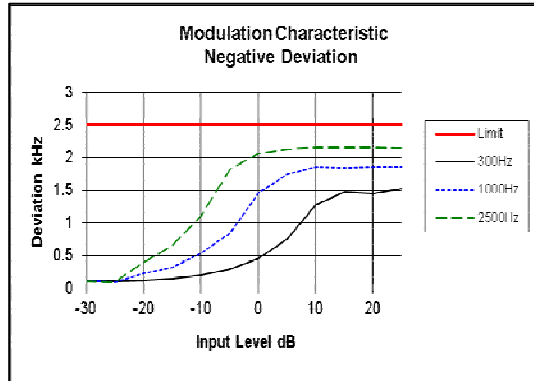
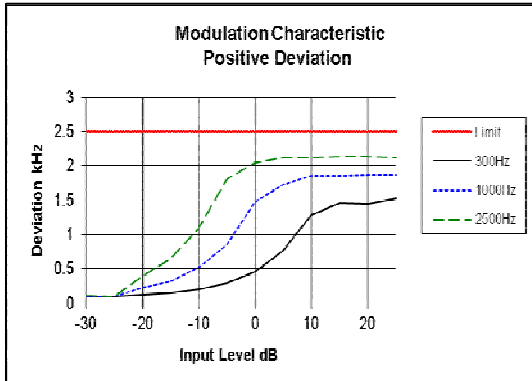
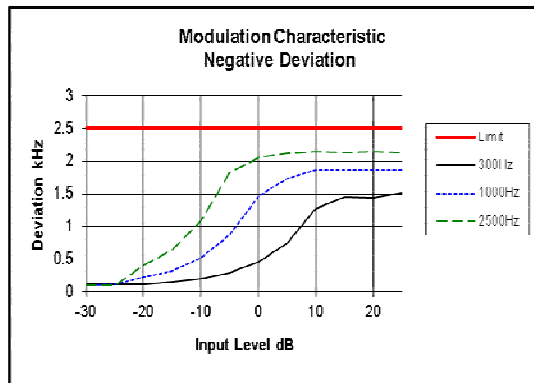
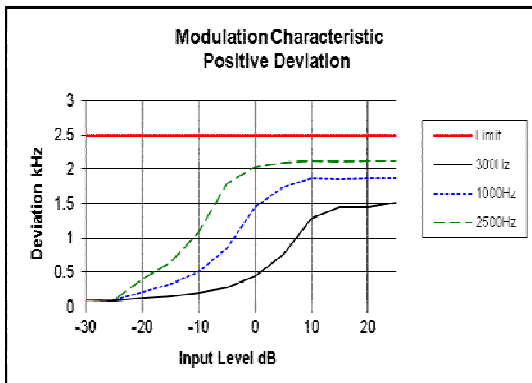


Transmitter Modulation Limiting

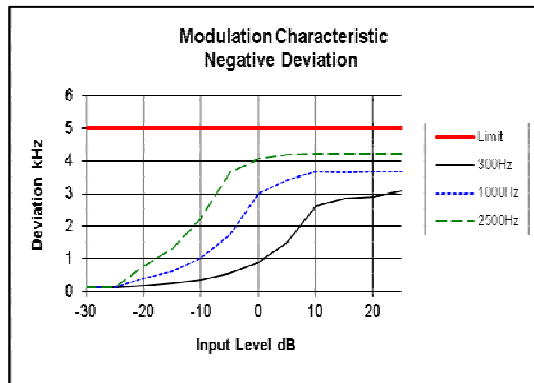
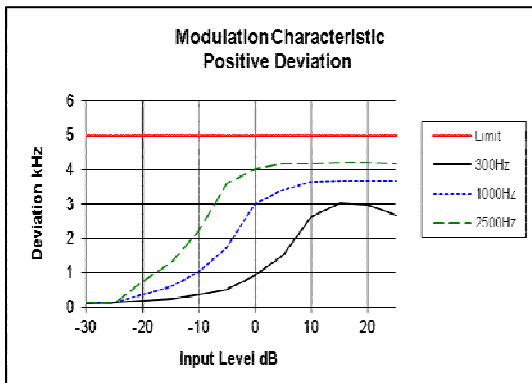
866.00000 MHz 12.5 kHz Channel Spacing



868.98750 MHz 12.5 kHz Channel Spacing

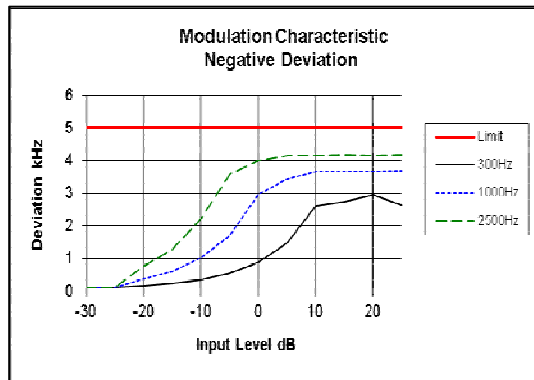
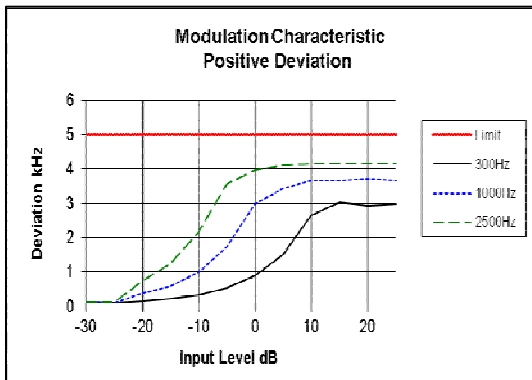


764.06875 MHz 25.0 kHz Channel Spacing



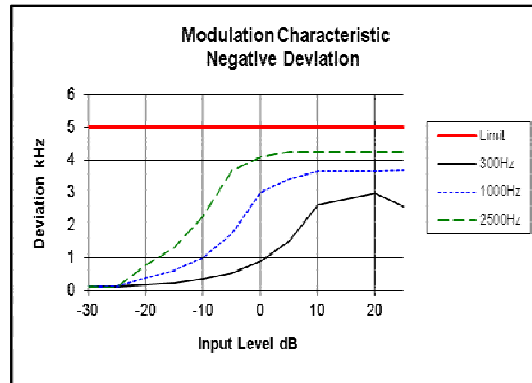
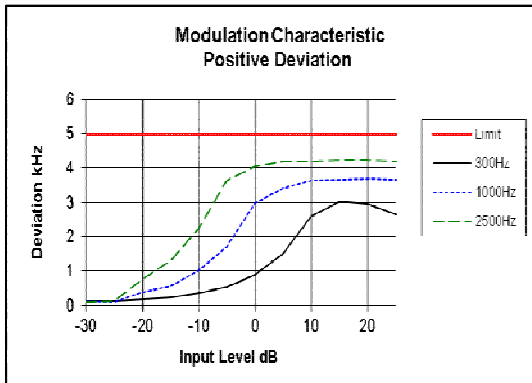
Tx FREQUENCY: 770.06875 MHz

25.0 kHz Channel Spacing

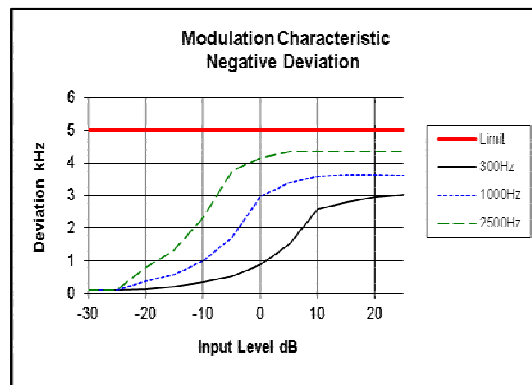
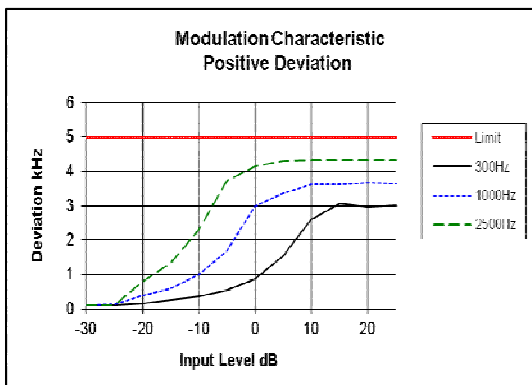


Transmitter Modulation Limiting

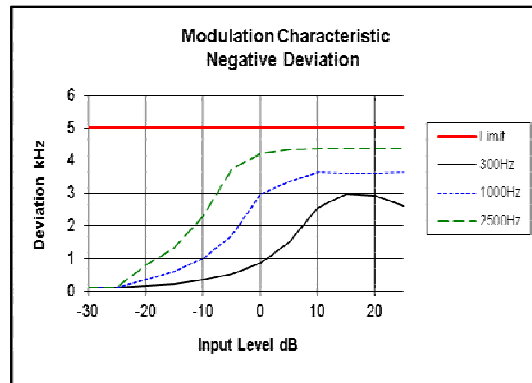
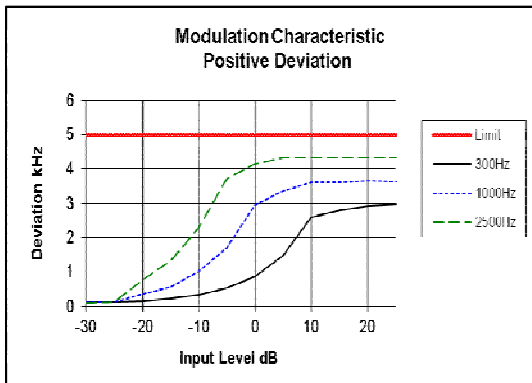
774.98750 MHz 25.0 kHz Channel Spacing



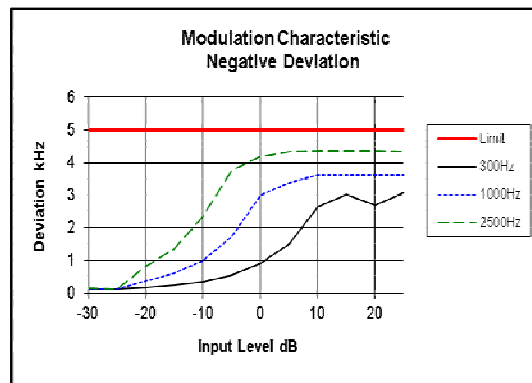
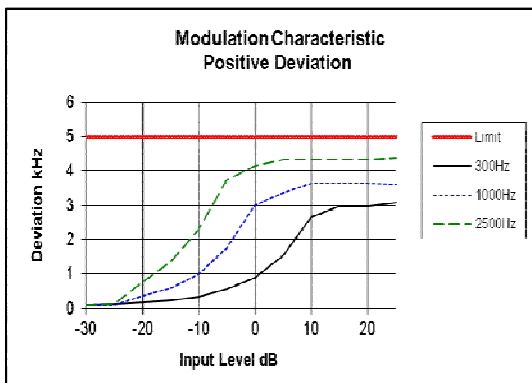
794.06875 MHz 25.0 kHz Channel Spacing



800.06875 MHz 25.0 kHz Channel Spacing

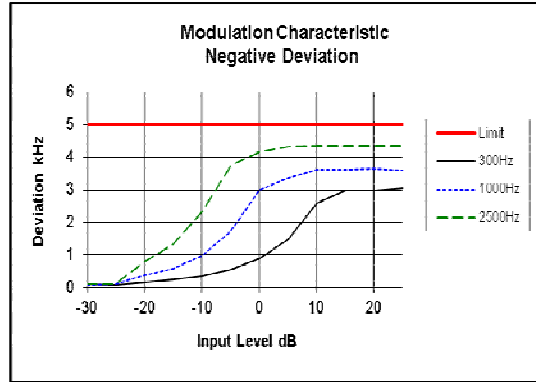
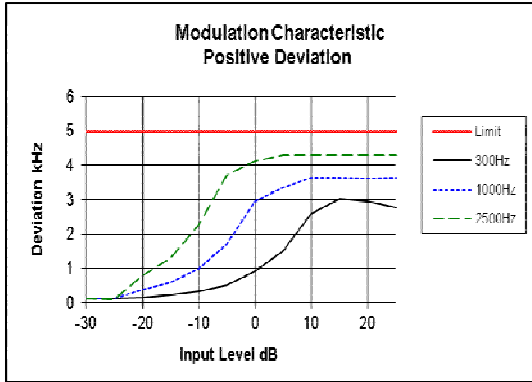


806.00000 MHz 25.0 kHz Channel Spacing

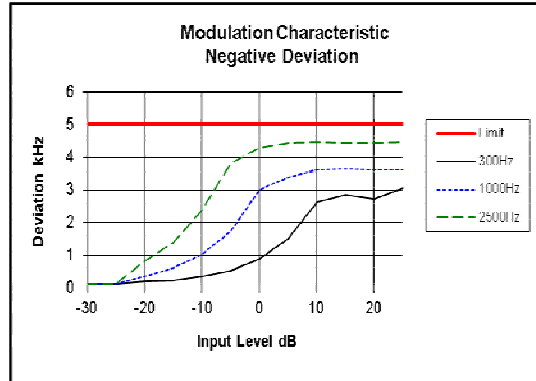
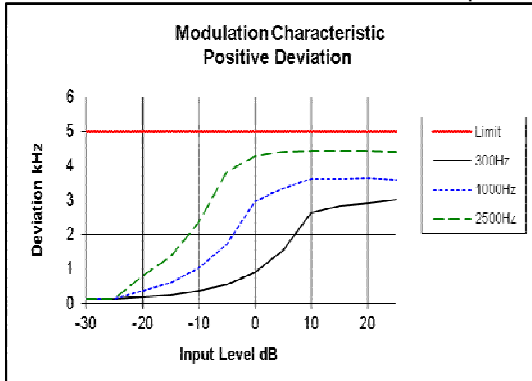


Transmitter Modulation Limiting

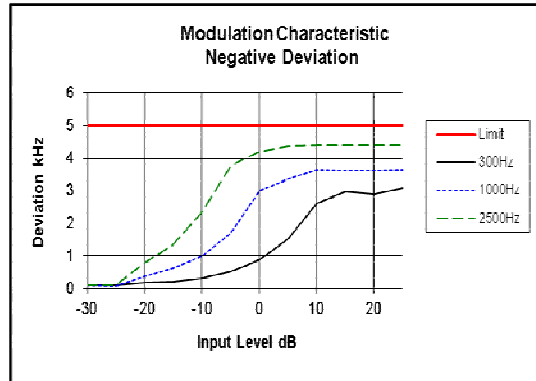
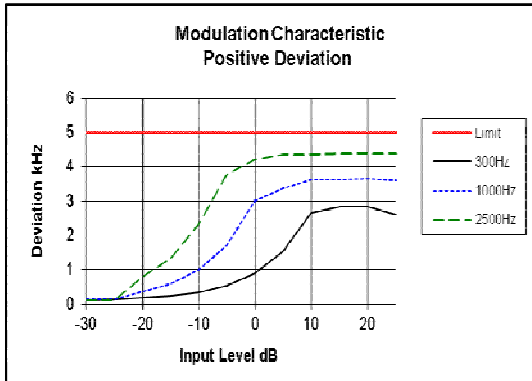
813.50000 MHz 25.0 kHz Channel Spacing



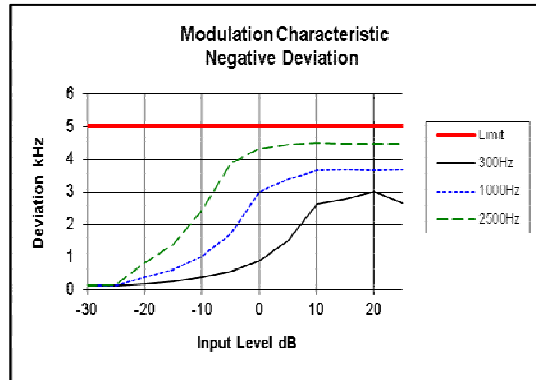
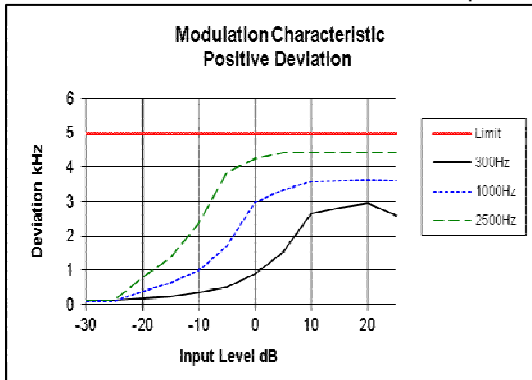
821.00000 MHz 25.0 kHz Channel Spacing



823.98750 MHz 25.0 kHz Channel Spacing

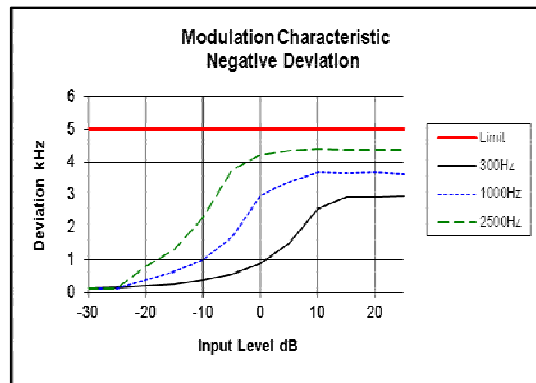
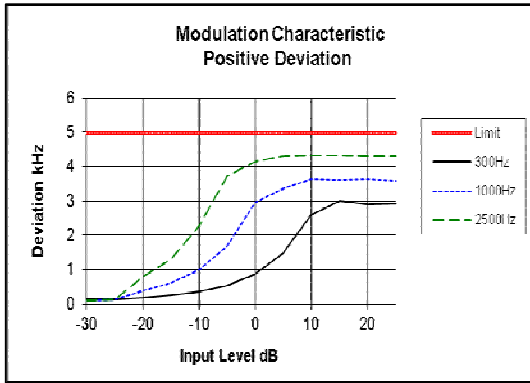


851.06875 MHz 25.0 kHz Channel Spacing

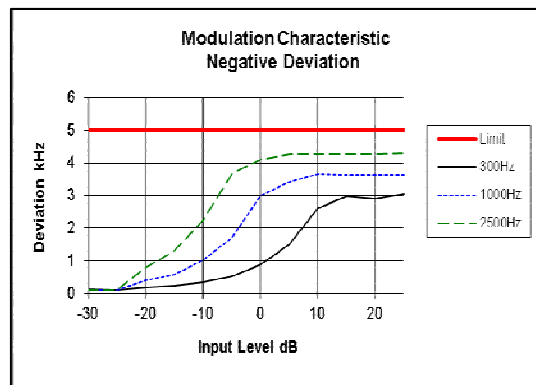
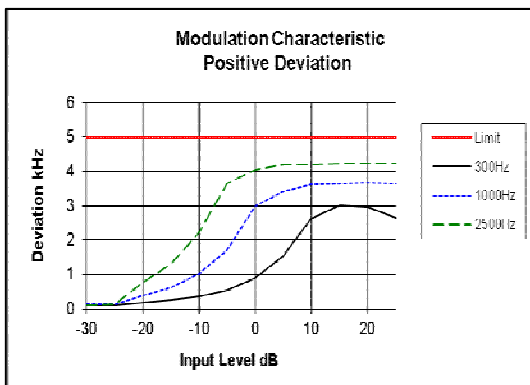


Transmitter Modulation Limiting

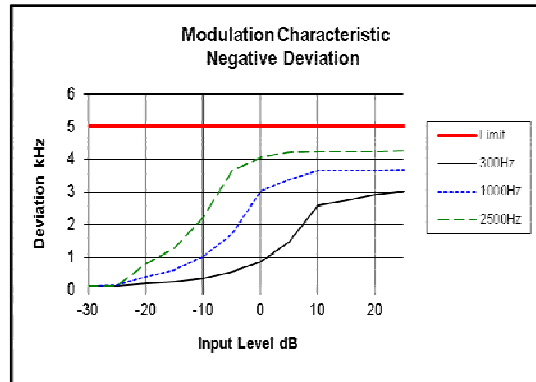
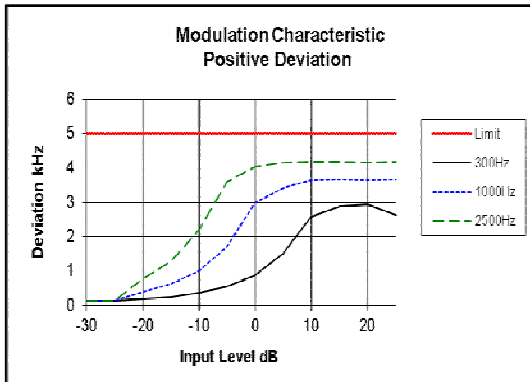
858.56875 MHz 25.0 kHz Channel Spacing



866.00000 MHz 25.0 kHz Channel Spacing



868.98750 MHz 25.0 kHz Channel Spacing



TRANSMITTER OCCUPIED BANDWIDTH AND SPECTRUM MASKS

SPECIFICATION: FCC 47 CFR 2.1049 (c)

RSS-119 5.5

GUIDE: TIA/EIA-603D 2.2.11

MEASUREMENT PROCEDURE:

1. Refer Annex A for Equipment Set up.
2. For analog measurements: The EUT was modulated by a 2500 Hz tone at an input level 16 dB above a level that produced 50% deviation. The input level was established at the frequency of maximum response of the audio modulating circuit.
For Data measurements: The EUT was modulated with an internally generated pseudo random bit sequence at the appropriate Baud rates.
3. The Occupied Bandwidth was measured on the Spectrum Analyser, with bandwidth settings as follows.

Emission Mask D – Resolution Bandwidth = 100 Hz, Video Bandwidth = 1 kHz
Emission Masks B, G, & H – Resolution bandwidth = 300 Hz, Video Bandwidth = 3 kHz

MEASUREMENT RESULTS:

See the plots on the following pages for 12.5 kHz & 25.0 kHz channel spacings.

LIMIT CLAUSE: FCC 47 CFR 90.210

RSS-119 5.5

EMISSION MASKS

Emission Mask D	12.5 kHz Channel Spacing	Analog, FFSK, Digital Voice/Data
Emission Mask B	25.0 kHz Channel Spacing	Analog
Emission Mask G	25.0 kHz Channel Spacing	FFSK
Emission Mask H	25.0 kHz Channel Spacing	FFSK (FCC 821-824 / 866-869 MHz)

DATA SPEED

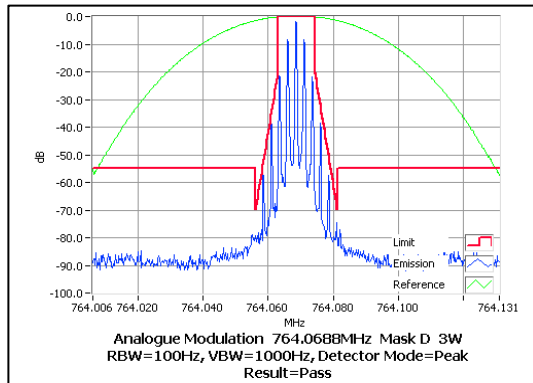
Digital Voice/Data	12.5 kHz Channel Spacing	9600 bps & 12000 bps
FFSK	12.5 kHz Channel Spacing	1200 bps & 2400 bps
FFSK	25.0 kHz Channel Spacing	1200 bps & 2400 bps

Occupied Bandwidth and Spectrum Masks - ANALOG VOICE

12.5 kHz Channel Spacing

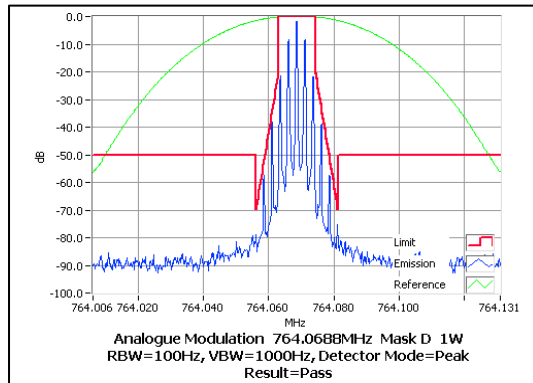
764.06875 MHz

3 W



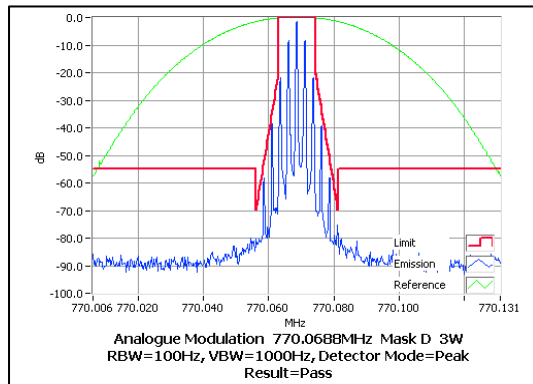
764.06875 MHz

1 W



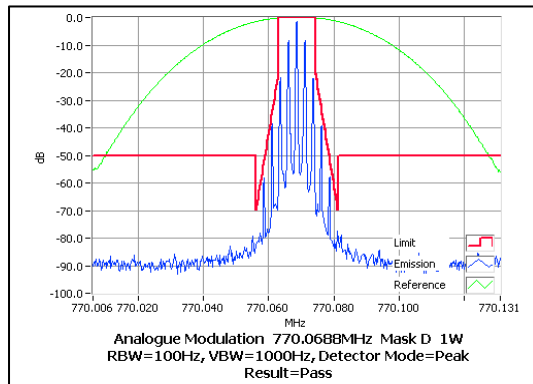
770.06875 MHz

3 W



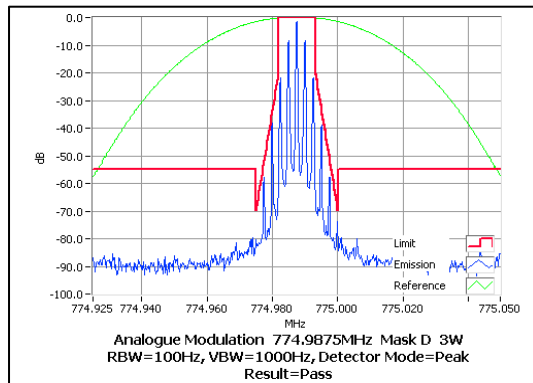
770.06875 MHz

1 W



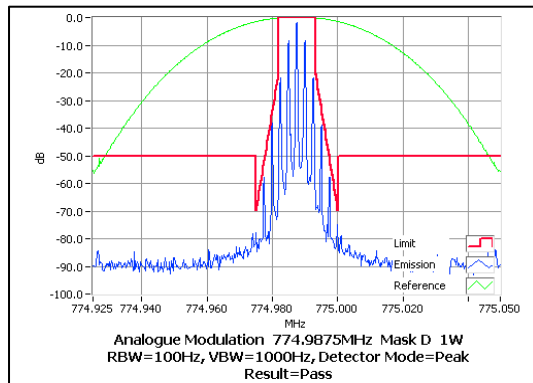
774.98750 MHz

3 W



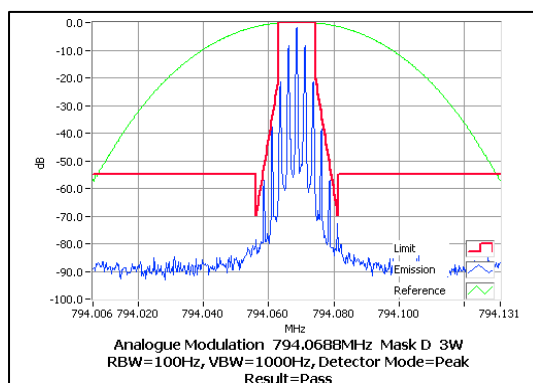
774.9875 MHz

1 W



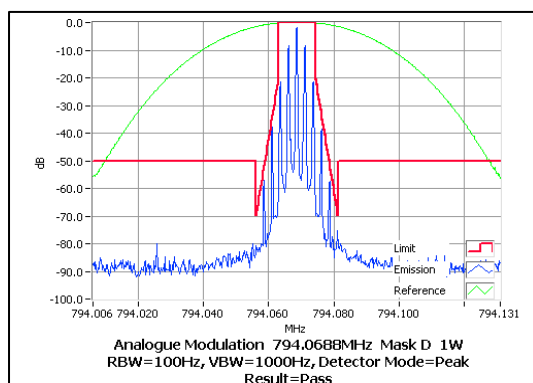
794.06875 MHz

3 W



794.06875 MHz

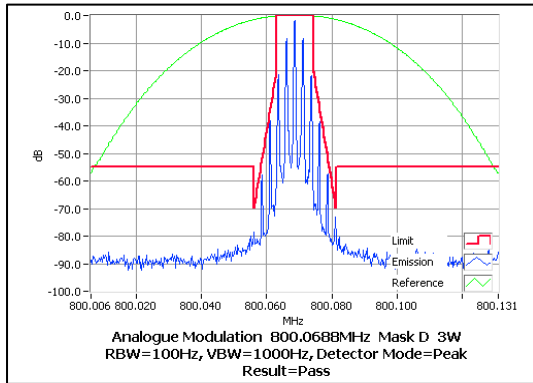
1 W



Occupied Bandwidth and Spectrum Masks - ANALOG VOICE 12.5 kHz Channel Spacing

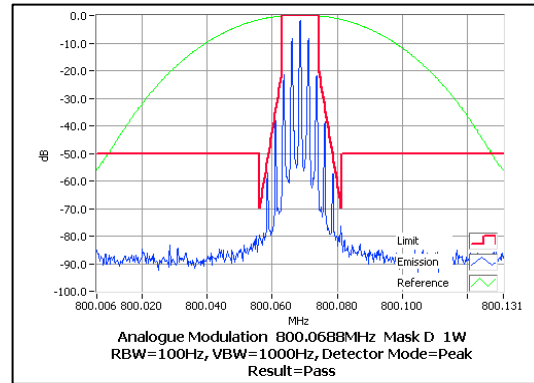
800.06875 MHz

3 W



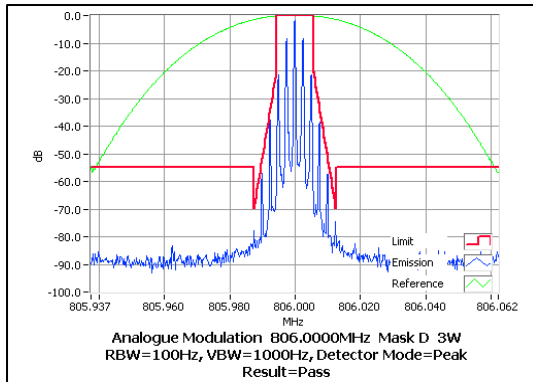
800.06875 MHz

1 W



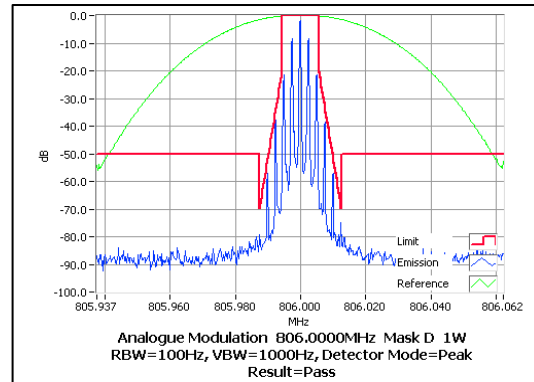
806.00000 MHz

3 W



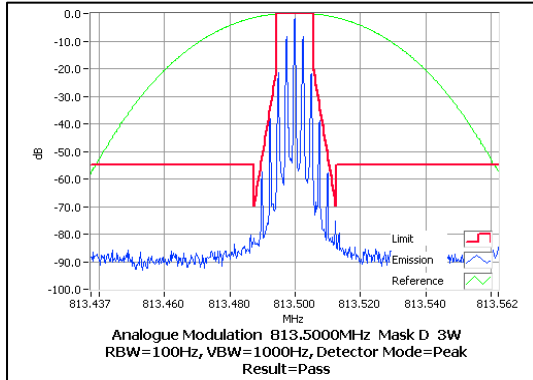
806.00000 MHz

1 W



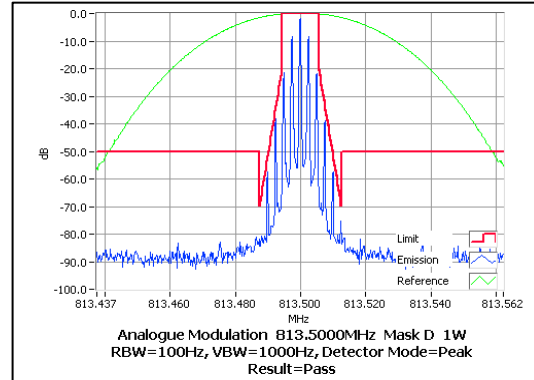
813.50000 MHz

3 W



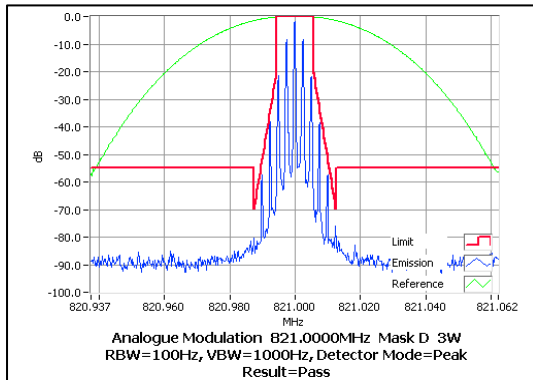
813.50000 MHz

1 W



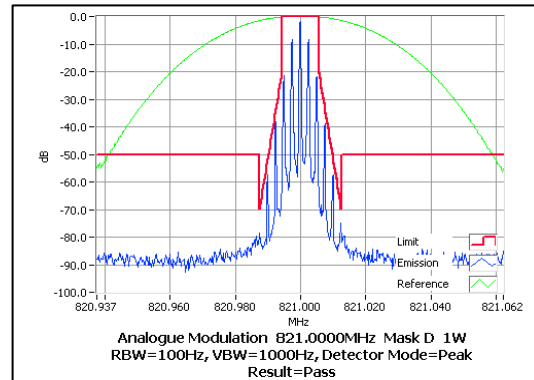
821.00000 MHz

3 W



821.00000 MHz

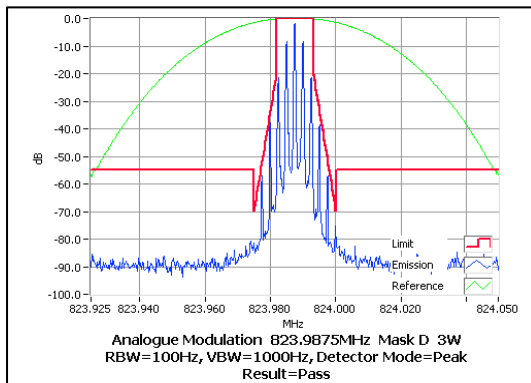
1 W



Occupied Bandwidth and Spectrum Masks - ANALOG VOICE 12.5 kHz Channel Spacing

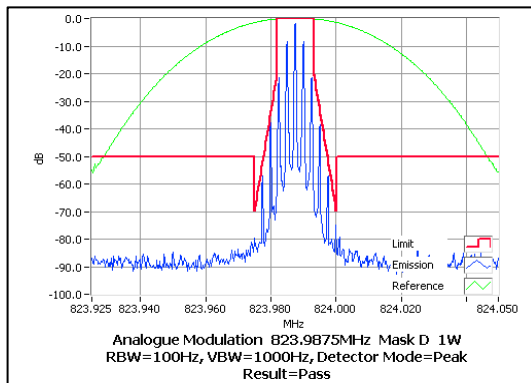
823.98750 MHz

3 W



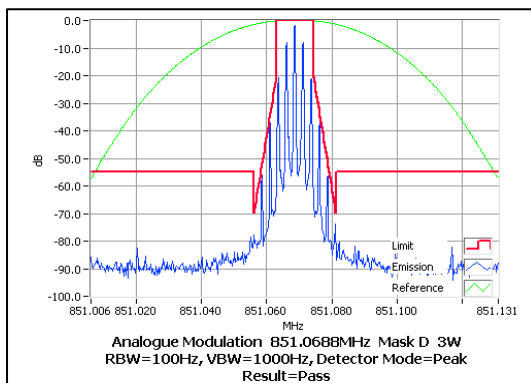
823.98750 MHz

1 W



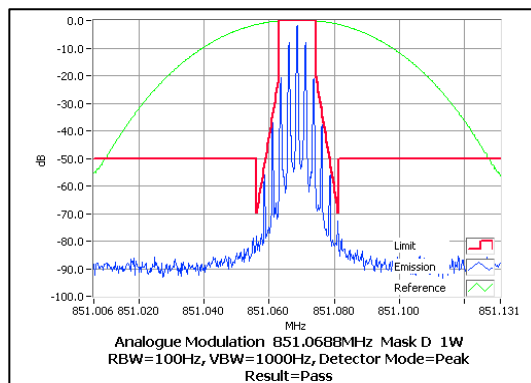
851.06875 MHz

3 W



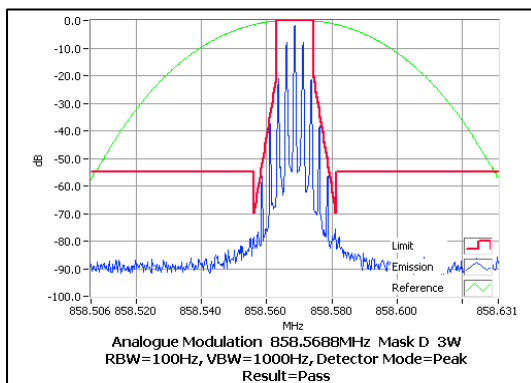
851.06875 MHz

1 W



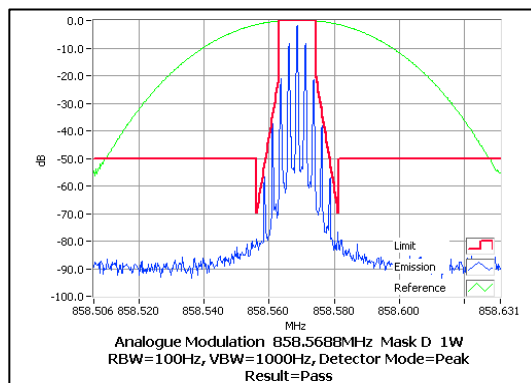
858.56875 MHz

3 W



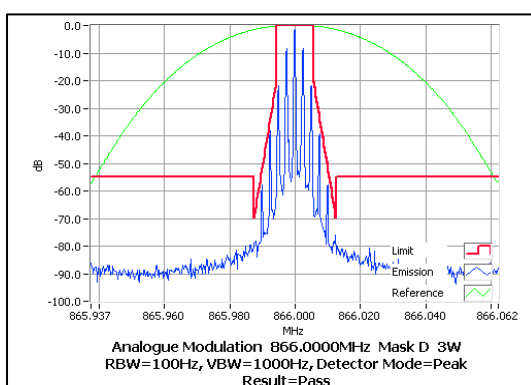
858.56875 MHz

1 W



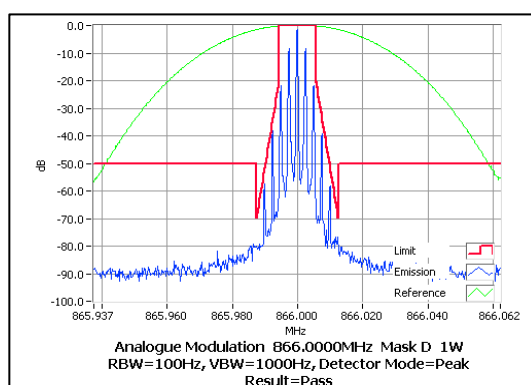
866.00000 MHz

3 W

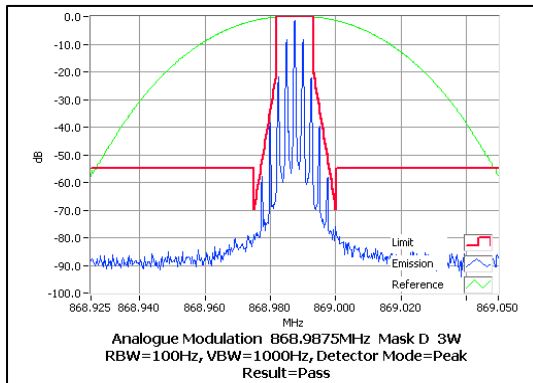


866.00000 MHz

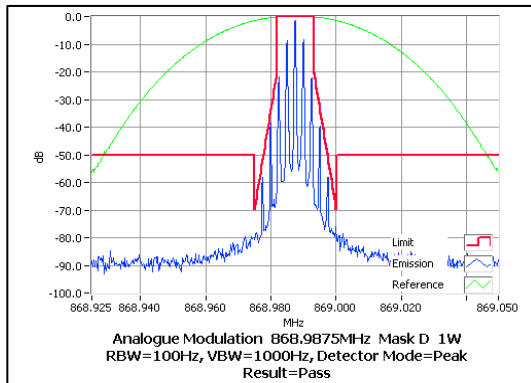
1 W



868.98750 MHz 3 W



868.98750 MHz 1 W

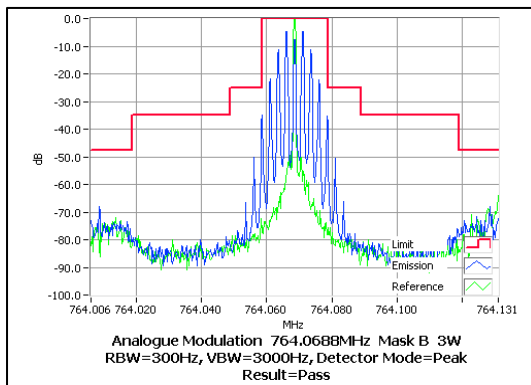


Occupied Bandwidth and Spectrum Masks - ANALOG VOICE

25.0 kHz Channel Spacing

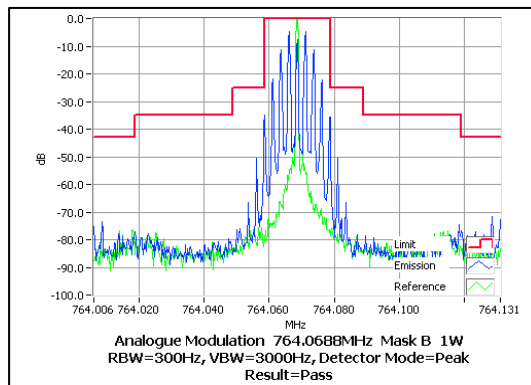
764.06875 MHz

3 W



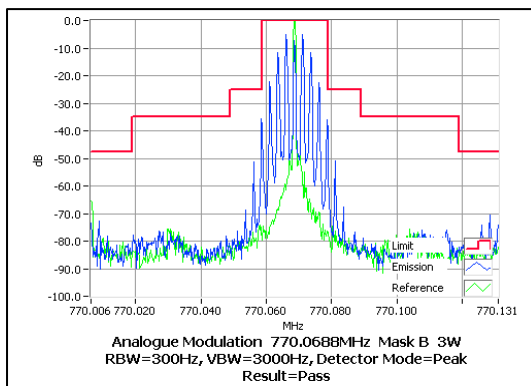
764.06875 MHz

1 W



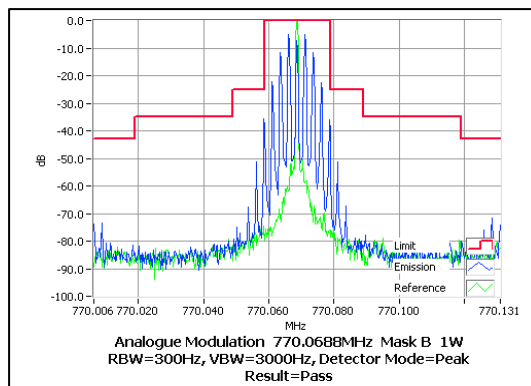
770.06875 MHz

3 W



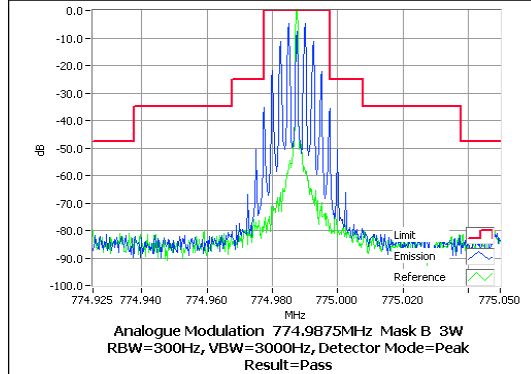
770.06875 MHz

1 W



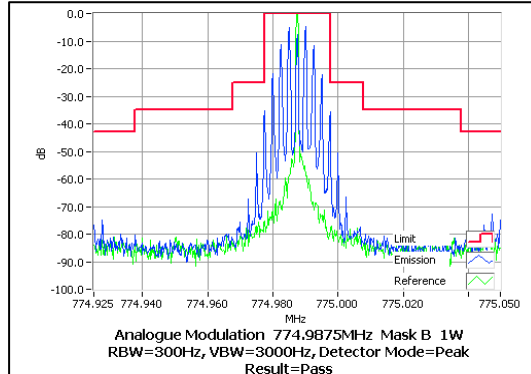
774.98750 MHz

3 W



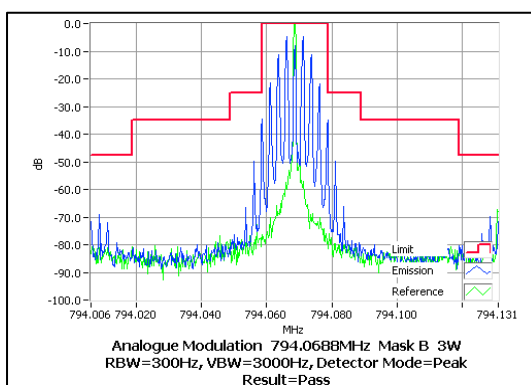
774.98750 MHz

1 W



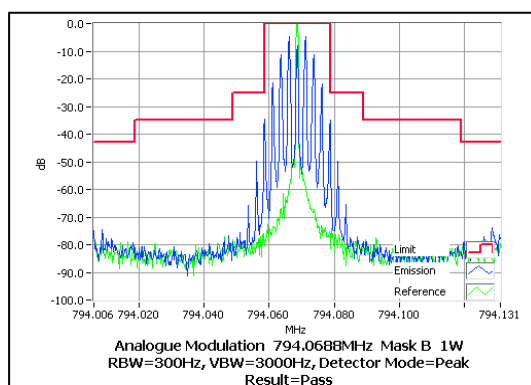
794.06875 MHz

3 W



794.06875 MHz

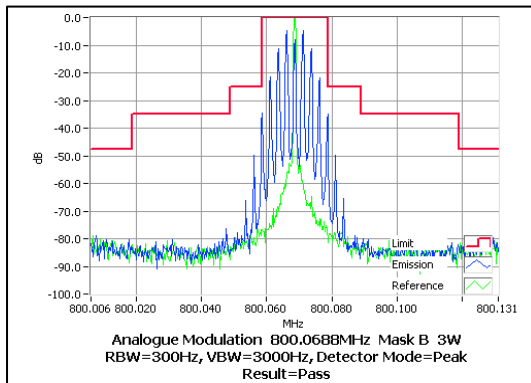
1 W



Occupied Bandwidth and Spectrum Masks - ANALOG VOICE 25.0 kHz Channel Spacing

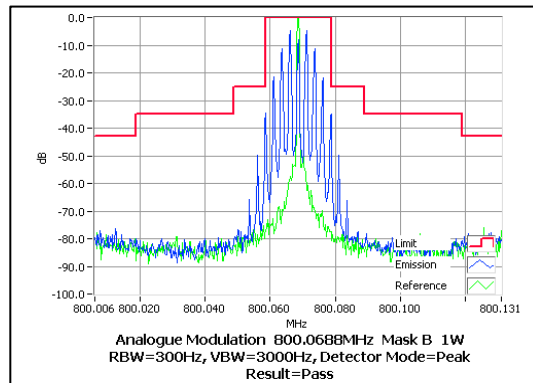
800.06875 MHz

3 W



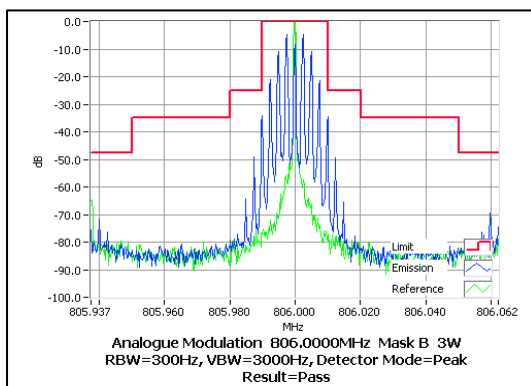
800.06875 MHz

1 W



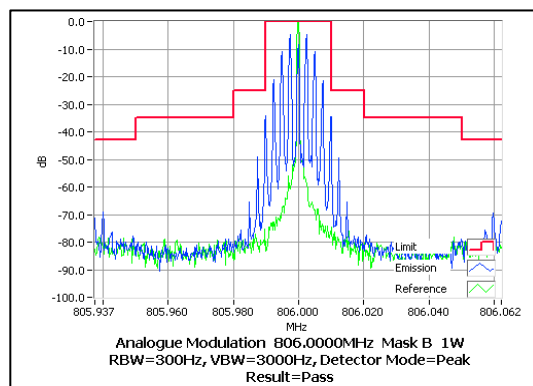
806.00000 MHz

3 W



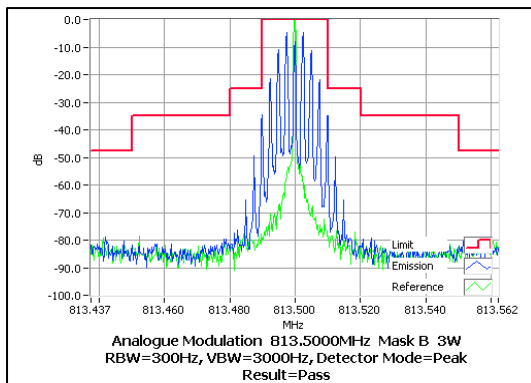
806.00000 MHz

1 W



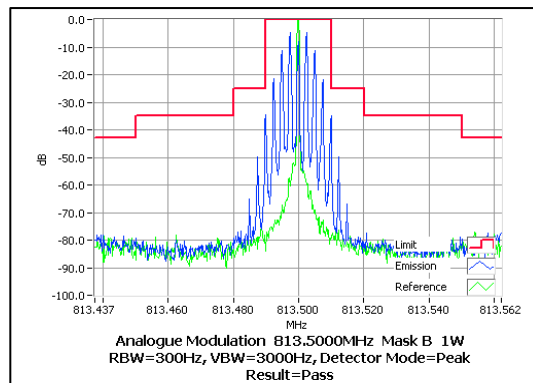
813.50000 MHz

3 W



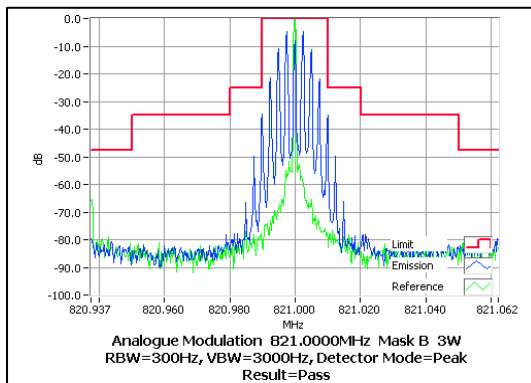
813.50000 MHz

1 W



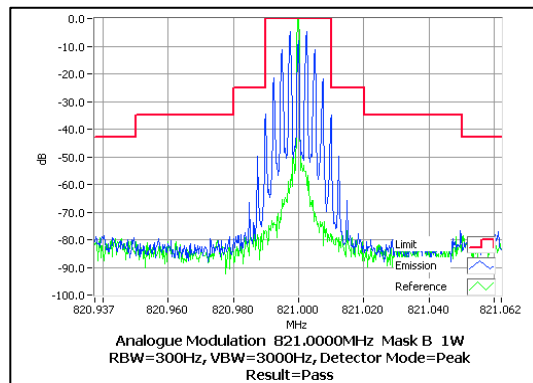
821.00000 MHz

3 W



821.00000 MHz

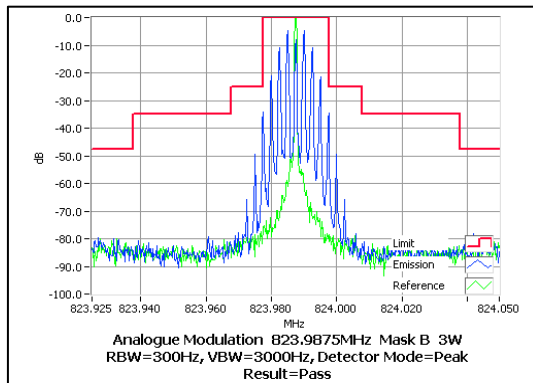
1 W



Occupied Bandwidth and Spectrum Masks - ANALOG VOICE 25.0 kHz Channel Spacing

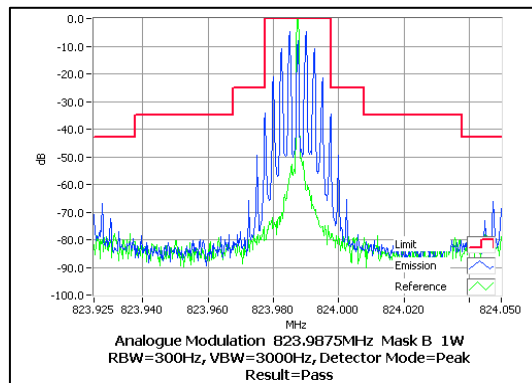
823.98750 MHz

3 W



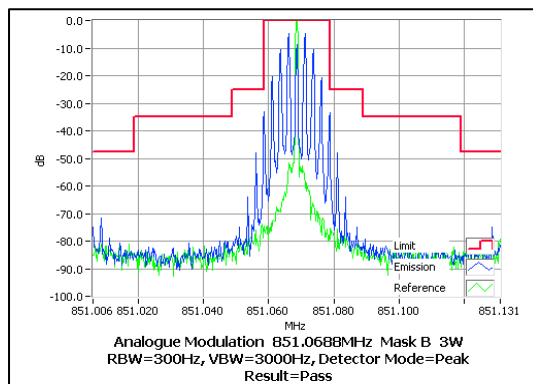
823.98750 MHz

1 W



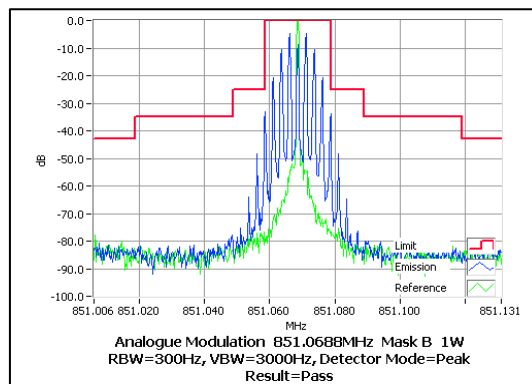
851.06875 MHz

3 W



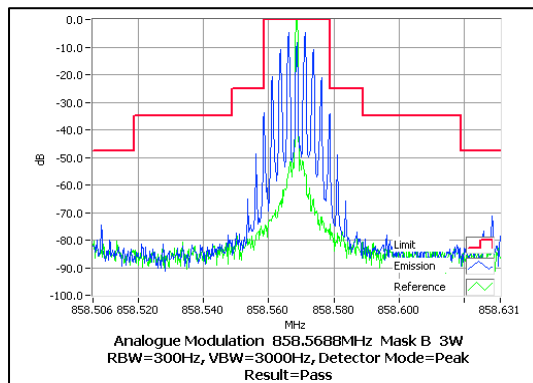
851.06875 MHz

1 W



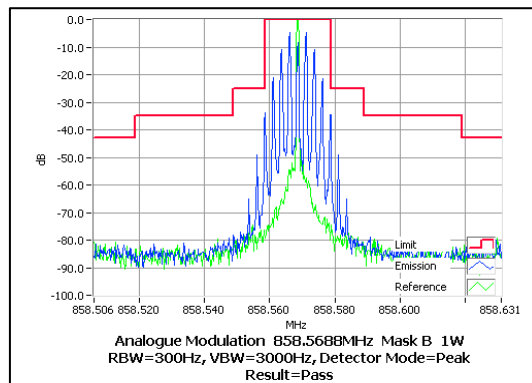
858.56875 MHz

3 W



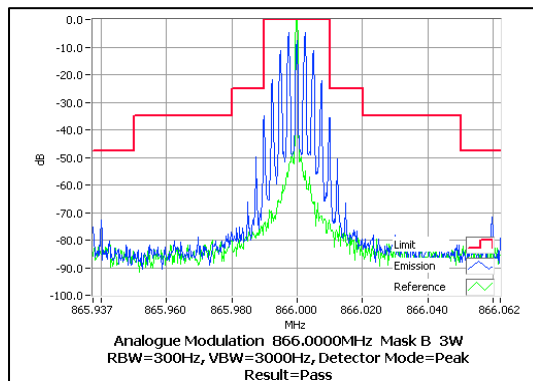
858.56875 MHz

1 W



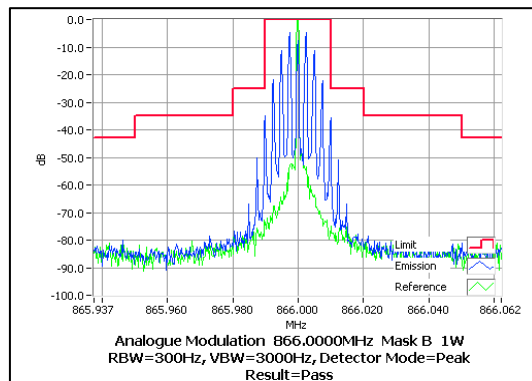
866.00000 MHz

3 W



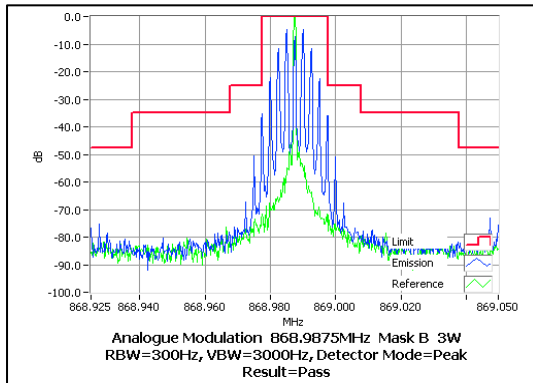
866.00000 MHz

1 W

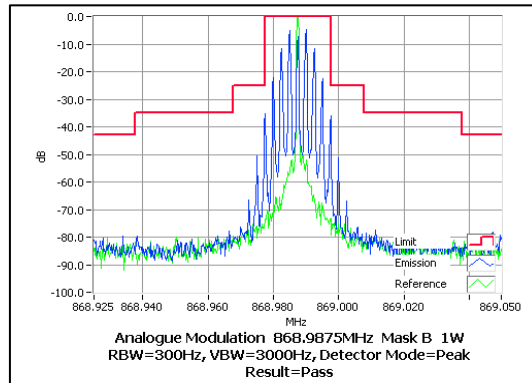


Occupied Bandwidth and Spectrum Masks - ANALOG VOICE 25.0 kHz Channel Spacing

868.98750 MHz 3 W



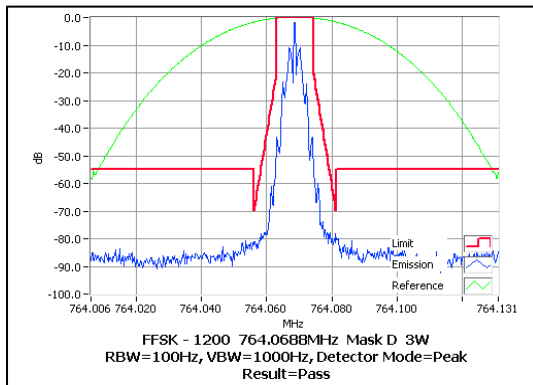
868.98750 MHz 1 W



Occupied Bandwidth and Spectrum Masks – FFSK 1200bps 12.5 kHz Channel Spacing

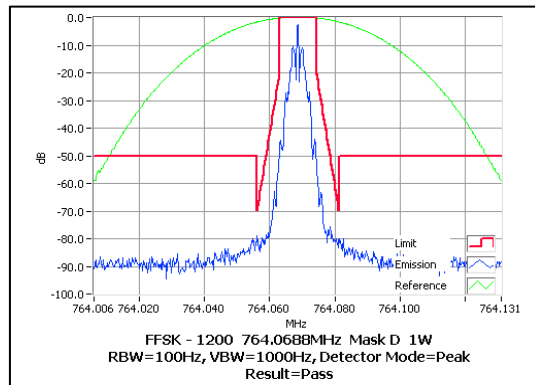
764.06875 MHz

3 W



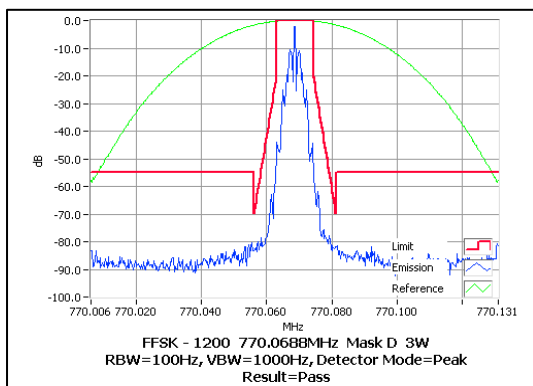
764.06875 MHz

1 W



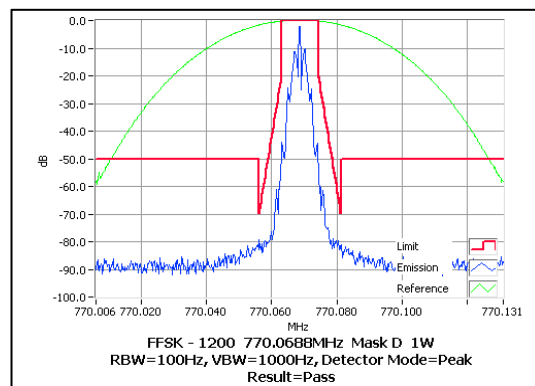
770.06875 MHz

3 W



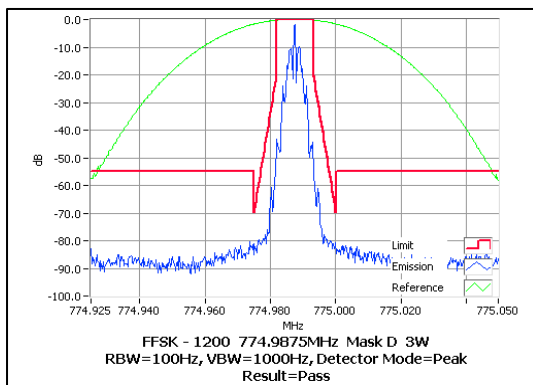
770.06875 MHz

1 W



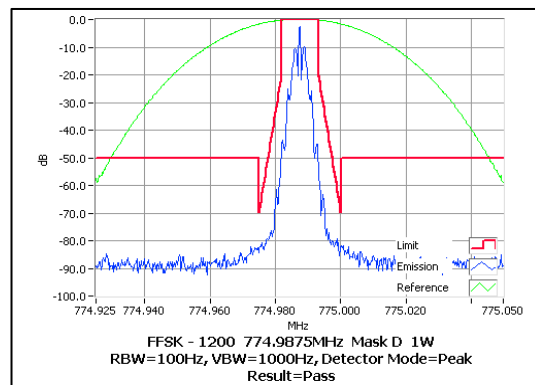
774.98750 MHz

3 W



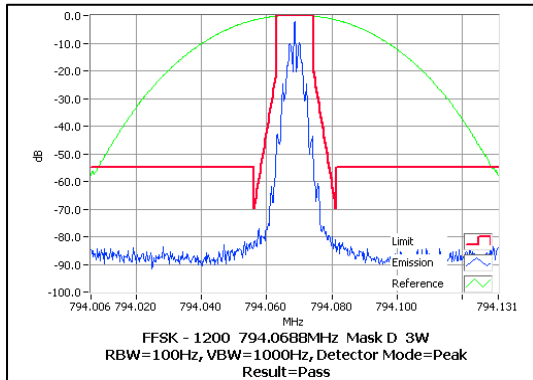
774.98750 MHz

1 W



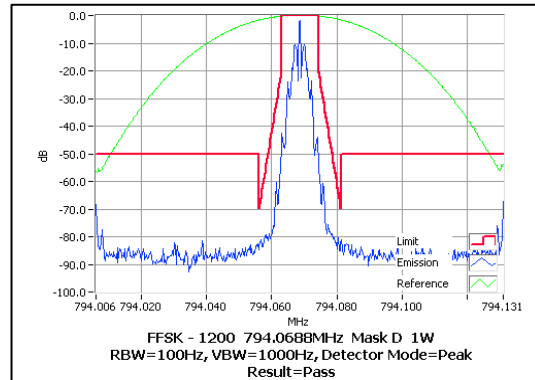
794.06875 MHz

3 W



794.06875 MHz

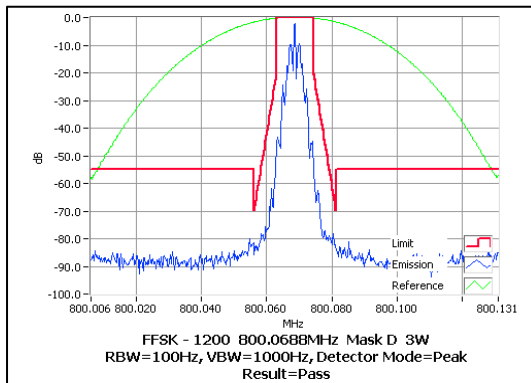
1 W



Occupied Bandwidth and Spectrum Masks – FFSK 1200bps 12.5 kHz Channel Spacing

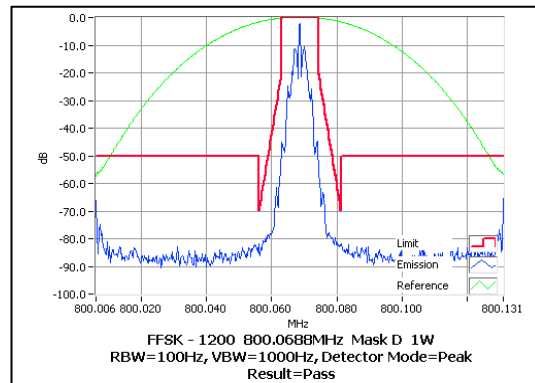
800.06875 MHz

3 W



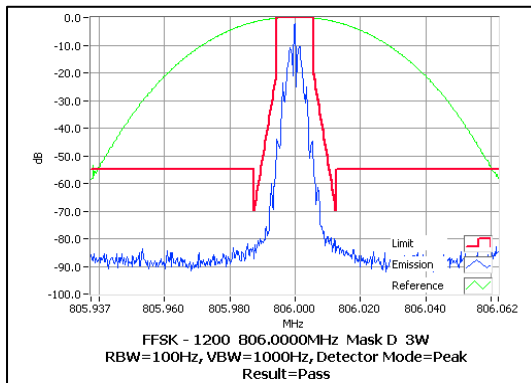
800.06875 MHz

1 W



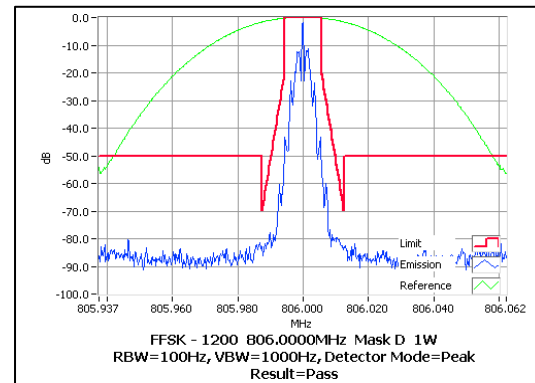
806.00000 MHz

3 W



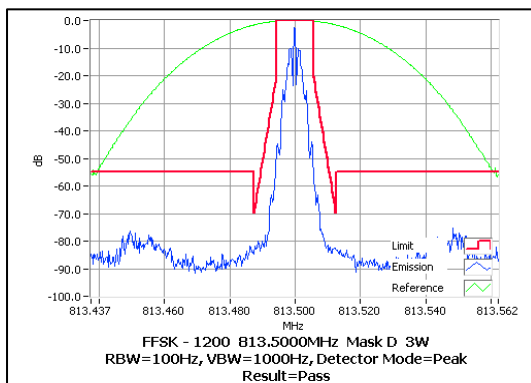
806.00000 MHz

1 W



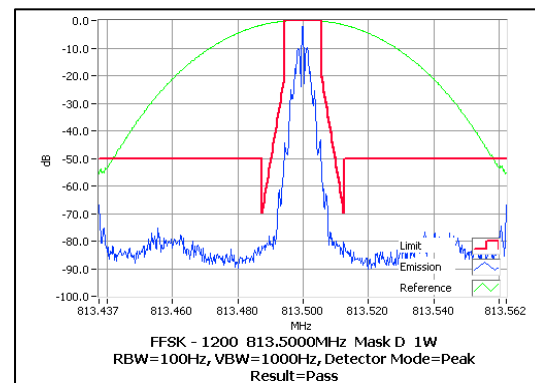
813.50000 MHz

3 W



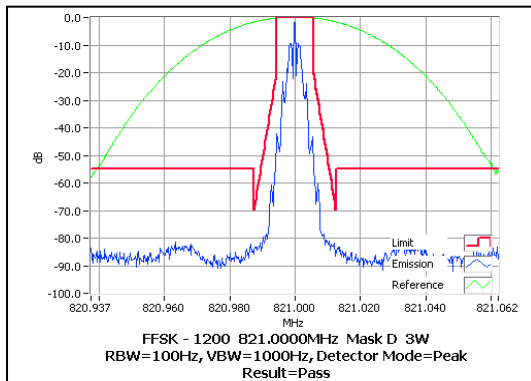
813.50000 MHz

1 W



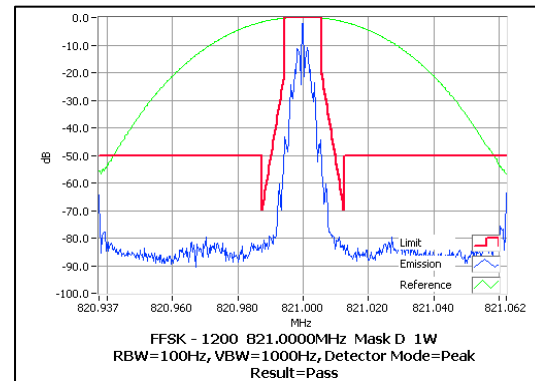
821.00000 MHz

3 W



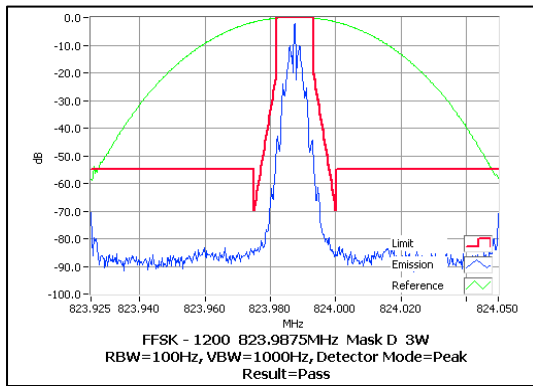
821.00000 MHz

1 W

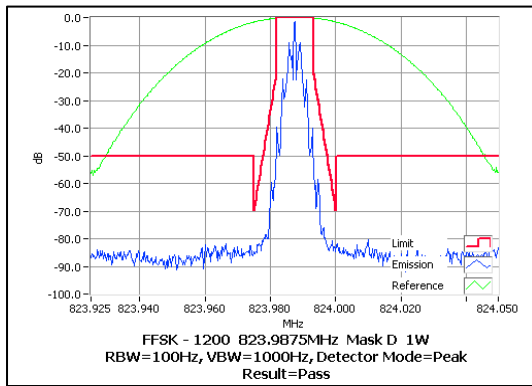


Occupied Bandwidth and Spectrum Masks – FFSK 1200bps 12.5 kHz Channel Spacing

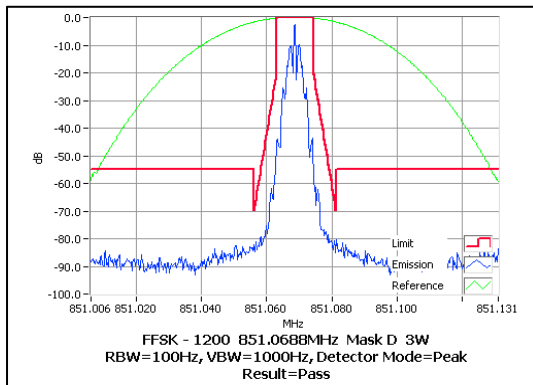
823.98750 MHz 3 W



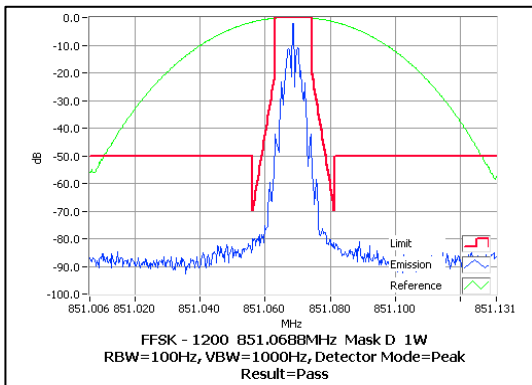
823.98750 MHz 1 W



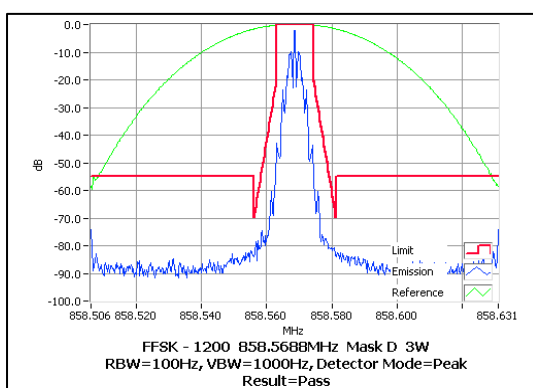
851.06875 MHz 3 W



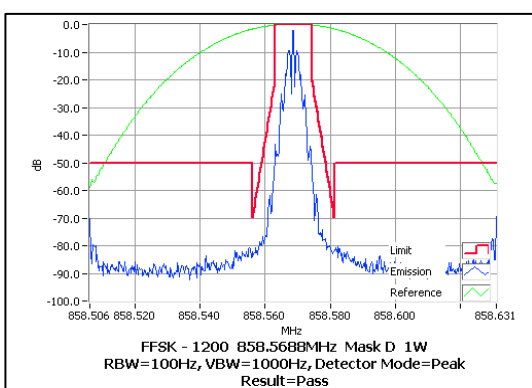
851.06875 MHz 1 W



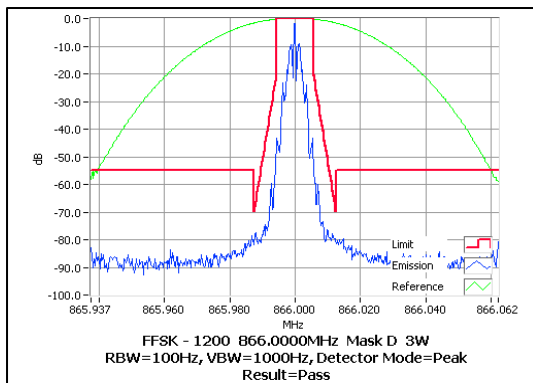
858.56875 MHz 3 W



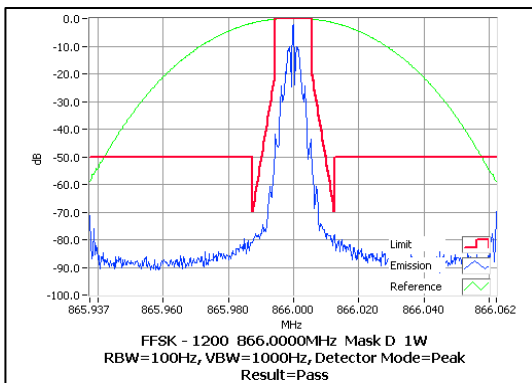
858.56875 MHz 1 W



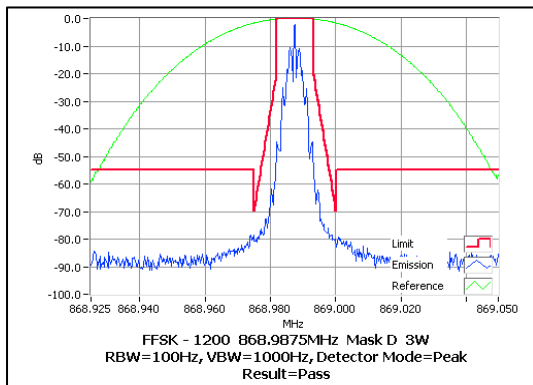
866.00000 MHz 3 W



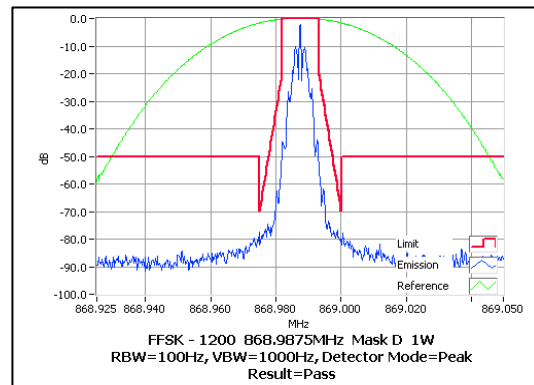
866.00000 MHz 1 W



868.98750 MHz 3 W



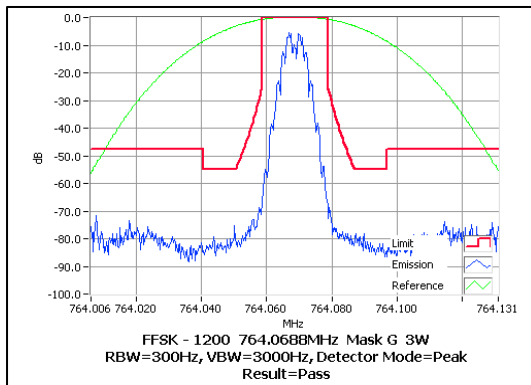
868.98750 MHz 1 W



Occupied Bandwidth and Spectrum Masks – FFSK 1200bps 25.0 kHz Channel Spacing

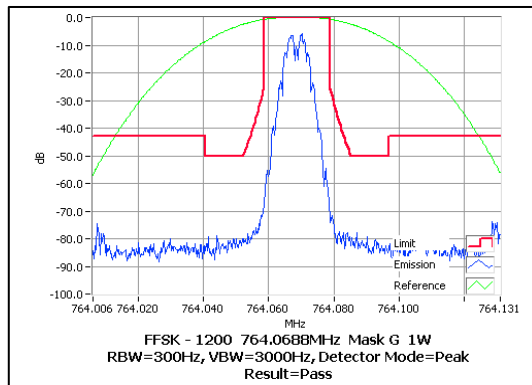
764.06875 MHz

3 W



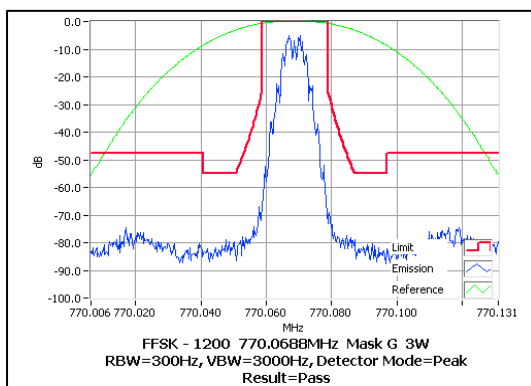
764.06875 MHz

1 W



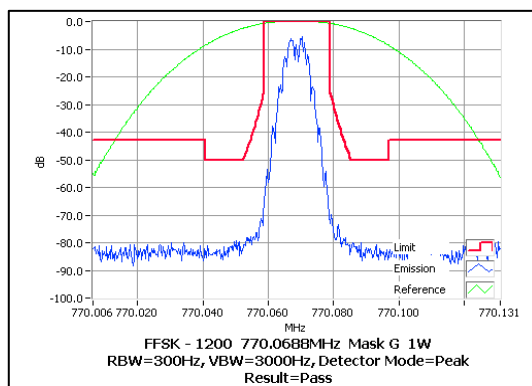
770.06875 MHz

3 W



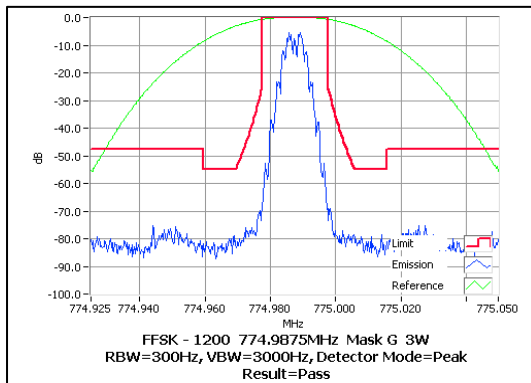
770.06875 MHz

1 W



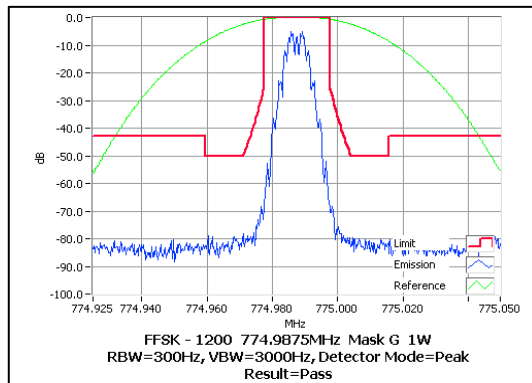
774.98750 MHz

3 W



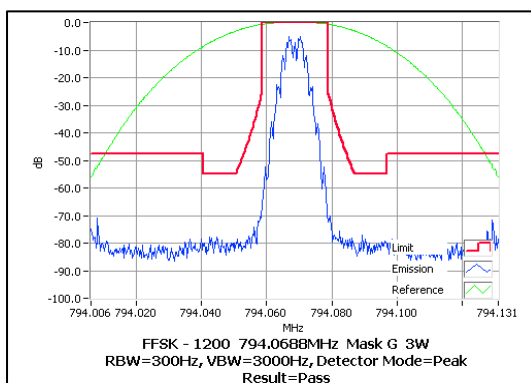
774.98750 MHz

1 W



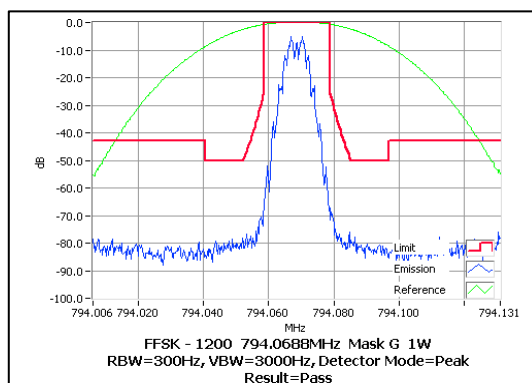
794.06875 MHz

3 W



794.06875 MHz

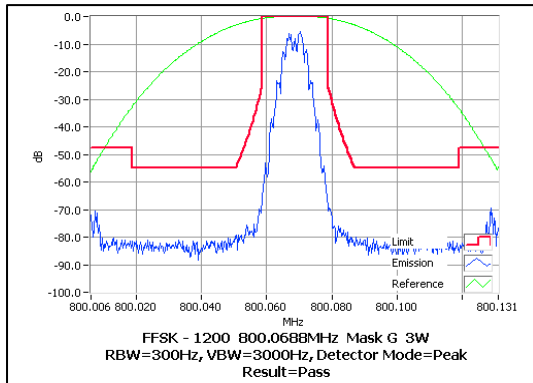
1 W



Occupied Bandwidth and Spectrum Masks – FFSK 1200bps 25.0 kHz Channel Spacing

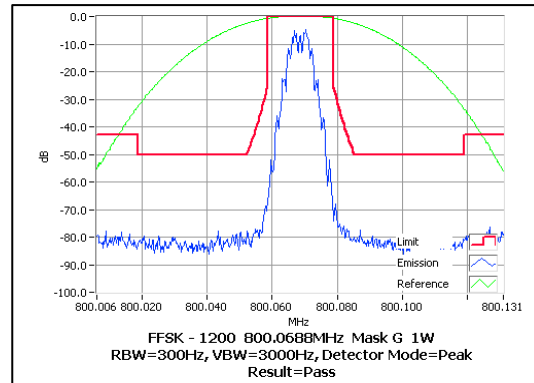
800.06875 MHz

3 W



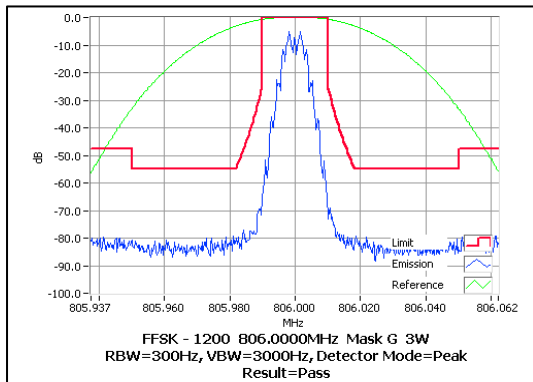
800.06875 MHz

1 W



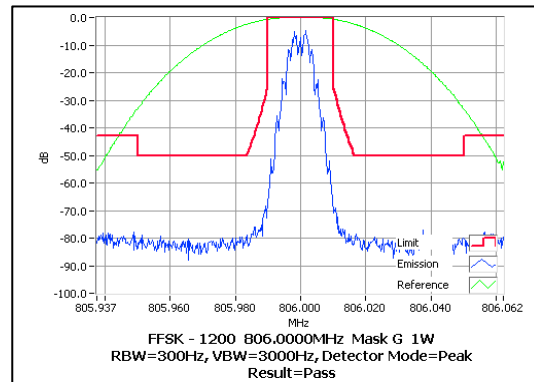
806.00000 MHz

3 W



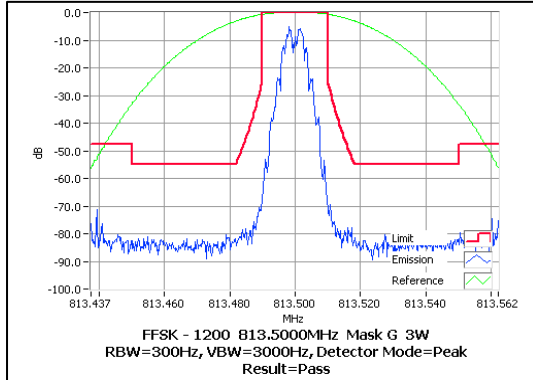
806.00000 MHz

1 W



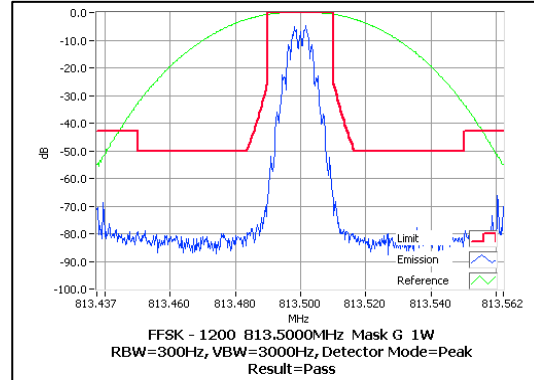
813.50000 MHz

3 W



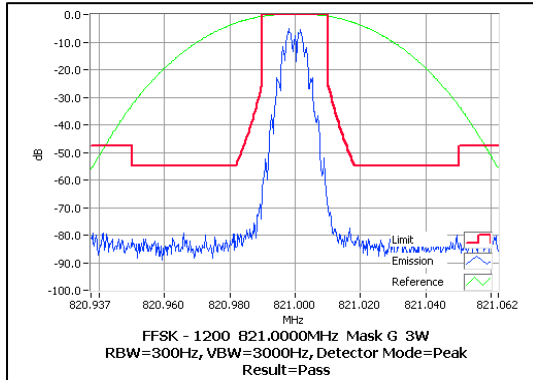
813.50000 MHz

1 W



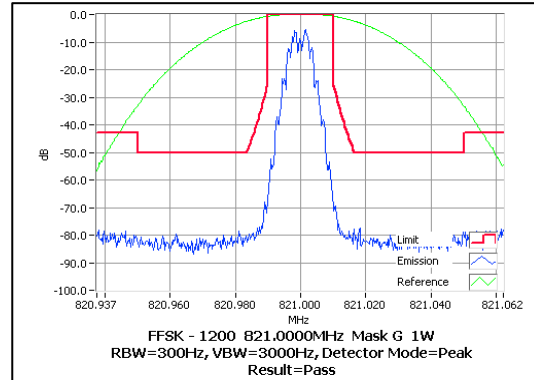
821.00000 MHz

3 W



821.00000 MHz

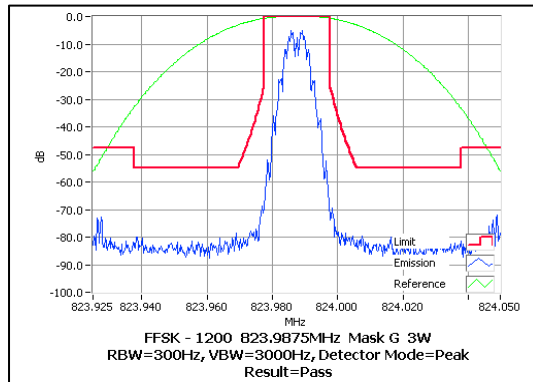
1 W



Occupied Bandwidth and Spectrum Masks – FFSK 1200bps 25.0 kHz Channel Spacing

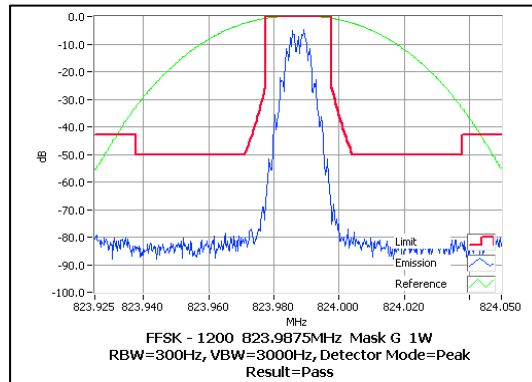
823.98750 MHz

3 W



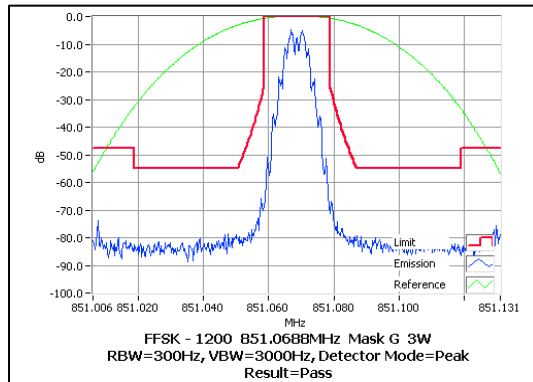
823.98750 MHz

1 W



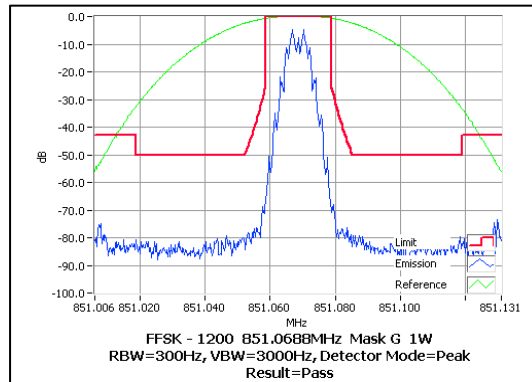
851.06875 MHz

3 W



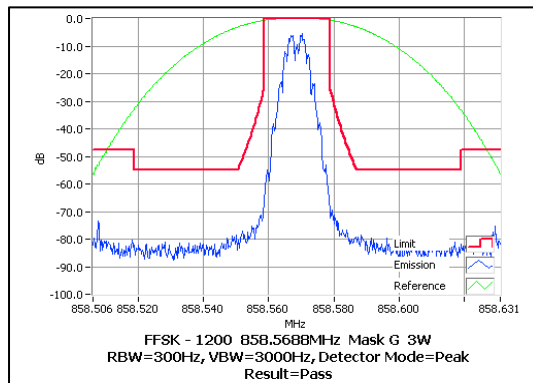
851.06875 MHz

1 W



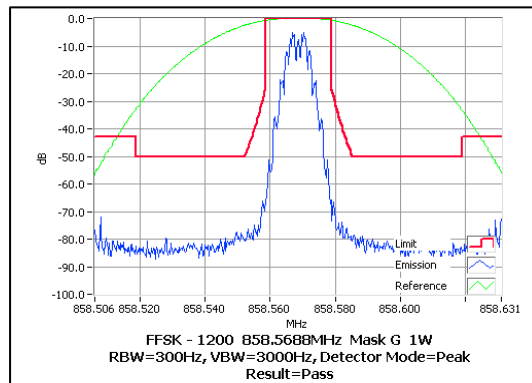
858.56875 MHz

3 W



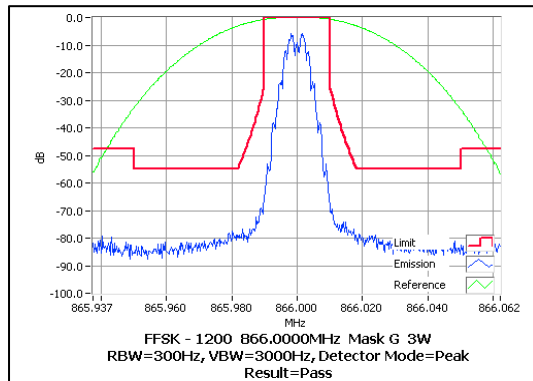
858.56875 MHz

1 W



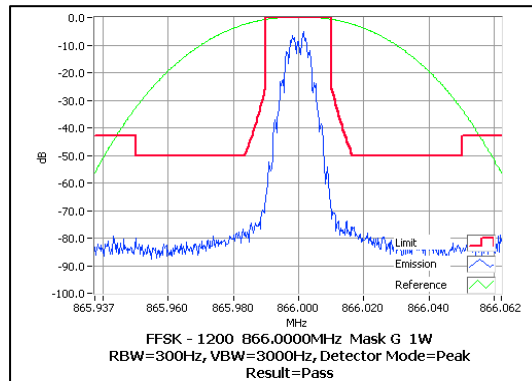
866.00000 MHz

3 W



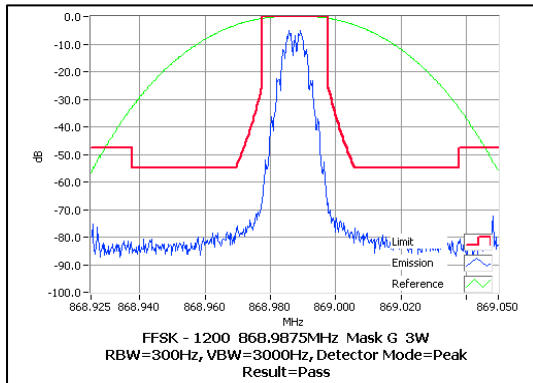
866.00000 MHz

1 W

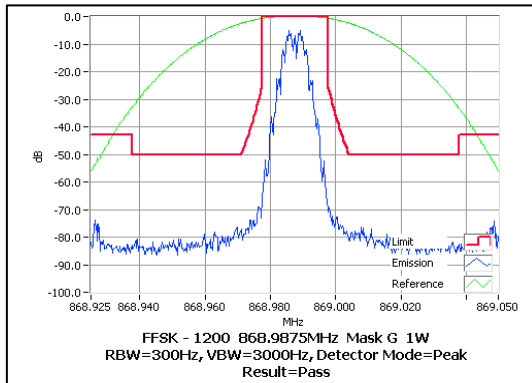


Occupied Bandwidth and Spectrum Masks – FFSK 1200bps 25.0 kHz Channel Spacing

868.98750 MHz 3 W



868.98750 MHz 1 W

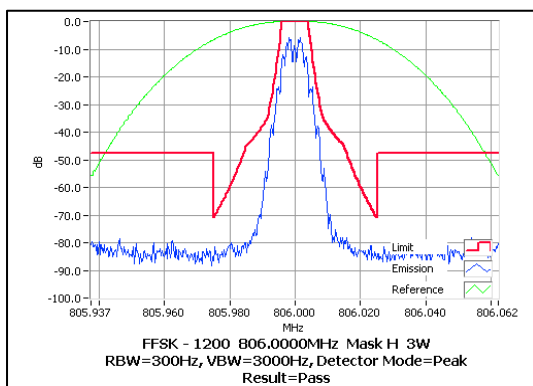


Occupied Bandwidth and Spectrum Masks – FFSK 1200bps 25.0 kHz Channel Spacing

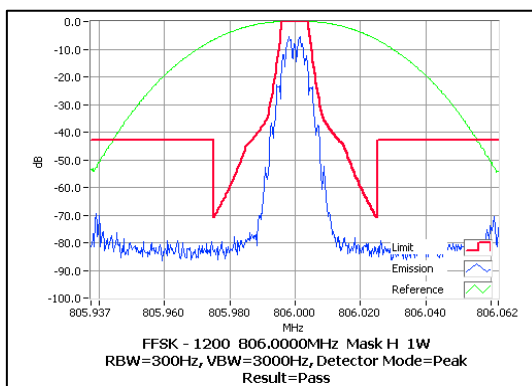
FCC 90.210 806-809 / 851-854 MHz

Mask H

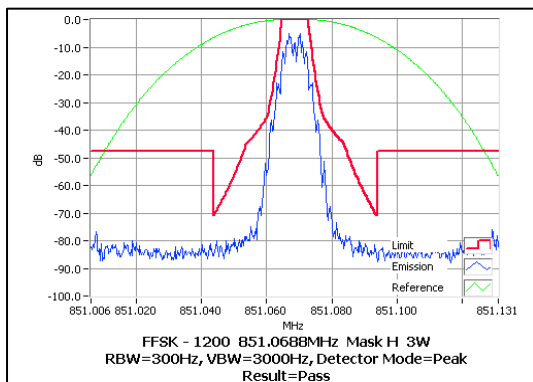
806.00000 MHz 3 W



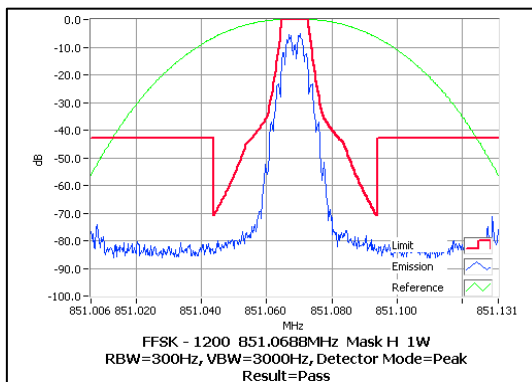
806.00000 MHz 1 W



851.06875 MHz 3 W



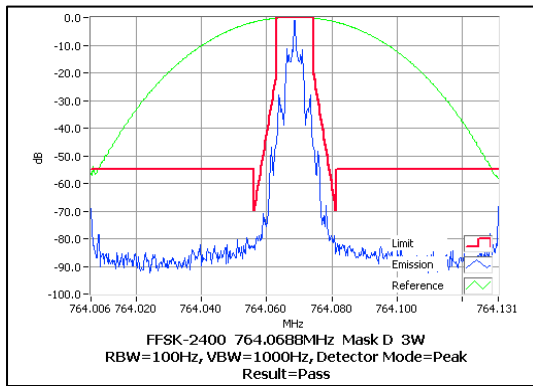
851.06875 MHz 1 W



Occupied Bandwidth and Spectrum Masks – FFSK 2400bps 12.5 kHz Channel Spacing

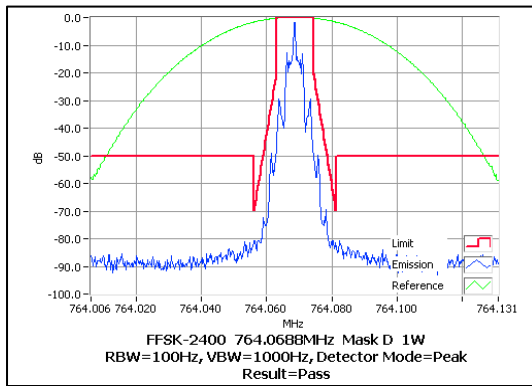
764.06875 MHz

3 W



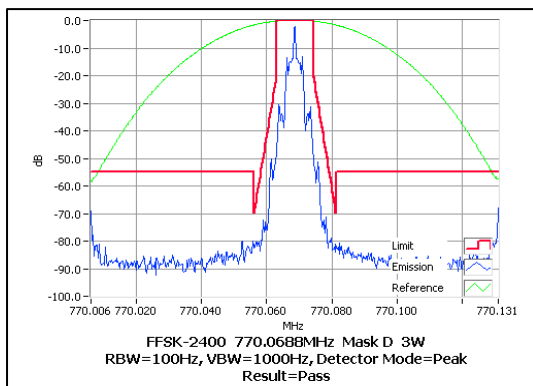
764.06875 MHz

1 W



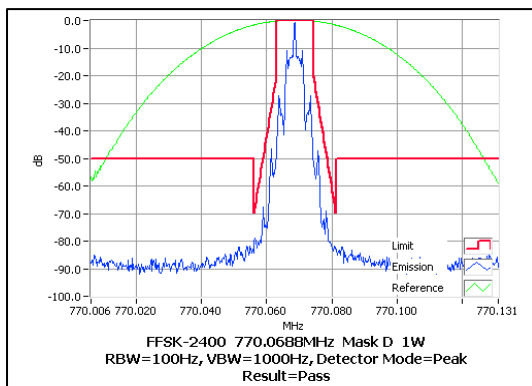
770.06875 MHz

3 W



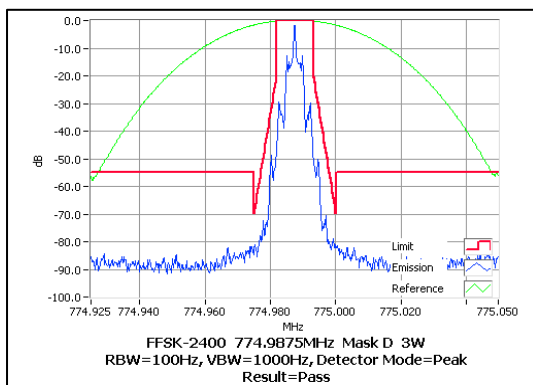
770.06875 MHz

1 W



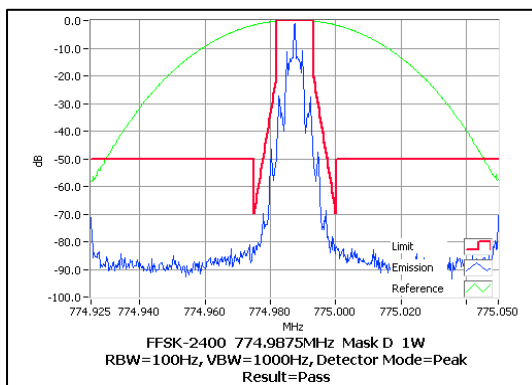
774.98750 MHz

3 W



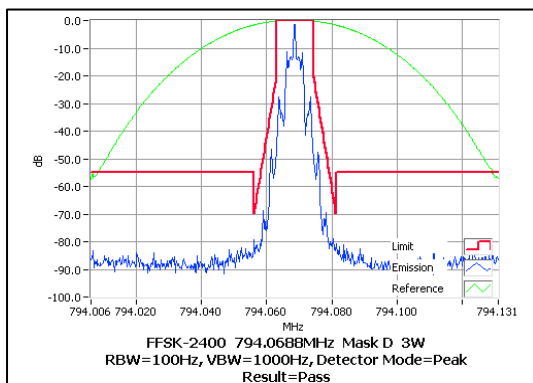
774.98750 MHz

1 W



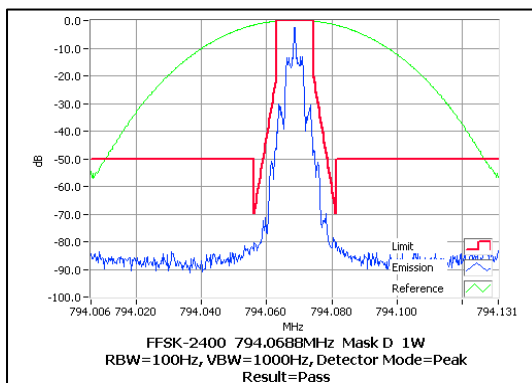
794.06875 MHz

3 W



794.06875 MHz

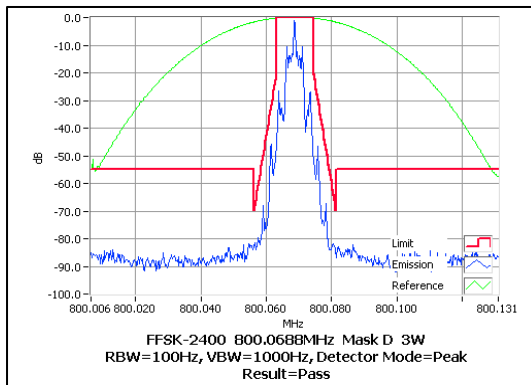
1 W



Occupied Bandwidth and Spectrum Masks – FFSK 2400bps 12.5 kHz Channel Spacing

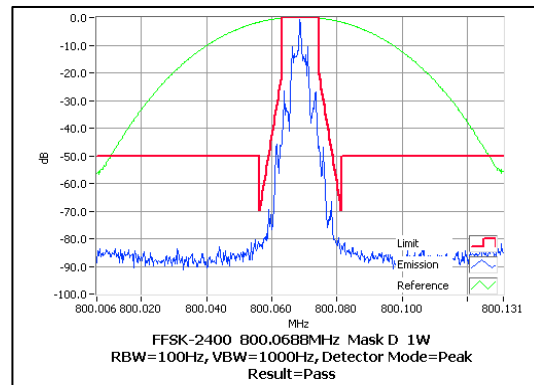
800.06875 MHz

3 W



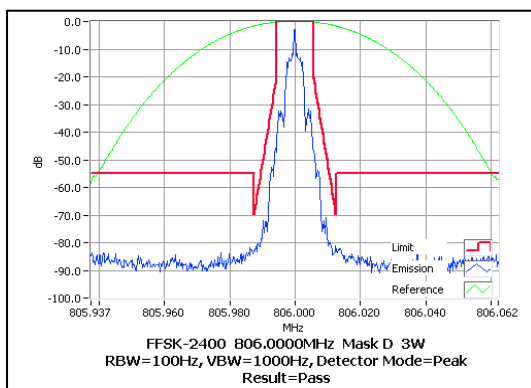
800.06875 MHz

1 W



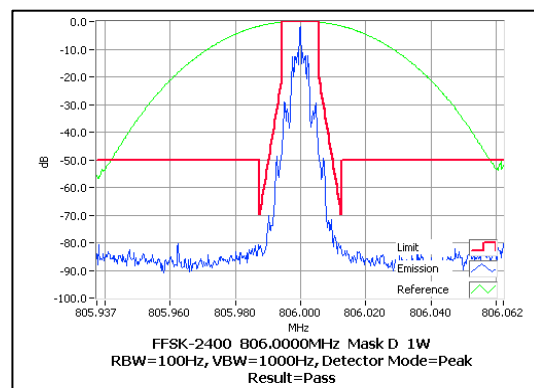
806.00000 MHz

3 W



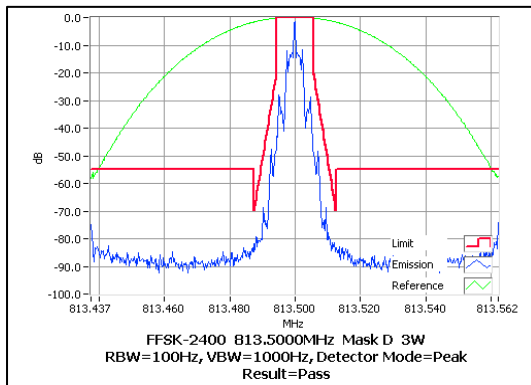
806.00000 MHz

1 W



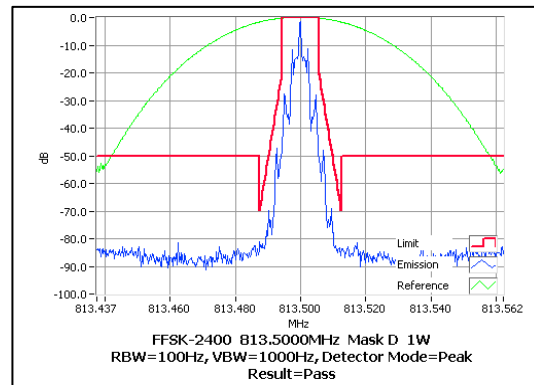
813.50000 MHz

3 W



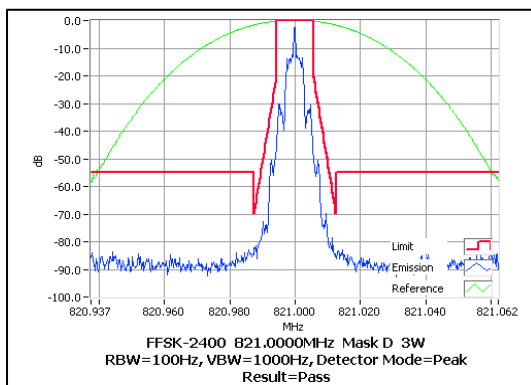
813.50000 MHz

1 W



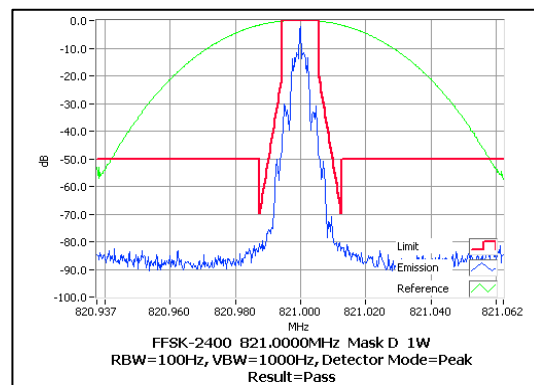
821.00000 MHz

3 W



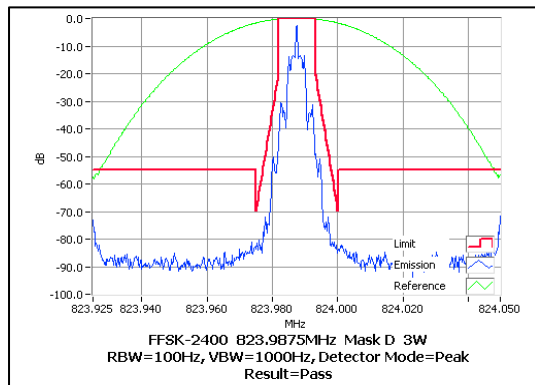
821.00000 MHz

1 W

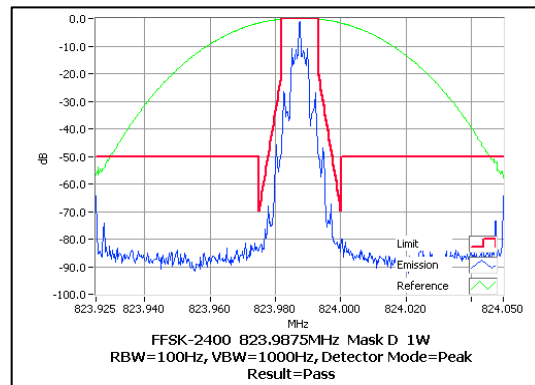


Occupied Bandwidth and Spectrum Masks – FFSK 2400bps 12.5 kHz Channel Spacing

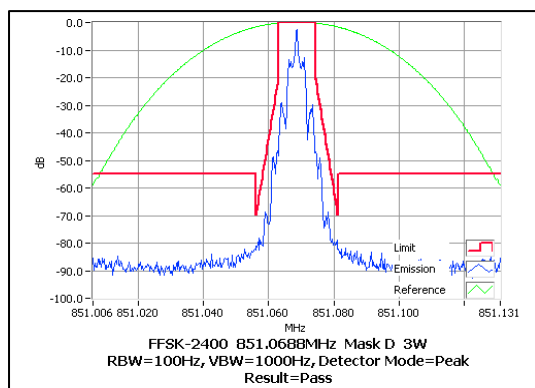
823.98750 MHz 3 W



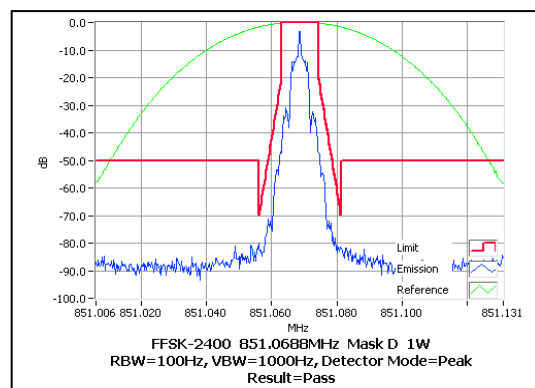
823.98750 MHz 1 W



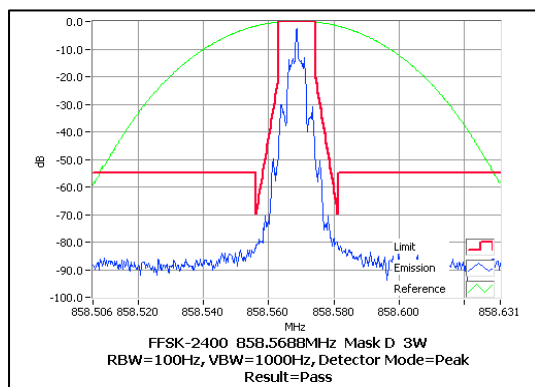
851.06875 MHz 3 W



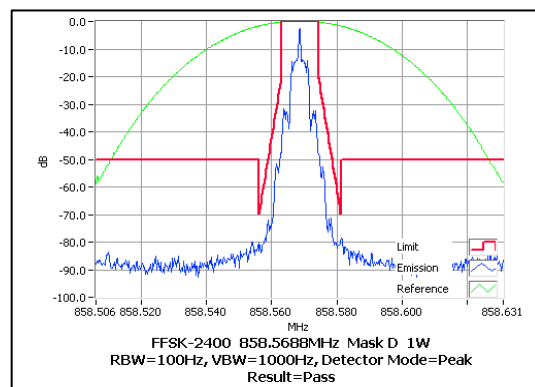
851.06875 MHz 1 W



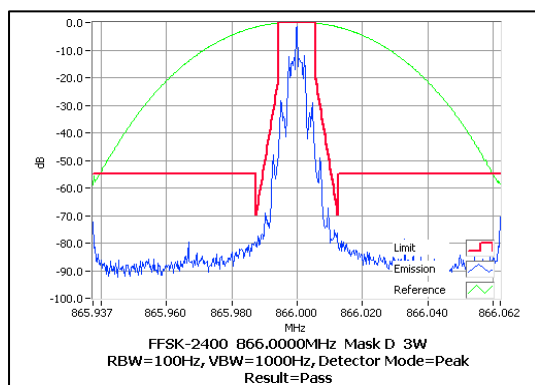
858.56875 MHz 3 W



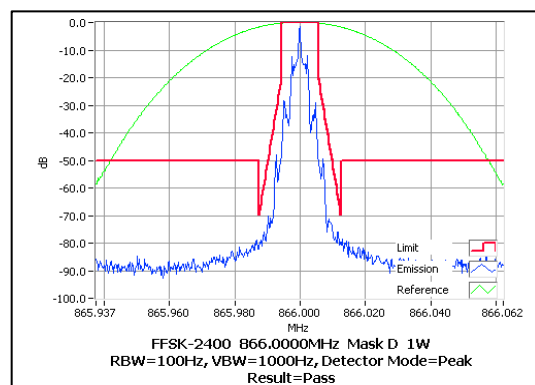
858.56875 MHz 1 W



866.00000 MHz 3 W

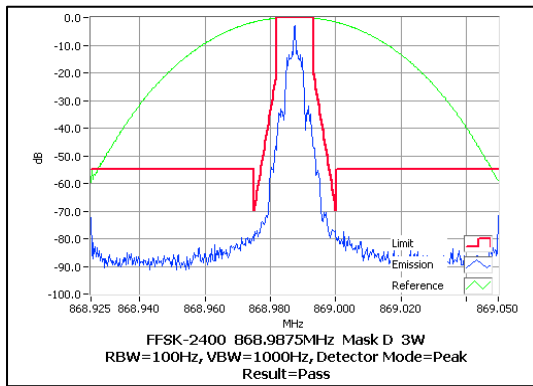


866.00000 MHz 1 W

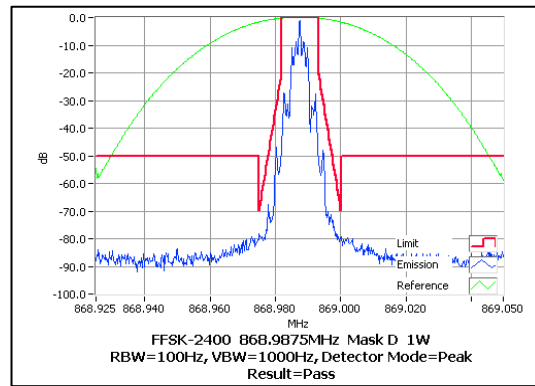


Occupied Bandwidth and Spectrum Masks – FFSK 2400bps 12.5 kHz Channel Spacing

868.98750 MHz 3 W



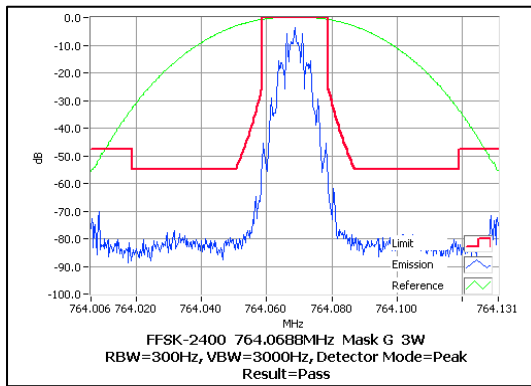
868.98750 MHz 1 W



Occupied Bandwidth and Spectrum Masks – FFSK 2400bps 25.0 kHz Channel Spacing

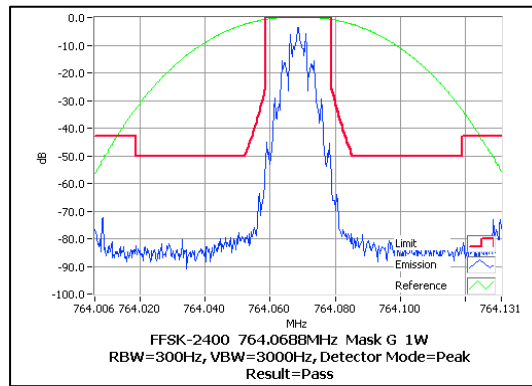
764.06875 MHz

3 W



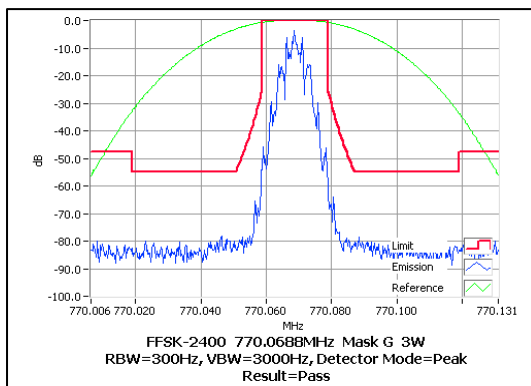
764.06875 MHz

1 W



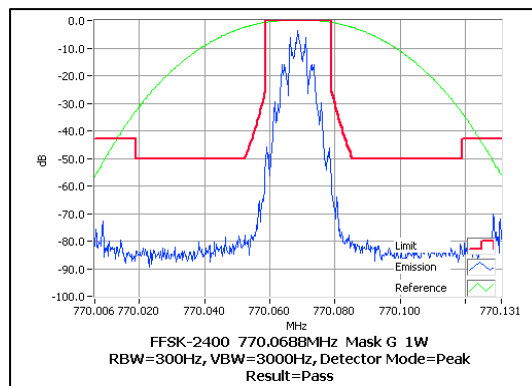
770.06875 MHz

3 W



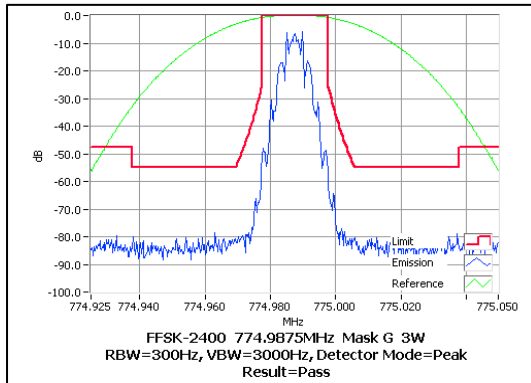
770.06875 MHz

1 W



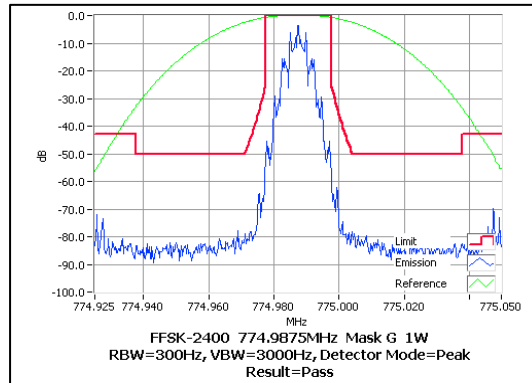
774.98750 MHz

3 W



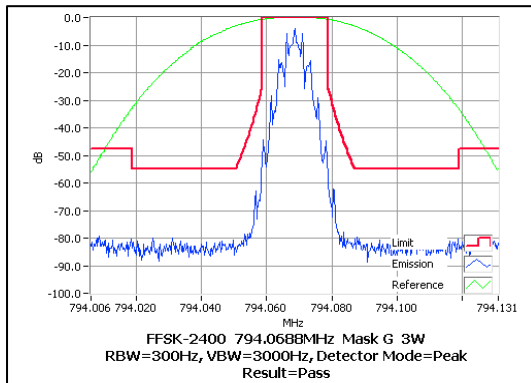
774.98750 MHz

1 W



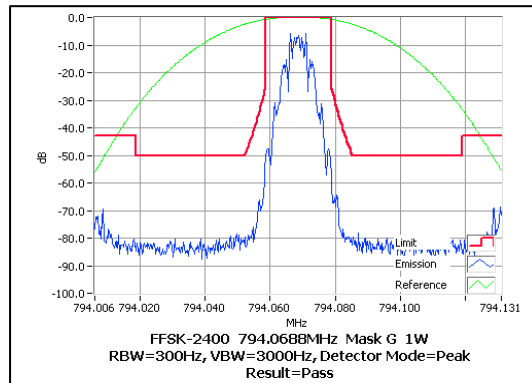
794.06875 MHz

3 W



794.06875 MHz

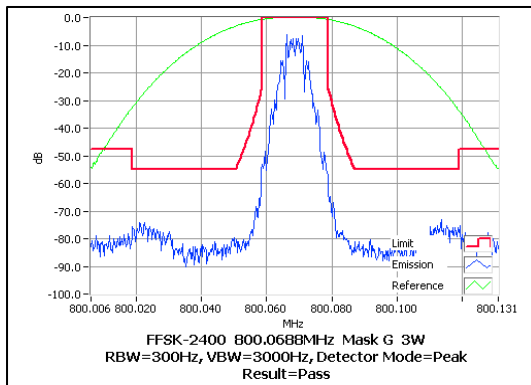
1 W



Occupied Bandwidth and Spectrum Masks – FFSK 2400bps 25.0 kHz Channel Spacing

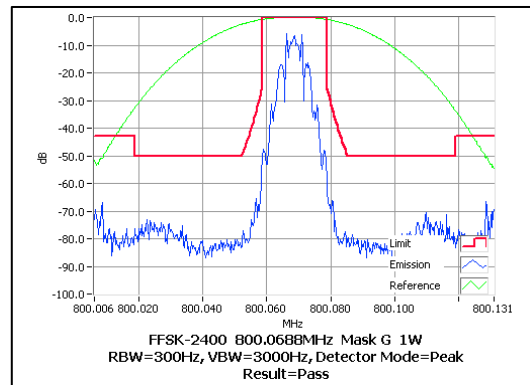
800.06875 MHz

3 W



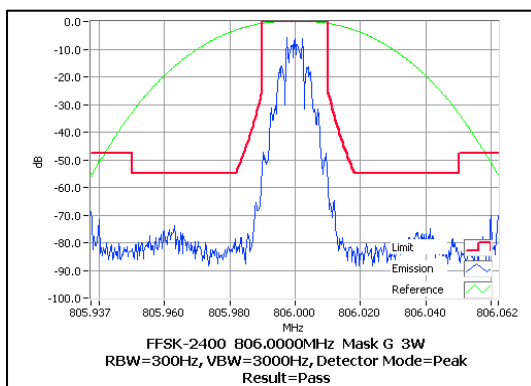
800.06875 MHz

1 W



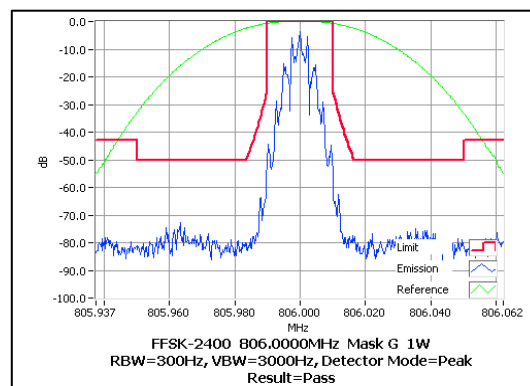
806.00000 MHz

3 W



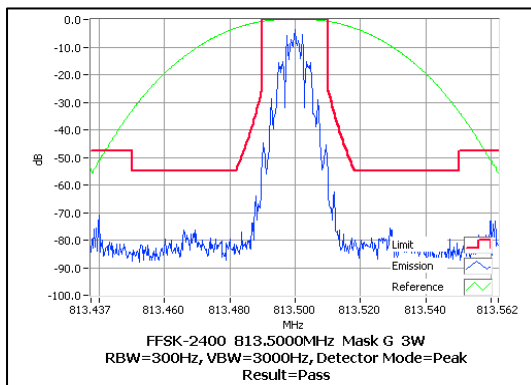
806.00000 MHz

1 W



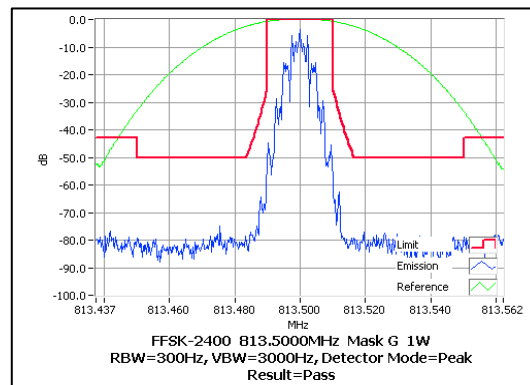
813.50000 MHz

3 W



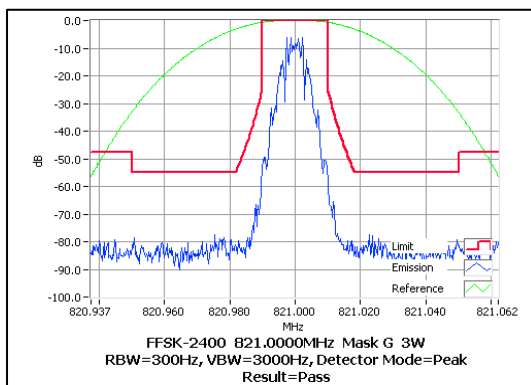
813.50000 MHz

1 W



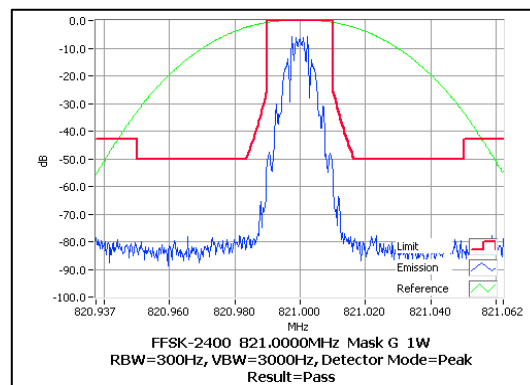
821.00000 MHz

3 W

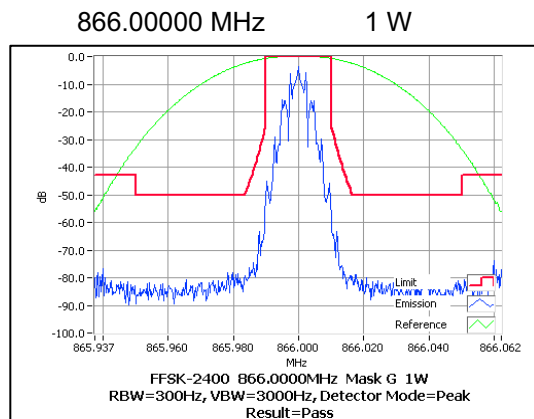
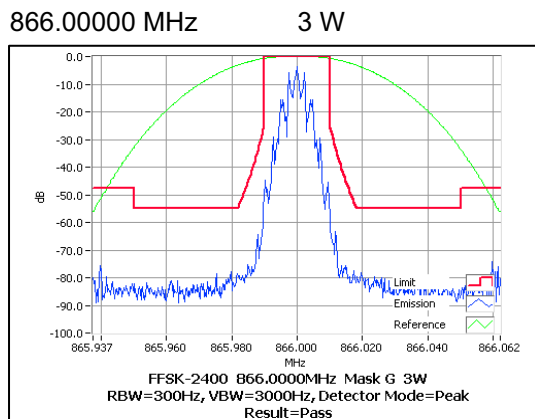
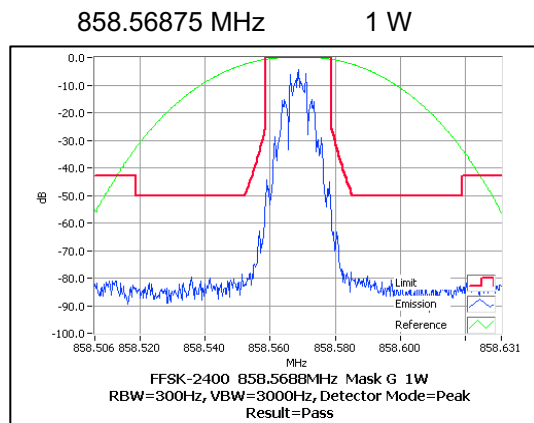
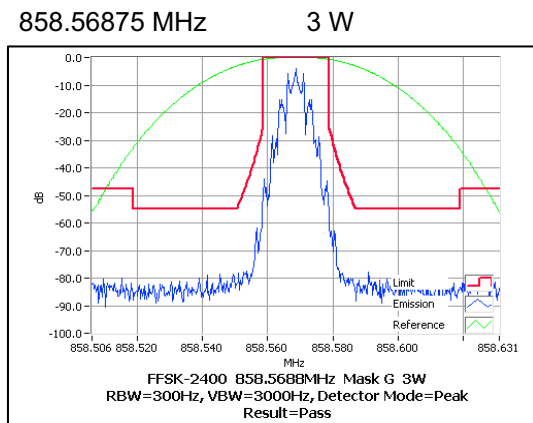
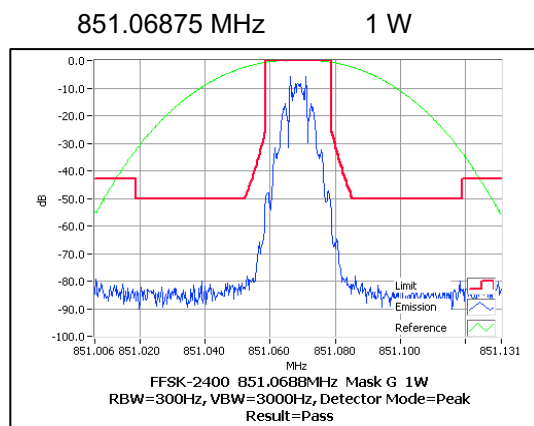
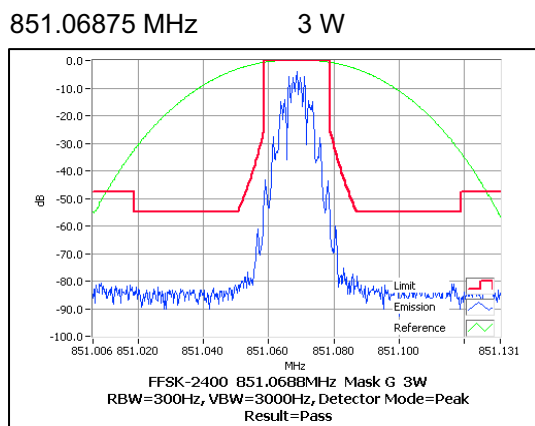
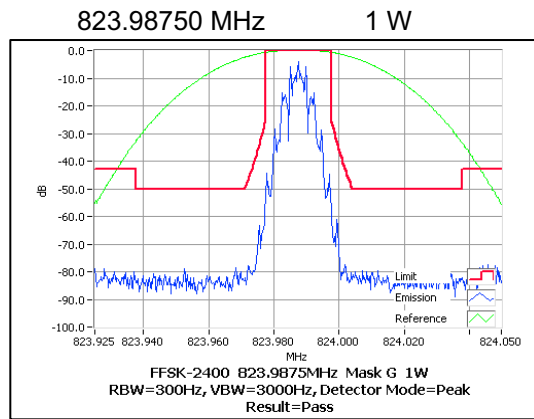
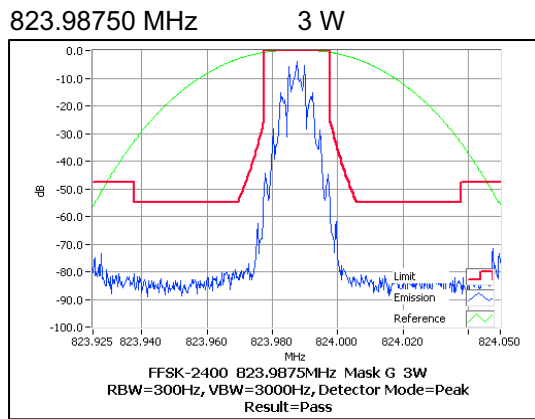


821.00000 MHz

1 W



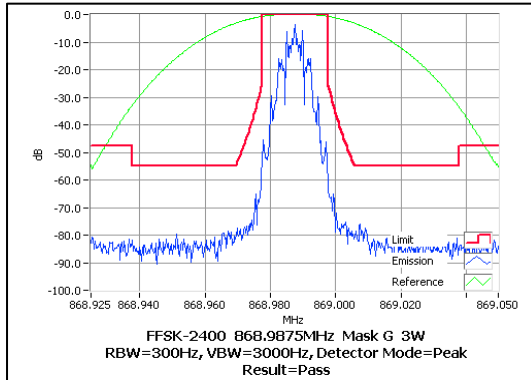
Occupied Bandwidth and Spectrum Masks – FFSK 2400bps 25.0 kHz Channel Spacing



Occupied Bandwidth and Spectrum Masks – FFSK 2400bps 25.0 kHz Channel Spacing

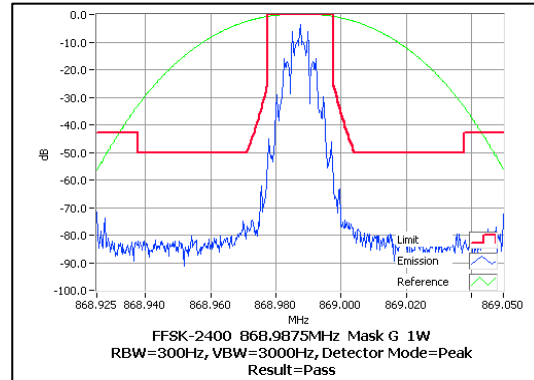
868.98750 MHz

3 W



868.98750 MHz

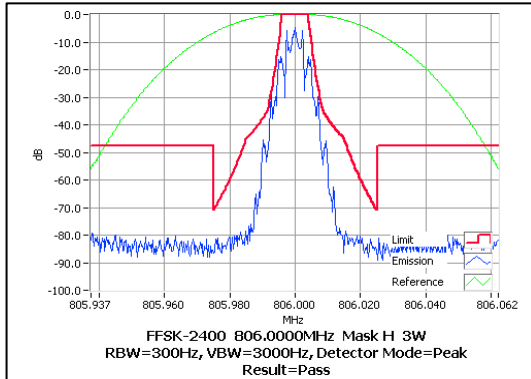
1 W



Occupied Bandwidth and Spectrum Masks – FFSK 2400bps 25 kHz Channel Spacing
FCC 90.210 806-809 / 851-854 MHz Mask H

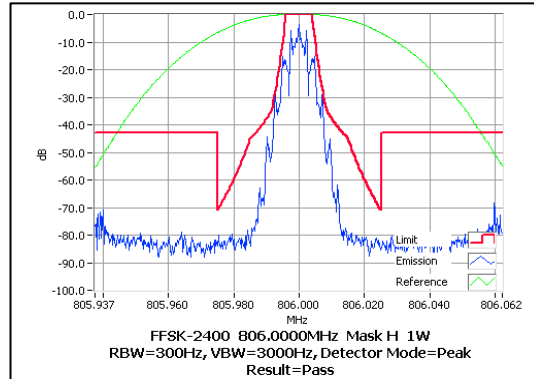
806.00000 MHz

3 W



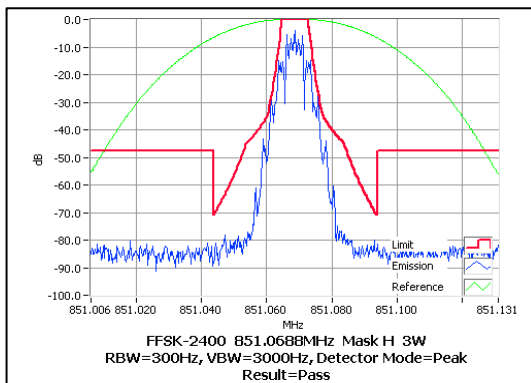
806.00000

1W



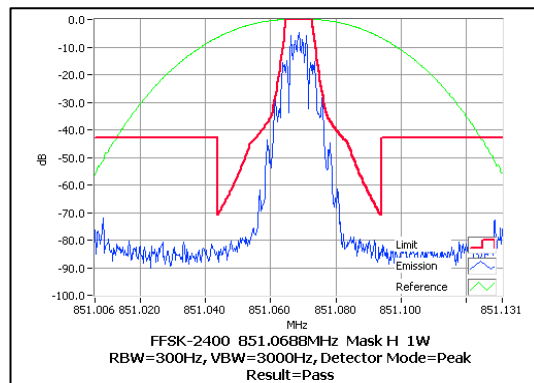
851.06875 MHz

3 W



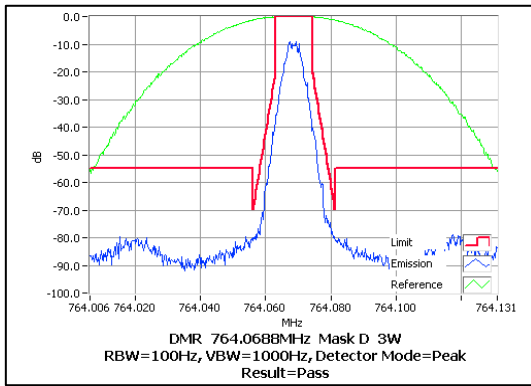
851.06875

1W

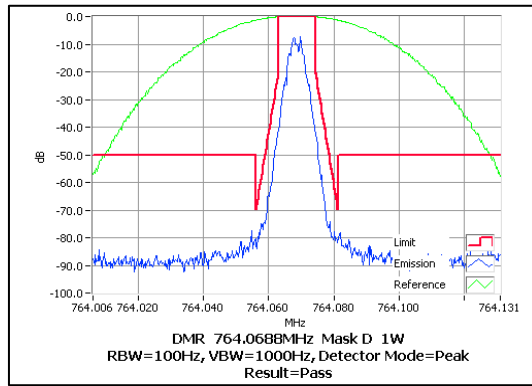


Occupied Bandwidth and Spectrum Masks - DMR 12.5 kHz Channel Spacing

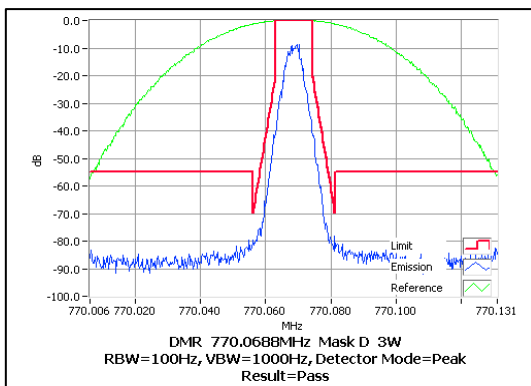
764.06875 MHz 3 W



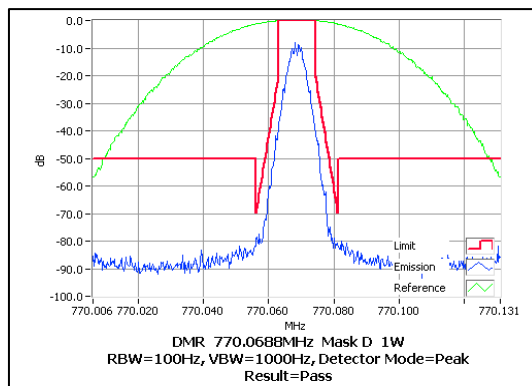
764.06875 MHz 1 W



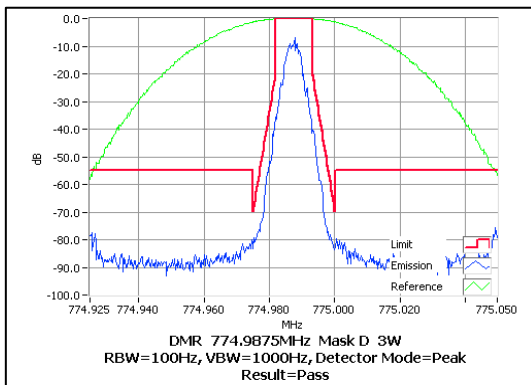
770.06875 MHz 3 W



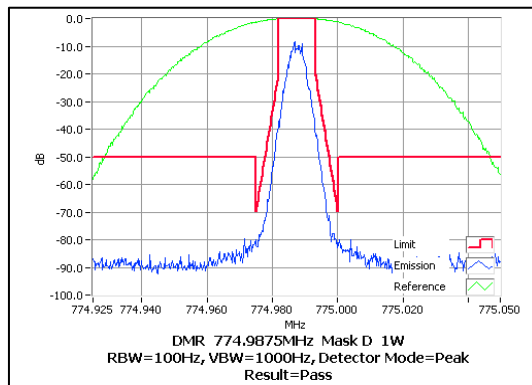
770.06875 MHz 1 W



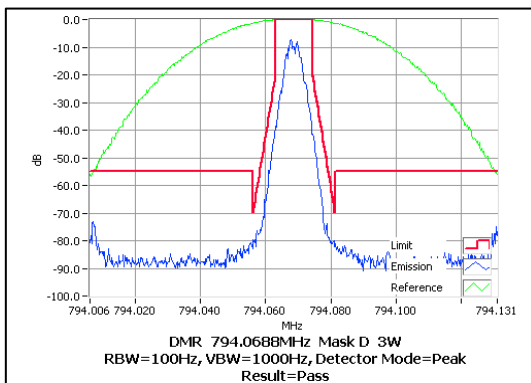
774.98750 MHz 3 W



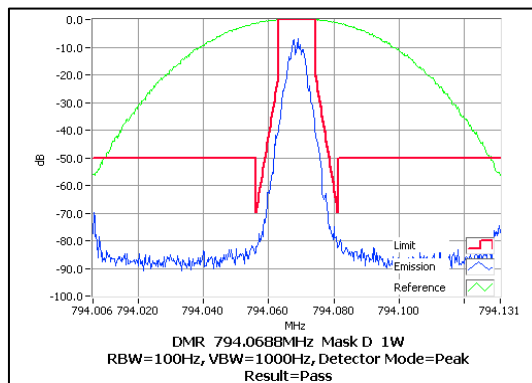
774.98750 MHz 1 W



794.06875 MHz 3 W



794.06875 MHz 1 W

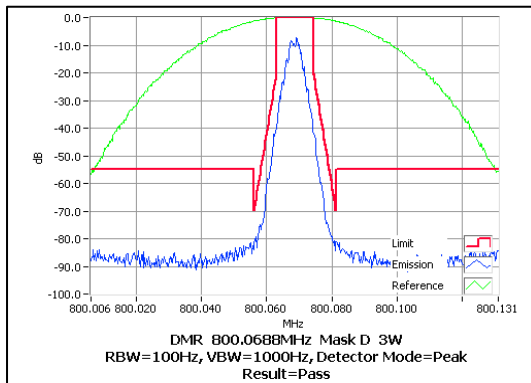


Occupied Bandwidth and Spectrum Masks - DMR

12.5 kHz Channel Spacing

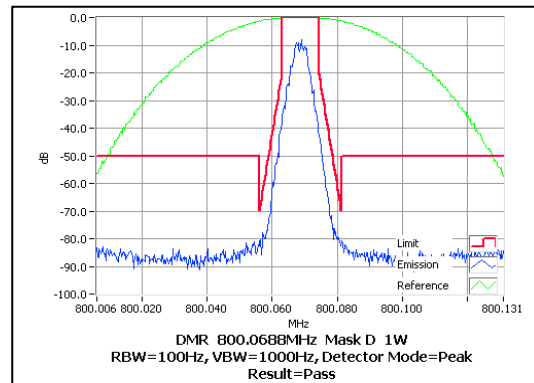
800.06875 MHz

3 W



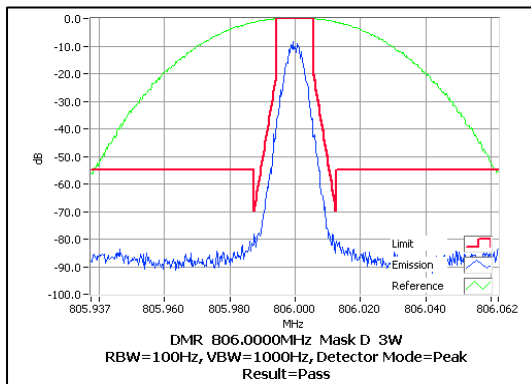
800.06875 MHz

1 W



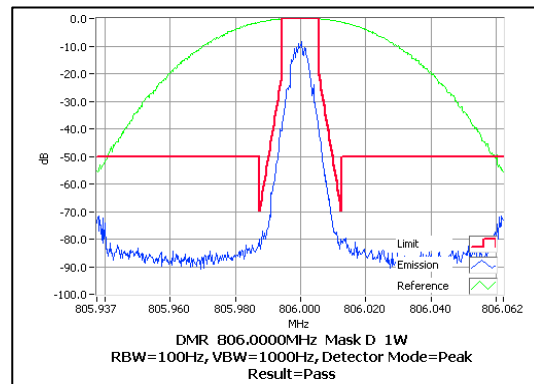
806.00000 MHz

3 W



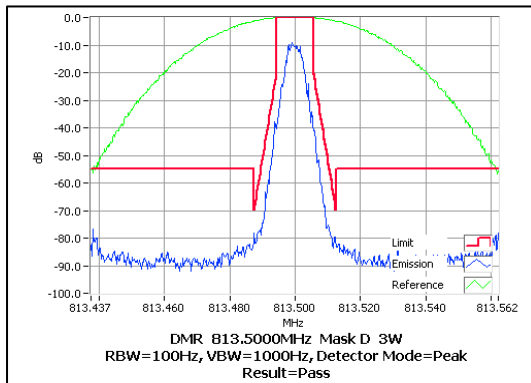
806.00000 MHz

1 W



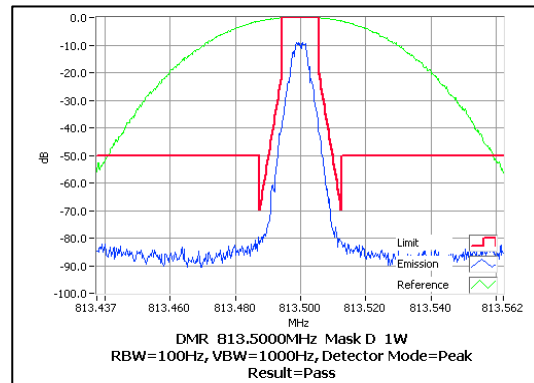
813.50000 MHz

3 W



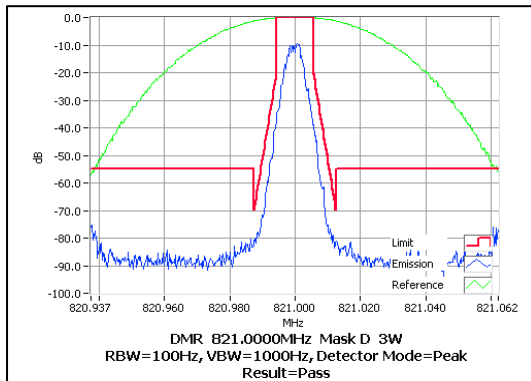
813.50000 MHz

1 W



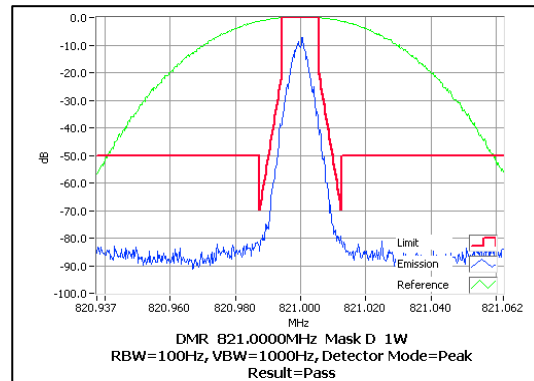
821.00000 MHz

3 W



821.00000 MHz

1 W

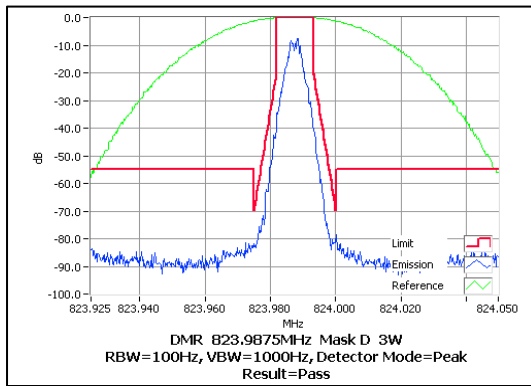


Occupied Bandwidth and Spectrum Masks - DMR

12.5 kHz Channel Spacing

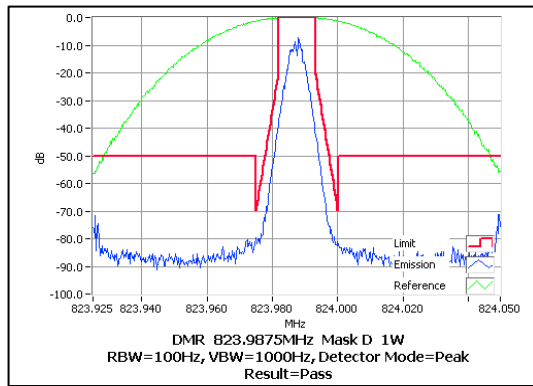
823.98750 MHz

3 W



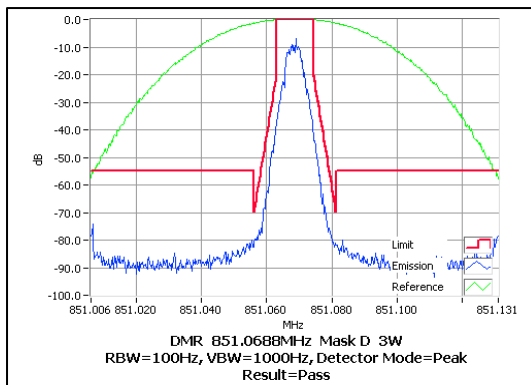
823.98750 MHz

1 W



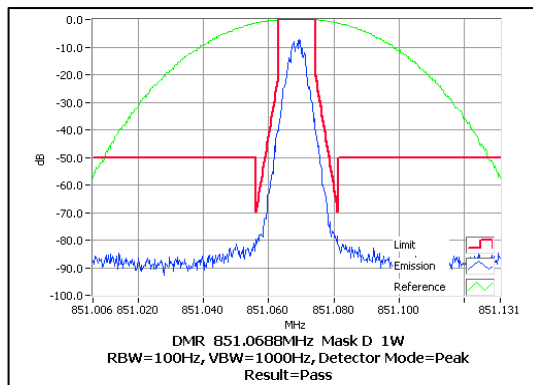
851.06875 MHz

3 W



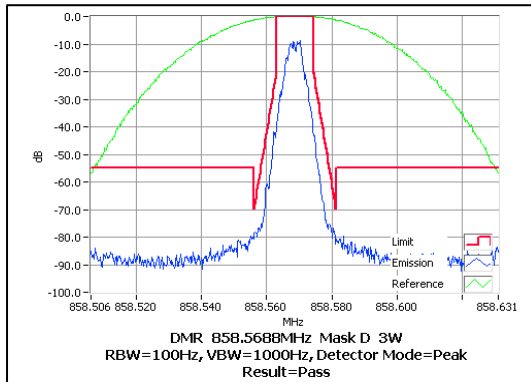
851.06875 MHz

1 W



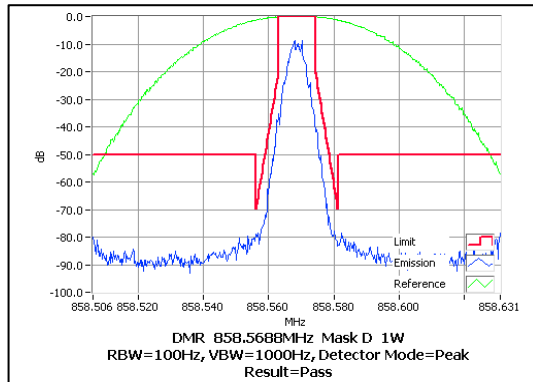
858.56875 MHz

3 W



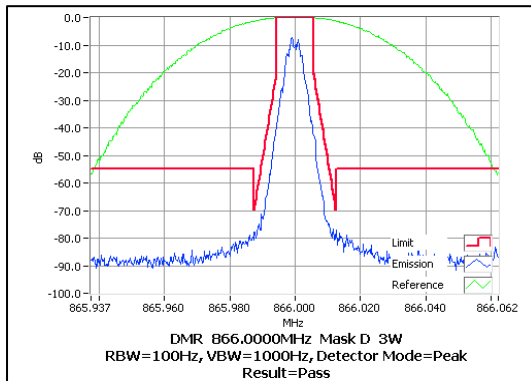
858.56875 MHz

1 W



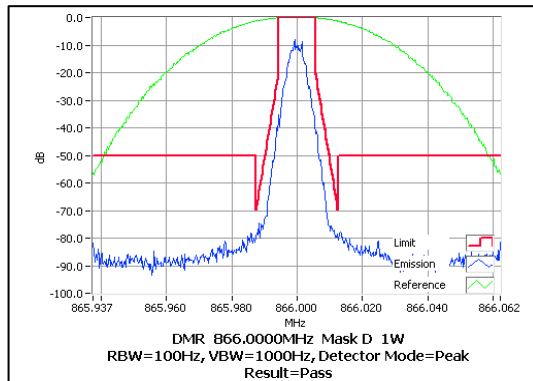
866.00000 MHz

3 W



866.00000 MHz

1 W

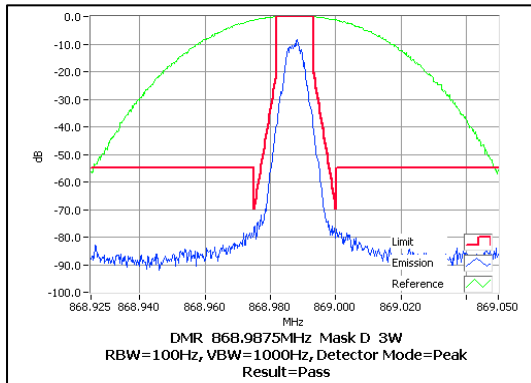


Occupied Bandwidth and Spectrum Masks - DMR

12.5 kHz Channel Spacing

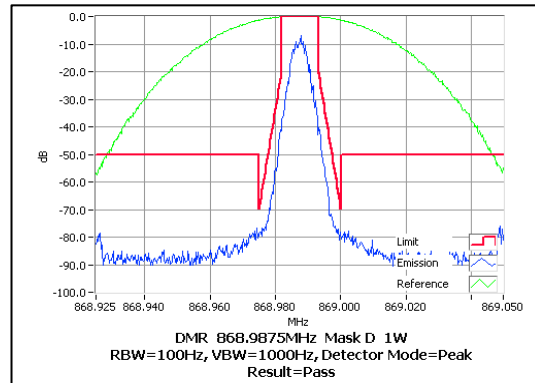
868.98750 MHz

3 W



868.98750 MHz

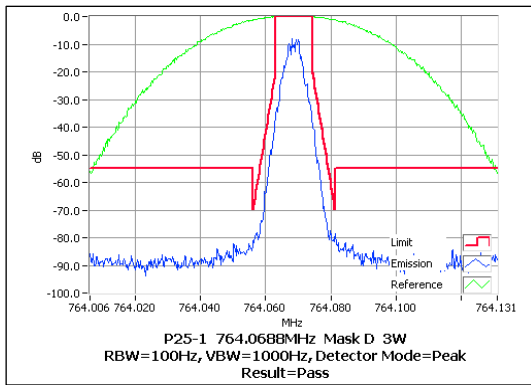
1 W



Occupied Bandwidth and Spectrum Masks – P25 Phase-1 12.5 kHz Channel Spacing

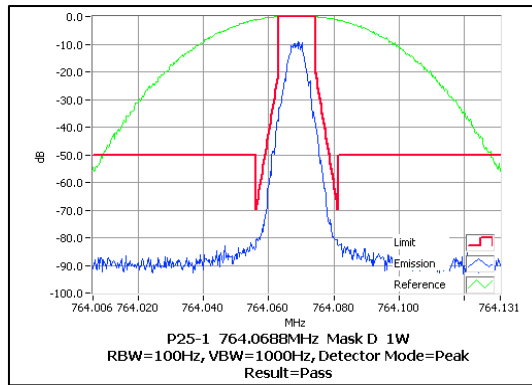
764.06875 MHz

3 W



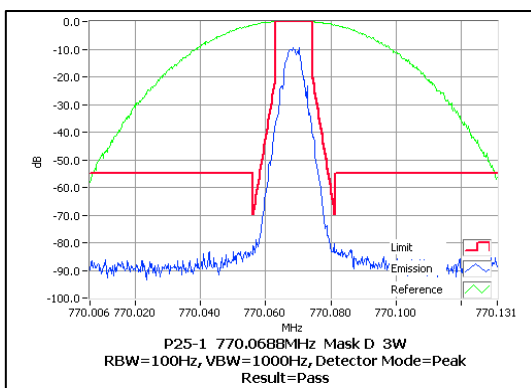
764.06875 MHz

1 W



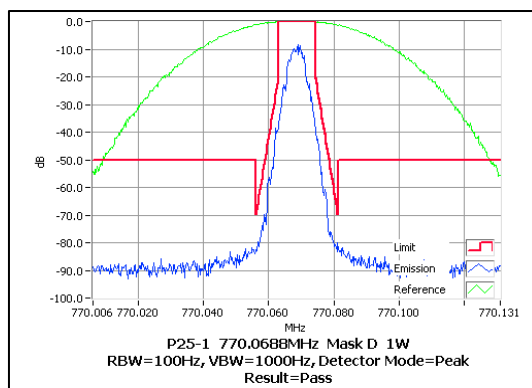
770.06875 MHz

3 W



770.06875 MHz

1 W

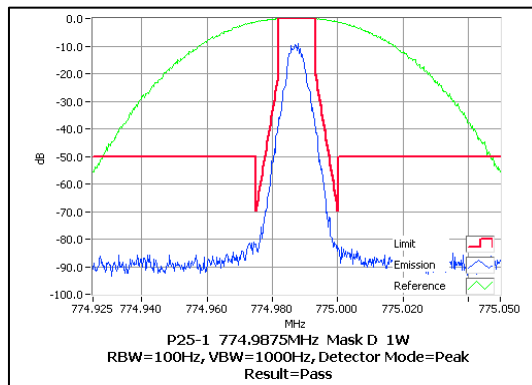


774.98750 MHz

Itinerant Channel - no 3W setting.

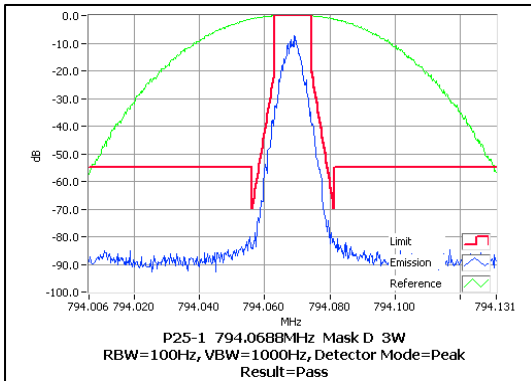
774.98750 MHz

1 W



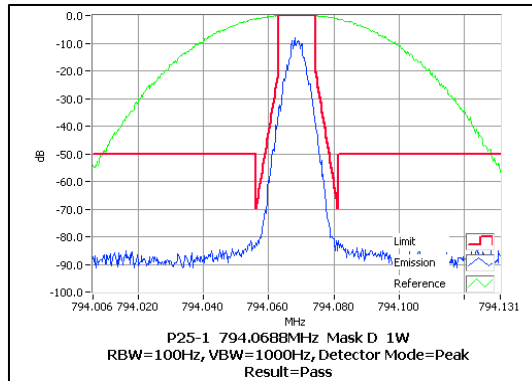
794.06875 MHz

3 W



794.06875 MHz

1 W

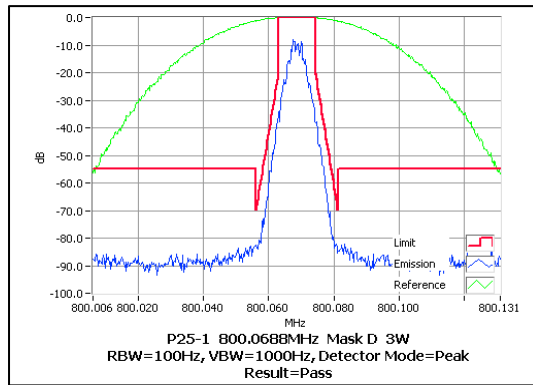


Occupied Bandwidth and Spectrum Masks – P25 Phase-1

12.5 kHz Channel Spacing

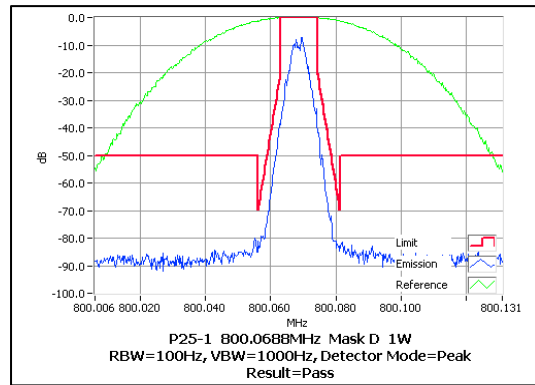
800.06875 MHz

3 W



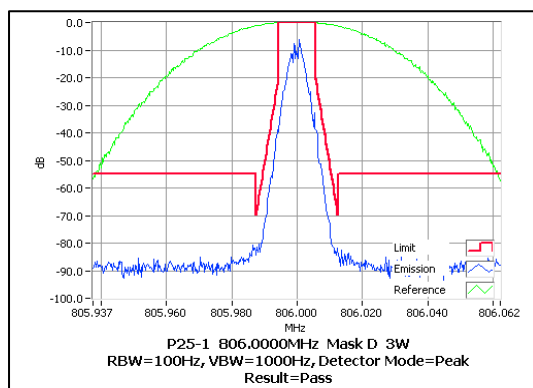
800.06875 MHz

1 W



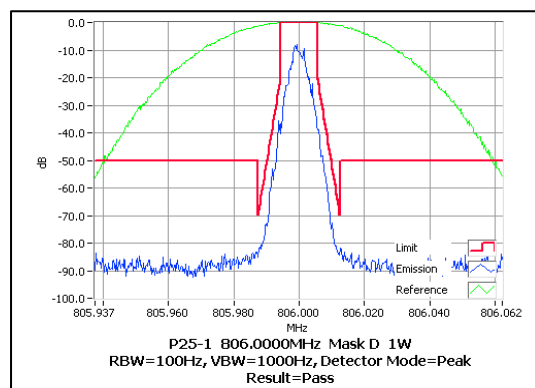
806.00000 MHz

3 W



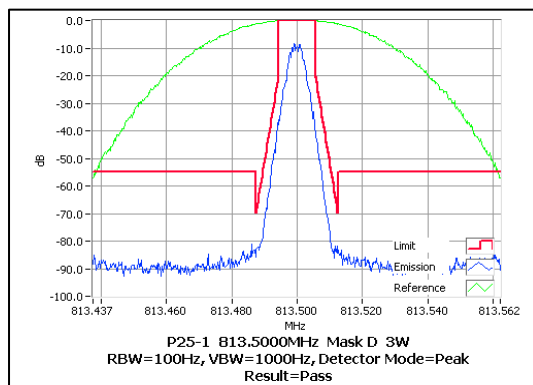
806.00000 MHz

1 W



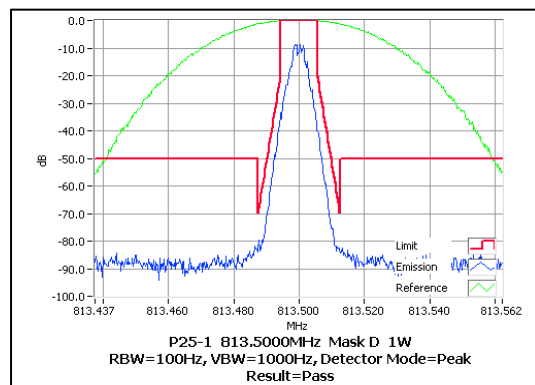
813.50000 MHz

3 W



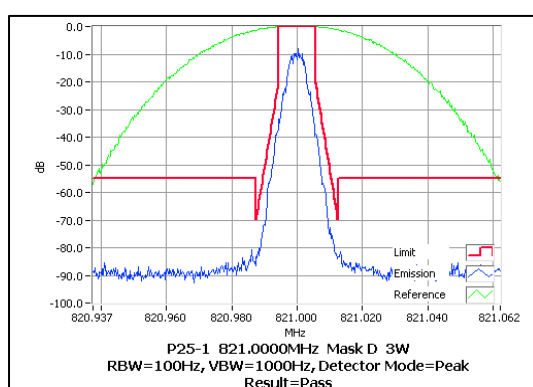
813.50000 MHz

1 W



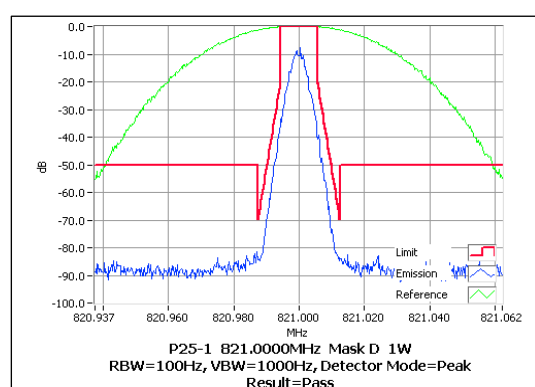
821.00000 MHz

3 W



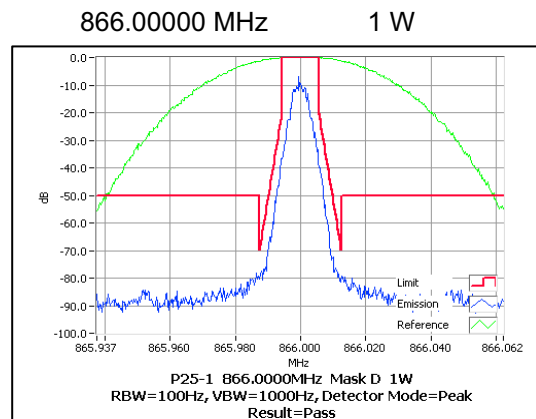
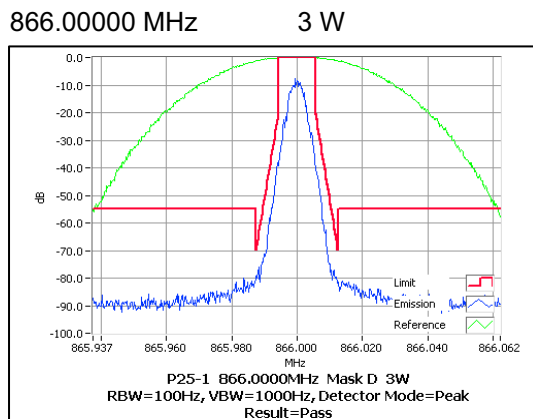
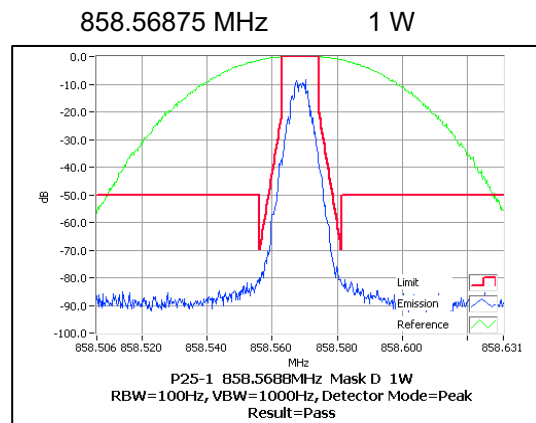
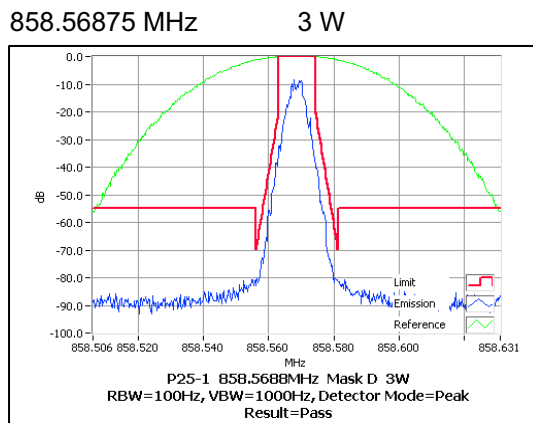
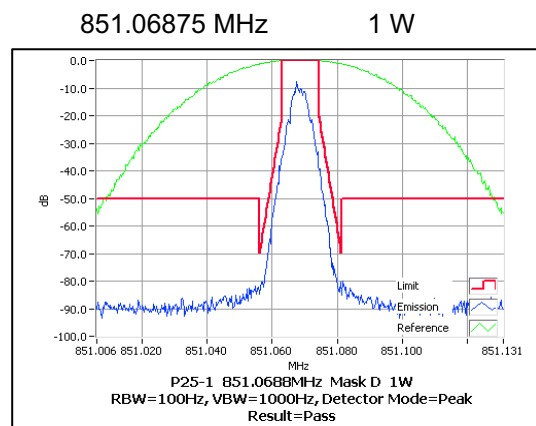
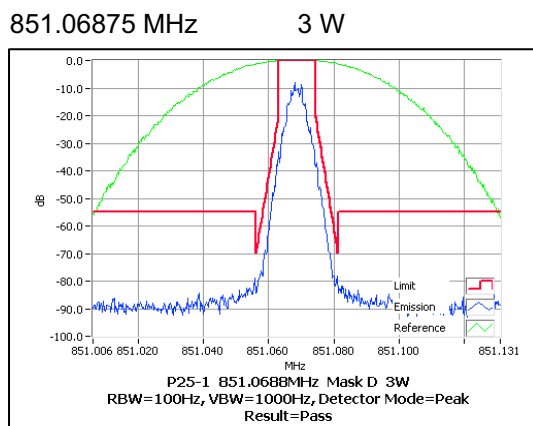
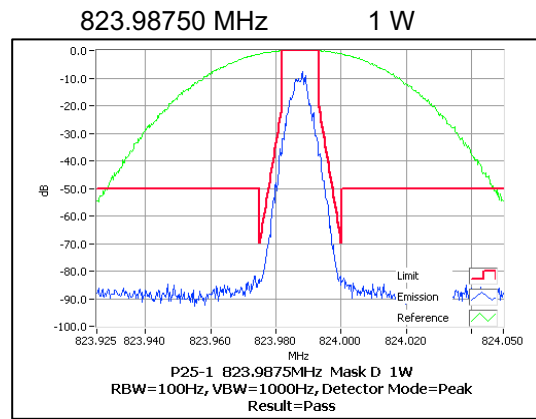
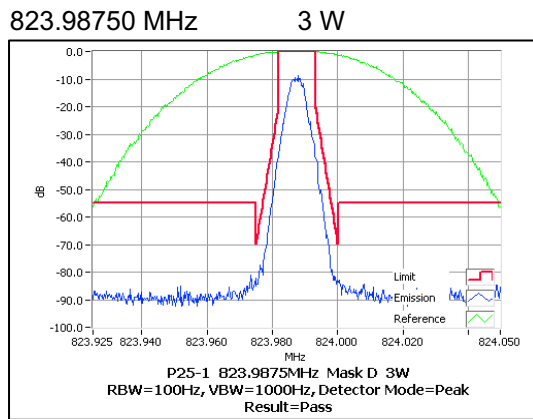
821.00000 MHz

1 W



Occupied Bandwidth and Spectrum Masks – P25 Phase-1

12.5 kHz Channel Spacing

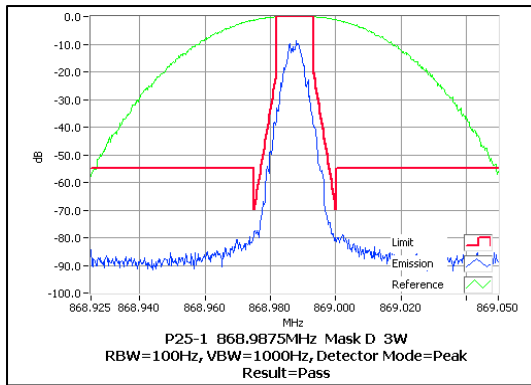


Occupied Bandwidth and Spectrum Masks – P25 Phase-1

12.5 kHz Channel Spacing

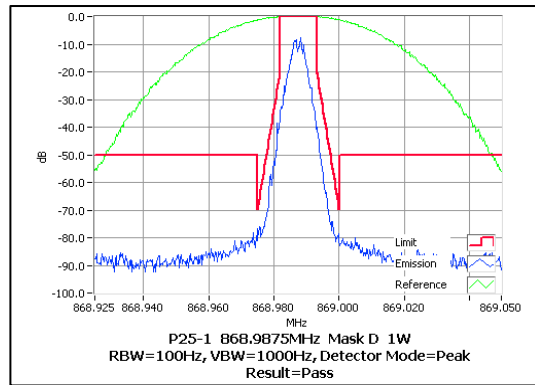
868.98750 MHz

3 W



868.98750 MHz

1 W

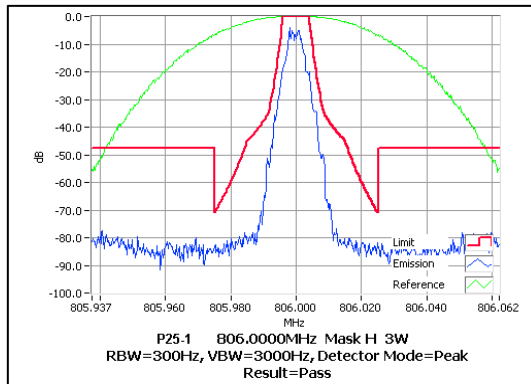


Occupied Bandwidth and Spectrum Masks – P25 Phase-1
FCC 90.210 806-809 / 851-854 MHz

12.5 kHz Channel Spacing
Mask H

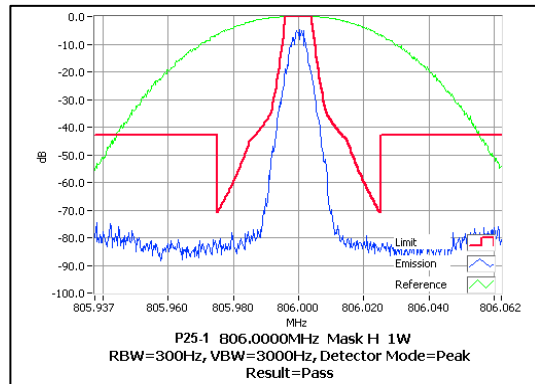
806.00000 MHz

3 W



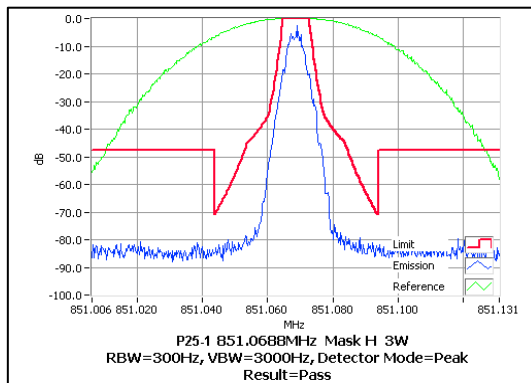
806.00000

1W



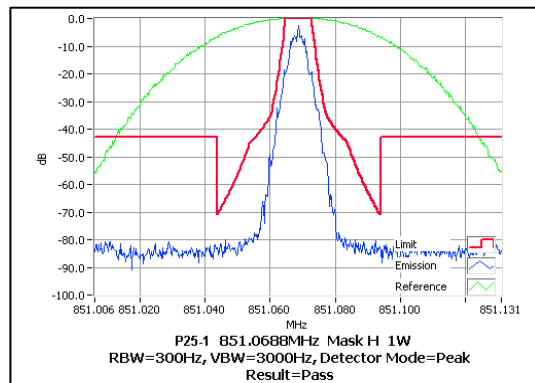
851.06875 MHz

3 W



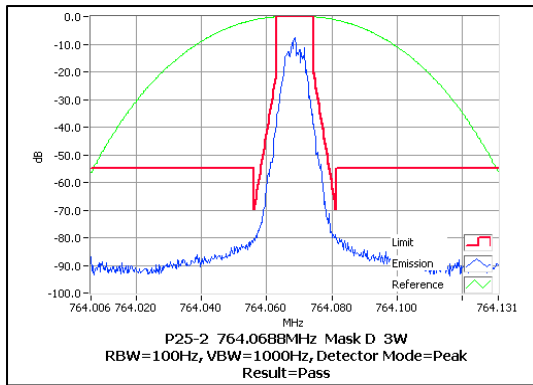
851.06875

1W

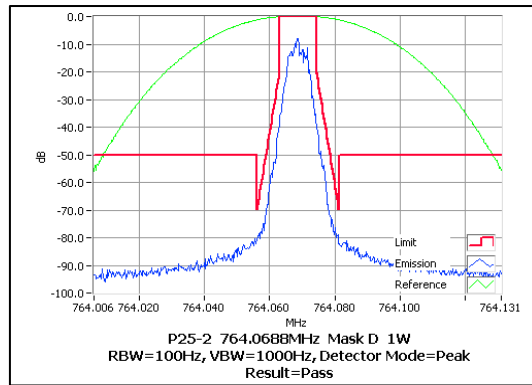


Occupied Bandwidth and Spectrum Masks – P25 Phase-2 12.5 kHz Channel Spacing

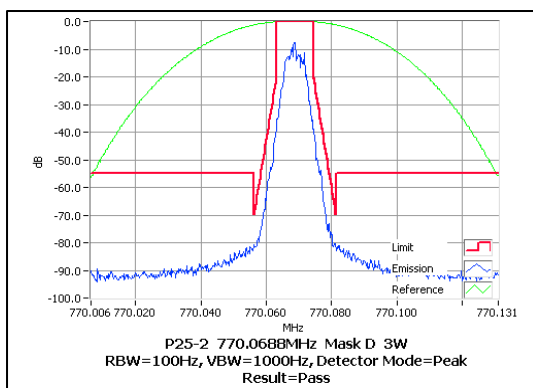
764.06875 MHz 3 W



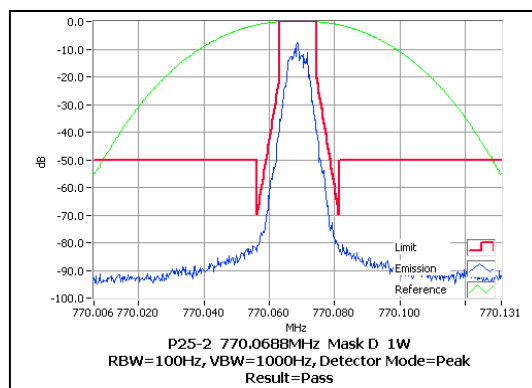
764.06875 MHz 1 W



770.06875 MHz 3 W



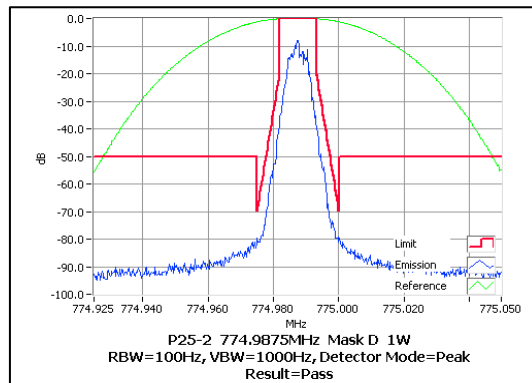
770.06875 MHz 1 W



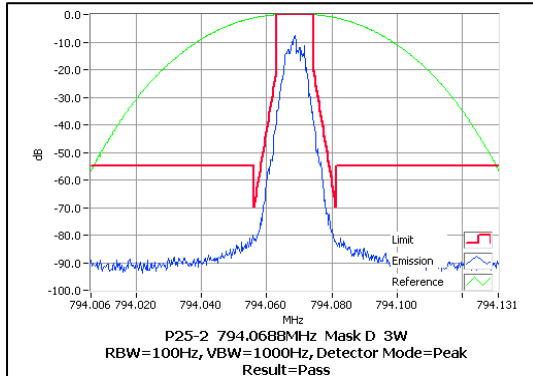
774.98750 MHz

Itinerant Channel - no 3W setting.

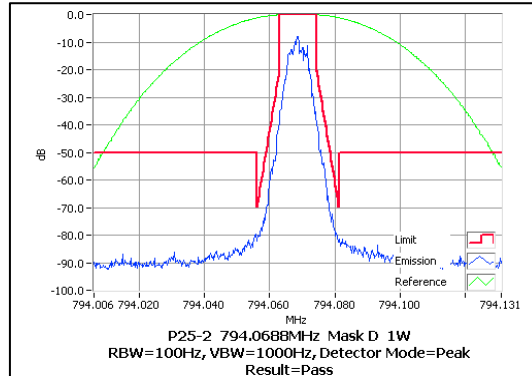
774.98750 MHz 1 W



794.06875 MHz 3 W



794.06875 MHz 1 W

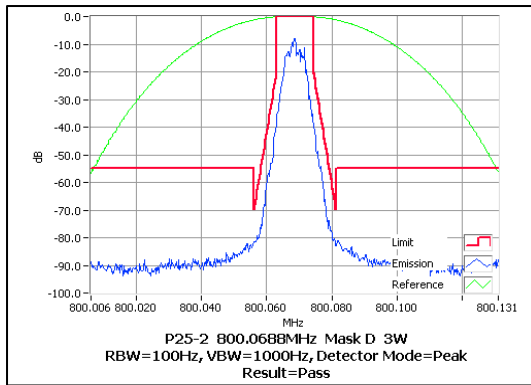


Occupied Bandwidth and Spectrum Masks – P25 Phase-2

12.5 kHz Channel Spacing

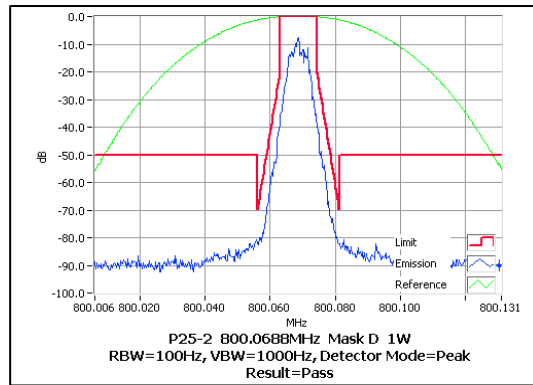
800.06875 MHz

3 W



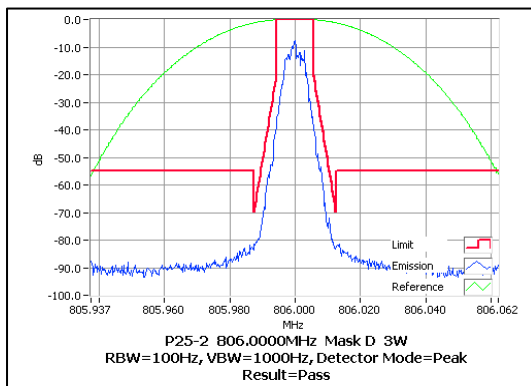
800.06875 MHz

1 W



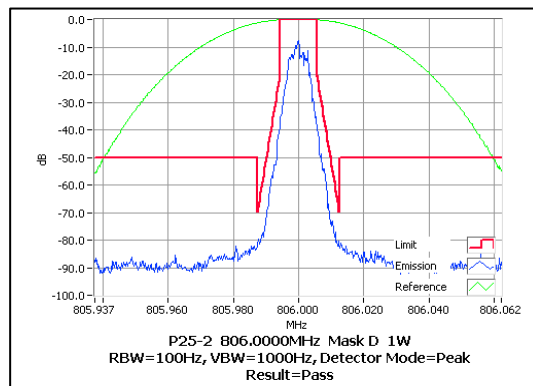
806.00000 MHz

3 W



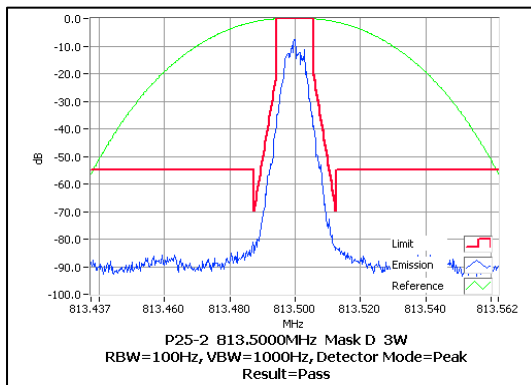
806.00000 MHz

1 W



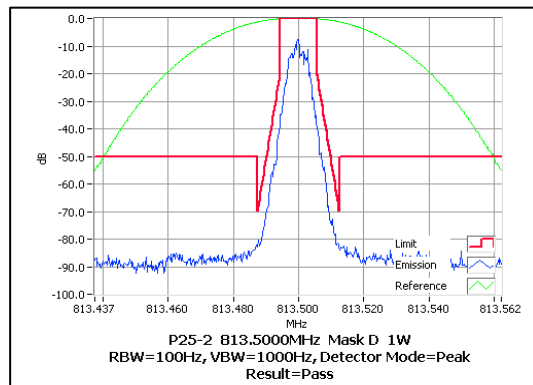
813.50000 MHz

3 W



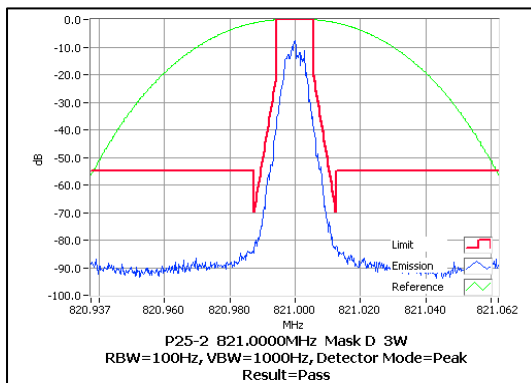
813.50000 MHz

1 W



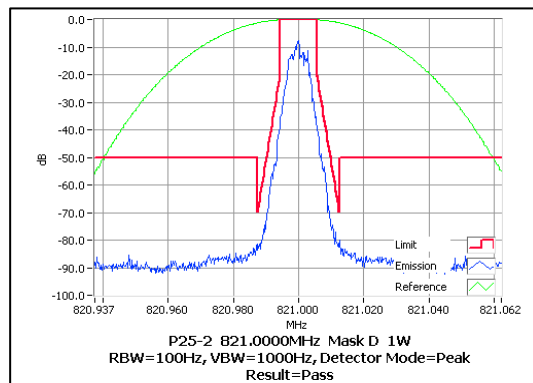
821.00000 MHz

3 W



821.00000 MHz

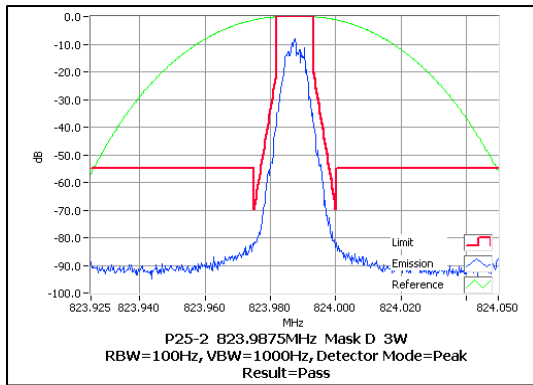
1 W



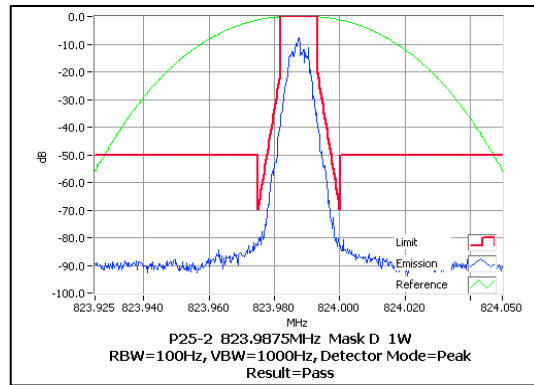
Occupied Bandwidth and Spectrum Masks – P25 Phase-2

12.5 kHz Channel Spacing

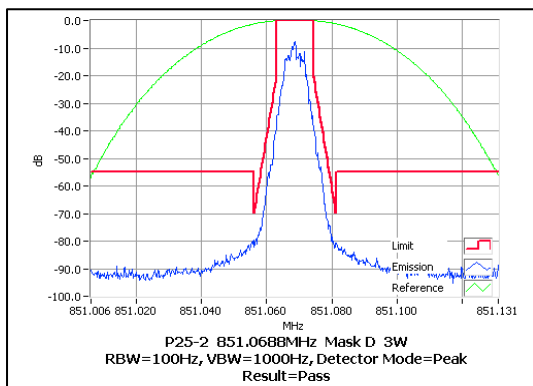
823.98750 MHz 3 W



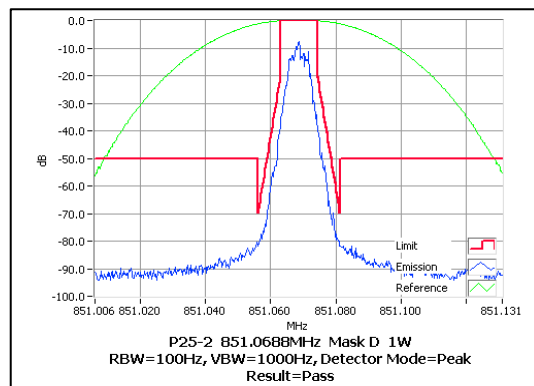
823.98750 MHz 1 W



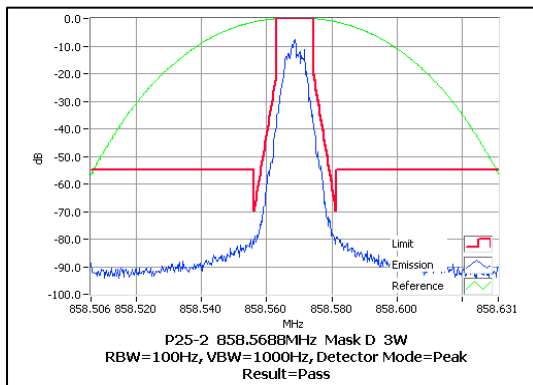
851.06875 MHz 3 W



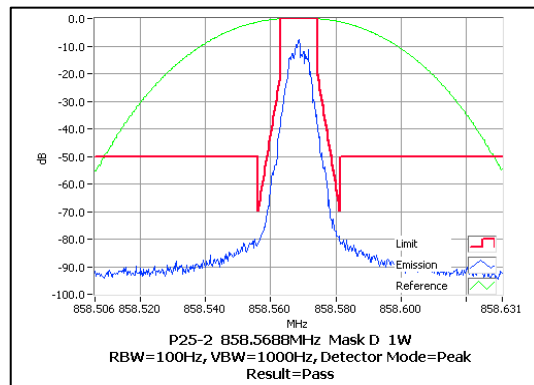
851.06875 MHz 1 W



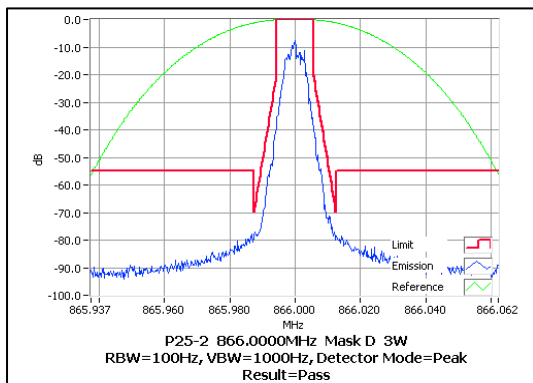
858.56875 MHz 3 W



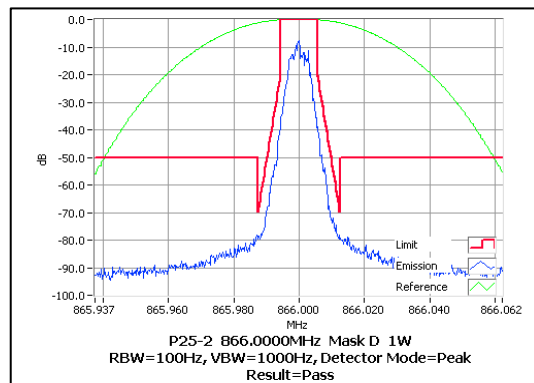
858.56875 MHz 1 W



866.00000 MHz 3 W

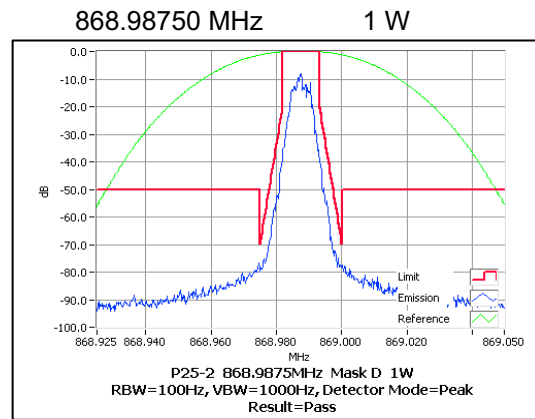
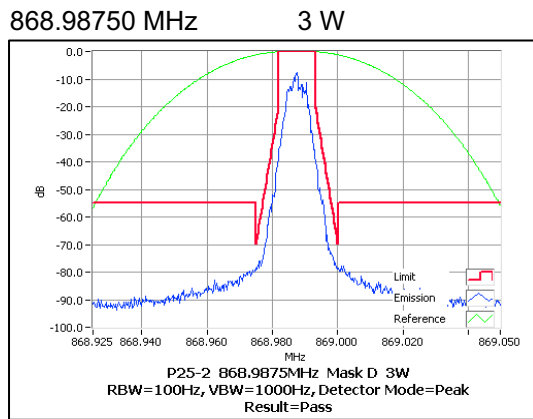


866.00000 MHz 1 W



Occupied Bandwidth and Spectrum Masks – P25 Phase-2

12.5 kHz Channel Spacing

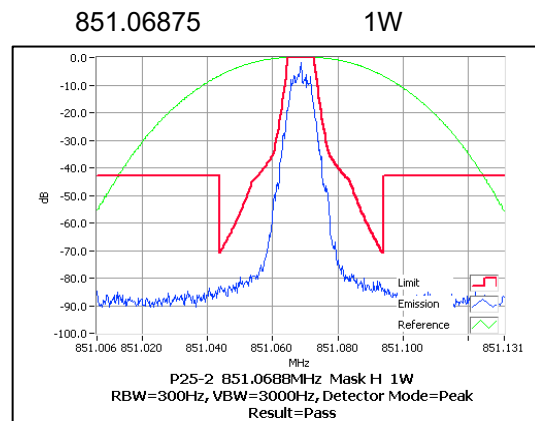
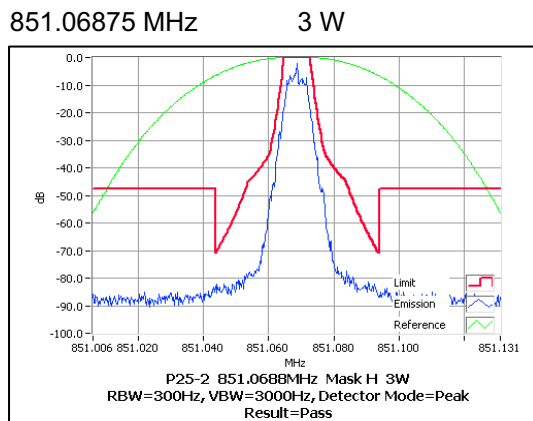
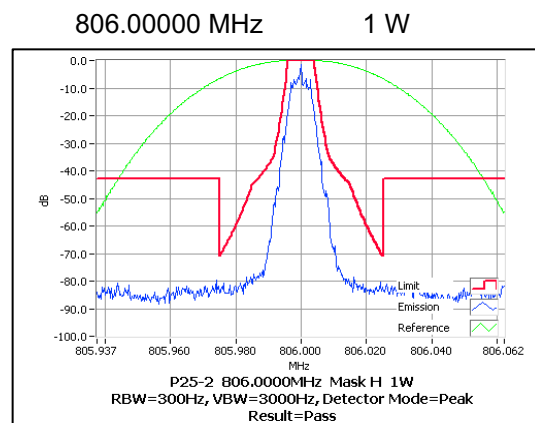
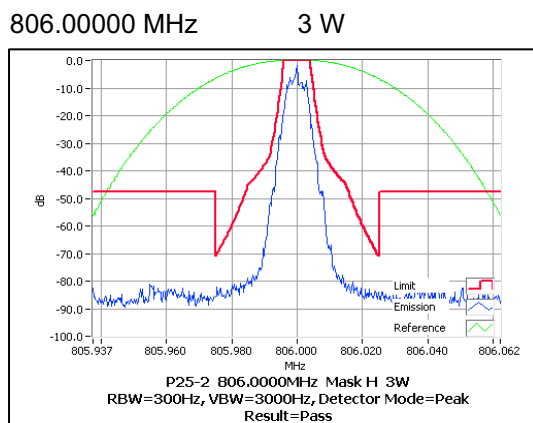


Occupied Bandwidth and Spectrum Masks – P25 Phase-2

12.5 kHz Channel Spacing

FCC 90.210 806-809 / 851-854 MHz

Mask H



TRANSMITTER ADJACENT CHANNEL POWER RATIO

SPECIFICATION: FCC 47 CFR 90.543

MEASUREMENT PROCEDURE:

1. Refer Annex A for equipment set up.
2. The transmitter is modulated with analog modulation and the standard digital modulation test pattern for DMR, P25-1, and P25-2.
3. The test is performed in accordance with 47 CFR 90.543

LIMIT CLAUSE: FCC 47 CFR 90.543

MEASUREMENT RESULTS:

ANALOG

Tx FREQUENCY: 770.06875 MHz 3 W 12.5 kHz Channel Spacing

Frequency Offset	Measurement Bandwidth	ACP Measured Lower (dBc)	ACP Measured Upper (dBc)	Maximum ACP(dBc)
9.375 kHz	6.25 kHz	-48.33	-48.94	-40
15.625 kHz	6.25 kHz	-70.83	-70.92	-60
21.875 kHz	6.25 kHz	-73.31	-73.29	-60
37.5 kHz	25 kHz	-69.44	-69.38	-60
62.5 kHz	25 kHz	-71.58	-71.03	-65
87.5 kHz	25 kHz	-73.80	-73.36	-65
150 kHz	100 kHz	-72.73	-72.15	-65
250 kHz	100 kHz	-80.89	-80.90	-65
350 kHz	100 kHz	-84.10	-84.16	-65
>400 kHz to 12 MHz	30 kHz (swept)	-82.07		-75
12 MHz to paired receive band	30 kHz (swept)	-78.94		-75
In the paired receive band	30 kHz (swept)	-101.53		-100

ANALOG

Tx FREQUENCY: 800.06875 MHz 3 W 12.5 kHz Channel Spacing

Frequency Offset	Measurement Bandwidth	ACP Measured Lower (dBc)	ACP Measured Upper (dBc)	Maximum ACP (dBc)
9.375 kHz	6.25 kHz	-48.21	-48.76	-40
15.625 kHz	6.25 kHz	-71.36	-71.36	-60
21.875 kHz	6.25 kHz	-73.80	-73.26	-60
37.5 kHz	25 kHz	-69.29	-69.54	-60
62.5 kHz	25 kHz	-70.65	-70.49	-65
87.5 kHz	25 kHz	-72.78	-72.51	-65
150 kHz	100 kHz	-71.10	-70.43	-65
250 kHz	100 kHz	-80.99	-80.82	-65
350 kHz	100 kHz	-84.38	-84.02	-65
>400 kHz to 12 MHz	30 kHz (swept)	-82.18		-75
12 MHz to paired receive band	30 kHz (swept)	-79.03		-75
In the paired receive band	30 kHz (swept)	-102.08		-100

Adjacent Channel Power Ratio - Continued

DMR

Tx FREQUENCY: 770.06875 MHz 3 W 12.5 kHz Channel Spacing

Frequency Offset	Measurement Bandwidth	ACP Measured Lower (dBc)	ACP Measured Upper (dBc)	Maximum ACP(dBc)
9.375 kHz	6.25 kHz	-43.58	-43.45	-40
15.625 kHz	6.25 kHz	-70.66	-70.41	-60
21.875 kHz	6.25 kHz	-73.39	-72.79	-60
37.5 kHz	25 kHz	-69.33	-69.63	-60
62.5 kHz	25 kHz	-71.80	-71.57	-65
87.5 kHz	25 kHz	-74.13	-74.12	-65
150 kHz	100 kHz	-72.55	-72.06	-65
250 kHz	100 kHz	-79.90	-79.77	-65
350 kHz	100 kHz	-83.68	-83.55	-65
>400 kHz to 12 MHz	30 kHz (swept)	-80.39		-75
12 MHz to paired receive band	30 kHz (swept)	-78.85		-75
In the paired receive band	30 kHz (swept)	-103.41		-100

DMR

Tx FREQUENCY: 800.06875 MHz 3 W 12.5 kHz Channel Spacing

Frequency Offset	Measurement Bandwidth	ACP Measured Lower (dBc)	ACP Measured Upper (dBc)	Maximum ACP (dBc)
9.375 kHz	6.25 kHz	-42.75	-42.19	-40
15.625 kHz	6.25 kHz	-70.47	-70.37	-60
21.875 kHz	6.25 kHz	-73.35	-73.65	-60
37.5 kHz	25 kHz	-68.98	-68.99	-60
62.5 kHz	25 kHz	-70.47	-69.98	-65
87.5 kHz	25 kHz	-71.89	-71.75	-65
150 kHz	100 kHz	-70.34	-69.64	-65
250 kHz	100 kHz	-79.12	-78.80	-65
350 kHz	100 kHz	-83.33	-82.95	-65
>400 kHz to 12 MHz	30 kHz (swept)	-80.65		-75
12 MHz to paired receive band	30 kHz (swept)	-78.78		-75
In the paired receive band	30 kHz (swept)	-104.64		-100

Adjacent Channel Power Ratio - Continued

P25 Phase 1

Tx FREQUENCY: 770.06875 MHz 3 W 12.5 kHz Channel Spacing

Frequency Offset	Measurement Bandwidth	ACP Measured Lower (dBc)	ACP Measured Upper (dBc)	Maximum ACP(dBc)
9.375 kHz	6.25 kHz	-41.01	-41.94	-40
15.625 kHz	6.25 kHz	-71.00	-70.78	-60
21.875 kHz	6.25 kHz	-73.31	-72.68	-60
37.5 kHz	25 kHz	-69.28	-69.06	-60
62.5 kHz	25 kHz	-71.36	-71.11	-65
87.5 kHz	25 kHz	-73.85	-73.25	-65
150 kHz	100 kHz	-69.14	-67.74	-65
250 kHz	100 kHz	-80.23	-79.68	-65
350 kHz	100 kHz	-83.41	-83.41	-65
>400 kHz to 12 MHz	30 kHz (swept)	-79.28		-75
12 MHz to paired receive band	30 kHz (swept)	-95.54		-75
In the paired receive band	30 kHz (swept)	-101.18		-100

P25 Phase 1

Tx FREQUENCY: 800.06875 MHz 3 W 12.5 kHz Channel Spacing

Frequency Offset	Measurement Bandwidth	ACP Measured Lower (dBc)	ACP Measured Upper (dBc)	Maximum ACP (dBc)
9.375 kHz	6.25 kHz	-41.95	-43.78	-40
15.625 kHz	6.25 kHz	-71.36	-71.27	-60
21.875 kHz	6.25 kHz	-73.22	-73.28	-60
37.5 kHz	25 kHz	-69.23	-69.13	-60
62.5 kHz	25 kHz	-70.83	-70.29	-65
87.5 kHz	25 kHz	-72.75	-72.52	-65
150 kHz	100 kHz	-69.50	-68.37	-65
250 kHz	100 kHz	-80.12	-79.24	-65
350 kHz	100 kHz	-84.05	-83.76	-65
>400 kHz to 12 MHz	30 kHz (swept)	-79.96		-75
12 MHz to paired receive band	30 kHz (swept)	-97.12		-75
In the paired receive band	30 kHz (swept)	-101.18		-100

Adjacent Channel Power Ratio - Continued

P25 Phase 2

Tx FREQUENCY: 770.06875 MHz 3 W 12.5 kHz Channel Spacing

Frequency Offset	Measurement Bandwidth	ACP Measured Lower (dBc)	ACP Measured Upper (dBc)	Maximum ACP(dBc)
9.375 kHz	6.25 kHz	-41.87	-43.10	-40
15.625 kHz	6.25 kHz	-71.05	-71.17	-60
21.875 kHz	6.25 kHz	-73.27	-73.00	-60
37.5 kHz	25 kHz	-69.07	-68.97	-60
62.5 kHz	25 kHz	-70.78	-70.35	-65
87.5 kHz	25 kHz	-73.35	-72.92	-65
150 kHz	100 kHz	-72.24	-71.98	-65
250 kHz	100 kHz	-80.04	-79.70	-65
350 kHz	100 kHz	-83.80	-83.51	-65
>400 kHz to 12 MHz	30 kHz (swept)	-79.48		-75
12 MHz to paired receive band	30 kHz (swept)	-95.64		-75
In the paired receive band	30 kHz (swept)	-101.34		-100

P25 Phase 2

Tx FREQUENCY: 800.06875 MHz 3 W 12.5 kHz Channel Spacing

Frequency Offset	Measurement Bandwidth	ACP Measured Lower (dBc)	ACP Measured Upper (dBc)	Maximum ACP (dBc)
9.375 kHz	6.25 kHz	-41.83	-42.66	-40
15.625 kHz	6.25 kHz	-71.24	-71.50	-60
21.875 kHz	6.25 kHz	-73.87	-73.71	-60
37.5 kHz	25 kHz	-69.61	-69.65	-60
62.5 kHz	25 kHz	-70.86	-70.83	-65
87.5 kHz	25 kHz	-73.22	-73.35	-65
150 kHz	100 kHz	-70.77	-70.48	-65
250 kHz	100 kHz	-79.35	-79.18	-65
350 kHz	100 kHz	-83.81	-83.14	-65
>400 kHz to 12 MHz	30 kHz (swept)	-79.78		-75
12 MHz to paired receive band	30 kHz (swept)	-97.12		-75
In the paired receive band	30 kHz (swept)	-101.74		-100

TRANSMITTER SPURIOUS EMISSIONS (CONDUCTED)

SPECIFICATIONS: FCC 47 CFR 2.1051

RSS-119 5.8

GUIDE: TIA/EIA-603D 2.2.13

MEASUREMENT PROCEDURE:

4. Refer Annex A for equipment set up.
5. The frequency range examined was from the lowest frequency generated within the EUT, to a frequency higher than the 10th Harmonic: 100 kHz to Fc-BW
Fc+ BW to 10Fc GHz
6. A Pre-scan is performed with a resolution bandwidth of 1 kHz, and a video bandwidth of 3 kHz. If any emissions are found to be within 20 dB of the limit a second measurement is made with the carrier modulated, and a resolution bandwidth of 10 kHz, and a video bandwidth of 30 kHz.

Spurious emissions which were attenuated by more than 20 dB below the limit were not recorded.

A photograph of the test set-up is included below.

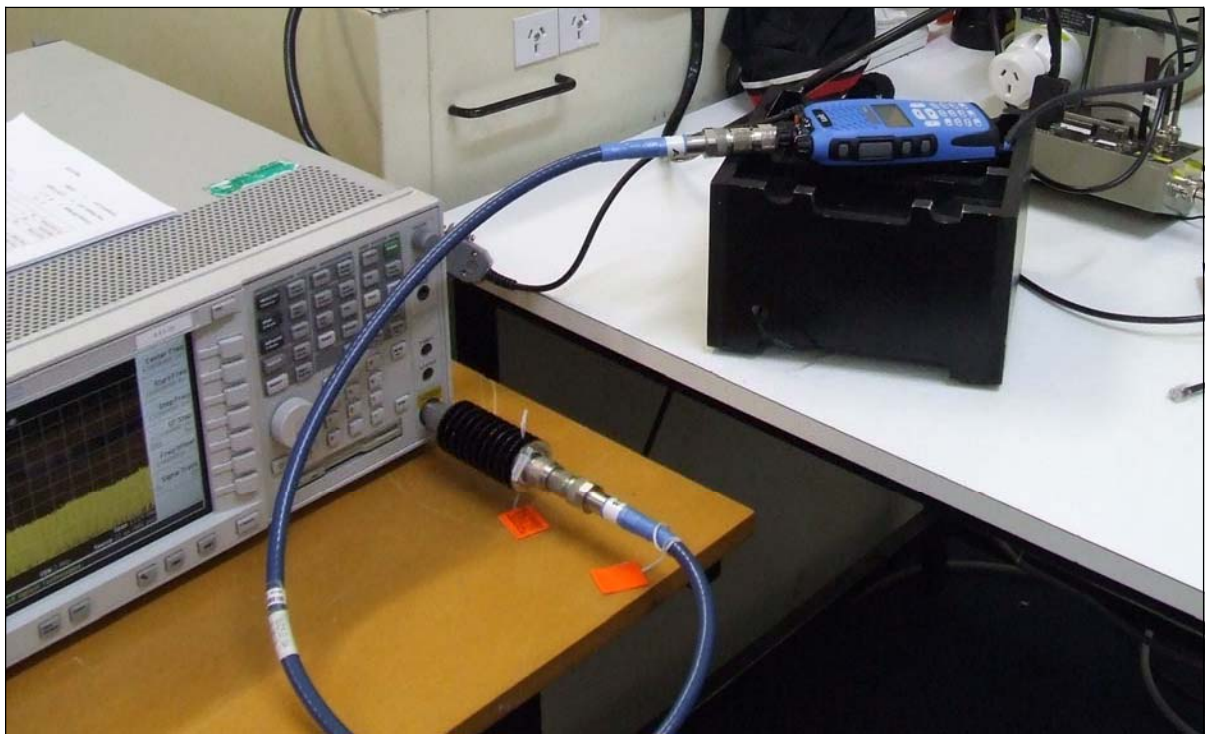
MEASUREMENT RESULTS:

See the tables and plots on the following pages for 12.5 kHz channel spacing.

LIMIT CLAUSES: FCC 47 CFR 90.210

RSS-119 5.8

Photo: Conducted Emissions Test Setup



Spurious Emissions (Tx Conducted)

SPECIFICATION: FCC CFR 2.1051

RSS-119 5.8

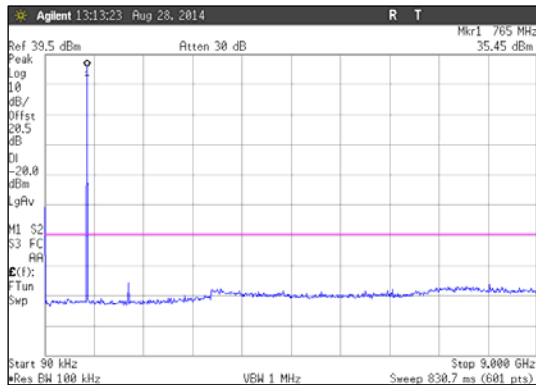
12.5 kHz Channel Spacing	764.06875 MHz @ 3 W	764.06875 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	770.06875 MHz @ 3 W	770.06875 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	774.9875 MHz @ 3 W	774.9875 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	794.06875 MHz @ 3 W	794.06875 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	800.06875 MHz @ 3 W	800.06875 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	806.00000 MHz @ 3 W	806.00000 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	813.50000 MHz @ 3 W	813.50000 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	821.00000 MHz @ 3 W	821.00000 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	823.9875 MHz @ 3 W	823.9875 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	851.06875 MHz @ 3 W	851.06875 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
No emissions were detected at a level greater than 20 dB below the limit.				

Spurious Emissions (Tx Conducted)

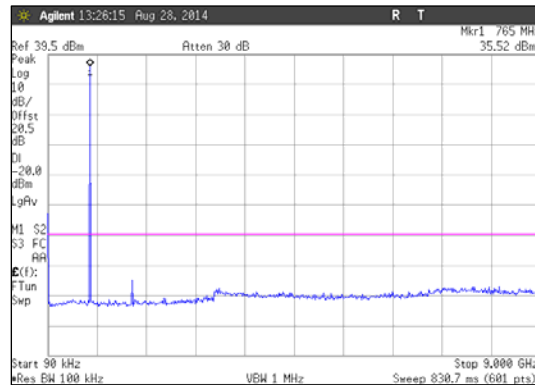
12.5 kHz Channel Spacing	858.56875 MHz @ 3 W	858.56875 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	866.00000 MHz @ 3 W	866.00000 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	868.98750 MHz @ 3 W	868.98750 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
No emissions were detected at a level greater than 20 dB below the limit.				

Conducted Emissions Plots

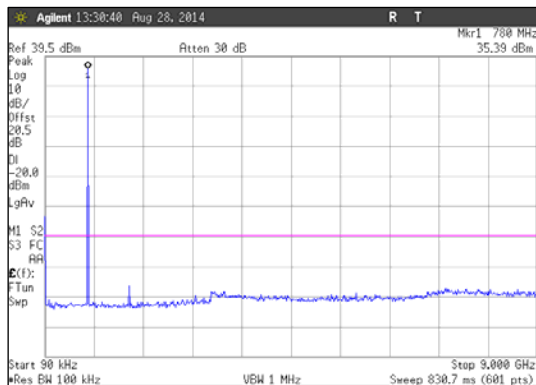
764.06875 MHz



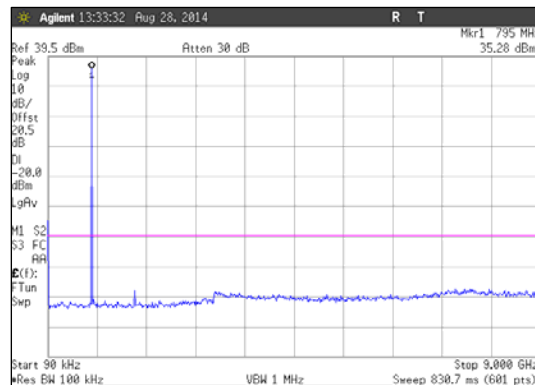
770.06875 MHz



774.98750 MHz 3W

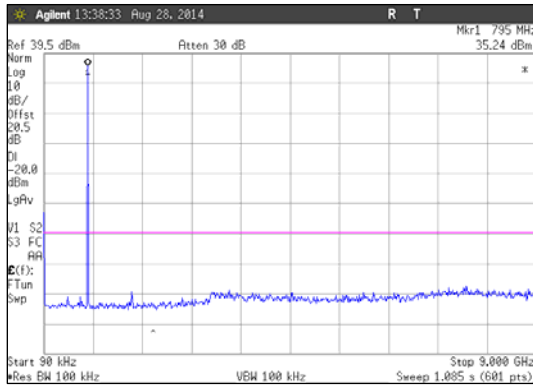


794.06875 MHz 3W

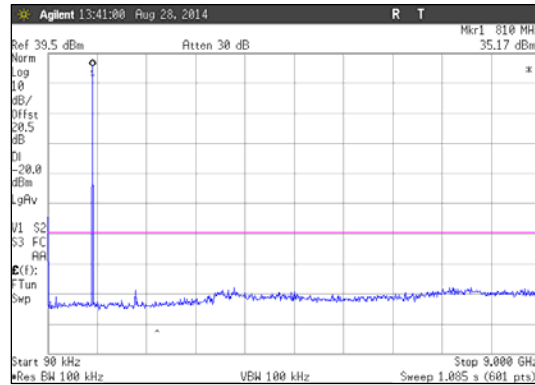


Spurious Emissions (Tx Conducted)

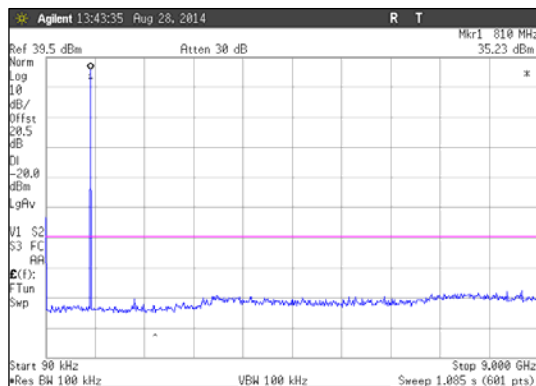
800.06875 MHz 3W



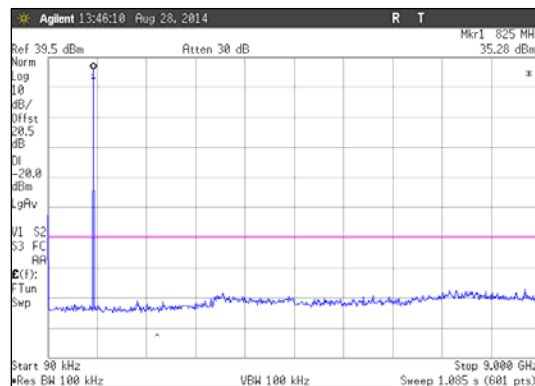
806.00000 MHz 3W



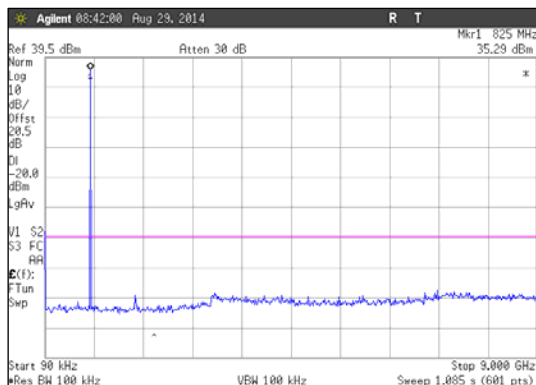
813.50000 MHz 3W



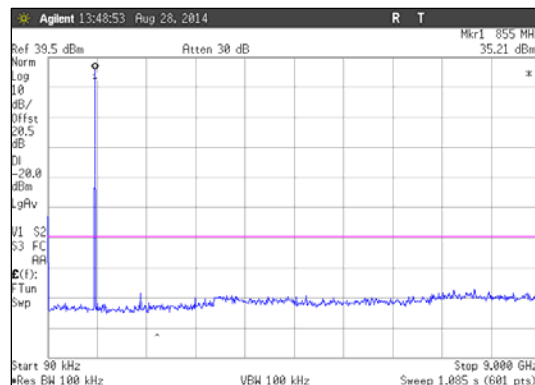
821.00000 MHz 3W



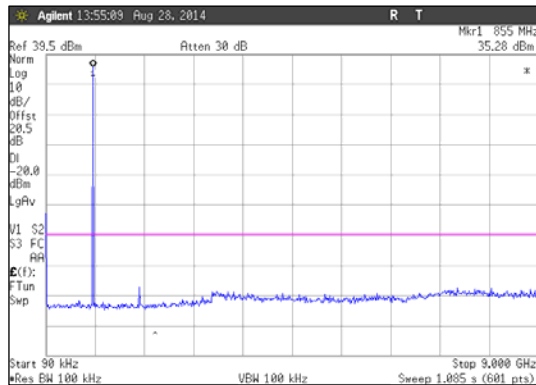
823.9875 MHz 3W



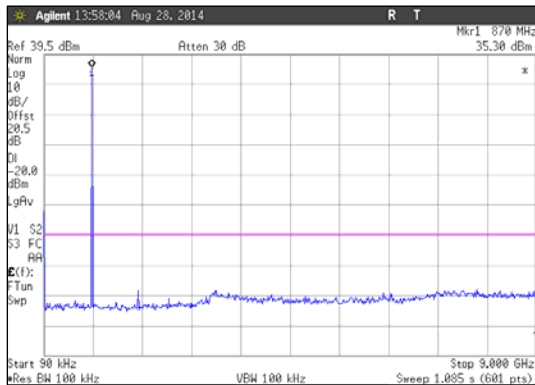
851.06875 MHz 3W



858.56875 MHz 3W

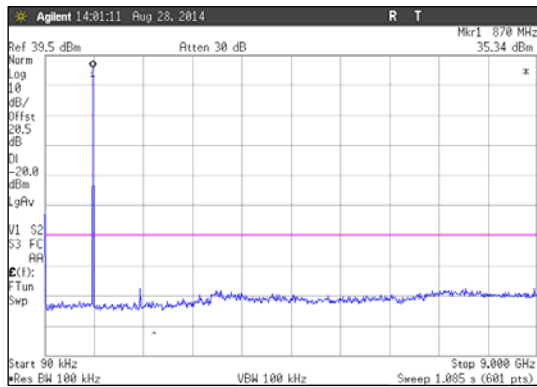


866.00000 MHz 3W



Spurious Emissions (Tx Conducted)

868.98750 MHz 3W



LIMITS: FCC 47 CFR 90.210

RSS-119 5.8

Carrier Output Power	Emission Mask D 12.5 kHz Channel Spacing $50 + 10 \log_{10} (P_{\text{Watts}})$	
	-20 dBm	54.8 dBc
3 W	-20 dBm	54.8 dBc
1 W	-20 dBm	50.0 dBc

TRANSMITTER SPURIOUS EMISSIONS (RADIATED)

SPECIFICATION: FCC 47 CFR 2.1053

GUIDE: TIA/EIA-603D 2.2.12

MEASUREMENT PROCEDURE:

Initial Scan:

1. The EUT is placed in the S-Line TEM cell and emissions are measured from 30 MHz to 1000 MHz. Any emission within 20 dB of the limit is then re-tested on the OATS along with measurements from 1000 MHz to the 10th harmonic of the fundamental frequency.
2. The EUT is placed in the reverberation chamber and emissions are measured from 1000 MHz to the upper frequency required. Any emission within 20 dB of the limit is then re-tested on the OATS.
3. The harmonics emissions up to the 6th harmonic of the fundamental frequency are measured on the OATS

OATS Measurement:

1. The EUT is placed on a wooden turntable at a distance of three metres from the test antenna. The output terminal is connected to an RF dummy load.
2. The test antenna is raised from 1 m to 4 m to obtain a maximum reading; the turntable is then rotated through 360° to obtain the maximum response of each spurious emission. Valid emissions are determined by switching the EUT on and off.
3. The EUT is then replaced by a signal generator and substitution antenna to make measurements by the substitution method.

MEASUREMENT RESULTS:

See the tables on the following pages

LIMIT CLAUSE: FCC 47 CFR 90.210

Spurious Emissions (Tx Radiated)

SPECIFICATION: FCC CFR 2.1053

12.5 kHz Channel Spacing	764.06875 MHz @ 3 W	764.06875 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	770.06875 MHz @ 3 W	770.06875 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	774.9875 MHz @ 3 W	774.9875 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	794.06875 MHz @ 3 W	794.06875 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	800.06875 MHz @ 3 W	800.06875 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	806.00000 MHz @ 3 W	806.00000 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	813.50000 MHz @ 3 W	813.50000 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	821.00000 MHz @ 3 W	821.00000 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	823.9875 MHz @ 3 W	823.9875 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	851.06875 MHz @ 3 W	851.06875 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
No emissions were detected at a level greater than 20 dB below the limit.				

Spurious Emissions (Tx Radiated)

12.5 kHz Channel Spacing	858.56875 MHz @ 3 W	858.56875 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	866.00000 MHz @ 3 W	866.00000 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
12.5 kHz Channel Spacing	868.98750 MHz @ 3 W	868.98750 MHz @ 1 W	Emission Mask D	
Emission Frequency (MHz)	Level (dBm)	Level (dBm)	3W (dBc)	1W (dBc)
~	~	~	~	~
No emissions were detected at a level greater than 20 dB below the limit.				

LIMITS: FCC CFR 2.1053

Carrier Output Power	Emission Mask D 12.5 kHz Channel Spacing $50 + 10 \log_{10} (P_{\text{Watts}})$	
3 W	-20 dBm	54.8 dBc
1 W	-20 dBm	50.0 dBc

Tx Radiated Emissions - Continued

Open Area Test Site Results:

806.000 MHz	3 Watts	Emission Mask D	
Harmonic Emission Frequency MHz		Level dBm	Level dBc
1612.000		-49.26	-84.03
2418.000		-71.63	-106.4
3224.000		-59.26	-94.03
4030.000		-47.49	-82.26
4836.000		-49.03	-83.80
5642.000		-45.27	-80.04

Photo: OATS Setup



TRANSMITTER RADIATED EMISSIONS IN THE GNSS BAND

SPECIFICATION: FCC CFR 90.543

GUIDE: TIA/EIA-603D 2.2.12

MEASUREMENT PROCEDURE:

1. Refer Annex A for equipment set up.
2. Spurious emissions were measured in the GNSS band. (1559 – 1610 MHz)
3. The EUT was placed on a wooden turntable at a distance of three metres from the test antenna.
4. The test antenna was raised from 1m to 4m to obtain a maximum reading; the turntable was then rotated through 360° to obtain the maximum response of each spurious emission.
5. Valid emissions were determined by switching the EUT on and off.
6. The EUT was replaced by a signal generator and substitution antenna to make measurements by the substitution method.
7. The test was performed with a representative antenna connected to the EUT and the transmitter was modulated with DMR modulation.

794.06875 MHz 3W

GNSS Frequency	Antenna Polarity	Level dBW / MHz EIRP
1588.1375 MHz	Horizontal	-84.44
	Vertical	-81.24

LIMIT CLAUSE FCC 47 CFR 90.543 (f)	-70 dBW / MHz EIRP
---------------------------------------	--------------------

(f) For operations in the 763-775 MHz and 793-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

TRANSMITTER CONDUCTED EMISSIONS IN THE GNSS BAND

SPECIFICATION: RSS-119 5.8

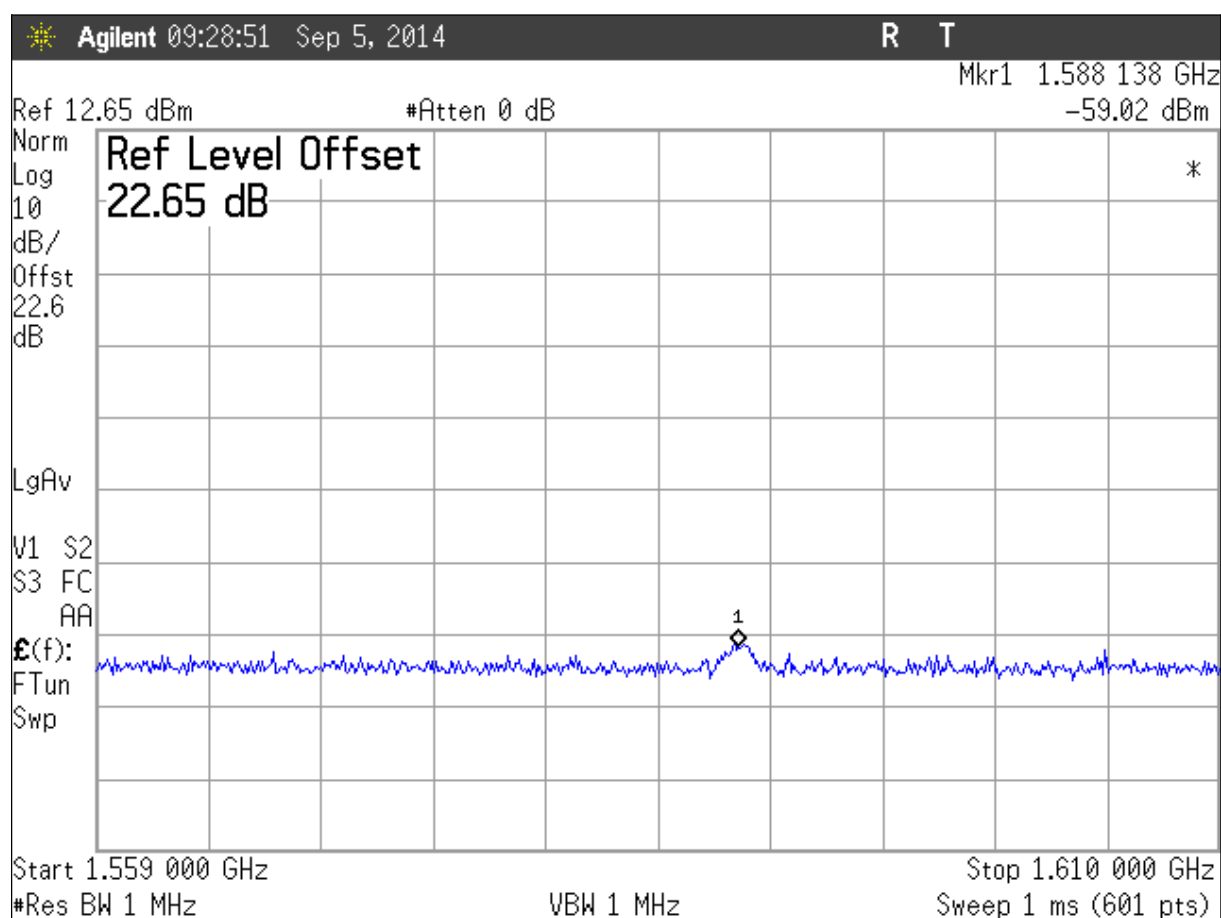
MEASUREMENT PROCEDURE:

1. Refer Annex A for equipment set up.
2. Spurious emissions were measured in the GNSS band. (1559 – 1610 MHz)
3. The EUT was connected via an attenuator to a spectrum analyser.
4. Allowance was made for a theoretical dipole with a gain of 2.15 dB isotropic.
5. The emission at the frequency of the second harmonic was measured.

794.06875 MHz 3W

Frequency	Level dBm / MHz EIRP	Level dBW / MHz EIRP
1588.1375 MHz	-59.02	-89.02

LIMIT CLAUSE RSS-119 5.8.9.2	-70 dBW / MHz EIRP
---------------------------------	--------------------



TRANSMITTER FREQUENCY STABILITY - TEMPERATURE

SPECIFICATION: FCC 47 CFR 2.1055 (a) (1)

RSS-119 5.3

GUIDE: TIA/EIA-603D 2.2.2

MEASUREMENT PROCEDURE:

1. Refer Annex A for equipment set up.
2. The EUT was tested for frequency error from -30°C to $+50^{\circ}\text{C}$ in 10°C increments
3. The frequency error was recorded in parts per million (ppm).

MEASUREMENT RESULTS:

See the results tables and plots on the following pages for 12.5 kHz channel spacing.

Channels 1 → 6

°C	764.06875 MHz		770.06875 MHz		774.9875 MHz		794.06875 MHz		800.06875 MHz		806.00000 MHz	
	Hz	ppm	Hz	ppm	Hz	ppm	Hz	ppm	Hz	ppm	Hz	ppm
-30	-39	-0.05	-23	-0.03	-38	-0.05	-44	-0.06	-46	-0.06	-51	-0.06
-20	-49	-0.06	-28	-0.04	3	0.00	25	0.03	37	0.05	37	0.05
-10	29	0.04	34	0.04	19	0.02	11	0.01	12	0.01	0	0.00
0	-4	-0.01	6	0.01	18	0.02	39	0.05	51	0.06	67	0.08
10	44	0.06	83	0.11	99	0.13	117	0.15	126	0.16	124	0.15
20	103	0.13	114	0.15	113	0.15	117	0.15	125	0.16	117	0.15
30	91	0.12	95	0.12	120	0.15	110	0.14	118	0.15	120	0.15
40	98	0.13	119	0.15	129	0.17	168	0.21	188	0.23	206	0.26
50	181	0.24	211	0.27	233	0.30	240	0.30	240	0.30	226	0.28
Limit (ppm)		1.5		1.5		1.5		1.5		1.5		1.5

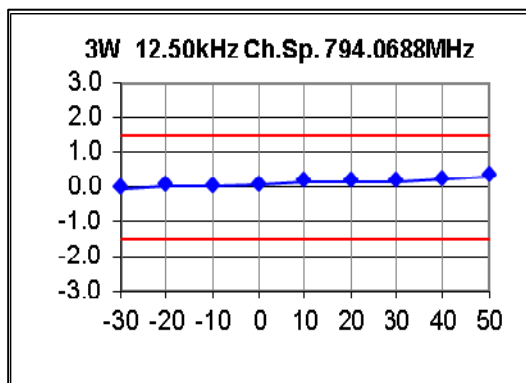
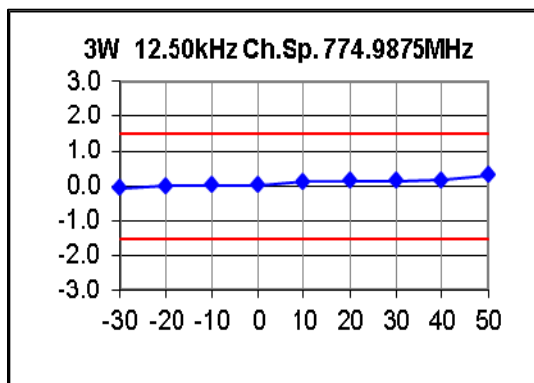
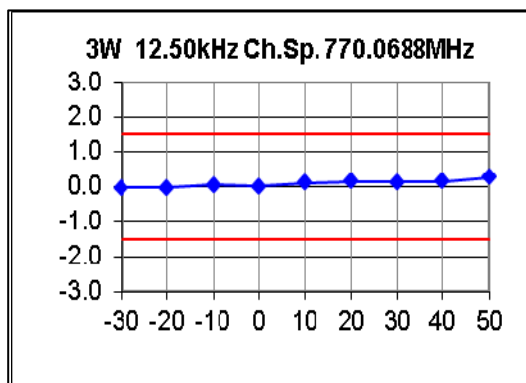
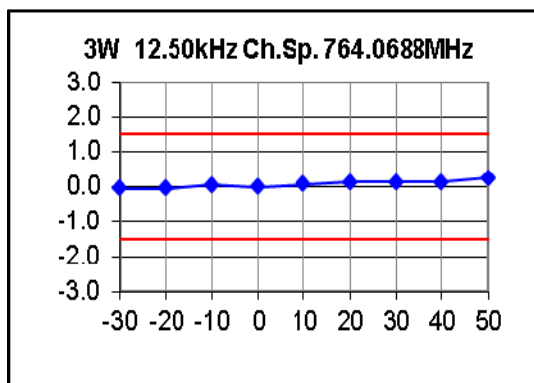
Channels 7 → 12

°C	813.50000 MHz		821.00000 MHz		823.98750 MHz		851.06875 MHz		858.56875 MHz		866.00000 MHz	
	Hz	ppm	Hz	ppm	Hz	ppm	Hz	ppm	Hz	ppm	Hz	ppm
-30	-86	-0.11	-51	-0.06	-24	-0.03	-61	-0.07	-38	-0.04	-87	-0.10
-20	-49	-0.06	-52	-0.06	-35	-0.04	-67	-0.08	-34	-0.04	-47	-0.05
-10	16	0.02	34	0.04	38	0.05	29	0.03	22	0.03	21	0.02
0	-1	0.00	2	0.00	2	0.00	-28	-0.03	2	0.00	2	0.00
10	20	0.02	42	0.05	70	0.08	38	0.04	80	0.09	29	0.03
20	105	0.13	116	0.14	127	0.15	141	0.17	130	0.15	109	0.13
30	109	0.13	113	0.14	112	0.14	138	0.16	109	0.13	114	0.13
40	98	0.12	106	0.13	133	0.16	99	0.12	138	0.16	108	0.12
50	166	0.20	191	0.23	216	0.26	197	0.23	227	0.26	182	0.21
Limit (ppm)		2.5		2.5		2.5		1.5		2.5		2.5

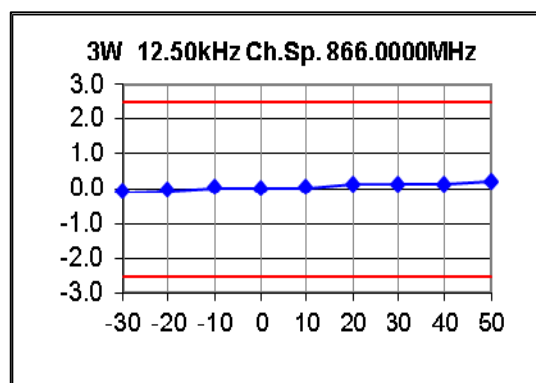
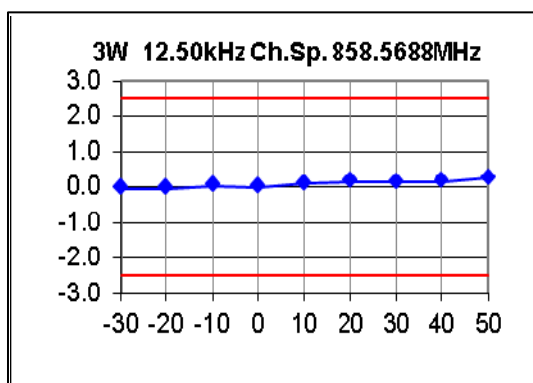
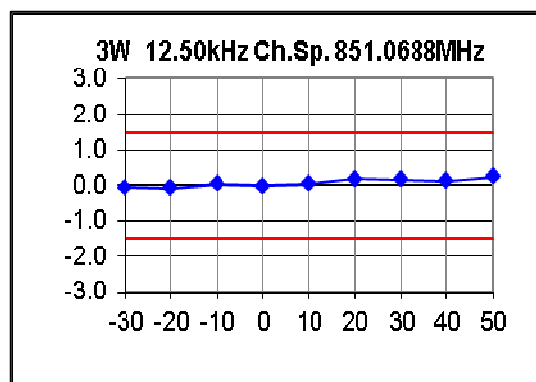
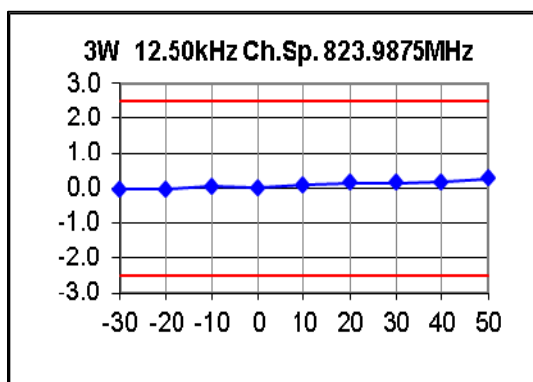
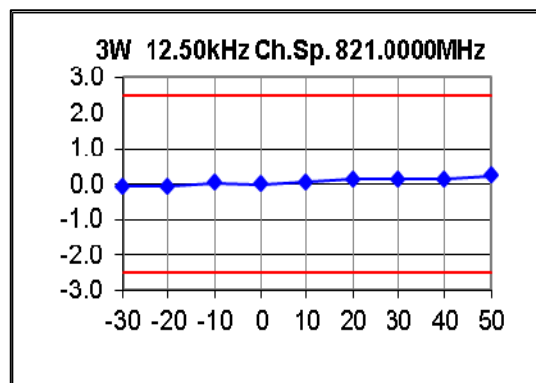
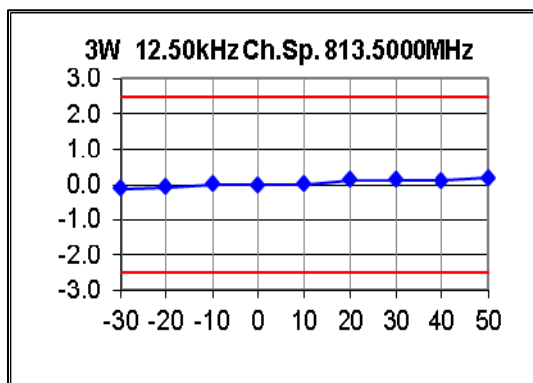
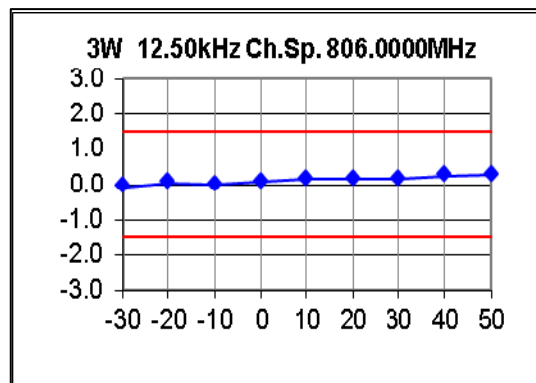
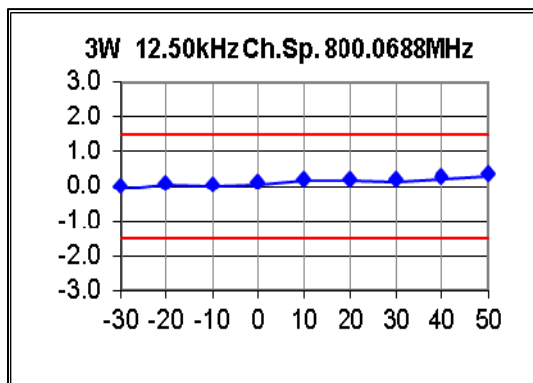
Transmitter Frequency Stability - Temperature

Channel 13		
°C	868.98750 MHz	
	Hz	ppm
-30	-43	-0.05
-20	-43	-0.05
-10	34	0.04
0	6	0.01
10	53	0.06
20	123	0.14
30	118	0.14
40	119	0.14
50	203	0.23
Limit (ppm)		2.5

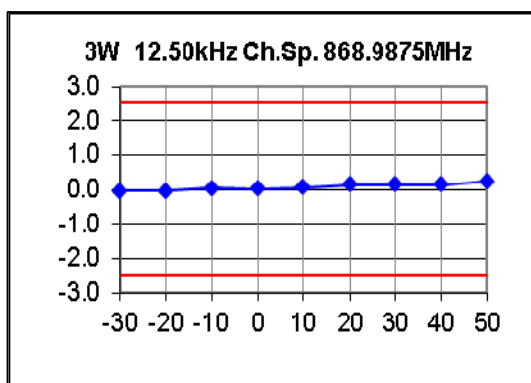
Transmitter Frequency Stability Plots



Transmitter Frequency Stability - Temperature



Transmitter Frequency Stability - Temperature



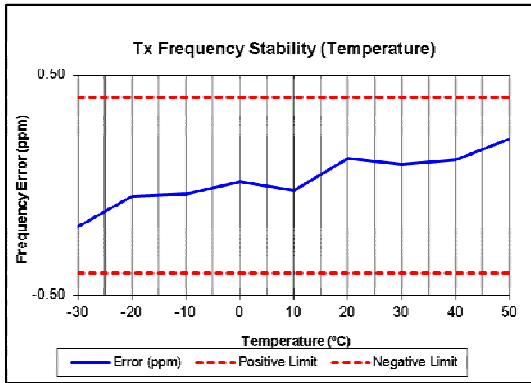
Transmitter Frequency Stability – Temperature – AFC On

Channels 1 → 6

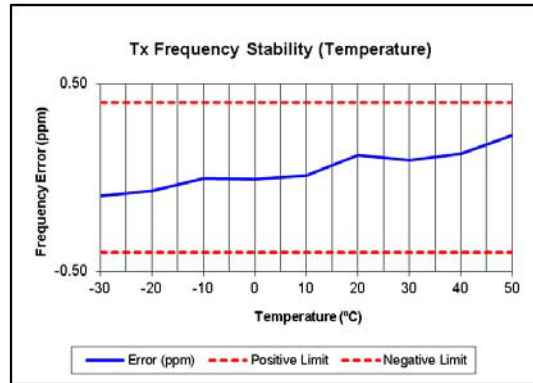
°C	764.06875 MHz		770.06875 MHz		774.98750 MHz		794.06875 MHz		800.06875 MHz		806.00000 MHz	
	Hz	ppm	Hz	ppm	Hz	ppm	Hz	ppm	Hz	ppm	Hz	ppm
50	162	0.21	174	0.23	178	0.23	201	0.25	216	0.27	177	0.22
40	88	0.12	100	0.13	107	0.14	125	0.16	157	0.20	142	0.18
30	72	0.09	73	0.09	75	0.10	87	0.11	101	0.13	80	0.10
20	93	0.12	93	0.12	88	0.11	98	0.12	121	0.15	94	0.12
10	-19	-0.02	9	0.01	31	0.04	57	0.07	89	0.11	96	0.12
0	13	0.02	-7	-0.01	-13	-0.02	-8	-0.01	1	0.00	13	0.02
-10	-31	-0.04	-3	0.00	8	0.01	23	0.03	32	0.04	1	0.00
-20	-38	-0.05	-53	-0.07	-62	-0.08	-37	-0.05	-2	0.00	-29	-0.04
-30	-144	-0.19	-74	-0.10	-61	-0.08	-37	-0.05	-22	-0.03	-44	-0.05
Limit (ppm)		0.4		0.4		0.4		0.4		0.4		0.4

Transmitter Frequency Stability – Temperature – AFC On Plots

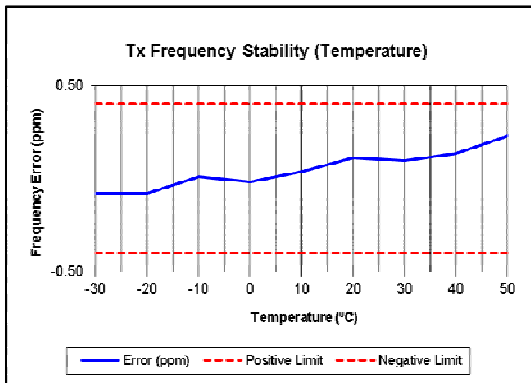
764.06875 MHz 3 W



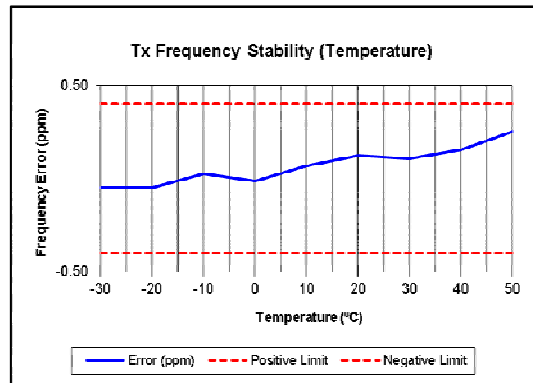
770.06875 MHz 3 W



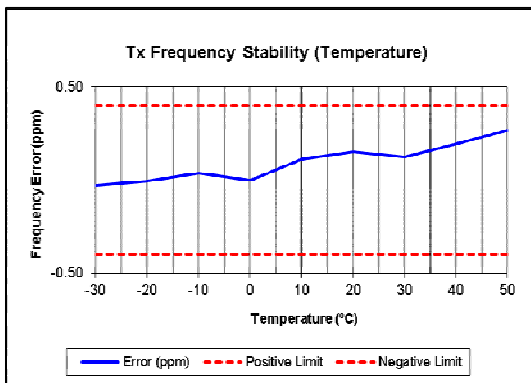
774.98750 MHz 1 W
FCC Itinerant Channel



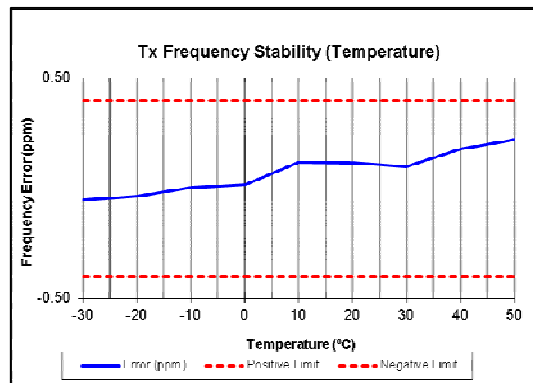
794.06875 MHz 3W



800.06875 MHz 3W



806.00000 MHz 3 W



Transmitter Frequency Stability – Temperature

LIMITS: Channel Spacing 12.5 kHz

FCC 47 CFR 90.213 Frequency Bands MHz	Limit Mobile > 2W ppm	RSS-119 5.3 Frequency Bands MHz	Limit ppm
806 → 809	1.5	764 → 776	0.4 with AFC 1.5 aggregated
809 → 824	2.5	794 → 806	0.4 with AFC
851 → 854	1.5	806 → 821	1.5
854 → 869	2.5	821 → 824	1.5
~	~	851 → 866	1.5
~	~	866 → 869	1.5

TRANSMITTER FREQUENCY STABILITY - VOLTAGE

SPECIFICATION: FCC 47 CFR 2.1055 (d) (1)

RSS-119 5.3

GUIDE: TIA/EIA-603D 2.2.2

MEASUREMENT PROCEDURE:

1. Refer Annex A for equipment set up.
2. The EUT was tested for frequency error at input voltages to the radio of nominal 7.5v and battery endpoint.
3. The frequency error was recorded in parts per million (ppm).

MEASUREMENT RESULTS:

Test Conditions		Frequency Error (ppm)				
Ambient Temp	Voltage	764.06875 MHz	770.06875 MHz	774.98750 MHz	794.06875 MHz	800.06875 MHz
	7.5	0.07	0.04	-0.14	0.07	0.09
	6.375	0.07	0.05	-0.15	0.08	0.09
Maximum Freq. Error (ppm)		0.07	0.05	-0.15	0.08	0.09

Test Conditions		Frequency Error (ppm)				
Ambient Temp	Voltage	806.00000 MHz	813.50000 MHz	821.00000 MHz	823.9875 MHz	851.06875 MHz
	7.5	0.05	0.08	0.09	0.06	0.03
	6.375	0.07	0.09	0.10	0.04	0.04
Maximum Freq. Error (ppm)		0.07	0.09	0.10	0.06	0.04

Test Conditions		Frequency Error (ppm)				
Ambient Temp	Voltage	858.56750 MHz	866.00000 MHz	868.98750 MHz	~	~
	7.5	0.09	-0.01	0.02	~	~
	6.375	0.10	0.00	0.02	~	~
Maximum Freq. Error (ppm)		0.10	-0.01	0.02	~	~

Transmitter Frequency Stability - Voltage

LIMITS: Channel Spacing 12.5 kHz

FCC 47 CFR 90.213 Frequency Bands MHz	Limit Mobile > 2W ppm	RSS-119 5.3 Frequency Bands MHz	Limit ppm
806 → 809	1.5	764 → 776	0.4 with AFC 1.5 aggregated
809 → 824	2.5	794 → 806	0.4 AFC
851 → 854	1.5	806 → 821	1.5
854 → 869	2.5	821 → 824	1.5
~	~	851 → 866	1.5
~	~	866 → 869	1.5

RECEIVER SPURIOUS EMISSIONS (CONDUCTED)

SPECIFICATION: RSS-119 5.11

GUIDE: TIA/EIA-603D 2.1.2

MEASUREMENT PROCEDURE:

1. Refer Annex A for Equipment set up diagram.
2. The frequency range examined was from 30 MHz to 3 times highest tunable frequency.
3. Spurious emissions which were attenuated more than 20 dB below the limit were not recorded.

764.06875 MHz Receive		
Emission Frequency (MHz)	Level (nW)	Level (dBm)
~	~	~
770.06875 MHz Receive		
Emission Frequency (MHz)	Level (nW)	Level (dBm)
~	~	~
774.9875 MHz Receive		
Emission Frequency (MHz)	Level (nW)	Level (dBm)
~	~	~
794.06875 MHz Receive		
Emission Frequency (MHz)	Level (nW)	Level (dBm)
~	~	~
800.06875 MHz Receive		
Emission Frequency (MHz)	Level (nW)	Level (dBm)
~	~	~
806.00000 MHz Receive		
Emission Frequency (MHz)	Level (nW)	Level (dBm)
~	~	~
813.50000 MHz Receive		
Emission Frequency (MHz)	Level (nW)	Level (dBm)
~	~	~
No emissions were detected within 20 dB of Limit.		

Receiver Conducted Spurious Emissions

821.00000 MHz Receive		
Emission Frequency (MHz)	Level (nW)	Level (dBm)
~	~	~
823.9875 MHz Receive		
Emission Frequency (MHz)	Level (nW)	Level (dBm)
~	~	~
851.06875 MHz Receive		
Emission Frequency (MHz)	Level (nW)	Level (dBm)
~	~	~
858.56875 MHz Receive		
Emission Frequency (MHz)	Level (nW)	Level (dBm)
~	~	~
866.00000 MHz Receive		
Emission Frequency (MHz)	Level (nW)	Level (dBm)
~	~	~
868.9875 MHz Receive		
Emission Frequency (MHz)	Level (nW)	Level (dBm)
~	~	~
No emissions were detected within 20 dB of Limit.		

LIMIT CLAUSE: RSS-Gen 6(b)

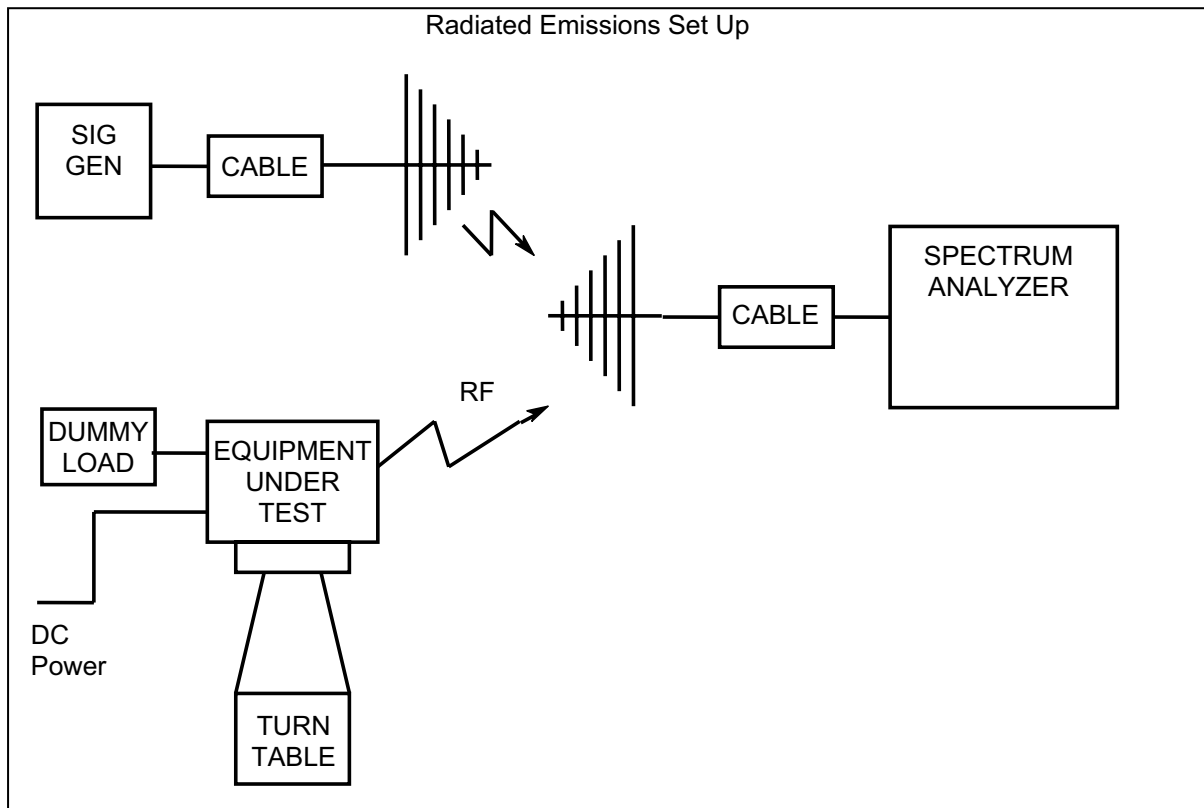
LIMIT	30 → 1000 MHz	2 nW	- 57 dBm
	> 1000 MHz	5 nW	- 53 dBm

TEST EQUIPMENT LIST

No#	Equipment Type	Information	Manufacturer	Model No	Serial No#	Tait ID	Cal Due
31	Antenna	18GHz DRG	Emco	DRG3115	9512-4638	E3560	6-Mar-16
32	Antenna	18GHz DRG	Emco	DRG3115	2084	E3076	6-Mar-16
148	Antenna	Reverb - 1-18GHz DRG	Schwarzbeck	BBHA 9120 D	9120D-885	E4857	
149	Antenna	Reverb - 1-18GHz DRG	Schwarzbeck	BBHA 9120 D	9120D-884	E4858	
65	Audio Analyser	TREVA2	Hewlett Packard	HP8903B	2818A04275	E3710	17-Oct-14
60	Coax Cable	1m Blue	Suhner	Sucoflex 104A	44610/4A	E4619	16-Oct-14
61	Coax Cable	2m Black	Suhner	RG214HF/Nm/Nm/2000	TeltestBlack2	E4623	15-Oct-14
62	Coax Cable	2m Black	Suhner	RG214HF/Nm/Nm/2000	TeltestBlack3	E4624	15-Oct-14
107	Coax Cable	OATS Tower Cable	Intelcom	RG214	OATS1	E4621	13-Oct-14
108	Coax Cable	OATS Turntable Cable	Intelcom	RG215	OATS2	E4622	13-Oct-14
134	Coax Cable	Reverb - 4.5m Multiflex 141	TeltestBlue6	MF 141	TeltestBlue6	E4843	16-Oct-14
135	Coax Cable	Reverb - 2m Multiflex 141	TeltestBlue5	MF 141	TeltestBlue5	E4844	16-Oct-14
136	Coax Cable	Reverb - 2m Multiflex 141	TeltestBlue4	MF 141	TeltestBlue4	E4845	15-Oct-14
137	Coax Cable	Reverb - 1m Multiflex 141	TeltestBlue3	MF 141	TeltestBlue3	E4846	17-Oct-14
138	Coax Cable	Reverb - 1m Multiflex 141	TeltestBlue2	MF 141	TeltestBlue2	E4847	17-Oct-14
139	Coax Cable	Reverb - 1m Multiflex 141	TeltestBlue1	MF 141	TeltestBlue1	E4848	17-Oct-14
18	Environ. Chamber	Chest	Contherm	Chest	E3397	E3397	2-Aug-15
19	Environ. Chamber	Chest	Contherm	Chest	E3397	E3397	1-Aug-15
90	Modulation Analyser	TREVA2	Hewlett Packard	HP8901B (Opt 002)	3704A05837	E3786	19-Oct-14
109	OATS	Antenna Tower	Electrometrics	EM-4720-2	112	E4447	
110	OATS	Controller	Electrometrics	EM-4700	119	E4445	
111	OATS	Turntable	Electrometrics	EM-4704A	105	E4446	
127	Power Meter	TREVA2 Power Head for HP8901	Hewlett Packard	HP11722A	2716A02037	1575	21-Oct-14
14	Power Supply	TREVA1	Hewlett Packard	HP6032A	2441A00412	E3075	17-Oct-14
36	RF Amplifier	1MHz-1000MHz	Amplifier Research	25W1000A	20444	E3637	
38	RF Amplifier	+21.7 dB 1GHz	Tait	ZFL-1000LN	E3660	E3360	16-Jan-15
48	RF Attenuator	10dB 50W	Weinschel	24-10-34	AZ0401	E3388	17-Oct-14
50	RF Attenuator	20dB 25W	Weinschel	33-20-33	BD5871	E3673	18-Oct-14
97	RF Attenuator	TREVA2 3dB	Weinschel	Model 1	BL9950	E4080	
35	RF Chamber	S-LINE TEM CELL	Rohde & Schwarz	1089.9296.02	338232/003	E3636	31-Aug-15
145	RF Chamber	Reverb - Stirrer controller for reverb chamber	Teseq	Stirrer Controller	29765.1	E4854	
146	RF Chamber	Reverb - 0.5 - 18GHz Reverberation Chamber	Teseq	RVC XS	29765	E4855	
101	RF Combiner	TREVA2	Minicircuits	ZFSC-4-1	-	E4084	
53	RF Load	50W	Weinschel	F1426	BF0487	E3675	22-Oct-14
54	RF Load	50W	Weinschel	F1426	AE2490	E3624	18-Oct-14
93	Signal Generator	TREVA2 Analog 3.3GHz	Rohde & Schwarz	SML03 1090.3000.13	100597	E4050	17-Oct-14
33	Spectrum Analyser	26.5GHz	Agilent	PXA N9030A	MY49432161	E4907	6-Jul-16
103	Spectrum Analyser	13.2GHz	Agilent	E4445A	MY42510072	E4139	21-Nov-14
133	TREVA 2		Teltest	-	2	-	9-Oct-14

NOTE: Items without calibration dates are calibrated immediately before use, or set using calibrated instruments.

ANNEX A – TEST SETUP DETAILS



All other testing is performed using the Teltest Radio **EVA**luation system (TREVA), which is configured as shown below. The Spectrum Analyser is connected to the EUT via the attenuator network for Conducted Emissions testing, and Occupied Bandwidth.

