

FCC Radio Test Report FCC ID: VX4RS0001

This report concerns (check one): Original Grant Class II Change

Issued Date: Jan. 03, 2008 Project No.: 0709C185

Equipment: TANGENT QUATTRO MKII

Model Name: tangent quattro

Applicant: Eltax.A/S

A d d r e s s: Drejervej 2 DK-7490, Aulum, Denmark

Tested by:

Neutron Engineering Inc. EMC Laboratory

Date of Test:

Dec. 20, 2007~ Jan. 02, 2008

Testing Engineer

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Authorized Signatory

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Declaration

Neutron represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with the standards traceable to National Measurement Laboratory (**NML**) of **R.O.C.**, or National Institute of Standards and Technology (**NIST**) of **U.S.A.**

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For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

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1. CERTIFICATION

Equipment: TANGENT QUATTRO MKII

Trade Name: tangent

Model Name: tangent quattro

Applicant: Eltax.A/S

Test Item: ENGINEERING SAMPLE

Standards: FCC Part15, Subpart C(15.247) / ANCI C63.4: 2003

The above equipment has been tested and found compliance with the requirement of the relative standards by Neutron Engineering Inc. EMC Laboratory.

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. NEI-FCCP-1-0709C185) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of NVLAP and TAF according to the ISO-17025 quality assessment standard and technical standard(s).

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2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15, Subpart C						
Standard Section	Test Item	Judgment	Remark			
15.207	Conducted Emission	PASS				
15.247 (c)	Antenna conducted Spurious Emission	PASS				
15.247 (a)(2)	6dB Bandwidth	PASS				
15.247 (b)	Peak Output Power	PASS				
15.247 (c)	Radiated Spurious Emission	PASS				
15.247 (d)	Power Spectral Density	PASS				
15.203	Antenna Requirement	PASS				
1.1307 1.1310 2.1091 2.1093	RF Exposure Compliance	PASS				

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

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2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **C01/OS02** at the location of No.132-1, Lane 329, Sec. 2, Palain Road, Shijr City, Taipei, Taiwan. Neutron's test firm number is 95335

2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $\mathbf{y} \pm \mathbf{U}$, where expended uncertainty \mathbf{U} is based on a standard uncertainty multiplied by a coverage factor of $\mathbf{k=2}$, providing a level of confidence of approximately 95 % $^{\circ}$

A. Conducted Measurement:

Test Site	Method	Measurement Frequency Range	U , (dB)	NOTE
C01	ANSI	150 KHz ~ 30MHz	1.94	

B. Radiated Measurement:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U , (dB)	NOTE
OS-01	ANSI	30MHz ~ 200MHz	V	3.82	
		30MHz ~ 200MHz	Н	3.60	
		200MHz ~ 1,000MHz	V	3.86	
		200MHz ~ 1,000MHz	Н	3.94	
OS-02	ANSI	30MHz ~ 200MHz	V	2.48	
		30MHz ~ 200MHz	Н	2.16	
		200MHz ~ 1,000MHz	V	2.50	
		200MHz ~ 1,000MHz	Н	2.66	

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3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	TANGENT QUATTRO MKII		
Trade Name	tangent		
Model Name	tangent quattro		
OEM Brand/Model Name	N/A		
Model Difference	N/A		
Product Description	exhibited in User's Manu	Class 1 Class 3 DSSS & OFDM 802.11b:11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6 Mbps 11 CH, Please see Note 2. (please see page 9) Please see Note 3. (please see page 9) 11B:18.80dBm, 11G:21.42dBm n, features, or specification ual, the EUT is considered as an More details of EUT technical	
Channel List	Please refer to the Note	2. (please see page 9)	
	DC Voltage supplies fro	m AC/DC Adapter	
Power Source	Brand name:HON-KWA	NG	
	Model name:D12-15A		
Power Rating	AC I/P 120V 60Hz 35W	DC O/P 12Vdc 1500mA	

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

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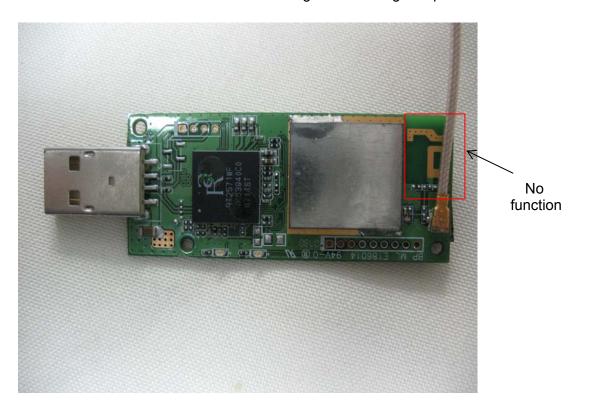


	Channel List							
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
	01	2412	04	2427	07	2442	10	2457
	02	2417	05	2432	08	2447	11	2462
2.	03	2422	06	2437	09	2452		

Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	Cortec	AN2400-2451BX	Dipole antenna	U.FL	2.0
2	-	-	Printed antenna	N/A	

Note: Ant 2. no Wireless function . so the testing not recording in report .



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3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Test Items	Mode	Data Rate	Channel	Antenna
AC Power Line Conducted Emissions	Normal Link	11 Mbps	6	1
Maximum Peak Conducted Output Power	11b/BPSK	1 Mbps	1/6/11	1
Power Spectral Density	11g/BPSK	6 Mbps	1/6/11	1
6dB Spectrum Bandwidth				
Radiated Emissions 9kHz~1GHz	11g/BPSK	6 Mbps	6	1
Radiated Emissions 1GHz~10 th Harmonic	11b/BPSK	1 Mbps	1/6/11	1
	11g/BPSK	6 Mbps	1/6/11	1
Band Edge Emissions	11b/BPSK	1 Mbps	1/11	1
	11g/BPSK	6 Mbps	1/11	1

3.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

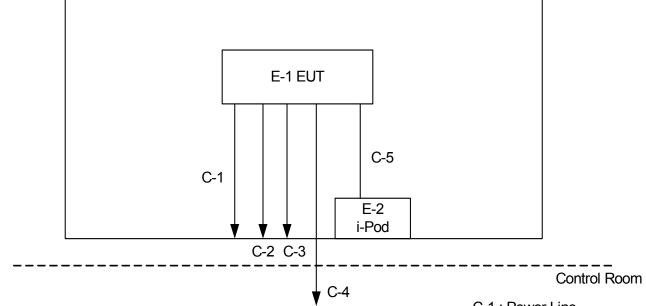
During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of WLAN

Test Software Version	Wifi Test		
Frequency	2412 MHz	2437 MHz	2462 MHz
IEEE 802.11b DSSS	3	3	3
IEEE 802.11g OFDM	3	3	3

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3.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



C-1: Power Line C-2: Audio Cable C-3: Audio Cable C-4: RJ-45 Cable C-5: Audio Cable

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3.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
E-1	TANGENT QUATTRO MKII	tangent	tangent quattro	VX4RS0001	N/A	EUT
E-2	Notebook PC	DELL	D600	DOC	7T390 A03	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	1.8M	
C-2	NO	NO	1.5M	
C-3	NO	NO	1.5M	
C-4	NO	NO	10M	
C-5	NO	NO	1.5M	

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in <code>[Length]</code> column.

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4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 POWER LINE CONDUCTED EMISSION LIMITS (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B	Standard	
TREQUENCT (MITZ)	Quasi-peak	Average	Quasi-peak	Average	Staridard
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

4.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	Rolf Heine	NNB-2/16Z	98053	Dec. 17, 2008
2	4L-V-LISN	Rolf Heine	NNB-4/63TL	02/10040	Mar. 05, 2008
3	Pulse Limiter	Electro-Metrics	EM-7600	112644	Nov. 27, 2008
4	50Ω Terminator	N/A	N/A	N/A	Apr.10, 2008
5	Test Cable	N/A	C01	N/A	Nov. 27, 2008
6	EMI Test Receiver	R&S	ESCI	100082	Jan. 31, 2008

Remark: "N/A" denotes No Model No., Serial No. or No Calibration specified.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

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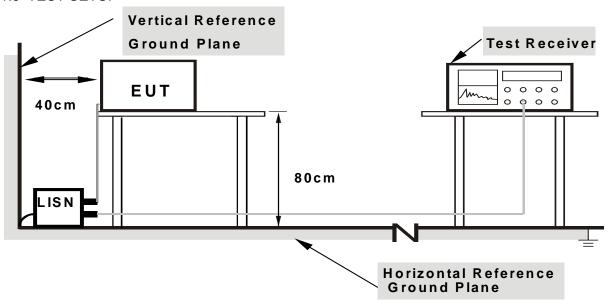
4.1.3 TEST PROCEDURE

- a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

4.1.6 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

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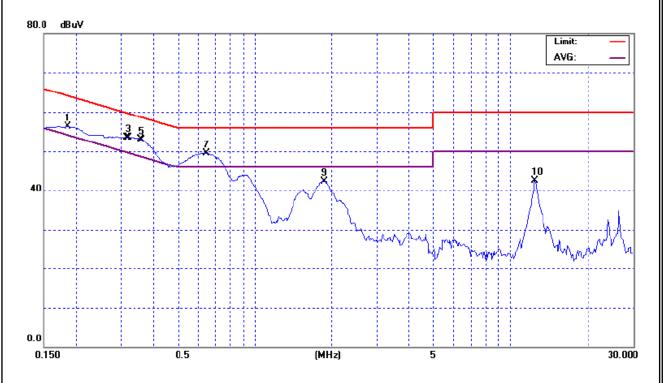
4.1.7 TEST RESULTS

EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	Normal Link		

Freq.	Terminal	Measured(dBuV)		Limits(dBuV)		Margin	Note
(MHz)	L/N	QP-Mode	AV-Mode	QP-Mode	AV-Mode	(dB)	NOLE
0.19	Line	56.21	44.69	64.26	54.26	-8.05	(QP)
0.32	Line	53.48	42.56	59.71	49.71	-6.23	(QP)
0.36	Line	52.89	41.76	58.69	48.69	-5.80	(QP)
0.65	Line	49.54	39.89	56.00	46.00	-6.11	(AV)
1.87	Line	42.39	*	56.00	46.00	-13.61	(QP)
12.43	Line	42.57	*	60.00	50.00	-17.43	(QP)

Remark

- (1) All readings are QP Mode value unless otherwise stated AVG in column of Note ... If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform In this case, a " * " marked in AVG Mode column of Interference Voltage Measured •
- (2) Measuring frequency range from 150KHz to 30MHz •



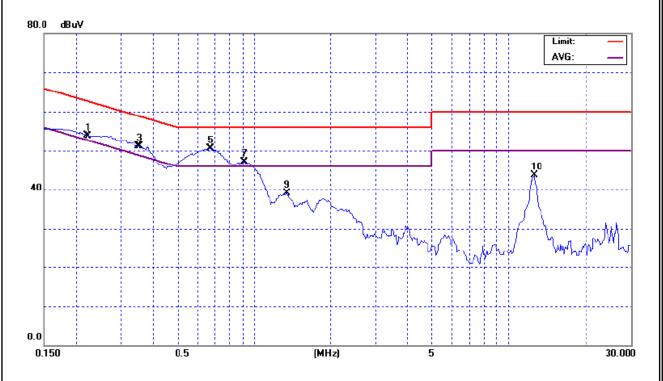
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EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	Normal Link		

Freq.	Terminal	Measured(dBuV)		Limits(dBuV)		Margin	Note
(MHz)	L/N	QP-Mode	AV-Mode	QP-Mode	AV-Mode	(dB)	NOLE
0.22	Neutral	53.79	43.27	62.70	52.70	-8.91	(QP)
0.36	Neutral	51.05	40.85	58.83	48.83	-7.78	(QP)
0.68	Neutral	50.49	38.70	56.00	46.00	-5.51	(QP)
0.92	Neutral	47.16	36.02	56.00	46.00	-8.84	(QP)
1.35	Neutral	39.20	*	56.00	46.00	-16.80	(QP)
12.61	Neutral	43.73	*	60.00	50.00	-16.27	(QP)

- (1) All readings are QP Mode value unless otherwise stated AVG in column of Note ... If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform In this case, a " * " marked in AVG Mode column of Interference Voltage Measured •
- (2) Measuring frequency range from 150KHz to 30MHz •



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4.2 RADIATED EMISSION MEASUREMENT

4.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies	Field Strength	Measurement Distance
(MHz)	(micorvolts/meter)	(meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class A (dBu	ıV/m) (at 3m)	Class B (dBuV/m) (at 3m)		
	PEAK	AVERAGE	PEAK	AVERAGE	
Above 1000	80	60	74	54	

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15B.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

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4.2.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Log-Bicon Antenna	Schwarzbeck	VULB 9160	3058	Nov. 27, 2008
2	Test Cable	N/A	10M_OS02	N/A	Nov. 27, 2008
3	Test Cable	N/A	OS02-1/-2/-3	N/A	Nov. 27, 2008
4	Pre-Amplifier	Anritsu	MH648A	M09961	Nov. 27, 2008
5	EMI Test Receiver	R&S	ESCI	100082	Jan. 31, 2008
6	Antenna Mast	Chance Most	CMTB-1.5	N/A	N/A
7	Turn Table	Chance Most	CMTB-1.5	N/A	N/A
8	Spectrum Analyzer	R&S	FSP_40	100129	Jan. 08, 2008
9	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-325	Oct. 24, 2008
10	Horn Antenna	Schwarzbeck	BBHA9170	9170187	Oct. 24, 2008
11	Microwave Pre_amplifier	Agilent	8449B	3008A01714	Mar. 10, 2008
12	Microflex Cable	United Microwave	57793	1m	Mar. 10, 2008
13	Microflex Cable	United Microwave	A30A30-500 6	10M	Jul. 07, 2008

Remark: "N/A" denotes No Model No. / Serial No. and No Calibration specified.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (other emission)	100KHz / 100KHz for peak

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

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4.2.3 TEST PROCEDURE

- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

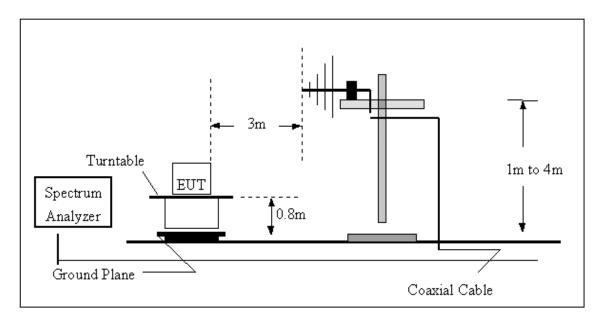
4.2.4	DEVIATION FROM	TEST STANDARD
No de	eviation	

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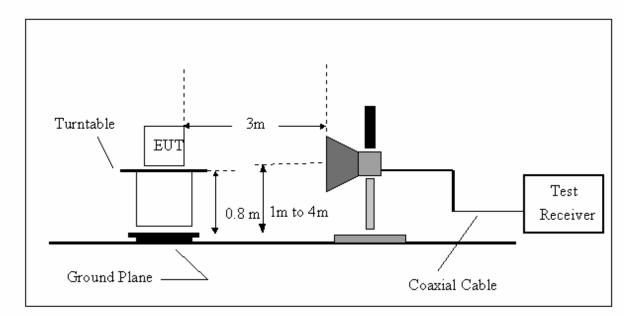


4.2.5 TEST SETUP

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



4.2.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **4.1.6** Unless otherwise a special operating condition is specified in the follows during the testing.

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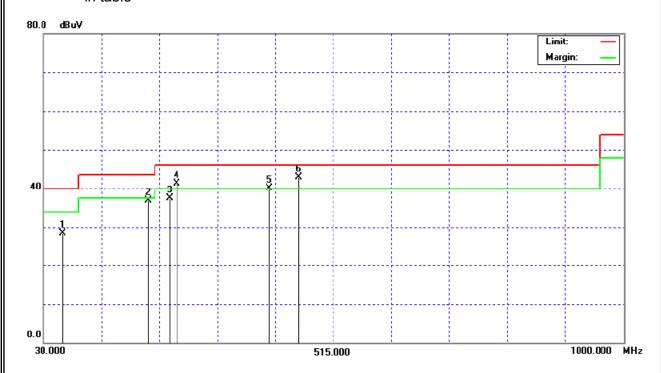
4.2.7 TEST RESULTS (Between 30 - 1000 MHz)

EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX 11G Mode CH01		

Freq.	Ant.	Reading(RA)	Corr.Factor(CF)	Measured(FS)	Limits(QP)	Margin	Note
(MHz)	H/V	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	NOLE
61.04	V	52.39	-23.91	28.48	40.00	- 11.52	
202.66	V	57.65	-20.79	36.86	43.50	- 6.64	
239.52	V	56.36	-18.91	37.45	46.00	- 8.55	
253.10	V	59.69	-18.47	41.22	46.00	- 4.78	
406.36	V	54.69	-14.51	40.18	46.00	- 5.82	
456.80	V	56.39	-13.47	42.92	46.00	- 3.08	

Remark:

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz $^{\circ}$
- (2) All readings are Peak unless otherwise stated QP in column of ${}^{\mathbb{F}}$ Note ${}_{\mathbb{J}}$. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ${}_{\circ}$
- (3) Measuring frequency range from 30MHz to 1000MHz •
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table $^{\circ}$



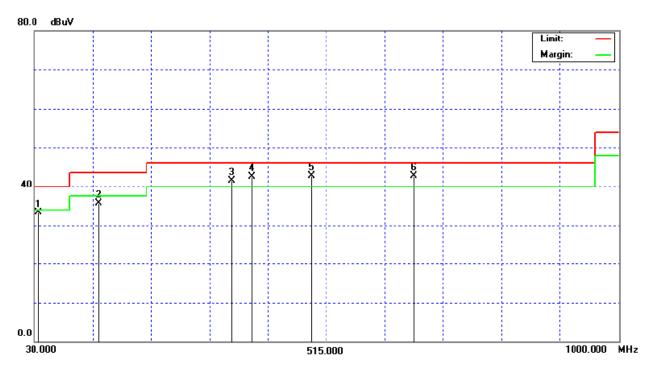
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EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX 11G Mode CH01		

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
35.26	Η	49.48	-16.24	33.24	40.00	- 6.76	
135.29	Η	59.36	-23.70	35.66	43.50	- 7.84	
356.02	Η	56.58	-15.08	41.50	46.00	- 4.50	
390.36	Η	57.00	-14.41	42.59	46.00	- 3.41	
489.98	Η	55.39	-12.66	42.73	46.00	- 3.27	
660.02	Н	52.36	-9.71	42.65	46.00	- 3.35	

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=120KHz, VBW =120KHz, Swp. Time = 0.3 sec./MHz
- (2) All readings are Peak unless otherwise stated QP in column of $^{\mathbb{F}}$ Note $_{\mathbb{J}}$. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform $_{\circ}$
- (3) Measuring frequency range from 30MHz to 1000MHz •
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table ${}^{\circ}$



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4.2.8 TEST RESULTS (Above 1000 MHz)

EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX 11B Mode CH01		

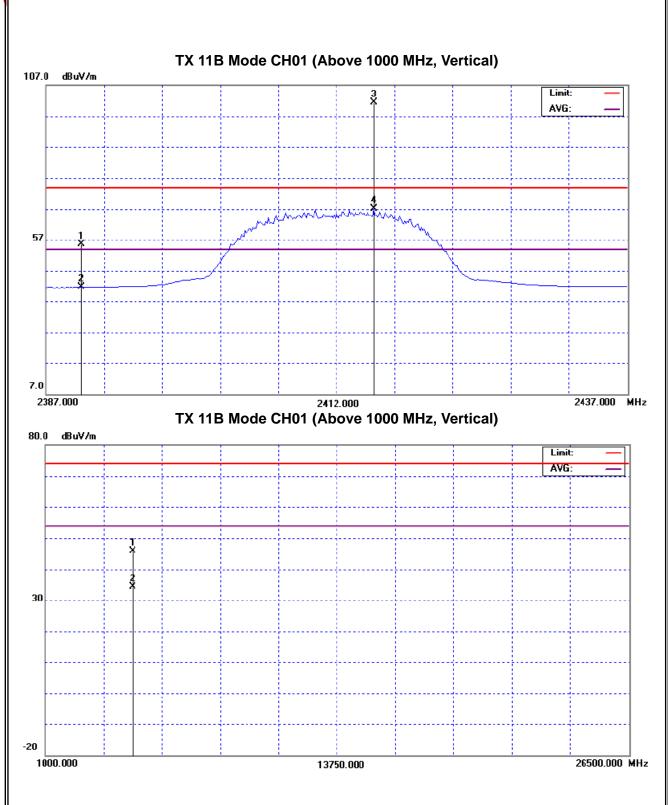
Freq.	Ant.Pol.	Rea	ding	Ant./CF	A	ct.	Lir	mit	
		Peak	AV		Peak	AV	Peak	AV	Note
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2390.00	V	23.69	9.73	32.05	55.74	41.78	74.00	54.00	Y/E
2415.20	V	69.36	35.01	32.13	101.49	67.14			Y/F
4824.12	V	42.36	30.75	3.57	45.93	34.32	74.00	54.00	Y/H

Remark:

- (1) All readings are Peak unless otherwise stated QP in column of $^{\mathbb{F}}$ Note $_{\mathbb{J}}$. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform $_{\circ}$
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis:
 - "X" denotes Laid on Table; "Y" denotes Vertical Stand; "Z" denotes Side Stand

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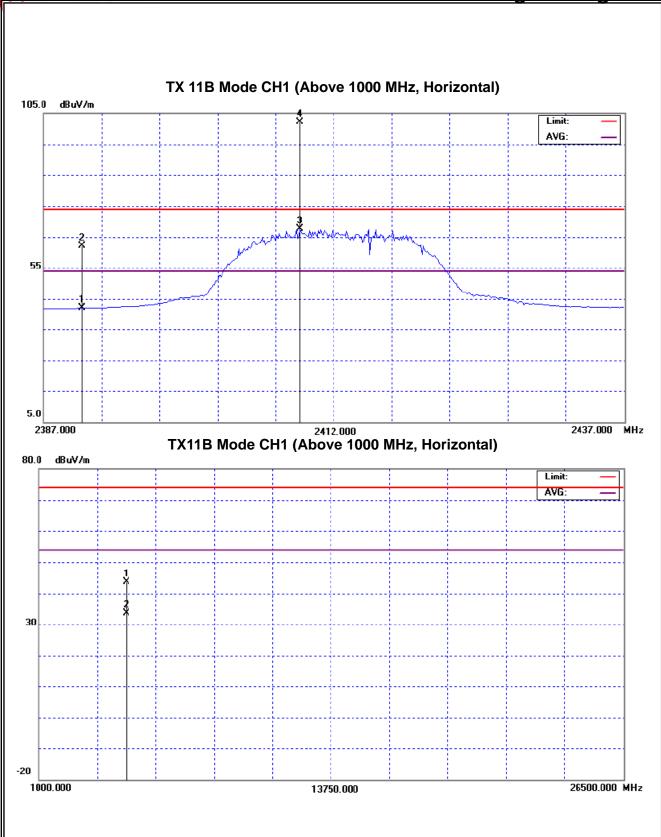
EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX 11B Mode CH1		

Freq.	Ant.Pol.	Rea	ding	Ant./CF	A	ct.	Lir	nit	
		Peak	AV		Peak	AV	Peak	AV	Note
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2390.00	Н	30.10	10.00	32.05	62.15	42.05	74.00	54.00	Y/E
2409.10	Н	70.10	35.41	32.11	102.21	67.52			Y/F
4824.00	Н	39.98	29.99	3.57	43.55	33.56	74.00	54.00	Y/H

- (1) All readings are Peak unless otherwise stated QP in column of $^{\mathbb{F}}$ Note $_{\mathbb{J}}$. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform $_{\circ}$
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis:
 - "X" denotes Laid on Table; "Y" denotes Vertical Stand; "Z" denotes Side Stand

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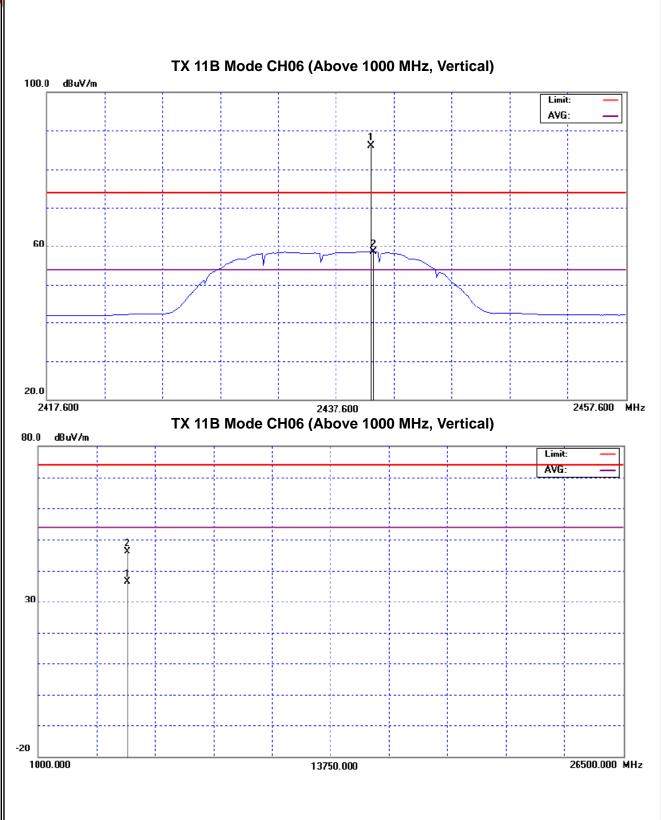
EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX 11B Mode CH06		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		
		Peak	AV		Peak	AV	Peak	AV	Note
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2440.00	V	53.99	26.38	32.21	86.20	58.59			Y/F
4873.98	V	42.39	32.63	3.72	46.11	36.35	74.00	54.00	Y/H

- (1) All readings are Peak unless otherwise stated QP in column of ${}^{\mathbb{F}}$ Note ${}_{\mathbb{J}}$. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ${}_{\circ}$
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission •
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis:
 - "X" denotes Laid on Table; "Y" denotes Vertical Stand; "Z" denotes Side Stand

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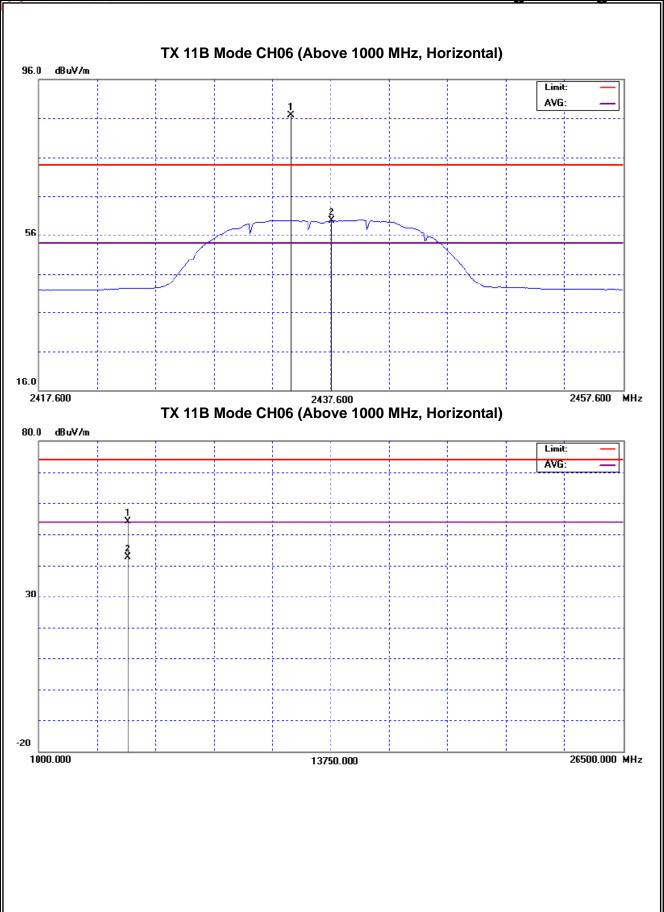
EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature:	26 ℃	Relative Humidity:	60%
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX 11B Mode CH06		

	Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		
Γ			Peak	AV		Peak	AV	Peak	AV	Note
	(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
	2434.88	Н	54.61	27.42	32.19	86.80	59.62			Y/F
Г	4873.69	Н	50.39	38.93	3.72	54.11	42.65	74.00	54.00	Y/H

- (1) All readings are Peak unless otherwise stated QP in column of ${}^{\mathbb{F}}$ Note ${}_{\mathbb{J}}$. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ${}_{\circ}$
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis:
 - "X" denotes Laid on Table; "Y" denotes Vertical Stand; "Z" denotes Side Stand

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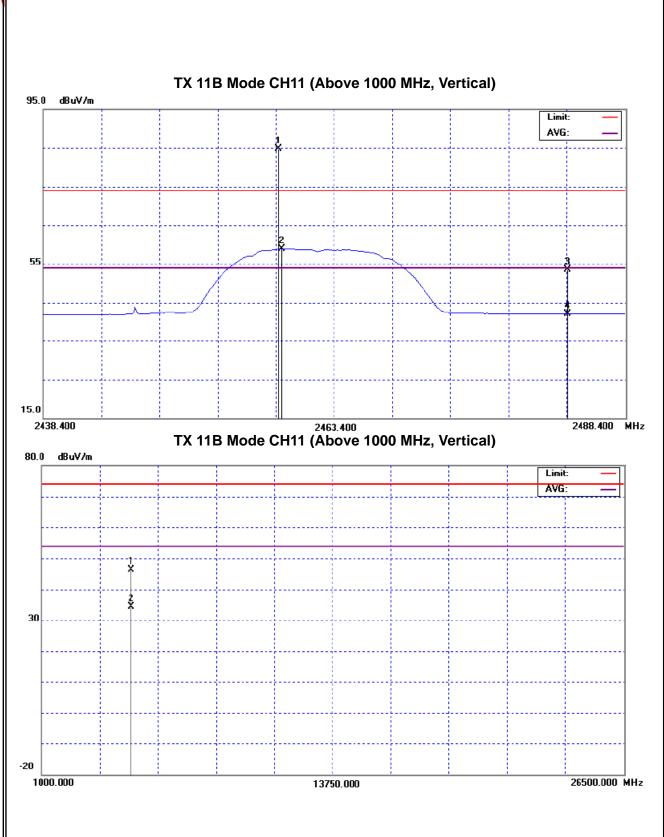
EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX 11B Mode CH11		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		
		Peak	AV		Peak	AV	Peak	AV	Note
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2458.60	٧	52.36	26.67	32.27	84.63	58.94			Y/F
2483.50	V	21.11	9.78	32.35	53.46	42.13	74.00	54.00	Y/E
4923.69	V	42.42	30.46	3.87	46.29	34.33	74.00	54.00	Y/H

- (1) All readings are Peak unless otherwise stated QP in column of ${}^{\mathbb{F}}$ Note $_{\mathbb{J}}$. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform $_{\circ}$
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis:
 - "X" denotes Laid on Table; "Y" denotes Vertical Stand; "Z" denotes Side Stand

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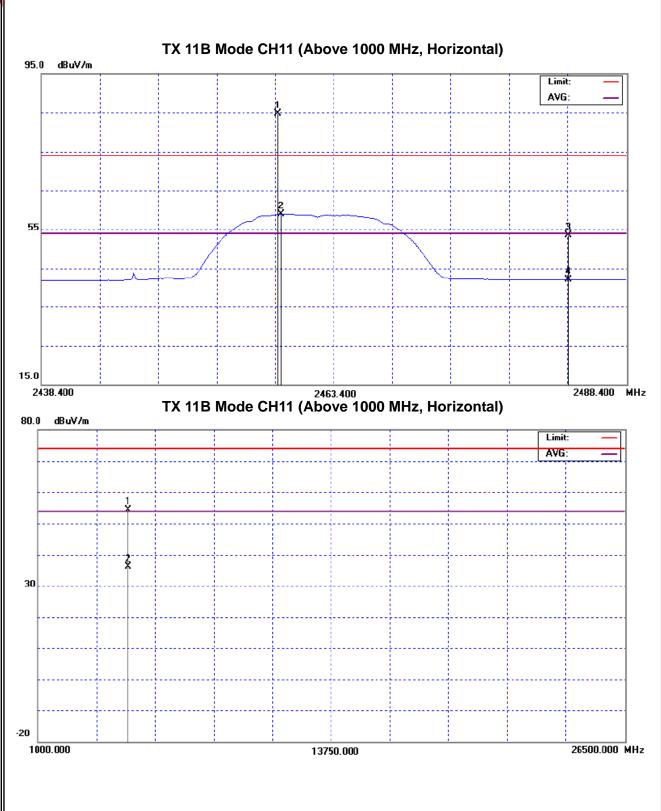
EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX 11B Mode CH11		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		
		Peak	AV		Peak	AV	Peak	AV	Note
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2462.70	Н	54.30	28.78	32.28	86.59	61.06			Y/F
2483.50	Н	21.08	9.78	32.35	53.43	42.13	74.00	54.00	Y/E
4924.20	Н	50.42	32.17	3.87	54.29	36.04	74.00	54.00	Y/H

- (1) All readings are Peak unless otherwise stated QP in column of ${}^{\mathbb{F}}$ Note ${}_{\mathbb{J}}$. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ${}_{\circ}$
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis:
 - "X" denotes Laid on Table; "Y" denotes Vertical Stand; "Z" denotes Side Stand

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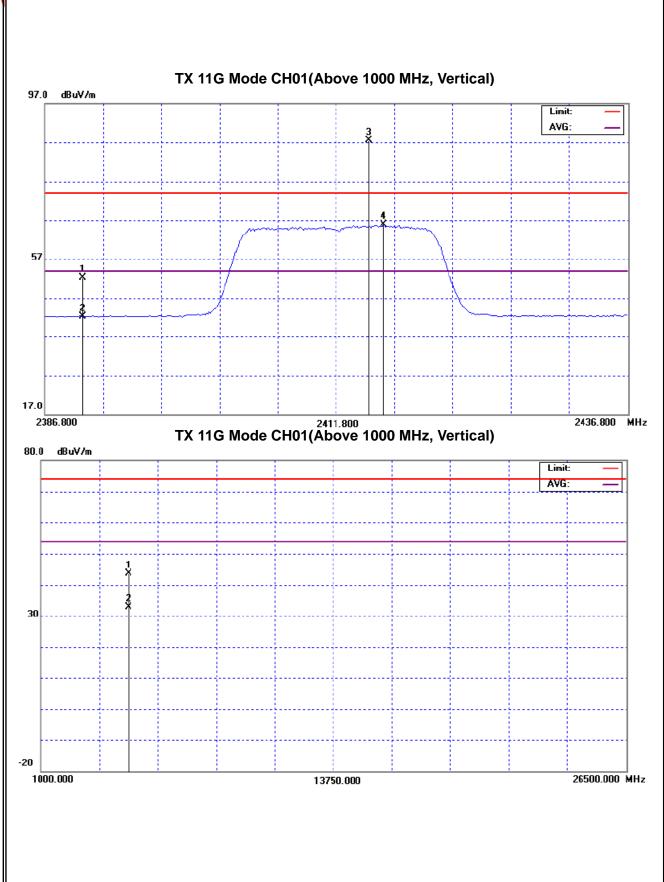
EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX 11G Mode CH01		

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		
		Peak	AV		Peak	AV	Peak	AV	Note
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2390.00	V	20.20	10.28	32.05	52.25	42.33	74.00	54.00	Y/E
2414.60	٧	55.43	33.68	32.13	87.56	65.81			Y/F
4824.02	V	39.98	29.27	3.57	43.55	32.84	74.00	54.00	Y/H

- (1) All readings are Peak unless otherwise stated QP in column of ${}^{\mathbb{F}}$ Note ${}_{\mathbb{J}}$. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ${}_{\circ}$
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission •
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis:
 - "X" denotes Laid on Table; "Y" denotes Vertical Stand; "Z" denotes Side Stand

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EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX 11G Mode CH01		

Freq.	Ant.Pol.	Reading		Ant./CF	A	Act.		Limit	
		Peak	AV		Peak	AV	Peak	AV	Note
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2390.00	Н	20.98	10.33	32.05	53.03	42.38	74.00	54.00	Y/E
2416.60	Н	53.57	32.80	32.13	85.71	64.93			Y/F
4824.00	Н	40.26	31.02	3.57	43.83	34.59	74.00	54.00	Y/H

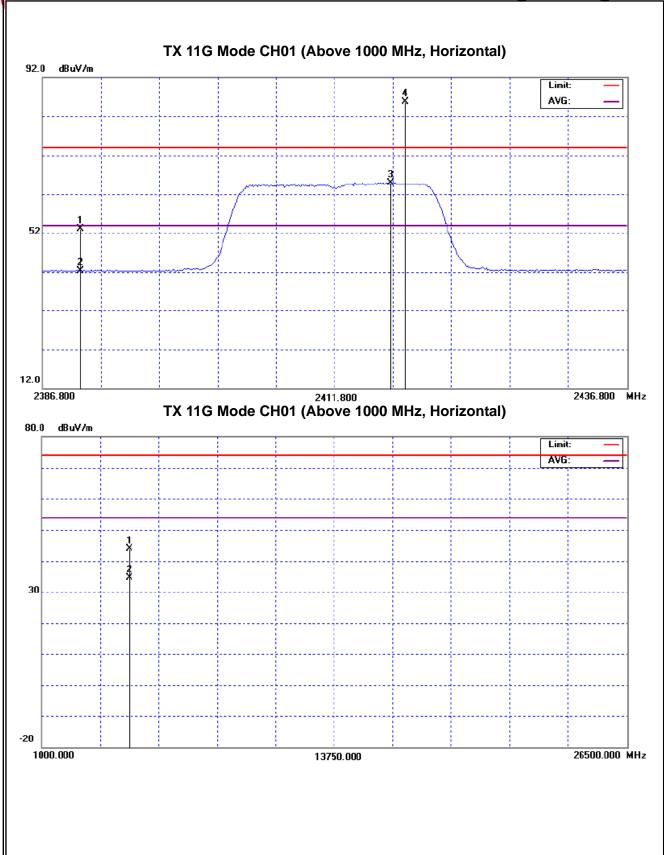
Remark:

- (1) All readings are Peak unless otherwise stated QP in column of $^{\mathbb{F}}$ Note $_{\mathbb{J}}$. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform $_{\circ}$
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis:

"X" - denotes Laid on Table; "Y" - denotes Vertical Stand; "Z" - denotes Side Stand

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EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX 11G Mode CH06		

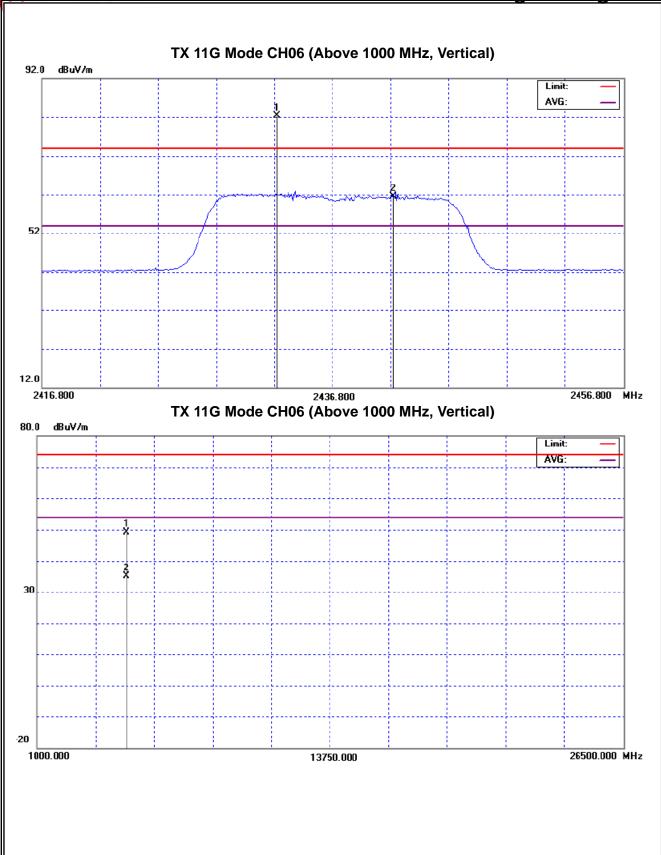
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Lir		
		Peak	AV		Peak	AV	Peak	AV	Note
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2432.96	V	50.03	29.37	32.19	82.22	61.58			Y/F
4874.26	V	45.29	31.32	3.72	49.01	35.05	74.00	54.00	Y/H

Remark:

- (1) All readings are Peak unless otherwise stated QP in column of ${}^{\mathbb{F}}$ Note ${}_{\mathbb{J}}$. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ${}_{\circ}$
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission •
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis:
 - "X" denotes Laid on Table; "Y" denotes Vertical Stand; "Z" denotes Side Stand

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EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX 11G Mode CH06		

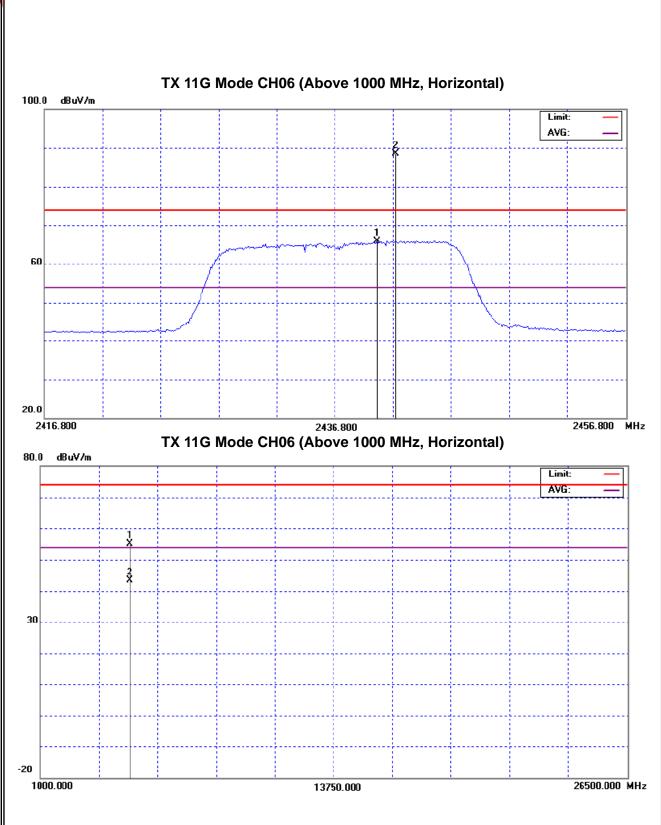
	Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Lir		
I			Peak	AV		Peak	AV	Peak	AV	Note
	(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
	2439.68	Н	56.37	33.76	32.21	88.58	65.97			Y/F
ſ	4874.19	Н	51.32	39.57	3.72	55.04	43.29	74.00	54.00	Y/H

Remark:

- (1) All readings are Peak unless otherwise stated QP in column of ${}^{\mathbb{F}}$ Note ${}_{\mathbb{J}}$. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ${}_{\circ}$
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis:
 - "X" denotes Laid on Table; "Y" denotes Vertical Stand; "Z" denotes Side Stand

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EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX 11G Mode CH11		

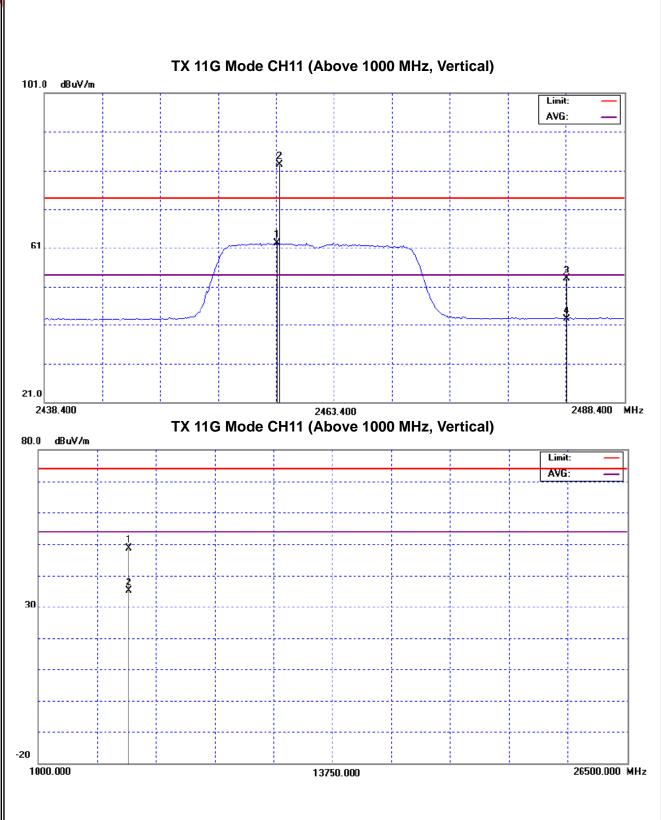
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		
		Peak	AV		Peak	AV	Peak	AV	Note
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2458.50	٧	50.26	30.06	32.27	82.53	62.33			Y/F
2483.50	V	20.82	10.19	32.35	53.17	42.54	74.00	54.00	Y/E
4924.04	V	44.65	31.32	3.87	48.52	35.19	74.00	54.00	Y/H

Remark:

- (1) All readings are Peak unless otherwise stated QP in column of ${}^{\mathbb{F}}$ Note $_{\mathbb{J}}$. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform $_{\circ}$
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency. "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis:
 - "X" denotes Laid on Table; "Y" denotes Vertical Stand; "Z" denotes Side Stand

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EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure :	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	TX 11G Mode CH11		

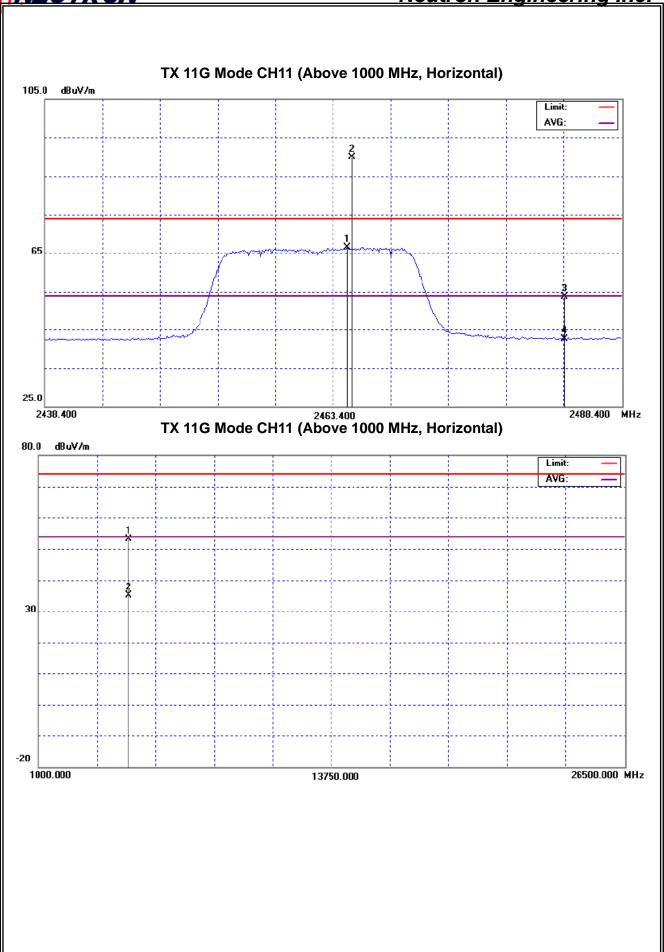
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Lir		
		Peak	AV		Peak	AV	Peak	AV	Note
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2464.60	Н	57.54	34.29	32.29	89.83	66.58			Y/F
2483.50	Н	21.39	10.24	32.35	53.74	42.59	74.00	54.00	Y/E
4924.10	Н	49.32	31.32	3.87	53.19	35.19	74.00	54.00	Y/H

Remark:

- (1) All readings are Peak unless otherwise stated QP in column of ${}^{\mathbb{F}}$ Note ${}_{\mathbb{J}}$. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform ${}_{\circ}$
- (2) Measuring frequency range from 30MHz to 1000MHz or the 10th harmonic of highest fundamental frequency "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency. (This judgment method includes the Band Edge Requirement.)
- (3) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission
- (4) Data of measurement within this frequency range shown " * " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (5) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
- (6) EUT Orthogonal Axis:
 - "X" denotes Laid on Table; "Y" denotes Vertical Stand; "Z" denotes Side Stand

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4.2.9 TEST RESULTS (Restricted Bands Requirements)

EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro					
Temperature :	26 ℃	Relative Humidity:	60%					
Pressure:	O10 hPa Test Voltage : AC 120V/60Hz							
Test Mode :	11B Mode CH 01/11 Vertical							
Note:	 The transmitter was setup to field strength was measured The transmitter was setup to the field strength was measured 	at 2310-2390 MHz. transmit at the higher	est channel (CH11). Then					

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Liı		
		Peak	AV	,	Peak	AV	Peak	AV	Note
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2390.00	V	23.69	9.73	32.05	55.74	41.78	74.00	54.00	CH01
2483.50	V	21.11	9.78	32.35	53.46	42.13	74.00	54.00	CH11

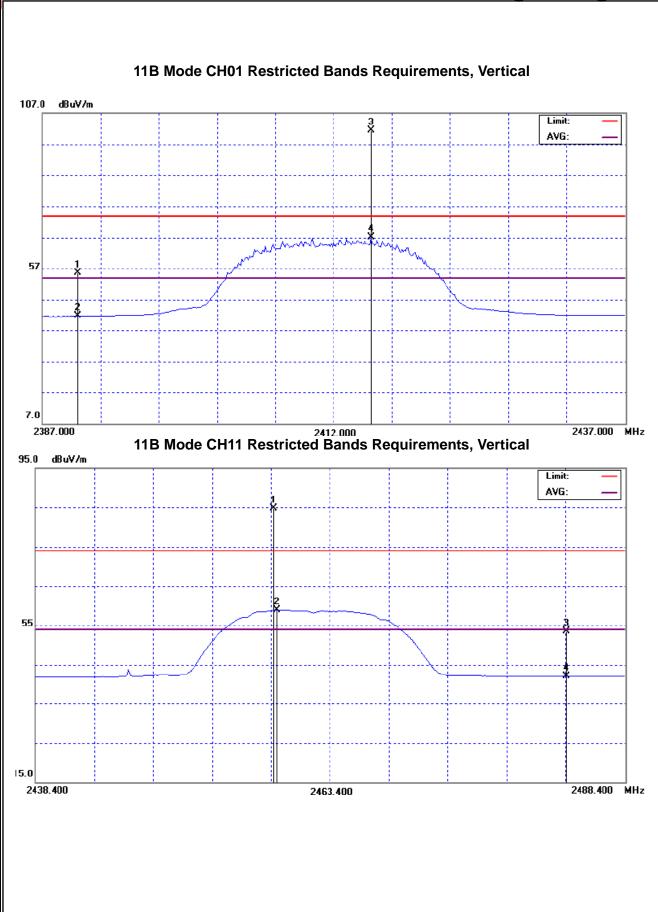
Remark:

- (1) Spectrum Setting: 30MHz 1000MHz, RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = 200 ms
- (2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission $\,^{\circ}$
- (3) EUT Orthogonal Axes:

"X" - denotes Laid on Table; "Y" - denotes Vertical Stand; "Z" - denotes Side Stand

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EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure :	1010 hPa	AC 120V/60Hz	
Test Mode :	11B Mode CH 01/11 Horizontal		
Note:	The transmitter was setup to field strength was measured The transmitter was setup to the field strength was measured.	at 2310-2390 MHz. transmit at the higher	est channel (CH11). Then

Freq.	Ant.Pol.	Rea	ading	Ant./CF	A	ct.	Lir	nit	
		Peak	AV		Peak	AV	Peak	AV	Note
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2390.30	Н	30.10	10.00	32.05	62.15	42.05	74.00	54.00	CH01
2483.50	Н	21.08	9.78	32.35	53.43	42.13	74.00	54.00	CH11

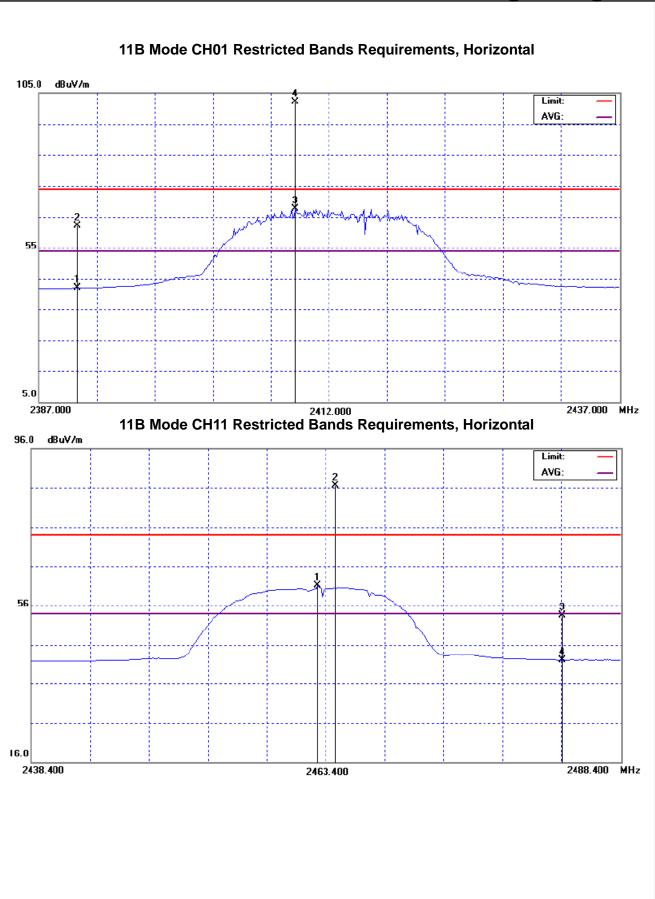
Remark:

- (1) Spectrum Setting: 30MHz 1000MHz, RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = 200 ms
- (2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission $\,^{\circ}$
- (3) EUT Orthogonal Axes:

"X" - denotes Laid on Table; "Y" - denotes Vertical Stand; "Z" - denotes Side Stand

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EUT:	TANGENT QUATTRO MKII L	Model No. :	tangent quattro				
Temperature :	26 ℃	Relative Humidity:	60%				
Pressure:	1010 hPa Test Voltage : AC 120V/60Hz						
Test Mode :	11G Mode CH 01/11 Vertical						
Note:	field strength was measured 2. The transmitter was setup to	1. The transmitter was setup to transmit at the lowest channel (CH01). Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel (CH11). Then the field strength was measured at 2483.5-2500 MHz.					

Freq.	Ant.Pol.	Reading		Ant./CF	A	ct.	Liı	mit	
		Peak	AV	,	Peak	AV	Peak	AV	Note
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2390.00	V	20.20	10.28	32.05	52.25	42.33	74.00	54.00	CH01
2483.50	V	20.82	10.19	32.35	53.17	42.54	74.00	54.00	CH11

Remark:

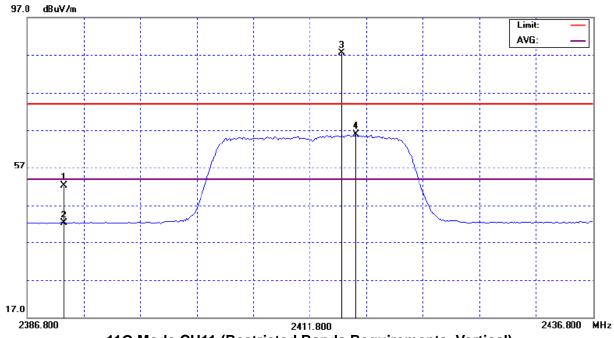
- (1) Spectrum Setting: 30MHz 1000MHz, RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = 200 ms
- (2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission $\,^{\circ}$
- (3) EUT Orthogonal Axes:

"X" - denotes Laid on Table; "Y" - denotes Vertical Stand; "Z" - denotes Side Stand

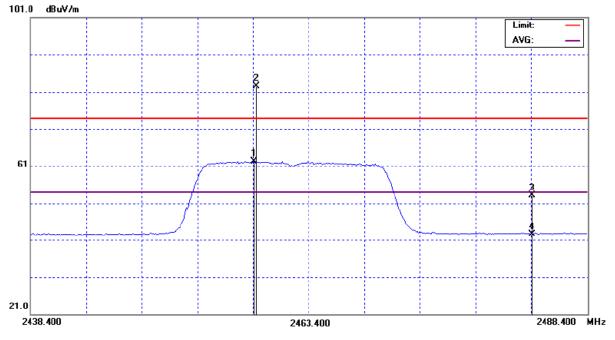
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11G Mode CH01 (Restricted Bands Requirements, Vertical)



11G Mode CH11 (Restricted Bands Requirements, Vertical)



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EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro			
Temperature :	26 ℃	Relative Humidity:	60%			
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz			
Test Mode :	11G Mode CH 01/11 Horizontal					
	1. The transmitter was setup to transmit at the lowest channel (CH01). Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel (CH11). Then the field strength was measured at 2483.5-2500 MHz.					

Freq.	Ant.Pol.	Rea	ding	Ant./CF	A	ct.	Liı	mit	
		Peak	AV		Peak	AV	Peak	AV	Note
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
2390.00	Н	20.98	10.33	32.05	53.03	42.38	74.00	54.00	CH01
2483.50	Н	21.39	10.24	32.35	53.74	42.59	74.00	54.00	CH11

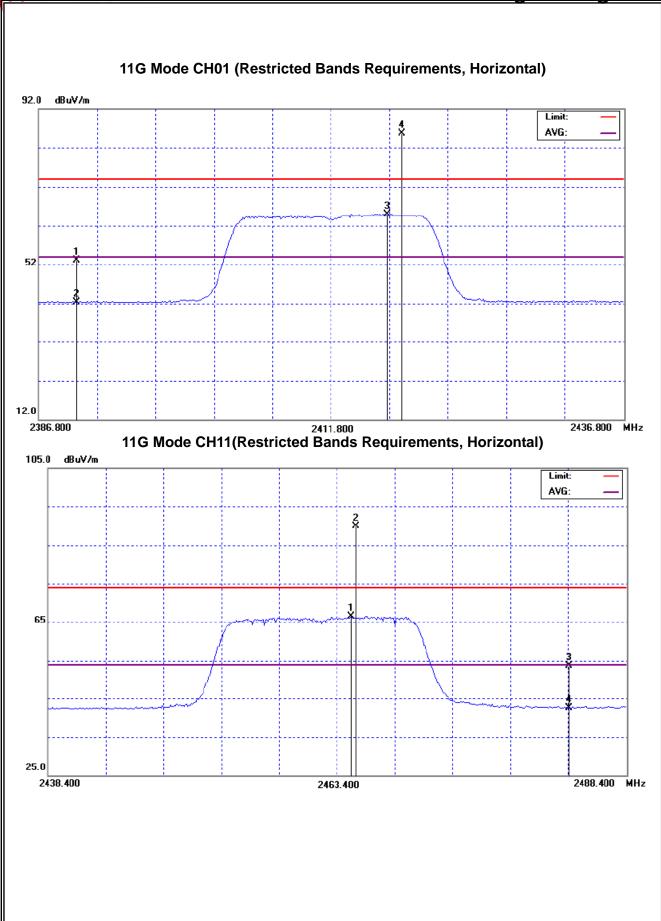
Remark:

- (1) Spectrum Setting : 30MHz 1000MHz, RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms. 1GHz- 25GHz, RBW= 1MHz, VBW= 1MHz, Sweep time = 200 ms
- (2) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission $\,^{\circ}$
- (3) EUT Orthogonal Axes:

"X" - denotes Laid on Table; "Y" - denotes Vertical Stand; "Z" - denotes Side Stand

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5. BANDWIDTH TEST

5.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C							
Section	Test Item	Limit	Frequency Range (MHz)	Result			
15.247 (a)(2)	Bandwidth	>= 500KHz (6dB bandwidth)	2400-2483.5	PASS			

5.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP_40	100129	Jan. 08, 2008

Remark: "N/A" denotes No Model No., Serial No. or No Calibration specified.

5.1.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b Spectrum Setting: RBW= 100KHz, VBW=100KHz, Sweep time = 20 ms.

5.1.3 DEVIATION FROM STANDARD

No deviation.

5.1.4 TEST SETUP

EUT	SPECTRUM
	ANALYZER

5.1.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

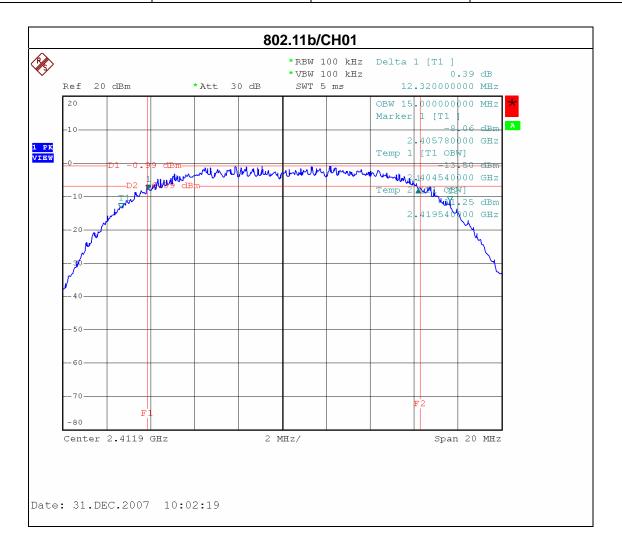
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5.1.6 TEST RESULTS

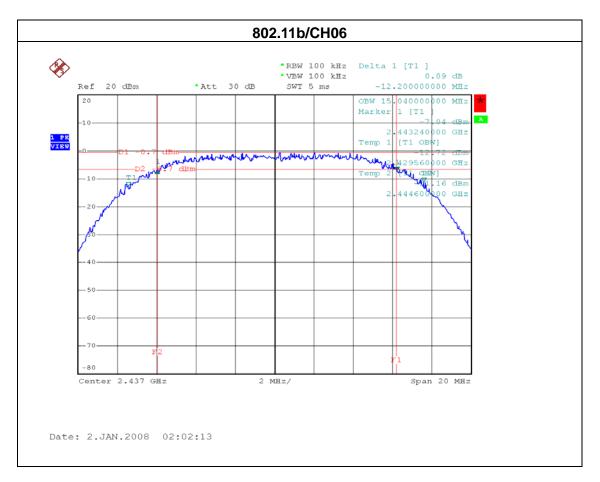
EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure :	1004 hPa	Test Power :	AC 120V/60Hz
Test Mode :	802.11b/CH01, CH06, CH11		

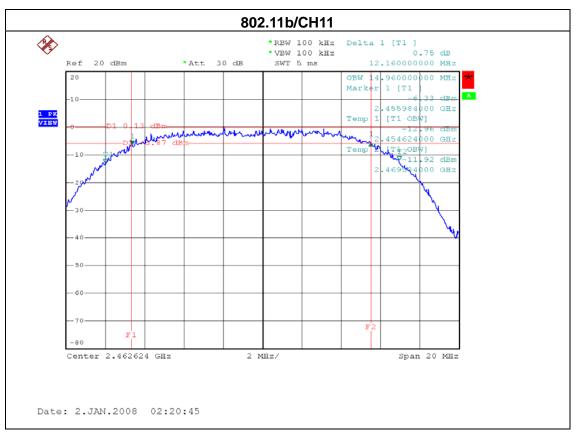
Test Channel	Frequency	Bandwidth	LIMIT
rest sname	(MHz)	(MHz)	(MHz)
CH01	2412	12.32	>=500KHz
CH06	2437	12.20	>=500KHz
CH11	2462	12.16	>=500KHz



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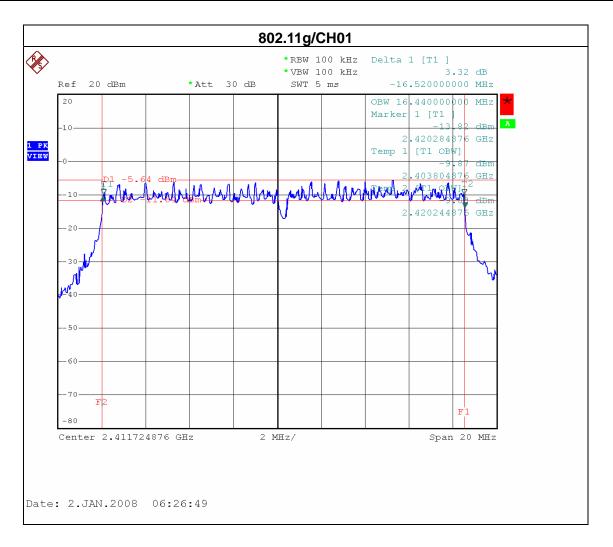


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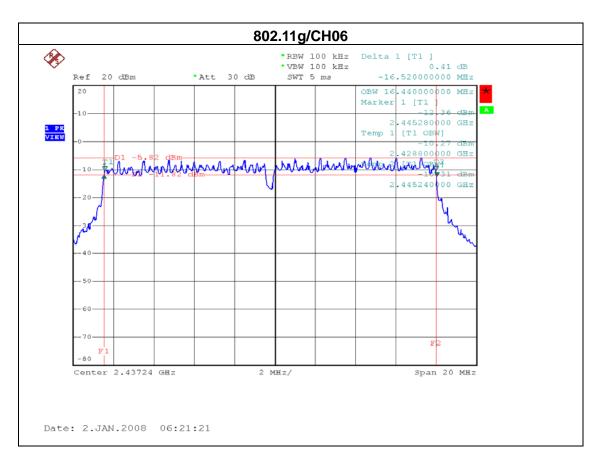
EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure :	1004 hPa	Test Power :	AC 120V/60Hz
Test Mode :	802.11g/CH01, CH06, CH11		

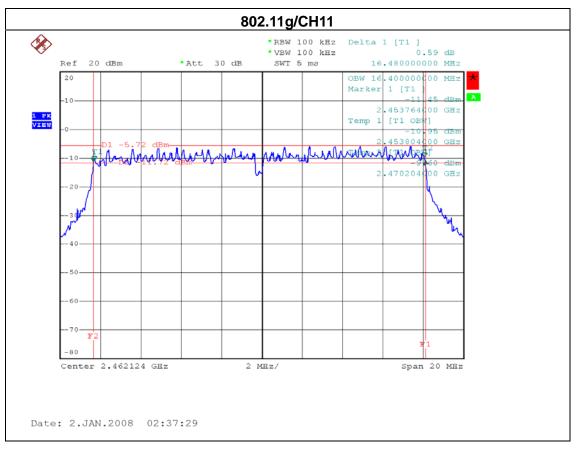
Test Channel	Frequency (MHz)	Bandwidth (MHz)	LIMIT (MHz)
CH01	2412	16.52	>=500KHz
CH06	2437	16.52	>=500KHz
CH11	2462	16.48	>=500KHz



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6. PEAK OUTPUT POWER TEST

6.1 APPLIED PROCEDURES / LIMIT

	FCC Part15 (15.247) , Subpart C						
Section	Test Item	Limit	Frequency Range (MHz)	Result			
15.247 (b)(1)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS			

6.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Power Meter	Anritsu	ML2487A	6K00004714	Feb. 04, 2008
2	Power Meter Sensor	Anritsu	MA2491A	34138	Feb. 04, 2008

Remark: "N/A" denotes No Model No., Serial No. or No Calibration specified.

6.1.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting: RBW= 3MHz, VBW= 3MHz, Sweep time = 20 ms.

6.1.3 DEVIATION FROM STANDARD

No deviation.

6.1.4 TEST SETUP

EUT	SPECTRUM
	ANALYZER

6.1.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

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6.1.6 TEST RESULTS

EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure :	1004 hPa	Test Power :	AC 120V/60Hz
Test Mode :	802.11b/CH01, CH06, CH11		

Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	LIMIT (W)
CH01	2412	18.50	30	1
CH06	2437	18.60	30	1
CH11	2462	18.80	30	1

EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure:	1004 hPa	Test Power :	AC 120V/60Hz
Test Mode :	802.11g/CH01, CH06, CH11		

Test Channel	Frequency	Peak Output Power	LIMIT	LIMIT
rest orialine	(MHz)	(dBm)	(dBm)	(W)
CH01	2412	21.06	30	1
CH06	2437	21.23	30	1
CH11	2462	21.42	30	1

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7. ANTENNA CONDUCTED SPURIOUS EMISSION

7.1 APPLIED PROCEDURES / LIMIT

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 错误! 未找到引用源。, then the 错误! 未找到引用源。 limit in the table below has to

be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

7.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP_40	100129	Jan, 08, 2008

Remark: "N/A" denotes No Model No., Serial No. or No Calibration specified.

The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (other emission)	100 KHz /100 KHz for Peak

7.1.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting: RBW= 100KHz, VBW=100KHz, Sweep time = 200 ms.

7.1.3 DEVIATION FROM STANDARD

No deviation.

7.1.4 TEST SETUP

EUT	SPECTRUM
	ANALYZER

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7.1.5 EUT OPERATION CONDITIONS The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

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7.1.6 TEST RESULTS

EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure :	1004 hPa	Test Power :	AC 120V/60Hz
Test Mode :	11B mode CH01, CH11		

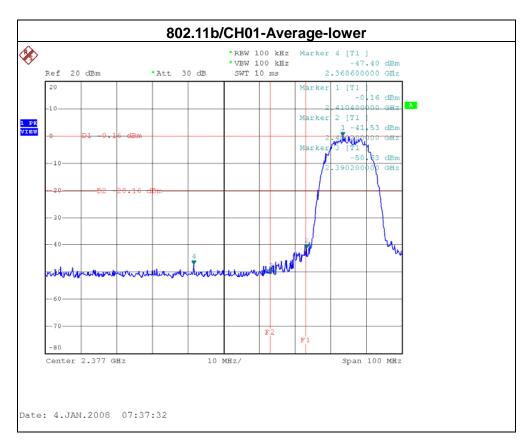
Channel of Worst Data: CH11				
	cy power in any 100kHz the frequency band	The max. radio frequence bandwidth within the		
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)	
2368.60	-47.40	2495.20	-46.26	
Result				

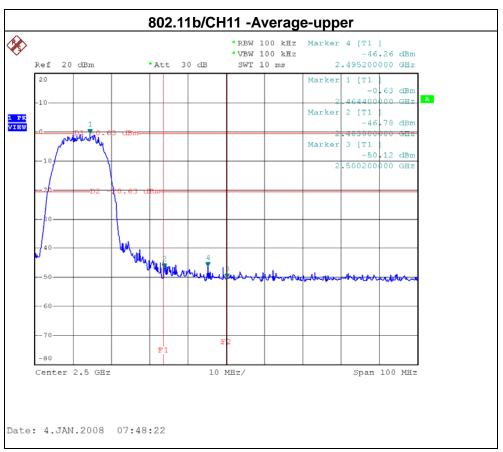
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest lever of the desired

power.

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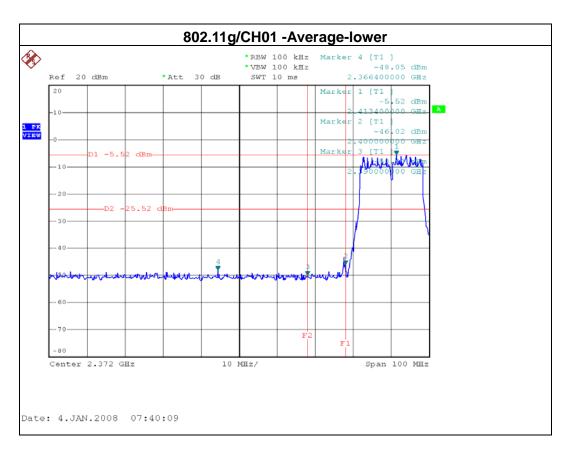
EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure :	1004 hPa	Test Power :	AC 120V/60Hz
Test Mode :	11G mode CH01, CH11		

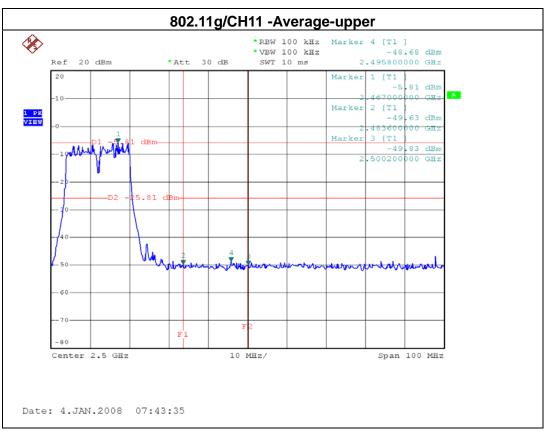
Channel of Worst Data: CH01				
The max. radio frequent bandwidth outside to	, .	The max. radio frequence bandwidth within the	,	
FREQUENCY(MHz)	POWER(dBm)	FREQUENCY(MHz)	POWER(dBm)	
2366.40	-48.05	2495.8	-48.68	
Result				

In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest lever of the desired power.

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8. POWER SPECTRAL DENSITY TEST

8.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C					
Section	Test Item	Limit	Frequency Range (MHz)	Result	
15.247 (d)	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS	

8.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP_40	100129	Jan, 08, 2008

Remark: "N/A" denotes No Model No., Serial No. or No Calibration specified.

8.1.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting: RBW=3KHz, VBW=30 KHz, Sweep time = 500s.

8.1.3 DEVIATION FROM STANDARD

No deviation.

8.1.4 TEST SETUP

EUT	SPECTRUM
	ANALYZER

8.1.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

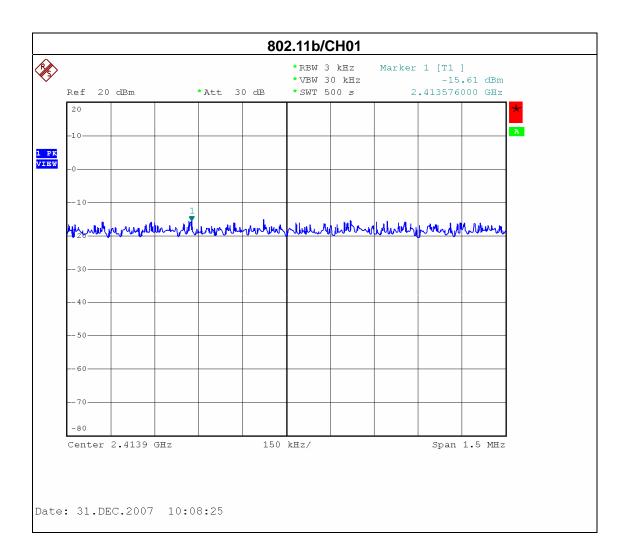
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8.1.6 TEST RESULTS

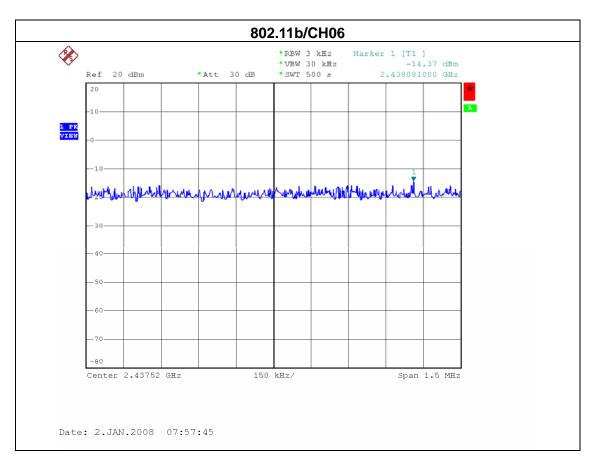
EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature:	26 ℃	Relative Humidity:	60%
Pressure :	1004 hPa	Test Power :	AC 120V/60Hz
Test Mode :	11B mode CH01, CH06, CH11		

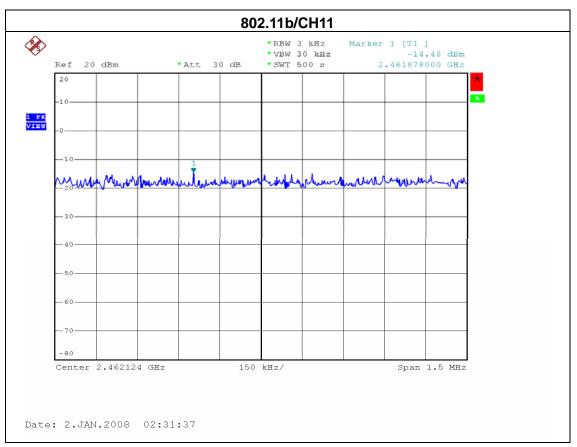
Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)
CH01	2412	-15.61	8
CH06	2437	-14.37	8
CH11	2462	-14.48	8



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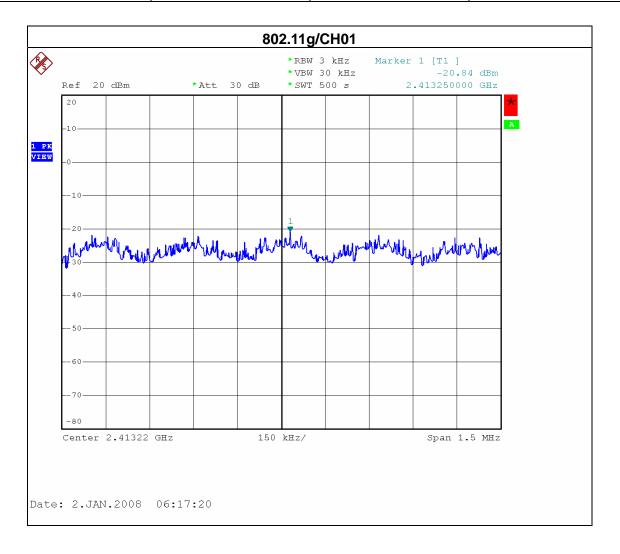


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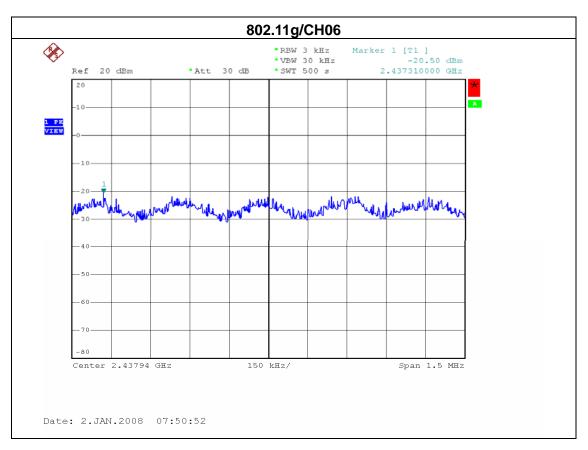
EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature :	26 ℃	Relative Humidity:	60%
Pressure:	1004 hPa	Test Power :	AC 120V/60Hz
Test Mode :	11G mode CH01, CH06, CH11		

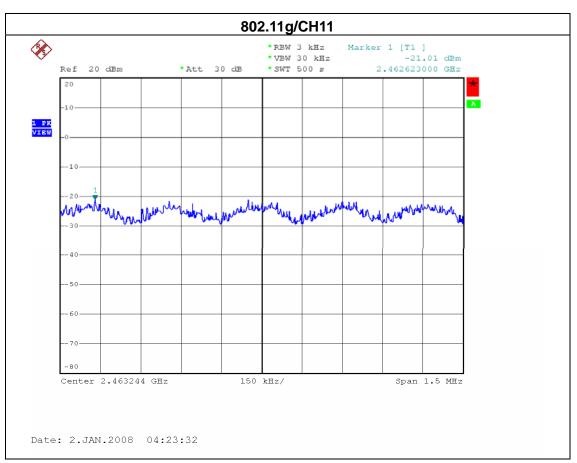
Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)
CH01	2412	-20.84	8
CH06	2437	-20.50	8
CH11	2462	-21.01	8



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9. RF EXPOSURE TEST

9.1 Applied procedures / limit

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ², H ²or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	9
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm²)	Averaging Time E ², H ² or S (minutes)	
0.3-1.34	614	1.63	(100)*	30	
1.34-30	824/f	2.19/f	(180/f)*	30	
30-300	27.5	0.073	0.2	30	
300-1500			F/1500	30	
1500-100,000			1.0	30	

Note: f = frequency in MHz; *Plane-wave equivalent power density

9.1.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP_40	100129	Jan, 08, 2008

Remark: "N/A" denotes No Model Name, Serial No. or No Calibration specified.

9.1.2 MPE CALCULATION METHOD

E (V/m)
$$=\frac{\sqrt{30\times P\times G}}{d}$$
 Power Density: Pd (W/m²) $=\frac{E^2}{377}$

 $\mathbf{E} = \text{Electric field (V/m)}$

P = Peak RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained

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9.1.3 DEVIATION FROM STANDARD

No deviation.

9.1.4 TEST SETUP

EUT	SPECTRUM
	ANALYZER

9.1.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

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9.1.6 TEST RESULTS

EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro
Temperature:	26 ℃	Relative Humidity:	60%
Pressure:	1004 hPa	Test Power :	AC 120V/60Hz
Test Mode :	11B mode CH01, CH06, CH11		

ntenna ain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm²)	Limit of Power Density (S) (mW/cm²)	Test Result
2	1.5849	18.50	70.7946	0.022333	1	Complies
2	1.5849	18.60	72.4436	0.022853	1	Complies
2	1.5849	18.80	75.8578	0.023930	1	Complies

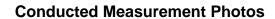
EUT:	TANGENT QUATTRO MKII	Model No. :	tangent quattro	
Temperature:	26 ℃	Relative Humidity:	60%	
Pressure:	1004 hPa	Test Power :	AC 120V/60Hz	
Test Mode :	11G mode CH01, CH06, CH11			

Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm²)	Limit of Power Density (S) (mW/cm²)	Test Result
2	1.5849	21.06	127.6439	0.040267	1	Complies
2	1.5849	21.23	132.7394	0.041875	1	Complies
2	1.5849	21.42	138.6756	0.043747	1	Complies

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10. EUT TEST PHOTO



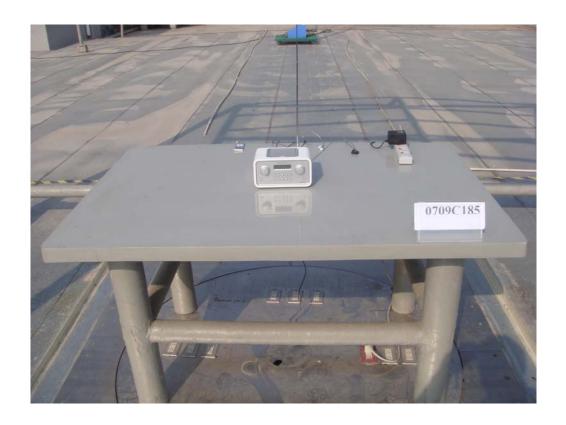




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Radiated Measurement Photos





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