# FCC PART 15 SUBPART C TEST REPORT for

2.4GHz Cordless Optical Mouse

Model No.: RF-7550A

of

Applicant: I-ROCKS TECHNOLOGY CO., LTD. Address: 12F, No. 190, Chung-hsin Rd., Sec. 2, Hsin-tien City, Taipei, 23146 Taiwan, R.O.C.

Tested and Prepared by



ETS Product Service (Taiwan) Co., Ltd.

FCC Registration No.: 930600

Industry Canada filed test laboratory Reg. No. IC 5679

A2LA Accredited No.: 1983.02

**PTCRB** Accredited Type Certification Test House

**FCC ID: UJ97550A** 

Report No.: W6D20711-8705-P-15

6F, NO. 58, LANE 188, RUEY-KUANG RD., NEIHU TAIPEI 114, TAIWAN, R.O.C. TEL: 886-2-66068877 FAX: 886-2-66068879 E-mail: ets@ets-bzt.com.tw



FCC ID: UJ97550A

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### 1 General Information

### 1.1 Notes

The purpose of conformity testing is to increase the probability of adherence to the essential requirements or conformity specifications, as appropriate.

The complexity of the technical specifications, however, means that full and thorough testing is impractical for both technical and economic reasons.

Furthermore, there is no guarantee that a test sample which has passed all the relevant tests conforms to a specification.

Neither is there any guarantee that such a test sample will interwork with other genuinely open systems. The existence of the tests nevertheless provides the confidence that the test sample possesses the qualities as maintained and that is performance generally conforms to representative cases of communications equipment.

The test results of this test report relate exclusively to the item tested as specified in 1.5. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the ETS Product Service (Taiwan) Co., Ltd.

### Tester:

December 07, 2007		Jay Chaing	Jay Chaing
Date	ETS-Lab.	Name	Signature

### **Technical responsibility for area of testing:**

December 07, 2007		Steven Chuang	Steven	Chuang
Date ETS		Name	Signature	



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### 1.2 Testing laboratory

### 1.2.1 Location

**OATS** 

No.5-1, Shuang Sing Village, LiShuei Rd., Wanli Township, Taipei County 207, Taiwan (R.O.C.)

Company

ETS Product Service (Taiwan) Co., Ltd. 6F, NO. 58, LANE 188, RUEY-KUANG RD. NEIHU, TAIPEI 114, TAIWAN R.O.C.

Tel : 886-2-66068877 Fax : 886-2-66068879

### 1.2.2 Details of accreditation status

**Accredited testing laboratory** 

A2LA accredited number: 1983.02

FCC filed test laboratory Reg. No. 930600

Industry Canada filed test laboratory Reg. No. IC 5679

**PTCRB** Accredited Type Certification Test House

### 1.3 Details of approval holder

Name: I-ROCKS TECHNOLOGY CO., LTD.

Street: 12F, No. 190, Chung-hsin Rd., Sec. 2, Hsin-tien City,

Town: Taipei, 23146
Country: Taiwan, R.O.C.
Telephone: +886-2-2911-3080
Fax: +886-2-2914-1712

Teletex: ./.



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### 1.4 Application details

Date of receipt of test item: November 21, 2007

Date of test: From November 22, 2007 to December 06, 2007

### 1.5 General information of Test item

Type of test item: 2.4GHz Cordless Optical Mouse

Model Number: RF-7550A

Brand name: i-rocks

Photos: see Appendix

**Technical data** 

Frequency band: 2.400-2.4835 GHz

Operation Frequency: 2.410-2.473 GHz

Frequency 1: 2.410 GHz

Frequency 2: 2.437 GHz

Frequency 3: 2.473 GHz

Operation modes: simplex

Modulation Type: FSK

Antenna type: PCB antenna

Power supply: Battery (AA\*1)



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### **Manufacturer: (if different from applicant)**

Name: JING MOLD ELECTRONICS TECHNOLOGY CO., LTD

Street: XinQiao,3rd Industrial Estate, Shajing Paoan,

Town: Shenzhen, Country: China

Additional information: ./.

### 1.6 Test standards

Technical standard: FCC RULES PART 15 SUBPART B / SUBPART C § 15.249 (2007-09)



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# **2** Technical test

# 2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed.	×
or	
The deviations as specified in 2.5 were ascertained in the course of the tests performed.	

### 2.2 Test environment

Temperature: 23 °C

Relative humidity content: 20 ... 75 %

Air pressure: 86 ... 103 kPa

Details Power supply: Battery (AA\*1)

Extreme conditions parameters: Not required



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# 2.3 Test Equipment List

No.	Test equipment	Туре	Serial No.	Manufacturer	Cal. Date	Next Cal. Date
ETSTW-CE 001	EMI TEST RECEIVER	ESHS10	842121/013	R&S	2007/10/15	2008/10/14
ETSTW-CE 002	PREREULATOR MODE DC POWER SUPPLY	None	None		Functi	on Test
ETSTW-CE 003	AC POWER SOURCE	APS-9102	D161137	GW	Functi	on Test
ETSTW-CE 004	ZWEILEITER-V- NETZNACHBILDUNG TWO- LINE V-NETWORK	ESH3-Z5	840731/011	R&S	2007/10/15	2008/10/14
ETSTW-CE 005	Line-Impedance Stabilisation Network	NNBM 8126D	137	Schwarzbeck	2007/10/15	2008/10/14
ETSTW-CE 006	IMPULSBEGRENZER PULSE LIMITER	ESH3-Z2	100226	R&S	In House	Certificate
ETSTW-CE 008	ABSORBING CLAMP	MDS 21	3469	Schwarzbeck	2007/10/23	2009/10/22
ETSTW-CE 009	TEMP.&HUMIDITY CHAMBER	GTH-225-40-1P-U	MAA0305-009	GIANT FORCE	2007/8/2	2008/8/1
ETSTW-CE 013	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T4-02	20242	FCC	2007/11/2	2009/11/1
ETSTW-CE 014	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T2-02	20241	FCC	2005/12/7	2008/12/6
ETSTW-CE 015	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T8-02	20307	FCC	2006/11/7	2008/11/6
ETSTW-CE 016	TWO-LINE V-NETWORK	ENV216	100050	R&S	2007/10/29	2008/10/28
ETSTW-RE 002	Function Generator	33220A	MY43004982	Agilent	2007/10/12	2009/10/11
ETSTW-RE 004	EMI TEST RECEIVER	ESI 40	832427/004	R&S	2007/10/29	2008/10/28
ETSTW-RE 005	EMI TEST RECEIVER	ESVS10	843207/020	R&S	2007/10/11	2008/10/12
ETSTW-RE 010	PROGRAMMABLE LINEAR POWER SUPPLY	LPS-305	30503070181	MOTECH	Function Test	
ETSTW-RE 011	PROGRAMMABLE LINEAR POWER SUPPLY	LPS-305	30503070165	MOTECH	Functi	on Test
ETSTW-RE 017	Log-Periodic Antenna	HL025	352886/001	R&S	2006/5/4	2008/5/3
ETSTW-RE 018	MICROWAVE HORN ANTENNA	AT4560	27212	AR	2007/11/7	2010/11/6
ETSTW-RE 020	MICROWAVE HORN ANTENNA	AT4002A	306915	AR	Functi	on Test
ETSTW-RE 021	SWEEP GENERATOR	SWM05	835130/010	R&S	2007/10/9	2008/10/8
ETSTW-RE 027	Passive Loop Antenna	6512	00034563	EMCO	In House	Certificate
ETSTW-RE 028	Log-Periodic DipoleArray Antenna	3148	34429	EMCO	2006/5/26	2008/5/25
ETSTW-RE 029	Biconical Antenna	3109	33524	EMCO	2006/5/26	2008/5/25
ETSTW-RE 030	Double-Ridged Guide Horn Antenna	3117	00035224	EMCO	2006/5/3	2008/5/2
ETSTW-RE 032	Millivoltmeter	URV 55	849086/013	R&S	2007/10/9	2008/10/8
ETSTW-RE 033	WaveRunner 6000A Serise Oscilloscope	WAVERUNNER 6100A	LCRY0604P14508	LeCroy	2007/7/9	2008/7/8
ETSTW-RE 034	Power Sensor	URV5-Z4	839313/006	R&S	2007/10/16	2009/10/15
ETSTW-RE 042	Biconical Antenna	HK116	100172	R&S	2007/1/11	2009/1/10
ETSTW-RE 043	Log-Periodic Dipole Antenna	HL223	100166	R&S	2006/5/8	2008/5/7
ETSTW-RE 044	Log-Periodic Antenna	HL050	100094	R&S	2006/5/29	2008/5/28
ETSTW-RE 047	ESA-E SERIES SPECTRUM ANALYZER	E4445A	MY46181369	Agilent	2007/7/19	2008/7/18
ETSTW-RE 048	Triple Loop Antenna	HXYZ 9170	HXYZ 9170-134	Schwarzbeck	2005/3/22	2008/3/21



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ETSTW-RE 049	TRILOG Super Broadband test Antenna	VULB 9160	9160-3185	Schwarzbeck	2007/5/2	2009/5/1
ETSTW-RE 055 SPECTRUM ANALYZER		FSU-26	200074	R&S	2007/7/16	2008/7/15
ETSTW-RE 064	ETSTW-RE 064 Bluetooth Test Set		6K00005709	Anritsu	Functi	on Test
ETSTW-RE 072	ETSTW-RE 072 CELL SITE TEST SET		3339A00375	HP	2007/7/2	2009/7/1



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### 2.4 General Test Procedure

**POWER LINE CONDUCTED INTERFERENCE:** The procedure used was ANSI STANDARD C63.4-2003 using a 50µH LISN (if necessary). Both lines were observed. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

**RADIATION INTERFERENCE:** The test procedure used was according to ANSI STANDARD C63.4-2003 employing a spectrum analyzer. For investigated frequency is equal to or below 1GHz, the RBW and VBW of the spectrum analyzer was 100 kHz and 100kHz respectively with an appropriate sweep speed. For investigated frequency is above 1GHz, both of RBW and VBW of the spectrum analyzer were 1 MHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna.

**FORMULA OF CONVERSION FACTORS:** The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of  $dB\mu V$ ) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB.

Example:

Freq (MHz) METER READING + ACF + CABLE LOSS (to the receiver) = FS

 $20 \text{ dB}\mu\text{V} + 10.36 \text{ dB} + 6 \text{ dB} = 36.36 \text{ dB}\mu\text{V/m} \text{ @3m}$ 

ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm height and with dimensions of 1m by 1.5m (non metallic table). The EUT was placed in the centre of the table. The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to 10<sup>th</sup> harmonic of the fundamental.

Peak readings were taken in three (3) orthogonal planes and the highest readings. Measurements were made by ETS Product Service (Taiwan) Co., Ltd. at the registered open field test site located at No.5-1, Shuang Sing Village, LiShuei Rd., Wanli Township, Taipei County 207, Taiwan (R.O.C.) The Registration Number: 930600.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.



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# 3 Test results (enclosure)

Test case	Para. Number	Required	Test passed	Test failed
Peak Output Power	15.249 (a)	×	×	
Spurious Emissions radiated – Transmitter operating	15.249 (e)	×	×	
Spurious Emissions conducted – Transmitter operating	15.249 (e)			
Radiated Emission from Digital Part	15.109	×	X	
Out of Band Spurious Emission, Band edge-Transmitter operating	15.249 (e)	×	×	
Power Line Conducted Emission	15.207			

The follows is intended to leave blank.



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### 3.1 Peak Output Power (transmitter)

FCC Rule: 15.249 (b)

This measurement applies to equipment with an integral antenna and to equipment with an antenna connector and equipped with an antenna as declared by the applicant.

The power was measured with modulation (declared by the applicant).

Test condit		Transmitter field strength of fundamental	Transmitter field strength of harmonics			
		$[dB\mu V/m]$				
$T_{\text{nom}} = 23  ^{\circ}  \text{C}  V_{\text{nom}} = 1.5  \text{V}$		90.61				
Measurement ur	ncertainty	< 3 dB				

Test conditions Frequency 2	Transmitter field strength of fundamental	Transmitter field strength of harmonics		
	$[dB\mu V/m]$			
$T_{\text{nom}} = 23  ^{\circ}  \text{C}     V_{\text{nom}} = 1.5  \text{V}$	90.29			
Measurement uncertainty	< 3 dB			

Test conditions Frequency 3	Transmitter field strength of fundamental	Transmitter field strength of harmonics	
	$[dB\mu V/m]$		
$T_{\text{nom}} = 23 ^{\circ}  \text{C}     V_{\text{nom}} = 1.5  \text{V}$	89.21		
Measurement uncertainty	< 3 dB		

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 028 ETSTW-RE 030 ETSTW-RE 043 ETSTW-RE 044

Explanation: The diagrams for the field strength measurements are included in appendix.



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### 3.2 Equivalent isotropic radiated power

Because using an permanent antenna there are no deviations from the radiated test results according 3.1.

### 3.3 RF Exposure Compliance Requirements

Not applicable for this 2.4GHz Cordless Optical Mouse for the low power level.

### 3.4 Out of Band Radiated Emissions

FCC Rule: 15.249 (d)(e), 15.35(b)

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

For frequency above 1000 MHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.

### Limits:

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Frequency of Emission	Field strength	Field Strength
(MHz)	(microvolts/meter)	(dB microvolts/meter)
30 - 88	100	40.0
88 – 216	150	43.5
216 – 960	200	46.5
Above 960	500	54.0

For frequencies above 1 GHz (Peak measurements).

Limit + 20 dB  $54.0 \text{ dB}\mu\text{V/m} + 20 \text{ dB} = 74 \text{dB}\mu\text{V/m}$ 

Or

Must be attenuated at least 50dB below the level of fundament

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 028

ETSTW-RE 029 ETSTW-RE 030 ETSTW-RE 042 ETSTW-RE 043

ETSTW-RE 044

Explanation: Please see attached diagram as appendix.



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## 3.5 Spurious emission (tx)

Spurious emission was measured with modulation (declared by manufacturer).

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

For frequencies above 1000 MHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For point-to-point operation, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth.

SAMPLE CALCULATION OF LIMIT. ALL results will be updated by an automatic measuring system in accordance with point 2.3.

The peak and average spurious emission plots was measured with the average limits. The critical peak value listed in the table agree with the above calculated limits.

### Summary table with radiated data of the test plots

### Low Channel

Antenna Polarization	Frequency Marker (MHz)	Corrected Reading (dBuv)	Correction Factor (dB)	Detector				Table Azimuth (degree)	(cm)
	1348.500	44.77	-8.35	PK	36.42	54.0	17.58	177	145
Н	1842.541	43.21	-4.67	PK	38.54	54.0	15.46	124	150
11	4839.585	57.53	4.61	PK	62.14	74.0	11.86	99	140
	4839.585	42.95	4.61	AV	47.56	54.0	6.44	99	140

Antenna Polarization	Frequency Marker (MHz)	Corrected Reading (dBuv)	Correction Factor (dB)	Detector	Result	Compliance Limit (dBuV/m)	Margin	Table Azimuth (degree)	(cm)
	1492.981	56.81	-7.28	PK	49.53	54.0	4.47	189	150
V	1842.541	47.81	-4.67	PK	43.14	54.0	10.86	127	130
	4839.779	43.91	4.61	PK	48.52	54.0	5.48	230	160



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### Middle Channel

Antenna Polarization	Frequency Marker (MHz)	Corrected Reading (dBuv)	Correction Factor (dB)	Detector	Result	Compliance Limit (dBuV/m)		Table Azimuth (degree)	Antenna Height (cm)
	1348.500	42.93	-8.35	PK	34.58	54.0	19.42	92	150
Н	1492.981	43.80	-7.28	PK	36.52	54.0	17.48	145	150
11	4873.584	53.74	4.78	PK	58.52	74.0	15.48	270	160
	4873.584	42.73	4.78	AV	47.51	54.0	6.49	270	160

Antenna Polarization	Frequency Marker (MHz)	Corrected Reading (dBuv)	Correction Factor (dB)	Detector	Result	Compliance Limit (dBuV/m)	Margin	Table Azimuth (degree)	(cm)
	1348.500	52.49	-8.35	PK	44.14	54.0	9.86	94	115
V	1498.945	67.06	-7.22	PK	59.84	74.0	14.16	149	150
v	1498.945	53.14	-7.22	AV	45.92	54.0	8.08	149	150
	4873.584	43.14	4.78	PK	47.92	54.0	6.08	275	160

High Channel

Antenna Polarization	Frequency Marker (MHz)	Corrected Reading (dBuv)	Correction Factor (dB)	Detector	Result	Compliance Limit (dBuV/m)		Table Azimuth (degree)	Antenna Height (cm)
	1201.484	42.33	-7.79	PK	34.54	54.0	19.46	94	150
Н	1498.945	43.36	-7.22	PK	36.14	54.0	17.86	92	150
11	4945.845	54.08	4.50	PK	58.58	74.0	15.42	200	145
	4945.845	45.52	4.50	AV	50.02	54.0	3.98	200	145

Antenna Polarization	Frequency Marker (MHz)	Corrected Reading (dBuv)	Correction Factor (dB)	Detector	Test Result (dBuV/m)	Compliance Limit (dBuV/m)		Table Azimuth (degree)	Antenna Height (cm)
	1348.500	50.50	-8.35	PK	42.15	54.0	11.85	91	155
V	1505.041	53.61	-7.19	PK	46.42	54.0	7.58	90	160
	4945.845	44.64	4.50	PK	49.14	54.0	4.86	210	150

Note 1. Correction Factor = Antenna factor + Cable loss - Preamplifier

- 2. The formula of measured value as: Test Result = Reading + Correction Factor
- 3. Detector function in the form: PK = Peak, QP = Quasi Peak, AV = Average
- 4. All not in the table noted test results are more than 20 dB below the relevant limits.
- 5. Please see attached diagram as appendix.

**TEST RESULT (Transmitter):** The unit DOES meet the FCC requirements.

Test equipment used: ETSTW-RE 004 ETSTW-RE 055



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### 3.6 Radiated Emissions from Digital Part

### Summary table with radiated data of the test plots

Model: RF-7550A Date: 2007/11/27

Mode: Temperature: 26 °C Engineer: Eric

Polarization: Horizontal Humidity: 60 %

i dianzation.	Tionzontai			Hulfillulty.	00	70		
Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
74.550	8.12	peak	11.11	19.23	30.00	-10.77	100	300
167.250	7.62	peak	15.10	22.72	30.00	-7.28	88	310
200.100	15.51	peak	12.14	27.65	30.00	-2.35	235	300
333.833	7.63	peak	16.20	23.83	37.00	-13.17	215	100
500.667	6.29	peak	19.82	26.11	37.00	-10.89	43	130
830.833	-1.94	peak	25.55	23.61	37.00	-13.39	151	120

Polarization: Vertical

Frequency (MHz)	Reading (dBuV)	Detector	Factor (dB)	Result (dBuV/m)		Margin (dB)	Table Degree (Deg.)	Ant. High (cm)
70.950	9.02	peak	11.90	20.92	30.00	-9.08	170	100
167.250	7.02	peak	15.10	22.12	30.00	-7.88	60	130
200.100	14.76	peak	12.14	26.90	30.00	-3.10	250	100
534.500	4.80	peak	20.39	25.19	37.00	-11.81	120	310
601.000	4.56	peak	22.18	26.74	37.00	-10.26	38	300
912.500	0.15	peak	26.53	26.67	37.00	-10.33	200	350

Note

- 1. Correction Factor = Antenna factor + Cable loss Preamplifier
- 2. The formula of measured value as: Test Result = Reading + Correction Factor
- 3. Detector function in the form: PK = Peak, QP = Quasi Peak, AV = Average
- 4. All not in the table noted test results are more than 20 dB below the relevant limits.

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 028 ETSTW-RE 029 ETSTW-RE 030 ETSTW-RE 042 ETSTW-RE 043 ETSTW-RE 044

Explanation: Please see attached diagram as appendix.



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## 3.7 Radiated Emission on the band edge

From the following plots, they show that the fundamental emissions are confined in the specified band and hey at least 50 dB below the carrier level at band edge (2400 and 2483.5 MHz). It meets the requirement of section 15.249(d).

Test conditions	Transmitter field strength of	Transmitter field strength of
Tnom = $23^{\circ}$ C, Vnom = $1.5$ V	Radiated Emission	Radiated Emission
Frequency [MHz]	(Peak Detector)	(Average Detector)
	[dBµ'	V/m]
2400.0		
2483.5		

Limit:

Frequency Range (MHz)	Limit (dBµV/m)				
902 – 928	Peak	Average			
2400 – 2483.5					
5725 – 5875	74	54			
24000 - 24250					

Test equipment used: ETSTW-RE 003 ETSTW-RE 004 ETSTW-RE 017 ETSTW-RE 028 ETSTW-RE 030 ETSTW-RE 043 ETSTW-RE 044

Comment: This test is not required because the bandwidth is 1.2 MHz.

Please see attached diagram as appendix.



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### 3.8 Power Line Conducted Emission

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the table bellows with this provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals.

This measurement was transact first with instrumentation using an average and peak detector and a 10 kHz bandwidth. If the peak detector achieves a calculated level, the measurement is repeated by an instrumentation using a quasi-peak detector.

Fraguancy	Level	(dBμV)
Frequency	quasi-peak	average
150 kHz	lower limit line	Lower limit line

### Limits:

Frequency of Emission (MHz)	Conducted Limit (dBuV)			
	Quasi Peak	Average		
0.15-0.5	66 to 56	56 to 46		
0.5-5	56	46		
5-30	60	50		

Test equipment used: ETSTW-CE 001 ETSTW-CE 003 ETSTW-CE 004 ETSTW-CE 006 ETSTW-CE 011

Explanation: This is not required the sample is battery used.



FCC ID: UJ97550A

# **Appendix**

# A Measurement diagrams

- 1. Fundamental Field Strength
- 2. Spurious Emissions radiated
- 3. Radiated Emissions from Digital Part
- 4. Bandwidth

# **B** Photos

- 1. External Photos
- 2. Internal Photos
- 3. Set Up Photo of Radiated Emission



Registration number: W6D20711-8705-P-15 FCC ID: UJ97550A

Fundamental Field Strength

### FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( low channel )

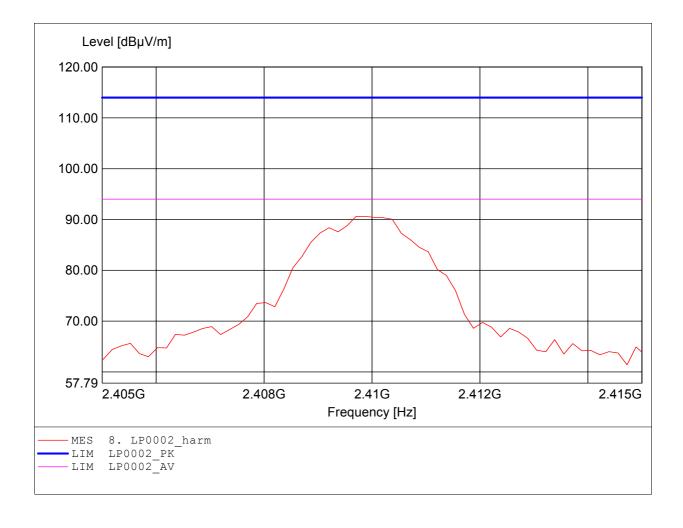
Temperature: Michael

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025

Freq: 2.410GHz, Emax: 90.61dBuV/m, RBW: 1MHz



### FCC RULES PART 15, SUBPART C / LP0002

W6D20711-8705 Order Number : ( low channel )

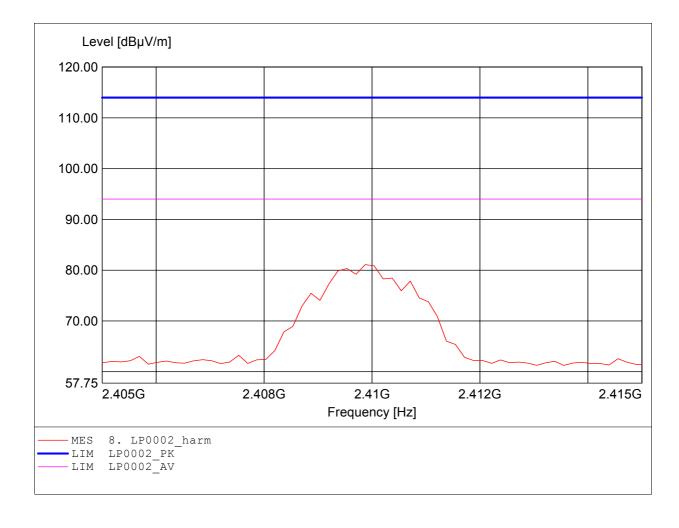
Temperature: Operator: Michael

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025

Freq: 2.410GHz, Emax: 81.10dBuV/m, RBW: 1MHz



### FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( middle channel )

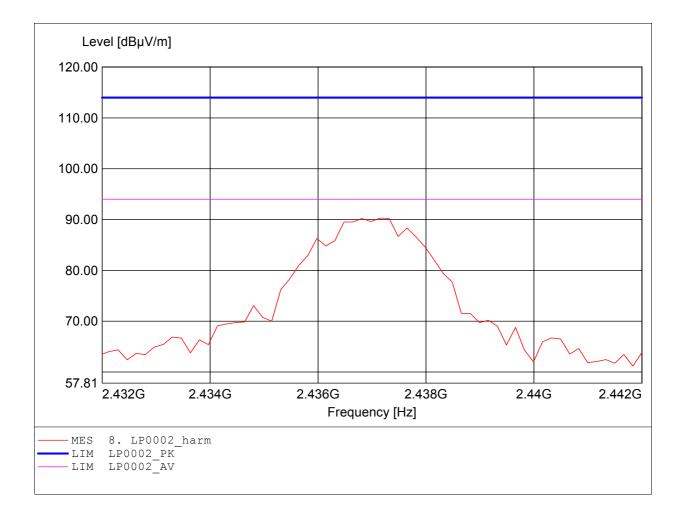
Temperature: Operator: Michael

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025

Freq: 2.437GHz, Emax: 90.29dBuV/m, RBW: 1MHz



### FCC RULES PART 15, SUBPART C / LP0002

W6D20711-8705 ( middle channel ) Order Number :

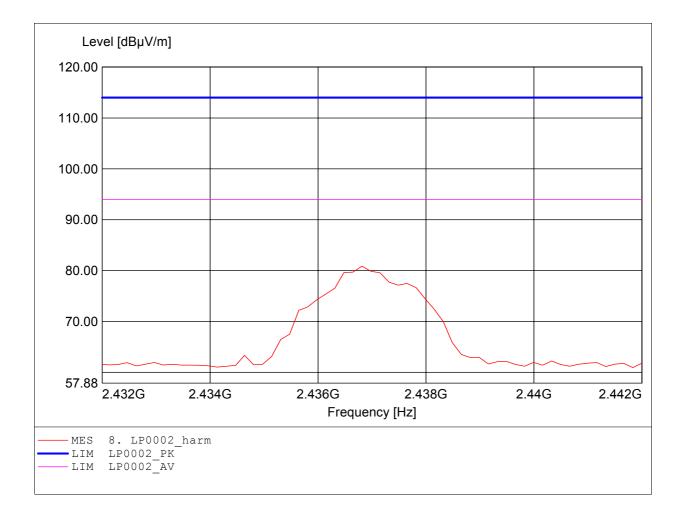
Temperature: Operator: Michael

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025

Freq: 2.437GHz, Emax: 80.88dBuV/m, RBW: 1MHz



### FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( high channel )

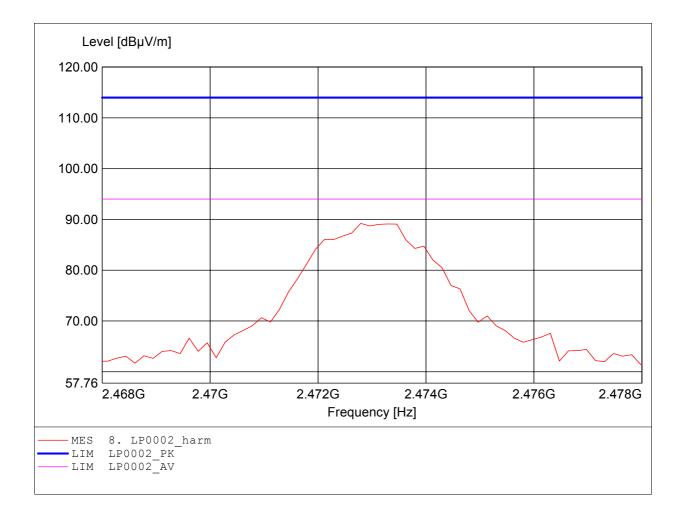
Temperature: Operator: Michael

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025

Freq: 2.473GHz, Emax: 89.21dBuV/m, RBW: 1MHz



### FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( high channel )

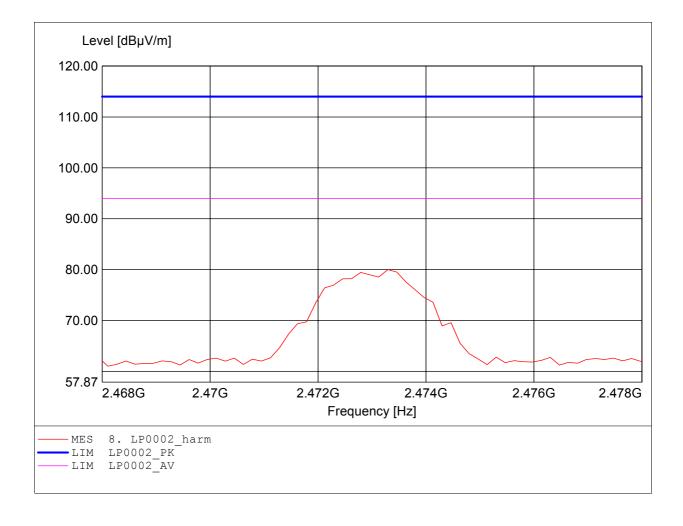
Temperature: Operator: Michael

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025

Freq: 2.473GHz, Emax: 79.98dBuV/m, RBW: 1MHz





Registration number: W6D20711-8705-P-15 FCC ID: UJ97550A

Spurious Emissions radiated

### FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( low channel )

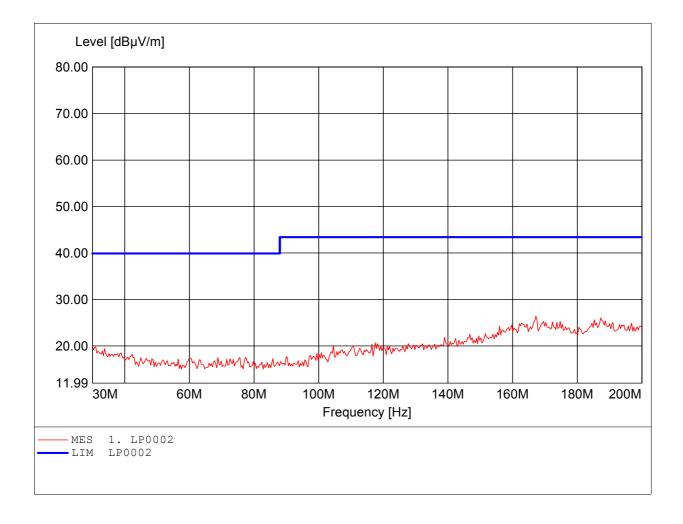
Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HK 116

Freq: 167.295MHz, Emax: 26.40dBμV/m, RBW: 100kHz



### FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( low channel )

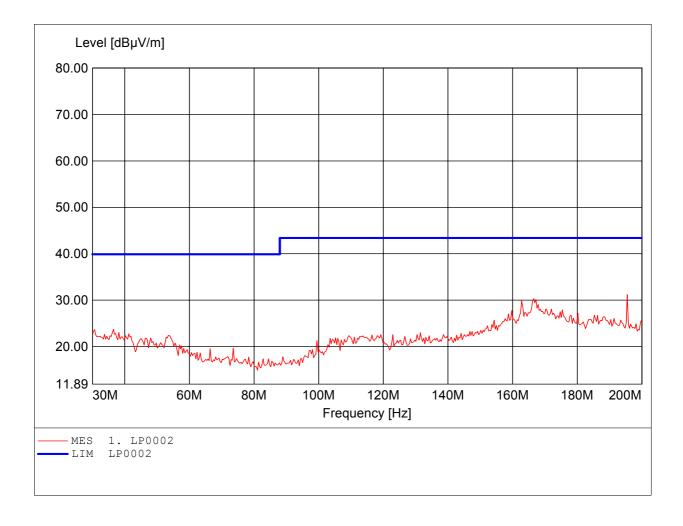
Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HK 116

Freq: 195.571MHz, Emax: 31.19dBμV/m, RBW: 100kHz



### FCC RULES PART 15, SUBPART C / LP0002

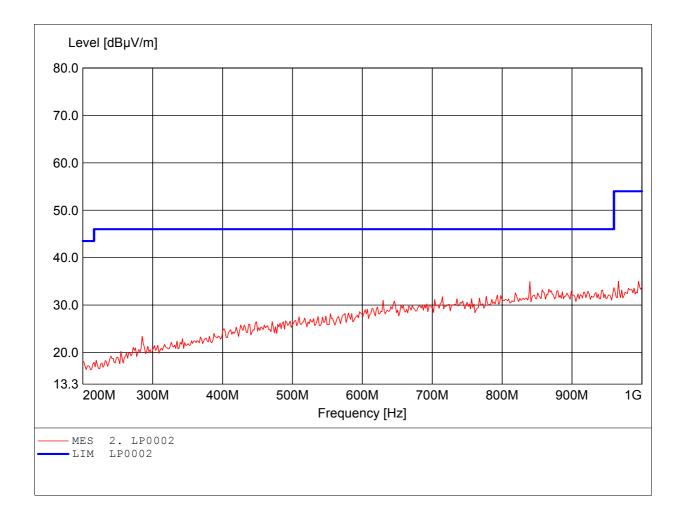
Order Number : W6D20711-8705 ( low channel )

Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector Comment 1: Ant.: HL 223, amplif.

Freq: 966.333MHz, Emax: 35.01dBμV/m, RBW: 100kHz



### FCC RULES PART 15, SUBPART C / LP0002

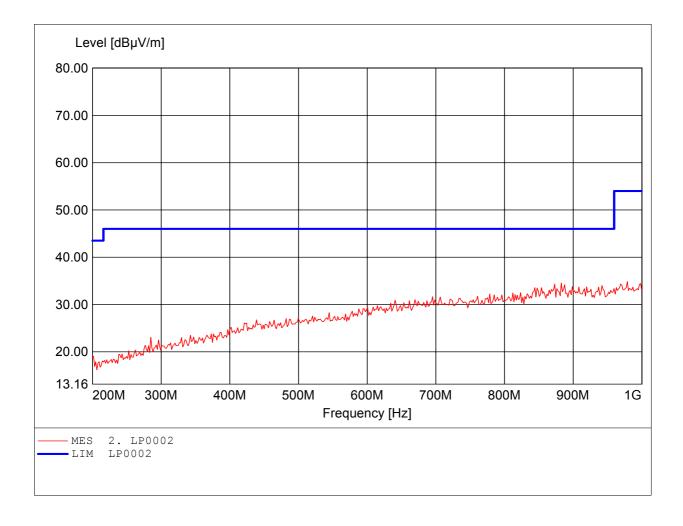
Order Number : W6D20711-8705 ( low channel )

Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector Comment 1: Ant.: HL 223, amplif.

Freq: 979.158MHz, Emax: 34.84dBμV/m, RBW: 100kHz



### FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( low channel )

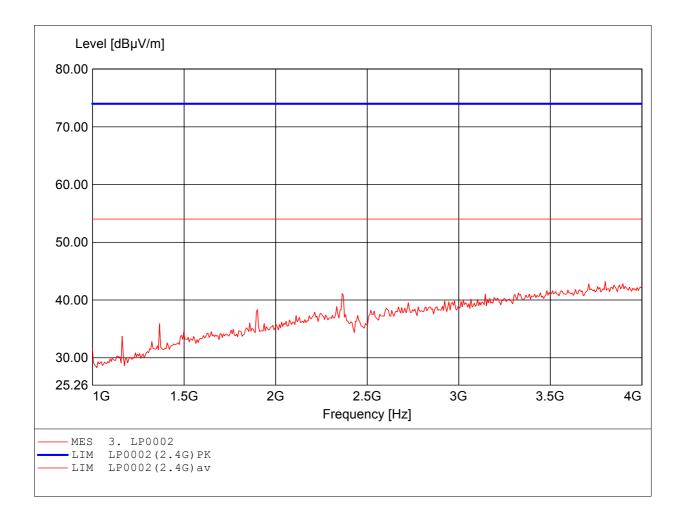
Operator: Michael Temperature:

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025, amplif.

Freq: 3.802GHz, Emax: 43.21dBuV/m, RBW: 1MHz



### FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( low channel )

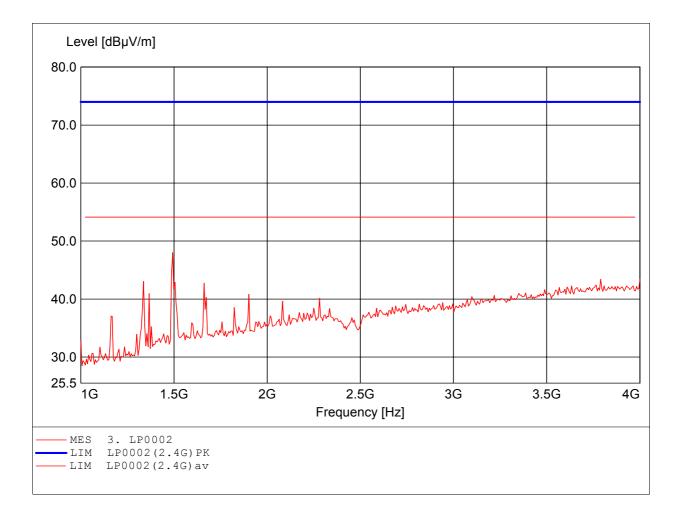
Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025, amplif.

Freq: 1.493GHz, Emax: 48.00dBµV/m, RBW: 1MHz



### FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( low channel )

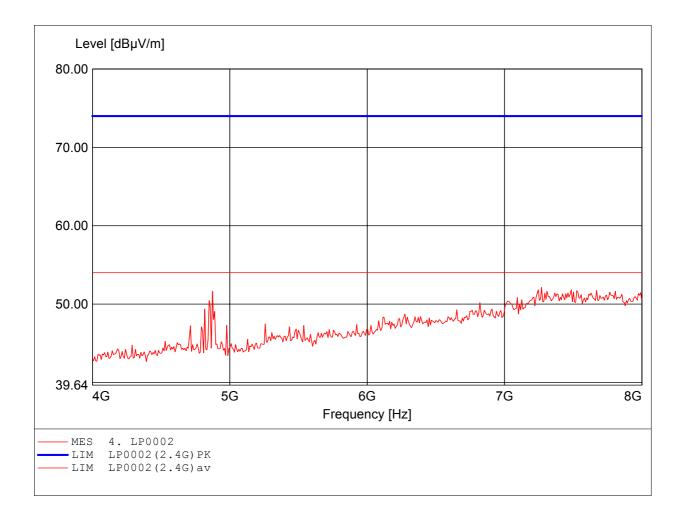
Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1:

Ant.: HL025, ampl.+HP. Freq: 7.271GHz, Emax: 52.12dBμV/m, RBW: 1MHz



### FCC RULES PART 15, SUBPART C / LP0002

W6D20711-8705 Order Number : ( low channel )

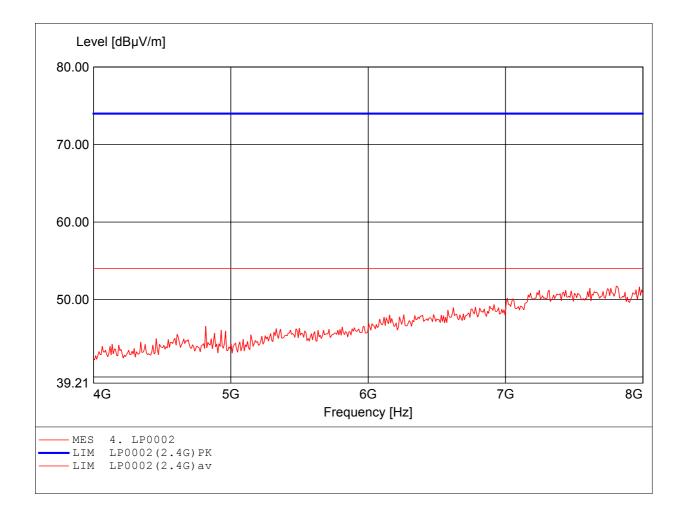
Operator: Michael Temperature:

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025, ampl.+HP.

Freq: 7.808GHz, Emax: 51.73dBuV/m, RBW: 1MHz



### FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( low channel )

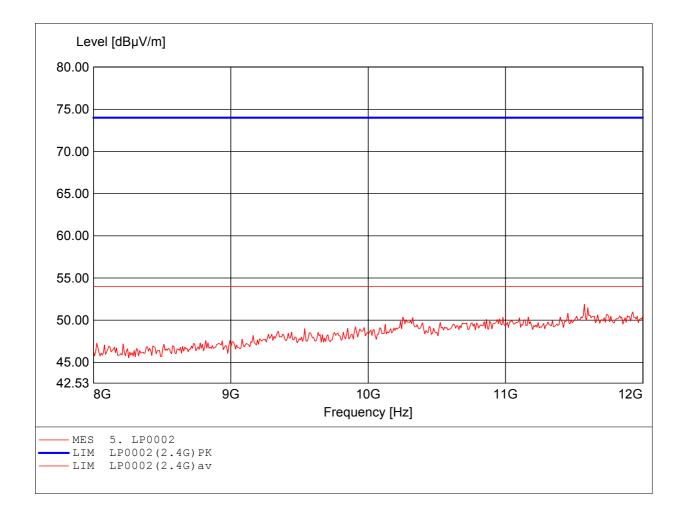
Operator: Michael Temperature:

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025, ampl.+HP.

Freq: 11.575GHz, Emax: 51.87dBµV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( low channel )

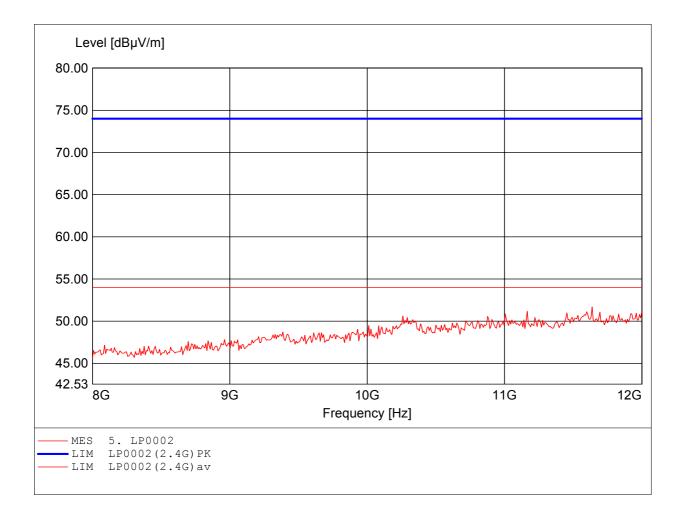
Operator: Michael Temperature:

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025, ampl.+HP.

Freq: 11.639GHz, Emax: 51.68dBµV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( low channel )

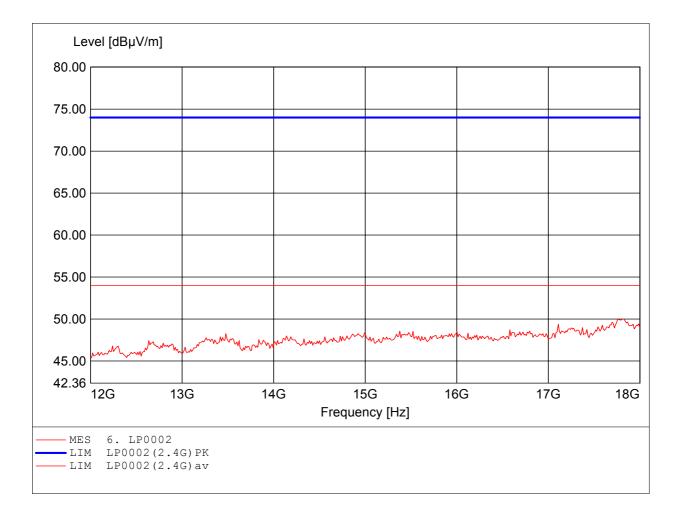
Operator: Michael Temperature:

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Ant.: HL025, ampl.+HP. Comment 1:

Freq: 17.820GHz, Emax: 49.99dBμV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( low channel )

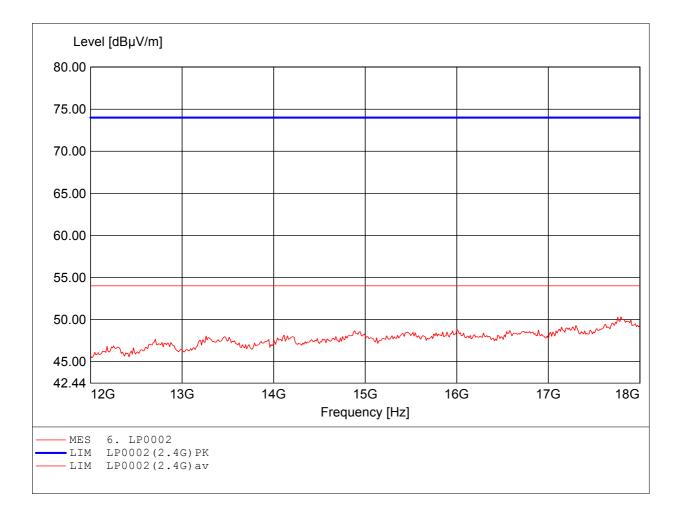
Operator: Michael Temperature:

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Ant.: HL025, ampl.+HP. Comment 1:

Freq: 17.796GHz, Emax: 50.33dBµV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

W6D20711-8705 Order Number : ( low channel )

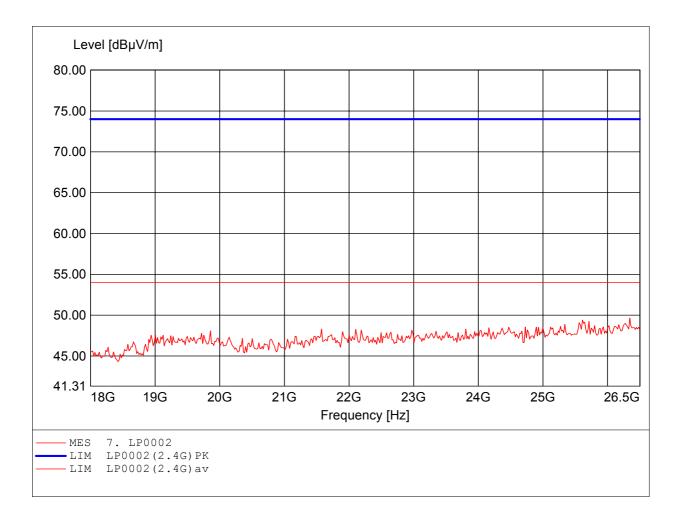
Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025, amplif.

Freq: 26.347GHz, Emax: 49.65dBμV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( low channel )

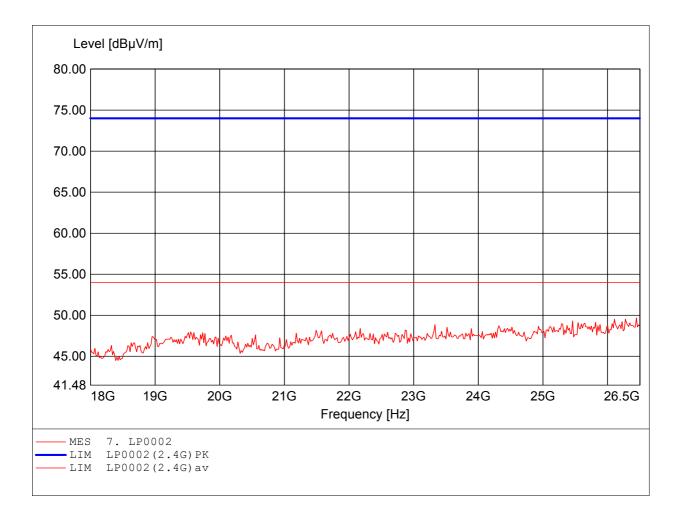
Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025, amplif.

Freq: 26.449GHz, Emax: 49.66dBμV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( middle channel )

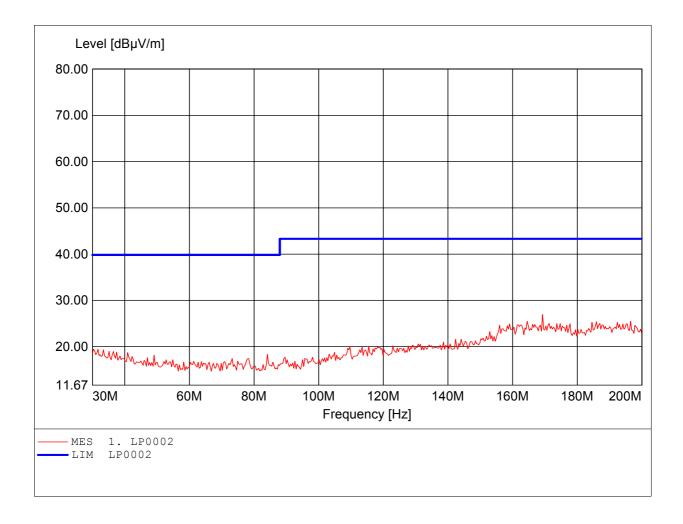
Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HK 116

Freq: 169.339MHz, Emax: 26.94dBμV/m, RBW: 100kHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( middle channel )

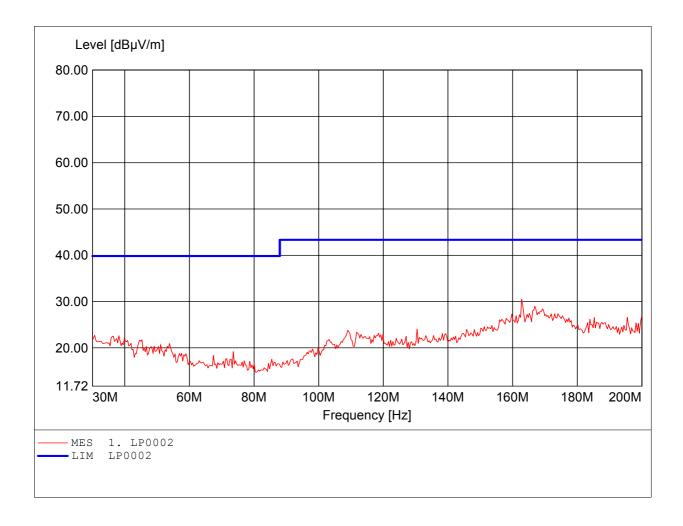
Temperature: Operator: Michael

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HK 116

Freq: 162.866MHz, Emax: 30.53dBμV/m, RBW: 100kHz



## FCC RULES PART 15, SUBPART C / LP0002

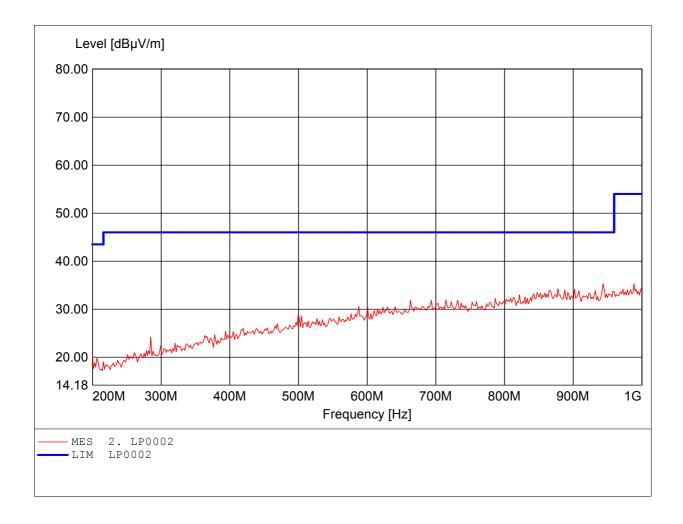
Order Number : W6D20711-8705 ( middle channel )

Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector Comment 1: Ant.: HL 223, amplif.

Freq: 988.778MHz, Emax: 35.28dBμV/m, RBW: 100kHz



## FCC RULES PART 15, SUBPART C / LP0002

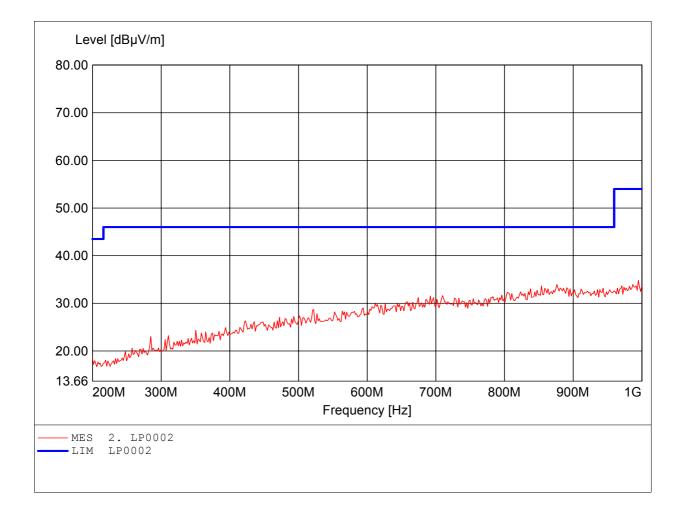
W6D20711-8705 Order Number : ( middle channel )

Operator: Michael Temperature:

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector Comment 1: Ant.: HL 223, amplif.

Freq: 995.190MHz, Emax: 34.82dBµV/m, RBW: 100kHz



## FCC RULES PART 15, SUBPART C / LP0002

W6D20711-8705 Order Number : ( middle channel )

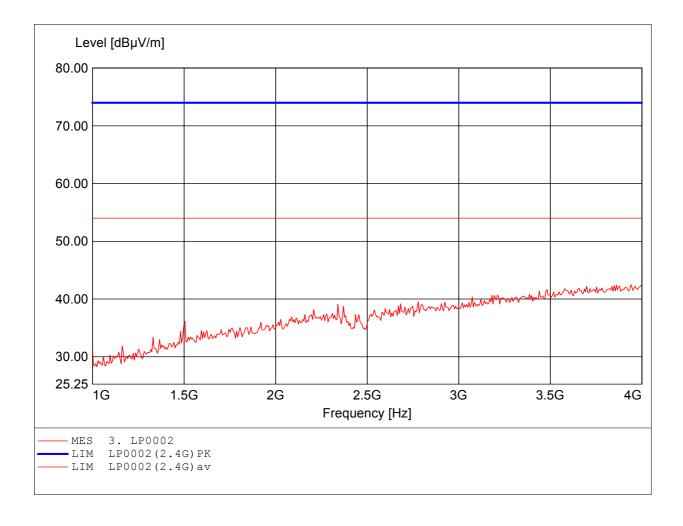
Operator: Michael Temperature:

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025, amplif.

Freq: 4.000GHz, Emax: 42.50dBµV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( middle channel )

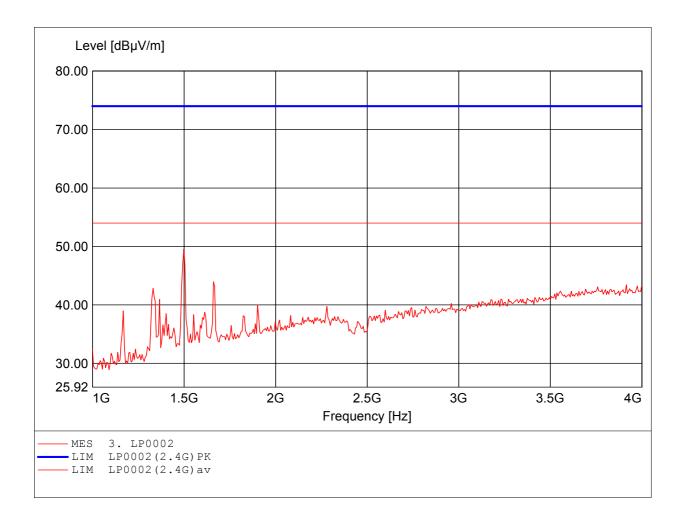
Operator: Michael Temperature:

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025, amplif.

Freq: 1.499GHz, Emax: 49.55dBuV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( middle channel )

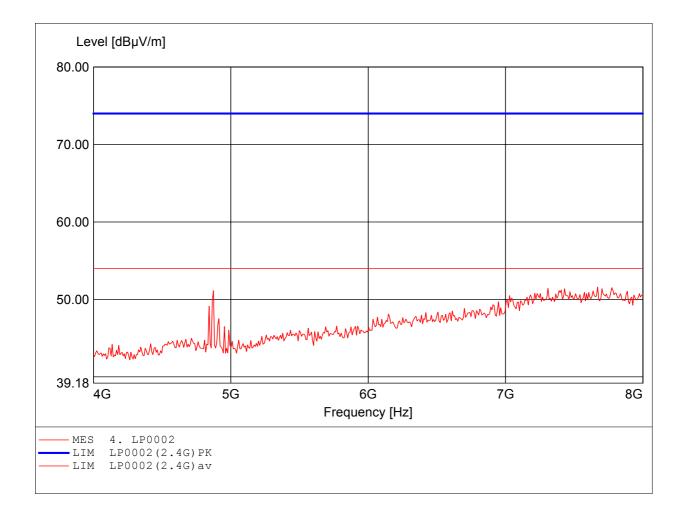
Operator: Michael Temperature:

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025, ampl.+HP.

Freq: 7.671GHz, Emax: 51.60dBuV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( middle channel )

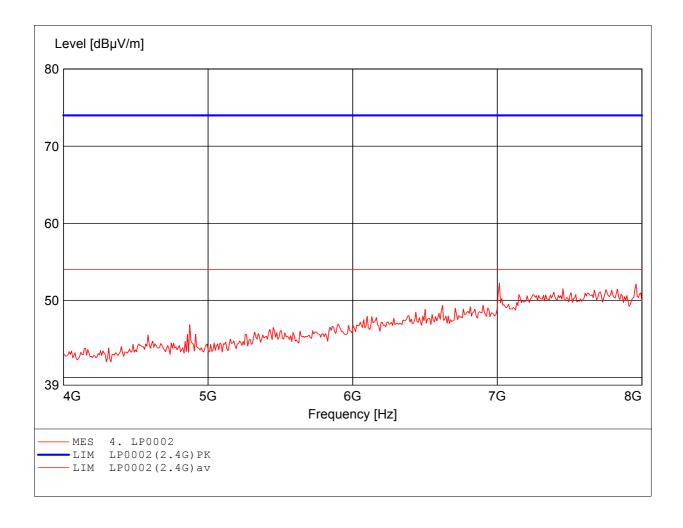
Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025, ampl.+HP.

Freq: 7.014GHz, Emax: 52.25dBuV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( middle channel )

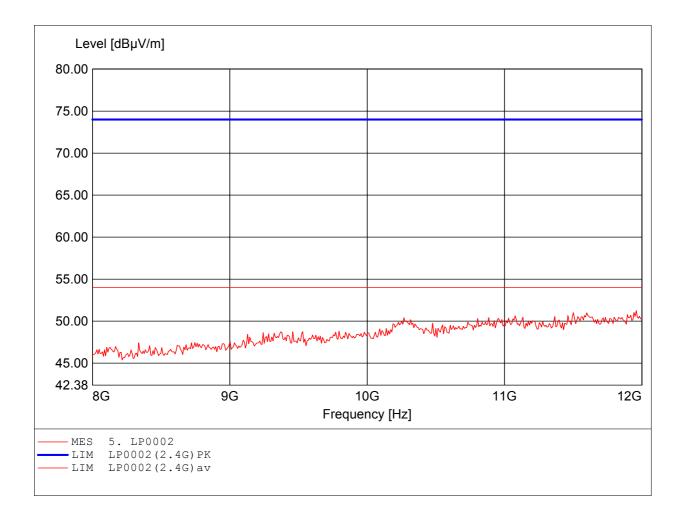
Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Ant.: HL025, ampl.+HP. Comment 1:

Freq: 11.960GHz, Emax: 51.24dBµV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

W6D20711-8705 Order Number : ( middle channel )

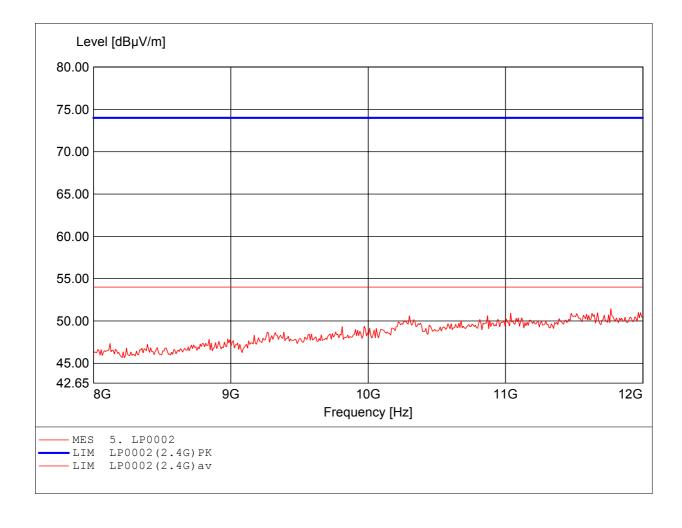
Operator: Michael Temperature:

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025, ampl.+HP.

Freq: 11.768GHz, Emax: 51.45dBµV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( middle channel )

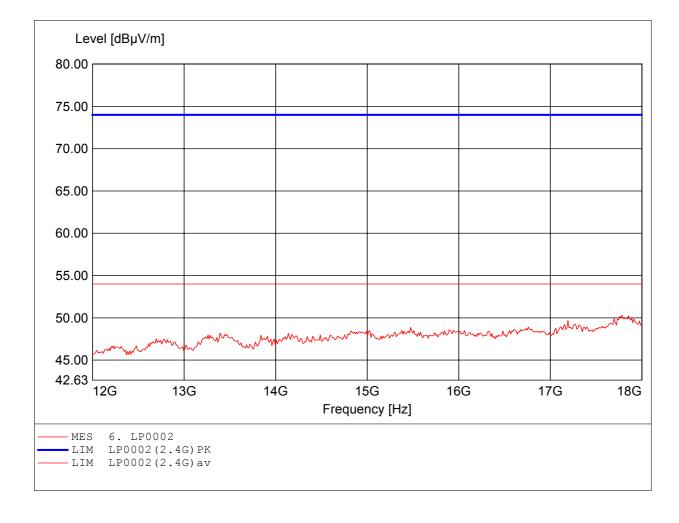
Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Ant.: HL025, ampl.+HP. Comment 1:

Freq: 17.784GHz, Emax: 50.29dBµV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( middle channel )

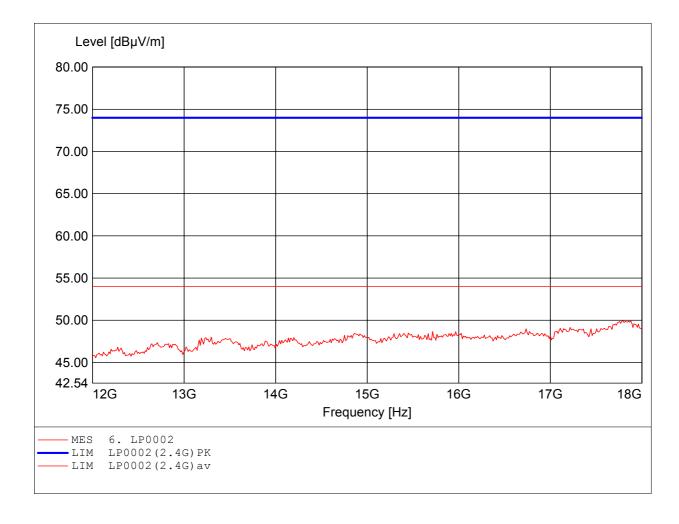
Operator: Michael Temperature:

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Ant.: HL025, ampl.+HP. Comment 1:

Freq: 17.796GHz, Emax: 49.93dBµV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( middle channel )

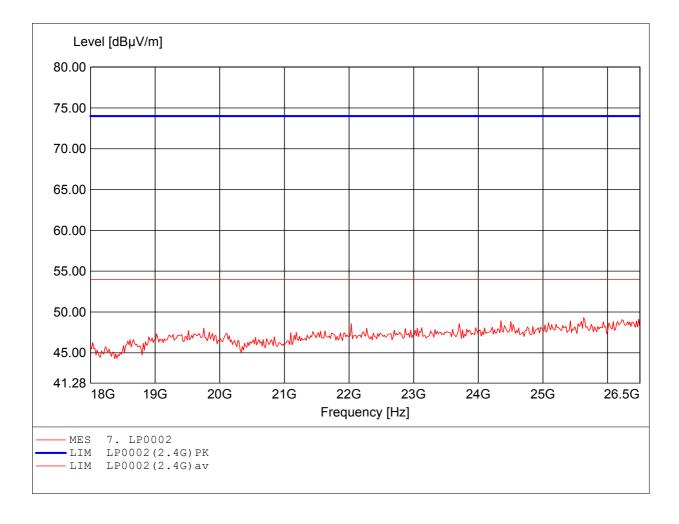
Operator: Michael Temperature:

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025, amplif.

Freq: 25.631GHz, Emax: 49.30dBµV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

W6D20711-8705 Order Number : ( middle channel )

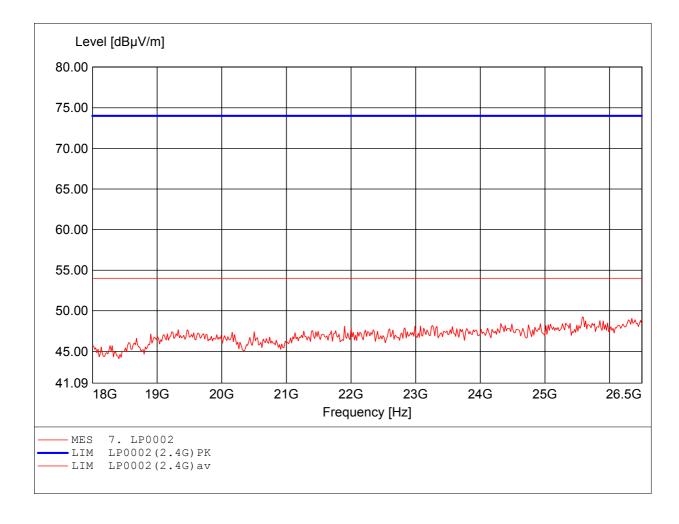
Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025, amplif.

Freq: 25.580GHz, Emax: 49.23dBµV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( high channel )

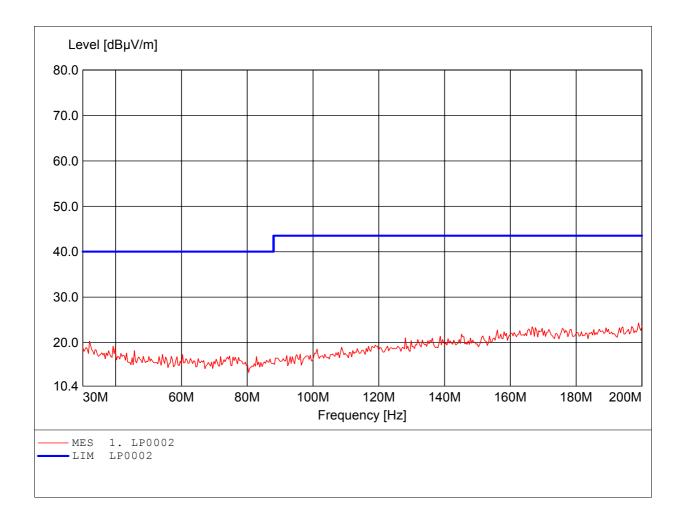
Operator: Michael Temperature:

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HK 116

Freq: 198.978MHz, Emax: 24.30dBμV/m, RBW: 100kHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( high channel )

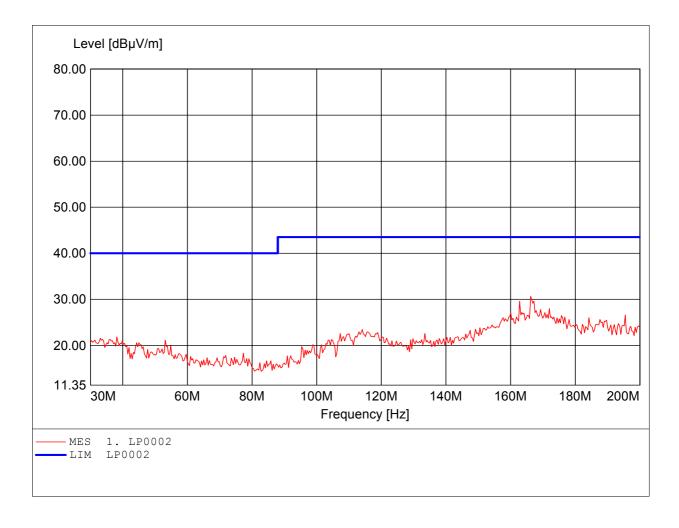
Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HK 116

Freq: 166.273MHz, Emax: 30.63dBμV/m, RBW: 100kHz



## FCC RULES PART 15, SUBPART C / LP0002

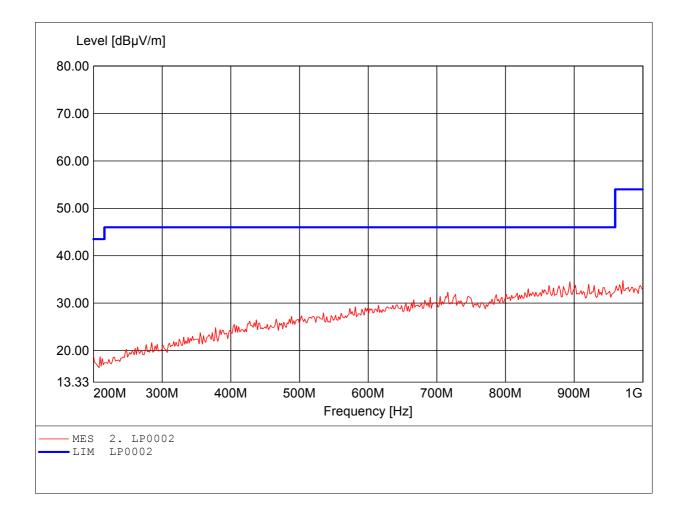
W6D20711-8705 Order Number : ( high channel )

Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector Comment 1: Ant.: HL 223, amplif.

Freq: 971.142MHz, Emax: 34.77dBμV/m, RBW: 100kHz



## FCC RULES PART 15, SUBPART C / LP0002

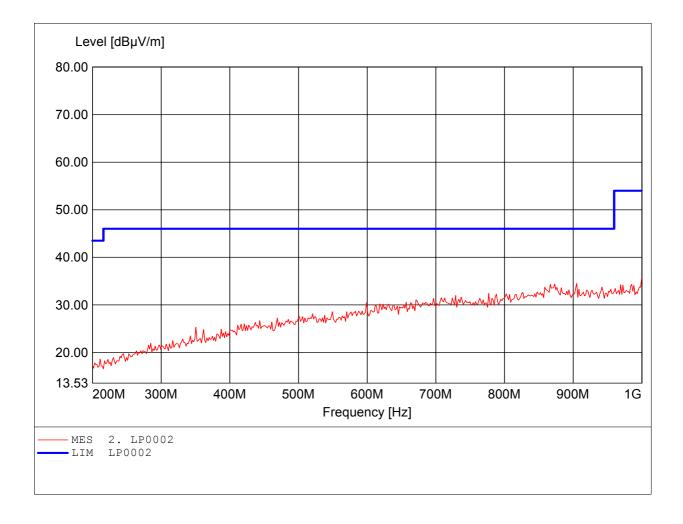
Order Number : W6D20711-8705 ( high channel )

Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector Comment 1: Ant.: HL 223, amplif.

Freq: 1.000GHz, Emax: 35.63dBμV/m, RBW: 100kHz



## FCC RULES PART 15, SUBPART C / LP0002

W6D20711-8705 Order Number : ( high channel )

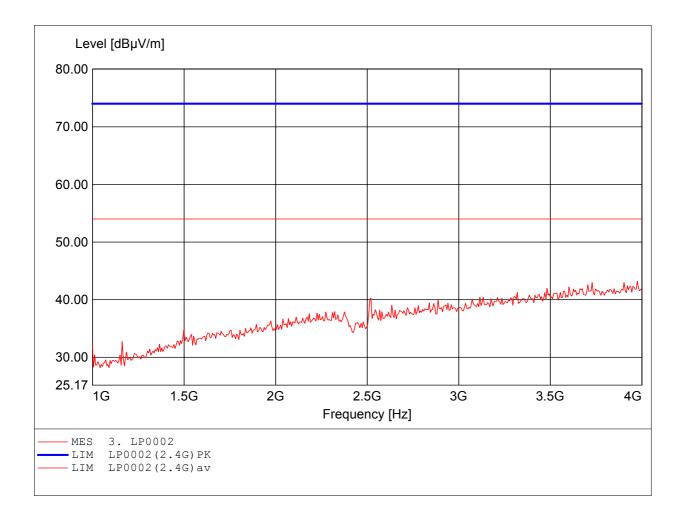
Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025, amplif.

Freq: 3.976GHz, Emax: 43.21dBuV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( high channel )

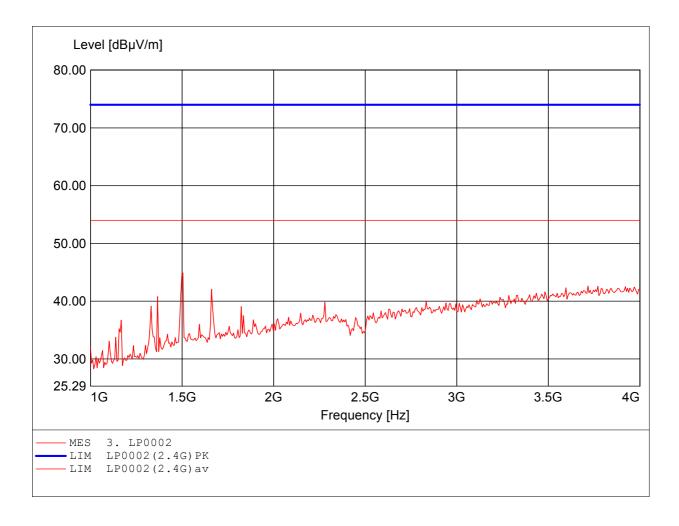
Operator: Michael Temperature:

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025, amplif.

Freq: 1.505GHz, Emax: 44.90dBuV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( high channel )

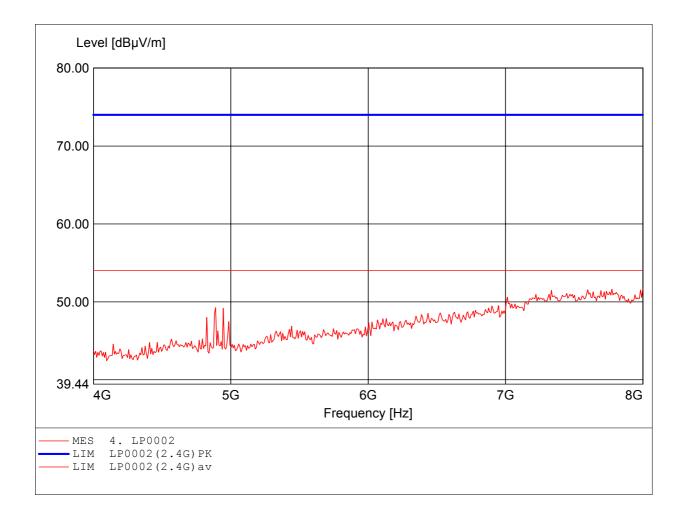
Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1:

Ant.: HL025, ampl.+HP. Freq: 8.000GHz, Emax: 51.70dBμV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( high channel )

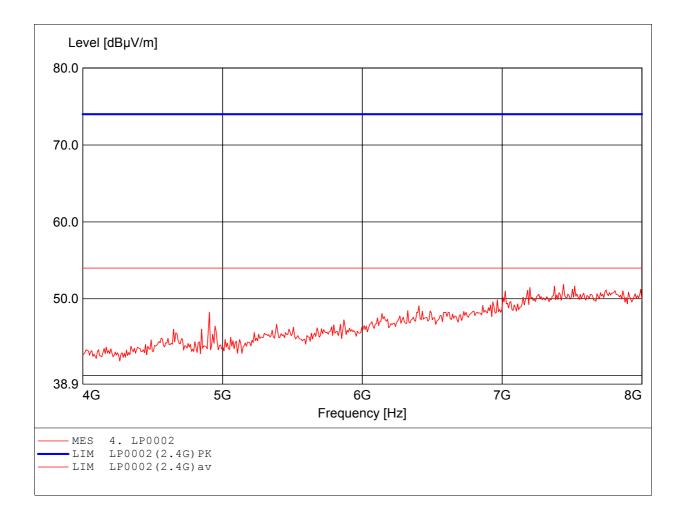
Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1:

Ant.: HL025, ampl.+HP. Freq: 7.439GHz, Emax: 51.87dBμV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( high channel )

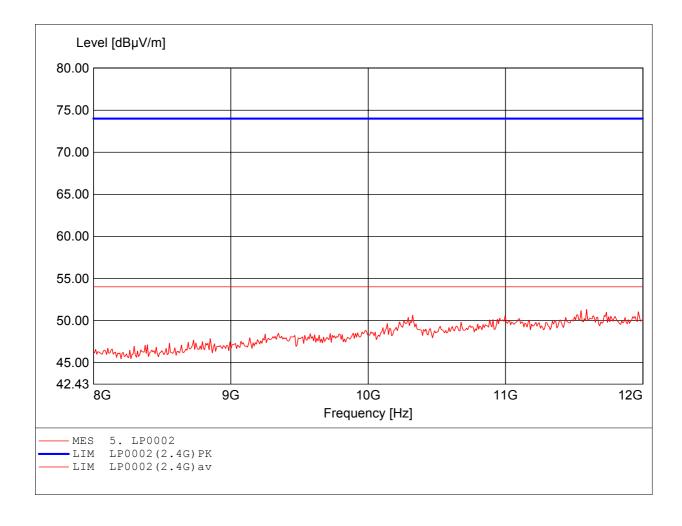
Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Ant.: HL025, ampl.+HP. Comment 1:

Freq: 11.591GHz, Emax: 51.31dBµV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

W6D20711-8705 Order Number : ( high channel )

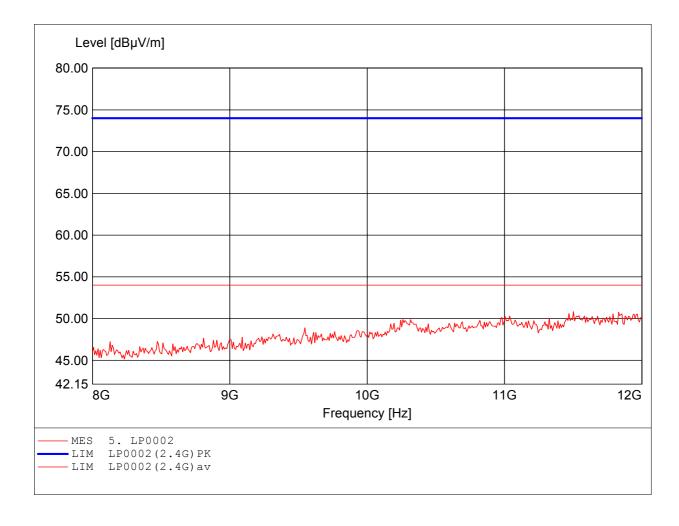
Operator: Michael Temperature:

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Ant.: HL025, ampl.+HP. Comment 1:

Freq: 11.503GHz, Emax: 50.82dBµV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( high channel )

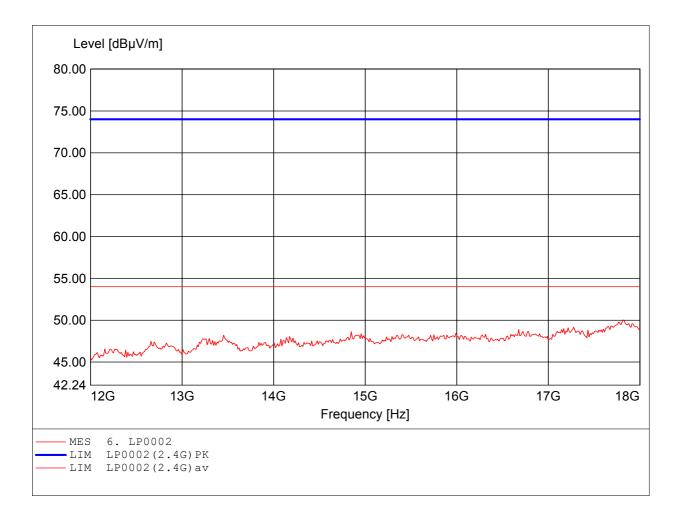
Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Ant.: HL025, ampl.+HP. Comment 1:

Freq: 17.820GHz, Emax: 50.03dBµV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( high channel )

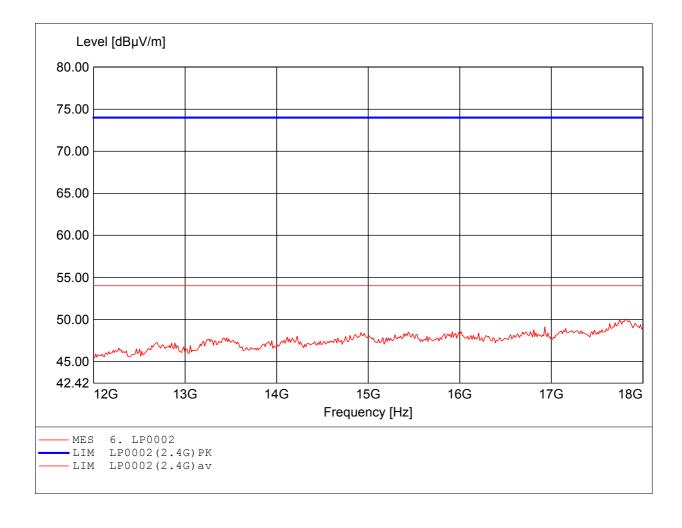
Operator: Michael Temperature:

Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Ant.: HL025, ampl.+HP. Comment 1:

Freq: 17.820GHz, Emax: 50.02dBµV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

Order Number : W6D20711-8705 ( high channel )

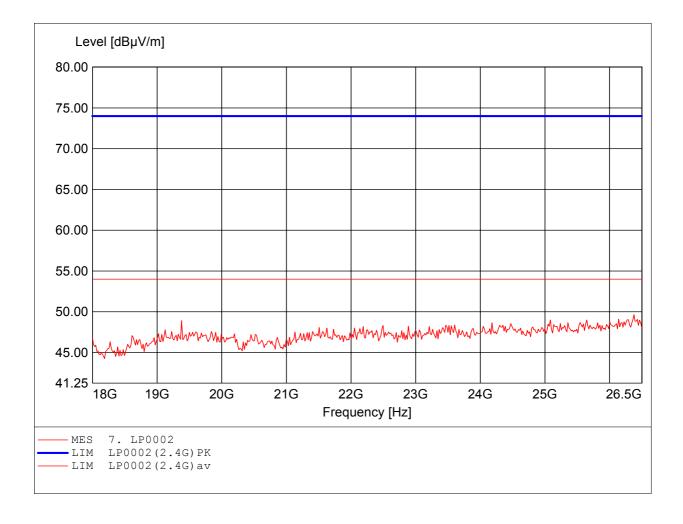
Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025, amplif.

Freq: 26.381GHz, Emax: 49.65dBμV/m, RBW: 1MHz



## FCC RULES PART 15, SUBPART C / LP0002

W6D20711-8705 Order Number : ( high channel )

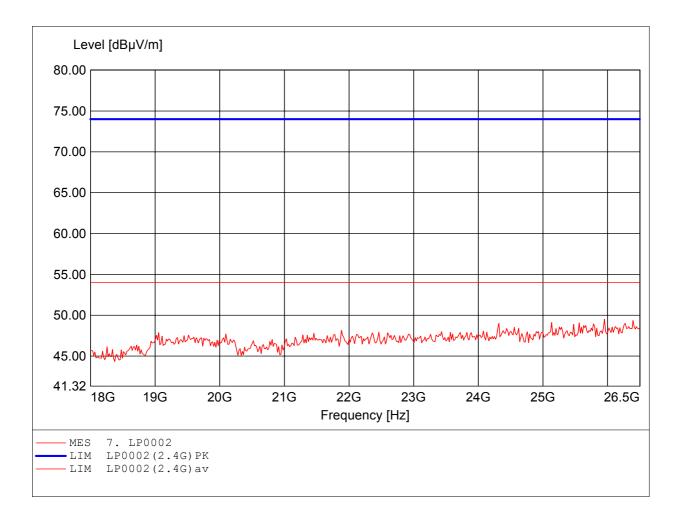
Operator: Michael

Temperature: Temp.: 23.9°C

Test Specification: according to LP0002, peak detector

Comment 1: Ant.: HL025, amplif.

Freq: 25.955GHz, Emax: 49.52dBµV/m, RBW: 1MHz

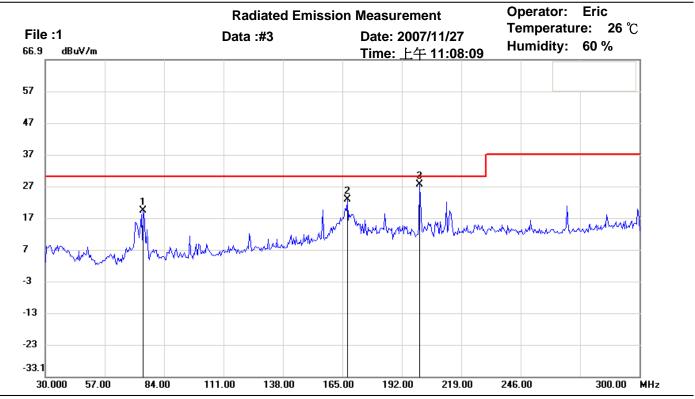


## ETS Product Service (Taiwan) Co., Ltd.



Registration number: W6D20711-8705-P-15 FCC ID: UJ97550A

Radiated Emissions from Digital Part



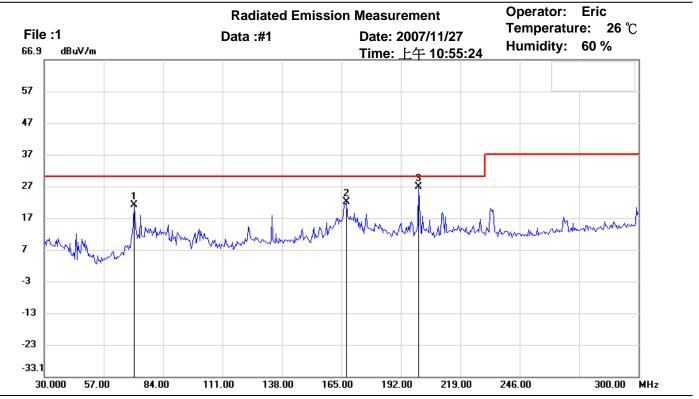
Site: site #1

Condition: CISPR22 RE-Class B 10M Polarization: Horizontal

Company: W6D20711-8705 Power: <sup>0</sup>
EUT Model: RF-7550A Distance: <sup>10m</sup>

**Execute Program:** 

Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	74.5500	13.52	peak	5.71	19.23	30.00	300	100	-10.77	
	167.2500	12.39	peak	10.33	22.72	30.00	310	88	-7.28	
*	200.1000	15.85	peak	11.80	27.65	30.00	300	235	-2.35	



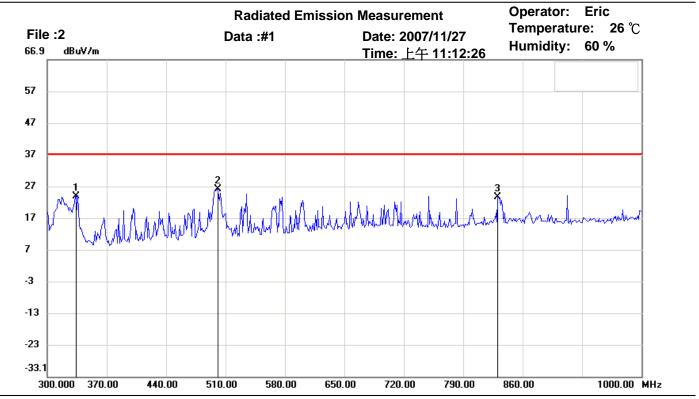
Site: site #1

Condition: CISPR22 RE-Class B 10M Polarization: Vertical

Company: W6D20711-8705 Power: <sup>0</sup>
EUT Model: RF-7550A Distance: <sup>10m</sup>

**Execute Program:** 

Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	70.9500	15.14	peak	5.78	20.92	30.00	100	170	-9.08	
	167.2500	11.79	peak	10.33	22.12	30.00	130	60	-7.88	
*	200.1000	15.10	peak	11.80	26.90	30.00	100	250	-3.10	



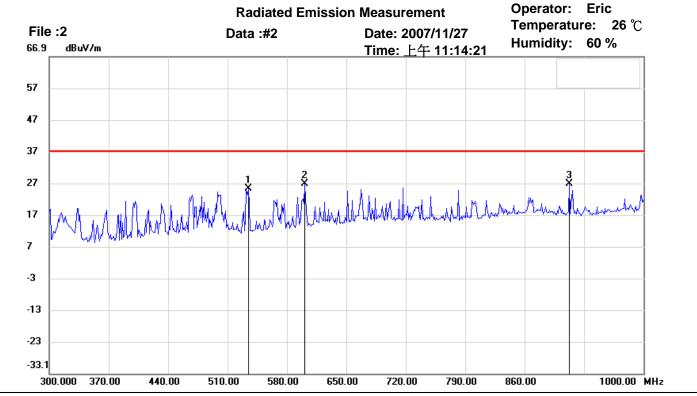
Site: site #1

Condition: CISPR22 RE-Class B 10M Polarization: Horizontal

Company: W6D20711-8705 Power: <sup>0</sup>
EUT Model: RF-7550A Distance: <sup>10m</sup>

**Execute Program:** 

Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	333.8333	14.21	peak	9.62	23.83	37.00	100	215	-13.17	
*	500.6667	12.98	peak	13.13	26.11	37.00	130	43	-10.89	
	830.8333	6.52	peak	17.09	23.61	37.00	120	151	-13.39	



Site: site #1

Condition: CISPR22 RE-Class B 10M Polarization: Vertical

Company: W6D20711-8705 Power: <sup>0</sup>
EUT Model: RF-7550A Distance: <sup>10m</sup>

**Execute Program:** 

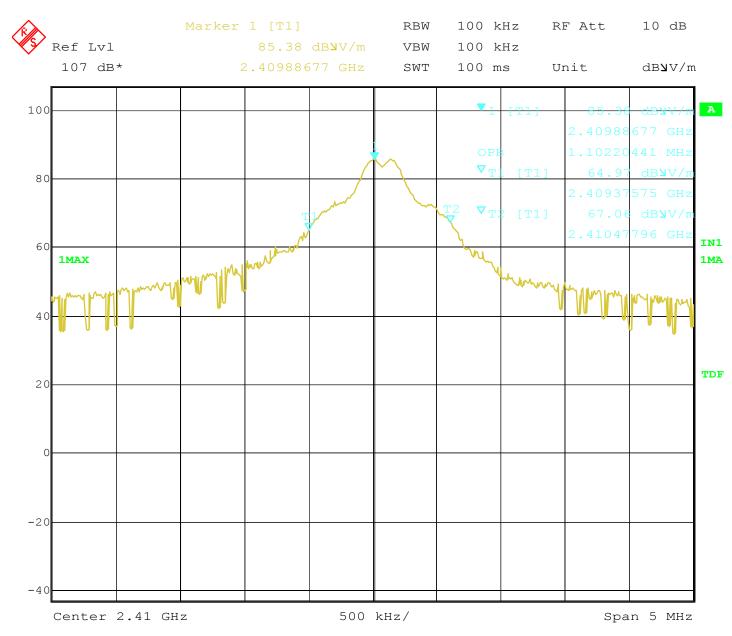
Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	534.5000	11.16	peak	14.03	25.19	37.00	310	120	-11.81	
*	601.0000	11.20	peak	15.54	26.74	37.00	300	38	-10.26	
	912.5000	7.57	peak	19.10	26.67	37.00	350	200	-10.33	

# ETS Product Service (Taiwan) Co., Ltd.

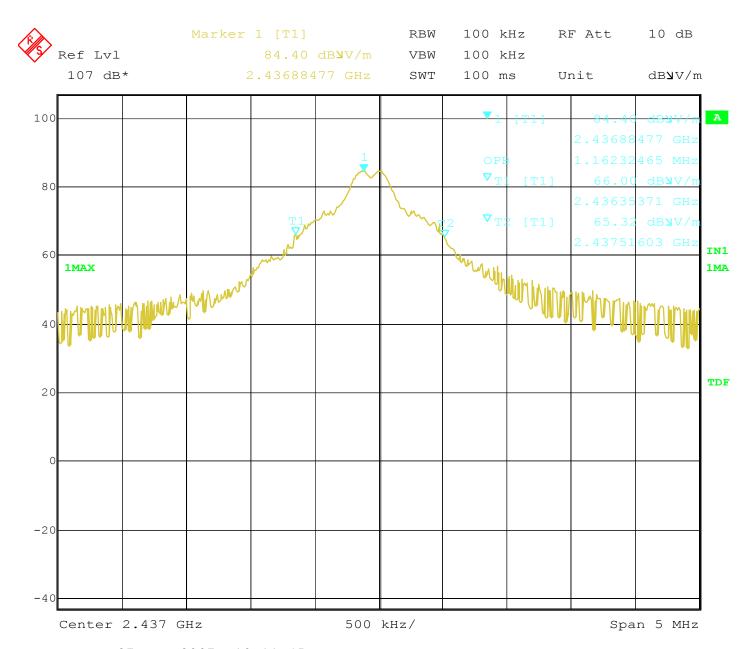


Registration number: W6D20711-8705-P-15 FCC ID: UJ97550A

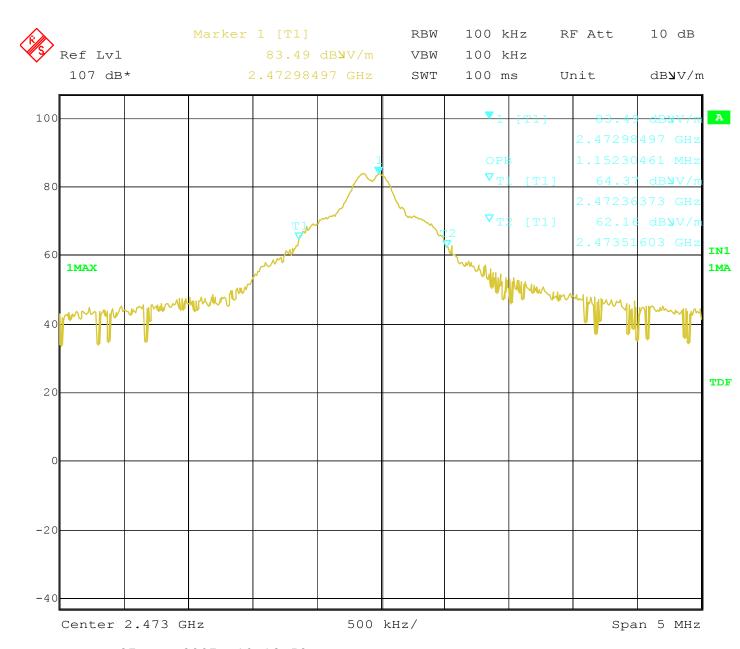
# Bandwidth



Date: 27.NOV.2007 19:09:19



Date: 27.NOV.2007 19:11:45



Date: 27.NOV.2007 19:13:58