

**WORKING PAPER:**

**POLICY ON  
SHORT RANGE DEVICES (SRD)  
IN PAKISTAN**

[The working paper has been established keeping in mind the latest Short range devices (SRD) that are being manufactured around the world and the regulatory measures to cater on any interference scenarios with the primary users of frequency.]

**PAKISTAN TELECOM  
AUTHORITY**

# Table of Contents

- 1. Introduction ..... 3
- 2. PTA Recommended framework ..... 4
- 3. Criteria for Short Range Devices ..... 4
- 4. SRD Equipment Classification ..... 5
  - 4.1. Licensed-Short Range Radio Devices (SRDs) ..... 5
  - 4.2. License-Exempt, Type Approval Exempt SRDs ..... 5
  - 4.3. License-Exempt, Type Approval Required SRDs ..... 5
- 5. Reference Standards ..... 7
- 6. SRD Spectrum with concerned Power Levels and Range..... 8

## 1. INTRODUCTION

Short Range Device (SRD) is a generic term that encompasses all radio transmitters which provide either uni-directional or bi-directional communication or are designed for use at short range having low potential for harmful interference with other radio communications. Applications include alarms, identification systems, radio-detection, vehicle radar systems, wireless local area networks, remote controls, telecomm, telemetry and on-site paging systems. These devices may employ different types of modulation and may have speech application.

Short Range Devices (SRDs) are also referred to as **Low Interference Potential Devices LIPDs, Restricted Radiation Devices RRDs and Low Power Devices (LPDs)**. Any radio communication device has a potential for harmful interference with other radio communication devices operating at the same or adjacent frequency bands. Due to low power characteristics of SRDs, this problem does not largely occur. Moreover techniques like duty cycle management, carrier sensing systems etc further minimize this problem. This gives support to the idea of unlicensed use of SRDs unless justified reasons are present for placing some restrictions.

*Short Range Devices operate on a non-interference and non-protected basis i.e. they are not permitted to cause harmful interference to other users of the band and cannot claim protection from interference received.*

**Due to the growing interest in the use of SRDs throughout the World for a wide range of applications, it is necessary to harmonize frequencies and regulations for these devices and to distinguish between different applications.**

## 2. PTA RECOMMENDED FRAMEWORK

PTA after thorough study of the subject and in consultation with FAB and the consultant (Dr. Shoab Khan, *CASE*) has recommended the below mentioned framework for SRDs in Pakistan. There has been a number of observations regarding the frequency band and permissible power from the FAB during the consultation process (see correspondence on **Annex-B**) which were consolidated in the below mentioned framework.

The detailed Frequency chart along with concerned power level, working range and restrictions is attached as **Annex-A**.

## 3. CRITERIA FOR SHORT RANGE DEVICES

Short range devices shall be designed to meet the following basic objectives:

- i. The Short Range Devices must follow the defined frequency range, power limits and applications, mentioned in Annex-A.
- ii. The SRDs are allowed only on “**Secondary, Non-interference, Non-Protection**” basis.
- iii. The device is intended for operating in unprotected and shared frequency bands. Its operation shall not cause interference with other authorized radio-communication services, and be able to tolerate any interference caused by other radio-communication services, electrical or electronic equipment.
- iv. If SRD device is found, or reported to interfere with any primary service, the device operation must be stopped immediately, either voluntarily or through regulatory intervention.
- v. The device shall not be constructed with any external or readily accessible control/ antenna source which permits the adjustment of its operation in a manner that is inconsistent with its specifications.

- vi. The device shall be marked with the following such that it should be legible, indelible and readily visible:
  - a. The OEM supplier or manufacturer's name or identification mark.
  - b. The OEM supplier or manufacturer's model or type reference.
  - c. Permissible Frequency range and power levels
- vii. Use of SRD devices for data transfer outside Pakistan is not allowed, except through a LDI operator.

## 4. SRD EQUIPMENT CLASSIFICATION

Short Range radio communication devices may be classified and certified in three broad categories:

### 4.1. *Licensed-Short Range Devices (SRDs)*

Both Type Approval certification as well as licensing is required for equipment in this category. For example, any equipment designed to intervene privacy of individuals may well be licensed. For example

- i. Audio bugging devices.
- ii. Wireless Spy cameras.

**Note:** It does not include radio and TV apparatus (transmitters and receivers) for the broadcasting service.

### 4.2. *License-Exempt, Type Approval Exempt SRDs*

Provided that the power and distance limits at Annex-A are met, No type approval or licensing is required for SRDs that are already certified under FCC/EU/ARIB standards except those mentioned at clause 4.3. SRDs are required to operate on a **“non-interference, non-protection & secondary”** basis (i.e. they may not cause

radio interference and cannot claim protection from interference).

#### **4.3. License-Exempt, Type Approval Required SRDs**

Provided that the power and distance limits at Annex-A are met, Type Approval Certificate, issued by PTA is required for SRDs operating in the below mentioned frequency ranges .

- ✓ 72.08-72.6MHz
- ✓ 180-200 MHz
- ✓ 151.125-151.150 MHz
- ✓ 169.4-175.0 MHz
- ✓ 10.5-10.55 GHz

**Note:** It is Compulsory that the SRDs operating in the above mentioned frequency ranges must be used only for **indoor and be Type approved by PTA** as these frequencies are being used in mission critical activities. (See Annex-A)

## 5. REFERENCE STANDARDS

ERC/ REC 70-03	“Use of the SRDs” Recommendations adopted by the Frequency Management, Regulatory Affairs and Spectrum Engineering Workgroup
ITU-R SM-1538.2	Technical and operating parameters and spectrum requirements for short range radio-communication devices
ETSI EN 300 220-1	Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio Equipment to be used in the 25 MHz to 1000 MHz frequency range with power levels ranging up to 500 mW; Part 1: Technical characteristics and test methods.
ETSI EN 300 330-1	Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz; Part 1: Technical characteristics and test methods.
ETSI EN 300 440-1	Electromagnetic compatibility and Radio spectrum Matters (ERM); Short range devices; Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Part 1: Technical characteristics and test methods.
EN 300 440-2	Radio equipment to be used in the 1 GHz to 40 [61.5] GHz frequency range Part 2: Harmonized EN under article 3.2 of the R&TTE Directive
EN 301 489-1	Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements.
EN 301 489-3	Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 40 GHz
ITU-R SA.1346	ITU Recommendations for Medical Implanted Devices in freq range 401-406MHz.

## 6. SRD SPECTRUM WITH CONCERNED POWER LEVELS AND RANGE

S. No	Frequency band	Max Radiated Field Strength/Output	Maximum allowable Range	Applications	Comments/ Remarks
1	9-59.750 KHz	66db $\mu$ A/m@10m	10 m	induction loop system SRDs	only loop coil external antennas may be employed
2	59.750-60.250 KHz	42db $\mu$ A/m@10m	10m	induction loop system SRDs	only loop coil external antennas may be employed
3	60.250-70.000 KHz	66db $\mu$ A/m@10m	10m	induction loop system SRDs	only loop coil external antennas may be employed
4	70-119 KHz	42db $\mu$ A/m@10m	10 m	induction loop system SRDs	only loop coil external antennas may be employed
5	119-135 KHz	66db $\mu$ A/m@10m	10 m	induction loop system SRDs/RFID	only loop coil external antennas may be employed
6	135-140 KHz	42db $\mu$ A/m@10m	10 m	induction loop system SRDs	only loop coil external antennas may be employed
7	140-148.5 KHz	37.7db $\mu$ A/m@10m	10 m	induction loop system SRDs	only loop coil external antennas may be employed
8	148.5-150 KHz	-15 db $\mu$ A/m@10m	10 m	induction loop system SRDs	only loop coil external antennas may be employed
9	150-5000KHz	$\leq 13.5$ db $\mu$ A/m@10m	10 m	induction loop system SRDs	only loop coil external antennas may be employed
10	6765-6795 KHz	42db $\mu$ A/m@10m	10 m	induction loop system SRDs	-
11	7400-8800 KHz	9 db $\mu$ A/m@10m	10 m	induction loop system SRDs	-
12	13.533-13.567 MHz	42 db $\mu$ A/m@10m	10 m	Induction loop system ,Radio detection, alarm system	-
13	26.957-27.283 MHz	42db $\mu$ A/m@10m	10m	telemetry	-
14	29.7-47 MHz	10 mW ERP	10m	Remote control of aircraft glider, telemetry, alarm systems	on a tuning range basis
15	40.60-40.700 MHz	10 mW ERP	10 m	Telemetry, Telecommand SRds	-
16	40.70-41 MHz	100m W ERP	10 m	Medical and biological telemetry	-
17	72.08-72.6MHz	$\leq 1000$ mW ERP	<b>indoor only</b>	Wireless modem, data communication system	-
18	88-108 MHz	$\leq 60$ db $\mu$ V/m@10m	10 m	Wireless microphone	-



19	146.35-146.5 MHz	$\leq 40 \text{ dB}\mu \text{ V/m@10m}$	10 m	Radio detection alarm system	—
20	151.125-151.150 MHz	$\leq 1000 \text{ mW ERP}$	<b>indoor only</b>	On-site radio paging system	—
21	169.4-175.0 MHz	$\leq 500 \text{ mW ERP}$	<b>indoor only</b>	Wireless microphone, Hearing/Audio assistance aids	—
22	180-200 MHz	$\leq 112 \text{ dB } \mu\text{V/m@10m}$	<b>indoor only</b>	Wireless microphone, Hearing/Audio assistance aids	—
23	300-300.33 MHz	$\leq 80 \text{ dB}\mu \text{ V/m@10m}$	<b>10m</b>	Radio detection alarm system	—
24	314.7-315.0 MHz	$\leq 80 \text{ dB}\mu \text{ V/m@10m}$	10m	Radio detection alarm system	—
25	402-407 MHz	$\leq 25\mu\text{W ERP}$	1m	Medical and bio telemetry Equipments	Individual transmitters may combine adjacent channels (25 KHz spacing) for increased bandwidth up to 300KHz.
26	433.05-434.79 MHz	10mW ERP	10m	Radio Telemetry, Telecommand, Alarms' and data system	—
27	444.5-444.8 MHz	$\leq 80\text{dB}\mu\text{V/m@10m}$	10m	Radio detection alarm system	—
28	451.750, 452.0, 452.050, 452.325 MHz	$\leq 1000 \text{ mW ERP}$	10m	Remote control of cranes and loading arms.	—
29	470.600 MHz	$\leq 1000 \text{ mW ERP}$	10m	Wireless modern data communication system	—
30	600-630 MHz	$\leq 50 \text{ mW ERP}$	10m	Wireless microphone	—
31	630-710 MHz	$\leq 50 \text{ m W ERP}$	10m	wireless video transmitter	—
32	865.0--865.6 MHz	$\leq 100 \text{ mW ERP}$	10m	Radio Telemetry, Telecommand & RFID system	—
33	865.6--867.6 MHz	$\leq 200 \text{ mW ERP}$	10m	Radio Telemetry, Telecommand & RFID system	—
34	867.6.0--869.0 MHz	$\leq 200 \text{ mW ERP}$	10m	Radio Telemetry, Telecommand & RFID system	—
35	920-925 MHz	$\leq 200 \text{ mW ERP}$	10m	Radio Telemetry, Telecommand & RFID system	—
36	1427-1432 MHz	$\leq 100 \text{ mW ERP}$	10m	Medical, biological and telemetry	—
37	2.40-2.483 GHz	$\leq 100 \text{ mW EIRP}$	100m	Wireless video transmitters ,Wlans	Wlans for non localized operations shall be approved on exceptional basis
38	5.150-5.350 GHz	$\leq 200 \text{ mW EIRP}$	100m	Wlans and broadband access	—
39	5.725-5.850 GHz	$\leq 200 \text{ mW EIRP}$	100m	Wlans and broadband access	—

40	10.5-10.55 GHz	$\leq 117 \text{ dB}\mu\text{V/m@3m}$	<b>indoor only</b>	Wireless video transmitters & other SRDs	Radar gun devices not allowed under this provision
41	24.00-24.25GHz	$\leq 100 \text{ mW EIRP}$	50m	Wireless video transmitters & other SRDs	-
42	76.00-77.00 GHz	$\leq 100 \text{ mW EIRP}$	50m	Automatic cruise control and collision warning system for vehicles	

\* Type approval required for the SRDs working in frequency bands highlighted yellow.

### PTA, FAB & Consultant's Consultation

Sr. No.	Activity	Topic	Date
1.	Contract Agreement	Short Range Devices	Aug 08, 2008
2.	First Draft Report Received	-	Oct 10, 2008
3.	Comments by FAB on Draft Report	1 <sup>st</sup> Draft report	Oct 24, 2008
4.	Meeting Held between PTA and FAB	List of Freq bands to be allowed for SRDs.	Jan 02, 2009
5.	Letter from FAB	FAB agreed to allow SRDs as per PTA report & on non-interference basis.	Jan 05, 2009
6.	Meeting Held between PTA and FAB	-	Apr 21, 2009
7.	Letter from FAB	Comments	Apr 30, 2009
8.	PTA Reply to FAB letter dated 30 <sup>th</sup> April 2009	SRD Spectrum-FAB Recommendations	May 06, 2009
9.	Letter from FAB	Reply of the letter dated May 06, 2009	May 25, 2009
10.	Meeting Held between PTA and FAB on 9 <sup>th</sup> June 2009	Conflict between Medical Band	Jun 15, 2009
11.	FAB Reply	Medical band conflict	Jun 16, 2009
12.	Letter from FAB	ITU Recommendations for Medical Band 402-407MHz	Jun 29, 2009
13.	Meeting Held between PTA and FAB on 15 <sup>th</sup> July 2009	Conflict between some freq bands	Aug 04, 2009
14.	Observations on Minutes of the Meeting by FAB	-	Aug 18, 2009
15.	PTA Reply to FAB Observations	-	Aug 31, 2009
16.	Letter to MoIT and FAB	SRD Recommendations	Nov 17, 2009
17.	Letter from DG Services	Comments	Dec 14, 2009
18.	Letter from FAB	Comments by FAB on SRD Recommendations	Dec 16, 2009
19.	Letter to DG Services	Response of observations raised by DG Services	Dec 23, 2009
20.	Letter to FAB	Response of observations raised by FAB	Dec 24, 2009
21.	Reply from FAB	SRD Recommendations	Jan 05, 2010

## Glossary of Acronyms, Terms and Definitions

EMC	Electromagnetic compatibility
ERP	Effective radiated power (ERP)
EIRP	Effective Isotropic Radiated Power (EIRP)
LIPD	Low Interference Potential devices
RRDs	Restricted Radiation Devices
SRD	Short Range Devices
Wlans	Wireless Local Area Networks
Primary Service	A service provided by a PTA licensee who also has been assigned spectrum
Secondary user	A user operating a device which fall under the ambit of a Short Range Device
OEM	Original Equipment Manufacturer