



Frequency Stability

Test Conditions		FR1 n48 (256QAM) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 20MHz	Note 2.
		Deviation (ppm)	Result
50	Normal Voltage	0.0012	PASS
40	Normal Voltage	0.0028	
30	Normal Voltage	0.0025	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0023	
0	Normal Voltage	0.0025	
-10	Normal Voltage	0.0007	
-20	Normal Voltage	0.0031	
-30	Normal Voltage	0.0036	
20	Maximum Voltage	0.0043	
20	Normal Voltage	0.0051	
20	Battery End Point	0.0009	

Note:

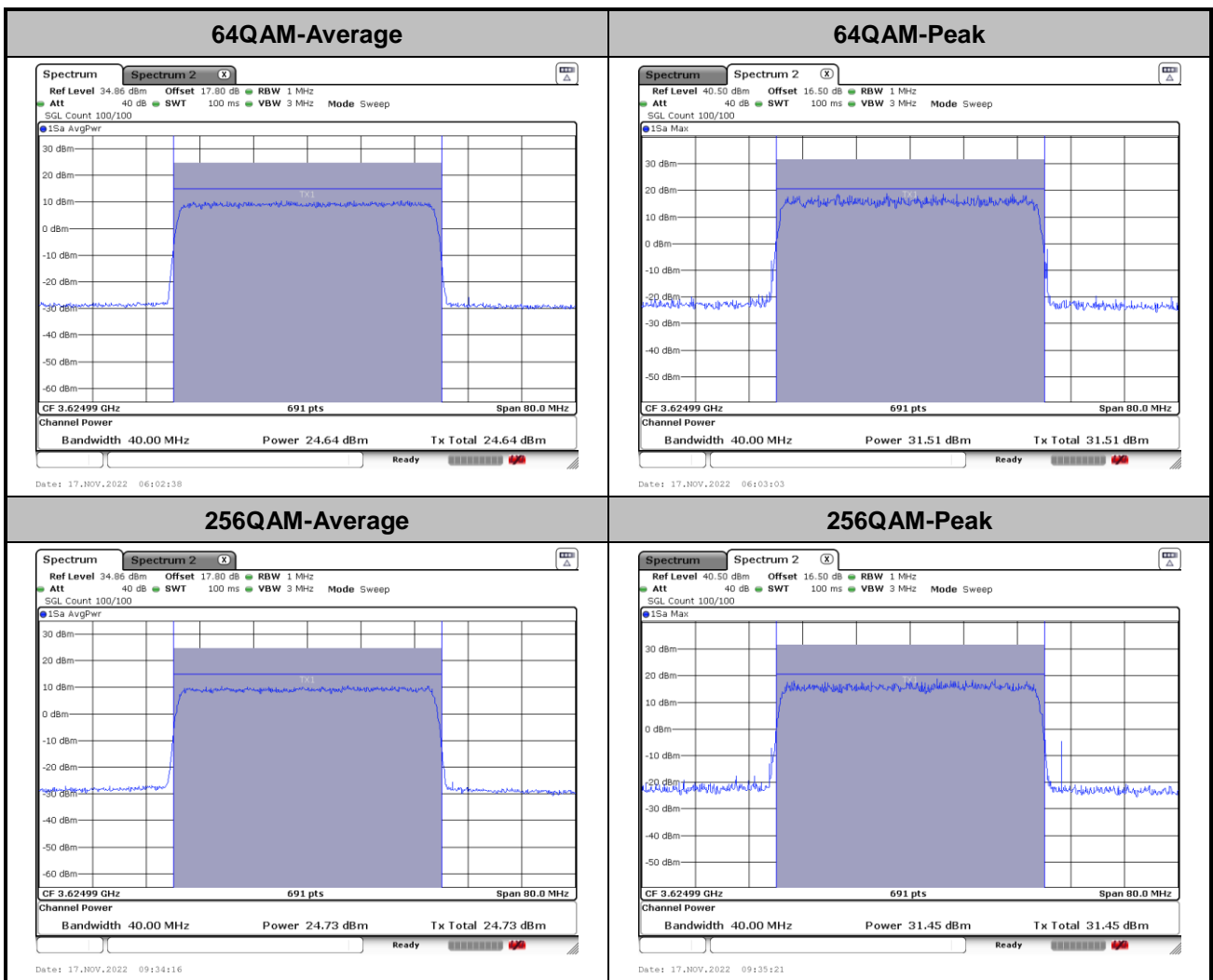
1. Normal Voltage =12 V. ; Battery End Point (BEP) =12.6 V. ; Maximum Voltage =11.4V.
2. Note: The frequency fundamental emissions stay within the authorized frequency block.



MIMO Internal Antenna 4

Peak-to-Average Ratio

Mode	FR1 Part 96 N48 /40MHz / DFT-S OFDM		
Mod.	40M		Limit: 13dB
RB Size	64QAM	256QAM	Result
Middle CH	6.87	6.72	PASS

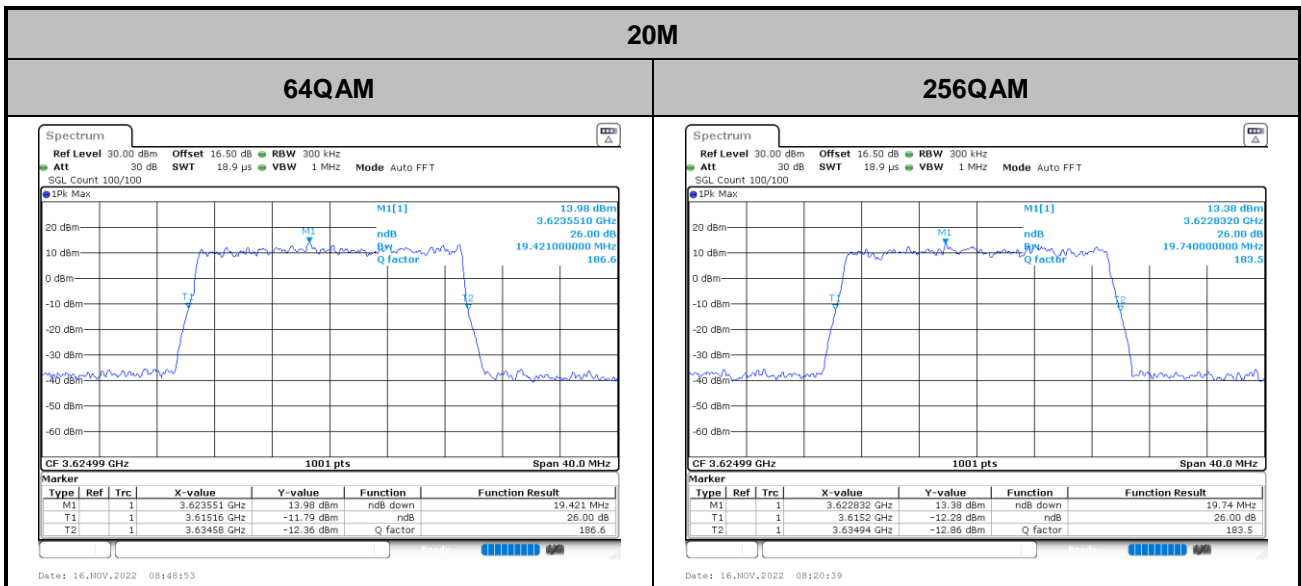


Note: PAR=Peak-Average



26dB Bandwidth

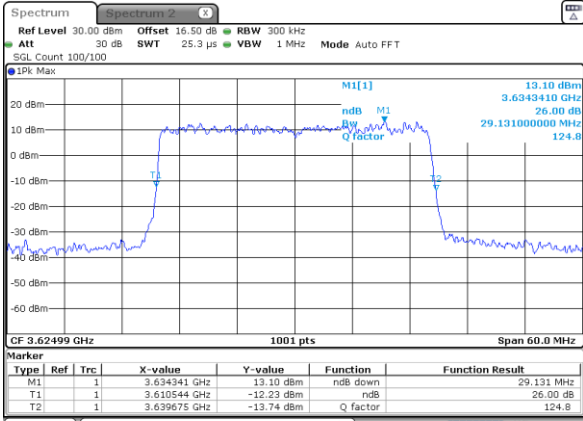
Mode	FR1 Part 96 N48 : 26dB BW(MHz)	
BW	20M	
Mod.	64QAM	256QAM
Middle CH	19.42	19.74
BW	30M	
Mod.	64QAM	256QAM
Middle CH	29.13	29.25
BW	40M	
Mod.	64QAM	256QAM
Middle CH	39.64	39.40





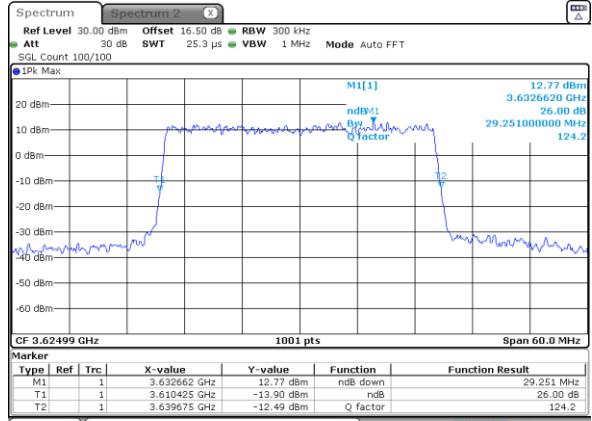
30M

64QAM



Date: 25.NOV.2022 07:49:17

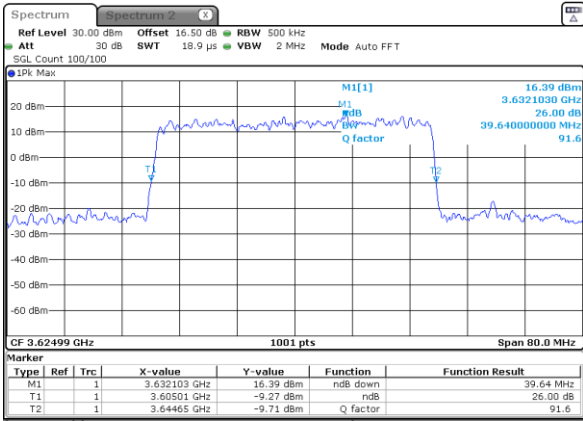
256QAM



Date: 25.NOV.2022 07:49:47

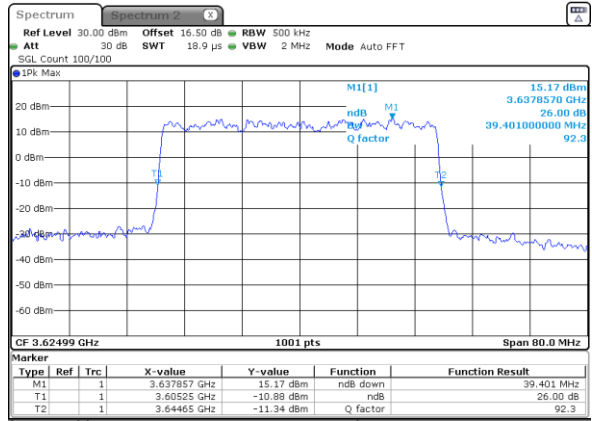
40M

64QAM



Date: 17.NOV.2022 08:52:12

256QAM

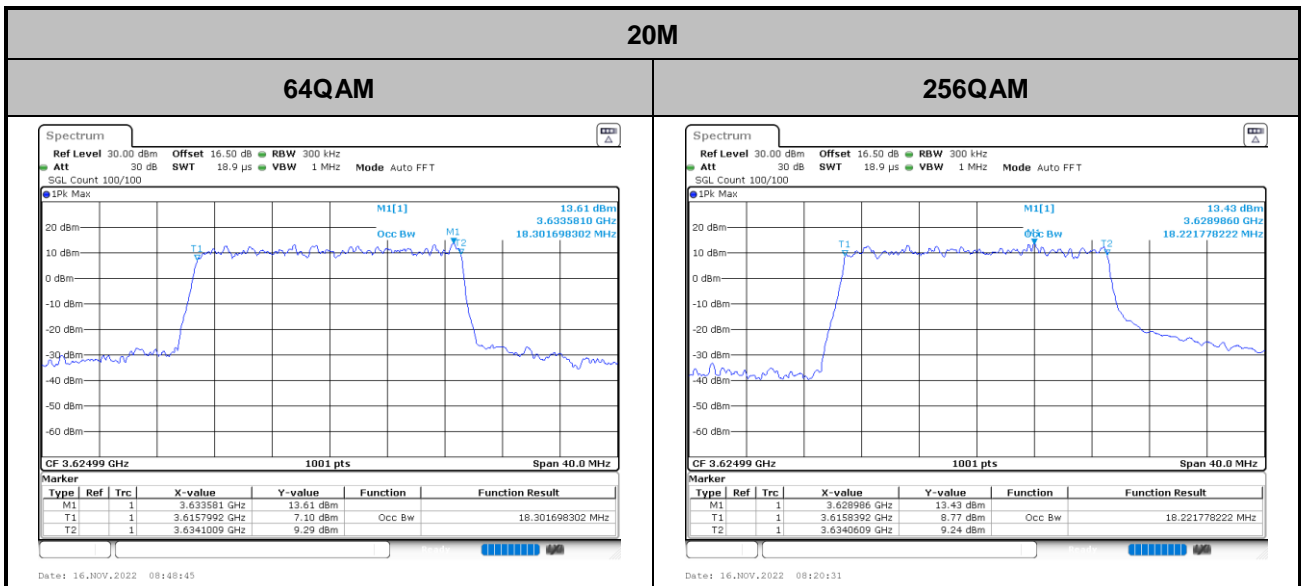


Date: 17.NOV.2022 09:32:35



Occupied Bandwidth

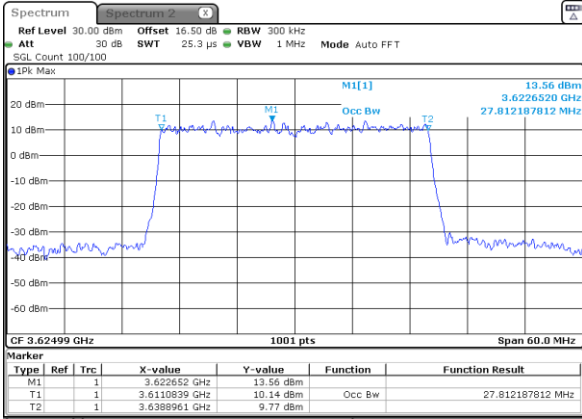
Mode	FR1 Part 96 N48: OB BW(MHz)	
BW	20M	
Mod.	64QAM	256QAM
Middle CH	18.30	18.22
BW	30M	
Mod.	64QAM	256QAM
Middle CH	27.81	27.81
BW	40M	
Mod.	64QAM	256QAM
Middle CH	37.80	37.88





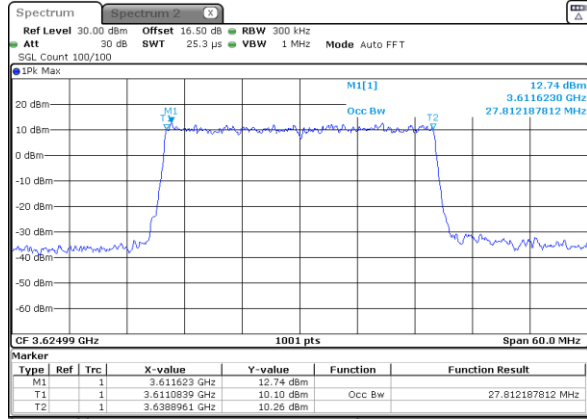
30M

64QAM



Date: 25.NOV.2022 07:49:00

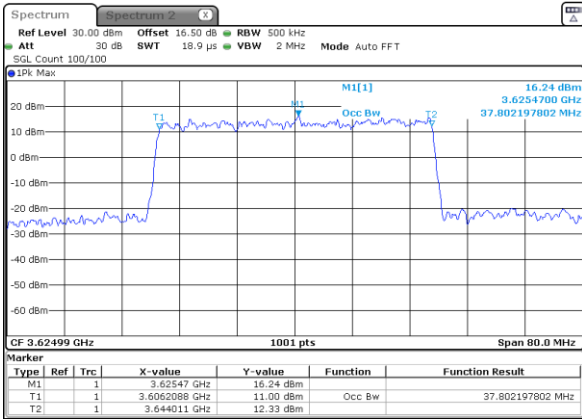
256QAM



Date: 25.NOV.2022 07:49:33

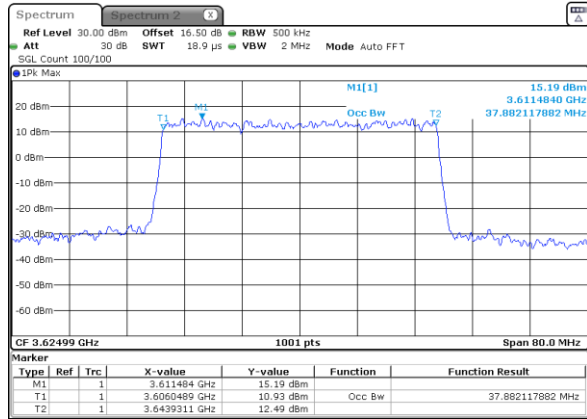
40M

64QAM



Date: 17.NOV.2022 08:51:51

256QAM



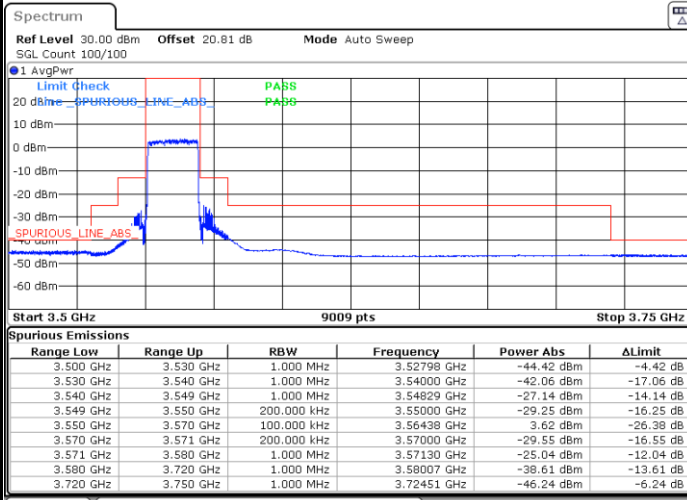
Date: 17.NOV.2022 09:32:24



Conducted Band Edge

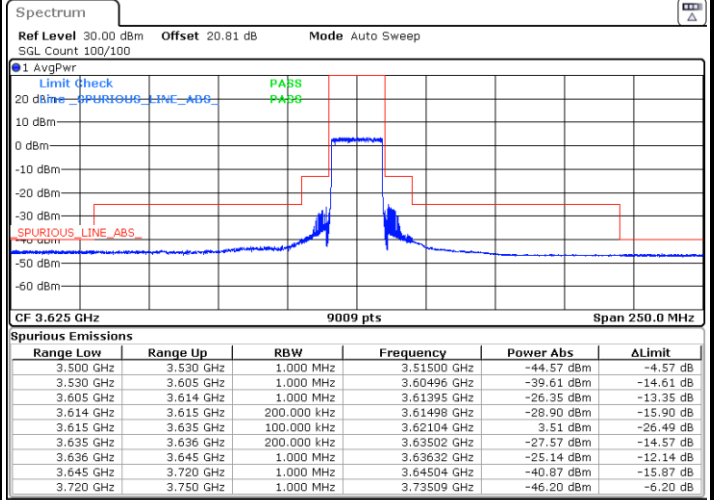
FR1 Part 96 N48/ 20MHz / DFT-S OFDM / 64QAM

Lowest Band Edge / Full RB



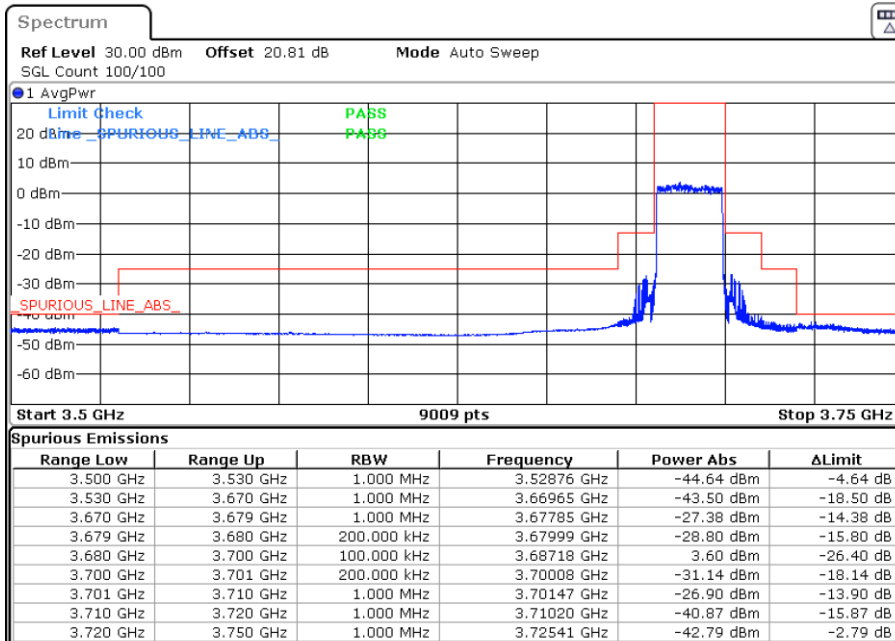
Date: 18.NOV.2022 06:43:35

Middle Band Edge / Full RB



Date: 18.NOV.2022 06:47:31

Highest Band Edge / Full RB



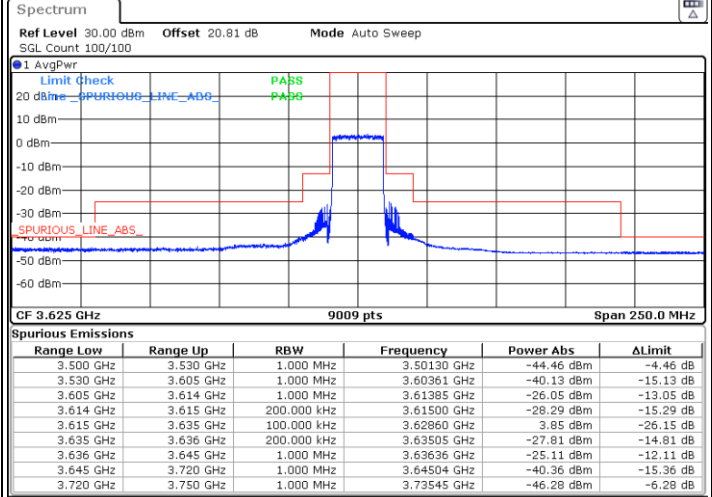
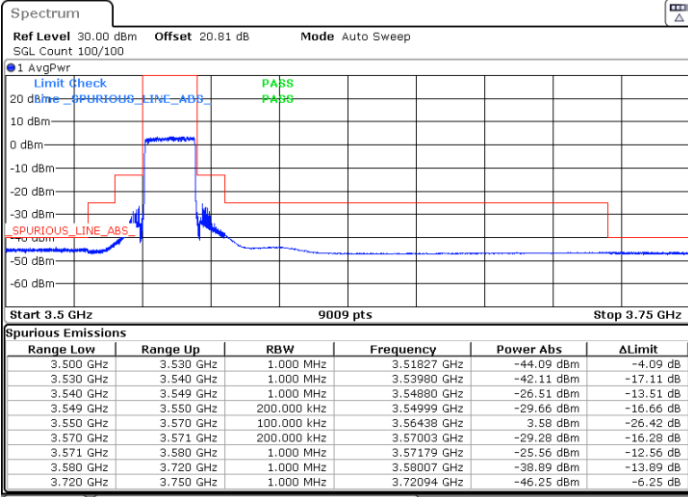
Date: 18.NOV.2022 06:55:34



FR1 Part 96 N48/ 20MHz / DFT-S OFDM / 256QAM

Lowest Band Edge / Full RB

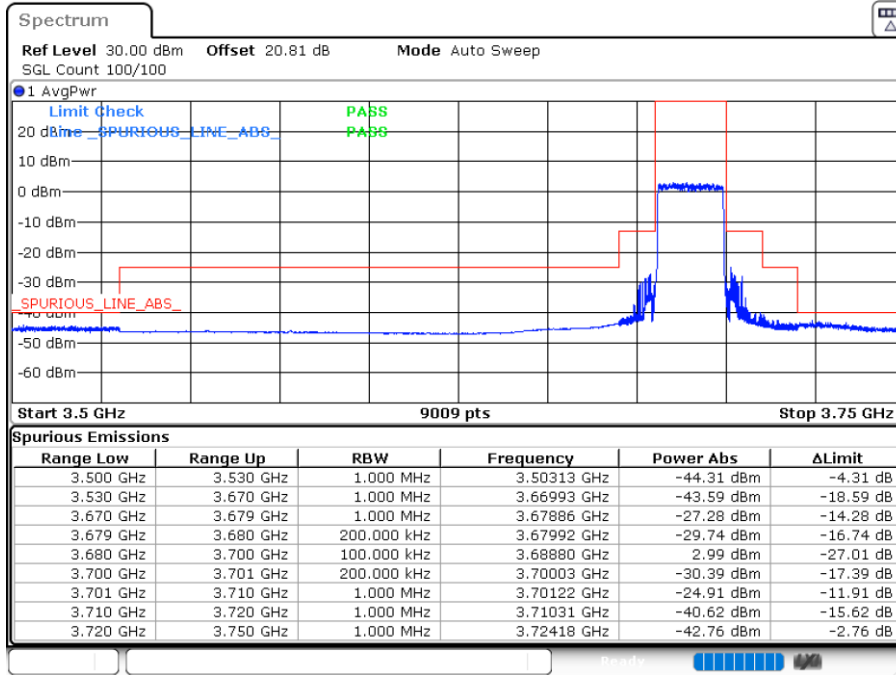
Middle Band Edge / Full RB



Date: 18.NOV.2022 06:42:34

Date: 18.NOV.2022 06:48:13

Highest Band Edge / Full RB



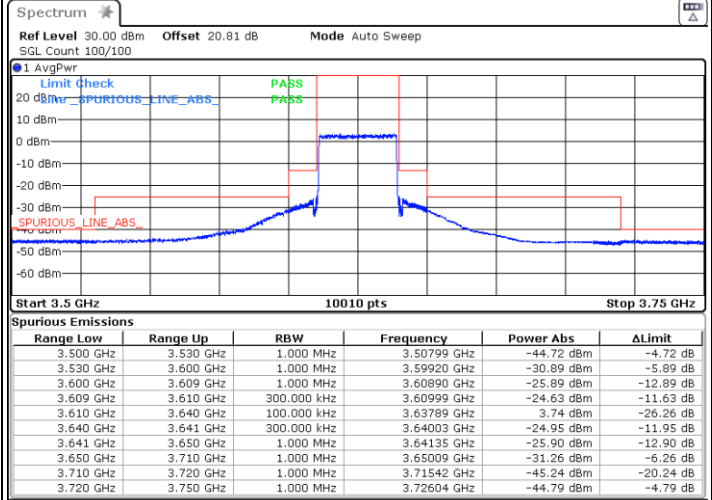
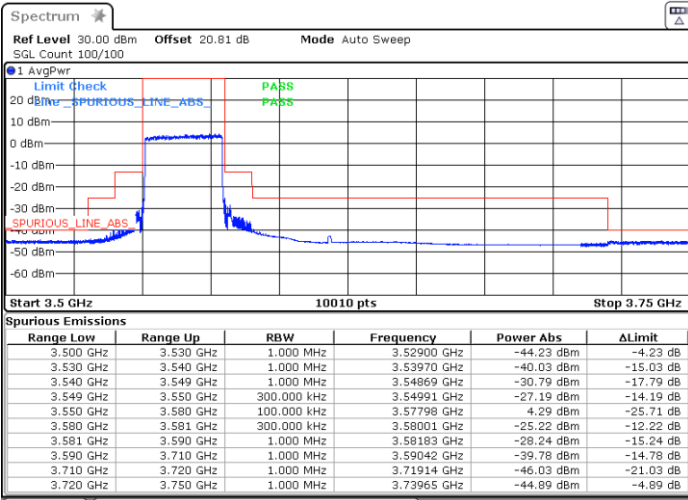
Date: 18.NOV.2022 06:54:46



FR1 Part 96 N48/ 30MHz / DFT-S OFDM / 64QAM

Lowest Band Edge / Full RB

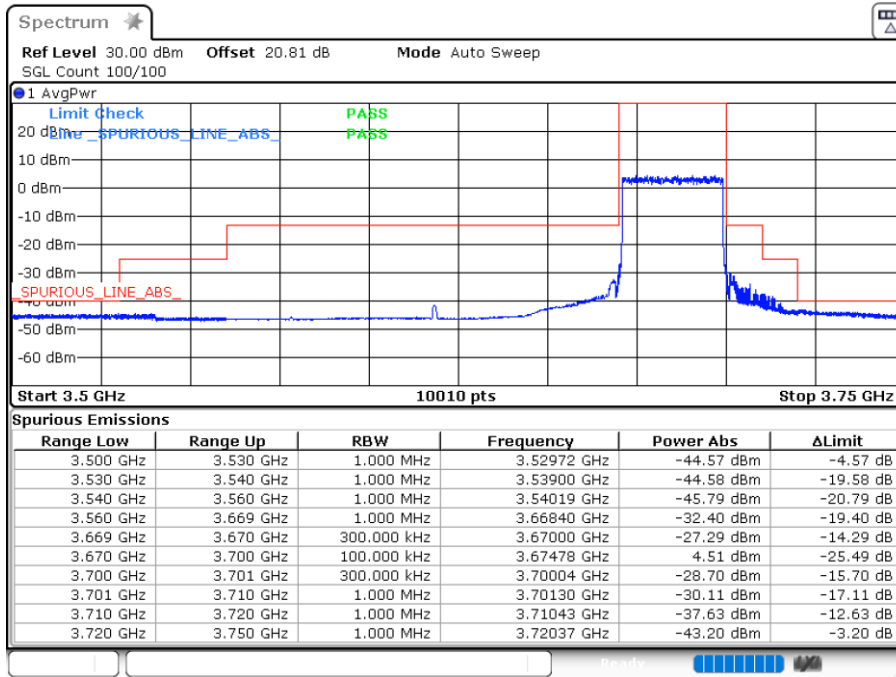
Middle Band Edge / Full RB



Date: 16.NOV.2022 10:05:54

Date: 16.NOV.2022 09:59:31

Highest Band Edge / Full RB



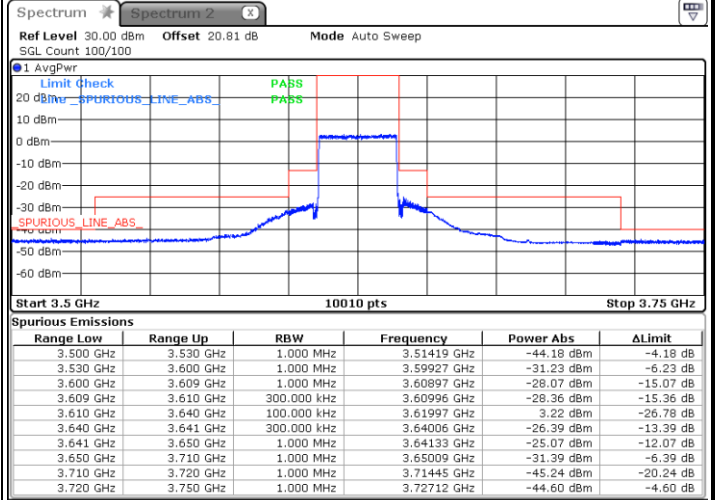
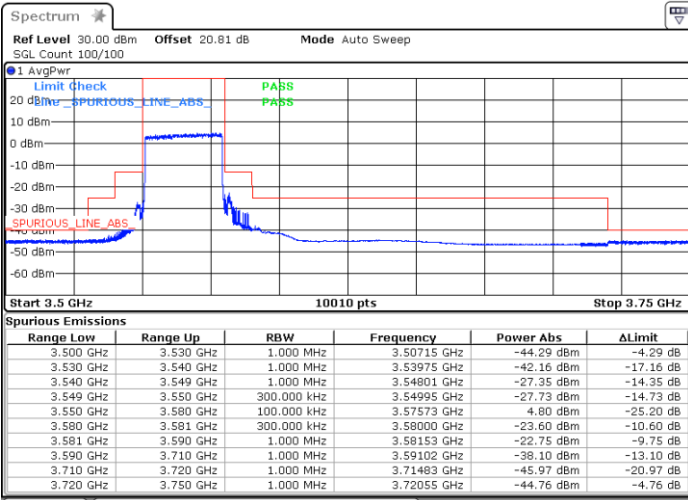
Date: 16.NOV.2022 09:54:41



FR1 Part 96 N48/ 30MHz / DFT-S OFDM / 256QAM

Lowest Band Edge / Full RB

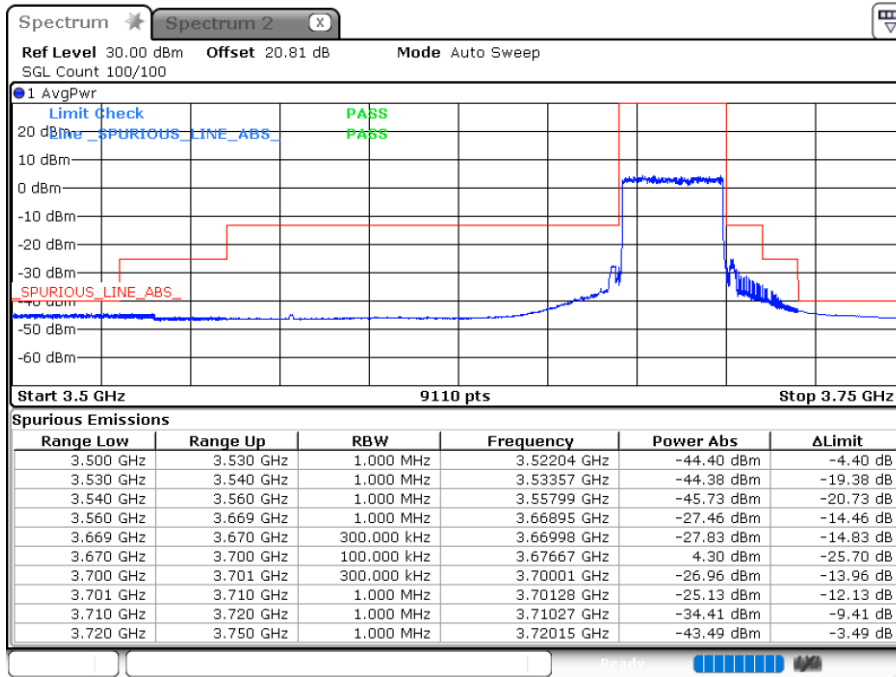
Middle Band Edge / Full RB



Date: 24.NOV.2022 06:45:28

Date: 24.NOV.2022 07:24:14

Highest Band Edge / Full RB



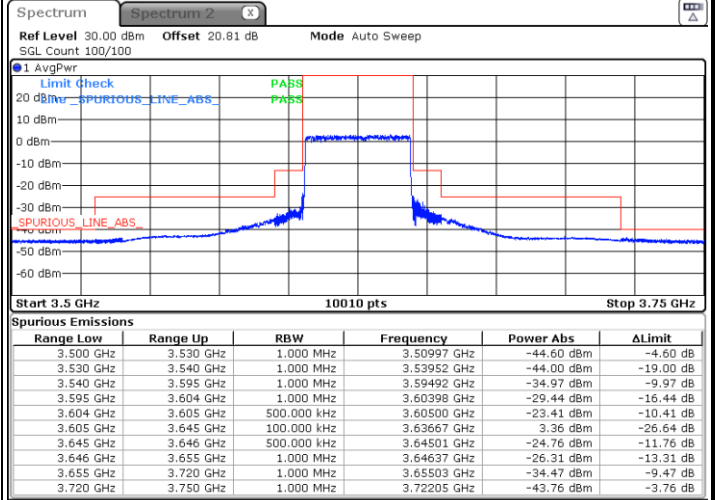
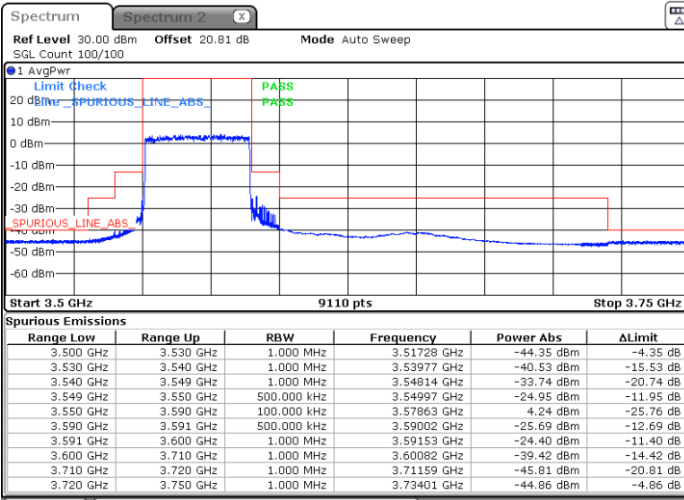
Date: 24.NOV.2022 09:46:47



FR1 Part 96 N48/ 40MHz / DFT-S OFDM / 64QAM

Lowest Band Edge / Full RB

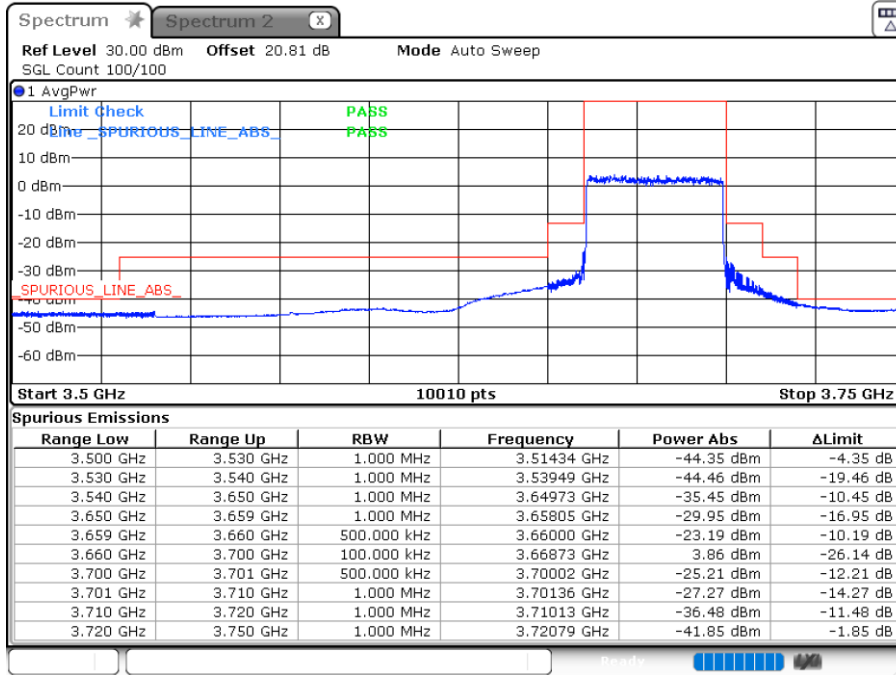
Middle Band Edge / Full RB



Date: 17.NOV.2022 06:09:30

Date: 17.NOV.2022 06:04:10

Highest Band Edge / Full RB



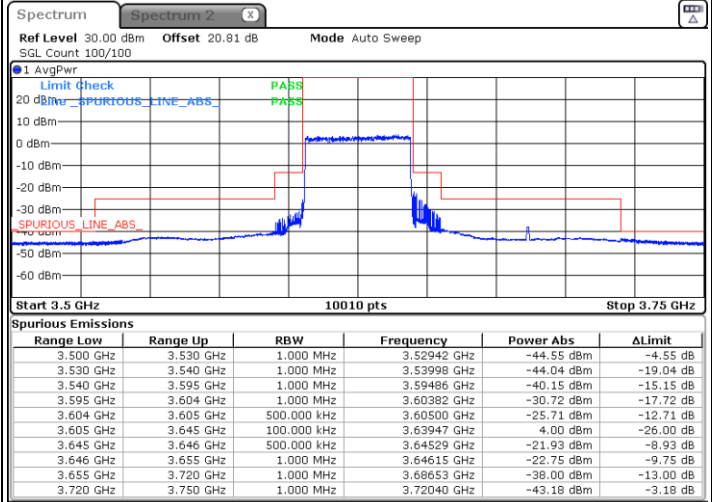
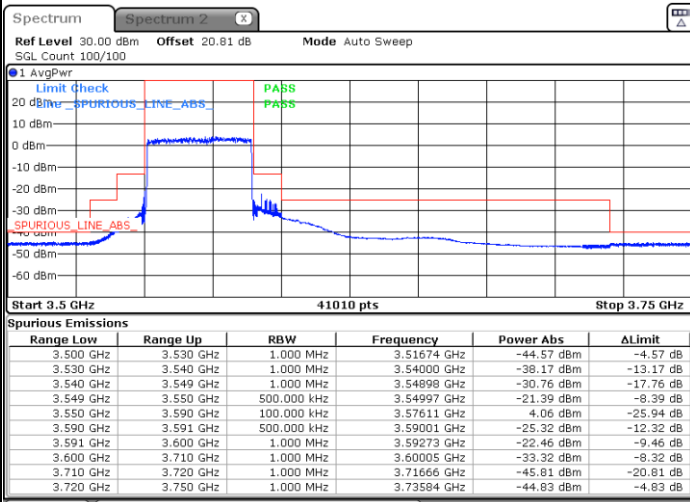
Date: 17.NOV.2022 08:30:09



FR1 Part 96 N48/ 40MHz / DFT-S OFDM / 256QAM

Lowest Band Edge / Full RB

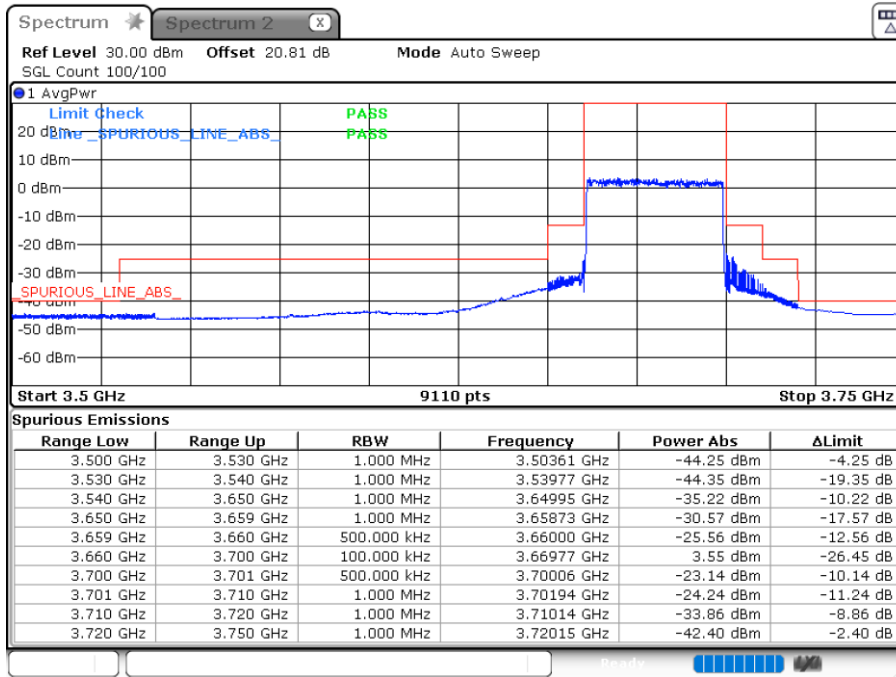
Middle Band Edge / Full RB



Date: 17.NOV.2022 09:16:26

Date: 17.NOV.2022 09:28:17

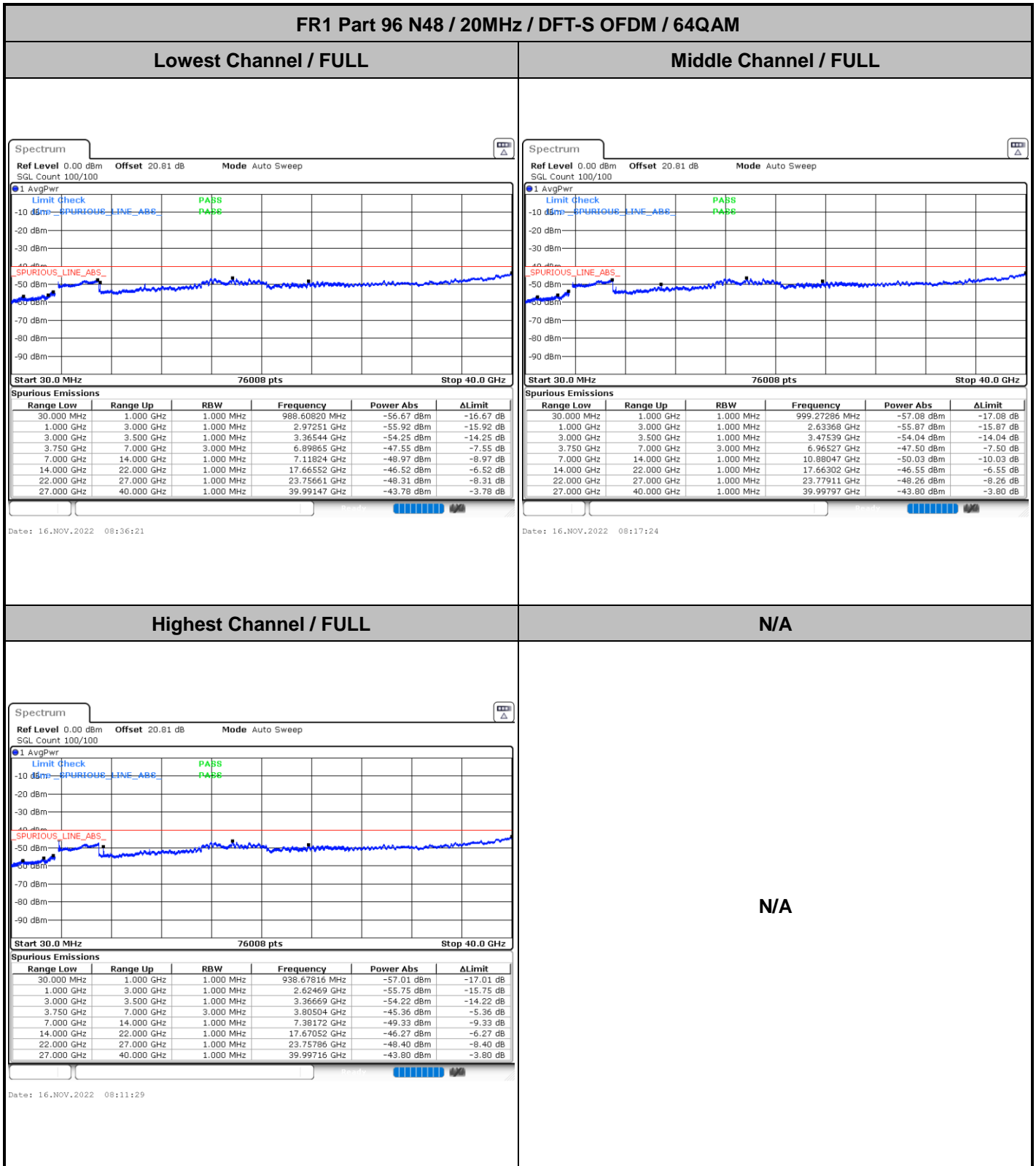
Highest Band Edge / Full RB



Date: 17.NOV.2022 10:09:16



Conducted Spurious Emission

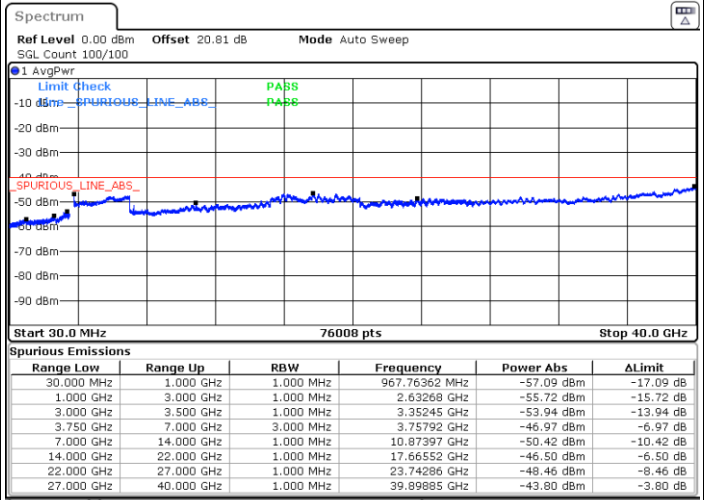
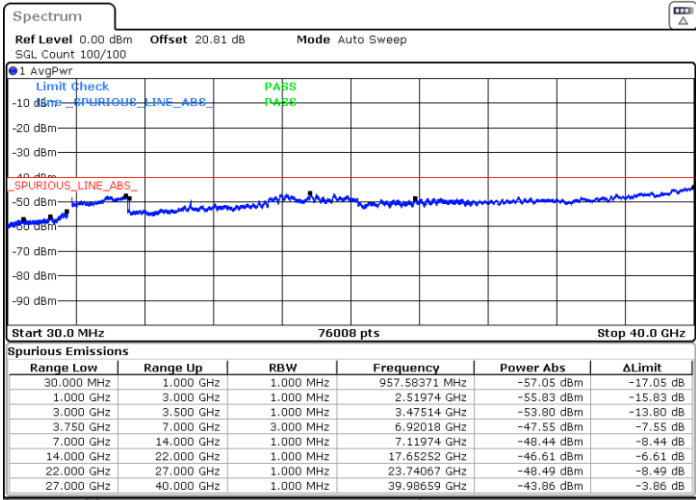




FR1 Part 96 N48 / 20MHz / DFT-S OFDM / 256QAM

Lowest Channel / FULL

Middle Channel / FULL

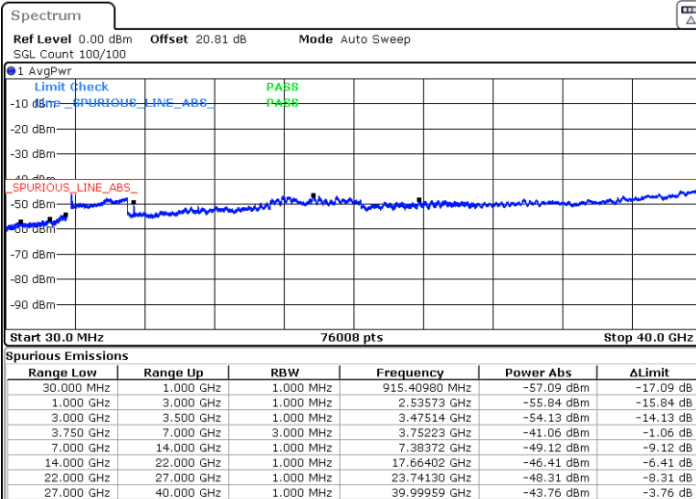


Date: 16.NOV.2022 08:35:10

Date: 16.NOV.2022 08:20:06

Highest Channel / FULL

N/A



N/A

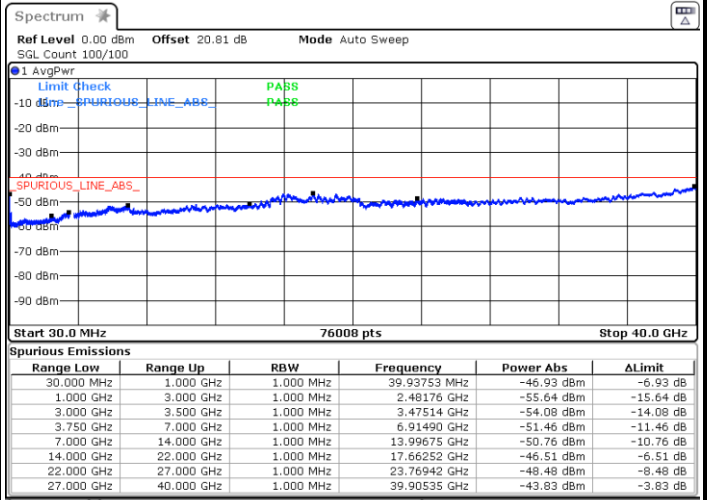
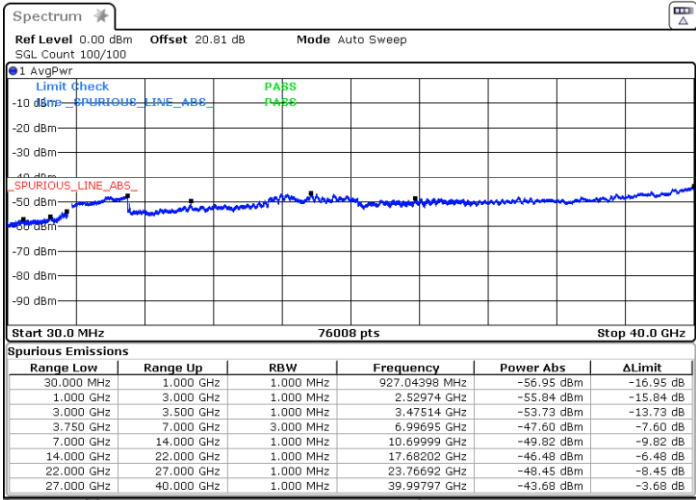
Date: 16.NOV.2022 08:07:24



FR1 Part 96 N48 / 30MHz / DFT-S OFDM / 64QAM

Lowest Channel / FULL

Middle Channel / FULL

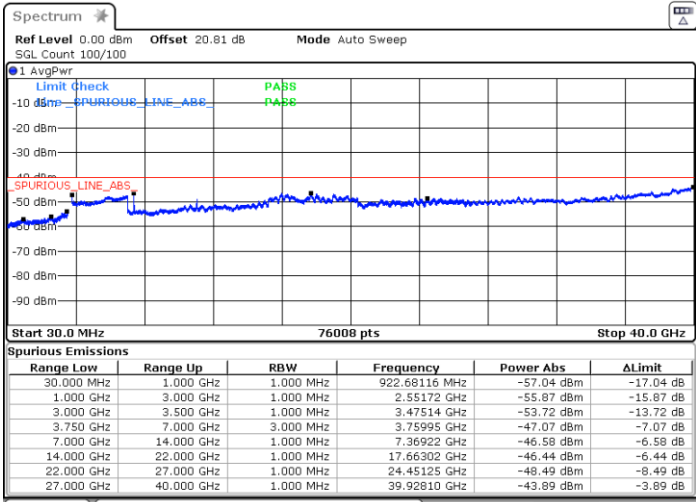


Date: 16.NOV.2022 10:07:34

Date: 16.NOV.2022 10:01:18

Highest Channel / FULL

N/A



Date: 16.NOV.2022 09:56:52

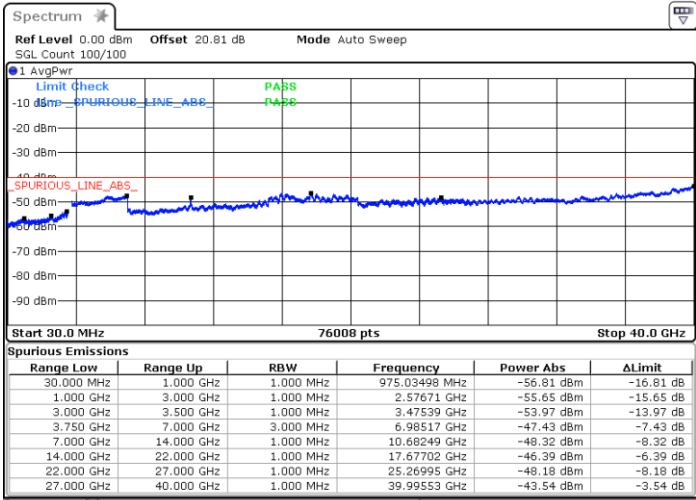
N/A



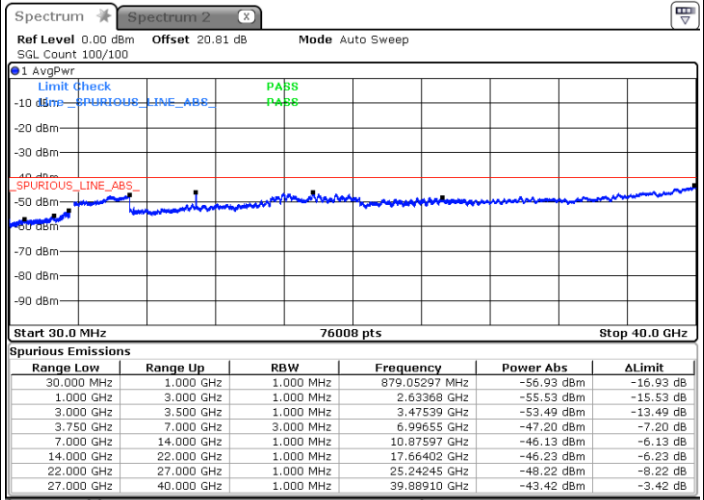
FR1 Part 96 N48 / 30MHz / DFT-S OFDM / 256QAM

Lowest Channel / FULL

Middle Channel / FULL



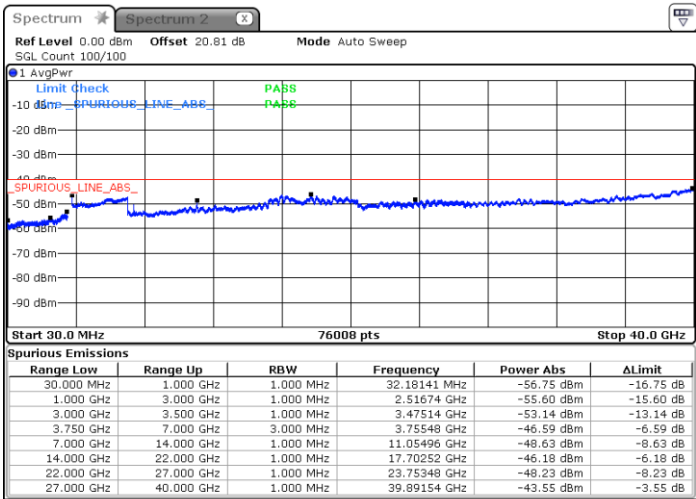
Date: 24.NOV.2022 06:47:26



Date: 24.NOV.2022 07:26:48

Highest Channel / FULL

N/A



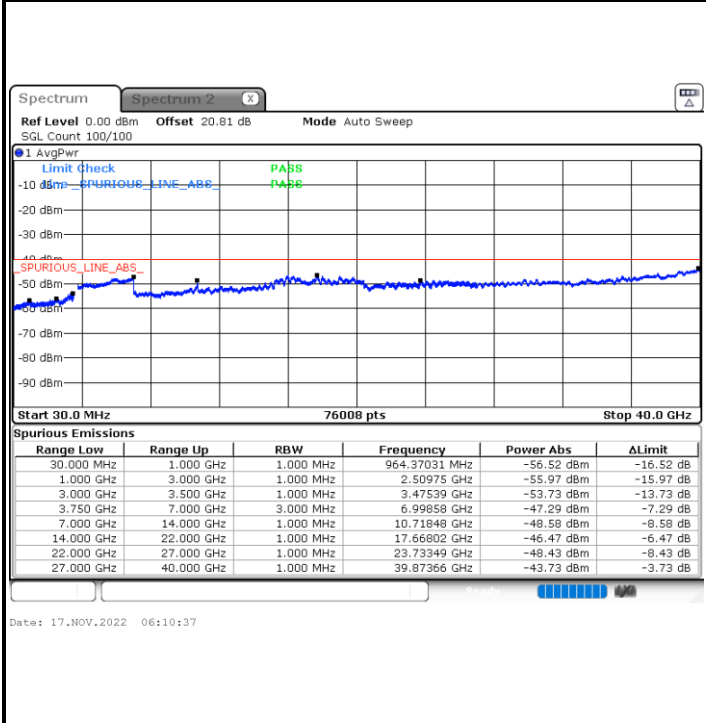
Date: 24.NOV.2022 09:50:28

N/A

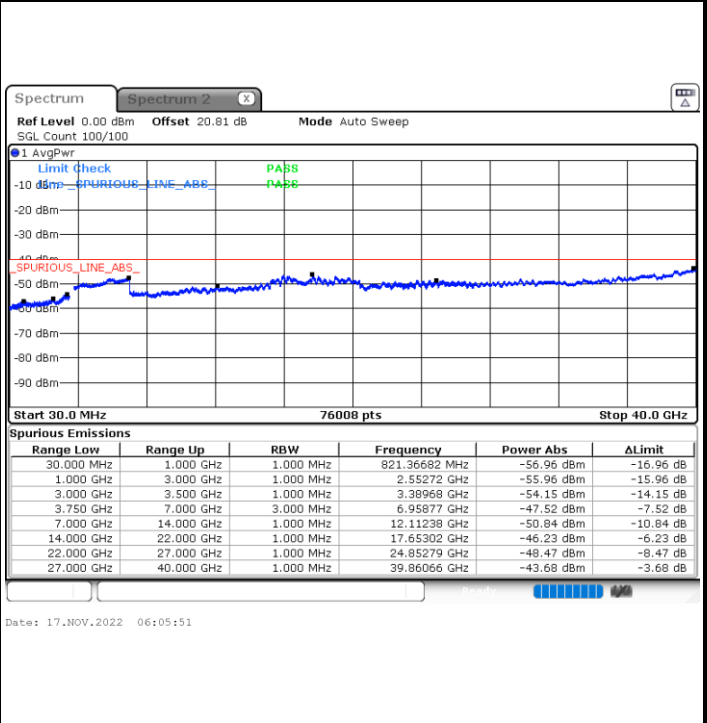


FR1 Part 96 N48 / 40MHz / DFT-S OFDM / 64QAM

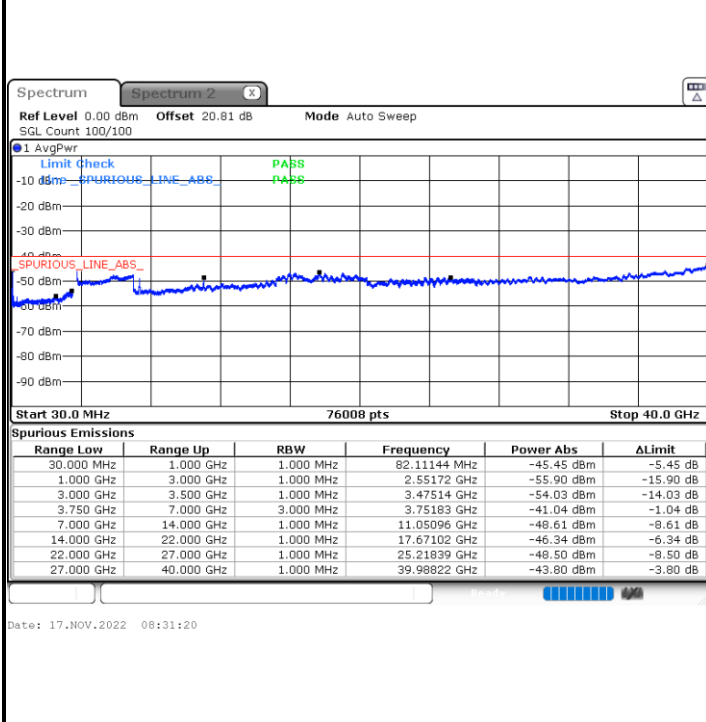
Lowest Channel / FULL



Middle Channel / FULL



Highest Channel / FULL



N/A

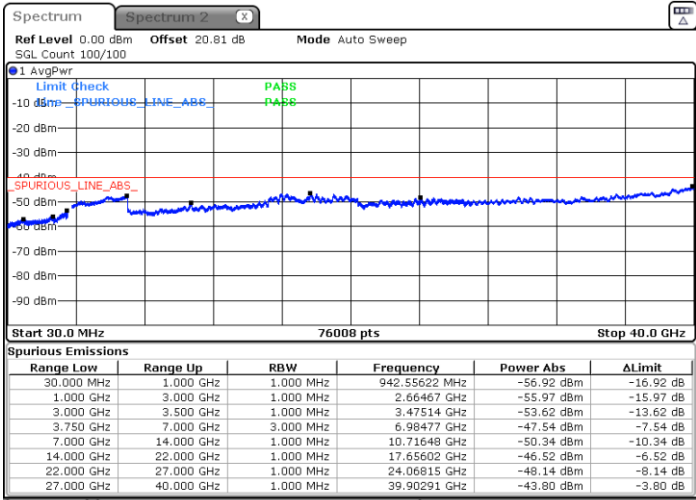
N/A



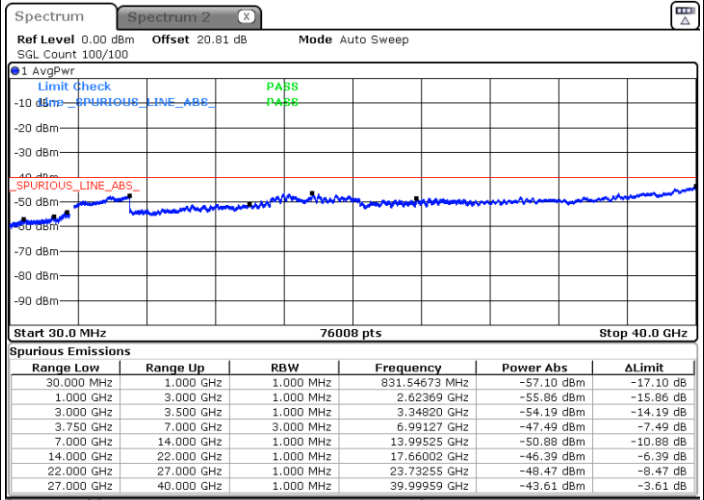
FR1 Part 96 N48 / 40MHz / DFT-S OFDM / 256QAM

Lowest Channel / FULL

Middle Channel / FULL



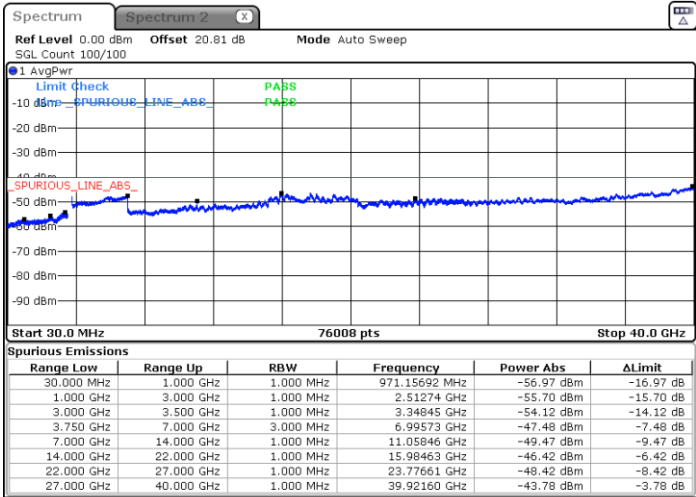
Date: 17.NOV.2022 09:19:30



Date: 17.NOV.2022 09:29:55

Highest Channel / FULL

N/A



Date: 17.NOV.2022 10:05:23

N/A



Frequency Stability

Test Conditions		FR1 n48 (256QAM) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 20MHz	Note 2.
		Deviation (ppm)	Result
50	Normal Voltage	0.0020	PASS
40	Normal Voltage	0.0030	
30	Normal Voltage	0.0021	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0005	
0	Normal Voltage	0.0011	
-10	Normal Voltage	0.0007	
-20	Normal Voltage	0.0001	
-30	Normal Voltage	0.0012	
20	Maximum Voltage	0.0033	
20	Normal Voltage	0.0021	
20	Battery End Point	0.0001	

Note:

1. Normal Voltage =12V. ; Battery End Point (BEP) =11.4 V. ; Maximum Voltage =12.6V.
2. Note: The frequency fundamental emissions stay within the authorized frequency block.



Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

Test Engineer :	Peng	Temperature :	23~25°C
		Relative Humidity :	41~42%

<n48 SA mode>

SA n48 / NR 40MHz /64QAM - Internal Antenna with Adapter mode								
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)
Middle	7212	-61.91	-40	-21.91	-73.37	2.84	14.30	H
	10824	-60.06	-40	-20.06	-70.00	3.49	13.43	H
	14430	-60.50	-40	-20.50	-70.74	3.85	14.09	H
	7212	-62.15	-40	-22.15	-73.61	2.84	14.30	V
	10824	-59.84	-40	-19.84	-69.78	3.49	13.43	V
	14430	-60.49	-40	-20.49	-70.73	3.85	14.09	V

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

SA n48 / NR 40MHz /64QAM - External Antenna with Adapter mode								
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)
Middle	7212	-62.25	-40	-22.25	-73.71	2.84	14.30	H
	10824	-60.26	-40	-20.26	-70.20	3.49	13.43	H
	14430	-59.89	-40	-19.89	-70.13	3.85	14.09	H
	7212	-62.58	-40	-22.58	-74.04	2.84	14.30	V
	10824	-60.56	-40	-20.56	-70.50	3.49	13.43	V
	14430	-60.76	-40	-20.76	-71.00	3.85	14.09	V

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

SA n48 / NR 40MHz /64QAM - Internal Antenna with POE mode								
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)
Middle	7212	-62.07	-40	-22.07	-73.53	2.84	14.30	H
	10824	-59.86	-40	-19.86	-69.80	3.49	13.43	H
	14430	-60.86	-40	-20.86	-71.10	3.85	14.09	H
	7212	-62.02	-40	-22.02	-73.48	2.84	14.30	V
	10824	-60.00	-40	-20.00	-69.94	3.49	13.43	V
	14430	-60.75	-40	-20.75	-70.99	3.85	14.09	V

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



<LTE Band 66 + n48 Simultaneous mode>

LTE Band66 + n48 / LTE 10MHz + NR 40MHz / 64QAM - Internal Antenna with Adapter mode								
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)
Middle	7212	-62.55	-40	-22.55	-74.01	2.84	14.30	H
	10824	-60.36	-40	-20.36	-70.30	3.49	13.43	H
	14430	-60.92	-40	-20.92	-71.16	3.85	14.09	H
	7212	-62.44	-40	-22.44	-73.90	2.84	14.30	V
	10824	-60.74	-40	-20.74	-70.68	3.49	13.43	V
	14430	-60.90	-40	-20.90	-71.14	3.85	14.09	V

Remark:

1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line.
2. LTE Band 66 + n48 Simultaneous mode also cover the LTE Band 4 + n48 Simultaneous mode.

LTE Band66 + n48 / LTE 10MHz + NR 40MHz / 64QAM - External Antenna with Adapter mode								
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)
Middle	7212	-62.29	-40	-22.29	-73.75	2.84	14.30	H
	10824	-60.16	-40	-20.16	-70.10	3.49	13.43	H
	14430	-60.88	-40	-20.88	-71.12	3.85	14.09	H
	7212	-61.90	-40	-21.90	-73.36	2.84	14.30	V
	10824	-60.00	-40	-20.00	-69.94	3.49	13.43	V
	14430	-60.90	-40	-20.90	-71.14	3.85	14.09	V

Remark:

1. Spurious emissions within 30-1000MHz were found more than 20dB below limit line.
2. LTE Band 66 + n48 Simultaneous mode also cover the LTE Band 4 + n48 Simultaneous mode.



<LTE Band 13 + n48 Simultaneous mode>

LTE Band13 + n48 / LTE 10MHz + NR 40MHz / 64QAM - Internal Antenna with Adapter mode								
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)
Middle	7212	-62.21	-40	-22.21	-73.67	2.84	14.30	H
	10824	-60.75	-40	-20.75	-70.69	3.49	13.43	H
	14430	-60.50	-40	-20.50	-70.74	3.85	14.09	H
	7212	-62.65	-40	-22.65	-74.11	2.84	14.30	V
	10824	-60.71	-40	-20.71	-70.65	3.49	13.43	V
	14430	-60.54	-40	-20.54	-70.78	3.85	14.09	V

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

LTE Band13 + n48 / LTE 10MHz + NR 40MHz / 64QAM - External Antenna with Adapter mode								
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)
Middle	7212	-61.96	-40	-21.96	-73.42	2.84	14.30	H
	10824	-60.24	-40	-20.24	-70.18	3.49	13.43	H
	14430	-60.62	-40	-20.62	-70.86	3.85	14.09	H
	7212	-62.34	-40	-22.34	-73.80	2.84	14.30	V
	10824	-60.33	-40	-20.33	-70.27	3.49	13.43	V
	14430	-60.35	-40	-20.35	-70.59	3.85	14.09	V

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