**SGS-CSTC Standards Technical Services Co., Ltd.
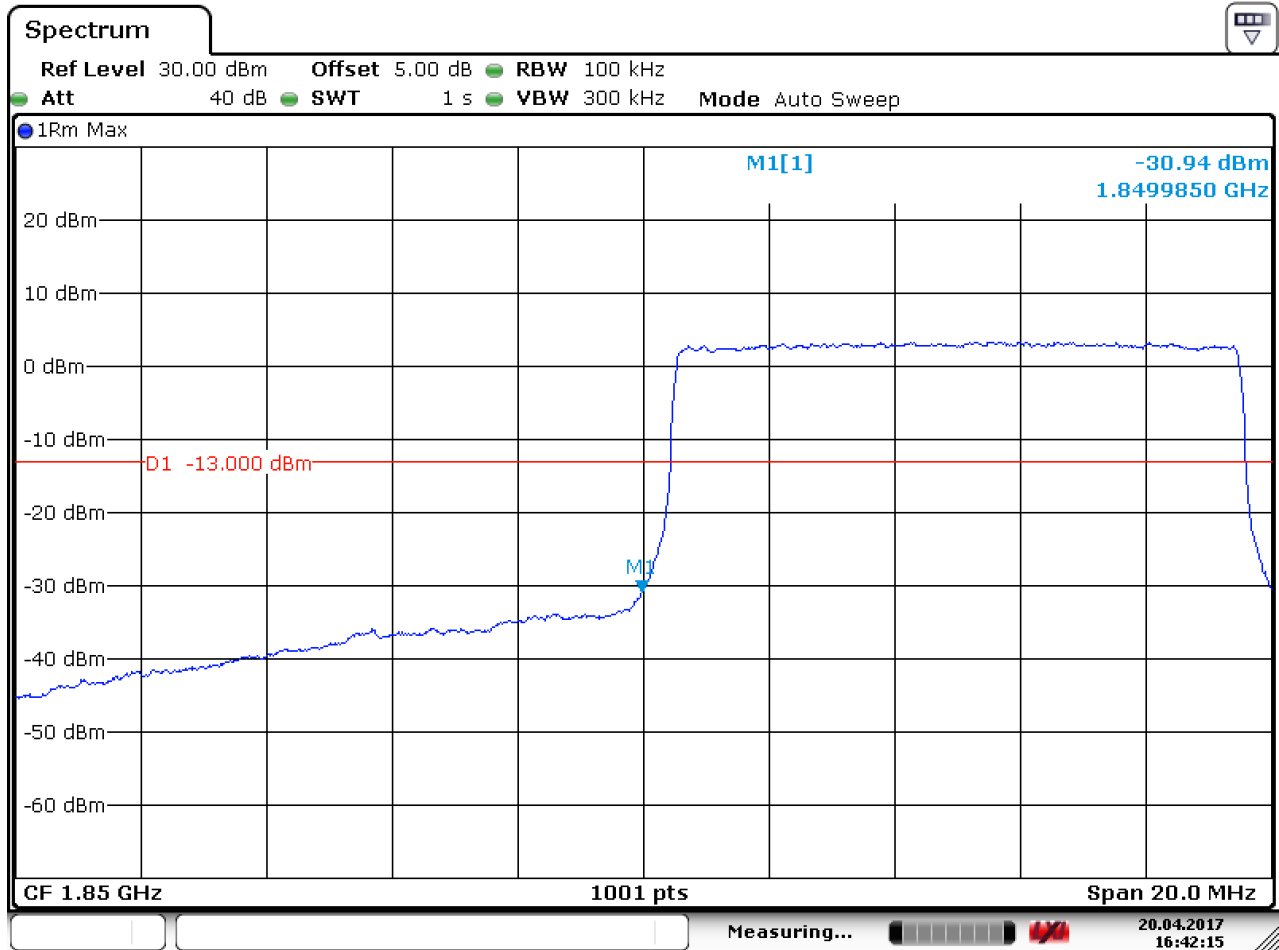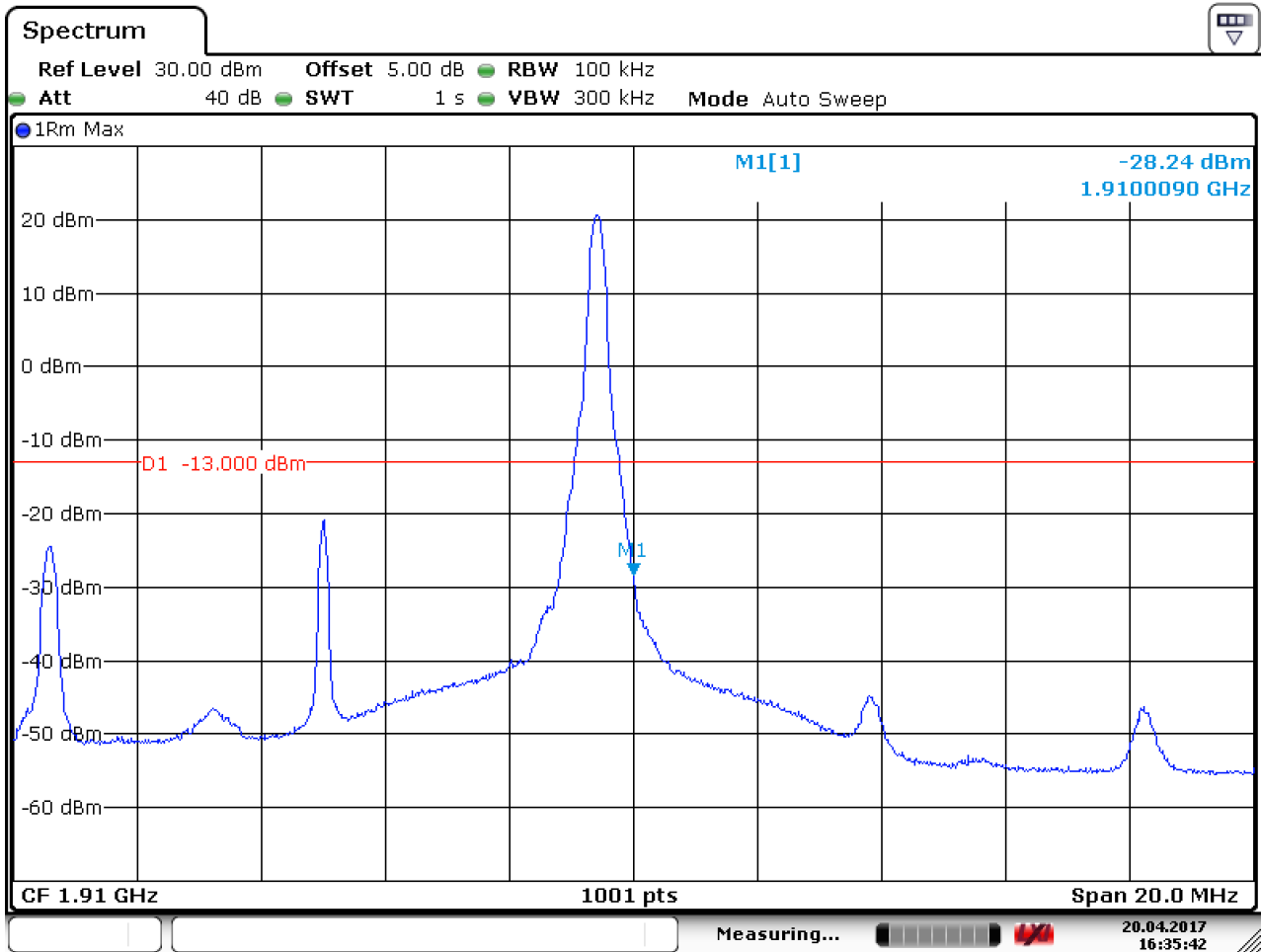Shenzhen Branch**

5.1.1.8.1.2 Test RB=50RB

Date: 20.APR.2017 16:42:15

5.1.1.8.2   Test Channel = HCH
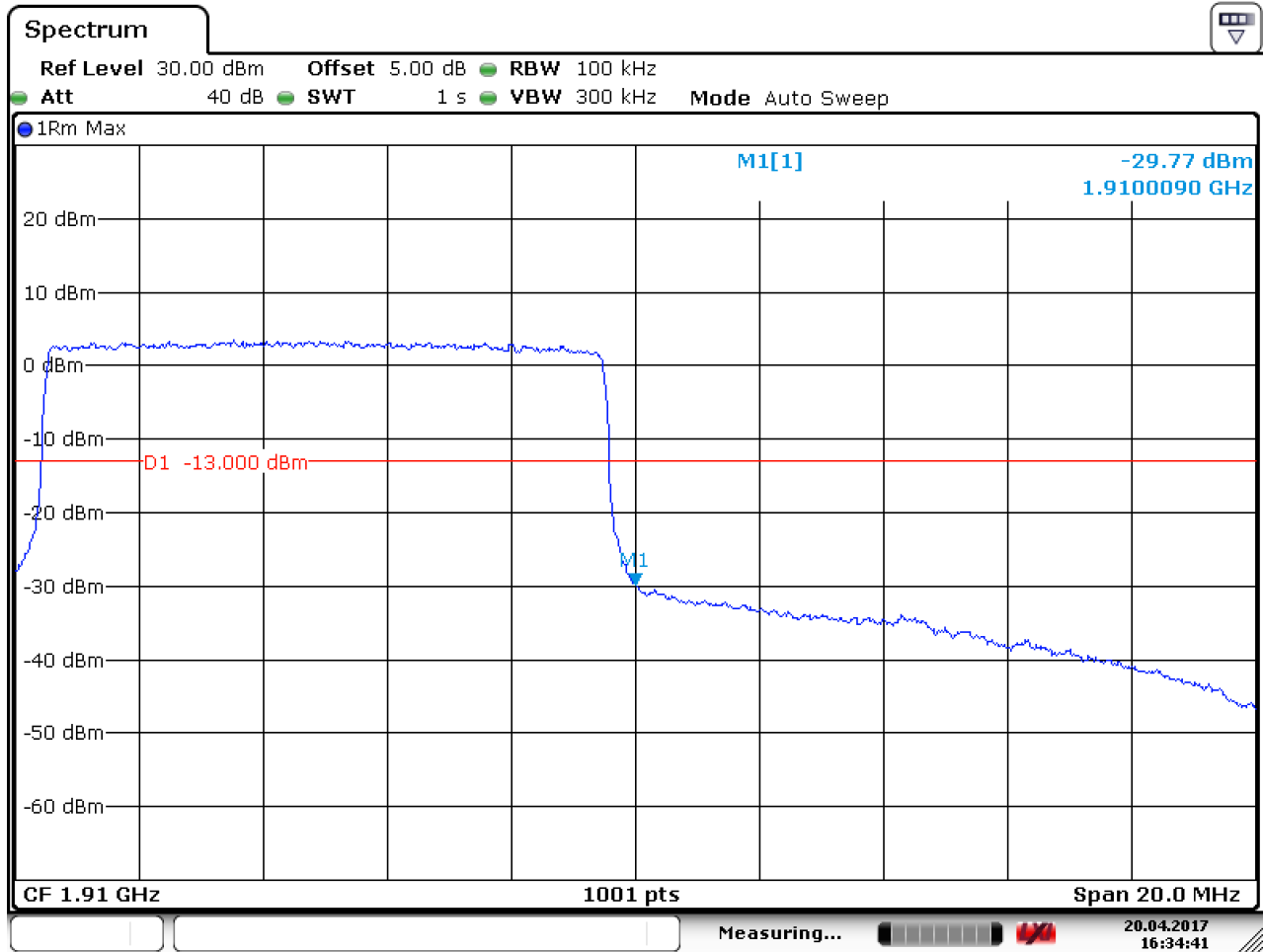
5.1.1.8.2.1 Test RB=1RB

Date: 20.APR.2017 16:35:42
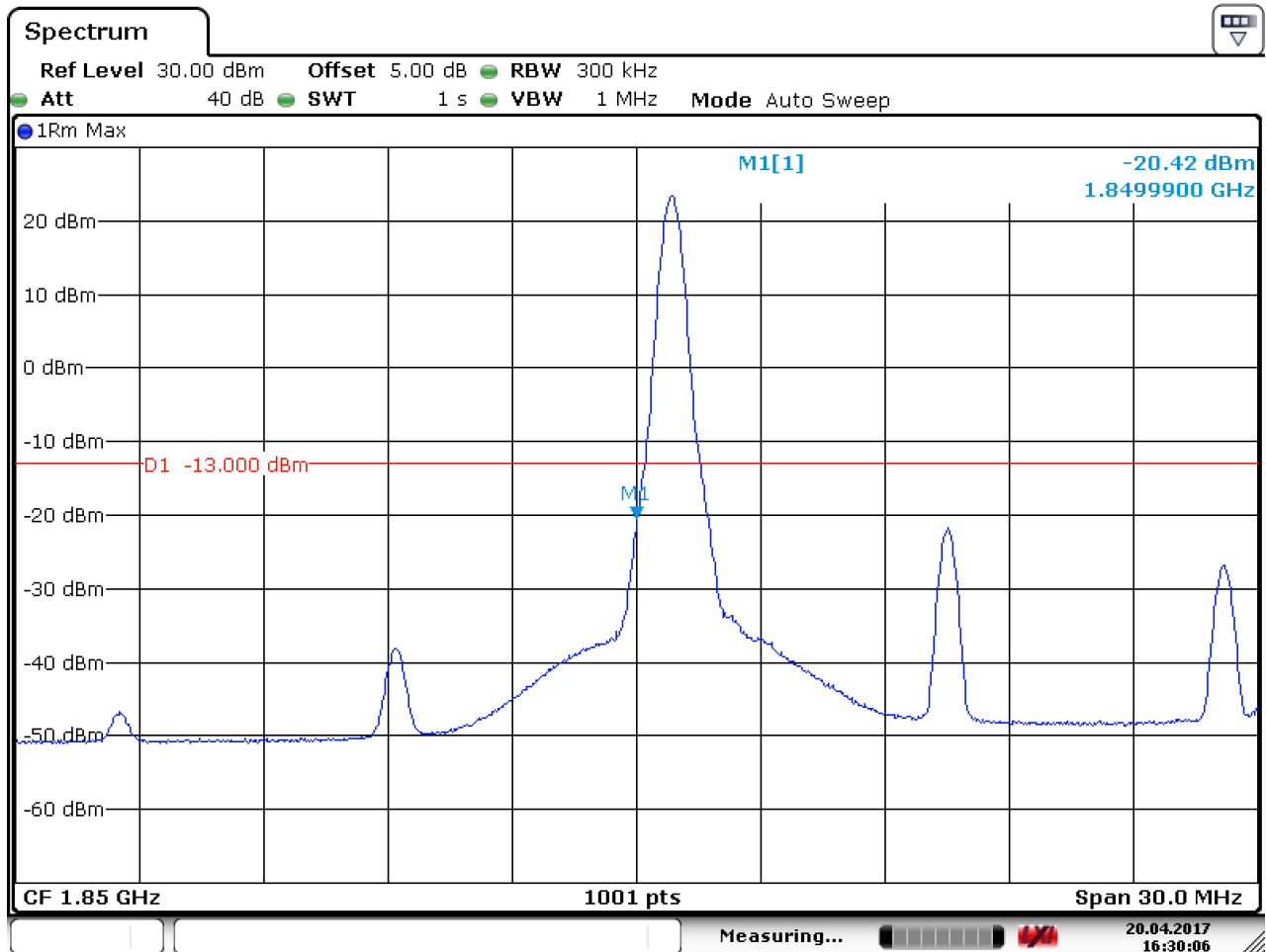
5.1.1.8.2.2 Test RB=50RB
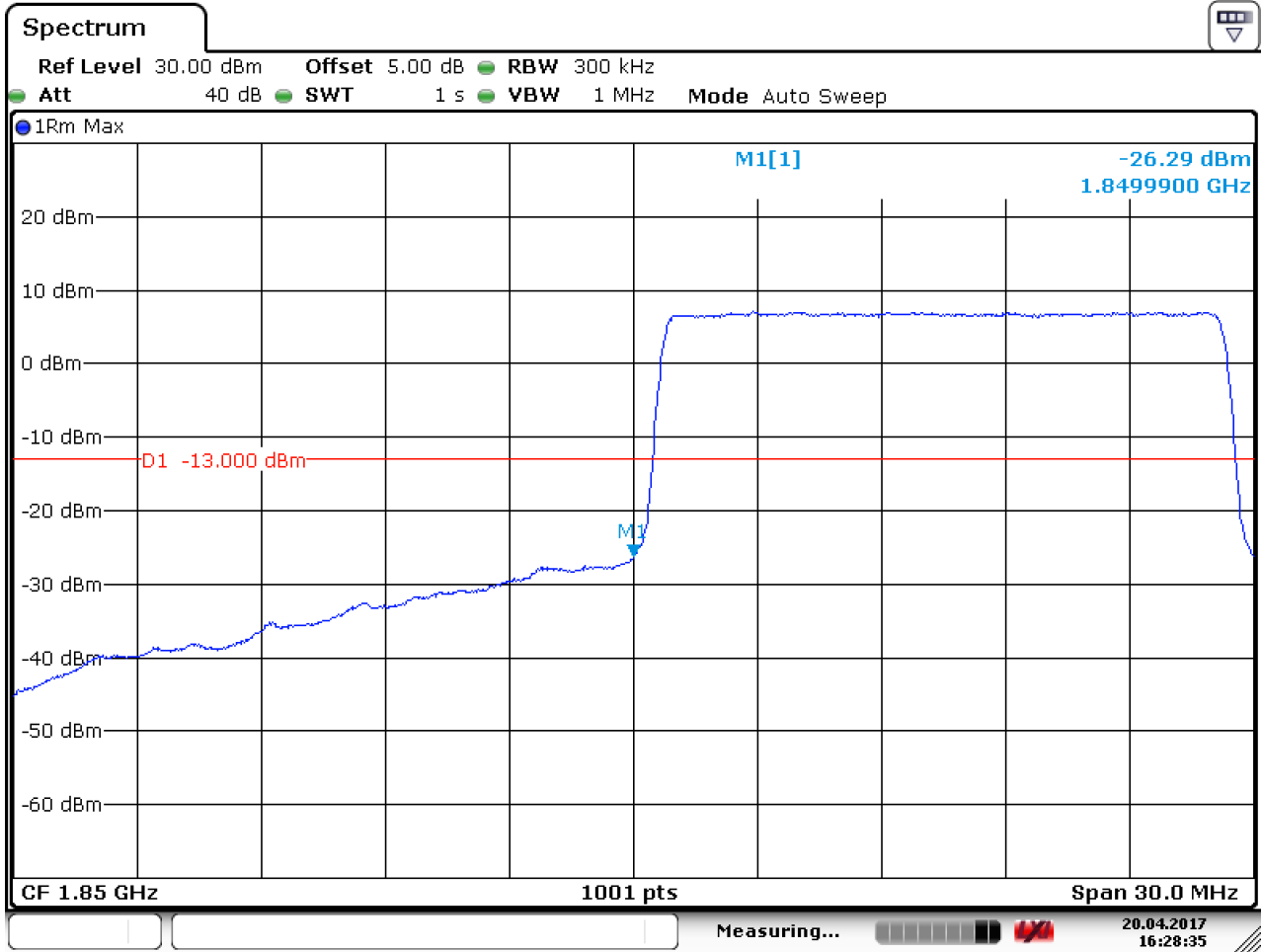

Date: 20.APR.2017 16:34:42

5.1.1.9   Test Mode = LTE/TM1 15MHz

5.1.1.9.1   Test Channel = LCH

5.1.1.9.1.1 Test RB=1RB

Date: 20.APR.2017 16:30:06

5.1.1.9.1.2 Test RB=75RB

Date: 20.APR.2017 16:28:36

5.1.1.9.2 Test Channel = HCH

5.1.1.9.2.1 Test RB=1RB

Date: 20.APR.2017 16:30:51

5.1.1.9.2.2 Test RB=75RB

Spectrum		
Ref Level 30.00 dBm	Offset 5.00 dB	RBW 300 kHz
Att 40 dB	SWT 1 s	VBW 1 MHz	Mode Auto Sweep

1Rm Max

M1[1] -25.88 dBm 1.9100300 GHz

20 dBm

10 dBm

0 dBm

-10 dBm

D1 -13.000 dBm

-20 dBm

M1

-30 dBm

-40 dBm

-50 dBm

-60 dBm

CF 1.91 GHz   1001 pts   Span 30.0 MHz

Measuring...   20.04.2017 16:31:51
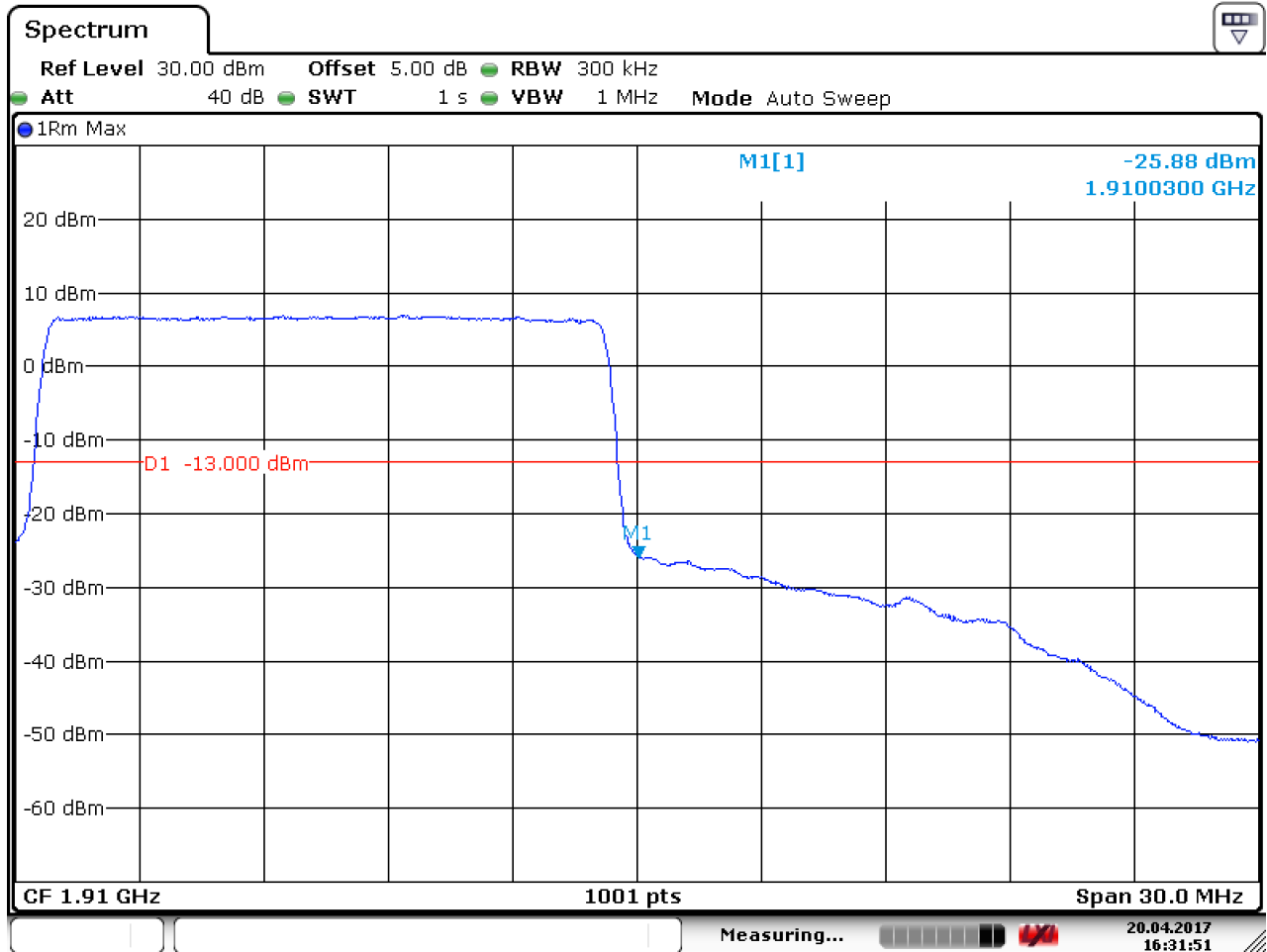
Date: 20.APR.2017 16:31:51

5.1.1.10   Test Mode = LTE/TM2 15MHz

5.1.1.10.1   Test Channel = LCH

5.1.1.10.1.1 Test RB=1RB
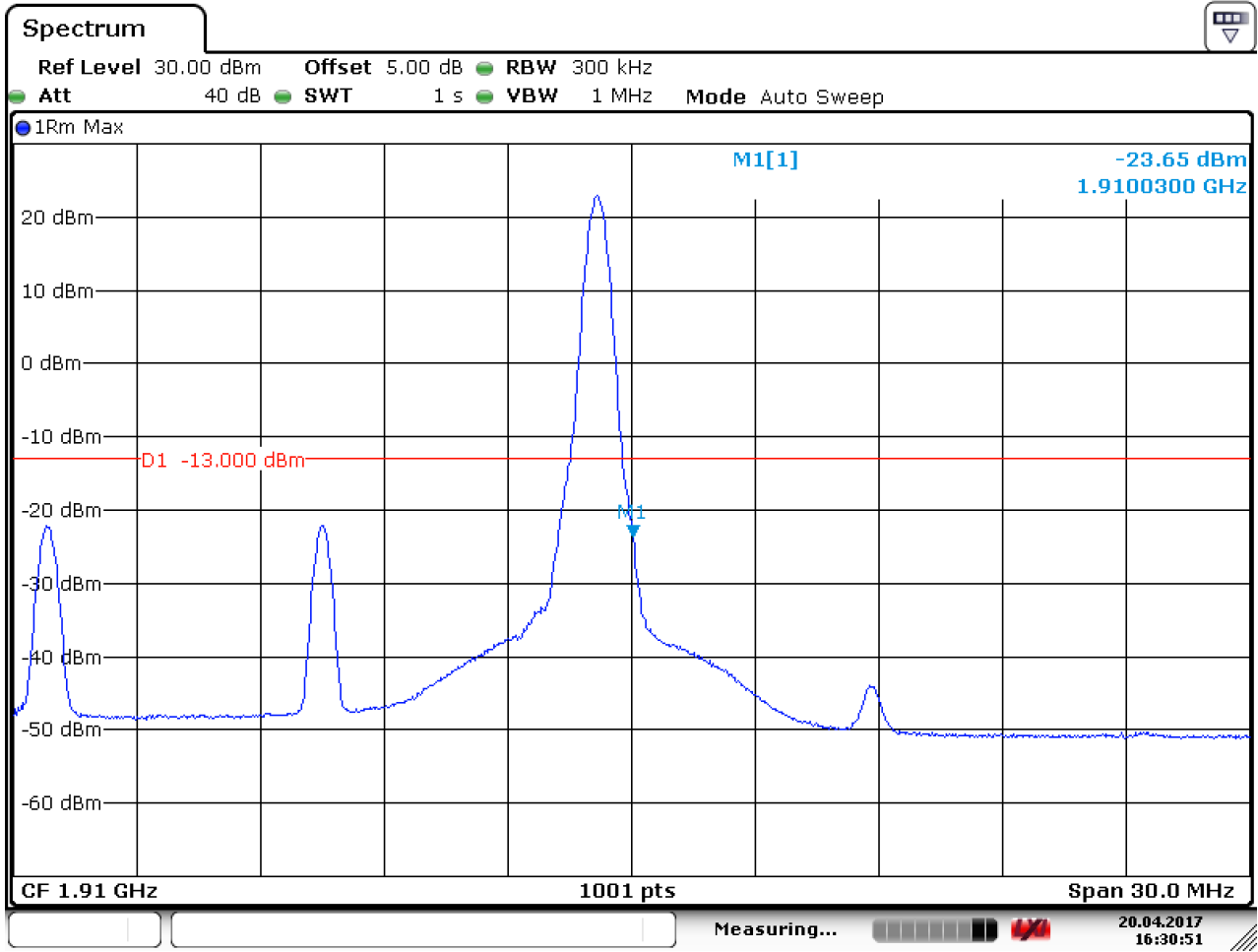

Date: 20.APR.2017 16:29:41

5.1.1.10.1.2 Test RB=75RB
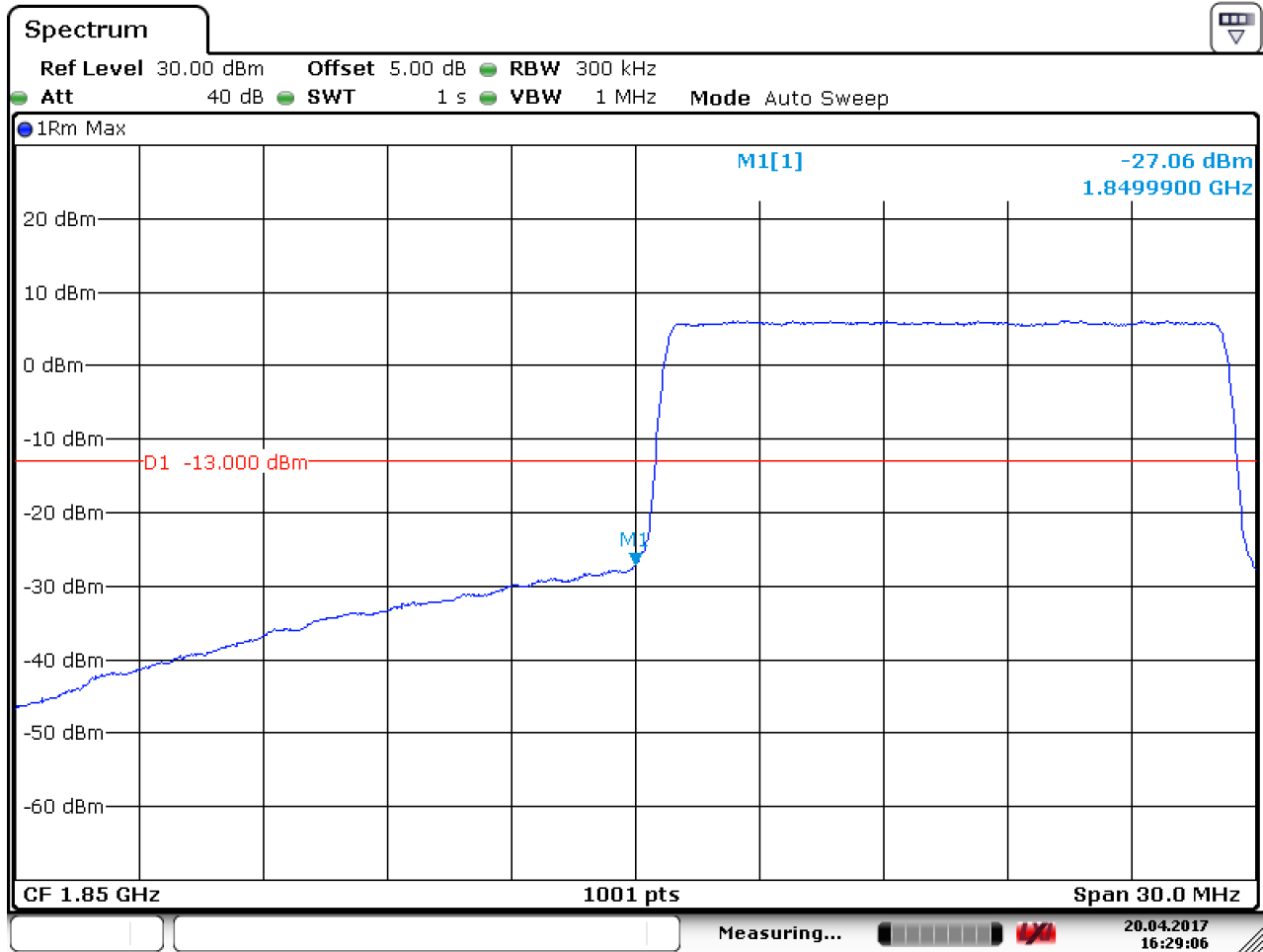
Date: 20.APR.2017 16:29:06

5.1.1.10.2 Test Channel = HCH
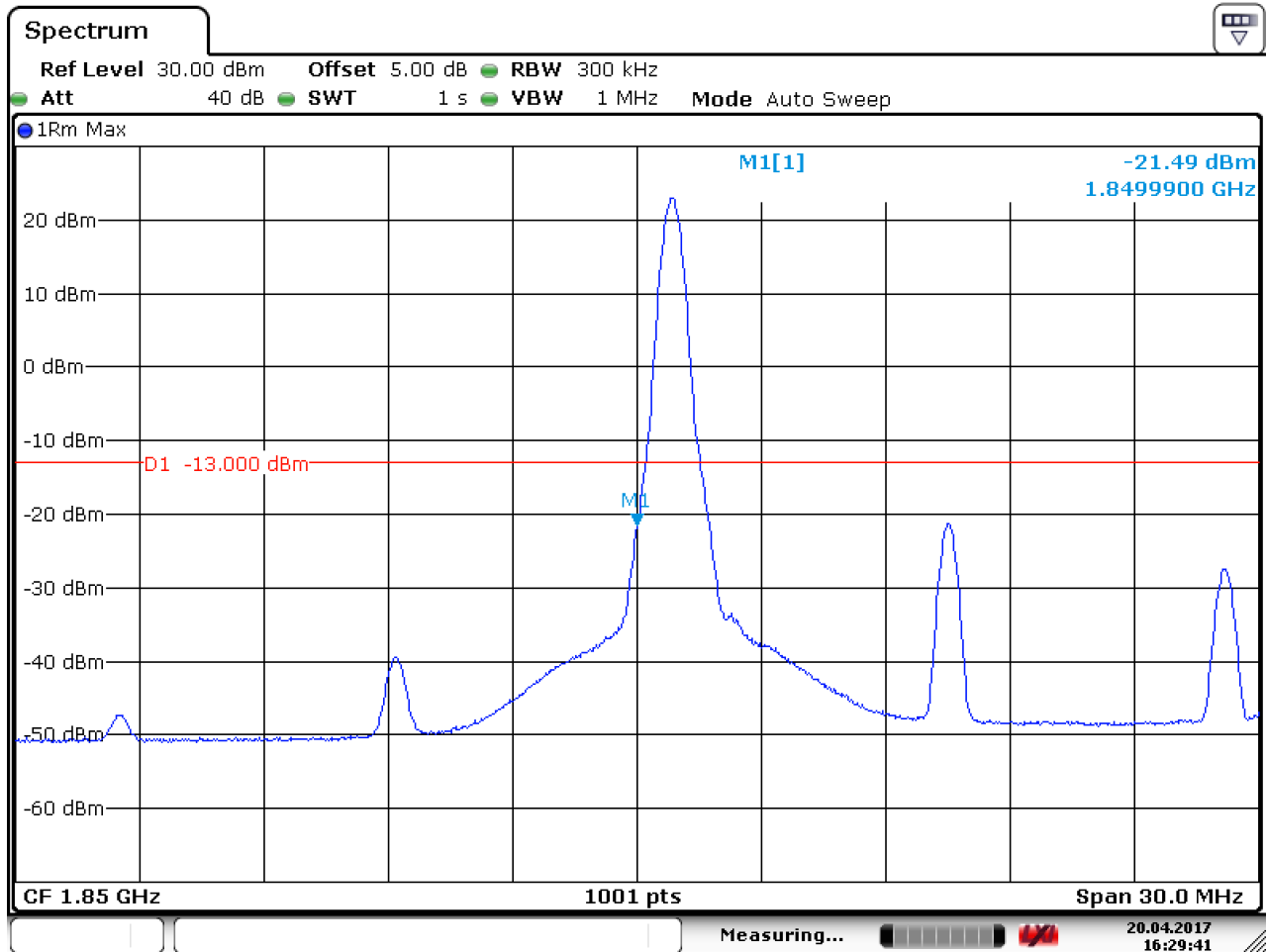
5.1.1.10.2.1 Test RB=1RB
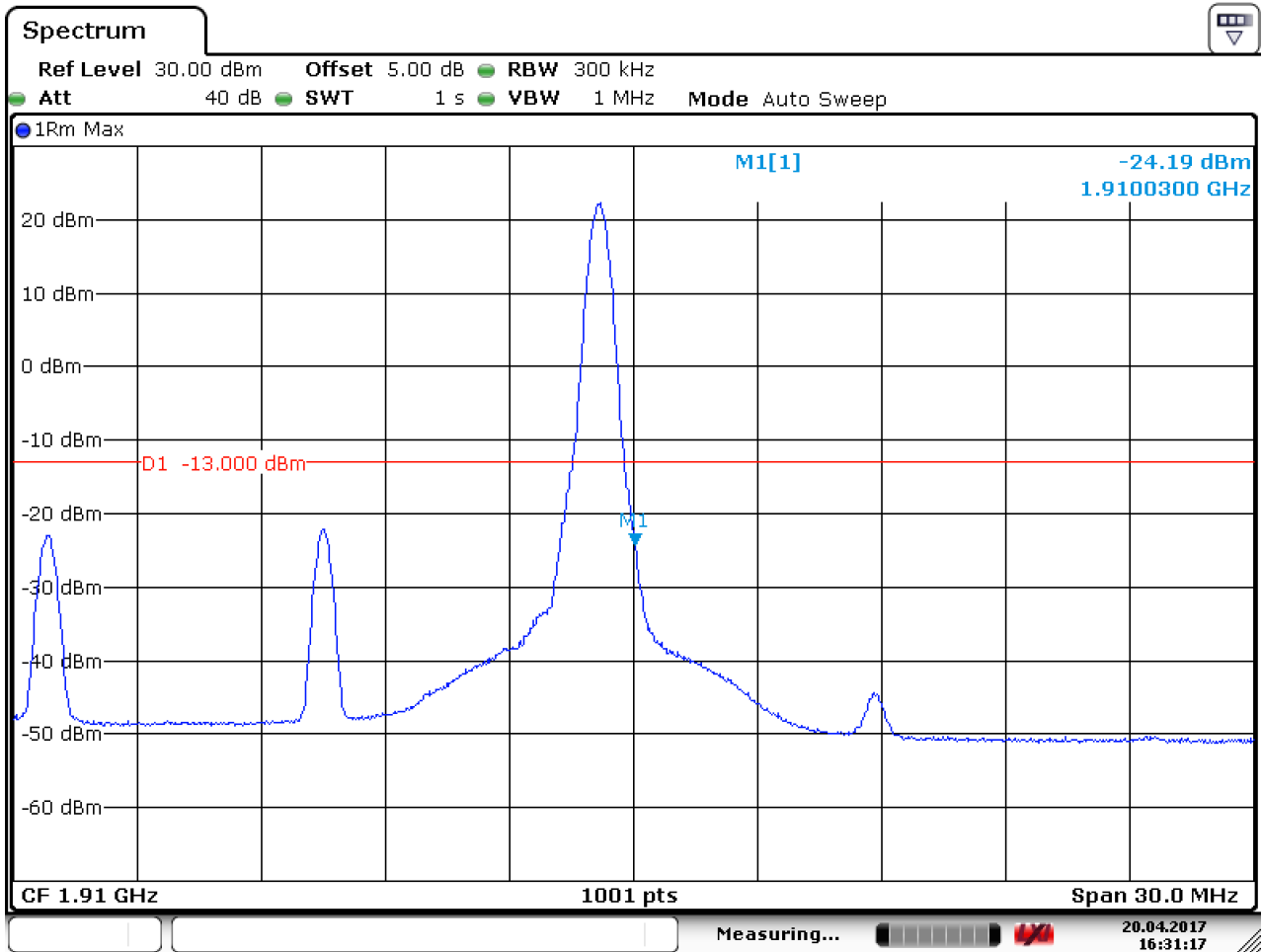
Date: 20.APR.2017 16:31:17

5.1.1.10.2.2 Test RB=75RB

Date: 20.APR.2017 16:32:52

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
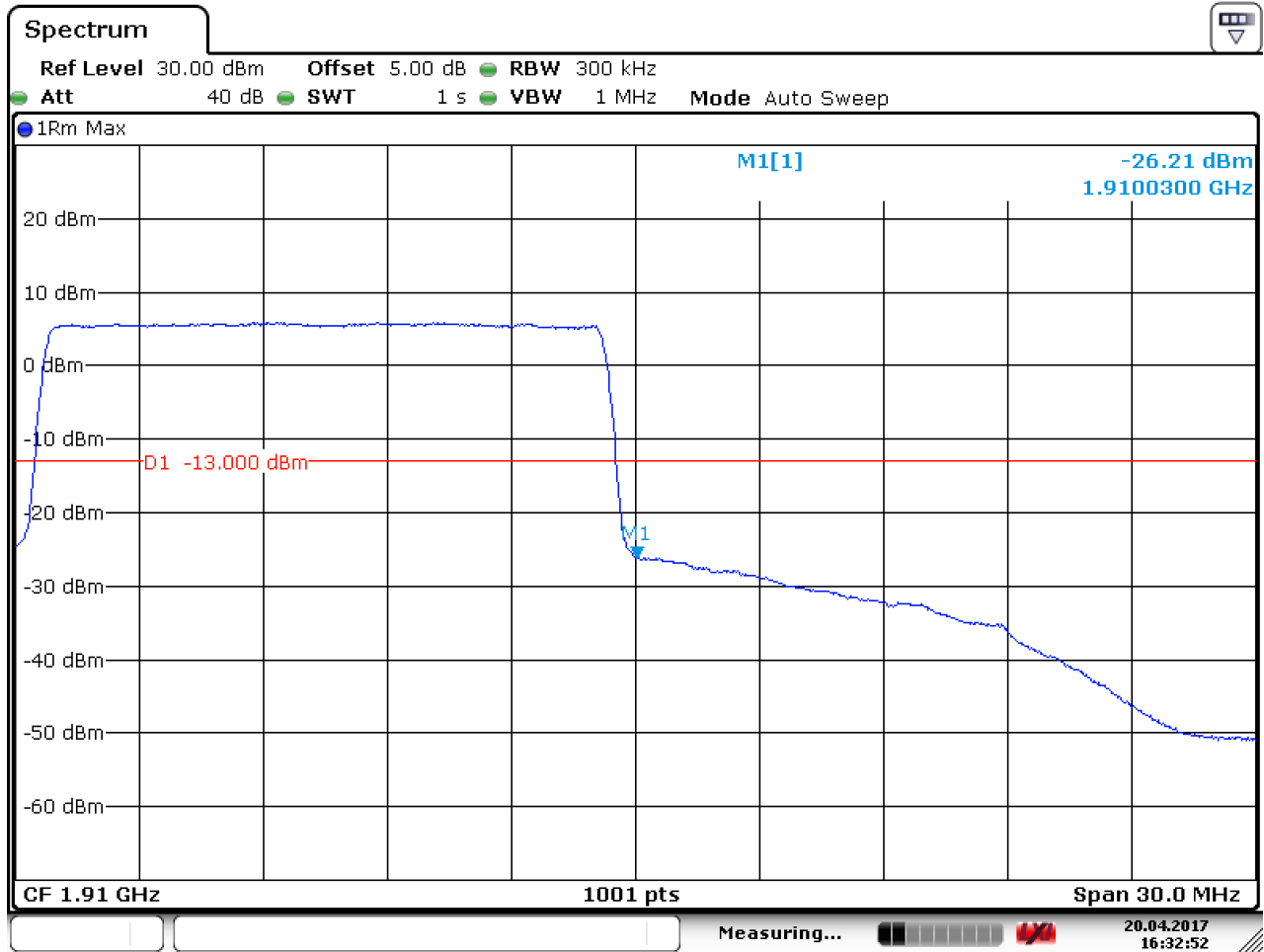
5.1.1.11   Test Mode = LTE/TM1 20MHz

5.1.1.11.1   Test Channel = LCH

5.1.1.11.1.1 Test RB=1RB

Date: 20.APR.2017 16:26:13

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
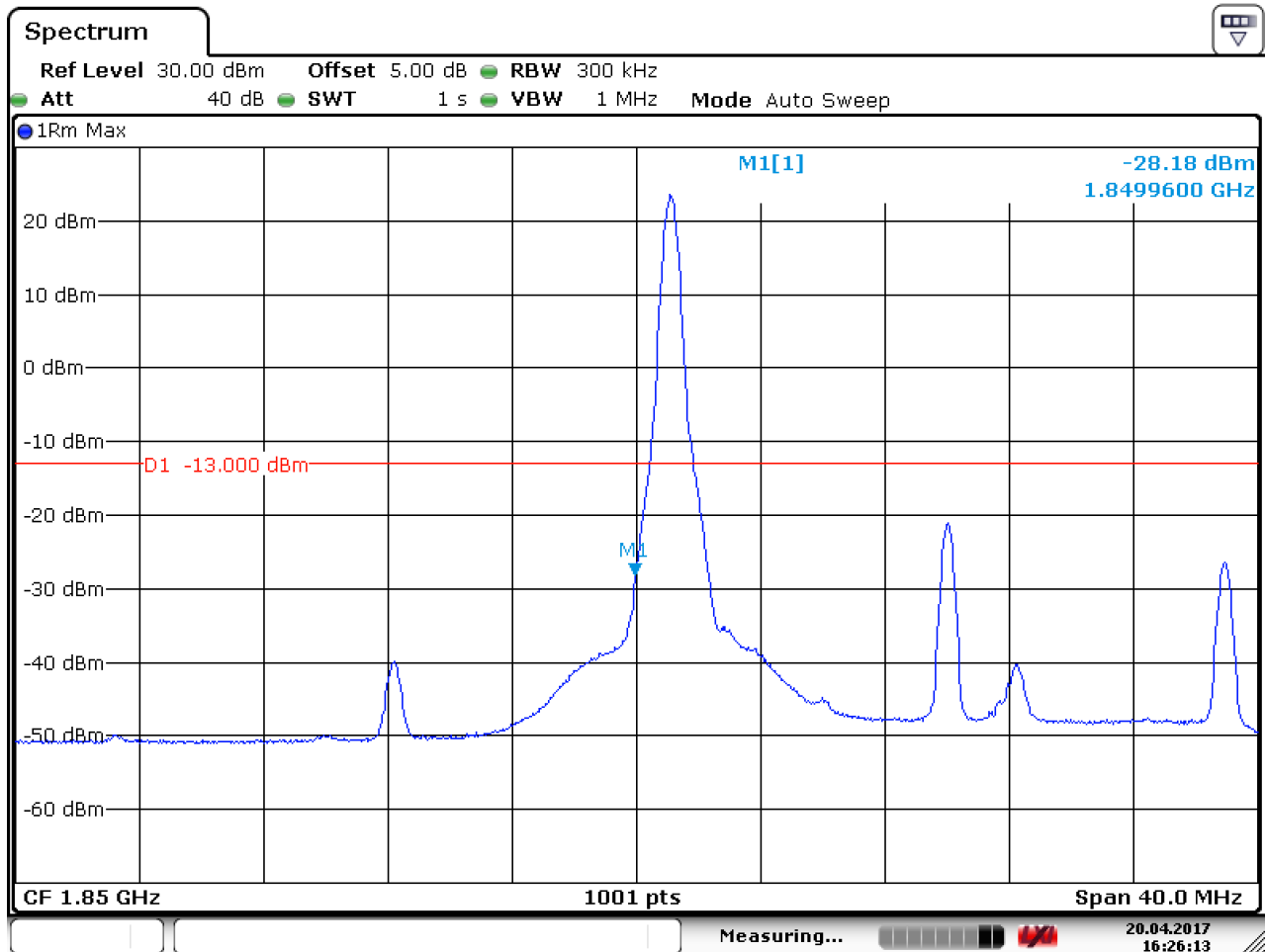
5.1.1.11.1.2 Test RB=100RB

Date: 20.APR.2017 16:27:47

5.1.1.11.2 Test Channel = HCH

5.1.1.11.2.1 Test RB=1RB

Date: 20.APR.2017 16:25:35

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5.1.1.11.2.2 Test RB=100RB

Date: 20.APR.2017 16:23:46

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
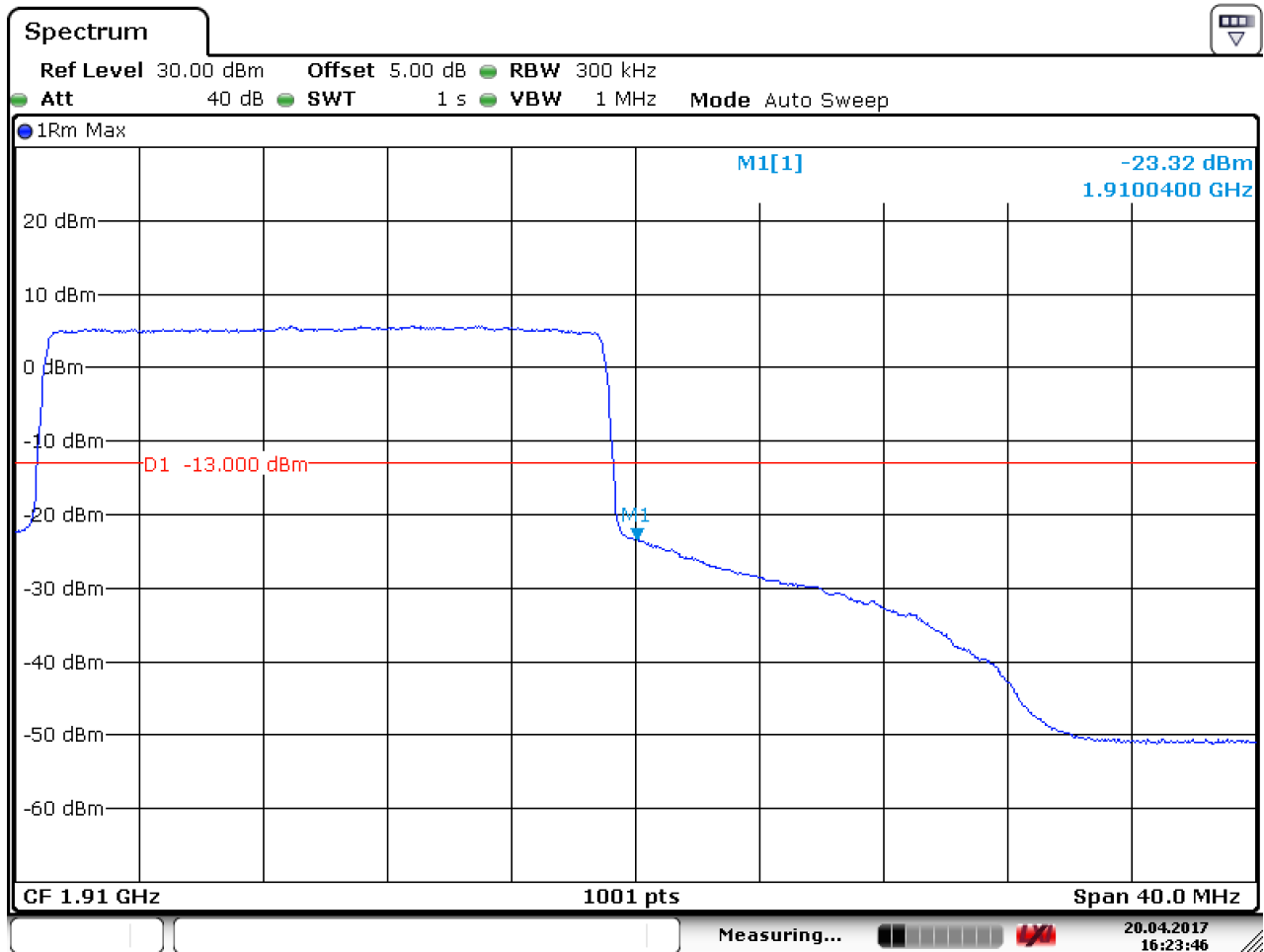
5.1.1.12 Test Mode = LTE/TM2 20MHz

5.1.1.12.1 Test Channel = LCH

5.1.1.12.1.1 Test RB=1RB

Date: 20.APR.2017 16:26:43

5.1.1.12.1.2 Test RB=100RB

Spectrum

Ref Level 30.00 dBm	Offset 5.00 dB	RBW 300 kHz	
Att 40 dB	SWT 1 s	VBW 1 MHz	Mode Auto Sweep

1Rm Max

M1[1]   -27.85 dBm
                         1.8499600 GHz

20 dBm

10 dBm

0 dBm

-10 dBm

D1 -13.000 dBm

-20 dBm

M1

-30 dBm

-40 dBm

-50 dBm

-60 dBm

CF 1.85 GHz   1001 pts   Span 40.0 MHz

Measuring...   20.04.2017
                                16:27:06
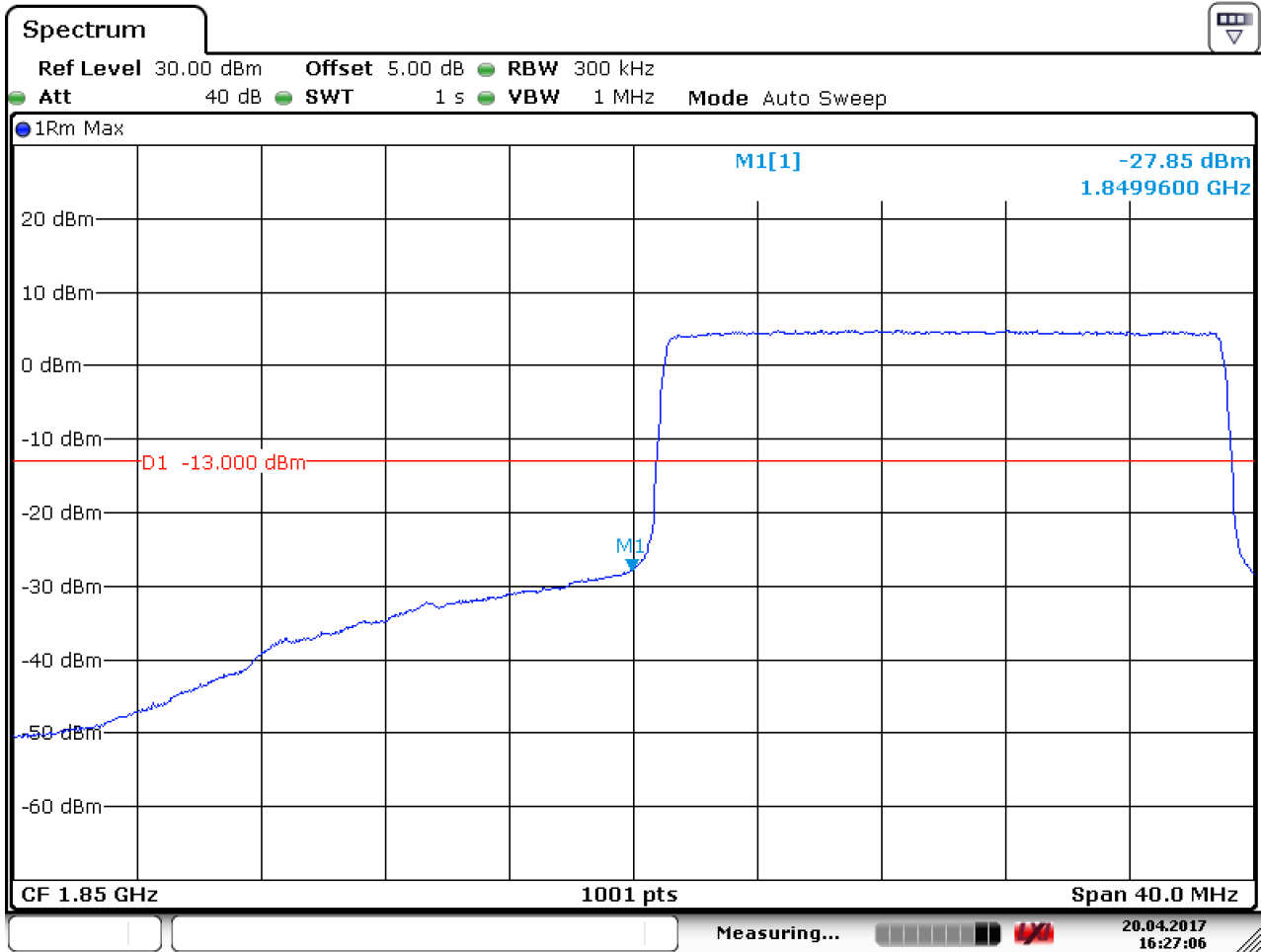
Date: 20.APR.2017 16:27:06

5.1.1.12.2 Test Channel = HCH

5.1.1.12.2.1 Test RB=1RB
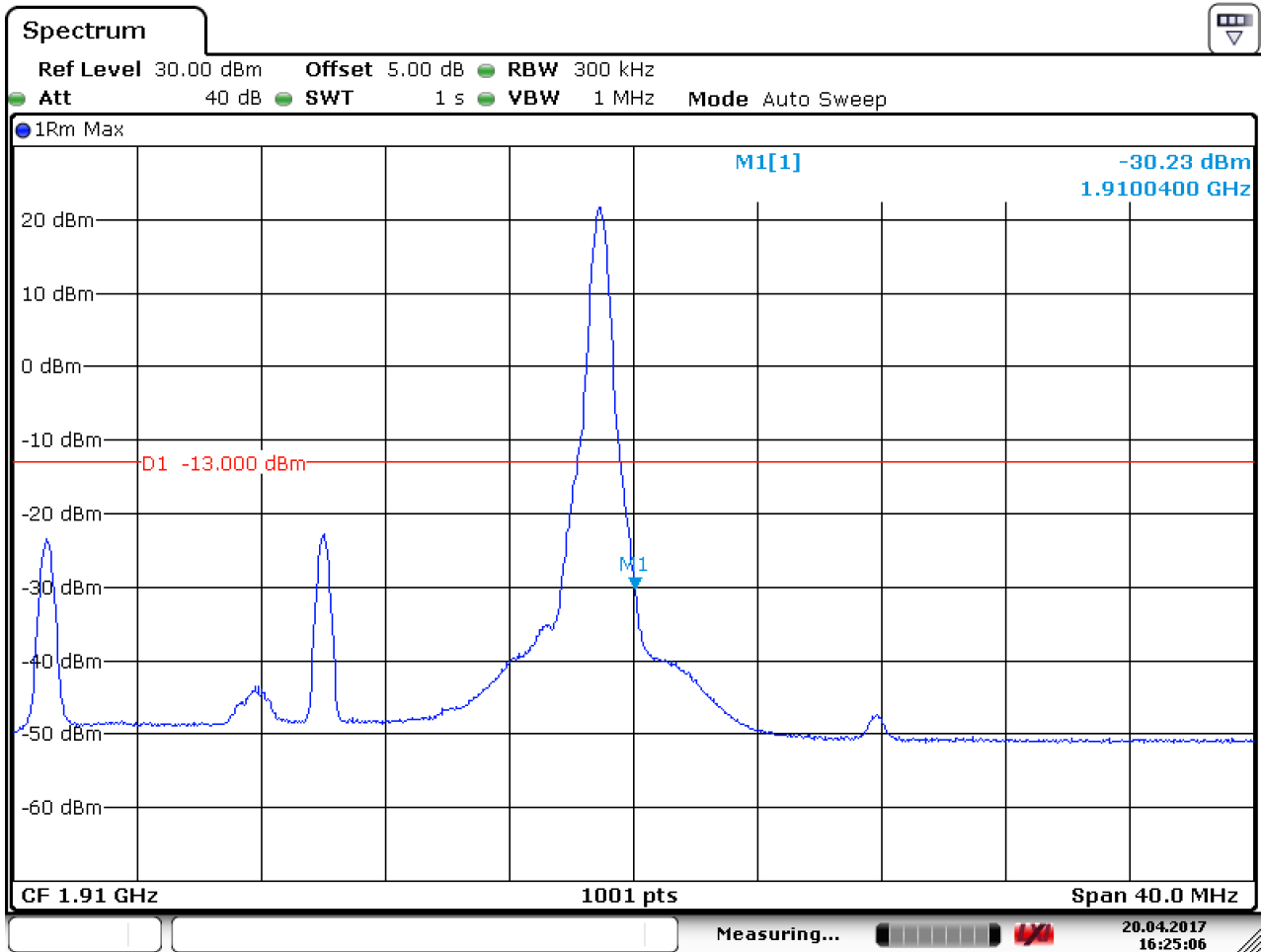
Date: 20.APR.2017 16:25:06

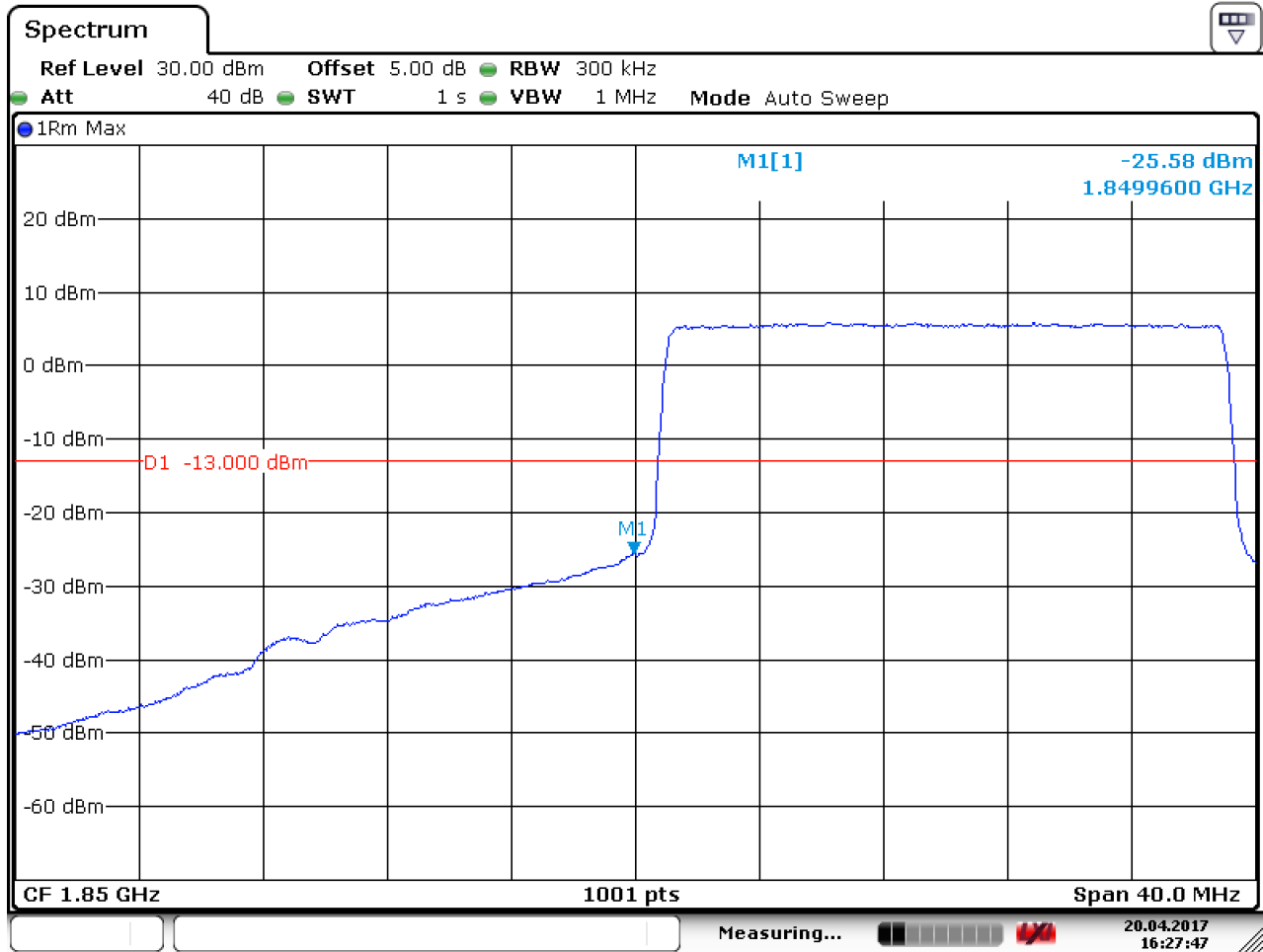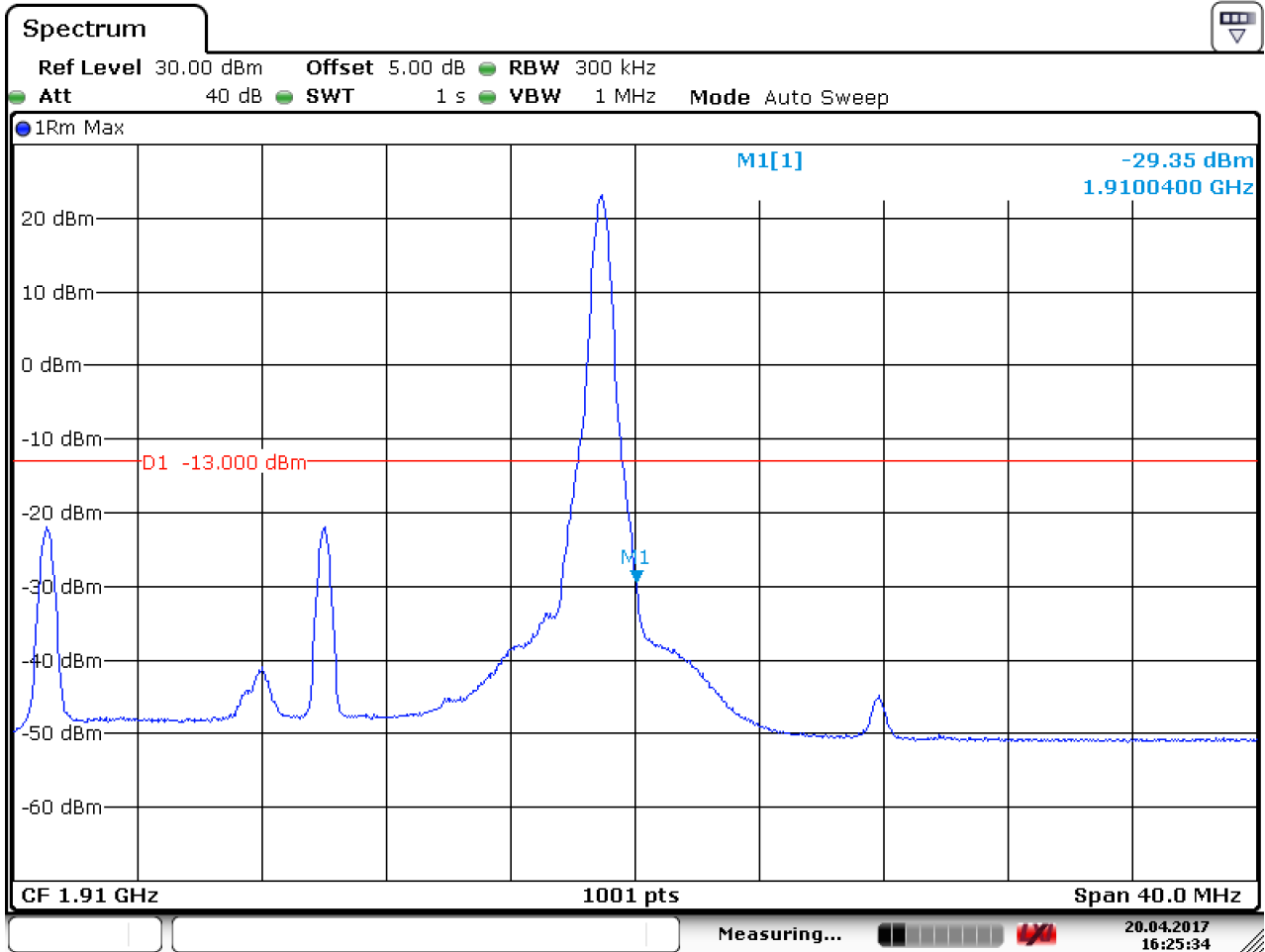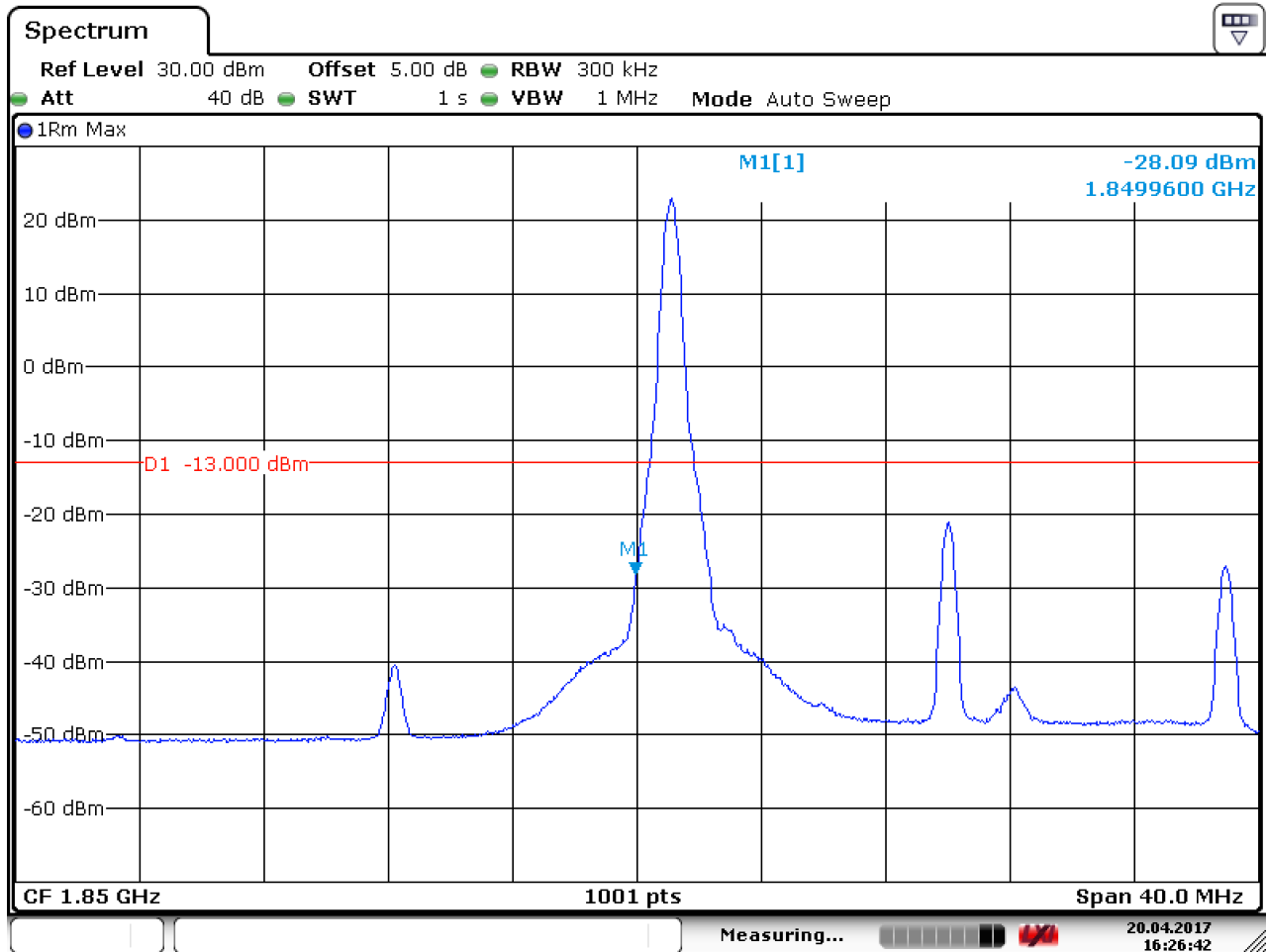**5.1.1.12.2.2 Test RB=100RB**
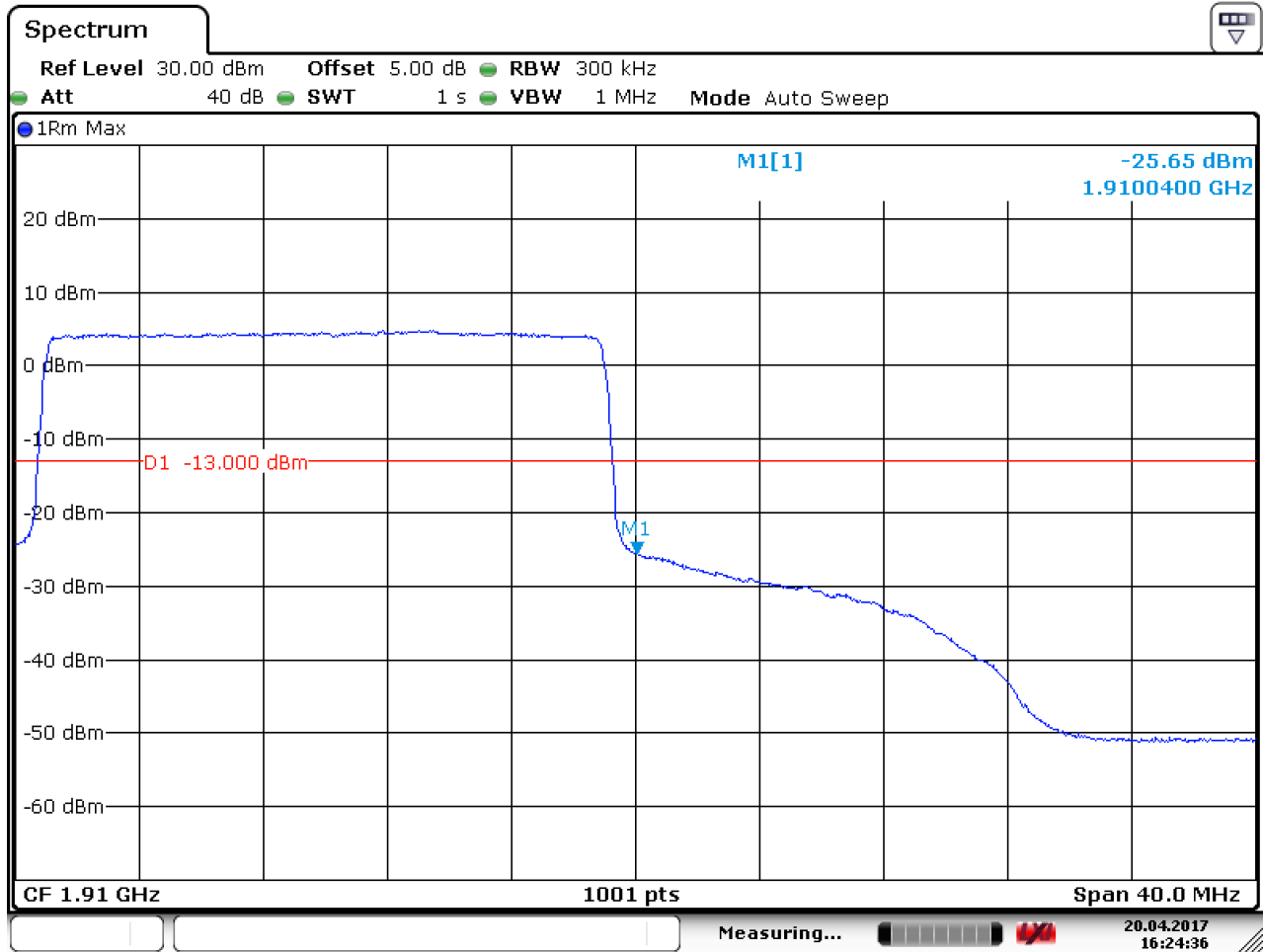
Date: 20.APR.2017 16:24:36

6   Spurious Emission at Antenna Terminal

NOTE: For the averaged unwanted emissions measurements, the measurement points in each sweep is greater than twice the Span/RBW in order to ensure bin-to-bin spacing of < RBW/2 so that narrowband signals are not lost between frequency bins. As to the present test item, the "Measurement Points = k * (Span / RBW)" with k between 4 and 5, which results in an acceptable level error of less than 0.5 dB.

Part I - Test Plots

6.1 For LTE

6.1.1 Test Band = LTE band2

6.1.1.1   Test Mode = LTE / TM1 1.4MHz RB1#0

6.1.1.1.1   Test Channel = LCH
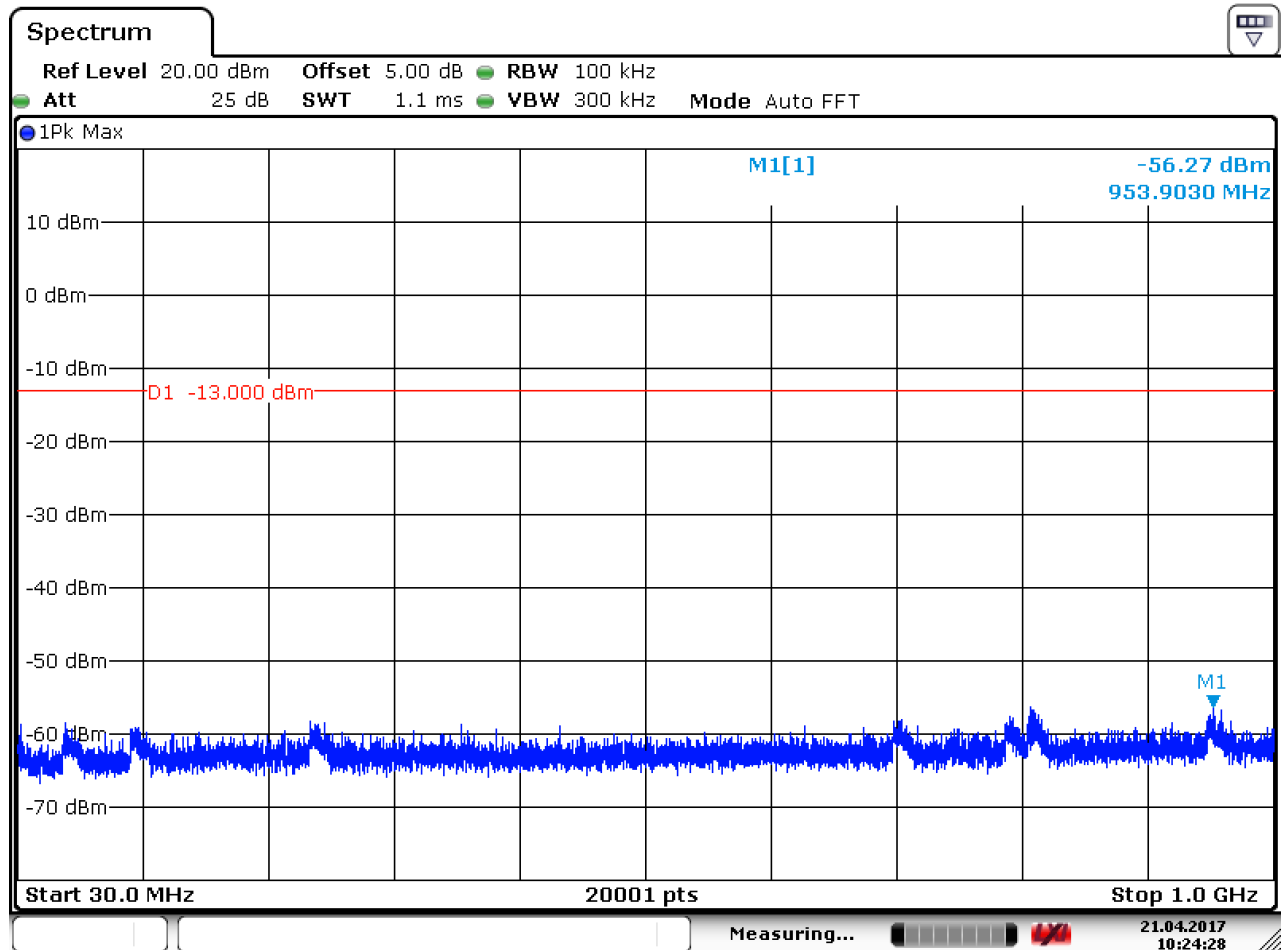
Date: 21.APR.2017 10:24:28

Date: 21.APR.2017 12:23:57

Spectrum		
Ref Level 20.00 dBm	**Offset** 5.00 dB ● **RBW** 1 MHz	
● **Att** 25 dB	**SWT** 30 ms ● **VBW** 3 MHz	**Mode** Auto Sweep

● 1Pk Max

M1[1]   -47.21 dBm
                               19.822260 GHz

10 dBm

0 dBm

-10 dBm

D1 -13.000 dBm

-20 dBm

-30 dBm

-40 dBm

                                                               M1

-50 dBm

-60 dBm

-70 dBm

Start 10.0 GHz   20001 pts   Stop 20.0 GHz

Measuring...   21.04.2017
                      12:23:24
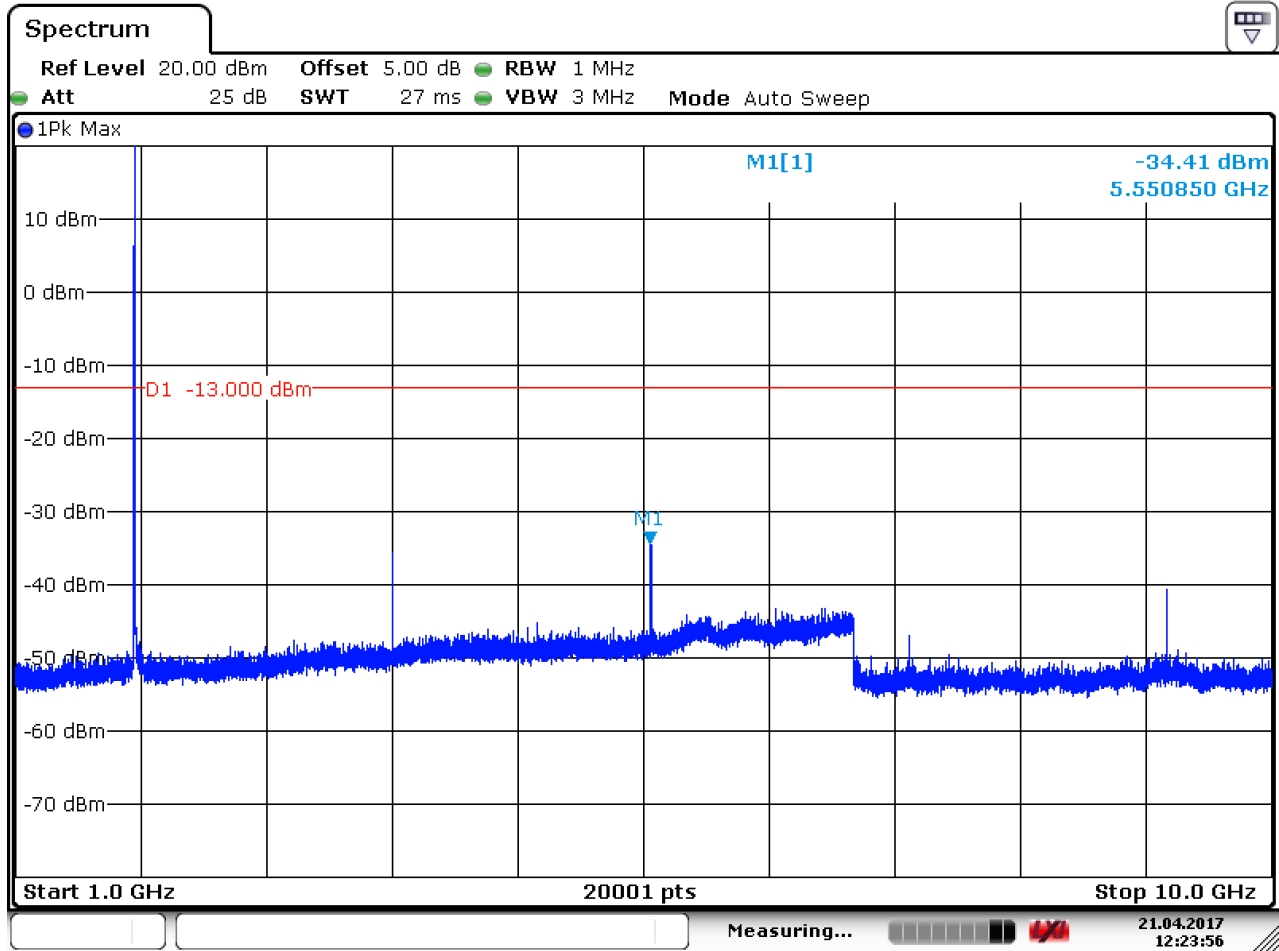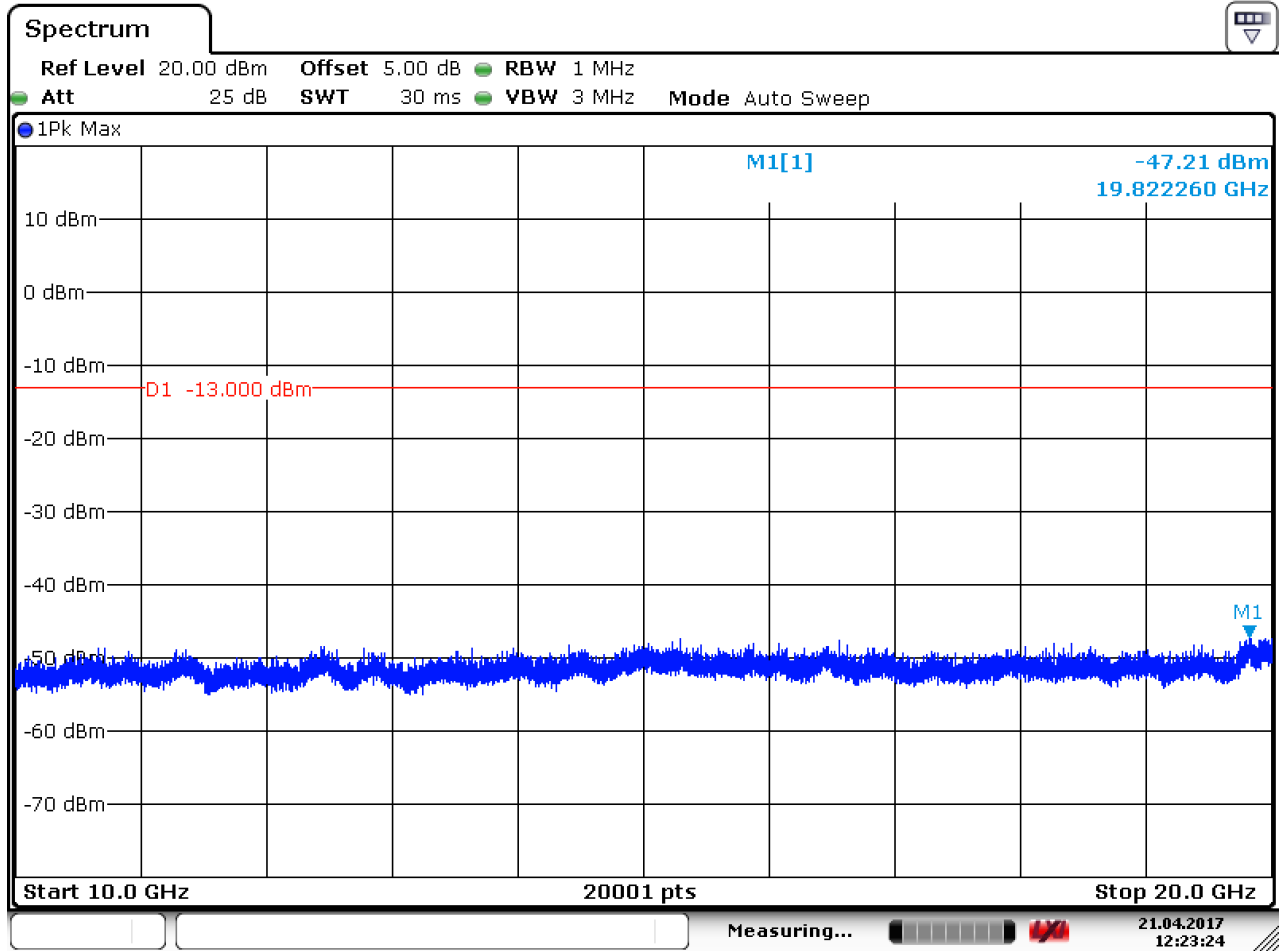
Date: 21.APR.2017 12:23:24

6.1.1.1.2 Test Channel = MCH

Date: 21.APR.2017 10:24:05

Spectrum

| Ref Level | 20.00 dBm | Offset | 5.00 dB | ● | RBW | 1 MHz |
| Att | 25 dB | SWT | 27 ms | ● | VBW | 3 MHz | Mode Auto Sweep |

● 1Pk Max

M1[1]   -33.58 dBm
                          3.759490 GHz

10 dBm

0 dBm

-10 dBm

D1 -13.000 dBm

-20 dBm

-30 dBm   M1

-40 dBm

-50 dBm

-60 dBm

-70 dBm

Start 1.0 GHz   20001 pts   Stop 10.0 GHz

Measuring...   21.04.2017
                                       12:20:15

Date: 21.APR.2017 12:20:15

Spectrum

| Ref Level | 20.00 dBm | Offset | 5.00 dB | RBW | 1 MHz |
| Att | 25 dB | SWT | 30 ms | VBW | 3 MHz | Mode Auto Sweep |

1Pk Max

M1[1]   -46.89 dBm
19.828260 GHz

D1 -13.000 dBm

M1

Start 10.0 GHz   20001 pts   Stop 20.0 GHz

Measuring...   21.04.2017 12:21:03

Date: 21.APR.2017 12:21:03

6.1.1.1.3 Test Channel = HCH

Date: 21.APR.2017 10:23:26

Date: 21.APR.2017 12:19:30

Date: 21.APR.2017 12:18:53

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6.1.1.2   Test Mode = LTE / TM1 3MHz RB1#0

6.1.1.2.1   Test Channel = LCH

Date: 21.APR.2017 10:21:38
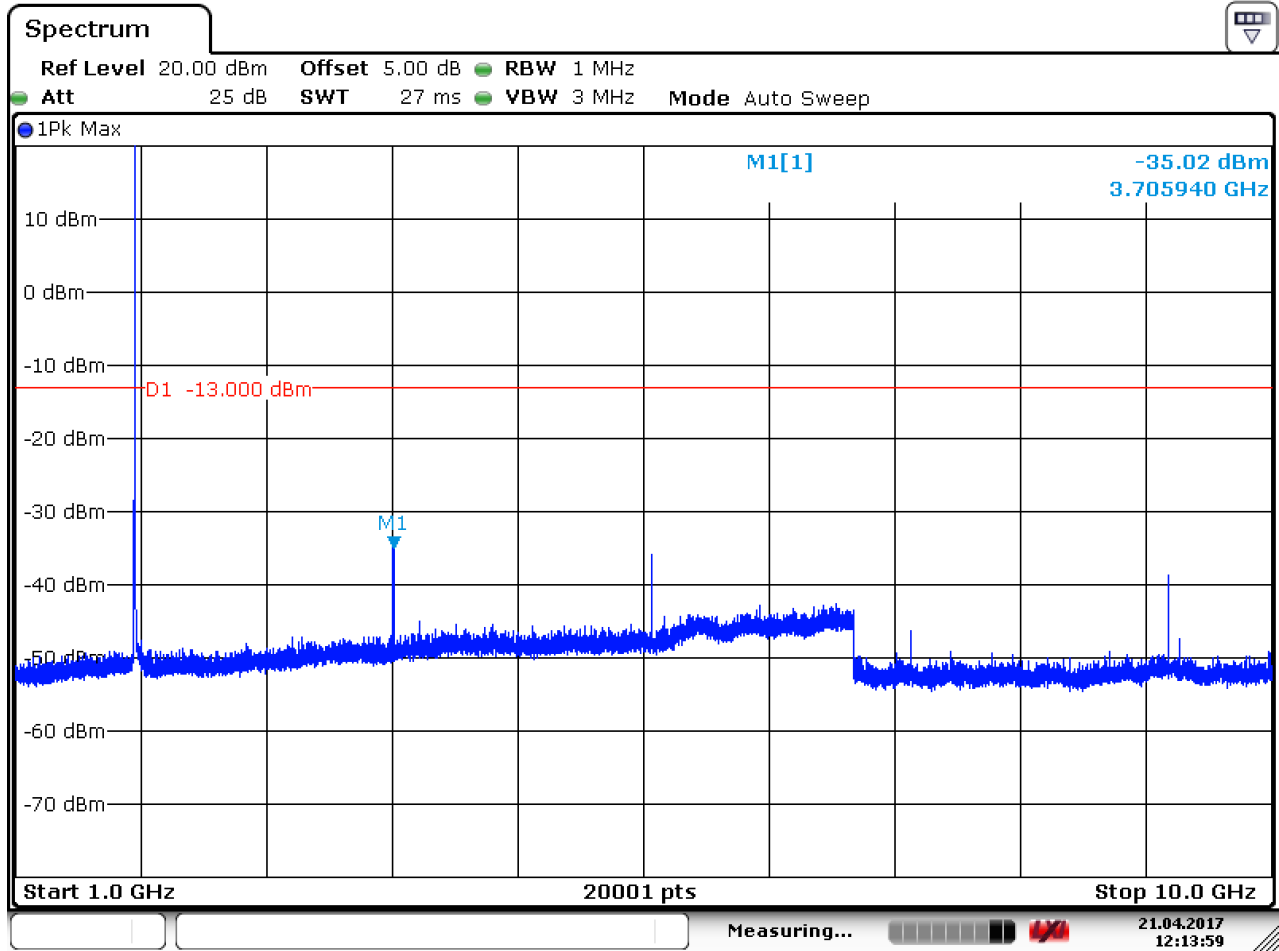
Date: 21.APR.2017 12:13:59

Date: 21.APR.2017 12:14:44

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6.1.1.2.2   Test Channel = MCH

Spectrum		
Ref Level 20.00 dBm	**Offset** 5.00 dB ⬤ **RBW** 100 kHz	
⬤ **Att** 25 dB	**SWT** 1.1 ms ⬤ **VBW** 300 kHz	**Mode** Auto FFT

⬤1Pk Max

M1[1]   -56.15 dBm
                               948.8590 MHz

10 dBm

0 dBm

-10 dBm
D1 -13.000 dBm

-20 dBm

-30 dBm

-40 dBm

-50 dBm
                                                              M1

-60 dBm

-70 dBm

Start 30.0 MHz   20001 pts   Stop 1.0 GHz

Measuring...   21.04.2017
                      10:22:23
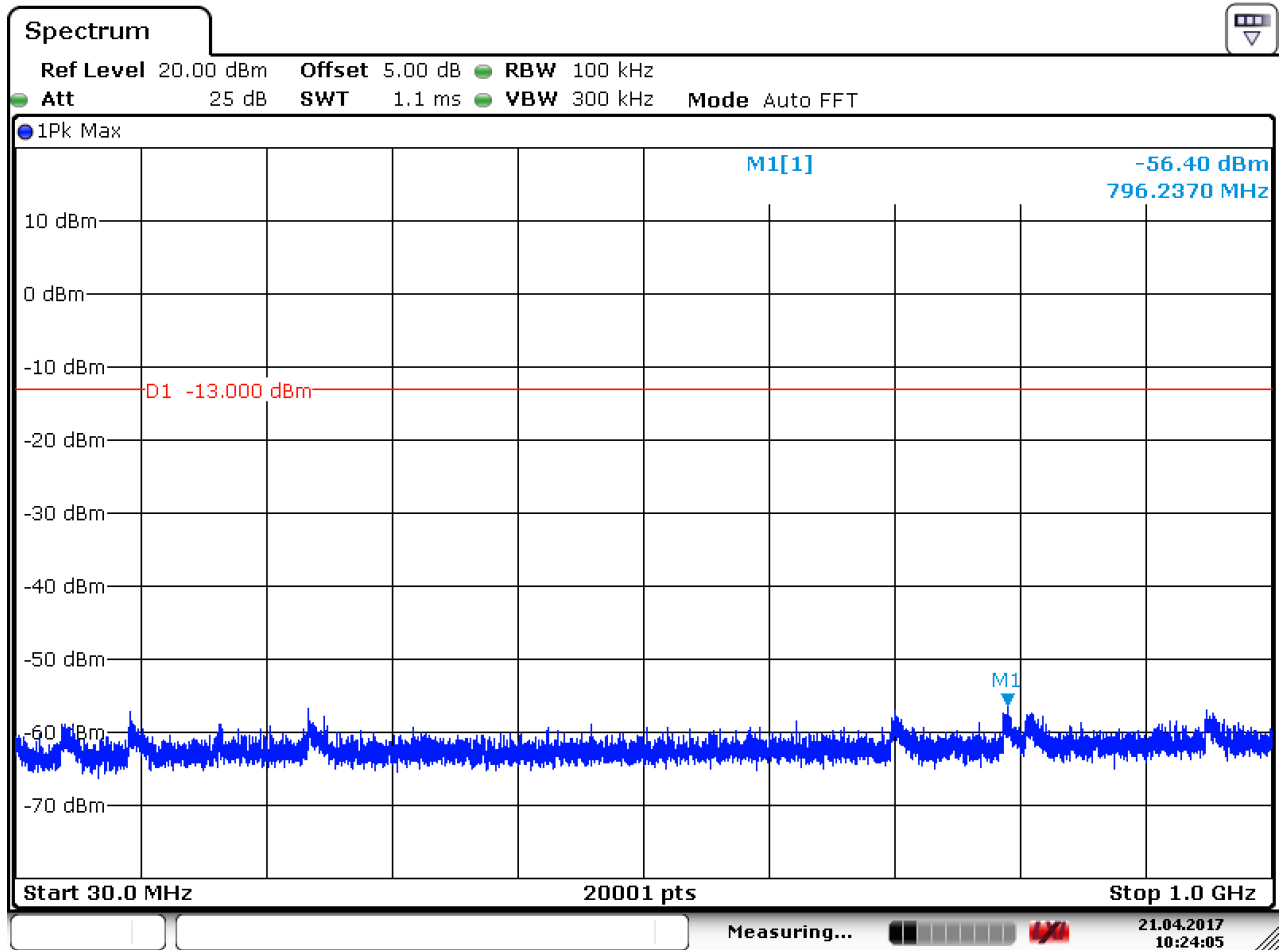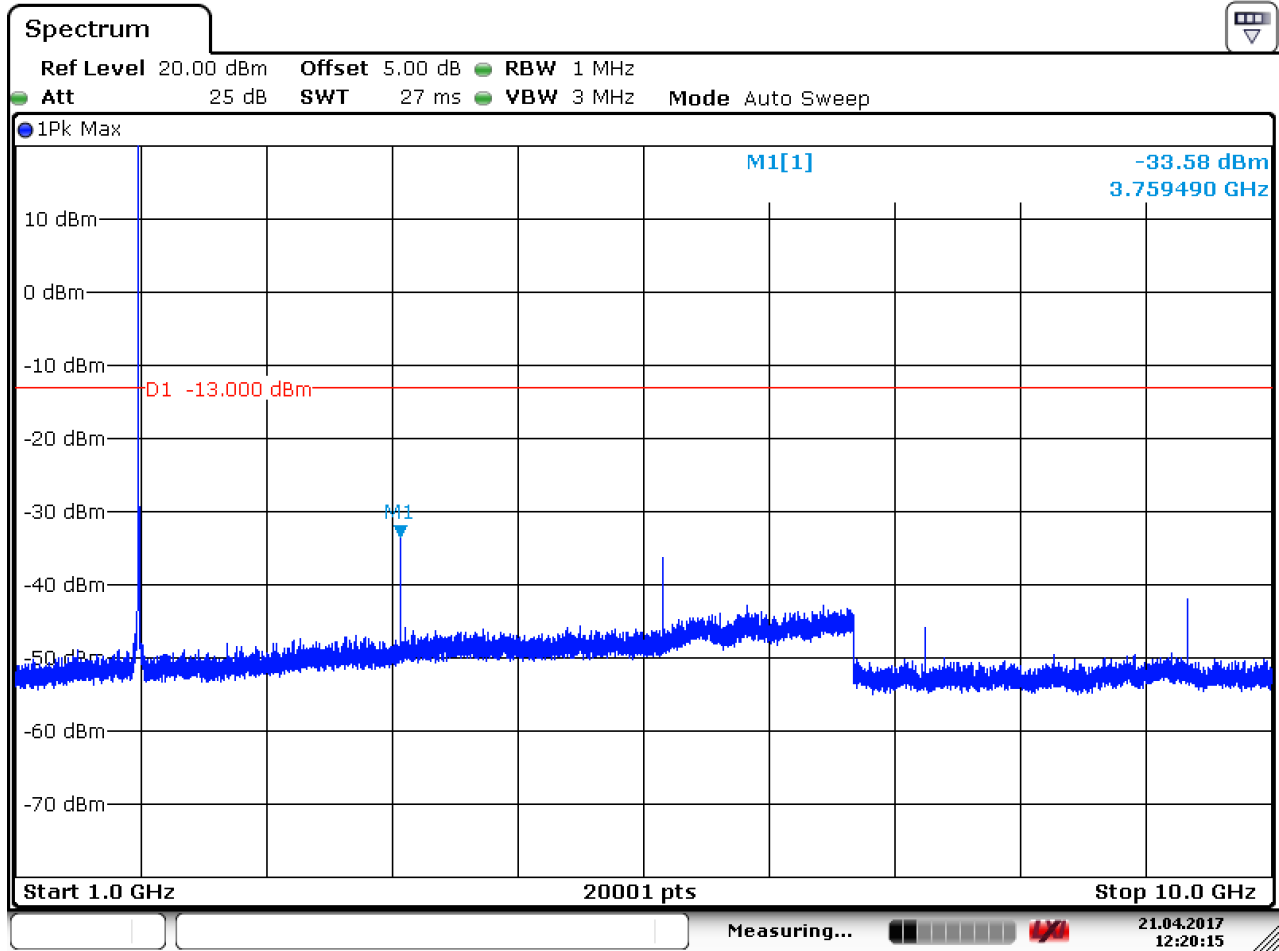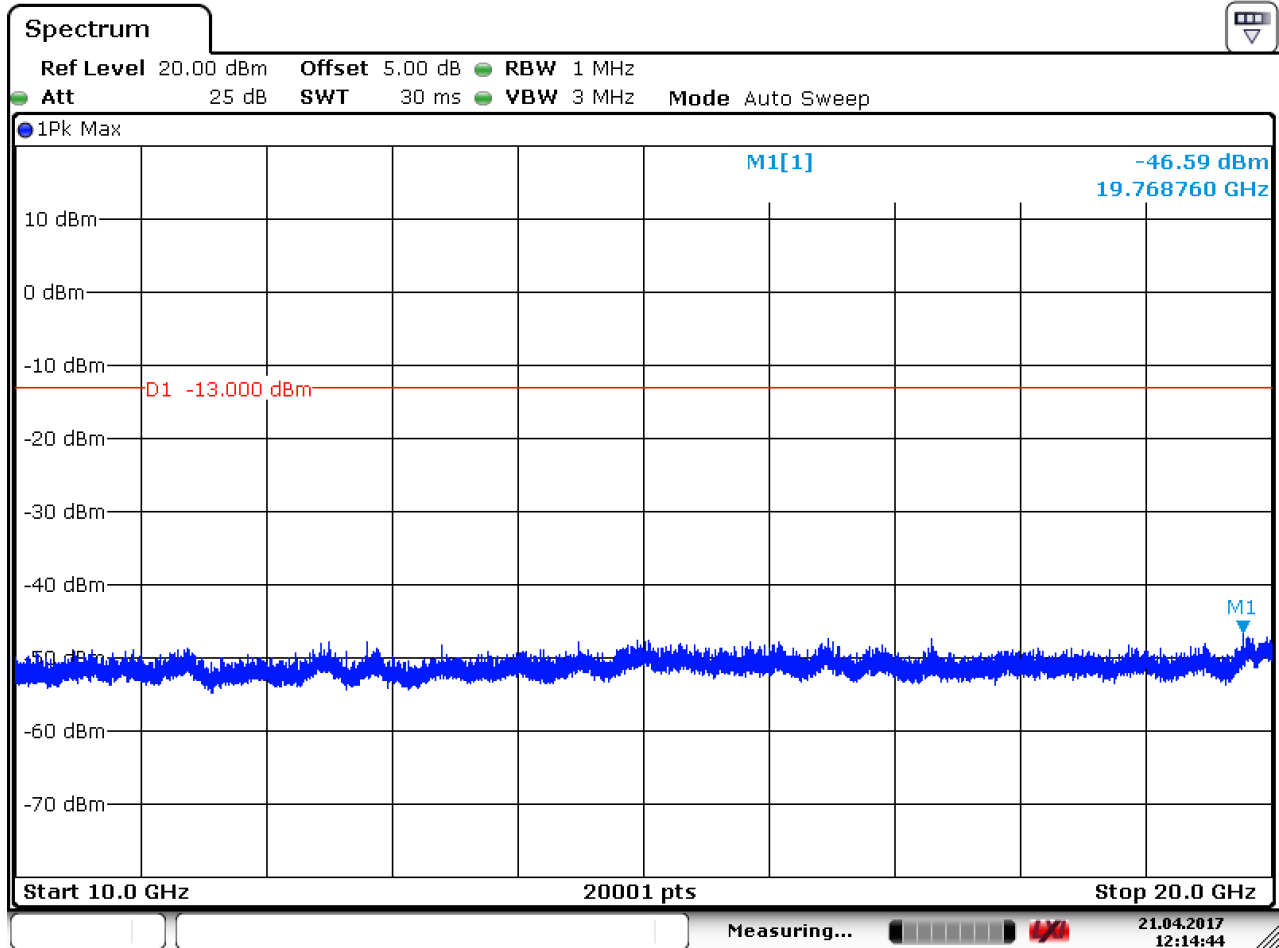
Date: 21.APR.2017 10:22:24
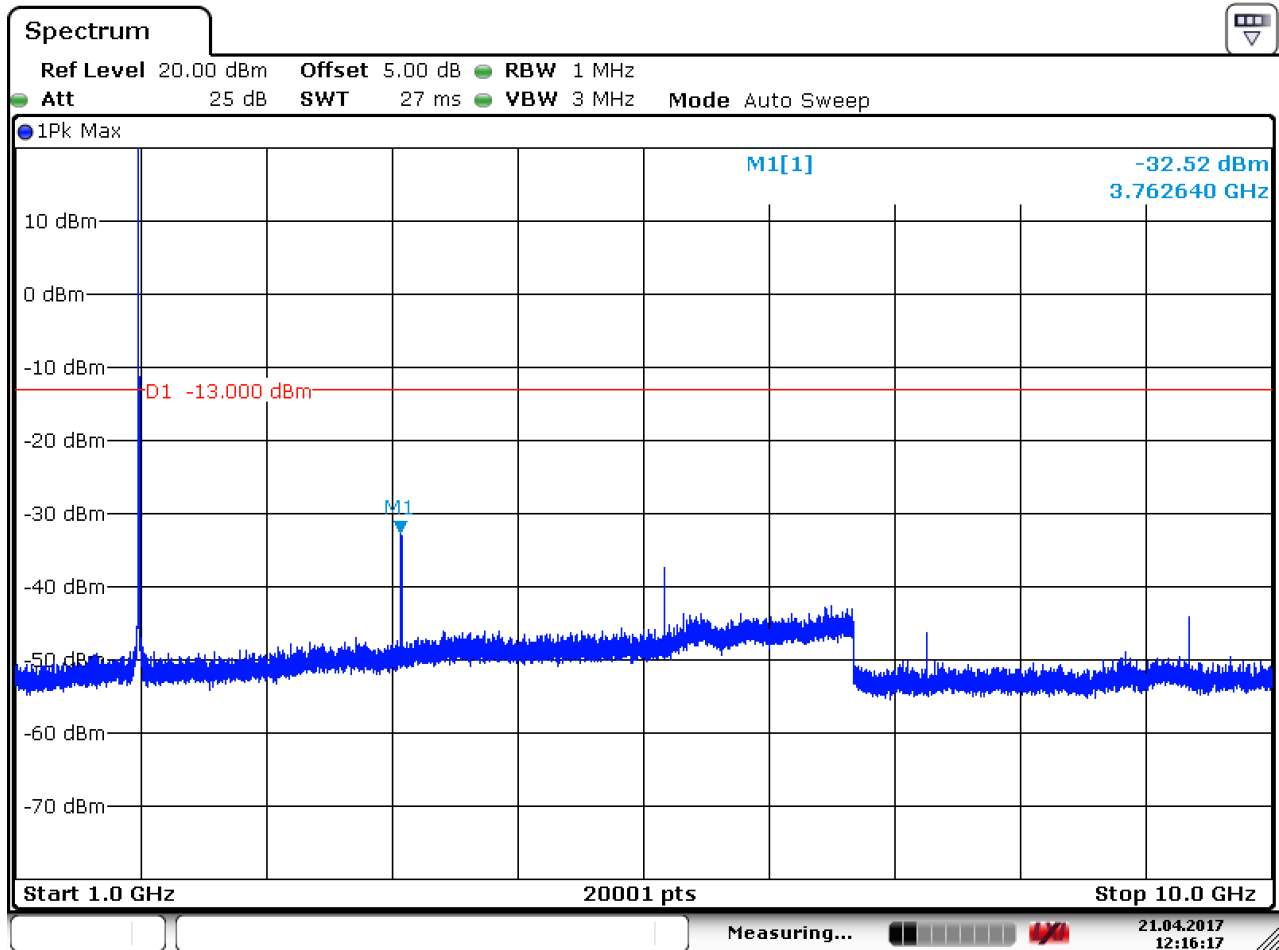
Date: 21.APR.2017 12:16:17
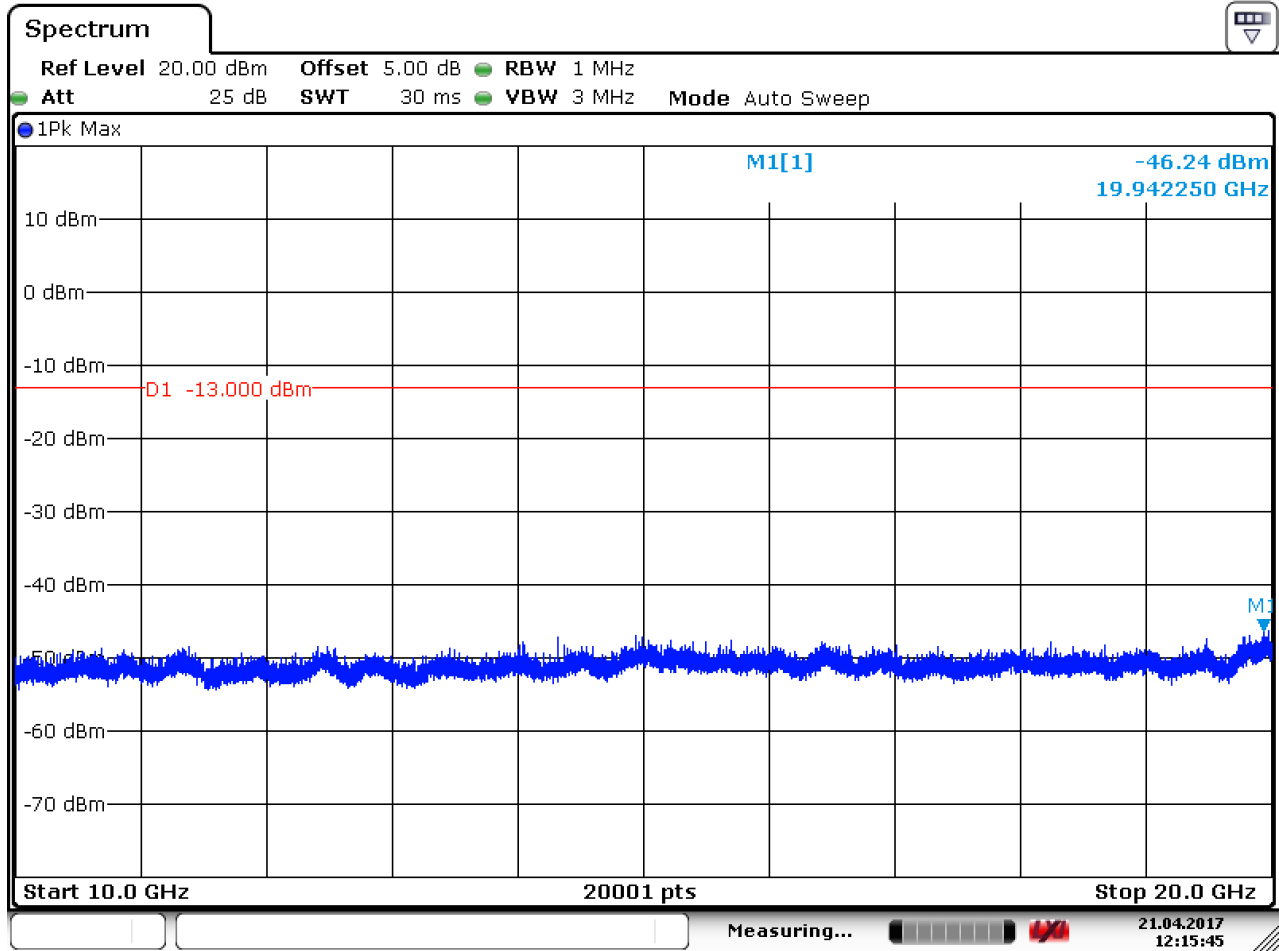
Date: 21.APR.2017 12:15:46
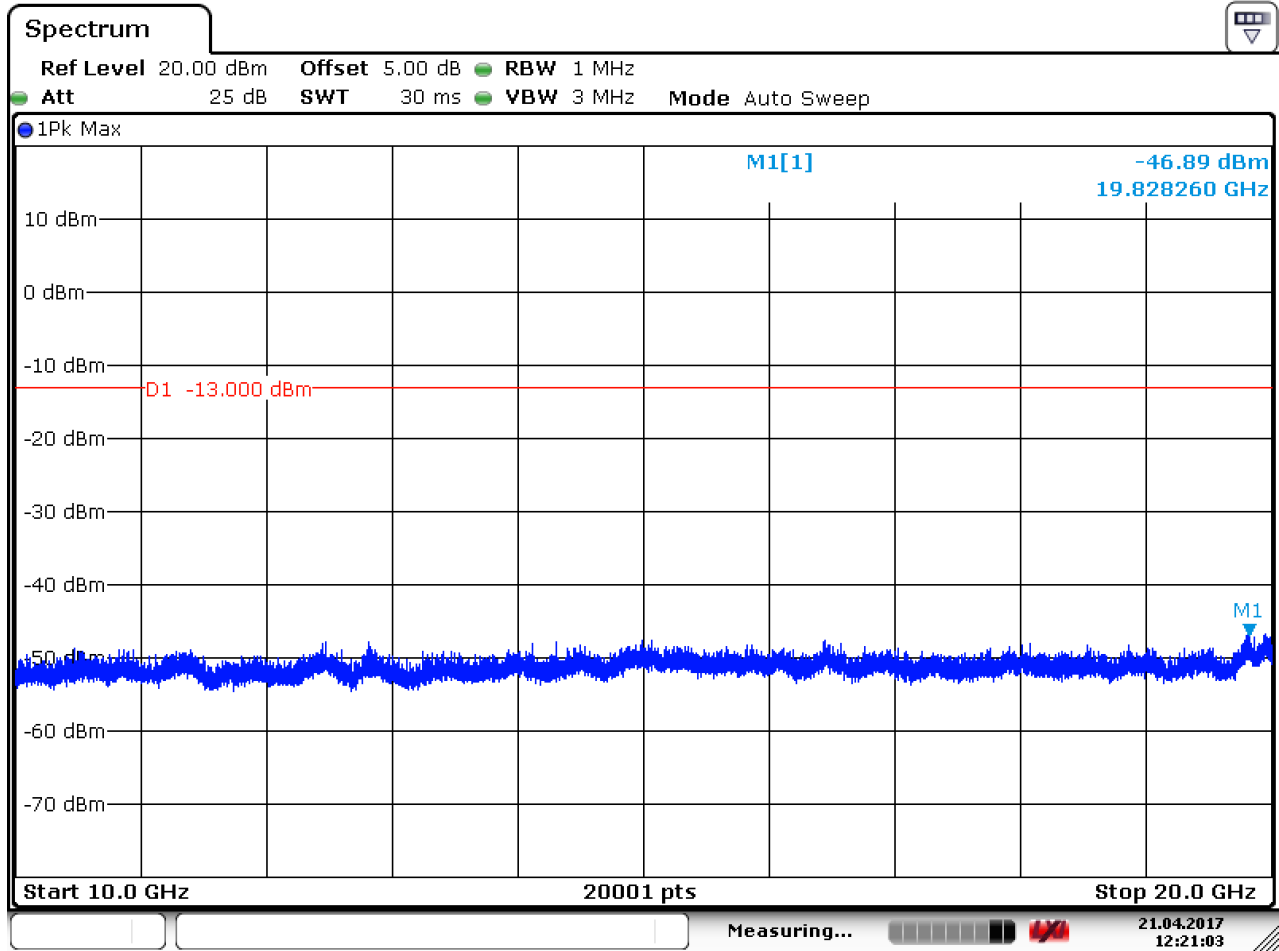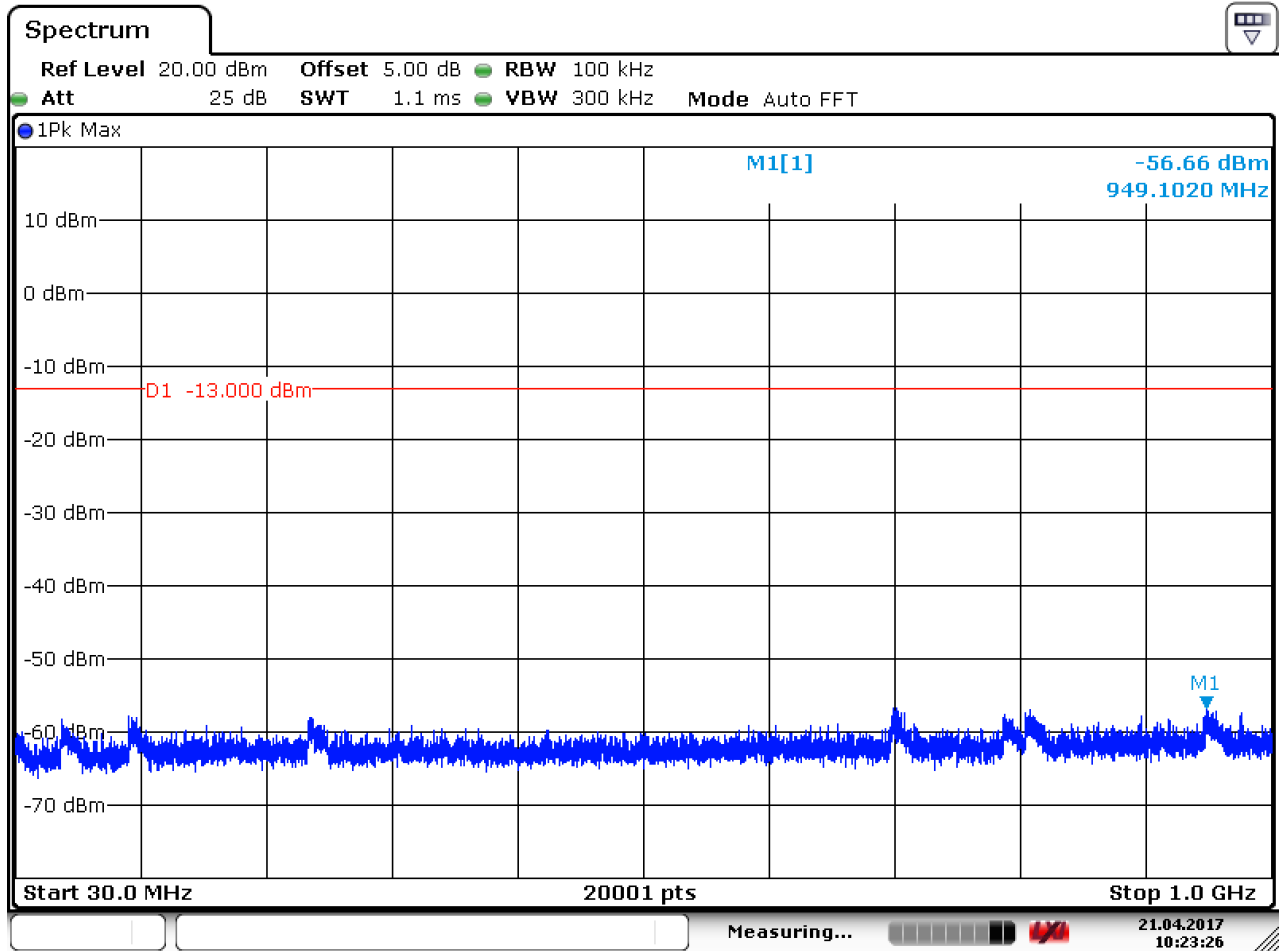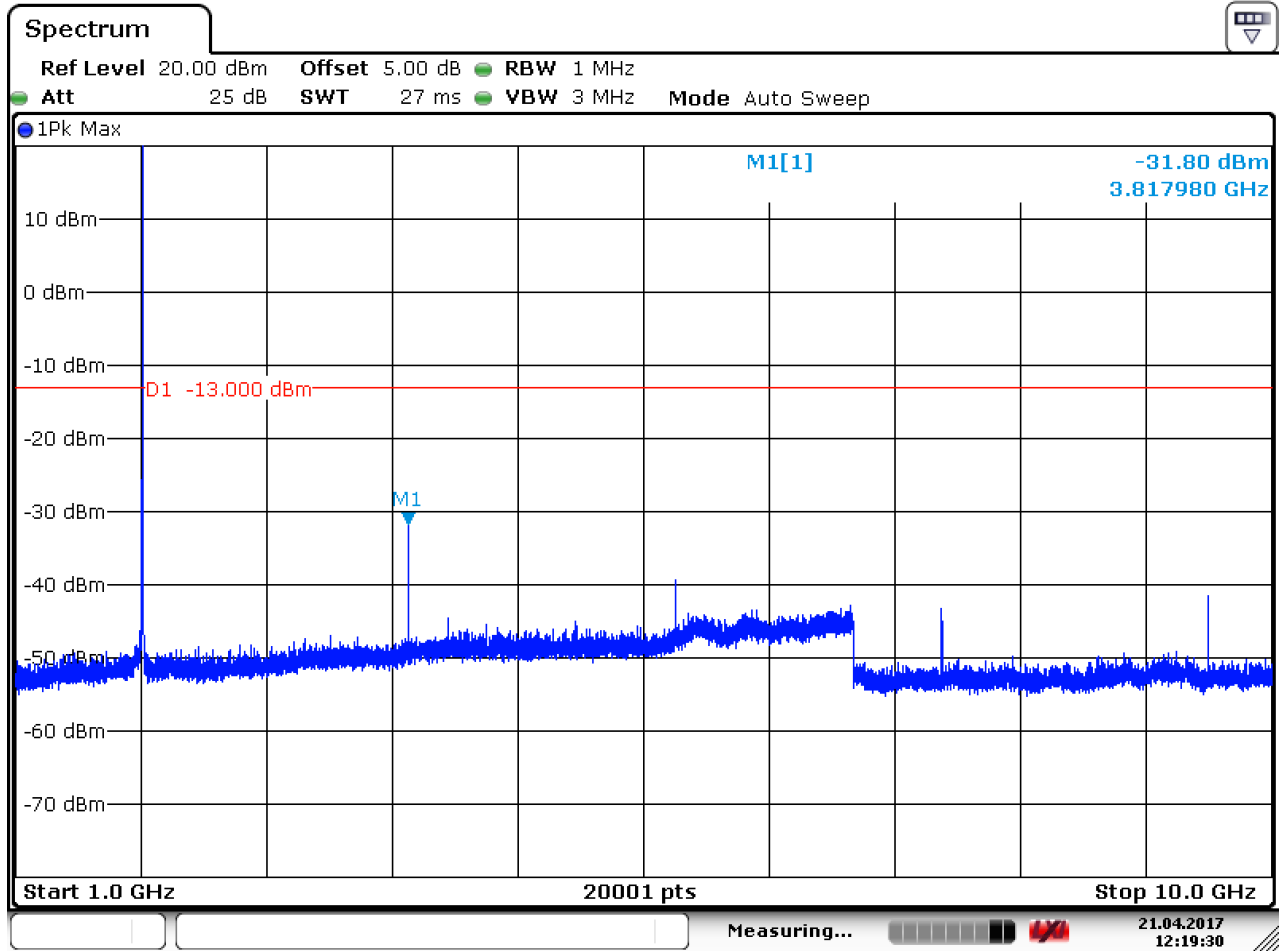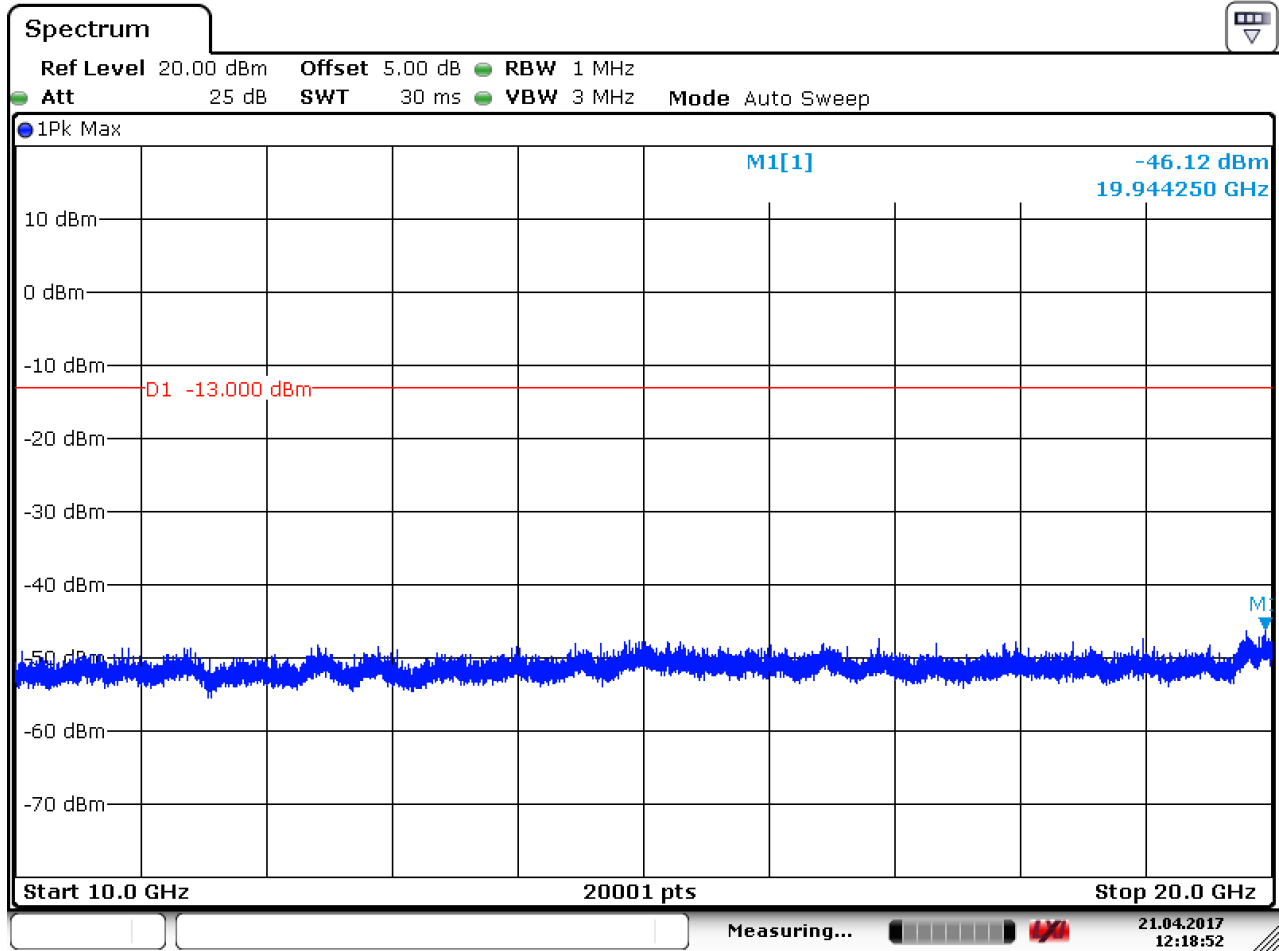
6.1.1.2.3   Test Channel = HCH
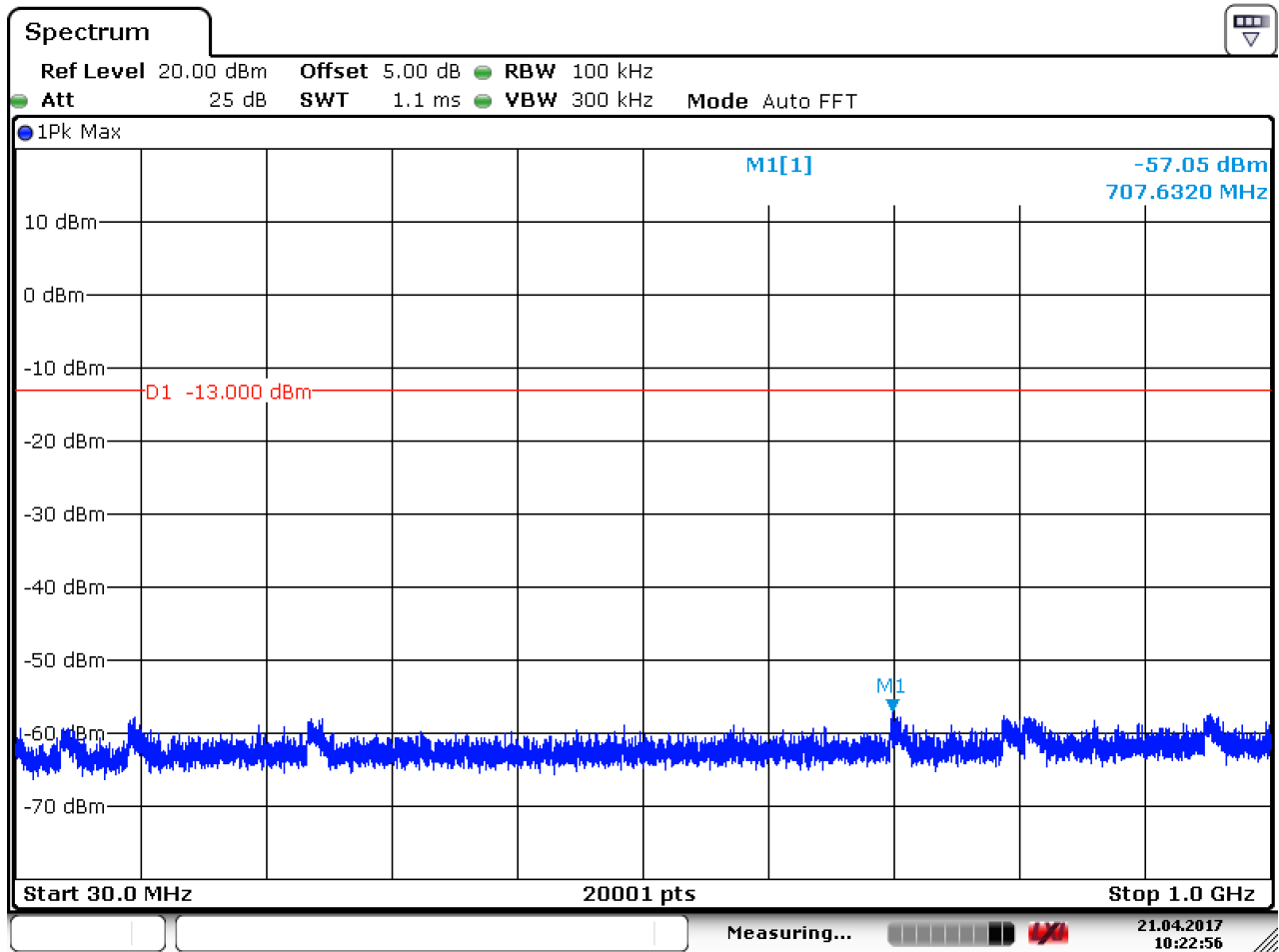
Date: 21.APR.2017 10:22:57
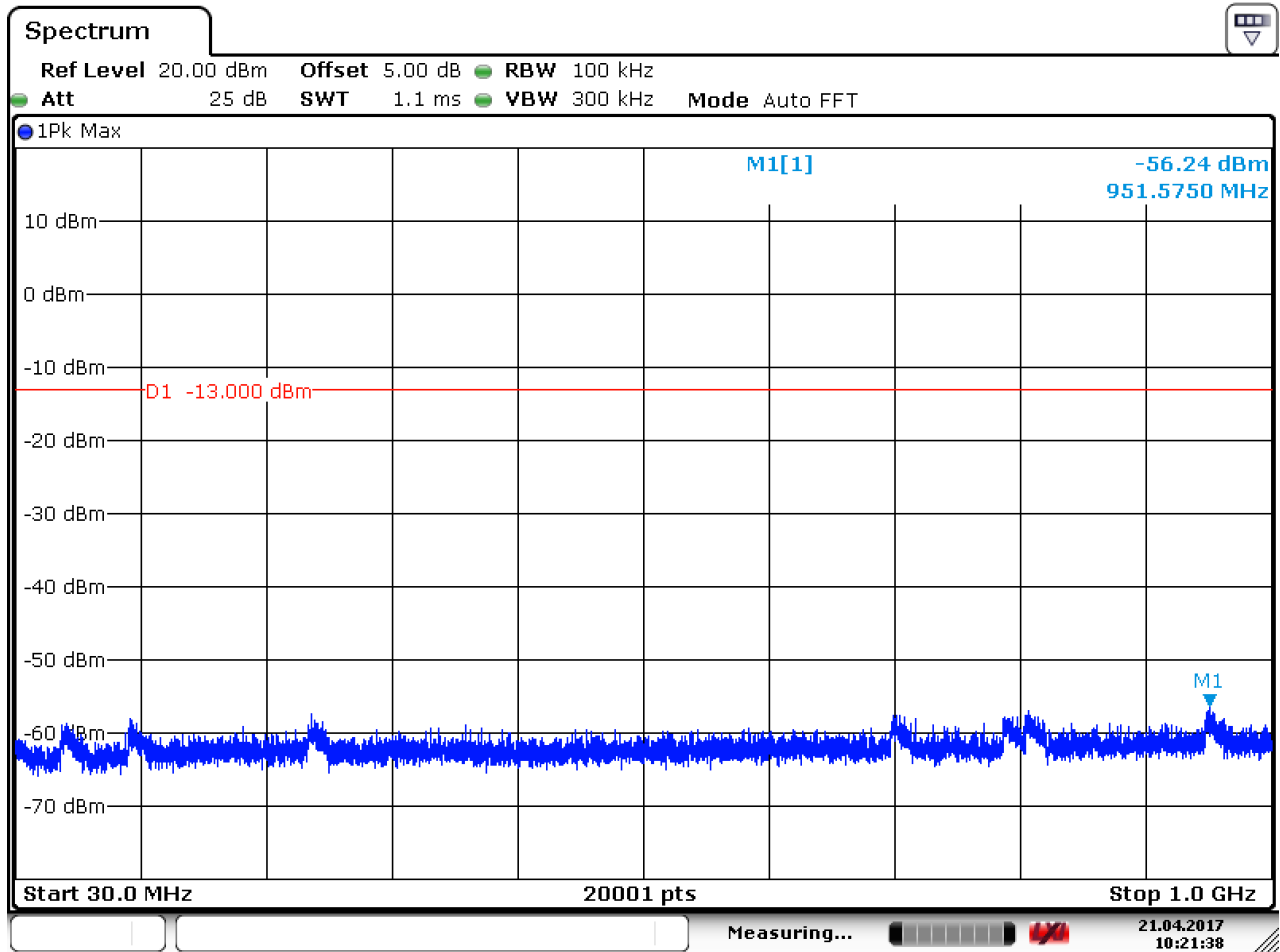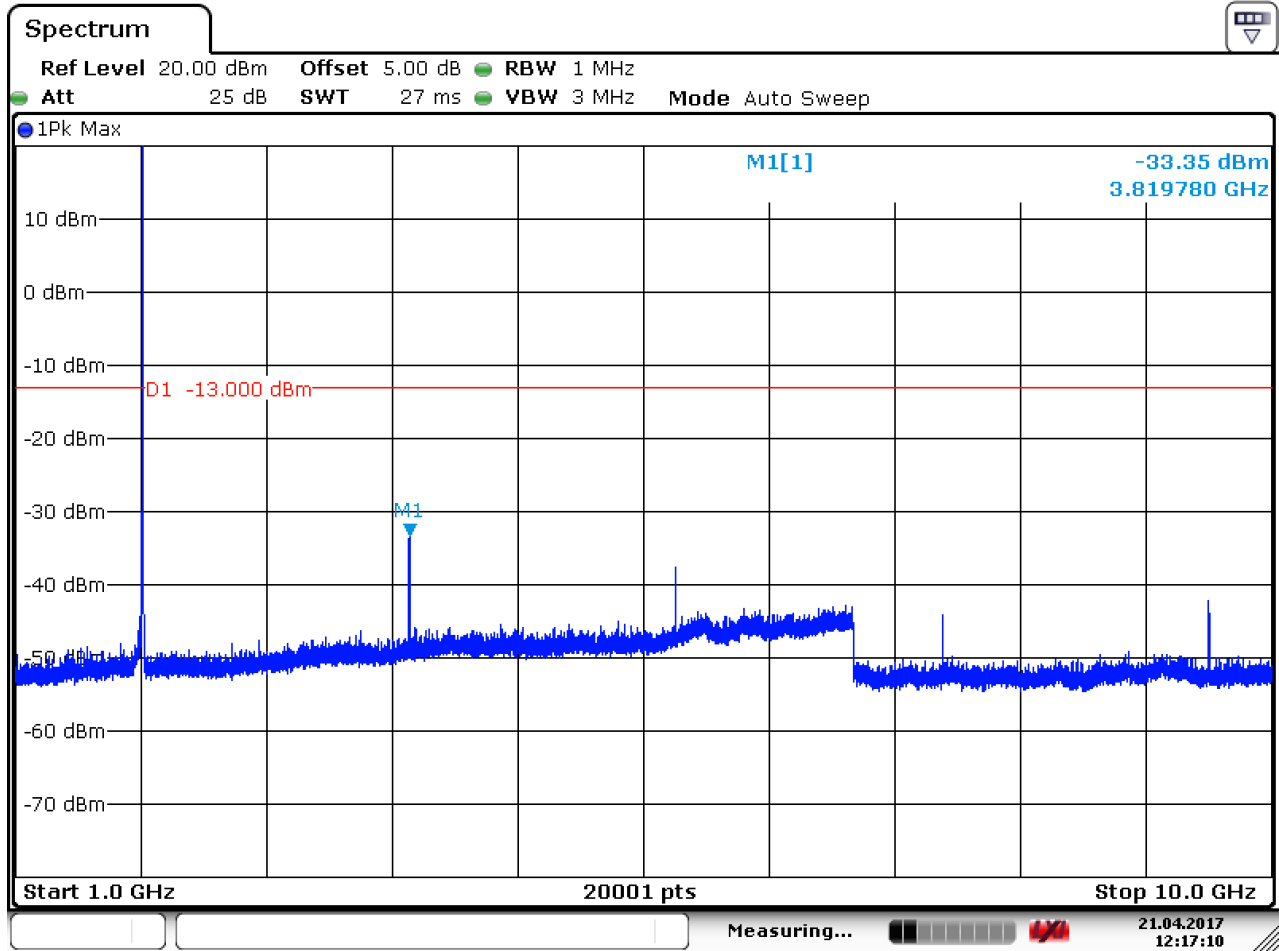
Date: 21.APR.2017 12:17:10
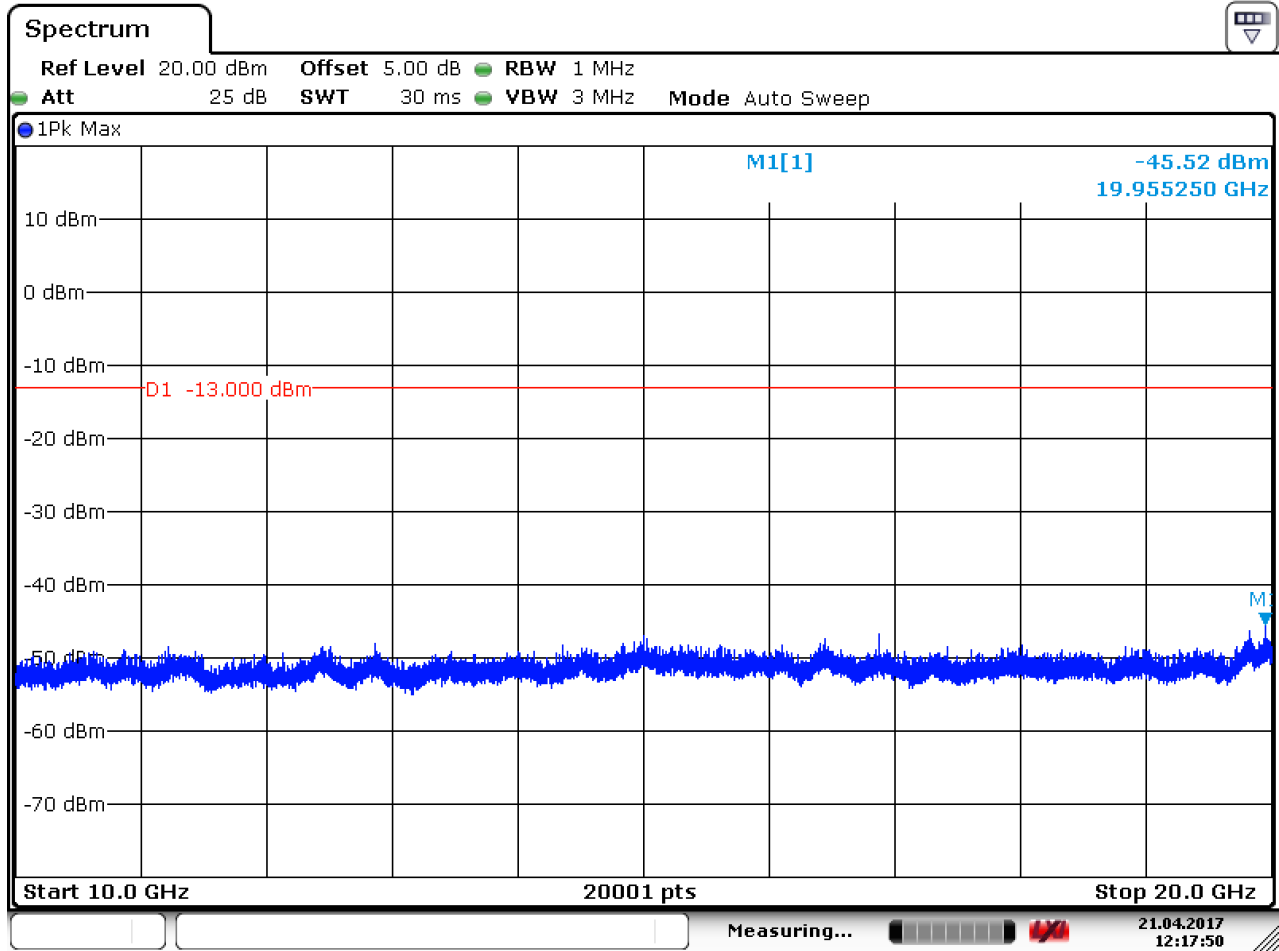
Date: 21.APR.2017 12:17:50

6.1.1.3   Test Mode = LTE / TM1 5MHz RB1#0

6.1.1.3.1   Test Channel = LCH

Date: 21.APR.2017 10:21:03

Date: 21.APR.2017 12:03:54

Spectrum

| Ref Level 20.00 dBm | Offset 5.00 dB | RBW 1 MHz |
| Att 25 dB | SWT 30 ms | VBW 3 MHz | Mode Auto Sweep |

1Pk Max

M1[1]   -46.73 dBm
          19.868260 GHz

10 dBm
0 dBm
-10 dBm
D1 -13.000 dBm
-20 dBm
-30 dBm
-40 dBm
M1
-50 dBm
-60 dBm
-70 dBm

Start 10.0 GHz   20001 pts   Stop 20.0 GHz
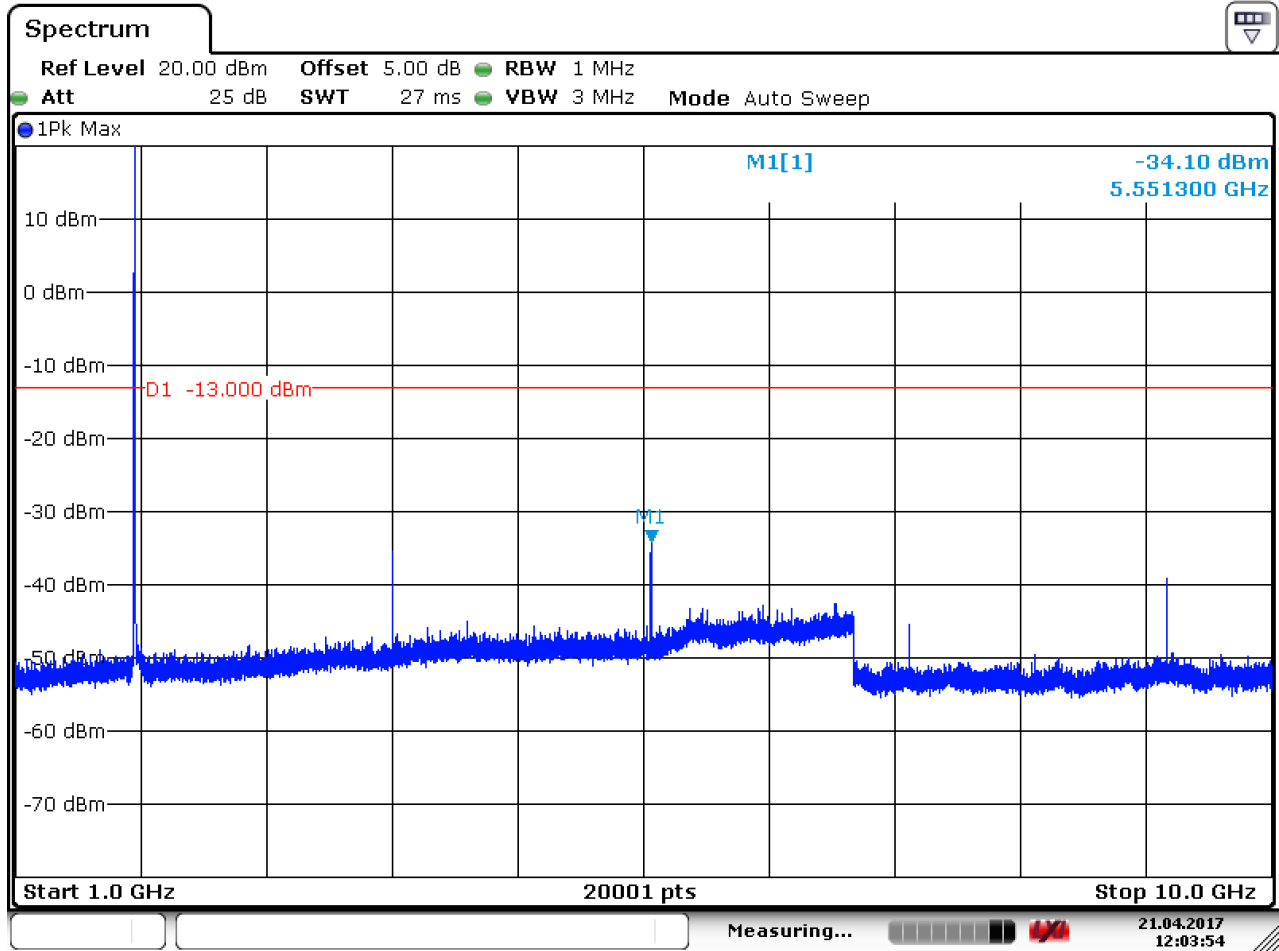
Measuring...   21.04.2017 12:04:54
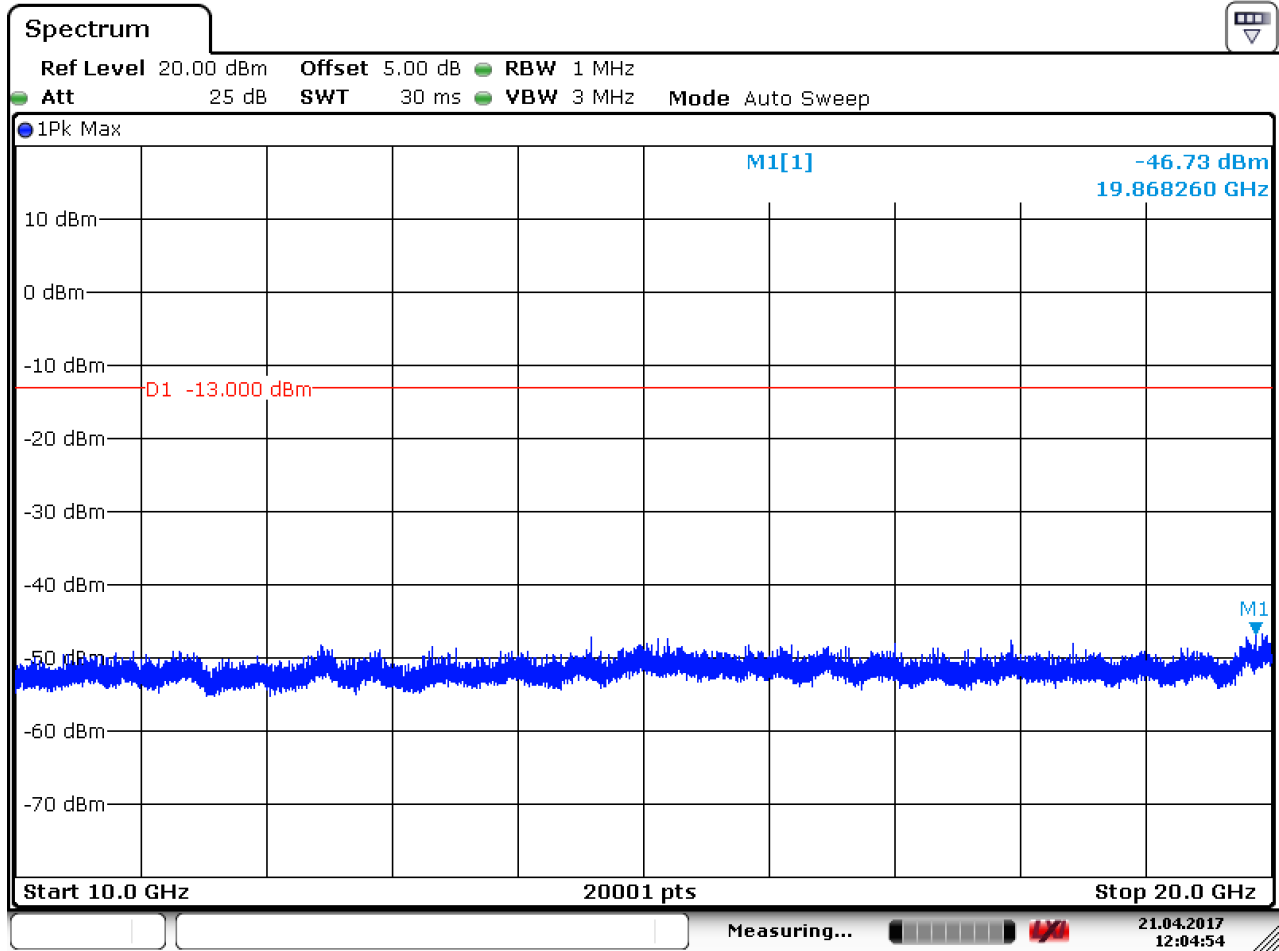
Date: 21.APR.2017 12:04:54

6.1.1.3.2   Test Channel = MCH

Date: 21.APR.2017 10:20:31

Spectrum							
Ref Level 20.00 dBm	**Offset** 5.00 dB	**RBW** 1 MHz					
Att 25 dB	**SWT** 27 ms	**VBW** 3 MHz	**Mode** Auto Sweep				

● 1Pk Max

M1[1]   -34.09 dBm
                         3.755440 GHz

10 dBm

0 dBm

-10 dBm
D1 -13.000 dBm

-20 dBm

-30 dBm
          M1

-40 dBm

-50 dBm

-60 dBm

-70 dBm

Start 1.0 GHz   20001 pts   Stop 10.0 GHz
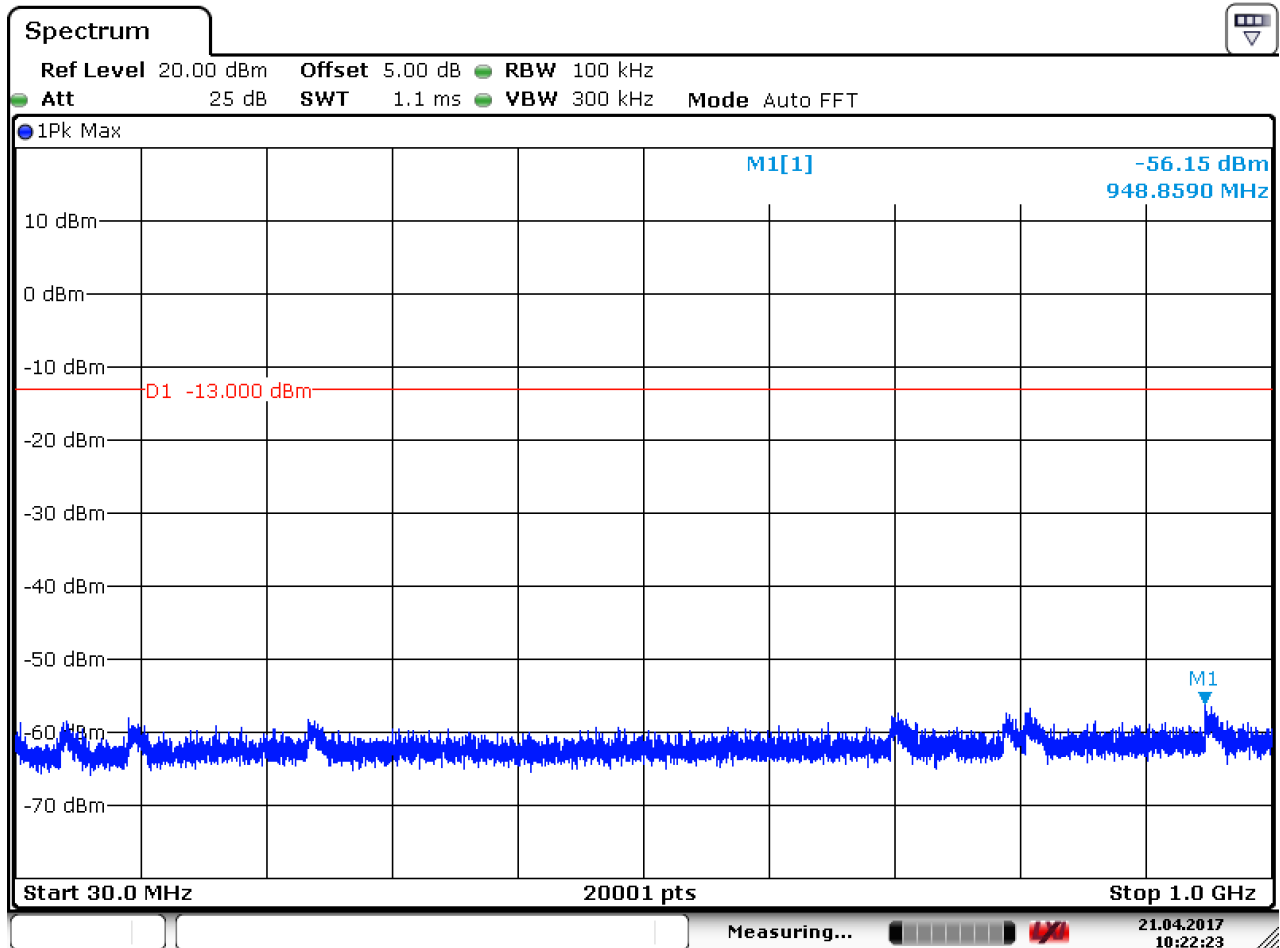
Measuring...   21.04.2017
                                12:06:10
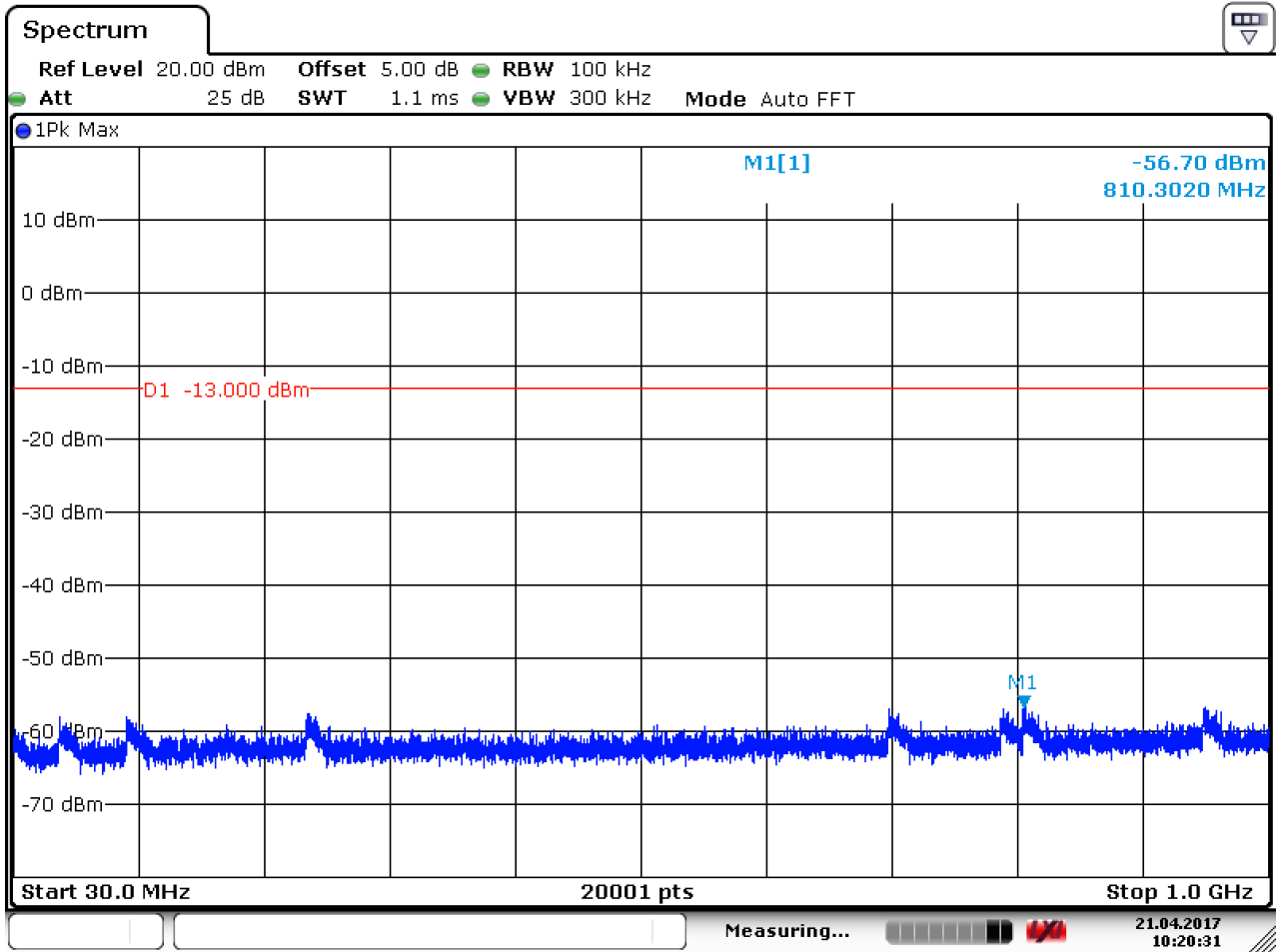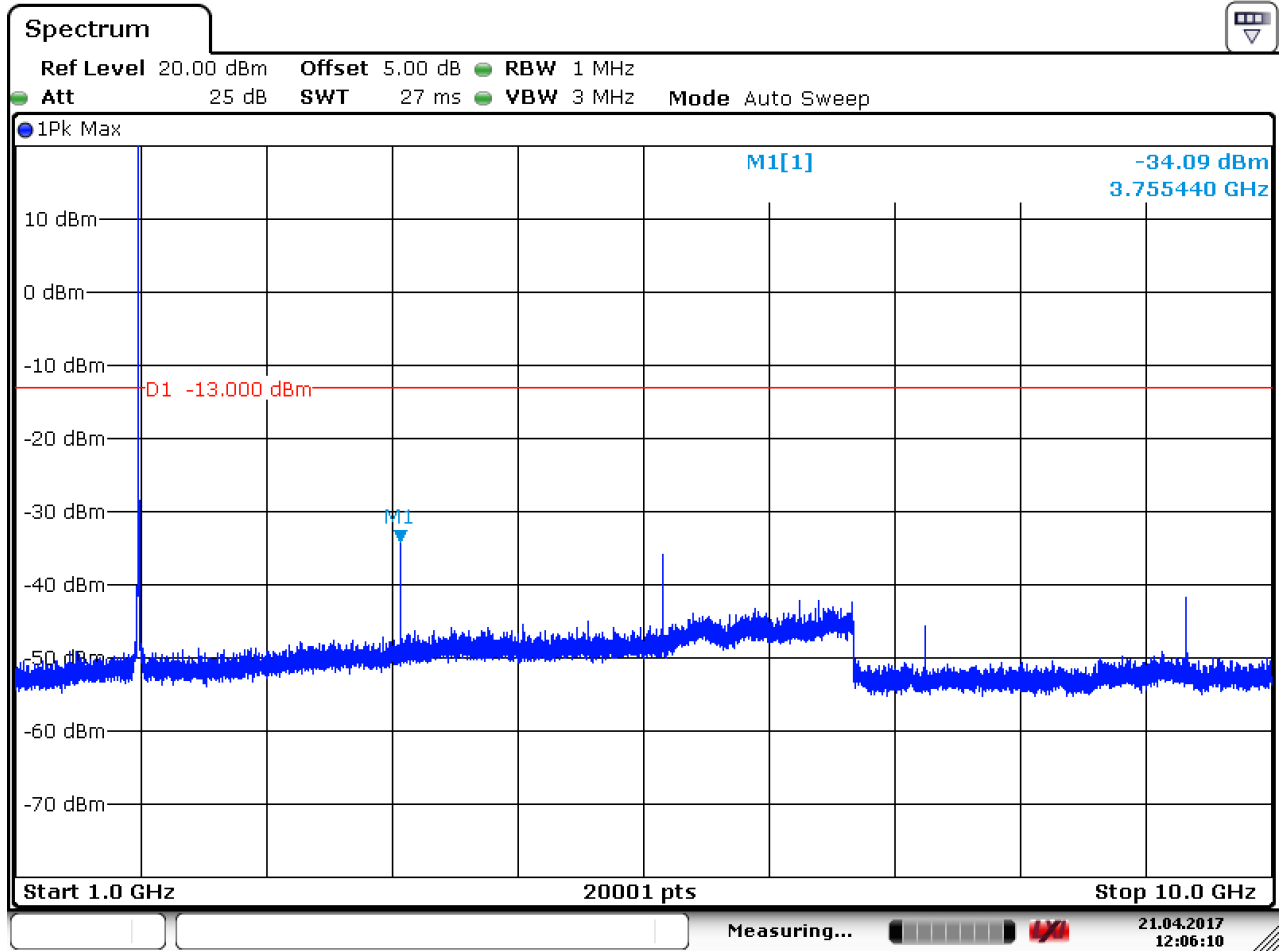
Date: 21.APR.2017 12:06:11
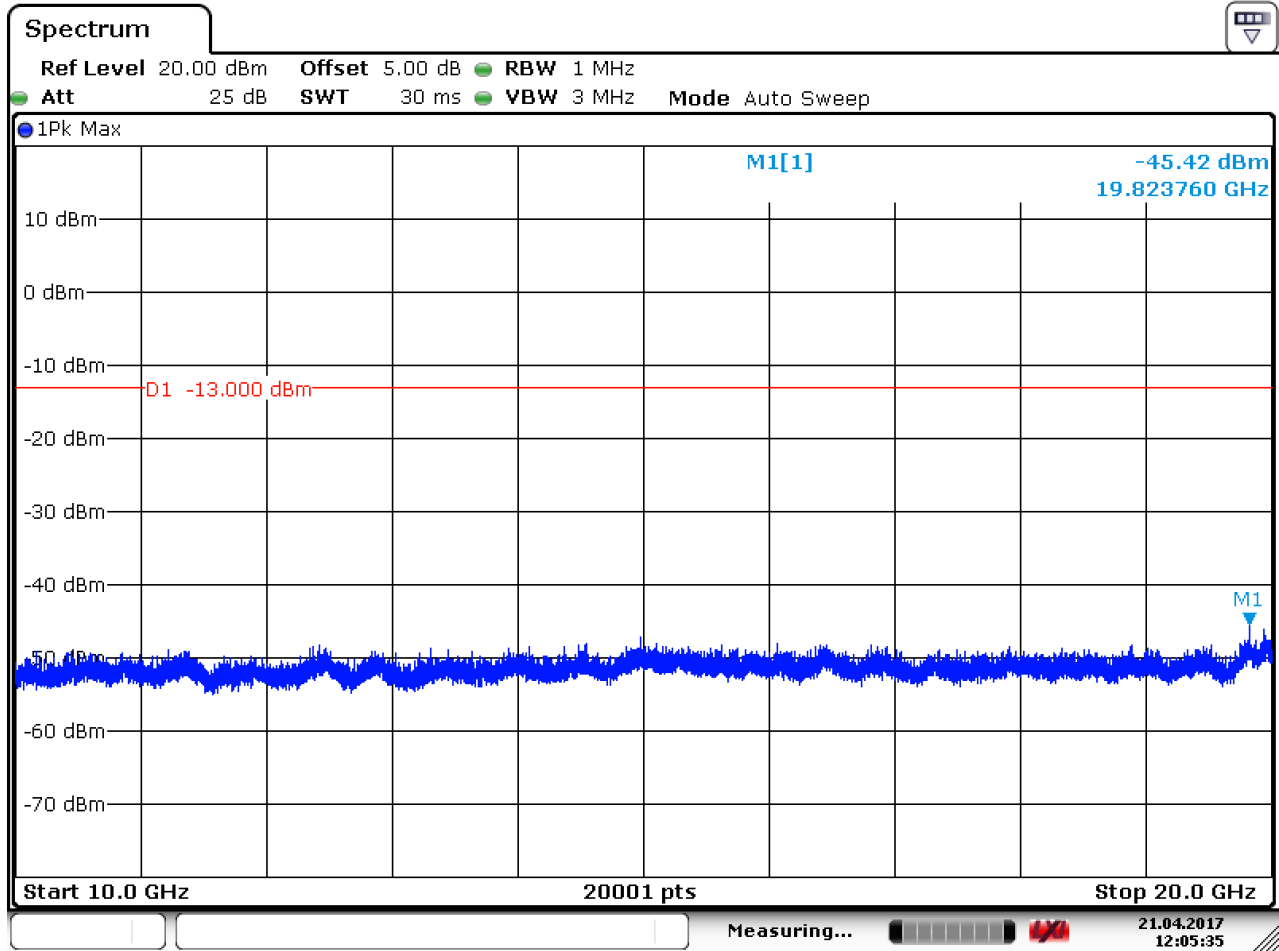
Date: 21.APR.2017 12:05:36

6.1.1.3.3   Test Channel = HCH

Spectrum

Ref Level 20.00 dBm	Offset 5.00 dB ● RBW 100 kHz	
● Att 25 dB	SWT 1.1 ms ● VBW 300 kHz	Mode Auto FFT

● 1Pk Max

M1[1]   -56.68 dBm
815.4420 MHz

10 dBm

0 dBm

-10 dBm
D1 -13.000 dBm

-20 dBm

-30 dBm

-40 dBm

-50 dBm
M1

-60 dBm

-70 dBm

Start 30.0 MHz   20001 pts   Stop 1.0 GHz

Measuring...   21.04.2017
10:19:51
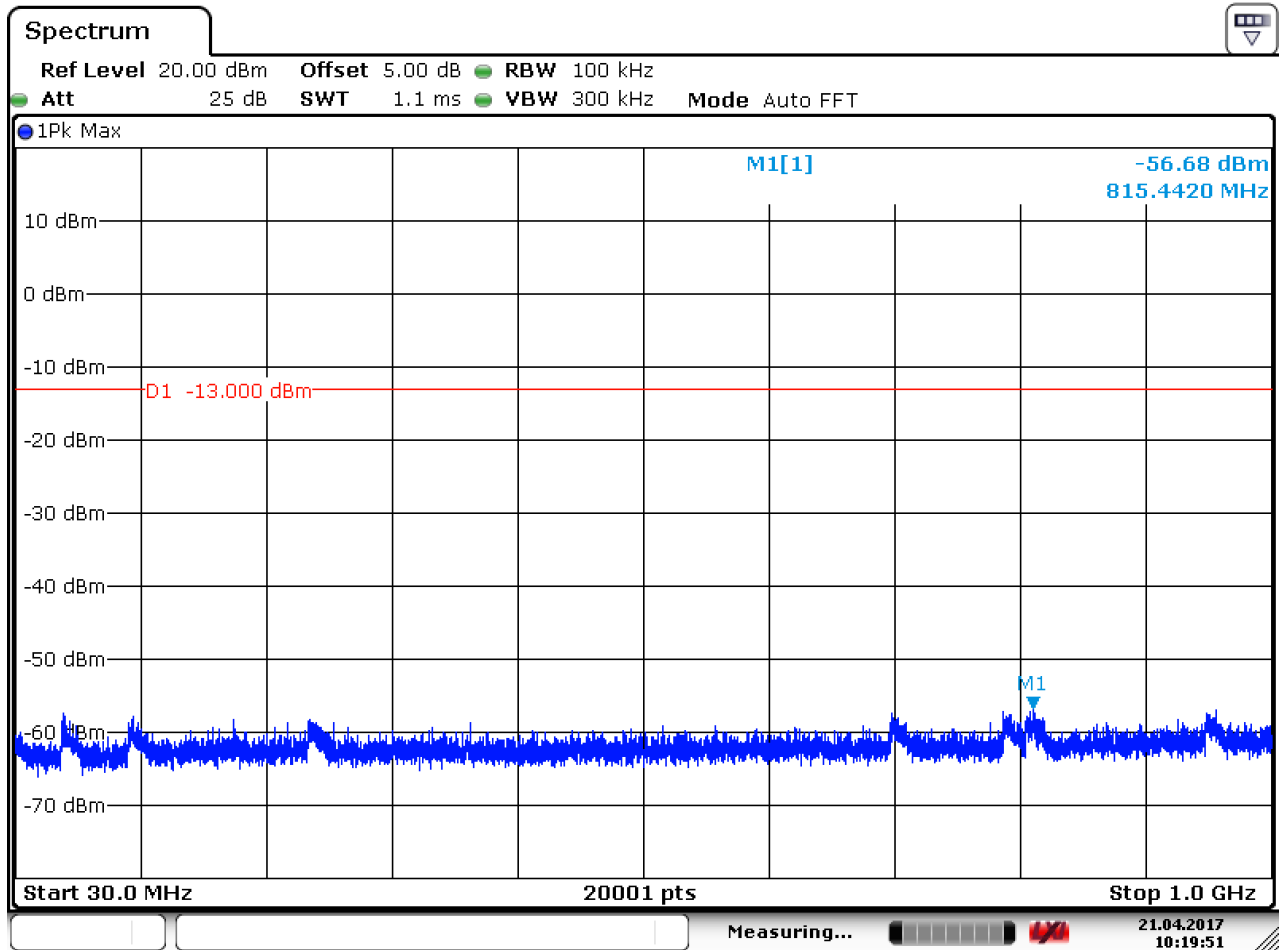
Date: 21.APR.2017 10:19:51

Spectrum					
Ref Level 20.00 dBm	Offset 5.00 dB	● RBW 1 MHz			
● Att 25 dB	SWT 27 ms	● VBW 3 MHz	Mode Auto Sweep		

● 1Pk Max

M1[1]   -32.43 dBm
                3.810780 GHz

10 dBm

0 dBm

-10 dBm

D1 -13.000 dBm

-20 dBm

-30 dBm   M1

-40 dBm

-50 dBm

-60 dBm

-70 dBm

Start 1.0 GHz   20001 pts   Stop 10.0 GHz

Measuring...   21.04.2017 12:06:58

Date: 21.APR.2017 12:06:58

SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch

Spectrum

Ref Level 20.00 dBm	Offset 5.00 dB	RBW 1 MHz	
Att 25 dB	SWT 30 ms	VBW 3 MHz	Mode Auto Sweep

1Pk Max

M1[1]   -46.32 dBm
                         19.815760 GHz

10 dBm

0 dBm

-10 dBm

D1 -13.000 dBm

-20 dBm

-30 dBm

-40 dBm

M1

-50 dBm

-60 dBm

-70 dBm

Start 10.0 GHz   20001 pts   Stop 20.0 GHz

Measuring...   21.04.2017
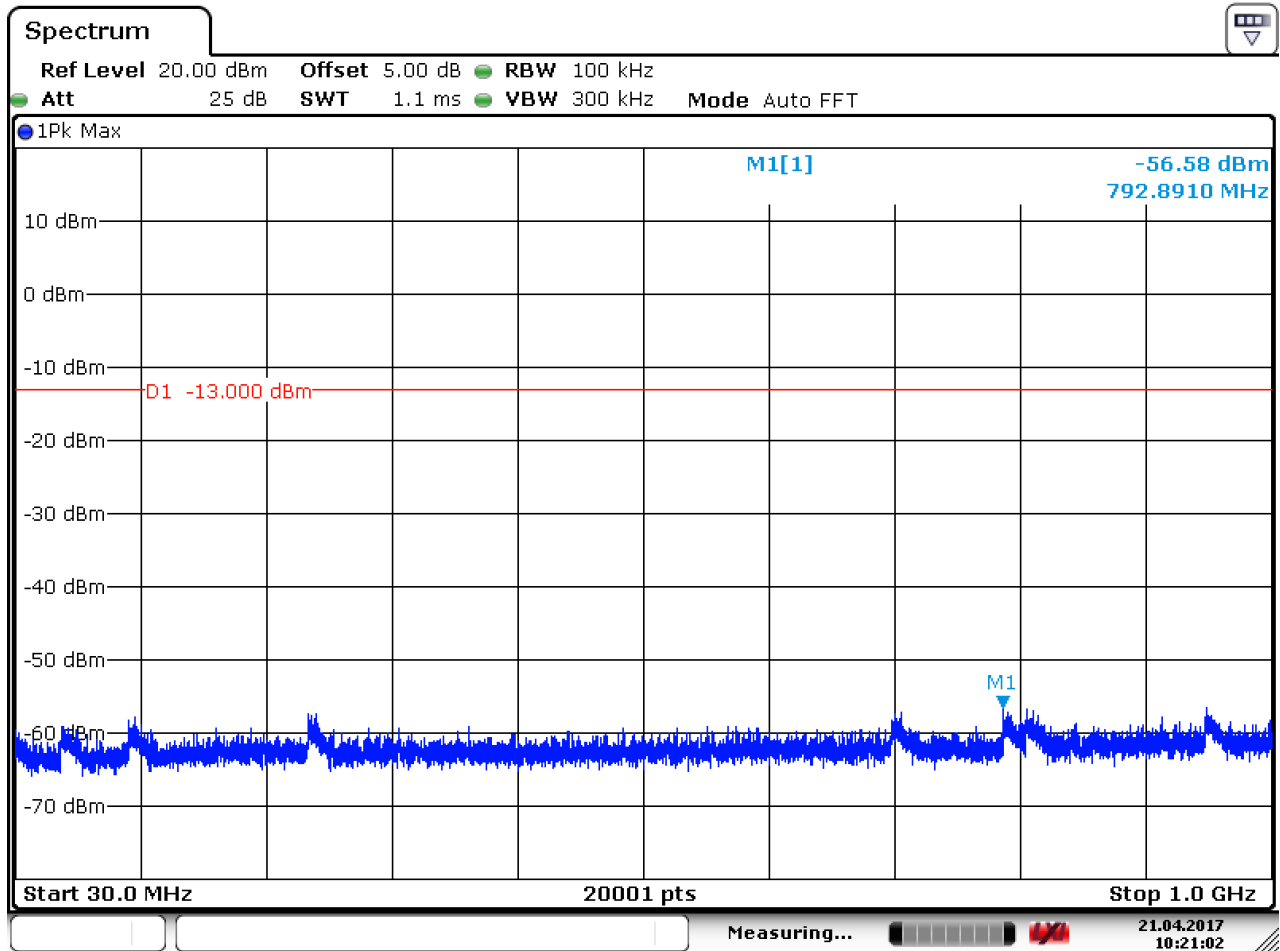   12:07:48

Date: 21.APR.2017 12:07:48

6.1.1.4 Test Mode = LTE / TM1 10MHz RB1#0

6.1.1.4.1 Test Channel = LCH

Date: 21.APR.2017 10:17:41

Spectrum

Ref Level	20.00 dBm	Offset	5.00 dB	RBW	1 MHz
Att	25 dB	SWT	27 ms	VBW	3 MHz

Mode Auto Sweep

1Pk Max

M1[1] -33.01 dBm 3.718990 GHz

D1 -13.000 dBm

M1

Start 1.0 GHz   20001 pts   Stop 10.0 GHz

Measuring...   21.04.2017 12:12:34
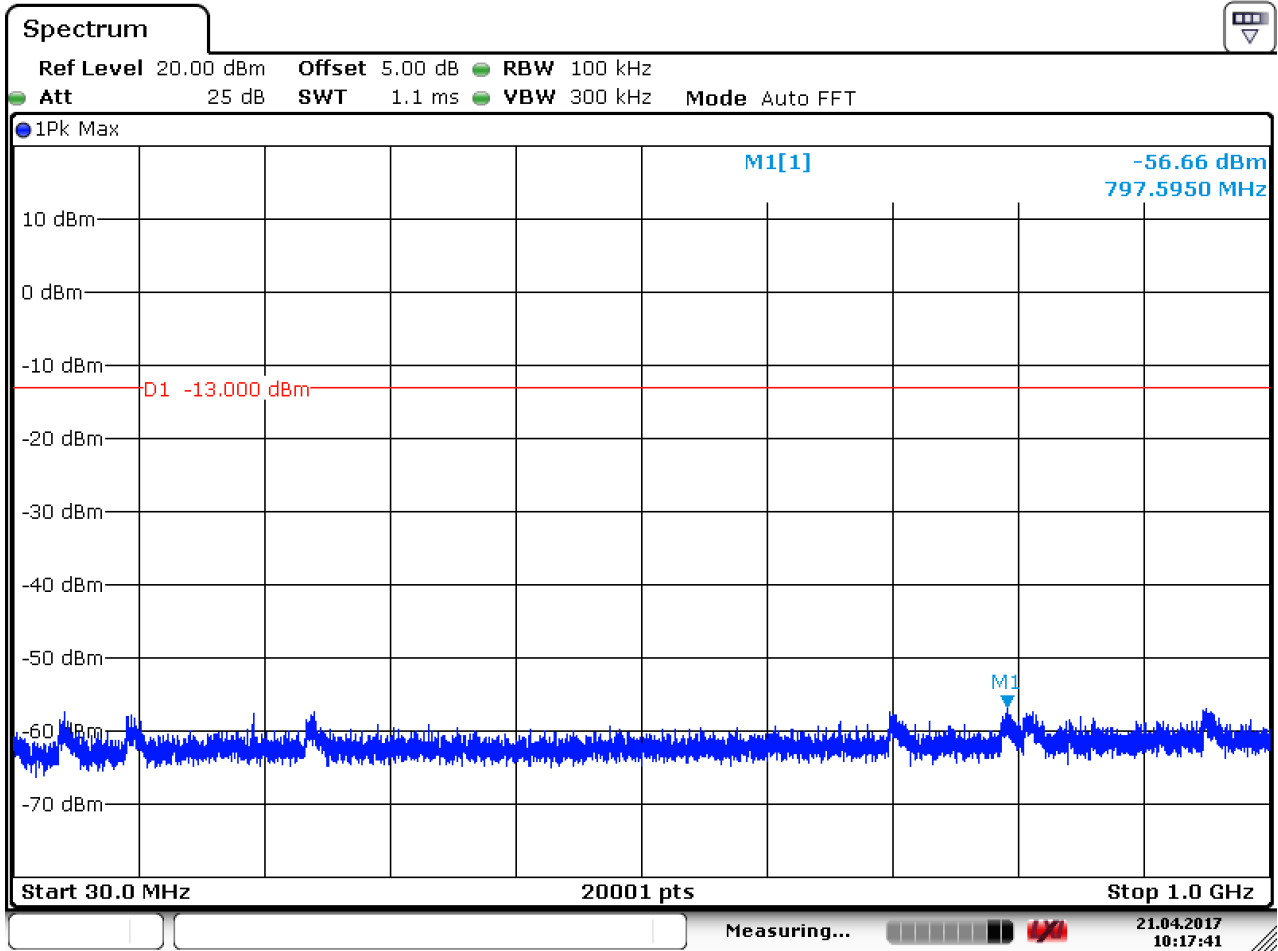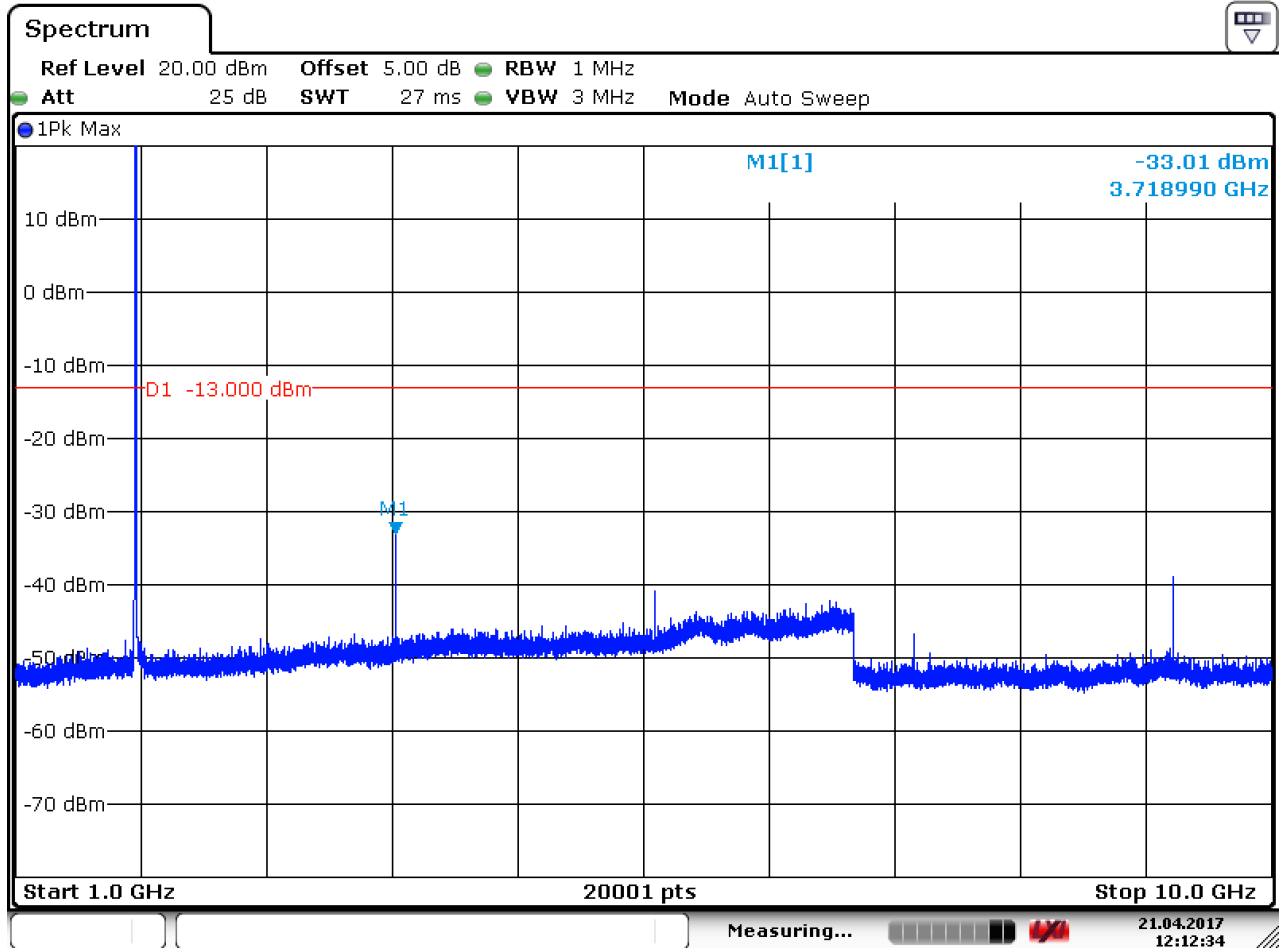
Date: 21.APR.2017 12:12:34

Spectrum						
Ref Level 20.00 dBm	Offset 5.00 dB	● RBW 1 MHz				
● Att 25 dB	SWT 30 ms	● VBW 3 MHz	Mode Auto Sweep			

● 1Pk Max

M1[1]   -46.62 dBm
19.964250 GHz

10 dBm

0 dBm

-10 dBm

D1 -13.000 dBm

-20 dBm

-30 dBm

-40 dBm

-50 dBm

-60 dBm

-70 dBm

M

Start 10.0 GHz   20001 pts   Stop 20.0 GHz

Measuring...   21.04.2017
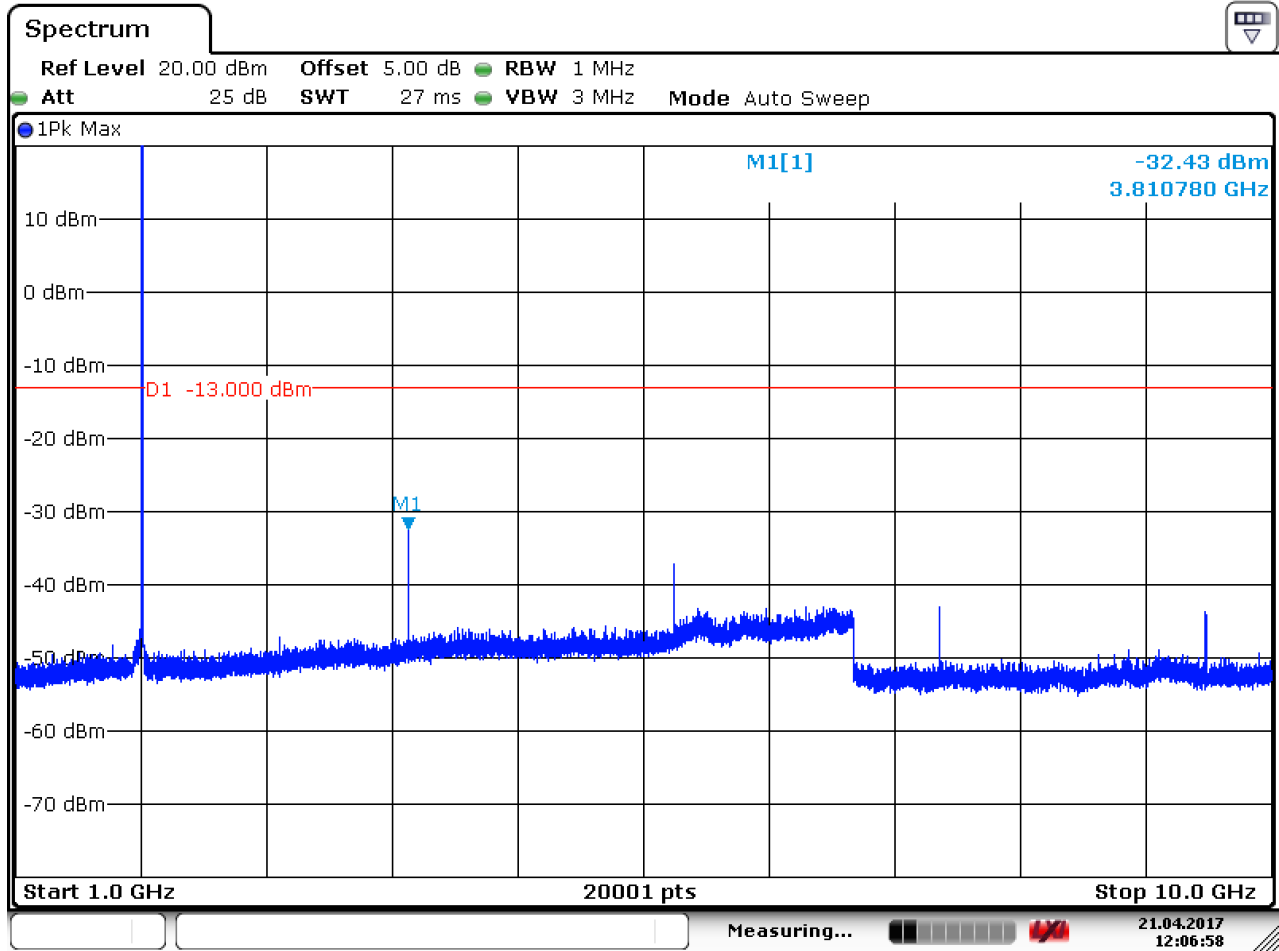   12:11:44

Date: 21.APR.2017 12:11:45

6.1.1.4.2   Test Channel = MCH

Date: 21.APR.2017 10:18:34
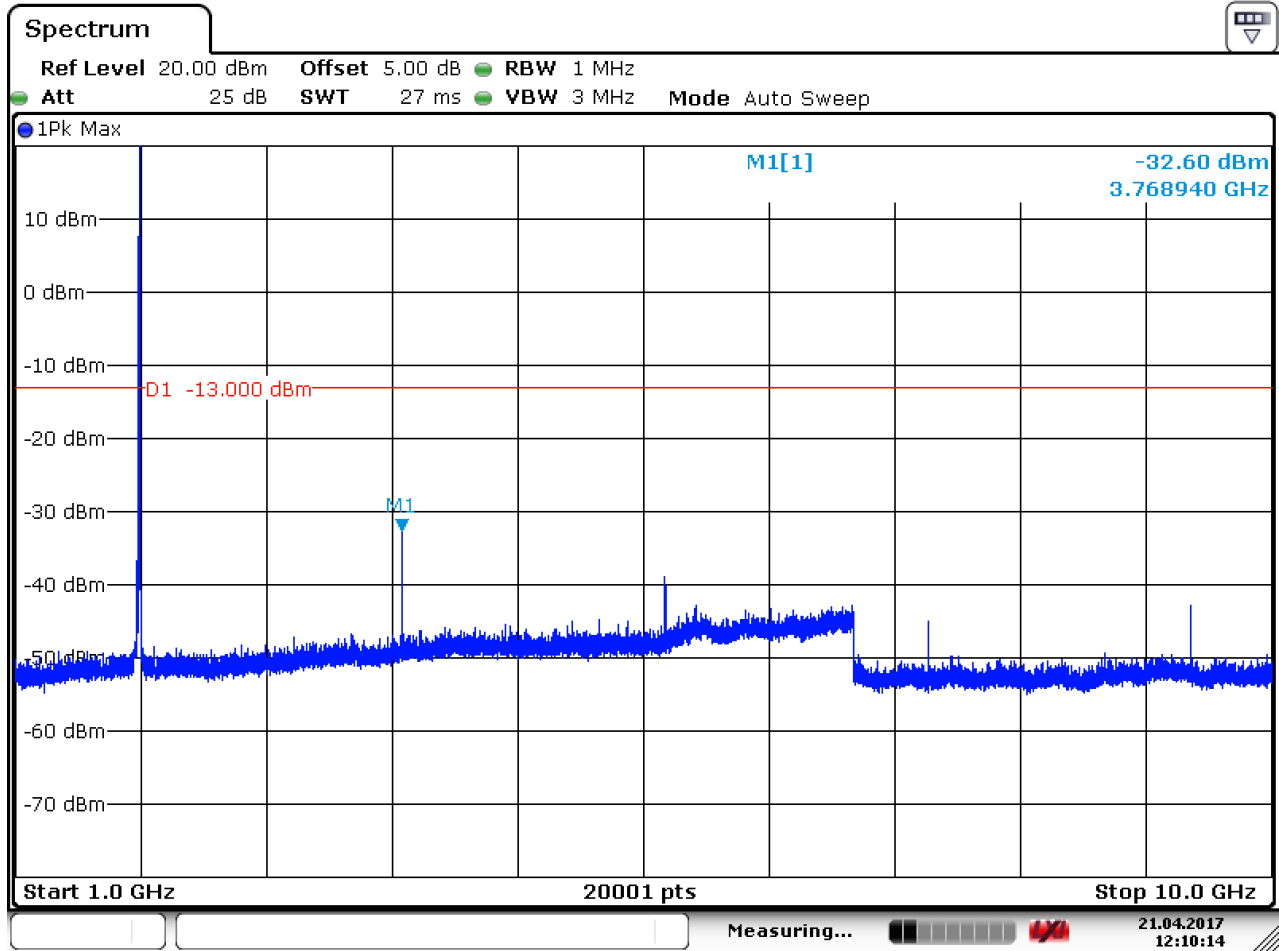
Date: 21.APR.2017 12:10:14
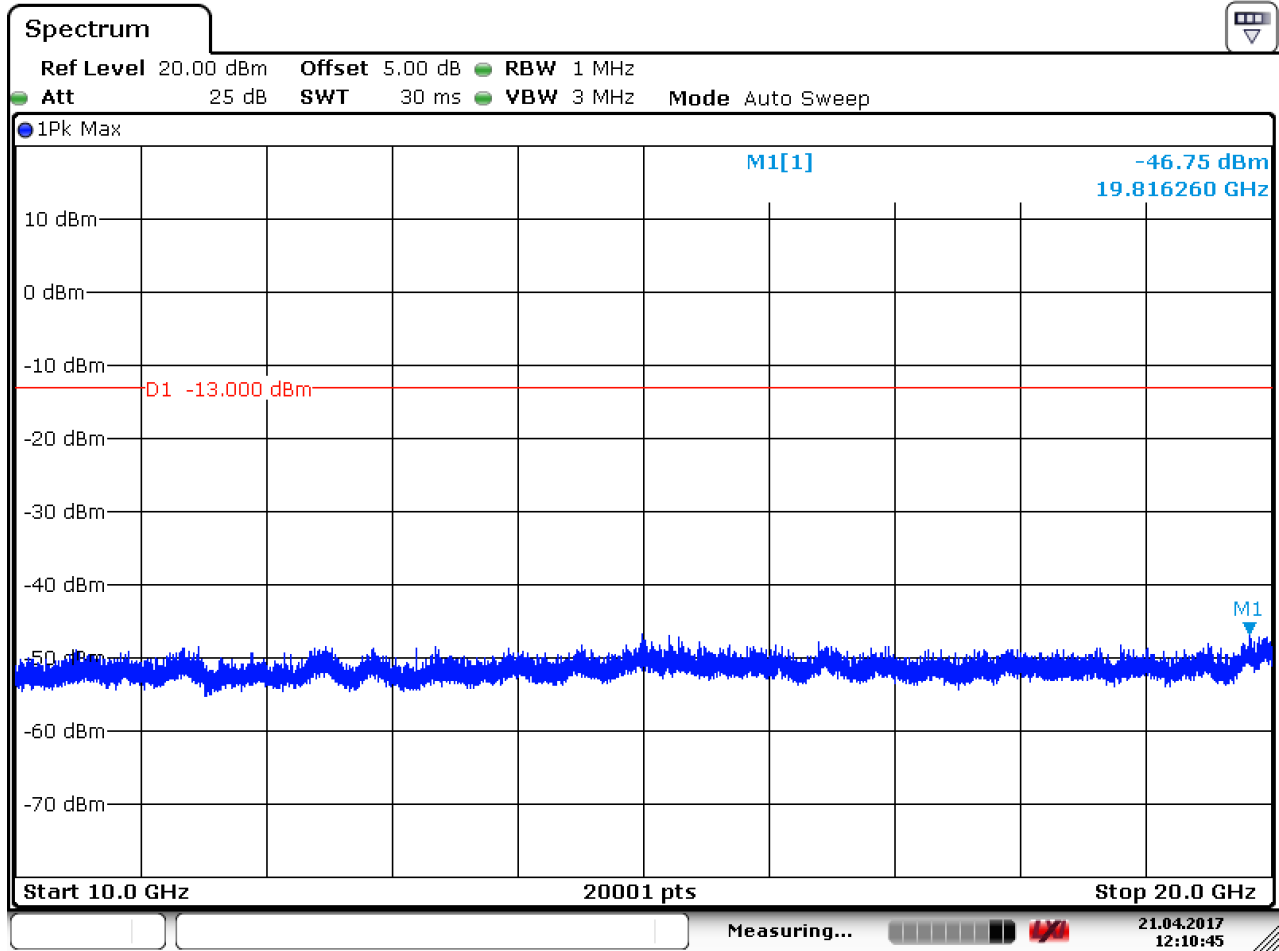
Date: 21.APR.2017 12:10:46

6.1.1.4.3   Test Channel = HCH

Date: 21.APR.2017 10:19:11

Spectrum						
Ref Level 20.00 dBm	**Offset** 5.00 dB	**RBW** 1 MHz				
Att 25 dB	**SWT** 27 ms	**VBW** 3 MHz	**Mode** Auto Sweep			

1Pk Max

M1[1] -32.50 dBm
3.818880 GHz

10 dBm

0 dBm

-10 dBm

D1 -13.000 dBm

-20 dBm

-30 dBm M1

-40 dBm

-50 dBm

-60 dBm

-70 dBm

Start 1.0 GHz   20001 pts   Stop 10.0 GHz

Measuring...   21.04.2017 12:09:29
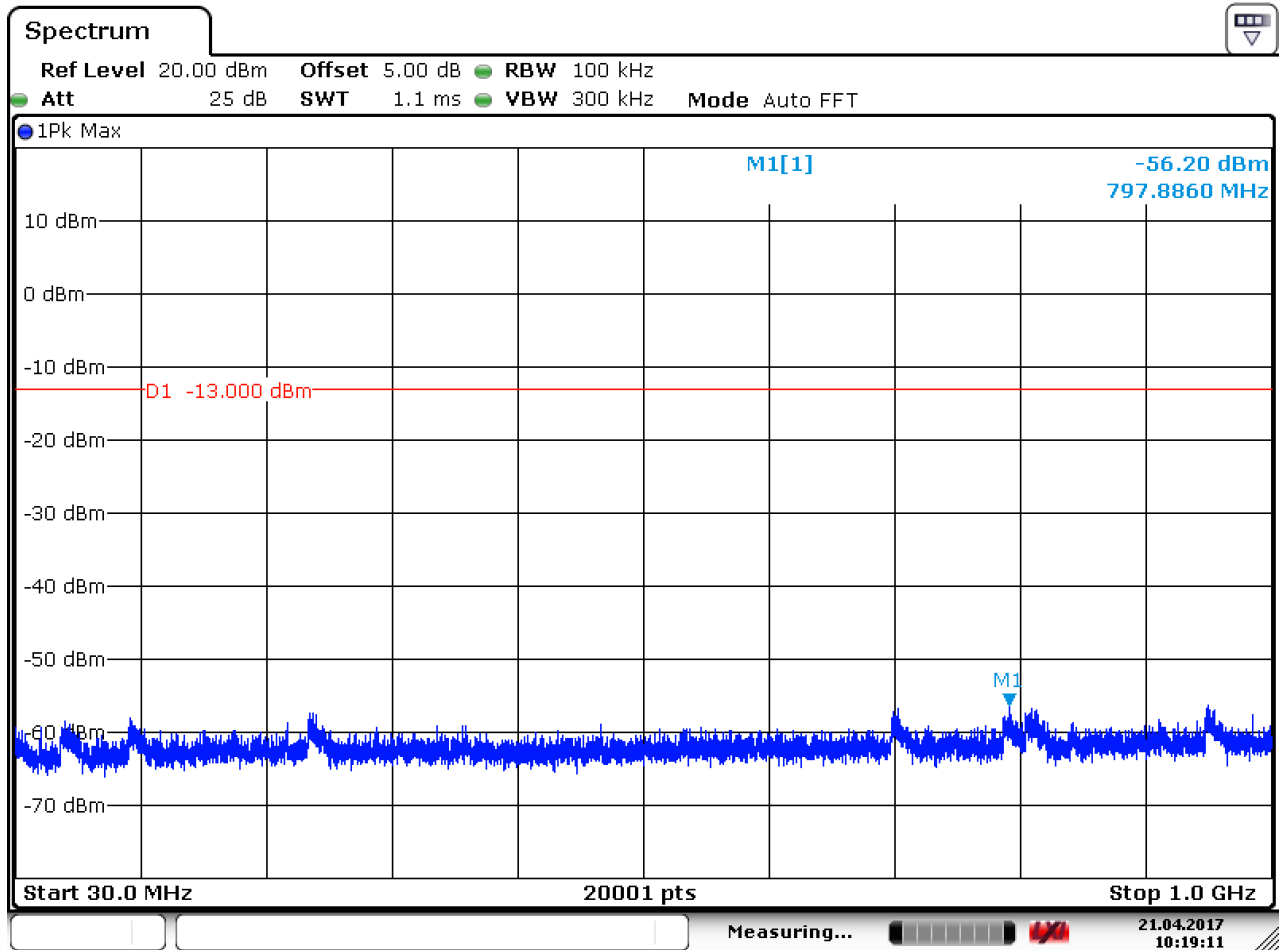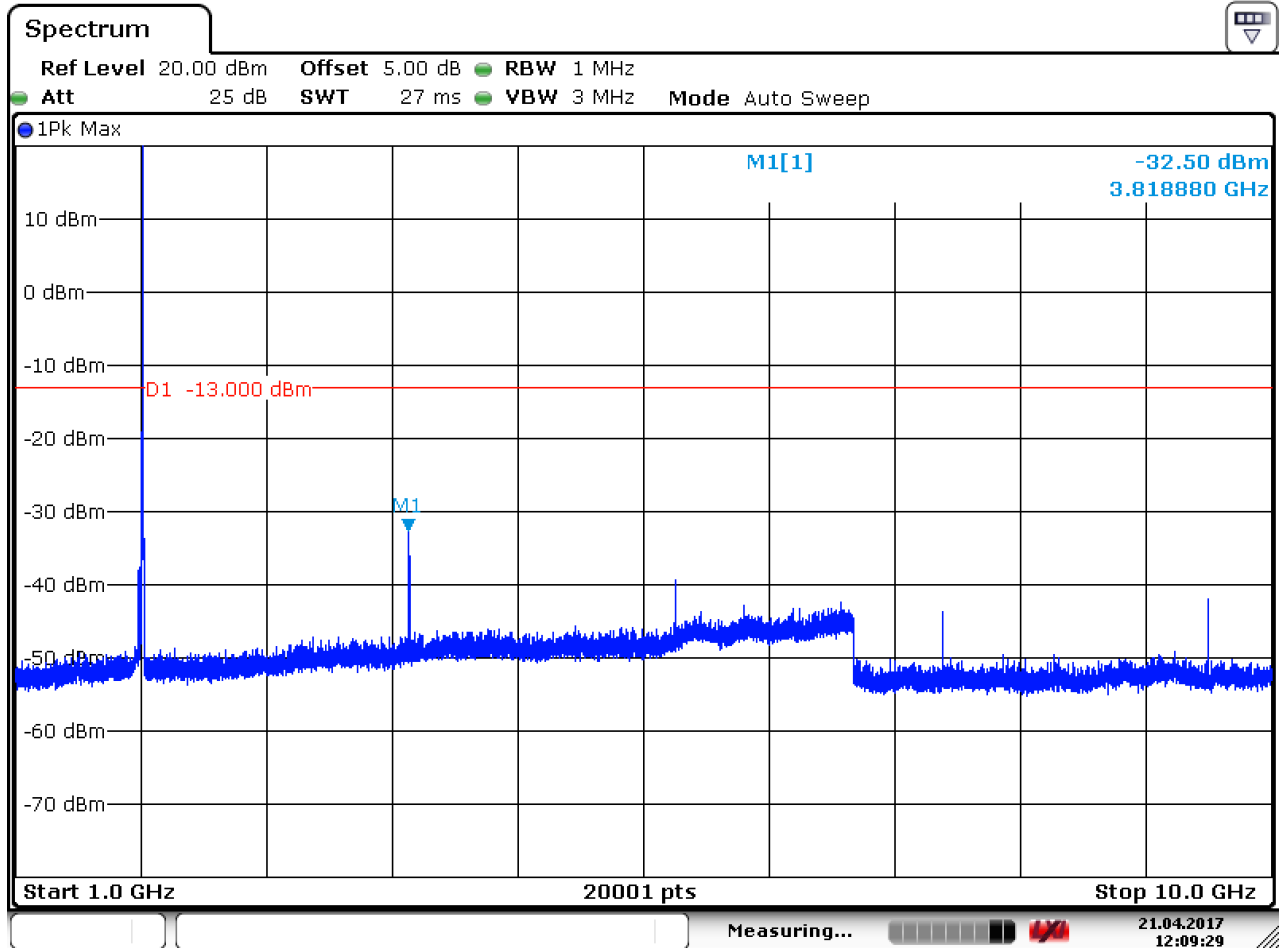
Date: 21.APR.2017 12:09:29
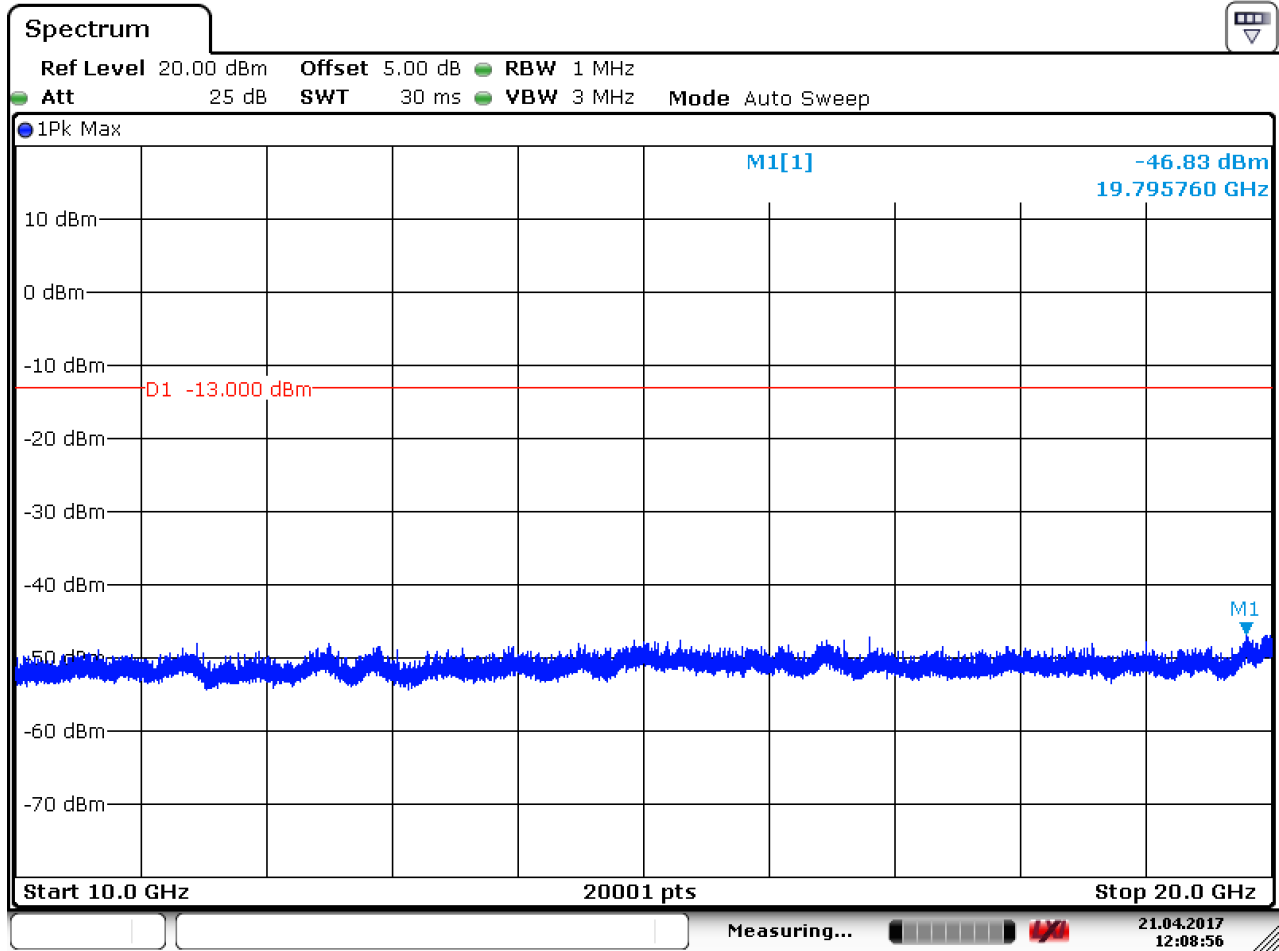
Date: 21.APR.2017 12:08:56

6.1.1.5　Test Mode = LTE / TM1　15MHz RB1#0

6.1.1.5.1　Test Channel = LCH

Date: 21.APR.2017　10:17:02

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
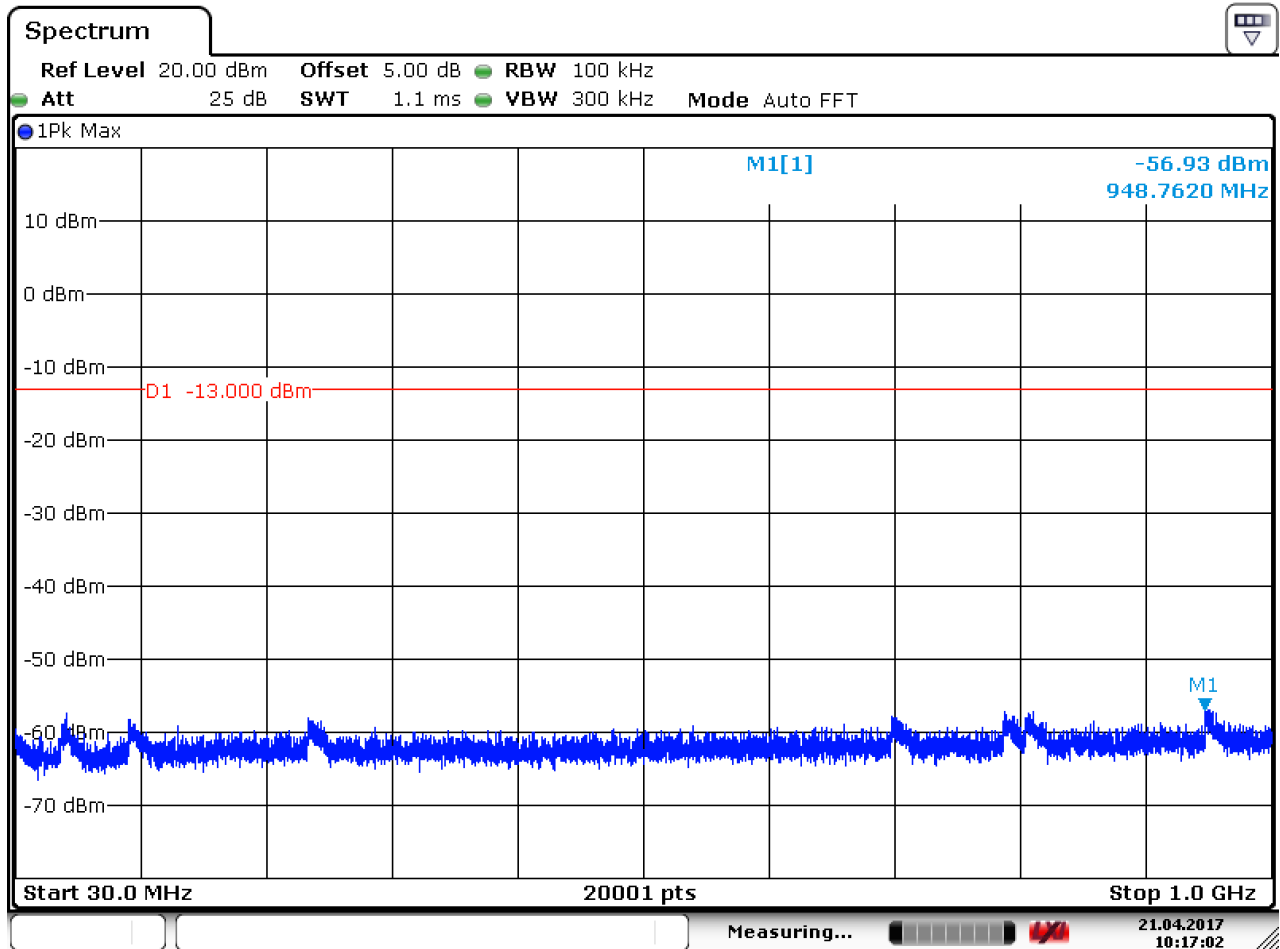
6.1.1.5.2 Test Channel = MCH
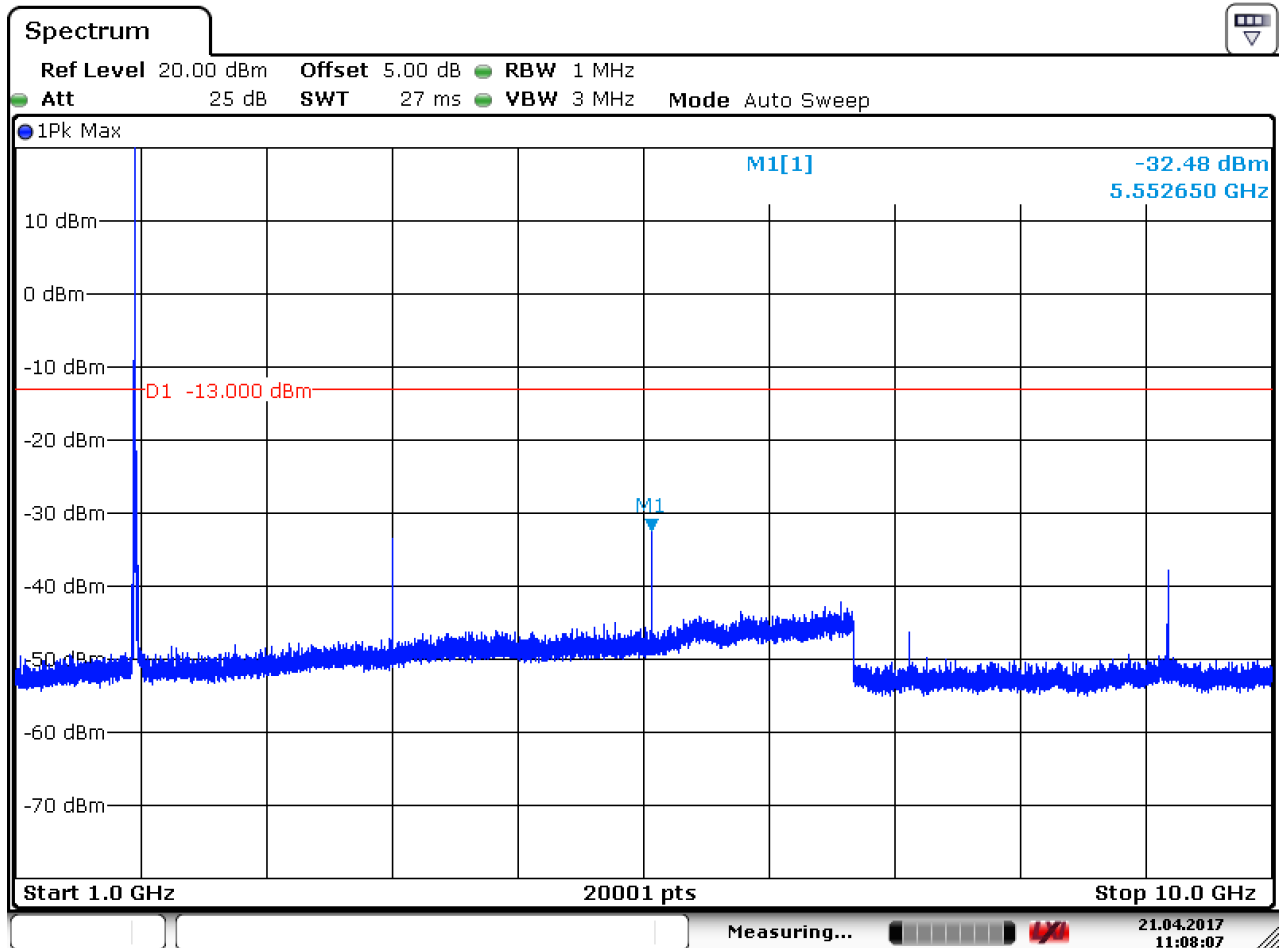
Date: 21.APR.2017 11:08:08

Date: 21.APR.2017 11:07:32

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
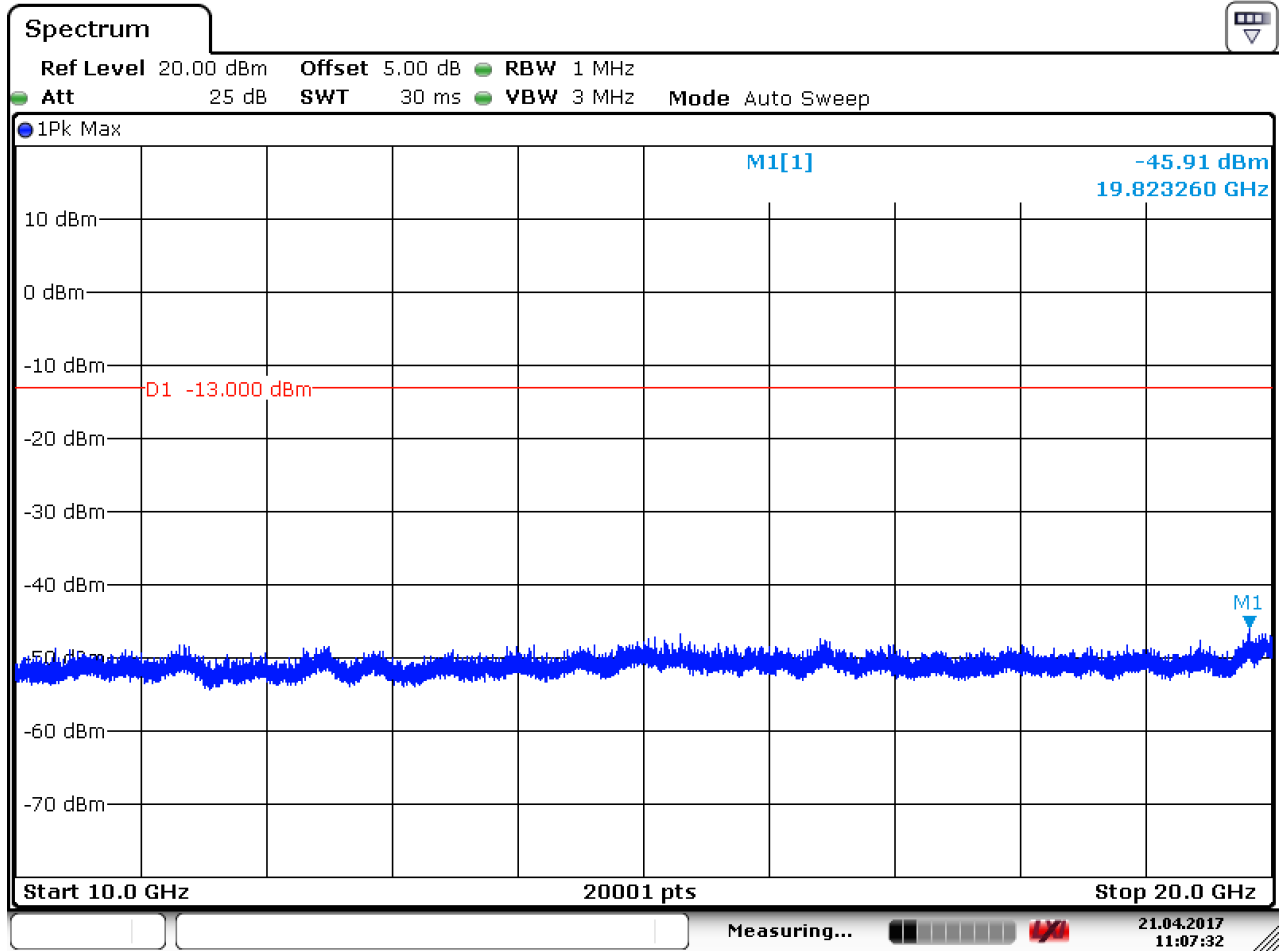
6.1.1.5.3   Test Channel = HCH

Date: 21.APR.2017 10:15:50

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
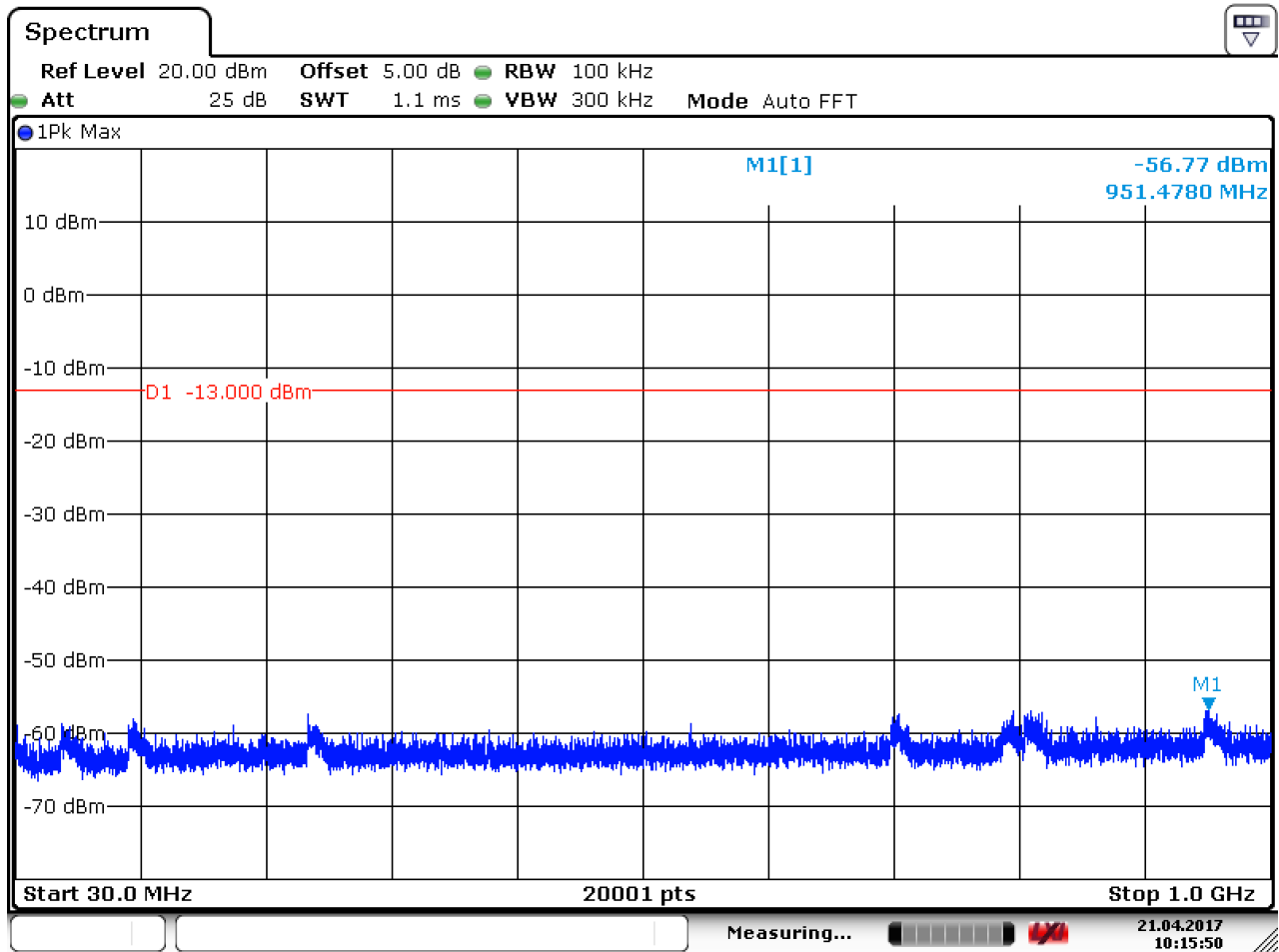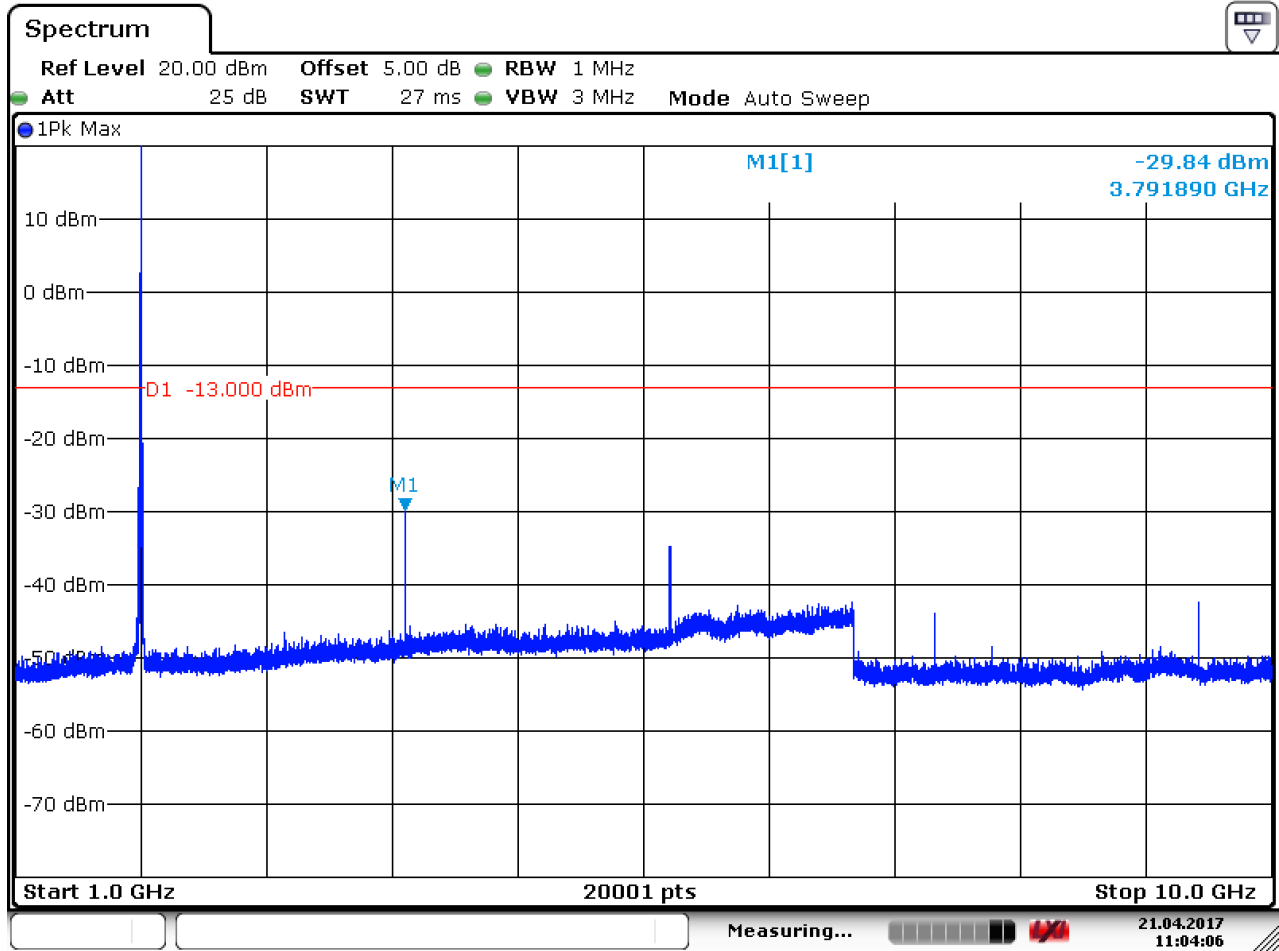
Date: 21.APR.2017 11:04:07
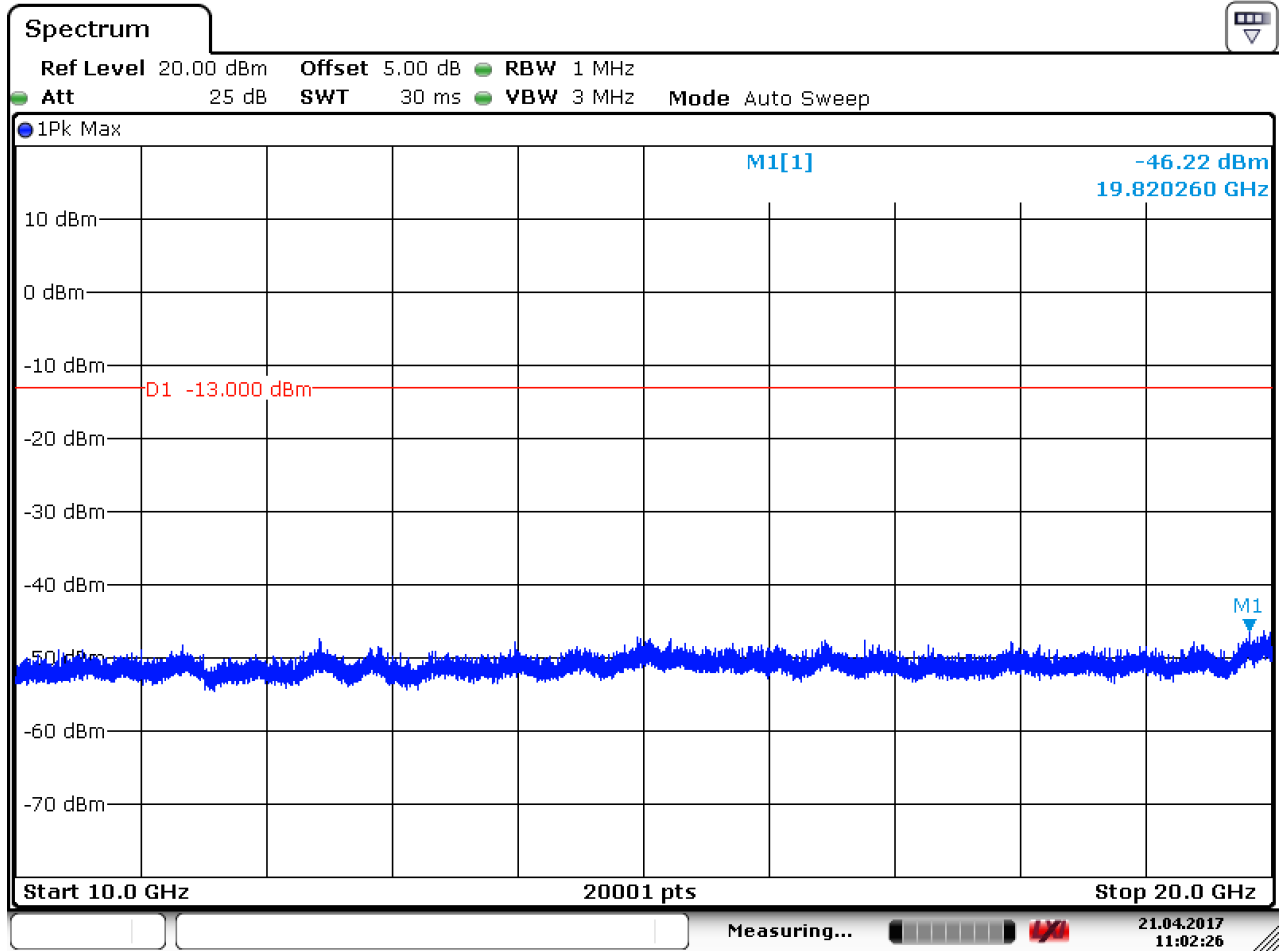
Date: 21.APR.2017 11:02:26

6.1.1.6   Test Mode = LTE / TM1 20MHz RB1#0

6.1.1.6.1   Test Channel = LCH

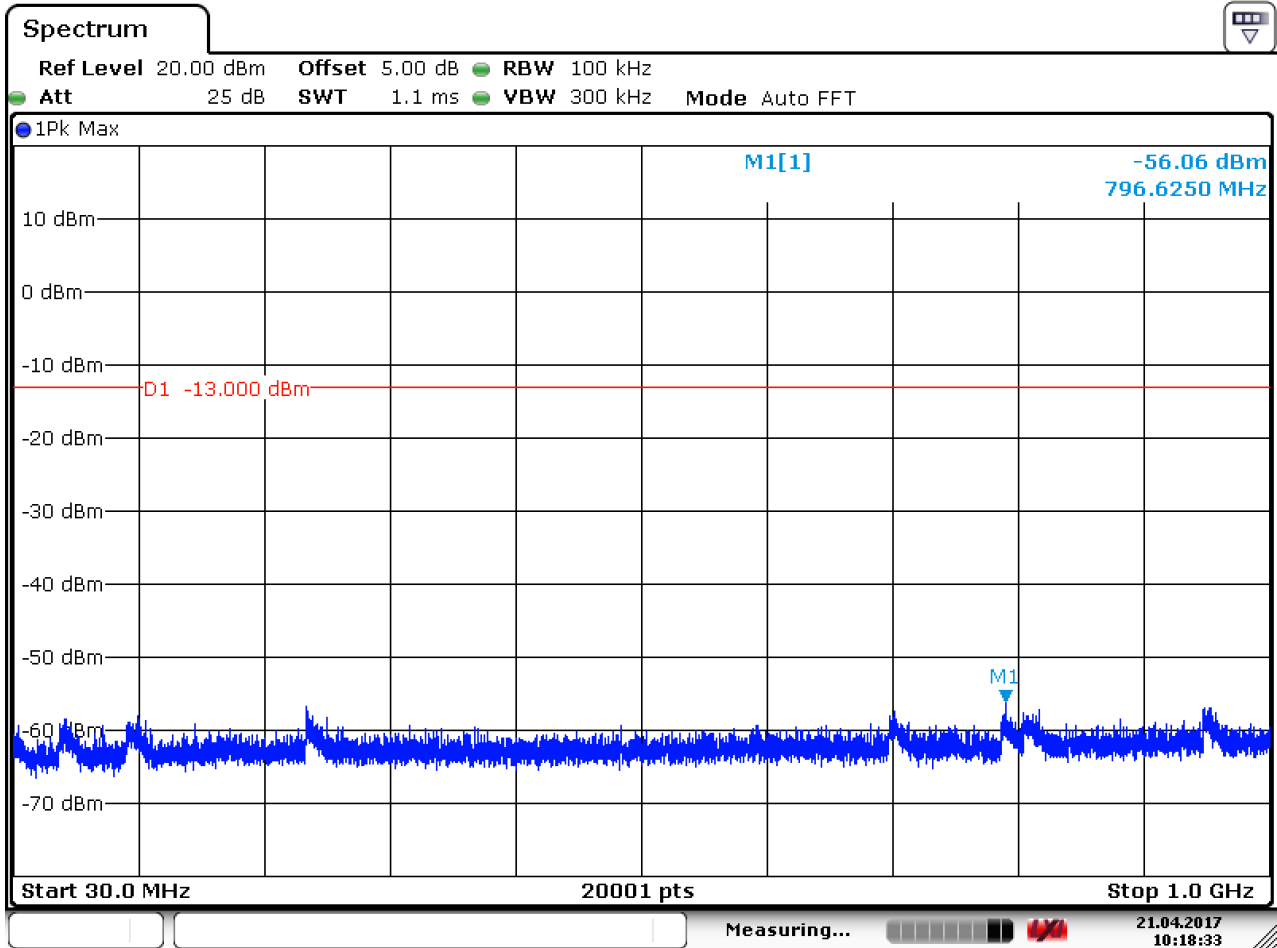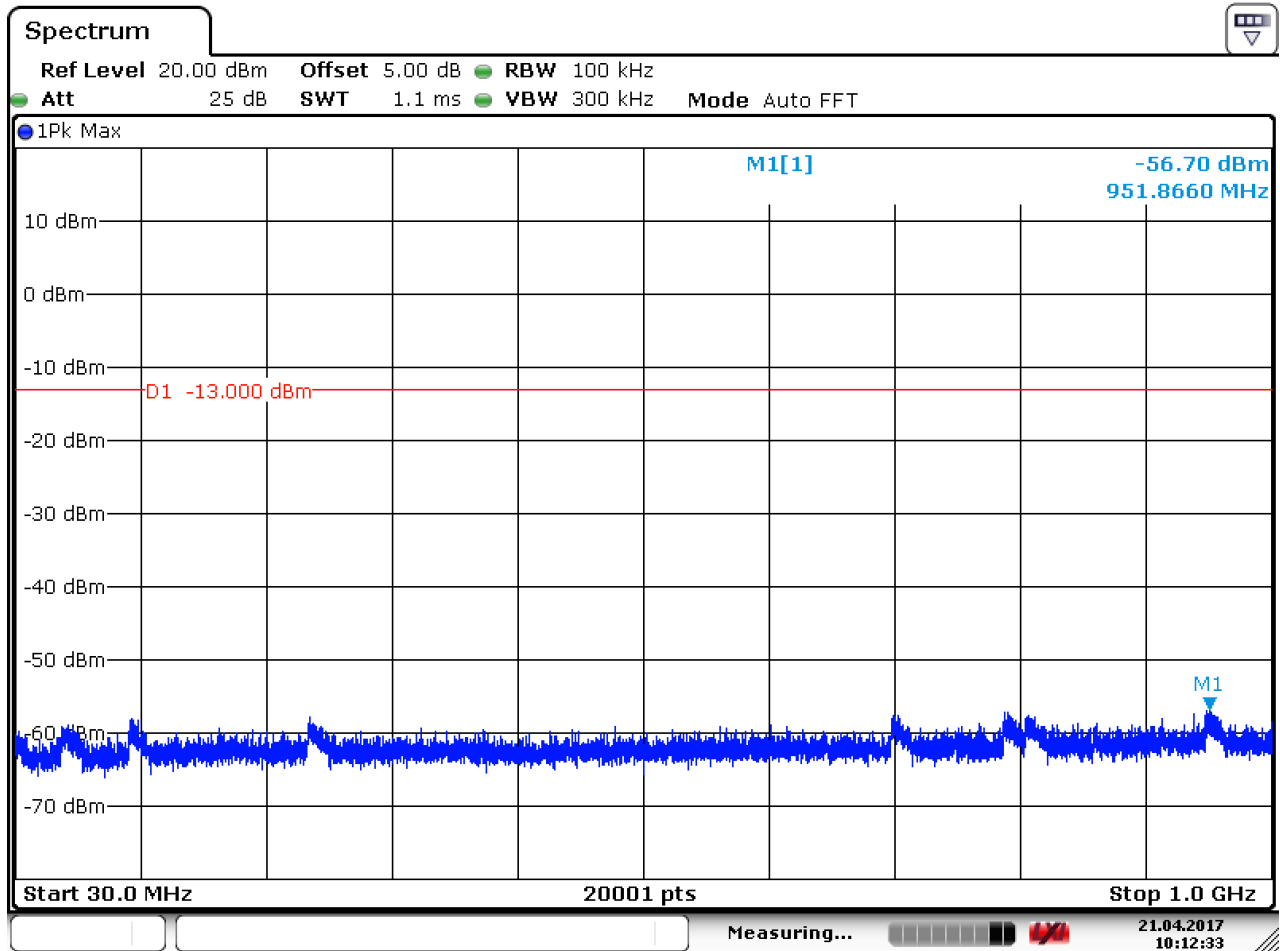

Date: 21.APR.2017 10:12:33

Date: 21.APR.2017 10:59:08

Spectrum

| Ref Level 20.00 dBm | Offset 5.00 dB ● RBW 1 MHz |
| Att 25 dB | SWT 30 ms ● VBW 3 MHz | Mode Auto Sweep |

1Pk Max

M1[1]   -46.68 dBm
19.973250 GHz

10 dBm
0 dBm
-10 dBm
D1 -13.000 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm

Start 10.0 GHz   20001 pts   Stop 20.0 GHz

Measuring...   21.04.2017 10:58:43

Date: 21.APR.2017 10:58:43

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
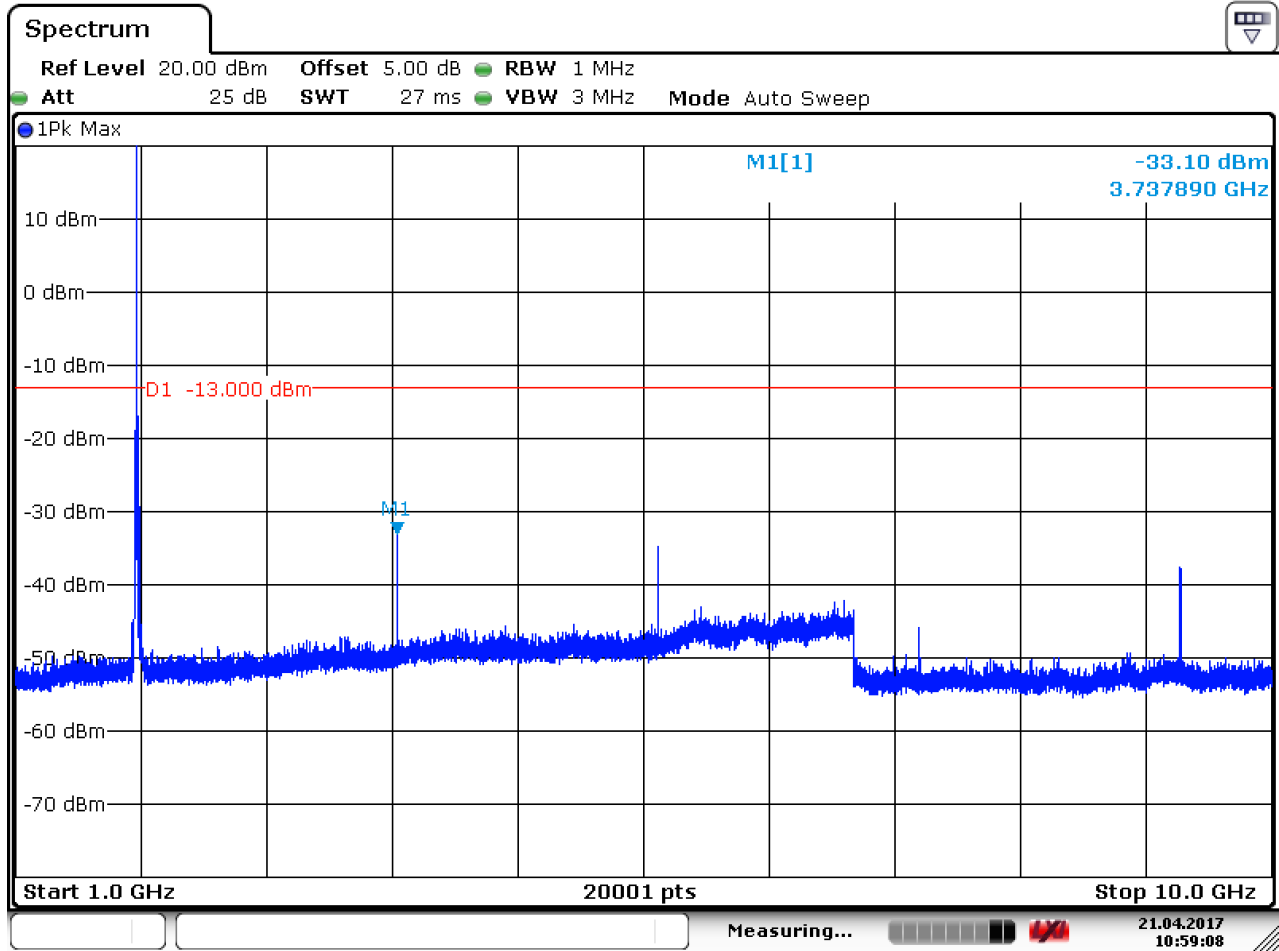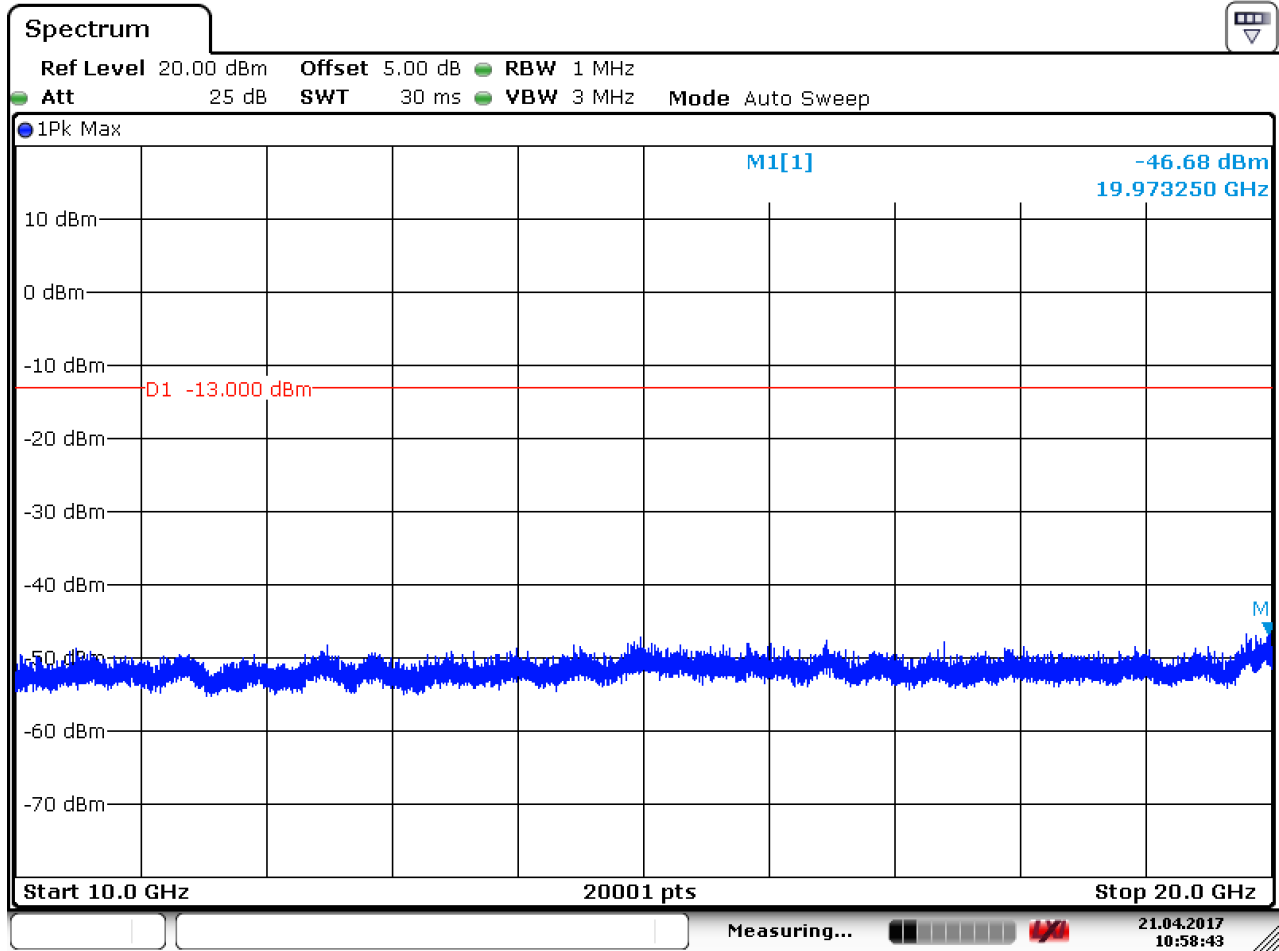
6.1.1.6.2   Test Channel = MCH
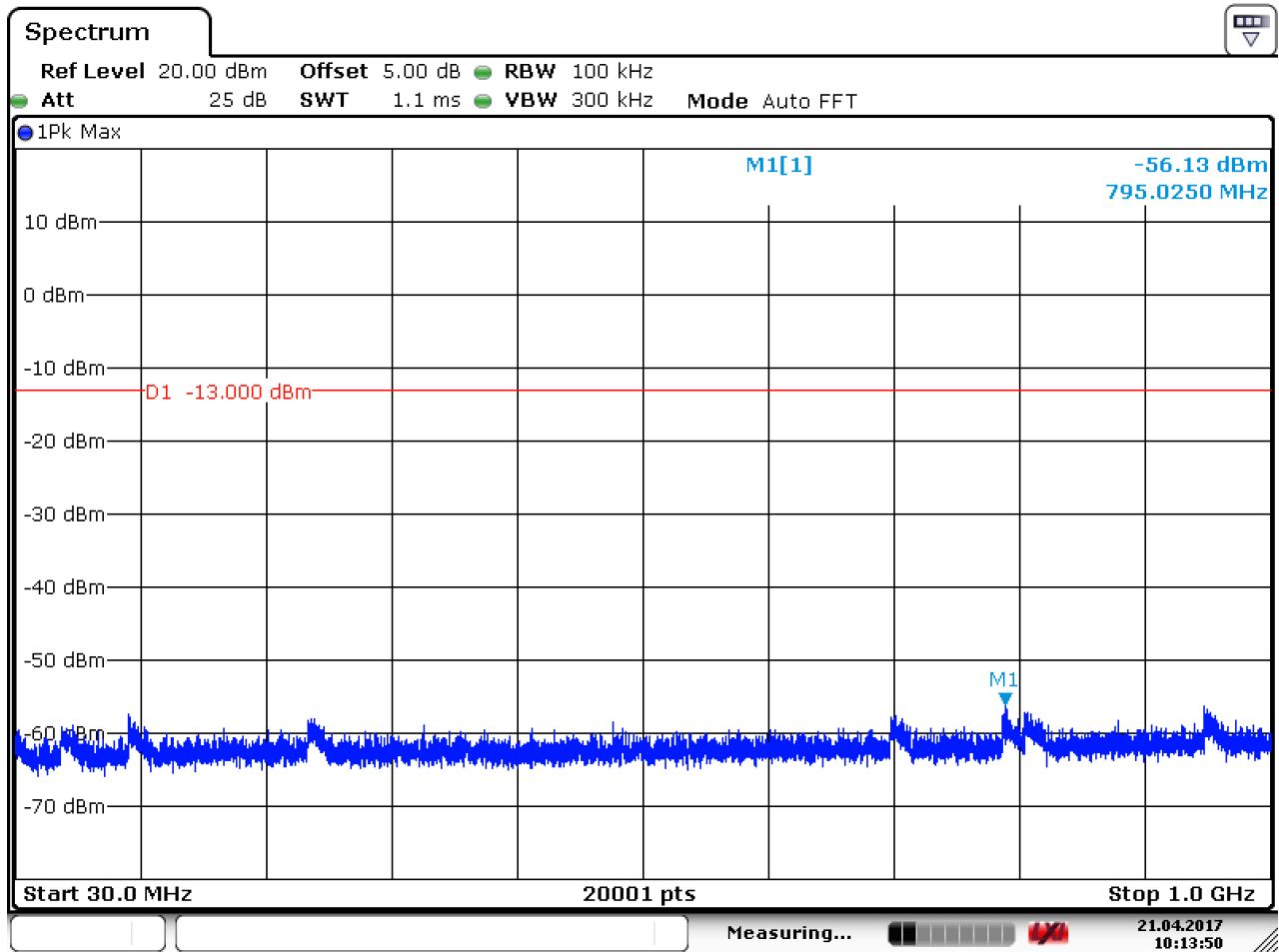
Date: 21.APR.2017 10:13:51

Date: 21.APR.2017 10:57:17

Spectrum

Ref Level 20.00 dBm	**Offset** 5.00 dB ● **RBW** 1 MHz	
● **Att** 25 dB	**SWT** 30 ms ● **VBW** 3 MHz	**Mode** Auto Sweep

●1Pk Max

M1[1]   -47.08 dBm
                         19.943250 GHz

10 dBm

0 dBm

-10 dBm

D1 -13.000 dBm

-20 dBm

-30 dBm

-40 dBm

-50 dBm

-60 dBm

-70 dBm

Start 10.0 GHz   20001 pts   Stop 20.0 GHz

Measuring...   21.04.2017
                                10:57:58

Date: 21.APR.2017 10:57:58

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
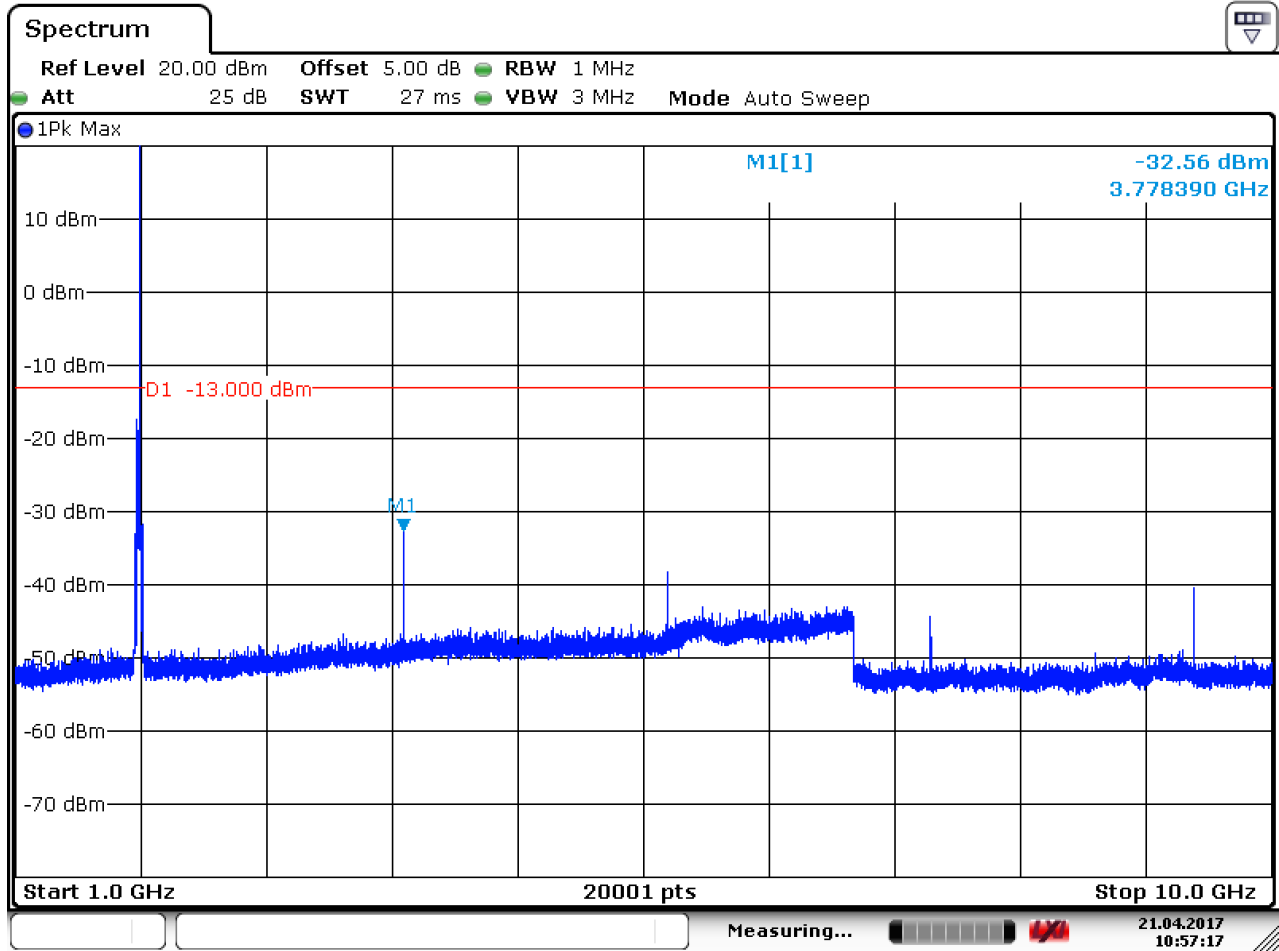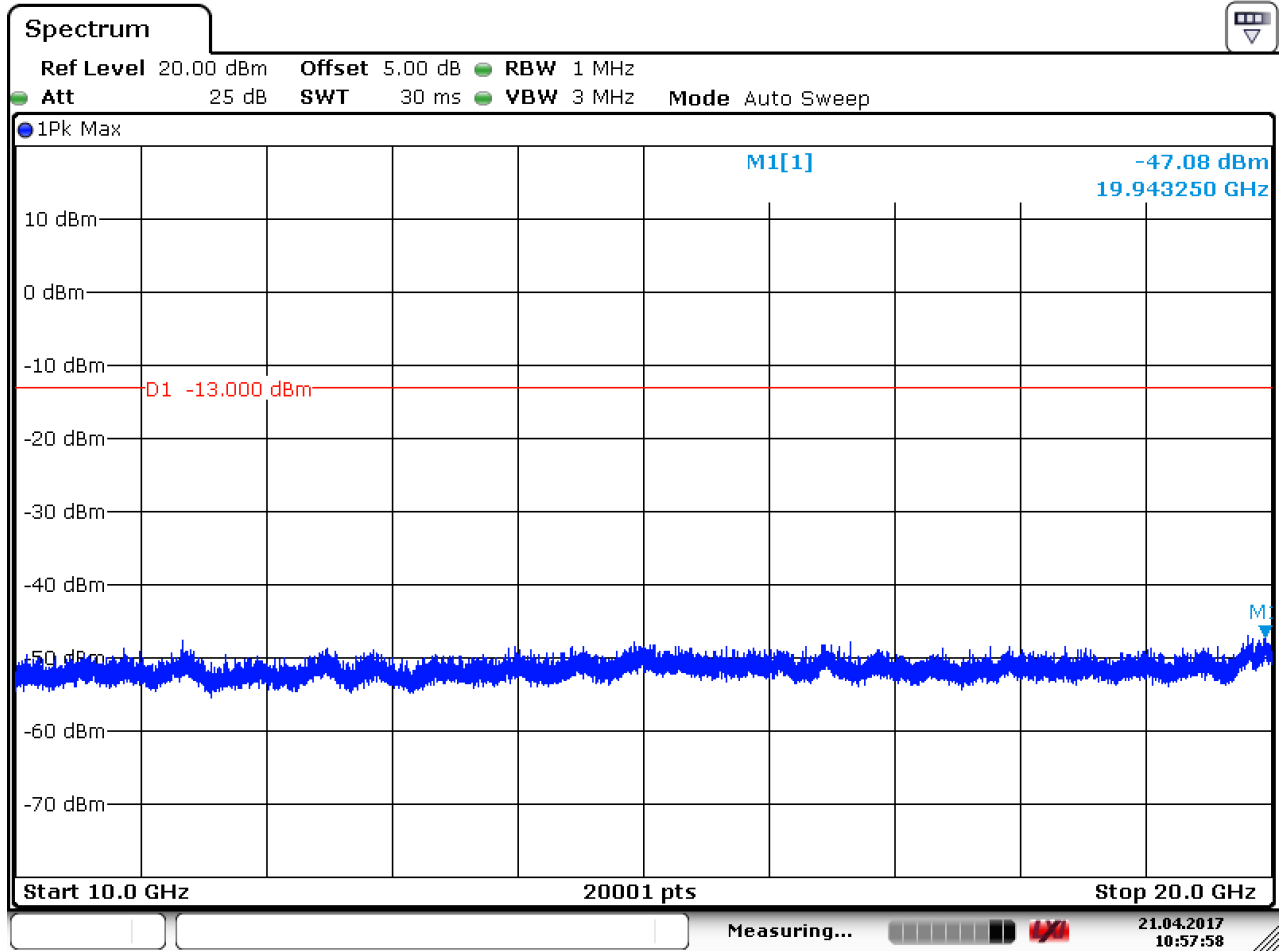
6.1.1.6.3 Test Channel = HCH

Date: 21.APR.2017 10:14:34

Spectrum						
Ref Level 20.00 dBm	**Offset** 5.00 dB	● **RBW** 1 MHz				
● **Att** 25 dB	**SWT** 27 ms	● **VBW** 3 MHz	**Mode** Auto Sweep			

●1Pk Max

M1[1]   -33.65 dBm
3.817980 GHz

D1 -13.000 dBm

Start 1.0 GHz   20001 pts   Stop 10.0 GHz

Measuring...   21.04.2017 11:00:04
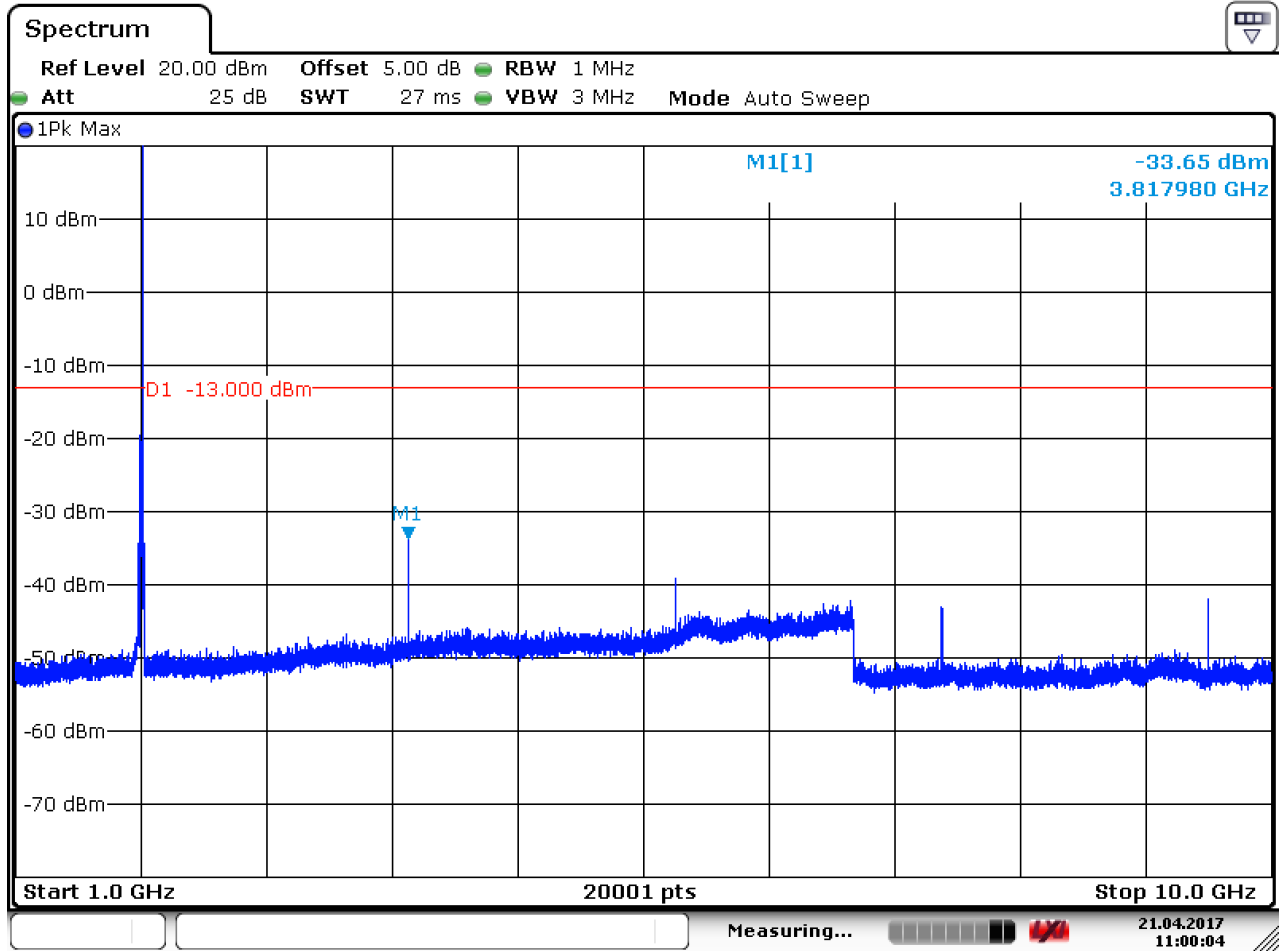
Date: 21.APR.2017 11:00:04

Spectrum

| Ref Level | 20.00 dBm | Offset | 5.00 dB | ● RBW | 1 MHz |
| Att | 25 dB | SWT | 30 ms | ● VBW | 3 MHz | Mode Auto Sweep |

●1Pk Max

M1[1]   -46.53 dBm
                    19.944750 GHz

10 dBm

0 dBm

-10 dBm

D1 -13.000 dBm

-20 dBm

-30 dBm

-40 dBm

-50 dBm

-60 dBm

-70 dBm

Start 10.0 GHz   20001 pts   Stop 20.0 GHz

Measuring...   21.04.2017 11:01:15

Date: 21.APR.2017 11:01:15

7 Field Strength of Spurious Radiation

7.1 For LTE

7.1.1 Test Band = LTE band2

7.1.1.1 Test Mode =LTE/TM1 20MHz RB1#0

7.1.1.1.1 Test Channel = LCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1177.000	-66.79	-13.00	-53.79	Vertical
4657.50	-68.14	-13.00	-55.14	Vertical
6607.500	-66.30	-13.00	-53.30	Vertical
1100.000	-66.54	-13.00	-53.54	Horizontal
4657.500	-68.12	-13.00	-55.12	Horizontal
7972.500	-65.30	-13.00	-52.30	Horizontal

7.1.1.1.2 Test Channel = MCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1199.000	-66.12	-13.00	-53.12	Vertical
4170.000	-68.05	-13.00	-55.05	Vertical
5145.000	-67.81	-13.00	-54.81	Vertical
1199.000	-66.85	-13.00	-53.85	Horizontal
4365.000	-68.17	-13.00	-55.17	Horizontal
6022.500	-66.76	-13.00	-53.76	Horizontal

7.1.1.1.3 Test Channel = HCH

Frequency (MHz)	Level (dBm)	Limit Line (dBm)	Over Limit (dB)	Polarization
1221.000	-66.13	-13.00	-53.13	Vertical
4462.500	-68.40	-13.00	-55.40	Vertical
6900.0000	-65.87	-13.00	-52.87	Vertical
1210.000	-66.82	-13.00	-53.82	Horizontal
5632.500	-67.40	-13.00	-54.40	Horizontal
7095.000	-66.23	-13.00	-53.23	Horizontal

NOTE:

1) The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

8   Frequency Stability

8.1 Frequency Error VS. Voltage

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
LTE band 2	LTE/TM1 20MHz	LCH	TN	VL	-3.03	-0.00163	PASS
				VN	2.46	0.00132	PASS
				VH	-5.73	-0.00308	PASS
		MCH	TN	VL	1.49	0.00079	PASS
				VN	-2.80	-0.00149	PASS
				VH	2.63	0.00140	PASS
		HCH	TN	VL	-4.56	-0.00240	PASS
				VN	-5.17	-0.00272	PASS
				VH	-2.79	-0.00147	PASS
	LTE/TM2 20MHz	LCH	TN	VL	-4.28	-0.00230	PASS
				VN	-2.55	-0.00137	PASS
				VH	-5.16	-0.00277	PASS
		MCH	TN	VL	1.52	0.00081	PASS
				VN	-3.80	-0.00202	PASS
				VH	2.19	0.00116	PASS
		HCH	TN	VL	-4.03	-0.00212	PASS
				VN	1.46	0.00077	PASS
				VH	-7.23	-0.00381	PASS

8.2 Frequency Error VS. Temperature

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
LTEband2	LTE/TM1 20MHz	LCH	VN	-30	-5.40	-0.00290	PASS
				-20	-1.34	-0.00072	PASS
				-10	2.38	0.00128	PASS
				0	1.75	0.00094	PASS
				10	1.65	0.00089	PASS
				20	4.13	0.00222	PASS
				30	-0.31	-0.00017	PASS
				40	-3.14	-0.00169	PASS
				50	2.59	0.00139	PASS
		MCH	VN	-30	-2.80	-0.00149	PASS
				-20	-5.95	-0.00316	PASS
				-10	-7.49	-0.00398	PASS
				0	-5.62	-0.00299	PASS
				10	-4.46	-0.00237	PASS
				20	-1.94	-0.00103	PASS
				30	-5.66	-0.00301	PASS
				40	-2.62	-0.00139	PASS
				50	-6.92	-0.00368	PASS
		HCH	VN	-30	4.54	0.00239	PASS
				-20	-1.49	-0.00078	PASS
				-10	1.53	0.00081	PASS
				0	-4.83	-0.00254	PASS
				10	2.60	0.00137	PASS
				20	-1.57	-0.00083	PASS
				30	-2.66	-0.00140	PASS
				40	-3.43	-0.00181	PASS
				50	-7.90	-0.00453	PASS

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Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq. Error [Hz]	Freq. vs. rated [ppm]	Verdict
LTEband2	LTE/TM2 20MHz	LCH	VN	-30	-4.50	-0.00242	PASS
				-20	-2.45	-0.00132	PASS
				-10	3.38	0.00182	PASS
				0	2.64	0.00142	PASS
				10	1.60	0.00086	PASS
				20	-2.23	-0.00120	PASS
				30	-0.44	-0.00024	PASS
				40	5.34	0.00287	PASS
				50	4.79	0.00258	PASS
		MCH	VN	-30	-3.80	-0.00202	PASS
				-20	-5.38	-0.00286	PASS
				-10	-7.29	-0.00388	PASS
				0	-4.32	-0.00230	PASS
				10	-1.34	-0.00071	PASS
				20	1.74	0.00093	PASS
				30	-3.84	-0.00204	PASS
				40	-2.62	-0.00139	PASS
				50	-3.31	-0.00176	PASS
		HCH	VN	-30	4.34	0.00228	PASS
				-20	-2.55	-0.00134	PASS
				-10	1.59	0.00084	PASS
				0	-3.93	-0.00207	PASS
				10	1.88	0.00099	PASS
				20	-1.45	-0.00076	PASS
				30	-2.29	-0.00121	PASS
				40	-4.13	-0.00217	PASS
				50	-6.60	-0.00378	PASS

The End