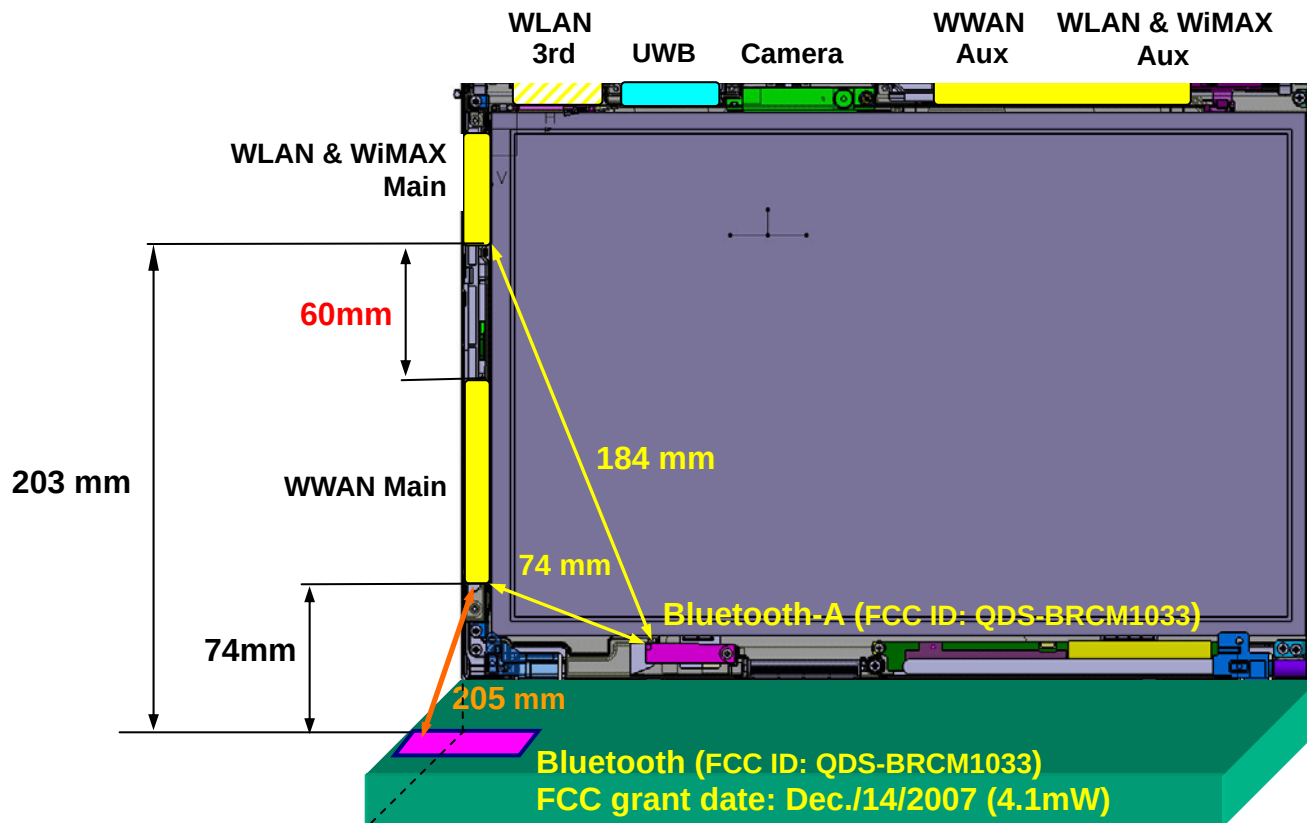


RF Exposure Info. for Model UNDP-1

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.

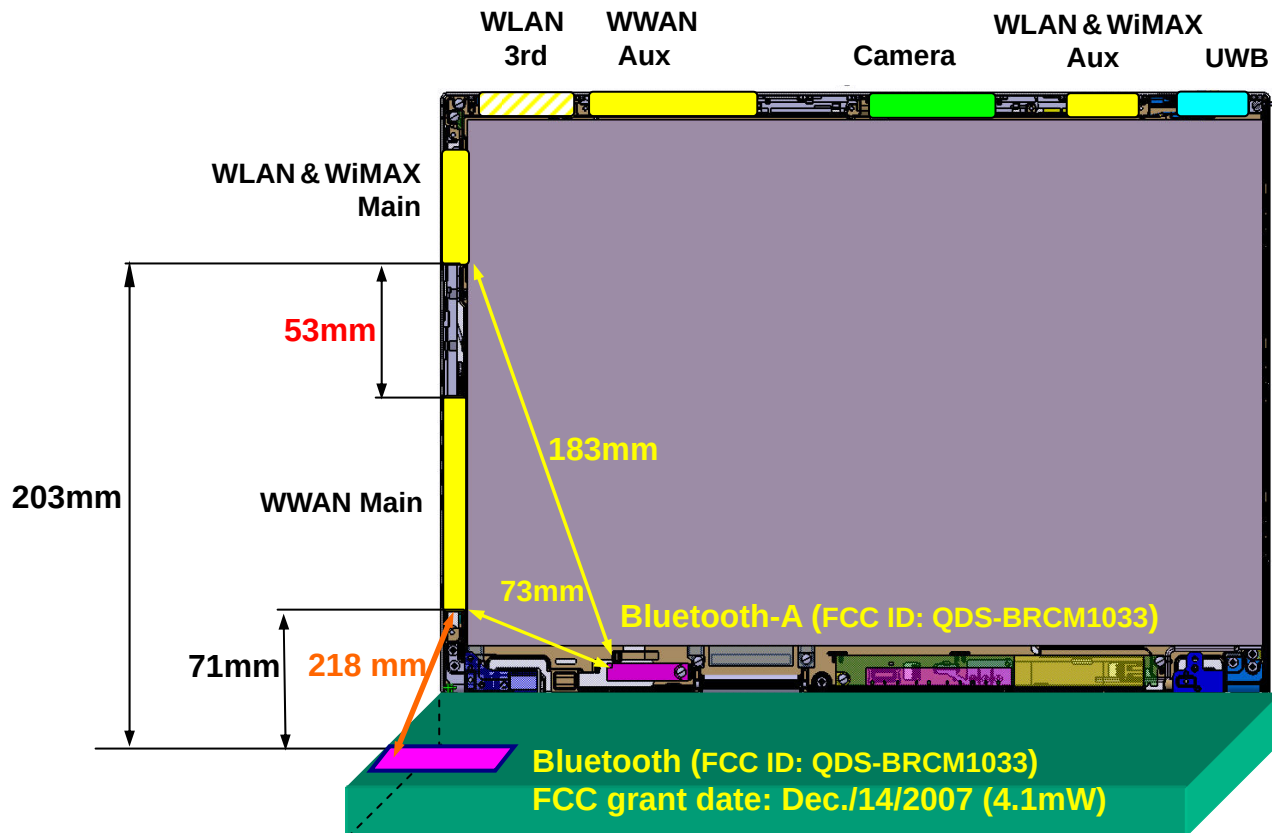
WWAN - UWB:

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: UNDP-1) SAR info.

UNDP-1 Grant date	Host PC model	FCC CFR	Max. Conducted power (P)	SAR Distance (D)	SAR (W/Kg)	limit (W/Kg)
03/05/2008 (without co-location)	ThinkPad T400/R400	Part 22H	1.986 W	7.4 cm	0.081	1.6
	ThinkPad T500/W500			7.1 cm	0.094	
08/05/2008 (with WLAN co-location)	ThinkPad T400/R400	Part 24E	0.885 W	7.4 cm	0.056	1.6
	ThinkPad T500/W500			7.1 cm	0.049	

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

Grant date	FCC ID	WLAN				WiMAX
		Part 15C 2.4GHz band	Part 15E 5.18 – 5.32GHz	Part 15E 5.50 – 5.70GHz	Part 15C 5.745 – 5.825GHz	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

		WLAN Main Antenna				
Host PC	Antenna Manufacturer	Antenna P/N	Frequency band (GHz)			
			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	Frequency band (GHz)			
	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	Frequency band (GHz)			
	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

		WiMAX Main Antenna (Only main antenna is used for WiMAX Tx.)	
Host PC	Antenna Manufacturer	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

Table-4: WLAN&WiMAX MPE info.

	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	1.0
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	
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: $MPE = (P \times 1000) \times (10^{G/10}) / (4 \times \pi \times 20^2)$