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# FCC TEST REPORT

**REPORT NO.:** RF980305H02

**MODEL NO.:** 21-121559

**RECEIVED:** March 05, 2009

**TESTED:** March 12 to 25, 2009

**ISSUED:** March 26, 2009

**APPLICANT:** Motorola Inc.

**ADDRESS:** One Motorola Plaza Holtsville, NY 11742

**ISSUED BY:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

**LAB LOCATION:** No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan

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## TABLE OF CONTENTS

1	CERTIFICATION.....	4
2	SUMMARY OF TEST RESULTS.....	5
2.1	MEASUREMENT UNCERTAINTY.....	6
3	GENERAL INFORMATION.....	7
3.1	GENERAL DESCRIPTION OF EUT.....	7
3.2	DESCRIPTION OF TEST MODES .....	8
3.3	TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL: .....	9
3.4	GENERAL DESCRIPTION OF APPLIED STANDARDS.....	11
3.5	DESCRIPTION OF SUPPORT UNITS .....	12
3.6	CONFIGURATION OF SYSTEM UNDER TEST .....	13
4	TEST PROCEDURES AND RESULTS.....	14
4.0	GENERAL DESCRIPTION OF EUT .....	14
4.1	CONDUCTED EMISSION MEASUREMENT.....	14
4.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT.....	14
4.1.2	TEST INSTRUMENTS .....	14
4.1.3	TEST PROCEDURES.....	15
4.1.4	DEVIATION FROM TEST STANDARD .....	15
4.1.5	TEST SETUP .....	16
4.1.6	EUT OPERATING CONDITIONS.....	16
4.1.7	TEST RESULTS .....	17
4.2	NUMBER OF HOPPING FREQUENCY USED .....	19
4.2.1	LIMIT OF HOPPING FREQUENCY USED .....	19
4.2.2	TEST INSTRUMENTS .....	19
4.2.3	TEST PROCEDURES.....	19
4.2.4	DEVIATION FROM TEST STANDARD .....	19
4.2.5	TEST SETUP .....	20
4.2.6	TEST RESULTS .....	20
4.3	DWELL TIME ON EACH CHANNEL.....	27
4.3.1	LIMIT OF DWELL TIME USED.....	27
4.3.2	TEST INSTRUMENTS .....	27
4.3.3	TEST PROCEDURES.....	27
4.3.4	DEVIATION FROM TEST STANDARD .....	28
4.3.5	TEST SETUP .....	28
4.3.6	TEST RESULTS .....	28
4.4	CHANNEL BANDWIDTH .....	36
4.4.1	TEST INSTRUMENTS .....	36
4.4.2	TEST PROCEDURE .....	37
4.4.3	DEVIATION FROM TEST STANDARD .....	37
4.4.4	TEST SETUP .....	37



A D T

4.4.5	EUT OPERATING CONDITION .....	37
4.4.6	TEST RESULTS .....	38
4.5	HOPPING CHANNEL SEPARATION.....	50
4.5.1	LIMIT OF HOPPING CHANNEL SEPARATION.....	50
4.5.2	TEST INSTRUMENTS .....	50
4.5.3	TEST PROCEDURES.....	50
4.5.4	DEVIATION FROM TEST STANDARD .....	50
4.5.5	TEST SETUP .....	50
4.5.6	TEST RESULTS .....	51
4.6	MAXIMUM PEAK OUTPUT POWER.....	63
4.6.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT .....	63
4.6.2	INSTRUMENTS.....	63
4.6.3	TEST PROCEDURES.....	63
4.6.4	DEVIATION FROM TEST STANDARD .....	63
4.6.5	TEST SETUP .....	64
4.6.6	EUT OPERATING CONDITION .....	64
4.6.7	TEST RESULTS .....	65
4.7	RADIATED EMISSION MEASUREMENT .....	77
4.7.1	LIMITS OF RADIATED EMISSION MEASUREMENT .....	77
4.7.2	TEST INSTRUMENTS .....	78
4.7.3	TEST PROCEDURES.....	79
4.7.4	DEVIATION FROM TEST STANDARD .....	79
4.7.5	TEST SETUP .....	80
4.7.6	TEST RESULTS .....	81
4.8	CONDUCTED OUT-BAND EMISSION MEASUREMENT .....	111
4.8.1	LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT .....	111
4.8.2	TEST INSTRUMENTS .....	111
4.8.3	TEST PROCEDURE .....	111
4.8.4	DEVIATION FROM TEST STANDARD .....	111
4.8.5	EUT OPERATING CONDITION .....	111
4.8.6	TEST RESULTS .....	112
4.9	ANTENNA REQUIREMENT .....	125
4.9.1	STANDARD APPLICABLE.....	125
4.9.2	ANTENNA CONNECTED CONSTRUCTION .....	125
5	INFORMATION ON THE TESTING LABORATORIES.....	126
6	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB .....	127



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## 1 CERTIFICATION

**PRODUCT :** 21-121559-01  
**BRAND NAME :** motorola  
**MODEL NO. :** 21-121559  
**APPLICANT :** Motorola Inc.  
**TESTED DATE:** March 12 to 25, 2009  
**TEST SAMPLE :** ENGINEERING SAMPLE  
**STANDARDS :** 47 CFR Part 15, Subpart C (Section 15.247),  
ANSI C63.4-2003

The above equipment (Model: 21-121559) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**PREPARED BY** : Carol Liao , **DATE:** March 26, 2009  
( Carol Liao, Specialist )

**TECHNICAL  
ACCEPTANCE** : Hank Chung , **DATE:** March 26, 2009  
Responsible for RF  
( Hank Chung, Deputy Manager )

**APPROVED BY** : May Chen , **DATE:** March 26, 2009  
( May Chen, Deputy Manager )



## 2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: 47 CFR Part 15, Subpart C			
Standard Section	Test Type and Limit	Result	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is -7.51dB at 0.150 MHz
15.247(a)(1)(i)	Number of Hopping Frequency Used Spec.:	PASS	Meet the requirement of limit
15.247(a)(1)(i)	Dwell Time on Each Channel Spec. : Max. 0.4 second	PASS	Meet the requirement of limit
15.247(a)(1)	Hopping Channel Separation Spec. : Min. 25 kHz or 20 dB bandwidth, which ever is greater	PASS	Meet the requirement of limit
15.247(a)(1)(i)	Spectrum Bandwidth of a Frequency Hopping Sequence Spread Spectrum System Spec. : Max. 0.5 MHz	PASS	Meet the requirement of limit
15.247(b)(2)	Maximum Peak Output Power Spec.: max. 30dBm	PASS	Meet the requirement of limit
15.247(d)	Transmitter Radiated Emissions Spec.: Table 15.209	PASS	Meet the requirement of limit Minimum passing margin is -9.88dB at 749.97MHz
15.247(d)	Conducted Out-Band Emission Measurement	PASS	Meet the requirement of limit



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## 2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement	Value
Conducted emissions	2.44 dB
Radiated emissions (30MHz-1GHz)	3.94 dB
Radiated emissions (1GHz ~18GHz)	2.49 dB
Radiated emissions (18GHz ~40GHz)	2.70 dB



### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	21-121559-01
<b>MODEL NO.</b>	21-121559
<b>FCC ID</b>	UZ721121559
<b>POWER SUPPLY</b>	DC 5V from DC POWER SUPPLY
<b>MODULATION TYPE</b>	PR-ASK(DRM) , DSB-ASK(MRM), PR-ASK(XRM)
<b>MODULATION TECHNOLOGY</b>	FHSS
<b>FREQUENCY RANGE</b>	902.75MHz ~ 927.25MHz
<b>NUMBER OF CHANNEL</b>	50
<b>OUTPUT POWER</b>	PR-ASK(DRM): 625.173mW DSB-ASK(MRM): 779.830mW PR-ASK(XRM): 826.038mW
<b>ANTENNA TYPE</b>	Please see note 1
<b>DATA CABLE</b>	NA
<b>I/O PORTS</b>	NA
<b>ASSOCIATED DEVICES</b>	NA

#### NOTE:

1. There is one antenna provided to this EUT:

Antenna Type	Connector Type	Gain (dBi)	Cable loss (dB)	Net Gain (dBi)
Dipole Antenna	SMA Female	2	0.3	1.7

2. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.



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### 3.2 DESCRIPTION OF TEST MODES

Fifty channels are provided to this EUT.

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	902.75	21	913.25	42	923.75
1	903.25	22	913.75	43	924.25
2	903.75	23	914.25	44	924.75
3	904.25	24	914.75	45	925.25
4	904.75	25	915.25	46	925.75
5	905.25	26	915.75	47	926.25
6	905.75	27	916.25	48	926.75
7	906.25	28	916.75	49	927.25
8	906.75	29	917.25		
9	907.25	30	917.75		
10	907.75	31	918.25		
11	908.25	32	918.75		
12	908.75	33	919.25		
13	909.25	34	919.75		
14	909.75	35	920.25		
15	910.25	36	920.75		
16	910.75	37	921.25		
17	911.25	38	921.75		
18	911.75	39	922.25		
19	912.25	40	922.75		
20	912.75	41	923.25		



### 3.3 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

EUT configure mode	Applicable to				Description
	PLC	RE<1G	RE≥1G	APCM	
-	√	√	√	√	-

Where PLC: Power Line Conducted Emission  
RE<1G: Radiated Emission below 1GHz  
RE≥1G: Radiated Emission above 1GHz  
APCM: Antenna Port Conducted Measurement

#### Power Line Conducted Emission:

- Pre-Scan to determine the worst-case mode from all possible combinations between available modulations and packet types.
- Following channel(s) was (were) selected for the final test as listed below.

Available Channel	Tested Channel	Modulation Technology	Modulation Type
0 to 49	49	FHSS	DSB-ASK(MRM)

#### Radiated Emission Test (Below 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

Available Channel	Tested Channel	Modulation Technology	Modulation Type
0 to 49	0	FHSS	PR-ASK(DRM)
0 to 49	0	FHSS	DSB-ASK(MRM)
0 to 49	0	FHSS	PR-ASK(XRM)

#### Radiated Emission Test (Above 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

Available Channel	Tested Channel	Modulation Technology	Modulation Type
0 to 49	0, 24, 49	FHSS	PR-ASK(DRM)
0 to 49	0, 24, 49	FHSS	DSB-ASK(MRM)
0 to 49	0, 24, 49	FHSS	PR-ASK(XRM)

**CONDUCTED OUT-BAND EMISSION Measurement:**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

Available Channel	Tested Channel	Modulation Technology	Modulation Type
0 to 49	0, 49	FHSS	PR-ASK(DRM)
0 to 49	0, 49	FHSS	DSB-ASK(MRM)
0 to 49	0, 49	FHSS	PR-ASK(XRM)

**Antenna Port Conducted Measurement:**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

Available Channel	Tested Channel	Modulation Technology	Modulation Type
0 to 49	0, 24, 49	FHSS	PR-ASK(DRM)
0 to 49	0, 24, 49	FHSS	DSB-ASK(MRM)
0 to 49	0, 24, 49	FHSS	PR-ASK(XRM)



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### 3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a 21-121559-01. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**47 CFR Part 15, Subpart C. (15.247)**  
**ANSI C63.4 : 2003**

All test items have been performed and recorded as per the above standards.

**NOTE:** The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.



### 3.5 DESCRIPTION OF SUPPORT UNITS

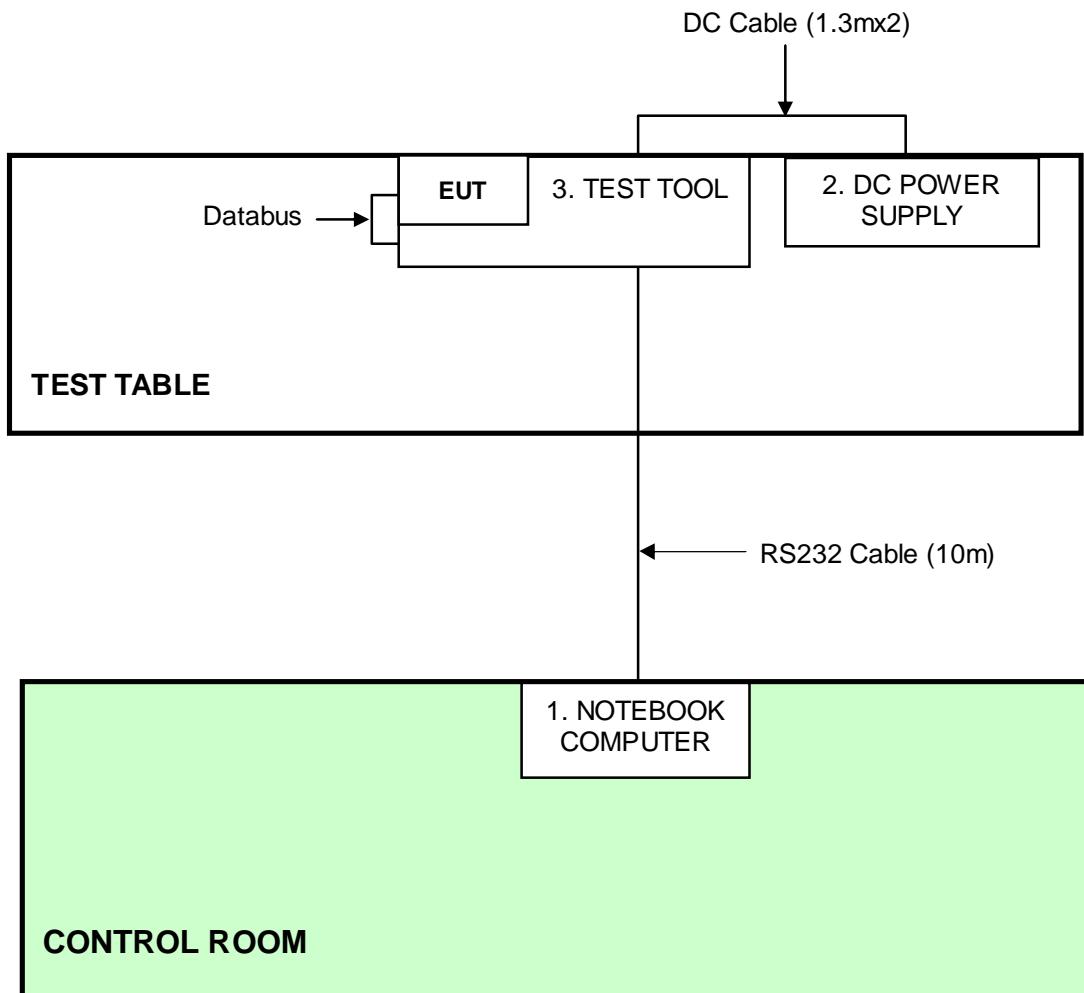
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	D531	CN-0XM006-4864 3-86L-4472	QDS-BRCM1019
2	DC POWER SUPPLY	GOOD WILL INSTRUMENT CO., LTD.	GPC-3030D	EG812707	NA
3	TEST TOOL	MTI	NA	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	NA
3	NA

**NOTE:** All power cords of the above support units are non shielded (1.8m).

### 3.6 CONFIGURATION OF SYSTEM UNDER TEST





## 4 TEST PROCEDURES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
0.15-0.5 0.5-5 5-30	Quasi-peak	Average
	66 to 56	56 to 46
	56	46
	60	50

Notes:

1. The lower limit shall apply at the transition frequencies.
2. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

#### 4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	April 01, 2008	Mar. 31, 2009
Line-Impedance Stabilization Network (for EUT)	ENV-216	100071	Nov. 26, 2008	Nov. 25, 2009
Line-Impedance Stabilization Network (for Peripheral)	ESH3-Z5	848773/004	Nov. 05, 2008	Nov. 04, 2009
RF Cable (JYEBAO)	5DFB	COBCAB-001	Aug 15, 2008	Aug 14, 2009
50 ohms Terminator	50	3	Nov. 05, 2008	Nov. 04, 2009
Software	BV ADT_Cond_V7.3.7	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. B.
3. The VCCI Con B Registration No. is C-2193.



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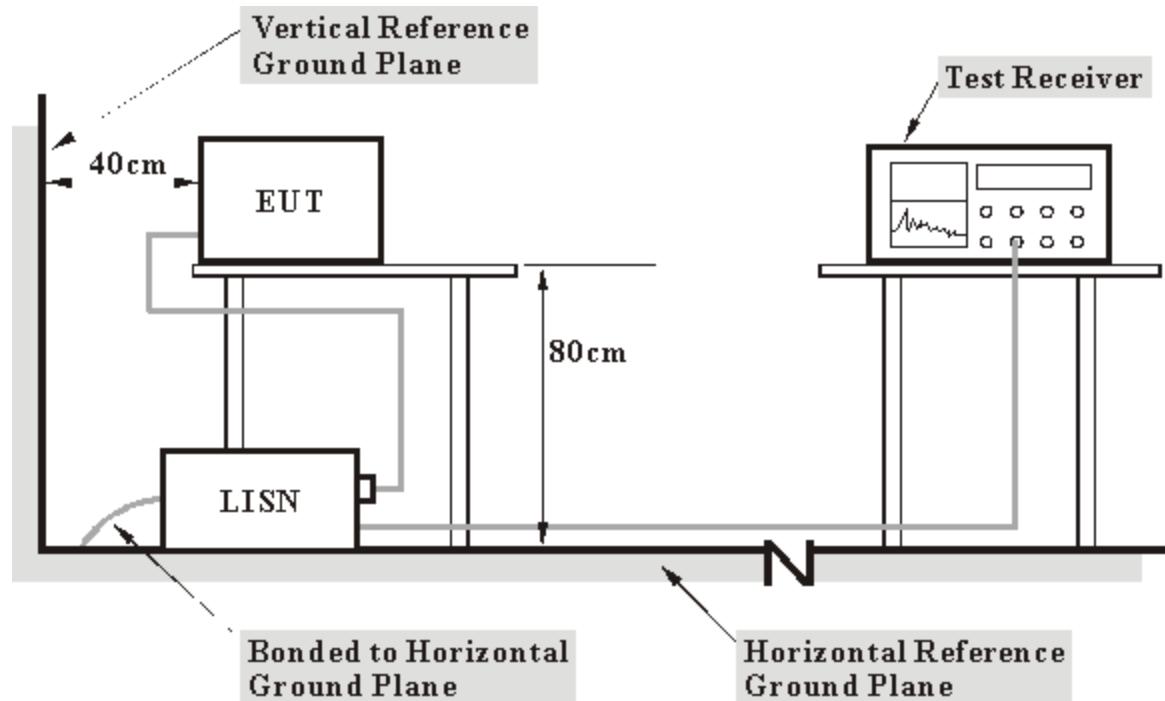
#### 4.1.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under Limit - 20dB was not recorded.

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.5 TEST SETUP



**Note:** 1. Support units were connected to second LISN.  
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

#### 4.1.6 EUT OPERATING CONDITIONS

- a. Placed the EUT on the testing table.
- b. Connect the EUT with the support unit 1 (Notebook computer) which placed outside of testing area.
- c. The support unit 1 (Notebook computer) run test program “RFIDDemo W32” to enable EUT under transmission condition continuously at specific channel frequency.



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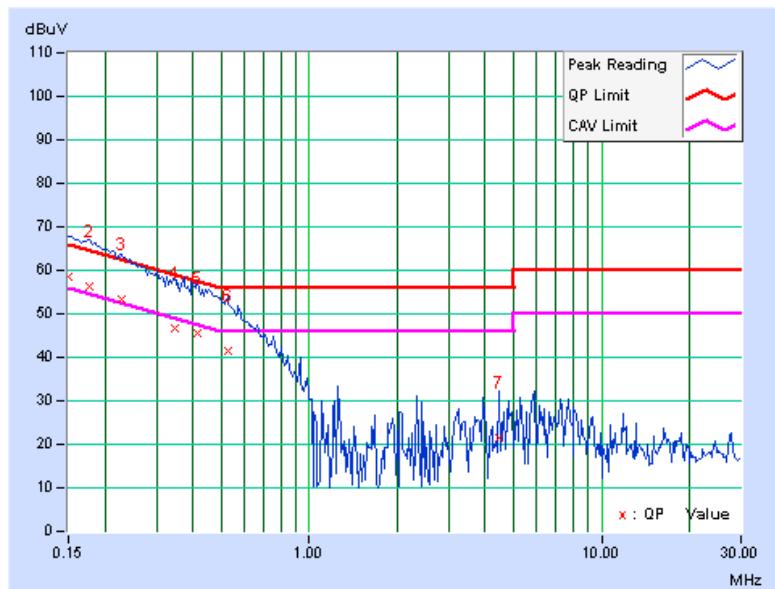
#### 4.1.7 TEST RESULTS

<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>6dB BANDWIDTH</b>	9 kHz
<b>ENVIRONMENTAL CONDITIONS</b>	22 deg. C, 58%RH, 965 hPa	<b>PHASE</b>	Line (L)
<b>TESTED BY</b>	Phoenix Huang		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.19	58.15	27.59	58.34	27.78	66.00	56.00	-7.66	-28.22
2	0.177	0.21	56.25	24.36	56.46	24.57	64.61	54.61	-8.15	-30.04
3	0.228	0.25	52.95	20.49	53.20	20.74	62.52	52.52	-9.31	-31.77
4	0.345	0.39	46.25	-	46.64	-	59.07	49.07	-12.43	-
5	0.416	0.46	45.06	-	45.52	-	57.54	47.54	-12.02	-
6	0.525	0.42	41.24	-	41.66	-	56.00	46.00	-14.34	-
7	4.434	0.59	21.05	-	21.64	-	56.00	46.00	-34.36	-

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.

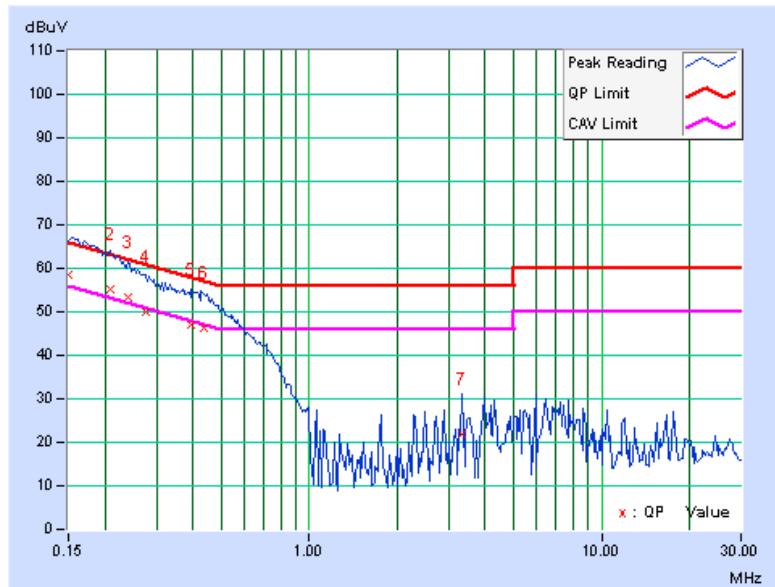


<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>6dB BANDWIDTH</b>	9 kHz
<b>ENVIRONMENTAL CONDITIONS</b>	22 deg. C, 58%RH, 965 hPa	<b>PHASE</b>	Neutral (N)
<b>TESTED BY</b>	Phoenix Huang		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.12	58.37	28.11	58.49	28.23	66.00	56.00	-7.51	-27.77
2	0.209	0.16	55.19	23.18	55.35	23.34	63.26	53.26	-7.91	-29.92
3	0.240	0.20	53.02	20.56	53.22	20.76	62.10	52.10	-8.88	-31.34
4	0.275	0.24	49.78	-	50.02	-	60.97	50.97	-10.94	-
5	0.396	0.40	46.56	-	46.96	-	57.93	47.93	-10.98	-
6	0.435	0.39	46.04	-	46.43	-	57.15	47.15	-10.73	-
7	3.336	0.45	21.50	-	21.95	-	56.00	46.00	-34.05	-

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.





## 4.2 NUMBER OF HOPPING FREQUENCY USED

### 4.2.1 LIMIT OF HOPPING FREQUENCY USED

At least 50 hopping frequencies, and should be equally spaced.

### 4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 09, 2008	Aug. 08, 2009

#### NOTE:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

### 4.2.3 TEST PROCEDURES

1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
2. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Set the SA on MaxHold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.
4. Set the SA on View mode and then plot the result on SA screen.
5. Repeat above procedures until all frequencies measured were complete.

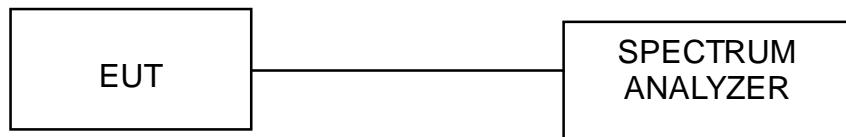
### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation



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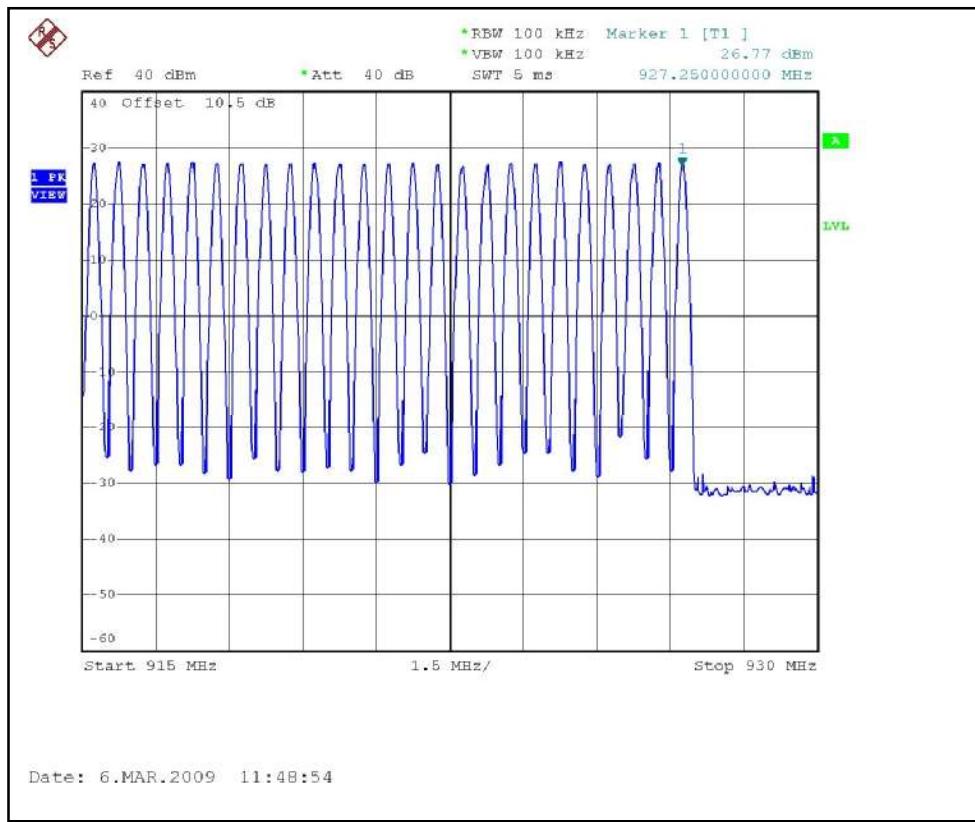
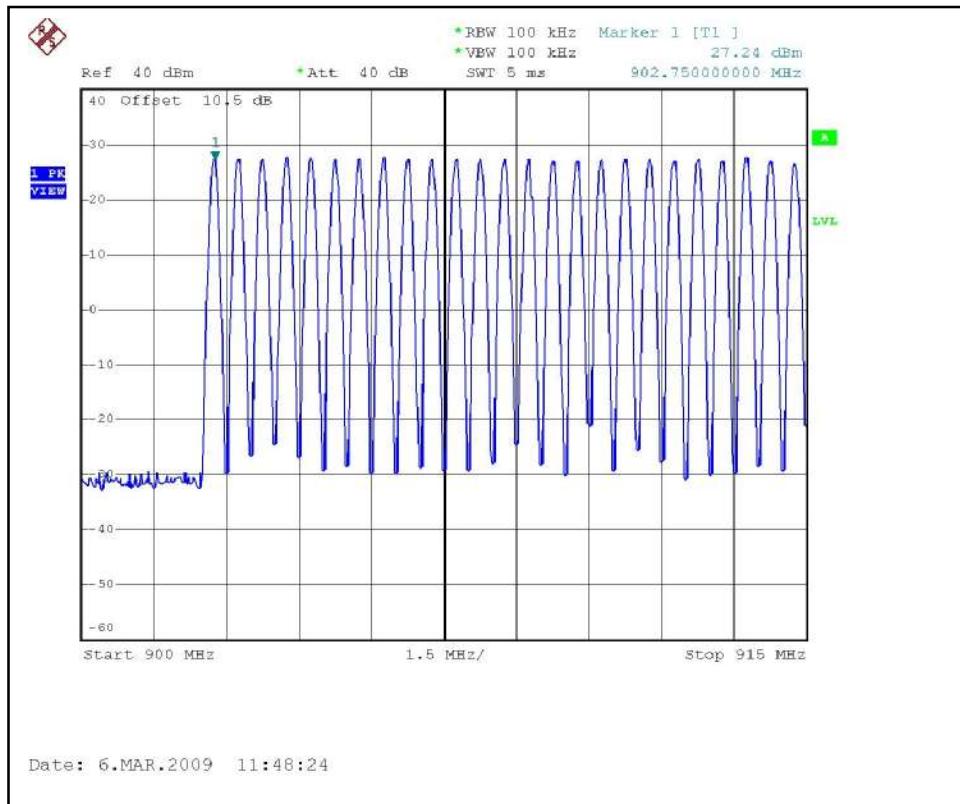
#### 4.2.5 TEST SETUP



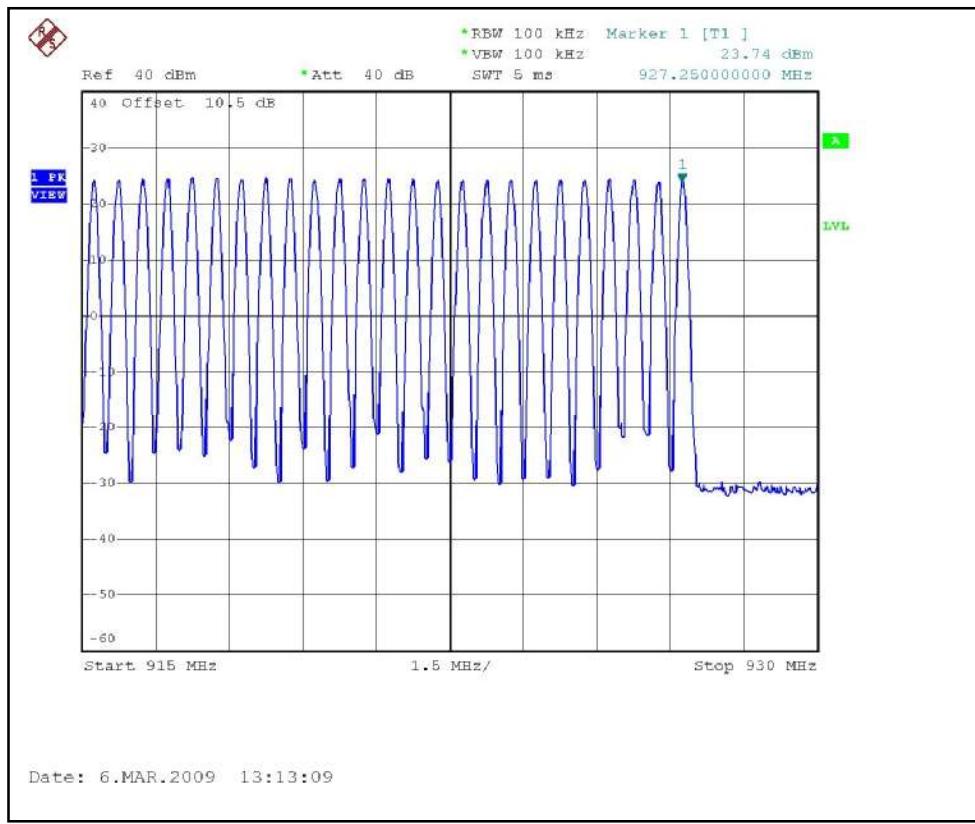
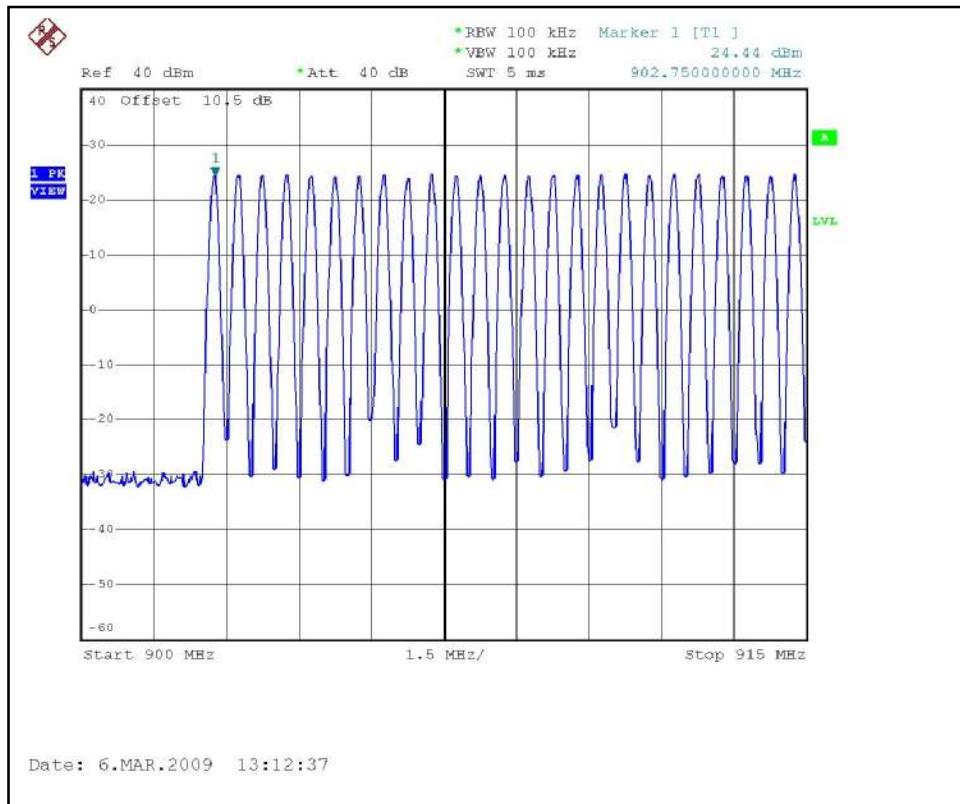
#### 4.2.6 TEST RESULTS

There are 50 hopping frequencies in the hopping mode. Please refer to following pages for the test result. On the plots, it shows that the hopping frequencies are equally spaced.

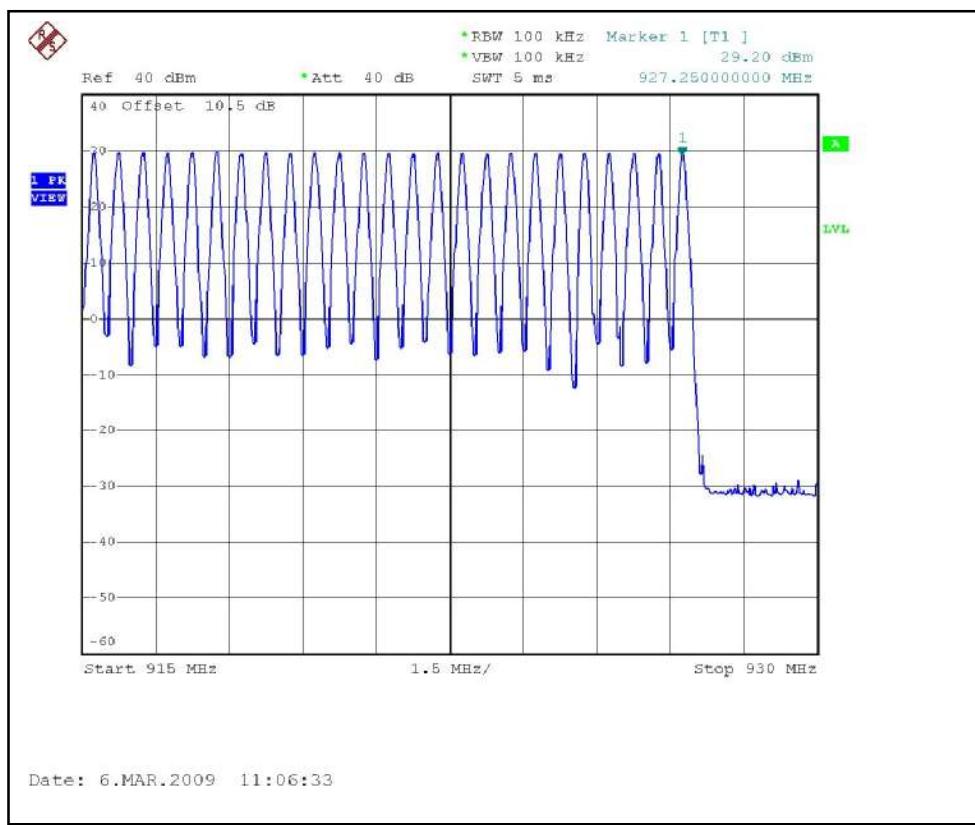
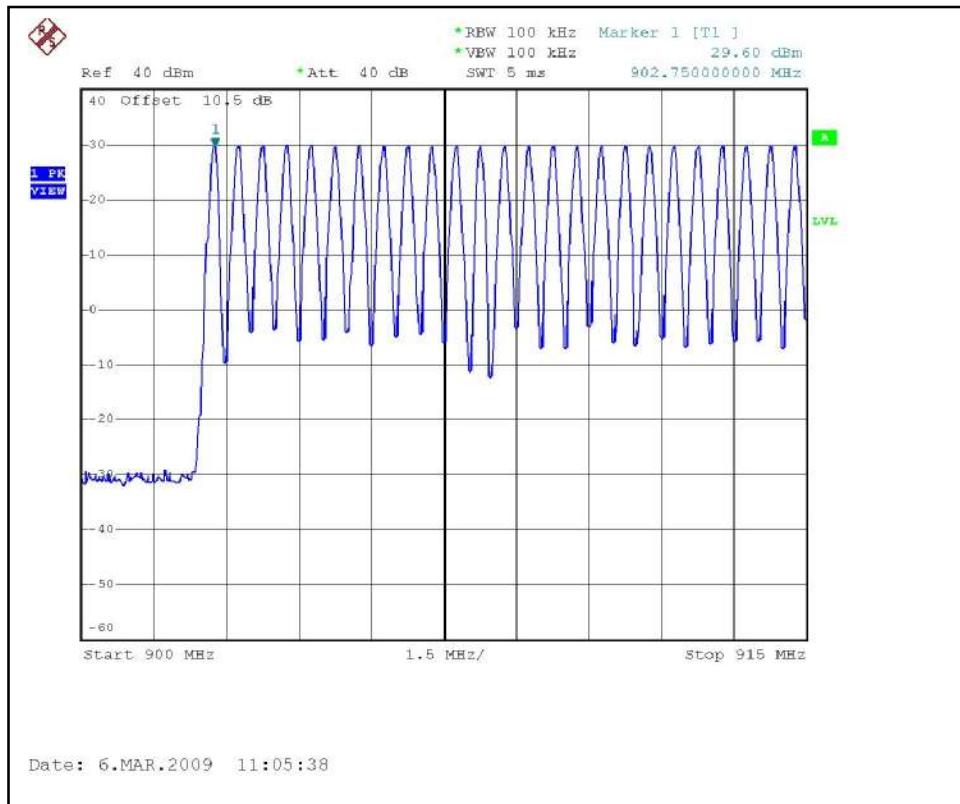
## For PR-ASK(DRM) – High Power:



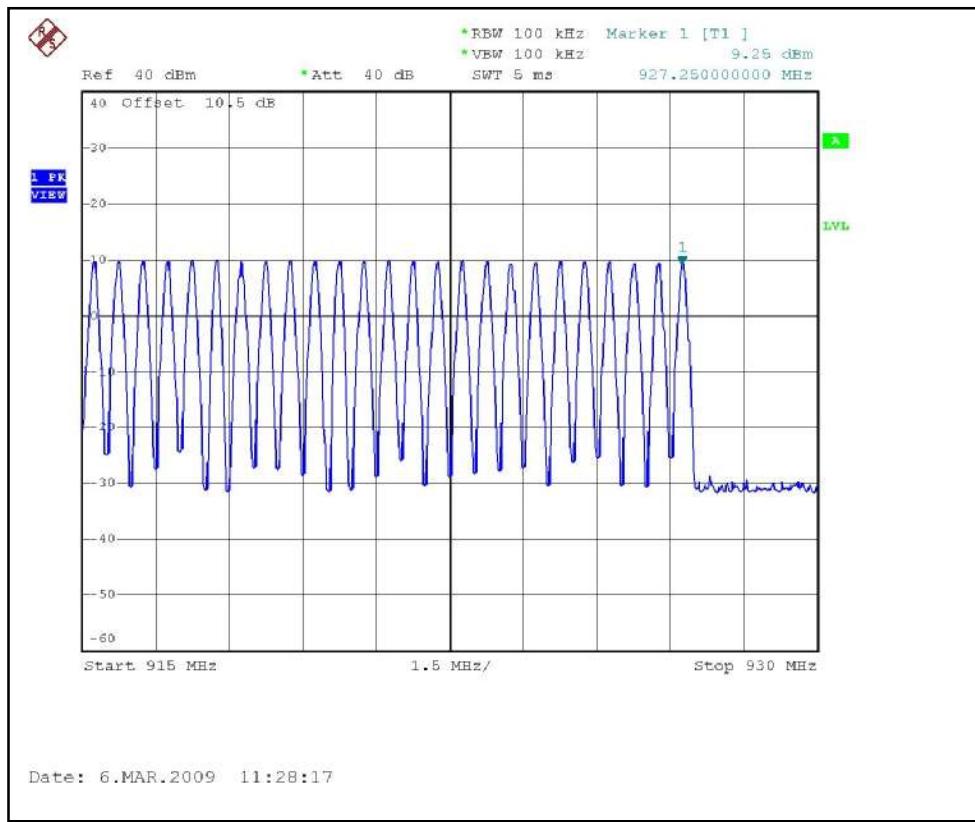
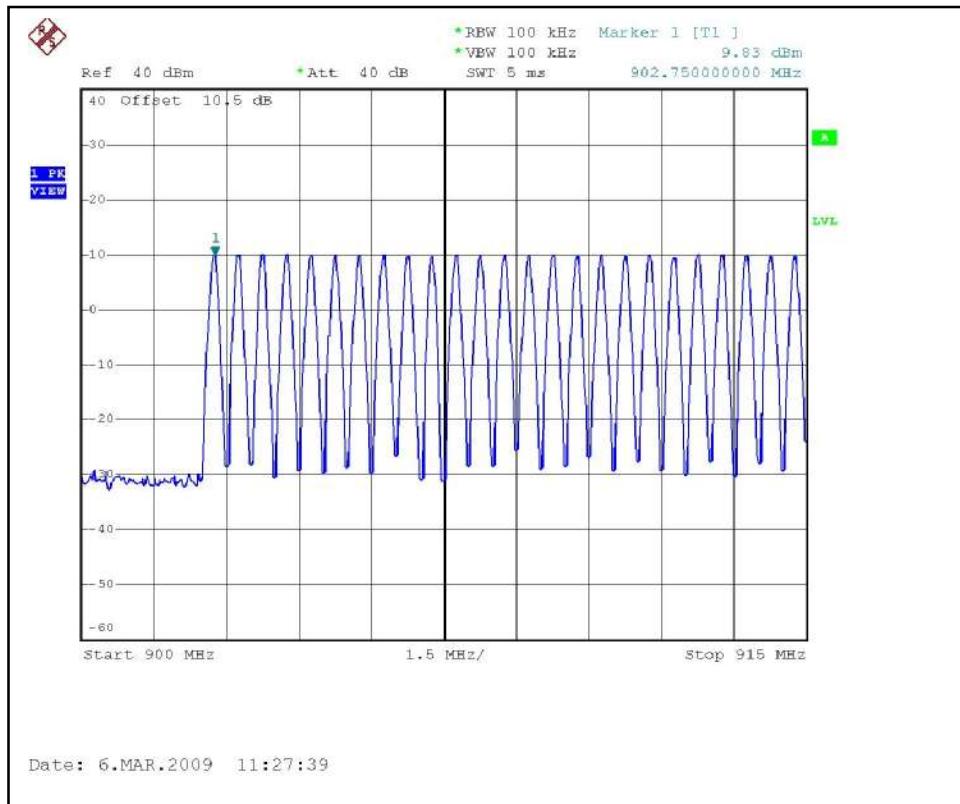
## For PR-ASK(DRM) – Low Power:

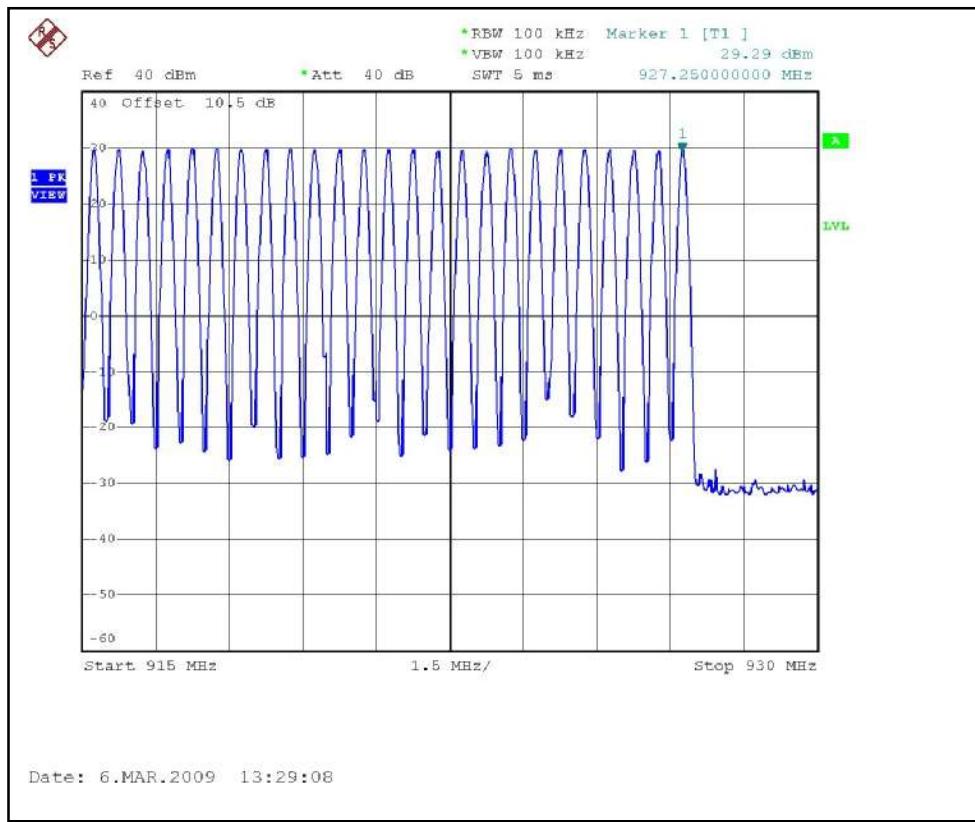
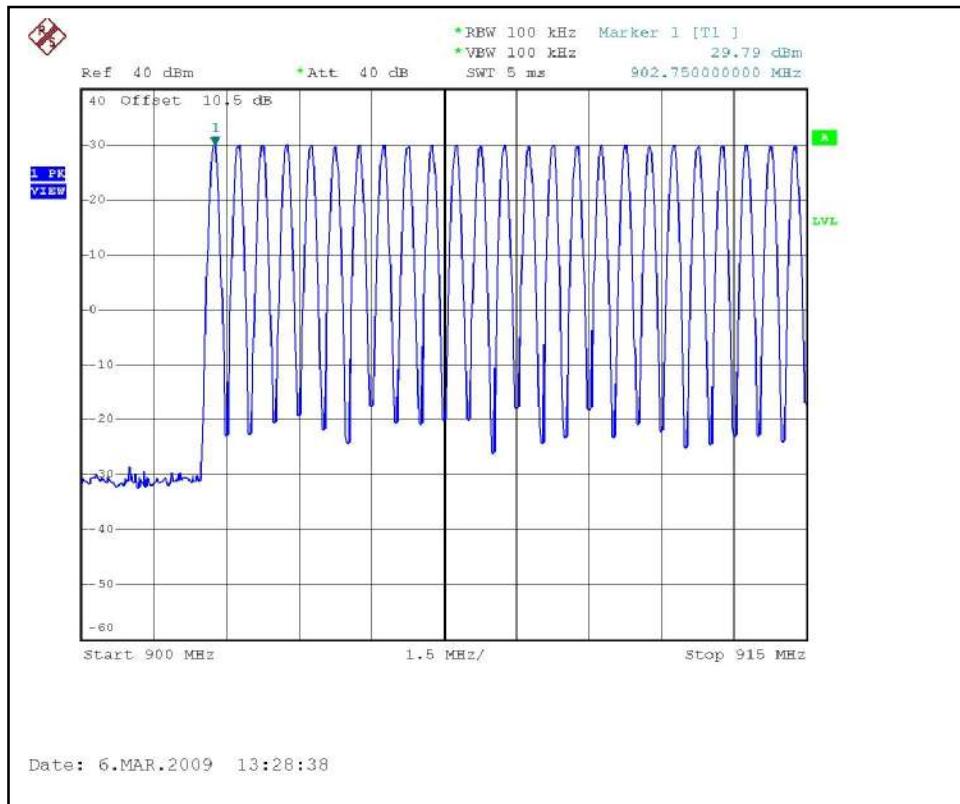


## For DSB-ASK(MRM) – High Power:

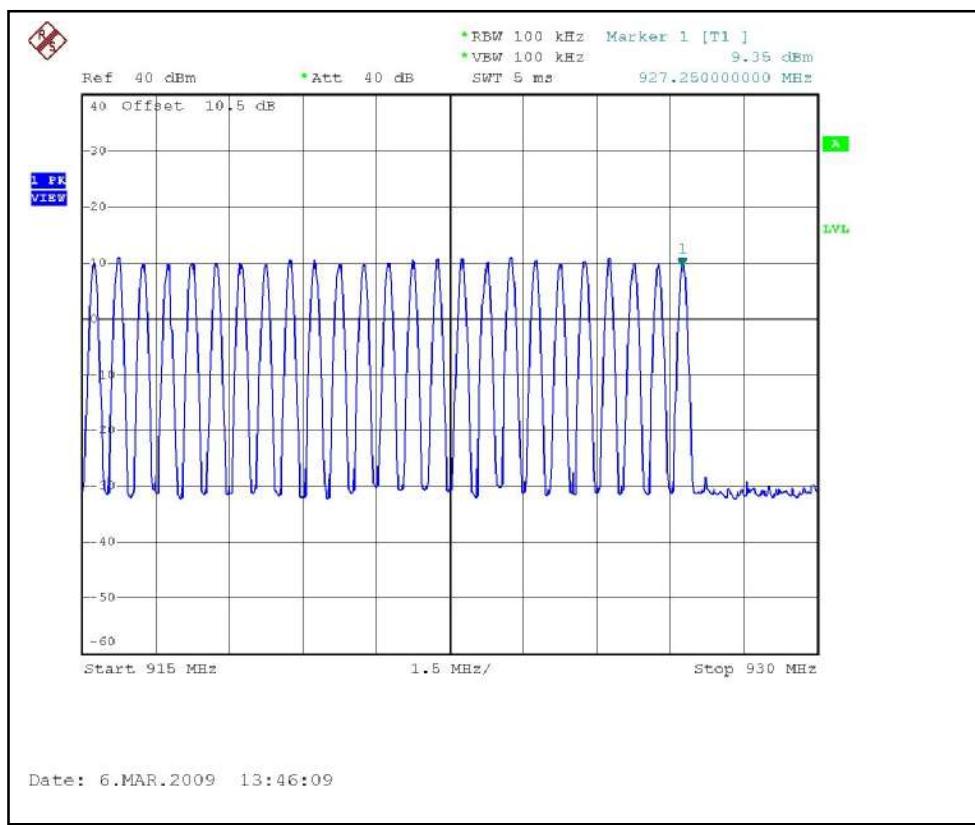
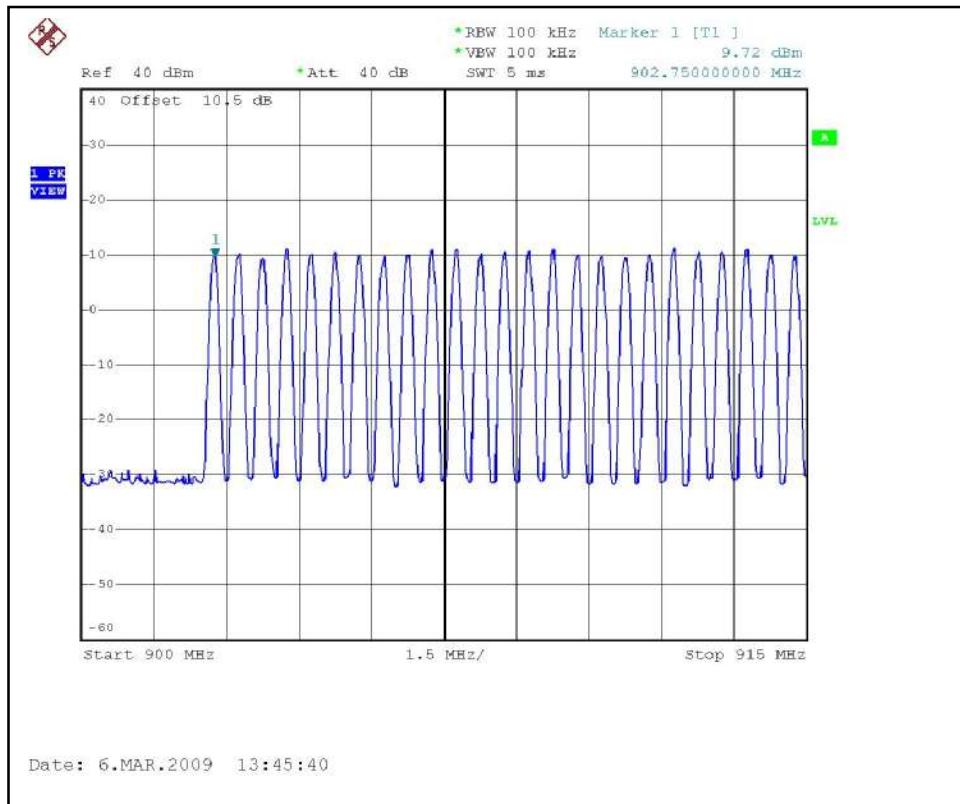


## For DSB-ASK(MRM) – Low Power:



**For PR-ASK(XRM) – High Power:**


## For PR-ASK(XRM) – Low Power:





## 4.3 DWELL TIME ON EACH CHANNEL

### 4.3.1 LIMIT OF DWELL TIME USED

For FHSS, the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period. For hybrid systems, the average time of occupancy on any frequency should not exceed 0.4 seconds within a time period in seconds equal to the number of hopping frequencies employed multiplied by 0.4.

### 4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 09, 2008	Aug. 08, 2009

#### NOTE:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

### 4.3.3 TEST PROCEDURES

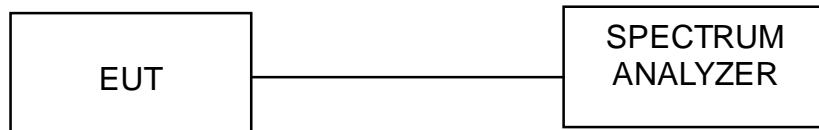
1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
2. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Adjust the center frequency of SA on any frequency to be measured and set SA to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
4. Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
5. Repeat above procedures until all frequencies measured were complete.



#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.3.5 TEST SETUP



#### 4.3.6 TEST RESULTS

For PR-ASK(DRM) – High Power:

Number of transmission in a 20 s	Length of transmission time (msec)	Result (msec)	Limit (msec)
23 times	11.8	271.4	400

For PR-ASK(DRM) – Low Power:

Number of transmission in a 20 s	Length of transmission time (msec)	Result (msec)	Limit (msec)
23 times	11.6	266.8	400



For DSB-ASK(MRM) – High Power:

Number of transmission in a 20 s	Length of transmission time (msec)	Result (msec)	Limit (msec)
24 times	8.5	204.0	400

For DSB-ASK(MRM) – Low Power:

Number of transmission in a 20 s	Length of transmission time (msec)	Result (msec)	Limit (msec)
26 times	8.5	221.0	400

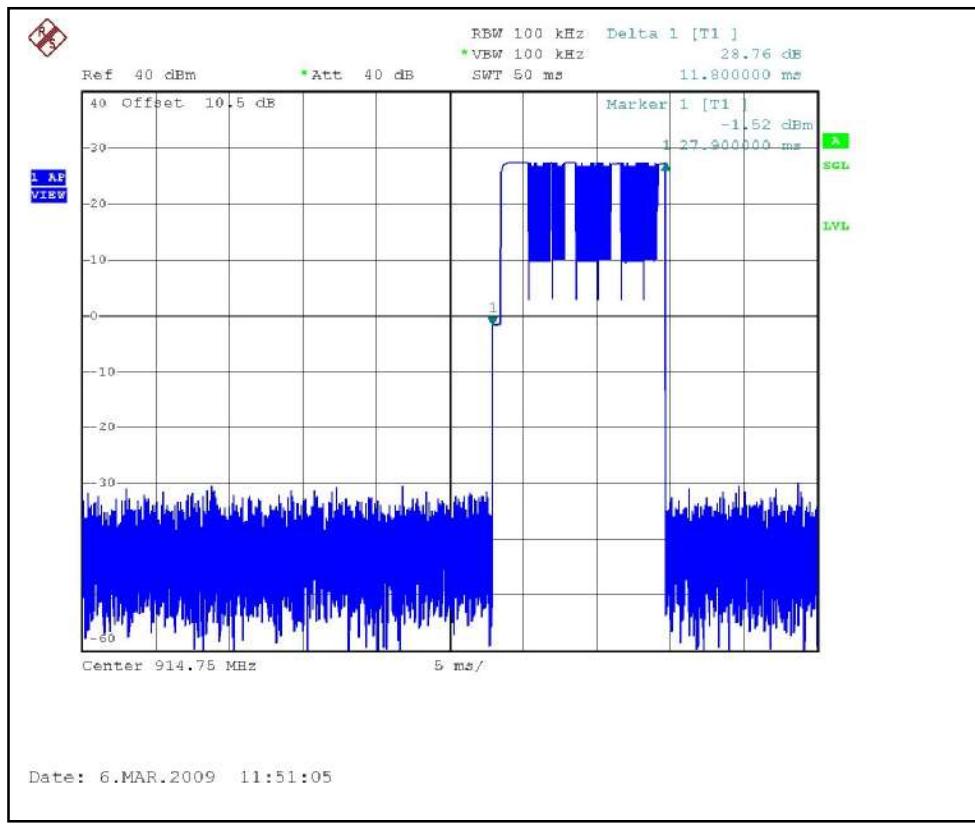
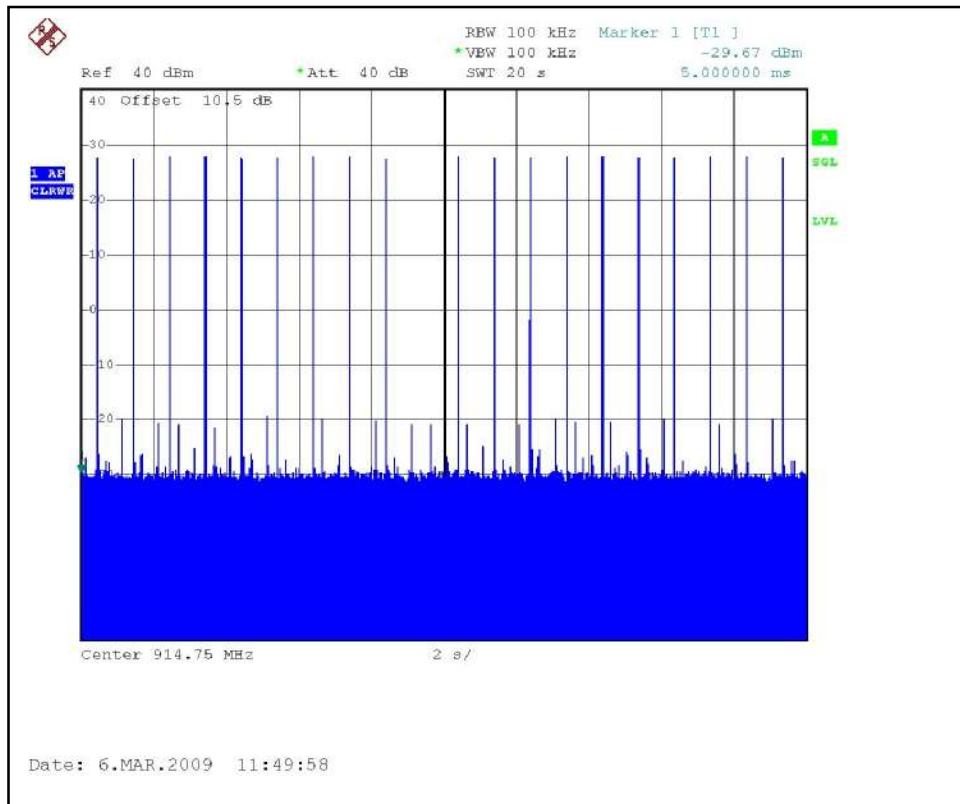
For PR-ASK(XRM) – High Power:

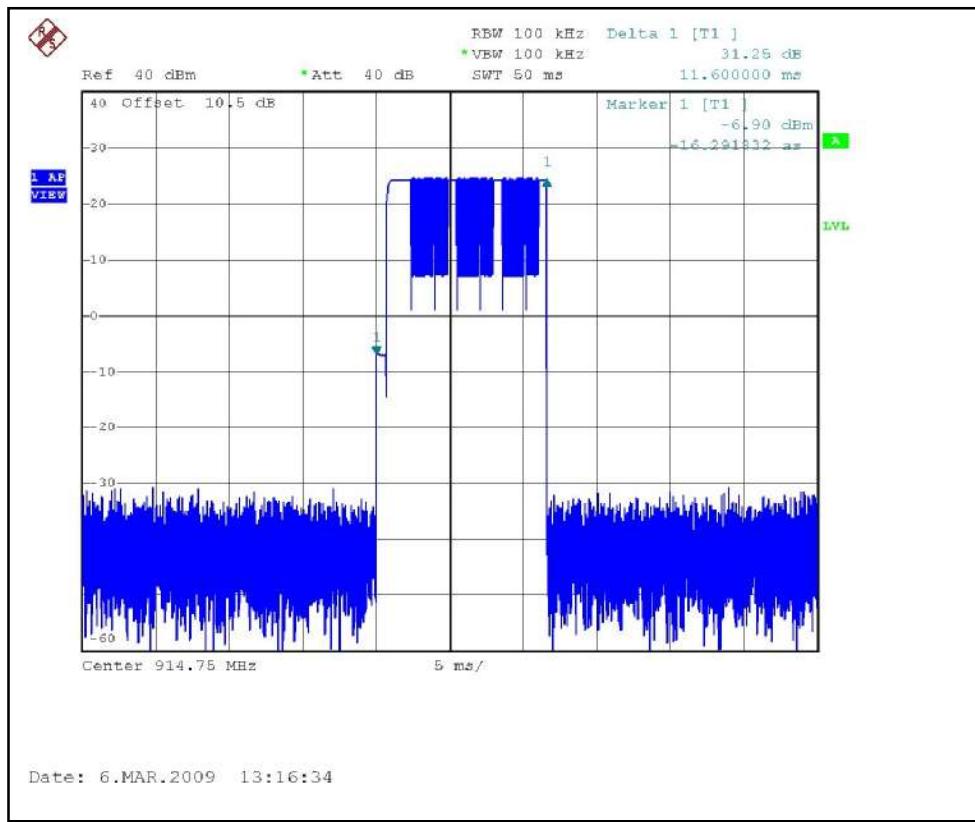
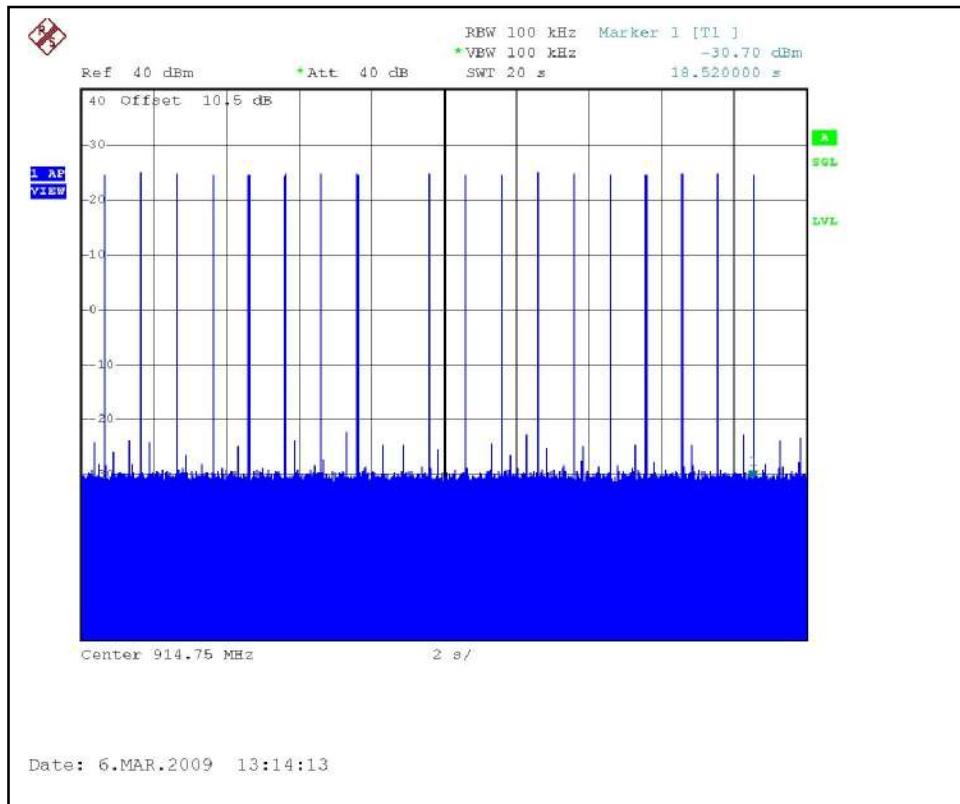
Number of transmission in a 20 s	Length of transmission time (msec)	Result (msec)	Limit (msec)
23 times	11.9	273.7	400

For PR-ASK(XRM) – Low Power:

Number of transmission in a 20 s	Length of transmission time (msec)	Result (msec)	Limit (msec)
23 times	11.6	266.8	400

Test plots of the transmitting time slot are shown on following pages.

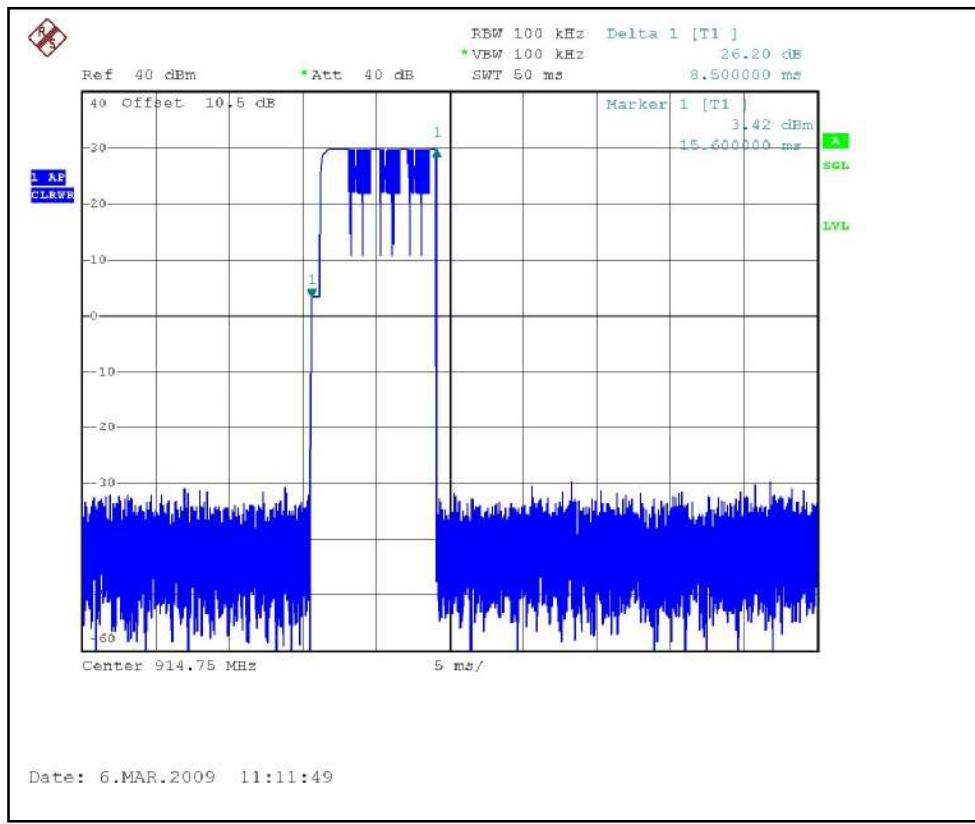
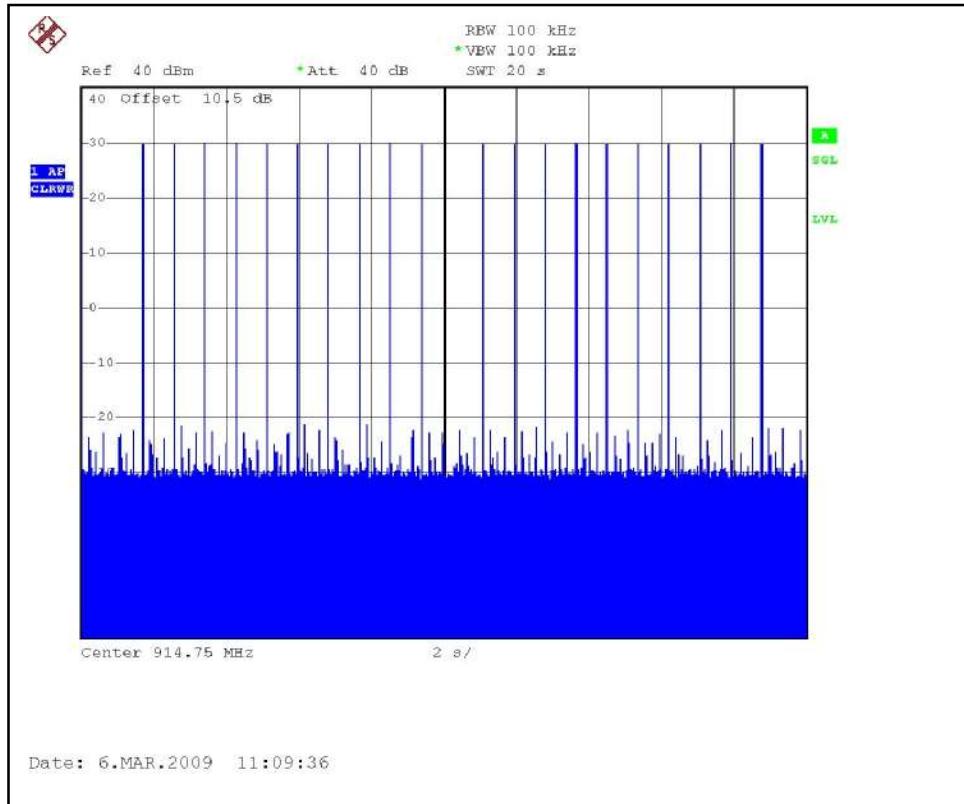
**For PR-ASK(DRM) – High Power:**


**For PR-ASK(DRM) – Low Power:**


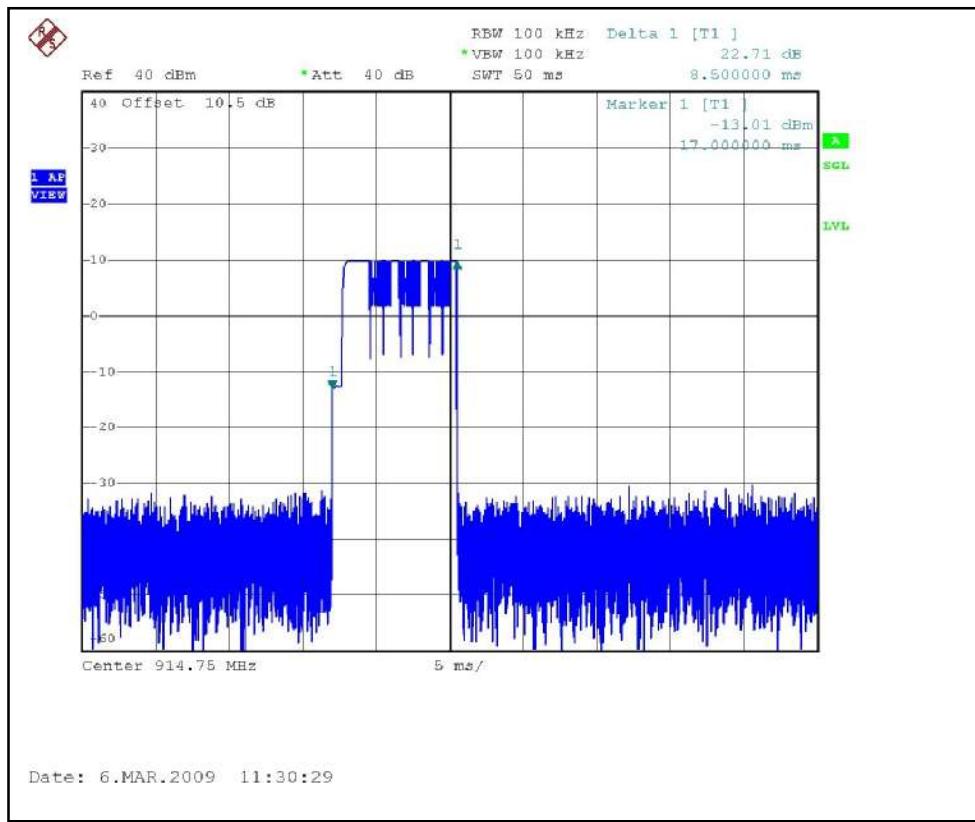
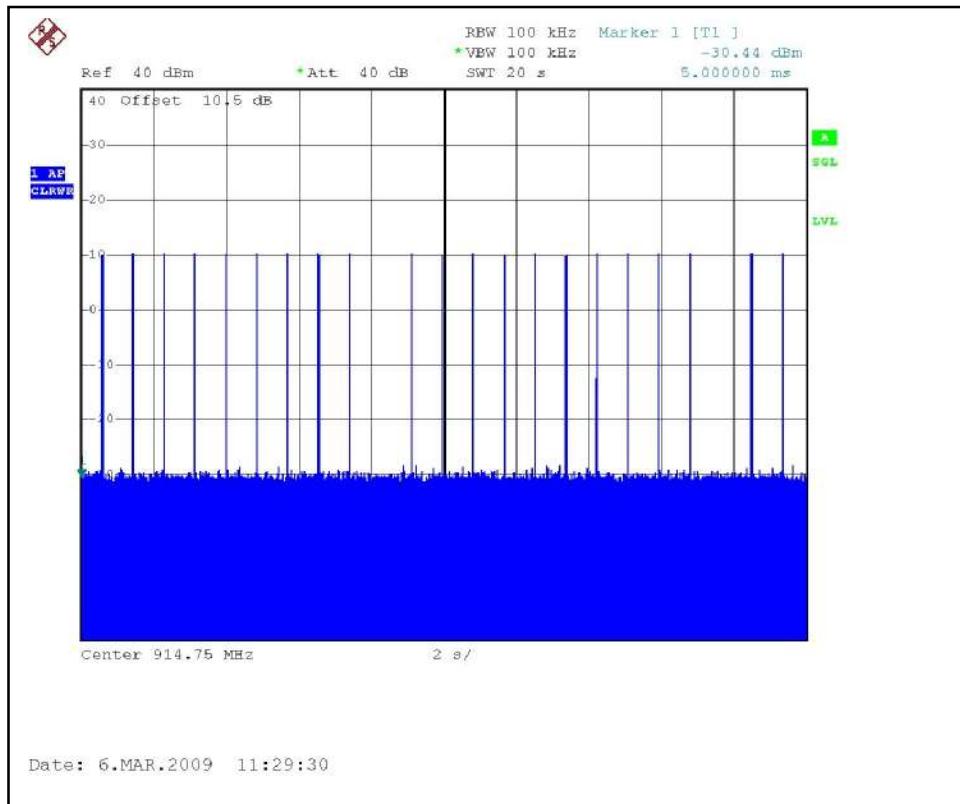


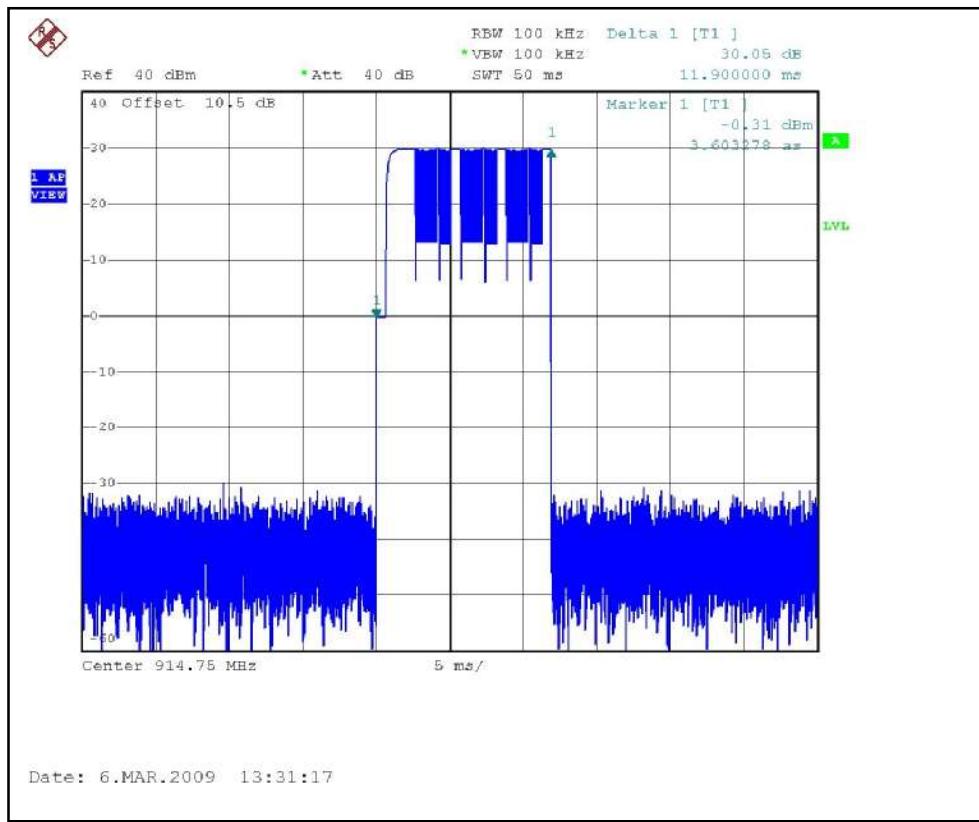
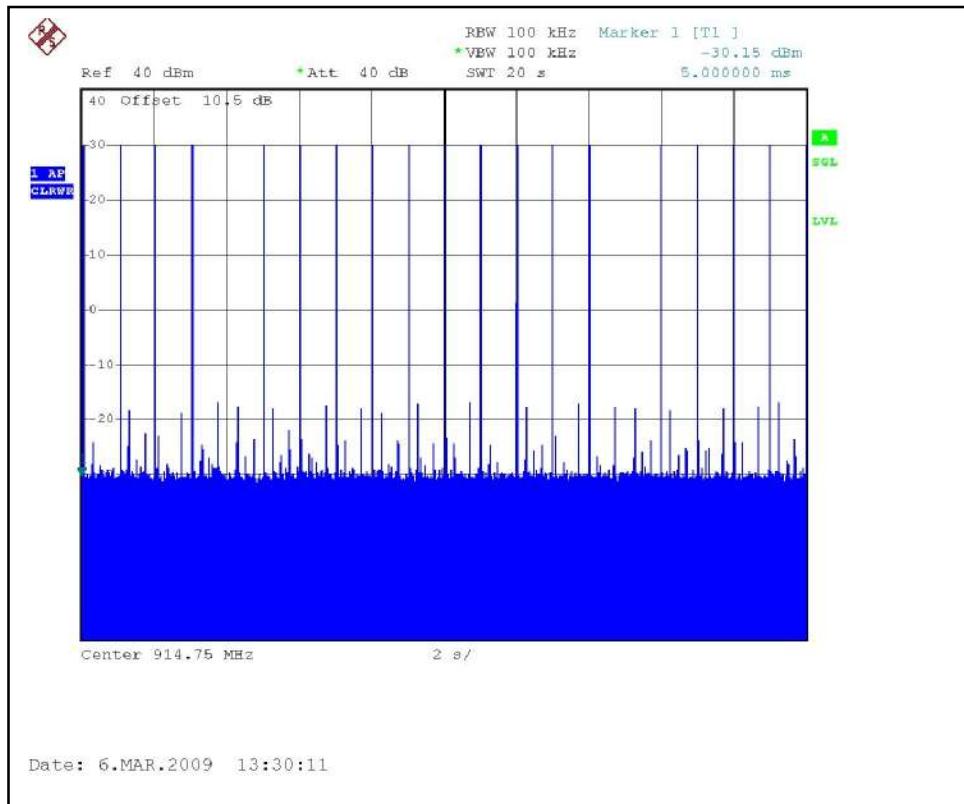
A D T

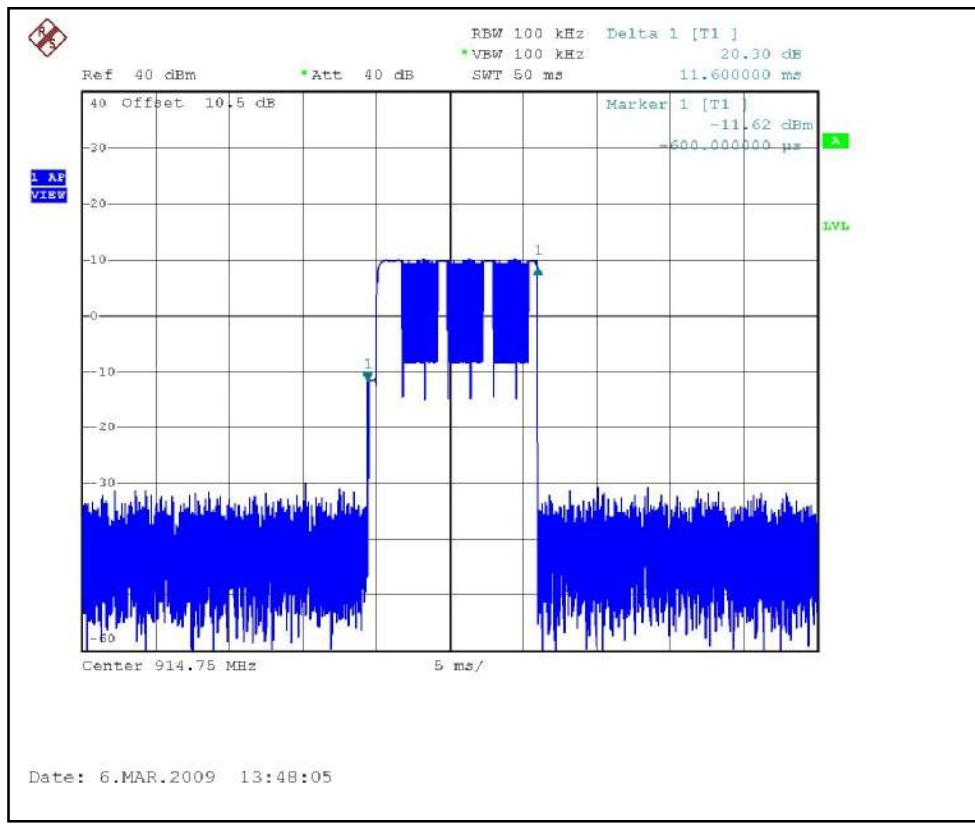
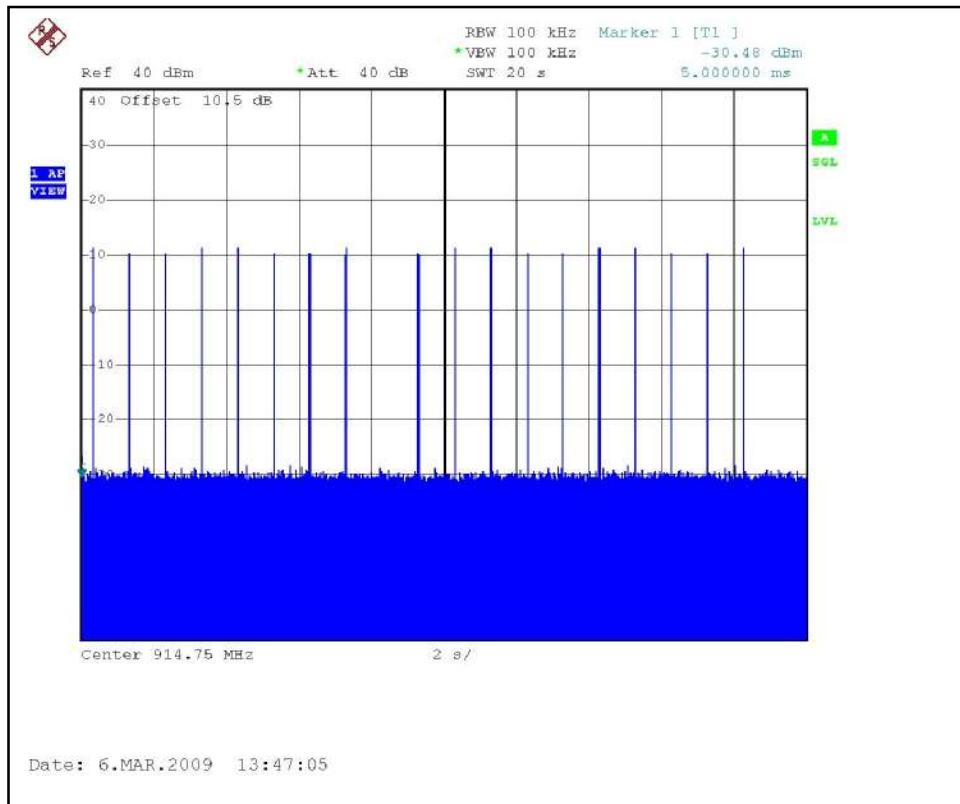
### For DSB-ASK(MRM) – High Power:



## For DSB-ASK(MRM) – Low Power:



**For PR-ASK(XRM) – High Power:**


**For PR-ASK(XRM) – Low Power:**




## 4.4 CHANNEL BANDWIDTH

For frequency hopping system operating in the 902-928MHz, If the 20dB bandwidth of hopping channel is greater than 25kHz, 20dB bandwidth of hopping channel shall be a minimum limit for the hopping channel separation.

### 4.4.1 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 09, 2008	Aug. 08, 2009

#### NOTE:

- 1.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.



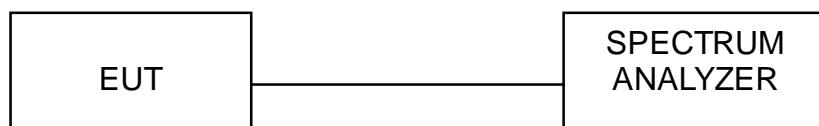
#### 4.4.2 TEST PROCEDURE

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. 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.
3. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

#### 4.4.3 DEVIATION FROM TEST STANDARD

No deviation

#### 4.4.4 TEST SETUP



#### 4.4.5 EUT OPERATING CONDITION

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

#### 4.4.6 TEST RESULTS

For PR-ASK(DRM) – High Power:

<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 965 hPa	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz
<b>TESTED BY</b>	Wen Yu		

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (kHz)
0	902.75	120.8
24	914.75	117.2
49	927.25	116.8

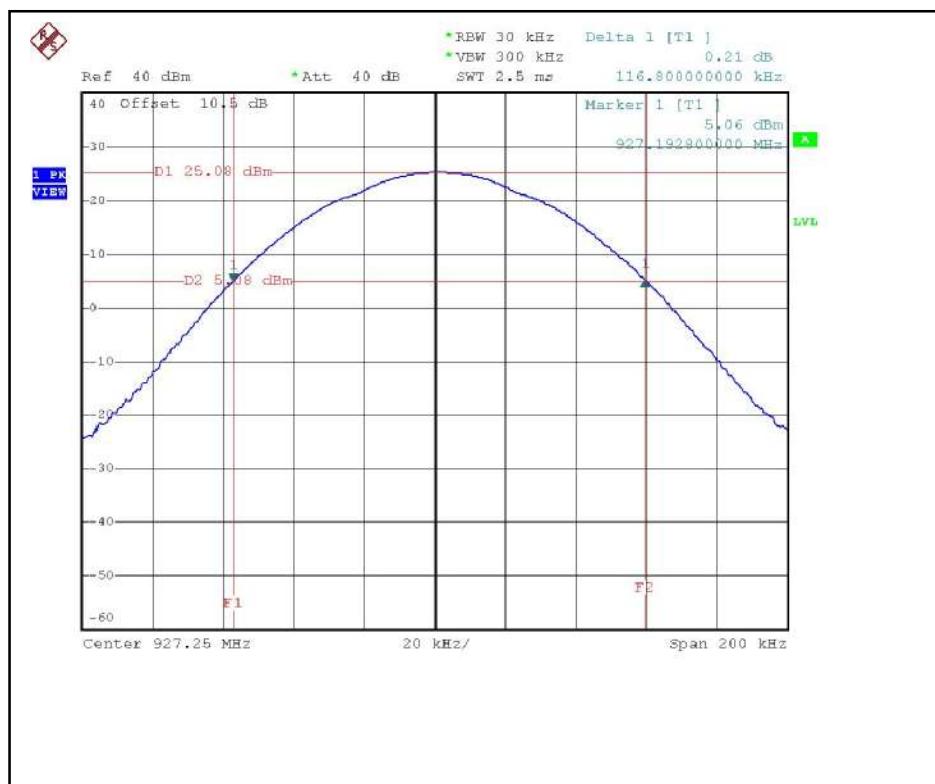
#### Channel 0



## Channel 24



## Channel 49



For PR-ASK(DRM) – Low Power:

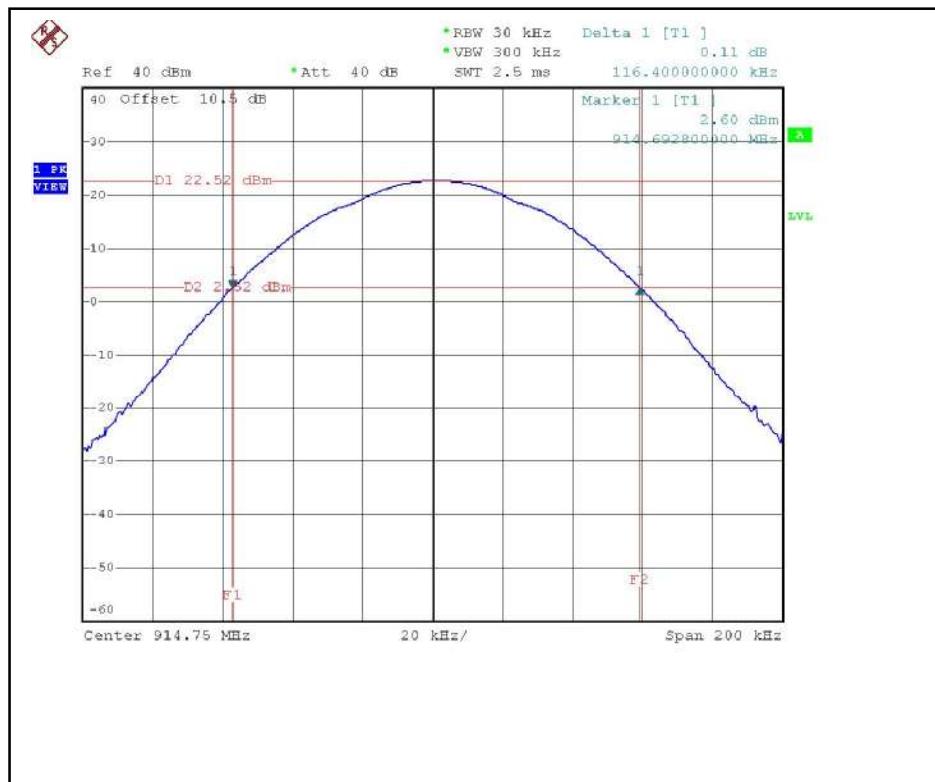
<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 965 hPa	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz
<b>TESTED BY</b>	Wen Yu		

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>20dB BANDWIDTH (kHz)</b>
0	902.75	118.4
24	914.75	116.4
49	927.25	116.4

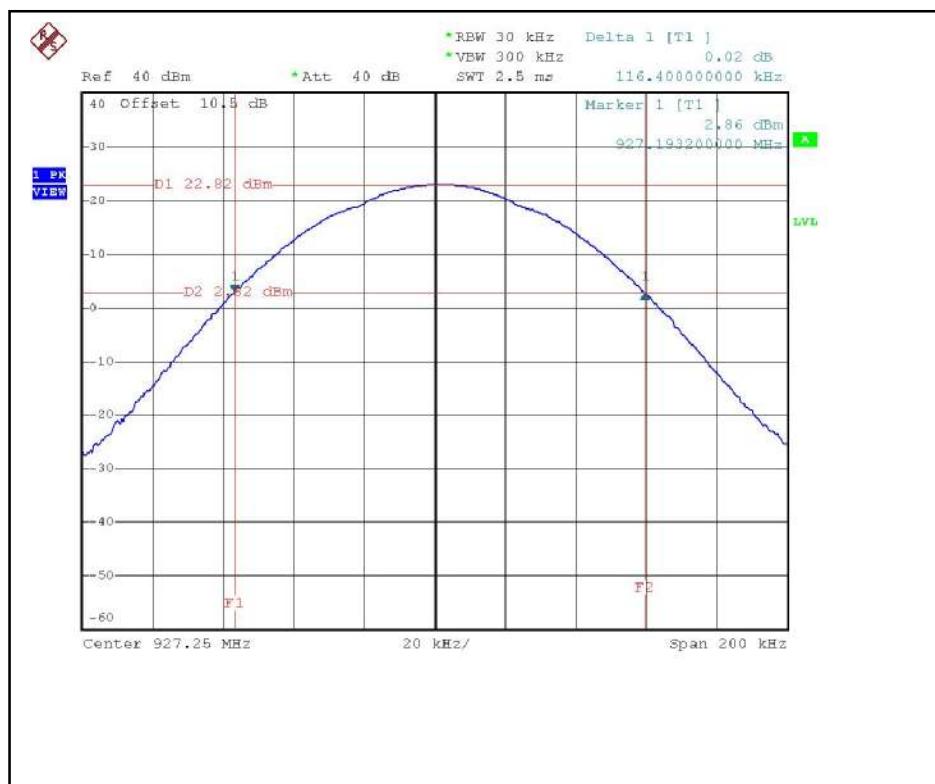
## Channel 0



## Channel 24



## Channel 49





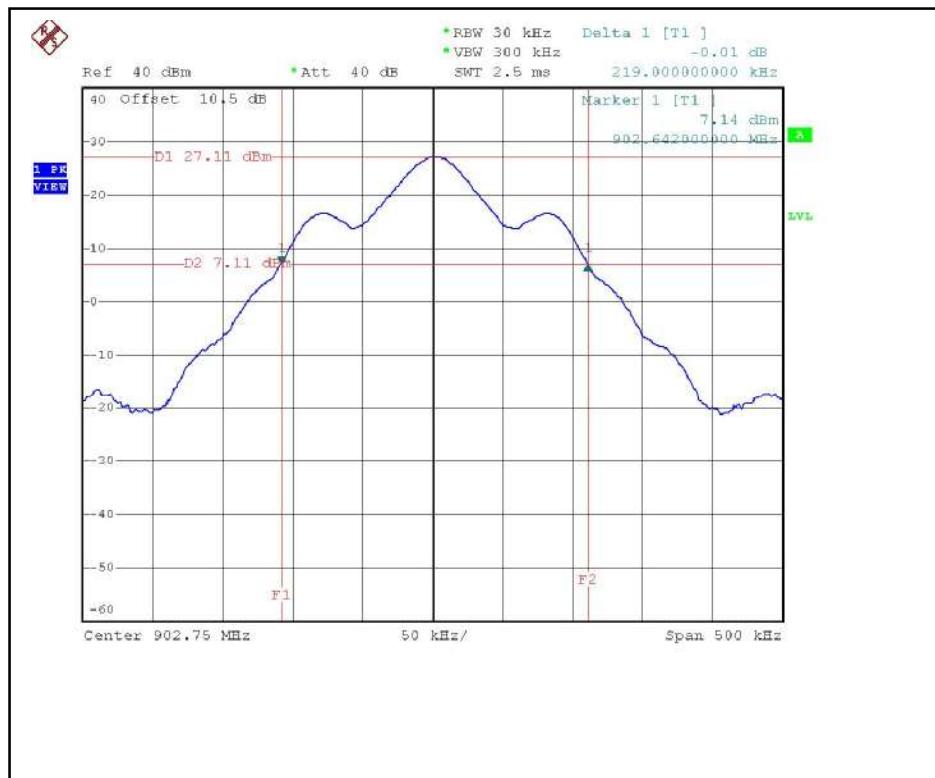
A D T

For DSB-ASK(MRM) – High Power:

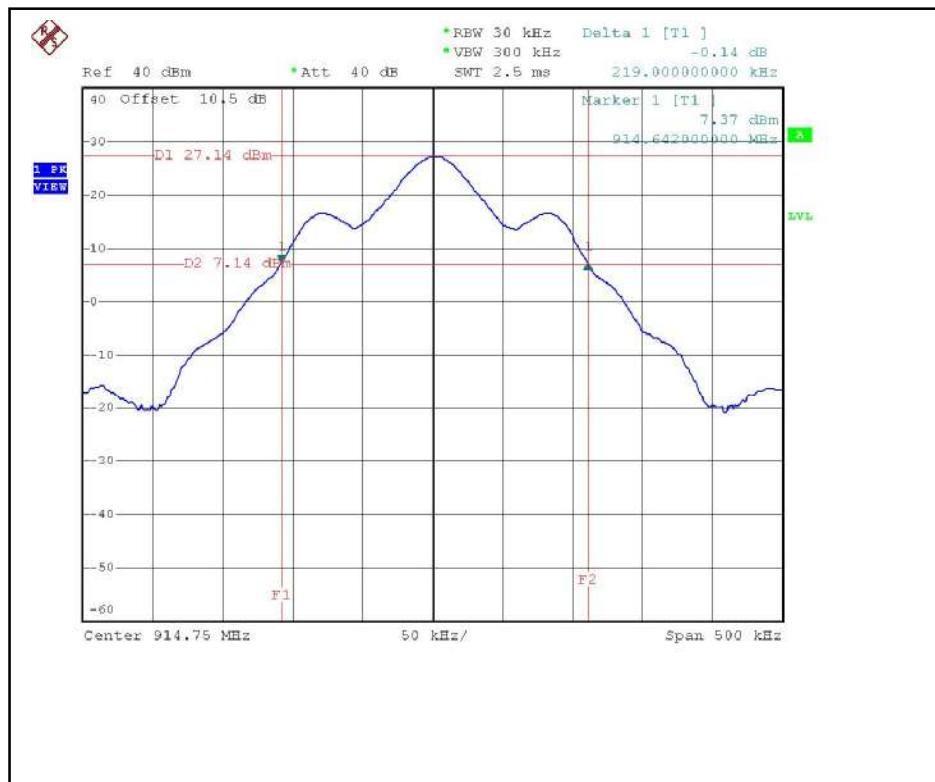
<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 965 hPa	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz
<b>TESTED BY</b>	Wen Yu		

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>20dB BANDWIDTH (kHz)</b>
0	902.75	219.0
24	914.75	219.0
49	927.25	219.0

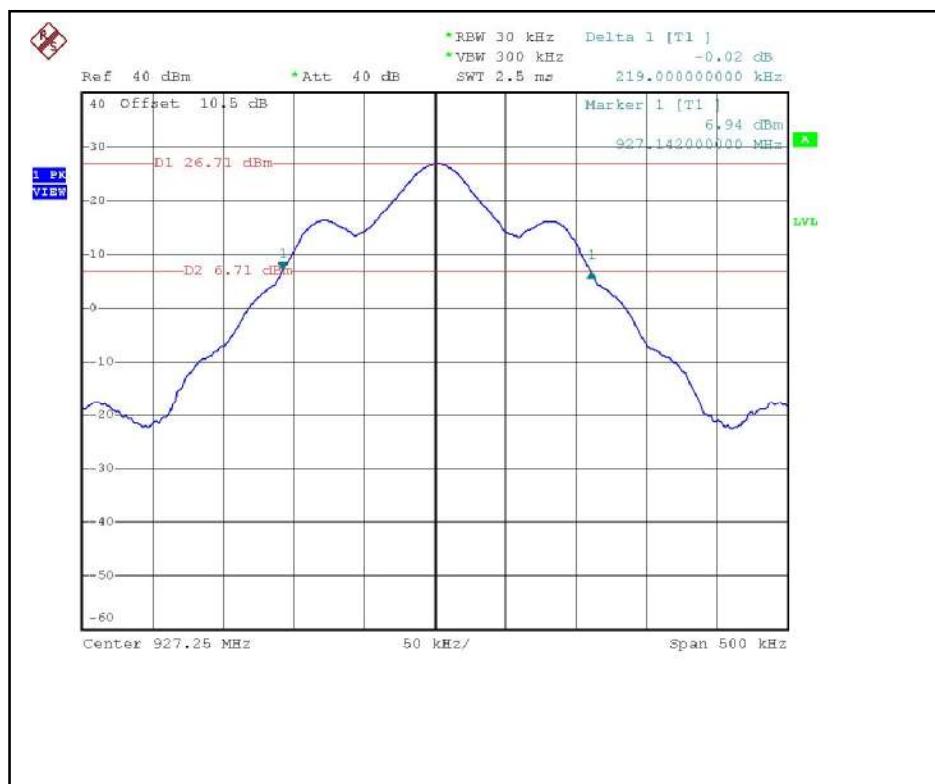
## Channel 0



## Channel 24



## Channel 49





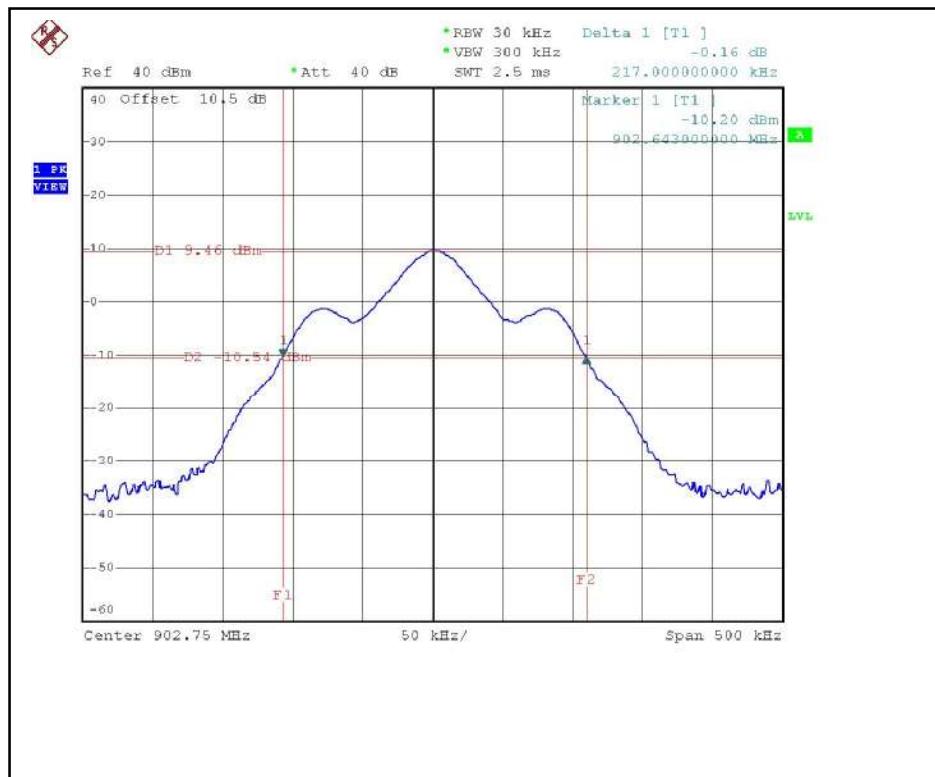
A D T

For DSB-ASK(MRM) – Low Power:

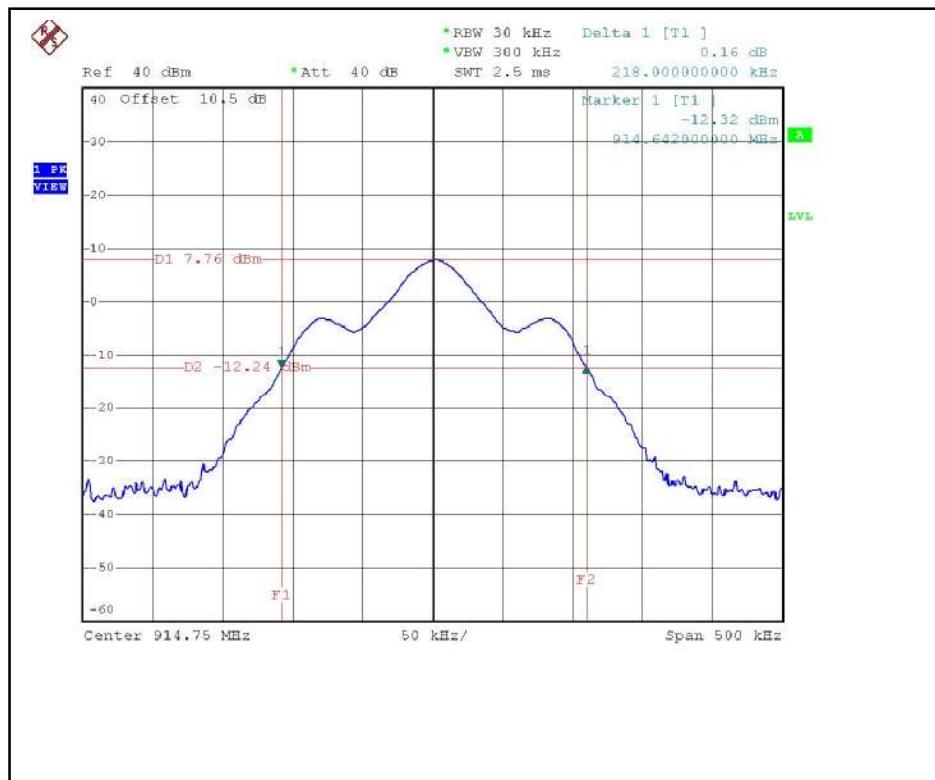
<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 965 hPa	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz
<b>TESTED BY</b>	Wen Yu		

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>20dB BANDWIDTH (kHz)</b>
0	902.75	217.0
24	914.75	218.0
49	927.25	217.0

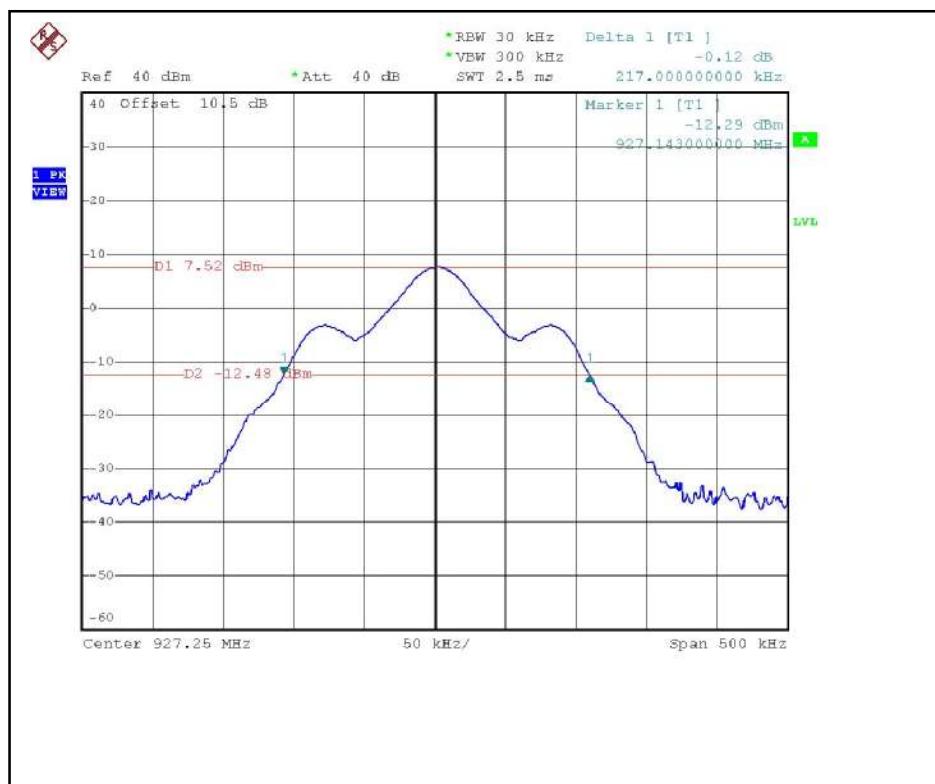
## Channel 0



## Channel 24



## Channel 49





A D T

For PR-ASK(XRM) – High Power:

<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 965 hPa	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz
<b>TESTED BY</b>	Wen Yu		

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>20dB BANDWIDTH (kHz)</b>
0	902.75	121.2
24	914.75	120.8
49	927.25	121.2

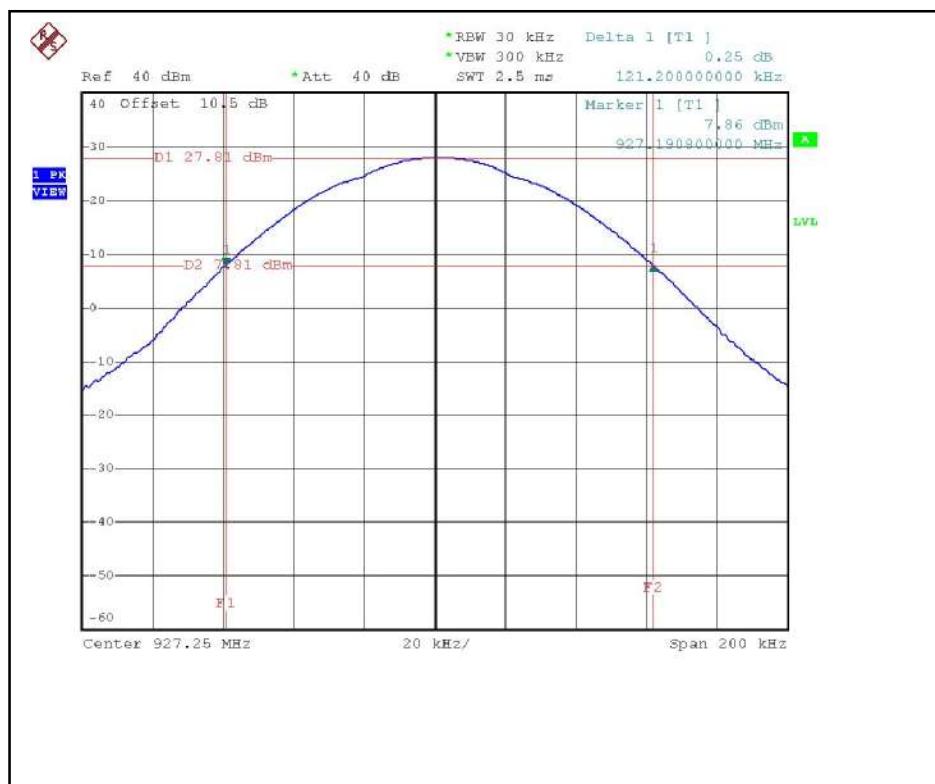
## Channel 0



## Channel 24



## Channel 49

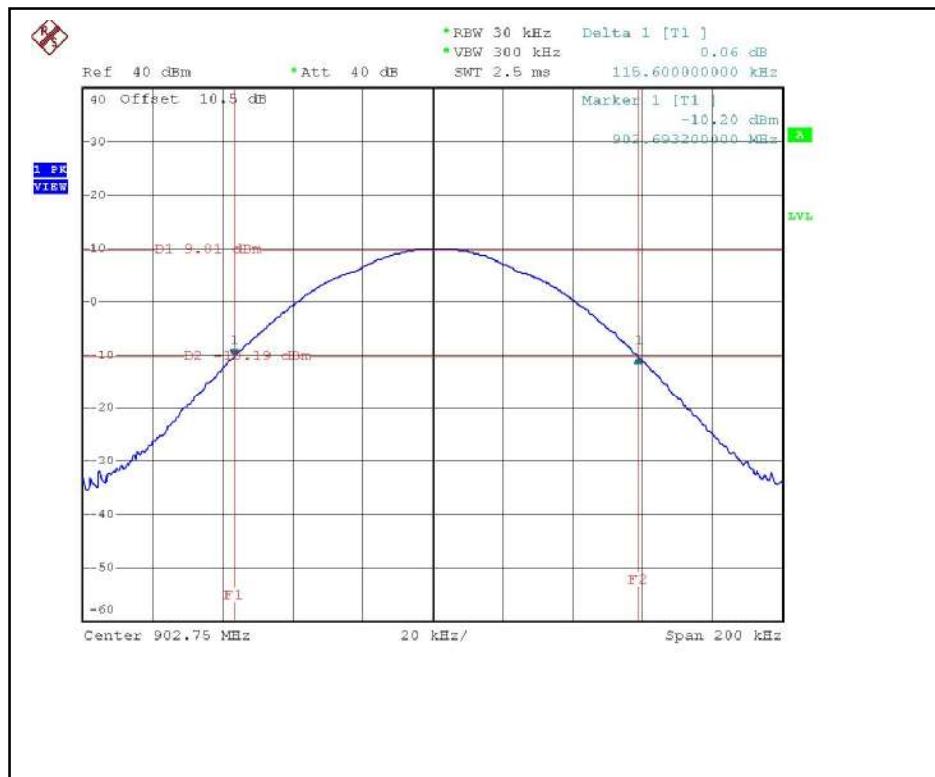


For PR-ASK(XRM) – Low Power:

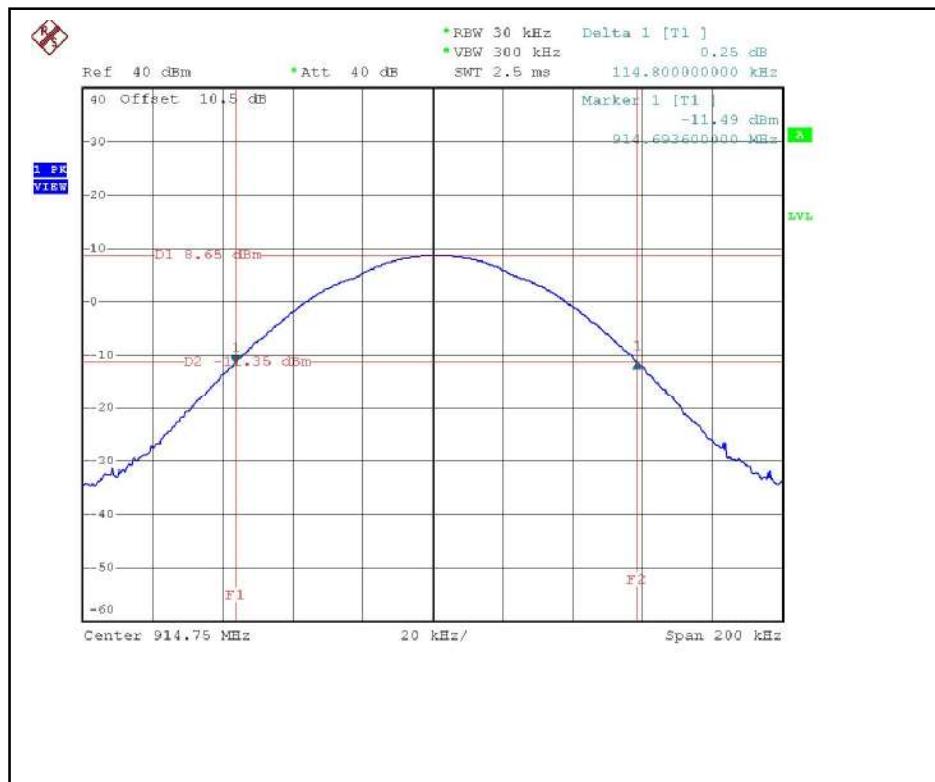
<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 965 hPa	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz
<b>TESTED BY</b>	Wen Yu		

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>20dB BANDWIDTH (kHz)</b>
0	902.75	115.6
24	914.75	114.8
49	927.25	115.6

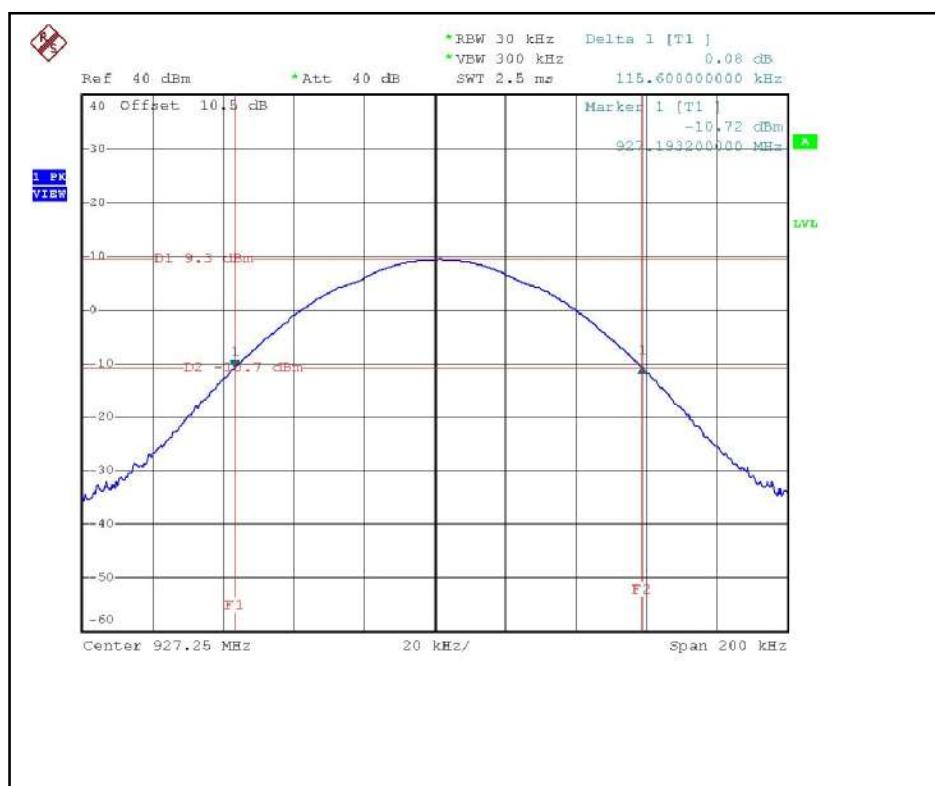
## Channel 0



## Channel 24



## Channel 49





## 4.5 HOPPING CHANNEL SEPARATION

### 4.5.1 LIMIT OF HOPPING CHANNEL SEPARATION

At least 25 kHz or 20dB hopping channel bandwidth (whichever is greater).

### 4.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100037	Aug. 09, 2008	Aug. 08, 2009

#### NOTE:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

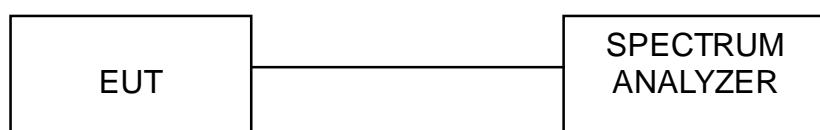
### 4.5.3 TEST PROCEDURES

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.
3. By using the MaxHold function record the separation of two adjacent channels.
4. Measure the frequency difference of these two adjacent channels by SA MARK function. And then plot the result on SA screen.
5. Repeat above procedures until all frequencies measured were complete.

### 4.5.4 DEVIATION FROM TEST STANDARD

No deviation

### 4.5.5 TEST SETUP



#### 4.5.6 TEST RESULTS

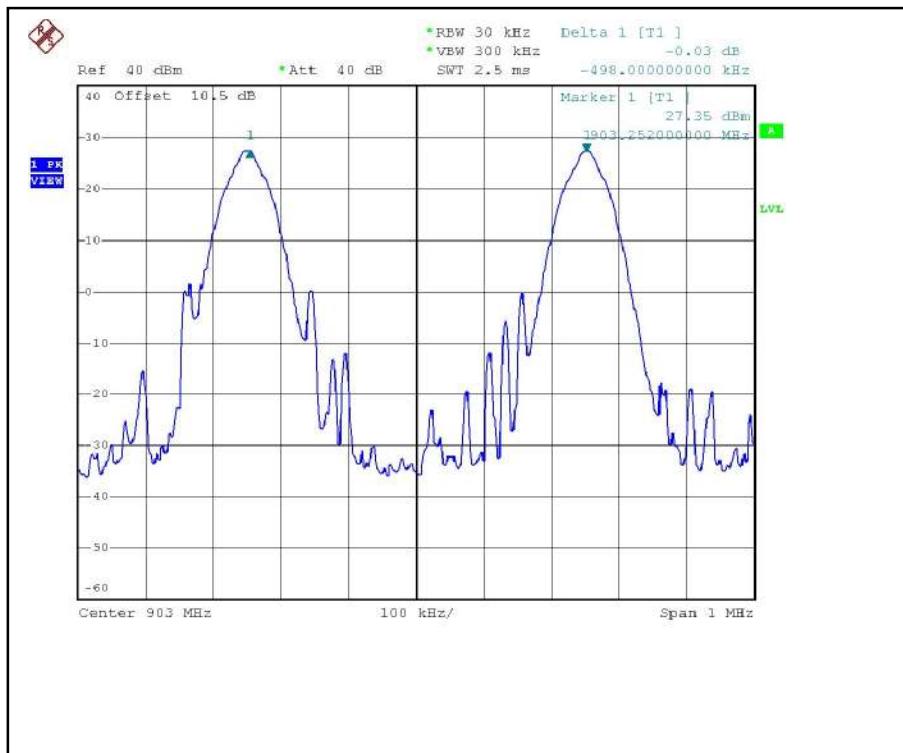
For PR-ASK(DRM) – High Power:

<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 965 hPa	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz
<b>TESTED BY</b>	Wen Yu		

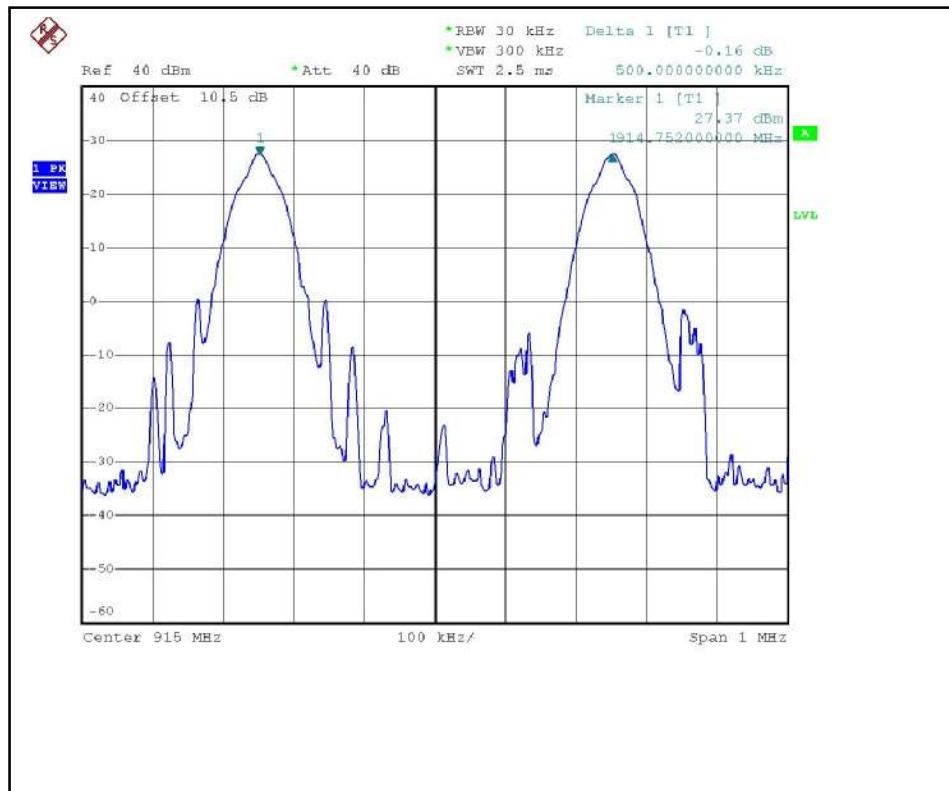
Channel	Frequency (MHz)	Adjacent Channel Separation	Minimum Limit (kHz)	Pass / Fail
0	902.75	498kHz	120.8	PASS
24	914.75	500kHz	117.2	PASS
49	927.25	500kHz	116.8	PASS

The minimum limit is 20dB bandwidth. Test results please refer to below.

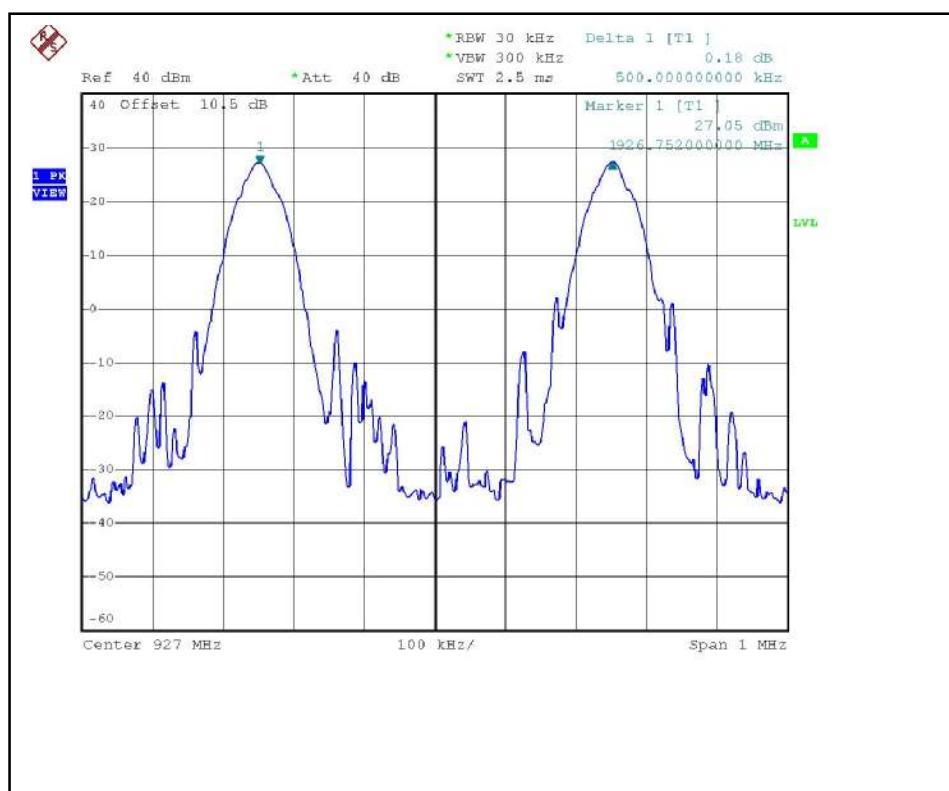
#### Channel 0



## Channel 24



## Channel 49





A D T

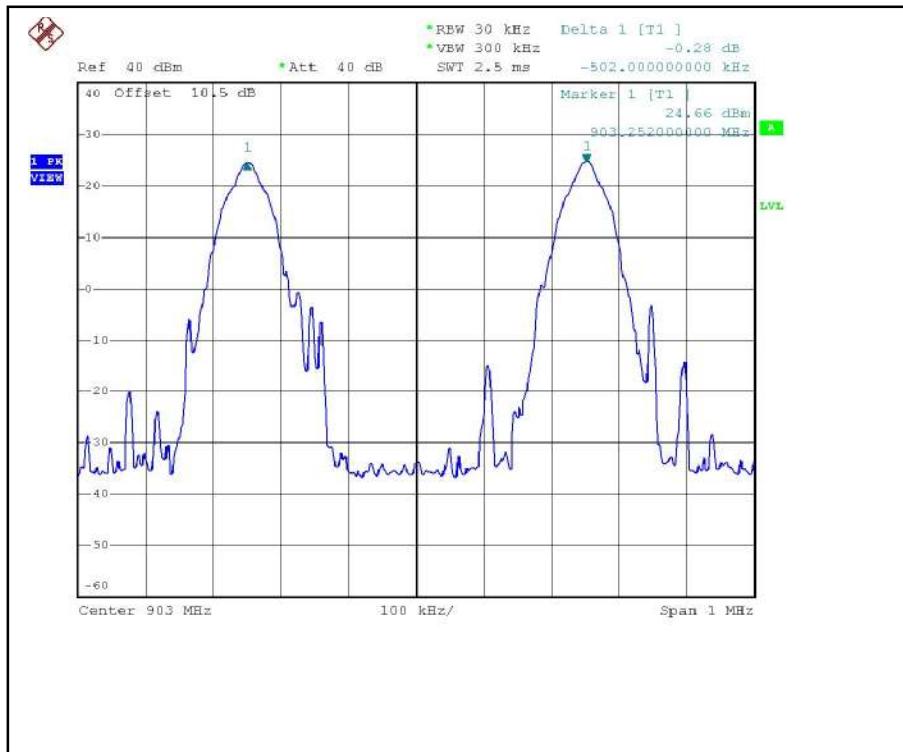
For PR-ASK(DRM) – Low Power:

<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 965 hPa	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz
<b>TESTED BY</b>	Wen Yu		

Channel	Frequency (MHz)	Adjacent Channel Separation	Minimum Limit (kHz)	Pass / Fail
0	902.75	502kHz	118.4	PASS
24	914.75	502kHz	116.4	PASS
49	927.25	502kHz	116.4	PASS

The minimum limit is 20dB bandwidth. Test results please refer to below.

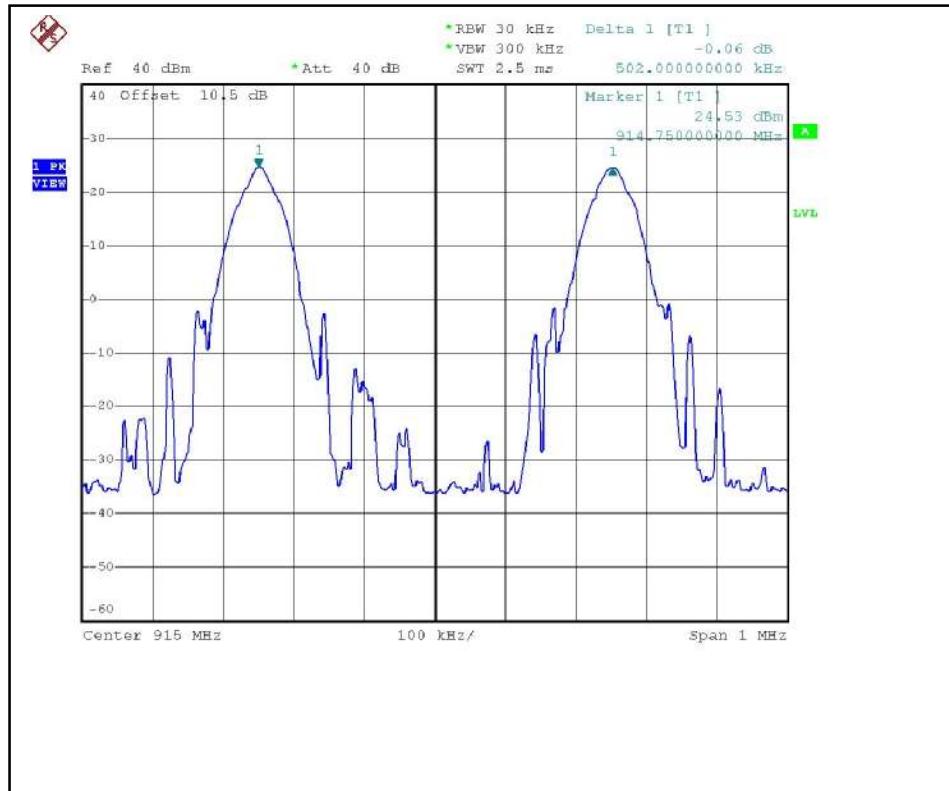
## Channel 0



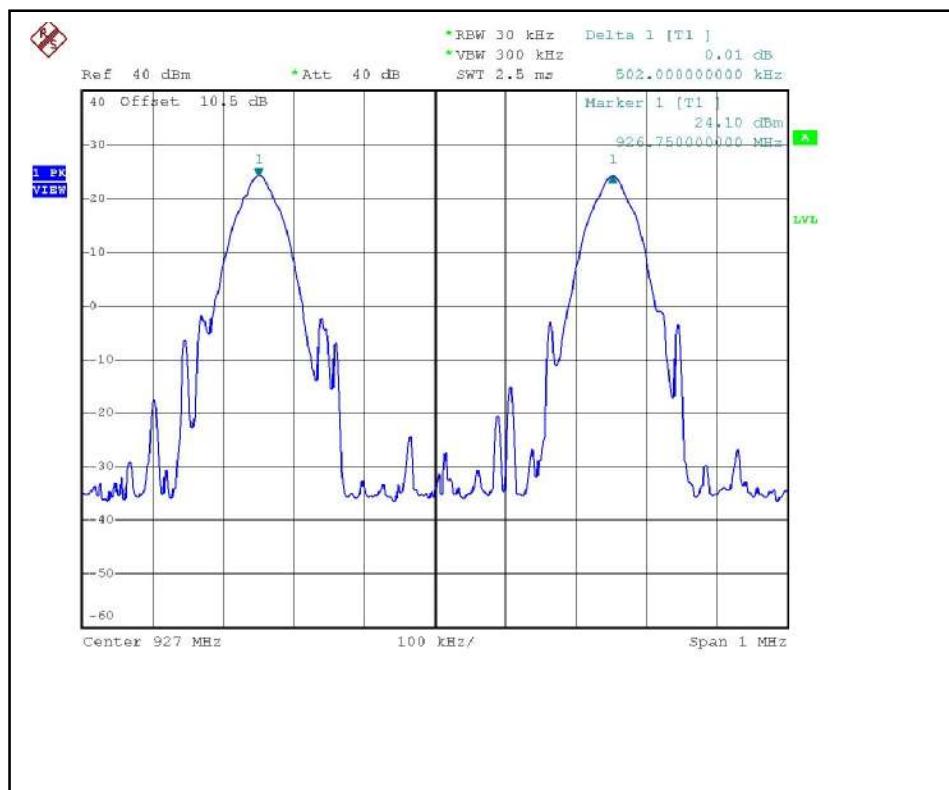


A D T

## Channel 24



## Channel 49





A D T

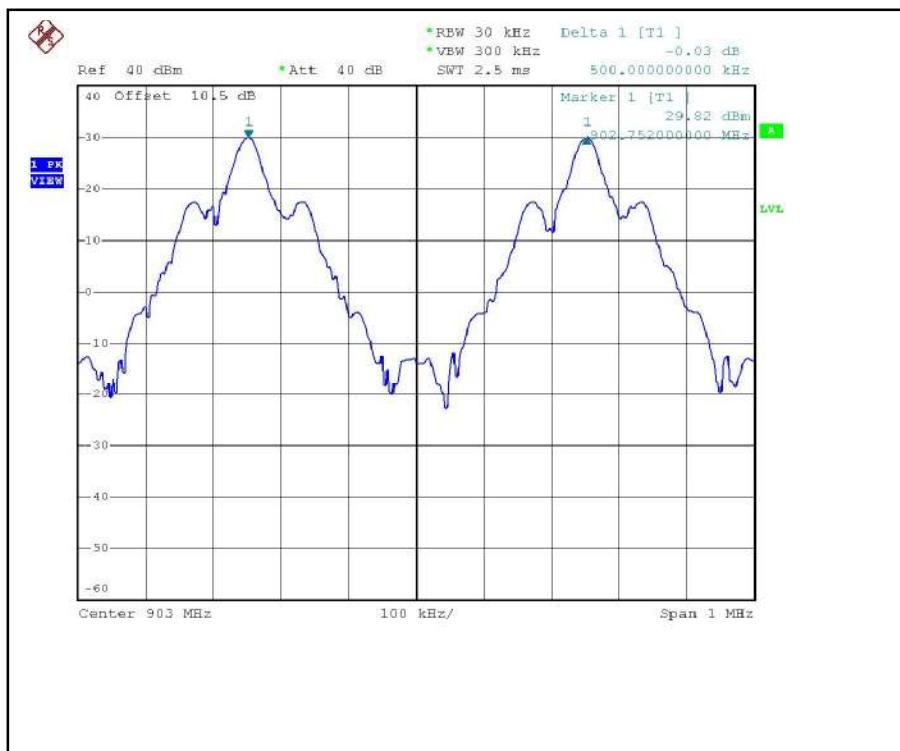
For DSB-ASK(MRM) – High Power:

<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 965 hPa	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz
<b>TESTED BY</b>	Wen Yu		

Channel	Frequency (MHz)	Adjacent Channel Separation	Minimum Limit (kHz)	Pass / Fail
0	902.75	500kHz	219.0	PASS
24	914.75	502kHz	219.0	PASS
49	927.25	502kHz	219.0	PASS

The minimum limit is 20dB bandwidth. Test results please refer to below.

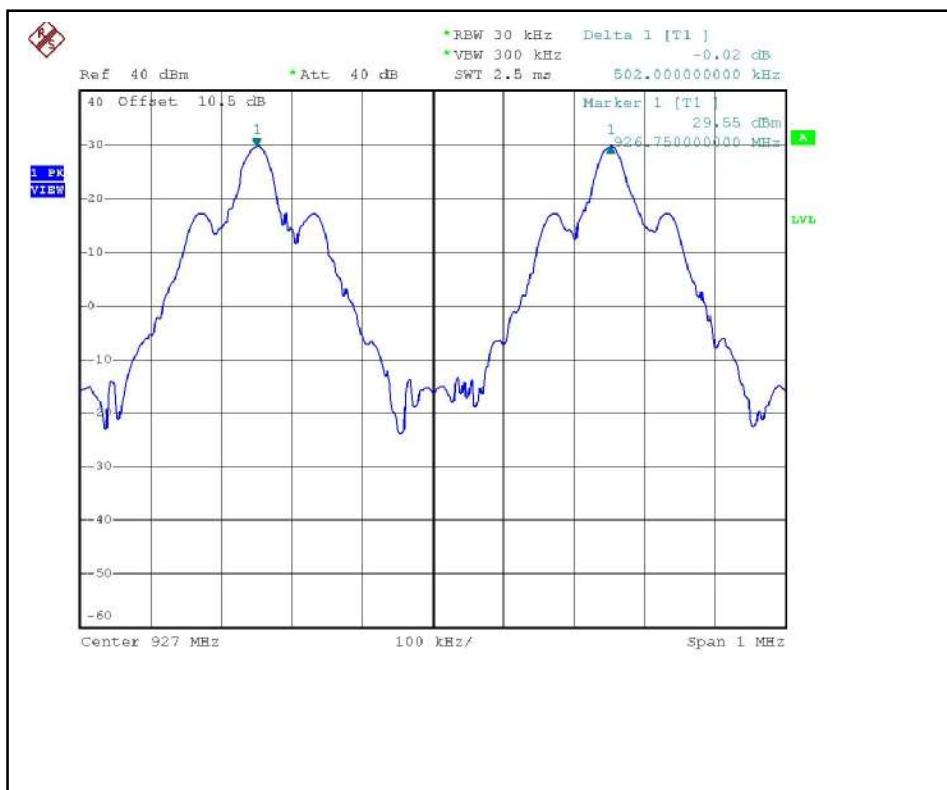
### Channel 0



## Channel 24



## Channel 49





A D T

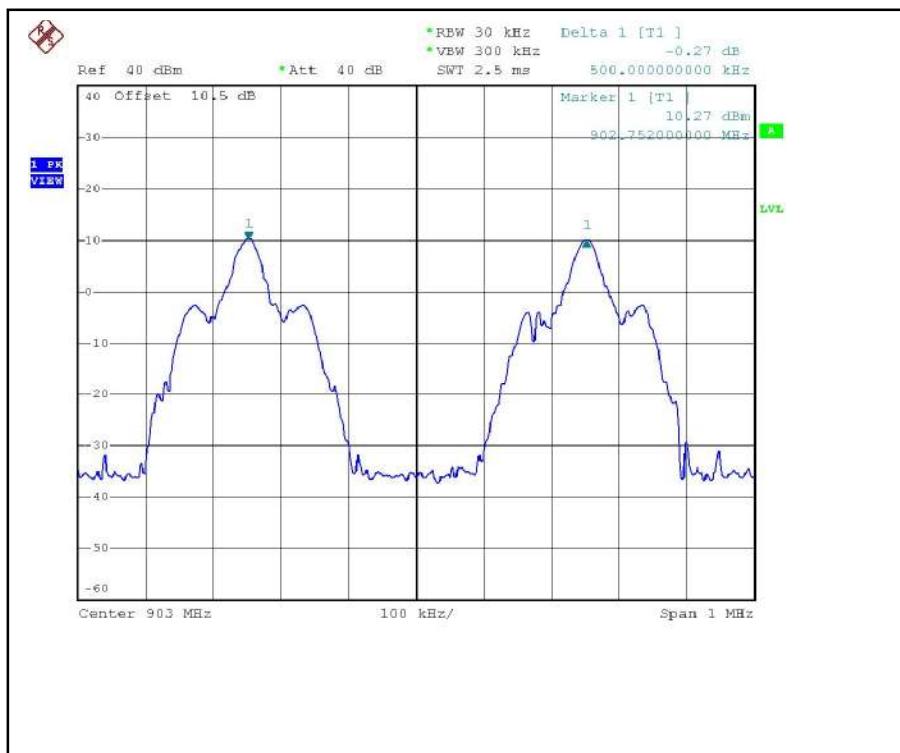
For DSB-ASK(MRM) – Low Power:

<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 965 hPa	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz
<b>TESTED BY</b>	Wen Yu		

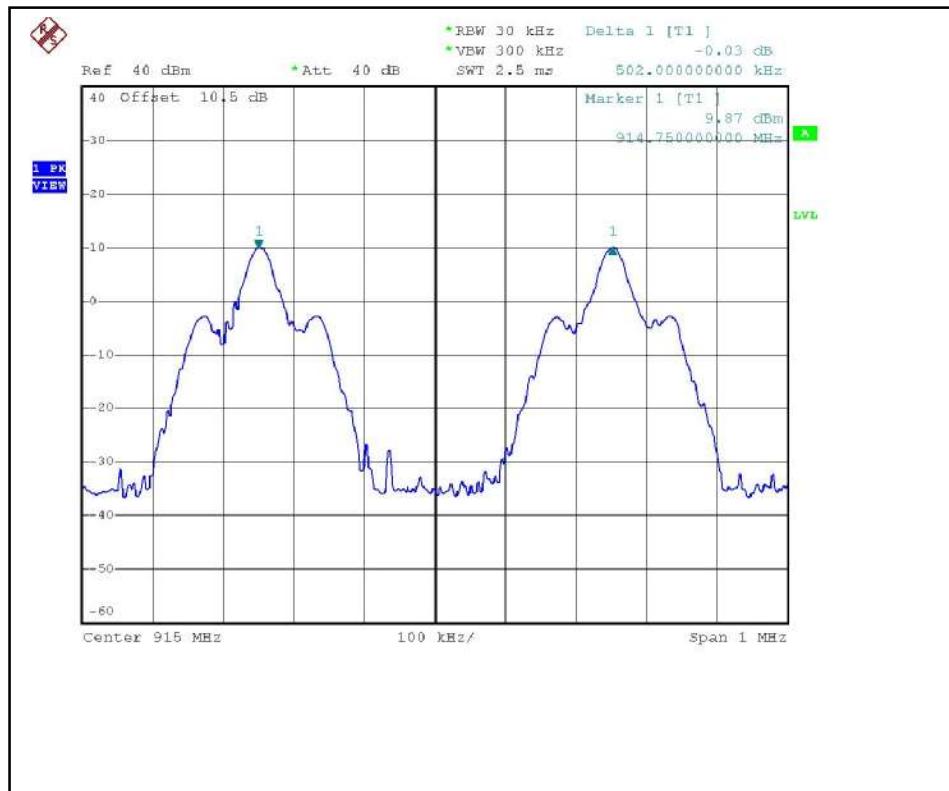
Channel	Frequency (MHz)	Adjacent Channel Separation	Minimum Limit (kHz)	Pass / Fail
0	902.75	500kHz	217.0	PASS
24	914.75	502kHz	218.0	PASS
49	927.25	500kHz	217.0	PASS

The minimum limit is 20dB bandwidth. Test results please refer to below.

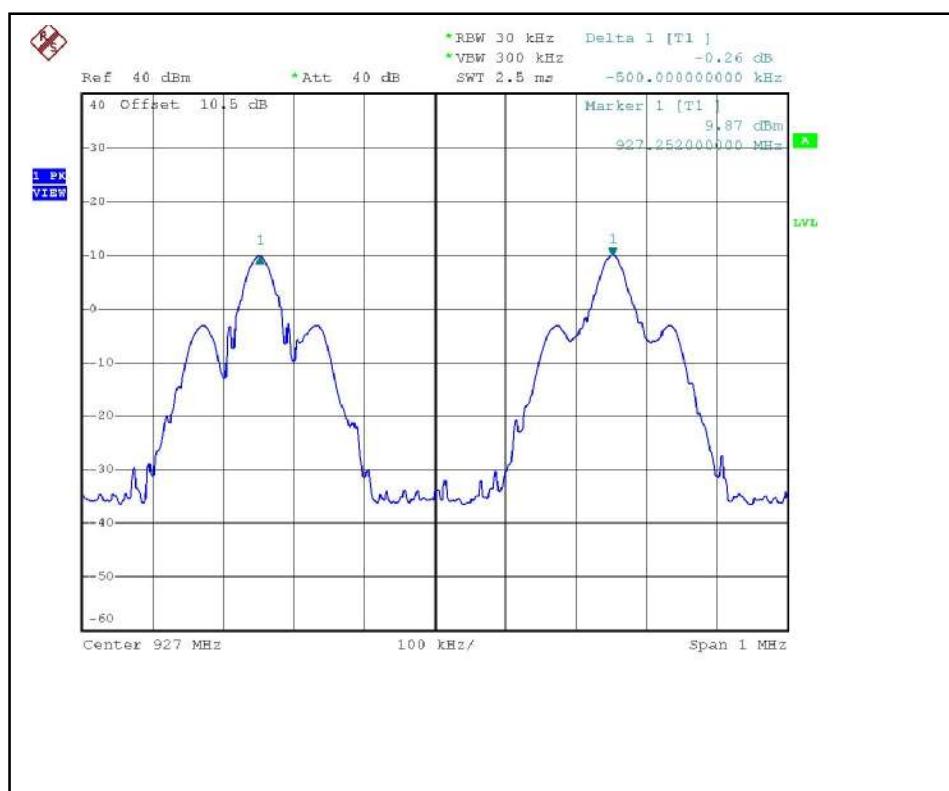
### Channel 0



## Channel 24



## Channel 49





A D T

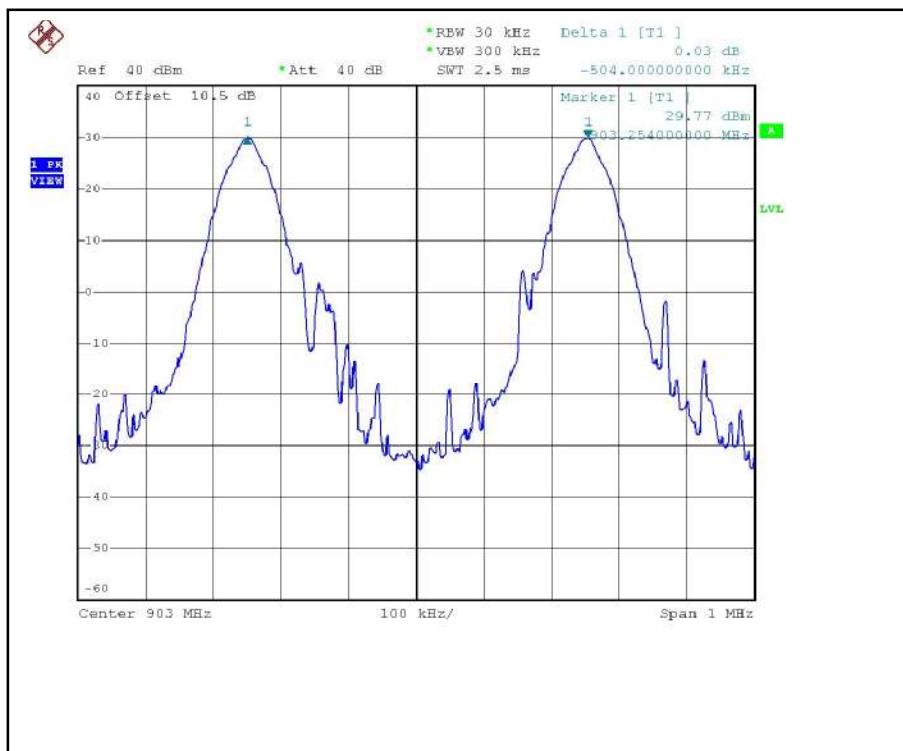
For PR-ASK(XRM) – High Power:

<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 965 hPa	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz
<b>TESTED BY</b>	Wen Yu		

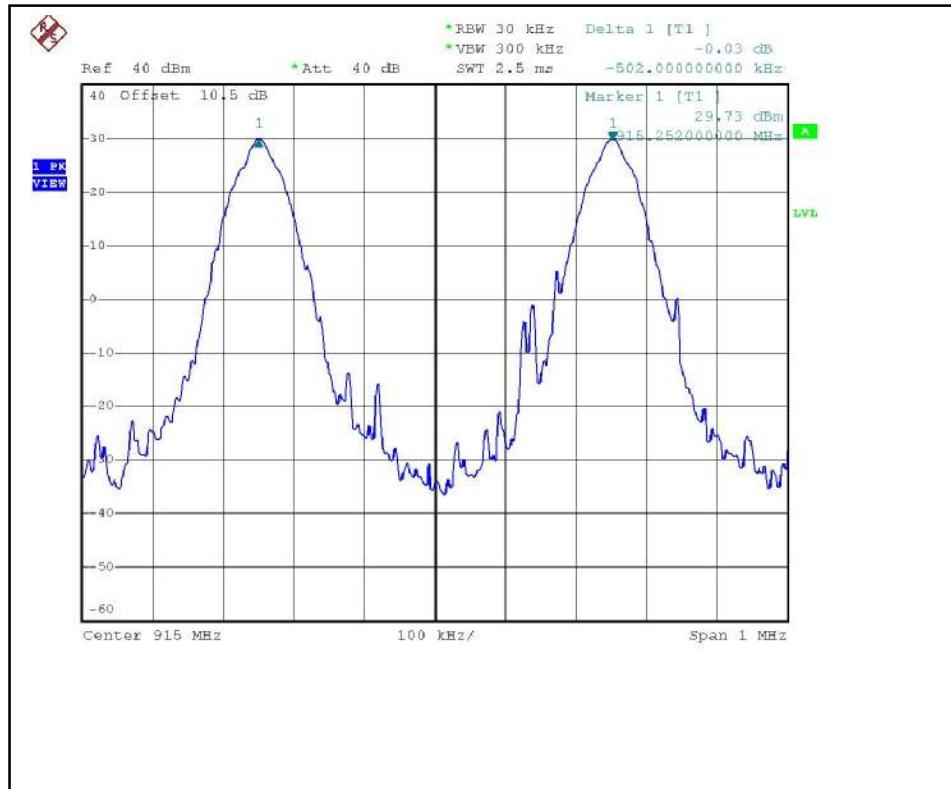
Channel	Frequency (MHz)	Adjacent Channel Separation	Minimum Limit (kHz)	Pass / Fail
0	902.75	504kHz	121.2	PASS
24	914.75	502kHz	120.8	PASS
49	927.25	502kHz	121.2	PASS

The minimum limit is 20dB bandwidth. Test results please refer to below.

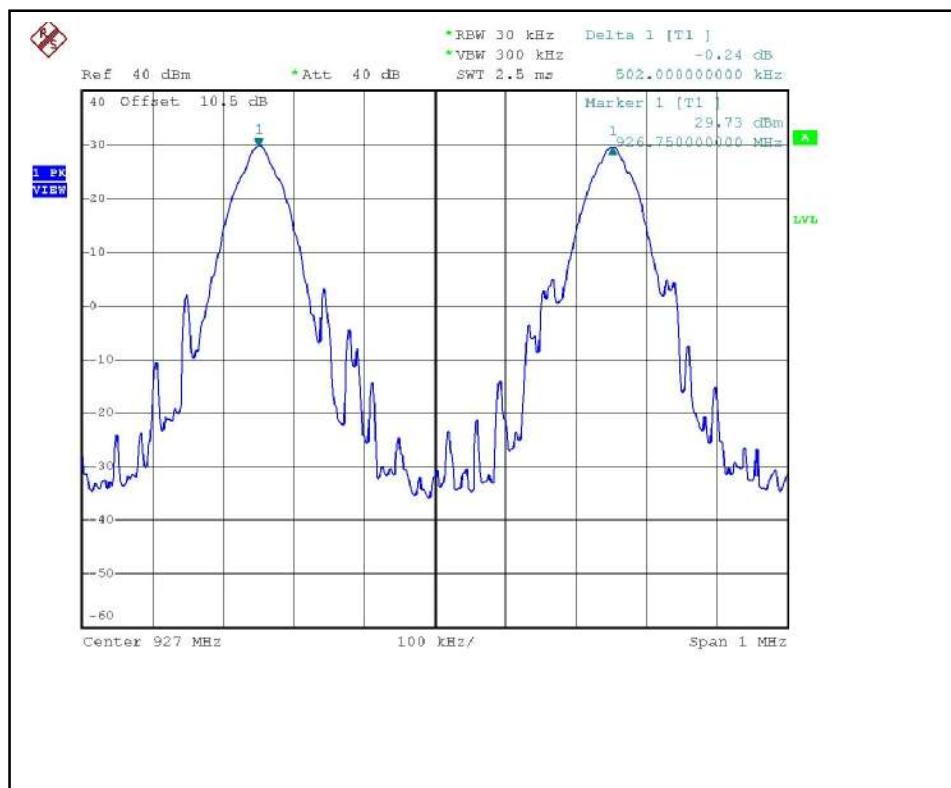
### Channel 0



## Channel 24



## Channel 49





A D T

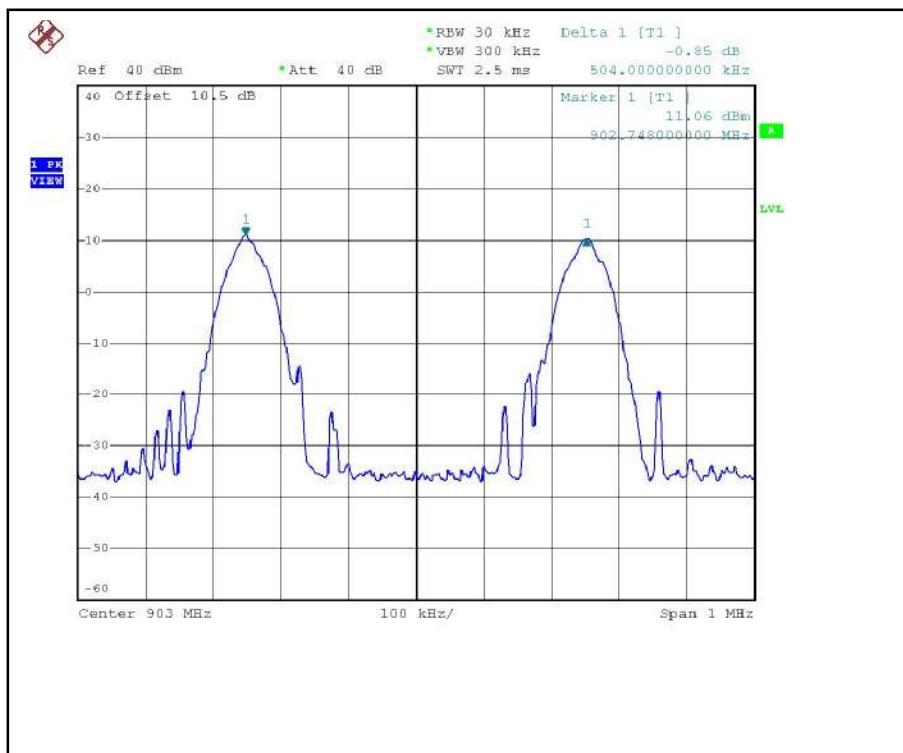
For PR-ASK(XRM) – Low Power:

<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 965 hPa	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz
<b>TESTED BY</b>	Wen Yu		

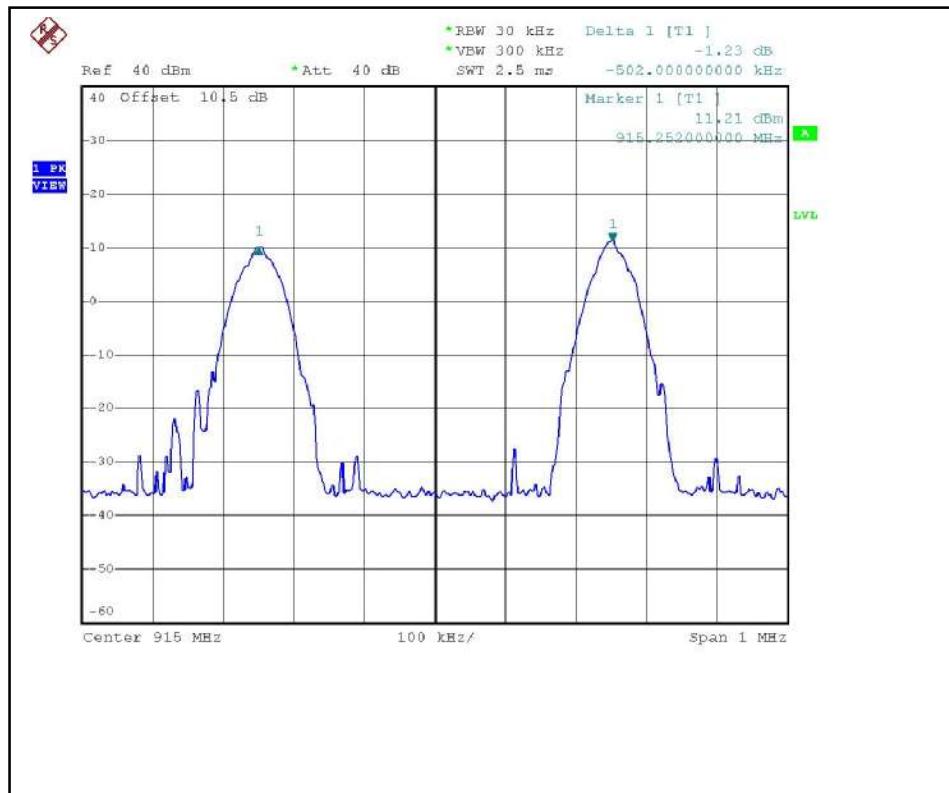
Channel	Frequency (MHz)	Adjacent Channel Separation	Minimum Limit (kHz)	Pass / Fail
0	902.75	504kHz	115.6	PASS
24	914.75	502kHz	114.8	PASS
49	927.25	506kHz	115.6	PASS

The minimum limit is 20dB bandwidth. Test results please refer to below.

### Channel 0



## Channel 24



## Channel 49

