

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency

Operations

# Technician and General Class Amateur Radio & Satellite Stuff

Anthony Odenthal, KE7OSN Amateur Extra

December 4, 2013

# Table of Contents

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

## Introduction

General Rules  
Who's In Charge  
Part 97  
licenses  
Callsigns  
frequencies  
Questions

Emergency  
Operations

## 1 Introduction

## 2 General Rules

- Who's In Charge
- Part 97
- licenses
- Callsigns
- frequencies
- Questions

## 3 Emergency Operations

# Welcome

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

Welcome, over the next several sessions we will cover a substantial amount of information. please ask questions and slow me down.

The goals are:

- To introduce you to Amateur Radio

# Welcome

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency

Operations

Welcome, over the next several sessions we will cover a substantial amount of information. please ask questions and slow me down.

The goals are:

- To introduce you to Amateur Radio
- Prepare you to take (and pass) the technician and general exams

# Welcome

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency

Operations

Welcome, over the next several sessions we will cover a substantial amount of information. please ask questions and slow me down.

The goals are:

- To introduce you to Amateur Radio
- Prepare you to take (and pass) the technician and general exams
- Introduce you to satellite communications.

# A little about myself

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

## Introduction

General Rules  
Who's In Charge  
Part 97  
licenses  
Callsigns  
frequencies  
Questions

Emergency  
Operations

- Passed Tech Sept 2007
- Passed Gen Oct 2007
- Joined Benton County ARES April 2012
- Passed Extra April 2012
- Became a VE in June 2012

# What is Amateur Radio?

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

Amateur radio are people and activities that are regulated and encouraged, in the US and abroad, that allow licensed individuals to play around with radio waves, electronics, software, techniques, practices, and equipment to do all sorts of really cool stuff. Radio Amateurs are some of the least restricted users of radio spectrum, and with that freedom they have proven time and time again their worth. The term Amateur refers to someone who does something as a pastime rather than a profession.

# Some useful tools

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency

Operations

Some things you may want to look into as useful for studying

- AA9PW practice exams <http://aa9pw.com>
- ARRL license Manuals <http://www.arrl.org/shop/Licensing-Education-and-Training/>



# About the test

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

- 35 questions

# About the test

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency

Operations

- 35 questions
- Multiple Choice

# About the test

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency

Operations

- 35 questions
- Multiple Choice
- No time limit

# About the test

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency

Operations

- 35 questions
- Multiple Choice
- No time limit
- 396 questions in the tech pool, 457 in the general

# About the test

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency

Operations

- 35 questions
- Multiple Choice
- No time limit
- 396 questions in the tech pool, 457 in the general
- Need a 75% to pass

# Shal we begin?

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

## Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency

Operations

Remember if I go too fast or you have questions, let me know.

# Table of Contents

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

## 1 Introduction

## 2 General Rules

- Who's In Charge
- Part 97
- licenses
- Callsigns
- frequencies
- Questions

## 3 Emergency Operations

# Table of Contents

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

## 1 Introduction

## 2 General Rules

- Who's In Charge
- Part 97
- licenses
- Callsigns
- frequencies
- Questions

## 3 Emergency Operations



# Who's In charge

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

callsigns

frequencies

Questions

Emergency  
Operations

## International Telecommunications Union (ITU)

- Worldwide, treaty-based organization that allocates frequencies for specific uses.
- Primary Users - first "rights" to a frequency
- Secondary Users - permitted to use a frequency but must not interfere with a primary user
- World divided into 3 regions, US is in Region 2
- Creates "bands" - sections of spectrum allocated for amateur radio use.

# Who's In Charge

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency

Operations

## Federal Communications Commission (FCC)

- Promulgates rules for non-federal radio users within ITU spec
- Divides amateur bands into mode-specific sub-bands
- Rules for telecommunications are in the Code of Federal Regulations, Chapter 47
- Rules for amateur radio are in Part 97 of Chapter 47 (47 CFR 97)

# Who's In Charge

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

**Who's In Charge**

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

## Frequency Coordinator

- FCC recognized regional groups that coordinate the use of bands between large number of users

# Who's In Charge

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency

Operations

## Frequency Coordinator

- FCC recognized regional groups that coordinate the use of bands between large number of users
- Appointed by amateurs for amateurs

# Who's In Charge

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

callsigns

frequencies

Questions

Emergency

Operations

## Frequency Coordinator

- FCC recognized regional groups that coordinate the use of bands between large number of users
- Appointed by amateurs for amateurs
- Intended to help reduce and allow resolution of interference issues

# Who's In Charge

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

callsigns

frequencies

Questions

Emergency  
Operations

## Frequency Coordinator

- FCC recognized regional groups that coordinate the use of bands between large number of users
- Appointed by amateurs for amateurs
- Intended to help reduce and allow resolution of interference issues
- Voluntary rules unless there is interference, then the coordinated user "wins"

# Who's In Charge

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

callsigns

frequencies

Questions

Emergency  
Operations

## Frequency Coordinator

- FCC recognized regional groups that coordinate the use of bands between large number of users
- Appointed by amateurs for amateurs
- Intended to help reduce and allow resolution of interference issues
- Voluntary rules unless there is interference, then the coordinated user "wins"
- Gentleman's agreement

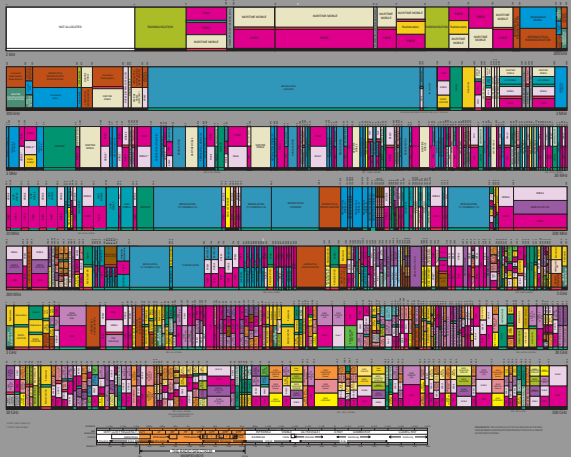
## FCC allocations

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

## Who's In Charge

# UNITED STATES FREQUENCY ALLOCATIONS





# Table of Contents

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

## 1 Introduction

## 2 General Rules

- Who's In Charge
- **Part 97**
- licenses
- Callsigns
- frequencies
- Questions

## 3 Emergency Operations

# 47 CRF 97.1 Basic Purpose

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency

Operations

The rules and regulations in this part are designed to provide an amateur radio service having a fundamental purpose as expressed in the following principles:

- A Recognition and enhancement of the value of the amateur service to the public as a *voluntary noncommercial communication service*, particularly with respect to providing emergency communications.

# 47 CRF 97.1 Basic Purpose

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

callsigns

frequencies

Questions

Emergency  
Operations

The rules and regulations in this part are designed to provide an amateur radio service having a fundamental purpose as expressed in the following principles:

- A Recognition and enhancement of the value of the amateur service to the public as a *voluntary noncommercial communication service*, particularly with respect to providing emergency communications.
- B Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art.

# 47 CRF 97.1 Basic Purpose

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

The rules and regulations in this part are designed to provide an amateur radio service having a fundamental purpose as expressed in the following principles:

- A Recognition and enhancement of the value of the amateur service to the public as a *voluntary noncommercial communication service*, particularly with respect to providing emergency communications.
- B Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art.
- C Encouragement and improvement of the amateur service through rules which provide for advancing skills in both the communication and technical phases of the art.

# 47 CRF 97.1 Basic Purpose

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

The rules and regulations in this part are designed to provide an amateur radio service having a fundamental purpose as expressed in the following principles:

- A Recognition and enhancement of the value of the amateur service to the public as a *voluntary noncommercial communication service*, particularly with respect to providing emergency communications.
- B Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art.
- C Encouragement and improvement of the amateur service through rules which provide for advancing skills in both the communication and technical phases of the art.
- D Expansion of the existing reservoir within the amateur radio service of trained operators, technicians, and electronics experts.

# 47 CRF 97.1 Basic Purpose

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

The rules and regulations in this part are designed to provide an amateur radio service having a fundamental purpose as expressed in the following principles:

- A Recognition and enhancement of the value of the amateur service to the public as a *voluntary noncommercial communication service*, particularly with respect to providing emergency communications.
- B Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art.
- C Encouragement and improvement of the amateur service through rules which provide for advancing skills in both the communication and technical phases of the art.
- D Expansion of the existing reservoir within the amateur radio service of trained operators, technicians, and electronics experts.
- E Continuation and extension of the amateur's unique ability to enhance international goodwill.

# Keyphrase

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency

Operations

*...a voluntary noncommercial  
communications service...*

This phrase sums up almost every rule and tenant of amateur radio.

# A voluntary noncommercial communications service

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns  
frequencies

Questions

Emergency  
Operations

Noncommercial means no "pecuniary interest". It is illegal to profit from the use of amateur radio.

As with almost any rule there are exceptions"

- Teachers may use ham radio in the classroom as a teaching aid
- "Code practice" transmissions
- Disaster Drills



# More basic rules

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

- No Music - expect transmission or re-transmission of a signal from a space station
- No Broadcasting
- No commercial traffic
- No profanity
- No codes or ciphers intended to hid content
- No international third party traffic unless treaty-approved

# Table of Contents

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules  
Who's In Charge  
Part 97  
**licenses**  
Callsigns  
frequencies  
Questions

Emergency  
Operations

## 1 Introduction

## 2 General Rules

- Who's In Charge
- Part 97
- **licenses**
- Callsigns
- frequencies
- Questions

## 3 Emergency Operations

# Licenses

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency

Operations

A license is valid for ten years, with a two year grace period.  
Upgrades don't count as renewals. Basic renewals are free!  
There are five classes.

- \*Novice
- Technician
- General
- \*Advanced
- Extra

# Licenses

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency

Operations

There are four kinds of licenses, Individual hams hold both a "Station" and "Operator"

- Station
- Operator
- Club - W7OSU, K7CVO, W1AW
- Special Event - A7W

Clubs can get a "club callsign", and events can get an event callsign.

# Table of Contents

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency

Operations

## 1 Introduction

## 2 General Rules

- Who's In Charge
- Part 97
- licenses
- **Callsigns**
- frequencies
- Questions

## 3 Emergency Operations

# Callsigns

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency

Operations

- US callsigns start with A,K,N, or W
- The format is one or two letters, a number, and one to three letters.
- New callsigns are assigned in sequential order - number indicates the region in the US
- Shorter callsigns are reserved for higher license classes
- 1X1 for special events only

# Callsigns

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency  
Operations

- KE7OSN
- N8GFO

# Callsigns

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency  
Operations

- KE7OSN
- N8GFO -Yep



# Callsigns

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency  
Operations

- KE7OSN
- N8GFO -Yep
- K7HZ

# Callsigns

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency  
Operations

- KE7OSN
- N8GFO -Yep
- K7HZ -That's an Extra

# Callsigns

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency

Operations

- KE7OSN
- N8GFO -Yep
- K7HZ -That's an Extra
- VE6GLW

# Callsigns

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency  
Operations

- KE7OSN
- N8GFO -Yep
- K7HZ -That's an Extra
- VE6GLW -That's Canadian, eh

# Callsigns

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

- KE7OSN
- N8GFO -Yep
- K7HZ -That's an Extra
- VE6GLW -That's Canadian, eh
- KLOO

# Callsigns

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency

Operations

- KE7OSN
- N8GFO -Yep
- K7HZ -That's an Extra
- VE6GLW -That's Canadian, eh
- KLOO -That's a commercial station

# Callsigns

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

- KE7OSN
- N8GFO -Yep
- K7HZ -That's an Extra
- VE6GLW -That's Canadian, eh
- KLOO -That's a commercial station
- WSJ509

# Callsigns

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

- KE7OSN
- N8GFO -Yep
- K7HZ -That's an Extra
- VE6GLW -That's Canadian, eh
- KLOO -That's a commercial station
- WSJ509 -Land Mobile, Benton County Sheriff



# Callsigns

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency  
Operations

- KE7OSN
- N8GFO -Yep
- K7HZ -That's an Extra
- VE6GLW -That's Canadian, eh
- KLOO -That's a commercial station
- WSJ509 -Land Mobile, Benton County Sheriff
- Mission Base

# Callsigns

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency  
Operations

- KE7OSN
- N8GFO -Yep
- K7HZ -That's an Extra
- VE6GLW -That's Canadian, eh
- KLOO -That's a commercial station
- WSJ509 -Land Mobile, Benton County Sheriff
- Mission Base -What is known as a "tactical callsign"

# Callsigns

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency  
Operations

- KE7OSN
- N8GFO -Yep
- K7HZ -That's an Extra
- VE6GLW -That's Canadian, eh
- KLOO -That's a commercial station
- WSJ509 -Land Mobile, Benton County Sheriff
- Mission Base -What is known as a "tactical callsign"

# What IS an amateur station?

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency  
Operations

T1A10 (A) [97.3(a)(5)] What is the FCC Part 97 definition of an amateur station?

# What IS an amateur station?

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency  
Operations

T1A10 (A) [97.3(a)(5)] What is the FCC Part 97 definition of an amateur station?

A. A station in an Amateur Radio Service consisting of the apparatus necessary for carrying on radio communications

# Operator

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency  
Operations

Who "operates" an amateur station?

# Operator

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency

Operations

Who "operates" an amateur station?

The control operator, who is designated by the station licensee, and determines the privileges of operation.

e.g. if you are at a radio that can operate outside your privileges, you still can only use what you are licensed to.

# Your Callsign

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency  
Operations

A station must transmit its callsign at least every ten minutes and at the end of every communication.

Special situations have special rules

- Control operator working outside of a station licensee privileges.
- Special event station control operator
- Control operator using new privileges prior to FCC database update



# The Uniform Licensing System

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency

Operations

The ULS is an online database of FCC license information. A new licensee may use their privileges as soon as their information appears in the ULS. When you upgrade you may use your new privileges as soon as you pass the test.

# Typical uses of a callsign

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency  
Operations

- W7OSU This is KE7OSN

# Typical uses of a callsign

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency  
Operations

- W7OSU This is KE7OSN
- Net Control This is KE7OSN

# Typical uses of a callsign

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency

Operations

- W7OSU This is KE7OSN
- Net Control This is KE7OSN
- This is W7OSU (Go Ahead)

# Typical uses of a callsign

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency

Operations

- W7OSU This is KE7OSN
- Net Control This is KE7OSN
- This is W7OSU (Go Ahead)
- CQ CQ CQ this is KE7OSN

# Typical uses of a callsign

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency

Operations

- W7OSU This is KE7OSN
- Net Control This is KE7OSN
- This is W7OSU (Go Ahead)
- CQ CQ CQ this is KE7OSN
- KE7OSN monitoring

# Typical uses of a callsign

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency  
Operations

- W7OSU This is KE7OSN
- Net Control This is KE7OSN
- This is W7OSU (Go Ahead)
- CQ CQ CQ this is KE7OSN
- KE7OSN monitoring
- This is KF7FGE stroke (/) KE7OSN

# Typical uses of a callsign

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency  
Operations

- W7OSU This is KE7OSN
- Net Control This is KE7OSN
- This is W7OSU (Go Ahead)
- CQ CQ CQ this is KE7OSN
- KE7OSN monitoring
- This is KF7FGE stroke (/) KE7OSN
- Hey Bob, you around?



# Hey bob, you around

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency  
Operations

Hey bob you around?  
Legal?

# Hey bob, you around

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

**Callsigns**

frequencies

Questions

Emergency

Operations

Hey bob you around?

Legal?

Yes, as long as you keep to the every ten minutes and the end of every communication.

# Hey bob, you around

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency

Operations

Hey bob you around?

Legal?

Yes, as long as you keep to the every ten minutes and the end of every communication.

What if Bob isn't there?

# Hey bob, you around

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency

Operations

Hey bob you around?

Legal?

Yes, as long as you keep to the every ten minutes and the end of every communication.

What if Bob isn't there?

KE7OSN clear

# Types of stations

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Call signs

frequencies

Questions

Emergency  
Operations

- Club – at least four people, one of which accepts responsibility and is the “trustee”.
- Space – at least 50km above the surface.
- Beacon – transmits a low-level signal for propagation studies
- Repeater – retransmits a signal heard on one frequency on another frequency.
- Auxillary – a secondary receiver that feeds a repeater station.

# Table of Contents

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

**frequencies**

Questions

Emergency  
Operations

## 1 Introduction

## 2 General Rules

- Who's In Charge
- Part 97
- licenses
- Callsigns
- **frequencies**
- Questions

## 3 Emergency Operations

# Band Plan

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules  
Who's In Charge  
Part 97  
licenses  
Call signs  
frequencies  
Questions

Emergency  
Operations

## US Amateur Radio Bands

### US AMATEUR POWER LIMITS

FCC 97.313 An amateur station must use the minimum transmitter power necessary to carry out the desired communications. (b) No station may transmit with a transmitter power exceeding 1.5 kW PEP.

Effective Date  
March 5, 2012

Published by:

**ARRL**

The national association for

**AMATEUR RADIO®**

[www.arrl.org](http://www.arrl.org)

225 Main Street, Newington, CT USA 06111-1494



### KEY

**Note:**  
CW operation is permitted throughout all amateur bands.

NCW is authorized above 50.1 MHz, except for 144.0-144.1 and 219-220 MHz.

Test transmissions are authorized above 51 MHz, except for 219-220 MHz.

- = RTTY and data
- = phone and image
- = CW only
- = SSB phone
- = USB phone, CW, RTTY, and data
- = Fixed digital message forwarding systems only

- E = Amateur Extra
- A = Advanced
- G = General
- T = Technician
- N = Novice

See [ARRLWeb](http://ARRLWeb) at [www.arrl.org](http://www.arrl.org) for detailed band plans.

**ARRL**  
**We're At Your Service**

ARRL Headquarters:  
805-594-0200 Fax 860-594-0259  
email: [hq@arrl.org](mailto:hq@arrl.org)

Publication Orders:  
[www.arrl.org/shops](http://www.arrl.org/shops)  
Toll-Free 1-888-277-5289 (860-594-0355)  
email: [orders@arrl.org](mailto:orders@arrl.org)

Membership/Circulation Desk:  
[www.arrl.org/membership](http://www.arrl.org/membership)  
Toll-Free 1-888-277-5289 (860-594-0358)  
email: [membership@arrl.org](mailto:membership@arrl.org)

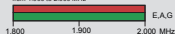
Golfing Started in Amateur Radio:  
Toll-Free 1-800-326-3942 (860-594-0355)  
email: [newham@arrl.org](mailto:newham@arrl.org)

Exams: 860-594-0300 email: [vec@arrl.org](mailto:vec@arrl.org)

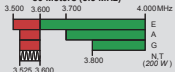
Copyright © ARRL 2012 rev. 4/12/2012

### 160 Meters (1.8 MHz)

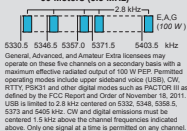
Avoid interference to radiolocation operations from 1.900 to 2.000 MHz



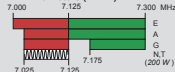
### 80 Meters (3.5 MHz)



### 60 Meters (5.3 MHz)



### 40 Meters (7 MHz)



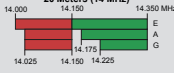
Phone and image modes are permitted between 7.075 and 7.100 MHz for FCC licensed stations in ITU Regions 1 and 3 and by FCC licensed stations in ITU Region 2 West of 130 degrees West longitude or South of 20 degrees North latitude. See Sections 97.305(c) and 97.307(h)(11).  
Novice and Technician licensees outside ITU Region 2 may use CW only between 7.025 and 7.075 MHz and between 7.100 and 7.125 MHz. 7.200 to 7.300 MHz is not available outside ITU Region 2. See Section 97.301(e). These exemptions do not apply to stations in the continental US.

### 30 Meters (10.1 MHz)

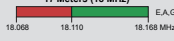
Avoid interference to fixed services outside the US.



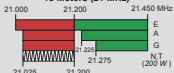
### 20 Meters (14 MHz)



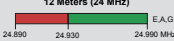
### 17 Meters (18 MHz)



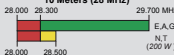
### 15 Meters (21 MHz)



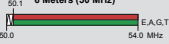
### 12 Meters (24 MHz)



### 10 Meters (28 MHz)



### 6 Meters (50 MHz)



### 2 Meters (144 MHz)



### 1.25 Meters (222 MHz)



\*Geographical and power restrictions may apply to all bands above 420 MHz. See the ARRL Operating Manual for information about your area.

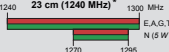
### 70 cm (420 MHz)\*



### 33 cm (902 MHz)\*



### 23 cm (1240 MHz)\*



All licensees except Novices are authorized all modes on the following frequencies:

2300-2310 MHz	10.0-10.5 GHz *	122.25-123.0 GHz
2390-2450 MHz	24.0-24.25 GHz	134-141 GHz
3300-3500 MHz	47.0-47.2 GHz	241-250 GHz
5650-5925 MHz	76.0-81.0 GHz	All above 275 GHz

\* No pulse emissions

# ITU Band Names

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

**frequencies**

Questions

Emergency  
Operations

- MF - Medium Frequency 300KHz to 3MHz
- HF - High Frequency 3MHz to 30 MHz
- VHF - Very High Frequency 30MHz to 300MHz
- UHF - Ultra High Frequency 300MHz to 3GHz
- SHF - Super High Frequency 3GHz to 30GHz
- EHF - Extremely High Frequency - 30GHz to 300GHz
- THF - Tremendously High Frequency - 300GHz to 3THz



# HF 3-30MHz

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

- 80 Meters
  - 3.525-3.600MHz: CW Only
- 40 Meters
  - 7.025-.125MHz: CW Only
- 15 Meters
  - 21.025-21.200MHz: CW Only
- 10 Meters
  - 28.000-28.300MHz: CW, RTTY/Data 200 watts PEP max
  - 28.300-28.500MHz: CW, Phone 200 watts PEP max

# VHF 30-300MHz

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

**frequencies**

Questions

Emergency  
Operations

- 6 Meters
  - 50.0-50.1MHz CW Only
  - 50.1-54.0MHz All modes
- 2 Meters
  - 144.0-144.1MHz CW Only
  - 144.1-148.0MHz All modes
- 1.25 Meters
  - 222.00-225.00MHz All modes

# UHF 300-3000MHz (3GHz)

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency

Operations

- 70 Centimeters
  - 420.0-450.0MHz All Modes
- 33 Centimeters
  - 902.0-928.0MHz All Modes
- 23 Centimeters
  - 1240-1300MHz All Modes
- 2.4GHz
  - 2.3-2.31GHz
  - 2.39-2.45GHz \*

# 2.4GHz

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

**frequencies**

Questions

Emergency

Operations

We share the 2390-2450MHz band with: 802.11 networks, cordless phones, video cameras, zigbee, etc.

We are PRIMARY users. We have first "rights". Secondary users must not cause us interference and must accept interference from our operations.

# SHF 3GHz-30GHz and up

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

**frequencies**

Questions

Emergency

Operations

- 3.3-3.5GHz
- 5.65-5.925GHz
- 10.0-10.5GHz
- 24.0-24.25GHz
- 47.0-47.2GHz
- 76.0-81.9GHz
- 119.98-120.02GHz
- 142-149GHz
- 241-250GHz
- Everything above 300GHz

# Table of Contents

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules  
Who's In Charge  
Part 97  
licenses  
Callsigns  
frequencies  
**Questions**

Emergency  
Operations

## 1 Introduction

## 2 General Rules

- Who's In Charge
- Part 97
- licenses
- Callsigns
- frequencies
- **Questions**

## 3 Emergency Operations

# T1A

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

T1A01 For whom is the Amateur Radio Service intended?

D. Persons who are interested in radio technique solely with a personal aim and without pecuniary interest

T1A02 What agency regulates and enforces the rules for the Amateur Radio Service in the United States?

C. The FCC

T1A03 Which part of the FCC rules contains the rules and regulations governing the Amateur Radio Service?

D. Part 97

T1A04 Which of the following meets the FCC definition of harmful interference?

C. That which seriously degrades, obstructs, or repeatedly interrupts a radio communication service operating in accordance with the Radio Regulations

T1A05 What is the FCC Part 97 definition of a space station?

D. An amateur station located more than 50 km above the Earth's surface

T1A06 What is the FCC Part 97 definition of telecommand?

C. A one-way transmission to initiate, modify or terminate functions of a device at a distance

T1A07 What is the FCC Part 97 definition of telemetry?

C. A one-way transmission of measurements at a distance from the measuring instrument

T1A08 Which of the following entities recommends transmit/receive channels and other parameters for auxiliary and repeater stations?

B. Frequency Coordinator

T1A09 Who selects a Frequency Coordinator?

C. Amateur operators in a local or regional area whose stations are eligible to be auxiliary or repeater stations

T1A10 What is the FCC Part 97 definition of an amateur station?

A. A station in an Amateur Radio Service consisting of the apparatus necessary for carrying on radio communications

T1A11 Which of the following stations transmits signals over the air from a remotereceive site to a repeater for retransmission?

C. Auxiliary station

# T1B

## Technician and General Class Amateur Radio & Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

## Questions

T1B01 What is the ITU?

B. A United Nations agency for information and communication technology issues

T1B02 North American amateur stations are located in which ITU region?

### B. Region 2

B. 52.525 MHz

A. 2 meter band

C. 443.350 MHz

B. 1296 MHz

D. 1.25 meter band

C. Amateurs may not cause harmful interference to primary users

A. To allow for calibration error in the transmitter frequency display

B. So that modulation sidebands do not extend beyond the band edge

C. To allow for transmitter frequency drift

D. All of these choices are correct

C. The 6 meter, 2 meter, and 1.25 meter bands

A. CW only



# T1C

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

T1C01 Which type of call sign has a single letter in both the prefix and suffix?

C. Special event

T1C02 Which of the following is a valid US amateur radio station call sign?

B. W3ABC

T1C03 What types of international communications are permitted by an FCC-licensed amateur station?

A. Communications incidental to the purposes of the amateur service and remarks of a personal character

T1C04 When are you allowed to operate your amateur station in a foreign country?

A. When the foreign country authorizes it

T1C05 What must you do if you are operating on the 23 cm band and learn that you are interfering with a radiolocation station outside

A. Stop operating or take steps to eliminate the harmful interference

T1C06 From which of the following may an FCC-licensed amateur station transmit, in addition to places where the FCC regulates commu

D. From any vessel or craft located in international waters and documented or registered in the United States

T1C07 What may result when correspondence from the FCC is returned as undeliverable because the grantee failed to provide the correct

B. Revocation of the station license or suspension of the operator license

T1C08 What is the normal term for an FCC-issued primary station/operator license grant?

C. Ten years

T1C09 What is the grace period following the expiration of an amateur license within which the license may be renewed?

A. Two years

T1C10 How soon may you operate a transmitter on an amateur service frequency after you pass the examination required for your first a

C. As soon as your name and call sign appear in the FCC's ULS database

T1C11 If your license has expired and is still within the allowable grace period, may you continue to operate a transmitter on amateur ser

A. No, transmitting is not allowed until the ULS database shows that the license has been renewed

# T1D

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules  
Who's In Charge  
Part 97  
licenses  
Callsigns  
frequencies

Questions

Emergency  
Operations

T1D01 With which countries are FCC-licensed amateur stations prohibited from exchanging communications?

A. Any country whose administration has notified the ITU that it objects to such communications

T1D02 On which of the following occasions may an FCC-licensed amateur station exchange messages with a U.S. military station?

A. During an Armed Forces Day Communications Test

T1D03 When is the transmission of codes or ciphers allowed to hide the meaning of a message transmitted by an amateur station?

C. Only when transmitting control commands to space stations or radio control craft

T1D04 What is the only time an amateur station is authorized to transmit music?

A. When incidental to an authorized retransmission of manned spacecraft communications

T1D05 When may amateur radio operators use their stations to notify other amateurs of the availability of equipment for sale or trade?

A. When the equipment is normally used in an amateur station and such activity is not conducted on a regular basis

T1D06 Which of the following types of transmissions are prohibited?

A. Transmissions that contain obscene or indecent words or language

T1D08 When may the control operator of an amateur station receive compensation for operating the station?

B. When the communication is incidental to classroom instruction at an educational institution

T1D09 Under which of the following circumstances are amateur stations authorized to transmit signals related to broadcasting, program

A. Only where such communications directly relate to the immediate safety of human life or protection of property

T1D10 What is the meaning of the term broadcasting in the FCC rules for the amateur services?

D. Transmissions intended for reception by the general public

T1D11 Which of the following types of communications are permitted in the Amateur Radio Service?

A. Brief transmissions to make station adjustments

# T1E

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

T1E01 When must an amateur station have a control operator?

A. Only when the station is transmitting

T1E02 Who is eligible to be the control operator of an amateur station?

D. Only a person for whom an amateur operator/primary station license grant appears in the FCC database or who is authorized for alien reciprocal operation

T1E03 Who must designate the station control operator?

A. The station licensee

T1E04 What determines the transmitting privileges of an amateur station?

D. The class of operator license held by the control operator

T1E05 What is an amateur station control point?

C. The location at which the control operator function is performed

T1E06 Under which of the following types of control is it permissible for the control operator to be at a location other than the control point?

B. Automatic control

T1E07 When the control operator is not the station licensee, who is responsible for the proper operation of the station?

D. The control operator and the station licensee are equally responsible

T1E08 What type of control is being used for a repeater when the control operator is not present at a control point?

C. Automatic control

T1E09 What type of control is being used when transmitting using a handheld radio?

D. Local control

T1E10 What type of control is used when the control operator is not at the station location but can indirectly manipulate the operating controls of the station?

B. Remote

T1E11 Who does the FCC presume to be the control operator of an amateur station, unless documentation to the contrary is in the station records?

D. The station licensee

T1F

## Technician and General Class Amateur Radio & Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

## Questions

A. Tactical call

C. Every ten minutes

T1F03 When is an amateur station required to transmit its assigned call sign?

D. At least every 10 minutes during and at the end of a contact

### C. The English language

B. Send the call sign using CW or phone emission

D. All of these choices are correct

D. It must not conflict with any other indicator specified by the FCC rules or with any call sign prefix assigned to another country

A. Never

### C. Repeater station

A. The control operator of the originating station

A. Any station whose government permits such communications

B. At least 4

T1F13 When must the station licensee make the station and its records available for FCC inspection?

B. Any time upon request by an FCC representative

# Table of Contents

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules  
Who's In Charge  
Part 97  
licenses  
Callsigns  
frequencies  
Questions

Emergency  
Operations

## 1 Introduction

## 2 General Rules

- Who's In Charge
- Part 97
- licenses
- Callsigns
- frequencies
- Questions

## 3 Emergency Operations

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world



# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world



# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenhal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world



# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world

# Title

Technician and  
General Class  
Amateur Radio  
& Satellite Stuff

Anthony  
Odenthal,  
KE7OSN  
Amateur Extra

Introduction

General Rules

Who's In Charge

Part 97

licenses

Callsigns

frequencies

Questions

Emergency  
Operations

hello world