RF Power Output and Effective Radiated Power

Mode	Modulation	Sub-carrier spacing (KHz)	Ntones	Conducted Power (dBm) for low/middle/high channel		
				19952 /1710.2	20175 /1732.5	20398 /1754.8
NB-IoT Band 4 Standalone	BPSK	3.75	1@0	23.02	22.92	22.88
			1@47	22.85	22.82	22.74
		15	1@0	22.64	22.47	22.58
			1@11	22.66	2.40	22.47
	QPSK	3.75	1@0	22.77	22.73	22.85
			1@47	22.74	22.76	22.71
		15	1@0	22.60	22.47	22.56
			1@11	22.72	22.48	22.61
		15	12@0	20.76	20.64	20.69
Mode	Modulation	Sub-carrier spacing (KHz)	Ntones	Conducted Power (dBm) for low/middle/high channel		
				23012 /699.2	23095 /707.5	23178 /715.8
NB-IoT Band 12 Standalone	BPSK	3.75	1@0	22.78	2.92	23.04
			1@47	22.61	22.79	22.91
		15	1@0	22.79	22.77	22.72
			1@11	22.71	22.73	22.60
	QPSK	3.75	1@0	22.72	22.91	22.96
			1@47	22.68	22.81	22.89
		15	1@0	22.73	22.78	22.79
			1@11	22.72	22.80	22.70
		15	12@0	21.03	21.07	21.10
Mode	Modulation	Sub-carrier spacing (KHz)	Ntones	Conducted Power (dBm) for low/middle/high channel		
				23182 /777.2	23230 /782	23278 /786.8
NB-IoT Band 13 Standalone	BPSK	3.75	1@0	22.90	22.54	22.80
			1@47	22.76	22.45	22.74
		15	1@0	22.81	22.67	22.48
			1@11	22.69	22.64	22.47
	QPSK	3.75	1@0	22.71	22.44	22.83
			1@47	22.75	22.39	22.69
		15	1@0	22.81	22.61	22.52
			1@11	22.75	22.65	22.59
		15	12@0	20.98	20.82	21.02

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Mode	Modulation	Sub-carrier spacing (KHz)	Ntones	Conducted Power (dBm) for low/middle/high channel		
				131974 /1710.2	132322 /1745	132670 /1779.8
NB-IoT Band 66 Standalone	BPSK	3.75	1@0	23.03	22.76	22.50
			1@47	23.05	22.73	22.45
		15	1@0	22.85	22.57	22.60
			1@11	22.79	22.50	22.51
	QPSK	3.75	1@0	23.12	22.68	22.52
			1@47	23.09	22.67	22.36
		15	1@0	22.88	22.58	22.61
			1@11	22.77	22.53	22.56
		15	12@0	21.14	20.92	20.68

Mode	Modulation	Sub-carrier spacing (KHz)	Ntones	Conducted Power (dBm) for low/middle/high channel		
				133124 /663.2	133297 /680.5	133470 /697.8
NB-IoT Band 71 Standalone	BPSK	3.75	1@0	22.50	22.62	22.58
			1@47	22.37	22.52	22.55
		15	1@0	22.35	22.21	22.46
			1@11	22.26	22.09	22.38
	QPSK	3.75	1@0	22.46	22.56	22.55
			1@47	22.44	22.61	22.52
		15	1@0	22.35	22.27	22.36
			1@11	22.38	22.25	22.41
		15	12@0	20.57	20.49	20.70

Mode	Modulation	Sub-carrier spacing (KHz)	Ntones	Conducted Power (dBm) for low/middle/high channel		
				134004 /698.2	134092 /707	134180 /715.8
NB-IoT Band 85 Standalone	BPSK	3.75	1@0	22.70	22.50	22.55
			1@47	22.65	22.45	22.54
		15	1@0	22.52	22.52	22.53
			1@11	22.48	22.47	22.42
	QPSK	3.75	1@0	22.62	22.46	22.23
			1@47	22.63	22.52	22.12
		15	1@0	22.54	22.49	22.48
			1@11	22.38	22.46	22.43
		15	12@0	20.73	20.71	20.67

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Occupied Bandwidth

Mode	Modulation	Sub-carrier spacing (KHz)	Ntones	Bandwidth(KHz) for low/mid/high channel					
				19952/1710.2		20175/1732.5		20398/1754.8	
				99% Power	-26dBc	99% Power	-26dBc	99% Power	-26dBc
NB-IoT Band 4 Standalone	BPSK	3.75	1@0	53.91	37.34	53.32	37.17	52.01	37.08

Mode	Modulation	Sub-carrier spacing (KHz)	Ntones	Bandwidth(KHz) for low/mid/high channel					
				23012/699.2		23095/707.5		23178/715.8	
				99% Power	-26dBc	99% Power	-26dBc	99% Power	-26dBc
NB-IoT Band 12 Standalone	BPSK	3.75	1@0	52.77	37.40	52.57	37.35	53.97	38.39

Mode	Modulation	Sub-carrier spacing (KHz)	Ntones	Bandwidth(KHz) for low/mid/high channel					
				23182/777.2		23230/782		23278/786.8	
				99% Power	-26dBc	99% Power	-26dBc	99% Power	-26dBc
NB-IoT Band 13 Standalone	BPSK	3.75	1@0	53.37	37.56	51.68	37.16	52.33	37.14

Mode	Modulation	Sub-carrier spacing (KHz)	Ntones	Bandwidth(KHz) for low/mid/high channel					
				131974/1710.2		132322/1745		132670/1779.8	
				99% Power	-26dBc	99% Power	-26dBc	99% Power	-26dBc
NB-IoT Band 66 Standalone	QPSK	3.75	1@0	58.42	39.29	58.88	39.01	61.62	42.27

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Mode	Modulation	Sub-carrier spacing (KHz)	Ntones	Bandwidth(KHz) for low/mid/high channel					
				133124/663.2		133297/680.5		133470/697.8	
				99% Power	-26dBc	99% Power	-26dBc	99% Power	-26dBc
NB-IoT Band 71 Standalone	BPSK	3.75	1@0	50.58	37.28	51.84	37.35	52.87	37.36

Mode	Modulation	Sub-carrier spacing (KHz)	Ntones	Bandwidth(KHz) for low/mid/high channel					
				134004/698.2		134092/707		134180/715.8	
				99% Power	-26dBc	99% Power	-26dBc	99% Power	-26dBc
NB-IoT Band 85 Standalone	BPSK	3.75	1@0	53.98	38.09	53.44	38.40	52.53	37.97

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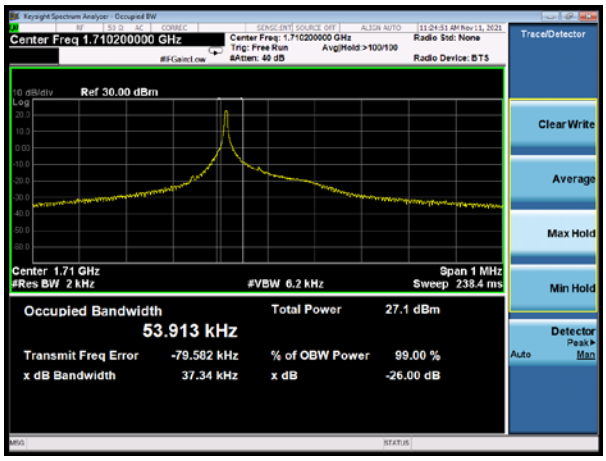
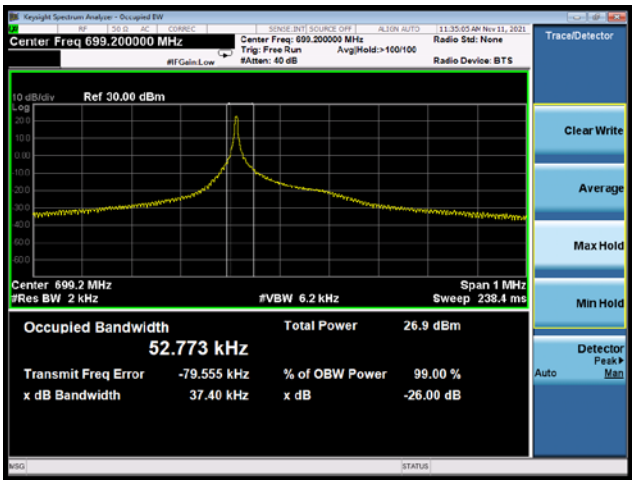
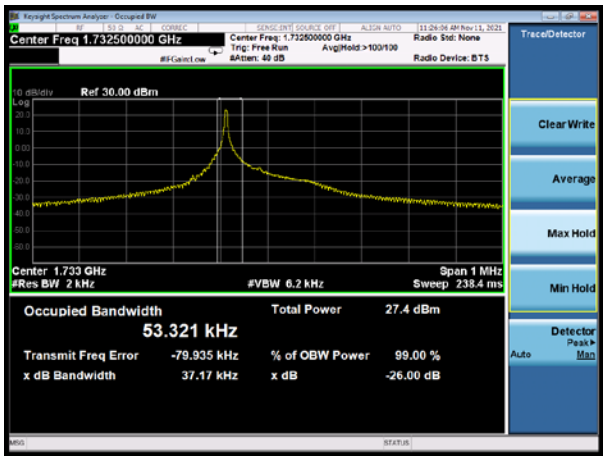
NB-IoT Band 4 BPSK 3.75KHz 1@0 CH-Low



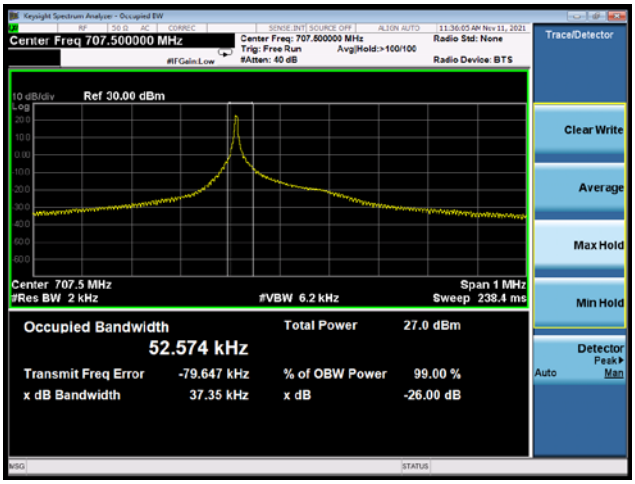
NB-IoT Band 12 BPSK 3.75KHz 1@0 CH-Low



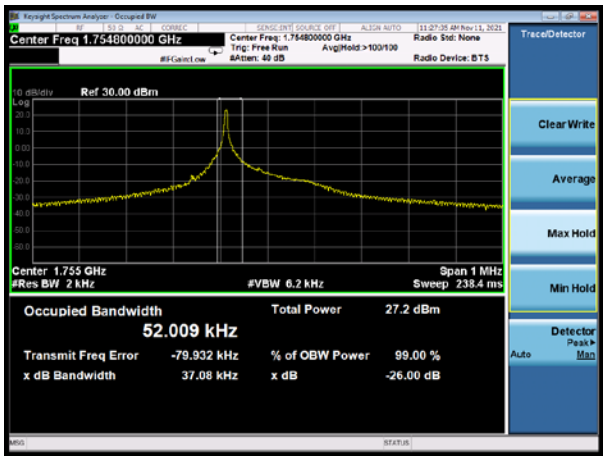
NB-IoT Band 4 BPSK 3.75KHz 1@0 CH-Middle



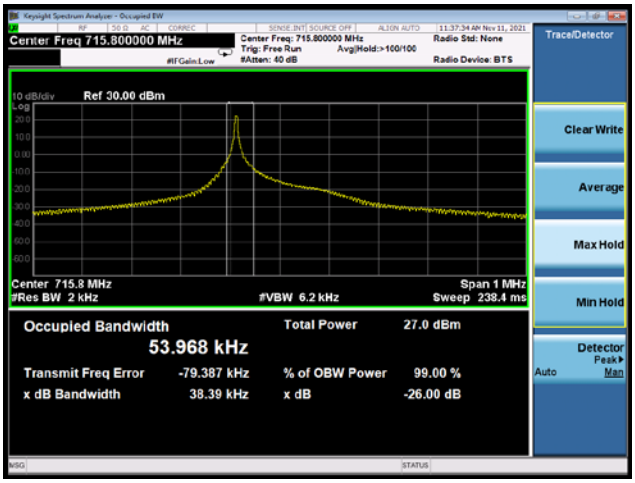
NB-IoT Band 12 BPSK 3.75KHz 1@0 CH-Middle



NB-IoT Band 4 BPSK 3.75KHz 1@0 CH-High



NB-IoT Band 12 BPSK 3.75KHz 1@0 CH-High



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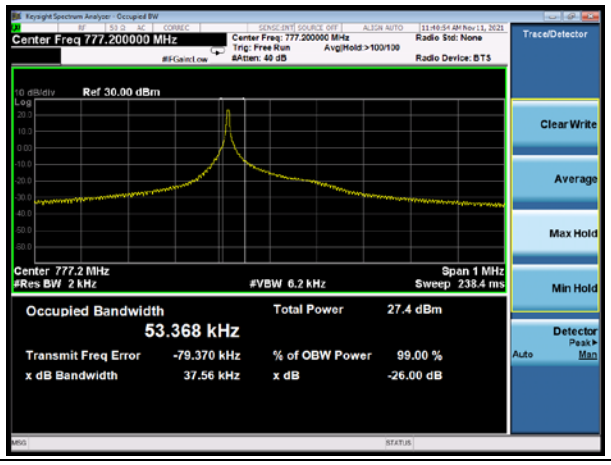
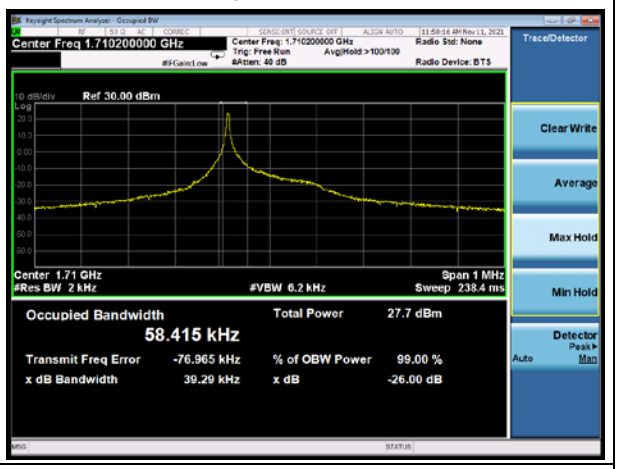
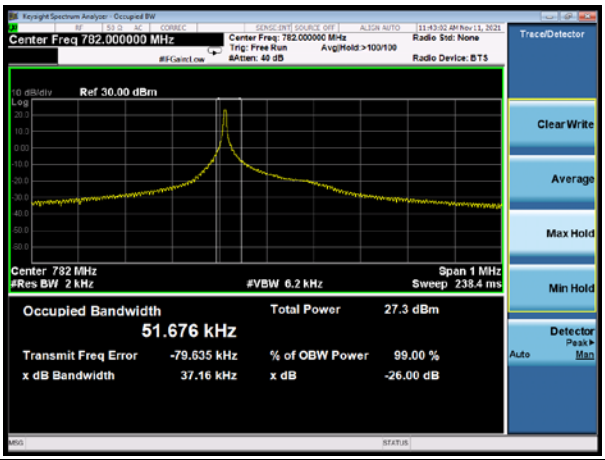
NB-IoT Band 13 BPSK 3.75KHz 1@0 CH-Low



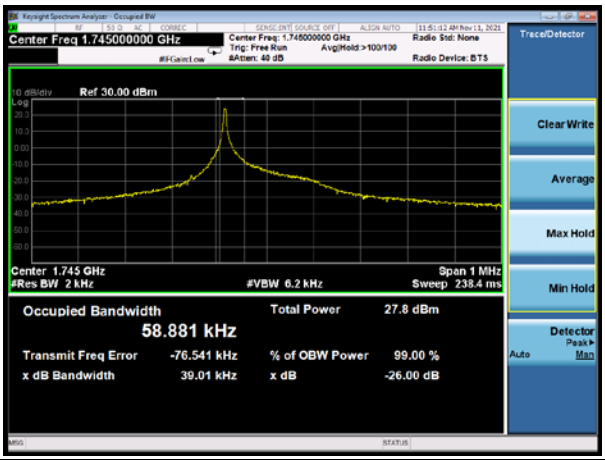
NB-IoT Band 66 QPSK 3.75KHz 1@0 CH-Low



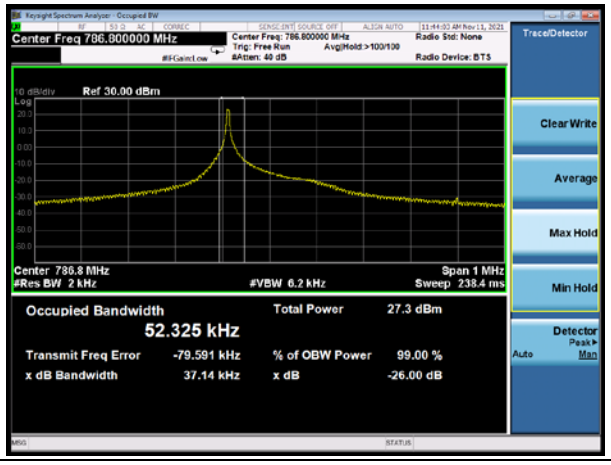
NB-IoT Band 13 BPSK 3.75KHz 1@0 CH-Middle



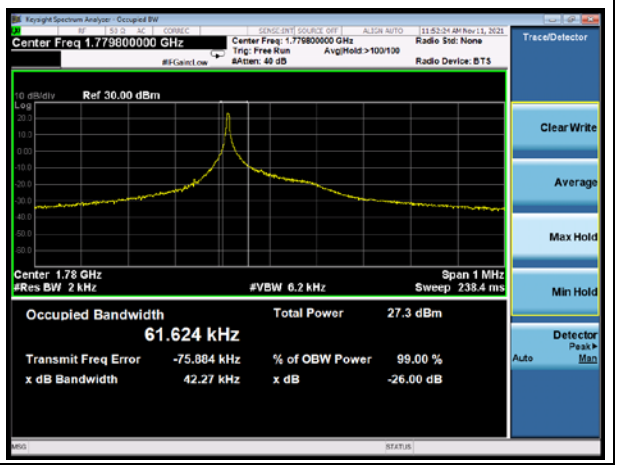
NB-IoT Band 66 QPSK 3.15KHz 1@0 CH-Middle



NB-IoT Band 13 BPSK 3.75KHz 1@0 CH-High



NB-IoT Band 66 QPSK 3.15KHz 1@0 CH-High



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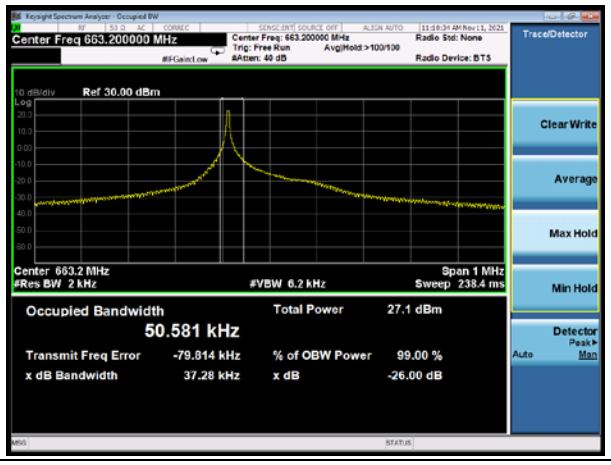
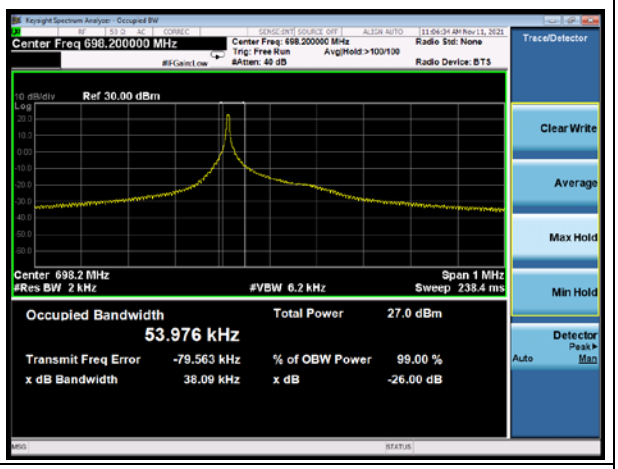
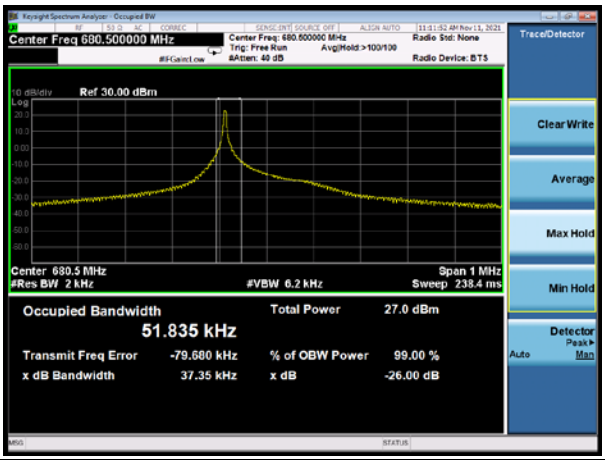
NB-IoT Band 71 BPSK 3.75KHz 1@0 CH-Low



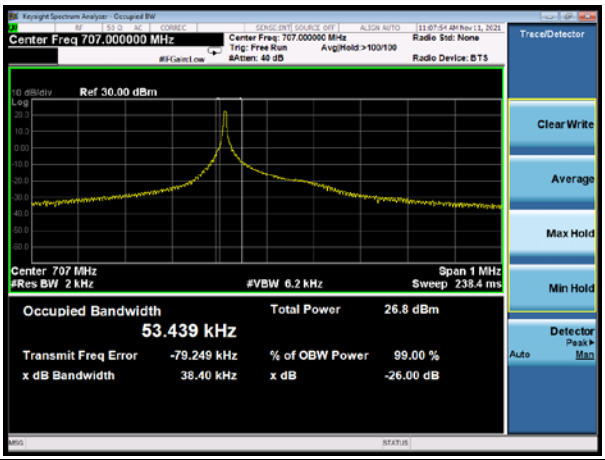
NB-IoT Band 85 BPSK 3.75KHz 1@0 CH-Low



NB-IoT Band 71 BPSK 3.75KHz 1@0 CH-Middle

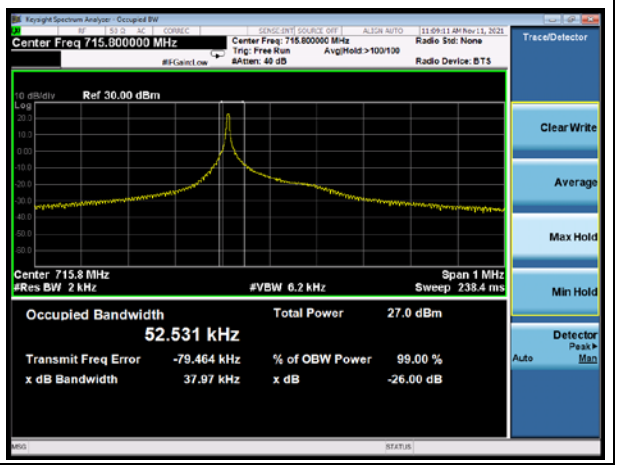


NB-IoT Band 85 BPSK 3.75KHz 1@0 CH-Middle



NB-IoT Band 71 BPSK 3.75KHz 1@0 CH-High

NB-IoT Band 85 BPSK 3.75KHz 1@0 CH-High



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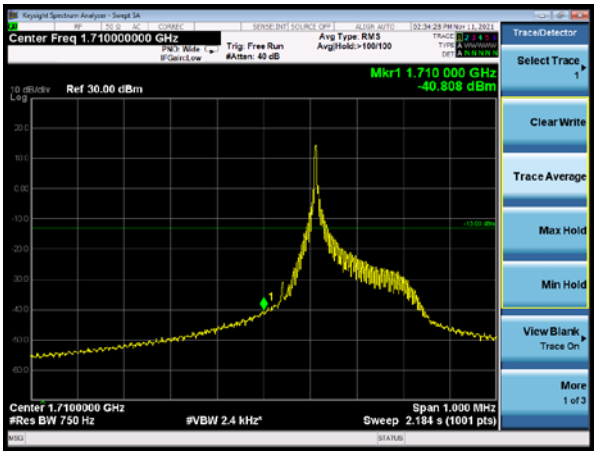
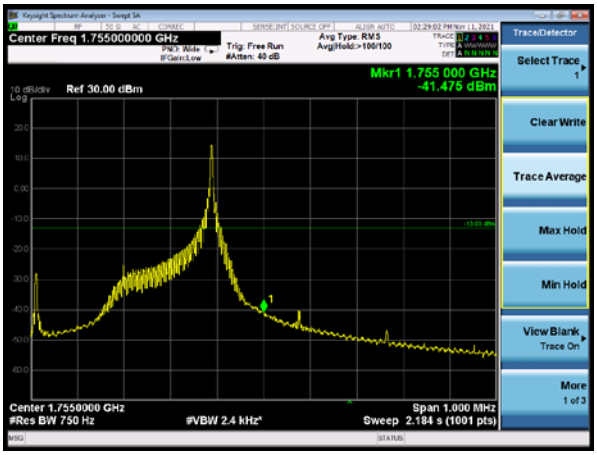
Band Edge Compliance

NB-IoT Band 4 BPSK 3.75kHz 1@0 CH-Low



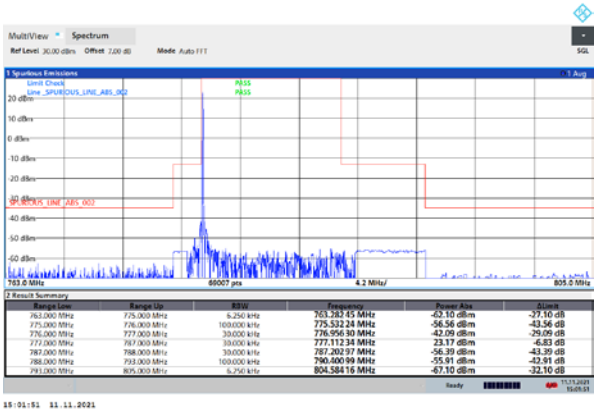
NB-IoT Band 4 BPSK 3.75kHz 1@11 CH-High



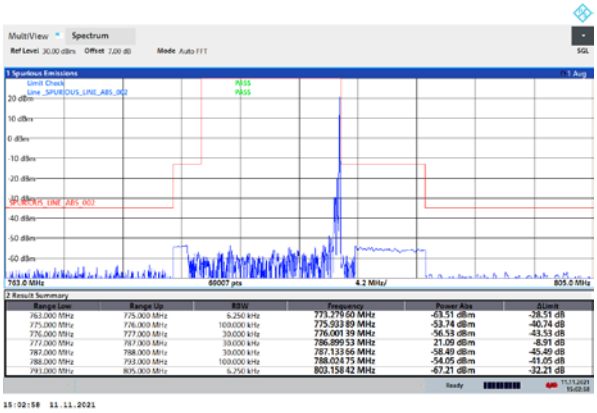
NB-IoT Band 12 BPSK 3.75kHz 1@0 CH-Low

NB-IoT Band 12 BPSK 3.75kHz 1@11 CH-High

NB-IoT Band 13 BPSK 3.75kHz 1@0 CH-Low



NB-IoT Band 13 BPSK 3.75kHz 1@11 CH-High



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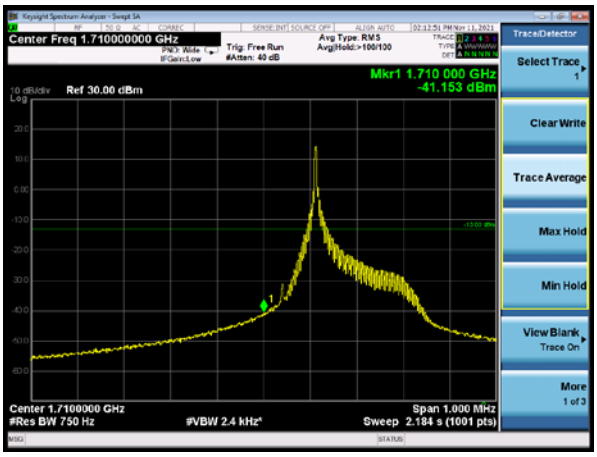
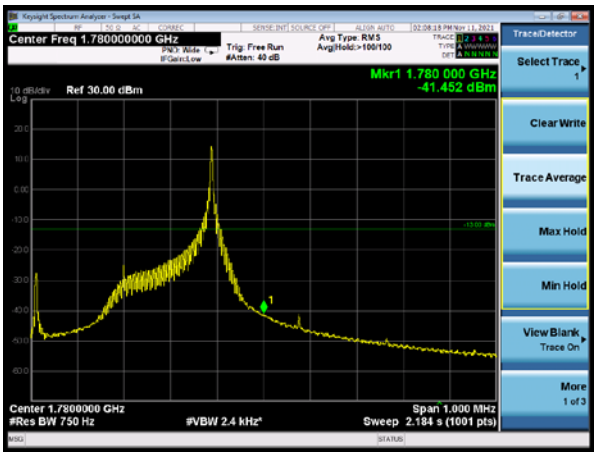
NB-IoT Band 66 QPSK 3.75kHz 1@0 CH-Low



NB-IoT Band 66 QPSK 3.75kHz 1@11 CH-High



NB-IoT Band 71 BPSK 3.75kHz 1@0 CH-Low

NB-IoT Band 71 BPSK 3.75kHz 1@11 CH-High

NB-IoT Band 85 BPSK 3.75kHz 1@0 CH-Low

NB-IoT Band 85 BPSK 3.75kHz 1@11 CH-High

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Peak-to-Average Power Ratio (PAPR)

Mode	Modulation	Sub-carrier spacing (KHz)	Channel/ Frequency (MHz)	Peak-to-Average Power Ratio (PAPR)		
				Peak(dBm)	Avg(dBm)	PAPR(dB)
NB-IoT Band 4 Standalone	BPSK	3.75	20175/1732.5	26.28	21.53	4.75
	QPSK	3.75	20175/1732.5	25.73	21.46	4.27
	BPSK	15	20175/1732.5	25.78	18.56	7.22
	QPSK	15	20175/1732.5	25.38	18.39	6.99
Mode	Modulation	Sub-carrier spacing (KHz)	Channel/ Frequency (MHz)	Peak-to-Average Power Ratio (PAPR)		
				Peak(dBm)	Avg(dBm)	PAPR(dB)
NB-IoT Band 12 Standalone	BPSK	3.75	23095/707.5	26.02	21.17	4.85
	QPSK	3.75	23095/707.5	25.31	21.20	4.11
	BPSK	15	23095/707.5	25.48	18.07	7.41
	QPSK	15	23095/707.5	25.12	18.12	7.00
Mode	Modulation	Sub-carrier spacing (KHz)	Channel/ Frequency (MHz)	Peak-to-Average Power Ratio (PAPR)		
				Peak(dBm)	Avg(dBm)	PAPR(dB)
NB-IoT Band 13 Standalone	BPSK	3.75	23230/782	26.35	21.42	4.93
	QPSK	3.75	23230/782	25.50	21.32	4.18
	BPSK	15	23230/782	25.71	18.31	7.40
	QPSK	15	23230/782	25.41	18.36	7.05
Mode	Modulation	Sub-carrier spacing (KHz)	Channel/ Frequency (MHz)	Peak-to-Average Power Ratio (PAPR)		
				Peak(dBm)	Avg(dBm)	PAPR(dB)
NB-IoT Band 66 Standalone	BPSK	3.75	132322/1745	26.42	21.50	4.92
	QPSK	3.75	132322/1745	25.60	21.40	4.20
	BPSK	15	132322/1745	25.91	18.61	7.30
	QPSK	15	132322/1745	25.67	18.57	7.10
Mode	Modulation	Sub-carrier spacing (KHz)	Channel/ Frequency (MHz)	Peak-to-Average Power Ratio (PAPR)		
				Peak(dBm)	Avg(dBm)	PAPR(dB)
NB-IoT Band 71 Standalone	BPSK	3.75	133297/680.5	25.97	21.03	4.94
	QPSK	3.75	133297/680.5	25.26	18.03	7.23
	BPSK	15	133297/680.5	24.87	17.92	6.95
	QPSK	15	133297/680.5	25.26	18.03	7.23
Mode	Modulation	Sub-carrier spacing (KHz)	Channel/ Frequency (MHz)	Peak-to-Average Power Ratio (PAPR)		
				Peak(dBm)	Avg(dBm)	PAPR(dB)
NB-IoT Band 85 Standalone	BPSK	3.75	134092/707	26.02	21.15	4.87
	QPSK	3.75	134092/707	25.27	21.08	4.19
	BPSK	15	134092/707	25.48	18.26	7.22

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	QPSK	15	134092/707	25.20	18.16	7.04

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Frequency Stability

NB-IoT Band 4						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability(ppm)	Frequency Stability(ppm)	Verdict
Sub-carrier spacing (KHz)	3.75					
Temperature	Voltage	BPSK	QPSK	BPSK	QPSK	
Normal(25℃)	Normal	3.82	3.22	0.00221	0.00186	PASS
Extreme(85℃)		1.96	1.47	0.00113	0.00085	PASS
Extreme(80℃)		17.72	16.48	0.01023	0.00951	PASS
Extreme(70℃)		8.52	6.46	0.00492	0.00373	PASS
Extreme(60℃)		7.72	9.11	0.00445	0.00526	PASS
Extreme(50℃)		12.44	10.94	0.00718	0.00632	PASS
Extreme(40℃)		10.00	1.00	0.00577	0.00058	PASS
Extreme(30℃)		14.00	11.00	0.00808	0.00635	PASS
Extreme(20℃)		4.00	11.00	0.00231	0.00635	PASS
Extreme(10℃)		2.00	3.00	0.00115	0.00173	PASS
Extreme(0℃)		1.00	14.00	0.00058	0.00808	PASS
Extreme(-10℃)		12.10	1.37	0.00699	0.00079	PASS
Extreme(-20℃)		10.85	9.35	0.00626	0.00540	PASS
Extreme(-30℃)		17.25	16.08	0.00996	0.00928	PASS
Extreme(-40℃)		17.21	17.33	0.00993	0.01000	PASS
25℃	LV	9.08	16.23	0.00524	0.00937	PASS
	HV	13.75	1.76	0.00794	0.00102	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability(ppm)	Frequency Stability(ppm)	Verdict
Sub-carrier spacing (KHz)	15					
Temperature	Voltage	BPSK	QPSK	BPSK	QPSK	
Normal(25℃)	Normal	3.24	3.90	0.00187	0.00225	PASS
Extreme(85℃)		8.17	12.55	0.00472	0.00724	PASS
Extreme(80℃)		10.58	17.96	0.00610	0.01037	PASS
Extreme(70℃)		15.76	5.50	0.00910	0.00318	PASS
Extreme(60℃)		4.29	9.47	0.00248	0.00546	PASS
Extreme(50℃)		10.09	13.90	0.00583	0.00802	PASS
Extreme(40℃)		16.00	14.00	0.00924	0.00808	PASS
Extreme(30℃)		12.00	14.00	0.00693	0.00808	PASS
Extreme(20℃)		6.00	16.00	0.00346	0.00924	PASS
Extreme(10℃)		11.00	7.00	0.00635	0.00404	PASS
Extreme(0℃)		3.00	2.00	0.00173	0.00115	PASS

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Extreme(-10℃)		9.03	5.14	0.00521	0.00297	PASS
Extreme(-20℃)		1.76	10.00	0.00101	0.00577	PASS
Extreme(-30℃)		10.15	9.88	0.00586	0.00571	PASS
Extreme(-40℃)		2.37	15.13	0.00137	0.00874	PASS
25℃	LV	7.76	3.73	0.00448	0.00215	PASS
	HV	7.97	2.76	0.00460	0.00160	PASS

NB-IoT Band 12						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability(ppm)	Frequency Stability(ppm)	Verdict
Sub-carrier spacing (KHz)	3.75					
Temperature	Voltage	BPSK	QPSK	BPSK	QPSK	
Normal(25℃)	Normal	3.85	17.19	0.00544	0.02430	PASS
Extreme(85℃)		9.79	13.25	0.01384	0.01873	PASS
Extreme(80℃)		2.74	11.35	0.00388	0.01605	PASS
Extreme(70℃)		2.83	14.75	0.00400	0.02085	PASS
Extreme(60℃)		10.80	13.18	0.01526	0.01863	PASS
Extreme(50℃)		10.00	8.00	0.01413	0.01131	PASS
Extreme(40℃)		14.00	10.00	0.01979	0.01413	PASS
Extreme(30℃)		4.00	8.00	0.00565	0.01131	PASS
Extreme(20℃)		16.00	15.00	0.02261	0.02120	PASS
Extreme(10℃)		13.00	13.00	0.01837	0.01837	PASS
Extreme(0℃)		8.08	8.51	0.01143	0.01203	PASS
Extreme(-10℃)		3.33	8.75	0.00470	0.01237	PASS
Extreme(-20℃)		2.29	15.00	0.00324	0.02120	PASS
Extreme(-30℃)		5.05	2.58	0.00714	0.00365	PASS
Extreme(-40℃)		16.16	2.14	0.02284	0.00302	PASS
25℃	LV	4.67	15.15	0.00660	0.02142	PASS
	HV	10.85	3.68	0.01534	0.00520	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability(ppm)	Frequency Stability(ppm)	Verdict
Sub-carrier spacing (KHz)	15					
Temperature	Voltage	BPSK	QPSK	BPSK	QPSK	
Normal(25℃)	Normal	5.31	9.69	0.00751	0.01370	PASS
Extreme(85℃)		14.09	2.88	0.01992	0.00407	PASS
Extreme(80℃)		16.68	1.71	0.02358	0.00241	PASS
Extreme(70℃)		7.68	11.05	0.01085	0.01561	PASS
Extreme(60℃)		5.89	12.57	0.00833	0.01777	PASS
Extreme(50℃)		12.00	10.00	0.01696	0.01413	PASS

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Extreme(40℃)		5.00	11.00	0.00707	0.01555	PASS
Extreme(30℃)		9.00	13.00	0.01272	0.01837	PASS
Extreme(20℃)		3.00	9.00	0.00424	0.01272	PASS
Extreme(10℃)		12.00	1.00	0.01696	0.00141	PASS
Extreme(0℃)		16.62	16.80	0.02349	0.02375	PASS
Extreme(-10℃)		15.92	14.70	0.02251	0.02078	PASS
Extreme(-20℃)		11.31	2.64	0.01599	0.00374	PASS
Extreme(-30℃)		1.24	15.74	0.00175	0.02224	PASS
Extreme(-40℃)		14.37	2.46	0.02031	0.00348	PASS
25℃	LV	6.66	16.28	0.00942	0.02301	PASS
	HV	6.24	7.12	0.00882	0.01006	PASS

NB-IoT Band 13						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability(ppm)	Frequency Stability(ppm)	Verdict
Sub-carrier spacing (KHz)	3.75					
Temperature	Voltage	BPSK	QPSK	BPSK	QPSK	
Normal(25℃)	Normal	15.50	4.35	0.01983	0.00556	PASS
Extreme(85℃)		7.87	10.69	0.01007	0.01367	PASS
Extreme(80℃)		14.45	17.27	0.01848	0.02208	PASS
Extreme(70℃)		8.18	15.77	0.01046	0.02016	PASS
Extreme(60℃)		12.00	12.00	0.01535	0.01535	PASS
Extreme(50℃)		4.00	4.00	0.00512	0.00512	PASS
Extreme(40℃)		11.00	10.00	0.01407	0.01279	PASS
Extreme(30℃)		5.00	10.00	0.00639	0.01279	PASS
Extreme(20℃)		16.00	4.00	0.02046	0.00512	PASS
Extreme(10℃)		12.88	3.38	0.01648	0.00432	PASS
Extreme(0℃)		5.41	1.75	0.00692	0.00224	PASS
Extreme(-10℃)		14.85	16.50	0.01900	0.02110	PASS
Extreme(-20℃)		4.54	6.39	0.00581	0.00817	PASS
Extreme(-30℃)		17.95	11.86	0.02295	0.01516	PASS
Extreme(-40℃)		8.59	7.81	0.01098	0.00998	PASS
25℃	LV	15.97	1.35	0.02042	0.00173	PASS
	HV	15.15	10.72	0.01937	0.01371	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability(ppm)	Frequency Stability(ppm)	Verdict
Sub-carrier spacing (KHz)	15					
Temperature	Voltage	BPSK	QPSK	BPSK	QPSK	
Normal(25℃)	Normal	12.52	14.38	0.01601	0.01839	PASS

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Extreme(85℃)		10.55	9.16	0.01350	0.01171	PASS
Extreme(80℃)		5.67	1.66	0.00725	0.00213	PASS
Extreme(70℃)		15.29	13.55	0.01955	0.01732	PASS
Extreme(60℃)		13.00	5.00	0.01662	0.00639	PASS
Extreme(50℃)		13.00	6.00	0.01662	0.00767	PASS
Extreme(40℃)		14.00	14.00	0.01790	0.01790	PASS
Extreme(30℃)		8.00	15.00	0.01023	0.01918	PASS
Extreme(20℃)		2.00	15.00	0.00256	0.01918	PASS
Extreme(10℃)		7.41	4.24	0.00947	0.00543	PASS
Extreme(0℃)		15.97	4.16	0.02043	0.00531	PASS
Extreme(-10℃)		13.80	4.83	0.01765	0.00618	PASS
Extreme(-20℃)		3.63	6.31	0.00464	0.00807	PASS
Extreme(-30℃)		8.67	5.51	0.01109	0.00704	PASS
Extreme(-40℃)		17.21	13.45	0.02201	0.01720	PASS
25℃	LV	16.23	1.28	0.02076	0.00164	PASS
	HV	5.96	16.50	0.00762	0.02110	PASS

NB-IoT Band 66						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability(ppm)	Frequency Stability(ppm)	Verdict
Sub-carrier spacing (KHz)	3.75					
Temperature	Voltage	BPSK	QPSK	BPSK	QPSK	
Normal(25℃)	Normal	12.02	14.09	0.00689	0.00807	PASS
Extreme(85℃)		11.73	17.39	0.00672	0.00996	PASS
Extreme(80℃)		3.13	9.68	0.00179	0.00555	PASS
Extreme(70℃)		17.00	17.00	0.00974	0.00974	PASS
Extreme(60℃)		12.00	6.00	0.00688	0.00344	PASS
Extreme(50℃)		12.00	16.00	0.00688	0.00917	PASS
Extreme(40℃)		13.00	14.00	0.00745	0.00802	PASS
Extreme(30℃)		2.00	6.00	0.00115	0.00344	PASS
Extreme(20℃)		14.70	9.17	0.00842	0.00526	PASS
Extreme(10℃)		8.00	17.83	0.00458	0.01022	PASS
Extreme(0℃)		11.57	3.55	0.00663	0.00203	PASS
Extreme(-10℃)		7.18	1.58	0.00411	0.00091	PASS
Extreme(-20℃)		1.97	12.24	0.00113	0.00701	PASS
Extreme(-30℃)		12.61	17.39	0.00723	0.00997	PASS
Extreme(-40℃)		10.73	17.10	0.00615	0.00980	PASS
25℃	LV	7.55	15.36	0.00433	0.00880	PASS
	HV	17.95	16.47	0.01029	0.00944	PASS

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Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability(ppm)	Frequency Stability(ppm)	Verdict
Sub-carrier spacing (KHz)	15					
Temperature	Voltage	BPSK	QPSK	BPSK	QPSK	
Normal(25℃)	Normal	9.14	4.51	0.00524	0.00259	PASS
Extreme(85℃)		8.24	2.33	0.00472	0.00134	PASS
Extreme(80℃)		14.55	17.16	0.00834	0.00983	PASS
Extreme(70℃)		6.00	14.00	0.00344	0.00802	PASS
Extreme(60℃)		2.00	7.00	0.00115	0.00401	PASS
Extreme(50℃)		13.00	13.00	0.00745	0.00745	PASS
Extreme(40℃)		4.00	7.00	0.00229	0.00401	PASS
Extreme(30℃)		8.00	4.00	0.00458	0.00229	PASS
Extreme(20℃)		11.16	6.35	0.00640	0.00364	PASS
Extreme(10℃)		16.48	7.69	0.00945	0.00441	PASS
Extreme(0℃)		7.76	9.45	0.00444	0.00541	PASS
Extreme(-10℃)		8.25	2.53	0.00473	0.00145	PASS
Extreme(-20℃)		4.55	12.73	0.00261	0.00729	PASS
Extreme(-30℃)		11.67	16.51	0.00669	0.00946	PASS
Extreme(-40℃)		14.14	13.75	0.00810	0.00788	PASS
25℃	LV	16.55	9.23	0.00949	0.00529	PASS
	HV	17.17	3.61	0.00984	0.00207	PASS

NB-IoT Band 71						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability(ppm)	Frequency Stability(ppm)	Verdict
Sub-carrier spacing (KHz)	3.75					
Temperature	Voltage	BPSK	QPSK	BPSK	QPSK	
Normal(25℃)	Normal	2.62	7.57	0.00385	0.01113	PASS
Extreme(85℃)		3.10	15.57	0.00455	0.02288	PASS
Extreme(80℃)		9.83	15.21	0.01445	0.02236	PASS
Extreme(70℃)		4.71	8.79	0.00692	0.01292	PASS
Extreme(60℃)		14.00	6.00	0.02057	0.00882	PASS
Extreme(50℃)		9.00	2.00	0.01323	0.00294	PASS
Extreme(40℃)		6.00	2.00	0.00882	0.00294	PASS
Extreme(30℃)		12.00	4.00	0.01763	0.00588	PASS
Extreme(20℃)		13.00	11.00	0.01910	0.01616	PASS
Extreme(10℃)		10.13	8.63	0.01489	0.01269	PASS
Extreme(0℃)		13.42	7.41	0.01973	0.01088	PASS
Extreme(-10℃)		14.70	17.40	0.02160	0.02558	PASS

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Extreme(-20℃)		1.60	11.47	0.00235	0.01686	PASS
Extreme(-30℃)		5.42	5.74	0.00796	0.00843	PASS
Extreme(-40℃)		10.42	12.57	0.01531	0.01848	PASS
25℃	LV	14.28	3.70	0.02098	0.00543	PASS
	HV	9.18	8.23	0.01350	0.01209	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability(ppm)	Frequency Stability(ppm)	Verdict
Sub-carrier spacing (KHz)	15					
Temperature	Voltage	BPSK	QPSK	BPSK	QPSK	
Normal(25℃)	Normal	4.22	6.92	0.00620	0.01016	PASS
Extreme(85℃)		15.68	4.75	0.02305	0.00698	PASS
Extreme(80℃)		10.47	17.53	0.01538	0.02576	PASS
Extreme(70℃)		2.52	12.83	0.00371	0.01886	PASS
Extreme(60℃)		16.00	4.00	0.02351	0.00588	PASS
Extreme(50℃)		16.00	3.00	0.02351	0.00441	PASS
Extreme(40℃)		13.00	8.00	0.01910	0.01176	PASS
Extreme(30℃)		17.00	9.00	0.02498	0.01323	PASS
Extreme(20℃)		8.00	7.00	0.01176	0.01029	PASS
Extreme(10℃)		7.13	8.68	0.01048	0.01276	PASS
Extreme(0℃)		1.62	7.63	0.00238	0.01121	PASS
Extreme(-10℃)		2.89	9.82	0.00425	0.01443	PASS
Extreme(-20℃)		15.06	1.27	0.02214	0.00186	PASS
Extreme(-30℃)		8.06	9.63	0.01185	0.01416	PASS
Extreme(-40℃)		12.81	14.61	0.01882	0.02147	PASS
25℃	LV	2.42	11.82	0.00355	0.01736	PASS
	HV	11.49	5.62	0.01689	0.00825	PASS

NB-IoT Band 85						
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability(ppm)	Frequency Stability(ppm)	Verdict
Sub-carrier spacing (KHz)	3.75					
Temperature	Voltage	BPSK	QPSK	BPSK	QPSK	
Normal(25℃)	Normal	17.22	1.34	0.02435	0.00190	PASS
Extreme(85℃)		5.92	9.56	0.00838	0.01352	PASS
Extreme(80℃)		13.53	1.84	0.01913	0.00261	PASS
Extreme(70℃)		8.72	13.83	0.01233	0.01957	PASS
Extreme(60℃)		2.00	7.00	0.00283	0.00990	PASS
Extreme(50℃)		6.00	10.00	0.00849	0.01414	PASS
Extreme(40℃)		13.00	12.00	0.01839	0.01697	PASS

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Extreme(30℃)		12.00	1.00	0.01697	0.00141	PASS
Extreme(20℃)		10.00	16.00	0.01414	0.02263	PASS
Extreme(10℃)		15.02	7.77	0.02125	0.01099	PASS
Extreme(0℃)		7.64	10.36	0.01081	0.01465	PASS
Extreme(-10℃)		12.59	14.96	0.01781	0.02116	PASS
Extreme(-20℃)		6.88	11.97	0.00973	0.01693	PASS
Extreme(-30℃)		8.71	9.54	0.01232	0.01349	PASS
Extreme(-40℃)		10.47	12.05	0.01480	0.01704	PASS
25℃	LV	8.89	16.00	0.01257	0.02263	PASS
	HV	2.27	3.03	0.00321	0.00429	PASS
Condition		Freq.Error (Hz)	Freq.Error (Hz)	Frequency Stability(ppm)	Frequency Stability(ppm)	Verdict
Sub-carrier spacing (KHz)	15					
Temperature	Voltage	BPSK	QPSK	BPSK	QPSK	
Normal(25℃)	Normal	6.97	7.32	0.00986	0.01035	PASS
Extreme(85℃)		13.66	6.40	0.01933	0.00905	PASS
Extreme(80℃)		10.99	15.46	0.01555	0.02186	PASS
Extreme(70℃)		11.53	4.83	0.01631	0.00683	PASS
Extreme(60℃)		7.00	16.00	0.00990	0.02263	PASS
Extreme(50℃)		6.00	4.00	0.00849	0.00566	PASS
Extreme(40℃)		3.00	9.00	0.00424	0.01273	PASS
Extreme(30℃)		7.00	11.00	0.00990	0.01556	PASS
Extreme(20℃)		5.00	7.00	0.00707	0.00990	PASS
Extreme(10℃)		7.15	15.23	0.01011	0.02154	PASS
Extreme(0℃)		14.19	4.53	0.02007	0.00641	PASS
Extreme(-10℃)		13.64	5.10	0.01930	0.00722	PASS
Extreme(-20℃)		17.40	12.51	0.02461	0.01770	PASS
Extreme(-30℃)		5.76	3.85	0.00814	0.00545	PASS
Extreme(-40℃)		14.88	9.68	0.02104	0.01369	PASS
25℃	LV	13.03	2.30	0.01843	0.00326	PASS
	HV	15.02	2.44	0.02124	0.00345	PASS

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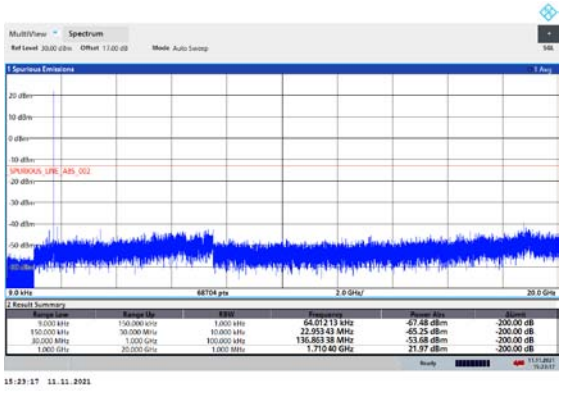
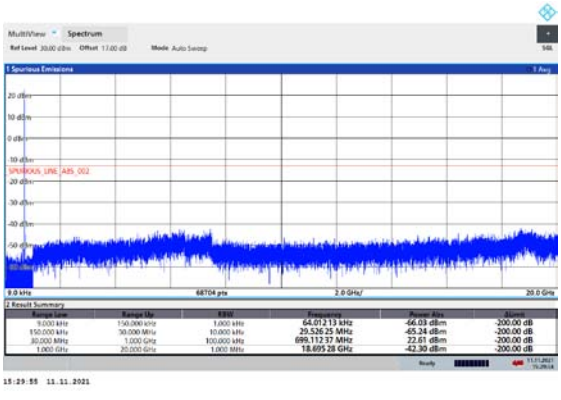
Spurious Emissions at Antenna Terminals

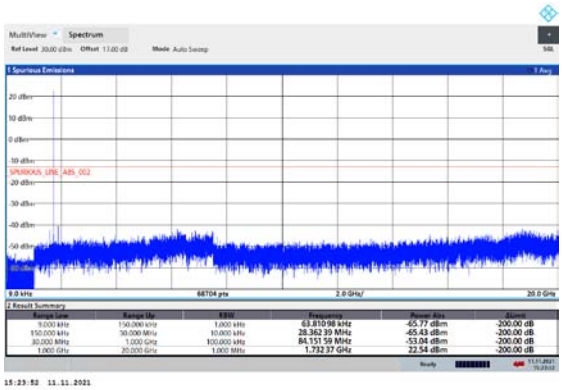
NB-IoT Band 4 CH-Low 9kHz~20GHz



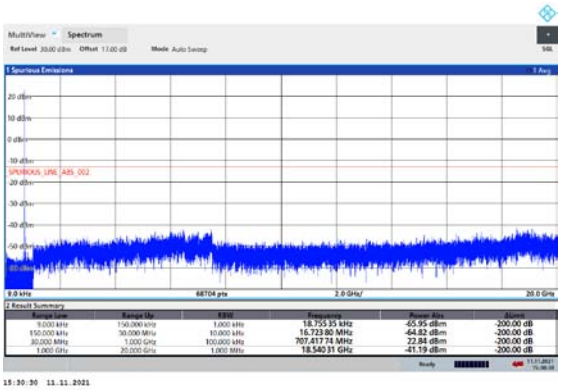
NB-IoT Band 12 CH-Low 9kHz~20GHz



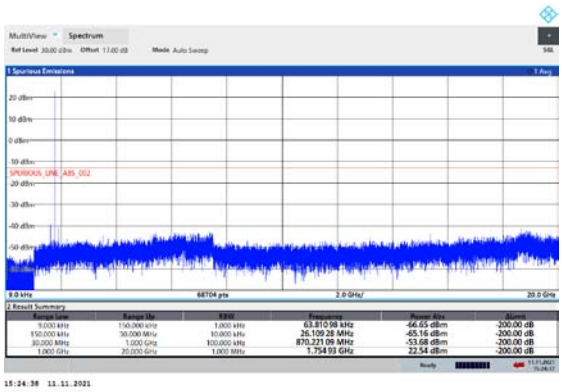
NB-IoT Band 4 CH-Middle 30MHz~1GHz



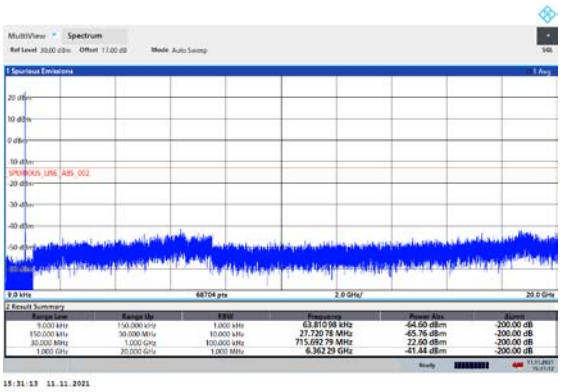
NB-IoT Band 12 CH-Middle 30MHz~1GHz



NB-IoT Band 4 CH-High 30MHz~1GHz



NB-IoT Band 12 CH-High 30MHz~1GHz



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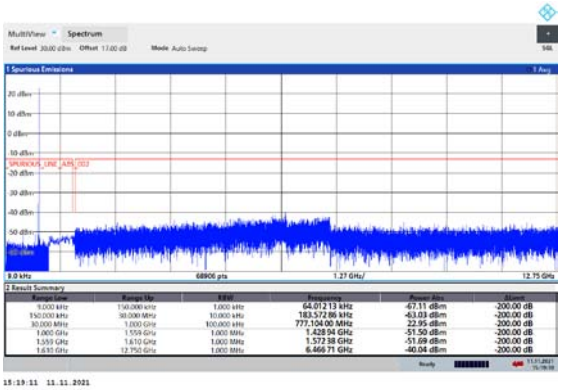
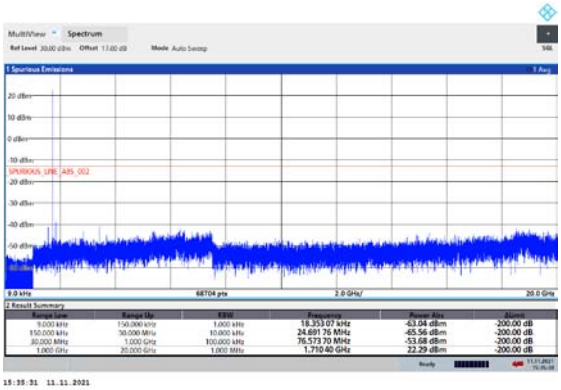
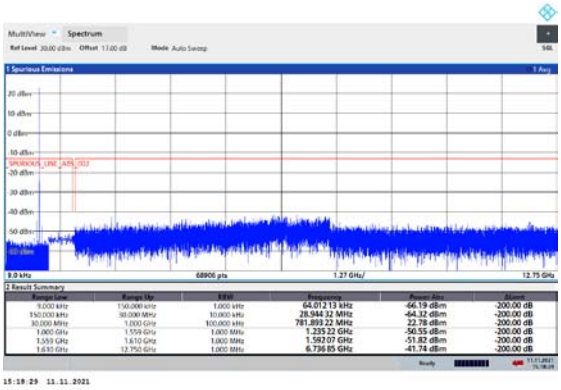
NB-IoT Band 13 CH-Low 9kHz~20GHz



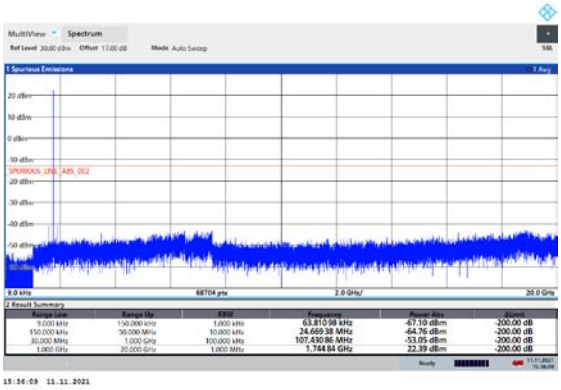
NB-IoT Band 66 CH-Low 9kHz~20GHz



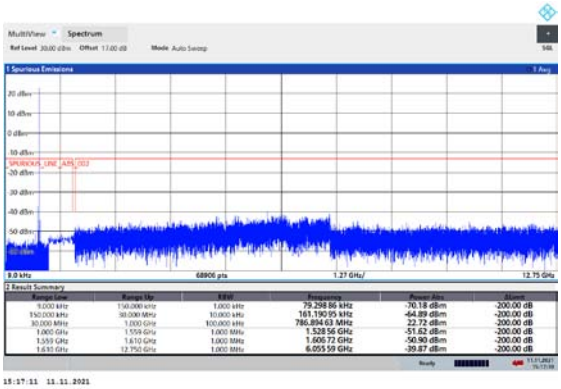
NB-IoT Band 13 CH-Middle 30MHz~1GHz



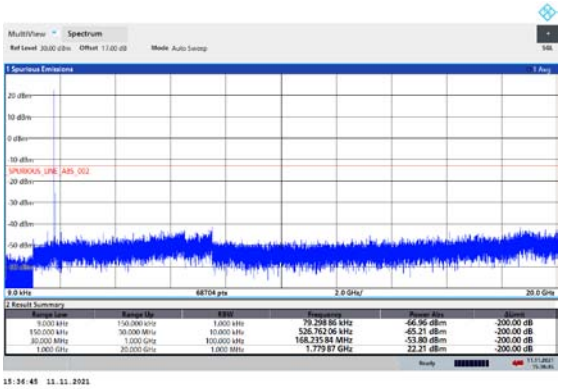
NB-IoT Band 66 CH-Middle 30MHz~1GHz



NB-IoT Band 13 CH-High 30MHz~1GHz



NB-IoT Band 66 CH-High 30MHz~1GHz



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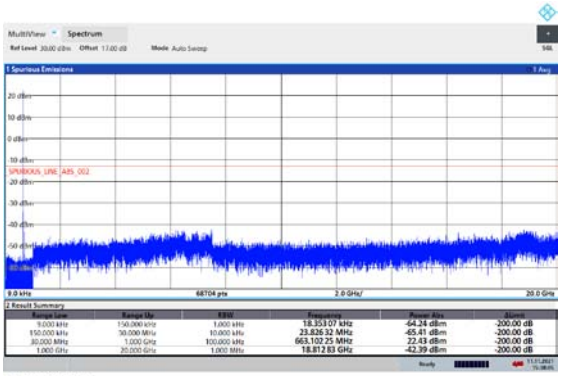
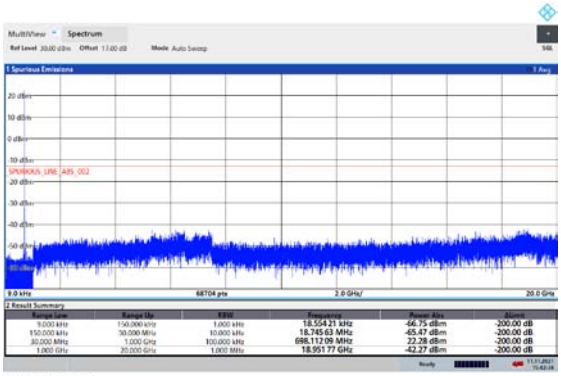
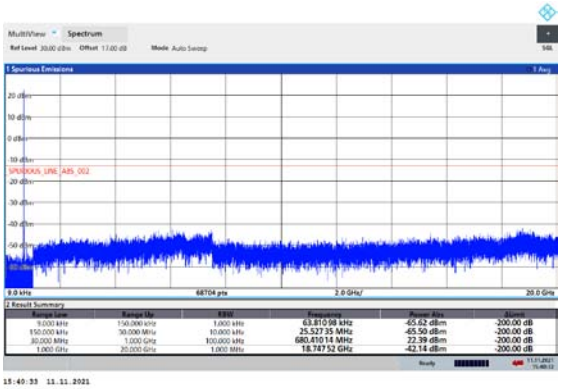
NB-IoT Band 71 CH-Low 9kHz~20GHz



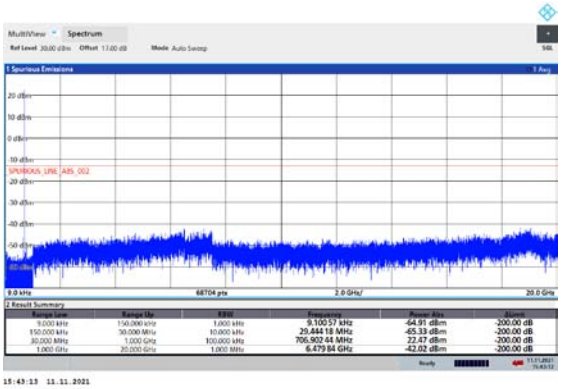
NB-IoT Band 85 CH-Low 9kHz~20GHz



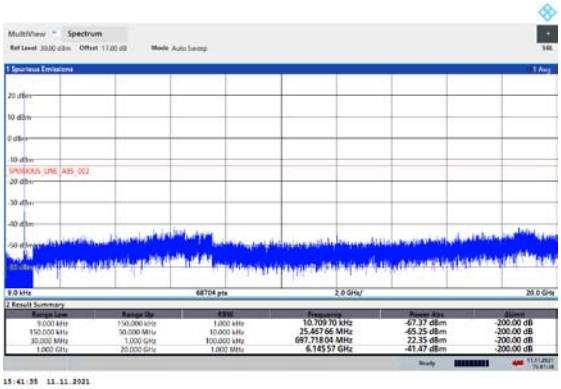
NB-IoT Band 71 CH-Middle 30MHz~1GHz



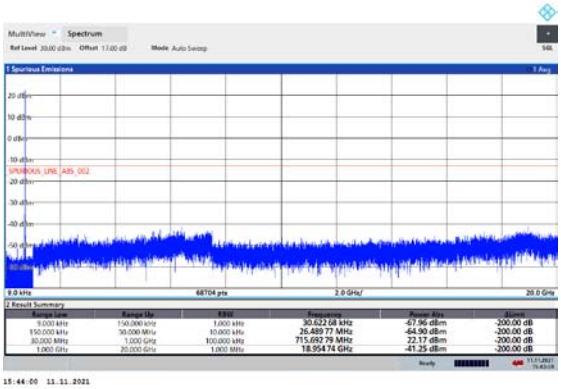
NB-IoT Band 85 CH-Middle 30MHz~1GHz



NB-IoT Band 71 CH-High 30MHz~1GHz



NB-IoT Band 85 CH-High 30MHz~1GHz



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Radiates Spurious Emission

NB-IoT Band 4 15kHz QPSK CH-Low

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3420.0	-48.00	2.6	10.15	Horizontal	-40.45	-13.00	27.45	225
3	5130.0	-51.87	2.4	11.35	Horizontal	-42.92	-13.00	29.92	135
4	6840.0	-51.82	4.5	10.85	Horizontal	-45.47	-13.00	32.47	225
5	8550.0	-55.05	5.1	11.35	Horizontal	-48.80	-13.00	35.80	135
6	10260.0	-51.54	5.3	11.95	Horizontal	-44.89	-13.00	31.89	90
7	11970.0	-50.22	5.5	13.55	Horizontal	-42.17	-13.00	29.17	45
8	13680.0	-50.51	6.3	13.75	Horizontal	-43.06	-13.00	30.06	0
9	15390.0	-46.78	6.7	13.85	Horizontal	-39.63	-13.00	26.63	90
10	17100.0	-47.50	6.8	14.25	Horizontal	-40.05	-13.00	27.05	225

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

NB-IoT Band 4 15kHz QPSK CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.0	-38.11	2.6	10.15	Horizontal	-30.56	-13.00	17.56	0
3	5197.5	-52.27	2.4	11.35	Horizontal	-43.32	-13.00	30.32	225
4	6930.0	-55.03	4.5	10.85	Horizontal	-48.68	-13.00	35.68	180
5	8662.5	-53.28	5.1	11.35	Horizontal	-47.03	-13.00	34.03	135
6	10395.0	-48.51	5.3	11.95	Horizontal	-41.86	-13.00	28.86	45
7	12127.5	-48.42	5.5	13.55	Horizontal	-40.37	-13.00	27.37	225
8	13860.0	-51.00	6.3	13.75	Horizontal	-43.55	-13.00	30.55	315
9	15592.5	-49.30	6.7	13.85	Horizontal	-42.15	-13.00	29.15	315
10	17325.0	-47.90	6.8	14.25	Horizontal	-40.45	-13.00	27.45	225

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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NB-IoT Band 4 15kHz QPSK CH-High

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3509.8	-39.82	2.6	10.15	Horizontal	-32.27	-13.00	19.27	135
3	5264.7	-56.84	2.4	11.35	Horizontal	-47.89	-13.00	34.89	180
4	7019.6	-51.59	4.5	10.85	Horizontal	-45.24	-13.00	32.24	180
5	8774.5	-53.22	5.1	11.35	Horizontal	-46.97	-13.00	33.97	135
6	10529.4	-49.70	5.3	11.95	Horizontal	-43.05	-13.00	30.05	0
7	12284.3	-50.62	5.5	13.55	Horizontal	-42.57	-13.00	29.57	225
8	14039.2	-51.08	6.3	13.75	Horizontal	-43.63	-13.00	30.63	270
9	15794.1	-49.37	6.7	13.85	Horizontal	-42.22	-13.00	29.22	90
10	17549.0	-47.47	6.8	14.25	Horizontal	-40.02	-13.00	27.02	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

NB-IoT Band 12 15kHz QPSK CH-Low

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1398.2	-45.86	2.00	10.15	Horizontal	-39.86	-13.00	26.86	135
3	2097.3	-59.78	2.51	11.05	Horizontal	-53.39	-13.00	40.39	270
4	2796.4	-59.64	4.20	11.15	Horizontal	-54.84	-13.00	41.84	135
5	3495.5	-57.55	5.20	11.15	Horizontal	-53.75	-13.00	40.75	270
6	4194.6	-58.67	5.50	11.95	Horizontal	-54.37	-13.00	41.37	135
7	4893.7	-58.94	5.70	13.55	Horizontal	-53.24	-13.00	40.24	0
8	5592.8	-57.36	6.30	13.75	Horizontal	-52.06	-13.00	39.06	180
9	6291.9	-57.23	6.80	13.85	Horizontal	-52.33	-13.00	39.33	315
10	6991.0	-58.39	6.90	14.25	Horizontal	-53.19	-13.00	40.19	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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NB-IoT Band 12 15kHz QPSK CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1415.0	-44.65	2.00	10.15	Horizontal	-38.65	-13.00	25.65	90
3	2122.5	-59.35	2.51	11.05	Horizontal	-52.96	-13.00	39.96	135
4	2827.8	-58.12	4.20	11.15	Horizontal	-53.32	-13.00	40.32	180
5	3537.5	-55.95	5.20	11.15	Horizontal	-52.15	-13.00	39.15	180
6	4245.0	-56.25	5.50	11.95	Horizontal	-51.95	-13.00	38.95	90
7	4952.5	-58.34	5.70	13.55	Horizontal	-52.64	-13.00	39.64	270
8	5660.0	-56.83	6.30	13.75	Horizontal	-51.53	-13.00	38.53	135
9	6367.5	-56.68	6.80	13.85	Horizontal	-51.78	-13.00	38.78	270
10	7075.0	-55.37	6.90	14.25	Horizontal	-50.17	-13.00	37.17	135

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

NB-IoT Band 12 15kHz QPSK CH-High

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1431.8	-40.55	2.00	10.15	Horizontal	-34.55	-13.00	21.55	180
3	2147.7	-57.69	2.51	11.05	Horizontal	-51.30	-13.00	38.30	135
4	2863.6	-58.66	4.20	11.15	Horizontal	-53.86	-13.00	40.86	180
5	3758.8	-55.47	5.20	11.15	Horizontal	-51.67	-13.00	38.67	135
6	4295.0	-56.03	5.50	11.95	Horizontal	-51.73	-13.00	38.73	225
7	5011.0	-57.57	5.70	13.55	Horizontal	-51.87	-13.00	38.87	45
8	5726.4	-57.72	6.30	13.75	Horizontal	-52.42	-13.00	39.42	0
9	6443.0	-57.44	6.80	13.85	Horizontal	-52.54	-13.00	39.54	135
10	7158.6	-54.56	6.90	14.25	Horizontal	-49.36	-13.00	36.36	0

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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NB-IoT Band 13 15kHz QPSK CH-Low

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1554.2	-48.92	2.00	10.15	Horizontal	-42.92	-13.00	29.92	0
3	2331.3	-59.71	2.50	11.35	Horizontal	-53.01	-13.00	40.01	45
4	3108.4	-57.14	4.20	10.85	Horizontal	-52.64	-13.00	39.64	270
5	3885.5	-57.87	5.20	11.35	Horizontal	-53.87	-13.00	40.87	225
6	4662.6	-57.98	5.50	11.95	Horizontal	-53.68	-13.00	40.68	90
7	5439.7	-56.39	5.70	13.55	Horizontal	-50.69	-13.00	37.69	0
8	6216.8	-56.80	6.30	13.75	Horizontal	-51.50	-13.00	38.50	270
9	6993.9	-57.68	6.80	13.85	Horizontal	-52.78	-13.00	39.78	315
10	7771.0	-54.44	6.90	14.25	Horizontal	-49.24	-13.00	36.24	90

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

NB-IoT Band 66 15kHz CH-Low

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3420.2	-42.26	2.6	10.15	Horizontal	-34.71	-13.00	21.71	225
3	5130.3	-51.80	2.4	11.35	Horizontal	-42.85	-13.00	29.85	90
4	6840.4	-54.31	4.5	10.85	Horizontal	-47.96	-13.00	34.96	135
5	8550.5	-54.27	5.1	11.35	Horizontal	-48.02	-13.00	35.02	225
6	10260.6	-49.10	5.3	11.95	Horizontal	-42.45	-13.00	29.45	270
7	11970.7	-49.02	5.5	13.55	Horizontal	-40.97	-13.00	27.97	0
8	13680.8	-51.48	6.3	13.75	Horizontal	-44.03	-13.00	31.03	135
9	15390.9	-46.85	6.7	13.85	Horizontal	-39.70	-13.00	26.70	315
10	17101.0	-49.35	6.8	14.25	Horizontal	-41.90	-13.00	28.90	90

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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NB-IoT Band 66 15kHz CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3510.0	-41.73	2.6	10.15	Horizontal	-34.18	-13.00	21.18	0
3	5265.0	-56.04	2.4	11.35	Horizontal	-47.09	-13.00	34.09	270
4	7020.0	-52.58	4.5	10.85	Horizontal	-46.23	-13.00	33.23	225
5	8775.0	-53.38	5.1	11.35	Horizontal	-47.13	-13.00	34.13	45
6	10530.0	-50.01	5.3	11.95	Horizontal	-43.36	-13.00	30.36	225
7	12285.0	-49.51	5.5	13.55	Horizontal	-41.46	-13.00	28.46	315
8	14040.0	-50.96	6.3	13.75	Horizontal	-43.51	-13.00	30.51	90
9	15795.0	-48.96	6.7	13.85	Horizontal	-41.81	-13.00	28.81	315
10	17550.0	-48.30	6.8	14.25	Horizontal	-40.85	-13.00	27.85	90

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

NB-IoT Band 66 15kHz CH-High

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3559.8	-46.11	2.6	10.15	Horizontal	-38.56	-13.00	25.56	225
3	5339.7	-58.15	2.4	11.35	Horizontal	-49.20	-13.00	36.20	90
4	7119.6	-48.56	4.5	10.85	Horizontal	-42.21	-13.00	29.21	225
5	8899.5	-53.23	5.1	11.35	Horizontal	-46.98	-13.00	33.98	225
6	10679.4	-52.31	5.3	11.95	Horizontal	-45.66	-13.00	32.66	0
7	12459.3	-52.19	5.5	13.55	Horizontal	-44.14	-13.00	31.14	270
8	14239.2	-48.17	6.3	13.75	Horizontal	-40.72	-13.00	27.72	135
9	16019.1	-48.49	6.7	13.85	Horizontal	-41.34	-13.00	28.34	45
10	17799.0	-46.06	6.8	14.25	Horizontal	-38.61	-13.00	25.61	0

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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NB-IoT Band 71 15kHz QPSK CH-Low

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1326.2	-39.21	2.6	10.15	Horizontal	-33.81	-13.00	20.81	45
3	1989.3	-50.14	2.4	11.05	Horizontal	-43.64	-13.00	30.64	135
4	2652.4	-42.29	4.5	11.15	Horizontal	-37.79	-13.00	24.79	0
5	3315.5	-60.12	5.1	11.35	Horizontal	-56.02	-13.00	43.02	0
6	3978.6	-59.73	5.3	11.95	Horizontal	-55.23	-13.00	42.23	90
7	4641.7	-59.15	5.5	13.55	Horizontal	-53.25	-13.00	40.25	225
8	5304.8	-57.43	6.3	13.75	Horizontal	-52.13	-13.00	39.13	0
9	5967.9	-54.79	6.7	13.85	Horizontal	-49.79	-13.00	36.79	90
10	6631.0	-56.16	6.8	14.25	Horizontal	-50.86	-13.00	37.86	270
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

NB-IoT Band 71 15kHz QPSK CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1361.0	-40.01	2.6	10.15	Horizontal	-34.61	-13.00	21.61	270
3	2041.5	-46.97	2.4	11.05	Horizontal	-40.47	-13.00	27.47	315
4	2722.0	-41.58	4.5	11.15	Horizontal	-37.08	-13.00	24.08	225
5	3402.5	-58.94	5.1	11.35	Horizontal	-54.84	-13.00	41.84	0
6	4083.0	-59.62	5.3	11.95	Horizontal	-55.12	-13.00	42.12	45
7	4763.5	-57.65	5.5	13.55	Horizontal	-51.75	-13.00	38.75	270
8	5444.0	-55.67	6.3	13.75	Horizontal	-50.37	-13.00	37.37	225
9	6124.5	-56.77	6.7	13.85	Horizontal	-51.77	-13.00	38.77	180
10	6805.0	-57.67	6.8	14.25	Horizontal	-52.37	-13.00	39.37	0
Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor. 2. The worst emission was found in the antenna is Horizontal position.									

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NB-IoT Band 71 15kHz QPSK CH-High

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1395.8	-35.84	2.6	10.15	Horizontal	-30.44	-13.00	17.44	135
3	2093.7	-46.34	2.4	11.05	Horizontal	-39.84	-13.00	26.84	315
4	2791.6	-39.94	4.5	11.15	Horizontal	-35.44	-13.00	22.44	90
5	3489.5	-56.29	5.1	11.35	Horizontal	-52.19	-13.00	39.19	225
6	4187.4	-59.00	5.3	11.95	Horizontal	-54.50	-13.00	41.50	135
7	4885.3	-58.56	5.5	13.55	Horizontal	-52.66	-13.00	39.66	180
8	5583.2	-56.69	6.3	13.75	Horizontal	-51.39	-13.00	38.39	315
9	6281.1	-55.97	6.7	13.85	Horizontal	-50.97	-13.00	37.97	225
10	6979.0	-57.05	6.8	14.25	Horizontal	-51.75	-13.00	38.75	315

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

NB-IoT Band 85 15kHz QPSK CH-Low

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1396.2	-45.66	2.6	10.15	Horizontal	-40.26	-13.00	27.26	225
3	2094.3	-59.90	2.4	11.05	Horizontal	-53.40	-13.00	40.40	315
4	2792.4	-59.49	4.5	11.15	Horizontal	-54.99	-13.00	41.99	135
5	3490.5	-58.66	5.1	11.35	Horizontal	-54.56	-13.00	41.56	0
6	4188.6	-58.17	5.3	11.95	Horizontal	-53.67	-13.00	40.67	315
7	4886.7	-59.36	5.5	13.55	Horizontal	-53.46	-13.00	40.46	270
8	5584.8	-56.74	6.3	13.75	Horizontal	-51.44	-13.00	38.44	225
9	6282.9	-57.02	6.7	13.85	Horizontal	-52.02	-13.00	39.02	90
10	6981.0	-57.34	6.8	14.25	Horizontal	-52.04	-13.00	39.04	180

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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NB-IoT Band 85 15kHz QPSK CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1414.0	-44.17	2.6	10.15	Horizontal	-38.77	-13.00	25.77	315
3	2121.0	-58.58	2.4	11.05	Horizontal	-52.08	-13.00	39.08	90
4	2828.0	-59.65	4.5	11.15	Horizontal	-55.15	-13.00	42.15	225
5	3535.0	-55.66	5.1	11.35	Horizontal	-51.56	-13.00	38.56	45
6	4242.0	-56.85	5.3	11.95	Horizontal	-52.35	-13.00	39.35	225
7	4949.0	-58.38	5.5	13.55	Horizontal	-52.48	-13.00	39.48	315
8	5656.0	-56.31	6.3	13.75	Horizontal	-51.01	-13.00	38.01	45
9	6363.0	-56.71	6.7	13.85	Horizontal	-51.71	-13.00	38.71	135
10	7070.0	-55.14	6.8	14.25	Horizontal	-49.84	-13.00	36.84	315

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

NB-IoT Band 85 15kHz QPSK CH-High

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	ERP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	1431.8	-38.23	2.6	10.15	Horizontal	-32.83	-13.00	19.83	180
3	2147.7	-59.08	2.4	11.05	Horizontal	-52.58	-13.00	39.58	225
4	2863.6	-59.81	4.5	11.15	Horizontal	-55.31	-13.00	42.31	0
5	3579.5	-56.19	5.1	11.35	Horizontal	-52.09	-13.00	39.09	225
6	4295.4	-57.06	5.3	11.95	Horizontal	-52.56	-13.00	39.56	135
7	5011.3	-57.56	5.5	13.55	Horizontal	-51.66	-13.00	38.66	90
8	5727.2	-56.82	6.3	13.75	Horizontal	-51.52	-13.00	38.52	270
9	6443.1	-57.69	6.7	13.85	Horizontal	-52.69	-13.00	39.69	0
10	7159.0	-54.57	6.8	14.25	Horizontal	-49.27	-13.00	36.27	180

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

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Main Test Instruments

Date of Testing (variant): August 24, 2021 ~ November 25, 2021

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Base Station Simulator	R&S	CMW500	113824	2021-05-15	2022-05-14
Climate Chamber	Weiss	VT4002	58226119450010	2021-05-15	2022-05-14
Spectrum Analyzer	Key sight	N9020	MY52330084	2021-05-15	2022-05-14
Signal Analyzer	R&S	FSV3030	101411	2020-12-13	2021-12-12
Signal Analyzer	R&S	FSV30	100815	2020-12-13	2021-12-12
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	01111	2019--9-12	2022-09-11
Horn Antenna	Schwarzbeck	BBHA 9120D	1594	2020-12-17	2021-12-16
Software	R&S	EMC32	10.35.10	/	/

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