

FCC Part 15C

Measurement And Test Report For

Central Pacific International Technology Limited

B3, YuCan Industrial Park, LanZhu Road, ShenZhen Export Processing Zone, LongGang District, ShenZhen

FCC ID: 2AADNMID9902

April 22, 2013

This Report Concerns: <input checked="" type="checkbox"/> Original Report	Equipment Type: MID
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Test Date:	April 1- April 22, 2013
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior written consent of Shenzhen Microtest Technology Co.,Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Applicant:	Central Pacific International Technology Limited
Address of applicant:	B3, YuCan Industrial Park, LanZhu Road, ShenZhen Export Processing Zone, LongGang District,ShenZhen
Manufacturer:	Central Pacific International Technology Limited
Address of manufacturer:	B3, YuCan Industrial Park, LanZhu Road, ShenZhen Export Processing Zone, LongGang District,ShenZhen
Equipment Under Test:	MID
Trade Name:	N/A
Tested Model No.:	MID9902
Serial Model Name:	MID9902H,MID9602, MID9514, MID9512 ,MID9516, MID9518 ,MID9709.
Radio Technology:	Bluetooth 2.1
Type of Modulation:	GFSK
Frequency Band:	2402 MHz ~ 2480MHz
Number of Channels:	79
Channel Separation:	1MHz
Max. output power:	-6~4 dBm
Type of Antenna:	Integral Antenna, Max Gain 0dBi
Power Supply:	DC 5V Form adapter with 120V/60Hz
Adapter:	Manufacturer: Ten Pao Industrial Co., Ltd Model: S012GM0500210

Remark: * The test data gathered are from the production sample provided by the manufacturer.

1.2 Related Submittal(s) / Grant (s)

This submittal(s) is a test report based on the Electromagnetic Interference (EMI) tests performed on the EUT. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4 - 2003.

The tests were performed in order to determine compliance with FCC Part 15:2010, Subpart C, and section 15.203, 15.207, and 15.249 rules.

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 - 2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz. Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Test Facility

All measurement required was performed at laboratory of NTEK Testing Technology Co., Ltd., at 1/F, Building E, Fenda Science Park Sanwei Community, Xixiang Street, Baoan District , Shenzhen,Guangdong

The test facility is recognized, certified, or accredited by the following organizations:

FCC – Registration No.: 238937

NTEK Testing Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 238937.

2. SYSTEM TEST CONFIGURATION

The tests documented in this report were performed in accordance with ANSI C63.4-2003 and FCC CFR 47 Part 15 Subpart C.

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The calibrated antennas used to sample the radiated field strength are mounted on a non-conductive, motorized antenna mast 3 or 10 meters from the leading edge of the turntable.

2.3 General Test Procedures

Conducted Emissions The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 7.1 of ANSI C63.4-2003. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak detector mode.

Radiated Emissions The EUT is placed on as turntable, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4-2003.

2.4 List of Measuring Equipments Used

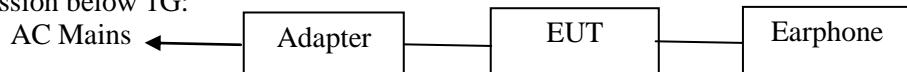
Items	Equipment	Manufacturer	Model No.	Serial No.	Last Cal	Calibration Period
1	EMI Test Receiver	ROHDE & SCHWARZ	ESI 26	100079	2012/11/18	1 year
2	Horn Antenna	TESEQ	BHA 9118	9118698	2012/11/18	1 year
3	Loop Antenna	COM Power	AL-130	UBTL0031	2012/11/18	1 year
4	3m Semi- Anechoic Chamber	ETS	N/A	N/A	2012/11/18	1 year
5	EMI Test Receiver	ROHDE & SCHWARZ	ESCS30	100038	2012/11/18	1 year
6	EMI Test Receiver	ROHDE & SCHWARZ	ESI 26	100009	2012/11/18	1 year
7	Receiver/ Spectrum Analyzer	ROHDE & SCHWARZ	ESCI	100106	2012/11/18	1 year
8	Spectrum Analyzer	Agilent	E7405A	US41160415	2012/11/18	1 year
9	Artificial Mains	ROHDE & SCHWARZ	ESH2-Z5	100028	2012/11/18	1 year
10	Pulse Limiter	ROHDE & SCHWARZ	ESHSZ2	100044	2012/11/18	1 year
11	LISN	COM Power	LI-200	12212	2012/11/18	1 year
12	LISN	COM Power	LI-200	12019	2012/11/18	1 year
13	3m/5m Semi- Anechoic Chamber	ETS	N/A	N/A	2012/11/18	1 year
14	Ultra-Broadband Antenna	R/S	HL562	100015	2012/11/18	1 year
15	Horn Antenna	OCEAN MICROWAVE	OBH2026 5	OC134039	2012/11/18	1 year
16	RF Test Panel	R/S	TS / RSP	335015/ 0017	N/A	N/A
17	Turntable	ETS	2088	2149	N/A	N/A
18	Antenna Mast	ETS	2075	2346	N/A	N/A

2.5 Test conduction

For conducted emission:



For radiated emission below 1G:



For radiated emission above 1G:



2.6 Test Peripheral Information

Items	Equipment	Manufacturer	Model No.
1	Earphone	GENESIS	N/A
2	/	/	/

3. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
15.203/15.249	Antenna Requirement	Pass
15.207	Conduction Emission	Pass
15.249	20dB Bandwidth	Pass
15.249	Radiated Emission	Pass
15.249	Band edge	Pass

Note: The EUT has been tested as an independent unit. And Continual, Transmitting in maximum power (The adapter be used during Test for the conducted test, The PC be use during Test for the below 1G radiated emission test, the battery be used during test for the other test)

4. ANTENNA REQUIREMENT

4.1 Standard Applicable

Section 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.

4.2 Antenna Connected Construction

This product has a integral antenna, The maximum Gain of the antenna is 0dBi. fulfill the requirement of this section.

5. CONDUCTED DISTURBANCES

5.1. Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is +2.4 dB.

5.2. Limit of Conducted Disturbances (Class B)

Frequency Range (MHz)	Limits (dBuV)	
	Quasi-Peak	Average
0.150~0.500	66~56	56~46
0.500~5.000	56	46
5.000~30.00	60	50

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

5.3. EUT Setup

The setup of EUT is according with CISPR 16-1: 2002, CISPR16-2: 2002 measurement procedure.

The EUT was placed center and the back edge of the test table.

The cables were draped along the test table and bundled to 30-40cm in the middle.

The spacing between the peripherals was 10 cm.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

5.4. Instrument Setup

The test receiver was set with the following configurations:

Test Receiver Setting:

Frequency Range.....150 KHz to 30 MHz

Detector.....Peak & Quasi-Peak & Average

Sweep Speed.....Auto

IF Band Width.....9 KHz

5.5. Test Procedure

During the conducted emission test, the EUT power cord was connected to the auxiliary outlet of the first Artificial Mains.

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination.

All data was recorded in the peak detection mode. Quasi-peak and Average readings were only performed when an emission was found to be marginal (within -10 dB μ V of specification limits). Quasi-peak readings are distinguished with a "QP". Average readings are distinguished with a "AV".

5.6. Summary of Test Results

According to the data in section 3.6, the worst margin reading of:

EUT Configuration on Test

MID	
Model Number	: MID9902
Serial Number	: N/A
Applicant	: Central Pacific International Technology Limited

5.7. Test Result

Pass.

Detailed information please refers to the following page.

Plot of Conducted Emissions Test Data

Conducted Disturbance

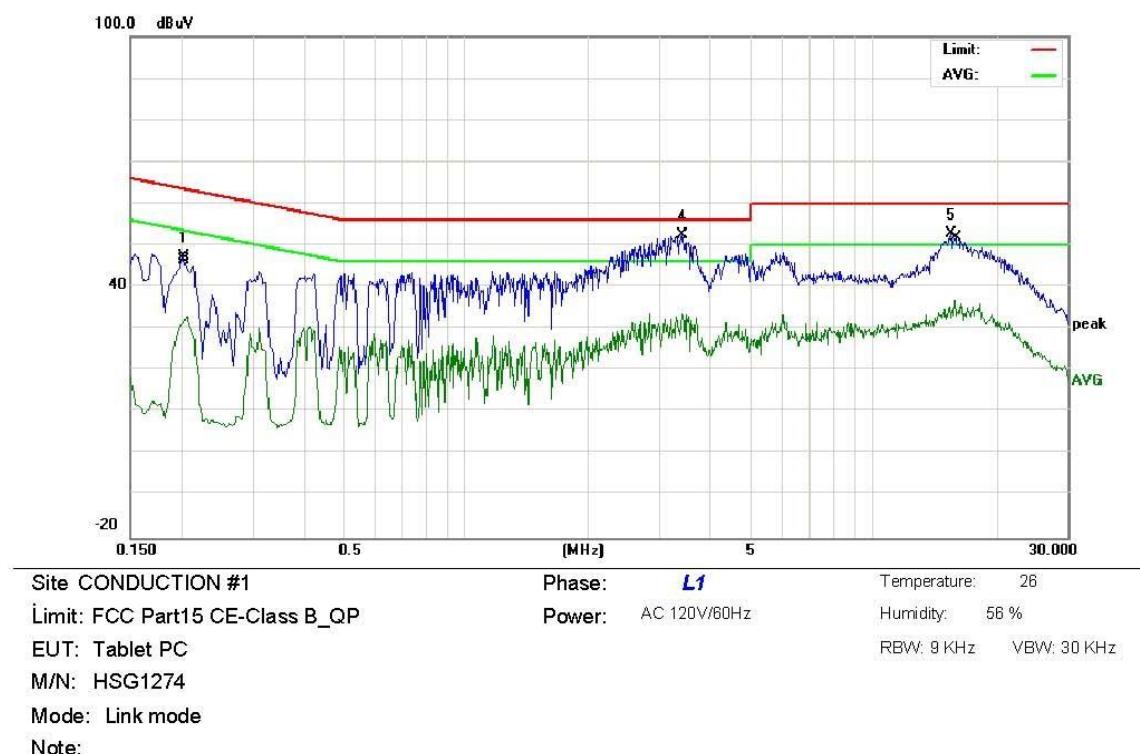
EUT: MID

M/N: MID9902

Operating Condition: Link mode

Test Specification: L

Comment: AC 120V/60Hz connect to Adapter



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dB			
1		0.2020	37.55	9.77	47.32	63.52	-16.20	peak	
2		0.2060	23.23	9.78	33.01	53.36	-20.35	AVG	
3		3.3980	23.25	10.31	33.56	46.00	-12.44	AVG	
4	*	3.4140	42.03	10.31	52.34	56.00	-3.66	peak	
5		15.5420	42.14	10.54	52.68	60.00	-7.32	peak	
6		15.8500	26.26	10.54	36.80	50.00	-13.20	AVG	

*:Maximum data x:Over limit l:over margin

Plot of Conducted Emissions Test Data

Conducted Disturbance

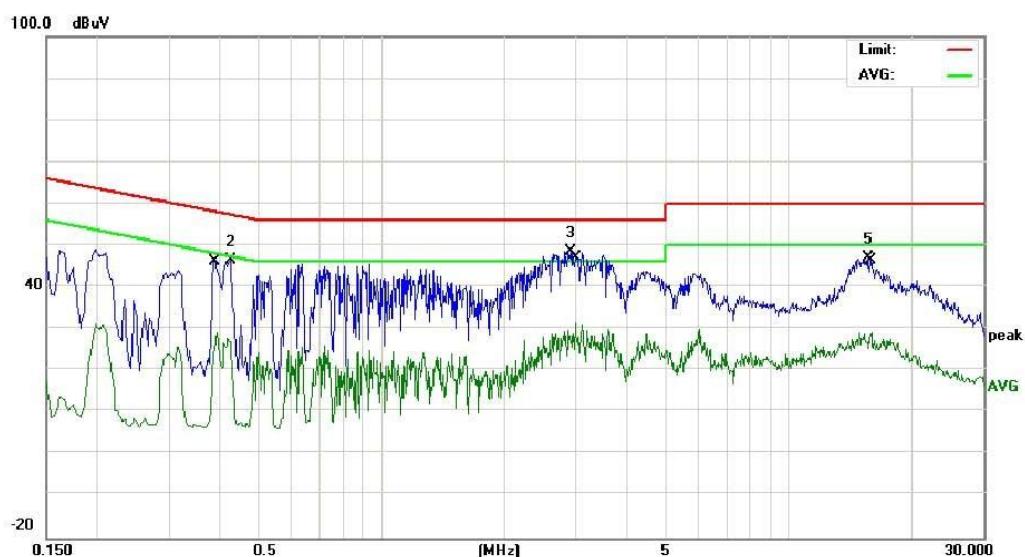
EUT: MID

M/N: MID9902

Operating Condition: Link mode

Test Specification: N

Comment: AC 120V/60Hz connect to Adapter



Site CONDUCTION #1

Phase: **N**

Temperature: 26

Limit: FCC Part15 CE-Class B_QP

Power: AC 120V/60Hz

Humidity: 56 %

EUT: Tablet PC

RBW: 9 KHz VBW: 30 KHz

M/N: HSG1274

Mode: Link mode

Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Detector	Comment
			Level	Factor	ment				
1		0.3940	18.91	10.20	29.11	47.98	-18.87	AVG	
2		0.4260	36.32	10.20	46.52	57.33	-10.81	peak	
3	*	2.9060	38.19	10.28	48.47	56.00	-7.53	peak	
4		2.9900	21.10	10.29	31.39	46.00	-14.61	AVG	
5		15.5620	36.58	10.54	47.12	60.00	-12.88	peak	
6		15.9580	18.48	10.57	29.05	50.00	-20.95	AVG	

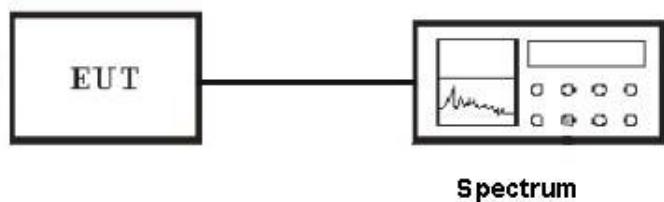
*:Maximum data x:Over limit !:over margin

6. 20-dB BANDWIDTH

6.1 Limits of 20-dB Bandwidth Measurement

Please refer section 15.249

6.2 EUT Setup



6.3 Test Equipment List and Details

See section 2.4.

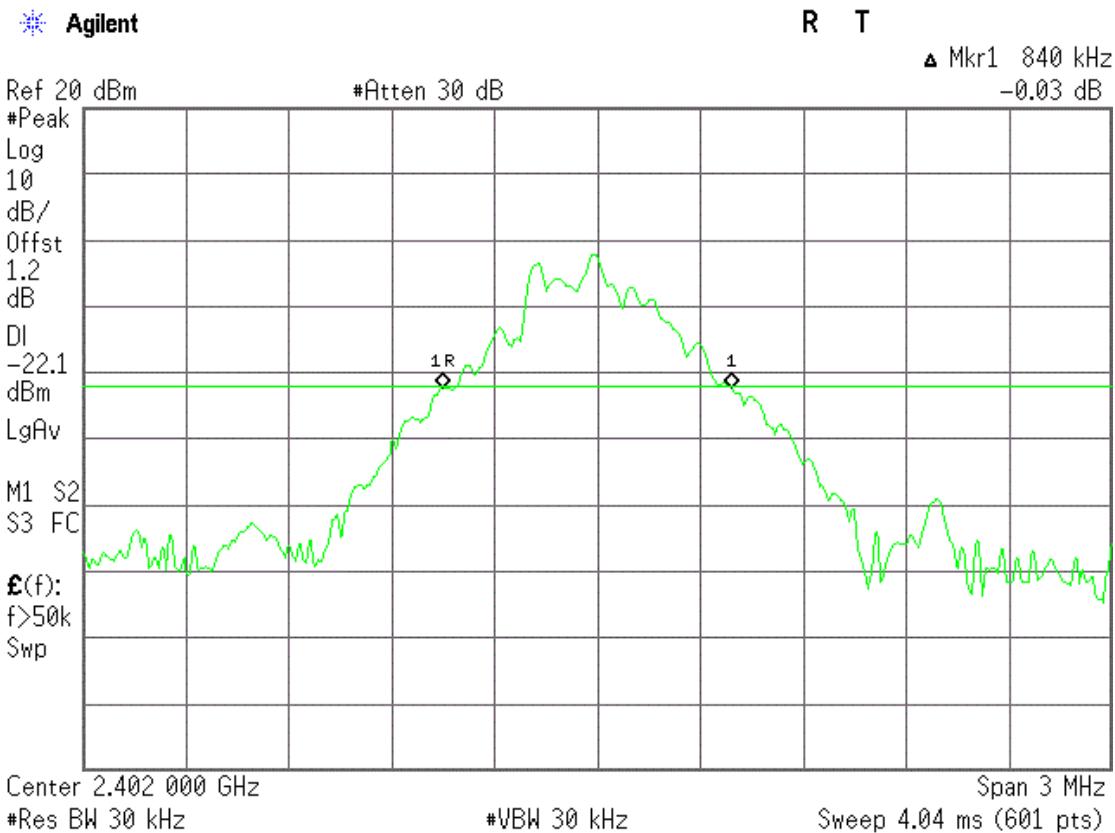
6.4 Test Procedure

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set center frequency of spectrum analyzer = operating frequency.
3. The spectrum analyzer as RBW=30 kHz (1 % of Bandwidth.), Sweep=auto
4. Mark the peak frequency and –20dB (upper and lower) frequency.

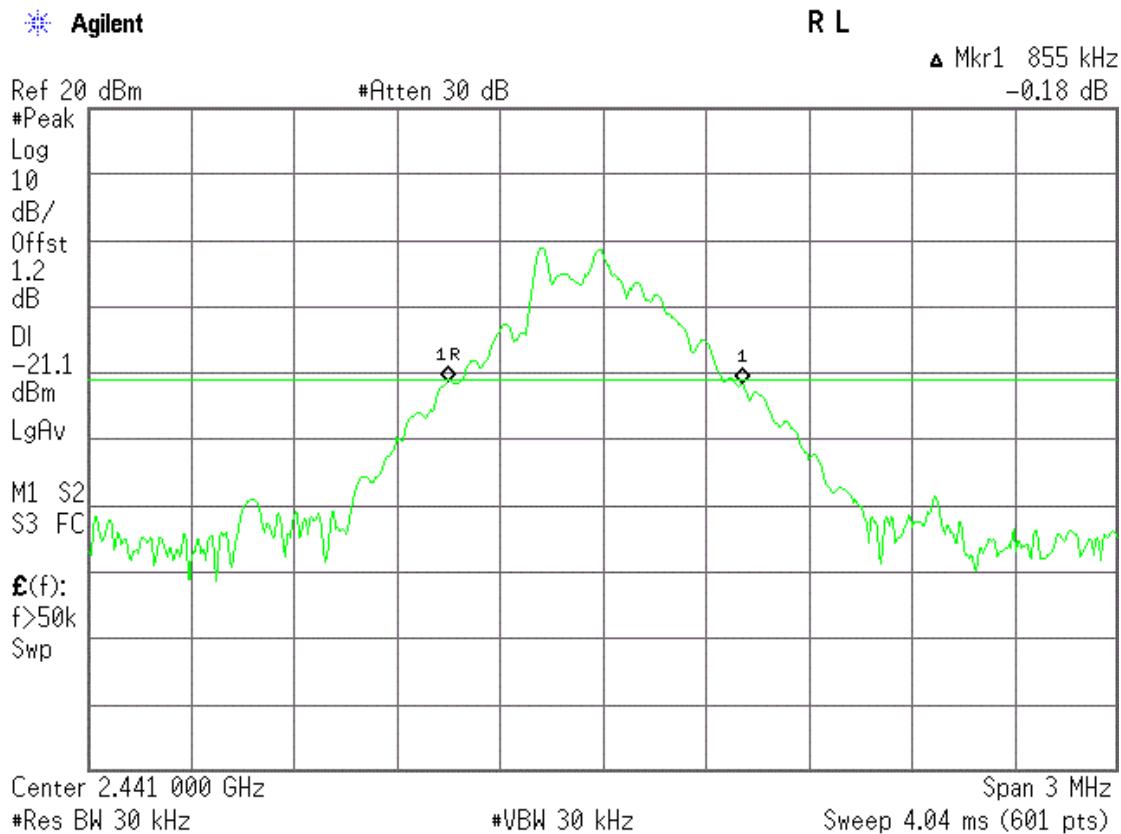
6.5 Test Result /Plots

Frequency MHz	20 dB Bandwidth kHz	Limit dB
2402	0.840	/
2441	0.855	/
2480	0.845	/

CH Low:

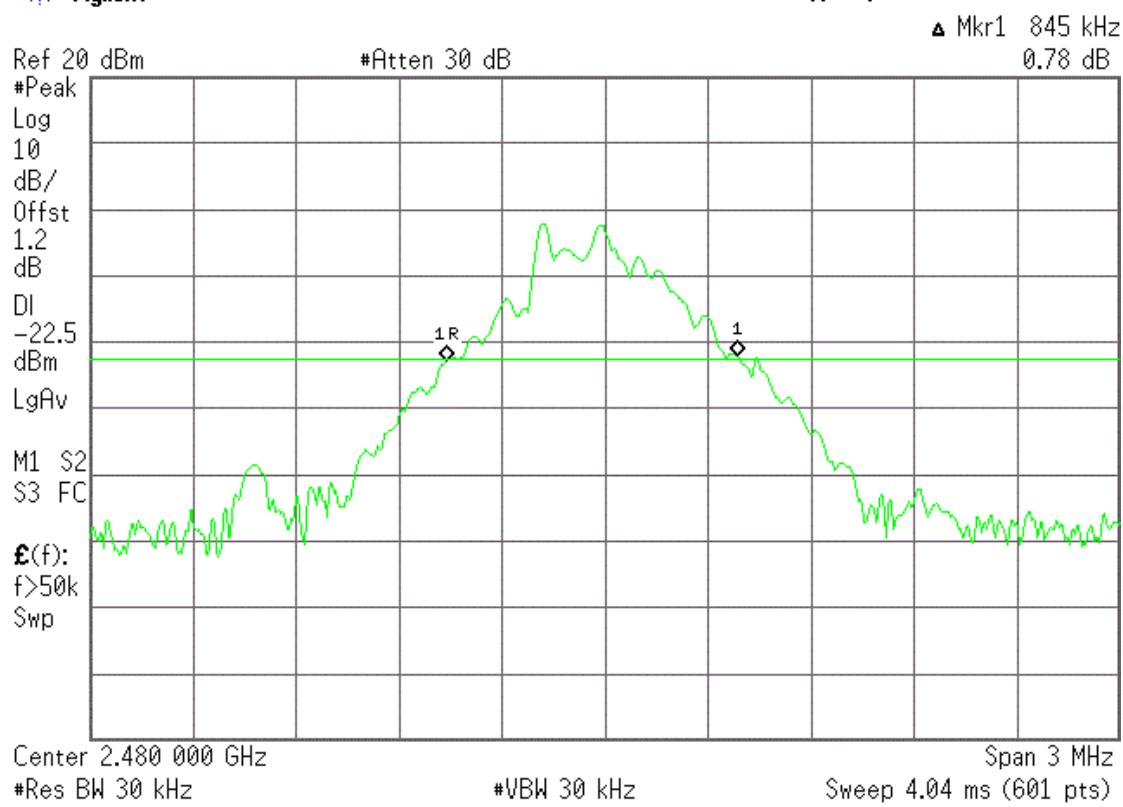


CH Mid:



CH High:

Agilent



7. FIELD STRENGTH OF SPURIOUS EMISSIONS

7.1 Limits of Radiated Emission Measurement

According to §15.249, 15.205 15.209(b) &15.35 (b), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Frequency (MHz)	Field Strength Limits at 3 metres (watts,e.i.r.p.)		
	uV/m	dB uV/m	Measurement distance(m)
0.009-0.490	2400/F(kHz)	XX	300
0.490-1.705	24000/F(kHz)	XX	30
1.705-30	30	29.5	30
30~88	100(3nW)	40	3
88~216	150(6.8nW)	43.5	3
216~960	200(12nW)	46	3
Above960	500(75nW)	54	3
Carrier frequency		93.97(AV)	3
Carrier frequency		113.97(PK)	3

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply.

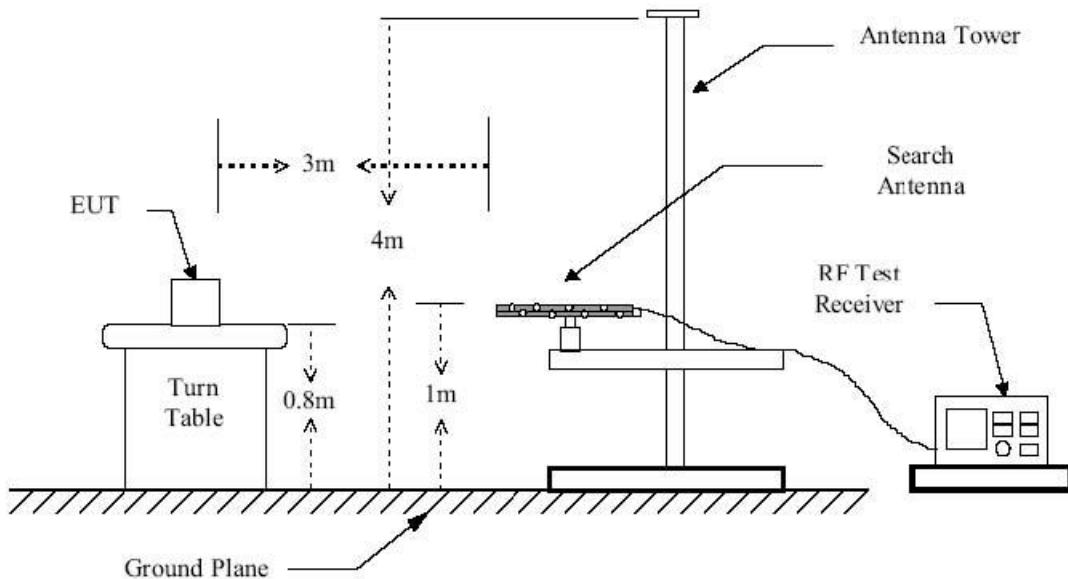
Emissions Radiated Outside Of The Specified Frequency Bands, Except For Harmonics, Shall Be Attenuated By At Least 20 Db Below The Level Of The Fundamental Or To The General Radiated Emission Limits In 15.209, Whichever Is The Lesser Attenuation.

Emissions that fall in the restricted bands (15.205) must be less than 54dBuV/m otherwise the spurious and harmonics must be attenuated by at least 20dB.

Note: 30m to 3m correction factor calculation:
 $40 \cdot \log(30m/3m) = 40$

7.2 EUT Setup

Radiated Measurement Setup



7.3 Test Equipment List and Details

See section 2.4.

7.4 Test Procedure

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using the quasi-peak method or average method as specified and then reported in Data sheet peak mode and QP mode.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.

7.5 Test Result

According to the data below, the FCC Part 15.205, 15.209 and 15.249 standards, and had the worst margin of:

-3.51 dB μ V at 83.35MHz in the Horizontal polarization, with 9KHz to 25 GHz, 3Meters

Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.

From 9KHz to 30MHz: Conclusion: PASS

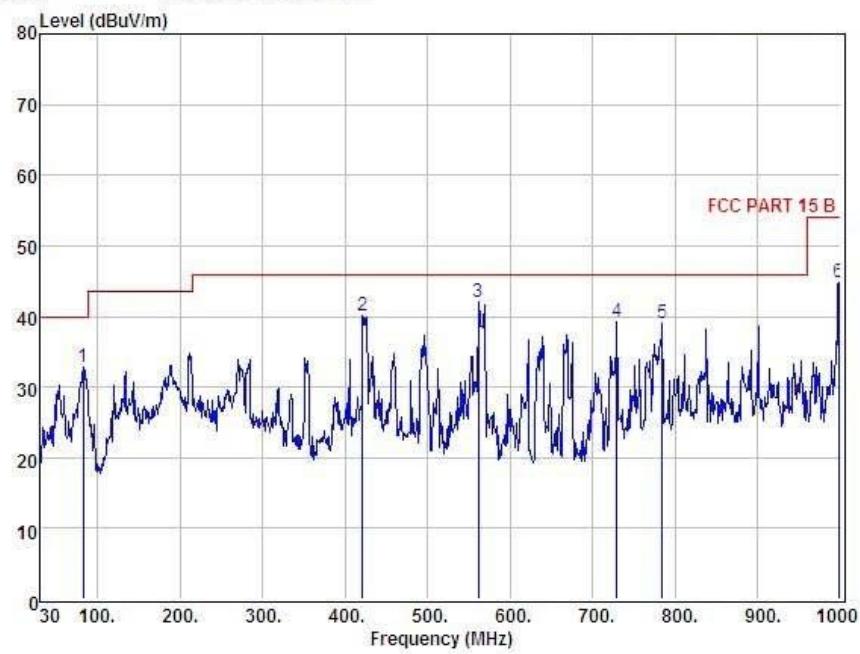
Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

The following test mode for the worst mode.

From 30 MHz to 1 GHz

Test Mode: Normal

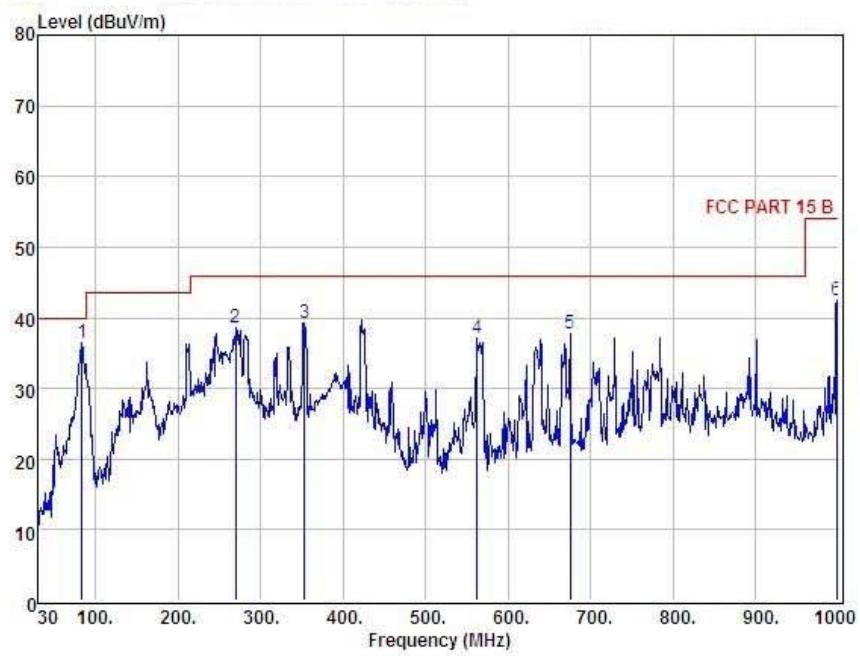
Vertical



Condition : FCC PART 15 B 3m POL: VERTICAL

Item	Freq	Read Level	Antenna Factor	Preamp Factor	Cable Lose	Level	Limit	Margin	Remark
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	82.38	49.43	9.35	26.80	0.77	32.75	40.00	-7.25	QP
2	420.91	49.68	15.23	27.45	2.58	40.04	46.00	-5.96	QP
3	561.56	48.96	17.60	27.73	3.12	41.95	46.00	-4.05	QP
4	729.37	43.44	20.02	27.71	3.46	39.21	46.00	-6.79	QP
5	783.69	42.49	20.60	27.66	3.57	39.00	46.00	-7.00	QP
6	998.06	46.23	22.23	27.57	4.00	44.89	54.00	-9.11	QP

Horizontal



Condition : FCC PART 15 B 3m POL: HORIZONTAL									
Item	Freq MHz	Read Level dBuV	Antenna Factor dB	Preamp Factor dB	Cable Loss dB	Level dBuV	Limit dBuV	Margin dBuV	Remark
1	83.35	53.16	9.35	26.80	0.78	36.49	40.00	-3.51	QP
2	269.59	51.99	12.09	27.14	1.77	38.71	46.00	-7.29	QP
3	353.01	50.46	13.87	27.28	2.21	39.26	46.00	-6.74	QP
4	562.53	44.09	17.60	27.73	3.12	37.08	46.00	-8.92	QP
5	675.05	42.80	19.40	27.77	3.35	37.78	46.00	-8.22	QP
6	998.06	43.70	22.23	27.57	4.00	42.36	54.00	-11.64	QP

Spurious emission above 1G :

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (1G to 25GHz)										
4804.0	AV	36.23	48	H	34.1	5.2	33.0	42.53	54	-11.47
4804.0	AV	35.77	29	V	34.1	5.2	33.0	42.07	54	-11.93
7206.0	AV	32.44	236	H	37.4	6.1	33.5	42.44	54	-11.56
7206.0	AV	32.19	158	V	37.4	6.1	33.5	42.19	54	-11.81
2402.0	AV	86.58	104	H	29.1	3.7	34.0	85.38	93.97	-8.59
2402.0	AV	87.33	217	V	29.1	3.7	34.0	86.13	93.97	-7.84
4804.0	PK	48.12	69	H	34.1	5.2	33.0	54.42	74	-19.58
4804.0	PK	48.87	43	V	34.1	5.2	33.0	55.17	74	-18.83
7206.0	PK	44.54	218	H	37.4	6.1	33.5	54.54	74	-19.46
7206.0	PK	45.75	124	V	37.4	6.1	33.5	55.75	74	-18.25
2402.0	PK	95.82	121	H	29.1	3.7	34.0	94.62	113.97	-19.35
2402.0	PK	95.63	286	V	29.1	3.7	34.0	94.43	113.97	-19.54
Middle Channel (1G to 25GHz)										
4882.0	AV	38.23	135	H	34.1	5.2	33.0	44.53	54	-9.47
4882.0	AV	37.17	128	V	34.1	5.2	33.0	43.47	54	-10.53
7323.0	AV	33.14	214	H	37.4	6.1	33.5	43.14	54	-10.86
7323.0	AV	32.58	86	V	37.4	6.1	33.5	42.58	54	-11.42
2441.0	AV	86.03	73	H	29.1	3.7	34.0	84.83	93.97	-9.14
2441.0	AV	86.4	69	V	29.1	3.7	34.0	85.22	93.97	-8.75
4882.0	PK	49.43	47	H	34.1	5.2	33.0	55.73	74	-18.27
4882.0	PK	48.62	147	V	34.1	5.2	33.0	54.92	74	-19.08
7323.0	PK	45.46	252	H	37.4	6.1	33.5	55.46	74	-18.54
7323.0	PK	44.38	135	V	37.4	6.1	33.5	54.38	74	-19.62
2441.0	PK	94.62	49	H	29.1	3.7	34.0	93.42	113.97	-20.55
2441.0	PK	95.76	63	V	29.1	3.7	34.0	94.56	113.97	-19.41

High Channel (1G to 25GHz)										
4960.0	AV	37.28	28	H	34.1	5.2	33.0	43.58	54	-10.42
4960.0	AV	36.57	84	V	34.1	5.2	33.0	42.87	54	-11.13
7440.0	AV	32.15	252	H	37.4	6.1	33.5	42.15	54	-11.85
7440.0	AV	33.24	136	V	37.4	6.1	33.5	43.24	54	-10.76
2480.0	AV	88.22	174	H	29.1	3.7	34.0	87.02	93.97	-6.95
2480.0	AV	87.64	87	V	29.1	3.7	34.0	86.44	93.97	-7.53
4960.0	PK	50.41	346	H	34.1	5.2	33.0	56.71	74	-17.29
4960.0	PK	47.9	129	V	34.1	5.2	33.0	54.16	74	-19.84
7440.0	PK	44.44	252	H	37.4	6.1	33.5	54.44	74	-19.56
7440.0	PK	45.73	85	V	37.4	6.1	33.5	55.73	74	-18.27
2480.0	PK	97.43	107	H	29.1	3.7	34.0	96.23	113.97	-17.74
2480.0	PK	95.74	164	V	29.1	3.7	34.0	94.54	113.97	-19.43

Note: Testing is carried out with frequency rang 30MHz to the tenth harmonics, which above 4th Harmonics is close to the noise base even antenna close up to 1meter distance according the measurement of ANSI C63.4.

8. Band Edges Measurement

8.1 Limits of Band Edges Measurement

Please refer section 15.249 and section 15.205.

249(d) 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.

249(e) As shown in section 15.35(b), for frequencies above 1000MHz, the above field strength limits in paragraphs (a) and (b) of this section 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 under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3meters along the antenna azimuth.

8.2 Test Equipment List and Details

See section 2.4.

8.3 Test Procedure

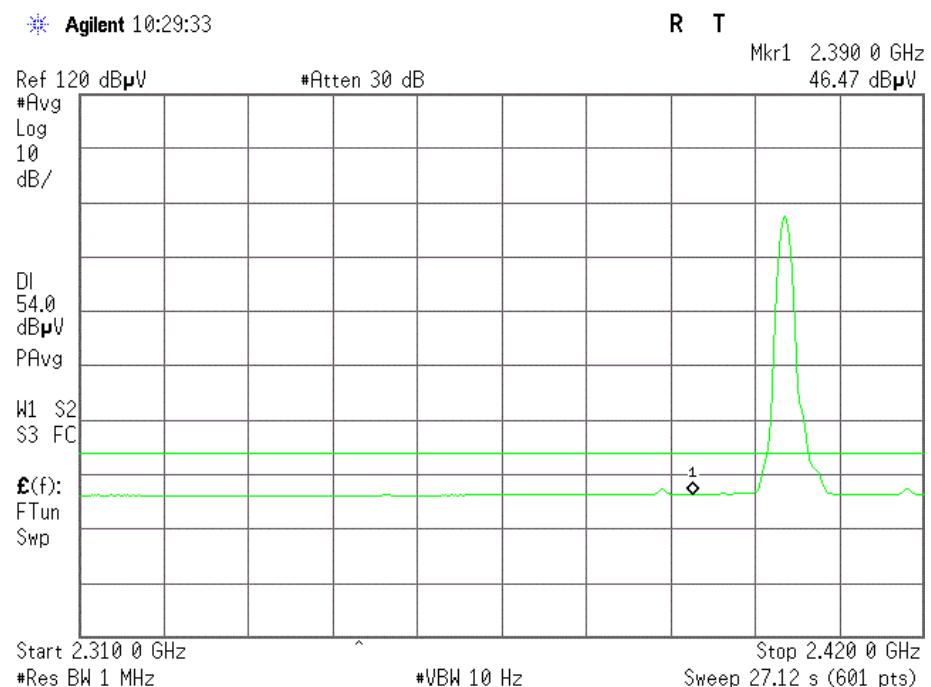
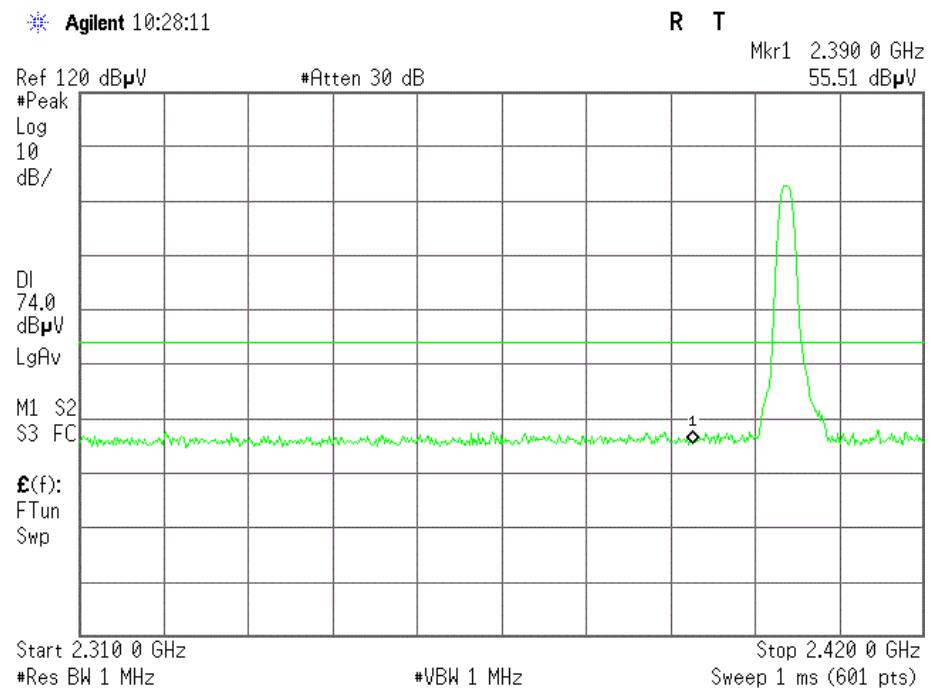
Set both RBW and VBW of spectrum analyzer to 100 kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges were measured and recorded. The spectrum plots (Peak RBW=VBW=100 kHz; Average RBW=1 MHz, VBW=10 Hz) are attached on the following pages.

8.4 Test Result

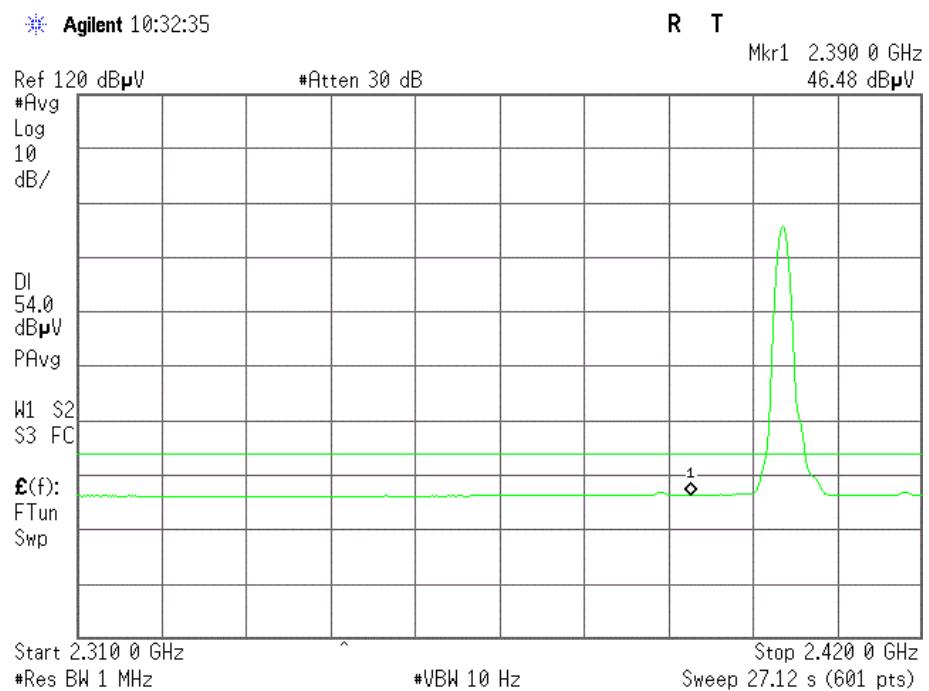
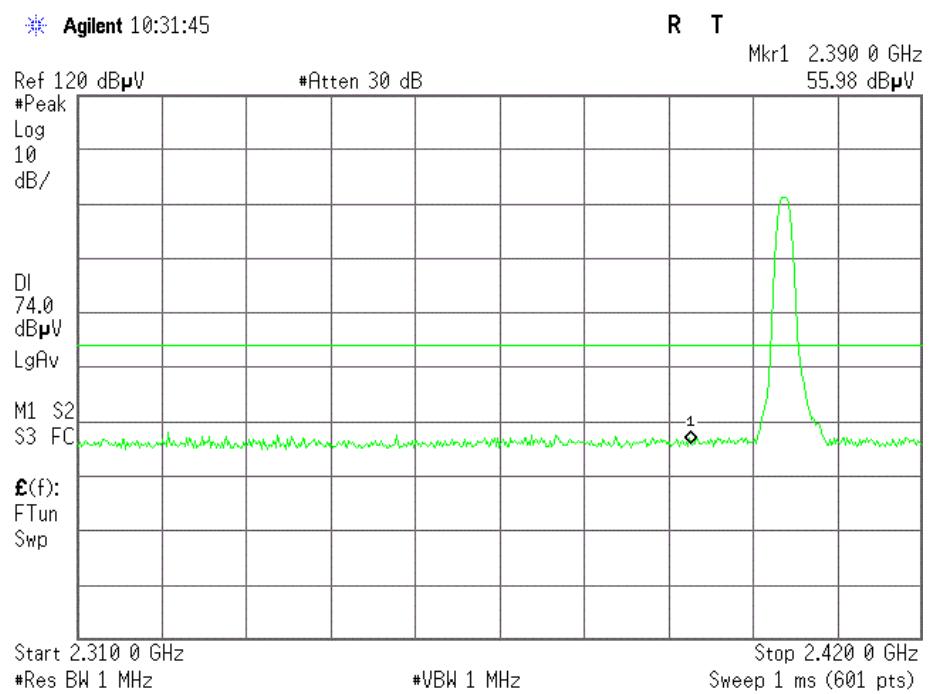
PASS.

Detailed information test plot, Please refer to the following pages.

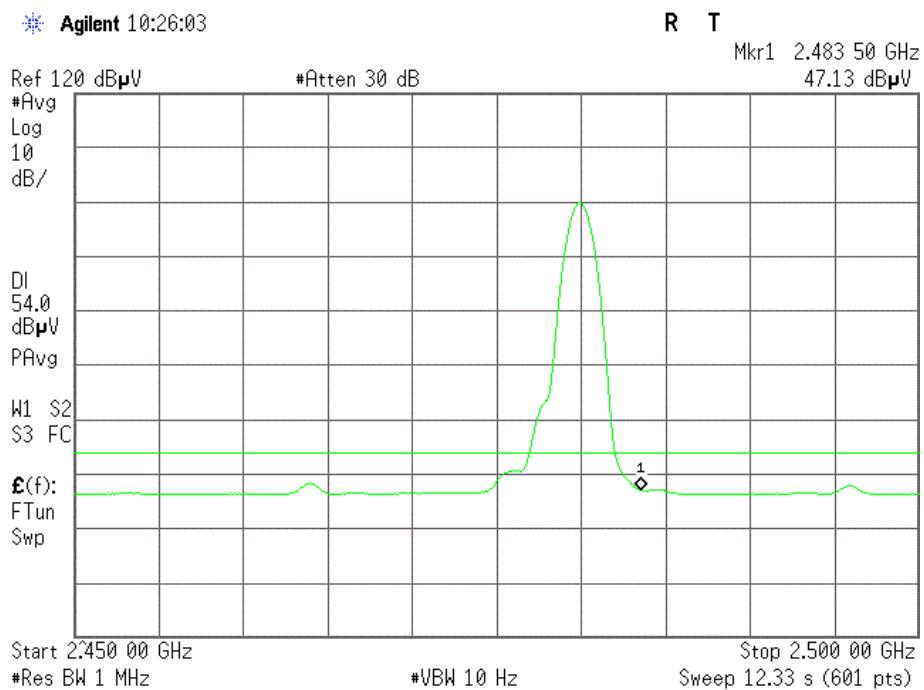
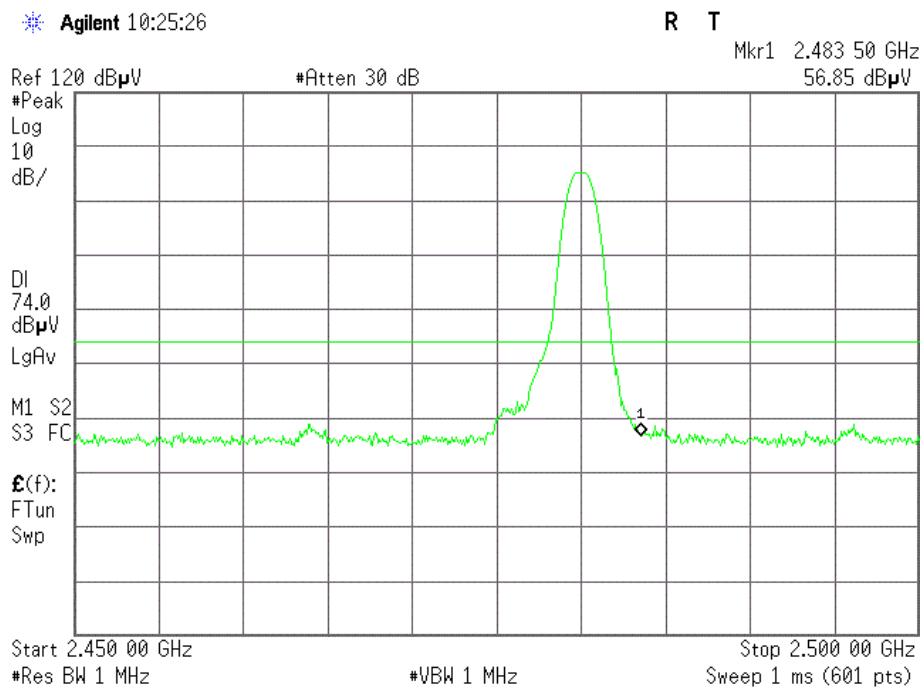
Lowest Bandedge-Horizontal



Lowest Bandedge- Vertical



High Bandedge-Horizontal



High Bandedge-Vertical

