

## Appendix C: Test Results of FHSS

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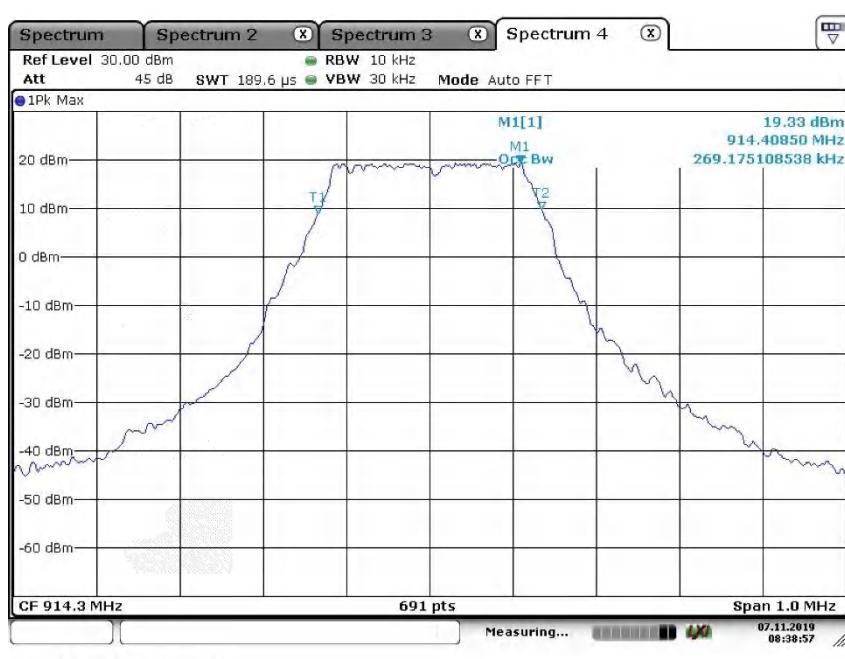
## Appendix C.1: Test Results of 99% Bandwidth

### FHSs#1 (Bandwidth: 250KHz)

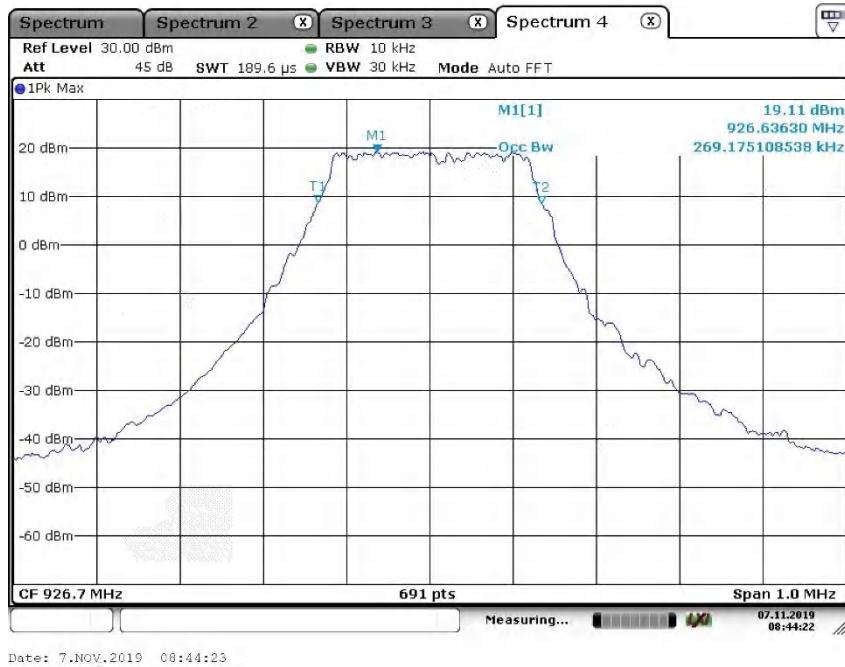
Low Channel



Middle Channel

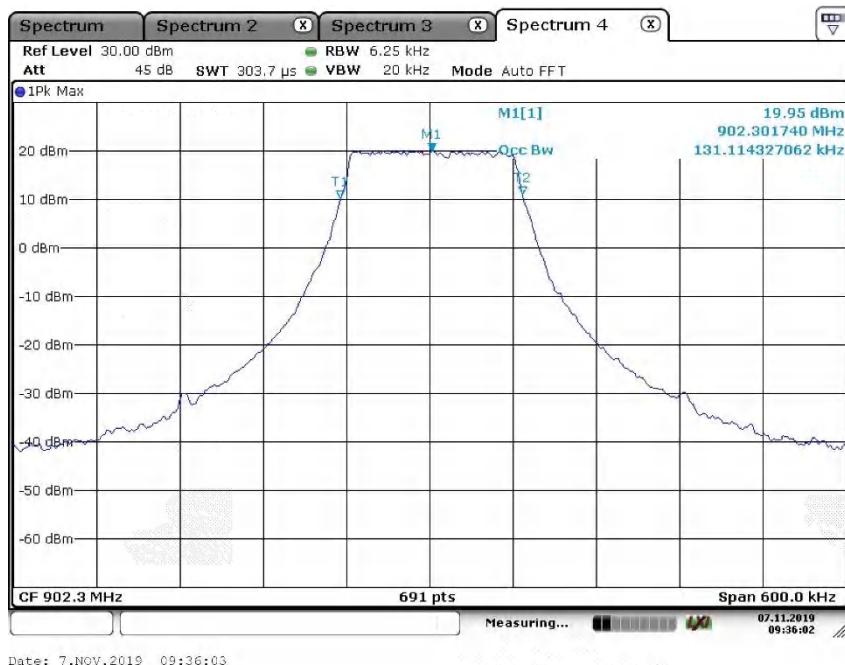


### High Channel



### FHSs#2 (Bandwidth: 125KHz)

#### Low Channel

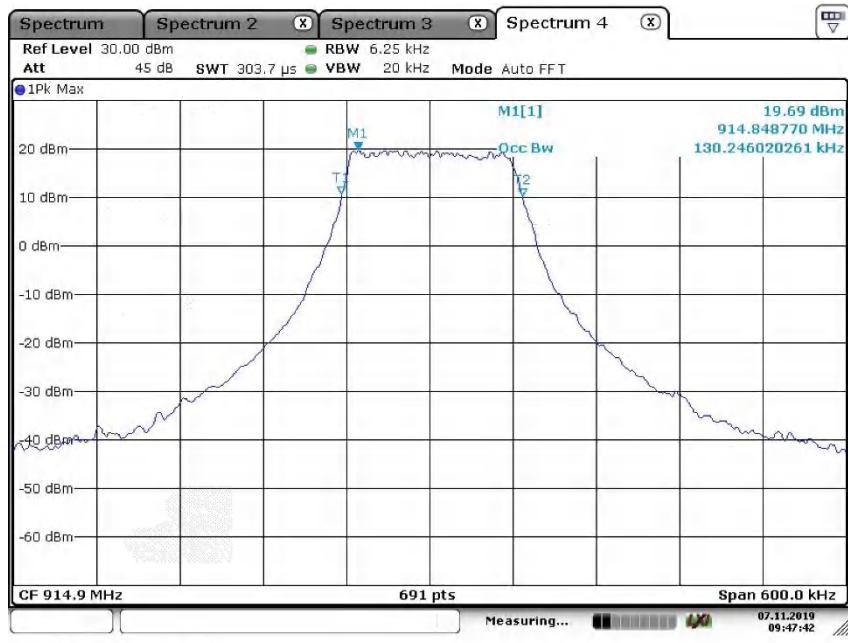


Middle Channel



Date: 7.NOV.2019 09:44:20

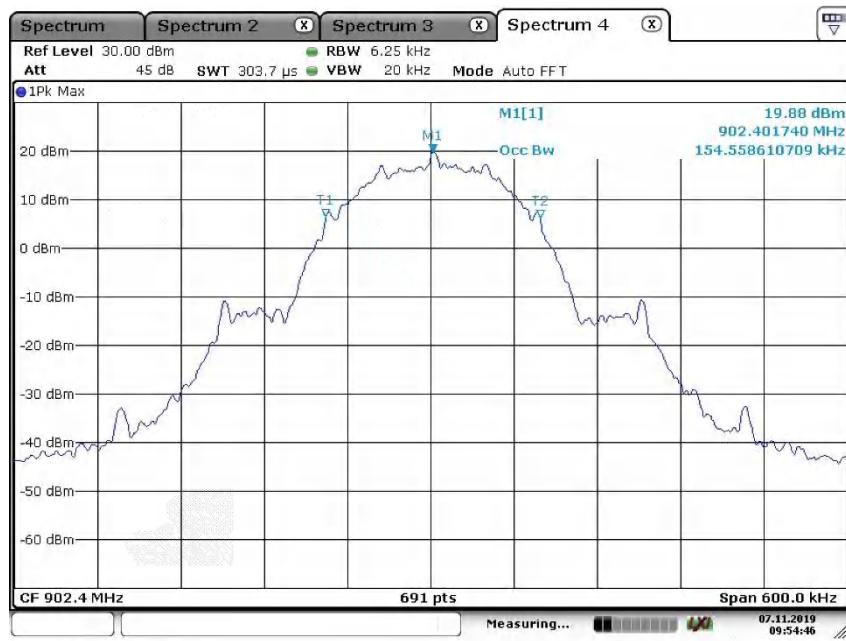
High Channel



Date: 7.NOV.2019 09:47:43

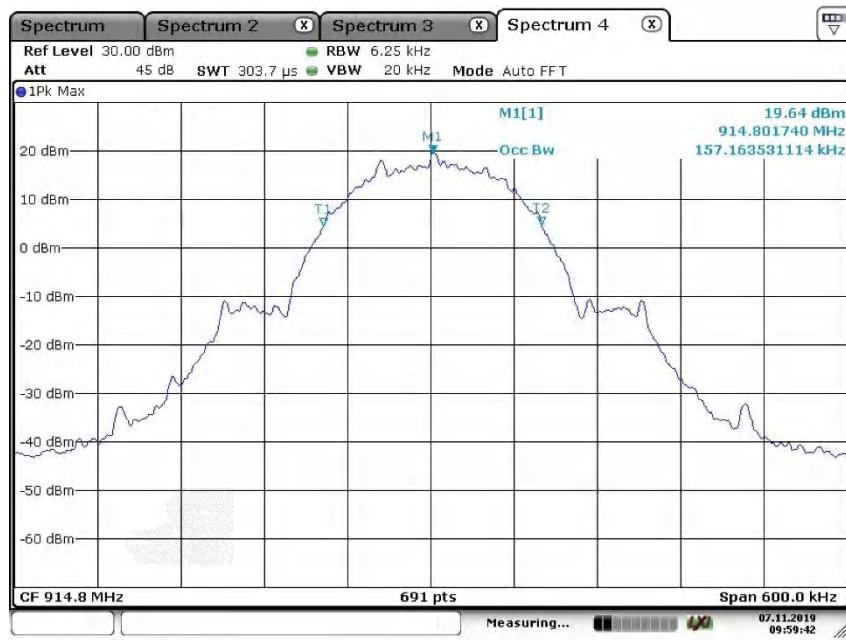
### FHSs#3 (DataRate: 150Kbps)

Low Channel



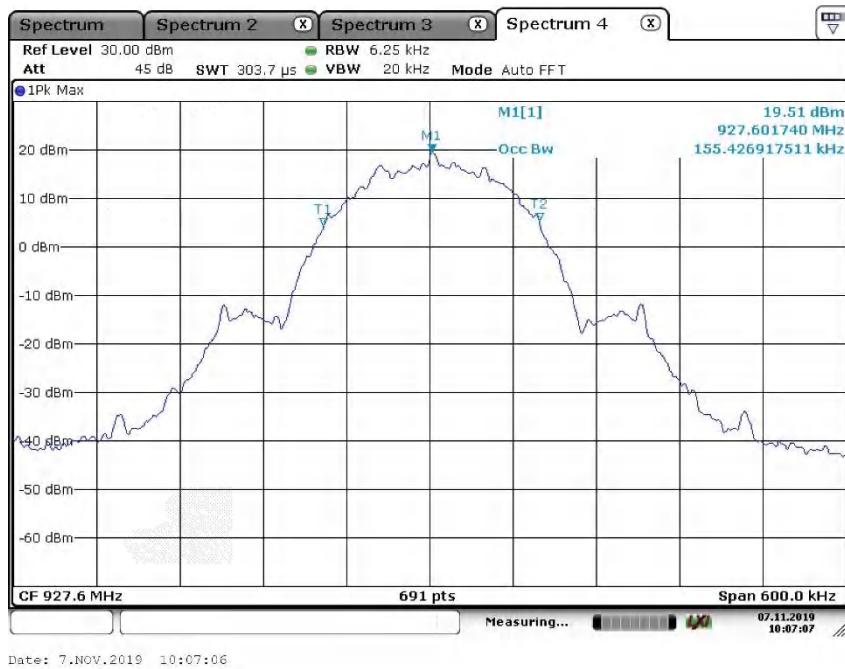
Date: 7.NOV.2019 09:54:45

Middle Channel



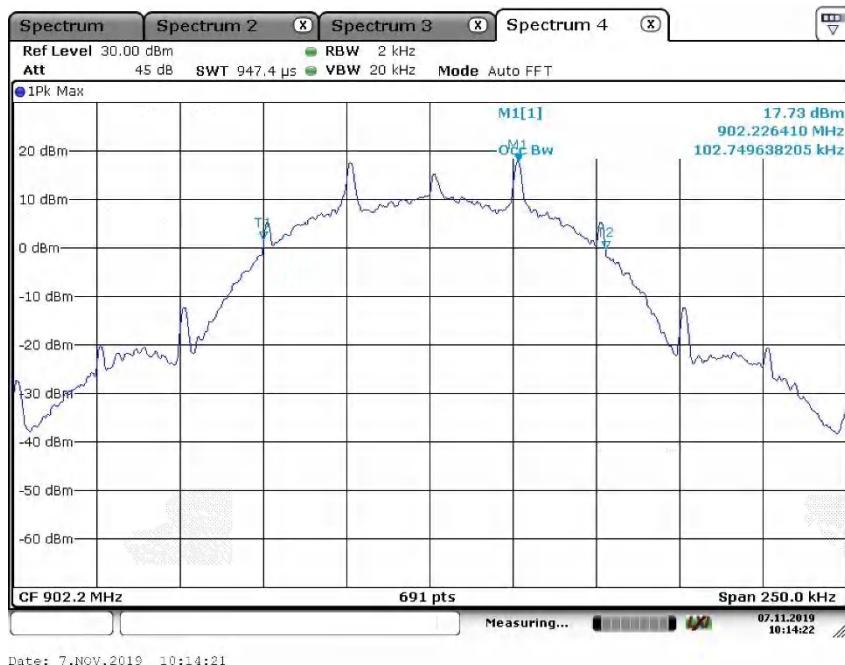
Date: 7.NOV.2019 09:59:41

High Channel



FHSs#4 (DataRate: 50Kbps)

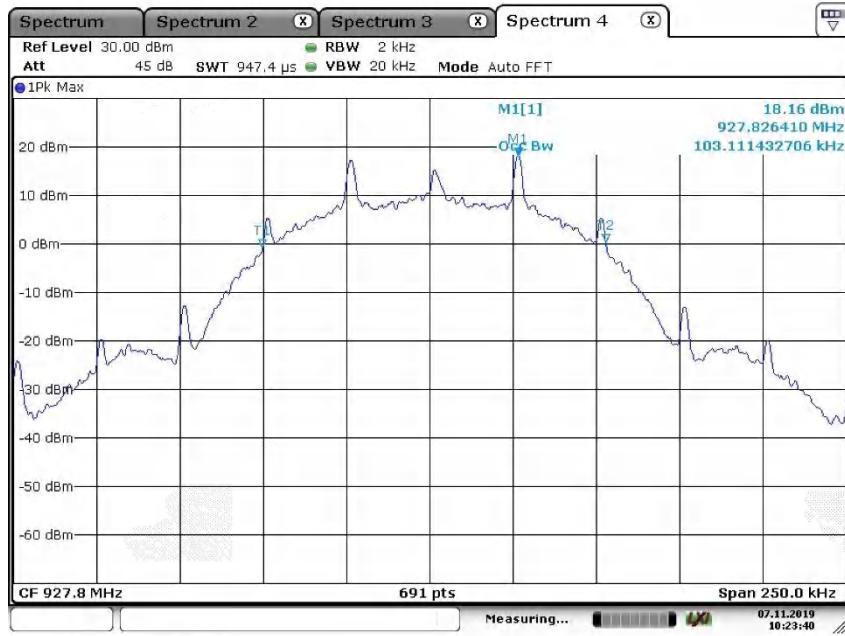
Low Channel



Middle Channel

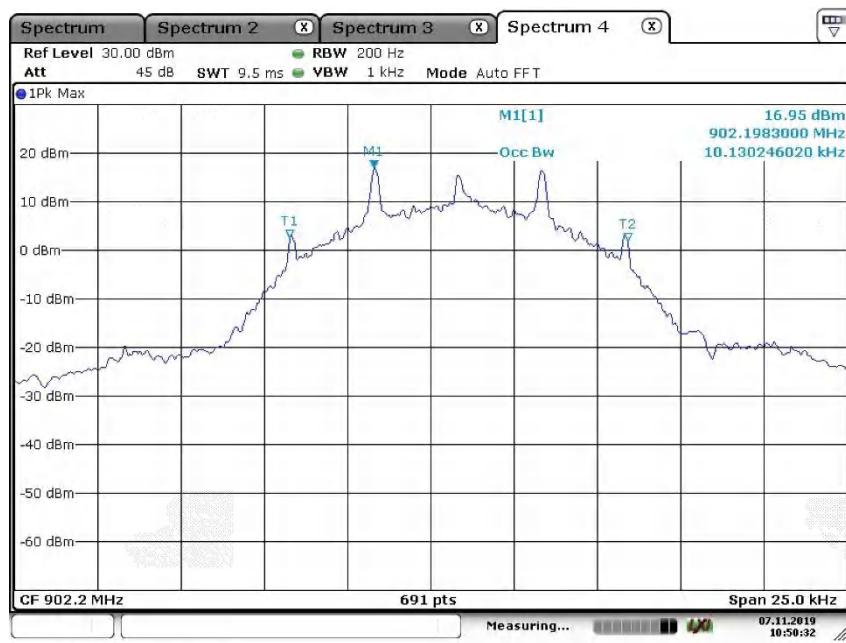


High Channel

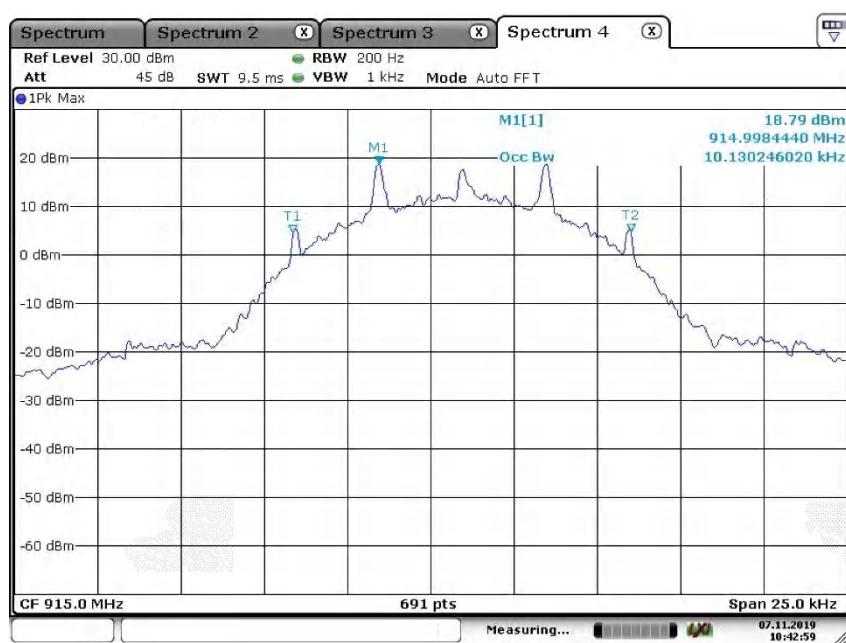


### FHSs#5 (DataRate: 5Kbps)

Low Channel



Middle Channel



High Channel



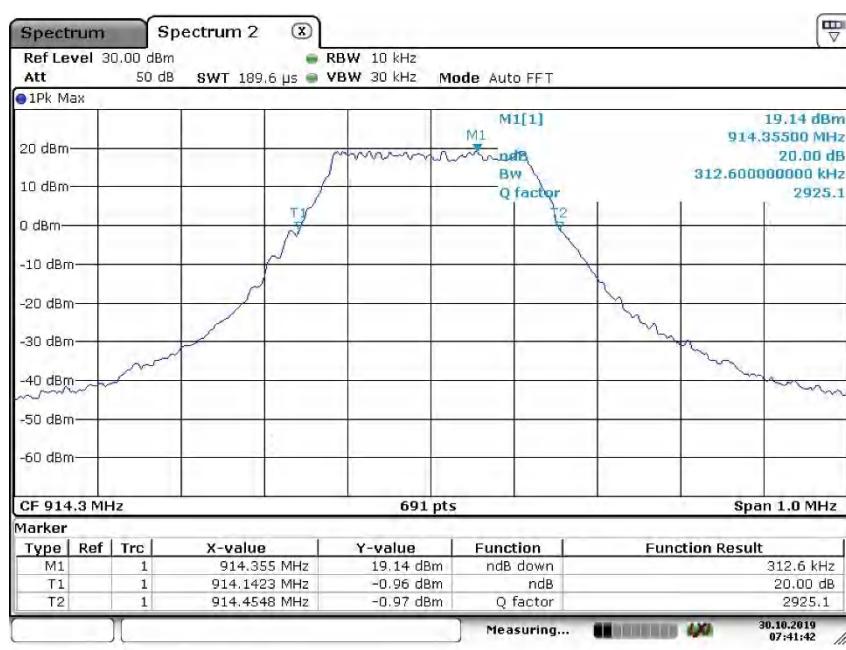
## Appendix C.2: Test Results of 20dB Bandwidth

### FHSs#1 (Bandwidth: 250KHz)

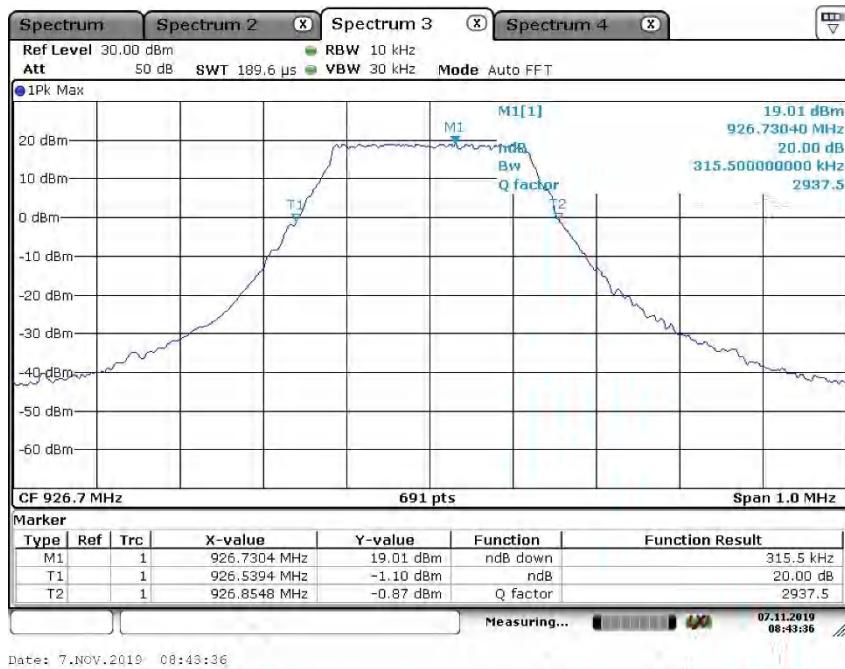
Low Channel



Middle Channel

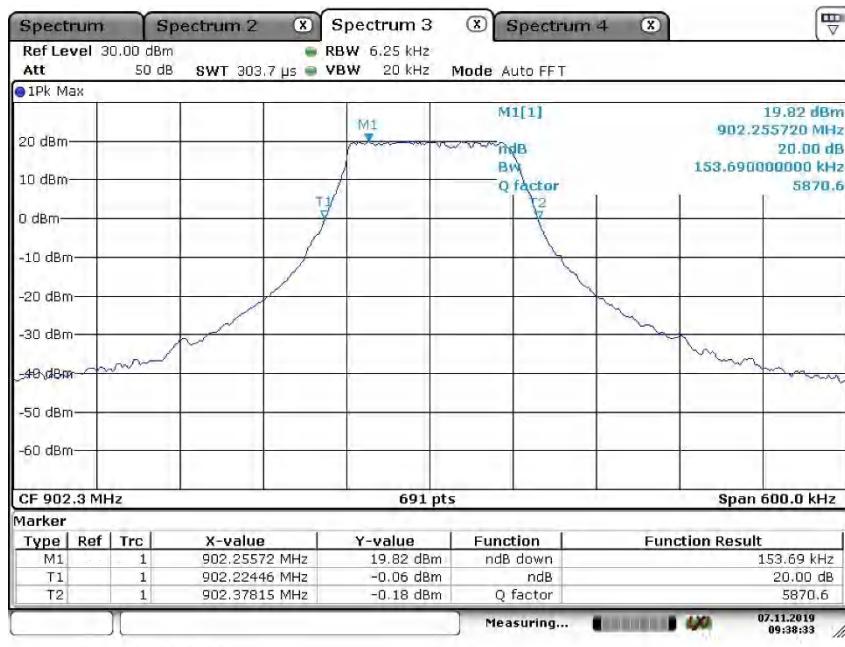


### High Channel

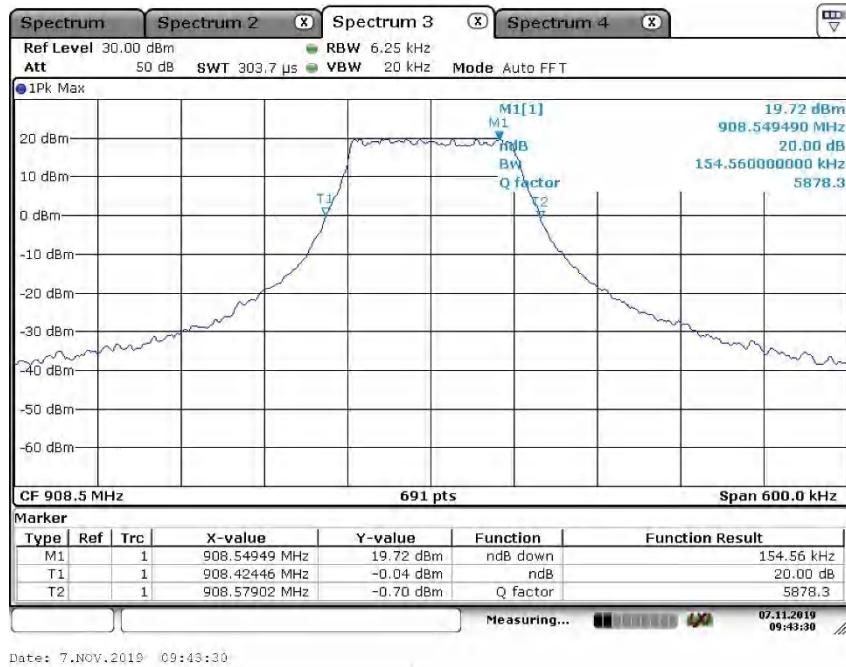


### FHSs#2 (Bandwidth: 125KHz)

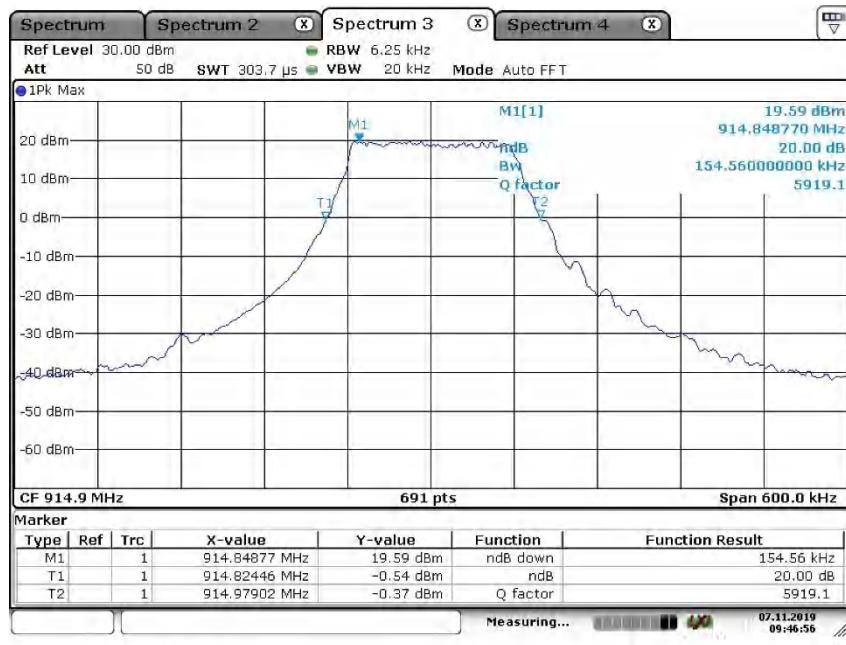
#### Low Channel



### Middle Channel

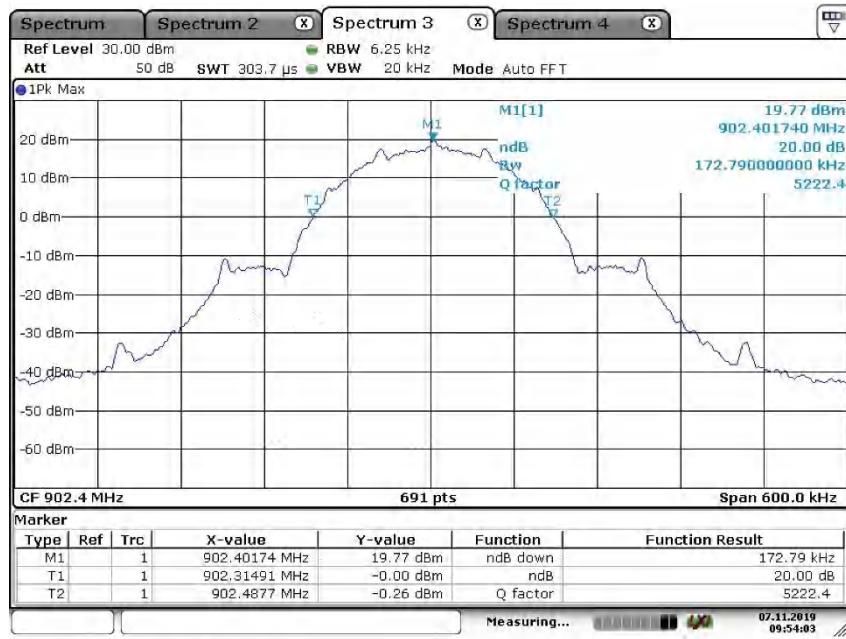


### High Channel

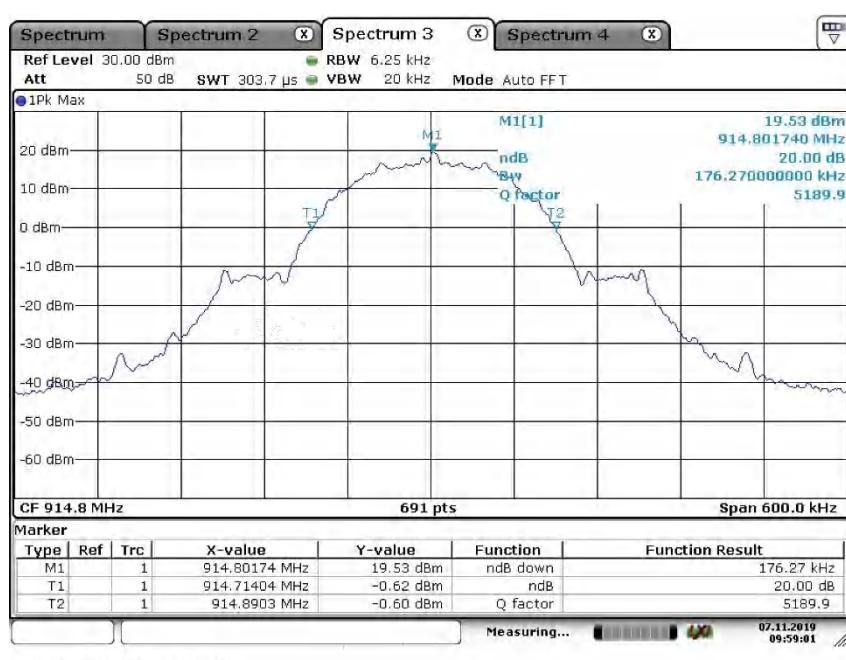


### FHSs#3 (DataRate: 150Kbps)

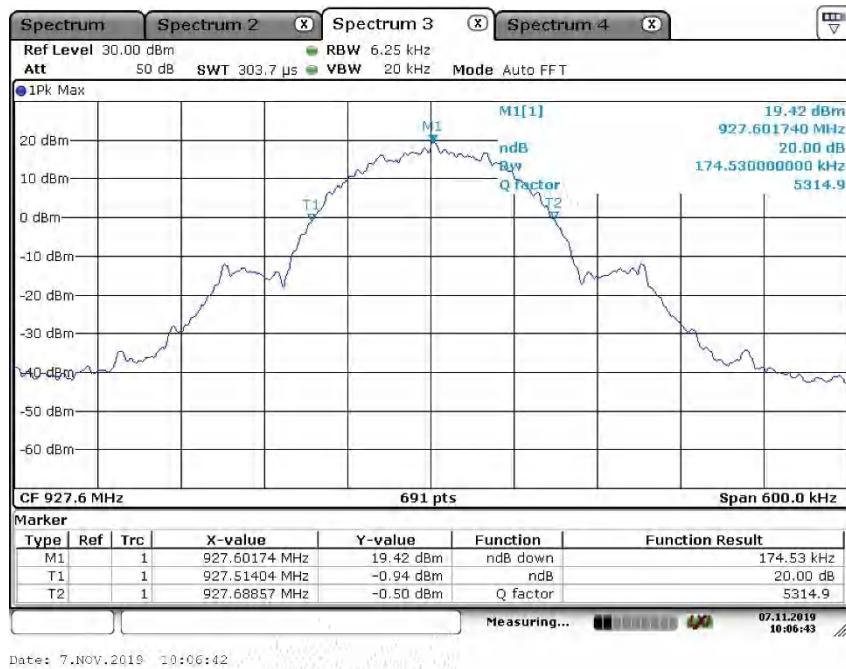
Low Channel



Middle Channel

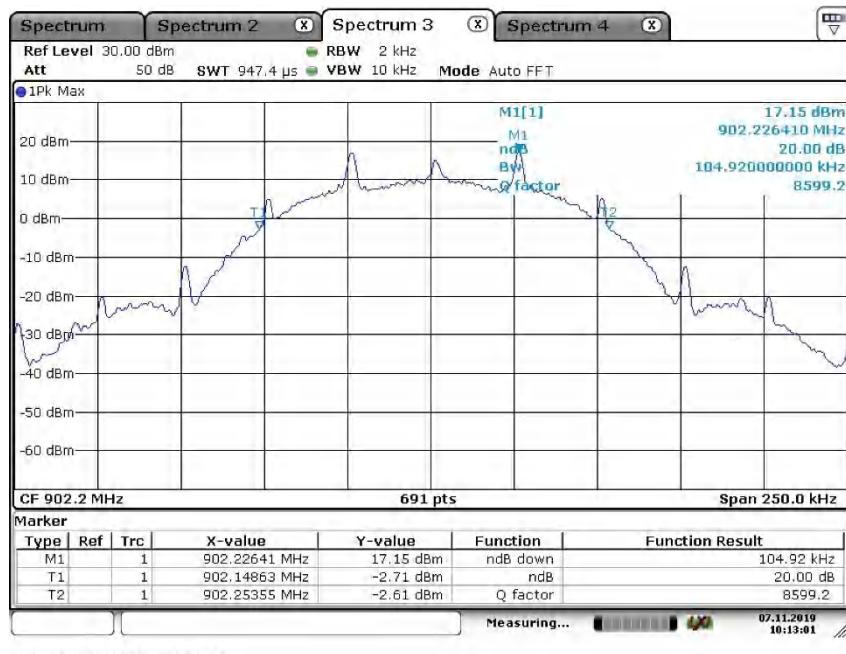


### High Channel

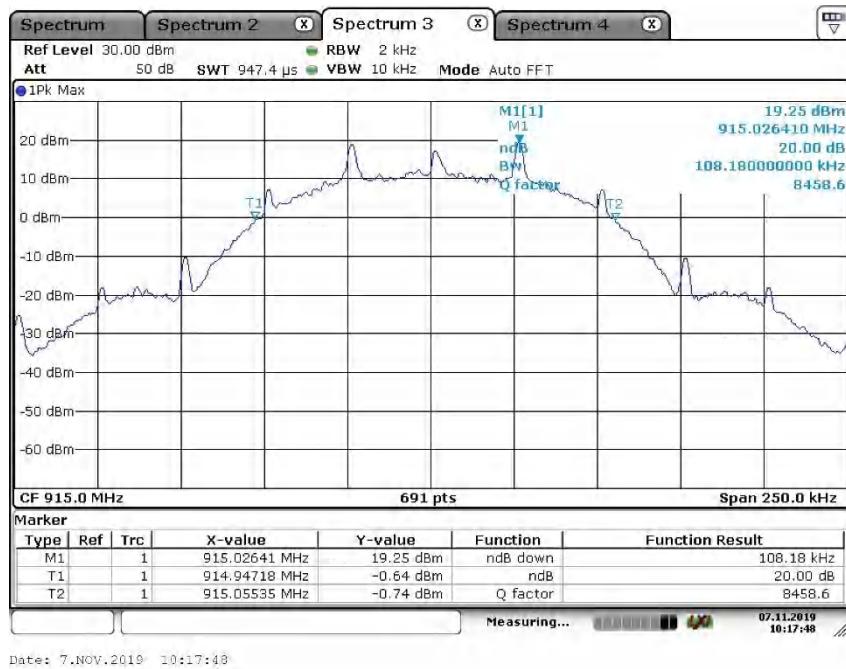


### FHSs#4 (DataRate: 50Kbps)

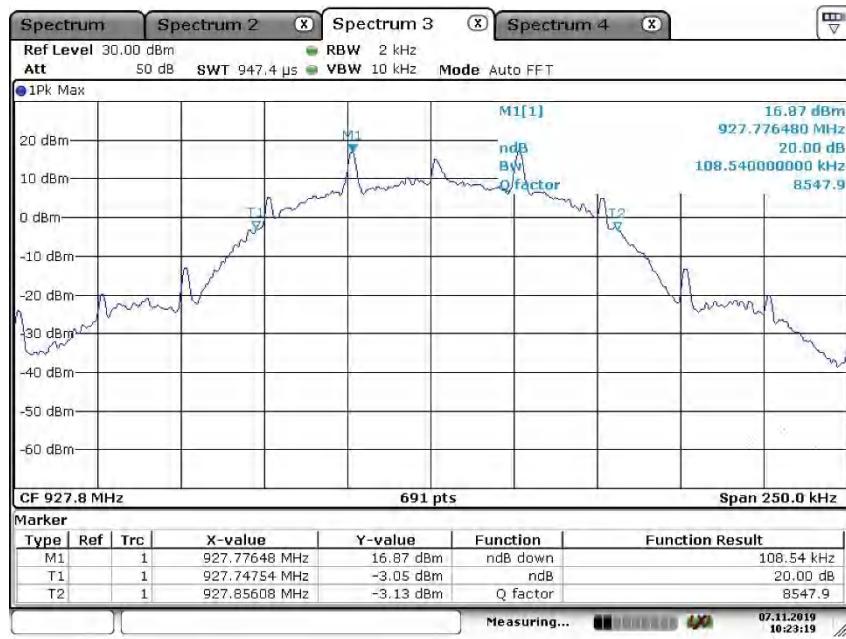
#### Low Channel



### Middle Channel

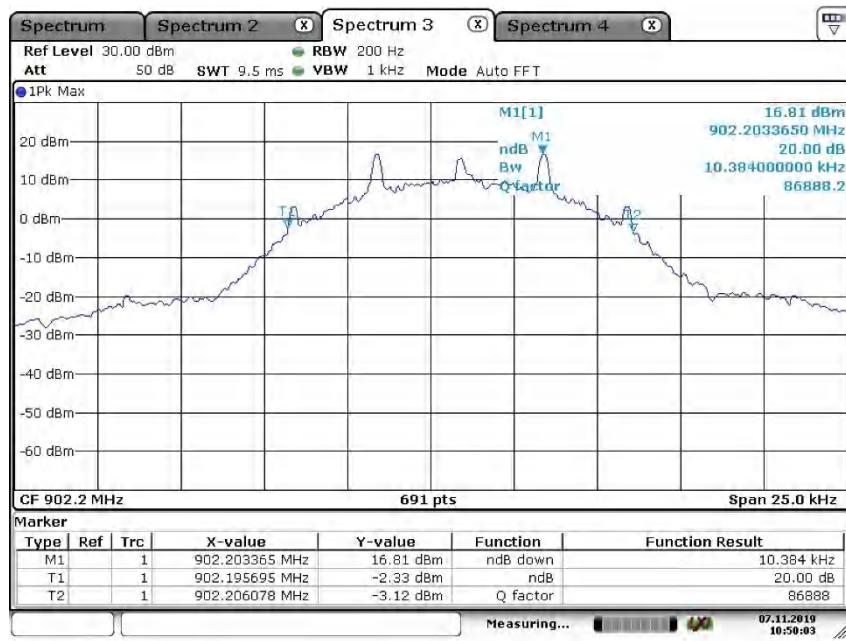


### High Channel

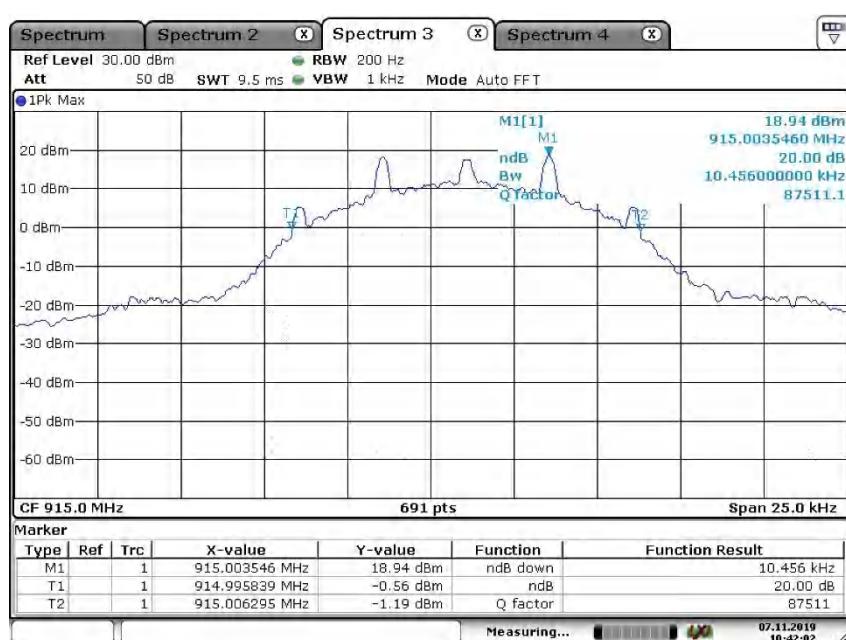


### FHSs#5 (DataRate: 5Kbps)

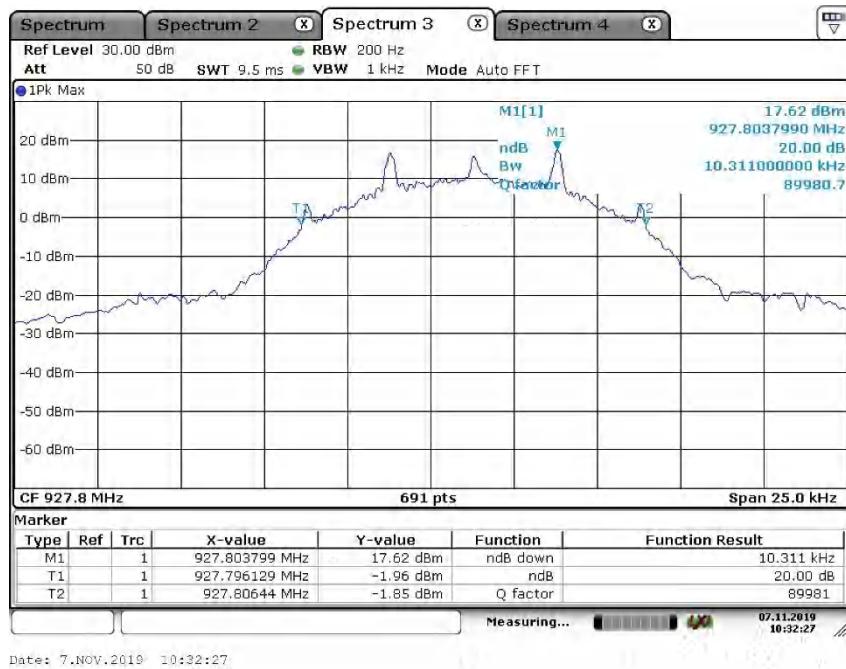
Low Channel



Middle Channel



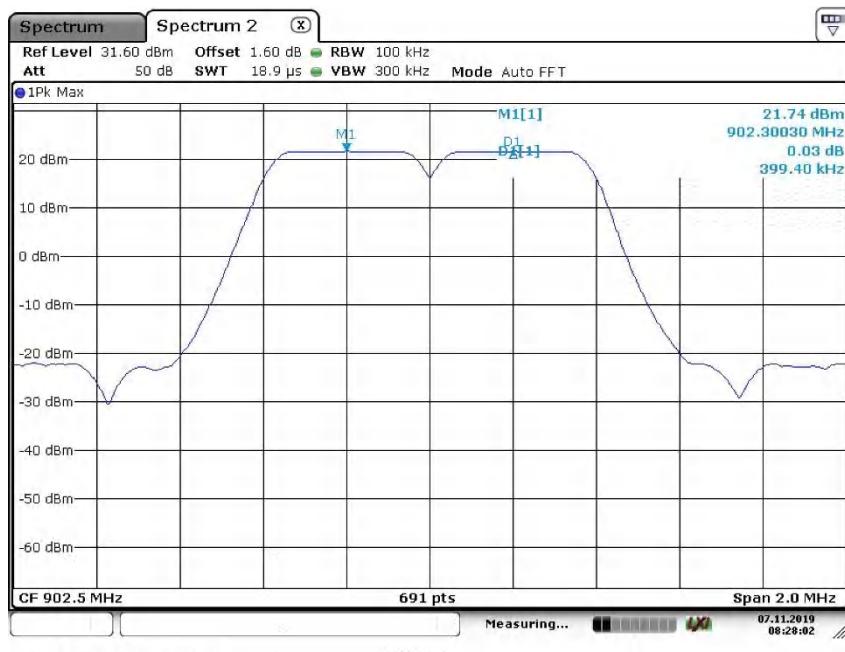
High Channel



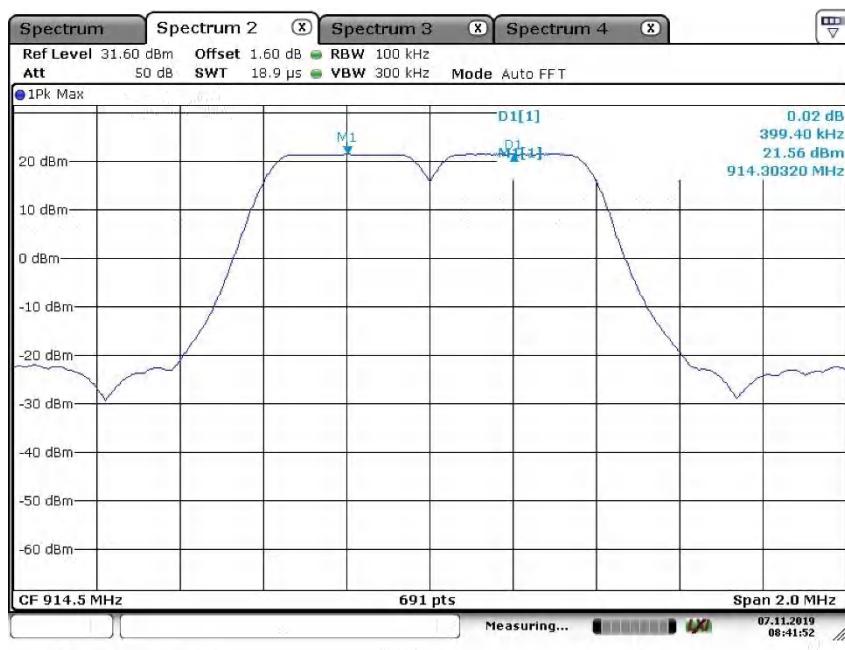
## Appendix C.3: Test Results of Carrier Frequency Separation

### FHSs#1 (Bandwidth: 250KHz)

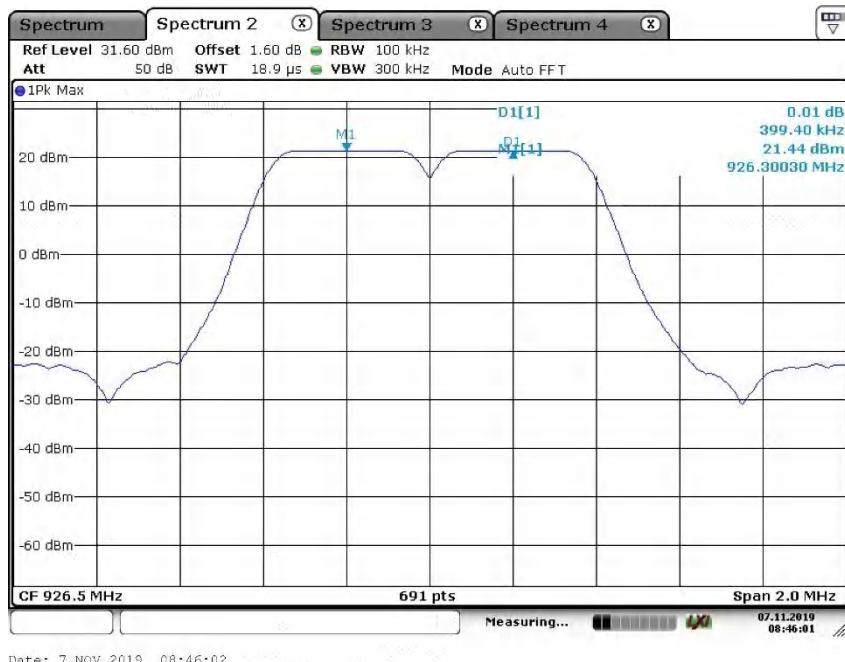
Low Channel



Middle Channel



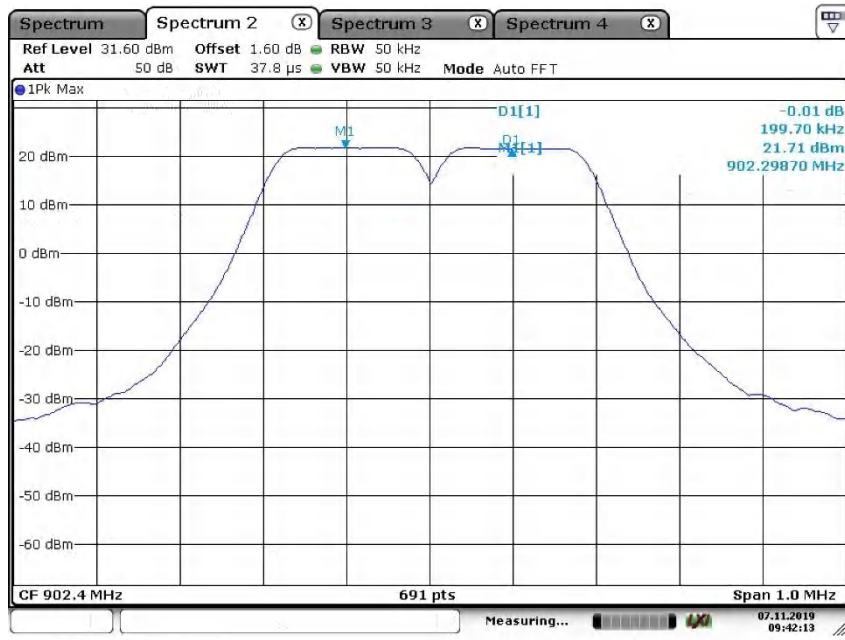
### High Channel



Date: 7.NOV.2019 08:46:02

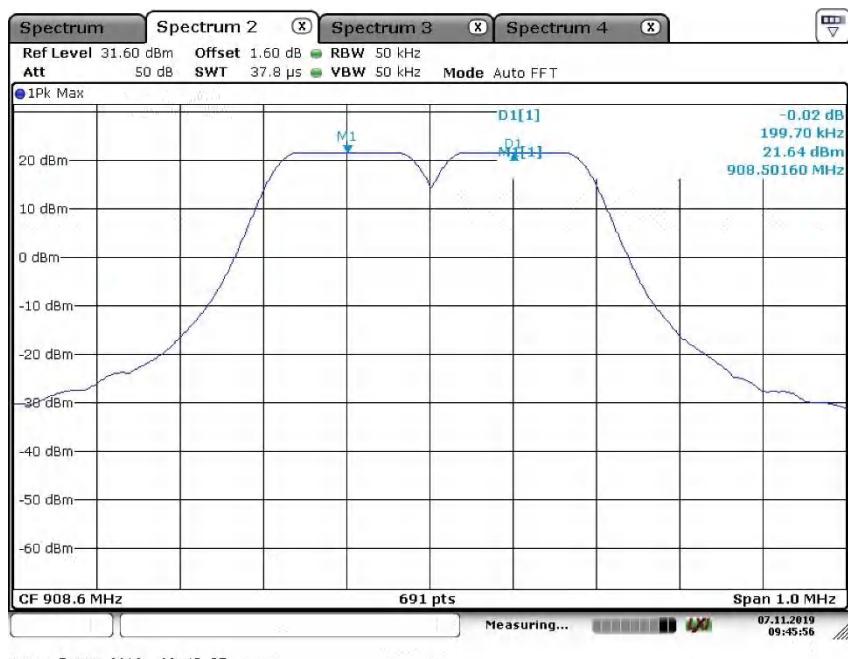
### FHSs#2 (Bandwidth: 125KHz)

#### Low Channel

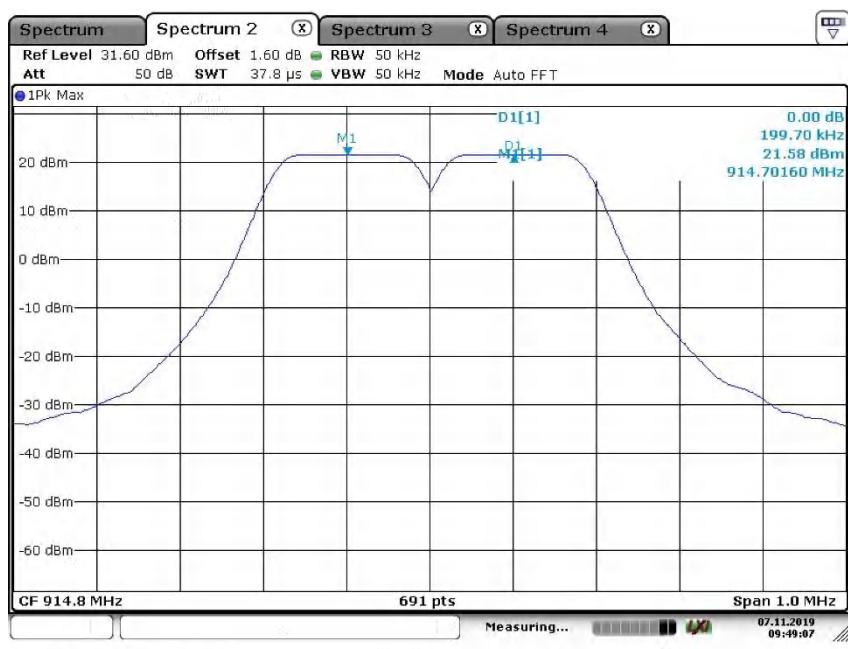


Date: 7.NOV.2019 09:42:13

Middle Channel

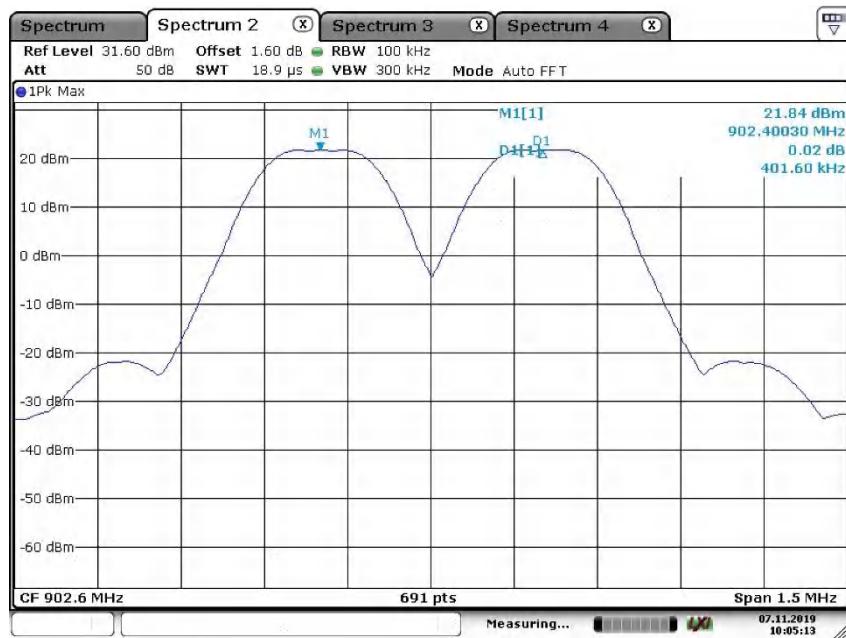


High Channel



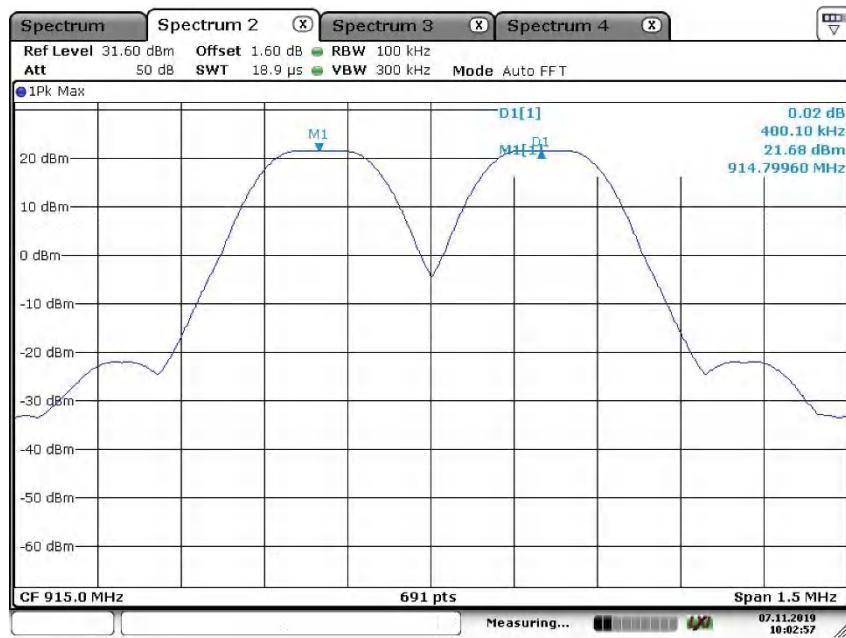
### FHSs#3 (DataRate: 150Kbps)

Low Channel



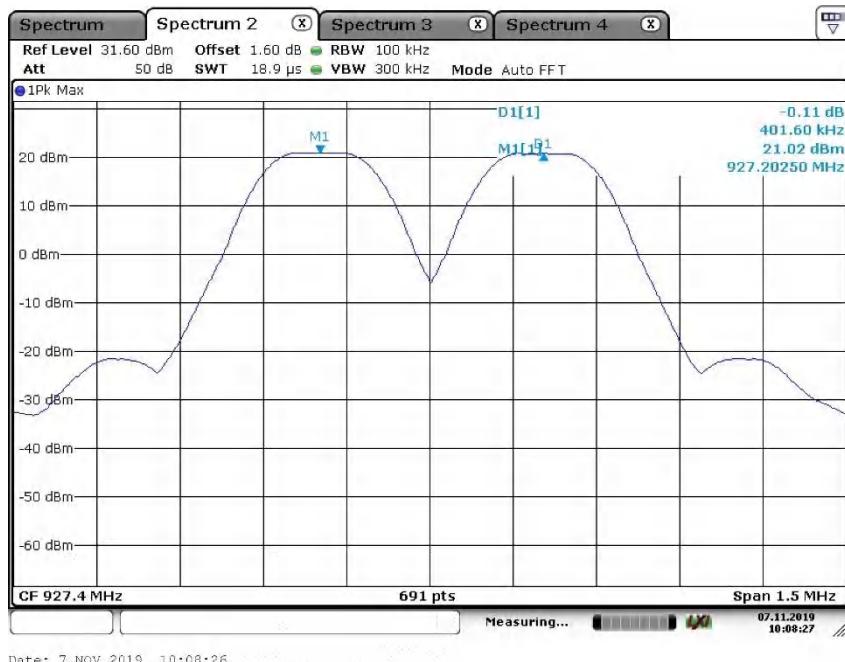
Date: 7.NOV.2019 10:05:13

Middle Channel



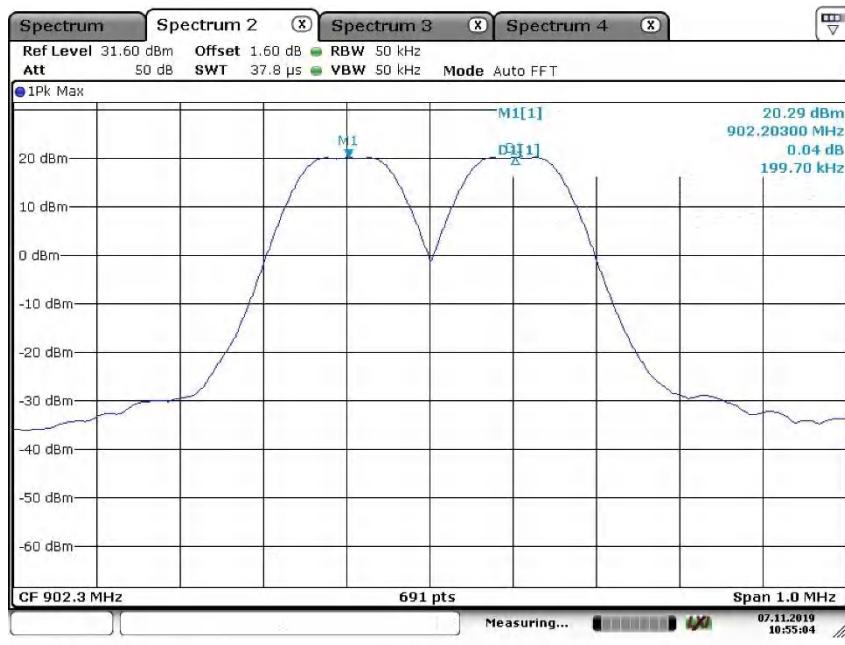
Date: 7.NOV.2019 10:02:57

High Channel

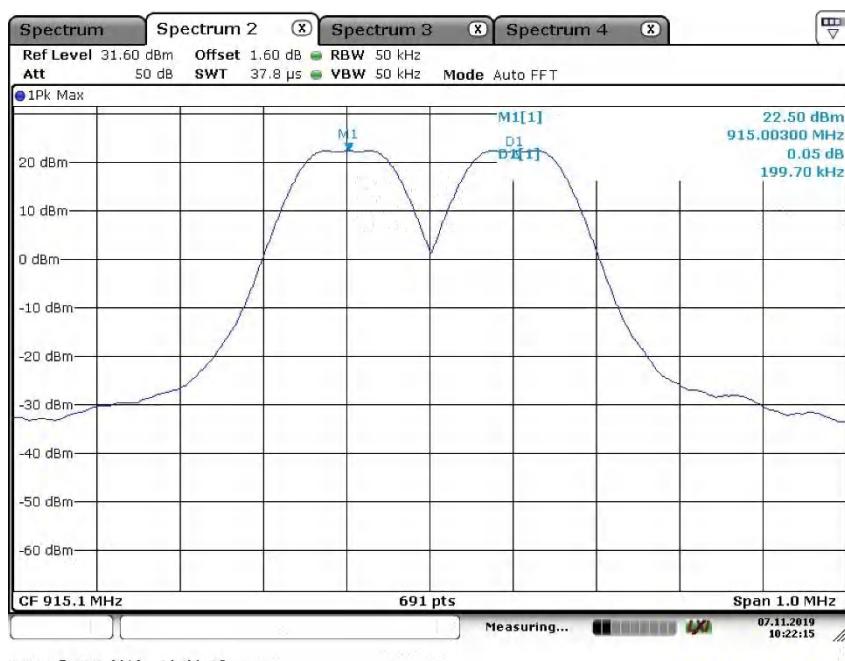


FHSs#4 (DataRate: 50Kbps)

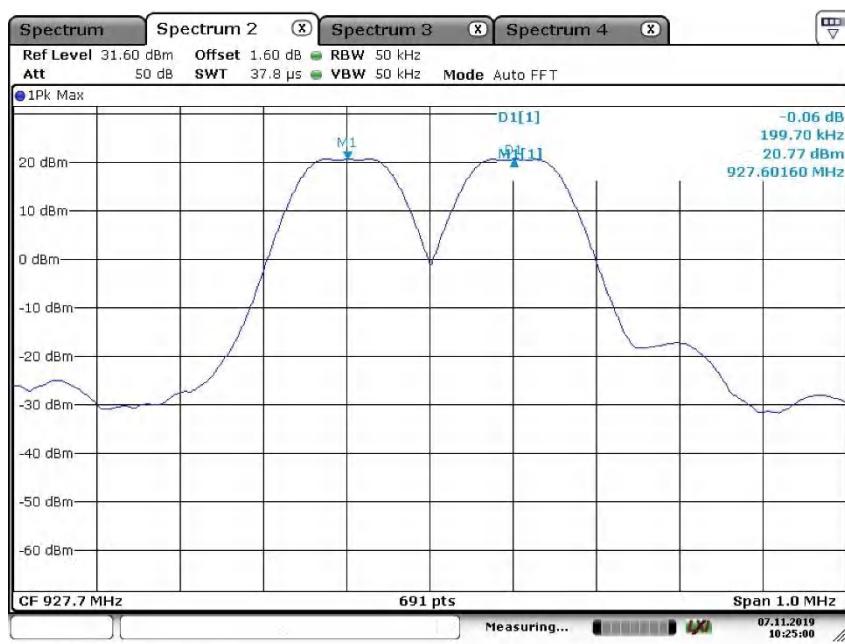
Low Channel



Middle Channel

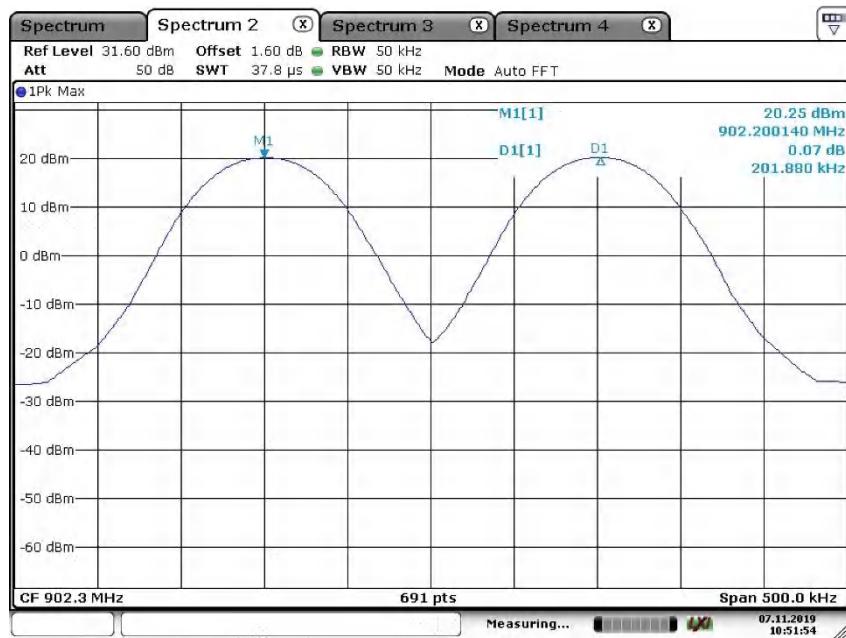


High Channel

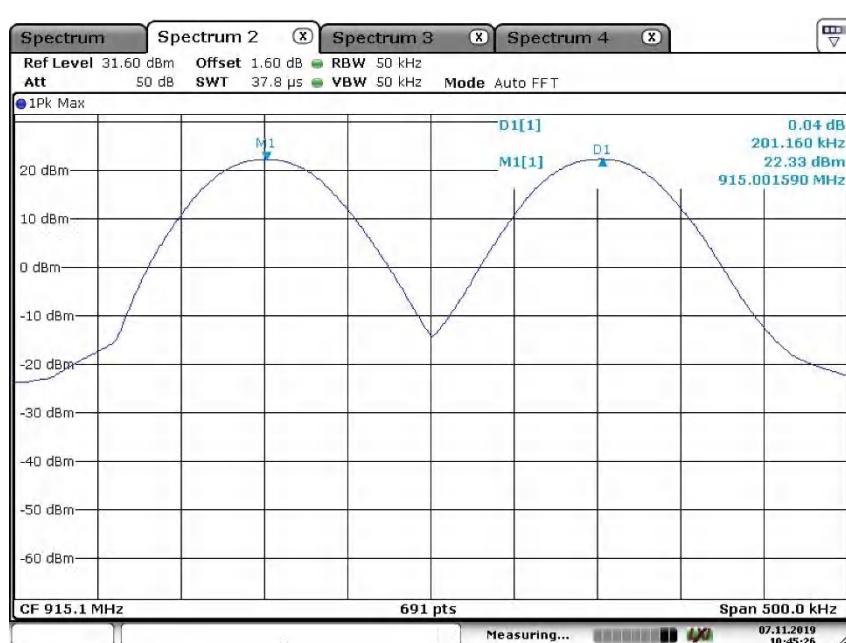


### FHSs#5 (DataRate: 5Kbps)

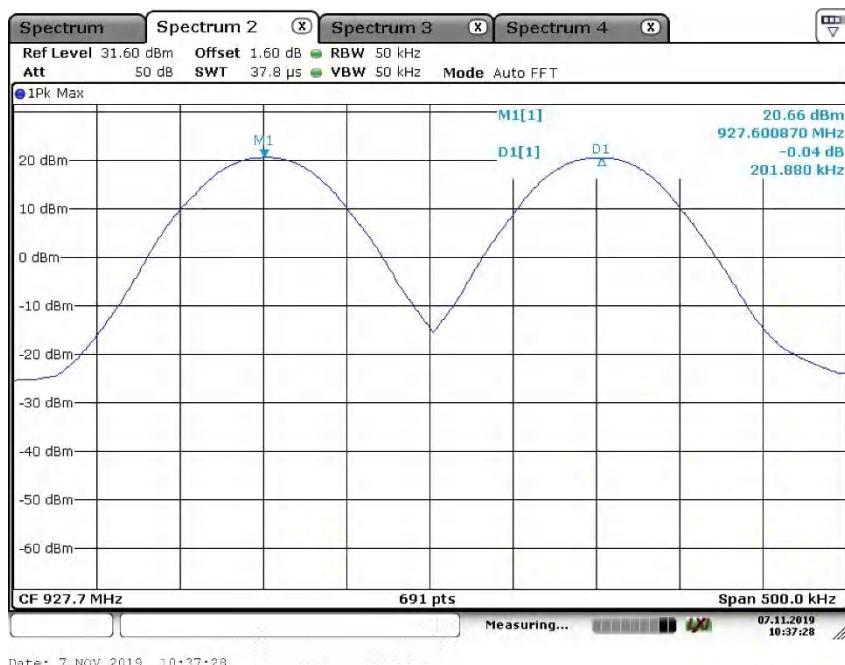
Low Channel



Middle Channel



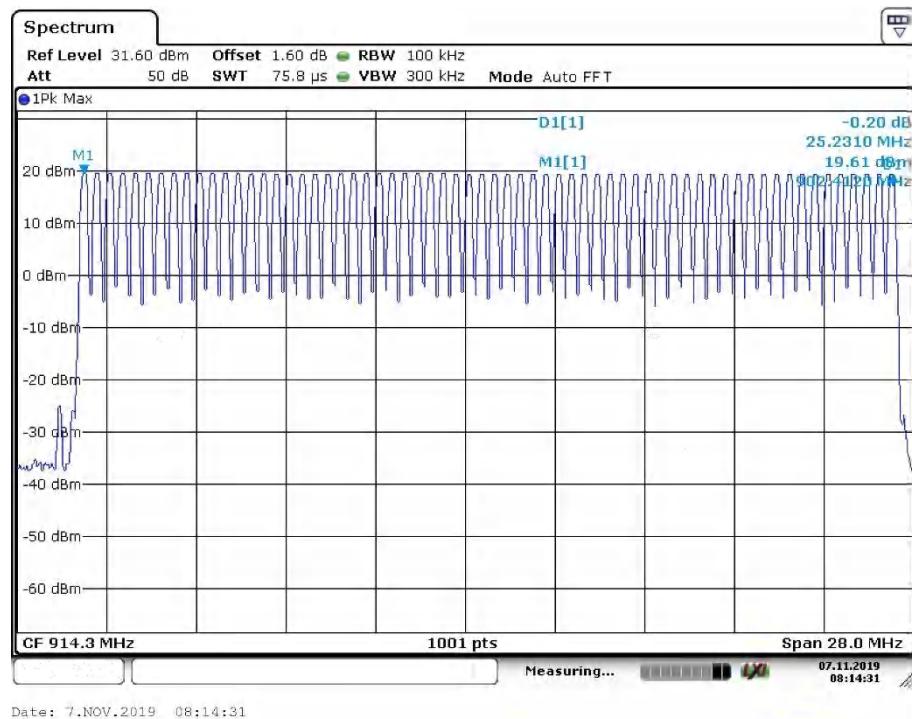
High Channel



## Appendix C.4: Test Results of Number of Hopping Frequency

### FHSs#1 (Bandwidth: 250KHz)

All hopping channels

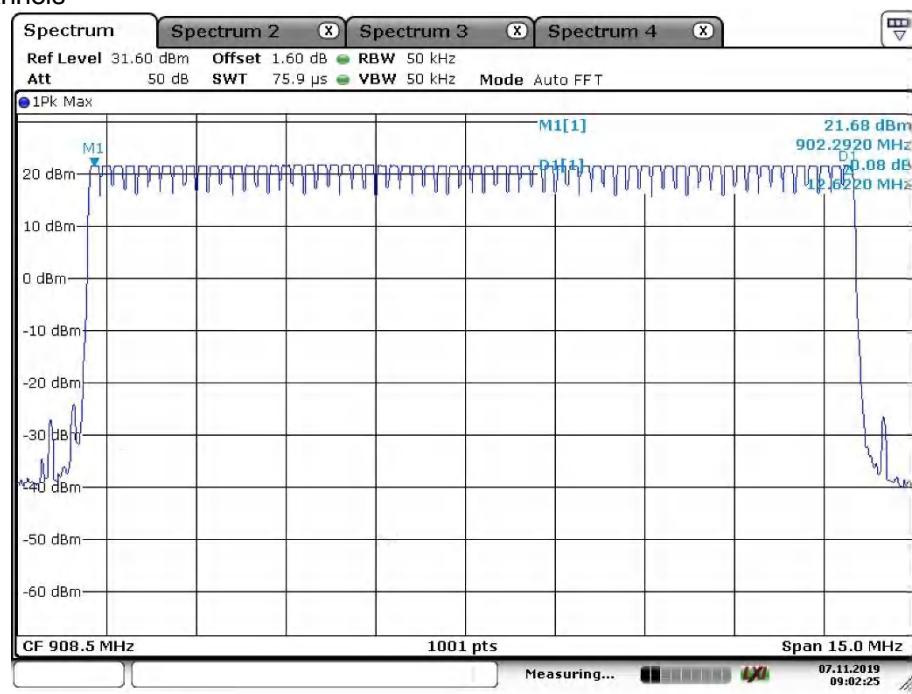


Date: 7.NOV.2019 08:14:31

07.11.2019  
08:14:31

### FHSs#2 (Bandwidth: 125KHz)

All hopping channels

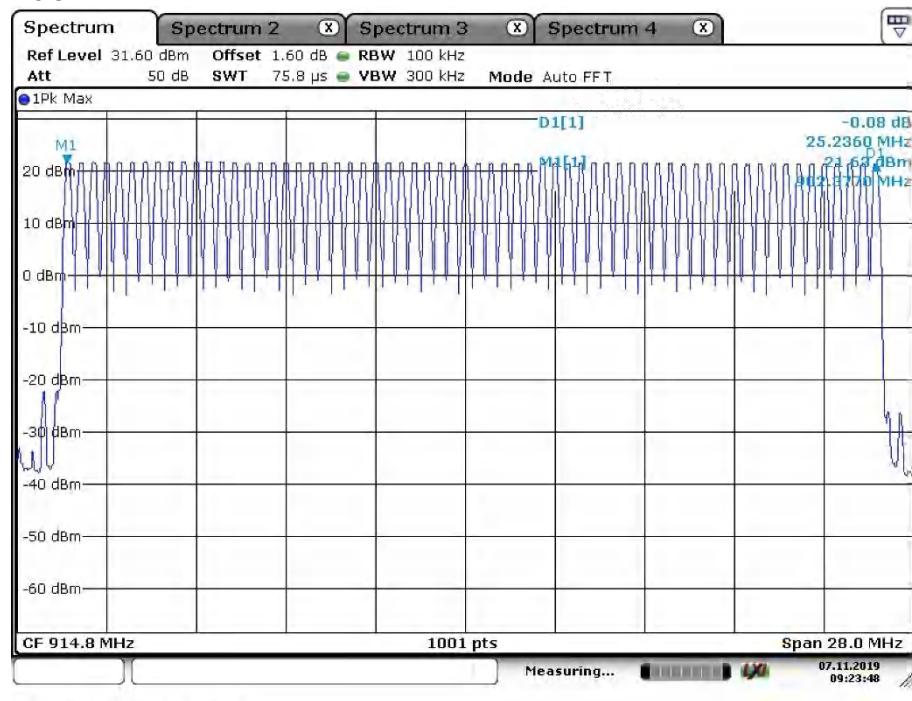


Date: 7.NOV.2019 09:02:25

07.11.2019  
09:02:25

### FHSs#3 (DataRate: 150Kbps)

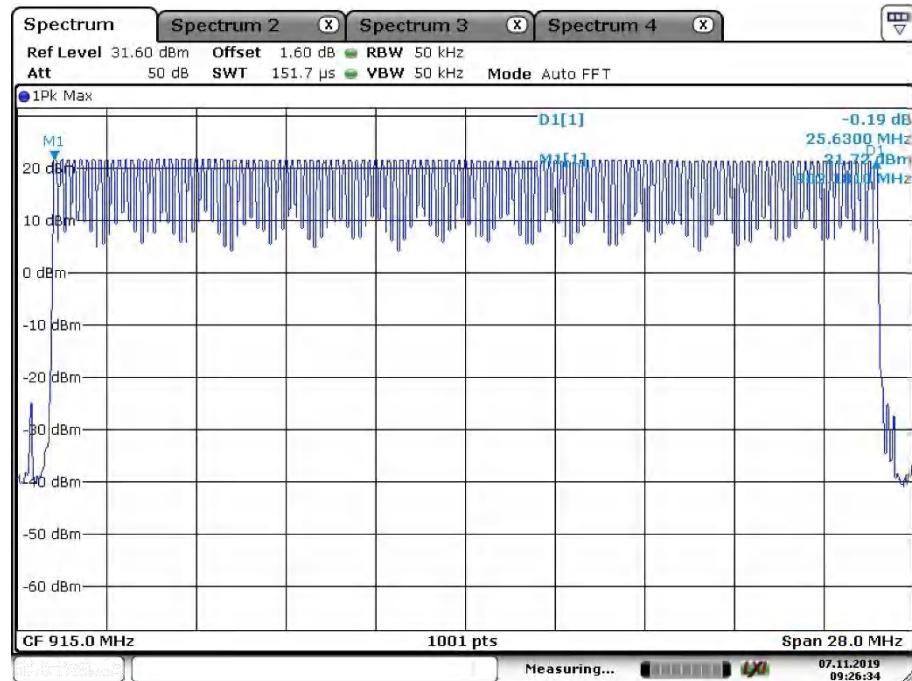
All hopping channels



Date: 7.NOV.2019 09:23:48

### FHSs#4 (DataRate: 50Kbps)

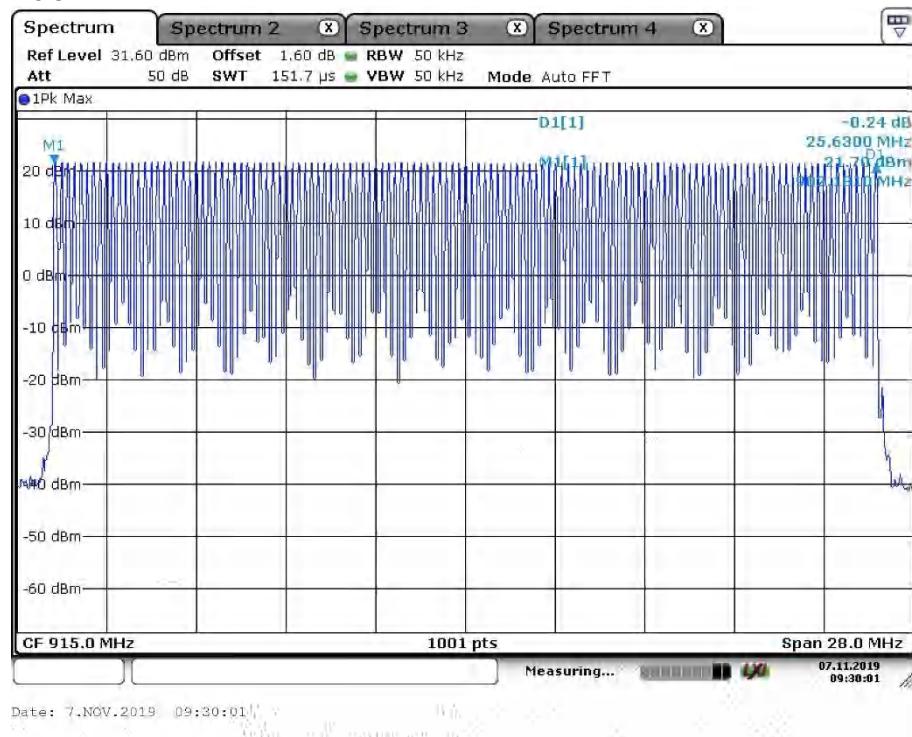
All hopping channels



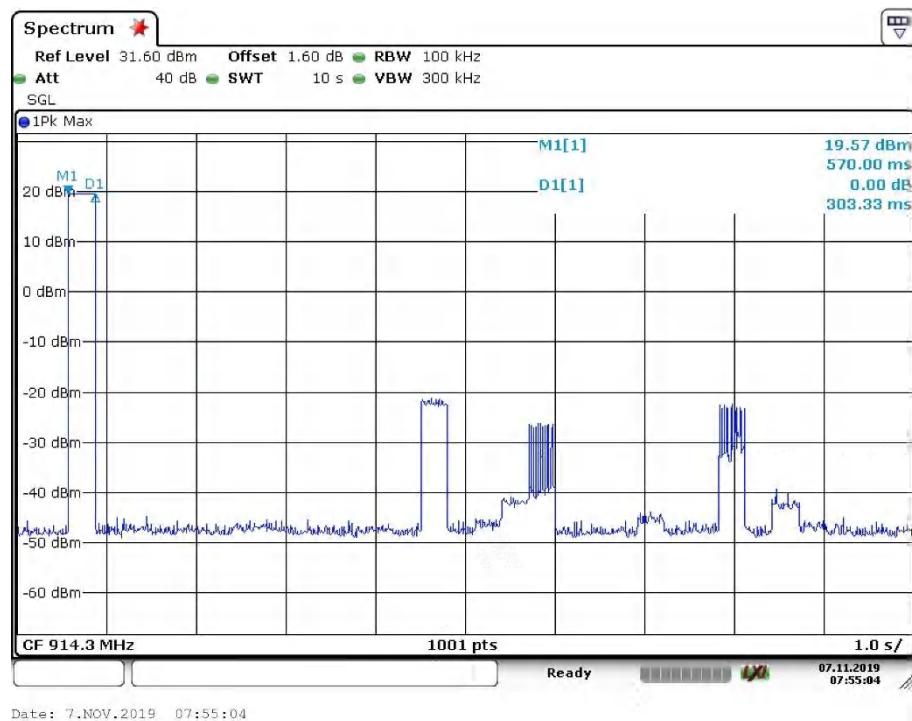
Date: 7.NOV.2019 09:26:34

### FHSs#5 (DataRate: 5Kbps)

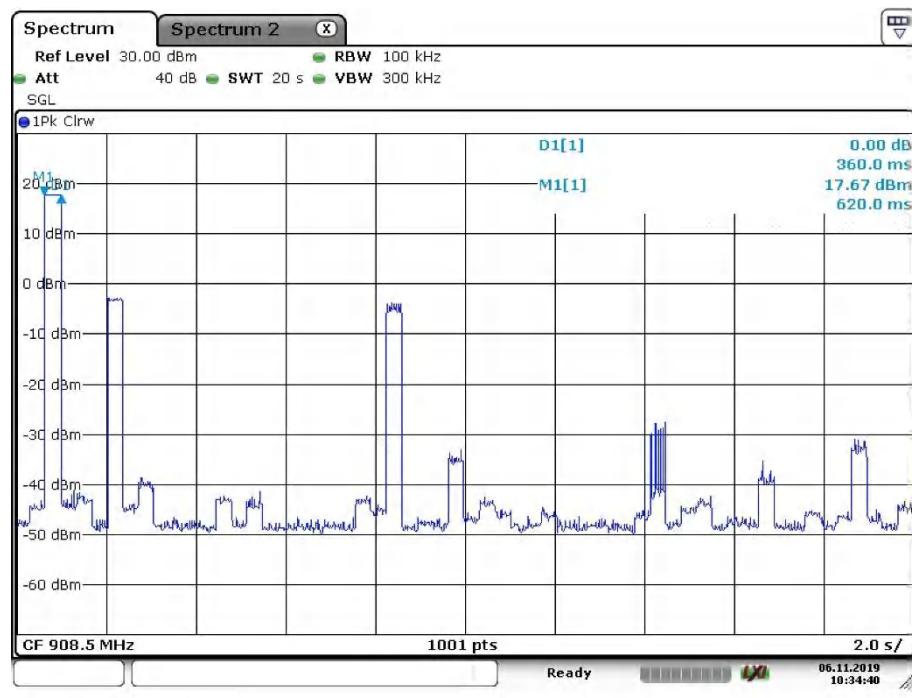
All hopping channels



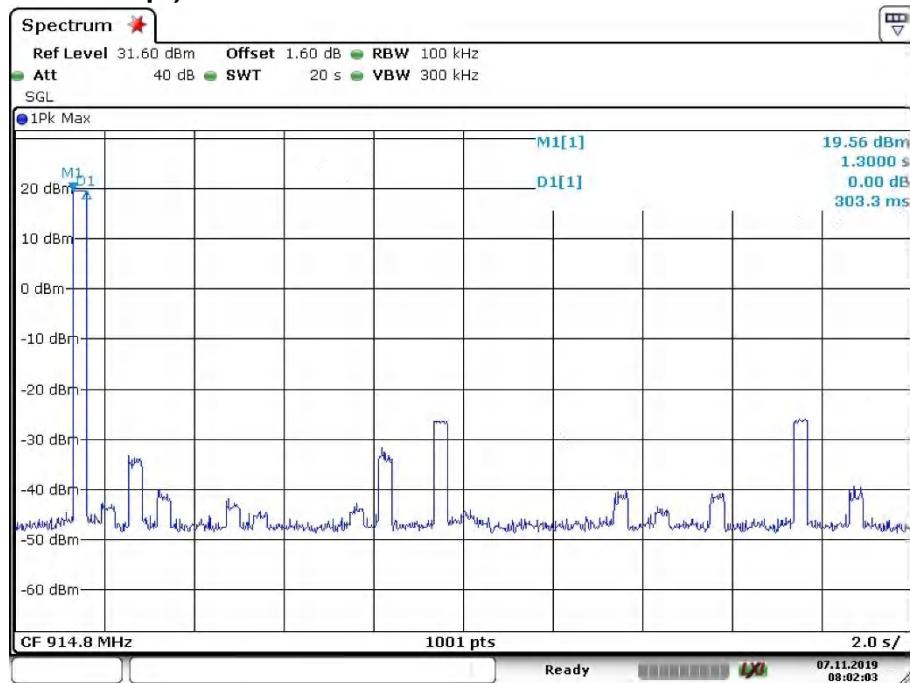
### Appendix C.5: Test Results of Time of Occupancy FHSs#1 (Bandwidth: 250KHz)



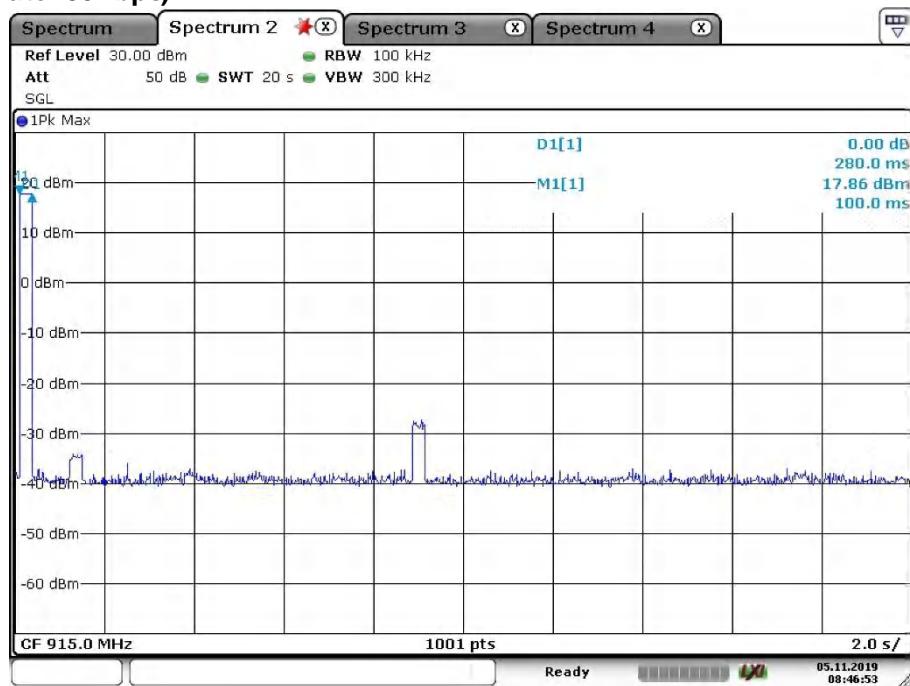
### FHSs#2 (Bandwidth: 125KHz)



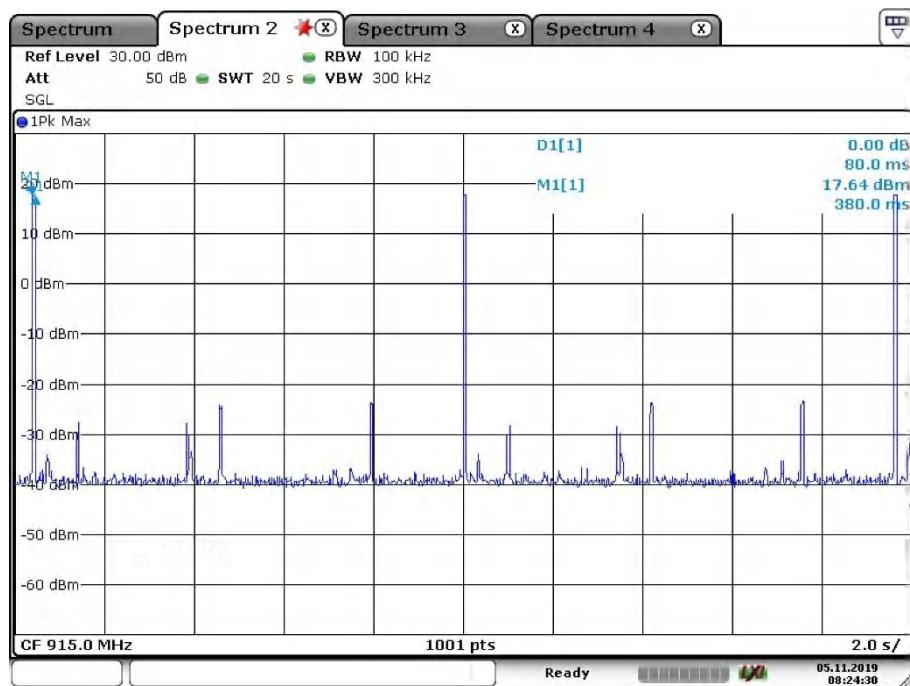
### FHSs#3 (DataRate: 150Kbps)



### FHSs#4 (DataRate: 50Kbps)



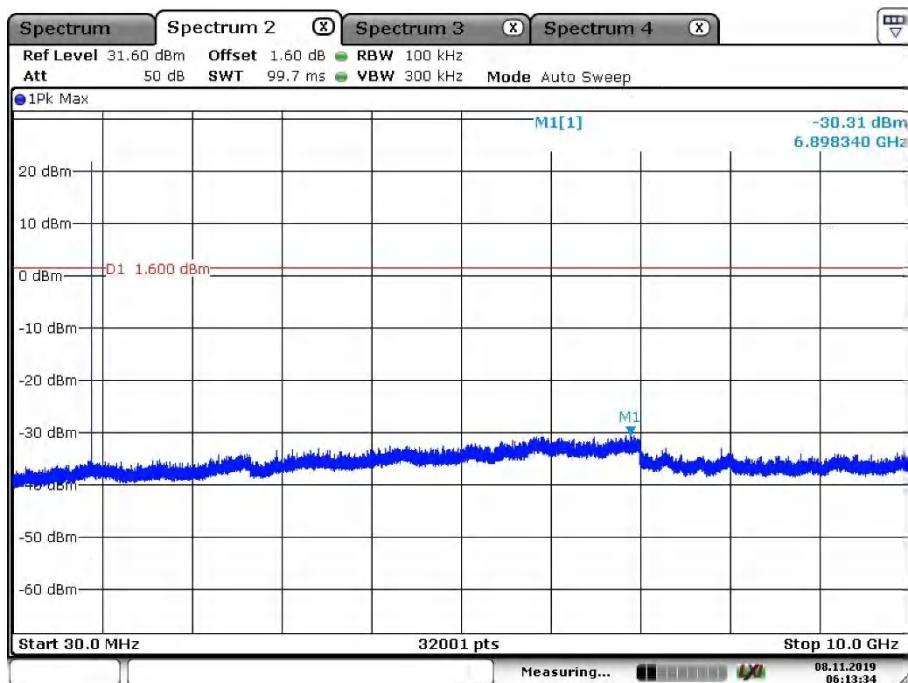
### FHS#5 (DataRate: 5Kbps)



## Appendix C.6: Test Results of Conducted Spurious Emissions Measured in 100 kHz Bandwidth

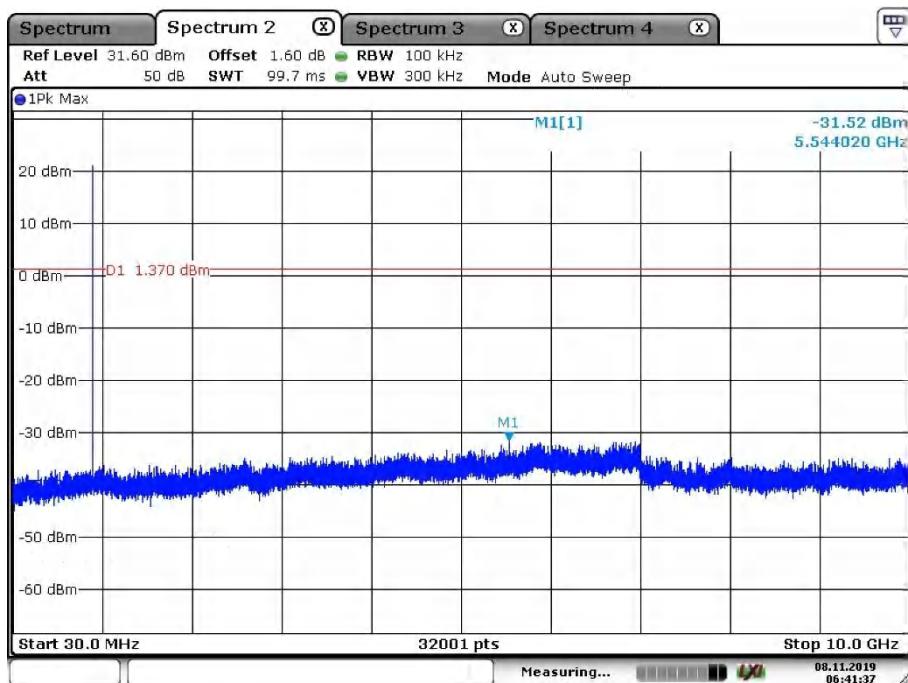
### FHS#1 (Bandwidth: 250KHz)

Low Channel



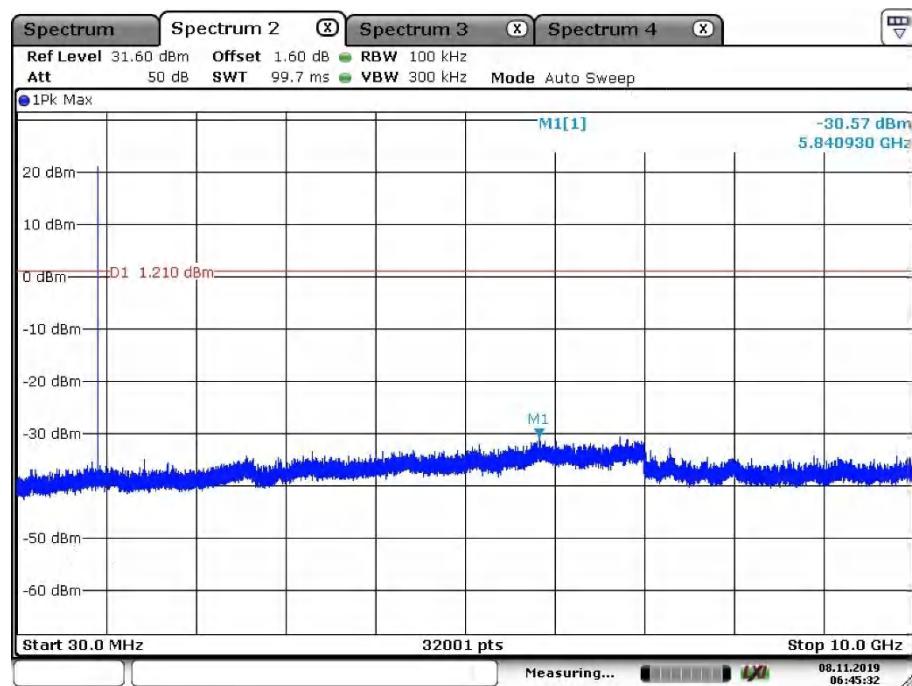
Date: 8.NOV.2019 06:13:34

Middle Channel



Date: 8.NOV.2019 06:41:37

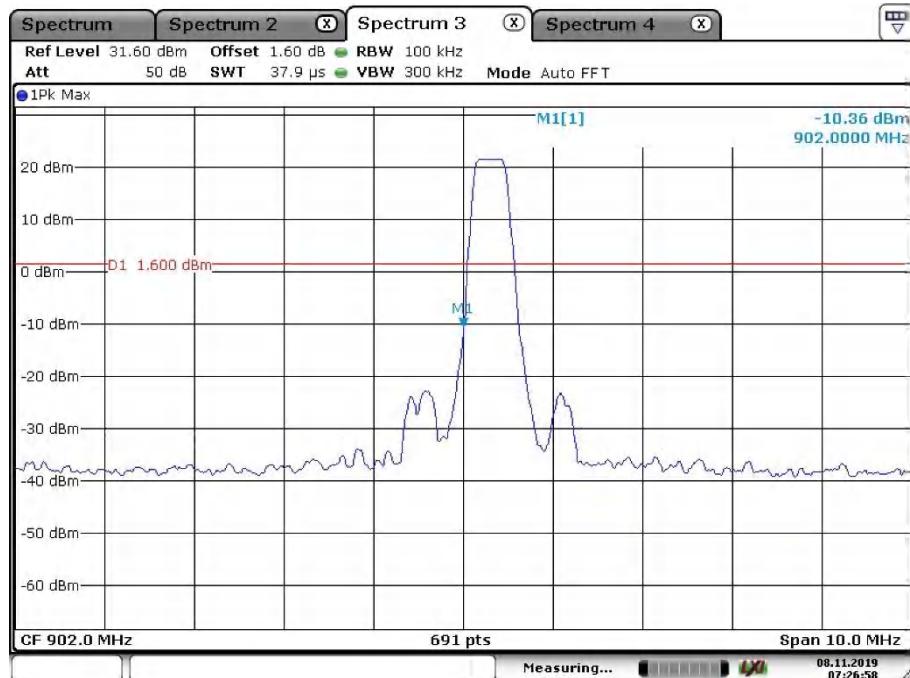
High Channel



Date: 8.NOV.2019 06:45:32

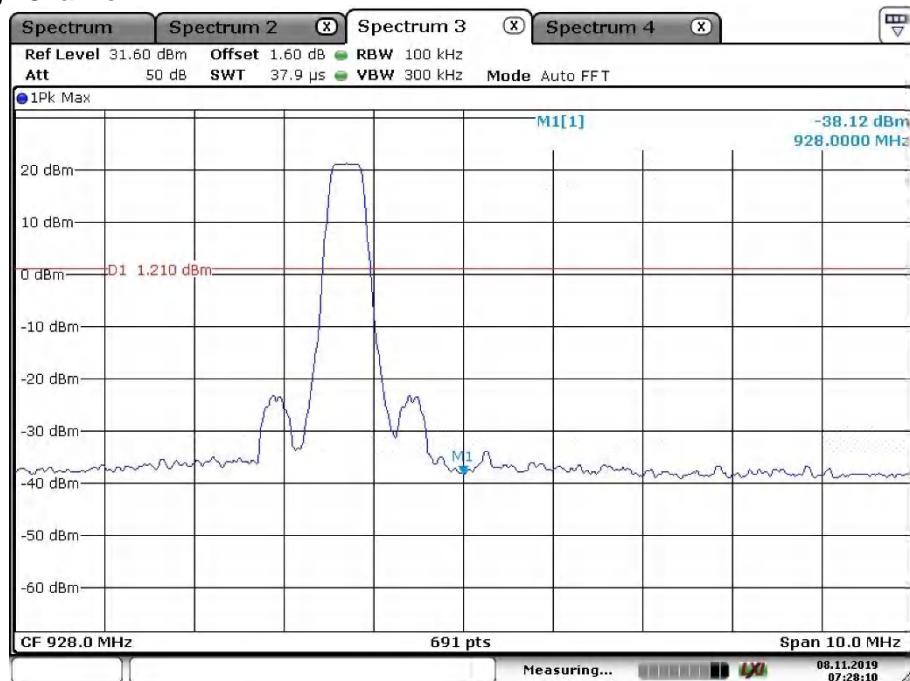
08.11.2019  
06:45:32

Band Edge, Low Channel



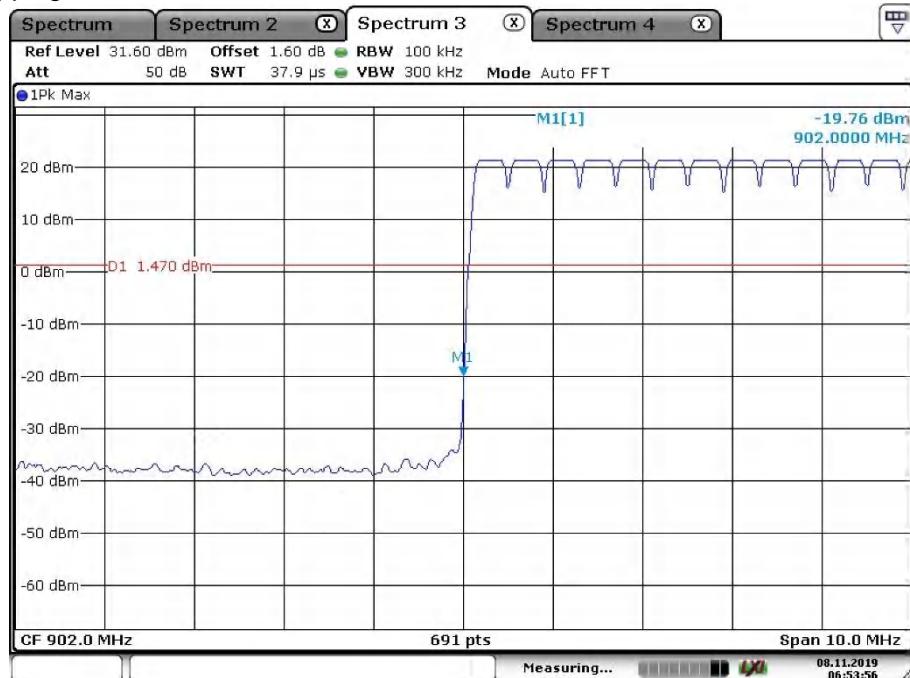
Date: 8.NOV.2019 07:26:58

Band Edge, High Channel



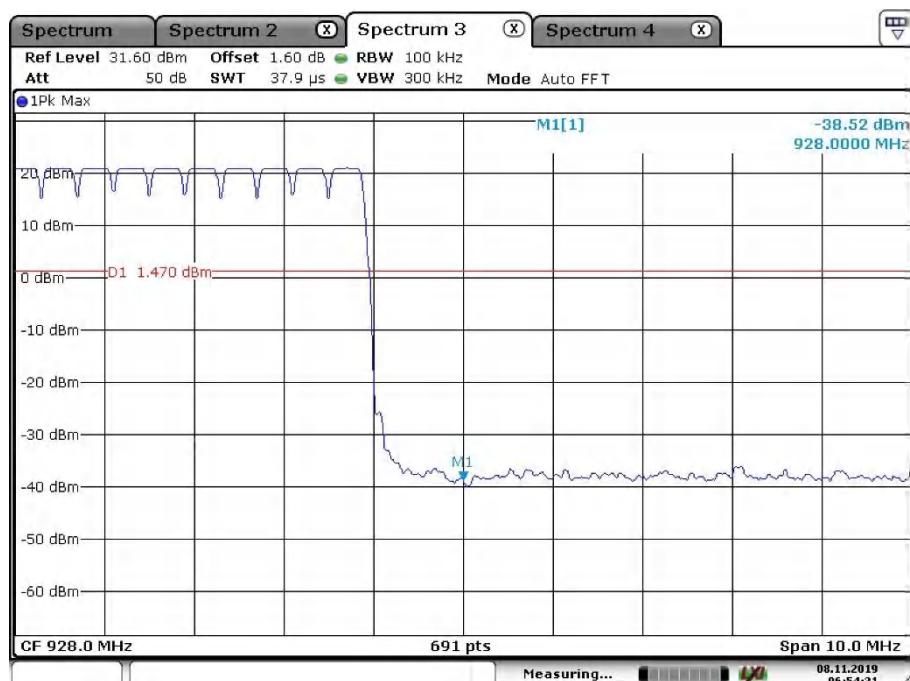
Date: 8.NOV.2019 07:28:10

Band Edge, Hopping Mode, Low Channel



Date: 8.NOV.2019 06:53:56

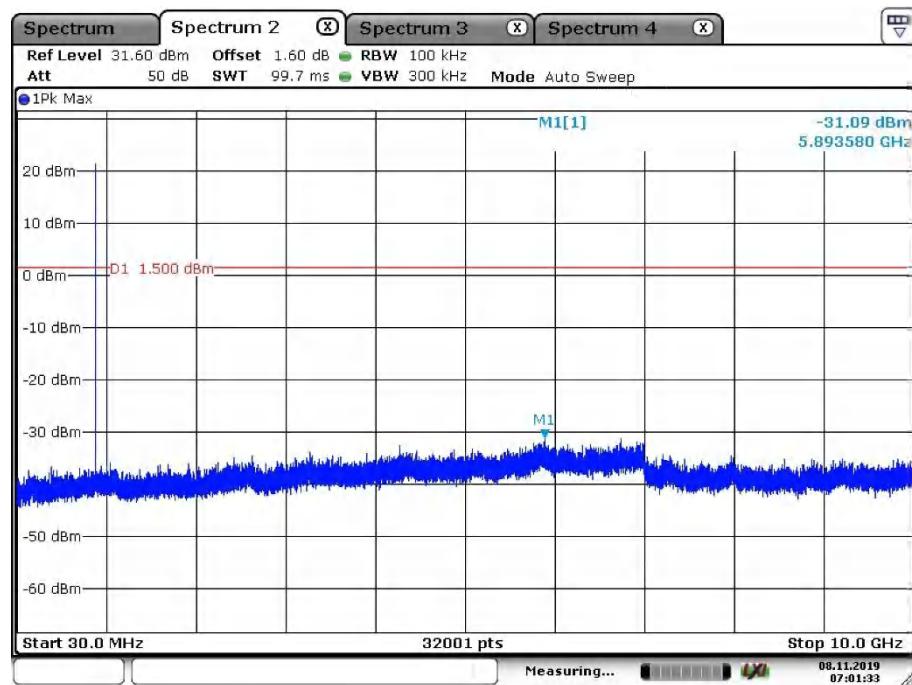
Band Edge, Hopping Mode, High Channle



Date: 8.NOV.2019 06:54:32

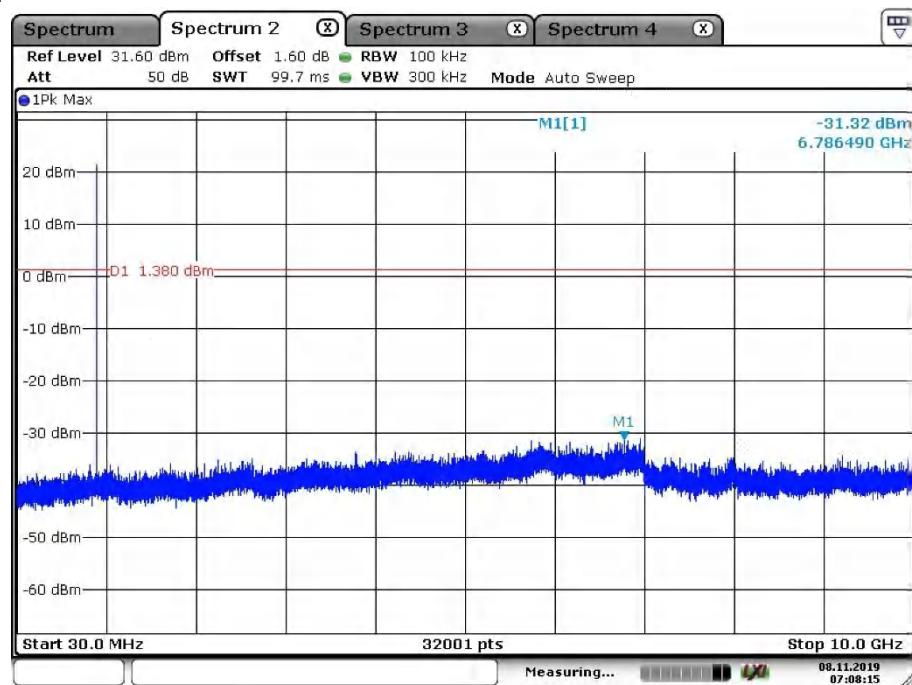
### FHSs#2 (Bandwidth: 125KHz)

Low Channel



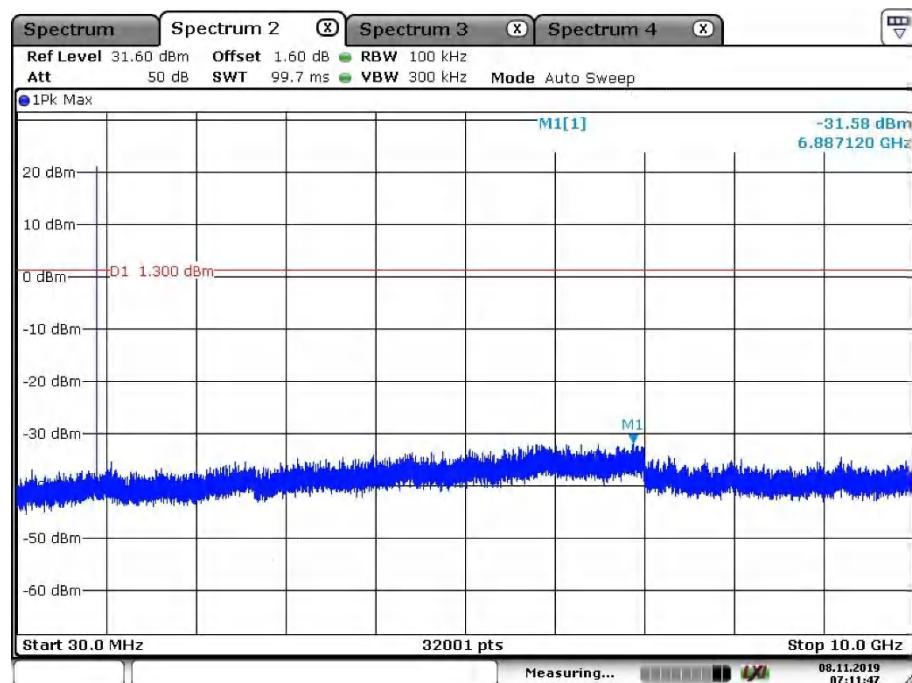
Date: 8.NOV.2019 07:01:33

Middle Channel



Date: 8.NOV.2019 07:08:15

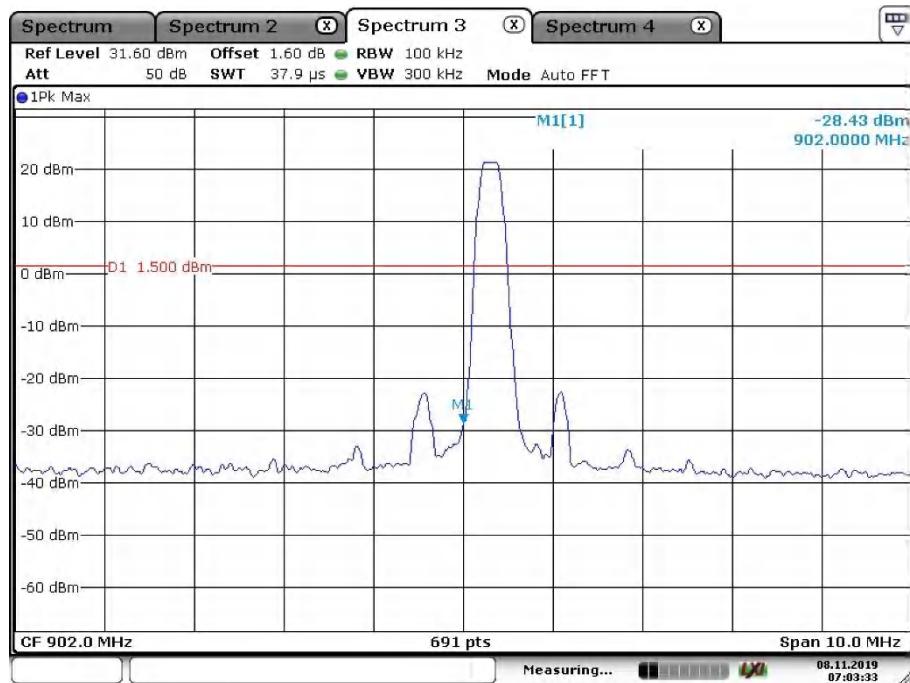
High Channel



Date: 8.NOV.2019 07:11:47

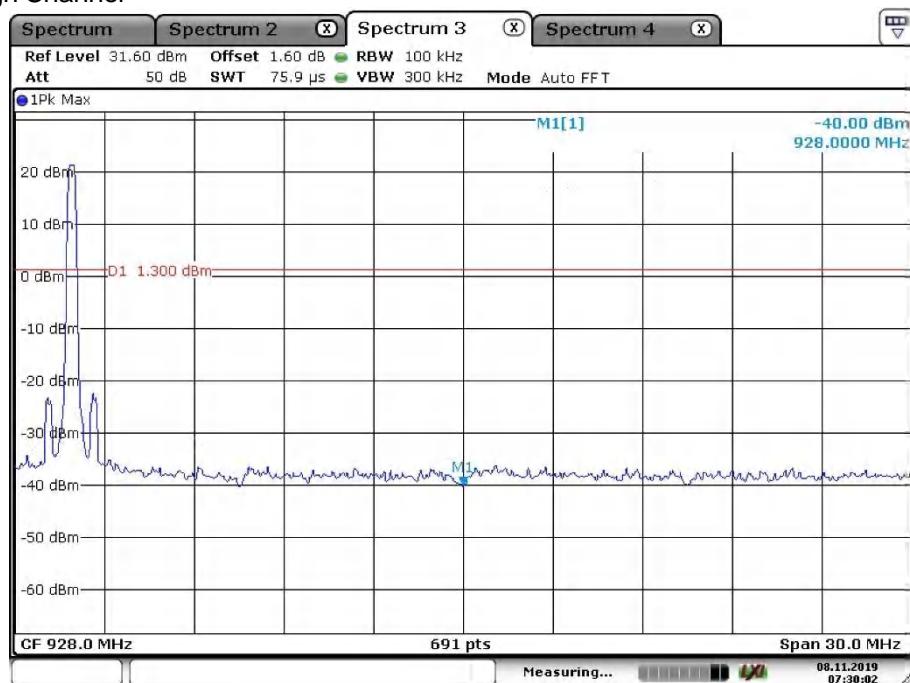
08.11.2019  
07:11:47

Band Edge, Low Channel



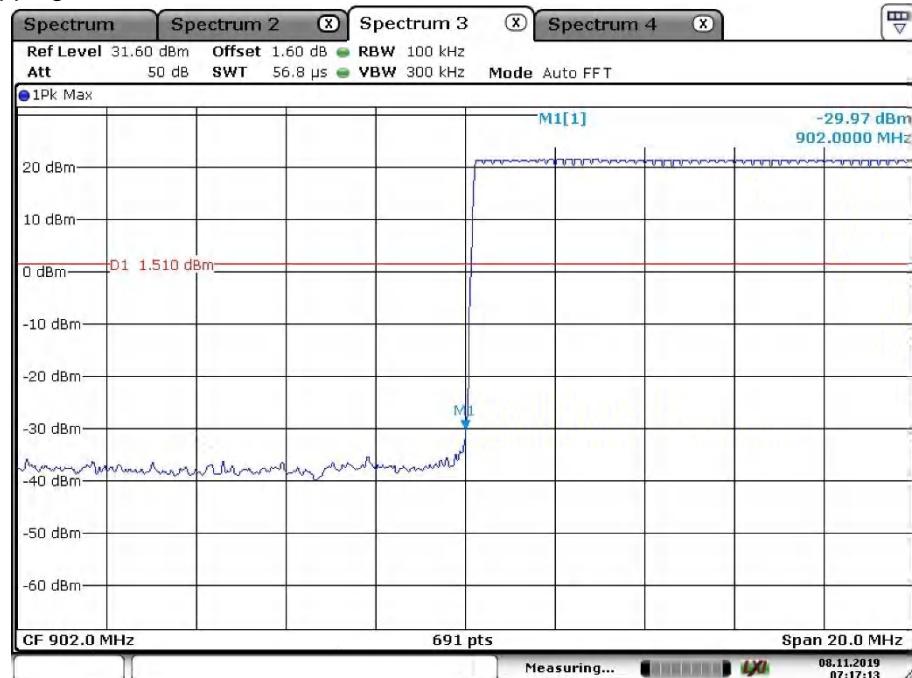
Date: 8.NOV.2019 07:03:33

Band Edge, High Channel



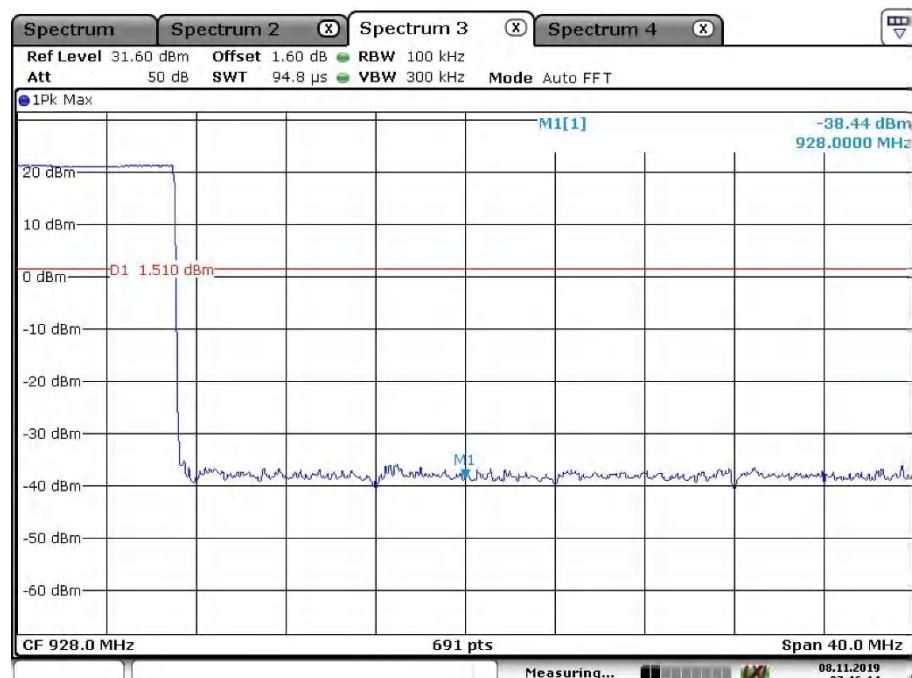
Date: 8.NOV.2019 07:30:02

Band Edge, Hopping Mode, Low Channel



Date: 8.NOV.2019 07:17:13

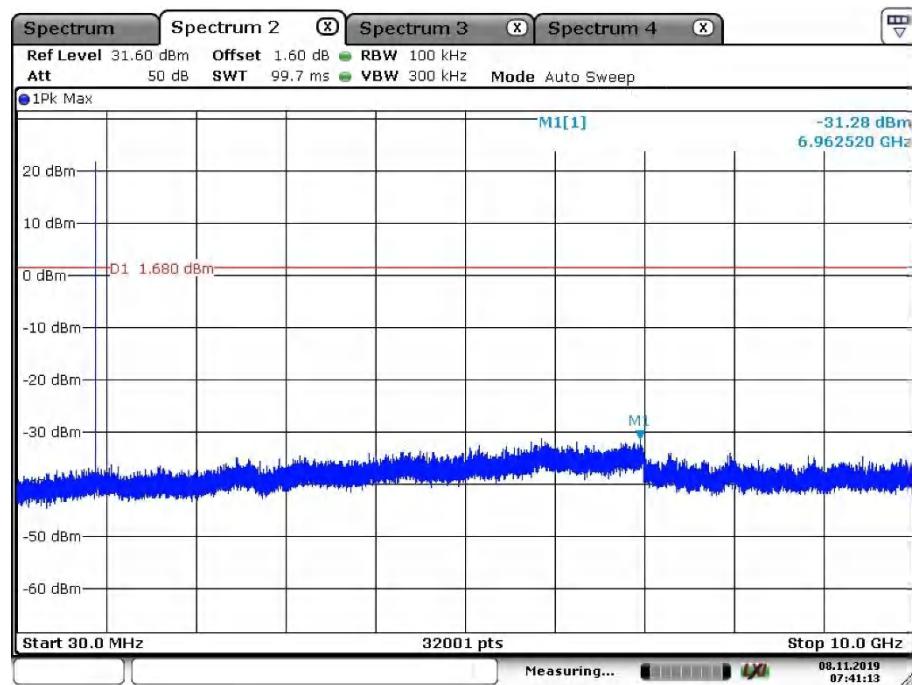
Band Edge, Hopping Mode, High Channle



Date: 8.NOV.2019 07:16:14

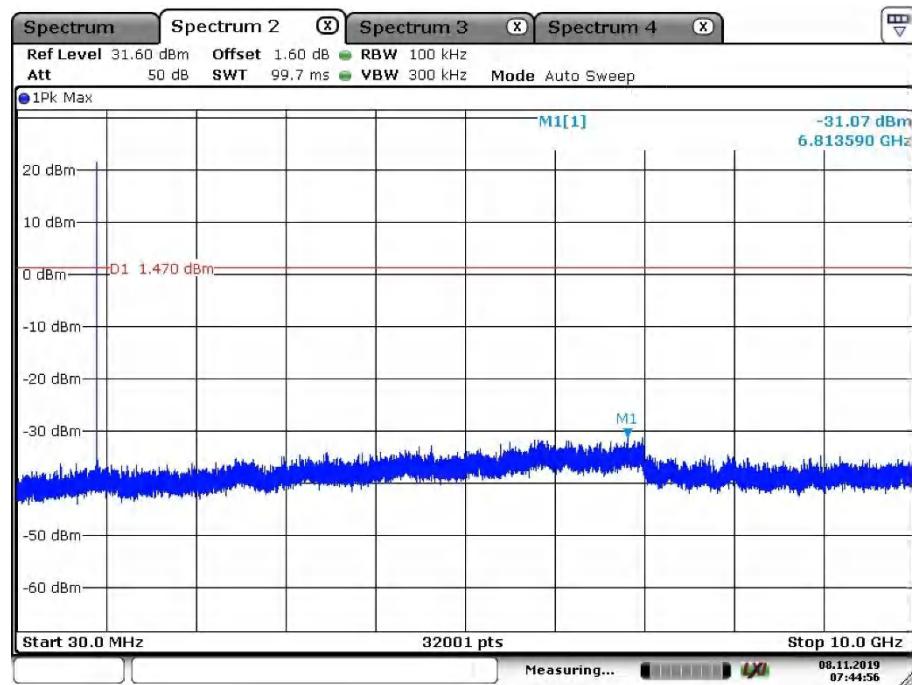
### FHSs#3 (DataRate: 150Kbps)

Low Channel



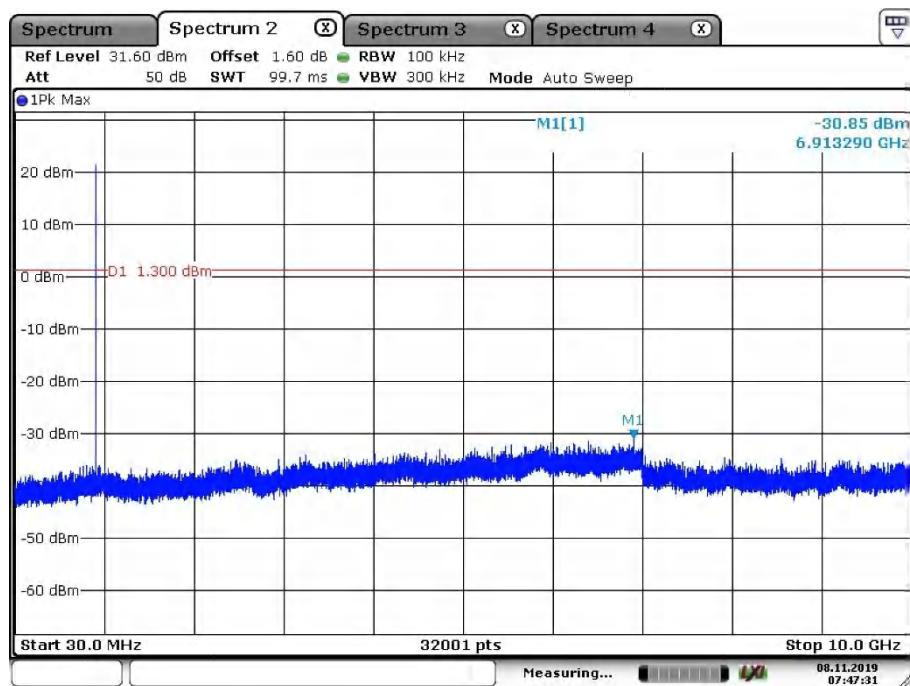
Date: 8.NOV.2019 07:41:14

Middle Channel



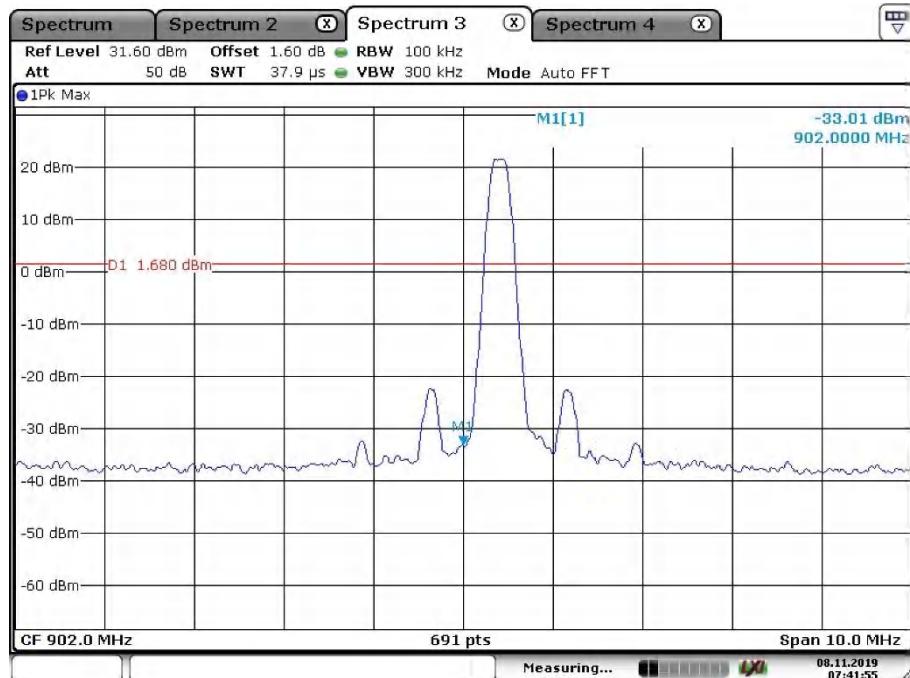
Date: 8.NOV.2019 07:44:56

High Channel



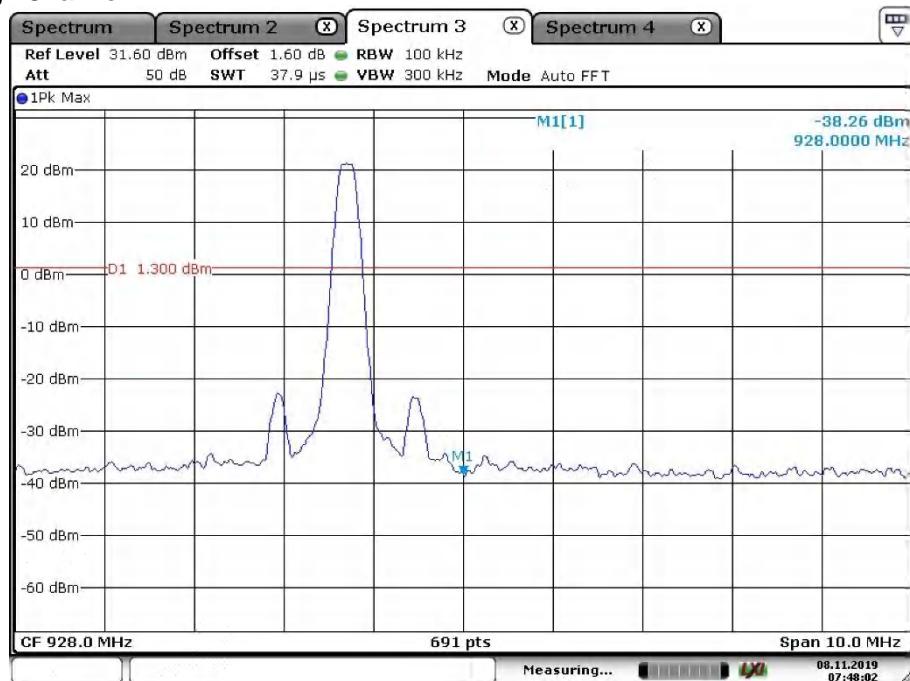
Date: 8.NOV.2019 07:47:32

### Band Edge, Low Channel



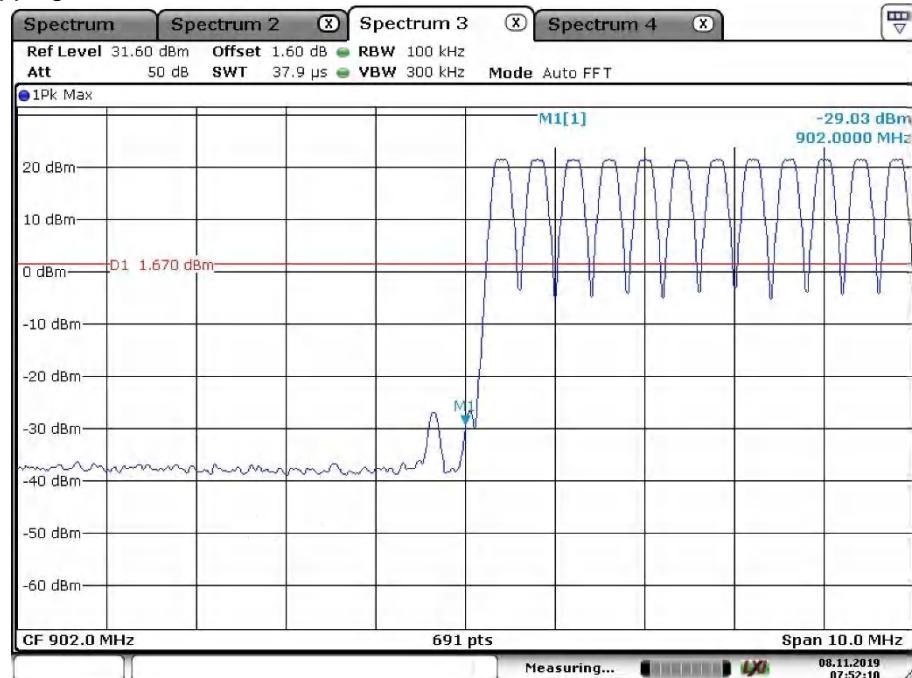
Date: 8.NOV.2019 07:41:55

### Band Edge, High Channel



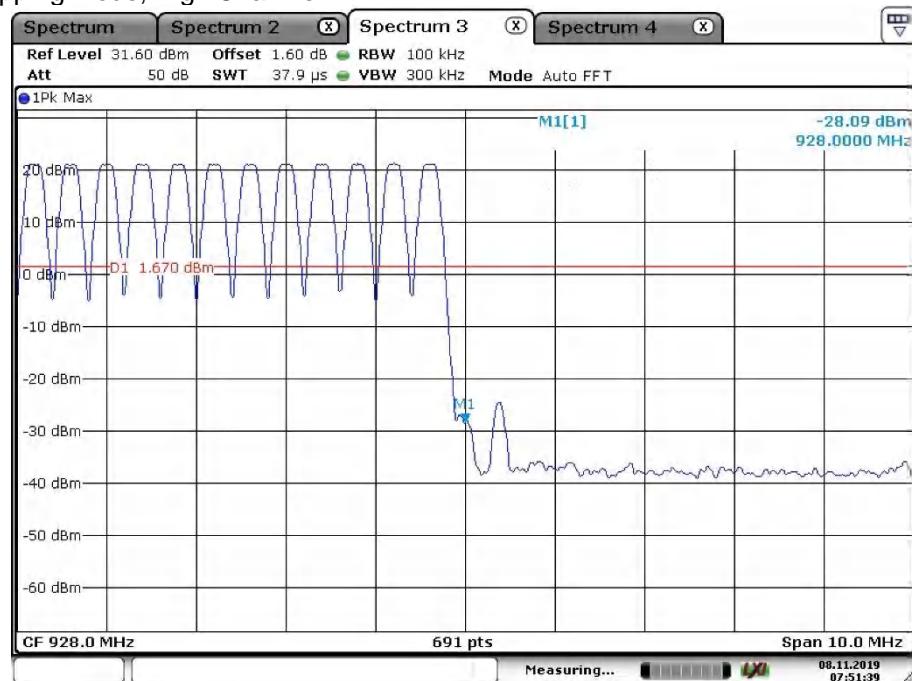
Date: 8.NOV.2019 07:48:02

Band Edge, Hopping Mode, Low Channel



Date: 8.NOV.2019 07:52:11

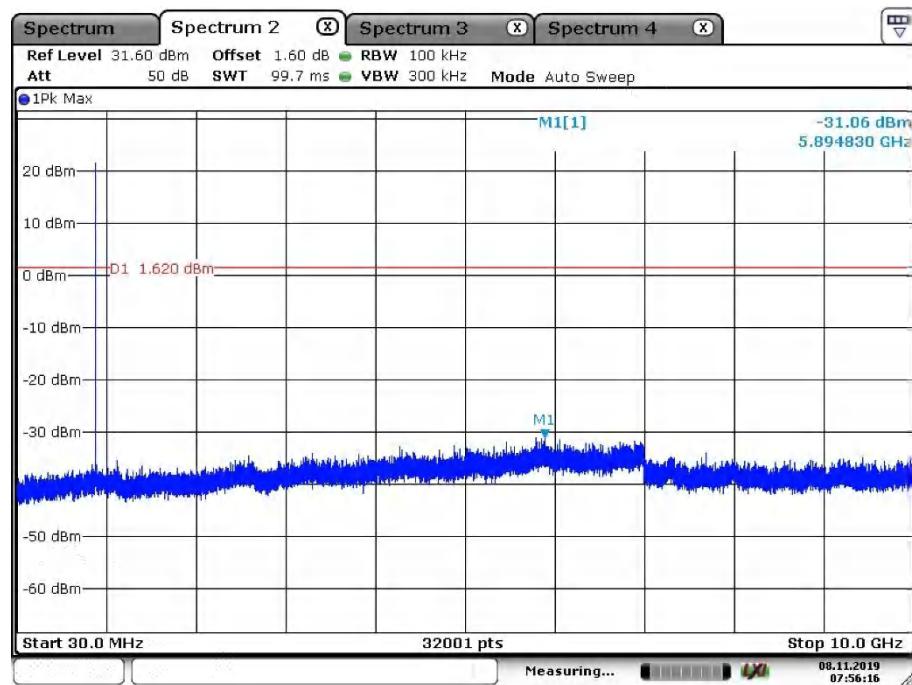
Band Edge, Hopping Mode, High Channle



Date: 8.NOV.2019 07:51:39

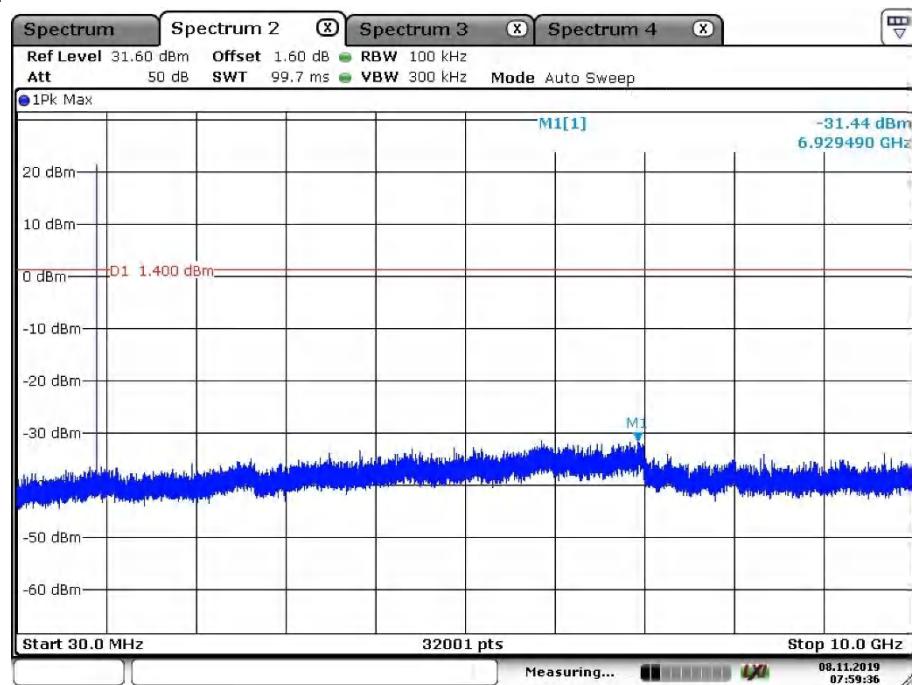
### FHSs#4 (DataRate: 50Kbps)

Low Channel



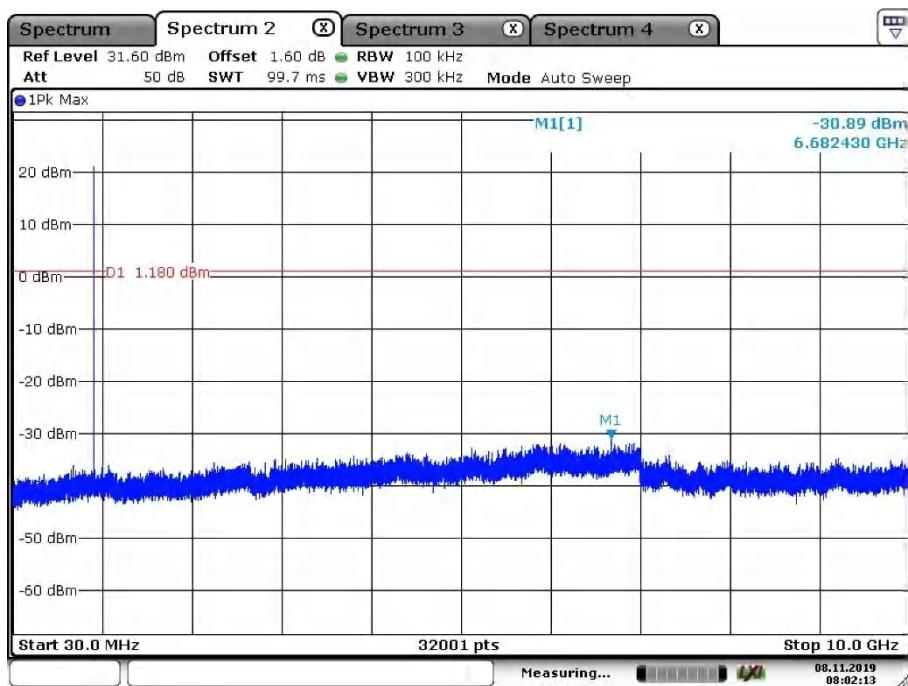
Date: 8.NOV.2019 07:56:16

Middle Channel



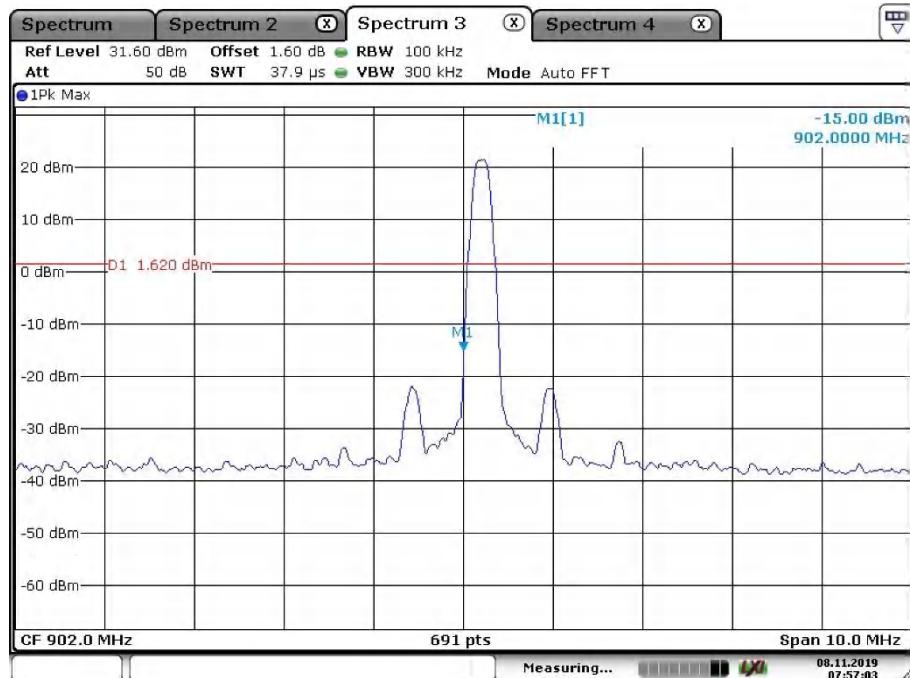
Date: 8.NOV.2019 07:59:37

High Channel



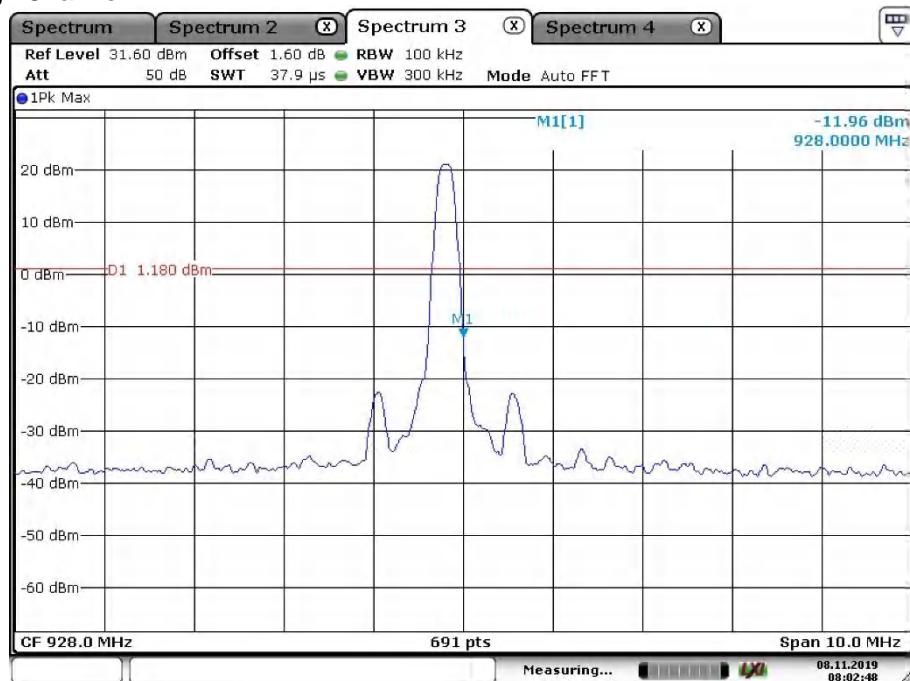
Date: 8.NOV.2019 08:02:13

Band Edge, Low Channel



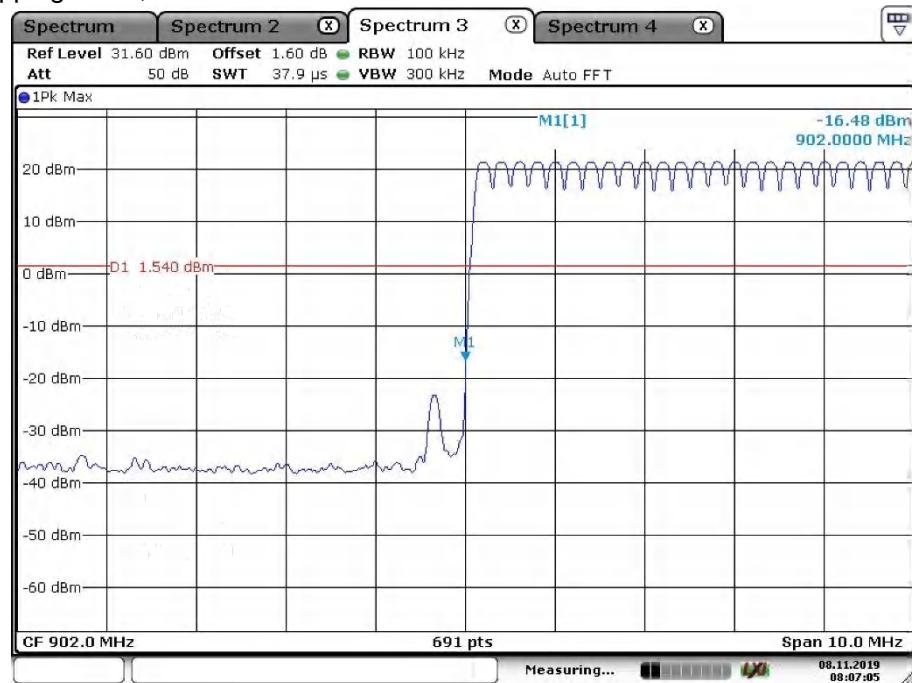
Date: 8.NOV.2019 07:57:03

Band Edge, High Channel



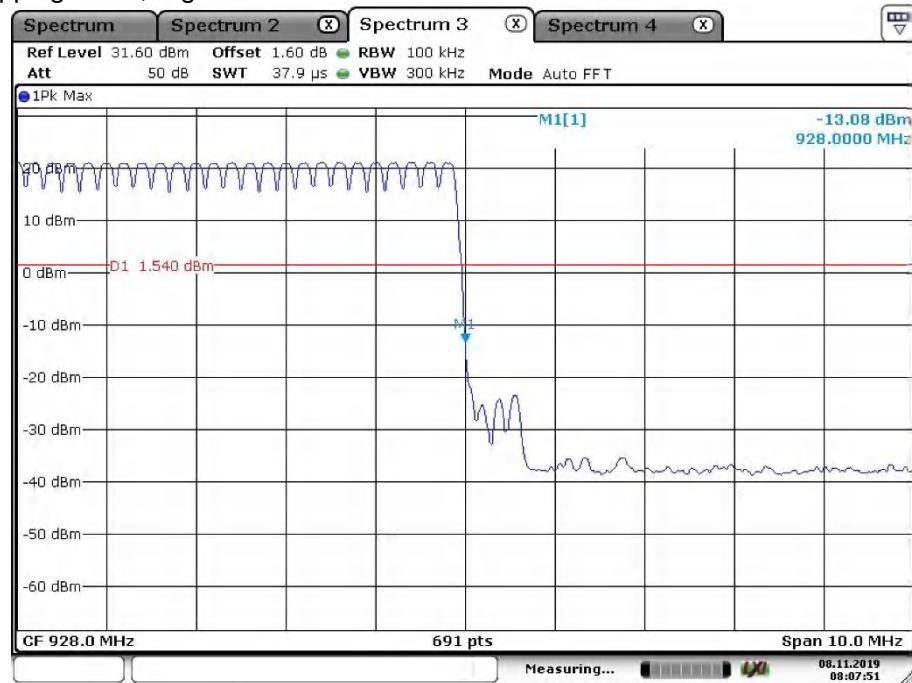
Date: 8.NOV.2019 08:02:48

Band Edge, Hopping Mode, Low Channel



Date: 8.NOV.2019 08:07:06

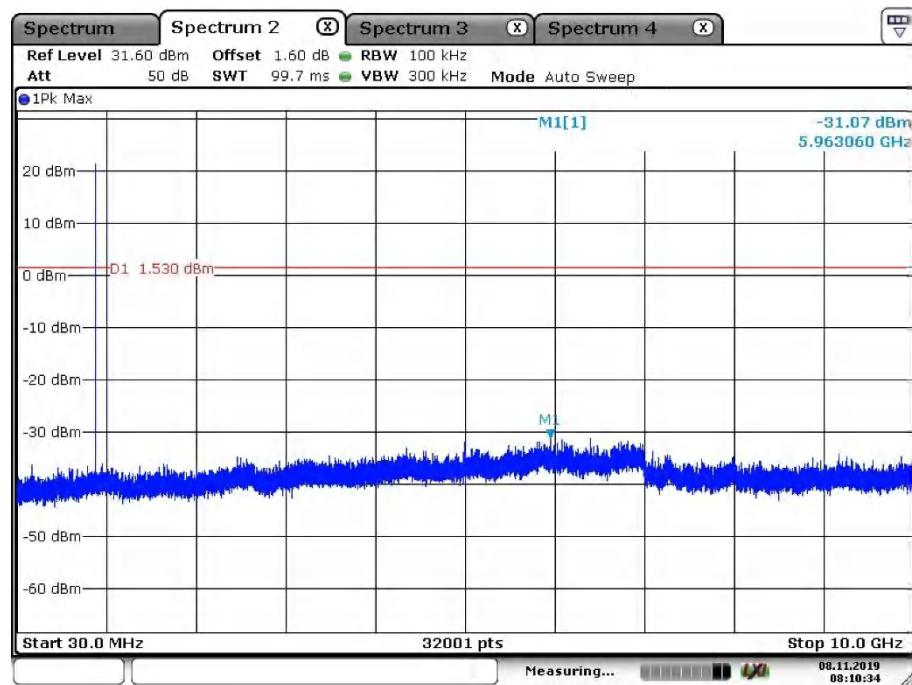
Band Edge, Hopping Mode, High Channle



Date: 8.NOV.2019 08:07:51

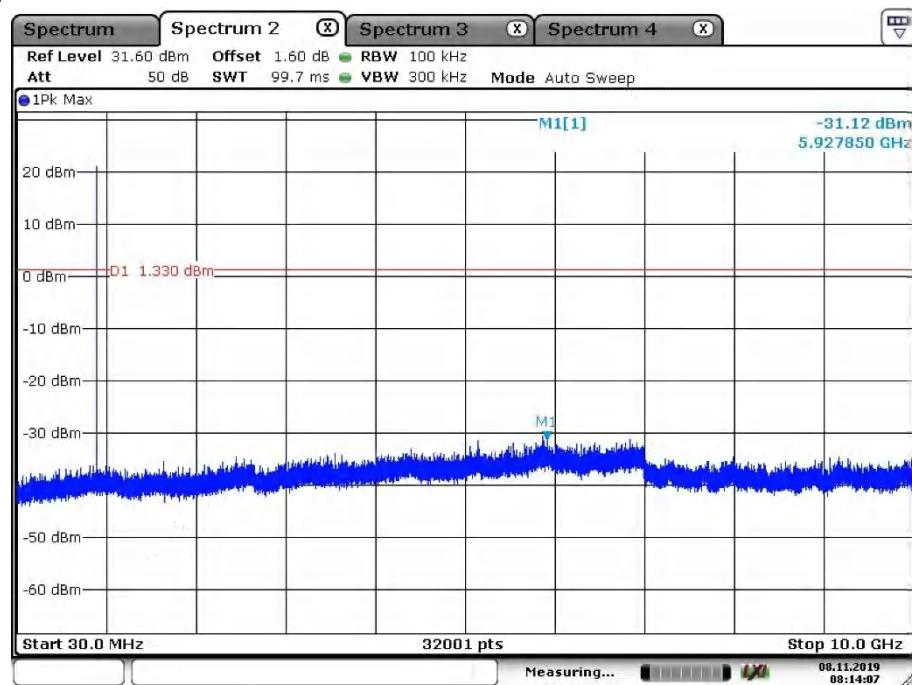
### FHSs#5 (DataRate: 5Kbps)

Low Channel



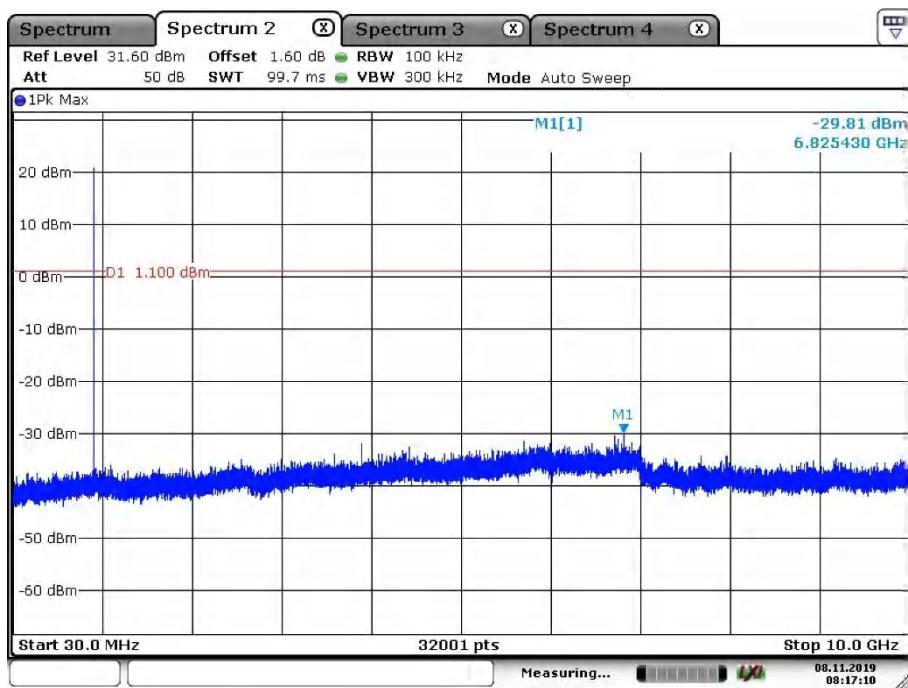
Date: 8.NOV.2019 08:10:34

Middle Channel



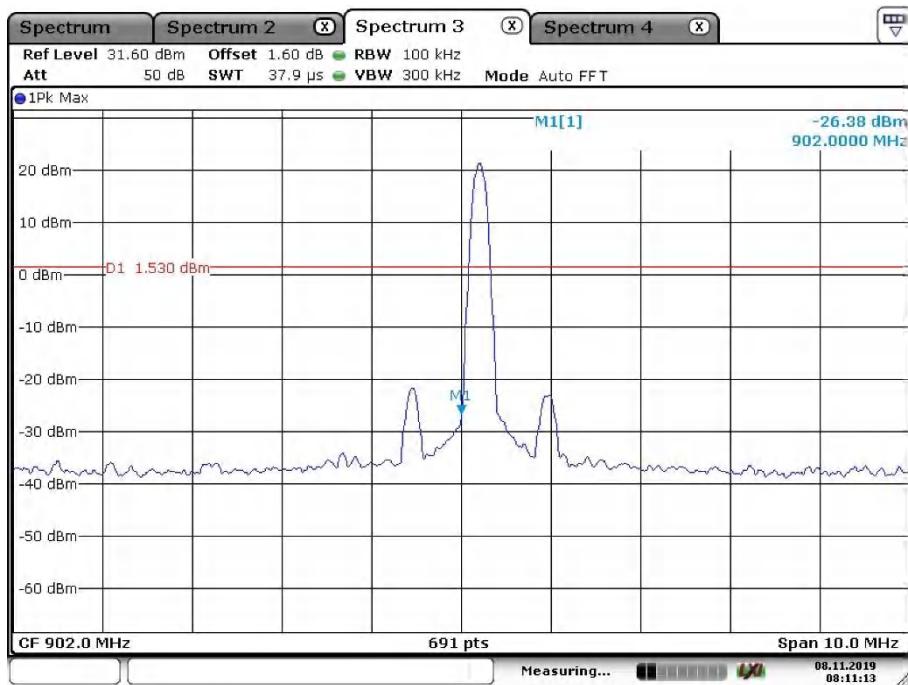
Date: 8.NOV.2019 08:14:08

High Channel

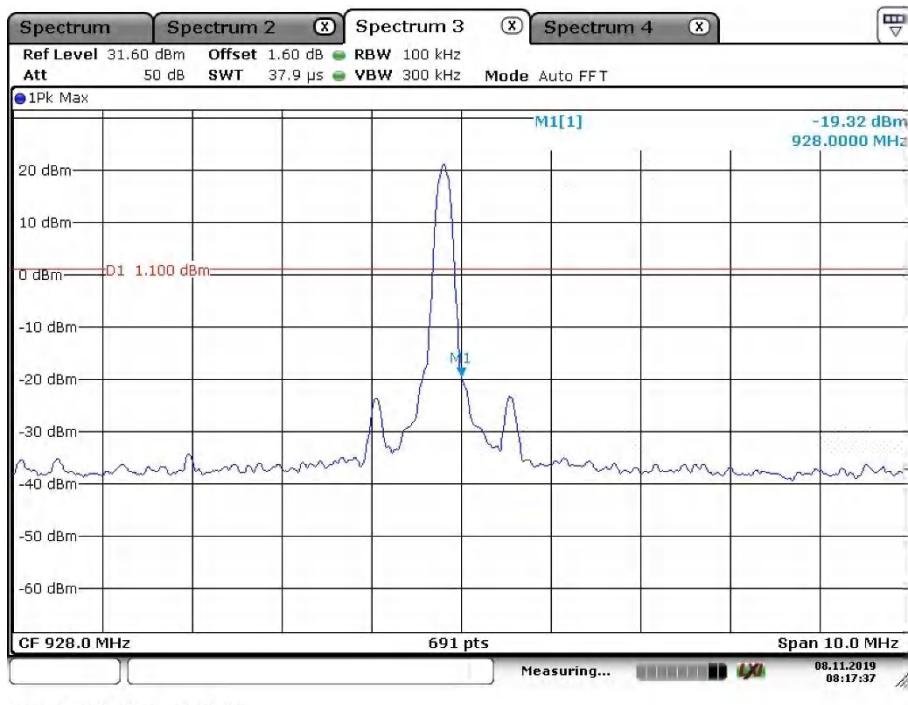


Date: 8.NOV.2019 08:17:11

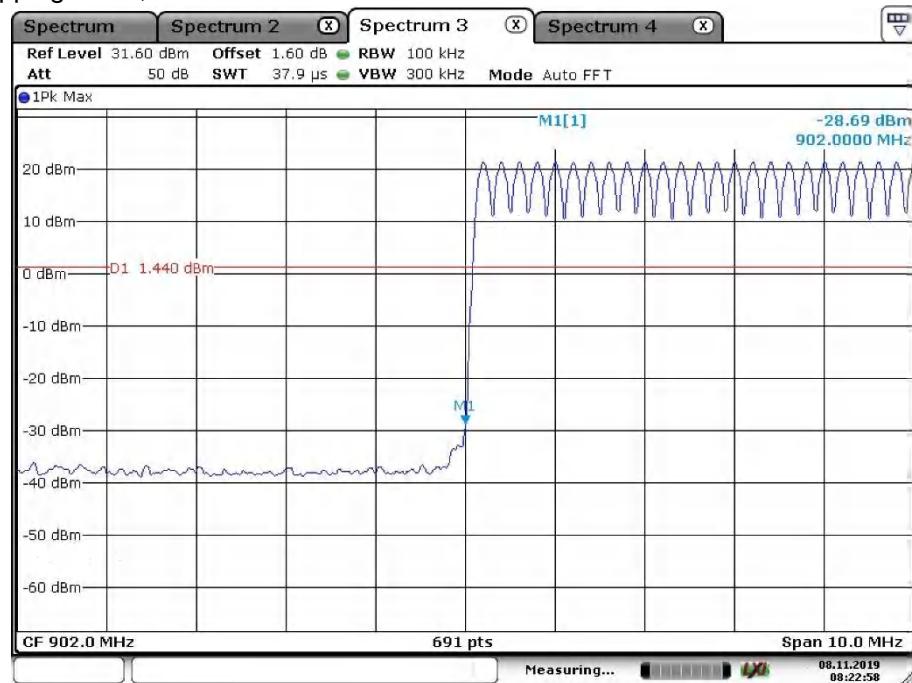
### Band Edge, Low Channel



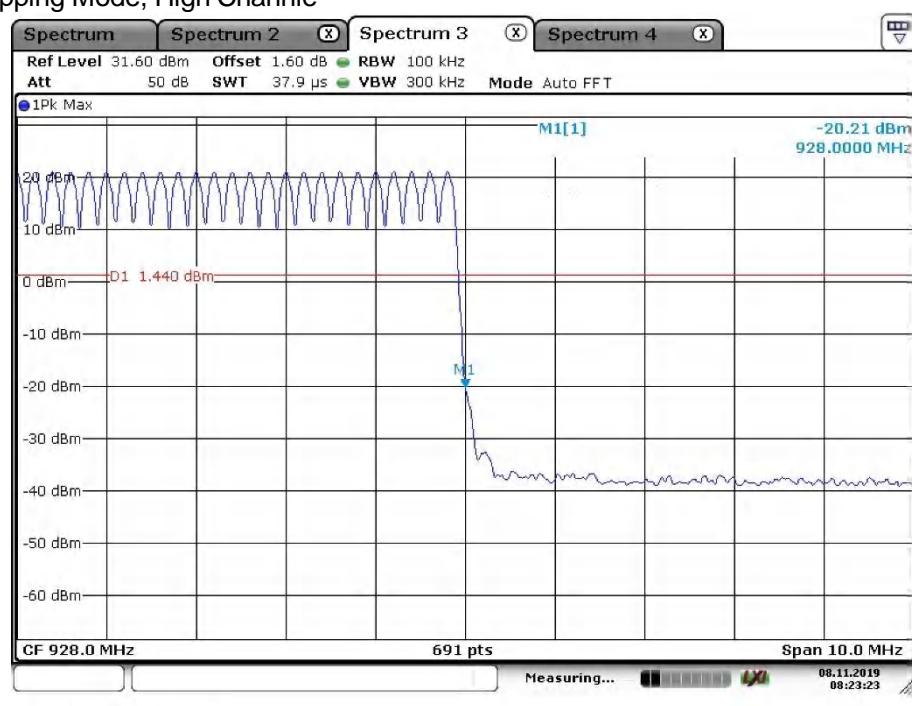
### Band Edge, High Channel



Band Edge, Hopping Mode, Low Channel



Band Edge, Hopping Mode, High Channle



## Appendix C.7: Test Results of Conducted Emission on AC Mains

Bluetooth connecting mode

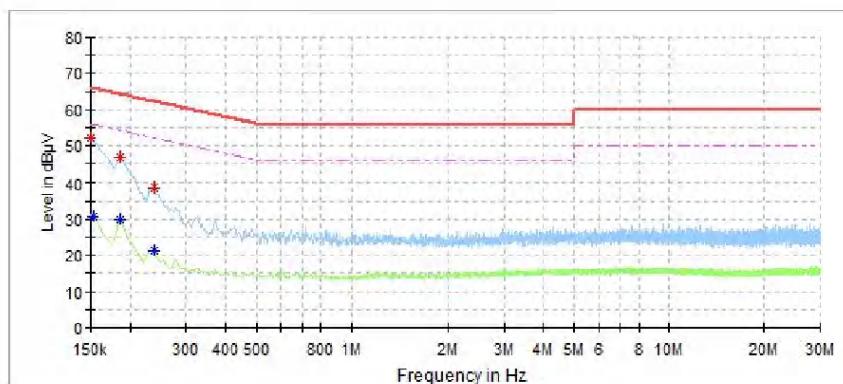
L-120V-BT

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### Test Report

#### EUT Information

EUT Name: Ring Smart Lightbulb  
Model: PAR38  
Order No.: 168134202 50  
Test Mode: Bluetooth connecting  
Test Voltage: AC120V50Hz  
Test By: Tom Guo  
Review By: Gary Chen



#### Critical\_Freqs

Frequency (MHz)	MaxPeak (dB $\mu$ V)	Average (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	51.92	---	66.00	14.08	---	---	L1	9.6
0.154000	---	30.87	55.78	24.91	---	---	L1	9.6
0.186000	---	30.07	54.21	24.15	---	---	L1	9.6
0.186000	46.70	---	64.21	17.52	---	---	L1	9.6
0.238000	---	21.52	52.17	30.64	---	---	L1	9.6
0.238000	38.71	---	62.17	23.46	---	---	L1	9.6

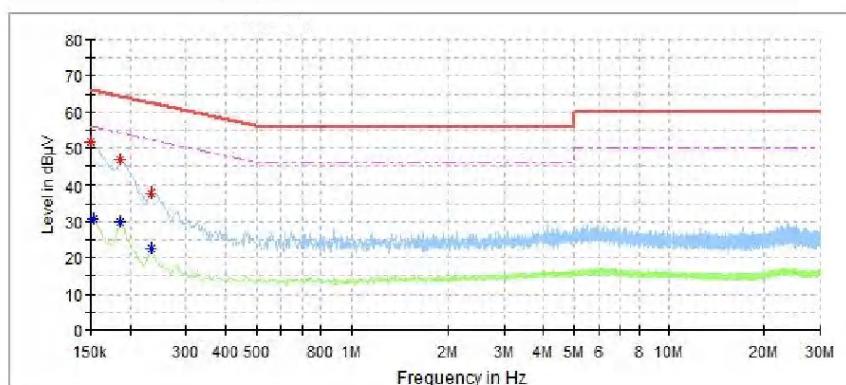
N-120V-BT

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## Test Report

### EUT Information

EUT Name: Ring Smart Lightbulb  
Model: PAR38  
Order No.: 168134202 50  
Test Mode: Bluetooth connecting  
Test Voltage: AC120V50Hz  
Test By: Tom Guo  
Review By: Gary Chen



### Critical\_Freqs

Frequency (MHz)	MaxPeak (dB <sub>A</sub> )	Average (dB <sub>A</sub> )	Limit (dB <sub>A</sub> )	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	51.74	---	66.00	14.26	---	---	N	9.6
0.154000	---	30.59	55.78	25.19	---	---	N	9.6
0.186000	---	29.89	54.21	24.33	---	---	N	9.6
0.186000	46.93	---	64.21	17.29	---	---	N	9.6
0.234000	---	22.63	52.31	29.68	---	---	N	9.6
0.234000	37.70	---	62.31	24.60	---	---	N	9.6

DTSs connecting mode

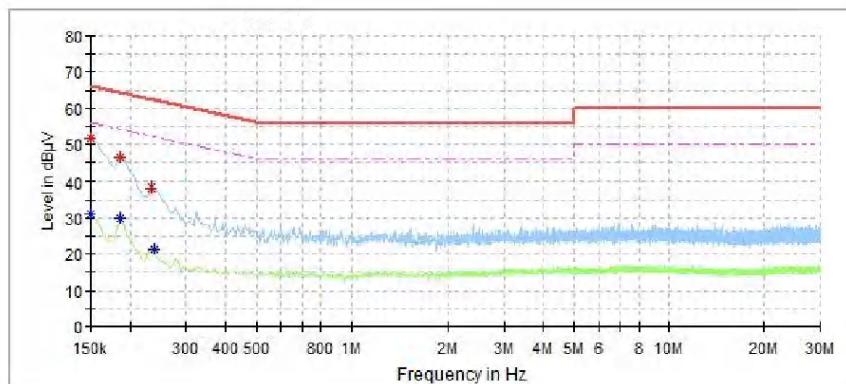
L-120V-DTSs

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## Test Report

### EUT Information

EUT Name: Ring Smart Lightbulb  
Model: PAR38  
Order No.: 168134202 50  
Test Mode: DTSs conneting  
Test Voltage: AC120V50Hz  
Test By: Tom Guo  
Review By: Gary Chen



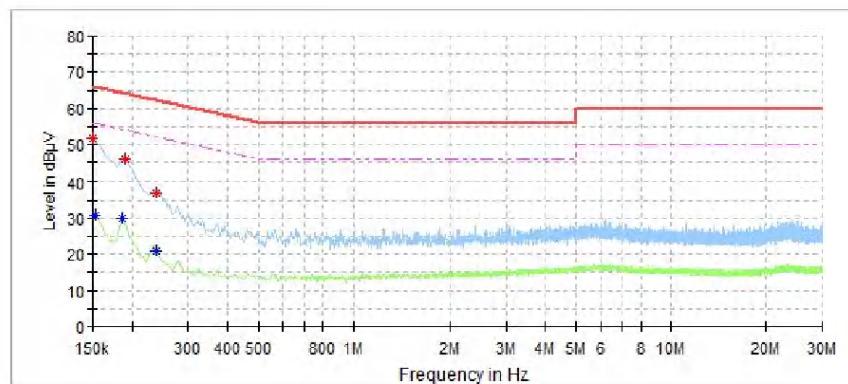
### Critical\_Freqs

Frequency (MHz)	MaxPeak (dB <sub>A</sub> )	Average (dB <sub>A</sub> )	Limit (dB <sub>A</sub> )	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	31.10	56.00	24.90	---	---	L1	9.6
0.150000	51.88	---	66.00	14.12	---	---	L1	9.6
0.186000	---	29.99	54.21	24.22	---	---	L1	9.6
0.186000	46.45	---	64.21	17.77	---	---	L1	9.6
0.234000	38.03	---	62.31	24.27	---	---	L1	9.6
0.238000	---	21.17	52.17	30.99	---	---	L1	9.6

## Test Report

### EUT Information

EUT Name: Ring Smart Lightbulb  
Model: PAR38  
Order No.: 168134202 50  
Test Mode: DTSs conneting  
Test Voltage: AC120V50Hz  
Test By: Tom Guo  
Review By: Gary Chen  
EUT Name: Ring Smart Lightbulb



### Critical\_Freqs

Frequency (MHz)	MaxPeak (dB <sub>Peak</sub> )	Average (dB <sub>Peak</sub> )	Limit (dB <sub>Peak</sub> )	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	51.81	---	66.00	14.19	---	---	N	9.6
0.154000	---	30.57	55.78	25.21	---	---	N	9.6
0.186000	---	29.77	54.21	24.44	---	---	N	9.6
0.190000	45.88	---	64.04	18.16	---	---	N	9.6
0.238000	---	20.74	52.17	31.43	---	---	N	9.6
0.238000	36.88	---	62.17	25.29	---	---	N	9.6

FHSs connecting mode

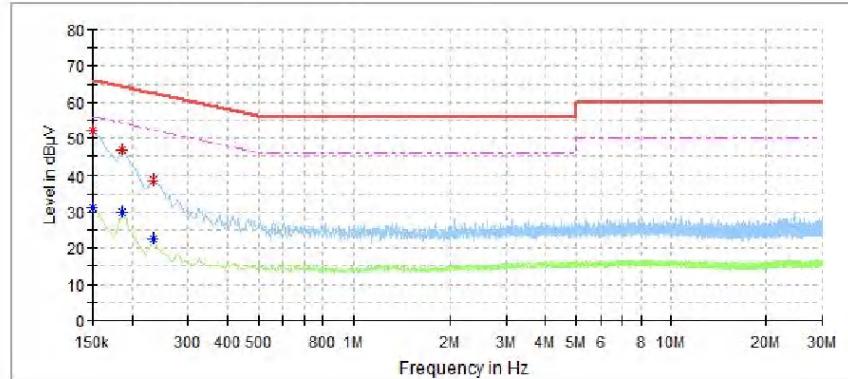
L-120V-FHSs

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## Test Report

### EUT Information

EUT Name: Ring Smart Lightbulb  
Model: PAR38  
Order No.: 168134202 50  
Test Mode: FHSs conneting  
Test Voltage: AC120V50Hz  
Test By: Tom Guo  
Review By: Gary Chen  
EUT Name: Ring Smart Lightbulb



### Critical\_Freqs

Frequency (MHz)	MaxPeak (dB <sub>A</sub> )	Average (dB <sub>A</sub> )	Limit (dB <sub>A</sub> )	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	31.14	56.00	24.86	---	---	L1	9.6
0.150000	51.98	---	66.00	14.02	---	---	L1	9.6
0.186000	---	29.89	54.21	24.33	---	---	L1	9.6
0.186000	46.65	---	64.21	17.56	---	---	L1	9.6
0.234000	---	22.59	52.31	29.72	---	---	L1	9.6
0.234000	38.75	---	62.31	23.55	---	---	L1	9.6

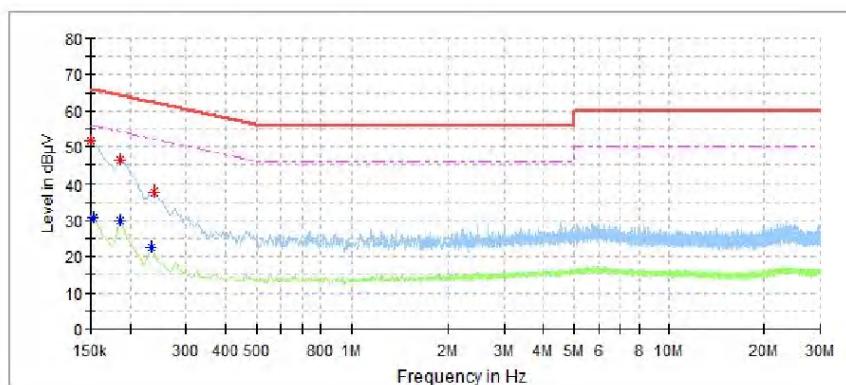
N-120V-FHSs

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## Test Report

### EUT Information

EUT Name: Ring Smart Lightbulb  
Model: PAR38  
Order No.: 168134202 50  
Test Mode: FHSs conneting  
Test Voltage: AC120V50Hz  
Test By: Tom Guo  
Review By: Gary Chen  
EUT Name: Ring Smart Lightbulb



### Critical Freqs

Frequency (MHz)	MaxPeak (dB <sub>A</sub> )	Average (dB <sub>A</sub> )	Limit (dB <sub>A</sub> )	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	51.80	---	66.00	14.20	---	---	N	9.6
0.154000	---	30.59	55.78	25.19	---	---	N	9.6
0.186000	---	29.87	54.21	24.34	---	---	N	9.6
0.186000	46.44	---	64.21	17.77	---	---	N	9.6
0.234000	---	22.48	52.31	29.83	---	---	N	9.6
0.238000	37.55	---	62.17	24.62	---	---	N	9.6