LXE

Regulatory Approvals Group

November 20, 2000

Federal Communications Commission
Equipment Authorization Division,
Application Processing Branch
7435 Oakland Mills Road
Columbia, MD 21046

RE: KDZLXE4810P3S01US
Form 731: EA99143
Correspondence Number: 117112

Dear Mr. Chan:

After reviewing the last permissive change application on this radio, I would like to withdraw LXE antenna 155102-0001 from this application. This antenna was the subject of the last permissive change application granted on 5/6/98 and is already approved for use on the 4810P3S01US. This permissive change includes 4 antennas.

In response to your inquiry of 11/16/2000, I have prepared the following:

Items 1&2:
The 4810P3S01US Transceiver radio card will be integrated into individual components of the LXE product line. Terminals currently targeted for integration are LXE Models: 1380, 1390, 2330, 2335(MX1), 2381(MX3), 2480(CX1), VX1 and VX2. Below is a table of antennas currently approved or are now pending for use with the 4810P3S01US. In addition, it shows which terminal uses which antenna, when the antenna was approved or filed, and the intended type of operation of the terminals that use the radio and antenna.

LXE P/N	Mfg.	Mfg. P/N	Antenna Type	Gain (dBi)	System EIRP (dBm)	LXE Product Used In	Type of Operation	Approval Date
None	None	None	1/4 Wave Whip	2.5	26.5	1380/1390 VX1/VX2	Mobile - Vehicle Mount	7/21/95
155102-0001	LXE	155102-0001	Omni	0	24	2330 2335(MX1)	Hand-Held Only	5/6/98
148693-0001	Hytennas	10519	Omni	2.5	26.5	1380/90 VX1/VX2	Mobile - Vehicle Mount	Filed 10/27/00
148694-0001	Hytennas	10556	Omni	2.5	26.5	1380/90 VX1/VX2	Mobile - Vehicle Mount	Filed 10/27/00
148695-0001	Hytennas	10542	Omni	2.5	26.5	1380/90 VX1/VX2	Mobile - Vehicle Mount	Filed 10/27/00
156428-0001	LXE	156428-0001	Patch	0	24	MX3 CX1	Hand-Held/ Body Worn	Filed 10/27/00

LXE, Inc. 125 Technology Parkway Norcross, GA 30092-9200 USA
TEL: (770) 447-4224 FAX: (770) 447-6928 EMAIL: rsw3347@lxe.com

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Each terminal is described in detail below

The 4810P3S01US radio will be integrated into the terminals described below. All terminals have been evaluated to, and found to comply with all applicable EMI/EMC and product safety standards.

1380/90

The 1380 and 1390 use antennas 148693-0001 or 148694-0001 or 148695-0001. These antennas are currently pending with this permissive change application.

The LXE Models 1380 and 1390 are similar, however the 1390 has an external keyboard with a full screen display, while the 1380 has an integrated keyboard and half screen display. The LXE Models 1380/90 are overhead, vehicle mounted, ruggedized computer terminals. A typical application for the 1380/90 is mounted on a fork lift type vehicle. Minimum MPE distance to be maintained from the antenna is calculated to be 4.62cm, however as standard LXE policy dictates, installers are instructed to ensure 20cm.

VX1/VX2

The VX1 and VX2 use antennas 148693-0001 or 148694-0001 or 148695-0001. These antennas are currently pending with this permissive change application.

The LXE VX1 and VX2 are the next generation of the 1380 and 1390 respectively. The VX1/VX2 come with several upgrades including an Intel 486 processor, extended operating temperatures, touch screen option, and other cost reducing modifications. In principle, the application of the VX1/VX2 is identical to the 1380/90. Minimum MPE distance to be maintained from the antenna is calculated to be 4.62cm, however as standard LXE policy dictates, installers are instructed to ensure 20cm.

2330

The 2330 uses antenna 155102-0001. This antenna was approved on 5/6/98.

The LXE Model 2330 is high end DOS Based vertical hand-held terminal(VHHT) equipped with an optional integrated laser barcode scanner. The 2330 is intended to be a hand-held only device.

2335(MX1)

The 2330 uses antenna 155102-0001. This antenna was approved on 5/6/98.

The LXE Model 2335(MX1) is the next generation of DOS Based vertical hand held terminals(VHHT). The 2335(MX1) is intended to be a hand-held only device. The 2335(MX1) will ultimately replace the 2330, however the 2330 is still in service.

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2381(MX3)
The 2381(MX3) uses antenna 156428-0001. This antenna is currently pending with this permissive change application.

The LXE Model 2381(MX3) is a DOS based horizontal hand-held terminal(HHHT) and serves the same functions as the other hand-held terminals with a horizontal form factor. Unlike the other hand-held terminals, the 2381(MX3) is designed with a "Hip Flip" that allows the user to rest the terminal on a platform secured to the waist by a belt. The antenna is in the endcap of the terminal, furthest away from the user. Distance from antenna to the user is 15cm.

2480(CX1)
The 2381(MX3) use antenna 156428-0001. This antenna is currently pending with this permissive change application.

The CX1's form factor is identical to the MX3 however the CX1 uses a faster CPU and different operating system.

The LXE Model 2480(CX1) is a windows CE based horizontal hand-held terminal(HHHT) and serves the same functions as the other hand-held terminals with a horizontal form factor. Unlike the other hand-held terminals, the 2480(CX1) is designed with a "Hip Flip" that allows the user to rest the terminal on a platform secured to the waist by a belt. The antenna is in the endcap of the terminal, furthest away from the user. Distance from antenna to the user is 15cm.

Item 3

The installation guides will be revised to include the general population as well as the user.

> **"This device is intended to transmit RF energy. For protection against excessive RF exposure to humans and in accordance with FCC rules, this equipment should be installed such that a minimum separation distance of at least 20cm is maintained between the radiating element and the general population"**

Item 4
For this radio, 4 terminals are considered portable, the 2330, 2335, 2381(MX3) and the 2480(CX1). Due to similar form factors, the 2330 and 2335 use antenna 155102-0001 and the 2381(MX3) and 2480(MX3) use antenna 156428-0001.

Due to the current high costs of SAR testing, an engineering judgment was made to test a single antenna configuration. Since the gains of the antennas are the same, the judgment was made based on proximity of the antenna to the user.

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The SAR testing for this radio was performed with antenna 155102-0001 that is used with the 2330 and 2335(MX1). This antenna was chosen for this test over 156428-0001, used with the 2381(MX3) and 2480(CX1), because in typical use, it is in closer proximity to the user than 156428-0001.

To further validate testing only the one antenna, we instructed the test lab to test the antenna in a configuration that is far worse than in a typical use. The antenna was removed from the host and placed directly on the test measurement specimen. This obviously produced a failing result and so the antenna was moved away from the specimen until a passing result was obtained. The separation distance that produced the passing result was 2mm. The 155102-0001 antenna, when used properly in the host terminal, will always be at least 10cm from the user. Additionally, the 156428-0001 antenna used in the 2381(MX3) and 2480(CX1), will always be at least 15cm from the user.

Testing every portable host that use the same radio would cost in excess of $25,000 and is an unjust financial burden for a permissive change filing. We believe we have done or due diligence to show compliance to the SAR requirements, and we firmly believe that this configuration shows that both antennas used in their host devices, will satisfy the SAR requirements.

Item 5
I received soft copies of the photos from the test lab and have uploaded them.

Item 6
“Front” and “Back” are arbitrarily defined as each side of the antenna.

Horizontal Back: The antenna is in a horizontal position relative to the test specimen and lying on its “Back”.

Horizontal Front: The antenna is in a horizontal position relative to the test specimen and lying on its “Front”.

The laptop computer provided the EUT power and ran the software to drive the radio. The radio was attached to a ribbon cable that attached to a PCMCIA extender card that was fitted into one of the laptop’s PCMCIA slot. The computer was not involved in the configuration.

Item 7

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See item 5.

Item 8
All of our radio devices are integrated into our terminals, both mobile and portable. I personally have filed permissive change applications for LXE for 2 ½ years and only recently have been told of this new issue. This is difficult for us since we currently have certifications for various radios that are used in mobile and portable devices. It only seems fair that radios already certified as both, should be allowed to continue to file any antenna types against them as long as they show compliance to the technical and RF Safety requirements.

Please advise how to proceed with future permissive changes on our already "Hybrid" certifications.

Sincerely,

R. Sam Wismer
RF Approvals Engineer
LXE, Inc.

LXE, Inc. 125 Technology Parkway Norcross, GA 30092-9200 USA
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