

Chris Harvey

From: □□□ [cgylives@hct.co.kr]
Sent: Tuesday, June 03, 2008 1:00 AM
To: Chris Harvey
Cc: lucy.tsai@ccsemc.com; charvey-tcb@ccsemc.com; '□□□□□ \(\HCT\)'
Subject: Re: LG Electronics, FCC ID: BEJLEO2, Assessment NO.: AN08T7934, Notice#1A
Attachments: STC Letter(Rev).pdf; ATT.A label(Rev).pdf; ATT.F Internal Photos(Rev).pdf; ATT.H Hardware Manual(Rev).pdf; LEO2 Test Report(Rev).pdf

Dear Chris,

Thank you for your help.

Here is the answer for your comments.

> 1. Please provide additional Internal photos that show all components of the
> RF Board (remove shield/heat-sink to show components underneath).
> -> **Attached please find "ATT.F Internal Photos(Rev).pdf"**

> 2. The Hardware Manual indicates that this device incorporates a MIMO FPGA,
> but the block diagrams of this device has only one transmitter (and 2
> receiver) paths. Please explain how this device incorporates MIMO (Multiple
> Input Multiple Output) and whether more than one of these boards is used
> location (co-location). Please explain the Space-Frequency Block Coding
> stated in the Operational Description exhibit.
> -> **Attached please find "ATT.H Hardware Manual(Rev).pdf"**

> 3. The RF Exposure Warning statement says that the antenna should not exceed
> -4dBi in the Cellular Band. The term Cellular Band is vague (likely to be
> understood as the 850MHz band in USA). Please clarify the frequency band by
> indicating the frequency of operation in this RF Exposure warning. Also,
> the integrator/installer should be warned against co-location with other
> transmitters and antennas. Please update the RF Exposure Warning section
> accordingly.
> -> **Attached please find "ATT.H Hardware Manual(Rev).pdf"**

> 4. The label location exhibit is required to be non-confidential, but the
> exhibit submitted has a photograph of the EUT. Since the label location
> exhibit can not be held confidential, please either confirm that it will be
> acceptable to have the label location photo as non-confidential, or submit a
> revised label location exhibit with a drawing of the label location instead
> of a photograph.
> -> **Attached please find "ATT.A label(Rev).pdf"**

> 5. The RF test report has plots for Conducted and Radiated Power
> measurements. The Conducted Power plots show a signal that is very flat
> over the entire bandwidth, where the Radiated Power plots (EIRP) show a
> jagged signal (including a central peak). There appears to be some sort of
> averaging in the conducted plots. Please explain the difference in
> appearance of the 2 plots.
> -> Mentioned.

> 6. Please provide the Emission Designator including the justification for
> the necessary bandwidth and modulation code for this device
> -> **Attached please find "LEO2 Test Report(Rev).pdf"**

> 7. please submit an updated Confidentiality request letter which lists

> the complete FCC ID number for this device (part of the ID is missing).
-> **Attached please find "STC Letter(Rev).pdf"**

And we are preparing the letter of the Modular Approval.

Could you pls still help to get cert. by 20th of June?

Thank you.

(Ms.)GYE-YOUNG CHA --- EMC Part
HCT Co., Ltd.
San 136-1, Ami-ri, Bubal-eup, Icheon-si,
Kyoungki-do, Korea 467-701
TEL : (82-31)639-8539 FAX : (82-31)639-8525

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

From: [Chris Harvey](#)

To: '□□□□'

Cc: lucy.tsai@ccsemc.com ; charvey-tcb@ccsemc.com ; '□□□□□ \(\HCT\)'

Sent: Tuesday, June 03, 2008 10:41 AM

Subject: RE: LG Electronics, FCC ID: BEJLEO2, Assessment NO.: AN08T7934, Notice#1A

Dear Gye-Young,

1. Limited Modular Approval means that this device does not meet ALL of the conditions for Full Modular Approval and the manufacturer has control to ensure that the final product will comply with all requirements. Full Modular Approval would allow free marketing to end users to use as they wish, where Limited Modular Approval has some condition that may prevent marketing to the general public
2. Yes, a letter is required for Limited Modular Approval.
3. yes, I must have a Modular Approval Request letter even if the device will not be marketed in USA because the modular letter explains how the device will comply with the FCC requirements. The letter can be from the manufacturer or its authorized representative.

I am sorry this response was delayed.

Best regards,

Chris Harvey

From: □□□ [mailto:cgylives@hct.co.kr]
Sent: Monday, June 02, 2008 2:39 AM
To: Chris Harvey
Cc: lucy.tsai@ccsemc.com; charvey-tcb@ccsemc.com; '□□□□□ \HCT\'
Subject: Re: LG Electronics, FCC ID: BEJLEO2, Assessment NO.: AN08T7934, Notice#1A

Dear Chris,

I have some question about this.

Question 1. Please explain both limited modular and modular.

Question 2. Doesn't the limited modular need the form for Approval letter for this application?

Question 3. It is get the certificate, not for sale, just require from business partner.
In this case, is it have a problem get the certificate with limited modular?

Answer #5

5. The RF test report has plots for Conducted and Radiated Power measurements. The Conducted Power plots show a signal that is very flat over the entire bandwidth, where the Radiated Power plots (EIRP) show a jagged signal (including a central peak). There appears to be some sort of averaging in the conducted plots. Please explain the difference in appearance of the 2 plots.

-> We did test Channel power with Avg. detector for Conducted power and the tested peak detector for EIRP.

Please contact to Mr. Chio(cschoi@hct.co.kr) with this project.
I'm not here from tomtrow.
I'm going to have a baby pretty soon.
So I'm on a maternity leave from June to August.

Thank you.
(Ms.)GYE-YOUNG CHA --- EMC Part
HCT Co., Ltd.
San 136-1, Ami-ri, Bubal-eup, Icheon-si,
Kyoungki-do, Korea 467-701
TEL : (82-31)639-8539 FAX : (82-31)639-8525

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

From: [Chris Harvey](#)

To: '□□□'

Cc: lucy.tsai@ccsemc.com ; charvey-tcb@ccsemc.com ; '□□□□□ \(\HCT\)'

Sent: Saturday, May 31, 2008 2:55 AM

Subject: RE: LG Electronics, FCC ID: BEJLEO2, Assessment NO.: AN08T7934, Notice#1A

Dear Gye-Young Cha,

I have been asked by Mike Kuo to make sure there is a Modular Approval Cover Letter submitted for this application. Since this device is a Pt. 27 transmitter, the attached Pt.15 modular letter can only be used as a guide, and the final letter should not reference 15.212.

Can you please submit a Modular Approval letter for this application?

Thanks,

Chris Harvey

From: Chris Harvey [mailto:charvey@ieee.org]

Sent: Friday, May 30, 2008 9:51 AM

To: '□□□'

Cc: lucy.tsai@ccsemc.com; charvey-tcb@ccsemc.com; '□□□□□ \(\HCT\)'

Subject: RE: LG Electronics, FCC ID: BEJLEO2, Assessment NO.: AN08T7934, Notice#1

Dear Gye-Young Cha,

The manual should include wording such as the following:

The antenna(s) used for this transmitter must not exceed -4dBi and installed with a separation distance of at least 20 cm from all persons. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The FCC uses the 99% Occupied Bandwidth as the measurement for the necessary bandwidth portion of the Emission Designator. If the 99% Bandwidth measurement is 9.00 MHz then 9M00 would be the necessary bandwidth for the emission designator. As for the 3 character Modulation portion of the emission designator, please use the character descriptions from FCC Part 2.201, copied here for your reference:

(c) First Symbol—types of modulation of the main carrier:

- (1) Emission of an unmodulated carrier N
- (2) Emission in which the main carrier is amplitude-modulated (including cases where sub-carriers are angle-modulated):
 - Double-sideband A
 - Single-sideband, full carrier H
 - Single-sideband, reduced or variable level carrier R
 - Single-sideband, suppressed carrier J
 - Independent sidebands B
 - Vestigial sideband C
- (3) Emission in which the main

carrier is angle-modulated:.

- Frequency modulation F
- Phase modulation G

NOTE: Whenever frequency modulation “F” is indicated, Phase modulation “G” is also acceptable.

(4) Emission in which the main carrier is amplitude and anglemodulated either simultaneously or in a pre-established sequence .. D

(5) Emission of pulses:1.

—Sequence of unmodulated

pulses P

—A sequence of pulses:

—Modulated in amplitude K

—Modulated in width/duration L

—Modulated in position/phase .. M

—In which the carrier is anglemodulated during the period

of the pulse Q

—Which is a combination of the foregoing or is produced by

other means V

(6) Cases not covered above, in which an emission consists of the main carrier modulated, either simultaneously or in a pre-established sequence, in a combination

of two or more of the following modes: amplitude, angle, pulse ... W

(7) Cases not otherwise covered ... X

(d) Second Symbol—nature of signal(s) modulating the main carrier:

(1) No modulating signal 0

(2) A single channel containing quantized or digital information without the use of a modulating sub-carrier, excluding time-division multiplex 1

(3) A single channel containing quantized or digital information with the use of a modulating subcarrier, excluding time-division multiplex 2

(4) A single channel containing analogue information 3

(5) Two or more channels containing quantized or digital information 7

(6) Two or more channels containing analogue information 8

(7) Composite system with one or more channels containing quantized or digital information, together with one or more channels containing analogue information 9

(8) Cases not otherwise covered ... X

(e) Third Symbol—type of information to be transmitted:2

(1) No information transmitted ... N

(2) Telegraphy—for aural reception A

(3) Telegraphy—for automatic reception B

(4) Facsimile C

(5) Data transmission, telemetry, telecommand D

(6) Telephony (including sound broadcasting) E

(7) Television (video) F

(8) Combination of the above W

(9) Cases not otherwise covered ... X

Best regards,

Chris Harvey

From: ☐☐☐ [mailto:cgylives@hct.co.kr]

Sent: Thursday, May 29, 2008 9:44 PM

To: Chris Harvey

Cc: lucy.tsai@ccsemc.com; charvey-tcb@ccsemc.com; '□□□□ \ (HCT\)'

Subject: Re: LG Electronics, FCC ID: BEJLEO2, Assessment NO.: AN08T7934, Notice#1

Dear Chris,

Actually it is not we want.

We need the comment for here.

Also, the integrator/installer should be warned against co-location with other transmitters and antennas. Please update the RF Exposure Warning section accordingly.

Is this the fixed comment or do you have the other comment?

Question 6:

6. Please provide the Emission Designator including the justification for

> the necessary bandwidth and modulation code for this device.

>

> The items indicated above must be submitted before processing can continue

> on the above referenced application. Failure to provide the requested

> information within 30 days of the original e-mail date may result in

> application dismissal and forfeiture of the filing fee. Also, please note

> that partial responses increase processing time and should not be submitted.

> Any questions about the content of this correspondence should be directed to

> the e-mail address listed below the name of the sender.

-> The EUT's modulation is QPSK, 16QAM and necessary bandwidth is 9 MHz.

In this case we think 9M00G7D(QPSK), 9M00WDD(16QAM) is right.

Is it wrong?

Please conform.

Thank you.

(Ms.)GYE-YOUNG CHA --- EMC Part

HCT Co., Ltd.

San 136-1, Ami-ri, Bubal-eup, Icheon-si,

Kyeongki-do, Korea 467-701

TEL : (82-31)639-8539 FAX : (82-31)639-8525

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

From: [Chris Harvey](#)

To: '□□□'

Cc: lucy.tsai@ccsemc.com ; charvey-tcb@ccsemc.com ; '□□□□□ \ (HCT\)'

Sent: Thursday, May 29, 2008 7:31 PM

Subject: RE: LG Electronics, FCC ID: BEJLEO2, Assessment NO.: AN08T7934, Notice#1

Dear Gye-Young Cha,

I am sorry I was not clear the first time. The current wording:

The gain of the antenna for Cellular band must not exceed -4 dBi

could be changed to read:

The gain of the antenna for 1710-1755 MHz Cellular band must not exceed -4 dBi.

Does this help?

BR,

Chris Harvey

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

From: □□□ [mailto:cgyloves@hct.co.kr]

Sent: Thursday, May 29, 2008 4:03 AM

To: Chris Harvey

Cc: lucy.tsai@ccsemc.com; charvey-tcb@ccsemc.com; □□□□□ \ (HCT\)

Subject: Re: LG Electronics, FCC ID: BEJLEO2, Assessment NO.: AN08T7934, Notice#1

Dear Chris,

Thank you for your help.

I have a question about Question 3.

3. The RF Exposure Warning statement says that the antenna should not exceed -4dBi in the Cellular Band. The term Cellular Band is vague (likely to be understood as the 850MHz band in USA). Please clarify the frequency band by indicating the frequency of operation in this RF Exposure warning. Also, the integrator/installer should be warned against co-location with other transmitters and antennas. Please update the RF Exposure Warning section accordingly.

-> Please let me know the fixed comment for user manual.

Thank you & Best Regards,

(Ms.) GYE-YOUNG CHA --- EMC Part

HCT Co., Ltd.

San 136-1, Ami-ri, Bubal-eup, Icheon-si,

Kyoungki-do, Korea 467-701

TEL : (82-31) 639-8539 FAX : (82-31) 639-8525

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

From: "Chris Harvey" <charvey@ieee.org>
To: <cgyloves@hct.co.kr>
Cc: <lucy.tsai@ccsemc.com>; <charvey-tcb@ccsemc.com>
Sent: Wednesday, May 28, 2008 9:41 PM
Subject: RE: LG Electronics, FCC ID: BEJLEO2, Assessment NO.: AN08T7934, Notice#1

> Also, please submit an updated Confidentiality request letter which lists
> the complete FCC ID number for this device (part of the ID is missing).

>
> Thank you,

>
> Chris Harvey

> -----Original Message-----

> From: charvey-tcb@ccsemc.com [mailto:charvey-tcb@ccsemc.com]
> Sent: Tuesday, May 27, 2008 5:03 PM
> To: cgyloves@hct.co.kr
> Cc: charvey-tcb@ccsemc.com; lucy.tsai@ccsemc.com
> Subject: LG Electronics, FCC ID: BEJLEO2, Assessment NO.: AN08T7934,
> Notice#1

>
> Dear Ms.GYE-YOUNG CHA,

>
> You are listed as the Technical Contact for the above referenced TCB
> application. The following item(s) need(s) to be resolved before the review
> can be continued:

>
> 1. Please provide additional Internal photos that show all components of the
> RF Board (remove shield/heat-sink to show components underneath).

>
> 2. The Hardware Manual indicates that this device incorporates a MIMO FPGA,
> but the block diagrams of this device has only one transmitter (and 2
> receiver) paths. Please explain how this device incorporates MIMO (Multiple
> Input Multiple Output) and whether more than one of these boards is used
> location (co-location). Please explain the Space-Frequency Block Coding
> stated in the Operational Description exhibit.

>
> 3. The RF Exposure Warning statement says that the antenna should not exceed
> -4dBi in the Cellular Band. The term Cellular Band is vague (likely to be
> understood as the 850MHz band in USA). Please clarify the frequency band by
> indicating the frequency of operation in this RF Exposure warning. Also,
> the integrator/installer should be warned against co-location with other
> transmitters and antennas. Please update the RF Exposure Warning section
> accordingly.

>
> 4. The label location exhibit is required to be non-confidential, but the
> exhibit submitted has a photograph of the EUT. Since the label location
> exhibit can not be held confidential, please either confirm that it will be
> acceptable to have the label location photo as non-confidential, or submit a

> revised label location exhibit with a drawing of the label location instead
> of a photograph.
>
> 5. The RF test report has plots for Conducted and Radiated Power
> measurements. The Conducted Power plots show a signal that is very flat
> over the entire bandwidth, where the Radiated Power plots (EIRP) show a
> jagged signal (including a central peak). There appears to be some sort of
> averaging in the conducted plots. Please explain the difference in
> appearance of the 2 plots.
>
> 6. Please provide the Emission Designator including the justification for
> the necessary bandwidth and modulation code for this device.
>
> The items indicated above must be submitted before processing can continue
> on the above referenced application. Failure to provide the requested
> information within 30 days of the original e-mail date may result in
> application dismissal and forfeiture of the filing fee. Also, please note
> that partial responses increase processing time and should not be submitted.
> Any questions about the content of this correspondence should be directed to
> the e-mail address listed below the name of the sender.
>
> Best regards,
>
> Chris Harvey
> Charvey-tcb@ccsemc.com
>