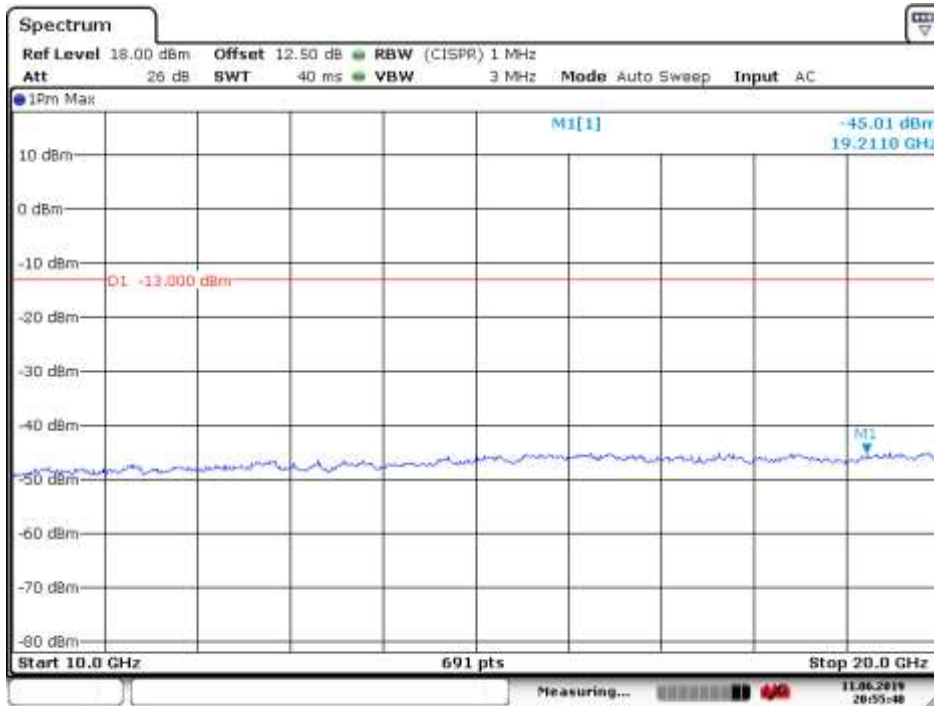


Date: 11 JUN 2019 20:52:52

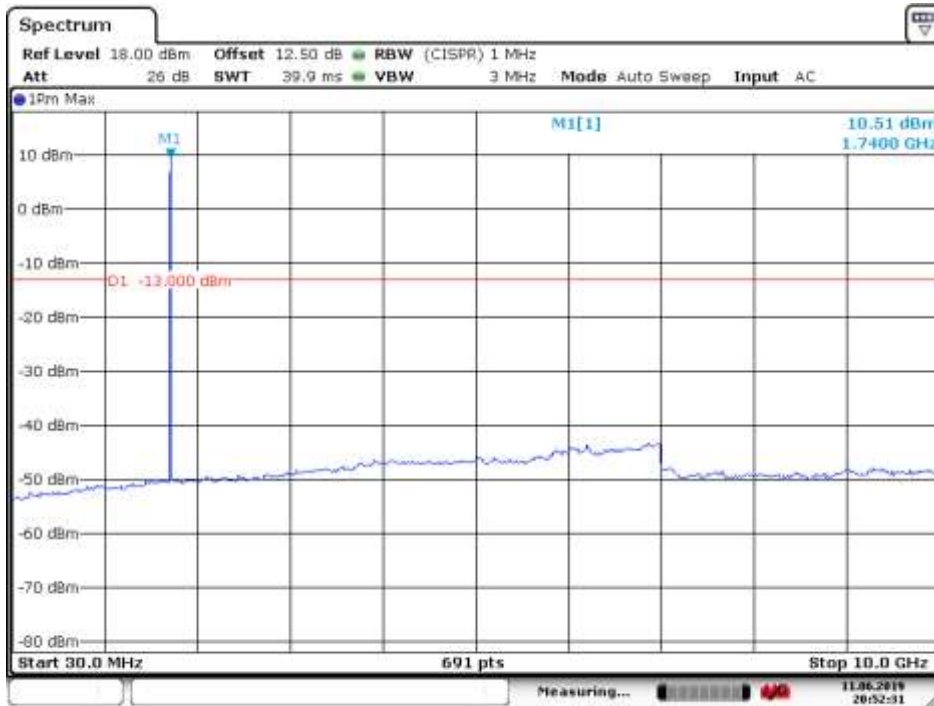
30MHz to 10GHz, Mid Channel, Subcarrier (3.75kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 20:53:48

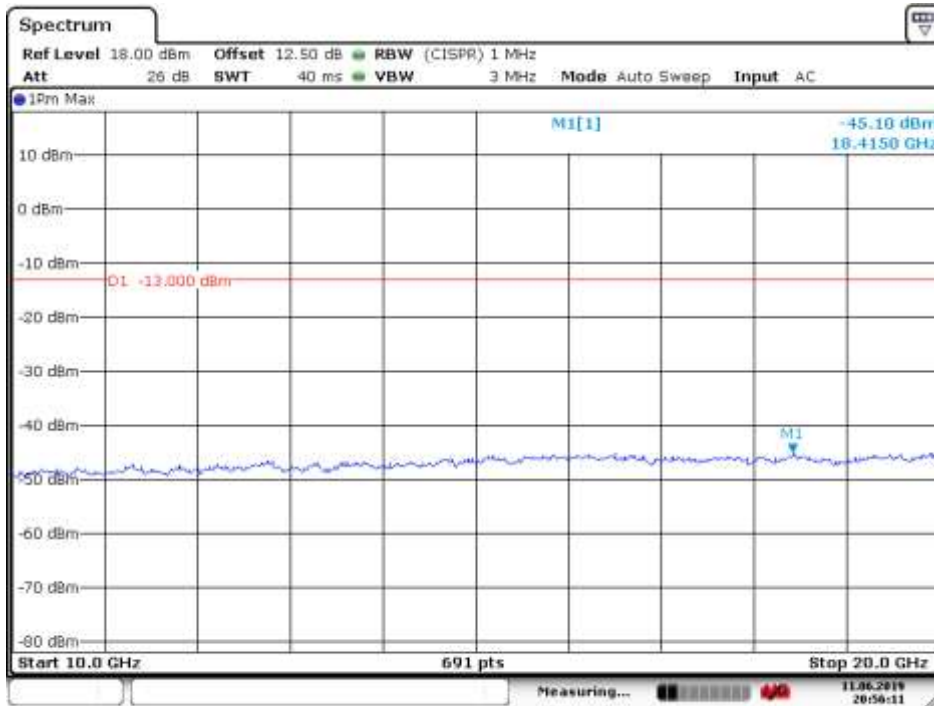
10GHz to 20GHz, Mid Channel, Subcarrier (3.75kHz), QPSK, 1@0



Date: 11 JUN 2019 20:52:32

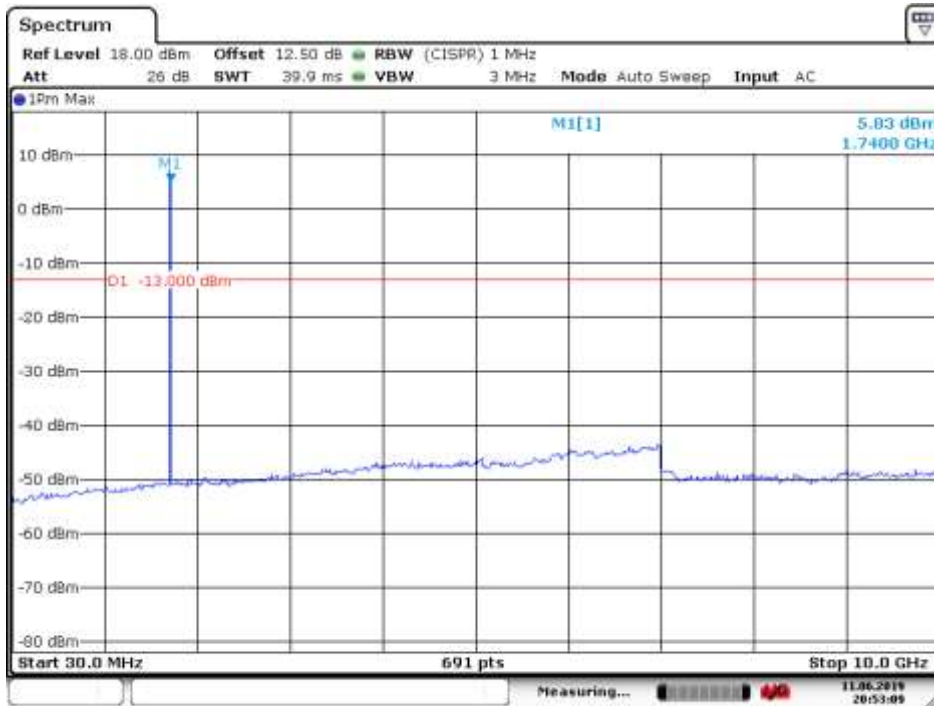
30MHz to 10GHz, Mid Channel, Subcarrier (3.75kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



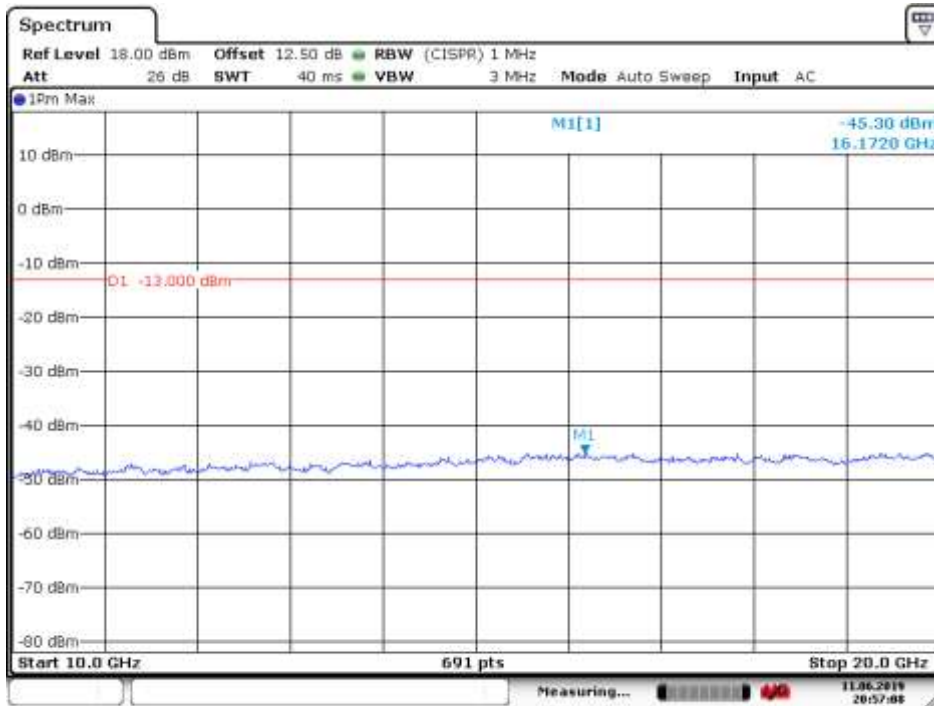
Date: 11 JUN 2019 20:50:12

10GHz to 20GHz, Mid Channel, Subcarrier (3.75kHz), BPSK, 1@0

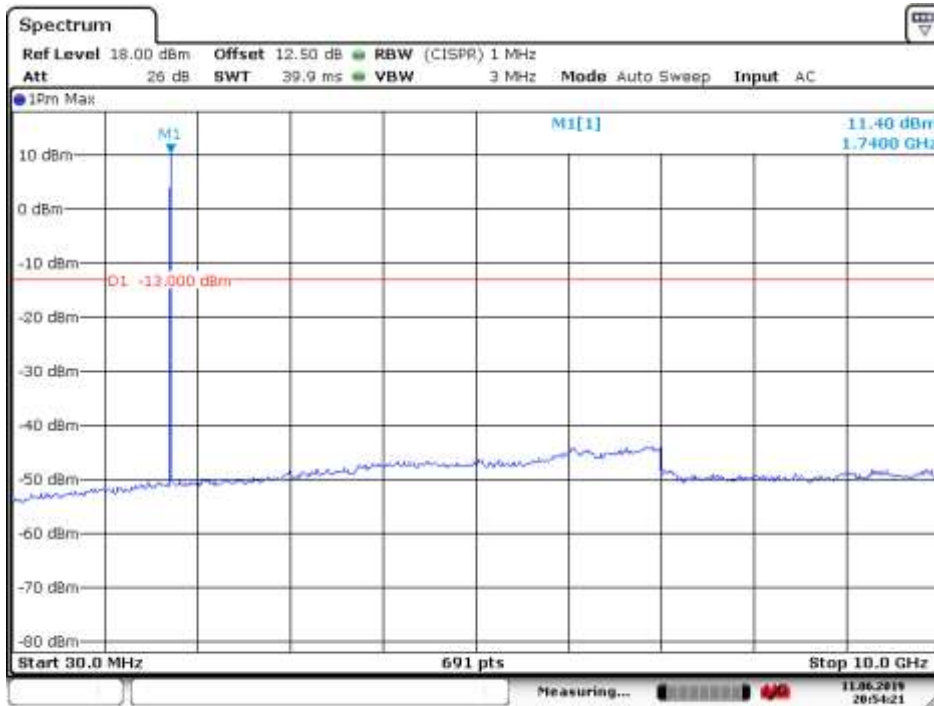


30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



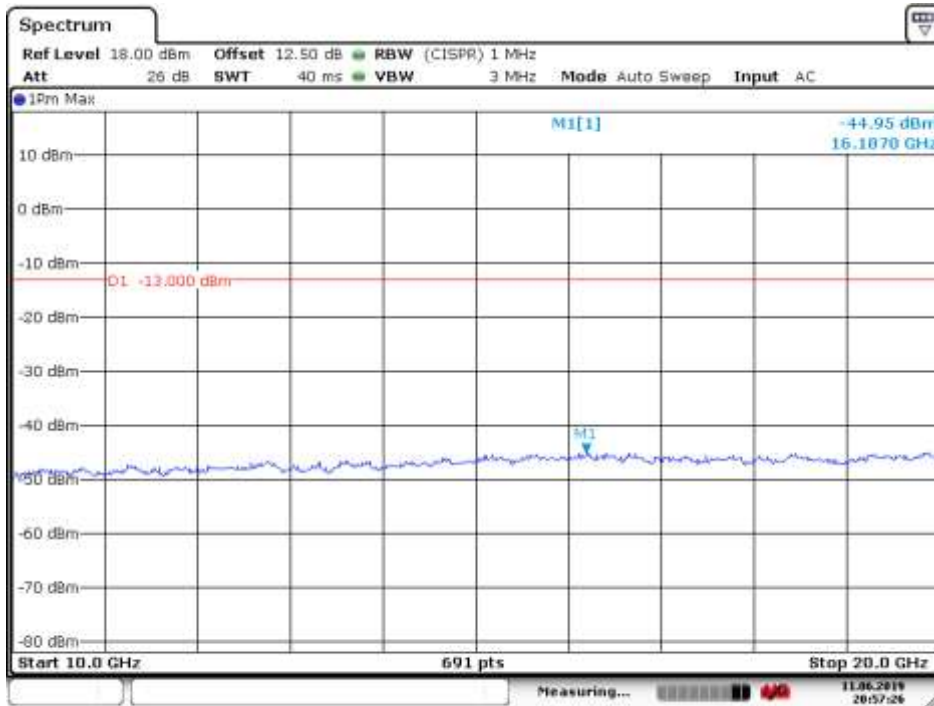
10GHz to 20GHz, Mid Channel, Subcarrier (15kHz), QPSK, 1@0



Date: 11 JUN 2019 20:54:21

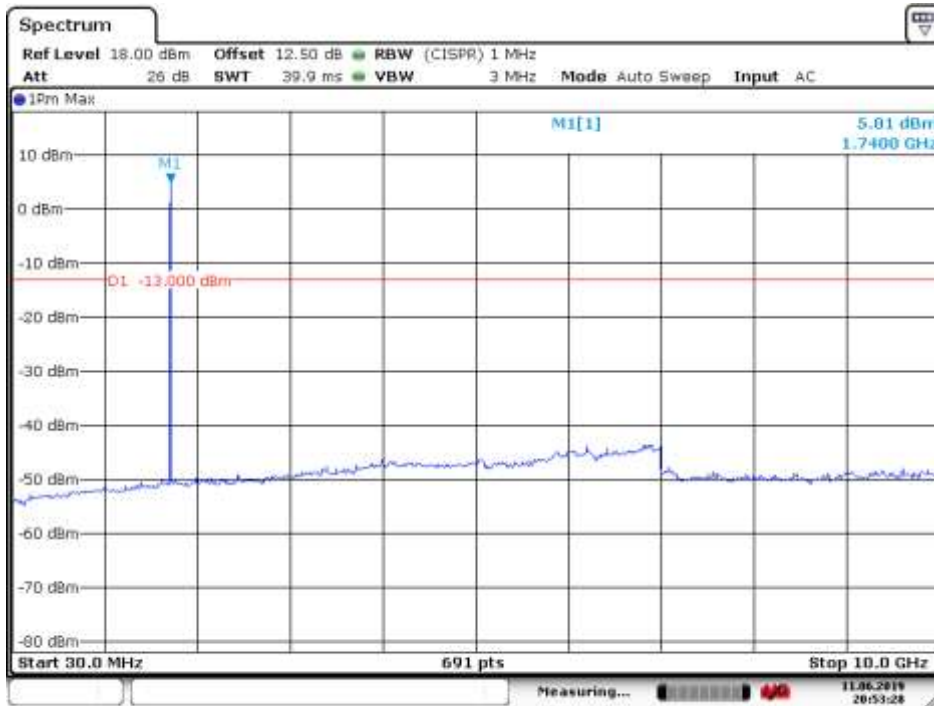
30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), QPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 20:57:27

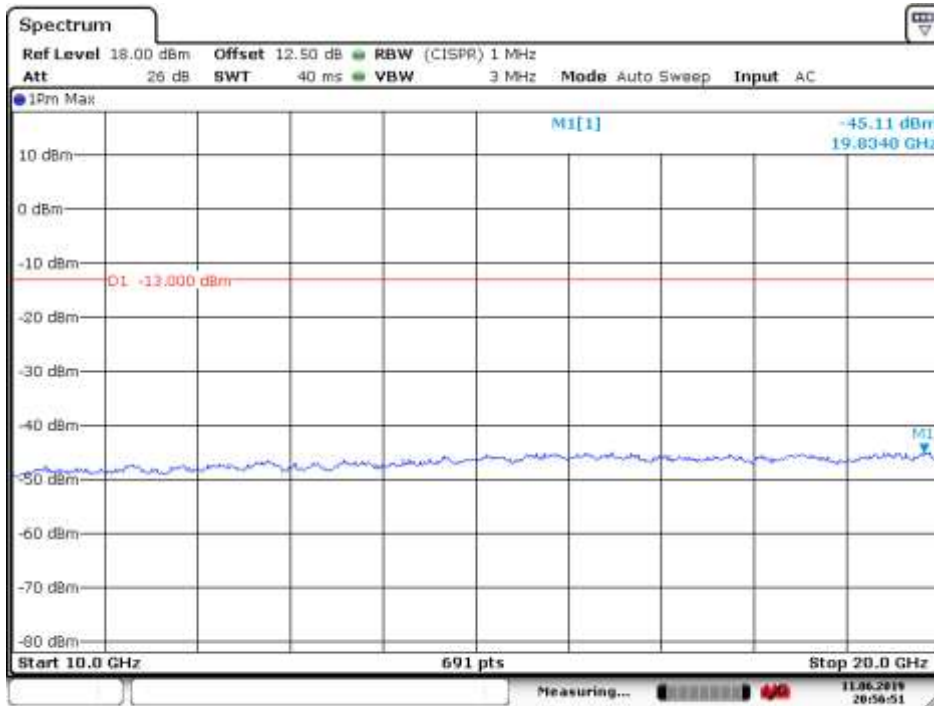
10GHz to 20GHz, Mid Channel, Subcarrier (15kHz), QPSK, 12@0



Date: 11 JUN 2019 20:53:28

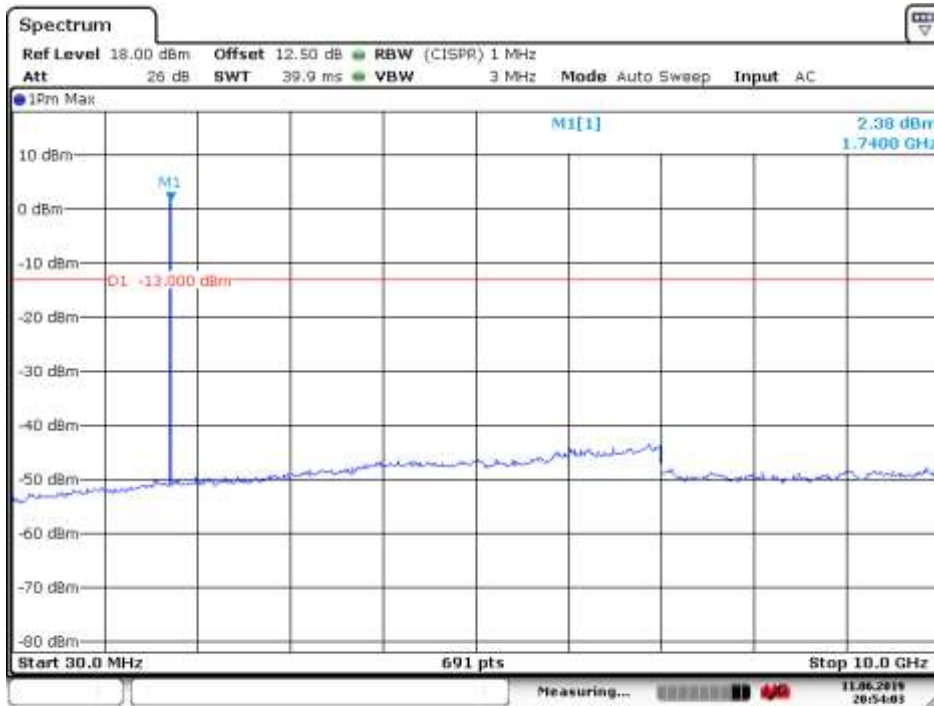
30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 20:56:51

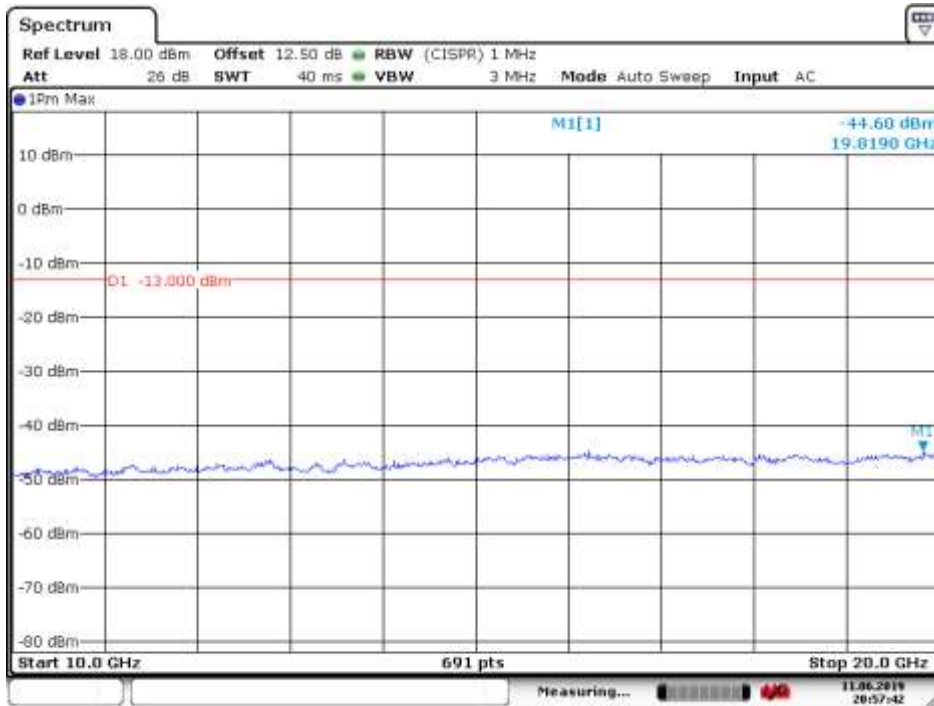
10GHz to 20GHz, Mid Channel, Subcarrier (15kHz), BPSK, 1@0



Date: 11 JUN 2019 20:54:02

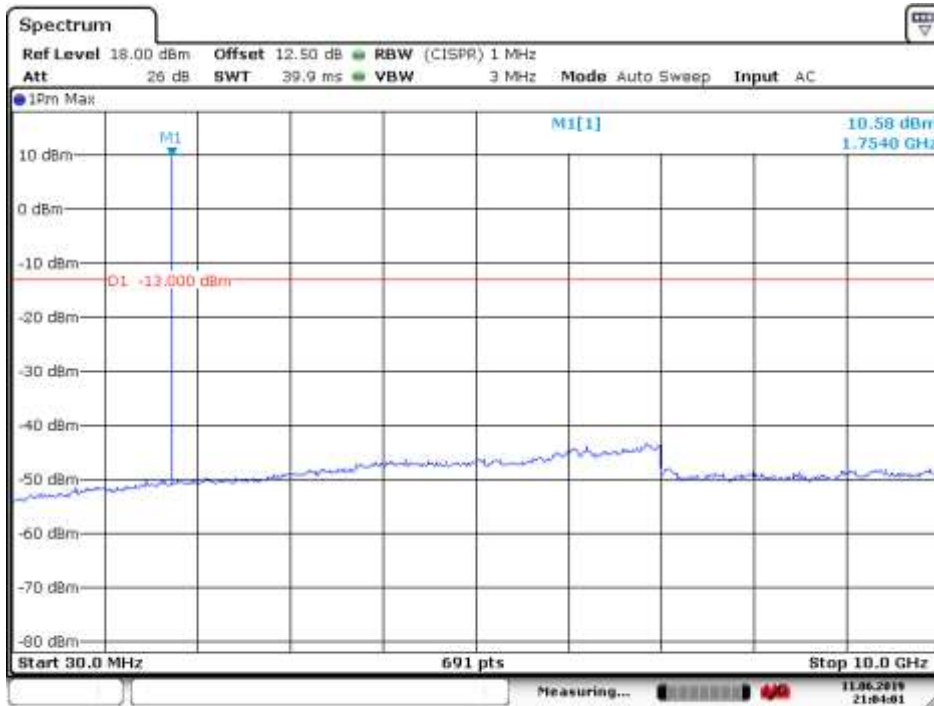
30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), BPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 20:57:42

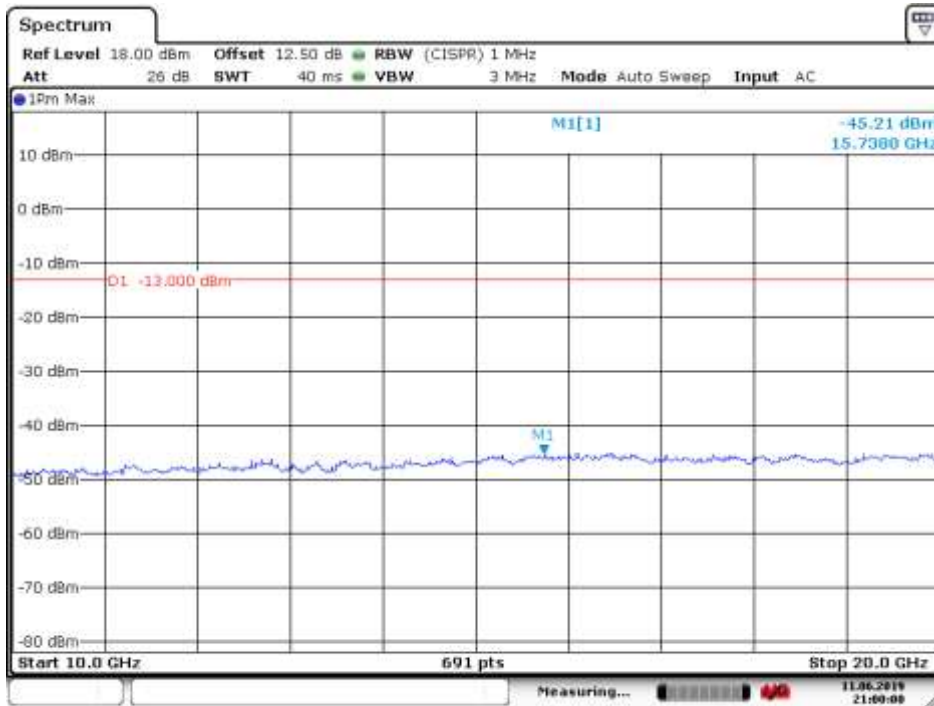
10GHz to 20GHz, Mid Channel, Subcarrier (15kHz), BPSK, 12@0



Date: 11 JUN 2019 21:04:01

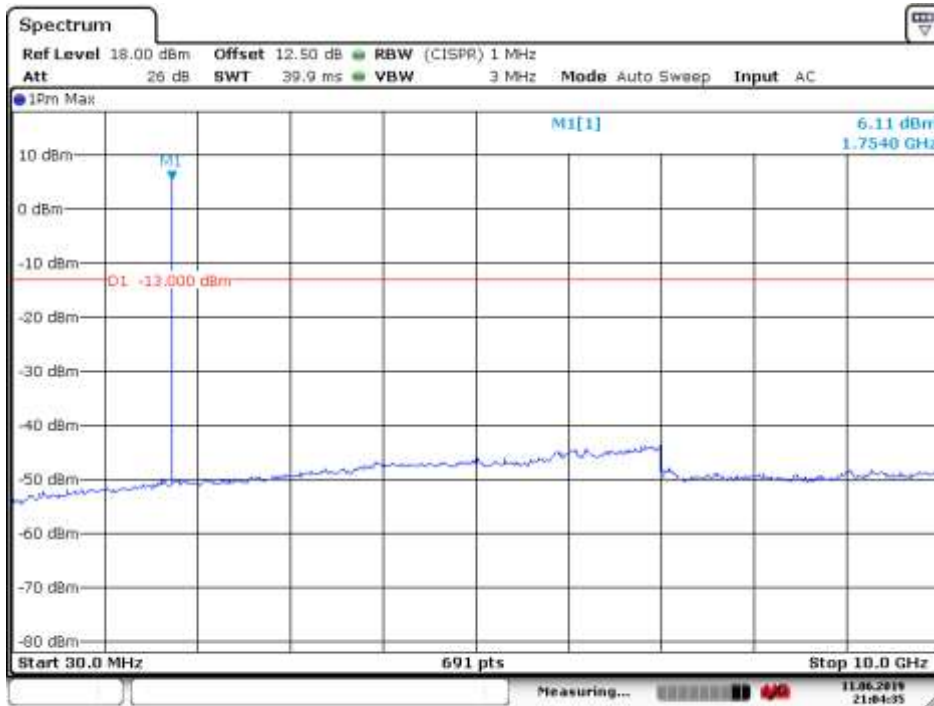
30MHz to 10GHz, High Channel, Subcarrier (3.75kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:00:00

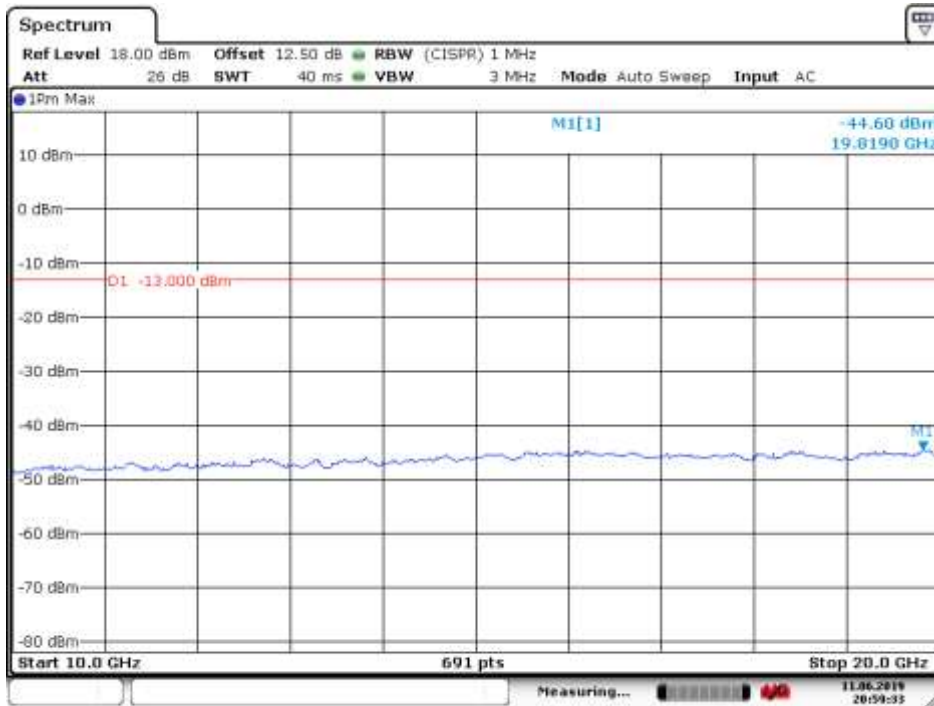
10GHz to 20GHz, High Channel, Subcarrier (3.75kHz), QPSK, 1@0



Date: 11 JUN 2019 21:04:35

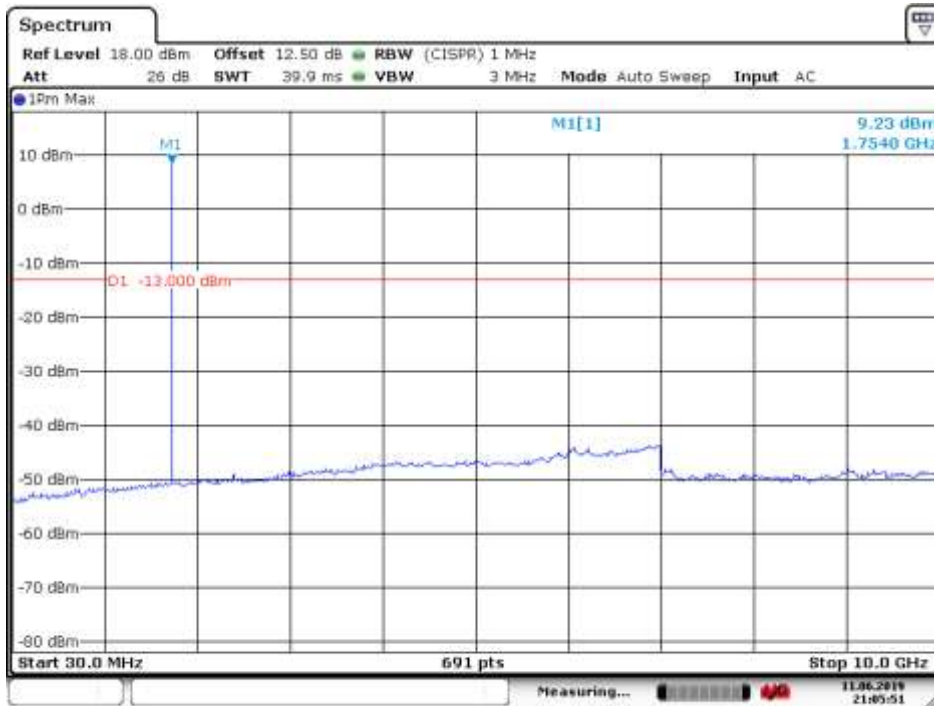
30MHz to 10GHz, High Channel, Subcarrier (3.75kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 20:59:33

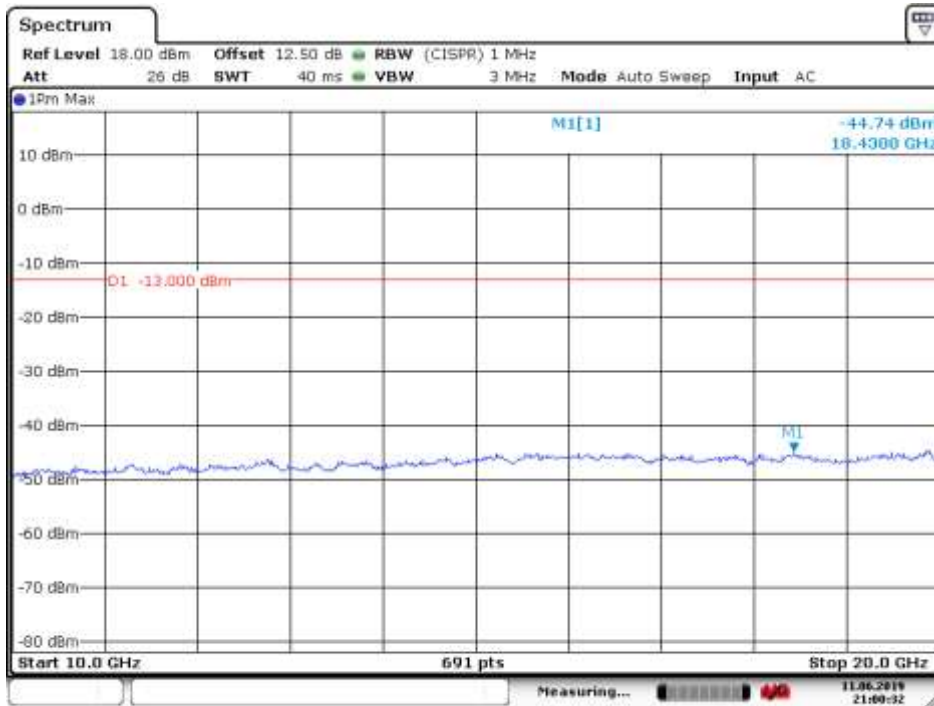
10GHz to 20GHz, High Channel, Subcarrier (3.75kHz), BPSK, 1@0



Date: 11 JUN 2019 21:05:52

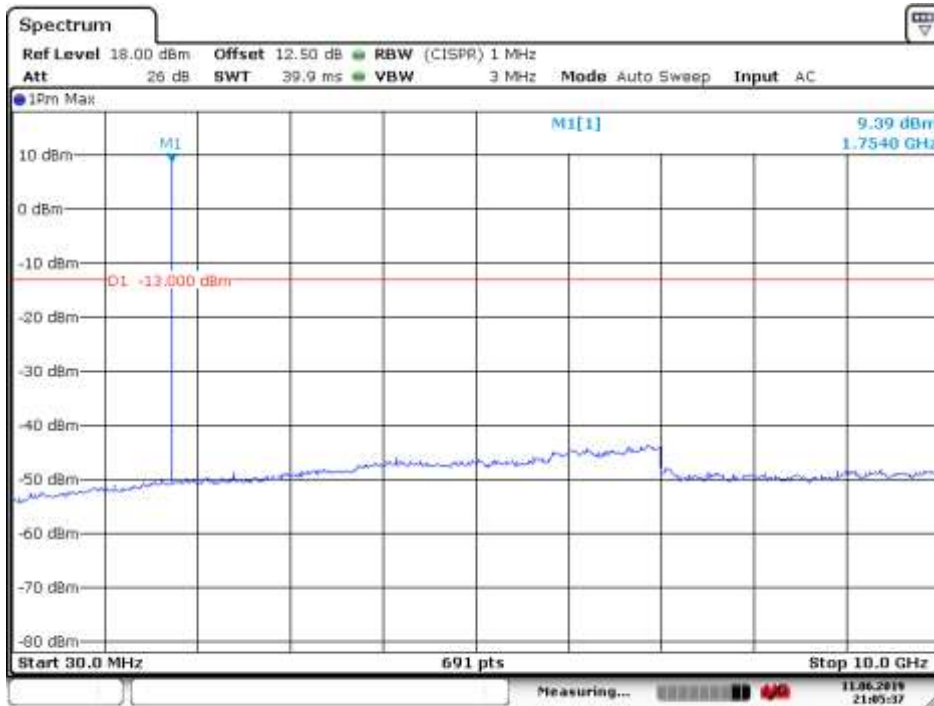
30MHz to 10GHz, High Channel, Subcarrier (15kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:00:32

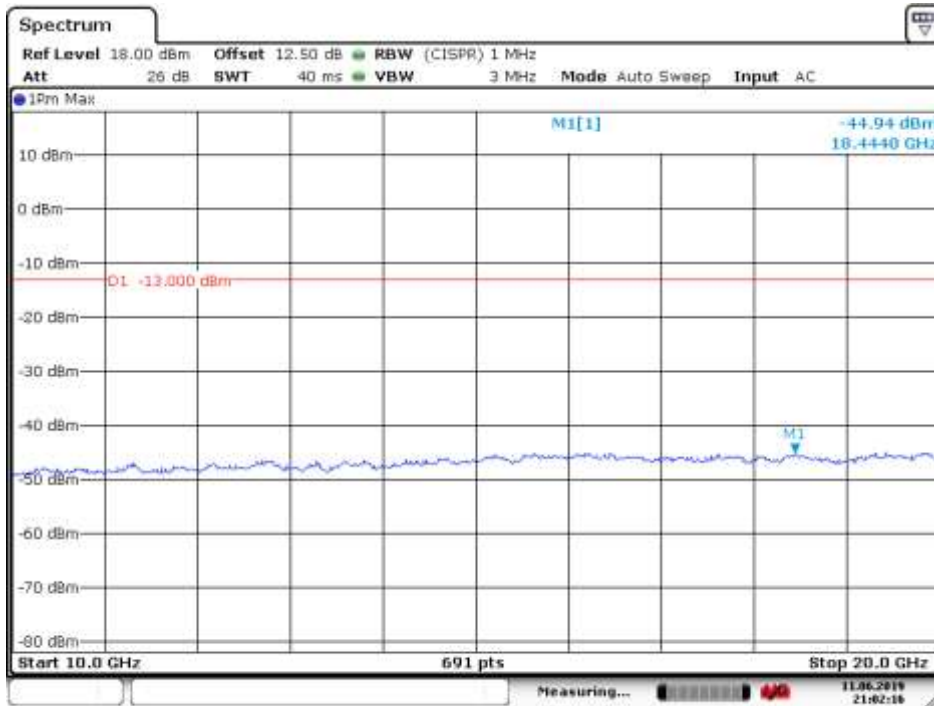
10GHz to 20GHz, High Channel, Subcarrier (15kHz), QPSK, 1@0



Date: 11 JUN 2019 21:05:37

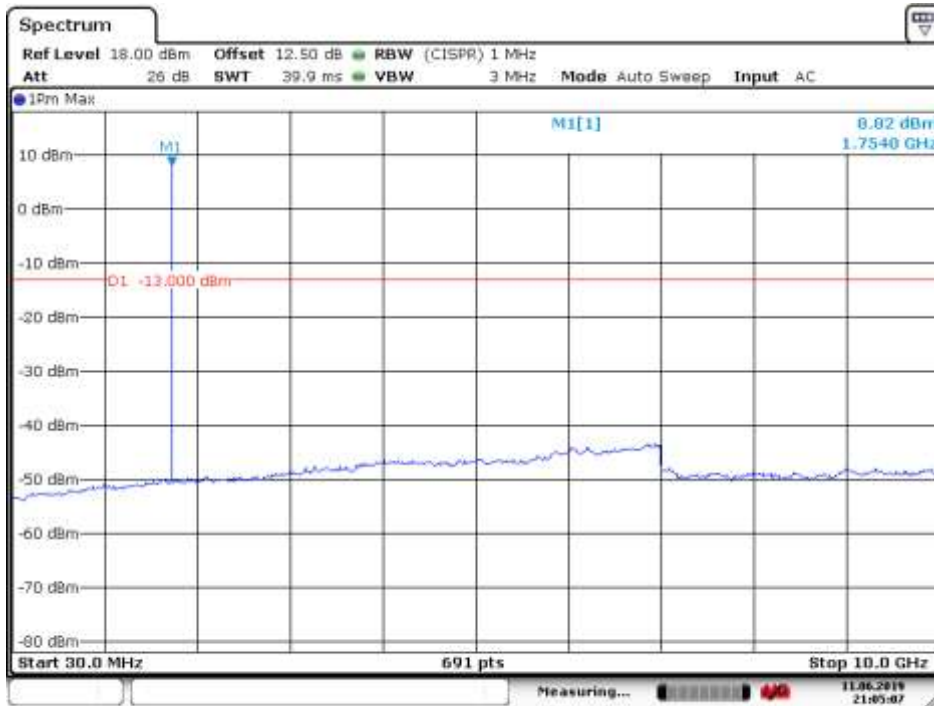
30MHz to 10GHz, High Channel, Subcarrier (15kHz), QPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:02:16

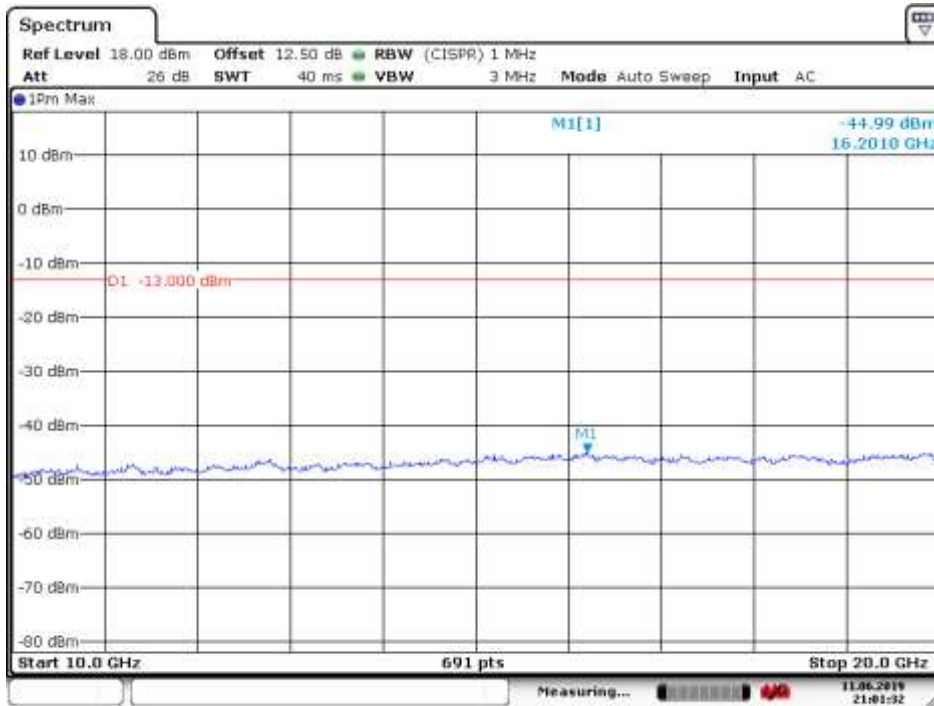
10GHz to 20GHz, High Channel, Subcarrier (15kHz), QPSK, 12@0



Date: 11 JUN 2019 21:05:07

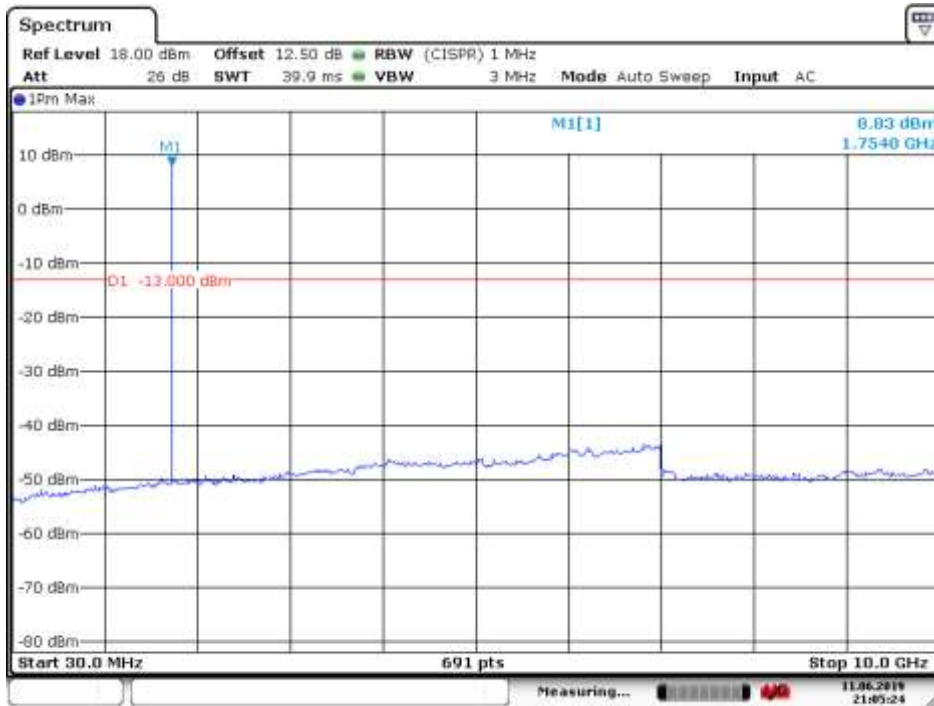
30MHz to 10GHz, High Channel, Subcarrier (15kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:01:32

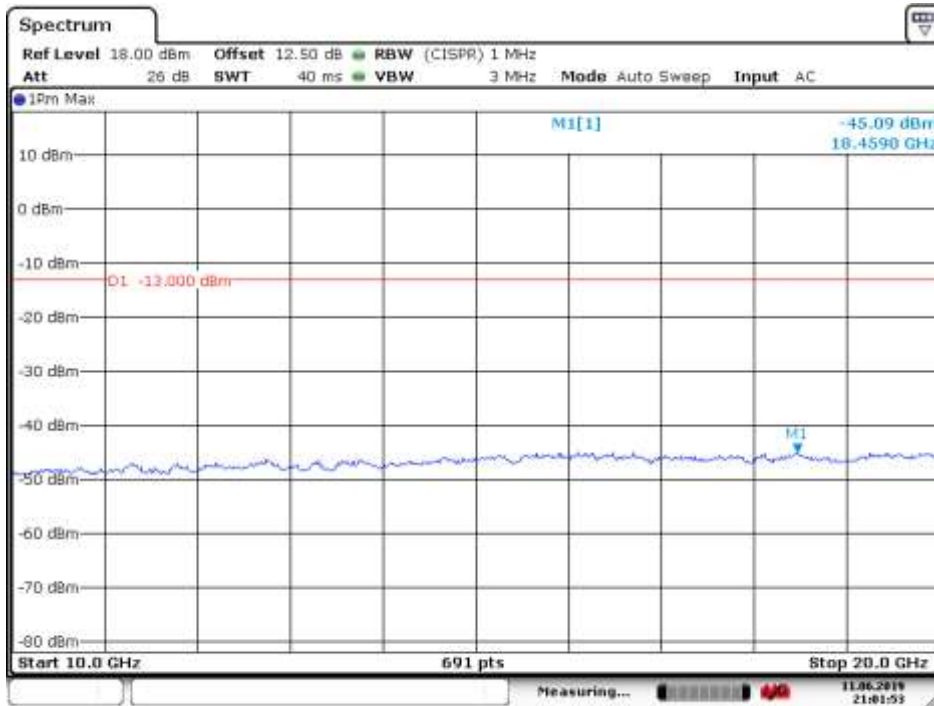
10GHz to 20GHz, High Channel, Subcarrier (15kHz), BPSK, 1@0



Date: 11 JUN 2019 21:05:24

30MHz to 10GHz, High Channel, Subcarrier (15kHz), BPSK, 12@0

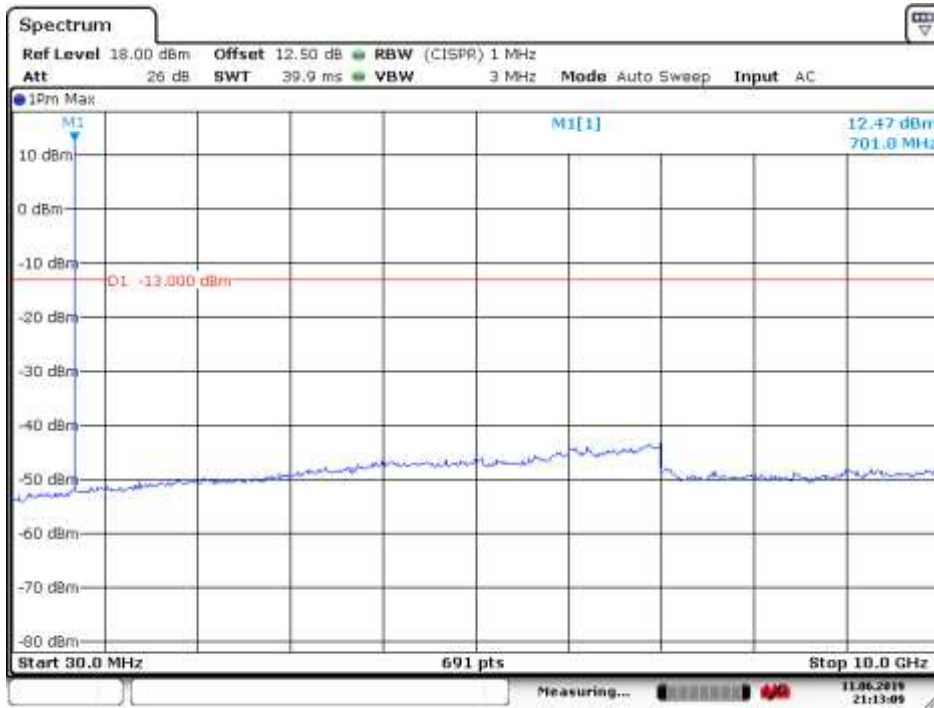
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:01:54

10GHz to 20GHz, High Channel, Subcarrier (15kHz), BPSK, 12@0

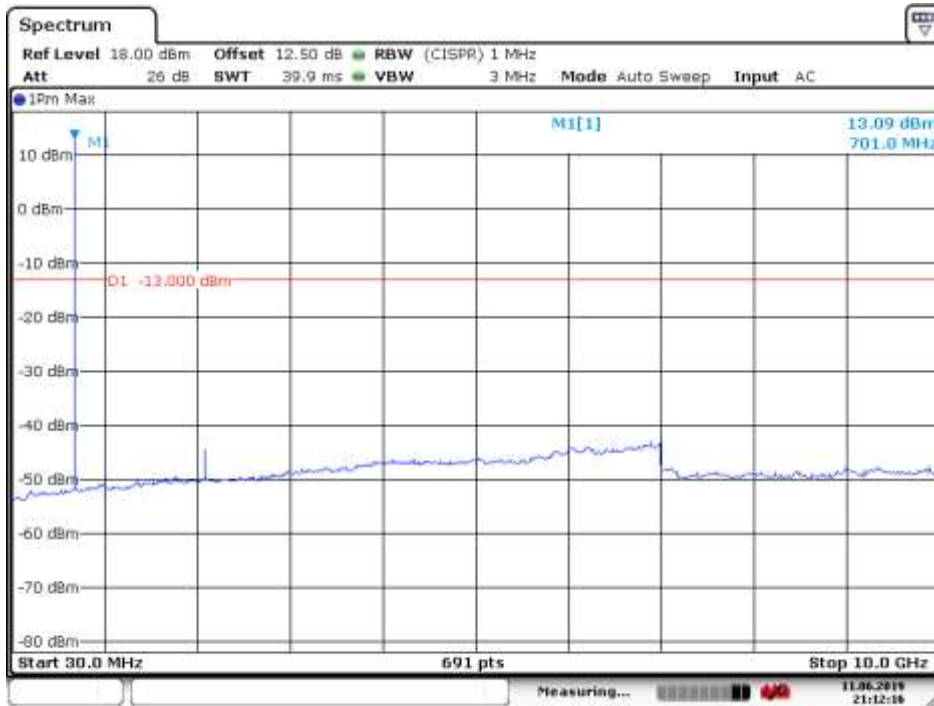
5.3.3 NB-IoT Band 12



Date: 11 JUN 2019 21:13:09

30MHz to 10GHz, Low Channel, Subcarrier (3.75kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.

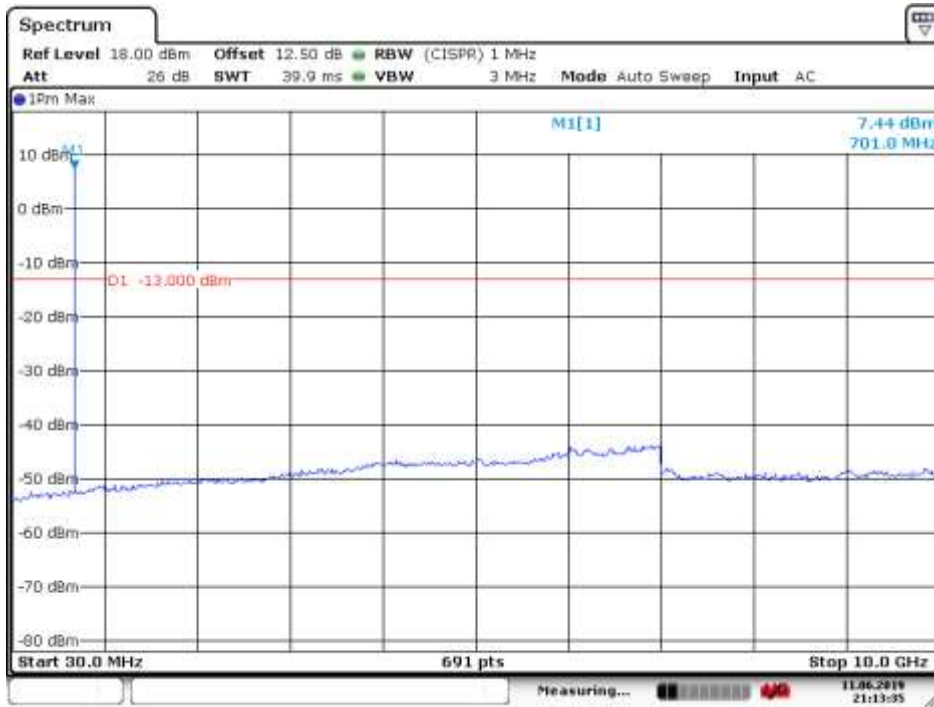


Date: 11 JUN 2019 21:12:16

30MHz to 10GHz, Low Channel, Subcarrier (3.75kHz), BPSK, 1@0

Report No.:B19W50105-WWAN_Rev5

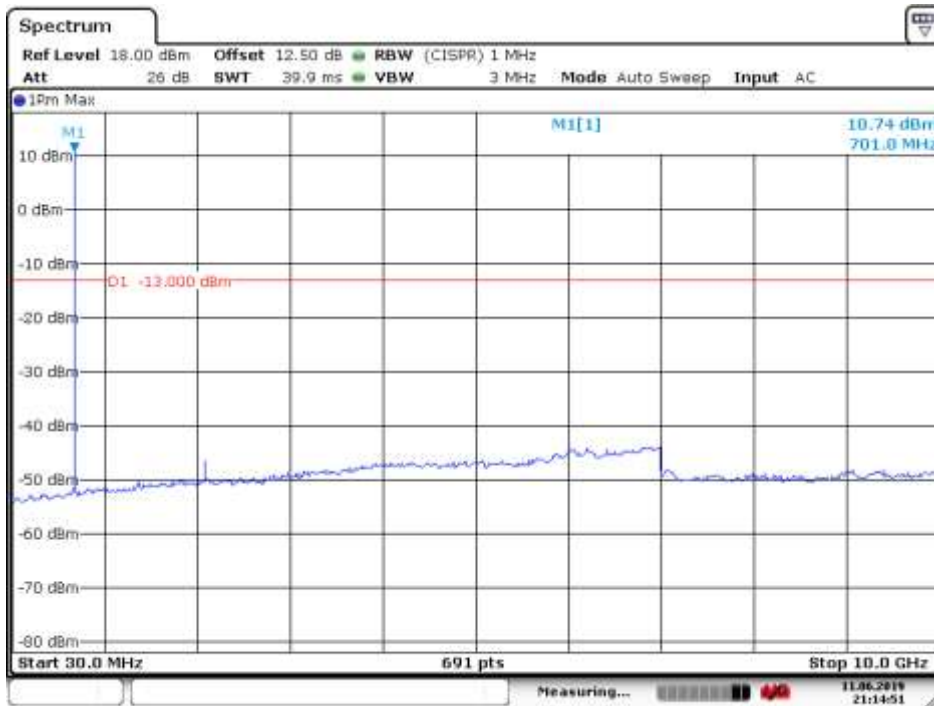
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:13:35

30MHz to 10GHz, Low Channel, Subcarrier (15kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.

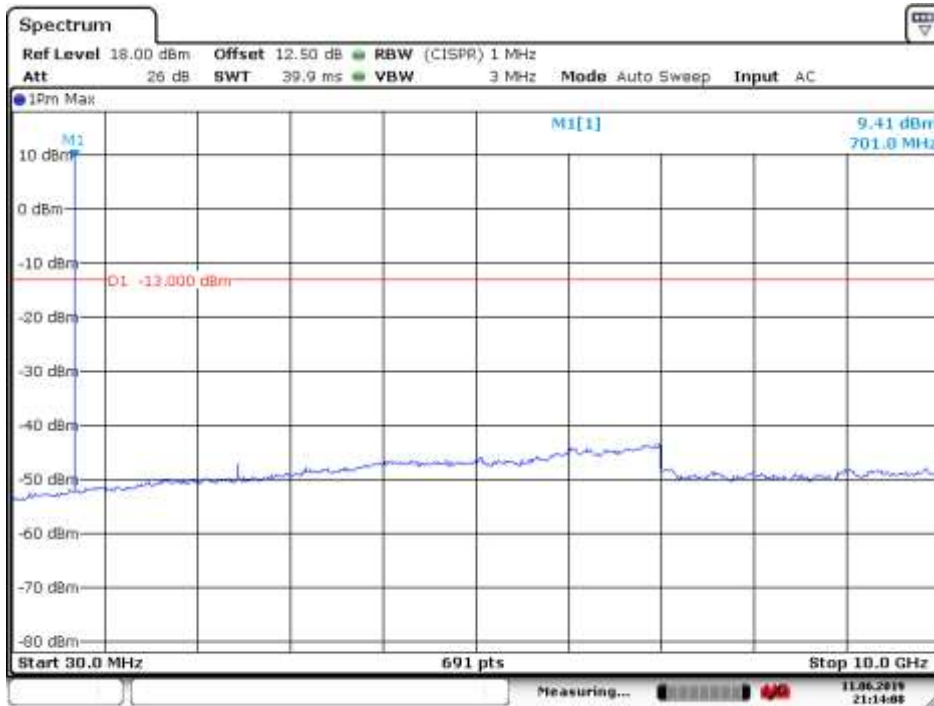


Date: 11 JUN 2019 21:14:51

30MHz to 10GHz, Low Channel, Subcarrier (15kHz), QPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.

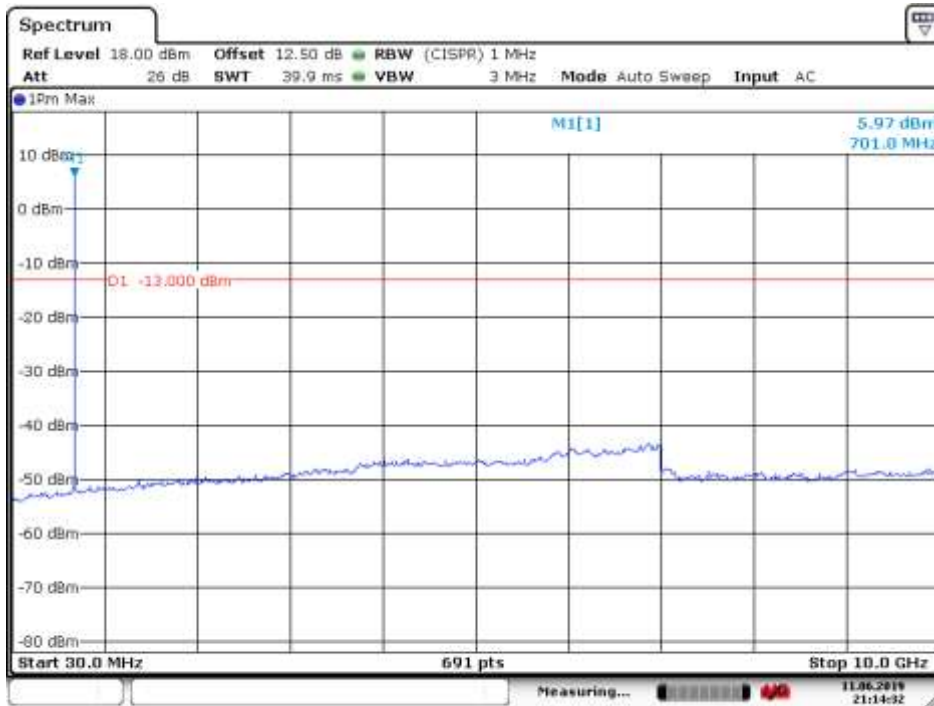
Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965 FAX: 0086-23-88608777



Date: 11 JUN 2019 21:14:08

30MHz to 10GHz, Low Channel, Subcarrier (15kHz), BPSK, 1@0

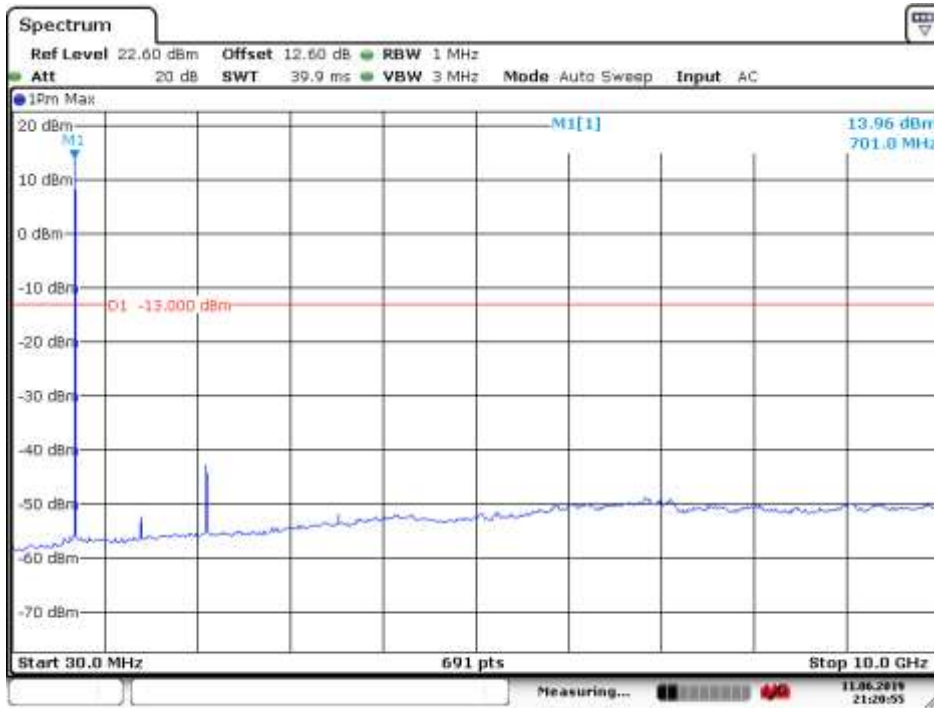
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:14:32

30MHz to 10GHz, Low Channel, Subcarrier (15kHz), BPSK, 12@0

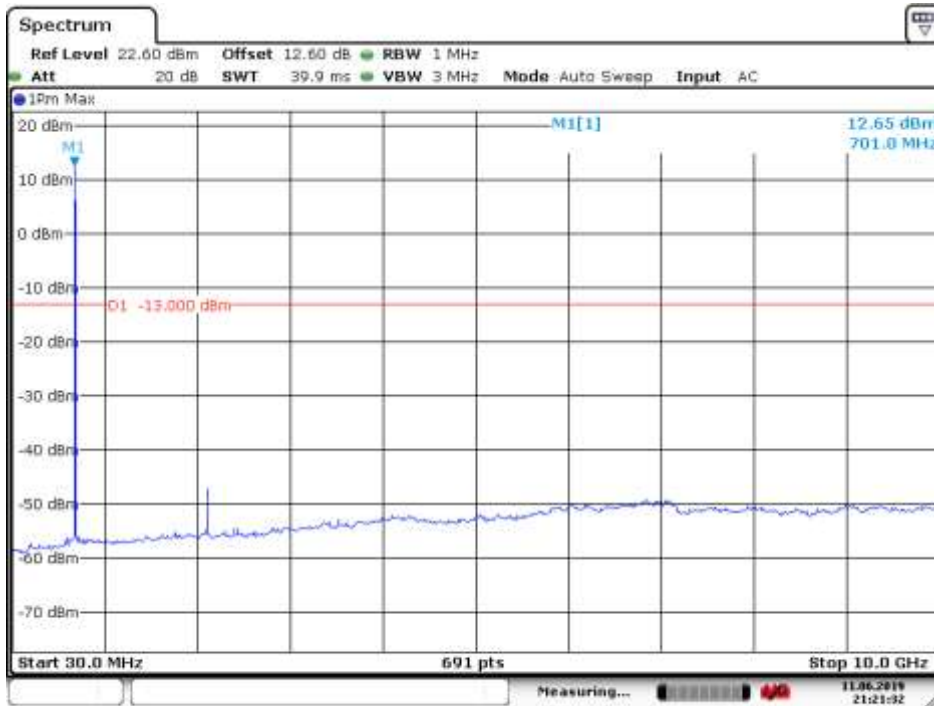
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:20:55

30MHz to 10GHz, Mid Channel, Subcarrier (3.75kHz), QPSK, 1@0

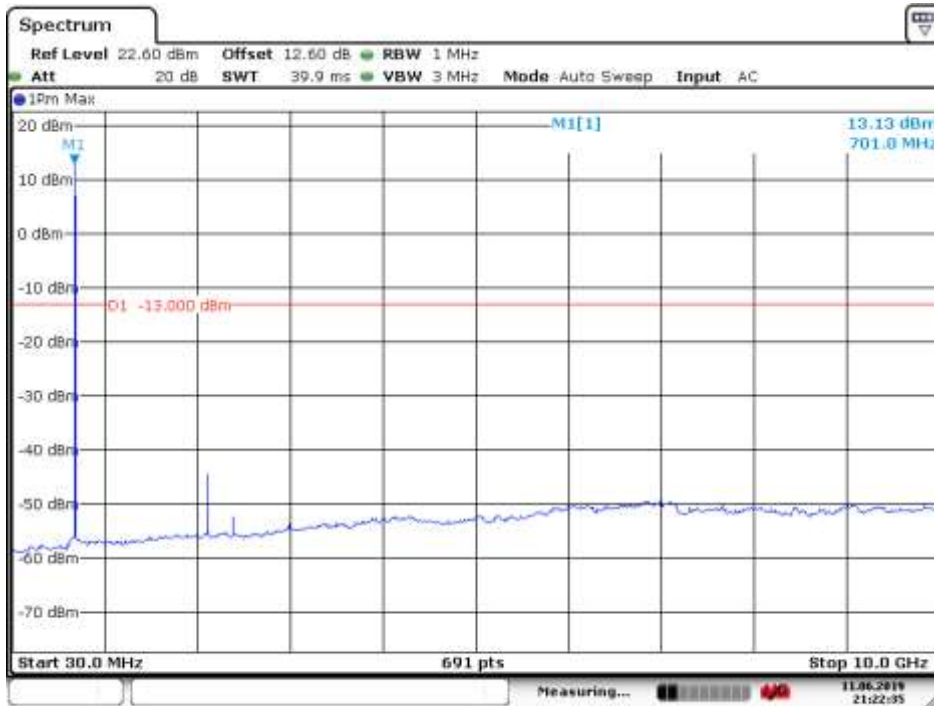
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:21:33

30MHz to 10GHz, Mid Channel, Subcarrier (3.75kHz), BPSK, 1@0

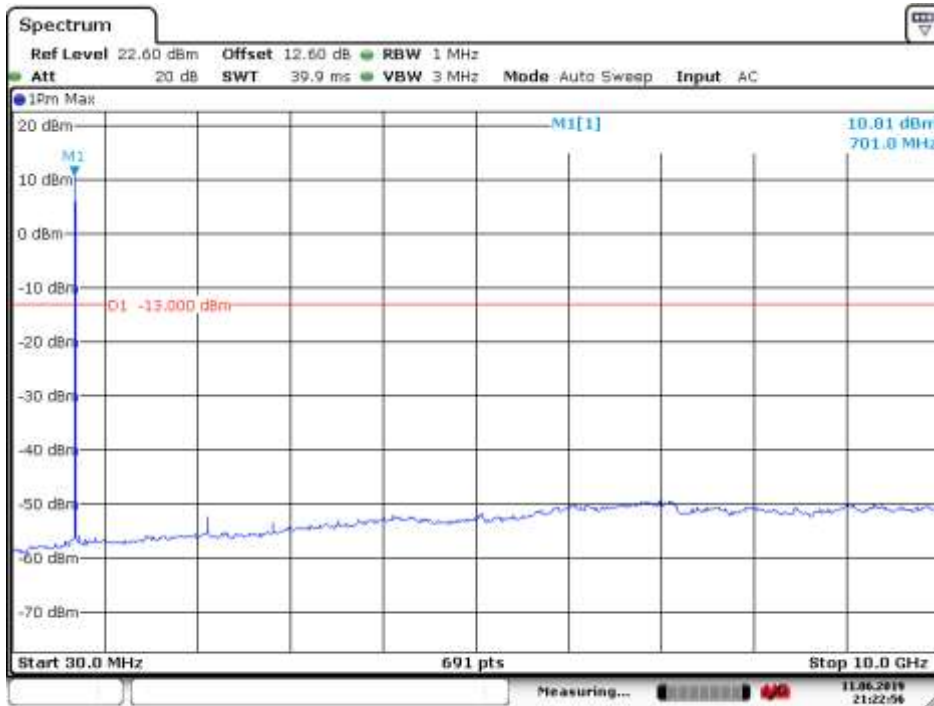
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:22:36

30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), QPSK, 1@0

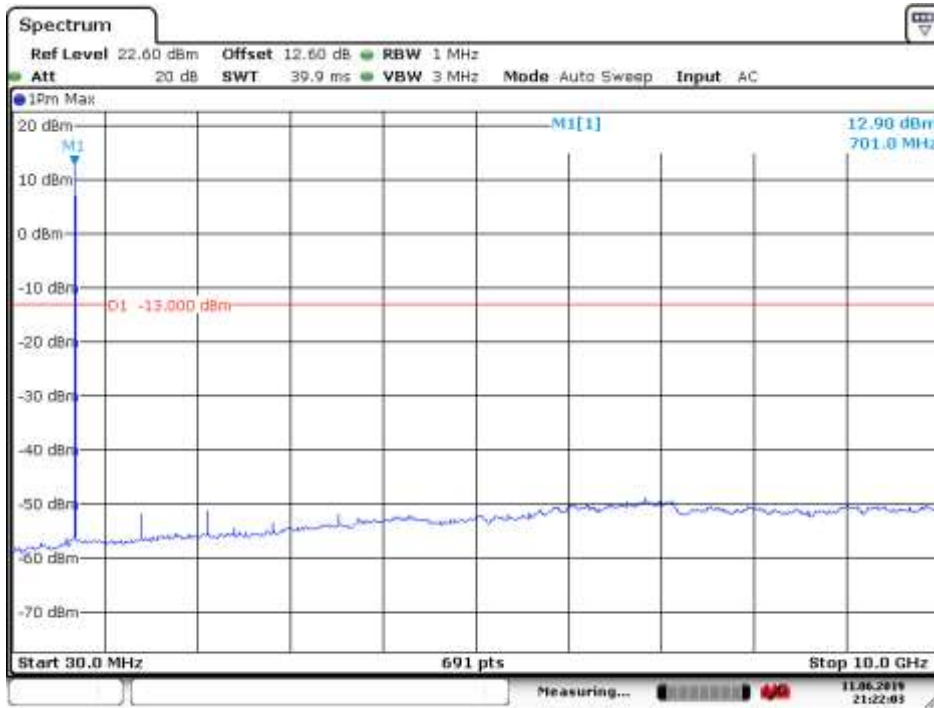
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:22:56

30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), QPSK, 12@0

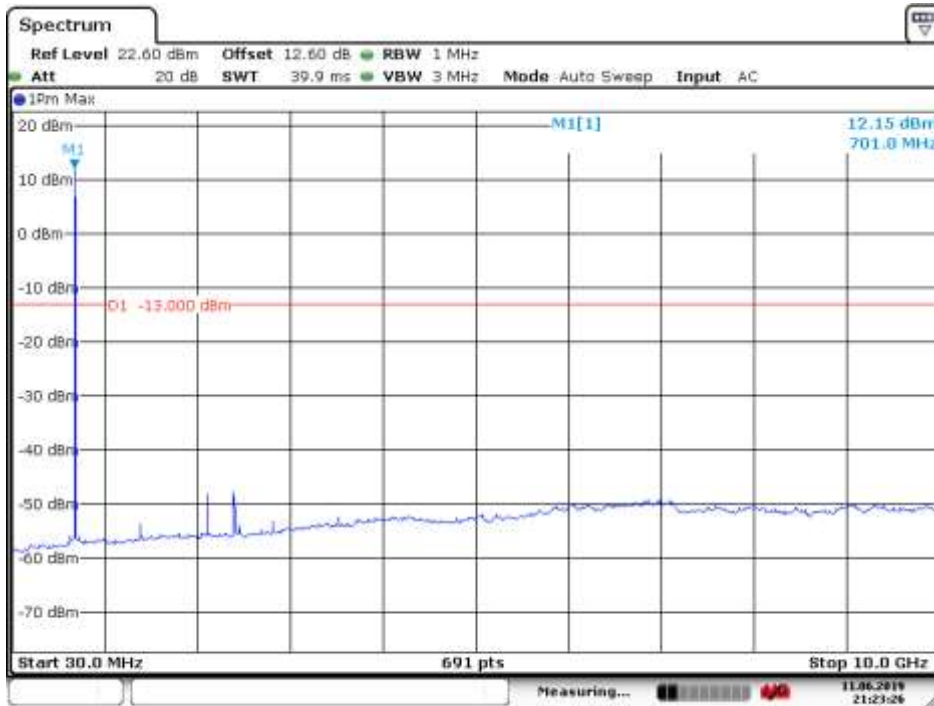
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:22:03

30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), BPSK, 1@0

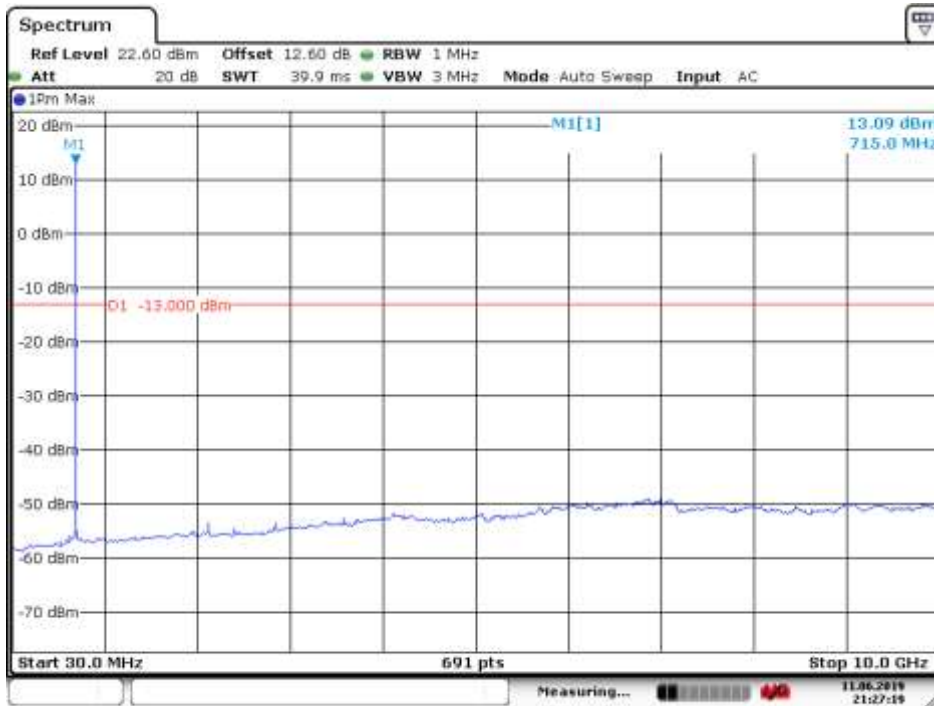
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:23:26

30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), BPSK, 12@0

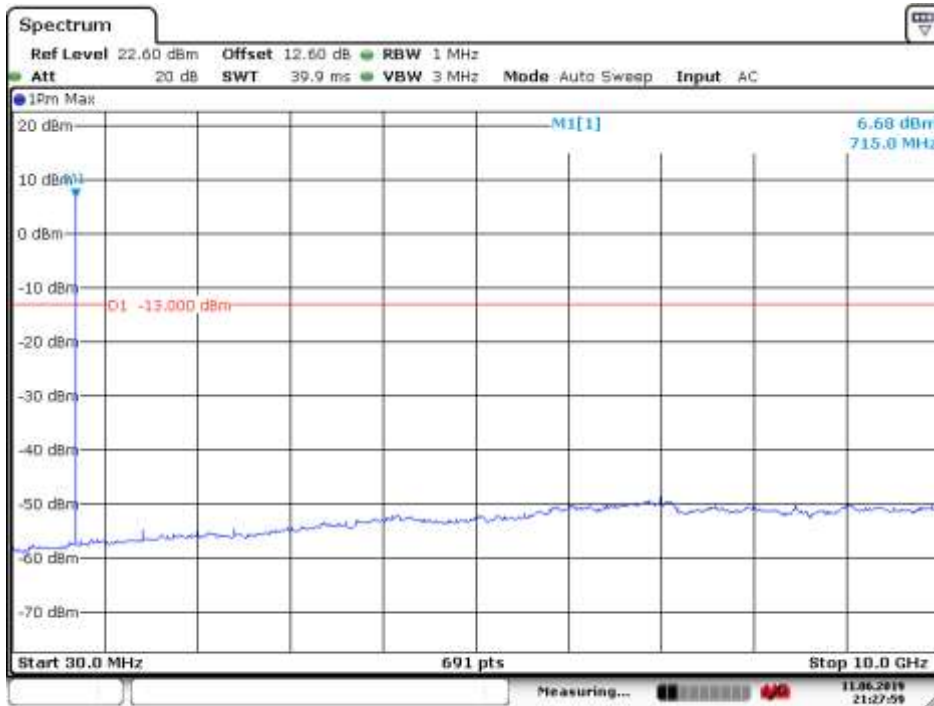
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:27:19

30MHz to 10GHz, High Channel, Subcarrier (3.75kHz), QPSK, 1@0

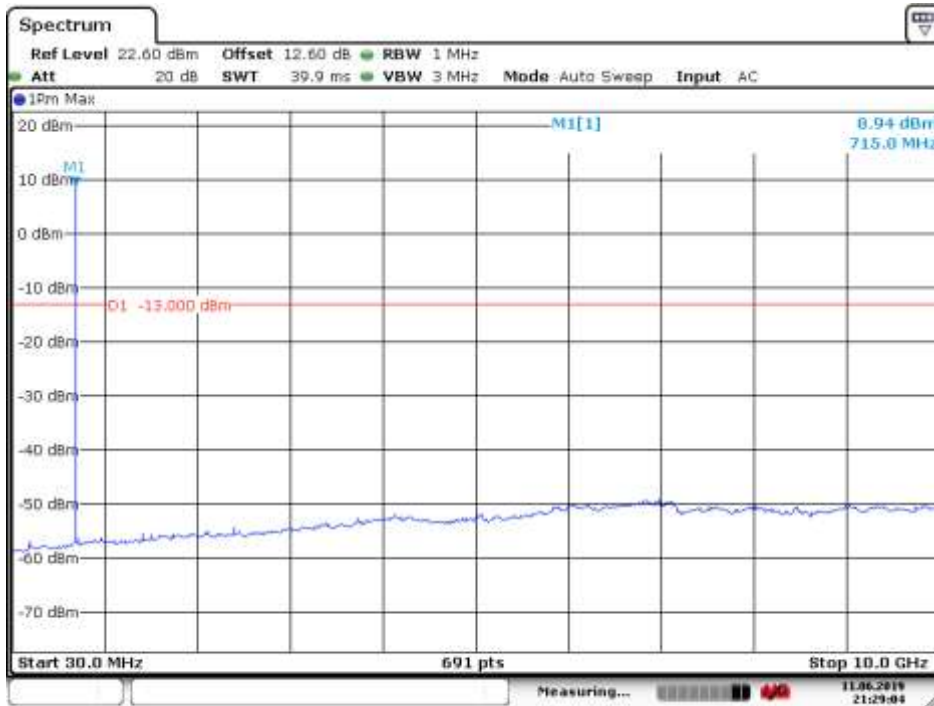
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:27:59

30MHz to 10GHz, High Channel, Subcarrier (3.75kHz), BPSK, 1@0

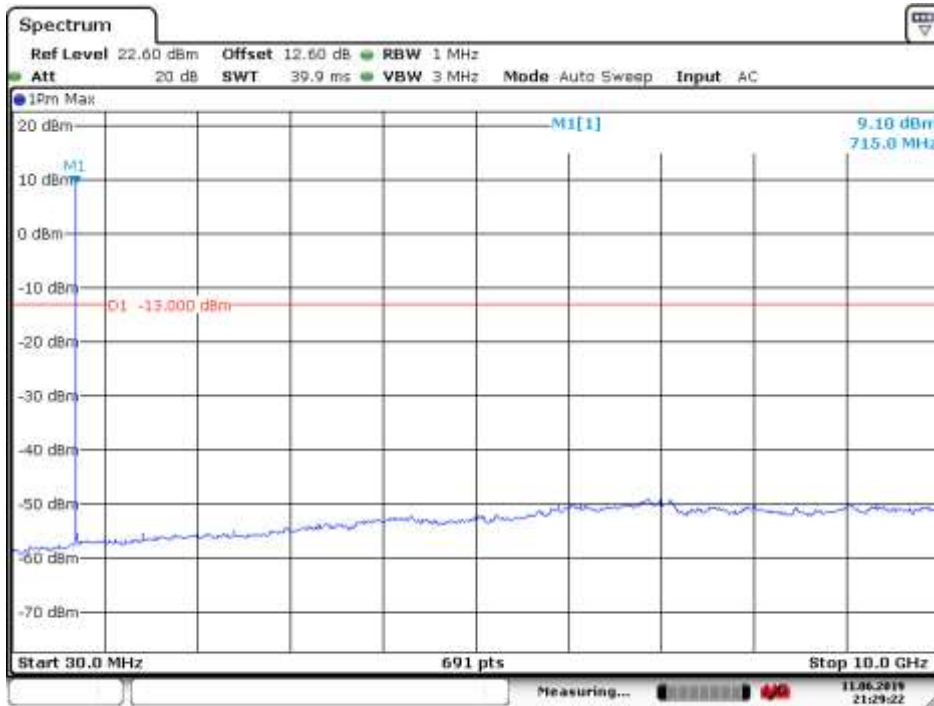
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:29:04

30MHz to 10GHz, High Channel, Subcarrier (15kHz), QPSK, 1@0

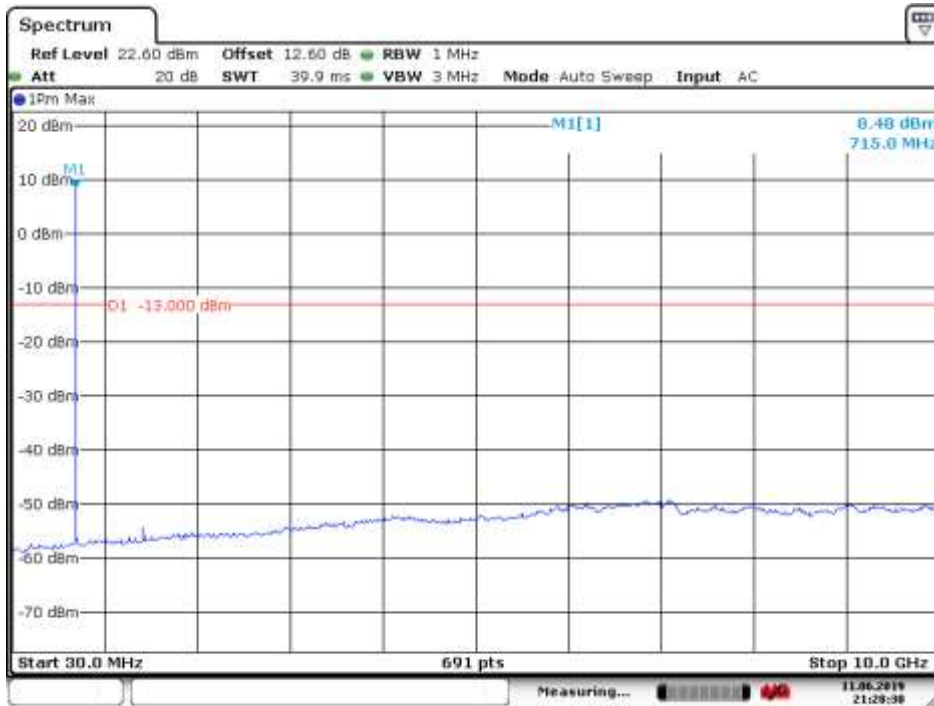
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:29:22

30MHz to 10GHz, High Channel, Subcarrier (15kHz), QPSK, 12@0

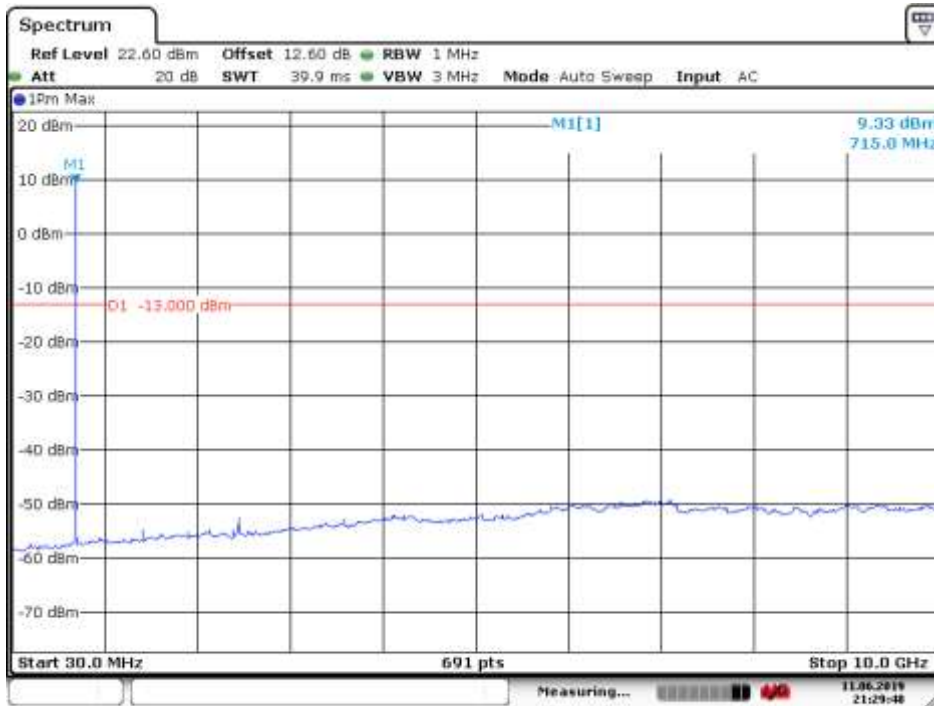
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:28:30

30MHz to 10GHz, High Channel, Subcarrier (15kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.

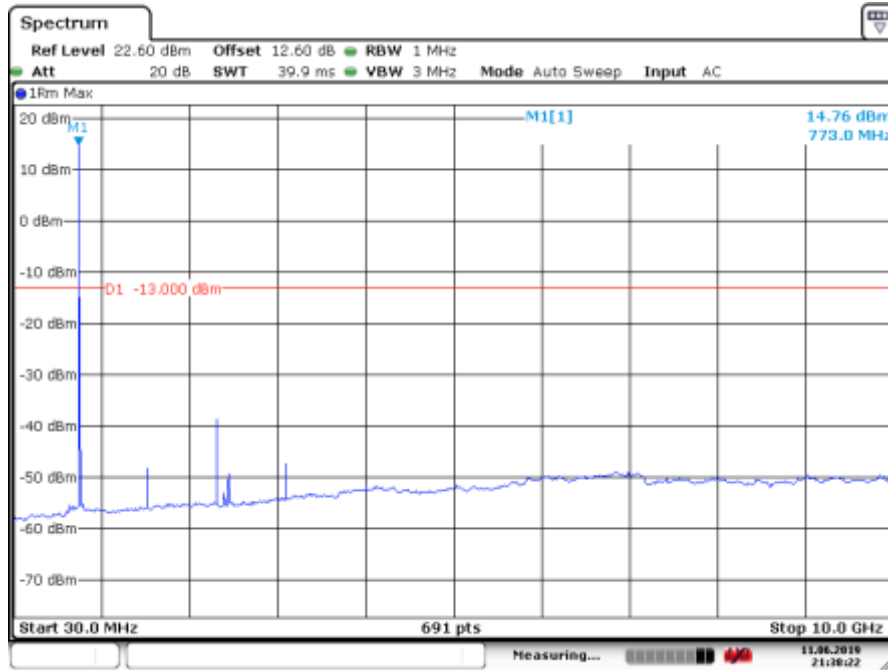


Date: 11 JUN 2019 21:29:48

30MHz to 10GHz, High Channel, Subcarrier (15kHz), BPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.

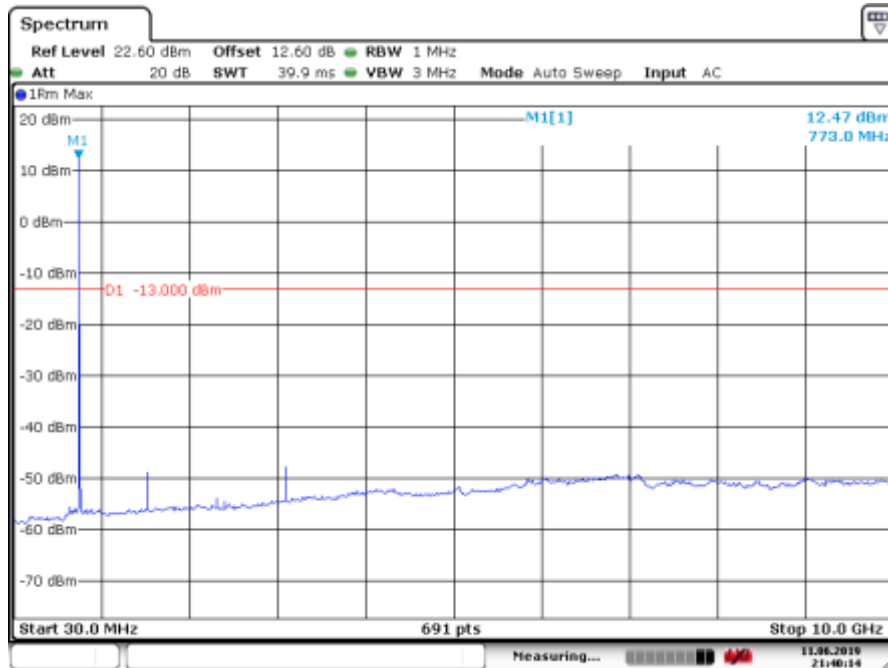
5.3.4 NB-IoT Band 13



Date: 11 JUN 2019 21:38:23

30MHz to 10GHz, Low Channel, Subcarrier (3.75kHz), QPSK, 1@0

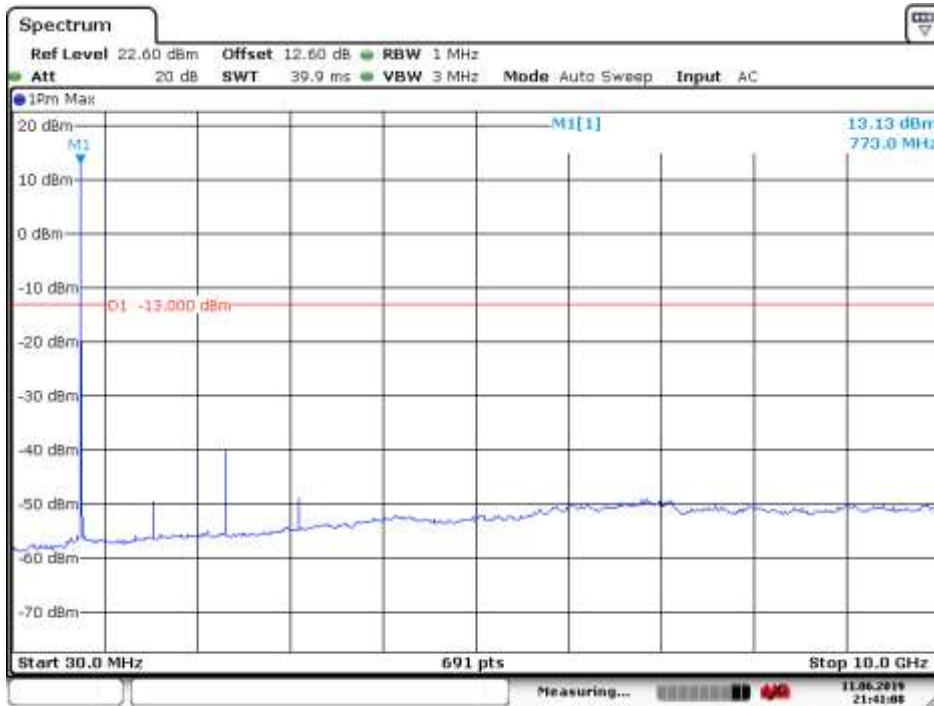
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:40:14

30MHz to 10GHz, Low Channel, Subcarrier (3.75kHz), BPSK, 1@0

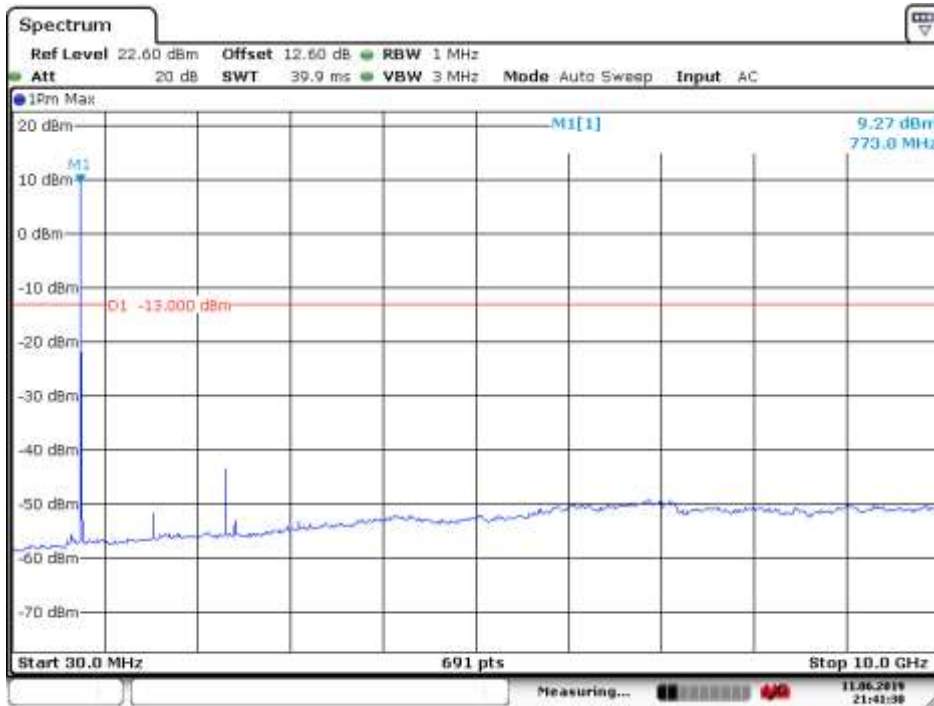
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:41:08

30MHz to 10GHz, Low Channel, Subcarrier (15kHz), QPSK, 1@0

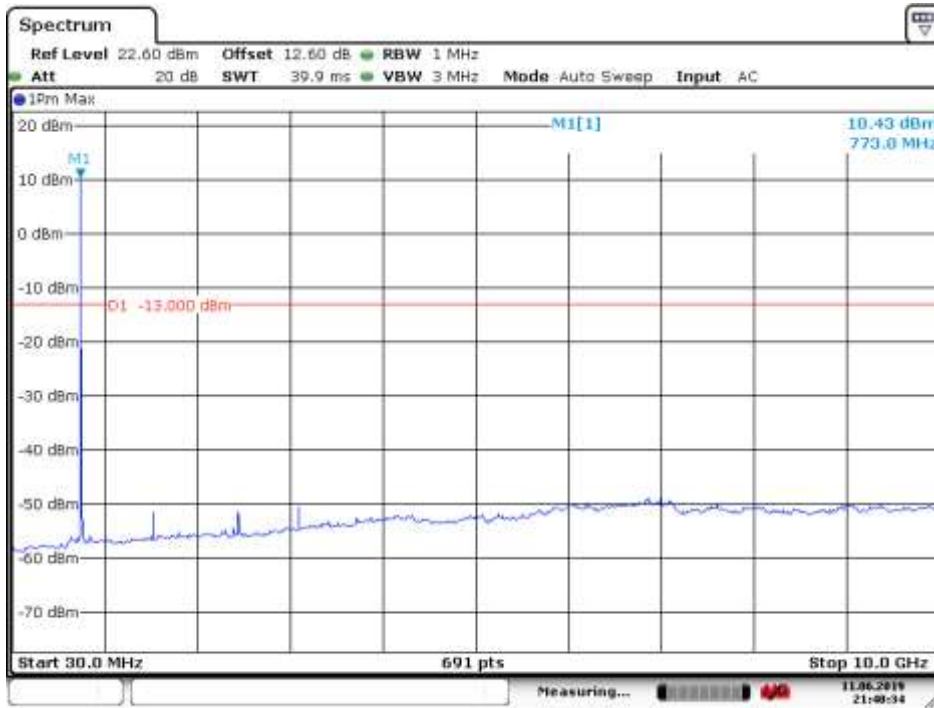
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:41:30

30MHz to 10GHz, Low Channel, Subcarrier (15kHz), QPSK, 12@0

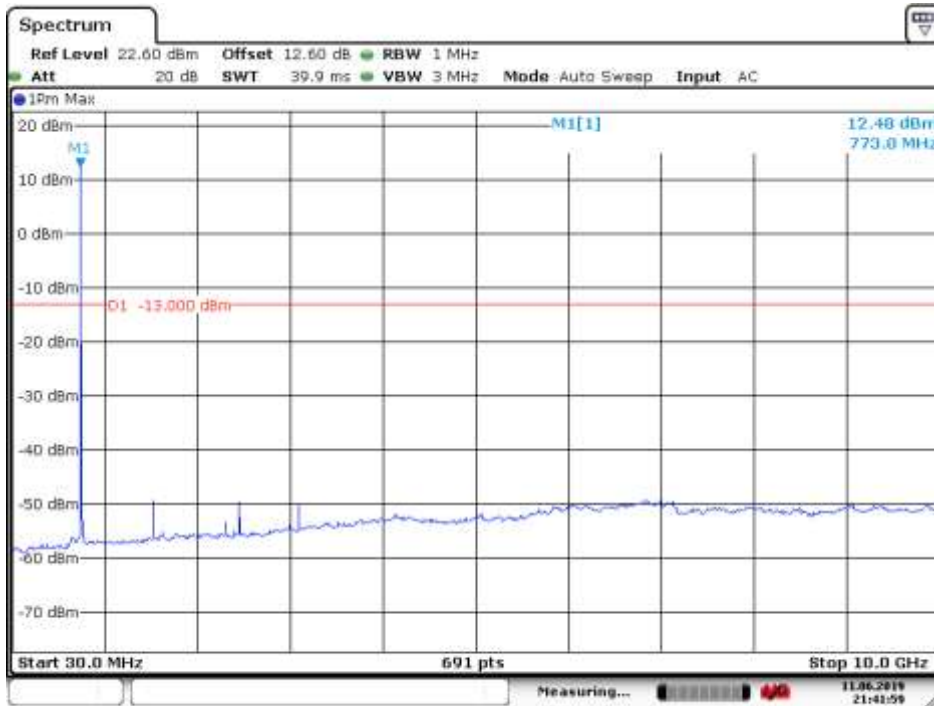
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:40:35

30MHz to 10GHz, Low Channel, Subcarrier (15kHz), BPSK, 1@0

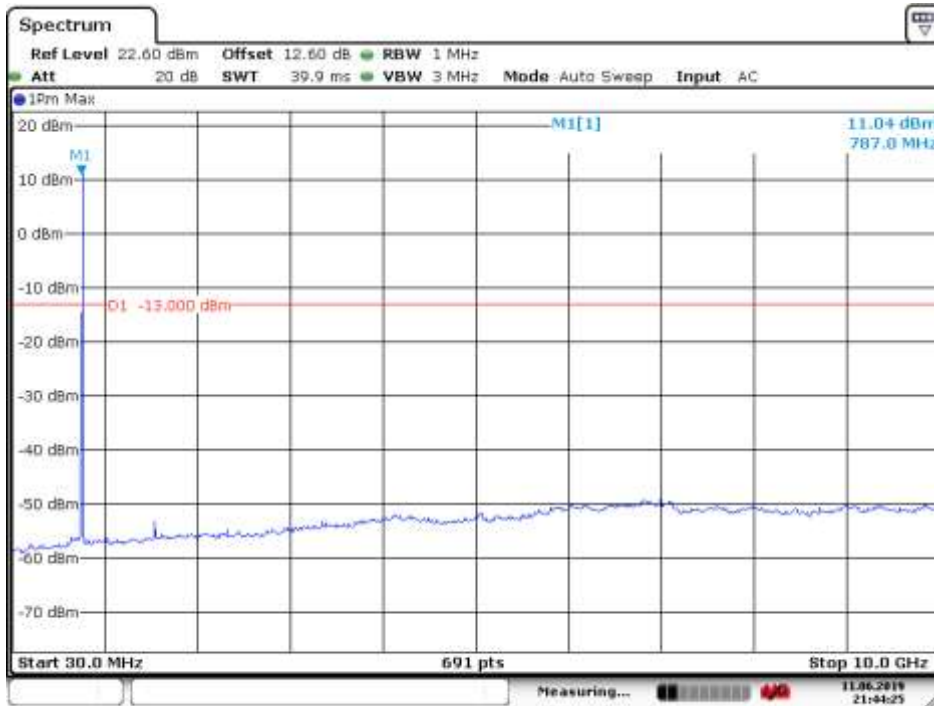
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:41:59

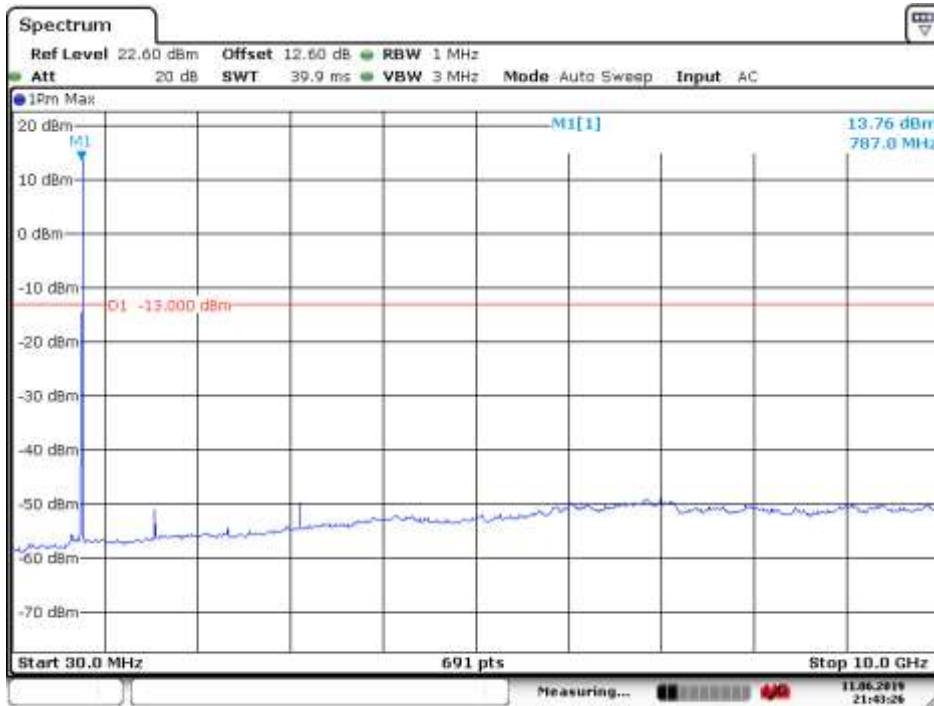
30MHz to 10GHz, Low Channel, Subcarrier (15kHz), BPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.



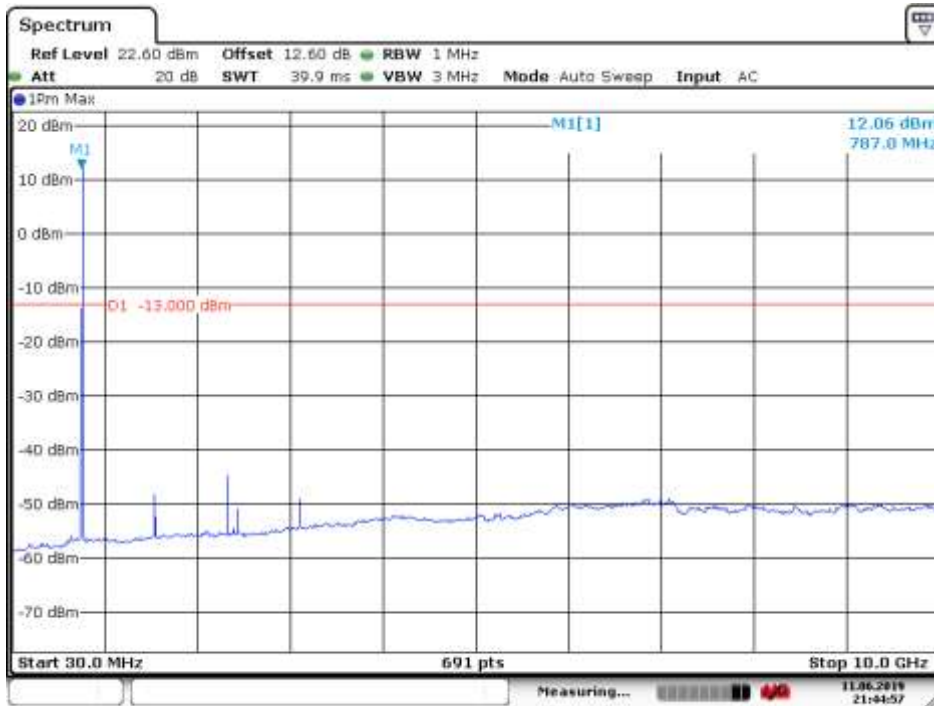
30MHz to 10GHz, Mid Channel, Subcarrier (3.75kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



30MHz to 10GHz, Mid Channel, Subcarrier (3.75kHz), BPSK, 1@0

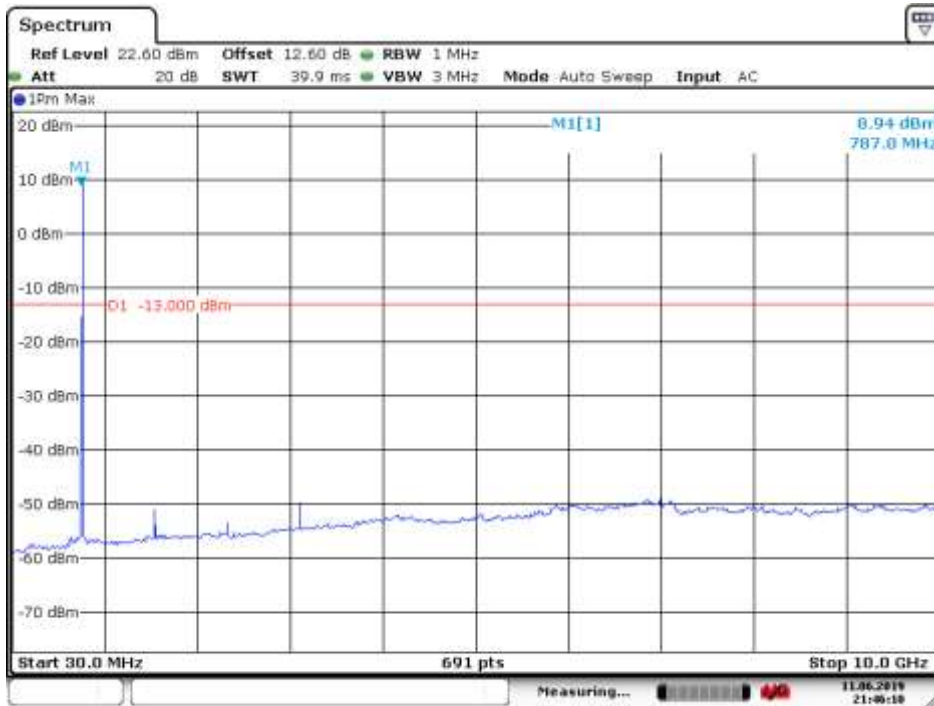
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:44:57

30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), QPSK, 1@0

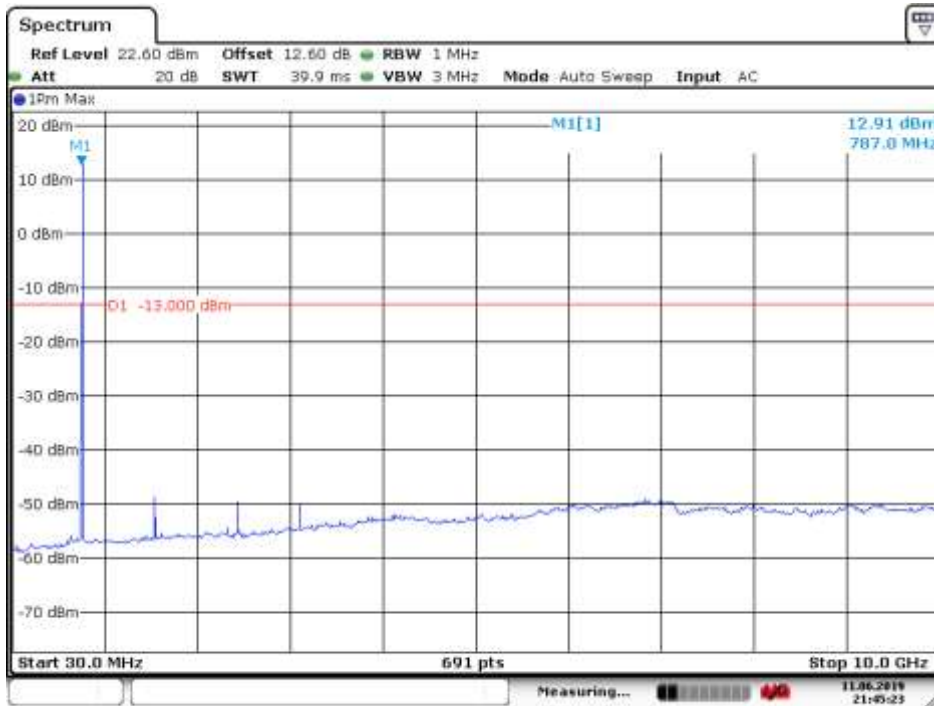
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:46:10

30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), QPSK, 12@0

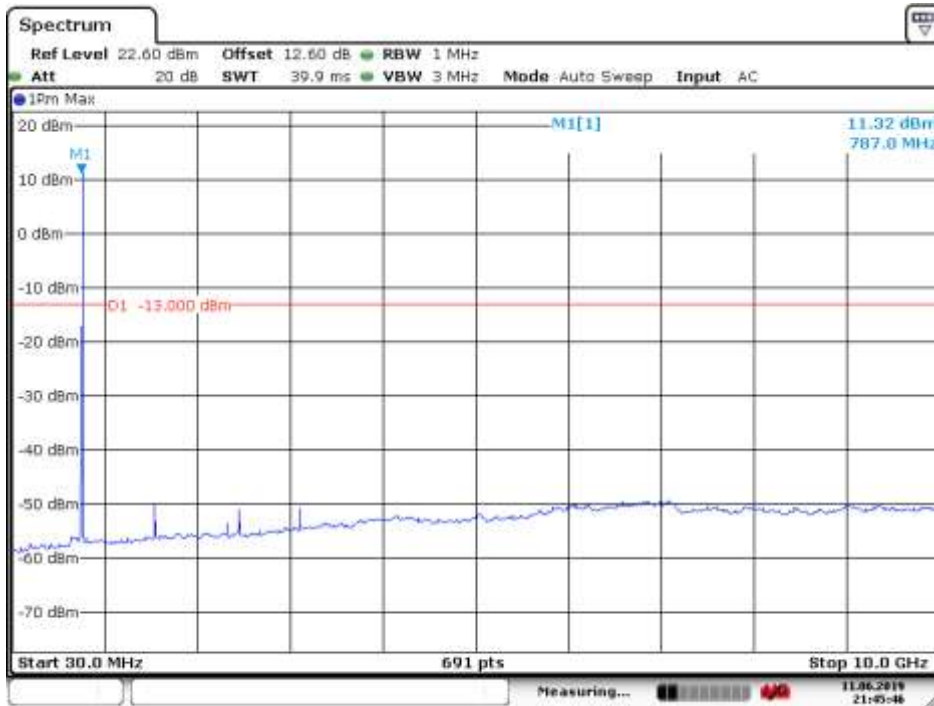
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:45:23

30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), BPSK, 1@0

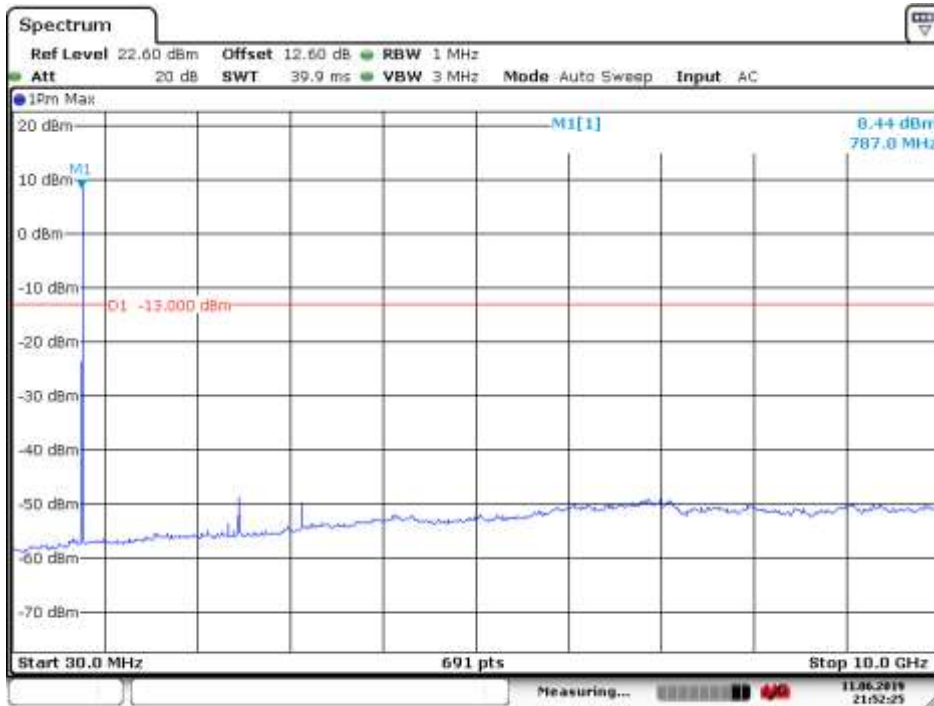
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:45:47

30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), BPSK, 12@0

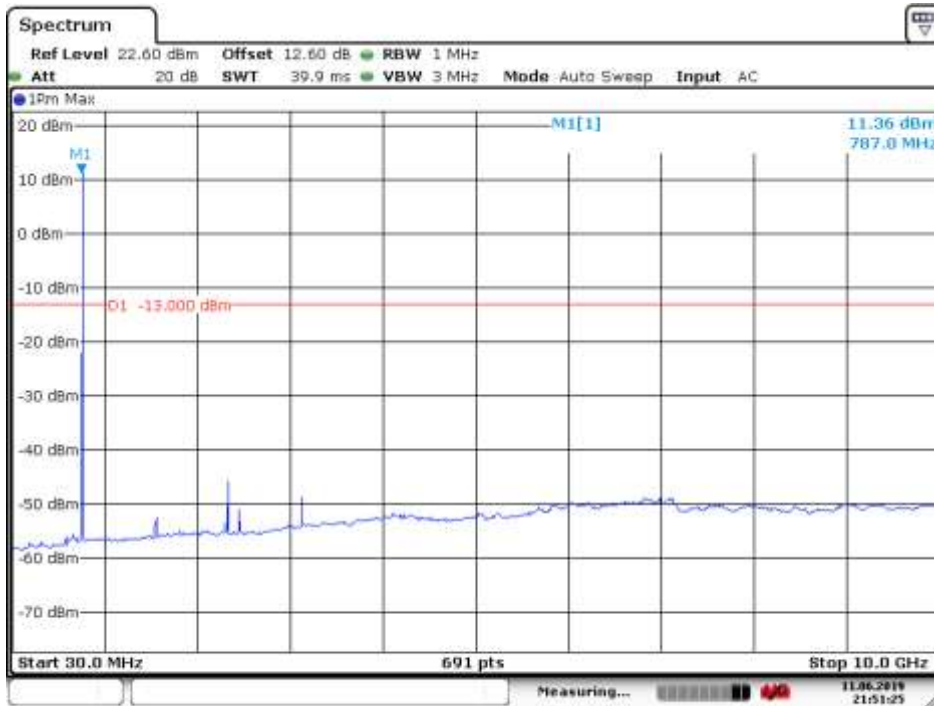
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:52:25

30MHz to 10GHz, High Channel, Subcarrier (3.75kHz), QPSK, 1@0

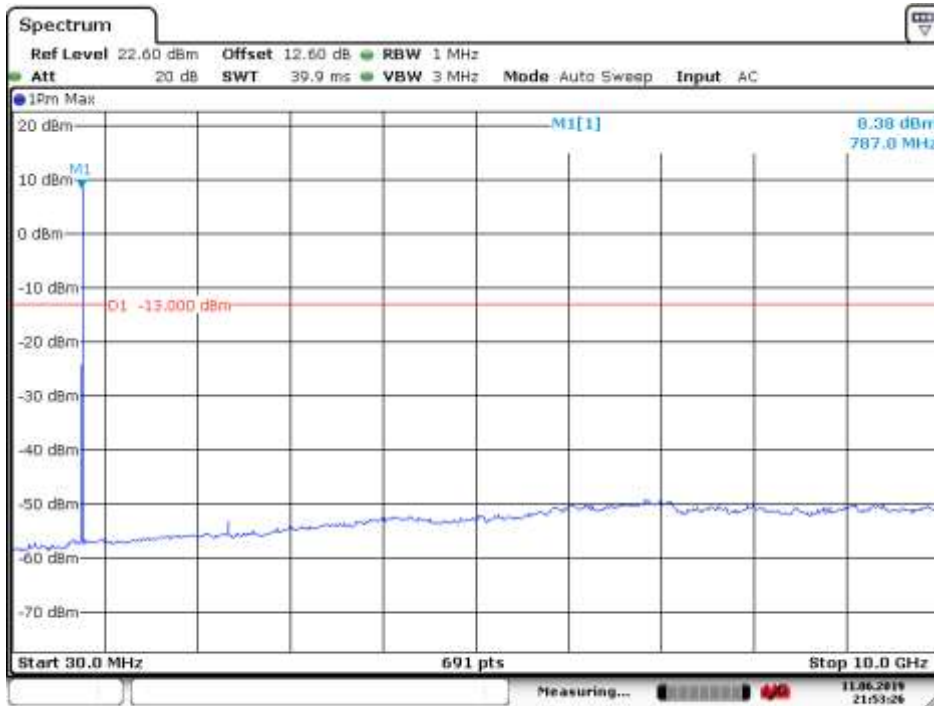
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:51:26

30MHz to 10GHz, High Channel, Subcarrier (3.75kHz), BPSK, 1@0

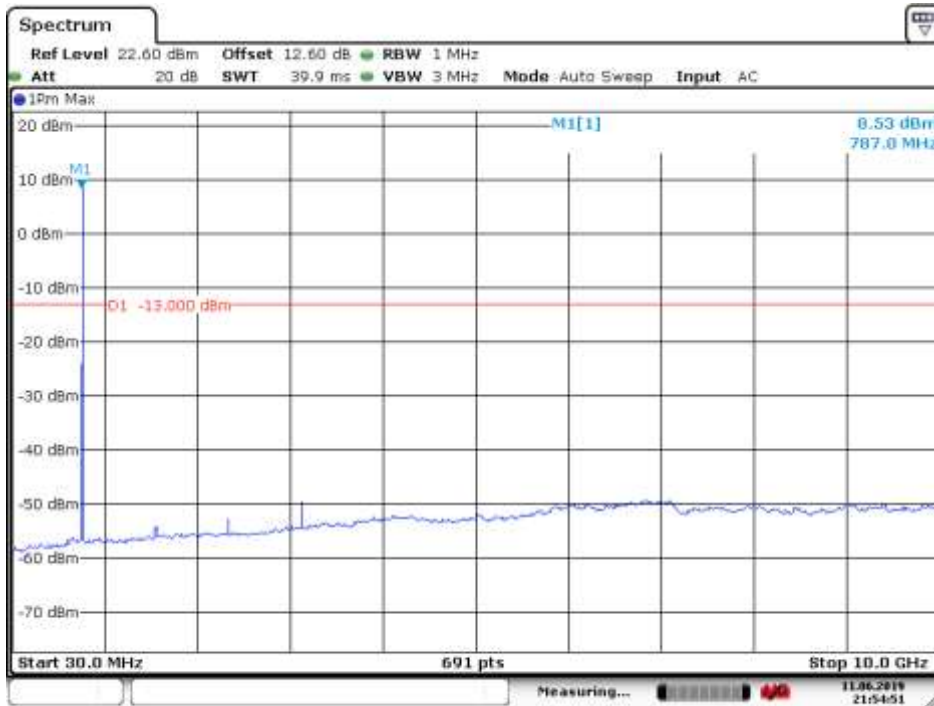
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:53:26

30MHz to 10GHz, High Channel, Subcarrier (15kHz), QPSK, 1@0

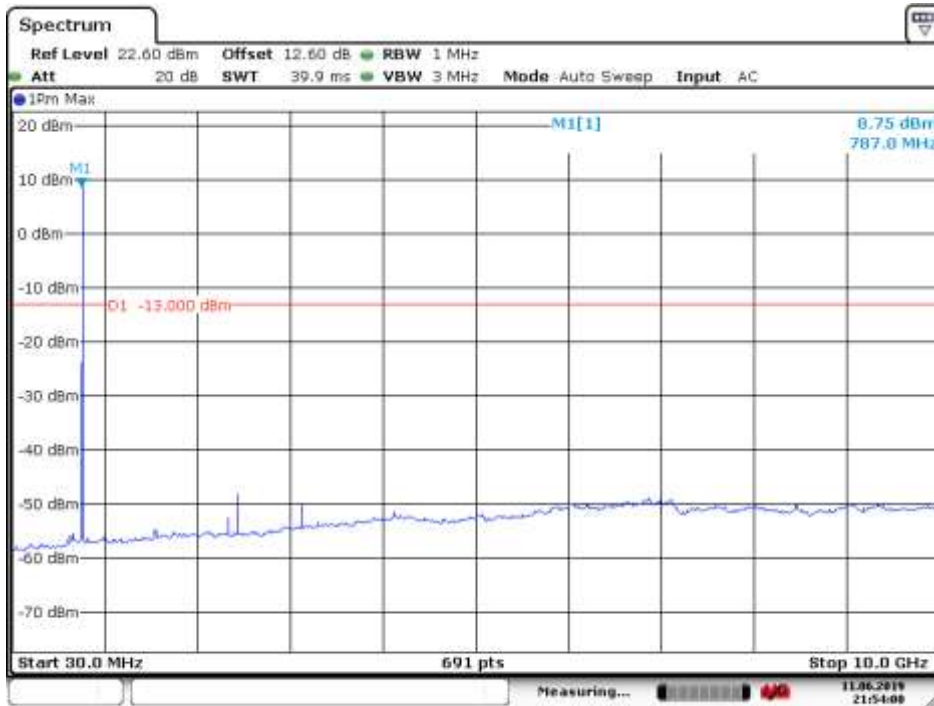
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:54:51

30MHz to 10GHz, High Channel, Subcarrier (15kHz), QPSK, 12@0

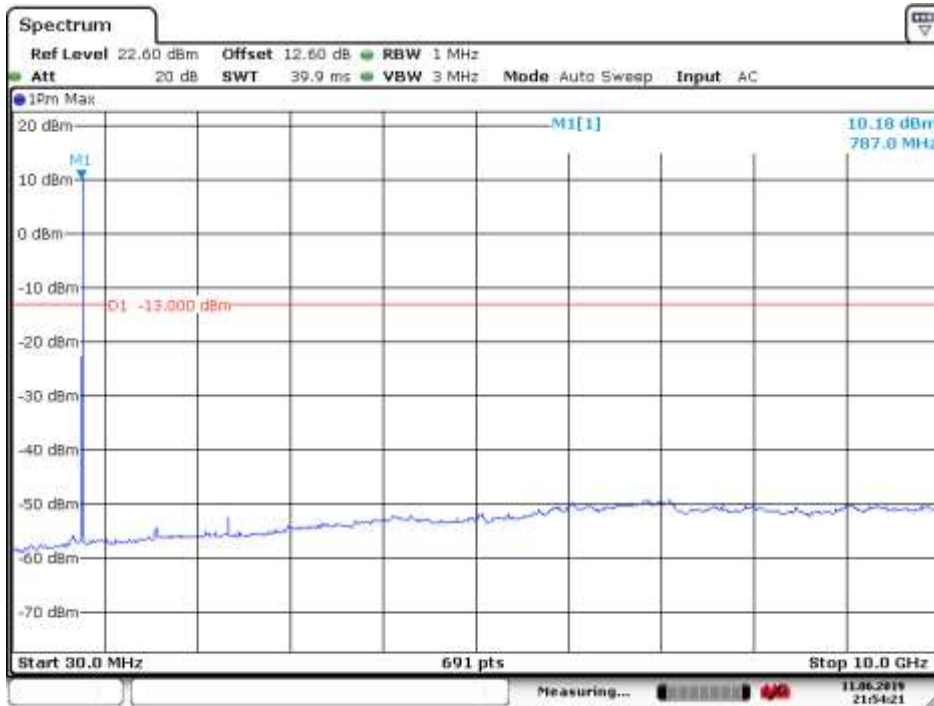
Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 21:54:00

30MHz to 10GHz, High Channel, Subcarrier (15kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.

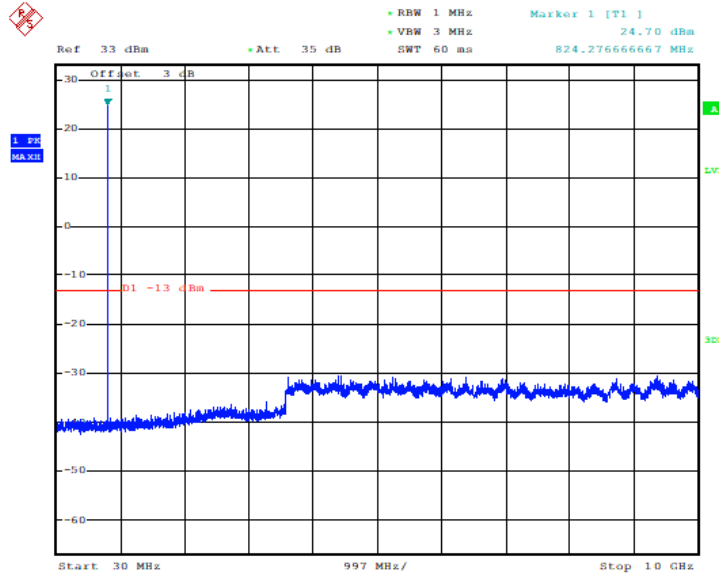


Date: 11 JUN 2019 21:54:21

30MHz to 10GHz, High Channel, Subcarrier (15kHz), BPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.

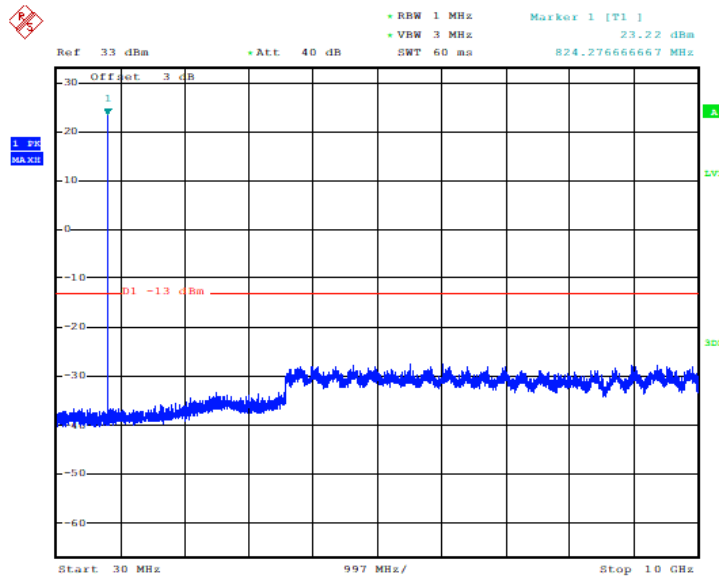
5.3.4 NB-IoT Band 26



Date: 21.AUG.2019 17:42:48

30MHz to 10GHz, Low Channel, Subcarrier (3.75kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.

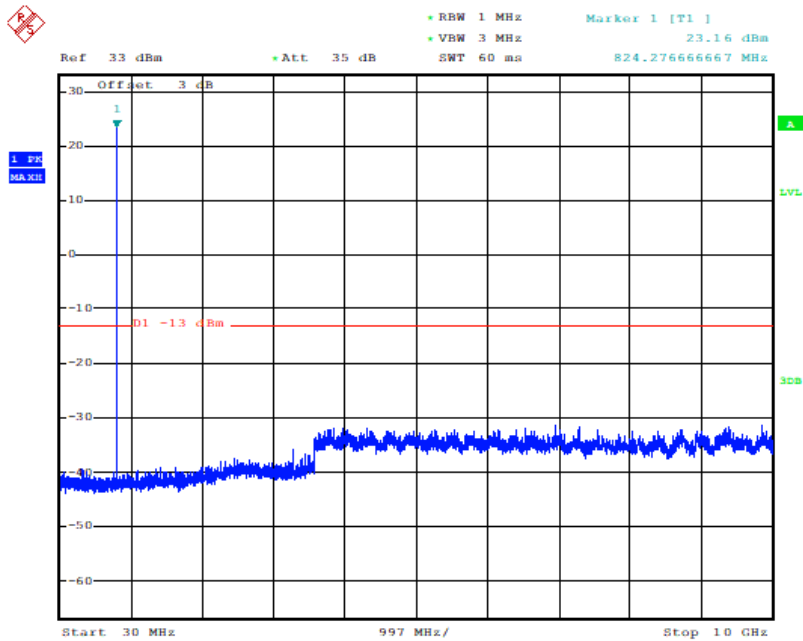


Date: 21.AUG.2019 17:49:00

30MHz to 10GHz, Low Channel, Subcarrier (3.75kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.

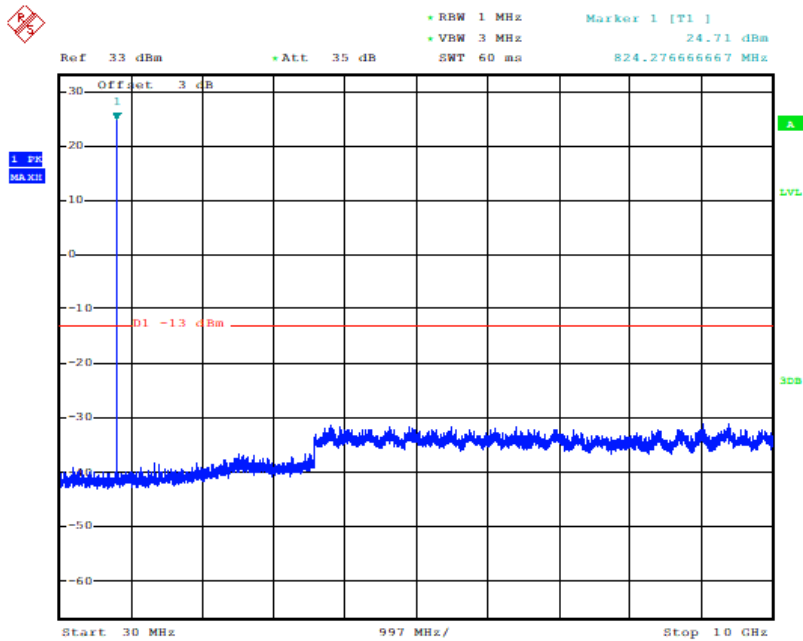
Report No.:B19W50105-WWAN_Rev5



Date: 21.AUG.2019 17:53:18

30MHz to 10GHz, Low Channel, Subcarrier (15kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.

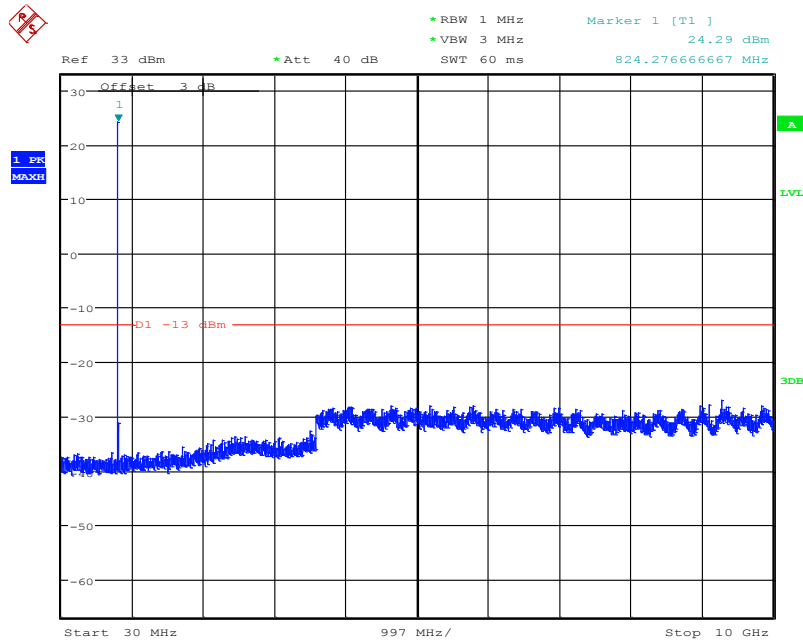


Date: 21.AUG.2019 17:55:46

30MHz to 10GHz, Low Channel, Subcarrier (15kHz), QPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.

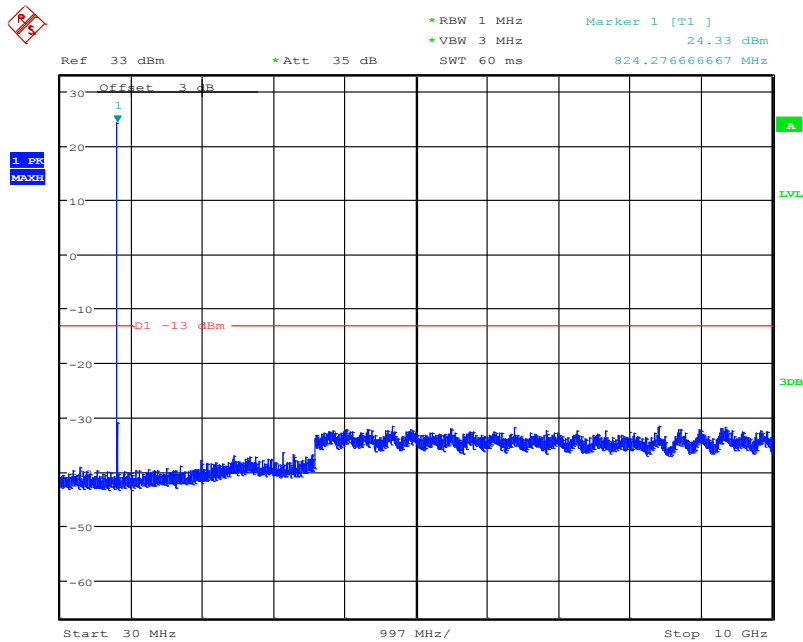
Report No.:B19W50105-WWAN_Rev5



Date: 21.AUG.2019 17:51:54

30MHz to 10GHz, Low Channel, Subcarrier (15kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.

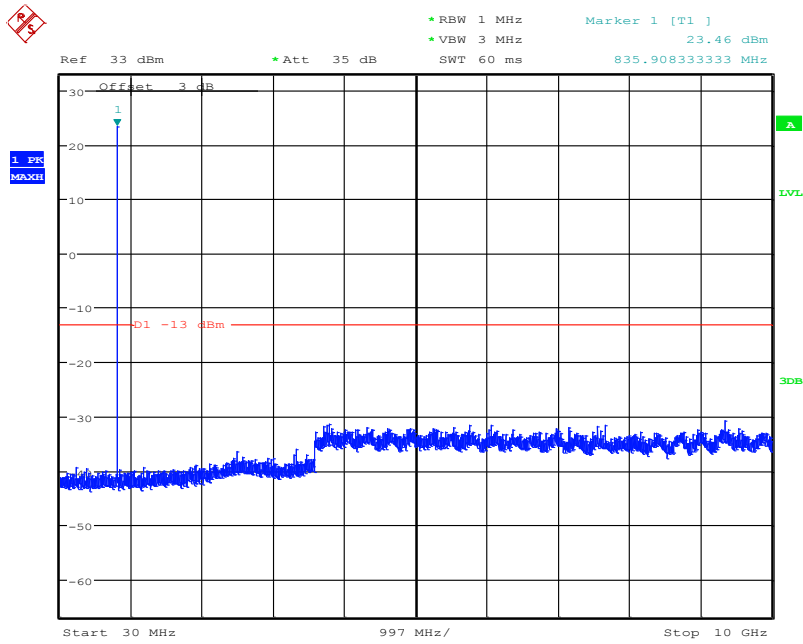


Date: 21.AUG.2019 17:56:07

30MHz to 10GHz, Low Channel, Subcarrier (15kHz), BPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.

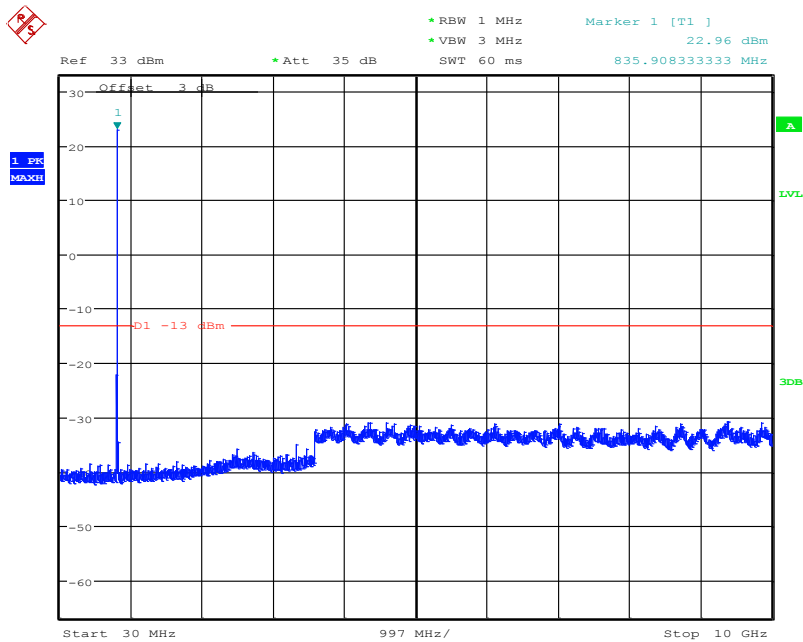
Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
 Tel: 0086-23-88069965 FAX: 0086-23-88608777



Date: 21.AUG.2019 18:05:28

30MHz to 10GHz, Mid Channel, Subcarrier (3.75kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.

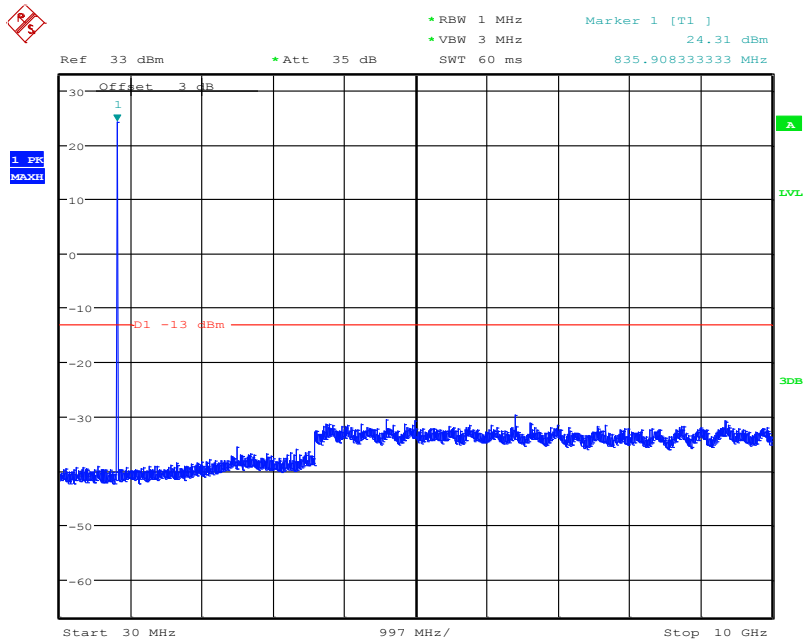


Date: 21.AUG.2019 18:04:59

30MHz to 10GHz, Mid Channel, Subcarrier (3.75kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.

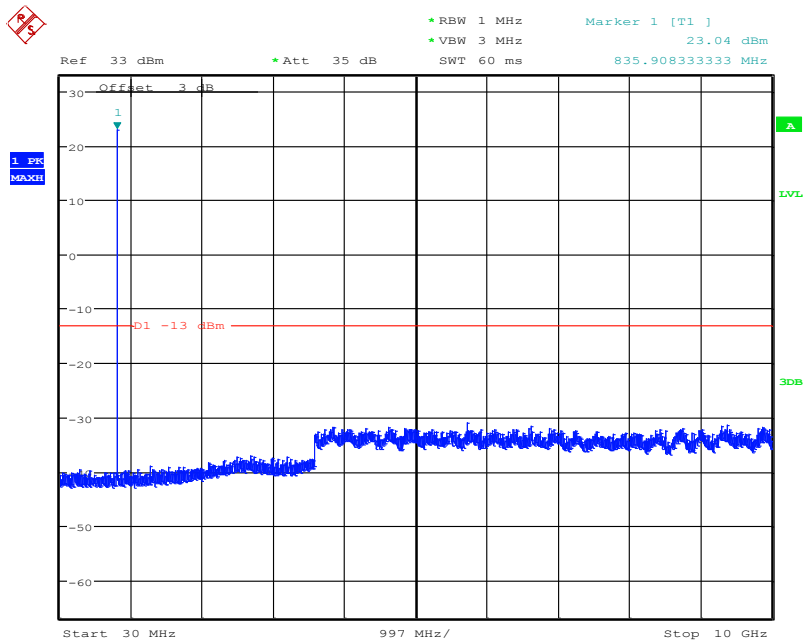
Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965 FAX: 0086-23-88608777



Date: 21.AUG.2019 18:06:54

30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.

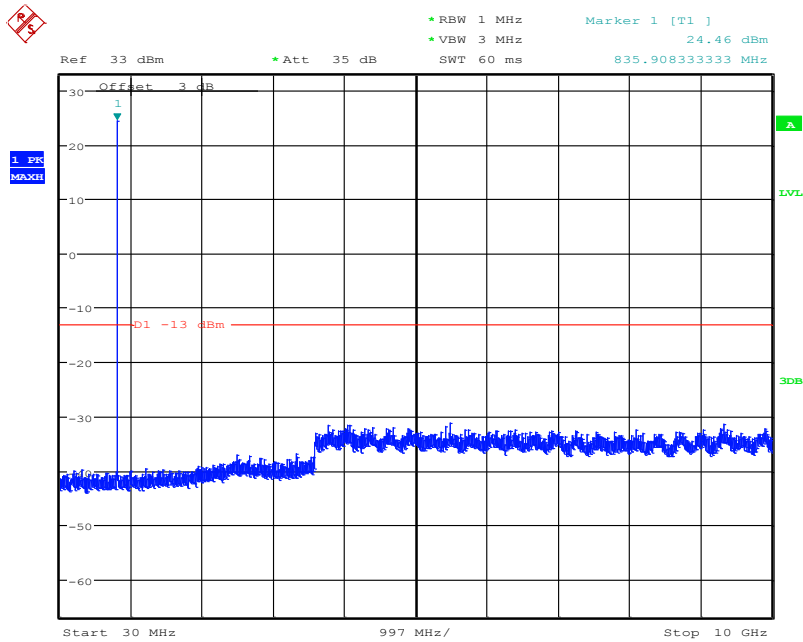


Date: 21.AUG.2019 18:08:08

30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), QPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.

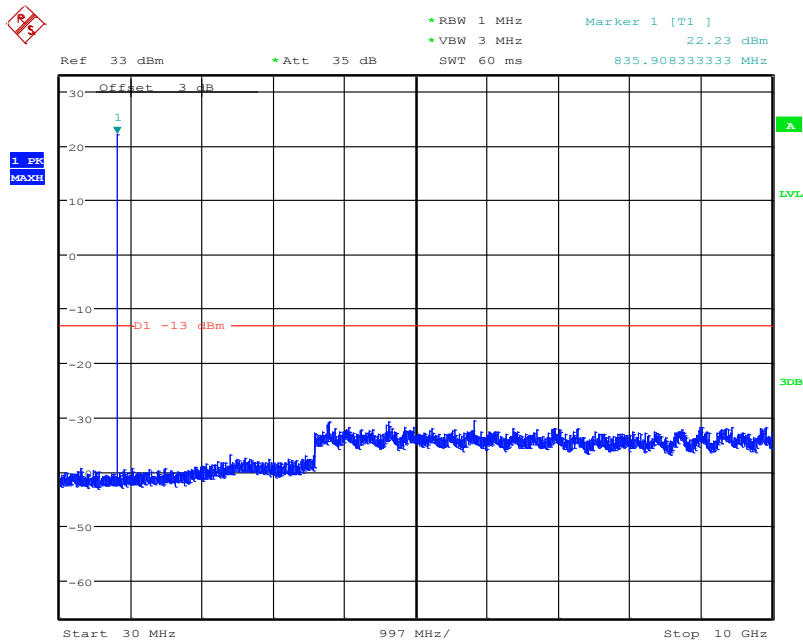
Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965 FAX: 0086-23-88608777



Date: 21.AUG.2019 18:07:17

30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.

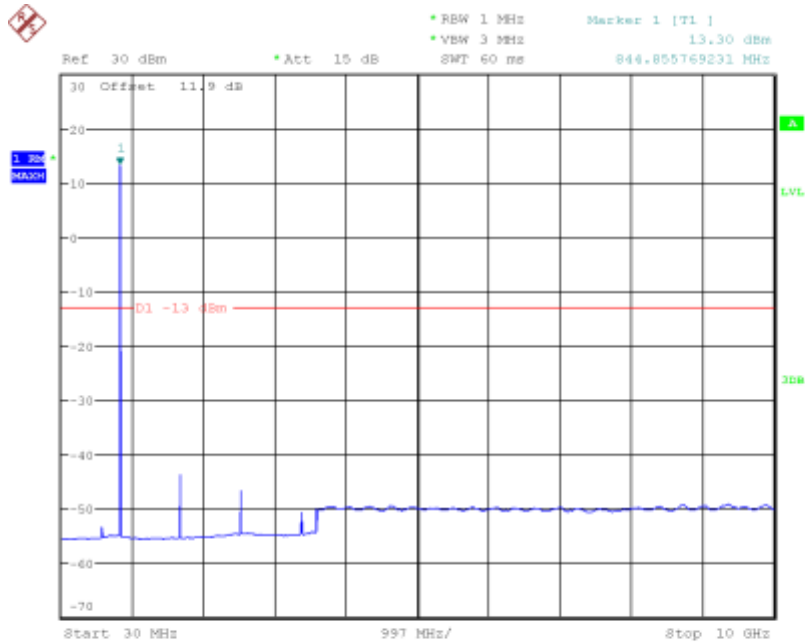


Date: 21.AUG.2019 18:09:34

30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), BPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.

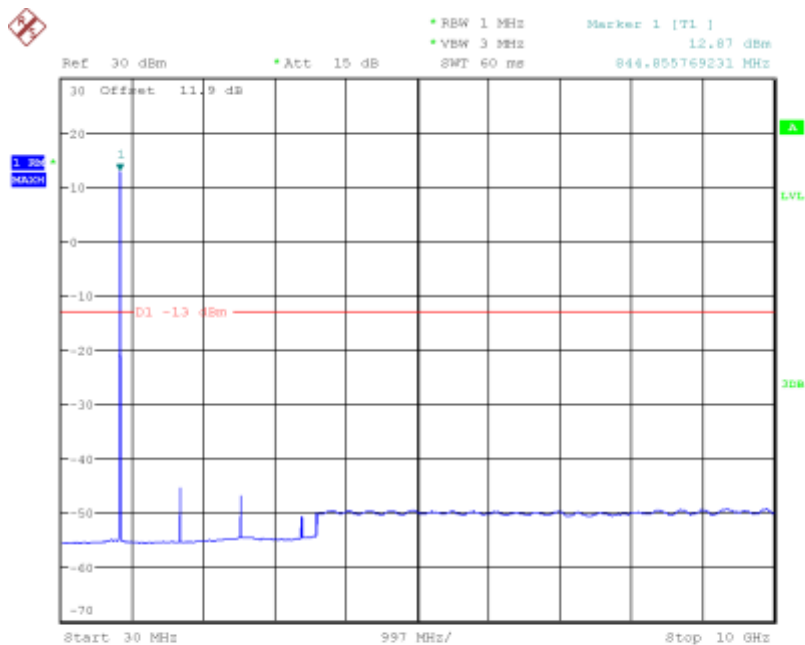
Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965 FAX: 0086-23-88608777



Date: 16.AUG.2019 16:00:08

30MHz to 10GHz, High Channel, Subcarrier (3.75kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.

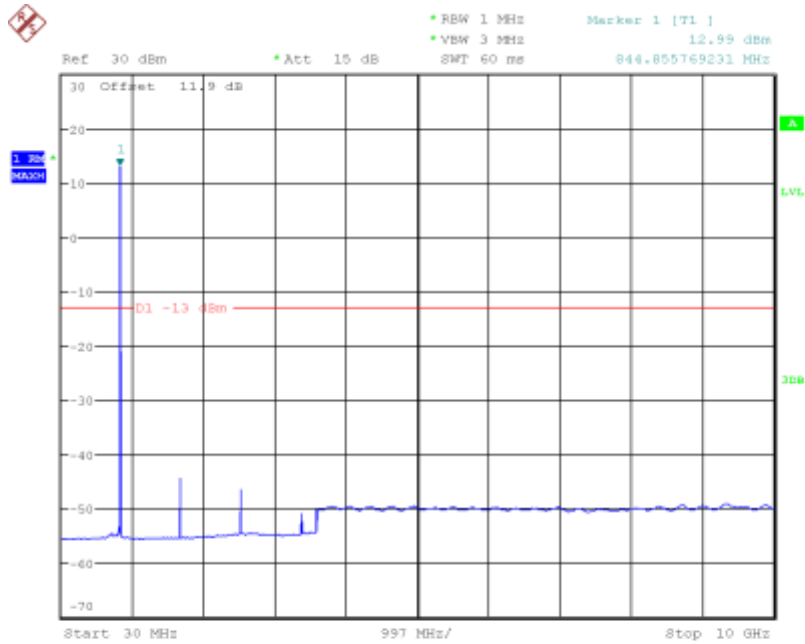


Date: 16.AUG.2019 16:00:36

30MHz to 10GHz, High Channel, Subcarrier (3.75kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.

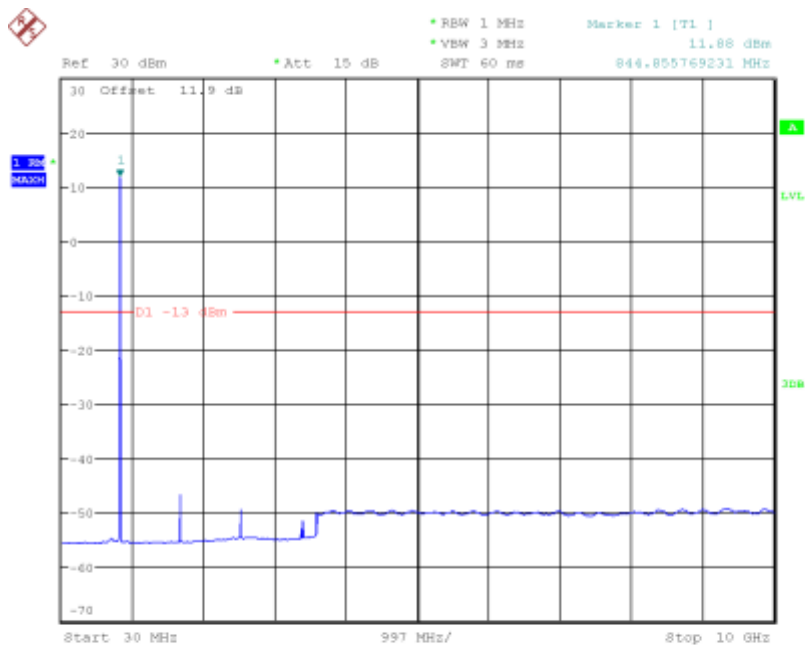
Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965 FAX: 0086-23-88608777



Date: 16.AUG.2019 15:57:14

30MHz to 10GHz, High Channel, Subcarrier (15kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.

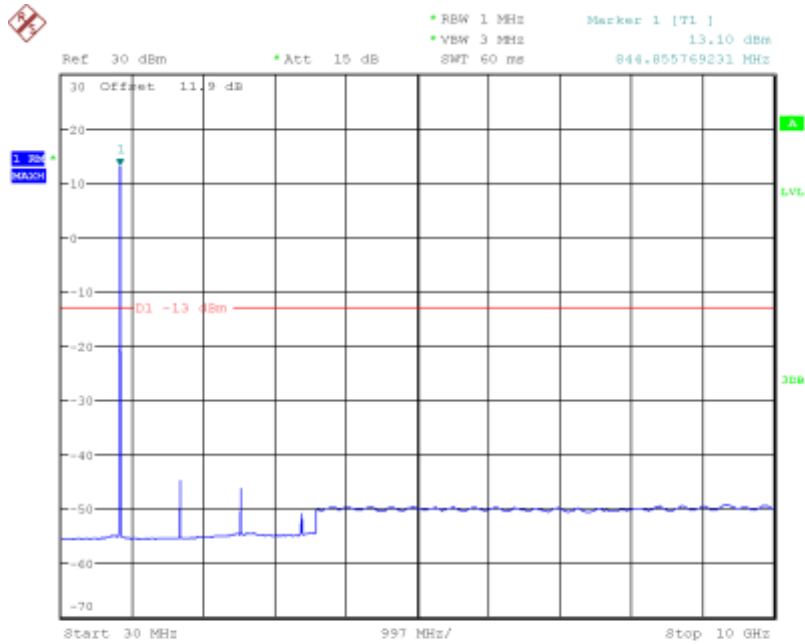


Date: 16.AUG.2019 15:58:16

30MHz to 10GHz, High Channel, Subcarrier (15kHz), QPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.

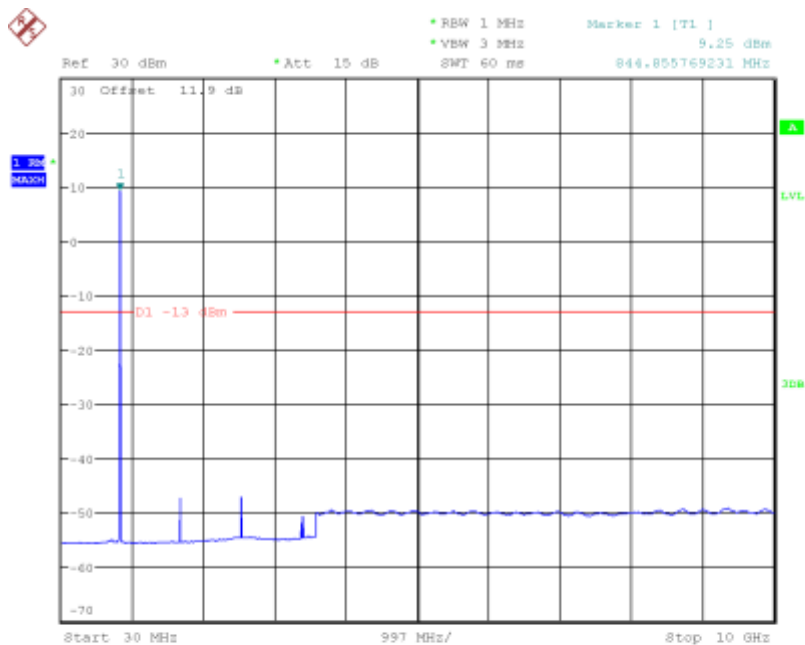
Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965 FAX: 0086-23-88608777



Date: 16.AUG.2019 15:57:41

30MHz to 10GHz, High Channel, Subcarrier (15kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



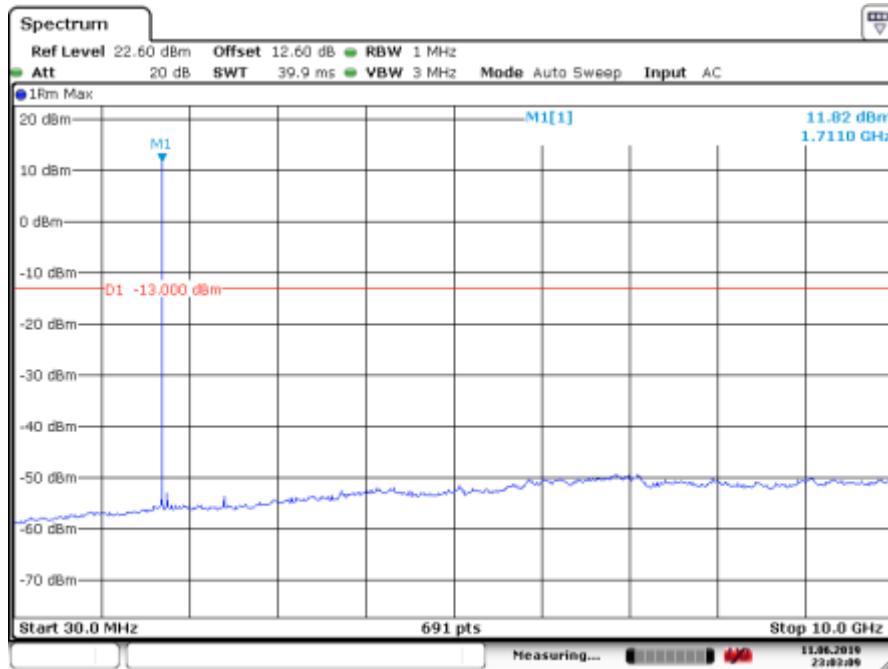
Date: 16.AUG.2019 15:58:53

30MHz to 10GHz, High Channel, Subcarrier (15kHz), BPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.

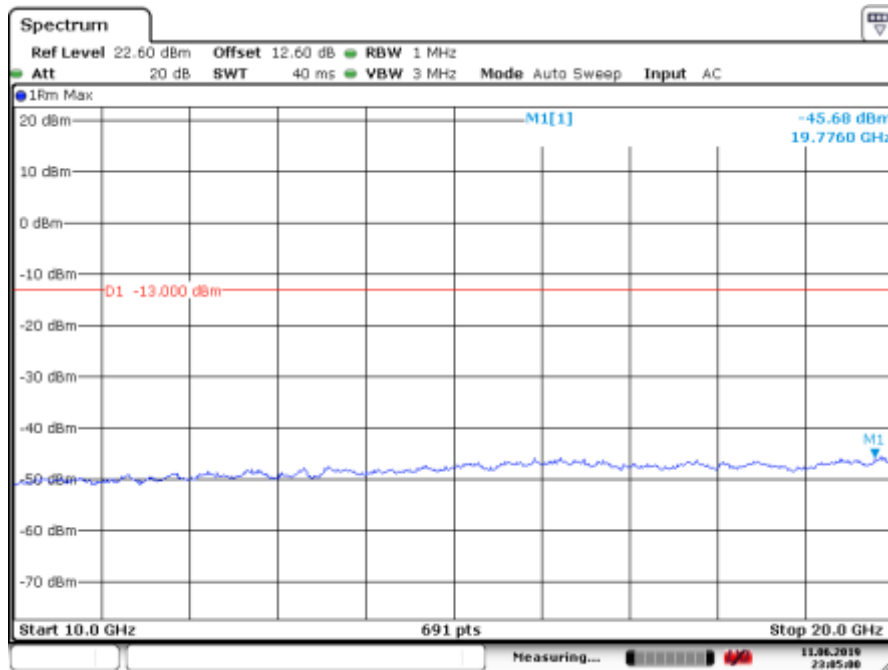
Address: No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965 FAX: 0086-23-88608777

5.3.4 NB-IoT Band 66

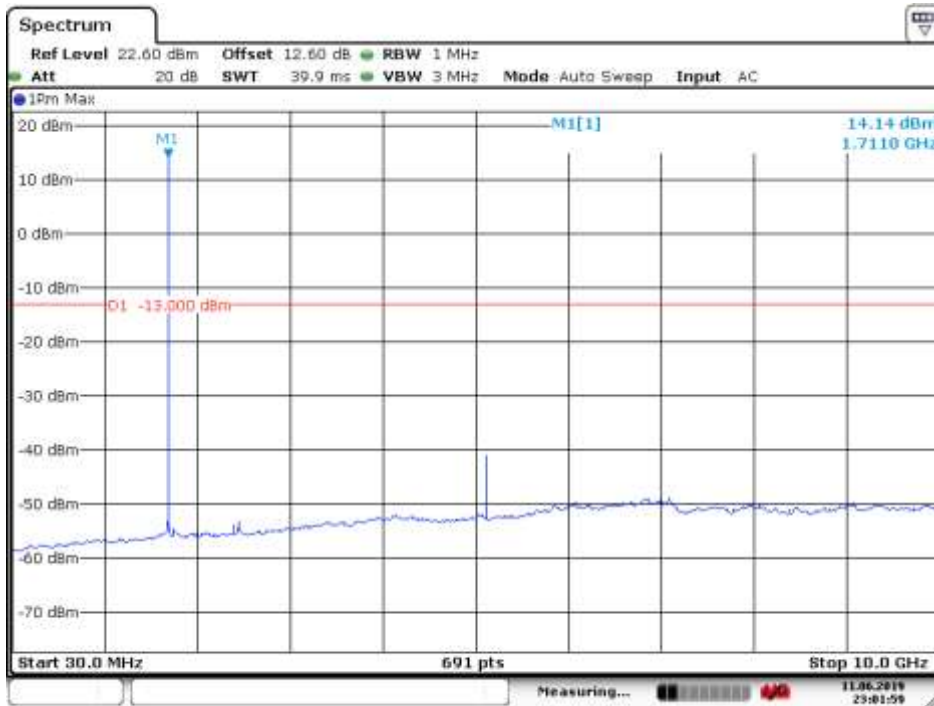


30MHz to 10GHz, Low Channel, Subcarrier (3.75kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



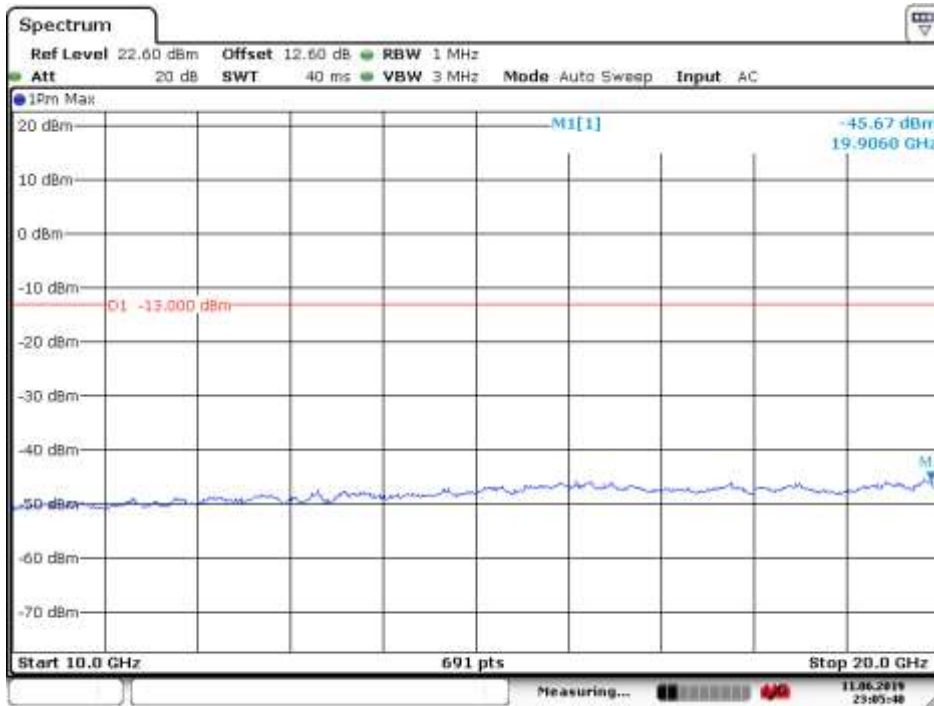
10GHz to 20GHz, Low Channel, Subcarrier (3.75kHz), QPSK, 1@0



Date: 11 JUN 2019 23:01:59

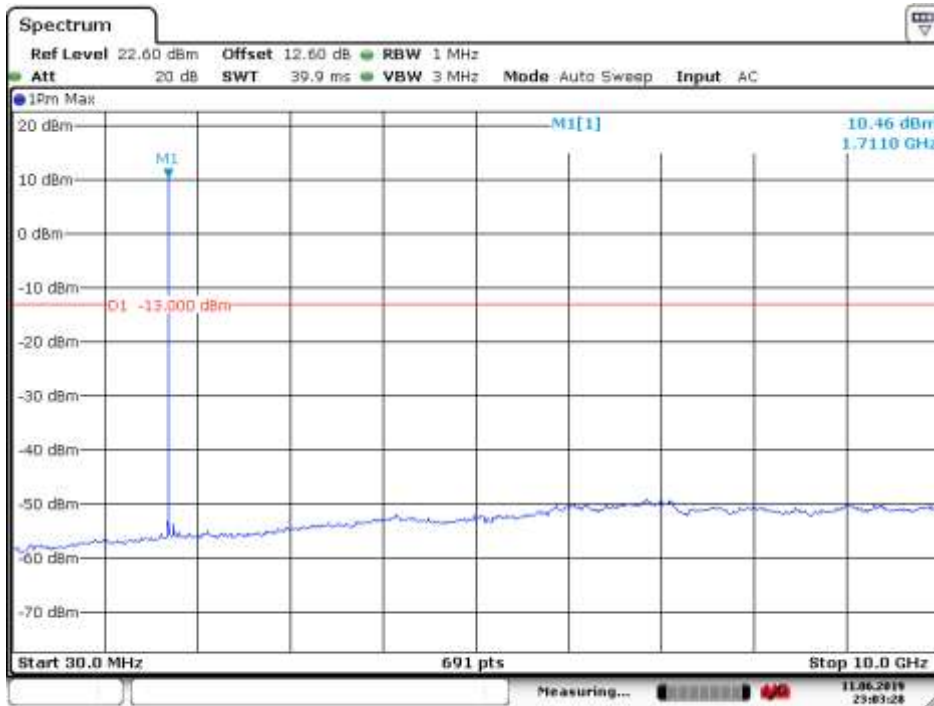
30MHz to 10GHz, Low Channel, Subcarrier (3.75kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 23:05:40

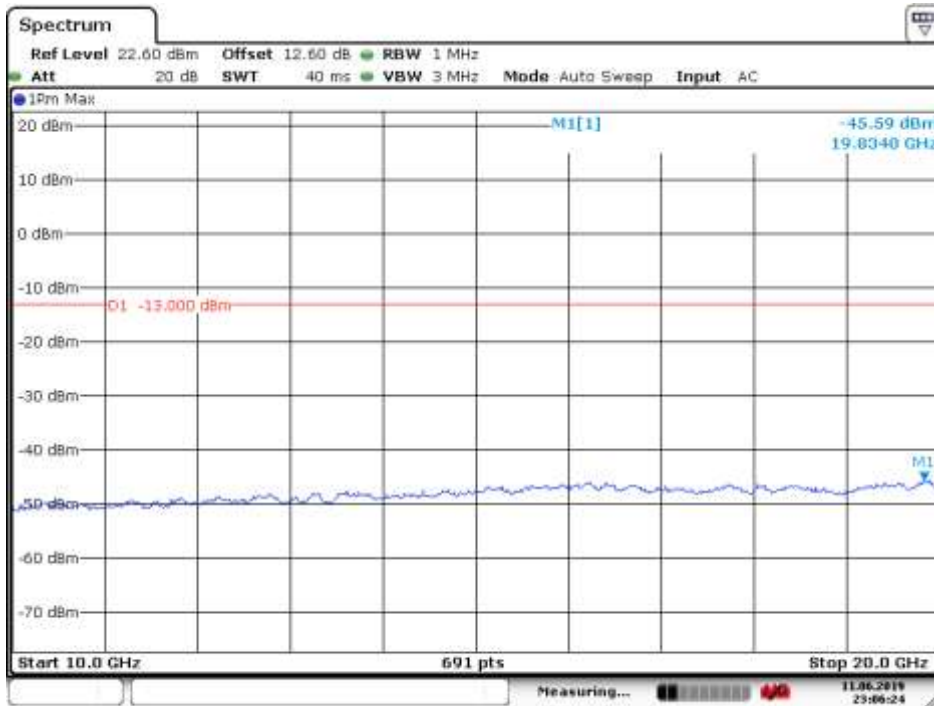
10GHz to 20GHz, Low Channel, Subcarrier (3.75kHz), BPSK, 1@0



Date: 11 JUN 2019 23:03:28

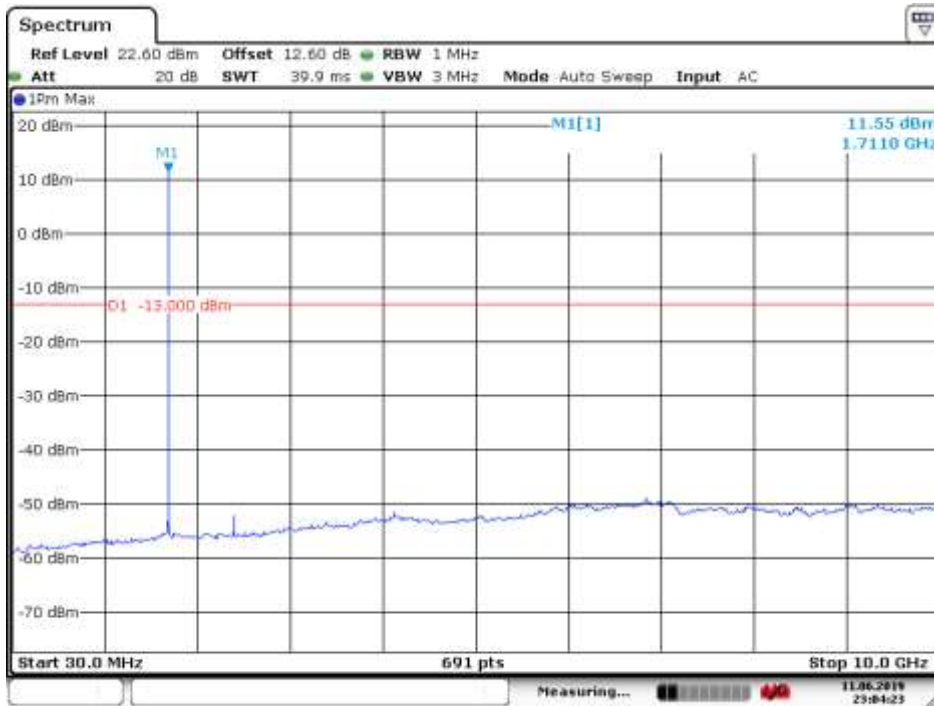
30MHz to 10GHz, Low Channel, Subcarrier (15kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 23:06:24

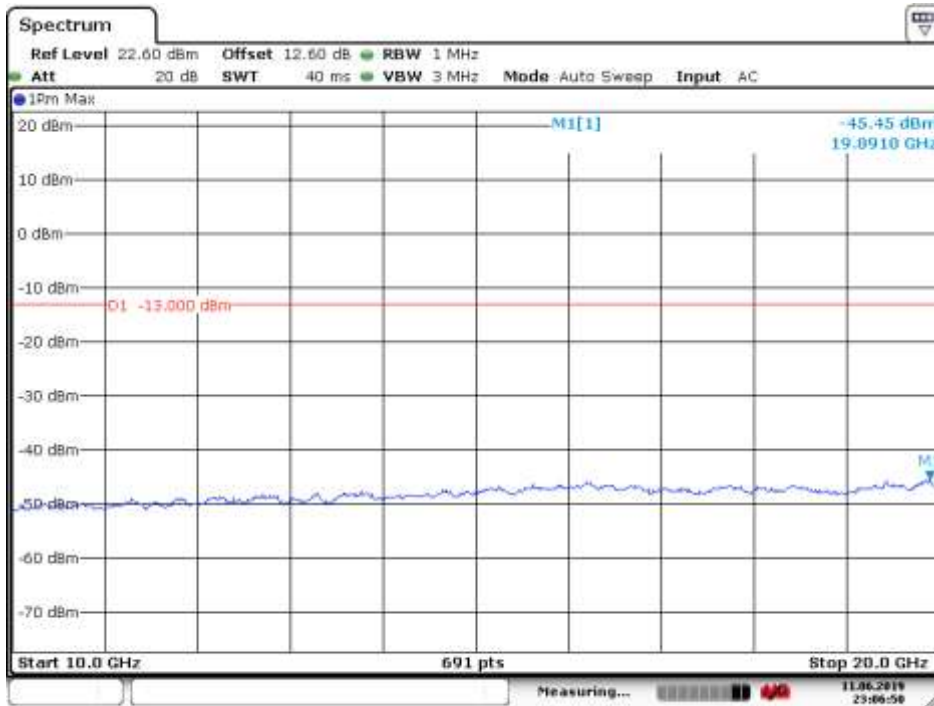
10GHz to 20GHz, Low Channel, Subcarrier (15kHz), QPSK, 1@0



Date: 11 JUN 2019 23:04:23

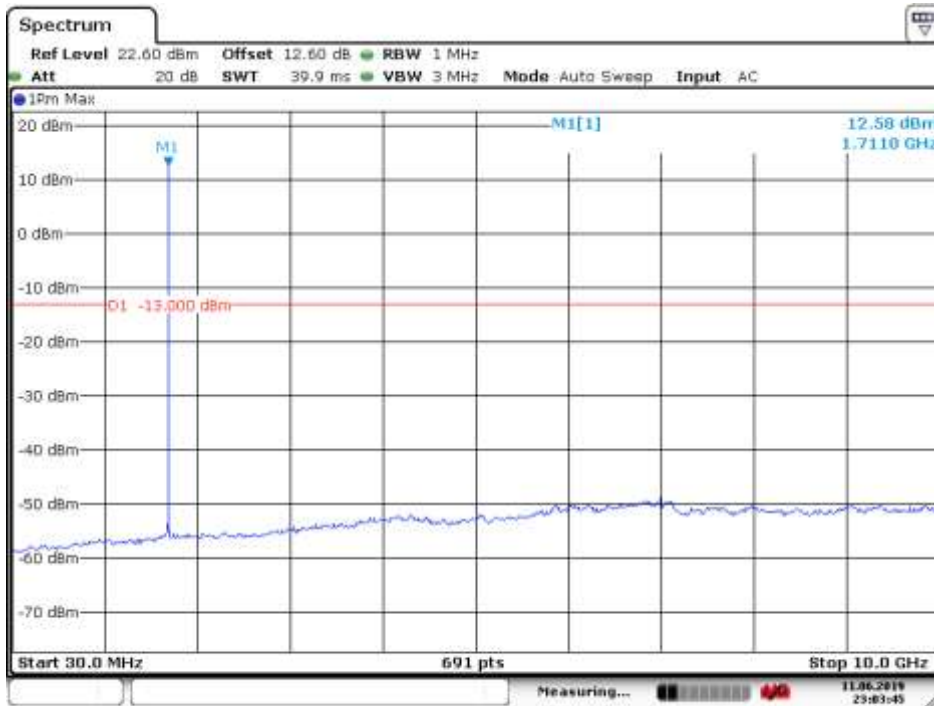
30MHz to 10GHz, Low Channel, Subcarrier (15kHz), QPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 23:06:49

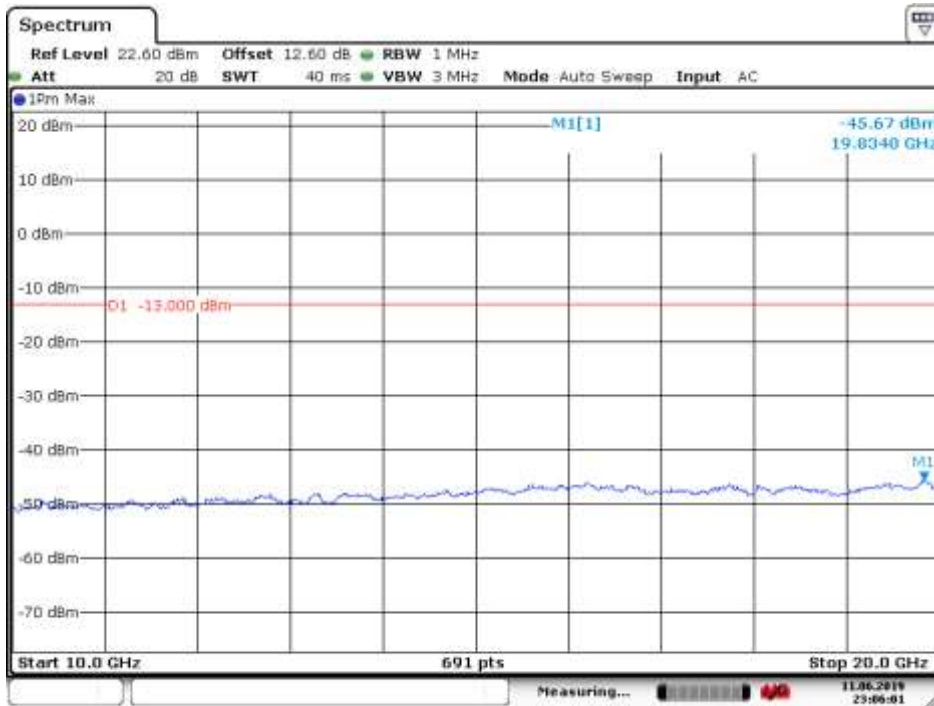
10GHz to 20GHz, Low Channel, Subcarrier (15kHz), QPSK, 12@0



Date: 11 JUN 2019 23:03:46

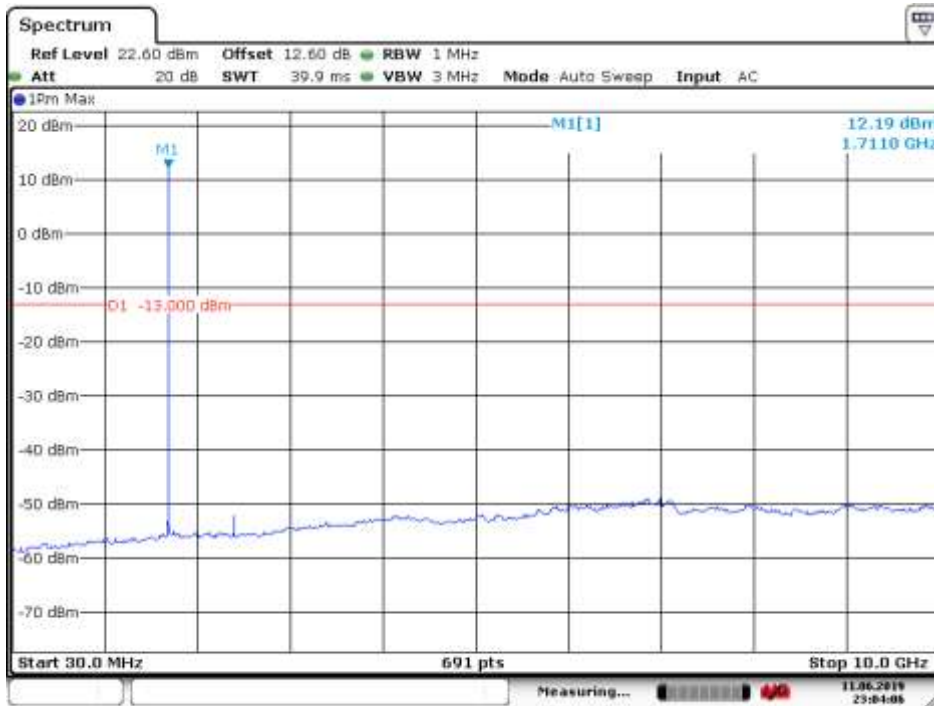
30MHz to 10GHz, Low Channel, Subcarrier (15kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 23:06:01

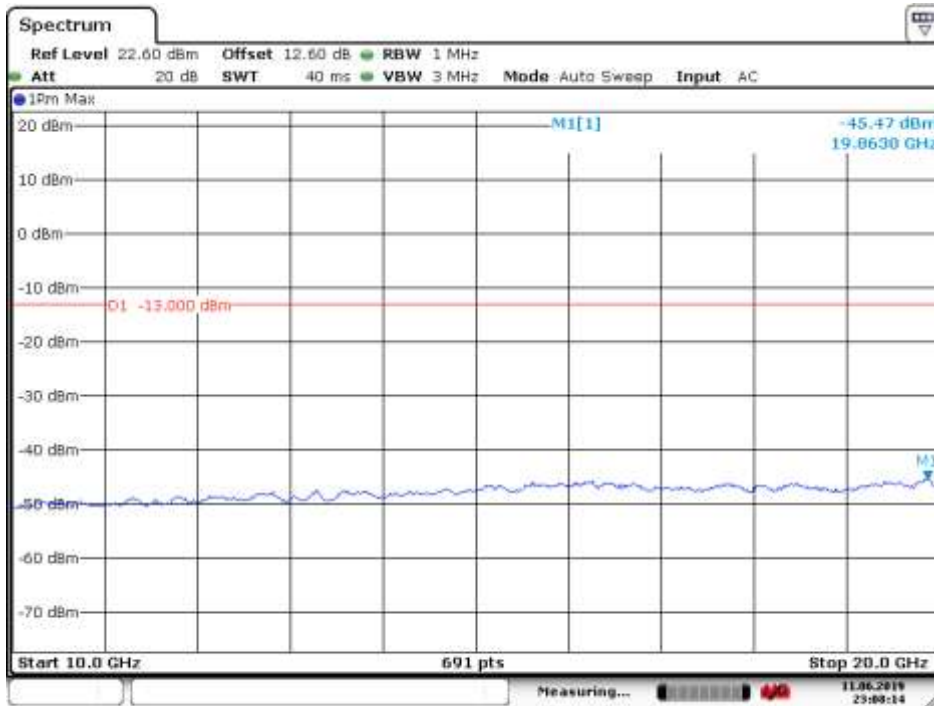
10GHz to 20GHz, Low Channel, Subcarrier (15kHz), BPSK, 1@0



Date: 11 JUN 2019 23:04:07

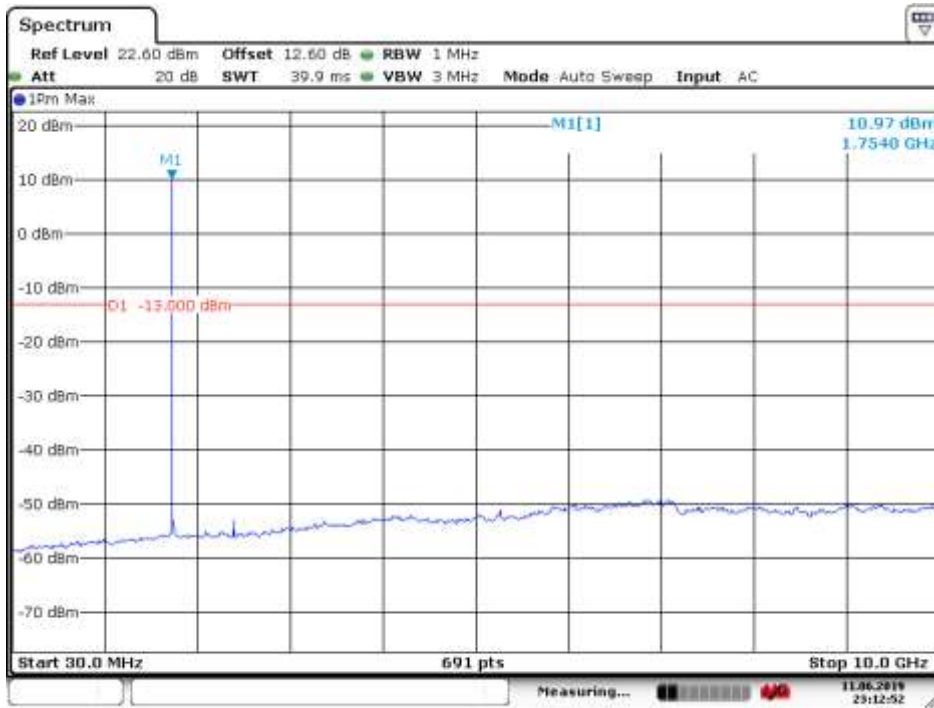
30MHz to 10GHz, Low Channel, Subcarrier (15kHz), BPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 23:08:14

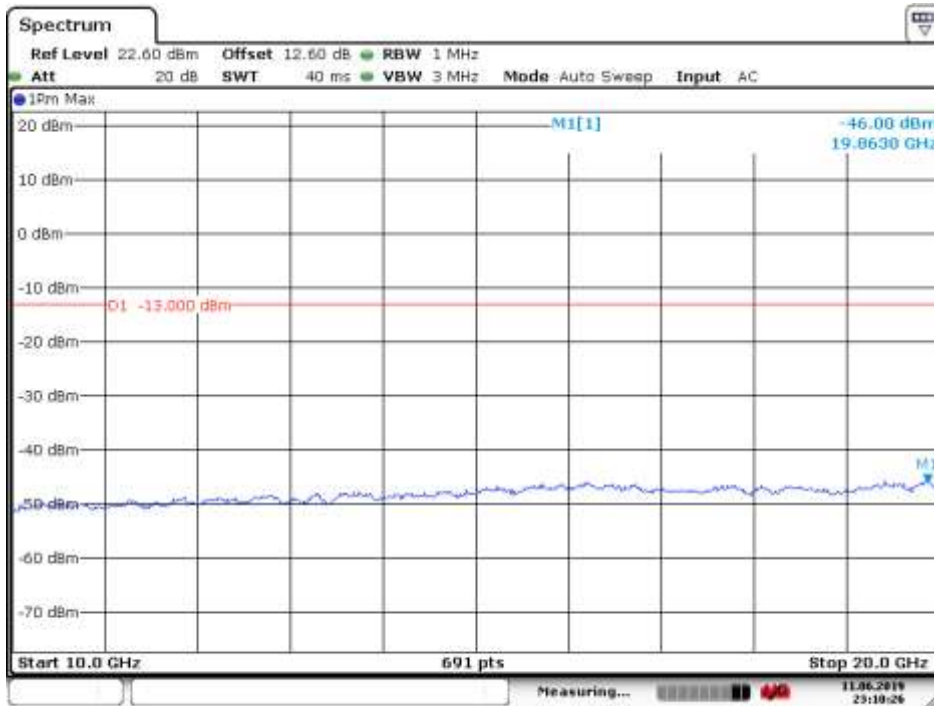
10GHz to 20GHz, Low Channel, Subcarrier (15kHz), BPSK, 12@0



Date: 11 JUN 2019 23:12:52

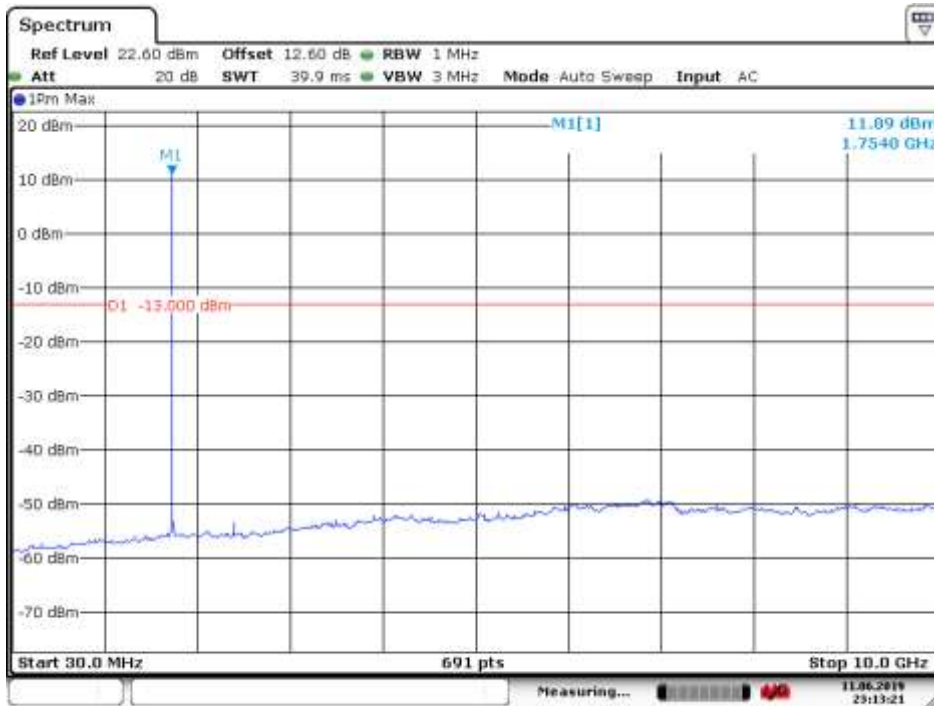
30MHz to 10GHz, Mid Channel, Subcarrier (3.75kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 23:10:26

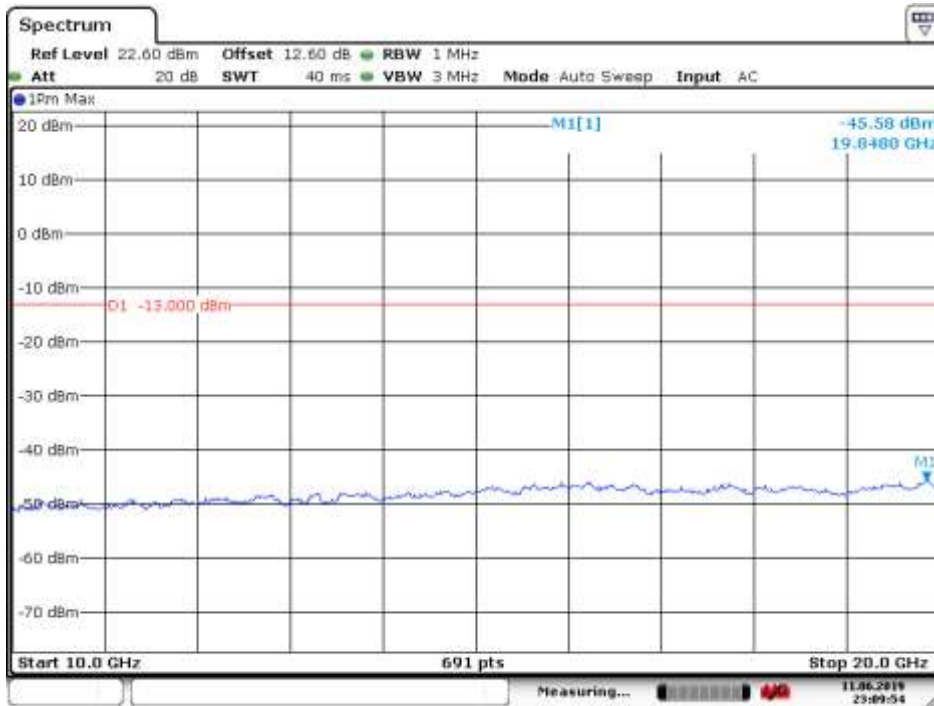
10GHz to 20GHz, Mid Channel, Subcarrier (3.75kHz), QPSK, 1@0



Date: 11 JUN 2019 23:13:21

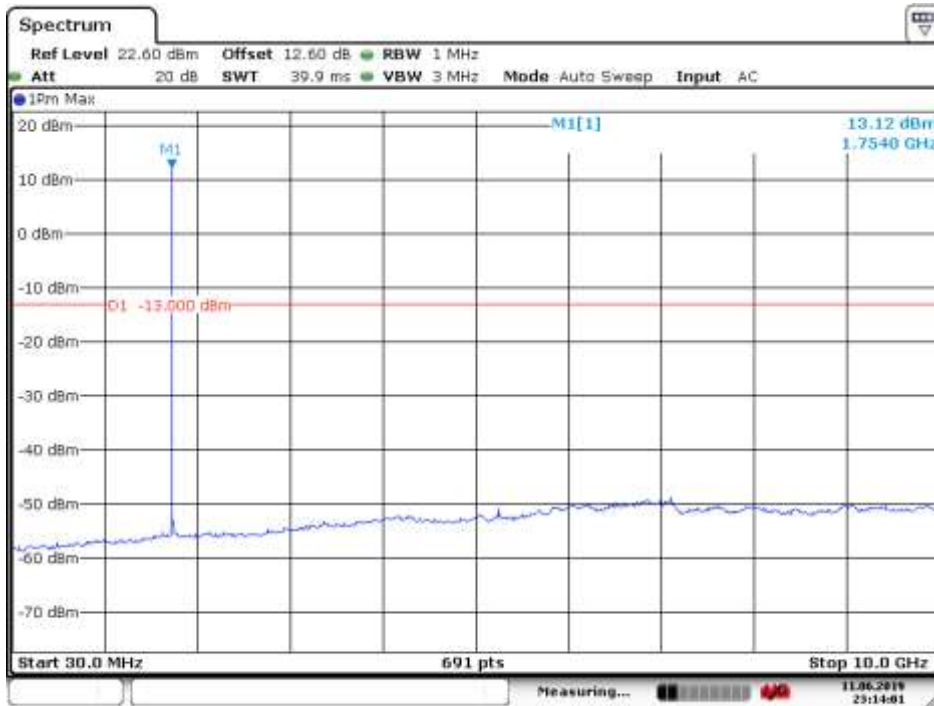
30MHz to 10GHz, Mid Channel, Subcarrier (3.75kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 23:09:54

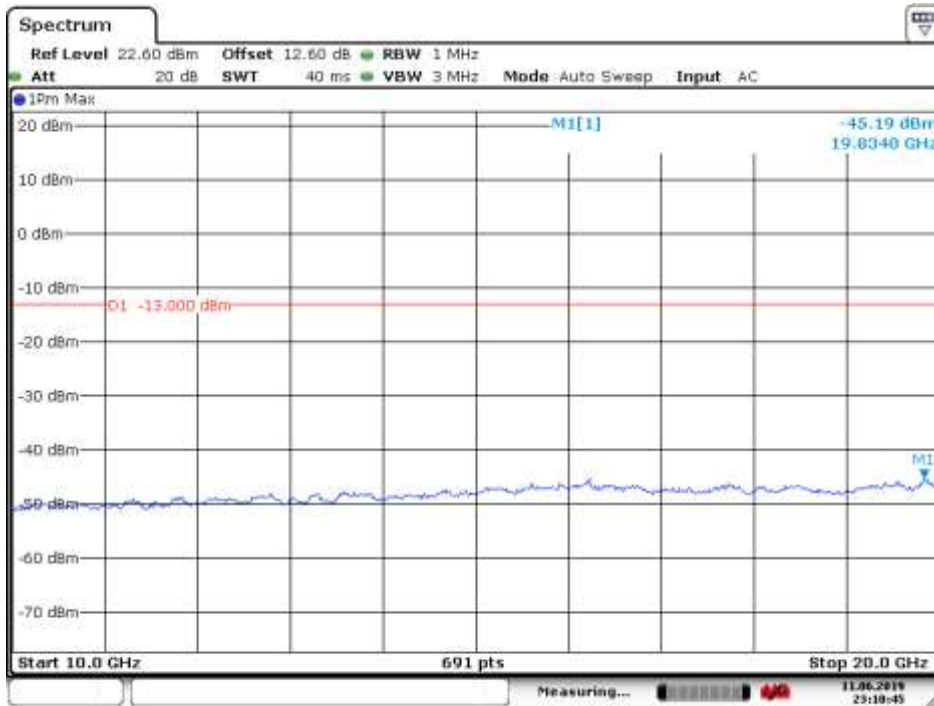
10GHz to 20GHz, Mid Channel, Subcarrier (3.75kHz), BPSK, 1@0



Date: 11 JUN 2019 23:14:00

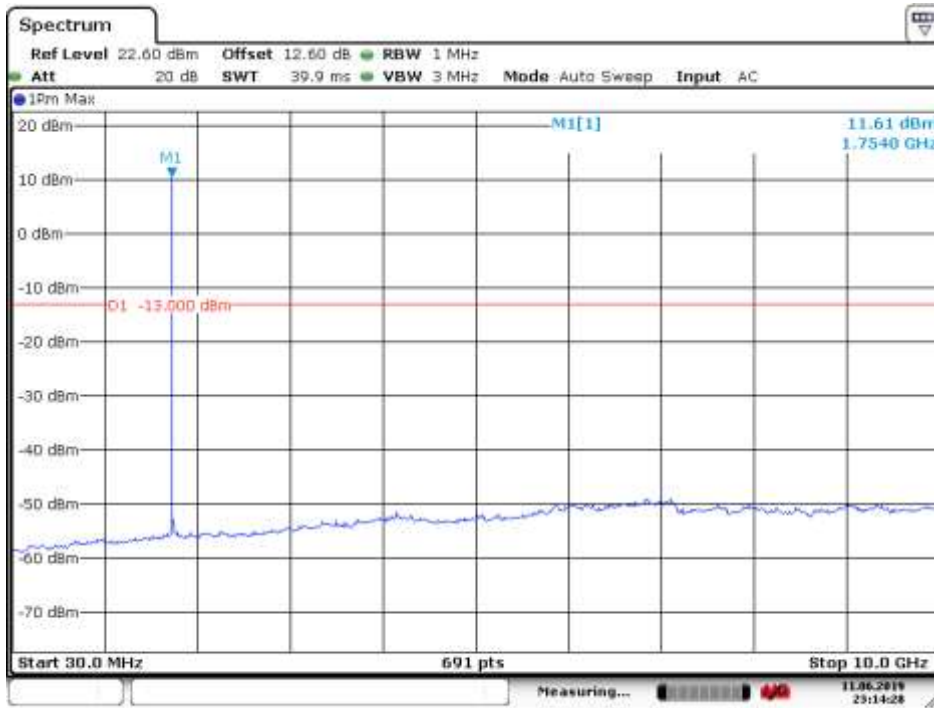
30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), QPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 23:10:45

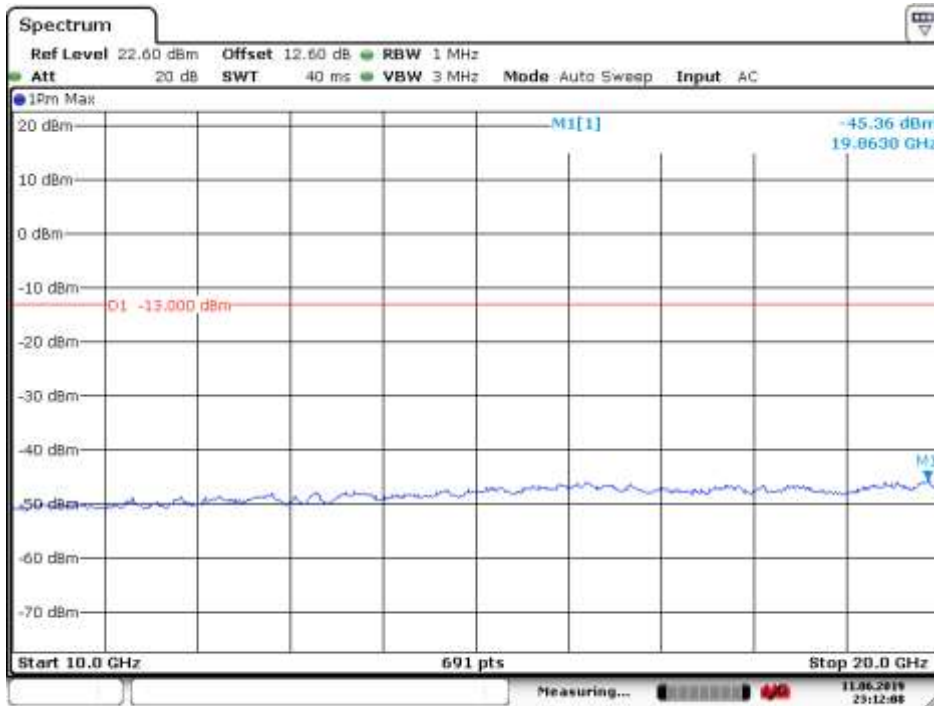
10GHz to 20GHz, Mid Channel, Subcarrier (15kHz), QPSK, 1@0



Date: 11 JUN 2019 23:14:28

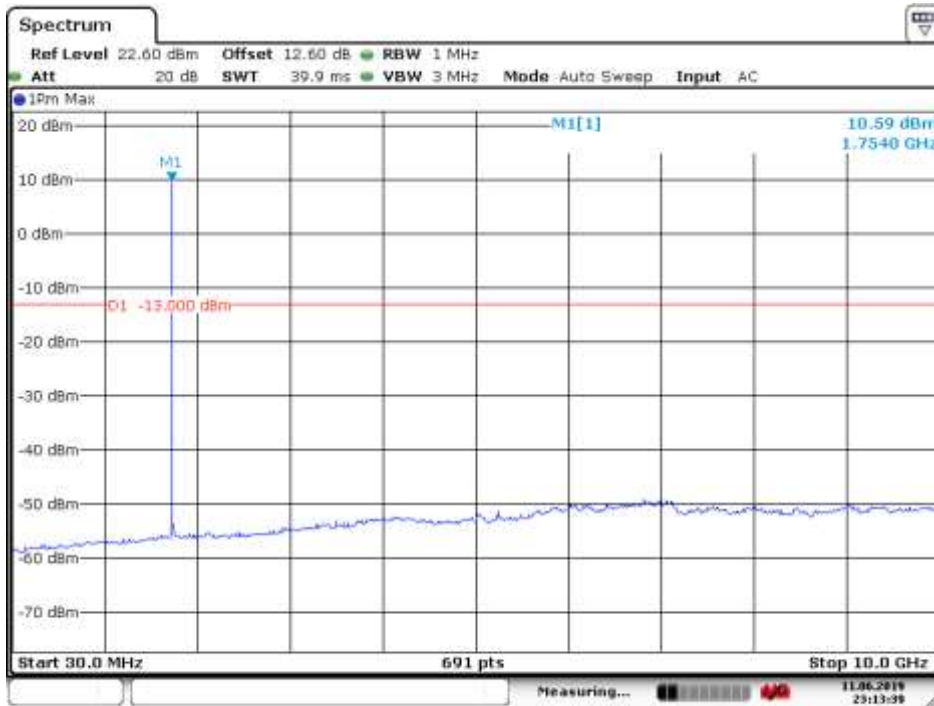
30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), QPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 23:12:08

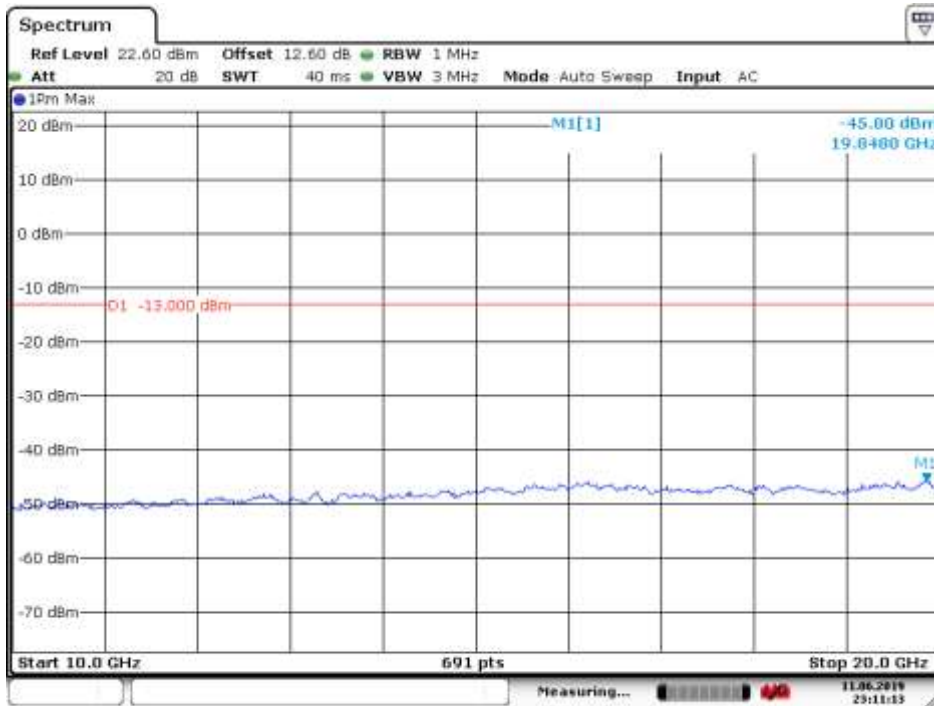
10GHz to 20GHz, Mid Channel, Subcarrier (15kHz), QPSK, 12@0



Date: 11 JUN 2019 23:13:40

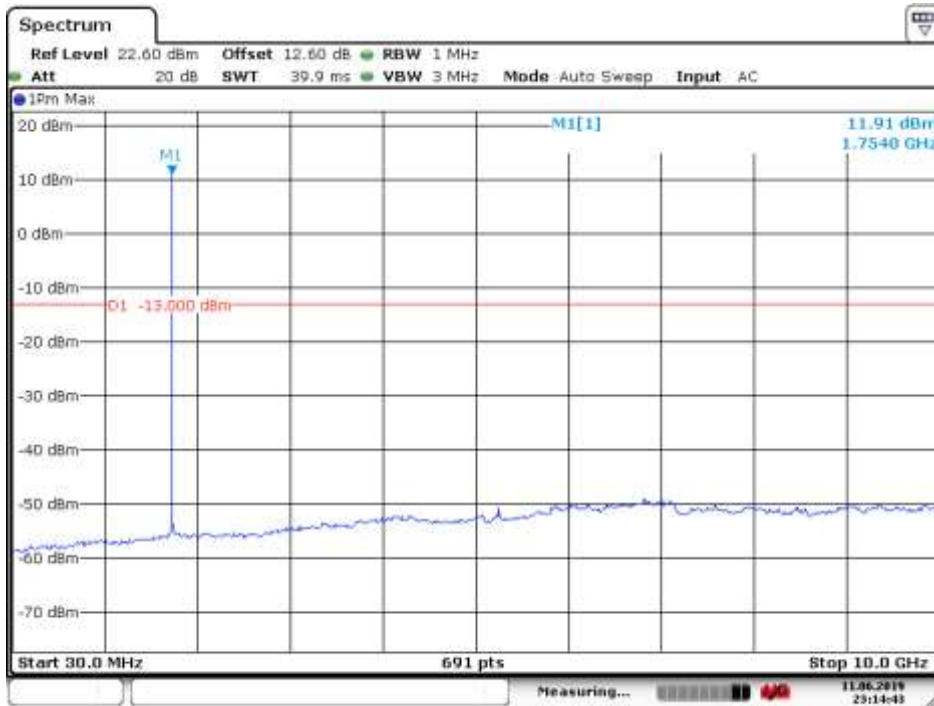
30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



Date: 11 JUN 2019 23:11:14

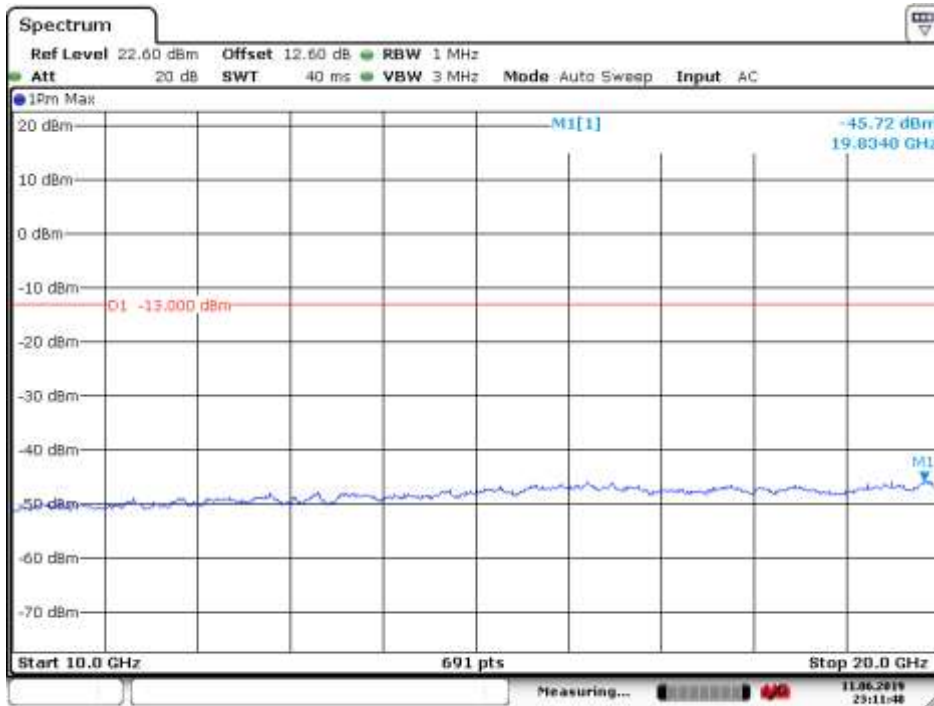
10GHz to 20GHz, Mid Channel, Subcarrier (15kHz), BPSK, 1@0



Date: 11 JUN 2019 23:14:43

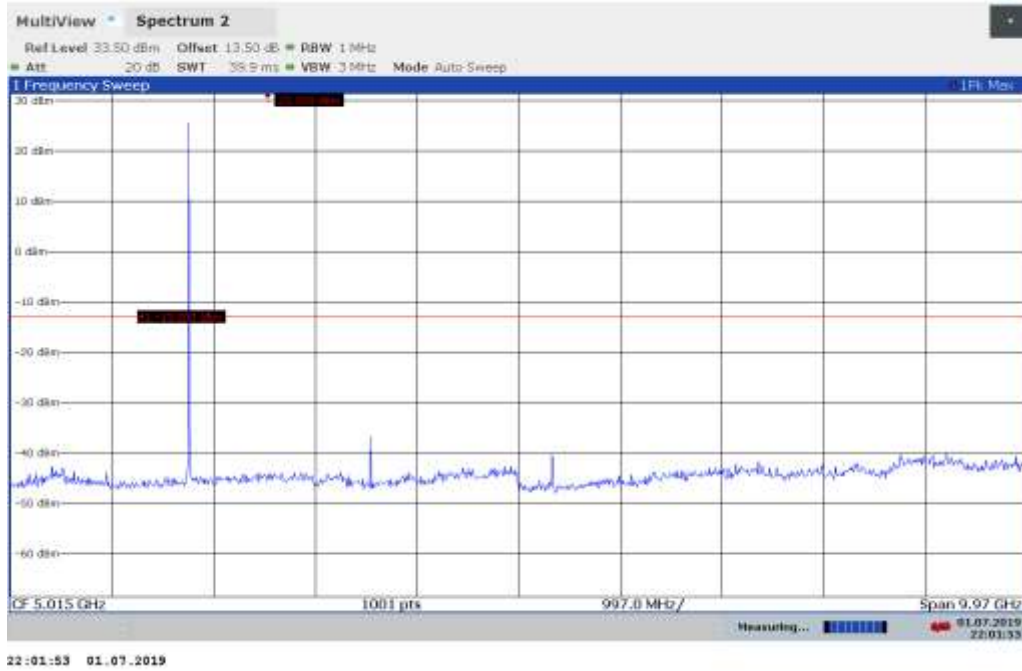
30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), BPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.



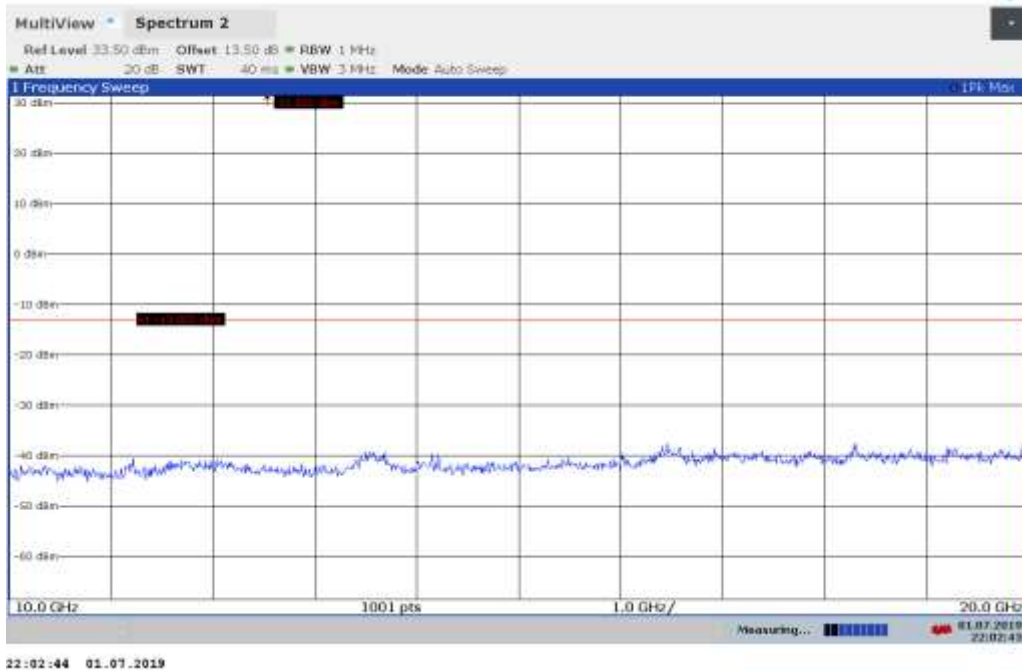
Date: 11 JUN 2019 23:11:47

10GHz to 20GHz, Mid Channel, Subcarrier (15kHz), BPSK, 12@0

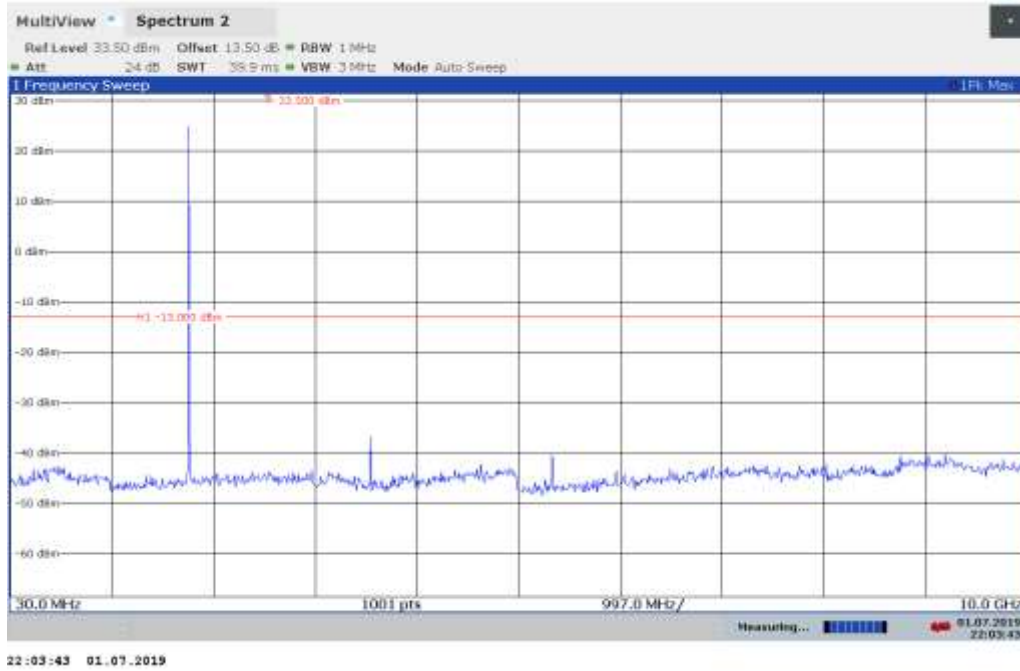


30MHz to 10GHz, High Channel, Subcarrier (3.75kHz), QPSK, 1@0

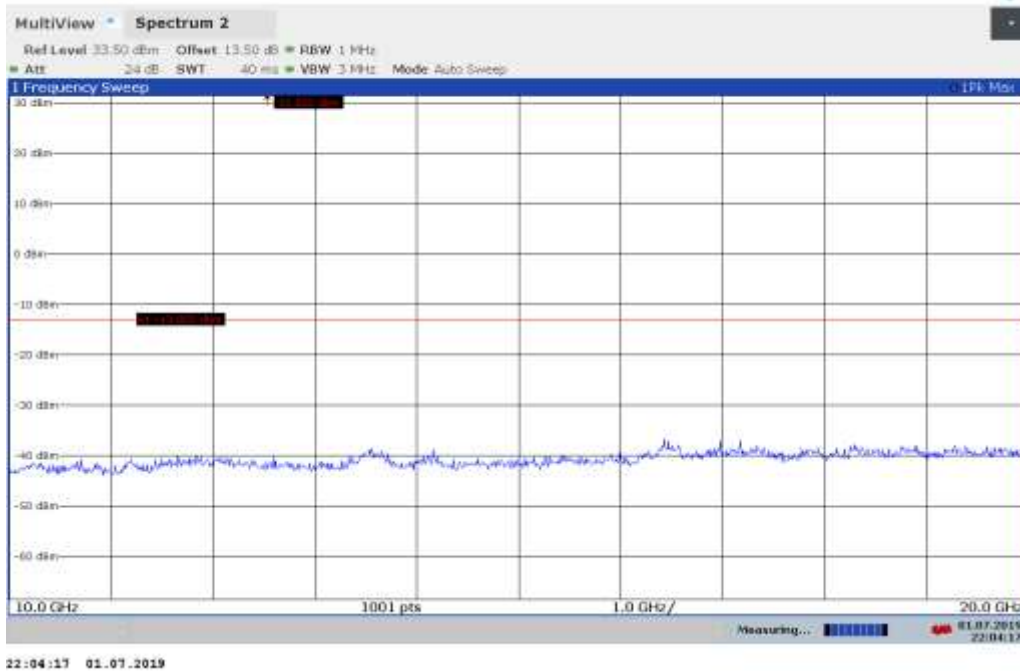
Note: The strong emission shown in each case is the carrier signal.



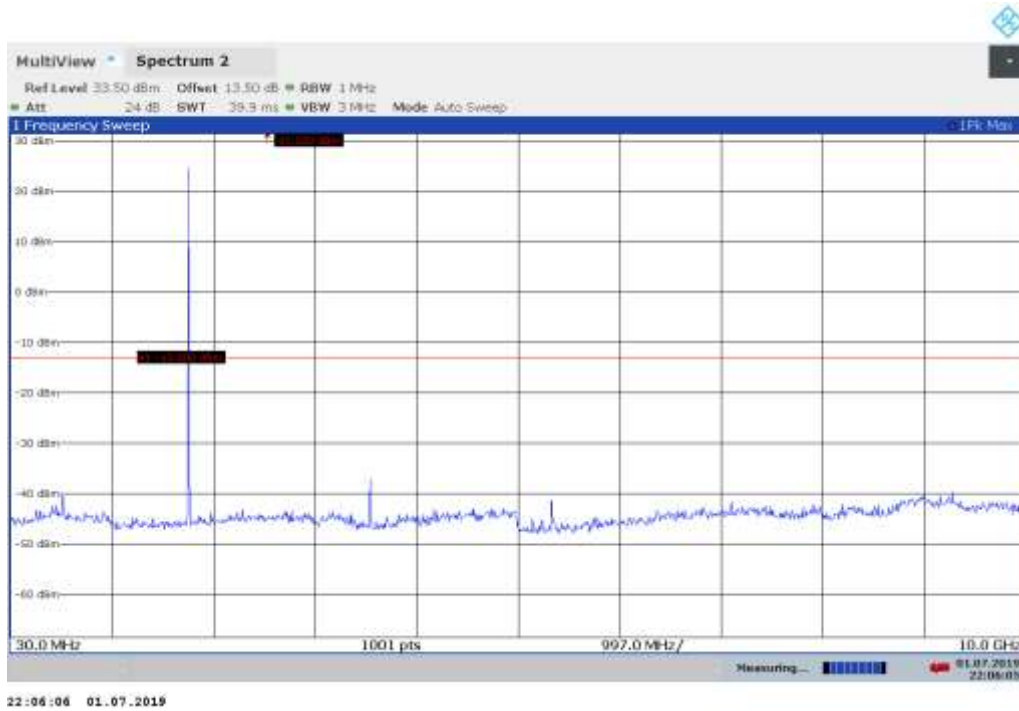
10GHz to 20GHz, High Channel, Subcarrier (3.75kHz), QPSK, 1@0



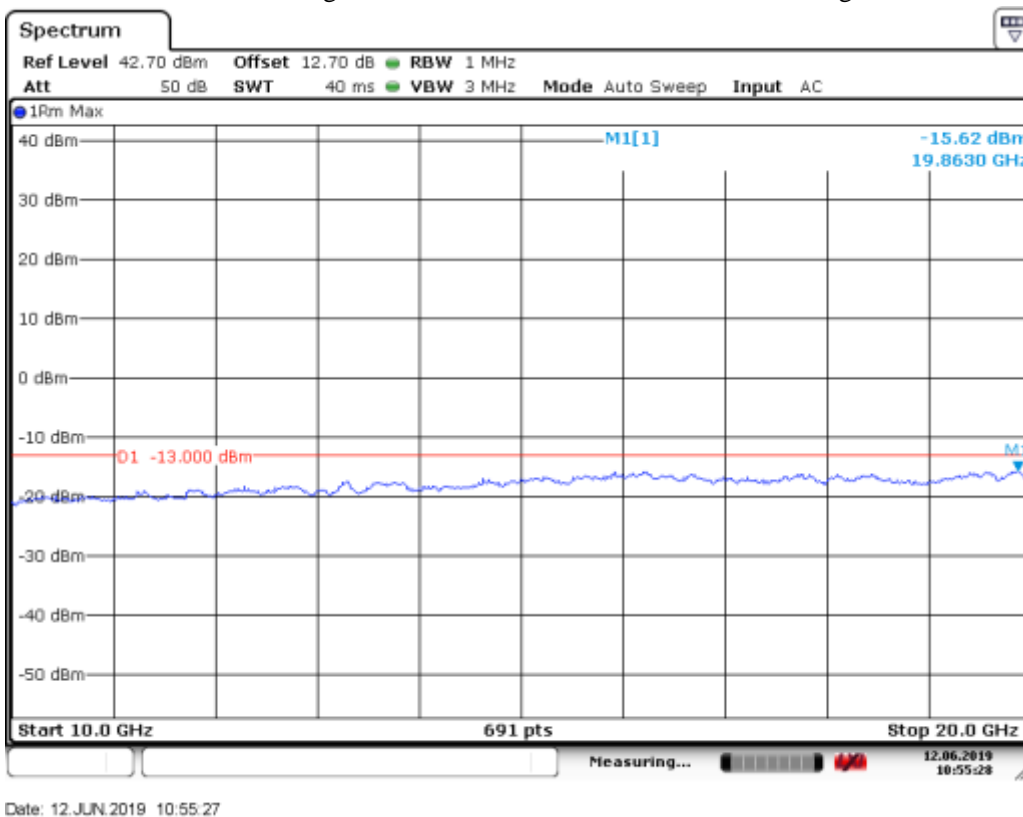
30MHz to 10GHz, High Channel, Subcarrier (3.75kHz), BPSK, 1@0
Note: The strong emission shown in each case is the carrier signal.



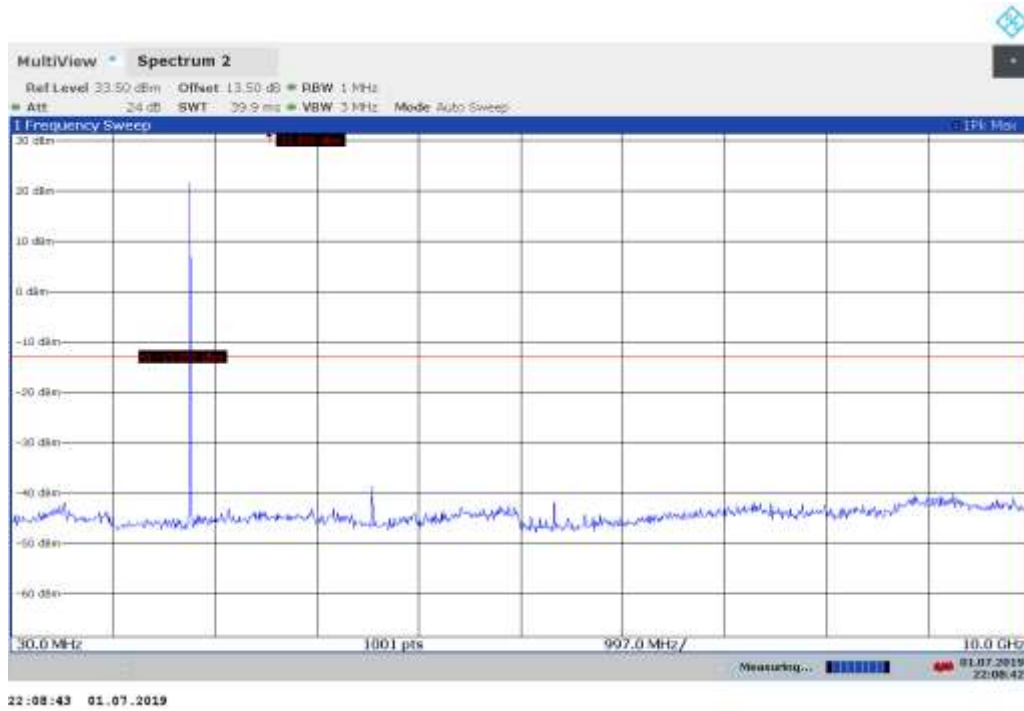
10GHz to 20GHz, High Channel, Subcarrier (3.75kHz), BPSK, 1@0



30MHz to 10GHz, High Channel, Subcarrier (15kHz), QPSK, 1@0
Note: The strong emission shown in each case is the carrier signal.

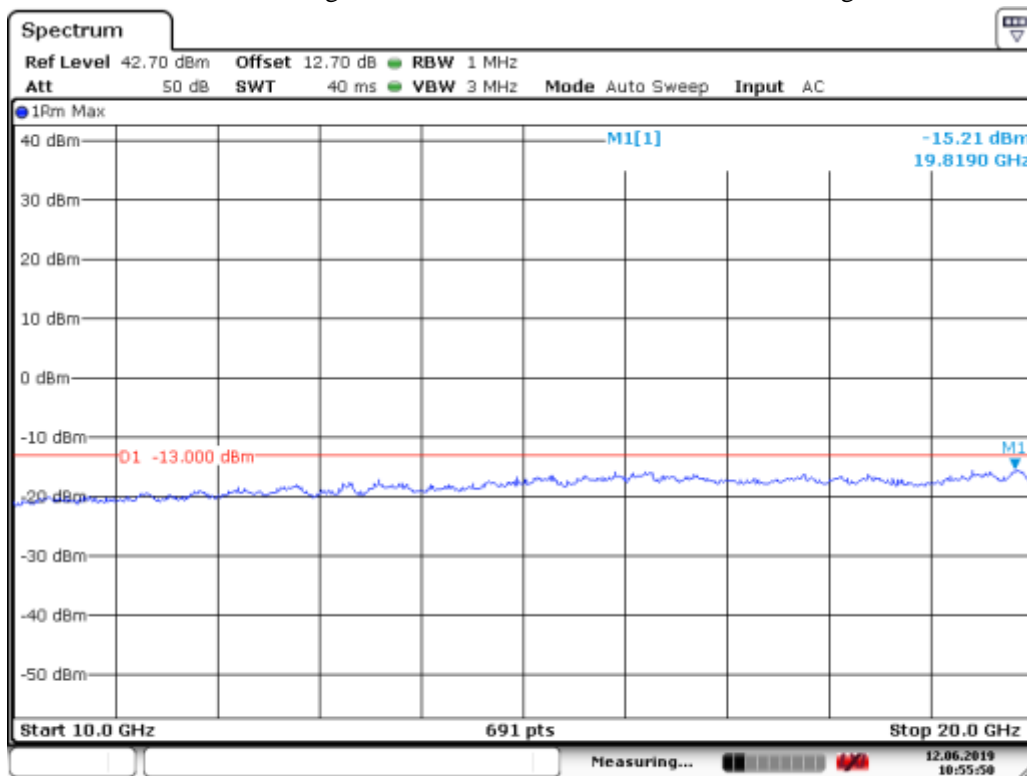


10GHz to 20GHz, High Channel, Subcarrier (15kHz), QPSK, 1@0



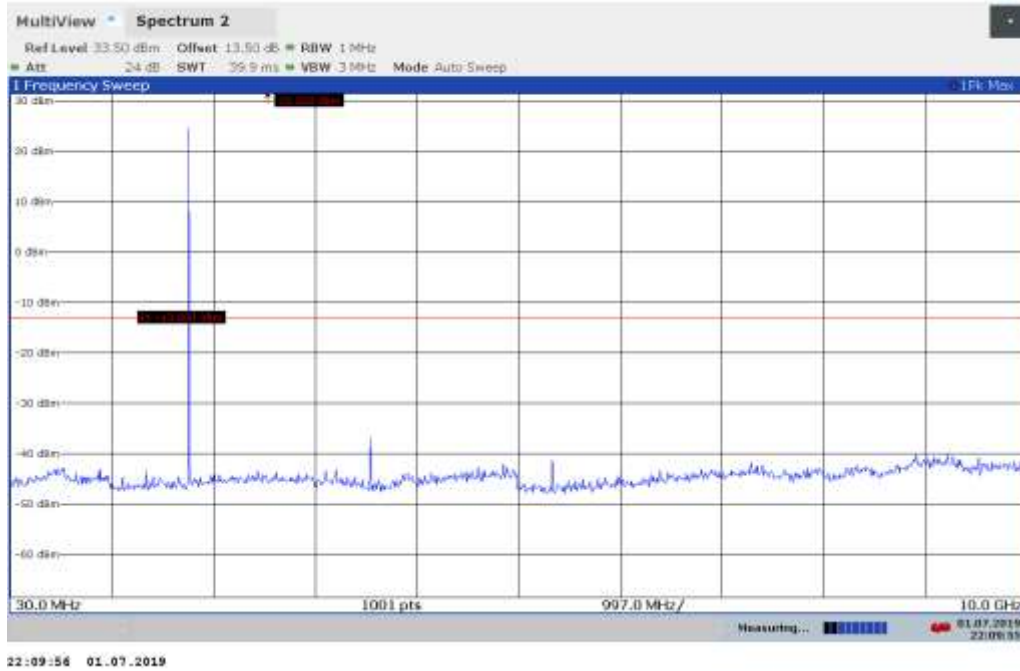
30MHz to 10GHz, High Channel, Subcarrier (15kHz), QPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.

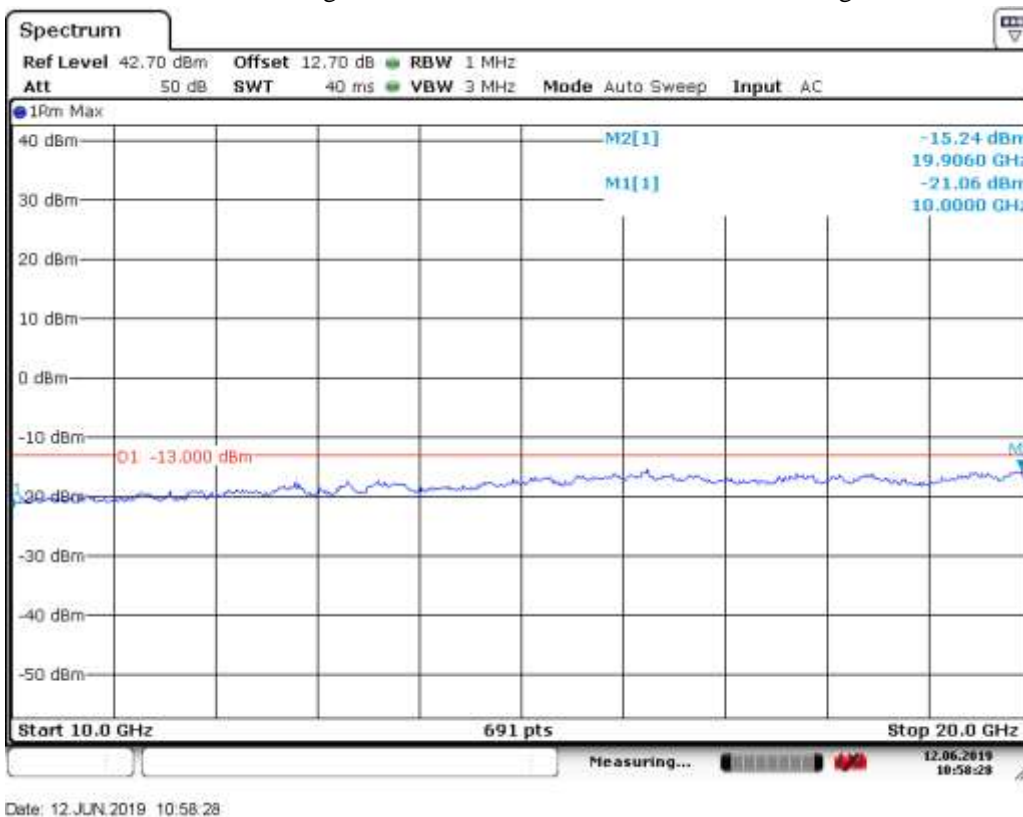


Date: 12 JUN 2019 10:55:50

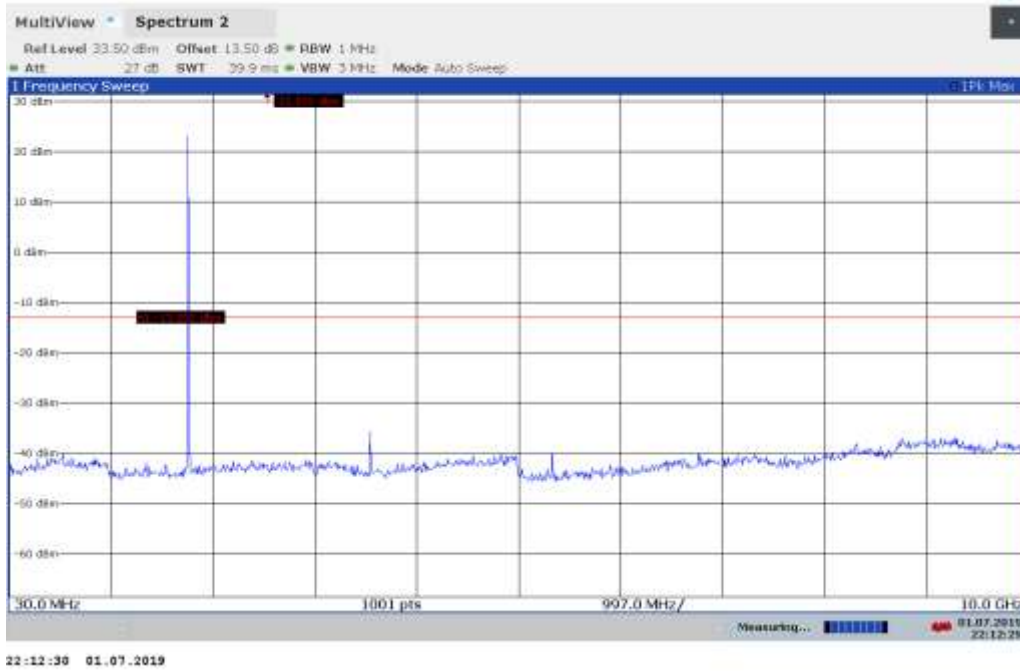
10GHz to 20GHz, High Channel, Subcarrier (15kHz), QPSK, 12@0



30MHz to 10GHz, High Channel, Subcarrier (15kHz), BPSK, 1@0
Note: The strong emission shown in each case is the carrier signal.

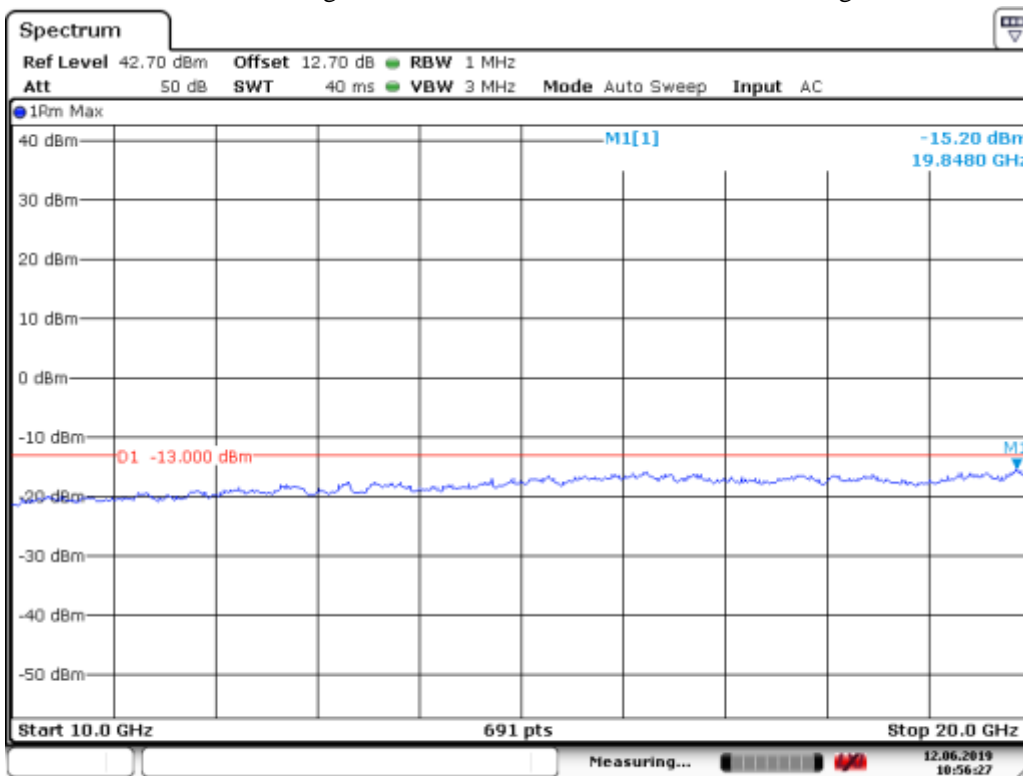


10GHz to 20GHz, High Channel, Subcarrier (15kHz), BPSK, 1@0



30MHz to 10GHz, High Channel, Subcarrier (15kHz), BPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.



Date: 12 JUN 2019 10:56:27

10GHz to 20GHz, High Channel, Subcarrier (15kHz), BPSK, 12@0

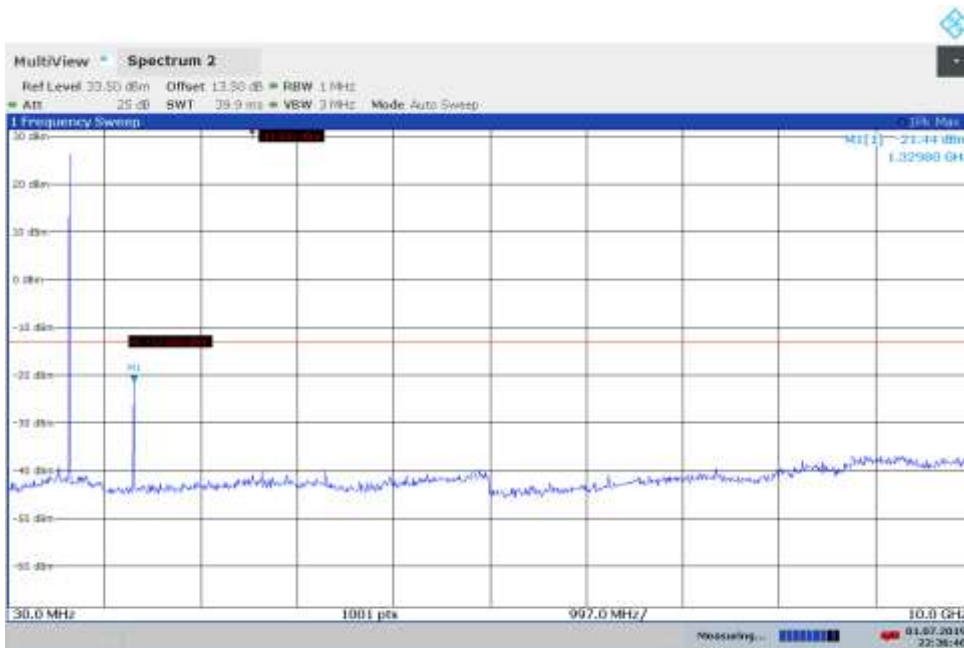
5.3.4 NB-IoT Band 71



Date: 12 JUN 2019 11:13:54

30MHz to 10GHz, Low Channel, Subcarrier (3.75kHz), QPSK, 1@0

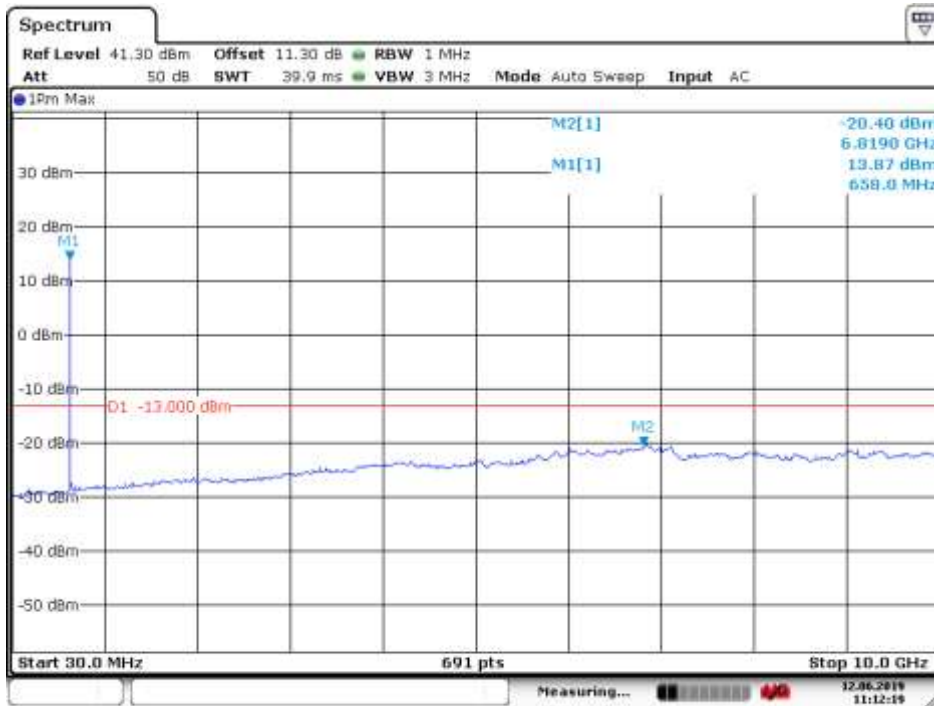
Note: The strong emission shown in each case is the carrier signal.



22:38:46 01.07.2019

30MHz to 10GHz, Low Channel, Subcarrier (3.75kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



Date: 12 JUN 2019 11:12:19

30MHz to 10GHz, Low Channel, Subcarrier (15kHz), QPSK, 1@0

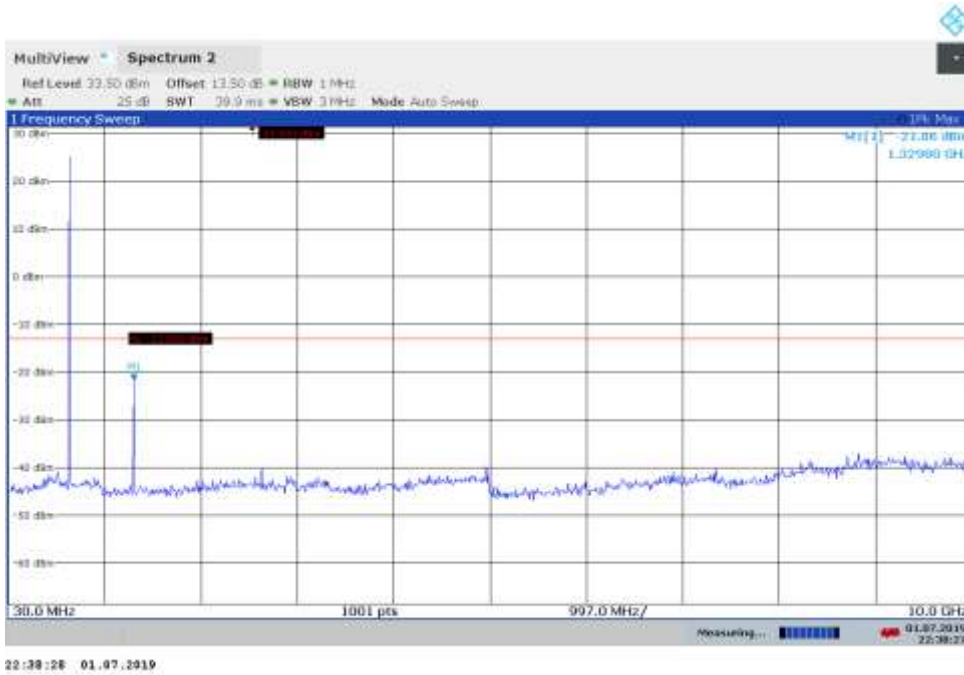
Note: The strong emission shown in each case is the carrier signal.



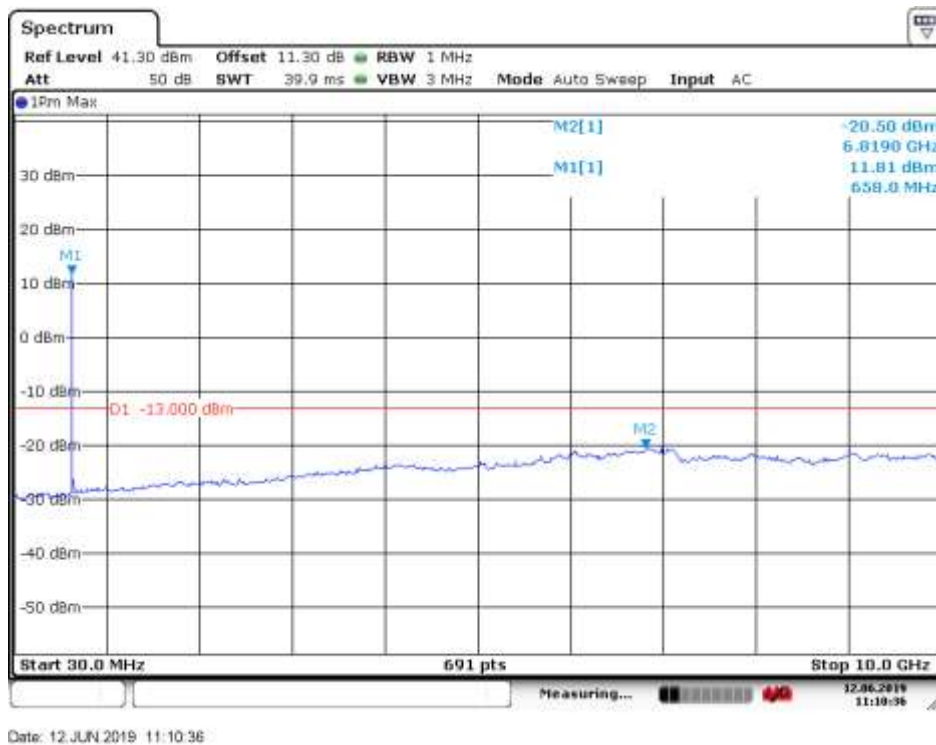
Date: 12 JUN 2019 11:08:14

30MHz to 10GHz, Low Channel, Subcarrier (15kHz), QPSK, 12@0

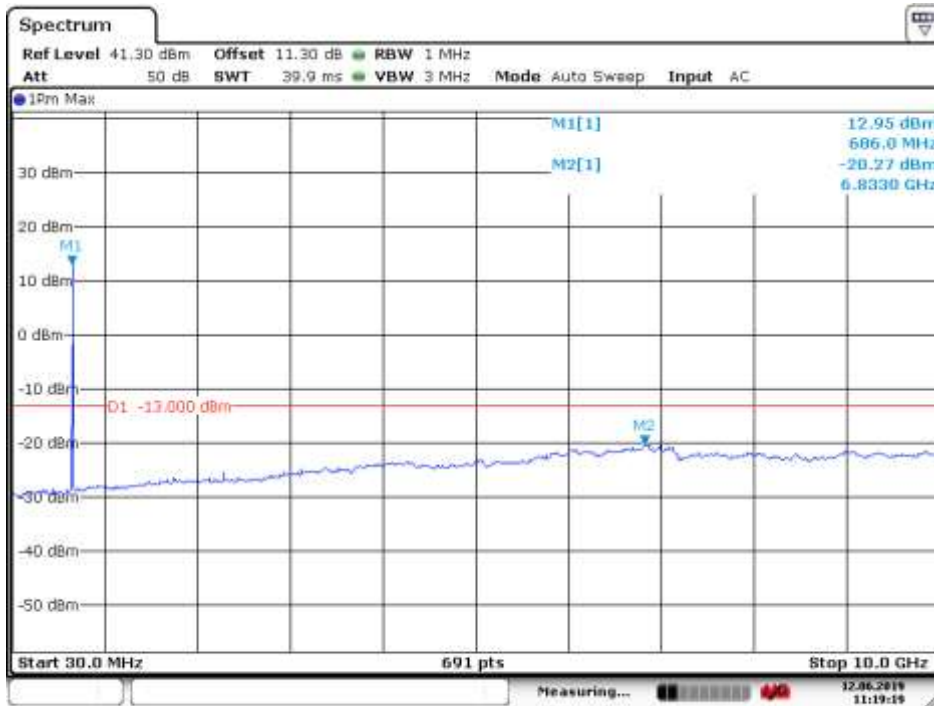
Note: The strong emission shown in each case is the carrier signal.



30MHz to 10GHz, Low Channel, Subcarrier (15kHz), BPSK, 1@0
Note: The strong emission shown in each case is the carrier signal.



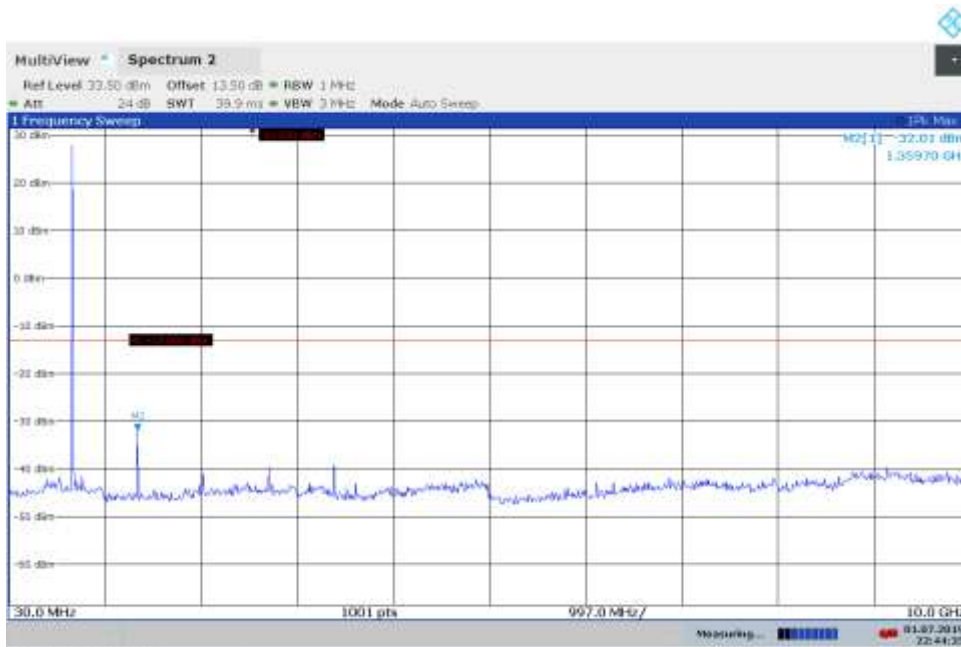
30MHz to 10GHz, Low Channel, Subcarrier (15kHz), BPSK, 12@0
Note: The strong emission shown in each case is the carrier signal.



Date: 12 JUN 2019 11:19:20

30MHz to 10GHz, Mid Channel, Subcarrier (3.75kHz), QPSK, 1@0

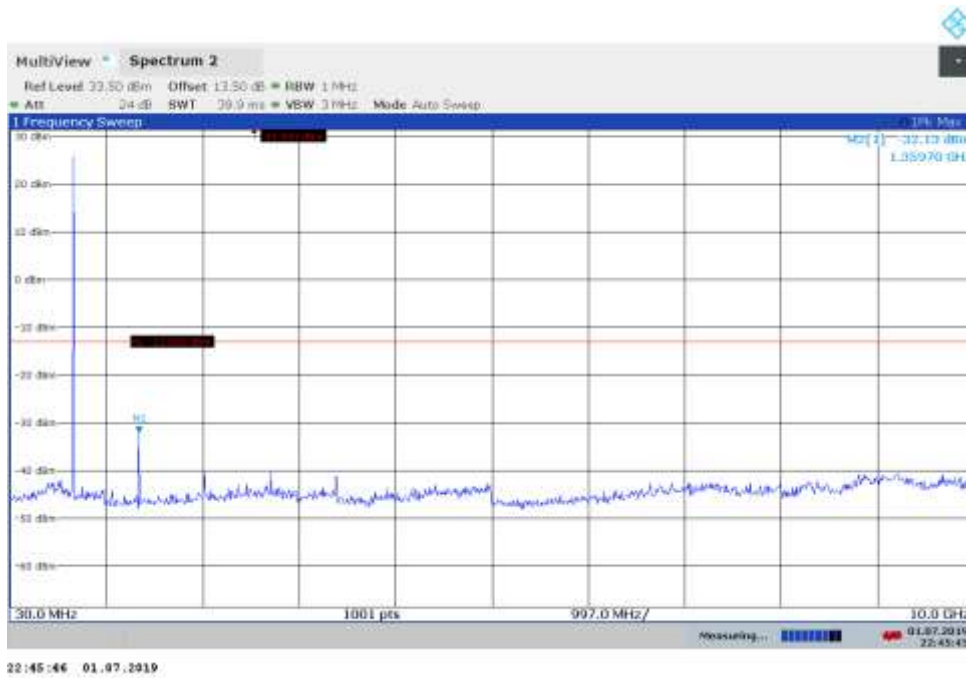
Note: The strong emission shown in each case is the carrier signal.



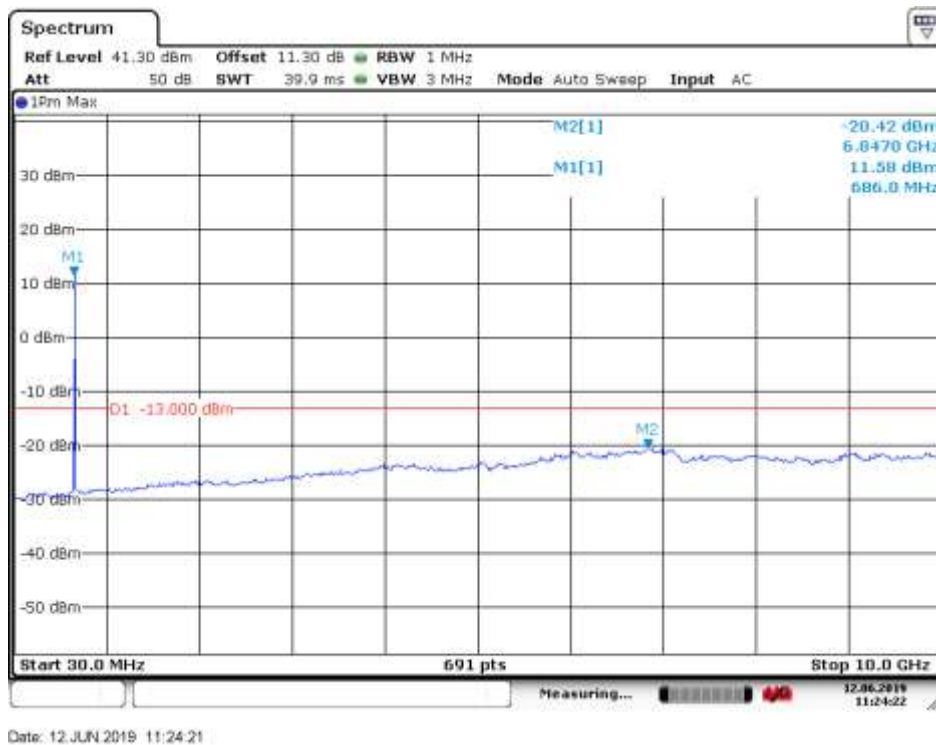
22:44:25 01.07.2019

30MHz to 10GHz, Mid Channel, Subcarrier (3.75kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



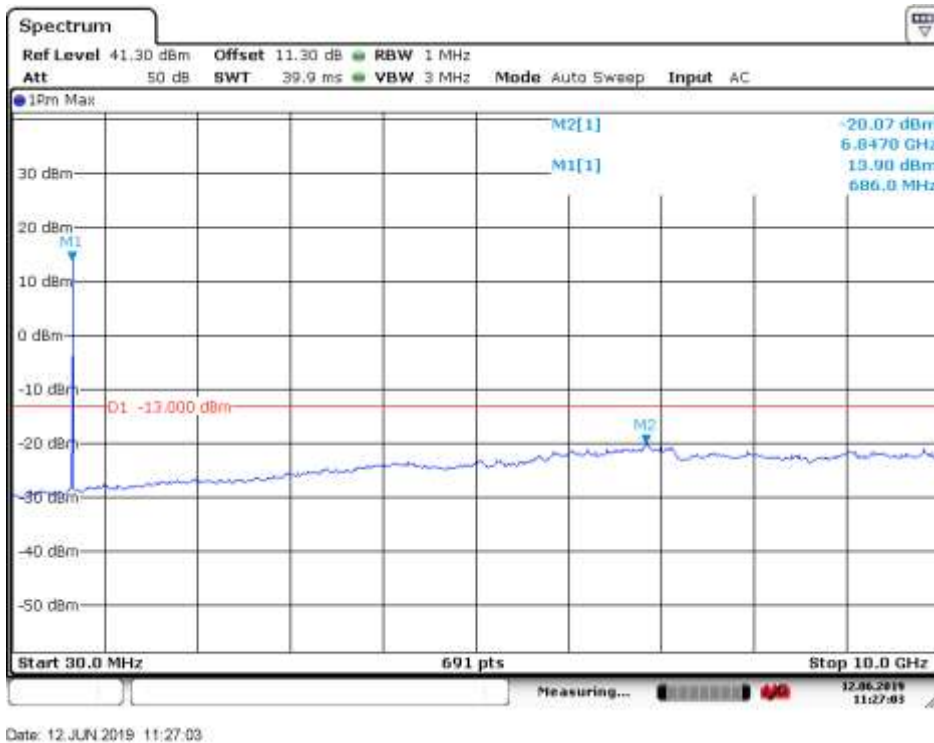
30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), QPSK, 1@0
 Note: The strong emission shown in each case is the carrier signal.



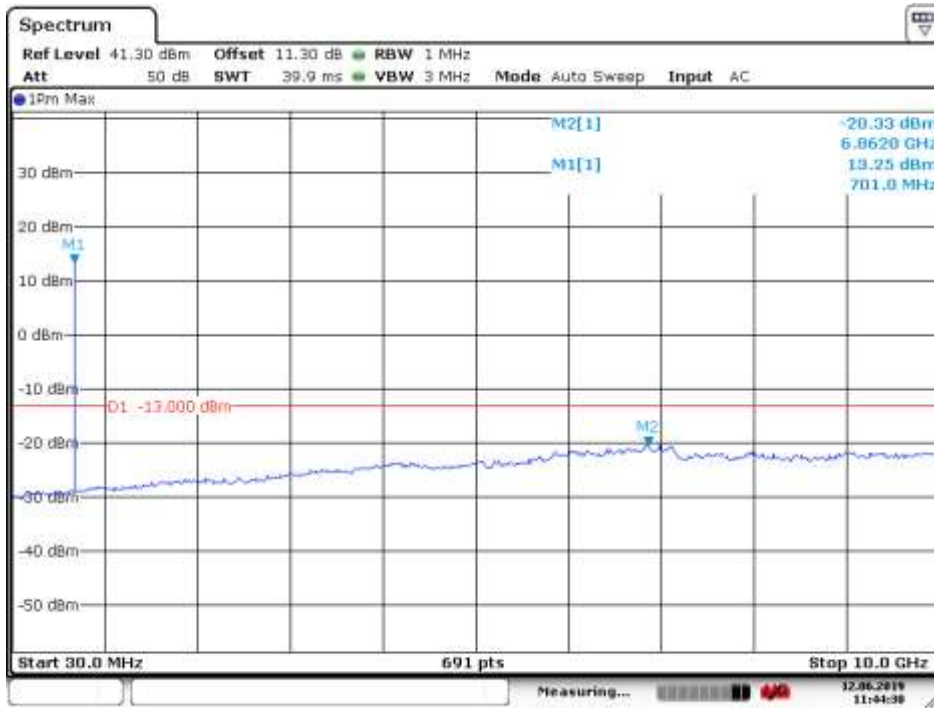
30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), QPSK, 12@0
 Note: The strong emission shown in each case is the carrier signal.



30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), BPSK, 1@0
 Note: The strong emission shown in each case is the carrier signal.



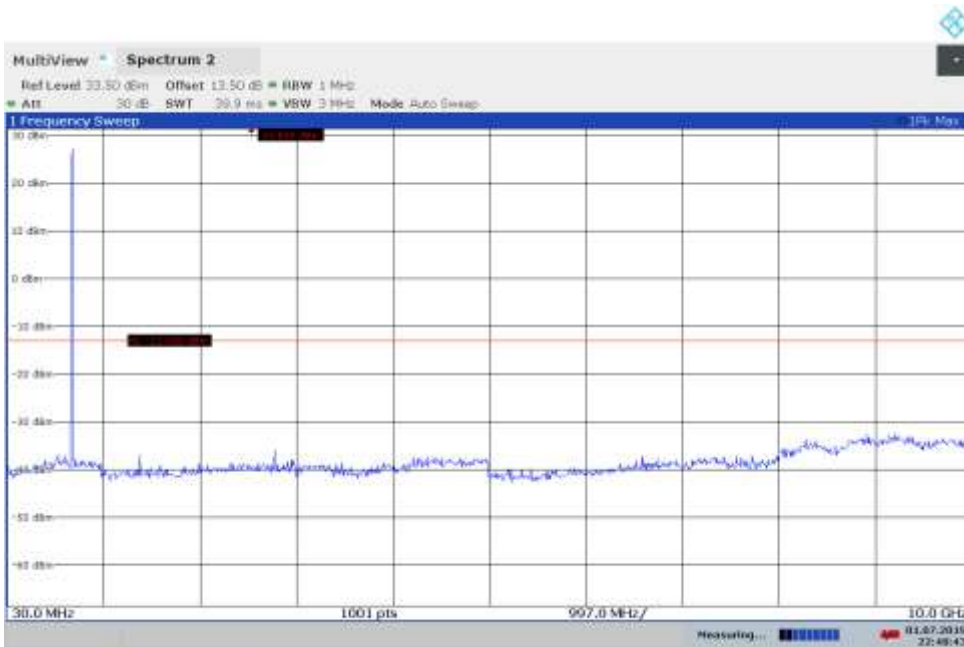
30MHz to 10GHz, Mid Channel, Subcarrier (15kHz), BPSK, 12@0
 Note: The strong emission shown in each case is the carrier signal.



Date: 12 JUN 2019 11:44:31

30MHz to 10GHz, High Channel, Subcarrier (3.75kHz), QPSK, 1@0

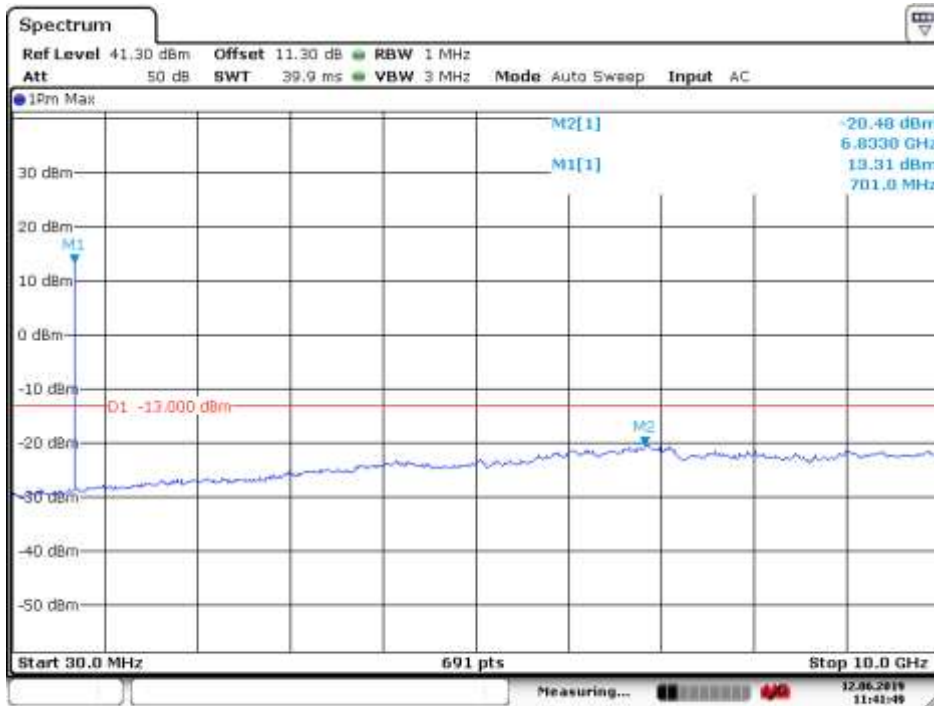
Note: The strong emission shown in each case is the carrier signal.



22:48:43 01.07.2019

30MHz to 10GHz, High Channel, Subcarrier (3.75kHz), BPSK, 1@0

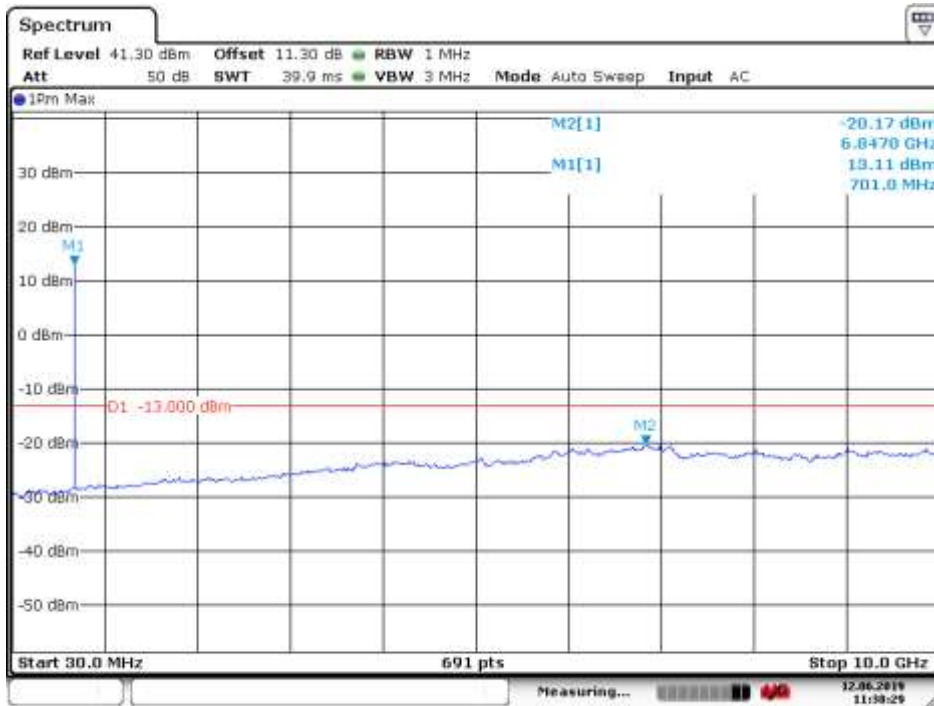
Note: The strong emission shown in each case is the carrier signal.



Date: 12 JUN 2019 11:41:49

30MHz to 10GHz, High Channel, Subcarrier (15kHz), QPSK, 1@0

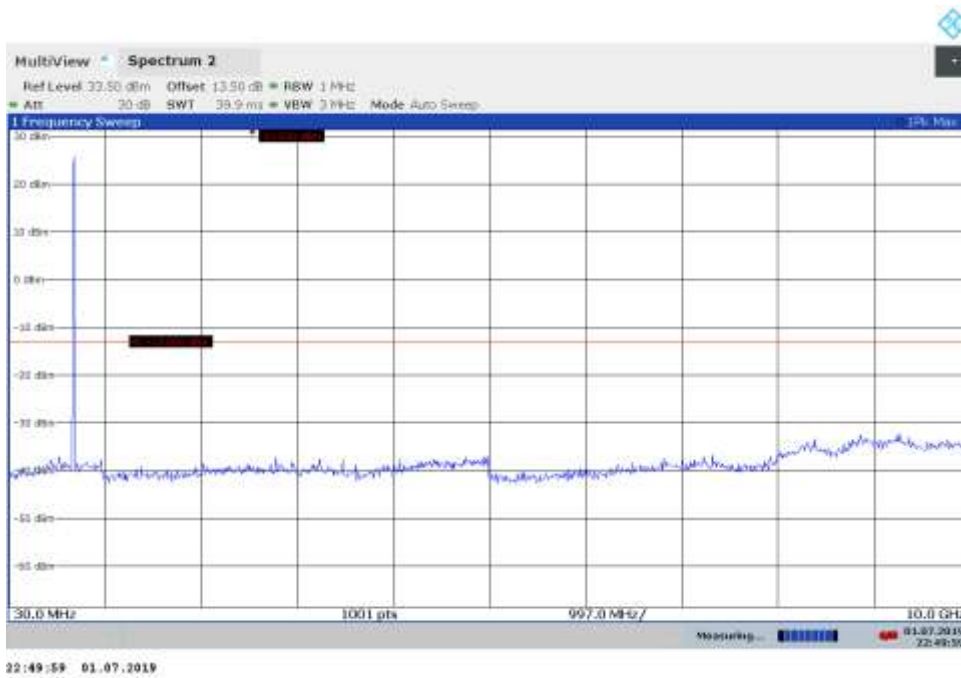
Note: The strong emission shown in each case is the carrier signal.



Date: 12 JUN 2019 11:38:29

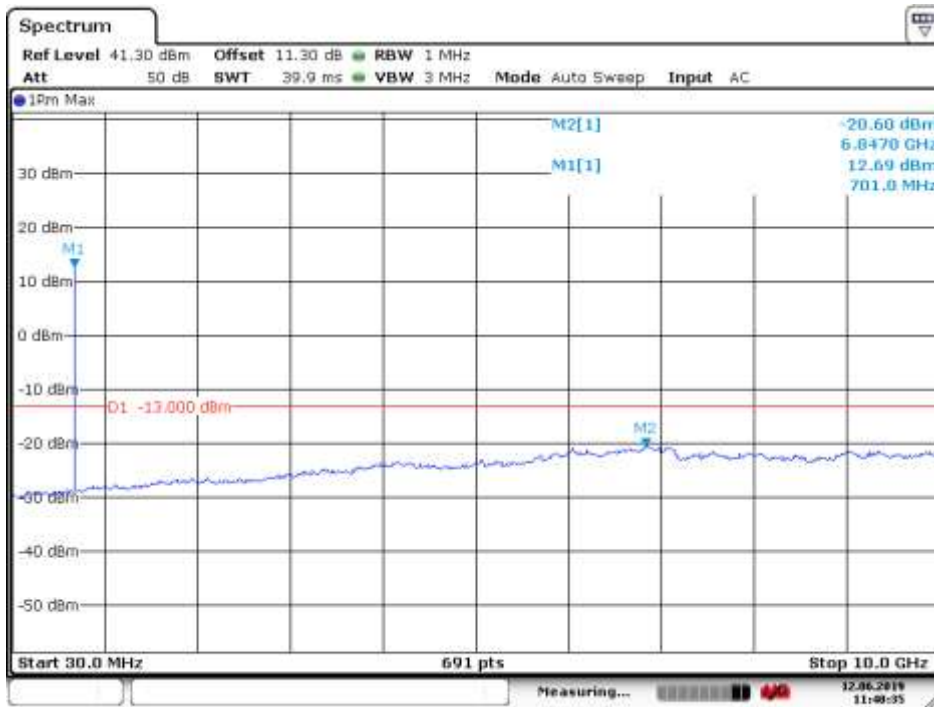
30MHz to 10GHz, High Channel, Subcarrier (15kHz), QPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.



30MHz to 10GHz, High Channel, Subcarrier (15kHz), BPSK, 1@0

Note: The strong emission shown in each case is the carrier signal.



Date: 12 JUN 2019 11:40:35

30MHz to 10GHz, High Channel, Subcarrier (15kHz), BPSK, 12@0

Note: The strong emission shown in each case is the carrier signal.

5.4 Radiated Spurious Emission

Specifications:	FCC Part 2.1051, 24.238, 2.1053, 22.917, 27.53
DUT Serial Number:	868334032569323
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

According to Part 24.238 (a), i.e., Out of Band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB, so the limit level is: $P(\text{dBm}) - (43 + 10 \log(P)) \text{ dB} = -13\text{dBm}$.

According to Part 27.53(h):

Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 Bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

According to Part 27.53(g):

For operations in the 600 MHz Band and the 698-746 MHz Band, the power of any emission outside a licensee's frequency Band(s) of operation shall be attenuated below the transmitter power (P) within the licensed Band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution Bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz Bands immediately outside and adjacent to a licensee's frequency block, a resolution Bandwidth of at least 30 kHz may be employed.

Limits for Radiated spurious emissions(UE)	
Frequency range	Limit Level /Resolution Bandwidth
30 MHz to 20000 MHz	-13dBm/1MHz

Measurement Uncertainty:

Item	Uncertainty
Expanded Uncertainty	5.15 dB (k=2)

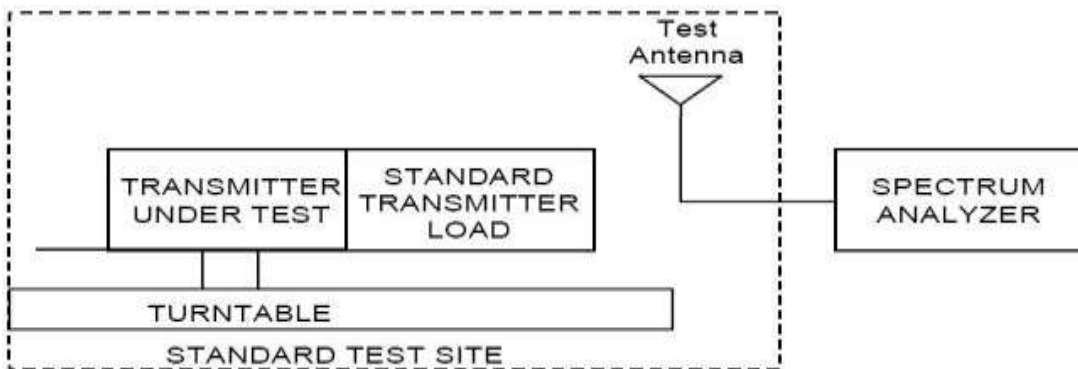
Test Setup:

The EUT was placed in an anechoic chamber. The Wireless Communications Test Set was used to set the TX channel and power level and modulate the TX signal with different bit patterns.

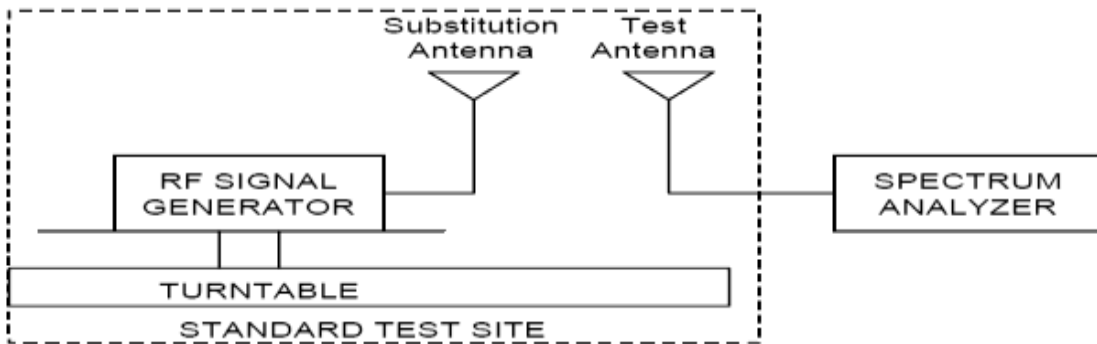
Test Method:

The measurement method is substitution method accordance with section 2.2.12 of ANSI/TIA-603-E: Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

(a) Connect the equipment as illustrated and measure the spurious emissions as the method as above. The distance from the device to the antenna is 3 m .



(b) Reconnect the equipment as illustrated.



(c) Remove the transmitter and replace it with a substitution antenna. The center of the substitution antenna should be approximately at the same location as the center of the transmitter.

(d) Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a non-radiating cable. With the antennas at both ends horizontally polarized, and with the signal generator tuned to a particular spurious frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output.

(e) Repeat step d) with both antennas vertically polarized for each spurious frequency.

(f) Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the

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readings obtained in steps d) and e) by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna by the following formula:

$$P_d(\text{dBm}) = P_g(\text{dBm}) - \text{cable loss (dB)} + \text{antenna gain (dB)}$$

where:

P_d is the dipole equivalent power and P_g is the generator output power into the substitution antenna.

Note: Only worst case mode of in-band result is given below, the EUT is working in Sub-carrier Spacing 3.75 kHz, one tone mode.

5.4.1 NB-IoT Band 2 Radiated Spurious Emission Results

Test Data (QPSK Mode channel 18601)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3701.12	-49.80	7.2	8.9	-48.10	V
5551.32	-56.73	2.5	10.5	-48.73	V
7401.07	-73.30	0.9	11.9	-62.30	V
9250.10	-70.55	1.0	11.5	-60.05	V
11100.53	-74.14	0.4	12.1	-62.44	V
12950.72	-72.18	0.4	12.4	-60.18	V

Test Data (QPSK Mode channel 18900)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3760.0	-49.61	7.3	9.2	-47.71	V
5640.0	-58.24	1.8	10.5	-49.54	V
7520.0	-71.48	0.9	11.9	-60.48	V
9400.0	-72.41	0.8	11.8	-61.41	V
11280.0	-73.93	0.3	12.1	-62.13	V
13160.0	-76.55	0.4	12.4	-64.55	V

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Test Data (QPSK Mode channel 19199)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3819.8	-50.71	7.4	9.2	-48.91	V
5729.7	-57.05	1.5	10.5	-48.05	V
7639.6	-74.59	1.1	11.9	-63.79	V
9549.5	-72.76	0.9	11.8	-61.86	V
11459.4	-76.30	0.3	12.1	-64.50	V
13369.3	-72.76	0.4	12.4	-60.76	V

Test Data (BPSK Mode channel 18601)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3769.46	-49.26	7.2	8.9	-47.56	V
5550.12	-57.21	2.5	10.5	-49.21	V
7400.48	-74.24	0.9	11.9	-63.24	V
9251.07	-75.46	1.0	11.5	-64.96	V
11100.35	-73.97	0.4	12.1	-62.27	V
12950.39	-73.68	0.4	12.4	-61.68	V

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Test Data (BPSK Mode channel 18900)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3760.0	-49.92	7.3	9.2	-48.02	V
5640.0	-57.31	1.8	10.5	-48.61	V
7520.0	-73.12	0.9	11.9	-62.12	V
9400.0	-73.27	0.8	11.8	-62.27	V
11280.0	-72.29	0.3	12.1	-60.49	V
13160.0	-74.86	0.4	12.4	-62.86	V

Test Data (BPSK Mode channel 19199)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3819.8	-49.48	7.4	9.2	-47.68	V
5729.7	-58.53	1.5	10.5	-49.53	V
7639.6	-73.01	1.1	11.9	-62.21	V
9549.5	-75.82	0.9	11.8	-64.92	V
11459.4	-74.72	0.3	12.1	-62.92	V
13369.3	-75.96	0.4	12.4	-63.96	V

5.4.2 NB-IoT Band 4 Radiated Spurious Emission Results

Test Data (QPSK Mode channel 19951)

Frequency [MHz]	Generator output power(P _g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P _d) [dBm]	Antenna Polarization [H/V]
3420.2	-50.95	6.9	8.9	-48.95	V
5130.3	-57.10	6.3	9.9	-53.50	V
6840.4	-75.63	0.8	11.9	-64.53	V
8550.5	-70.97	0.9	11.2	-60.67	V
10260.6	-75.02	0.5	12.0	-63.52	V
11970.7	-73.28	0.4	12.2	-61.48	V

Test Data (QPSK Mode channel 20175)

Frequency [MHz]	Generator output power(P _g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P _d) [dBm]	Antenna Polarization [H/V]
3465.0	-47.86	6.9	8.9	-45.86	V
5197.5	-56.70	5.8	9.9	-52.60	V
6930.0	-72.51	0.9	11.9	-61.51	V
8662.5	-74.09	0.9	11.2	-63.79	V
10395.0	-73.21	0.3	12.0	-61.51	V
12127.5	-72.22	0.4	12.2	-60.42	V

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Test Data (QPSK Mode channel 20399)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3509.8	-46.13	7.0	8.9	-44.23	V
5264.7	-58.96	5.0	9.9	-54.06	V
7019.6	-71.31	1.2	11.9	-60.61	V
8774.5	-74.49	1.2	11.2	-64.49	V
10529.4	-71.58	0.6	12.0	-60.18	V
12284.3	-73.85	0.2	12.2	-61.85	V

Test Data (BPSK Mode channel 19951)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3420.2	-46.70	6.9	8.9	-44.70	V
5130.3	-58.90	5.8	9.9	-54.80	V
6840.4	-72.17	0.9	11.9	-61.17	V
8550.5	-75.06	0.9	11.2	-64.76	V
10260.6	-73.35	0.3	12.0	-61.65	V
11970.7	-75.96	0.4	12.2	-64.16	V

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Test Data (BPSK Mode channel 20175)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3465.0	-47.61	6.9	8.9	-45.61	V
5197.5	-59.44	5.8	9.9	-55.34	V
6930.0	-72.63	0.9	11.9	-61.63	V
8662.5	-73.65	0.9	11.2	-63.35	V
10395.0	-75.12	0.3	12.0	-63.42	V
12127.5	-73.01	0.4	12.2	-61.21	V

Test Data (BPSK Mode channel 20399)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3509.8	-47.09	7.0	8.9	-45.19	V
5264.7	-59.17	5.0	9.9	-54.27	V
7019.6	-73.36	1.2	11.9	-62.66	V
8774.5	-71.97	1.2	11.2	-61.97	V
10529.4	-74.87	0.6	12.0	-63.47	V
12284.3	-75.81	0.2	12.2	-63.81	V

5.4.3 NB-IoT Band 12 Radiated Spurious Emission Results

Test Data (QPSK Mode channel 23011)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1298.32	-46.10	4.2	8.0	-42.30	H
2097.11	-46.90	5.4	8.2	-44.10	V
2796.38	-47.39	6.1	7.8	-45.69	V
3495.72	-53.01	7.0	8.9	-51.11	V
4194.78	-65.52	7.8	9.2	-64.12	V
4893.23	-62.88	7.8	9.9	-60.78	V

Test Data (QPSK Mode channel 23095)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1415.0	-46.06	4.4	8.3	-42.16	V
2122.5	-48.58	5.4	8.2	-45.78	V
2830.0	-48.59	6.3	7.9	-46.99	V
3537.5	-52.59	7.0	8.9	-50.69	V
4245.0	-64.99	7.8	9.2	-63.59	V
4952.5	-63.28	7.7	9.9	-61.08	V

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Test Data (QPSK Mode channel 23179)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1432.56	-47.41	4.4	8.2	-43.61	V
2148.62	-47.48	5.4	7.0	-45.88	V
2865.25	-47.73	6.4	8.0	-46.13	V
3581.13	-52.57	7.1	8.9	-50.77	V
4296.21	-66.15	7.8	9.2	-64.75	V
5012.44	-64.85	7.5	9.9	-62.45	V

Test Data (BPSK Mode channel 23011)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1298.19	-47.96	4.2	8.0	-44.16	V
2097.85	-47.69	5.4	8.2	-44.89	V
2795.99	-48.96	6.1	7.8	-47.26	V
3495.28	-52.87	7.0	8.9	-50.97	V
4194.39	-65.50	7.8	9.2	-64.10	V
4893.02	-65.77	7.8	9.9	-63.67	V

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Test Data (BPSK Mode channel 23095)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1415.0	-49.57	4.4	8.3	-45.67	V
2122.5	-47.83	5.4	8.2	-45.03	V
2830.0	-49.71	6.3	7.9	-48.11	V
3537.5	-51.61	7.0	8.9	-49.71	V
4245.0	-64.91	7.8	9.2	-63.51	V
4952.5	-63.64	7.7	9.9	-61.44	V

Test Data (BPSK Mode channel 23179)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1431.8	-50.11	4.4	8.2	-46.31	V
2147.7	-45.85	5.4	7.0	-44.25	V
2863.6	-51.37	6.4	8.0	-49.77	V
3579.5	-52.11	7.1	8.9	-50.31	V
4295.4	-62.28	7.8	9.2	-60.88	V
5011.3	-66.35	7.5	9.9	-63.95	V

5.4.4 NB-IoT Band 13 Radiated Spurious Emission Results

Test Data (QPSK Mode channel 23181)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1554.37	-47.56	4.6	8.6	-43.56	V
2331.92	-46.66	5.6	8.0	-44.26	V
3108.44	-45.41	6.6	8.9	-43.11	V
3884.85	-66.03	7.4	9.2	-64.23	V
4662.64	-65.13	8.1	9.5	-63.73	V
5440.57	-70.79	2.9	10.5	-63.19	V

Test Data (QPSK Mode channel 23230)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1564.0	-48.60	4.6	8.6	-44.60	V
2346.0	-45.12	5.6	8	-42.72	V
3128.0	-45.92	6.6	8.9	-43.62	V
3910.0	-64.44	7.4	9.2	-62.64	V
4692.0	-62.57	8.1	9.5	-61.17	V
5474.0	-70.96	2.9	10.5	-63.36	V

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Test Data (QPSK Mode channel 23279)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1573.9	-44.26	4.6	8.6	-40.26	V
2360.7	-44.06	5.6	8.0	-41.66	V
3147.6	-45.52	6.6	8.9	-43.22	V
3934.5	-66.63	7.4	9.2	-64.83	V
4721.4	-64.00	8.1	9.5	-62.60	V
5508.3	-70.26	2.9	10.5	-62.66	V

Test Data (BPSK Mode channel 23181)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1554.0	-44.26	4.6	8.6	-40.26	V
2331.0	-44.81	5.6	8.0	-42.41	V
3108.0	-46.12	6.6	8.9	-43.82	V
3885.0	-64.04	7.4	9.2	-62.24	V
4662.0	-64.44	8.1	9.5	-63.04	V
5439.0	-68.73	2.9	10.5	-61.13	V

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Test Data (BPSK Mode channel 23230)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1564.0	-45.62	4.6	8.6	-41.62	V
2346.0	-44.58	5.6	8.0	-42.18	V
3128.0	-45.82	6.6	8.9	-43.52	V
3910.0	-64.34	7.4	9.2	-62.54	V
4692.0	-65.45	8.1	9.5	-64.05	V
5474.0	-72.48	2.9	10.5	-64.88	V

Test Data (BPSK Mode channel 23279)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1573.9	-45.73	4.6	8.6	-41.73	V
2360.7	-45.08	5.6	8	-42.68	V
3147.6	-45.82	6.6	8.9	-43.52	V
3934.5	-62.81	7.4	9.2	-61.01	V
4721.4	-62.08	8.1	9.5	-60.68	V
5508.3	-72.57	2.9	10.5	-64.97	V

5.4.5 NB-IoT Band 26 Radiated Spurious Emission Results

Test Data (QPSK Mode channel 26791)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1628.0	-44.72	4.7	7.3	-42.12	V
2442.0	-43.56	5.9	6.8	-42.66	V
3256.0	-46.21	6.7	8.9	-44.01	V
4070.0	-64.79	7.5	9.2	-63.09	V
4884.0	-63.32	7.8	9.5	-61.62	V
5698.0	-69.55	1.7	10.5	-60.75	V

Test Data (QPSK Mode channel 26915)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1663.0	-45.33	4.8	7.6	-42.53	V
2494.5	-42.85	5.9	6.8	-41.95	V
3326.0	-44.63	6.8	8.9	-42.53	V
4157.5	-63.05	7.6	9.2	-61.45	V
4989.0	-65.97	7.5	9.9	-63.57	V
5820.5	-70.34	1.4	10.9	-60.84	V

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Test Data (QPSK Mode channel 27039)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1697.8	-44.46	4.8	8.0	-41.26	V
2546.7	-44.17	5.9	7.2	-42.87	V
3395.6	-44.05	6.9	8.9	-42.05	V
4244.5	-66.66	7.8	9.5	-64.96	V
5093.4	-66.91	6.8	9.9	-63.81	V
5942.3	-70.27	1.4	10.9	-60.77	V

Test Data (BPSK Mode channel 26791)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1628.0	-45.48	4.7	7.3	-42.88	V
2442.0	-43.03	5.9	6.8	-42.13	V
3256.0	-46.18	6.7	8.9	-43.98	V
4070.0	-66.11	7.5	9.2	-64.41	V
4884.0	-62.79	7.8	9.5	-61.09	V
5698.0	-72.50	1.7	10.5	-63.70	V

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Test Data (BPSK Mode channel 26915)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1663.0	-44.92	4.8	7.6	-42.12	V
2494.5	-43.31	5.9	6.8	-42.41	V
3326.0	-45.78	6.8	8.9	-43.68	V
4157.5	-65.78	7.6	9.2	-64.18	V
4989.0	-63.74	7.5	9.9	-61.34	V
5820.5	-70.68	1.4	10.9	-61.18	V

Test Data (BPSK Mode channel 27039)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1697.8	-45.04	4.8	8.0	-41.84	V
2546.7	-43.43	5.9	7.2	-42.13	V
3395.6	-45.88	6.9	8.9	-43.88	V
4244.5	-65.78	7.8	9.5	-64.08	V
5093.4	-64.24	6.8	9.9	-61.14	V
5942.3	-74.44	1.4	10.9	-64.94	V

5.4.6 NB-IoT Band 66 Radiated Spurious Emission Results

Test Data (QPSK Mode channel 131972)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3420.0	-50.95	6.9	8.9	-42.12	V
5130.0	-57.10	6.3	9.9	-42.66	V
6840.0	-75.63	0.8	11.9	-44.01	V
8550.0	-70.97	0.9	11.2	-63.09	V
10260.0	-75.02	0.5	12.0	-61.62	V
11970.0	-73.28	0.4	12.2	-60.75	V

Test Data (QPSK Mode channel 132322)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3490.0	-45.33	7.0	8.9	-42.53	V
5235.0	-42.85	5.0	9.9	-41.95	V
6980.0	-44.63	0.9	11.9	-42.53	V
8725.0	-63.05	1.2	11.2	-61.45	V
10470.0	-65.97	0.3	12.0	-63.57	V
12215.0	-70.34	0.3	12.2	-60.84	V

Test Data (QPSK Mode channel 132671)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3559.8	-44.46	6.9	8.9	-41.26	V
5339.7	-44.17	6.3	10.5	-42.87	V
7119.6	-44.05	0.8	11.9	-42.05	V
8899.5	-66.66	0.9	11.5	-64.96	V
10679.4	-66.91	0.5	12.2	-63.81	V
12459.3	-70.27	0.4	12.3	-60.77	V

Test Data (BPSK Mode channel 131972)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3420.0	-50.95	6.9	8.9	-42.88	V
5130.0	-57.10	6.3	9.9	-42.13	V
6840.0	-75.63	0.8	11.9	-43.98	V
8550.0	-70.97	0.9	11.2	-64.41	V
10260.0	-75.02	0.5	12.0	-61.09	V
11970.0	-73.28	0.4	12.2	-63.70	V

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Test Data (BPSK Mode channel 132322)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3490.0	-45.33	7.0	8.9	-42.12	V
5235.0	-42.85	5.0	9.9	-42.41	V
6980.0	-44.63	0.9	11.9	-43.68	V
8725.0	-63.05	1.2	11.2	-64.18	V
10470.0	-65.97	0.3	12.0	-61.34	V
12215.0	-70.34	0.3	12.2	-61.18	V

Test Data (BPSK Mode channel 132671)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3559.8	-44.46	6.9	8.9	-41.84	V
5339.7	-44.17	6.3	10.5	-42.13	V
7119.6	-44.05	0.8	11.9	-43.88	V
8899.5	-66.66	0.9	11.5	-64.08	V
10679.4	-66.91	0.5	12.2	-61.14	V
12459.3	-70.27	0.4	12.3	-64.94	V

5.4.6 NB-IoT Band 71 Radiated Spurious Emission Results

Test Data (QPSK Mode channel 133122)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1326.0	-50.95	4.3	8.9	-42.12	V
1989.0	-57.10	5.2	9.9	-42.66	V
2652.0	-75.63	6.1	11.9	-44.01	V
3315.0	-70.97	6.5	11.2	-63.09	V
3978.0	-75.02	7.6	12.0	-61.62	V
4641.0	-73.28	8.1	12.2	-60.75	V

Test Data (QPSK Mode channel 133297)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1361.0	-45.33	7.0	8.9	-42.53	V
2041.5	-42.85	5.0	9.9	-41.95	V
2722.0	-44.63	0.9	11.9	-42.53	V
3402.5	-63.05	1.2	11.2	-61.45	V
4083.0	-65.97	0.3	12.0	-63.57	V
4763.5	-70.34	0.3	12.2	-60.84	V

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Test Data (QPSK Mode channel 133471)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
1395.8	-44.46	6.9	8.9	-41.26	V
2093.7	-44.17	6.3	10.5	-42.87	V
2791.6	-44.05	0.8	11.9	-42.05	V
3489.5	-66.66	0.9	11.5	-64.96	V
4187.4	-66.91	0.5	12.2	-63.81	V
4885.3	-70.27	0.4	12.3	-60.77	V

Test Data (BPSK Mode channel 131972)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3420.0	-50.95	6.9	8.9	-42.88	V
5130.0	-57.10	6.3	9.9	-42.13	V
6840.0	-75.63	0.8	11.9	-43.98	V
8550.0	-70.97	0.9	11.2	-64.41	V
10260.0	-75.02	0.5	12.0	-61.09	V
11970.0	-73.28	0.4	12.2	-63.70	V

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Test Data (BPSK Mode channel 132322)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3490.0	-45.33	7.0	8.9	-42.12	V
5235.0	-42.85	5.0	9.9	-42.41	V
6980.0	-44.63	0.9	11.9	-43.68	V
8725.0	-63.05	1.2	11.2	-64.18	V
10470.0	-65.97	0.3	12.0	-61.34	V
12215.0	-70.34	0.3	12.2	-61.18	V

Test Data (BPSK Mode channel 132671)

Frequency [MHz]	Generator output power(P_g) [dBm]	Cable loss [dB]	Antenna Gain [dB]	Spurious Emission Power (P_d) [dBm]	Antenna Polarization [H/V]
3559.8	-44.46	6.9	8.9	-41.84	V
5339.7	-44.17	6.3	10.5	-42.13	V
7119.6	-44.05	0.8	11.9	-43.88	V
8899.5	-66.66	0.9	11.5	-64.08	V
10679.4	-66.91	0.5	12.2	-61.14	V
12459.3	-70.27	0.4	12.3	-64.94	V

5.5 Band Edge

Specifications:	FCC Part 2.1051, 24.238, 2.1053, 22.917, 27.53
DUT Serial Number:	868334032569216
Test conditions:	Ambient Temperature:15°C-35°C Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

According to Part 22.917 (a), i.e., Out of Band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

According to Part 24.238 (a), i.e., Out of Band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB, so the limit level is: $P(\text{dBm}) - (43 + 10 \log(P)) \text{ dB} = -13\text{dBm}$.

According to Part 27.53(h):

Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 Bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB.

According to Part 27.53(g):

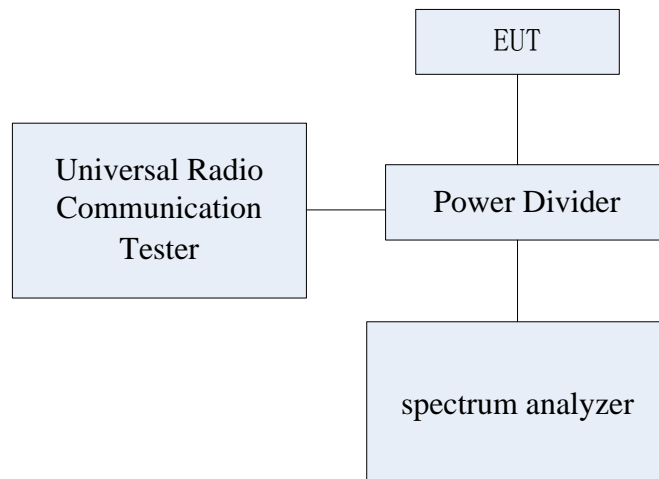
For operations in the 600 MHz Band and the 698-746 MHz Band, the power of any emission outside a licensee's frequency Band(s) of operation shall be attenuated below the transmitter power (P) within the licensed Band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution Bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz Bands immediately outside and adjacent to a licensee's frequency block, a resolution Bandwidth of at least 30 kHz may be employed.

Measurement Uncertainty:

Item	Uncertainty	
Expanded Uncertainty	$9\text{kHz} < f \leq 4\text{GHz}$	0.71 dB (k=2)
	$4\text{GHz} \leq f < 12.75\text{GHz}$	0.74 dB (k=2)
	$12.75\text{GHz} \leq f < 26\text{GHz}$	2.70 dB (k=2)

Test Setup:

During the test, the EUT was controlled via the Wireless Communications Test Set to ensure max power transmission and proper modulation and measured by spectrum analyzer.

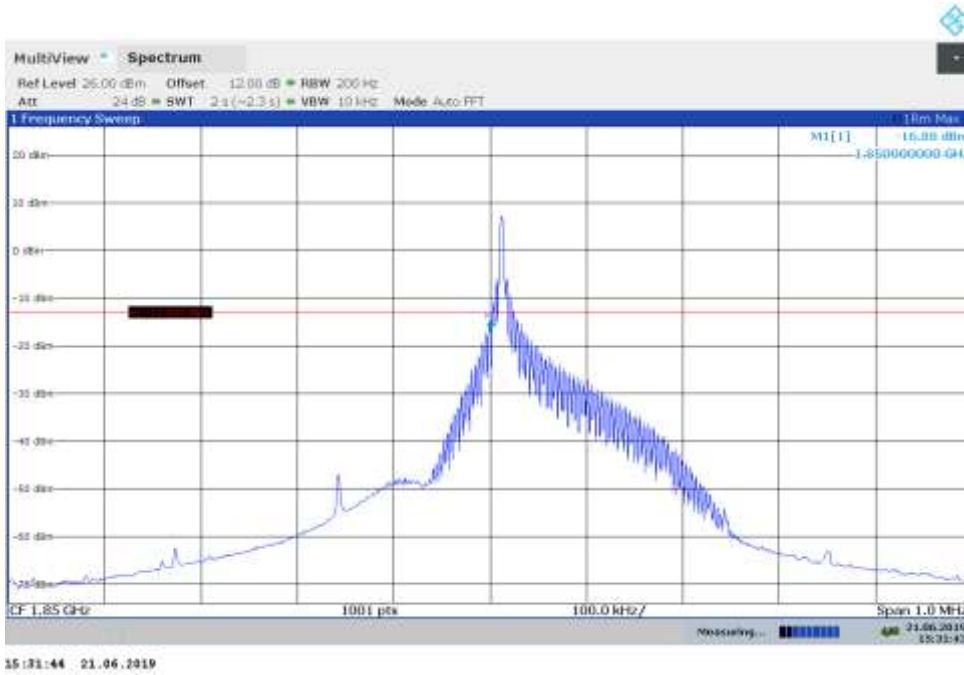


Test Method:

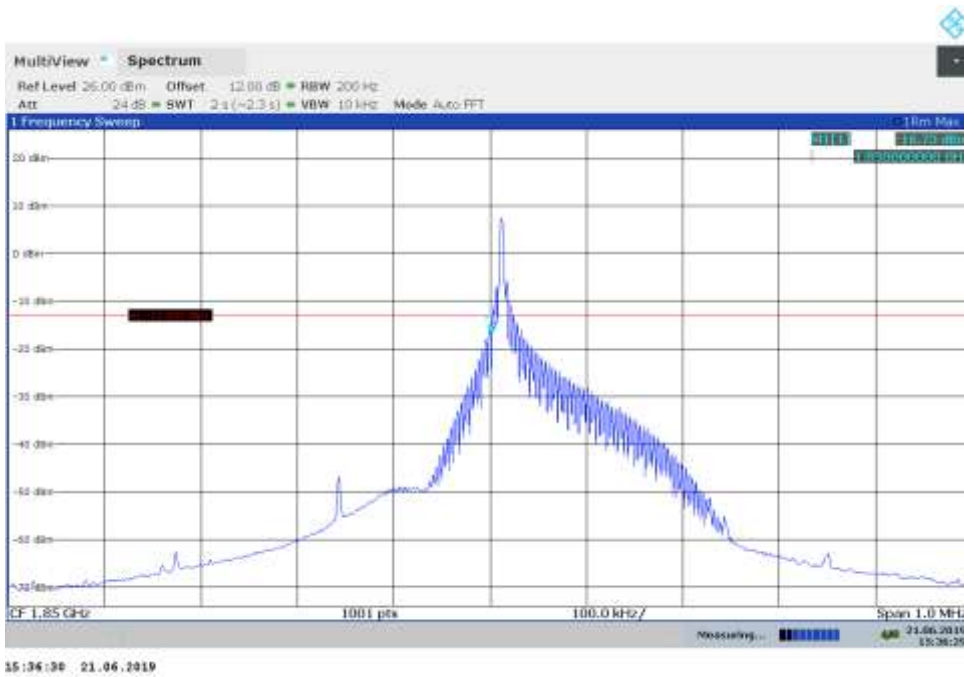
- 1) The EUT was coupled to the EMI test receiver analyzer mode and the base station simulator through a power divider. The loss of the cables the test system is calibrated to correct the readings.
- 2) The spectrum analyzer was set to Average Detector function and Maximum hold mode.
- 3) The resolution Bandwidth of the spectrum analyzer was a little greater than 1% of the 26dB emission Bandwidth.

Note: Only worst case mode of in-band result is given below.

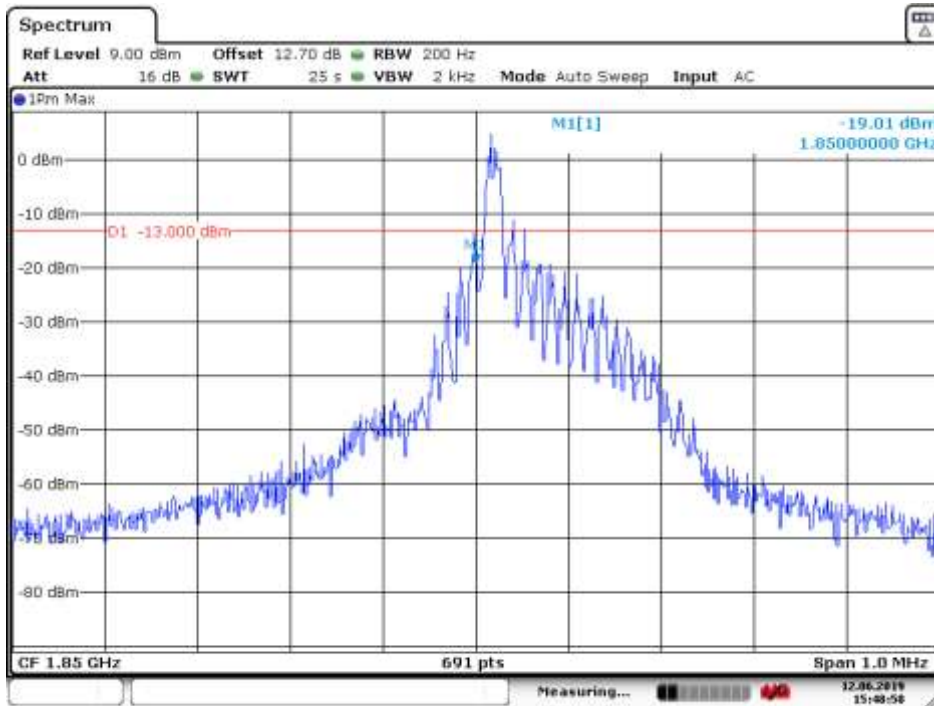
5.5.1 NB-IoT Band 2 Edge Results



Low Channel, Subcarrier (3.75kHz), QPSK, 1@0

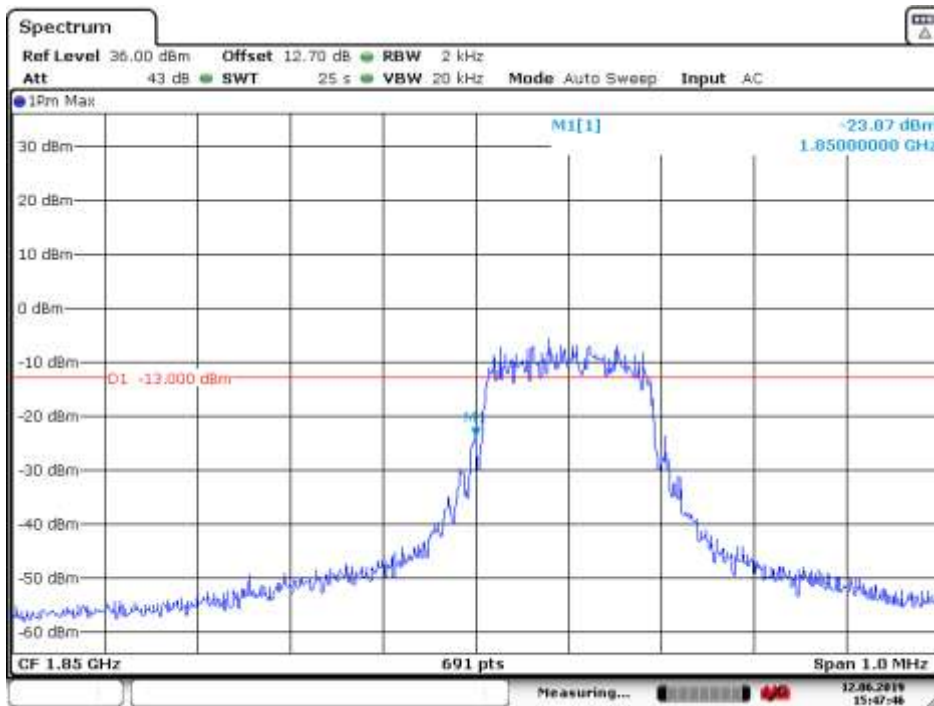


Low Channel, Subcarrier (3.75kHz), BPSK, 1@0



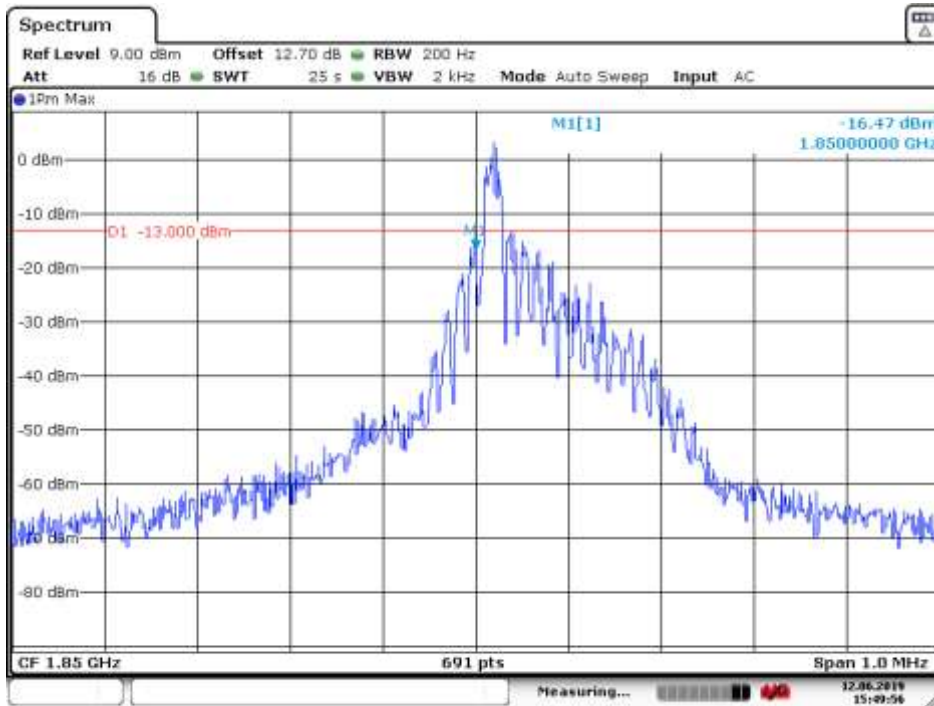
Date: 12 JUN 2019 15:48:58

Low Channel, Subcarrier (15kHz), QPSK, 1@0



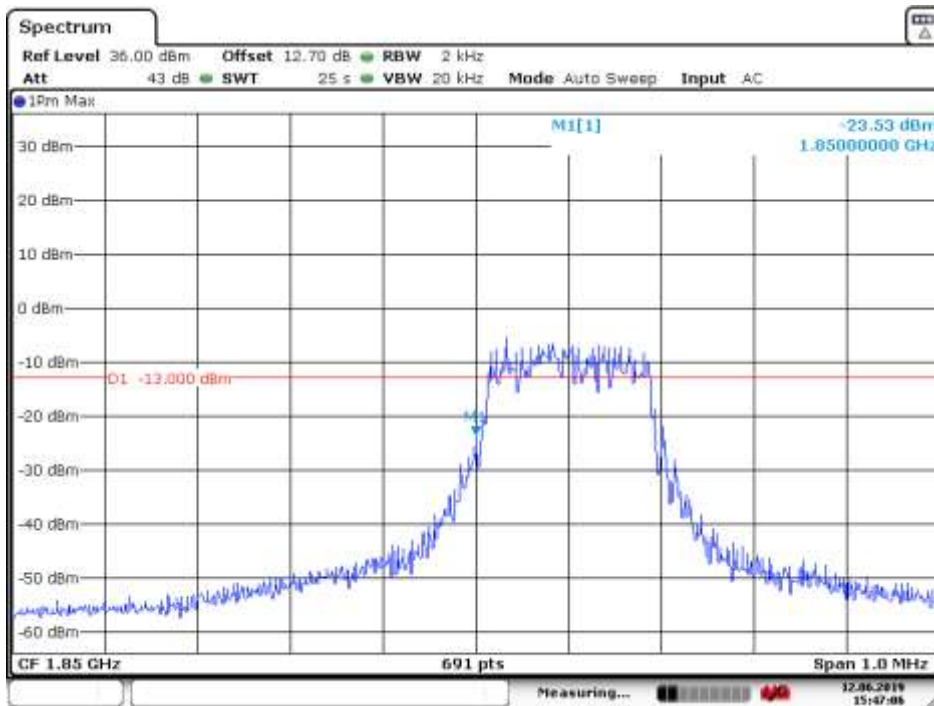
Date: 12 JUN 2019 15:47:47

Low Channel, Subcarrier (15kHz), QPSK, 12@0



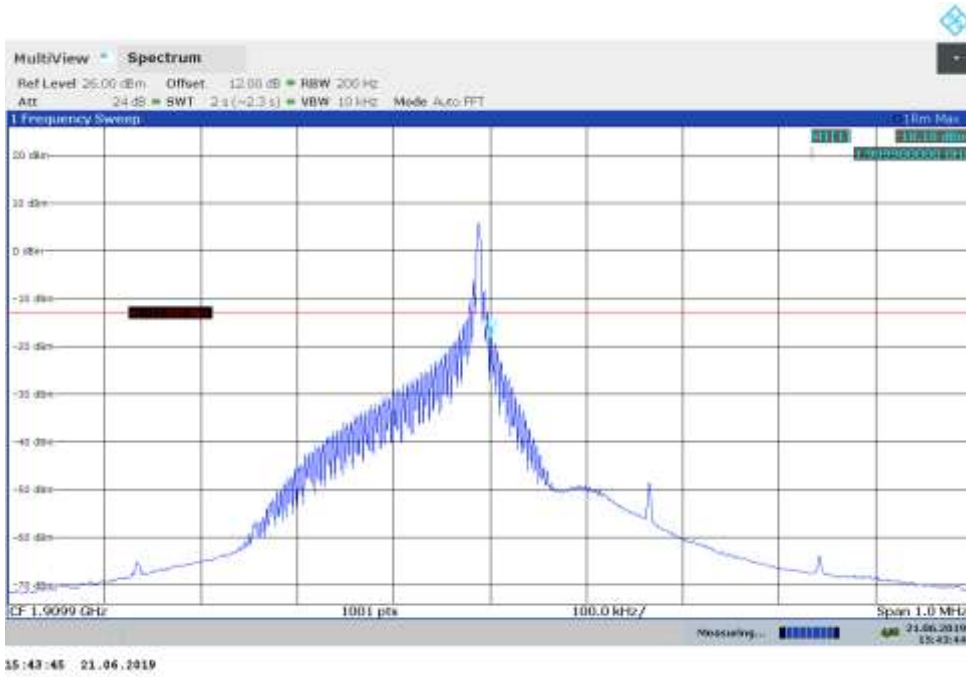
Date: 12 JUN 2019 15:49:56

Low Channel, Subcarrier (15kHz), BPSK, 1@0

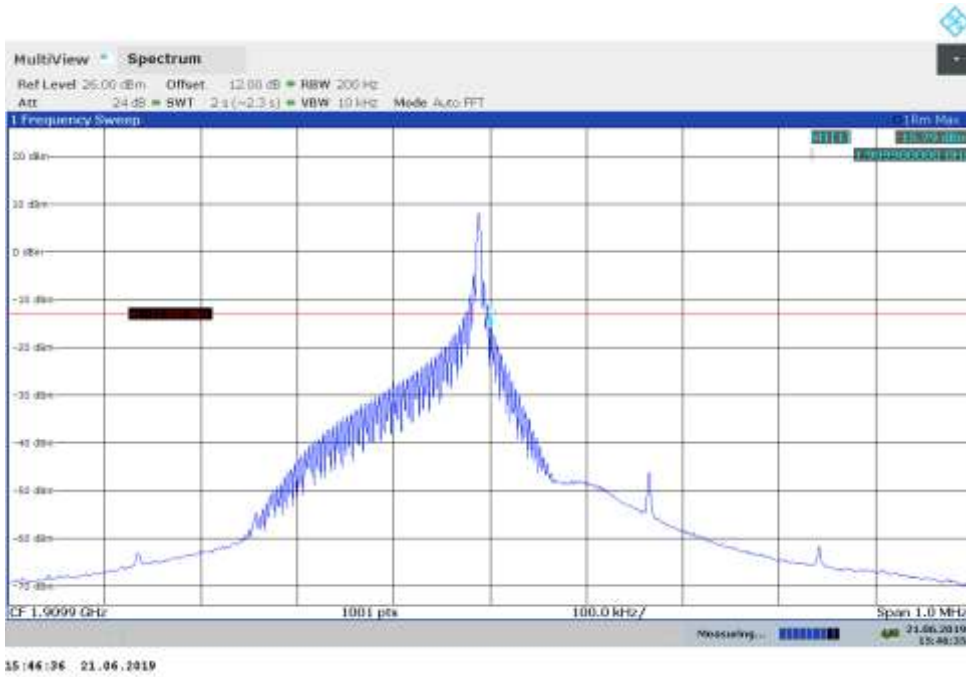


Date: 12 JUN 2019 15:47:06

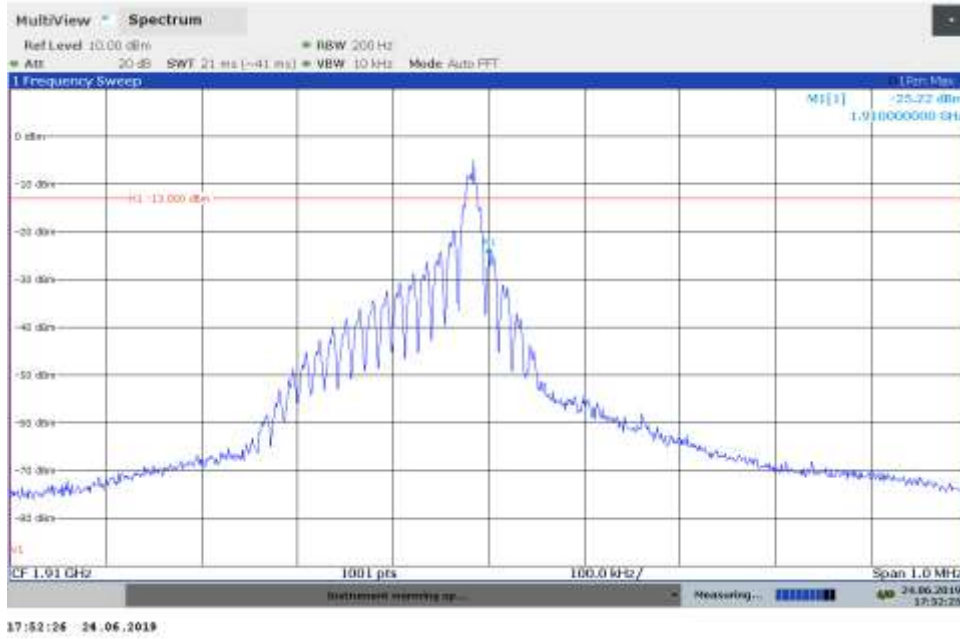
Low Channel, Subcarrier (15kHz), BPSK, 12@0



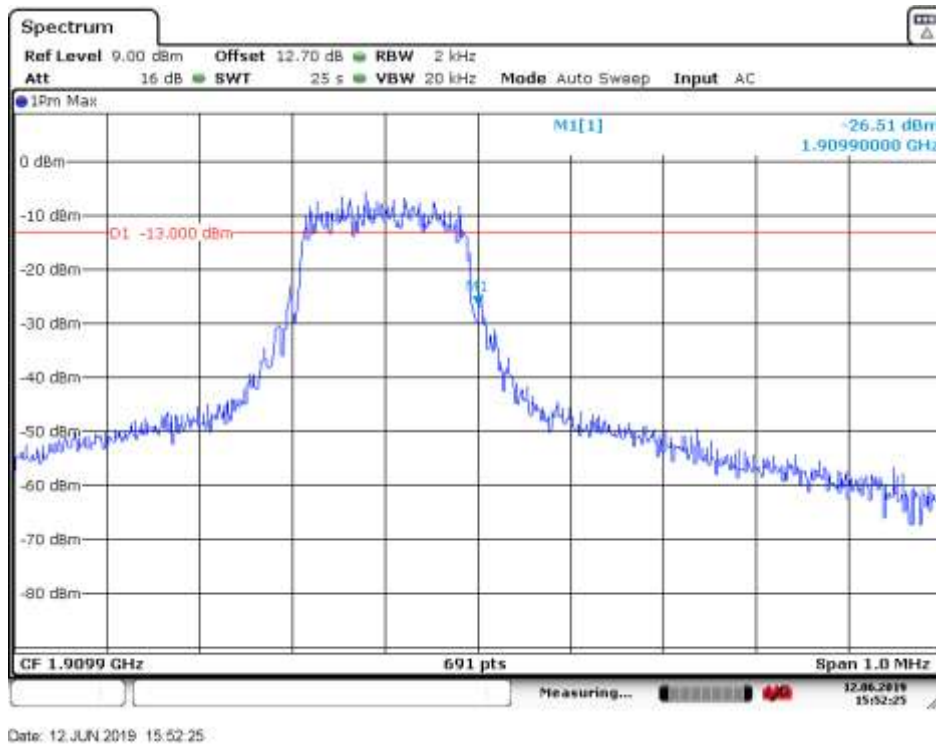
High Channel, Subcarrier (3.75kHz), QPSK, 1@47



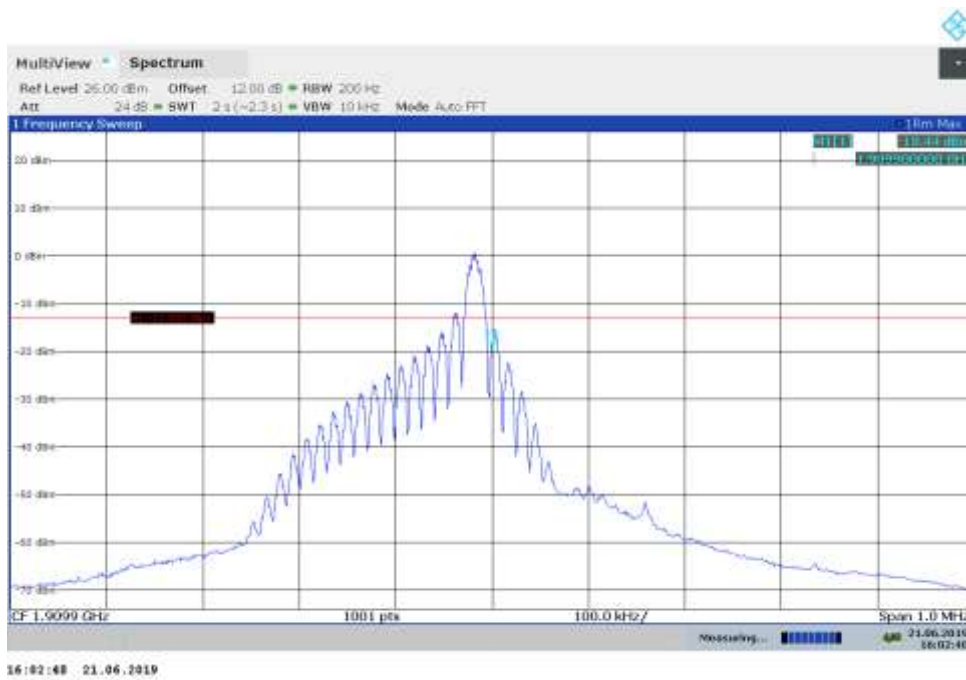
High Channel, Subcarrier (3.75kHz), BPSK, 1@47



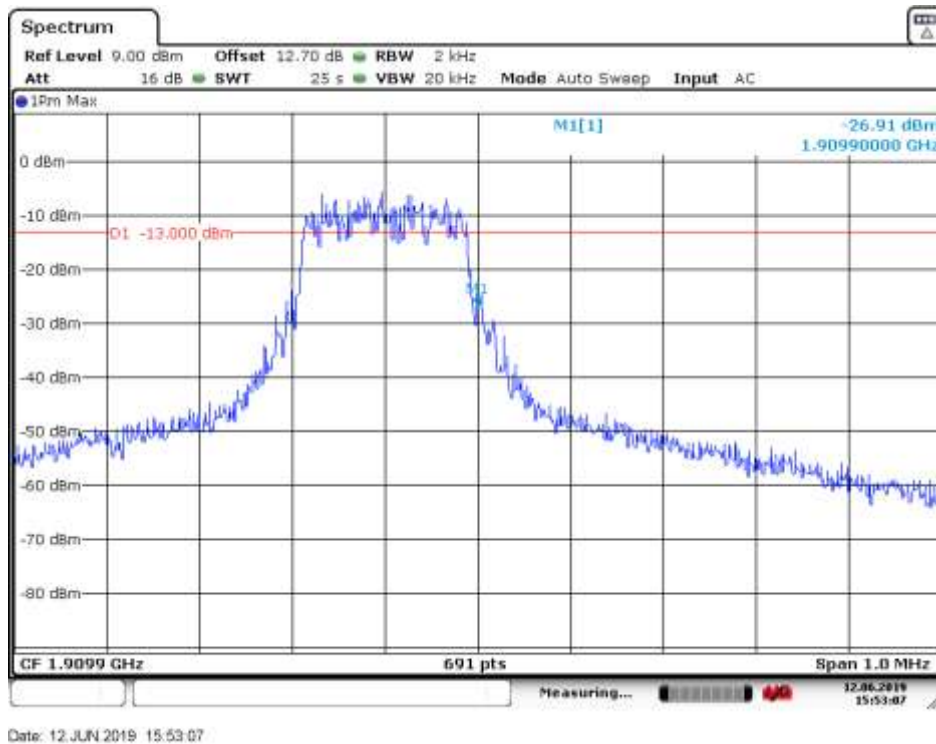
High Channel, Subcarrier (15kHz), QPSK, 1@11



High Channel, Subcarrier (15kHz), QPSK, 12@0

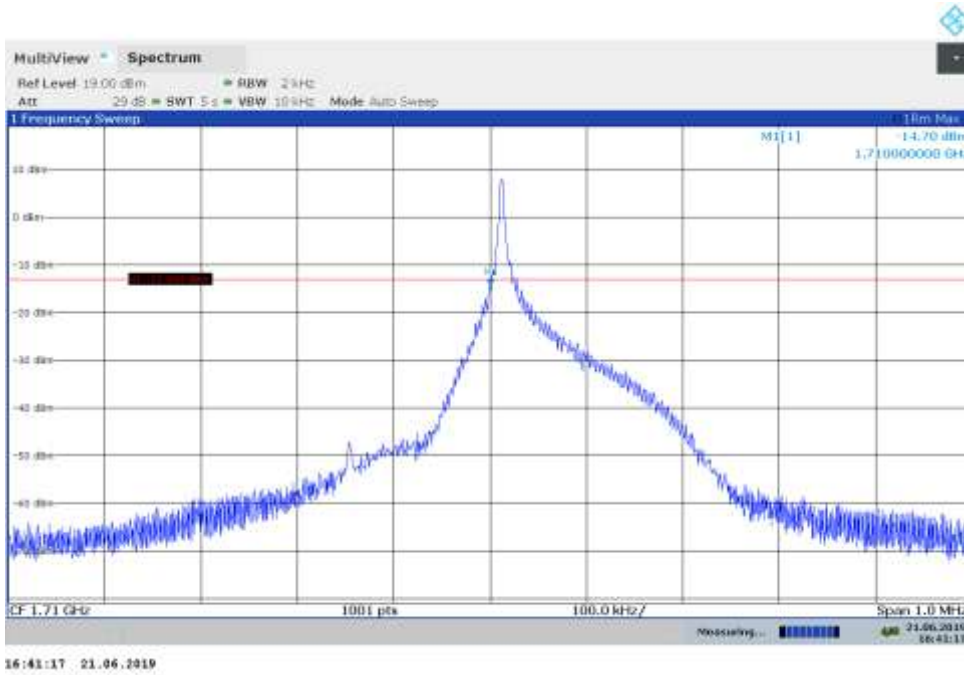


High Channel, Subcarrier (15kHz), BPSK, 1@11

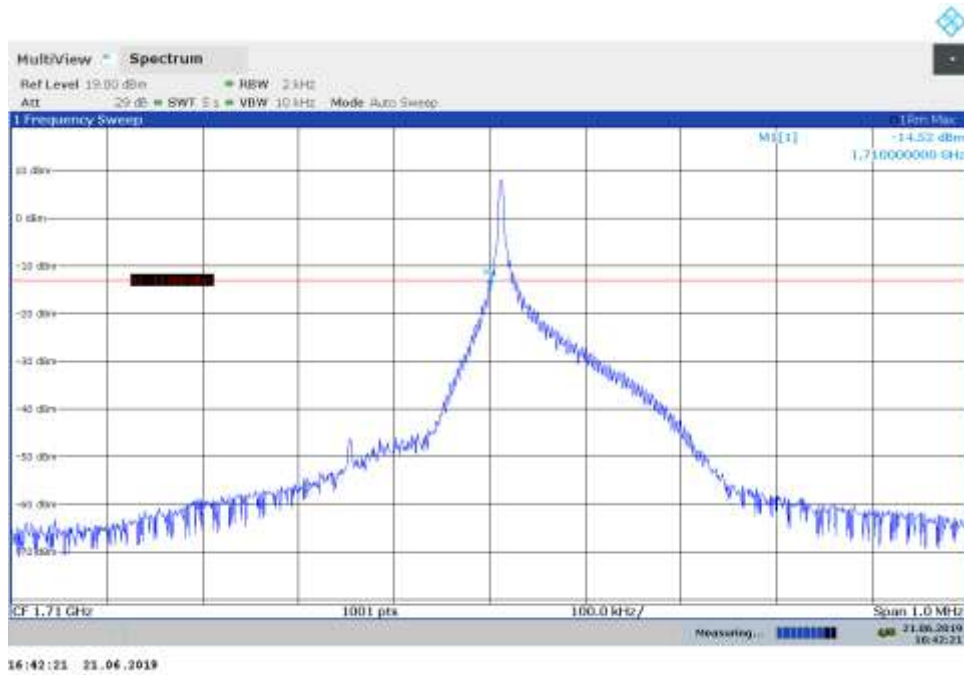


High Channel, Subcarrier (15kHz), BPSK, 12@0

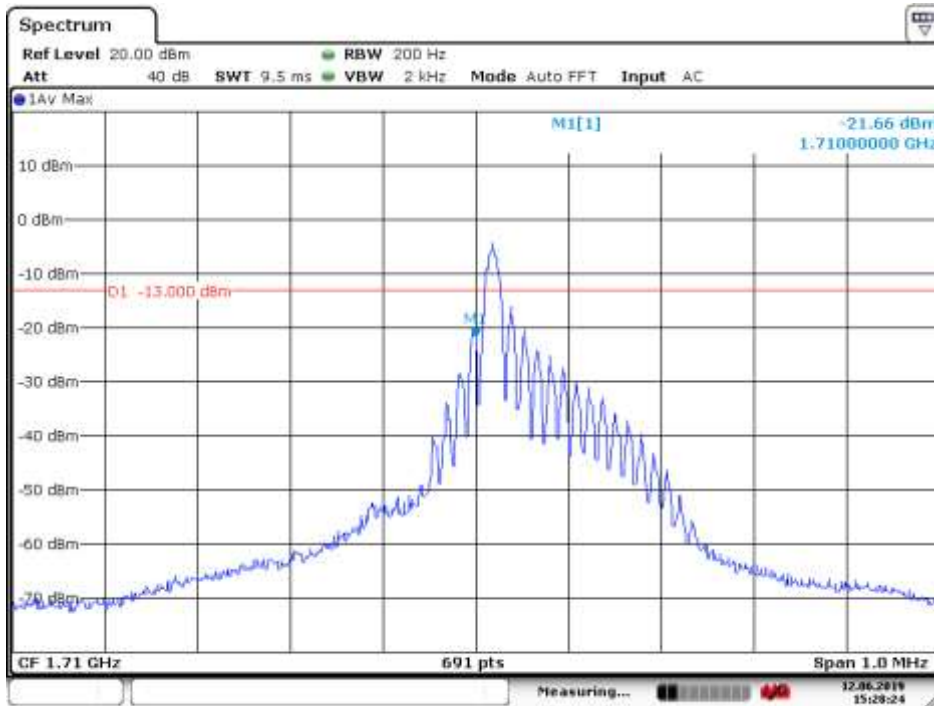
5.5.2 NB-IoT Band 4 Edge Results



Low Channel, Subcarrier (3.75kHz), QPSK, 1@0

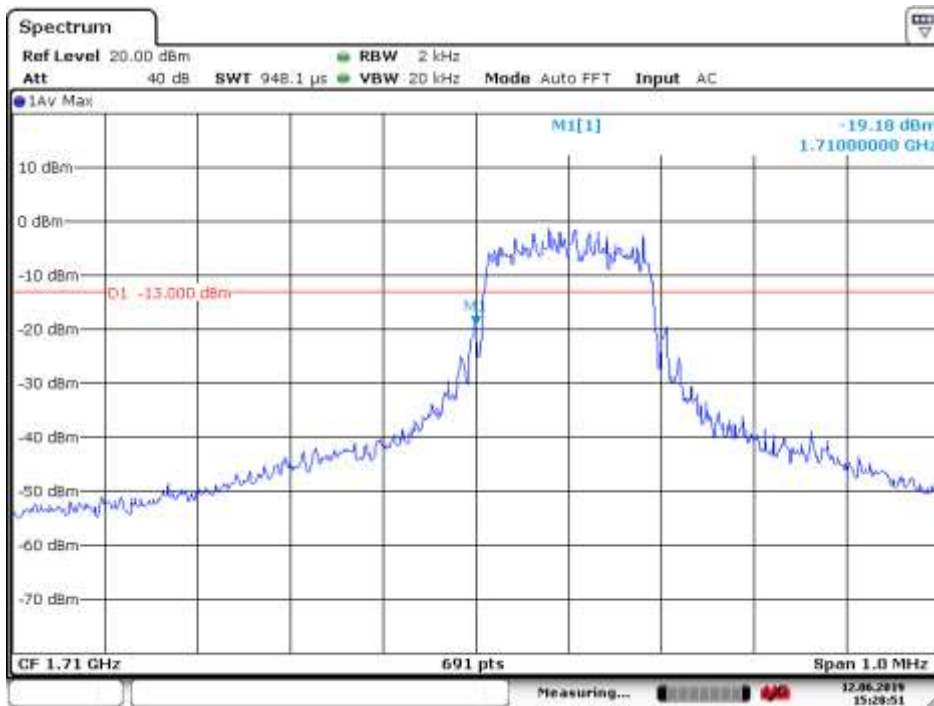


Low Channel, Subcarrier (3.75kHz), BPSK, 1@0



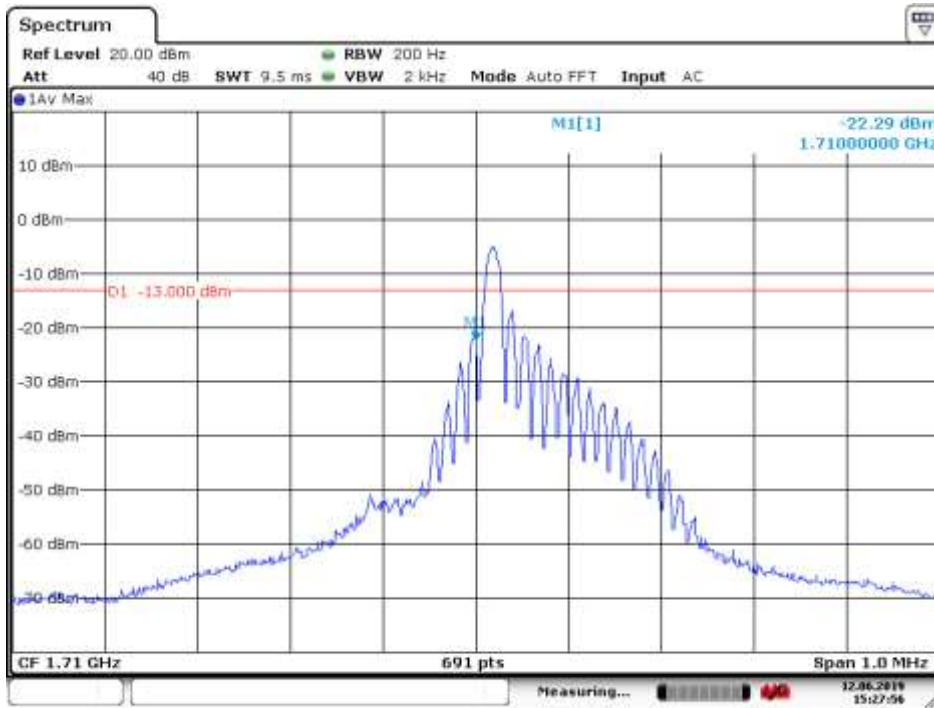
Date: 12 JUN 2019 15:28:24

Low Channel, Subcarrier (15kHz), QPSK, 1@0



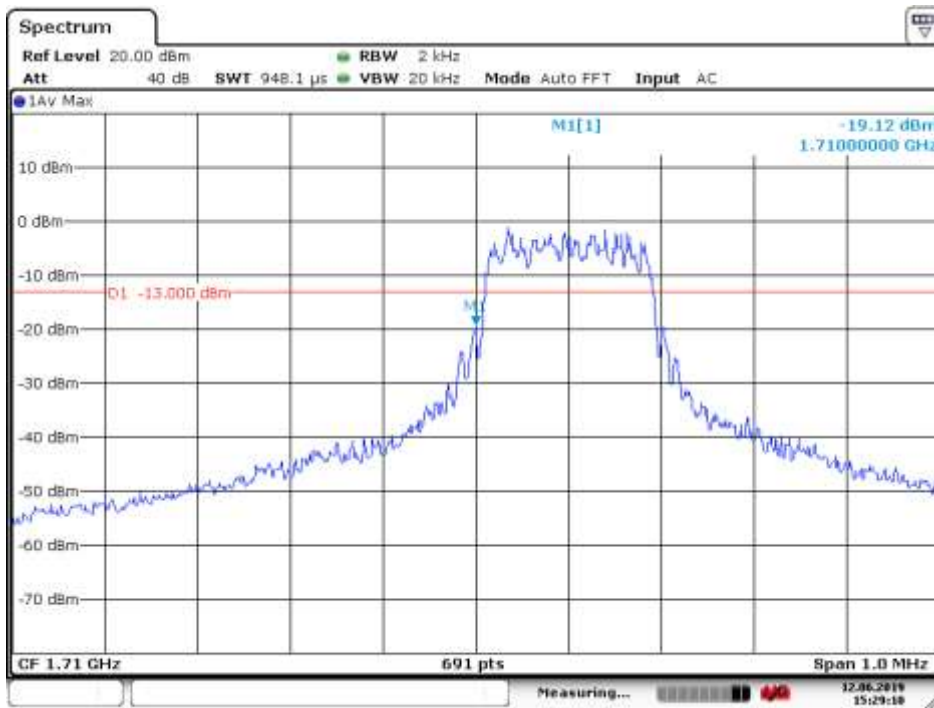
Date: 12 JUN 2019 15:28:51

Low Channel, Subcarrier (15kHz), QPSK, 12@0



Date: 12 JUN 2019 15:27:56

Low Channel, Subcarrier (15kHz), BPSK, 1@0



Date: 12 JUN 2019 15:29:10

Low Channel, Subcarrier (15kHz), BPSK, 12@0