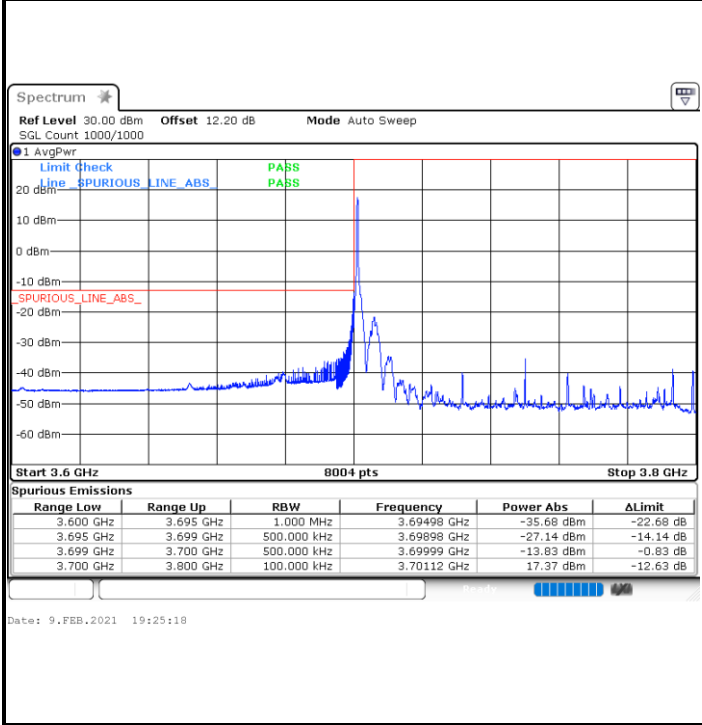


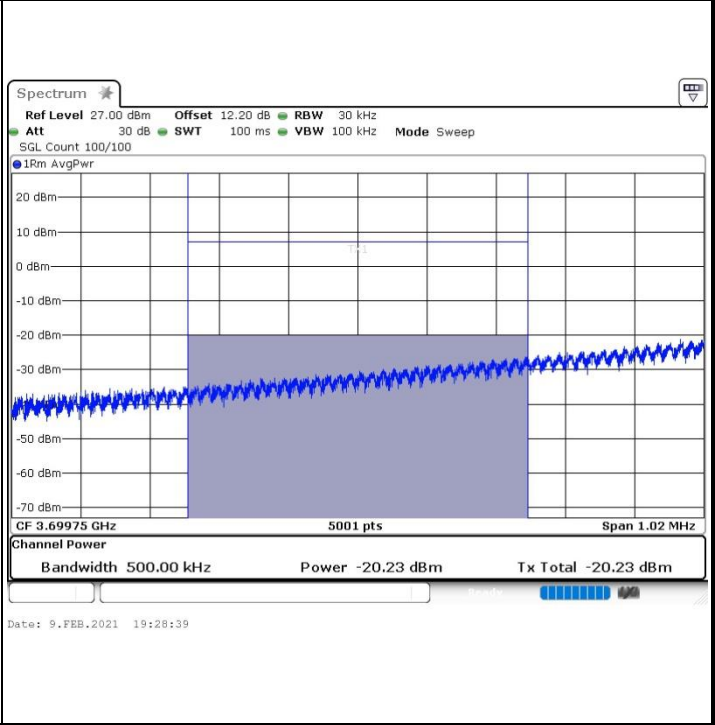


**FR1 n77 / 100MHz / DFT-S OFDM QPSK**

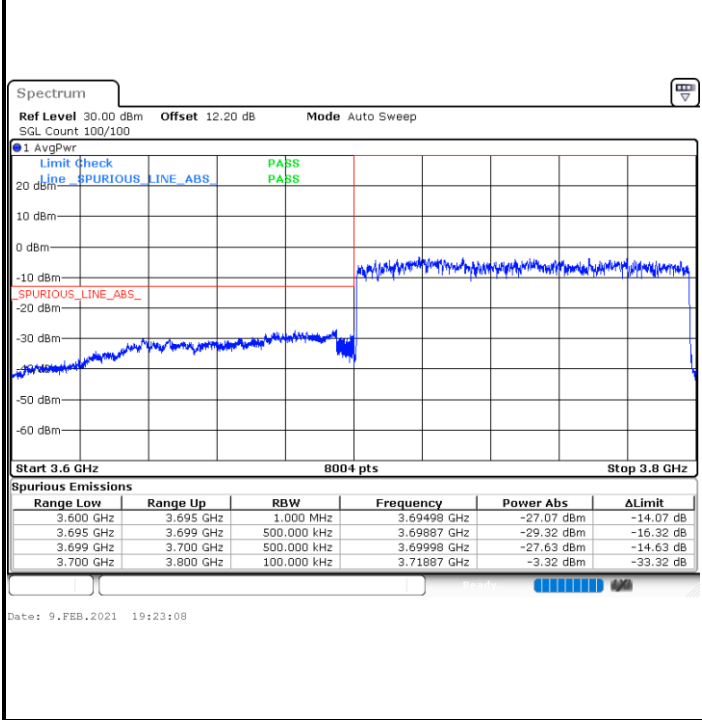
**Lowest Band Edge / 1 RB**



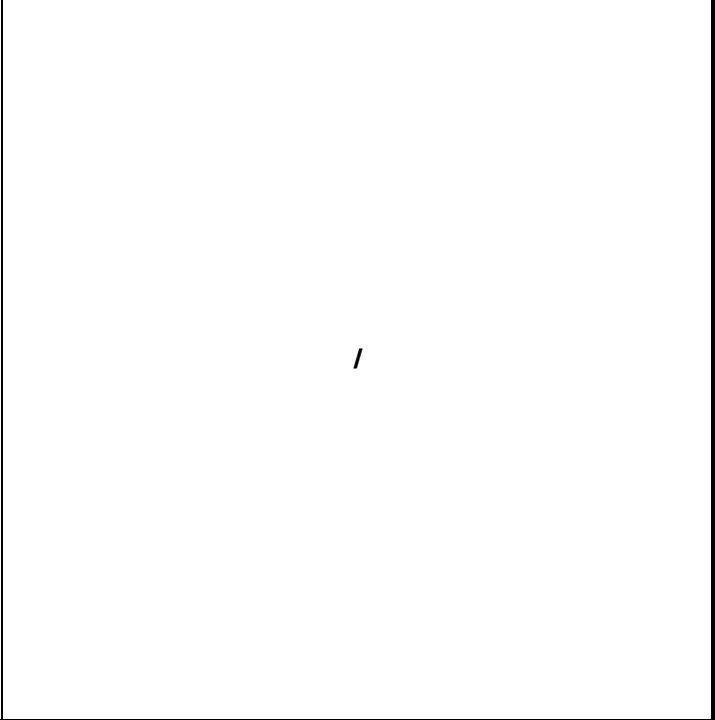
**Channel Power < -13dBm Pass**



**Lowest Band Edge / Full RB**



**Channel Power < -13dBm Pass**

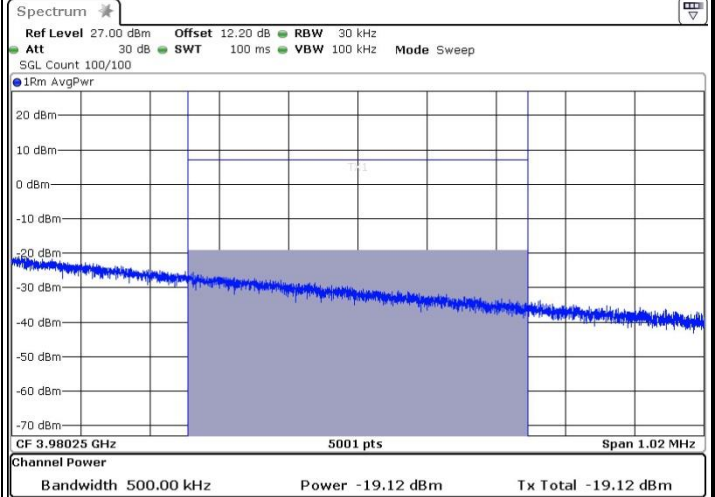
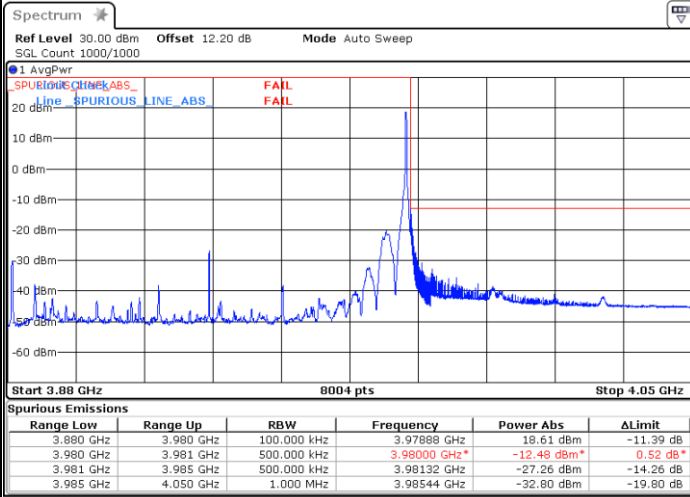




FR1 n77 / 100MHz / DFT-S OFDM QPSK

Highest Band Edge / 1 RB

Channel Power < -13dBm Pass

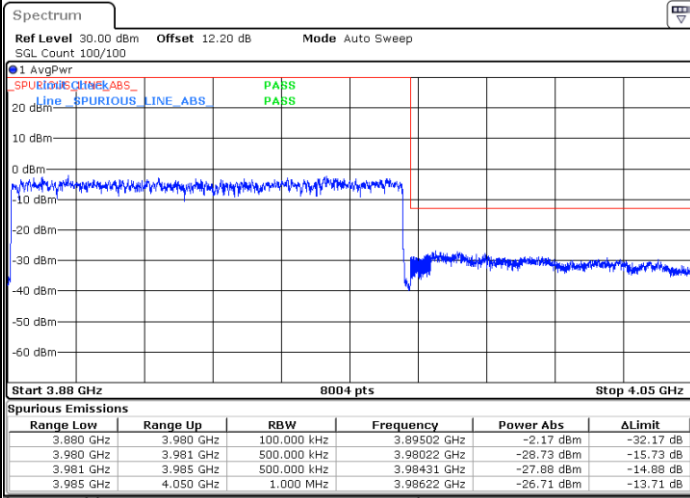


Date: 9.FEB.2021 19:33:29

Date: 9.FEB.2021 19:36:04

Highest Band Edge / Full RB

Channel Power < -13dBm Pass



Date: 9.FEB.2021 19:37:25

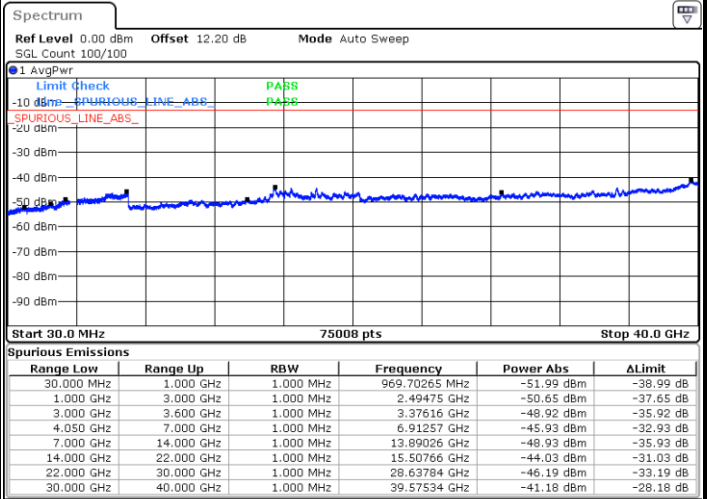
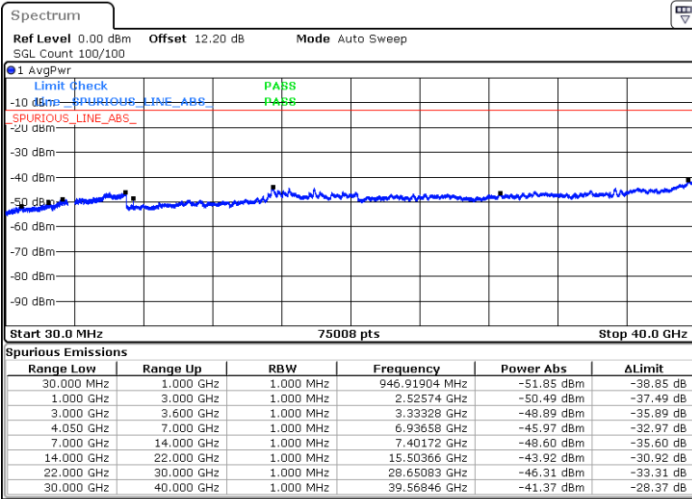


# Conducted Spurious Emission

FR1 n77 / 10MHz / DFT-S OFDM / BPSK

Lowest Channel / 1RB

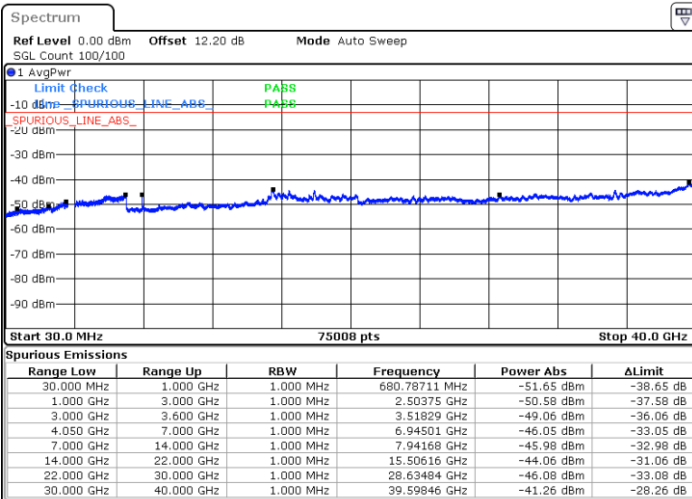
Middle Channel / 1RB



Date: 9.FEB.2021 23:04:35

Date: 9.FEB.2021 22:59:48

Highest Channel / 1RB



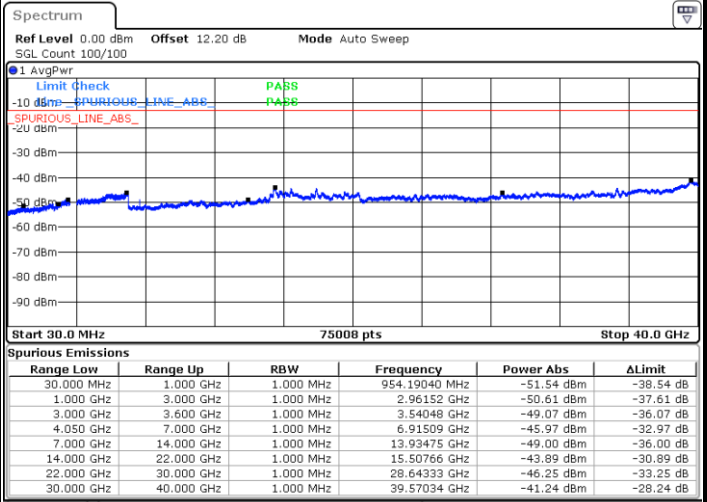
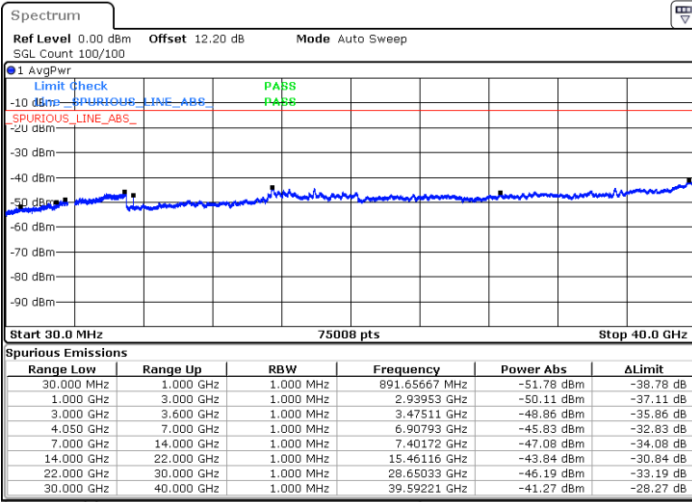
Date: 9.FEB.2021 23:06:01



FR1 n77 / 10MHz / DFT-S OFDM / QPSK

Lowest Channel / 1RB

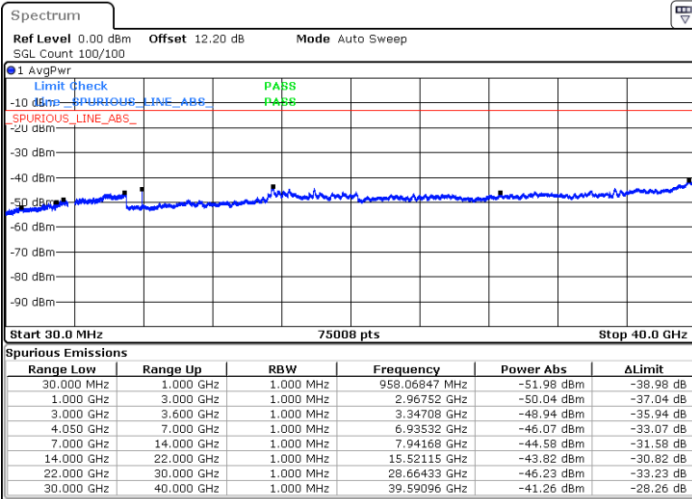
Middle Channel / 1RB



Date: 9.FEB.2021 23:02:51

Date: 9.FEB.2021 23:01:01

Highest Channel / 1RB



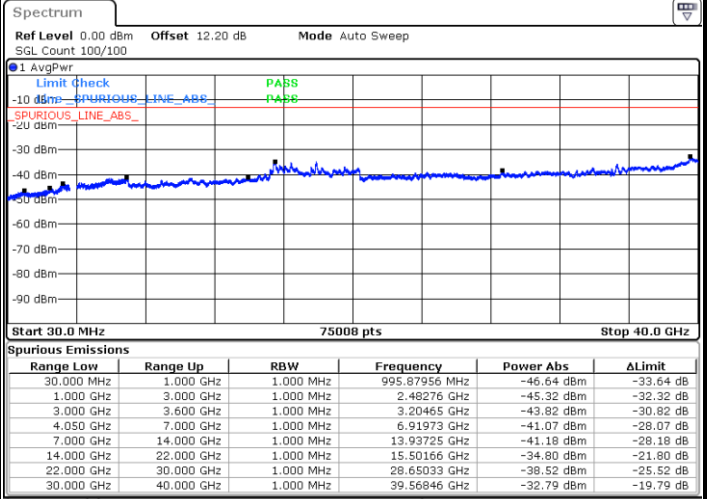
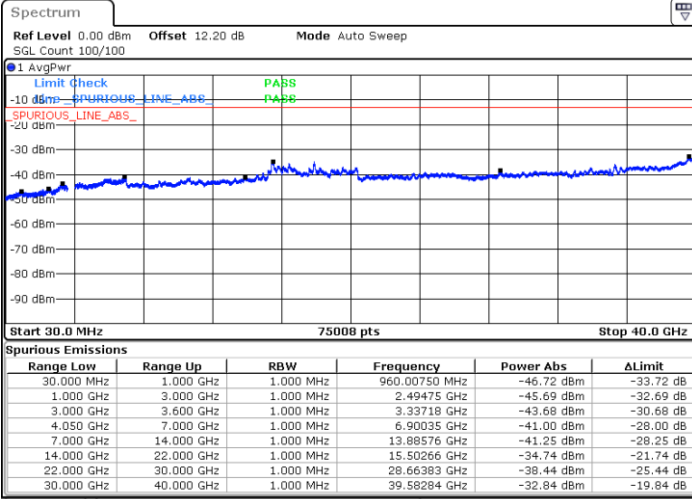
Date: 9.FEB.2021 23:07:22



FR1 n77 / 50MHz / DFT-S OFDM / BPSK

Lowest Channel / 1RB

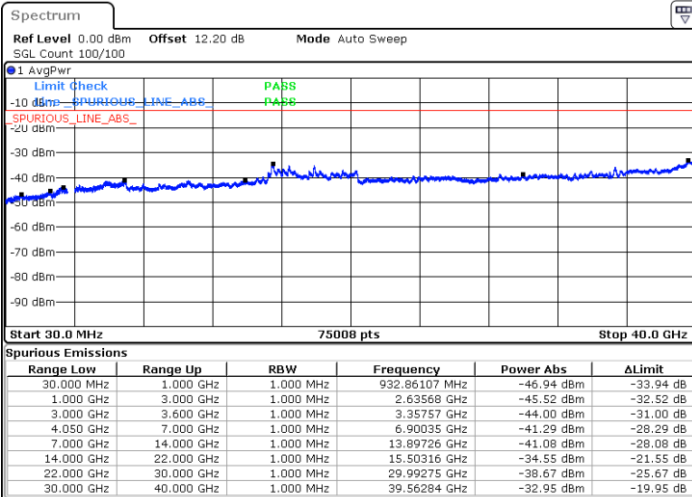
Middle Channel / 1RB



Date: 9.FEB.2021 20:57:13

Date: 9.FEB.2021 20:44:41

Highest Channel / 1RB



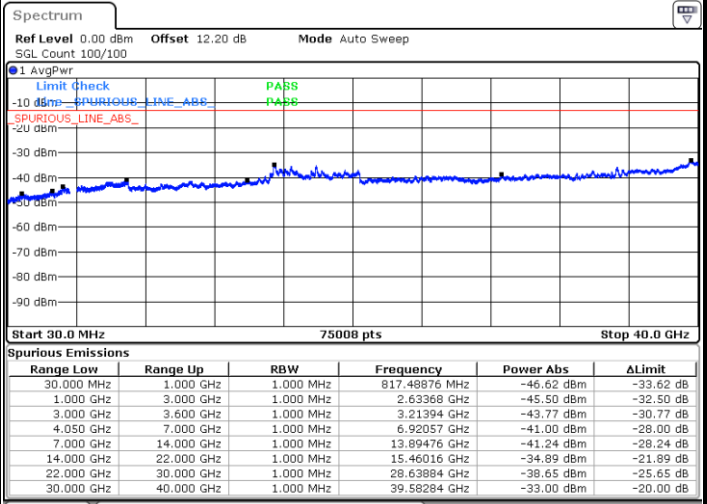
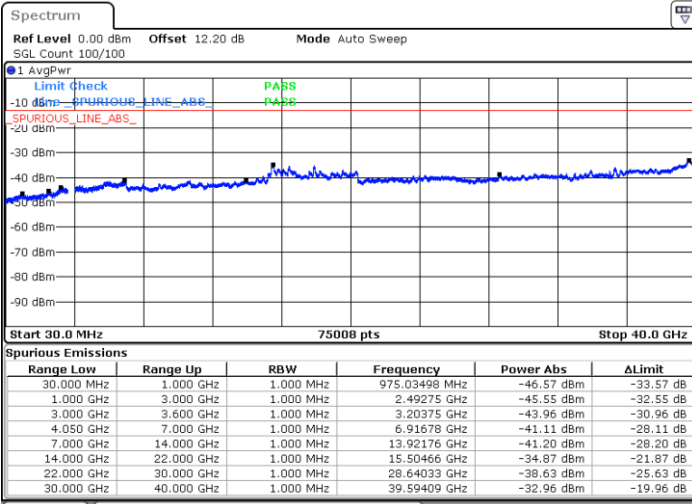
Date: 9.FEB.2021 20:58:46



FR1 n77 / 50MHz / DFT-S OFDM / QPSK

Lowest Channel / 1RB

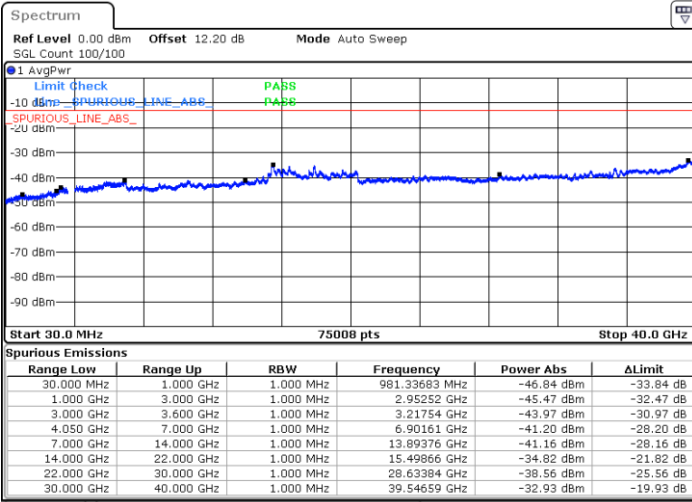
Middle Channel / 1RB



Date: 9.FEB.2021 20:55:33

Date: 9.FEB.2021 20:53:50

Highest Channel / 1RB



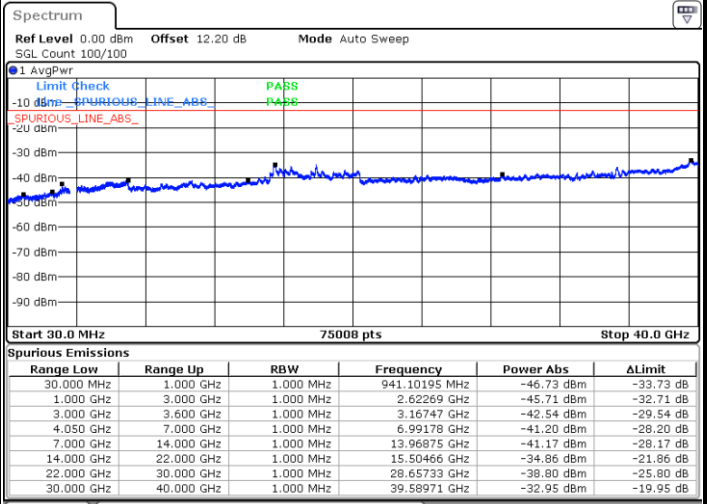
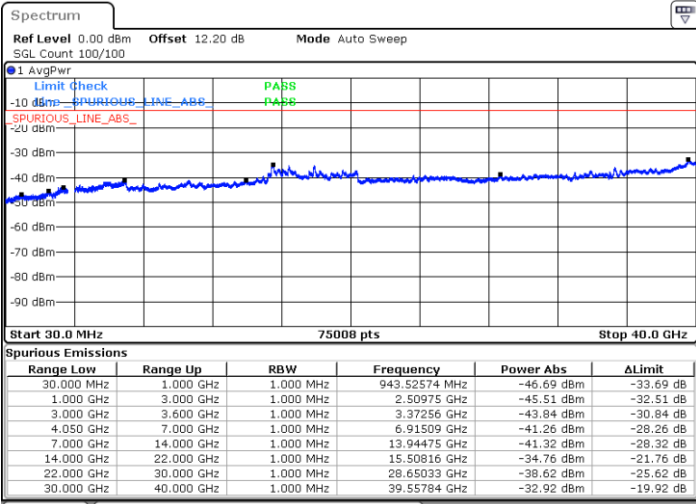
Date: 9.FEB.2021 21:51:47



FR1 n77 / 100MHz / DFT-S OFDM / BPSK

Lowest Channel / 1RB

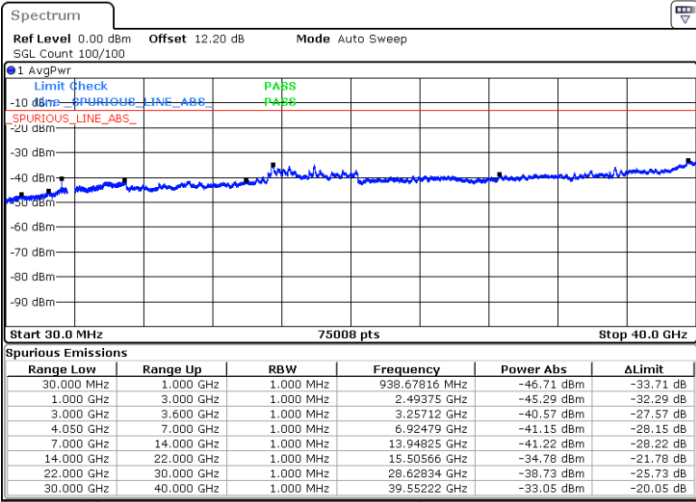
Middle Channel / 1RB



Date: 9.FEB.2021 20:16:48

Date: 9.FEB.2021 20:01:12

Highest Channel / 1RB



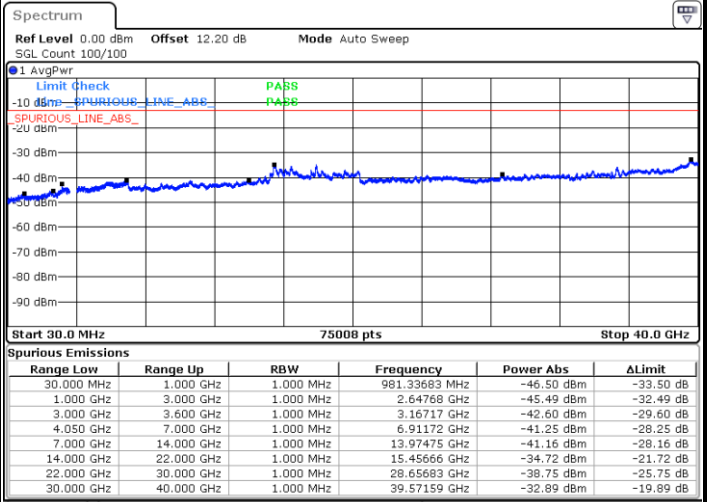
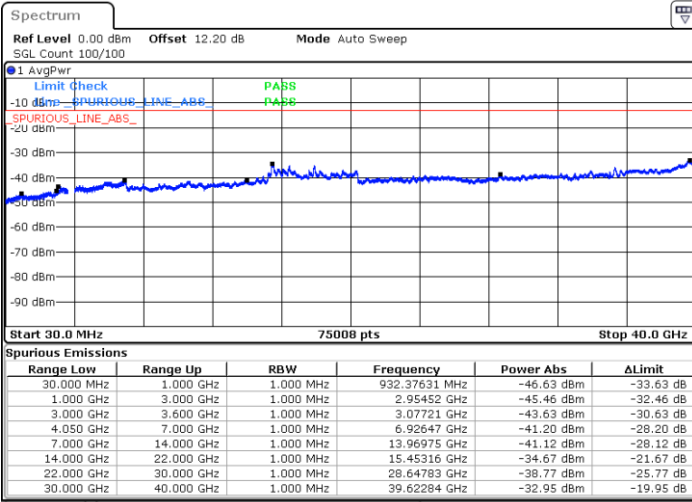
Date: 9.FEB.2021 19:58:56



FR1 n77 / 20MHz / DFT-S OFDM / QPSK

Lowest Channel / 1RB

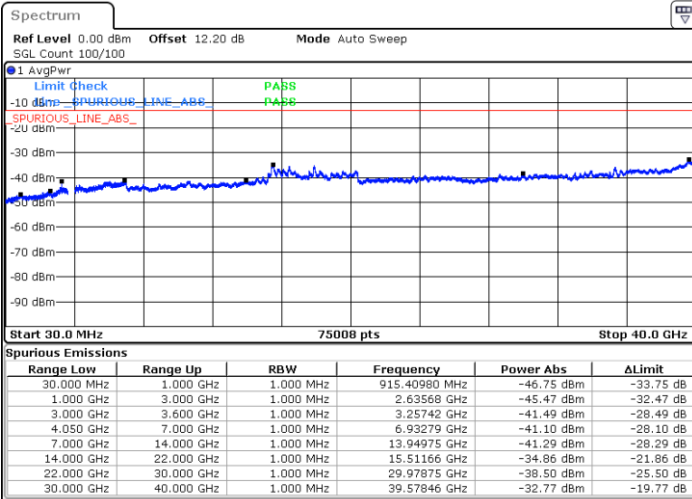
Middle Channel / 1RB



Date: 9.FEB.2021 20:07:36

Date: 9.FEB.2021 20:02:47

Highest Channel / 1RB



Date: 9.FEB.2021 19:47:39



**Frequency Stability**

Test Conditions		NR n77 (BPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 20MHz	Within Band
		Deviation (ppm)	Result
50	Normal Voltage	0.0029	PASS
40	Normal Voltage	0.0017	
30	Normal Voltage	0.0012	
20(Ref.)	Normal Voltage	0.0031	
10	Normal Voltage	0.0013	
0	Normal Voltage	0.0012	
-10	Normal Voltage	0.0022	
-20	Normal Voltage	0.0015	
-30	Normal Voltage	0.0029	
20	Maximum Voltage	0.0019	
20	Normal Voltage	0.0025	
20	Battery End Point	0.0015	

**Note:**

1. Normal Voltage =3.3 V. ; Battery End Point (BEP) =3.14 V. ; Maximum Voltage =4.4 V.
2. Note: The frequency fundamental emissions stay within the authorized frequency block.



### 5G NR n77 UL\_MIMO HPUE -SCS 15K

#### Peak-to-Average Ratio

Mode	FR1 UL-MIMO n77 / 20MHz / CP-OFDM (M2)				
Mod.	QPSK	QPSK			Limit: 13dB
RB Size	1RB	Full RB			Result
Lowest CH	7.83	8.46			PASS
Middle CH	7.8	8.35			
Highest CH	7.42	8.32			

Mode	FR1 UL-MIMO n77 / 20MHz / CP-OFDM (M)				
Mod.	QPSK	QPSK			Limit: 13dB
RB Size	1RB	Full RB			Result
Lowest CH	7.01	8.41			PASS
Middle CH	7.33	8.38			
Highest CH	7.07	8.12			



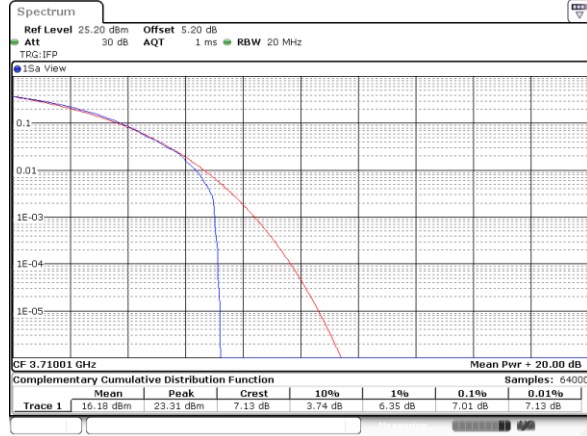
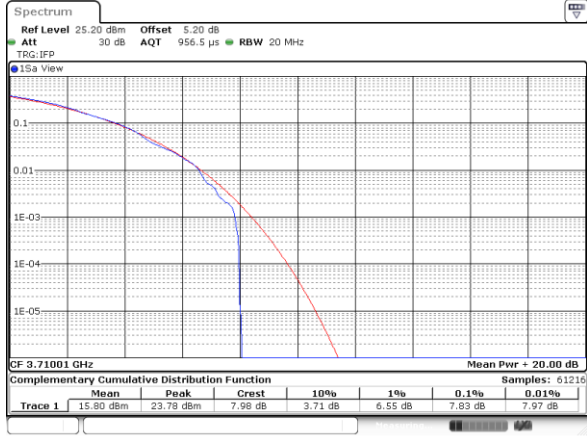
FR1 UL-MIMO n77 / 20MHz / CP-OFDM

QPSK(M2)

QPSK(M)

Lowest Channel / 1RB

Lowest Channel / 1RB

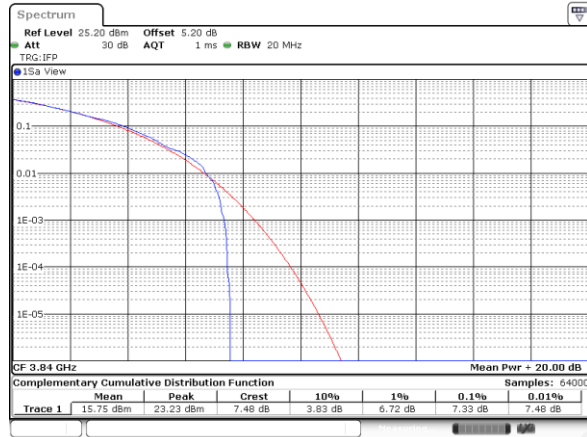
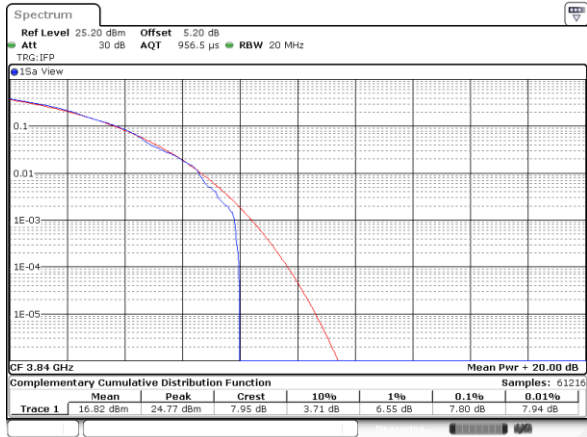


Date: 13.FEB.2021 17:51:10

Date: 13.FEB.2021 05:16:13B

Middle Channel / 1 RB

Middle Channel / 1 RB

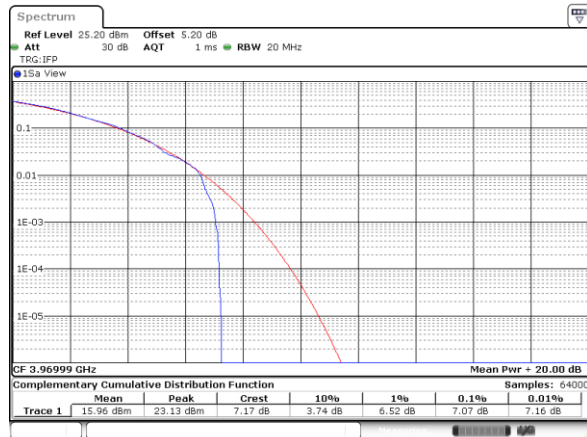
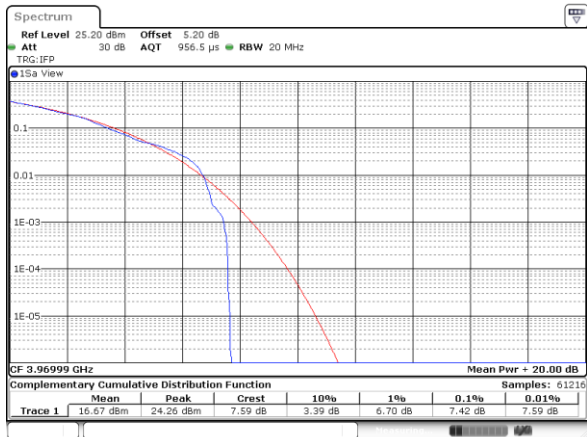


Date: 13.FEB.2021 17:46:01

Date: 13.FEB.2021 05:40:46

Highest Channel / 1 RB

Highest Channel / 1 RB



Date: 13.FEB.2021 18:22:52

Date: 13.FEB.2021 05:46:18



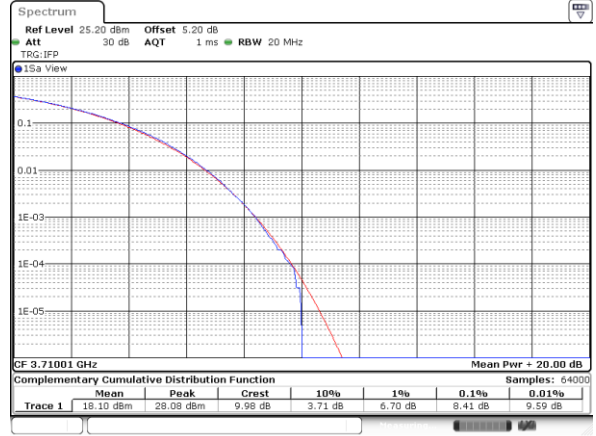
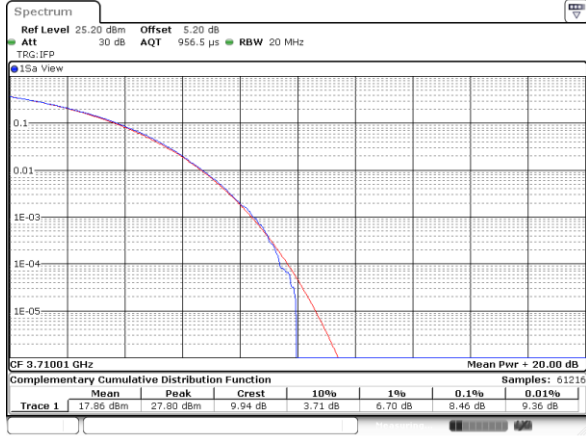
FR1 UL-MIMO n77 / 20MHz / CP-OFDM

QPSK(M2)

QPSK(M)

Lowest Channel / Full RB

Lowest Channel / Full RB

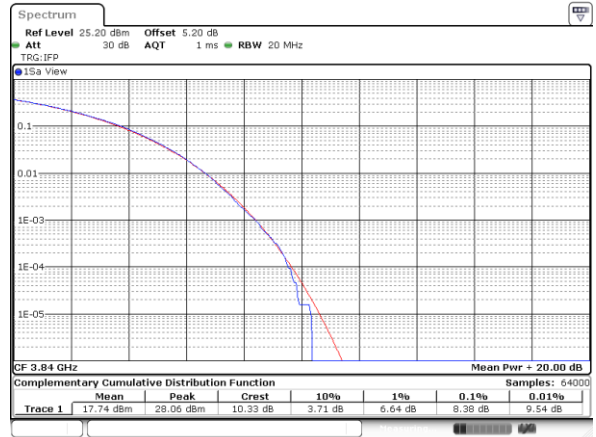
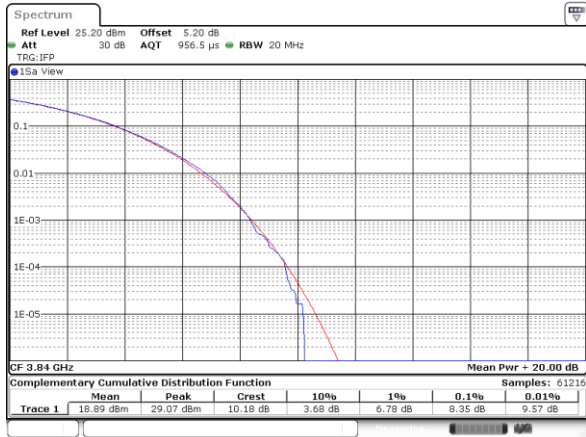


Date: 13.FEB.2021 18:08:06

Date: 13.FEB.2021 05:13:110

Middle Channel / Full RB

Middle Channel / Full RB

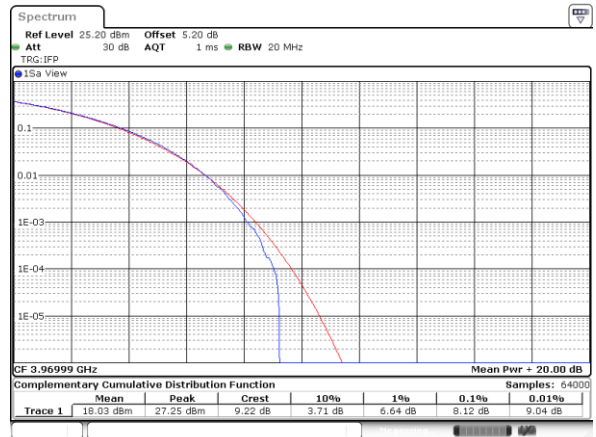
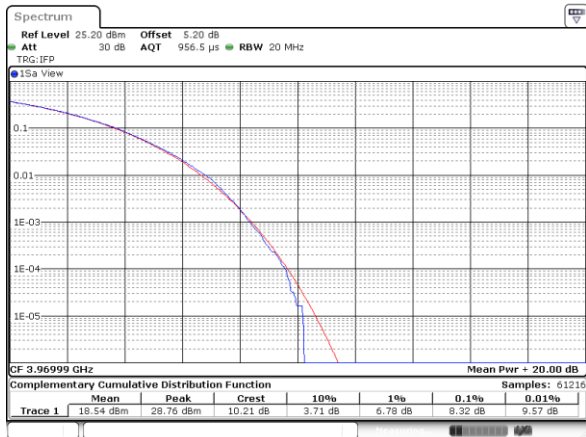


Date: 13.FEB.2021 17:43:59

Date: 13.FEB.2021 05:13:110

Highest Channel / Full RB

Highest Channel / Full RB



Date: 13.FEB.2021 18:09:02

Date: 13.FEB.2021 05:14:6144



**26dB Bandwidth**

Mode	FR1 UL-MIMO n77 : 26dB BW(MHz) / CP-OFDM							
	M2				M			
BW	10MHz	10MHz	10MHz	10MHz	10MHz	10MHz	10MHz	10MHz
Mod.	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
Middle CH	9.61	9.65	9.71	9.75	9.73	9.75	9.61	9.73

Mode	FR1 UL-MIMO n77 : 26dB BW(MHz) / CP-OFDM							
	M2				M			
BW	15MHz	15MHz	15MHz	15MHz	15MHz	15MHz	15MHz	15MHz
Mod.	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
Middle CH	14.93	14.84	14.84	14.87	14.90	14.84	14.84	14.96

Mode	FR1 UL-MIMO n77 : 26dB BW(MHz) / CP-OFDM							
	M2				M			
BW	20MHz	20MHz	20MHz	20MHz	20MHz	20MHz	20MHz	20MHz
Mod.	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
Middle CH	19.7	19.66	19.82	19.82	19.78	19.82	19.78	19.66



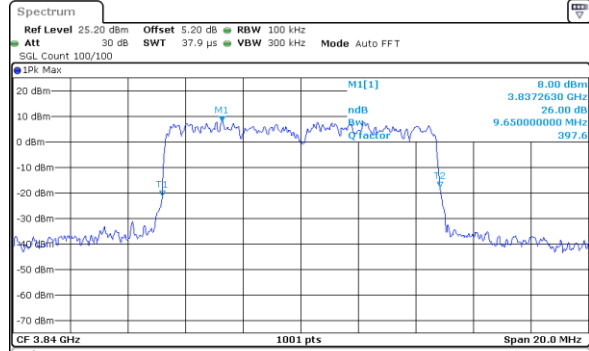
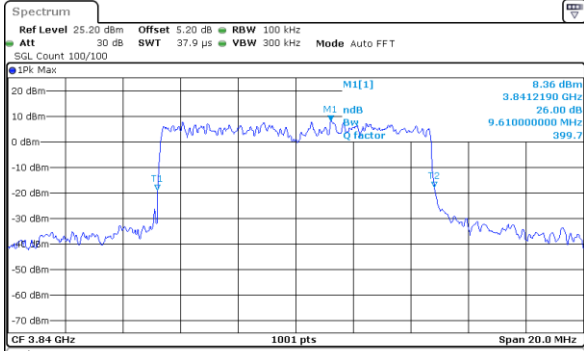
FR1 UL-MIMO n77 / 10MHz / CP-OFDM (M2)

QPSK

16QAM

Middle Channel

Middle Channel



Date: 13.FEB.2021 19:41:28

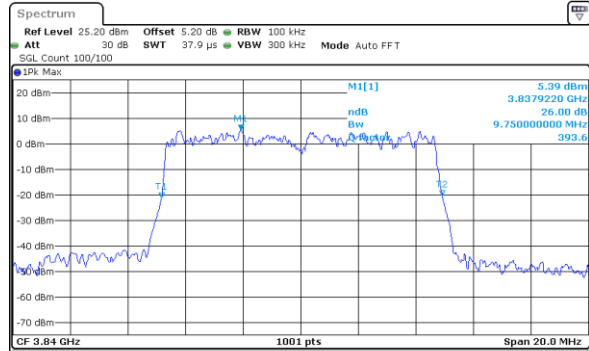
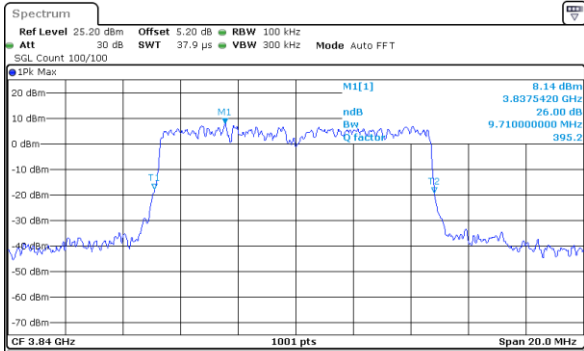
Date: 13.FEB.2021 19:41:48

64QAM

256QAM

Middle Channel

Middle Channel



Date: 13.FEB.2021 19:42:06

Date: 13.FEB.2021 19:42:28



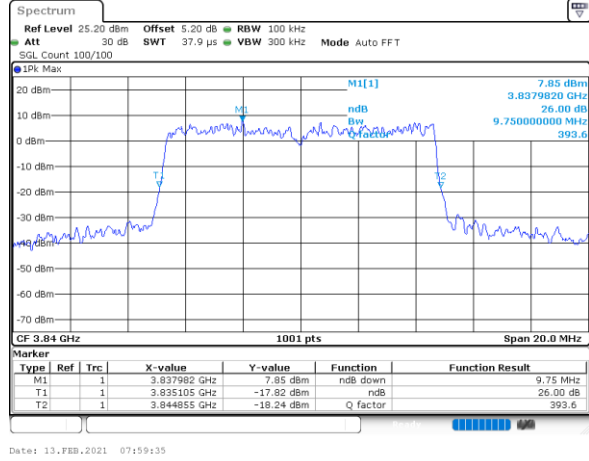
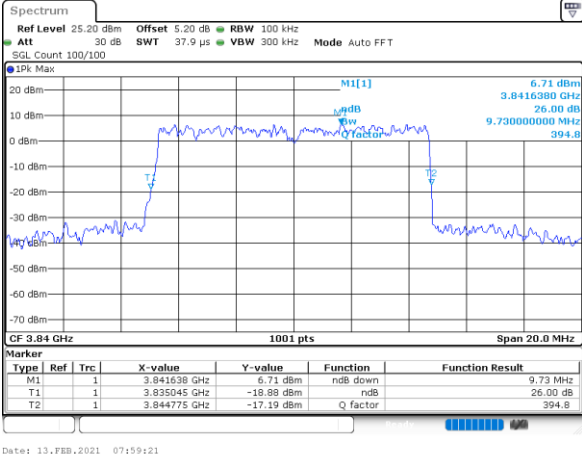
FR1 UL-MIMO n77 / 10MHz / CP-OFDM (M)

QPSK

16QAM

Middle Channel

Middle Channel

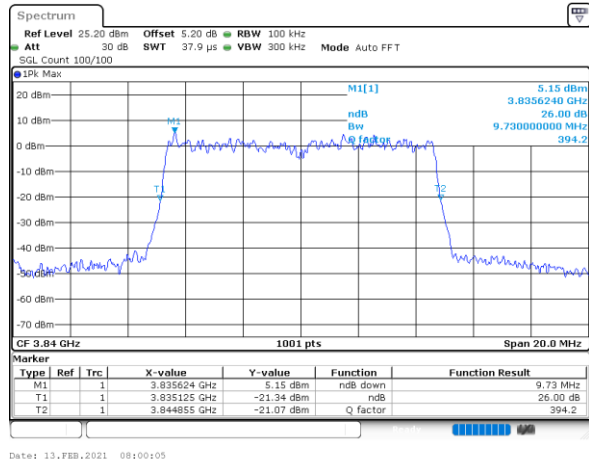
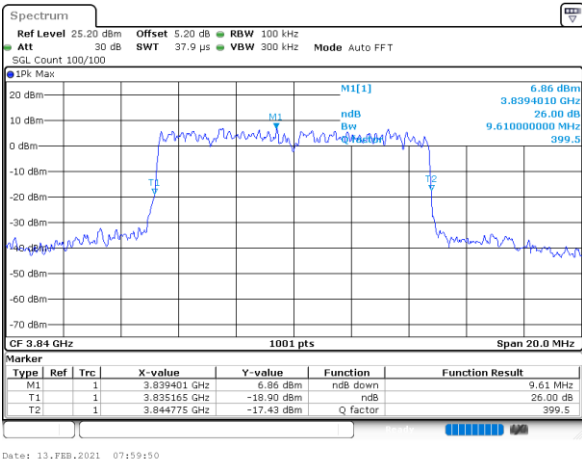


64QAM

256QAM

Middle Channel

Middle Channel





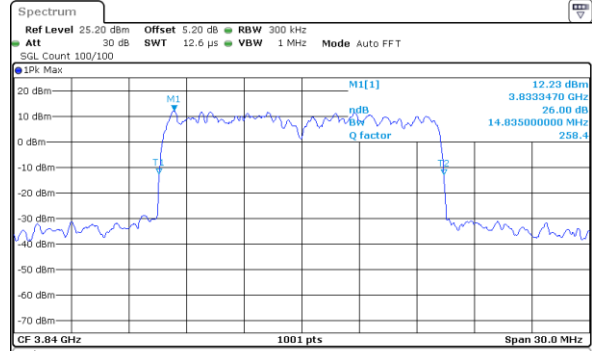
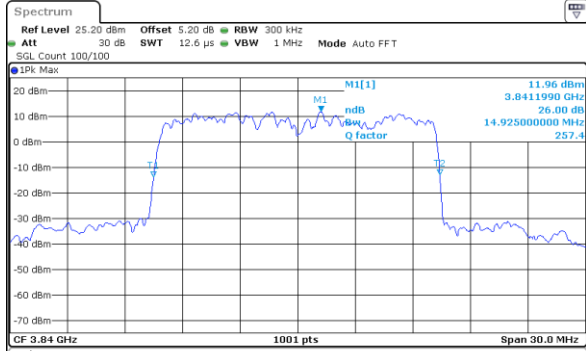
FR1 UL-MIMO n77 / 15MHz / CP-OFDM (M2)

QPSK

16QAM

Middle Channel

Middle Channel



Date: 13.FEB.2021 18:24:12

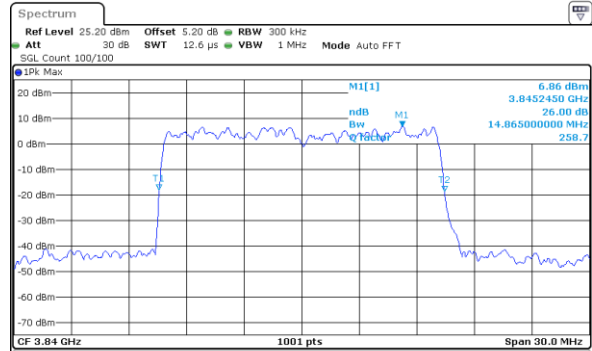
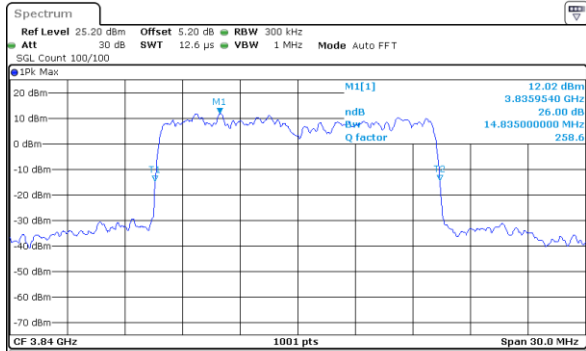
Date: 13.FEB.2021 18:24:28

64QAM

256QAM

Middle Channel

Middle Channel



Date: 13.FEB.2021 18:24:47

Date: 13.FEB.2021 18:25:06





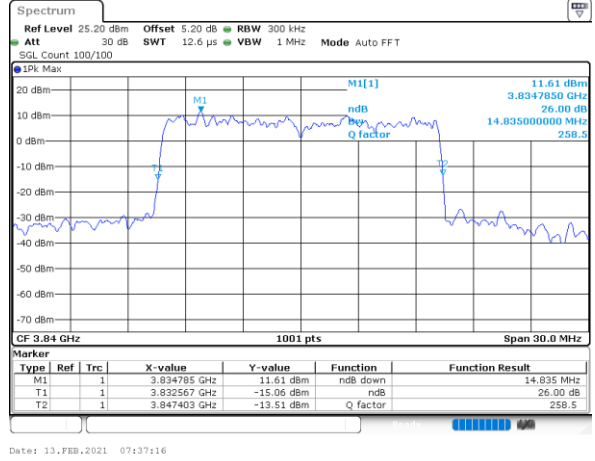
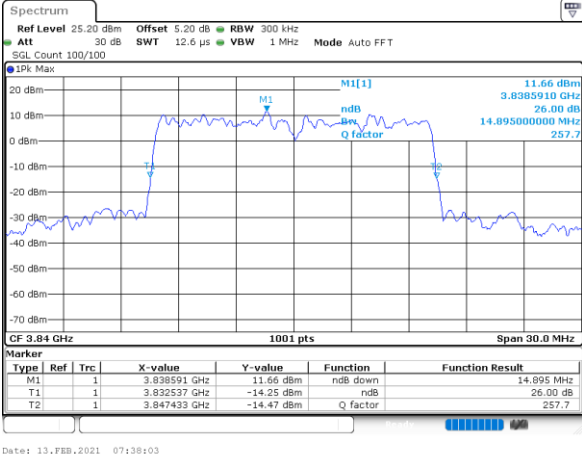
FR1 UL-MIMO n77 / 15MHz / CP-OFDM (M)

QPSK

16QAM

Middle Channel

Middle Channel

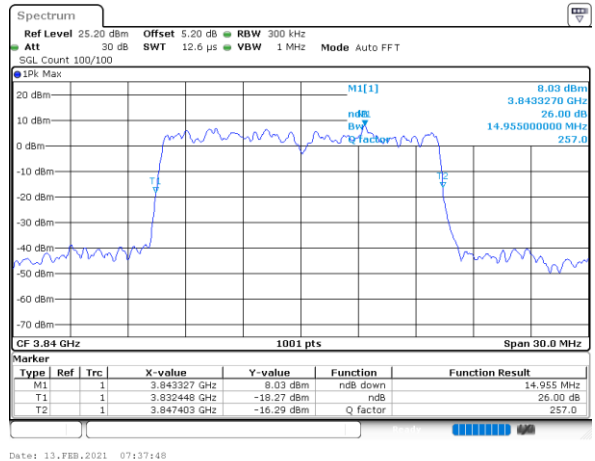
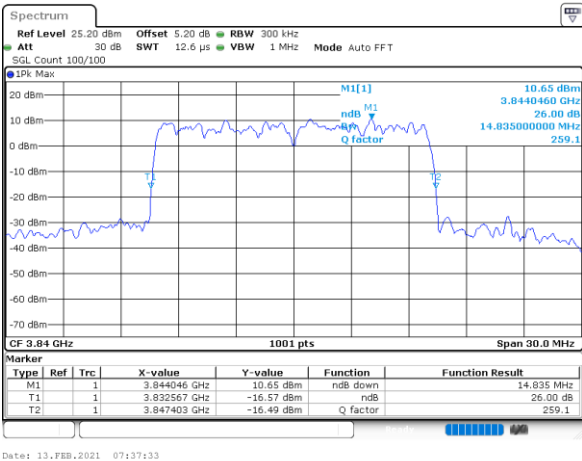


64QAM

256QAM

Middle Channel

Middle Channel





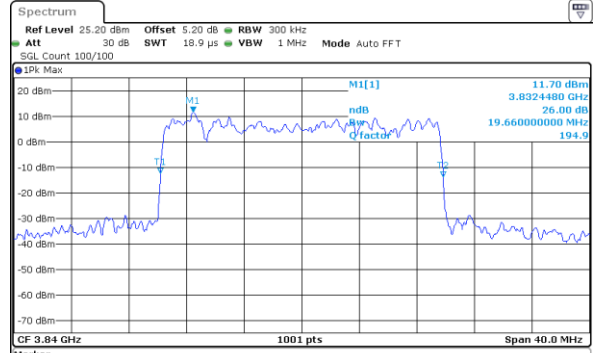
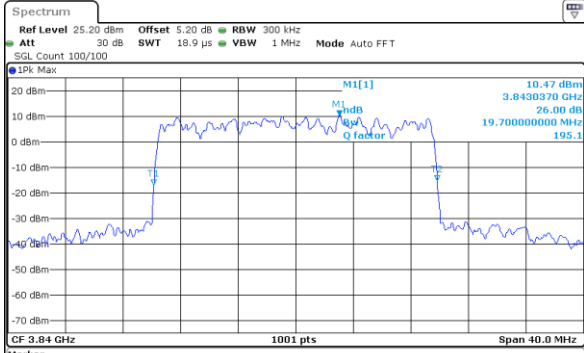
FR1 UL-MIMO n77 / 20MHz / CP-OFDM (M2)

QPSK

16QAM

Middle Channel

Middle Channel



Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		3.843037 GHz	10.47 dBm	ndB down	19.7 MHz
T1	1		3.83013 GHz	-16.77 dBm	ndB	26.00 dB
T2	1		3.84983 GHz	-15.18 dBm	Q factor	195.1

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		3.832448 GHz	11.70 dBm	ndB down	19.66 MHz
T1	1		3.83017 GHz	-12.34 dBm	ndB	26.00 dB
T2	1		3.84983 GHz	-13.59 dBm	Q factor	194.9

Date: 13.FEB.2021 17:43:52

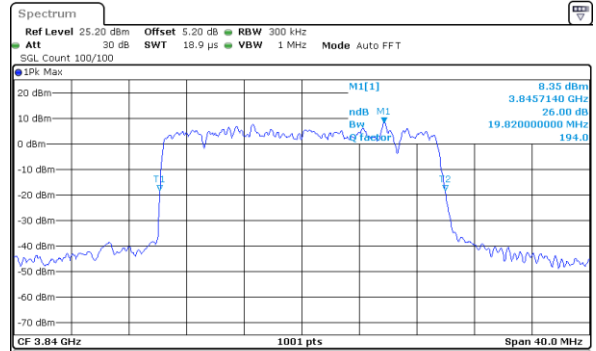
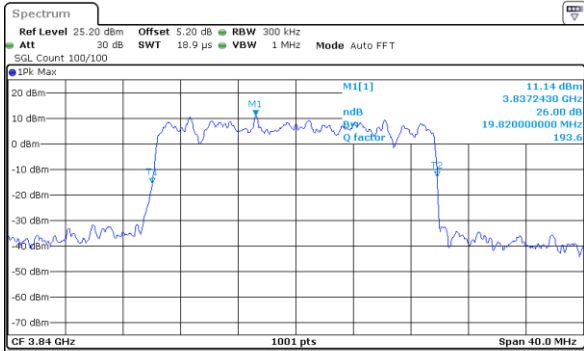
Date: 13.FEB.2021 17:44:48

64QAM

256QAM

Middle Channel

Middle Channel



Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		3.837243 GHz	-11.14 dBm	ndB down	19.82 MHz
T1	1		3.83001 GHz	-15.33 dBm	ndB	26.00 dB
T2	1		3.84983 GHz	-12.80 dBm	Q factor	193.6

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1	1		3.845714 GHz	8.35 dBm	ndB down	19.82 MHz
T1	1		3.83013 GHz	-18.24 dBm	ndB	26.00 dB
T2	1		3.84995 GHz	-18.23 dBm	Q factor	194.0

Date: 13.FEB.2021 17:45:00

Date: 13.FEB.2021 17:45:25



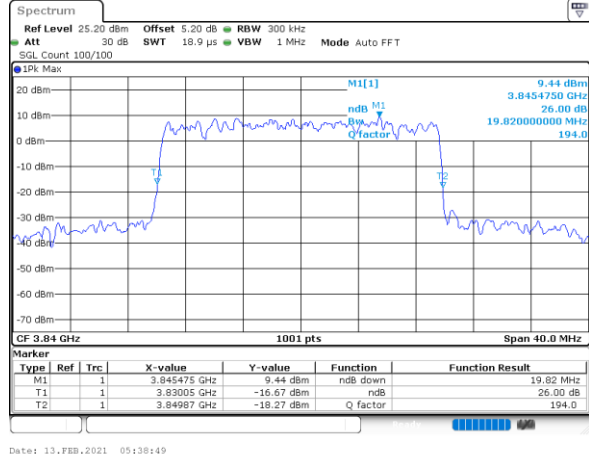
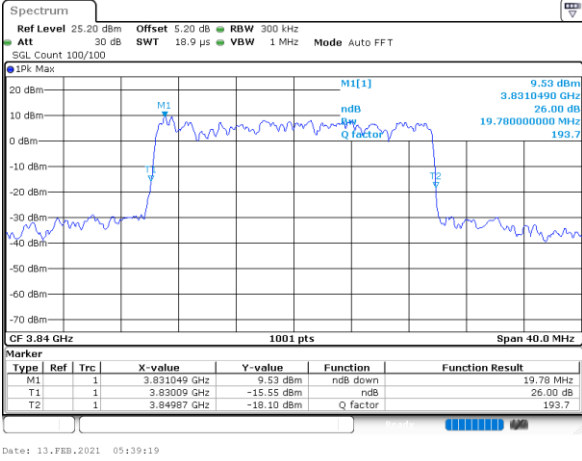
FR1 UL-MIMO n77 / 20MHz / CP-OFDM (M)

QPSK

16QAM

Middle Channel

Middle Channel



Date: 13.FEB.2021 05:139:19

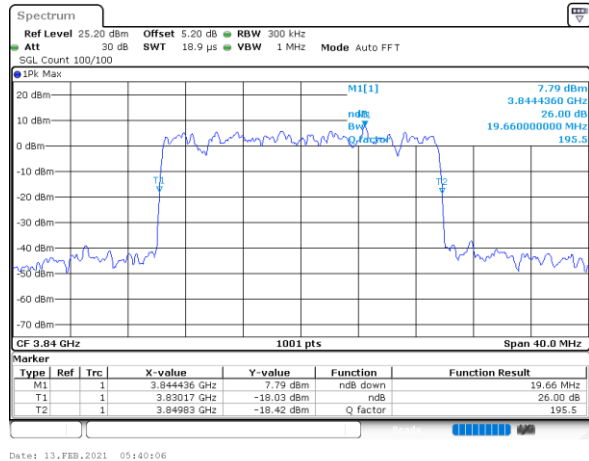
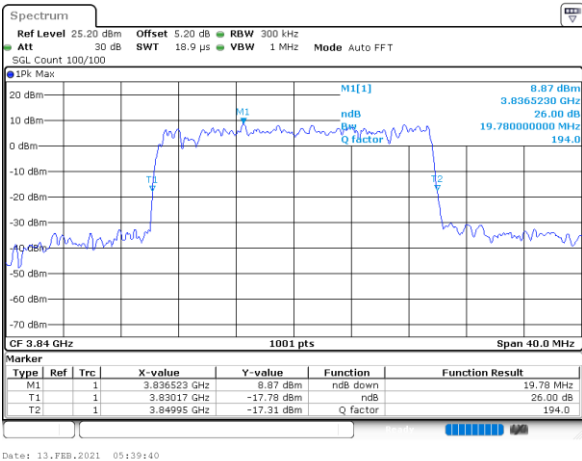
Date: 13.FEB.2021 05:138:49

64QAM

256QAM

Middle Channel

Middle Channel



Date: 13.FEB.2021 05:139:40

Date: 13.FEB.2021 05:140:06

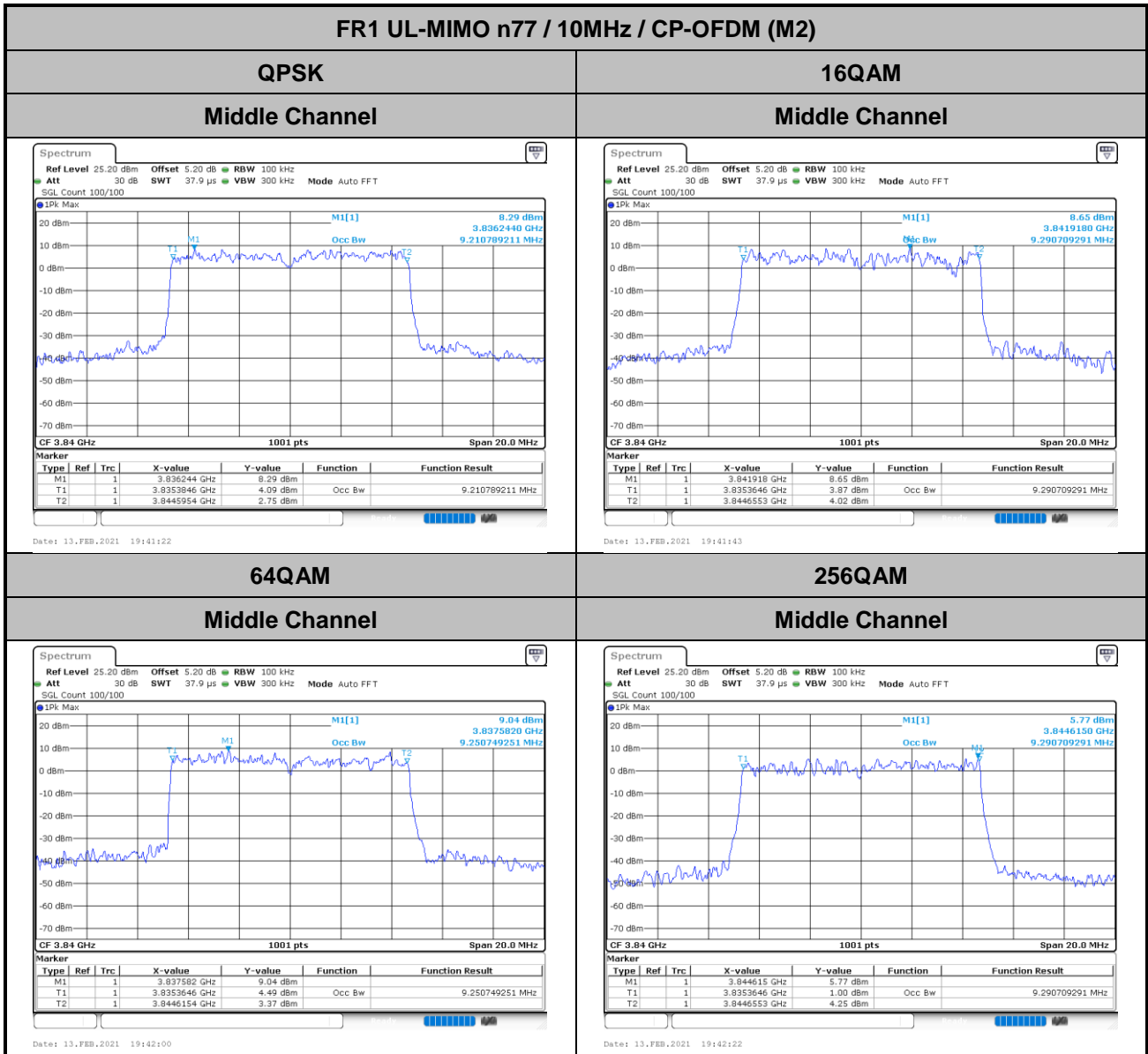


## Occupied Bandwidth

Mode	FR1 UL-MIMO n77 : OBW(MHz) / CP-OFDM							
	M2				M			
BW	10MHz	10MHz	10MHz	10MHz	10MHz	10MHz	10MHz	10MHz
Mod.	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
Middle CH	9.21	9.29	9.25	9.29	9.25	9.29	9.29	9.31

Mode	FR1 UL-MIMO n77 : OBW(MHz) / CP-OFDM							
	M2				M			
BW	15MHz	15MHz	15MHz	15MHz	15MHz	15MHz	15MHz	15MHz
Mod.	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
Middle CH	14.18	14.12	14.15	14.18	14.03	14.12	14.15	14.09

Mode	FR1 UL-MIMO n77 : OBW(MHz) / CP-OFDM							
	M2				M			
BW	20MHz	20MHz	20MHz	20MHz	20MHz	20MHz	20MHz	20MHz
Mod.	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
Middle CH	18.98	18.94	18.86	18.90	18.86	18.98	18.98	18.86





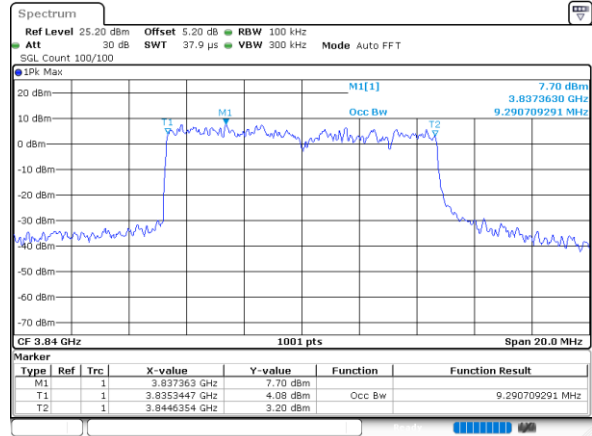
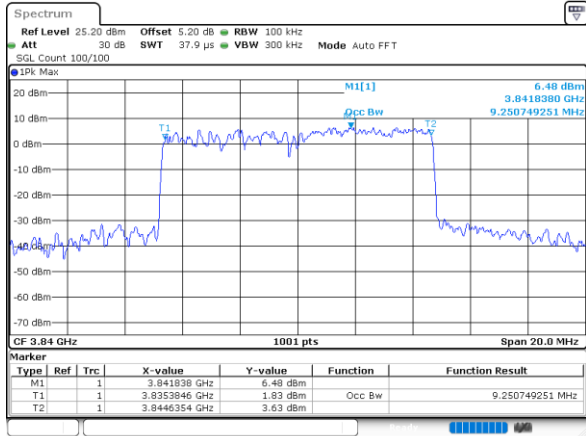
FR1 UL-MIMO n77 / 10MHz / CP-OFDM (M)

QPSK

16QAM

Middle Channel

Middle Channel



Date: 13.FEB.2021 07:59:16

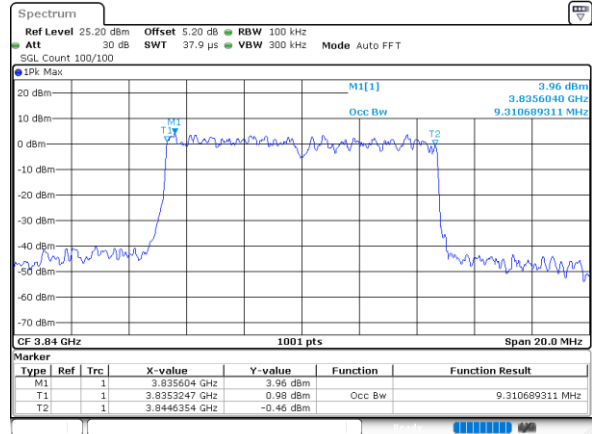
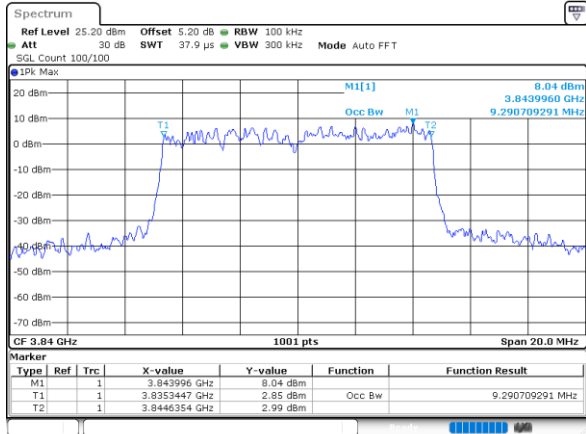
Date: 13.FEB.2021 07:59:13

64QAM

256QAM

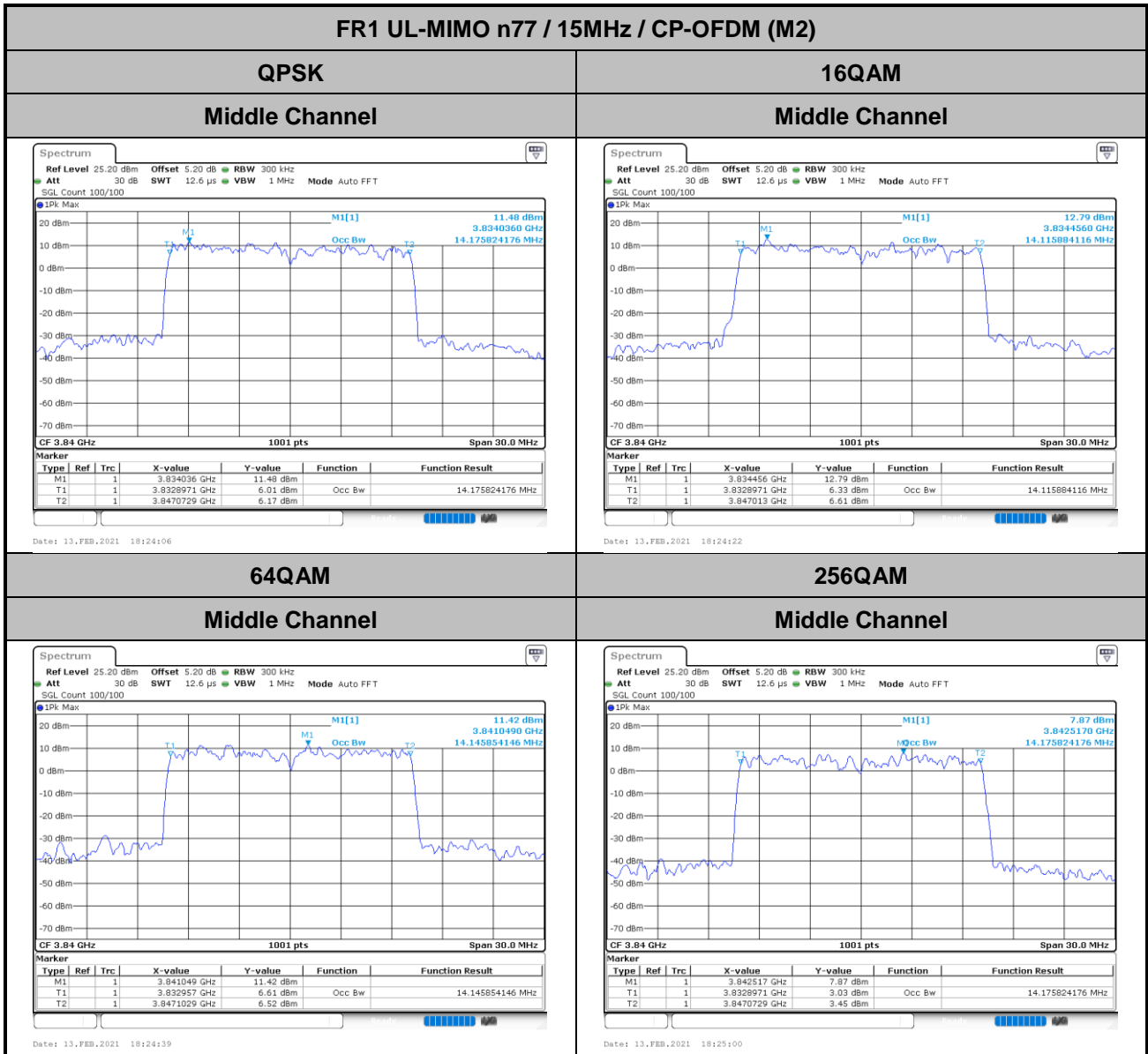
Middle Channel

Middle Channel



Date: 13.FEB.2021 07:59:46

Date: 13.FEB.2021 08:00:01





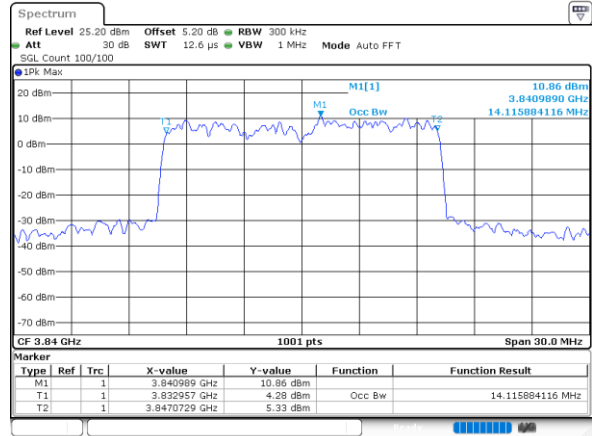
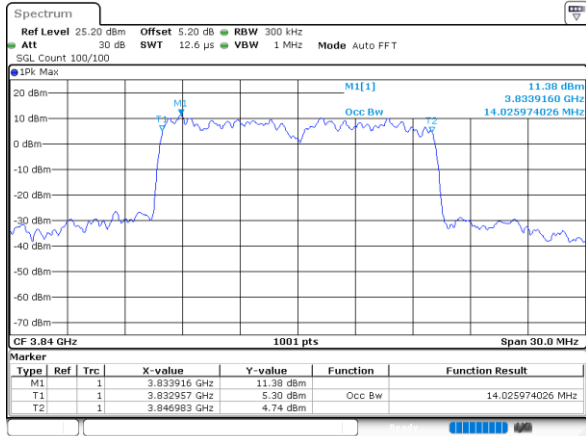
FR1 UL-MIMO n77 / 15MHz / CP-OFDM (M)

QPSK

16QAM

Middle Channel

Middle Channel



Date: 13.FEB.2021 07:37:58

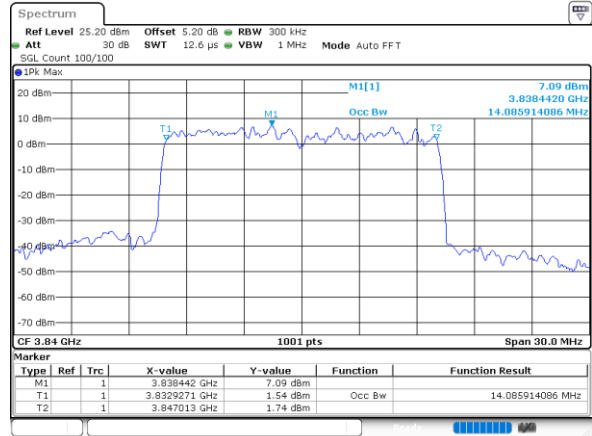
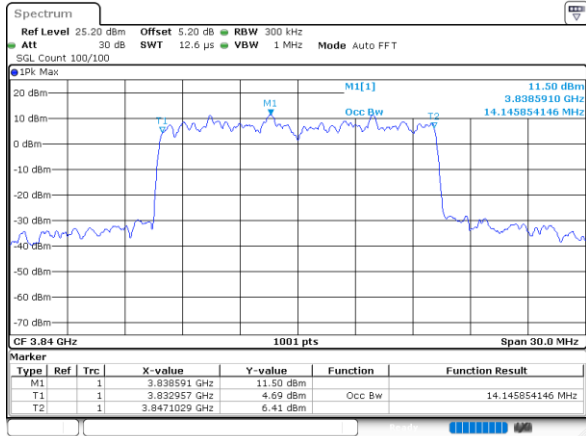
Date: 13.FEB.2021 07:37:11

64QAM

256QAM

Middle Channel

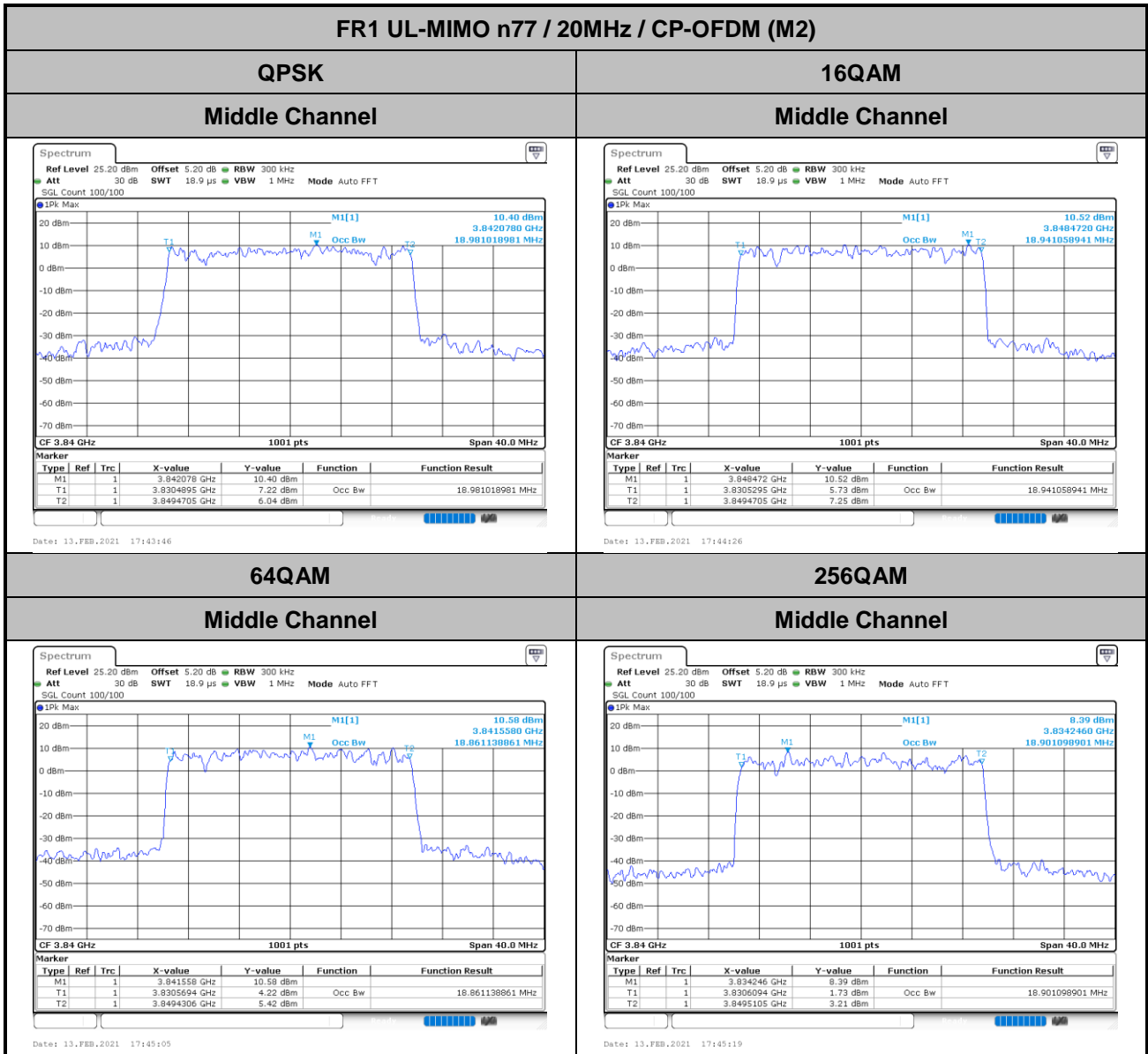
Middle Channel

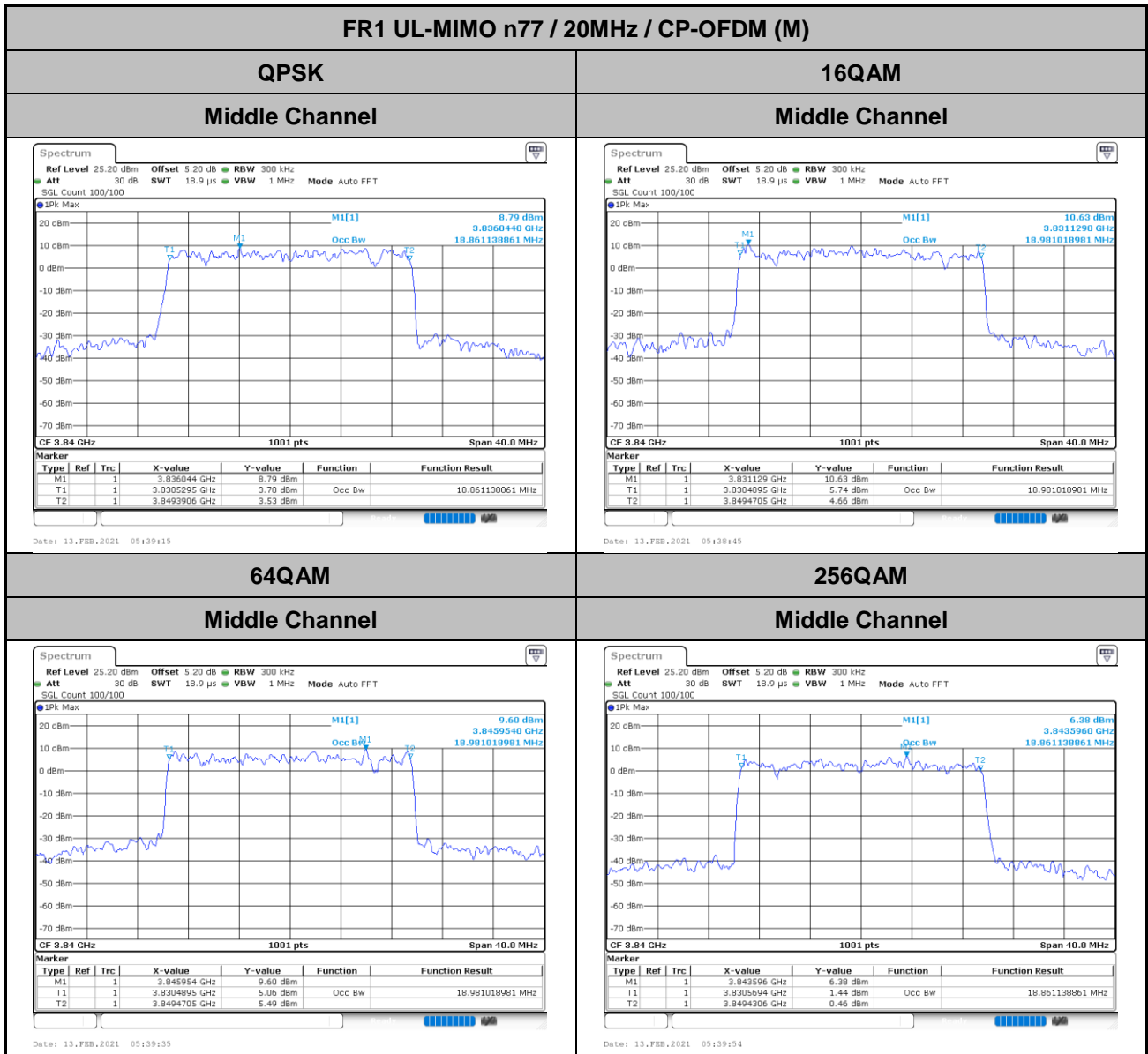


Date: 13.FEB.2021 07:37:27

Date: 13.FEB.2021 07:37:44



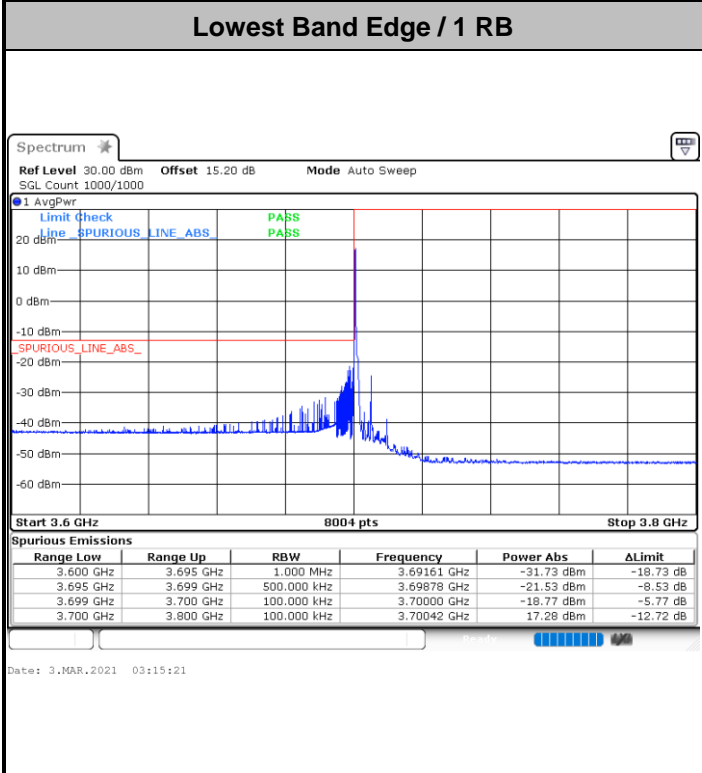




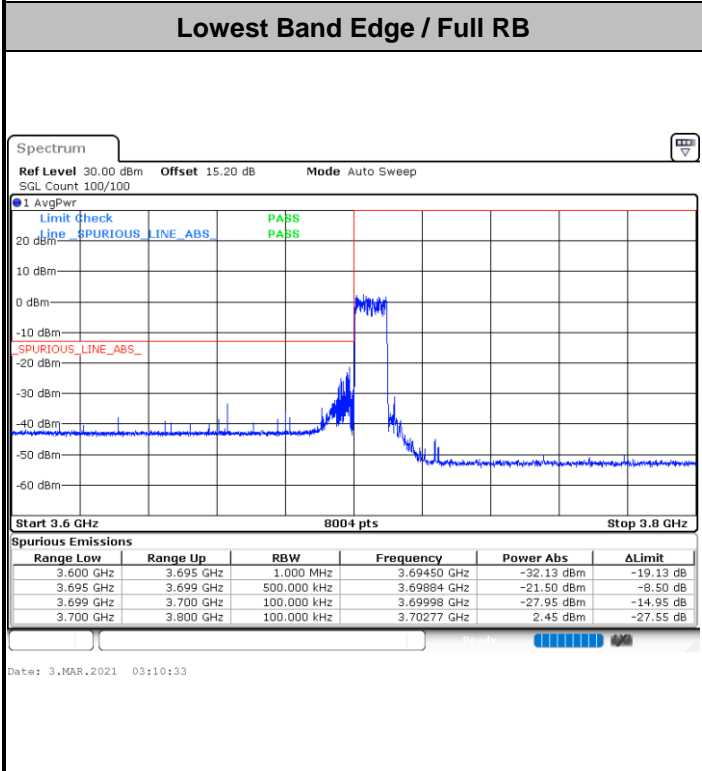


# Conducted Band Edge

## FR1 UL-MIMO n77 / 10MHz / CP-OFDM QPSK (M2)



Channel Power < -13dBm Pass



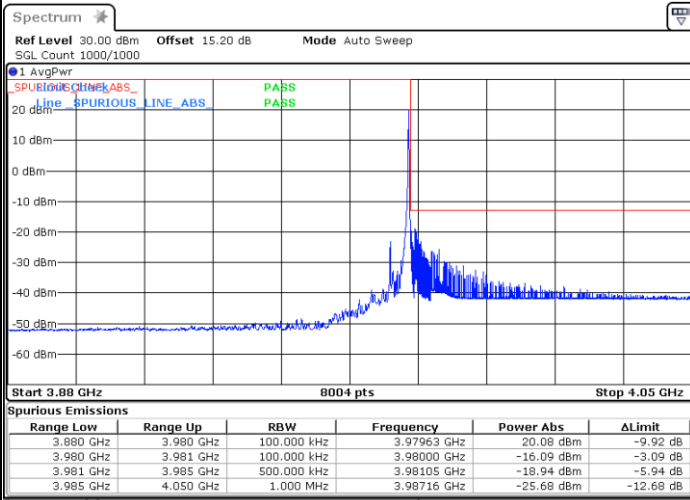
Channel Power < -13dBm Pass



FR1 UL-MIMO n77 / 10MHz / CP-OFDM QPSK (M2)

Highest Band Edge / 1 RB

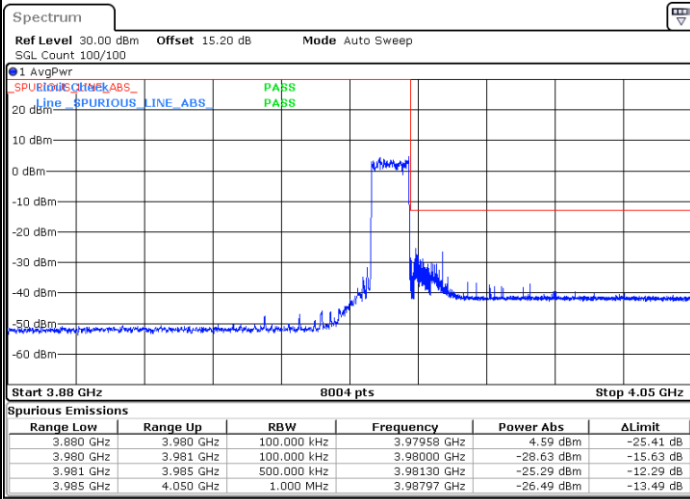
Channel Power < -13dBm Pass



Date: 13.FEB.2021 20:01:50

Highest Band Edge / Full RB

Channel Power < -13dBm Pass



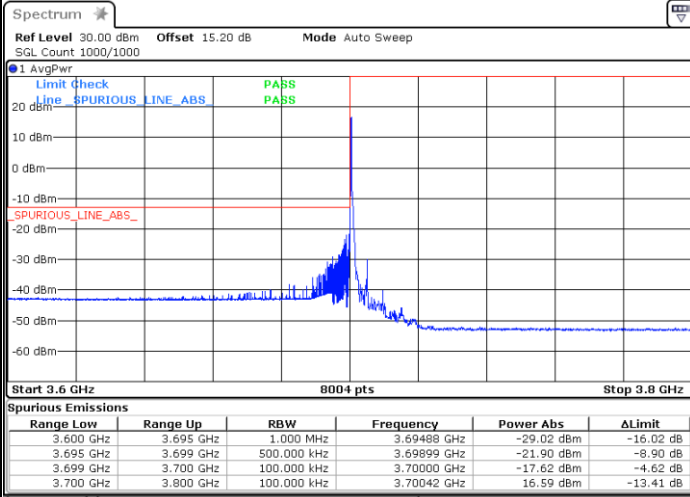
Date: 13.FEB.2021 19:58:18



FR1 UL-MIMO n77 / 10MHz / CP-OFDM QPSK (M)

Lowest Band Edge / 1 RB

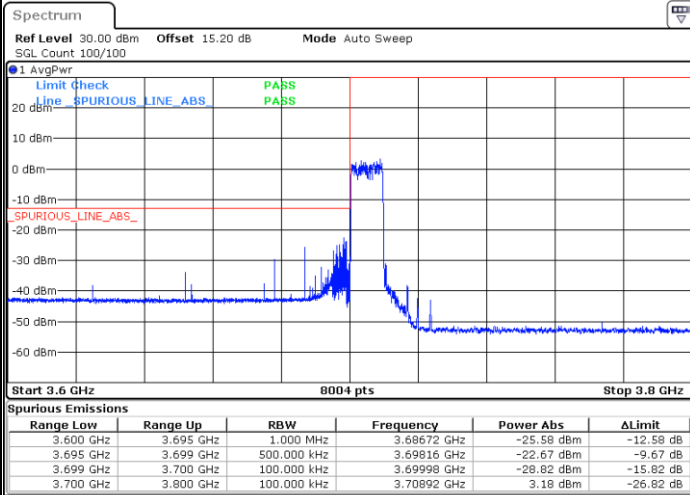
Channel Power < -13dBm Pass



Date: 3.MAR.2021 03:35:57

Lowest Band Edge / Full RB

Channel Power < -13dBm Pass

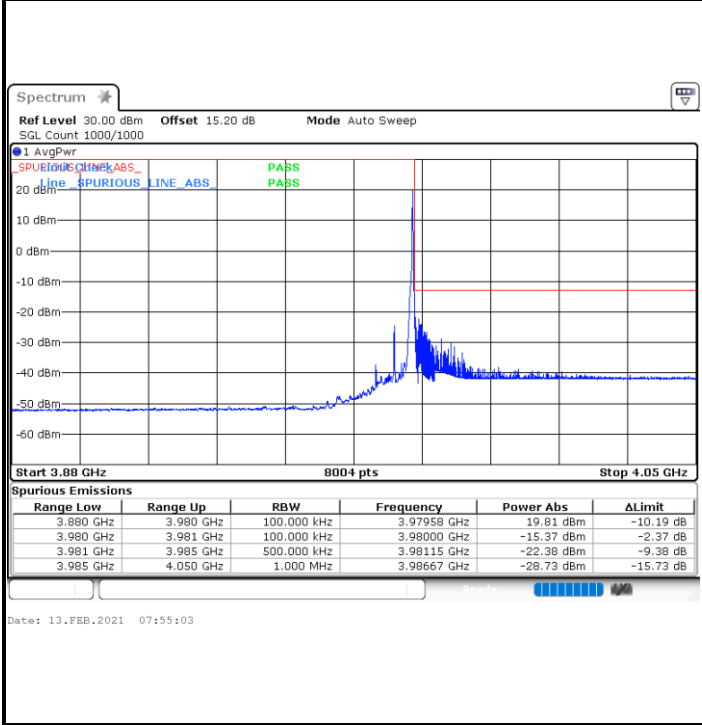


Date: 3.MAR.2021 03:40:34

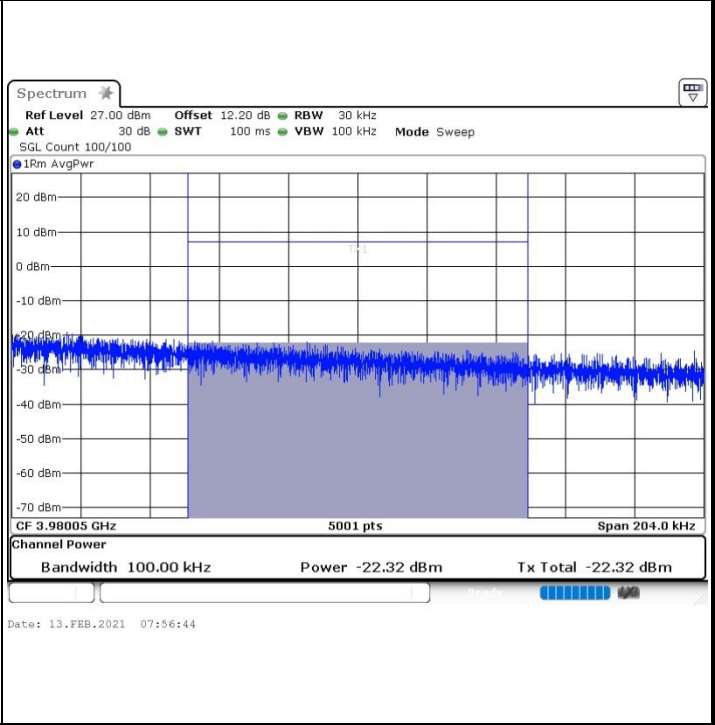


FR1 UL-MIMO n77 / 10MHz / CP-OFDM QPSK (M)

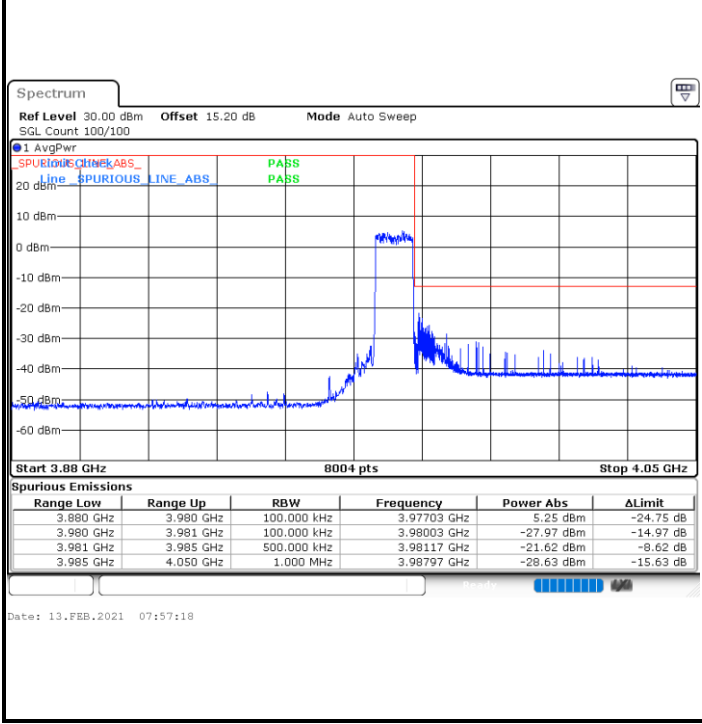
Highest Band Edge / 1 RB



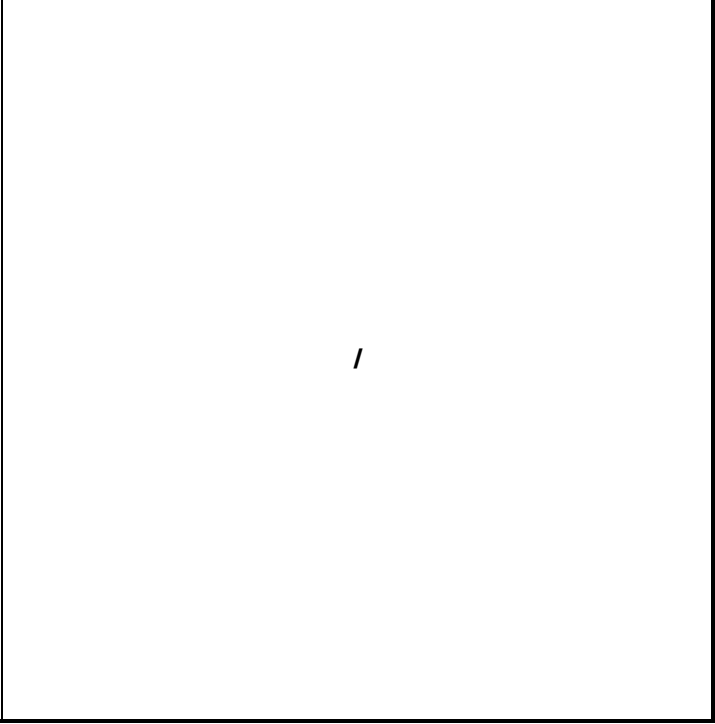
Channel Power < -13dBm Pass



Highest Band Edge / Full RB



Channel Power < -13dBm Pass

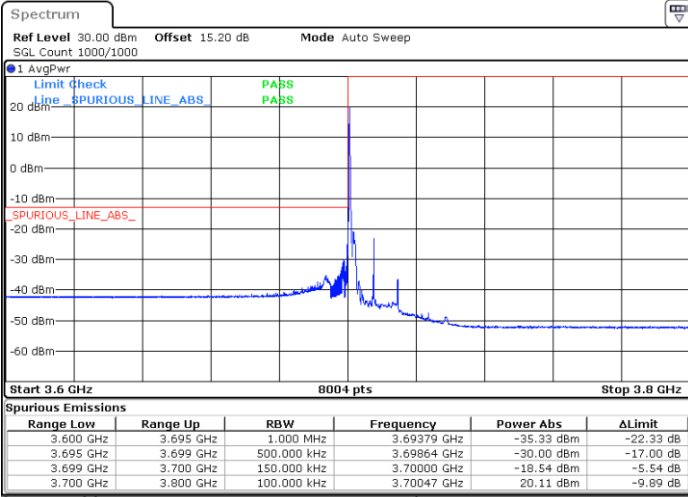




FR1 UL-MIMO n77 / 15MHz / CP-OFDM QPSK (M2)

Lowest Band Edge / 1 RB

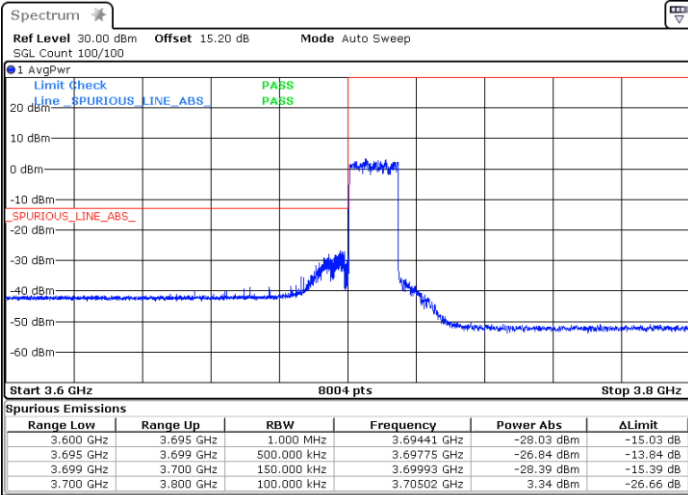
Channel Power < -13dBm Pass



Date: 12.MAR.2021 07:42:23

Lowest Band Edge / Full RB

Channel Power < -13dBm Pass



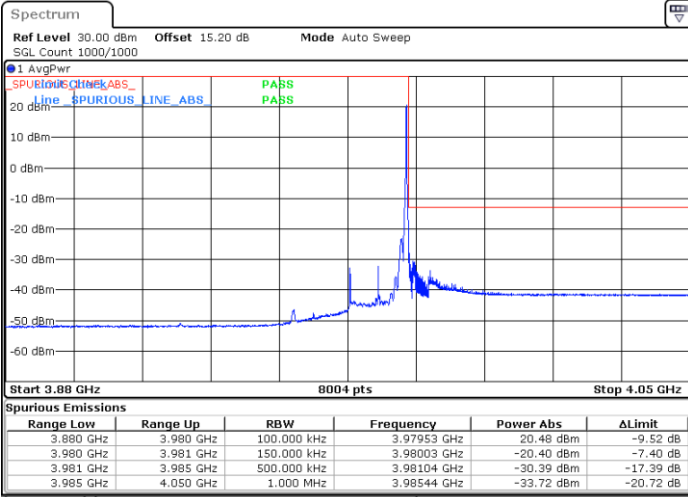
Date: 12.MAR.2021 07:44:03



FR1 UL-MIMO n77 / 15MHz / CP-OFDM QPSK (M2)

Highest Band Edge / 1 RB

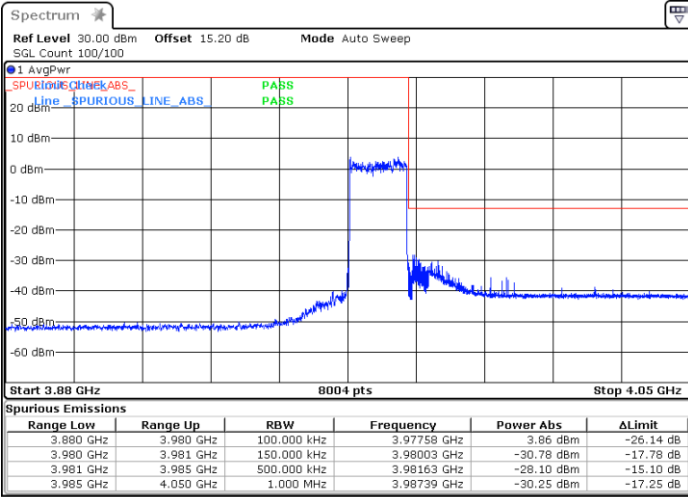
Channel Power < -13dBm Pass



Date: 12.MAR.2021 07:51:32

Highest Band Edge / Full RB

Channel Power < -13dBm Pass



Date: 12.MAR.2021 07:46:06

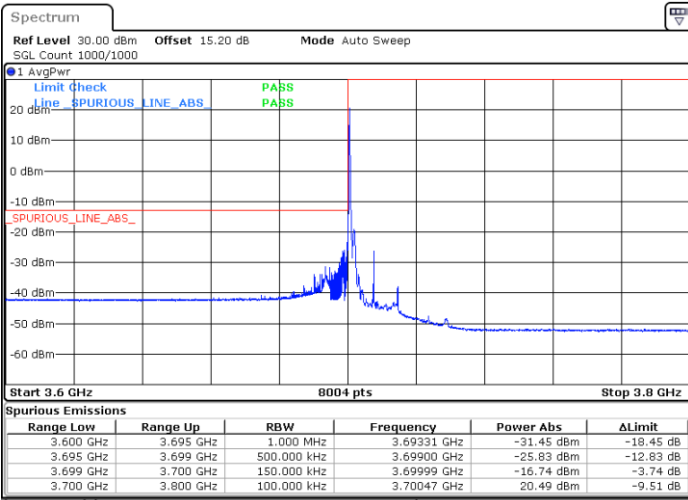




FR1 UL-MIMO n77 / 15MHz / CP-OFDM QPSK (M)

Lowest Band Edge / 1 RB

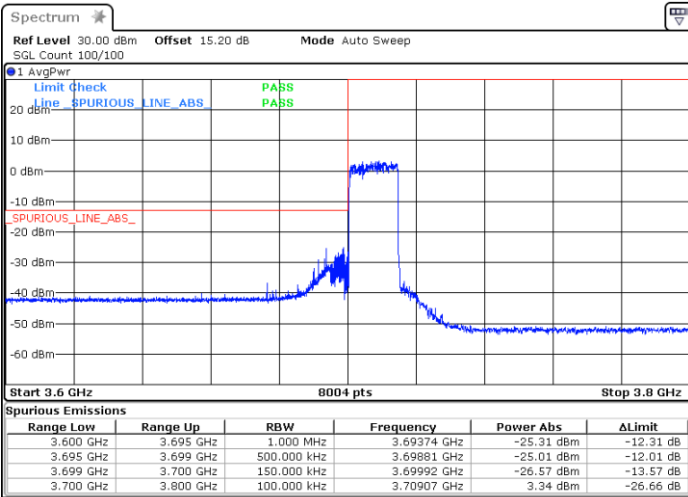
Channel Power < -13dBm Pass



Date: 12.MAR.2021 09:20:38

Lowest Band Edge / Full RB

Channel Power < -13dBm Pass



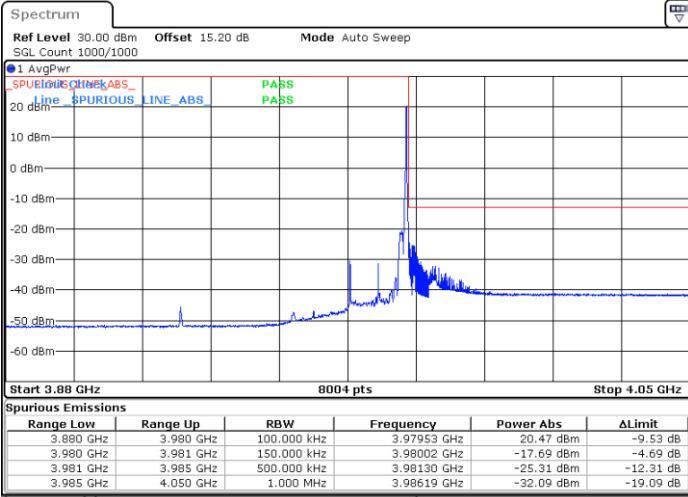
Date: 12.MAR.2021 08:13:59



FR1 UL-MIMO n77 / 15MHz / CP-OFDM QPSK (M)

Highest Band Edge / 1 RB

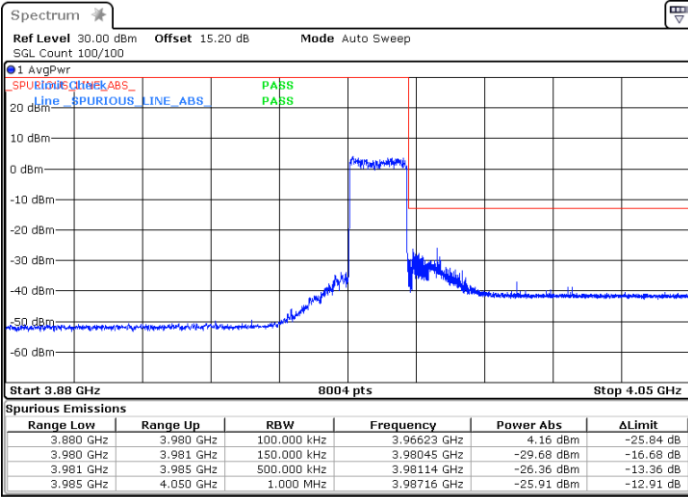
Channel Power < -13dBm Pass



Date: 12.MAR.2021 08:03:21

Highest Band Edge / Full RB

Channel Power < -13dBm Pass



Date: 12.MAR.2021 08:13:02