



Case Study

Ambient Air Monitoring Applications
Emergency Mobile Van Intervention

airmOzone expert + DET QMS: VOC TO15

Ozone precursors by FID from WATER or AIR
0 - 325 $\mu\text{g}/\text{m}^3$ or higher



Application PAMS 56 VOC: 30 minutes cycle

Table 1. List of PAMS: 24 compounds analysed by airmoVOC C2C6 + DET QMS

	LOW_RETENTION_TIME	HIGH_RETENTION_TIME	RESPONSE_FACTOR	ASSOCIATED_ION
ETHANE	4	14	0.343913	26
ETHYLENE	22	32	0.21322	26
PROPANE	55	65	1.67621	41
PROPENE	153	163	0.535343	41
I-BUTANE	186	196	0.648704	41
N-BUTANE	203	213	1	41
ACETYLENE	223	233	0.22	26
TRANS-2-BUTENE	303	313	0.398145	41
1-BUTENE	316	326	0.363911	41
CIS-2-BUTENE	343	353	0.365982	41
CYCLOPENTANE	354	364	0.915151	42
I-PENTANE	363	373	0.473288	41
N-PENTANE	379	389	0.498552	41
TRANS-2-PENTENE	449	459	1.0073	55
1-PENTENE	469	479	0.702728	42
CIS-2-PENTENE	485	495	1.22599	55
ME-CYCLOPENTANE	503	513	0.447471	56
2-3-DIME-BUTANE	520	530	0.330532	42
2-ME-PENTANE	528	535	0.330532	41
3-ME-PENTANE	533	538	0.47106	56
N-HEXANE	543	553	0.43013	41
ISOPRENE	569	579	0.774378	39
2-ME-1-PENTENE	604	614	0.427009	41

Table 2. List of PAMS: 32 compounds (10 common to the TO 14 list in blue) analysed by airmoVOC C6C12 + DET QMS

2-2-DIME-BUTANE	91	101	1.4527	57
BENZENE	260	280.07	1	78
CYCLOHEXANE	287.47	297.47	2.47262	84
2-ME-HEXANE	303.33	313.33	3.39886	85
2-3-DIME-PENTANE	306.07	318.07	5.52482	71
3-ME-HEXANE	331.93	341.93	2.65564	57
224-TME-PENTANE	371	381	0.693941	57
N-HEPTANE	392	412	1.91848	41
ME-CYCLOHEXANE	467	477	1.92239	83
234-TME-PENTANE	543	557	1.58303	71
TOLUENE	560	575	0.918655	91
2-ME-HEPTANE	595	605	1.52964	41
3-ME-HEPTANE	615.53	625.53	1.34767	41
N-OCTANE	677.27	687.27	1.64129	57
ETHYLBENZENE	776.6	786.6	0.476701	91
M&P-XYLENES	790	800	0.816475	91
STYRENE	823.87	833.87	2.987	104
O-XYLENE	831.47	841.47	0.646252	91
N-NONANE	855.6	865.6	0.460238	43
I-PROPYLBENZENE	874.47	884.47	0.516704	105
N-PROPYLBENZENE	917.33	927.33	3.36765	91
M-ETHYLTOLUENE	928	934	0.57193	105
P-ETHYLTOLUENE	932	940.27	0.601904	105
135-TMB	940.47	950.47	1.00995	105
O-ETHYLTOLUENE	957	967	0.745585	105
124-TMB	969.2	979.2	1.02427	105
N-DECANE	989.93	999.93	0.582683	57
123-TMB	1013.53	1023.53	1.25822	105
M-DIETHYLBENZENE	1043.47	1053.47	1.50136	105
P-DIETHYLBENZENE	1053.13	1063.13	1.6253	105
N-UNDECANE	1120.1	1130.1	0.796797	57

Options:

- Options:
- Europe: 1,3-Butadiene analysed by airmoVOC C2C6 (in TO15 list)
 - Japan: 58 VOCs in total (+ 2 terpenes: alpha and beta-Pinene, analysed by airmoVOC C6C12). Limonene can also be analysed.

MS Chromatograms from PAMS gas mixture cylinder: with 1-Hexene

airmOzone + DET QMS is the only online GCMS which analyse light VOCs from C2 to C6 on the MS detector.

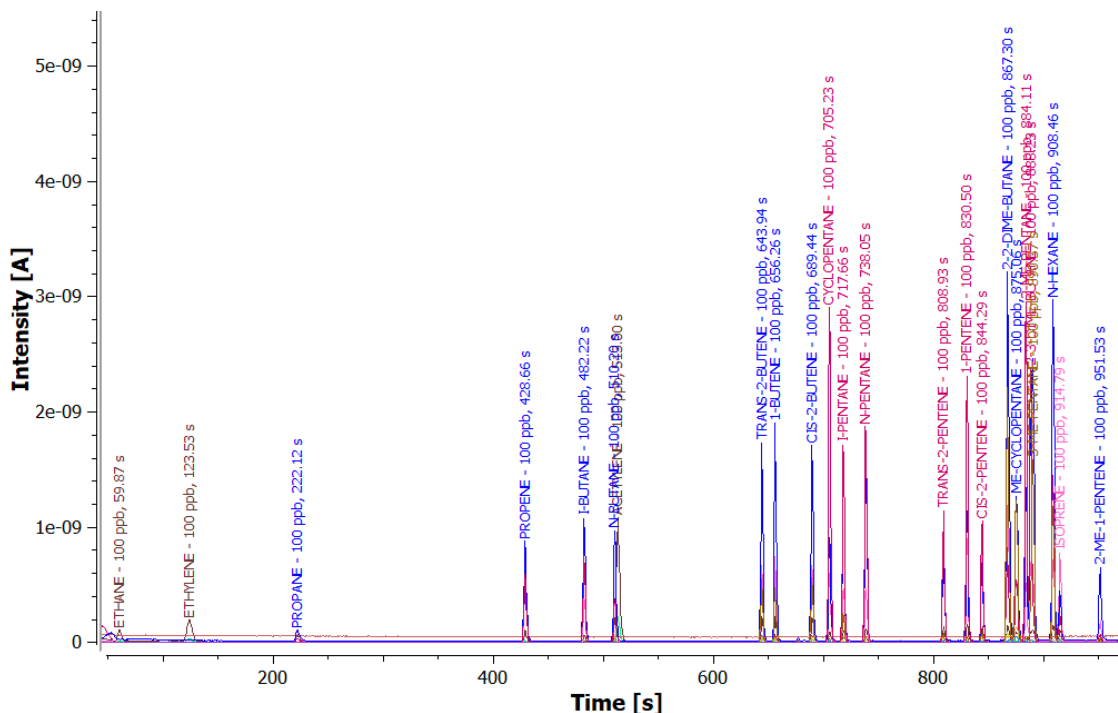


Figure 1. airmoVOC C2-C6 expert + DET QMS: 30-minutes cycle time in standard

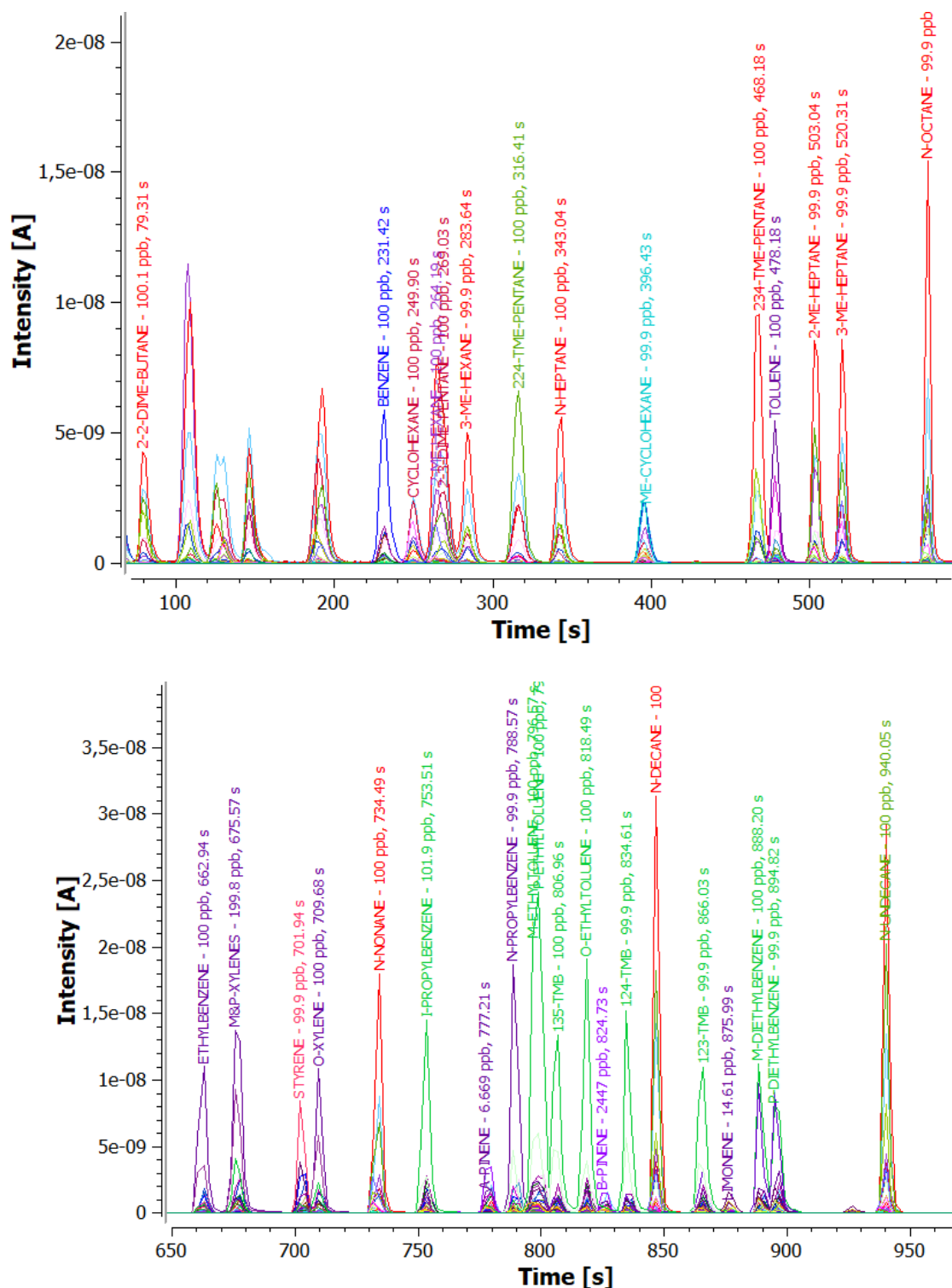


Figure 2. airmoVOC C2-C6 (top) and C6-C12 (bottom) expert + DET QMS: 30-minutes cycle time in standard with Mcerts approval for Benzene & VOC

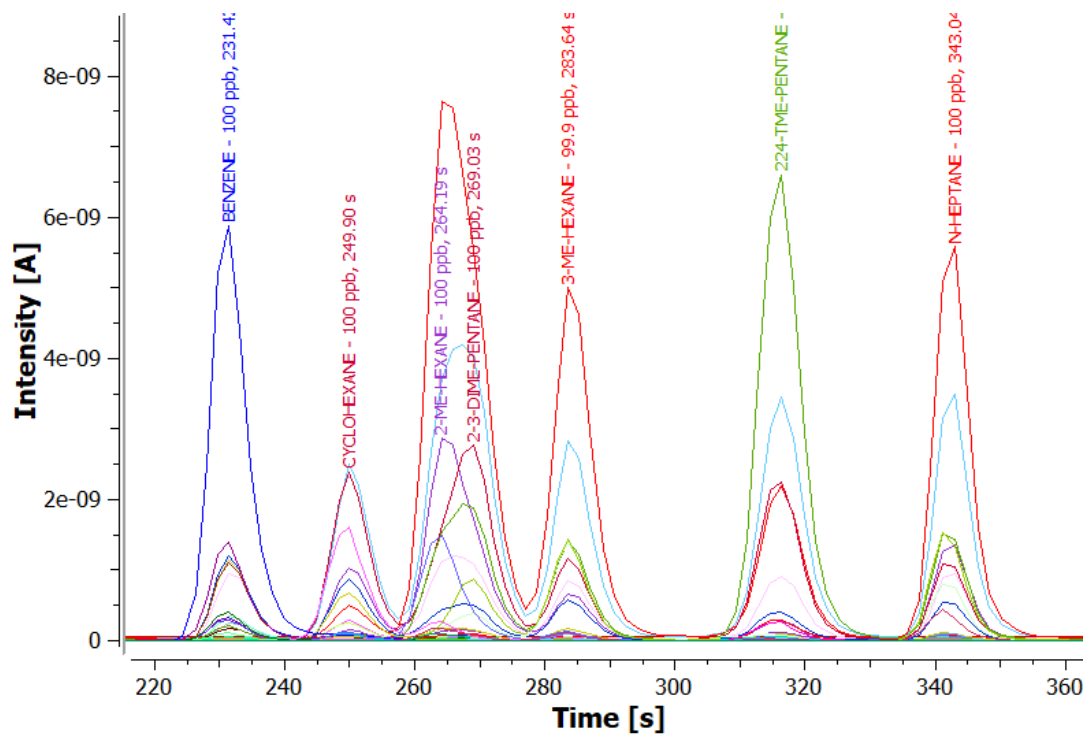


Figure 3. Quantification of partial coelution 2,3-dimethylpentane and 2-methylhexane

Application TO15 : 30 minutes cycle

Table 1. List of TO15: 12 compounds analysed by airmoVOC C2C6 expert + DET QMS

	LOW_RETENTION_TIME	HIGH_RETENTION_TIME	RESPONSE_FACTOR	ASSOCIATED_ION
FREON-12	400	410	1.90217	85
PROPENE	435	445	0.891224	41
PROPADIENE	510	520	1	41
FREON-114	630	640	1.39106	85
VINYLCHLORIDE	659	669	2.54682	62
FREON-11	695	705	1.34883	101
1-3-BUTADIENE	765	775	1.52106	54
1-1DICHLOROETHENE	771	781	1.17625	61
FREON-113	855	875	1.65355	101
CYCLOHEXANE	865	880	1.12691	56
T-1-2-DICL-ETHENE	865	885	1.21905	61
N-HEXANE	903	913	0.509657	41

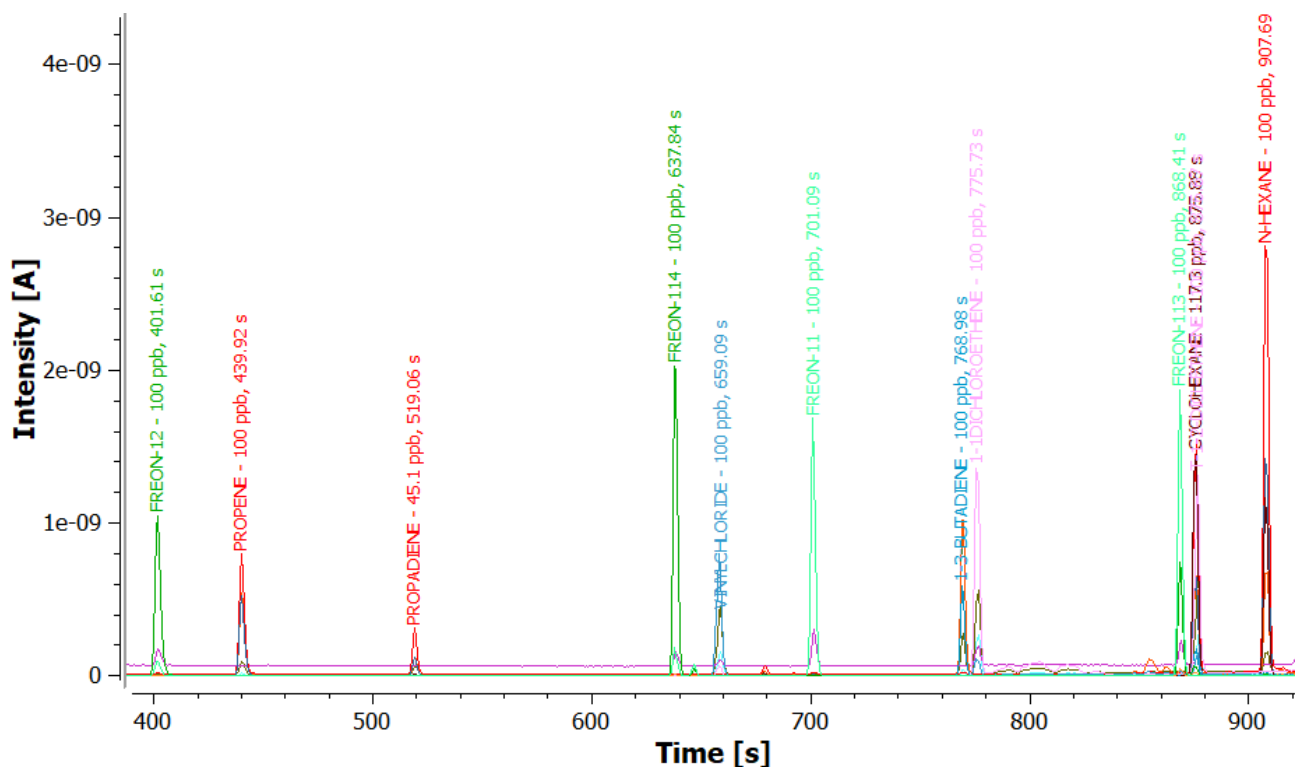
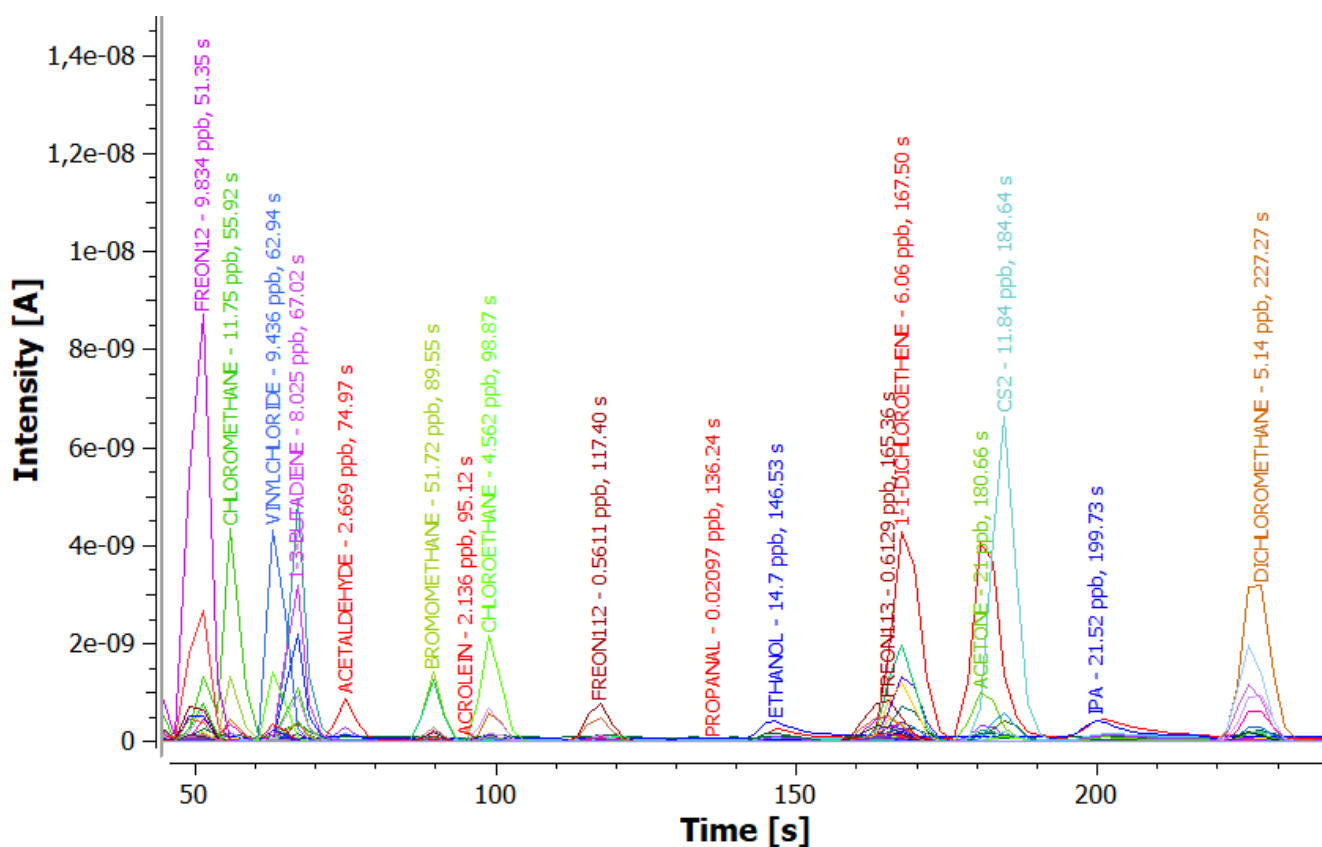


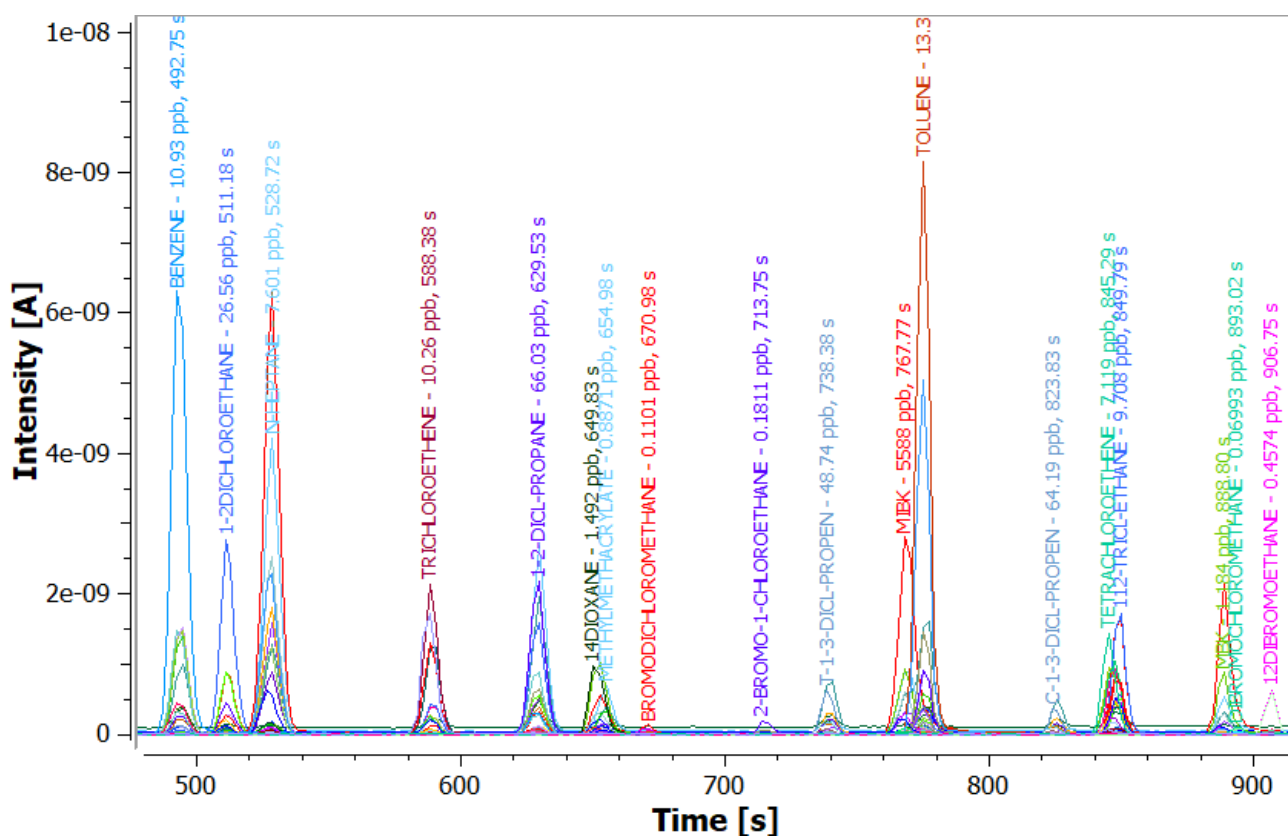
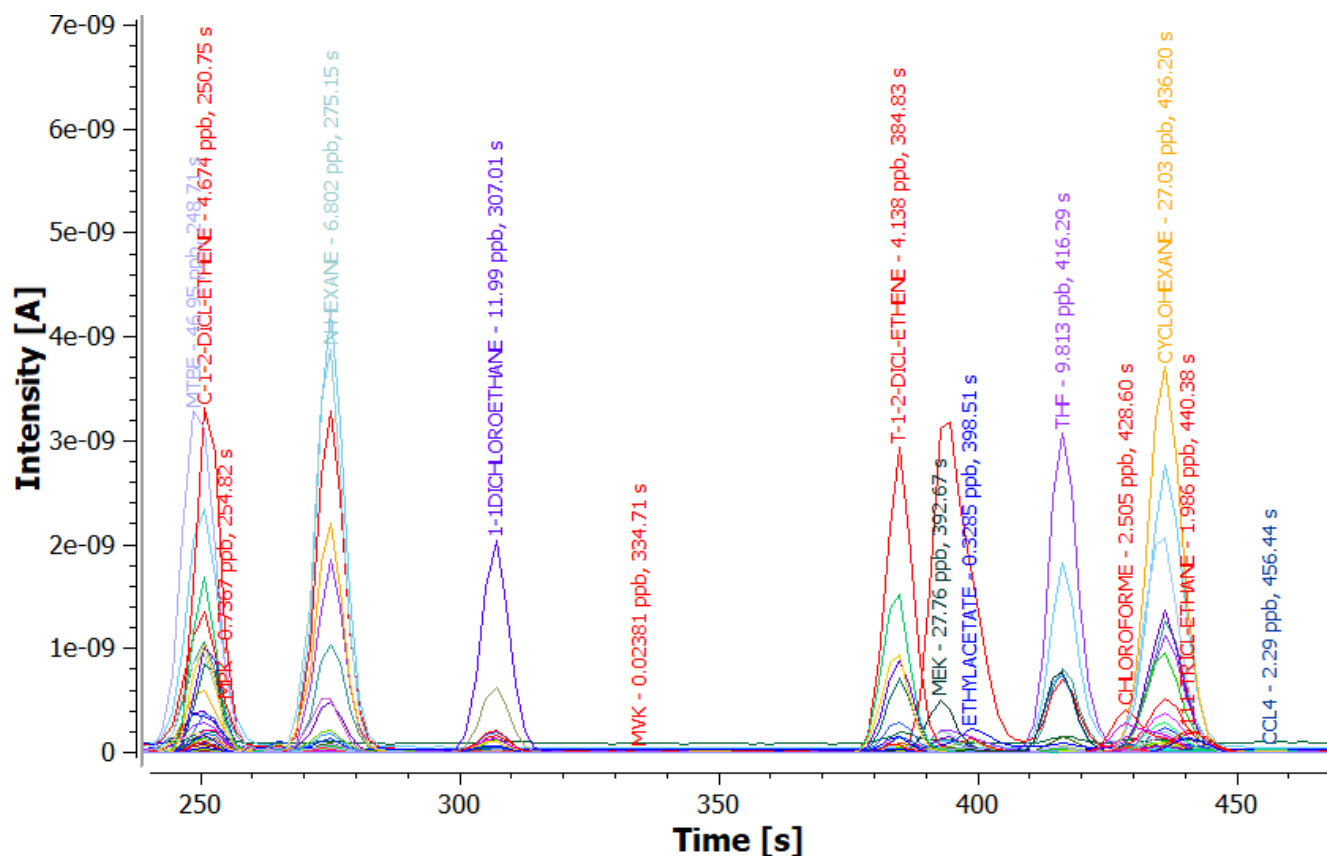
Figure 1. airmoVOC C2C6 expert + DET QMS cycle time 30 minutes with sample TO15 cylinder at 100 ppb

Table 2. List of TO15 : 46 compounds analysed by airmoVOC C6C12 expert + DET QMS in 30 minutes

	LOW_RETENTION_TIME	HIGH_RETENTION_TIME	RESPONSE_FACTOR	ASSOCIATED_ION
FREON12	46	56	1	85
CHLOROMETHANE	51	61	1	50
1-3-BUTADIENE	60	70	1	54
VINYLCHELORIDE	60	70	1	62
ACETALDEHYDE	73	83	1	43
BROMOMETHANE	85	95	25.6262	94
ACROLEIN	94	104	52.5587	43
CHLOROETHANE	94	104	1	64
FREON112	112	122	1	101
PROPANAL	130	140	1	43
ETHANOL	142	152	12.5717	45
FREON113	156	166	1	101
1-1-DICHLOROETHENE	162	172	1	61
ACETONE	175	185	9	58
CS2	179	189	1	76
IPA	195	205	23.5704	45
DICHLOROMETHANE	219	229	1	49
MTBE	243	253	9.28216	73
C-1-2-DICL-ETHENE	245	255	1	61
MPK	254	255	1	43
N-HEXANE	270	280	1.1155	57
1-1-DICHLOROETHANE	302	312	4.30861	63
MVK	334	344	1	43
T-1-2-DICL-ETHENE	380	390	1	61
MEK	389	399	29.2543	72
ETHYLACETATE	395	405	1.0918	45
THF	411	421	1.7051	42
CHLOROFORME	423	433	5.29537	83
CYCLOHEXANE	431	441	4.53007	56
1-1-TRICL-ETHANE	436	446	9.16465	97
CCL4	451	461	76.6001	117
BENZENE	487	497	1	78
1-2-DICHLOROETHANE	505	515	6.84859	62
N-HEPTANE	521	531	1.34618	41
TRICHLOROETHENE	585	595	4.6581	95
1-2-DICL-PROPANE	624	634	25.356	63
1,4-DIOXANE	645	655	1	88
METHYLMETHACRYLATE	648	658	1	41
BROMODICHLOROMETHANE	667	675	1	83
2-BROMO-1-CHLOROETHANE	708	718	1	63
T-1-3-DICL-PROPEN	733	743	63.7831	75
MIBK	760	768	1477.18	43
TOLUENE	770	780	1.11617	91
C-1-3-DICL-PROPEN	821	829	145.211	75
TETRACHLOROETHENE	840	850	6.05538	129
1-1-TRICL-ETHANE	845	855	5.56301	62
MBK	883	893	1	58
DIBROMOCHLOROMETHANE	888	898	1	129
1,2-DIBROMOETHANE	902	917	1	107
CHLOROBENZENE	965	970	1.32986	112
ETHYLBENZENE	979	989	0.633585	91

M&P-XYLENES	995	1005	0.978248	91
O-XYLENE	1042	1052	0.705352	91
STYRENE	1047	1057	1.4312	104
BROMOFORM	1066	1076	1	91
1122TETRACL-ETHAN	1139	1149	1091.34	96
P-ETHYLTOLUENE	1152	1162	0.728757	105
135-TMB	1160	1170	0.728029	105
124-TMB	1203	1213	1.01414	105
1-3-DICL-BENZENE	1238	1248	5.25087	111
1-4-DICL-BENZENE	1248	1258	4.29635	111
BENZYLCHLORIDE	1266	1366	1.35	91
1-2-DICL-BENZENE	1288	1298	6.47392	111
NAPHTALENE	1408	1407	1	78
124-TRICL-BENZENE	1490	1491	176.005	109
HEXCL-1-3BUTADIEN	1510	1511	40.4751	118





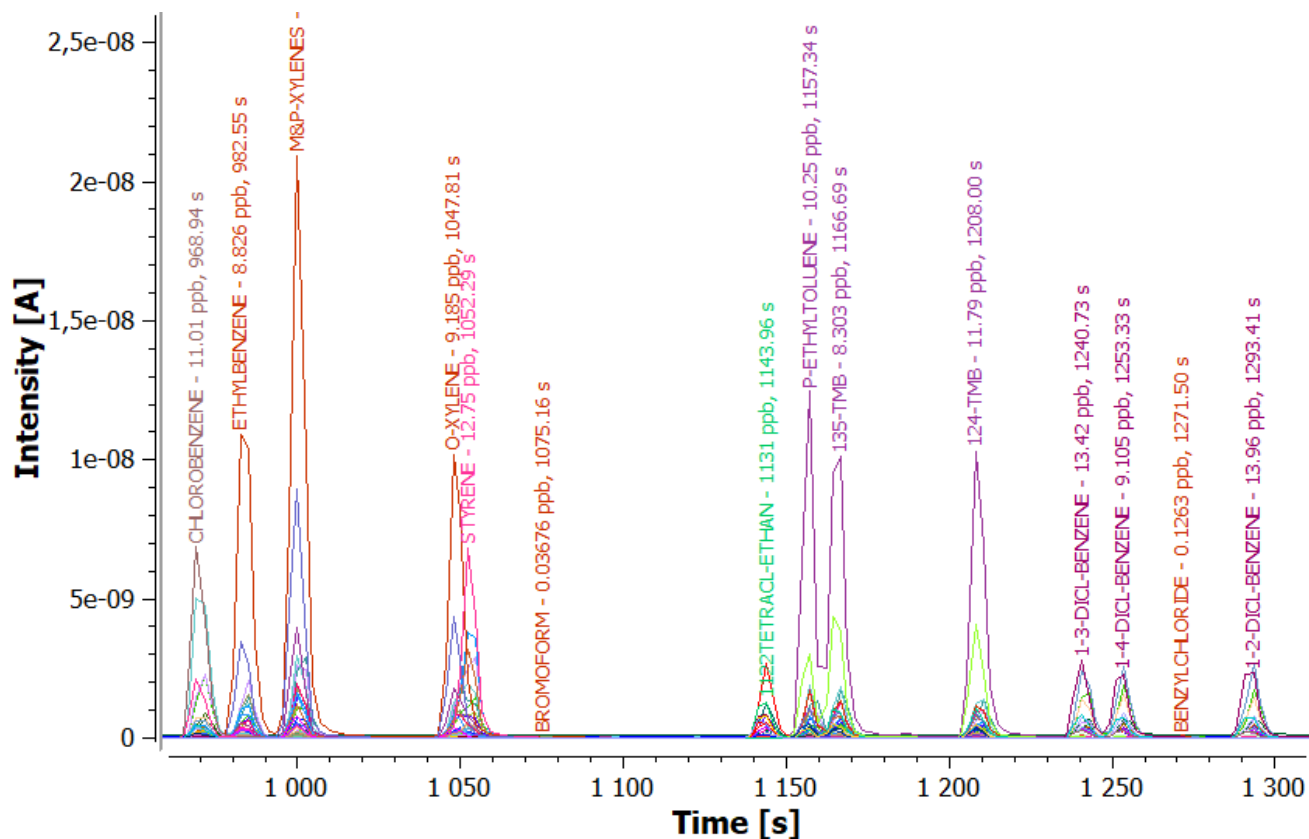


Figure 2: airmOVOC C6C12 expert 624 with 3 phases trap + DET QMS sample TO15 cylinder

