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

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High Channel

Date: 7.DEC.2019 10:46:41

FHSs#2 (Bandwidth: 125KHz)

Low Channel

Date: 7.DEC.2019 10:50:10

Middle Channel
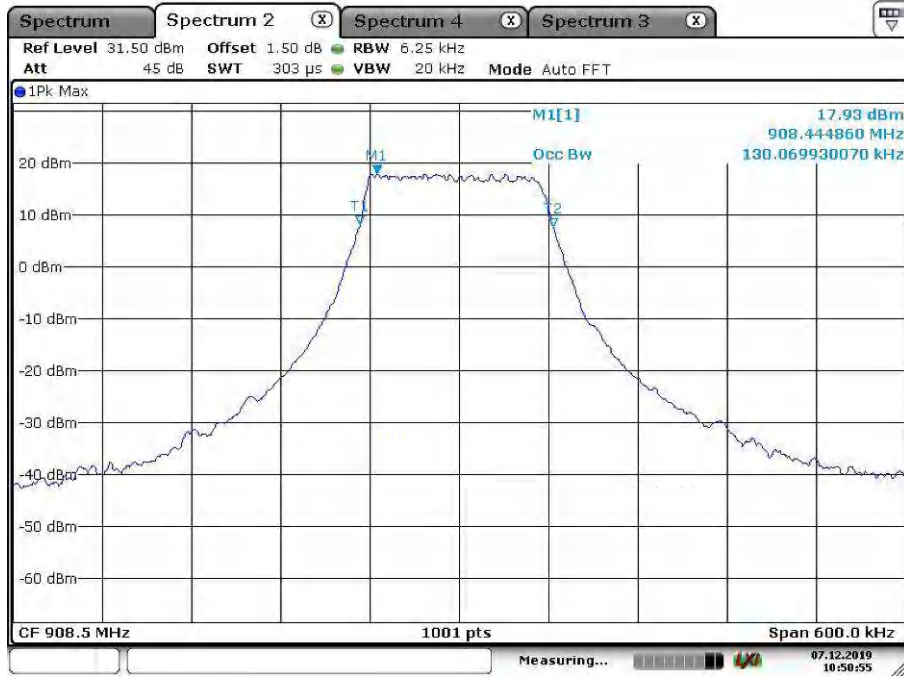
Date: 7.DEC.2019 10:50:56

High Channel

Date: 7.DEC.2019 10:56:47

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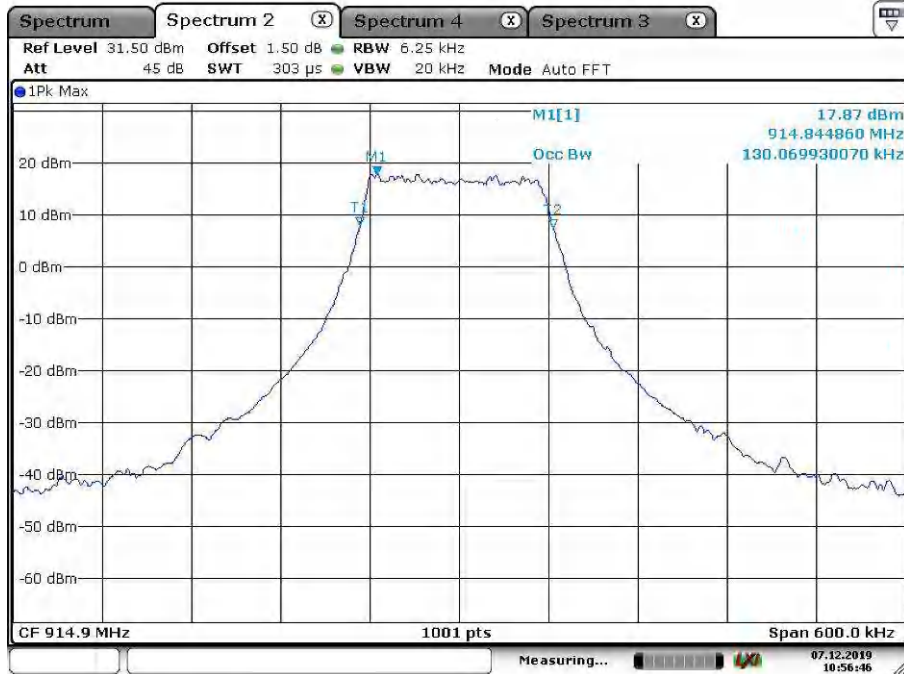
FHSs#3 (DataRate: 150Kbps)
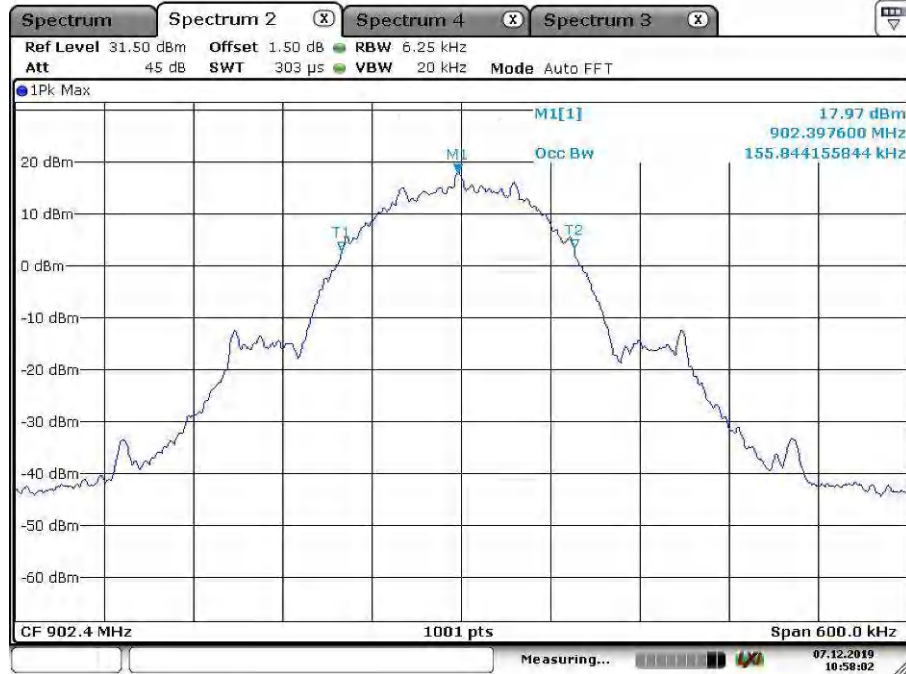
Low Channel

Date: 7.DEC.2019 10:58:03

Middle Channel

Date: 7.DEC.2019 11:00:16

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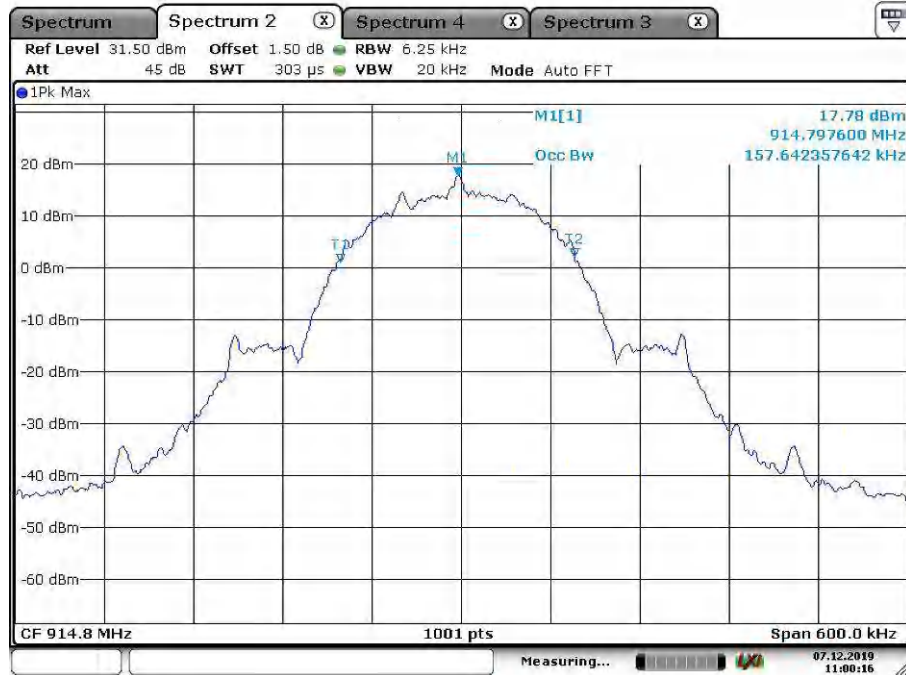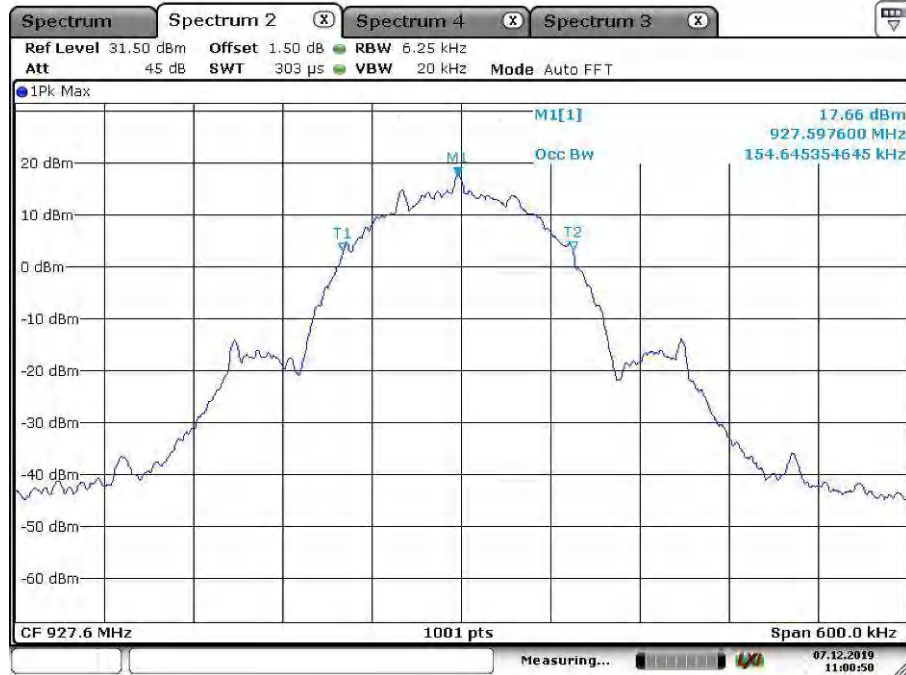
High Channel

Date: 7.DEC.2019 11:00:50

FHSs#4 (DataRate: 50Kbps)

Low Channel

Date: 7.DEC.2019 11:05:11

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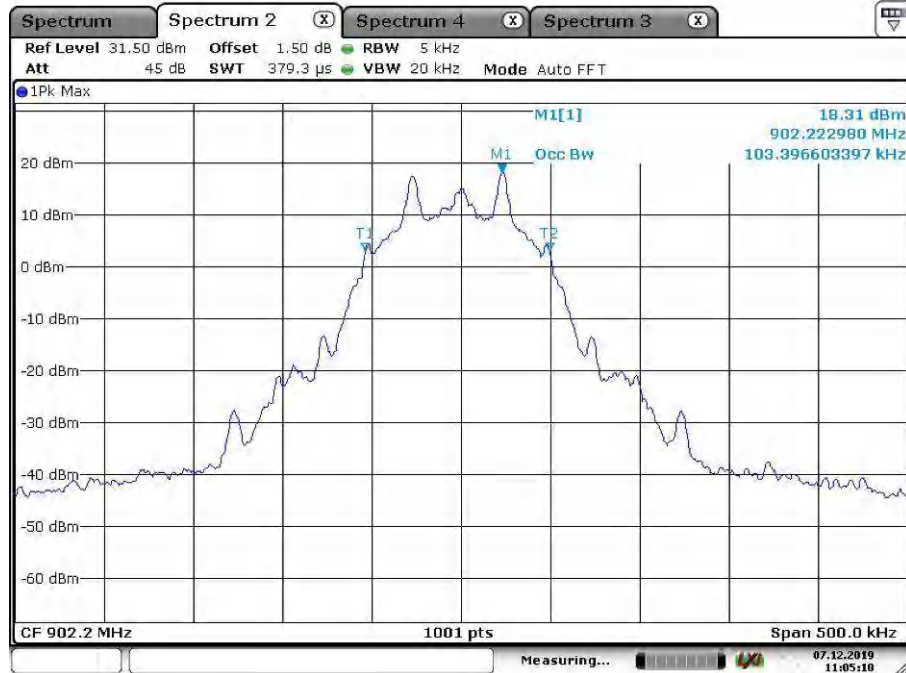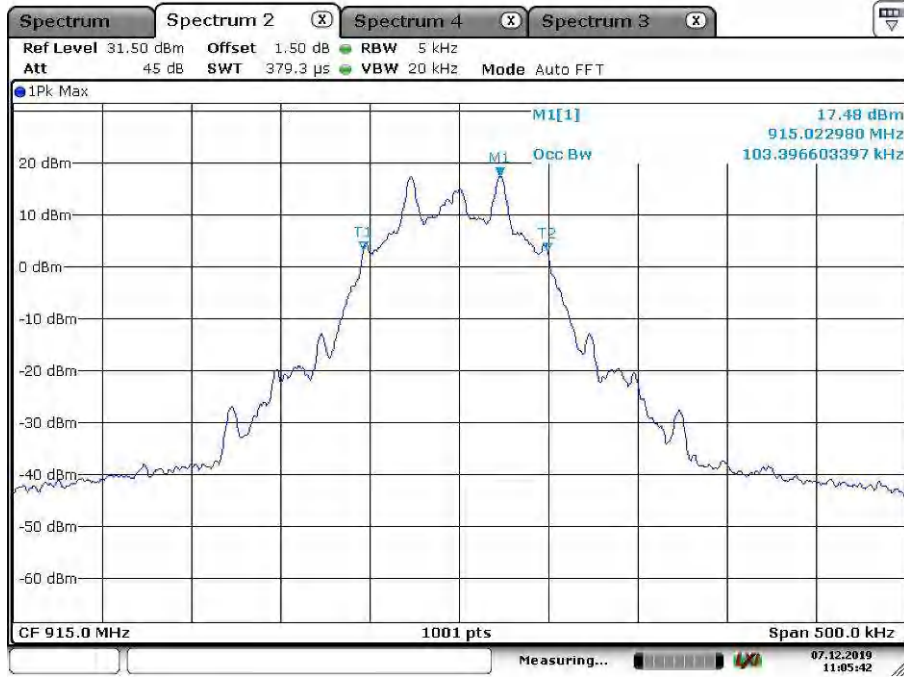
Middle Channel

Date: 7.DEC.2019 11:05:43

High Channel
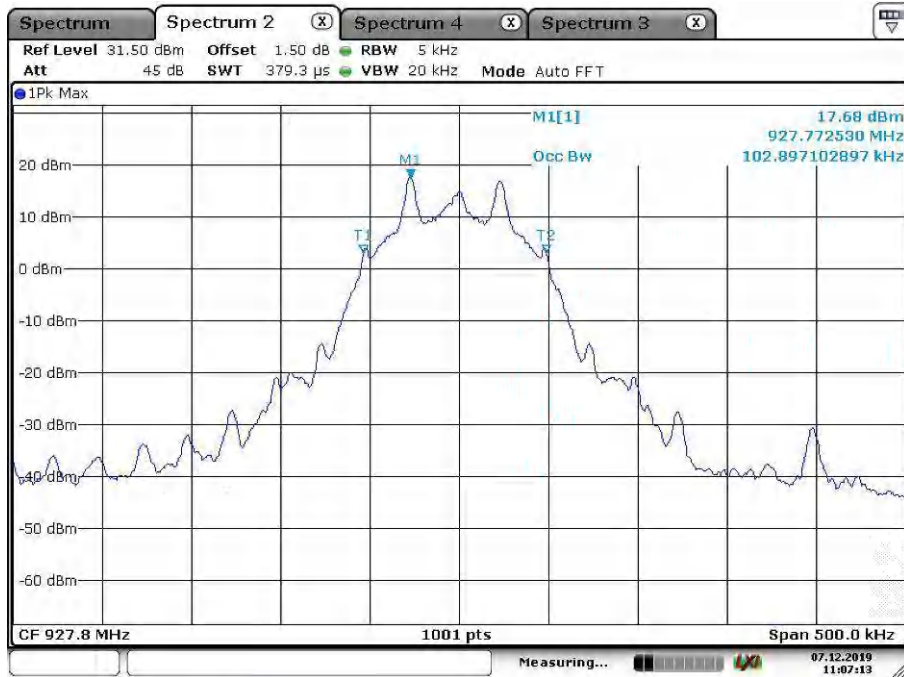
Date: 7.DEC.2019 11:07:13

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FHSs#5 (DataRate: 5Kbps)
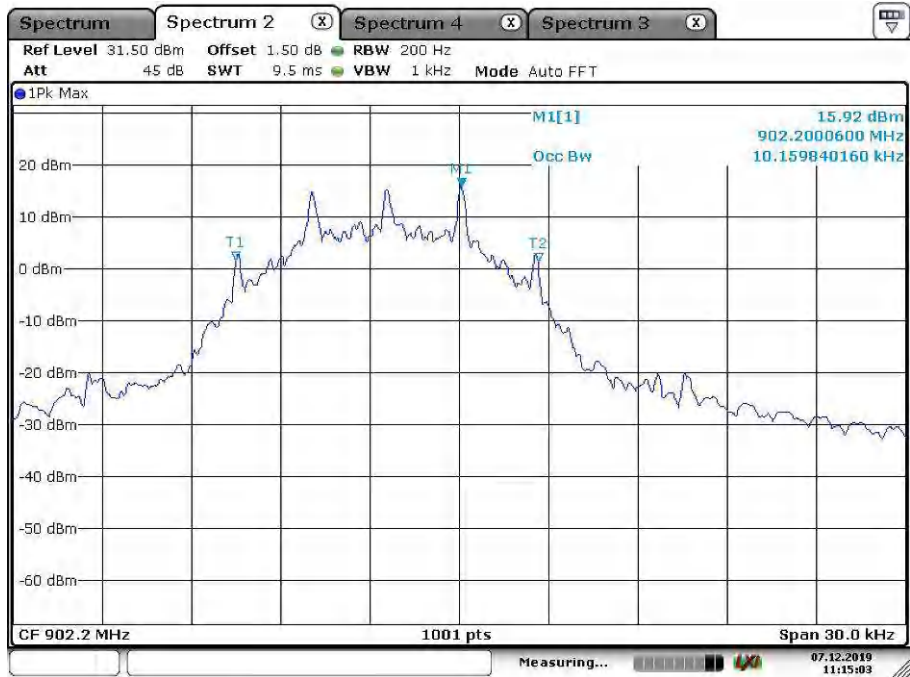
Low Channel

Date: 7.DEC.2019 11:15:03

Middle Channel

Date: 7.DEC.2019 11:14:16

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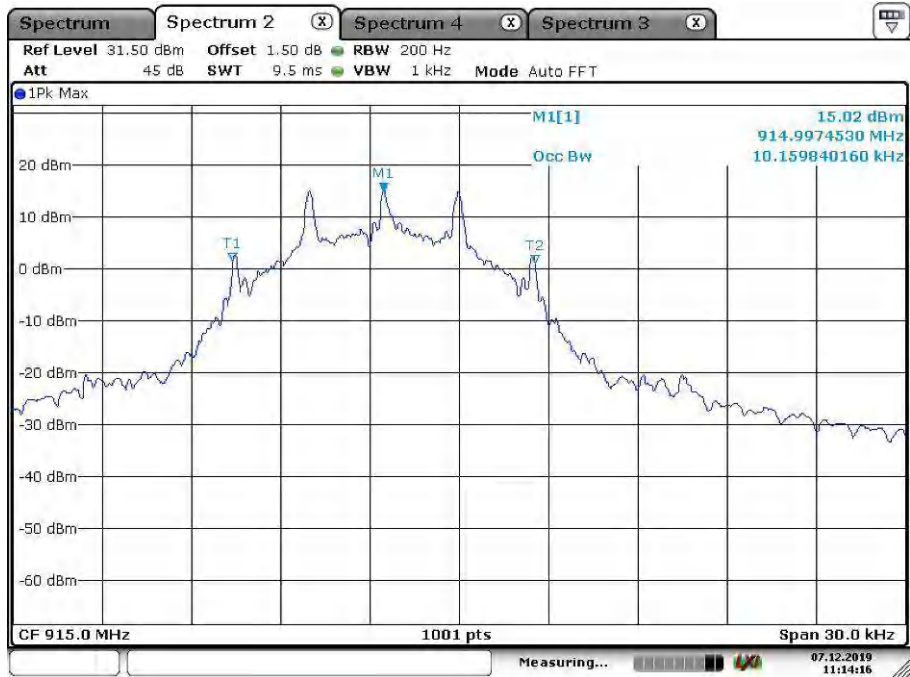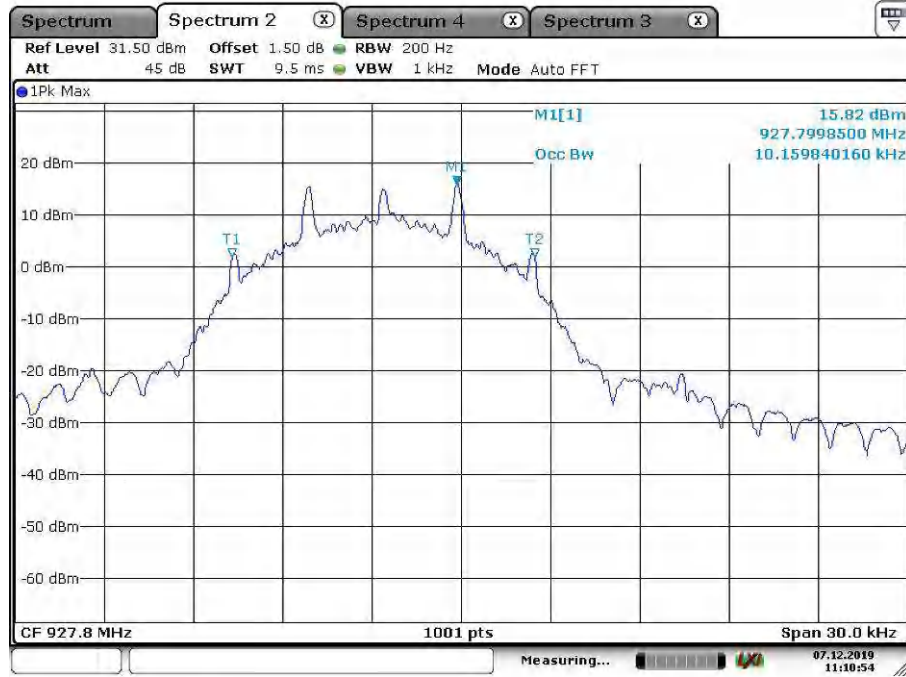
High Channel

Date: 7.DEC.2019 11:10:54

Appendix C.2: Test Results of 20dB Bandwidth

FHSs#1 (Bandwidth: 250KHz)
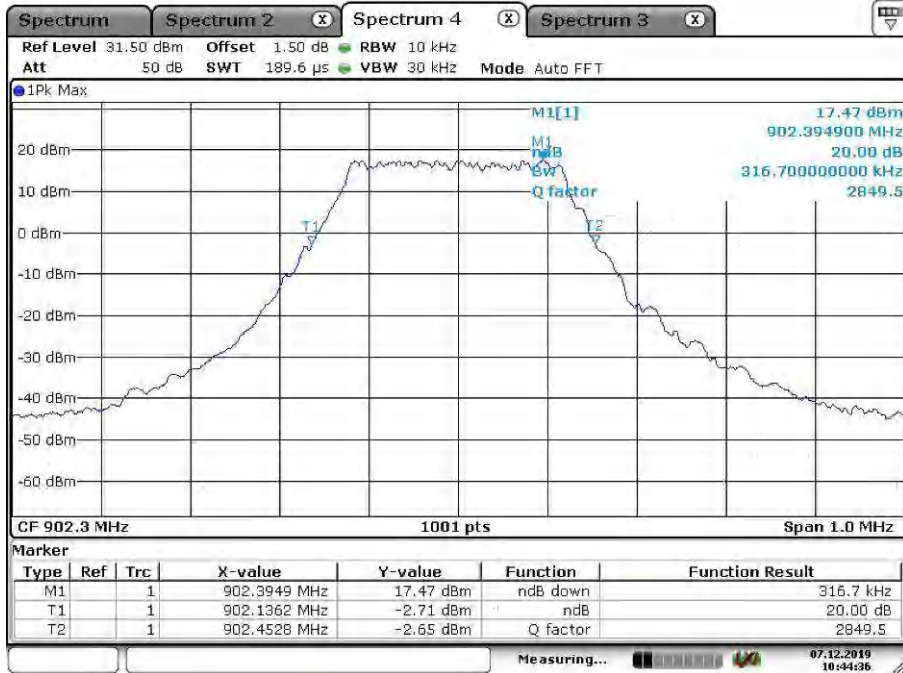
Low Channel

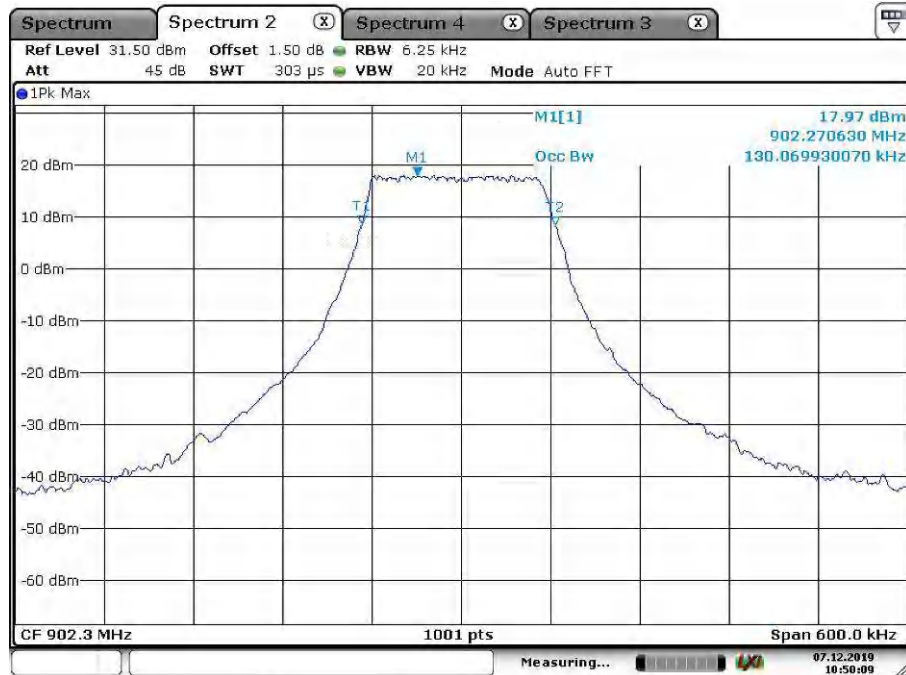Date: 7.DEC.2019 10:44:36

Middle Channel

Date: 7.DEC.2019 10:45:19

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High Channel

FHSs#2 (Bandwidth: 125KHz)

Low Channel

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Middle Channel

Spectrum	Spectrum 2	⊗	Spectrum 4	⊗	Spectrum 3	⊗	

Ref Level 31.50 dBm **Offset** 1.50 dB **RBW** 6.25 kHz
Att 50 dB **SWT** 303 µs **VBW** 20 kHz **Mode** Auto FFT

● 1Pk Max

M1[1] 17.88 dBm
908.444860 MHz
ndB 20.00 dB
Bw 155.240000000 kHz
Q factor 5851.7

CF 908.5 MHz 1001 pts Span 600.0 kHz

Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	908.44486 MHz	17.88 dBm	ndB down	155.24 kHz
T1		1	908.42088 MHz	-2.07 dBm	ndB	20.00 dB
T2		1	908.57612 MHz	-2.30 dBm	Q factor	5851.7

Measuring... 07.12.2019 10:55:33

Date: 7.DEC.2019 10:55:34

High Channel

Spectrum	Spectrum 2	⊗	Spectrum 4	⊗	Spectrum 3	⊗	

Ref Level 31.50 dBm **Offset** 1.50 dB **RBW** 6.25 kHz
Att 50 dB **SWT** 303 µs **VBW** 20 kHz **Mode** Auto FFT

● 1Pk Max

M1[1] 17.77 dBm
914.844860 MHz
ndB 20.00 dB
Bw 153.450000000 kHz
Q factor 5962.0

CF 914.9 MHz 1001 pts Span 600.0 kHz

Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	914.84486 MHz	17.77 dBm	ndB down	153.45 kHz
T1		1	914.82088 MHz	-2.20 dBm	ndB	20.00 dB
T2		1	914.97433 MHz	-2.34 dBm	Q factor	5962.0

Measuring... 07.12.2019 10:56:20

Date: 7.DEC.2019 10:56:20

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FHSs#3 (DataRate: 150Kbps)

Low Channel

Middle Channel

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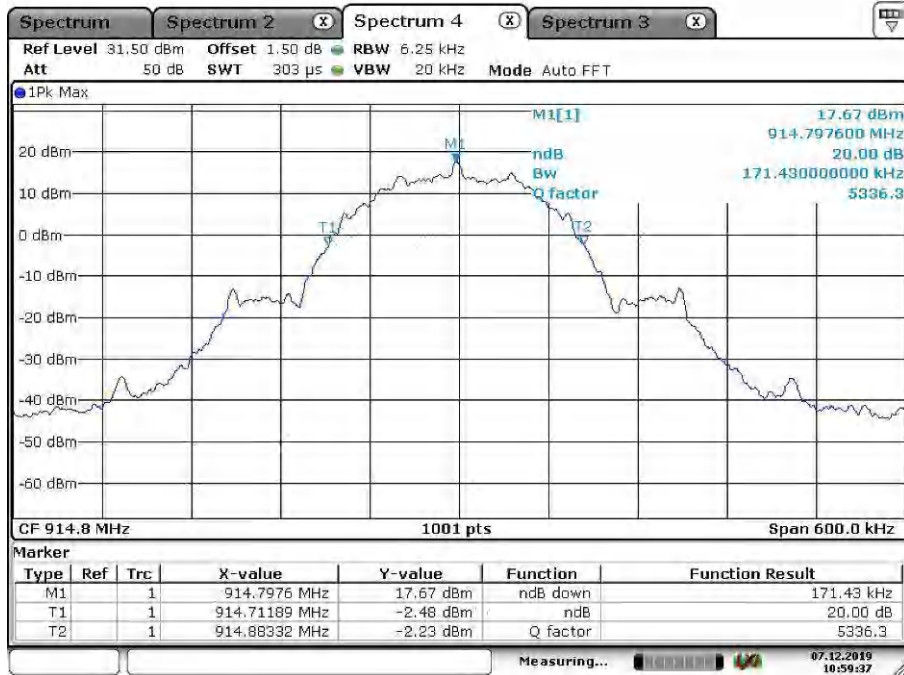
High Channel

FHSs#4 (DataRate: 50Kbps)

Low Channel

Middle Channel

High Channel

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FHSs#5 (DataRate: 5Kbps)

Low Channel

Middle Channel

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High Channel

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	927.79988 MHz	16.49 dBm	ndB down	9.95 kHz
T1		1	927.792178 MHz	-4.40 dBm	ndB	20.00 dB
T2		1	927.802128 MHz	-3.34 dBm	Q factor	93246

Date: 7.DEC.2019 11:12:20

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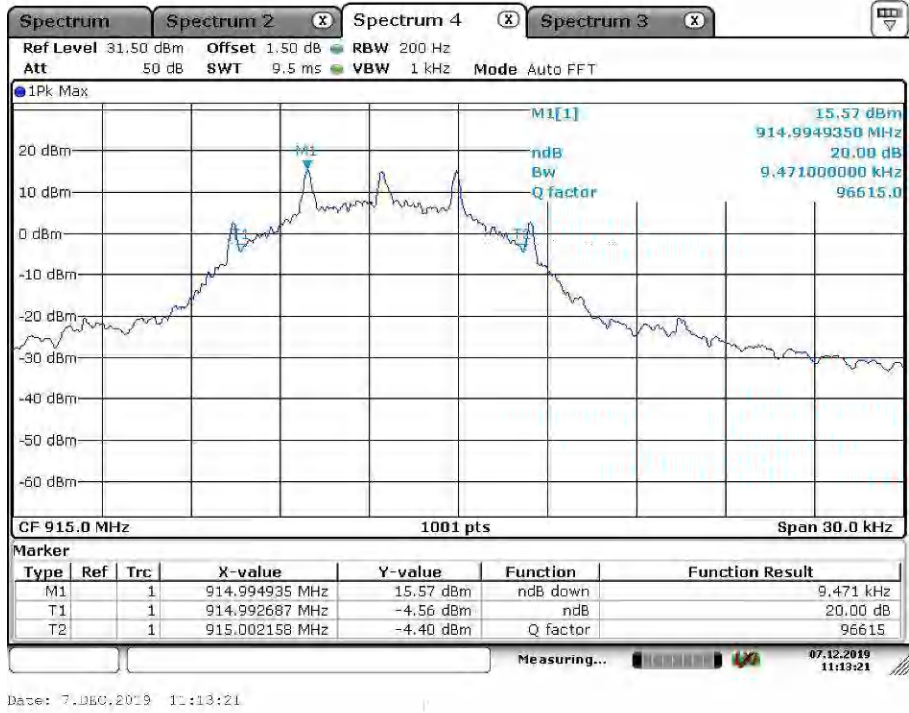
Appendix C.3: Test Results of Carrier Frequency Separation

FHSs#1 (Bandwidth: 250KHz)

Low Channel

Date: 9.DEC.2019   02:24:24

Middle Channel

Date: 9.DEC.2019   02:26:56

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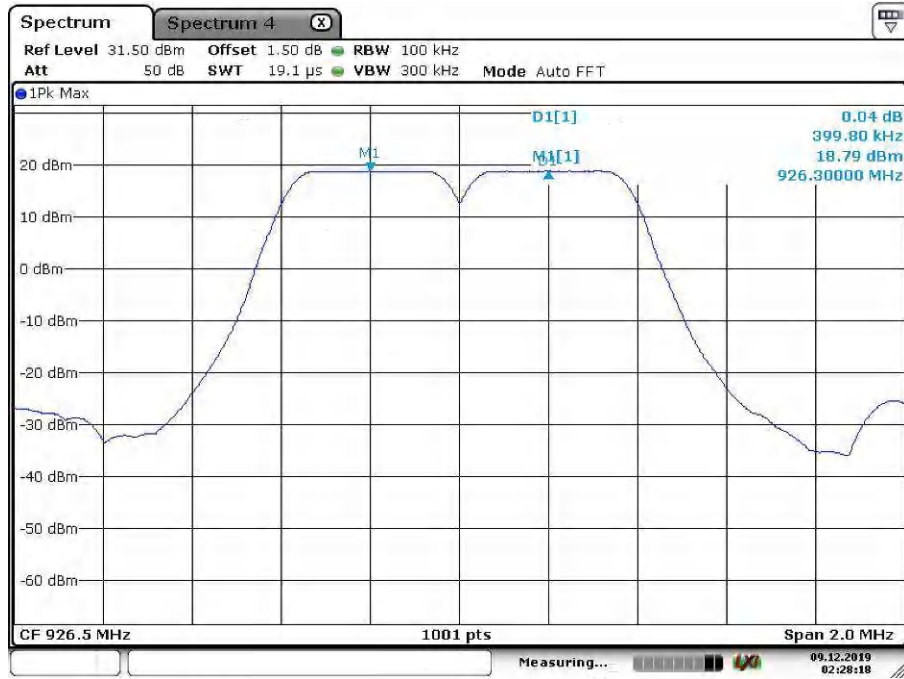
High Channel

Date: 9.DEC.2019 02:28:18

FHSs#2 (Bandwidth: 125KHz)

Low Channel

Date: 9.DEC.2019 02:29:44

Middle Channel
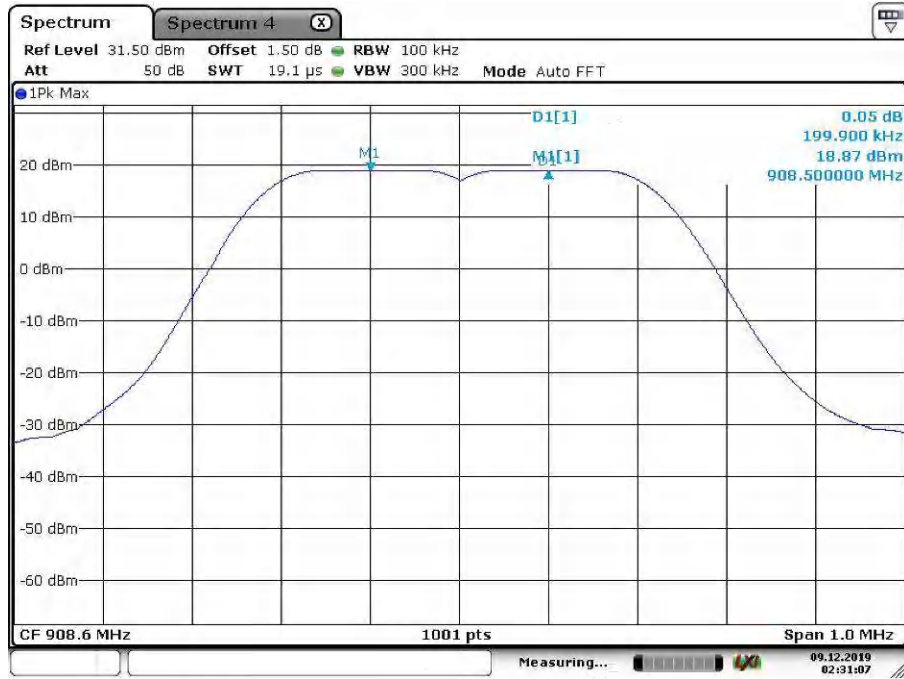
Date: 9.DEC.2019 02:31:07

High Channel

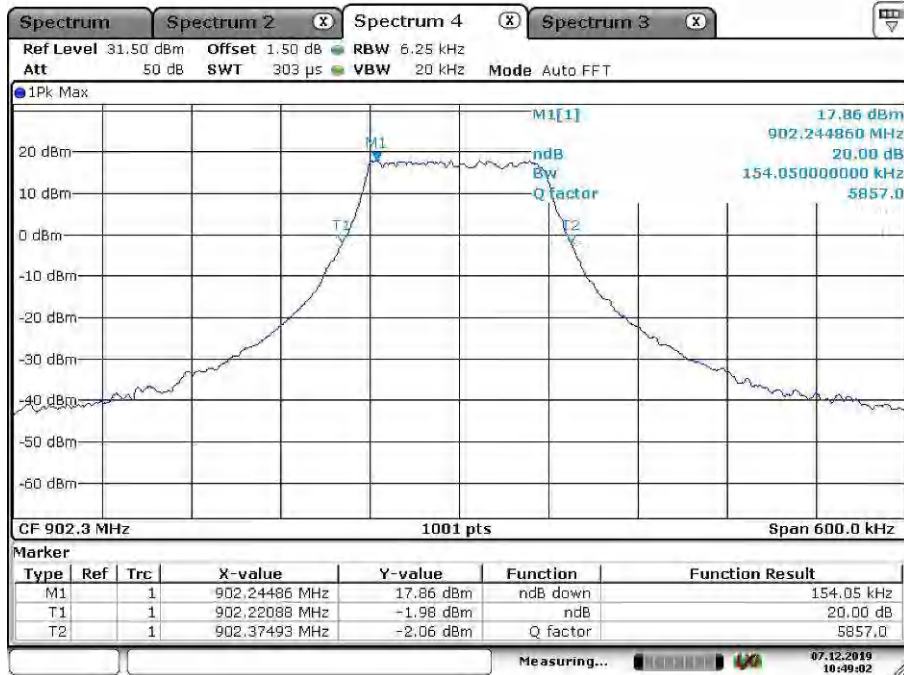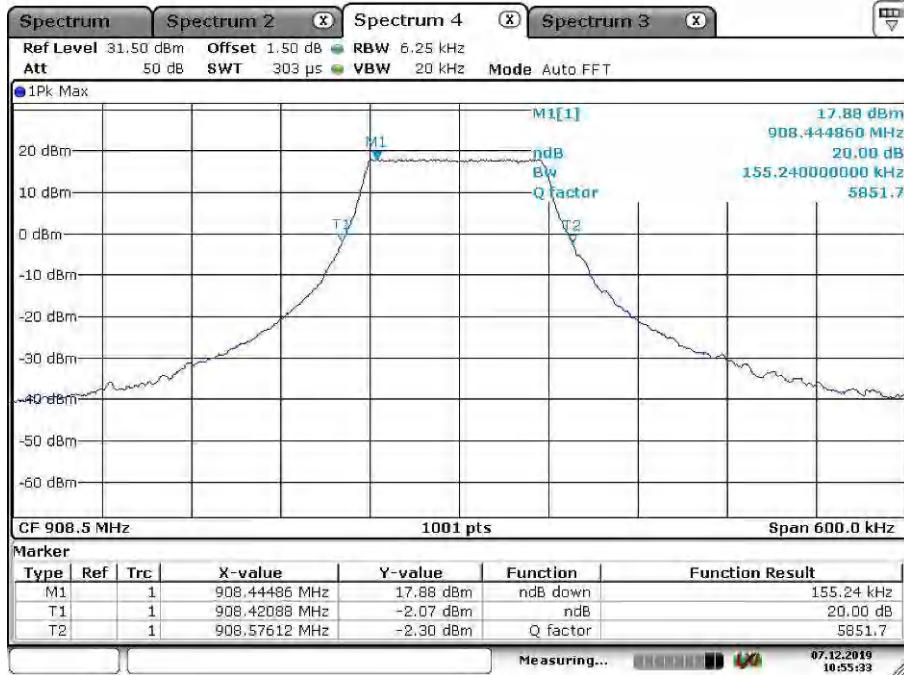Date: 9.DEC.2019 02:32:04

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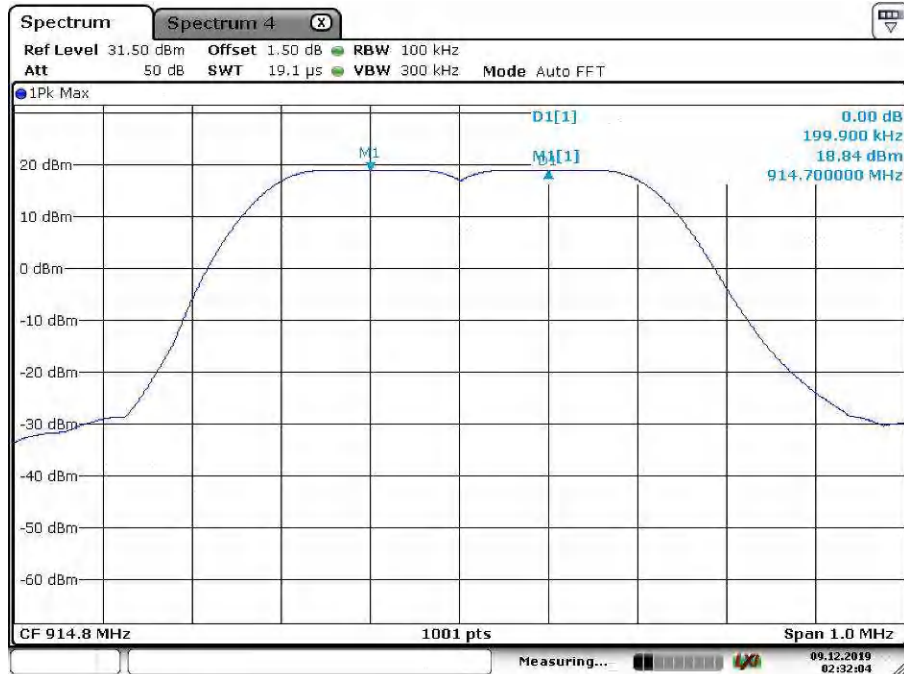
FHSs#3 (DataRate: 150Kbps)
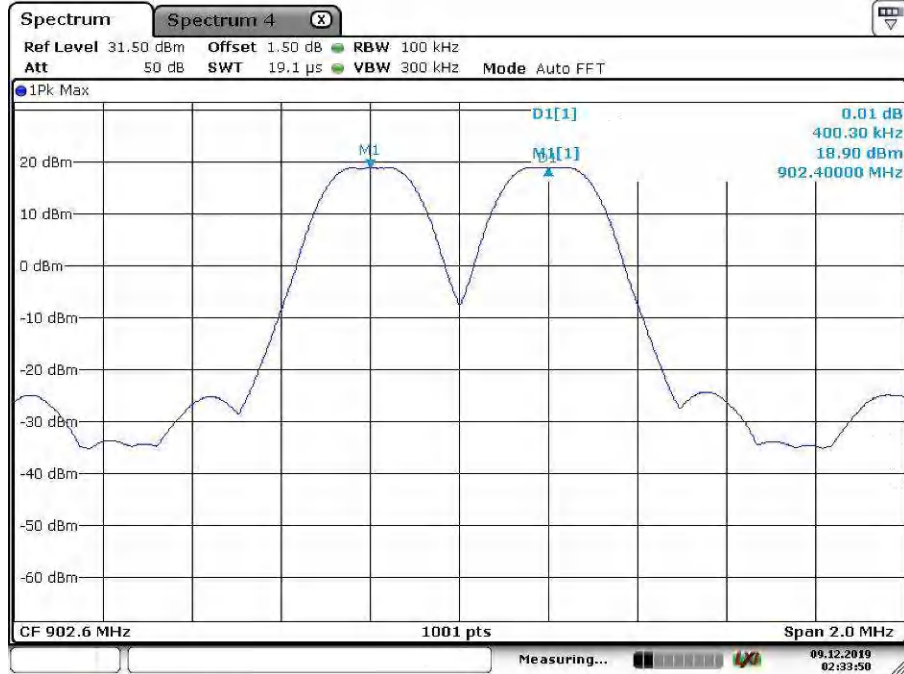
Low Channel

Date: 9.DEC.2019   02:33:50

Middle Channel

Date: 9.DEC.2019   02:35:09

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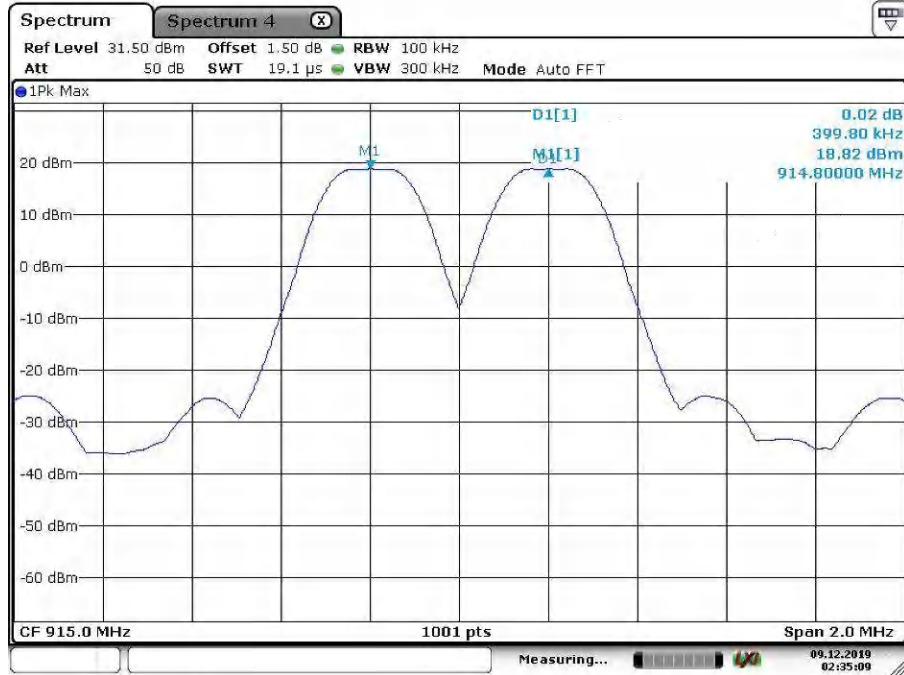
High Channel

Date: 9.DEC.2019 02:36:17

FHSs#4 (DataRate: 50Kbps)

Low Channel

Date: 9.DEC.2019 02:37:47

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Middle Channel

Date: 9.DEC.2019 02:39:26

High Channel

Date: 9.DEC.2019 02:40:40

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FHSs#5 (DataRate: 5Kbps)

Low Channel

Middle Channel

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High Channel

Date: 9.DEC.2019 02:41:45

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

FHSs#1 (Bandwidth: 250KHz)
All hopping channels
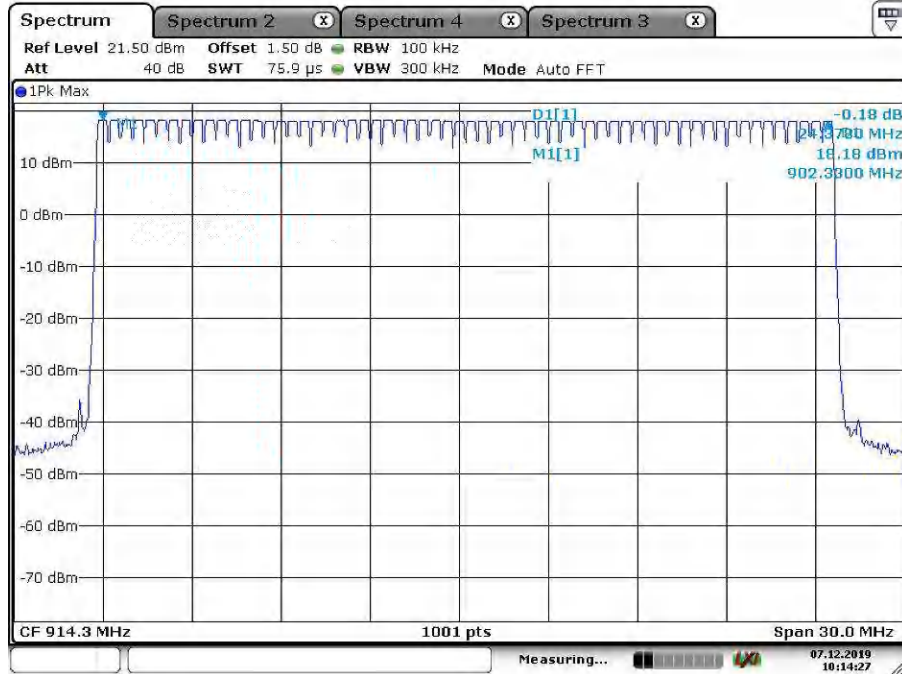
Date: 7.DEC.2019 10:14:28

FHSs#2 (Bandwidth: 125KHz)
All hopping channels
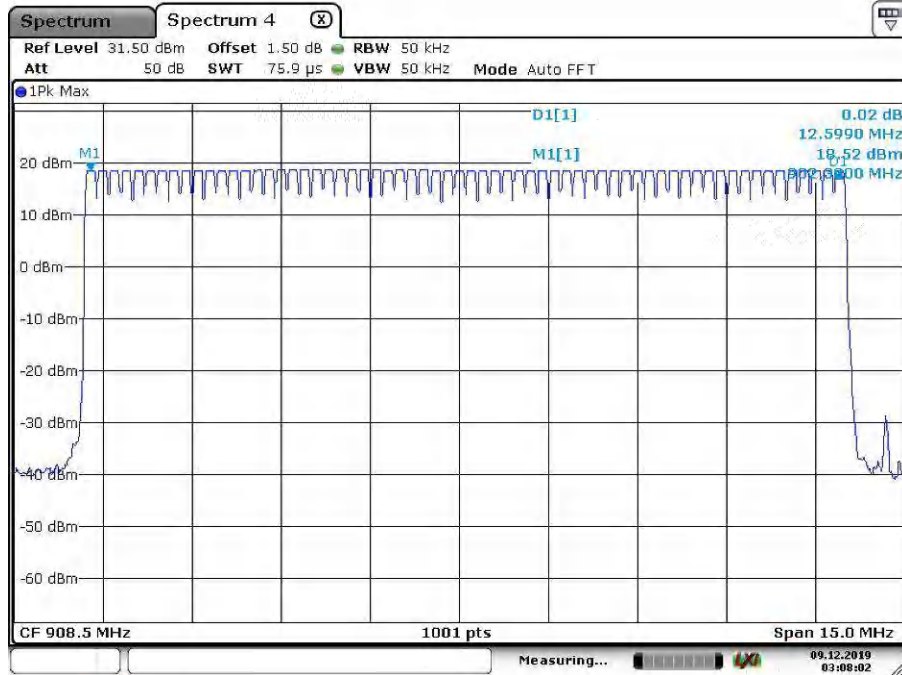
Date: 9.DEC.2019 03:08:02

FHSs#3 (DataRate: 150Kbps)
All hopping channels
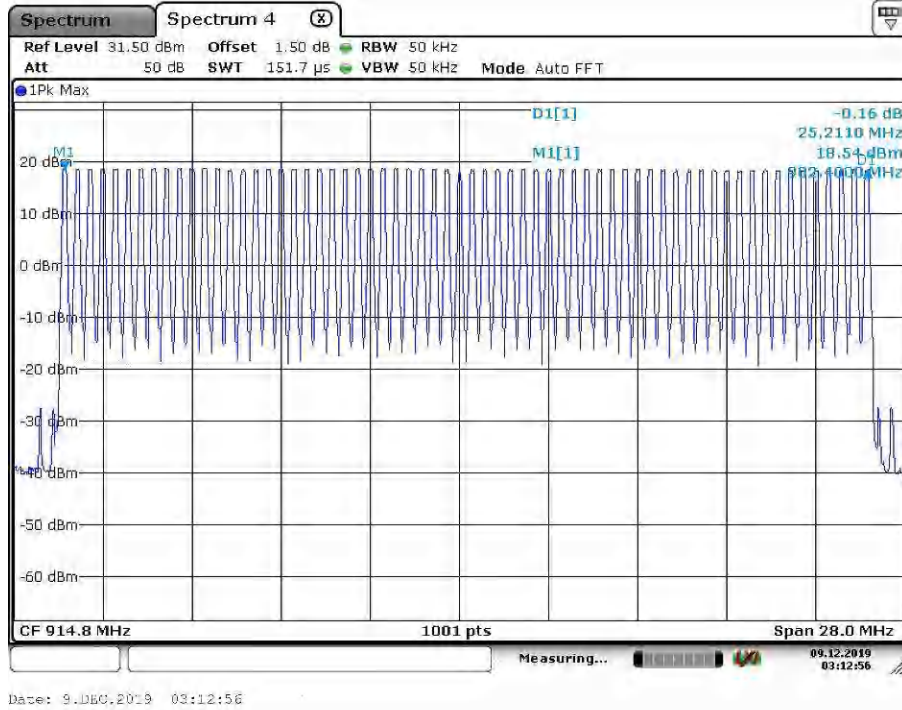
FHSs#4 (DataRate: 50Kbps)
All hopping channels
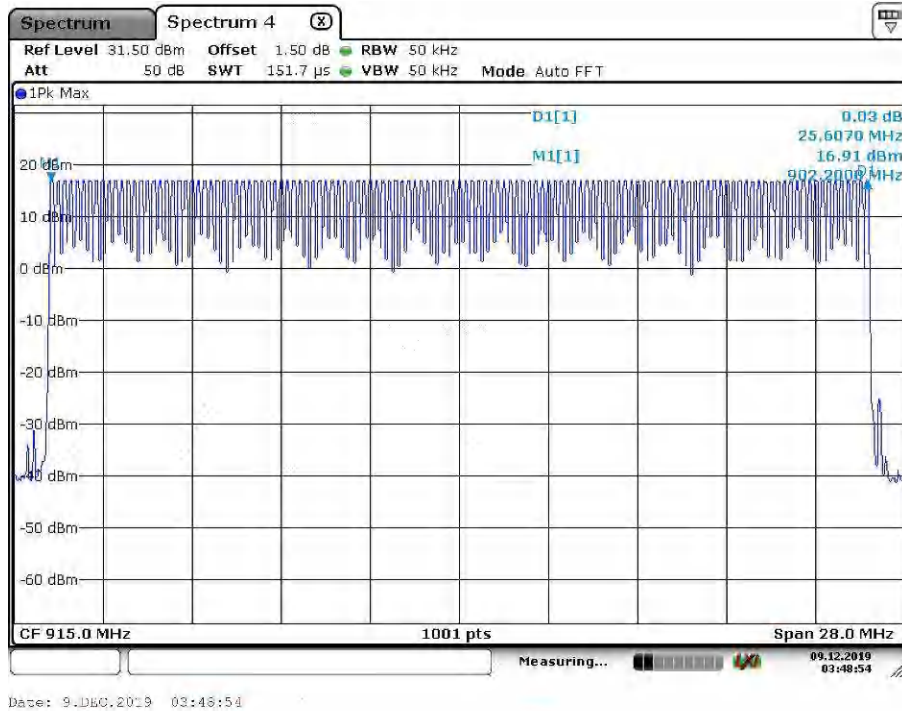
FHSs#5 (DataRate: 5Kbps)
All hopping channels

Date: 9.DEC.2019 03:52:11
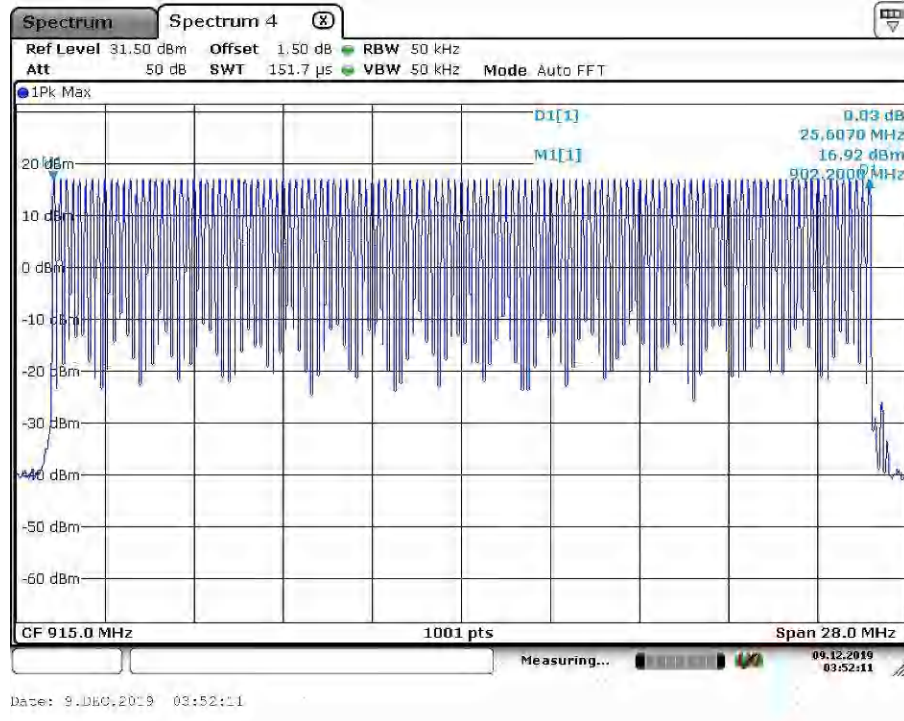
Appendix C.5: Test Results of Time of Occupancy
FHSs#1 (Bandwidth: 250KHz)
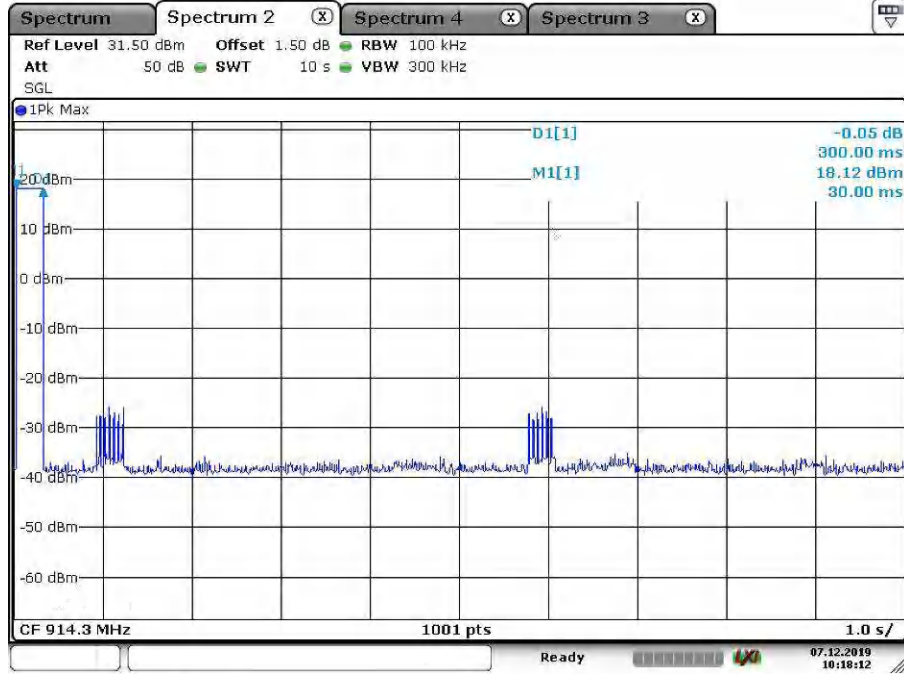
Date: 7.DEC.2019 10:18:13

FHSs#2 (Bandwidth: 125KHz)

Date: 9.DEC.2019 02:52:31

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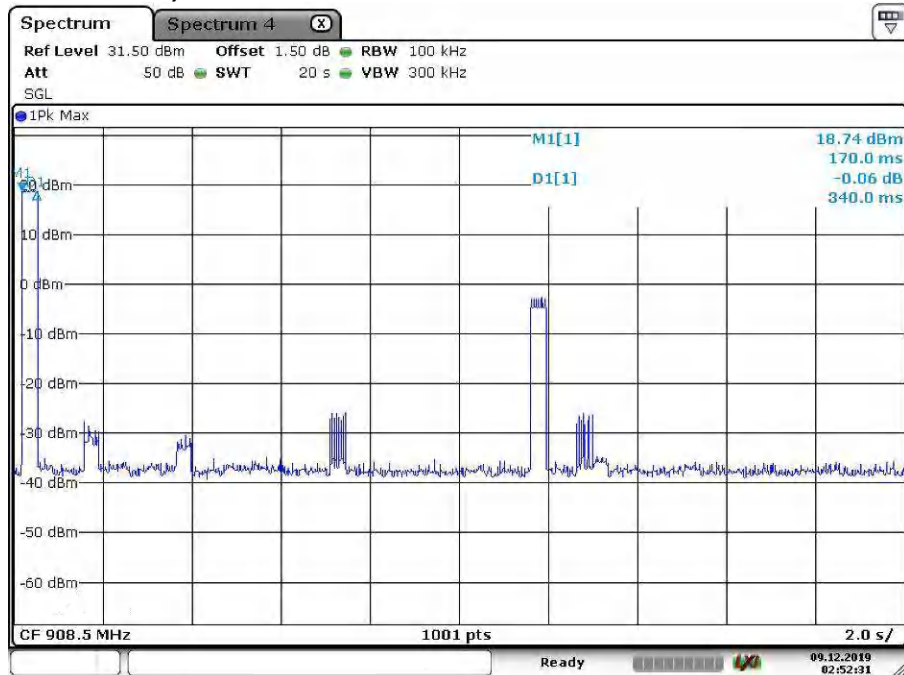
FHSs#3 (DataRate: 150Kbps)
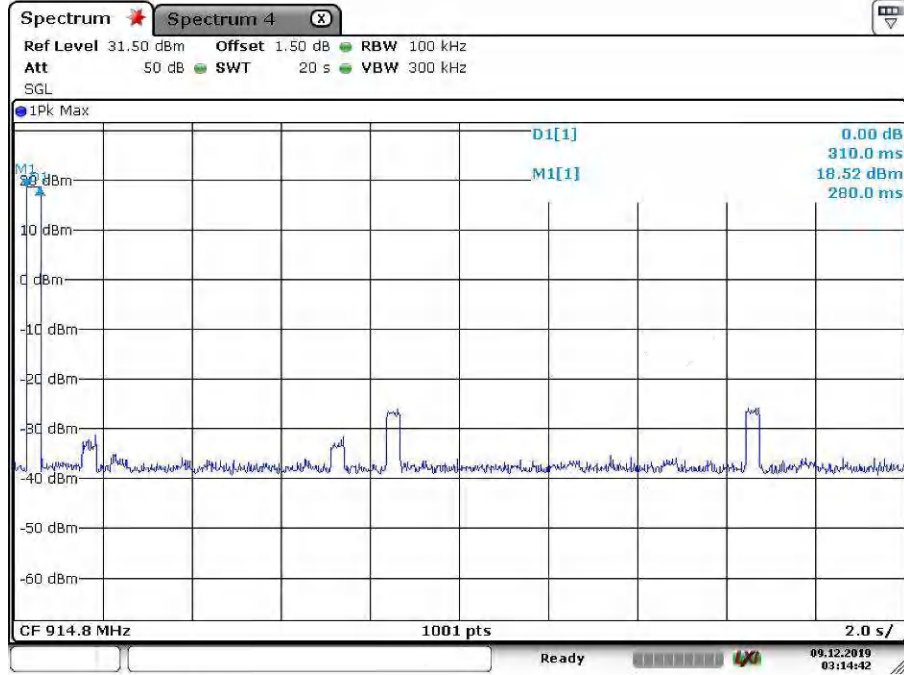
Date: 9.DEC.2019 03:14:43

FHSs#4 (DataRate: 50Kbps)
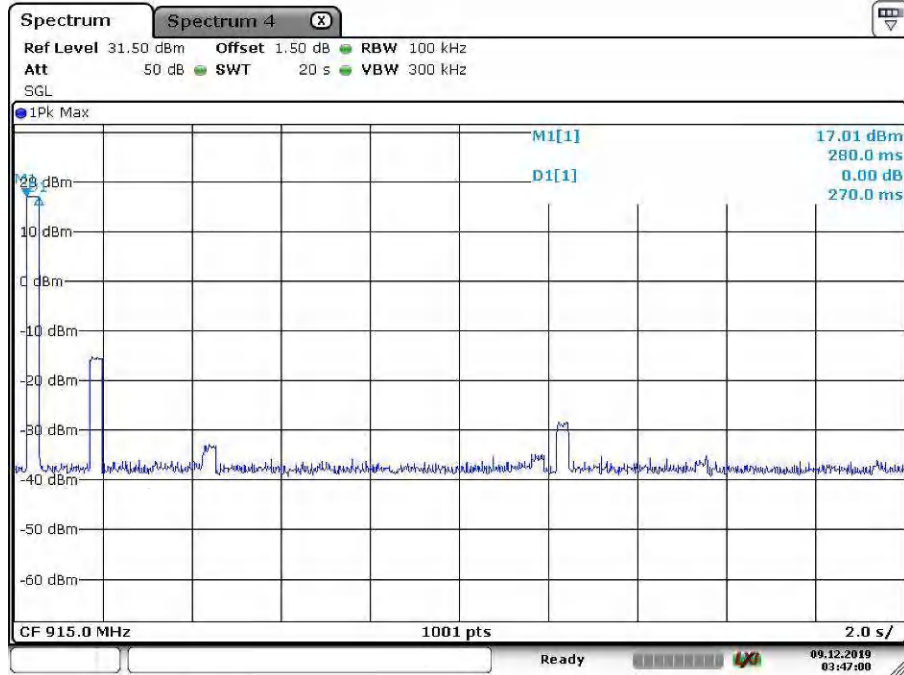
Date: 9.DEC.2019 03:47:00

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FHSs#5 (DataRate: 5Kbps)

Date: 9.DEC.2019   03:54:20

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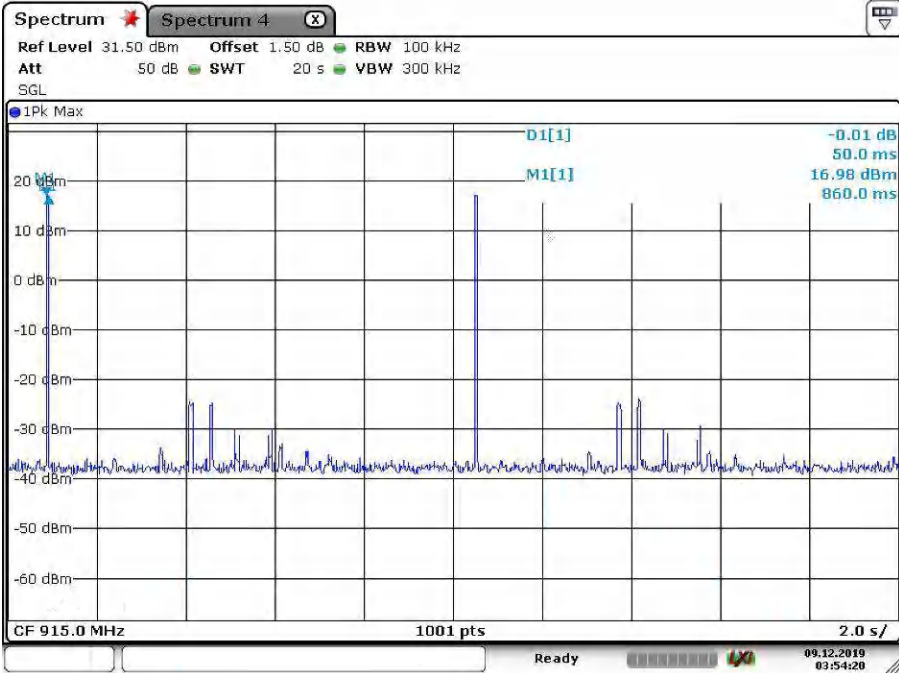
Appendix C.6: Test Results of Conducted Spurious Emissions Measured in 100 kHz Bandwidth

FHSs#1 (Bandwidth: 250KHz)
Low Channel

Middle Channel

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High Channel

Spectrum	Spectrum 4	(X)		
Ref Level 31.50 dBm	Offset 1.50 dB	RBW 100 kHz		
Att 50 dB	SWT 250 ms	VBW 300 kHz	Mode Auto Sweep	

● 1Pk Max

M1[1]   -30.77 dBm
19.879360 GHz

20 dBm
10 dBm
0 dBm — D1 -2.060 dBm
-10 dBm
-20 dBm
-30 dBm
-50 dBm
-60 dBm

Start 30.0 MHz   32001 pts   Stop 25.0 GHz

Measuring...   09.12.2019 08:06:43

Date: 9.DEC.2019   08:06:43

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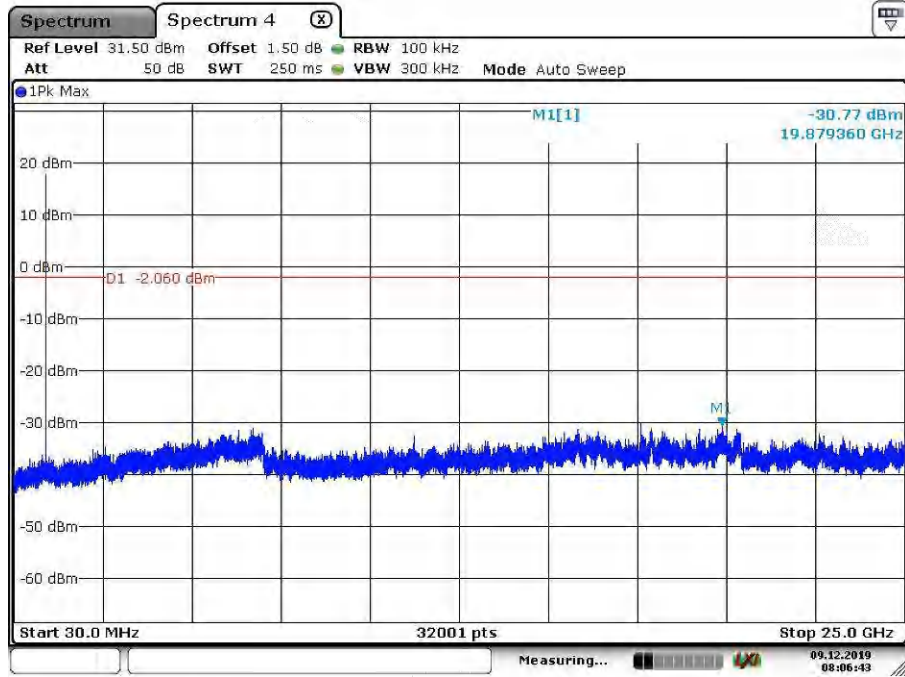
Band Edge, Low Channel

Date: 9.DEC.2019 08:10:11

Band Edge, High Channel

Date: 9.DEC.2019 08:05:59

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Band Edge, Hopping Mode, Low Channel
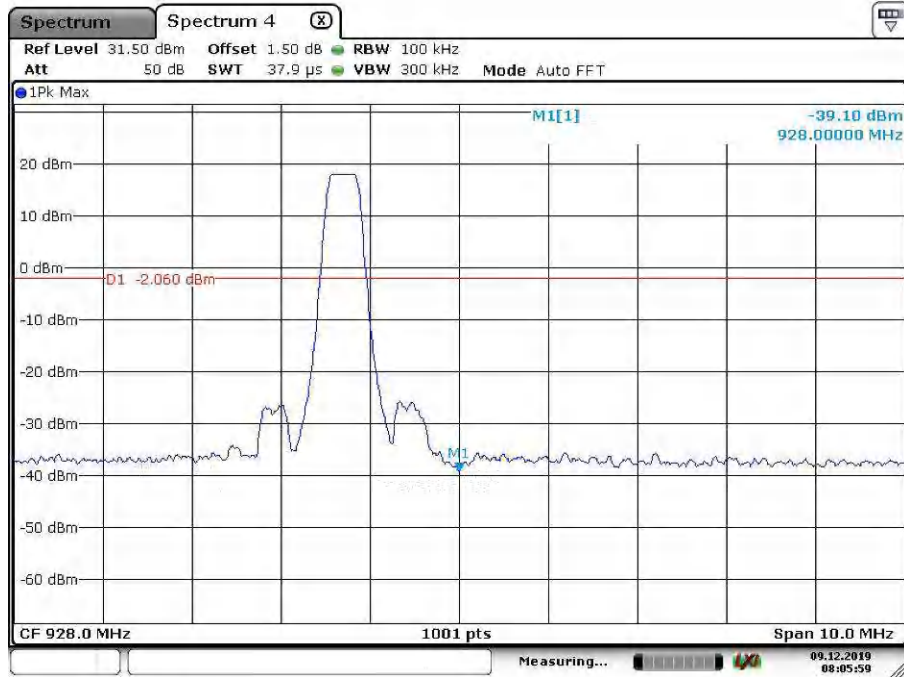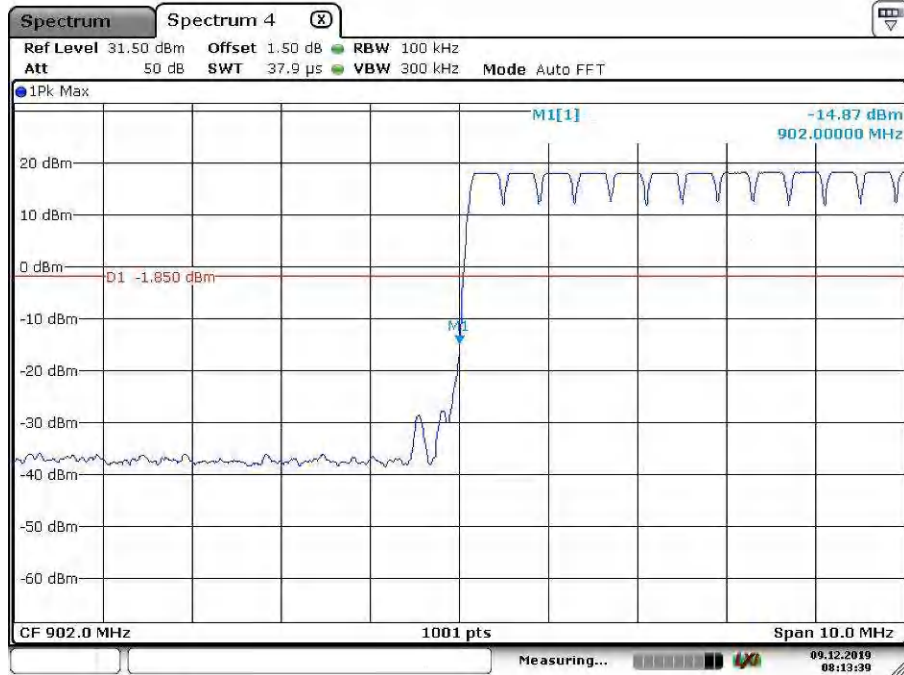
Date: 9.DEC.2019 08:13:39

Band Edge, Hopping Mode, High Channle

Date: 9.DEC.2019 08:14:27

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FHSs#2 (Bandwidth: 125KHz)
Low Channel

Date: 9.DEC.2019   07:57:12

Middle Channel

Date: 9.DEC.2019   07:56:11

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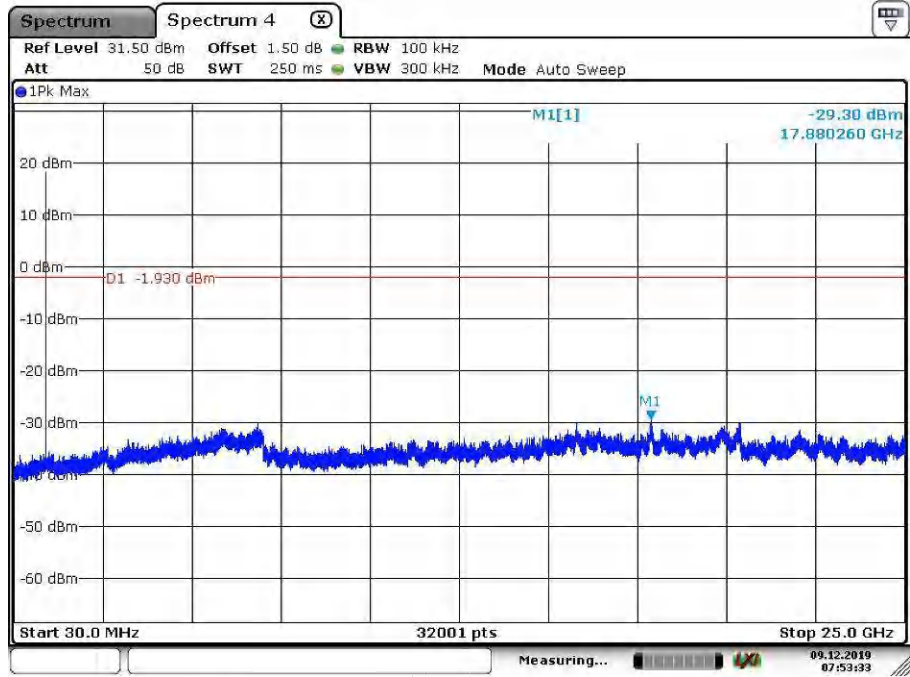
High Channel

Date: 9.DEC.2019 07:53:33

Band Edge, Low Channel
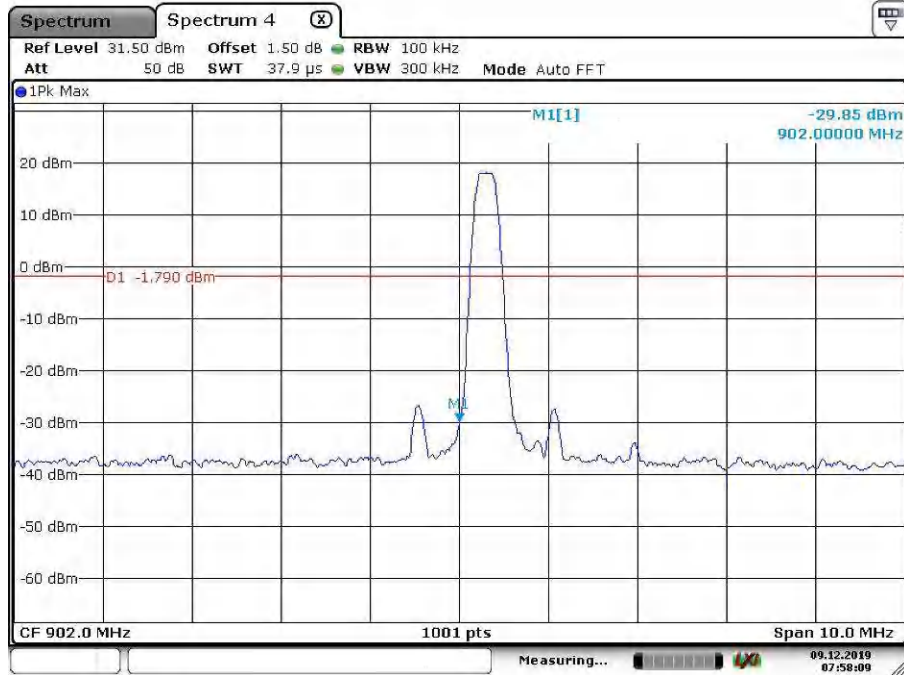
Date: 9.DEC.2019 07:58:09

Band Edge, High Channel

Date: 9.DEC.2019 07:54:44

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Band Edge, Hopping Mode, Low Channel

Date: 9.DEC.2019 07:39:17

Band Edge, Hopping Mode, High Channle

Date: 9.DEC.2019 07:41:30

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FHSs#3 (DataRate: 150Kbps)
Low Channel
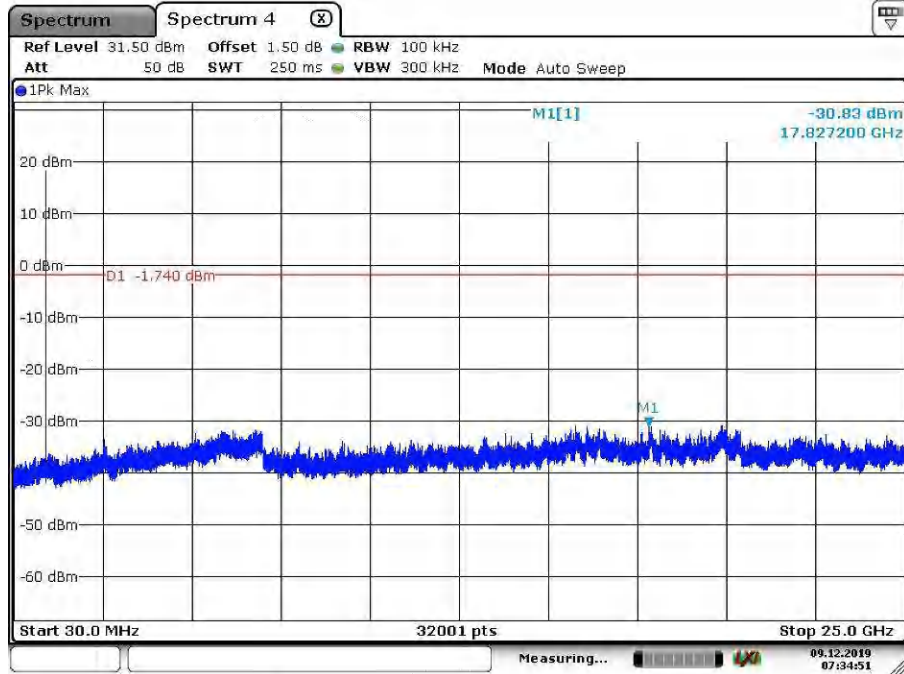
Date: 9.DEC.2019   07:34:51

Middle Channel
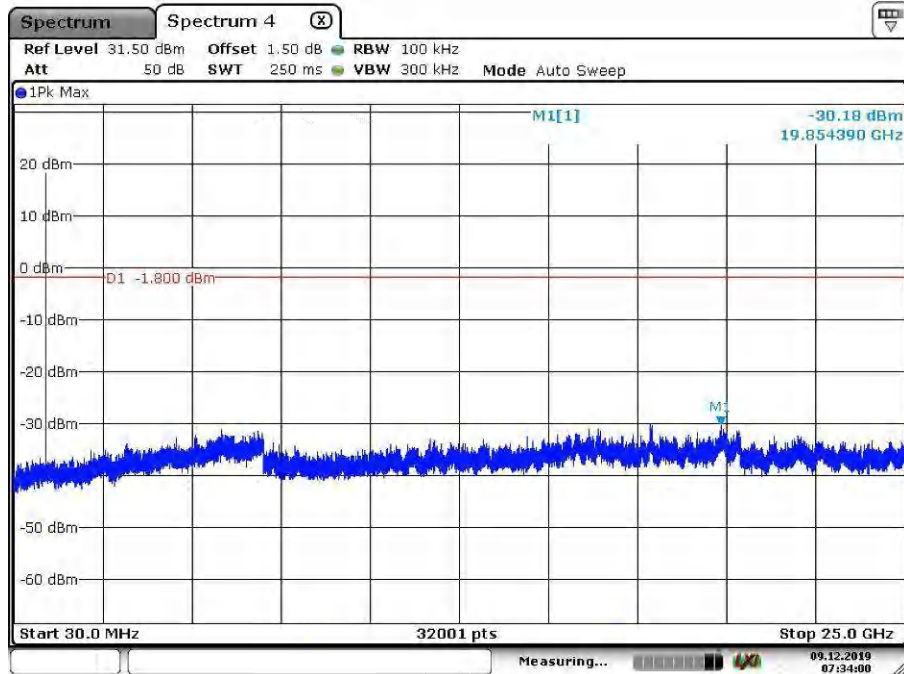
Date: 9.DEC.2019   07:34:00

High Channel

Spectrum	Spectrum 4	(X)			
Ref Level 31.50 dBm	Offset 1.50 dB	RBW 100 kHz			
Att 50 dB	SWT 250 ms	VBW 300 kHz	Mode Auto Sweep		

1Pk Max

M1[1] -30.28 dBm 17.894310 GHz

20 dBm

10 dBm

0 dBm — D1 -2.000 dBm

-10 dBm

-20 dBm

-30 dBm

M1

-50 dBm

-60 dBm

Start 30.0 MHz   32001 pts   Stop 25.0 GHz

Measuring...   09.12.2019 07:33:11
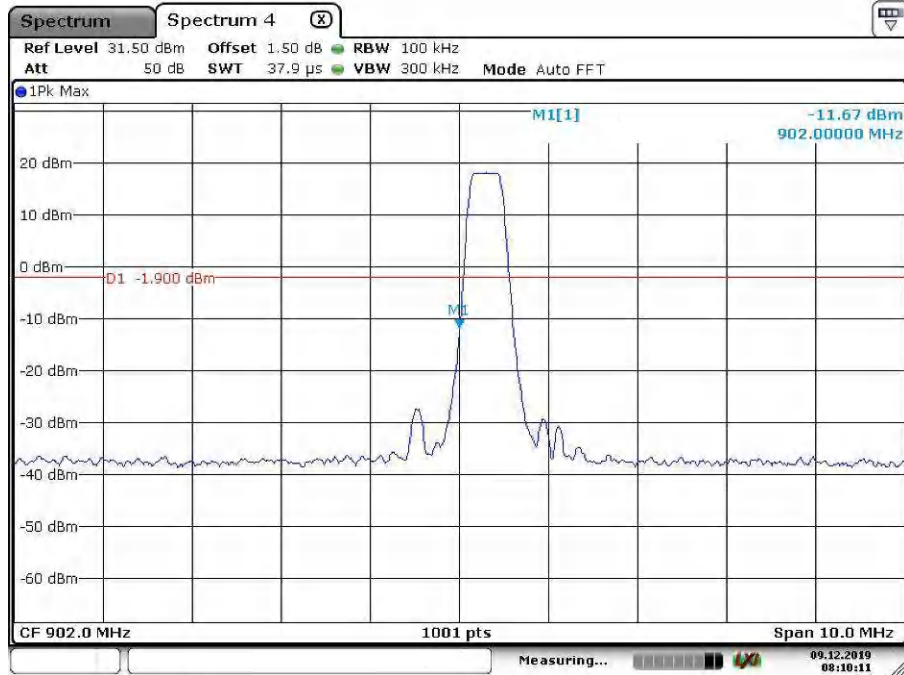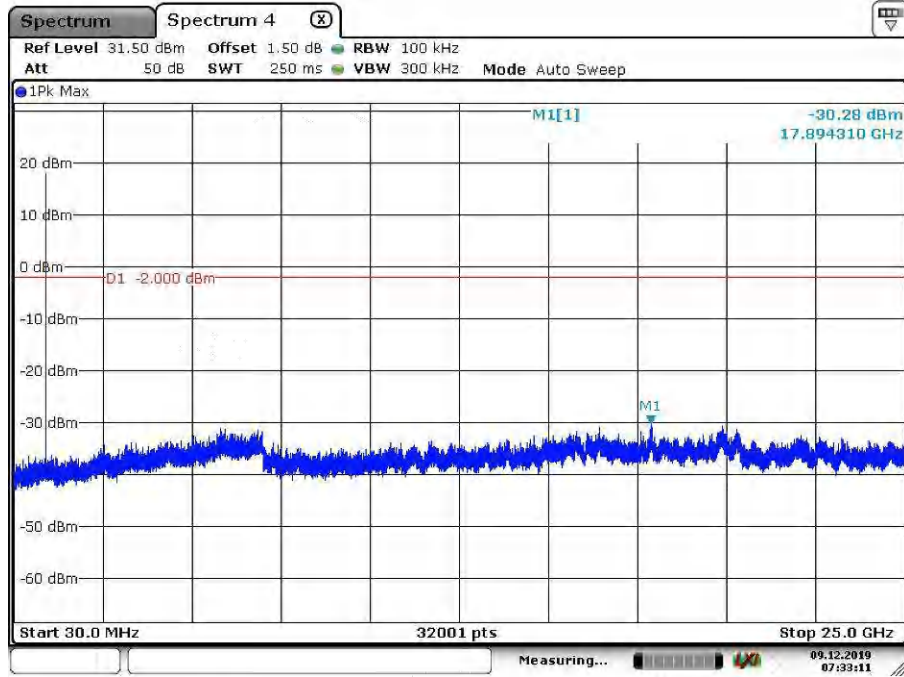
Date: 9.DEC.2019 07:33:10

Band Edge, Low Channel
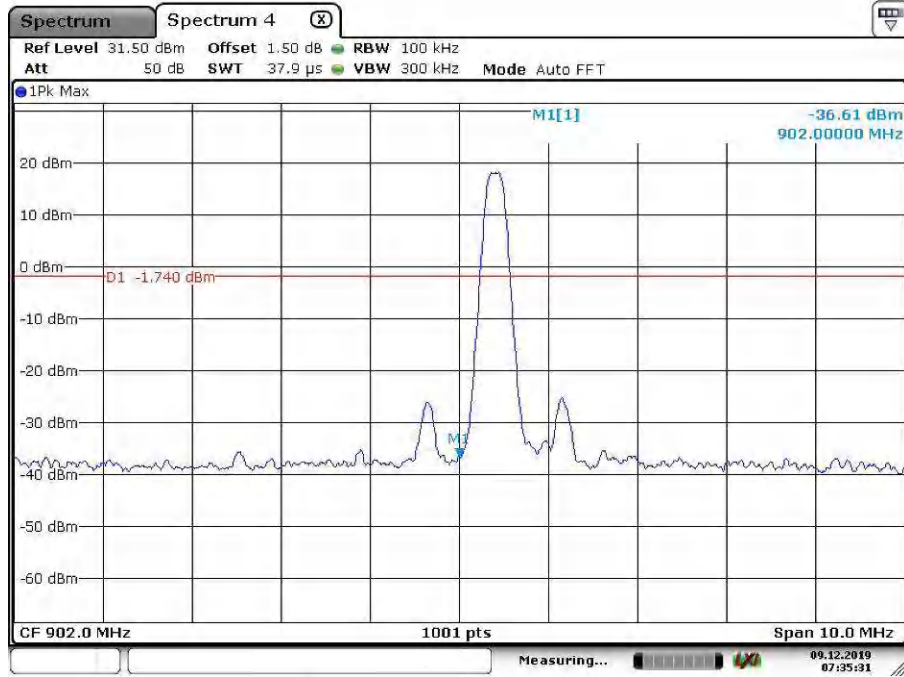
Date: 9.DEC.2019   07:35:31

Band Edge, High Channel

Date: 9.DEC.2019   07:32:15

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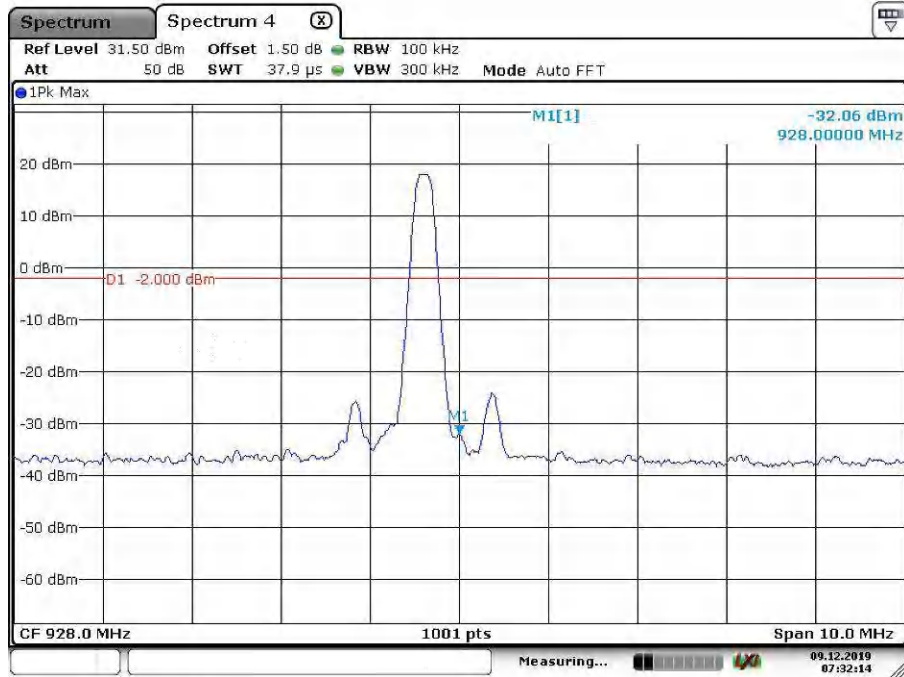
Band Edge, Hopping Mode, Low Channel
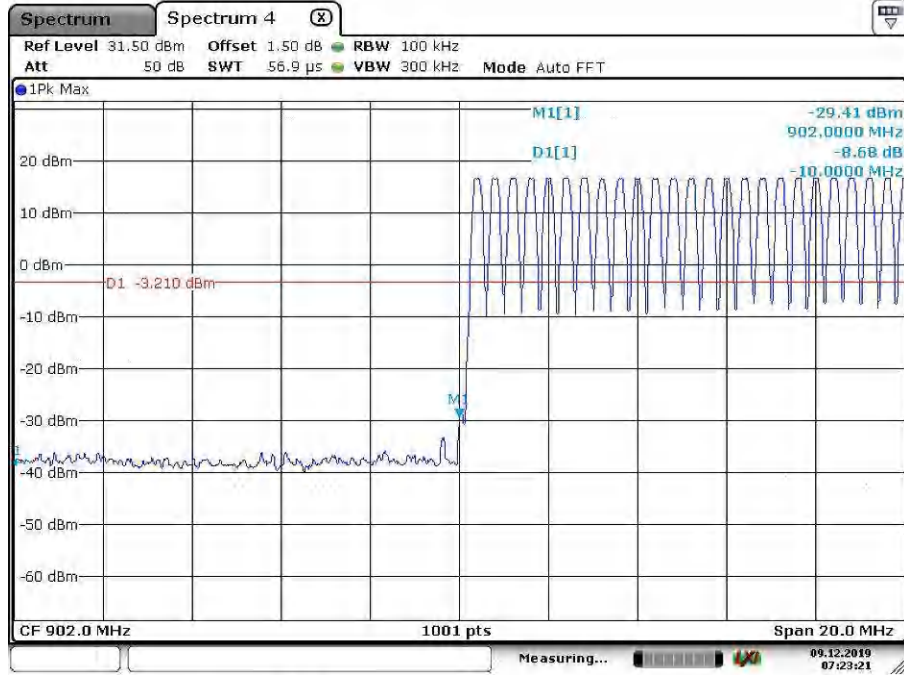
Date: 9.DEC.2019 07:23:21

Band Edge, Hopping Mode, High Channle
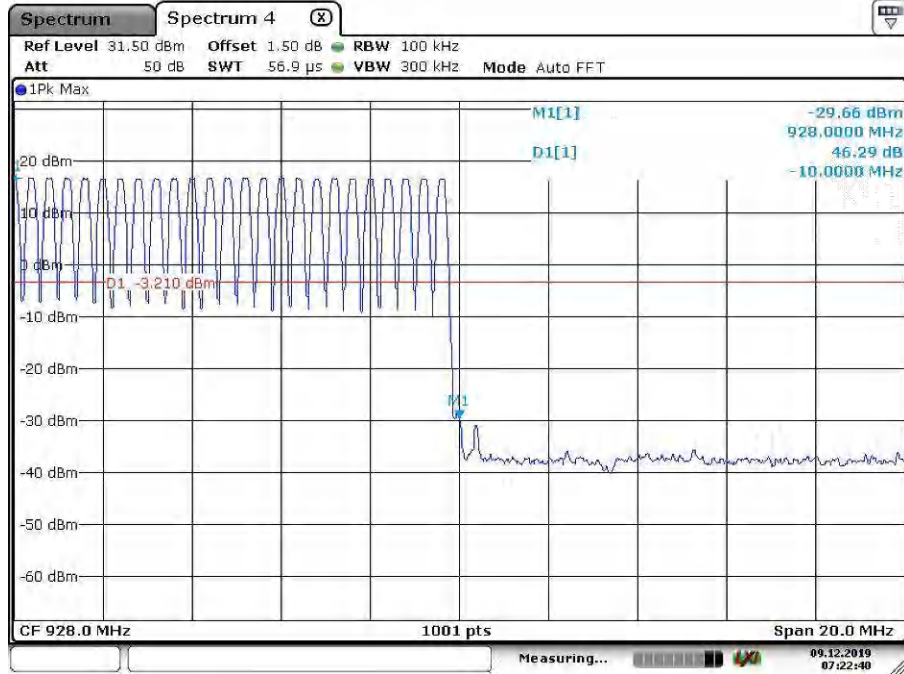
Date: 9.DEC.2019 07:22:41

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FHSs#4 (DataRate: 50Kbps)
Low Channel

Date: 9.DEC.2019 04:35:09

Middle Channel

Date: 9.DEC.2019 04:34:24

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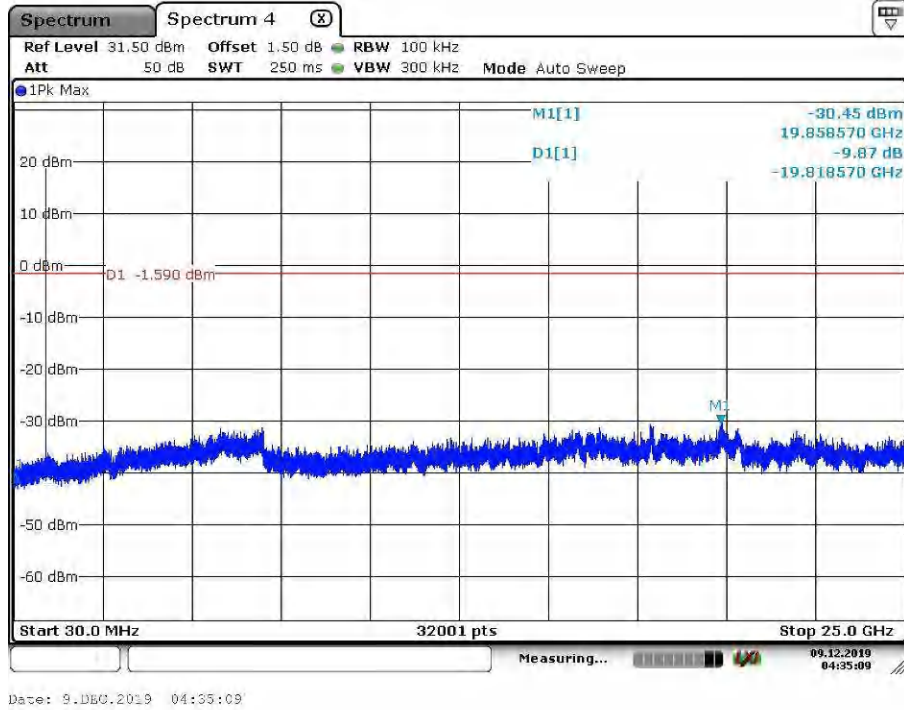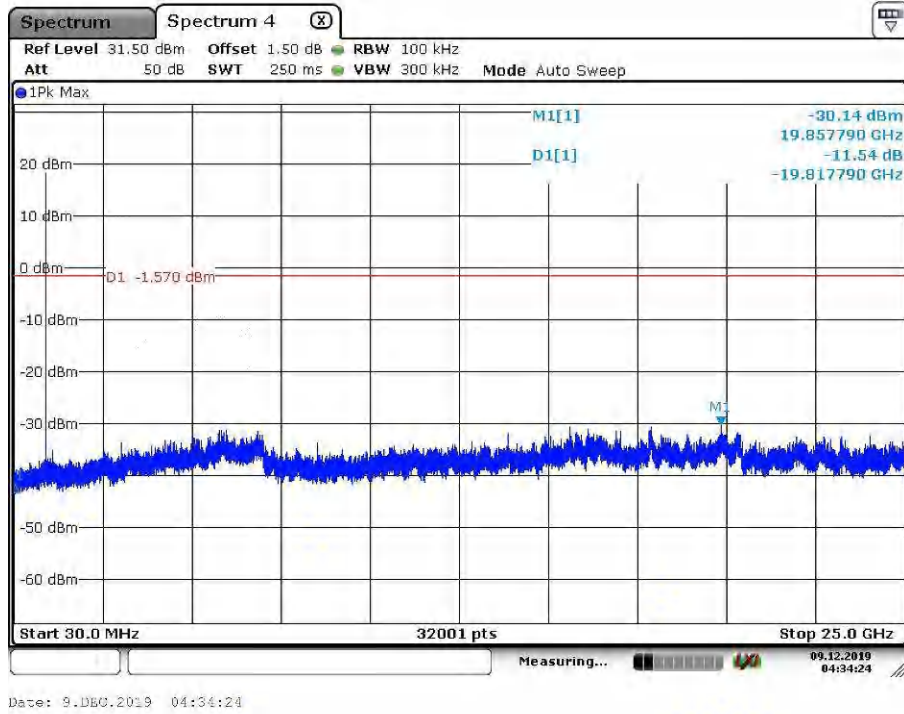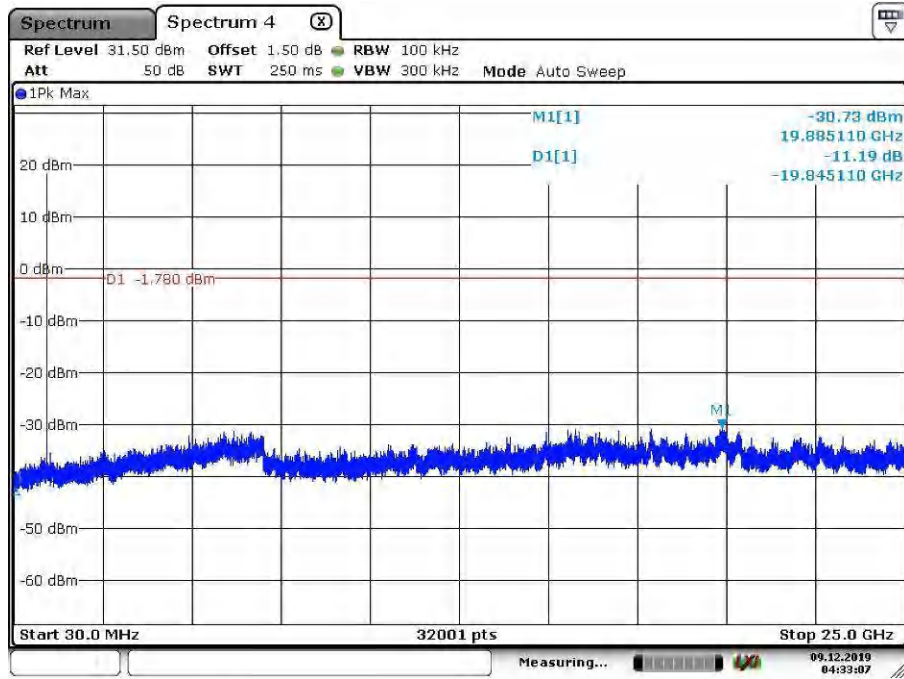
High Channel

Date: 9.DEC.2019 04:33:07

Band Edge, Low Channel
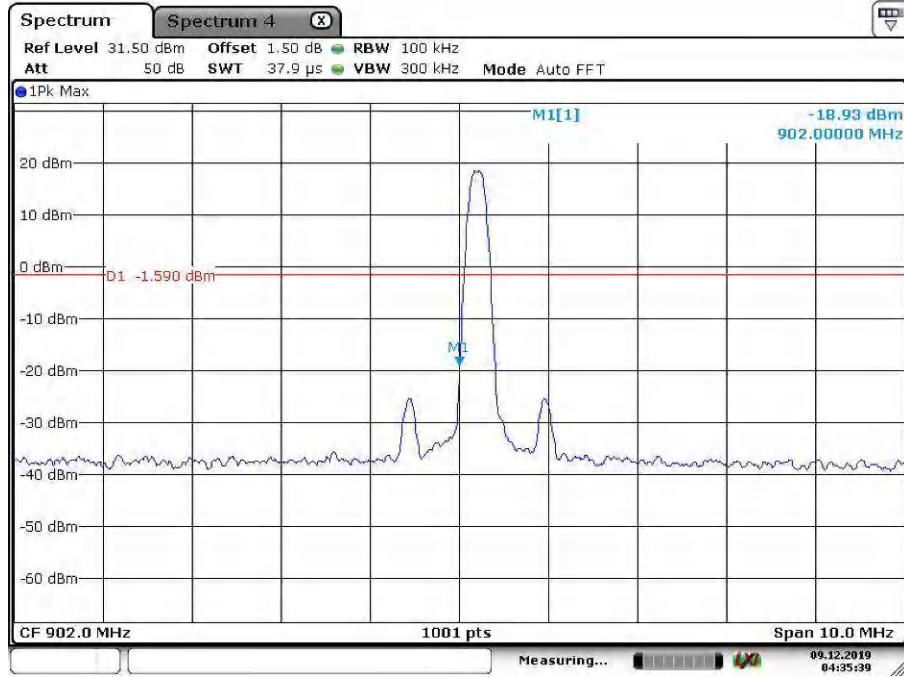
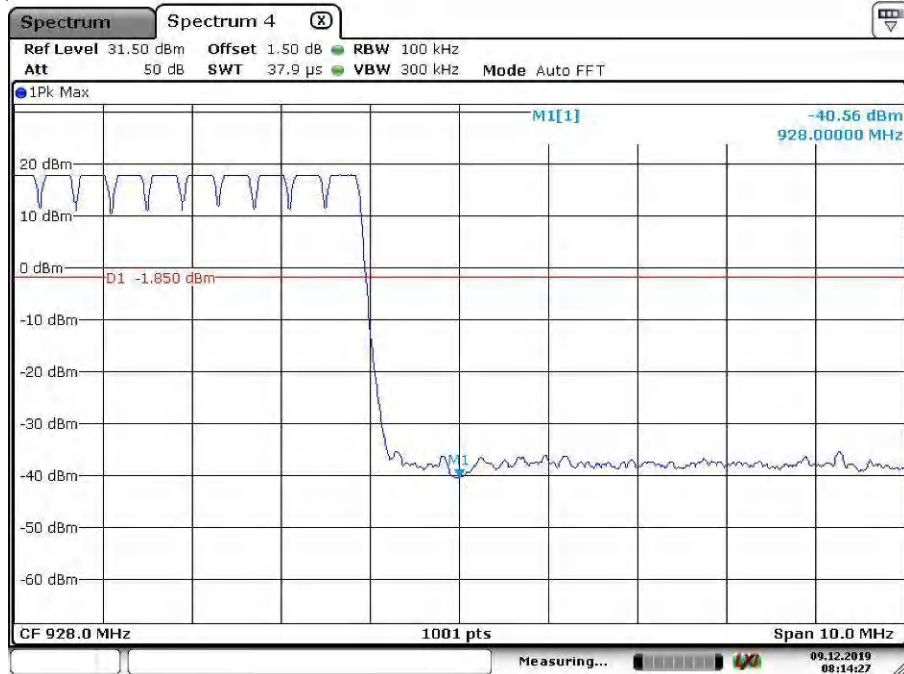Date: 9.DEC.2019   04:35:39

Band Edge, High Channel
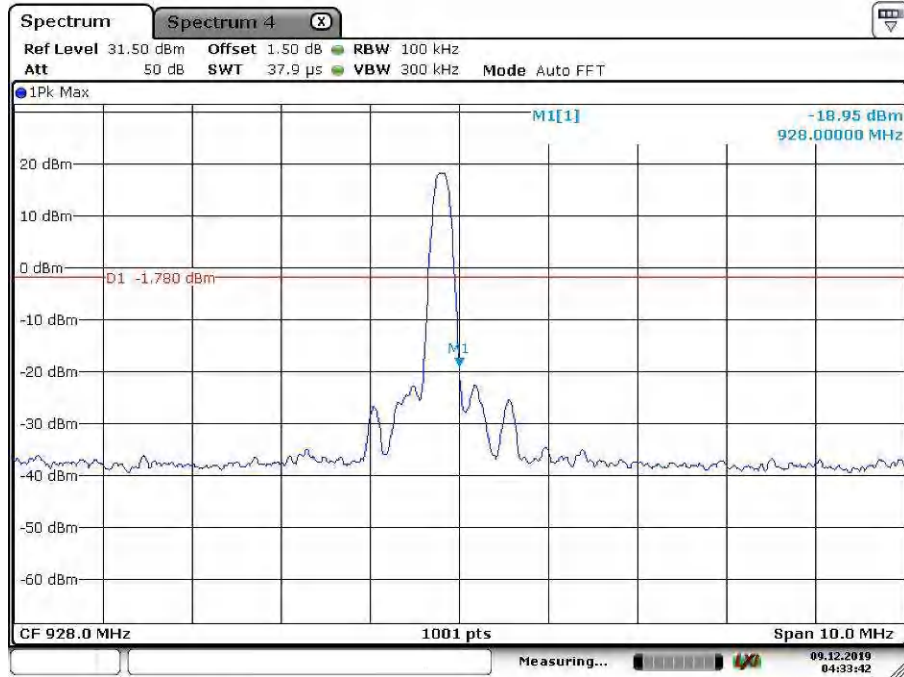
Date: 9.DEC.2019   04:33:42
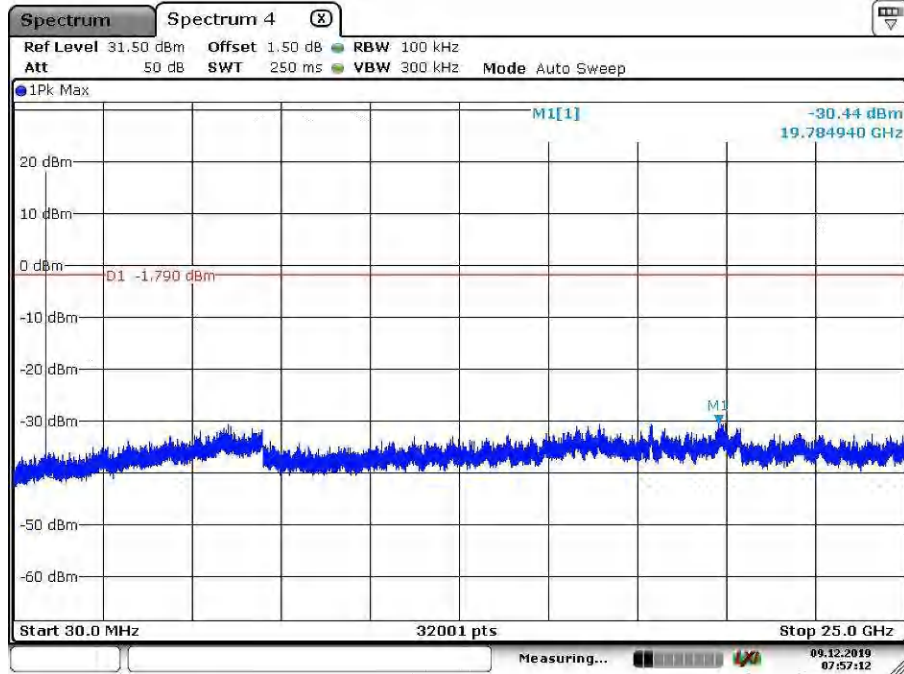
Band Edge, Hopping Mode, Low Channel
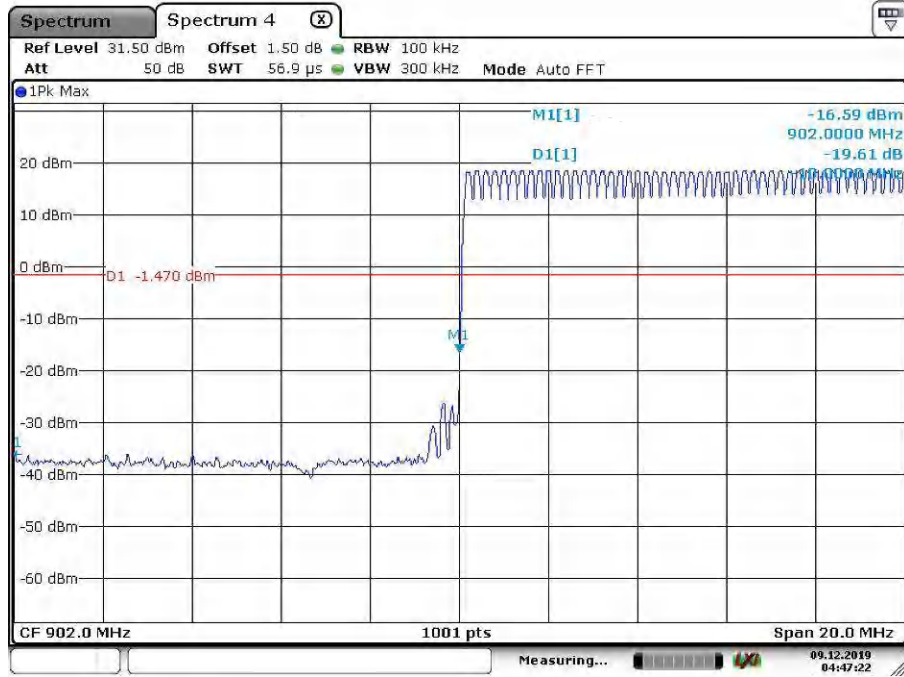
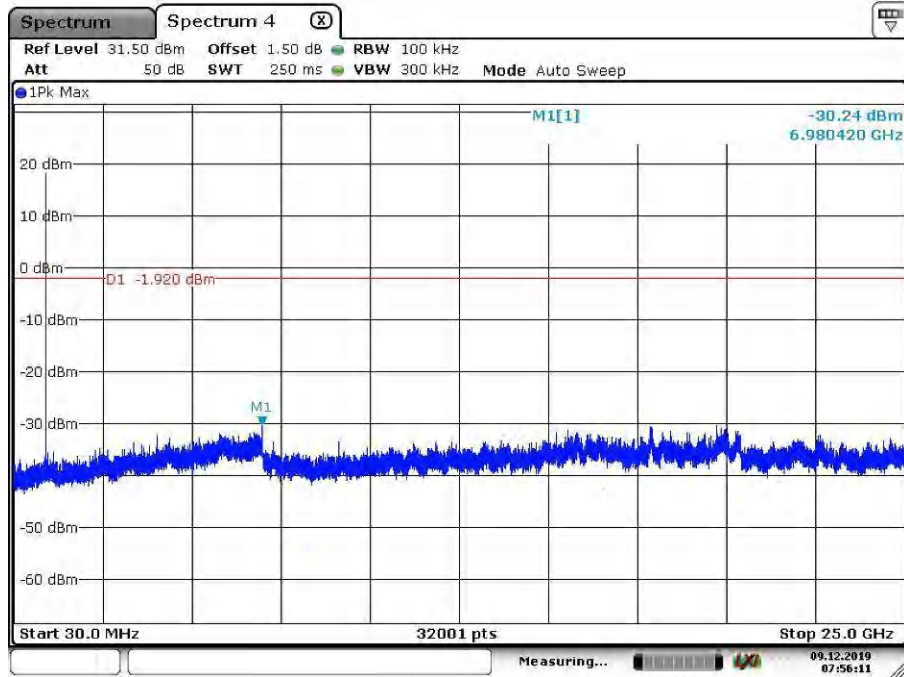Date: 9.DEC.2019 04:47:23

Band Edge, Hopping Mode, High Channle
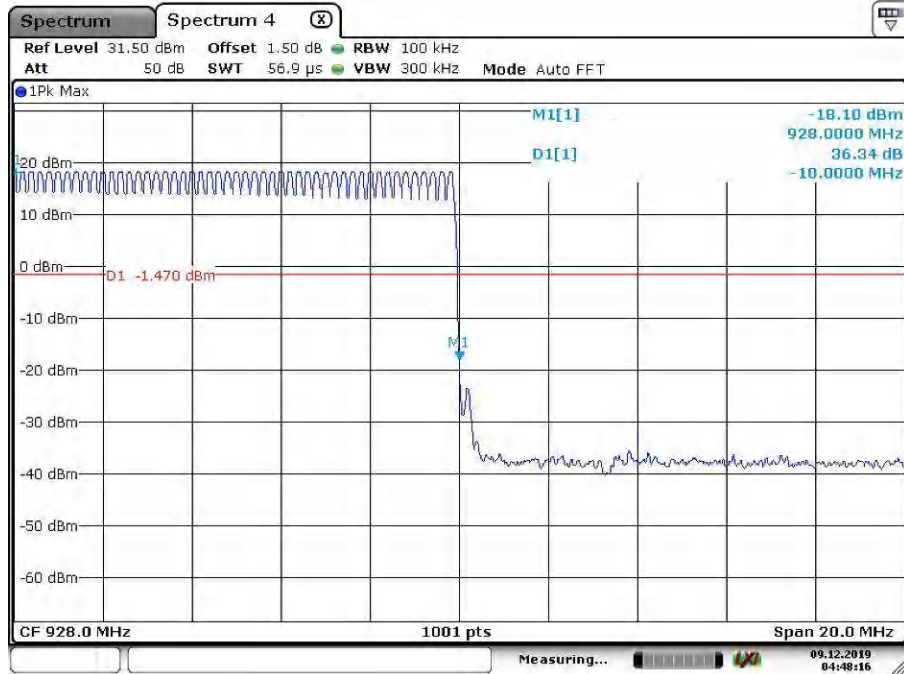
Date: 9.DEC.2019 04:48:17

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FHSs#5 (DataRate: 5Kbps)
Low Channel

Date: 9.DEC.2019 04:23:18

Middle Channel

Date: 9.DEC.2019 04:22:39

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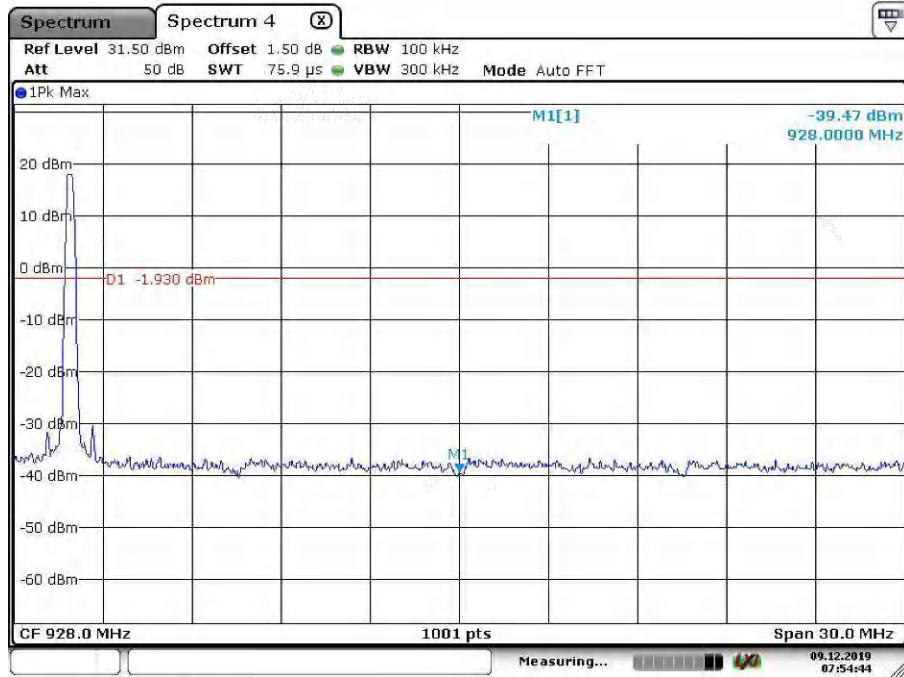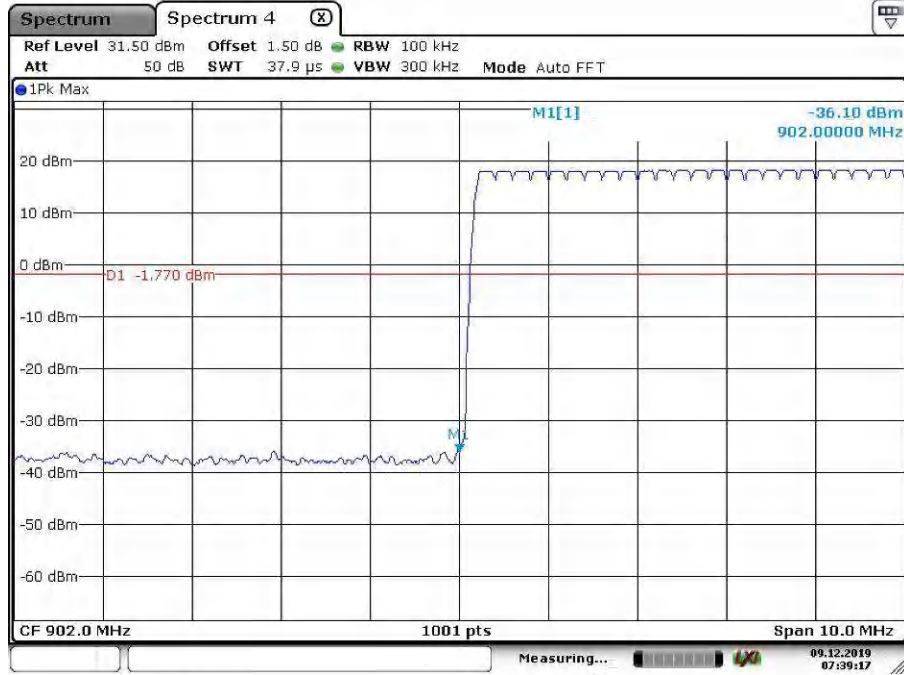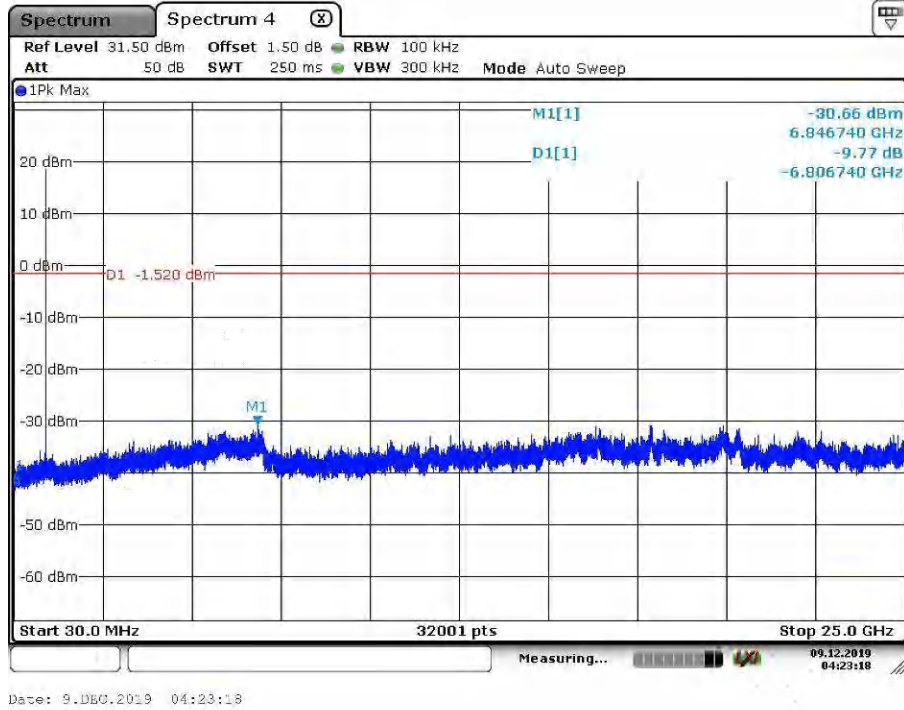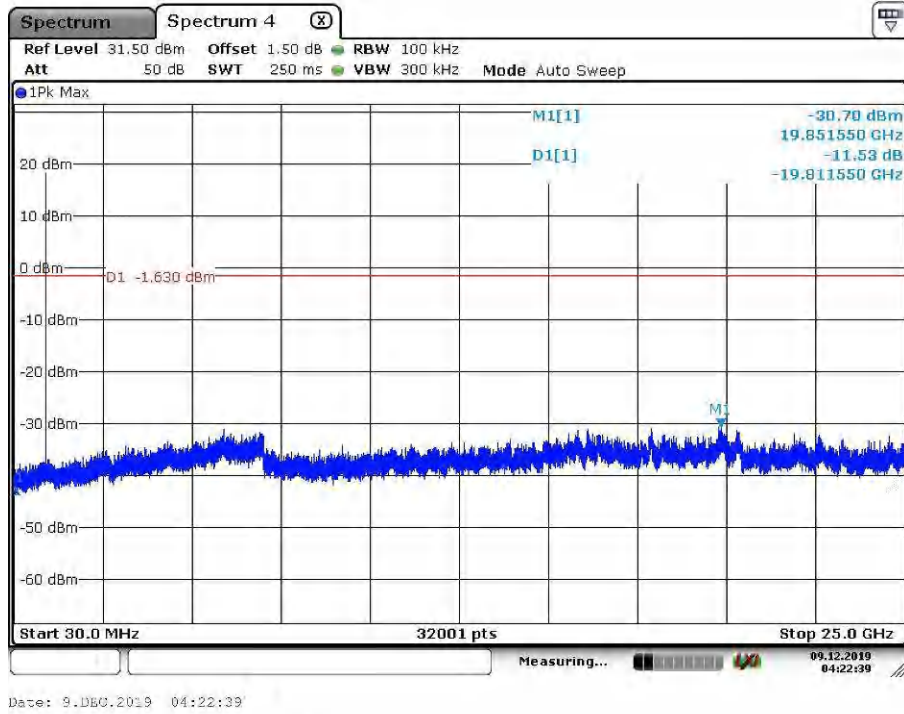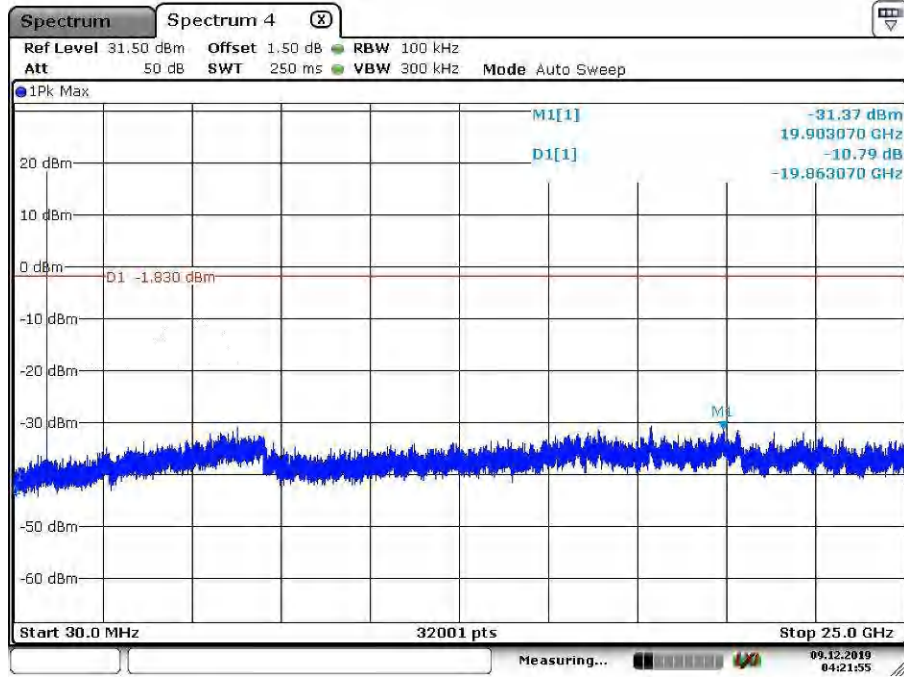
High Channel

Date: 9.DEC.2019 04:21:55

Band Edge, Low Channel

Date: 9.DEC.2019 04:23:53
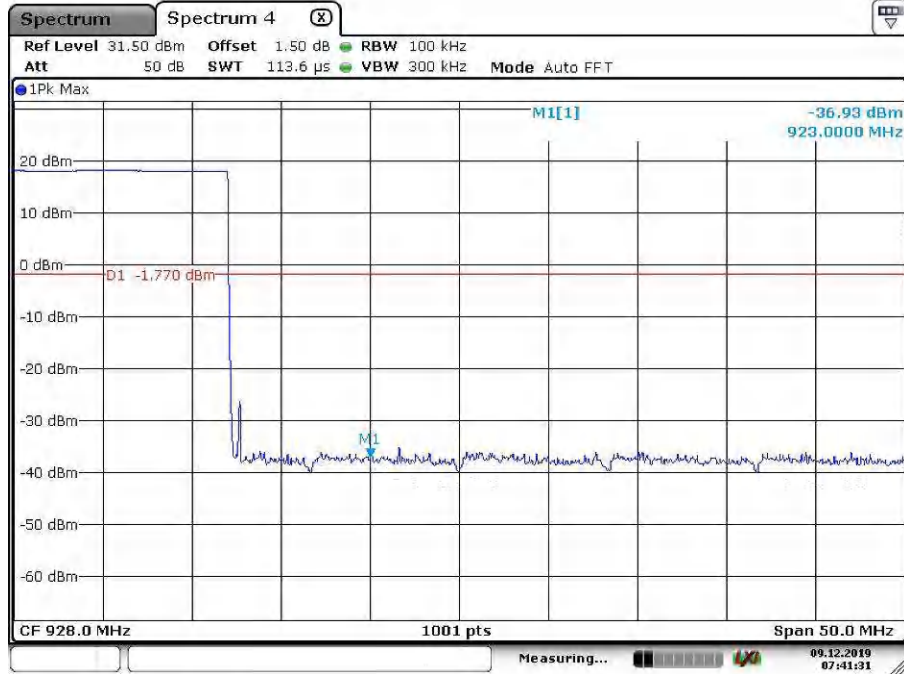
Band Edge, High Channel

Date: 9.DEC.2019 04:21:27

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Band Edge, Hopping Mode, Low Channel

Spectrum	Spectrum 4	(X)		
Ref Level	31.50 dBm	Offset	1.50 dB	RBW 100 kHz
Att	50 dB	SWT	56.9 µs	VBW 300 kHz	Mode Auto FFT

● 1Pk Max

M1[1]   -33.20 dBm
     902.0000 MHz
D1[1]   50.14 dB
     10.0000 MHz

D1 -2.990 dBm

M1

CF 902.0 MHz   1001 pts   Span 20.0 MHz

Measuring...   09.12.2019 04:01:48
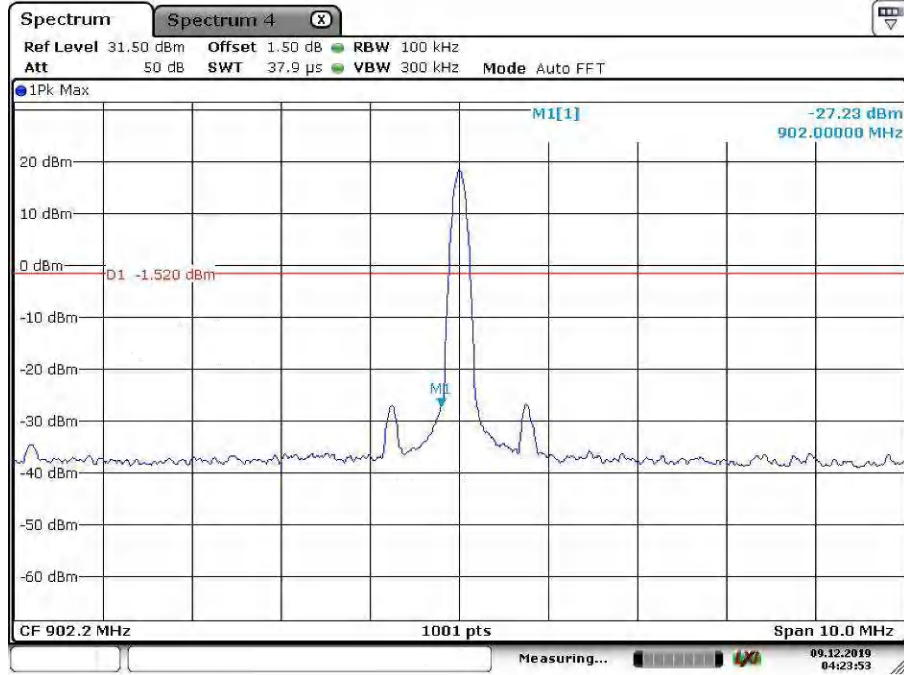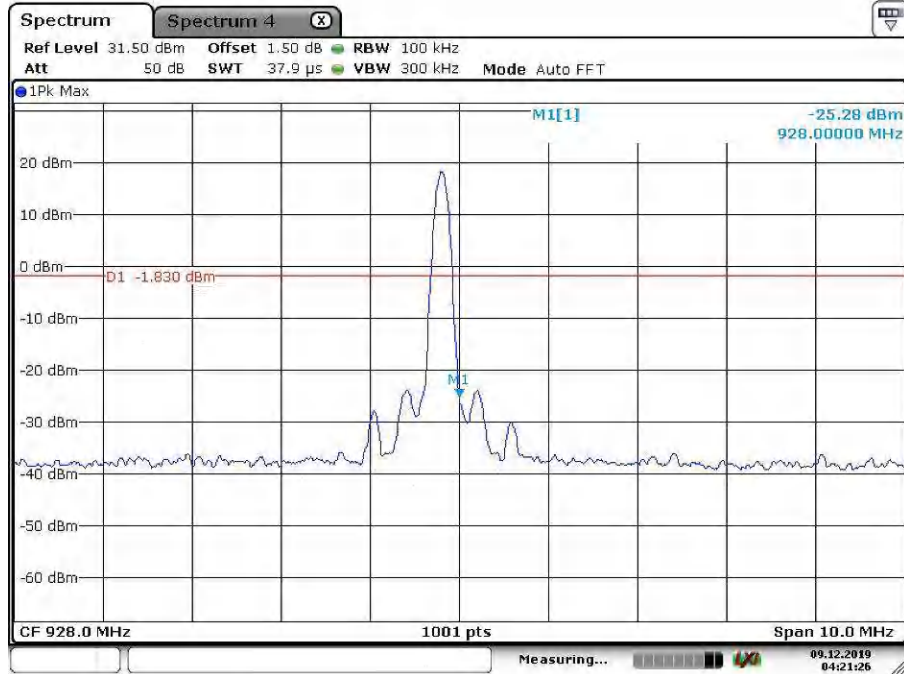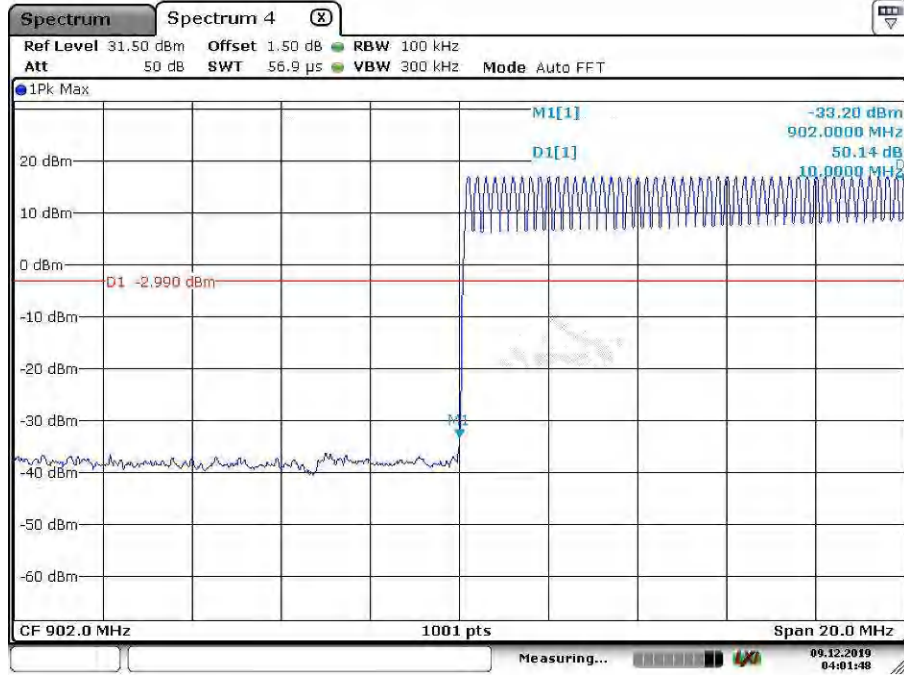
Date: 9.DEC.2019 04:01:48

Band Edge, Hopping Mode, High Channle

Spectrum	Spectrum 4	(X)		
Ref Level	31.50 dBm	Offset	1.50 dB	RBW 100 kHz
Att	50 dB	SWT	56.9 µs	VBW 300 kHz	Mode Auto FFT

● 1Pk Max

M1[1]   -26.81 dBm
     928.0000 MHz
D1[1]   43.70 dB
     -10.0000 MHz

D1 -2.990 dBm

M1

CF 928.0 MHz   1001 pts   Span 20.0 MHz

Measuring...   09.12.2019 04:02:21
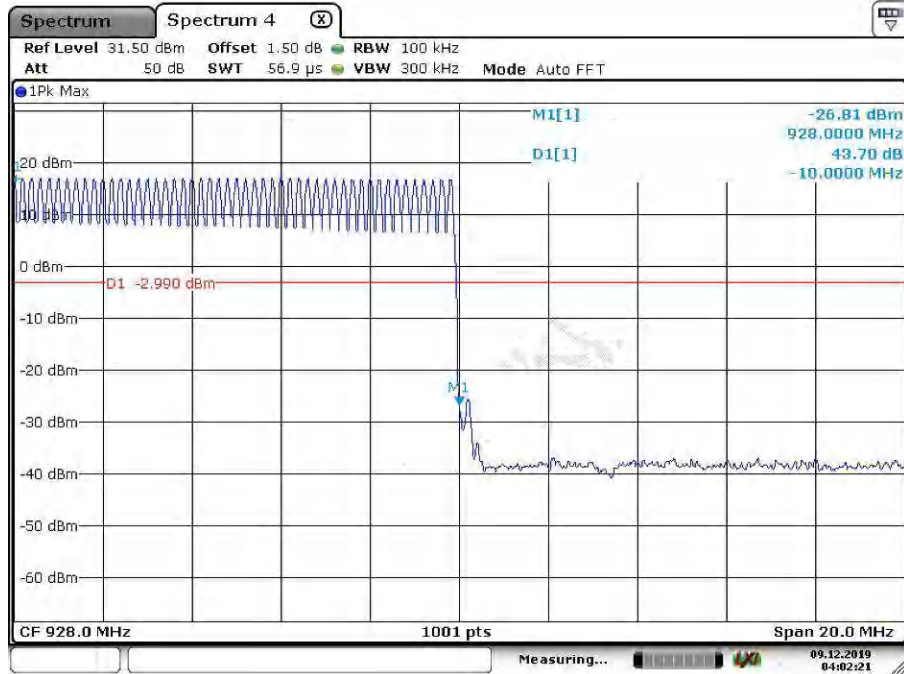
Date: 9.DEC.2019 04:02:21

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

FHSs connecting mode

L-FHSS connecting mode   1 / 1

Test Report

EUT Information

EUT Name:	Solar Pathlight
Model:	5AT1S6
Order No.:	168141103-140
Test Mode:	FHSS connecting mode
Test Voltage:	AC 120V/60Hz
Test By:	Tom Guo
Review By:	Gary Chen
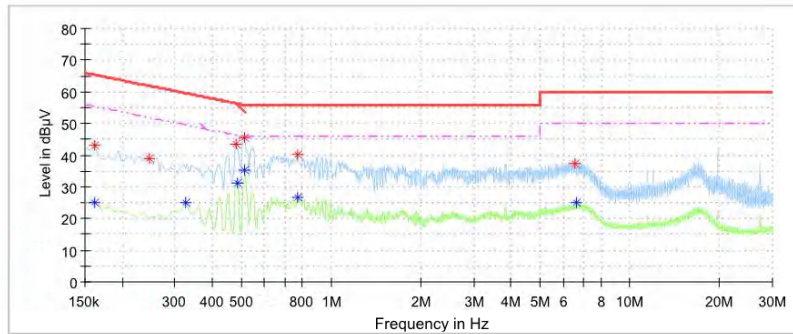
Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.162000	---	25.13	55.36	30.23	---	---	L1	9.6
0.162000	43.21	---	65.36	22.15	---	---	L1	9.6
0.246000	39.00	---	61.89	22.89	---	---	L1	9.6
0.326000	---	24.95	49.55	24.60	---	---	L1	9.7
0.482000	43.68	---	56.31	12.62	---	---	L1	9.7
0.486000	---	31.27	46.24	14.96	---	---	L1	9.7
0.512000	45.55	---	56.00	10.45	---	---	L1	9.7
0.516000	---	35.32	46.00	10.68	---	---	L1	9.7
0.772000	40.06	---	56.00	15.94	---	---	L1	9.7
0.776000	---	26.50	46.00	19.50	---	---	L1	9.7
6.532000	37.53	---	60.00	22.47	---	---	L1	10.0
6.636000	---	24.93	50.00	25.07	---	---	L1	10.0

12/7/2019   2:27:58 PM

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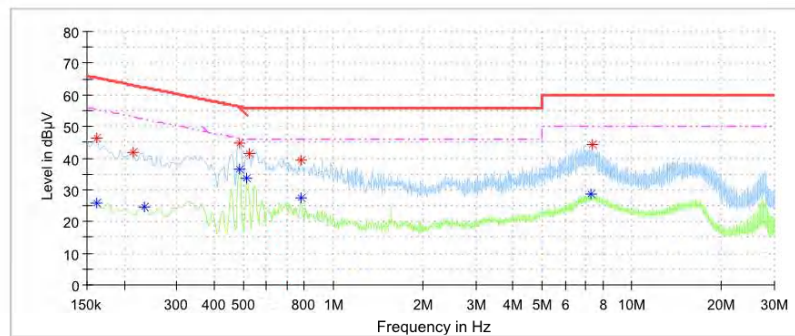N-FHSS connecting mode   1 / 1

Test Report

EUT Information

EUT Name: Solar Pathlight
Model: 5AT1S6
Order No.:   168141103-140
Test Mode: FHSS connecting mode
Test Voltage: AC 120V/60Hz
Test By: Tom Guo
Review By: Gary Chen

Critical Freqs

Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.162000	---	25.84	55.36	29.52	---	---	N	9.6
0.162000	46.49	---	65.36	18.87	---	---	N	9.6
0.214000	41.74	---	63.05	21.30	---	---	N	9.6
0.234000	---	24.42	52.31	27.89	---	---	N	9.6
0.486000	44.76	---	56.24	11.48	---	---	N	9.7
0.486000	---	36.67	46.24	9.57	---	---	N	9.7
0.516000	---	33.56	46.00	12.44	---	---	N	9.7
0.524000	41.31	---	56.00	14.69	---	---	N	9.7
0.780000	---	27.51	46.00	18.49	---	---	N	9.7
0.784000	39.20	---	56.00	16.80	---	---	N	9.7
7.312000	---	28.64	50.00	21.36	---	---	N	10.0
7.348000	44.11	---	60.00	15.89	---	---	N	10.0

12/7/2019   2:11:10 PM