

Band edge measurements according to CFR 47 §24.238 and §27.53(h)

Date	Temperature	Humidity
2018-03-22	21 °C ± 3 °C	15 % ± 5 %
2018-03-23	22 °C ± 3 °C	15 % ± 5 %
2018-04-03	19 °C ± 3 °C	8 % ± 5 %
2018-04-04	22 °C ± 3 °C	25 % ± 5 %

Test set-up and procedure

The measurements were made per definition in ANSI C63.26, 5.7.3. The test object was connected to a spectrum analyzer with the RMS detector activated.

A RBW of 1% of EBW may be used up to 1 MHz away from the band edges. A smaller resolution bandwidth is permitted provided that the measured power is integrated over the full required measurement bandwidth.

From 1 MHz to 30 MHz away from the band edges a RBW of 100 kHz was used. To compensate for the reduced RBW the limit was adjusted by 10 dB to -23 dBm in this frequency range.

Measurement equipment	RISE number
R&S FSW 43	902 073
Directional coupler	901 496
RF attenuator	902 282
Testo 635, temperature and humidity meter	504 203

Measurement uncertainty: 3.7 dB

Results

Band 2 4x 40 W + Band 66A 4x 60 W configuration:

Before comparing the results to the limit, 6 dB [10 log (4)] to cover 4x4 MIMO, should be added according to ANSI C63.26 6.4.4.1 c “measure and add 10 log(N_{ANT})”.

Single carrier TM 1.1

Diagram	Symbolic name	Tested Port
1 a-b	B ₅	RF A
2 a-b	T ₅	RF A
3 a-b	B ₅	RF B
4 a-b	T ₅	RF B
5 a-b	B ₅	RF C
6 a-b	B ₁₀	RF C
7 a-b	B ₁₅	RF C
8 a-b	B ₂₀	RF C
9 a-b	T ₅	RF C
10 a-b	T ₁₀	RF C
11 a-b	T ₁₅	RF C
12 a-b	T ₂₀	RF C
13 a-b	B ₅	RF D
14 a-b	T ₅	RF D

Single carrier TM 3.1

Diagram	Symbolic name	Tested Port
15 a-b	T ₅	RF C

Single carrier TM 3.1a

Diagram	Symbolic name	Tested Port
16 a-b	T ₅	RF C

Single carrier TM 3.2

Diagram	Symbolic name	Tested Port
17 a-b	T ₅	RF C

Multi carrier TM 1.1

Diagram	Symbolic name	Tested Port
18 a-c	B _{im}	RF C
19 a-c	T _{im}	RF C

Band 2 x 60 W + Band 66A 2x 80 W configuration:

Before comparing the results to the limit, 3 dB [10 log (2)] to cover 2x2 MIMO, should be added according to ANSI C63.26 6.4.4.1 c “measure and add 10 log(N_{ANT})”.

Single carrier TM 1.1

Diagram	Symbolic name	Tested Port
20 a-b	B ₅	RF A
21 a-b	B ₁₀	RF A
22 a-b	B ₁₅	RF A
23 a-b	B ₂₀	RF A
24 a-b	T ₅	RF A
25 a-b	T ₁₀	RF A
26 a-b	T ₁₅	RF A
27 a-b	T ₂₀	RF A
28 a-b	B ₅	RF D
29 a-b	T ₅	RF D

Single carrier TM 3.1

Diagram	Symbolic name	Tested Port
30 a-b	B ₅	RF A

Single carrier TM 3.1a

Diagram	Symbolic name	Tested Port
31 a-b	B ₅	RF A

Single carrier TM 3.2

Diagram	Symbolic name	Tested Port
32 a-b	B ₅	RF A

Multi carrier TM 1.1

Diagram	Symbolic name	Tested Port
33 a-b	B _{im}	RF A
34 a-b	T _{im}	RF A

Band 2 4x 40 W + Band 66A 4x 60 W configuration:

Before comparing the results to the limit, 6 dB [10 log (4)] to cover 4x4 MIMO, should be added according to ANSI C63.26 6.4.4.1 c “measure and add 10 log(N_{ANT})”.

Single carrier TM 1.1

Diagram	Symbolic name	Tested Port
35 a-b	B ₅	RF E
36 a-b	T ₅	RF E
37 a-b	B ₅	RF F
38 a-b	B ₁₀	RF F
39 a-b	B ₁₅	RF F
40 a-b	B ₂₀	RF F
41 a-b	T ₅	RF F
42 a-b	T ₁₀	RF F
43 a-b	T ₁₅	RF F
44 a-b	T ₂₀	RF F
45 a-b	B ₅	RF G
46 a-b	T ₅	RF G
47 a-b	B ₅	RF H
48 a-b	T ₅	RF H

Single carrier TM 3.1

Diagram	Symbolic name	Tested Port
49 a-b	T ₅	RF F

Single carrier TM 3.1a

Diagram	Symbolic name	Tested Port
50 a-b	T ₅	RF F

Single carrier TM 3.2

Diagram	Symbolic name	Tested Port
51 a-b	T ₅	RF F

Multi carrier TM 1.1

Diagram	Symbolic name	Tested Port
52 a-b	B _{im}	RF F
53 a-b	T _{im}	RF F

Band 2 2x 60 W + Band 66A 2x 80 W configuration:

Before comparing the results to the limit, 3 dB [10 log (2)] to cover 2x2 MIMO, should be added according to ANSI C63.26 6.4.4.1 c “measure and add 10 log(N_{ANT})”.

Single carrier TM 1.1

Diagram	Symbolic name	Tested Port
54 a-b	B ₅	RF E
55 a-b	B ₁₀	RF E
56 a-b	B ₁₅	RF E
57 a-b	B ₂₀	RF E
58 a-b	T ₅	RF E
59 a-b	T ₁₀	RF E
60 a-b	T ₁₅	RF E
61 a-b	T ₂₀	RF E
62 a-b	B ₅	RF H
63 a-b	T ₅	RF H

Single carrier TM 3.1

Diagram	Symbolic name	Tested Port
64 a-b	T ₅	RF E

Single carrier TM 3.1a

Diagram	Symbolic name	Tested Port
65 a-b	T ₅	RF E

Single carrier TM 3.2

Diagram	Symbolic name	Tested Port
66 a-b	T ₅	RF E

Multi carrier TM 1.1

Diagram	Symbolic name	Tested Port
67 a-b	B _{im}	RF E
68 a-b	T _{im}	RF E

The diagrams are shown on the following pages.

Limits

CFR 47 24.238 and §27.53(h):

Outside a licensee’s frequency band(s) of operation the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, resulting in a limit of -13 dBm.

Complies?	Yes
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Diagram 1a:

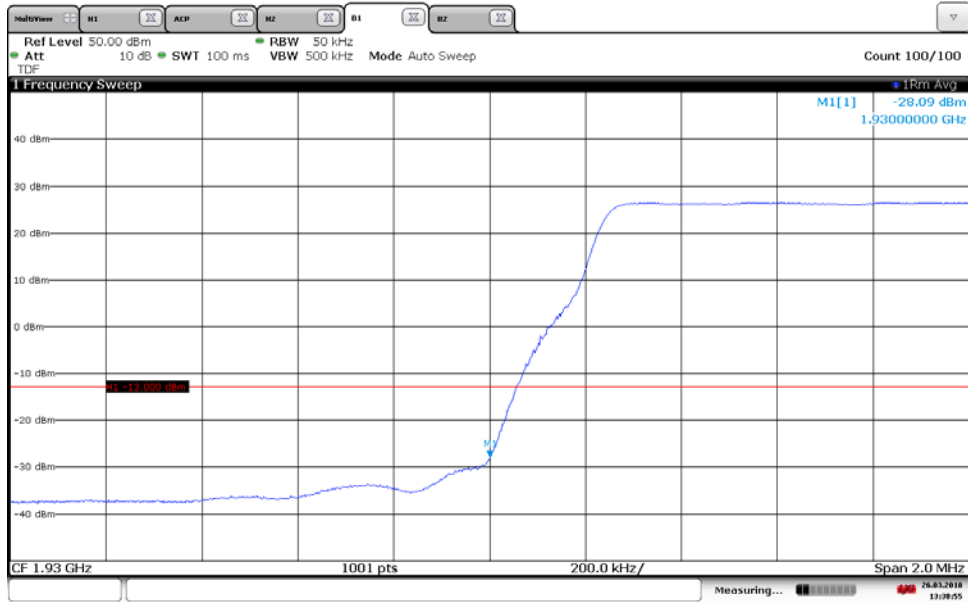


Diagram 1b:

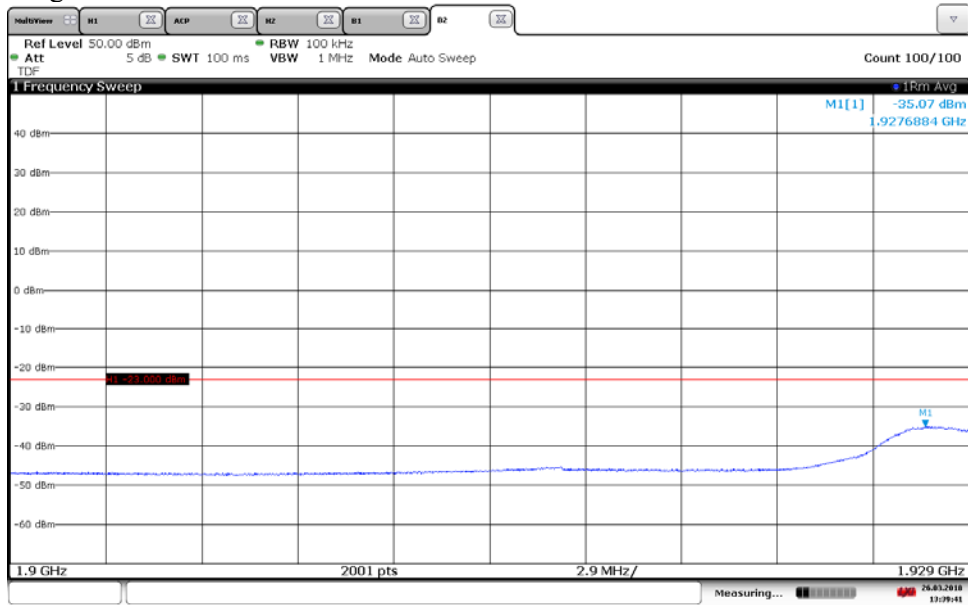
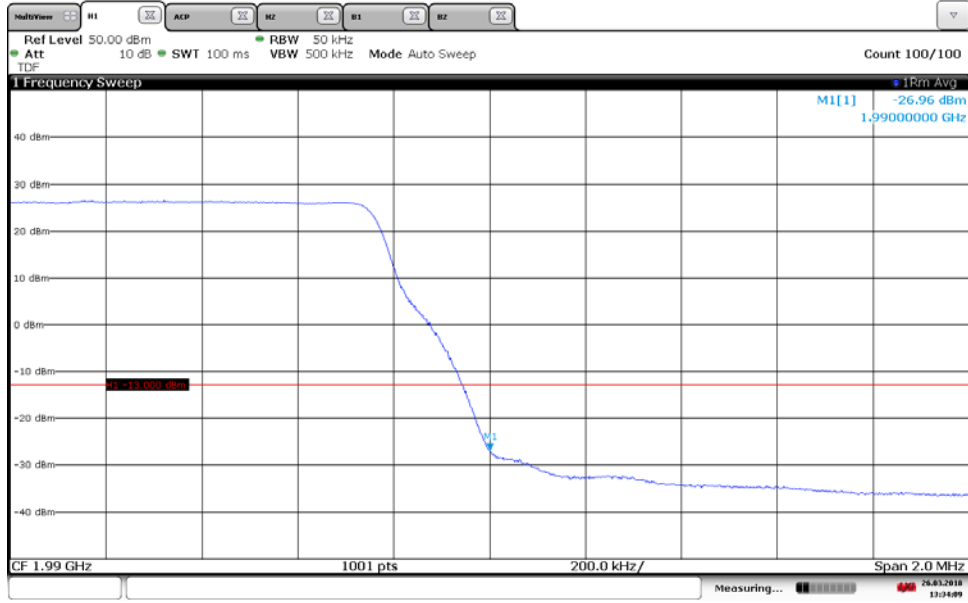
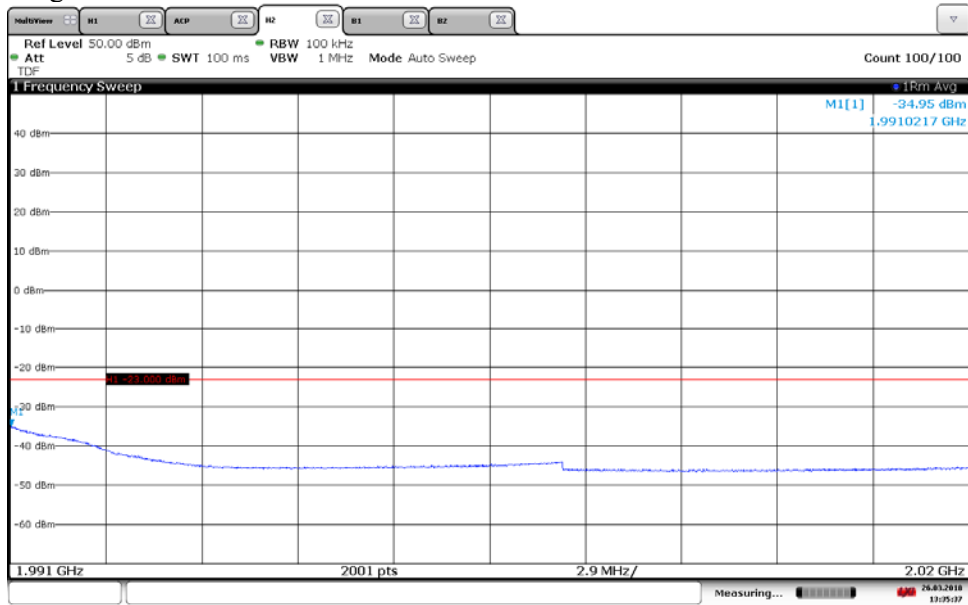


Diagram 2a:



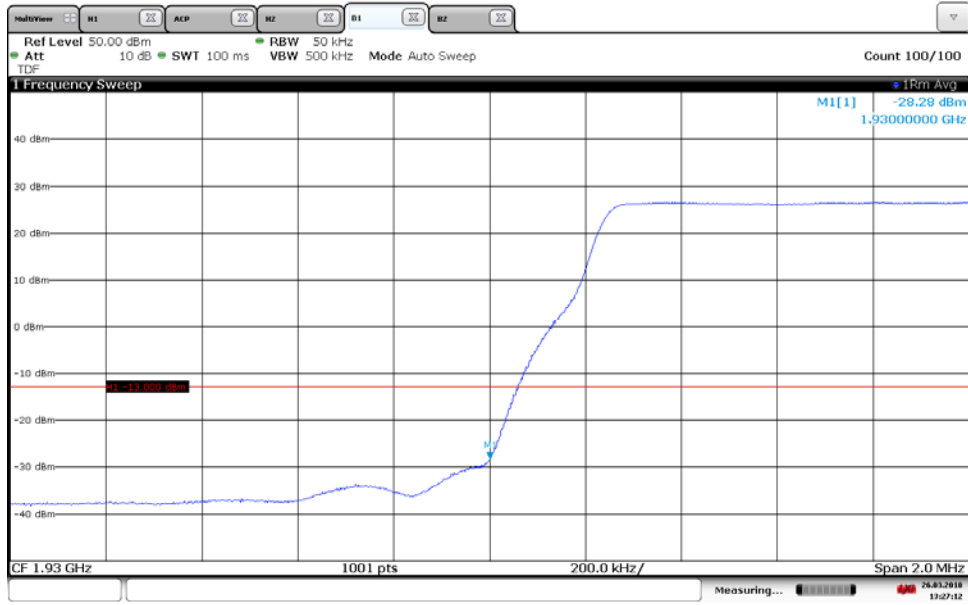
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Diagram 2b:



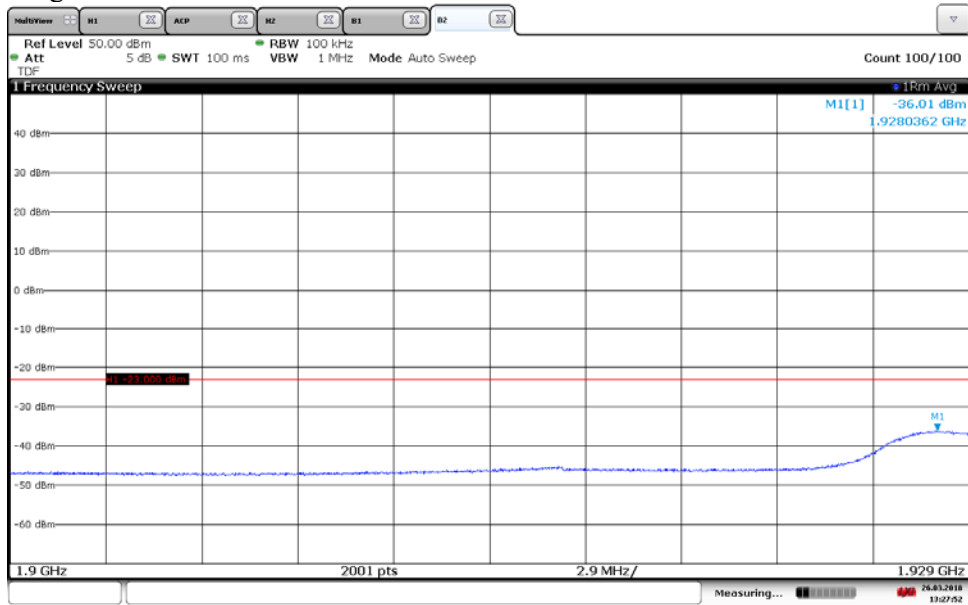
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Diagram 3a:



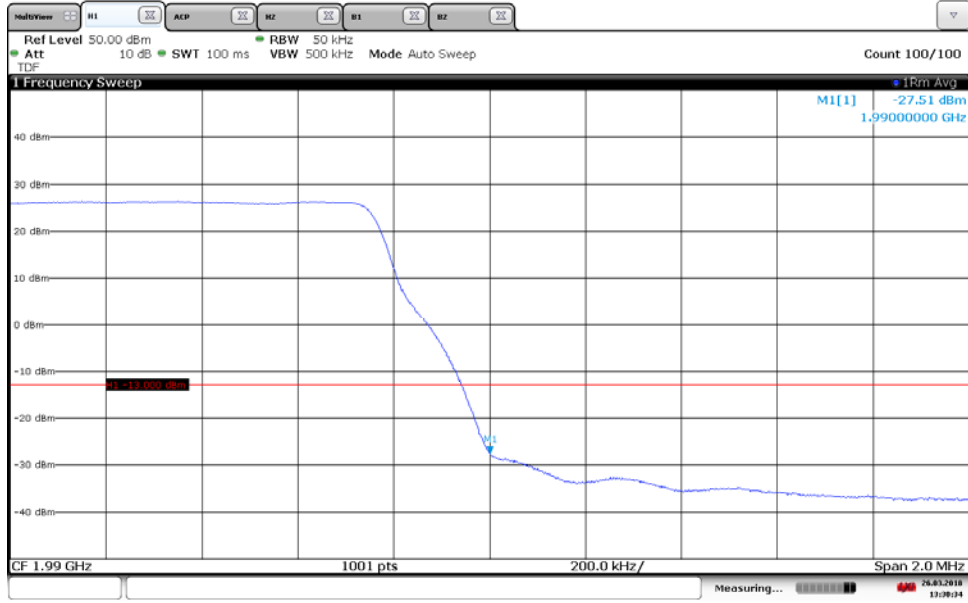
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Diagram 3b:



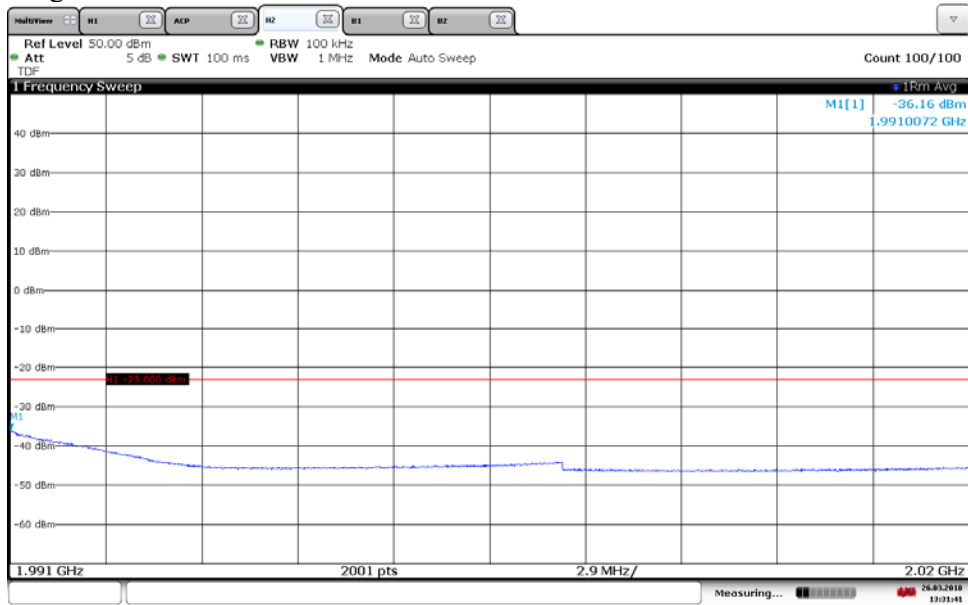
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Diagram 4a:



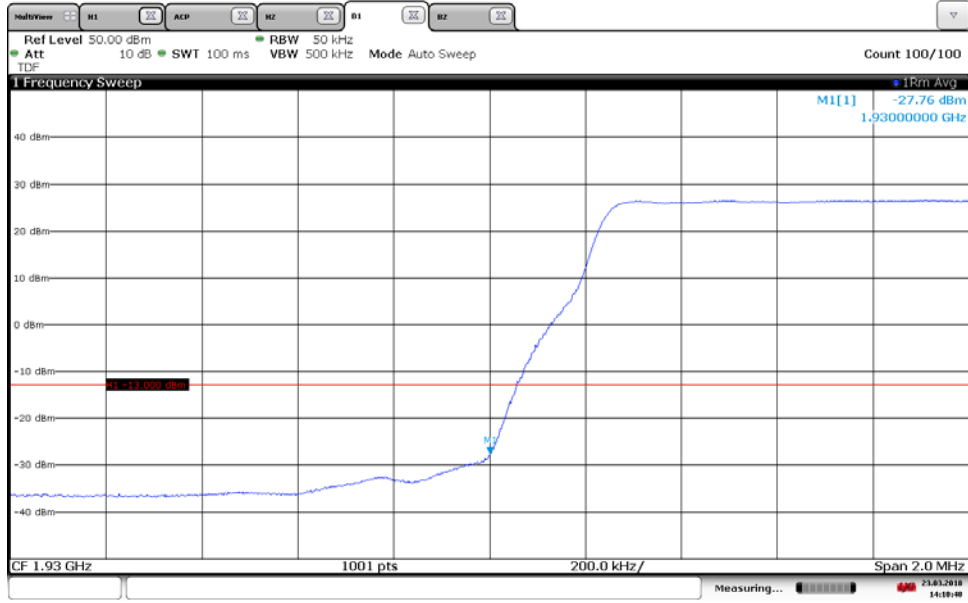
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Diagram 4b:



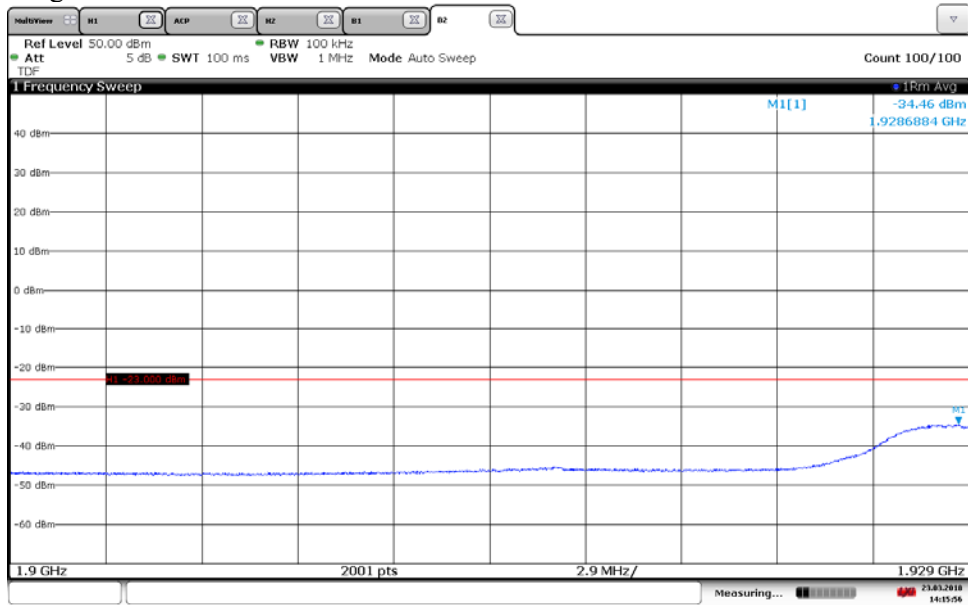
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Diagram 5a:



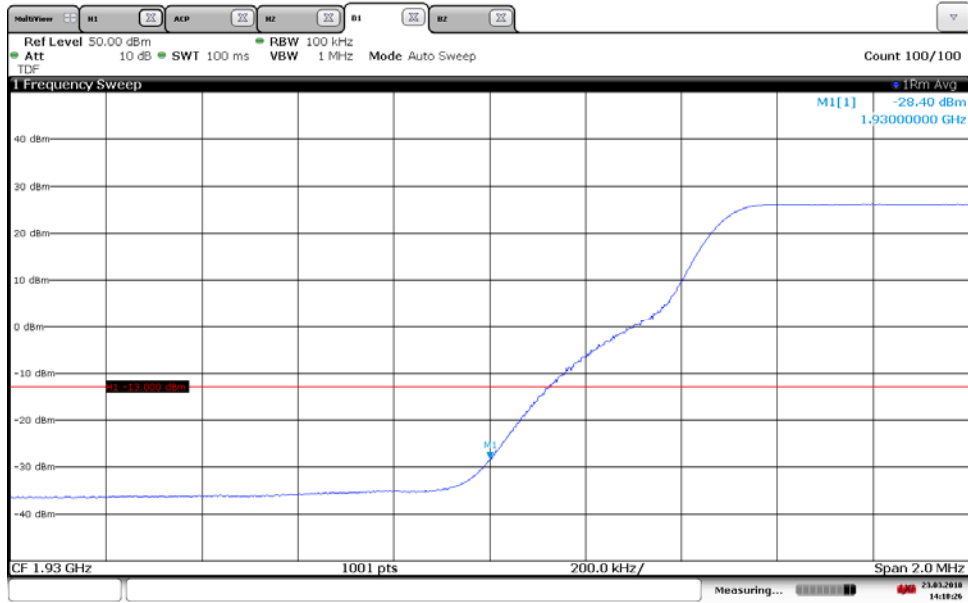
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Diagram 5b:



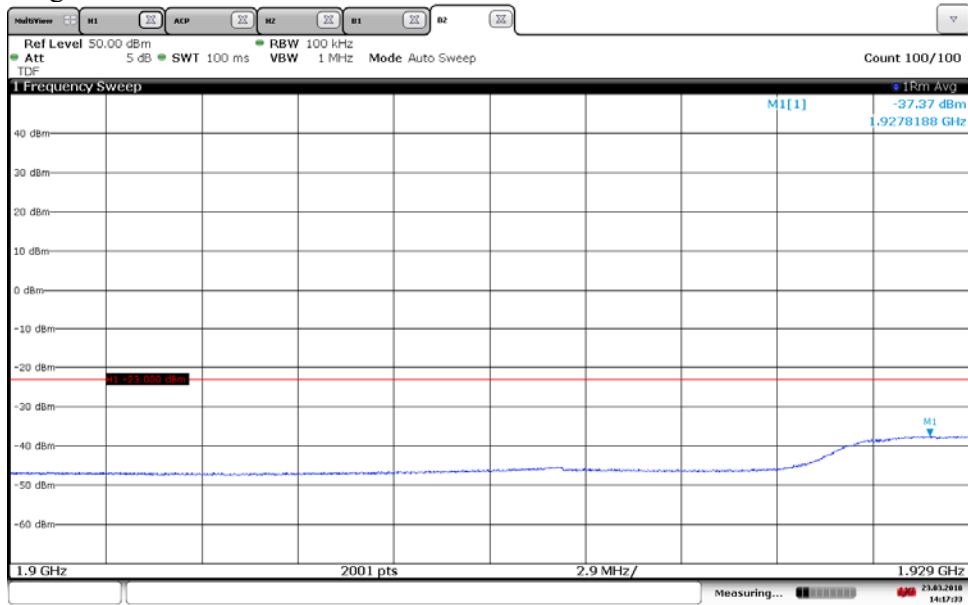
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Diagram 6a:



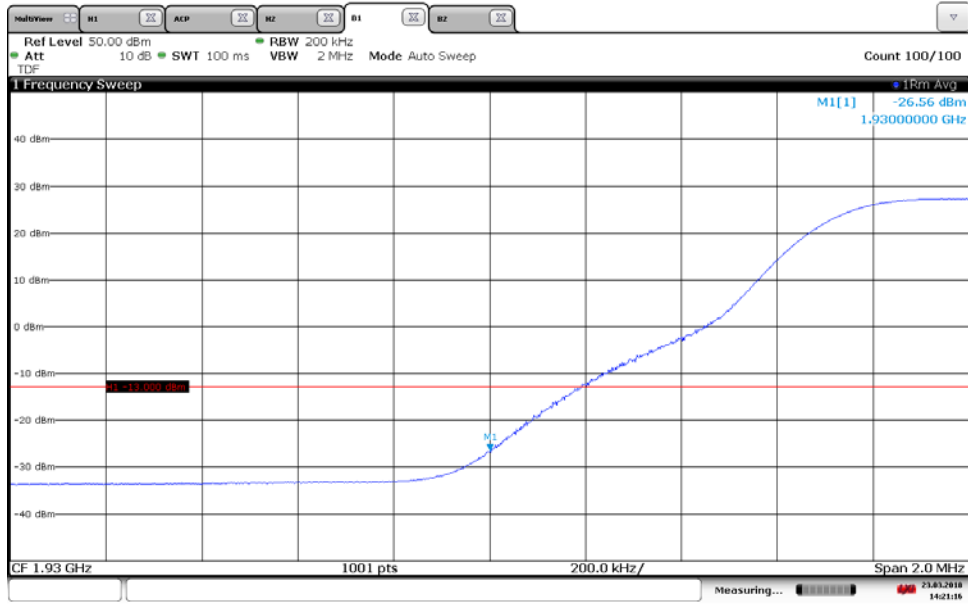
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Diagram 6b:



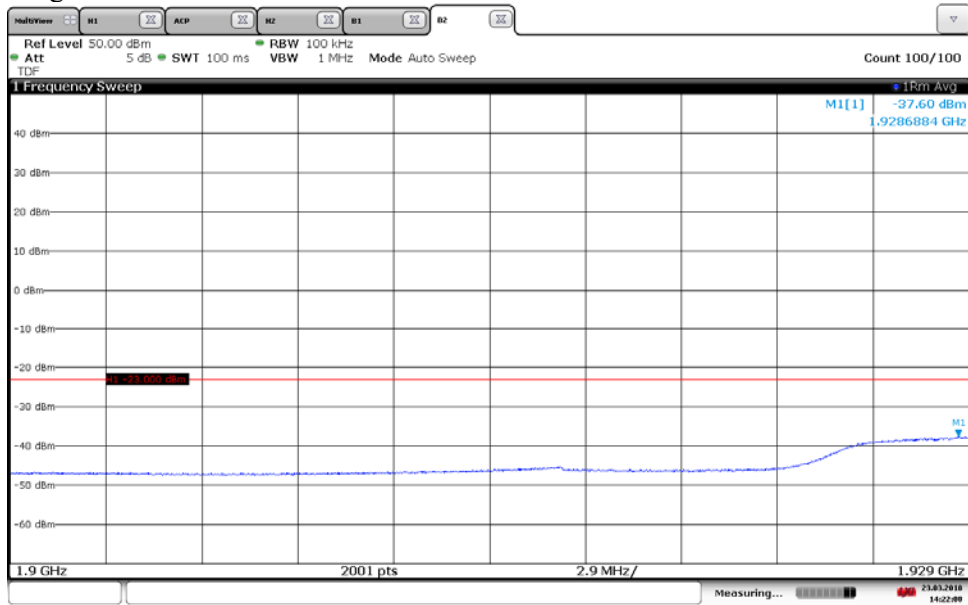
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Diagram 7a:



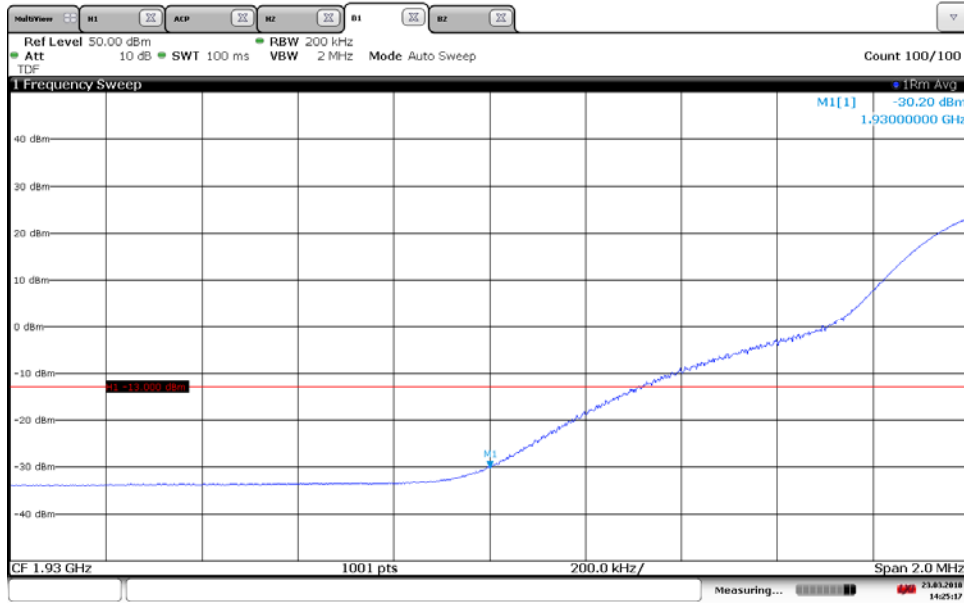
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Diagram 7b:



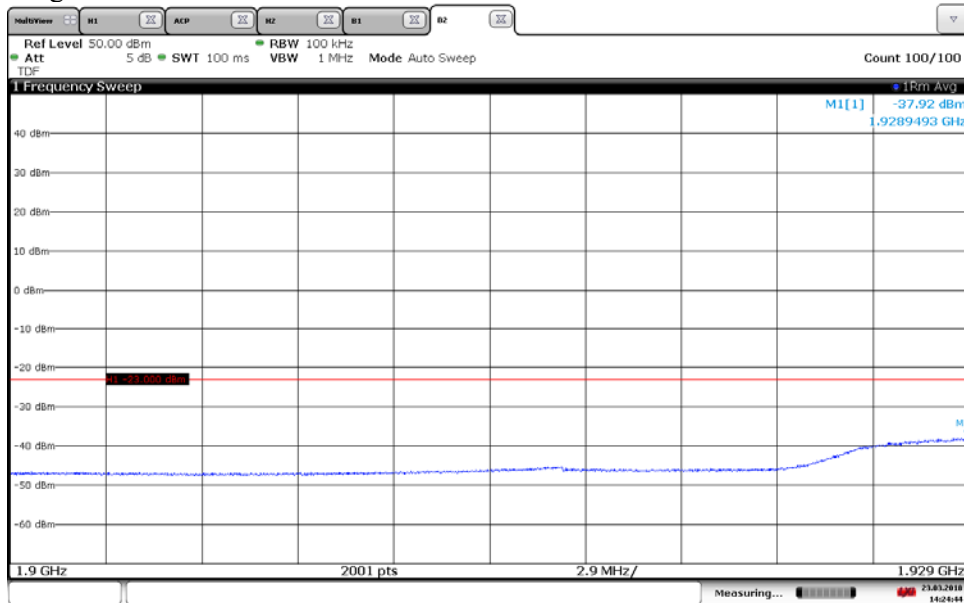
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Diagram 8a:



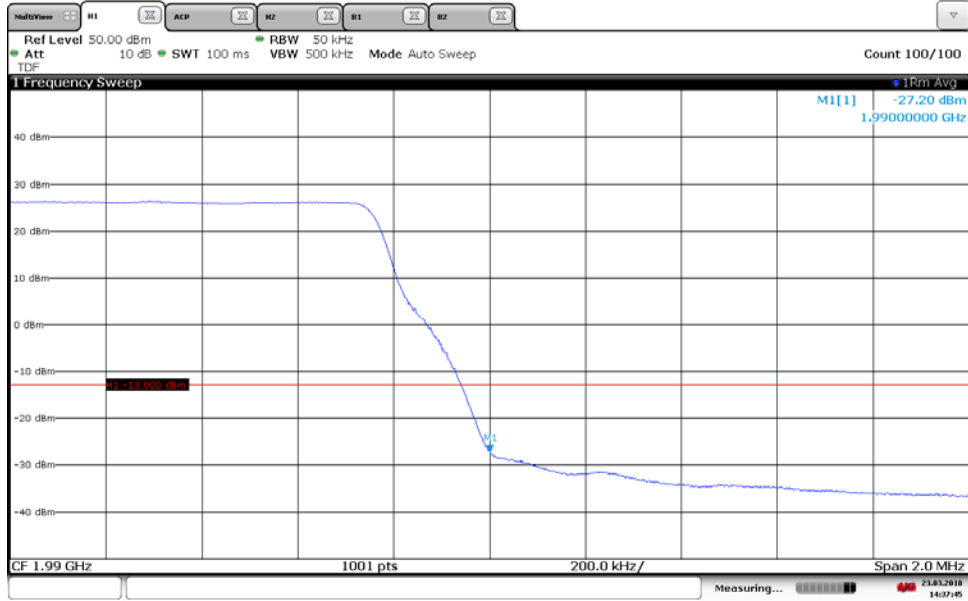
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Diagram 8b:



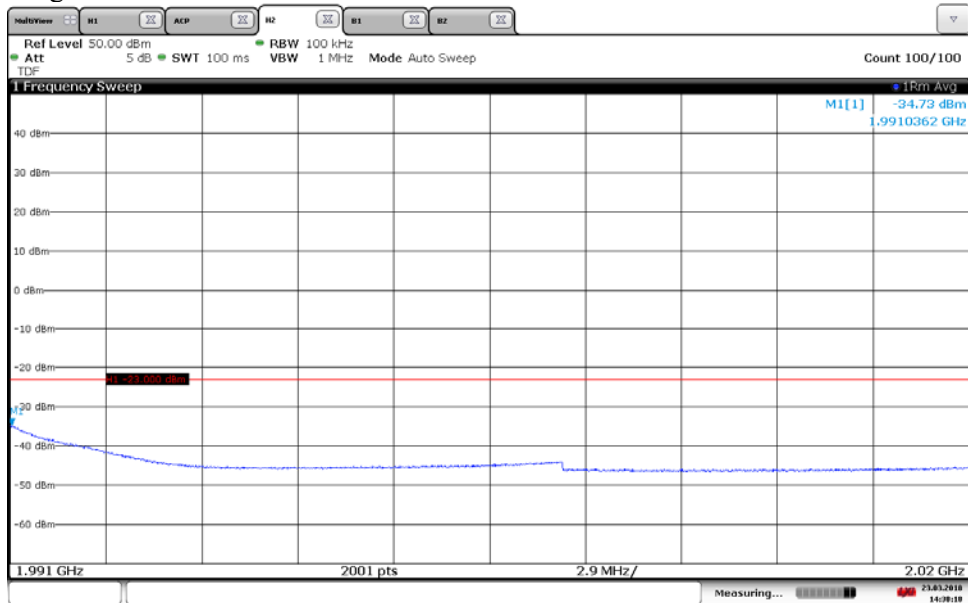
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Diagram 9a:



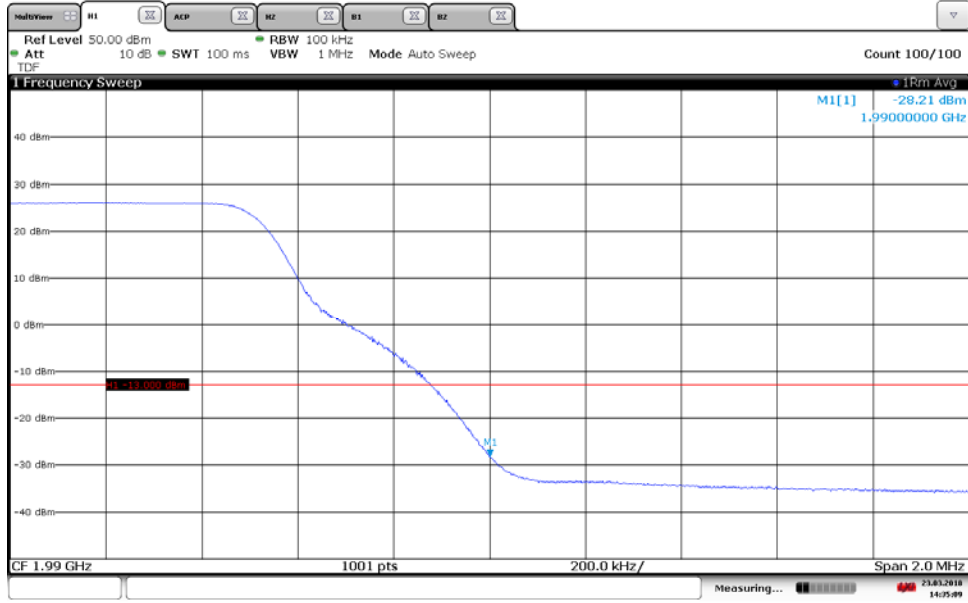
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Diagram 9b:



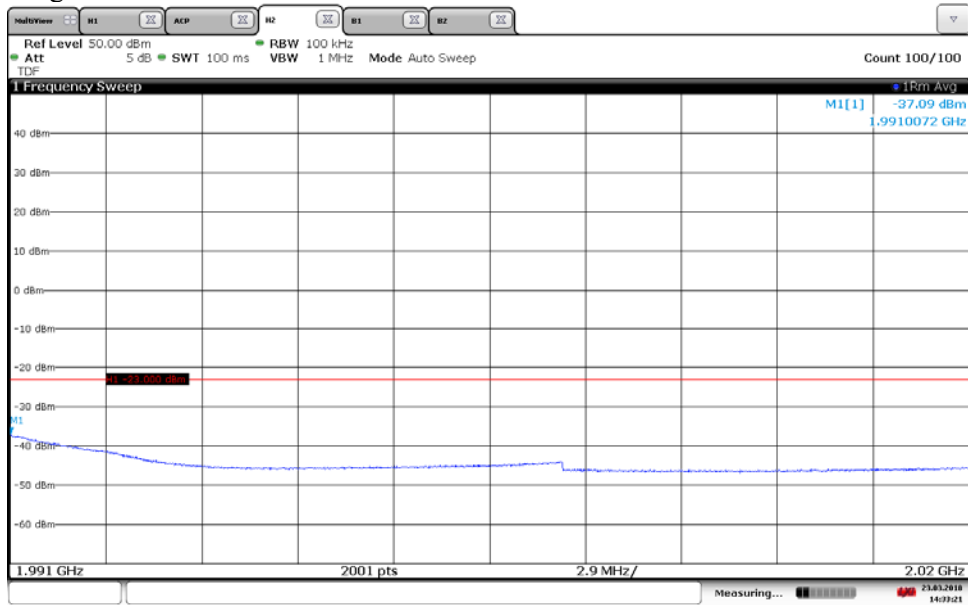
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Diagram 10a:



14:35:10 23.03.2018

Diagram 10b:



14:33:22 23.03.2018

Diagram 11a:

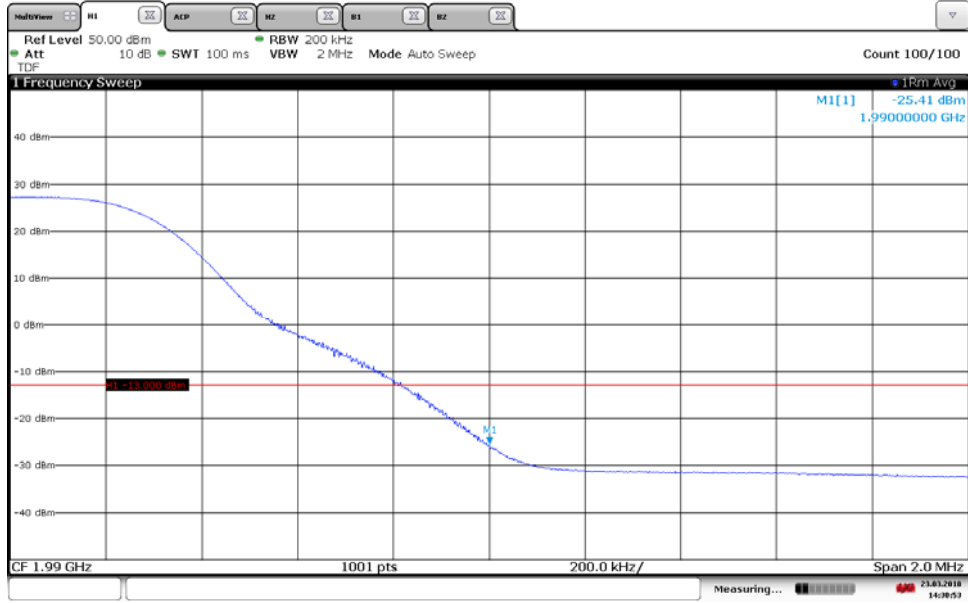


Diagram 11b:

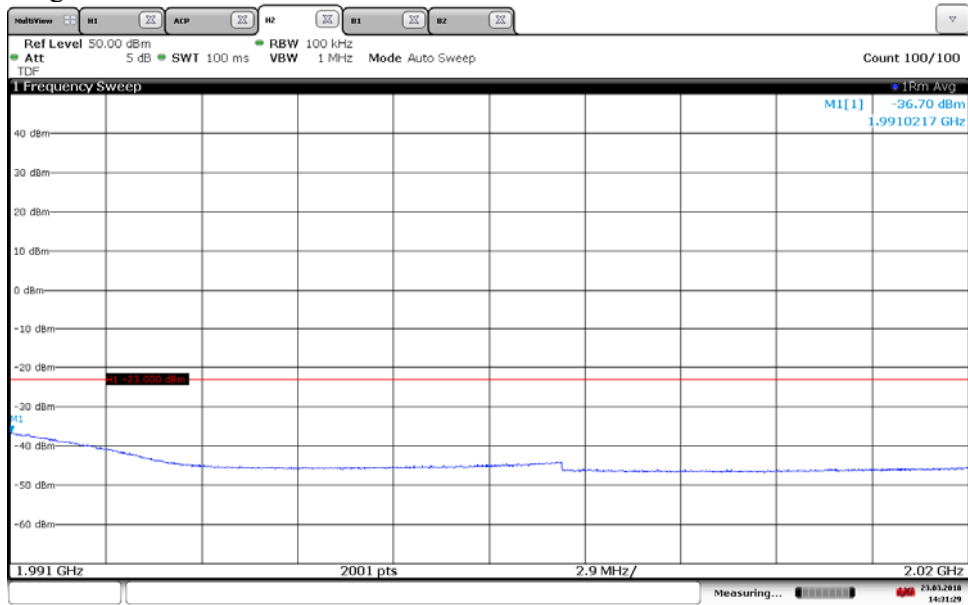


Diagram 12a:

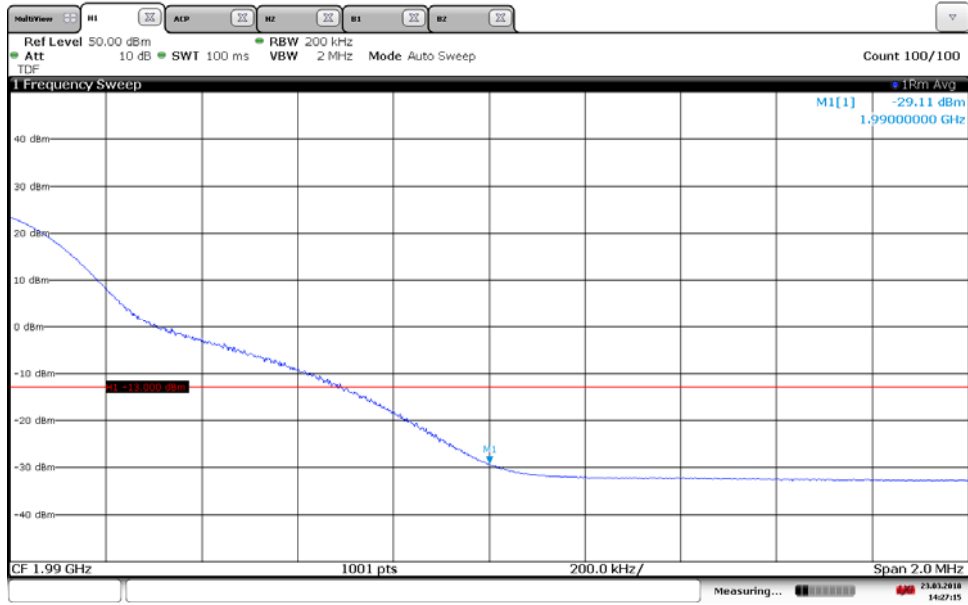


Diagram 12b:

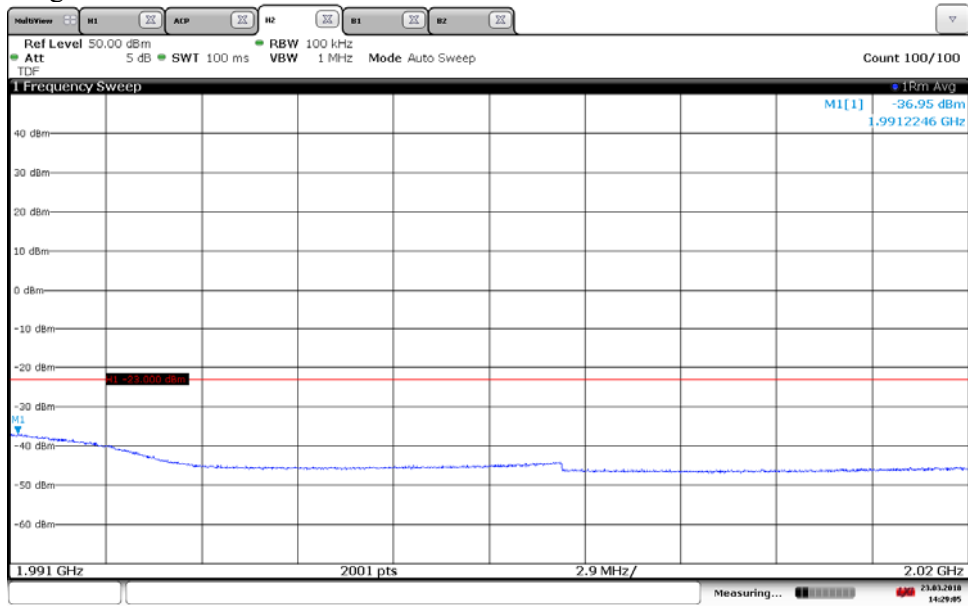
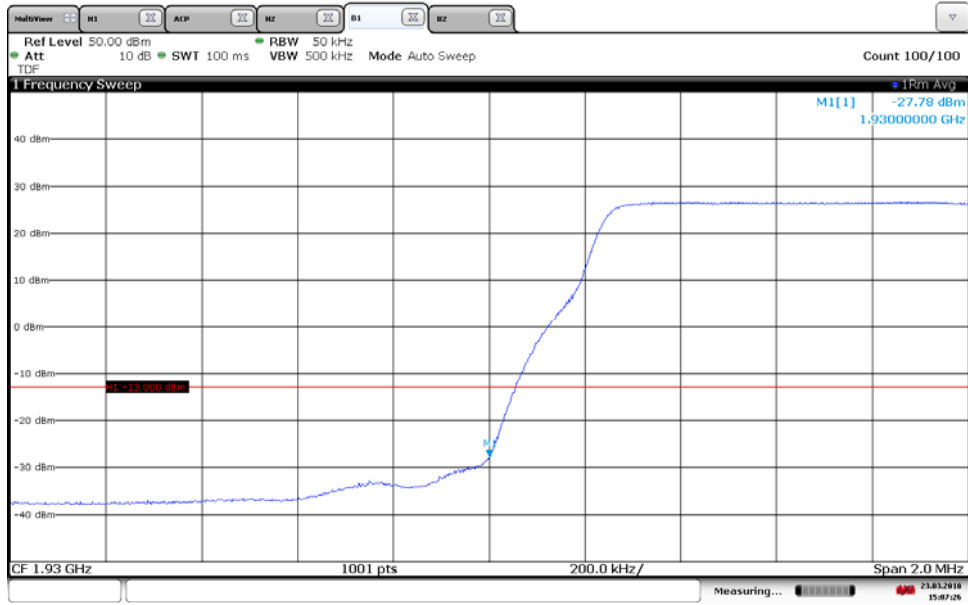
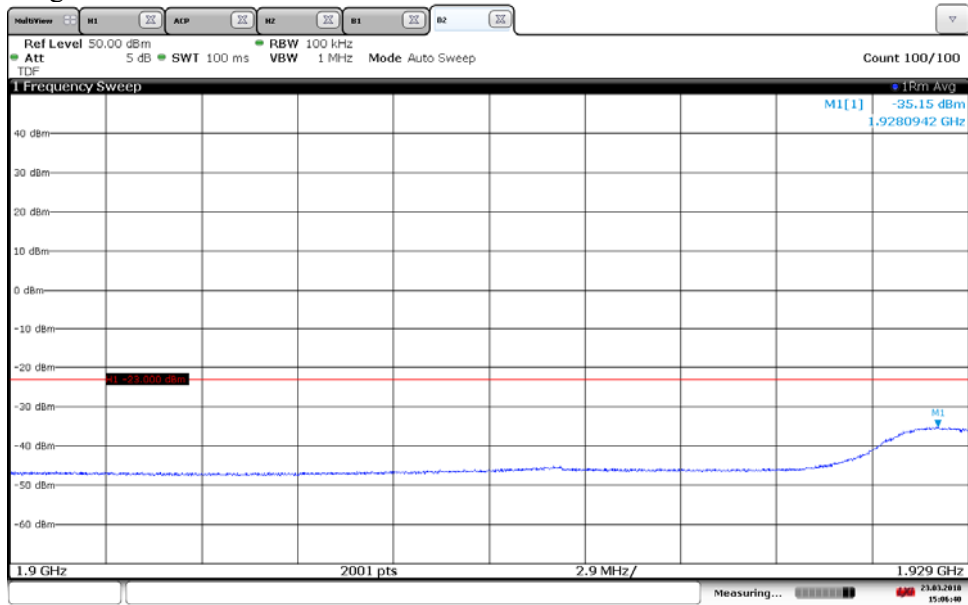


Diagram 13a:



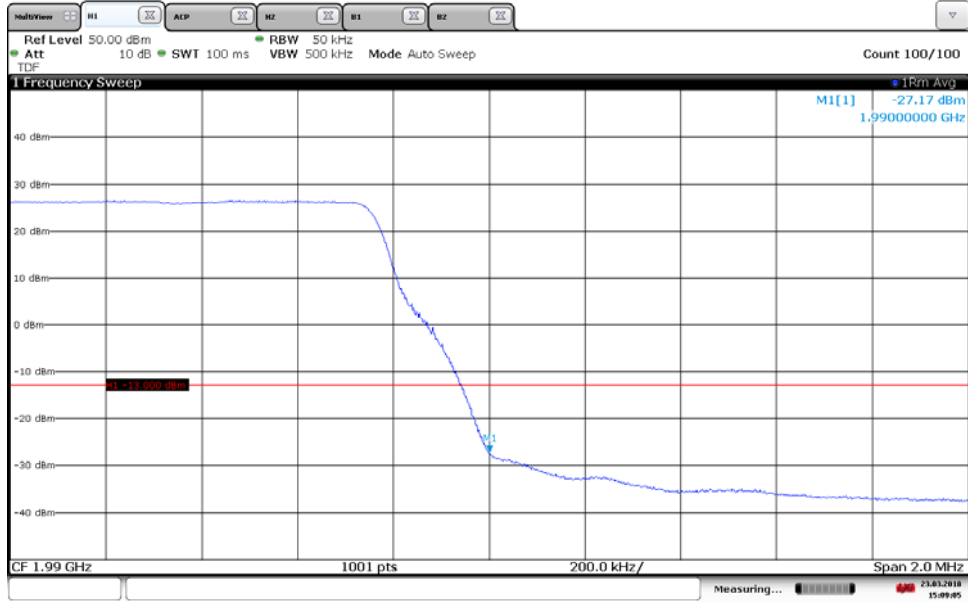
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Diagram 13b:



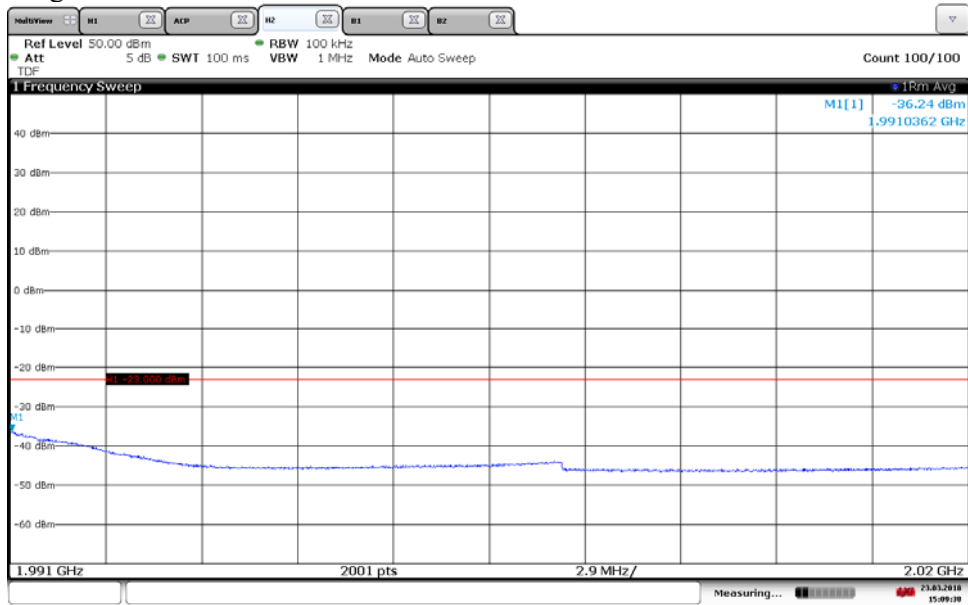
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Diagram 14a:



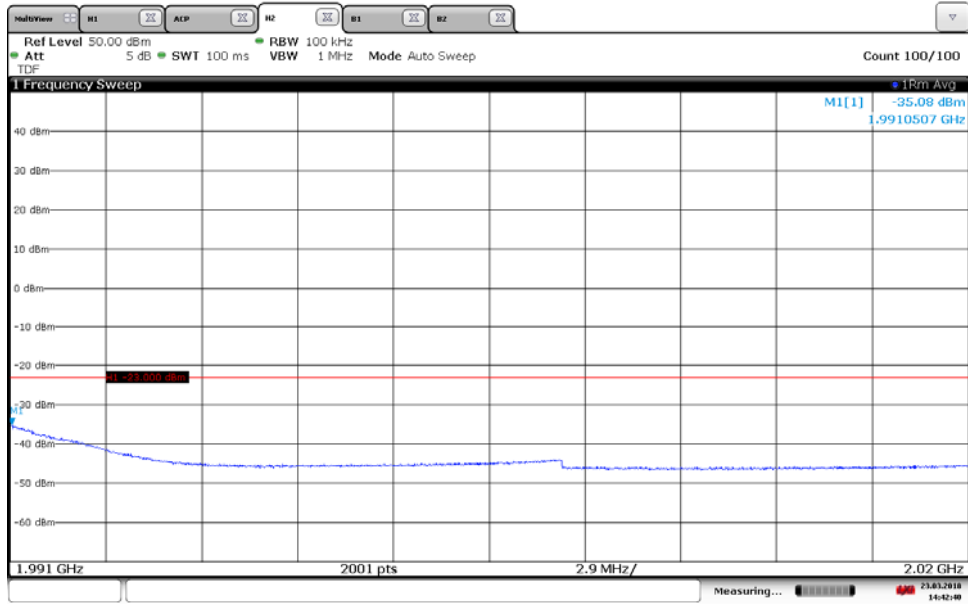
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Diagram 14b:



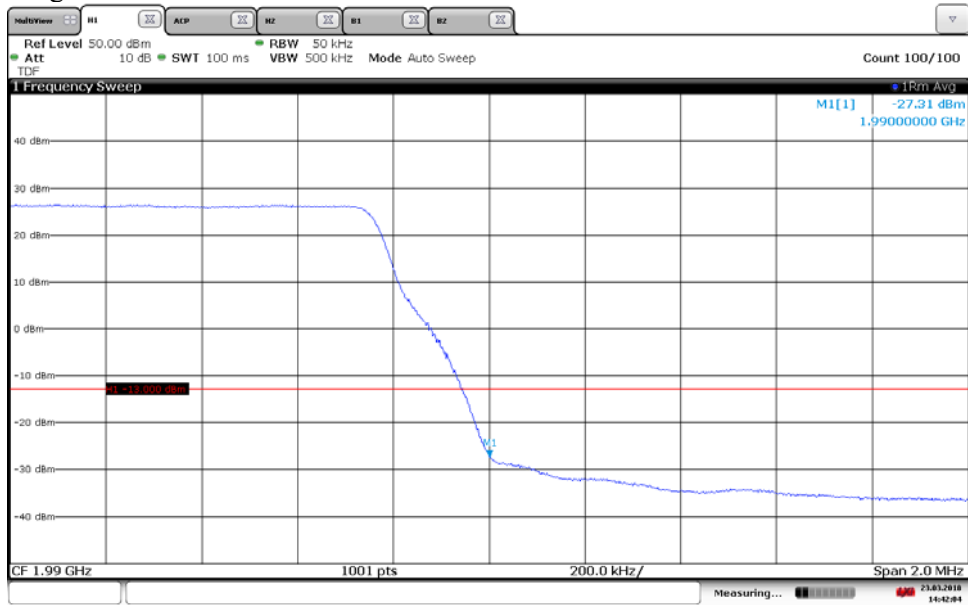
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Diagram 15a:



14:42:40 23.03.2018

Diagram 15b:



14:42:05 23.03.2018

Diagram 16a:

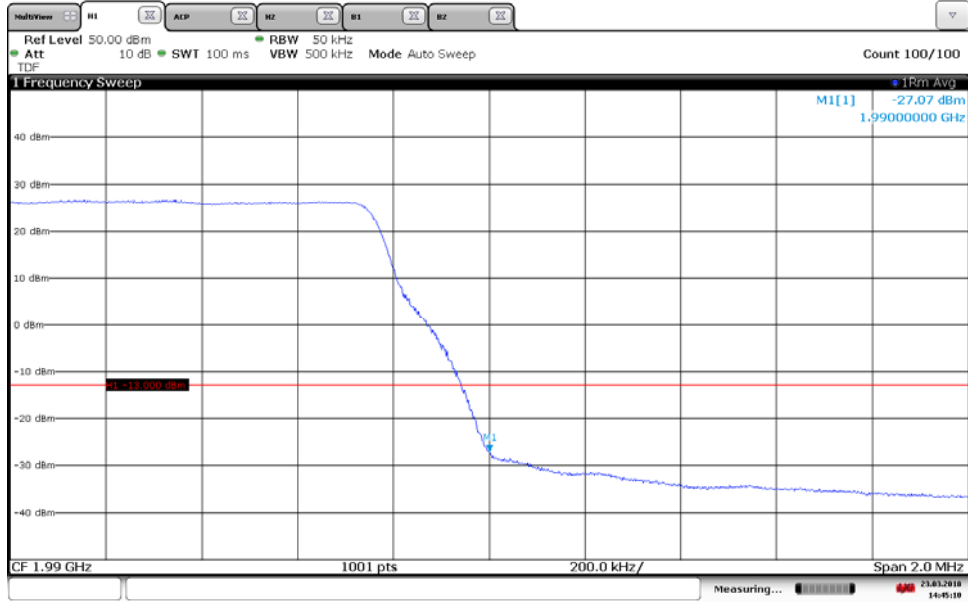


Diagram 16b:

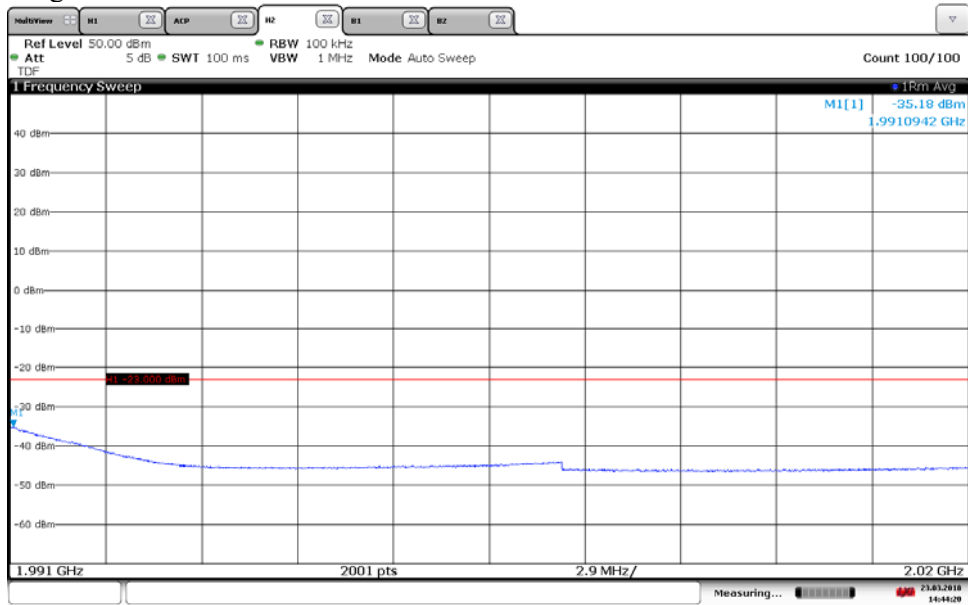
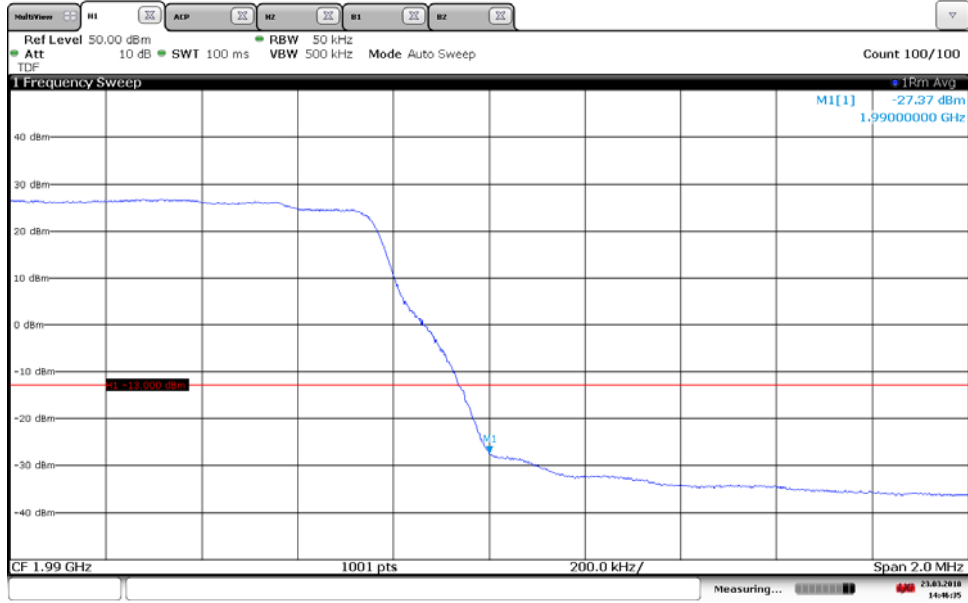
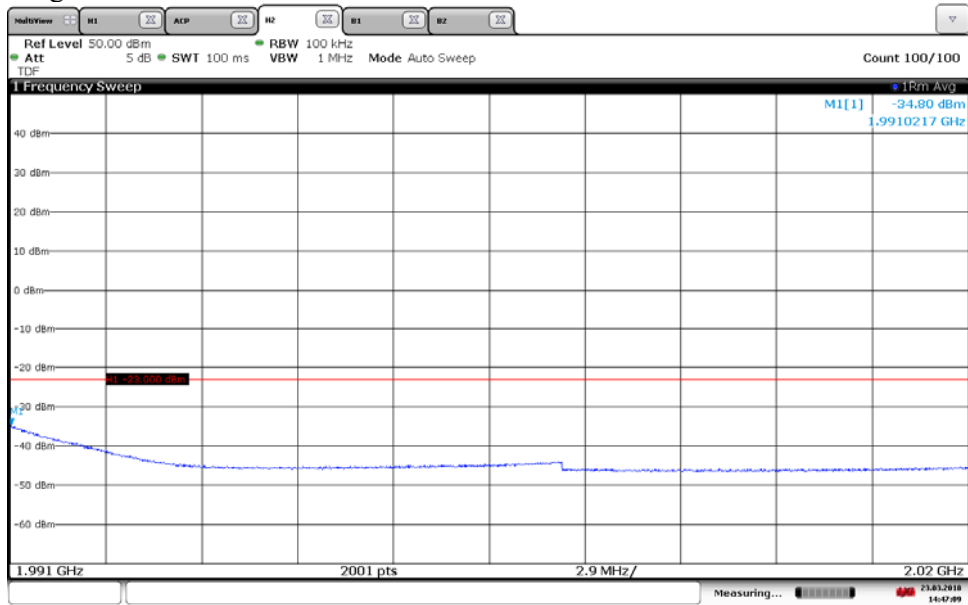


Diagram 17a:



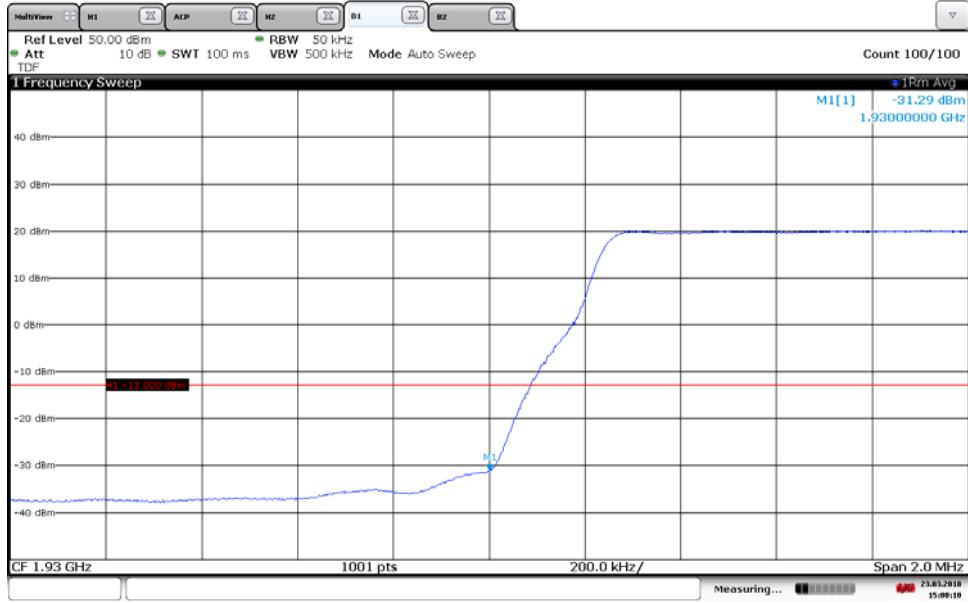
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Diagram 17b:



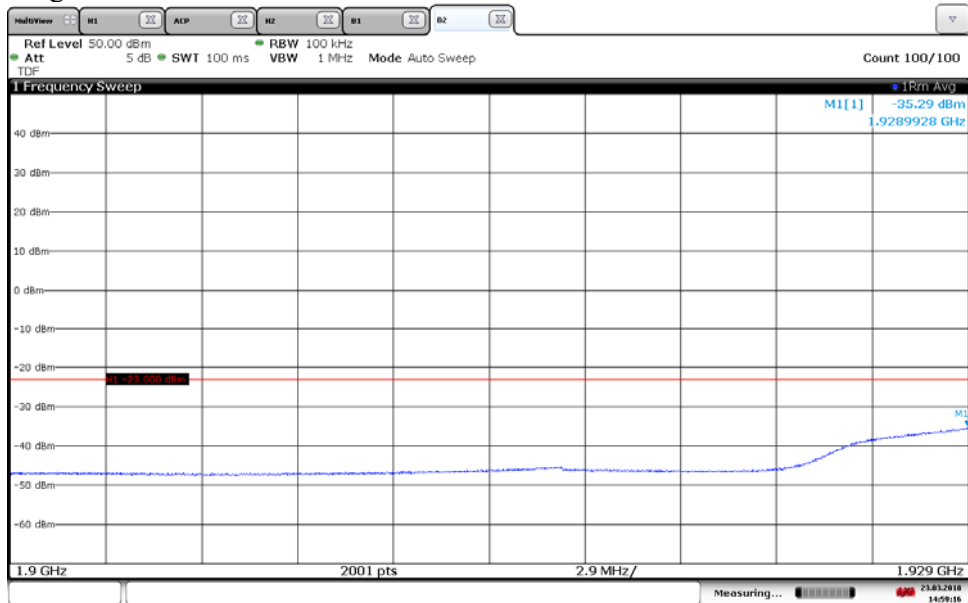
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Diagram 18a:



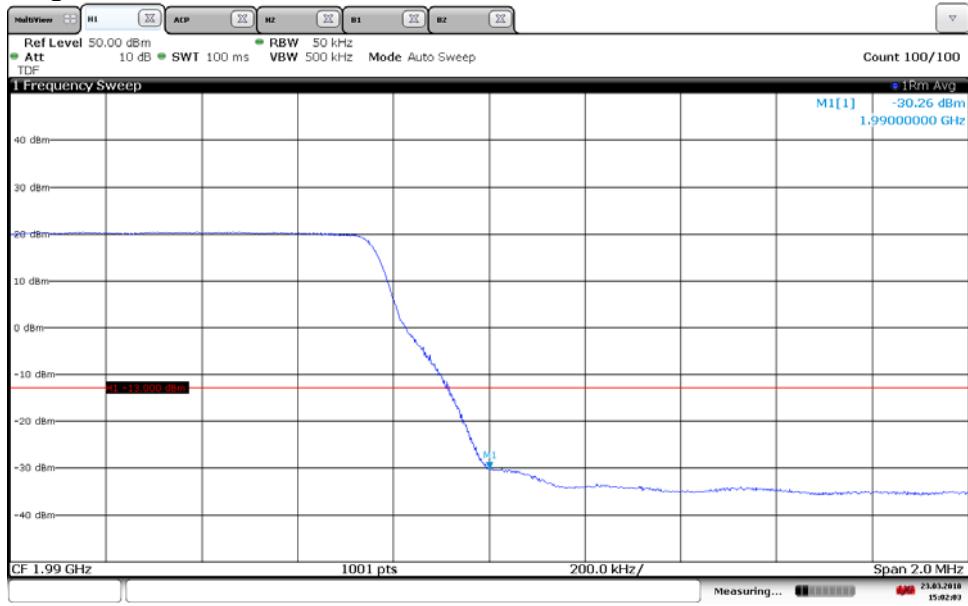
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Diagram 18b:



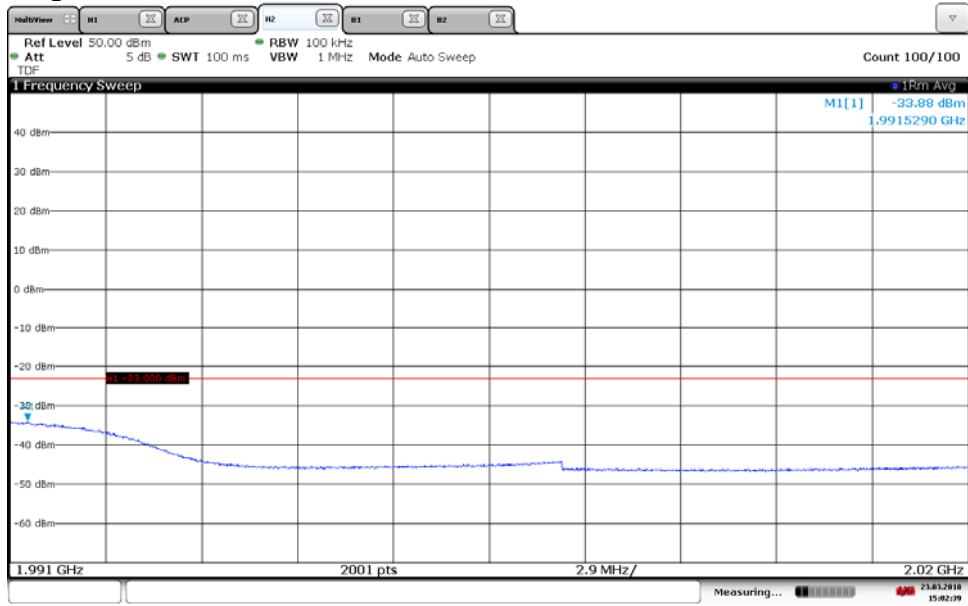
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Diagram 19a:



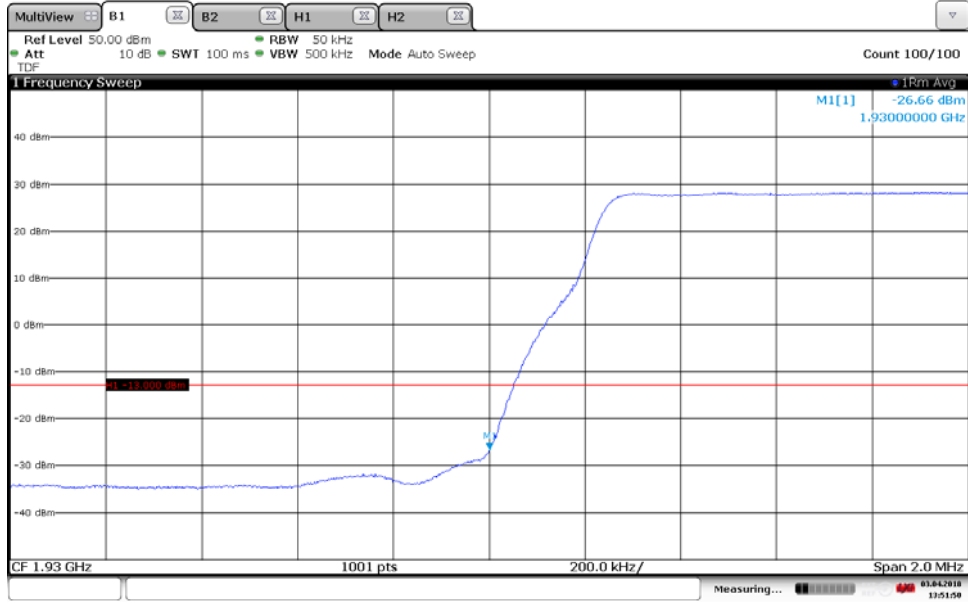
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Diagram 19b:



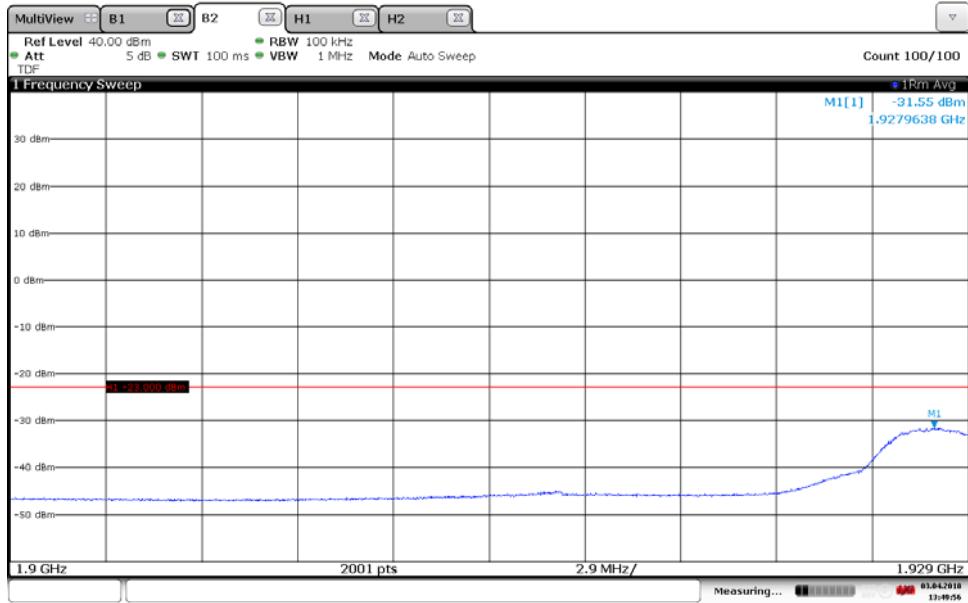
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Diagram 20a:



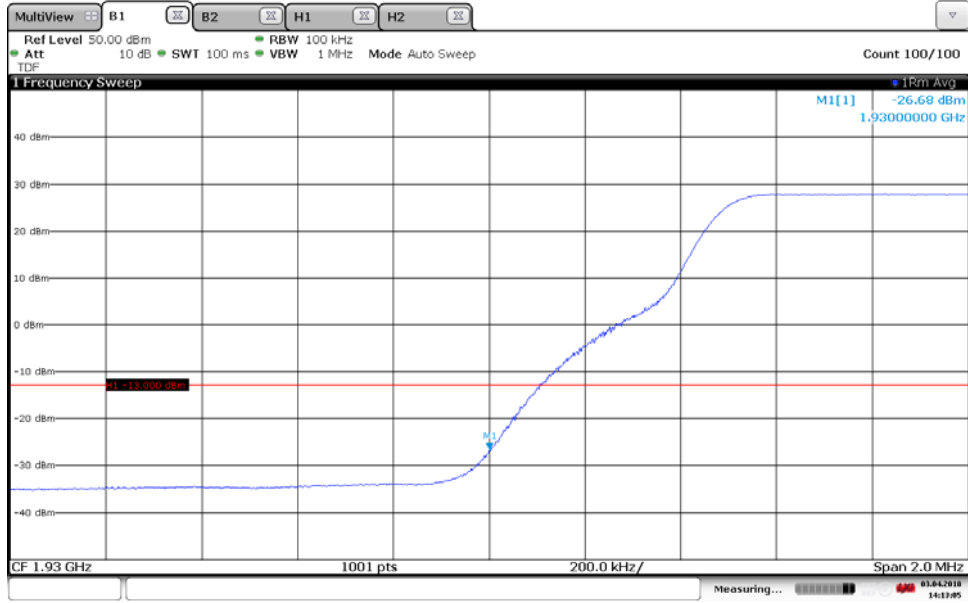
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Diagram 20b:



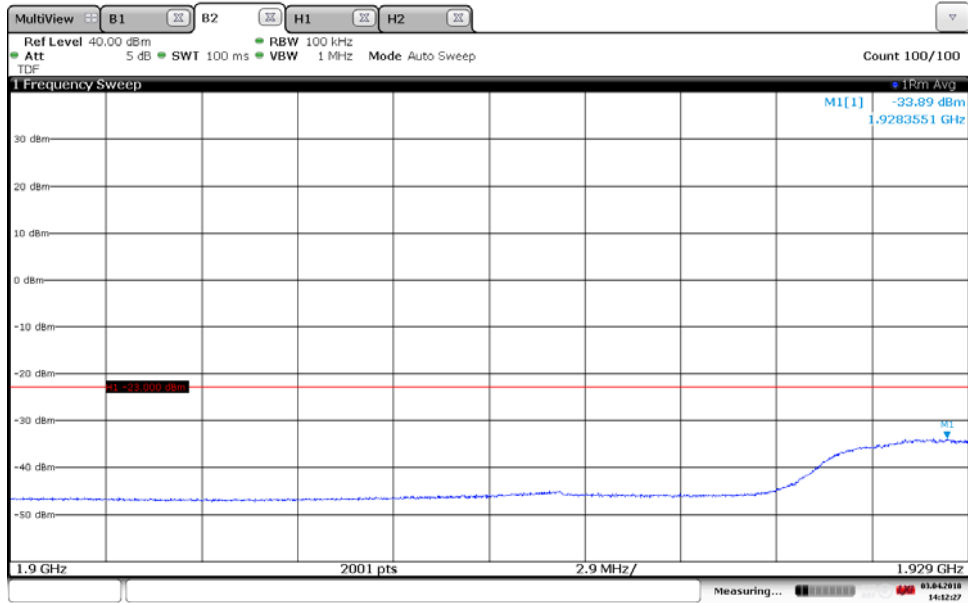
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Diagram 21a:



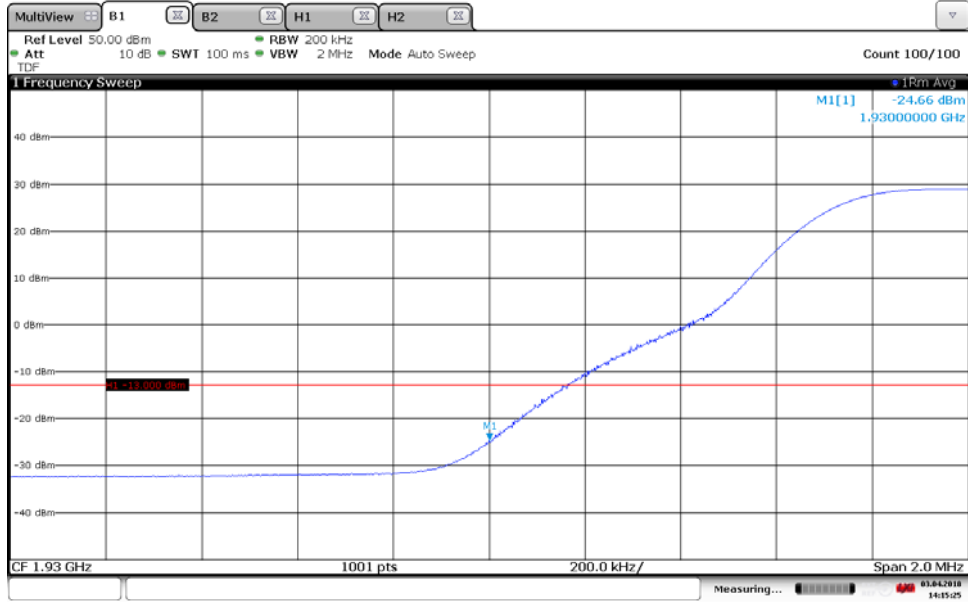
14:13:05 03.04.2018

Diagram 21b:



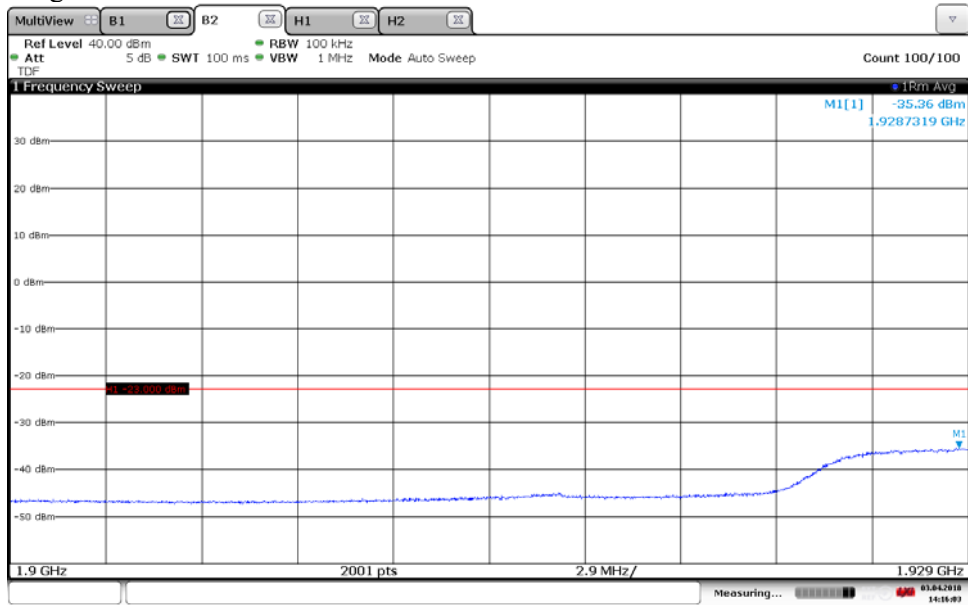
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Diagram 22a:



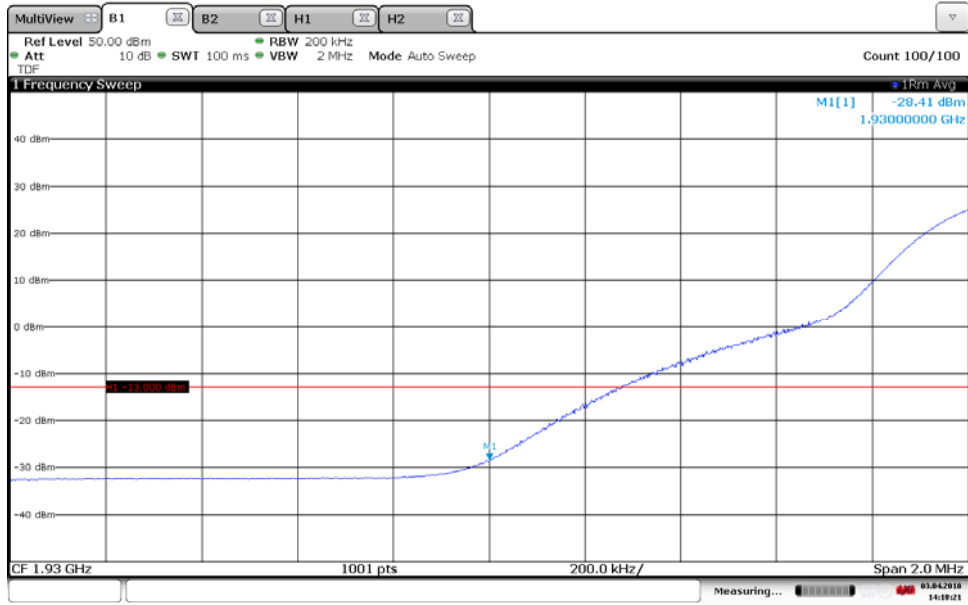
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Diagram 22b:



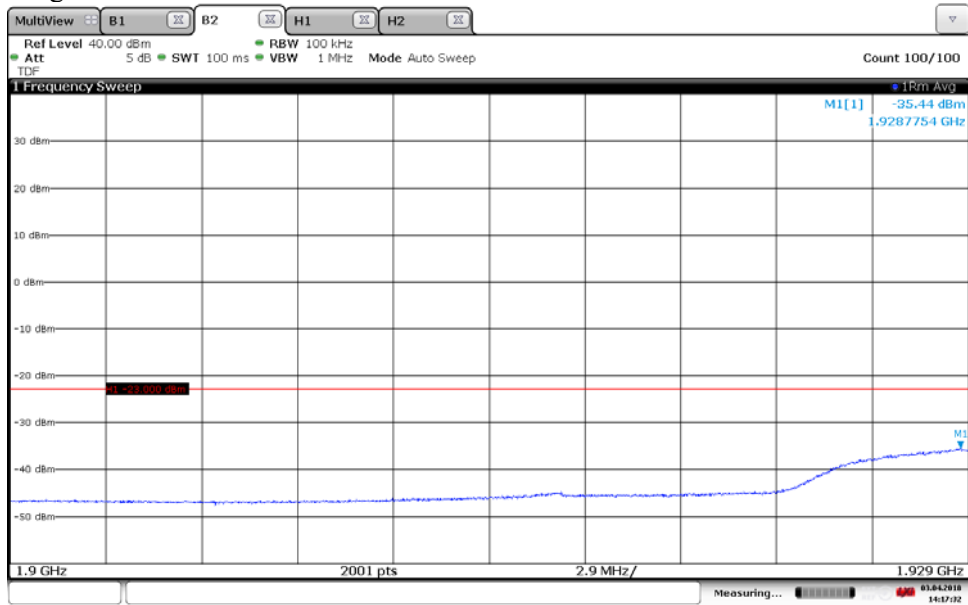
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Diagram 23a:



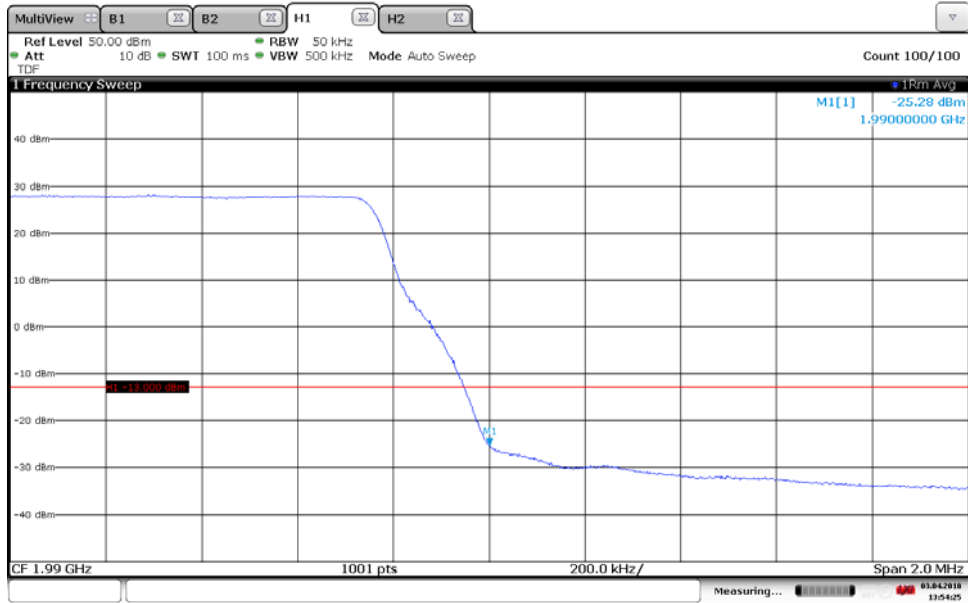
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Diagram 23b:



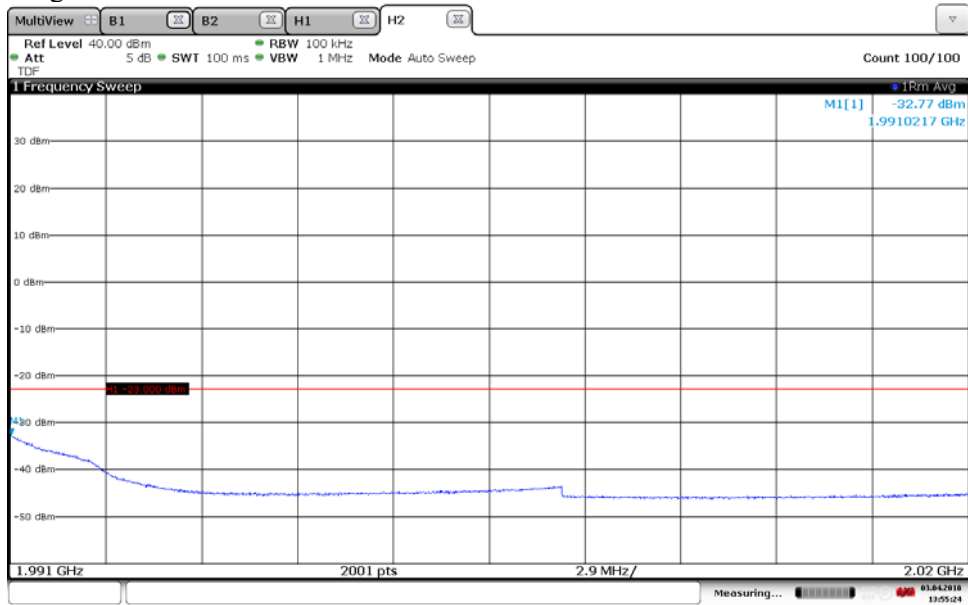
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Diagram 24a:



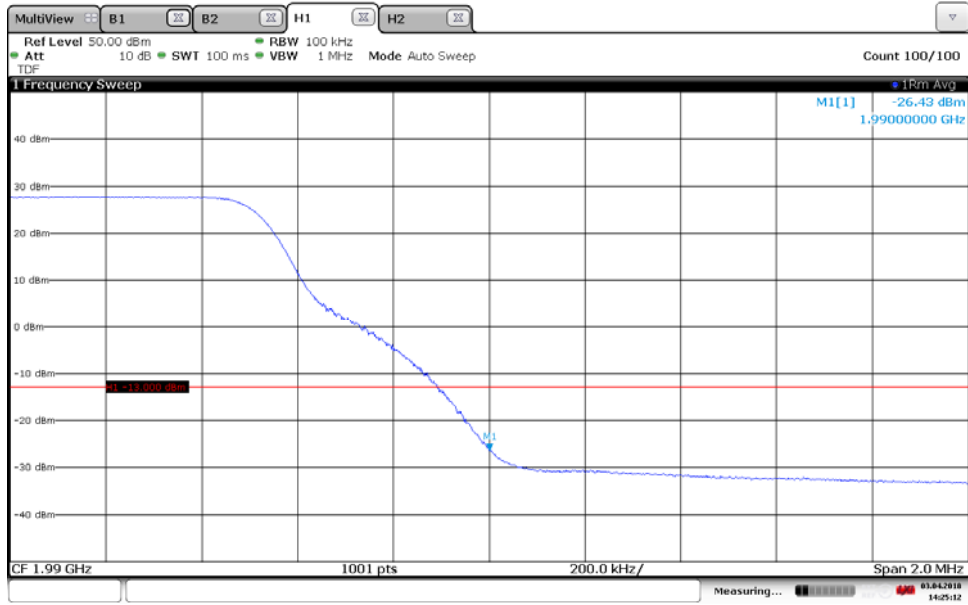
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Diagram 24b:



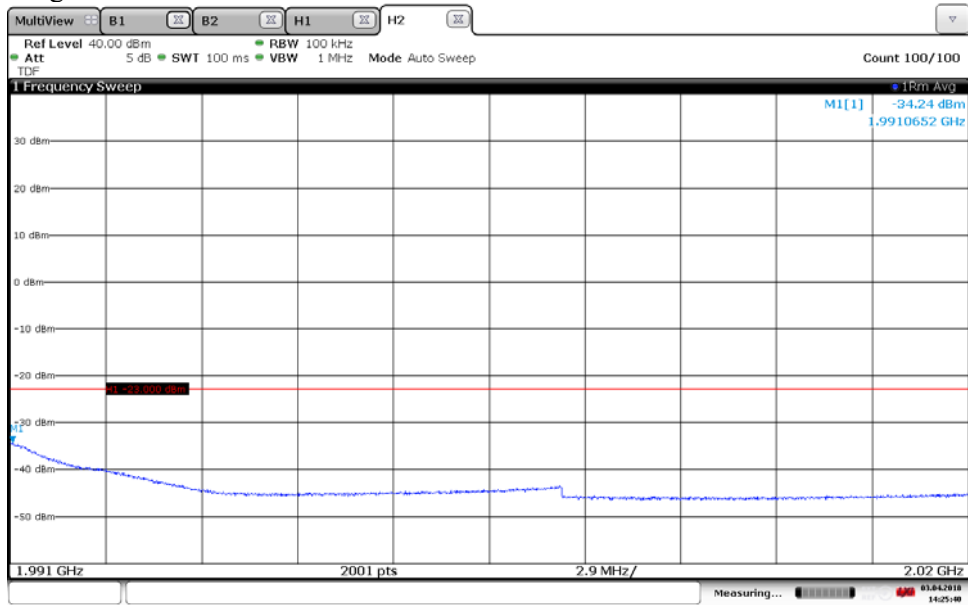
13:55:25 03.04.2018

Diagram 25a:



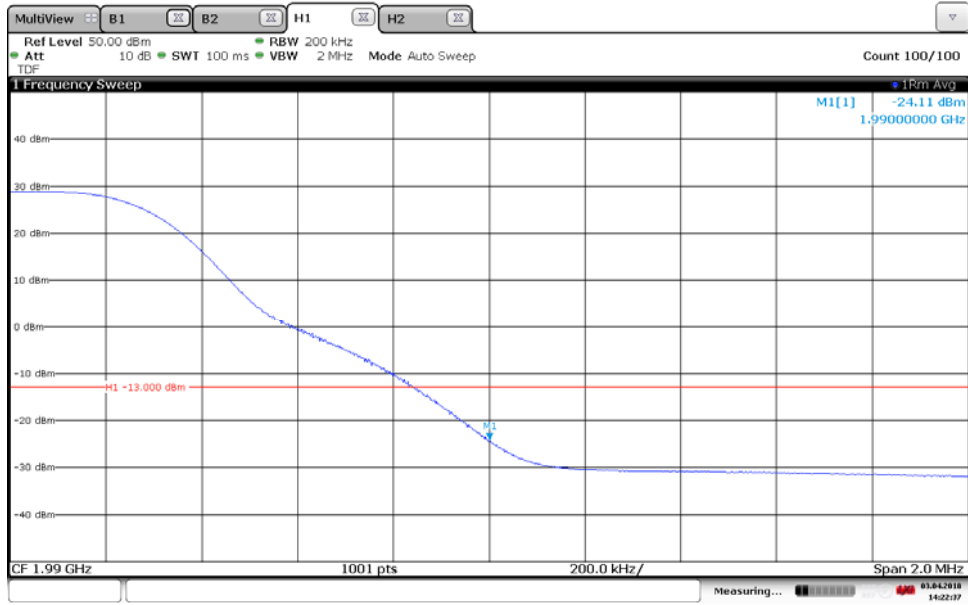
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Diagram 25b:



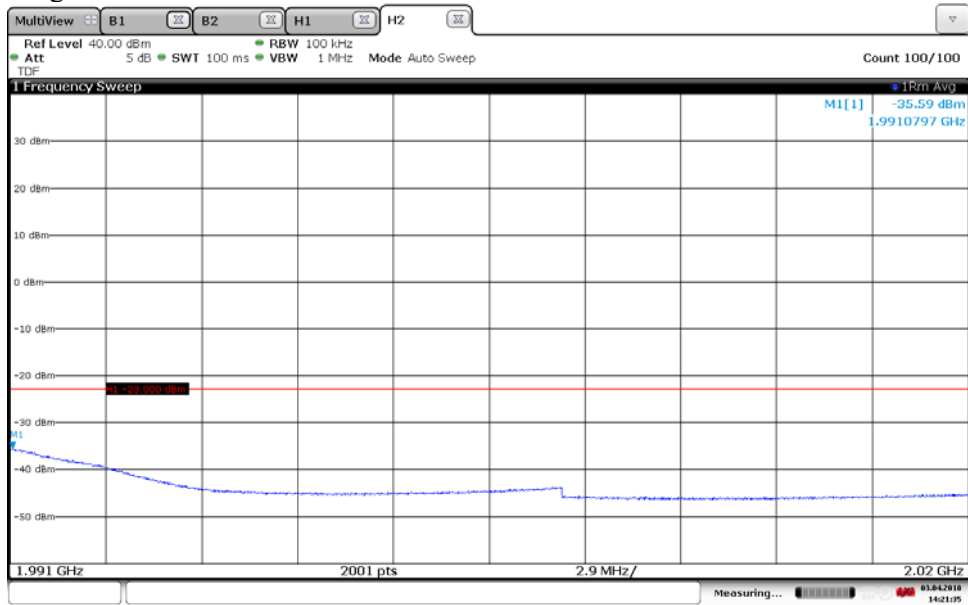
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Diagram 26a:



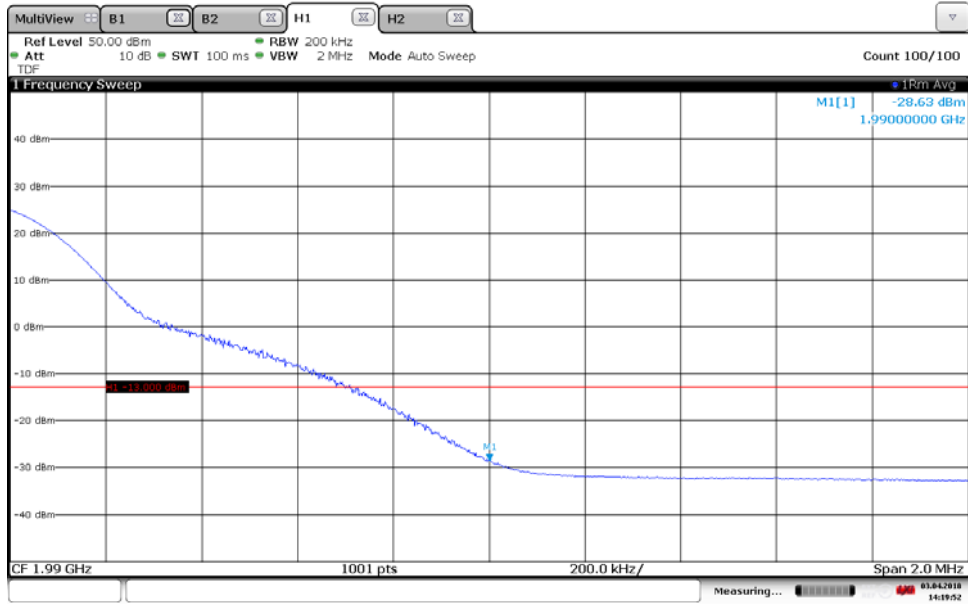
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Diagram 26b:



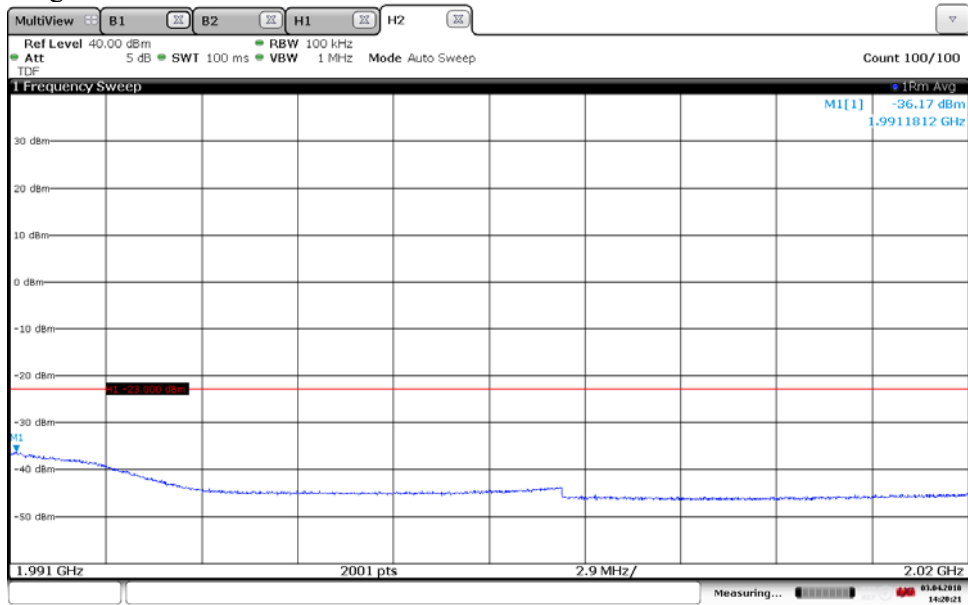
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Diagram 27a:



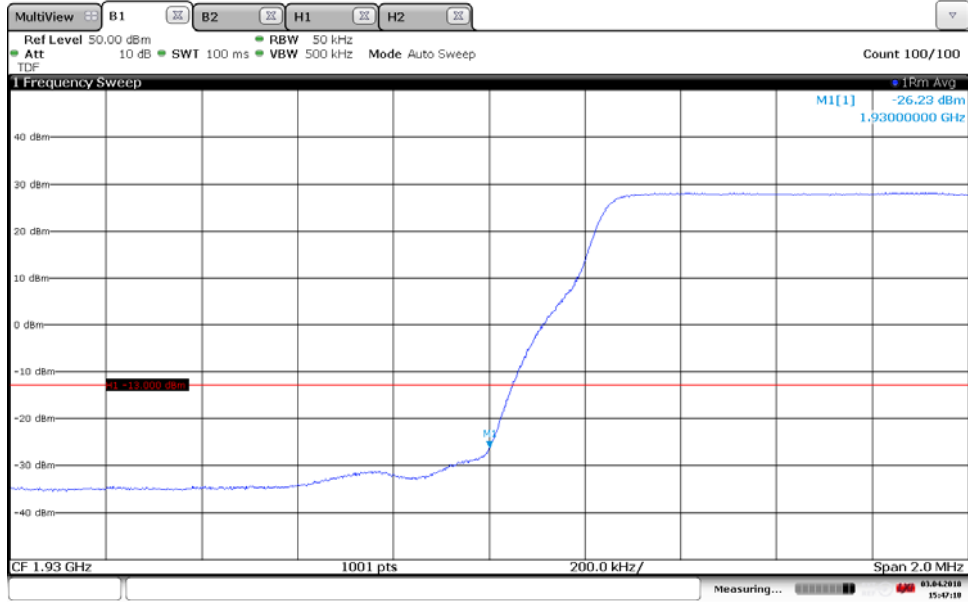
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Diagram 27b:



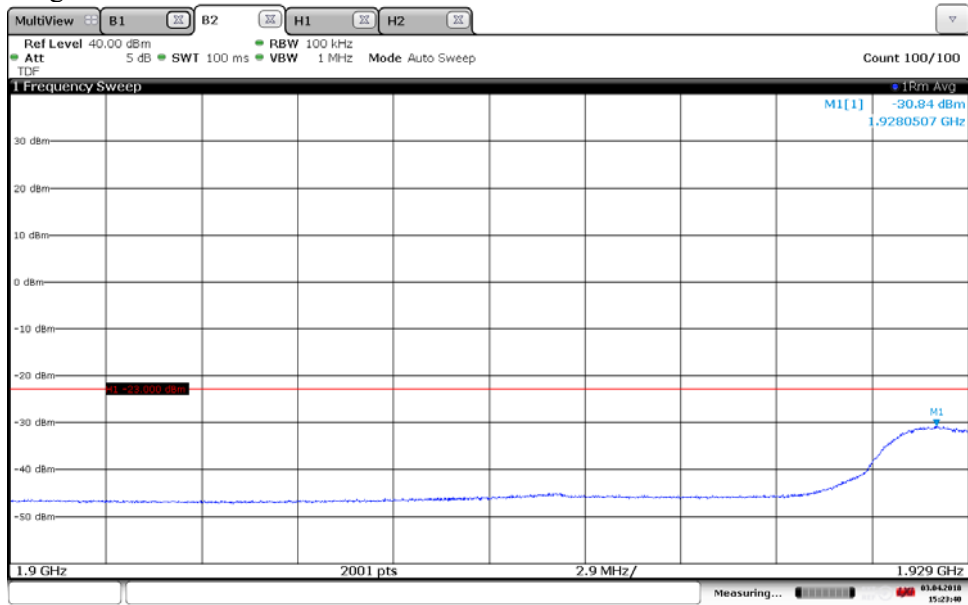
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Diagram 28a:



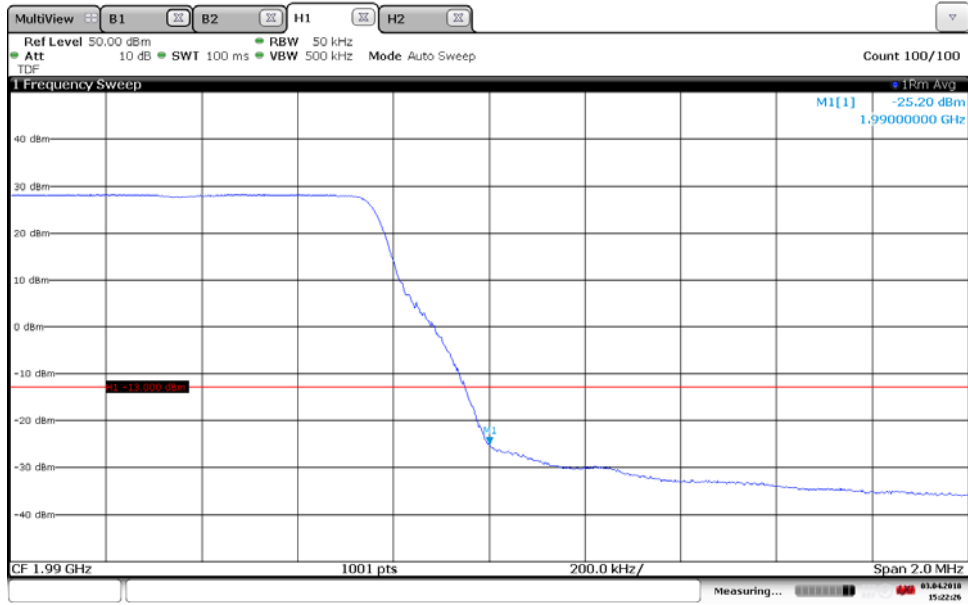
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Diagram 28b:



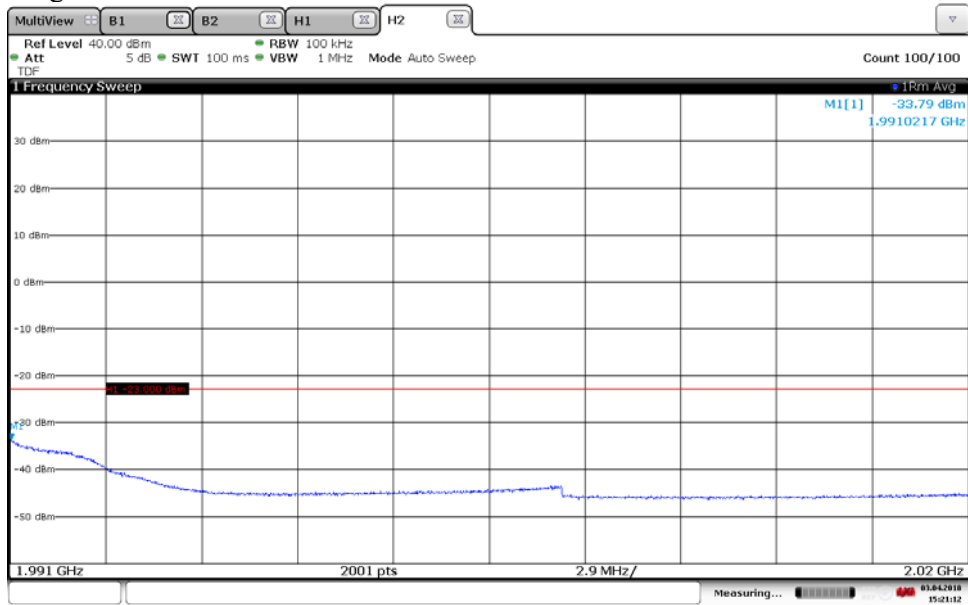
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Diagram 29a:



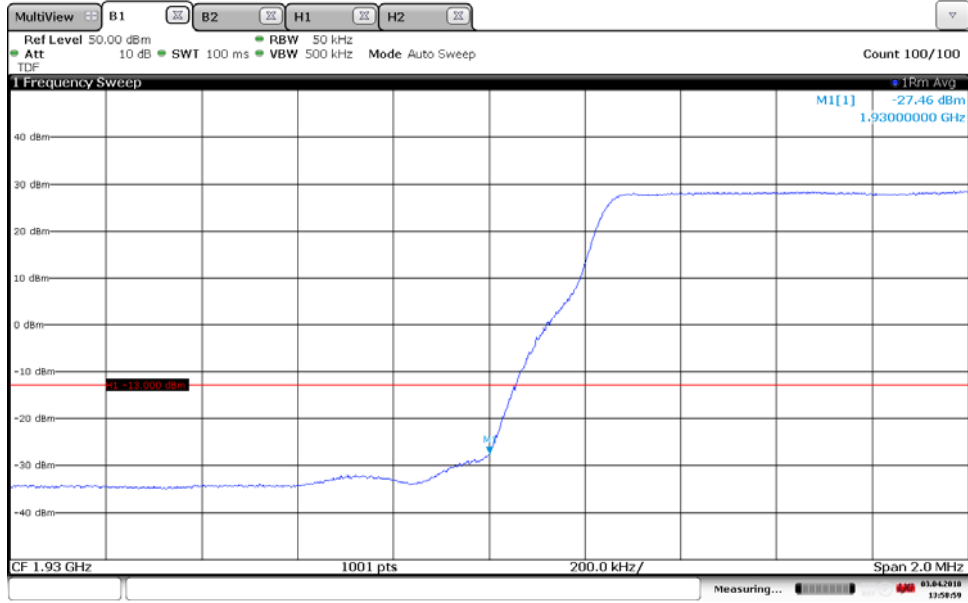
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Diagram 29b:



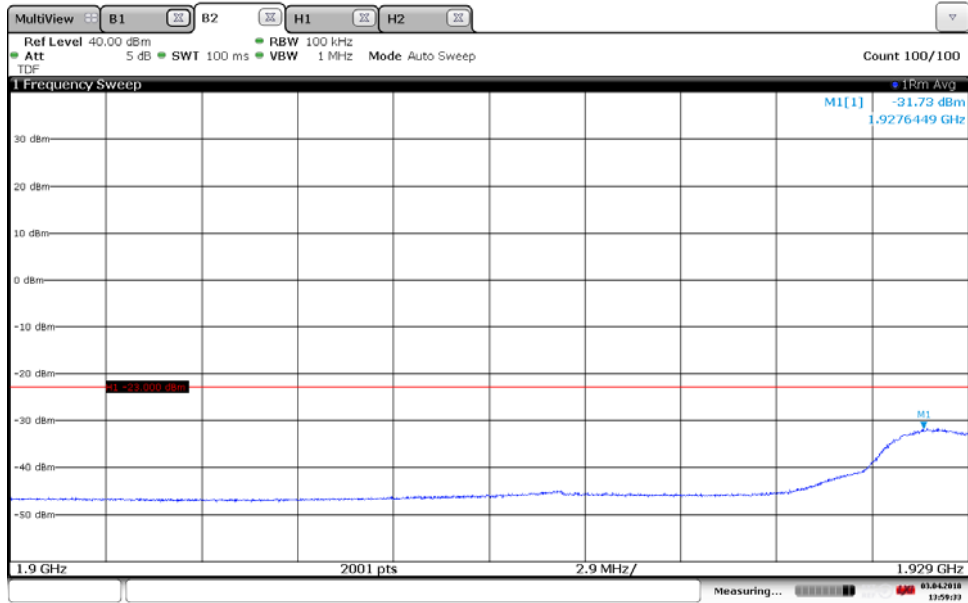
15:21:12 03.04.2018

Diagram 30a:



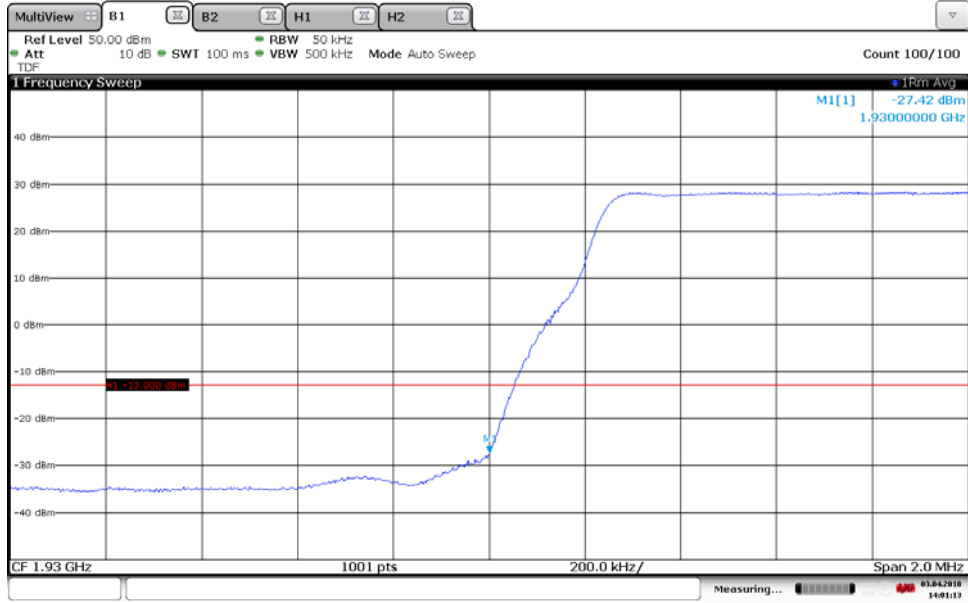
13:59:00 03.04.2018

Diagram 30b:



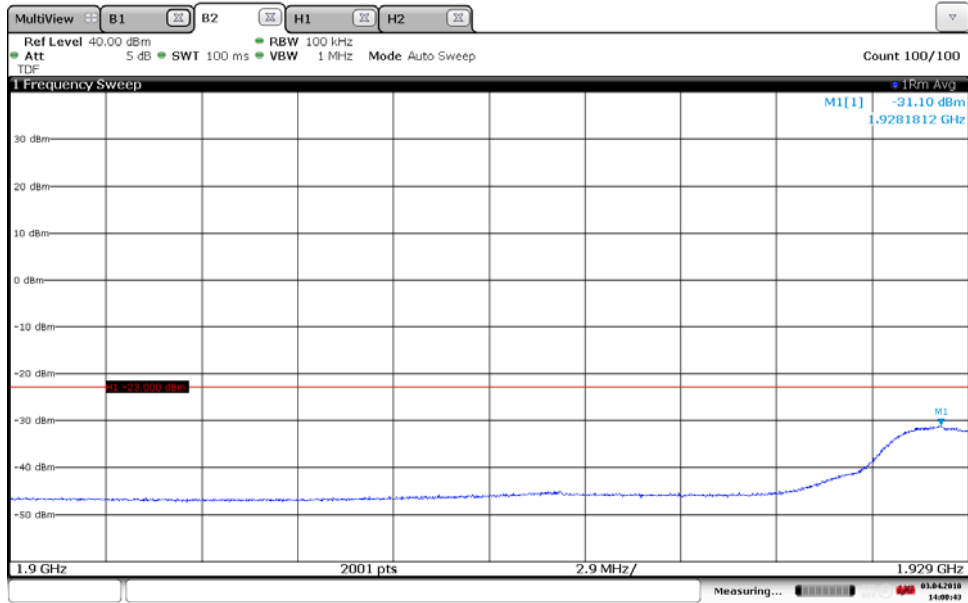
13:59:33 03.04.2018

Diagram 31a:



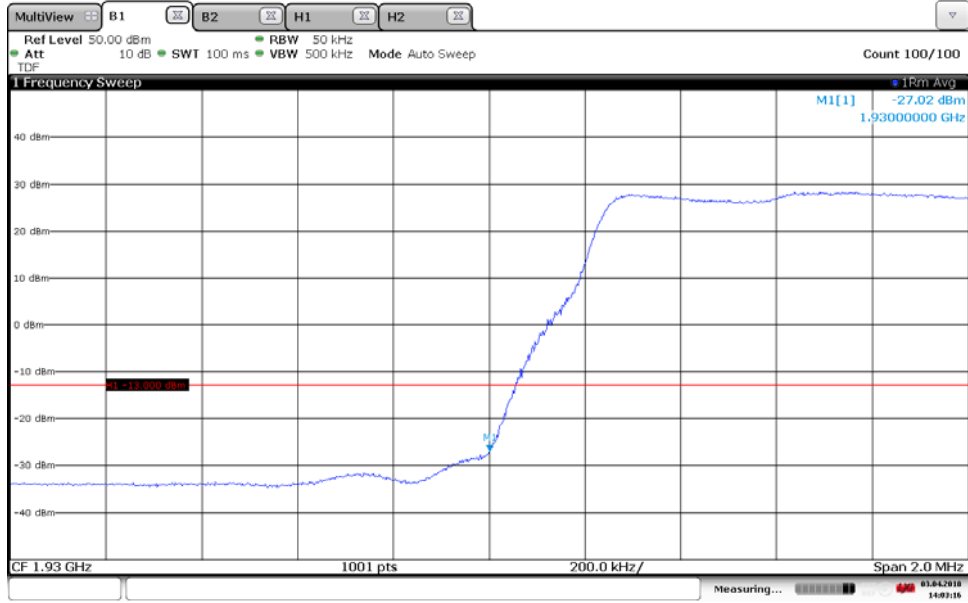
14:01:14 03.04.2018

Diagram 31b:



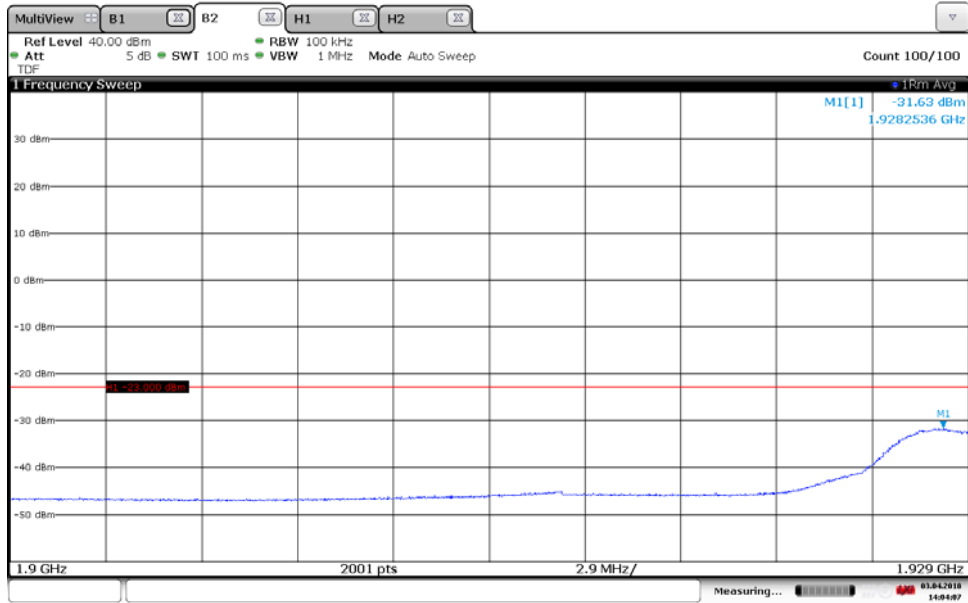
14:00:43 03.04.2018

Diagram 32a:



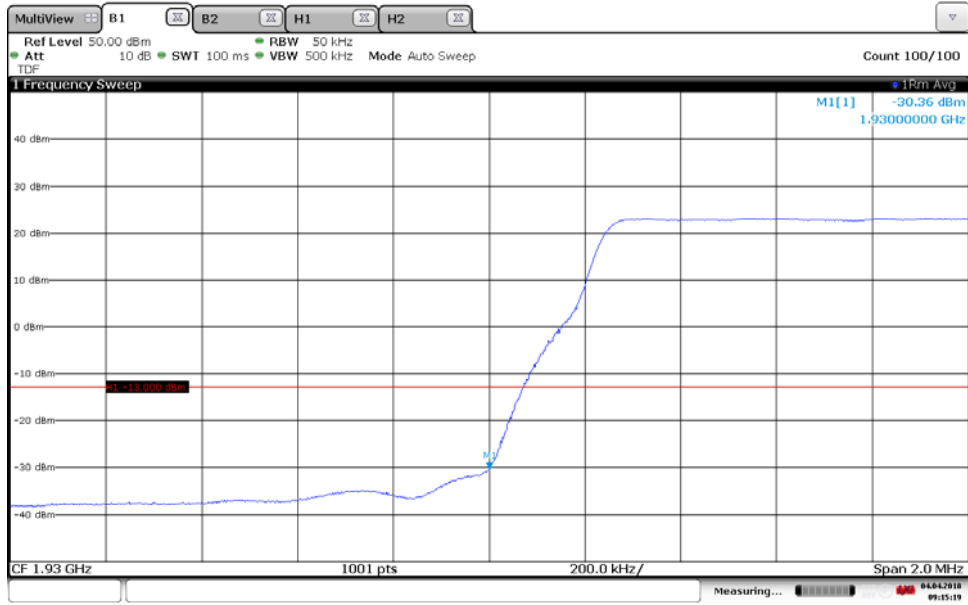
14:03:17 03.04.2018

Diagram 32b:



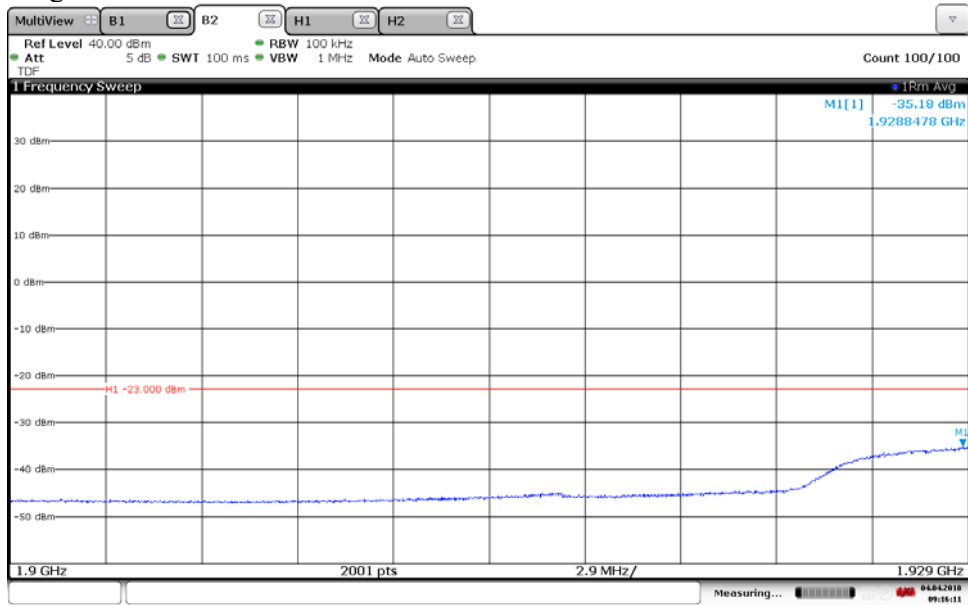
14:04:07 03.04.2018

Diagram 33a:



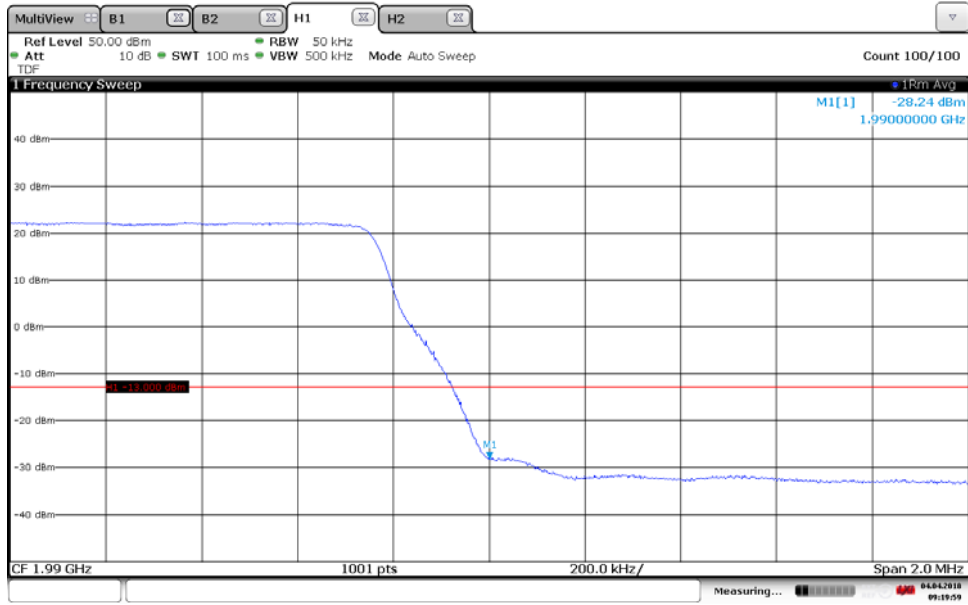
09:15:20 04.04.2018

Diagram 33b:



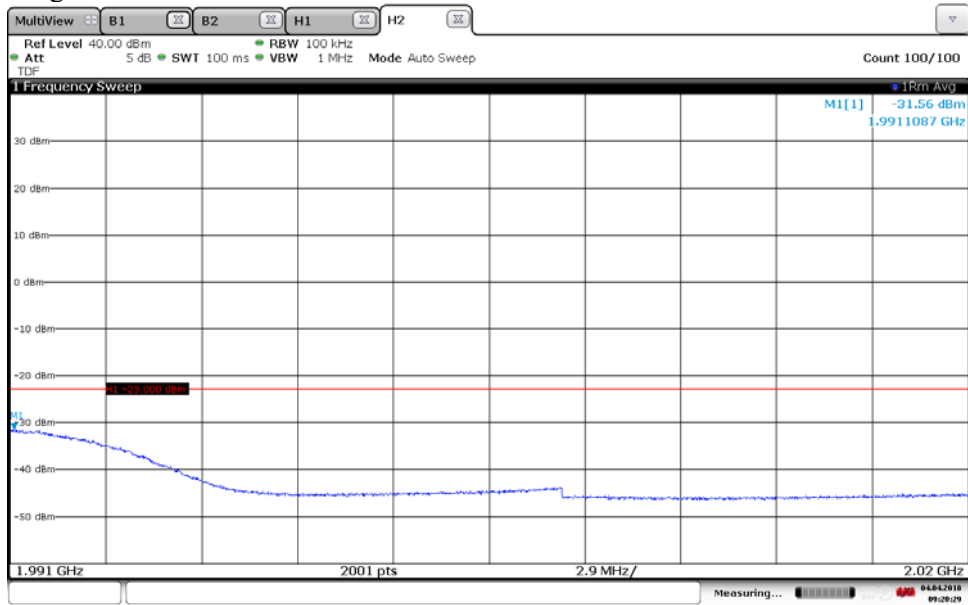
09:16:11 04.04.2018

Diagram 34a:



09:19:59 04.04.2018

Diagram 34b:



09:20:29 04.04.2018