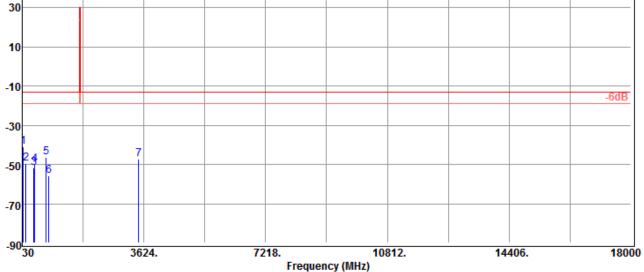


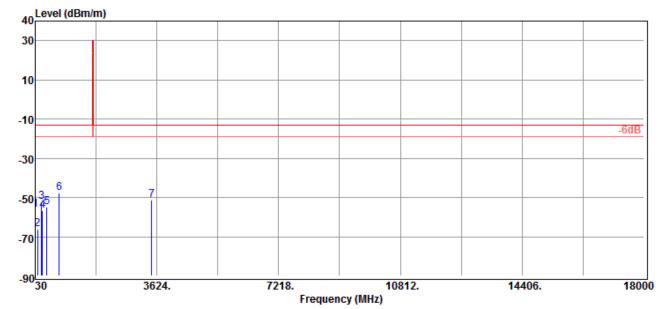
Operation Mode Test Mode EUT Pol Test Channel 40 ^{Level (dBm/m)}	:NB lot B4 BPSK :TX CH MID :E2 Plan :1732.5 MHz	Te	est Date emp./Humi. ntenna Pol. ngineer	:2018- :25/59 :VERT :Ashtor	ICAL
40					



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
62.01	-40.99	-39.79	-0.54	-0.66	-13.00	-27.99
145.43	-49.55	-50.83	2.27	-0.99	-13.00	-36.55
375.32	-51.64	-55.30	5.66	-2.00	-13.00	-38.64
396.66	-50.09	-53.63	5.57	-2.03	-13.00	-37.09
737.13	-46.42	-51.69	7.38	-2.11	-13.00	-33.42
817.64	-55.76	-60.89	7.54	-2.41	-13.00	-42.76
3465.00	-47.10	-52.49	12.23	-6.84	-13.00	-34.10



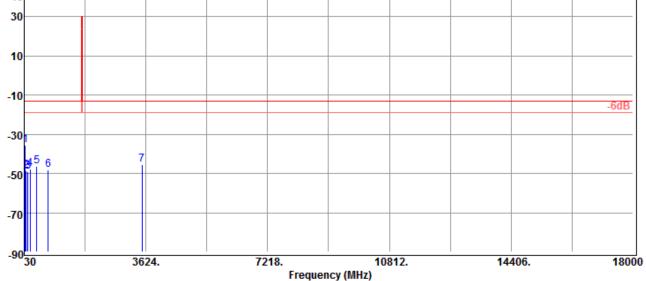
Operation Mode	:NB lot B4 BPSK 15 RB 1,11	Test Date	:2018-11-22
Test Mode	:TX CH MID	Temp./Humi.	:25/59
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:1732.5 MHz	Engineer	:Ashton



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
40.67	-56.06	-44.05	-11.41	-0.60	-13.00	-43.06
97.90	-66.22	-64.66	-0.71	-0.85	-13.00	-53.22
212.36	-52.05	-56.41	5.65	-1.29	-13.00	-39.05
249.22	-56.80	-60.54	5.18	-1.44	-13.00	-43.80
375.32	-54.84	-58.50	5.66	-2.00	-13.00	-41.84
741.98	-47.71	-53.01	7.39	-2.09	-13.00	-34.71
3465.00	-51.13	-56.52	12.23	-6.84	-13.00	-38.13



Operation Mode Test Mode EUT Pol Test Channel	:NB lot :TX CH :E2 Plar :1754.9	HIGH า	I5 RB 1,11	Temp.	/Humi. na Pol.	:2018 :25/59 :VERT :Ashto	ICAL
40 Level (dBm/m)							

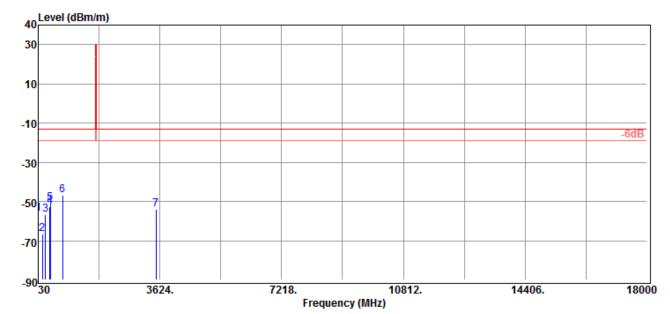


Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
60.07	-35.60	-34.13	-0.82	-0.65	-13.00	-22.60
82.38	-48.69	-48.40	0.50	-0.79	-13.00	-35.69
143.49	-49.03	-50.21	2.16	-0.98	-13.00	-36.03
200.72	-47.88	-52.46	5.82	-1.24	-13.00	-34.88
402.48	-46.37	-49.91	5.58	-2.04	-13.00	-33.37
737.13	-48.33	-53.60	7.38	-2.11	-13.00	-35.33
3509.80	-45.31	-50.62	12.31	-7.00	-13.00	-32.31

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:NB lot B4 BPSK 15 RB 1,11 **Operation Mode** Test Date :2018-11-22 Test Mode :TX CH HIGH Temp./Humi. :25/59 EUT Pol :E2 Plan Antenna Pol. :HORIZONTAL :1754.9 MHz :Ashton **Test Channel** Engineer



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-56.41	-35.92	-20.05	-0.44	-13.00	-43.41
148.34	-66.77	-68.21	2.44	-1.00	-13.00	-53.77
249.22	-56.94	-60.68	5.18	-1.44	-13.00	-43.94
374.35	-52.58	-56.26	5.67	-1.99	-13.00	-39.58
390.84	-50.92	-54.49	5.59	-2.02	-13.00	-37.92
746.83	-46.98	-52.31	7.40	-2.07	-13.00	-33.98
3509.80	-54.19	-59.50	12.31	-7.00	-13.00	-41.19



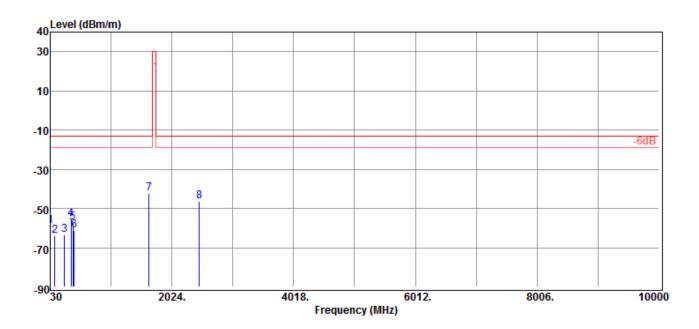
Radiated Spurious Emission Measurement Result: LTE-Band 5 (The Worst Case)

Operation Mode Test Mode EUT Pol **Test Channel**

:NB lot B5 QPSK 15 RB 1,0 :TX CH LOW :E2 Plan :824.1 MHz

Test Date Temp./Humi. Antenna Pol. Engineer

:2018-11-22 :25/59 :VERTICAL :Ashton



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-58.96	-38.47	-20.05	-0.44	-13.00	-45.96
103.72	-63.84	-62.38	-0.58	-0.88	-13.00	-50.84
263.77	-63.56	-67.44	5.37	-1.49	-13.00	-50.56
374.35	-55.57	-59.25	5.67	-1.99	-13.00	-42.57
400.54	-57.15	-60.67	5.56	-2.04	-13.00	-44.15
424.79	-61.18	-64.95	5.82	-2.05	-13.00	-48.18
1648.20	-42.10	-47.06	8.79	-3.83	-13.00	-29.10
2472.30	-46.35	-52.65	10.68	-4.38	-13.00	-33.35

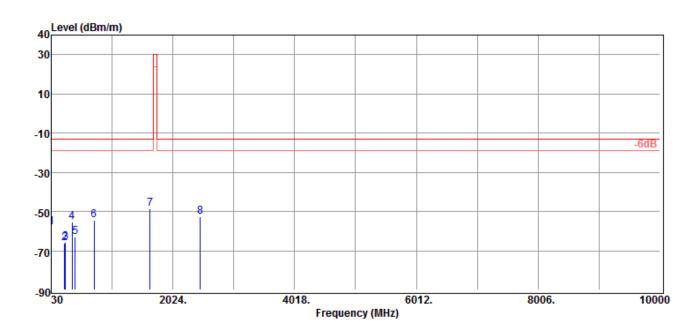


Operation Mode Test Mode EUT Pol **Test Channel**

:NB lot B5 QPSK 15 RB 1,0 :TX CH LOW :E2 Plan :824.1 MHz

Test Date Temp./Humi. Antenna Pol. Engineer

:2018-11-22 :25/59 :HORIZONTAL :Ashton



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-58.07	-37.58	-20.05	-0.44	-13.00	-45.07
250.19	-66.34	-70.07	5.17	-1.44	-13.00	-53.34
261.83	-65.84	-69.70	5.34	-1.48	-13.00	-52.84
375.32	-55.56	-59.22	5.66	-2.00	-13.00	-42.56
424.79	-63.20	-66.97	5.82	-2.05	-13.00	-50.20
731.31	-54.39	-59.62	7.37	-2.14	-13.00	-41.39
1648.20	-48.74	-53.70	8.79	-3.83	-13.00	-35.74
2472.30	-52.50	-58.80	10.68	-4.38	-13.00	-39.50

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-10

-30

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-90

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6

6dB

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8006.

:NB lot B5 QPSK 15 RB 1,0 **Operation Mode** Test Date :2018-11-22 Test Mode :TX CH MID Temp./Humi. :25/59 EUT Pol :E2 Plan Antenna Pol. :VERTICAL :836.5 MHz :Ashton **Test Channel** Engineer Level (dBm/m) 40 30 10

> 4018. 6012. Frequency (MHz)

Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
70.74	-46.83	-46.62	0.52	-0.73	-13.00	-33.83
81.41	-51.27	-51.06	0.57	-0.78	-13.00	-38.27
148.34	-60.34	-61.78	2.44	-1.00	-13.00	-47.34
375.32	-53.86	-57.52	5.66	-2.00	-13.00	-40.86
405.39	-55.97	-59.54	5.61	-2.04	-13.00	-42.97
732.28	-48.04	-53.28	7.38	-2.14	-13.00	-35.04
1673.00	-39.02	-44.06	8.90	-3.86	-13.00	-26.02
2509.50	-44.96	-51.28	10.71	-4.39	-13.00	-31.96

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2024.

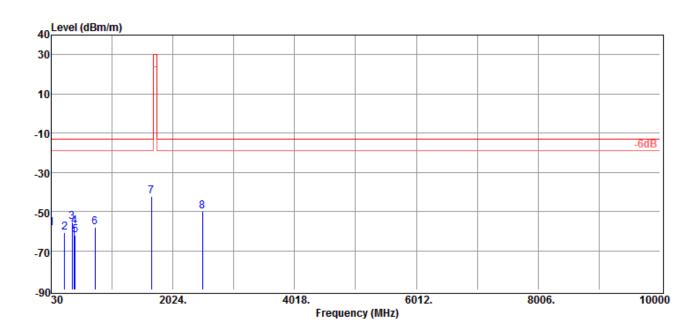


Operation Mode Test Mode EUT Pol **Test Channel**

:NB lot B5 QPSK 15 RB 1,0 :TX CH MID :E2 Plan :836.5 MHz

Test Date Temp./Humi. Antenna Pol. Engineer

:2018-11-22 :25/59 :HORIZONTAL :Ashton



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-58.43	-37.94	-20.05	-0.44	-13.00	-45.43
250.19	-60.84	-64.57	5.17	-1.44	-13.00	-47.84
374.35	-55.32	-59.00	5.67	-1.99	-13.00	-42.32
407.33	-57.60	-61.19	5.63	-2.04	-13.00	-44.60
424.79	-62.17	-65.94	5.82	-2.05	-13.00	-49.17
747.80	-58.25	-63.60	7.41	-2.06	-13.00	-45.25
1673.00	-42.26	-47.30	8.90	-3.86	-13.00	-29.26
2509.50	-49.84	-56.16	10.71	-4.39	-13.00	-36.84

-30

-50

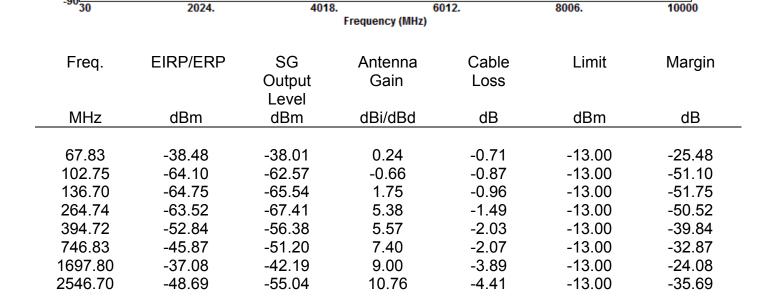
-70

-90

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8

:NB lot B5 QPSK 15 RB 1,0 **Operation Mode** Test Date :2018-11-22 Test Mode :TX CH HIGH :25/59 Temp./Humi. EUT Pol :E2 Plan Antenna Pol. :VERTICAL :848.9 MHz :Ashton **Test Channel** Engineer Level (dBm/m) 40 30 10 -10 6dE



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

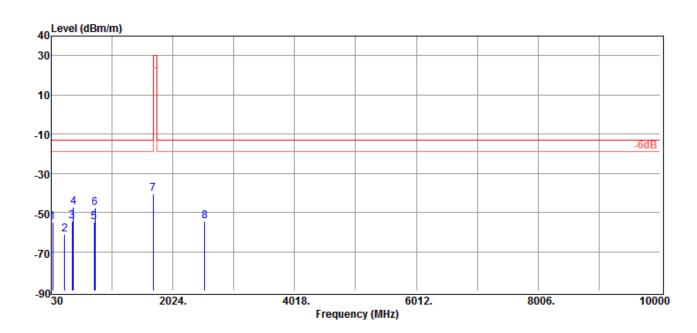
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Operation Mode Test Mode EUT Pol **Test Channel**

:NB lot B5 QPSK 15 RB 1,0 :TX CH HIGH :E2 Plan :848.9 MHz

Test Date Temp./Humi. Antenna Pol. Engineer

:2018-11-22 :25/59 :HORIZONTAL :Ashton



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
52.31	-54.89	-50.48	-3.75	-0.66	-13.00	-41.89
250.19	-61.10	-64.83	5.17	-1.44	-13.00	-48.10
375.32	-54.46	-58.12	5.66	-2.00	-13.00	-41.46
391.81	-47.18	-50.74	5.59	-2.03	-13.00	-34.18
731.31	-54.92	-60.15	7.37	-2.14	-13.00	-41.92
746.83	-47.53	-52.86	7.40	-2.07	-13.00	-34.53
1697.80	-40.43	-45.54	9.00	-3.89	-13.00	-27.43
2546.70	-54.27	-60.62	10.76	-4.41	-13.00	-41.27



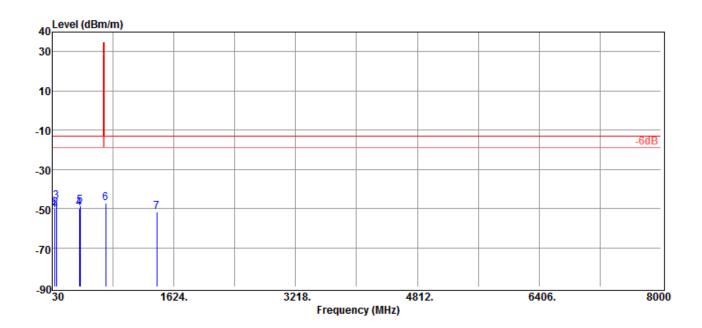
Radiated Spurious Emission Measurement Result: LTE-Band 12 (The Worst Case)

Operation Mode Test Mode EUT Pol **Test Channel**

:NB lot B12 BPSK 15 RB 1,11 Test Date :TX CH LOW :E2 Plan :699.1 MHz

Temp./Humi. Antenna Pol. Engineer

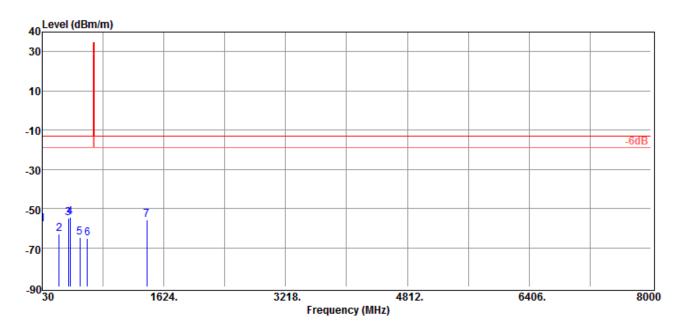
:2018-11-23 :24/55 :VERTICAL :Ashton



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
62.01	-51.04	-49.84	-0.54	-0.66	-13.00	-38.04
69.77	-50.06	-49.81	0.48	-0.73	-13.00	-37.06
83.35	-46.51	-46.15	0.43	-0.79	-13.00	-33.51
385.02	-50.14	-53.75	5.62	-2.01	-13.00	-37.14
396.66	-48.79	-52.33	5.57	-2.03	-13.00	-35.79
731.31	-47.35	-52.58	7.37	-2.14	-13.00	-34.35
1398.20	-51.93	-56.14	7.68	-3.47	-13.00	-38.93



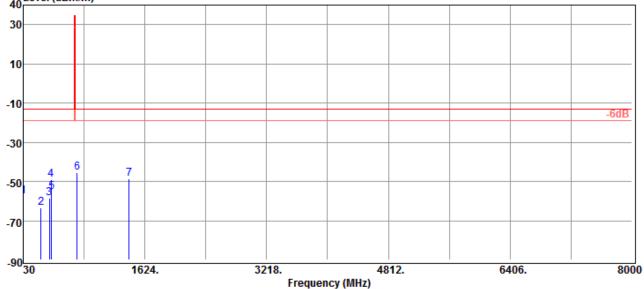
Operation Mode	:NB lot B12 BPSK 15 RB 1,11	Test Date	:2018-11-23
Test Mode	:TX CH LOW	Temp./Humi.	:24/55
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:699.1 MHz	Engineer	:Ashton



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-58.25	-37.76	-20.05	-0.44	-13.00	-45.25
250.19	-63.14	-66.87	5.17	-1.44	-13.00	-50.14
375.32	-55.02	-58.68	5.66	-2.00	-13.00	-42.02
396.66	-54.40	-57.94	5.57	-2.03	-13.00	-41.40
524.70	-64.91	-68.67	6.25	-2.49	-13.00	-51.91
620.73	-65.34	-69.80	6.75	-2.29	-13.00	-52.34
1398.20	-55.93	-60.14	7.68	-3.47	-13.00	-42.93



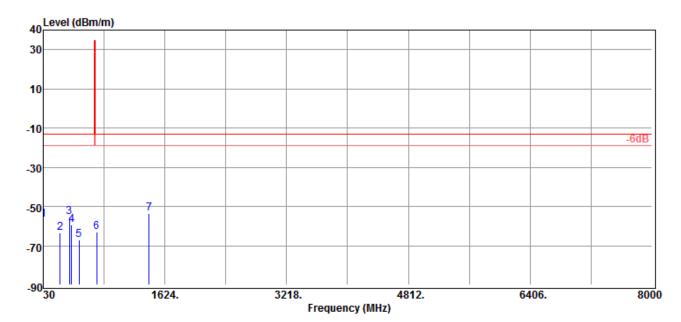
Operation Mode	:NB lot B12 BPSK 15 RB 1,11	Test Date	:2018-11-23
Test Mode	:TX CH MID	Temp./Humi.	:24/55
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:707.5 MHz	Engineer	:Ashton
Level (dBm/m)			



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-57.82	-37.33	-20.05	-0.44	-13.00	-44.82
264.74	-63.26	-67.15	5.38	-1.49	-13.00	-50.26
375.32	-58.42	-62.08	5.66	-2.00	-13.00	-45.42
395.69	-49.10	-52.64	5.57	-2.03	-13.00	-36.10
403.45	-55.39	-58.94	5.59	-2.04	-13.00	-42.39
737.13	-45.63	-50.90	7.38	-2.11	-13.00	-32.63
1415.00	-48.73	-52.98	7.75	-3.50	-13.00	-35.73



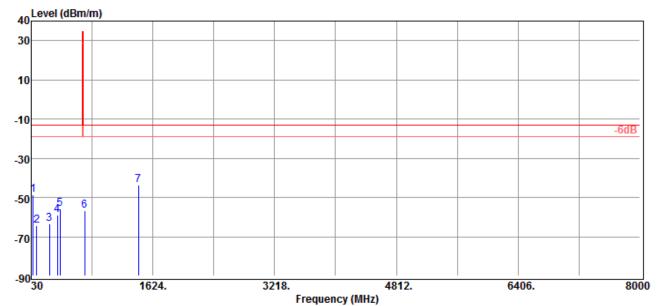
Operation Mode	:NB lot B12 BPSK 15 RB 1,11	Test Date	:2018-11-23
Test Mode	:TX CH MID	Temp./Humi.	:24/55
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:707.5 MHz	Engineer	:Ashton



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.97	-56.84	-37.23	-19.15	-0.46	-13.00	-43.84
250.19	-63.43	-67.16	5.17	-1.44	-13.00	-50.43
375.32	-55.46	-59.12	5.66	-2.00	-13.00	-42.46
401.51	-59.20	-62.73	5.57	-2.04	-13.00	-46.20
499.48	-66.98	-70.66	6.29	-2.61	-13.00	-53.98
730.34	-62.80	-68.03	7.37	-2.14	-13.00	-49.80
1415.00	-53.48	-57.73	7.75	-3.50	-13.00	-40.48



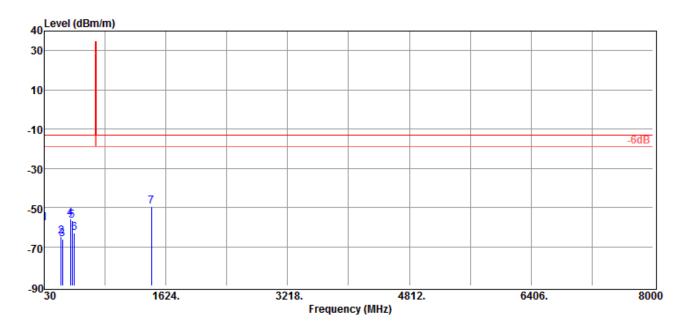
Operation Mode	:NB lot B12 BPSK 15 RB 1,11	Test Date	:2018-11-23
Test Mode	:TX CH HIGH	Temp./Humi.	:24/55
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:715.9 MHz	Engineer	:Ashton



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
56.19	-48.76	-45.88	-2.23	-0.65	-13.00	-35.76
102.75	-64.18	-62.65	-0.66	-0.87	-13.00	-51.18
270.56	-63.67	-67.62	5.46	-1.51	-13.00	-50.67
375.32	-58.82	-62.48	5.66	-2.00	-13.00	-45.82
409.27	-55.60	-59.21	5.65	-2.04	-13.00	-42.60
733.25	-56.72	-61.97	7.38	-2.13	-13.00	-43.72
1431.80	-43.72	-48.01	7.82	-3.53	-13.00	-30.72



Operation Mode	:NB lot B12 BPSK 15 RB 1,11	Test Date	:2018-11-23
Test Mode	:TX CH HIGH	Temp./Humi.	:24/55
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:715.9 MHz	Engineer	:Ashton



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-58.16	-37.67	-20.05	-0.44	-13.00	-45.16
250.19	-64.66	-68.39	5.17	-1.44	-13.00	-51.66
267.65	-66.31	-70.23	5.42	-1.50	-13.00	-53.31
375.32	-55.59	-59.25	5.66	-2.00	-13.00	-42.59
395.69	-56.82	-60.36	5.57	-2.03	-13.00	-43.82
424.79	-62.93	-66.70	5.82	-2.05	-13.00	-49,93
1431.80	-49.63	-53.91	7.80	-3.52	-13.00	-36.63



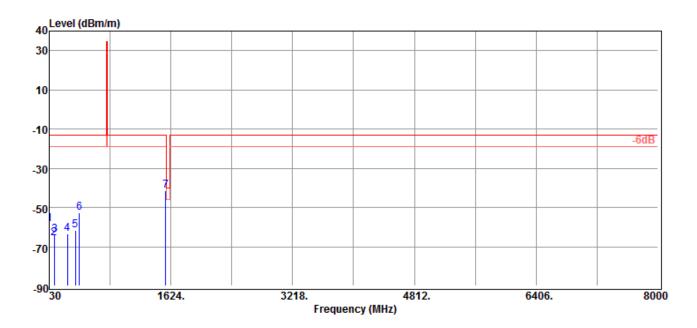
Radiated Spurious Emission Measurement Result: LTE-Band 13 (The Worst Case)

Operation Mode Test Mode EUT Pol **Test Channel**

:NB lot B13 QPSK 15 RB 1,0 Test Date :TX CH LOW :E2 Plan :777.1 MHz

Temp./Humi. Antenna Pol. Engineer

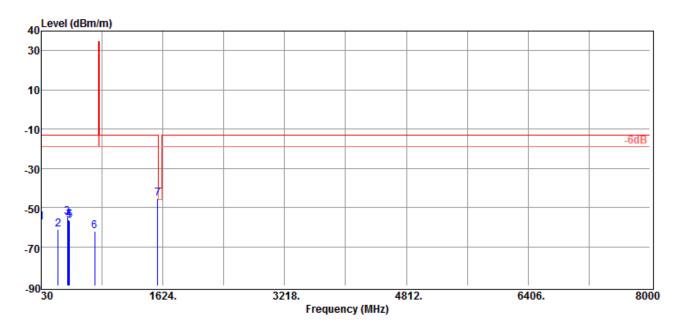
:2018-11-23 :24/55 :VERTICAL :Ashton



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-58.52	-38.03	-20.05	-0.44	-13.00	-45.52
94.02	-65.86	-64.66	-0.37	-0.83	-13.00	-52.86
102.75	-64.00	-62.47	-0.66	-0.87	-13.00	-51.00
267.65	-63.48	-67.40	5.42	-1.50	-13.00	-50.48
375.32	-61.72	-65.38	5.66	-2.00	-13.00	-48.72
426.73	-52.84	-56.63	5.84	-2.05	-13.00	-39.84
1554.20	-41.55	-46.20	8.36	-3.71	-13.00	-28.55



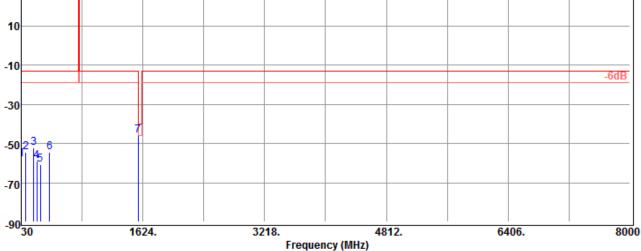
Operation Mode	:NB lot B13 QPSK 15 RB 1,0	Test Date	:2018-11-23
Test Mode	:TX CH LOW	Temp./Humi.	:24/55
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:777.1 MHz	Engineer	:Ashton



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-57.57	-37.08	-20.05	-0.44	-13.00	-44.57
249.22	-61.32	-65.06	5.18	-1.44	-13.00	-48.32
375.32	-55.02	-58.68	5.66	-2.00	-13.00	-42.02
389.87	-56.09	-59.67	5.60	-2.02	-13.00	-43.09
399.57	-56.83	-60.34	5.55	-2.04	-13.00	-43.83
731.31	-62.02	-67.25	7.37	-2.14	-13.00	-49.02
1554.20	-45.43	-50.08	8.36	-3.71	-13.00	-32.43



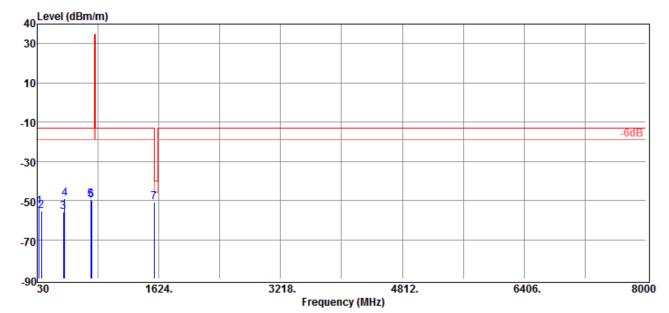
Operation Mode Test Mode EUT Pol Test Channel	:NB lot B13 QPSK :TX CH MID :E2 Plan :782 MHz	(15 RB 1,0 Test Date Temp./Humi. Antenna Pol. Engineer	:2018-11-23 :24/55 :VERTICAL :Ashton
30			
50			



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-58.15	-37.66	-20.05	-0.44	-13.00	-45.15
93.05	-54.57	-53.45	-0.29	-0.83	-13.00	-41.57
196.84	-52.34	-56.77	5.65	-1.22	-13.00	-39.34
233.70	-58.93	-62.93	5.37	-1.37	-13.00	-45.93
280.26	-60.91	-64.96	5.60	-1.55	-13.00	-47.91
404.42	-54.33	-57.89	5.60	-2.04	-13.00	-41.33
1564.00	-45.79	-50.47	8.40	-3.72	-40.00	-5.79



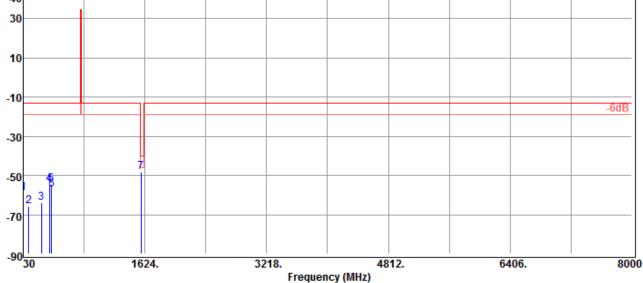
Operation Mode	:NB lot B13 QPSK 15 RB 1,0	Test Date	:2018-11-23
Test Mode	:TX CH MID	Temp./Humi.	:24/55
EUT Pol	:E2 Plan	Antenna Pol.	:HORIZONTAL
Test Channel	:782 MHz	Engineer	:Ashton



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
57.16	-53.28	-50.77	-1.86	-0.65	-13.00	-40.28
83.35	-55.57	-55.21	0.43	-0.79	-13.00	-42.57
374.35	-55.76	-59.44	5.67	-1.99	-13.00	-42.76
390.84	-49.17	-52.74	5.59	-2.02	-13.00	-36.17
732.28	-49.74	-54.98	7.38	-2.14	-13.00	-36.74
744.89	-50.11	-55.44	7.40	-2.07	-13.00	-37.11
1564.00	-50.77	-55.45	8.40	-3.72	-40.00	-10.77



Operation Mode	:NB lot B13 QPSK 15 F	RB 1,0 Test Date	:2018-11-23
Test Mode	:TX CH HIGH	Temp./Humi.	:24/55
EUT Pol	:E2 Plan	Antenna Pol.	:VERTICAL
Test Channel	:786.9 MHz	Engineer	:Ashton
40 Level (dBm/m)			

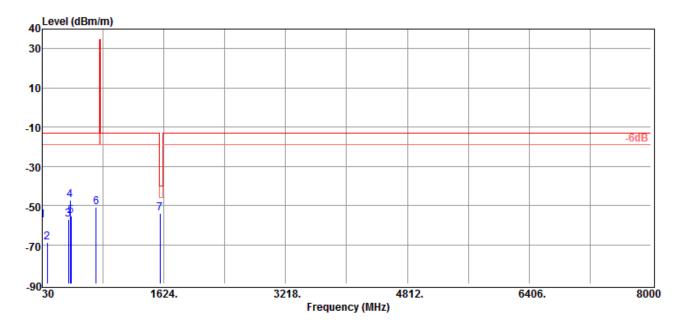


Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-58.82	-38.33	-20.05	-0.44	-13.00	-45.82
102.75	-65.64	-64.11	-0.66	-0.87	-13.00	-52.64
271.53	-63.99	-67.95	5.48	-1.52	-13.00	-50.99
374.35	-54.43	-58.11	5.67	-1.99	-13.00	-41.43
395.69	-54.34	-57.88	5.57	-2.03	-13.00	-41.34
404.42	-56.94	-60.50	5.60	-2.04	-13.00	-43.94
1573.80	-48.12	-52.84	8.45	-3.73	-40.00	-8.12

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:NB lot B13 QPSK 15 RB 1,0 Test Date **Operation Mode** :2018-11-23 Test Mode :TX CH HIGH Temp./Humi. :24/55 EUT Pol :E2 Plan Antenna Pol. :HORIZONTAL :786.9 MHz :Ashton **Test Channel** Engineer



Freq.	EIRP/ERP	SG Output Level	Antenna Gain	Cable Loss	Limit	Margin
MHz	dBm	dBm	dBi/dBd	dB	dBm	dB
30.00	-57.63	-37.14	-20.05	-0.44	-13.00	-44.63
97.90	-68.85	-67.29	-0.71	-0.85	-13.00	-55.85
375.32	-57.02	-60.68	5.66	-2.00	-13.00	-44.02
395.69	-47.47	-51.01	5.57	-2.03	-13.00	-34.47
409.27	-55.20	-58.81	5.65	-2.04	-13.00	-42.20
734.22	-50.76	-56.01	7.38	-2.13	-13.00	-37.76
1573.80	-54.09	-58.81	8.45	-3.73	-40.00	-14.09



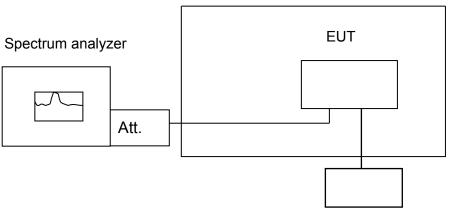
10 FREQUENCY STABILITY MEASUREMENT

10.3 Standard Applicabl

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

10.4 Test Set-up

Temperature Chamber



Variable DC Power Supply

Note: Measurement setup for testing on Antenna connector

10.5 Measurement Procedure

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

Set chamber temperature to 25°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation (+/- 15%) and endpoint as declared by the manufacturer, record the maximum frequency change.

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10.6 **Measurement Equipment Used**

Conducted Emission (measured at antenna port) Test Site						
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.	
TYPE		NUMBER	NUMBER	CAL.		
Spectrum Analyzer	Agilent	N9010A	MY5144011 3	2018/06/20	2019/06/19	
Radio Communica- tion Analyer	Anritsu	MT8821C	6261786084	2018/01/03	2019/01/02	
DC Power Supply	Agilent	E3640A	MY5314000 6	2018/05/30	2019/05/29	
Attenuator	Marvelous	MVE2213-1 0	RF30	2017/12/26	2018/12/25	
Splitter	Woken	DOM35LW 1A2	RF36	2017/12/26	2018/12/25	

10.7 **Measurement Result**

Cat M1

Reference Freq.:	M1 B2 Mid Channel		1880	MHz 20M QPSK CH 18900
Power Supply Vdc	Temp. (℃)	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)
		Freq. ERROR v	s. Voltage	
48	25	1880.000010	9.900000123	4700
12	25	1879.999993	-6.799999937	4700
9	25	1879.999989	-11.09999994	4700
5.7 (End Point)	25	1880.000000	-0.099999852	4700
		Freq. ERROR	l vs. Temp.	
12	-30	1880.000001	1.000000111	4700
12	-20	1879.999982	-18.4999999	4700
12	-10	1880.000011	11.29999987	4700
12	0	1880.000001	0.700000101	4700
12	10	1879.999996	-4.4000008	4700
12	20	1880.000007	7.400000186	4700
12	30	1879.999993	-6.900000017	4700
12	40	1880.000001	1.299999894	4700
12	50	1879.999985	-14.70000007	4700

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Reference Freq.:	M1 B4 Mid Channel		1732.5	MHz 20M QPSK CH 20175
Power Supply Vdc	Temp. (℃)	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)
		Freq. ERROR v	s. Voltage	
48	25	1732.499989	-11.4000002	4331
12	25	1732.500019	18.89999999	4331
9	25	1732.499990	-10.3	4331
5.7 (End Point)	25	1732.499994	-5.59999989	4331
		Freq. ERROR	l vs. Temp.	
12	-30	1732.500001	0.599999794	4331
12	-20	1732.500006	6.099999837	4331
12	-10	1732.499998	-1.59999991	4331
12	0	1732.500017	17.0000007	4331
12	10	1732.500019	19.09999992	4331
12	20	1732.499988	-12.2000001	4331
12	30	1732.500015	14.9	4331
12	40	1732.500008	7.699999969	4331
12	50	1732.499988	-12.4000001	4331

Reference Freq.:		1 B5 Mid hannel	836.5	MHz 10M QPSK CH 20525								
Power Supply Vdc	Temp. (℃)	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)								
	Freq. ERROR vs. VOLTAGE											
48	25	836.499996	-3.799999945	2091								
12	25	836.499980	-19.70000005	2091								
9	25	836.500012	11.99999997	2091								
5.7 (End Point)	25	836.499997	-2.700000096	2091								
		Freq. ERROI	R vs. Temp.									
12	-30	836.499990	-9.599999998	2091								
12	-20	836.500014	13.79999992	2091								
12	-10	836.500000	-0.100000079	2091								
12	0	836.500015	14.99999996	2091								
12	10	836.500002	2.30000006	2091								
12	20	836.500004	4.10000069	2091								
12	30	836.499993	-7.100000062	2091								
12	40	836.499985	-14.79999992	2091								
12	50	836.499996	-4.30000001	2091								



Rataranca Fran		l B12 Mid Channel	707.5	MHz 10M QPSK CH 23095							
Power Supply Vdc	Temp. (°C)	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)							
Freq. ERROR vs. VOLTAGE											
48	25	707.499994	-6.100000064	1769							
12	25	707.499993	-7.20000027	1769							
9	25	707.500004	4.399999966	1769							
5.7 (End Point)	25	707.500015	14.999999996	1769							
		Freq. ERROR	l vs. Temp.								
12	-30	707.500020	19.59999997	1769							
12	-20	707.500016	16.39999994	1769							
12	-10	707.499981	-19.10000003	1769							
12	0	707.499982	-17.99999995	1769							
12	10	707.500016	16.39999994	1769							
12	20	707.499986	-14.50000002	1769							
12	30	707.499990	-10.20000002	1769							
12	40	707.500017	17.10000004	1769							
12	50	707.500015	15.20000001	1769							

Reference Freq.:	Reference Freq.: M1 B Cha		782	MHz 10M QPSK CH 23230						
Power Supply Vdc	Temp. (°C)	Freq. (MHz)	Delta (Hz)	Limit = +/- 2.5 ppm (Hz)						
Freq. ERROR vs. VOLTAGE										
48	25	781.999996	-3.9000002	1955						
12	25	781.999984	-16	1955						
9	25	781.999989	-11	1955						
5.7 (End Point)	25	781.999986	-14.3999999	1955						
		Freq. ERROR	R vs. Temp.							
12	-30	781.999998	-1.7000001	1955						
12	-20	782.000009	8.999999977	1955						
12	-10	781.999987	-12.7000001	1955						
12	0	782.000004	3.50000048	1955						
12	10	782.000004	3.60000014	1955						
12	20	781.999982	-17.9	1955						
12	30	782.000009	8.999999977	1955						
12	40	781.999984	-15.7999999	1955						
12	50	781.999981	-19.2	1955						



NBIoT

	LTE NB IoT Band 2 1880 MHz									
Limit: within freqeuncy block										
Vdc	Temp. (°C)Freq. (MHz)Delta (kHz)Frequencies(Plane)									
		FREQUENCY ERROR v	s. VOLTAGE							
48	20	1879.999997	-0.003	-0.002						
12	20	1879.999995	-0.005	-0.003						
9	20	1880.000009	0.009	0.005						
5.7(End point)	20	1879.999996	-0.004	-0.002						
		FREQUENCY ERROR	vs. Temp.							
12	50	1880.00000	-0.005	-0.003						
12	40	1880.00000	-0.002	-0.001						
12	30	1880.00000	0.001	0.001						
12	20	1879.99999	-0.006	-0.003						
12	10	1880.00001	0.005	0.003						
12	0	1880.00000	-0.005	-0.003						
12	-10	1880.00000	-0.001	-0.001						
12	-20	1880.00000	-0.002	-0.001						
12	-30	1880.00000	0.002	0.001						



		LTE NB IoT Band 4	1732.5	MHz							
	Limit: within freqeuncy block										
Vdc	VdcTemp. (°C)Freq. (MHz)Delta (kHz)Frequenc (PPM)										
	FREQUENCY ERROR vs. VOLTAGE										
48	20	1732.499993	-0.007	-0.004							
12	20	1732.499995	-0.005	-0.003							
9	20	1732.500003	0.003	0.002							
5.7(End point)	20	1732.500009	0.009	0.005							
		FREQUENCY ERROR	vs. Temp.								
12	50	1732.49999	-0.006	-0.003							
12	40	1732.50000	-0.004	-0.002							
12	30	1732.50000	-0.005	-0.003							
12	20	1732.49999	-0.009	-0.005							
12	10	1732.50000	-0.001	-0.001							
12	0	1732.50000	0.003	0.002							
12	-10	1732.50001	0.005	0.003							
12	-20	1732.50000	-0.004	-0.002							
12	-30	1732.50000	0.002	0.001							



		LTE NB IoT Band 5	888	MHz							
	Limit: +/- 2.5 ppm										
Vdc	Temp. (℃)	Freq. (MHz)	Delta (kHz)	Frequency error (PPM)							
FREQUENCY ERROR vs. VOLTAGE											
48	20	888.000005	0.005	0.006							
12	20	888.000003	0.003	0.006							
9	20	888.000004	0.004	0.006							
5.7(End point)	20	888.000005	0.005	0.006							
		FREQUENCY ERROR	vs. Temp.								
12	50	888.00000	0.001	0.001							
12	40	888.00000	-0.005	-0.006							
12	30	888.00000	-0.002	-0.002							
12	20	888.00000	0.002	0.002							
12	10	888.00000	-0.005	-0.006							
12	0	888.00000	0.003	0.003							
12	-10	888.00000	-0.004	-0.005							
12	-20	887.99999	-0.007	-0.008							
12	-30	887.99999	-0.009	-0.010							



		LTE NB IoT Band 12	707.5	MHz
		Limit: within freqeur	icy block	
Vdc	Temp. (℃)	Freq. (MHz)	Delta (kHz)	Frequency error (PPM)
		FREQUENCY ERROR v	s. VOLTAGE	
48	20	707.499995	-0.005	-0.007
12	20	707.500003	0.003	0.004
9	20	707.500005	0.005	0.007
5.7(End point)	20	707.499999	-0.001	-0.001
		FREQUENCY ERROR	vs. Temp.	
12	50	707.49999	-0.006	-0.008
12	40	707.49999	-0.008	-0.011
12	30	707.50000	0	0.000
12	20	707.50001	0.005	0.007
12	10	707.50000	0.003	0.004
12	0	707.50000	0.004	0.006
12	-10	707.50000	-0.004	-0.006
12	-20	707.49999	-0.007	-0.010
12	-30	707.50000	-0.001	-0.001



		LTE NB IoT Band 13	782	MHz							
		Limit: within freqeun	icy block								
Vdc	Temp. (℃)	Frequency error (PPM)									
	FREQUENCY ERROR vs. VOLTAGE										
48 20 782.00002 0.002 0.003											
12	20	782.000002	0.002	0.003							
9	20	782	0	0.000							
5.7(End point)	20	782.000005	0.005	0.006							
		FREQUENCY ERROR	vs. Temp.								
12	50	782.00001	0.005	0.006							
12	40	782.00000	-0.003	-0.004							
12	30	782.00001	0.006	0.008							
12	20	782.00001	0.009	0.012							
12	10	782.00000	0.004	0.005							
12	0	781.99999	-0.006	-0.008							
12	-10	781.99999	-0.007	-0.009							
12	-20	782.00000	-0.002	-0.003							
12	-30	782.00000	0.001	0.001							

Note: The power supply is rated 12V.

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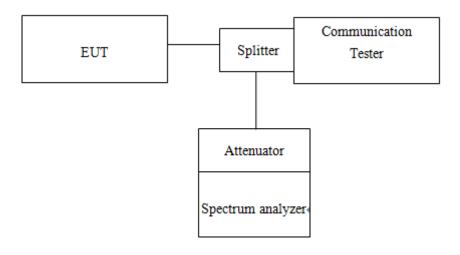


11 PEAK TO AVERAGE RATIO

11.3 Standard Applicable

The peak-to-average ratio (PAR) of the transmission may not exceed 13dB.

11.4 Test SET-UP



11.5 Measurement Procedure

- 1. KDB 971168 D01 is employed as the following procedure is proper adjusted accordingly:
- 2. Set resolution/measurement bandwidth \geq signal's occupied bandwidth; & internal =1ms
- Set the number of counts to a value that stabilizes the measured CCDF curve.

Conducted Emission (measured at antenna port) Test Site										
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.					
Spectrum Analyzer	Agilent	N9010A	MY5144011 3	2018/06/20	2019/06/19					
Radio Communica- tion Analyer	Anritsu	MT8821C	6261786084	2018/01/03	2019/01/02					
DC Power Supply	Agilent	E3640A	MY5314000 6	2018/05/30	2019/05/29					
Attenuator	Marvelous	MVE2213-1 0	RF30	2017/12/26	2018/12/25					
Splitter	Woken	DOM35LW 1A2	RF36	2017/12/26	2018/12/25					

11.6 Measurement Equipment Used

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11.7 Measurement Result

Tabular Results:

Cat M1

M1 BAND 2										
Channel bandwidth: 1.4MHz				Channel bandwidth: 3MHz						
Freq.	СН	PAPR	(dB)	Freq.	СН	PAPR (dB)				
(MHz)	СП	16QAM	Limit	(MHz)	CH	16QAM	Limit			
1850.7	18607	8.08	13	1851.5	18615	10.16	13			
1880.0	18900	8.55	13	1880.0	18900	10.44	13			
1909.3	19193	8.68	13	1908.5	19185	9.95	13			

	M1 BAND 2										
Char	Channel bandwidth: 5MHz				nel band	width: 10N	ЛНz				
Freq.	СН	PAPR	PAPR (dB) Freq.		PAPR (dB)						
(MHz)	CIT	16QAM	Limit	(MHz)	СН	16QAM	Limit				
1852.5	18625	9.31	13	1855.0	18650	10.52	13				
1880.0	18900	10.39	13	1880.0	18900	10.65	13				
1907.5	19175	7.99	13	1905.0	19150	10.26	13				

	M1 BAND 2										
Channel bandwidth: 15MHz				Channel bandwidth: 20MHz							
Freq.	СН	PAPR	(dB)	Freq.	СН	PAPR	(dB)				
(MHz)	CII	16QAM	Limit	(MHz)	СП	16QAM	Limit				
1857.5	18675	8.56	13	1860.0	18700	8.53	13				
1880.0	18900	8.05	13	1880.0	18900	8.95	13				
1902.5	19125	8.53	13	1900.0	19100	8.82	13				

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M1 BAND 4								
Channel bandwidth: 1.4MHz			Channel bandwidth: 3MHz					
Freq.	СН	PAPR	(dB)	Freq.	СН	PAPR	(dB)	
(MHz)	СП	16QAM	Limit	(MHz)	Сп	16QAM	Limit	
1710.7	19957	8.88	13	1711.5	19965	10.63	13	
1732.5	20175	9.63	13	1732.5	20175	8.21	13	
1754.3	20393	9.46	13	1753.5	20385	8.42	13	

M1 BAND 4								
Channel bandwidth: 5MHz			Channel bandwidth: 10MHz					
Freq.	СН	PAPR	(dB)	Freq.	СН	PAPR (dB)		
(MHz)	СП	16QAM	Limit	(MHz)	Сн	16QAM	Limit	
1712.5	19975	8.54	13	1715.0	20000	10.21	13	
1732.5	20175	9.95	13	1732.5	20175	9.94	13	
1752.5	20375	9.11	13	1750.0	20350	9.47	13	

M1 BAND 4								
Channel bandwidth: 15MHz			Channel bandwidth: 20MHz					
Freq.	СН	PAPR	(dB)	Freq.	СН	PAPR	(dB)	
(MHz)	CII	16QAM	Limit	(MHz)	Сп	16QAM	Limit	
1717.5	20025	8.58	13	1720.0	20050	8.43	13	
1732.5	20175	8.91	13	1732.5	20175	8.53	13	
1747.5	20325	8.58	13	1745.0	20300	9.06	13	

	M1 BAND 5								
Channel bandwidth: 1.4MHz			Channel bandwidth: 3MHz						
Freq.	СН	PAPR	(dB)	Freq.	СН	PAPR (dB)			
(MHz)	СП	16QAM	Limit	(MHz)	СП	16QAM	Limit		
824.7	20407	10.10	13	825.5	20415	7.34	13		
836.5	20525	10.36	13	836.5	20525	7.42	13		
848.3	20643	8.50	13	847.5	847.5 20635 7.55 1				

M1 BAND 5								
Channel bandwidth: 5MHz			Channel bandwidth: 10MHz					
Freq.	СН	PAPR	(dB)	Freq.	СН	PAPR (dB)		
(MHz)	СП	16QAM	Limit	(MHz)	Сн	16QAM	Limit	
826.5	20425	7.52	13	829.0	20450	11.53	13	
836.5	20525	9.93	13	836.5	20525	10.39	13	
846.5	20625	10.34	13	844.0	20600	11.02	13	



M1 BAND 12								
Channel bandwidth: 1.4MHz			Channel bandwidth: 3MHz					
Freq.	СН	PAPR	(dB)	Freq.	СН	PAPR (dB)		
(MHz)	СП	16QAM	Limit	(MHz)	СП	16QAM	Limit	
699.7	23017	10.57	13	700.5	23025	8.95	13	
707.5	23095	10.03	13	707.5	23095	9.39	13	
715.3	23173	11.63	13	714.5	23165	10.61	13	

M1 BAND 12								
Channel bandwidth: 5MHz			Channel bandwidth: 10MHz					
Freq.	СН	PAPR	(dB)	Freq.	СН	PAPR (dB)		
(MHz)	СП	16QAM	Limit	(MHz)	СН	16QAM	Limit	
701.5	23035	9.93	13	704.0	23060	8.55	13	
707.5	23095	8.99	13	707.5	23095	10.11	13	
713.5	23155	8.89	13	711.0	23130	9.47	13	

M1 BAND 13								
Channel bandwidth: 5MHz			Channel bandwidth: 10MHz					
Freq.	СН	PAPR	(dB)	Freq.	CH PAPR (dB)		(dB)	
(MHz)	СП	16QAM	Limit	(MHz)	Сп	16QAM	Limit	
779.5	23205	8.35	13			10.70	13	
782.0	23230	9.91	13	782.0	23230			
784.5	23255	11.26	13					



NBIoT

15K LTE NB-loT Band 2 CCDF							
Channel	18601	18900	19199				
Freq. (MHz)	1850.1	1880	1909.9				
Modulation(BPSK)	8.05	9.64	10.52				
Modulation(QPSK)	9.98	11.55	11.05				
	•						

15K LTE NB-loT	Band 4	CCDF	
Channel	19951	20175	10399
Freq. (MHz)	1710.1	1732.5	1754.9
Modulation(BPSK)	10.53	9.7	9.98
Modulation(QPSK)	12.02	11.46	11.21

15K LTE NB-IoT Band 5 CCDF							
Channel	20401	20525	20649				
Freq. (MHz)	824.1	836.5	848.9				
Modulation(BPSK)	10.02	9.54	9.39				
Modulation(QPSK)	11.93	10.56	10.92				

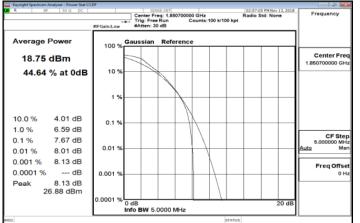
15K LTE NB-IoT Band 12 CCDF							
Channel	23011	23095	23179				
Freq. (MHz)	699.1	707.5	715.9				
Modulation(BPSK)	9.56	9.61	9.35				
Modulation(QPSK)	11.19	10.88	11.68				

15K LTE NB-IoT Band 13 CCDF			
Channel	23181	23230	23279
Freq. (MHz)	777.1	782	786.9
Modulation(BPSK)	10.75	10.25	9.57
Modulation(QPSK)	10.84	10.69	11.4

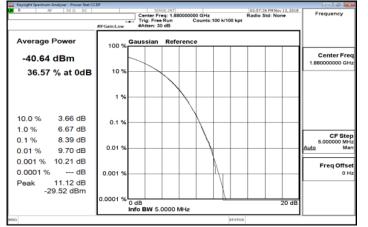
Please refer to next page for test plots.



M1 CCDF LTE_Band2_1_4MHz_QPSK_6_0_LowCH18607-1850.7



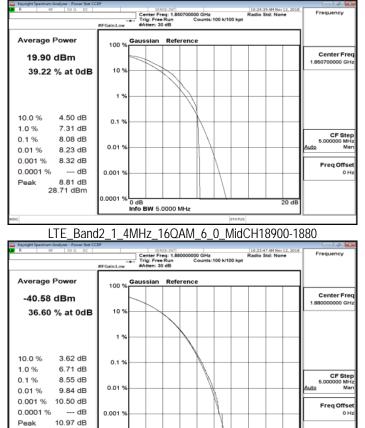
LTE_Band2_1_4MHz_QPSK_6_0_MidCH18900-1880



LTE_Band2_1_4MHz_QPSK_6_0_HighCH19193-1909.3

	IFGain:Low #Atten: 30 dB	
Average Power	100 % Gaussian Reference	
19.08 dBm 44.79 % at 0dB	10 %	Center Fre 1.909300000 GH
	1 %	
10.0 % 3.94 dB 1.0 % 6.86 dB	0.1 %	
0.1 % 7.86 dB 0.01 % 8.21 dB 0.001 % 8.40 dB	0.01 %	CF Ste 5.00000 MH <u>Auto</u> Ma
0.001 % 8.40 dB 0.0001 % dB Peak 8.89 dB 27.97 dBm	0.001 %	Freq Offse 0 H
27.97 dBm	0.0001 % 0 dB	20 dB

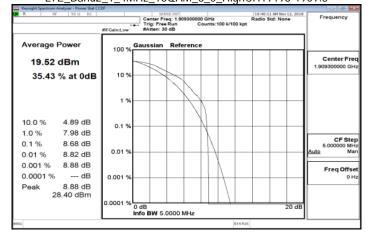
LTE_Band2_1_4MHz_16QAM_6_0_LowCH18607-1850.7





0 dB Info BW 5.0000 MHz

20 dF



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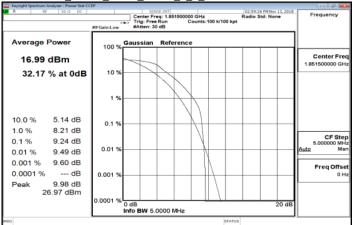
-29.61 dBm

0.0001 %

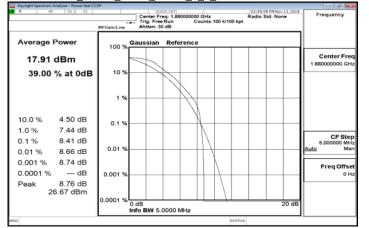
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LTE_Band2_3MHz_QPSK_6_0_LowCH18615-1851.5



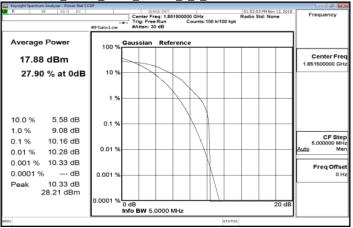
LTE_Band2_3MHz_QPSK_6_0_MidCH18900-1880



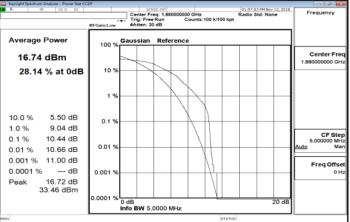
LTE_Band2_3MHz_QPSK_6_0_HighCH19185-1908.5

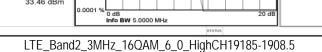
Keysight Spectrum Analyzer - Power Stat CC		
R RF 50Ω DC	Center Freq: 1.908500000 GHz Radio Std: None Trig: Free Run Counts:100 k/100 kpt #FGain:Low #Atten: 30 dB	Frequency
Average Power	100 % Gaussian Reference]
18.01 dBm		Center Freq 1.908500000 GHz
30.42 % at 0dB	10 %	
10.0 % 5.69 dB	1 %	
1.0 % 5.69 dB 1.0 % 8.08 dB 0.1 % 9.00 dB	0.1 %	CF Step 5.000000 MHz
0.01 % 9.25 dB 0.001 % 9.34 dB	0.01 %	Auto Man
0.0001 % dB Peak 10.97 dB 28.98 dBm	0.001 %	0 Hz
20.96 UDIII	0.0001 % 0 dB 20 dB Info BW 5.0000 MHz	
MSG	STATUS	

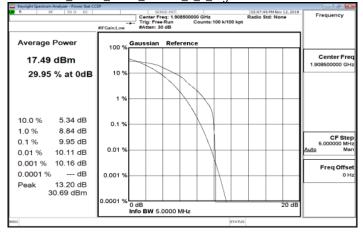
LTE_Band2_3MHz_16QAM_6_0_LowCH18615-1851.5



LTE_Band2_3MHz_16QAM_6_0_MidCH18900-1880







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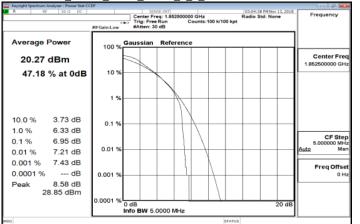
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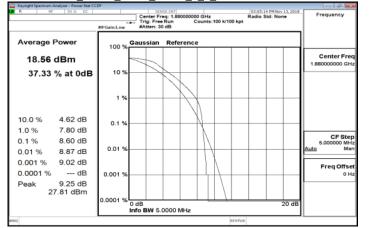
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LTE_Band2_5MHz_QPSK_6_0_LowCH18625-1852.5



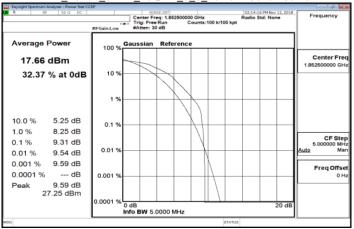
LTE_Band2_5MHz_QPSK_6_0_MidCH18900-1880



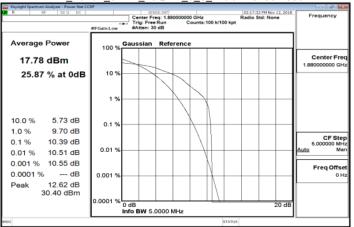
LTE_Band2_5MHz_QPSK_6_0_HighCH19175-1907.5

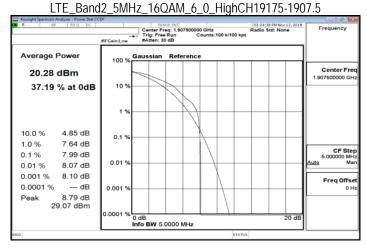
R RF 50 Ω DC	T	enter Freq: 1.907500000 GHz rig: Free Run Counts:100 k/100 Atten: 30 dB	03:05:41 PM Nov 13, 2018 Radio Std: None kpt	Frequency
Average Power	100 % Gau	ssian Reference		
19.80 dBm				Center Freq 1.907500000 GHz
43.78 % at 0dB	10 %			
10.0 % 4.04 dB 1.0 % 6.99 dB	0.1 %			
0.1 % 7.56 dB 0.01 % 7.74 dB 0.001 % 7.90 dB	0.01 %			CF Step 5.000000 MHz <u>Auto</u> Man
0.001 % 7.90 dB 0.0001 % dB Peak 7.91 dB 27,71 dBm	0.001 %			Freq Offset 0 Hz
190	0.0001 % 0 dB Info	BW 5.0000 MHz	20 dB	

LTE_Band2_5MHz_16QAM_6_0_LowCH18625-1852.5



LTE_Band2_5MHz_16QAM_6_0_MidCH18900-1880





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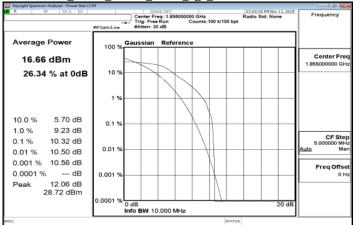
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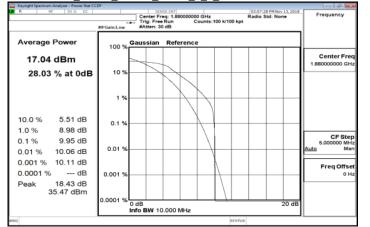
f (886-2) 2298-0488



LTE_Band2_10MHz_QPSK_6_0_LowCH18650-1855



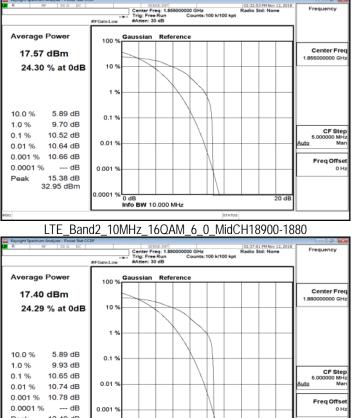
LTE_Band2_10MHz_QPSK_6_0_MidCH18900-1880

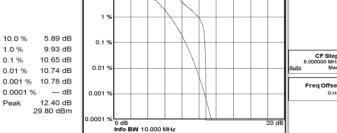


LTE_Band2_10MHz_QPSK_6_0_HighCH19150-1905

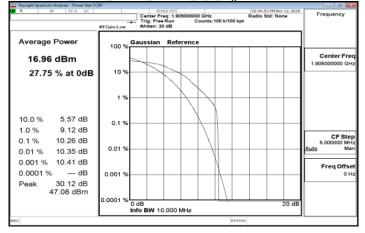
Keysight Spectrum Analyzer - Power Stat CC		
K RF SOD DC	SENGEDHT SENGEDHT OD:007:52 PM Nev 13, 2018 Center Freq: 1, 905000000 GHz Radio Std: None Trig: Free Run Counts:100 k/100 kpt #IFGain:Low #Atten: 30 dB	Frequency
Average Power	100 % Gaussian Reference	
18.63 dBm		Center Freq 1.905000000 GHz
35.92 % at 0dB	1 %	
10.0 % 4.75 dB 1.0 % 8.00 dB	0.1 %	
0.1 % 8.62 dB 0.01 % 8.70 dB	0.01 %	CF Step 5.00000 MHz <u>Auto</u> Man
0.001 % 8.77 dB 0.0001 % dB Peak 11.26 dB	0.001 %	Freq Offset 0 Hz
29.89 dBm	0.0001 % 0 dB 20 dB 20 dB 20 dB	
M9G	STATUS	

LTE_Band2_10MHz_16QAM_6_0_LowCH18650-1855









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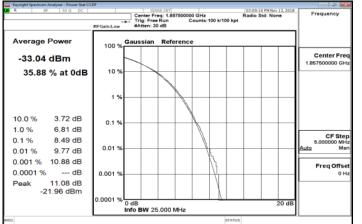
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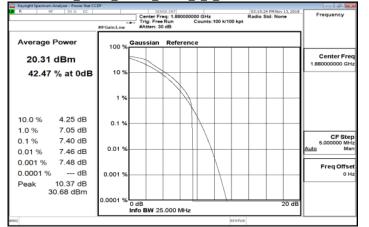
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LTE_Band2_15MHz_QPSK_6_0_LowCH18675-1857.5



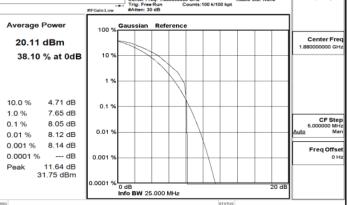
LTE_Band2_15MHz_QPSK_6_0_MidCH18900-1880

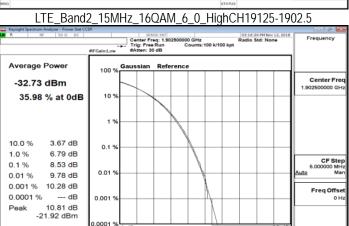


LTE Band2 15MHz QPSK 6 0 HighCH19125-1902.5

Keysight Spectrum Analyzer - Power Stat CO		
R RF 50Ω DC	Stress:INTI Center Freq: 1.902500000 GHz Trig: Free Run Counts:100 k/100 kpt #FGain:Low #Atten: 30 dB	C3:10:53 PH Nov 13, 2018 Radio Std: None Frequency
Average Power	100 % Gaussian Reference	
20.36 dBm		Center Free 1.902500000 GH
42.20 % at 0dB	10 %	
	1 %	
10.0 % 4.22 dB	0.1 %	
1.0 % 7.11 dB 0.1 % 7.40 dB	0.01%	CF Ste 5.000000 MH Auto Ma
0.01 % 7.48 dB 0.001 % 7.82 dB		Freq Offse
0.0001 % dB Peak 11.51 dB	0.001 %	ОН
31.87 dBm	0.0001 % 0 dB	20 dB
	Info BW 25.000 MHz	20 00
193	STATUS	

SENSE::NT 02:55:43 PM Nov 12, 2 Center Freq: 1.857500000 GHz Radio Std: None Trig: Free Run Counts: 100 k/100 kpt #Atten: 30 dB Counts: 100 k/100 kpt Frequency Average Power Gaussian Reference Center Free -32.93 dBm 36.00 % at 0dB 10 ' 1 % 10.0 % 3 71 dB 0.1 % 1.0 % 6.78 dB CF Step 5.000000 MIL 8.56 dB 0.1 % 0.01 % 9.71 dB 0.01 % 0.001 % 10.38 dB Freq Offse 0.0001 % ---- dB 0.001 % 0 H Peak 10.63 dB -22.30 dBm 0.0001 % 0 dB Info BW 25.000 MHz LTE_Band2_15MHz_16QAM_6_0_MidCH18900-1880 SERSE:INT Center Freq: 1.88000000 GHz Trig: Free Run Counts:100 k/100 kpt #Atten: 30 dP .





20 dF

0 dB Info BW 25.000 MHz

LTE_Band2_15MHz_16QAM_6_0_LowCH18675-1857.5

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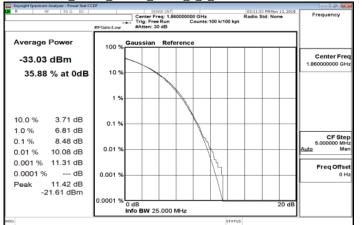
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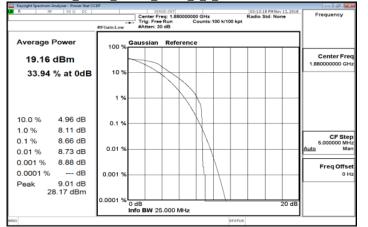
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LTE_Band2_20MHz_QPSK_6_0_LowCH18700-1860



LTE_Band2_20MHz_QPSK_6_0_MidCH18900-1880

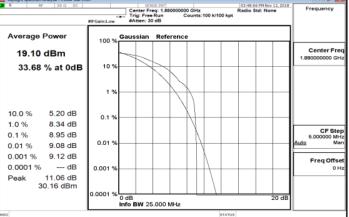


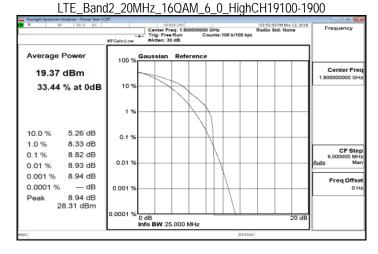
LTE Band2 20MHz QPSK 6 0 HighCH19100-1900

Keysight Spectrum Analyzer - Power Stat CC		
R RF SO DC	SERVELINTI 02:12:36 PM No Center Freq: 1.900000000 GHz Radio Std: No Trig: Free Run Counts:100 k/100 kpt #FGainsLow #Atten: 30 dB	
Average Power	100 % Gaussian Reference	
-32.81 dBm		Center Freq 1.900000000 GHz
35.95 % at 0dB	10 %	
	1 %	
10.0 % 3.71 dB 1.0 % 6.81 dB	0.1 %	
0.1 % 8.48 dB 0.01 % 9.59 dB	0.01 %	CF Step 5.000000 MHz <u>Auto</u> Man
0.001 % 10.19 dB 0.0001 % dB Peak 10.20 dB	0.001 %	Freq Offse
Peak 10.20 dB -22.61 dBm	0.0001 %	20 dB
	Info BW 25.000 MHz	20 00
M9G	STATUS	

Center Freq: 1.86000000 GHz Radio Std: None Trig: Free Run Counts:100 k/100 kpt #Atten: 30 dB Frequency Average Power Gaussian Reference Center Free -32.94 dBm 35.92 % at 0dB 10 ' 1 % 10.0 % 3 69 dB 0.1 % 1.0 % 6.80 dB CF Step 5.000000 MIL 8.53 dB 0.1 % 0.01 % 9.75 dB 0.01 % 0.001 % 10.51 dB Freq Offse 0.0001 % ---- dB 0.001 % 0 H Peak 10.82 dB -22.12 dBm 0.0001 % 0 dB Info BW 25.000 MHz LTE_Band2_20MHz_16QAM_6_0_MidCH18900-1880

LTE_Band2_20MHz_16QAM_6_0_LowCH18700-1860





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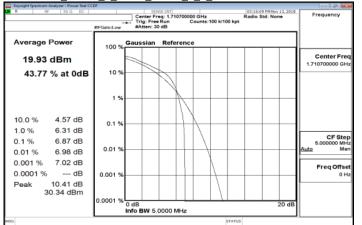
台灣檢驗科技股份有限公司

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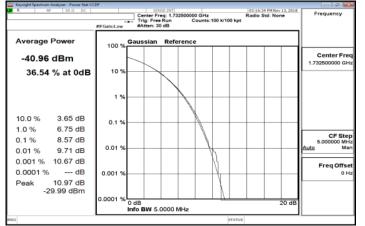
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LTE_Band4_1_4MHz_QPSK_6_0_LowCH19957-1710.7



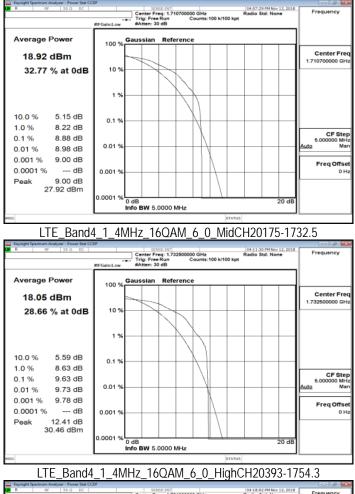
LTE_Band4_1_4MHz_QPSK_6_0_MidCH20175-1732.5

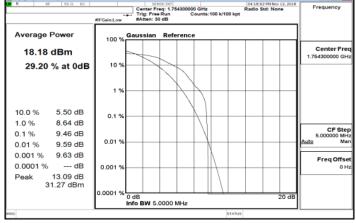


LTE_Band4_1_4MHz_QPSK_6_0_HighCH20393-1754.3

Average Power	#FGain:Low	Center Freq: 1.754300000 Gi Trig: Free Run Cour #Atten: 30 dB	Hz R: nts:100 k/100 kpt	adio Std: None	Frequency
Average Power					
	100 % Ga	ussian Reference			
18.32 dBm 41.53 % at 0dB	-				Center Free 1.754300000 GH:
	1 %				
10.0 % 4.29 dB 1.0 % 7.04 dB	0.1 %	$+$ $+$ \wedge			
0.1 % 8.00 dB 0.01 % 8.35 dB	0.01 %				CF Ste 5.000000 MH <u>Auto</u> Ma
0.001 % 8.51 dB 0.0001 % dB Peak 9.23 dB	0.001 %				Freq Offse 0 H
27.55 dBm	0.0001 % 0 c inf	IB o BW 5.0000 MHz		20 dB	

LTE_Band4_1_4MHz_16QAM_6_0_LowCH19957-1710.7





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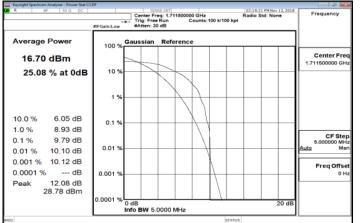
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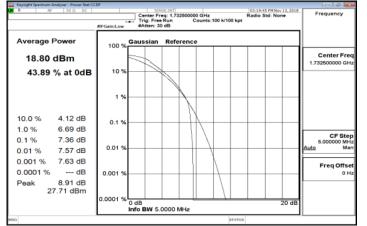
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LTE_Band4_3MHz_QPSK_6_0_LowCH19965-1711.5



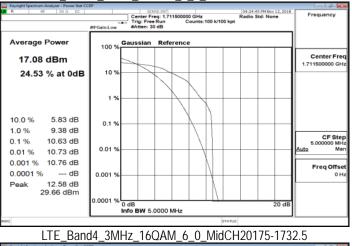
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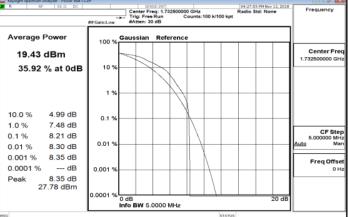


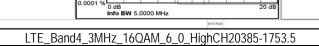
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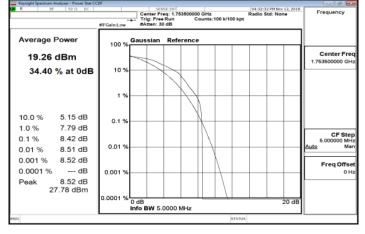
Keysight Spectrum Analyzer - Power Stat CO		
R RF 50 Ω DC		30 PM Nov 13, 2018 Std: None Frequency
Average Power	100 % Gaussian Reference	
-40.96 dBm		Center Free 1.753500000 GH
36.62 % at 0dB	10 %	
	1 %	
10.0 % 3.66 dB 1.0 % 6.72 dB	0.1 %	
0.1 % 8.41 dB 0.01 % 9.66 dB	0.01 %	CF Ster 5.000000 MH Auto Mar
0.001 % 10.54 dB 0.0001 % dB	0.001 %	Freq Offse 0 H
Peak 11.80 dB -29.16 dBm	0.0001 %	
	0 dB Info BW 5.0000 MHz	20 dB

LTE_Band4_3MHz_16QAM_6_0_LowCH19965-1711.5









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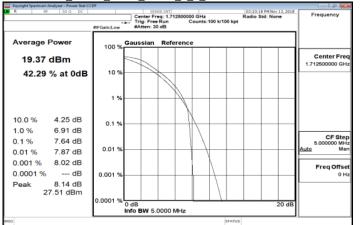
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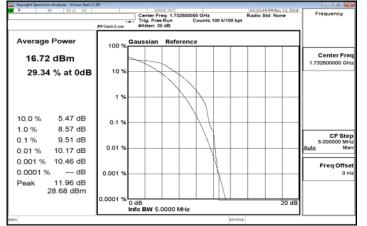
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LTE_Band4_5MHz_QPSK_6_0_LowCH19975-1712.5



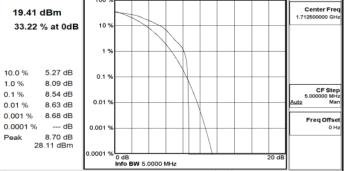
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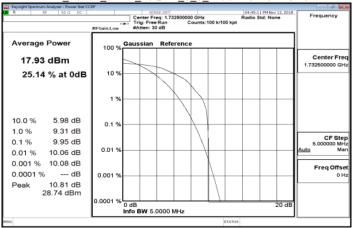
LTE_Band4_5MHz_QPSK_6_0_HighCH20375-1752.5

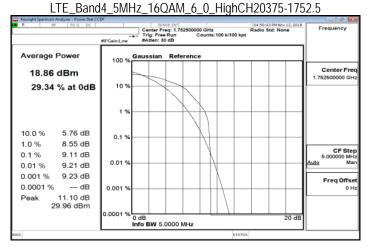
Keysight Spectrum Analyzer - Power Stat CC		
C R RF 50 Ω DC	SENSE::NT 02:25:57 PH Nov 13, 2018 Center Freq: 1,752500000 GHz Radio Std: None Trig: Freq: Run Counts:100 k/100 kpt #FGain:Low #Atten: 30 dB	Frequency
Average Power	100 % Gaussian Reference	
19.65 dBm		Center Freq 1.752500000 GHz
42.77 % at 0dB	1 %	
10.0 % 4.22 dB 1.0 % 6.81 dB	0.1 %	
0.1 % 7.29 dB 0.01 % 7.44 dB	0.01 %	CF Step 5.000000 MHz Auto Man
0.001 % 7.51 dB 0.0001 % dB Peak 7.92 dB	0.001 %	Freq Offset 0 Hz
27.57 dBm	0.0001 % 0 dB 20 dB Info BW 5.0000 MHz	
MBG	STATUS	

LTE_Band4_5MHz_16QAM_6_0_LowCH19975-1712.5 Center Freq: 1.712500000 GHz Radio Std: None Trig: Free Run Counts: 100 k/100 kpt #Atten: 30 dB Frequency Average Power Gaussian Reference



LTE_Band4_5MHz_16QAM_6_0_MidCH20175-1732.5





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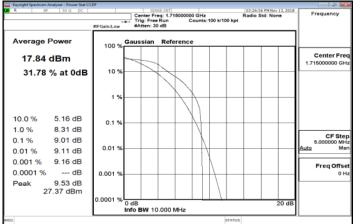
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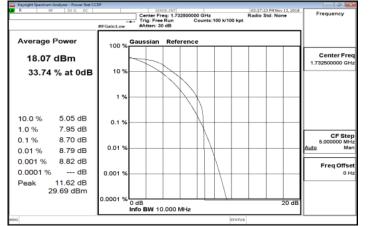
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LTE_Band4_10MHz_QPSK_6_0_LowCH20000-1715



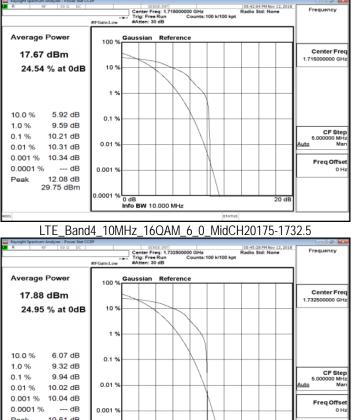
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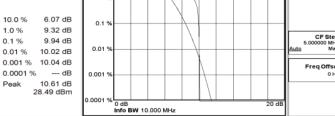


LTE Band4 10MHz QPSK 6 0 HighCH20350-1750

Trig:	n: 30 dB	GHz unts:100 k/100 kpt	Radio Std: Non	e Fre	quency enter Frec 000000 GH2
10 %	an Reference				
	\mathbb{N}				
0.1 %					05.010
0.01 %		[] []		Auto 5.0	CF Ste 000000 MH Ma
0.001 %		<u>-</u>		F	reqOffsi 0⊦
0.0001 % 0 dB	10.000 MHz			20 dB	
	0.01 %	0.01 %	0.01 % 0.001 % 0.0001 % 0.0001 % 0.000 MHz	0.01 % 0.001 % 0.0001 %	0.01 % 0.001 % 0.001 % 0.001 % 0.000 MHz 20 dB 1nfo BW 10.000 MHz

LTE_Band4_10MHz_16QAM_6_0_LowCH20000-1715





LTE_Band4_10MHz_16QAM_6_0_HighCH20350-1750

R RF 50 Q DC	Center Freq: 1.750000000 GHz Radio Std: None Trig: Free Run Counts:100 k/100 kpt #Atten: 30 dB	Frequency
Average Power	100 % Gaussian Reference	
18.57 dBm 27.03 % at 0dB	10 %	Center Free 1.750000000 GH
	1 %	_
10.0 % 6.05 dB 1.0 % 8.92 dB	0.1 %	_
0.1 % 9.47 dB 0.01 % 9.53 dB 0.001 % 9.55 dB	0.01 %	CF Ste 5.000000 MH Auto Ma
0.0001 % dB Peak 12.26 dB	0.001 %	Freq Offse
30.83 dBm	0.0001 % 0 dB 20 Info BW 10.000 MHz	dB
490	STATUS	

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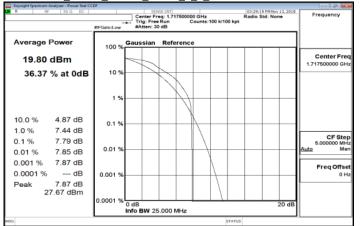
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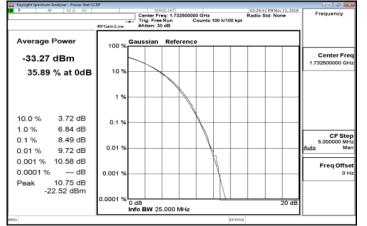
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LTE_Band4_15MHz_QPSK_6_0_LowCH20025-1717.5



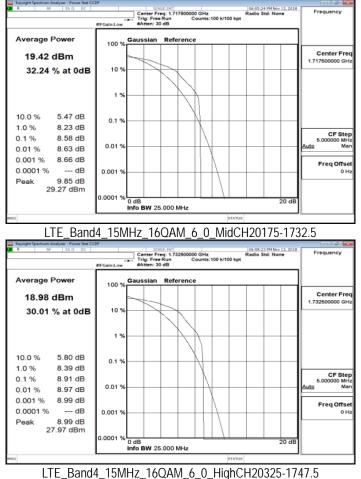
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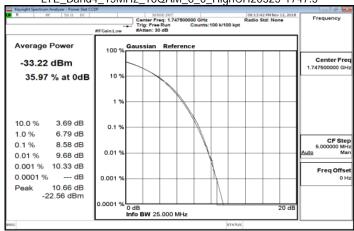


LTE_Band4_15MHz_QPSK_6_0_HighCH20325-1747.5

	Keysight Spectrum Analyzer - Power Stat CC		
-33.28 dBm 35.93 % at 0dB 10 % 1 % 1 % 1 % 1 % 1 % 1 % 1 % 1	R RF SO DC	Center Freq: 1.747500000 GHz Radio Std: None Trig: Free Run Counts:100 k/100 kpt	Frequency
-33.20 dBm 35.93 % at 0dB 10 % 1 % 10 % 1 % 1 % 1 % 10 % 1 % 1 % 1 % 1 % 1 % 1 % 1 % 1	Average Power	100 % Gaussian Reference	
10.0 % 3.72 dB 1 % 10.0 % 3.72 dB 0.1 % 0.1 % 6.78 dB 0.01 % 0.001 % 1.0.71 dB 0.01 % 0.001 % dB 0.001 % Peak 10.91 dB 0001 % 0.0001 % 0001 % 0.001 %			Center Freq 1.747500000 GHz
10.0 % 3.72 dB 0.1 % 0.1 % 0.1 % 0.1 % 0.1 % 0.1 % 0.1 % 0.1 % 0.0 %	35.93 % at 0dB	10 %	
1.0 % 6.78 dB 0.1 % CF Step 0.1 % 8.54 dB 0.01 % 0.01 % 0.01 % 9.77 dB 0.01 % 0.01 % 0.001 % 10.71 dB 0.001 % 0.001 % Peak 10.91 dB 0.0001 % 0.0001 % 0.0001 % 0.0001 % 0.0001 % 0.0001 %		1 %	
0.1 % 8.54 dB 0.01 % 9.77 dB 0.001 % 10.71 dB 0.001 % 0.001 % 0.001 % 0.001 % 0.001 % 0.001 % 0.000		0.1 %	
0.0001 % dB 0.001 % Peak 10.91 dB -22.37 dBm 0.0001 % 0 dB 20 dB	0.1 % 8.54 dB 0.01 % 9.77 dB	0.01 %	CF Step 5.000000 MHz Auto Man
0.0001 % 0 dB 20 dB	0.0001 % dB	0.001 %	Freq Offset 0 Hz
Info BW 25.000 MHz	-22.37 dBm	0 dB 20 dB	
		Info BW 25.000 MHz	

LTE_Band4_15MHz_16QAM_6_0_LowCH20025-1717.5





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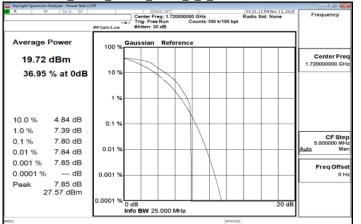
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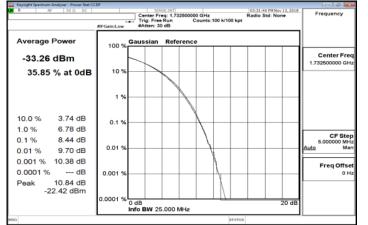
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LTE_Band4_20MHz_QPSK_6_0_LowCH20050-1720



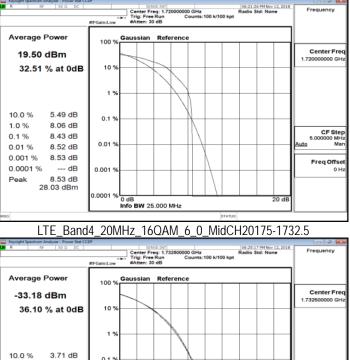
LTE_Band4_20MHz_QPSK_6_0_MidCH20175-1732.5

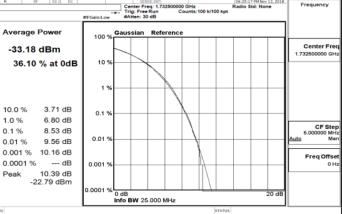


LTE_Band4_20MHz_QPSK_6_0_HighCH20300-1745

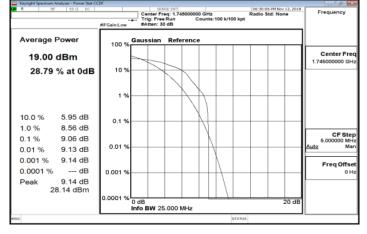
Keysight Spectrum Analyzer - Power Stat CC		
DAR RF SO Ω DC	SERVE::btl 03:22:07 PM Nev 13 Center Freq: 1.745000000 GHz Radio Std: None Trig: Freq: Run Counts:100 k/100 kpt #IFGain:Low #Atten: 30 dB	Frequency
Average Power	100 % Gaussian Reference	
-33.26 dBm		Center Freq 1.745000000 GHz
36.11 % at 0dB	10 %	
	1 %	-
10.0 % 3.73 dB 1.0 % 6.76 dB	0.1 %	_
0.1 % 8.48 dB 0.01 % 9.77 dB	0.01 %	CF Step 5.000000 MHz <u>Auto</u> Man
0.001 % 10.41 dB 0.0001 % dB Peak 10.56 dB	0.001 %	Freq Offset 0 Hz
-22.70 dBm		dB
	Info BW 25.000 MHz	
MSG	STATUS	

LTE_Band4_20MHz_16QAM_6_0_LowCH20050-1720









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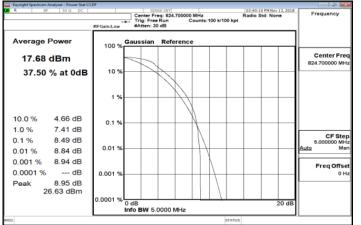
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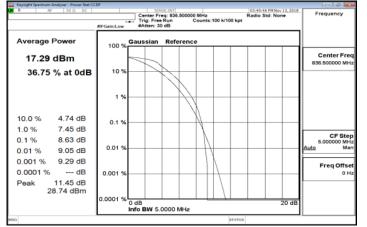
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LTE_Band5_1_4MHz_QPSK_6_0_LowCH20407-824.7



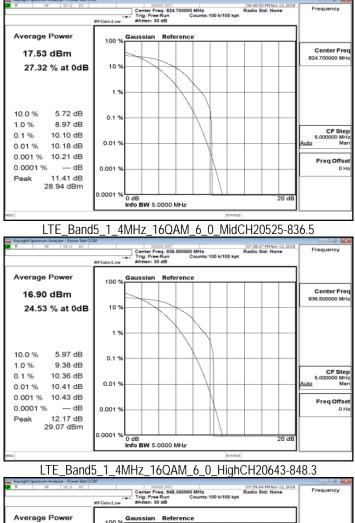
LTE_Band5_1_4MHz_QPSK_6_0_MidCH20525-836.5

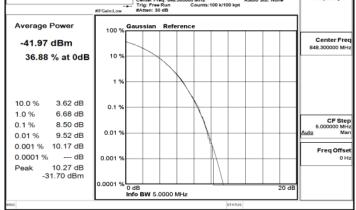


LTE Band5 1 4MHz QPSK 6 0 HighCH20643-848.3

Keysight Spectrum Analyzer - Power Stat CCI		
R RF 50 Ω DC	Center Freq: 848.300000 MHz Radio Std: None Trig: Freq Run Counts:100 k/100 kpt #FGain:Low #Atten: 30 dB	Frequency
Average Power	100 % Gaussian Reference	
17.47 dBm		Center Freq 848.300000 MHz
41.36 % at 0dB	1 %	
10.0 % 4.34 dB 1.0 % 6.93 dB	0.1 %	
0.1 % 7.89 dB 0.01 % 8.19 dB	0.01 %	CF Step 5.000000 MHz Auto Mar
0.001 % 8.27 dB 0.0001 % dB Peak 8.27 dB	0.001 %	Freq Offset 0 Ha
25.74 dBm	0.0001 % 0 dB 20 dB 20 dB 10fo BW 5.0000 MHz	
MSG	STATUS	

LTE_Band5_1_4MHz_16QAM_6_0_LowCH20407-824.7





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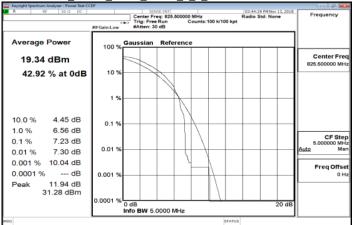
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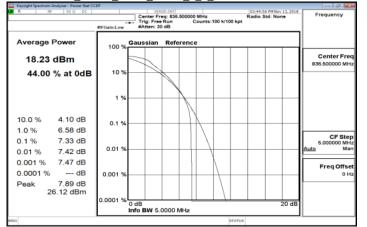
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LTE_Band5_3MHz_QPSK_6_0_LowCH20415-825.5



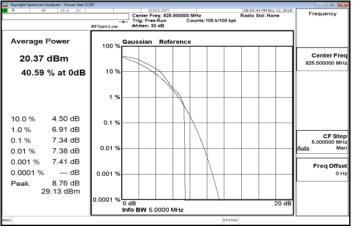
LTE_Band5_3MHz_QPSK_6_0_MidCH20525-836.5



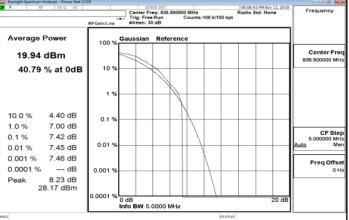
LTE_Band5_3MHz_QPSK_6_0_HighCH20635-847.5

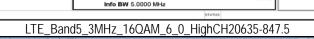
Keysight Spectrum Analyzer - Power Stat CO		
DAR RF SO DC	Stratt: 247.500000 MHz Radio Std: None Trig: Free Run Counts:100 k/100 kpt	Frequency
Average Power	100 % Gaussian Reference	
17.89 dBm		Center Freq 847.500000 MHz
44.69 % at 0dB	10 %	
10.0 % 4.03 dB 1.0 % 6.50 dB	0.1 %	
0.1 % 7.12 dB 0.01 % 7.24 dB	0.01 %	CF Step 5.000000 MHz <u>Auto</u> Man
0.001 % 7.30 dB 0.0001 % dB Peak 7.87 dB 25.76 dBm	0.001 %	Freq Offset 0 Hz
23.76 dBiii	0.0001 % 0 dB 20 dB Info BW 5.0000 MHz	

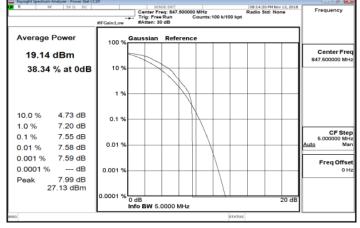
LTE_Band5_3MHz_16QAM_6_0_LowCH20415-825.5



LTE_Band5_3MHz_16QAM_6_0_MidCH20525-836.5







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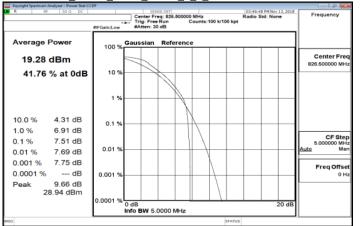
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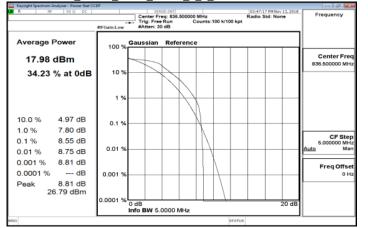
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LTE_Band5_5MHz_QPSK_6_0_LowCH20425-826.5



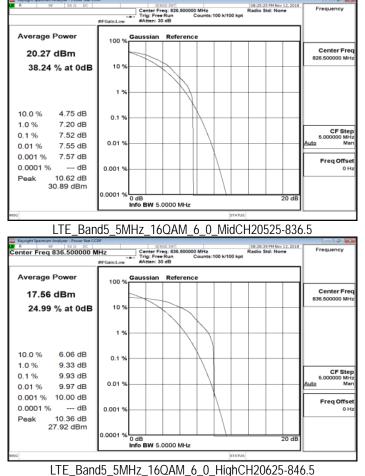
LTE_Band5_5MHz_QPSK_6_0_MidCH20525-836.5

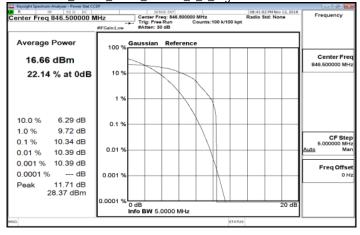


LTE_Band5_5MHz_QPSK_6_0_HighCH20625-846.5

Keysight Spectrum Analyzer - Power Stat CO		
R RF 50 G DC Center Freq 846.500000 M	SERSE:INT 02:47:38 PM Nov 13; HZ Center Freq: 846.500000 MHz Radio Std: None Trig: Free Run Counts:100 k/100 kpt affGainsLow #Atten: 30 dB B Counts:100 k/100 kpt	Frequency
Average Power	100 % Gaussian Reference	
16.18 dBm		Center Free 846.500000 MH
26.72 % at 0dB	10%	
10.0 % 5.79 dB 1.0 % 8.84 dB	0.1 %	_
0.1 % 9.76 dB 0.01 % 9.95 dB 0.001 % 10.04 dB	0.01 %	CF Ste 5.000000 MH <u>Auto</u> Ma
0.0001 % dB Peak 13.79 dB	0.001 %	Freq Offse
29.97 dBm	0.0001 % 0 dB 5.0000 MHz 20	dB

LTE_Band5_5MHz_16QAM_6_0_LowCH20425-826.5





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