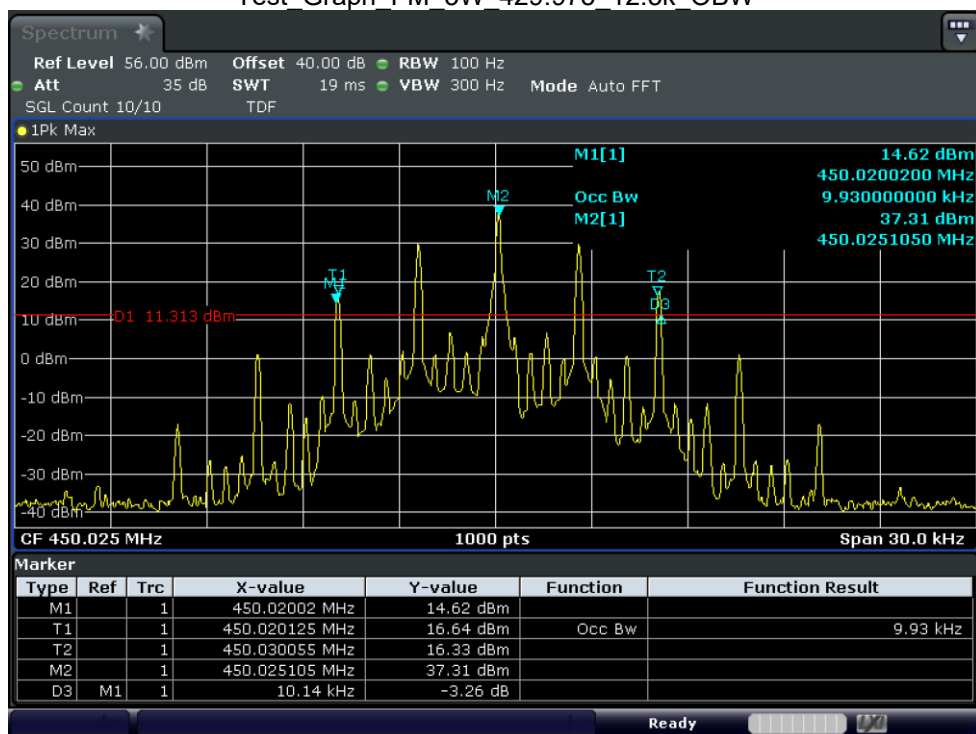
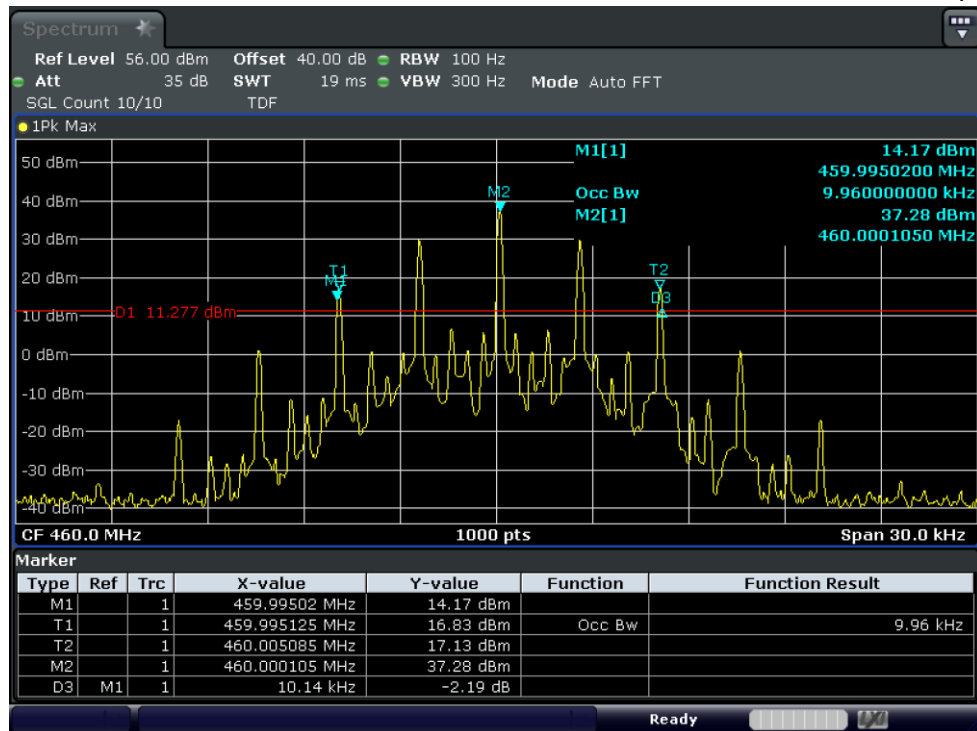


Test Graph FM 5W 429.975 12.5k OBW

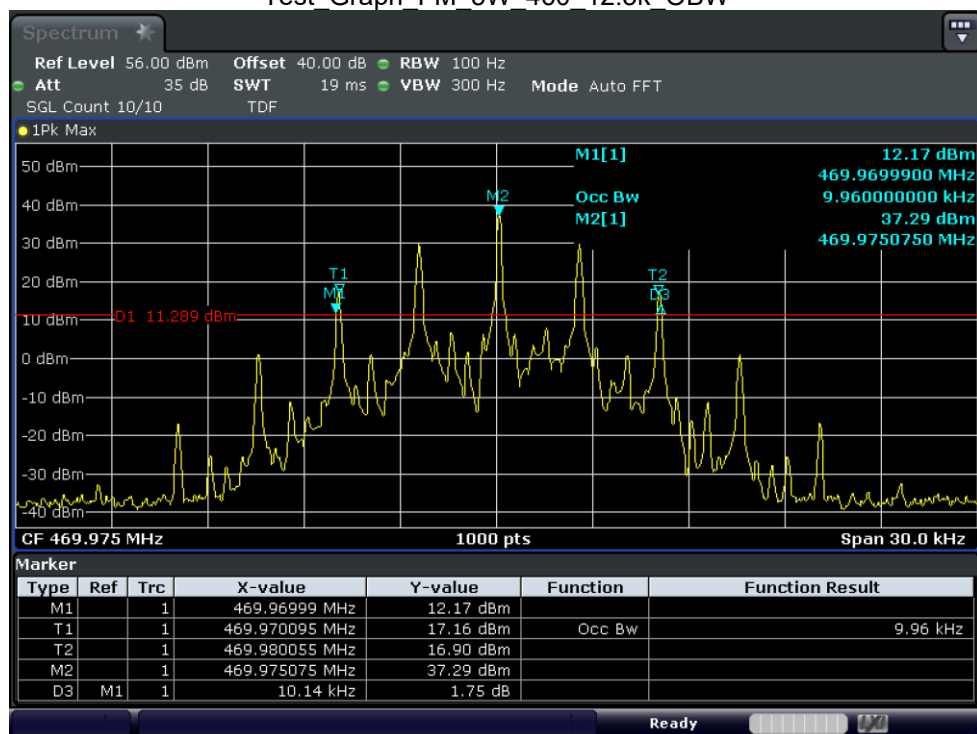


Test_Graph_FM_5W_450.025_12.5k_OBW





Test Graph FM 5W 460 12.5k OBW

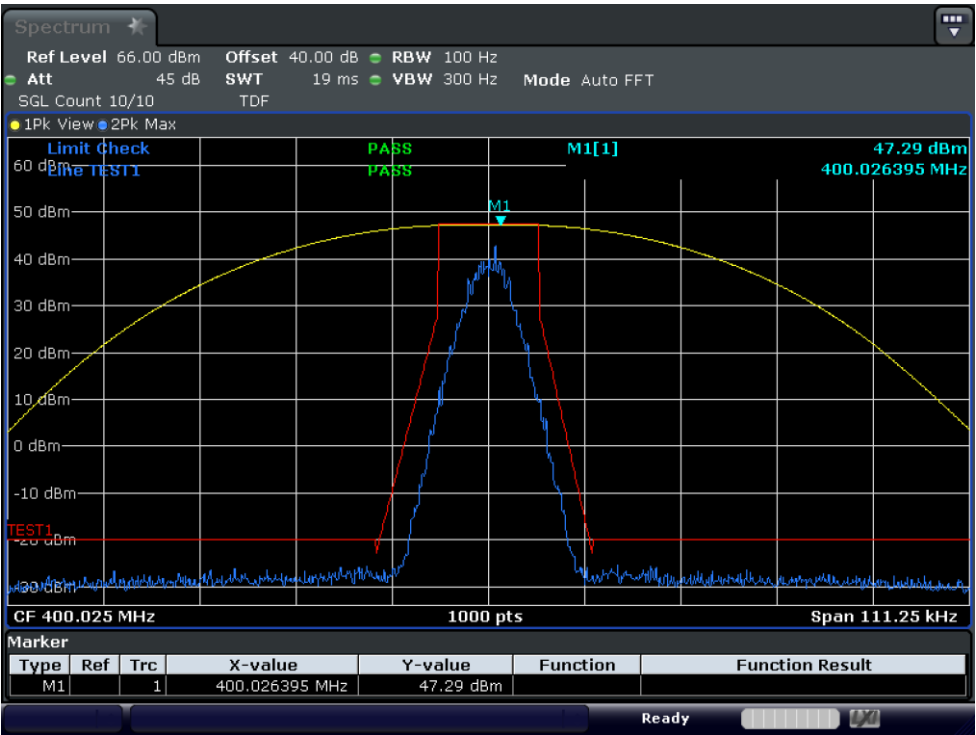


Test_Graph_FM_5W_469.975_12.5k_OBW

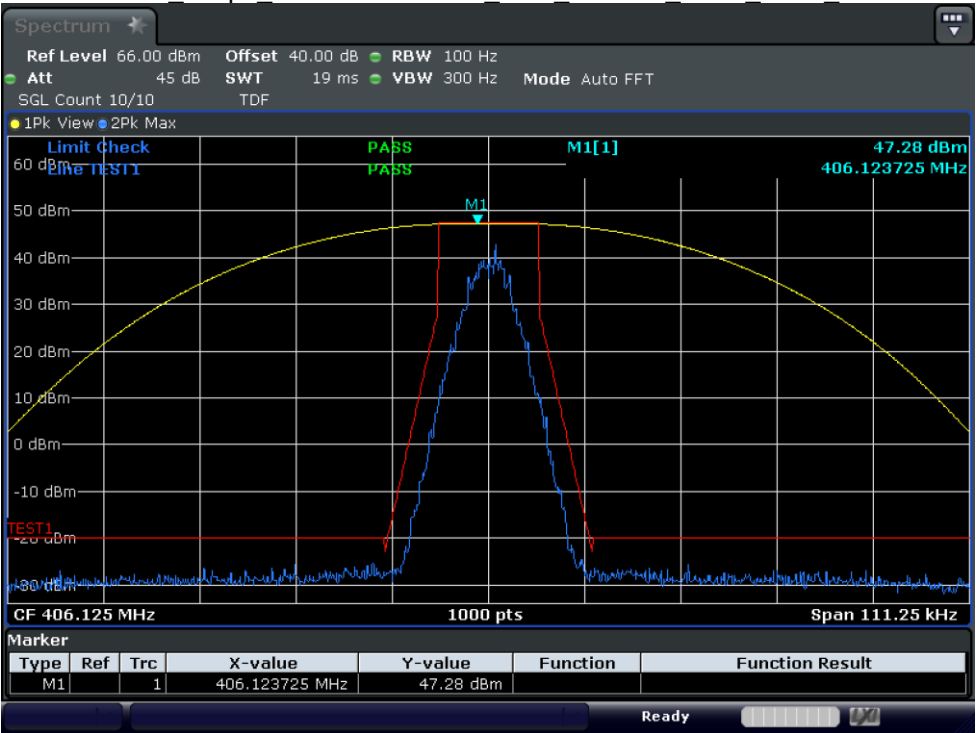




Test Graphs of Mask

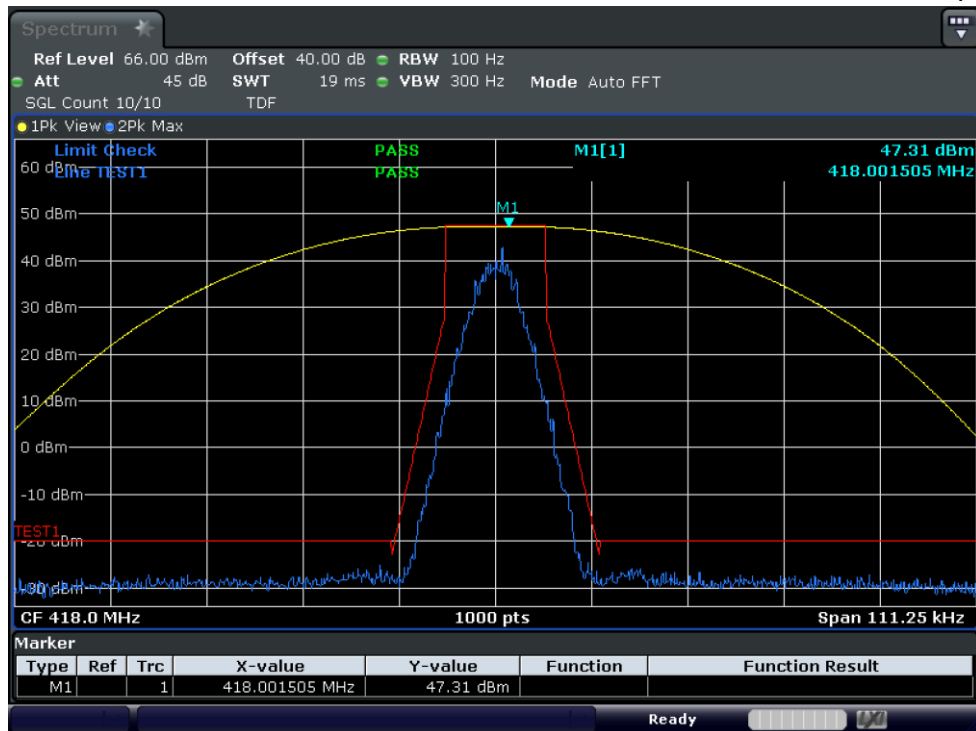


Test Graph 4FSK Data+Voice 50W 400.025 12.5k Mask D

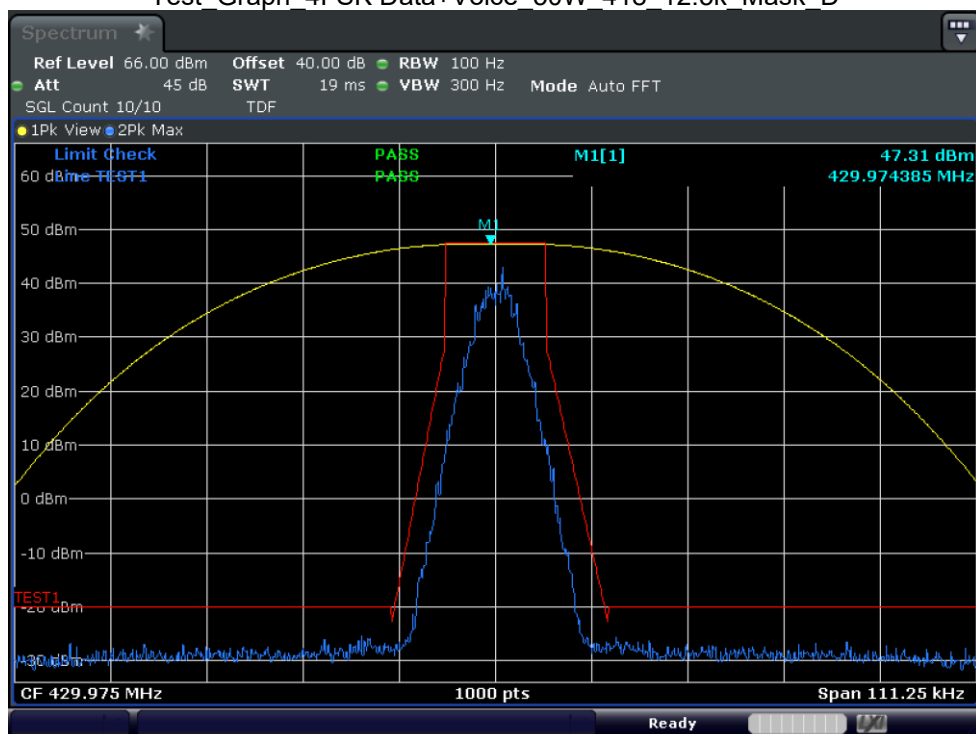


Test_Graph_4FSK Data+Voice_50W_406.125_12.5k_Mask_D



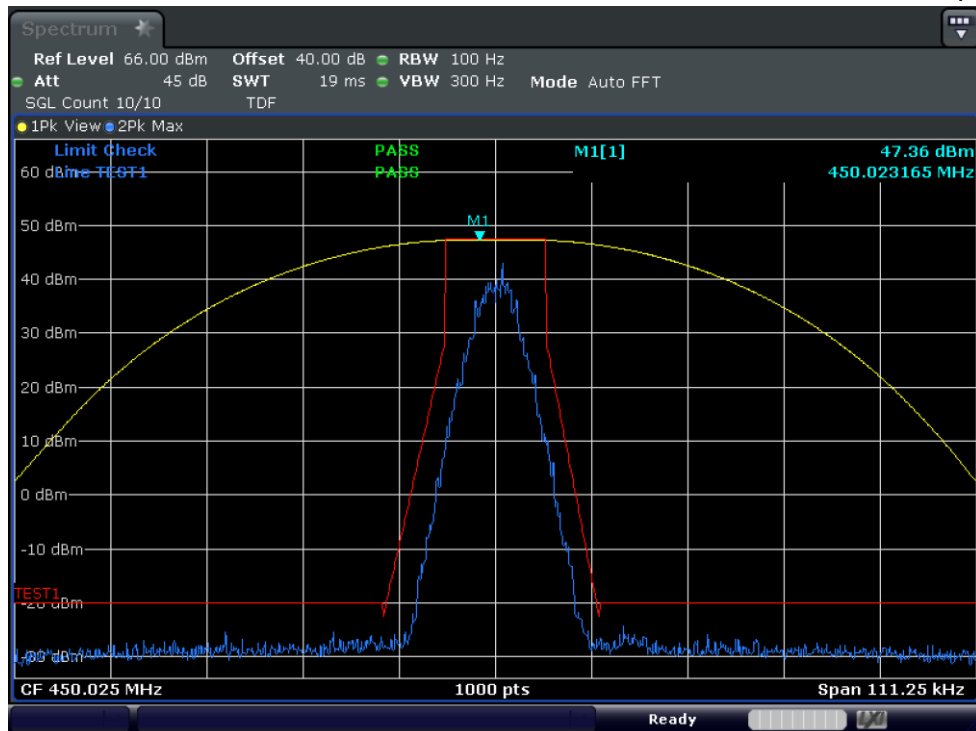


Test Graph 4FSK Data+Voice 50W 418 12.5k Mask D

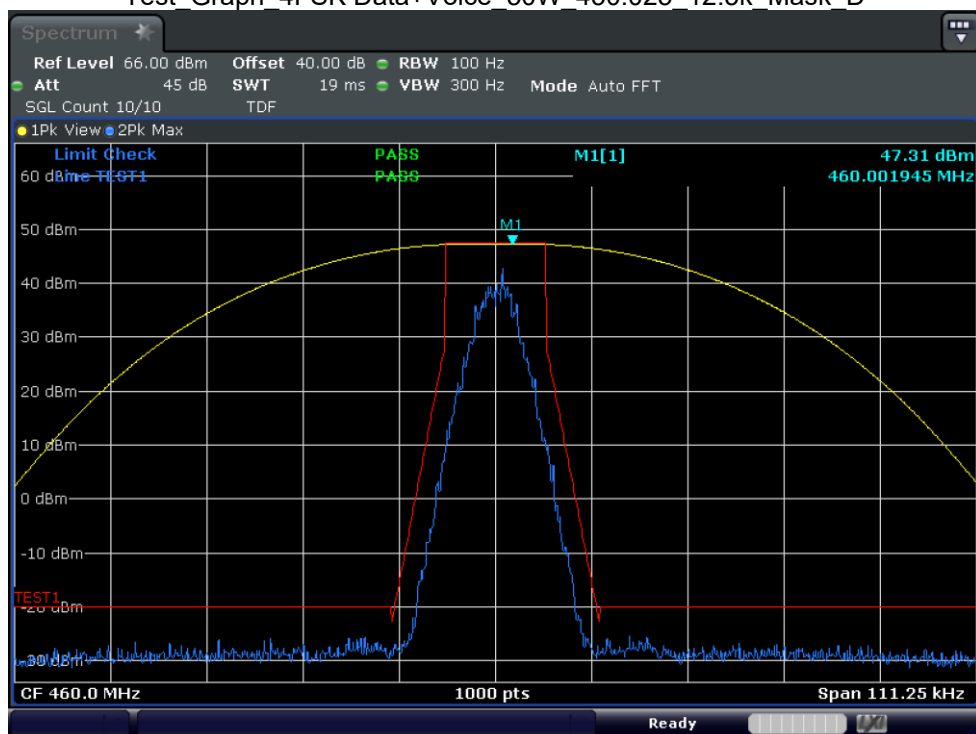


Test_Graph_4FSK Data+Voice_50W_429.975_12.5k_Mask_D



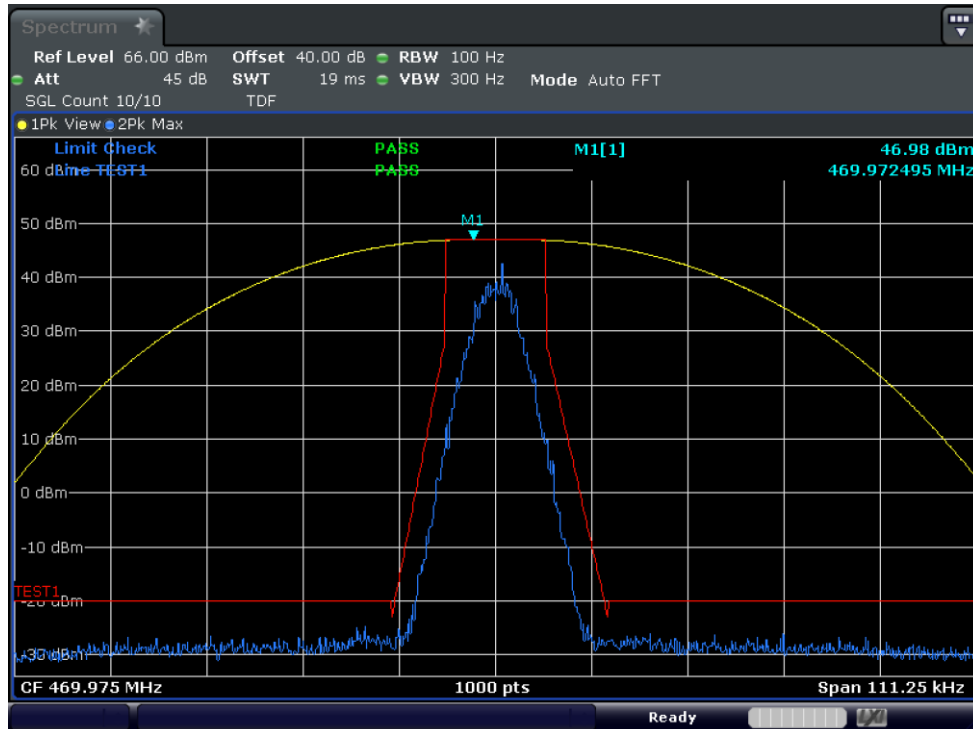


Test Graph 4FSK Data+Voice 50W 450.025 12.5k Mask D

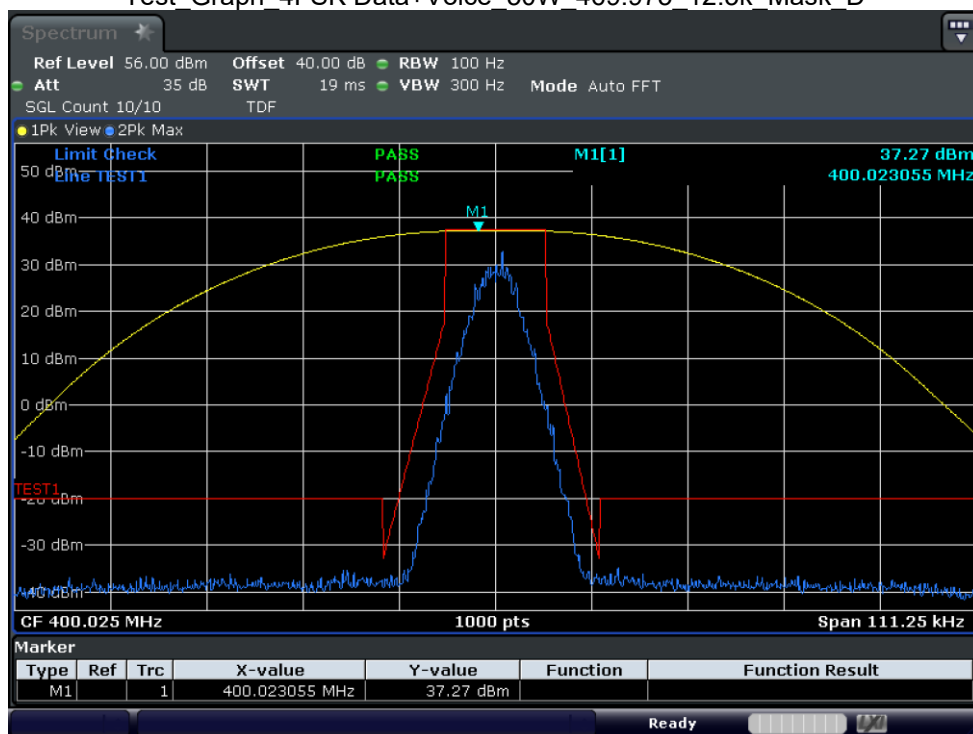


Test_Graph_4FSK Data+Voice_50W_460_12.5k_Mask_D



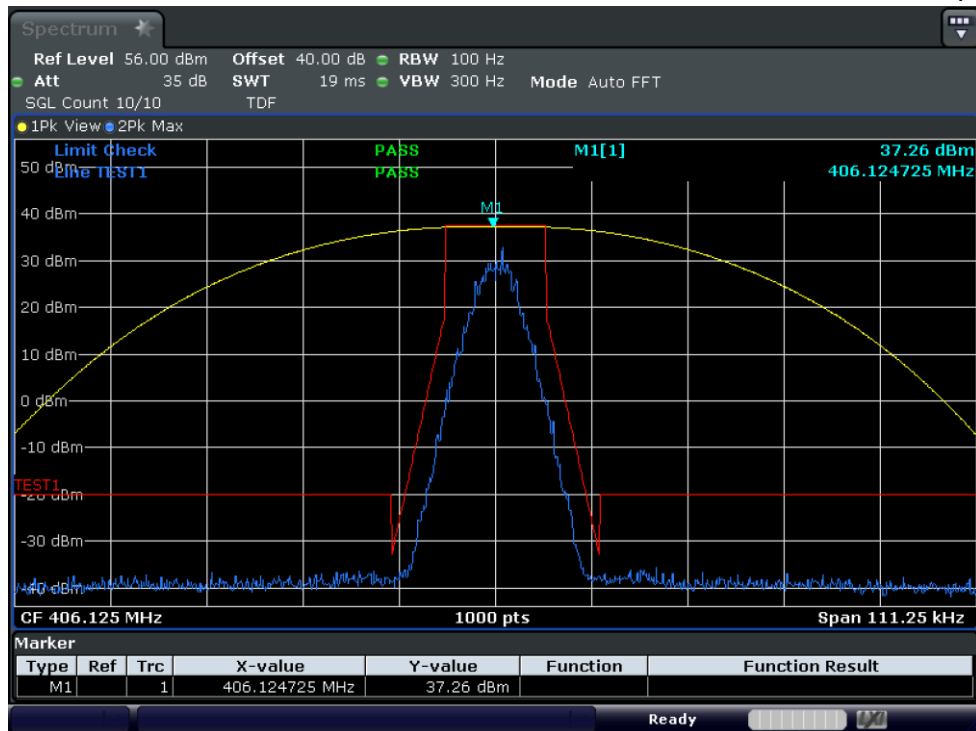


Test Graph 4FSK Data+Voice 50W 469.975 12.5k Mask D

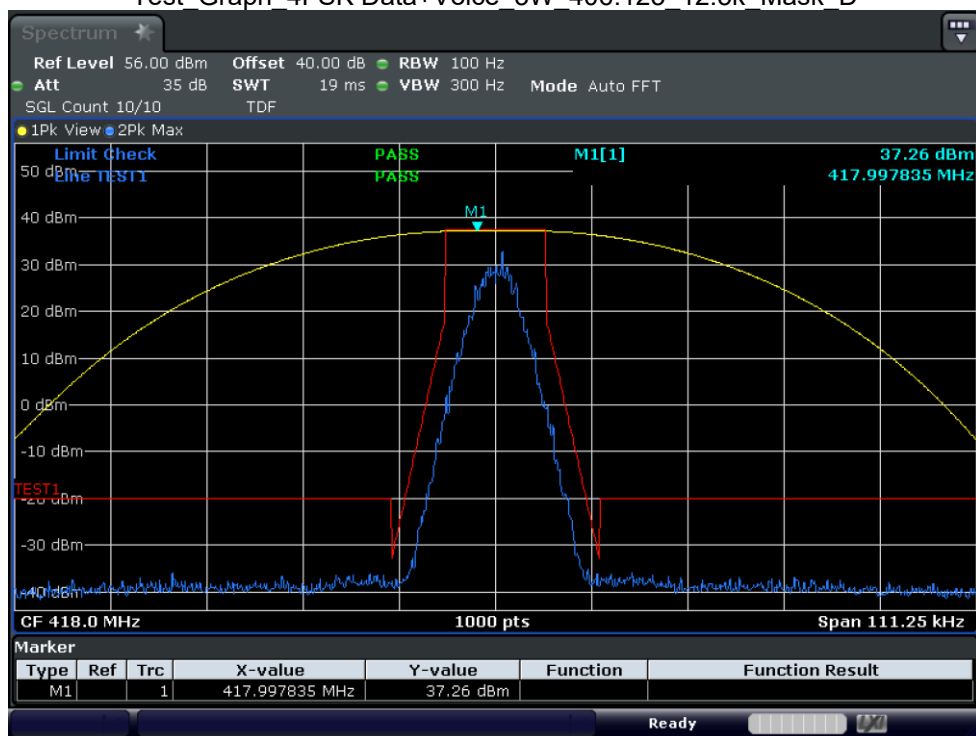


Test_Graph_4FSK Data+Voice_5W_400.025_12.5k_Mask_D



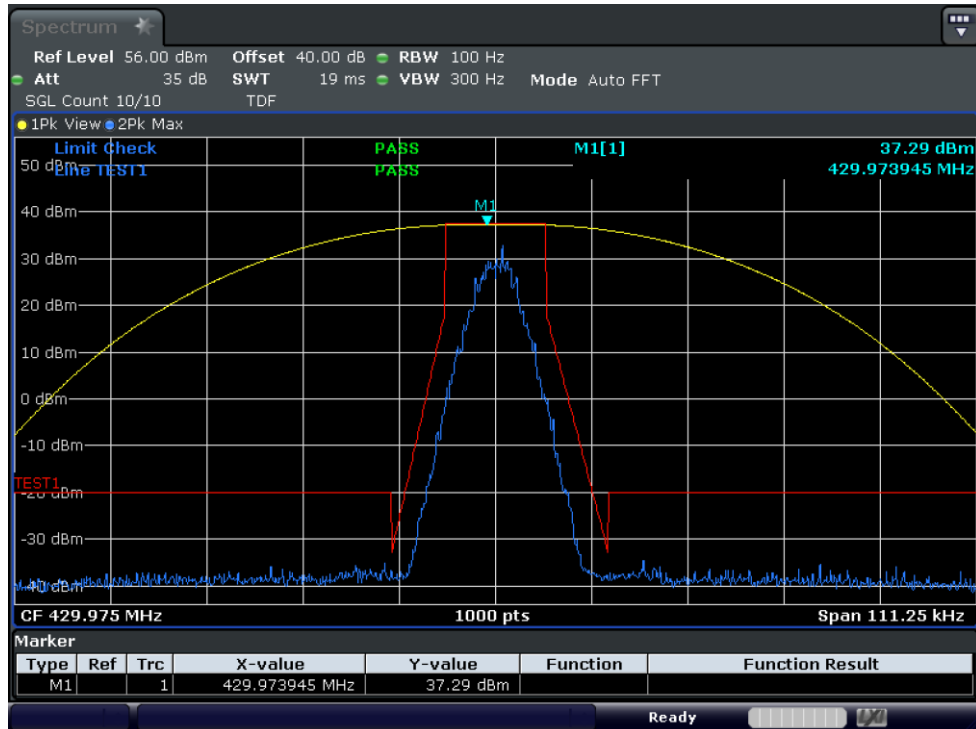


Test_Graph_4FSK Data+Voice_5W_406.125_12.5k_Mask_D

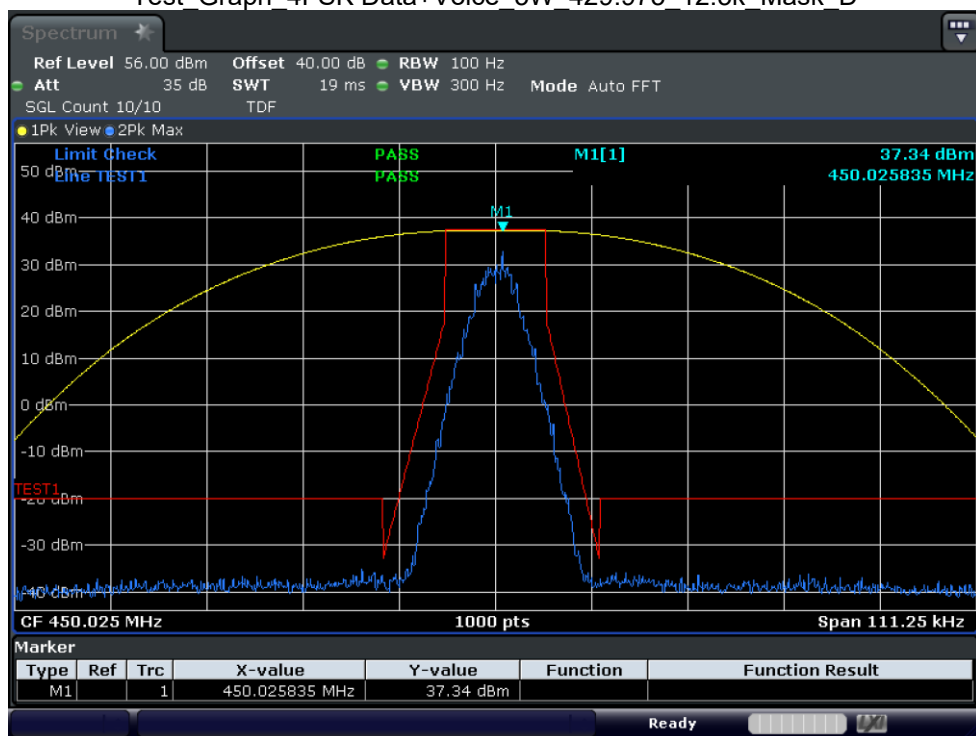


Test_Graph_4FSK Data+Voice_5W_418_12.5k_Mask_D



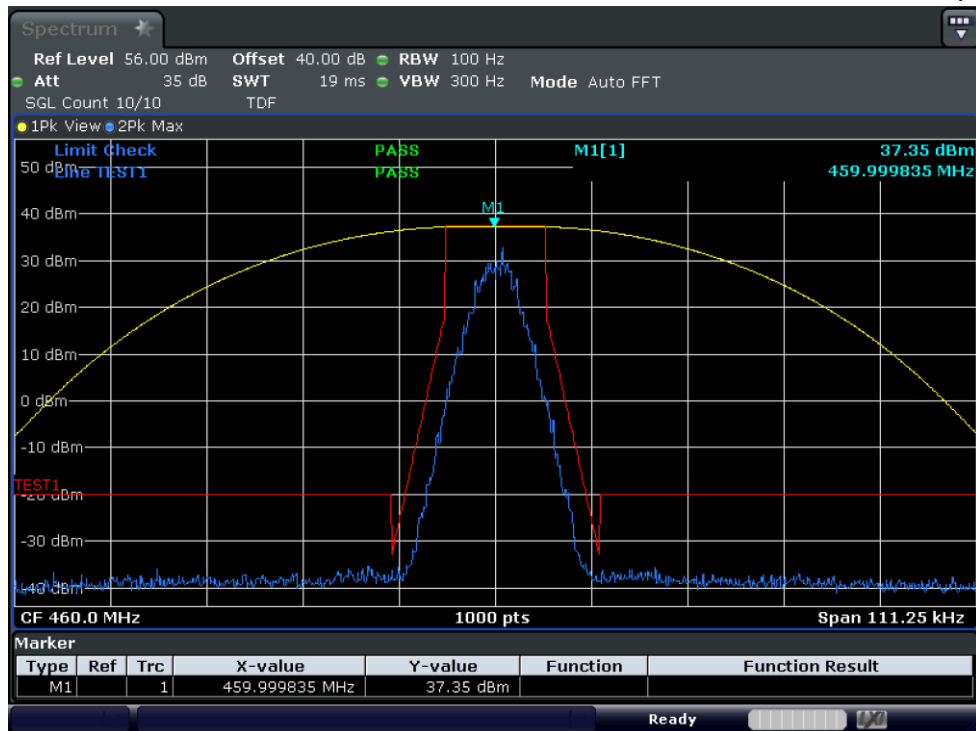


Test Graph 4FSK Data+Voice 5W 429.975 12.5k Mask D

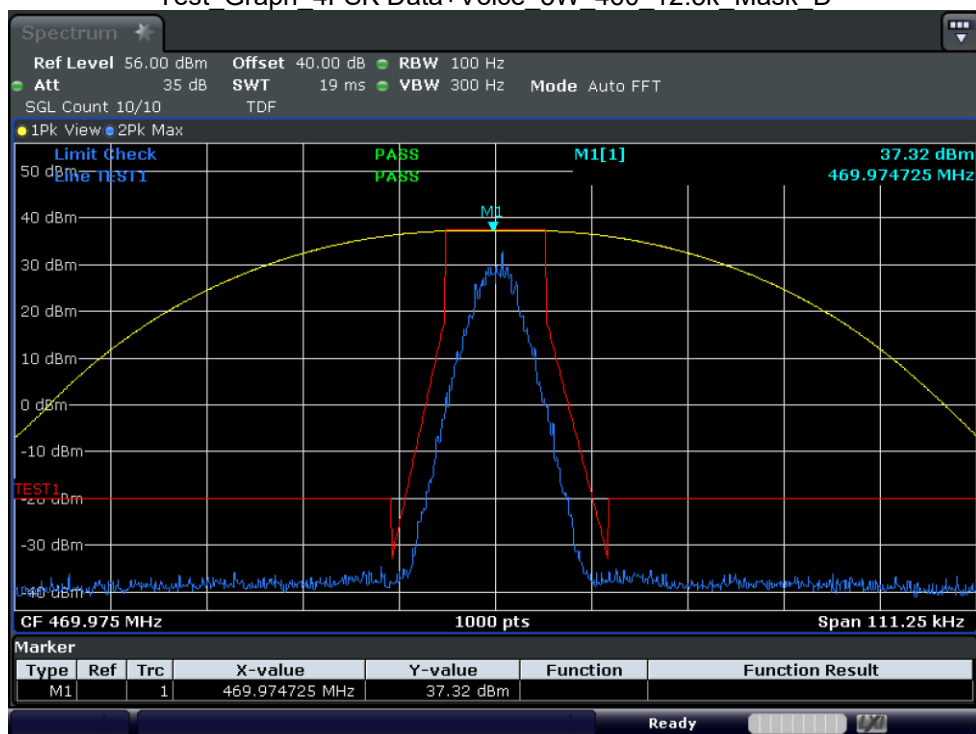


Test_Graph_4FSK Data+Voice_5W_450.025_12.5k_Mask_D



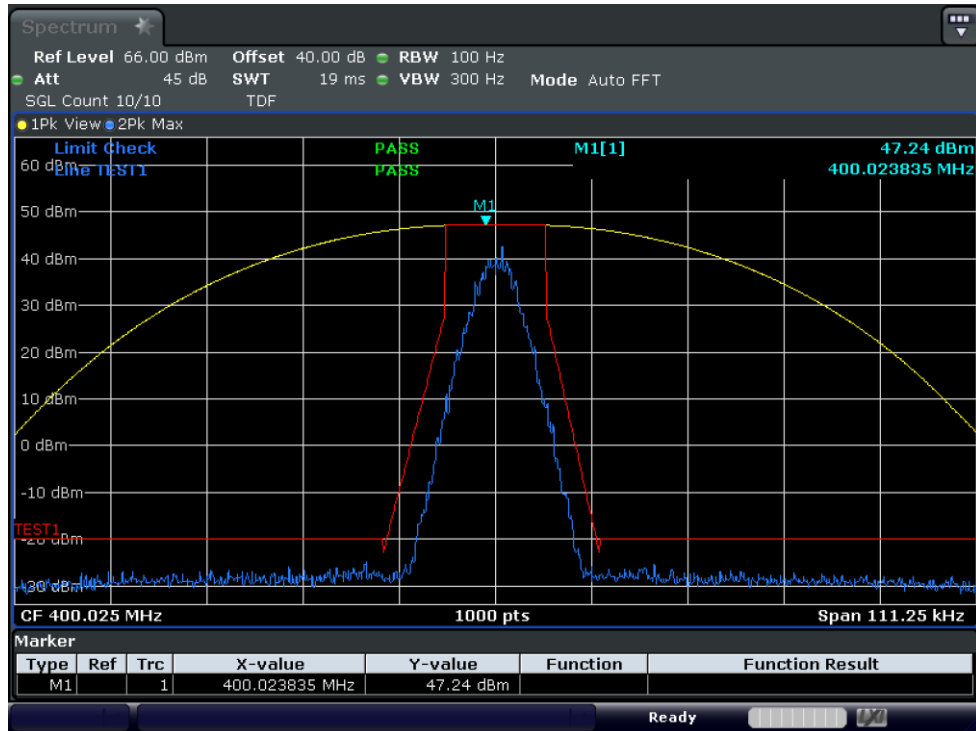


Test Graph 4FSK Data+Voice 5W 460 12.5k Mask D

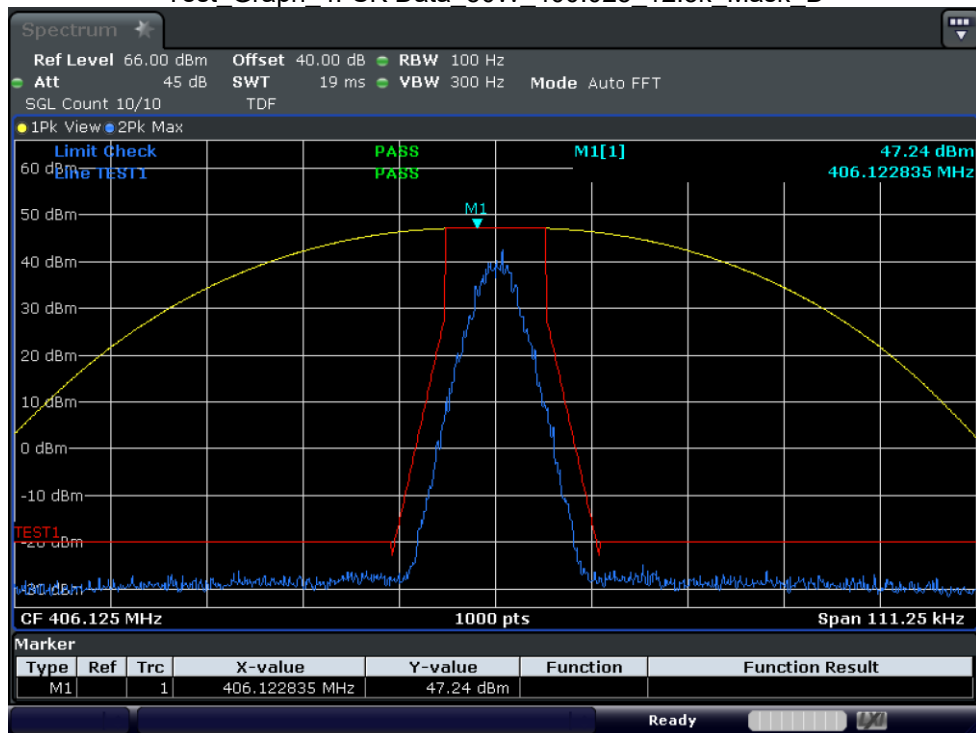


Test_Graph_4FSK Data+Voice_5W_469.975_12.5k_Mask_D



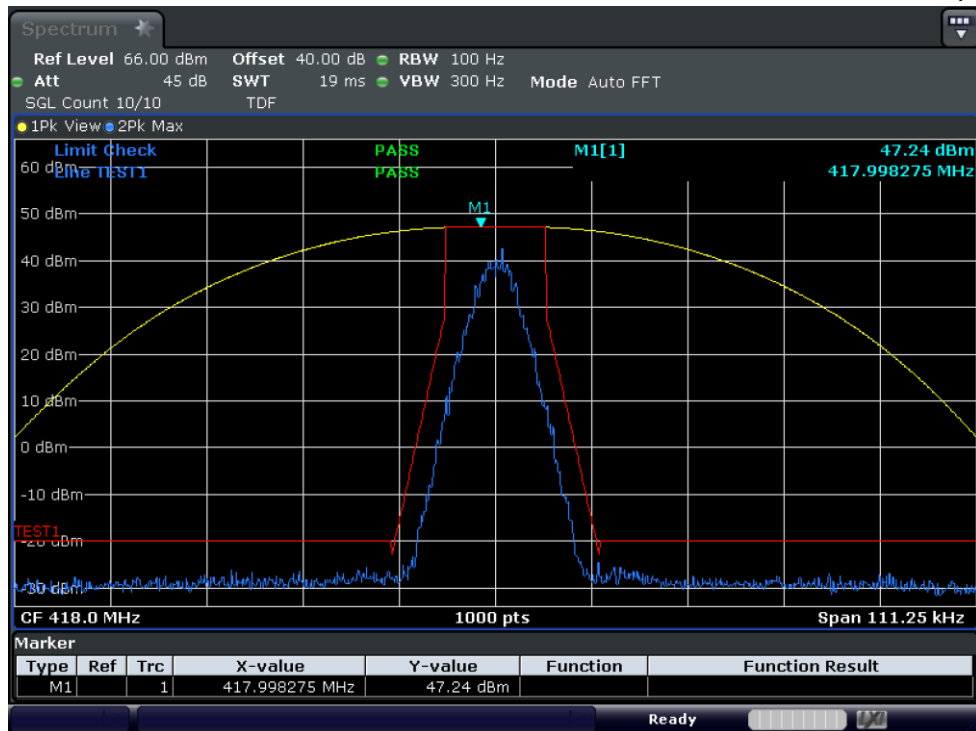


Test Graph 4FSK Data 50W 400.025 12.5k Mask D

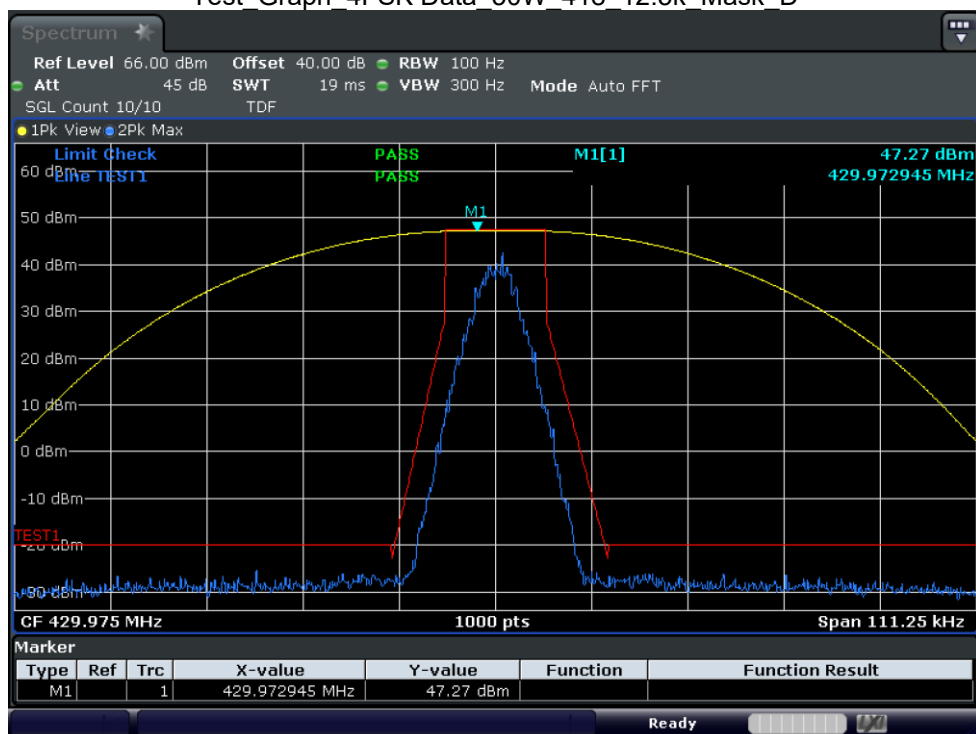


Test_Graph_4FSK Data_50W_406.125_12.5k_Mask_D



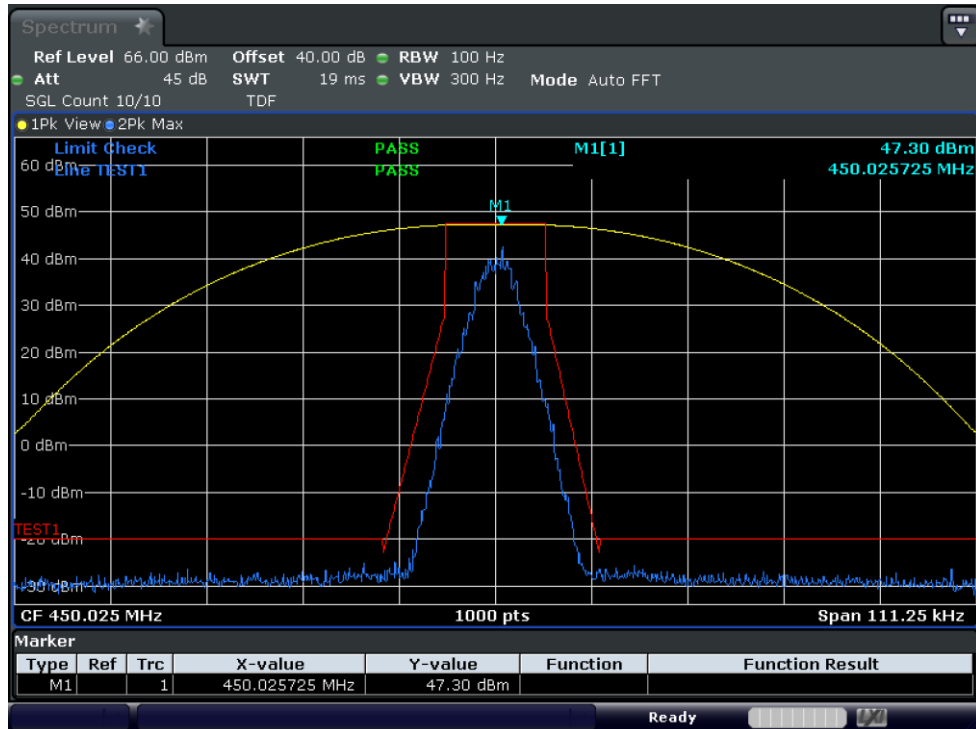


Test Graph 4FSK Data 50W 418 12.5k Mask D

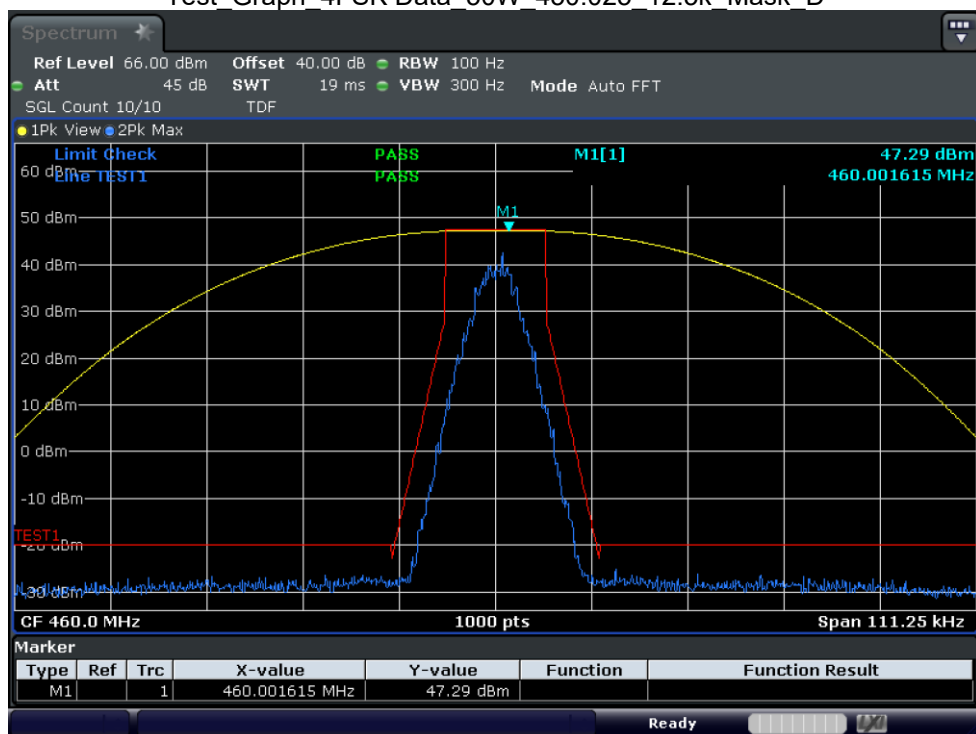


Test_Graph_4FSK Data_50W_429.975_12.5k_Mask_D



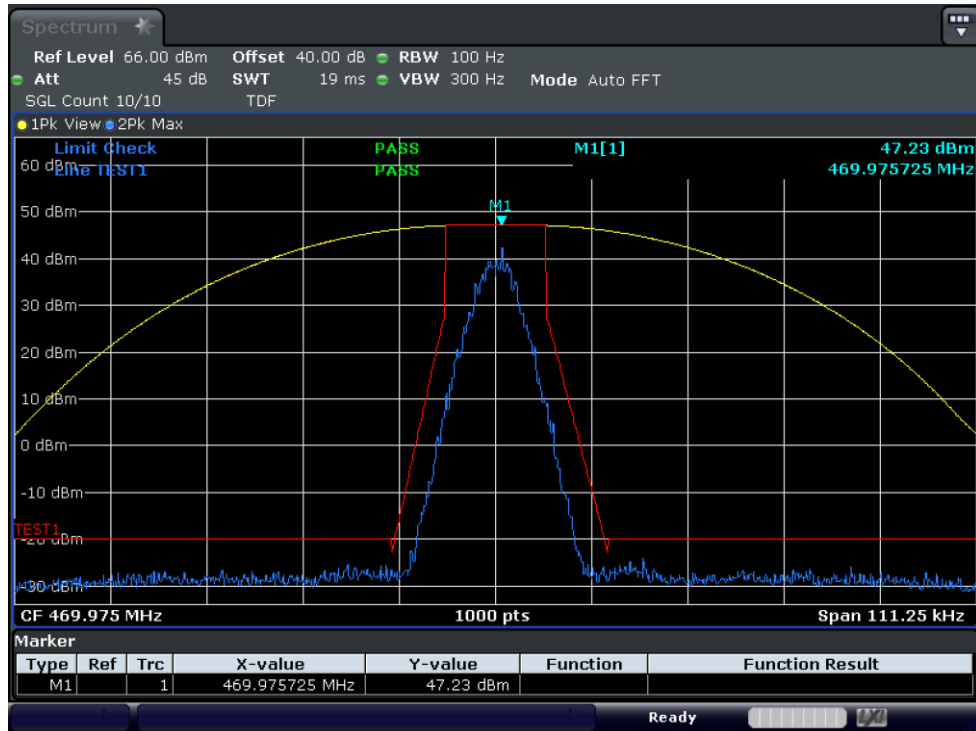


Test Graph 4FSK Data 50W 450.025 12.5k Mask D

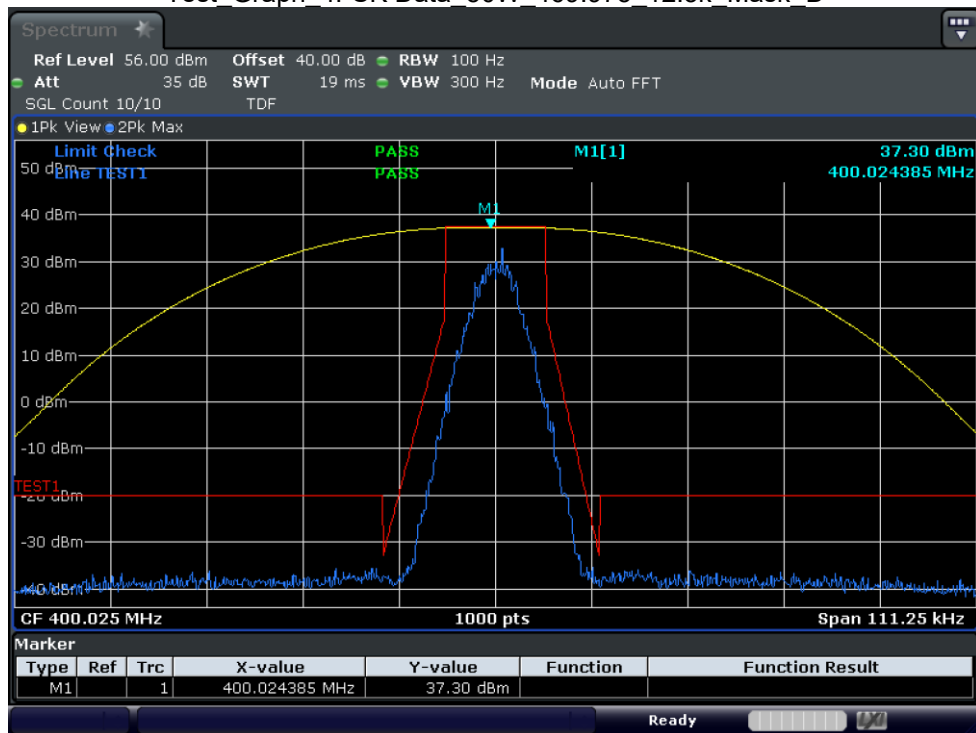


Test_Graph_4FSK Data_50W_460_12.5k_Mask_D



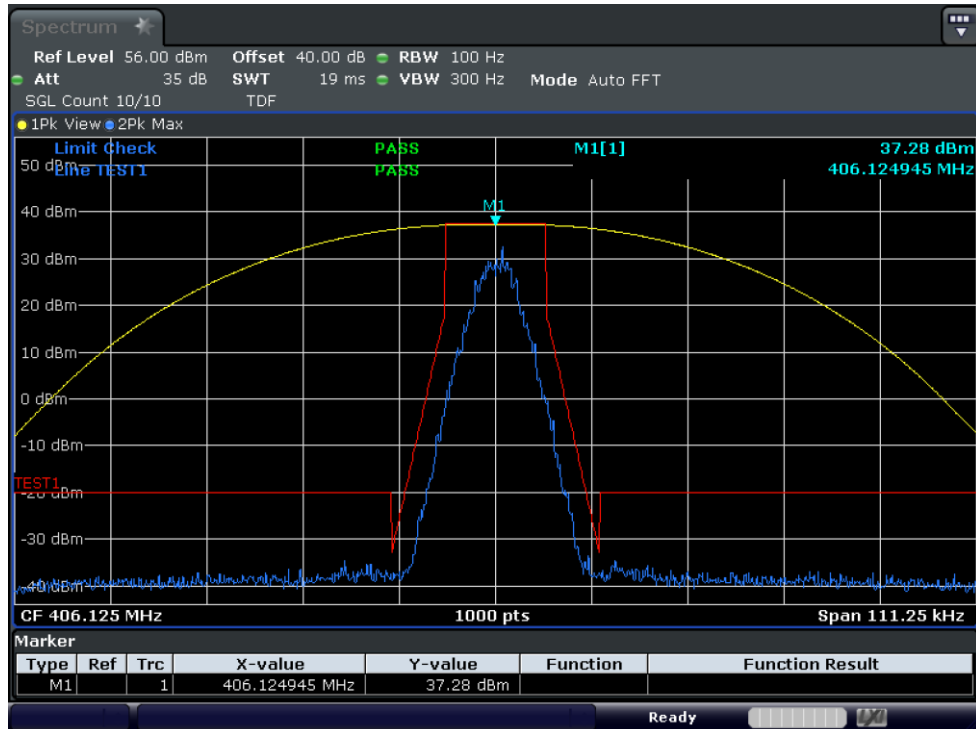


Test Graph 4FSK Data 50W 469.975 12.5k Mask D

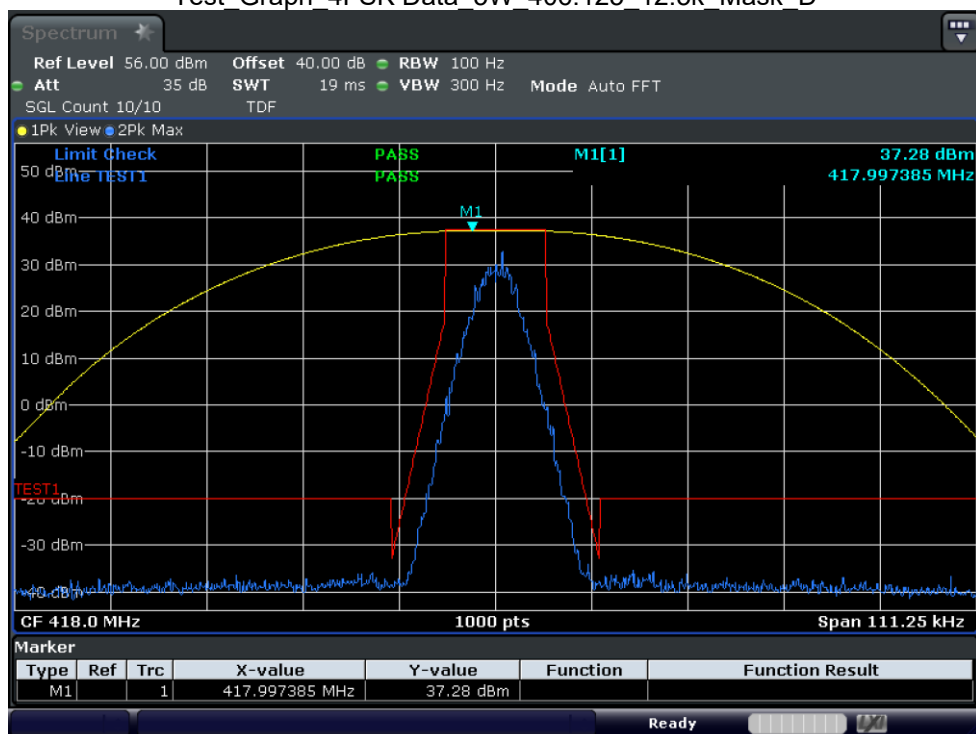


Test_Graph_4FSK Data_5W_400.025_12.5k_Mask_D



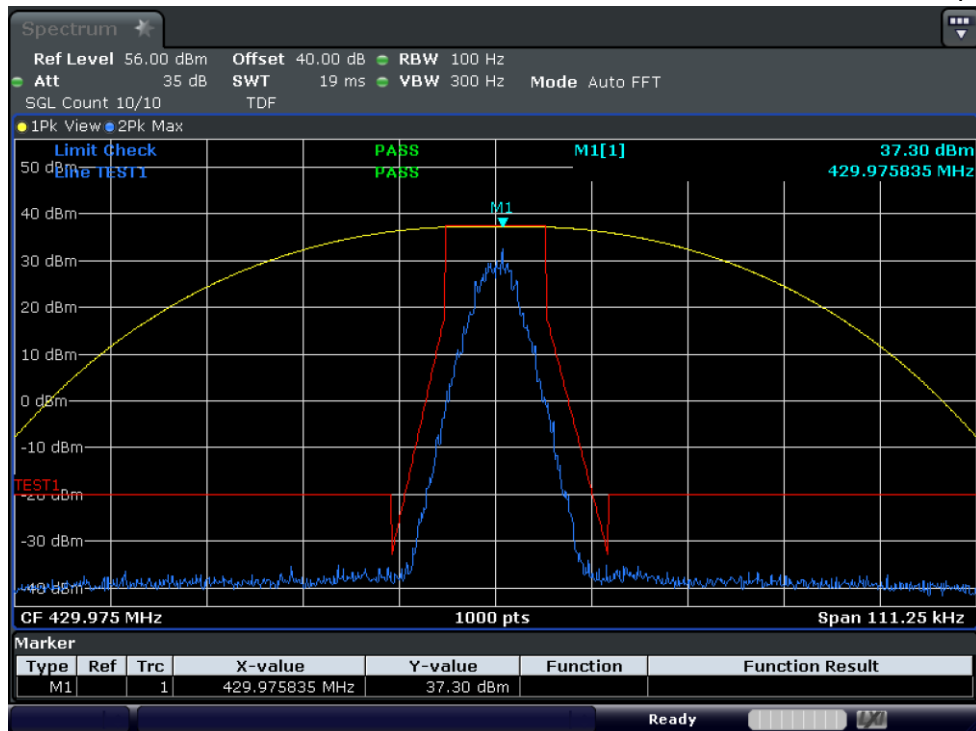


Test Graph 4FSK Data 5W 406.125 12.5k Mask D

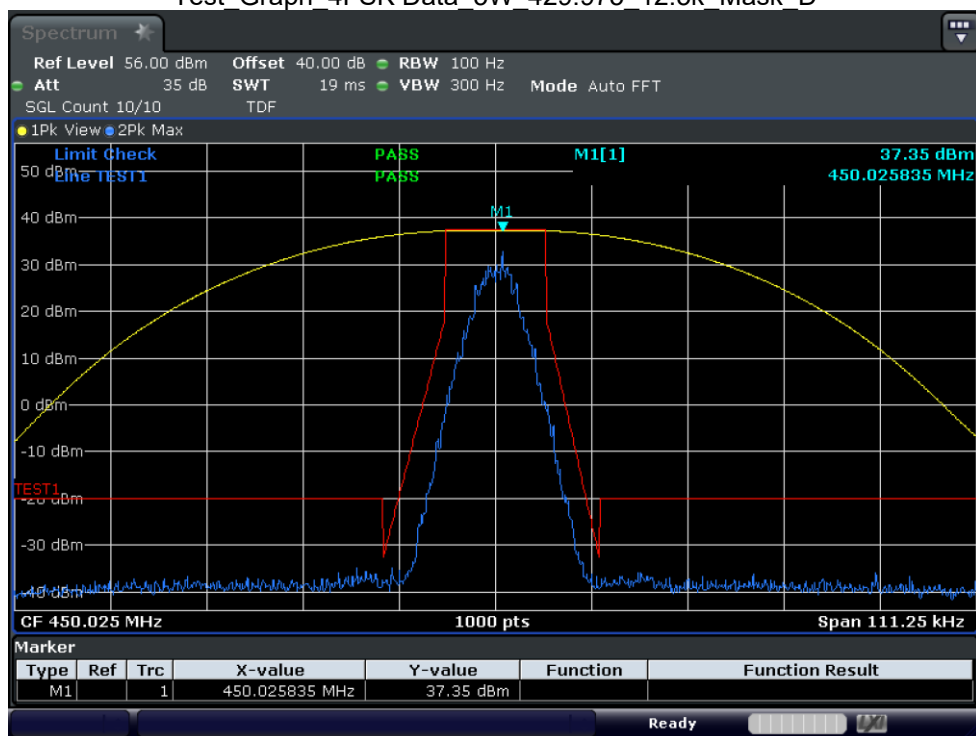


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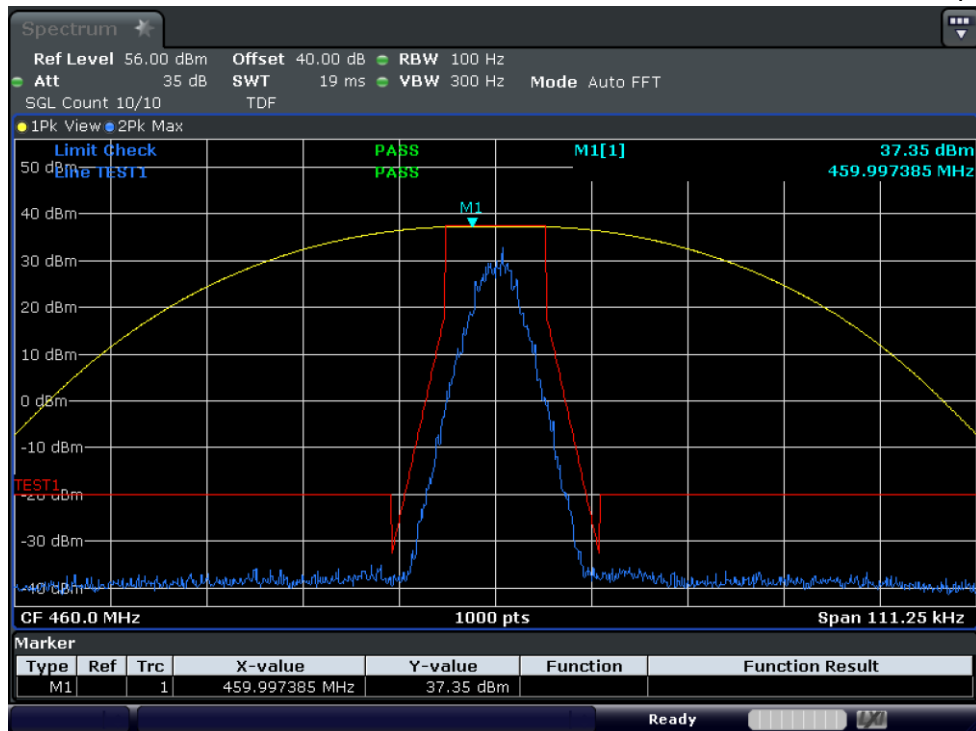


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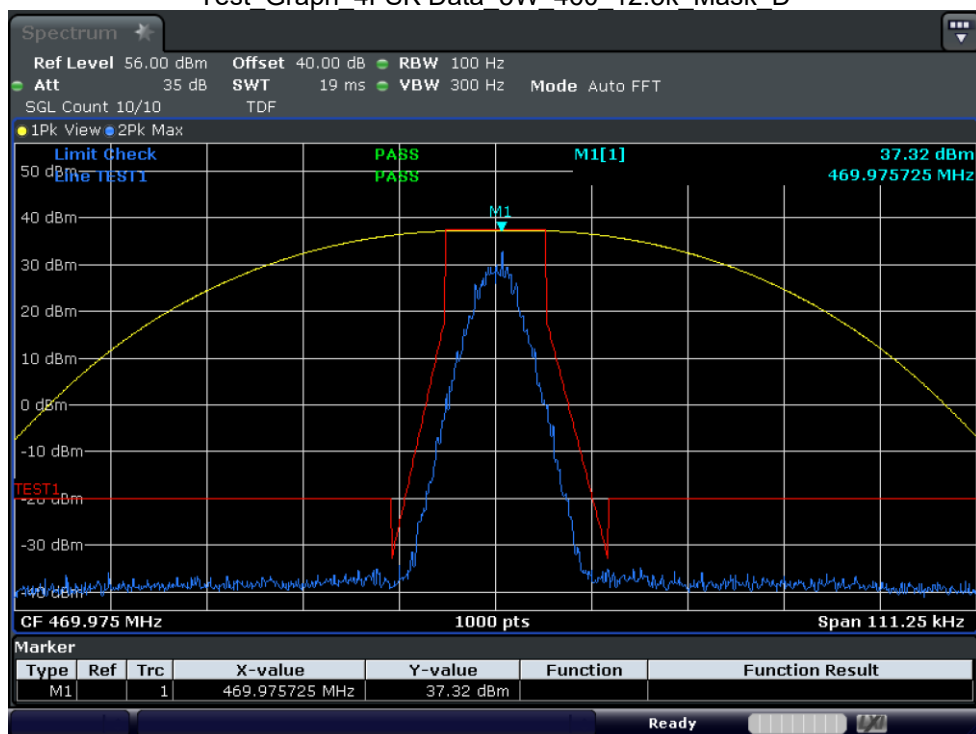


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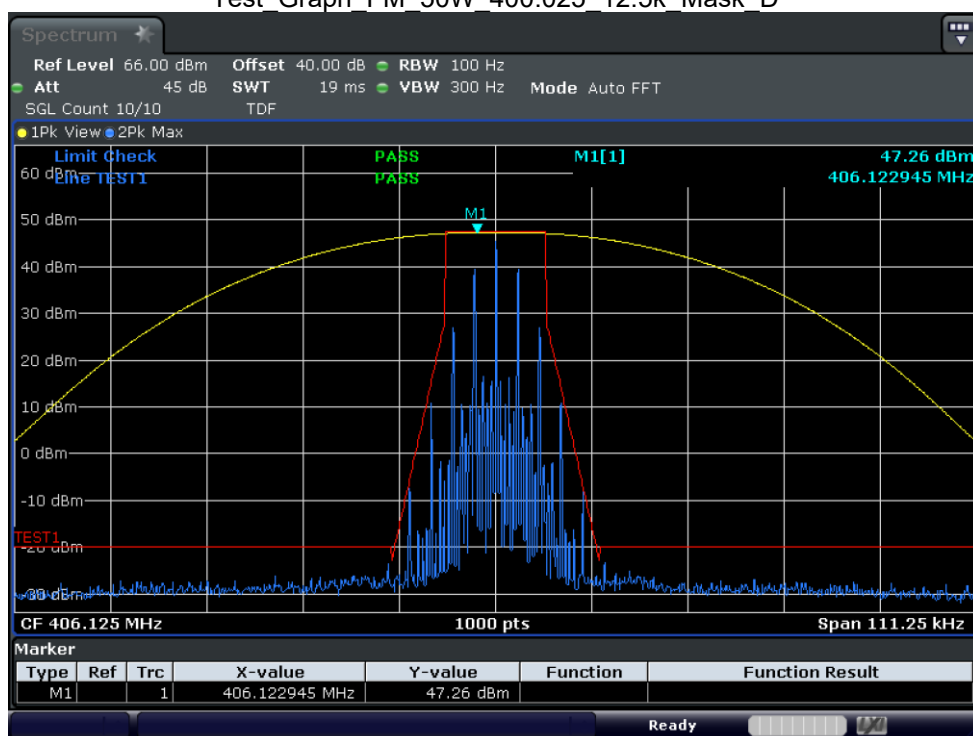
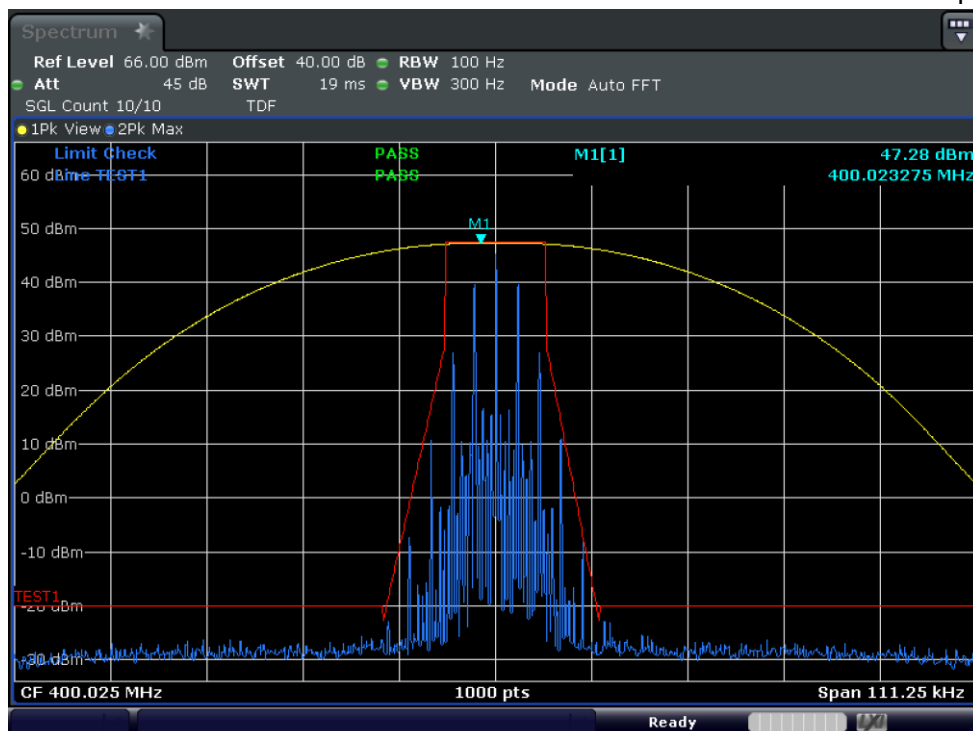
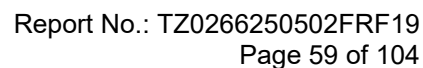


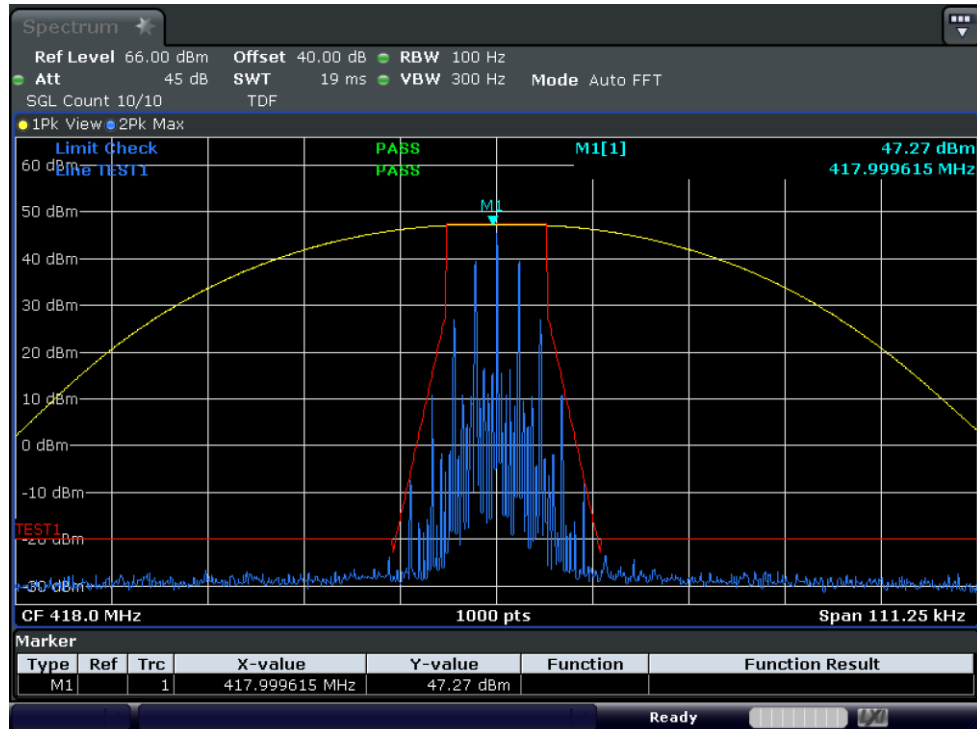
Test Graph 4FSK Data 5W 460 12.5k Mask D



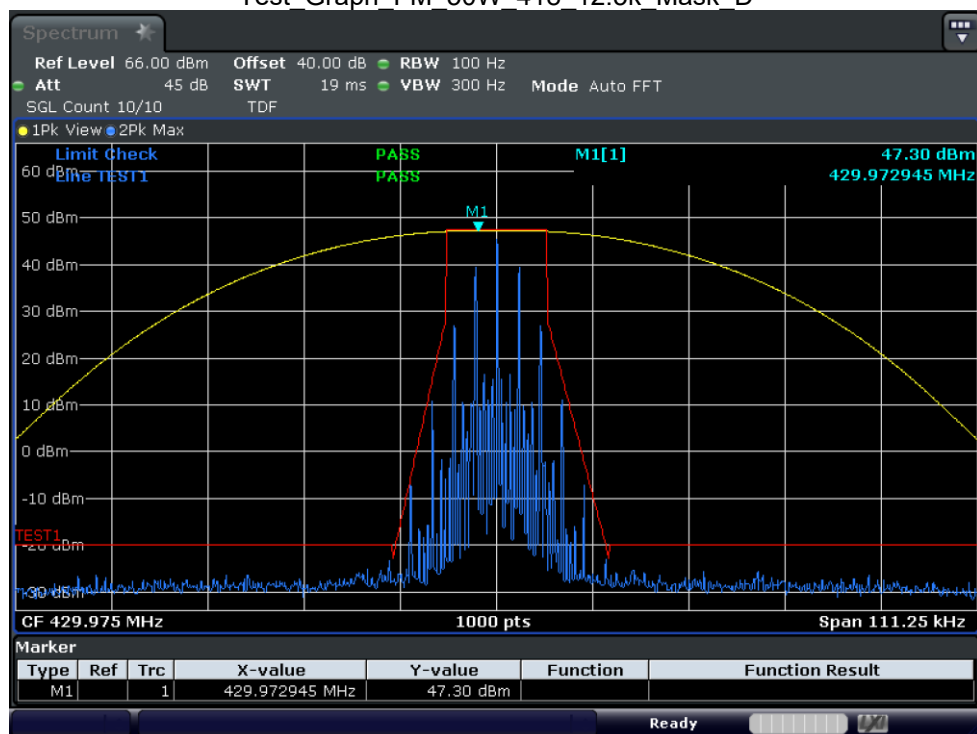
Test_Graph_4FSK Data_5W_469.975_12.5k_Mask_D





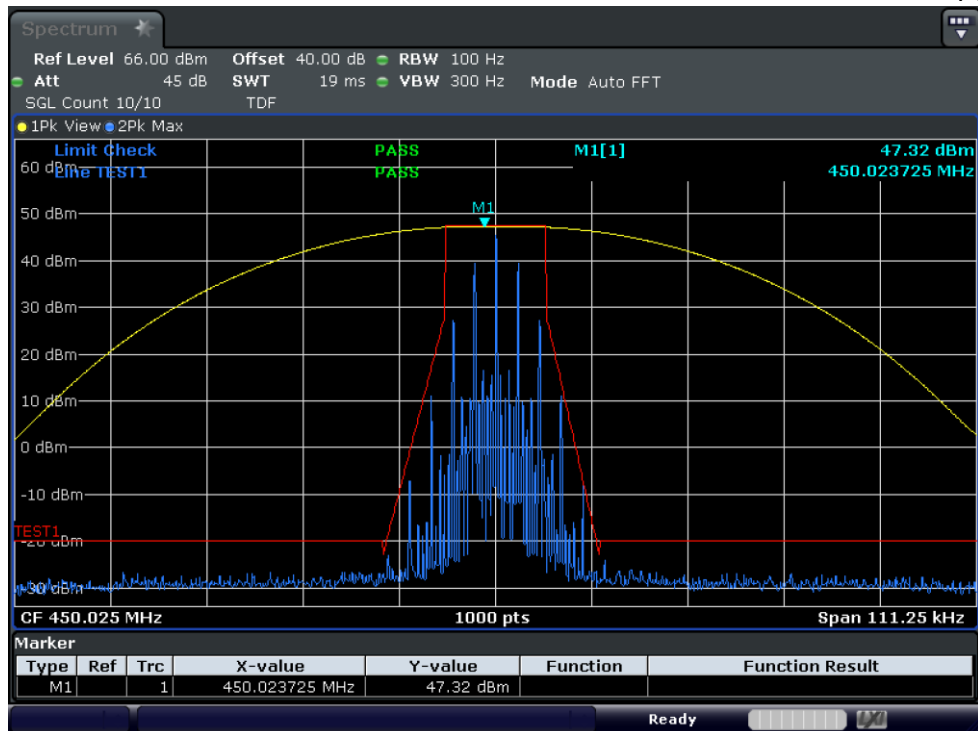


Test Graph FM 50W 418 12.5k Mask D

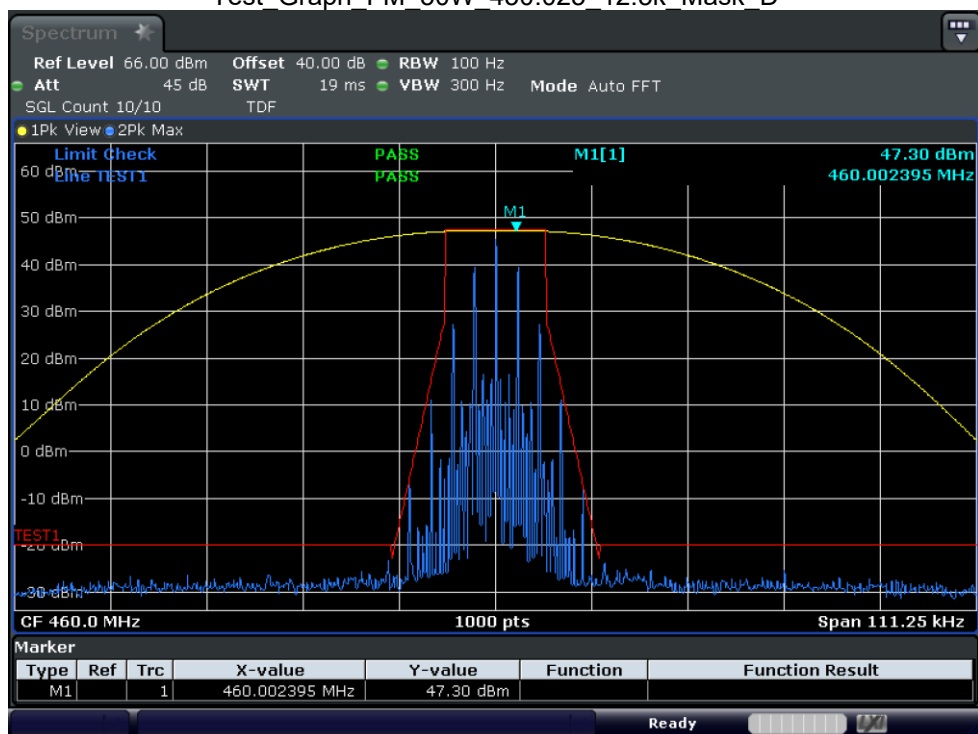


Test_Graph_FM_50W_429.975_12.5k_Mask_D



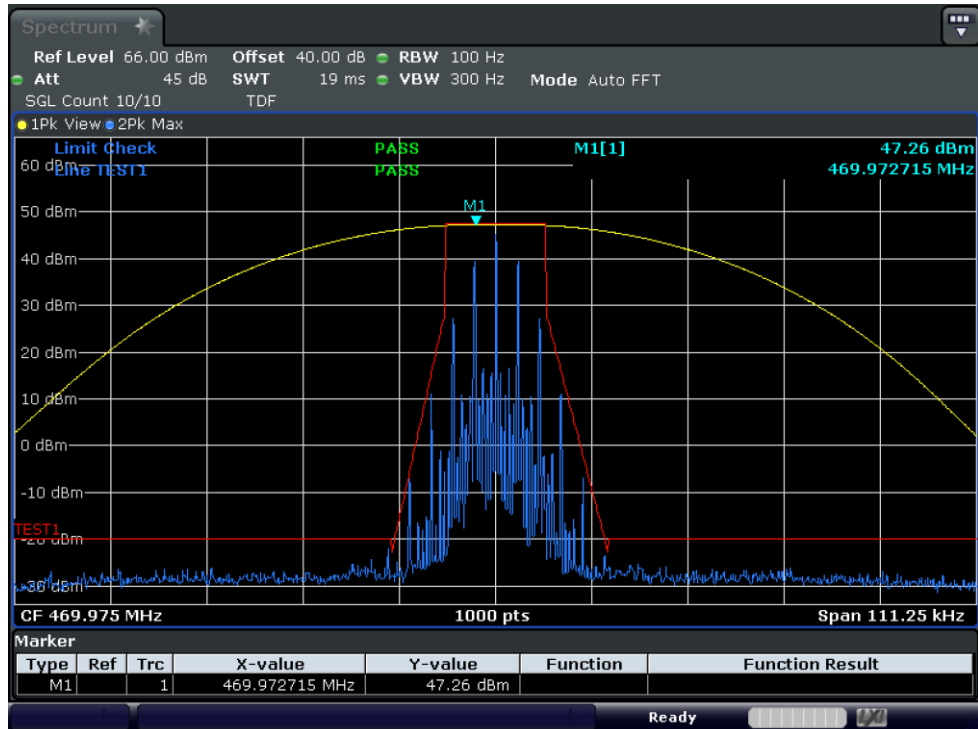


Test Graph FM 50W 450.025 12.5k Mask D

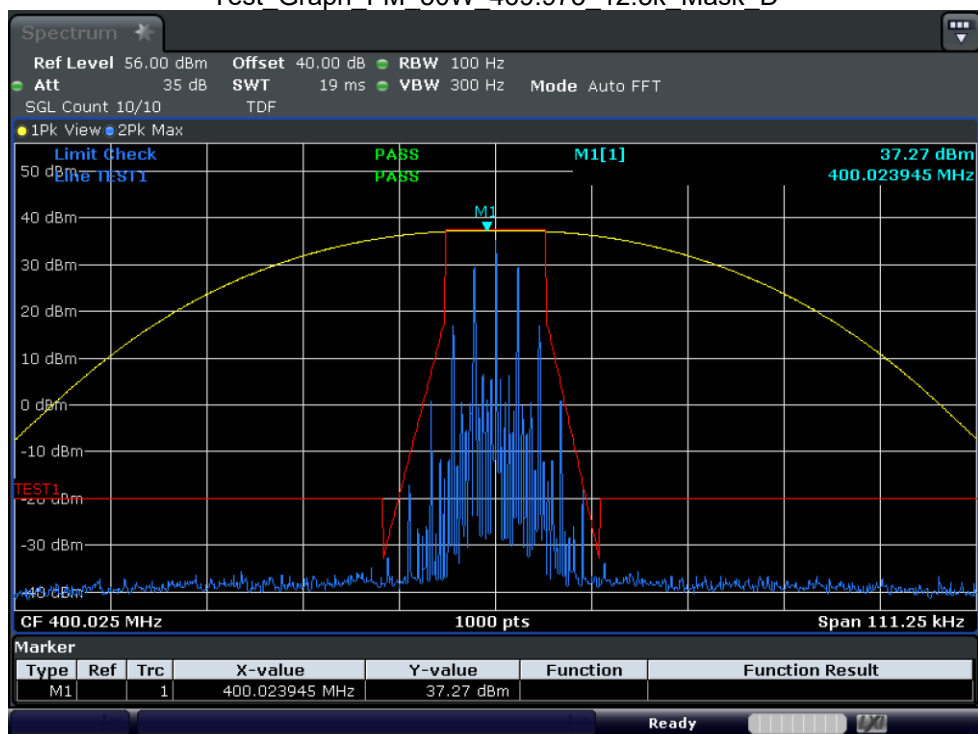


Test_Graph_FM_50W_460_12.5k_Mask_D



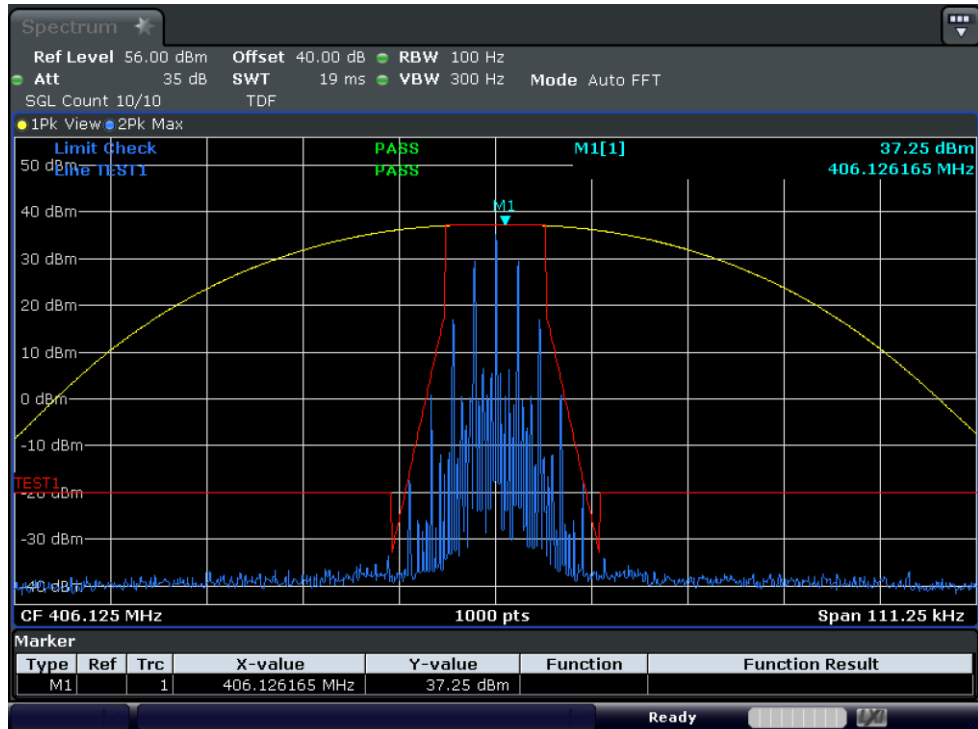


Test Graph FM 50W 469.975 12.5k Mask D

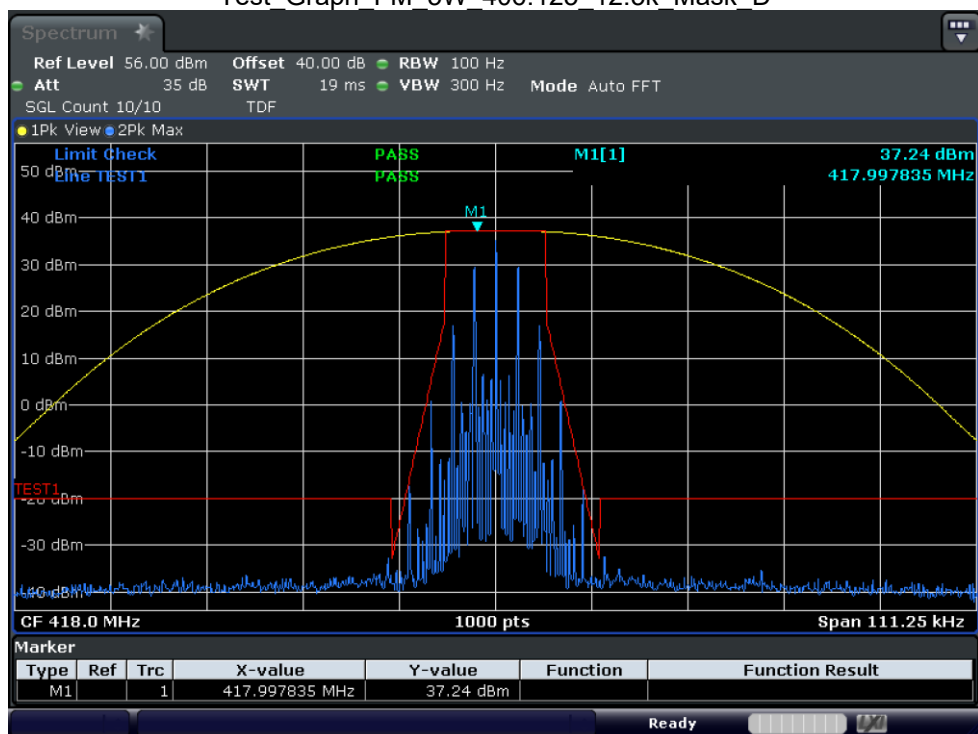


Test_Graph_FM_5W_400.025_12.5k_Mask_D



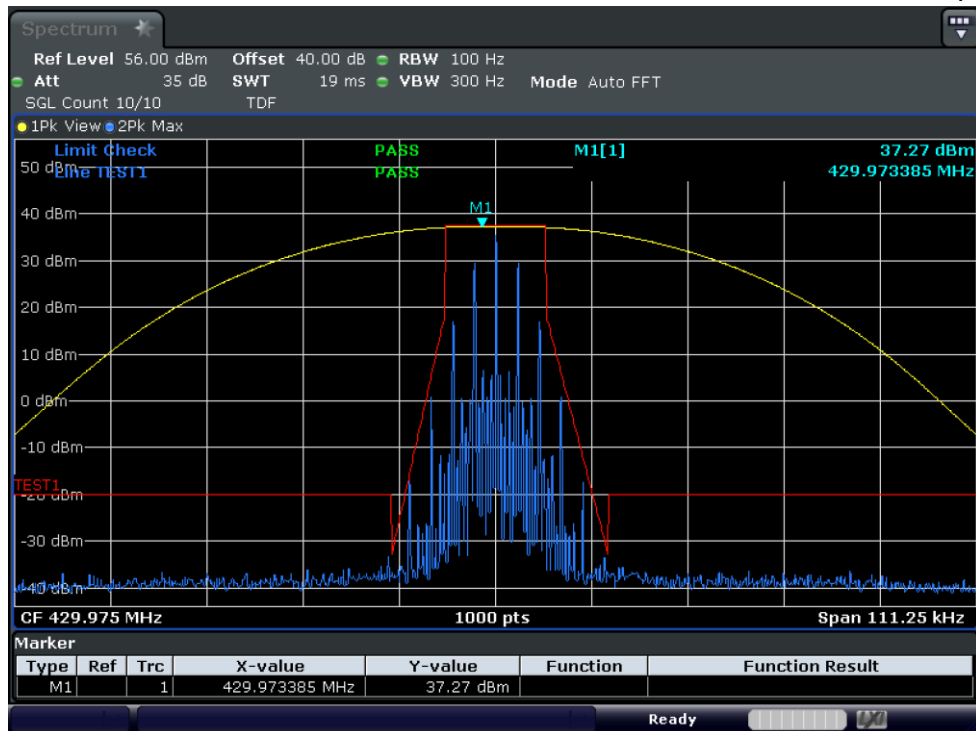


Test Graph FM 5W 406.125 12.5k Mask D

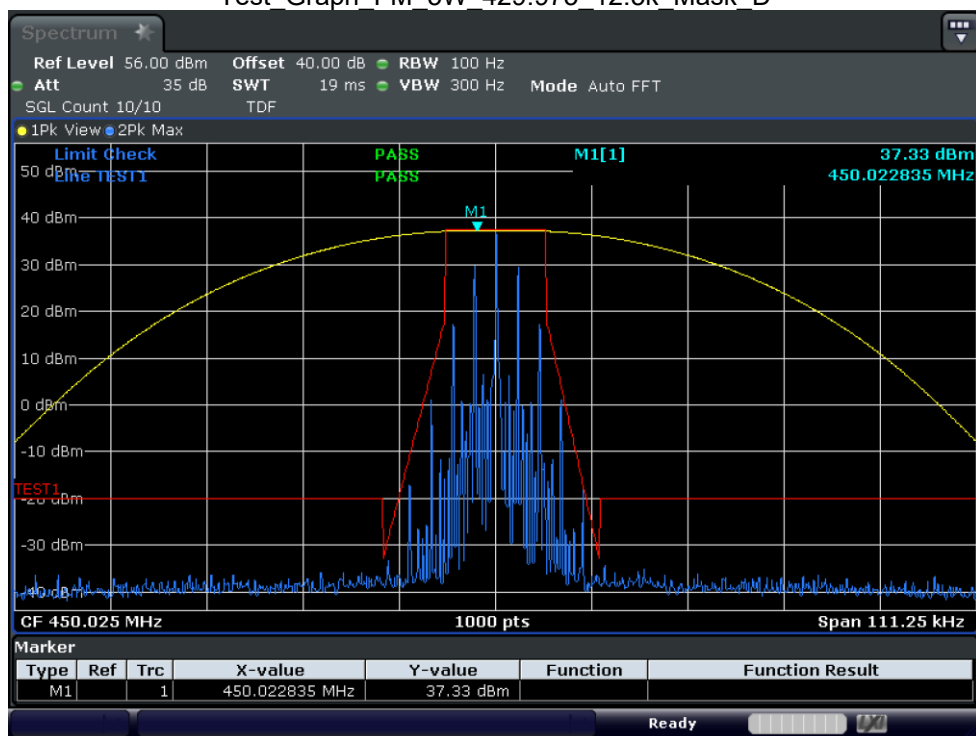


Test_Graph_FM_5W_418_12.5k_Mask_D



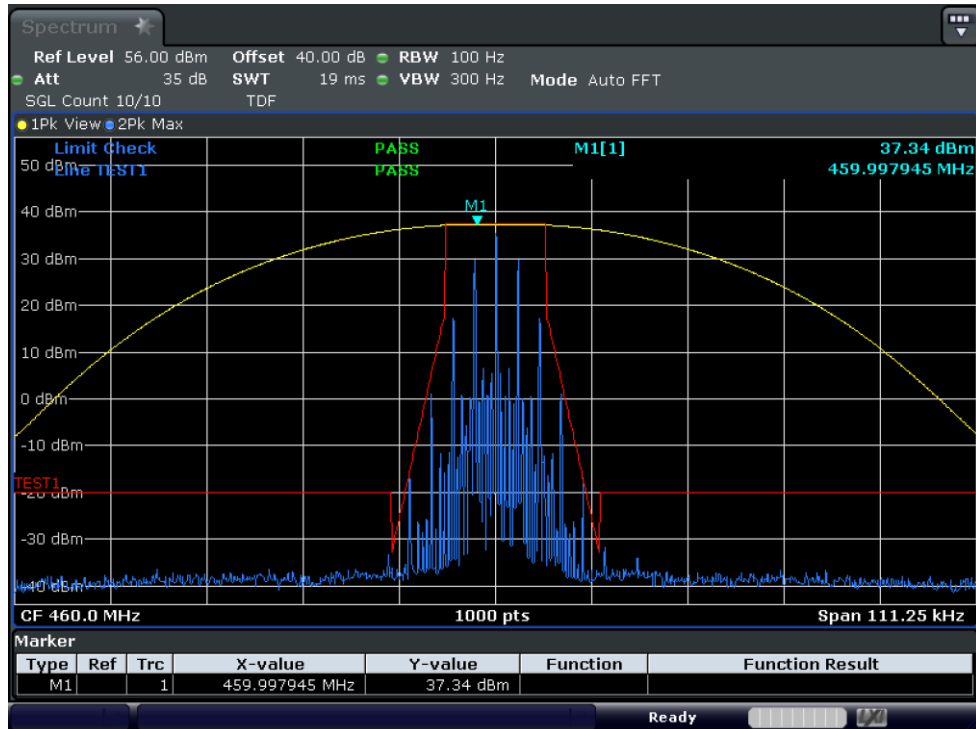


Test Graph FM 5W 429.975 12.5k Mask D

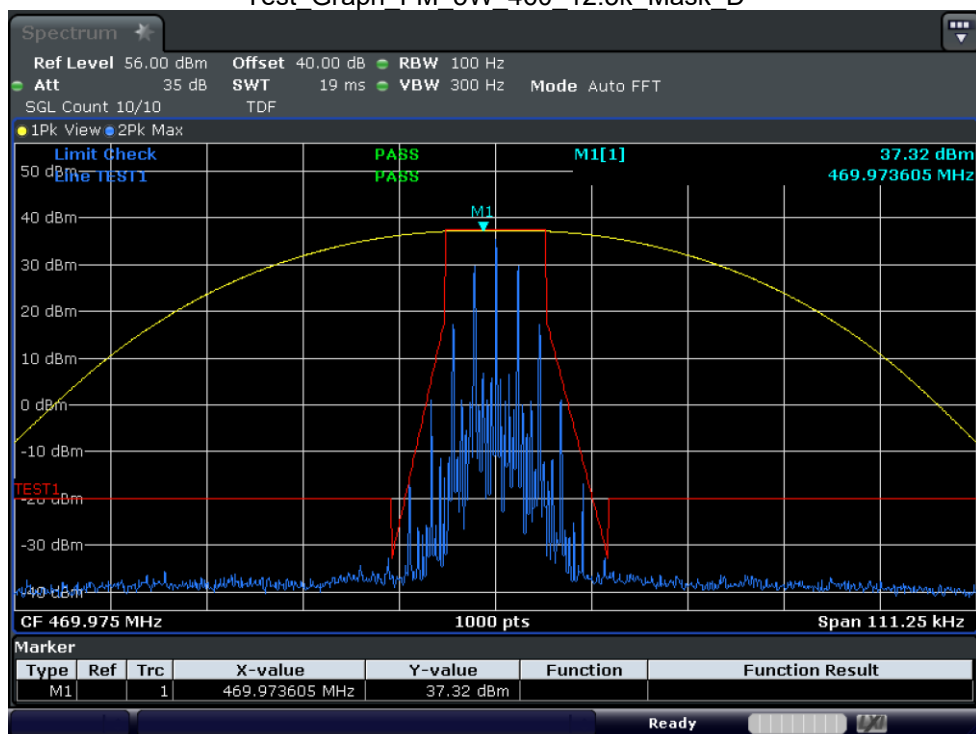


Test_Graph_FM_5W_450.025_12.5k_Mask_D





Test Graph FM 5W 460 12.5k Mask D



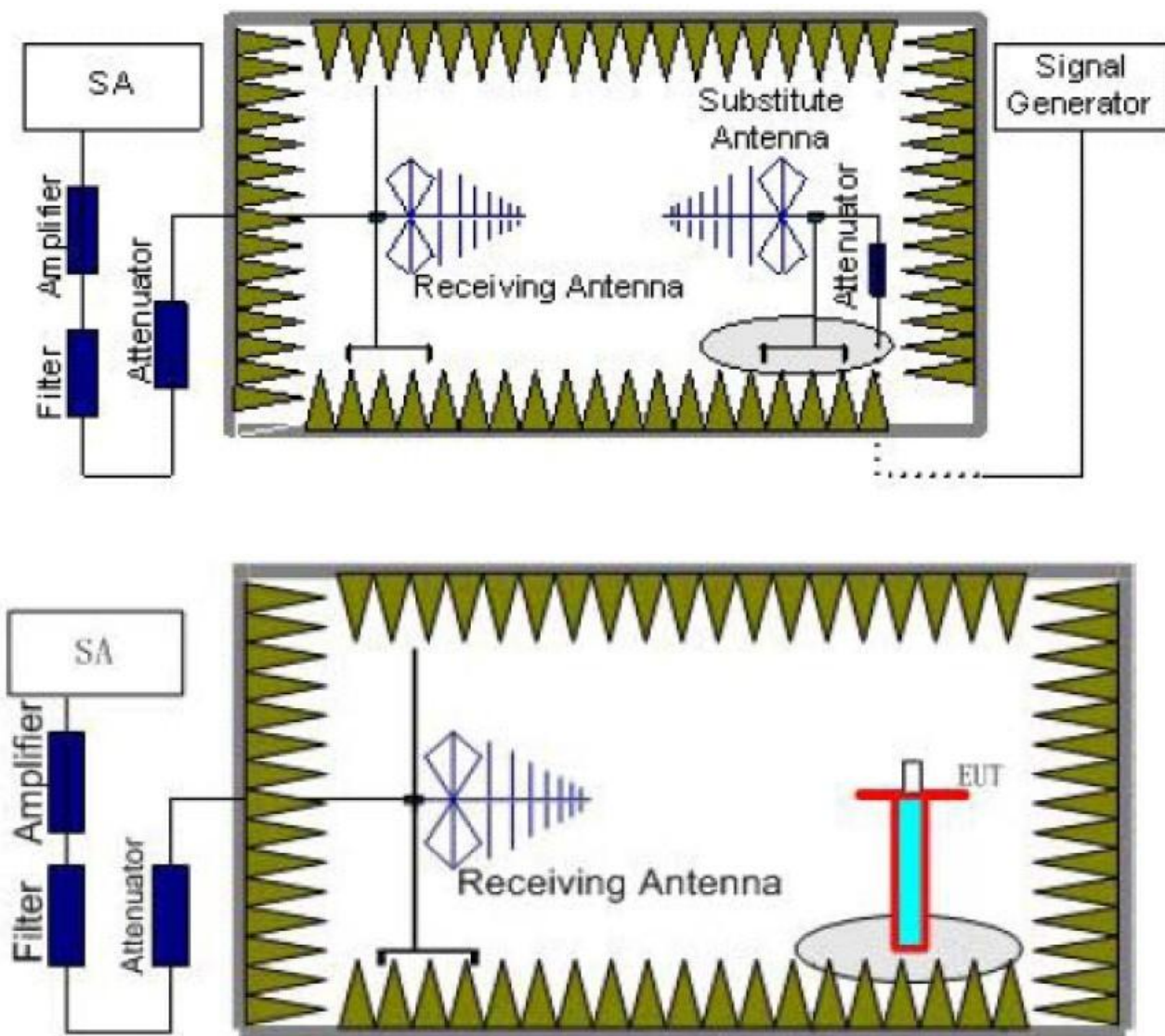
Test_Graph_FM_5W_469.975_12.5k_Mask_D





4.4. Field Strength Spurious Emissions

TEST CONFIGURATION





TEST PROCEDURE

1. EUT was placed on a 1.50 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.50 m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in six channels were measured with peak detector.
2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyser or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyser or receiver.
3. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=1MHz,VBW=3MHz for above 1GHz and RBW=100KHz,VBW=300KHz for 30MHz to 1GHz, And the maximum value of the receiver should be recorded as (P_r).
4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
5. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (P_{cl}), the Substitution Antenna Gain (G_a) and the Amplifier Gain (P_{Ag}) should be recorded after test.
The measurement results are obtained as described below:

$$\text{Power(EIRP)} = P_{Mea} - P_{Ag} - P_{cl} + G_a$$

It can omit power amplifier if signal generator level meets requirement;

This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.

6. ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.15\text{dBi}$.

Subrange (GHz)	RBW	VBW	Sweep time (s)
0.00009~0.15	1KHz	3KHz	30
0.00015~0.03	10KHz	30KHz	10
0.03~1	100KHz	300KHz	10
1~5	1 MHz	3 MHz	5

TEST LIMIT

According to §90.210 d) (3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5 kHz: At least $50 + 10 \log(P)$ dB or 70 dB, whichever is the lesser attenuation.

According to §90.210 b) (3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least $43 + 10 \log(P)$ dB.

TEST RESULTS

1. In general, the worst case attenuation requirement shown above was applied.
2. The measurement frequency range from 9KHz to 5 GHz.





3. EIRP for measure frequency above 1 GHz and ERP for below 1 GHz.

4. *** means that the emission level is too low to be measured or at least 20 dB down than the limit.

Test Frequency: 400.025MHz				Channel Separation:12.5KHz			
Frequency (MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Correction (dB)	Values (dBm)	Limit (dBm)	Polarization
800.05	-44.25	0.61	7.31	2.15	-39.7	-20	H
1,200.08	-45.31	0.88	7.73	0	-38.46	-20	H
1,600.10	-50.24	1.2	8.16	0	-43.28	-20	H
...	...	...	...	...	...	...	H
800.05	-41.11	0.61	7.31	2.15	-36.56	-20	V
1,200.08	-42.36	0.88	7.73	0	-35.51	-20	V
1,600.10	-52.56	1.2	8.16	0	-45.6	-20	V
...	...	...	...	...	...	...	V

Test Frequency: 469.975MHz				Channel Separation:12.5KHz			
Frequency (MHz)	P _{Mea} (dBm)	Path Loss	Antenna Gain	Correction (dB)	Values (dBm)	Limit (dBm)	Polarization
939.95	-46.27	0.72	7.52	2.15	-41.62	-20	H
1,409.93	-44.25	1.12	8.06	0	-37.31	-20	H
1,879.90	-46.88	1.55	8.6	0	-39.83	-20	H
...	...	...	...	...	...	...	H
939.95	-44.25	0.72	7.52	2.15	-39.6	-20	V
1,409.93	-42.17	1.12	8.06	0	-35.23	-20	V
1,879.90	-47.27	1.55	8.6	0	-40.22	-20	V
...	...	...	...	...	...	...	V

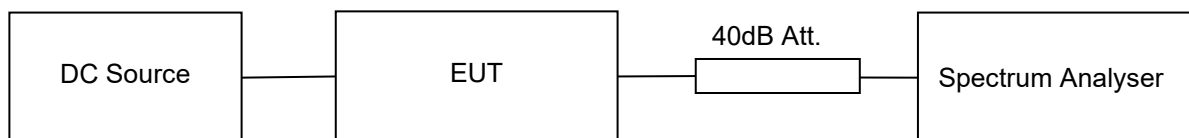
Note: All the test modes was tested, but only the worst mode(50W power level at lowest frequency and highest frequency) be recorded in this part.





4.5. Conducted spurious emission result(at antenna terminal):

TEST CONFIGURATION



TEST PROCEDURE

- 1) Connect the equipment as illustrated.
- 2) Set EUT working in continuous mode in low, middle, high frequency, read and record the peak power value.

TEST LIMIT

According to §90.210 d) (3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5 kHz: At least $50 + 10 \log(P)$ dB or 70 dB, whichever is the lesser attenuation.

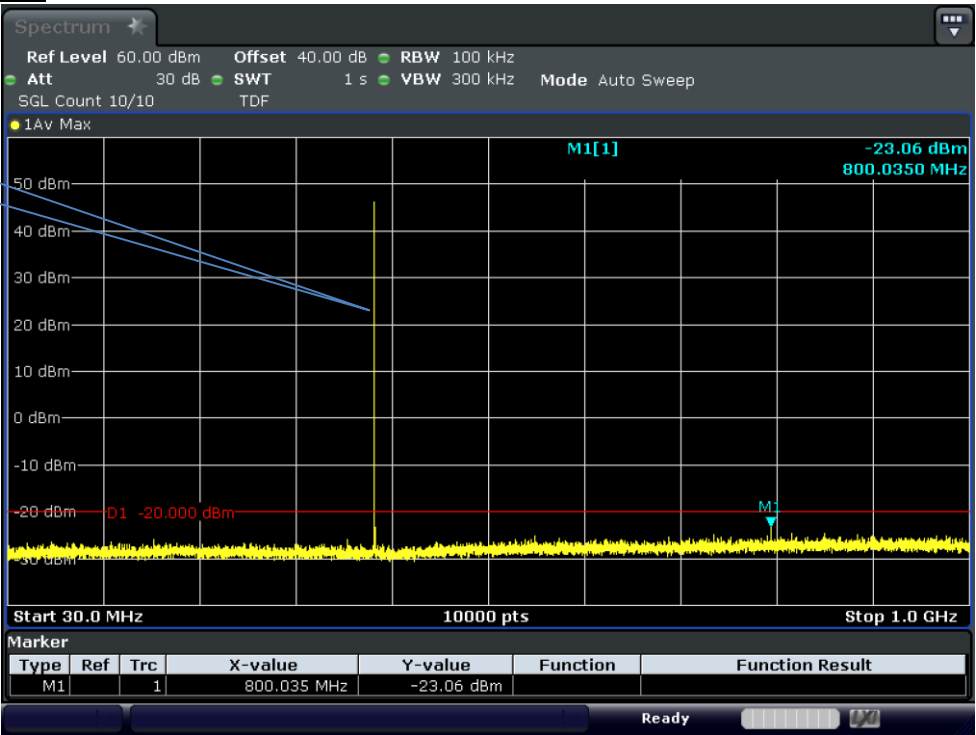
According to §90.210 b) (3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least $43 + 10 \log(P)$ dB.



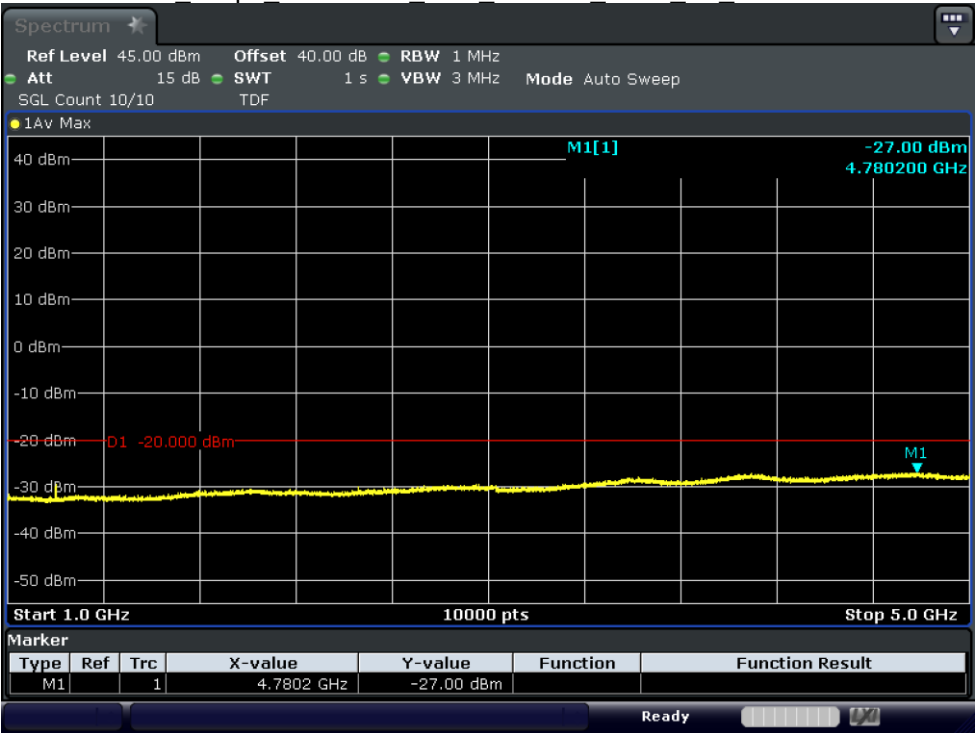


TEST RESULTS

Fundamental



Test Graph_4FSK Data_50W_400.025_12.5k_TX_0.03G-1G

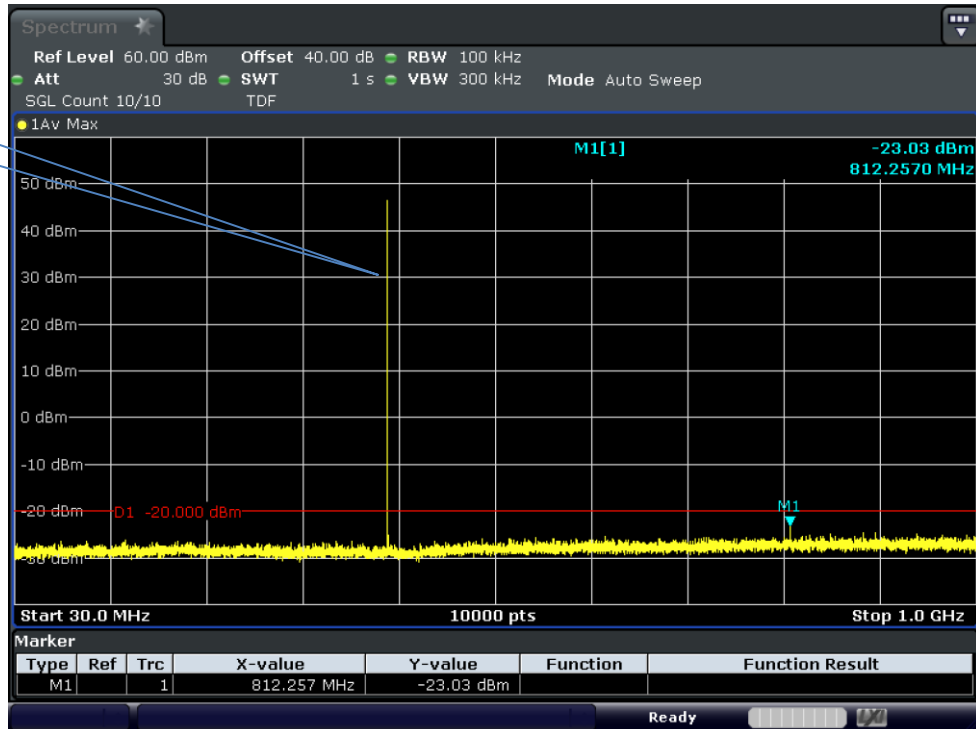


Test_Graph_4FSK Data_50W_400.025_12.5k_TX_1G-5G

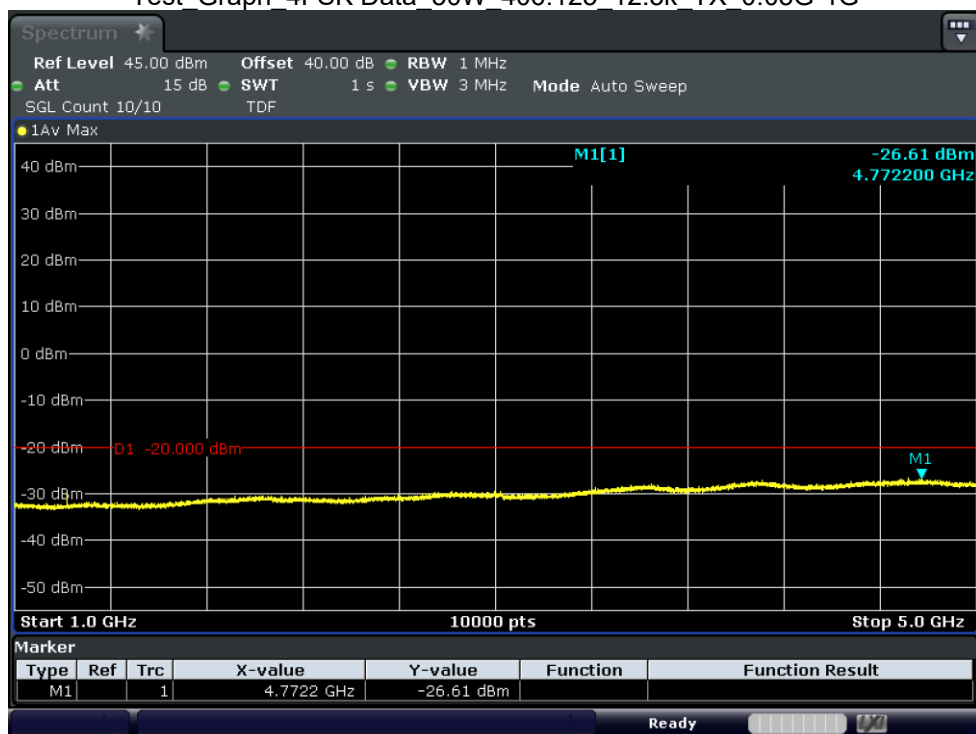




Fundamental



Test Graph 4FSK Data 50W 406.125 12.5k TX 0.03G-1G

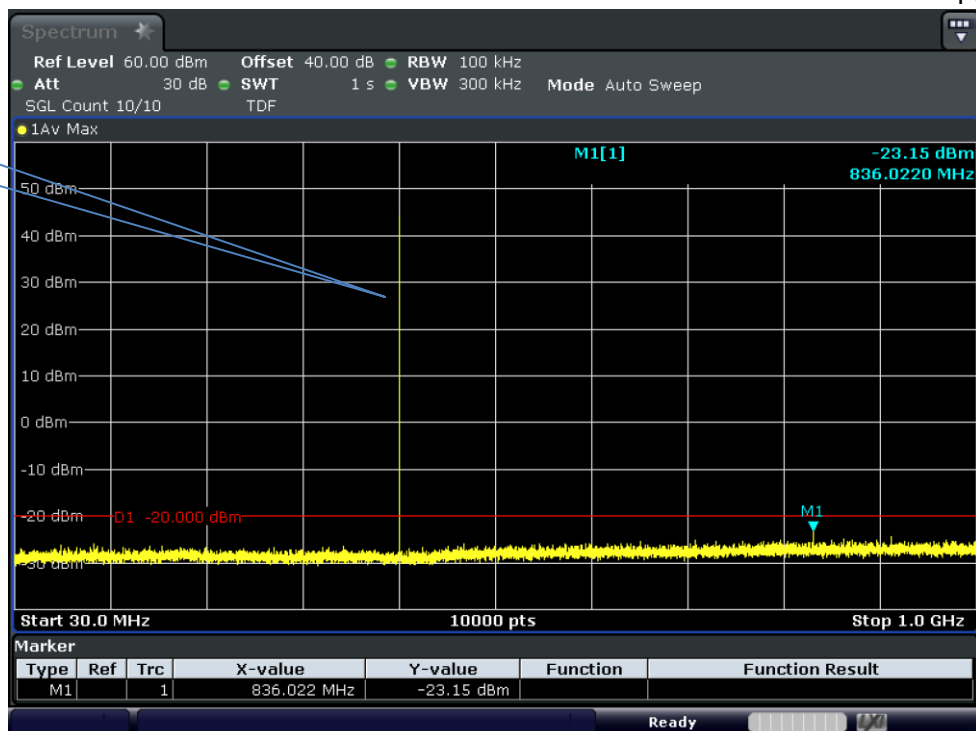


Test_Graph_4FSK Data_50W_406.125_12.5k_TX_1G-5G

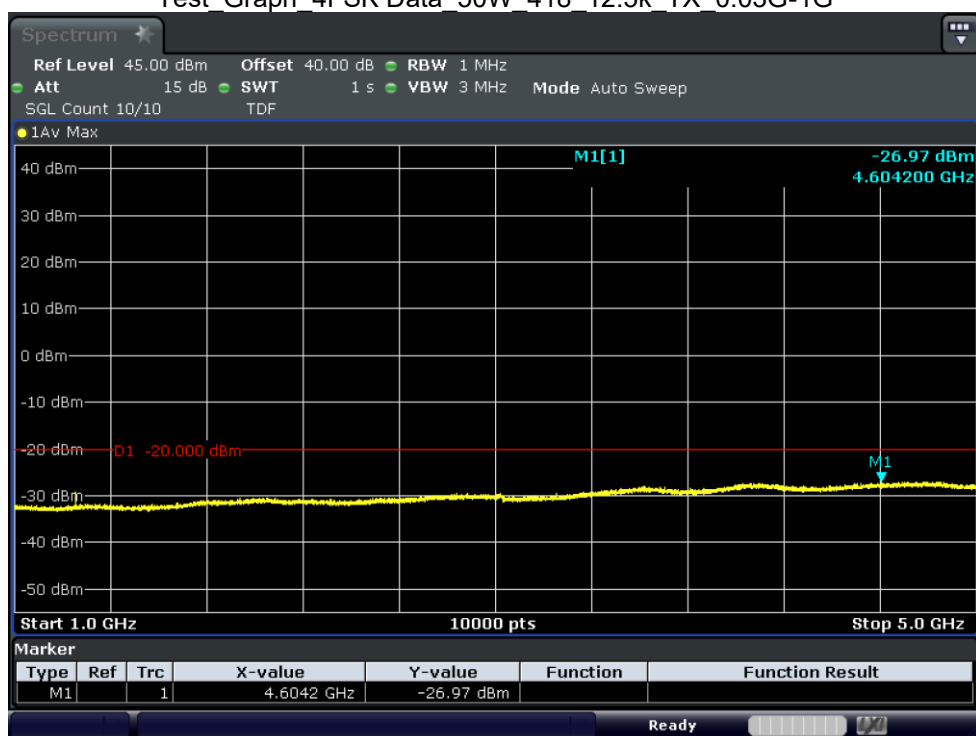




Fundamental



Test Graph 4FSK Data 50W 418 12.5k TX 0.03G-1G

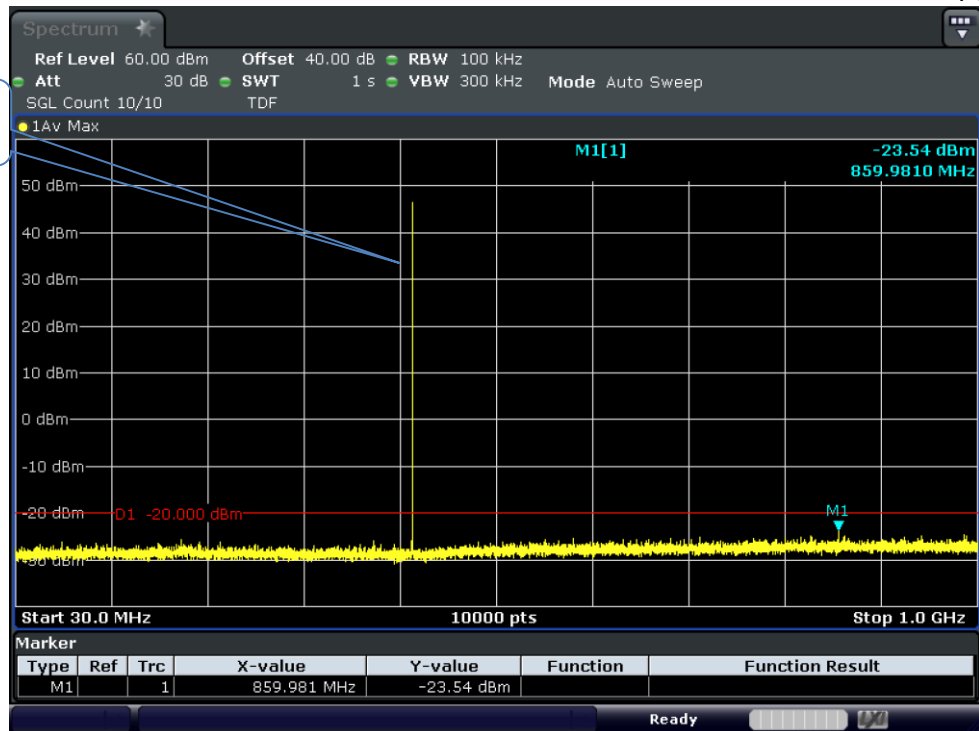


Test_Graph_4FSK Data_50W_418_12.5k_TX_1G-5G

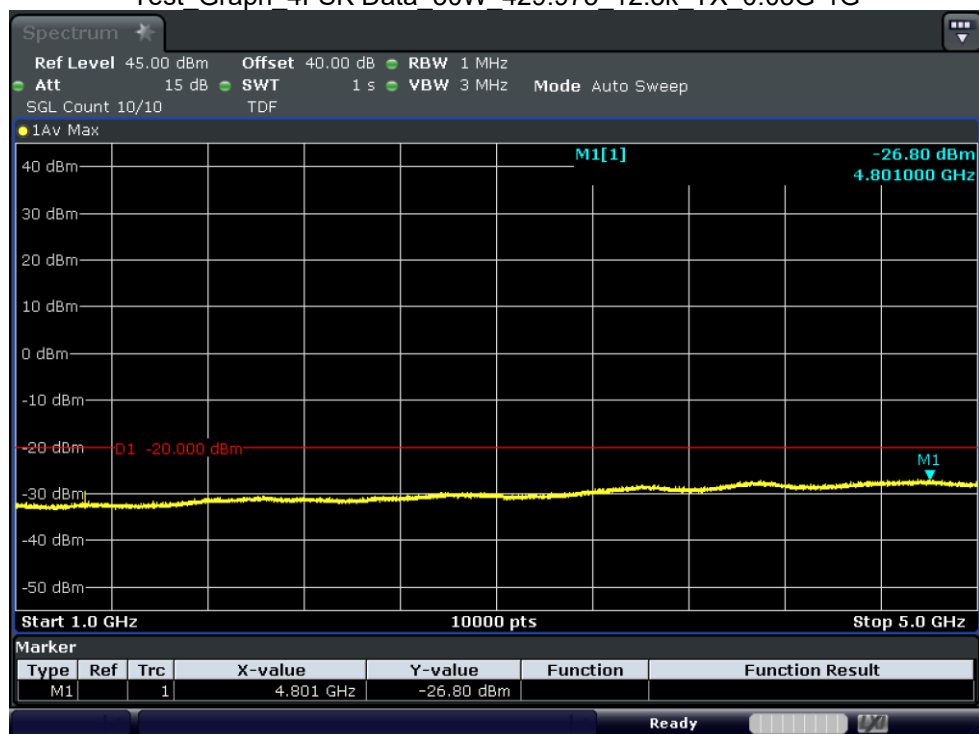




Fundamental

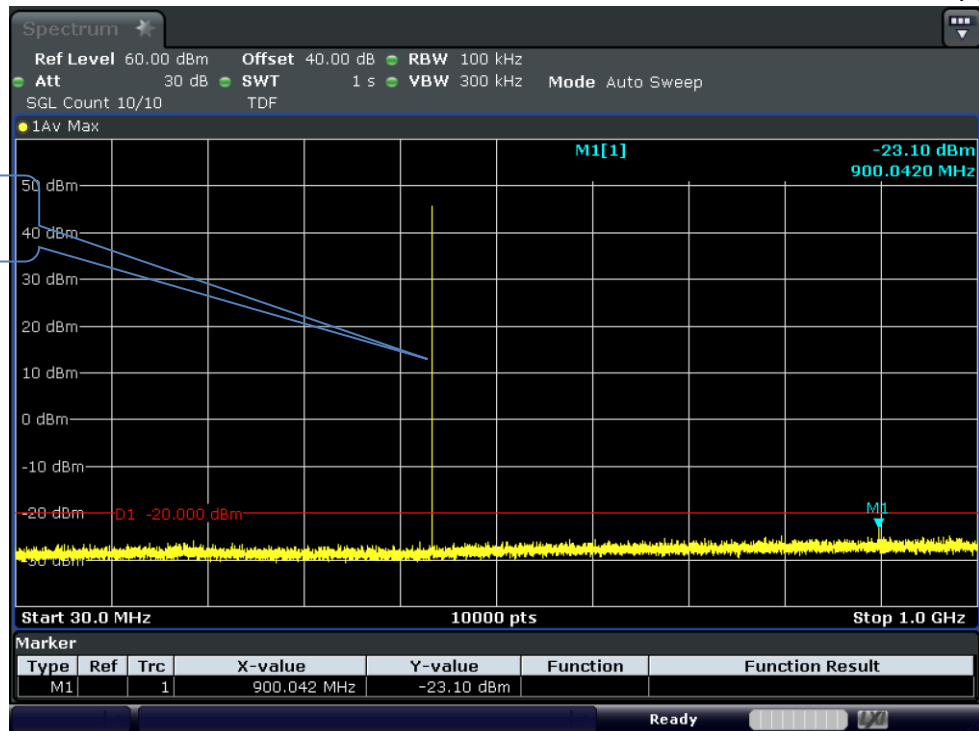


Test Graph 4FSK Data 50W 429.975 12.5k TX 0.03G-1G

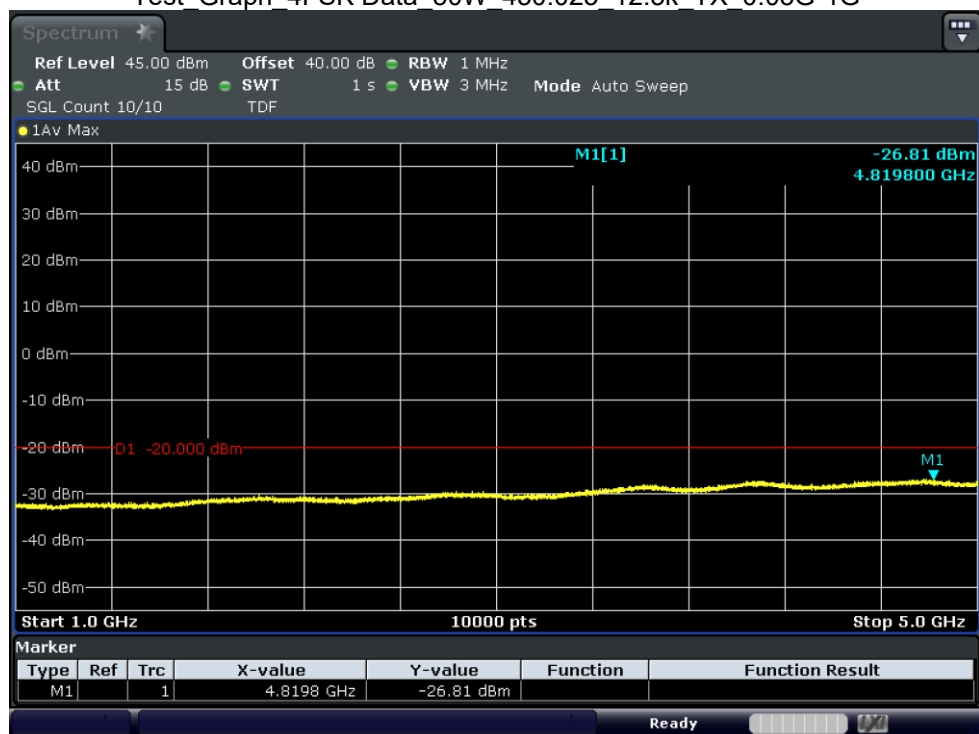


Test_Graph_4FSK Data_50W_429.975_12.5k_TX_1G-5G





Test Graph 4FSK Data 50W 450.025 12.5k TX 0.03G-1G

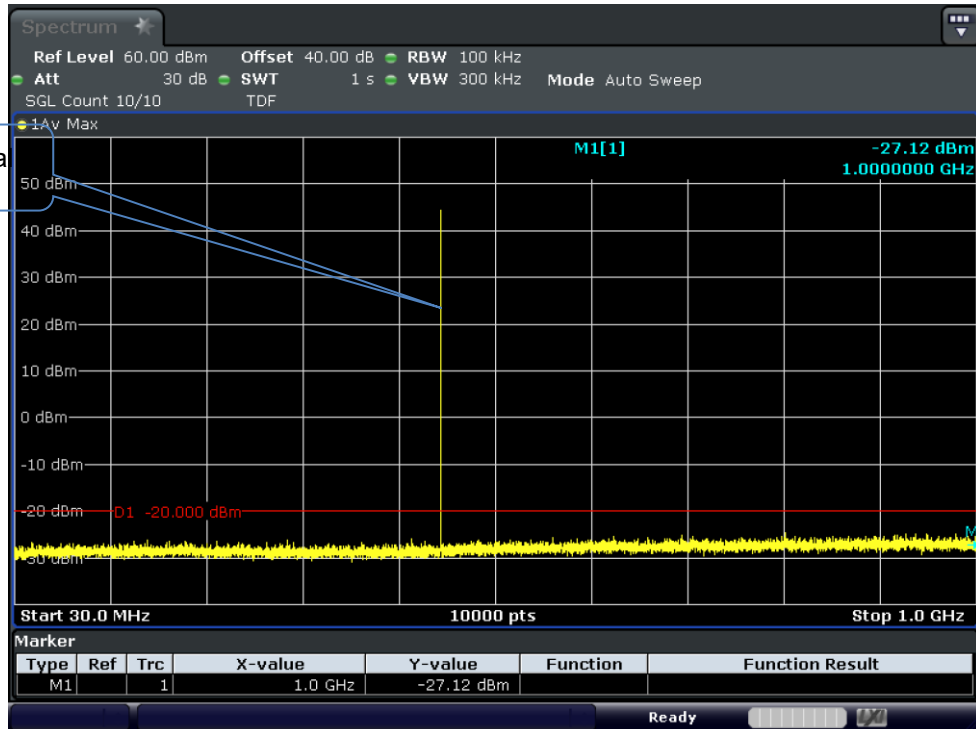


Test_Graph_4FSK Data_50W_450.025_12.5k_TX_1G-5G

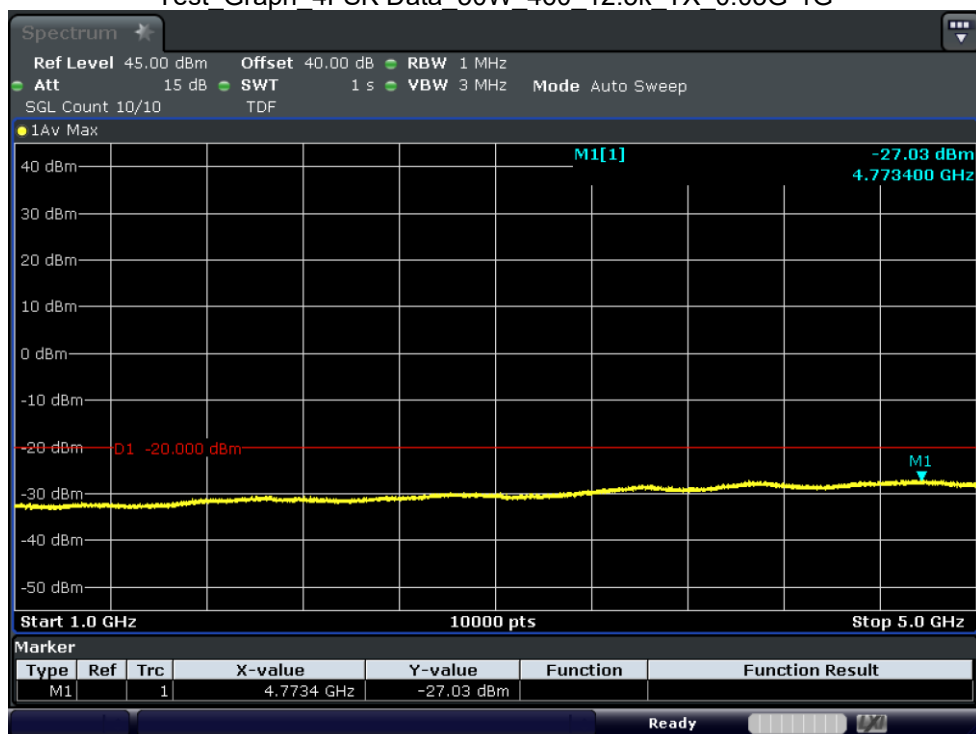




Fundamenta



Test Graph 4FSK Data 50W 460 12.5k TX 0.03G-1G

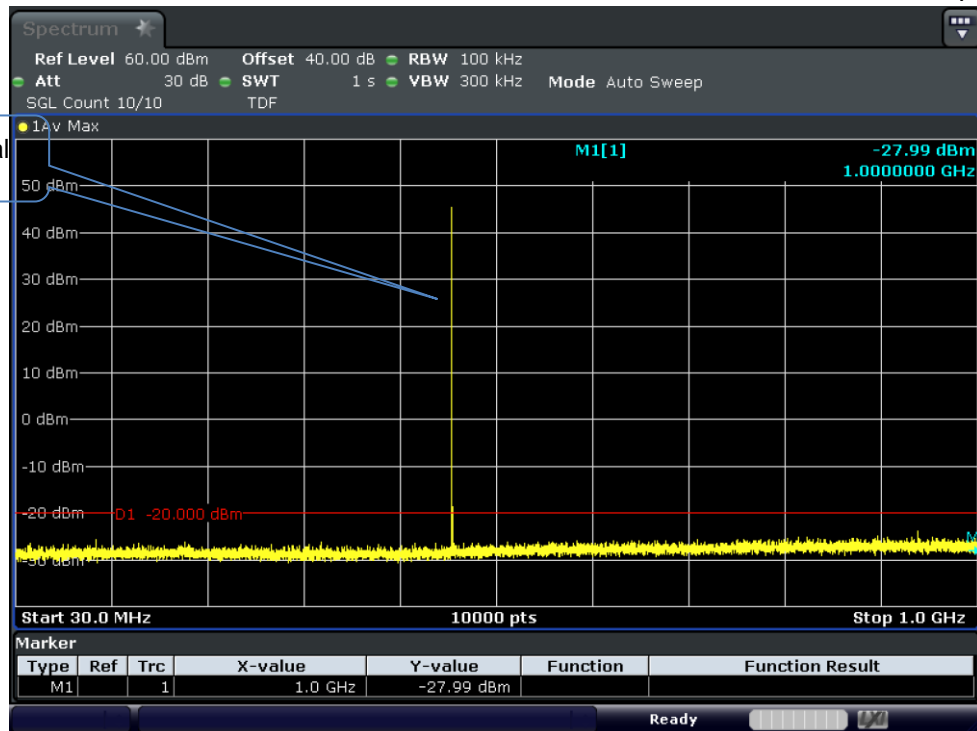


Test_Graph_4FSK Data_50W_460_12.5k_TX_1G-5G

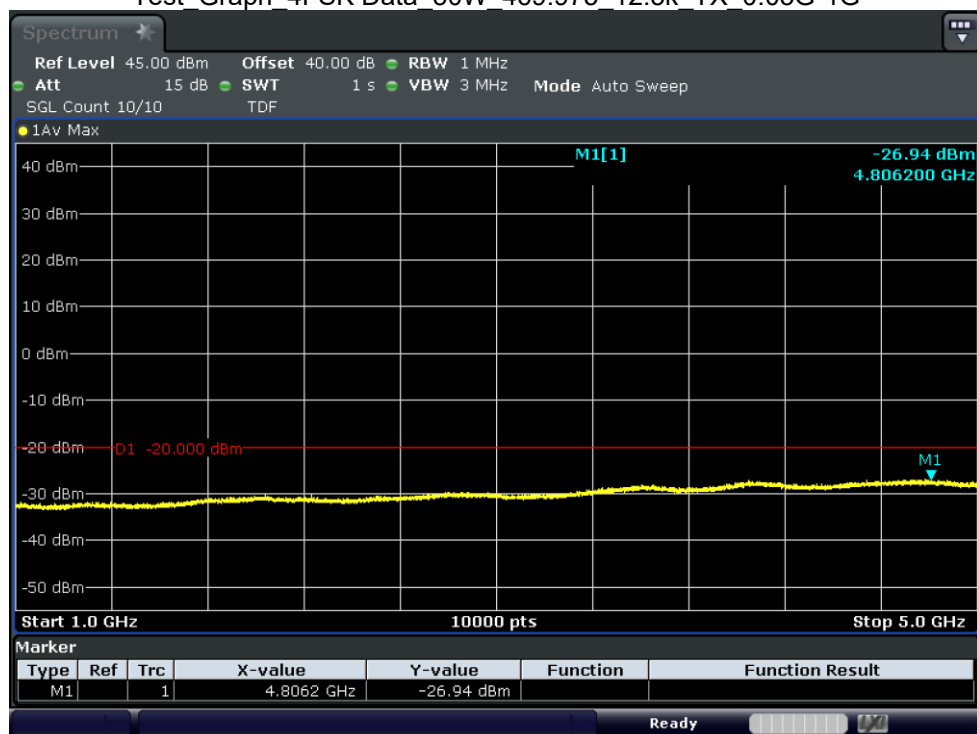




Fundamental



Test Graph 4FSK Data 50W 469.975 12.5k TX 0.03G-1G

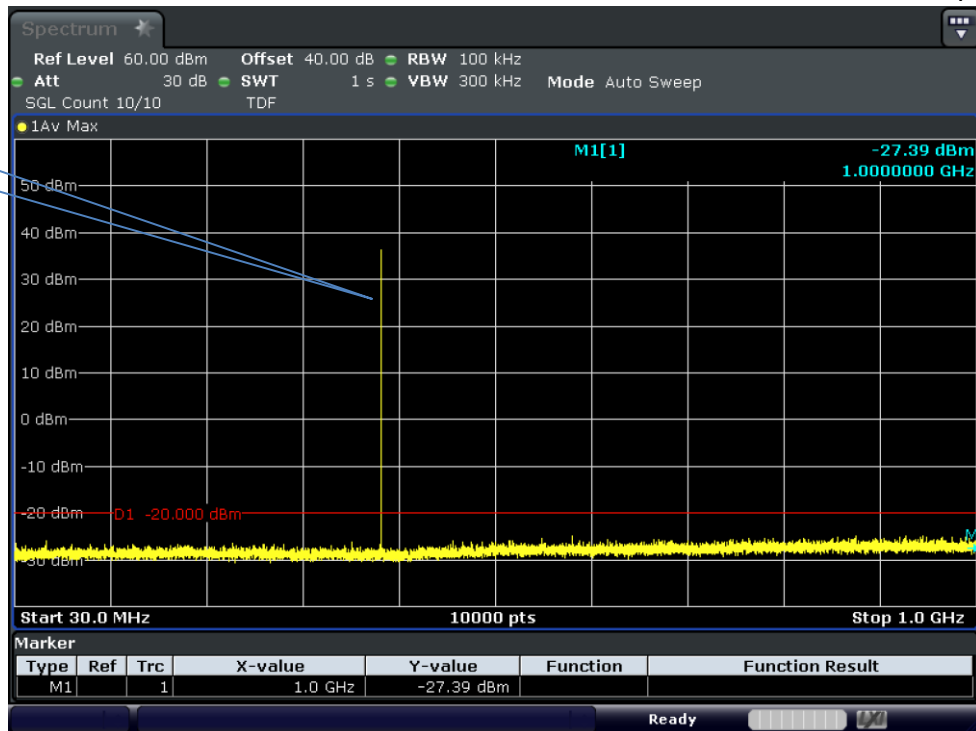


Test_Graph_4FSK Data_50W_469.975_12.5k_TX_1G-5G

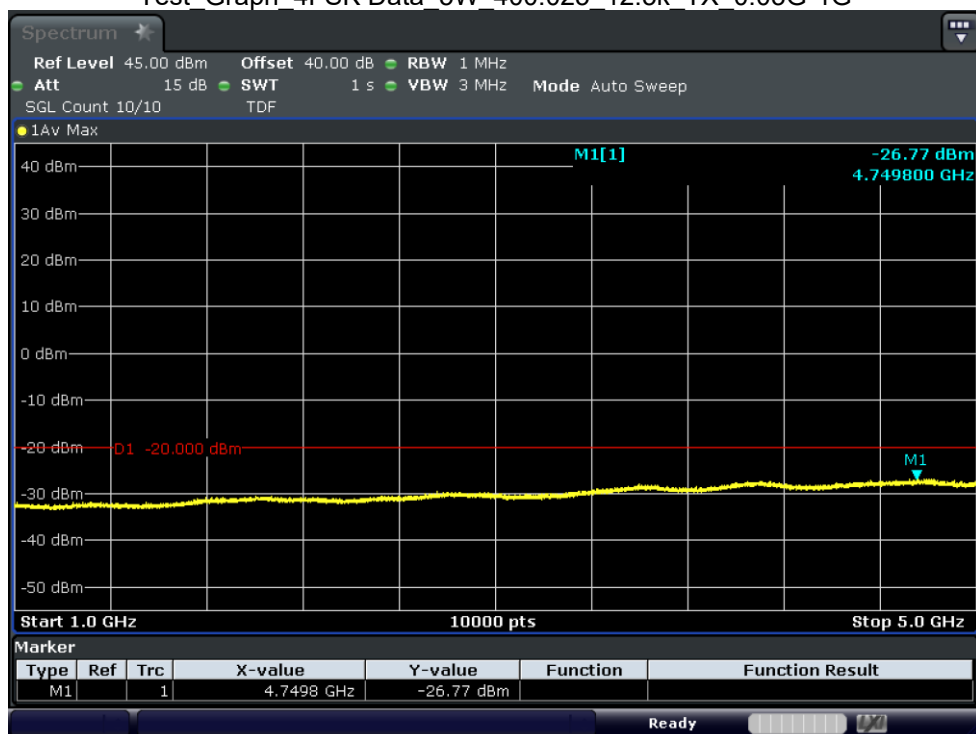




Fundamental



Test Graph 4FSK Data 5W 400.025 12.5k TX 0.03G-1G

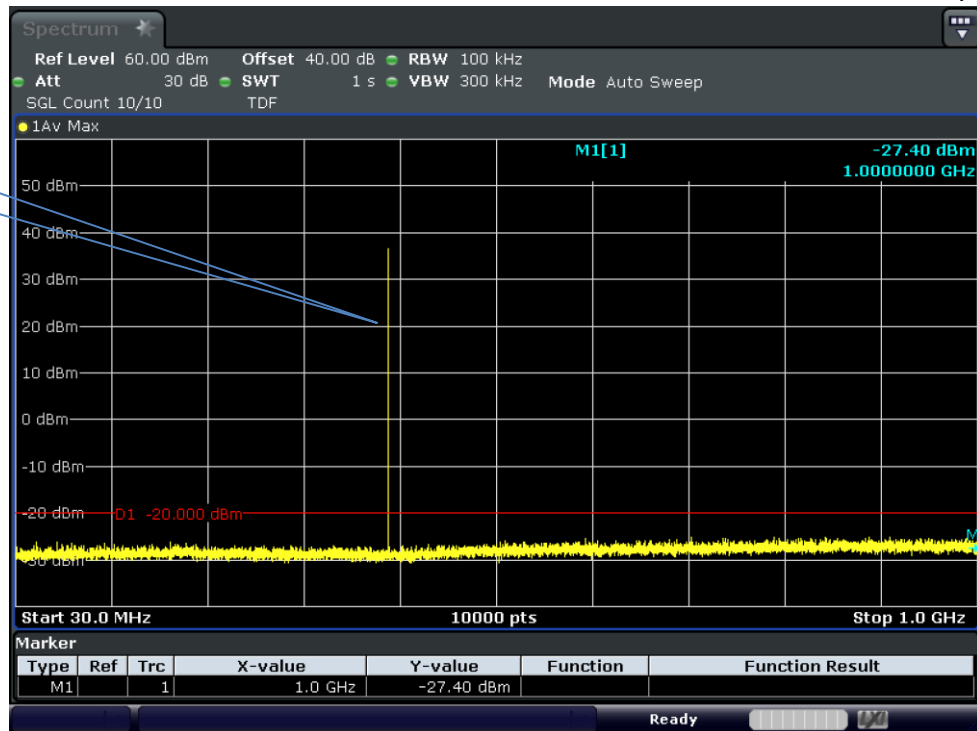


Test_Graph_4FSK Data_5W_400.025_12.5k_TX_1G-5G

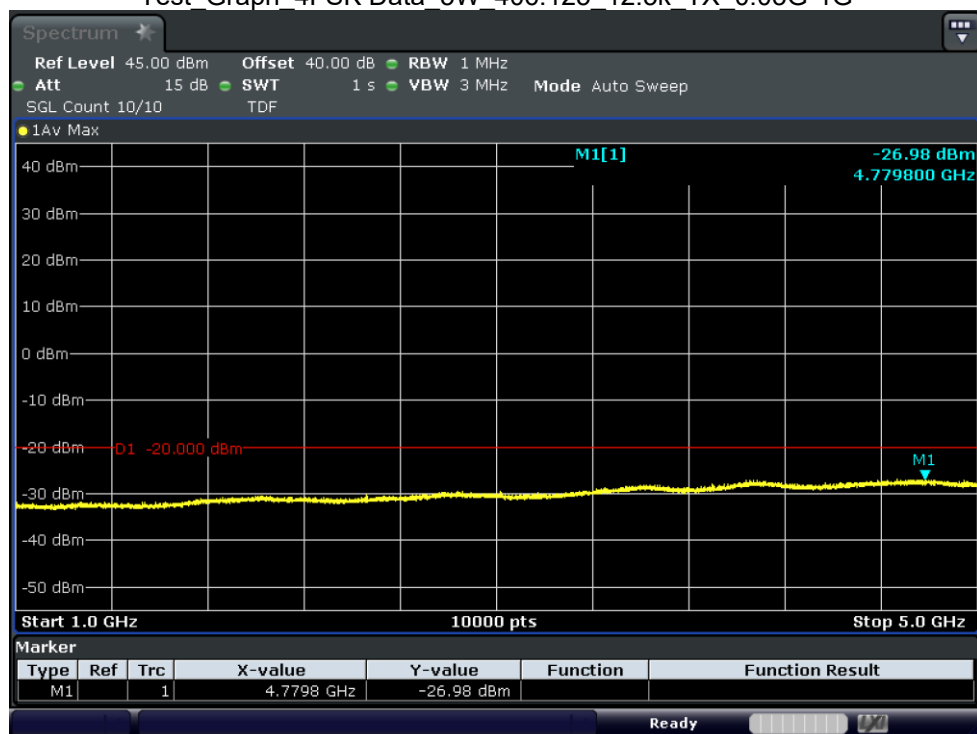




Fundamental



Test Graph 4FSK Data 5W 406.125 12.5k TX 0.03G-1G



Test_Graph_4FSK Data_5W_406.125_12.5k_TX_1G-5G

