



## L. S. COMPLIANCE, Inc.

September 28, 2000

To: Mr. Rich Fabina  
FCC OET Laboratory

Subject: FCC Filing: EA 96569  
FCC ID Number: OMF-QP-100-RF  
Product Name: Quick Pitch

Dear Rich,

Thank you for spending time in researching the bottleneck of this, the FCC Filing for the FairPlay Quick Pitch product.

After you provided the missing letter of May 17<sup>th</sup>, I also researched my filing components and now present the following response...

The Quick Pitch test report submitted on April 27<sup>th</sup> referenced test data from a previous FairPlay product's test report.

This previous product is the FairPlay MP-70, with FCC ID #: OMF-FP-MP-70.

Quoting from the Quick Pitch test report ... page 4, paragraph 1.5 ...

“ Various of all these tests, including the conducted RF out and the antenna port and the jamming margin test are contained in an additional test report that is attached to this report. These measurements were earlier performed on the Fairplay MP-70 product, which has the same RF module, and differs only in the case, and outer hardware.”

Now you may ask yourself, why did we refer to a previous test report. Please review the attached scan copy of an email response from Mr. Joe Dichoso, dated December 16, 1999.

Prior to our product testing, we presented to Joe our test plan for this product with the intention of utilizing test data from a previous product family filing. As you can see, Joe agreed with our test plan and approved the sharing of test data.

A review of all this information leads to the following....

- 1) The initial filing should have contained a copy of the Spread Spectrum Report filed with the FarPlay MP-70 which is referenced in the email message of December 16<sup>th</sup>. This report will now be submitted as an attachment to the EA96569 FCC Electronic File.
- 2) In addition, the Theoretical Processing Gain Calculation will also be submitted for review per Mr. Dichoso's request as an attachment to the EA96569 FCC Electronic File..

I apologize for the fact that the reference report was never attached to the Quick Pitch test report filing of April 27<sup>th</sup>.

Please review and respond if we need to provide any additional information.

Sincerely,  
Jim Blaha  
L. S. Compliance, Inc.

**Jim Blaha**

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**From:** Joe Dichoso <JDICHOSO@fcc.gov>  
**To:** <GCZUMAK@fcc.gov>; <jblaha@lsr.com>  
**Cc:** <dfoster@fair-play.com>; <kboston@lsr.com>  
**Sent:** Thursday, December 16, 1999 9:43 AM  
**Subject:** Re: FCC Ruling on Testing Requirements.

Dear Jim, Your inquiry was forwarded to me for reply. The test plan that you propose is acceptable when the transmitter and receiver in the original filing are the same as the new device. The radiated test that will be performed will cover any enclosure changes or changes in the digital portion of the device. Although you do not have to perform some of the tests, you must submit copies of the test with a cover letter. You still need to address other requirements like compliance with the RF safety requirements and compliance with Section 15.203 etc....

I would ask that you perform an output power test to verify performance. Also, verify that the theoretical process gain (spread rate/data rate) is at least 10 dB as this is a requirement and was not apparent in the original application.

>>> "Jim Blaha" <jimb@execpc.com> 12/14/99 04:34PM >>>

Dear Greg:

The following situation leads to my FCC Certification Question.

I have a customer that filed for Grant of Authorization this past summer and received the FCC Grant of Authorization on August 22, 1999. ( FCC ID #: OMF-FP-MP-70 )

This product consisted of a 900MHz Spread Spectrum Transmitter linked to a scoreboard control panel.

This same customer would like to take this same radio, 900MHz Spread Spectrum Transmitter, and incorporate it into another data collection system, by different packaging, for sporting events.

My question is this, will the FCC accept the following test plan for the transmitter/receiver.

Carry over ( no need to test ) from the previous testing and FCC Filing approval on the 900MHz Transmitter.

Part 15.247 (a)(2) Occupied Bandwidth Test

Part 15.247 (b) Maximum Output Conducted Power Test

Part 15.247 (c) Out of Band Conducted Emissions Test

Part 15.247 (d) Power Spectral Density Test

Part 15.247 (e) Processing Gain Jamming Margin Test

The following tests will be performed.

ReTest FCC Part 15.209 Radiated Emissions on the Transmitter

ReTest FCC Part 15 Emissions Verification on the Receiver.

This action would save our customer a fair amount of money on the cost of testing an already approved FCC transmitter. The above will be combined and filed via Form 731 for a new FCC ID Number and Grant of Authorization. A FCC - DOC will be issued for the receiver.

Thank you for your time in responding.

If you would like to discuss this situation live, just call either Ken Boston, EMC Lab Manager, or I at: 262 - 375 - 4400.

Sincerely,

Jim Blaha

Sr. Vice-President

Quality Manager

L. S. Compliance, Inc.

## **Fairplay's Theoretical Processing Gain Calculation:**

The input data stream at a data rate,  $R_b$ , is used to form two-bit QPSK (base-band domain) symbols at a symbol rate of  $R_s$ . There are four possible symbols: {00,01,10,11}. The relationship between the symbol rate and the data rate is as follows:

$$R_s = \frac{R_b}{2}$$

The spread-spectrum modulator uses M-ary orthogonal keying to transmit a unique pseudorandom sequence associated with each of the QPSK symbols. The length of each sequence is 32 chips. The chipping rate is related to the symbol rate as follows:

$$R_c = 32R_s$$

The processing gain is defined as the ratio of the chipping rate to the data rate:

$$G_p = \frac{R_c}{R_b} = \frac{32R_s}{2R_s} = 16$$

The processing gain in dB is greater than 10 dB and therefore is theoretically compliant with 15.247(e).

$$G_p = 10 \log_{10}(16) = 12.04 \text{ dB} > 10 \text{ dB}$$