

The example data presented here represents typical expected performance and is provided for the purposes of illustration and user guidance only. All Waters analytical instruments are installed and tested in accordance with Waters Standard Performance Tests. In presenting these data no agreement is implied by Waters to perform any additional non-standard performance tests during the installation.

XEVO TQ-XS UPLC/MRM

System Sensitivity – Positive Ion APCI

1pg 17 α Hydroxyprogesterone on Column

This document presents example data obtained using an ACQUITY UPLC / Xevo TQ-XS system when operating in the APCI positive MRM mode. The test is based on monitoring the UPLC MRM response for replicate injections of a solution of 17 α Hydroxyprogesterone to demonstrate the sensitivity and reproducibility of this system configuration. Please see the relevant document for a full listing of the Xevo TQ-XS performance specifications.

EXPERIMENTAL CONDITIONS

Sample

Test sample: 1 pg/ μ L 17 α Hydroxyprogesterone (in 100% acetonitrile)
Blank: 100% acetonitrile

LC Conditions

Instrument: ACQUITY I-Class
Column: ACQUITY BEH, 50mm x 2.1mm, 1.7 μ m
Injection volume: 1 μ L
Flow rate: 0.8 mL/min
Mobile phase A: water + 0.01% formic acid + 0.05% ammonia solution
Mobile phase B: acetonitrile + 0.01% formic acid
Sample Manager Wash: acetonitrile
Purge syringe: 90% water, 10% methanol
Seal Wash: 90% water, 10% methanol
Column Temp: 40°C
Sample Temp: 10°C

UPLC Gradient

Time (min)	%A	%B	Curve
0.00	90	10	-
1.00	90	10	6
1.50	30	70	1
2.50	10	90	6
2.70	10	90	6
2.71	90	10	6
3.00	90	10	6

NB. The ACQUITY UPLC was cleaned prior to performing this experiment. See document 720004989 for details of the cleaning procedure used.

MS Conditions

Instrument:	Xevo TQ-XS
Ionization mode:	APCI positive
MS acquisition:	MRM = m/z 331 – m/z 109, dwell = 200ms
Resolution:	Peak width at half-height of precursor and product ions <1 Da
MRM spike rejection:	Enabled

Software

MassLynx:	V4.1, SCN905
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RESULTS

Figure 1 shows a typical UPLC MRM chromatogram obtained using the 17 α Hydroxyprogesterone standard solution (1pg on column). The example shows that the 17 α Hydroxyprogesterone was detected with a signal to noise ratio that was greater than 300:1 (Signal is the height of the chromatographic peak of interest and noise is the RMS of a continuous section of the mass chromatogram between 0.6 and 0.9 minutes). The signal to noise shown is based on raw (unsmoothed) data.

Figure 2 shows a typical UPLC MRM chromatogram obtained using the solvent blank (sample diluent). The blank response was less than 10% of that obtained for the 17 α Hydroxyprogesterone standard.

Ten replicate injections of the 1pg/ μ L 17 α Hydroxyprogesterone standard solution were made. The areas under the peak of interest were measured as illustrated in figure 3. The data presented in figure 4 shows that the relative standard deviation in chromatographic peak area reproducibility was less than 5%.

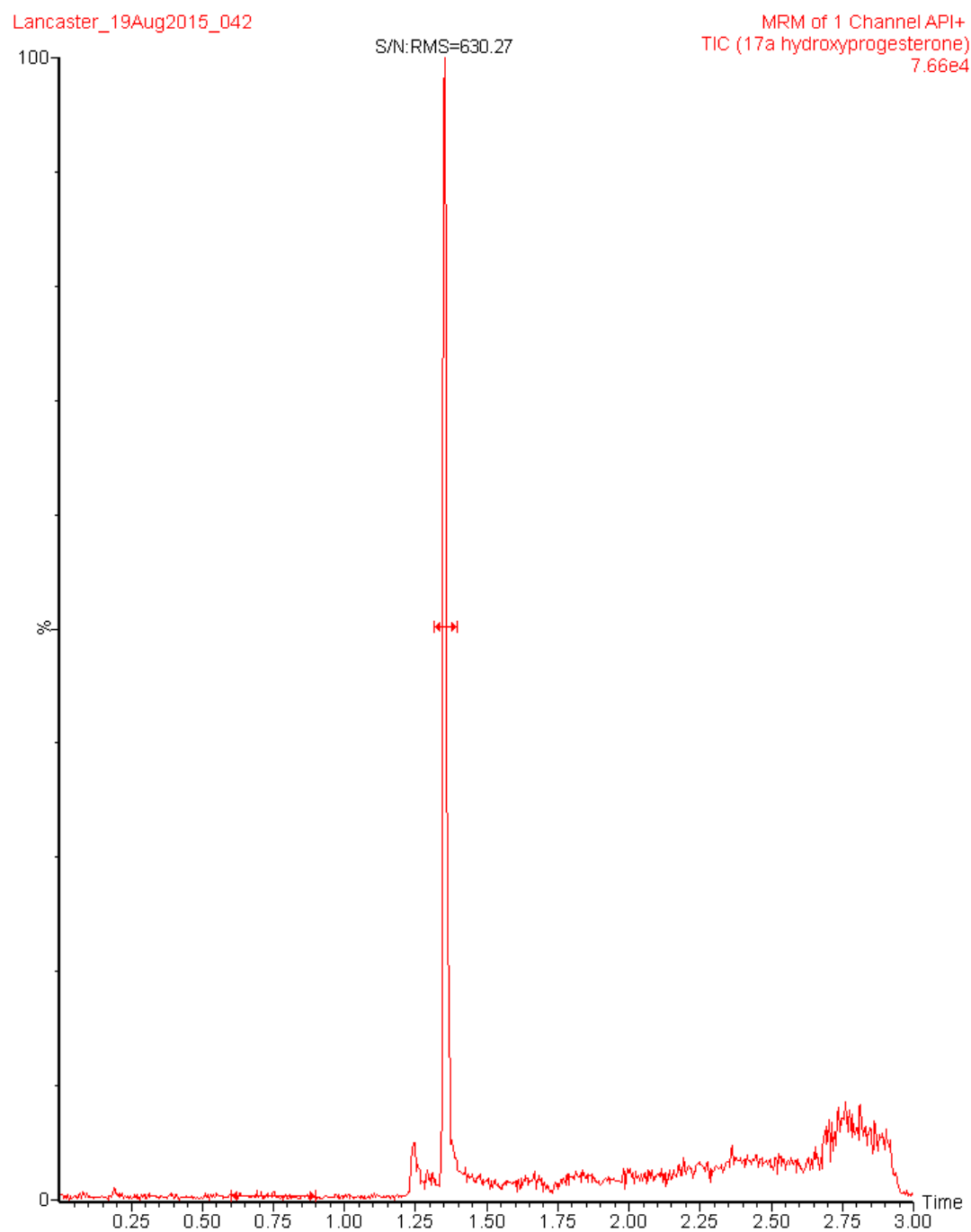


Figure 1.
*1pg/ μ L 17a Hydroxyprogesterone (1pg on column)
Signal:Noise > 300:1*

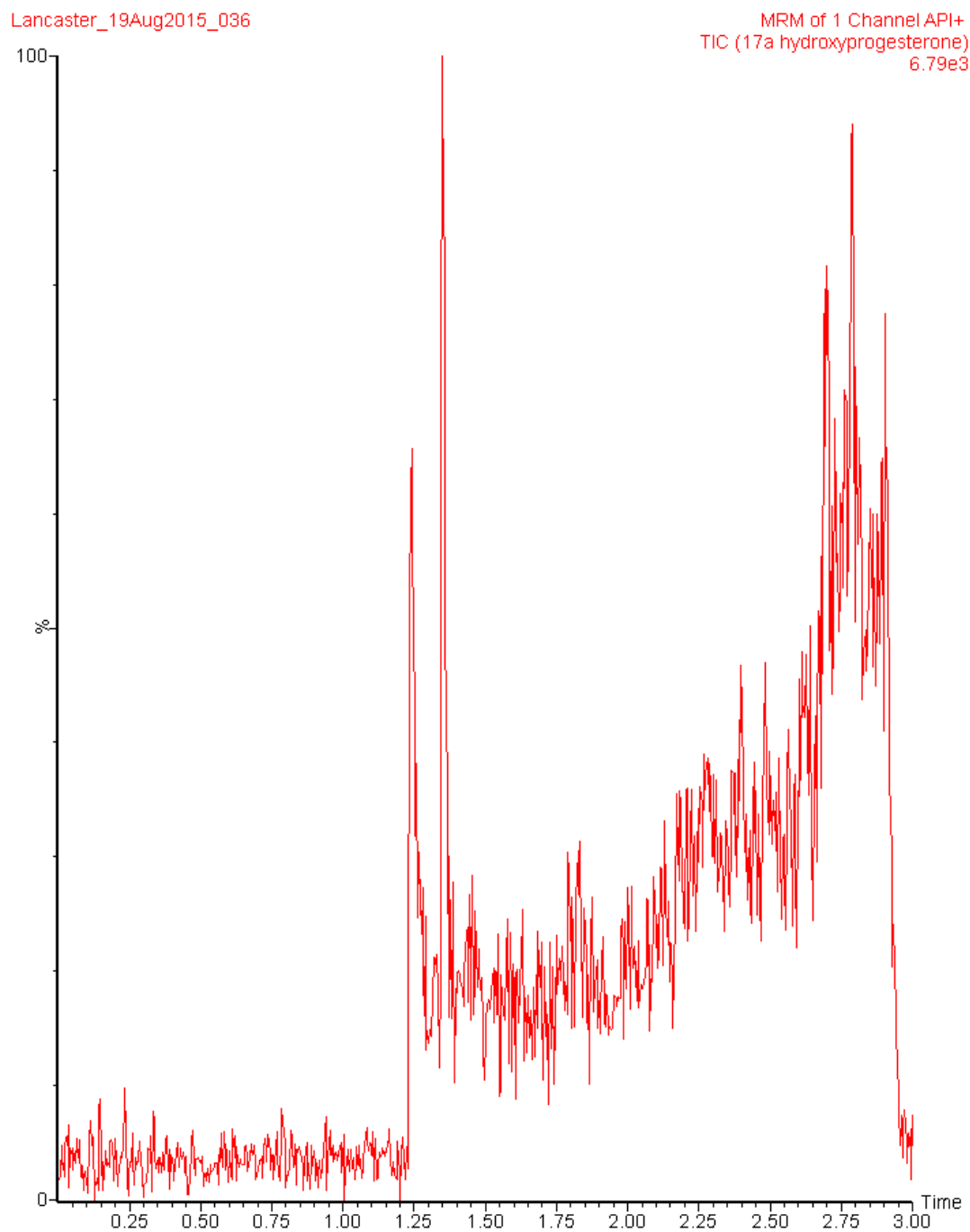


Figure 2.
Blank (sample diluent)
Contribution = <10% (4.9% actual)

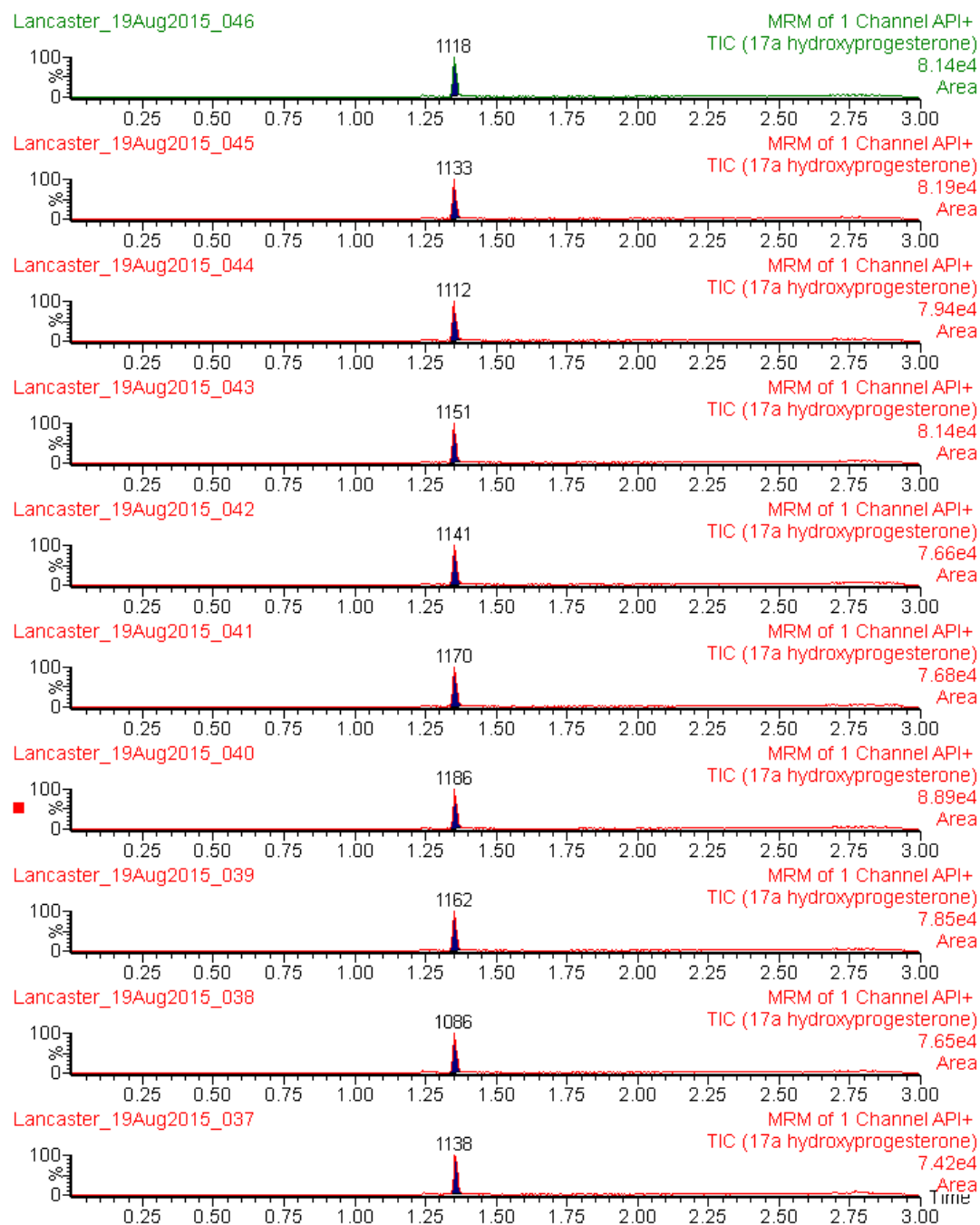


Figure 3.
UPLC MRM peak areas for replicate injections.
RSD of peak area <5%

Injection	Peak areas
Blank	n/a
Blank	n/a
Blank	n/a
injection 1	1138
injection 2	1086
injection 3	1162
injection 4	1186
injection 5	1170
injection 6	1141
injection 7	1151
injection 8	1112
injection 9	1133
injection 10	1118
Average	1140
Std dev	29.5
% RSD	2.6

Figure 4.
UPLC MRM Peak area reproducibility
RSD of peak area <5% (2.6% actual)



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