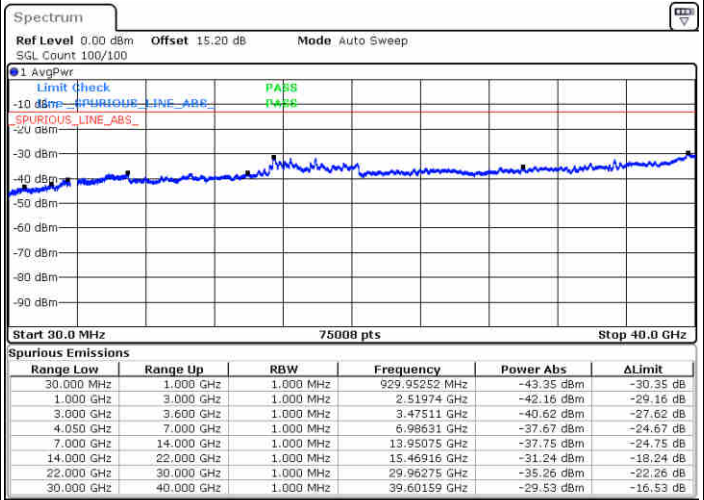
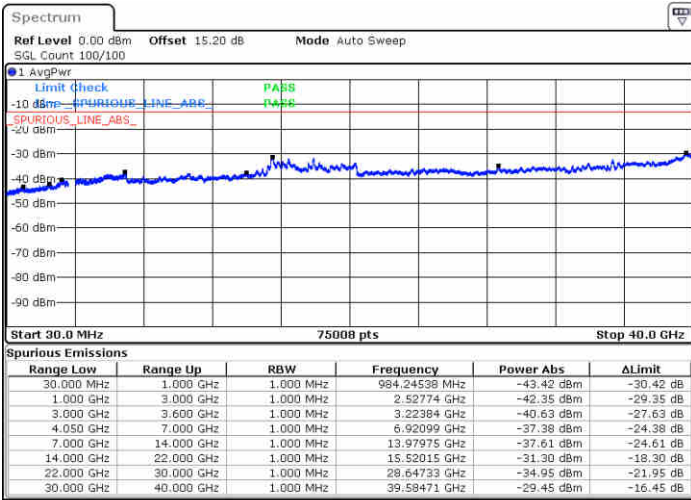




FR1 UL-MIMO n77 / 100MHz / CP-OFDM QPSK (M)

Lowest Channel / 1RB

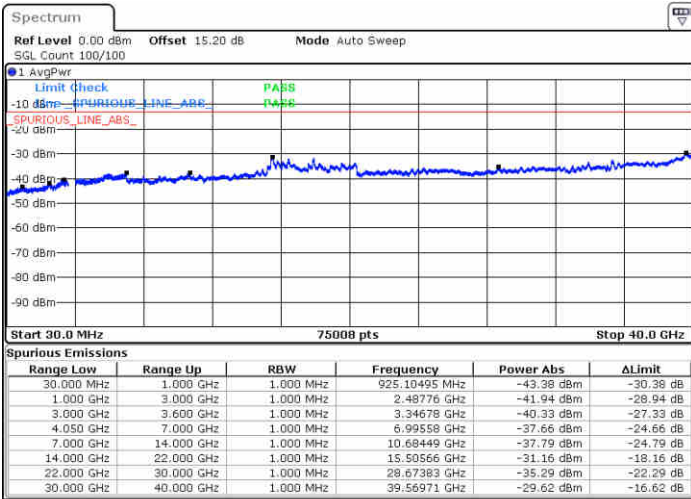
Middle Channel / 1RB



Date: 13.FEB.2021 10:09:02

Date: 13.FEB.2021 09:56:48

Highest Channel / 1RB



Date: 13.FEB.2021 10:23:06



Frequency Stability

Test Conditions		NR UL-MIMO n77 (QPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 20MHz	Within Band
		Deviation (ppm)	Result
50	Normal Voltage	0.0025	PASS
40	Normal Voltage	0.0015	
30	Normal Voltage	0.0016	
20(Ref.)	Normal Voltage	0.0023	
10	Normal Voltage	0.0017	
0	Normal Voltage	0.0024	
-10	Normal Voltage	0.0025	
-20	Normal Voltage	0.0018	
-30	Normal Voltage	0.0015	
20	Maximum Voltage	0.0025	
20	Normal Voltage	0.0011	
20	Battery End Point	0.0025	

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 NSA-SCS 15K

Peak-to-Average Ratio

Mode	FR1 N77 / 20MHz / DFT-S OFDM				
Mod.	PI/2 BPSK	PI/2 BPSK	QPSK	QPSK	Limit: 13dB
RB Size	1RB	Full RB	1RB	Full RB	Result
Lowest CH	3.54	4.12	5.54	5.45	PASS
Middle CH	3.36	3.97	4.38	5.19	
Highest CH	3.25	3.88	4.26	5.25	



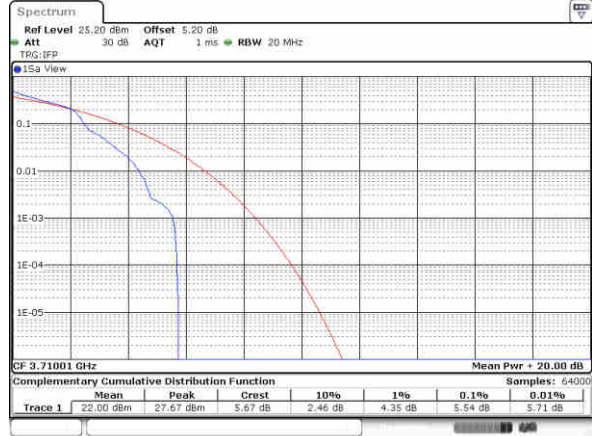
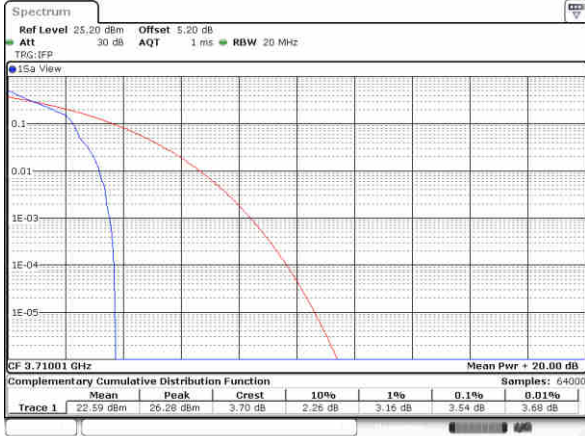
FR1 N77 / 20MHz / DFT-S OFDM

PI/2 BPSK

QPSK

Lowest Channel / 1RB

Lowest Channel / 1RB

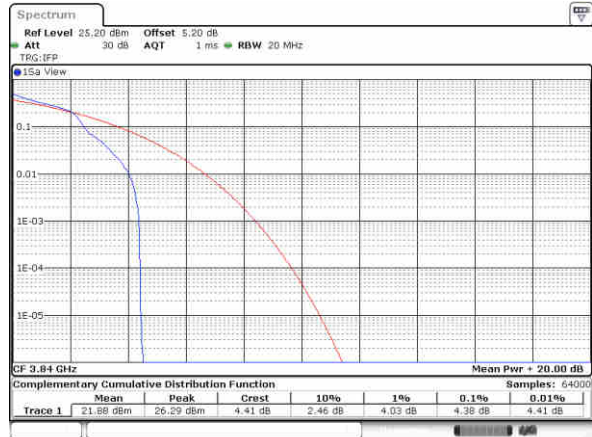
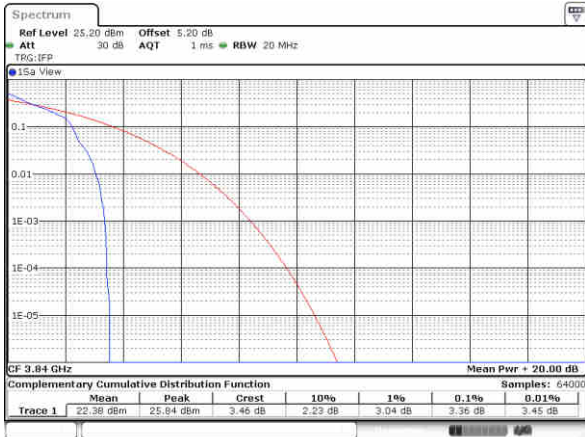


Date: 29, MAR, 2021 05:32:17

Date: 29, MAR, 2021 05:32:01

Middle Channel / 1 RB

Middle Channel / 1 RB

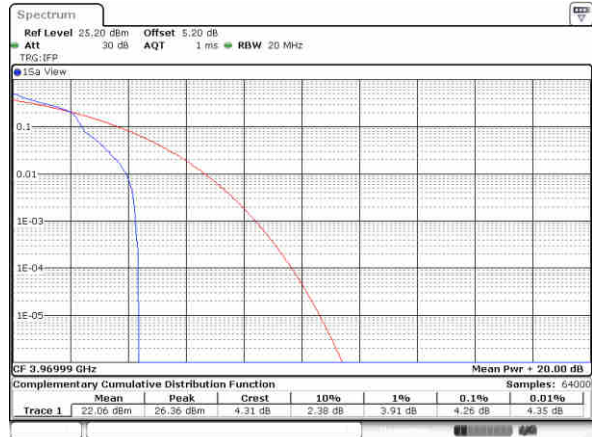
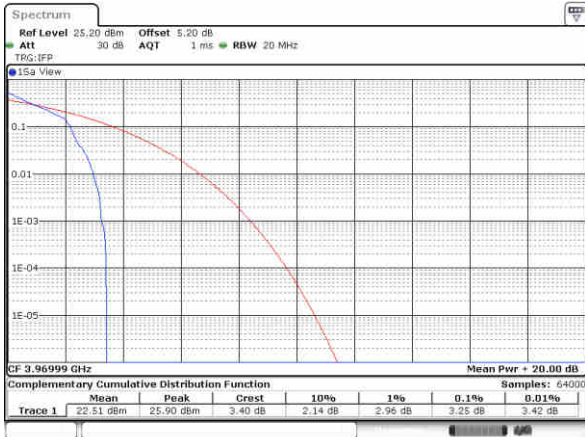


Date: 29, MAR, 2021 05:35:35

Date: 29, MAR, 2021 05:36:01

Highest Channel / 1 RB

Highest Channel / 1 RB



Date: 29, MAR, 2021 05:27:16

Date: 29, MAR, 2021 05:36:34



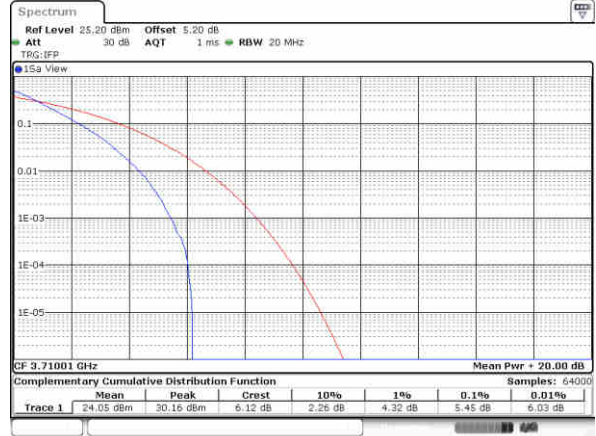
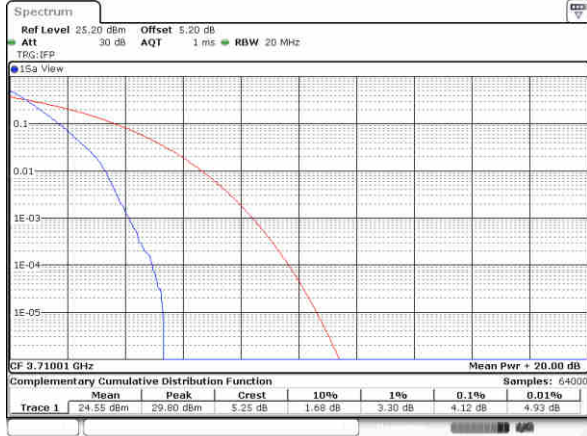
FR1 N77 / 20MHz / DFT-S OFDM

PI/2 BPSK

QPSK

Lowest Channel / Full RB

Lowest Channel / Full RB

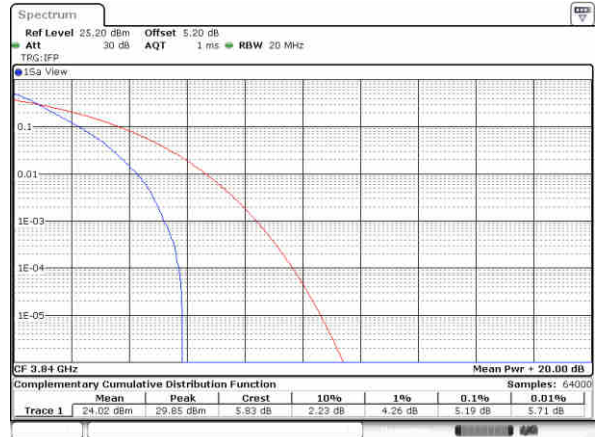
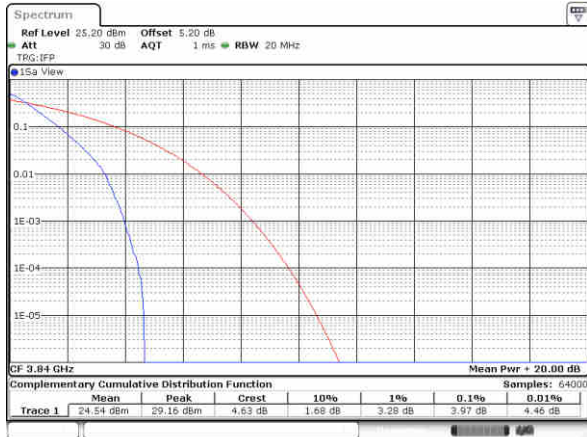


Date: 29, MAR, 2021 05:33:00

Date: 29, MAR, 2021 05:33:43

Middle Channel / Full RB

Middle Channel / Full RB

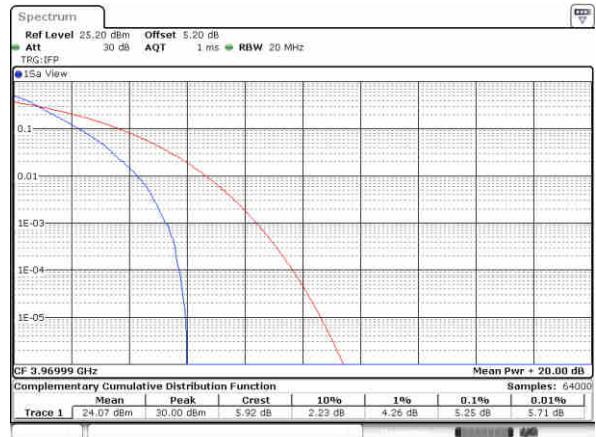
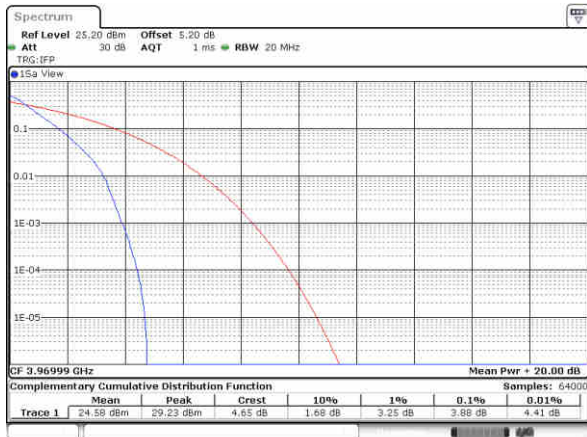


Date: 29, MAR, 2021 05:35:01

Date: 29, MAR, 2021 05:34:26

Highest Channel / Full RB

Highest Channel / Full RB



Date: 29, MAR, 2021 05:37:47

Date: 29, MAR, 2021 05:38:19

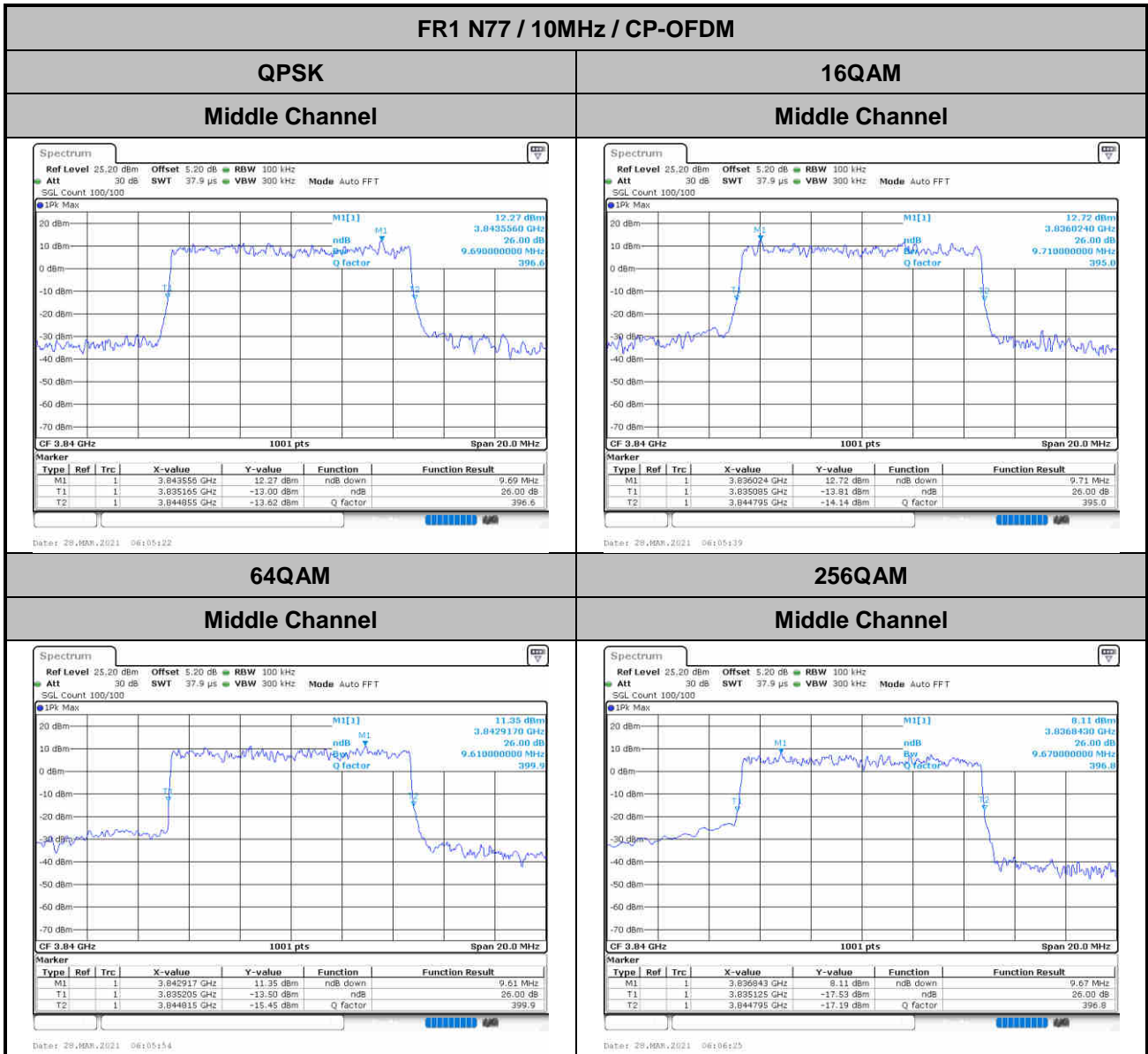


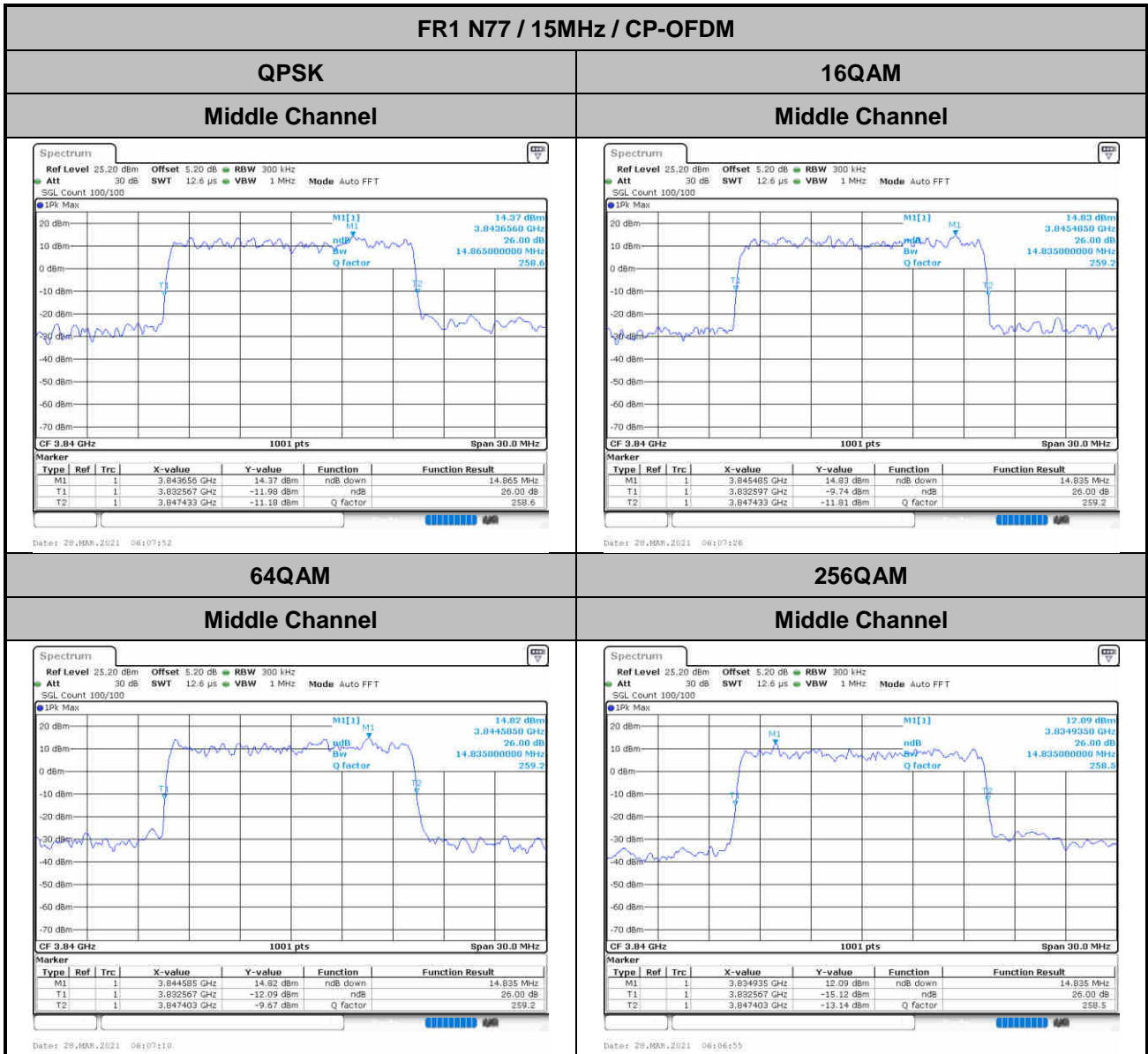
26dB Bandwidth

Mode	FR1 N77 : 26dB BW(MHz) / CP-OFDM							
BW	10MHz	10MHz	10MHz	10MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	9.69	9.71	9.61	9.67				

Mode	FR1 N77 : 26dB BW(MHz) / CP-OFDM							
BW	15MHz	15MHz	15MHz	15MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	14.87	14.84	14.84	14.84				

Mode	FR1 N77 : 26dB BW(MHz) / CP-OFDM							
BW	20MHz	20MHz	20MHz	20MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	19.86	19.74	19.70	19.70				







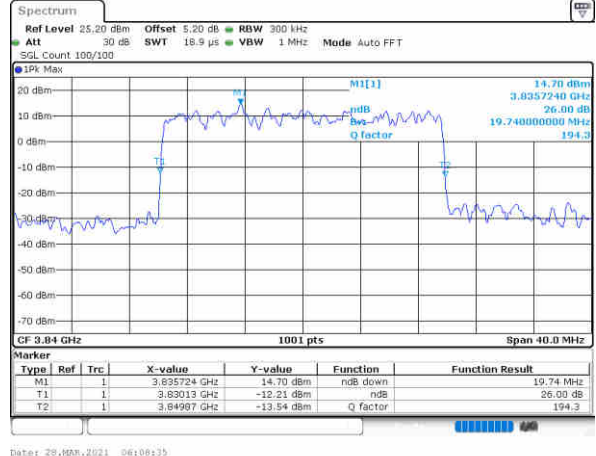
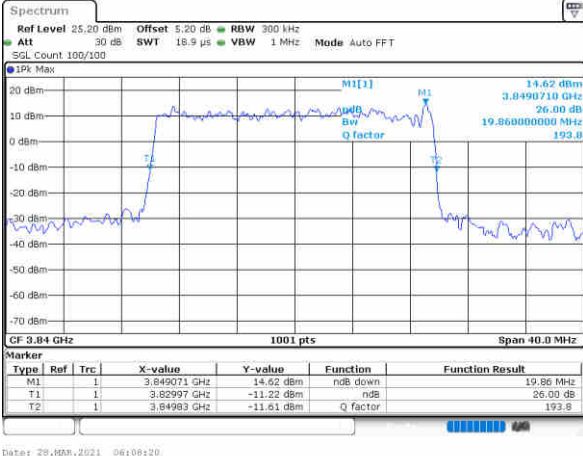
FR1 N77 / 20MHz / CP-OFDM

QPSK

16QAM

Middle Channel

Middle Channel



Date: 29.MAR.2021 06:08:20

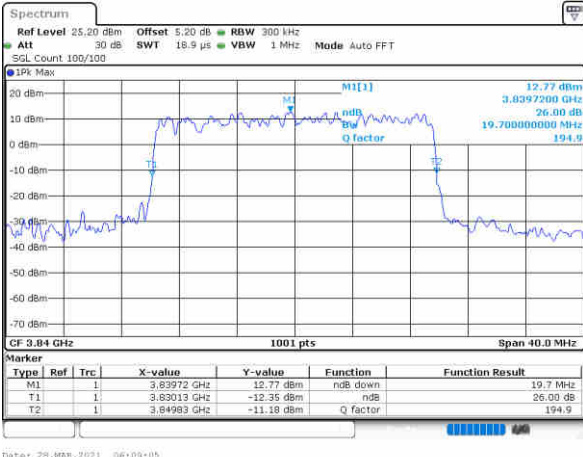
Date: 29.MAR.2021 06:10:33

64QAM

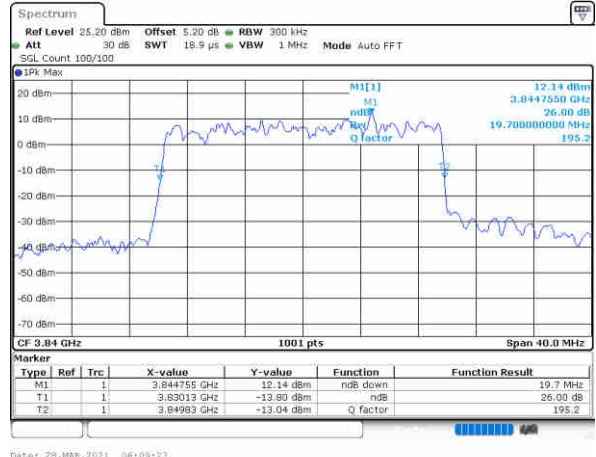
256QAM

Middle Channel

Middle Channel



Date: 29.MAR.2021 06:09:05



Date: 29.MAR.2021 06:10:23

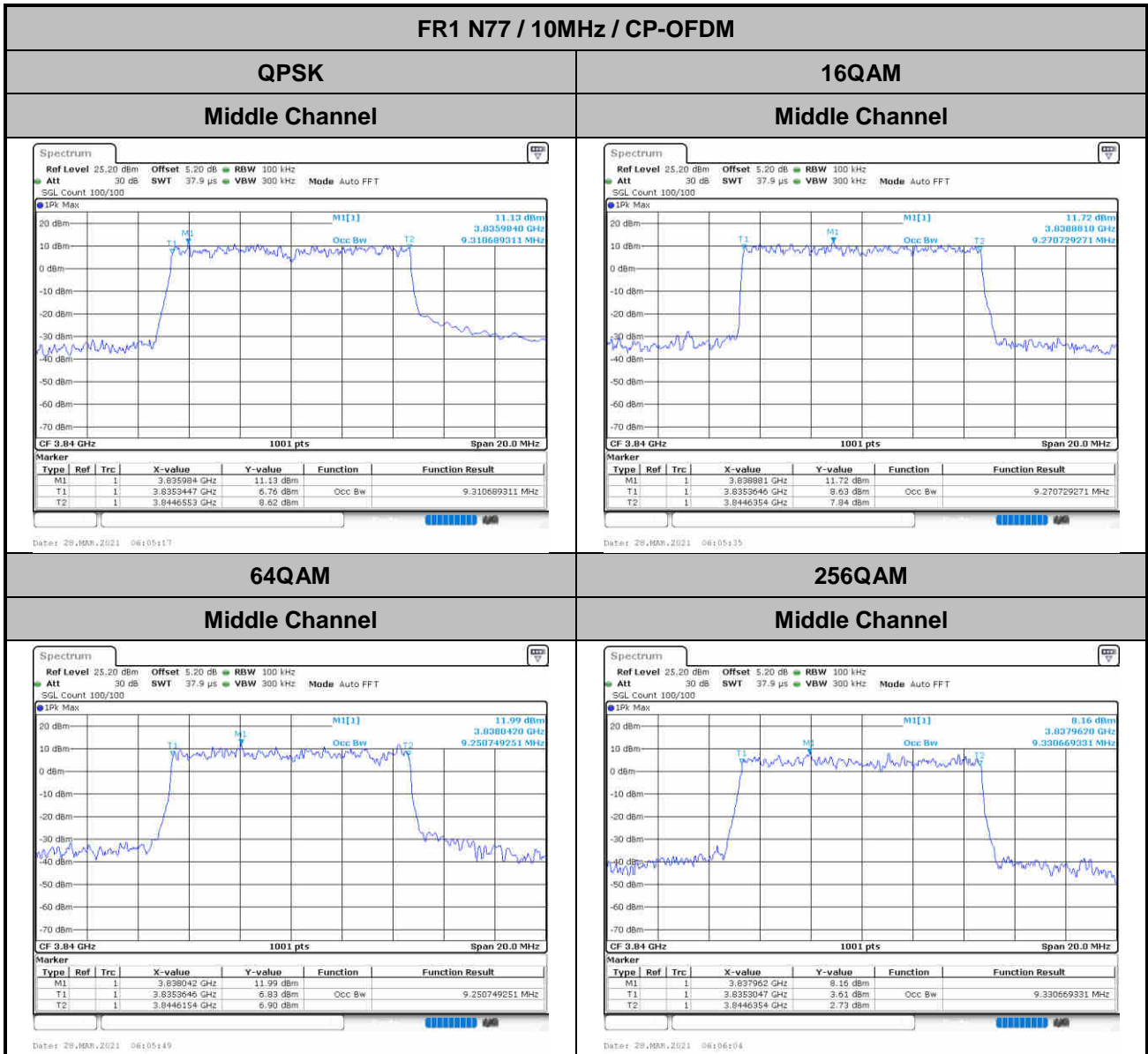


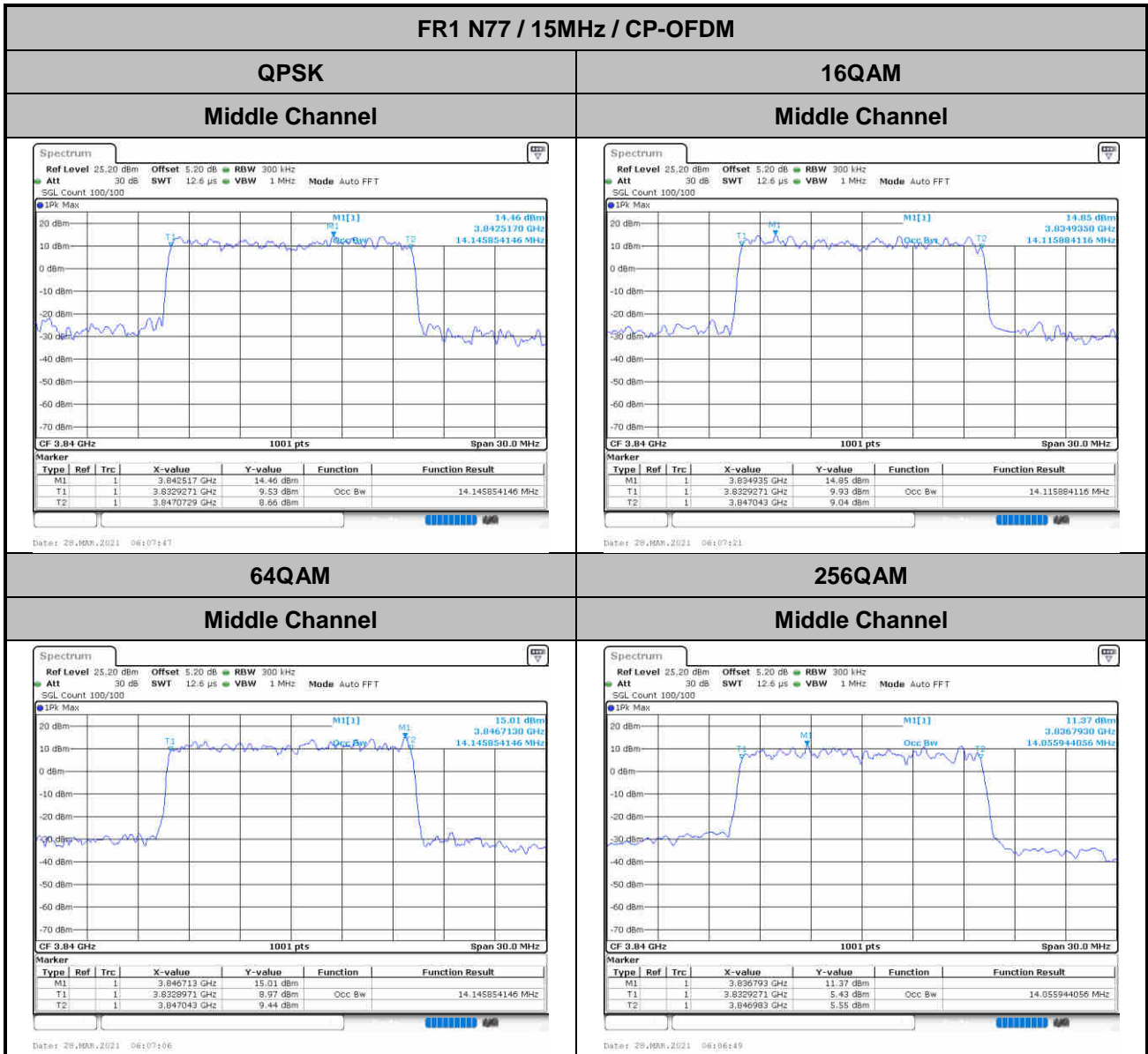
Occupied Bandwidth

Mode	FR1 N77 : OBW(MHz) / CP-OFDM							
BW	10MHz	10MHz	10MHz	10MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	9.31	9.27	9.25	9.33				

Mode	FR1 N77 : OBW(MHz) / CP-OFDM							
BW	15MHz	15MHz	15MHz	15MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	14.15	14.12	14.15	14.06				

Mode	FR1 N77 : OBW(MHz) / CP-OFDM							
BW	20MHz	20MHz	20MHz	20MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	18.90	19.06	19.02	18.86				







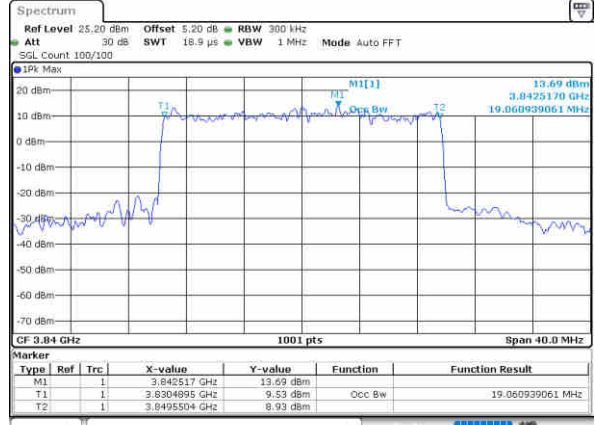
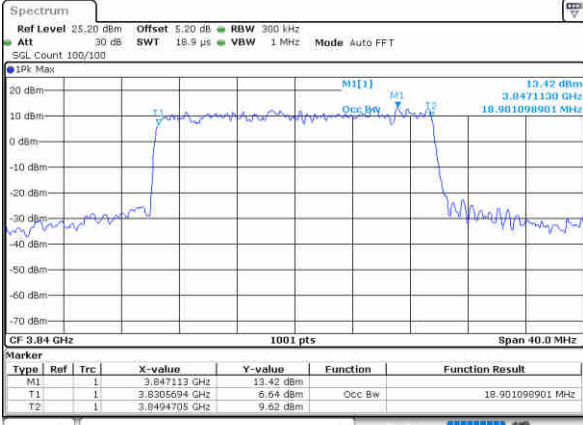
FR1 N77 / 20MHz / CP-OFDM

QPSK

16QAM

Middle Channel

Middle Channel



Date: 29.MAR.2021 06:08:10

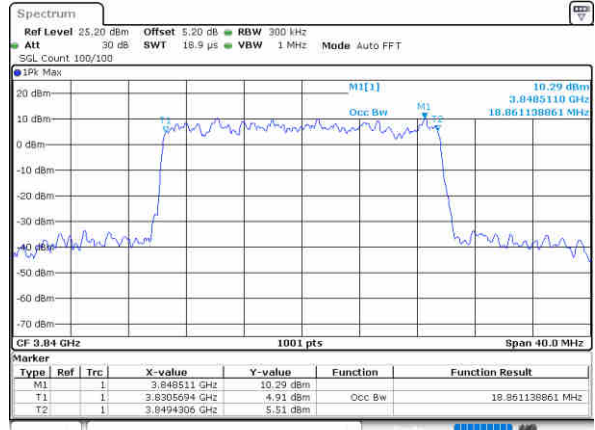
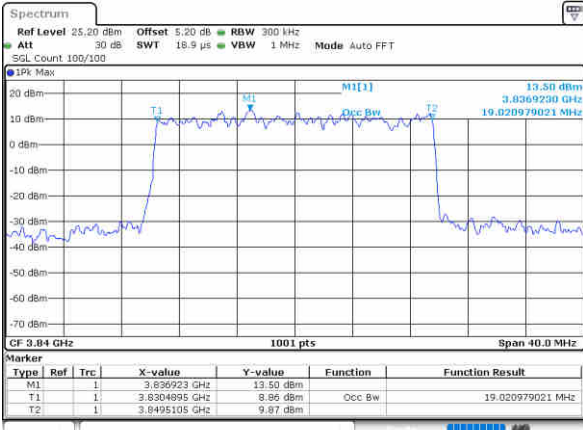
Date: 29.MAR.2021 06:10:30

64QAM

256QAM

Middle Channel

Middle Channel

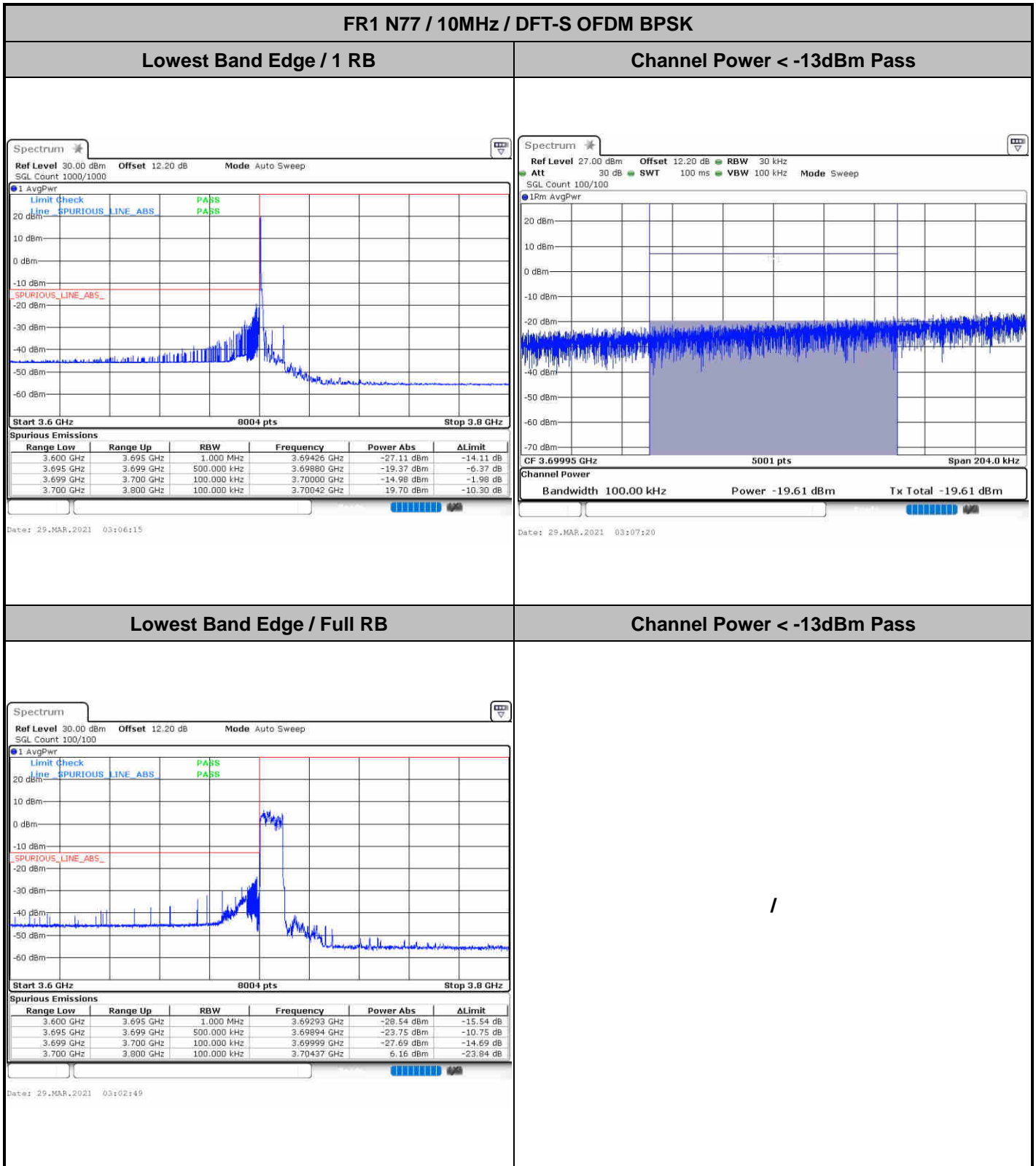


Date: 29.MAR.2021 06:08:48

Date: 29.MAR.2021 06:10:17



Conducted Band Edge

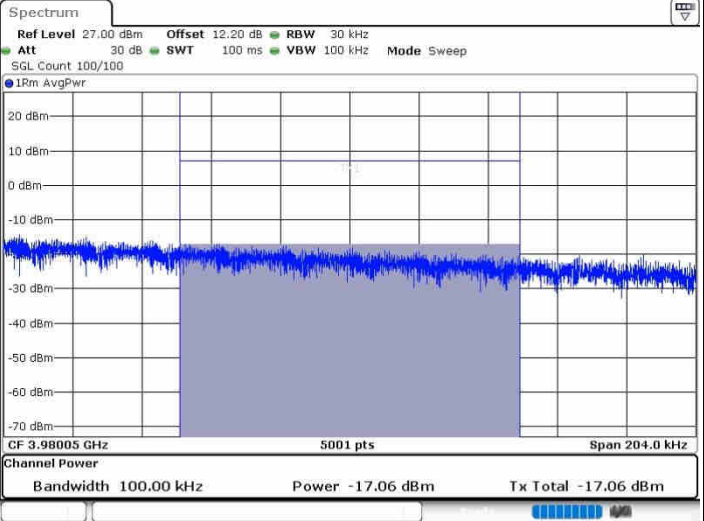




FR1 N77 / 10MHz / DFT-S OFDM BPSK

Highest Band Edge / 1 RB

Channel Power < -13dBm Pass

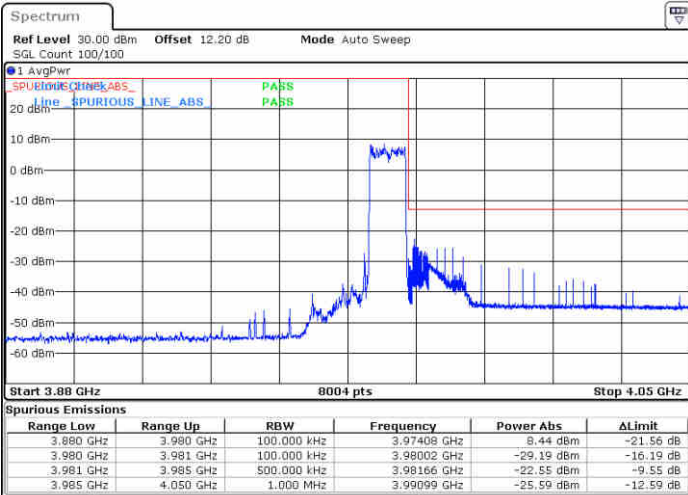


Date: 28.MAR.2021 04:45:57

Date: 28.MAR.2021 04:50:16

Highest Band Edge / Full RB

Channel Power < -13dBm Pass



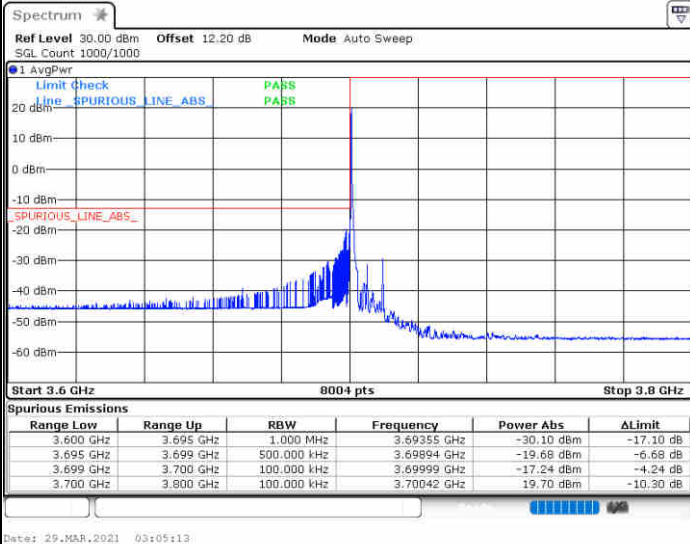
Date: 28.MAR.2021 04:50:33



FR1 N77 / 10MHz / DFT-S OFDM QPSK

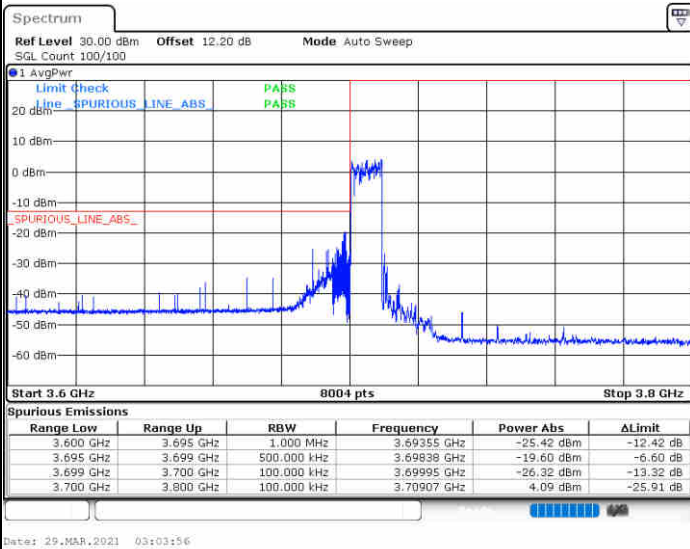
Lowest Band Edge / 1 RB

Channel Power < -13dBm Pass



Lowest Band Edge / Full RB

Channel Power < -13dBm Pass



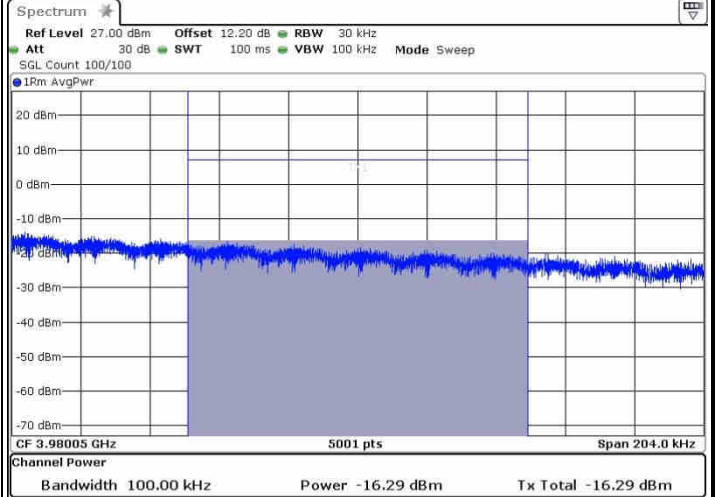
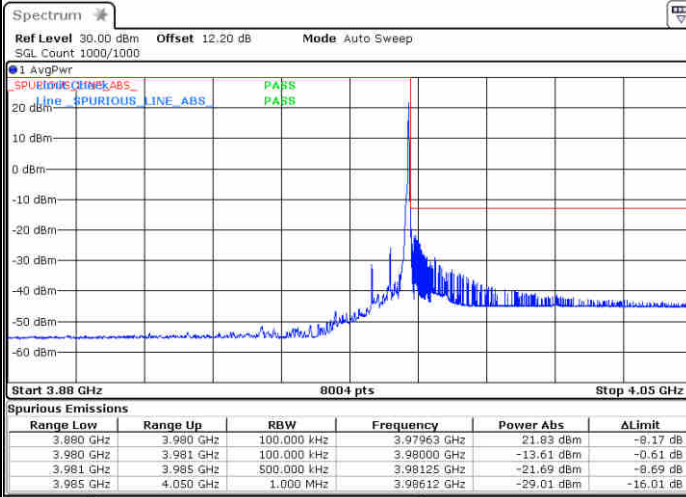
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FR1 N77 / 10MHz / DFT-S OFDM QPSK

Highest Band Edge / 1 RB

Channel Power < -13dBm Pass

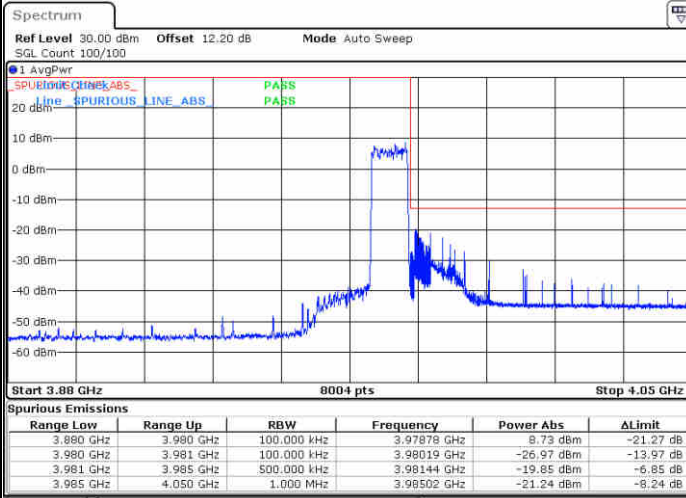


Date: 28.MAR.2021 04:47:06

Date: 28.MAR.2021 04:49:13

Highest Band Edge / Full RB

Channel Power < -13dBm Pass

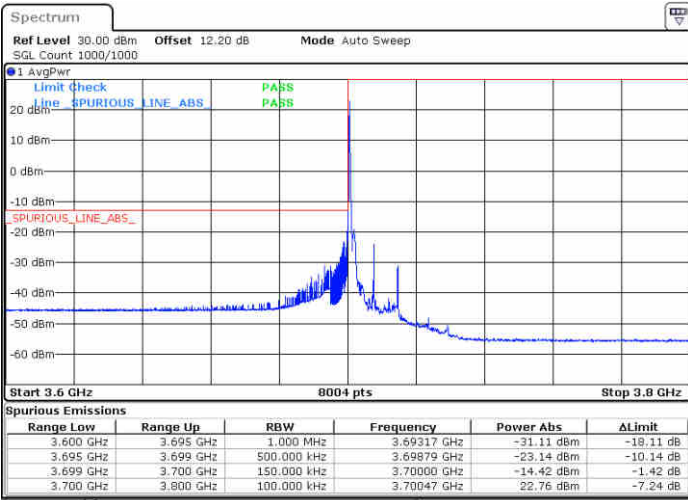


Date: 28.MAR.2021 04:52:42



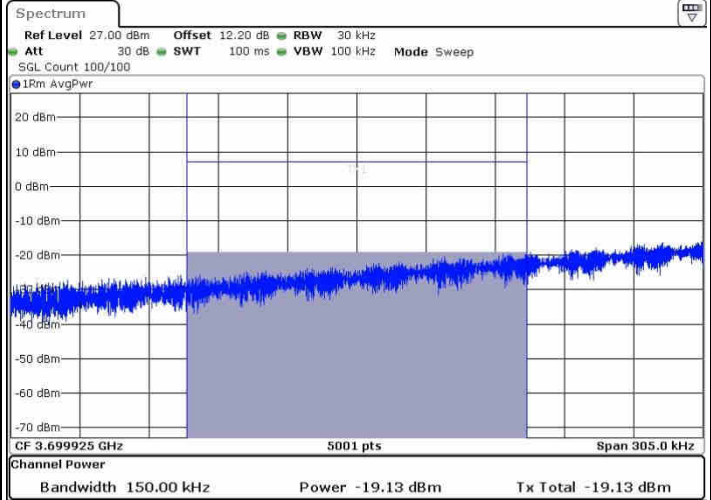
FR1 N77 / 15MHz / DFT-S OFDM BPSK

Lowest Band Edge / 1 RB



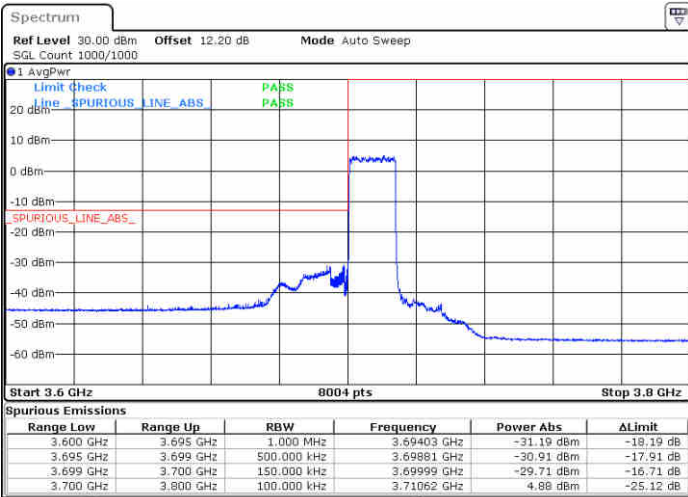
Date: 28.MAR.2021 04:56:19

Channel Power < -13dBm Pass



Date: 28.MAR.2021 05:07:25

Lowest Band Edge / Full RB



Date: 28.MAR.2021 04:55:21

Channel Power < -13dBm Pass

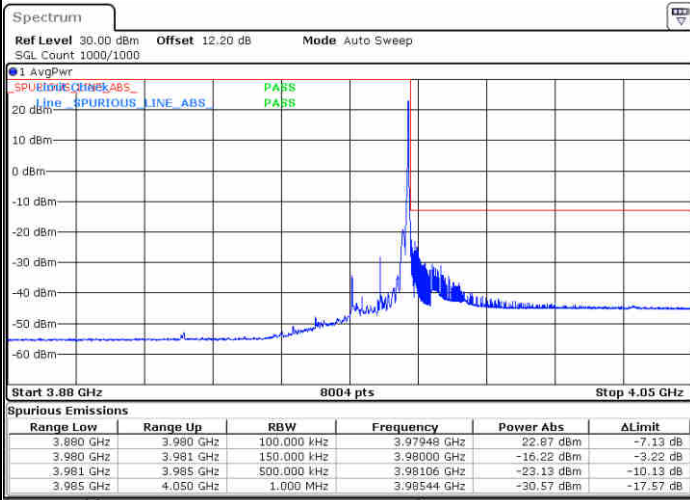
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FR1 N77 / 15MHz / DFT-S OFDM BPSK

Highest Band Edge / 1 RB

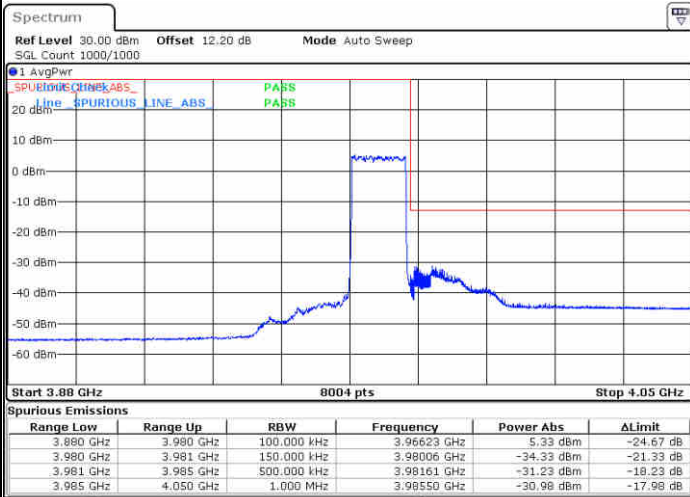
Channel Power < -13dBm Pass



Date: 28_MAR_2021 04:59:42

Highest Band Edge / Full RB

Channel Power < -13dBm Pass



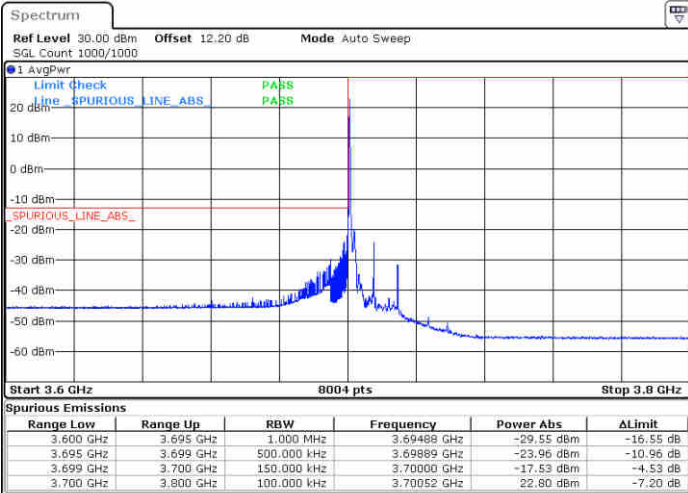
Date: 28_MAR_2021 05:02:32



FR1 N77 / 15MHz / DFT-S OFDM QPSK

Lowest Band Edge / 1 RB

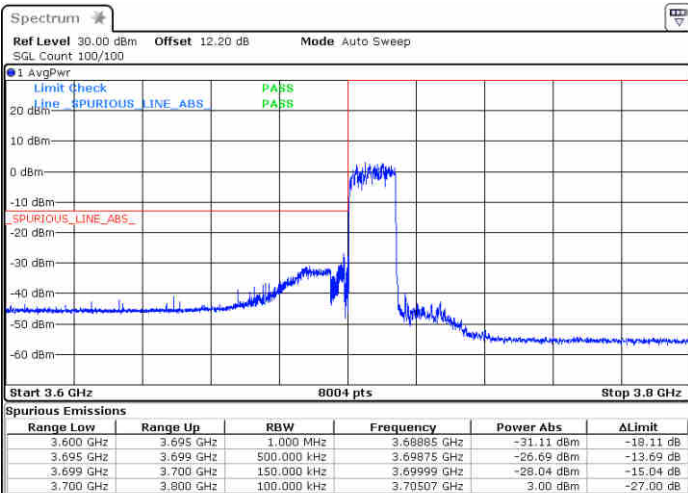
Channel Power < -13dBm Pass



Date: 28_MAR.2021 04:57:12

Lowest Band Edge / Full RB

Channel Power < -13dBm Pass



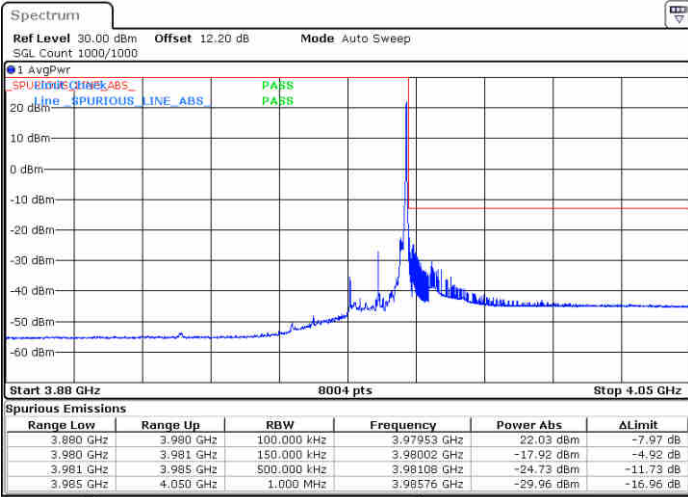
Date: 28_MAR.2021 04:54:01



FR1 N77 / 15MHz / DFT-S OFDM QPSK

Highest Band Edge / 1 RB

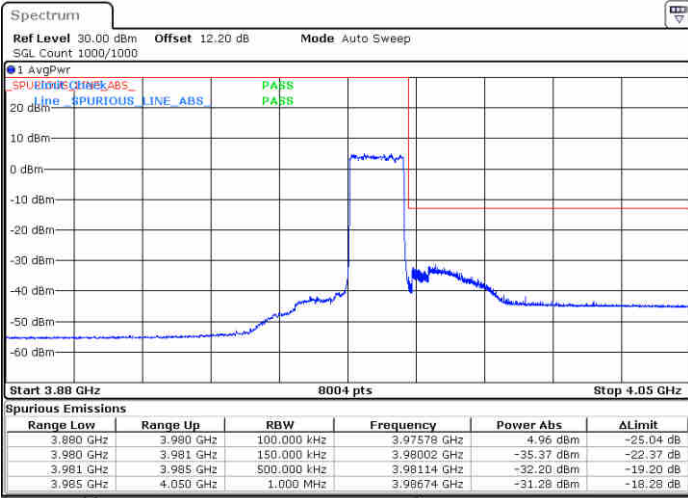
Channel Power < -13dBm Pass



Date: 28.MAR.2021 04:58:27

Highest Band Edge / Full RB

Channel Power < -13dBm Pass



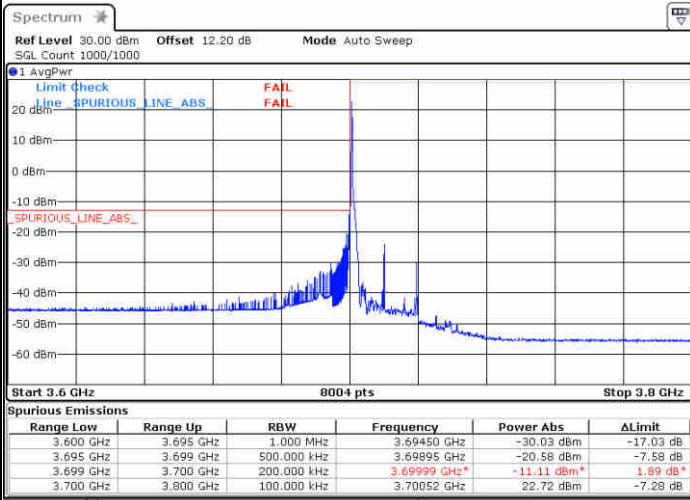
Date: 28.MAR.2021 05:05:36



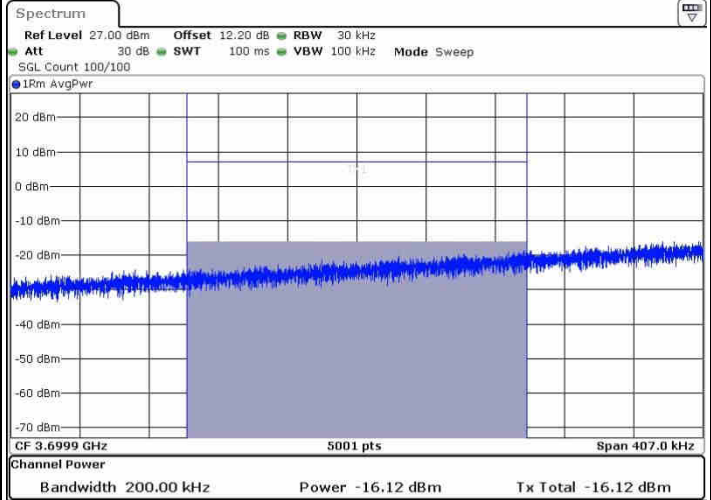
FR1 N77 / 20MHz / DFT-S OFDM BPSK

Lowest Band Edge / 1 RB

Channel Power < -13dBm Pass



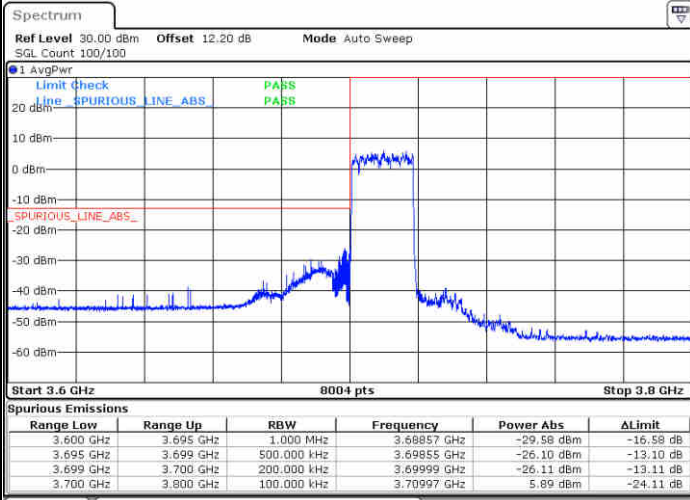
Date: 28.MAR.2021 05:16:16



Date: 28.MAR.2021 05:30:55

Lowest Band Edge / Full RB

Channel Power < -13dBm Pass



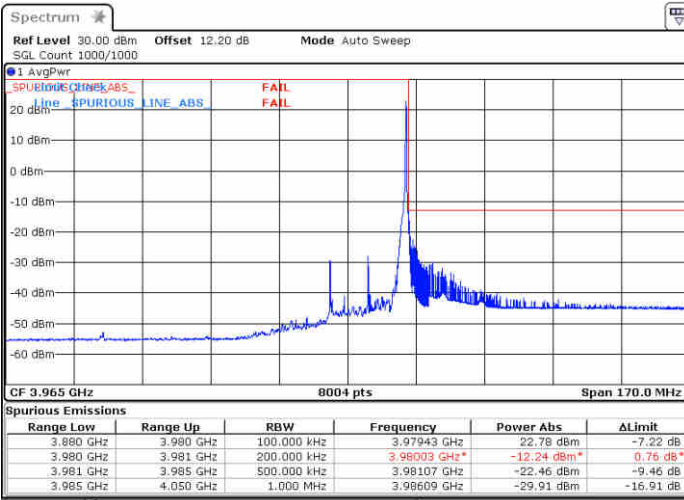
Date: 28.MAR.2021 05:08:13

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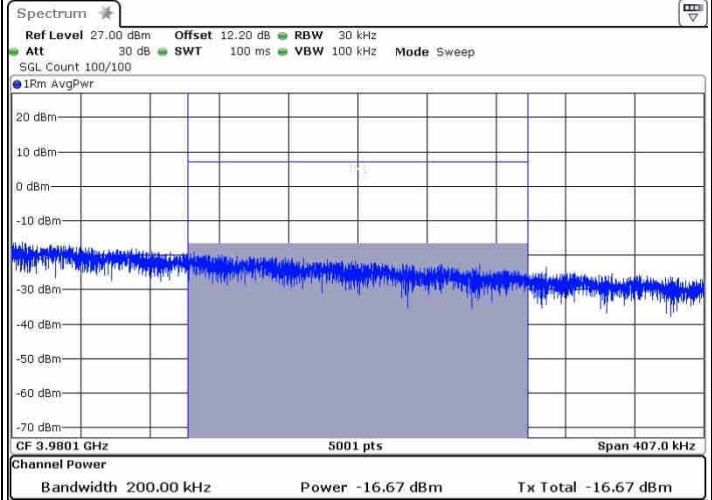
FR1 N77 / 20MHz / DFT-S OFDM BPSK

Highest Band Edge / 1 RB



Date: 28.MAR.2021 05:18:53

Channel Power < -13dBm Pass



Date: 28.MAR.2021 05:24:21

Highest Band Edge / Full RB



Date: 28.MAR.2021 05:22:58

Channel Power < -13dBm Pass

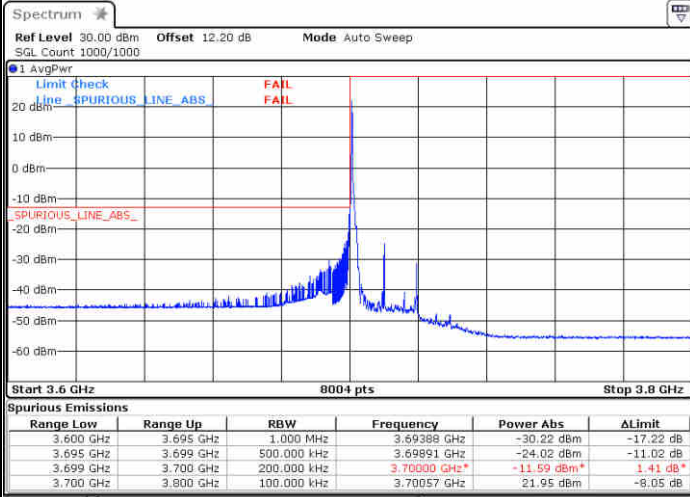
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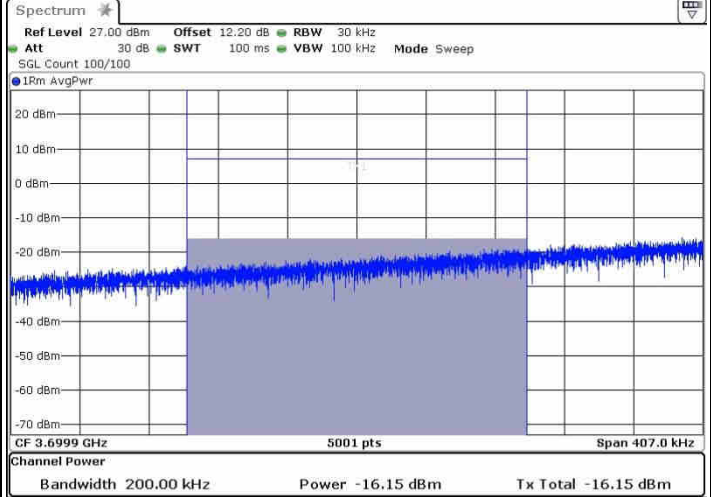
FR1 N77 / 20MHz / DFT-S OFDM QPSK

Lowest Band Edge / 1 RB

Channel Power < -13dBm Pass



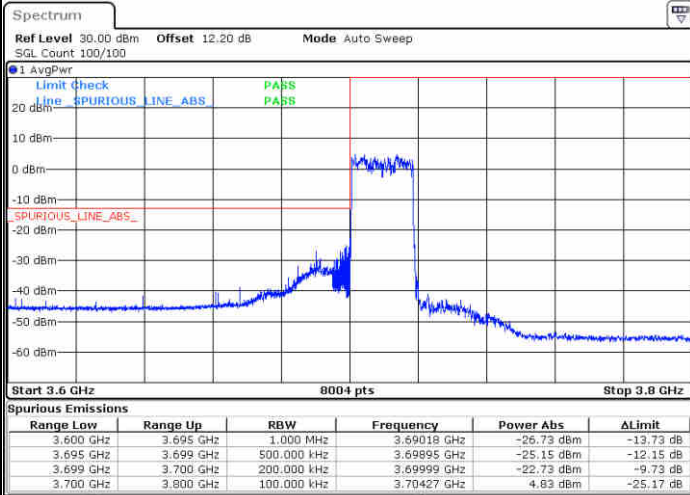
Date: 28.MAR.2021 05:12:03



Date: 28.MAR.2021 05:30:29

Lowest Band Edge / Full RB

Channel Power < -13dBm Pass



Date: 28.MAR.2021 05:09:45

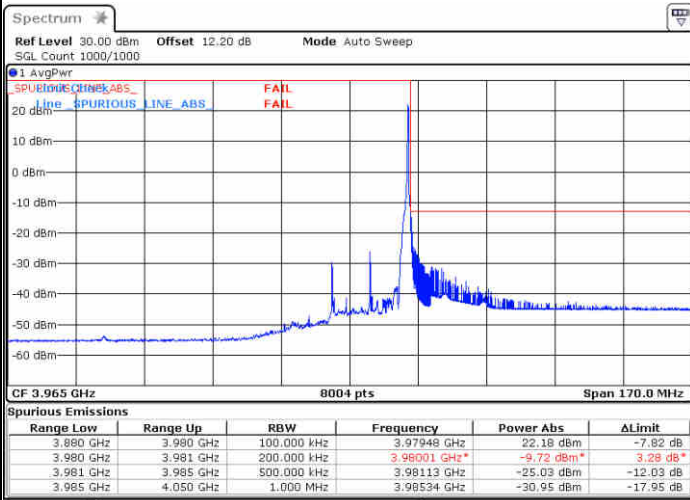
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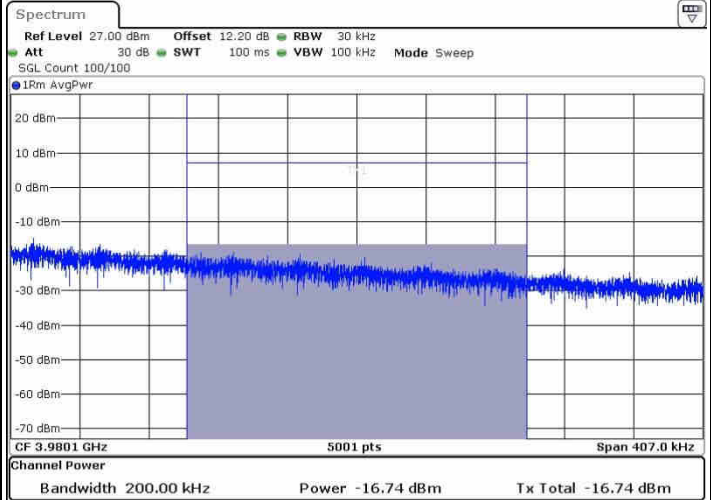
FR1 N77 / 20MHz / DFT-S OFDM QPSK

Highest Band Edge / 1 RB

Channel Power < -13dBm Pass



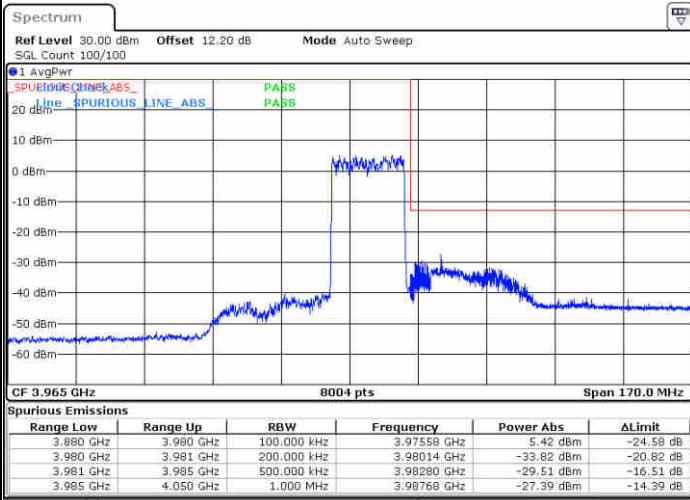
Date: 28.MAR.2021 05:20:22



Date: 28.MAR.2021 05:28:32

Highest Band Edge / Full RB

Channel Power < -13dBm Pass



Date: 28.MAR.2021 05:21:45

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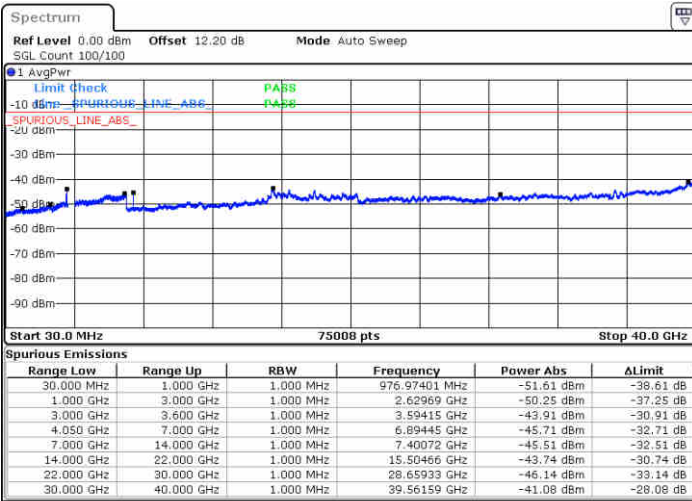


Conducted Spurious Emission

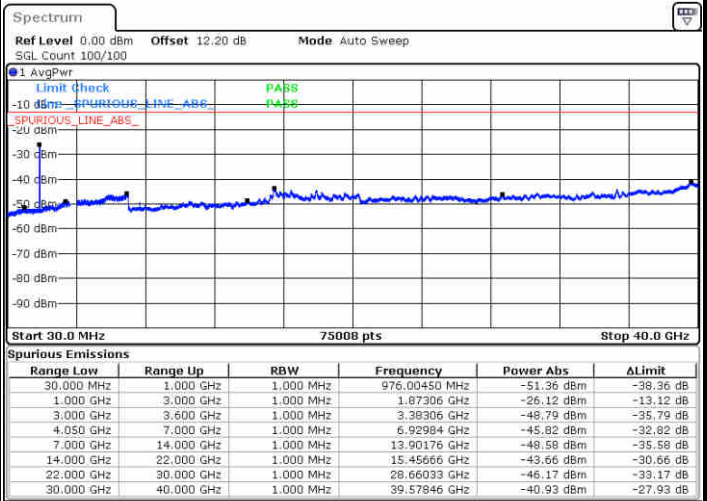
FR1 N77 / 10MHz / DFT-S OFDM / BPSK

Lowest Channel / 1RB

Middle Channel / 1RB

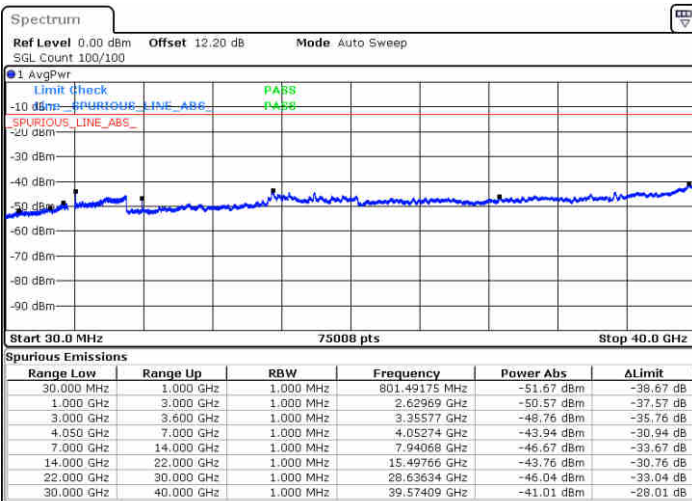


Date: 29.MAR.2021 03:08:28



Date: 28.MAR.2021 04:39:00

Highest Channel / 1RB



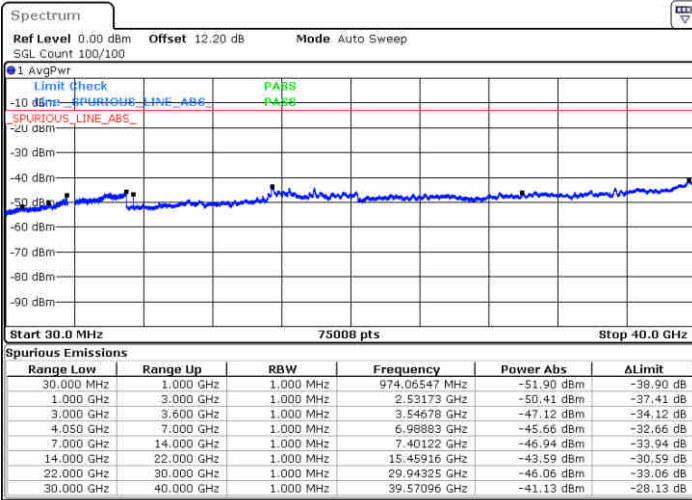
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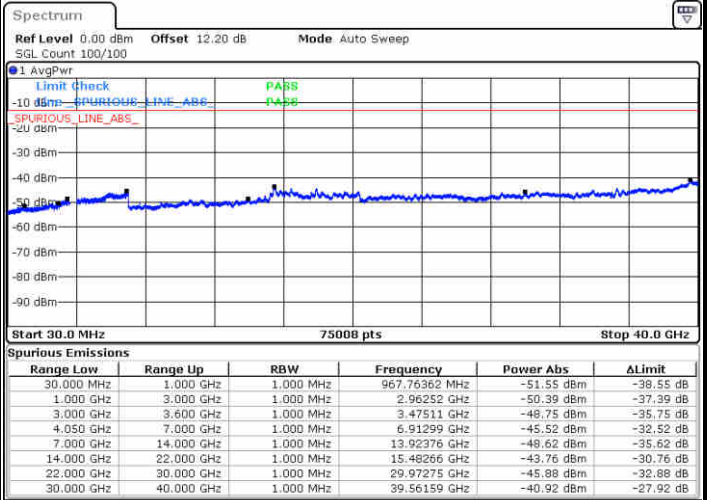
FR1 N77 / 10MHz / DFT-S OFDM / QPSK

Lowest Channel / 1RB

Middle Channel / 1RB

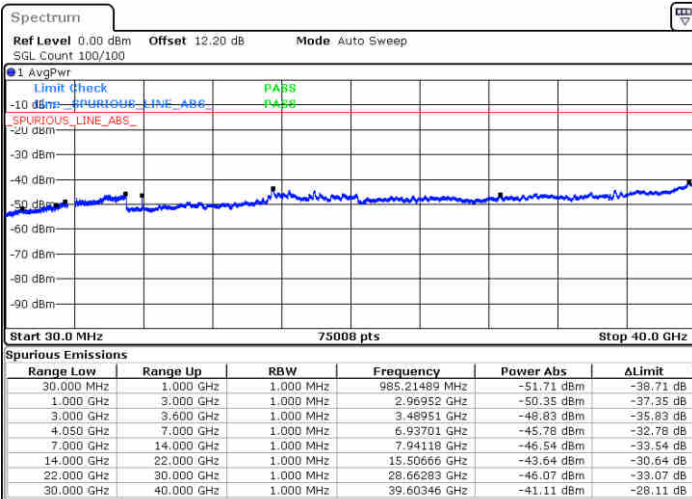


Date: 29.MAR.2021 03:09:47



Date: 28.MAR.2021 04:15:15

Highest Channel / 1RB



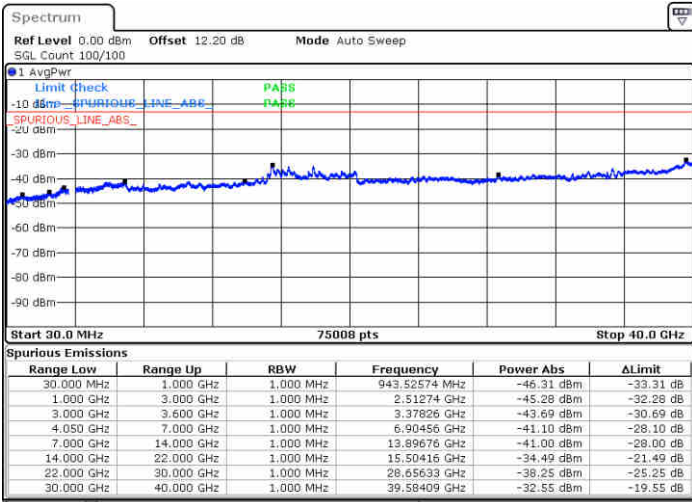
Date: 28.MAR.2021 04:18:02



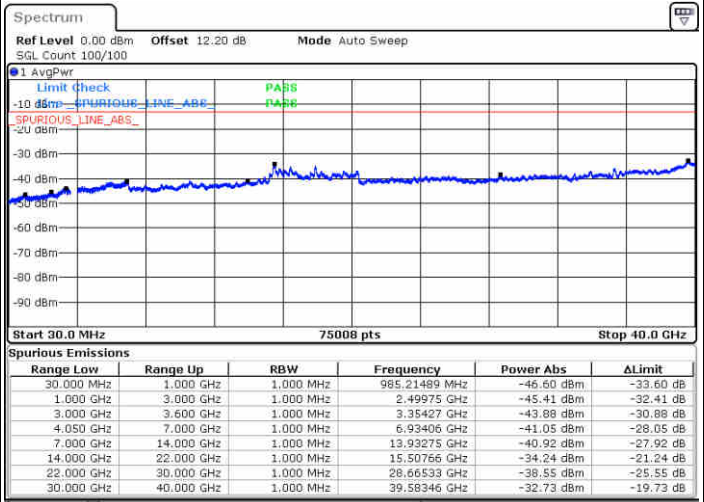
FR1 N77 / 15MHz / DFT-S OFDM / BPSK

Lowest Channel / 1RB

Middle Channel / 1RB

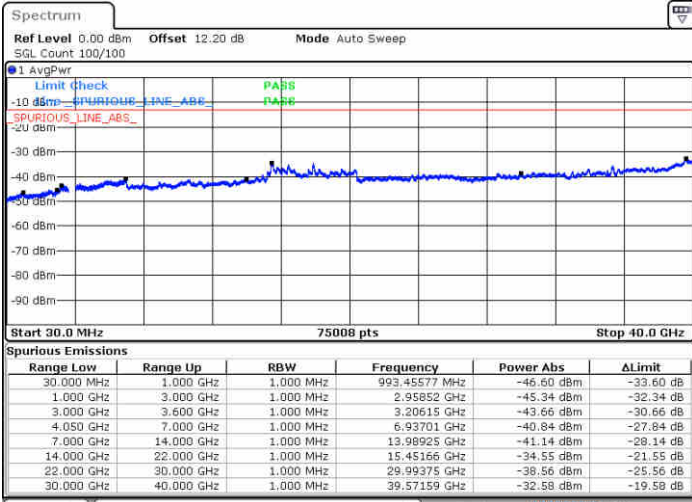


Date: 28.MAR.2021 03:32:38



Date: 28.MAR.2021 04:08:56

Highest Channel / 1RB



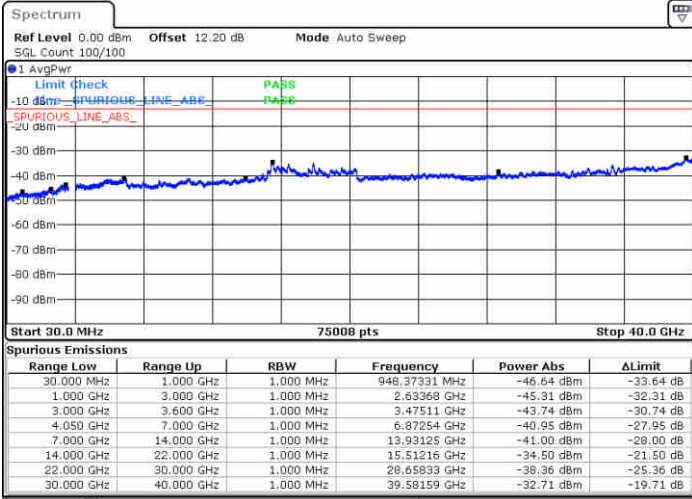
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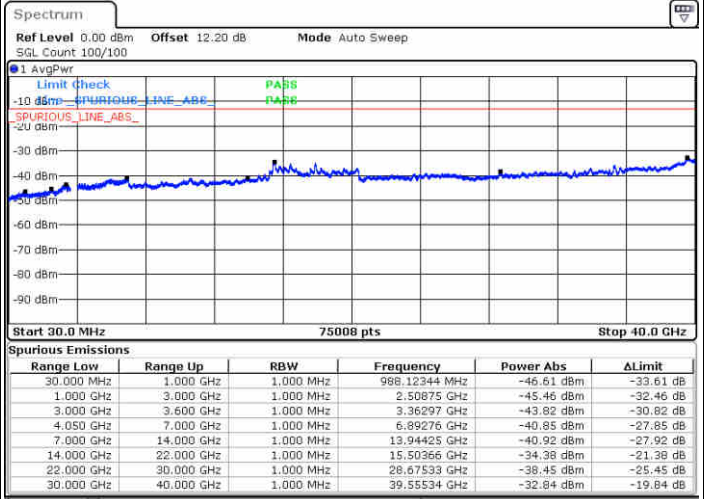
FR1 N77 / 15MHz / DFT-S OFDM / QPSK

Lowest Channel / 1RB

Middle Channel / 1RB

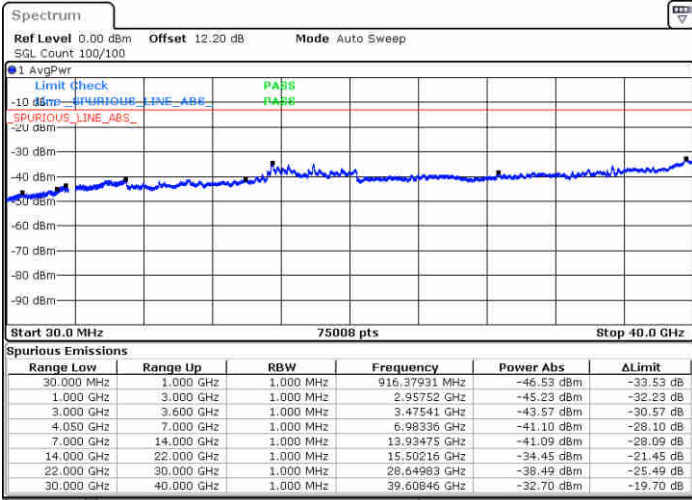


Date: 28.MAR.2021 03:33:56



Date: 28.MAR.2021 03:35:17

Highest Channel / 1RB



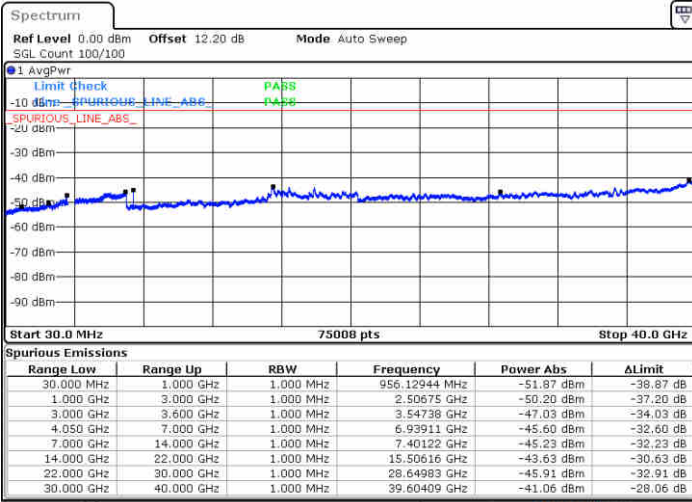
Date: 28.MAR.2021 04:12:08



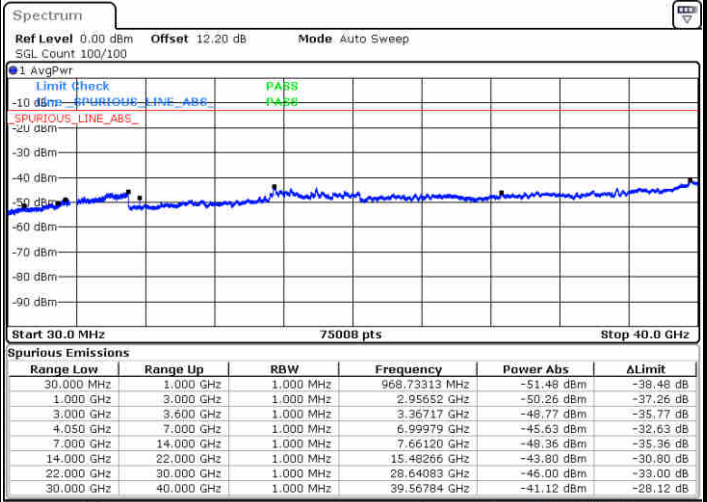
FR1 N77 / 20MHz / DFT-S OFDM / BPSK

Lowest Channel / 1RB

Middle Channel / 1RB

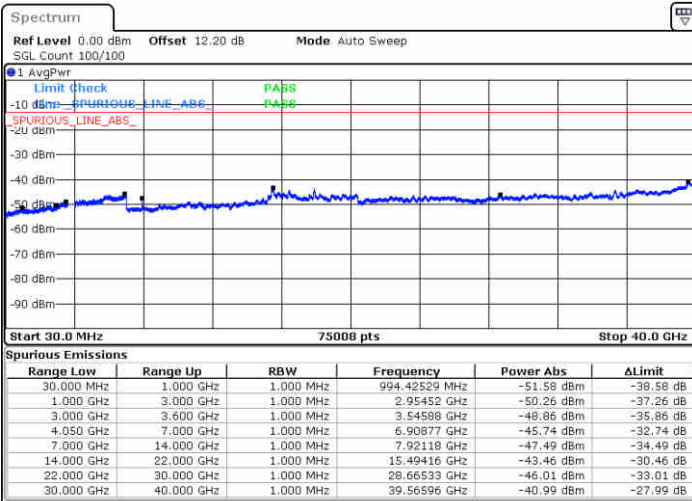


Date: 28.MAR.2021 02:41:25



Date: 28.MAR.2021 03:17:05

Highest Channel / 1RB



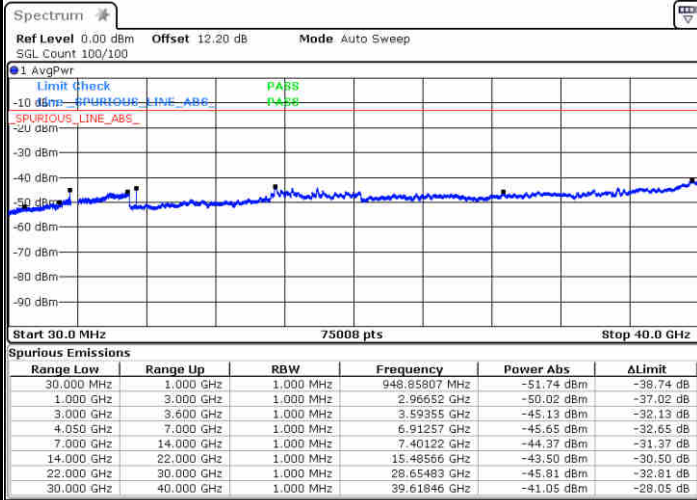
Date: 28.MAR.2021 03:20:29



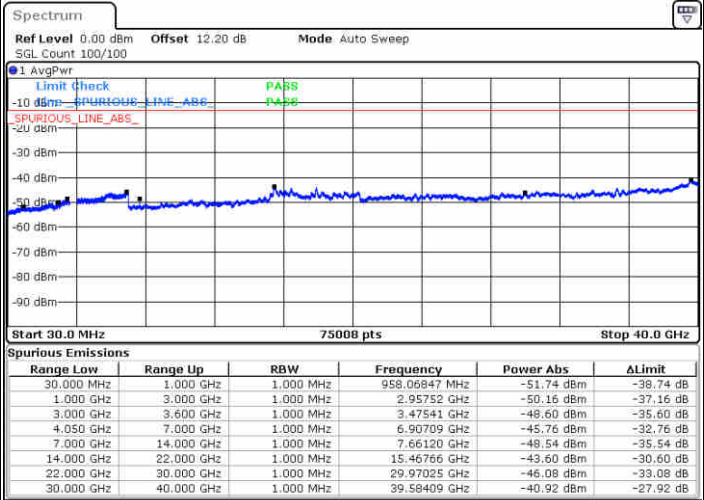
FR1 N77 / 20MHz / DFT-S OFDM / QPSK

Lowest Channel / 1RB

Middle Channel / 1RB

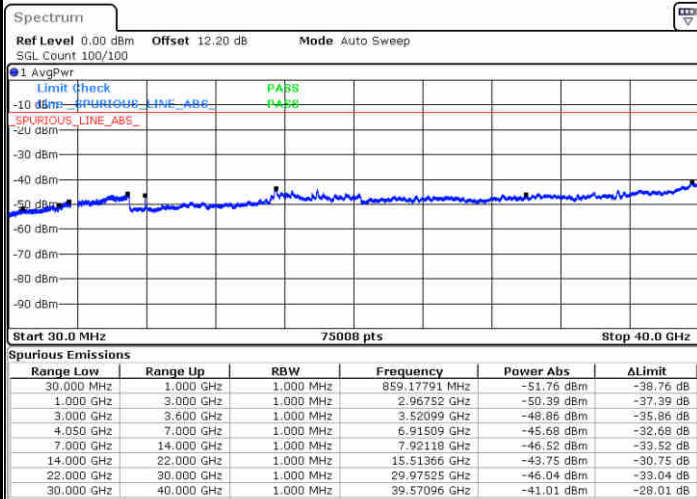


Date: 28.MAR.2021 02:31:14



Date: 28.MAR.2021 03:15:33

Highest Channel / 1RB



Date: 28.MAR.2021 03:18:59



Frequency Stability

Test Conditions		NR N77 (BPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 20MHz	Within Band
		Deviation (ppm)	Result
50	Normal Voltage	0.0015	PASS
40	Normal Voltage	0.0001	
30	Normal Voltage	0.0006	
20(Ref.)	Normal Voltage	0.0019	
10	Normal Voltage	0.0002	
0	Normal Voltage	0.0009	
-10	Normal Voltage	0.0013	
-20	Normal Voltage	0.0002	
-30	Normal Voltage	0.0019	
20	Maximum Voltage	0.0009	
20	Normal Voltage	0.0015	
20	Battery End Point	0.0013	

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 NSA-SCS 30K

Peak-to-Average Ratio

Mode	FR1 n77 / 10MHz / DFT-S OFDM				
Mod.	PI/2 BPSK	PI/2 BPSK	QPSK	QPSK	Limit: 13dB
RB Size	1RB	Full RB	1RB	Full RB	Result
Lowest CH	7.86	6.78	8.29	8.23	PASS
Middle CH	6.84	7.77	7.45	9.39	
Highest CH	6.87	6.67	7.59	8.17	



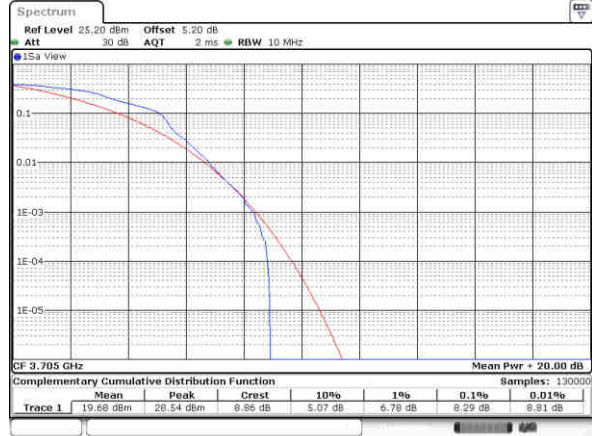
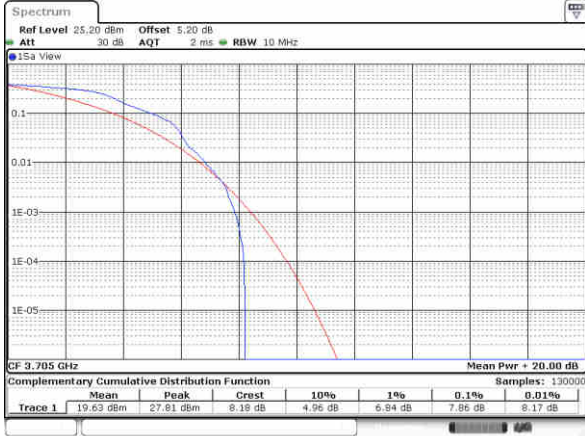
FR1 n77 / 10MHz / DFT-S OFDM

PI/2 BPSK

QPSK

Lowest Channel / 1RB

Lowest Channel / 1RB

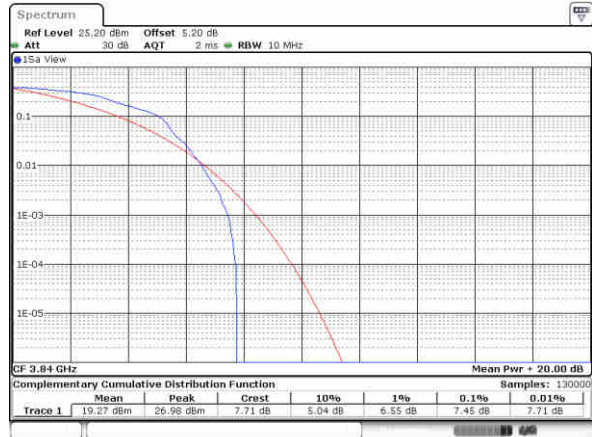
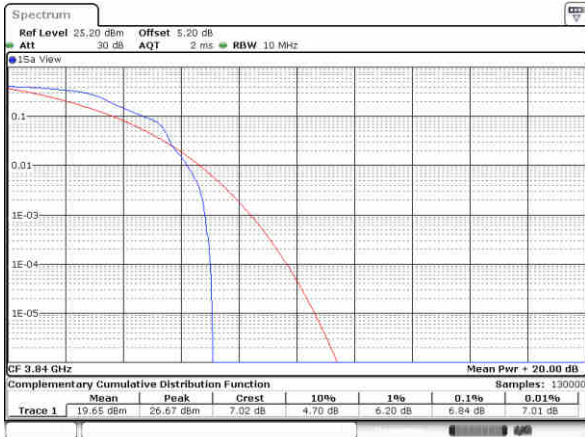


Date: 4.MAR.2021 14:12:42

Date: 4.MAR.2021 14:15:54

Middle Channel / 1 RB

Middle Channel / 1 RB

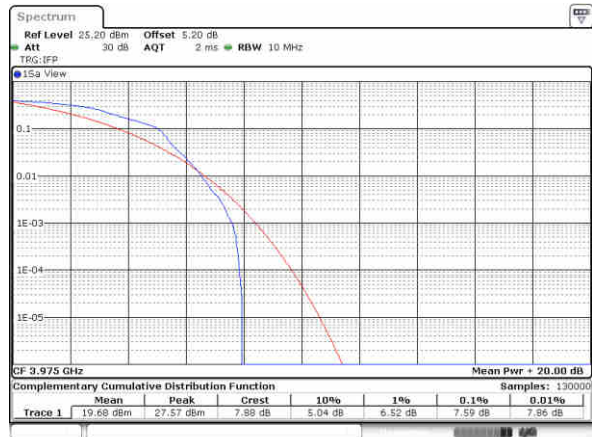
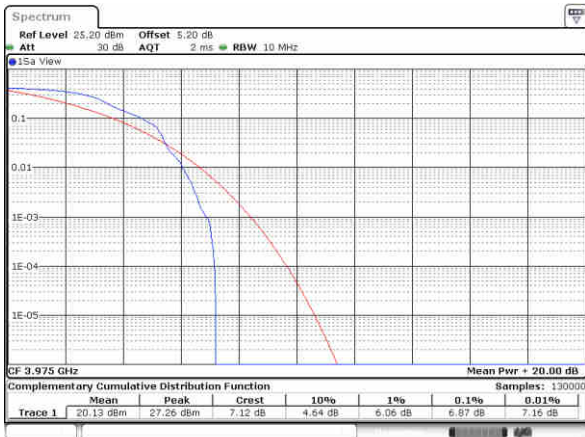


Date: 4.MAR.2021 14:19:04

Date: 4.MAR.2021 14:16:16

Highest Channel / 1 RB

Highest Channel / 1 RB



Date: 4.MAR.2021 14:28:01

Date: 4.MAR.2021 14:28:30



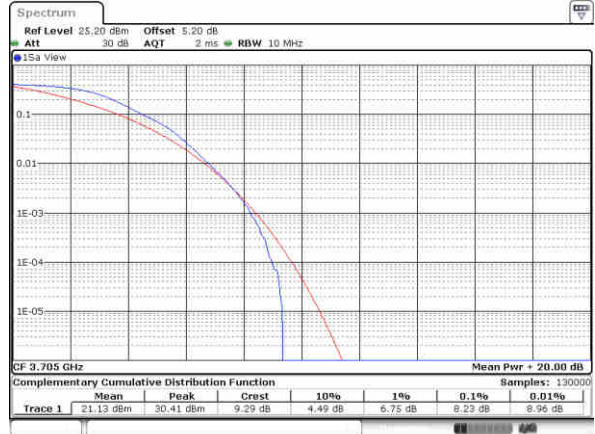
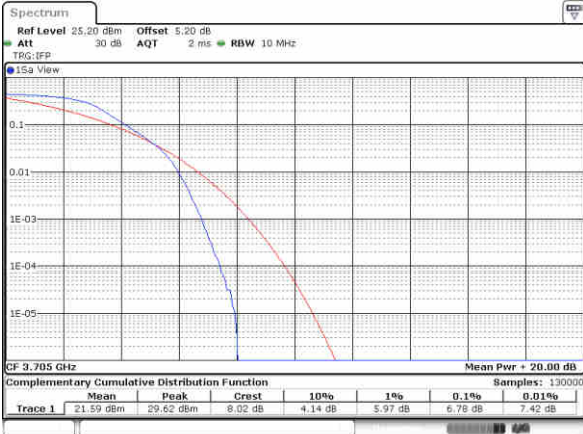
FR1 n77 / 10MHz / DFT-S OFDM

PI/2 BPSK

QPSK

Lowest Channel / Full RB

Lowest Channel / Full RB

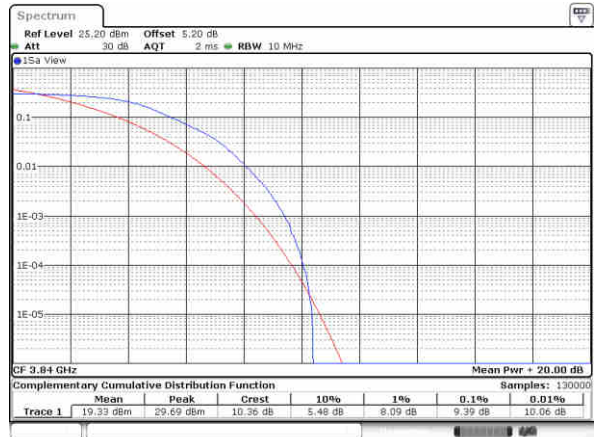
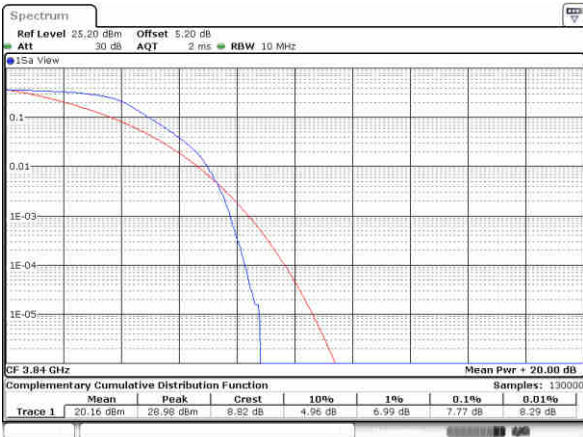


Date: 4.MAR.2021 14:11:23

Date: 4.MAR.2021 14:09:39

Middle Channel / Full RB

Middle Channel / Full RB

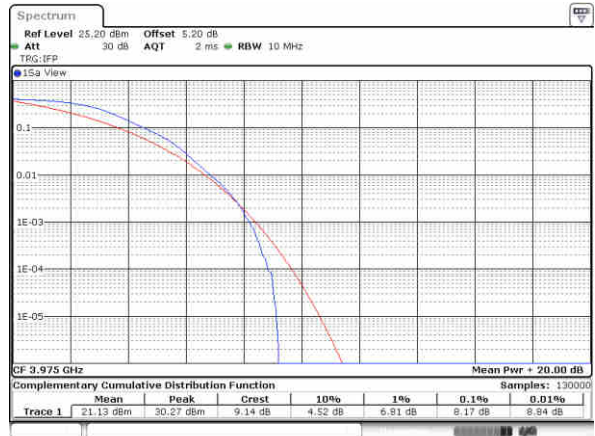
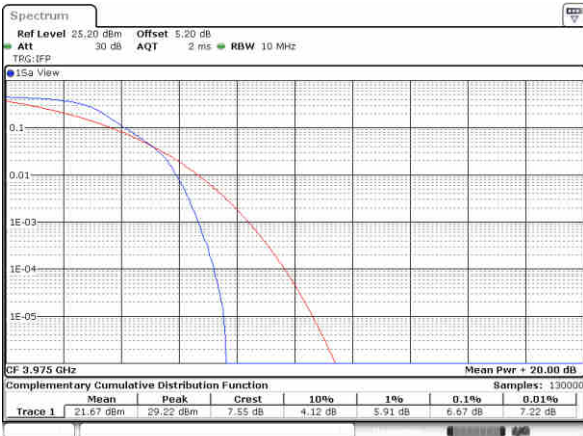


Date: 4.MAR.2021 14:19:23

Date: 4.MAR.2021 14:20:11

Highest Channel / Full RB

Highest Channel / Full RB



Date: 4.MAR.2021 14:24:22

Date: 4.MAR.2021 14:22:06



26dB Bandwidth

Mode	FR1 n77 : 26dB BW(MHz) / CP-OFDM							
BW	10MHz	10MHz	10MHz	10MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	9.09	9.29	9.21	9.09				

Mode	FR1 n77 : 26dB BW(MHz) / CP-OFDM							
BW	15MHz	15MHz	15MHz	15MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	14.42	14.51	14.33	14.51				

Mode	FR1 n77 : 26dB BW(MHz) / CP-OFDM							
BW	20MHz	20MHz	20MHz	20MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	19.02	19.14	19.54	19.06				

Mode	FR1 n77 : 26dB BW(MHz) / CP-OFDM							
BW	40MHz	40MHz	40MHz	40MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	40.28	40.20	40.28	40.36				

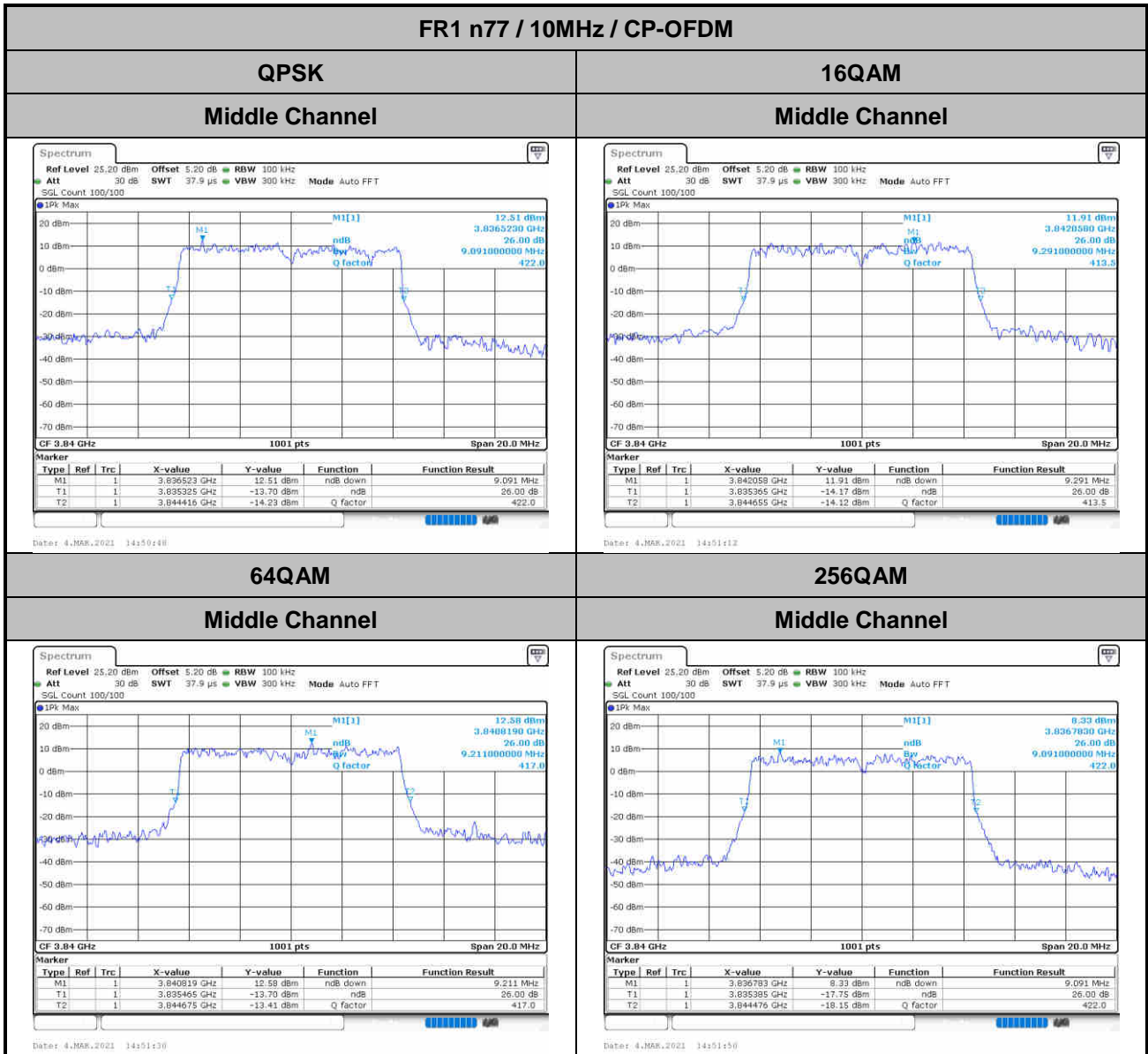
Mode	FR1 n77 : 26dB BW(MHz) / CP-OFDM							
BW	50MHz	50MHz	50MHz	50MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	49.75	49.75	49.55	49.95				

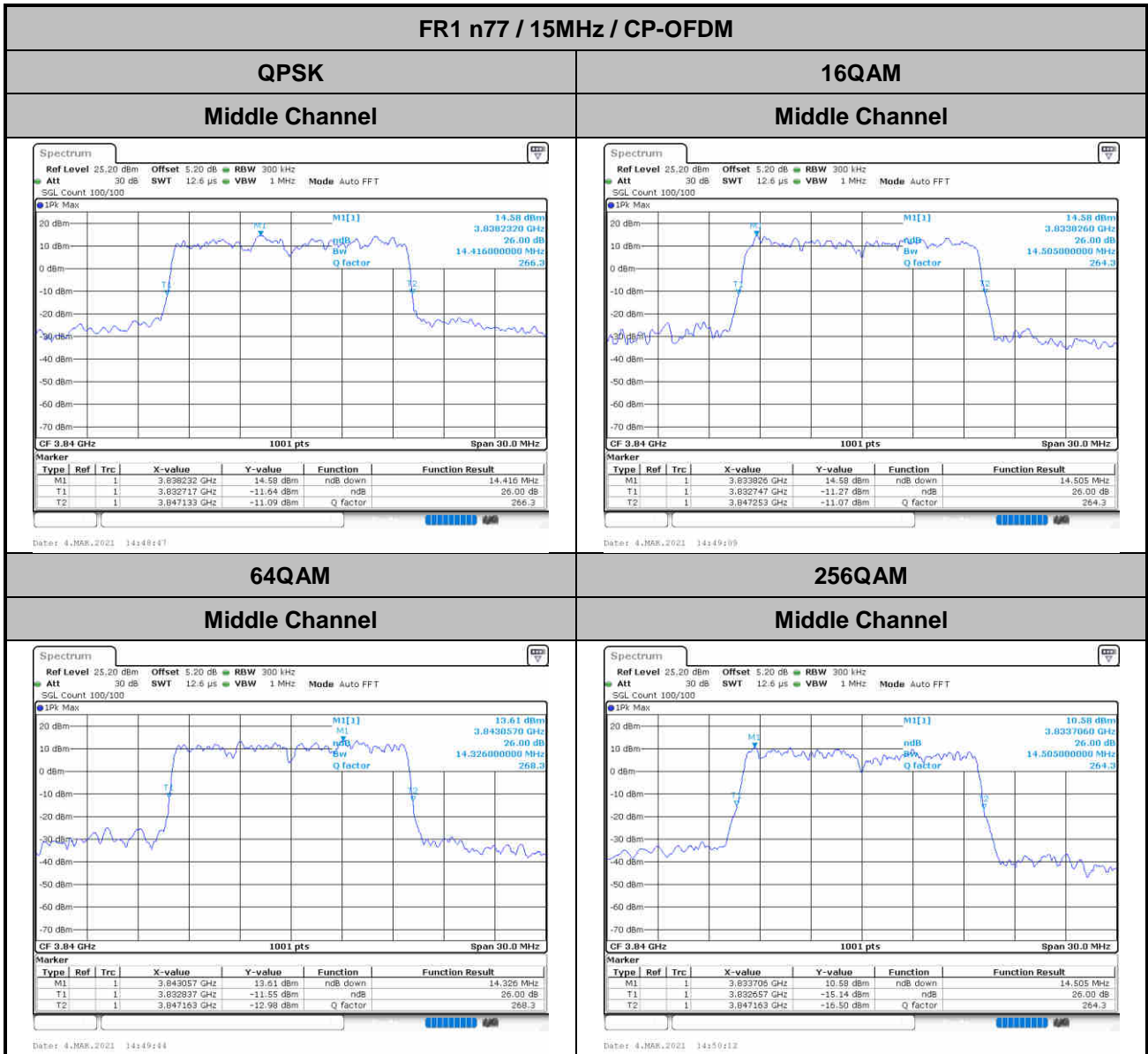
Mode	FR1 n77 : 26dB BW(MHz) / CP-OFDM							
BW	60MHz	60MHz	60MHz	60MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	60.54	60.18	60.66	60.30				

Mode	FR1 n77 : 26dB BW(MHz) / CP-OFDM							
BW	80MHz	80MHz	80MHz	80MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	80.08	80.24	79.92	79.92				



Mode	FR1 n77 : 26dB BW(MHz) / CP-OFDM							
BW	100MHz	100MHz	100MHz	100MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	100.10	100.90	100.30	100.50				







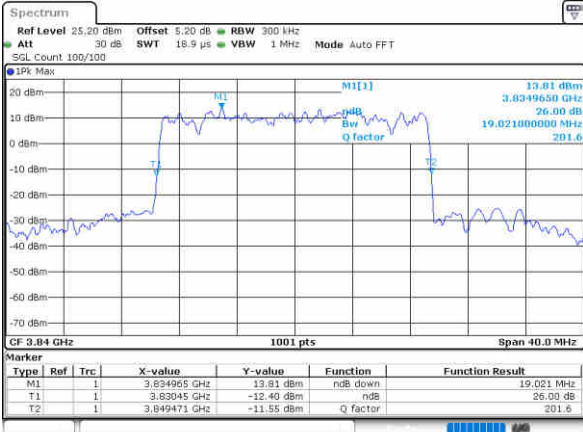
FR1 n77 / 20MHz / CP-OFDM

QPSK

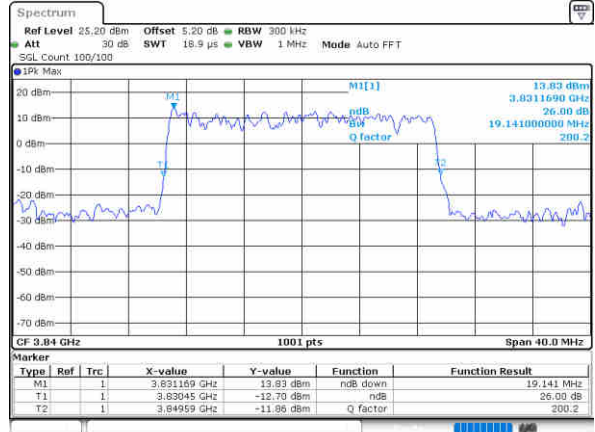
16QAM

Middle Channel

Middle Channel



Date: 4.MAR.2021 14:46:33



Date: 4.MAR.2021 14:46:51

64QAM

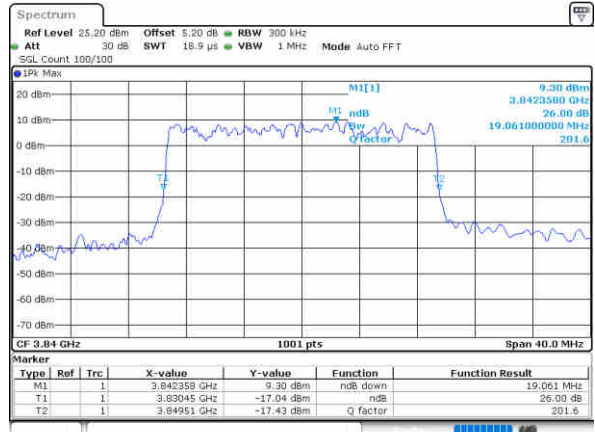
256QAM

Middle Channel

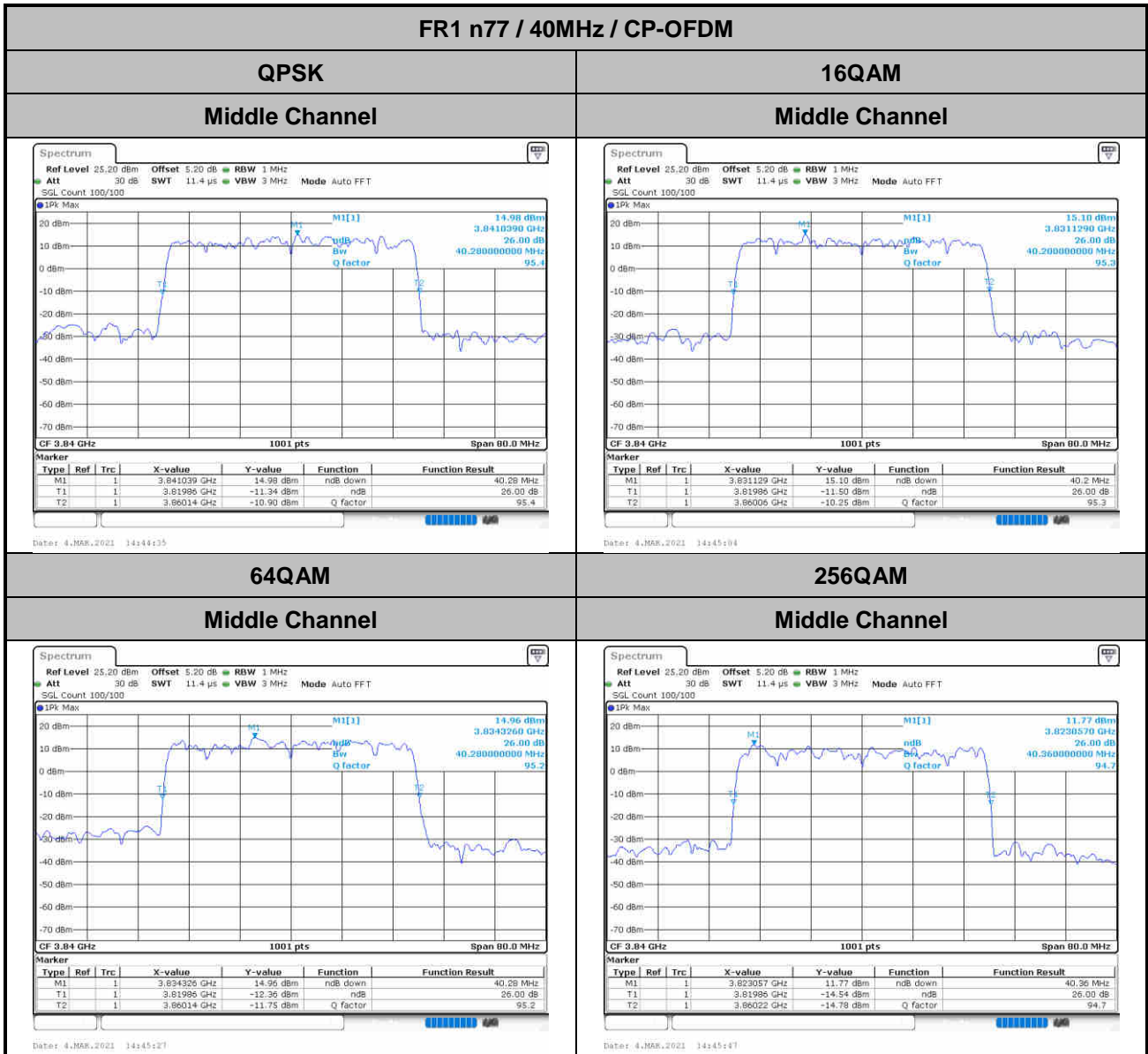
Middle Channel

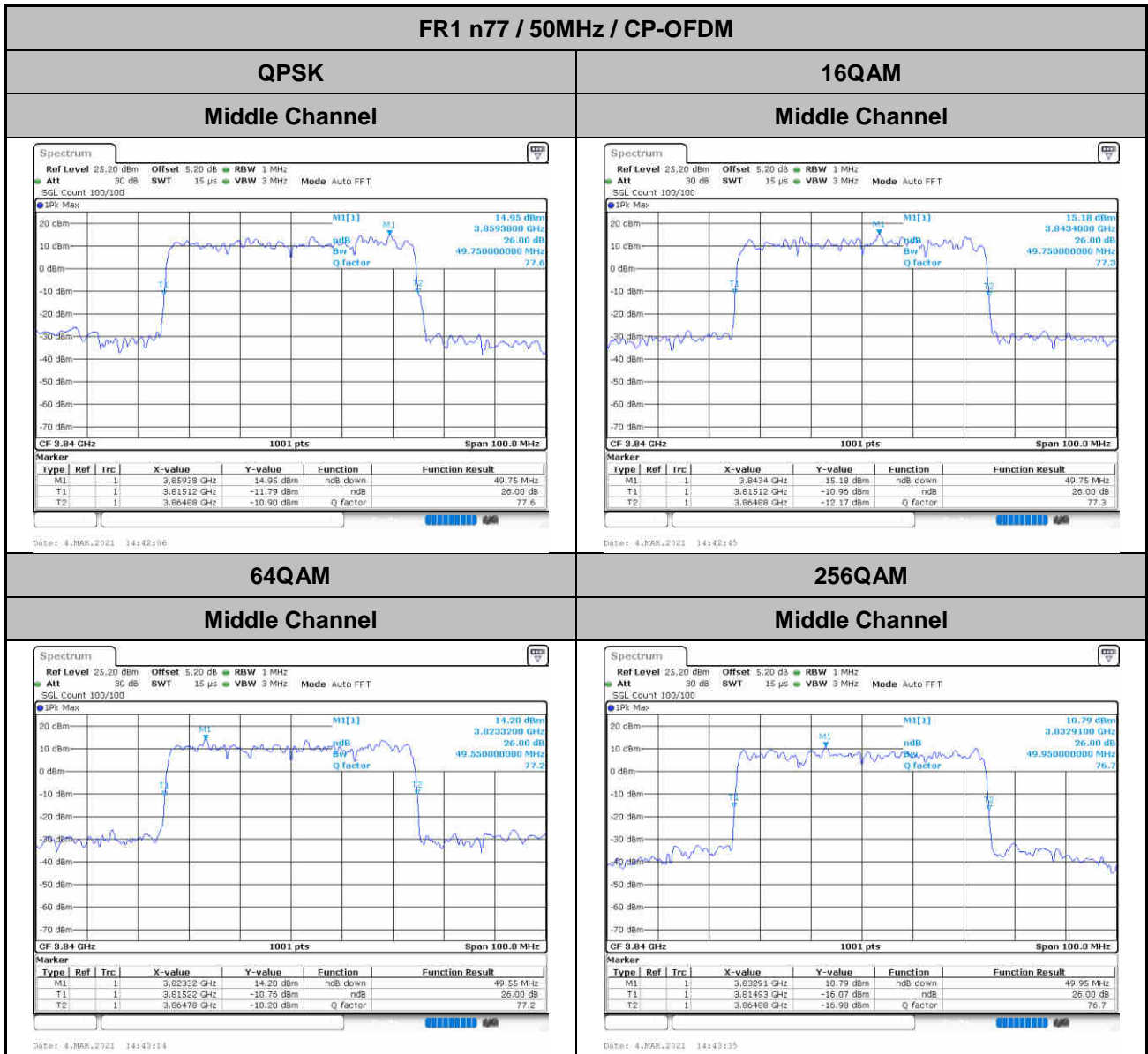


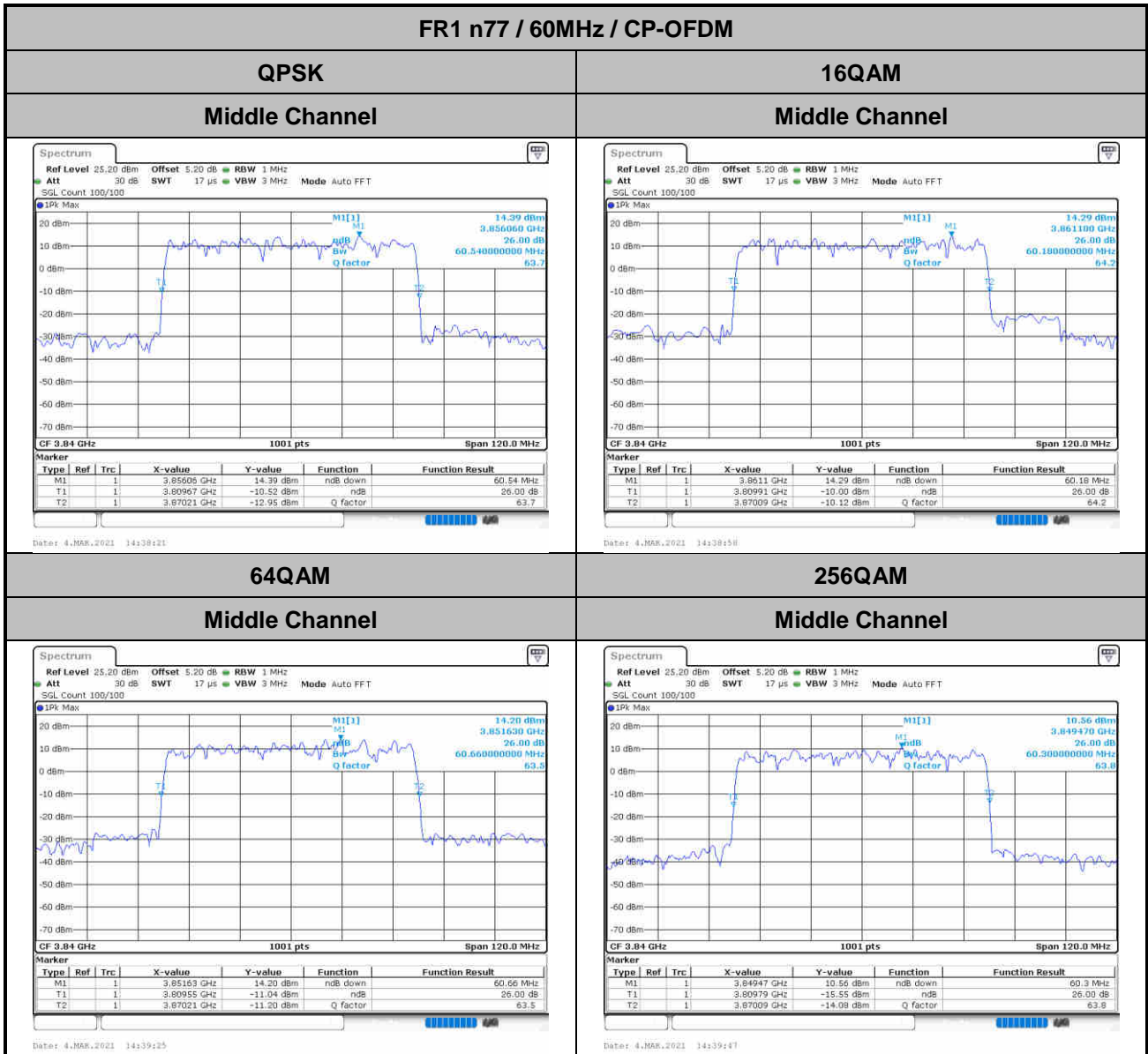
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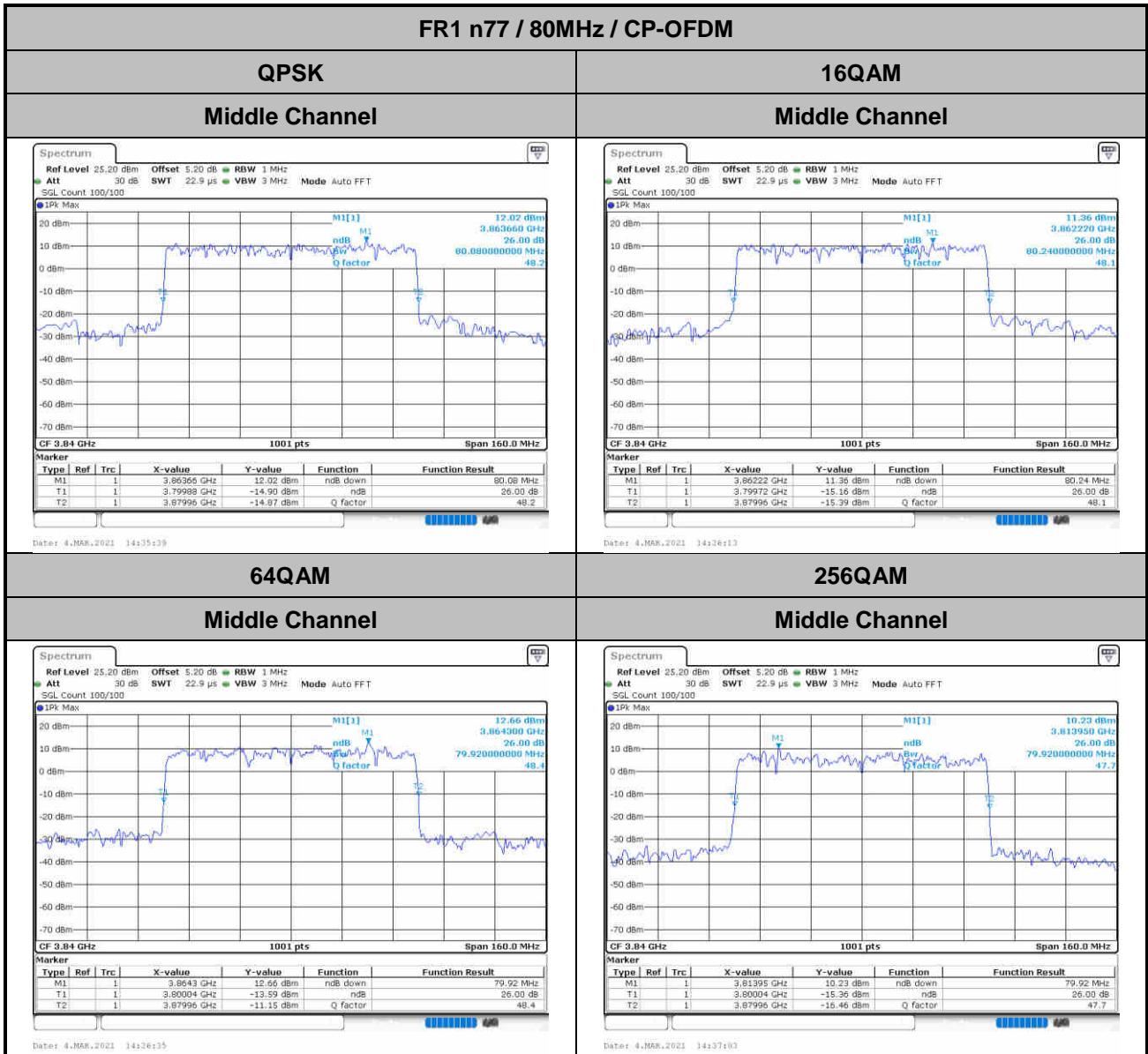


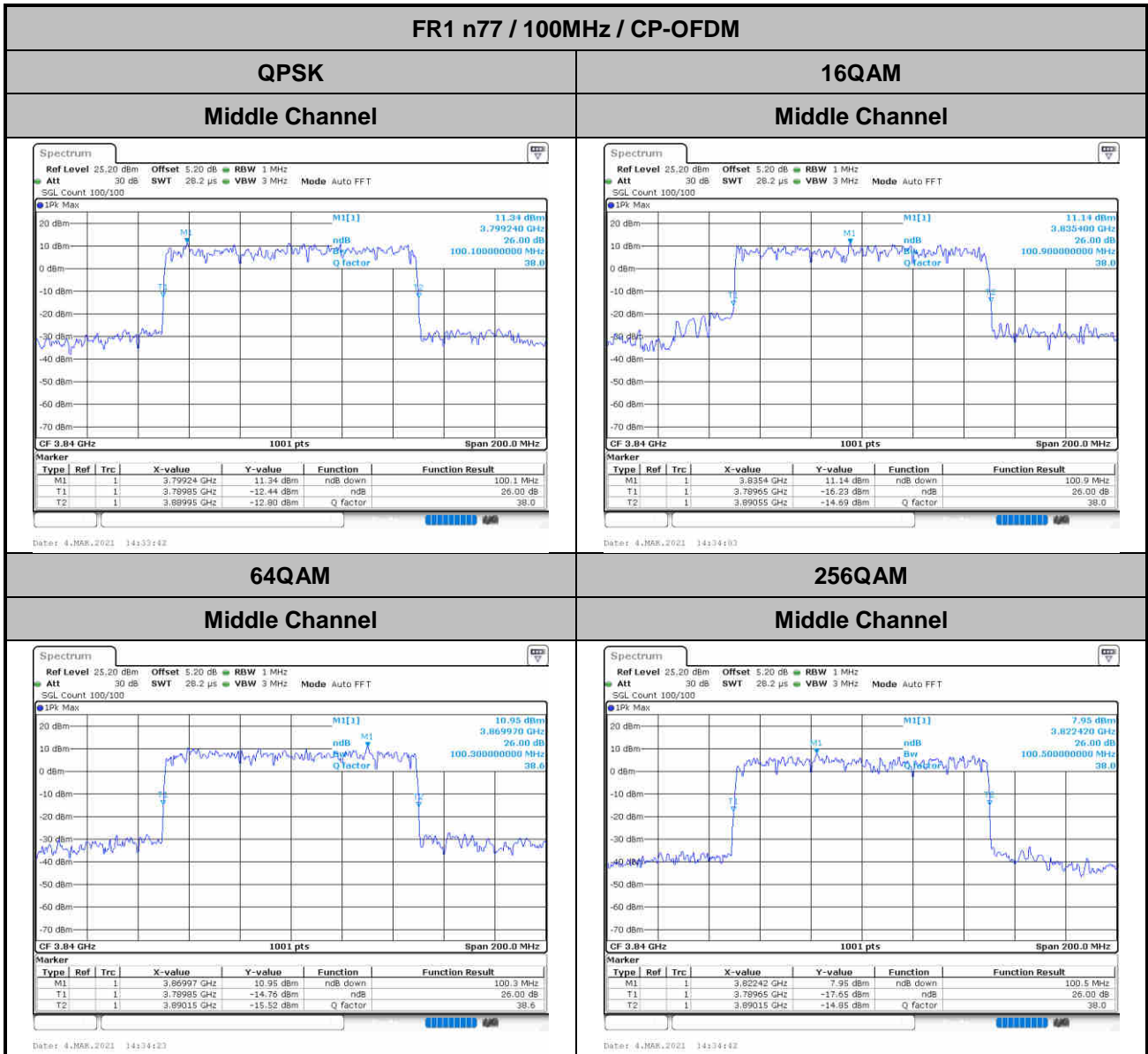
Date: 4.MAR.2021 14:47:34













Occupied Bandwidth

Mode	FR1 n77 : OBW(MHz) / CP-OFDM							
BW	10MHz	10MHz	10MHz	10MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	8.55	8.55	8.55	8.55				

Mode	FR1 n77 : OBW(MHz) / CP-OFDM							
BW	15MHz	15MHz	15MHz	15MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	13.61	13.61	13.67	13.64				

Mode	FR1 n77 : OBW(MHz) / CP-OFDM							
BW	20MHz	20MHz	20MHz	20MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	18.26	18.30	18.18	18.26				

Mode	FR1 n77 : OBW(MHz) / CP-OFDM							
BW	40MHz	40MHz	40MHz	40MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	38.12	38.12	38.20	38.12				

Mode	FR1 n77 : OBW(MHz) / CP-OFDM							
BW	50MHz	50MHz	50MHz	50MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	47.65	47.35	47.55	47.15				

Mode	FR1 n77 : OBW(MHz) / CP-OFDM							
BW	60MHz	60MHz	60MHz	60MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	57.54	57.78	57.66	57.90				

Mode	FR1 n77 : OBW(MHz) / CP-OFDM							
BW	80MHz	80MHz	80MHz	80MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	77.84	77.20	77.20	77.52				



Mode	FR1 n77 : OBW(MHz) / CP-OFDM							
BW	100MHz	100MHz	100MHz	100MHz				
Mod.	QPSK	16QAM	64QAM	256QAM				
Middle CH	97.50	97.30	97.30	97.50				

