GHZ 10 DB 1 W	HUBER&SUHNER	6610.19.AA	sn:RF ATTEN 07	2016-02-02	2017-02-02
POWER SOURCE	CALIFORNIA INSTR.	500i-400	inv:9489	-	-
LISN	ROHDE & SCHWARZ	ENV216	inv:9611	2016-02-24	2017-02-24