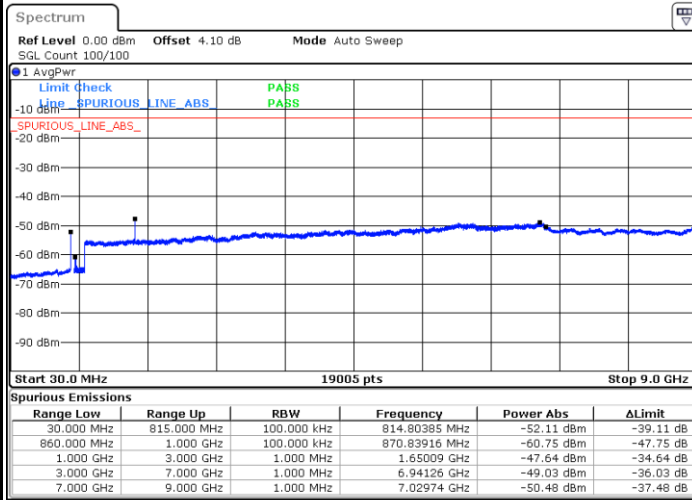




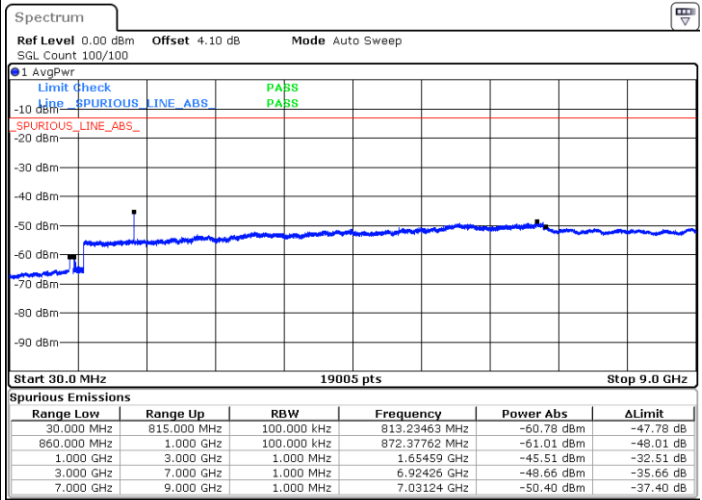
FR1 n5 / 20MHz / DFT-S OFDM / QPSK

Lowest Channel / 1RB



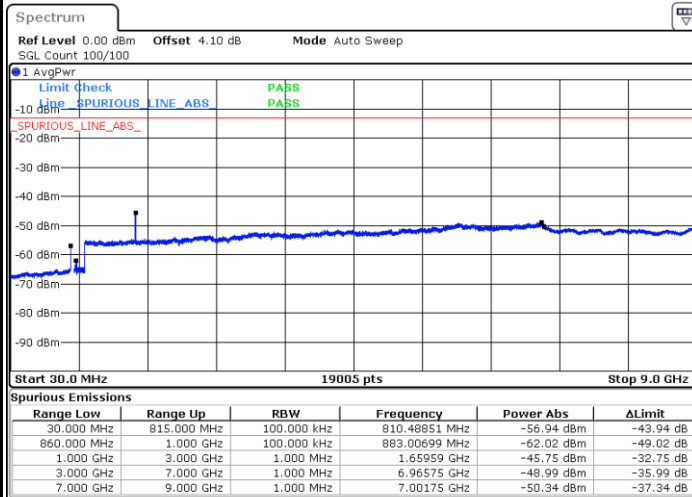
Date: 12.AUG.2020 21:42:11

Middle Channel / 1RB



Date: 12.AUG.2020 21:36:58

Highest Channel / 1RB



Date: 12.AUG.2020 21:49:42

**Frequency Stability**

Test Conditions		FR1 n5 (QPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 20MHz	2.5ppm.
		Deviation (ppm)	Result
50	Normal Voltage	0.0014	PASS
40	Normal Voltage	0.0002	
30	Normal Voltage	0.0001	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0026	
0	Normal Voltage	0.0028	
-10	Normal Voltage	0.0003	
-20	Normal Voltage	0.0030	
-30	Normal Voltage	0.0009	
20	Maximum Voltage	0.0006	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0011	

Note: Normal Voltage =3.8 V. ; Battery End Point (BEP) =3.135 V. ; Maximum Voltage =4.4 V.



5G NR n12

Peak-to-Average Ratio

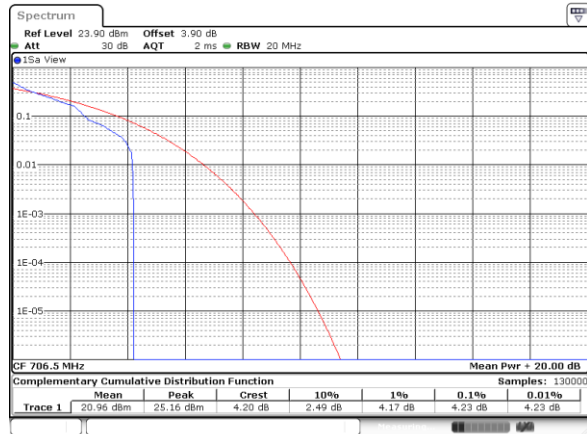
Mode	FR1 n12 / 15MHz / DFT-S OFDM				
Mod.	QPSK	QPSK			Limit: 13dB
RB Size	1 RB	Full RB			Result
Lowest CH	4.23	4.55			PASS
Middle CH	4.14	4.58			
Highest CH	4.12	5.10			



FR1 n12 / 15MHz / DFT-S OFDM

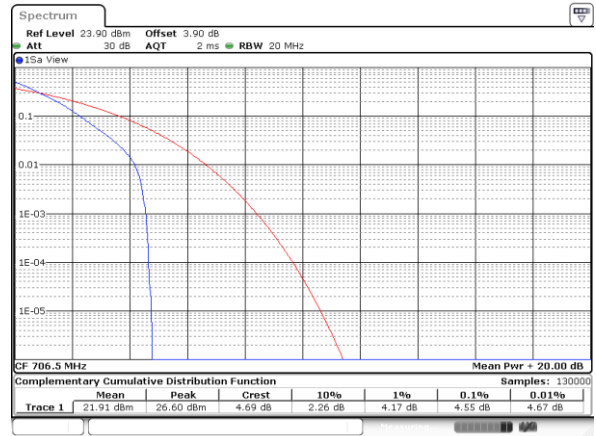
QPSK

Lowest Channel / 1 RB

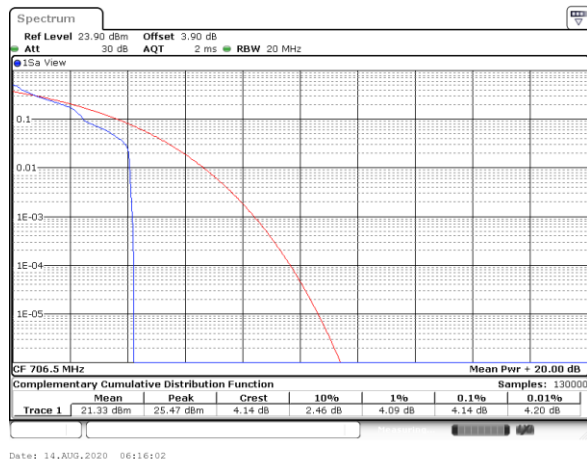


QPSK

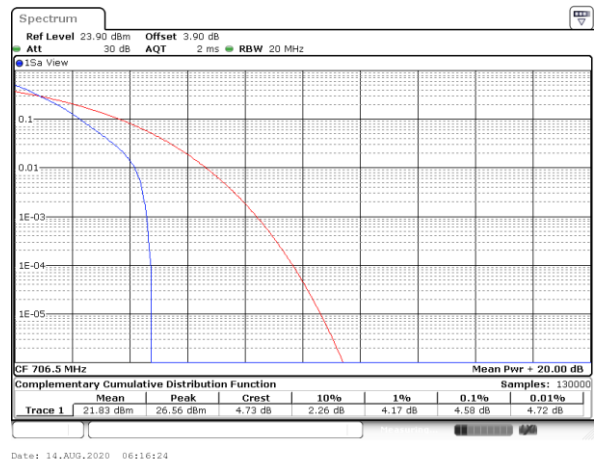
Lowest Channel / Full RB



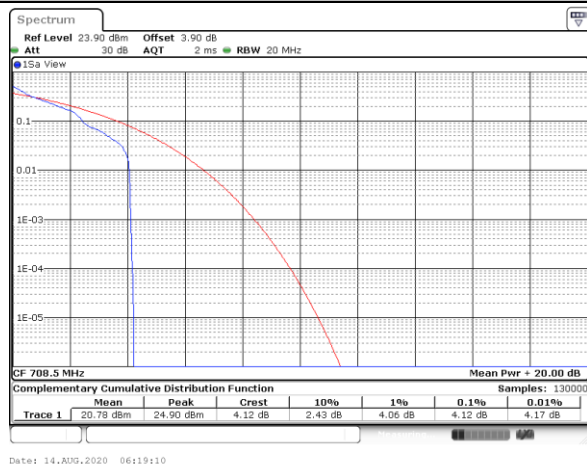
Middle Channel / 1 RB



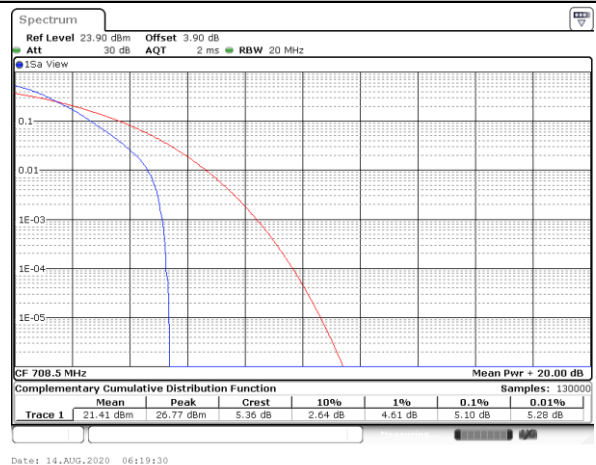
Middle Channel / Full RB



Highest Channel / 1 RB



Highest Channel / Full RB





26dB Bandwidth

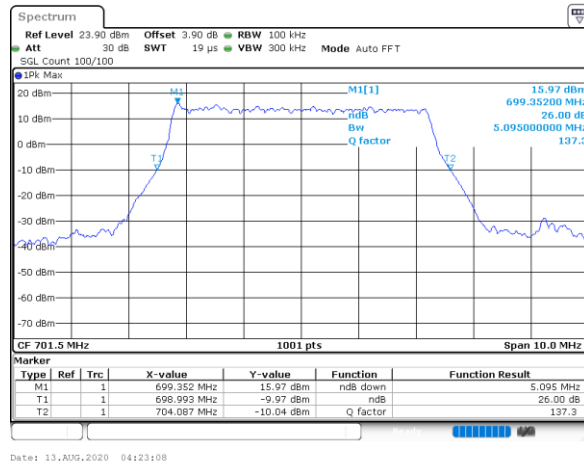
Mode	FR1 n12 : 26dB BW(MHz) / DFT-S OFDM				
BW	5MHz	10MHz	15MHz		
Mod.	QPSK	QPSK	QPSK		
Lowest CH	5.095	9.73	15.535		
Middle CH	5.105	9.65	14.146		
Highest CH	5.125	9.55	14.446		



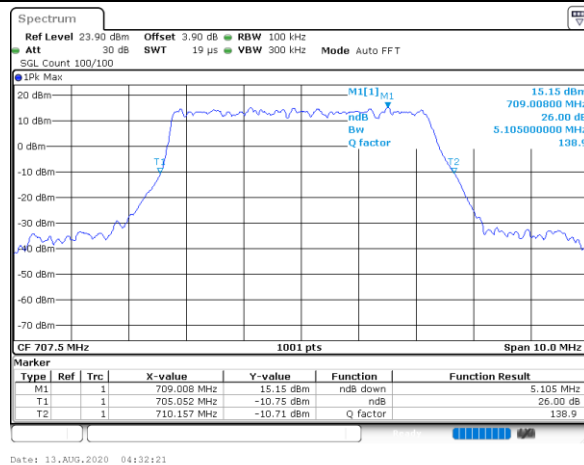
FR1 n12 / 5MHz / DFT-S OFDM

QPSK

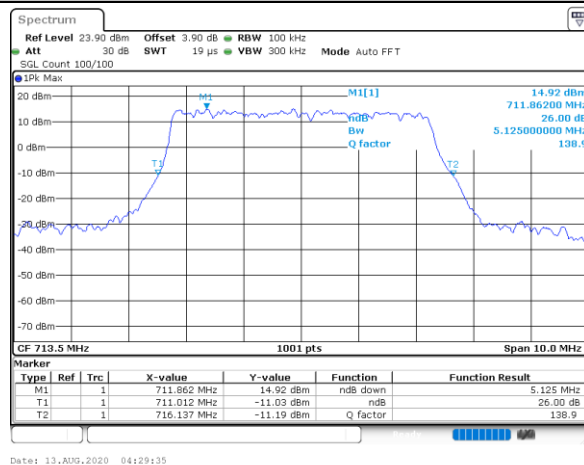
Lowest Channel



Middle Channel



Highest Channel

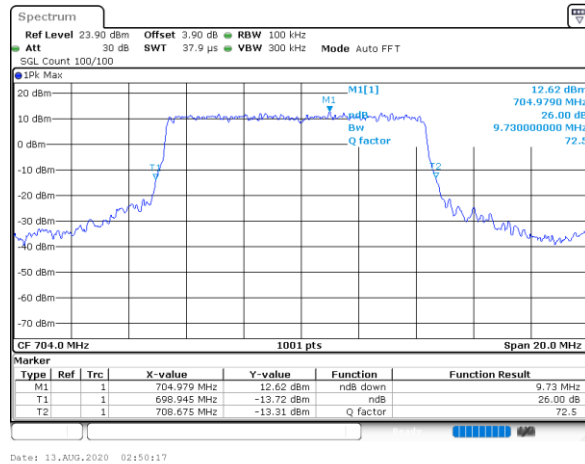




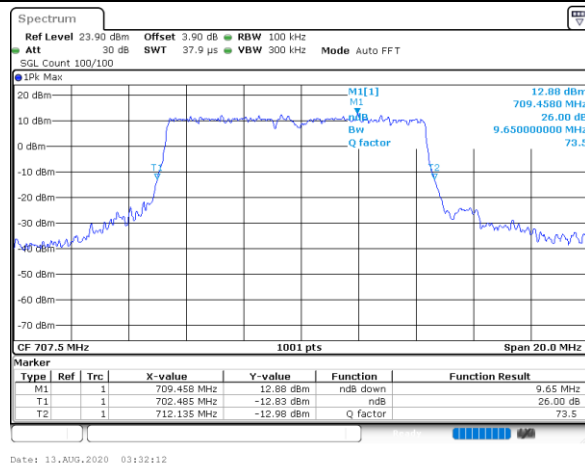
FR1 n12 / 10MHz / DFT-S OFDM

QPSK

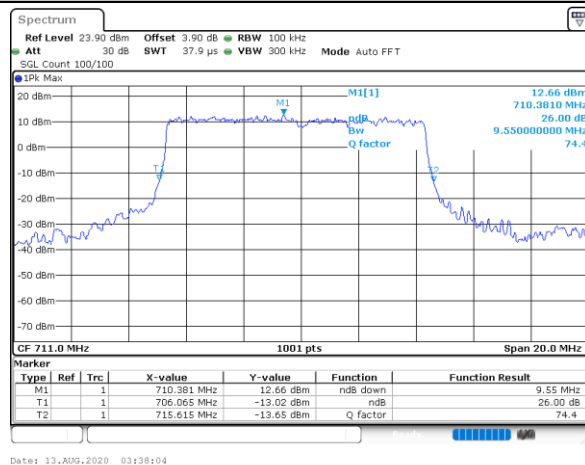
Lowest Channel



Middle Channel



Highest Channel

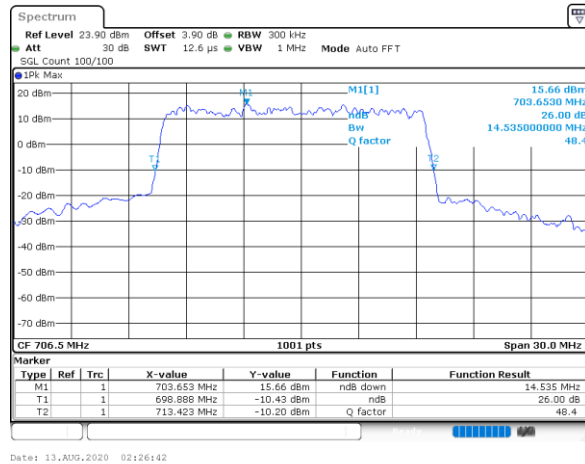




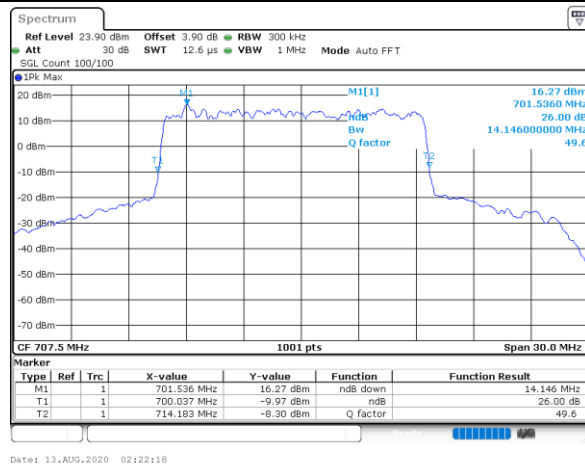
FR1 n12 / 15MHz / DFT-S OFDM

QPSK

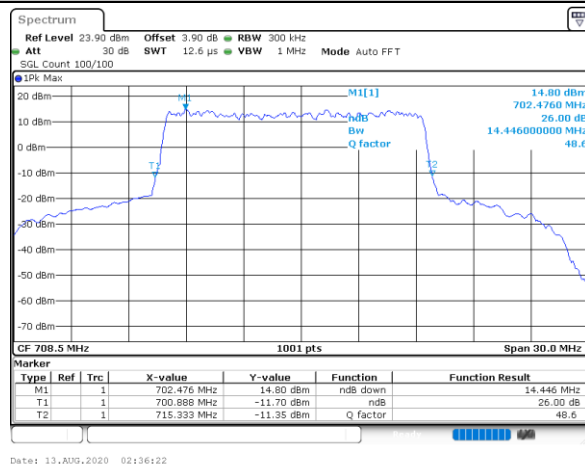
Lowest Channel



Middle Channel



Highest Channel





Occupied Bandwidth

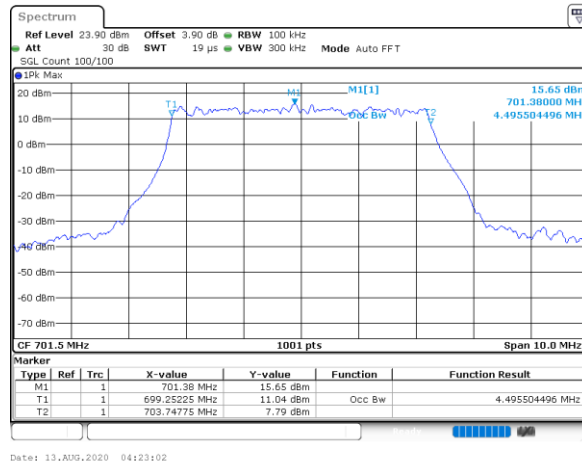
Mode	FR1 n12 : 99%OBW(MHz) / DFT-S OFDM					
BW	5MHz	10MHz	15MHz	5MHz	10MHz	15MHz
Mod.	QPSK	QPSK	QPSK	16QAM	16QAM	16QAM
Lowest CH	4.50	8.93	13.49	-	-	-
Middle CH	4.51	8.95	13.43	4.49	9.27	14.09
Highest CH	4.48	8.93	13.43	-	-	-



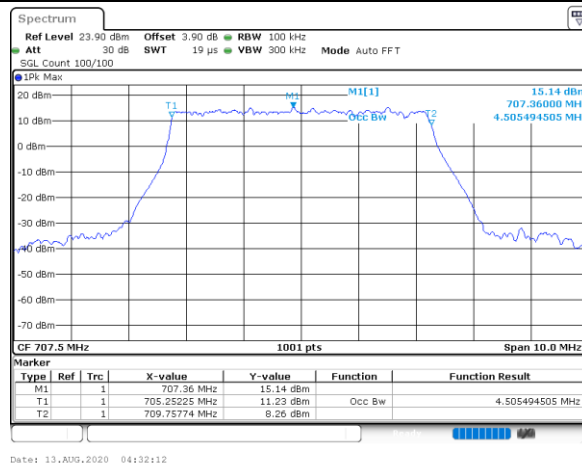
FR1 n12 / 5MHz / DFT-S OFDM

QPSK

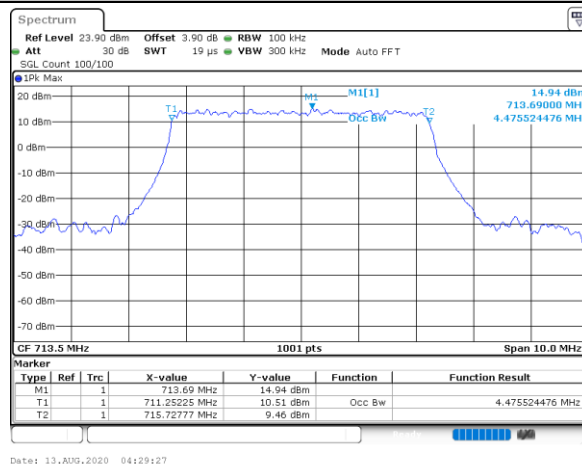
Lowest Channel



Middle Channel



Highest Channel

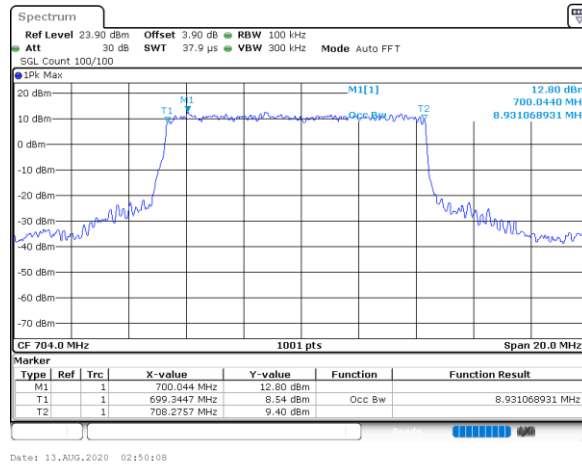




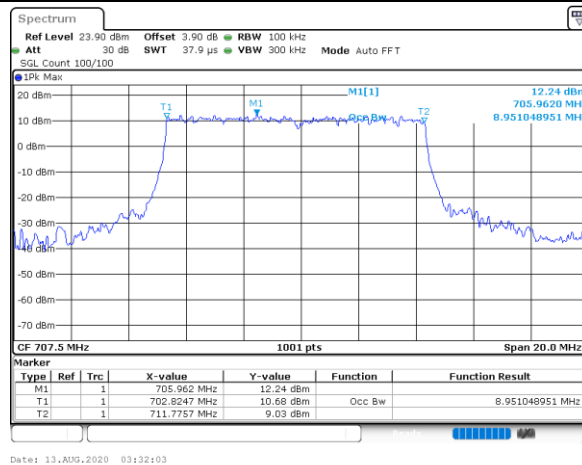
FR1 n12 / 10MHz / DFT-S OFDM

QPSK

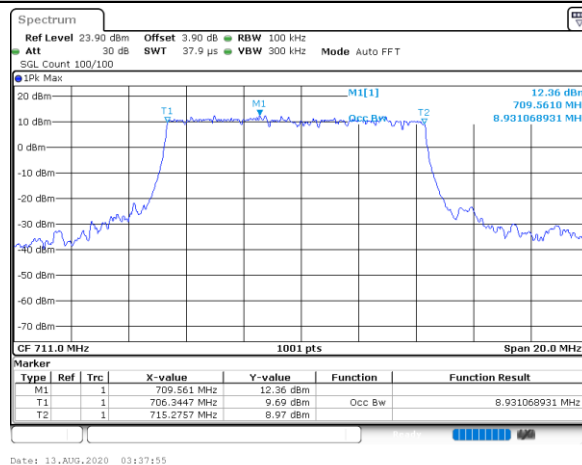
Lowest Channel



Middle Channel



Highest Channel

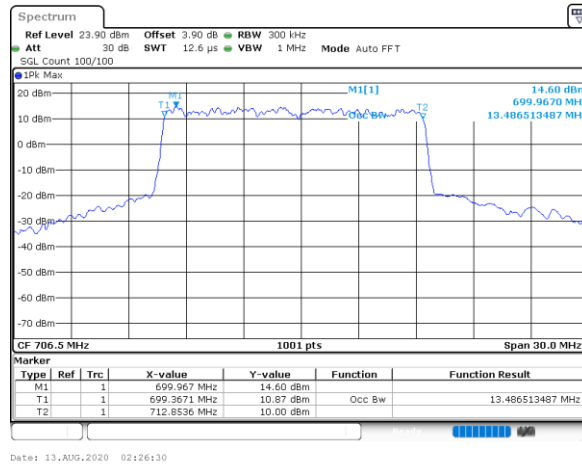




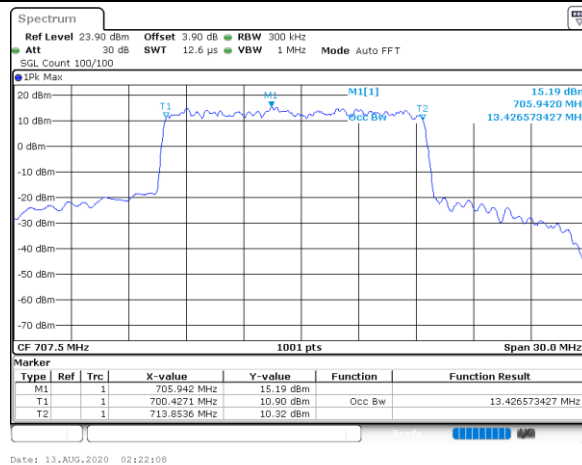
FR1 n12 / 15MHz / DFT-S OFDM

QPSK

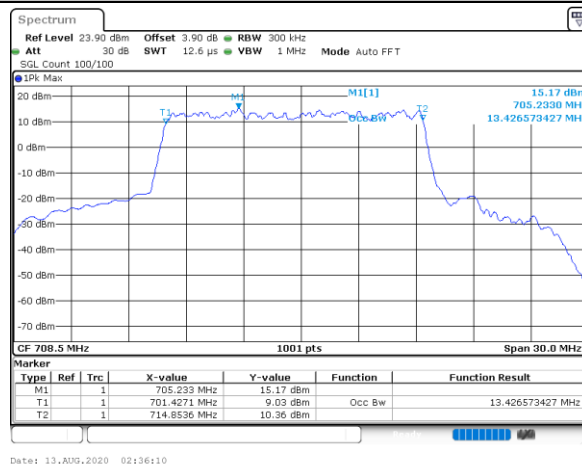
Lowest Channel



Middle Channel



Highest Channel

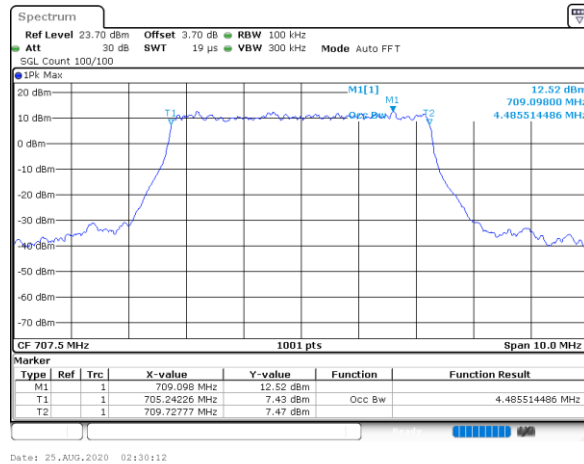




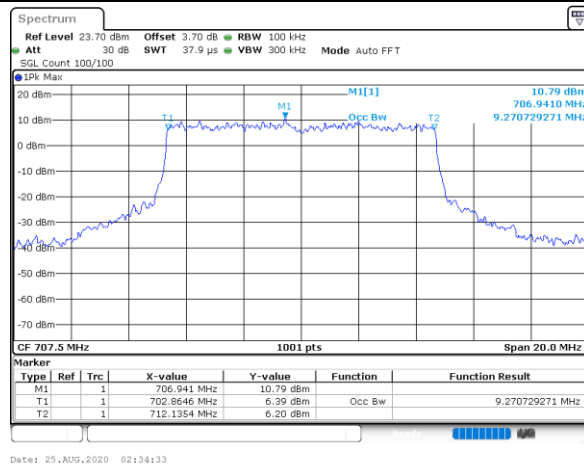
FR1 n12 / DFT-S OFDM

16QAM / Middle Channel

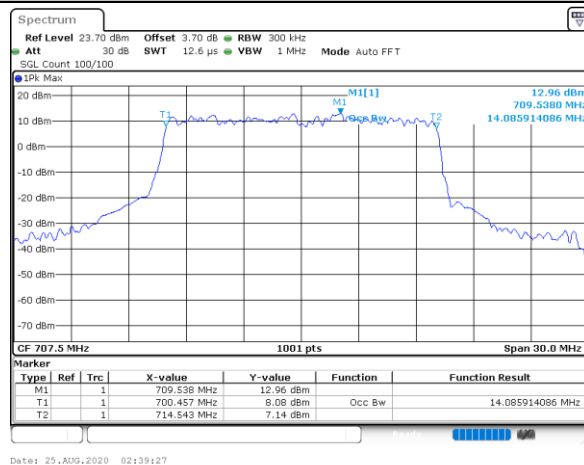
5MHz

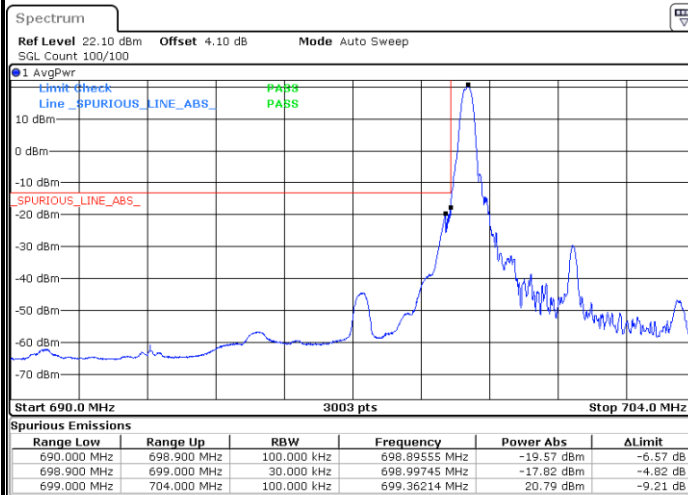
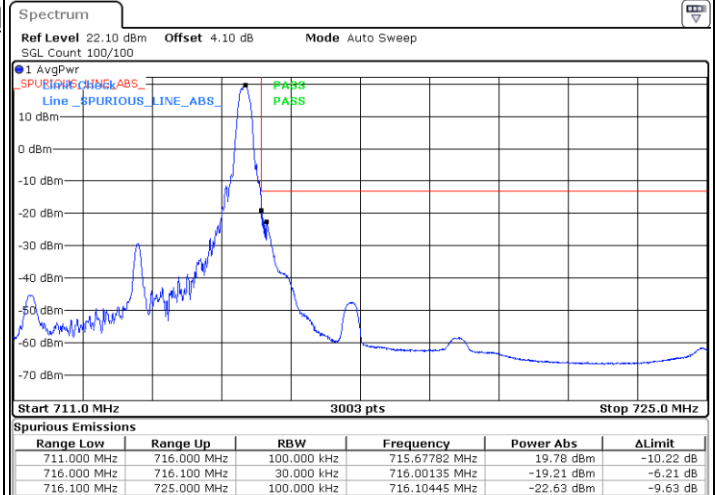
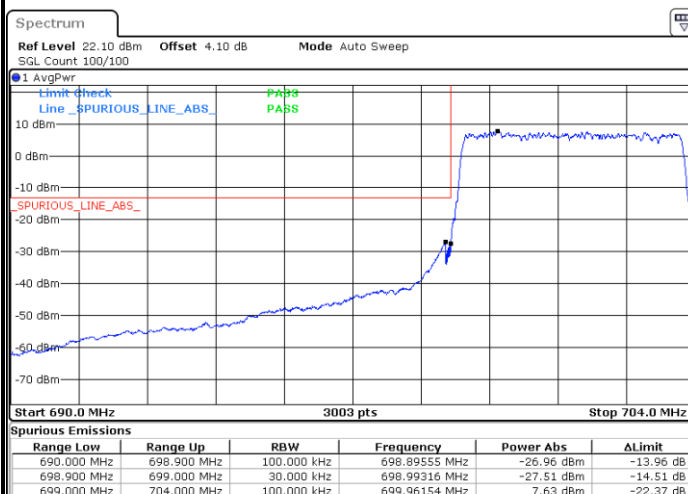
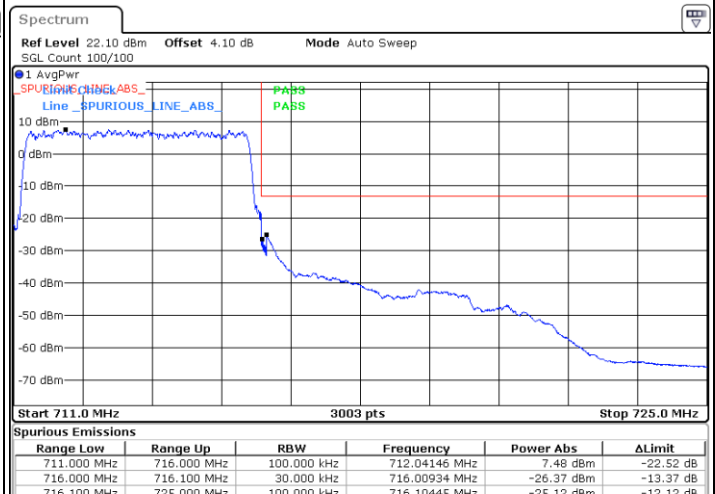


10MHz



15MHz



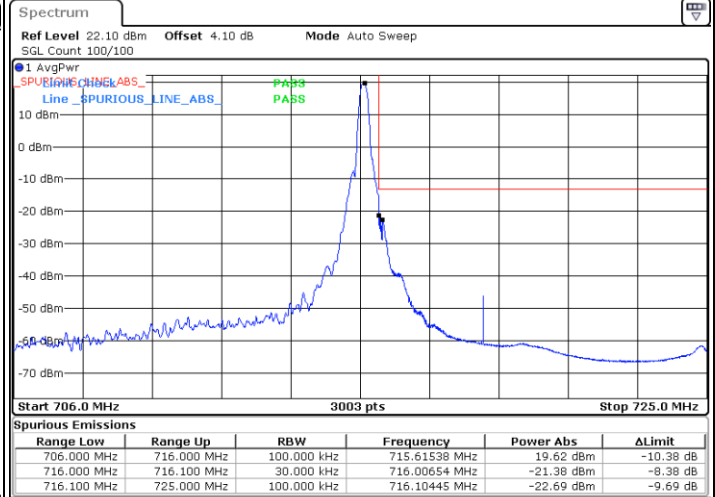
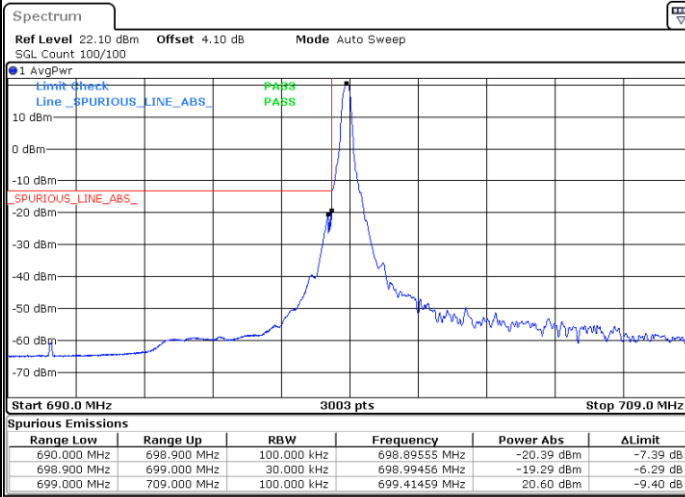
**Conducted Band Edge****FR1 n12 / 5MHz / DFT-S OFDM / QPSK****Lowest Band Edge / 1RB0****Highest Band Edge / 1RBmax****Lowest Band Edge / Full RB****Highest Band Edge / Full RB**



FR1 n12 / 10MHz / DFT-s-OFDM / QPSK

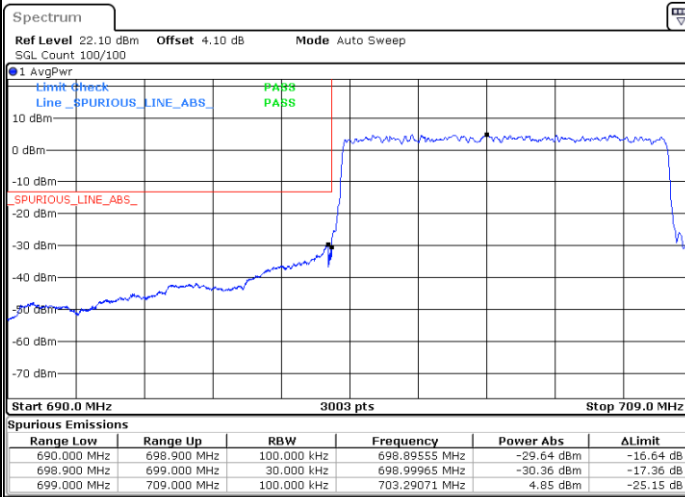
Lowest Band Edge / 1RB0

Highest Band Edge / 1RBmax



Lowest Band Edge / Full RB

Highest Band Edge / Full RB

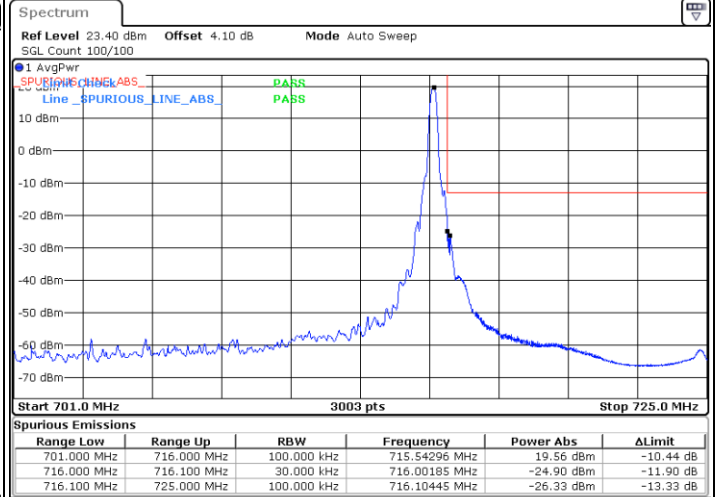
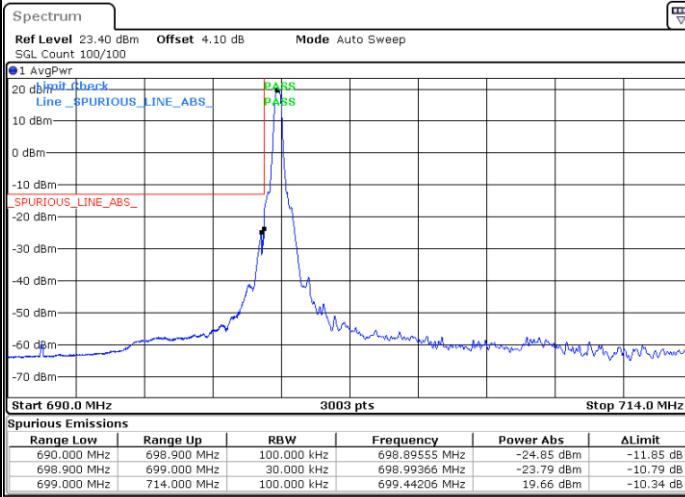




FR1 n12 / 15MHz / DFT-s-OFDM / QPSK

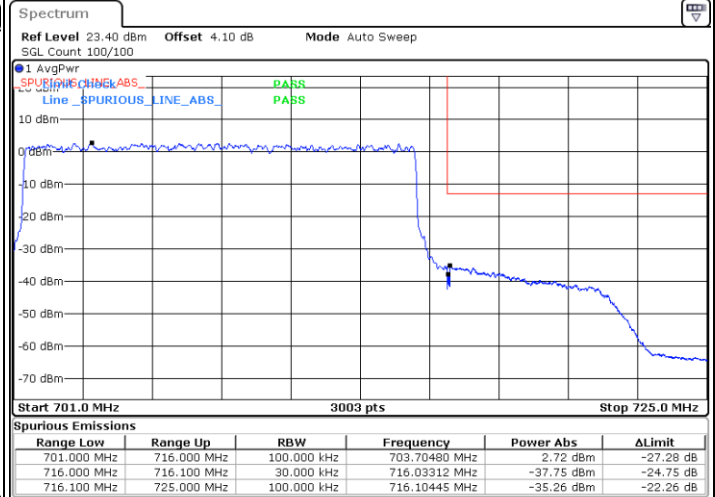
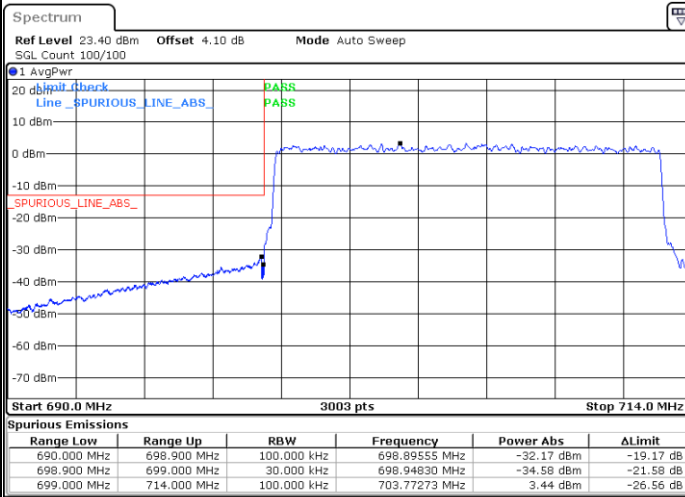
Lowest Band Edge / 1RB0

Highest Band Edge / 1RBmax



Lowest Band Edge / Full RB

Highest Band Edge / Full RB



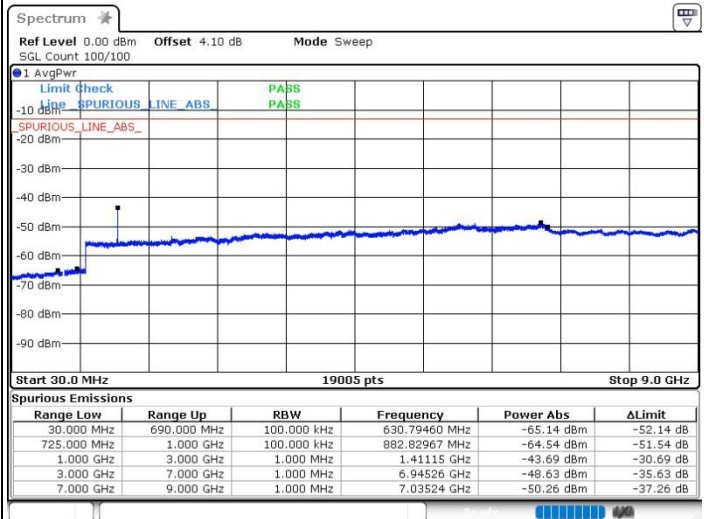
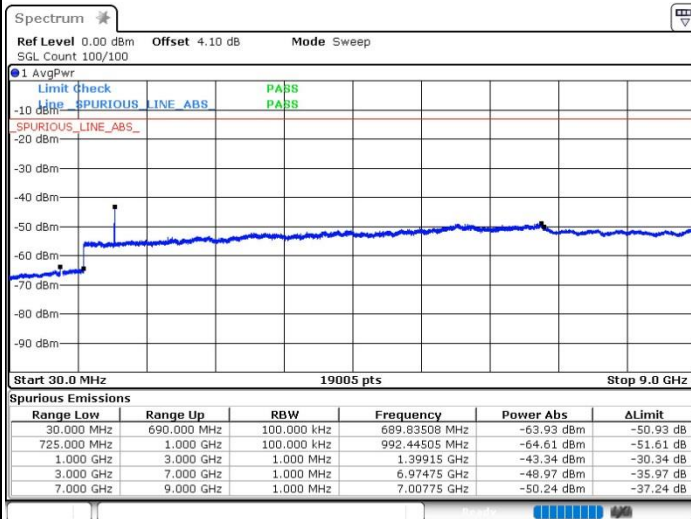


Conducted Spurious Emission

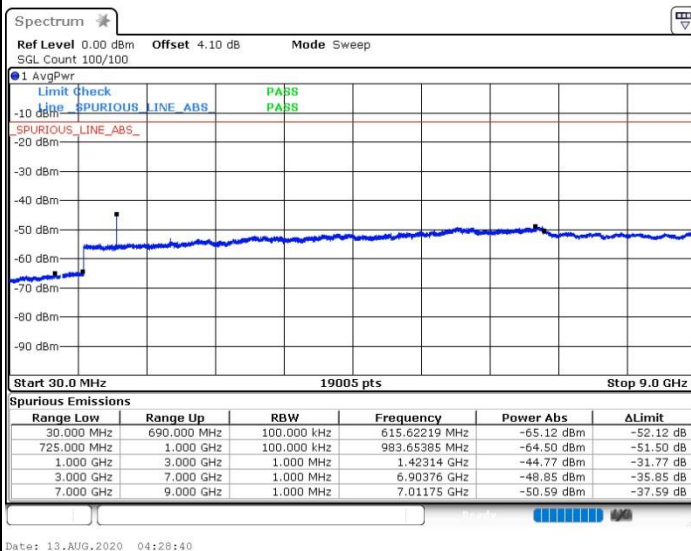
FR1 n12 / 5MHz / DFT-S OFDM / QPSK

Lowest Channel / 1RB

Middle Channel / 1RB



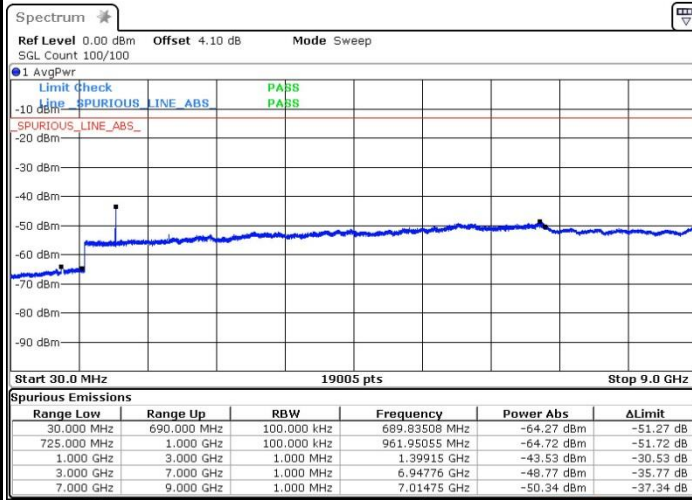
Highest Channel / 1RB





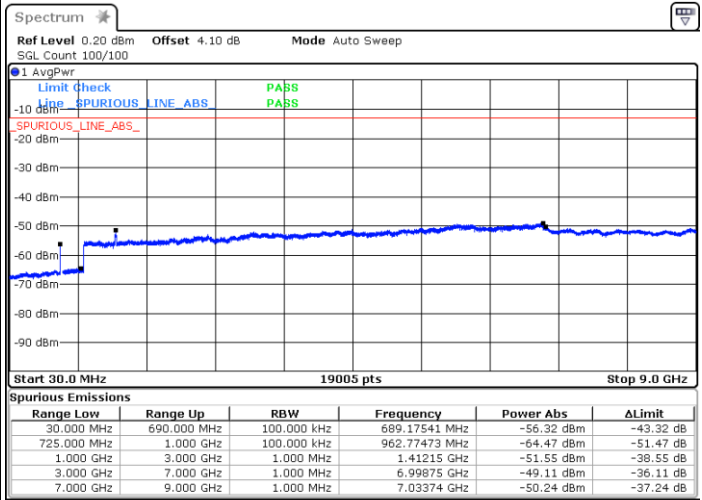
FR1 n12 / 10MHz / DFT-S OFDM / QPSK

Lowest Channel / 1RB



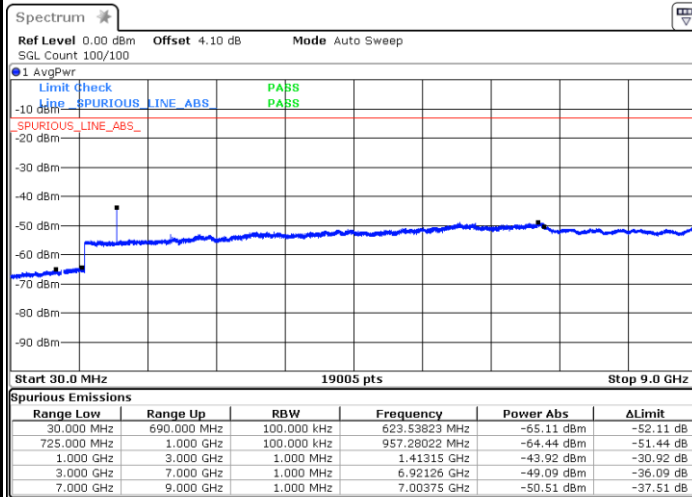
Date: 13.AUG.2020 04:09:18

Middle Channel / 1RB



Date: 13.AUG.2020 03:35:52

Highest Channel / 1RB

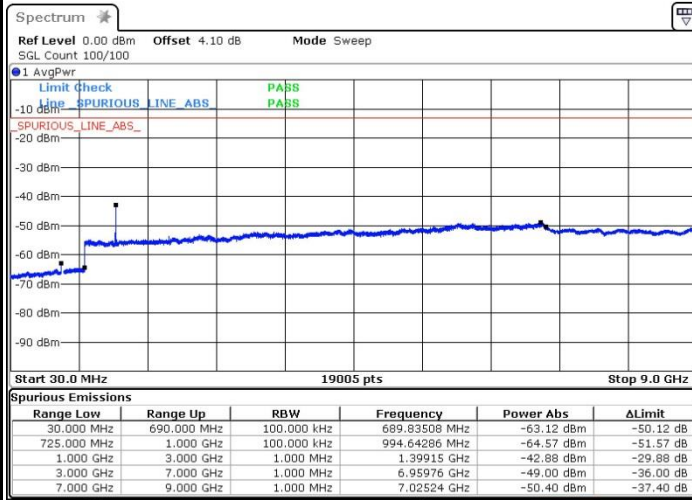


Date: 13.AUG.2020 04:08:25



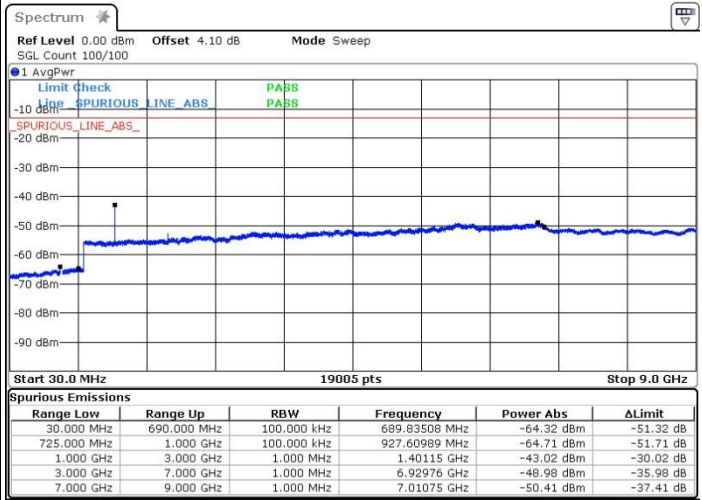
FR1 n12 / 15MHz / DFT-S OFDM / QPSK

Lowest Channel / 1RB



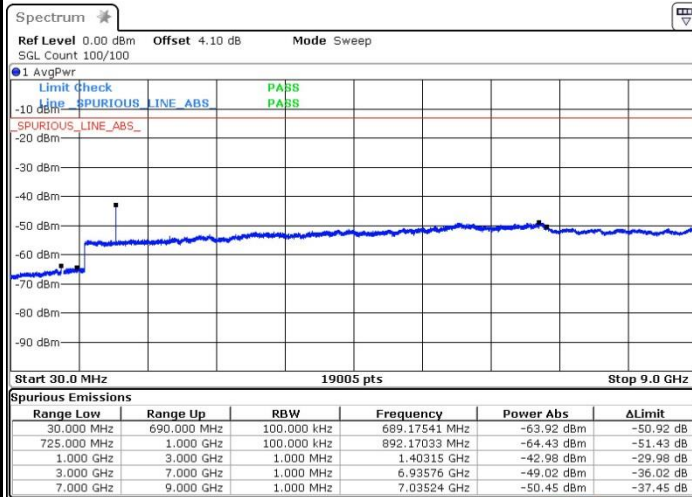
Date: 13.AUG.2020 04:11:16

Middle Channel / 1RB



Date: 13.AUG.2020 04:14:06

Highest Channel / 1RB



Date: 13.AUG.2020 04:15:11

Frequency Stability

Test Conditions		FR1 n12 (QPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 15MHz	Note 2.
		Deviation (ppm)	Result
50	Normal Voltage	0.0019	PASS
40	Normal Voltage	0.0008	
30	Normal Voltage	0.0011	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0024	
0	Normal Voltage	0.0025	
-10	Normal Voltage	0.0001	
-20	Normal Voltage	0.0015	
-30	Normal Voltage	0.0011	
20	Maximum Voltage	0.0006	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0016	

Note:

1. Normal Voltage =3.8 V. ; Battery End Point (BEP) =3.135 V. ; Maximum Voltage =4.4 V.
2. Note: The frequency fundamental emissions stay within the authorized frequency block.



5G NR n25

Peak-to-Average Ratio

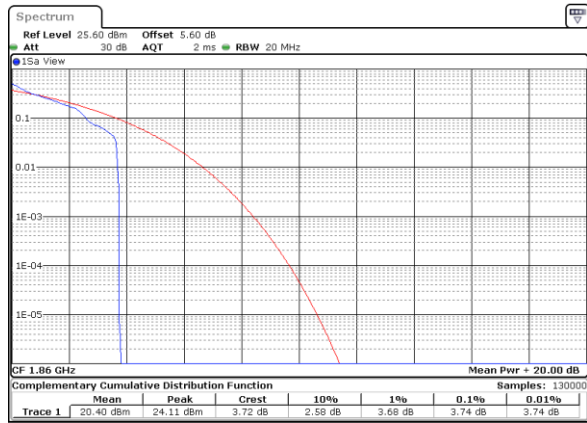
Mode	FR1 n25 / 20MHz / DFT-S OFDM				
Mod.	QPSK	QPSK			Limit: 13dB
RB Size	1 RB	Full RB			Result
Lowest CH	3.74	4.35			PASS
Middle CH	4.03	4.20			
Highest CH	3.74	4.43			



FR1 n25 / 20MHz / DFT-S OFDM

QPSK

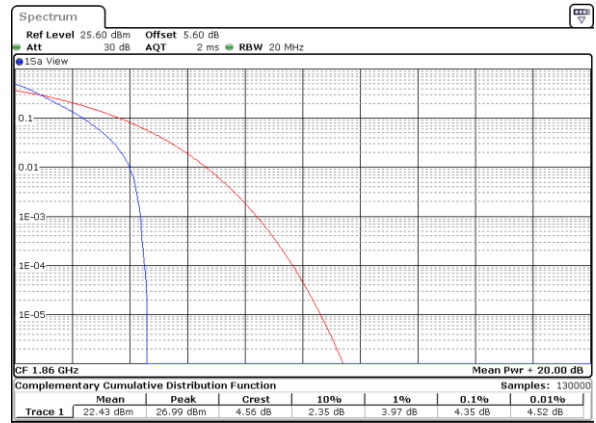
Lowest Channel / 1 RB



Date: 13.AUG.2020 05:06:01

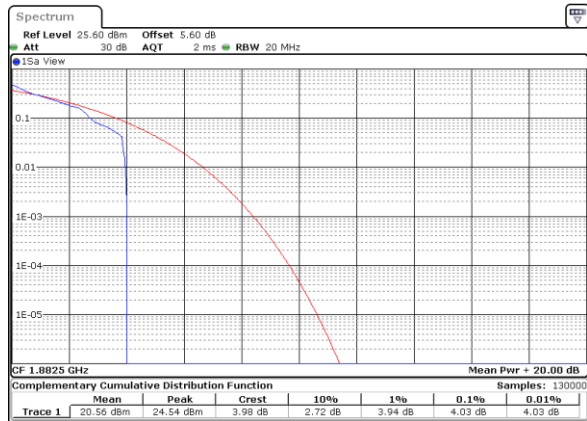
QPSK

Lowest Channel / Full RB



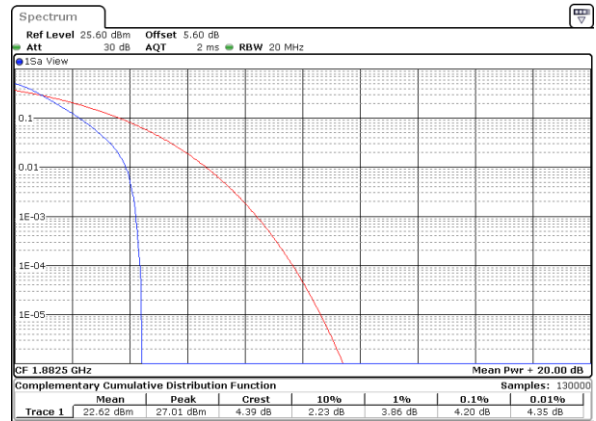
Date: 13.AUG.2020 05:04:47

Middle Channel / 1 RB



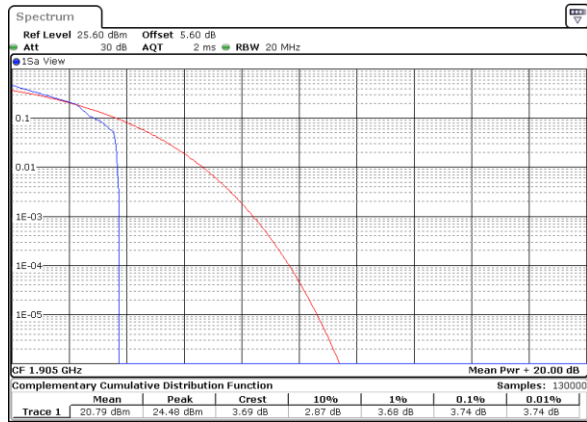
Date: 13.AUG.2020 05:03:42

Middle Channel / Full RB



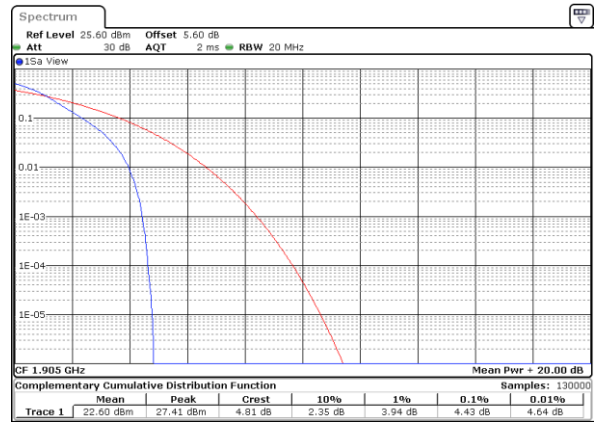
Date: 13.AUG.2020 05:04:01

Highest Channel / 1 RB



Date: 13.AUG.2020 05:00:40

Highest Channel / Full RB



Date: 13.AUG.2020 05:00:00



26dB Bandwidth

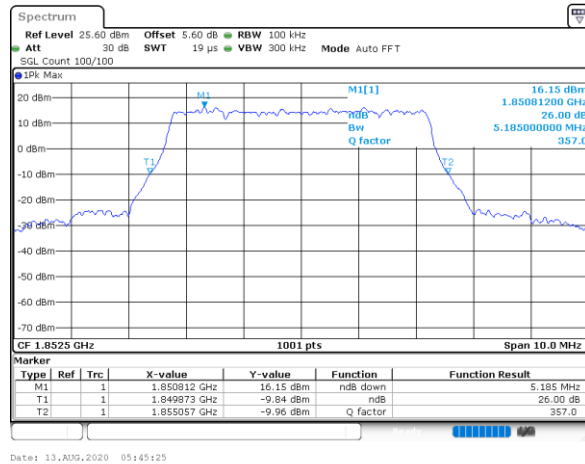
Mode	FR1 n25 : 26dB BW(MHz) / DFT-S OFDM				
BW	5MHz	10MHz	20MHz		
Mod.	QPSK	QPSK	QPSK		
Lowest CH	5.185	9.73	18.941		
Middle CH	5.105	9.69	18.781		
Highest CH	5.135	9.471	18.701		



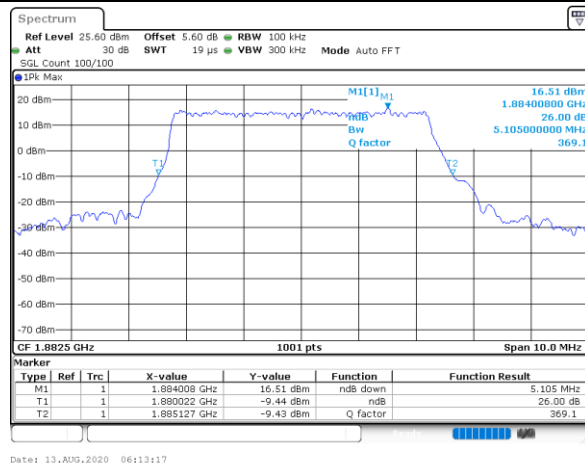
FR1 n25 / 5MHz / DFT-S OFDM

QPSK

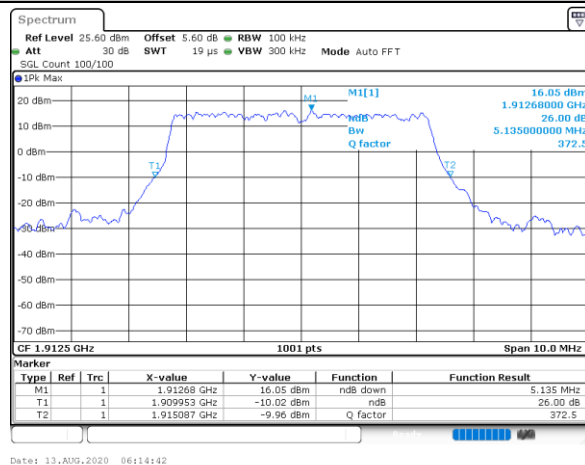
Lowest Channel



Middle Channel



Highest Channel

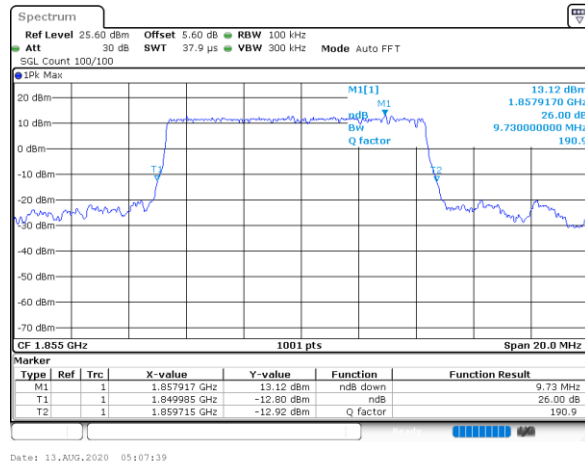




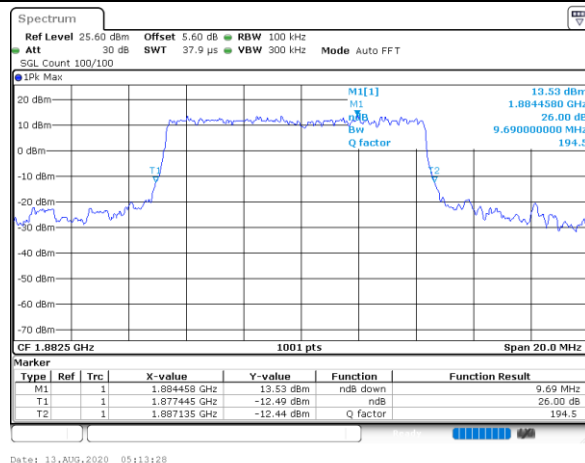
FR1 n25 / 10MHz / DFT-S OFDM

QPSK

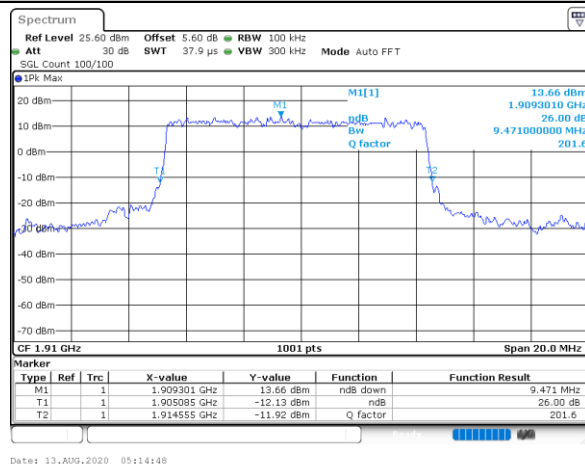
Lowest Channel



Middle Channel



Highest Channel

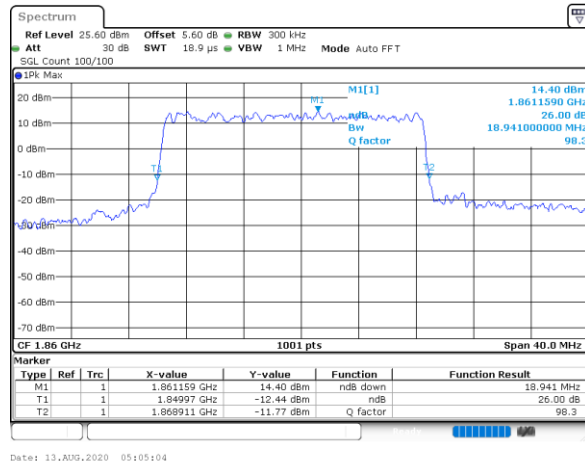




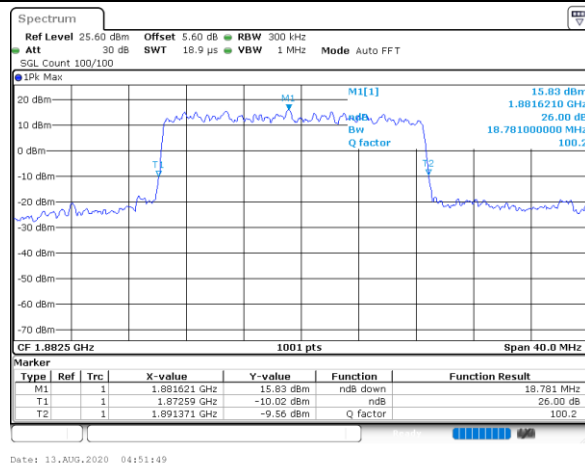
FR1 n25 / 20MHz / DFT-S OFDM

QPSK

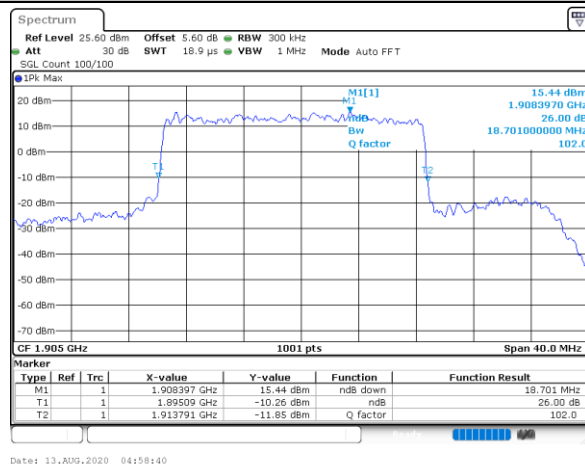
Lowest Channel



Middle Channel



Highest Channel





Occupied Bandwidth

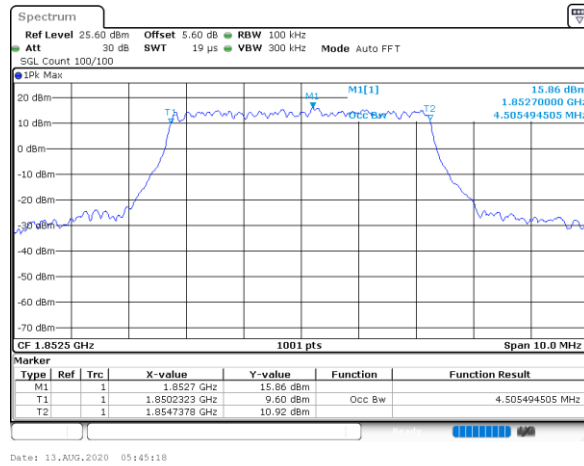
Mode	FR1 n25 : 99%OBW(MHz) / DFT-S OFDM					
BW	5MHz	10MHz	20MHz	5MHz	10MHz	20MHz
Mod.	QPSK	QPSK	QPSK	16QAM	16QAM	16QAM
Lowest CH	4.51	8.91	17.90	-	-	-
Middle CH	4.53	8.93	17.90	4.48	9.29	18.94
Highest CH	4.48	8.91	17.82	-	-	-



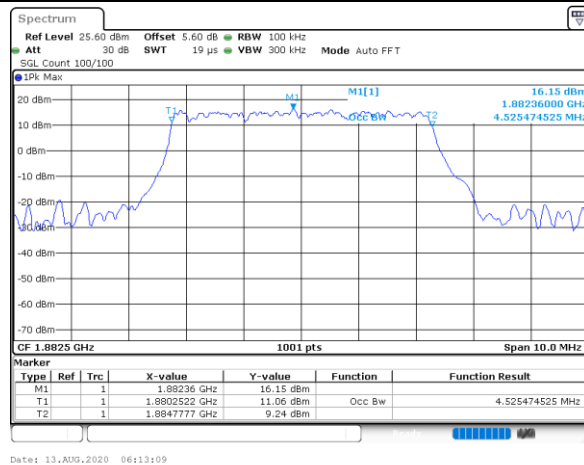
FR1 n25 / 5MHz / DFT-S OFDM

QPSK

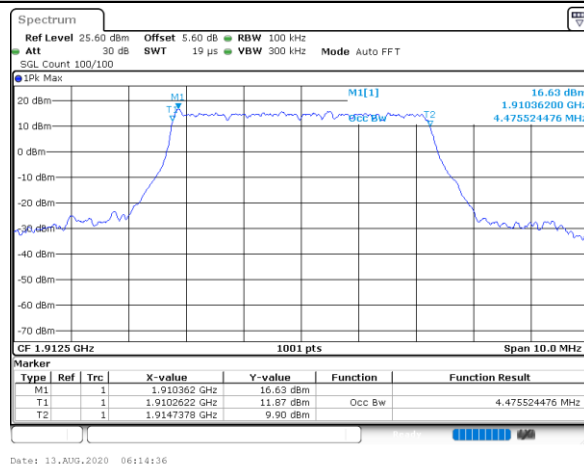
Lowest Channel



Middle Channel



Highest Channel

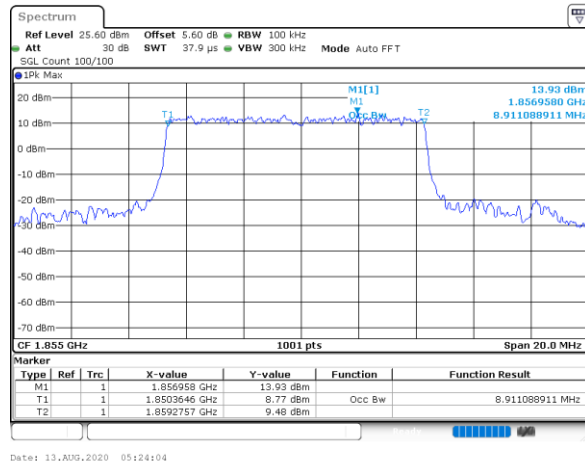




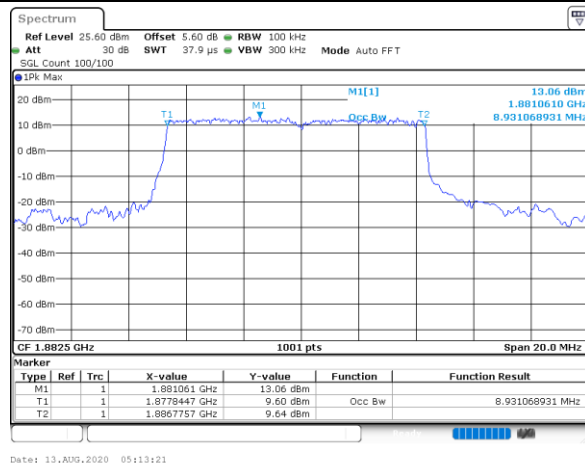
FR1 n25 / 10MHz / DFT-S OFDM

QPSK

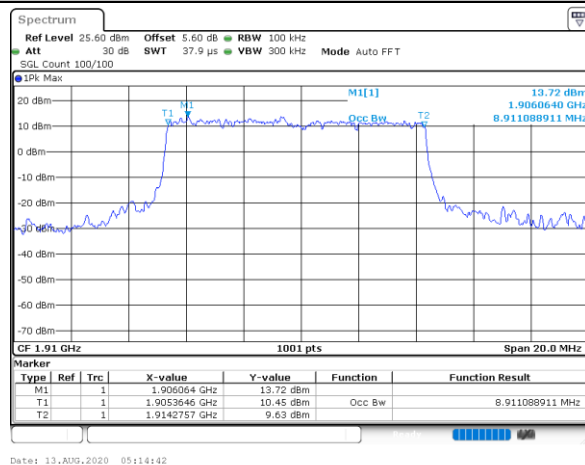
Lowest Channel



Middle Channel



Highest Channel

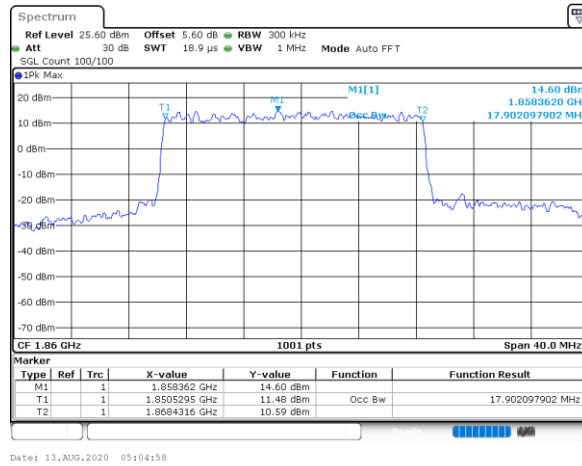




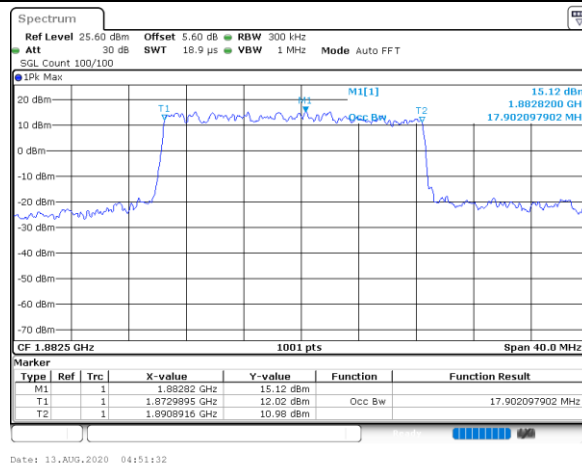
FR1 n25 / 20MHz / DFT-S OFDM

QPSK

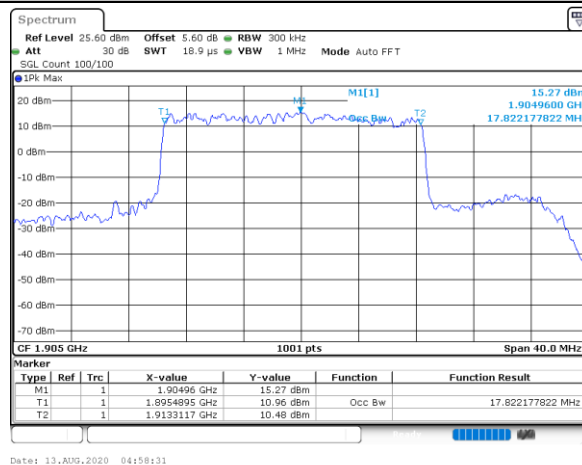
Lowest Channel



Middle Channel



Highest Channel

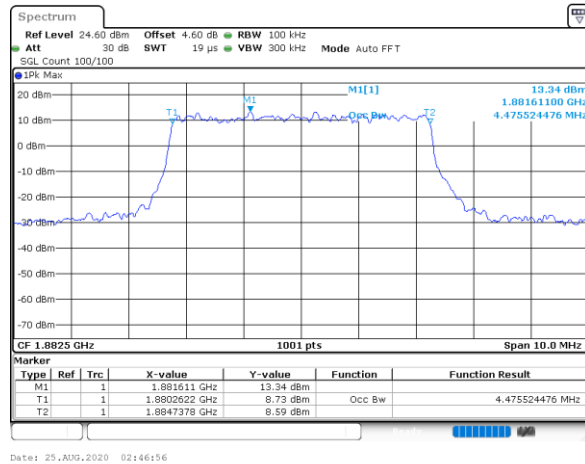




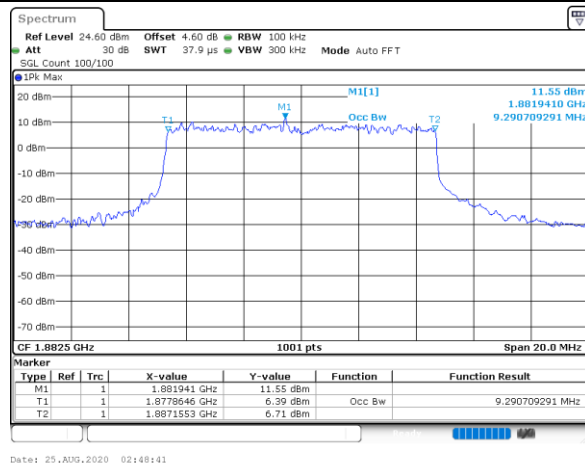
FR1 n25 / DFT-S OFDM

16QAM / Middle Channel

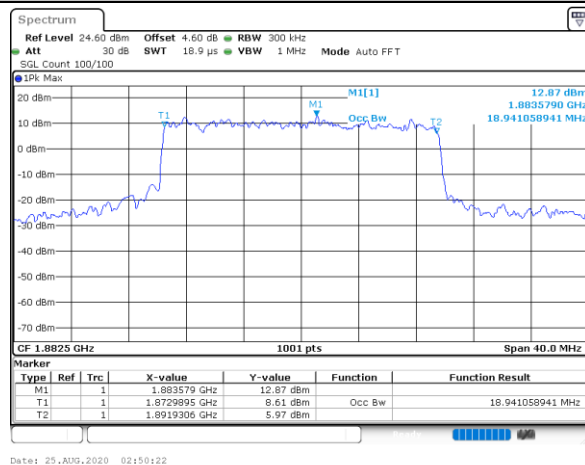
5MHz

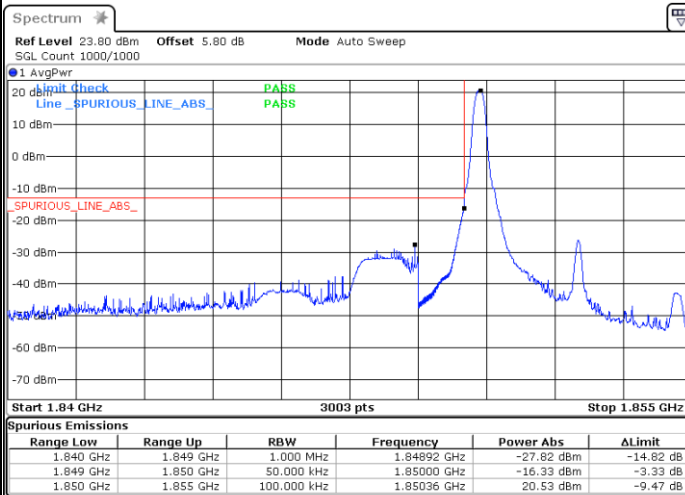


10MHz

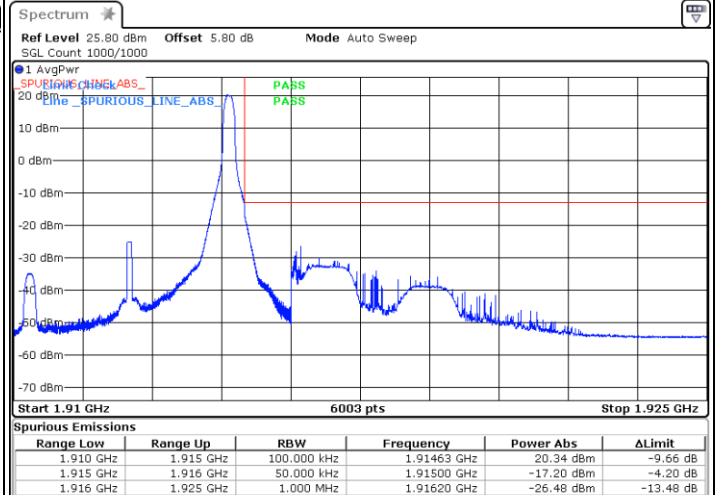


20MHz

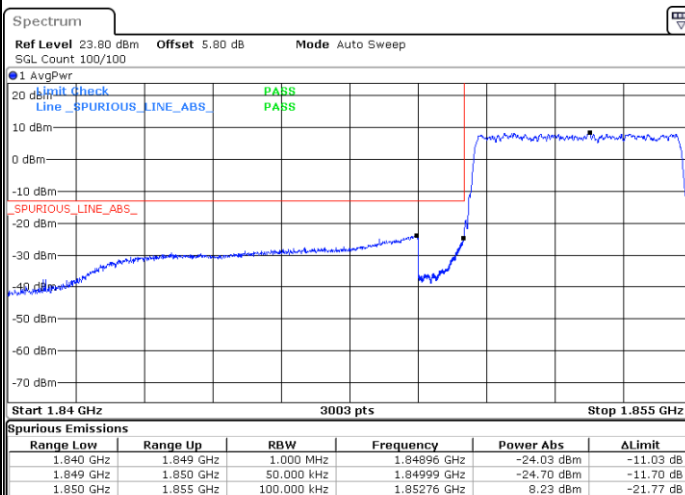


**Conducted Band Edge****FR1 n25 / 5MHz / DFT-S OFDM / QPSK****Lowest Band Edge / 1RB0****Highest Band Edge / 1RBmax**

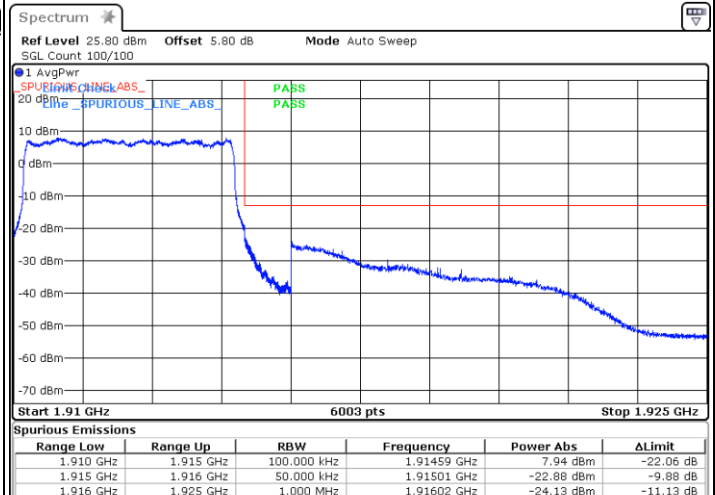
Date: 13.AUG.2020 05:50:09



Date: 13.AUG.2020 06:20:11

Lowest Band Edge / Full RB**Highest Band Edge / Full RB**

Date: 13.AUG.2020 05:45:53



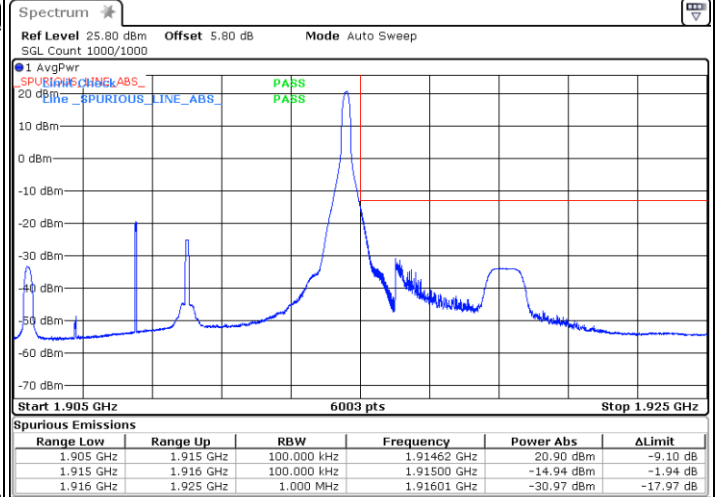
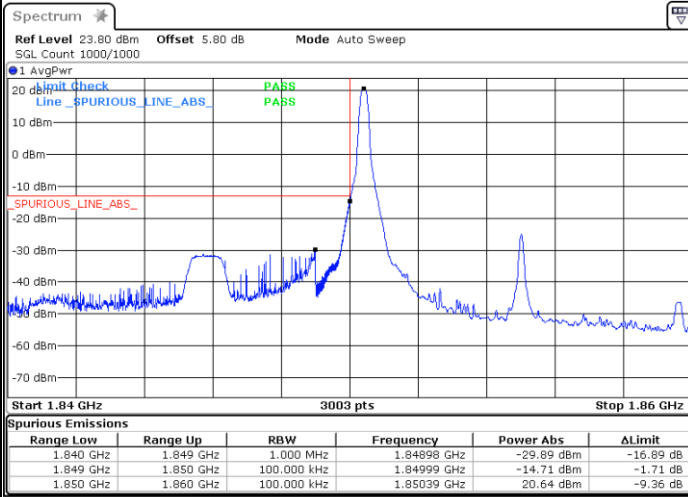
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FR1 n25 / 10MHz / DFT-s-OFDM / QPSK

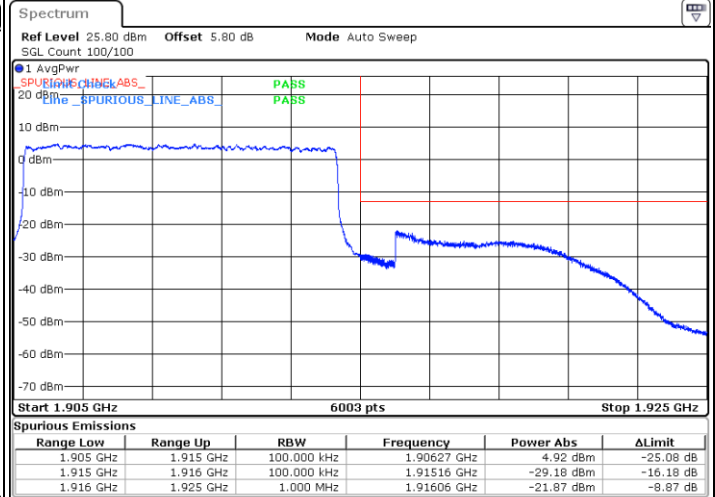
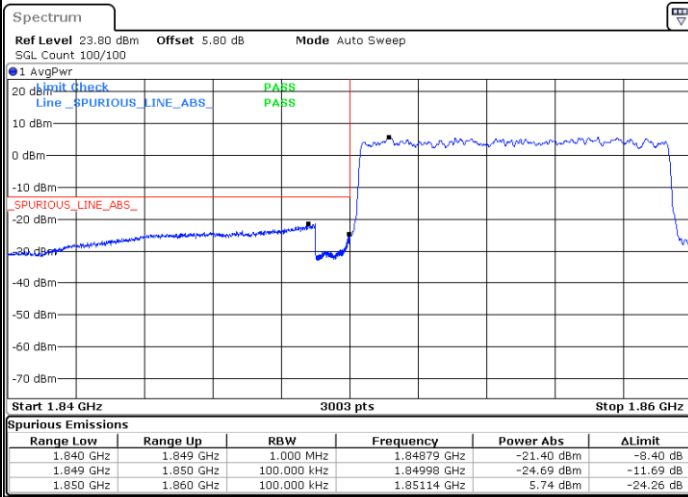
Lowest Band Edge / 1RB0

Highest Band Edge / 1RBmax



Lowest Band Edge / Full RB

Highest Band Edge / Full RB

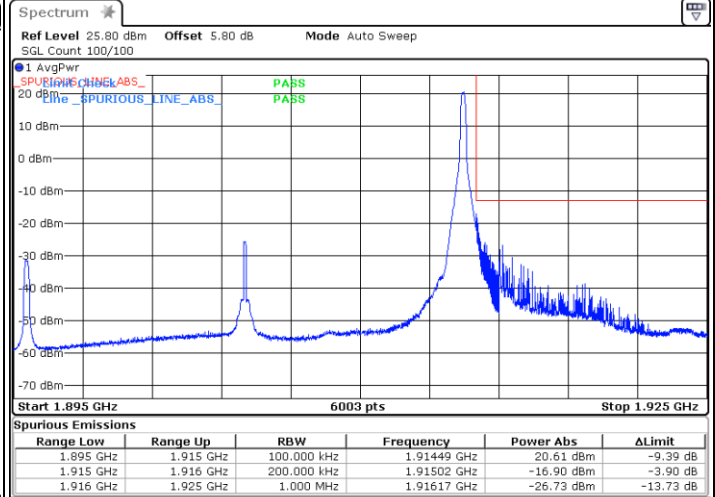
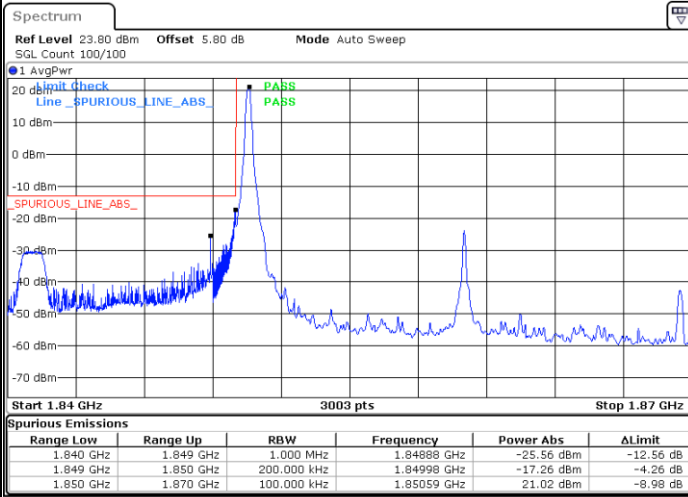




FR1 n25 / 20MHz / DFT-s-OFDM / QPSK

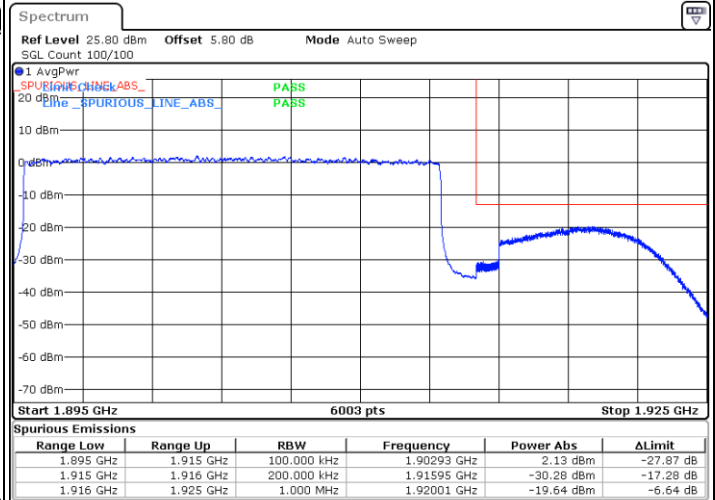
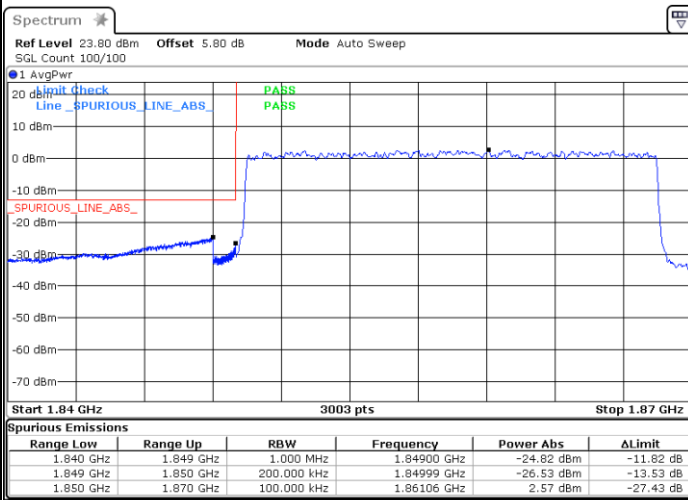
Lowest Band Edge / 1RB0

Highest Band Edge / 1RBmax



Lowest Band Edge / Full RB

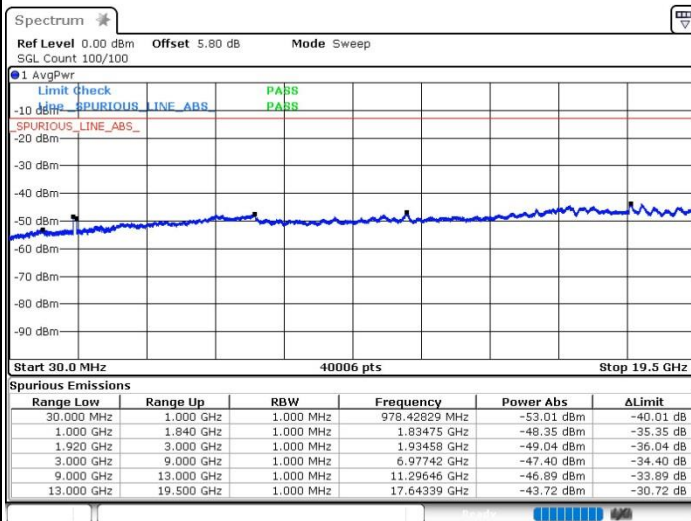
Highest Band Edge / Full RB



Conducted Spurious Emission

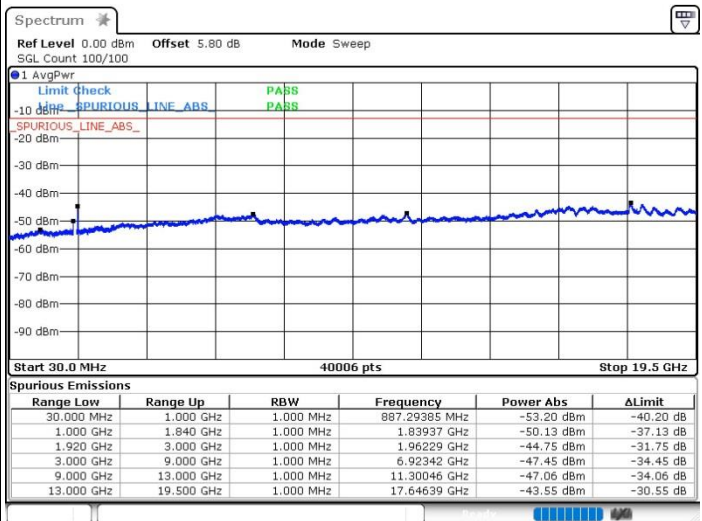
FR1 n25 / 5MHz / DFT-S OFDM / QPSK

Lowest Channel / 1RB



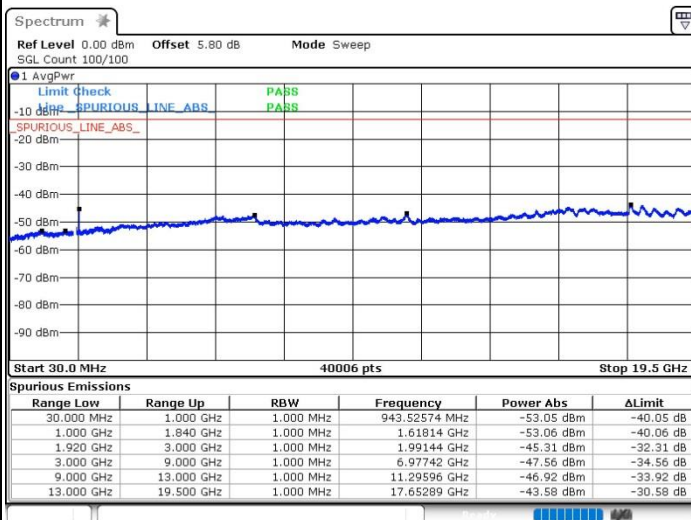
Date: 13.AUG.2020 06:26:03

Middle Channel / 1RB



Date: 13.AUG.2020 06:24:59

Highest Channel / 1RB

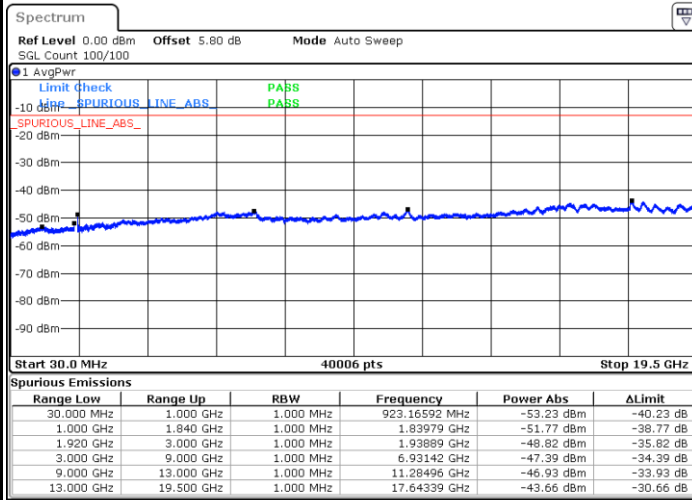


Date: 13.AUG.2020 06:21:40



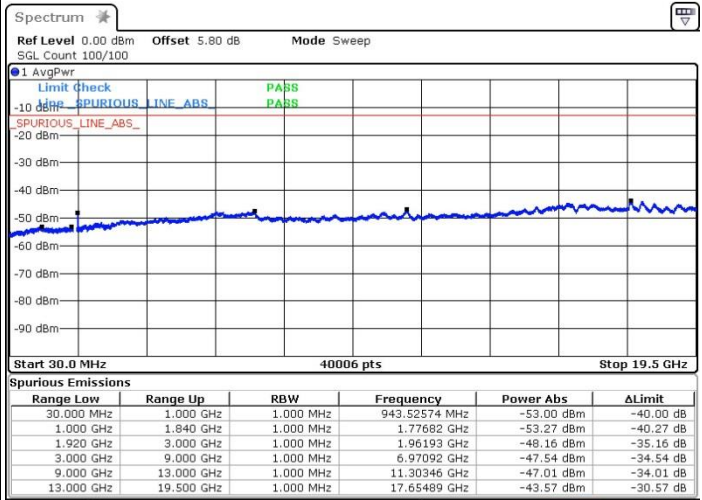
FR1 n25 / 10MHz / DFT-S OFDM / QPSK

Lowest Channel / 1RB



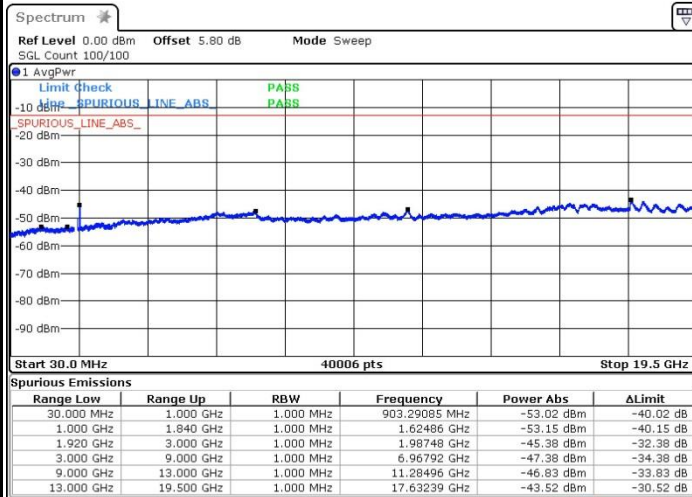
Date: 13.AUG.2020 05:27:35

Middle Channel / 1RB



Date: 13.AUG.2020 05:30:31

Highest Channel / 1RB

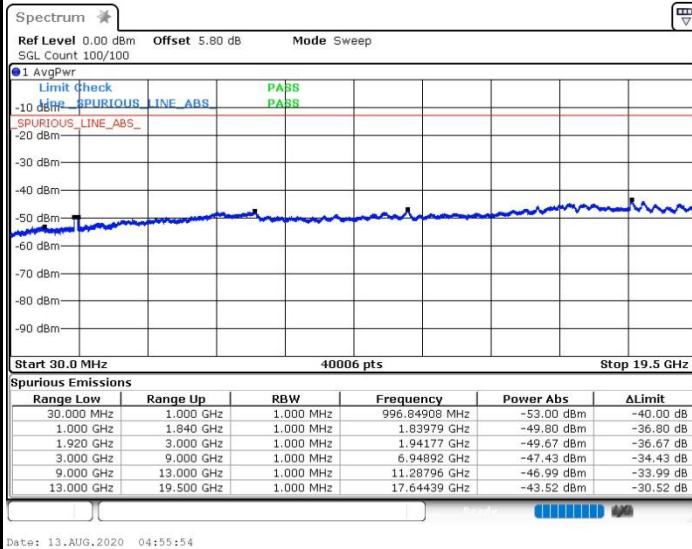


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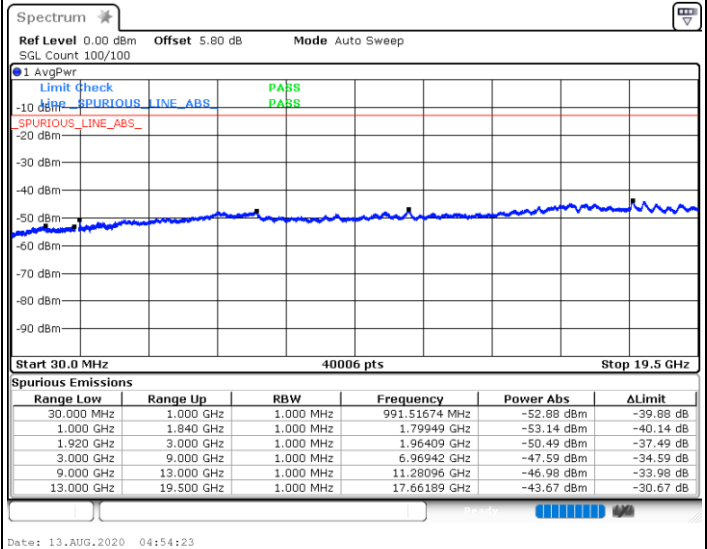


FR1 n25 / 20MHz / DFT-S OFDM / QPSK

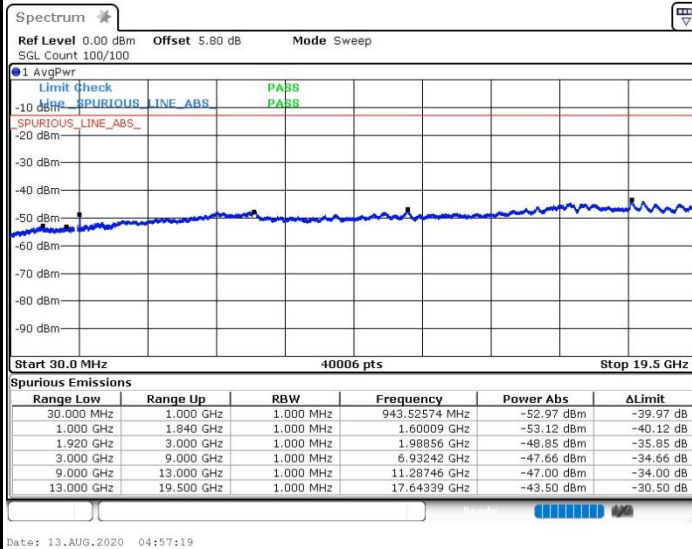
Lowest Channel / 1RB



Middle Channel / 1RB



Highest Channel / 1RB



Frequency Stability

Test Conditions		FR1 n25 (QPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 20MHz	Note 2.
		Deviation (ppm)	Result
50	Normal Voltage	0.0001	PASS
40	Normal Voltage	0.0028	
30	Normal Voltage	0.0007	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0024	
0	Normal Voltage	0.0026	
-10	Normal Voltage	0.0012	
-20	Normal Voltage	0.0004	
-30	Normal Voltage	0.0002	
20	Maximum Voltage	0.0004	
20	Normal Voltage	0.0002	
20	Battery End Point	0.0009	

Note:

1. Normal Voltage =3.8 V. ; Battery End Point (BEP) =3.135 V. ; Maximum Voltage =4.4 V.
2. Note: The frequency fundamental emissions stay within the authorized frequency block.



Appendix B. Test Results of Radiated Test

Radiated Spurious Emission_SA mode

5G NR n2 / NR 20MHz / QPSK DFT-s-OFDM								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3702	-58.13	-13	-45.13	-70.39	2.64	14.90	H
	5553	-53.71	-13	-40.71	-65.57	2.94	14.80	H
	7404	-49.34	-13	-36.34	-59.11	3.39	13.16	H
	3702	-58.07	-13	-45.07	-70.33	2.64	14.90	V
	5553	-53.80	-13	-40.80	-65.66	2.94	14.80	V
	7404	-49.12	-13	-36.12	-58.89	3.39	13.16	V
Middle	3741	-57.50	-13	-44.50	-69.76	2.64	14.90	H
	5613	-54.00	-13	-41.00	-65.86	2.94	14.80	H
	7488	-49.15	-13	-36.15	-58.92	3.39	13.16	H
	3741	-57.69	-13	-44.69	-69.95	2.64	14.90	V
	5613	-53.88	-13	-40.88	-65.74	2.94	14.80	V
	7488	-48.67	-13	-35.67	-58.44	3.39	13.16	V
Highest	3783	-57.40	-13	-44.40	-69.66	2.64	14.90	H
	5673.27	-53.75	-13	-40.75	-65.61	2.94	14.80	H
	7565	-48.62	-13	-35.62	-58.39	3.39	13.16	H
	3783	-56.93	-13	-43.93	-69.19	2.64	14.90	V
	5673	-53.50	-13	-40.50	-65.36	2.94	14.80	V
	7565	-48.31	-13	-35.31	-58.08	3.39	13.16	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



5G NR n5 / NR 20MHz / QPSK DFT-s-OFDM								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1650	-64.69	-13	-51.69	-71.66	1.58	10.70	H
	2474	-61.15	-13	-48.15	-69.40	2.102	12.50	H
	3300	-61.29	-13	-48.29	-70.18	2.856	13.90	H
	1650	-63.40	-13	-50.40	-70.37	1.58	10.70	V
	2474	-58.25	-13	-45.25	-66.50	2.10	12.50	V
	3300	-61.53	-13	-48.53	-70.42	2.86	13.90	V
Middle	1656	-65.26	-13	-52.26	-72.23	1.58	10.70	H
	2482.77	-60.27	-13	-47.27	-68.52	2.102	12.50	H
	3312	-61.31	-13	-48.31	-70.20	2.856	13.90	H
	1656	-64.89	-13	-51.89	-71.86	1.58	10.70	V
	2482.77	-59.12	-13	-46.12	-67.37	2.10	12.50	V
	3312	-61.37	-13	-48.37	-70.26	2.86	13.90	V
Highest	1660	-65.11	-13	-52.11	-72.08	1.58	10.70	H
	2490	-60.69	-13	-47.69	-68.94	2.102	12.50	H
	3320	-61.62	-13	-48.62	-70.51	2.856	13.90	H
	1660	-64.59	-13	-51.59	-71.56	1.58	10.70	V
	2490	-59.36	-13	-46.36	-67.61	2.10	12.50	V
	3320	-61.11	-13	-48.11	-70.00	2.86	13.90	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



5G NR n12 / NR 15MHz / QPSK DFT-s-OFDM								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1400	-65.46	-13	-52.46	-72.43	1.58	10.70	H
	2099.52	-64.04	-13	-51.04	-72.29	2.102	12.50	H
	2799.36	-61.63	-13	-48.63	-70.52	2.856	13.90	H
	1399.68	-65.04	-13	-52.04	-72.01	1.58	10.70	V
	2099.52	-63.68	-13	-50.68	-71.93	2.10	12.50	V
	2800	-61.34	-13	-48.34	-70.23	2.86	13.90	V
Middle	1402	-65.52	-13	-52.52	-72.49	1.58	10.70	H
	2102.52	-63.74	-13	-50.74	-71.99	2.102	12.50	H
	2803.36	-61.43	-13	-48.43	-70.32	2.856	13.90	H
	1402	-65.06	-13	-52.06	-72.03	1.58	10.70	V
	2102.52	-63.62	-13	-50.62	-71.87	2.10	12.50	V
	2803.36	-61.35	-13	-48.35	-70.24	2.86	13.90	V
Highest	1404	-65.86	-13	-52.86	-72.83	1.58	10.70	H
	2105.52	-64.15	-13	-51.15	-72.40	2.102	12.50	H
	2807.36	-61.70	-13	-48.70	-70.59	2.856	13.90	H
	1404	-65.72	-13	-52.72	-72.69	1.58	10.70	V
	2105.52	-63.54	-13	-50.54	-71.79	2.10	12.50	V
	2807.36	-61.57	-13	-48.57	-70.46	2.86	13.90	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



5G NR n25 / NR 20MHz / QPSK DFT-s-OFDM								
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3702	-57.80	-13	-44.80	-70.06	2.64	14.90	H
	5553.27	-53.83	-13	-40.83	-65.69	2.94	14.80	H
	7404	-49.75	-13	-36.75	-59.52	3.39	13.16	H
	3702	-58.12	-13	-45.12	-70.38	2.64	14.90	V
	5553.27	-54.11	-13	-41.11	-65.97	2.94	14.80	V
	7404	-49.18	-13	-36.18	-58.95	3.39	13.16	V
Middle	3741	-57.74	-13	-44.74	-70.00	2.64	14.90	H
	5613.27	-54.06	-13	-41.06	-65.92	2.94	14.80	H
	7488	-49.11	-13	-36.11	-58.88	3.39	13.16	H
	3741	-57.79	-13	-44.79	-70.05	2.64	14.90	V
	5613.27	-54.38	-13	-41.38	-66.24	2.94	14.80	V
	7488	-48.92	-13	-35.92	-58.69	3.39	13.16	V
Highest	3783	-57.52	-13	-44.52	-69.78	2.64	14.90	H
	5673	-53.57	-13	-40.57	-65.43	2.94	14.80	H
	7560	-48.78	-13	-35.78	-58.55	3.39	13.16	H
	3783	-57.56	-13	-44.56	-69.82	2.64	14.90	V
	5673	-54.09	-13	-41.09	-65.95	2.94	14.80	V
	7560	-48.88	-13	-35.88	-58.65	3.39	13.16	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.