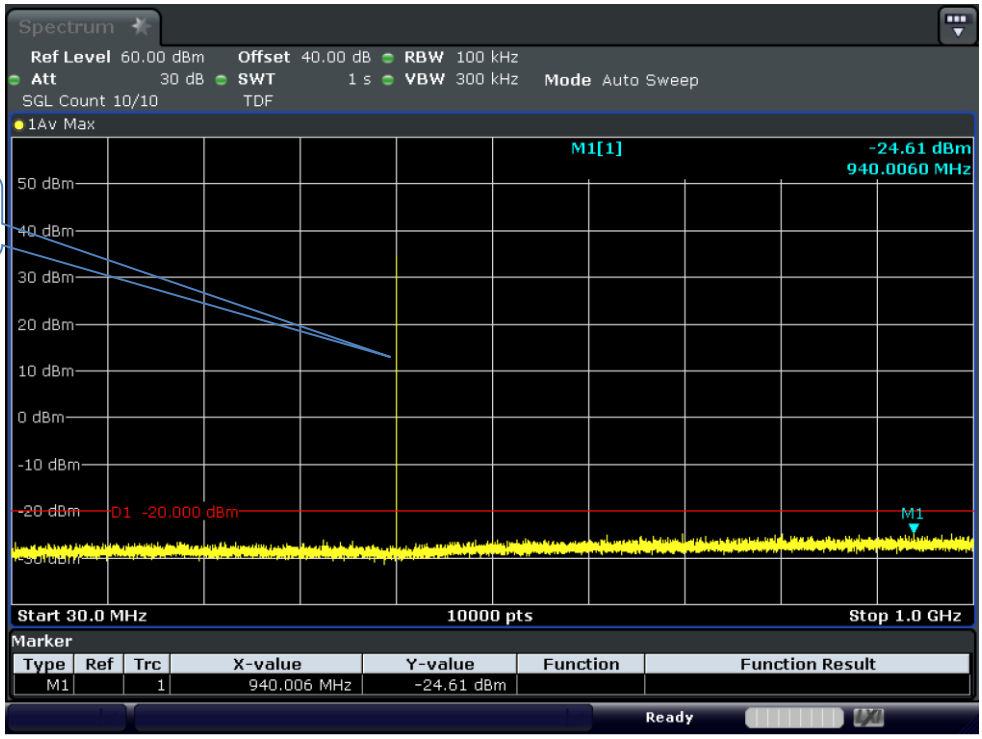
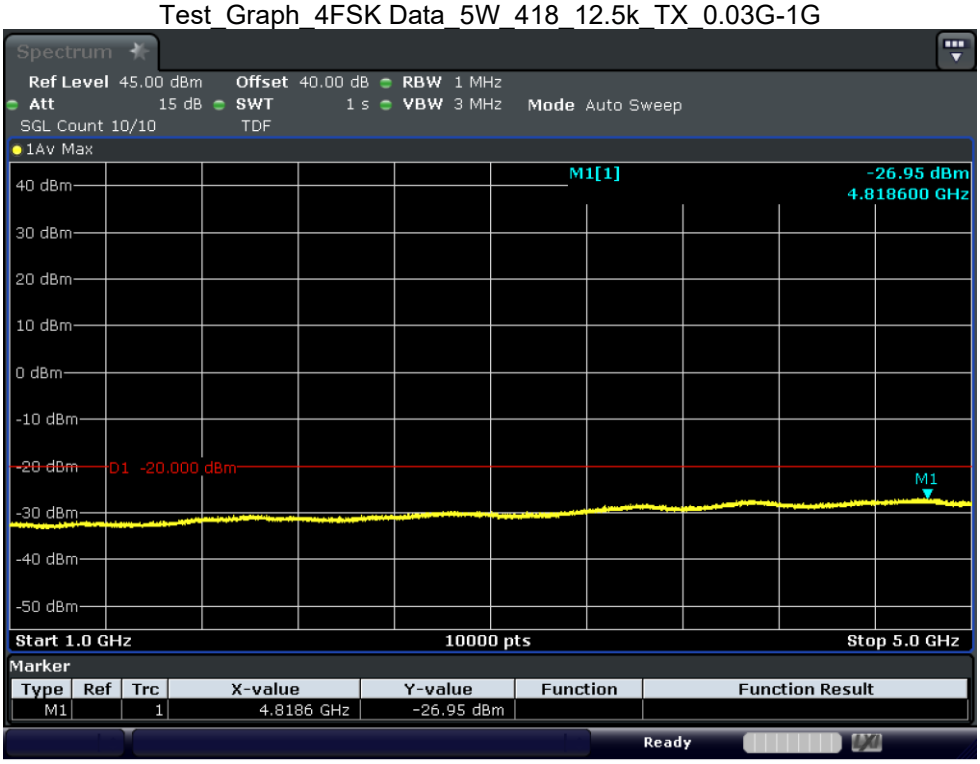
Fundamental

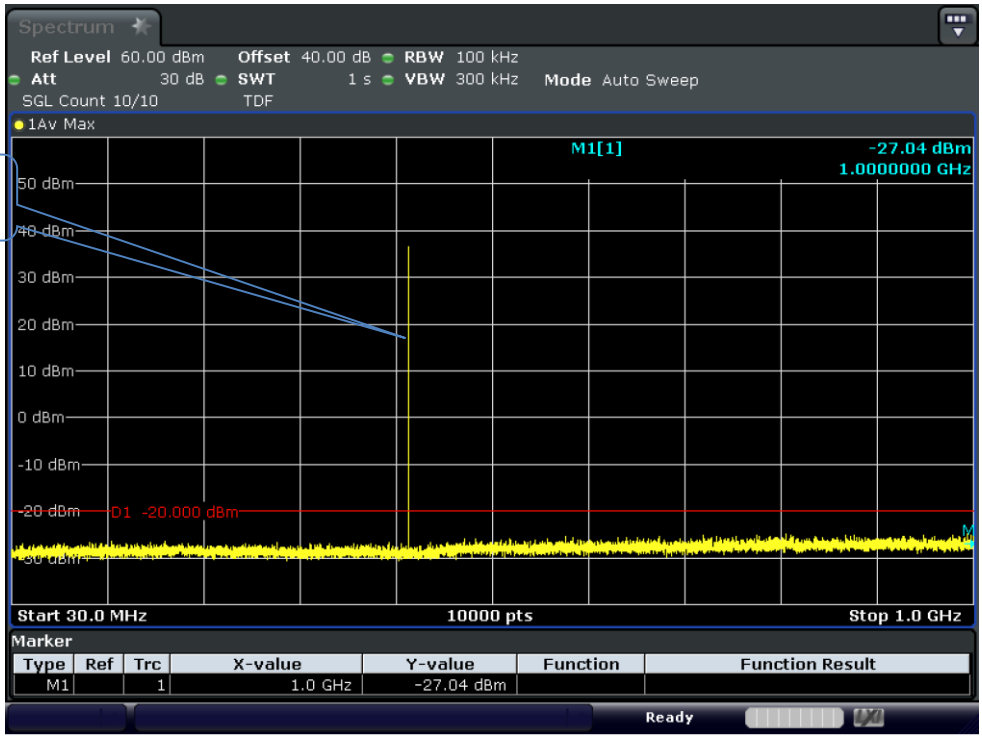


Test_Graph_4FSK Data_5W_418_12.5k_TX_0.03G-1G

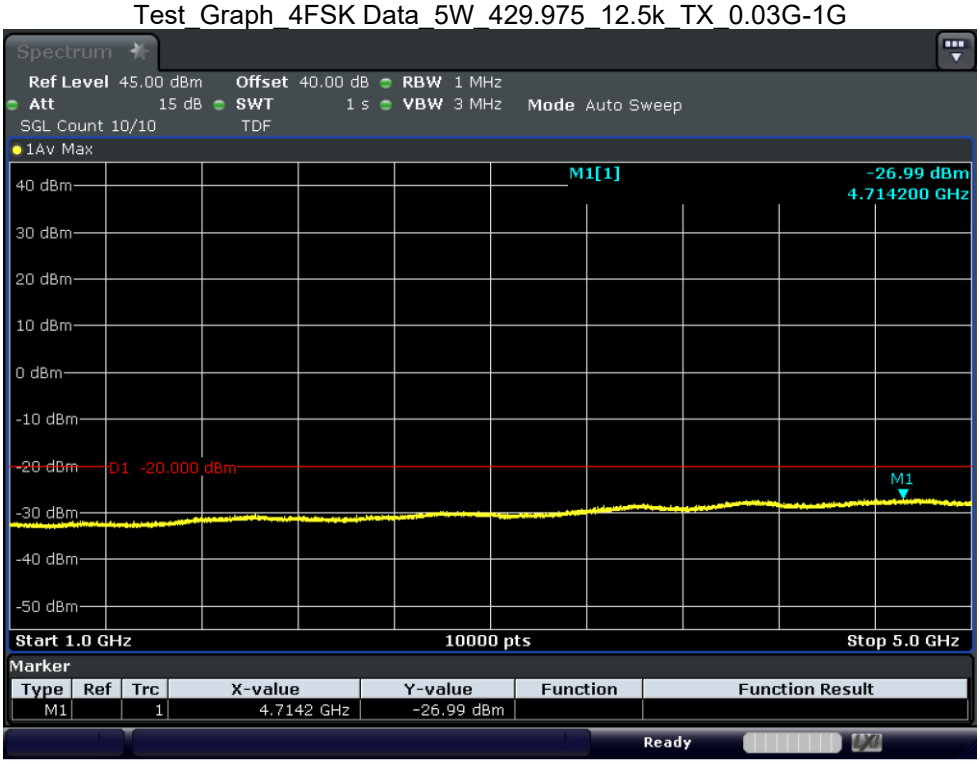


Test_Graph_4FSK Data_5W_418_12.5k_TX_1G-5G

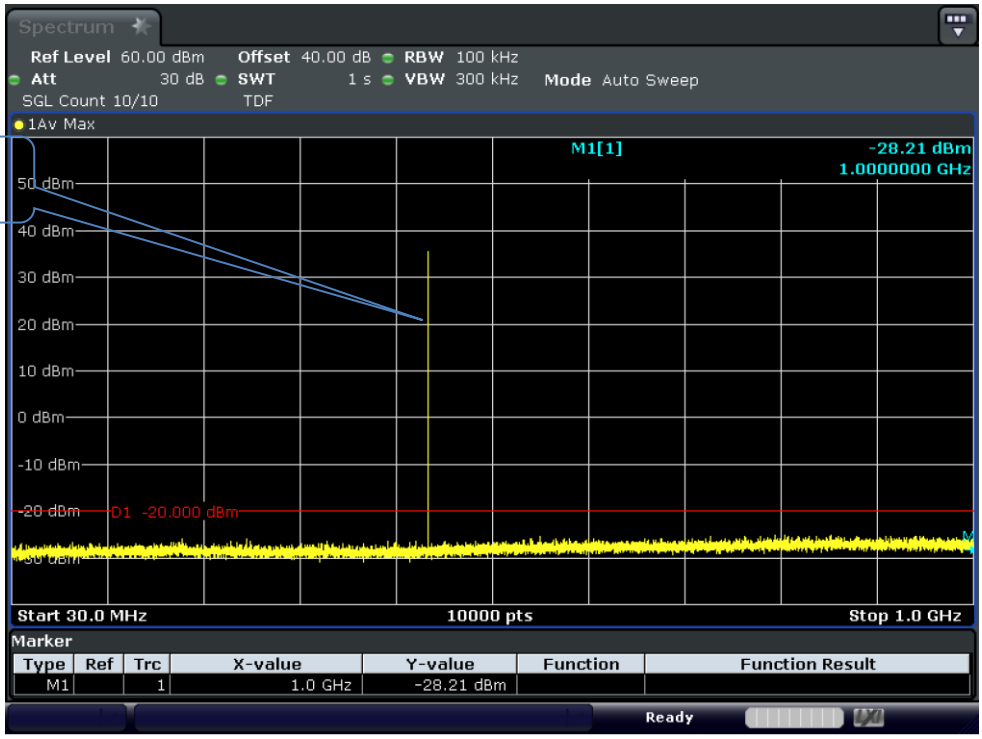
Fundamental



Test_Graph_4FSK Data_5W_429.975_12.5k_TX_0.03G-1G



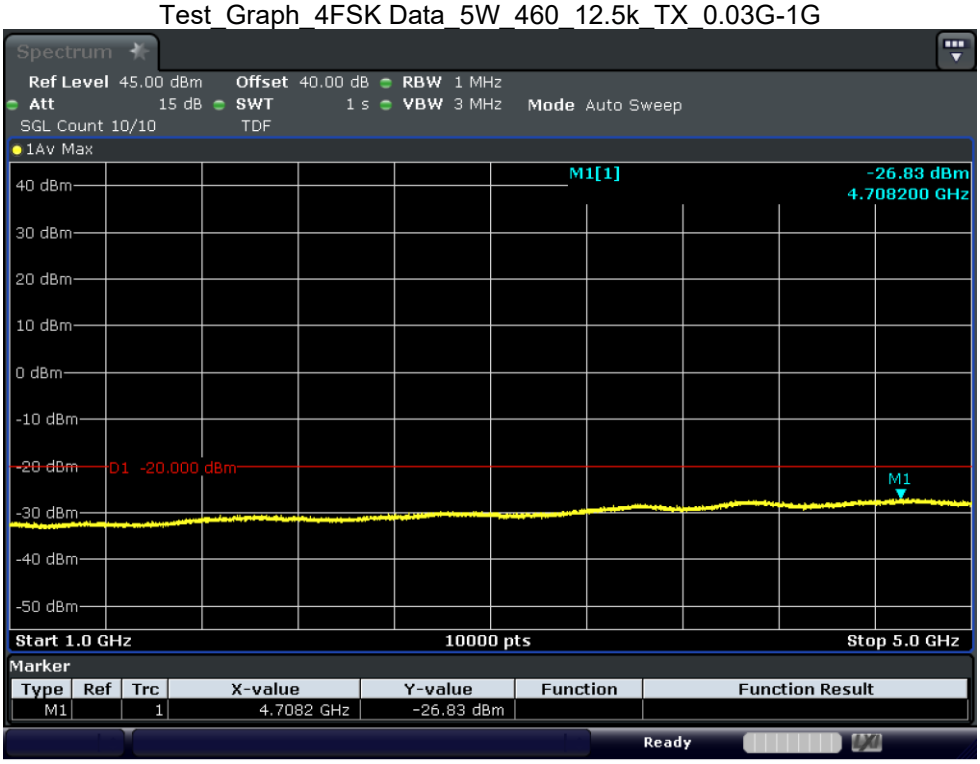
Test_Graph_4FSK Data_5W_429.975_12.5k_TX_1G-5G



Test_Graph_4FSK Data_5W_450.025_12.5k_TX_0.03G-1G

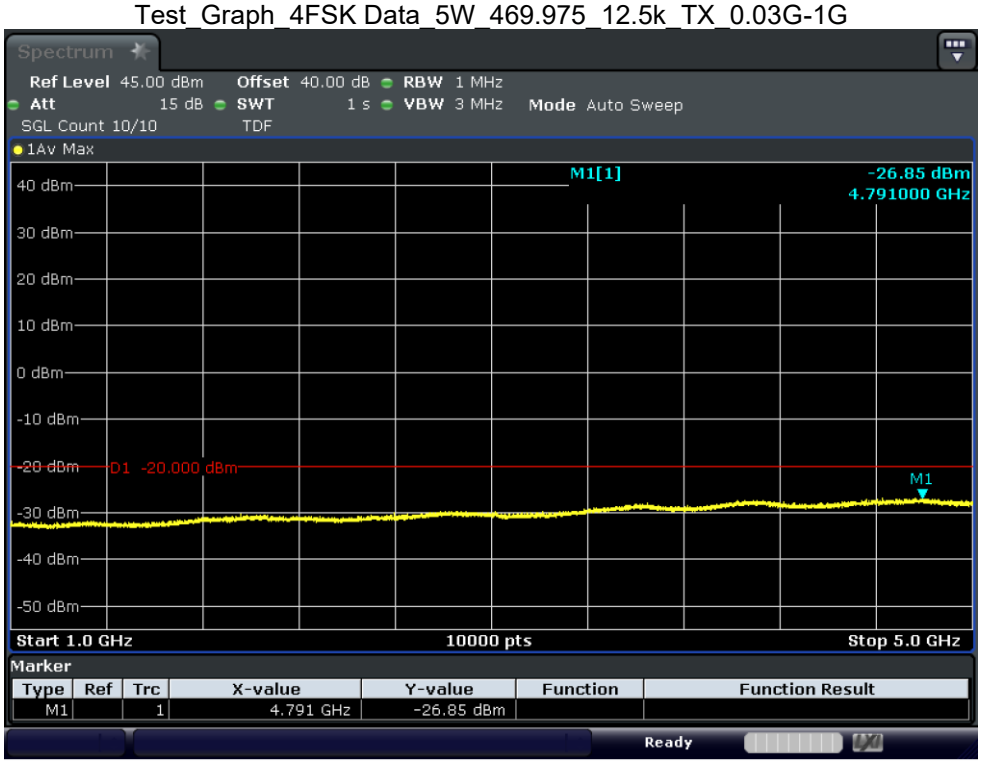
Test_Graph_4FSK Data_5W_450.025_12.5k_TX_1G-5G

Test_Graph_4FSK Data_5W_460_12.5k_TX_0.03G-1G

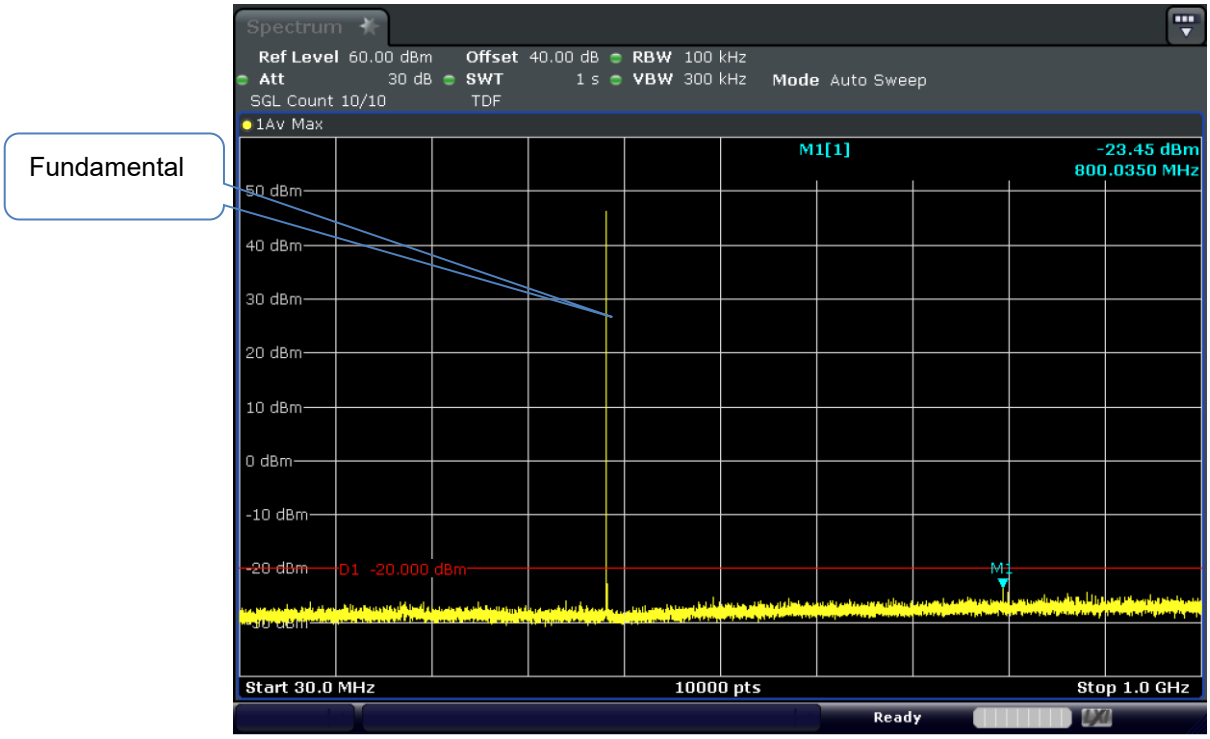


Test_Graph_4FSK Data_5W_460_12.5k_TX_1G-5G

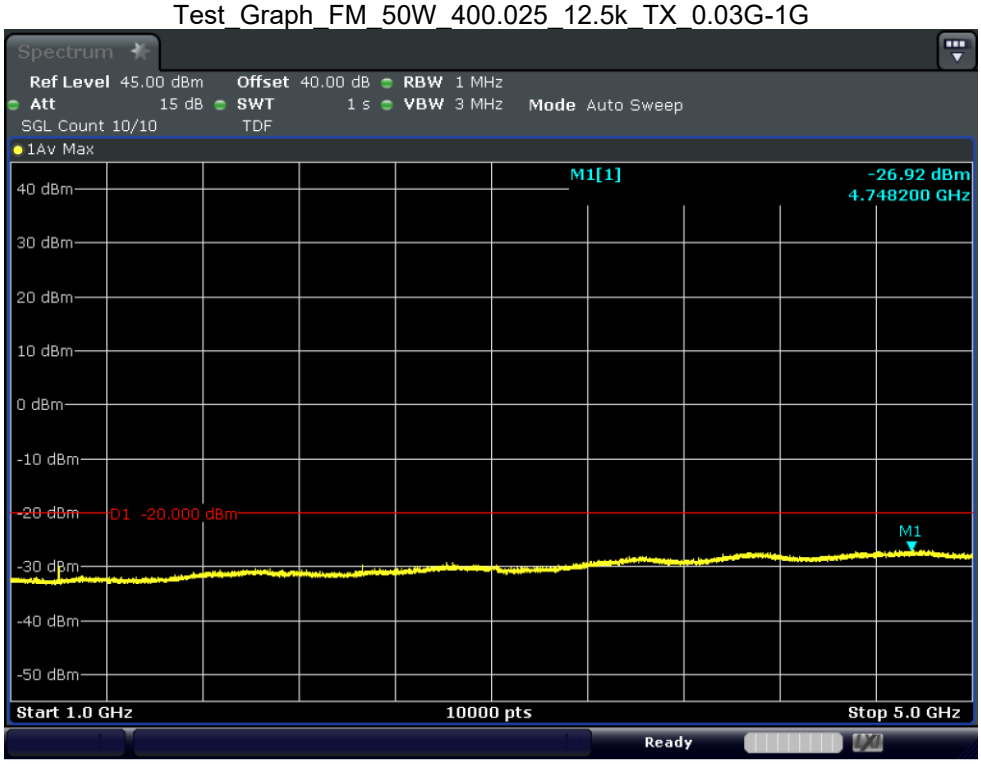
Test_Graph_4FSK Data_5W_469.975_12.5k_TX_0.03G-1G



Test_Graph_4FSK Data_5W_469.975_12.5k_TX_1G-5G



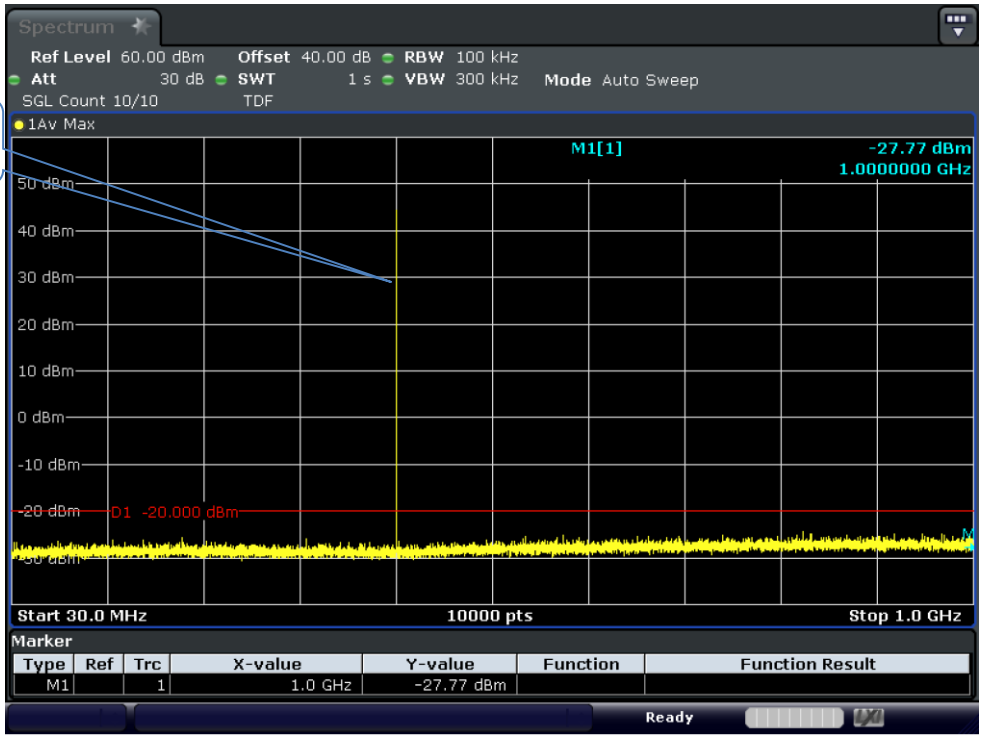
Test_Graph_FM_50W_400.025_12.5k_TX_0.03G-1G



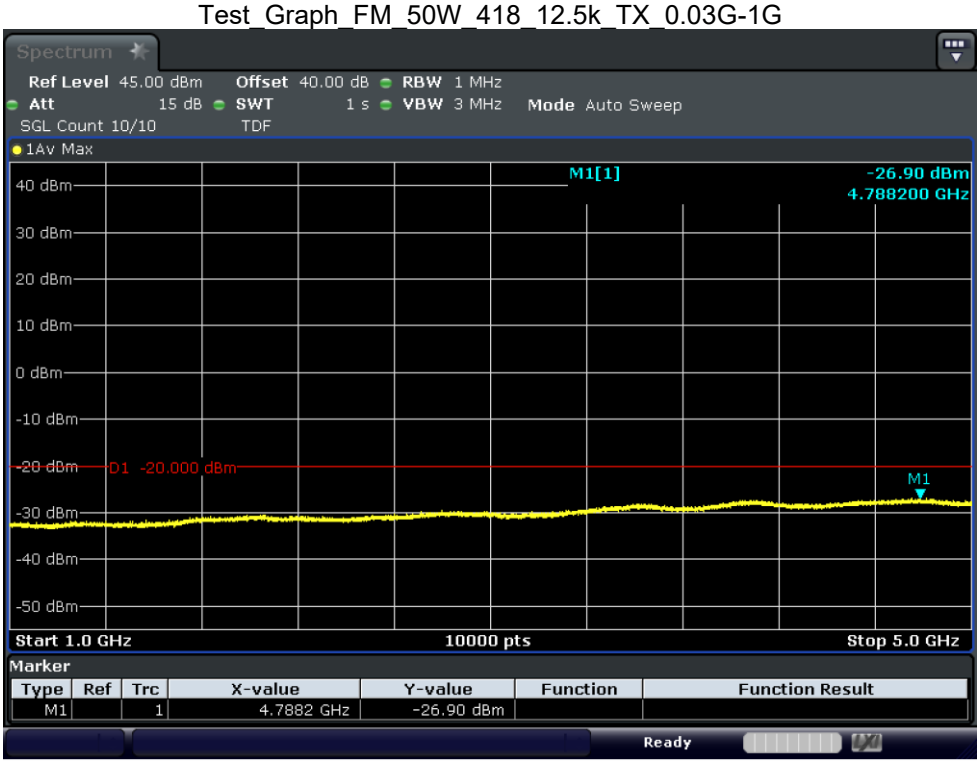
Test_Graph_FM_50W_400.025_12.5k_TX_1G-5G

Test_Graph_FM_50W_406.125_12.5k_TX_0.03G-1G

Test_Graph_FM_50W_406.125_12.5k_TX_1G-5G

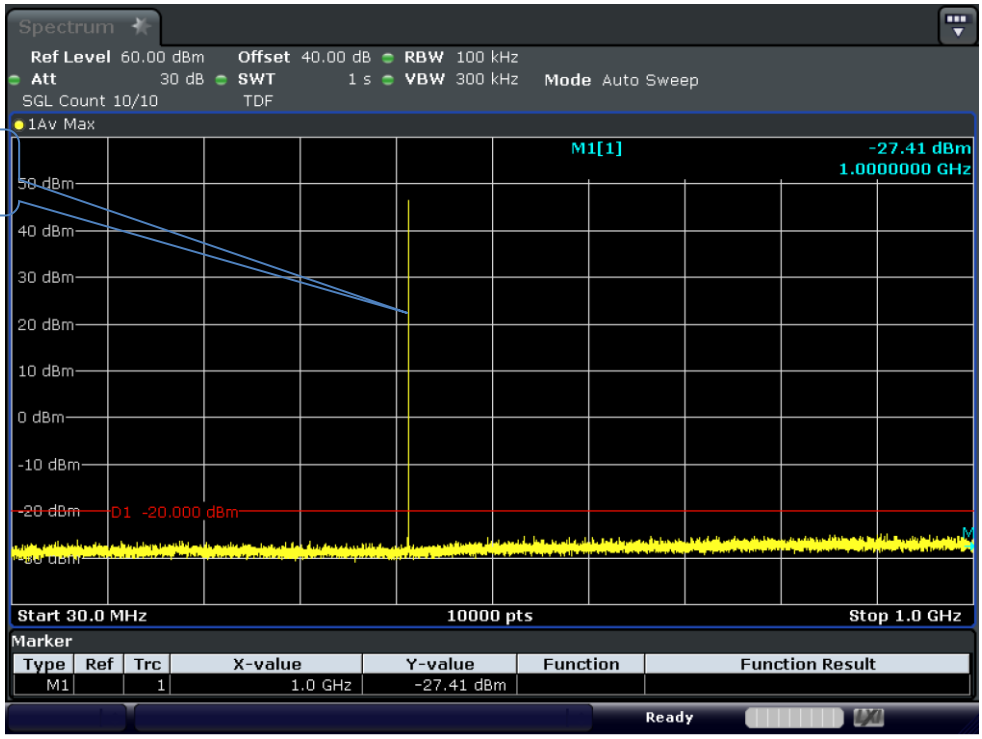


Test_Graph_FM_50W_418_12.5k_TX_0.03G-1G



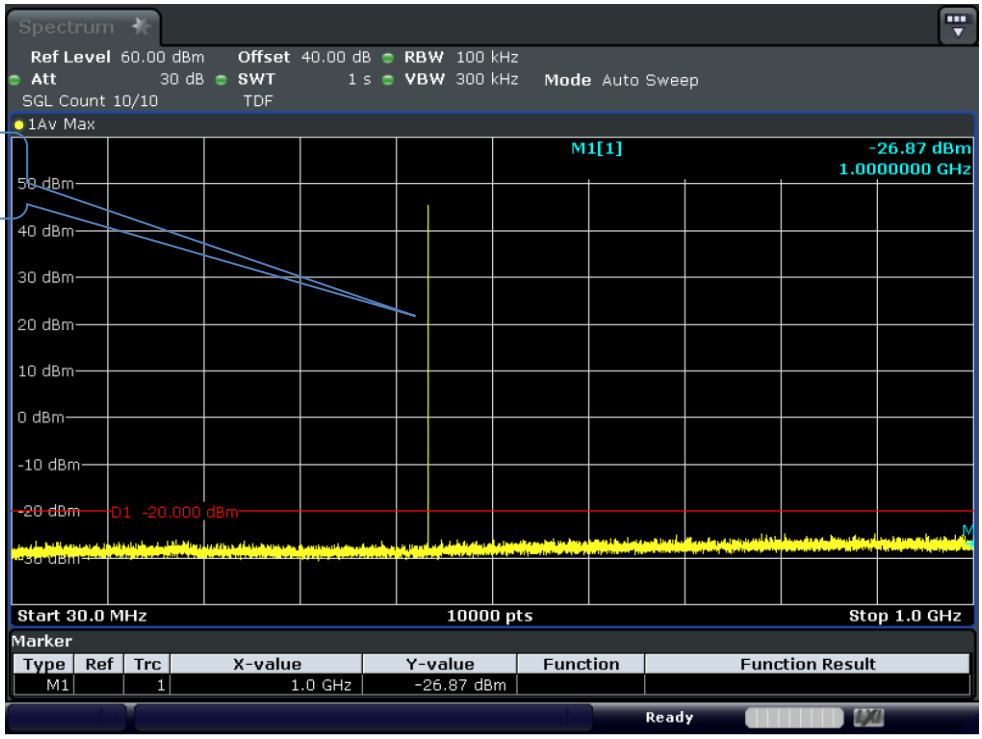
Test_Graph_FM_50W_418_12.5k_TX_1G-5G

Fundamental



Test_Graph_FM_50W_429.975_12.5k_TX_0.03G-1G

Test_Graph_FM_50W_429.975_12.5k_TX_1G-5G

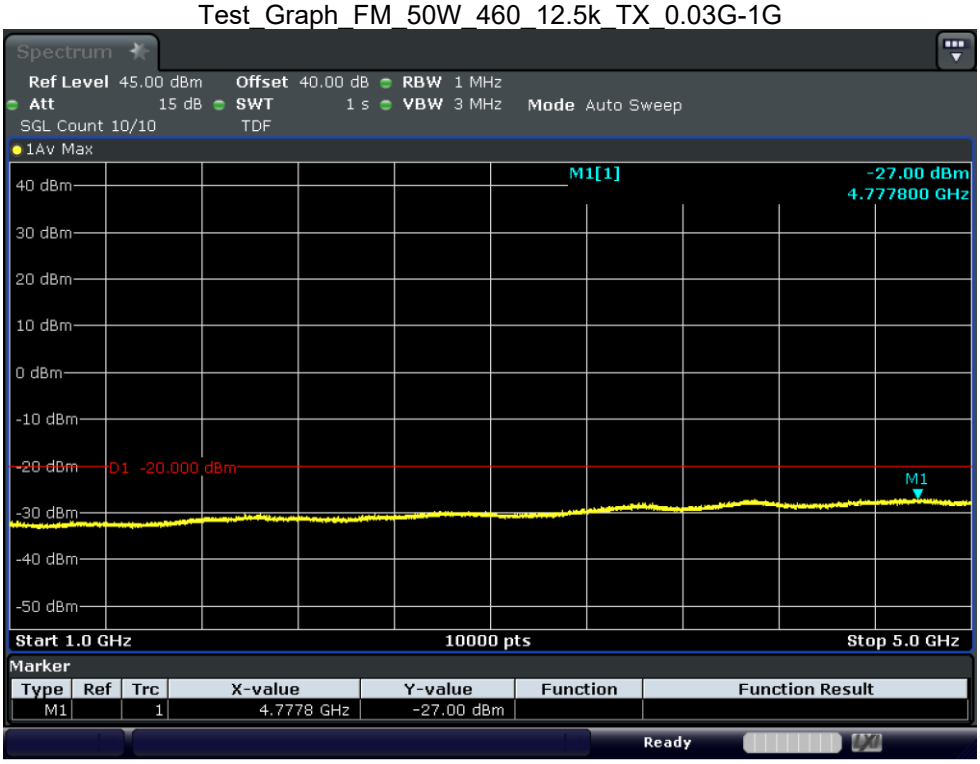


Test_Graph_FM_50W_450.025_12.5k_TX_0.03G-1G

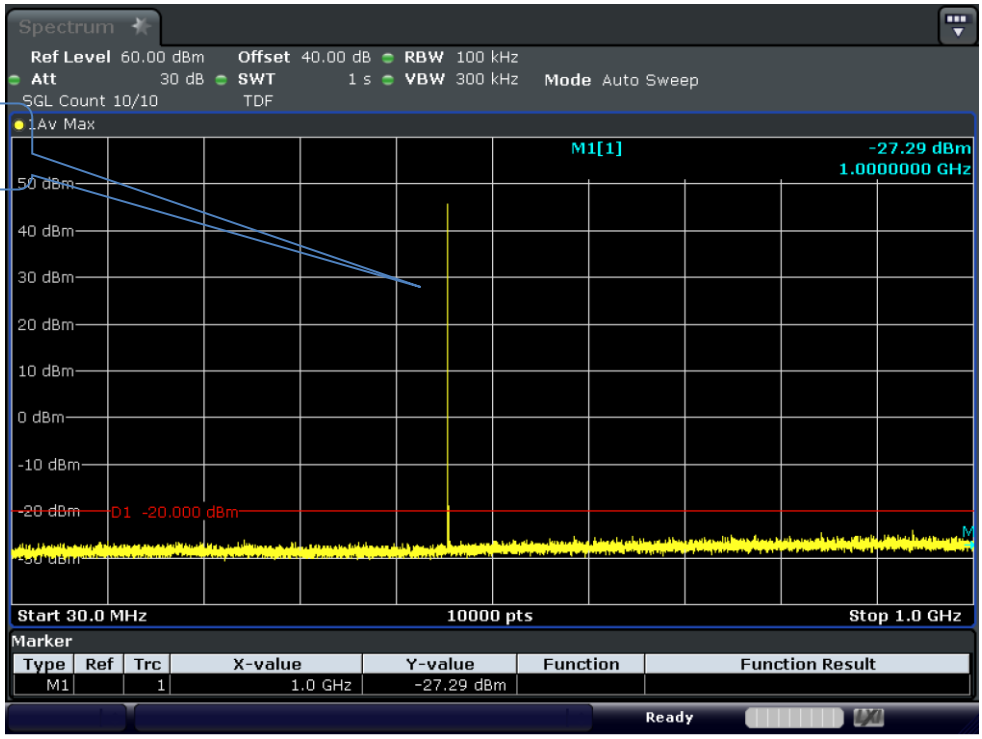
Test_Graph_FM_50W_450.025_12.5k_TX_1G-5G

Fundamental

Test_Graph_FM_50W_460_12.5k_TX_0.03G-1G

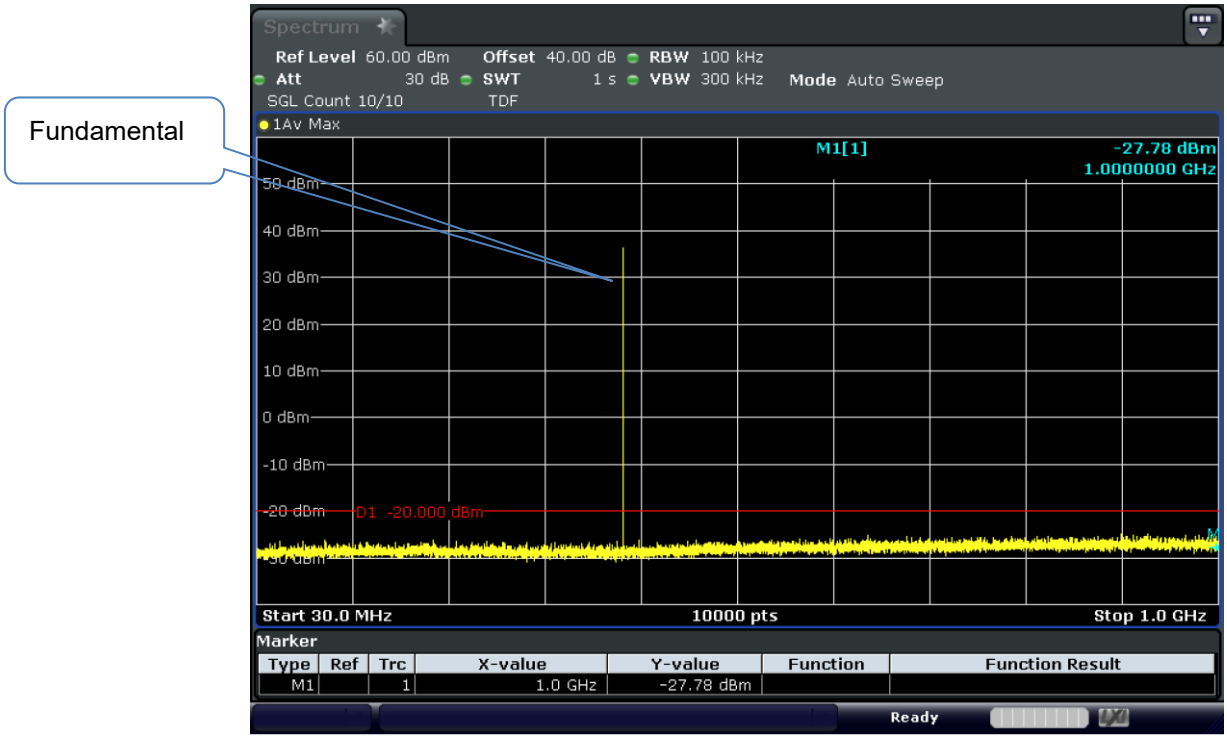


Test_Graph_FM_50W_460_12.5k_TX_1G-5G

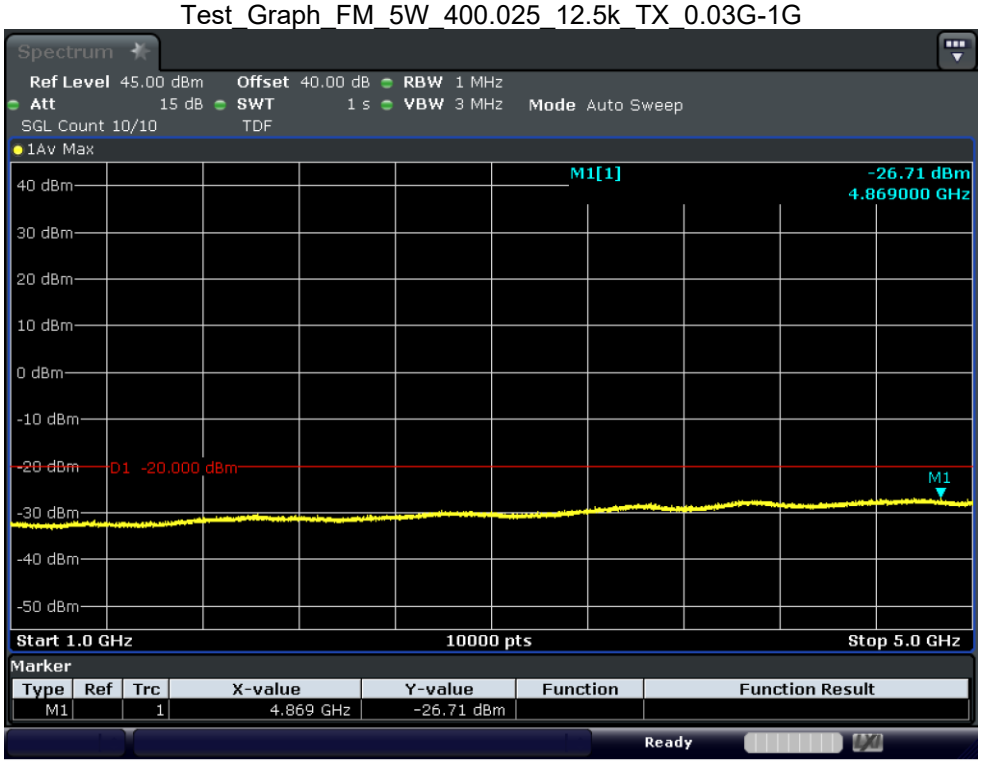


Test_Graph_FM_50W_469.975_12.5k_TX_0.03G-1G

Test_Graph_FM_50W_469.975_12.5k_TX_1G-5G

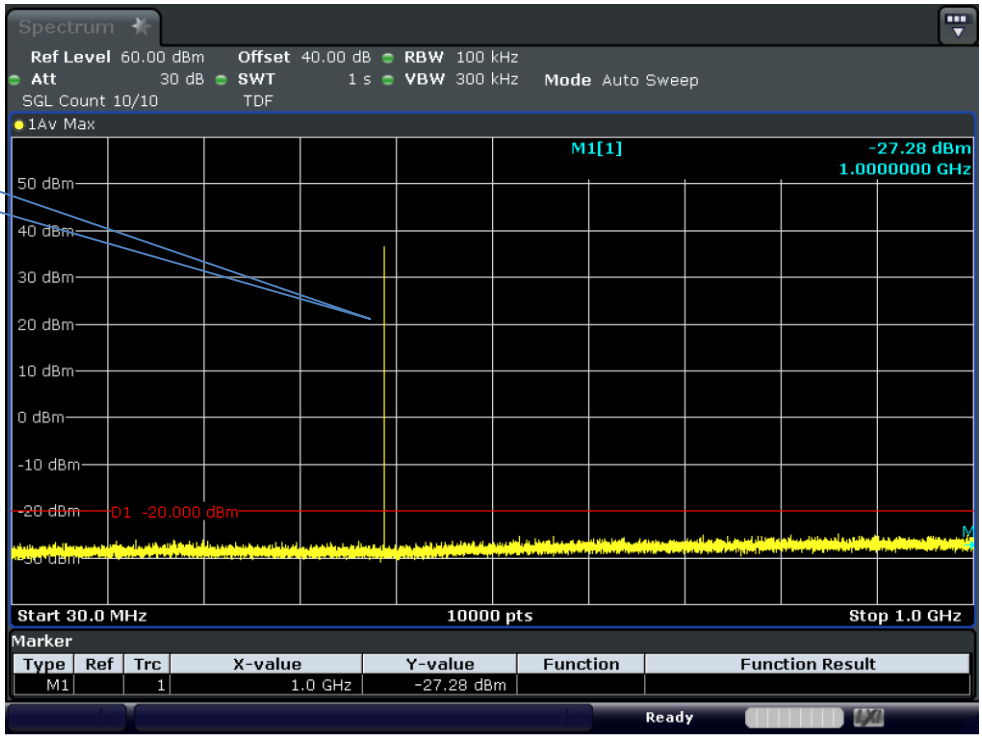


Test_Graph_FM_5W_400.025_12.5k_TX_0.03G-1G



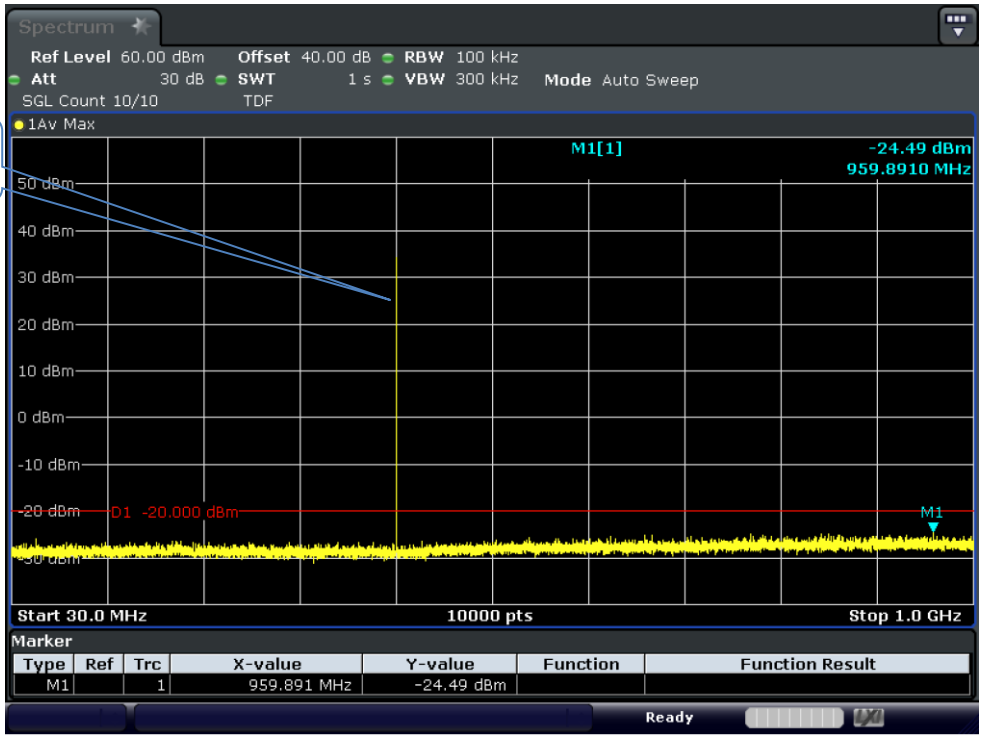
Test_Graph_FM_5W_400.025_12.5k_TX_1G-5G

Fundamental

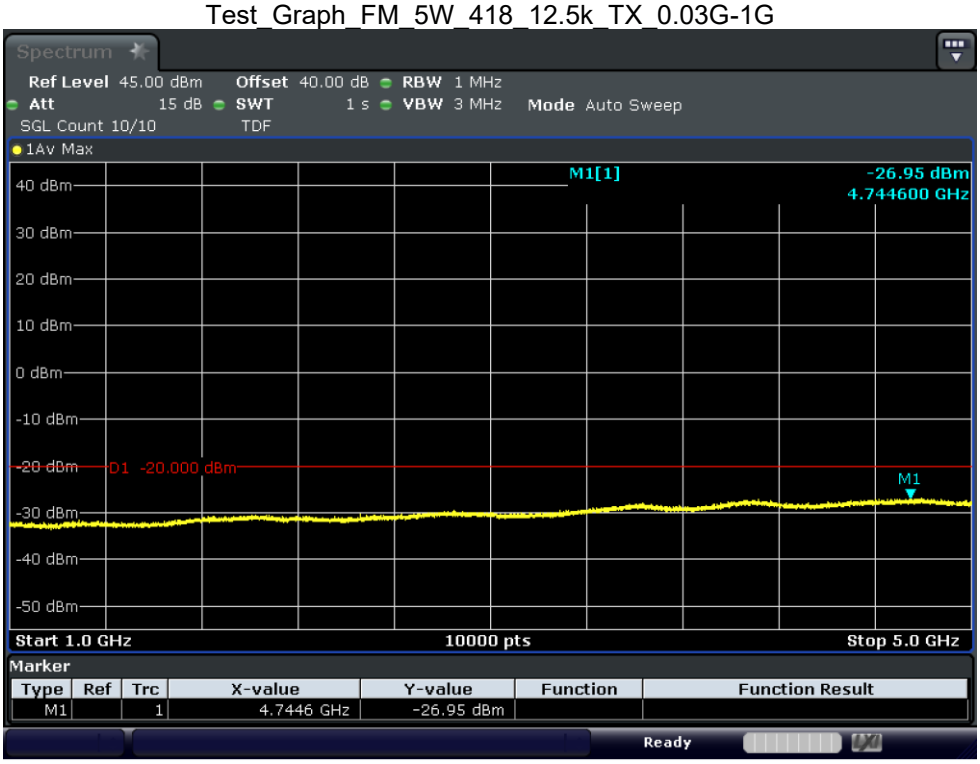


Test_Graph_FM_5W_406.125_12.5k_TX_0.03G-1G

Test_Graph_FM_5W_406.125_12.5k_TX_1G-5G

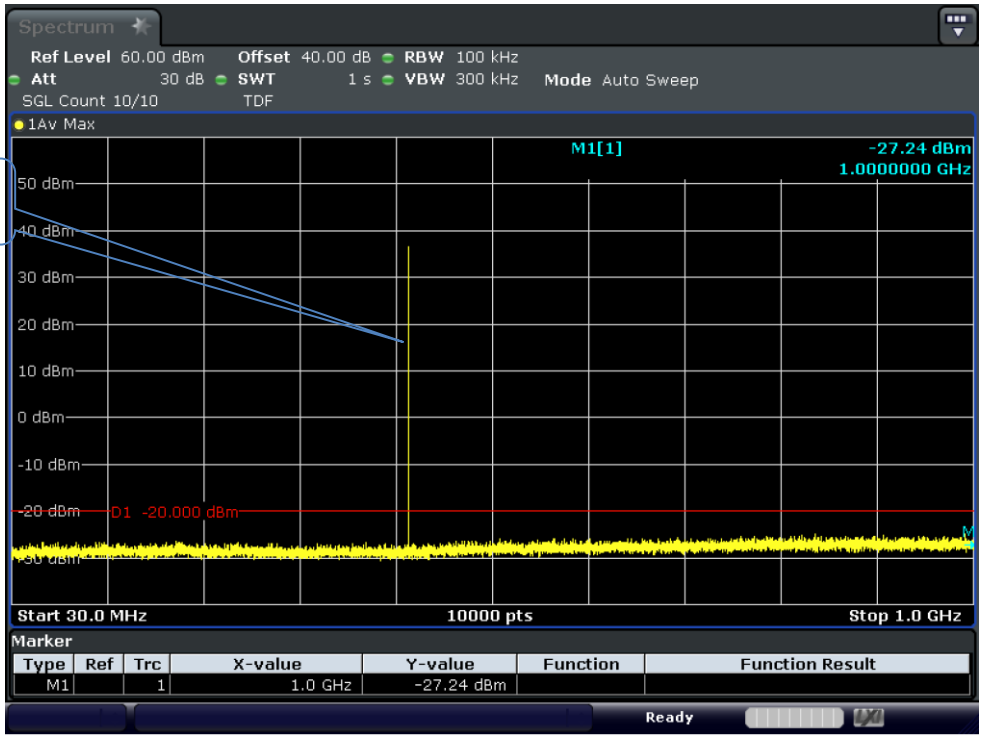


Test_Graph_FM_5W_418_12.5k_TX_0.03G-1G

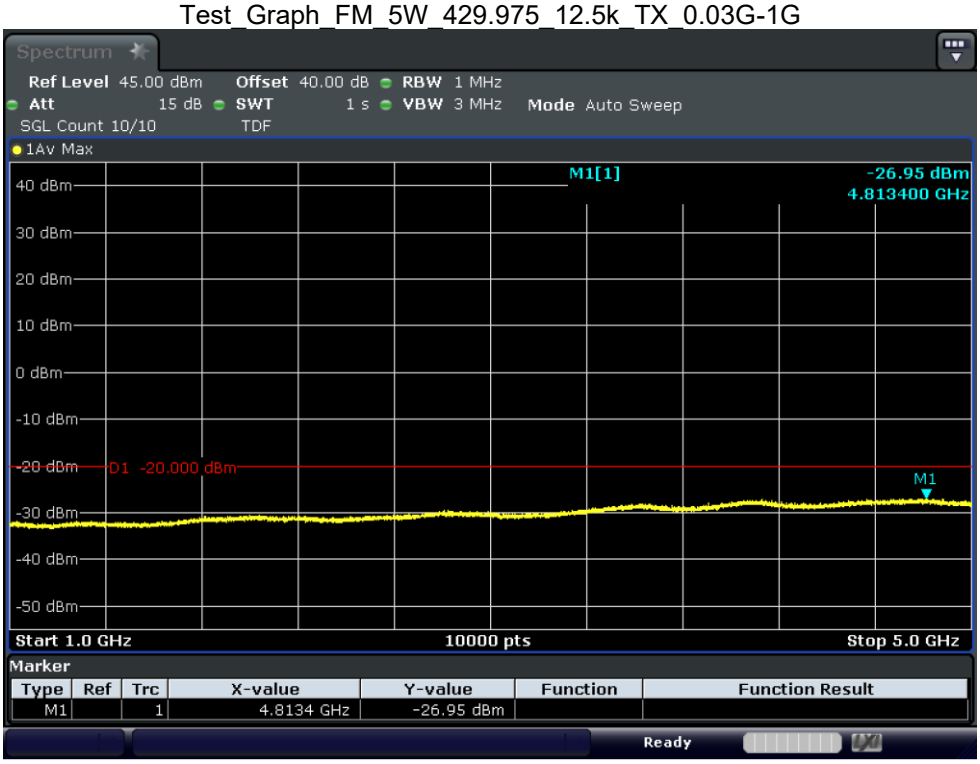


Test_Graph_FM_5W_418_12.5k_TX_1G-5G

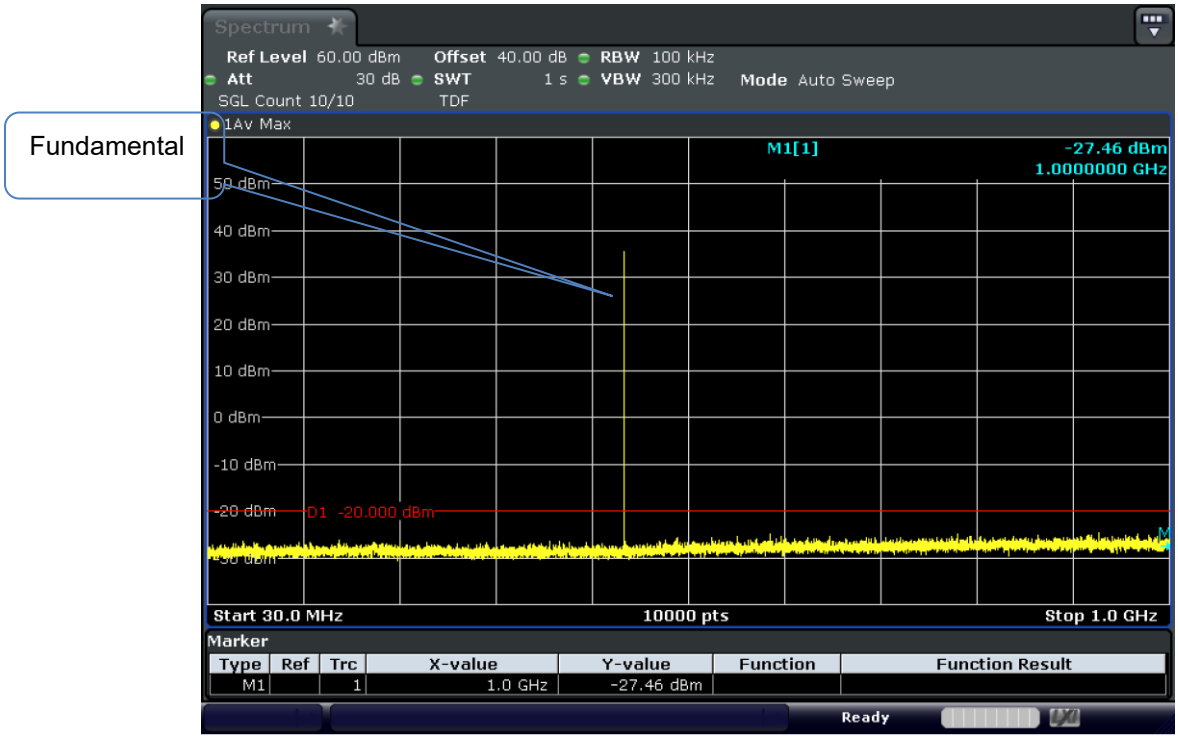
Fundamental



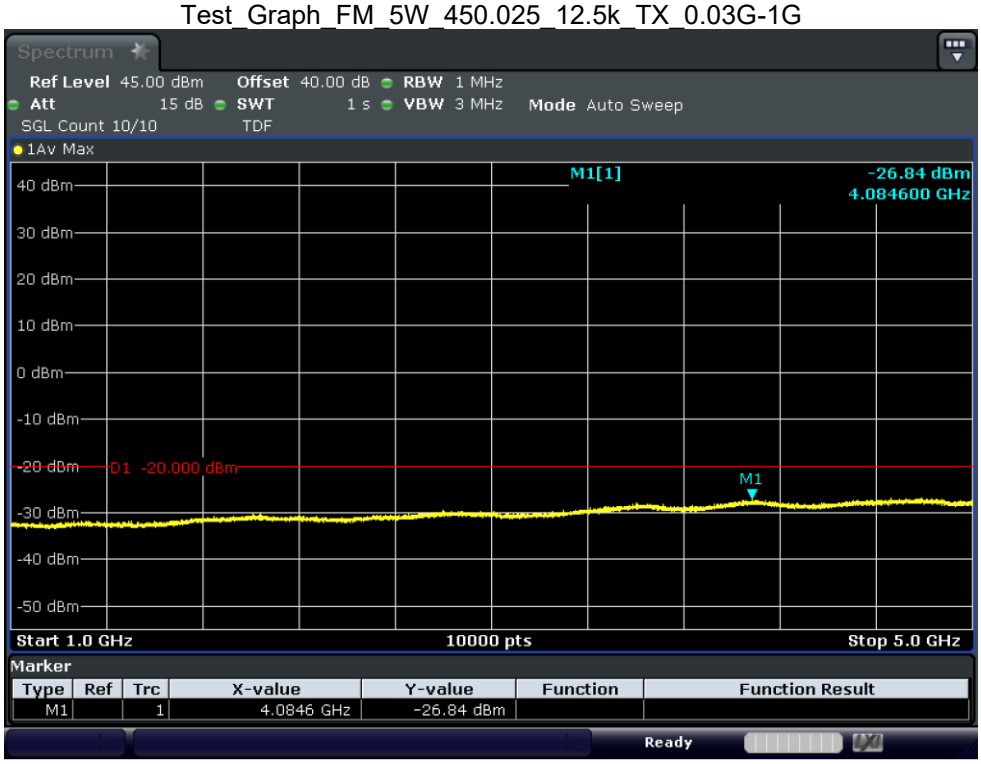
Test_Graph_FM_5W_429.975_12.5k_TX_0.03G-1G



Test_Graph_FM_5W_429.975_12.5k_TX_1G-5G

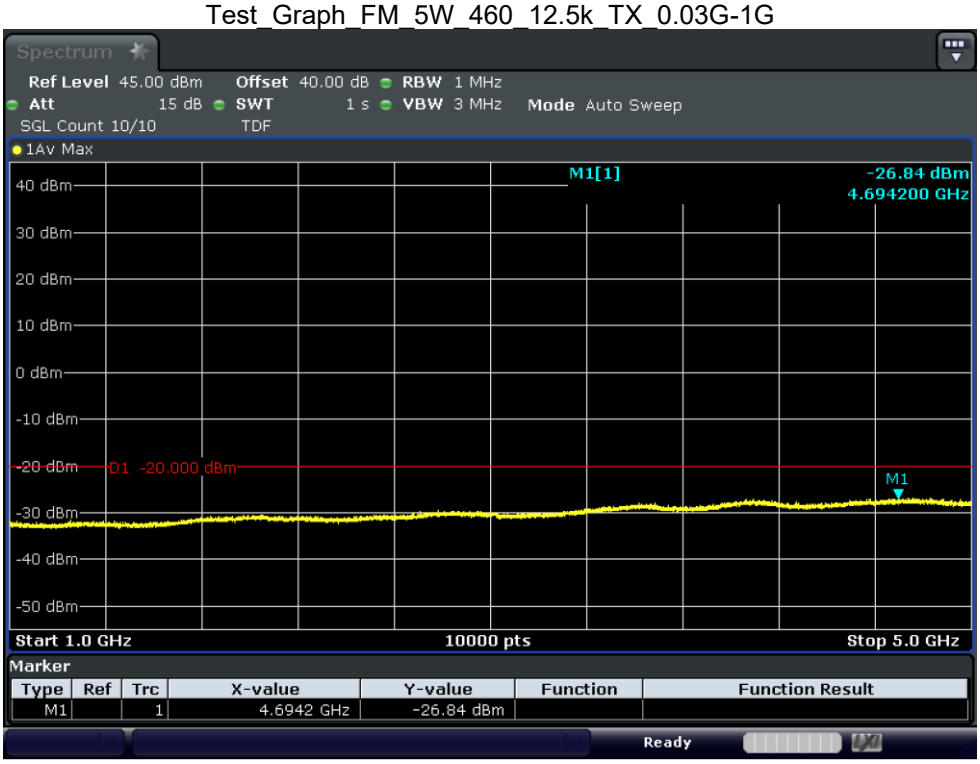


Test_Graph_FM_5W_450.025_12.5k_TX_0.03G-1G



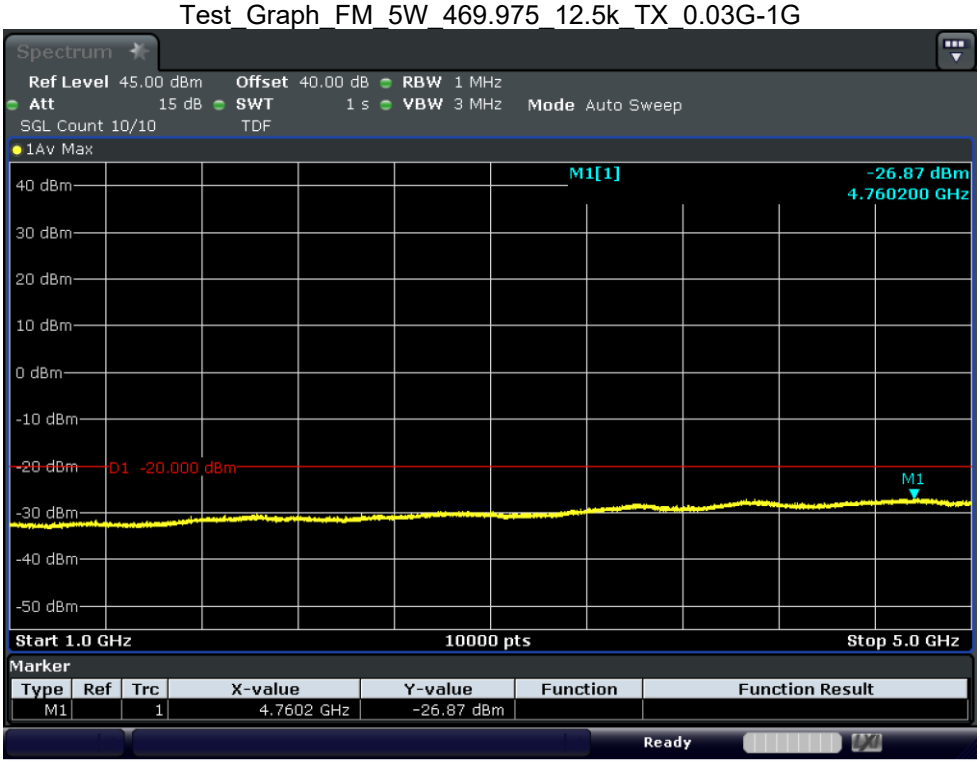
Test_Graph_FM_5W_450.025_12.5k_TX_1G-5G

Test_Graph_FM_5W_460_12.5k_TX_0.03G-1G



Test_Graph_FM_5W_460_12.5k_TX_1G-5G

Test_Graph_FM_5W_469.975_12.5k_TX_0.03G-1G

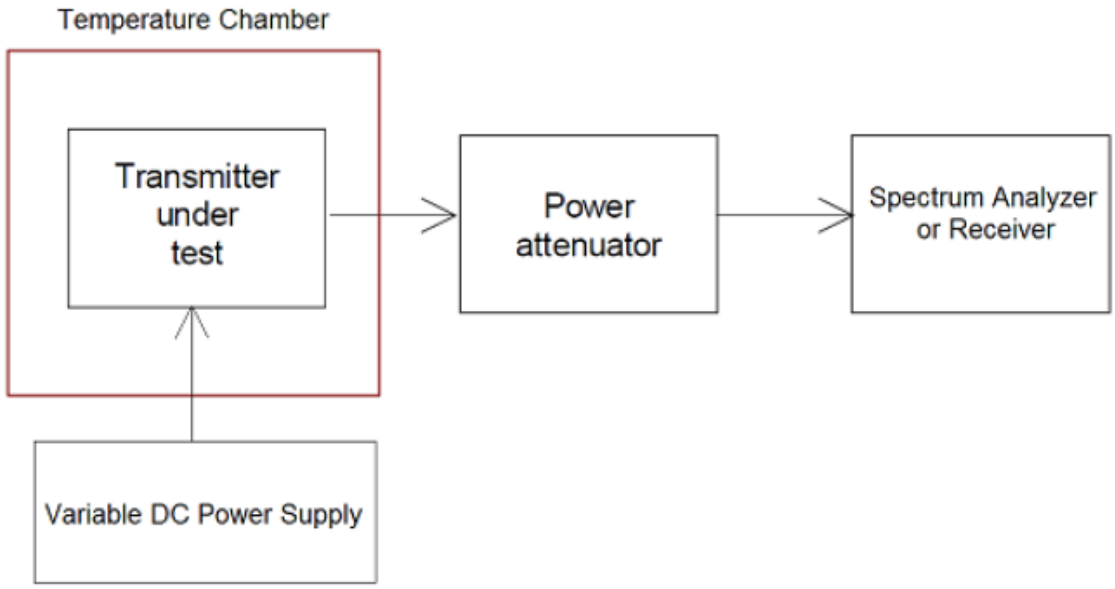


Test_Graph_FM_5W_469.975_12.5k_TX_1G-5G

Note: All the test modes was tested, but only the worst mode(4FSK Data and FM at 12.5kHz channel spacing) be recorded in this part.

4.6. Frequency Stability

TEST CONFIGURATION



TEST PROCEDURE

The EUT was set in the climate chamber and connected to an external DC power supply. The RF output was directly connected to frequency meter. The coupling loss of the additional cables was recorded and taken in account for all the measurements. After temperature stabilization (approx. 20 min for each stage), the frequency for the lower, the middle and the highest frequency range was recorded. For Frequency stability Vs. Voltage the EUT was connected to a DC power supply and the voltage was adjusted in the required ranges. The result was recorded.

TEST APPLICABLE

1 According to FCC Part 2 Section 2.1055 (a)(1), the frequency stability shall be measured with variation of ambient temperature from -30℃ to +60℃centigrade.
2 According to FCC Part 2 Section 2.1055 (a) (2), for battery powered equipment, the frequency stability shall be measured with reducing primary supply voltage to the battery operating end point, which is specified by the manufacture.
3 Vary primary supply voltage from 85 to 115 percent of the nominal value; if manufacturer declares extreme voltage within 85 to 115 percent of the nominal value, measured at extreme voltage declared by manufacturer.

LIMIT

1.5 ppm.

TEST RESULTS

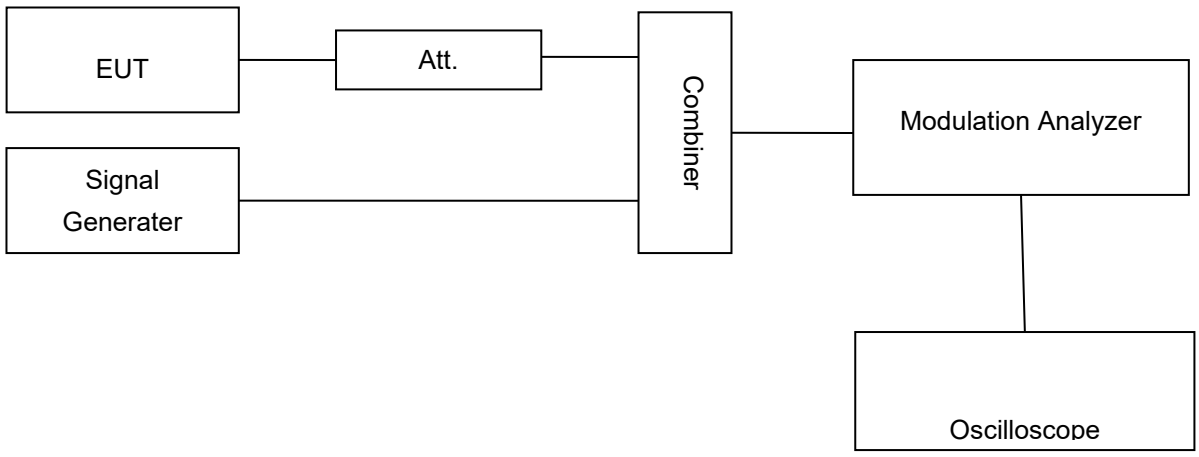
Test conditions		Frequency error (ppm)		
Voltage Condition	Temp(℃)	400.025 MHz	450.025MHz	469.975MHz
NV	-30	0.042	0.042	0.042
	-20	0.042	0.042	0.042
	-10	0.041	0.041	0.043
	0	0.042	0.043	0.044
	10	0.041	0.042	0.043
	20	0.042	0.042	0.044
	30	0.046	0.044	0.046
	40	0.045	0.045	0.047
	50	0.046	0.046	0.047
LV	20	0.042	0.042	0.041
HV	20	0.042	0.042	0.041
Limit(ppm)		1.50	1.50	1.50
Result		PASS	PASS	PASS

Note: All the test modes was tested, but only the worst mode(50W power level at 400.025MHz/450.025MHz/469.975MHz) be recorded in this part.

NV: Normal Voltage 13.60V
LV: Low Voltage 11.56V
HV: High Voltage 15.64V

4.7. Transient Frequency Behavior

TEST CONFIGURATION



TEST PROCEDURE

1. Connect the EUT and test equipment as shown on the following block diagram.
2. Set the Spectrum Analyzer to measure FM deviation, and tune the RF frequency to the transmitter assigned frequency.
3. Set the signal generator to the assigned transmitter frequency and modulate it with a 1 kHz tone at ±12.5 kHz deviation and set its output level to -100dBm.
4. Turn on the transmitter.
5. Supply sufficient attenuation via the RF attenuator to provide an input level to the Spectrum Analyzer that is 40 dB below the maximum allowed input power when the transmitter is operating at its rated power level. Note this power level on the Spectrum Analyzer as P0.
6. Turn off the transmitter.
7. Adjust the RF level of the signal generator to provide RF power equal to P0. This signal generator RF level shall be maintained throughout the rest of the measurement.
8. Remove the attenuation 1, so the input power to the Spectrum Analyzer is increased by 30 dB when the transmitter is turned on.
9. Adjust the vertical amplitude control of the spectrum analyzer to display the 1000 Hz at ±4 divisions
10. vertically centered on the display. Set trigger mode of the Spectrum Analyzer to “Video”, and tune the “trigger level” on suitable level. Then set the “tiger offset” to -10ms for turn on and -15ms for turn off.
11. Turn on the transmitter and the transient wave will be captured on the screen of Spectrum Analyzer. Observe the stored display. The instant when the 1 kHz test signal is completely suppressed is considered to be ton. The trace should be maintained within the allowed divisions during the period t_1 and t_2.
12. Then turn off the transmitter, and another transient wave will be captured on the screen of Spectrum Analyzer. The trace should be maintained within the allowed divisions during the period t_3.

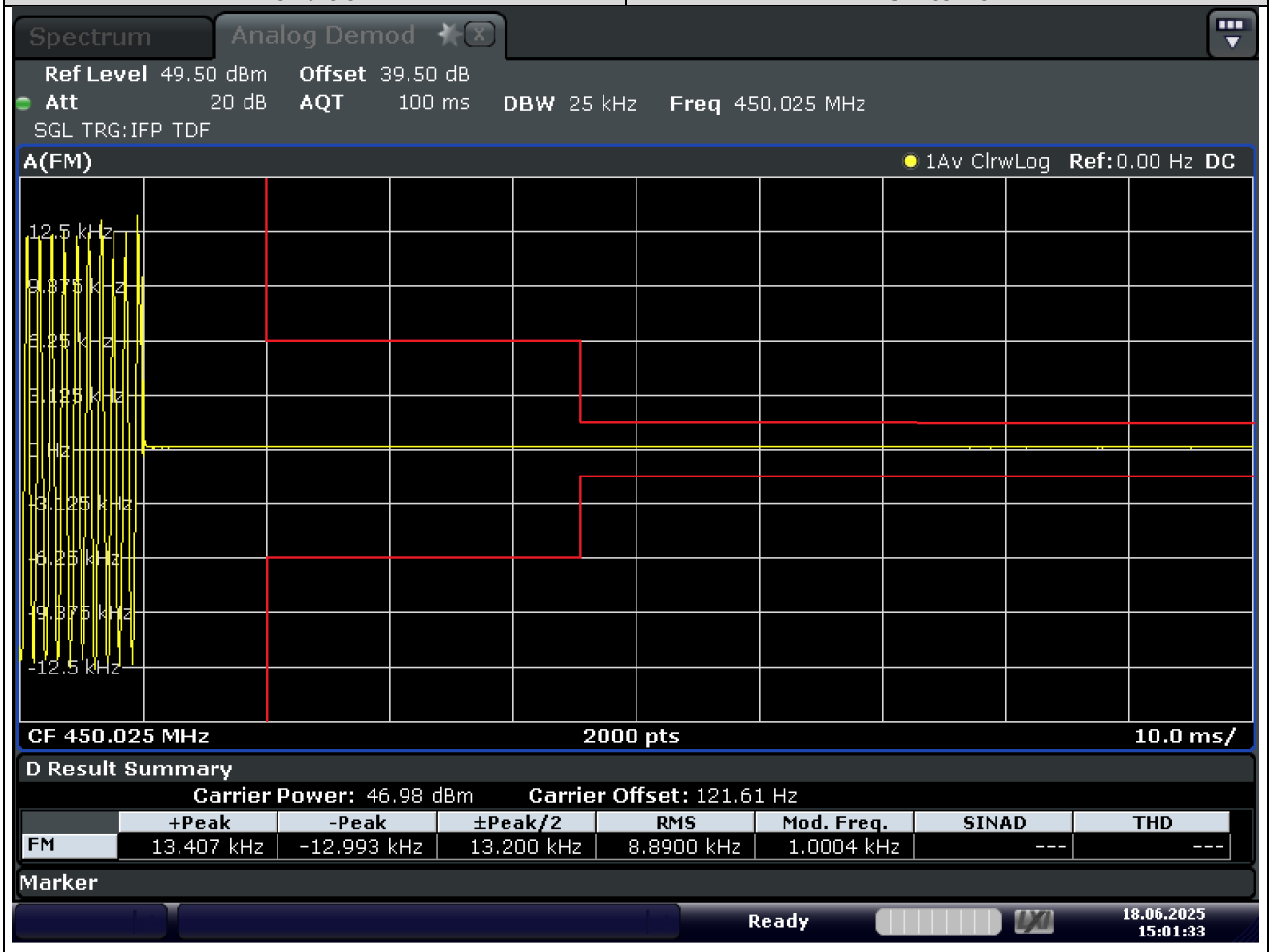
LIMIT

Time intervals [1, 2]	Maximum frequency difference [3]	All equipment	
		150 to 174 MHz	421 to 512 MHz
Transient Frequency Behavior for Equipment Designed to Operate on 25 kHz Channels			
t_1 [4]	± 25.0 kHz	5.0 ms	10.0 ms
t_2	± 12.5 kHz	20.0 ms	25.0 ms
t_3 [4]	± 25.0 kHz	5.0 ms	10.0 ms
Transient Frequency Behavior for Equipment Designed to Operate on 12.5 kHz Channels			
t_1 [4]	± 12.5 kHz	5.0 ms	10.0 ms
t_2	± 6.25 kHz	20.0 ms	25.0 ms
t_3 [4]	± 12.5 kHz	5.0 ms	10.0 ms
Transient Frequency Behavior for Equipment Designed to Operate on 6.25 kHz Channels			
t_1 [4]	± 6.25 kHz	5.0 ms	10.0 ms
t_2	± 3.125 kHz	20.0 ms	25.0 ms
t_3 [4]	± 6.25 kHz	5.0 ms	10.0 ms

[1] t_{on} is the instant when a 1 kHz test signal is completely suppressed, including any capture time due to phasing.
t_1 is the time period immediately following t_{on}.
t_2 is the time period immediately following t_1.
t_3 is the time period from the instant when the transmitter is turned off until t_{off}.
t_{off} is the instant when the 1 kHz test signal starts to rise.
[2] During the time from the end of t_2 to the beginning of t_3, the frequency difference must not exceed the limits specified in § 90.213.
[3] Difference between the actual transmitter frequency and the assigned transmitter frequency.
[4] If the transmitter carrier output power rating is 6 watts or less, the frequency difference during this time period may exceed the maximum frequency difference for this time period.

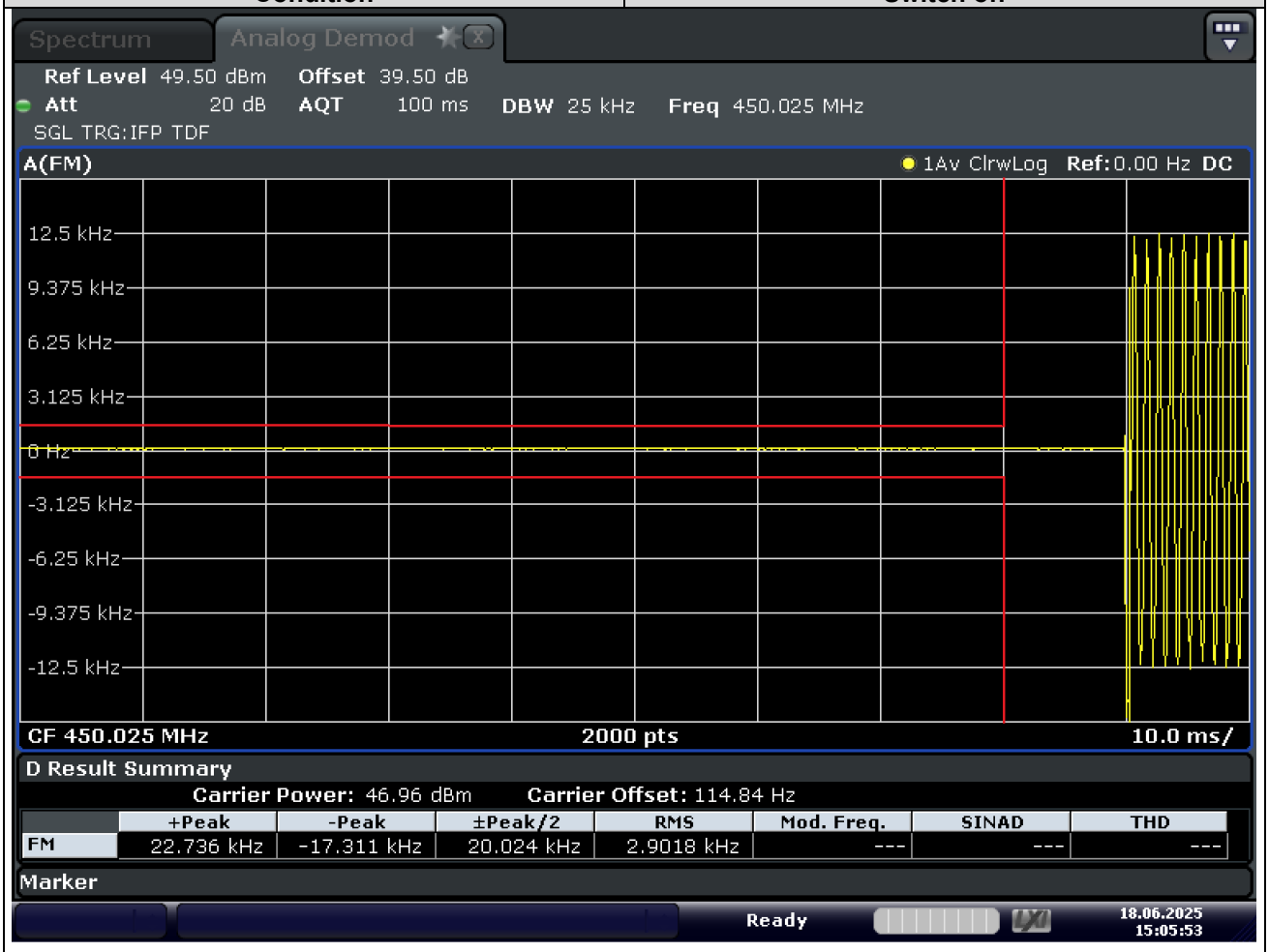
TEST RESULTS

Test Frequency: 450.025MHz	Channel Separation:12.5KHz
Condition	Switch on



Note: All the test frequencies was tested, but only the worst data be recorded in this part.

Test Frequency: 450.025MHz	Channel Separation:12.5KHz
Condition	Switch off



Note: All the test frequencies was tested, but only the worst data be recorded in this part.

5. TEST SETUP PHOTOGRAPHS OF EUT

Please refer to separated files for Test Setup Photos of the EUT.

6. EXTERIOR PHOTOGRAPHS OF EUT

Please refer to separated files for External Photos of the EUT.

7. INTERIOR PHOTOGRAPHS OF EUT

Please refer to separated files for Internal Photos of the EUT.

.....End of Report.....