

Helen Zhao

Subject: FW: Remote Play Inc., FCC ID: ST2-CA100, Assessment NO.: AN05T4598, Notice#1

-----Original Message-----

From: Weili

Sent: Monday, March 07, 2005 8:30 AM

To: Helen Zhao

Subject: Re: Remote Play Inc., FCC ID: ST2-CA100, Assessment NO.: AN05T4598, Notice#1

Hi, Helen.

Attached are Confidential letter, new report with Rx data and Answer for Q1. We are done.

thanks again.

Regards,

Wei

-----Original Message-----

From: Weili

Sent: Friday, March 05, 2005 1:29 PM

To: Helen Zhao

Subject: Re: Remote Play Inc., FCC ID: ST2-CA100, Assessment NO.: AN05T4598, Notice#1

Subject: Remote Play Inc., FCC ID: ST2-CA100, Assessment NO.: AN05T4598, Notice#1

Question #1: No documents in the filing indicate that this is a hybrid device, instead all the documents refer this device as an FHSS device. But the device was tested as a hybrid system, the test report says "there is no requirement of minimum number of hopping channels associated with this type of hybrid system". Please provide technical information as how the device is qualified as a hybrid system.

See below.

RPI Hybrid system utilizes 10 frequencies for hopping. As is stated in 15.247 paragraph (f) such a system is not subject to a minimum number of hopping channels as long as it complies with the following:

1. It shares all designated frequency equally.
2. It complies with the maximum power density in 3 KHz bandwidth, i.e. < 8 dbm
3. It uses digital modulation

RPI system complies with all the three requirements above:

1. It equally shares each frequency channel. It spends 8.25 milliseconds in each channel.
2. Its maximum transmission power is less than 7 dBm. This was verified over more than 100 sets that were built during the prototype phase.
3. It used FSK modulation that is qualifies as digital modulation

The system is not designed to skip frequencies and there is no active methods to avoid collisions.

[Helen Zhao] According to FCC Q&A in knowledge database, for hybrid system, "However, the hopping function must be a true hopping system, as described in Section 15.247(a)(1). The specific requirements in Section 15.247(a)(1) are: 1) A minimum channel separation. 2)

3/7/2005

Pseudo-random hop sequence. 3) Equal use of each frequency. 4) Receiver matching bandwidth and Synchronization. The test report answered #1, but how about #2-4. You may need to provide detailed operational description to address these requirements. For your quick reference, here I provide you FCC guideline.

[RPI] (1) The minimum Channel Separation is 1 MHz (2) The Pseudo Random Sequence is generated during manufacturing using a Shift Register Style PN Generator in which the 24 bit seed is the device ID. We then use 8-bit numbers out of the register and select only number from 1 to 10. If a number repeats, we ignore the number. (3) When transmitting we repeat the PN random sequence, so every channel is equally used. We never omit frequencies and never use non-frequency hopping operation in all times. (4) The receiver is a synthesizer based super-heterodyne receiver with a bandwidth of 230 KHz. The 20 dB bandwidth of the system is about 400 KHz and the 3 dB bandwidth is less than 200 KHz. The synchronization is done as followed. The receiver waits in a single frequency. The transmitter continuously hopping in the same sequence defined by the system ID as described above. When the transmitter transmits in the frequency that the receiver is waiting on, the receiver locks onto the transmitter, and because it knows the sequence and timing the receiver starts hopping together with the transmitter.

Pseudorandom Frequency Hopping Sequence

Describe how the hopping sequence is generated. Provide an example of the hopping sequence channels, in order to demonstrate that the sequence meets the requirement specified in the definition of a frequency hopping spread spectrum system, found in Section 2.1.

[RPI] The explanation how the sequence is generated is shown above. An example of ID number [0000001110101010111000] will be the following:

4
3
1
5
6
7
9
2
0
8

Which means that the first frequency to be transmitted is the 4th in the ordered sequence, the second is the 3rd, the third is 1st and so on.

Equal Hopping Frequency Use

Describe how each individual EUT meets the requirement that each of its hopping channels is used equally on average (e.g., that each new transmission event begins on the next channel in the hopping sequence after the final channel used in the previous transmission event).

[RPI] Because we never omit frequencies and each transmission on every channel is the same (about 8 milliseconds), we use every channel equally. Each new transmission event begins on the following channel and after final channel used in the previous transmission event.

System Receiver Input Bandwidth

Describe how the associated receiver(s) complies with the requirement that its input bandwidth (either RF or IF) matches the bandwidth of the transmitted signal.

[RPI] as explained above the IF receiver bandwidth is fixed at 230 KHz (around 10.7 MHz) and matches the bandwidth of the transmitted signal in all channels with 3 dB bandwidth of just about 200 KHz and 20 dB bandwidth of about 400 KHz

System Receiver Hopping Capability

Describe how the associated receiver(s) has the ability to shift frequencies in synchronization with the transmitted signals.

[RPI] The receiver uses a synthesizer to tune into the right frequency. It shifts frequencies such that it always tuned to the transmitter's hopping frequency.

Question #2: Confidentiality requests must reference Section 0.459 at a minimum because this section provides the authority for such a request. Referencing Section 0.457 is not mandatory but it is suggested because this section lists what information is normally held confidential in equipment authorization filings. Please revise your confidentiality letter accordingly.

See attached letter.

[Helen Zhao] Please resend. The revised confidential letter is corrupted.

Question #3: The schematic diagram is blurred. Please provide a clear copy.

Corrected one is attached.

[Helen Zhao] OK.

Question #4: Please verify 8.25 in "Time of Occupancy" is ns or ms. Please revise the report if necessary.

It's ms. The plot/letter is too small.

[Helen Zhao] OK.

Question #5: The test report shows the average power is greater than peak power, the channel power, which does not make sense. Please explain.

Revised for typo.

[Helen Zhao] OK.

Question #6: The RF conducted emission (spurious) should be investigated upto 10th harmonic based upon FCC15.33(a)(2). However the test plots show that the investigation was done upto 6.5GHz. Also the test report does not contain data for middle channel. Please provide plots for middle channel. Based upon FCC DA-00-705A, FHSS measurement procedure, the RBW setting for RF conducted spurious emission testing should be 100KHz, not 120KHz. Please update the test report.

RE-DO and revised in the report.

[Helen Zhao] OK.

Question #7: The radiated emission testing data was adjusted by duty-cycle correction factor. Based upon FCC DA-00-705A, FHSS measurement procedure, "If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 100Hz RBW for $f < 1\text{GHz}$, 10 Hz VBW may be further adjusted by a "duty cycle correction factor", derived from $20\log(\text{dwell time}/100\text{ ms})$, in an effort to demonstrate compliance with the 15.209 limit. Submit this data." The test report shows the neither RBW nor VBW complies with the requirement. Please update the test report.

RE-DO and revised in the report.

[Helen Zhao] Please provide receiving mode radiated emission test data, since the device is operating at 902-928MHz band. According to FCC rule and regulation, receiving mode test data is required.

Question #8: There is no power line conducted emission testing data provided. Please explain why this test can be exempted.

It's use battery DC power. Also see the user manual.

[Helen Zhao] OK.

Question #9: The user manual does not provide enough information as how the RF module will be used, what is the typical application, the manual does not include any installation information either, no FCC RF exposure warning statement as specified in FCC15.247(b)(5). The possible statement could be: The antenna(s) used for this transmitter must be installed with a separation distance of 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or

transmitter.

This is limited portable modular application. Module hosted in enclosure is tested. User manual is revised. [Helen Zhao] The revised user manual does not contain user information as specified in FCC 15.19 and FCC15.21. Also the information how to label the host device when the RF module is installed in is missing. Please also add the statement: additional radiated spurious emission evaluation for the additional host device may be required.

YES

Question #10: The device is seeking FCC certification, if you would like to apply for modular approval (might be limited), please provide modular approval cover letter.

See attached request letter.

[Helen Zhao] The modular approval cover letter indicated FCC ID label has two formats: for the module itself and for the host device. Please resubmit FCC ID label format.

YES

OK. May have a break now.

Regards,

Wei