Calculations of Weighted Average Engine Emission Indices under Three Runway Scenario

Engine Used	Number of Usage in 2031 Busy Day Flight Schedule	Fraction	Bypass Ratio	Rated Engine Output (kN)	Unadjusted Fuel Flow - Takeoff	Unadjusted Fuel Flow - Climbout	Unadjusted Fuel Flow - Approach	Unadjusted Fuel Flow - Idle	CO Raw Emission Index - (Takeoff)	CO Raw Emission Index - (Climbout)	CO Raw Emission Index - (Approach)	CO Raw Emission Index - (Idle)	HC Raw Emission Index - (Takeoff)	HC Raw Emission Index - (Climbout)	HC Raw Emission Index - (Approach)	HC Raw Emission Index - (Idle)	NOx Raw Emission Index - (Takeoff)	NOx Raw Emission Index - (Climbout)	NOx Raw Emission Index - (Approach)	NOx Raw Emission Index - (Idle)	PM Emission Index - (Takeoff)	PM Emission Index - (Climbout)	PM Emission Index - (Approach)	PM Emission Index - (Idle)	Engine Entry Into Service Year
Group 1 - CPAHDA [1]																									
GEnx-2B67	22	0.0320	0.2558	9.5866	0.0784	0.0643	0.0224	0.0069	0.0054	0.0090	0.0809	0.6060	0.0006	0.0006	0.0019	0.0182	0.9977	0.5737	0.3063	0.1417	0.0021	0.0021	0.0027	0.0015	2009
GE9X8	10	0.0145	0.1453	5.7035	0.0410	0.0334	0.0105	0.0035	0.0025	0.0035	0.0362	0.2860	0.0003	0.0003	0.0009	0.0092	0.5509	0.4404	0.1802	0.0642	0.0007	0.0007	0.0008	0.0011	2020
Trent XWB-83	152	0.2209	2.0547	77.5465	0.5258	0.4397	0.1390	0.0563	0.1127	0.1060	0.1502	1.6923	0.0000	0.0000	0.0000	0.0088	8.0131	4.8052	2.3021	0.9809	0.0128	0.0115	0.0127	0.0132	2018
Trent 772B-60	50	0.0727	0.3656	22.9578	0.2326	0.1875	0.0618	0.0203	0.0145	0.0116	0.0647	1.3038	0.0000	0.0000	0.0007	0.1061	2.4985	1.9215	0.7485	0.3423	0.0055	0.0060	0.0044	0.0041	1994
Trent XWB-97	104	0.1512	1.4058	65.1512	0.4778	0.3850	0.1191	0.0387	0.0771	0.0726	0.1028	1.1579	0.0000	0.0000	0.0000	0.0060	6.3186	5.1093	2.0709	0.7195	0.0080	0.0087	0.0093	0.0073	2018
Trent 772-60	86	0.1250	0.6288	39.4875	0.4000	0.3225	0.1063	0.0350	0.0250	0.0200	0.1113	2.2425	0.0000	0.0000	0.0013	0.1825	4.2975	3.3050	1.2875	0.5888	0.0061	0.0062	0.0058	0.0066	1994
PW1127G	89	0.1294	1.5523	16.1313	0.1392	0.1110	0.0373	0.0125	0.0867	0.1048	0.5989	3.3349	0.0026	0.0009	0.0003	0.0466	2.2147	1.6998	0.8137	0.3803	0.0096	0.0093	0.0063	0.0071	2016
GE9X9	15	0.0218	0.2180	9.3968	0.0689	0.0555	0.0172	0.0056	0.0037	0.0052	0.0543	0.4291	0.0004	0.0004	0.0013	0.0137	0.9113	0.7369	0.2987	0.1038	0.0012	0.0011	0.0013	0.0013	2020
GE90-115BL2	50	0.0727	0.5145	37.3474	0.3408	0.2667	0.0821	0.0276	0.0058	0.0051	0.1439	2.8423	0.0029	0.0022	0.0044	0.3081	3.6584	2.6148	1.1991	0.3772	0.0045	0.0039	0.0039	0.0054	2003
Trent XWB-93	30	0.0436	0.4055	16.3081	0.1133	0.0938	0.0294	0.0111	0.0222	0.0209	0.0297	0.3340	0.0000	0.0000	0.0000	0.0017	1.6491	1.0958	0.4945	0.1975	0.0024	0.0022	0.0024	0.0024	2018
V2527-A5	8	0.0116	0.0560	1.2930	0.0122	0.0102	0.0038	0.0016	0.0049	0.0051	0.0262	0.1391	0.0003	0.0003	0.0008	0.0016	0.2695	0.2251	0.1133	0.0603	0.0023	0.0028	0.0021	0.0012	2009
GE90-110B1	27	0.0392	0.2881	19.3317	0.1695	0.1362	0.0424	0.0145	0.0027	0.0027	0.0899	1.5929	0.0012	0.0012	0.0024	0.1786	1.7440	1.3284	0.6193	0.2005	0.0023	0.0021	0.0021	0.0030	2003
PW1133G	32	0.0465	0.5581	6.8372	0.0578	0.0456	0.0146	0.0045	0.0251	0.0116	0.0995	1.1902	0.0023	0.0009	0.0023	0.0512	1.0581	0.7479	0.3279	0.1577	0.0036	0.0033	0.0023	0.0028	2016
PW4062A	9	0.0131	0.0589	3.4914	0.0362	0.0283	0.0093	0.0029	0.0050	0.0067	0.0220	0.3134	0.0010	0.0010	0.0020	0.0426	0.4925	0.3604	0.1672	0.0542	0.0012	0.0011	0.0007	0.0011	1993
Trent 892B-17	4	0.0058	0.0331	2.3923	0.0227	0.0180	0.0058	0.0017	0.0016	0.0012	0.0033	0.0760	0.0001	0.0000	0.0000	0.0041	0.2657	0.1936	0.0673	0.0310	0.0003	0.0004	0.0003	0.0003	1994
CPAHDA	**688**	**1.0**	**8.5406**	**332.9624**	**2.7163**	**2.1977**	**0.7009**	**0.2429**	**0.3950**	**0.3860**	**1.6137**	**17.5405**	**0.0118**	**0.0080**	**0.0182**	**0.9791**	**34.9398**	**25.1579**	**10.9966**	**4.3999**	**0.0627**	**0.0615**	**0.0572**	**0.0585**	**2010**
Group 2 - OTHERS [2]																									
Trent XWB-97	14	0.0133	0.1235	5.7249	0.0420	0.0338	0.0105	0.0034	0.0068	0.0064	0.0090	0.1017	0.0000	0.0000	0.0000	0.0005	0.5552	0.4490	0.1820	0.0632	0.0007	0.0008	0.0008	0.0006	2018
Trent XWB-83	70	0.0664	0.6176	23.3112	0.1581	0.1322	0.0418	0.0169	0.0339	0.0319	0.0452	0.5087	0.0000	0.0000	0.0000	0.0027	2.4088	1.4445	0.6920	0.2949	0.0038	0.0034	0.0038	0.0040	2018
Trent 772B-60	92	0.0873	0.4391	27.5738	0.2793	0.2252	0.0742	0.0244	0.0175	0.0140	0.0777	1.5659	0.0000	0.0000	0.0009	0.1274	3.0009	2.3079	0.8991	0.4111	0.0066	0.0072	0.0053	0.0050	1994
Trent 970-84	16	0.0152	0.1139	5.0808	0.0395	0.0334	0.0106	0.0046	0.0061	0.0030	0.0213	0.2292	0.0000	0.0000	0.0000	0.0030	0.5647	0.4417	0.1731	0.0774	0.0009	0.0009	0.0009	0.0007	2006
PW1127G	187	0.1774	2.1290	22.1242	0.1909	0.1522	0.0511	0.0172	0.1189	0.1437	0.8215	4.5739	0.0035	0.0012	0.0004	0.0639	3.0374	2.3313	1.1160	0.5216	0.0132	0.0128	0.0086	0.0098	2016
CFM LEAP-1B	65	0.0617	0.6167	6.5925	0.0577	0.0472	0.0157	0.0052	0.0222	0.0956	0.2578	1.6096	0.0012	0.0012	0.0049	0.0826	0.9349	0.7499	0.4212	0.1967	0.0052	0.0048	0.0033	0.0036	2018
V2527-A5	8	0.0076	0.0366	0.8440	0.0080	0.0066	0.0025	0.0010	0.0032	0.0033	0.0171	0.0908	0.0002	0.0002	0.0005	0.0011	0.1759	0.1469	0.0739	0.0394	0.0015	0.0019	0.0014	0.0008	2009
GE9X9	28	0.0266	0.2657	11.4497	0.0840	0.0677	0.0209	0.0068	0.0045	0.0064	0.0661	0.5228	0.0005	0.0005	0.0016	0.0167	1.1104	0.8979	0.3639	0.1265	0.0015	0.0014	0.0015	0.0015	2020
Trent XWB-93	33	0.0313	0.2912	11.7097	0.0814	0.0673	0.0211	0.0080	0.0160	0.0150	0.0213	0.2398	0.0000	0.0000	0.0000	0.0013	1.1841	0.7868	0.3550	0.1418	0.0017	0.0016	0.0017	0.0017	2018
GE90-110B1	92	0.0873	0.6407	42.9973	0.3771	0.3029	0.0943	0.0323	0.0061	0.0061	0.1999	3.5430	0.0026	0.0026	0.0052	0.3972	3.8790	2.9546	1.3774	0.4460	0.0051	0.0046	0.0047	0.0067	2003
GEnx-2B67	49	0.0465	0.3719	13.9376	0.1139	0.0935	0.0326	0.0100	0.0079	0.0130	0.1176	0.8810	0.0009	0.0009	0.0028	0.0265	1.4505	0.8340	0.4454	0.2059	0.0031	0.0030	0.0039	0.0022	2009
CFM56-5B4/P	42	0.0398	0.2351	4.7862	0.0451	0.0373	0.0124	0.0041	0.0359	0.0359	0.0917	0.9324	0.0080	0.0080	0.0199	0.1833	1.1157	0.9245	0.3985	0.1713	0.0034	0.0030	0.0029	0.0030	1995
CFM56-7B26	9	0.0085	0.0435	0.9990	0.0104	0.0085	0.0029	0.0010	0.0017	0.0051	0.0137	0.1605	0.0009	0.0009	0.0009	0.0162	0.2459	0.1921	0.0922	0.0401	0.0011	0.0009	0.0007	0.0008	1996
Trent 1000-A	24	0.0228	0.2156	7.0793	0.0520	0.0427	0.0142	0.0054	0.0121	0.0102	0.0175	0.1988	0.0000	0.0000	0.0000	0.0014	1.0627	0.8168	0.3026	0.1230	0.0012	0.0013	0.0014	0.0011	2011
GE90-115BL2	22	0.0209	0.1478	10.7266	0.0979	0.0766	0.0236	0.0079	0.0017	0.0015	0.0413	0.8163	0.0008	0.0006	0.0013	0.0885	1.0507	0.7510	0.3444	0.1083	0.0013	0.0011	0.0011	0.0015	2003
CFM56-3B1	9	0.0085	0.0435	0.7635	0.0081	0.0068	0.0025	0.0010	0.0077	0.0081	0.0324	0.2937	0.0003	0.0004	0.0007	0.0195	0.1511	0.1324	0.0709	0.0333	0.0005	0.0005	0.0005	0.0006	1983
PW1133G	38	0.0361	0.4326	5.2998	0.0448	0.0353	0.0113	0.0035	0.0195	0.0090	0.0772	0.9226	0.0018	0.0007	0.0018	0.0397	0.8202	0.5797	0.2542	0.1222	0.0028	0.0026	0.0018	0.0022	2016
GEnx-1B64	18	0.0171	0.1537	5.0892	0.0387	0.0318	0.0103	0.0034	0.0031	0.0065	0.0511	0.3692	0.0003	0.0003	0.0010	0.0138	0.4239	0.2495	0.1542	0.0724	0.0011	0.0011	0.0014	0.0008	2009
CF6-80C2B6F	3	0.0028	0.0145	0.7600	0.0074	0.0060	0.0019	0.0006	0.0001	0.0001	0.0055	0.0524	0.0001	0.0001	0.0003	0.0041	0.0779	0.0599	0.0359	0.0137	0.0002	0.0002	0.0002	0.0002	1995
Trent XWB-74	25	0.0237	0.2206	7.9222	0.0524	0.0444	0.0141	0.0060	0.0121	0.0114	0.0161	0.1817	0.0000	0.0000	0.0000	0.0009	0.8316	0.4533	0.2303	0.1037	0.0013	0.0014	0.0015	0.0011	2016
GE9X8	53	0.0503	0.5028	19.7317	0.1417	0.1156	0.0364	0.0123	0.0085	0.0121	0.1252	0.9896	0.0010	0.0010	0.0030	0.0317	1.9058	1.5236	0.6235	0.2223	0.0025	0.0024	0.0027	0.0039	2020
PW4170A	37	0.0351	0.1706	10.9315	0.1060	0.0860	0.0292	0.0090	0.0063	0.0063	0.0411	0.4929	0.0000	0.0000	0.0018	0.0291	1.1023	0.8018	0.4385	0.1467	0.0022	0.0023	0.0016	0.0021	2008
CF6-80C2D1F	2	0.0019	0.0097	0.5123	0.0050	0.0040	0.0013	0.0004	0.0001	0.0001	0.0036	0.0342	0.0001	0.0001	0.0002	0.0026	0.0534	0.0404	0.0240	0.0092	0.0001	0.0001	0.0001	0.0001	1995
Trent 556A2-61	2	0.0019	0.0142	0.5008	0.0043	0.0035	0.0012	0.0004	0.0003	0.0007	0.0010	0.0189	0.0000	0.0000	0.0001	0.0002	0.0850	0.0631	0.0222	0.0116	0.0001	0.0001	0.0001	0.0001	2005
PW4062A	11	0.0104	0.0470	2.7855	0.0289	0.0226	0.0074	0.0023	0.0040	0.0053	0.0175	0.2501	0.0008	0.0008	0.0016	0.0340	0.3929	0.2875	0.1334	0.0432	0.0010	0.0009	0.0006	0.0009	1993
CFM56-7B26/3	24	0.0228	0.1161	2.6641	0.0276	0.0225	0.0075	0.0025	0.0057	0.0036	0.0699	0.7045	0.0005	0.0005	0.0011	0.0398	0.4962	0.3889	0.2033	0.0972	0.0024	0.0021	0.0013	0.0016	2006
Trent 772C-60	14	0.0133	0.0668	4.1960	0.0425	0.0343	0.0113	0.0037	0.0027	0.0021	0.0118	0.2383	0.0000	0.0000	0.0001	0.0194	0.4567	0.3512	0.1368	0.0626	0.0006	0.0007	0.0006	0.0007	1994
CFM56-5B3/P	8	0.0076	0.0425	1.0808	0.0112	0.0087	0.0030	0.0010	0.0046	0.0099	0.1510	0.2619	0.0008	0.0008	0.0220	0.0190	0.2429	0.1412	0.0592	0.0326	0.0004	0.0004	0.0016	0.0006	1995
PW1524G	8	0.0076	0.0911	0.8099	0.0071	0.0058	0.0019	0.0006	0.0041	0.0099	0.0749	0.2543	0.0003	0.0004	0.0119	0.0257	0.1151	0.0923	0.0518	0.0242	0.0007	0.0006	0.0010	0.0005	2015
CFM56-5B6/3	8	0.0076	0.0448	0.7932	0.0073	0.0061	0.0021	0.0007	0.0013	0.0013	0.0330	0.2914	0.0002	0.0002	0.0005	0.0222	0.1346	0.1129	0.0629	0.0299	0.0007	0.0006	0.0004	0.0006	2006
CFM56-7B24/3	2	0.0019	0.0101	0.2042	0.0021	0.0017	0.0006	0.0002	0.0003	0.0003	0.0070	0.0659	0.0000	0.0001	0.0001	0.0044	0.0359	0.0296	0.0163	0.0078	0.0002	0.0002	0.0001	0.0001	2006
CFM56-5B6/P	2	0.0019	0.0114	0.1983	0.0018	0.0015	0.0005	0.0002	0.0017	0.0019	0.0055	0.0526	0.0004	0.0004	0.0011	0.0104	0.0448	0.0372	0.0175	0.0076	0.0002	0.0001	0.0001	0.0002	1995
CF6-80E1A3	2	0.0019	0.0097	0.5784	0.0057	0.0045	0.0014	0.0004	0.0006	0.0006	0.0023	0.0702	0.0001	0.0001	0.0003	0.0181	0.0866	0.0602	0.0195	0.0089	0.0002	0.0002	0.0001	0.0002	1995
RR Advance3	10	0.0095	0.1423	3.1755	0.0202	0.0165	0.0054	0.0020	0.0048	0.0046	0.0065	0.0727	0.0000	0.0000	0.0000	0.0004	0.3918	0.2951	0.0998	0.0405	0.0005	0.0006	0.0006	0.0004	2018
CFM56-3C1	2	0.0019	0.0097	0.1985	0.0022	0.0018	0.0006	0.0002	0.0017	0.0017	0.0059	0.0509	0.0001	0.0001	0.0001	0.0027	0.0393	0.0338	0.0173	0.0082	0.0001	0.0001	0.0001	0.0001	1983
CF6-80E1A4	2	0.0019	0.0097	0.5644	0.0055	0.0044	0.0014	0.0004	0.0006	0.0006	0.0025	0.0723	0.0001	0.0001	0.0003	0.0196	0.0819	0.0575	0.0192	0.0088	0.0002	0.0002	0.0001	0.0002	1995
Trent 875-17	2	0.0019	0.0115	0.6676	0.0059	0.0049	0.0017	0.0005	0.0004	0.0003	0.0016	0.0373	0.0000	0.0000	0.0000	0.0034	0.0632	0.0504	0.0198	0.0088	0.0001	0.0001	0.0001	0.0001	1994
PW4168	2	0.0019	0.0097	0.5740	0.0055	0.0045	0.0015	0.0005	0.0002	0.0004	0.0046	0.0302	0.0000	0.0000	0.0000	0.0004	0.0510	0.0383	0.0230	0.0099	0.0002	0.0002	0.0001	0.0001	2000
V2524-A5	2	0.0019	0.0091	0.2069	0.0020	0.0016	0.0006	0.0003	0.0008	0.0008	0.0043	0.0228	0.0001	0.0001	0.0001	0.0003	0.0436	0.0365	0.0184	0.0098	0.0005	0.0005	0.0006	0.0003	2009
GE90-115B	2	0.0019	0.0134	0.9751	0.0089	0.0070	0.0021	0.0007	0.0002	0.0001	0.0038	0.0742	0.0001	0.0001	0.0001	0.0080	0.0955	0.0683	0.0313	0.0098	0.0001	0.0001	0.0001	0.0001	2003
Trent 772-60	1	0.0009	0.0048	0.2997	0.0030	0.0024	0.0008	0.0003	0.0002	0.0002	0.0008	0.0170	0.0000	0.0000	0.0000	0.0014	0.0326	0.0251	0.0098	0.0045	0.0000	0.0000	0.0000	0.0001	1994
CFMI Leap-1A	2	0.0019	0.0190	0.2366	0.0018	0.0015	0.0005	0.0002	0.0007	0.0029	0.0079	0.0495	0.0000	0.0000	0.0002	0.0025	0.0330	0.0268	0.0136	0.0066	0.0001	0.0001	0.0001	0.0001	2017
PW4164	2	0.0019	0.0099	0.5402	0.0051	0.0042	0.0015	0.0005	0.0004	0.0003	0.0054	0.0336	0.0000	0.0000	0.0000	0.0007	0.0453	0.0354	0.0225	0.0095	0.0002	0.0002	0.0001	0.0001	2000
V2530-A5	4	0.0038	0.0172	0.5063	0.0050	0.0041	0.0015	0.0006	0.0015	0.0016	0.0063	0.0397	0.0001	0.0001	0.0002	0.0005	0.1193	0.0908	0.0414	0.0209	0.0002	0.0003	0.0003	0.0002	2009
CFM56-5B4/3	4	0.0038	0.0216	0.4558	0.0043	0.0036	0.0012	0.0004	0.0009	0.0006	0.0123	0.1217	0.0001	0.0001	0.0002	0.0073	0.0819	0.0654	0.0336	0.0160	0.0004	0.0004	0.0002	0.0003	2006
Trent 972-84	2	0.0019	0.0142	0.6564	0.0051	0.0042	0.0014	0.0005	0.0008	0.0006	0.0027	0.0302	0.0000	0.0000	0.0000	0.0005	0.0736	0.0562	0.0224	0.0095	0.0001	0.0001	0.0001	0.0001	2006
OTHERS	**1054**	**1.0**	**8.5818**	**268.8151**	**2.2541**	**1.8289**	**0.5928**	**0.2035**	**0.3901**	**0.4950**	**2.6093**	**22.1709**	**0.0260**	**0.0228**	**0.0874**	**1.3946**	**30.3858**	**22.3132**	**10.1632**	**4.1792**	**0.0705**	**0.0682**	**0.0605**	**0.0618**	**2009**

Calculations of Weighted Average Engine Emission Indices under Three Runway Scenario

Engine Used	Number of Usage in 2031 Busy Day Flight Schedule	Fraction	Bypass Ratio	Rated Engine Output (kN)	Unadjusted Fuel Flow - Takeoff	Unadjusted Fuel Flow - Climbout	Unadjusted Fuel Flow - Approach	Unadjusted Fuel Flow - Idle	CO Raw Emission Index - (Takeoff)	CO Raw Emission Index - (Climbout)	CO Raw Emission Index - (Approach)	CO Raw Emission Index - (Idle)	HC Raw Emission Index - (Takeoff)	HC Raw Emission Index - (Climbout)	HC Raw Emission Index - (Approach)	HC Raw Emission Index - (Idle)	NOx Raw Emission Index - (Takeoff)	NOx Raw Emission Index - (Climbout)	NOx Raw Emission Index - (Approach)	NOx Raw Emission Index - (Idle)	PM Emission Index - (Takeoff)	PM Emission Index - (Climbout)	PM Emission Index - (Approach)	PM Emission Index - (Idle)	Engine Entry Into Service Year
Group 3 - CLASSAB [3]																									
BR710A2-20	3	0.3143	0.3143	4.9208	0.0536	0.0446	0.0161	0.0067	0.0780	0.0698	0.3608	2.1000	0.0015	0.0015	0.0038	0.0840	1.4048	1.1273	0.5753	0.3503	0.0279	0.0261	0.0038	0.0049	1996
CFM LEAP-1B	3	0.7500	0.7500	8.0175	0.0701	0.0574	0.0191	0.0064	0.0270	0.1163	0.3135	1.9575	0.0015	0.0015	0.0060	0.1005	1.1370	0.9120	0.5123	0.2393	0.0064	0.0058	0.0040	0.0044	2018
CFM56-5B7/P	3	0.4425	0.4425	9.0083	0.0849	0.0701	0.0234	0.0078	0.0675	0.0675	0.1725	1.7550	0.0150	0.0150	0.0375	0.3450	2.1000	1.7400	0.7500	0.3225	0.0065	0.0056	0.0054	0.0056	1995
CFM56-7B26/B1	2	0.2550	0.2550	5.8500	0.0600	0.0500	0.0150	0.0050	0.0100	0.0100	0.1550	1.5450	0.0000	0.0000	0.0050	0.0900	1.0900	0.8550	0.4450	0.2150	0.0051	0.0045	0.0030	0.0034	2006
GE Passport 20	27	6.7500	6.7500	48.6405	0.4617	0.3821	0.1316	0.0540	0.1978	0.1566	3.3480	18.4545	0.0000	0.0000	0.0000	1.8563	8.3498	6.9795	4.2120	1.8968	0.0392	0.0410	0.0333	0.0408	2017
PW1127G	1	0.3000	0.3000	3.1175	0.0269	0.0215	0.0072	0.0024	0.0168	0.0203	0.1158	0.6445	0.0005	0.0002	0.0001	0.0090	0.4280	0.3285	0.1573	0.0735	0.0019	0.0018	0.0012	0.0014	2016
PW306A	1	0.1125	0.1125	0.6718	0.0079	0.0066	0.0024	0.0011	0.0568	0.0628	0.1778	0.9088	0.0000	0.0000	0.0000	0.1090	0.5020	0.4815	0.2968	0.1065	0.0022	0.0014	0.0015	0.0019	2000
CLASSAB	**40**	**1.0**	**8.9243**	**80.2263**	**0.7651**	**0.6322**	**0.2148**	**0.0833**	**0.4538**	**0.5031**	**4.6433**	**27.3653**	**0.0185**	**0.0182**	**0.0523**	**2.5938**	**15.0115**	**12.4238**	**6.9485**	**3.2038**	**0.0891**	**0.0862**	**0.0523**	**0.0624**	**2013**

Notes:

[1] CPAHDA - Engine testing of class C, D, E or F aircrafts by Cathay Pacific Airways or Hong Kong Dragon Airlines are responsible for about 70% of the total number of engine tests occurred in 2011 record.

[2] OTHERS - Engine testing of other class C, D, E or F aircrafts by other airlines (except Cathay Pacific Airways and Hong Kong Dragon Airlines) are responsible for about 25% of the total number of engine tests occurred in 2011 record.

[3] CLASSAB - Engine testing of class A or B aircrafts are responsible for about 5% of the total number of engine tests occurred in 2011 record.

[4] Based on LTO schedule in Year 2031 (provided by IATA as shown in Appendix 5.3.1-4).

Calculations of Weighted Average Engine Emission Indices under Two Runway Scenario

Engine Used	Number of Usage in 2031 Busy Day Flight Schedule	Fraction	Bypass Ratio	Rated Engine Output (kN)	Unadjusted Fuel Flow - Takeoff	Unadjusted Fuel Flow - Climbout	Unadjusted Fuel Flow - Approach	Unadjusted Fuel Flow - Idle	CO Raw Emission Index - (Takeoff)	CO Raw Emission Index - (Climbout)	CO Raw Emission Index - (Approach)	CO Raw Emission Index - (Idle)	HC Raw Emission Index - (Takeoff)	HC Raw Emission Index - (Climbout)	HC Raw Emission Index - (Approach)	HC Raw Emission Index - (Idle)	NOx Raw Emission Index - (Takeoff)	NOx Raw Emission Index - (Climbout)	NOx Raw Emission Index - (Approach)	NOx Raw Emission Index - (Idle)	PM Emission Index - (Takeoff)	PM Emission Index - (Climbout)	PM Emission Index - (Approach)	PM Emission Index - (Idle)	Engine Entry Into Service Year
Group 1 - CPAHDA [1]																									
Trent XWB-97	111	0.2332	2.1687	100.5063	0.7371	0.5939	0.1838	0.0597	0.1189	0.1119	0.1586	1.7863	0.0000	0.0000	0.0000	0.0093	9.7475	7.8819	3.1947	1.1100	0.0123	0.0135	0.0143	0.0113	2018
Trent XWB-83	117	0.2458	2.2859	86.2752	0.5850	0.4891	0.1546	0.0627	0.1254	0.1180	0.1671	1.8828	0.0000	0.0000	0.0000	0.0098	8.9151	5.3461	2.5612	1.0913	0.0142	0.0128	0.0142	0.0147	2018
GE9X9	15	0.0315	0.3151	13.5819	0.0996	0.0803	0.0248	0.0081	0.0054	0.0076	0.0785	0.6202	0.0006	0.0006	0.0019	0.0199	1.3172	1.0651	0.4317	0.1500	0.0018	0.0016	0.0018	0.0018	2020
GE90-115BL2	38	0.0798	0.5652	41.0256	0.3744	0.2930	0.0902	0.0303	0.0064	0.0056	0.1581	3.1222	0.0032	0.0024	0.0048	0.3385	4.0187	2.8724	1.3172	0.4143	0.0049	0.0043	0.0043	0.0059	2003
GE9X8	6	0.0126	0.1261	4.9462	0.0355	0.0290	0.0091	0.0031	0.0021	0.0030	0.0314	0.2481	0.0003	0.0003	0.0008	0.0079	0.4777	0.3819	0.1563	0.0557	0.0006	0.0006	0.0007	0.0010	2020
PW1133G	23	0.0483	0.5798	7.1029	0.0601	0.0474	0.0152	0.0046	0.0261	0.0121	0.1034	1.2365	0.0024	0.0010	0.0024	0.0532	1.0993	0.7770	0.3407	0.1638	0.0037	0.0035	0.0024	0.0029	2016
PW1127G	38	0.0798	0.9580	9.9550	0.0859	0.0685	0.0230	0.0077	0.0535	0.0647	0.3696	2.0581	0.0016	0.0006	0.0002	0.0287	1.3667	1.0490	0.5021	0.2347	0.0059	0.0058	0.0039	0.0044	2016
Trent 772B-60	35	0.0735	0.3699	23.2279	0.2353	0.1897	0.0625	0.0206	0.0147	0.0118	0.0654	1.3191	0.0000	0.0000	0.0007	0.1074	2.5279	1.9441	0.7574	0.3463	0.0056	0.0061	0.0045	0.0042	1994
Trent 772-60	32	0.0672	0.3382	21.2370	0.2151	0.1734	0.0571	0.0188	0.0134	0.0108	0.0598	1.2061	0.0000	0.0000	0.0007	0.0982	2.3113	1.7775	0.6924	0.3166	0.0033	0.0033	0.0031	0.0036	1994
GEnx-2B67	26	0.0546	0.4370	16.3756	0.1339	0.1099	0.0383	0.0118	0.0093	0.0153	0.1382	1.0351	0.0011	0.0011	0.0033	0.0311	1.7042	0.9799	0.5233	0.2420	0.0036	0.0036	0.0046	0.0026	2009
GE90-110B1	11	0.0231	0.1696	11.3836	0.0998	0.0802	0.0250	0.0086	0.0016	0.0016	0.0529	0.9380	0.0007	0.0007	0.0014	0.1051	1.0270	0.7822	0.3647	0.1181	0.0014	0.0012	0.0012	0.0018	2003
PW4062A	19	0.0399	0.1796	10.6536	0.1104	0.0865	0.0283	0.0089	0.0152	0.0204	0.0671	0.9564	0.0032	0.0032	0.0060	0.1301	1.5028	1.0997	0.5101	0.1653	0.0038	0.0033	0.0022	0.0034	1993
PW4056	2	0.0042	0.0197	1.0605	0.0098	0.0081	0.0028	0.0009	0.0018	0.0024	0.0084	0.0918	0.0003	0.0000	0.0005	0.0081	0.1181	0.0962	0.0487	0.0202	0.0003	0.0003	0.0003	0.0003	1987
RB211-524H	2	0.0042	0.0176	1.1109	0.0115	0.0091	0.0030	0.0011	0.0037	0.0016	0.0042	0.0494	0.0014	0.0014	0.0015	0.0031	0.2766	0.1946	0.0431	0.0201	0.0006	0.0006	0.0005	0.0002	1987
Trent XWB-93	1	0.0021	0.0195	0.7857	0.0055	0.0045	0.0014	0.0005	0.0011	0.0010	0.0014	0.0161	0.0000	0.0000	0.0000	0.0001	0.0795	0.0528	0.0238	0.0095	0.0001	0.0001	0.0001	0.0001	2018
CPAHDA	**476**	**1.0**	**8.5500**	**349.2282**	**2.7990**	**2.2626**	**0.7190**	**0.2474**	**0.3986**	**0.3876**	**1.4641**	**16.5661**	**0.0147**	**0.0112**	**0.0241**	**0.9505**	**36.4896**	**26.3005**	**11.4675**	**4.4579**	**0.0622**	**0.0605**	**0.0581**	**0.0582**	**2011**
Group 2 - OTHERS [2]																									
CF6-80C2B1F	9	0.0129	0.0656	3.2691	0.0311	0.0255	0.0084	0.0026	0.0005	0.0005	0.0274	0.2472	0.0006	0.0006	0.0014	0.0198	0.3207	0.2535	0.1603	0.0608	0.0010	0.0008	0.0008	0.0009	1995
CF6-80C2B5F	6	0.0086	0.0437	2.3360	0.0230	0.0185	0.0060	0.0018	0.0004	0.0003	0.0157	0.1496	0.0004	0.0004	0.0009	0.0112	0.2450	0.1865	0.1092	0.0421	0.0007	0.0006	0.0005	0.0006	1995
CF6-80C2D1F	2	0.0029	0.0146	0.7713	0.0075	0.0061	0.0020	0.0006	0.0001	0.0001	0.0054	0.0515	0.0001	0.0001	0.0003	0.0039	0.0803	0.0609	0.0362	0.0139	0.0002	0.0002	0.0002	0.0002	1995
CF6-80E1A3	2	0.0029	0.0146	0.8709	0.0085	0.0068	0.0022	0.0006	0.0010	0.0009	0.0035	0.1058	0.0002	0.0002	0.0005	0.0272	0.1304	0.0907	0.0294	0.0134	0.0003	0.0003	0.0002	0.0004	1995
CFM LEAP-1B	42	0.0600	0.6000	6.4140	0.0561	0.0459	0.0153	0.0051	0.0216	0.0930	0.2508	1.5660	0.0012	0.0012	0.0048	0.0804	0.9096	0.7296	0.4098	0.1914	0.0051	0.0047	0.0032	0.0035	2018
CFM56-3B1	6	0.0086	0.0437	0.7664	0.0081	0.0068	0.0025	0.0010	0.0077	0.0081	0.0326	0.2949	0.0003	0.0004	0.0007	0.0195	0.1517	0.1329	0.0711	0.0334	0.0005	0.0005	0.0005	0.0006	1983
CFM56-5B4/3	4	0.0057	0.0326	0.6863	0.0065	0.0054	0.0018	0.0006	0.0014	0.0009	0.0185	0.1833	0.0001	0.0001	0.0003	0.0110	0.1233	0.0985	0.0506	0.0241	0.0006	0.0005	0.0003	0.0004	2006
CFM56-5B4/P	18	0.0257	0.1517	3.0885	0.0291	0.0240	0.0080	0.0027	0.0231	0.0231	0.0591	0.6017	0.0051	0.0051	0.0129	0.1183	0.7200	0.5966	0.2571	0.1106	0.0022	0.0019	0.0019	0.0019	1995
CFM56-5B6/3	2	0.0029	0.0169	0.2986	0.0028	0.0023	0.0008	0.0003	0.0005	0.0005	0.0124	0.1097	0.0001	0.0001	0.0002	0.0084	0.0507	0.0425	0.0237	0.0113	0.0003	0.0002	0.0002	0.0002	2006
CFM56-7B26	6	0.0086	0.0437	1.0028	0.0105	0.0086	0.0029	0.0010	0.0017	0.0051	0.0137	0.1611	0.0009	0.0009	0.0009	0.0163	0.2469	0.1929	0.0926	0.0403	0.0011	0.0009	0.0007	0.0008	1996
CFM56-7B26/3	14	0.0200	0.1020	2.3400	0.0243	0.0197	0.0066	0.0022	0.0050	0.0032	0.0614	0.6188	0.0004	0.0004	0.0010	0.0350	0.4358	0.3416	0.1786	0.0854	0.0021	0.0018	0.0011	0.0014	2006
CFMI Leap-1A	2	0.0029	0.0286	0.3563	0.0028	0.0023	0.0008	0.0002	0.0010	0.0044	0.0119	0.0746	0.0001	0.0001	0.0002	0.0038	0.0497	0.0403	0.0205	0.0099	0.0002	0.0002	0.0002	0.0002	2017
GE90-110B1	58	0.0829	0.6082	40.8154	0.3579	0.2875	0.0895	0.0307	0.0058	0.0058	0.1897	3.3632	0.0025	0.0025	0.0050	0.3770	3.6822	2.8047	1.3075	0.4234	0.0049	0.0044	0.0044	0.0064	2003
GE90-115B	2	0.0029	0.0202	1.4683	0.0134	0.0105	0.0032	0.0011	0.0002	0.0002	0.0057	0.1117	0.0001	0.0001	0.0002	0.0121	0.1438	0.1028	0.0471	0.0148	0.0002	0.0002	0.0002	0.0002	2003
GE90-115BL2	20	0.0286	0.2023	14.6829	0.1340	0.1049	0.0323	0.0109	0.0023	0.0020	0.0566	1.1174	0.0011	0.0009	0.0017	0.1211	1.4383	1.0280	0.4714	0.1483	0.0018	0.0015	0.0015	0.0021	2003
GE9X8	43	0.0614	0.6143	24.1046	0.1731	0.1412	0.0445	0.0150	0.0104	0.0147	0.1530	1.2089	0.0012	0.0012	0.0037	0.0387	2.3281	1.8613	0.7617	0.2715	0.0031	0.0030	0.0033	0.0047	2020
GE9X9	32	0.0457	0.4571	19.7029	0.1445	0.1164	0.0360	0.0117	0.0078	0.0110	0.1138	0.8997	0.0009	0.0009	0.0027	0.0288	1.9109	1.5451	0.6263	0.2176	0.0026	0.0023	0.0026	0.0026	2020
GEnx-1B64	17	0.0243	0.2186	7.2371	0.0550	0.0452	0.0147	0.0048	0.0044	0.0092	0.0726	0.5251	0.0005	0.0005	0.0015	0.0197	0.6028	0.3548	0.2193	0.1030	0.0016	0.0016	0.0020	0.0012	2009
GEnx-2B67	31	0.0443	0.3543	13.2769	0.1085	0.0891	0.0310	0.0096	0.0075	0.0124	0.1120	0.8392	0.0009	0.0009	0.0027	0.0252	1.3817	0.7945	0.4243	0.1962	0.0029	0.0029	0.0037	0.0021	2009
PW1127G	112	0.1600	1.9200	19.9520	0.1722	0.1373	0.0461	0.0155	0.1072	0.1296	0.7408	4.1248	0.0032	0.0011	0.0003	0.0576	2.7392	2.1024	1.0064	0.4704	0.0119	0.0116	0.0078	0.0088	2016
PW1133G	33	0.0471	0.5657	6.9300	0.0586	0.0462	0.0148	0.0045	0.0255	0.0118	0.1009	1.2064	0.0024	0.0009	0.0024	0.0519	1.0725	0.7581	0.3324	0.1598	0.0036	0.0034	0.0024	0.0029	2016
PW1524G	8	0.0114	0.1371	1.2194	0.0107	0.0087	0.0029	0.0010	0.0062	0.0150	0.1128	0.3829	0.0005	0.0006	0.0179	0.0386	0.1733	0.1390	0.0781	0.0365	0.0010	0.0009	0.0016	0.0008	2015
PW4056	2	0.0029	0.0134	0.7211	0.0067	0.0055	0.0019	0.0006	0.0013	0.0016	0.0057	0.0625	0.0002	0.0000	0.0004	0.0055	0.0803	0.0654	0.0331	0.0137	0.0002	0.0002	0.0002	0.0002	1987
PW4168	2	0.0029	0.0146	0.8642	0.0082	0.0068	0.0023	0.0007	0.0003	0.0006	0.0069	0.0454	0.0000	0.0000	0.0000	0.0006	0.0769	0.0577	0.0346	0.0149	0.0003	0.0003	0.0001	0.0002	2000
PW4170A	8	0.0114	0.0555	3.5589	0.0345	0.0280	0.0095	0.0029	0.0021	0.0021	0.0134	0.1605	0.0000	0.0000	0.0006	0.0095	0.3589	0.2610	0.1427	0.0478	0.0007	0.0008	0.0005	0.0007	2008
RR Advance3	10	0.0143	0.2143	4.7814	0.0305	0.0249	0.0081	0.0030	0.0073	0.0069	0.0097	0.1094	0.0000	0.0000	0.0000	0.0006	0.5900	0.4443	0.1503	0.0610	0.0008	0.0009	0.0008	0.0007	2018
Trent 1000-A	18	0.0257	0.2435	7.9946	0.0587	0.0483	0.0161	0.0061	0.0136	0.0116	0.0198	0.2245	0.0000	0.0000	0.0000	0.0015	1.2001	0.9224	0.3417	0.1389	0.0014	0.0015	0.0015	0.0012	2011
Trent 772B-60	43	0.0614	0.3090	19.4053	0.1966	0.1585	0.0522	0.0172	0.0123	0.0098	0.0547	1.1020	0.0000	0.0000	0.0006	0.0897	2.1119	1.6242	0.6327	0.2893	0.0046	0.0051	0.0038	0.0035	1994
Trent 772C-60	10	0.0143	0.0719	4.5129	0.0457	0.0369	0.0121	0.0040	0.0029	0.0023	0.0127	0.2563	0.0000	0.0000	0.0001	0.0209	0.4911	0.3777	0.1471	0.0673	0.0007	0.0007	0.0007	0.0008	1994
Trent 970-84	14	0.0200	0.1500	6.6940	0.0520	0.0440	0.0140	0.0060	0.0080	0.0040	0.0280	0.3020	0.0000	0.0000	0.0000	0.0040	0.7440	0.5820	0.2280	0.1020	0.0011	0.0012	0.0012	0.0010	2006
Trent XWB-74	21	0.0300	0.2790	10.0200	0.0663	0.0561	0.0179	0.0077	0.0153	0.0144	0.0204	0.2298	0.0000	0.0000	0.0000	0.0012	1.0518	0.5733	0.2913	0.1311	0.0016	0.0017	0.0018	0.0014	2016
Trent XWB-83	75	0.1071	0.9964	37.6071	0.2550	0.2132	0.0674	0.0273	0.0546	0.0514	0.0729	0.8207	0.0000	0.0000	0.0000	0.0043	3.8861	2.3304	1.1164	0.4757	0.0062	0.0056	0.0062	0.0064	2018
Trent XWB-93	14	0.0200	0.1860	7.4800	0.0520	0.0430	0.0135	0.0051	0.0102	0.0096	0.0136	0.1532	0.0000	0.0000	0.0000	0.0008	0.7564	0.5026	0.2268	0.0906	0.0011	0.0010	0.0011	0.0011	2018
Trent XWB-97	8	0.0114	0.1063	4.9257	0.0361	0.0291	0.0090	0.0029	0.0058	0.0055	0.0078	0.0875	0.0000	0.0000	0.0000	0.0005	0.4777	0.3863	0.1566	0.0544	0.0006	0.0007	0.0007	0.0006	2018
V2527-A5	6	0.0086	0.0413	0.9531	0.0090	0.0075	0.0028	0.0011	0.0036	0.0038	0.0193	0.1025	0.0003	0.0003	0.0006	0.0012	0.1987	0.1659	0.0835	0.0445	0.0017	0.0021	0.0016	0.0009	2009
OTHERS	**700**	**1.0**	**8.9366**	**281.1078**	**2.2895**	**1.8605**	**0.5989**	**0.2079**	**0.3787**	**0.4755**	**2.4552**	**21.5997**	**0.0233**	**0.0196**	**0.0644**	**1.2658**	**30.9605**	**22.5502**	**10.2984**	**4.2091**	**0.0689**	**0.0661**	**0.0595**	**0.0613**	**2011**

Expansion of Hong Kong International Airport into a Three-Runway System
Engine Run Up Facilities - Engine Emission Indices adopted for Calculation of ERUF Emission

Engine Used	Number of Usage in 2031 Busy Day Flight Schedule	Fraction	Bypass Ratio	Rated Engine Output (kN)	Unadjusted Fuel Flow - Takeoff	Unadjusted Fuel Flow - Climbout	Unadjusted Fuel Flow - Approach	Unadjusted Fuel Flow - Idle	CO Raw Emission Index - (Takeoff)	CO Raw Emission Index - (Climbout)	CO Raw Emission Index - (Approach)	CO Raw Emission Index - (Idle)	HC Raw Emission Index - (Takeoff)	HC Raw Emission Index - (Climbout)	HC Raw Emission Index - (Approach)	HC Raw Emission Index - (Idle)	NOx Raw Emission Index - (Takeoff)	NOx Raw Emission Index - (Climbout)	NOx Raw Emission Index - (Approach)	NOx Raw Emission Index - (Idle)	PM Emission Index - (Takeoff)	PM Emission Index - (Climbout)	PM Emission Index - (Approach)	PM Emission Index - (Idle)	Engine Entry Into Service Year
Group 3 - CLASSAB [3]																									
CFM LEAP-1B	2	0.1053	1.0526	11.2526	0.0984	0.0805	0.0268	0.0089	0.0379	0.1632	0.4400	2.7474	0.0021	0.0021	0.0084	0.1411	1.5958	1.2800	0.7189	0.3358	0.0089	0.0082	0.0056	0.0062	2018
CFM56-5B7/P	1	0.0526	0.3105	6.3216	0.0596	0.0492	0.0164	0.0055	0.0474	0.0474	0.1211	1.2316	0.0105	0.0105	0.0263	0.2421	1.4737	1.2211	0.5263	0.2263	0.0045	0.0039	0.0038	0.0039	1995
GE Passport 20	16	0.8421	8.4211	60.6821	0.5760	0.4766	0.1642	0.0674	0.2467	0.1954	4.1768	23.0232	0.0000	0.0000	0.0000	2.3158	10.4168	8.7074	5.2547	2.3663	0.0489	0.0512	0.0416	0.0510	2017
CLASSAB	**19**	**1.0**	**9.7842**	**78.2563**	**0.7340**	**0.6064**	**0.2075**	**0.0818**	**0.3320**	**0.4059**	**4.7379**	**27.0021**	**0.0126**	**0.0126**	**0.0347**	**2.6989**	**13.4863**	**11.2084**	**6.5000**	**2.9284**	**0.0624**	**0.0633**	**0.0510**	**0.0611**	**2016**

Notes:

[1] CPAHDA - Engine testing of class C, D, E or F aircrafts by Cathay Pacific Airways or Hong Kong Dragon Airlines are responsible for about 70% of the total number of engine tests occurred in 2011 record.

[2] OTHERS - Engine testing of other class C, D, E or F aircrafts by other airlines (except Cathay Pacific Airways and Hong Kong Dragon Airlines) are responsible for about 25% of the total number of engine tests occurred in 2011 record.

[3] CLASSAB - Engine testing of class A or B aircrafts are responsible for about 5% of the total number of engine tests occurred in 2011 record.

[4] Based on LTO schedule in Year 2031 (provided by IATA as shown in Appendix 5.3.1-4).

Engine List (calculated from weighted average) under Three Runway Scenario

UID	ENGINE	UID	Out of Service (if)	Engine Type (J- Jet; T- Turboprop; P-Piston)	Bypass Ratio	Rated Engine Output (kN)	Unadjusted Fuel Flow - Takeoff	Unadjusted Fuel Flow - Climbout	Unadjusted Fuel Flow - Approach	Unadjusted Fuel Flow - Idle	CO Raw Emission Index - (Takeoff)	CO Raw Emission Index - (Climbout)	CO Raw Emission Index - (Approach)	CO Raw Emission Index - (Idle)	HC Raw Emission Index - (Takeoff) [1]	HC Raw Emission Index - (Climbout) [1]	HC Raw Emission Index - (Approach) [1]	HC Raw Emission Index - (Idle) [1]	NOx Raw Emission Index - (Takeoff)	NOx Raw Emission Index - (Climbout)	NOx Raw Emission Index - (Approach)	NOx Raw Emission Index - (Idle)	PM Emission Index - (Takeoff) [2]	PM Emission Index - (Climbout) [2]	PM Emission Index - (Approach) [2]	PM Emission Index - (Idle) [2]	Engine Entry Into Service Year
1	CPAHDA	1	FALSE	J	8.54058	332.96238	2.71629	2.19766	0.70087	0.24291	0.39499	0.38603	1.61368	17.54045	0.01182	0.00796	0.01815	0.97913	34.93978	25.15788	10.99656	4.39993	0.06270	0.06148	0.05725	0.05853	2010
2	OTHERS	2	FALSE	J	8.58179	268.81509	2.25412	1.82887	0.59280	0.20350	0.39006	0.49503	2.60932	22.17094	0.02604	0.02278	0.08741	1.39455	30.38582	22.31319	10.16324	4.17920	0.07052	0.06816	0.06053	0.06184	2009
3	CLASSAB	3	FALSE	J	8.92425	80.22625	0.76510	0.63223	0.21484	0.08333	0.45378	0.50310	4.64325	27.36525	0.01850	0.01818	0.05230	2.59375	15.01150	12.42375	6.94850	3.20375	0.08911	0.08621	0.05228	0.06237	2013

Notes:

[1] According to the SAGE (System for assessing Aviation's Global Emissions) Technical Manual by the FAA Office of Environment and Energy, there are issues associated with the use of BFFM2 and the ICAO Emissions Databank.
At Issue 6 in Table 7, it is stated that "In the ICAO databank, some EI values are zeros which cannot be modeled on log plots", and the employed solution documentated within ICAO CAEP WG3 is "The zero values were replaced by reasonably low values of 1Ê"
Engines with the associated problems are corrected with the suggested solution.

Engine List (calculated from weighted average) under Two Runway Scenario

UID	ENGINE	UID	Out of Service (if)	Engine Type (J- Jet; T- Turboprop; P-Piston)	Bypass Ratio	Rated Engine Output (kN)	Unadjusted Fuel Flow - Takeoff	Unadjusted Fuel Flow - Climbout	Unadjusted Fuel Flow - Approach	Unadjusted Fuel Flow - Idle	CO Raw Emission Index - (Takeoff)	CO Raw Emission Index - (Climbout)	CO Raw Emission Index - (Approach)	CO Raw Emission Index - (Idle)	HC Raw Emission Index - (Takeoff) [1]	HC Raw Emission Index - (Climbout) [1]	HC Raw Emission Index - (Approach) [1]	HC Raw Emission Index - (Idle) [1]	NOx Raw Emission Index - (Takeoff)	NOx Raw Emission Index - (Climbout)	NOx Raw Emission Index - (Approach)	NOx Raw Emission Index - (Idle)	PM Emission Index - (Takeoff) [2]	PM Emission Index - (Climbout) [2]	PM Emission Index - (Approach) [2]	PM Emission Index - (Idle) [2]	Engine Entry Into Service Year
1	CPAHDA	1	FALSE	J	8.54998	349.22815	2.79898	2.26258	0.71901	0.24740	0.39855	0.38763	1.46410	16.56605	0.01475	0.01121	0.02413	0.95050	36.48964	26.30046	11.46754	4.45794	0.06216	0.06050	0.05812	0.05822	2011
2	OTHERS	2	FALSE	J	8.93661	281.10783	2.28951	1.86049	0.59894	0.20790	0.37866	0.47550	2.45519	21.59967	0.02326	0.01956	0.06442	1.26579	30.96049	22.55024	10.29843	4.20910	0.06885	0.06613	0.05951	0.06129	2011
3	CLASSAB	3	FALSE	J	9.78421	78.25632	0.73400	0.60637	0.20747	0.08179	0.33200	0.40589	4.73789	27.00211	0.01263	0.01263	0.03474	2.69895	13.48632	11.20842	6.50000	2.92842	0.06236	0.06328	0.05098	0.06106	2016

Notes:

[1] According to the SAGE (System for assessing Aviation's Global Emissions) Technical Manual by the FAA Office of Environment and Energy, there are issues associated with the use of BFFM2 and the ICAO Emissions Databank.
At Issue 6 in Table 7, it is stated that "In the ICAO databank, some EI values are zeros which cannot be modeled on log plots", and the employed solution documentated within ICAO CAEP WG3 is "The zero values were replaced by reasonably low values of 1Ê"
Engines with the associated problems are corrected with the suggested solution.