DEFENDING THE SPECTRUM

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Comba

CURRICULUM

Why are we here today?

NFPA and IFC

Signal Boosters and ERRCS or ERCES

Licensee Authority and Obligations – FCC Rules

Third Party Responsibly – FCC Rules

Plan Check for Licensees

Tools to catch interference before it’s a big problem

What Comba is doing to prevent problems

FCC Public Safety Complaint Portal

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NFPA and IFC

- NFPA – National Fire Protection Association
- IFC – International Fire Code
- NFPA 1225 and IFC 510 speak to “In-Building” signal enhancement.
- This presentation is about the FCC rules regarding the use of devices to enhance “inbuilding communications” in the Part 90 environment.
- All Police, Fire, EMS etc. narrow band LMR services fall under part 90 in the United States.

LMR Systems and Signal Boosters

- **Signal Boosters are an integral part of creating seamless coverage for dead areas both inside and outside of buildings.**
- **Signal Boosters work very well when used properly and in the proper circumstances.**
- **Signal boosters have been used since the 1980s with very few problems. It has just been in the last 7 years or so that we have seen a spike in interference related issues related to signal boosters.**
- **The problem comes when signal boosters are used without coordinating with the licensees and following FCC rules.**

LMR Systems and Signal Boosters

510.5.4 FCC Compliance

The emergency radio coverage system installation and components shall comply with all applicable federal regulations including but not limited to, FCC 47 CFR part 90.219

Eco System

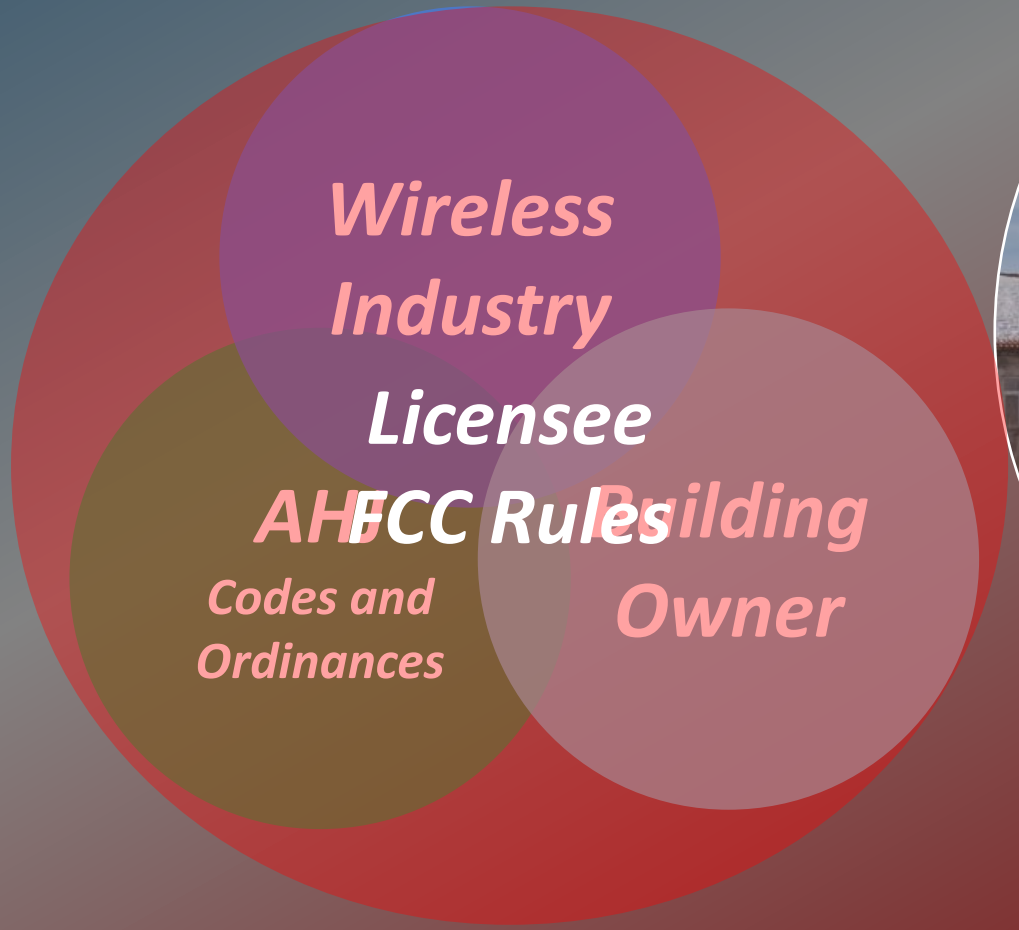
Licensee
FCC
Rules

Wireless
Industry

AHJ
Codes and
Ordinances

Building
Owner

Eco System FCC Rules



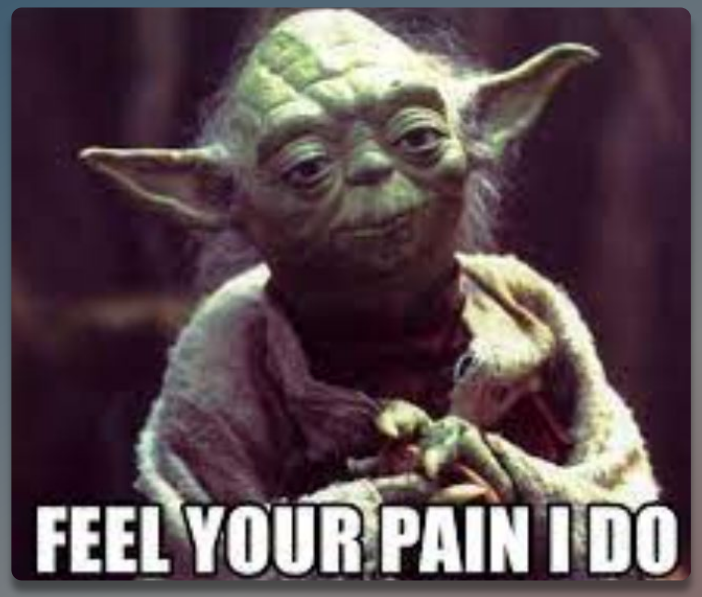
Where are we today

Licensees have been left out of the process!

Where are we today

Licensees are pushing back!

The Comba Position



What is Comba Doing

1 – Starting in February 2023 Comba began a new robust training / certification program, Comba University

2- Installers who want to become Comba certified must first pass a RF Theory course before they are permitted to take our Version 3 certification course.

3 – Comba no longer allows online testing, test must be taken at a proctored testing center (available nationwide)

4 – Currently, the pass rate for our ***basic*** RF theory class is 27 percent.

What are other OEM Doing ?

1 – One OEM has you watch a thirty (30) minute video and hands you a commissioning certificate.

2 – A major OEM has a few hour “features overview class” with no RF theory and no testing at the end, simply hands you a certificate.

3 – No other OEM mandates proctored testing for any level of their certification.

4 – No other OEM mandates students construct a link budget as part of their certification exam.

Actual Customer Email After Failing Test

Sent: Tuesday, June 11, 2024 9:08 AM

To: Jeff Wakabayashi <jwakabayashi@combausa.com>; Chris Scruggs <cscruggs@combausa.com>

Subject: Re: Open Items

Hi Team, finished the exam but looks like I failed at 68%. To be honest, I thought it would be abit more 'basic' than what it was and tried to sort of wing it not knowing I would need to intensely study FCC regulations. Not really looking to do this again, so we will have to pass on using Comba equipment.

Thanks!

Test Taker Email After Failing

Sent: Friday, June 14, 2024 9:37 AM
To: Jeff Wakabayashi <jwakabayashi@combausa.com>; Jeff Wakabayashi <Jeff.Wakabayashi@comba-telecom.com>
Cc: Warren Wiggins <wwiggins@combausa.com>; Greg Glenn <gglenn@combausa.com>
Subject: RF-101 Test, RE: NG BDA training?

Good Morning Jeff,

I just completed the ordeal with Prometric for the RF-101 test. I would rate the experience at a grade well below F as in Fail. The security protocol is absurd. I am not a criminal being processed into jail. Having to tear my office apart to meet their requirements is not appropriate. Being visually searched, to include behind my ears and in my pockets is _____. It was the worst experience that I could ever have imagined. It is definitely not a partner recruiting tool. The $150.00 fee was waste

I failed the examine. I received a 68%. Was it because of the frustration with the testing environment or because of the emphasis in the test questions. I would think with a BSEE, an MSEE, plus many years in the wireless business, I would be able to pass an RF-101 exam. All of the uplink and downlink questions were time consuming. I do not calculate link budgets manually. I bought iBwave so that I didn't need to waste my time in the design process doing fundamental math for link budgets or using an Excel spreadsheet. That is what I did before iBwave was invented.

As I mentioned previously, the RF-101 course was an excellent review; but I believe you failed at selecting the 25 questions for the test.

I guess I will just have to forgo the training that I sought for the NG Fiber DAS and just use my previous accreditations for the Comba systems and the available documentation.

I could not find the courses that I have previously taken nor my training certificates. Did you throw them away when you set up your new system? I have been a Comba installer since 2018.

Sample Test Questions

20. All 96 channels are programmed on a Comba V3 BDA. Assuming equal power sharing, what will be the output power per channel with all 96 channels transmitting?
    a. 0 dBm
    b. 7 dBm
    c. 13 dBm
    d. 27 dBm

21. When testing isolation, the pilot signal strength is 10dBm, the noise floor measured is -120dBm, and the received pilot signal strength is -100dBm. What is your isolation measurement?
    a. 90 dB
    b. 100 dB
    c. 110 dB
    d. 130 dB

22. What BDA function is used to help ensure unwanted signals from outside of the building do not get amplified through the BDA?
    a. UL AGC
    b. UL Gain
    c. UL Target
    d. UL Mute

23. What is the best place to start troubleshooting a VSWR alarm?
    a. Donor Antenna
    b. DT Port
    c. MT Port
    d. Furthest Service Antenna

This is depressing!

No news is good news

The News

Weather

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Vol. MMX Monday, April 15 2010 Metropolitan Evening Edition

DOOM and GLOOM!

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No End In Sight!

Economic indicators fell again for the 18th straight month in a row. Experts fear that if there's no turn around soon we could go even lower. All sectors are down. Housing sales are off by 30% with sales continuing for cut price in spite of all efforts to turn things around. So what does it all mean? It means DOOM!

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Job Market Shrinks

The job Market continues to collapse as companies try to trim their work forces to help survive the rough economy. More and more jobs are being consolidated to try to cut costs.

The Second Quarter did not show the growth people were hoping for. So what does this all mean? fotolia

D O O M !

Now Some Solutions!

1 – Limit Max Uplink Gain to 65dB. This forces antenna density and evens the playing field between the good installers and the low ballers.

2 – Mandate Class A Channelized BDAs. Class B creates wideband noise and can lack critical features.

3 – High Isolation Panel Donor Antennas. Many benefits.

4 – Ban the practice of allowing multiple BDA's installed in one building or a multi-building complex. Require Fiber DAS with a single donor antenna.

5 – Mandate Remote Monitoring of all BDA's to ensure 90.219(b) compliance

Solutions Continued…

6 – Outsource your plan check to a qualified RF engineering company. The entire project is dependent on a quality design!

7 – Clearly indicate if you will allow converged cellular and PS systems on the same passive infrastructure. Have a process in place to determine criteria.

8 – Implement a BDA installer license / Certification Exam. Yes, you can do this!

9 – Mandate NICET ERRCS Certification, the GROL is useless!

Salt Lake City Ice Cream Vendor

5.64.510: PURPOSE AND INTENT:

The City Council expressly finds that vehicles in which ice cream, confections and other frozen dessert products are carried for purposes of retail sale on the public streets pose special dangers to the public health, safety and welfare of children and residents in the City of Salt Lake City. It is the purpose and intent of the City Council, in enacting this article, to provide responsible companies and individuals who engage in the operation of ice cream trucks with clear and concise regulations to prevent safety, traffic and health hazards, as well as to preserve the peace, safety and welfare of the community. (Ord. 24-03 § 1, 2003)

5.64.620: FINGERPRINTS REQUIRED:

The prospective applicant for an ice cream truck operator's license shall be required to file with the Chief of Police two (2) sets of fingerprint impressions, which shall be taken under the supervision of the Chief of Police. (Ord. 24-03 § 1, 2003)

NICET ERRCS Certification

Mandate the following levels:

NICET Level One – Any personnel working on an ERRCS project, cable pullers included

NICET Level Two – Lead installer must have level 2 certification, level 2 certified installer should be on site to supervise level one technicians.

NICET Level Three – Personnel commissioning the ERRC System should have a level three certification

NICET Designer Level – The design professional must have a designer level certification.

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Remote Monitoring

Remote Monitoring – 90.219(b)

(b) Authority to operate. PLMRS licensees for stations operating on assigned channels higher than 150 MHz may operate signal boosters, limited to the service band for which they are authorized, as needed anywhere within the PLMRS stations' service contour, but may not extend the stations' service contour.

(1) PLMRS licensees may also consent to operation of signal boosters by non-licensees (such as a building owner or a signal booster installation contractor) within their service contour and across their applicable frequencies, but must maintain a reasonable level of control over these operations in order to resolve interference problems.

Remote Monitoring – 90.427

§ 90.427 Precautions against unauthorized operation.

(a) Each transmitter shall be so installed and protected that it is not accessible to or capable of operation by persons other than those duly authorized by and under the control of the licensee. Provisions of this part authorizing certain unlicensed persons to operate stations, or authorizing unattended operation of stations in certain circumstances, shall not be construed to change or diminish in any respect the responsibility of station licensees to maintain control over the stations licensed to them (including all transmitter units thereof), or for the proper functioning and operation of those stations and transmitter units in accordance with the terms of the licenses of those stations.

(b) Except for frequencies used in accordance with § 90.417, no person shall program into a transmitter frequencies for which the licensee using the transmitter is not authorized