Federal Communications Commission
Authorization and Evaluation Division
Equipment Authorization Branch
7435 Oakland Mills Road
Columbia, Maryland 21046

lenovo
Lenovo(Japan)Ltd.
1623-14, Shimotsuruma, Yamato
Kanagawa, 242-8502, Japan

Re: **FCC/TCB Requested Information**
  FCC ID: VV7-MBMF3507G-L

To whom it may concern,

Question 1: This application has been submitted for a Class II Permissive Change to allow simultaneous transmission of this EUT in a Portable Configuration along with other transmitters that have been separately evaluated in Mobile operating configuration. Please address this situation in accordance with the FCC Laptop Computer SAR procedures for Simultaneous Transmission using the $n = P/(60/f)-1$ formulae to determine the need to further evaluation.

Answer 1: The antenna-to-antenna separation distance regarding KDB 616217 is calculated as below.

$\frac{1}{2}n_x = \frac{1}{2}[P_x/(60/f)-1]$ (cm) P_x: See Table-1.			$\frac{1}{2}n_y = \frac{1}{2}[P_y/(60/f)-1]$ (cm) P_y: See Table-2.			5cm + 1/2nx + 1/2ny	WLAN to WWAN (cm)	Simul Eval?
WWAN: Cellular	$\frac{1}{2}[2000/(60/0.836)-1]$	14	WLAN 2400MHz	$\frac{1}{2}[470/(60/2.45)-1]$	9	28	5.3 or 6	Yes
			WLAN 5250MHz	$\frac{1}{2}[110/(60/5.25)-1]$	5	24	5.3 or 6	Yes
			WLAN 5600MHz	$\frac{1}{2}[110/(60/5.60)-1]$	5	24	5.3 or 6	Yes
			WLAN 5785MHz	$\frac{1}{2}[436/(60/5.785)-1]$	21	40	5.3 or 6	Yes
			WIMAX 2590MHz	$\frac{1}{2}[211/(60/2.59)-1]$	4	23	5.3 or 6	Yes
WWAN: PCS	$\frac{1}{2}[871/(60/1.880)-1]$	14	WLAN 2400MHz	$\frac{1}{2}[470/(60/2.45)-1]$	9	28	5.3 or 6	Yes
			WLAN 5250MHz	$\frac{1}{2}[110/(60/5.25)-1]$	5	24	5.3 or 6	Yes
			WLAN 5600MHz	$\frac{1}{2}[110/(60/5.60)-1]$	5	24	5.3 or 6	Yes
			WLAN 5785MHz	$\frac{1}{2}[436/(60/5.785)-1]$	21	40	5.3 or 6	Yes
			WIMAX 2590MHz	$\frac{1}{2}[211/(60/2.59)-1]$	4	23	5.3 or 6	Yes

  With these result, the configuration of antenna systems in this application requires the FCC evaluation for simultaneous transmission of the applying WWAN device and the co-located WLAN/WiMAX devices.
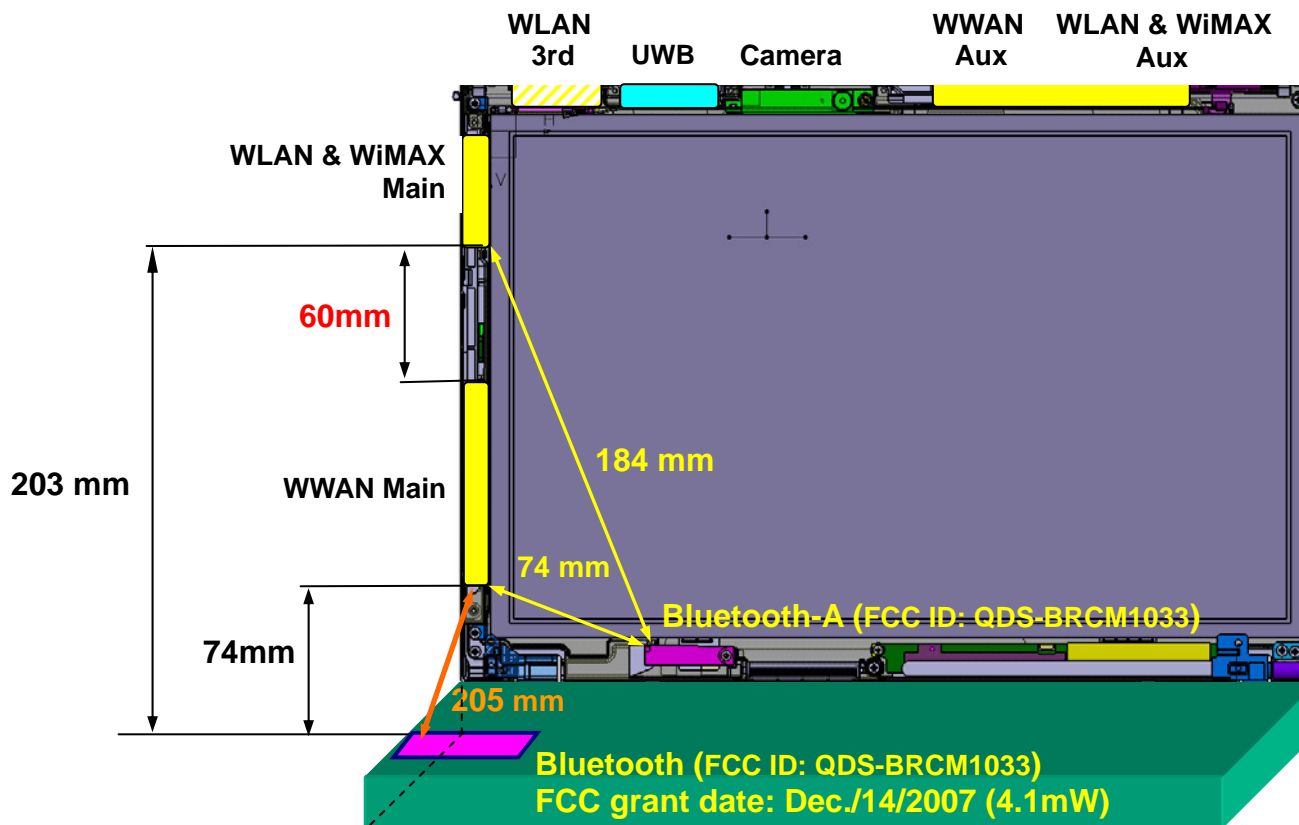
Sincerely,

September 25, 2008

Signature: _____

Toshiya Murota, Lenovo(Japan)Ltd.
Advisory R&D Engineer, Standard Engineering

RF Exposure Info. for Model F3507G

The Figure-1 and Figure-2 show the antenna configurations of the applying host PC devices in this application.

Figure-1   Antenna configuration of ThinkPad T400/R400

WWAN - Bluetooth:
> The RF Exposure evaluation nor SAR testing in co-locating with Bluetooth is not required pursuant to the FCC document "616217 D01 SAR for Laptop v01" issued on December/07/2007, since the separation distance to the nearest WWAN Tx antenna is more than 5cm apart and its maximum power is 4.1mW.
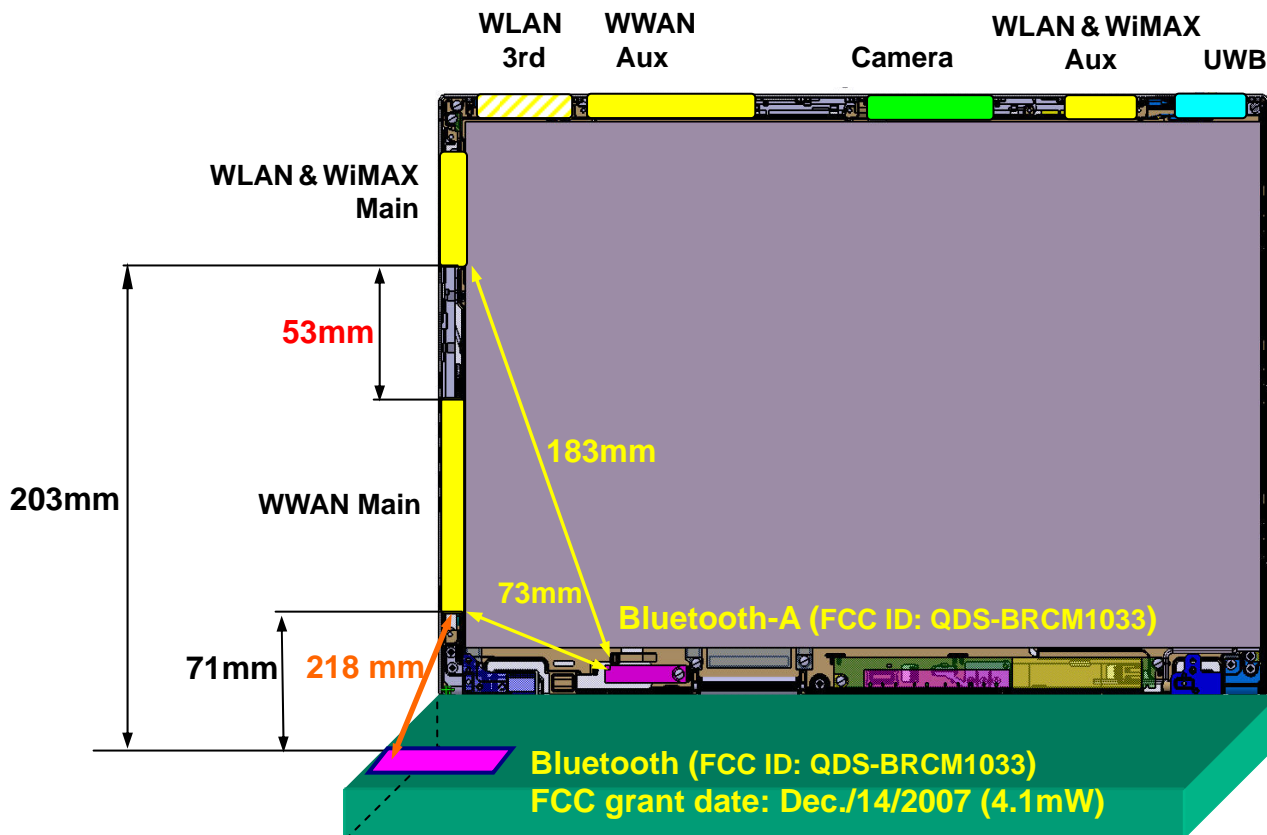
WWAN - UWB:
> Since UWB transmitter is not mentioned in the section 2.1091 and 2.1093, it does not subject to RF exposure evaluation. Therefore no co-located MPE or SAR testing is required.

WWAN - WLAN:
> The WWAN main (Tx) antenna and WLAN (or WiMAX) Tx antennas co-locate with 60mm of separation distance, and both devices transmit RF simultaneously.

Figure-2 Antenna configuration of ThinkPad X500/W500

WWAN - Bluetooth:
  The RF Exposure evaluation nor SAR testing in co-locating with Bluetooth is not required
  pursuant to the FCC document "616217 D01 SAR for Laptop v01" issued on
  December/07/2007, since the separation distance to the nearest WWAN Tx antenna is more
  than 5cm apart and its maximum power is 4.1mW.

WWAN - UWB:
  Since UWB transmitter is not mentioned in the section 2.1091 and 2.1093, it does not subject
  to RF exposure evaluation. Therefore no co-located MPE or SAR testing is required.

WWAN - WLAN:
  The WWAN main (Tx) antenna and WLAN (or WiMAX) Tx antennas co-locate with
  53mm of separation distance, and both devices transmit RF simultaneously.

Table-1: WWAN (Model: **F3507G**) SAR info.

F3507G Grant date	Host PC model	FCC CFR	Max. Conducted power (**P**)	SAR Distance (**D**)	**SAR** (W/Kg)	limit (W/Kg)
05/09/2008 (without co-location)	ThinkPad T400/R400	Part 22H	2.0 W	7.4 cm	**0.173**	1.6
	ThinkPad T500/W500			7.1 cm	**0.161**	
08/05/2008 (with WLAN co-location)	ThinkPad T400/R400	Part 24E	0.871 W	7.4 cm	**0.112**	1.6
	ThinkPad T500/W500			7.1 cm	**0.064**	

Table-2: Co-located WLAN&WiMAX Peak power

Grant date	FCC ID	WLAN Part 15C 2.4GHz band	WLAN Part 15E 5.18 – 5.32GHz	WLAN Part 15E 5.50 – 5.70GHz	WLAN Part 15C 5.745 – 5.825GHz	WiMAX Part 27 2.496 – 2.690GHz
05/09/2008	PPD-AR5BHB63-L	0.1977W	N/A	N/A	N/A	N/A
06/24/2008	PD9LEN512ANMU	0.091 W	0.028 W	0.054 W	0.021 W	N/A
07/07/2008	PD9533ANMU	0.130 W	0.110 W	0.110 W	0.068 W	N/A
07/18/2008	**PD9533ANXMU *1**	0.470 W	0.048 W	0.048 W	0.436 W	0.211 W

*1: The new co-located WLAN&WiMAX combo module in this application

Table-3: Certified WLAN&WiMAX antenna List

Host PC	Antenna Manufacturer	WLAN Main Antenna Antenna P/N	2.4 -2.5	5.15 -5.35	5.47 -5.725	5.725 -5.85
T400/R400	NISSEI	3172467	0.54	0.90	1.93	1.47
	Amphenol	LX0970-11-000-R	1.47	0.26	-0.36	-0.30
	FOXCONN	WDAN-L1ML3001-DF	-0.40	2.59	1.62	1.38
T500/W500	NISSEI	3172525	1.35	1.76	0.09	-1.66
	Amphenol	LX0980-11-000-R	1.61	0.75	1.75	1.75

WLAN Auxiliary Antenna Antenna P/N	2.4 -2.5	5.15 -5.35	5.47 -5.725	5.725 -5.85
3172509	1.80	-0.17	0.46	0.46
LX0968-11-000-R	1.68	1.65	1.58	1.08
WDAN-L1ML3002-DF	1.10	1.22	0.00	-0.69
3172566	1.99	0.77	2.04	2.42
LX0983-11-000-R	1.57	1.47	1.73	2.33

WLAN 3rd Antenna Antenna P/N	2.4 -2.5	5.15 -5.35	5.47 -5.725	5.725 -5.85
3172483	1.99	0.97	0.67	1.29
LX0991-11-000-R	-0.60	1.78	2.79	2.46
WDAN-L1ML3004-DF	1.85	0.70	0.20	-0.42
3172541	1.97	0.20	0.82	-1.01
LX0988-11-000-R	1.18	1.53	0.84	0.67

Host PC	Antenna Manufacturer	WiMAX Main Antenna (Only main antenna is used for WiMAX Tx.) Antenna P/N	Frequency band (GHz) 2.49 - 2.69
T400/R400	NISSEI	3172467	0.67
	Amphenol	LX0970-11-000-R	1.94
T500/W500	NISSEI	3172525	1.55
	Amphenol	LX0980-11-000-R	1.32

<u>**Table-4**: WLAN&WiMAX MPE info.</u>

	Max. Conducted power from **Table-2** (**P**)	Max. Host PC antenna gain from **Table-3** (**G**)	**MPE *2** (mW/cm^2)	limit (mW/cm^2)
Part 15C 2.4GHz band	0.470 W	1.99 dBi	0.148	
Part 15E 5.18 – 5.32GHz	0.110 W	2.59 dBi	0.040	
Part 15E 5.50 – 5.70GHz	0.110 W	2.79 dBi	0.042	1.0
Part 15E 5.50 – 5.70GHz	0.436 W	2.46 dBi	**0.153**	
Part 27 2.496 – 2.690GHz	0.211 W	1.94 dBi	0.066	

*2: MPE= (**P**x1000)x(10$^{G/10}$) / (4 x π x 20^2)