

**Guangdong-Hong Kong-Macao
Pearl River Delta
Regional Air Quality Monitoring Network**

October to December 2020

**Statistical Summary of the Fourth quarter
Monitoring Results**

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1. Foreword

Since the Pearl River Delta (PRD) Regional Air Quality Monitoring Network came into operation on 30 November 2005, the PRD Regional Air Quality Index (RAQI) was reported to the public on a daily basis. Starting from 2006, half-yearly and annual air quality monitoring reports were also published every year. The network was subsequently enhanced and expanded in September 2014 and renamed to “Guangdong-Hong Kong-Macao Pearl River Delta Regional Air Quality Monitoring Network” (the “Network”).

To cope with the enhancement of the network, the update of the national ambient air quality standards as well as the need for improving the reporting frequency of monitoring results, starting from 2014, the real-time hourly monitoring data was reported on a new internet platform to replace the daily RAQI, the half-yearly report was also replaced by a quarterly report while the annual air quality monitoring report was maintained. The quarterly report is a brief statistical summary of the regional air quality monitoring results in a quarter. The annual report, in addition to the reporting of the monitoring data, provides a more detailed analysis and comparison of the air quality in the year. From the fourth quarter of 2014, the statistical results of carbon monoxide (CO) and fine suspended particulates (PM_{2.5} or FSP) were added to the report in addition to those of respirable suspended particulates (PM₁₀ or RSP), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), and ozone (O₃).

This report is the statistical summary of the monitoring results of the PRD Regional Air Quality Monitoring Network in the fourth quarter of 2020. It is the twenty-eighth report published in the form of a quarterly report and the twenty-fifth report with the statistical summaries of the six pollutants (i.e. PM₁₀, PM_{2.5}, SO₂, NO₂, O₃ and CO).

2. Introduction to Guangdong-Hong Kong-Macao Pearl River Delta Regional Air Quality Monitoring Network

The PRD Regional Air Quality Monitoring Network was jointly established by the Guangdong Provincial Environmental Monitoring Centre (GDEMC) and the Environmental Protection Department of the Hong Kong Special Administrative Region (HKEPD) from 2003 to 2005, and commenced its operation to report the Regional Air Quality Index (RAQI) on 30 November 2005.

With the growing concerns of air pollution control and economic development of the region, the GDEMC and HKEPD had worked in collaboration with the environmental protection cum meteorological authorities of Macao to enhance the network by extending the coverage of monitoring area to Guangdong, Hong Kong and Macao in September 2014. The enhancements included the addition of monitoring stations from 16 to 23 to further improve the spatial distribution and the inclusion of two new monitoring parameters, i.e. carbon monoxide (CO) and fine suspended particulates (PM_{2.5}), to enrich the air quality monitoring information. At the same time, the network was renamed to “Guangdong-Hong Kong-Macao Pearl River Delta Regional Air Quality Monitoring Network” (the “Network”) while the “Quality Management Committee of Guangdong-Hong Kong-Macao Pearl River Delta Regional Air Quality Monitoring Network”, which was jointly established by the GDEMC, HKEPD, Environmental Protection Bureau of Macao SARG and the Meteorological and Geophysical Bureau of Macao SARG, was responsible for quality management of the Network and dissemination of information.

The Network comprises 23 automatic air quality monitoring stations (see Figure 2.1) across the PRD region. Ten city stations are operated either by the Environmental Monitoring Centres of the individual cities in Guangdong or the operation-cum-maintenance agencies commissioned by the State. Eight regional stations are operated by the GDEMC, the four stations located in Hong Kong are managed by the HKEPD and the remaining one in Macao is operated by Meteorological and Geophysical Bureau of Macao SARG.

All stations are installed with monitoring equipment to measure the ambient concentrations of PM₁₀, PM_{2.5}, SO₂, NO₂, O₃ and CO.

Annexes A and B show the site information of the monitoring stations in the Network and the methods used for measuring air pollutant concentrations respectively.



Figure 2.1 : Spatial Distribution of Monitoring Stations in the Network

Remark: For the boundary of the administrative division of the Macao Special Administrative Region, according to the Decree n.º665 of the State Council of the People’s Republic of China, “the map of the administrative division of the Macao Special Administrative Region” was approved at the 116th Executive Meeting of the State Council on 16 December 2015.

3. Operation of the Network

The operations of Modiesha monitoring station were suspended temporarily. The overall operation of the Network was smooth in the fourth quarter of 2020. The average data capture rate of hourly air pollutant monitoring data measured at all monitoring stations was 97.6% in the fourth quarter (Modiesha monitoring station were excluded).

4. Statistical Results of Pollutant Concentrations

Tables 4.1a to 4.6b list the detailed statistical results of the six air pollutants (SO₂, NO₂, O₃, CO, PM₁₀ and PM_{2.5}) from October to December 2020. Per the amended *GB 3095-2012: Ambient Air Quality Standards*, starting from 2019, the concentrations of gaseous pollutants are calculated at a reference temperature of 298.15K and a pressure of 101.325 kPa, while the concentrations of PM₁₀ and PM_{2.5} are measured at real-time temperature and atmospheric pressure during monitoring.

Table 4.1a : The monthly maxima and minima of hourly averages of SO₂

Monitoring Station	October 2020		November 2020		December 2020	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	5	18	5	17	5	17
Modiesha (Guangzhou)	-	-	-	-	-	-
Nansha-HKUST (Guangzhou)	5	23	5	28	6	32
Tianhu (Guangzhou)	3	17	3	17	3	25
Zhudong (Guangzhou)	5	31	5	26	5	31
Tongxinling (Shenzhen)	4	8	4	11	3	8
Jinjuzui (Foshan)	2	17	2	20	2	17
Huijingcheng (Foshan)	7	22	8	25	5	34
Tangjia (Zhuhai)	1	15	1	18	1	17
Donghu (Jiangmen)	5	26	5	29	3	23
Duanfen (Jiangmen)	1	22	1	19	4	22
Huaguoshan (Jiangmen)	2	63	2	58	3	47
Chengzhong (Zhaoqing)	1	58	1	52	2	28
Xiapu (Huizhou)	5	26	5	30	6	33
Xijiao (Huizhou)	1	19	1	13	1	15
Jinguowan (Huizhou)	2	11	3	14	4	16
Zimaling (Zhongshan)	3	16	2	22	1	17
Nanchengyuanling (Dongguan)	3	18	5	21	4	22
Tap Mun (Hong Kong)	2	9	2	13	3	12
Tsuen Wan (Hong Kong)	4	11	5	14	3	16
Yuen Long (Hong Kong)	3	11	3	13	4	14
Tung Chung (Hong Kong)	1	10	1	14	1	22
Taipa Grande (Macao)	0	6	0	9	2	16

Remark : All concentration units are in micrograms per cubic metre (µg/m³).

“ - ” The operations of the Modiesha monitoring station were suspended owing to the relocation of the stations, hence no data is available.

Table 4.1b : The monthly maxima and minima of daily averages of SO₂

Monitoring Station	October 2020		November 2020		December 2020	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	5	11	6	13	6	12
Modiesha (Guangzhou)	-	-	-	-	-	-
Nansha-HKUST (Guangzhou)	6	12	7	15	7	18
Tianhu (Guangzhou)	4	15	4	11	3	13
Zhudong (Guangzhou)	7	17	7	17	6	16
Tongxinling (Shenzhen)	4	8	5	9	4	7
Jinjuzui (Foshan)	2	13	4	9	3	10
Huijingcheng (Foshan)	9	15	10	18	8	22
Tangjia (Zhuhai)	3	11	2	12	2	11
Donghu (Jiangmen)	6	16	7	15	4	14
Duanfen (Jiangmen)	2	10	3	12	6	16
Huaguoshan (Jiangmen)	5	16	6	18	4	19
Chengzhong (Zhaoqing)	2	14	2	28	3	19
Xiapu (Huizhou)	7	17	6	16	8	15
Xijiao (Huizhou)	1	6	1	7	2	8
Jinguowan (Huizhou)	2	8	4	11	4	9
Zimaling (Zhongshan)	4	12	3	16	2	11
Nanchengyuanling (Dongguan)	4	13	6	13	6	15
Tap Mun (Hong Kong)	3	8	3	9	5	10
Tsuen Wan (Hong Kong)	5	9	5	11	4	10
Yuen Long (Hong Kong)	3	8	5	10	5	10
Tung Chung (Hong Kong)	2	5	2	8	2	8
Taipa Grande (Macao)	1	4	1	6	2	8

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

“ - ” The operations of the Modiesha monitoring station were suspended owing to the relocation of the stations, hence no data is available.

Table 4.1c : The monthly averages of SO₂

Monitoring Station	October 2020	November 2020	December 2020
Luhu (Guangzhou)	9	9	9
Modiesha (Guangzhou)	-	-	-
Nansha-HKUST (Guangzhou)	9	10	12
Tianhu (Guangzhou)	7	7	8
Zhudong (Guangzhou)	11	11	11
Tongxinling (Shenzhen)	5	6	5
Jinjuzui (Foshan)	5	6	6
Huijingcheng (Foshan)	12	13	16
Tangjia (Zhuhai)	7	7	7
Donghu (Jiangmen)	9	10	9
Duanfen (Jiangmen)	6	8	11
Huaguoshan (Jiangmen)	10	11	10
Chengzhong (Zhaoqing)	7	11	7
Xiapu (Huizhou)	12	11	11
Xijiao (Huizhou)	4	3	4
Jinguowan (Huizhou)	4	6	6
Zimaling (Zhongshan)	8	8	6
Nanchengyuanling (Dongguan)	8	9	10
Tap Mun (Hong Kong)	5	5	7
Tsuen Wan (Hong Kong)	6	7	7
Yuen Long (Hong Kong)	5	7	8
Tung Chung (Hong Kong)	3	4	4
Taipa Grande (Macao)	2	3	5

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

“ - ” The operations of the Modiesha monitoring station were suspended owing to the relocation of the stations, hence no data is available.

Table 4.2a : The monthly maxima and minima of hourly averages of NO₂

Monitoring Station	October 2020		November 2020		December 2020	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	10	104	13	166	13	196
Modiesha (Guangzhou)	-	-	-	-	-	-
Nansha-HKUST (Guangzhou)	7	107	11	117	10	207
Tianhu (Guangzhou)	4	17	7	74	5	39
Zhudong (Guangzhou)	7	77	10	85	11	97
Tongxinling (Shenzhen)	4	60	4	144	8	124
Jinjuzui (Foshan)	5	143	11	137	12	174
Huijingcheng (Foshan)	6	139	9	183	6	235
Tangjia (Zhuhai)	3	88	6	141	6	126
Donghu (Jiangmen)	8	90	9	136	12	177
Duanfen (Jiangmen)	2	49	1	57	2	52
Huaguoshan (Jiangmen)	7	100	8	140	18	111
Chengzhong (Zhaoqing)	10	109	11	128	14	150
Xiapu (Huizhou)	5	74	10	107	9	146
Xijiao (Huizhou)	2	17	4	23	4	26
Jinguowan (Huizhou)	6	29	7	39	7	87
Zimaling (Zhongshan)	4	93	6	135	10	139
Nanchengyuanling (Dongguan)	8	114	11	118	11	122
Tap Mun (Hong Kong)	1	23	3	41	6	52
Tsuen Wan (Hong Kong)	5	105	8	143	10	180
Yuen Long (Hong Kong)	6	77	8	167	6	166
Tung Chung (Hong Kong)	2	83	1	111	4	119
Taipa Grande (Macao)	5	52	5	81	8	133

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

“ - ” The operations of the Modiesha monitoring station were suspended owing to the relocation of the stations, hence no data is available.

Table 4.2b : The monthly maxima and minima of daily averages of NO₂

Monitoring Station	October 2020		November 2020		December 2020	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	20	60	23	65	22	92
Modiesha (Guangzhou)	-	-	-	-	-	-
Nansha-HKUST (Guangzhou)	16	54	16	60	17	104
Tianhu (Guangzhou)	5	11	8	34	7	25
Zhudong (Guangzhou)	14	33	20	56	19	48
Tongxinling (Shenzhen)	7	27	8	45	12	56
Jinjuzui (Foshan)	12	61	23	75	20	85
Huijingcheng (Foshan)	12	64	15	83	17	103
Tangjia (Zhuhai)	11	32	19	61	18	81
Donghu (Jiangmen)	14	49	22	67	24	83
Duanfen (Jiangmen)	7	25	4	32	7	30
Huaguoshan (Jiangmen)	14	59	26	67	29	73
Chengzhong (Zhaoqing)	14	59	15	67	18	91
Xiapu (Huizhou)	10	27	15	39	14	65
Xijiao (Huizhou)	4	9	6	11	8	16
Jinguowan (Huizhou)	10	18	11	24	10	32
Zimaling (Zhongshan)	8	46	18	59	23	85
Nanchengyuanling (Dongguan)	12	42	16	48	16	79
Tap Mun (Hong Kong)	3	13	7	24	9	28
Tsuen Wan (Hong Kong)	10	44	31	65	31	83
Yuen Long (Hong Kong)	13	39	27	77	27	83
Tung Chung (Hong Kong)	8	42	14	59	18	82
Taipa Grande (Macao)	10	33	17	47	19	75

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

“ - ” The operations of the Modiesha monitoring station were suspended owing to the relocation of the stations, hence no data is available.

Table 4.2c : The monthly averages of NO₂

Monitoring Station	October 2020	November 2020	December 2020
Luhu (Guangzhou)	30	42	46
Modiesha (Guangzhou)	-	-	-
Nansha-HKUST (Guangzhou)	26	36	47
Tianhu (Guangzhou)	8	13	14
Zhudong (Guangzhou)	22	30	30
Tongxinling (Shenzhen)	17	22	31
Jinjuzui (Foshan)	30	42	47
Huijingcheng (Foshan)	28	43	47
Tangjia (Zhuhai)	20	33	45
Donghu (Jiangmen)	30	39	45
Duanfen (Jiangmen)	17	16	19
Huaguoshan (Jiangmen)	35	45	44
Chengzhong (Zhaoqing)	26	37	38
Xiapu (Huizhou)	15	22	27
Xijiao (Huizhou)	6	9	11
Jinguowan (Huizhou)	14	15	19
Zimaling (Zhongshan)	27	37	50
Nanchengyuanling (Dongguan)	21	32	35
Tap Mun (Hong Kong)	8	12	16
Tsuen Wan (Hong Kong)	31	42	46
Yuen Long (Hong Kong)	28	40	45
Tung Chung (Hong Kong)	28	33	44
Taipa Grande (Macao)	22	32	45

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

“ - ” The operations of the Modiesha monitoring station were suspended owing to the relocation of the stations, hence no data is available.

Table 4.3a : The monthly maxima and minima of hourly averages of O₃

Monitoring Station	October 2020		November 2020		December 2020	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	3	239	2	200	2	241
Modiesha (Guangzhou)	-	-	-	-	-	-
Nansha-HKUST (Guangzhou)	7	263	2	316	2	272
Tianhu (Guangzhou)	30	189	4	179	7	169
Zhudong (Guangzhou)	3	234	2	223	3	280
Tongxinling (Shenzhen)	18	217	2	222	1	233
Jinjuzui (Foshan)	2	252	2	283	1	235
Huijingcheng (Foshan)	6	243	5	238	4	194
Tangjia (Zhuhai)	7	250	1	323	1	294
Donghu (Jiangmen)	1	305	1	278	1	284
Duanfen (Jiangmen)	8	256	2	251	4	162
Huaguoshan (Jiangmen)	3	213	3	228	3	191
Chengzhong (Zhaoqing)	6	181	5	182	2	243
Xiapu (Huizhou)	16	168	3	183	4	250
Xijiao (Huizhou)	3	157	2	192	4	171
Jinguowan (Huizhou)	12	179	1	182	3	285
Zimaling (Zhongshan)	4	304	2	274	2	300
Nanchengyuanling (Dongguan)	4	245	1	202	1	231
Tap Mun (Hong Kong)	29	185	17	219	3	180
Tsuen Wan (Hong Kong)	6	174	1	236	0	135
Yuen Long (Hong Kong)	8	221	1	309	1	280
Tung Chung (Hong Kong)	5	236	0	299	2	210
Taipa Grande (Macao)	16	242	2	282	1	214

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

“ - ” The operations of the Modiesha monitoring station were suspended owing to the relocation of the stations, hence no data is available.

Table 4.3b : Daily maximum 8-hour averages of O₃ (the monthly maxima, minima and the 90th percentile)

Monitoring Station	October 2020			November 2020			December 2020		
	Min	Max	90 th per	Min	Max	90 th per	Min	Max	90 th per
Luhu (Guangzhou)	54	191	159	35	162	159	20	164	105
Modiesha (Guangzhou)	-	-	-	-	-	-	-	-	-
Nansha-HKUST (Guangzhou)	82	221	202	36	267	213	16	213	125
Tianhu (Guangzhou)	60	163	144	57	161	151	32	149	120
Zhudong (Guangzhou)	51	197	158	26	163	148	23	183	107
Tongxinling (Shenzhen)	67	181	157	45	177	151	12	180	104
Jinjuzui (Foshan)	73	206	196	23	216	166	14	186	96
Huijingcheng (Foshan)	54	200	183	28	195	167	17	151	98
Tangjia (Zhuhai)	73	226	188	45	257	202	11	229	119
Donghu (Jiangmen)	61	261	217	23	237	207	17	227	126
Duanfen (Jiangmen)	78	218	209	23	207	193	22	137	126
Huaguoshan (Jiangmen)	42	188	162	19	187	152	11	142	78
Chengzhong (Zhaoqing)	53	164	146	31	154	142	22	196	94
Xiapu (Huizhou)	67	162	144	45	157	147	23	185	107
Xijiao (Huizhou)	57	142	125	50	145	139	25	141	121
Jinguowan (Huizhou)	60	165	139	38	153	145	17	234	112
Zimaling (Zhongshan)	56	240	215	61	207	191	13	222	108
Nanchengyuanling (Dongguan)	65	219	152	45	180	153	22	184	145
Tap Mun (Hong Kong)	71	174	154	71	181	165	22	147	128
Tsuen Wan (Hong Kong)	52	134	109	20	184	121	9	90	76
Yuen Long (Hong Kong)	45	168	133	17	208	143	10	180	98
Tung Chung (Hong Kong)	45	173	138	19	229	150	8	142	87
Taipa Grande (Macao)	63	205	158	42	224	173	11	180	109

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

“ - ” The operations of the Modiesha monitoring station were suspended owing to the relocation of the stations, hence no data is available.

Table 4.3c : The monthly averages of O₃

Monitoring Station	October 2020	November 2020	December 2020
Luhu (Guangzhou)	71	64	42
Modiesha (Guangzhou)	-	-	-
Nansha-HKUST (Guangzhou)	88	81	50
Tianhu (Guangzhou)	93	94	73
Zhudong (Guangzhou)	72	63	48
Tongxinling (Shenzhen)	87	77	50
Jinjuzui (Foshan)	78	66	41
Huijingcheng (Foshan)	80	71	43
Tangjia (Zhuhai)	91	81	50
Donghu (Jiangmen)	80	75	49
Duanfen (Jiangmen)	86	80	58
Huaguoshan (Jiangmen)	62	58	34
Chengzhong (Zhaoqing)	69	64	48
Xiapu (Huizhou)	81	75	55
Xijiao (Huizhou)	65	61	57
Jinguowan (Huizhou)	73	71	57
Zimaling (Zhongshan)	79	72	42
Nanchengyuanling (Dongguan)	75	73	54
Tap Mun (Hong Kong)	97	94	68
Tsuen Wan (Hong Kong)	70	63	41
Yuen Long (Hong Kong)	70	65	42
Tung Chung (Hong Kong)	80	70	39
Taipa Grande (Macao)	88	82	50

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

“ - ” The operations of the Modiesha monitoring station were suspended owing to the relocation of the stations, hence no data is available.

Table 4.4a : The monthly maxima and minima of hourly averages of CO

Monitoring Station	October 2020		November 2020		December 2020	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	0.5	1.2	0.5	1.5	0.3	1.6
Modiesha (Guangzhou)	-	-	-	-	-	-
Nansha-HKUST (Guangzhou)	0.6	1.4	0.3	1.2	0.7	1.8
Tianhu (Guangzhou)	0.3	1.0	0.4	1.0	0.2	1.3
Zhudong (Guangzhou)	0.5	1.1	0.5	1.3	0.4	1.4
Tongxinling (Shenzhen)	0.4	0.9	0.4	1.5	0.3	1.5
Jinjuzui (Foshan)	0.5	1.5	0.4	1.4	0.4	2.0
Huijingcheng (Foshan)	0.3	1.2	0.3	2.1	0.2	2.6
Tangjia (Zhuhai)	0.1	1.3	0.2	1.1	0.2	1.5
Donghu (Jiangmen)	0.4	2.5	0.4	2.8	0.3	3.4
Duanfen (Jiangmen)	0.2	0.9	0.4	1.2	0.4	1.5
Huaguoshan (Jiangmen)	0.4	1.5	0.4	1.4	0.6	1.6
Chengzhong (Zhaoqing)	0.3	1.2	0.3	1.6	0.3	1.6
Xiapu (Huizhou)	0.3	0.9	0.4	1.2	0.4	2.1
Xijiao (Huizhou)	0.0	0.9	0.2	1.1	0.3	1.4
Jinguowan (Huizhou)	0.4	1.2	0.4	1.0	0.5	1.6
Zimaling (Zhongshan)	0.3	1.0	0.2	1.2	0.1	1.3
Nanchengyuanling (Dongguan)	0.4	1.4	0.2	1.2	0.3	1.4
Tap Mun (Hong Kong)	0.1	0.8	0.1	1.0	0.4	1.5
Tsuen Wan (Hong Kong)	0.4	1.0	0.1	1.1	0.3	1.4
Yuen Long (Hong Kong)	0.3	0.8	0.3	1.5	0.2	1.4
Tung Chung (Hong Kong)	0.2	0.7	0.2	0.9	0.4	1.5
Taipa Grande (Macao)	0.4	1.4	0.3	1.3	0.4	1.5

Remark : All concentration units are in milligrams per cubic metre (mg/m³).

“ - ” The operations of the Modiesha monitoring station were suspended owing to the relocation of the stations, hence no data is available.

Table 4.4b : Daily averages of CO (the monthly maxima, minima and the 95th percentile)

Monitoring Station	October 2020			November 2020			December 2020		
	Min	Max	95 th per	Min	Max	95 th per	Min	Max	95 th per
Luhu (Guangzhou)	0.6	1.0	1.0	0.5	1.0	1.0	0.4	1.2	1.1
Modiesha (Guangzhou)	-	-	-	-	-	-	-	-	-
Nansha-HKUST (Guangzhou)	0.6	1.0	1.0	0.3	1.0	0.9	0.7	1.3	1.2
Tianhu (Guangzhou)	0.5	0.9	0.9	0.5	0.9	0.8	0.4	0.9	0.9
Zhudong (Guangzhou)	0.5	1.0	0.9	0.6	1.0	1.0	0.5	1.3	1.2
Tongxinling (Shenzhen)	0.5	0.8	0.7	0.4	0.9	0.8	0.4	1.0	0.9
Jinjuzui (Foshan)	0.6	1.0	1.0	0.5	1.0	1.0	0.5	1.2	1.2
Huijingcheng (Foshan)	0.4	0.8	0.8	0.5	1.1	1.0	0.3	1.1	1.0
Tangjia (Zhuhai)	0.3	1.0	1.0	0.3	0.9	0.8	0.3	1.1	1.0
Donghu (Jiangmen)	0.5	1.0	1.0	0.6	1.2	1.0	0.4	1.4	1.2
Duanfen (Jiangmen)	0.3	0.8	0.7	0.5	1.1	1.0	0.5	1.3	1.2
Huaguoshan (Jiangmen)	0.5	1.1	1.1	0.7	1.2	1.2	0.7	1.2	1.2
Chengzhong (Zhaoqing)	0.4	0.9	0.8	0.5	1.0	0.9	0.4	1.1	1.0
Xiapu (Huizhou)	0.4	0.8	0.7	0.5	0.8	0.8	0.4	1.0	0.9
Xijiao (Huizhou)	0.2	0.8	0.8	0.4	1.0	0.9	0.5	1.1	0.9
Jinguowan (Huizhou)	0.4	1.1	0.9	0.5	1.0	0.9	0.5	1.0	1.0
Zimaling (Zhongshan)	0.4	0.8	0.8	0.3	1.0	0.8	0.2	0.9	0.9
Nanchengyuanling (Dongguan)	0.5	0.8	0.8	0.4	1.0	0.9	0.5	1.0	1.0
Tap Mun (Hong Kong)	0.2	0.7	0.6	0.2	0.9	0.8	0.5	1.0	0.9
Tsuen Wan (Hong Kong)	0.5	0.9	0.8	0.2	0.9	0.9	0.6	1.2	1.1
Yuen Long (Hong Kong)	0.4	0.7	0.7	0.4	0.8	0.8	0.4	0.8	0.8
Tung Chung (Hong Kong)	0.2	0.6	0.5	0.2	0.7	0.7	0.5	1.0	0.9
Taipa Grande (Macao)	0.4	1.0	0.9	0.5	1.0	1.0	0.4	1.1	1.1

Remark : All concentration units are in milligrams per cubic metre (mg/m³).

“ - ” The operations of the Modiesha monitoring station were suspended owing to the relocation of the stations, hence no data is available.

Table 4.4c : The monthly averages of CO

Monitoring Station	October 2020	November 2020	December 2020
Luhu (Guangzhou)	0.8	0.8	0.9
Modiesha (Guangzhou)	-	-	-
Nansha-HKUST (Guangzhou)	0.8	0.7	0.9
Tianhu (Guangzhou)	0.6	0.7	0.7
Zhudong (Guangzhou)	0.7	0.8	0.8
Tongxinling (Shenzhen)	0.6	0.6	0.7
Jinjuzui (Foshan)	0.8	0.8	0.9
Huijingcheng (Foshan)	0.6	0.7	0.7
Tangjia (Zhuhai)	0.5	0.6	0.7
Donghu (Jiangmen)	0.8	0.9	1.0
Duanfen (Jiangmen)	0.5	0.8	1.0
Huaguoshan (Jiangmen)	0.9	0.9	1.0
Chengzhong (Zhaoqing)	0.6	0.7	0.7
Xiapu (Huizhou)	0.5	0.6	0.7
Xijiao (Huizhou)	0.5	0.7	0.7
Jinguowan (Huizhou)	0.6	0.7	0.8
Zimaling (Zhongshan)	0.6	0.6	0.7
Nanchengyuanling (Dongguan)	0.6	0.7	0.8
Tap Mun (Hong Kong)	0.5	0.5	0.7
Tsuen Wan (Hong Kong)	0.7	0.5	0.8
Yuen Long (Hong Kong)	0.5	0.6	0.6
Tung Chung (Hong Kong)	0.4	0.5	0.7
Taipa Grande (Macao)	0.7	0.7	0.8

Remark : All concentration units are in milligrams per cubic metre (mg/m³).

“ - ” The operations of the Modiesha monitoring station were suspended owing to the relocation of the stations, hence no data is available.

Table 4.5a : The monthly maxima and minima of daily averages of PM₁₀

Monitoring Station	October 2020		November 2020		December 2020	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	20	80	29	82	17	115
Modiesha (Guangzhou)	-	-	-	-	-	-
Nansha-HKUST (Guangzhou)	23	84	23	80	21	97
Tianhu (Guangzhou)	12	68	17	71	7	64
Zhudong (Guangzhou)	23	85	32	92	26	105
Tongxinling (Shenzhen)	20	73	21	88	31	108
Jinjuzui (Foshan)	23	84	25	84	22	120
Huijingcheng (Foshan)	26	97	28	104	21	170
Tangjia (Zhuhai)	14	69	17	83	28	107
Donghu (Jiangmen)	31	98	34	92	28	137
Duanfen (Jiangmen)	24	90	21	102	27	97
Huaguoshan (Jiangmen)	30	116	36	106	27	136
Chengzhong (Zhaoqing)	13	81	21	89	12	140
Xiapu (Huizhou)	25	81	28	80	17	102
Xijiao (Huizhou)	18	59	20	65	9	65
Jinguowan (Huizhou)	20	66	15	77	18	68
Zimaling (Zhongshan)	21	85	19	89	24	114
Nanchengyuanling (Dongguan)	22	83	25	81	15	113
Tap Mun (Hong Kong)	24	64	13	76	18	62
Tsuen Wan (Hong Kong)	15	54	16	64	17	61
Yuen Long (Hong Kong)	15	80	15	97	27	78
Tung Chung (Hong Kong)	14	53	18	70	27	81
Taipa Grande (Macao)	19	77	17	88	32	89

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

“ - ” The operations of the Modiesha monitoring station were suspended owing to the relocation of the stations, hence no data is available.

Table 4.5b : The monthly averages of PM₁₀

Monitoring Station	October 2020	November 2020	December 2020
Luhu (Guangzhou)	44	55	58
Modiesha (Guangzhou)	-	-	-
Nansha-HKUST (Guangzhou)	47	55	59
Tianhu (Guangzhou)	36	42	37
Zhudong (Guangzhou)	51	62	59
Tongxinling (Shenzhen)	46	54	65
Jinjuzui (Foshan)	48	58	68
Huijingcheng (Foshan)	53	64	66
Tangjia (Zhuhai)	42	51	66
Donghu (Jiangmen)	57	65	69
Duanfen (Jiangmen)	52	58	58
Huaguoshan (Jiangmen)	63	70	71
Chengzhong (Zhaoqing)	43	54	51
Xiapu (Huizhou)	47	53	56
Xijiao (Huizhou)	36	39	38
Jinguowan (Huizhou)	40	45	49
Zimaling (Zhongshan)	49	57	63
Nanchengyuanling (Dongguan)	43	54	53
Tap Mun (Hong Kong)	37	41	41
Tsuen Wan (Hong Kong)	34	36	40
Yuen Long (Hong Kong)	41	51	52
Tung Chung (Hong Kong)	36	41	50
Taipa Grande (Macao)	45	52	60

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

“ - ” The operations of the Modiesha monitoring station were suspended owing to the relocation of the stations, hence no data is available.

Table 4.6a : The monthly maxima and minima of daily averages of PM_{2.5}

Monitoring Station	October 2020		November 2020		December 2020	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	10	46	14	46	9	62
Modiesha (Guangzhou)	-	-	-	-	-	-
Nansha-HKUST (Guangzhou)	5	48	14	55	13	57
Tianhu (Guangzhou)	7	32	9	35	5	45
Zhudong (Guangzhou)	15	50	18	54	17	66
Tongxinling (Shenzhen)	10	44	13	46	12	61
Jinjuzui (Foshan)	14	43	13	44	13	58
Huijingcheng (Foshan)	14	55	17	68	11	94
Tangjia (Zhuhai)	6	43	12	51	13	70
Donghu (Jiangmen)	12	54	15	52	5	66
Duanfen (Jiangmen)	13	50	15	55	20	72
Huaguoshan (Jiangmen)	14	73	18	69	13	90
Chengzhong (Zhaoqing)	8	43	9	55	6	73
Xiapu (Huizhou)	11	45	15	42	10	56
Xijiao (Huizhou)	10	35	15	44	5	43
Jinguowan (Huizhou)	14	39	12	44	9	47
Zimaling (Zhongshan)	10	48	9	47	10	64
Nanchengyuanling (Dongguan)	4	43	11	45	5	60
Tap Mun (Hong Kong)	12	32	8	37	10	42
Tsuen Wan (Hong Kong)	11	31	9	38	10	45
Yuen Long (Hong Kong)	10	39	7	36	8	44
Tung Chung (Hong Kong)	8	28	8	37	14	47
Taipa Grande (Macao)	9	36	8	41	7	49

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

“ - ” The operations of the Modiesha monitoring station were suspended owing to the relocation of the stations, hence no data is available.

Table 4.6b : The monthly averages of PM_{2.5}

Monitoring Station	October 2020	November 2020	December 2020
Luhu (Guangzhou)	27	31	33
Modiesha (Guangzhou)	-	-	-
Nansha-HKUST (Guangzhou)	27	31	35
Tianhu (Guangzhou)	19	23	28
Zhudong (Guangzhou)	32	34	38
Tongxinling (Shenzhen)	26	29	37
Jinjuzui (Foshan)	25	30	36
Huijingcheng (Foshan)	31	36	39
Tangjia (Zhuhai)	25	31	43
Donghu (Jiangmen)	29	33	38
Duanfen (Jiangmen)	29	35	39
Huaguoshan (Jiangmen)	37	42	45
Chengzhong (Zhaoqing)	24	31	33
Xiapu (Huizhou)	25	28	35
Xijiao (Huizhou)	24	27	27
Jinguowan (Huizhou)	24	24	31
Zimaling (Zhongshan)	26	28	34
Nanchengyuanling (Dongguan)	24	27	31
Tap Mun (Hong Kong)	19	21	26
Tsuen Wan (Hong Kong)	20	22	27
Yuen Long (Hong Kong)	20	21	26
Tung Chung (Hong Kong)	18	21	28
Taipa Grande (Macao)	20	23	29

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

“ - ” The operations of the Modiesha monitoring station were suspended owing to the relocation of the stations, hence no data is available.

Annex A: Site Information of Monitoring Stations

Monitoring Stations	Address	Area Type	Sampling Height (Above P.D.)	Above Ground	Date Commenced Operation
Luhu (Guangzhou)	Jufong Garden of Luhu Park (Big yard, No. 11 Luhu Park)	City	30m	9m	1993
Modiesha (Guangzhou)	Modiesha Street, Haizhu District	City	95m	45m	Dec 2011
Nansha-HKUST ⁽¹⁾ (Guangzhou)	HKUST Fok Ying Tung Research Institute, Nansha	Mixed educational/commercial and residential/industrial	54m	28m	Oct 2004
Tianhu (Guangzhou)	Tianhu Park, Conghua	Background : rural	251m	13m	Oct 2004
Zhudong (Guangzhou)	Zhudong Village Committee, Chini Town, Huadu District	Rural	19m	10m	Dec 2011
Tongxinling ⁽²⁾ (Shenzhen)	Shennan Zhong Road, Futian District	City	38m	12m	Sep 1997
Jinjuzui (Foshan)	Foshan City Communist Party School, Jinjuzui, Shunde District	Tourist and cultural /educational	27m	17m	Oct 1999
Huijingcheng (Foshan)	No. 127, Fenjiang Nan Road, Chancheng District	Urban: mixed residential/commercial/industrial	24m	14m	Feb 2000
Tangjia (Zhuhai)	Qiao Island Mangrove Monitoring Station, Tangjia Town	Mixed educational/commercial and residential/industrial	13m	13m	Jan 2010
Donghu (Jiangmen)	Donghu Park, Jiangmen	City	17.5m	5m	Nov 2001
Duanfen (Jiangmen)	Duanfen Middle School, Taishan	Rural	15m	12m	Dec 2011
Huaguoshan (Jiangmen)	Huaguoshan, Taoyuan, Heshan	Rural	25m	15m	Feb 2012
Chengzhong (Zhaoqing)	No. 63, Zhengdong Road, Duanzhou District	Urban: mixed residential/commercial	38m	16m	Jun 2001
Xiapu (Huizhou)	No. 4 Xiabuhengjiang Road No. 3, Huicheng District	Urban: commercial	49m	20m	Dec 1999
Xijiao ⁽³⁾ (Huizhou)	Zhangbei Yaowei She Nationality Primary School, Henghe Town	Rural	44m	10m	Dec 2011
Jinguowan (Huizhou)	Jinguowan Ecological Farm, Huizhou	Residential	77m	8m	Oct 2004

Monitoring Stations	Address	Area Type	Sampling Height (Above P.D.)	Above Ground	Date Commenced Operation
Zimaling (Zhongshan)	Zimaling Park, Zhongshan	Mixed residential/commercial	45 m	7m	Aug 2002
Nanchengyuanling (Dongguan)	Nanchengyuanling Community, Dongguan	Mixed residential/commercial/industrial	33 m	18m	Sep 2010
Tap Mun (Hong Kong)	Tap Mun Police Station	Background: rural	26m	11m	Apr 1998
Tsuen Wan (Hong Kong)	60 Tai Ho Road, Tsuen Wan	Urban: mixed residential/commercial/industrial	21m	17m	Aug 1988
Yuen Long (Hong Kong)	Yuen Long District Office, 269 Castle Peak Road, Yuen Long	New Town: residential	31m	25m	Jul 1995
Tung Chung (Hong Kong)	6 Fu Tung Street, Tung Chung	New Town: residential	34.5m	27.5m	Apr 1999
Taipa Grande (Macao)	Rampa do Observatorio, Taipa Grande	Rural	120m	10m	Mar 1999

Remarks:

- (1) Wanqingsha station was renamed as Nansha-HKUST station in the 1st quarter of 2019.
- (2) Liyuan station was renamed as Tongxinling station in the 1st quarter of 2019.
- (3) Xijiao station was relocated from Xijiao Village Committee, Boluo County to Zhangbei Yaowei She Nationality Primary School, Henghe Town, Boluo County, in the 4th quarter of 2019. The distance between the old and new sites is about 200 metres.

Annex B : Measurement Methods of Air Pollutant Concentration

Pollutants	Measuring Principles
Sulphur dioxide (SO ₂)	UV fluorescence / Differential Optical Absorption Spectroscopy
Nitrogen dioxide (NO ₂)	Chemiluminescence / Differential Optical Absorption Spectroscopy
Ozone (O ₃)	UV absorption / Differential Optical Absorption Spectroscopy
Respirable suspended particulates (PM ₁₀)	Oscillating microbalance (TEOM) / Beta particulate monitor
Fine suspended particulates (PM _{2.5})	Oscillating microbalance (TEOM) / Beta particulate monitor / Hybrid nephelometric / radiometric particulate mass monitor
Carbon monoxide (CO)	Gas filter correlation infrared absorption method / Non-dispersive infrared absorption method