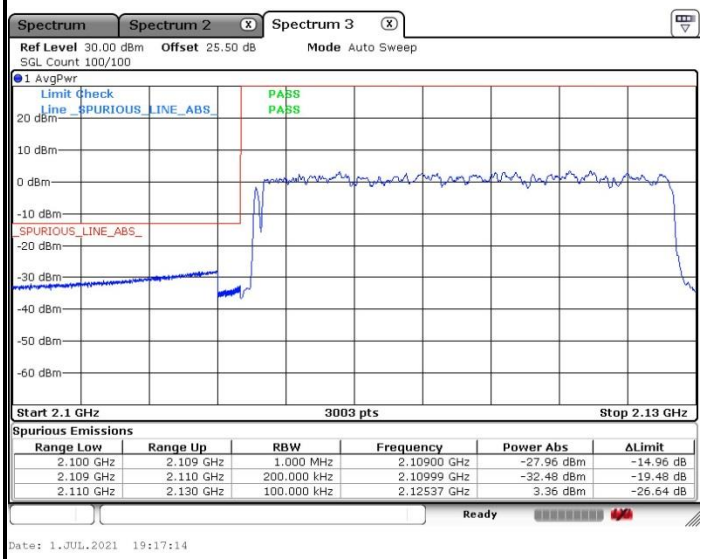
LTE Band 66 / 20MHz / QPSK

Lowest Band Edge / Full RB

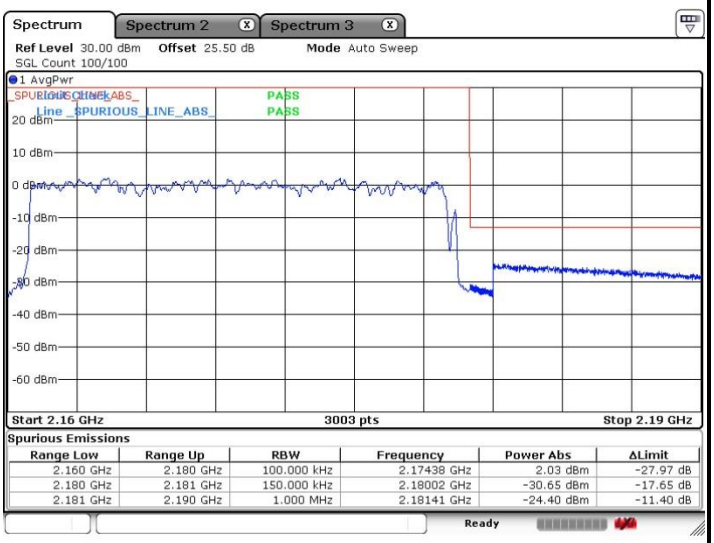


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.100 GHz	2.109 GHz	1.000 MHz	2.10900 GHz	-27.96 dBm	-14.96 dB
2.109 GHz	2.110 GHz	200.000 kHz	2.10999 GHz	-32.48 dBm	-19.48 dB
2.110 GHz	2.130 GHz	100.000 kHz	2.12537 GHz	3.36 dBm	-26.64 dB

Date: 1.JUL.2021 19:17:14

Highest Band Edge / Full RB



Spurious Emissions

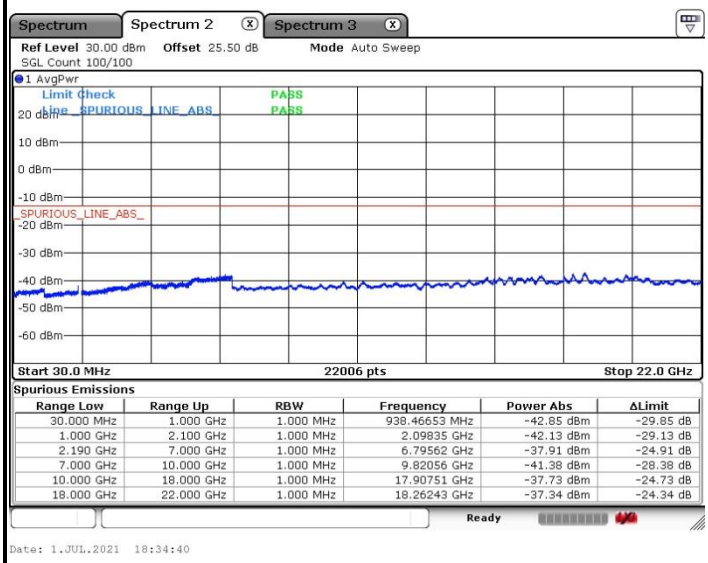
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
2.160 GHz	2.180 GHz	100.000 kHz	2.17438 GHz	2.03 dBm	-27.97 dB
2.180 GHz	2.181 GHz	150.000 kHz	2.18002 GHz	-30.65 dBm	-17.65 dB
2.181 GHz	2.190 GHz	1.000 MHz	2.18141 GHz	-24.40 dBm	-11.40 dB

Date: 1.JUL.2021 19:55:22

Conducted Spurious Emission

LTE Band 66 / 10MHz

Lowest Channel / QPSK

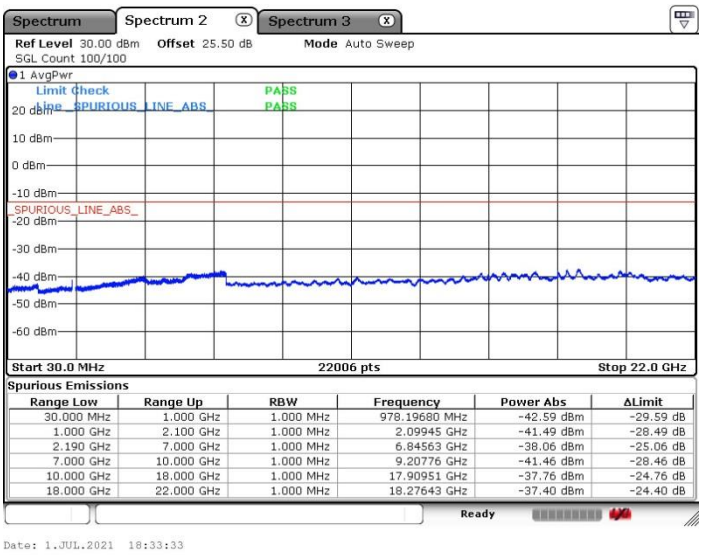


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	938.46653 MHz	-42.85 dBm	-29.85 dB
1.000 GHz	2.100 GHz	1.000 MHz	2.09835 GHz	-42.13 dBm	-29.13 dB
2.190 GHz	7.000 GHz	1.000 MHz	6.79562 GHz	-37.91 dBm	-24.91 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.82056 GHz	-41.38 dBm	-28.38 dB
10.000 GHz	18.000 GHz	1.000 MHz	17.90751 GHz	-37.73 dBm	-24.73 dB
18.000 GHz	22.000 GHz	1.000 MHz	18.26243 GHz	-37.34 dBm	-24.34 dB

Date: 1.JUL.2021 18:34:40

Middle Channel / QPSK

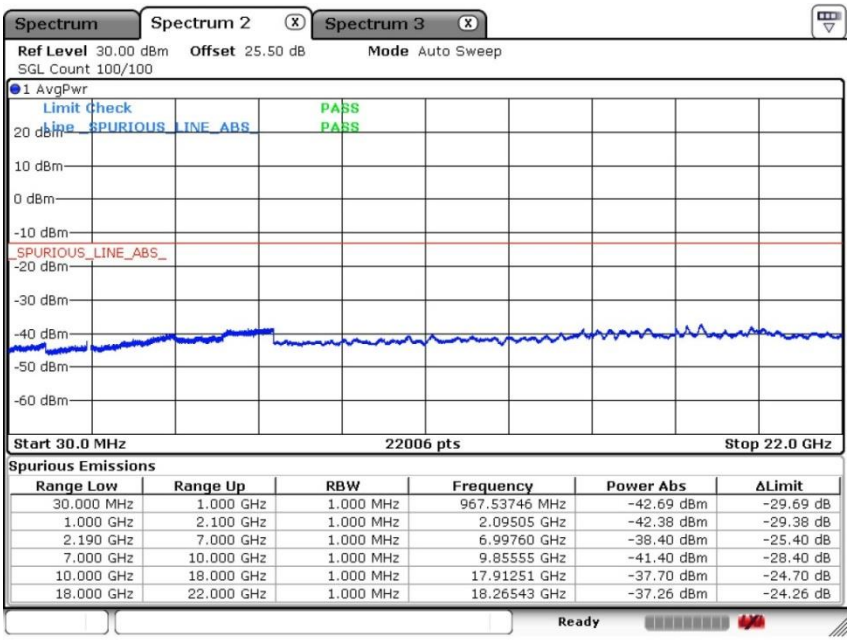


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	978.19680 MHz	-42.59 dBm	-29.59 dB
1.000 GHz	2.100 GHz	1.000 MHz	2.09945 GHz	-41.49 dBm	-28.49 dB
2.190 GHz	7.000 GHz	1.000 MHz	6.84563 GHz	-38.06 dBm	-25.06 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.20776 GHz	-41.46 dBm	-28.46 dB
10.000 GHz	18.000 GHz	1.000 MHz	17.90951 GHz	-37.76 dBm	-24.76 dB
18.000 GHz	22.000 GHz	1.000 MHz	18.27643 GHz	-37.40 dBm	-24.40 dB

Date: 1.JUL.2021 18:33:33

Highest Channel / QPSK



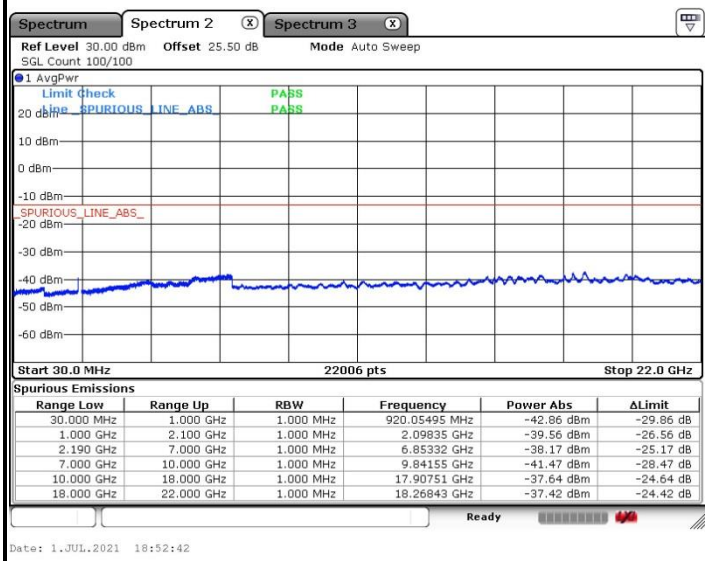
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	967.53746 MHz	-42.69 dBm	-29.69 dB
1.000 GHz	2.100 GHz	1.000 MHz	2.09505 GHz	-42.38 dBm	-29.38 dB
2.190 GHz	7.000 GHz	1.000 MHz	6.99760 GHz	-38.40 dBm	-25.40 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.85555 GHz	-41.40 dBm	-28.40 dB
10.000 GHz	18.000 GHz	1.000 MHz	17.91251 GHz	-37.70 dBm	-24.70 dB
18.000 GHz	22.000 GHz	1.000 MHz	18.26543 GHz	-37.26 dBm	-24.26 dB

Date: 1.JUL.2021 18:35:31

LTE Band 66 / 15MHz

Lowest Channel / QPSK

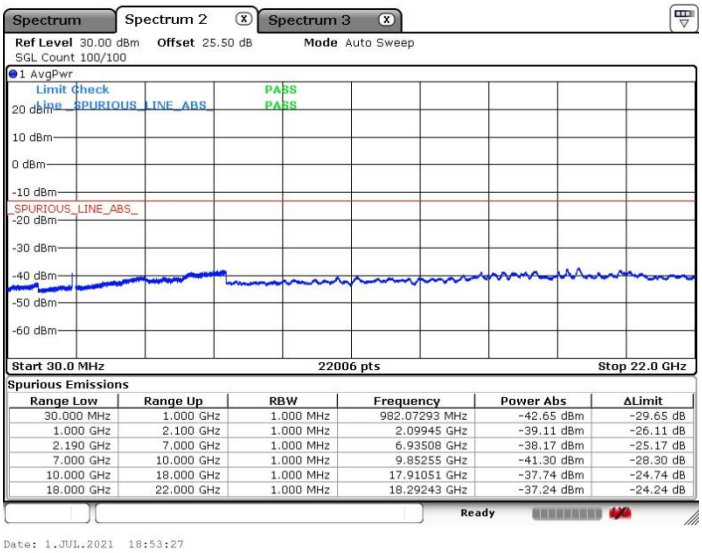


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	920.05495 MHz	-42.86 dBm	-29.86 dB
1.000 GHz	2.100 GHz	1.000 MHz	2.09835 GHz	-39.56 dBm	-26.56 dB
2.190 GHz	7.000 GHz	1.000 MHz	6.85332 GHz	-38.17 dBm	-25.17 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.84155 GHz	-41.47 dBm	-28.47 dB
10.000 GHz	18.000 GHz	1.000 MHz	17.90751 GHz	-37.64 dBm	-24.64 dB
18.000 GHz	22.000 GHz	1.000 MHz	18.26843 GHz	-37.42 dBm	-24.42 dB

Date: 1.JUL.2021 18:52:42

Middle Channel / QPSK

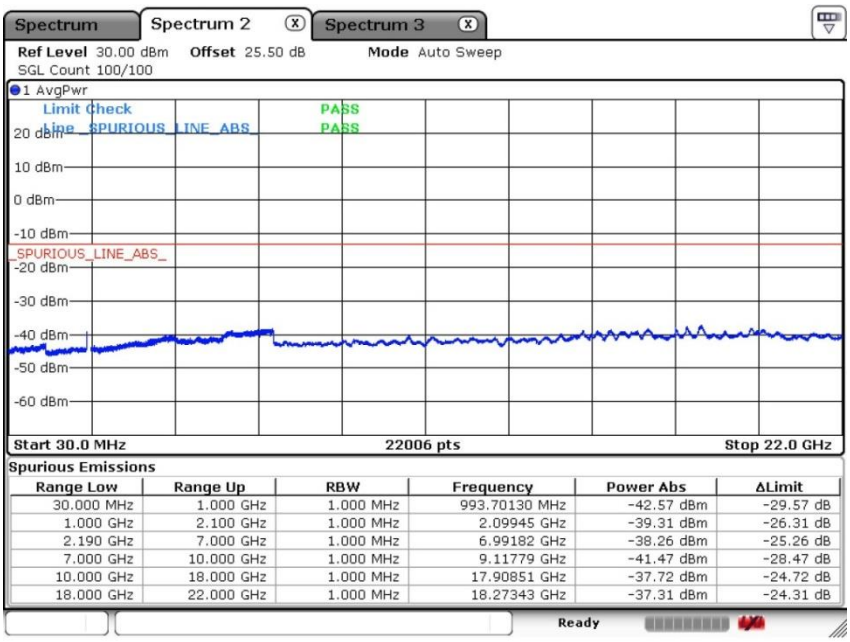


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	982.07293 MHz	-42.65 dBm	-29.65 dB
1.000 GHz	2.100 GHz	1.000 MHz	2.09945 GHz	-39.11 dBm	-26.11 dB
2.190 GHz	7.000 GHz	1.000 MHz	6.93508 GHz	-38.17 dBm	-25.17 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.85255 GHz	-41.30 dBm	-28.30 dB
10.000 GHz	18.000 GHz	1.000 MHz	17.91051 GHz	-37.74 dBm	-24.74 dB
18.000 GHz	22.000 GHz	1.000 MHz	18.29243 GHz	-37.24 dBm	-24.24 dB

Date: 1.JUL.2021 18:53:27

Highest Channel / QPSK



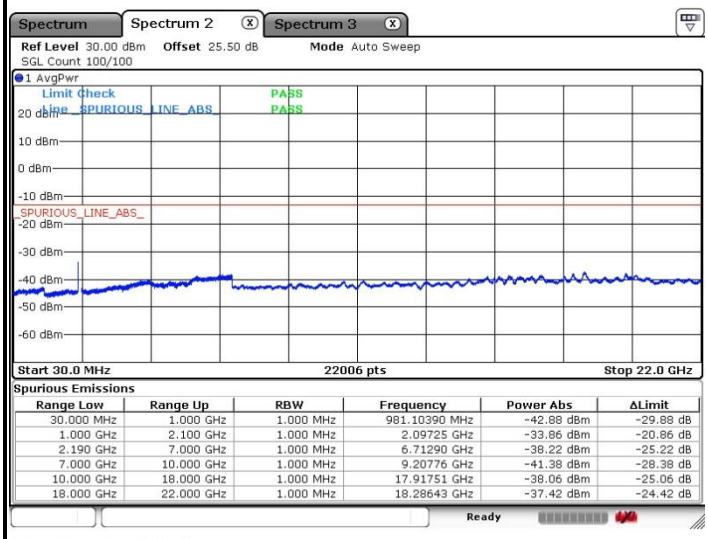
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	993.70130 MHz	-42.57 dBm	-29.57 dB
1.000 GHz	2.100 GHz	1.000 MHz	2.09945 GHz	-39.31 dBm	-26.31 dB
2.190 GHz	7.000 GHz	1.000 MHz	6.99182 GHz	-38.26 dBm	-25.26 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.11779 GHz	-41.47 dBm	-28.47 dB
10.000 GHz	18.000 GHz	1.000 MHz	17.90851 GHz	-37.72 dBm	-24.72 dB
18.000 GHz	22.000 GHz	1.000 MHz	18.27343 GHz	-37.31 dBm	-24.31 dB

Date: 1.JUL.2021 18:51:24

LTE Band 66 / 20MHz

Lowest Channel / QPSK

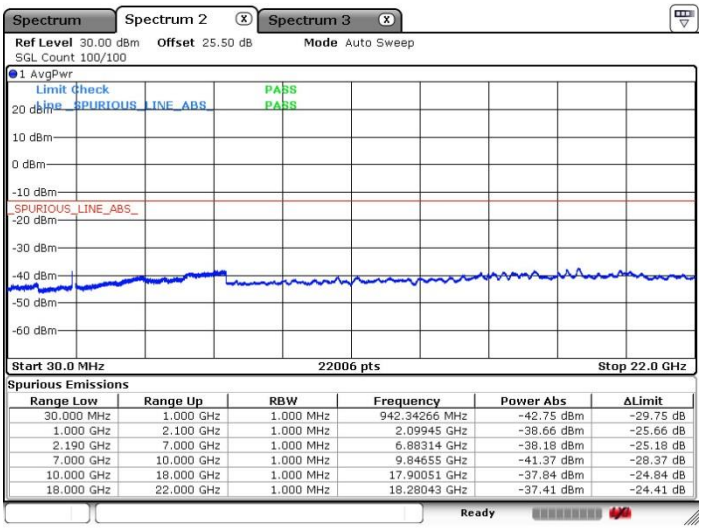


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	981.10390 MHz	-42.88 dBm	-29.88 dB
1.000 GHz	2.100 GHz	1.000 MHz	2.09725 GHz	-33.86 dBm	-20.86 dB
2.190 GHz	7.000 GHz	1.000 MHz	6.71290 GHz	-38.22 dBm	-25.22 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.20776 GHz	-41.38 dBm	-28.38 dB
10.000 GHz	18.000 GHz	1.000 MHz	17.91751 GHz	-38.06 dBm	-25.06 dB
18.000 GHz	22.000 GHz	1.000 MHz	18.28643 GHz	-37.42 dBm	-24.42 dB

Date: 1.JUL.2021 19:49:19

Middle Channel / QPSK

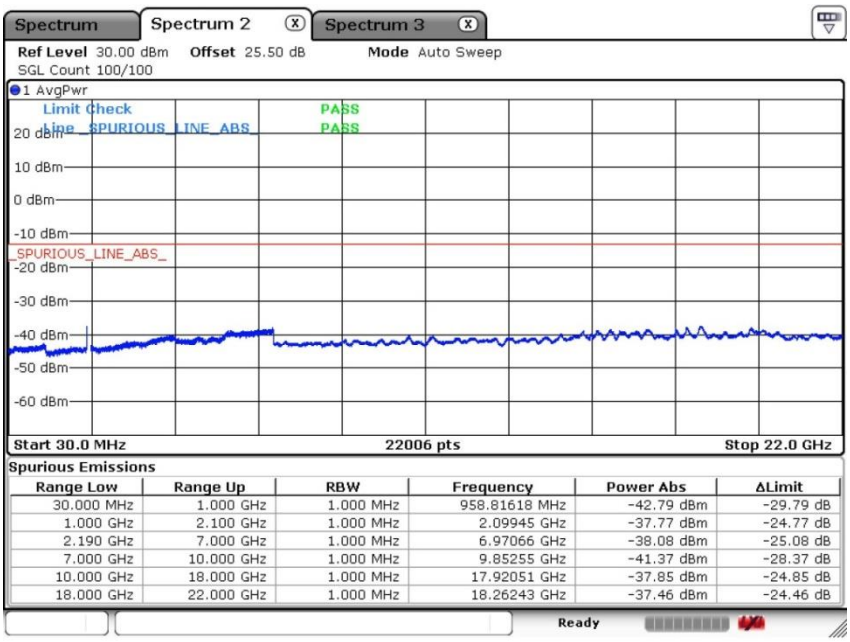


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	942.34266 MHz	-42.75 dBm	-29.75 dB
1.000 GHz	2.100 GHz	1.000 MHz	2.09945 GHz	-38.66 dBm	-25.66 dB
2.190 GHz	7.000 GHz	1.000 MHz	6.88314 GHz	-38.18 dBm	-25.18 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.84655 GHz	-41.37 dBm	-28.37 dB
10.000 GHz	18.000 GHz	1.000 MHz	17.90051 GHz	-37.84 dBm	-24.84 dB
18.000 GHz	22.000 GHz	1.000 MHz	18.28043 GHz	-37.41 dBm	-24.41 dB

Date: 1.JUL.2021 19:18:23

Highest Channel / QPSK



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	958.81618 MHz	-42.79 dBm	-29.79 dB
1.000 GHz	2.100 GHz	1.000 MHz	2.09945 GHz	-37.77 dBm	-24.77 dB
2.190 GHz	7.000 GHz	1.000 MHz	6.97066 GHz	-38.08 dBm	-25.08 dB
7.000 GHz	10.000 GHz	1.000 MHz	9.85255 GHz	-41.37 dBm	-28.37 dB
10.000 GHz	18.000 GHz	1.000 MHz	17.92051 GHz	-37.85 dBm	-24.85 dB
18.000 GHz	22.000 GHz	1.000 MHz	18.26243 GHz	-37.46 dBm	-24.46 dB

Date: 1.JUL.2021 19:19:38

Frequency Stability

Test Conditions		LTE Band 66 BW 20M (QPSK)				Limit
Temperature (°C)	Voltage (Volt)	2120MHz		2170MHz		Note 2
		FL	FH	FL	FH	Result
50	Normal Voltage	2110.564	2129.03	2160.97	2179.436	PASS
40	Normal Voltage	2110.564	2129.03	2160.97	2179.436	
30	Normal Voltage	2110.564	2129.03	2160.97	2179.436	
20(Ref.)	Normal Voltage	2110.564	2129.03	2160.97	2179.436	
10	Normal Voltage	2110.564	2129.03	2160.97	2179.378	
0	Normal Voltage	2110.564	2129.03	2160.97	2179.436	
-10	Normal Voltage	2110.564	2129.03	2160.97	2179.436	
-20	Normal Voltage	2110.564	2129.03	2160.97	2179.436	
-30	Normal Voltage	2110.564	2129.03	2160.97	2179.436	
20	Maximum Voltage	2110.564	2129.03	2160.97	2179.378	
20	Normal Voltage	2110.564	2129.03	2160.912	2179.436	
20	Minimum Voltage	2110.564	2129.03	2160.97	2179.436	

Note:

1. Normal Voltage =120 V. ; Minimum Voltage =102 V. ; Maximum Voltage =138 V.
2. Note: The frequency fundamental emissions stay within the authorized frequency block.

Appendix B. Test Results of Radiated Test

Radiated Spurious Emission

LTE:

LTE Band 2 / 20MHz / QPSK								
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	3921	-56.48	-13	-43.48	-68.74	2.64	14.90	H
	5880	-48.98	-13	-35.98	-60.84	2.94	14.80	H
	7836	-45.35	-13	-32.35	-55.12	3.39	13.16	H
	3921	-56.72	-13	-43.72	-68.98	2.64	14.90	V
	5880	-46.87	-13	-33.87	-58.73	2.94	14.80	V
	7836	-48.55	-13	-35.55	-58.32	3.39	13.16	V

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

LTE Band 66 / 20MHz / QPSK								
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	4312	-49.28	-13	-36.28	-60.02	2.604	13.34	H
	6464	-58.18	-13	-45.18	-68.69	3.011	13.52	H
	8620	-50.62	-13	-37.62	-60.82	3.271	13.47	H
	10780	-56.70	-13	-43.70	-63.67	5.527	12.5	H
	12930	-54.92	-13	-41.92	-61.78	6.038	12.9	H
	15080	-57.62	-13	-44.62	-64.82	6.726	13.93	H
	17240	-53.80	-13	-40.80	-61.24	6.963	14.4	H
	4312	-45.31	-13	-32.31	-56.05	2.604	13.34	V
	6464	-55.11	-13	-42.11	-65.62	3.011	13.52	V
	8620	-44.24	-13	-31.24	-54.44	3.271	13.47	V
	10780	-53.56	-13	-40.56	-60.53	5.527	12.50	V
	12930	-53.39	-13	-40.39	-60.25	6.038	12.90	V
	15080	-56.72	-13	-43.72	-63.92	6.726	13.93	V
	17240	-52.78	-13	-39.78	-60.22	6.963	14.40	V

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

NB-IOT Category NB1:

NB-IOT Band 2 Low Location / 20MHz / QPSK								
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	3921	-56.72	-13	-43.72	-68.98	2.64	14.90	H
	5880	-47.96	-13	-34.96	-59.82	2.94	14.80	H
	7836	-46.96	-13	-33.96	-56.73	3.39	13.16	H
	3921	-56.55	-13	-43.55	-68.81	2.64	14.90	V
	5880	-49.50	-13	-36.50	-61.36	2.94	14.80	V
	7836	-49.88	-13	-36.88	-59.65	3.39	13.16	V

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

NB-IOT Band 2 Upper Location / 20MHz / QPSK								
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	3921	-57.10	-13	-44.10	-69.36	2.64	14.90	H
	5880	-49.15	-13	-36.15	-61.01	2.94	14.80	H
	7836	-44.87	-13	-31.87	-54.64	3.39	13.16	H
	3921	-56.37	-13	-43.37	-68.63	2.64	14.90	V
	5880	-48.07	-13	-35.07	-59.93	2.94	14.80	V
	7836	-47.48	-13	-34.48	-57.25	3.39	13.16	V

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

NB-IOT Band 66 Low Location / 20MHz / QPSK								
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	4312	-49.23	-13	-36.23	-59.97	2.604	13.34	H
	6464	-59.80	-13	-46.80	-70.31	3.011	13.52	H
	8620	-49.20	-13	-36.20	-59.40	3.271	13.47	H
	10780	-56.60	-13	-43.60	-63.57	5.527	12.5	H
	12930	-54.45	-13	-41.45	-61.31	6.038	12.9	H
	15080	-57.49	-13	-44.49	-64.69	6.726	13.93	H
	17240	-54.67	-13	-41.67	-62.11	6.963	14.4	H
	4312	-46.64	-13	-33.64	-57.38	2.604	13.34	V
	6464	-55.04	-13	-42.04	-65.55	3.011	13.52	V
	8620	-43.40	-13	-30.40	-53.60	3.271	13.47	V
	10780	-54.99	-13	-41.99	-61.96	5.527	12.50	V
	12930	-53.81	-13	-40.81	-60.67	6.038	12.90	V
	15080	-56.43	-13	-43.43	-63.63	6.726	13.93	V
	17240	-50.97	-13	-37.97	-58.41	6.963	14.40	V

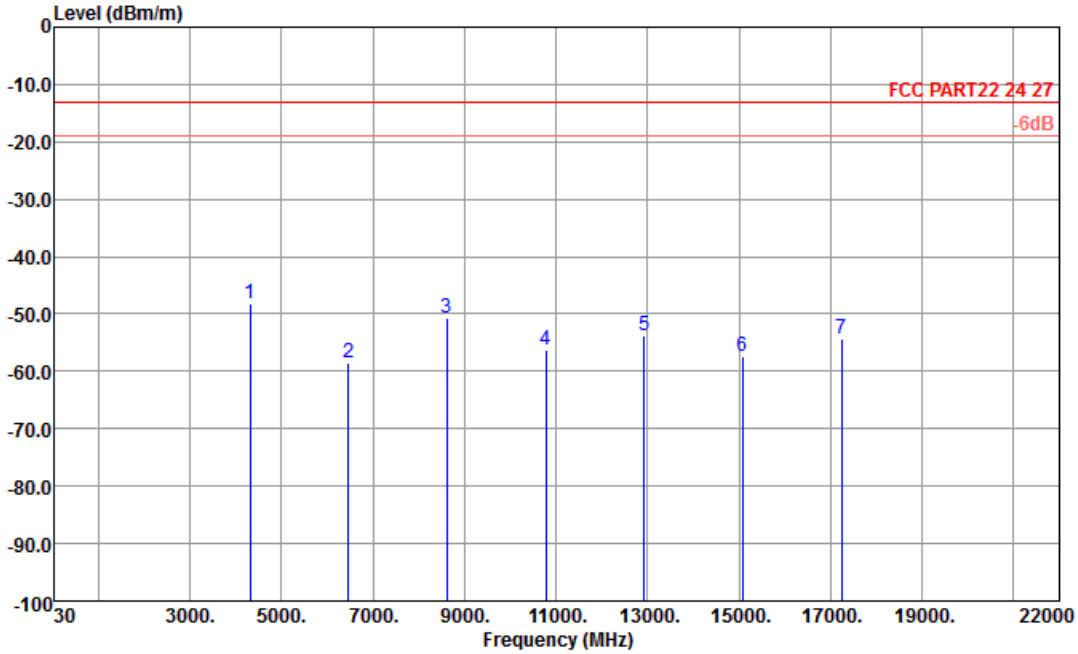
Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

NB-IOT Band 66 Upper Location / 20MHz / QPSK								
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	4312	-48.23	-13	-35.23	-58.97	2.604	13.34	H
	6464	-58.45	-13	-45.45	-68.96	3.011	13.52	H
	8620	-50.56	-13	-37.56	-60.76	3.271	13.47	H
	10780	-56.41	-13	-43.41	-63.38	5.527	12.50	H
	12930	-53.67	-13	-40.67	-60.53	6.038	12.90	H
	15080	-57.50	-13	-44.50	-64.70	6.726	13.93	H
	17240	-54.23	-13	-41.23	-61.67	6.963	14.40	H
	4312	-46.72	-13	-33.72	-57.46	2.604	13.34	V
	6464	-56.60	-13	-43.60	-67.11	3.011	13.52	V
	8620	-43.31	-13	-30.31	-53.51	3.271	13.47	V
	10780	-53.89	-13	-40.89	-60.86	5.527	12.50	V
	12930	-53.02	-13	-40.02	-59.88	6.038	12.90	V
	15080	-56.50	-13	-43.50	-63.70	6.726	13.93	V
	17240	-51.79	-13	-38.79	-59.23	6.963	14.40	V

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

Worst test plots

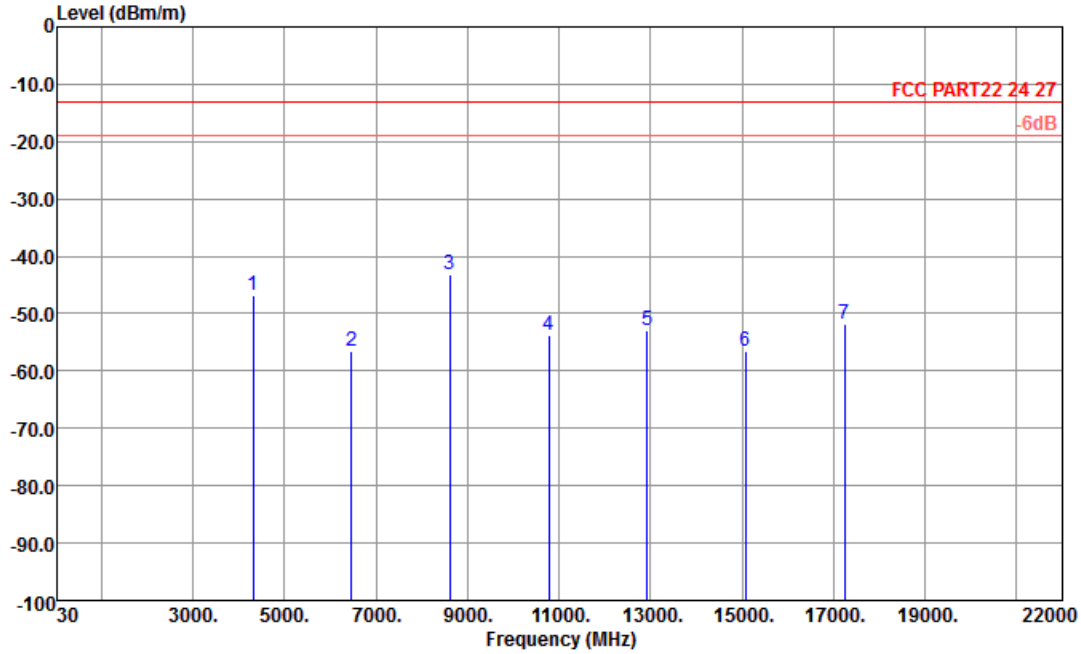
NB-IOT Band 66 Upper Location / 20MHz / QPSK for middle channel



Site : 03CH04-KS
Condition : FCC PART22 24 27 3m HF PART 22/24/27 HORIZONTAL
Project : (FG)151309

: B66 BW 20 QPSK+NB IOT B66 SCS15K QPSK

	Freq	Level	Over Limit	Limit Line	Read Level	Pol/Phase
	MHz	dBm/m	dB	dBm/m	dBm	
1	4312.00	-48.23	-35.23	-13.00	-38.78	HORIZONTAL
2	6464.00	-58.45	-45.45	-13.00	-52.32	HORIZONTAL
3	8620.00	-50.56	-37.56	-13.00	-49.25	HORIZONTAL
4	10780.00	-56.41	-43.41	-13.00	-57.20	HORIZONTAL
5	12930.00	-53.67	-40.67	-13.00	-58.92	HORIZONTAL
6	15080.00	-57.50	-44.50	-13.00	-63.34	HORIZONTAL
7	17240.00	-54.23	-41.23	-13.00	-65.46	HORIZONTAL



Site : 03CH04-KS
Condition : FCC PART22 24 27 3m HF PART 22/24/27 VERTICAL
Project : (FG)151309

: B66 BW 20 QPSK+NB IOT B66 SCS15K QPSK

	Freq	Level	Over Limit	Limit Line	Read Level	Pol/Phase
	MHz	dBm/m	dB	dBm/m	dBm	
1	4312.00	-46.72	-33.72	-13.00	-37.56	VERTICAL
2	6464.00	-56.60	-43.60	-13.00	-50.47	VERTICAL
3	8620.00	-43.31	-30.31	-13.00	-41.93	VERTICAL
4	10780.00	-53.89	-40.89	-13.00	-54.54	VERTICAL
5	12930.00	-53.02	-40.02	-13.00	-57.75	VERTICAL
6	15080.00	-56.50	-43.50	-13.00	-62.37	VERTICAL
7	17240.00	-51.79	-38.79	-13.00	-62.57	VERTICAL