

**ORDINANCE AMENDING CHAPTER 5 OF THE CITY OF BILOXI  
CODE OF ORDINANCES TO INCLUDE PROVISIONS FOR  
EMERGENCY RADIO SYSTEM COVERAGE**

WHEREAS, with rapidly advancing technology and telecommunications, it is essential to provide minimum standards to insure a reasonable degree of reliable emergency services communications from within certain buildings and structures located within the City of Biloxi between public safety users and emergency communications centers; and

WHEREAS, to achieve this purpose, it is appropriate to adopt an Emergency Radio System Coverage Ordinance.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF BILOXI, MISSISSIPPI, AS FOLLOWS:

Section 1. The findings, statements, and conclusions of fact contained in the preamble area adopted, ratified, and incorporated herein.

Section 2. Chapter 5 of the Code of Ordinances is hereby amended to add a new Article XVI to read in its entirety as follows:

**5-16-1. TITLE**

(a) The title of this Article shall be: "The Emergency Radio System Coverage Ordinance."

**5-16-2. PURPOSE**

(a) The purpose of this Ordinance is to provide minimum standards to insure a reasonable degree of reliable emergency services communications from within certain buildings and structures located within the City of Biloxi between public safety users and emergency communications centers.

(b) It is the responsibility of the Harrison County Emergency Communications Commission to get the signal to and from the building site.

(c) Failure to comply with this Ordinance shall be grounds for the Director of Community Development to revoke any previously issued Certificate of Occupancy for the building or structure. A written appeal may be taken in the manner set forth in the City of Biloxi's Code of Ordinances.

### 5-16-3. **DEFINITIONS**

- (a) **Owner:** Building Owner.
- (b) **County or Municipality:**
- (c) **FCC:** Federal Communications Commission
- (d) **Public Safety Services:** Those services including, but not limited to Police, Fire, EMS, and Public Works departments.
- (e) **Building:** Any structure, enclosed or open, public or private, which is owned by Owner.
- (f) **Building Amplifier:** Any system which is designed to receive a radio signal outside of the Building and radiate it throughout the Building and conversely, receive a radio signal generated within the Building and re-radiate a signal outside of the Building.
- (g) **Battery:** An electrochemical storage device consisting of either Nickel Metal Hydride (NiMH), Nickel Cadmium (NiCad), or Lead (Pb).
- (h) **Antenna:** Device designed to convert electrical signals from a cable to electro-magnetic radiation in the air.
- (i) **Talk-out:** The ability of a Public Safety Radio Network Infrastructure Site to transmit a radio signal of sufficient strength as to be clearly received by a Public Safety Radio user in the field.
- (j) **Talk-back:** The ability of a Public Safety Radio user located in the field to transmit a radio signal of sufficient strength as to be clearly received by a Public Safety Radio Network Infrastructure Site.
- (k) **Sufficient Strength:** As defined by this Ordinance, a minimum received radio signal level of 95 dBm measured either at the Public Safety Radio Infrastructure Site, or received in the field by a Public Safety Radio user.

### 5-16-4 . **RADIO COVERAGE**

- (a) Except as otherwise provided, no person shall erect, construct, or modify any building or structure or any part thereof, or cause the same to be done which inhibits or degrades adequate radio coverage for public safety services. A certificate of occupancy may not be issued for any building or structure which fails to comply with this requirement

(b) The frequency range which must be supported shall be 806-870MHz, or as otherwise established and required in writing by the City of Biloxi as being necessary for public safety purposes.

(c) For the purposes of this ordinance, adequate radio coverage shall include the following:

- (1) A minimum signal strength of -95 dBm available in ninety percent (90%) of the area of each floor of the building when transmitted from the closest Public Safety Radio Network Site (PSRNS).
- (2) A minimum signal strength of -95 dBm received at the closest PSRNS when transmitted from ninety percent (90%) of the area of each floor of the building.
- (3) A ninety percent (90%) reliability factor.

#### 5-16-5 . **AMPLIFICATION SYSTEM ALLOWED**

(a) Buildings and structures shall be equipped with any of the following, in order to achieve adequate radio coverage.

- (1) A radiating cable system;
- (2) An internal multiple antenna system with FCC Type Accepted (CFR Part 47,90.219) Bi-Directional Amplifiers as needed to encompass the frequency range stated above or frequency range subsequently established by the City of Biloxi; or
- (3) A system that has been approved by the City of Biloxi as being capable of providing amplification to meet the requirements of this Ordinance.

(b) The system shall be capable of operating on an independent battery and/or generator system for a period of at least 12 hours without external power input.

- (1) The battery system shall automatically charge in the presence of external power input.
- (2) If a battery standby system is used, these batteries shall be replaced, and disposed of properly by the Owner, once every 24 months after initial system installation.

(3) Documentation shall be retained and made available for immediate inspection to assure that batteries have been replaced in accordance to this Ordinance.

(c) There shall be no connectivity between the amplification system and fire alarm system.

(d) In the event that a signal booster is employed:

(1) It shall be fully encased within a dust and water resistant case with a NEMA 4 rating or better.

(2) It shall have a 4-hour safety survivability rating or greater.

(3) It shall be painted red and bear the lettering as follows: Harrison County Emergency Communications Commission Equipment.

(e) All proposed building amplifier systems must provide the following information to the Harrison County Emergency Communications Commission:

(1) A building blueprint showing name and address of contractor, name of Owner and Occupant, Location, including street address, point of compass, full height cross section or schematic diagram including structural member information if required for clarity and including ceiling construction and method of protection for non-metallic piping, location of partitions, location of fire walls, occupancy class and use of each area or room, a graphic representation of the scale used on all plans.

(2) Make, type, model, and size of all cable, amplifiers, antennas, batteries, etc. (specification sheets).

(3) Drawings indicating the locations of the amplification equipment and associated antenna systems, cables, antennas, hangers, sleeves, braces, methods of securing cables, which includes a view showing building access to the equipment.

(4) Schematic drawings of the electrical, backup power, antennas system and any other associated equipment relative to the amplification equipment including panel locations and labeling.

#### **5-16-6. OWNER RESPONSIBILITY**

(a) It shall be the responsibility of the Owner of a building or structure which currently holds a Certificate of Occupancy or allows the building or structure to be used for any purpose other than construction, to be in compliance with this Ordinance.

#### **5-16-7. INADEQUATE RADIO COVERAGE**

- (a) The Owner of any building or structure found to have inadequate public safety radio coverage must submit to the Harrison County Emergency Communications Commission for approval a Plan to correct the radio coverage deficiency.
- (b) This Plan must be submitted within ninety (90) days from the date the radio coverage is found to be inadequate.
- (c) The approved Plan must be put into place by the Owner within one hundred and twenty (120) days after the Plan has been approved by the Harrison County Emergency Communications Commission.

#### **5-16-8. EXISTING BUILDINGS AND STRUCTURES**

- (a) Any building or structure existing, under construction, or for which a building permit application is pending, or has been approved as of the effective date of this Ordinance, shall not be required to comply with the provisions of this Ordinance unless the building has been modified, altered, or repaired and the costs of same exceeds fifty percent (50%) of the assessed value of the existing building and are made within any twelve (12) month period or the usable floor area is expanded or enlarged by more than fifty percent (50%).

#### **5-16-9. EVALUATION PROCESS**

- (a) The evaluation process for determining the need for in-building amplification is conducted in a minimum of two phases: Pre-construction and acceptance/implementation.
- (b) Pre-construction Phase.
  - (1) Before the construction of the new building, basic information can be gathered to begin the process of determining the need, type and actual implementation of augmentation to the radio system. In most cases, the following information must be known to properly design and cost estimate an in-building radio system.

a. New Building Information

1. Type/size of building—single story, multi-level, square footage, number of stories.
2. Orientation of building—above/below ground, line of sight.
3. Construction of the outer and inner walls—plaster, drywall, brick, sheet metal.
4. Proposed equipment locations—equipment rooms, cableways, conduits.
5. Building location—longitude and latitude coordinates.
6. Local building code requirements and special requirements.
7. Building blueprints and drawings.

(2) Existing System Information—to be supplied by Harrison County Emergency Communications Commission.

- a. Public Safety Radio Network Site location nearest to construction locations.
- b. Donor Channel Frequency—specific digital channel to enhance radio coverage.
- c. Grade of service required to meet coverage requirements.
- d. Type of Subscriber unit.
- e. Number of channels and their frequencies.
- f. Signal strength of donor site at the building locations.

With the information above, the following steps can establish the potential need for a building amplifier.

(3) Needs Determination—Signal Strength Measurements.

- a. At the planned construction site, measure (or have measured) the signal strength of the donor control channel.
- b. If the signal strength of the donor is -95 dBm or less on the outside of the building, the probability of additional in-building coverage is high.
- c. If the signal strength of the donor is greater than 95 dBm, determine the expected signal strength of the donor by subtracting the sum of the interior losses due to walls, doors, and windows from the ambient signal outside the building.  
(See Table 1)
- d. If a signal strength of -95 dBm or greater is calculated at the inner most point of the building, an in-building system may not be required.
- e. If a signal strength is calculated at -95 dBm or less, an in-building system is warranted.
- f. To determine signal strengths for specific areas and evaluate the impact of the proposed building on existing structures, consult the latest Harrison County Emergency Communications District RF Survey Report.
- g. If determined that an in-building amplification system is required for either the proposed site or existing structures impacted by the proposed construction, provide placeholder in budget for cost of communication system based on results of the above.

5-16-10.        **ACCEPTANCE TEST PROCEDURES**

(a) Acceptance testing for an in-building radio amplification system is required, upon completion of installation of the system is required, upon completion of installation of the system. It is the Owner's responsibility to have the radio amplifier system functionally tested to ensure adequate two-way coverage provided on each floor of the building is in compliance with requirements as set forth in this Ordinance.

(b) A minimally acceptable test plan shall require that each floor of the building be divided into a grid of approximately twenty (20) equal areas. A maximum of two nonadjacent areas will be allowed to fail the test.

(c) In the event that three of the areas fail the test, in order to be more statistically accurate, the floor may be divided into forty (40) equal areas. In such event, a maximum of four nonadjacent areas will be allowed to fail the test. After the forty (40) area tests, and if the system continues to fail, the Owner shall repair, replace, alter, or upgrade the system to meet the coverage requirements of this Ordinance.

(d) Talk-out and Talk-back testing from the building site to the Harrison County Public Safety Radio Network shall use a three watt portable transceiver with out-speaker/microphone and flexible antenna.

(e) A test location approximately in the center of a grid area will be selected for the test, then the radio will be keyed with a voice message used to verify two-way communication to and from the outside of the building.

(f) Once the test location has been selected, use of another test location within the grid area will not be permitted. Each test location will also require the capture of the actual signal strength (measured in units of dBm) at that location.

(g) Signal strength testing instruments are to be recently calibrated (within the past 12 months prior to testing) and of a frequency selective type incorporating an antenna similar to the ones used on the hand-held transceivers.

(h) The gain values of all building amplifiers shall be measured and the results kept on file with the Owner so that building amplifier performance measurements can be verified each year during the annual tests.

(i) In the event that the measurement results become lost, the Owner will be required to rerun the coverage acceptance test to reestablish the gain values.



#### **5-16-11. ANNUAL TESTS**

(a) Once an in-building radio amplifier system is installed, the building owner shall test all active components of the system including but not limited to amplifier, power supplies, and back-up batteries, a minimum of once every 12 months.

(b) Amplifiers shall be tested to ensure that the gain is the same as it was upon initial installation and acceptance.

(c) Back-up batteries and power supplies shall be tested under load for a period of one hour to verify that they will operate during an actual power outage.

(d) All other radio signal radiating components shall be checked to determine that they are operating within the manufacturer's specifications for the intended purpose.

#### **5-16-12. FIVE YEAR TEST**

(a) In addition to the annual test, the Owner shall perform a radio coverage test a minimum of once every five years to ensure that the radio system continues to meet the requirements of the Ordinance at the time of original implementation.

(b) The procedure set forth above shall apply to such tests.

#### **5-16-13. QUALIFICATIONS OF TESTING PERSONNEL**

(a) All tests shall be conducted, documented, and witnessed by a person in possession of a current FCC general radiotelephone operator license or a manufacturer-authorized maintenance agent for the Harrison County Emergency Communications Commission radio system.

(b) All test records shall be retained at the inspected premises by the Owner and a copy submitted to the Harrison County Emergency Communications Commission and the City of Biloxi within thirty (30) days of when the test has been conducted.

(c) In the event the test results fail to comply with the minimum requirements of the Harrison County Emergency Communications Commission and the City of Biloxi, appropriate repairs shall be made and additional tests conducted until tests meet the minimum requirements.

#### 5-16-14. **INSPECTIONS**

- (a) Harrison County Emergency Communications Commission and City of Biloxi personnel (or their representative), after providing reasonable notice to the Owner or his representative, shall have the right to enter onto the property to conduct field verification to be certain that the required minimum level of radio coverage is present.
- (b) The cost associated with this activity is the responsibility of the Owner.
- (c) Repairs or upgrades needed to correct identified amplifier system shortfalls, to bring failed systems into compliance with the technical and functional requirements of this Ordinance, are the responsibility of the Owner.

#### 5-16-15. **PROPERTY OWNER MAINTENANCE RESPONSIBILITIES**

- (a) Upon verification of coverage testing results as outlined above, the Owner shall be responsible for maintenance of the system.
- (b) A copy of the Owner's Maintenance Contract shall be provided to the Harrison County Emergency Communications Commission with the name of contractor, who will supply a 24-hour, 7-day emergency repair response within two (2) hours after notification by either the Harrison County Emergency Communications Commission and the City of Biloxi or the Owner.
- (c) The maintenance contract shall also contain appropriate information as to the contact personnel with phone numbers.
- (d) The Owner shall also be responsible for making any repairs, replacement or upgrades to the systems as directed by the Harrison County Emergency Communications Commission, should the system fail or no longer work in the future.

#### 5-16-16. **EXEMPTIONS**

- (a) This Ordinance shall not apply to the following buildings provided they do not make use of any metal construction or any underground storage or parking areas.
  - (1) Any building zoned Single-Family Residential (SFR).
  - (2) Buildings or structures existing as of the effective date of this Ordinance. This exemption shall not apply to buildings or structures which have been modified, altered, or repaired as set forth in Section 5-16-8 (Existing Buildings and Structures) after the effective date of this Ordinance.

- (b) For purposes of this section, parking structures and stairwells are included in the definition of “building” and stair shafts and elevators are included in the definition of “all parts of a building”.

**5-16-17. AUTHORITY**

- (a) The Fire Chief or his authorized designee shall render interpretations of this code and make and enforce rules and regulations in order to carry out the application and intent of its provisions.
- (b) The Fire Chief or his authorized designee shall make and enforce rules and supplemental regulations in order to carry out the application and intent of its provisions. The Fire Chief or his authorized designee shall require additional safeguards consisting of special systems suitable for the protection of the hazard involved. Therefore, the Harrison County Emergency Communications Commission requires that public safety radio amplification system shall be installed within certain buildings and structures within the City of Biloxi to provide for emergency communications to and from the emergency communications center.

**5-16-18. SCOPE**

- (a) This Article covers all new construction or building remodels in the City of Biloxi after the effective date.

**TABLE 1 RF LOSSES**

<b>Item</b>	<b>Loss (dB)</b>
Ceiling Duct	1-8
Metal Pole (small)	3
Metal Catwalks	5
Large I Beam	8-10
Concrete Block Wall	13-20
One Floor	23-30
One Floor and One Wall	40-50
Machinery, Light	1-4
Metallic Hoppers	3-6
General Machinery (10-20 sq. ft.)	5-10
Heavy Machinery (>20 sq. ft.)	10-15
Textile, Light	3-5
Empty Cardboard	3-6
Metal Inventory	4-7
Heavy Textile	8-11

Section 3: Current Article XVI (and all sections thereunder) of Chapter 5 of the Code of Ordinances shall be renumbered as Article XVII.