

**Measurements of Shure AXT100/200 for FCC Part 74 and Canada IC
RSS123 Regulatory Approval.
Conducted spurious emissions measurement.**

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Table of Contents

1. Introduction	4
1.1 Test Equipment used:	4
1.2 Test set up:	4
1.2.1 FCC Part 74 requirement:.....	4
1.2.2 Canada IC RSS-123 requirement:	4
1.3 Review and Approval	5
1.4 Revision History	5
1.5 References.....	6
1.6 Acronyms and Definitions.....	6
 2. AXT 200 (HH TX) conducted UHF spurious measurements:	7
2.1 FCC Part 74	7
Spurious emissions should be below -13dBm (green display line in the plots).....	7
2.1.1 G1 band 470-530 MHz	7
2.1.2 H4 band 518-578 MHz.....	8
2.1.3 J5 Band 578-638 MHz	9
2.1.4 L3 band 638-698 MHz	10
2.2 Canada IC RSS123:.....	11
Spurious emissions should be below -25dBm (green display line in the plots).....	11
2.2.1 G1 band 470-530 MHz	11
2.2.2 H4 band 518-578 MHz.....	14
2.2.3 J5 Band 578-638MHz	17
2.2.4 L3 band 638-698MHz	20
 3. AXT 100 (BP TX) conducted UHF spurious measurements:.....	23
3.1 FCC Part 74	23

Spurious emissions should be below -13dBm (green display line in the plots).....	23
3.1.1 G1 Band 470-530MHz	23
3.1.2 H4 band 518-578MHz.....	24
3.1.3 J5 Band 578-638 MHz	25
3.1.4 L3 Band 638-698MHz	26
3.2 Canada IC RSS123:.....	27
Spurious emissions should be below -25dBm (green display line in the plots).....	27
3.2.1 G1 band 470-530MHz	27
3.2.2 H4 band 518-578MHz.....	30
3.2.3 J5 band 578-638MHz	33
3.2.4 L3 band 638-698MHz	36

1. Introduction

Conducted spurious emissions measurements of AXT100 (BP TX) and AXT200 (HH TX) for FCC Part74 and Canada IC RSS-123 approval.

1.1 Test Equipment used:

- Spectrum Analyzer – Agilent E4407B (SN: MY45116757, Cal Date: 04/14/2011, Cal due:04/30/2012, Cal#46410-103). Calibration performed by SIMCO)
- Shure Axient System: AXT200, AXT100.

1.2 Test set up:

1.2.1 FCC Part 74 requirement:

FCC part 74 limit requires all spurious emissions to be less than (below the carrier) $43 + 10 \times \log_{10}$ (Output power in Watts). AXT200 HH TX has maximum output of 50mW (16.9 dBm) in high power mode. All spurious emissions should be less than -13dBm in frequency range of 30MHz to 10th harmonic of highest UHF frequency.

Measurement setting:

- TX set to mid frequency in high power mode.
- Zigbee turned off
- Spectrum analyzer swept from 30MHz -1GHz with resolution bandwidth of 100KHz and from 1GHz – 7GHz with resolution bandwidth of 1MHz.

1.2.2 Canada IC RSS-123 requirement:

IC RSS-123 limit requires all spurious emissions to be less than (below the carrier) $55 + 10 \times \log_{10}$ (Output power in Watts). AXT200 HH TX has maximum output of 50mW (16.9 dBm) in high power mode. All spurious emissions should be less than -25dBm in frequency range of 30MHz to 10th harmonic of highest UHF frequency.

Measurement setting:

- TX set to mid frequency in high power mode.
- Zigbee turned off
- Spectrum analyzer swept from 30MHz -1GHz with resolution bandwidth of 100 KHz and from 1GHz – 7GHz with resolution bandwidth of 100 KHz.

1.3 Review and Approval

This document must be reviewed and approved by Axient project manager(s).

1.4 Revision History

The most current version of this document can be found in Stellent ID:

Revision	Date	Author	Comments
1	05/27/2011	Mohit Shringi	

1.5 References

1.6 Acronyms and Definitions

AXT	Axient
BP	Body pack
HH	Hand held
IMD	Intermodulation distortion
Pwr	Power
RF	Radio frequency
TX	Transmitter
UHF	Ultra High Frequency
FCC	Federal Communications Commission
IC	Industry Canada
RSS	Radio Standards Specification

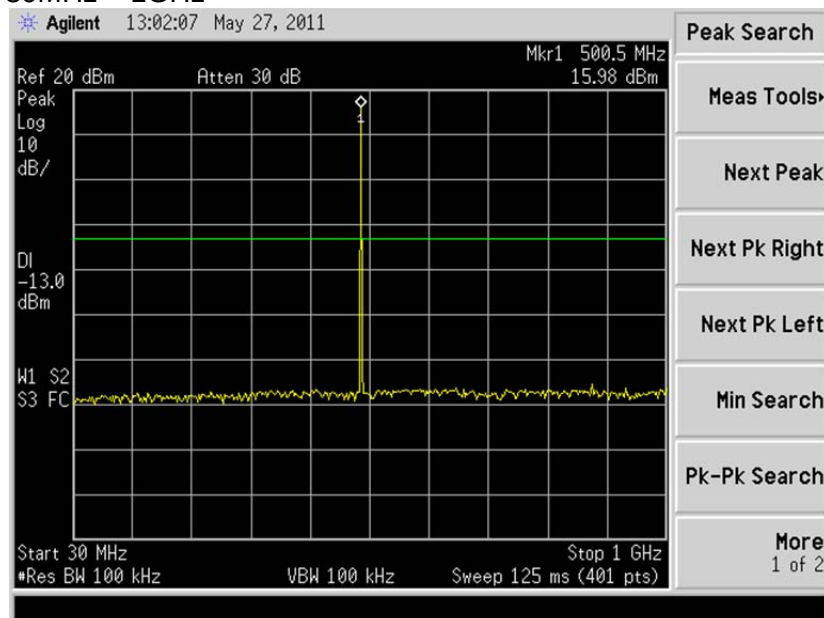
2. AXT 200 (HH TX) conducted UHF spurious measurements:

2.1 FCC Part 74

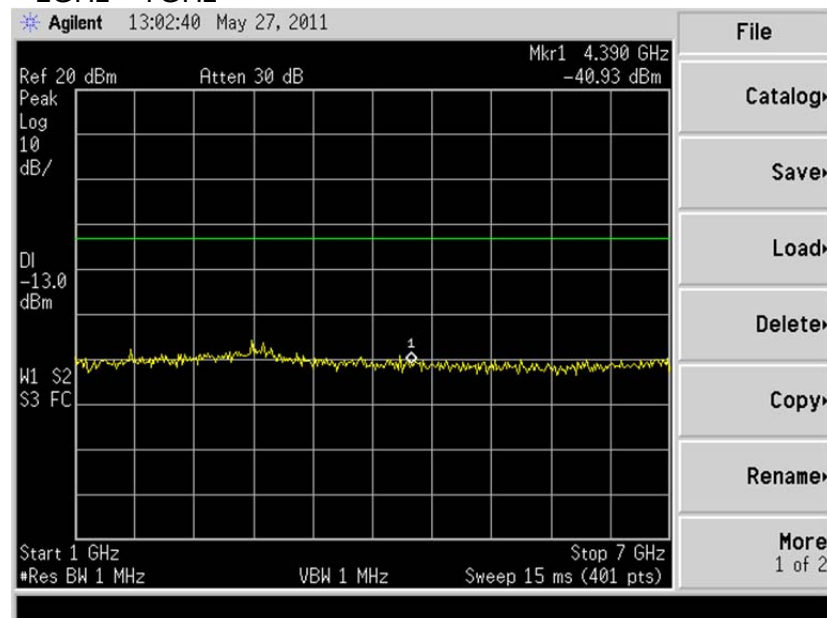
Spurious emissions should be below -13dBm (green display line in the plots).

2.1.1 G1 band 470-530 MHz

30MHz – 1GHz

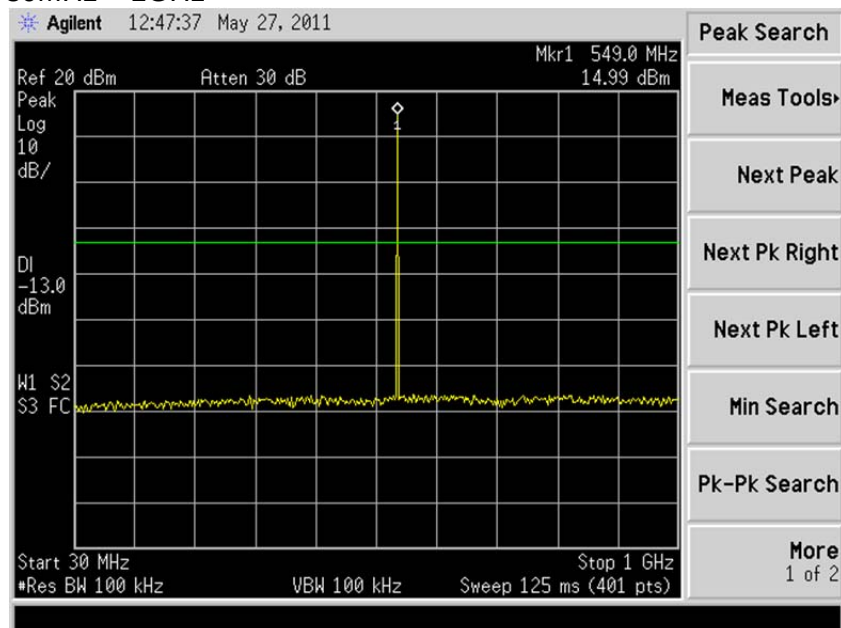


1GHz – 7GHz

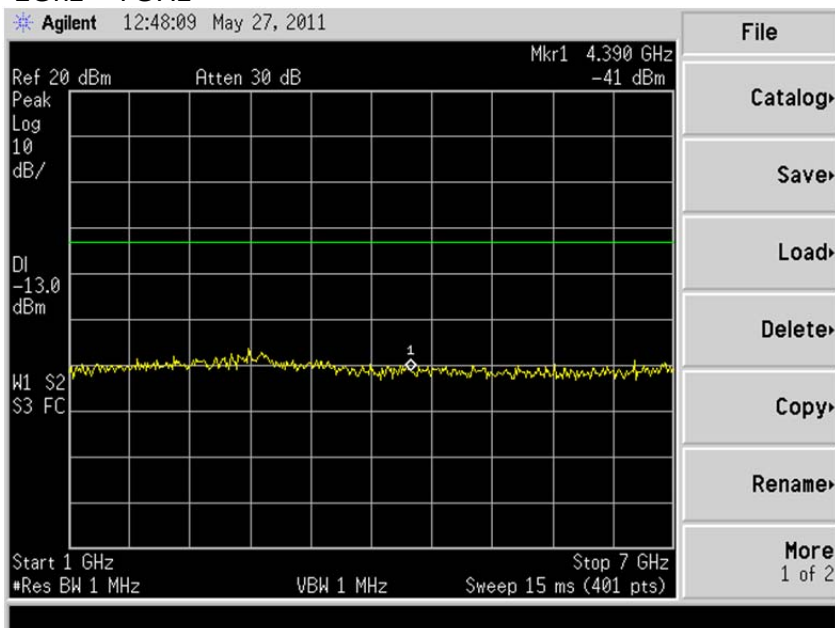


2.1.2 H4 band 518-578 MHz

30MHz – 1GHz

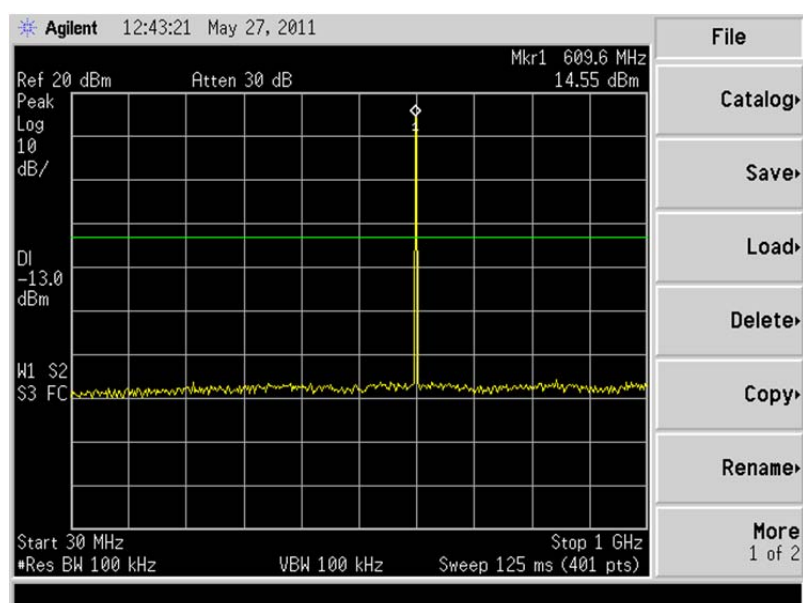


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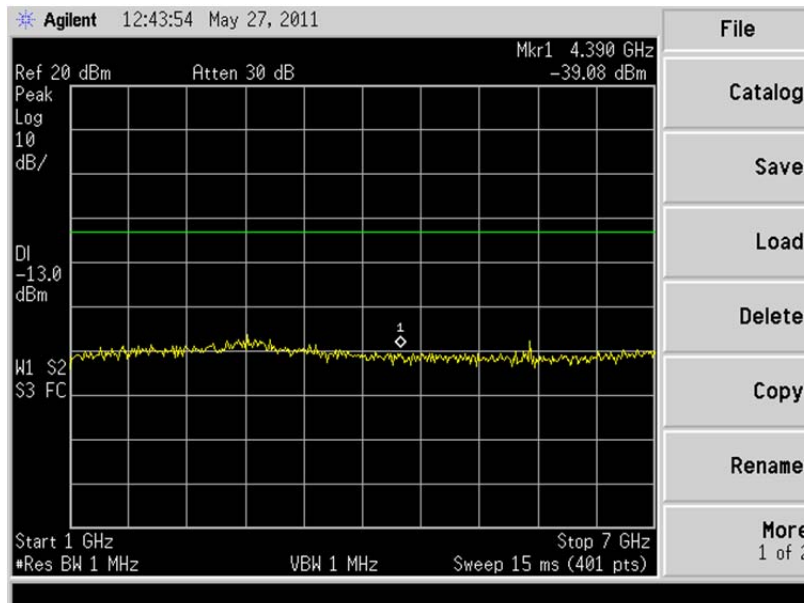


2.1.3 J5 Band 578-638 MHz

30MHz – 1GHz

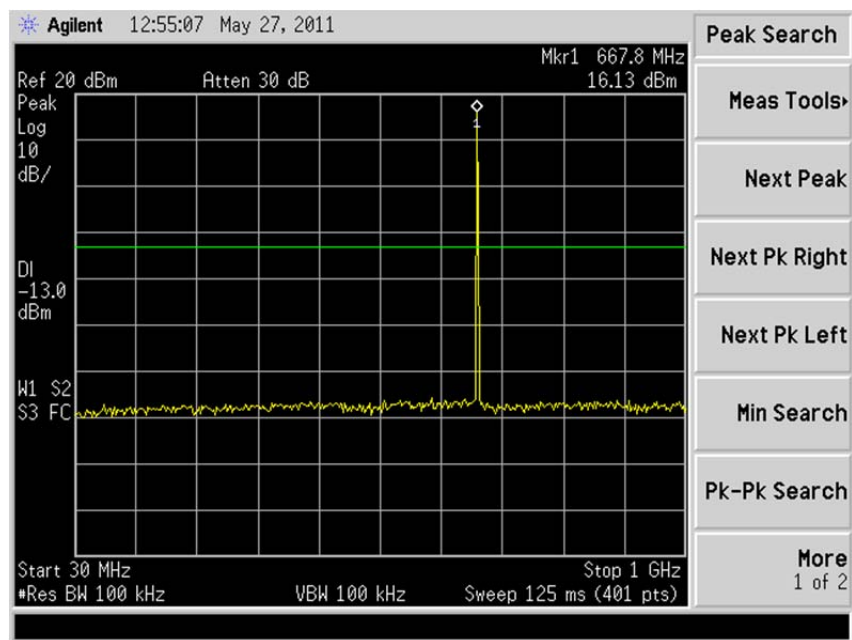


1GHz – 7GHz

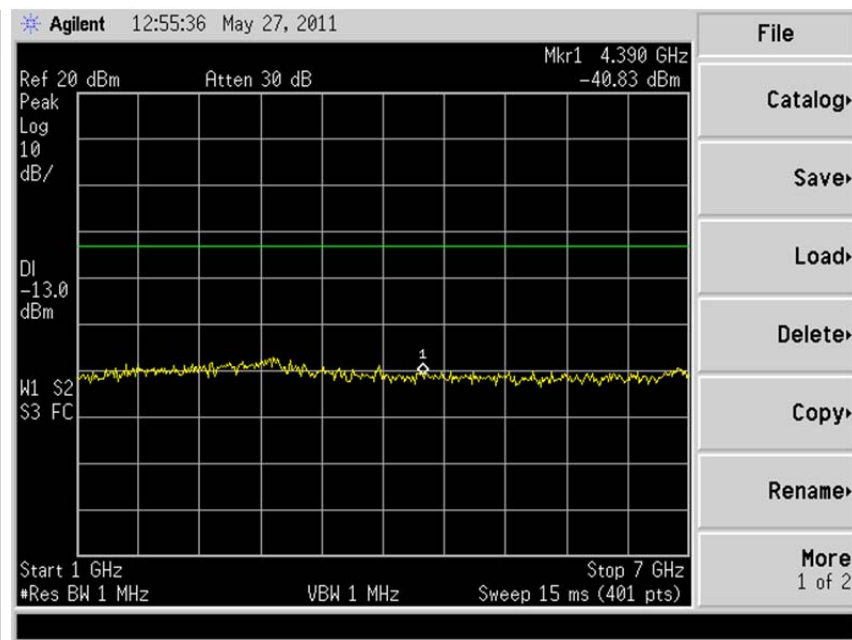


2.1.4 L3 band 638-698 MHz

30MHz – 1GHz



1GHz – 7GHz



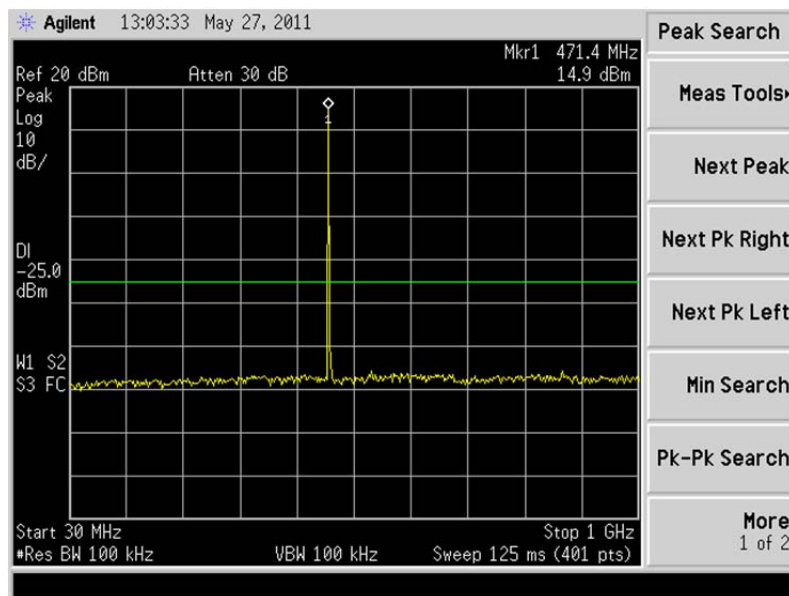
2.2 Canada IC RSS123:

Spurious emissions should be below -25dBm (green display line in the plots).

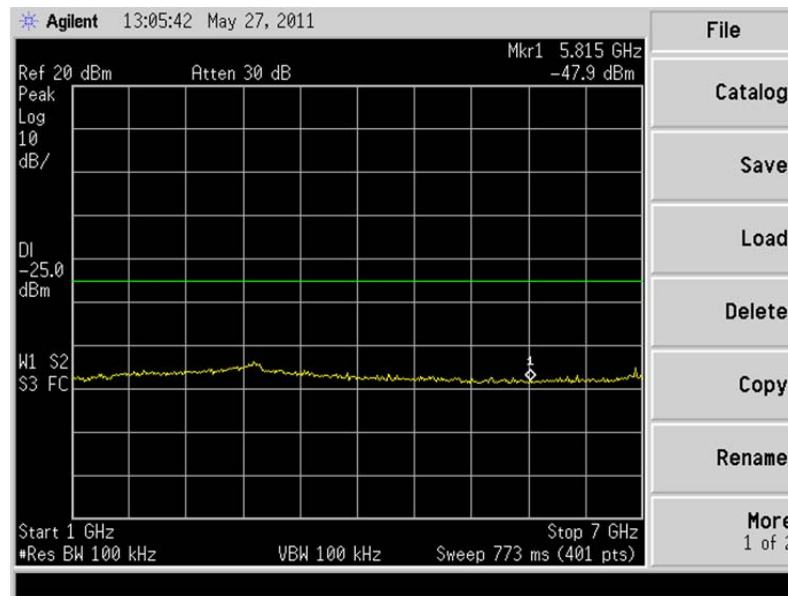
2.2.1 G1 band 470-530 MHz

Low freq 471MHz

30MHz – 1GHz

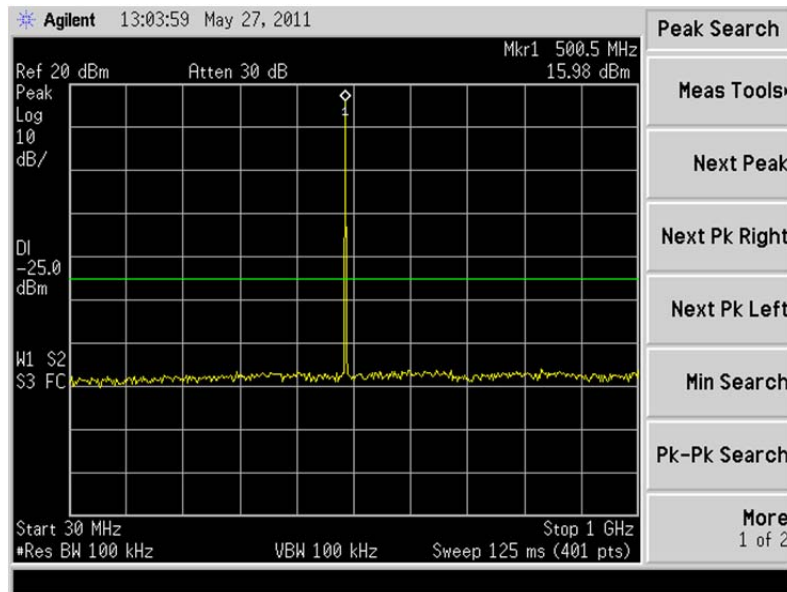


1GHz – 7GHz

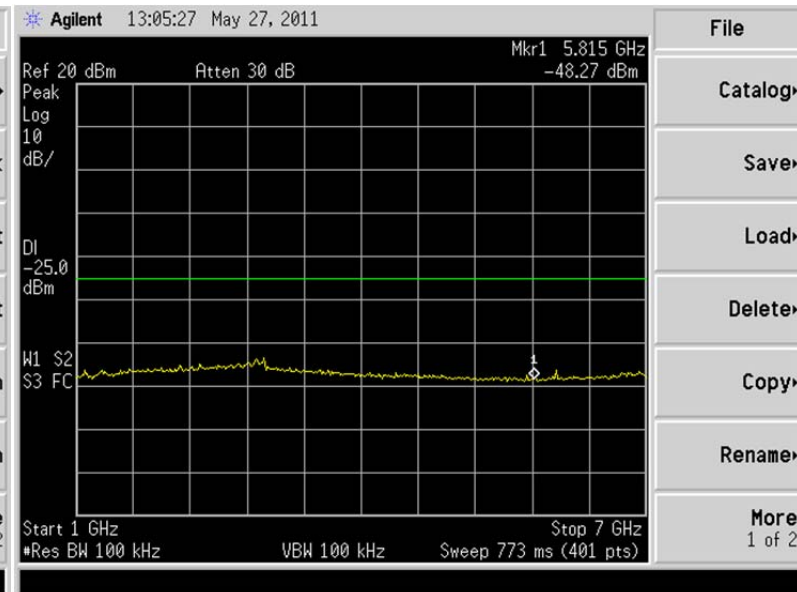


Mid freq 500 MHz

30MHz – 1GHz

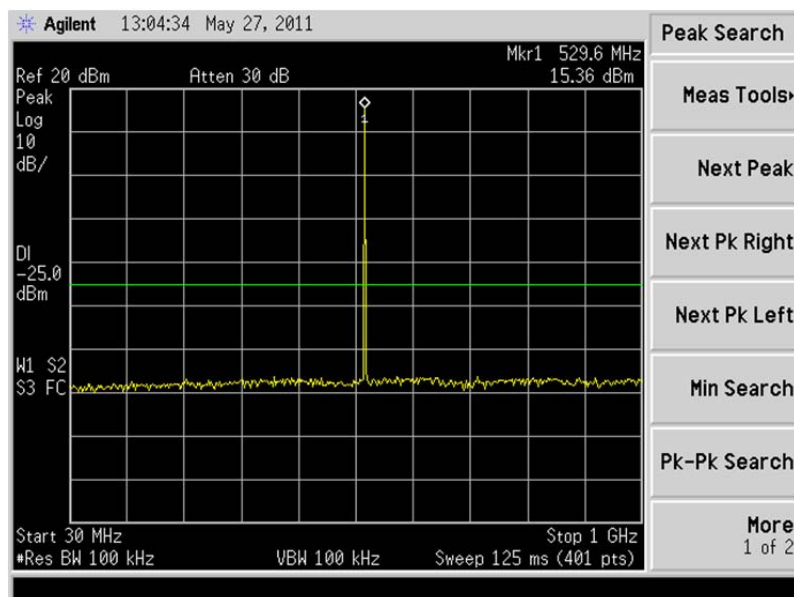


1GHz – 7GHz

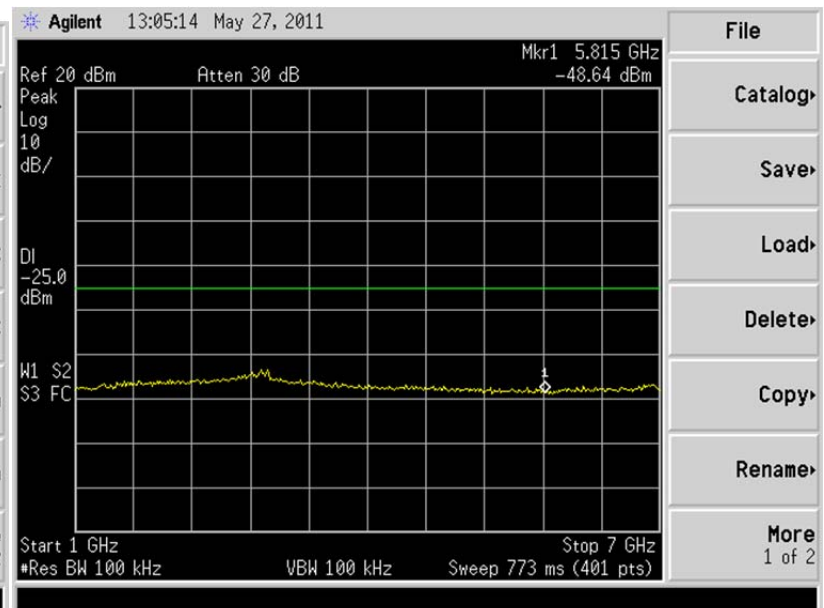


High frequency 530MHz

30MHz – 1GHz



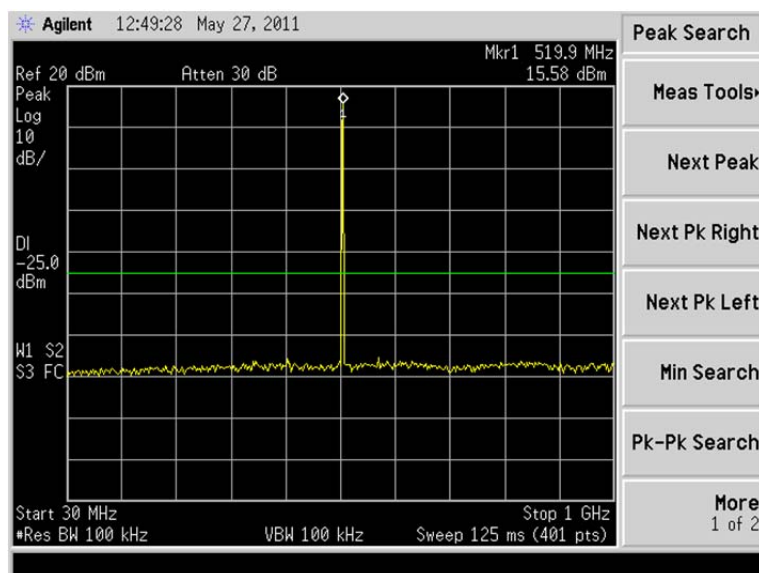
1GHz – 7GHz



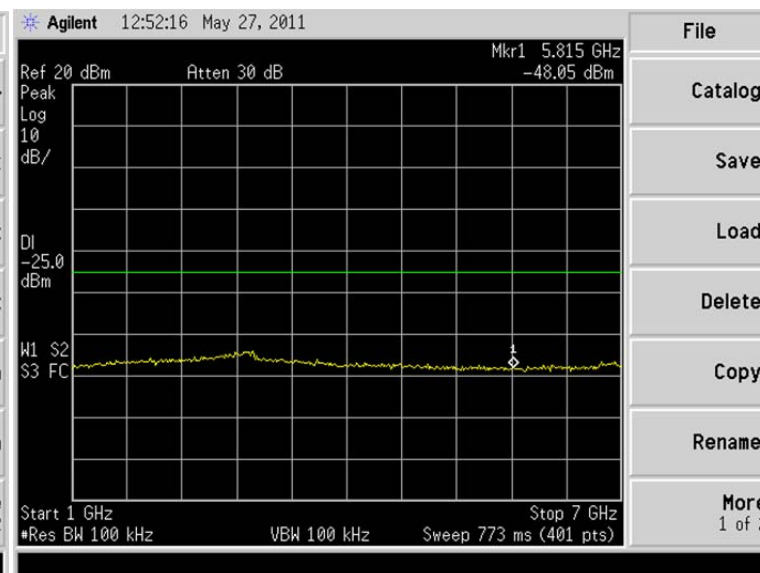
2.2.2 H4 band 518-578 MHz

Low freq 518MHz

30MHz – 1GHz

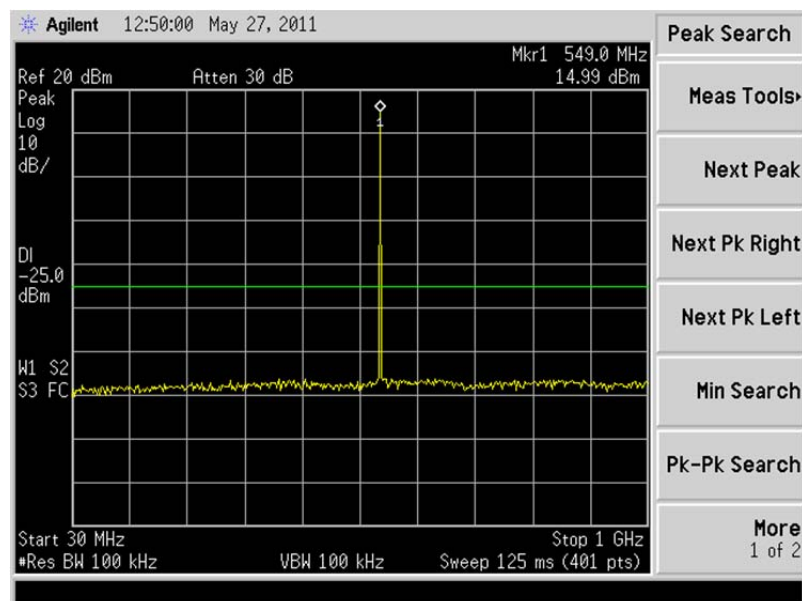


1GHz – 7GHz

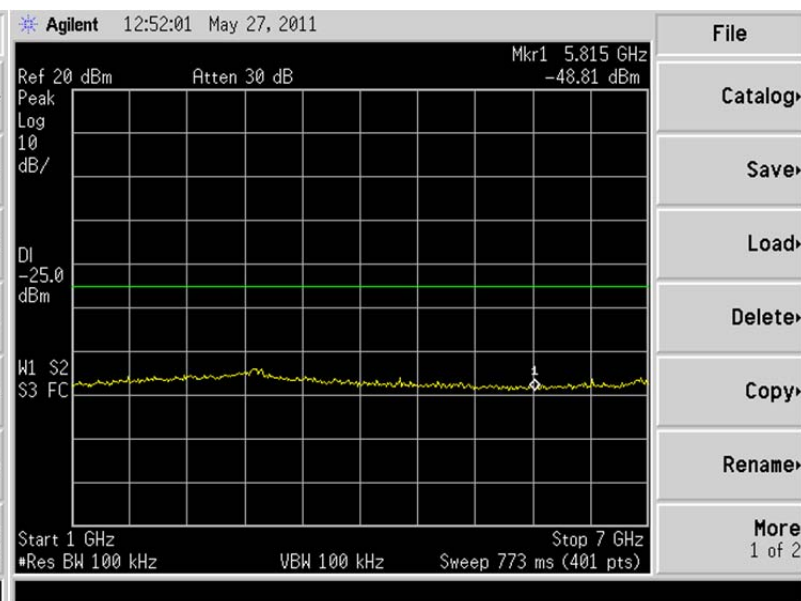


Mid Freq 548MHz

30MHz – 1GHz

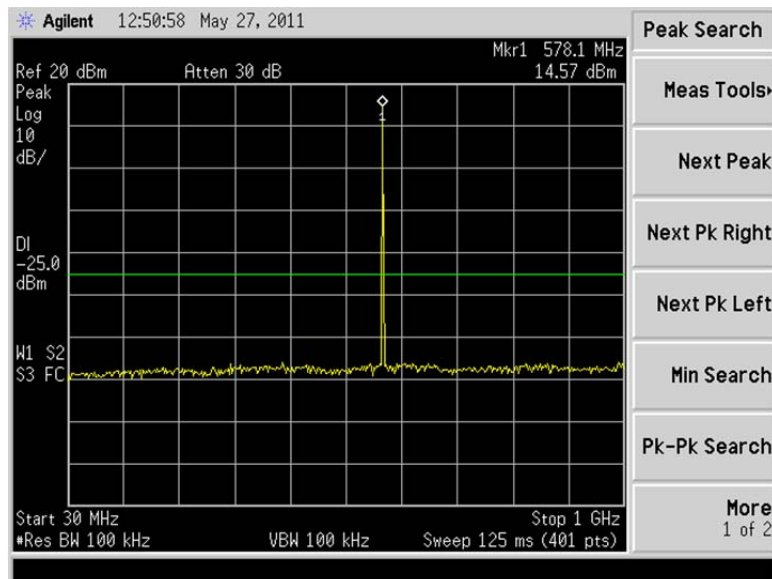


1GHz – 7GHz

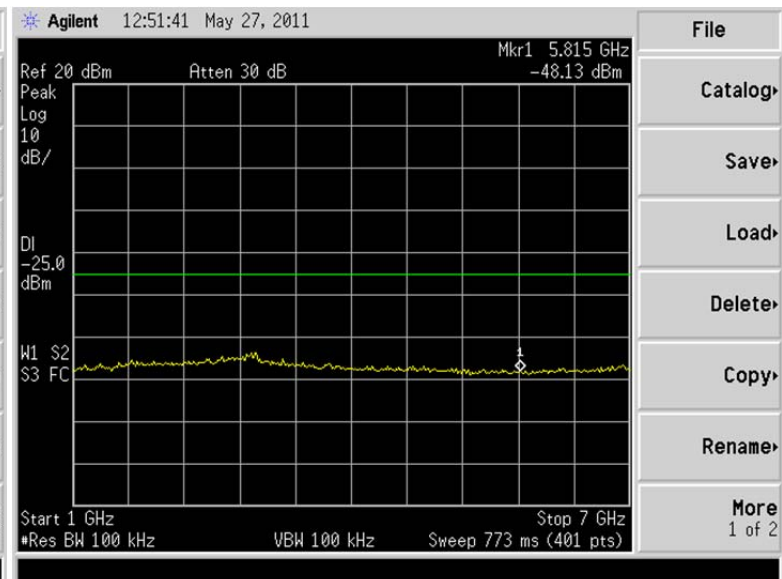


High freq 578 MHz

30MHz – 1GHz



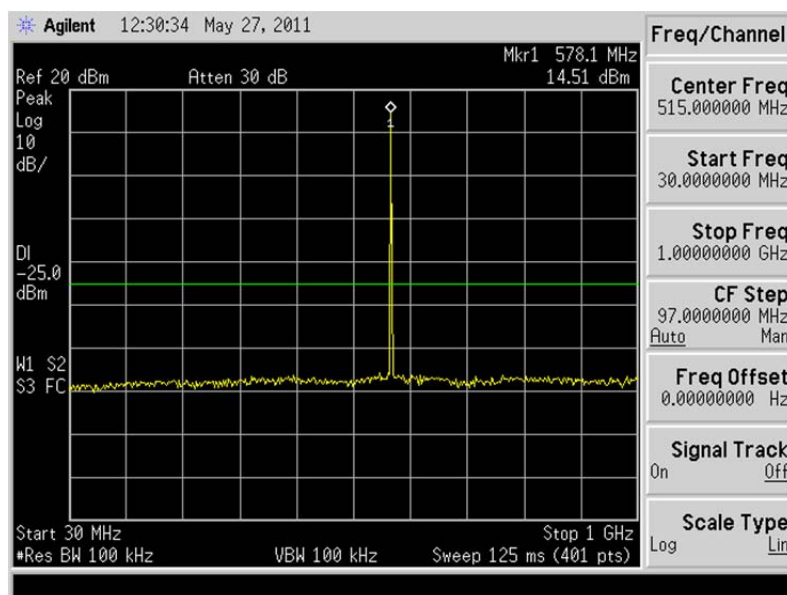
1GHz – 7GHz



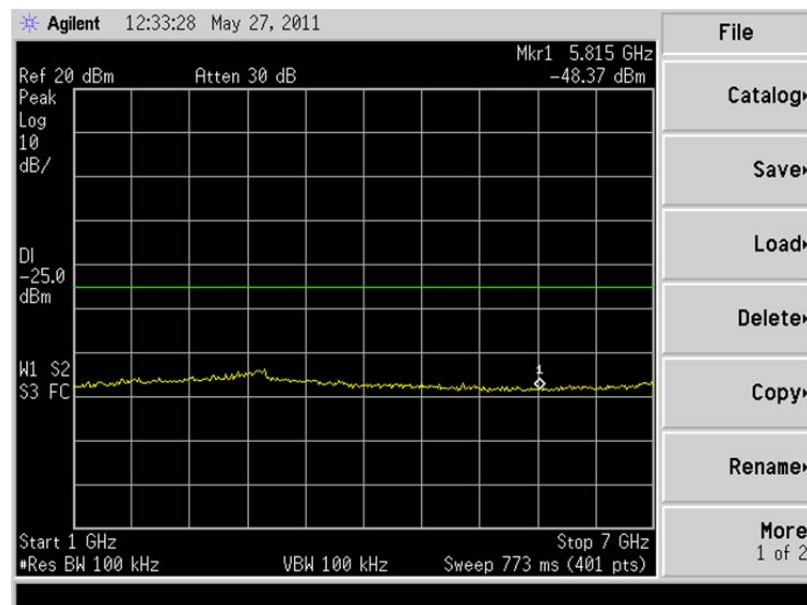
2.2.3 J5 Band 578-638MHz

Low freq 578MHz

30MHz – 1GHz

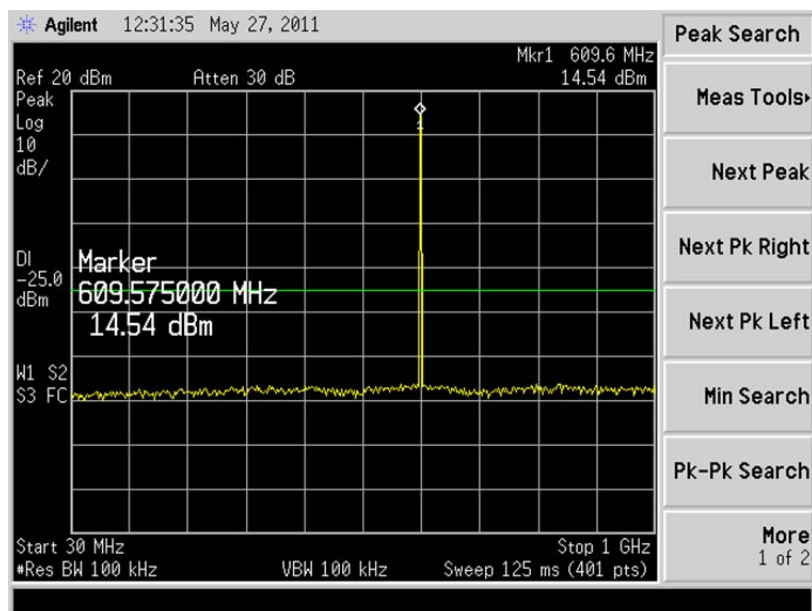


1GHz – 7GHz

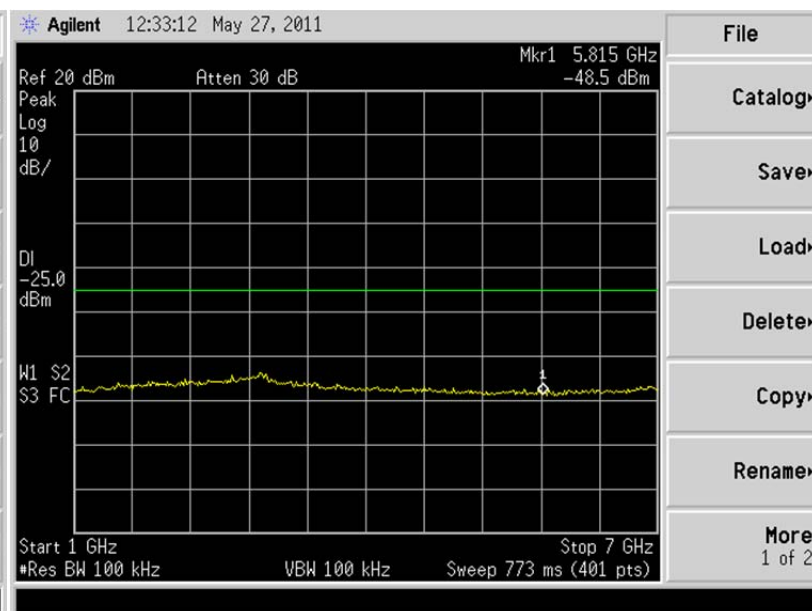


Mid frequency 610MHz

30MHz – 1GHz

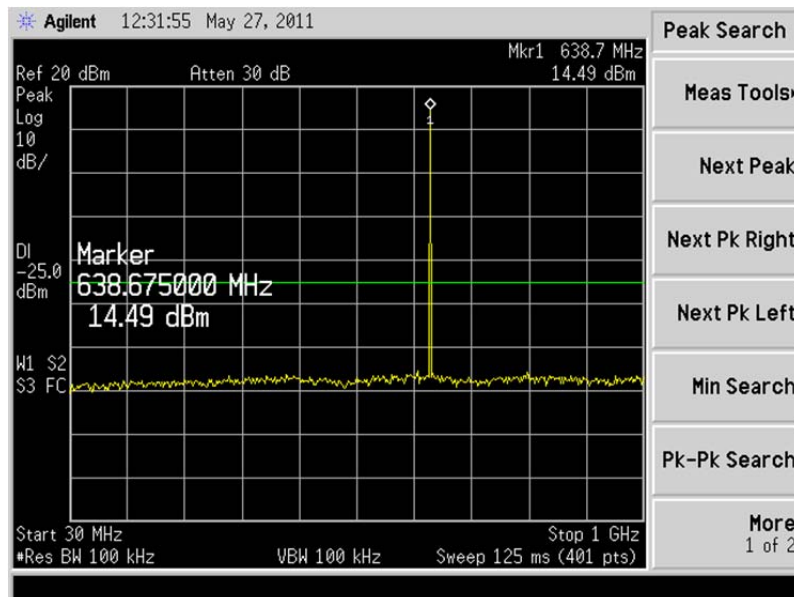


1GHz – 7GHz

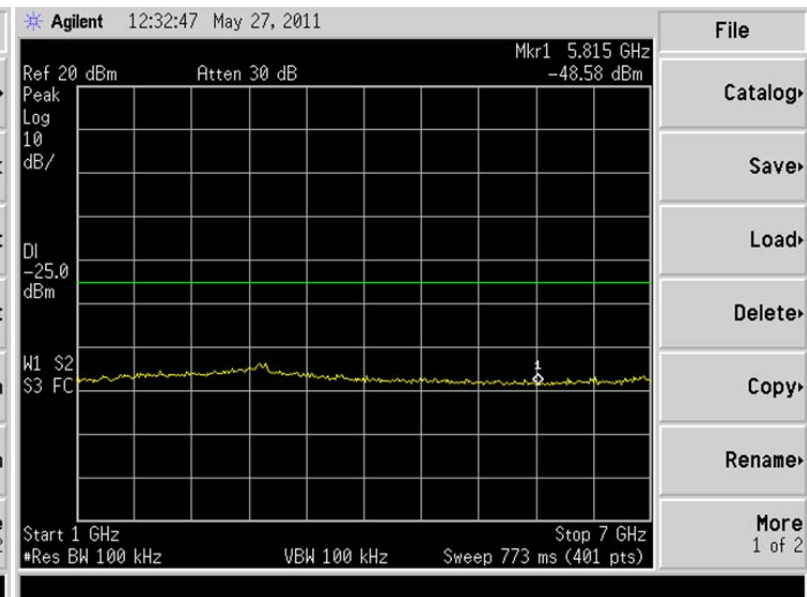


High freq 638MHz

30MHz – 1GHz



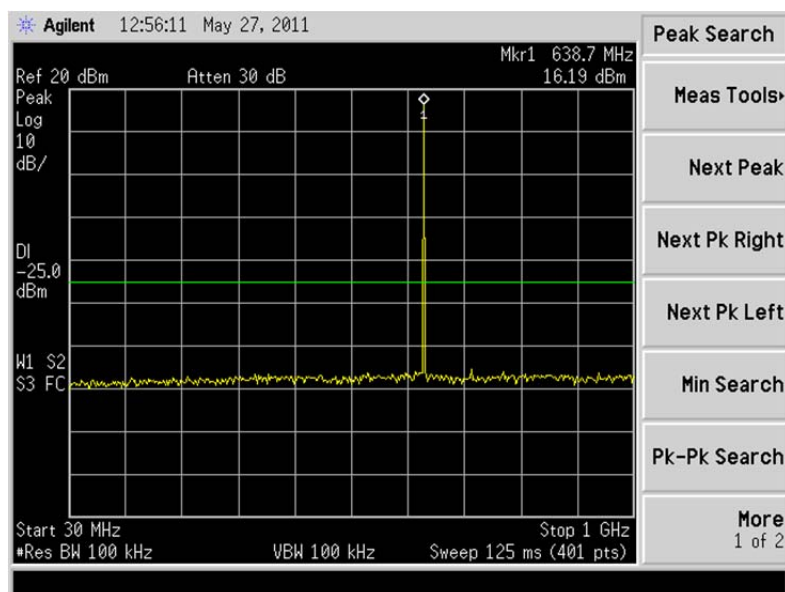
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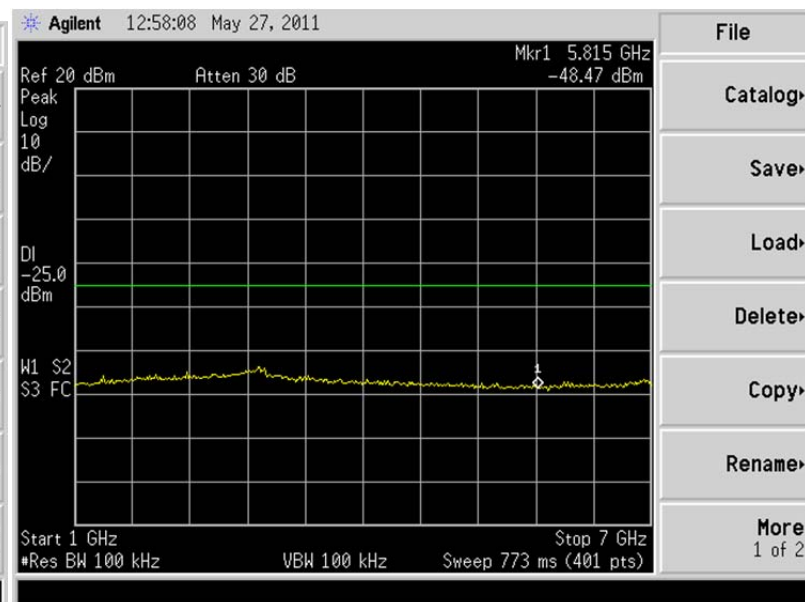
2.2.4 L3 band 638-698MHz

Low freq 638MHz

30MHz – 1GHz

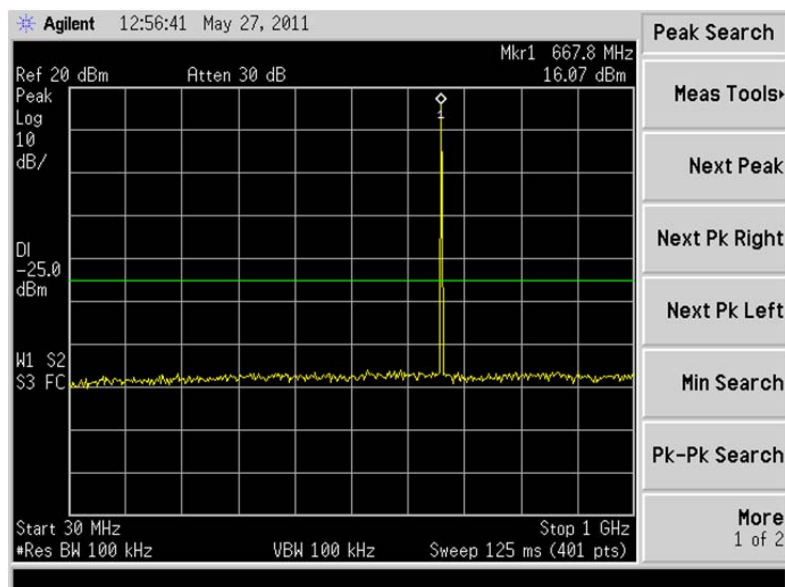


1GHz – 7GHz

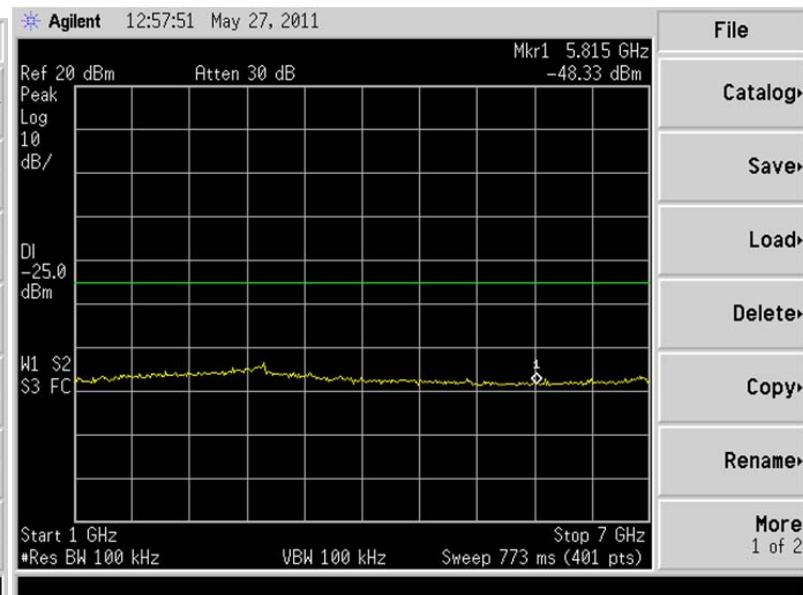


Mid freq 668MHz

30MHz – 1GHz

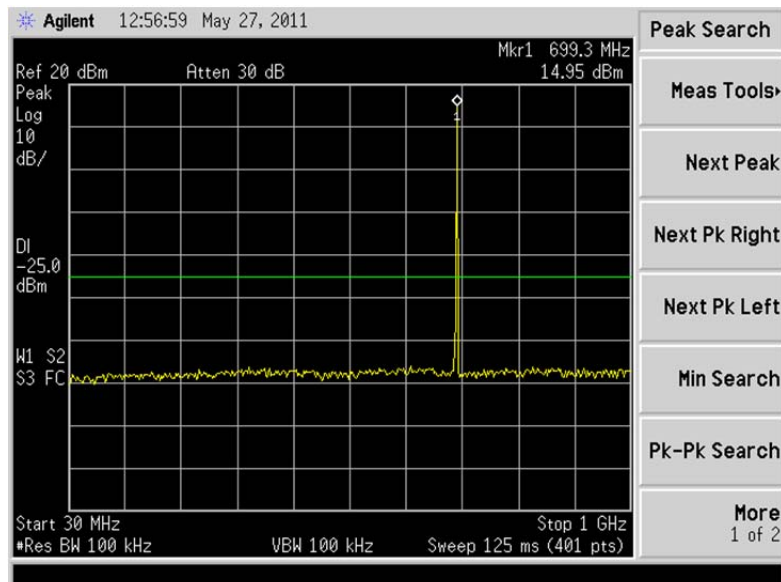


1GHz – 7GHz

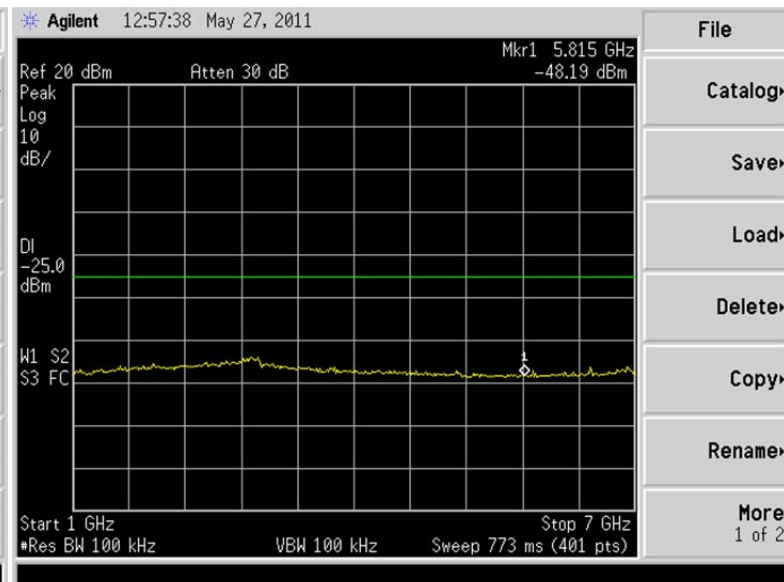


High freq 698 MHz

30MHz – 1GHz



1GHz – 7GHz



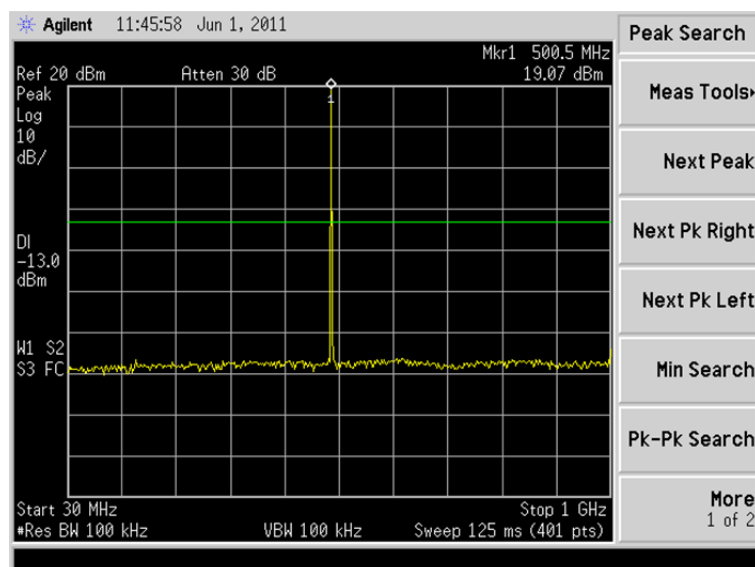
3. AXT 100 (BP TX) conducted UHF spurious measurements:

3.1 FCC Part 74

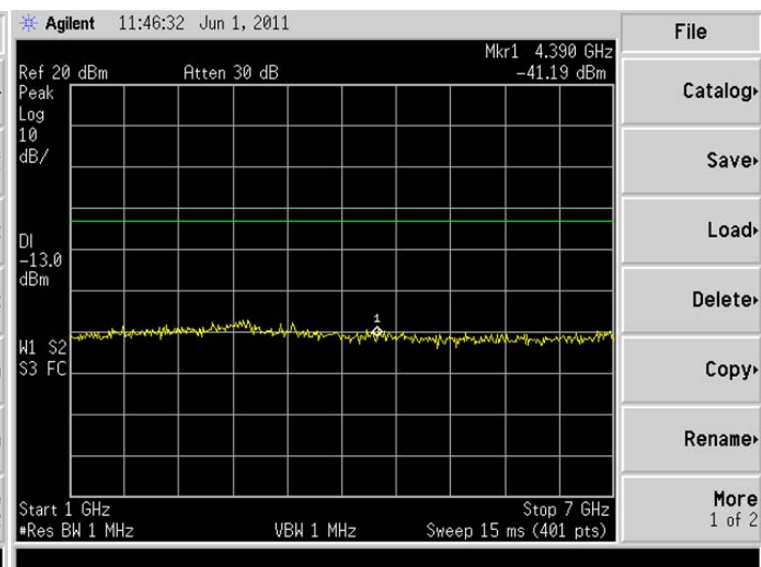
Spurious emissions should be below -13dBm (green display line in the plots).

3.1.1 G1 Band 470-530MHz

30MHz – 1GHz

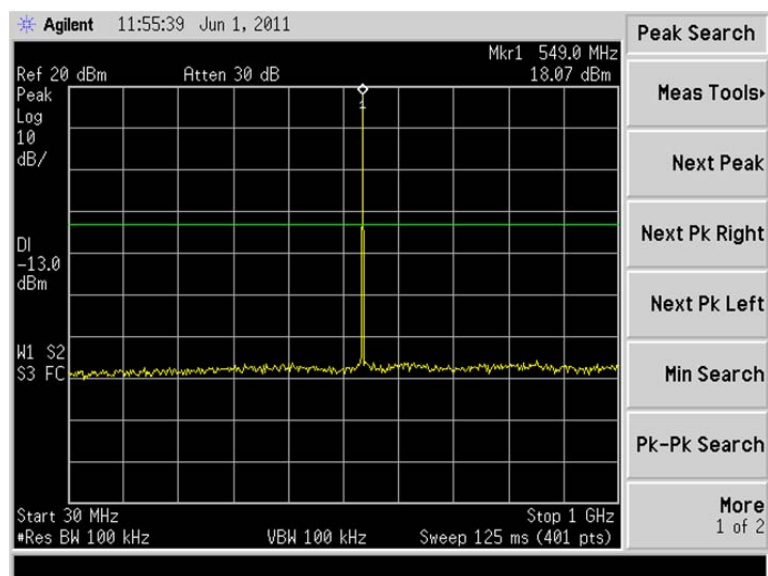


1GHz – 7GHz

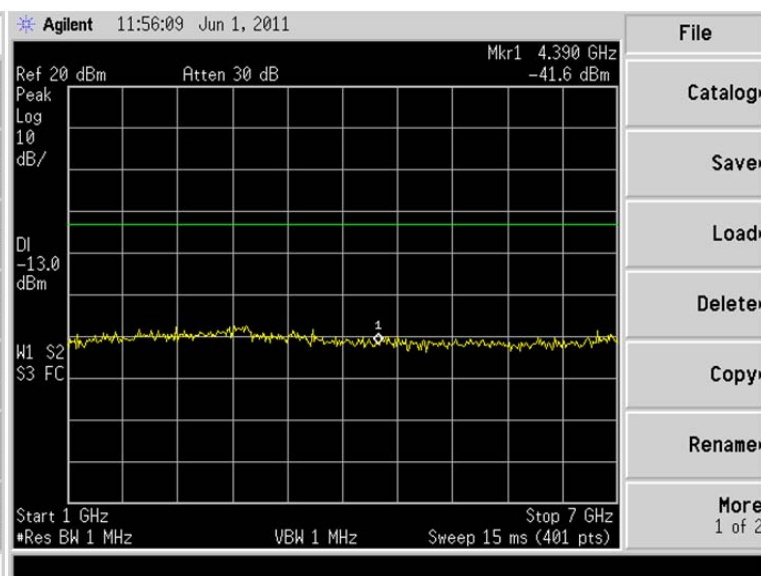


3.1.2 H4 band 518-578MHz

30MHz – 1GHz

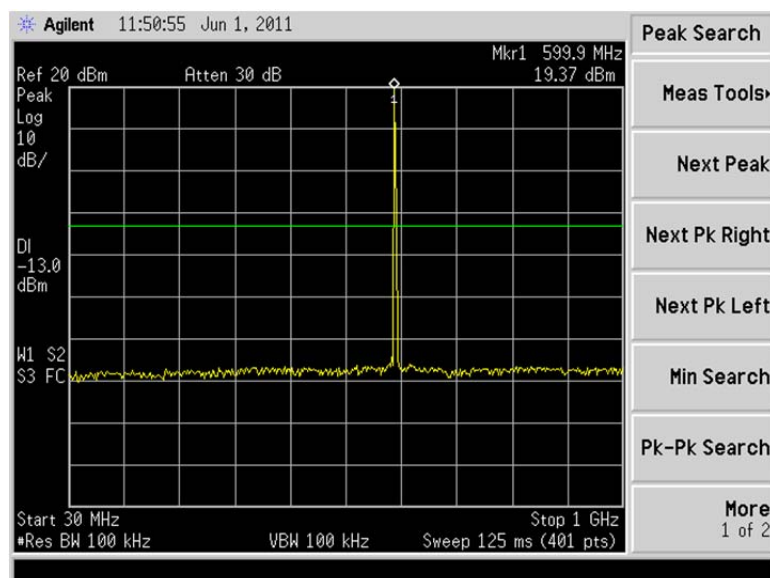


1GHz – 7GHz

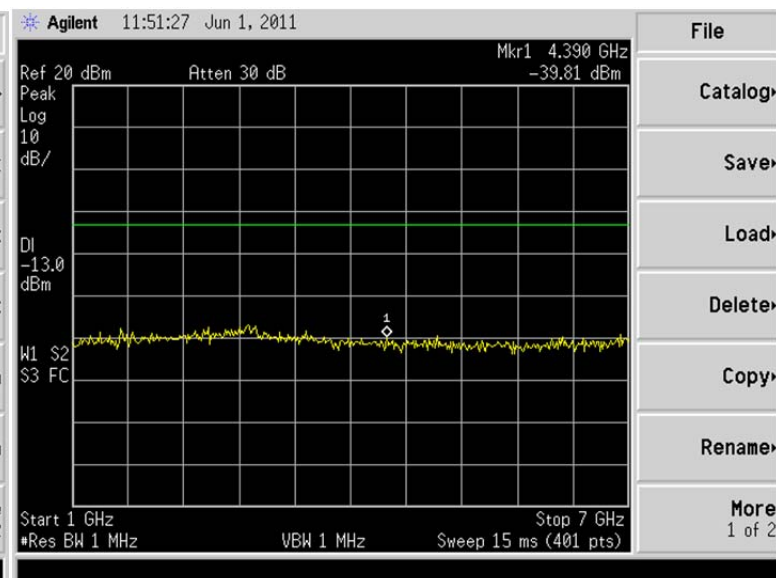


3.1.3 J5 Band 578-638 MHz

30MHz – 1GHz

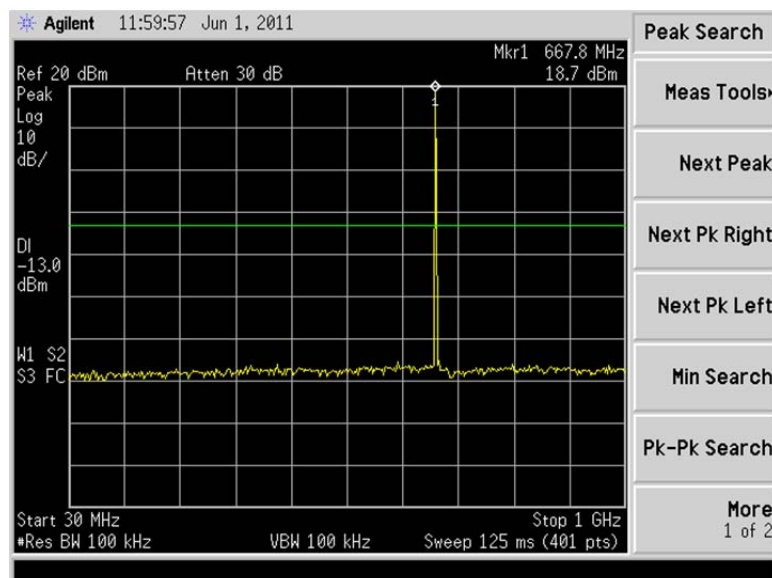


1GHz – 7GHz

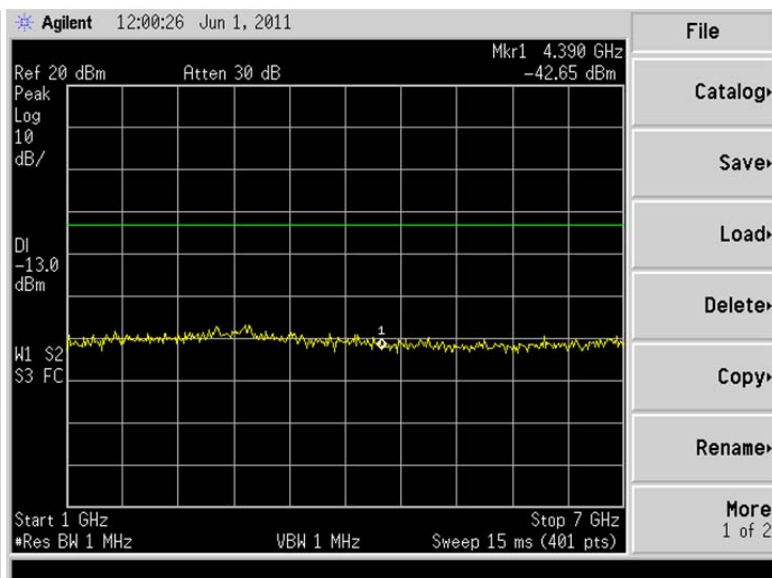


3.1.4 L3 Band 638-698MHz

30MHz – 1GHz



1GHz – 7GHz



3.2 Canada IC RSS123:

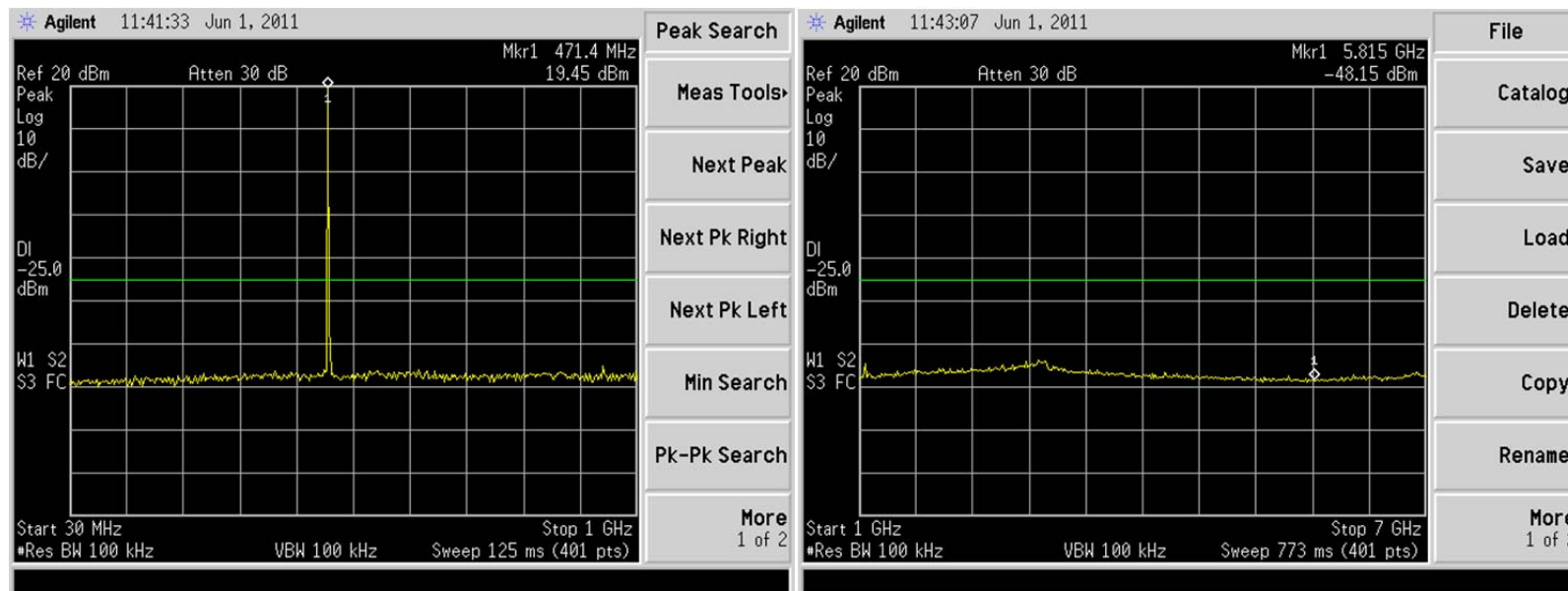
Spurious emissions should be below -25dBm (green display line in the plots)

3.2.1 G1 band 470-530MHz

Low freq 470 MHz

30MHz – 1GHz

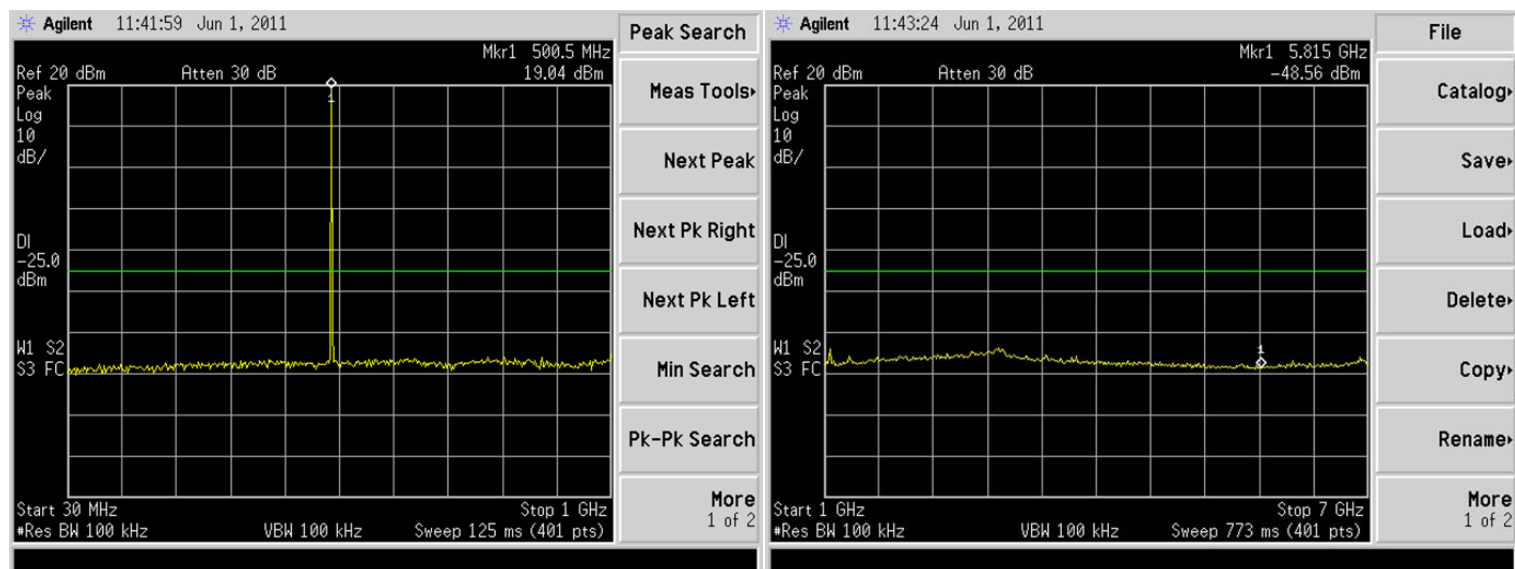
1GHz – 7GHz



Mid freq 500MHz

30MHz – 1GHz

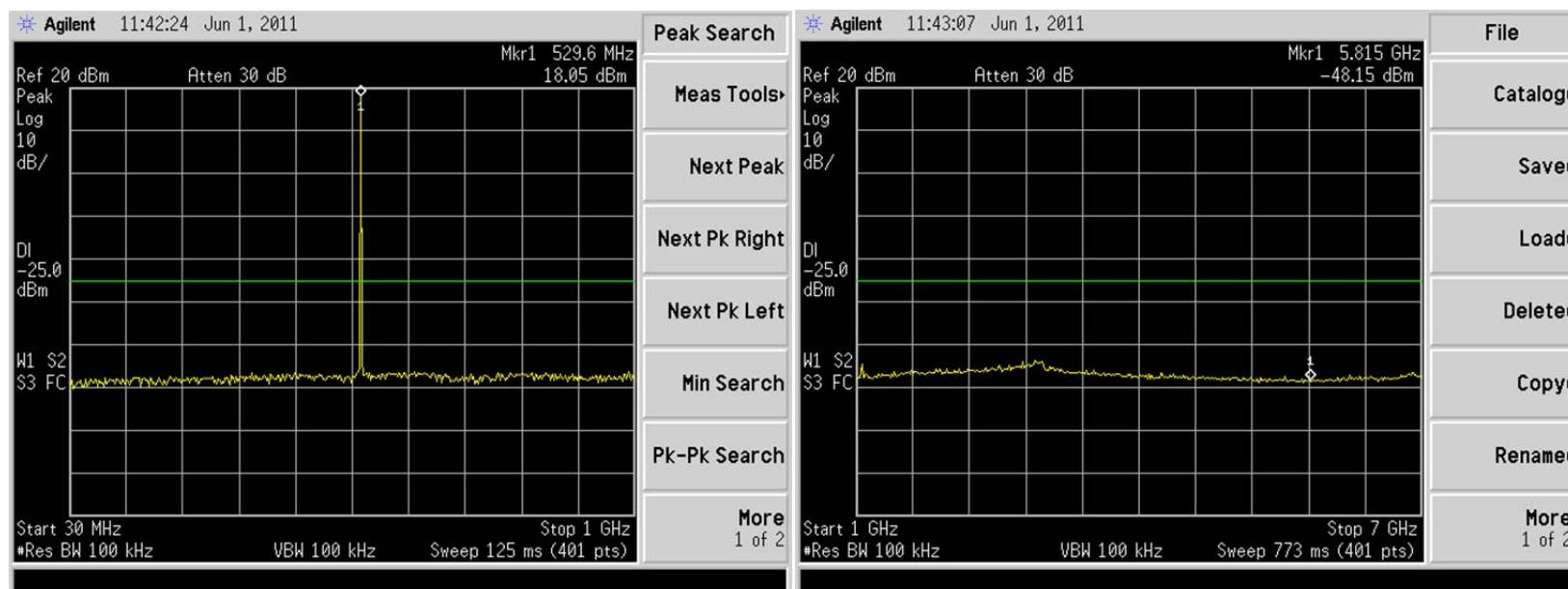
1GHz – 7GHz



High freq 530MHz

30MHz – 1GHz

1GHz – 7GHz

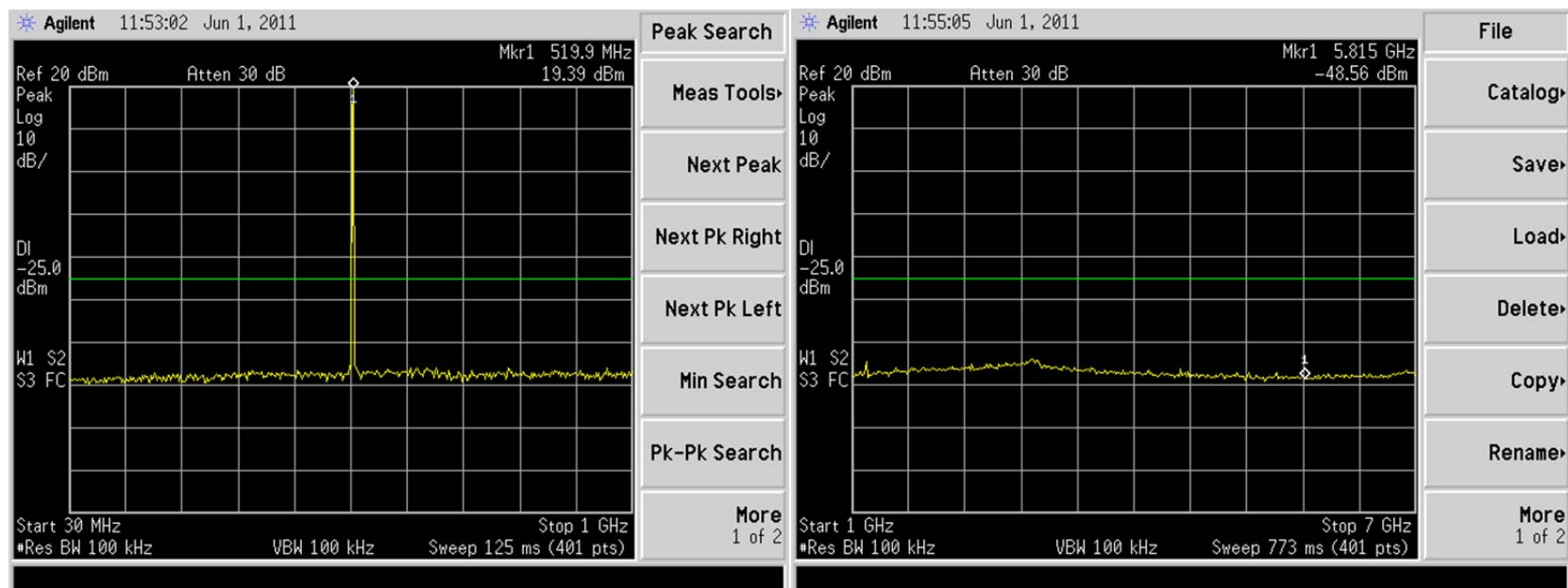


3.2.2 H4 band 518-578MHz

Low freq 518MHz

30MHz – 1GHz

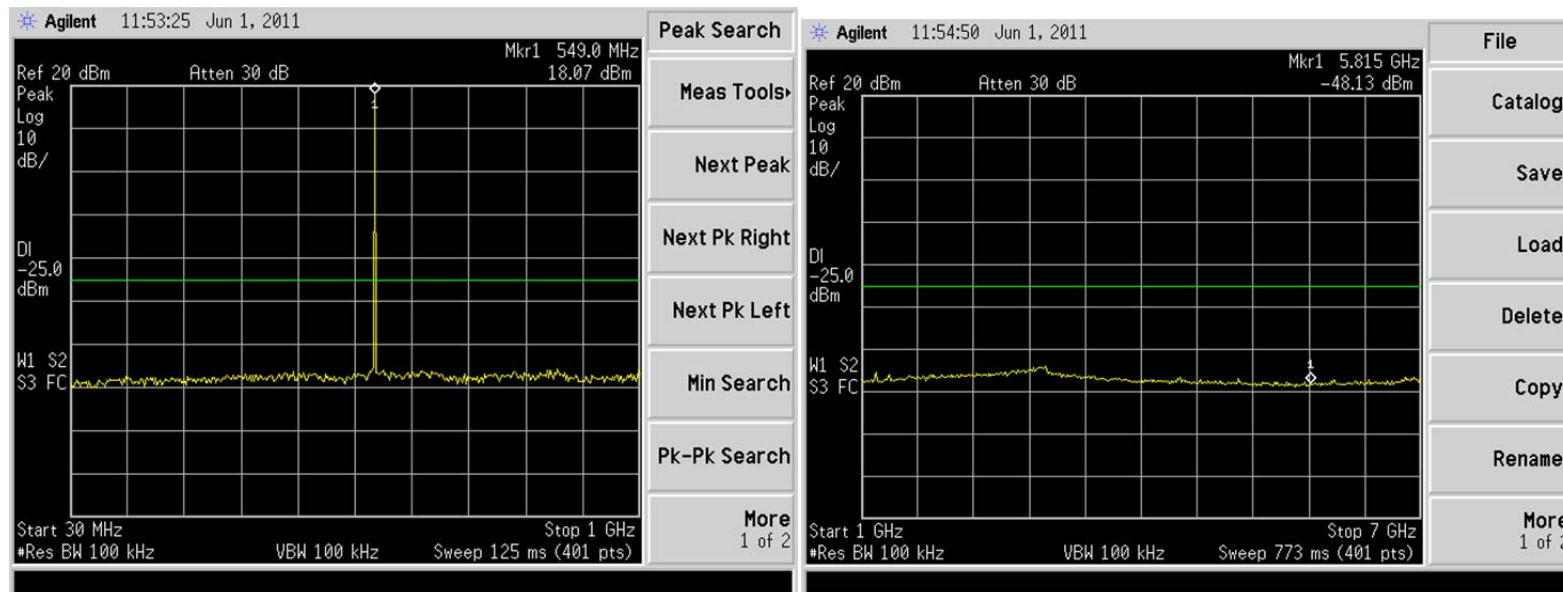
1GHz – 7GHz



Mid freq 548MHz

30MHz – 1GHz

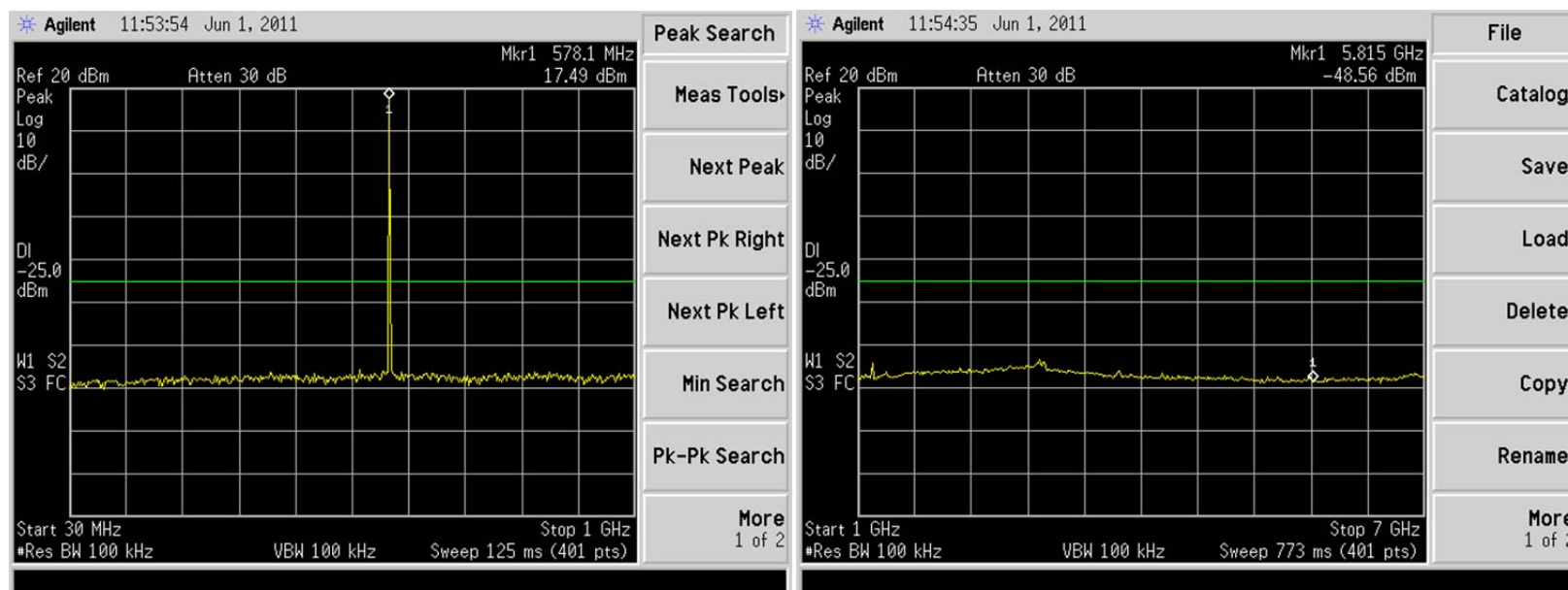
1GHz – 7GHz



High freq 578MHz

30MHz – 1GHz

1GHz – 7GHz

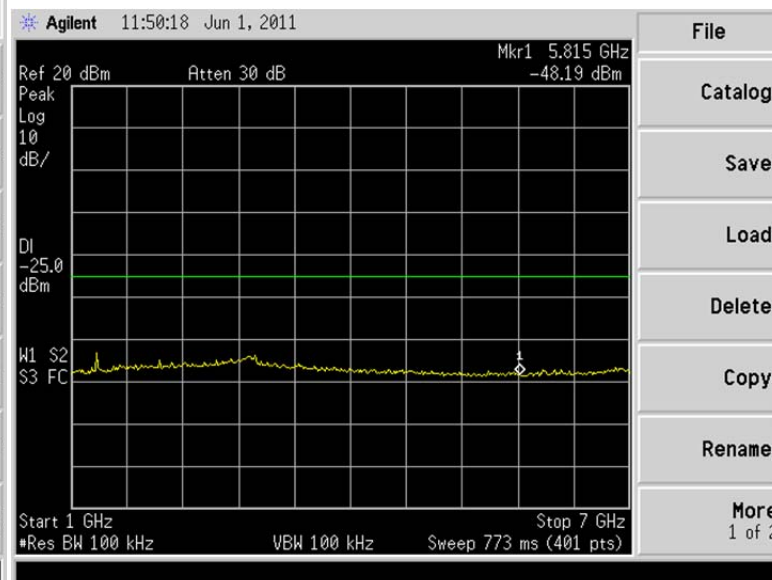
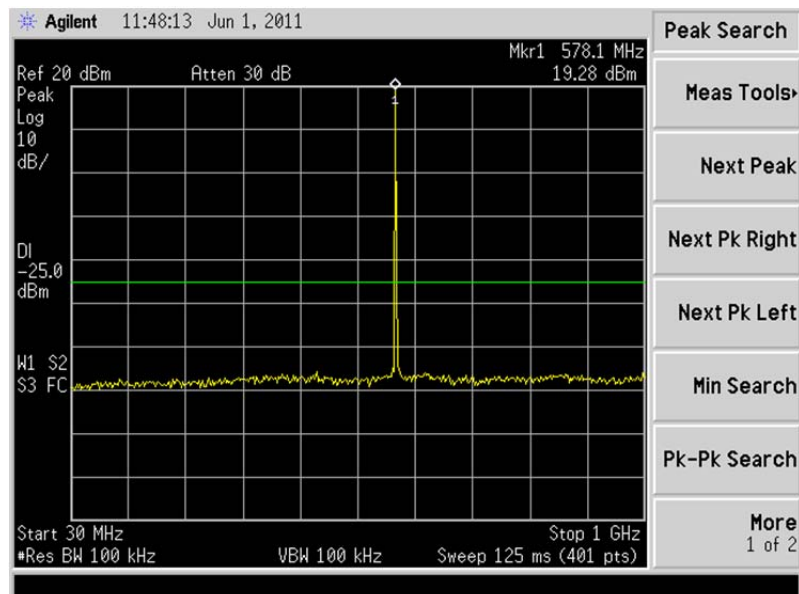


3.2.3 J5 band 578-638MHz

Low freq 578MHz

30MHz – 1GHz

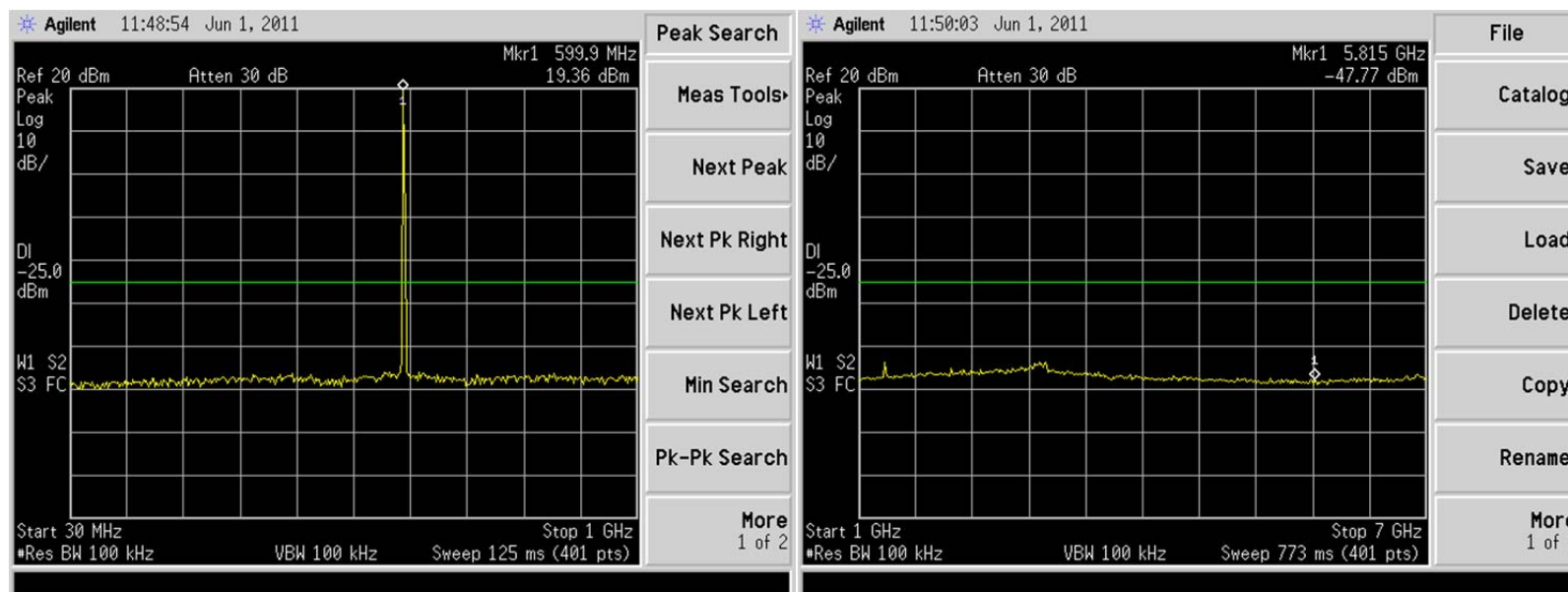
1GHz – 7GHz



Mid freq 600MHz

30MHz – 1GHz

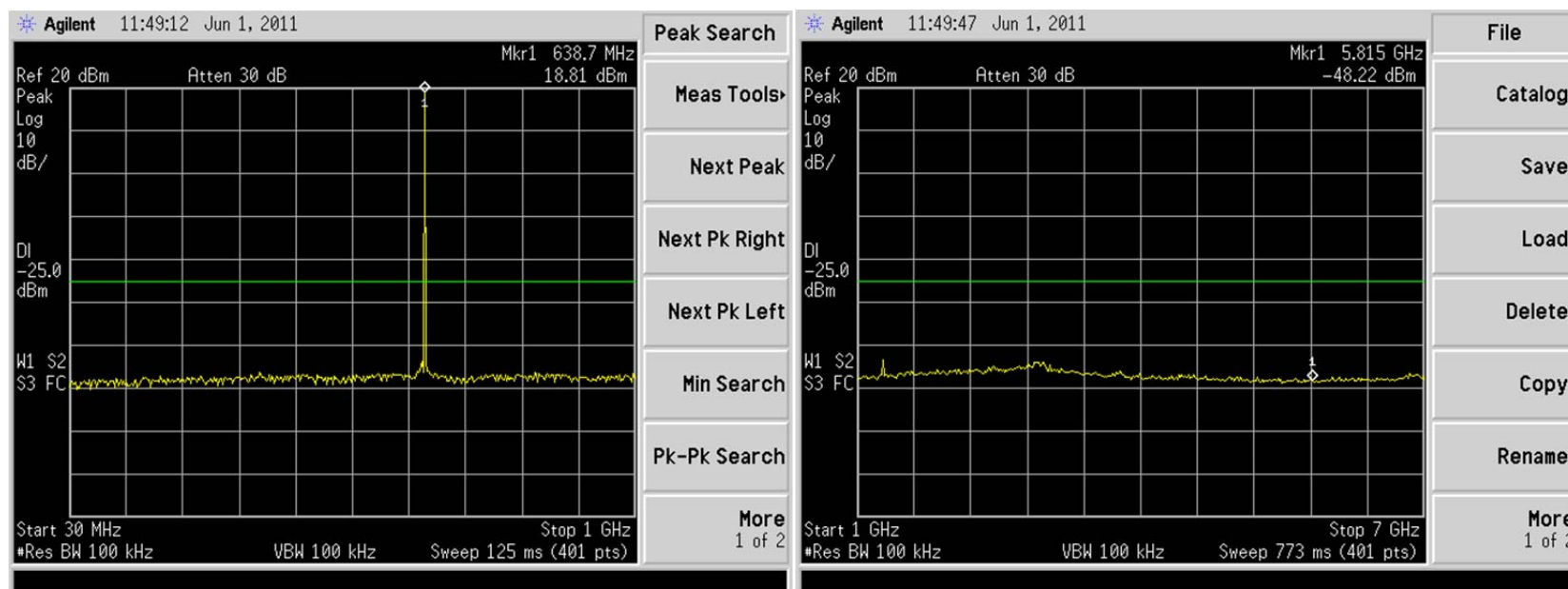
1GHz – 7GHz



High freq 638MHz

30MHz – 1GHz

1GHz – 7GHz

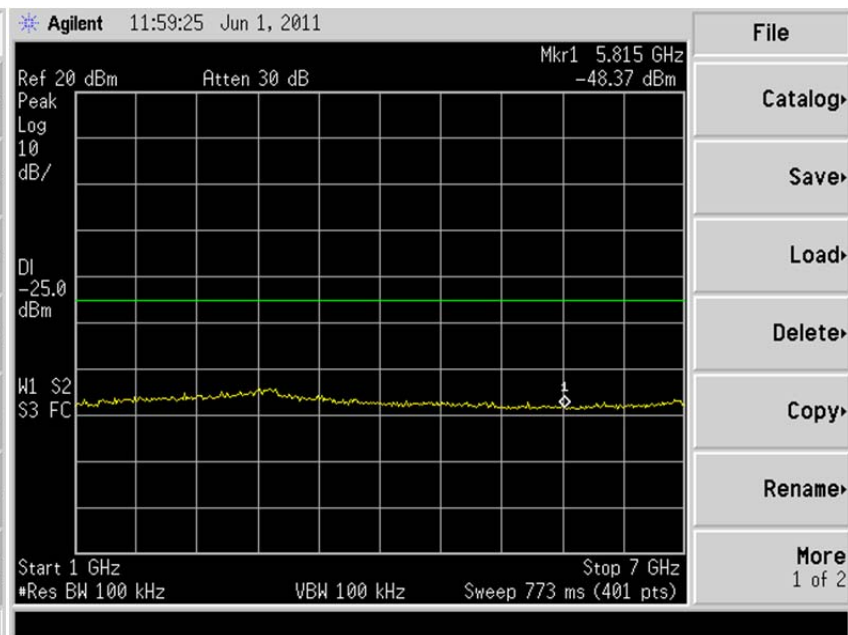
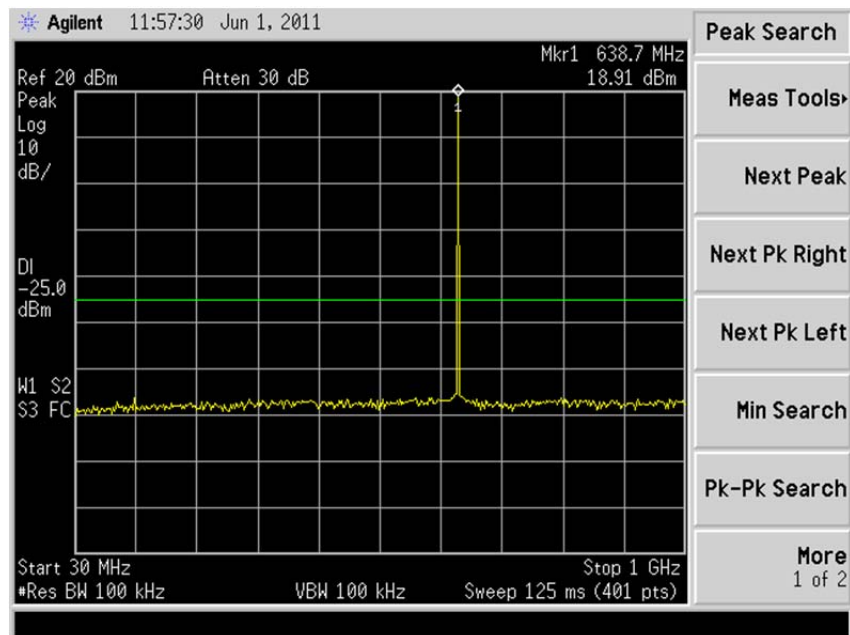


3.2.4 L3 band 638-698MHz

Low freq 638MHz

30MHz – 1GHz

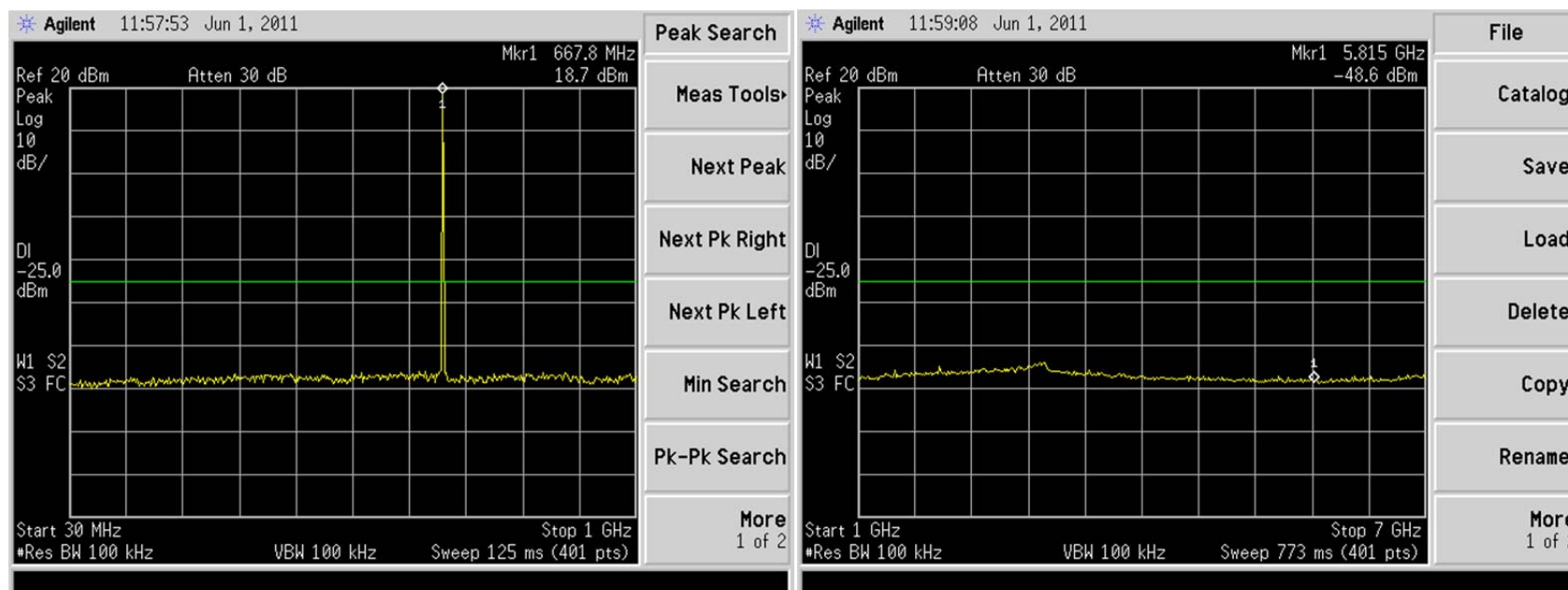
1GHz – 7GHz



Mid freq 668MHz

30MHz – 1GHz

1GHz – 7GHz



High freq 698MHz

30MHz – 1GHz

1GHz – 7GHz

