SCREEN SERVICE BROADCASTING TECHNOLOGIES
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FREQUENCY and POWER STABILITY vs TEMPERATURE and POWER SUPPLY. SPECTRUM and HARMONICS

CONTENTS

1.1 PURPOSE

The document purpose is to give the sufficient and necessary information about:

1. CARRIER STABILITY
2. POWER STABILITY

Over:

- TEMPERATURE VARIATION: 0℃; 25℃; 50 ℃
- POWER SUPPLY VARIATION: 90 to 264 VAC SINGLE PHASE

At rated output power which is 20.0 W under ATSC standard

By the results below (CHAPTER 1.2.1, 1.2.2, 1.2.3, 1.2.4 and 1.2.5) it turns out that:

- The frequency stability over temperature AND power supply variation is within +/- 1PPM
- The output power has no significant variation over temperature AND power supply

The chapter 1.2.6 gives the spurious frequency at the output of the equipment. No harmonics are present with a level higher than -70 dBc with reference to the nominal rated output power.

1.2 MEASURE

1.2.1 FREQUENCY AND RF POWER STABILITY AT CHANNEL 14 WITH INTERNAL REFERENCE

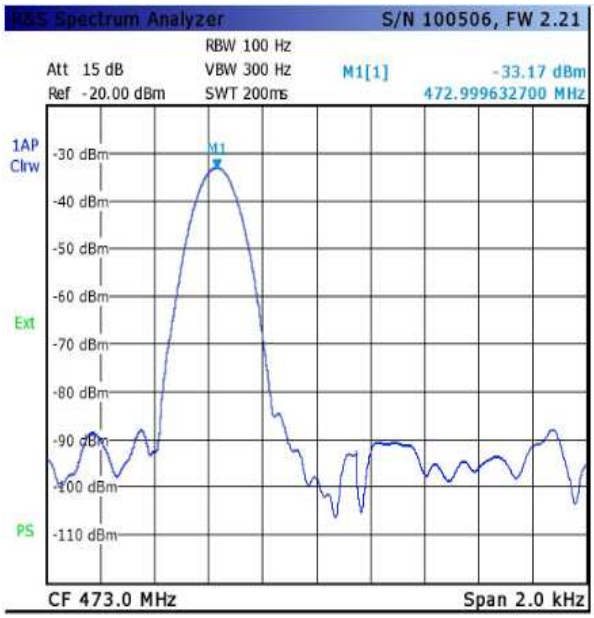
TRANSMITTER BRAND: **SCREEN SERVICE**
MODEL: **SDT 500 UB ARK 1**
FREQUENCY: **UHF RANGE IV e V**
CHANNEL SPACING: **6 MHz**
FREQUENCY: **473 MHz**
TEMPERATURE: **0°C**
OUTPUT POWER:
DIGITAL: **20.1 W rms**

FREQUENCY TOLERANCE
MFN/ FREE OFFSET:

MEASURE [HZ]: **-367**

POWER SUPPLY VARIATION:

MEASURE: **90 TO 264 VAC**



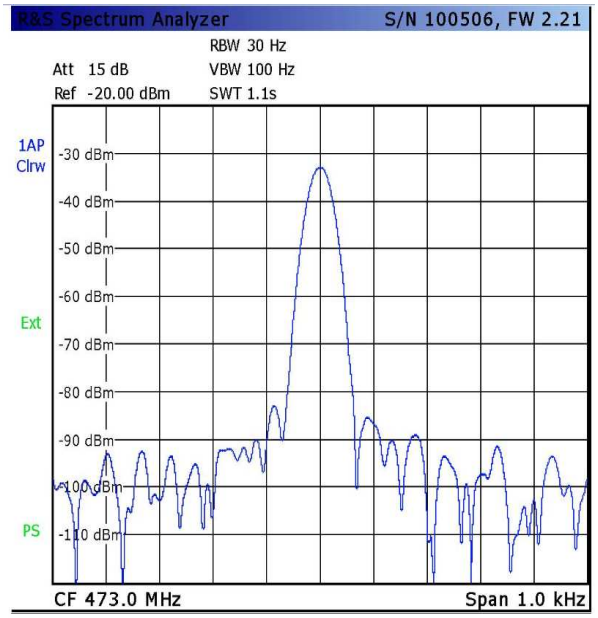
TRANSMITTER BRAND: **SCREEN SERVICE**
MODEL: **SDT 500 UB ARK 1**
FREQUENCY: **UHF RANGE**
CHANNEL SPACING: **6 MHz**
FREQUENCY: **473 MHz**
TEMPERATURE: **25°C**
OUTPUT POWER:
DIGITAL: **20.1 W rms**

FREQUENCY TOLERANCE
MFN/ FREE OFFSET:

MEASURE [HZ]: **-2**

POWER SUPPLY VARIATION:

MEASURE: **90 TO 264 VAC**



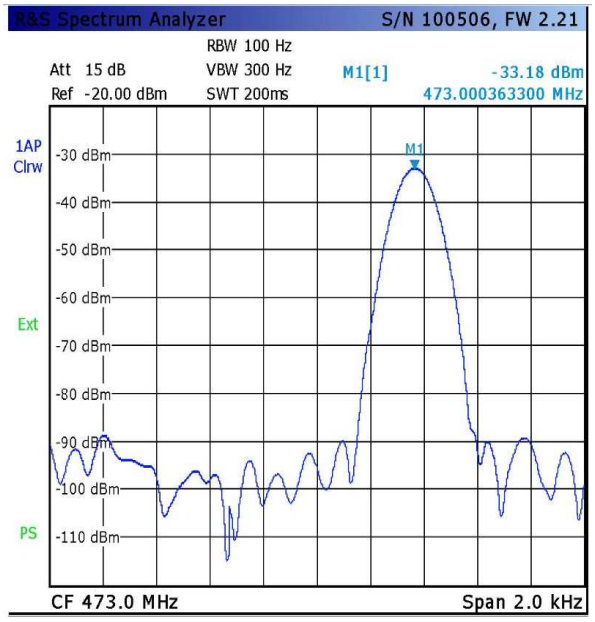
TRANSMITTER BRAND: **SCREEN SERVICE**
MODEL: **SDT 500 UB ARK 1**
FREQUENCY: **UHF RANGE**
CHANNEL SPACING: **6 MHz**
FREQUENCY: **473 MHz**
TEMPERATURE: **50°C**
OUTPUT POWER:
DIGITAL: **20.1 W rms**

FREQUENCY TOLERANCE
MFN/ FREE OFFSET:

MEASURE [HZ]: **+363**

POWER SUPPLY VARIATION:

MEASURE: **90 TO 264 VAC**



1.2.2 FREQUENCY AND RF POWER STABILITY AT CHANNEL 25 WITH INTERNAL REFERENCE

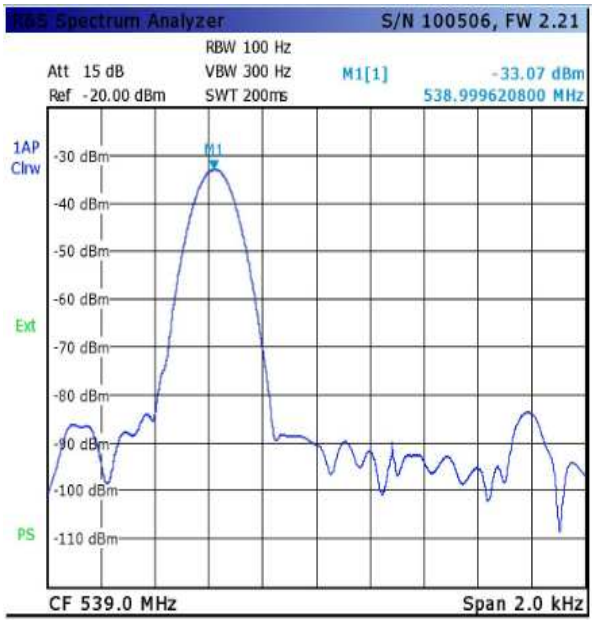
TRANSMITTER BRAND: **SCREEN SERVICE**
MODEL: **SDT 500 UB ARK 1**
FREQUENCY: **UHF RANGE**
CHANNEL SPACING: **6 MHz**
FREQUENCY: **539 MHz**
TEMPERATURE: **0°C**
OUTPUT POWER:
DIGITAL: **20.1 W rms**

FREQUENCY TOLERANCE
MFN/ FREE OFFSET:

MEASURE [HZ]: **-379**

POWER SUPPLY VARIATION:

MEASURE: **90 TO 264 VAC**



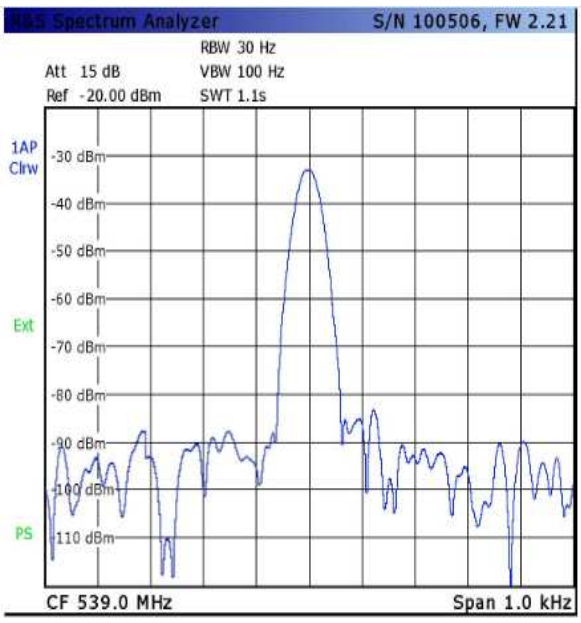
TRANSMITTER BRAND: **SCREEN SERVICE**
MODEL: **SDT 500 UB ARK 1**
FREQUENCY: **UHF RANGE**
CHANNEL SPACING: **6 MHz**
FREQUENCY: **666 MHz**
TEMPERATURE: **25°C**
OUTPUT POWER:
DIGITAL: **20.1 W rms**

FREQUENCY TOLERANCE
MFN/ FREE OFFSET:

MEASURE [HZ]: **-21**

POWER SUPPLY VARIATION:

MEASURE: **90 TO 264 VAC**



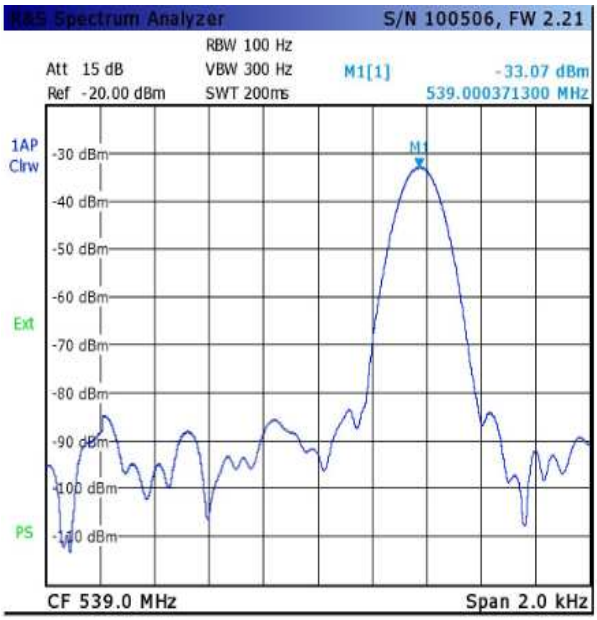
TRANSMITTER BRAND: **SCREEN SERVICE**
MODEL: **SDT 500 UB ARK 1**
FREQUENCY: **UHF RANGE**
CHANNEL SPACING: **6 MHz**
FREQUENCY: **539 MHz**
TEMPERATURE: **50°C**
OUTPUT POWER:
DIGITAL: **20.1 W rms**

FREQUENCY TOLERANCE
MFN/ FREE OFFSET:

MEASURE [HZ]: **+371**

POWER SUPPLY VARIATION:

MEASURE: **90 TO 264 VAC**



1.2.3 FREQUENCY AND RF POWER STABILITY AT CHANNEL 36 WITH INTERNAL REFERENCE

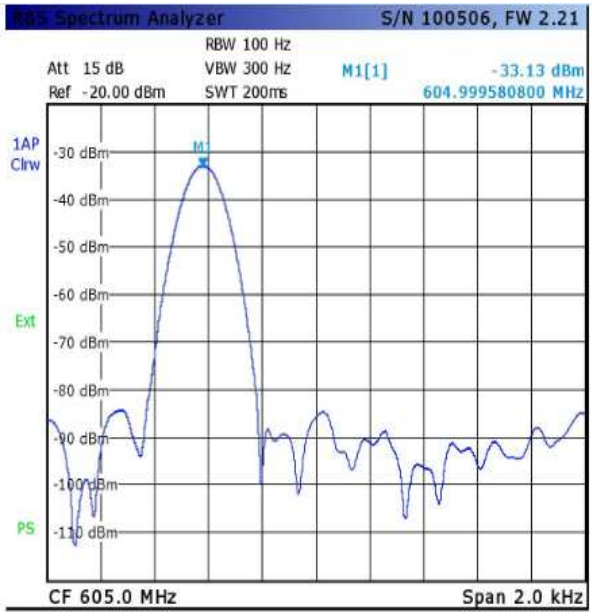
TRANSMITTER BRAND: **SCREEN SERVICE**
MODEL: **SDT 500 UB ARK 1**
FREQUENCY: **UHF RANGE**
CHANNEL SPACING: **6 MHz**
FREQUENCY: **605 MHz**
TEMPERATURE: **0 °C**
OUTPUT POWER:
DIGITAL: **20.1 W rms**

FREQUENCY TOLERANCE
MFN/ FREE OFFSET:

MEASURE [HZ]: **-419**

POWER SUPPLY VARIATION:

MEASURE: **90 TO 264 VAC**



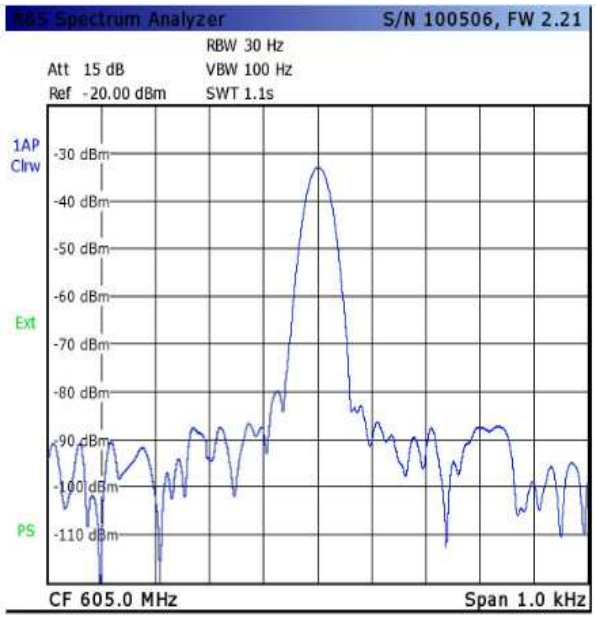
TRANSMITTER BRAND: **SCREEN SERVICE**
MODEL: **SDT 500 UB ARK 1**
FREQUENCY: **UHF RANGE**
CHANNEL SPACING: **6 MHz**
FREQUENCY: **605 MHz**
TEMPERATURE: **25°C**
OUTPUT POWER:
DIGITAL: **20.1 W rms**

FREQUENCY TOLERANCE
MFN/ FREE OFFSET:

MEASURE [HZ]: **-5**

POWER SUPPLY VARIATION:

MEASURE: **90 TO 264 VAC**



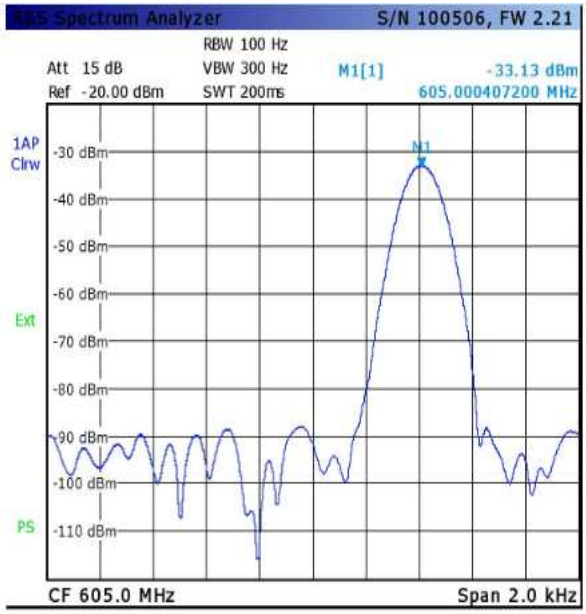
TRANSMITTER BRAND: **SCREEN SERVICE**
MODEL: **SDT 500 UB ARK 1**
FREQUENCY: **UHF RANGE**
CHANNEL SPACING: **6 MHz**
FREQUENCY: **605 MHz**
TEMPERATURE: **50°C**
OUTPUT POWER:
DIGITAL: **20.1 W rms**

FREQUENCY TOLERANCE
MFN/ FREE OFFSET:

MEASURE [HZ]: **+407**

POWER SUPPLY VARIATION:

MEASURE: **90 TO 264 VAC**



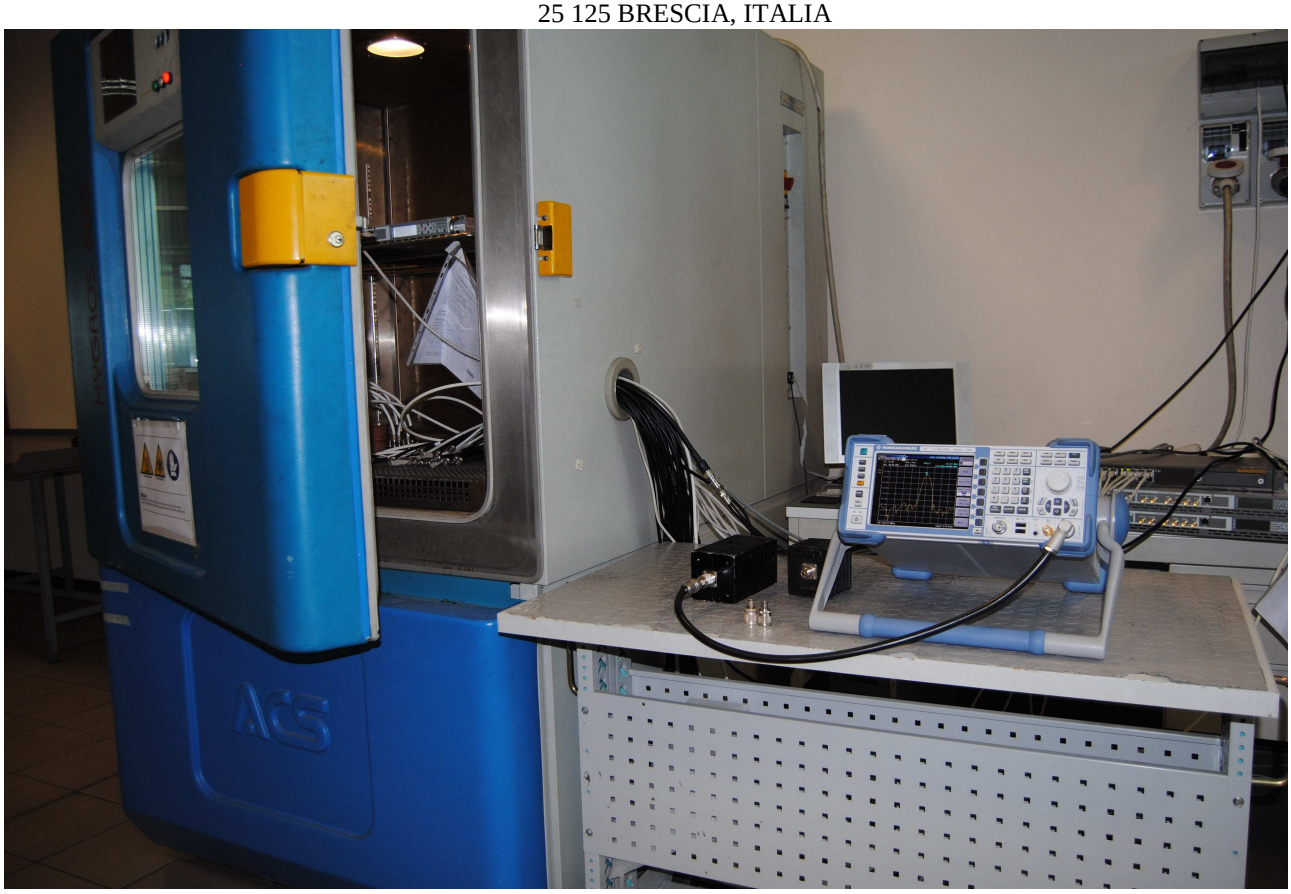
1.2.4 FREQUENCY STABILITY WITH EXTERNAL(GPS) REFERENCE

The GPS reference can be used because is an embedded function. When this function is active for example in the SFN (Single Frequency Network or other needs) the frequency variation temperature AND power supply is within +/- 1 HZ.

1.2.5 TEST BENCH

This chapter shows the used equipment for testing:

SDT 500 UB S/N 1047-40554
RF ATTENUATOR 76 dB +/-0.1
ETL R&S_S/N 100506
THERMAL CHAMBER_ANGELANTONI_HYGROS 600_S/N7024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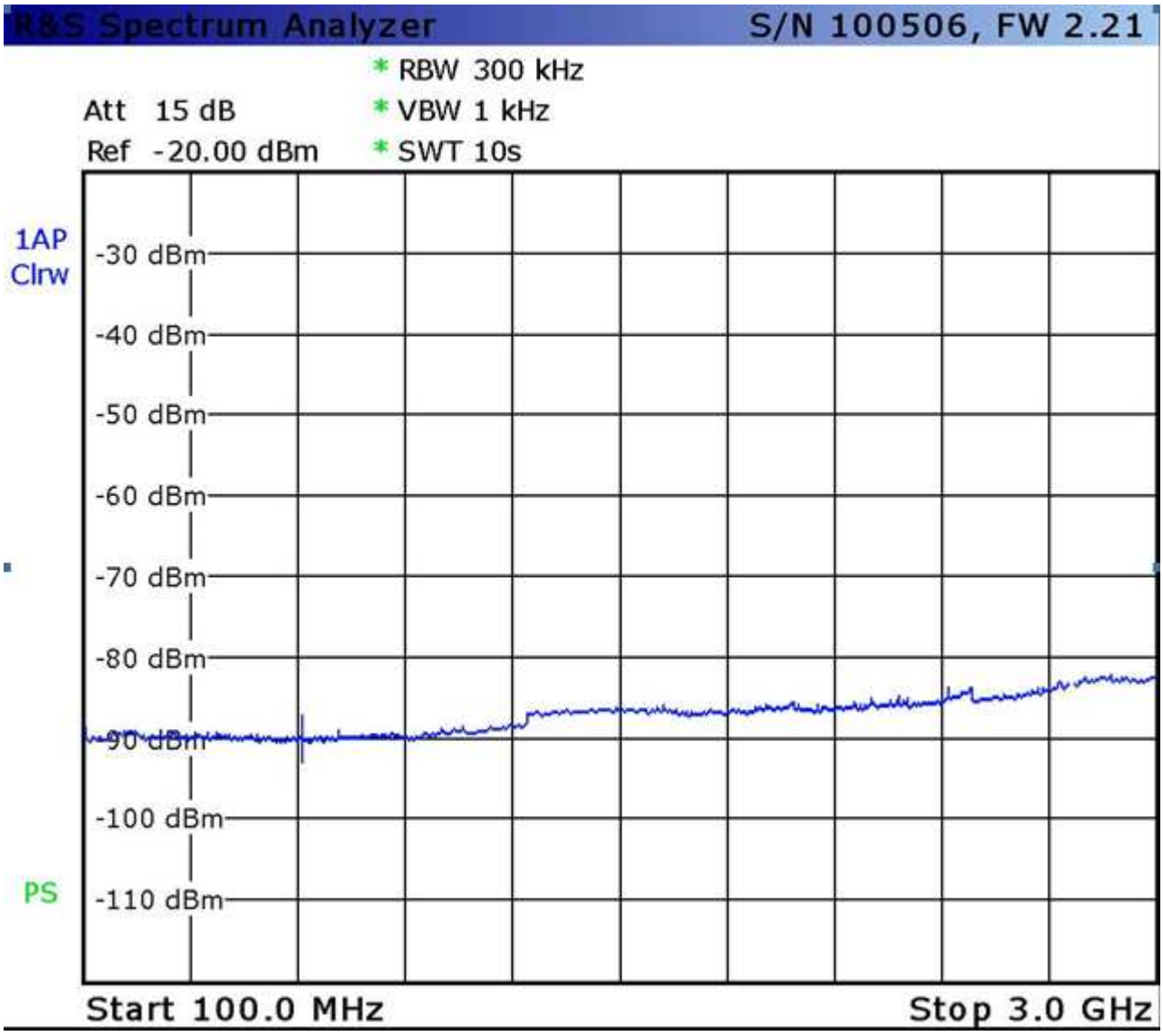
1.2.6 SPECTRUM

This chapter shows the spurious frequency.
In particular 1.2.1.1 shows the test bench the other three pictures reports the spectrum at the three required frequencies.

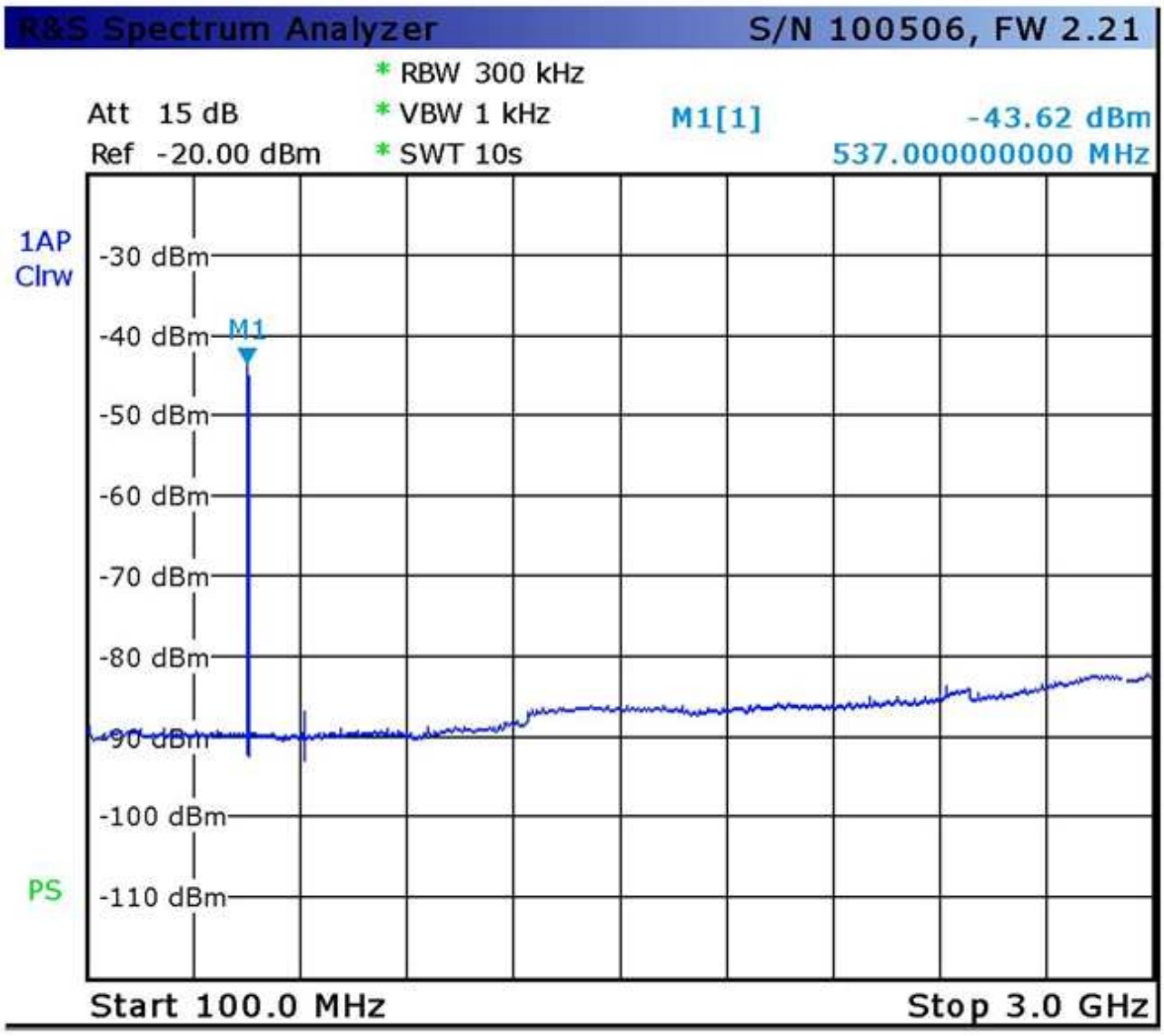
NO HARMONICS ARE DETECTED above the noise of the instrument.

1.2.6.1 REFERENCE



1.2.6.2 SPECTRUM at channel 14

1.2.6.3 SPECTRUM at channel 25



1.2.6.4 SPECTRUM at channel 36