

**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 15 SUBPART C REQUIREMENT**

OF

Shenzhou Spaceship2012 Wireless remote handset

MODEL No.: JLDK.21.01

FCC ID: PCU-JLDK-21-01

REPORT NO: KAN130802005F

ISSUE DATE: September 10, 2013

Prepared for

OKIN REFINED ELECTRIC TECHNOLOGY CO., LTD.

**Plant 4, No.410, Xinyonglian Road, Wangjiangjing Development Zone,
Jiaxing Zhejiang China**

Prepared by

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VERIFICATION OF COMPLIANCE

Applicant:	OKIN REFINED ELECTRIC TECHNOLOGY CO., LTD. Plant 4, No.410, Xinyonglian Road, Wangjiangjing Development Zone, Jiaxing Zhejiang China
Manufacturer:	OKIN REFINED ELECTRIC TECHNOLOGY CO., LTD. Plant 4, No.410, Xinyonglian Road, Wangjiangjing Development Zone, Jiaxing Zhejiang China
Product Description:	Shenzhou Spaceship2012 Wireless remote handset
Model Number:	JLDK.21.01
File Number:	KAN130802005F
Date of Test:	August 2, 2013 to September 8, 2013

We hereby certify that:

The above equipment was tested by NINGBO EMTEK CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2009) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.247.

The test results of this report relate only to the tested sample identified in this report.

Approved By



Andy.wang/Manager
NINGBO EMTEK CO., LTD.

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1. General Information

1.1 Product Description

The EUT is a short range, lower power equipment. Details of technical specification, refers to the description as follows:

- A). Operation Frequency: 2425MHz, 2450MHz, 2475MHz
- B). Modulation: O-QPSK
- C). Max Data Rate: 250kbps
- D). Conducted Power: 3.67dBm
- E). Antenna Gain: 5.44dBi (Max)
- F). Antenna Type: PCB Antenna
- G). Power Supply: DC4.5V

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: PCU-JLDK-21-01 filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

1.3 Test Methodology

Both conducted and radiated tests were performed according to the procedures in ANSI C63.4 (2009). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Special Accessories

Not available for this EUT intended for grant.

1.5 Equipment Modifications

Not available for this EUT intended for grant.

1.6 Test Facility

Site Description

EMC Lab. : Accredited by FCC, June 14, 2011
The Certificate Registration Number is 463622.

Accredited by Industry Canada, May 2, 2011
The Certificate Registration Number is 46405-9469.

Name of Firm : NINGBO EMTEK CO., LTD.

Site Location : 1F Building 4, 1177#, Lingyun Road, Ningbo National Hi-Tech Zone,
Ningbo, Zhejiang, China

9kHz~26GHz Radiated emission item Subcontracted in Shenzhen Emtek:

EMC Lab. : The Certificate Registration Number is 709623.

Name of Firm : SHENZHEN EMTEK CO., LTD.

Site Location : Bldg 69, Majialong Industry Zone, Nanshan District, Shenzhen,
Guangdong, China

2. System Test Configuration

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 which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements

2.3 Test Procedure

2.3.1 Conducted Emissions (Not apply in the report)

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 13.3 of ANSI C63.4-2009. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table 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 emission, the relative positions of Shenzhou Spaceship2012 Wireless remote handset (EUT) was rotated through three orthogonal axes according to the requirements in Section 13.4 of ANSI C63.4-2009.

2.4 Configuration of Tested System

EUT

2.5 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
1.	Shenzhou Spaceship2012 Wireless remote handset	N/A	JLDK.21.01	PCU-JLDK-21-1	N/A	EUT

Note:

- (1) Unless otherwise denoted as EUT in 『Remark』 column , device(s) used in tested system is a support equipment.

3. Description of Test Modes

The EUT is a short range, lower power equipment. This is Digital Transmission System (DTS) and has one type of modulation O-QPSK. The data rates are 250kbps.

1. Mode 1: 2425MHz
2. Mode 2: 2450MHz
3. Mode 3: 2475MHz

4. Summary of the Test Results

FCC Rules	Description Of Test	Result
§15.247(a)(2)	6dB bandwidth	Compliant
§15.247(b)(3)	Max Peak output Power test	Compliant
§15.247(e)	Power density	Compliant
§15.247(d)	Band edge test	Compliant
§15.207	AC Power Conducted Emission	N/A
§15.247(d), §15.209	Radiated Emission	Compliant
§15.247(d)	Antenna Port Emission	Compliant
§15.247(b)&§15.203	Antenna Application	Compliant

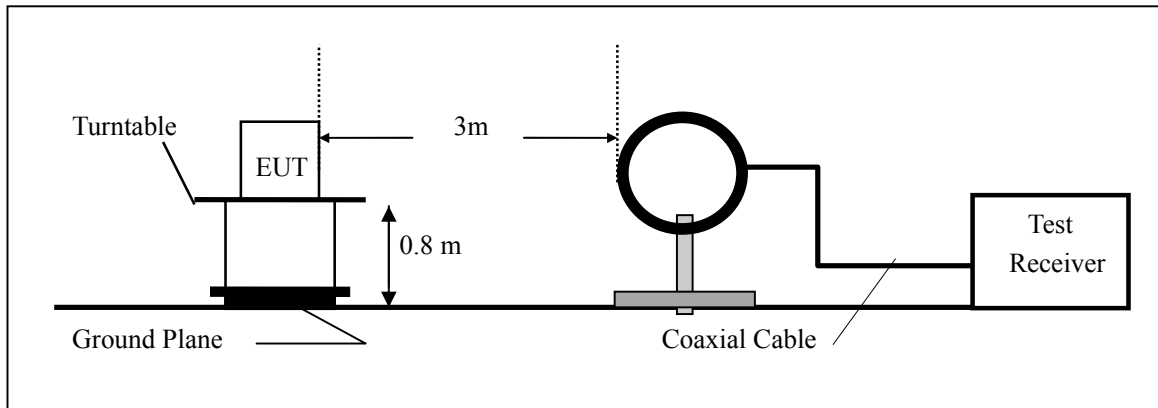
5. Radiated Emission Test

5.1 Measurement Procedure

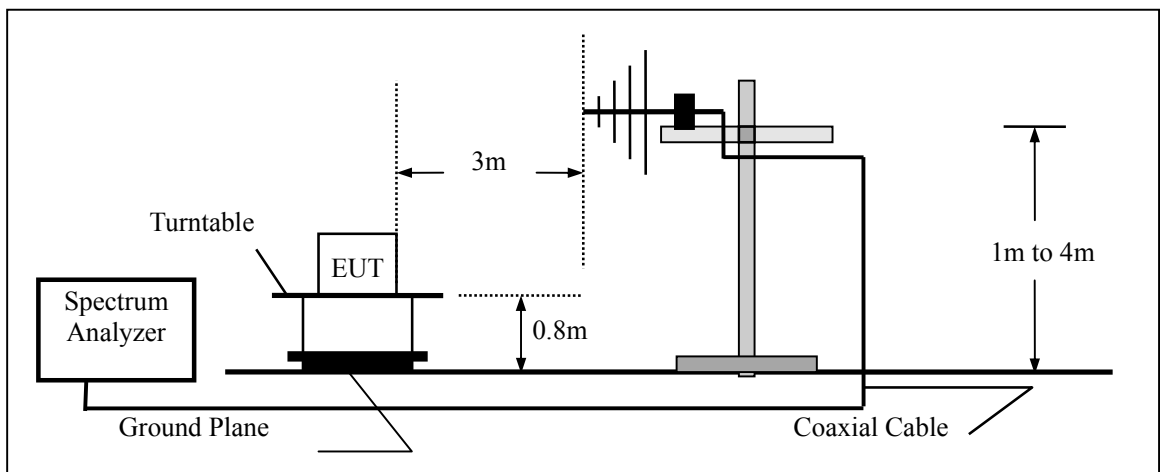
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

5.2 Test SET-UP (Block Diagram of Configuration)

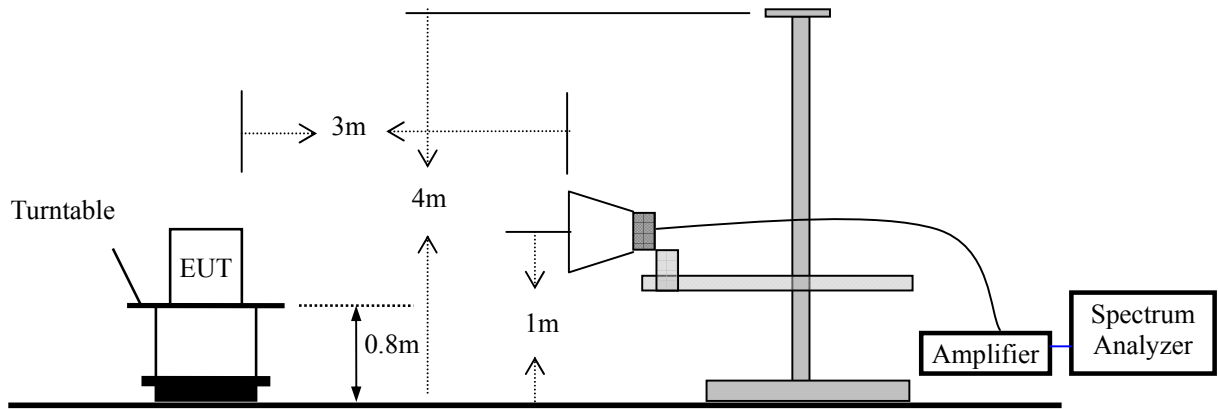
(A) Radiated Emission Test Set-Up, Frequency below 30MHz



(B) Radiated Emission Test Set-Up, Frequency below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



5.3 Measurement Equipment Used:

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	05/29/2013	1 Year
2.	Pre-Amplifier	HP	8447D	2944A07999	05/29/2013	1 Year
3.	Pre-Amplifier	A.H.	PAM-0126	1415261	05/29/2013	1 Year
4.	Bilog Antenna	Schwarzbeck	VULB9163	142	05/29/2013	1 Year
5.	Loop Antenna	Schwarzbeck	FMZB 1519	1519-012	05/29/2013	1 Year
6.	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170399	05/29/2013	1 Year
7.	Horn Antenna	Schwarzbeck	BBHA 9120	D143	05/29/2013	1 Year
8.	Cable	Schwarzbeck	AK9513	ACRX1	05/29/2013	1 Year
9.	Cable	Rosenberger	N/A	FP2RX2	05/29/2013	1 Year
10.	Cable	Schwarzbeck	AK9513	CRPX1	05/29/2013	1 Year
11.	Cable	Schwarzbeck	AK9513	CRRX2	05/29/2013	1 Year

5.4 Radiated Emission Limit

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table 15.209(a):

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

FCC 15.205 Restricted operation bands:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 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	(²)

Remark:

1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of § 15.205, and the emissions located in restricted bands also comply with 15.209 limit.

5.5 Measurement Result

a. 9KHz~30MHz

Operation Mode: Mode 1, 2, 3 Test Date : 08/31/2013
Frequency Range: 9kHz~30MHz Temperature : 23 °C
Test Result: PASS Humidity : 56 %
Measured Distance: 3m Test By: Rujianbo

Freq. (MHz)	Ant. Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)
--	--	--	--	--

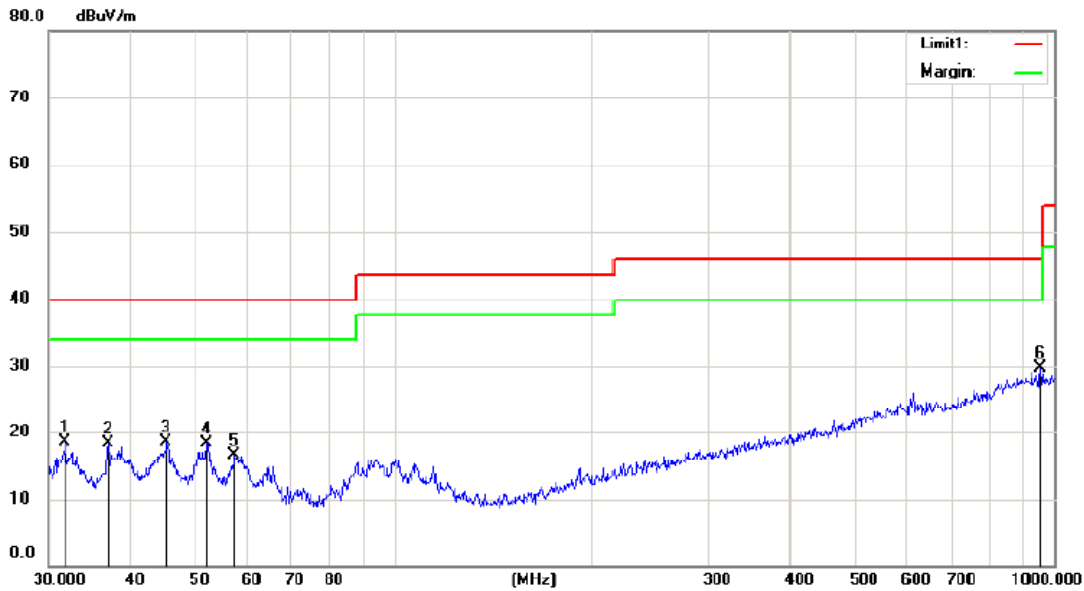
Note:

- 1.the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.
- 2.Distance extrapolation factor = $40\log(\text{Specific distance}/ \text{test distance})$ (dB);
- 3.Limit line=Specific limits(dBuV) + distance extrapolation factor.

b. 30MHz~1000MHz:

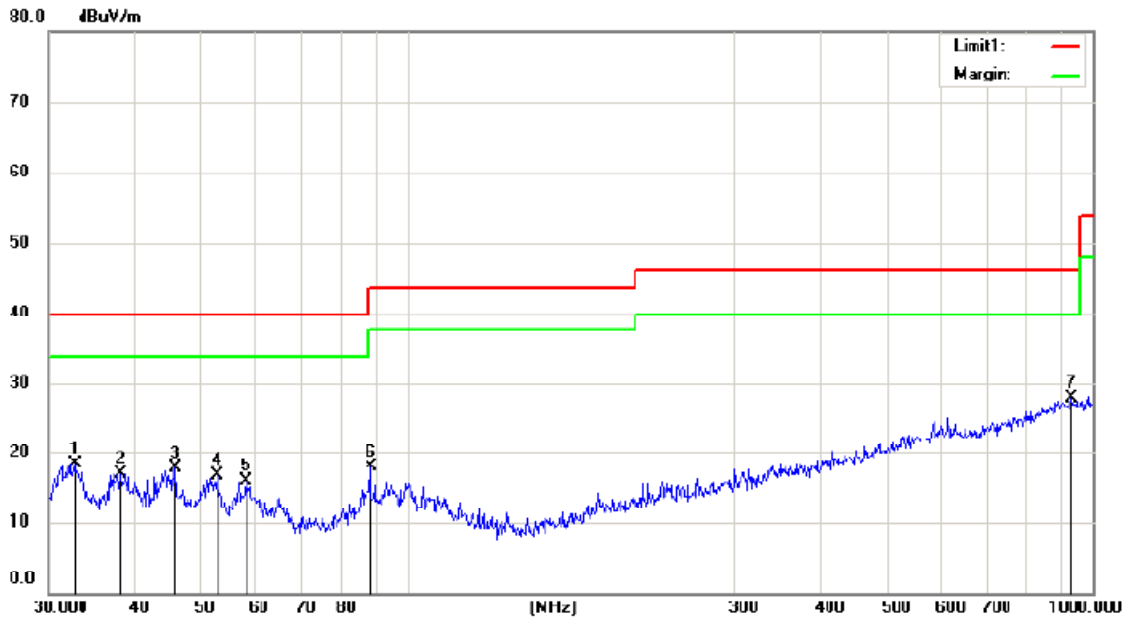
Please refer to the following data.

Mode 1



Site site #1 Polarization: *Horizontal* Temperature: 20 C
 Limit: FCC Part15 Class B 3M Radiation Power: DC 4.5V Humidity: 55 %
 Mode: TX, 2425MHz
 Note:

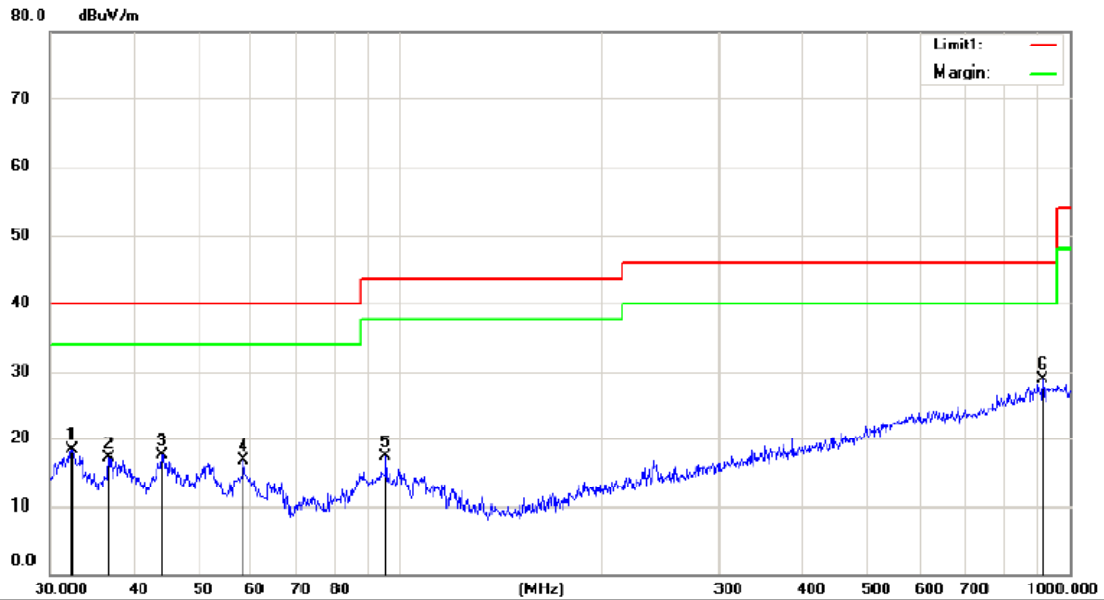
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1		31.8427	40.19	-21.64	18.55	40.00	-21.45	QP			
2		36.8953	39.64	-21.33	18.31	40.00	-21.69	QP			
3		45.2166	39.23	-20.77	18.46	40.00	-21.54	QP			
4		52.0251	39.55	-21.17	18.38	40.00	-21.62	QP			
5		57.3923	37.92	-21.35	16.57	40.00	-23.43	QP			
6	*	952.0937	34.95	-5.25	29.70	46.00	-16.30	QP			



Site site #1 Polarization: *Vertical* Temperature: 20 C
 Limit: FCC Part15 Class B 3M Radiation Power: DC 4.5V Humidity: 55 %
 Mode: TX, 2425MHz
 Note:

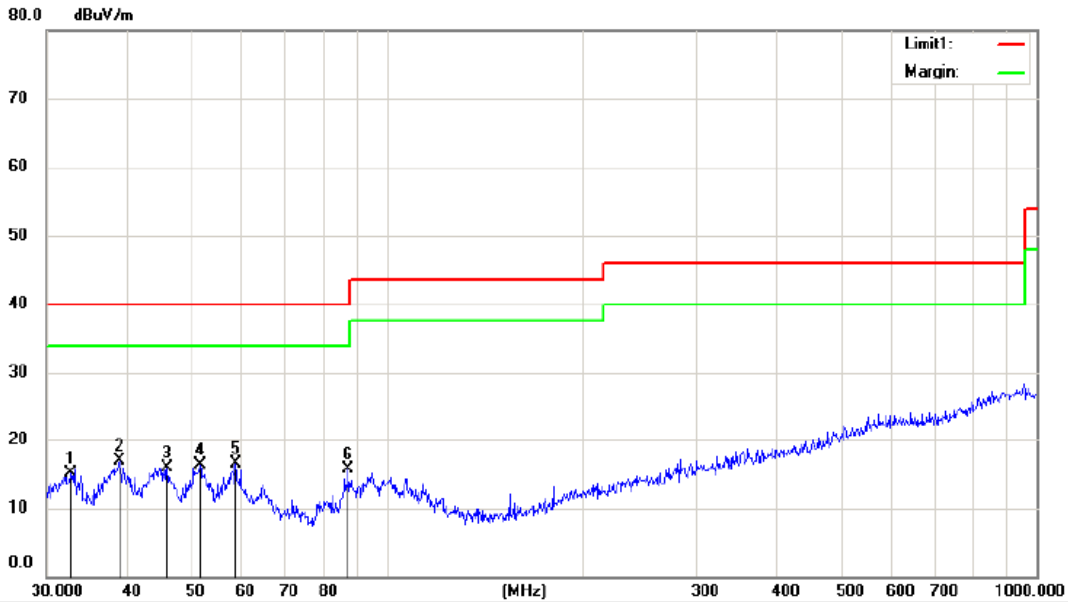
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		cm	degree	
1		32.6340	40.03	-21.68	18.35	40.00	-21.65	QP			
2		38.0783	38.06	-21.06	17.00	40.00	-23.00	QP			
3		45.8553	38.45	-20.81	17.64	40.00	-22.36	QP			
4		52.5753	37.79	-21.18	16.61	40.00	-23.39	QP			
5		57.9993	37.32	-21.38	15.94	40.00	-24.06	QP			
6		88.3421	40.03	-22.17	17.86	43.50	-25.64	QP			
7	*	929.0082	33.17	-5.35	27.82	46.00	-18.18	QP			

Mode 2



Site site #1 Polarization: **Vertical** Temperature: 20 C
 Limit: FCC Part15 Class B 3M Radiation Power: DC 4.5V Humidity: 55 %
 Mode: TX, 2450MHz
 Note:

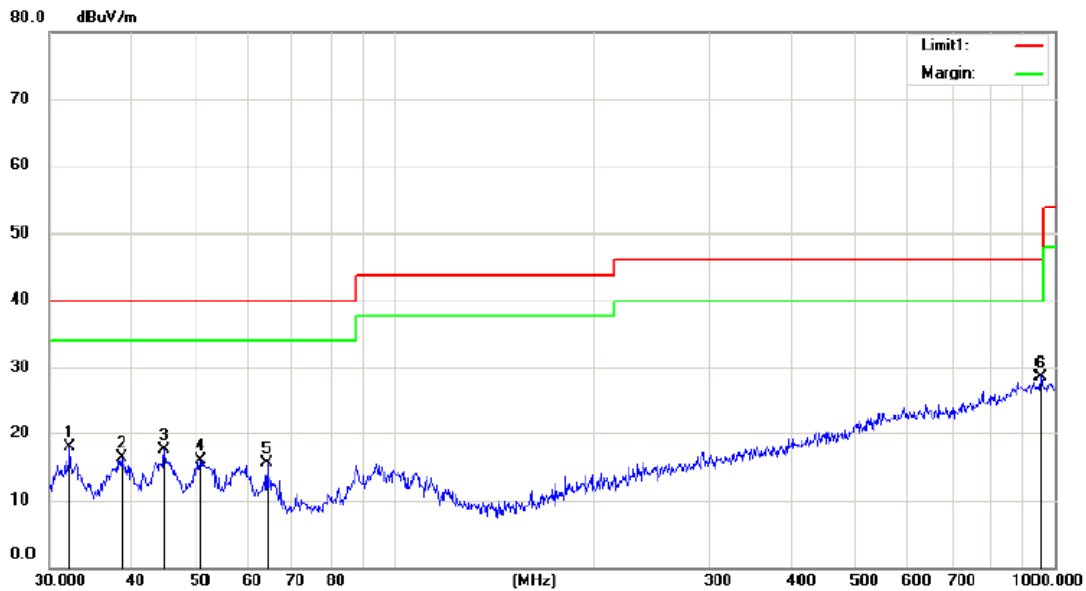
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	
1		32.4060	40.06	-21.67	18.39	40.00	-21.61	QP		
2		36.7661	38.55	-21.37	17.18	40.00	-22.82	QP		
3		44.1202	38.23	-20.73	17.50	40.00	-22.50	QP		
4		58.4074	38.01	-21.40	16.61	40.00	-23.39	QP		
5		95.0930	38.12	-20.89	17.23	43.50	-26.27	QP		
6	*	912.8620	34.23	-5.41	28.82	46.00	-17.18	QP		



Site site #1 Polarization: *Horizontal* Temperature: 20 C
 Limit: FCC Part15 Class B 3M Radiation Power: DC 4.5V Humidity: 55 %
 Mode: TX, 2450MHz
 Note:

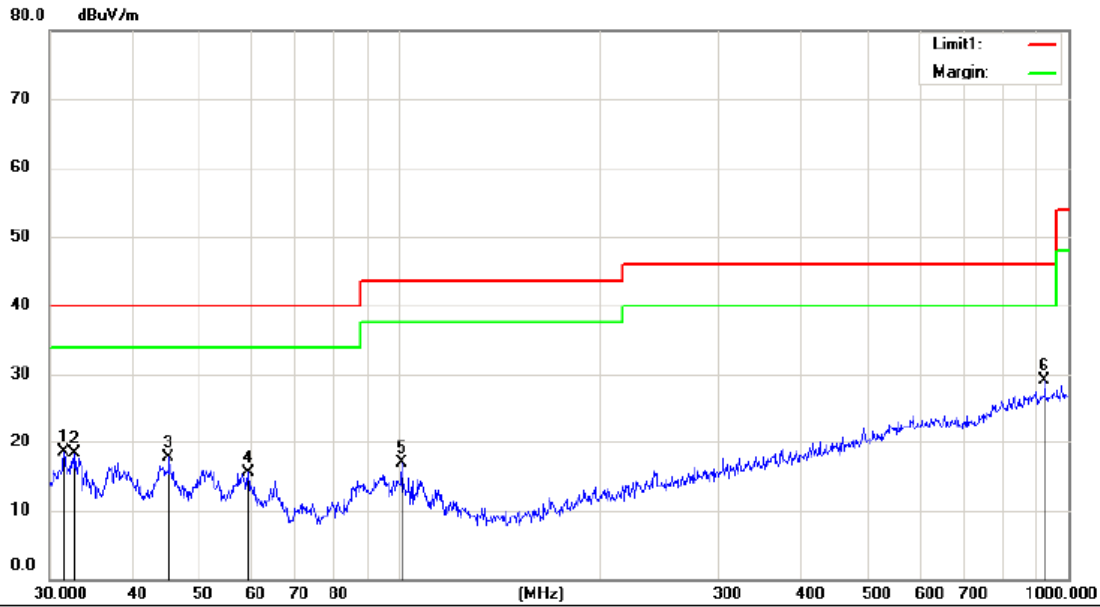
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1		32.7486	36.74	-21.68	15.06	40.00	-24.94	QP			
2	*	38.8878	37.85	-20.89	16.96	40.00	-23.04	QP			
3		46.0164	36.78	-20.82	15.96	40.00	-24.04	QP			
4		51.6616	37.53	-21.16	16.37	40.00	-23.63	QP			
5		58.6126	37.88	-21.41	16.47	40.00	-23.53	QP			
6		87.4177	38.12	-22.47	15.65	40.00	-24.35	QP			

Mode 3



Site site #1 Polarization: *Horizontal* Temperature: 20 C
 Limit: FCC Part15 Class B 3M Radiation Power: DC 4.5V Humidity: 55 %
 Mode: TX, 2475MHz
 Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree
1		32.2925	39.65	-21.66	17.99	40.00	-22.01	QP	
2		38.6160	37.22	-20.94	16.28	40.00	-23.72	QP	
3		44.7433	38.31	-20.74	17.57	40.00	-22.43	QP	
4		50.9420	36.99	-21.15	15.84	40.00	-24.16	QP	
5		63.9828	38.56	-23.02	15.54	40.00	-24.46	QP	
6	*	952.0937	33.85	-5.25	28.60	46.00	-17.40	QP	



Site site #1 Polarization: *Vertical* Temperature: 20 C
 Limit: FCC Part15 Class B 3M Radiation Power: DC 4.5V Humidity: 55 %
 Mode: TX, 2475MHz
 Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		31.5095	40.22	-21.64	18.58	40.00	-21.42	QP		
2		32.7486	40.02	-21.68	18.34	40.00	-21.66	QP		
3		45.2166	38.54	-20.77	17.77	40.00	-22.23	QP		
4		59.4405	36.95	-21.44	15.51	40.00	-24.49	QP		
5		100.9340	37.72	-20.87	16.85	43.50	-26.65	QP		
6	*	922.5157	34.56	-5.37	29.19	46.00	-16.81	QP		

Above 1000MHz:

Frequency Range: 1000MHz-25000MHz Test Date: 08/31/2013
 Test Result: PASS Temperature: 23 °C
 Measured Distance: 3m Humidity: 56 %
 Test By: Rujianbo

Mode 1							
Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV)		Limit 3m(dBuV/m)		Margin(dB)	
		PK	AV	PK	AV	PK	AV
4850.246	V	48.36	30.02	74	54	-25.64	-23.98
7275.526	V	53.11	34.88	74	54	-20.89	-19.12
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
4850.346	H	49.98	32.28	74	54	-24.02	-21.72
7275.808	H	48.28	30.59	74	54	-25.72	-23.41
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--

Mode 2							
Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV)		Limit 3m(dBuV/m)		Margin(dB)	
		PK	AV	PK	AV	PK	AV
4901.036	V	49.81	28.58	74	54	-24.19	-25.42
7350.756	V	51.53	33.78	74	54	-22.47	-20.22
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
4900.321	H	48.93	30.58	74	54	-25.07	-23.42
7350.192	H	49.57	31.60	74	54	-24.43	-22.40
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--

Mode 3							
Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV)		Limit 3m(dBuV/m)		Margin(dB)	
		PK	AV	PK	AV	PK	AV
4950.128	V	48.59	29.04	74	54	-25.41	-24.96
7425.897	V	48.12	29.71	74	54	-25.88	-24.29
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
4950.321	H	48.68	30.38	74	54	-25.32	-23.62
7425.487	H	51.69	34.16	74	54	-22.31	-19.84
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--

- Note:** (1) All Readings are Peak Value and AV.
 (2) Emission Level= Reading Level+Probe Factor +Cable Loss
 (3) Data of measurement within this frequency range shown “ -- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

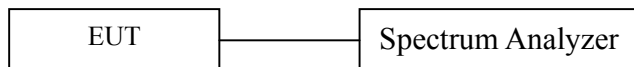
6. 6dB Bandwidth Test and 99% Bandwidth Test

6.1 Measurement Procedure

The EUT was operating in O-QPSK mode. The test result was printed out from the spectrum by hard copy function.

1. Set resolution bandwidth (RBW) = 100 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequency) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

6.2 Test SET-UP (Block Diagram of Configuration)



6.3 Measurement Equipment Used:

Name of Equipment	Manufacturer	Model	Serial Number	Last Cal.	CAL DUE.
Spectrum Analyzer	Rohde & Schwarz	ESCI	10017	08/02/2013	08/01/2014

6.4 Limit

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

6.5 Measurement Results

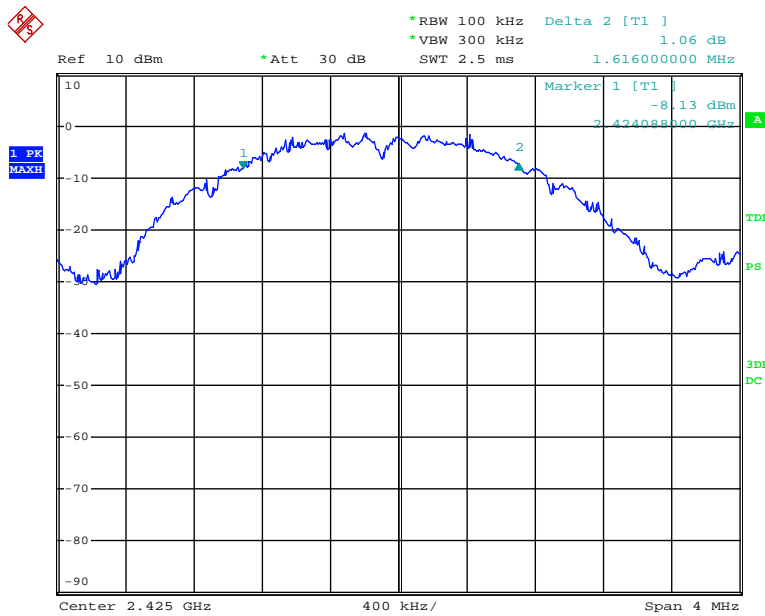
Refer to attached data chart.

6dB Bandwidth Test

Spectrum Detector:	PK	Test Date :	08/26/2013
Test By:	Jary	Temperature :	20 °C
Test Result:	PASS	Humidity :	55 %

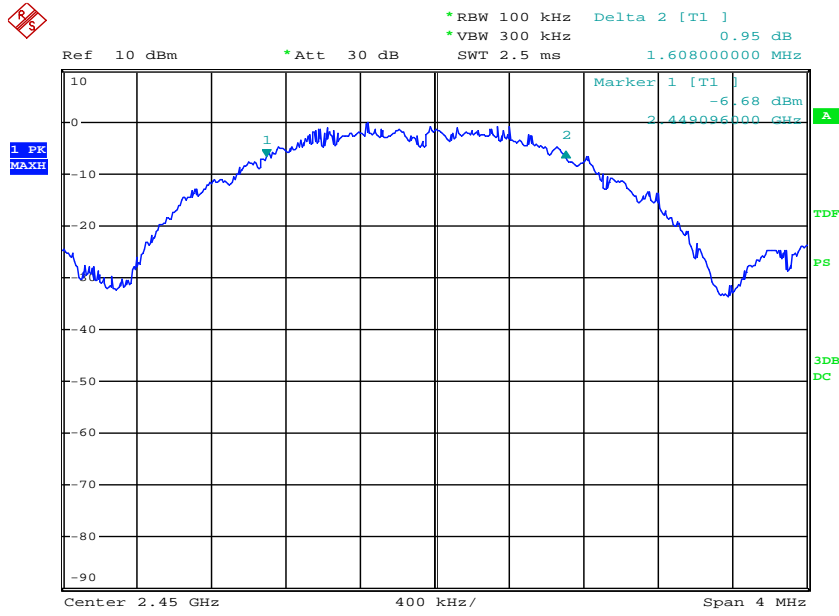
Test Mode	Channel frequency (MHz)	Measurement level (MHz)	Required Limit (KHz)
Mode 1	2425	1.616	>500
Mode 2	2450	1.608	>500
Mode 3	2475	1.616	>500

Mode 1



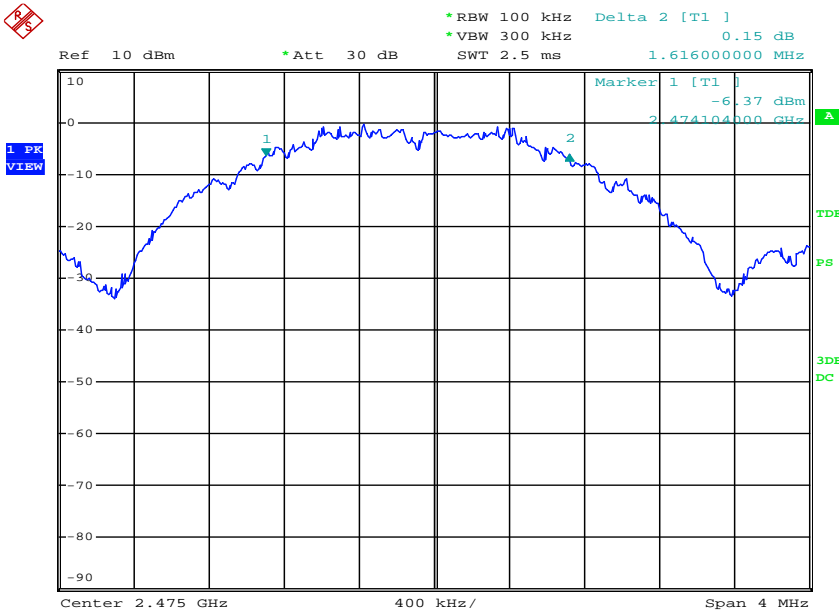
Date: 26.AUG.2013 08:35:21

Mode 2



Date: 26.AUG.2013 09:01:58

Mode 3



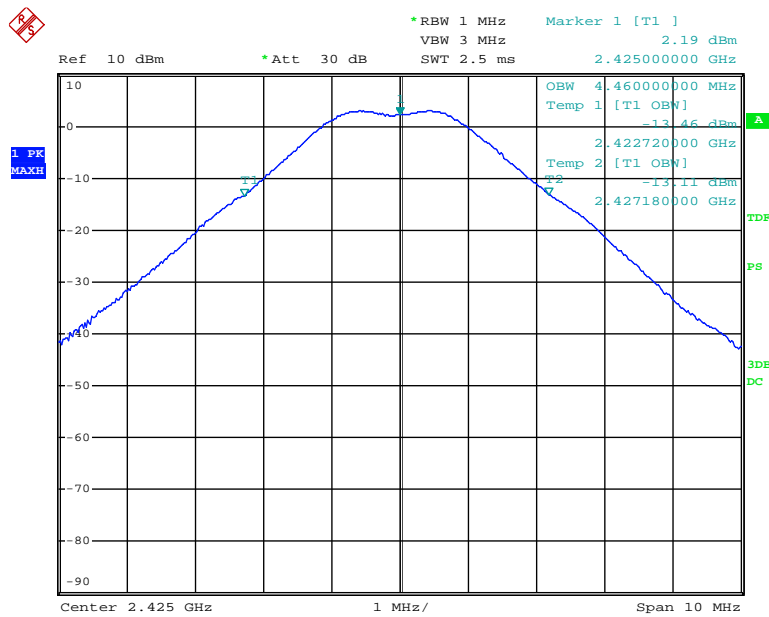
Date: 26.AUG.2013 07:43:03

99% Bandwidth Test

Spectrum Detector:	PK	Test Date :	08/26/2013
Test By:	Jary	Temperature :	20 °C
Test Result:	Pass	Humidity :	55 %

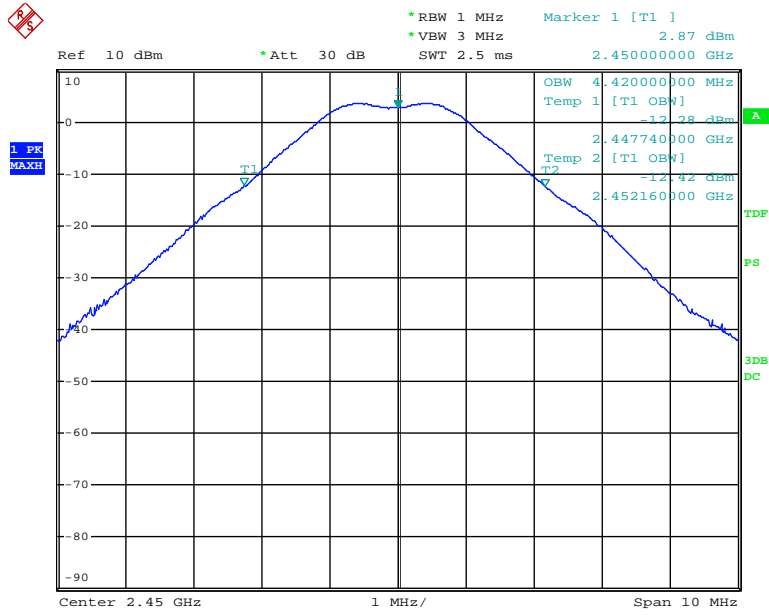
Test Mode	Channel frequency (MHz)	Measurement level (MHz)	Mode
Mode 1	2425	4.46	99% Bandwidth Test
Mode 2	2450	4.42	99% Bandwidth Test
Mode 3	2475	4.42	99% Bandwidth Test

Mode 1



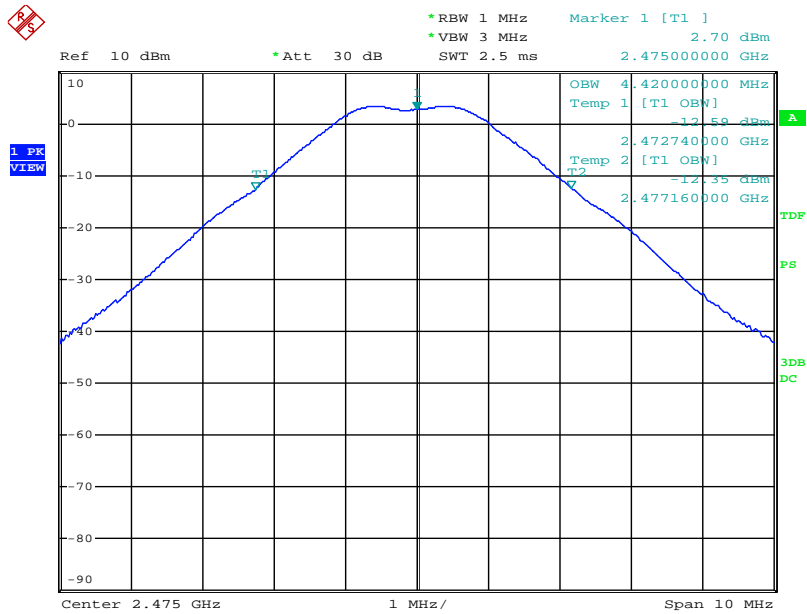
Date: 26.AUG.2013 08:39:19

Mode 2



Date: 26.AUG.2013 09:03:28

Mode 3



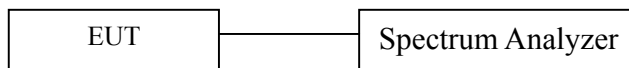
Date: 26.AUG.2013 07:45:59

7. MAXIMUM PEAK OUTPUT POWER TEST

7.1 Measurement Procedure

- a. Check the calibration of the measuring instrument(SA) using either an internal calibrator or a known signal from an external generator.
- b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- c. The center frequency of the spectrum analyzer is set to the fundamental frequency and using proper RBW and VBW setting.
- d. Measure the captured power within the band and recording the plot.
- e. Repeat above procedures until all frequencies required were complete.

7.2 Test SET-UP (Block Diagram of Configuration)



7.3 Measurement Equipment Used:

Name of Equipment	Manufacturer	Model	Serial Number	Last Cal.	CAL DUE.
Spectrum Analyzer	Rohde & Schwarz	ESCI	10017	08/02/2013	08/01/2014

7.4 Peak Power output limit

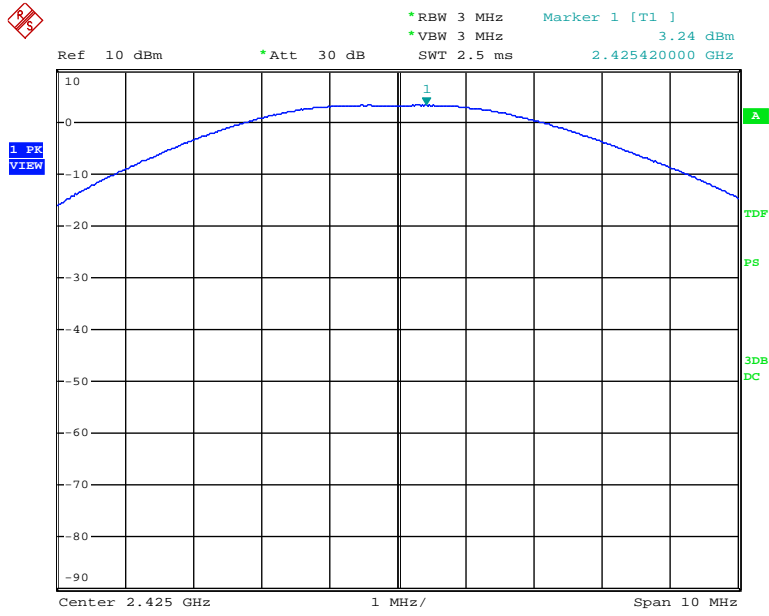
The maximum peak power shall be less 1Watt.

7.5 Measurement Results:

Spectrum Detector:	PK	Test Date :	08/26/2013
Test By:	Jary	Temperature :	20 °C
Test Result:	PASS	Humidity :	55 %

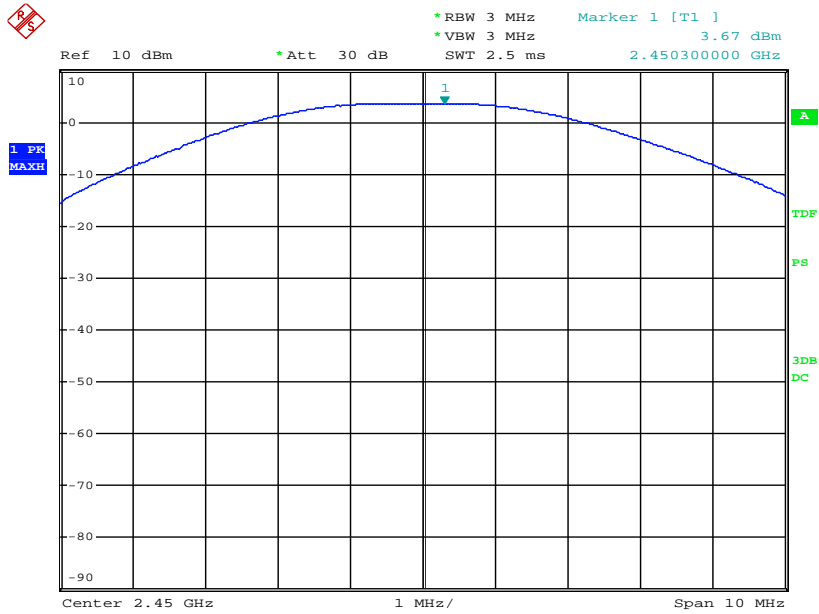
Test Mode	Channel Frequency (MHz)	Peak Power output(dBm)	Peak Power Limit(W)	Pass/Fail
Mode 1	2425.00	3.24	1W(30dBm)	PASS
Mode 2	2450.00	3.67	1W(30dBm)	PASS
Mode 3	2475.00	3.47	1W(30dBm)	PASS

Mode 1



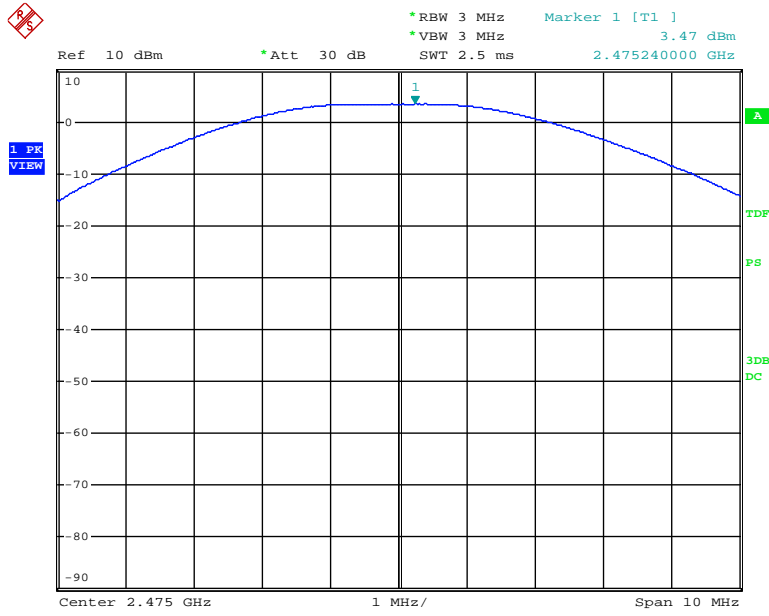
Date: 26.AUG.2013 08:43:18

Mode 2



Date: 26.AUG.2013 09:04:21

Mode 3



Date: 26.AUG.2013 07:35:12

8. Band Edge Test

8.1 Applicable Standard

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, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified 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 specified in §15.209(a) (see §15.205(c)).

8.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Put it on the Rotated table and turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
3. Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge, for Radiated emissions restricted band RBW=1MHz, VBW=3MHz.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

8.3 Test SET-UP (Block Diagram of Configuration)

Same as 5.2 Radiated Emission Set-up.

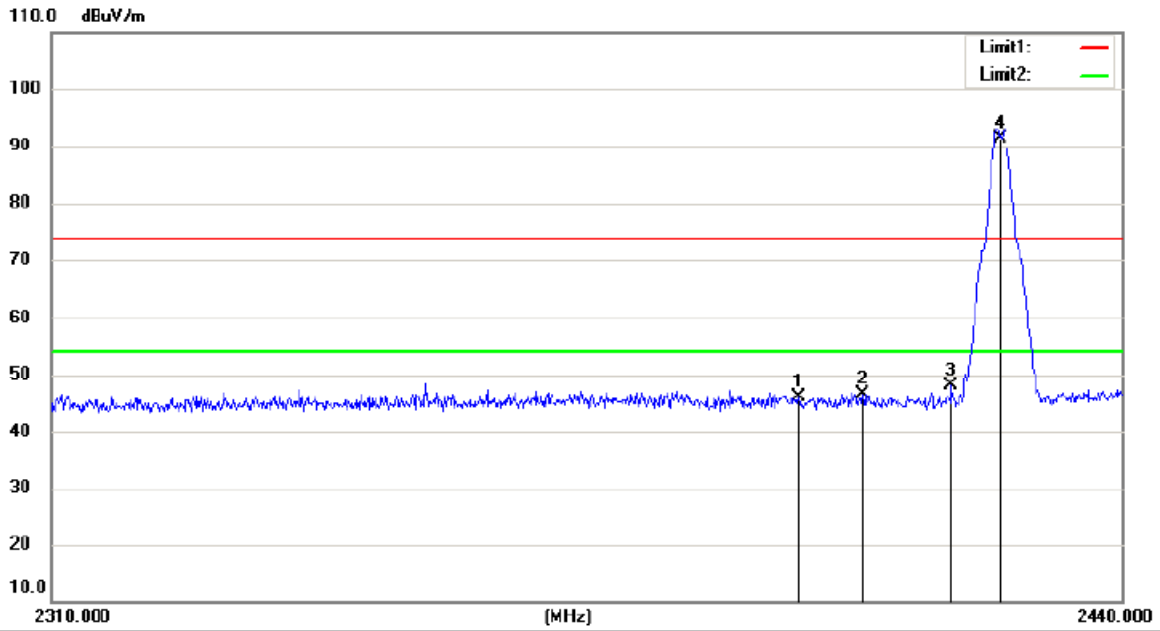
8.4 Measurement Equipment Used

Same as 5.3 Radiated Emission Measurement.

8.5 Measurement Results

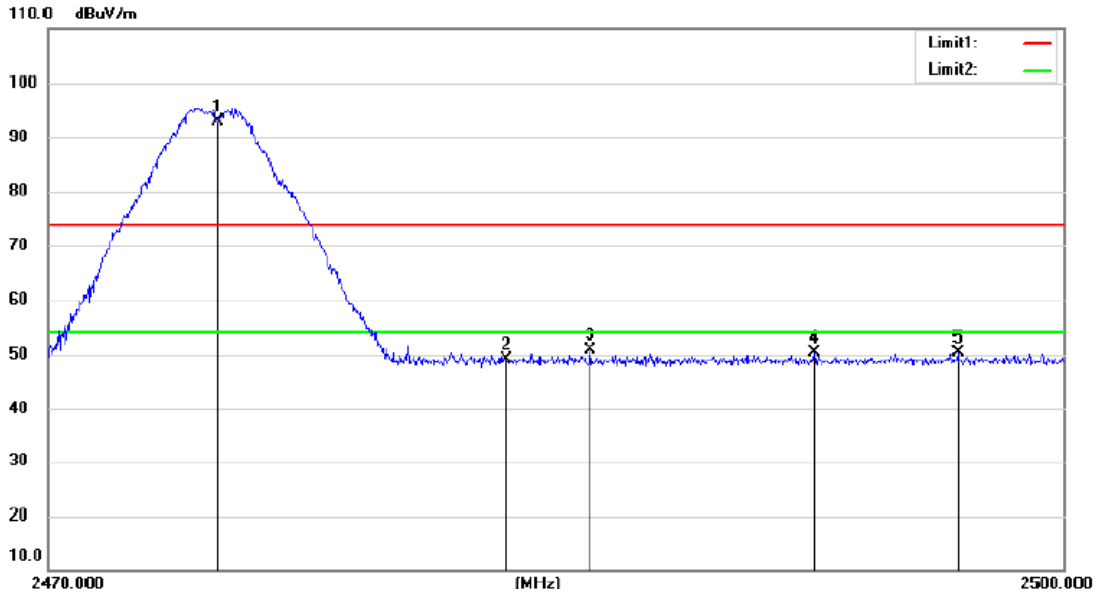
Refer to attached data.

Lower Band Edge (Peak)



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1		2400.000	34.82	11.33	46.15	73.90	-27.75			peak
2		2407.890	35.31	11.40	46.71	73.90	-27.19			peak
3		2418.940	36.55	11.51	48.06	73.90	-25.84			peak
4	*	2425.000	79.72	11.57	91.29	73.90	17.39			peak

Upper Band Edge (Peak)



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1	*	2475.000	80.76	12.05	92.81	73.90	18.91	peak			
2		2483.500	36.89	12.13	49.02	73.90	-24.88	peak			
3		2485.990	38.85	12.15	51.00	73.90	-22.90	peak			
4		2492.620	38.17	12.21	50.38	73.90	-23.52	peak			
5		2496.880	38.11	12.26	50.37	73.90	-23.53	peak			

9. Power Density

9.1 Test Equipment

Name of Equipment	Manufacturer	Model	Serial Number	Last Cal.	CAL DUE.
Spectrum Analyzer	Rohde & Schwarz	ESCI	10017	08/02/2013	08/01/2014

9.2 Measuring Instruments and Setting

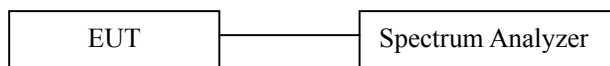
The following table is the setting of spectrum analyzer.

Spectrum analyzer	Setting
Attenuation	Auto
Span Frequency	Set the span to 1.5 times the DTS bandwidth.
RB	$3\text{kHz} \geq \text{RBW} \leq 100\text{KHz}$
VB	$3 \times \text{RBW}$
Detector	Peak
Trace	Max hold
Sweep Time	Automatic

9.3 Test Procedures

- The transmitter output (antenna port) was connected to the spectrum analyzer.
- Set analyzer center frequency to DTS channel center frequency.
- Set the analyzer span to a minimum of 1.5 times the DTS bandwidth.
- Set the $\text{RBW} \geq 3 \text{ kHz}$. Set the $\text{VBW} \geq 3 \times \text{RBW}$.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level within the RBW.

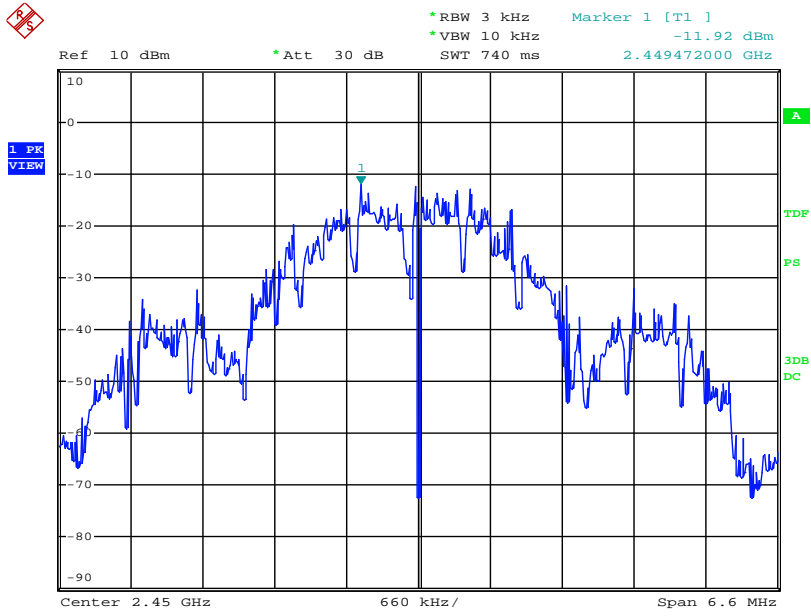
9.4 Block Diagram of Test Setup



9.5 Limit

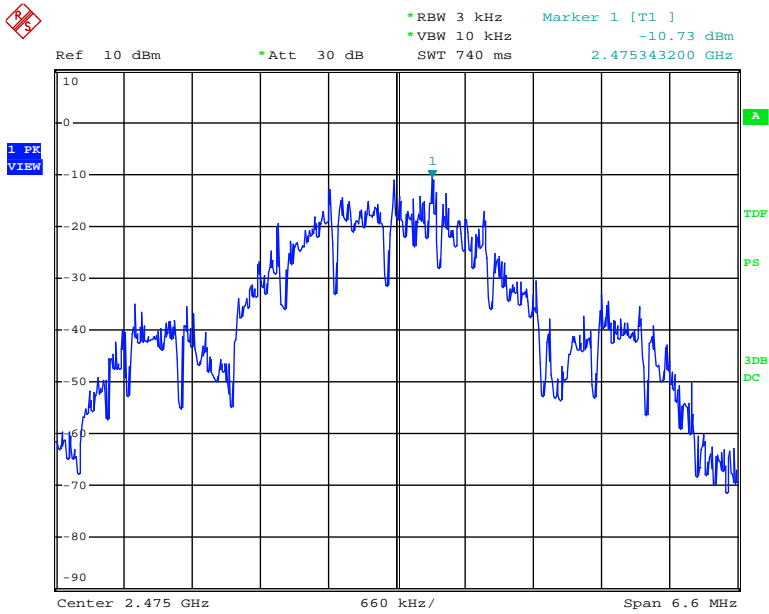
The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

Mode 2



Date: 26.AUG.2013 07:25:41

Mode 3



Date: 26.AUG.2013 07:50:53

10. Antenna Port Emission

10.1 Test Equipment

Name of Equipment	Manufacturer	Model	Serial Number	Last Cal.	CAL DUE.
Spectrum Analyzer	Agilent	E4407B	MY45107013	05/29/2013	05/28/2014

10.2 Measuring Instruments and setting

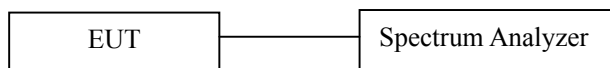
The following table is the setting of spectrum analyzer.

Spectrum analyzer	Setting
Attenuation	Auto
RB	100kHz
VB	300kHz
Detector	Peak
Trace	Max hold

10.3 Test Procedures

The conducted spurious emissions were measured conducted using a spectrum analyzer at three test modes; the limit was determined by attenuation 20dB of the RF peak power output.

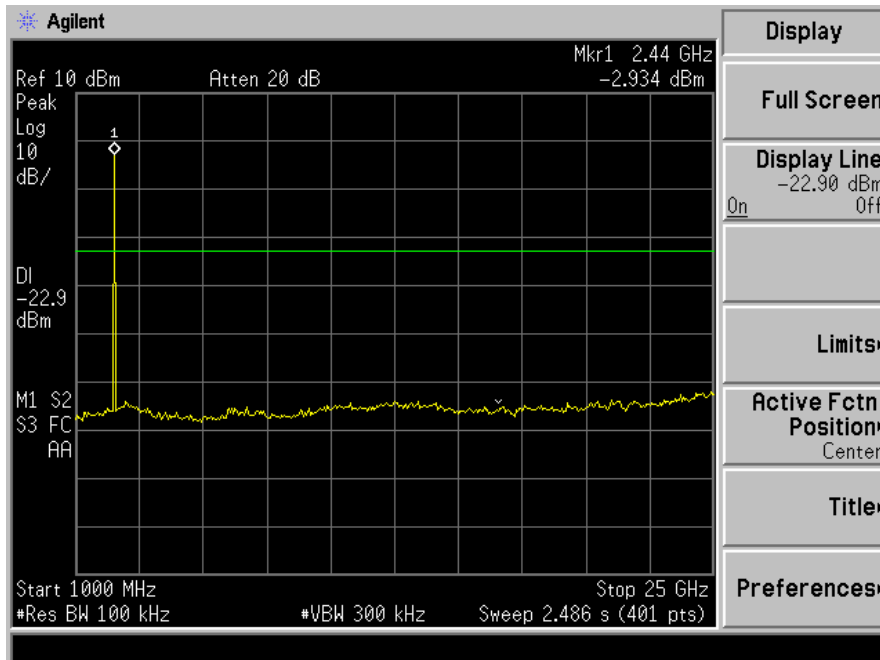
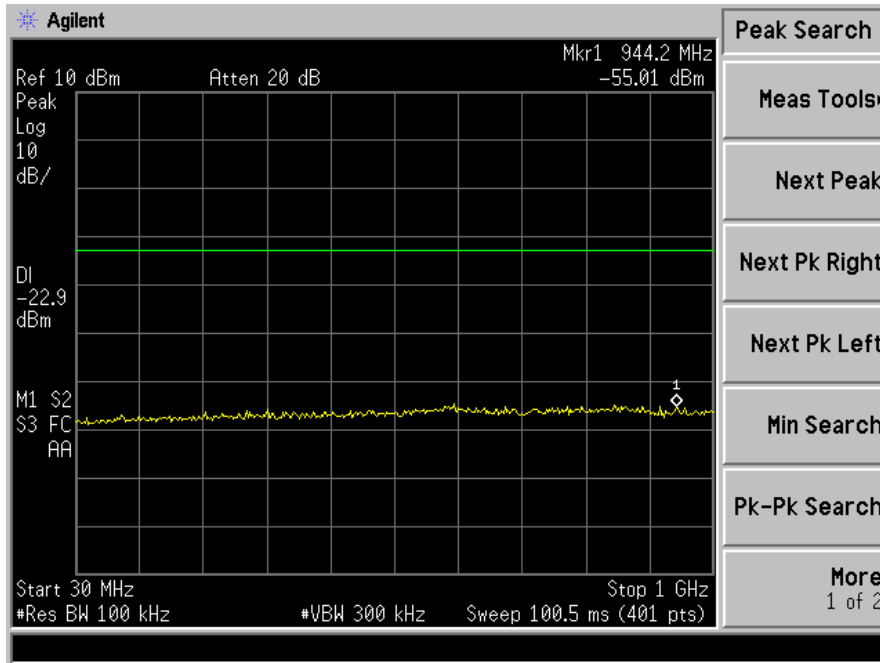
10.4 Block Diagram of Test setup



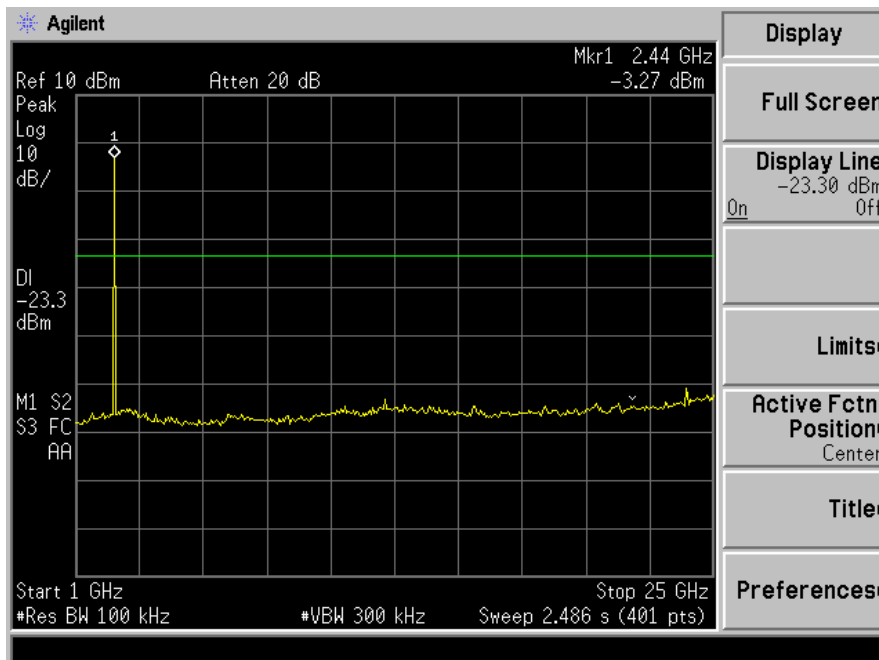
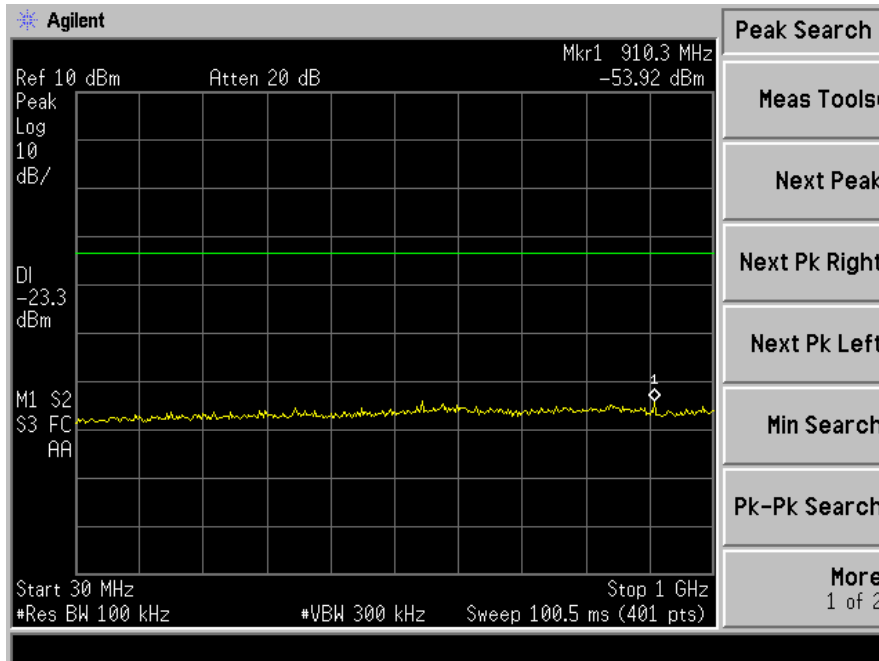
10.6. Test Result

PASS.

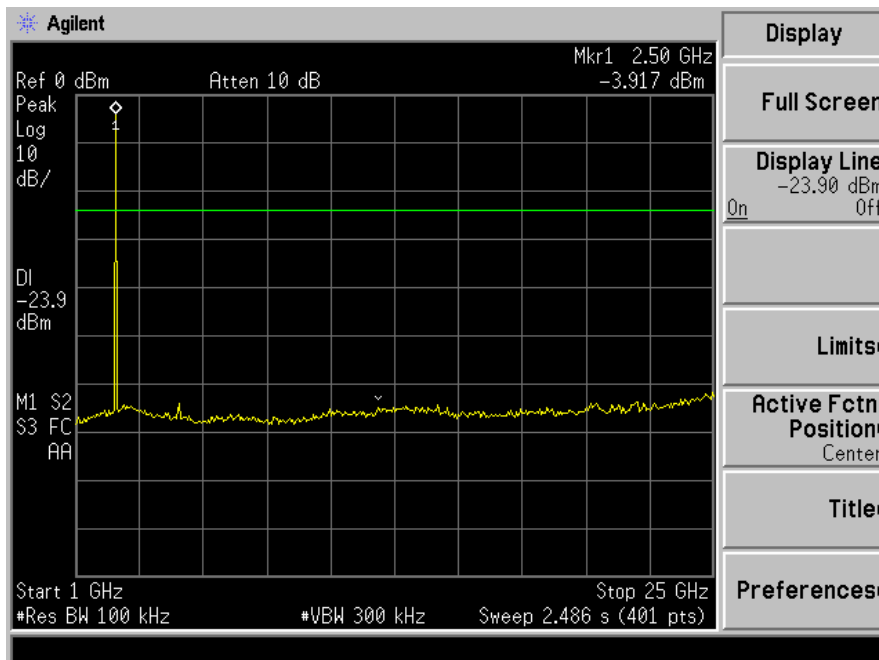
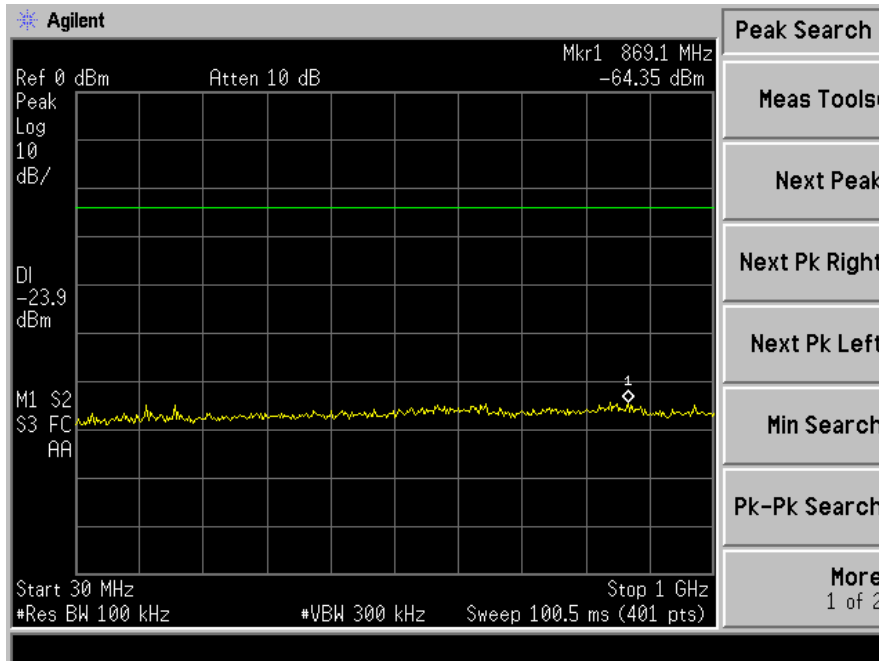
Mode 1



Mode 2



Mode 3



11. Antenna Application

11.1 Antenna requirement

The EUT'S antenna is met the requirement of FCC part 15C section 15.203 and 15.240.

FCC part 15C section 15.247 requirements:

Systems operating in the 2425-2475MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

11.2 Result

The EUT's antenna used a chip antenna and integrated on PCB, The antenna's gain is 5.44 dBi and meets the requirement.

12. Uncertainty

Measurement Uncertainty for a level of Confidence of 95%

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-5}$
Maximum Peak Output Power Test	$\pm 1.0\text{dB}$
Radiated Emission Test	$\pm 2.0\text{dB}$
Power Density	$\pm 2.0\text{dB}$
Occupied Bandwidth Test	$\pm 1.0\text{dB}$
Band Edge Test	$\pm 3\text{dB}$
All emission, radiated	$\pm 3\text{dB}$
Antenna Port Emission	$\pm 3\text{dB}$
Temperature	$\pm 0.5^\circ\text{C}$
Humidity	$\pm 3\%$