

Test Report

Report No.: MTi160623E002

Date of issue: Jul. 11, 2016

Sample Description: PIN PAD

Model(s): G3

Applicant: Shenzhen Xinguodu Technology Co., Ltd.

Address: 17/A, Jinsong Building Tairan Industry And Trading

Garden, Shenzhen, China

Date of Test: Jun. 23, 2016 to Jul. 11, 2016



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TEST RESULT CERTIFICATION			
Applicant's name:	Shenzhen Xinguodu Technology Co., Ltd.		
Address:	17/A, Jinsong Building Tairan Industry And Trading Garden, Shenzhen, China		
Manufacture's Name: Shenzhen Xinguodu Technology Co., Ltd.			
Address:	17/A, Jinsong Building Tairan Industry And Trading Garden, Shenzhen, China		
Product description			
Product name:	PIN PAD		
Trademark:	NEXGO		
Model name:	G3		
Standards:	FCC Part 15.247		
Test Procedure:	ANSI C63.10-2013 558074 D01 DTS Meas Guidance v03r05		

This device described above has been tested by Shenzhen Toby Technology Co., Ltd. and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

Tested by:	David Chen		
Reviewed by:	David Chen	Jul. 11, 2016	
	Leon Chen	Jul. 11, 2016	
Approved by:	Jun (
	Ares Liu	Jul. 11, 2016	



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SUMMARY OF TEST RESULT

ltem	FCC Part No.	Description of Test	Result
1	15.203	Antenna requirement	Pass
2	15.207	AC power line conducted emission	Pass
3	15.247(b)(3)	Maximum output power	Pass
4	15.247(a)(2)	6dB emission bandwidth	Pass
5	15.247(e)	Power spectral density (PSD)	Pass
8	15.247(d)	Band edge & conducted spurious emission	Pass
9	15.247(d), 15.205, 15.209	Radiated emission	Pass



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1 General description

1.1 Feature of equipment under test (EUT)

Product name:	PIN PAD	
Model name:	G3	
Serial model name:	1	
Tx/Rx frequency range:	Tx/Rx: 2412MHz~2462MHz for 802.11b/g/n20	
WIFI feature:		
Modulation type:	DSSS, OFDM	
Power supply:	DC 5V from adapter	
Adapter information:	Model: ADS-6MA-06 05050EPCU Input: 100-240V 50/60Hz Max. 0.3A Output: 5V 1A	
Antenna designation:	PCB antenna (Antenna Gain: 2dBi)	

1.2 Operation channel list

Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	6	2437MHz	11	2462MHz
2	2417MHz	7	2442MHz		
3	2422MHz	8	2447MHz		
4	2427MHz	9	2452MHz		
5	2432MHz	10	2457MHz		



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2 Test Configuration of EUT

2.1 Test frequency channel

Channel	802.11b/g/n20	802.11n40
Low	2412MHz	1
Middle	2437MHz	1
High	2462MHz	1

2.2 EUT operation mode

During testing, RF test program provided by the manufacture to control the Tx operation followed the test requirement. The EUT is configured to transmit continuously (duty cycle > 98 %) at the maximum power control level.

2.3 Test conditions

During the measurement the environmental conditions were within the listed ranges:

- Temperature: 20°C~30°C - Humidity: 30%~70%

- Atmospheric pressure: 98kPa~101kPa

2.4 Testing site

Test Site Shenzhen Toby Technology Co., Ltd.	
Test Site Location	1 A/F., Bldg.6, Yusheng Industrial Zone The National Road No.107 Xixiang Section 467, Shenzhen, Guangdong, China
FCC Registration No.:	811562
CNAS Registration No.:	CNAS L5813

2.5 Ancillary equipment list

Equipment	Model	S/N	Manufacturer	Certificate type
1	/	1	/	1

2.6 Measurement uncertainty

Measurement Uncertainty for a Level of Confidence of 95 %, U=2xUc(y)

RF frequency	1 x 10-7
RF power, conducted	± 1 dB
Conducted emission(150kHz~30MHz)	± 2.5 dB
Radiated emission(30MHz~1GHz)	± 4.2 dB
Radiated emission (above 1GHz)	± 4.3 dB
Temperature	±1 degree
Humidity	± 5 %



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3 List of test equipment

For AC power line conducted emission:

Equipment	Manufacturer	Model	Serial No.	Calibration Due
LISN	R&S	ENV216	101313	2016.12.06
LISN	SCHWARZBECK	NNLK 8129	8129245	2016.12.25
Pulse Limiter	SCHWARZBECK	VTSD 9561F	9716	2016.12.25
Test Cable	N/A	N/A	C01	2016.12.06
EMI Test Receiver	R&S	ESCI	101160	2016.12.06

For Radiated emission:

Equipment	Manufacturer	Model	Serial No.	Calibration Due
Log-Bicon Antenna	MESS-ELEKTRO NIK	VULB 9160	3058	2016.12.11
Horn Antenna	Schwarzbeck	BBHA 9120D	631	2016.12.05
Horn Antenna	Schwarzbeck	BBHA 9170	373	2016.12.05
Test Cable	United Microwave	57793	1m	2016.12.05
Test Cable	United Microwave	A30A30-5006	10m	2016.12.05
Microwave Pre_amplifier	Agilent	8449B	3008A01714	2016.12.05
Pre-Amplifier	Anritsu	MH648A	M09961	2016.12.05
EMI Test Receiver	R&S	ESPI-7	101318	2016.12.05
Spctrum analyzer	Agient	E4470B	MY41441082	2017.06.01

For RF conducted emission:

Equipment	Manufacturer	Model	Serial No.	Calibration Due
Spctrum analyzer	Agient	E4470B	MY41441082	2017.06.01
Power meter	Anritsu	ML2495A	1005002	2016.09.11
Power Senor	Anritsu	MA2411B	0917070	2016.09.11

Note: the calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).



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4 Test Result

4.1 Conducted emission

4.1.1. Limit

Frequency	Limit			
(MHz)	Quasi-peak	Average		
0.15-0.5	66 to 56	56 to 46		
0.5-5	56	46		
5-30	60	50		

Note: Decreases with the logarithm of the frequency from 0.15MHz to 0.5MHz.

4.1.2. Test method

- 1. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/50uH of coupling impedance for the measuring instrument.
- 2. 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.
- 3. 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.
- 4. LISN is at least 80 cm from nearest part of EUT chassis.
- 5. The resolution bandwidth of EMI test receiver is set at 9 kHz.

4.1.3. Test Result



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Temperat	erature: 22°C		F	Relative			51%				
Pressure:		101k	Pa	F	Polariz	ation:		L			
Test volta	ige:	AC 1	20V/60	Hz 1	Гest m	ode:		Transmitting			
100.0 dBuV											
90											
30											
80											
70											
60							FCCPa	rt15 ClassB	AC Conduction(QP)		
_							FCCPart	15 ClassB A	C Conduction(AVG)		
50		AVA									
40 W	mm	Mark Mark	ha walan da	Justile	ن امرينا)	×	4.XII	n U	edromery obligation of the least	nether	
30	7	WA.	x Machidale . A.	of today of the shift of	and the	MANNA MANA	orabital/halanta	(haddlennahlenahl-ar	estational programment and any	pea	
		- Market Market			-eventure-event	mm		Maryanana	and the second	AVO	
20											
10											
0.0											
		0.5			(MHz)		5			30.000	
0.0			Correct	Measure-	(MHz)		5			30.000	
0.0	Freq.	0.5 Reading Level	Correct	Measure- ment	(MHz)	Over	5			30.000	
0.0 0.150 No. Mk.	MHz	Reading Level dBuV	Factor	ment dBu∨	Limit dBuV	dB	Detector	Commen	t	30.000	
0.0 0.150 No. Mk.	MHz 0.4570	Reading Level dBuV 5.45	dB 30.02	ment dBuV 35.47	Limit dBuV 56.75	dB -21.28	Detector QP	Commen	t	30.000	
0.0 0.150 No. Mk.	MHz 0.4570 0.4570	Reading Level dBuV 5.45 -1.99	dB 30.02 30.02	ment dBuV 35.47 28.03	Limit dBuV 56.75 46.75	dB -21.28 -18.72	Detector QP AVG	Commen	t	30.000	
0.0 0.150 No. Mk.	MHz 0.4570 0.4570 0.8420	Reading Level dBuV 5.45 -1.99 -0.69	Factor dB 30.02 30.02 30.02	ment dBuV 35.47 28.03 29.33	Limit dBuV 56.75 46.75 56.00	dB -21.28 -18.72 -26.67	Detector QP AVG QP	Commen	t	30.000	
0.0 0.150 No. Mk.	MHz 0.4570 0.4570 0.8420 0.8420	Reading Level dBuV 5.45 -1.99 -0.69 -4.06	Factor dB 30.02 30.02 30.02 30.02	ment dBuV 35.47 28.03 29.33 25.96	Limit dBuV 56.75 46.75 56.00 46.00	dB -21.28 -18.72 -26.67 -20.04	Detector QP AVG QP AVG	Commen	t	30.000	
0.0 0.150 No. Mk.	MHz 0.4570 0.4570 0.8420	Reading Level dBuV 5.45 -1.99 -0.69	Factor dB 30.02 30.02 30.02	ment dBuV 35.47 28.03 29.33	Limit dBuV 56.75 46.75 56.00 46.00 56.00	dB -21.28 -18.72 -26.67	Detector QP AVG QP	Commen	t	30.000	
0.0 0.150 No. Mk.	MHz 0.4570 0.4570 0.8420 0.8420 1.0700	Reading Level dBuV 5.45 -1.99 -0.69 -4.06	Factor dB 30.02 30.02 30.02 30.02 30.02	ment dBuV 35.47 28.03 29.33 25.96 28.41	Limit dBuV 56.75 46.75 56.00 46.00 46.00	dB -21.28 -18.72 -26.67 -20.04 -27.59	Detector QP AVG QP AVG QP	Commen	t	30.000	
0.0 0.150 No. Mk. 1 2 * 3 4 5 6	MHz 0.4570 0.4570 0.8420 0.8420 1.0700 1.0700	Reading Level dBuV 5.45 -1.99 -0.69 -4.06 -1.61 -4.45	30.02 30.02 30.02 30.02 30.02 30.02 30.02	ment dBuV 35.47 28.03 29.33 25.96 28.41 25.57	Limit dBuV 56.75 46.75 56.00 46.00 56.00 56.00	dB -21.28 -18.72 -26.67 -20.04 -27.59 -20.43	Detector QP AVG QP AVG QP AVG	Commen	t	30.000	
0.0 0.150 No. Mk. 1 2 * 3 4 5 6 7	MHz 0.4570 0.4570 0.8420 0.8420 1.0700 1.0700 1.5858	Reading Level dBuV 5.45 -1.99 -0.69 -4.06 -1.61 -4.45 -0.93	Factor dB 30.02 30.02 30.02 30.02 30.02 30.02 30.02	ment dBuV 35.47 28.03 29.33 25.96 28.41 25.57 29.09	Limit dBuV 56.75 46.75 56.00 46.00 56.00 46.00 46.00	dB -21.28 -18.72 -26.67 -20.04 -27.59 -20.43 -26.91	Detector QP AVG QP AVG QP AVG QP QP	Commen	t	30.000	
0.0 0.150 No. Mk. 1 2 * 3 4 5 6 7 8	MHz 0.4570 0.4570 0.8420 0.8420 1.0700 1.0700 1.5858 1.5858	Reading Level dBuV 5.45 -1.99 -0.69 -4.06 -1.61 -4.45 -0.93 -4.30	Factor dB 30.02 30.02 30.02 30.02 30.02 30.02 30.02 30.02	ment dBuV 35.47 28.03 29.33 25.96 28.41 25.57 29.09 25.72	Limit dBuV 56.75 46.75 56.00 46.00 56.00 46.00 56.00 56.00	dB -21.28 -18.72 -26.67 -20.04 -27.59 -20.43 -26.91 -20.28	Detector QP AVG QP AVG QP AVG QP AVG	Commen	t	30.000	
0.0 0.150 No. Mk. 1 2 * 3 4 5 6 7 8 9	MHz 0.4570 0.4570 0.8420 0.8420 1.0700 1.5858 1.5858 2.3460	Reading Level dBuV 5.45 -1.99 -0.69 -4.06 -1.61 -4.45 -0.93 -4.30 -0.73	Factor dB 30.02 30.02 30.02 30.02 30.02 30.02 30.02 30.02 30.02 30.03	ment dBuV 35.47 28.03 29.33 25.96 28.41 25.57 29.09 25.72 29.30	Limit dBuV 56.75 46.75 56.00 46.00 56.00 46.00 56.00 46.00 46.00 56.00	dB -21.28 -18.72 -26.67 -20.04 -27.59 -20.43 -26.91 -20.28 -26.70	Detector QP AVG QP AVG QP AVG QP AVG QP AVG	Commen		30.000	



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Tempera	ature:	24°C			Relativ	e ·		57%			
Pressure	: :	101k	101kPa		Polarization:		:	N			
Test volt	age:	AC 1	20V/60	Hz	Test m	ode:		Transmitting			
100.0 dBu	v										_
90											
80											\dashv
70											
60							FCCP	art15 ClassB	AC Conduction(QP)	
60		_					ECCP.	et15 ClassR A	C Conduction(A)	VEI	
50		Y					rccre	ICIO Classo A	C Conductionpe	vaj	-
40		Myster	AL ALL ON	.uh.r						×	
	mandry	and approximately	White Links	hallstine hadro	ARABINA/AN	eghtelyhiphet	Mariana	helitright of histophi	who proportions and the second	humble should	peak
30	many	and the same	- Marian Maria	menonmenon	mount	done-hamen	-AMAN-AND AND AND AND AND AND AND AND AND AND	and the same of th	a for any marked of the forest	mem	AVG
20						A A			1 11 51		
100000											
10											
10											
1200		0.5			(MHz)		5			30.	000
10					(MHz)		5			30.	000
10	Freq.	0.5 Reading Level	Correct	Measure- ment		Over	5			30.	000
0.0 0.150	MHz	Reading Level dBuV	Factor dB	ment dBuV	Limit dBuV	dB	Detector	Comment		30.	000
10 0.0 0.150 No. Mk.	MHz 0.4570	Reading Level dBuV 10.25	Factor dB 30.02	ment dBuV 40.27	Limit dBuV 56.75	dB -16.48	Detector QP			30.	000
10 0.0 0.150 No. Mk.	MHz 0.4570 0.4570	Reading Level dBuV 10.25 0.99	d8 30.02 30.02	ment dBuV 40.27 31.01	Limit dBuV 56.75 46.75	dB -16.48 -15.74	Detector QP AVG			30.	000
No. Mk.	MHz 0.4570 0.4570 0.8820	Reading Level dBuV 10.25 0.99 2.59	Factor dB 30.02 30.02 30.02	ment dBuV 40.27 31.01 32.61	Limit dBuV 56.75 46.75 56.00	dB -16.48 -15.74 -23.39	Detector QP AVG QP			30.	000
No. Mk. 1 2 * 3 4	MHz 0.4570 0.4570 0.8820 0.8820	Reading Level dBuV 10.25 0.99 2.59 -2.90	Factor d8 30.02 30.02 30.02 30.02	ment dBuV 40.27 31.01 32.61 27.12	Limit dBuV 56.75 46.75 56.00 46.00	dB -16.48 -15.74 -23.39 -18.88	Detector QP AVG QP AVG			30.	000
No. Mk.	MHz 0.4570 0.4570 0.8820	Reading Level dBuV 10.25 0.99 2.59	Factor dB 30.02 30.02 30.02	ment dBuV 40.27 31.01 32.61	Limit dBuV 56.75 46.75 56.00 46.00 56.00	dB -16.48 -15.74 -23.39 -18.88 -25.90	Detector QP AVG QP AVG			30.	000
No. Mk. 1 2 * 3 4 5	MHz 0.4570 0.4570 0.8820 0.8820 1.0859 1.0859	Reading Level dBuV 10.25 0.99 2.59 -2.90 0.08 -3.93	30.02 30.02 30.02 30.02 30.02 30.02 30.02	ment dBuV 40.27 31.01 32.61 27.12 30.10 26.09	Limit dBuV 56.75 46.75 56.00 46.00 56.00 46.00	dB -16.48 -15.74 -23.39 -18.88 -25.90 -19.91	Detector QP AVG QP AVG			30.	000
No. Mk. 1 2 3 4 5 6	MHz 0.4570 0.4570 0.8820 0.8820 1.0859	Reading Level dBuV 10.25 0.99 2.59 -2.90 0.08	30.02 30.02 30.02 30.02 30.02 30.02	ment dBuV 40.27 31.01 32.61 27.12 30.10	Limit dBuV 56.75 46.75 56.00 46.00 56.00	dB -16.48 -15.74 -23.39 -18.88 -25.90 -19.91 -26.28	Detector QP AVG QP AVG QP AVG			30.	000
No. Mk. 1 2 * 3 4 5 6 7	MHz 0.4570 0.4570 0.8820 0.8820 1.0859 1.7460	Reading Level dBuV 10.25 0.99 2.59 -2.90 0.08 -3.93 -0.30	Factor d8 30.02 30.02 30.02 30.02 30.02 30.02 30.02 30.02	ment dBuV 40.27 31.01 32.61 27.12 30.10 26.09 29.72	Limit dBuV 56.75 46.75 56.00 46.00 46.00 56.00	dB -16.48 -15.74 -23.39 -18.88 -25.90 -19.91 -26.28 -20.04	Detector QP AVG QP AVG QP AVG QP AVG			30.	000
No. Mk. 1 2 * 3 4 5 6 7 8	MHz 0.4570 0.4570 0.8820 0.8820 1.0859 1.7460 1.7460	Reading Level dBuV 10.25 0.99 2.59 -2.90 0.08 -3.93 -0.30 -4.06	Factor d8 30.02 30.02 30.02 30.02 30.02 30.02 30.02 30.02	ment dBuV 40.27 31.01 32.61 27.12 30.10 26.09 29.72 25.96	Limit dBuV 56.75 46.75 56.00 46.00 56.00 46.00 46.00	dB -16.48 -15.74 -23.39 -18.88 -25.90 -19.91 -26.28 -20.04 -25.64	Detector QP AVG QP AVG QP AVG QP AVG			30.	000
No. Mk. 1 2 3 4 5 6 7 8 9	MHz 0.4570 0.4570 0.8820 0.8820 1.0859 1.7460 1.7460 3.3740	Reading Level dBuV 10.25 0.99 2.59 -2.90 0.08 -3.93 -0.30 -4.06 0.32	Factor dB 30.02 30.02 30.02 30.02 30.02 30.02 30.02 30.02 30.02 30.04	ment dBuV 40.27 31.01 32.61 27.12 30.10 26.09 29.72 25.96 30.36	Limit dBuV 56.75 46.75 56.00 46.00 56.00 46.00 56.00 56.00	dB -16.48 -15.74 -23.39 -18.88 -25.90 -19.91 -26.28 -20.04 -25.64 -20.78	Detector QP AVG QP AVG QP AVG QP AVG QP QP			30.	000



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4.2 Antenna requirement

4.2.1. Requirement defined in FCC 15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

4.2.2. EUT antenna description

The WIFI antenna of EUT is an internal permanently attached PIFA antenna, the maximum gain of the antenna is 2dBi. So the antenna meets the requirement of this part.



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4.3 Maximum output power

4.3.1. Limits

Conducted output power limit is 1W (30dBm).

4.3.2. Test Method

The maximum conducted output power may be measured using a broadband RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

4.3.3. Test Result

Frequency (MHz)	Maximum output power (dBm)	Limit (dBm)
	802.11b	
2412	13.37	30
2437	13.07	30
2462	12.92	30
	802.11g	
2412	12.93	30
2437	12.83	30
2462	12.47	30
	802.11n20	
2412	12.75	30
2437	12.55	30
2462	12.22	30



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4.4 6dB emission bandwidth

4.4.1. Limits

The minimum 6 dB bandwidth shall be at least 500 kHz.

4.4.2. Test method

Use the following spectrum analyzer settings:

RBW = 100kHz VBW ≥ 3RBW Detector = peak Trace mode = max hold Sweep time = auto couple

Allow the trace to stabilize, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

4.4.3. Test result

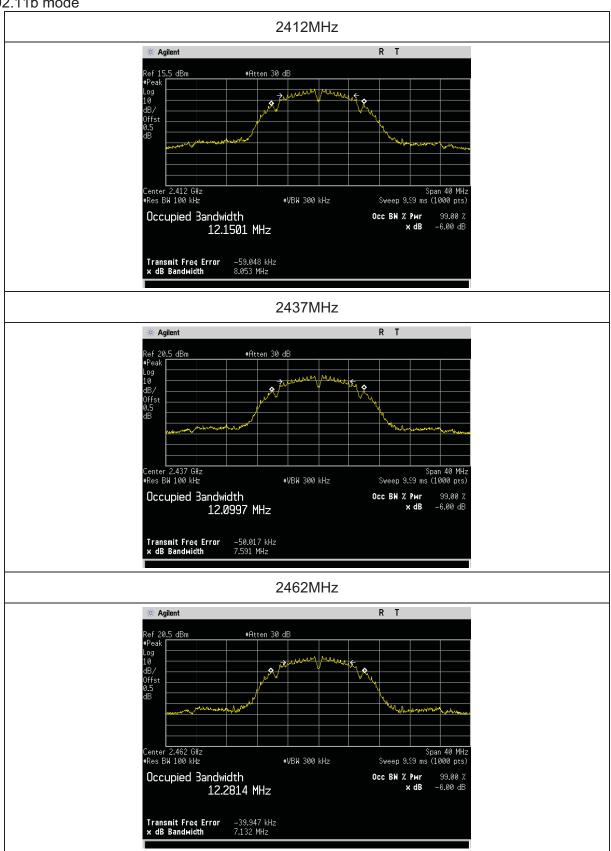
Frequency (MHz)	6dB emission bandwidth (MHz)	Limit
	802.11b	
2412	8.053	
2437	7.591	500kHz
2462	7.132	
	802.11g	
2412	15.784	
2437	15.714	500kHz
2462	15.72	
	802.11n20	
2412	16.909	
2437	16.336	500kHz
2462	16.334	

Test plots as below:



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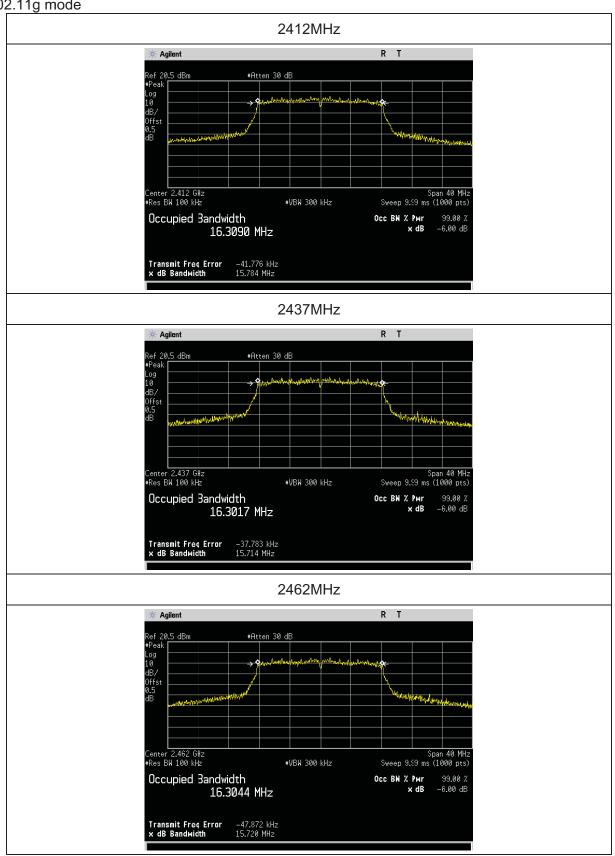
802.11b mode





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802.11g mode

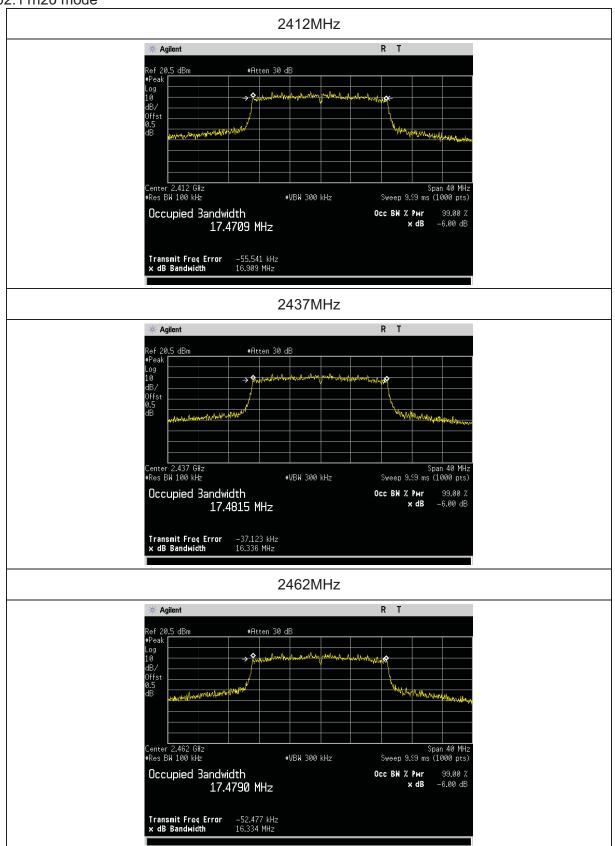


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802.11n20 mode





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4.5 Power spectral density

4.5.1. Limits

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

4.5.2. Test method

Span = 1.5 times DTS bandwidth (6dB emission bandwidth, see section 4.4)

RBW = 3kHz to 100kHz

VBW ≥ 3RBW

Detector = RMS

Sweep time = auto

Trace mode = max hold

Allow the trace to stabilize. Use the peak marker function to determine the maximum amplitude level within the RBW.

4.5.3. Test result

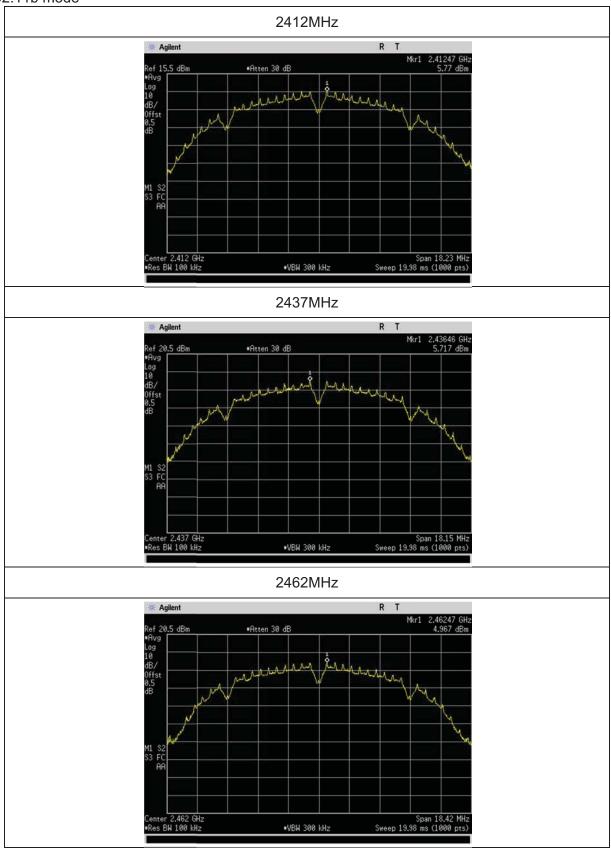
Frequency (MHz)	PSD (dBm/100kHz)	Limit (dBm/3kHz)				
	802.11b					
2412	5.77					
2437	5.717	8				
2462	4.976					
	802.11g					
2412	5.527					
2437	5.433	8				
2462	5.167					
	802.11n20					
2412	5.524					
2437	4.413	8				
2462	4.181					

Test plots as below:



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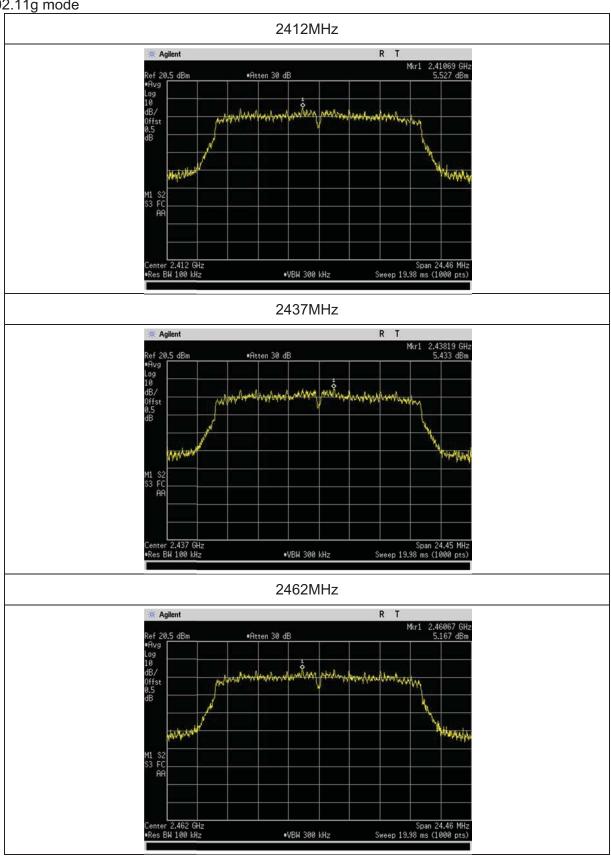
802.11b mode





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802.11g mode

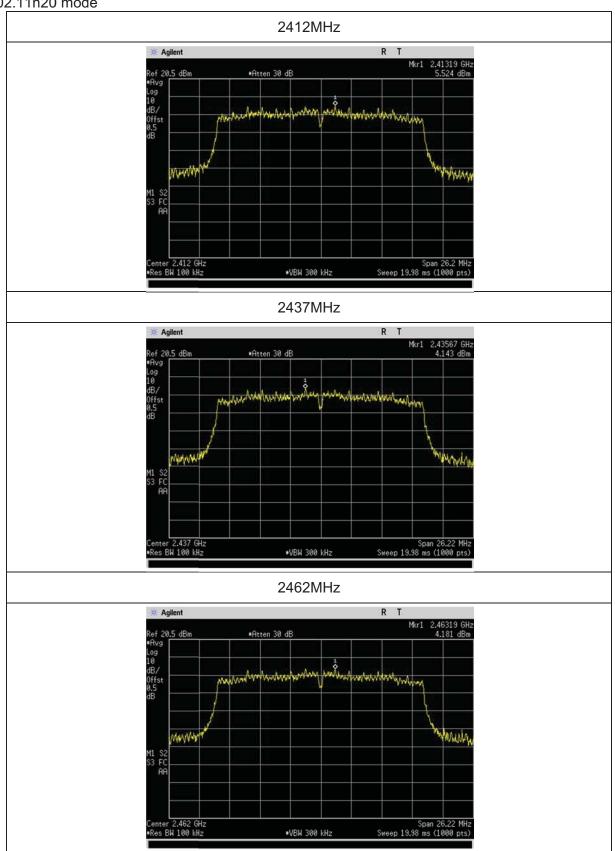


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802.11n20 mode



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4.6 Band edge

4.6.1. Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30dB instead of 20dB.

4.6.2. Test method

Use the following spectrum analyzer settings:

Set RBW = 100 kHz. VBW ≥ 3RBW. Detector = peak, Sweep time = auto couple, Trace mode = max hold.

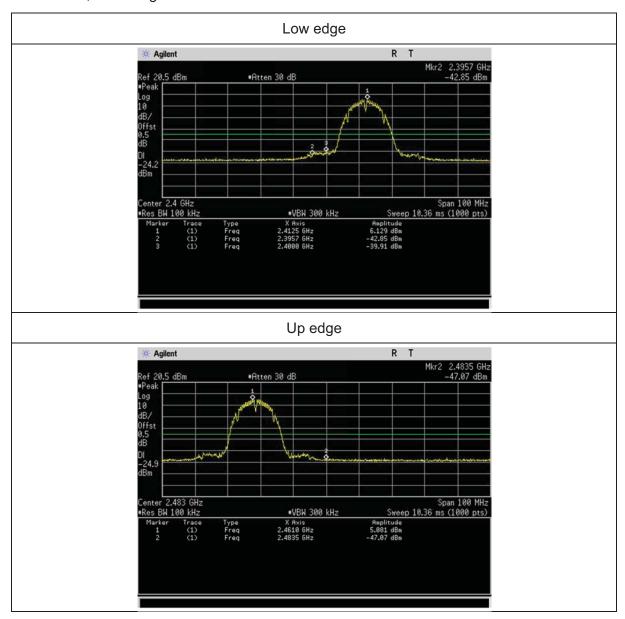
4.6.3. Test Result

Test plots as below:



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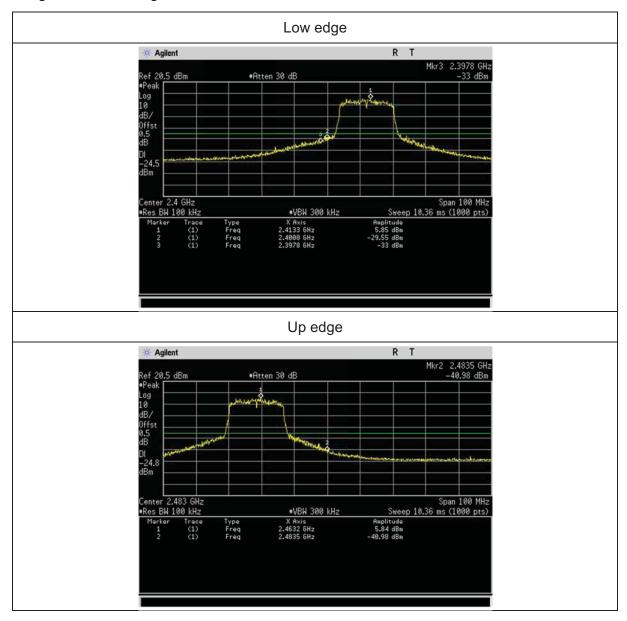
802.11b mode, Band edge





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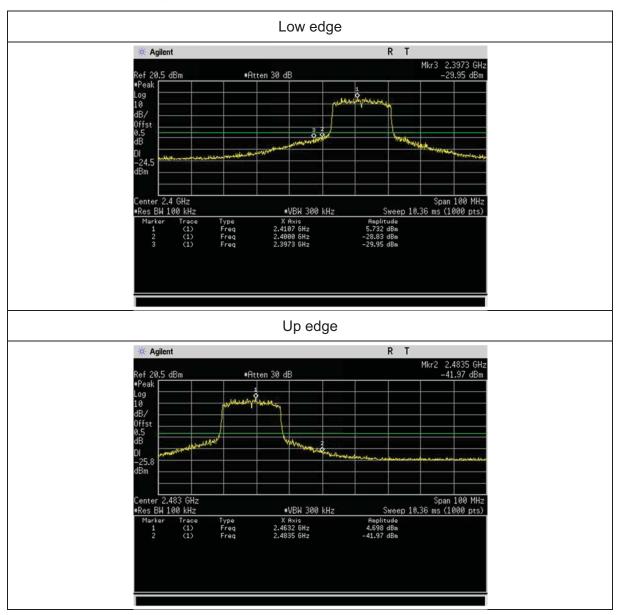
802.11g mode, Band edge





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802.11n20 mode, Band edge





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4.7 Radiated emission

4.7.1. Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20dB. Attenuation below the general limits defined in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits defined in §15.209(a).

Radiated emission limits defined in FCC 15.209:

Frequency (MHz)	Field strength µV/m	Field strength dBµV/m	Detector	Measurement distance
30-88	100	40	QP	
88-216	150	43.5	QP	
216-960	200	46	QP	3m
960-1000	500	46	QP	SIII
Above 1000	500	54	AV	
Above 1000	5000	74	PK	

Restricted bands defined in FCC 15.205:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			



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4.7.2. Test method

- 1. The EUT is placed on a turntable, which is 0.8m above ground plane.
- 2. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
- 3. Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured, RBW = 1 MHz for f ≥ 1GHz, 100 kHz for f < 1 GHz, VBW ≥ RBW, Sweep = auto, Detector function = peak, Trace = max hold

- 4. Follow the guidelines in ANSI C63.4-2014 with respect to maximizing the emission by rotating the EUT, adjusting the measurement antenna height and polarization, etc. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, submit this data. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 5. Set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209.
- 6. The three orthogonal axis (x, y, z) are pre-tested, only the worst emissions were reported.

4.7.3. Test Result

Remark:

If the PK measured values lower than average mode limit, the EUT shall be deemed to meet average limits and then no additional average mode measurement performed.



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802.11b: 241	2MHz					
Frequency	Ant. Polarization	Emission level	Limits	Detector	Result	Comment
(MHz)	H/V	dBμV/m	dBμV/m			
390.72	V	24.9	46	QP		Spurious emission
390.72	Н	31.5	46	QP		Spurious emission
2390	V	49.05	74	PK		Restricted bands
2390	Н	51.24	74	PK		Restricted bands
4824	V	52.43	74	PK	Pass	Restricted bands
4824	Н	56.29	74	PK		Restricted bands
4824	Н	52.86	54	AVG		Restricted bands
7236	V	52.37	74	PK		Spurious emission
7236	Н	53.29	74	PK		Spurious emission
802.11b: 243	7MHz			<u>'</u>		
Frequency	Ant. Polarization	Emission level	Limits	Detector	Result	Comment
(MHz)	H/V	dBμV/m	dBμV/m	1		
390.72	V	25.2	46	QP		Spurious emission
390.72	Н	31.1	46	QP		Spurious emission
4874	V	51.4	74	PK		Restricted bands
4874	Н	55.76	74	PK	Pass	Restricted bands
4874	Н	52.13	54	AVG		Restricted bands
7311	V	51.59	74	PK		Restricted bands
7311	Н	52.27	74	PK		Restricted bands
802.11b: 246	2MHz			•	•	
Frequency	Ant. Polarization	Emission level	Limits	Detector		Comment
(MHz)	H/V	dBμV/m	dBμV/m			
390.72	V	24.7	46	QP		Spurious emission
390.72	Н	32.1	46	QP		Spurious emission
2483.5	V	46.83	74	PK	_	Restricted bands
2483.5	Н	46.24	74	PK	Pass	Restricted bands
4924	V	52.61	74	PK		Restricted bands
4924	Н	54.86	74	PK		Restricted bands
4924	Н	51.79	54	AVG		Restricted bands
7386	V	51.42	74	PK		Restricted bands
7386	Н	50.76	74	PK		Restricted bands



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802.11g: 241	2MHz					
Frequency	Ant. Polarization	Emission level	Limits	Detector	Result	Comment
(MHz)	H/V	dBμV/m	dBµV/m			
390.72	V	25.5	46	QP		Spurious emission
390.72	Н	30.8	46	QP		Spurious emission
2390	V	58.72	74	PK		Restricted bands
2390	V	46.45	54	AVG		Restricted bands
2390	Н	62.32	74	PK	Dana	Restricted bands
2390	Н	48.29	54	AVG	Pass	Restricted bands
4824	V	50.77	74	PK		Restricted bands
4824	Н	50.89	74	PK		Restricted bands
7236	V	52.84	74	PK		Spurious emission
7236	Н	51.3	74	PK		Spurious emission
802.11g: 243	7MHz					
Frequency	Ant. Polarization	Emission level	Limits	Detector	Result	Comment
(MHz)	H/V	dBµV/m	dBμV/m			
390.72	V	24.4	46	QP		Spurious emission
390.72	Н	32.3	46	QP		Spurious emission
4874	V	51.84	74	PK	Doon	Restricted bands
4874	Н	50.24	74	PK	Pass	Restricted bands
7311	V	51.81	74	PK		Restricted bands
7311	Н	50.99	74	PK		Restricted bands
802.11g: 246	2MHz					
Frequency	Ant. Polarization	Emission level	Limits	Detector		Comment
(MHz)	H/V	dBµV/m	dBμV/m			
390.72	V	24.6	46	QP		Spurious emission
390.72	Н	32.2	46	QP		Spurious emission
2483.5	V	58.29	74	PK		Restricted bands
2483.5	V	45.96	54	AVG	Pass	Restricted bands
2483.5	Н	61.45	74	PK		Restricted bands
2483.5	Н	49.21	54	AVG		Restricted bands
4924	V	52.49	74	PK		Restricted bands
4924	Н	51.13	74	PK		Restricted bands
7386	V	52.17	74	PK		Restricted bands
7386	Н	51.76	74	PK		Restricted bands



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802.11n20: 2	412MHz					
Frequency	Ant. Polarization	Emission level	Limits	Detector	Result	Comment
(MHz)	H/V	dBμV/m	dBµV/m	1		
390.72	V	24.9	46	QP		Spurious emission
390.72	Н	31.8	46	QP		Spurious emission
2390	V	64.74	74	PK		Restricted bands
2390	V	46.97	54	AVG		Restricted bands
2390	Н	67.19	74	PK	Dana	Restricted bands
2390	Н	49.25	54	AVG	Pass	Restricted bands
4824	V	51.41	74	PK		Restricted bands
4824	Н	51.53	74	PK		Restricted bands
7236	V	52.01	74	PK		Spurious emission
7236	Н	50.01	74	PK		Spurious emission
802.11n20: 2	437MHz				•	
Frequency	Ant. Polarization	Emission level	Limits	Detector	Result	Comment
(MHz)	H/V	dBμV/m	dBμV/m]		
390.72	V	24.4	46	QP		Spurious emission
390.72	Н	31.1	46	QP		Spurious emission
4874	V	49.55	74	PK	Dana	Restricted bands
4874	Н	52.51	74	PK	Pass	Restricted bands
7311	V	49.5	74	PK		Restricted bands
7311	Н	51.09	74	PK		Restricted bands
802.11n20: 2	462MHz					
Frequency	Ant. Polarization	Emission level	Limits	Detector		Comment
(MHz)	H/V	dBµV/m	dBμV/m			
390.72	V	25.6	46	QP		Spurious emission
390.72	Н	31	46	QP		Spurious emission
2483.5	V	62.83	74	PK		Restricted bands
2483.5	V	47.11	54	AVG	Pass	Restricted bands
2483.5	Н	66.96	74	PK		Restricted bands
2483.5	Н	51.28	54	AVG		Restricted bands
4924	V	51.5	74	PK		Restricted bands
4924	Н	50.66	74	PK		Restricted bands
7386	V	51.25	74	PK		Restricted bands
7386	Н	51.16	74	PK		Restricted bands

----END OF REPORT----