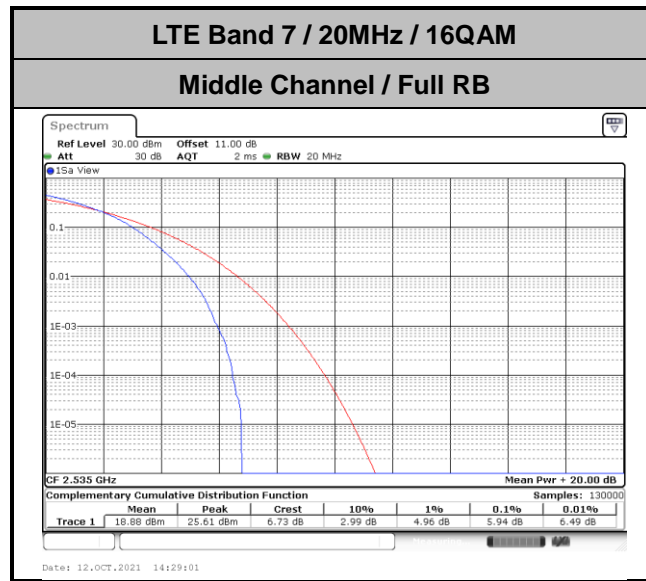




# LTE Band 7

## Peak-to-Average Ratio

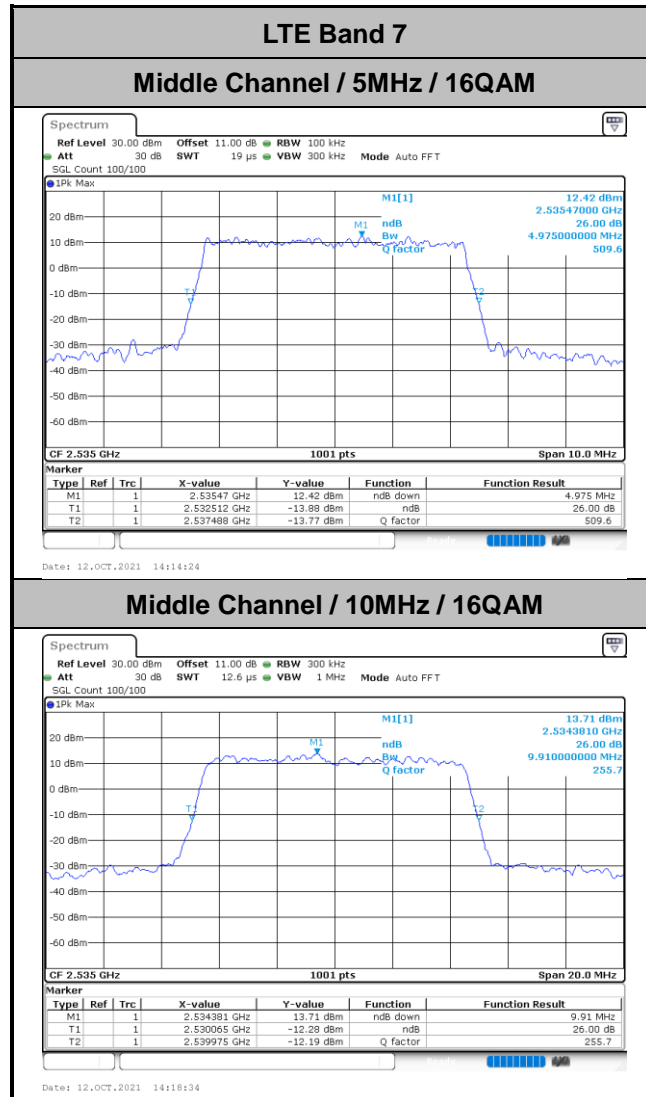
Mode	LTE Band 7 / 20MHz				
Mod.	QPSK	16QAM	64QAM	256QAM	Limit: 13dB
RB Size	Full RB	Full RB	Full RB	Full RB	Result
Middle CH	-	5.94	-	-	PASS



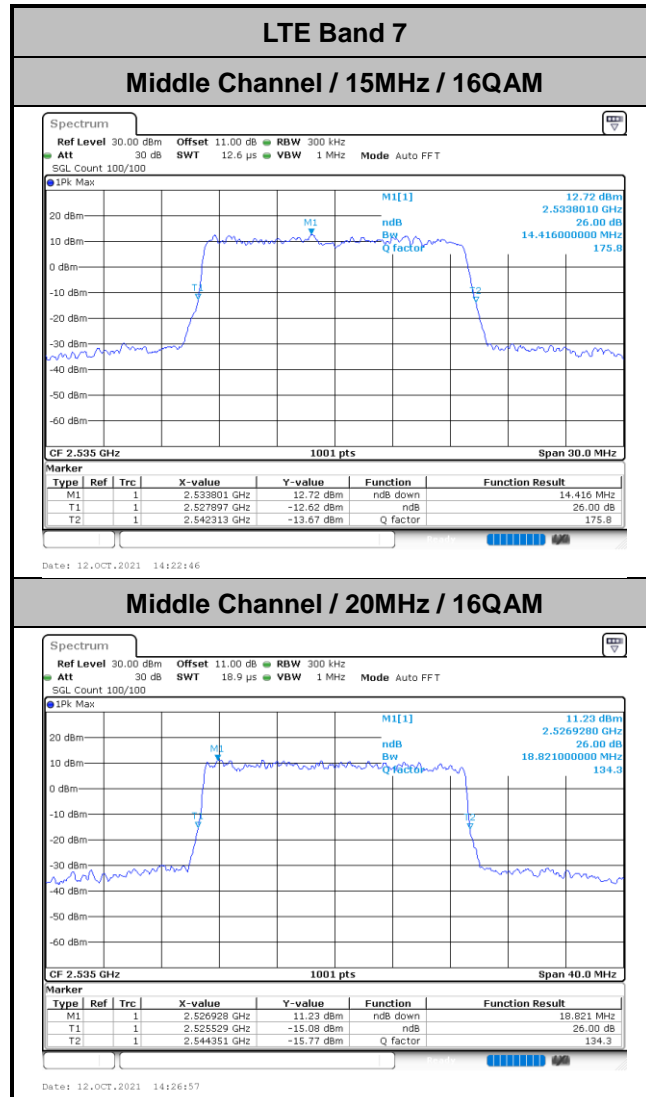


## 26dB Bandwidth

Mode	LTE Band 7 : 26dB BW(MHz)											
	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	-	-	-	-	-	4.98	-	9.91	-	14.42	-	18.82



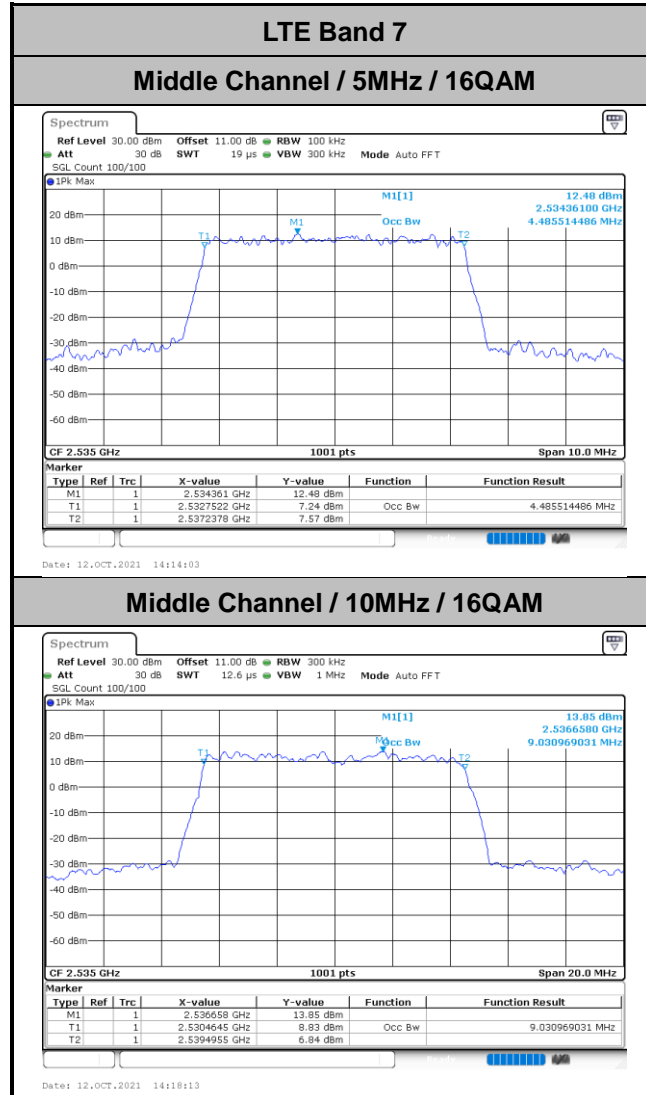
### Middle Channel / 10MHz / 16QAM

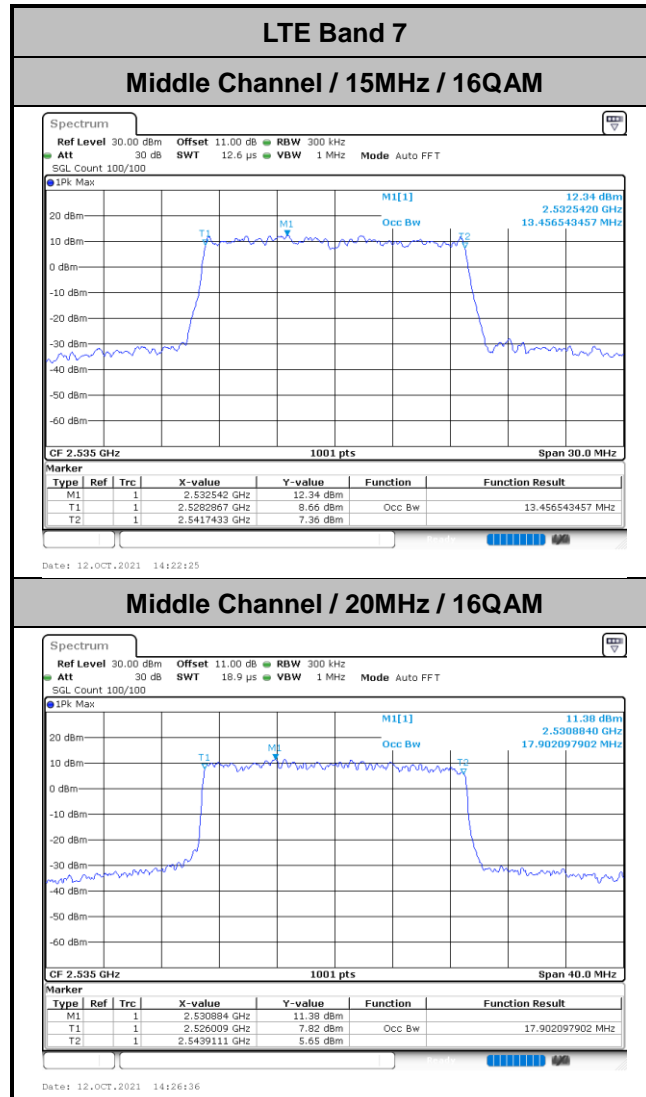




# Occupied Bandwidth

Mode	LTE Band 7 : 99%OBW(MHz)											
BW	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	-	-	-	-	-	4.49	-	9.03	-	13.46	-	17.90



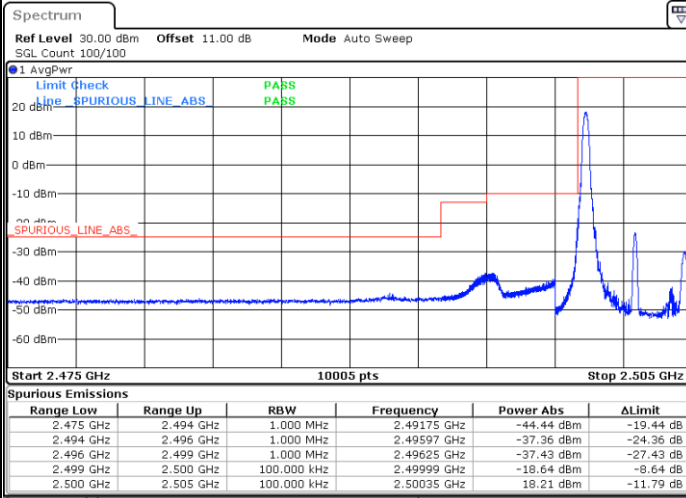




# Conducted Band Edge

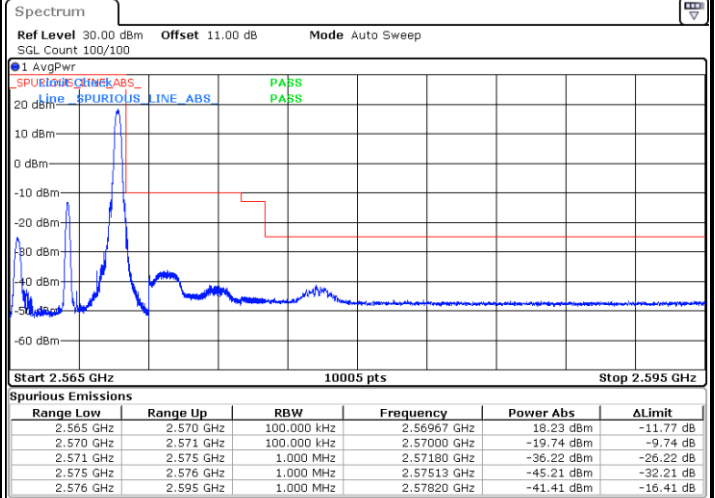
## LTE Band 7 / 5MHz / 16QAM

### Lowest Band Edge / 1RB



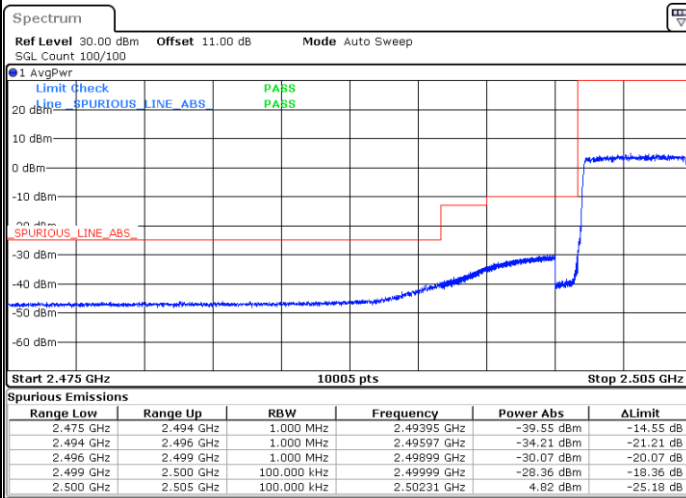
Date: 12.OCT.2021 14:12:49

### Highest Band Edge / 1 RB



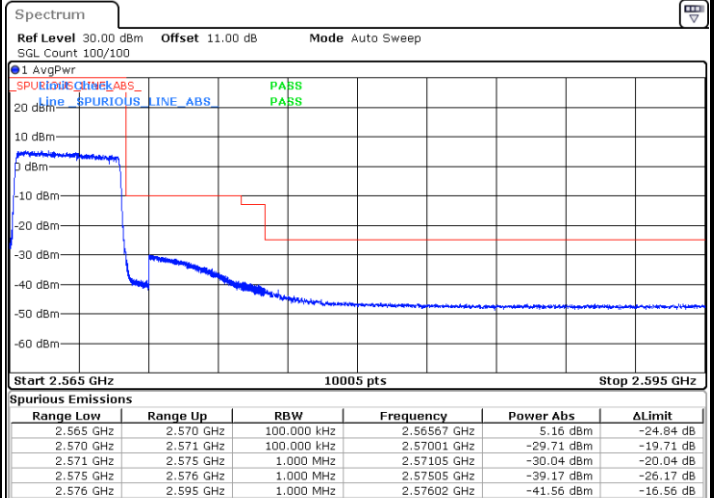
Date: 12.OCT.2021 14:15:15

### Lowest Band Edge / Full RB



Date: 12.OCT.2021 14:13:41

### Highest Band Edge / Full RB

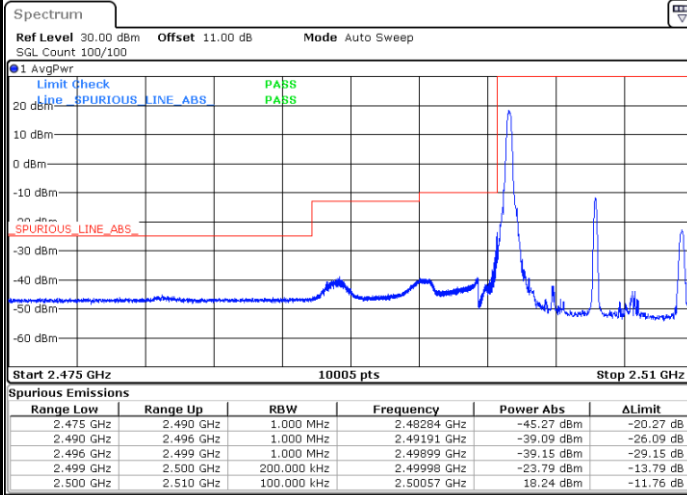


Date: 12.OCT.2021 14:16:07



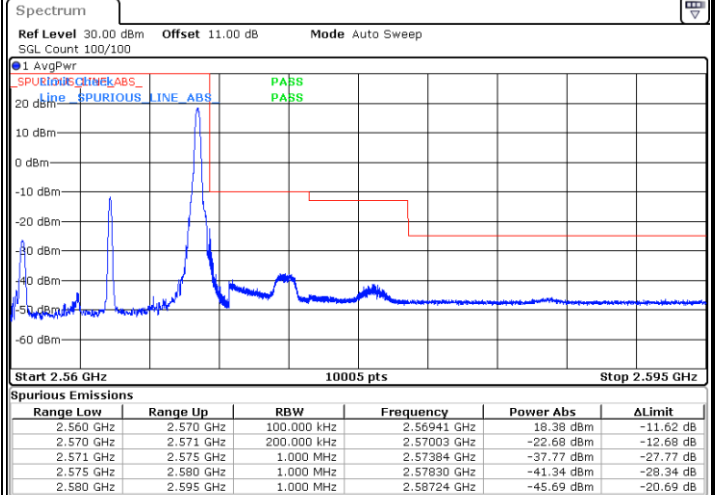
LTE Band 7 / 10MHz / 16QAM

Lowest Band Edge / 1 RB



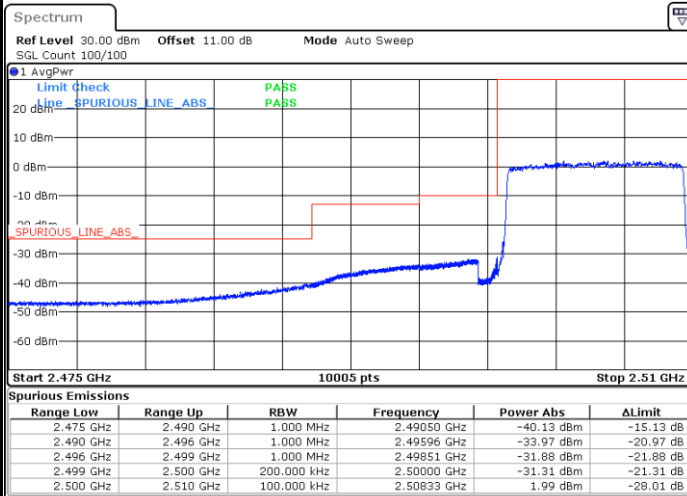
Date: 12.OCT.2021 14:17:00

Highest Band Edge / 1 RB



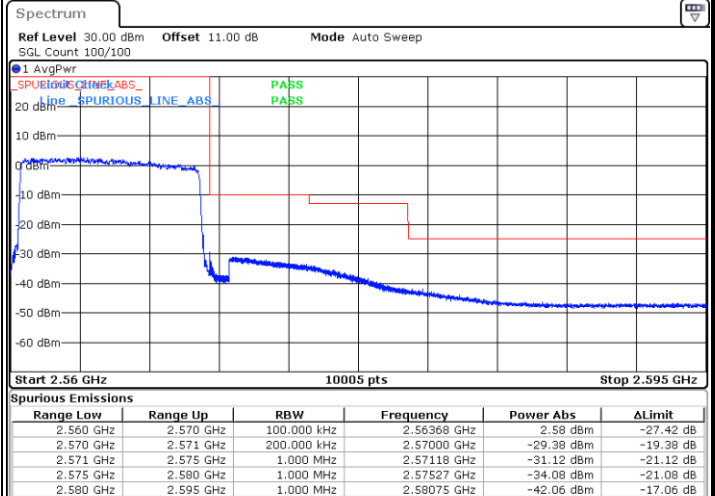
Date: 12.OCT.2021 14:19:25

Lowest Band Edge / Full RB



Date: 12.OCT.2021 14:17:51

Highest Band Edge / Full RB

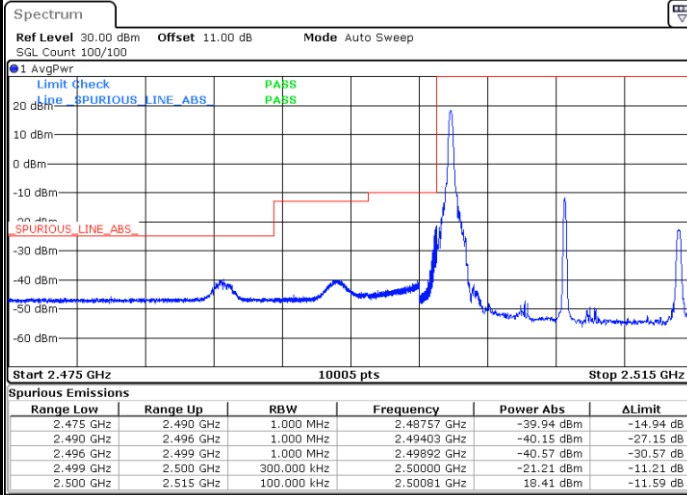


Date: 12.OCT.2021 14:20:17



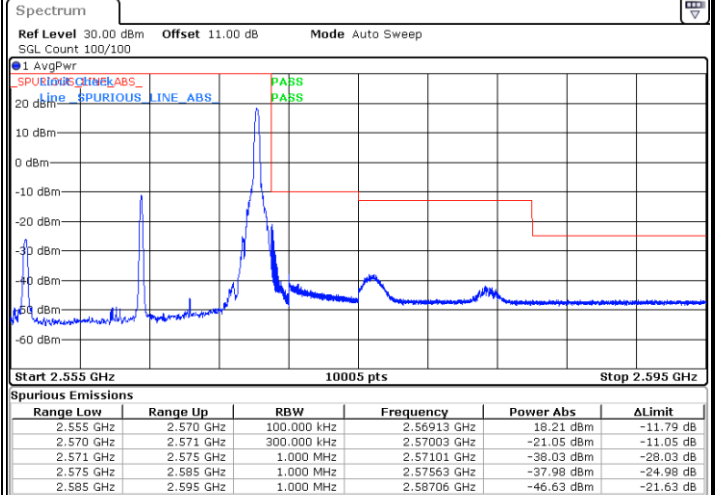
LTE Band 7 / 15MHz / 16QAM

Lowest Band Edge / 1 RB



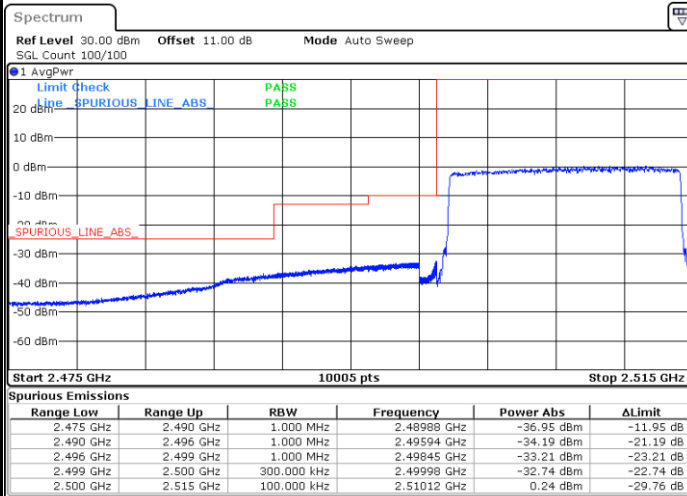
Date: 12.OCT.2021 14:21:10

Highest Band Edge / 1 RB



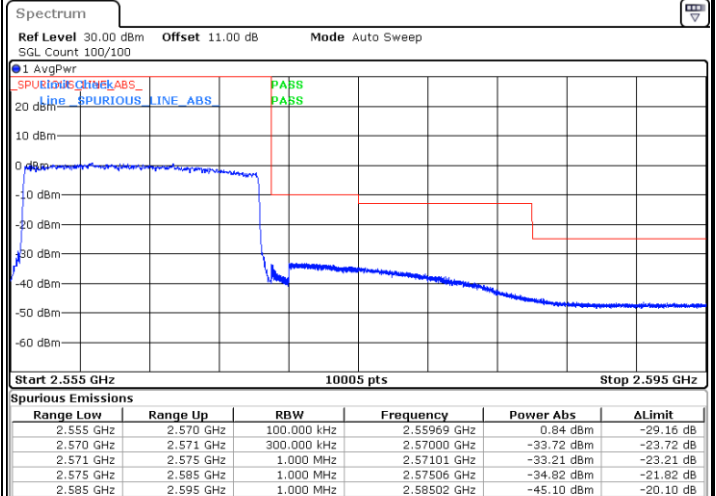
Date: 12.OCT.2021 14:23:36

Lowest Band Edge / Full RB



Date: 12.OCT.2021 14:22:02

Highest Band Edge / Full RB



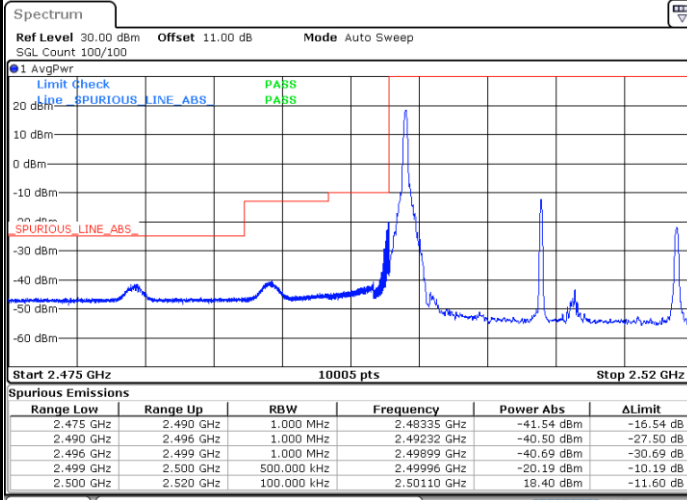
Date: 12.OCT.2021 14:24:29





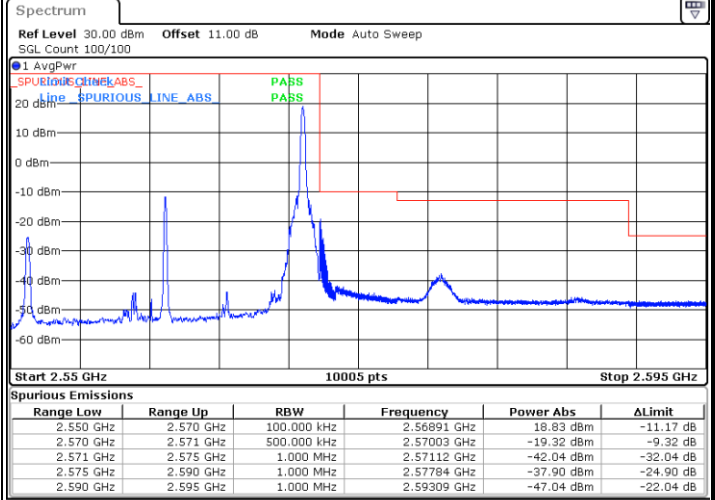
LTE Band 7 / 20MHz / 16QAM

Lowest Band Edge / 1 RB



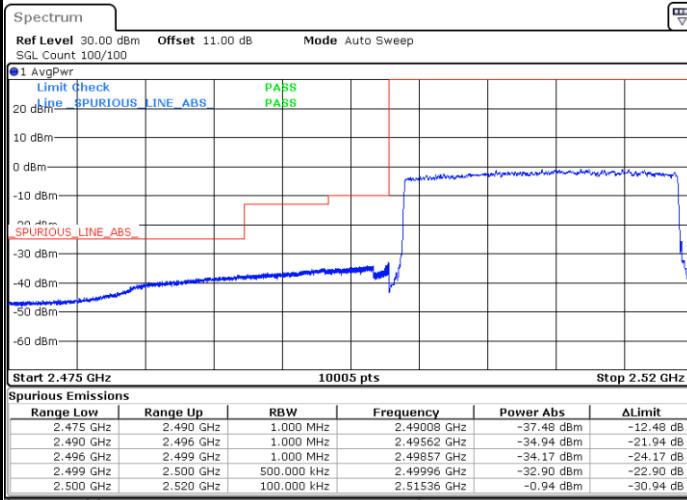
Date: 12.OCT.2021 14:25:21

Highest Band Edge / 1 RB



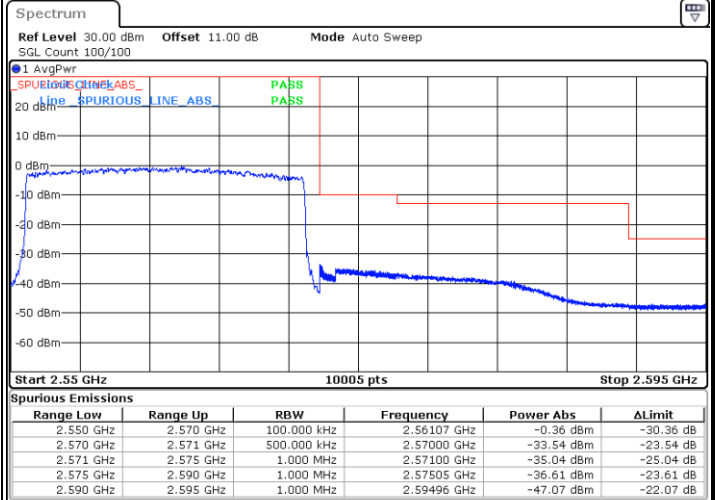
Date: 12.OCT.2021 14:27:48

Lowest Band Edge / Full RB



Date: 12.OCT.2021 14:26:14

Highest Band Edge / Full RB



Date: 12.OCT.2021 14:28:39



### Frequency Stability

Test Conditions		LTE Band 7 (16QAM) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 10MHz	Note 2.
		Deviation (ppm)	Result
50	Normal Voltage	0.0006	PASS
40	Normal Voltage	0.0003	
30	Normal Voltage	0.0000	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0023	
0	Normal Voltage	0.0022	
-10	Normal Voltage	0.0007	
-20	Normal Voltage	0.0009	
-30	Normal Voltage	0.0002	
20	Maximum Voltage	0.0004	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0002	

**Note:**

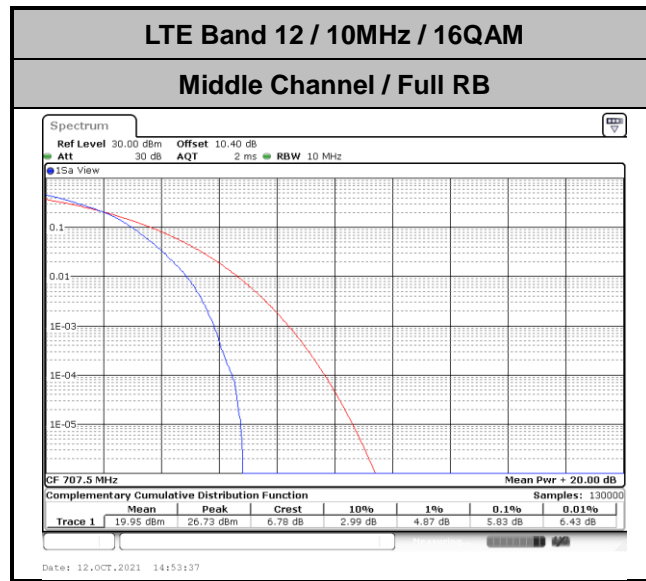
- 1. Normal Voltage =12 V. ; Battery End Point (BEP) =14 V. ; Maximum Voltage =16 V.
- 2. The frequency fundamental emissions stay within the authorized frequency block.



# LTE Band 12

## Peak-to-Average Ratio

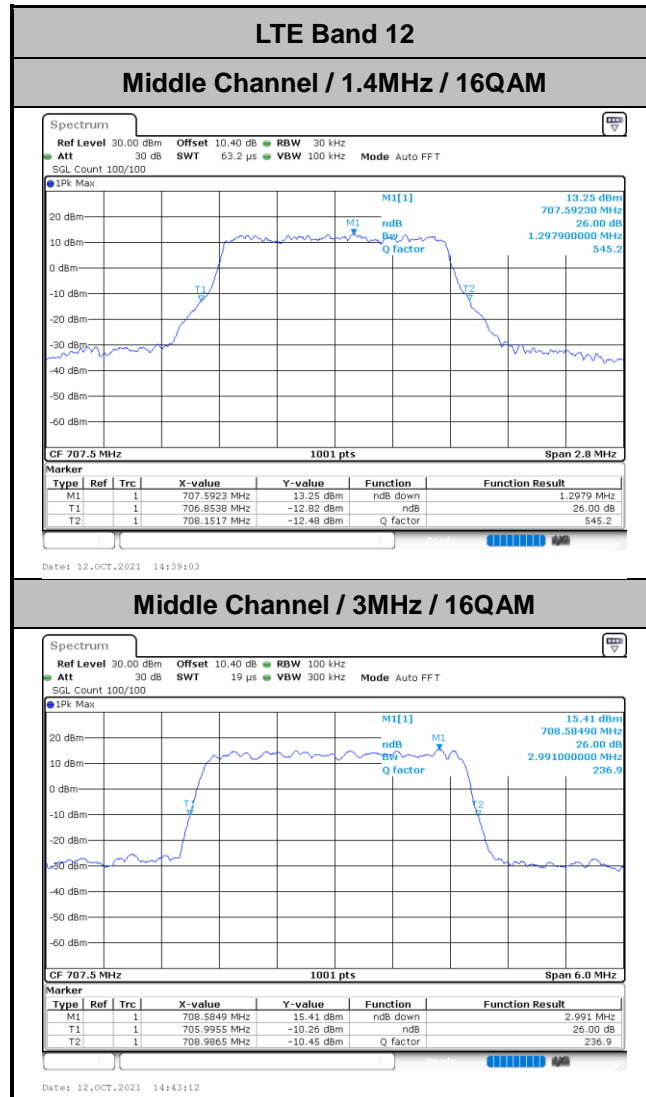
Mode	LTE Band 12 / 10MHz				
Mod.	QPSK	16QAM	64QAM	256QAM	Limit: 13dB
RB Size	Full RB	Full RB	Full RB	Full RB	Result
Middle CH	-	5.83	-	-	PASS



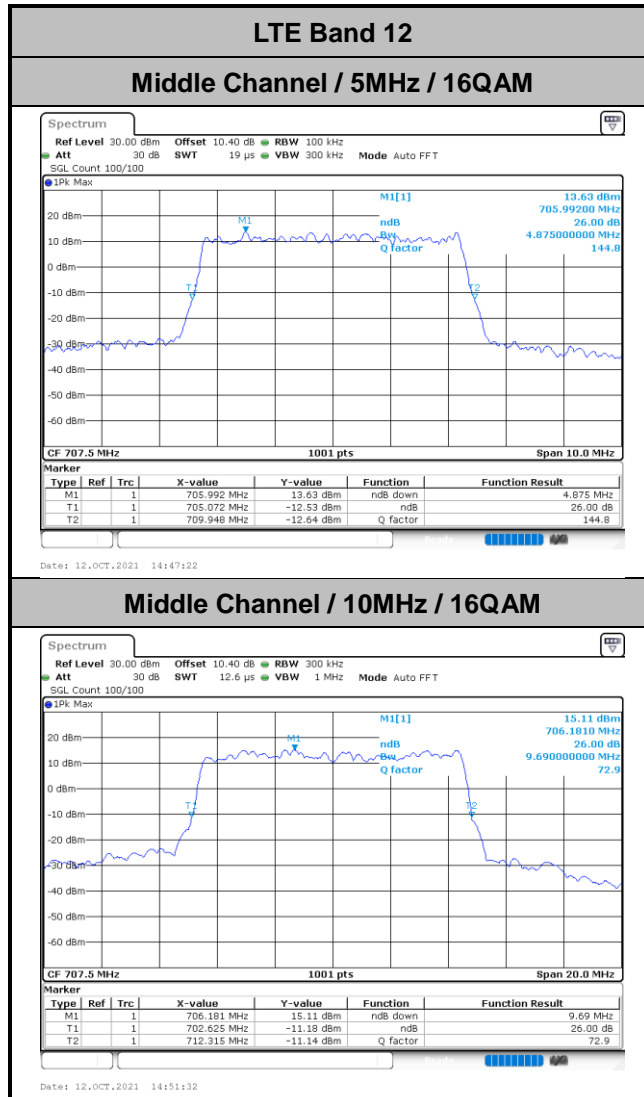


## 26dB Bandwidth

Mode	LTE Band 12 : 26dB BW(MHz)											
	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	-	1.30	-	2.99	-	4.88	-	9.69	-	-	-	-



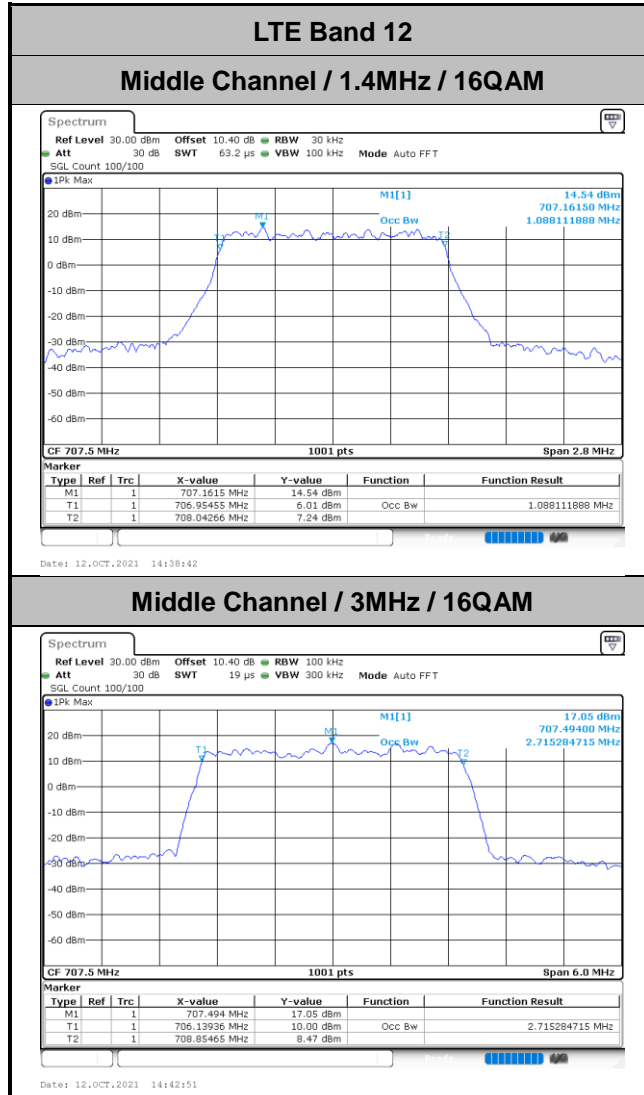
### Middle Channel / 3MHz / 16QAM

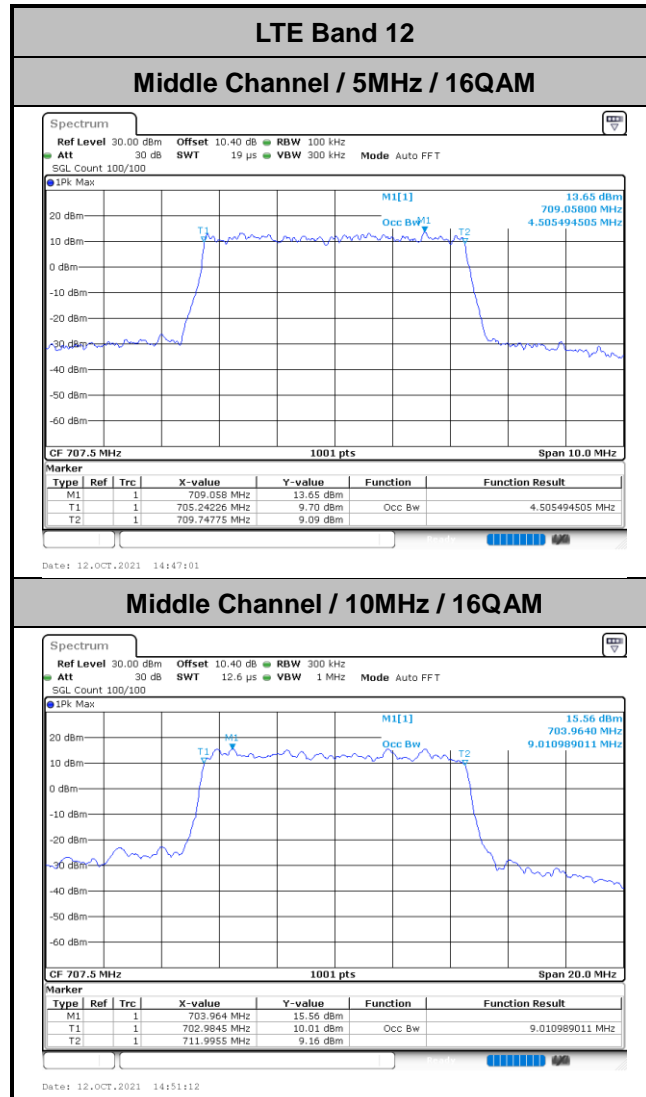




# Occupied Bandwidth

Mode	LTE Band 12 : 99%OBW(MHz)											
	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz	
Mod.	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM	QPSK	16QAM
Middle CH	-	1.09	-	2.72	-	4.51	-	9.01	-	-	-	-



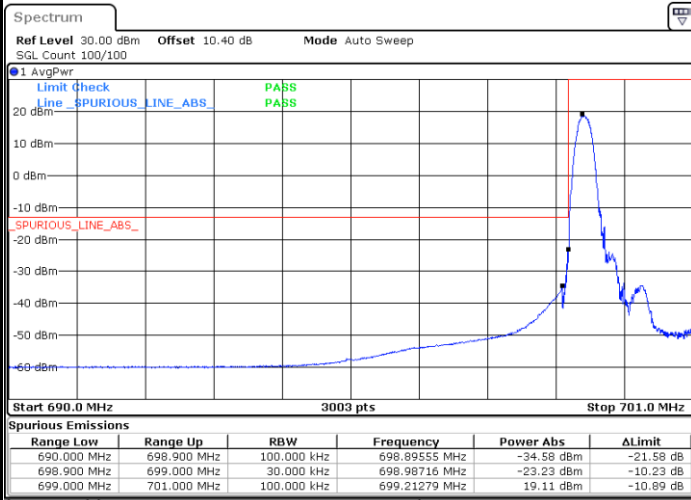




# Conducted Band Edge

## LTE Band 12 / 1.4MHz / 16QAM

### Lowest Band Edge / 1 RB



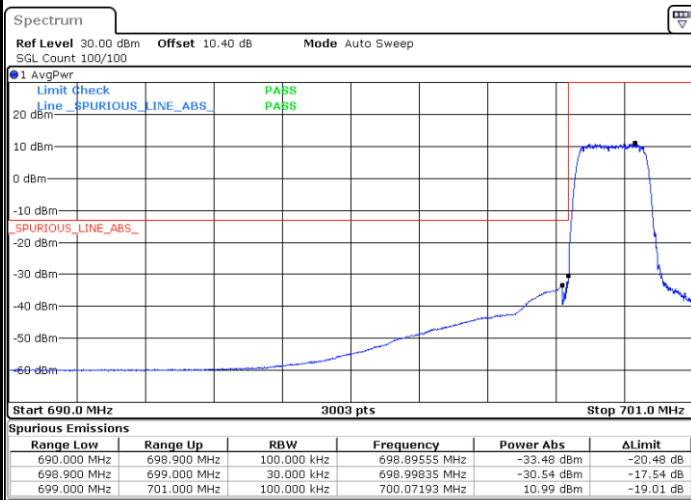
Date: 12.OCT.2021 14:38:21

### Highest Band Edge / 1 RB



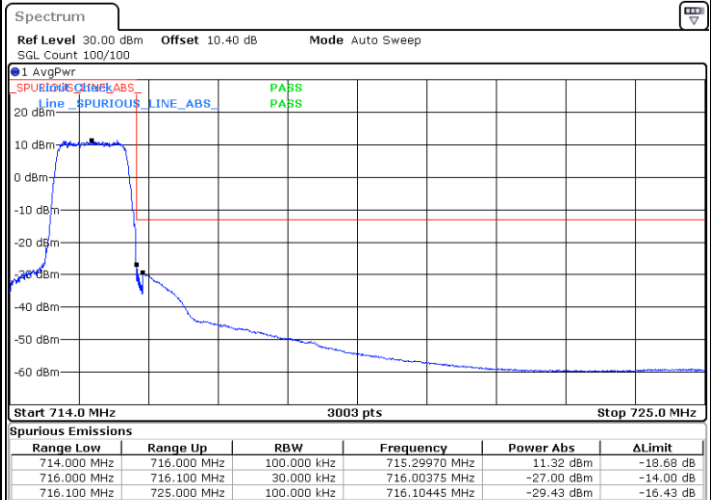
Date: 12.OCT.2021 14:40:46

### Lowest Band Edge / Full RB



Date: 12.OCT.2021 14:37:29

### Highest Band Edge / Full RB



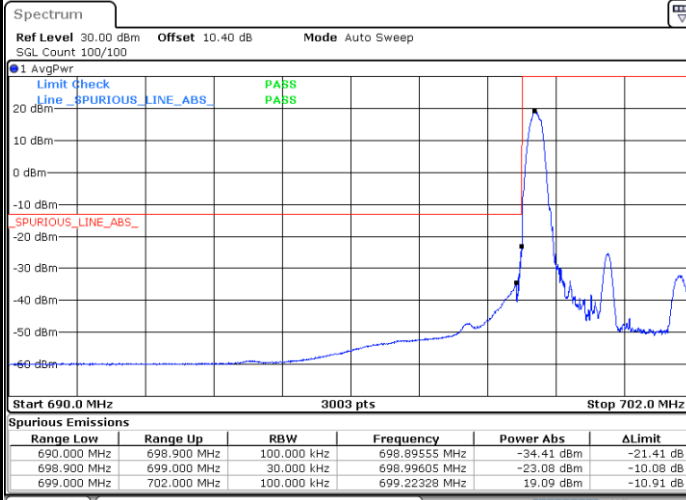
Date: 12.OCT.2021 14:39:54





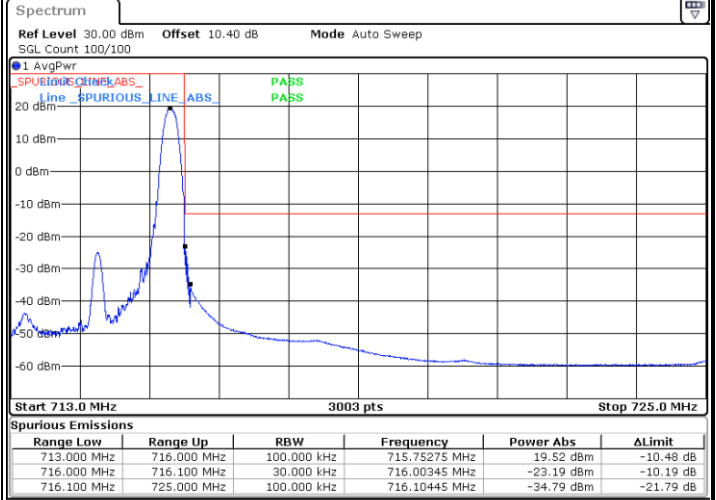
LTE Band 12 / 3MHz / 16QAM

Lowest Band Edge / 1 RB



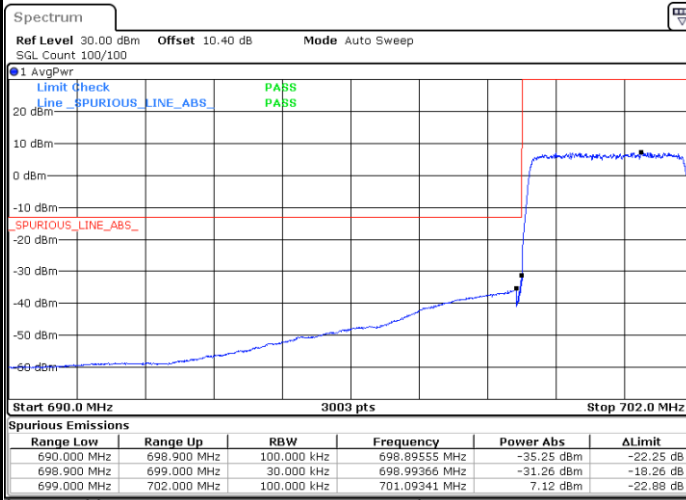
Date: 12.OCT.2021 14:42:29

Highest Band Edge / 1 RB



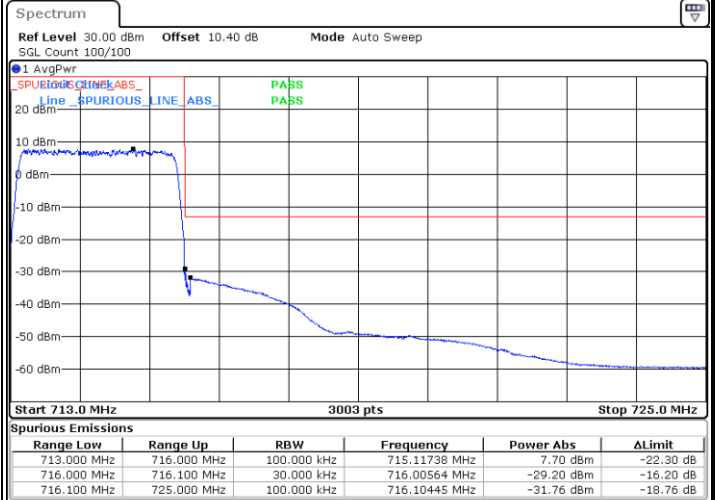
Date: 12.OCT.2021 14:44:55

Lowest Band Edge / Full RB



Date: 12.OCT.2021 14:41:38

Highest Band Edge / Full RB

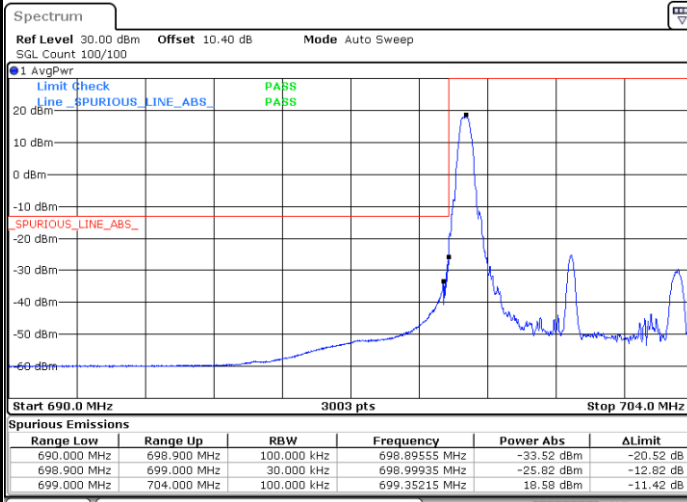


Date: 12.OCT.2021 14:44:03



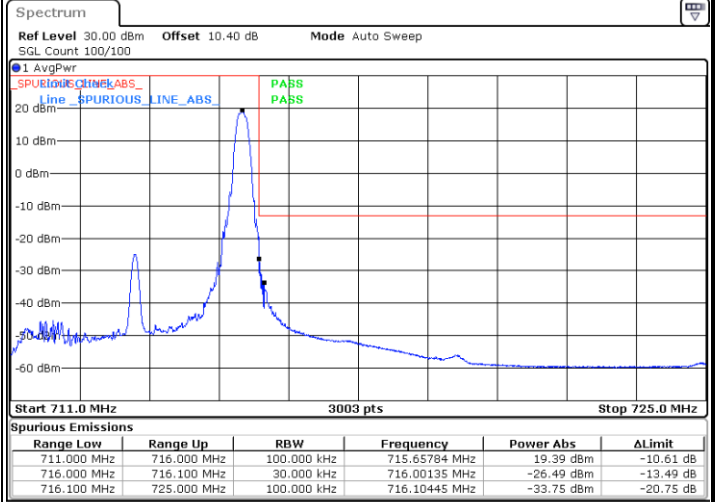
LTE Band 12 / 5MHz / 16QAM

Lowest Band Edge / 1RB



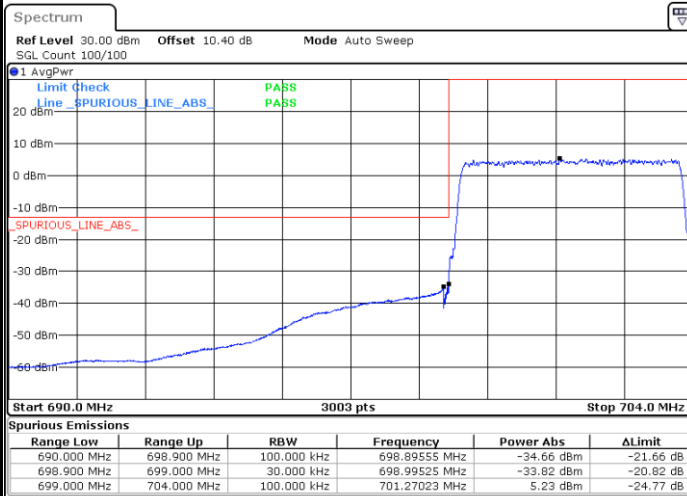
Date: 12.OCT.2021 14:46:39

Highest Band Edge / 1 RB



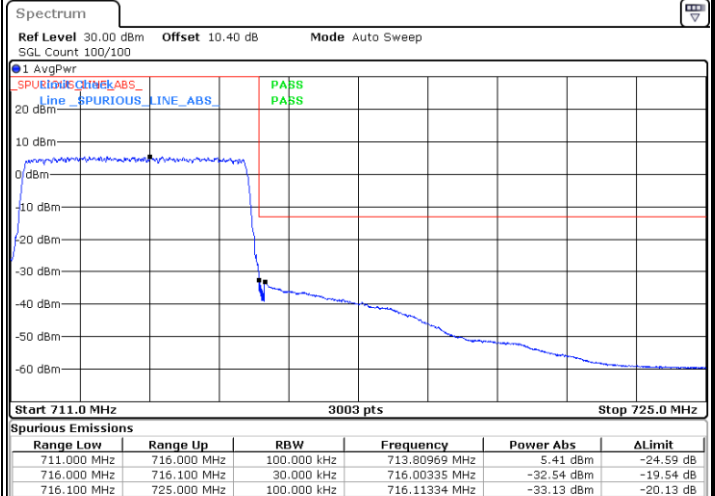
Date: 12.OCT.2021 14:49:04

Lowest Band Edge / Full RB



Date: 12.OCT.2021 14:45:47

Highest Band Edge / Full RB

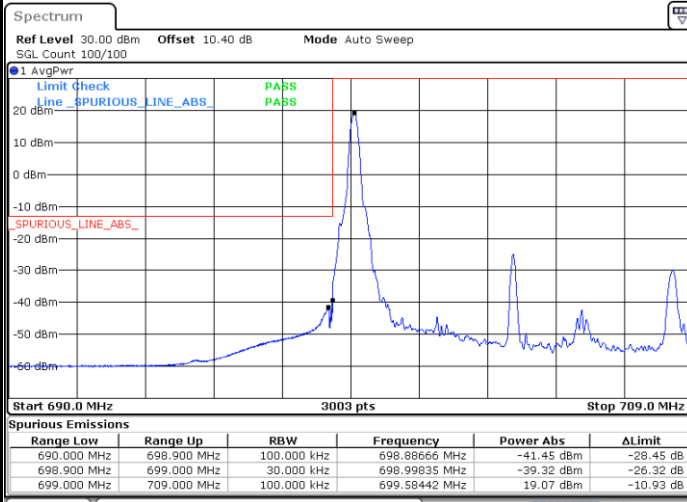


Date: 12.OCT.2021 14:48:12



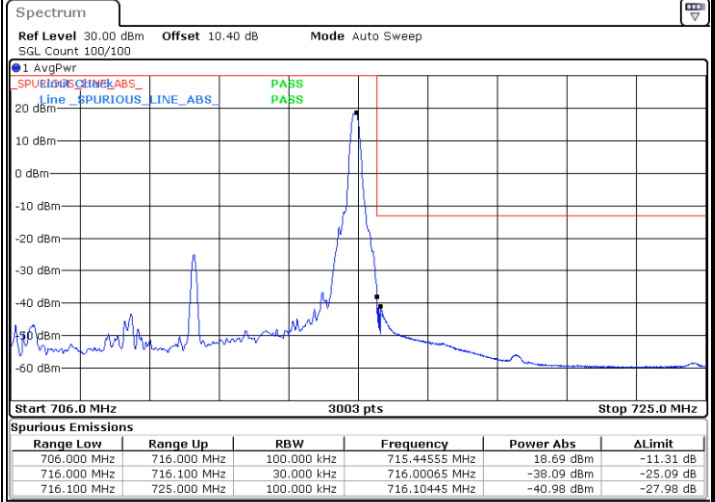
LTE Band 12 / 10MHz / 16QAM

Lowest Band Edge / 1 RB



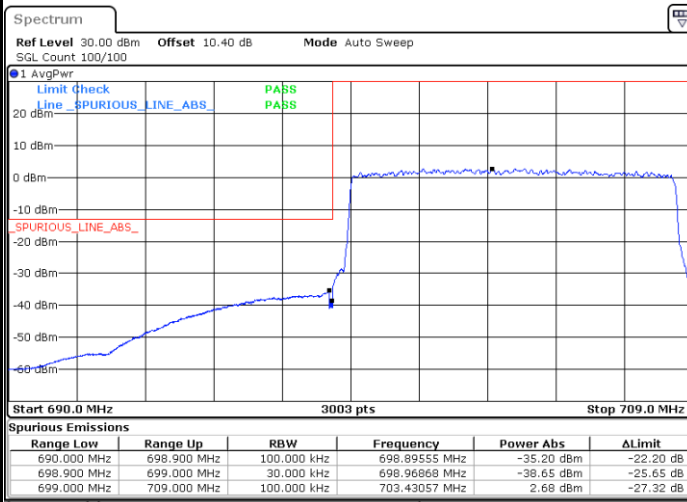
Date: 12.OCT.2021 14:50:48

Highest Band Edge / 1 RB



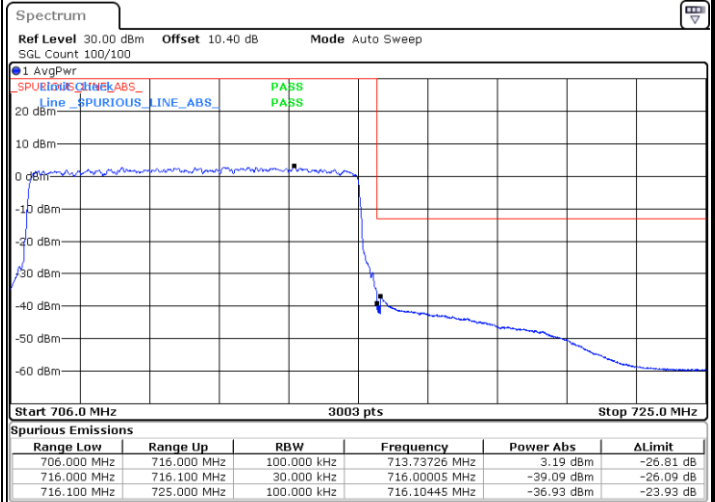
Date: 12.OCT.2021 14:53:15

Lowest Band Edge / Full RB



Date: 12.OCT.2021 14:49:57

Highest Band Edge / Full RB



Date: 12.OCT.2021 14:52:22



### Frequency Stability

Test Conditions		LTE Band 12 (16QAM) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 10MHz	Note 2.
		Deviation (ppm)	Result
50	Normal Voltage	0.0013	PASS
40	Normal Voltage	0.0008	
30	Normal Voltage	0.0027	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0028	
0	Normal Voltage	0.0024	
-10	Normal Voltage	0.0034	
-20	Normal Voltage	0.0004	
-30	Normal Voltage	0.0007	
20	Maximum Voltage	0.0018	
20	Normal Voltage	0.0000	
20	Battery End Point	0.0011	

**Note:**

1. Normal Voltage =12 V. ; Battery End Point (BEP) =14 V. ; Maximum Voltage =16 V.
2. The frequency fundamental emissions stay within the authorized frequency block.



## Appendix B. Test Results of Radiated Test

### LTE Band 2

LTE Band 2 / 20MHz / 16QAM									
Channel	Frequency ( MHz )	EIRP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3721	-52.49	-13	-39.49	-72.43	-62.77	1.98	12.27	H
	5579	-53.43	-13	-40.43	-76.34	-63.60	2.14	12.31	H
	7439	-48.77	-13	-35.77	-76.19	-56.73	2.15	10.11	H
									H
									H
									H
									H
	3721	-48.13	-13	-35.13	-68.59	-58.41	1.98	12.27	V
	5579	-52.46	-13	-39.46	-76.01	-62.63	2.14	12.31	V
	7439	-48.66	-13	-35.66	-76	-56.62	2.15	10.11	V
									V
									V
									V
									V
Middle	3760	-51.05	-13	-38.05	-71.1	-61.29	2.01	12.24	H
	5640	-52.86	-13	-39.86	-75.92	-63.13	2.12	12.40	H
	7520	-48.65	-13	-35.65	-75.72	-56.61	2.11	10.07	H
									H
									H
									H
									H
	3760	-46.16	-13	-33.16	-66.71	-56.40	2.01	12.24	V
	5640	-52.54	-13	-39.54	-76.23	-62.81	2.12	12.40	V
	7520	-48.92	-13	-35.92	-75.89	-56.88	2.11	10.07	V
									V
									V
									V
									V
								V	



Highest	3799	-51.43	-13	-38.43	-71.57	-61.63	2.03	12.22	H
	5699	-52.62	-13	-39.62	-75.98	-62.99	2.11	12.48	H
	7599	-49.26	-13	-36.26	-75.74	-57.50	2.11	10.36	H
									H
									H
									H
									H
	3799	-48.90	-13	-35.90	-69.52	-59.10	2.03	12.22	V
	5699	-52.19	-13	-39.19	-76.12	-62.56	2.11	12.48	V
	7599	-48.74	-13	-35.74	-75.25	-56.98	2.11	10.36	V
									V
									V
									V
									V

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



**LTE Band 4**

LTE Band 4 / 20MHz / 16QAM									
Channel	Frequency ( MHz )	EIRP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3422	-49.83	-13	-36.83	-68.12	-60.19	1.81	12.17	H
	5133	-51.70	-13	-38.70	-74.35	-61.52	2.31	12.13	H
	6844	-48.86	-13	-35.86	-74.41	-57.55	2.37	11.06	H
									H
									H
									H
									H
	3422	-43.54	-13	-30.54	-62.46	-53.90	1.81	12.17	V
	5133	-44.29	-13	-31.29	-67.51	-54.11	2.31	12.13	V
	6844	-45.97	-13	-32.97	-72.07	-54.66	2.37	11.06	V
									V
									V
									V
									V
Middle	3448	-46.52	-13	-33.52	-65.06	-56.94	1.83	12.24	H
	5170	-50.82	-13	-37.82	-73.49	-60.66	2.29	12.13	H
	6892	-48.76	-13	-35.76	-74.44	-57.38	2.38	11.01	H
									H
									H
									H
									H
	3448	-40.28	-13	-27.28	-59.39	-50.70	1.83	12.24	V
	5170	-42.76	-13	-29.76	-65.99	-52.60	2.29	12.13	V
	6892	-45.49	-13	-32.49	-71.76	-54.11	2.38	11.01	V
									V
									V
									V
									V
								V	



Highest	3472	-48.06	-13	-35.06	-66.8	-58.53	1.85	12.32	H
	5208	-54.36	-13	-41.36	-77.06	-64.23	2.27	12.14	H
	6944	-50.55	-13	-37.55	-76.37	-59.11	2.40	10.96	H
									H
									H
									H
									H
	3472	-40.96	-13	-27.96	-60.22	-51.43	1.85	12.32	V
	5208	-48.78	-13	-35.78	-72.02	-58.65	2.27	12.14	V
	6944	-48.49	-13	-35.49	-74.94	-57.05	2.40	10.96	V
									V
									V
									V
									V

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





**LTE Band 5**

LTE Band 5 / 10MHz / 16QAM									
Channel	Frequency ( MHz )	EIRP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1649	-48.32	-13	-35.32	-60.54	-53.71	1.23	8.77	H
	2474	-50.21	-13	-37.21	-66.37	-57.10	1.44	10.48	H
	3298	-58.21	-13	-45.21	-76.21	-66.15	1.70	11.79	H
									H
									H
									H
									H
	1649	-54.46	-13	-41.46	-66.56	-59.85	1.23	8.77	V
	2474	-55.58	-13	-42.58	-72.03	-62.47	1.44	10.48	V
	3298	-57.86	-13	-44.86	-76.26	-65.80	1.70	11.79	V
									V
									V
									V
									V
Middle	1664	-54.64	-13	-41.64	-66.92	-60.08	1.23	8.82	H
	2496	-58.44	-13	-45.44	-74.53	-65.35	1.44	10.50	H
	4160	-54.57	-13	-41.57	-74.13	-62.44	2.08	12.10	H
									H
									H
									H
									H
	1664	-58.45	-13	-45.45	-70.61	-63.89	1.23	8.82	V
	2496	-57.53	-13	-44.53	-73.83	-64.44	1.44	10.50	V
	4160	-55.55	-13	-42.55	-75.74	-63.42	2.08	12.10	V
									V
									V
									V
									V



Highest	1680	-59.97	-13	-46.97	-72.3	-65.47	1.24	8.88	H
	2520	-56.93	-13	-43.93	-73.01	-63.86	1.44	10.52	H
	4200	-53.96	-13	-40.96	-73.47	-61.84	2.07	12.10	H
									H
									H
									H
									H
	1680	-60.67	-13	-47.67	-72.9	-66.17	1.24	8.88	V
	2520	-57.77	-13	-44.77	-73.98	-64.69	1.44	10.52	V
	4200	-54.57	-13	-41.57	-74.76	-62.45	2.07	12.10	V
									V
									V
									V
									V

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



**LTE Band 7**

LTE Band 7 / 20MHz / 16QAM									
Channel	Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	5019	-51.59	-25	-26.59	-44.92	-61.34	2.35	12.10	H
	7529	-61.05	-25	-36.05	-59.33	-69.04	2.11	10.10	H
	10040	-59.30	-25	-34.30	-61.87	-69.25	1.86	11.82	H
									H
									H
									H
									H
	5019	-42.51	-25	-17.51	-36.45	-52.26	2.35	12.10	V
	7529	-58.86	-25	-33.86	-57.04	-66.85	2.11	10.10	V
	10040	-59.88	-25	-34.88	-61.6	-69.83	1.86	11.82	V
									V
									V
									V
									V
Middle	5070	-56.23	-25	-31.23	-49.69	-66.01	2.33	12.11	H
	7605	-62.25	-25	-37.25	-60.06	-70.51	2.11	10.38	H
	10140	-58.53	-25	-33.53	-61.21	-68.36	2.02	11.86	H
									H
									H
									H
									H
	5070	-45.82	-25	-20.82	-39.87	-55.60	2.33	12.11	V
	7605	-59.99	-25	-34.99	-57.84	-68.25	2.11	10.38	V
	10140	-59.33	-25	-34.33	-61.33	-69.16	2.02	11.86	V
									V
									V
									V
									V
								V	



Highest	5121	-54.26	-25	-29.26	-47.84	-64.07	2.31	12.12	H
	7679	-60.97	-25	-35.97	-58.96	-69.50	2.11	10.64	H
	10240	-58.28	-25	-33.28	-61.06	-68.00	2.18	11.90	H
									H
									H
									H
									H
	5121	-45.31	-25	-20.31	-39.46	-55.12	2.31	12.12	V
	7679	-58.60	-25	-33.60	-56.65	-67.13	2.11	10.64	V
	10240	-59.20	-25	-34.20	-61.51	-68.92	2.18	11.90	V
									V
									V
									V
									V

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



**LTE Band 12**

LTE Band 12 / 10MHz / 16QAM									
Channel	Frequency ( MHz )	ERP ( dBm )	Limit ( dBm )	Over Limit ( dB )	SPA Reading (dBm)	S.G. Power ( dBm )	TX Cable loss ( dB )	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1408	-39.72	-13.00	-26.72	-53.37	-44.20	1.15	7.78	H
	2112	-50.14	-13.00	-37.14	-66.51	-56.80	1.38	10.19	H
	4224	-52.31	-13.00	-39.31	-71.95	-60.20	2.06	12.10	H
									H
									H
									H
									H
	1408	-43.31	-13.00	-30.31	-56.42	-47.79	1.15	7.78	V
	2112	-55.87	-13.00	-42.87	-72.52	-62.53	1.38	10.19	V
	4224	-53.95	-13.00	-40.95	-74.28	-61.84	2.06	12.10	V
									V
	Middle	1415	-42.27	-13.00	-29.27	-55.90	-46.78	1.15	7.81
2123		-47.71	-13.00	-34.71	-64.26	-54.38	1.38	10.20	H
4246		-53.56	-13.00	-40.56	-73.31	-61.46	2.05	12.10	H
									H
									H
									H
									H
1415		-47.80	-13.00	-34.80	-60.90	-52.31	1.15	7.81	V
2123		-54.61	-13.00	-41.61	-71.47	-61.28	1.38	10.20	V
4246		-54.70	-13.00	-41.70	-75.15	-62.60	2.05	12.10	V
									V
									V
								V	



Highest	1422	-37.94	-13.00	-24.94	-51.54	-42.48	1.15	7.84	H
	2133	-39.11	-13.00	-26.11	-67.21	-45.79	1.38	10.21	H
	4266	-53.35	-13.00	-40.35	-73.21	-61.26	2.04	12.10	H
									H
									H
									H
									H
	1422	-41.99	-13.00	-28.99	-55.08	-46.53	1.15	7.84	V
	2133	-54.75	-13.00	-41.75	-72.81	-61.43	1.38	10.21	V
	4266	-54.28	-13.00	-41.28	-74.85	-62.19	2.04	12.10	V
									V
									V
									V
									V

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