

4.7 Conducted Spurious Emissions

4.7.1 Limits of Conducted Spurious Emissions Measurement

Power of any emissions outside the Fundamental	Limit
Within 0-10MHz above the Assigned Channel	-13 dBm/MHz
Within 0-10MHz below the Assigned Channel	
Greater than 0-10MHz above the Assigned Channel	-25 dBm/MHz
Greater than 0-10MHz below the Assigned Channel	
Power of any emission below 3530MHz	-40 dBm/MHz
Power of any emission above 3720MHz	

Note:

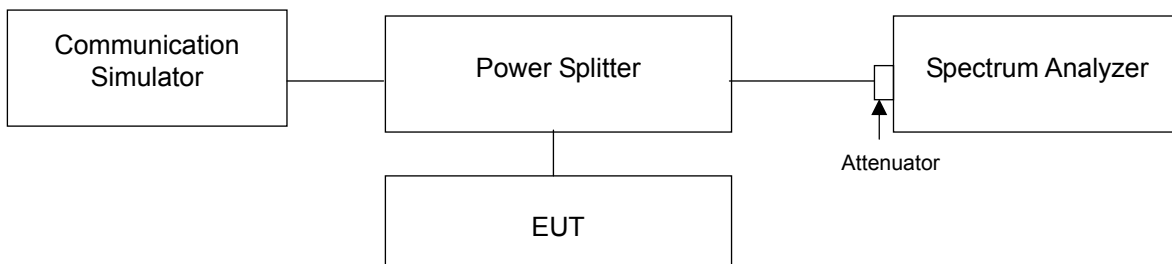
This device can be implement MIMO function, so the limit of spurious emissions needs to be reduced by $10\log(\text{Numbers}_{\text{Ant}})$ according to FCC KDB 662911 D01 guidance.

{The limit is adjusted to $-13\text{dBm} - 10*\log(2) = -16.01\text{dBm}$.}

{The limit is adjusted to $-25\text{dBm} - 10*\log(2) = -28.01\text{dBm}$.}

{The limit is adjusted to $-40\text{dBm} - 10*\log(2) = -43.01\text{dBm}$.}

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.7.4 Test Procedure

- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 30 MHz to 37 GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.
- Measuring frequency band edge, 20dB attenuation pad is connected with spectrum. 1% of the fundamental emission bandwidth is used for conducted emission measurement.

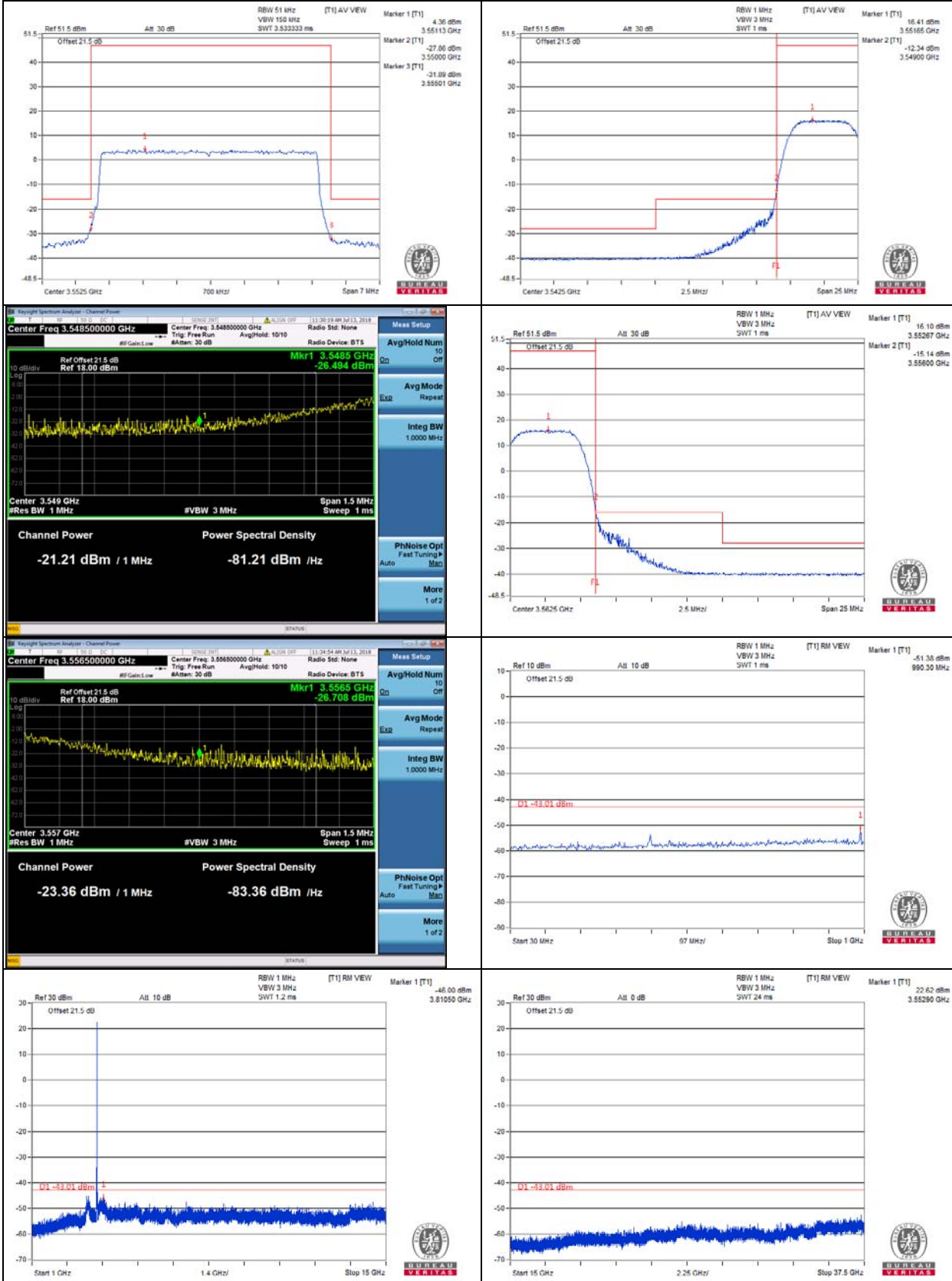
4.7.5 Test Results

5MHz

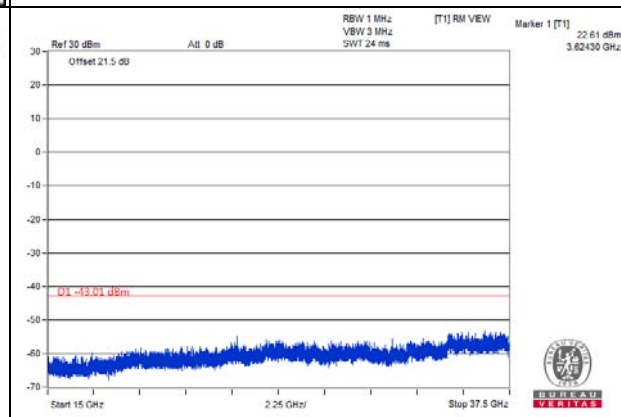
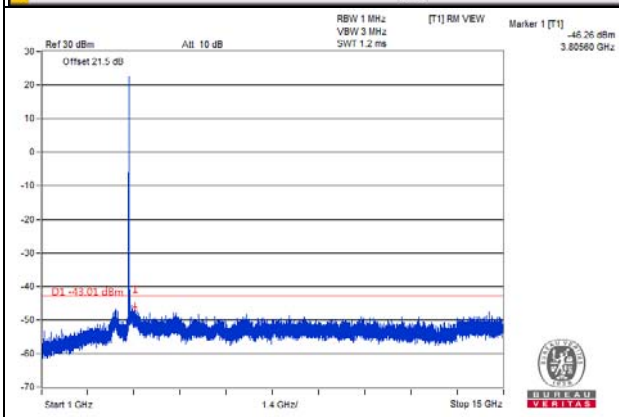
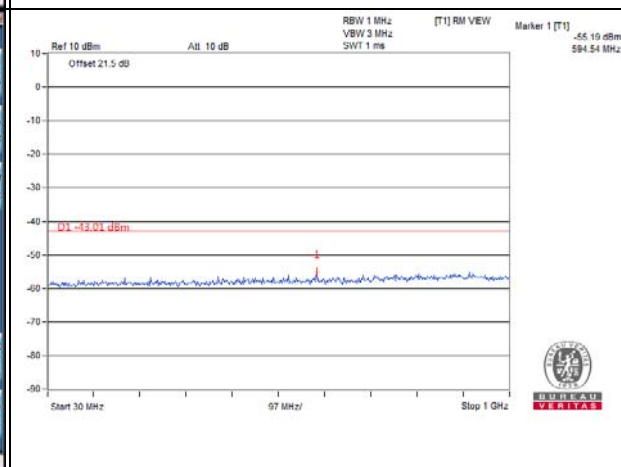
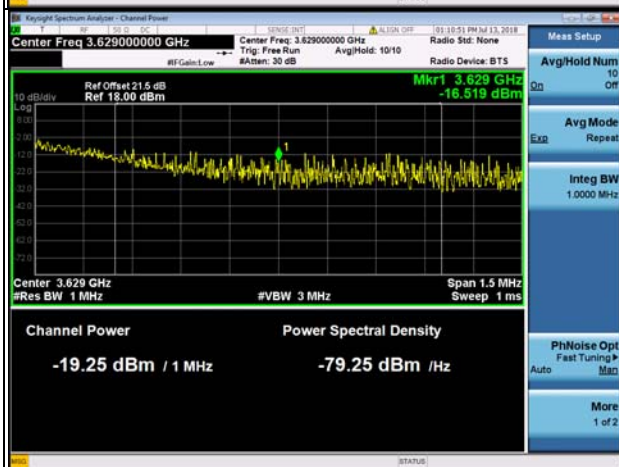
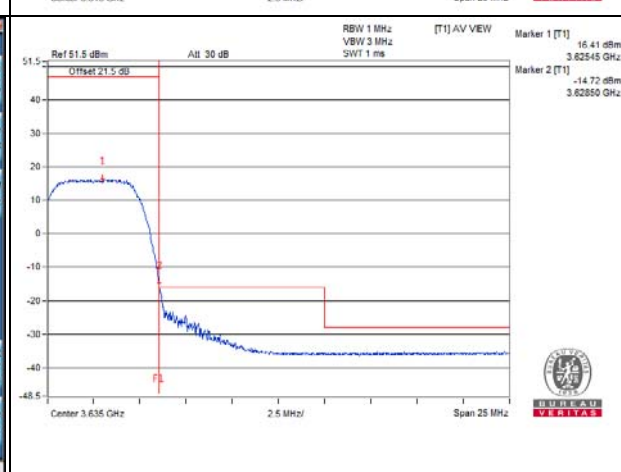
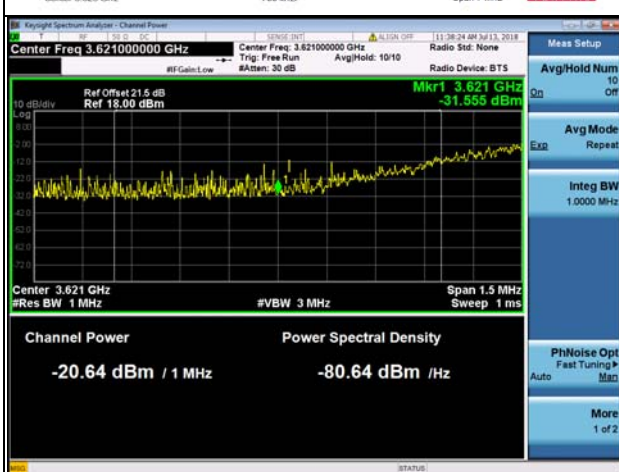
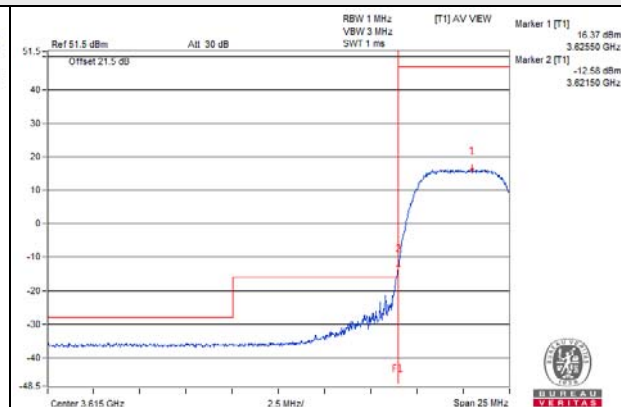
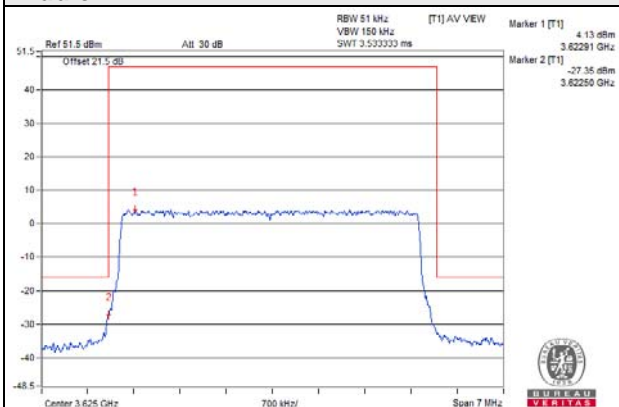
QPSK

Chain 0

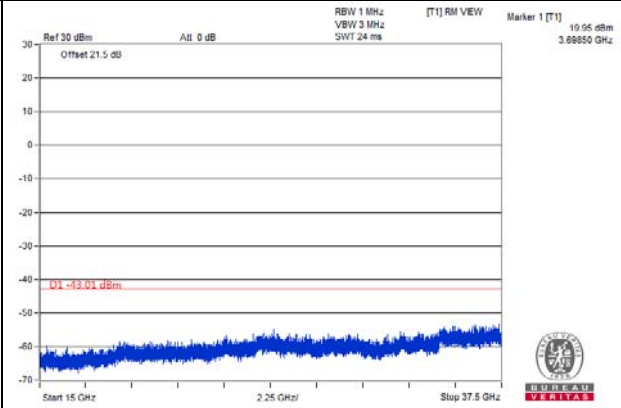
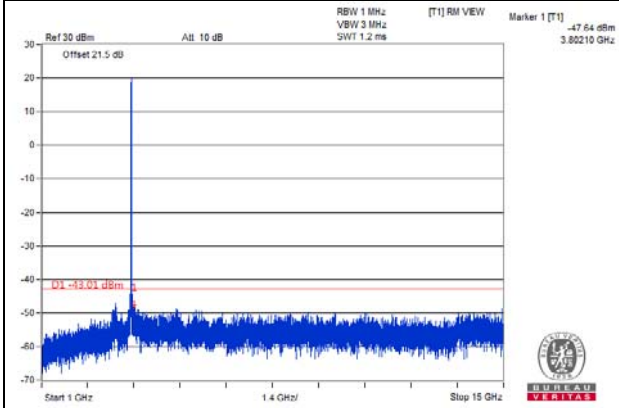
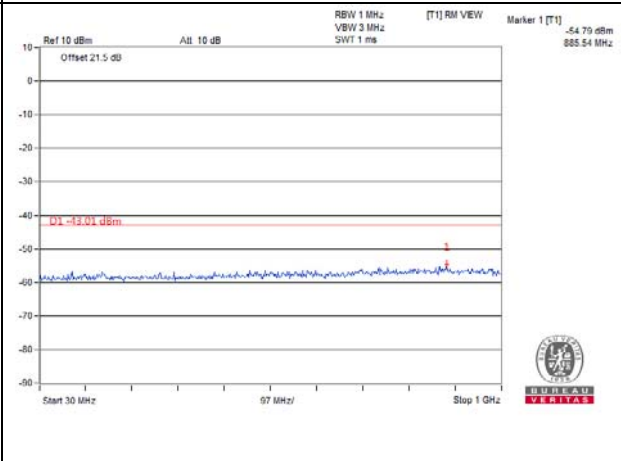
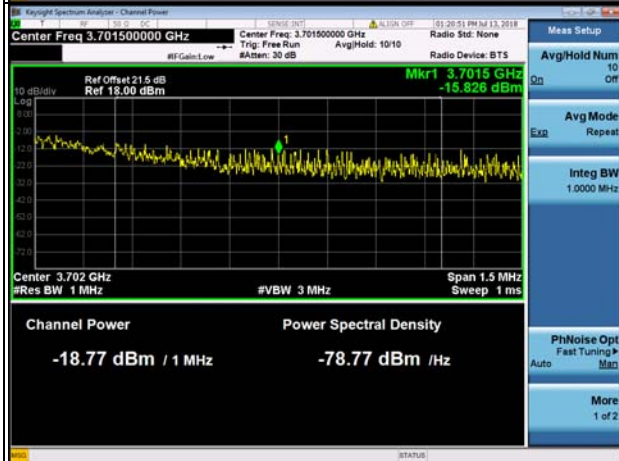
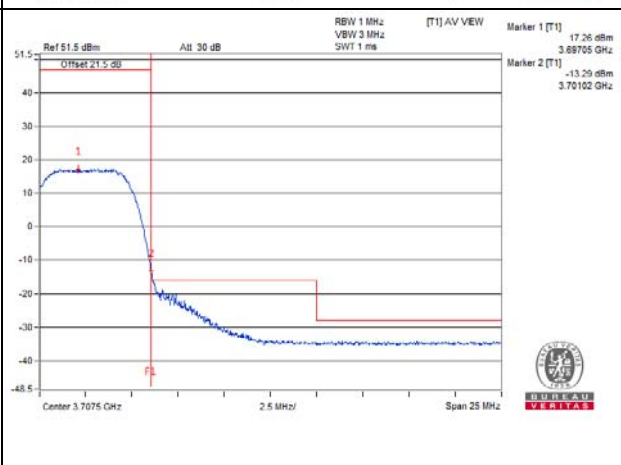
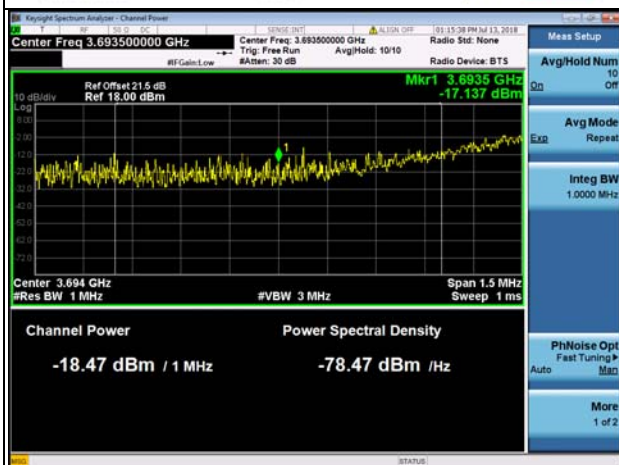
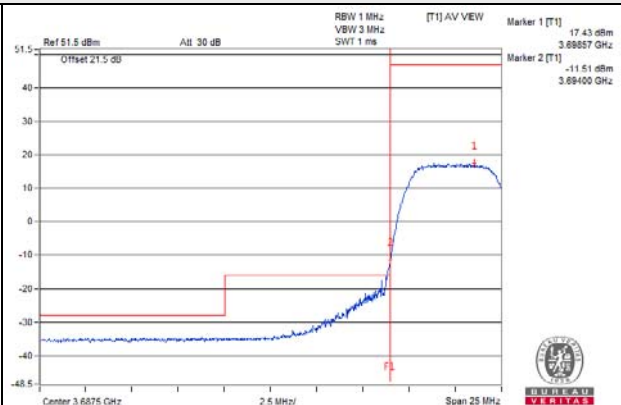
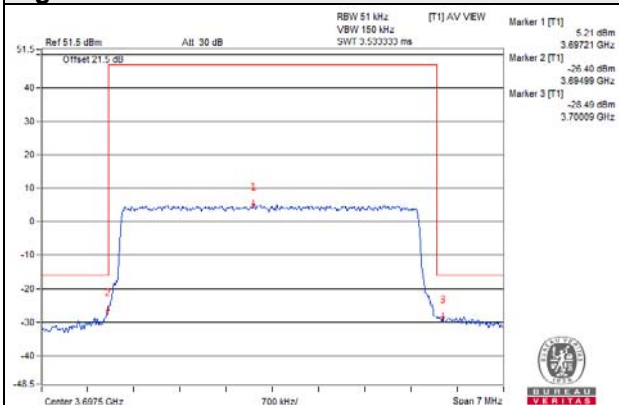
Low



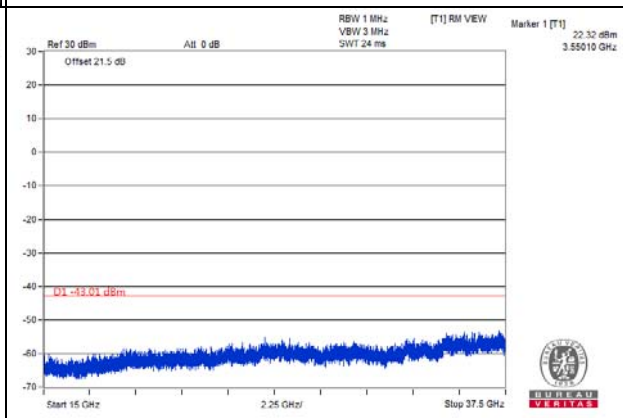
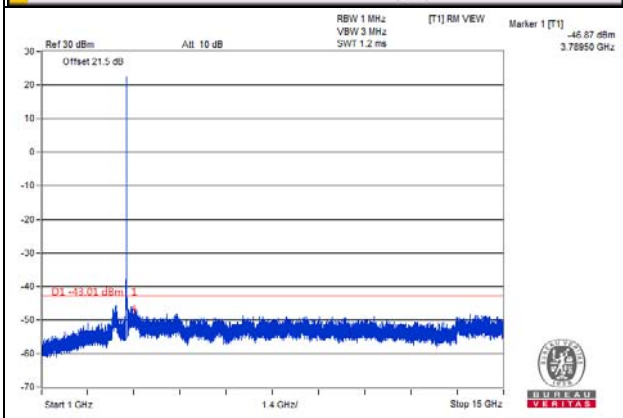
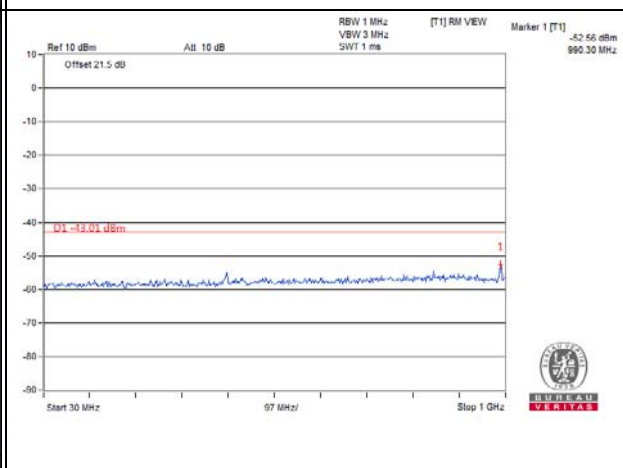
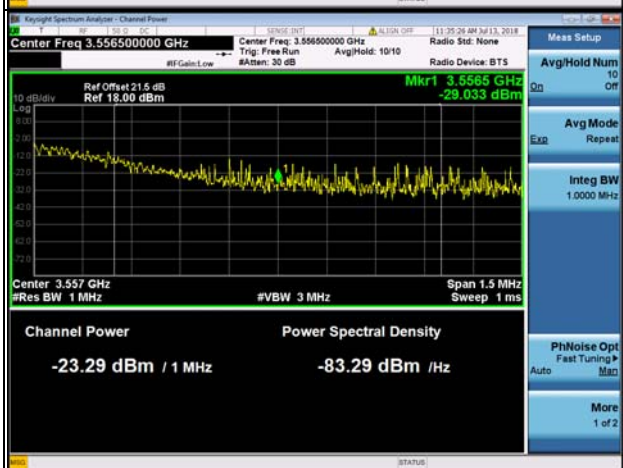
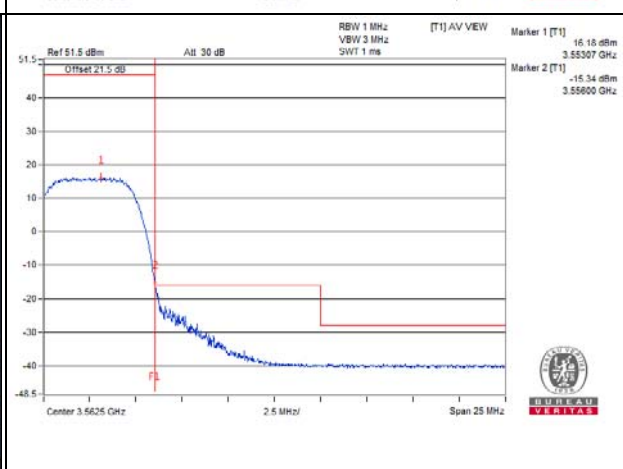
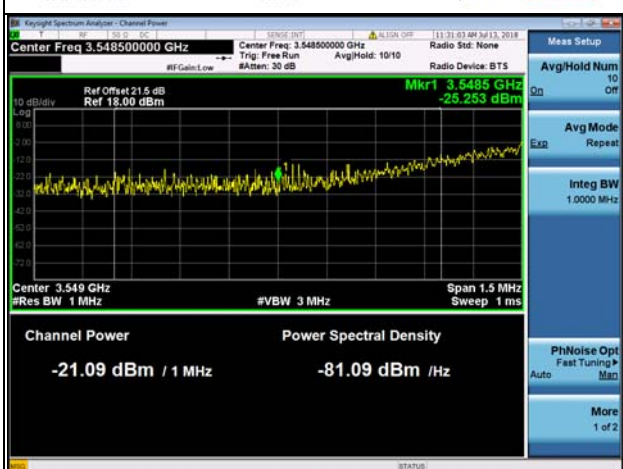
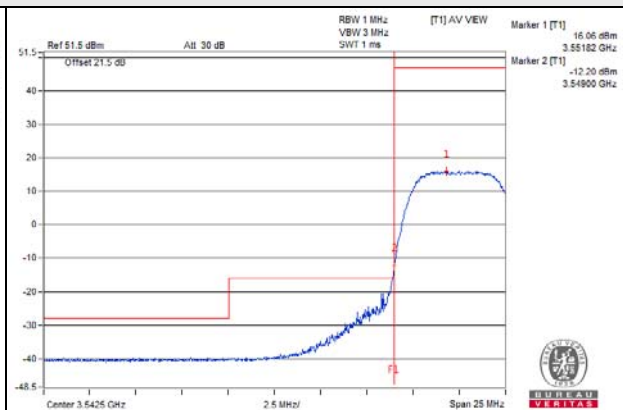
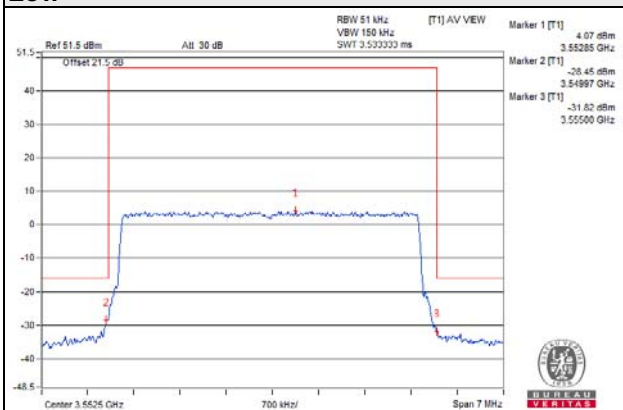
Middle



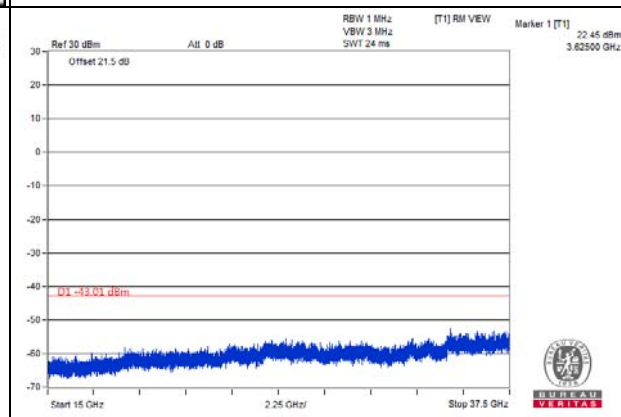
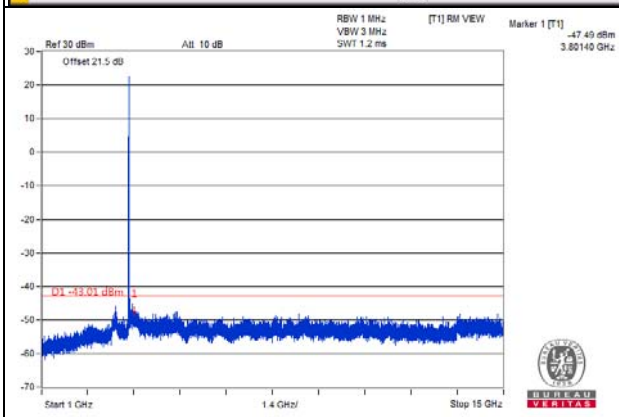
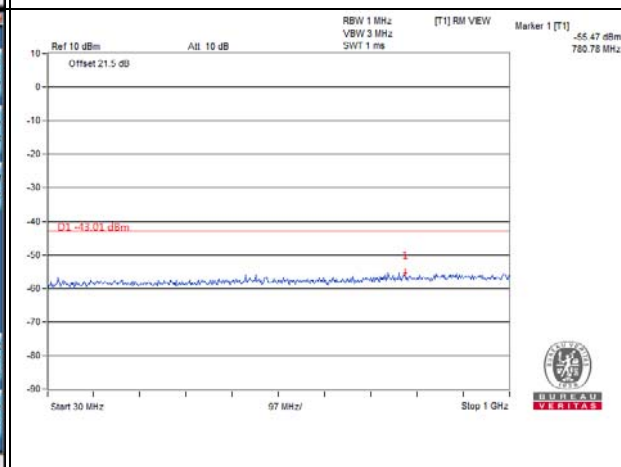
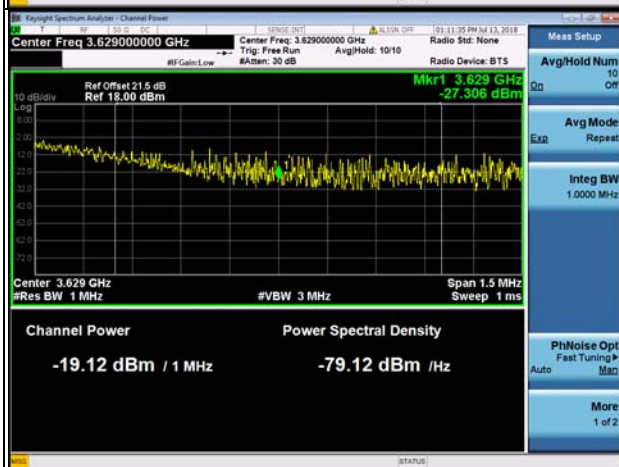
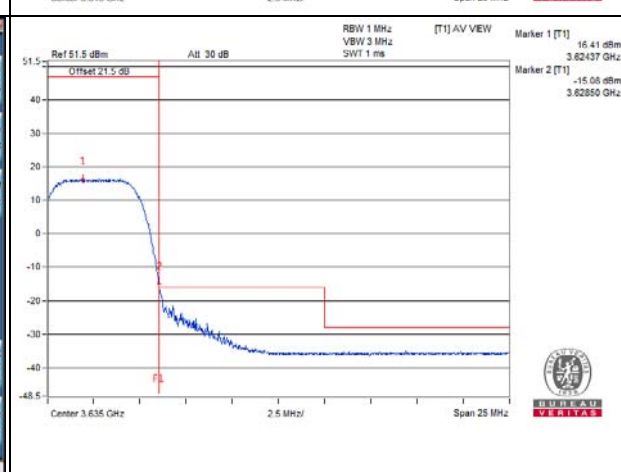
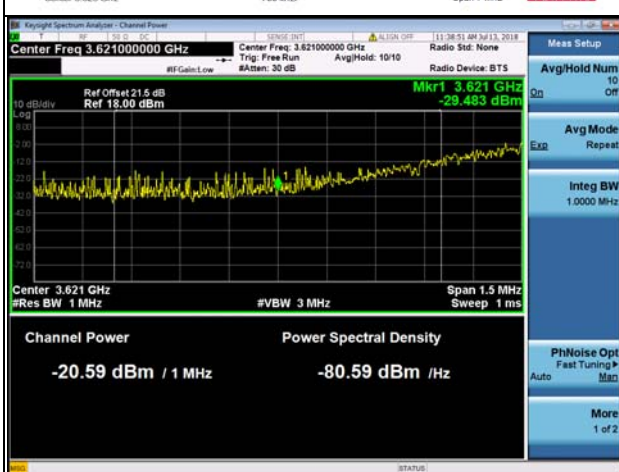
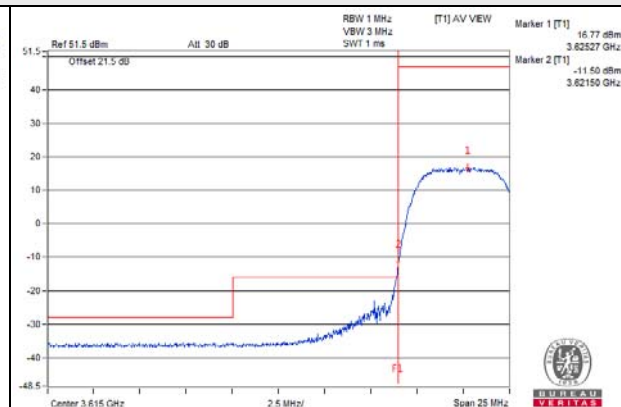
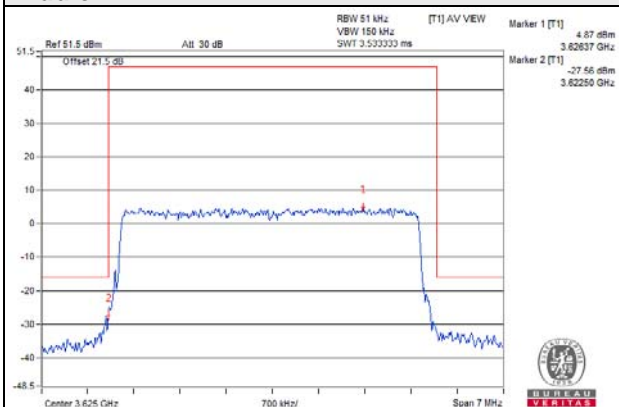
High



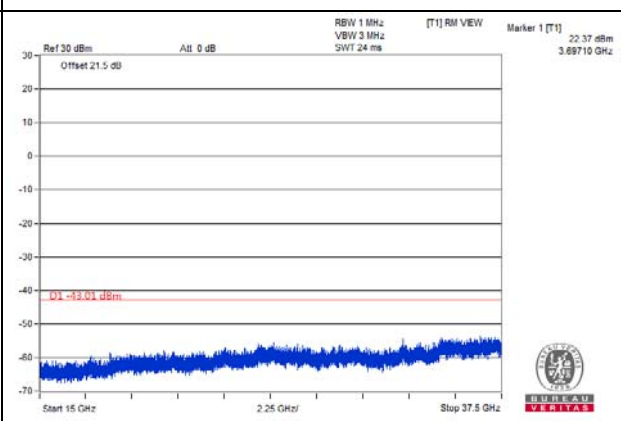
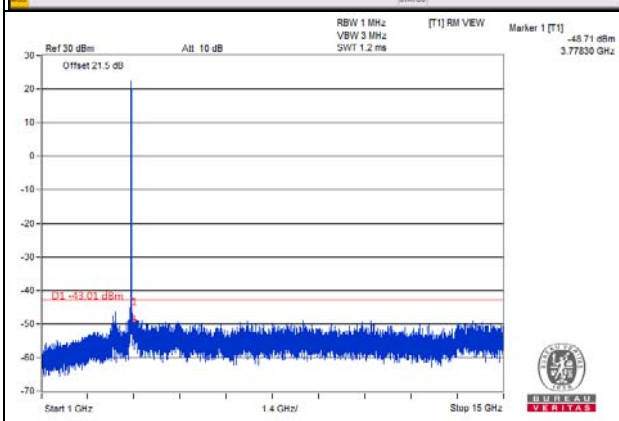
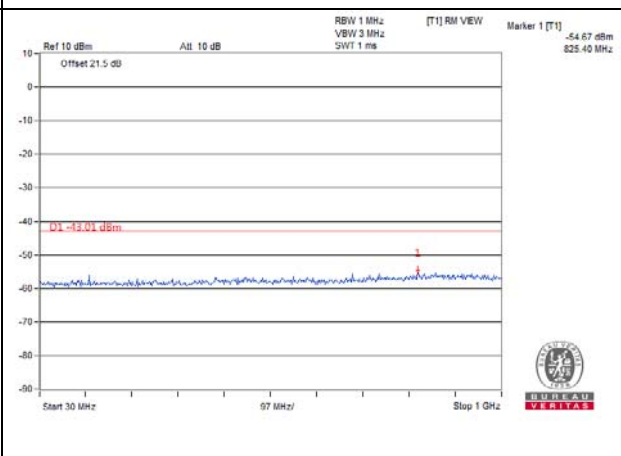
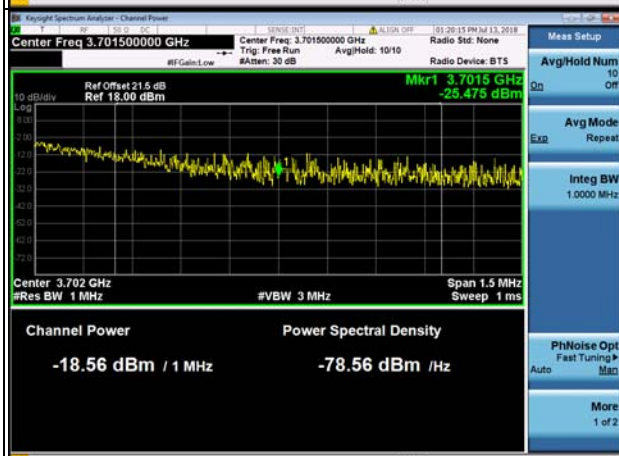
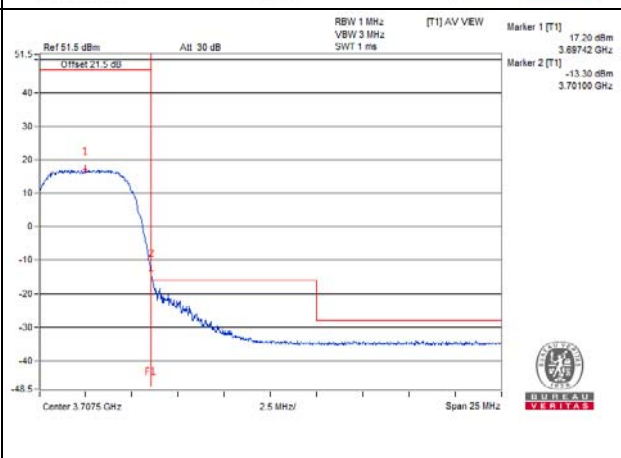
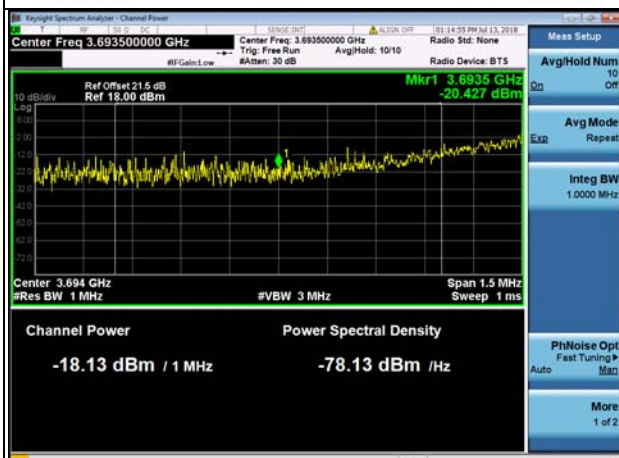
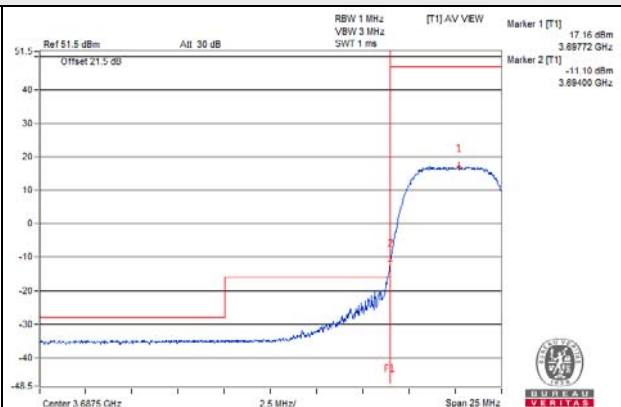
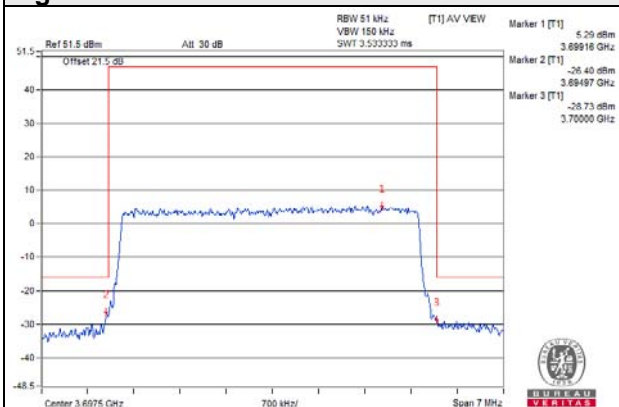
Chain 1 Low



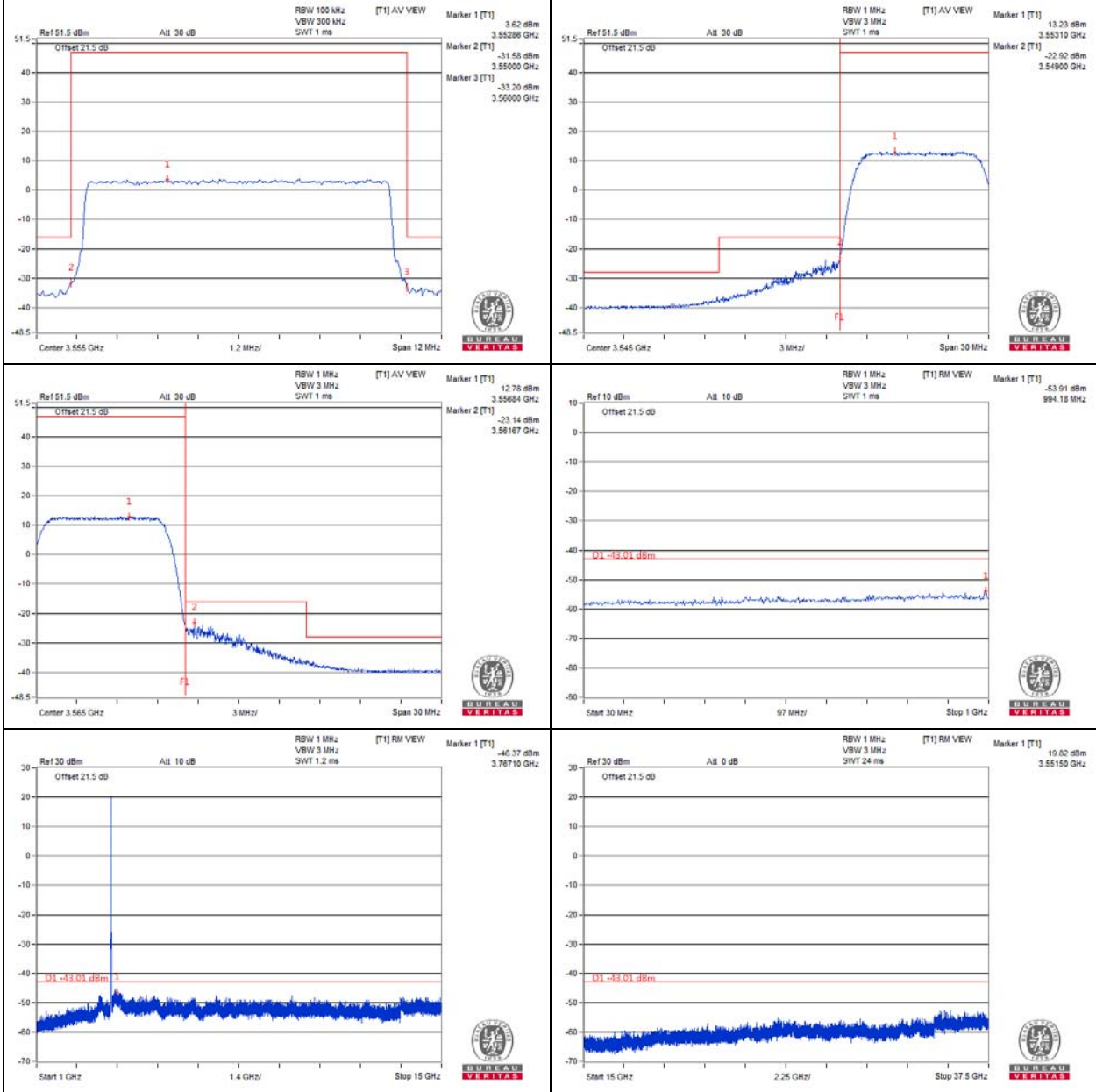
Middle



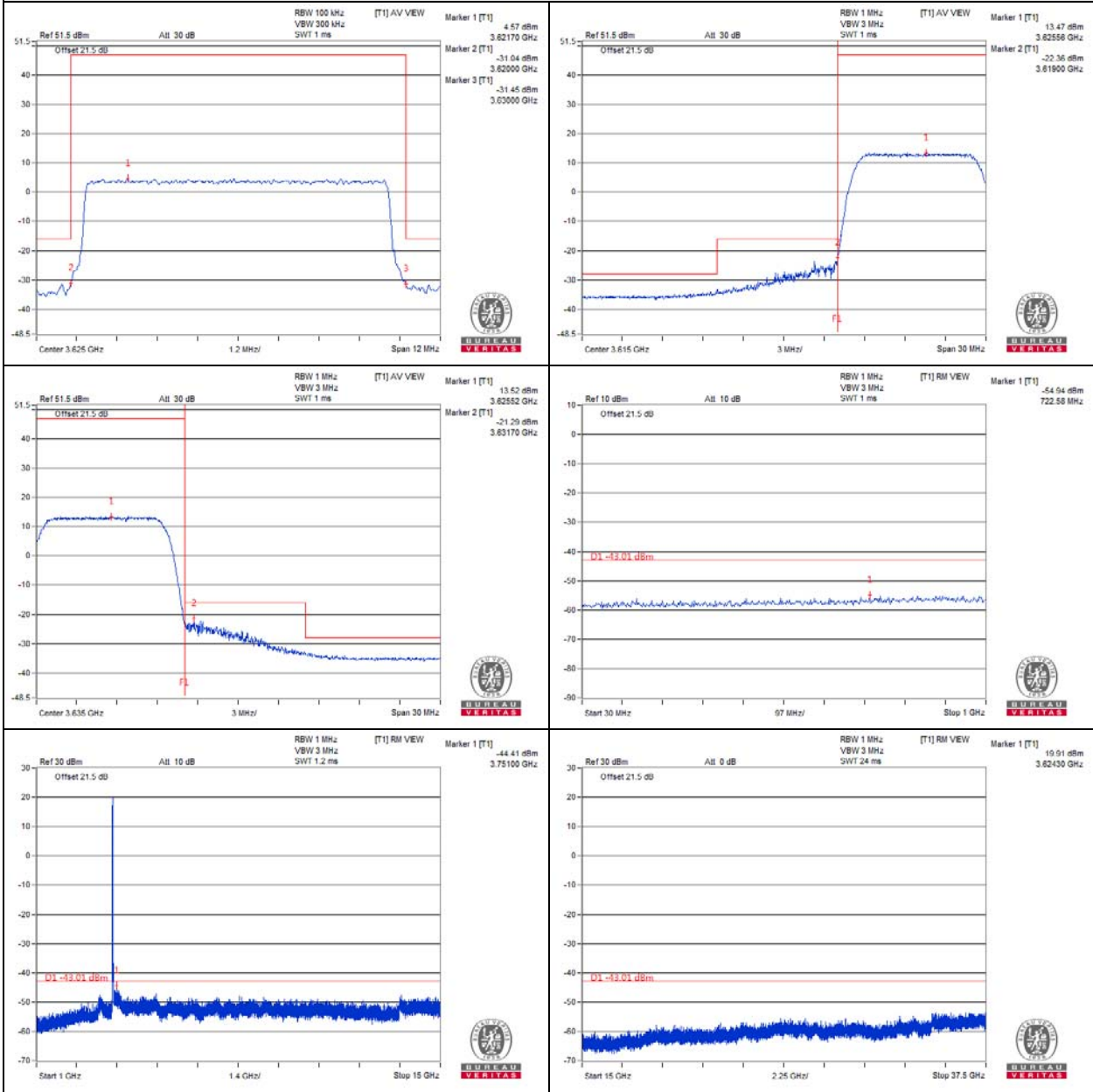
High



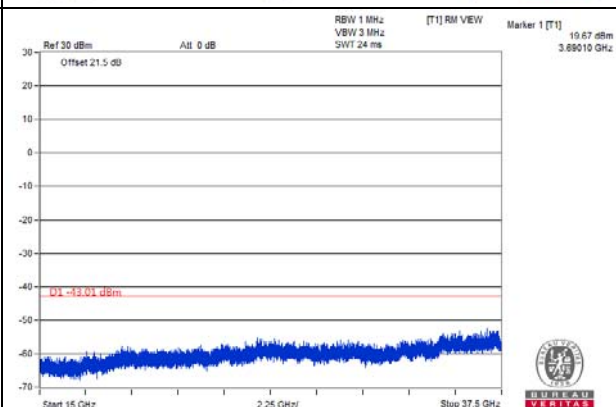
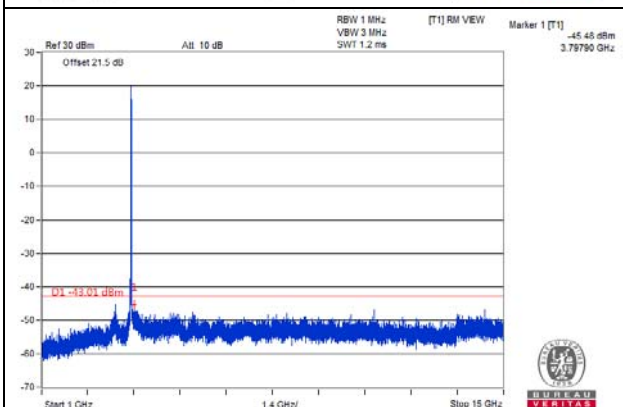
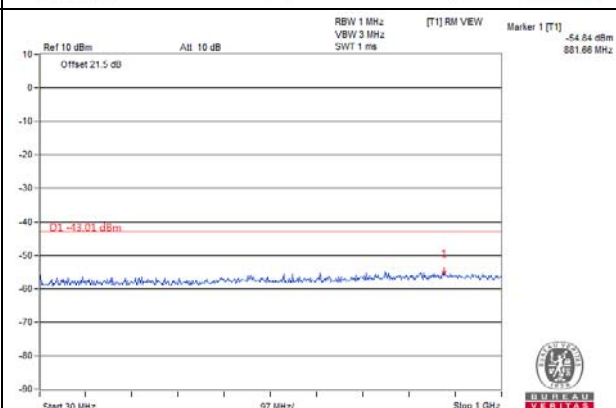
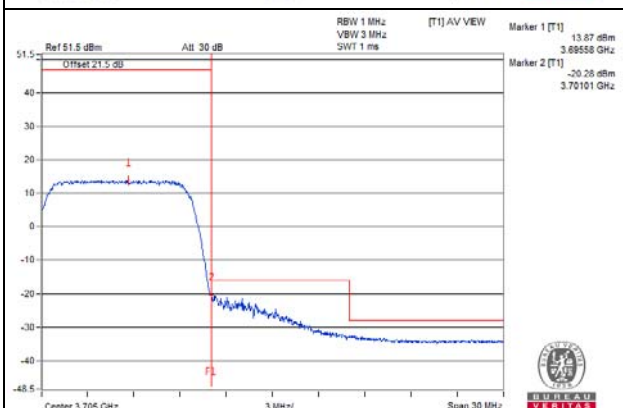
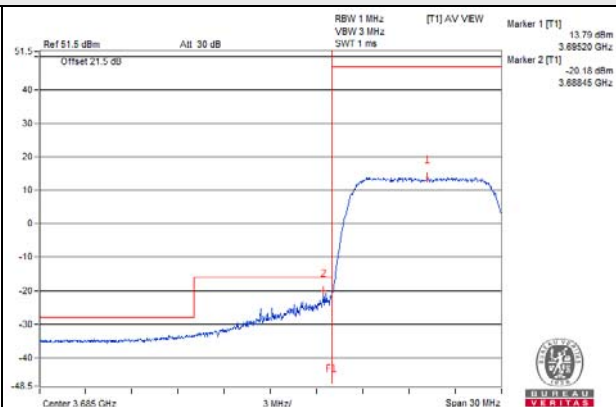
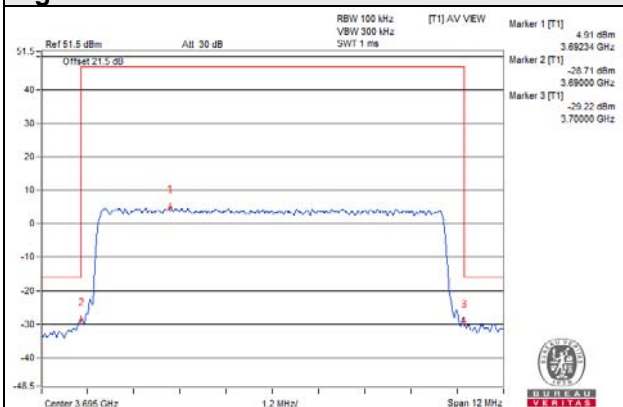
10MHz
QPSK
Chain 0
Low



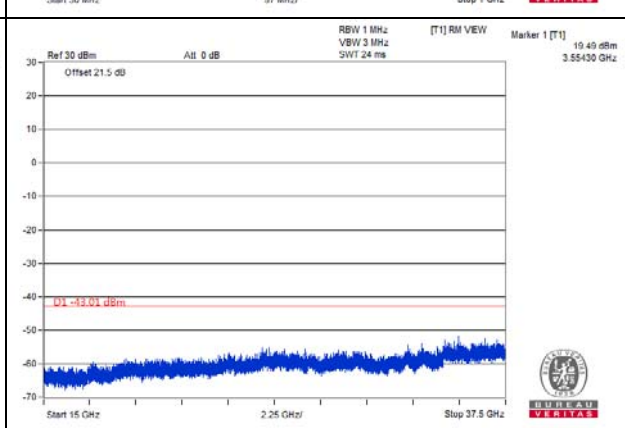
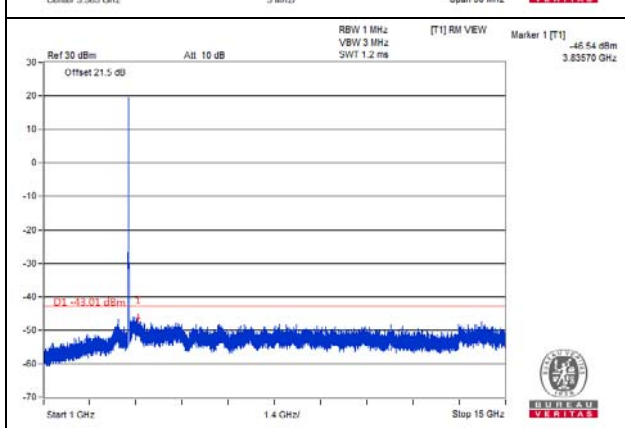
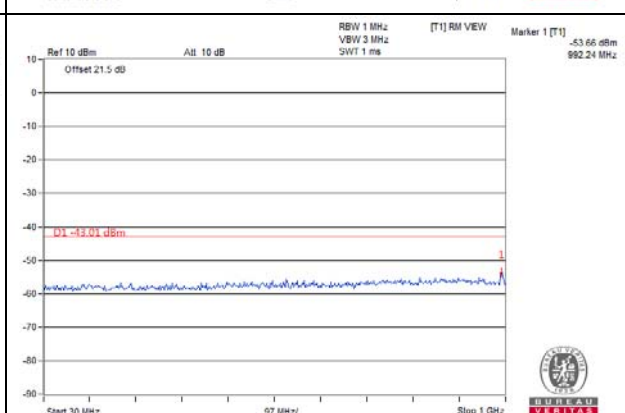
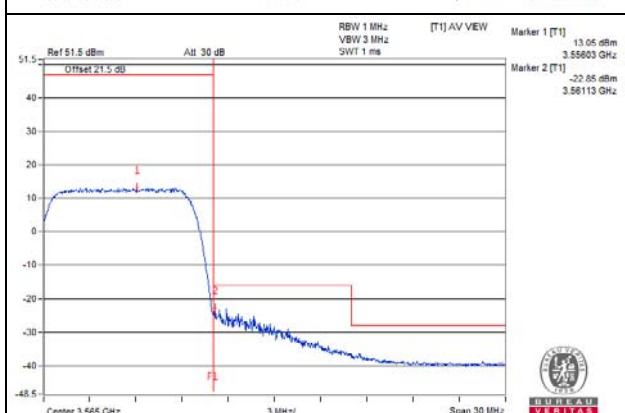
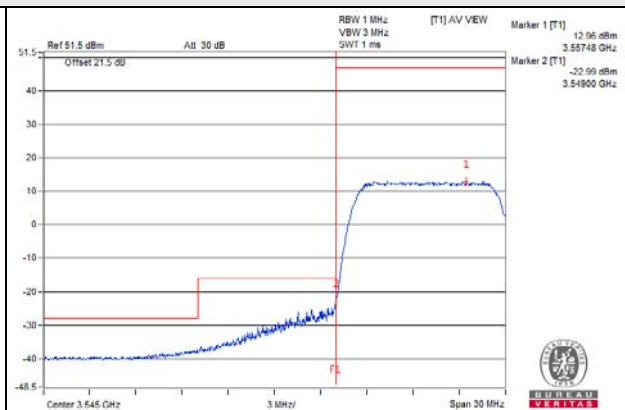
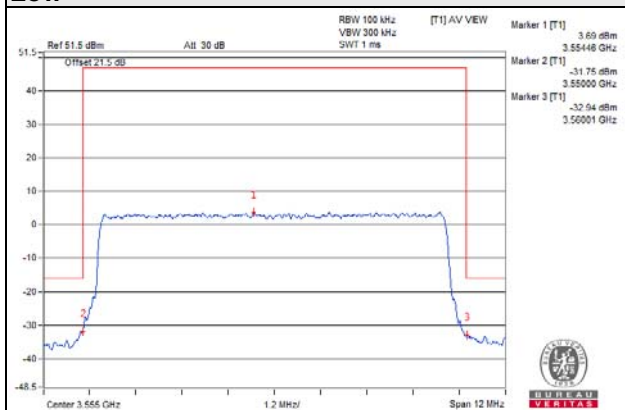
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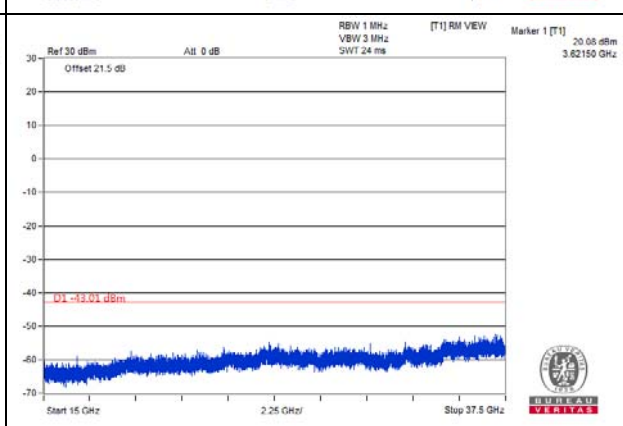
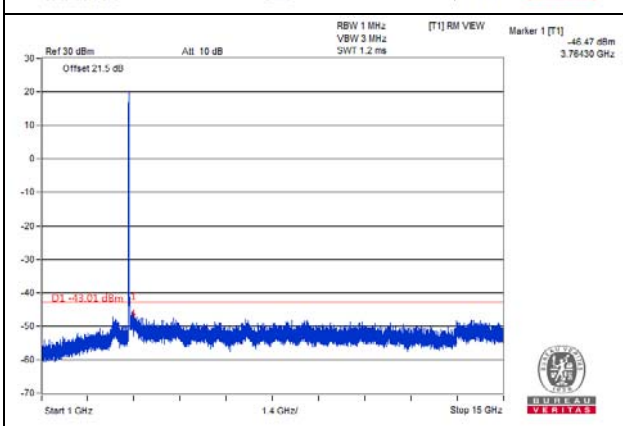
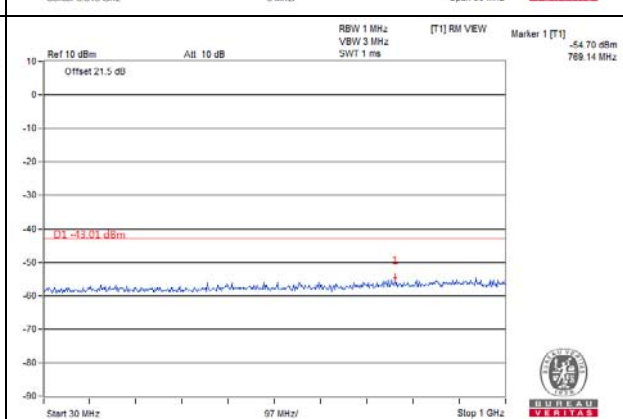
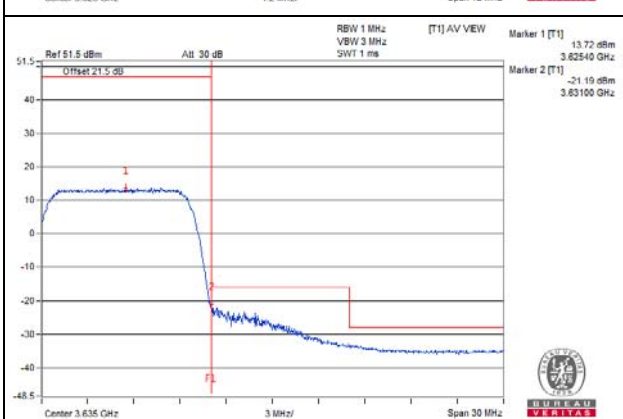
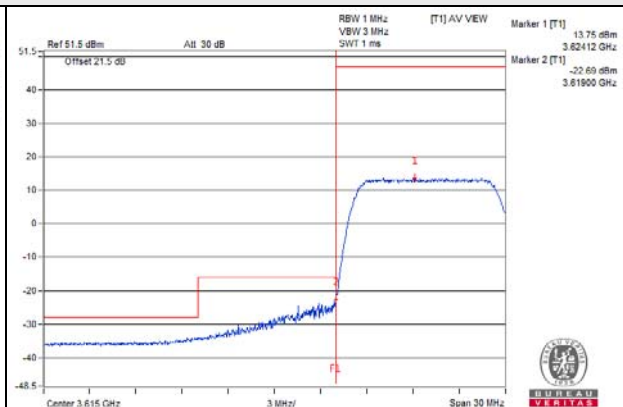
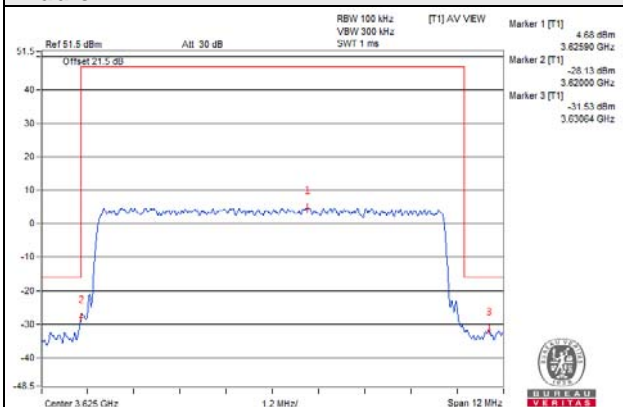
High



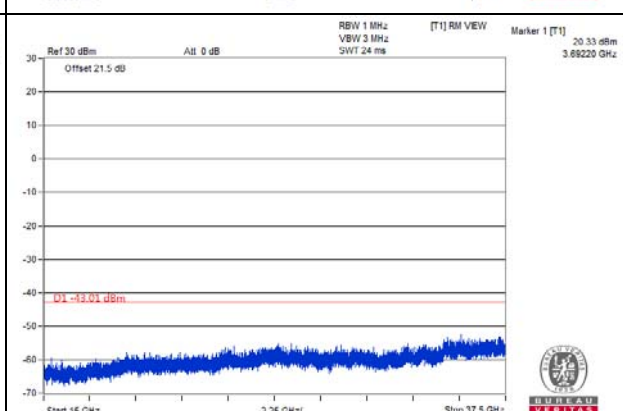
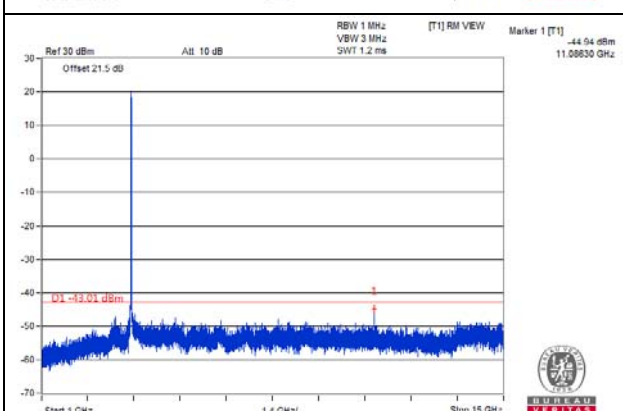
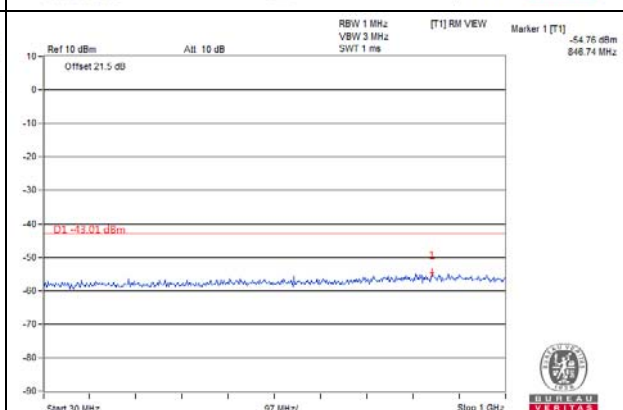
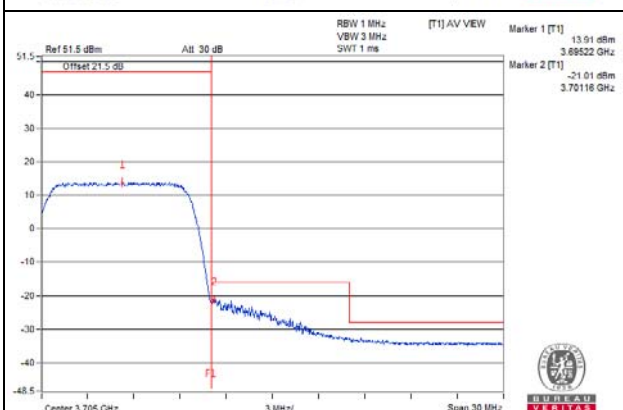
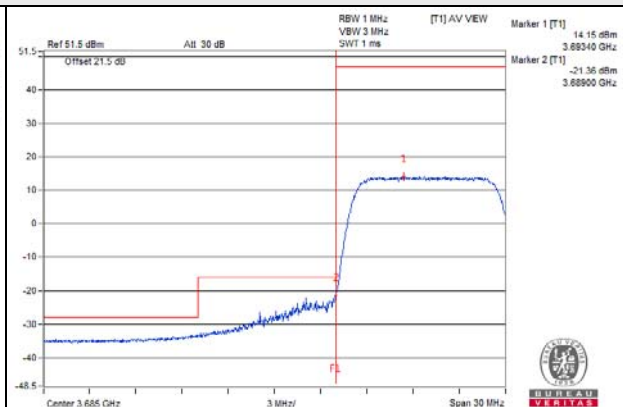
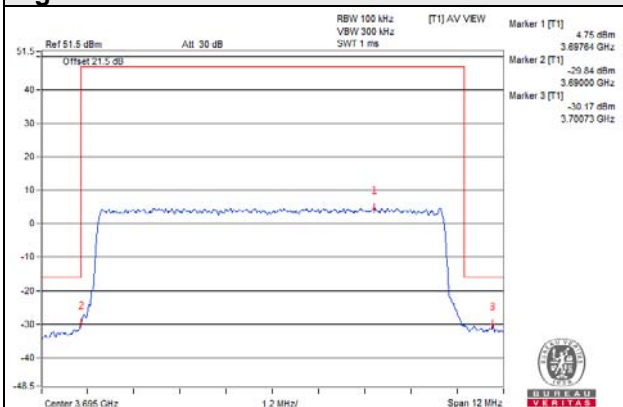
Chain 1
Low



Middle



High

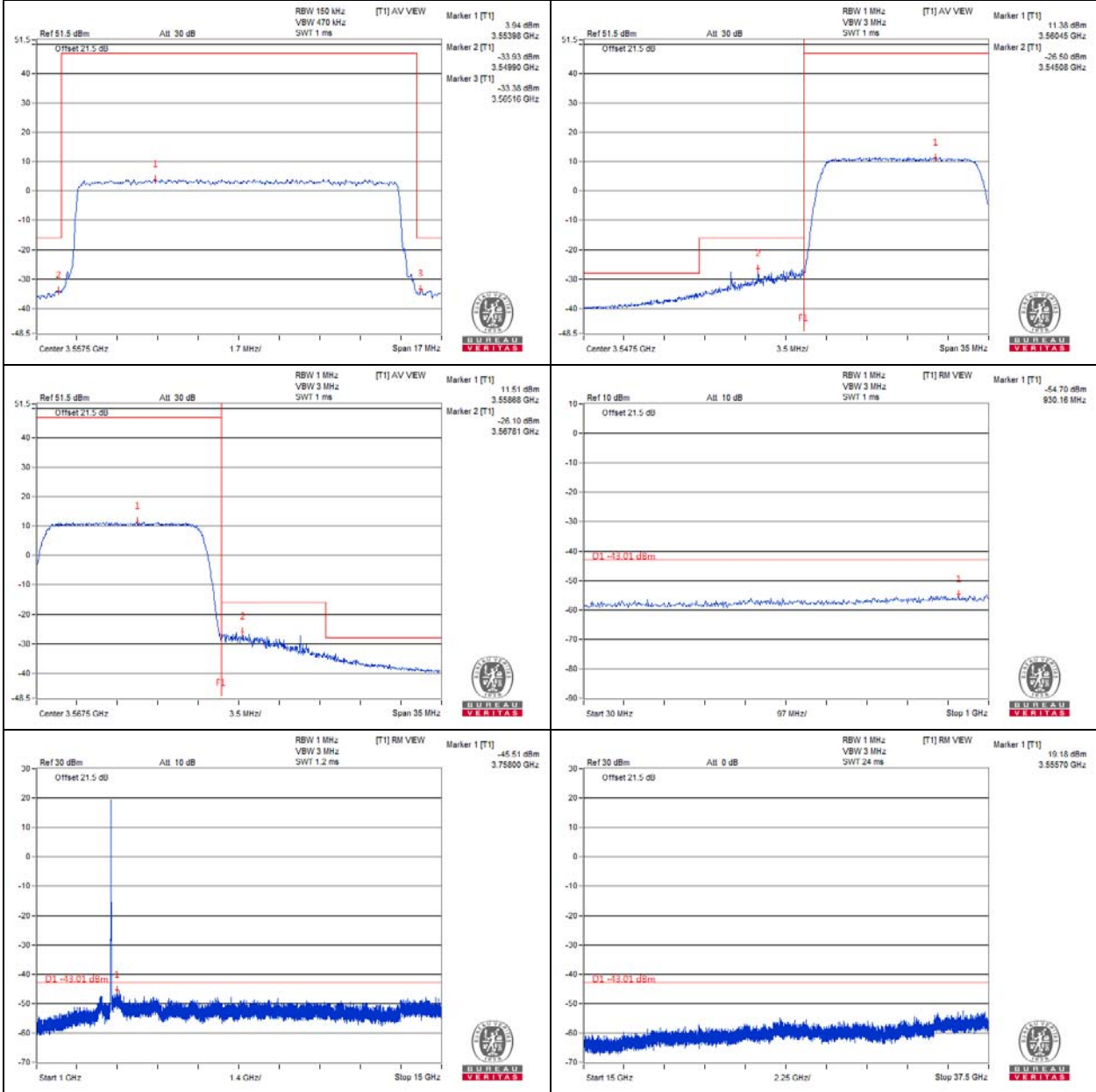


15MHz

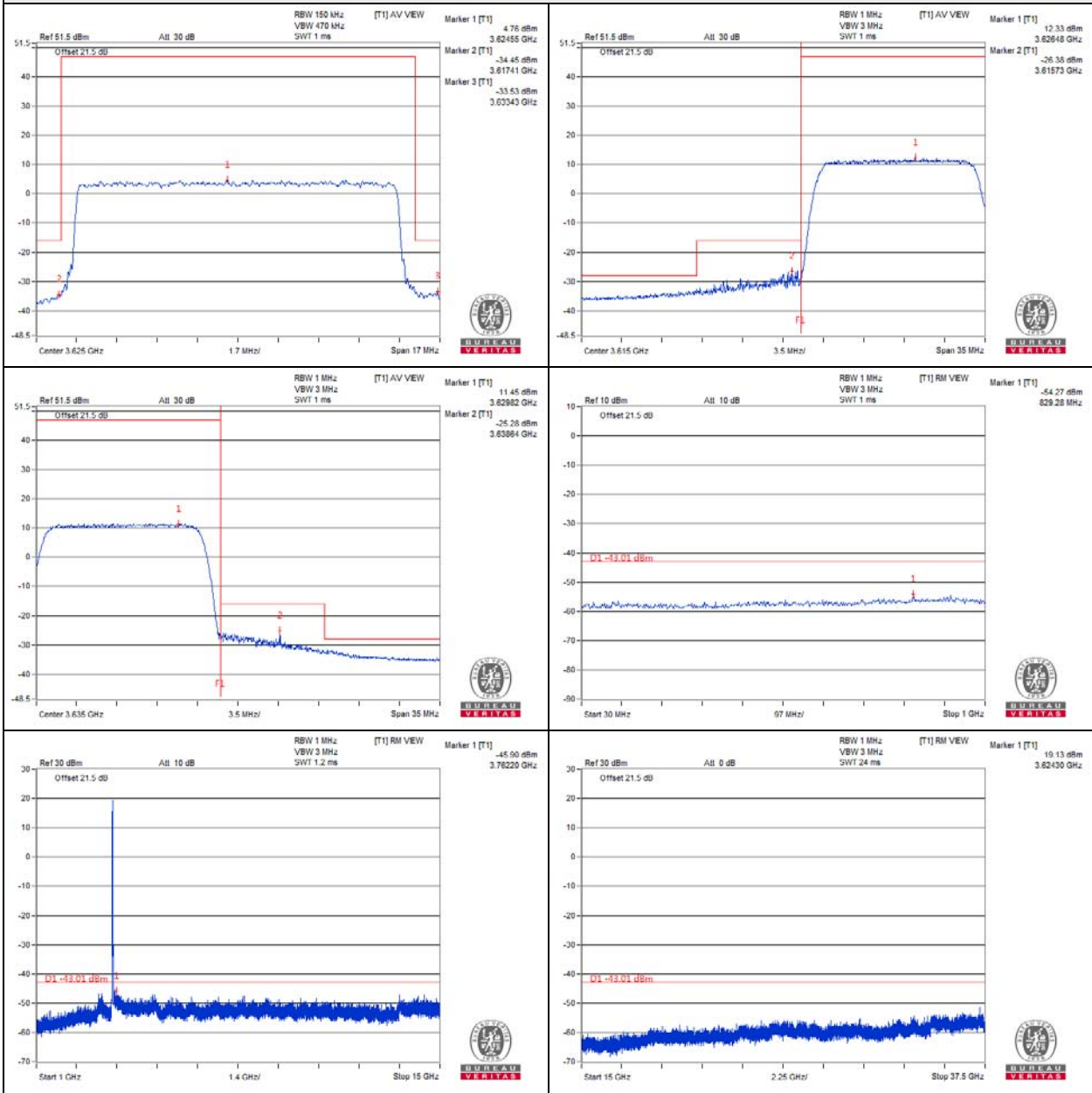
QPSK

Chain 0

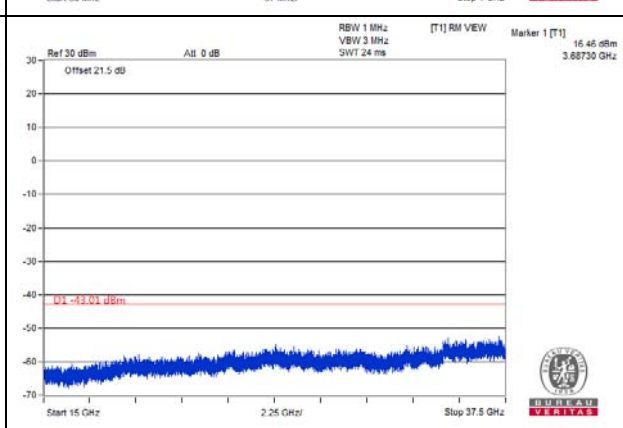
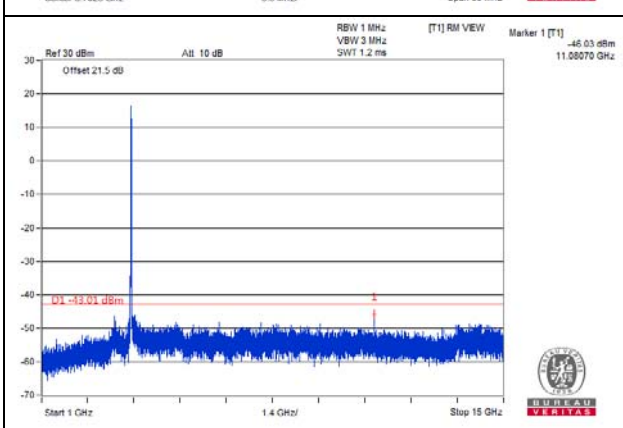
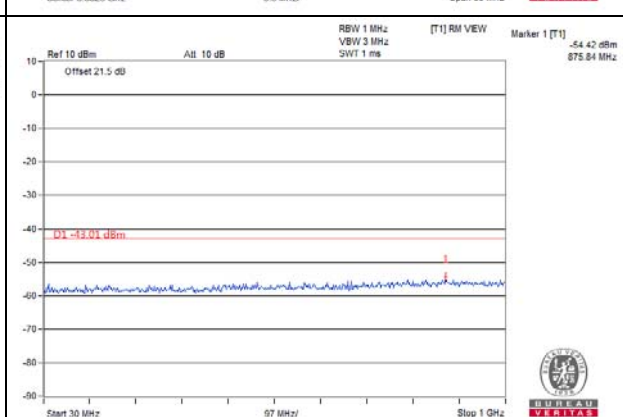
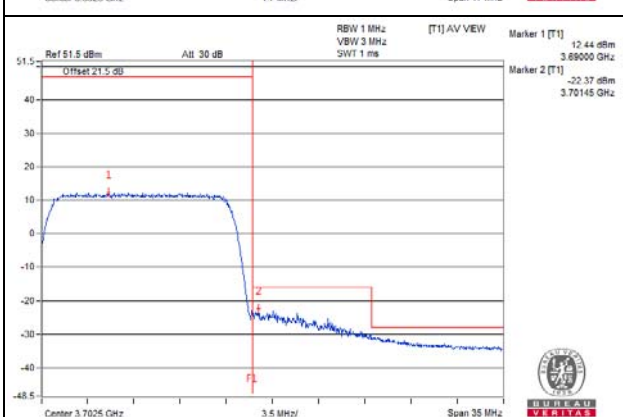
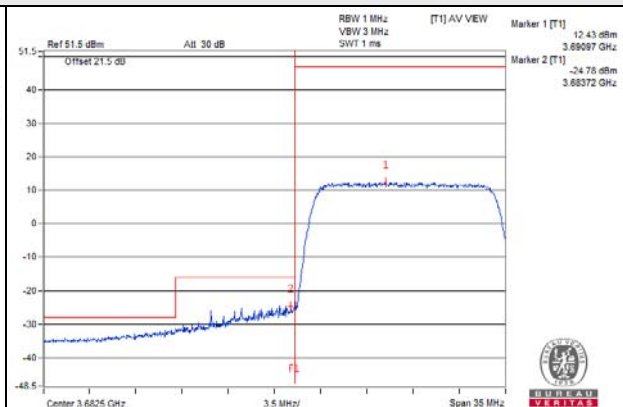
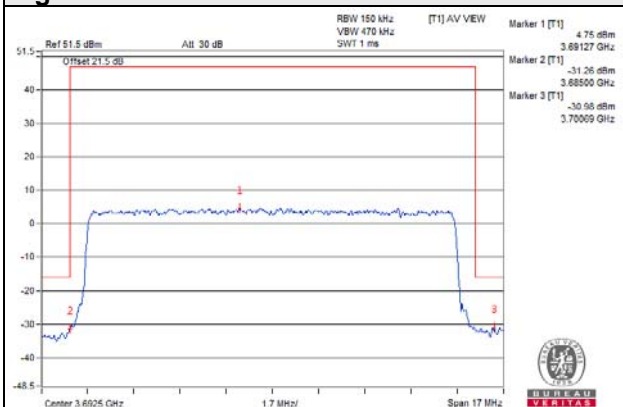
Low



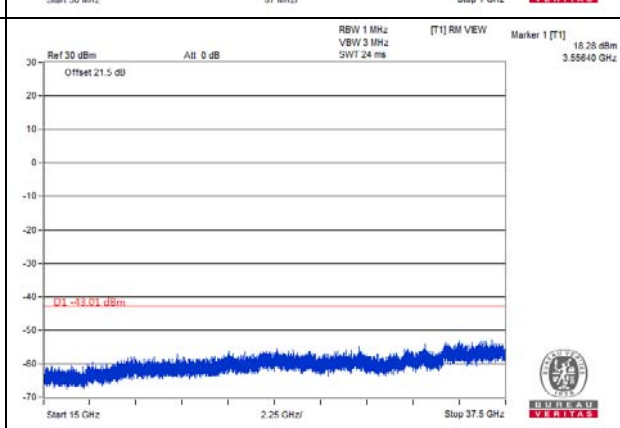
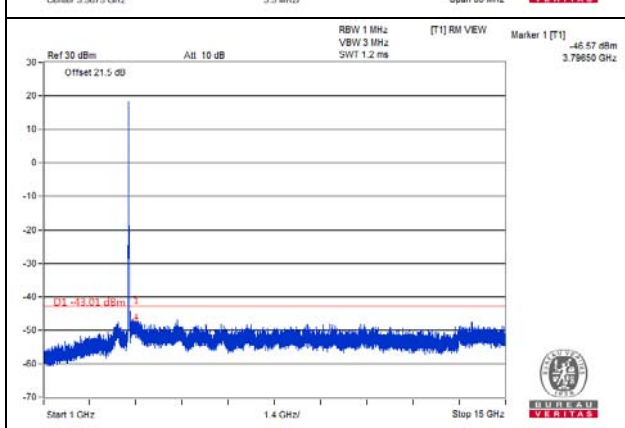
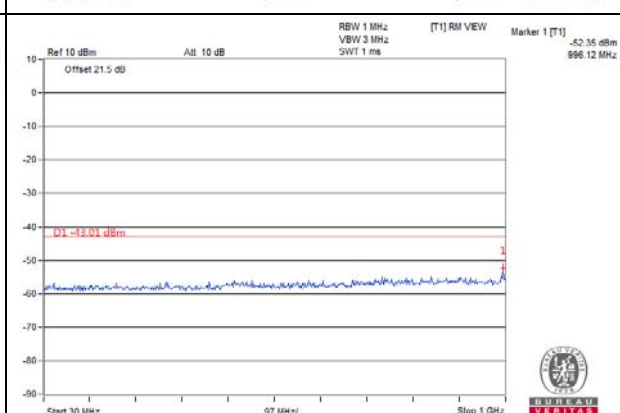
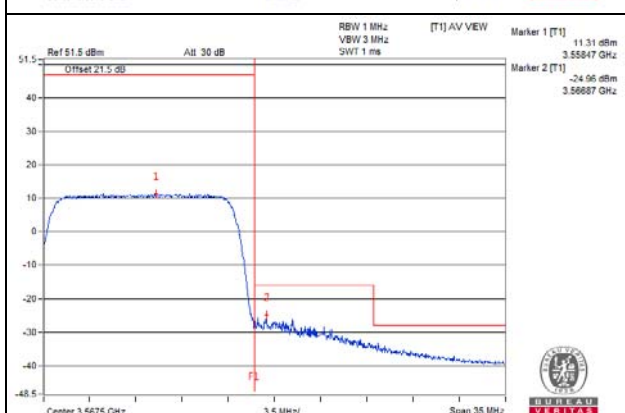
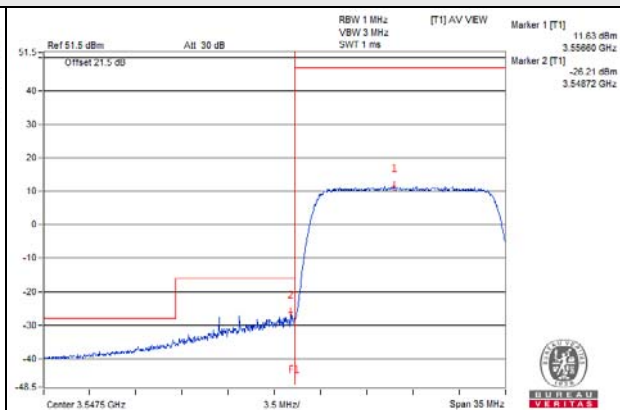
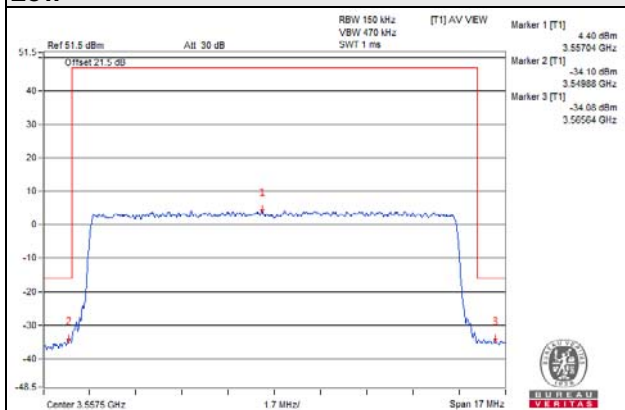
Middle



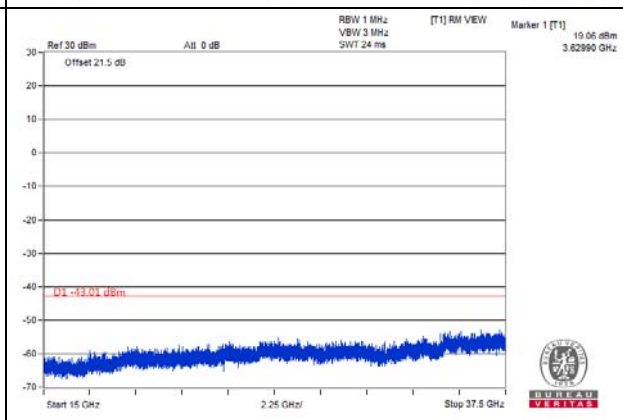
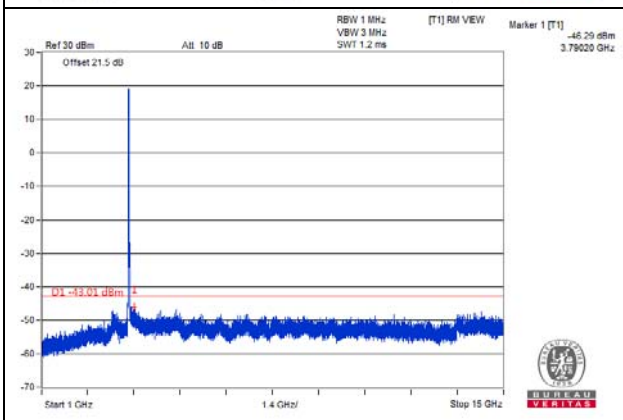
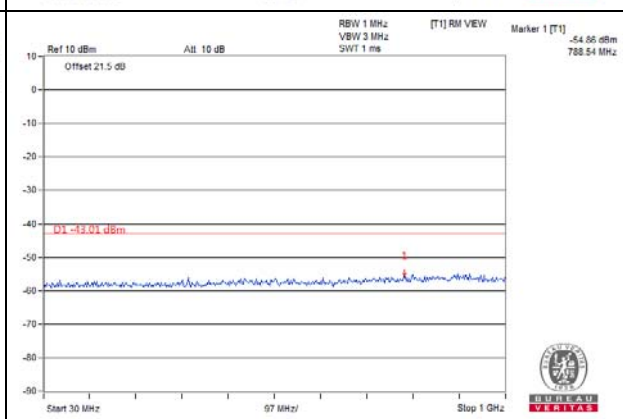
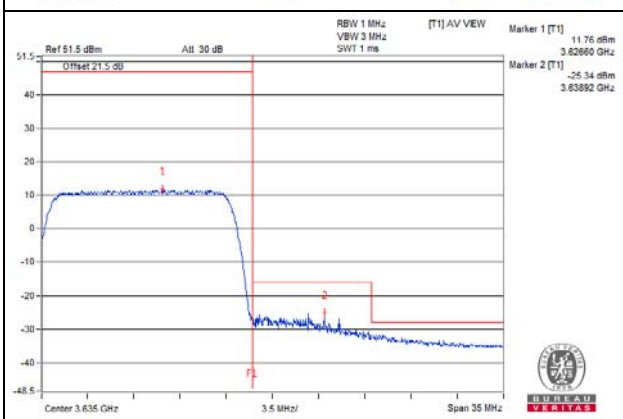
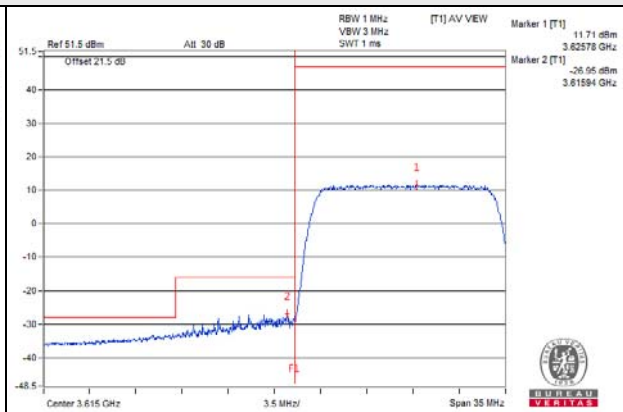
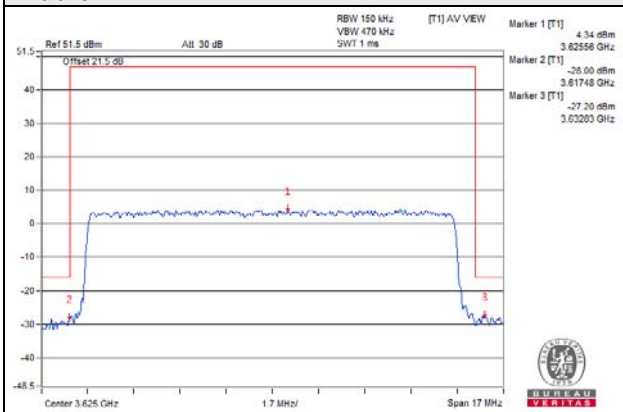
High



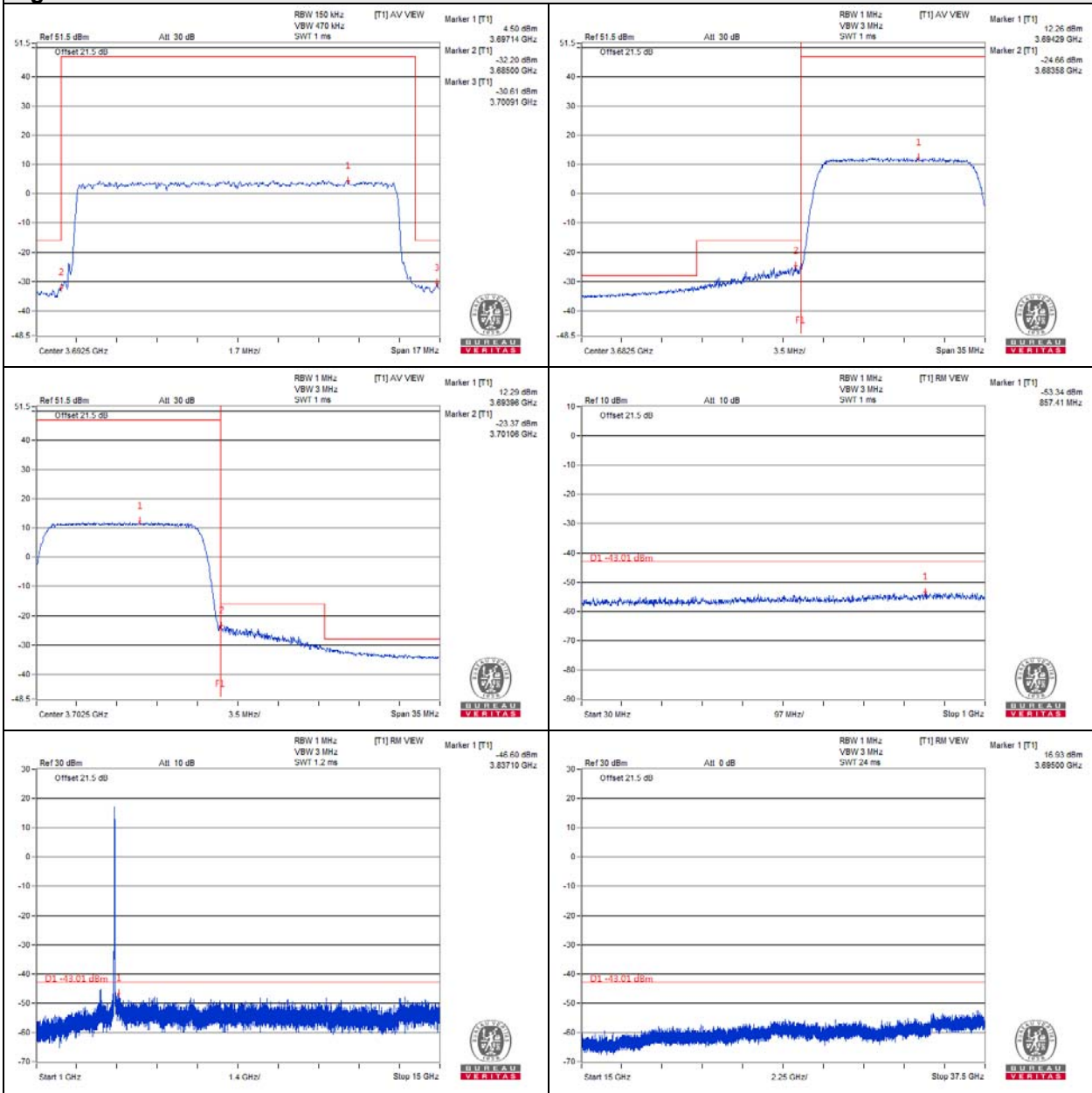
Chain 1 Low



Middle



High

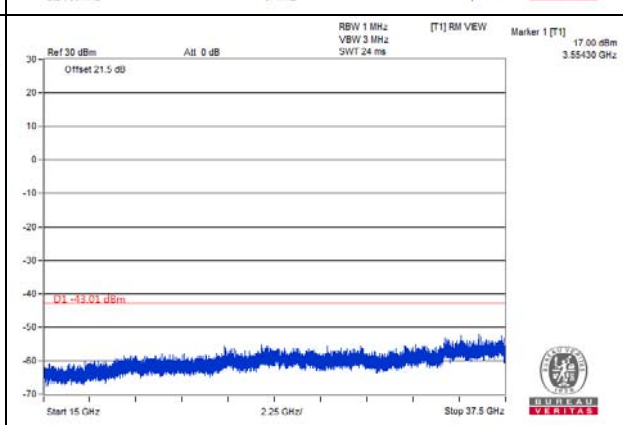
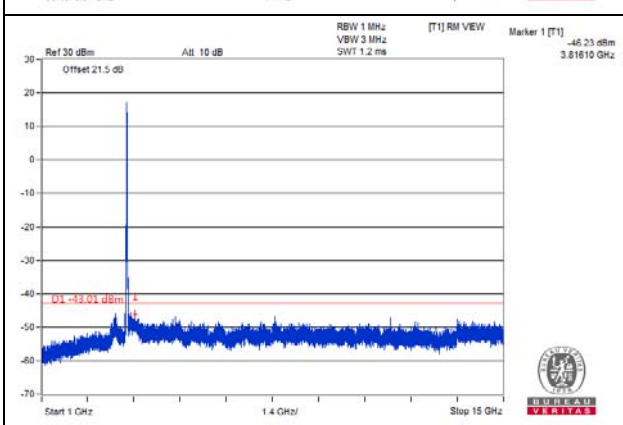
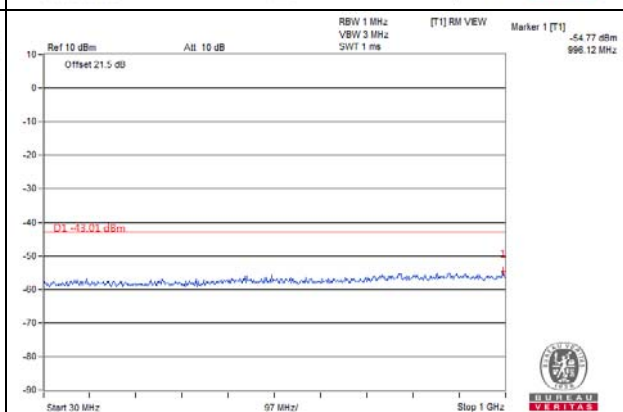
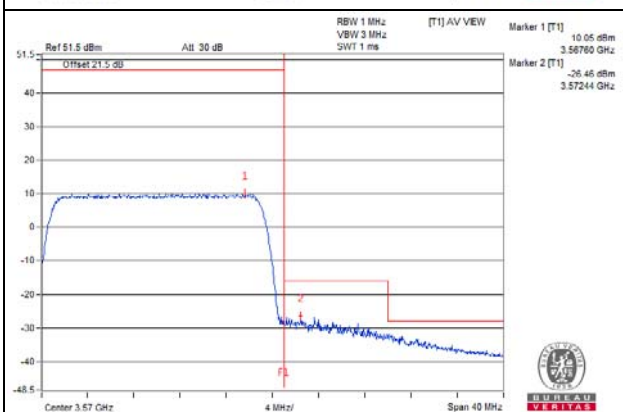
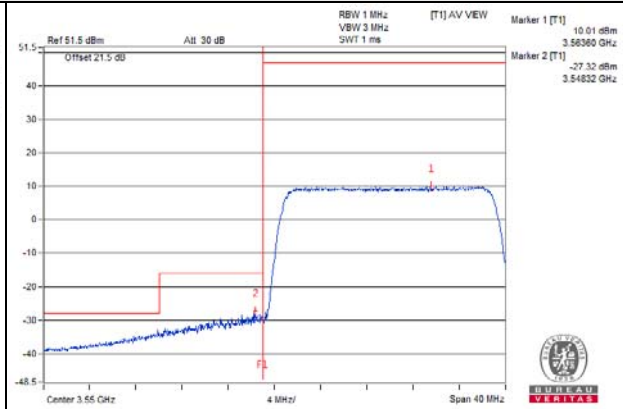
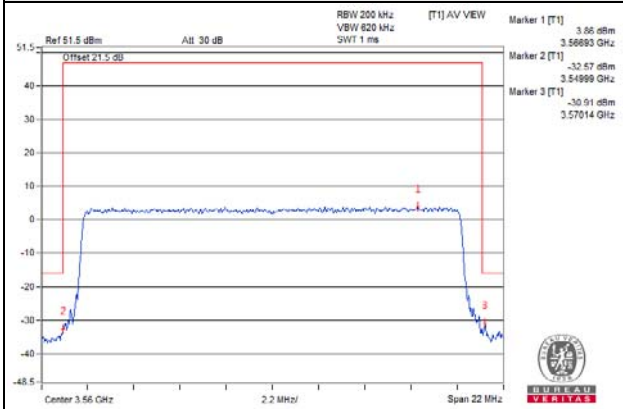


20MHz

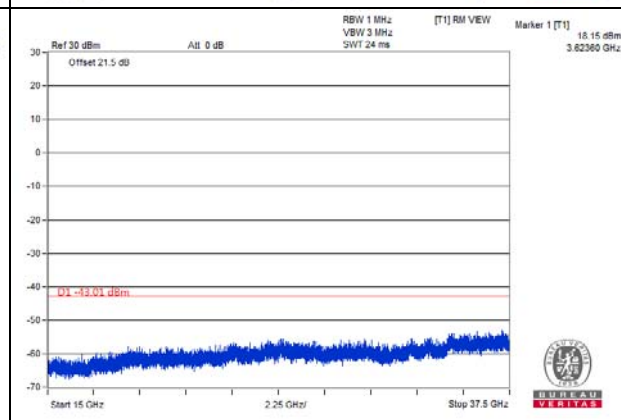
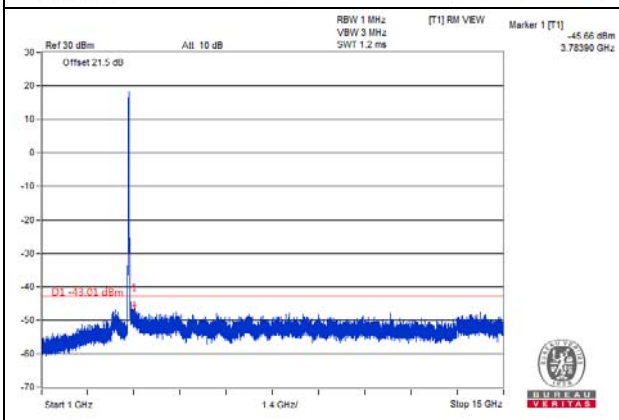
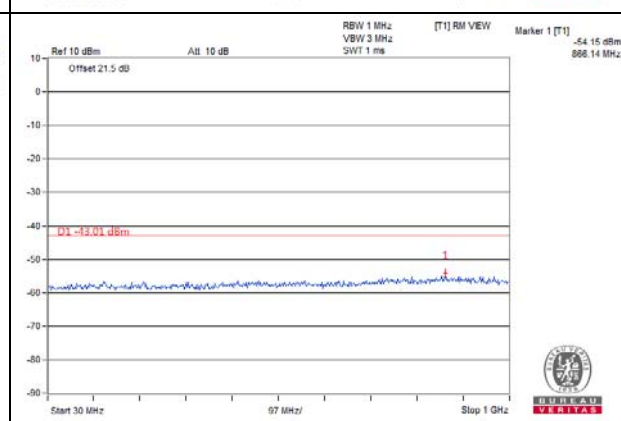
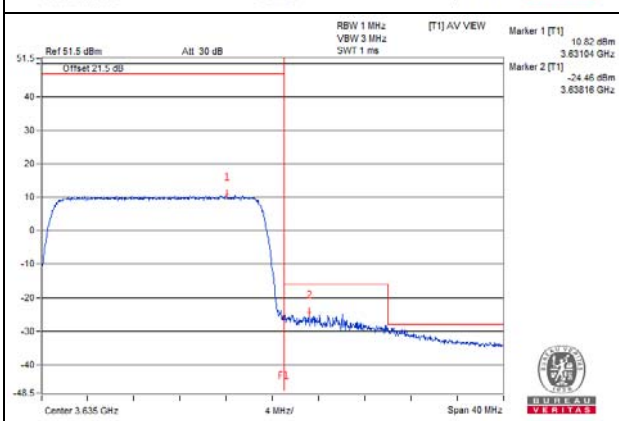
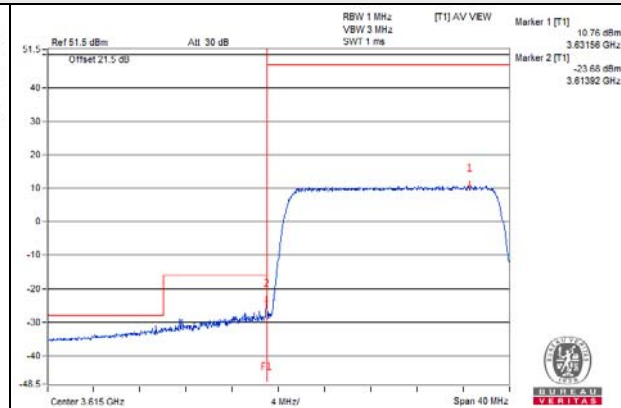
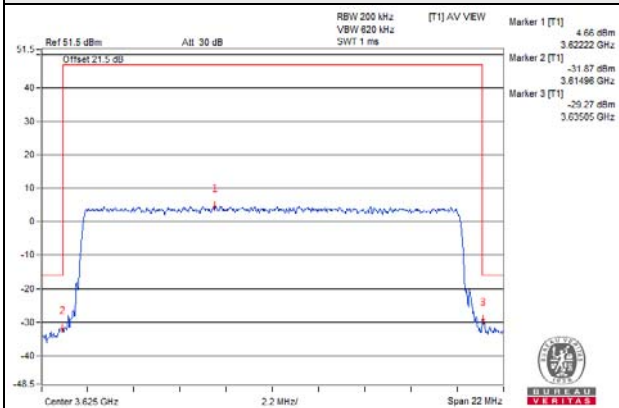
QPSK

Chain 0

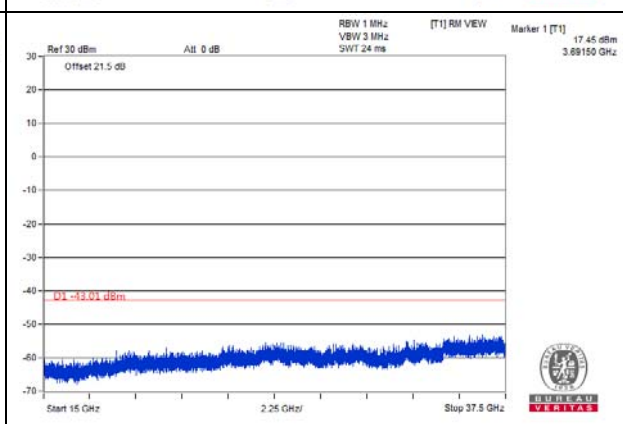
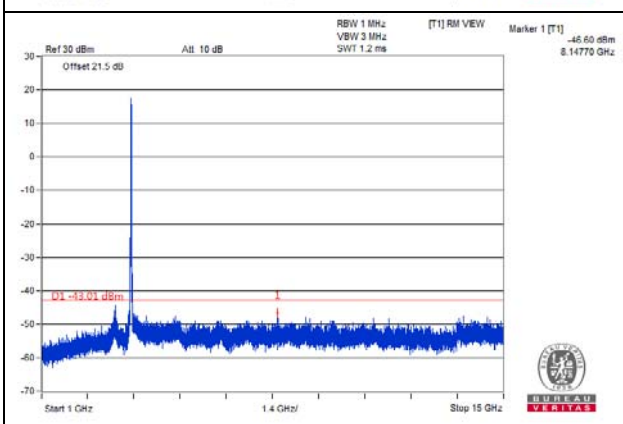
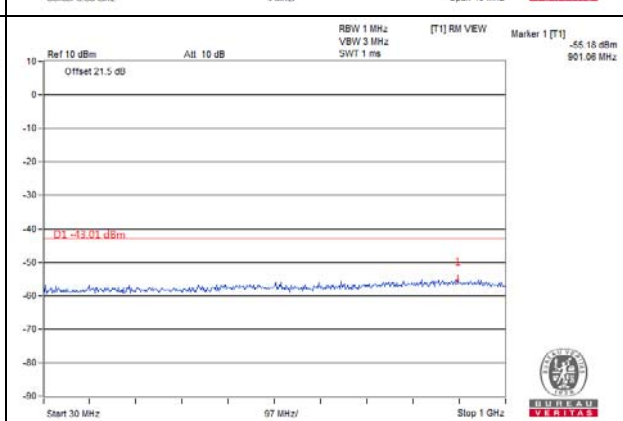
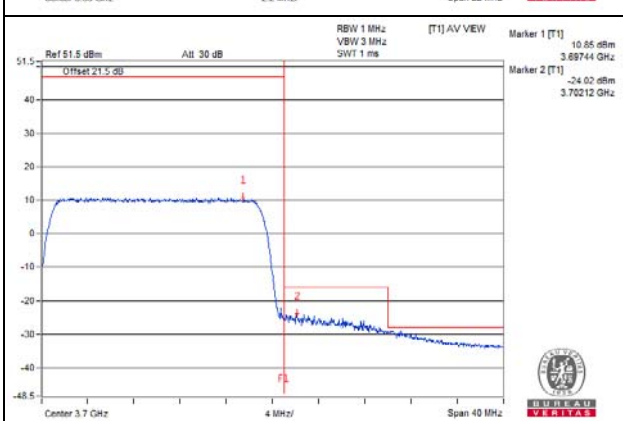
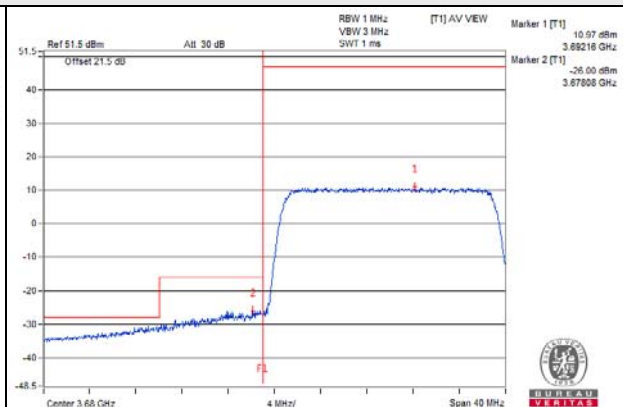
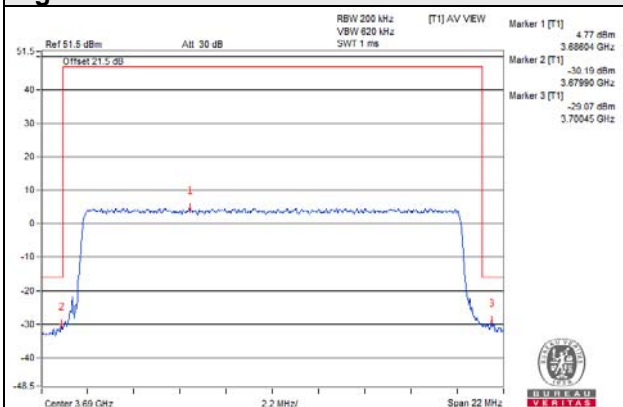
Low



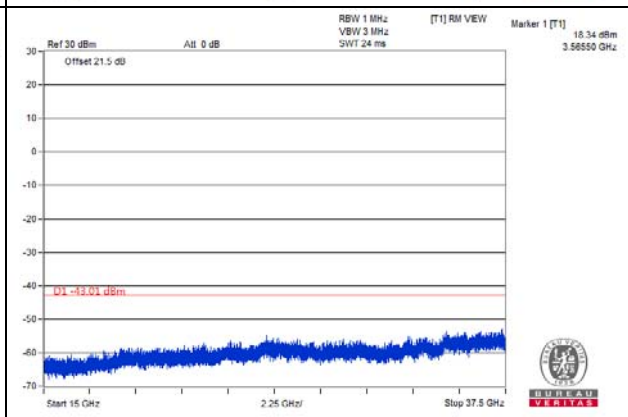
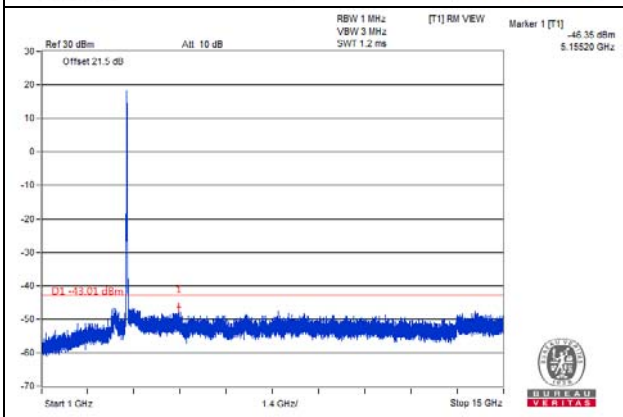
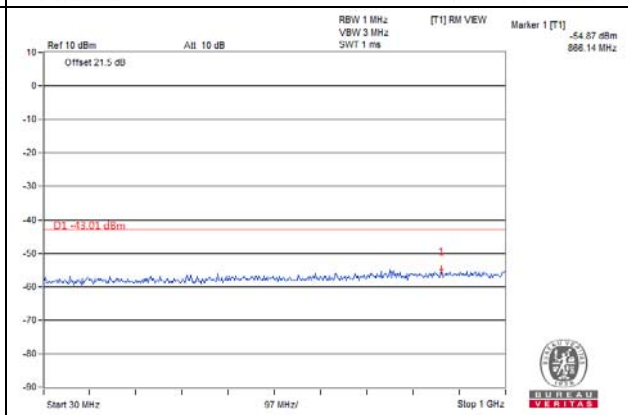
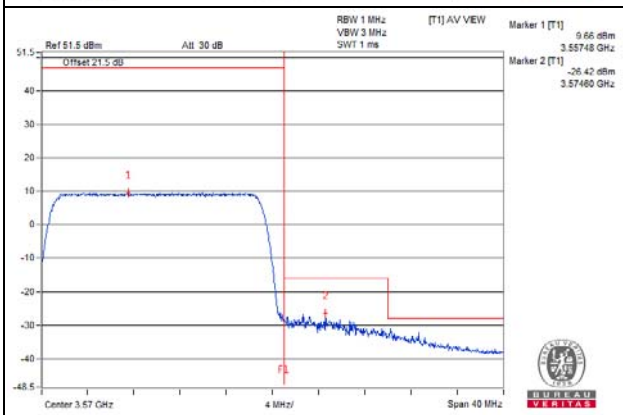
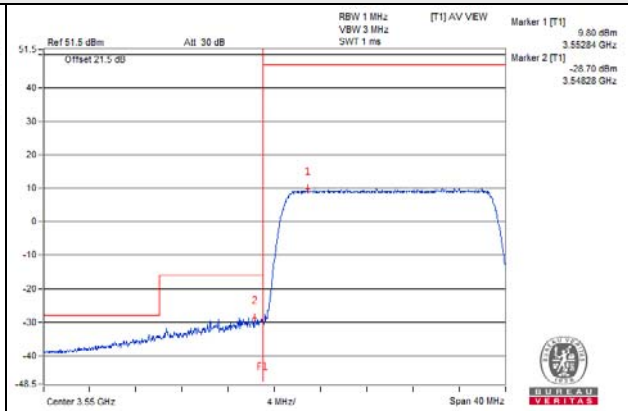
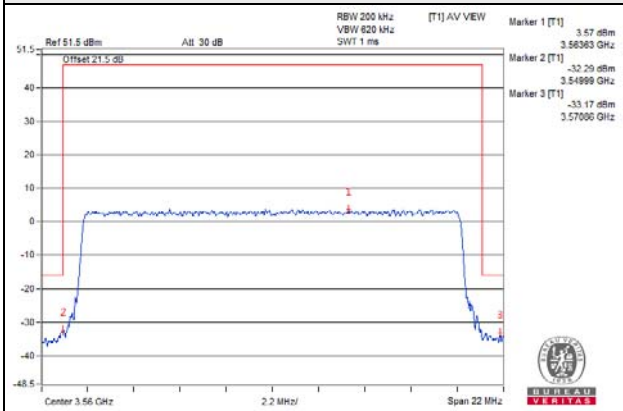
Middle



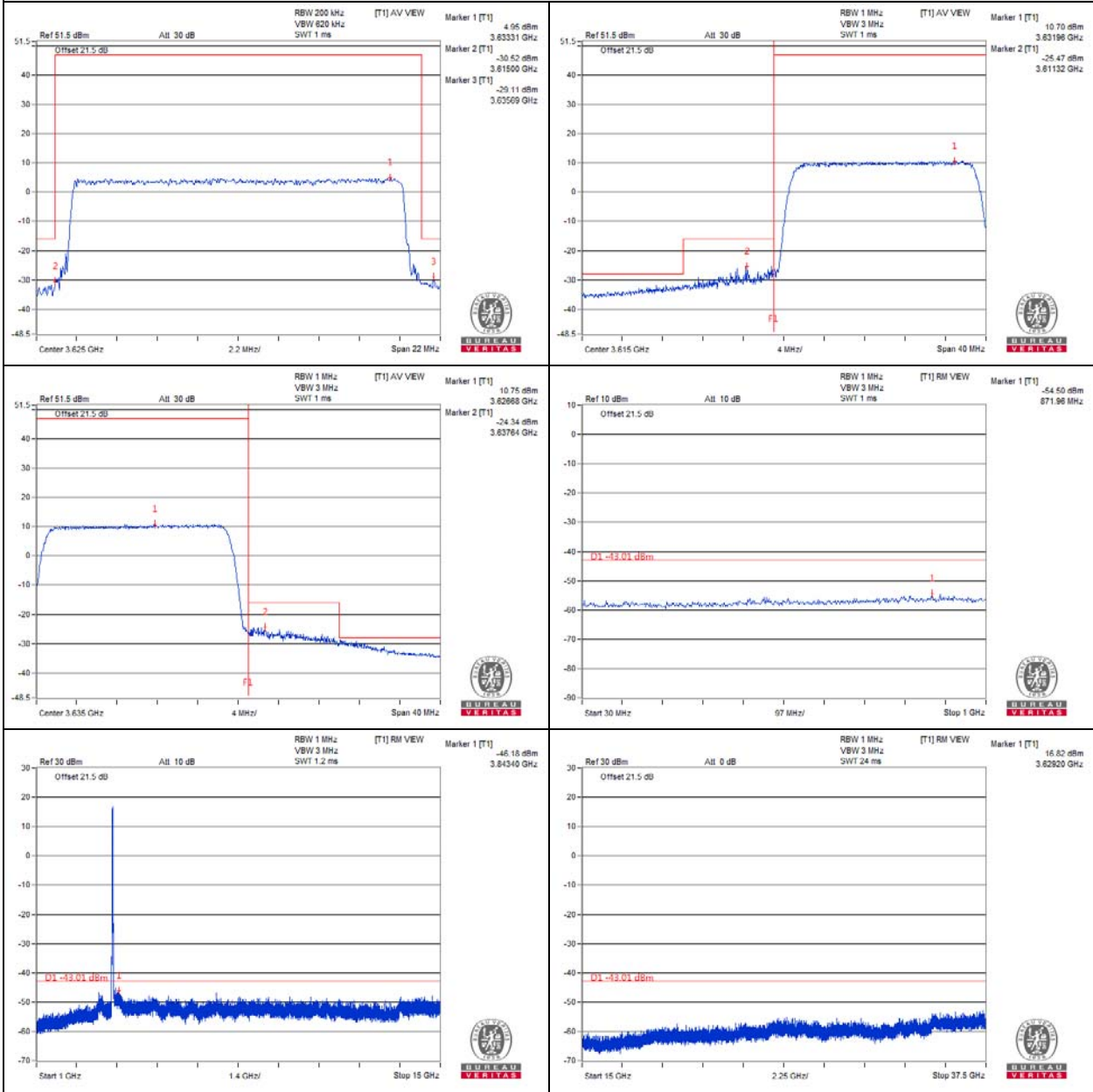
High



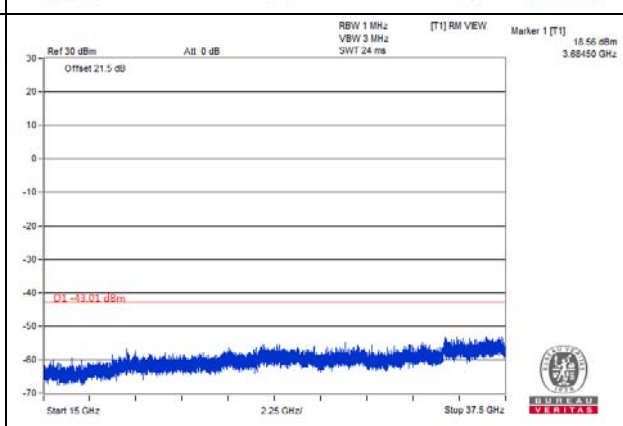
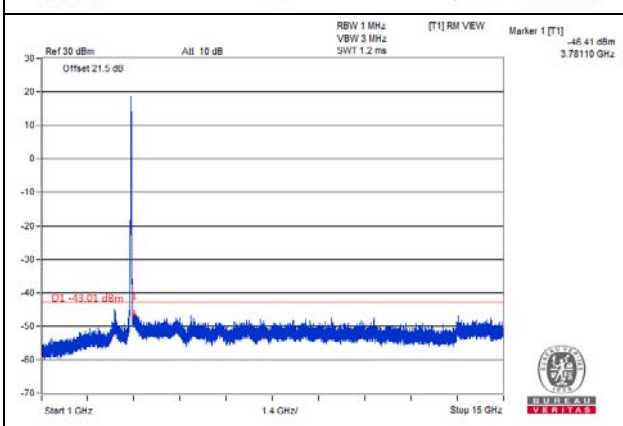
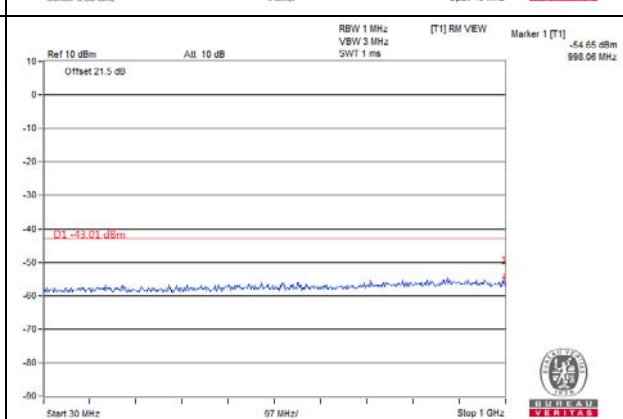
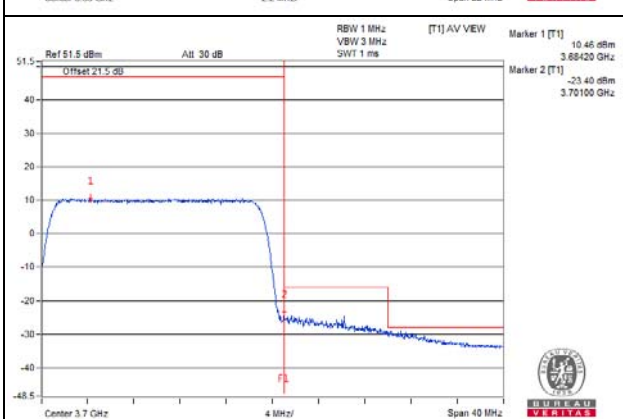
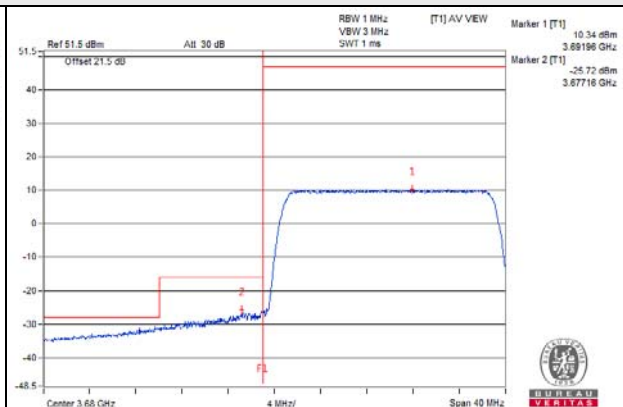
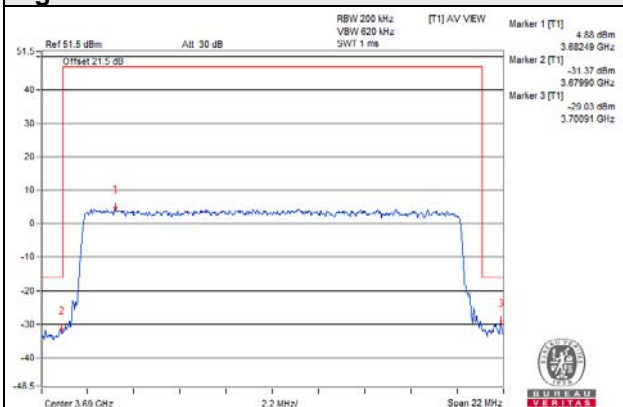
Chain 1 Low



Middle



High



4.8 Radiated Emission Measurement

4.8.1 Limits of Radiated Emission Measurement

The power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz .

4.8.2 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.8.3 Test Procedures

- a. Substitution method is used for EIRP measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The substitution antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G
- c. $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$.
- d. ERP power can be calculated form EIRP power by subtracting the gain of dipole, $\text{ERP power} = \text{EIPR power} - 2.15\text{dBi}$.

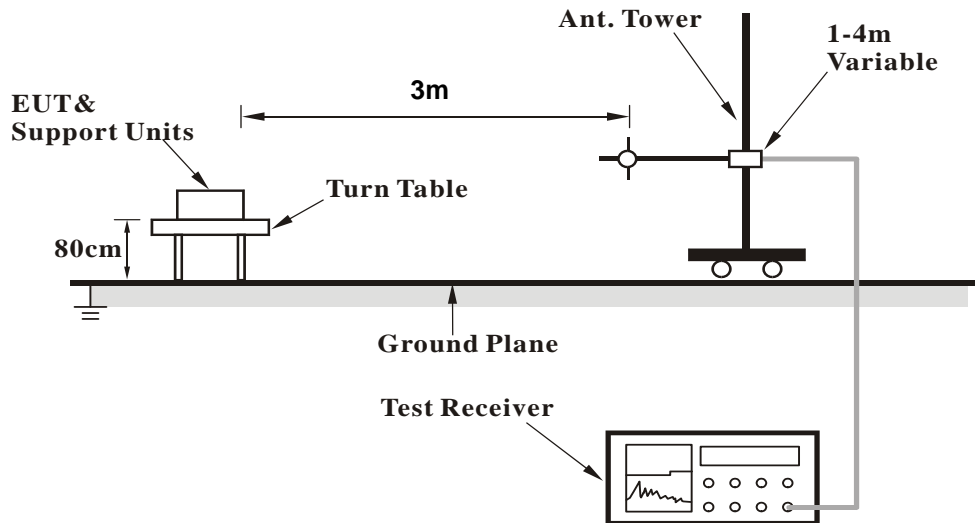
Note: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

4.8.4 Deviation from Test Standard

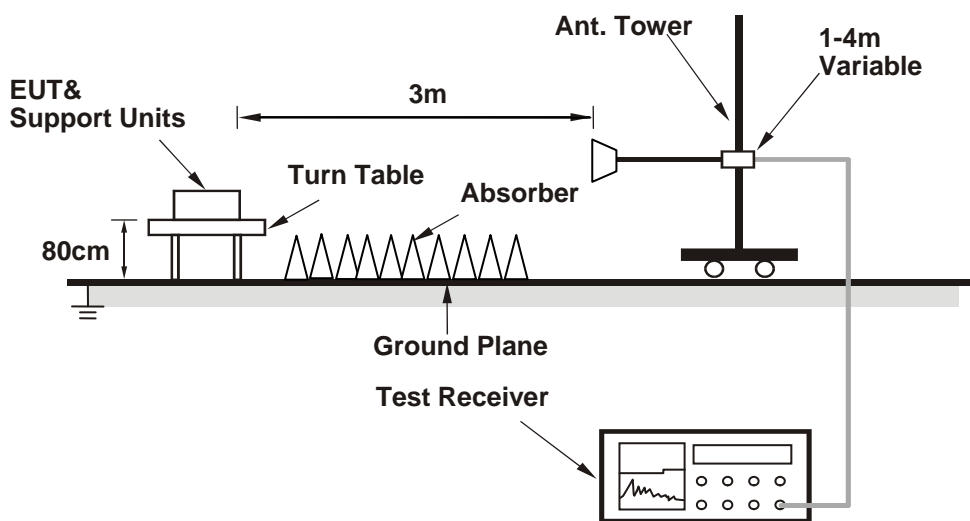
No deviation.

4.8.5 Test Set Up

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.8.6 Test Results

Test was done with 50ohm terminator on antenna port.

Below 1GHz Data :

5MHz

Mode	TX Low	Frequency Range	Below 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	32.30	-51.75	-67.99	13.47	-54.52	-40.00	-14.52
2	105.30	-54.28	-71.63	11.06	-60.57	-40.00	-20.57
3	185.81	-52.89	-70.94	13.07	-57.87	-40.00	-17.87
4	274.08	-54.80	-73.69	15.38	-58.31	-40.00	-18.31
5	441.76	-69.76	-91.42	20.23	-71.19	-40.00	-31.19
6	542.77	-74.69	-96.86	22.14	-74.72	-40.00	-34.72
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	32.06	-47.23	-61.49	13.48	-48.01	-40.00	-8.01
2	85.78	-49.69	-67.46	9.34	-58.12	-40.00	-18.12
3	175.74	-58.27	-76.14	14.01	-62.13	-40.00	-22.13
4	271.53	-51.04	-69.67	15.27	-54.40	-40.00	-14.40
5	349.25	-63.46	-83.22	17.39	-65.83	-40.00	-25.83
6	400.18	-67.79	-88.40	18.87	-69.53	-40.00	-29.53
7	540.34	-73.73	-95.45	22.11	-73.34	-40.00	-33.34

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Mode	TX Middle	Frequency Range	Below 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	32.06	-52.20	-68.50	13.48	-55.02	-40.00	-15.02
2	105.05	-54.38	-71.74	11.03	-60.71	-40.00	-20.71
3	178.29	-54.00	-71.59	13.77	-57.82	-40.00	-17.82
4	273.11	-54.85	-73.76	15.34	-58.42	-40.00	-18.42
5	348.04	-68.68	-88.90	17.37	-71.53	-40.00	-31.53
6	541.67	-73.54	-95.69	22.12	-73.57	-40.00	-33.57

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	31.58	-47.95	-62.14	13.47	-48.67	-40.00	-8.67
2	80.68	-58.16	-76.88	10.31	-66.57	-40.00	-26.57
3	177.56	-58.45	-76.43	13.85	-62.58	-40.00	-22.58
4	268.86	-51.71	-70.22	15.14	-55.08	-40.00	-15.08
5	348.64	-63.75	-83.52	17.38	-66.14	-40.00	-26.14
6	401.02	-67.69	-88.31	18.89	-69.42	-40.00	-29.42
7	541.67	-73.42	-95.11	22.12	-72.99	-40.00	-32.99

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Mode	TX High	Frequency Range	Below 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M							
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No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	32.06	-52.36	-68.66	13.48	-55.18	-40.00	-15.18
2	105.05	-55.15	-72.51	11.03	-61.48	-40.00	-21.48
3	181.32	-53.50	-71.21	13.46	-57.75	-40.00	-17.75
4	272.62	-53.80	-72.72	15.32	-57.40	-40.00	-17.40
5	370.23	-69.35	-89.92	18.16	-71.76	-40.00	-31.76
6	441.76	-70.15	-91.81	20.23	-71.58	-40.00	-31.58
7	540.46	-73.36	-95.51	22.11	-73.40	-40.00	-33.40
8	717.85	-75.23	-96.93	25.55	-71.38	-40.00	-31.38

Antenna Polarity & Test Distance: Vertical at 3 M							
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No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	32.06	-47.58	-61.84	13.48	-48.36	-40.00	-8.36
2	112.57	-66.62	-82.42	12.05	-70.37	-40.00	-30.37
3	177.32	-58.37	-76.33	13.87	-62.46	-40.00	-22.46
4	271.17	-50.87	-69.47	15.25	-54.22	-40.00	-14.22
5	348.64	-63.46	-83.23	17.38	-65.85	-40.00	-25.85
6	400.06	-67.30	-87.91	18.87	-69.04	-40.00	-29.04
7	541.92	-75.67	-97.36	22.12	-75.24	-40.00	-35.24

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

10MHz

Mode	TX Low	Frequency Range	Below 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	32.06	-52.35	-68.65	13.48	-55.17	-40.00	-15.17
2	105.05	-55.78	-73.14	11.03	-62.11	-40.00	-22.11
3	180.11	-53.80	-71.43	13.58	-57.85	-40.00	-17.85
4	269.95	-54.24	-73.22	15.20	-58.02	-40.00	-18.02
5	442.49	-70.34	-92.03	20.26	-71.77	-40.00	-31.77
6	540.83	-73.23	-95.38	22.11	-73.27	-40.00	-33.27
7	716.40	-77.78	-99.46	25.53	-73.93	-40.00	-33.93

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	32.06	-47.82	-62.08	13.48	-48.60	-40.00	-8.60
2	88.69	-56.81	-74.40	9.15	-65.25	-40.00	-25.25
3	175.62	-59.05	-76.91	14.02	-62.89	-40.00	-22.89
4	270.68	-51.91	-70.47	15.23	-55.24	-40.00	-15.24
5	347.92	-63.54	-83.32	17.37	-65.95	-40.00	-25.95
6	401.39	-67.59	-88.22	18.90	-69.32	-40.00	-29.32
7	541.67	-76.05	-97.74	22.12	-75.62	-40.00	-35.62
8	874.99	-82.07	-104.23	27.86	-76.37	-40.00	-36.37

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Mode	TX Middle	Frequency Range	Below 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	32.91	-52.40	-68.52	13.47	-55.05	-40.00	-15.05
2	105.42	-55.93	-73.29	11.09	-62.20	-40.00	-22.20
3	179.14	-54.31	-71.91	13.68	-58.23	-40.00	-18.23
4	269.71	-54.74	-73.72	15.18	-58.54	-40.00	-18.54
5	368.05	-69.00	-89.52	18.06	-71.46	-40.00	-31.46
6	442.86	-69.52	-91.23	20.28	-70.95	-40.00	-30.95
7	540.46	-72.38	-94.53	22.11	-72.42	-40.00	-32.42

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	32.06	-48.39	-62.65	13.48	-49.17	-40.00	-9.17
2	79.23	-57.99	-76.95	10.67	-66.28	-40.00	-26.28
3	172.59	-59.43	-77.11	14.29	-62.82	-40.00	-22.82
4	268.50	-51.78	-70.29	15.12	-55.17	-40.00	-15.17
5	348.16	-64.26	-84.03	17.37	-66.66	-40.00	-26.66
6	400.66	-67.12	-87.74	18.88	-68.86	-40.00	-28.86
7	540.22	-75.80	-97.52	22.11	-75.41	-40.00	-35.41
8	719.67	-73.52	-96.06	25.58	-70.48	-40.00	-30.48

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Mode	TX High	Frequency Range	Below 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M							
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No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	32.06	-52.25	-68.55	13.48	-55.07	-40.00	-15.07
2	105.42	-55.74	-73.10	11.09	-62.01	-40.00	-22.01
3	178.41	-54.19	-71.77	13.75	-58.02	-40.00	-18.02
4	273.47	-54.33	-73.23	15.35	-57.88	-40.00	-17.88
5	367.56	-69.47	-89.98	18.04	-71.94	-40.00	-31.94
6	441.52	-70.90	-92.56	20.22	-72.34	-40.00	-32.34
7	538.64	-71.25	-93.39	22.10	-71.29	-40.00	-31.29
8	904.33	-79.14	-100.84	28.40	-72.44	-40.00	-32.44

Antenna Polarity & Test Distance: Vertical at 3 M							
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No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	31.58	-48.43	-62.62	13.47	-49.15	-40.00	-9.15
2	85.90	-51.95	-69.70	9.32	-60.38	-40.00	-20.38
3	172.59	-58.79	-76.47	14.29	-62.18	-40.00	-22.18
4	269.23	-51.59	-70.10	15.16	-54.94	-40.00	-14.94
5	348.52	-63.36	-83.13	17.38	-65.75	-40.00	-25.75
6	399.93	-67.20	-87.81	18.87	-68.94	-40.00	-28.94
7	540.71	-73.93	-95.64	22.11	-73.53	-40.00	-33.53

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

15MHz

Mode	TX Low	Frequency Range	Below 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	32.91	-51.91	-68.03	13.47	-54.56	-40.00	-14.56
2	105.17	-54.13	-71.48	11.04	-60.44	-40.00	-20.44
3	189.20	-52.49	-70.76	12.73	-58.03	-40.00	-18.03
4	268.98	-54.72	-73.76	15.15	-58.61	-40.00	-18.61
5	348.04	-68.32	-88.54	17.37	-71.17	-40.00	-31.17
6	442.86	-69.68	-91.39	20.28	-71.11	-40.00	-31.11
7	540.83	-73.72	-95.87	22.11	-73.76	-40.00	-33.76

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	32.06	-48.55	-62.81	13.48	-49.33	-40.00	-9.33
2	80.32	-59.47	-78.27	10.39	-67.88	-40.00	-27.88
3	175.14	-58.91	-76.74	14.06	-62.68	-40.00	-22.68
4	269.95	-51.26	-69.77	15.20	-54.57	-40.00	-14.57
5	348.52	-63.08	-82.85	17.38	-65.47	-40.00	-25.47
6	399.45	-67.45	-88.06	18.86	-69.20	-40.00	-29.20
7	541.19	-74.96	-96.67	22.12	-74.55	-40.00	-34.55

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Mode	TX Middle	Frequency Range	Below 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	32.91	-52.92	-69.04	13.47	-55.57	-40.00	-15.57
2	105.42	-54.99	-72.35	11.09	-61.26	-40.00	-21.26
3	178.41	-53.82	-71.40	13.75	-57.65	-40.00	-17.65
4	272.74	-54.04	-72.95	15.32	-57.63	-40.00	-17.63
5	368.05	-69.35	-89.87	18.06	-71.81	-40.00	-31.81
6	539.74	-71.42	-93.56	22.10	-71.46	-40.00	-31.46
7	830.86	-82.35	-104.71	27.52	-77.19	-40.00	-37.19

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	31.58	-48.58	-62.77	13.47	-49.30	-40.00	-9.30
2	113.18	-66.79	-82.72	12.13	-70.59	-40.00	-30.59
3	175.62	-58.91	-76.77	14.02	-62.75	-40.00	-22.75
4	269.71	-50.97	-69.48	15.18	-54.30	-40.00	-14.30
5	348.52	-63.20	-82.97	17.38	-65.59	-40.00	-25.59
6	400.18	-67.58	-88.19	18.87	-69.32	-40.00	-29.32
7	540.46	-75.75	-97.47	22.11	-75.36	-40.00	-35.36
8	714.70	-78.92	-101.37	25.50	-75.87	-40.00	-35.87

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Mode	TX High	Frequency Range	Below 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	31.58	-50.63	-67.02	13.47	-53.55	-40.00	-13.55
2	105.42	-49.78	-67.14	11.09	-56.05	-40.00	-16.05
3	177.68	-59.00	-76.58	13.84	-62.74	-40.00	-22.74
4	270.56	-52.16	-71.11	15.22	-55.89	-40.00	-15.89
5	386.23	-70.49	-91.17	18.62	-72.55	-40.00	-32.55
6	441.89	-77.58	-99.24	20.23	-79.01	-40.00	-39.01
7	715.79	-81.13	-102.79	25.52	-77.27	-40.00	-37.27

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	32.06	-48.31	-62.57	13.48	-49.09	-40.00	-9.09
2	78.86	-58.09	-77.09	10.77	-66.32	-40.00	-26.32
3	171.86	-59.46	-77.11	14.36	-62.75	-40.00	-22.75
4	271.53	-51.64	-70.27	15.27	-55.00	-40.00	-15.00
5	348.04	-63.50	-83.28	17.37	-65.91	-40.00	-25.91
6	401.02	-67.83	-88.45	18.89	-69.56	-40.00	-29.56
7	541.80	-75.99	-97.68	22.12	-75.56	-40.00	-35.56

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

20MHz

Mode	TX Low	Frequency Range	Below 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	32.91	-50.37	-66.49	13.47	-53.02	-40.00	-13.02
2	105.17	-49.20	-66.55	11.04	-55.51	-40.00	-15.51
3	191.26	-56.59	-74.99	12.61	-62.38	-40.00	-22.38
4	274.08	-52.55	-71.44	15.38	-56.06	-40.00	-16.06
5	349.13	-68.13	-88.37	17.39	-70.98	-40.00	-30.98
6	385.02	-70.38	-91.07	18.60	-72.47	-40.00	-32.47
7	937.68	-82.33	-104.27	28.96	-75.31	-40.00	-35.31

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	31.58	-50.18	-64.37	13.47	-50.90	-40.00	-10.90
2	85.41	-50.68	-68.50	9.39	-59.11	-40.00	-19.11
3	174.17	-57.59	-75.35	14.13	-61.22	-40.00	-21.22
4	272.01	-51.63	-70.30	15.29	-55.01	-40.00	-15.01
5	349.86	-62.87	-82.62	17.40	-65.22	-40.00	-25.22
6	415.09	-71.01	-91.89	19.22	-72.67	-40.00	-32.67
7	703.06	-81.04	-103.30	25.32	-77.98	-40.00	-37.98

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Mode	TX Middle	Frequency Range	Below 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	32.91	-51.04	-67.16	13.47	-53.69	-40.00	-13.69
2	105.17	-49.55	-66.90	11.04	-55.86	-40.00	-15.86
3	179.99	-58.35	-75.97	13.59	-62.38	-40.00	-22.38
4	272.86	-52.19	-71.11	15.33	-55.78	-40.00	-15.78
5	349.37	-68.73	-88.97	17.39	-71.58	-40.00	-31.58
6	385.99	-69.70	-90.39	18.62	-71.77	-40.00	-31.77
7	803.70	-81.73	-103.54	27.01	-76.53	-40.00	-36.53

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	31.58	-50.05	-64.24	13.47	-50.77	-40.00	-10.77
2	111.48	-64.28	-79.87	11.93	-67.94	-40.00	-27.94
3	173.20	-58.79	-76.50	14.23	-62.27	-40.00	-22.27
4	272.62	-51.88	-70.60	15.32	-55.28	-40.00	-15.28
5	349.13	-62.54	-82.30	17.39	-64.91	-40.00	-24.91
6	414.61	-71.65	-92.52	19.21	-73.31	-40.00	-33.31
7	565.92	-79.06	-100.86	22.70	-78.16	-40.00	-38.16
8	818.25	-81.81	-103.87	27.18	-76.69	-40.00	-36.69

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Mode	TX High	Frequency Range	Below 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	32.91	-50.73	-66.85	13.47	-53.38	-40.00	-13.38
2	105.17	-49.21	-66.56	11.04	-55.52	-40.00	-15.52
3	187.50	-57.02	-75.17	12.89	-62.28	-40.00	-22.28
4	273.11	-51.15	-70.06	15.34	-54.72	-40.00	-14.72
5	349.37	-68.53	-88.77	17.39	-71.38	-40.00	-31.38
6	386.35	-70.56	-91.25	18.63	-72.62	-40.00	-32.62
7	814.97	-81.17	-103.12	27.14	-75.98	-40.00	-35.98

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	31.09	-51.15	-65.28	13.47	-51.81	-40.00	-11.81
2	111.72	-61.79	-77.43	11.96	-65.47	-40.00	-25.47
3	173.20	-58.21	-75.92	14.23	-61.69	-40.00	-21.69
4	273.11	-50.79	-69.54	15.34	-54.20	-40.00	-14.20
5	348.16	-62.31	-82.08	17.37	-64.71	-40.00	-24.71
6	414.73	-71.43	-92.30	19.21	-73.09	-40.00	-33.09
7	847.47	-81.82	-103.74	27.66	-76.08	-40.00	-36.08

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Above 1GHz Data :
5MHz

Mode	TX Low	Frequency Range	Above 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7105.01	-49.32	-61.98	20.39	-41.59	-40.00	-1.59
2	10657.69	-72.26	-82.16	24.11	-58.05	-40.00	-18.05

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7104.61	-60.42	-73.23	20.39	-52.84	-40.00	-12.84
2	10656.70	-59.34	-71.03	24.11	-46.92	-40.00	-6.92

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Mode	TX Middle	Frequency Range	Above 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7250.04	-49.10	-61.69	20.66	-41.03	-40.00	-1.03
2	10876.33	-75.23	-85.02	24.29	-60.73	-40.00	-20.73

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7249.63	-54.99	-67.81	20.66	-47.15	-40.00	-7.15
2	10875.11	-70.89	-82.45	24.29	-58.16	-40.00	-18.16

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Mode	TX High	Frequency Range	Above 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7393.98	-56.57	-69.10	20.93	-48.17	-40.00	-8.17
2	11090.17	-56.41	-65.97	24.38	-41.59	-40.00	-1.59

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7394.69	-61.70	-74.52	20.93	-53.59	-40.00	-13.59
2	11091.44	-62.76	-74.04	24.38	-49.66	-40.00	-9.66

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

10MHz

Mode	TX Low	Frequency Range	Above 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7109.37	-51.15	-63.81	20.40	-43.41	-40.00	-3.41
2	10665.75	-73.11	-83.00	24.12	-58.88	-40.00	-18.88

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7110.09	-55.88	-68.69	20.40	-48.29	-40.00	-8.29
2	10665.41	-72.79	-84.48	24.12	-60.36	-40.00	-20.36

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Mode	TX Middle	Frequency Range	Above 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7250.90	-49.99	-62.58	20.66	-41.92	-40.00	-1.92
2	10874.02	-71.83	-81.60	24.27	-57.33	-40.00	-17.33

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7250.22	-55.01	-67.82	20.66	-47.16	-40.00	-7.16
2	10875.13	-72.86	-84.42	24.29	-60.13	-40.00	-20.13

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Mode	TX High	Frequency Range	Above 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7389.53	-61.13	-73.66	20.92	-52.74	-40.00	-12.74
2	11083.06	-60.31	-69.89	24.39	-45.50	-40.00	-5.50

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7390.23	-64.42	-77.24	20.92	-56.32	-40.00	-16.32
2	11084.88	-62.07	-73.38	24.39	-48.99	-40.00	-8.99

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

15MHz

Mode	TX Low	Frequency Range	Above 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7114.98	-53.13	-65.79	20.41	-45.38	-40.00	-5.38
2	10672.20	-74.44	-84.33	24.12	-60.21	-40.00	-20.21

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7115.11	-56.16	-68.97	20.41	-48.56	-40.00	-8.56
2	10672.66	-74.57	-86.25	24.12	-62.13	-40.00	-22.13

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Mode	TX Middle	Frequency Range	Above 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7250.18	-51.75	-64.34	20.66	-43.68	-40.00	-3.68
2	10872.06	-73.67	-83.45	24.27	-59.18	-40.00	-19.18

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7250.28	-53.73	-66.54	20.66	-45.88	-40.00	-5.88
2	10872.17	-74.06	-85.60	24.27	-61.33	-40.00	-21.33

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Mode	TX High	Frequency Range	Above 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7384.86	-61.93	-74.46	20.91	-53.55	-40.00	-13.55
2	11076.77	-63.86	-73.45	24.39	-49.06	-40.00	-9.06

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7385.22	-64.24	-77.06	20.91	-56.15	-40.00	-16.15
2	11075.11	-64.32	-75.65	24.39	-51.26	-40.00	-11.26

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

20MHz

Mode	TX Low	Frequency Range	Above 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7120.90	-54.12	-66.78	20.42	-46.36	-40.00	-6.36
2	10684.42	-71.38	-81.27	24.14	-57.13	-40.00	-17.13

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7120.24	-56.94	-69.74	20.41	-49.33	-40.00	-9.33
2	10680.68	-72.73	-84.42	24.14	-60.28	-40.00	-20.28

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Mode	TX Middle	Frequency Range	Above 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7251.90	-51.89	-64.48	20.66	-43.82	-40.00	-3.82
2	10875.42	-71.69	-81.48	24.29	-57.19	-40.00	-17.19

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7250.46	-54.84	-67.65	20.66	-46.99	-40.00	-6.99
2	10875.74	-73.25	-84.81	24.29	-60.52	-40.00	-20.52

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

Mode	TX High	Frequency Range	Above 1000 MHz
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Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7381.70	-67.67	-80.21	20.91	-59.30	-40.00	-19.30
2	11078.30	-61.64	-71.23	24.39	-46.84	-40.00	-6.84

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Emission Value (dBm)	Limit (dBm)	Margin (dB)
1	7380.56 (PK)	-69.30	-82.13	20.91	-61.22	-40.00	-21.22
2	11072.28 (PK)	-62.92	-74.24	24.38	-49.86	-40.00	-9.86

Remarks:

1. Emission Value (dBm) = S.G Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

4.9 Transmit Power Control (TPC)

4.9.1 Definition

CBSDs must support transmit power control capability and the capability to limit their maximum EIRP and the maximum EIRP of associated End User Devices in response to instructions from an SAS.

4.9.2 Requirement

The EUT can adjust a transmitter's output power based on the signal level present at the receiver.
TPC is auto controlled by software.

Manufacturer provides declaration form to meet this requirement.

5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

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