Louis A. Feudi

From: Al Patrick [apatrick@cirronet.com]
Sent: Wednesday, June 23, 2004 1:28 PM
To: lfeudi@ustech-lab.com
Subject: FW: 2.1043,Class II permissive change

Permissive change filing requi...

Lou, per your request..

Al Patrick
Sr. Compliance Engineer
Cirronet Inc.
5375 Oakbrook Parkway
Norcross, GA 30093 USA
TEL: 678 684 2000
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www.cirronet.com
apatrick@cirronet.com

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

From: **Joe Dichoso [mailto:Joe.Dichoso@fcc.gov]**
Sent: Friday, June 18, 2004 9:10 AM
To: Mark Tucker
Cc: Rich Fabina; Bob Gemmell; Chuck Wilbourn; Greg Ratzel; James Kiernan; Paul Maziarczyk; Ryan Anderson; Tim Cutler; Tim Eskew
Subject: RE: 2.1043,Class II permissive change

Hello Mark,
Attached are the antenna guidelines/requirements for the grantee. Only approved antenna are alllowed. The end user must not make unauthorized changes. Also, the transmitters must be marketed as a complete system. You cannot sell a device without an antenna and let the end user choose an antenna.

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

From: **Mark Tucker [mailto:mtucker@cirronet.com]**
Sent: Thu 6/17/2004 10:25 AM
To: Joe Dichoso
Cc: Rich Fabina; Bob Gemmell; Chuck Wilbourn; Greg Ratzel; James Kiernan; Paul Maziarczyk; Ryan Anderson; Tim Cutler; Tim Eskew
Subject: RE: 2.1043,Class II permissive change

Joe,

I have a question on a similar note to your message below.

I'm trying to find out if we've been too restrictive in deciding which antennas we can use with our 15.247 certified products.

We regularly have radio module customers asking us if they can use lower cost equivalents of the antennas already qualified for use with our module. Our answer up to this point has always been no - you can only use the antennas we have tested in an accredited lab and obtained a class II permissive change. We have been dutifully towing the official line on this antenna replacement issue for the last 10 years - at substantial cost to us and our customers.

However, I can walk in my local computer distributor and purchase half a dozen different 2.4 GHz antennas to go with any flavor of 802.11b/g card or AP on the shelf. These antennas vary in gain from 2 dBi up to 9 dBi (or higher). When quizzed, the sales associates don't know about any regulatory restrictions associated with these antennas or which 802.11b cards or APs they can be attached to. I didn't open a box to see what RF connectors were attached to each antenna but I'd be willing to say it's something that would be compatible with most every 802.11b card/AP in the store.

Why is this? Are we (Cirronet) being too restrictive about which antennas our customers can use? Are all these computer distributors across the US selling illegal products? What am I missing?

Here's the $64,000 question; can our customers use antennas differing than those we specifically qualified with the module if they are -

A) Of a same type (dipole, extended monopole, corner reflector, Yagi, etc.) that has already been qualified with the module.
B) -And- of lesser or equal gain to those antennas that are already qualified.

Antenna vendors are constantly asking us to have their product included in our list of approved antennas. Some of these antennas are noticeably cheaper than the ones we have the module certified with right now. The problem is, we're not willing to go through the $2,000 to $2,500 lab/TCB cost and the 3-4 week wait to get the antennas "officially" certified when the individual cost savings is only a few dollars per unit.

What is the current status of the antenna replacement issue?

Mark Tucker

VP of Engineering

Cirronet

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

From: **Joe Dichoso [mailto:Joe.Dichoso@fcc.gov]**
Sent: Monday, June 14, 2004 1:11 PM
To: Al Patrick
Cc: Mark Tucker; Rich Fabina
Subject: RE: 2.1043,Class II permissive change

Hello Al,

Test the highest gain of each type of antenna and ensure you
also test
an antenna configuration with the highest output power.

Regards,

Joe

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

From: **Al Patrick [mailto:apatrick@cirronet.com]**
Sent: Thursday, June 10, 2004 4:20 PM
To: Joe Dichoso
Cc: Mark Tucker
Subject: RE: 2.1043,Class II permissive change

Thank you, Joe

We tested with a dipole (same as original) and the new module is
1 dB
better, radiated with antenna and conducted test results than
the
original submission.

Do we need to test with every antenna that has been certified
through
all the FCC PC II on this product.

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

From: **Joe Dichoso [mailto:Joe.Dichoso@fcc.gov]**
Sent: Thursday, June 10, 2004 4:08 PM
To: Al Patrick

Cc: Rich Fabina; Mark Tucker; Paul Maziarczyk; Tim Cutler

Subject: RE: 2.1043,Class II permissive change

Hello Al,

Per 2.1043(a), the rules require a new Certification for the changes you proposed. However, we allowed this change to be made with a Class II permissive change rather having you file a new Certification because they involved replacement components with the same specifications. Data for determining Class I or Class II requirement is considered for changes to other items not listed in 2.1043(a). Regards, Joe

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

From: **Al Patrick [mailto:apatrick@cirronet.com]**
Sent: Wednesday, June 09, 2004 5:09 PM
To: Joe Dichoso

Cc: Rich Fabina; Mark Tucker; Paul Maziarczyk; Tim Cutler

Subject: FW: 2.1043,Class II permissive change

Greetings, Mr. Joe Dichoso

I had a discussion with Mr. Rich Fabina today and asked this question. Will the FCC permit a Class I Permissive Change on our WIT2410M Rev L. RF 2.4 GHz. Transceiver module that has test data from U.S. Technologies, an EMC Lab, demonstrating better (lower) radiated with antenna and conducted/harmonic test results than the original submission.

His answer was Yes.

Our V.P of Engineering, Mark Tucker has exchanged email with you and Rich, which are attached below, discussing a Class II Permissive Change. But, the data indicates a Class I Permissive Change would be more appropriate. I would just like your concurrence on this approach.

Thank You

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

From: **Rich Fabina [mailto:Rich.Fabina@fcc.gov]**
Sent: Tuesday, February 17, 2004 4:43 PM
To: Mark Tucker; Joe Dichoso
Cc: Paul Maziarczyk; Tim Cutler
Subject: RE: 2.1043,Class II permissive change

Mark,

I've sent a reply to Joe Dichoso that I agree with him that this is acceptable.

Now you have my response: I agree that this is acceptable as a Class II permissive change.

Rich Fabina

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

From: **Mark Tucker [mailto:mtucker@cirronet.com]**
Sent: Friday, February 13, 2004 11:31 AM
To: Joe Dichoso; Rich Fabina
Cc: Paul Maziarczyk; Tim Cutler
Subject: RE: 2.1043,Class II permissive change

Joe and Rich,

Joe, your understanding of the frequencies is correct. The output frequency of U30 in the proposed revision is exactly the same as that of U14 in the current version of the radio.

Rich, if this is acceptable, could you please respond affirmatively via email? I will need some record of this exchange for the TCB when we go to make the permissive change.

Regards,

Mark

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

From: **Joe Dichoso [mailto:Joe.Dichoso@fcc.gov]**
Sent: Friday, February 13, 2004 10:22 AM
To: Mark Tucker; Rich Fabina

Cc: Paul Maziarczyk; Tim Cutler; Joe Dichoso

Subject: RE: 2.1043,Class II permissive change

Mark,

If the output frequency of U30 is the same as the output frequency of U14, I believe this is acceptable but get confirmation from Rich. I sent this to him but he won't be in until Tuesday. Regards, Joe

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

From: Mark Tucker [mailto:mtucker@cirronet.com]

Sent: Wed 2/11/2004 5:35 PM

To: Joe Dichoso

Cc: Paul Maziarczyk; Tim Cutler

Subject: RE: 2.1043,Class II permissive change

Joe,

I found a WIT2410 block diagram left over from one of our earlier submissions and modified it to meet your request. Hopefully, you have access to Power Point to view the diagrams.

I have attached two block diagrams. The diagram of the current WIT2410 being shipped (with the now-defunct SA2420) is labeled "Current WIT2410 RF Block Diagram". My proposed line-up with the new X2

multiplier section is labeled “Proposed WIT2410 RF Block Diagram”. I have highlighted the proposed new transmitter section in red ink.

To repeat my request, I propose removing U14, the X2 multiplier in the SA2420, and replacing it with a two part circuit consisting of U29, a UPC8172TB upconvert mixer configured as a X2 doubler, and U30, an isolation amplifier used to buffer the output of the doubler. The output power level of U30 will be adjusted to match that of the old doubler. This is to ensure that the output power of the new revision matches that of the old. The remainder of the transmit section (VCO, frequency synthesis circuits, power amplifier, and output filtering) remains unchanged.

Also note that none of the frequencies in the radio will be changed. All crystal oscillators, reference frequencies, output frequencies, IF frequencies will remain the same.

Let me know if you have any questions regarding my proposal or the block diagrams.

Regards,

Mark

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

From: Joe Dichoso [mailto:Joe.Dichoso@fcc.gov]
Sent: Wednesday, February 11, 2004 4:16 PM
To: Mark Tucker

Cc: Rich Fabina; Joe Dichoso

Subject: 2.1043,Class II permissive change

Hello Mark,

Can you please send a before and after block diagram showing
frequencies, and oscillators. It would help if you also partitioned the
block diagrams in sections that show items in 2.1043. i.e. Basic
frequency determining circuitry, stabilizing circuitry, frequency
multiplication stages, modulator circuit. Then overlay your proposed
changes with these Sections so that we can tell whether changes to these
sections are made and exactly what changes are made.

As indicated in the interpretation that you supplied, we allow(per the rules) other changes not listed in 2.1043 under certain
circumstances.

However, we have allowed changes to items in 2.1043, if they
involve replacement components with the same specifications.

The block diagram will help distinguish between the two and
clarify what you propose.

Thanks,

Joe

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

From: Mark Tucker [mailto:mtucker@cirronet.com]
Sent: Monday, February 09, 2004 11:57 AM
To: Rich Fabina; Rich Fabina
Cc: Tim Cutler; Paul Maziarczyk
Subject: Class II permissive change

Rich,

Our company, Cirronet, produces a Frequency Hopping data

transceiver called the WIT2410 (FCC ID: HSW-2410M). The WIT2410 is a standard 75-channel, 80 mW, 2.4 GHz frequency hopper and has been in production for 4 or 5 years.

Since the WIT2410 is getting a little long in the tooth, a part obsolescence issue has arisen that will require me to change a section of its transmitter. The obsolete part I must replace is the SA2420 integrated transceiver from Philips Semiconductor. This integrated RFIC chip contains a times-two frequency doubler, LNA, and down-convert mixer.

My transmit chain currently consists of a VCO running at half the output frequency, the frequency doubler found in the SA2420, a transmit driver stage, a ~100 mW power amplifier, an output harmonic filter, and finally a T/R switch. With the SA2420 going obsolete, I propose replacing the doubler section of that part with a discrete design. The rest of the transmit chain (i.e. VCO, driver, PA, filtering, etc.) will remain the same. I also propose setting the transmitted output power to the same value that the WIT2410 module is

currently
certified to operate with (roughly 18 dBm). No other changes in the
transmitter are proposed.

I am writing to see if I can make this change and submit
a class
II permissive change, rather than taking the major step of
recertification. The WIT2410 module is currently operating in thousands
of industrial products all bearing the FCC ID: HSW-2410M. Many large
industrial customers, Leica, GE Power systems, Automation Direct, use
our radio and would be required to spend a great deal of time and
expense to rerun this same radio through their internal certification
processes if the ID changes.

Given that we are only proposing to change one section
of the
transmitter and have no intention of changing the power level, I am
hoping to get permission to proceed with the Class II permissive change
rather than the cost and time-prohibitive recertification.

Finally, In support of my request, I submit the
following letter
found in your interpretation data base that directly relates to
my

situation. I offer it as precedence to my request.

Interpretation letter: 20000327-003 446

INQUIRY: A client has a certificate 902-927 MHz FHSS product that has been having some problems in the field with blown final RF power amps. Investigation has revealed poor VSWR between antenna and that particular power amp circuit. He wants to change the part to another mfr., however, because there is no exact replacement, he needs to add some components (DC regulators some biasing and matching circuits) that will necessitate a new board layout in the vicinity of the power amp output, in order to fit the new components. No change to the previously reported output power, no change to the modulation circuit, frequency determining circuit, etc. Is this change within the scope of class 2 per 2.1043? We will submit data on radiated and conducted emission to support class 2. RESPONSE: This is in response to your e-mail dated May 24, 1999. Pursuant to FCC policy, a change to components in the RF chain which results in a change to the circuit design may not be authorized as a Class II permissive change if the previously approved output power is changed. However, in this

case, the
resulting output power remains identical to that which was previously
approved. In light of this, the modification may be authorized as a
Class II permissive change. The output power and spurious emissions
(radiated and conducted) should be retested, with those results
submitted in the application.

If you have any further questions or comments, please feel free
to contact me.

Regards,

Mark Tucker

VP of Engineering
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(678) 684-2009
mtucker@cirronet.com