

**Practical Principle and  
Technical Standards for  
AM Planning**

**Deliverable No. 5**



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## Notice

This document is provided in good faith and is based on the Consultants' understanding of the NBTC's Radio Frequency Plan Project requirements. We would be pleased to discuss the contents of this document with you, particularly if NBTC's requirements have changed in any way.

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## 1. Summary

The Office of the National Broadcast and Telecommunications Commission, hereinafter in this report referred to as “NBTC”, has the mandate to implement and promote the Thai Government’s policy objectives for the broadcast and telecommunications sector in Thailand. In addition, the NBTC is mandated to establish and monitor the regulatory framework for the guidance of the telecommunications and broadcasting industry.

In the execution of its mandate to regulate the broadcasting sector in Thailand in line with the duties and responsibilities laid out in the Telecom Act BE2555 sections 27(1) and (5), the NBTC has embarked on a Radio Frequency Plan Project, hereinafter referred to as “RFPP”, with the main objective of developing a forward-looking radio frequency plan for AM, FM and digital radio services. This report includes related recommendations on policies and implementation strategies for the introduction and management of AM radio services in Thailand based on, among others, international best practises established through a comparative assessment and benchmark study of Thailand and the benchmark countries subject to this study.

The ‘PRACTICAL PRINCIPLE AND TECHNICAL STANDARDS FOR AM PLANNING, hereafter provided, consists of the AM Allotment Frequency plan and technical recommendations as requested by the NBTC.

## 2. Scope of the Document

As defined in the terms of reference document “**TOR-radio v10 27 08-55\_ENG\_edit.doc**” which provides the contractual basis of this study, the NBTC requested that the Consultant provide the following scope of work:

3.6 Develop a radio frequency plan for AM radio to be used for public, local, and commercial services (local, regional, and national levels) including conditions for use of radio frequency. The radio frequency plan has to cover the following topics (at least):

- 3.6.1 Plan the radio frequency channels
- 3.6.2 Determine the radio frequency channels for each service area in the specified portion for public, community, and commercial services (local, regional, and national levels) aiming for high efficiency, least impact to the existing licenses, and facilitating the transition to digital systems.
- 3.6.3 Determine relevant technical parameters
- 3.6.4 Conditions for use of radio frequency, including rule for use of radio frequency along border areas.

It is understood that the coordination of AM frequencies must be undertaken during ITU regional conferences and by responding to coordination request. Therefore, it was agreed that the Consultant will provide NBTC with the actual representation of existing stations' coverages (map representation and covered population count).

No evaluation of the available spectrum or the possibilities of parameter changes are provided with this report. All simulations are based on the document “**Final Acts** of the Regional Administrative LF/MF Broadcasting Conference (Regions 1 and 3) – Geneva, 1975”, hereinafter referred to as **GE75**.

### 3. Proposed Technical Parameters

#### 3.1 GE75 Simulation Parameters

As mentioned in the previous section, all AM simulations are based on the existing GE75 plan. The GE75 plan also include Emission Standards, protection ratios, minimum field strength values, and other relevant technical information.

As it is shown in Figure 23 of GE75, Thailand's location is defined as ITU Region 3, zone B. Therefore, the nominal usable field strength values (relative to 1  $\mu\text{V}/\text{m}$ ) are (paragraph 4.6 of GE75):

- Daytime ground-wave service: 73 dB
- Night ground-wave service (rural areas): 81 dB
- Night ground-wave service (urban areas): 87 dB

Additionally, the following protection ratios have been considered (as per GE75):

- Co-channel: 30 dB (for a stable wanted signal, statistical variability of 50%)
- Adjacent channel: 9 dB (for a limited degree of modulation compression)

Please note that the skywave coverage has not been evaluated by the Consultant in the course of this study since it is generally regarded as interference to other incumbent stations, rather than useful coverage for the LF/MF band.

All other relevant technical information and conditions for the use AM radio services in Thailand and in general are provided in GE75.

The information database used to complete this study was compiled from the information contained in the electronic files **AM\_database V17 170258\_ENG.xlsx** and **AM\_database Foreign Affair\_MOD v17.1 030358.xlsx**, both provided by the NBTC.

The resulting population coverage in terms of total population count is provided in Appendix A enclosed to this report and the coverage maps are provided in Appendix B as separate files.

#### 3.2 Spectrum for Community, Public and Commercial

As previously identified, the Public and Commercial radio operation is difficult to discriminate. Therefore for this study, unless a clear identification from the NBTC of the differences from Public and Commercial Stations has been identified, the Consultant has considered them in the same category. In order to provide a proposal for the different station's usage, the Consultant is proposing the following general rules:

- Stations operating at 5 kW or less than 5 kW of transmitter power (40 stations) should be reserved for Community operation (which corresponds to 20.72% of all stations in operation).
- Stations operating above 5 kW (10 kW and more), should be reserved for Public and Commercial operation (this corresponds to 153 stations, so 79.27%).

The proposed plan reflects the objectives of the TOR.

### 3.3 Technical Parameters for AM Transmission

The basic Emission Standard for the Amplitude Modulation Sound Broadcasting Service is based on ITU-R Recommendations BS.598 and BS.639.

In the following the key technical parameters for AM operation are listed:

- AM frequency allocation: 526.5 kHz to 1606.5 kHz
- Nominal Audio Bandwidth: 4.5 kHz
- RF Channel Bandwidth: 9 kHz
- Channel Spacing: 9 kHz with the lowest centre frequency being 531 kHz and highest channel frequency being 1602 kHz.
- Carrier frequency stability:  $\pm 10$  Hz
- Out-of-band emission: Any emission on a frequency removed from the carrier by more than 9 kHz, and up to and including 18 kHz, shall be attenuated at least 25 dB below the level of the carrier. Any emission on a frequency separated from the carrier by more than 18 kHz, and up to and including 27 kHz, shall be attenuated at least 35 dB below the level of the carrier. For frequencies separated from the carrier by more than 27 kHz, the level of any emission shall be further attenuated at a rate of 1 dB per kHz, or shall not exceed a level of 200  $\mu$ V/m, whichever is less stringent. The emission mask of the radiated signal is shown in Figure 1. Out-of-band and spurious emissions shall be quoted with respect to the carrier level and shall be measured at a distance of one kilometre from the antenna system.
- Audio characteristics: The program should consist of Monophonic transmission.
- Other relevant technical information is provided in the IEC documents 60244 "Methods of measurements for radio transmitters". More specifically, the relevant parts for AM broadcasting are:
  - Part 1: General characteristics for broadcast transmitters
  - Part 6 (including Supplement A): Cabinet radiation at frequencies between 130 kHz and 1 GHz
  - Part 15: Methods of measurement for radio transmitters – Amplitude-modulated transmitters for sound broadcasting

The following figure describes the Emission Mask for AM modulation:

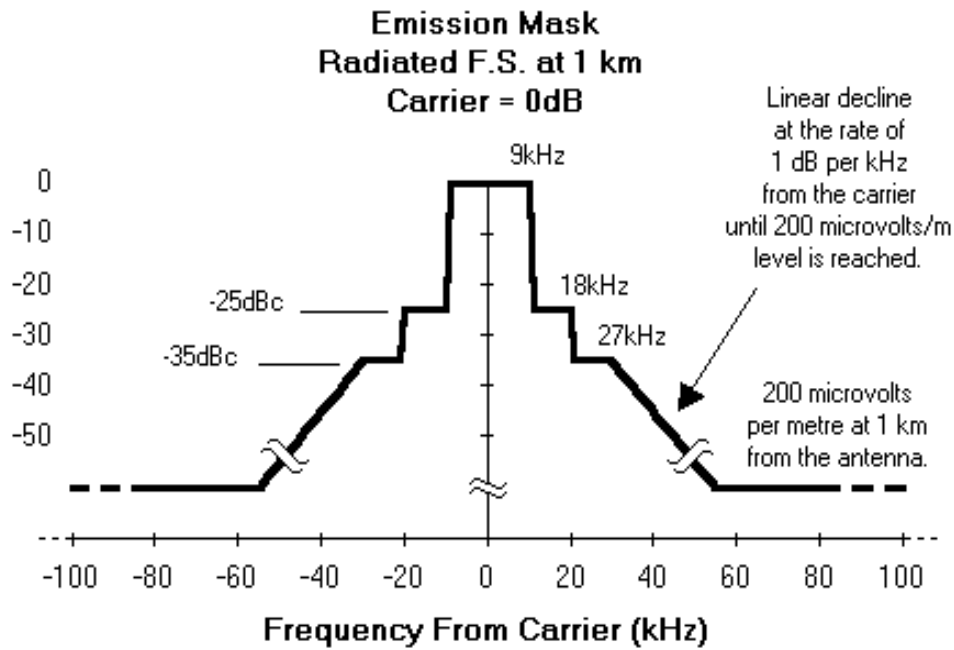


Figure 1: Emission mask for AM radiated field strength

### 3.4 Technical Parameters for AM Receivers

Following the Consultants research, many countries do not enforce hard specifications for AM receivers. Consequently, the Consultant does not recommend that Thailand enforces a hard specification for AM receivers.

Should the NBTC decides otherwise, the Consultant recommends that the specifications described in IEC 60315-3 "Methods of measurement on radio receivers for various classes of emission – Part 3: Receivers for amplitude-modulated sound-broadcasting emissions" should be considered.



## 4. Conclusion

Presently, the overall coverage (area of 73 dB $\mu$ V/m and above) of the AM service in Thailand has been calculated at:

- Population Covered: 56,527,404 (which corresponds to 87.70% of the total Thailand population of 64,456,693)
- Area Covered: 453,662.52 sq.km (which corresponds to 88.80% of the total Land Area of 510,890 sq.km)

In conclusion, the Consultant proposes the following recommendations:

- NBTC should ensure that AM broadcasting services transmission are operating as per the technical parameters provided in section 3.3.
- The NBTC should provide a transmitter certification based on the proof that the transmission mask, as described in section 3.3, is met by the operator.
- NBTC should follow international coordination requests in order to ensure that existing AM stations in Thailand keep their protection.

## Appendix A – AM Database Parameters and Population Coverage

Column description:

Column 1	#	Row number
Column 2	Station Name	Name of the station, as defined by NBTC
Column 3	Province	Thailand Province where the transmitter is located
Column 4	Center Freq (kHz)	Center Frequency in KHz
Column 5	Lat	Latitude N in decimal degree format
Column 6	Long	Longitude East in decimal degree format
Column 7	Height (m)	Antenna Physical height in meters
Column 8	Elec. Height (deg)	Antenna Electrical height in degrees
Column 9	Power D	Transmitter Daytime Power in kW
Column 10	Power N	Transmitter Night time Power in kW
Column 11	AP	Antenna Pattern (omni or directional)
Column 12	#	Directional Antenna number is the array
Column 13	Ratio	Tower Field Ratio
Column 14	Phase	Phase difference of field (in degrees)
Column 15	Spacing	Electrical tower spacing (in degrees)
Column 16	Orientation	Angular Tower Orientation (in degrees)
Column 17	Pop 73 dBu	Population included in the 73 dB $\mu$ V/m contour
Column 18	Pop 81 dBu	Population included in the 81 dB $\mu$ V/m contour
Column 19	Pop 87 dBu	Population included in the 87 dB $\mu$ V/m contour

Colour shading definitions:

Group No.	Types	Number of Frequency Channels
1	Existing frequencies (stations), which comply with AM Plan B.E. 2535	186
2	Existing frequencies (stations), which not comply with AM Plan B.E. 2535	6
3	Existing frequencies (station), which exceed from AM Plan B.E. 2535	1
4	Vacant frequencies according to AM Plan B.E. 2535 (have not been assigned, yet)	14
5	Frequencies which had been allocated to organizations in AM Plan B.E. 2535 but currently are vacant	5
Existing frequencies (stations)		<b>193</b>
Vacant Frequencies according to AM Plan B.E. 2535		<b>19</b>
Total		<b>212</b>

#	Station Name	Province	Center Freq (kHz)	Lat.	Long.	Antenna Height (m)	Elec. Height (degrees)	Station Power (kW)		AP	Directional Array Antenna					Pop 73dBu	Pop 81dBu	Pop 87dBu
								Daytime	Nighttime		#	Ratio	Phase	Spacing	Orientation			
1	Defense Energy Department Bangkok 792 kHz	Bangkok	792	13.68701111	100.6027139	90	85.595	5	5	Omni	-	-	-	-	-	14574540	9997026	7088446
2	Defense Energy Department Chiang mai 711 kHz	Chiang mai	711	18.851389	98.970222	105	89.648	5	5	Omni	-	-	-	-	-	1034074	718075	490236
3	Public Relations Department Pathum thani 819 kHz	Pathum thani	819	14.07613611	100.7119639	91	89.497	10	10	Omni	-	-	-	-	-	15238389	5398057	993587
4	Public Relations Department Bangkok 837 kHz	Bangkok	837	13.78192	100.560157	120	120.611	10	10	Omni	-	-	-	-	-	15296665	8529661	1871323
5	Public Relations Department Bangkok 918 kHz	Bangkok	918	14.07334444	100.7163972	86	94.803	10	10	Omni	-	-	-	-	-	14451881	9637549	3218141
6	Public Relations Department Bangkok 1467 kHz	Bangkok	1,467	14.07218333	100.7106917	113	199.063	100	100	Omni	-	-	-	-	-	19618341	17178398	14240881
7	Public Relations Department Kanchanaburi 558 kHz	Kanchanaburi	558	14.06316667	99.48695278	127	85.098	10	10	Omni	-	-	-	-	-	679363	329053	195375
8	Public Relations Department Kanchanaburi 810 kHz	Kanchanaburi	810	15.139214	98.444694	100	97.267	10	10	Omni	-	-	-	-	-	123536	60999	37957
9 D	Public Relations Department Krabi 720 kHz	Krabi	720	8.061954	98.90236	138	118.882	10	5	Omni	-	-	-	-	-	1868227	418429	187631
9 N	Public Relations Department Krabi 720 kHz	Krabi	720	8.061954	98.90236	138	118.882	10	5	Omni	-	-	-	-	-	2556129	1057918	278644
10	Public Relations Department Krabi 963 kHz	Krabi	963	8.113122	98.998669	103	118.531	50	50	Omni	-	-	-	-	-	1868227	418429	187631
11	Public Relations Department Khon kean 621 kHz	Khon kean	621	16.47656	102.957444	165	123.043	100	100	Omni	-	-	-	-	-	6517040	2854521	1541733
12	Public Relations Department Khon kean 648 kHz	Khon kean	648	16.568834	102.820052	205	159.518	55	55	Omni	-	-	-	-	-	5023356	2107896	1108855
13	Public Relations Department Chanthaburi 927	Chanthaburi	927	12.576194	102.069222	81	90.167	20	20	Omni	-	-	-	-	-	683799	373296	280598

#	Station Name	Province	Center Freq (kHz)	Lat.	Long.	Antenna Height (m)	Elec. Height (degrees)	Station Power (kW)		AP	Directional Array Antenna					Pop 73dBu	Pop 81dBu	Pop 87dBu
								Daytime	Nighttime		#	Ratio	Phase	Spacing	Orientation			
	kHz																	
14	Public Relations Department Chanthaburi 1125 kHz	Chanthaburi	1,125	12.667027	102.109638	80	108.075	50	50	Omni	-	-	-	-	-	688341	382479	281009
15	Public Relations Department Chum phon 1377 kHz	Chum phon	1,377	10.457974	99.131014	60	99.213	10	10	Omni	-	-	-	-	-	464937	289123	201868
16	Public Relations Department Chiang rai 1260 kHz	Chiang rai	1,260	19.93833333	99.84777778	80	121.044	50	50	Omni	-	-	-	-	-	415007	251480	200757
17	Public Relations Department Tak 864 kHz	Tak	864	16.915103	99.116212	92	95.452	10	10	Omni	-	-	-	-	-	421738	150369	88123
18	Public Relations Department Tak 1098 kHz	Tak	1,098	15.71863889	98.56119444	63	83.066	10	10	Omni	-	-	-	-	-	22695	9571	6944
19	Public Relations Department Trang 810 kHz	Trang	810	7.560277778	99.58472222	120	116.721	10	10	Omni	-	-	-	-	-	2793441	1051098	515239
20	Public Relations Department Trat 1557 kHz	Trat	1,557	12.237792	102.532914	45	84.136	10	10	Omni	-	-	-	-	-	166569	102900	82872
21	Public Relations Department Nakhon ratchasima 729 kHz	Nakhon ratchasima	729	14.93741667	101.9967778	180	157.573	55	55	Omni	-	-	-	-	-	7198972	3149772	1881324
22	Public Relations Department Nakhon si thammarat 639 kHz	Nakhon si thammarat	639	8.354480556	99.91449722	117	89.778	20	20	Omni	-	-	-	-	-	4470569	1929811	1126795
23-1	Public Relations Department Nakhon sawan 936 kHz	Nakhon sawan	936	15.80322	100.074023	176	197.820	50	50	Directional	1	1	0	0	0	5020559	2160592	1222424
23-2	Public Relations Department Nakhon sawan 936 kHz	Nakhon sawan	936	15.802546	100.074043	176	197.820	50	50	Directional	2	1	270	90	175			
24	Public Relations Department Nan 1368 kHz	Nan	1,368	18.69944444	100.7430556	63	103.492	50	50	Omni	-	-	-	-	-	185259	145146	115158
25	Public Relations Department Nongkhai 810 kHz	Nongkhai	810	17.88758333	102.7735	112	108.939	20	20	Omni	-	-	-	-	-	1325877	503506	307258

#	Station Name	Province	Center Freq (kHz)	Lat.	Long.	Antenna Height (m)	Elec. Height (degrees)	Station Power (kW)		AP	Directional Array Antenna					Pop 73dBu	Pop 81dBu	Pop 87dBu
								Daytime	Nighttime		#	Ratio	Phase	Spacing	Orientation			
26	Public Relations Department Nakhon phanom 981 kHz	Nakhon phanom	981	17.383239	104.755734	101	118.980	20	20	Omni	-	-	-	-	-	433126	231624	148922
27	Public Relations Department Buang Kan 927 kHz	Buang Kan	927	18.387251	103.598429	80	89.054	10	10	Omni	-	-	-	-	-	293723	112115	62844
28	Public Relations Department Buri ram 1368 kHz	Buri ram	1,368	15.00252778	103.1002778	48	78.851	10	10	Omni	-	-	-	-	-	518214	280422	190880
29	Public Relations Department Pattani 1296 kHz	Pattani	1,296	6.889194444	101.2497778	60	93.377	10	10	Omni	-	-	-	-	-	1912480	688078	408639
30	Public Relations Department Phangnga 1116 kHz	Phangnga	1,116	8.863253	98.336231	64	85.098	10	10	Omni	-	-	-	-	-	368080	112880	74225
31	Public Relations Department Phangnga 1341 kHz	Phangnga	1,341	8.447883	98.534264	73	116.748	10	10	Omni	-	-	-	-	-	873036	268801	127524
32	Public Relations Department Phatthalung 864 kHz	Phatthalung	864	7.585277778	99.97638889	75	77.814	10	10	Omni	-	-	-	-	-	3012165	1119656	431383
33	Public Relations Department Phitsanulok 1026 kHz	Phitsanulok	1,026	16.832212	100.217838	90	110.885	50	50	Omni	-	-	-	-	-	3211889	1710994	1041346
34	Public Relations Department Phetchabun 846 kHz	Phetchabun	846	16.455833	101.16	106	107.686	10	10	Omni	-	-	-	-	-	1114093	491048	264286
35	Public Relations Department Loei 909 kHz	Loei	909	17.280909	101.14056	80	87.324	10	10	Omni	-	-	-	-	-	521345	157090	79837
36	Public Relations Department Loei 1341 kHz	Loei	1,341	17.523194	101.726806	104	167.473	20	20	Omni	-	-	-	-	-	405294	228625	135898
37	Public Relations Department Phuket 1062 kHz	Phuket	1,062	7.909887	98.389659	70	88.632	10	10	Omni	-	-	-	-	-	1031724	528823	370495
38	Public Relations Department Mahasarakham 531 kHz	Mahasarakham	531	16.139077	103.253211	115	73.329	50	50	Omni	-	-	-	-	-	5796230	2883227	1327215
39	Public Relations Department Mukdahan 549 kHz	Mukdahan	549	16.537131	104.715736	110	72.518	10	10	Omni	-	-	-	-	-	1101063	373454	186195

#	Station Name	Province	Center Freq (kHz)	Lat.	Long.	Antenna Height (m)	Elec. Height (degrees)	Station Power (kW)		AP	Directional Array Antenna					Pop 73dBu	Pop 81dBu	Pop 87dBu
								Daytime	Nighttime		#	Ratio	Phase	Spacing	Orientation			
	kHz																	
40	Public Relations Department Mae hong son 981 kHz	Mae hong son	981	19.29022	97.965247	78	91.885	25	25	Omni	-	-	-	-	-	59678	39890	32761
41	Public Relations Department Yala 981 kHz	Yala	981	6.549055556	101.3592222	130	153.142	50	50	Omni	-	-	-	-	-	3247890	1883674	1552960
42	Public Relations Department Yala 1026 kHz	Yala	1,026	5.762472222	101.0679167	80	98.564	10	10	Omni	-	-	-	-	-	223807	78564	61080
43	Public Relations Department Ranong 783 kHz	Ranong	783	9.907618	98.627079	120	112.830	10	10	Omni	-	-	-	-	-	776374	316501	129745
44	Public Relations Department Rachaburi 1593 kHz	Rachaburi	1,593	13.52309722	99.80908333	50	95.646	10	10	Omni	-	-	-	-	-	2744678	1029043	673349
45-1	Public Relations Department Lampang 549 kHz	Lampang	549	18.309079	99.413904	137	90.318	100	100	Directional	1	1	0	0	0	2577024	826363	524706
45-2	Public Relations Department Lampang 549 kHz	Lampang	549	18.307812	99.413967	137	90.318	100	100	Directional	2	0.33	270	90	180			
46	Public Relations Department Lampang 1134 kHz	Lampang	1,134	18.30638889	99.41472222	60	81.705	10	10	Omni	-	-	-	-	-	363484	270689	194374
47	Public Relations Department Lamphun 639 kHz	Lamphun	639	18.569083	99.042311	50	38.367	10	10	Omni	-	-	-	-	-	1260164	882423	449984
48	Public Relations Department Lamphun 1476 kHz	Lamphun	1,476	18.569083	99.042311	50	88.621	100	100	Omni	-	-	-	-	-	924119	463903	232513
49	Public Relations Department Srisaket 864 kHz	Srisaket	864	15.097952	104.337906	100	103.752	10	10	Omni	-	-	-	-	-	628536	290006	152259
50-1	Public Relations Department Songkhla 558 kHz	Songkhla	558	7.142981	100.570712	132	88.448	50	50	Directional	1	1	0	0	0	6768254	4186604	1924599
50-2	Public Relations Department Songkhla 558 kHz	Songkhla	558	7.144107	100.572142	132	88.448	50	50	Directional	2	1	30	135	50			

#	Station Name	Province	Center Freq (kHz)	Lat.	Long.	Antenna Height (m)	Elec. Height (degrees)	Station Power (kW)		AP	Directional Array Antenna					Pop 73dBu	Pop 81dBu	Pop 87dBu
								Daytime	Nighttime		#	Ratio	Phase	Spacing	Orientation			
51	Public Relations Department Songkhla 1404 kHz	Songkhla	1,404	7.138055556	100.5694444	86	144.993	25	25	Omni	-	-	-	-	-	2324971	1278092	827925
52	Public Relations Department Satun 1206 kHz	Satun	1,206	6.652222222	100.0832778	50	72.410	10	10	Omni	-	-	-	-	-	942999	259812	164983
53-1	Public Relations Department Saraburi 891 kHz	Saraburi	891	14.257115	100.828177	170	181.890	1000	1000	Directional	1	1	0	0	0	26261532	21622454	17771022
53-2	Public Relations Department Saraburi 891 kHz	Saraburi	891	14.25599	100.828208	170	181.890	1000	1000	Directional	2	0.64	225	135	0			
53-3	Public Relations Department Saraburi 891 kHz	Saraburi	891	14.255877	100.827484	170	181.890	1000	1000	Directional	3	0.81	0	90	260			
54	Public Relations Department Surat thani 1215 kHz	Surat thani	1,215	9.078669444	99.35691111	113	164.868	50	50	Omni	-	-	-	-	-	2255750	1108897	640960
55-1	Public Relations Department Surat thani 1242 kHz	Surat thani	1,242	9.115155556	99.29471667	132	196.869	50	50	Directional	1	1	0	0	0	2106287	931446	661368
55-2	Public Relations Department Surat thani 1242 kHz	Surat thani	1,242	9.115345	99.295196	132	196.869	50	50	Directional	2	1	75	75	70			
56	Public Relations Department Surin 909 kHz	Surin	909	14.893683	103.493563	110	120.071	50	50	Omni	-	-	-	-	-	1943276	969246	540160
57	Public Relations Department Amnatcharoen 1422 kHz	Amnatcharoen	1,422	15.789187	104.645537	60	102.455	10	10	Omni	-	-	-	-	-	188307	94412	61390
58	Public Relations Department Uboratchathani 711 kHz	Uboratchathani	711	15.267477	104.929895	120	102.455	20	20	Omni	-	-	-	-	-	807504	486680	362207
59	Public Relations Department Uboratchathani 1341 kHz	Uboratchathani	1,341	15.3179	104.753074	100	161.031	50	50	Omni	-	-	-	-	-	482834	255950	120630
60	Department of Agricultural Extension Pathum thani 1386 kHz	Pathum thani	1,386	14.0460018	100.711669	112	186.407	10	10	Omni	-	-	-	-	-	11950394	7325774	2931338



#	Station Name	Province	Center Freq (kHz)	Lat.	Long.	Antenna Height (m)	Elec. Height (degrees)	Station Power (kW)		AP	Directional Array Antenna					Pop 73dBu	Pop 81dBu	Pop 87dBu
								Daytime	Nighttime		#	Ratio	Phase	Spacing	Orientation			
61	Meteorological Department Samutprakan 1287 kHz	Samutprakan	1,287	13.5166	100.7616667	120	185.456	10	10	Omni	-	-	-	-	-	12934697	8967512	3386030
62-1	The Ministry of Foreign Affairs Ayutthaya 1575 kHz	Ayutthaya	1,575	14.40474167	100.7786944	93	175.211	1000	1000	Omni	-	-	-	-	-	18080352	14304233	7218770
62-1	The Ministry of Foreign Affairs Ayutthaya 1575 kHz	Ayutthaya	1,575	14.40474167	100.7786944	93	175.211	1000	1000	Omni	-	-	-	-	-			
62-2-1	The Ministry of Foreign Affairs + VOA Ayutthaya 1575 kHz	Ayutthaya	1,575	14.406389	100.780216	93	175.211	1000	1000	Directional	1	1	0	0	0			
62-2-2	The Ministry of Foreign Affairs + VOA Ayutthaya 1575 kHz	Ayutthaya	1,575	14.405674	100.77995	93	175.211	1000	1000	Directional	2	0.8	45	160	235	14224683	5868671	2873204
62-2-3	The Ministry of Foreign Affairs + VOA Ayutthaya 1575 kHz	Ayutthaya	1,575	14.406129	100.779479	93	175.211	1000	1000	Directional	3	0.62	90	160	194			
63	Ministry of Education	Bangkok	1,161	13.622942	100.4249194	63	87.832	20	20	Omni	-	-	-	-	-	10557281	8917244	7042024
64	Bangkok Bangkok 873 kHz	Bangkok	873	13.73381667	100.5451194	86	90.156	5	5	Omni	-	-	-	-	-	13911865	9841691	7651384
65	Royal Thai Army Phrae 585 kHz	Phrae	585	18.20483333	100.1978333	54	37.934	5	5	Omni	-	-	-	-	-	392413	288409	201766
66	Royal Thai Army Phetchabun 1557 kHz	Phetchabun	1,557	16.754718	101.20806	45	84.136	10	10	Omni	-	-	-	-	-	407601	259912	186348
67	Royal Thai Army Udonthani 684 kHz	Udonthani	684	17.36244444	102.8195	72	59.139	5	5	Omni	-	-	-	-	-	1256946	645002	385154
68	Royal Thai Army Surin 756 kHz	Surin	756	14.86798	103.482714	100	90.783	5	5	Omni	-	-	-	-	-	1093447	489366	252719
69	Royal Thai Army Phrae 1215 kHz	Phrae	1,215	18.11313889	100.1375	63	91.918	10	10	Omni	-	-	-	-	-	267420	193615	160521
70	Royal Thai Army Sakonkakhon 1188 kHz	Sakonkakhon	1,188	17.15925	104.1319167	60	85.595	10	10	Omni	-	-	-	-	-	453336	262242	169700
71	Royal Thai Army Phayao 1512 kHz	Phayao	1,512	19.19405556	99.88047222	54	98.045	10	10	Omni	-	-	-	-	-	171562	129597	85588

#	Station Name	Province	Center Freq (kHz)	Lat.	Long.	Antenna Height (m)	Elec. Height (degrees)	Station Power (kW)		AP	Directional Array Antenna					Pop 73dBu	Pop 81dBu	Pop 87dBu
								Daytime	Nighttime		#	Ratio	Phase	Spacing	Orientation			
72	Royal Thai Army Khon kean 1044 kHz	Khon kean	1,044	16.046572	102.713924	63	78.981	10	10	Omni	-	-	-	-	-	721222	298609	177541
73	Royal Thai Army Lopburi 1197 kHz	Lopburi	1,197	14.79972778	100.6434778	100	143.739	10	10	Omni	-	-	-	-	-	2912591	1210841	556929
74	Royal Thai Army Bangkok 657 kHz	Bangkok	657	13.79222222	100.5275	63	49.704	5	5	Omni	-	-	-	-	-	15491621	10411271	7968531
75	Royal Thai Army Surat thani 1503 kHz	Surat thani	1,503	9.110891	99.23512	47	84.828	10	10	Omni	-	-	-	-	-	760158	490552	312692
76	Royal Thai Army Roi et 1251 kHz	Roi et	1,251	16.063413	103.640857	60	90.134	10	10	Omni	-	-	-	-	-	728361	354024	219015
77	Royal Thai Army Yasothon 1404 kHz	Yasothon	1,404	15.803994	104.142137	100	168.597	10	10	Omni	-	-	-	-	-	381882	194973	129579
78	Royal Thai Army Chai yaphum 567 kHz	Chai yaphum	567	15.85025	102.0674722	110	74.896	5	5	Omni	-	-	-	-	-	1734953	560222	247805
79	Royal Thai Army Srisaket 1458 kHz	Srisaket	1,458	15.101792	104.333977	55	96.295	10	10	Omni	-	-	-	-	-	225295	120935	79181
80	Royal Thai Army Chanthaburi 1530 kHz	Chanthaburi	1,530	12.568888	102.061138	45	82.677	10	10	Omni	-	-	-	-	-	344335	212371	178146
81	Royal Thai Army Sra kaeo 1188 kHz	Sra kaeo	1,188	13.78955	102.154061	120	171.190	10	10	Omni	-	-	-	-	-	370142	174295	95616
82	Royal Thai Army Suphanburi 1404 kHz	Suphanburi	1,404	14.275140	100.024410	96	161.853	10	10	Omni	-	-	-	-	-	6191363	1133951	533520
83	Royal Thai Army Prachuap khiri khan 1206 kHz	Prachuap khiri khan	1,206	12.392659	99.913433	120	173.784	10	10	Omni	-	-	-	-	-	1311811	313045	217040
84	Royal Thai Army Kalasin 945 kHz	Kalasin	945	16.426119	102.5135	79	89.648	10	10	Omni	-	-	-	-	-	1071194	369062	188832
85	Royal Thai Army Khon kean 1107 kHz	Khon kean	1,107	16.459849	102.849144	81	107.675	10	10	Omni	-	-	-	-	-	921811	533190	368020
86	Royal Thai Army Nakhon phanom 1440 kHz	Nakhon phanom	1,440	17.33230556	104.58025	53	91.647	10	10	Omni	-	-	-	-	-	301546	107234	50568
87	Royal Thai Army Nakhon ratchasima 1134 kHz	Nakhon ratchasima	1,134	14.96619444	102.1011667	66	89.875	10	10	Omni	-	-	-	-	-	1795417	979373	623299
88	Royal Thai Army Sakonnakhon 1359 kHz	Sakonnakhon	1,359	17.18811111	104.1028333	55	89.756	10	10	Omni	-	-	-	-	-	389344	217042	146008

#	Station Name	Province	Center Freq (kHz)	Lat.	Long.	Antenna Height (m)	Elec. Height (degrees)	Station Power (kW)		AP	Directional Array Antenna					Pop 73dBu	Pop 81dBu	Pop 87dBu
								Daytime	Nighttime		#	Ratio	Phase	Spacing	Orientation			
89	Royal Thai Army Surin 666 kHz	Surin	666	14.875032	103.486812	99	79.176	5	5	Omni	-	-	-	-	-	1284563	529873	279104
90	Royal Thai Army Udonthani 747 kHz	Udonthani	747	17.27122222	102.8851111	91	81.629	5	5	Omni	-	-	-	-	-	1105043	573751	263800
91	Royal Thai Army Uboratchathani 1215 kHz	Uboratchathani	1,215	15.202705	104.869644	60	87.541	10	10	Omni	-	-	-	-	-	363539	280239	210950
92	Royal Thai Army Tak 666 kHz	Tak	666	16.88069444	100.5010278	120	95.970	5	5	Omni	-	-	-	-	-	1965300	668035	254987
93	Royal Thai Army Phichit 1449 kHz	Phichit	1,449	16.48972222	100.1473889	54	93.960	10	10	Omni	-	-	-	-	-	1263659	466117	212617
94	Royal Thai Army Phitsanulok 1188 kHz	Phitsanulok	1,188	16.793618	100.287026	63	89.875	10	10	Omni	-	-	-	-	-	1447184	744007	455743
95	Royal Thai Army Phitsanulok 1116 kHz	Phitsanulok	1,116	16.80038889	100.2933056	120	160.815	10	10	Omni	-	-	-	-	-	1692958	882648	505342
96	Royal Thai Army Kamphaeng phet 783 kHz	Kamphaeng phet	783	16.46969444	99.50855556	100	94.025	10	10	Omni	-	-	-	-	-	2627245	809364	373072
97	Royal Thai Army Chiang rai 999 kHz	Chiang rai	999	19.90694444	99.80777778	75	89.972	10	10	Omni	-	-	-	-	-	358750	231375	173280
98	Royal Thai Army Phetchabun 1242 kHz	Phetchabun	1,242	16.813063	101.252213	120	178.972	10	10	Omni	-	-	-	-	-	521853	312011	206555
99	Royal Thai Army Sukhothai 828 kHz	Sukhothai	828	17.022122	99.814945	85	84.514	5	5	Omni	-	-	-	-	-	1848160	606159	286828
100	Royal Thai Army Uttaradit 1287 kHz	Uttaradit	1,287	17.66627778	100.1436944	100	154.547	10	10	Omni	-	-	-	-	-	583445	319226	242370
101	Royal Thai Army Nakhon si thammarat 684 kHz	Nakhon si thammarat	684	8.491061111	99.95689444	109	89.529	5	5	Omni	-	-	-	-	-	2123267	881755	494229
102	Royal Thai Army Pattani 936 kHz	Pattani	936	6.790055556	101.1446667	73	82.050	10	10	Omni	-	-	-	-	-	2473091	1100936	585498
103	Royal Thai Army Phatthalung 1584 kHz	Phatthalung	1,584	7.594166667	99.95944444	55	104.616	1	1	Omni	-	-	-	-	-	361343	179085	61582
104	Royal Thai Army Nakhon si thammarat 1044 kHz	Nakhon si thammarat	1,044	8.491061111	99.95689444	109	136.650	10	10	Omni	-	-	-	-	-	1758449	872562	551638
105	Royal Thai Army Bangkok 999 kHz	Bangkok	999	13.77457222	100.5504444	84	100.769	10	10	Omni	-	-	-	-	-	14738579	10551409	8793430

#	Station Name	Province	Center Freq (kHz)	Lat.	Long.	Antenna Height (m)	Elec. Height (degrees)	Station Power (kW)		AP	Directional Array Antenna					Pop 73dBu	Pop 81dBu	Pop 87dBu
								Daytime	Nighttime		#	Ratio	Phase	Spacing	Orientation			
	kHz																	
106	Royal Thai Army Bangkok 1350 kHz	Bangkok	1,350	13.77457222	100.5504444	84	136.174	10	10	Omni	-	-	-	-	-	12682160	9809571	8310804
107	Royal Thai Army Bangkok 594 kHz	Bangkok	594	13.7977	100.5237889	122	87.022	5	5	Omni	-	-	-	-	-	15852534	10562502	8190313
108	Royal Thai Army Bangkok 963 kHz	Bangkok	963	13.79312222	100.5193639	78	90.199	10	10	Omni	-	-	-	-	-	14995922	10640028	8881518
109	Royal Thai Army Rayong 774 kHz	Rayong	774	12.730917	101.279667	120	111.533	5	5	Omni	-	-	-	-	-	870050	416854	295004
110	Royal Thai Army Phitsanulok 1377 kHz	Phitsanulok	1,377	16.836395	100.261374	54	89.291	10	10	Omni	-	-	-	-	-	1226389	622189	411534
111	Royal Thai Army Bangkok 630 kHz	Bangkok	630	13.78542778	100.5239556	120	90.783	5	5	Omni	-	-	-	-	-	10781853	7440761	3404337
112	Royal Thai Army Bangkok 1053 kHz	Bangkok	1,053	13.78605556	100.5243	75	94.836	10	10	Omni	-	-	-	-	-	14294597	10382014	8721094
113	Royal Thai Army Lampang 1053 kHz	Lampang	1,053	18.29786111	99.51894444	60	75.868	10	10	Omni	-	-	-	-	-	392905	271521	193365
114	Royal Thai Army Lampang 1350 kHz	Lampang	1,350	18.29272222	99.51480556	63	102.131	10	10	Omni	-	-	-	-	-	330958	205101	157881
115	Royal Thai Army Bangkok 540 kHz	Bangkok	540	13.79353333	100.51905	60	38.907	5	5	Omni	-	-	-	-	-	15874743	10507679	8027072
116	Royal Thai Army Saraburi 693 kHz	Saraburi	693	14.516	100.9163806	85	70.735	5	5	Omni	-	-	-	-	-	6011068	1127644	513305
117	Royal Thai Army Saraburi 1305 kHz	Saraburi	1,305	14.515833	100.5187	120	188.050	10	10	Omni	-	-	-	-	-	8019507	2071354	963594
118	Royal Thai Army Bangkok 747 kHz	Bangkok	747	13.74693889	100.4953889	96	86.114	5	5	Omni	-	-	-	-	-	15304844	10402119	7816073
119	Royal Thai Army Khon kean 1152 kHz	Khon kean	1,152	16.454062	102.847303	61	84.385	10	10	Omni	-	-	-	-	-	855988	496250	352027
120	Royal Thai Army Chiang mai 1152 kHz	Chiang mai	1,152	18.822354	98.978968	60	83.001	10	10	Omni	-	-	-	-	-	784077	568494	424304
121	Royal Thai Army Chiang rai 1080 kHz	Chiang rai	1,080	19.90444444	99.8125	73	94.673	10	10	Omni	-	-	-	-	-	317851	213497	159985

#	Station Name	Province	Center Freq (kHz)	Lat.	Long.	Antenna Height (m)	Elec. Height (degrees)	Station Power (kW)		AP	Directional Array Antenna					Pop 73dBu	Pop 81dBu	Pop 87dBu
								Daytime	Nighttime		#	Ratio	Phase	Spacing	Orientation			
122	Royal Thai Army Khon kean 603 kHz	Khon kean	603	16.456624	102.844946	120	86.892	5	5	Omni	-	-	-	-	-	1659309	754200	463884
123	Royal Thai Army Uttaradit 1530 kHz	Uttaradit	1,530	17.63088889	100.0968056	97	178.215	10	10	Omni	-	-	-	-	-	535940	308782	240997
124	Royal Thai Army Chum phon 585 kHz	Chum phon	585	10.518847	99.108364	120	84.298	5	5	Omni	-	-	-	-	-	729283	387649	215576
125	Royal Thai Army Yala 1080 kHz	Yala	1,080	6.542277778	101.2818611	73	94.673	10	10	Omni	-	-	-	-	-	1811705	1261685	588807
126	Royal Thai Army Trang 1350 kHz	Trang	1,350	7.519444444	99.62944444	45	72.950	10	10	Omni	-	-	-	-	-	1109847	539484	366206
127	Royal Thai Army Chiang mai 738 kHz	Chiang mai	738	18.781083	99.011417	96	85.076	5	5	Omni	-	-	-	-	-	1058263	795537	599622
128	Royal Thai Army Nakhon ratchasima 1008 kHz	Nakhon ratchasima	1,008	14.96522222	102.0973611	74	89.572	10	10	Omni	-	-	-	-	-	2041741	1116261	669209
129	Royal Thai Army Nakhon si thammarat 828 kHz	Nakhon si thammarat	828	8.033288889	99.65105556	86	85.509	5	5	Omni	-	-	-	-	-	2560951	692407	251469
130	Royal Thai Army Songkhla 738 kHz	Songkhla	738	7.037722222	100.5025833	96	85.076	5	5	Omni	-	-	-	-	-	2413149	1112526	729131
131	Royal Thai Army Uboratchathani 1287 kHz	Uboratchathani	1,287	15.216486	104.869485	60	92.728	10	10	Omni	-	-	-	-	-	352550	274402	228509
132	Royal Thai Army Udonthani 1233 kHz	Udonthani	1,233	17.242977	102.471538	60	88.837	10	10	Omni	-	-	-	-	-	452945	207521	115268
133	Royal Thai Army Samut sakhon 1440 kHz	Samut sakhon	1,440	13.65872222	100.2912972	54	93.377	10	10	Omni	-	-	-	-	-	12270669	7626736	3514942
134	Royal Thai Army Nakhon sawan 1080 kHz	Nakhon sawan	1,080	14.67152778	100.1217778	72	93.377	10	10	Omni	-	-	-	-	-	3879532	1421864	579256
135	Royal Thai Army Chum phon 1449 kHz	Chum phon	1,449	10.510493	99.100702	47	81.780	10	10	Omni	-	-	-	-	-	422731	282348	192826
136	Royal Thai Army Lopburi 612 kHz	Lopburi	612	14.87592778	100.6402778	117	85.984	5	5	Omni	-	-	-	-	-	4515332	1386758	533028
137	Royal Thai Army Lopburi 711 kHz	Lopburi	711	14.87592778	100.6402778	90	76.841	5	5	Omni	-	-	-	-	-	4054929	1242766	490614
138	Royal Thai Army Bangkok 1422 kHz	Bangkok	1,422	13.77457222	100.5504444	84	143.437	10	10	Omni	-	-	-	-	-	12393866	9744528	8232539

#	Station Name	Province	Center Freq (kHz)	Lat.	Long.	Antenna Height (m)	Elec. Height (degrees)	Station Power (kW)		AP	Directional Array Antenna					Pop 73dBu	Pop 81dBu	Pop 87dBu
								Daytime	Nighttime		#	Ratio	Phase	Spacing	Orientation			
	kHz																	
139	Royal Thai Army Kanchanaburi 1539 kHz	Kanchanaburi	1,539	13.863	100.28487	97	179.264	10	10	Omni	-	-	-	-	-	12302623	8522502	4310173
140	Royal Thai Army Bangkok 1269 kHz	Bangkok	1,269	13.79035833	100.5295639	120	182.863	10	10	Omni	-	-	-	-	-	13750429	10307125	8738663
141	Royal Thai Army Prachinburi 855 kHz	Prachinburi	855	14.07191944	101.3763	125	128.339	5	5	Omni	-	-	-	-	-	2385326	584009	276950
142	Royal Thai Army Nakhon sawan 801 kHz	Nakhon sawan	801	15.66847222	100.1246944	86	82.720	10	10	Omni	-	-	-	-	-	3211508	1244593	520194
143	Royal Thai Navy Bangkok 675 kHz	Bangkok	675	13.667125	100.6114889	110	89.162	5	5	Omni	-	-	-	-	-	15262631	10346259	6894789
144	Royal Thai Navy Chanthaburi 1170 kHz	Chanthaburi	1,170	12.607666	102.097277	120	168.597	10	10	Omni	-	-	-	-	-	438096	301139	210565
145	Royal Thai Navy Chon buri 720 kHz	Chon buri	720	12.667751	100.996585	97	83.866	5	5	Omni	-	-	-	-	-	962563	548623	268332
146	Royal Thai Navy Phitsanulok 1170 kHz	Phitsanulok	1,170	16.955456	100.116745	120	168.597	10	10	Omni	-	-	-	-	-	1705913	899029	487057
147	Royal Thai Navy Phuket 1458 kHz	Phuket	1,458	7.868258	98.393075	120	210.097	10	10	Omni	-	-	-	-	-	1011889	568414	361844
148	Royal Thai Navy Songkhla 1431 kHz	Songkhla	1,431	7.195277778	100.6041667	61	104.822	10	10	Omni	-	-	-	-	-	1852421	931691	481327
149	Royal Thai Navy Uboratchathani 1161 kHz	Uboratchathani	1,161	15.306437	104.896242	120	167.300	10	10	Omni	-	-	-	-	-	394187	254365	176316
150	Royal Thai Air Force Bangkok 945 kHz	Bangkok	945	13.83495833	100.7401889	117	132.770	10	10	Omni	-	-	-	-	-	14987312	10673322	7861661
151	Royal Thai Air Force Bangkok 1233 kHz	Bangkok	1,233	13.91143056	100.6208556	60	88.837	10	10	Omni	-	-	-	-	-	12598272	9671088	6630671
152	Royal Thai Air Force Bangkok 1251 kHz	Bangkok	1,251	13.83495833	100.7401889	117	175.762	10	10	Omni	-	-	-	-	-	12961785	9826282	7009995
153	Royal Thai Air Force Chanthaburi 954 kHz	Chanthaburi	954	12.591611	102.090666	72	82.483	10	10	Omni	-	-	-	-	-	506999	320342	221870
154	Royal Thai Air Force Chiang	Chiang mai	1,323	18.7715	98.970333	51	81.024	10	10	Omni	-	-	-	-	-	761064	519562	365023

#	Station Name	Province	Center Freq (kHz)	Lat.	Long.	Antenna Height (m)	Elec. Height (degrees)	Station Power (kW)		AP	Directional Array Antenna					Pop 73dBu	Pop 81dBu	Pop 87dBu
								Daytime	Nighttime		#	Ratio	Phase	Spacing	Orientation			
	mai 1323 kHz																	
155	Royal Thai Air Force Chiang rai 801 kHz	Chiang rai	801	19.81375	99.760027	87	83.682	5	5	Omni	-	-	-	-	-	410612	230341	130250
156	Royal Thai Air Force Chiang rai 1224 kHz	Chiang rai	1,224	19.81375	99.760027	58	85.249	10	10	Omni	-	-	-	-	-	271438	149725	69260
157	Royal Thai Air Force Nakhon pathom 1368 kHz	Nakhon pathom	1,368	14.09777778	99.94425833	54	88.708	10	10	Omni	-	-	-	-	-	4839882	1139368	409338
158	Royal Thai Air Force Nakhon ratchasima 1431 kHz	Nakhon ratchasima	1,431	14.92747222	102.0815	45	77.327	10	10	Omni	-	-	-	-	-	1322836	794989	554086
159	Royal Thai Air Force Nakhon sawan 1224 kHz	Nakhon sawan	1,224	15.25180556	100.3100556	60	88.189	10	10	Omni	-	-	-	-	-	1881791	648425	298212
160	Royal Thai Air Force Prachuap khiri khan 1017 kHz	Prachuap khiri khan	1,017	11.79414	99.797197	60	73.275	10	10	Omni	-	-	-	-	-	435514	175030	99341
161	Royal Thai Air Force Phitsanulok 954 kHz	Phitsanulok	954	16.8135	100.2731944	75	85.919	10	10	Omni	-	-	-	-	-	1971192	930315	510087
162	Royal Thai Air Force Mahasarakham 1332 kHz	Mahasarakham	1,332	16.159358	103.304288	102	163.150	10	10	Omni	-	-	-	-	-	673137	299588	172399
163	Royal Thai Air Force Lopburi 765 kHz	Lopburi	765	14.87146944	100.6373639	100	91.864	5	5	Omni	-	-	-	-	-	3853322	1206594	475014
164	Royal Thai Air Force Songkhla 1512 kHz	Songkhla	1,512	6.923166667	100.4113611	60	108.939	10	10	Omni	-	-	-	-	-	1366431	759440	484715
165	Royal Thai Air Force Surat thani 1323 kHz	Surat thani	1,323	9.133686111	99.15648611	54	85.790	10	10	Omni	-	-	-	-	-	827558	492185	321112
166	Royal Thai Air Force Udonthani 1062 kHz	Udonthani	1,062	17.38625	102.8028611	60	76.517	10	10	Omni	-	-	-	-	-	884850	496405	357436
167	Royal Thai Air Force Uboratchathani 801 kHz	Uboratchathani	801	15.32494	104.829017	70	67.331	5	5	Omni	-	-	-	-	-	455309	276609	176609
168	Royal Thai Armed Forces Headquarters Phetchabun 972	Phetchabun	972	16.85095	101.23331	70	81.705	10	10	Omni	-	-	-	-	-	610641	340257	224325

#	Station Name	Province	Center Freq (kHz)	Lat.	Long.	Antenna Height (m)	Elec. Height (degrees)	Station Power (kW)		AP	Directional Array Antenna					Pop 73dBu	Pop 81dBu	Pop 87dBu
								Daytime	Nighttime		#	Ratio	Phase	Spacing	Orientation			
	kHz																	
169	Royal Thai Armed Forces Headquarters Bangkok 1521 kHz	Bangkok	1,521	13.84783056	100.5997389	66	120.547	10	10	Omni	-	-	-	-	-	11687406	9364542	7354291
170	Royal Thai Armed Forces Headquarters Chiang rai 1179 kHz	Chiang rai	1,179	20.109845	99.881816	68	96.273	10	10	Omni	-	-	-	-	-	273194	119745	74677
171	Royal Thai Armed Forces Headquarters Chiang rai 1395 kHz	Chiang rai	1,395	20.109845	99.881816	54	90.459	10	10	Omni	-	-	-	-	-	174196	88898	54257
172	Royal Thai Armed Forces Headquarters Narathiwat 756 kHz	Narathiwat	756	6.436536	101.796281	30	27.235	5	5	Omni	-	-	-	-	-	1813508	691384	294844
173	Royal Thai Armed Forces Headquarters Sakonnakhon 837 kHz	Sakonnakhon	837	17.203363	104.103304	125	125.637	5	5	Omni	-	-	-	-	-	648501	320283	192042
174	Royal Thai Armed Forces Headquarters Uthaithani 1512 kHz	Uthaithani	1,512	15.40677778	100.0181944	100	181.566	5	5	Omni	-	-	-	-	-	986223	395380	199989
175	MCOT Bangkok 1143 kHz	Bangkok	1,143	13.73364722	100.3895639	113.4	155.647	10	10	Omni	-	-	-	-	-	14242330	10382926	7749894
176	MCOT Bangkok 1494 kHz	Bangkok	1,494	13.73364722	100.3895639	113.4	203.444	10	10	Omni	-	-	-	-	-	13186591	9832590	7417457
177	Kasetsart University Khon kean 1314 kHz	Khon kean	1,314	16.440917	102.81393	108	170.412	10	10	Omni	-	-	-	-	-	781236	487479	355871
178	Kasetsart University Chiang mai 612 kHz	Chiang mai	612	18.877219	99.043729	112	82.310	5	5	Omni	-	-	-	-	-	1068180	739907	512894
179	Kasetsart University Songkhla 1269 kHz	Songkhla	1,269	7.113611111	100.5730556	104	158.481	10	10	Omni	-	-	-	-	-	1947496	1014868	728164
180	Kasetsart University Samut sakhon	Samut sakhon	1,107	13.678791	100.328526	110	146.225	10	10	Omni	-	-	-	-	-	14258195	10275776	6453454



#	Station Name	Province	Center Freq (kHz)	Lat.	Long.	Antenna Height (m)	Elec. Height (degrees)	Station Power (kW)		AP	Directional Array Antenna					Pop 73dBu	Pop 81dBu	Pop 87dBu
								Daytime	Nighttime		#	Ratio	Phase	Spacing	Orientation			
	1107 kHz																	
181	Thammasat University Pathum thani 981 kHz	Pathum thani	981	14.07501111	100.5977944	102	120.158	10	10	Omni	-	-	-	-	-	14865162	10302046	4596175
182	NBTC Lampang 765 kHz	Lampang	765	18.296499	99.413587	100	91.864	5	5	Omni	-	-	-	-	-	434547	335358	247398
183	NBTC Bangkok 1035 kHz	Bangkok	1,035	13.88394167	100.5782889	60	74.572	10	10	Omni	-	-	-	-	-	14263661	10438439	8276673
184	NBTC Udonthani 1089 kHz	Udonthani	1,089	17.43052778	102.8235556	100	130.770	10	10	Omni	-	-	-	-	-	896447	511569	349445
185	Royal Thai Police Headquarters Bangkok 576 kHz	Bangkok	576	13.86668056	100.5800778	48	33.201	5	5	Omni	-	-	-	-	-	15809902	10471892	7417197
186	Royal Thai Police Headquarters Bangkok 1179 kHz	Bangkok	1,179	13.805605	100.597991	68	96.273	10	10	Omni	-	-	-	-	-	13151364	10005247	8324434
187	Royal Thai Police Headquarters Chiang mai 918 kHz	Chiang mai	918	18.904446	98.948807	82	90.394	10	10	Omni	-	-	-	-	-	857300	545254	332360
188	Royal Thai Police Headquarters Nakhon ratchasima 990 kHz	Nakhon ratchasima	990	15.03602778	102.1371111	100	118.882	10	10	Omni	-	-	-	-	-	2177408	1179522	718231
189	Royal Thai Police Headquarters Phitsanulok 1422 kHz	Phitsanulok	1,422	16.81277778	100.2557222	50	85.379	10	10	Omni	-	-	-	-	-	1169045	590620	404300
190	Royal Thai Police Headquarters Songkhla 1098 kHz	Songkhla	1,098	6.965194444	100.4774444	63	83.066	10	10	Omni	-	-	-	-	-	1771897	1117310	690395
191	Royal Thai Police Headquarters Udonthani 774 kHz	Udonthani	774	17.4481	102.7875	120	111.533	5	5	Omni	-	-	-	-	-	1127026	598956	358238

#	Station Name	Province	Center Freq (kHz)	Lat.	Long.	Antenna Height (m)	Elec. Height (degrees)	Station Power (kW)		AP	Directional Array Antenna					Pop 73dBu	Pop 81dBu	Pop 87dBu
								Daytime	Nighttime		#	Ratio	Phase	Spacing	Orientation			
192	Secretariat of the House of Representatives Bangkok 1071 kHz	Bangkok	1,071	13.600322	100.434883	94	120.892	10	10	Omni	-	-	-	-	-	14160441	10216506	6658327
193	Bureau of the Royal Household Bangkok 1332 kHz	Bangkok	1,332	13.771789	100.522134	75	119.963	10	10	Omni	-	-	-	-	-	12797263	9809197	8125640
194	Bangkok 1089 kHz	Bangkok	1,089	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
195	Chiang rai 855 kHz	Chiang rai	855	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
196	Nakhon si thammarat 846 kHz	Nakhon si thammarat	846	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
197	Buri ram 1593 kHz	Buri ram	1,593	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
198	Phichit 1296 kHz	Phichit	1,296	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
199	Roi et 1386 kHz	Roi et	1,386	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200	Ranong 846 kHz	Ranong	846	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
201	Ranong 1278 kHz	Ranong	1,278	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
202	Lampang 1305 kHz	Lampang	1,305	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
203	Songkhla 1152 kHz	Songkhla	1,152	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
204	Songkhla 1539 kHz	Songkhla	1,539	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
205	Uboratchathani 1080 kHz	Uboratchathani	1,080	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
206	Uboratchathani 1512 kHz	Uboratchathani	1,512	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
207	Uboratchathani 1035 kHz	Uboratchathani	1,035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
208	Royal Thai Army Krabi 1008 kHz	Krabi	1,008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

#	Station Name	Province	Center Freq (kHz)	Lat.	Long.	Antenna Height (m)	Elec. Height (degrees)	Station Power (kW)		AP	Directional Array Antenna					Pop 73dBu	Pop 81dBu	Pop 87dBu
								Daytime	Nighttime		#	Ratio	Phase	Spacing	Orientation			
209	NBTC Tak 1071 kHz	Tak	1,071	-	-	-	-	-	-	-	-	-	-	-	-			
210	Public Relations Department Nakhon pathom 891 kHz	Nakhon pathom	891	-	-	-	-	-	-	-	-	-	-	-				
211	Public Relations Department Yala 1485 kHz	Yala	1,485	-	-	-	-	-	-	-	-	-	-	-				
212	Public Relations Department Surat thani 1539 kHz	Surat thani	1,539	-	-	-	-	-	-	-	-	-	-	-				

## Appendix B – Station Coverage

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Each station's individual coverage has been provided as individual PDF file map. These files are provided in conjunction to this report and are annexed to the soft copy version of this report.