ETSI EN 300328 V1.8.1: 2012 MEASURMENT AND TEST REPORT

For

Shenzhen Fenda Technology Co., Ltd.

Fenda Hi-Tech Park, Zhoushi Road, Shiyan Town, Baoan District, Shenzhen City, Guangdong, China

E.U.T.: 5.1 Multimedia Speaker

Model Name: F2300X, F2300BT, F2300U, F2300BTU

Brand Name: F&D

Report Number: NTC1410505E

Test Date(s): October 29, 2014 to November 06, 2014

Report Date(s): November 07, 2014

Prepared by

Dongguan Nore Testing Center Co., Ltd.

Building D, Gaosheng Science & Technology Park, Zhouxi Longxi Road, Nancheng District, Dongguan City, Guangdong Province, China

Tel: +86-769-22022444 Fax: +86-769-22022799

Prepared By

Rose Hu / Engineer

Approved & Authorized Signer

Sunm Lv / Q.A. Director

TABLE OF CONTENTS

1. GENERAL INFORMATION

PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST

This device is a Multimedia BT speaker; it's powered by AC Mains. For more details features, please refer to User's Manual.

Manufacturer	:	Shenzhen Fenda Technology Co., Ltd
Address	:	Fenda Hi-Tech Park, Zhoushi Road, Shiyan Town, Baoan District, Shenzhen City, Guangdong, China
Product Name	:	5.1 Multimedia Speaker
Model Name	:	F2300X, F2300BT, F2300U, F2300BTU
Model Difference Description	:	All models have the same circuitry, electrical mechanical and physical construction. Their differences in model name and silk-screen for trading purpose.
Power Supply	:	AC 220-240V ~ 50/60Hz
Test Voltage	:	AC 230V/50Hz for normal voltage AC 198V/50Hz and AC 264V/50Hz for Extreme voltage (The voltage range provide by manufacturer)
Operating Temperature Range	:	0°C to +45°C (Declaration by manufacturer)
Bluetooth Version	:	3.0
Frequency Range	:	2402-2480MHz
Modulation Type	:	GFSK, π/4-DQPSK, 8DPSK
Modulation Technology	:	FHSS
Number of Channel	:	79
Channel Space	:	1MHz
Antenna Type	:	PCB
Antenna Gain	:	2dBi (Declaration by manufacturer)
Adaptive/Non-Adaptive Equipment	:	Adaptive equipment
Note	:	Only one of the model F2300U was test in this report.

SUMMARY OF TEST RESULTS		
Section (ETSI EN 300328)	Description of Test	TEST RESULT
4.3.1.1	RF Output Power	Compliant
4.3.2.2	Power Spectral Density (Modulations other than FHSS equipment)	N/A
4.3.1.2	Duty cycle, Tx-Sequence, Tx-gap	N/A see note
4.3.1.3	Dwell time, Minimum Frequency Occupation & Hopping Sequence (FHSS equipment)	Compliant
4.3.1.4	Hopping Frequency Separation (FHSS equipment)	Compliant
4.3.1.5	Medium Utilisation	N/A see note
4.3.1.6	Adaptivity	N/A see note
4.3.1.7	Occupied Channel Bandwidth	Compliant
4.3.1.8	Transmitter unwanted emission in the OOB domain	Compliant
4.3.1.9	Transmitter unwanted emissions in the spurious domain	Compliant
4.3.1.10	Receiver spurious emissions	Compliant
4.3.1.11	Receiver Blocking	N/A see note

Note: These requirements do not apply for equipment with a maximum declared RF Output power of less than 10dBm EIRP or for equipment when operating in a mode where the RF Output power is less than 10dBm EIRP.

2. DESCRIPTION OF TEST MODES

The EUT has been tested under Normal Operating condition. Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting and receiving mode is programmed. All data rate and modulation type were tested, only the worst-case record in this report.

3. TEST FREQUENCIES

Channel	Frequency MHz
0	2402
39	2441
78	2480

4. OBJECTIVE

Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband Transmission systems; Data transmission equipment operating in the 2.4GHz ISM band and using wide band modulation techniques; Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive.

The objective is to determine compliance with ETSI EN 300328 V1.8.1 (2012-06).

5. TEST METHODOLOGY

All measurements contained in this report were conducted with ETSI EN 300328 V1.8.1 (2012-06).

6. TEST FACILITY

Site Description

EMC Lab : Listed by FCC, August. 02, 2011
The Certificate Number is 665078.

Listed by Industry Canada, July 01, 2011
The Certificate Registration Number. Is 46405-9743

Name of Firm : Dongguan Nore Testing Center Co., Ltd.
(Dongguan NTC Co., Ltd.)

Site Location : Building D, Gaosheng Science & Technology Park, Zhouxi Longxi Road, Nancheng District, Dongguan City, Guangdong Province, China

7. MEASUREMENT UNCERTAINTY

Parameter	Uncertainty
Occupied Channel Bandiwdth	±1.42 x10^{-4}%
RF output power, conducted	±1.06dB
Power Spectral Density, conducted	±1.06dB
Unwanted Emissions, conducted	±2.51dB
All emissions, radiated	±3.70dB
Temperature	±0.8℃
Humidity	±3.2%
DC and low frequency voltages	±0.1%
Time	±5%
Duty cycle	±5%

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

8. SUPPORT EQUIPMENT

Notebook PC: Manufacturer: IBM Corporation
M/N: R50e
S/N: L3-HZNGO
P/N: 1834KDC

9. RF OUTPUT POWER

Limits

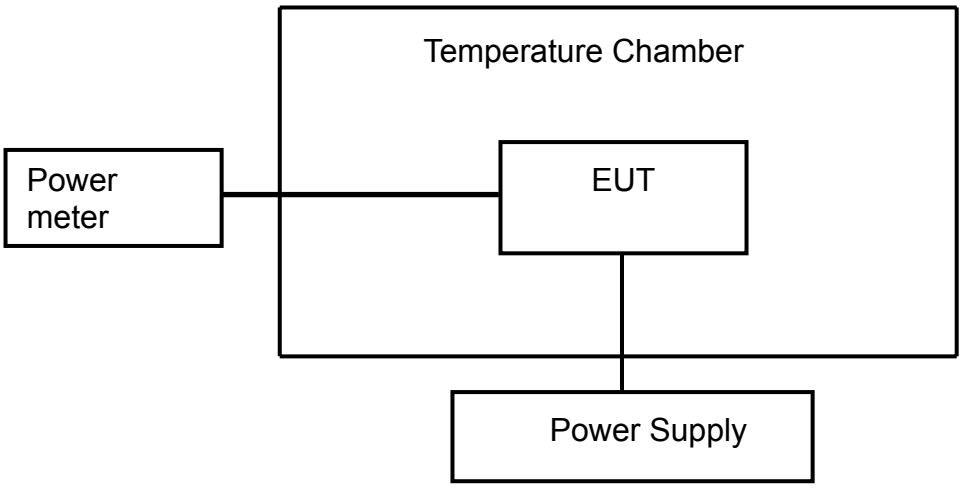
Frequency Band	Limit
2400 ~ 2483.5 MHz	
Adaptive frequency hopping systems	Equivalent isotropic radiated power (e.i.r.p.) ≤20 dBm

Test Method

1. Please refer to ETSI EN 300328 ($V_{1.8.1}$) clause 5.3.2.2.1 for conducted measurement method.
2. The measurements shall be performed at both normal environmental conditions and at The extremes of the operating temperature range.

Test Configuration

Temperature and Voltage Measurement



Test Result

Pass.

Please refer to following data tables.

GFSK				
Humidity :	53 %	Temperature :		24 ℃
Test Result:	PASS	Test By:		Sance
Antenna Assembly Gain:			2dBi	
Cable Loss=			1.5dB	
Low Channel f_o =2402 MHz				
Temperature (℃)	Power Supplied	Reading dBm	EIRP dBm	Limit dBm
25	AC 230V	-2.74	0.76	20
0	AC 198V	-2.69	0.81	20
	AC 264V	-2.71	0.79	20
45	AC 198V	-2.76	0.74	20
	AC 264V	-2.73	0.77	20
Middle Channel f_o =2441 MHz				
Temperature (℃)	Power Supplied	Reading dBm	EIRP dBm	Limit dBm
25	AC 230V	0.36	3.86	20
0	AC 198V	0.38	3.88	20
	AC 264V	0.31	3.81	20
45	AC 198V	0.37	3.87	20
	AC 264V	0.39	3.89	20
High Channel f_o =2480 MHz				
Temperature (℃)	Power Supplied	Reading dBm	EIRP dBm	Limit dBm
25	AC 230V	0.00	3.50	20
0	AC 198V	-0.01	3.49	20
	AC 264V	-0.02	3.48	20
45	AC 198V	0.01	3.51	20
	AC 264V	0.02	3.52	20

Note: Calculated Power(dBm)=Output Power(dBm)+Cable Loss(dB)+Antenna Gain(dBi)

8DPSK				
Humidity :	53 %	Temperature :	24 ℃	
Test Result:	PASS	Test By:	Sance	
Antenna Assembly Gain:			2dBi	
Cable Loss=			1.5dB	
Low Channel f_o =2402 MHz				
Temperature (℃)	Power Supplied	Reading dBm	EIRP dBm	Limit dBm
25	AC 230V	-2.91	0.59	20
0	AC 198V	-2.93	0.57	20
	AC 264V	-2.88	0.62	20
45	AC 198V	-2.89	0.61	20
	AC 264V	-2.93	0.57	20
Middle Channel f_o =2441 MHz				
Temperature (℃)	Power Supplied	Reading dBm	EIRP dBm	Limit dBm
25	AC 230V	-0.14	3.36	20
0	AC 198V	-0.18	3.32	20
	AC 264V	-0.09	3.41	20
45	AC 198V	-0.16	3.34	20
	AC 264V	-0.11	3.39	20
High Channel f_o =2480 MHz				
Temperature (℃)	Power Supplied	Reading dBm	EIRP dBm	Limit dBm
25	AC 230V	-0.69	2.81	20
0	AC 207V	-0.70	2.80	20
	AC 264V	-0.72	2.78	20
45	AC 207V	-0.68	2.82	20
	AC 264V	-0.70	2.80	20

Note: Calculated Power(dBm)=Output Power(dBm)+Cable Loss(dB)+Antenna Gain(dBi)

10. DWELL TIME, MINIMUM FREQUENCY OCCUPATION AND HOPPING SEQUENCE

Limits

Condition	Limit
Non-adaptive frequency hopping systems	The accumulated Dwell Time on any hopping frequency shall not be greater than 15 ms within any period of 15 ms multiplied by the minimum number of hopping frequencies (N) that have to be used. The hopping sequence(s) shall contain at least N hopping frequencies where N is 15 or 15 divided by the minimum Hopping Frequency Separation in MHz, whichever is the greater. The Minimum Frequency Occupation Time shall be equal to one dwell time within a period not exceeding four times the product of the dwell time per hop and the number of hopping frequencies in use.
Adaptive frequency hopping systems	Adaptive Frequency Hopping systems shall be capable of operating over a minimum of 70 % of the band. The maximum accumulated dwell time on any hopping frequency shall be 400 ms within any period of 400 ms multiplied by the minimum number of hopping frequencies (N) that have to be used. The hopping sequence(s) shall contain at least N hopping frequencies at all times, where N is 15 or 15 divided by the minimum Hopping Frequency Separation in MHz, whichever is the greater. The Minimum Frequency Occupation Time shall be equal to one dwell time within a period not exceeding four times the product of the dwell time per hop and the number of hopping frequencies in use.

Test Method

1. Please refer to ETSI EN 300328 ($V_{1.8.1}$) clause 5.3.4.2.1 for conducted measurement method.
2. The measurements shall be performed at normal environmental condition.

Test Configuration

Test Result

Pass.

Please refer to following data tables and test plots.

Temperature :	24 ℃	Humidity :	53%
Test Date :	November 04, 2014	Test Result:	PASS
Test By:	Sance		

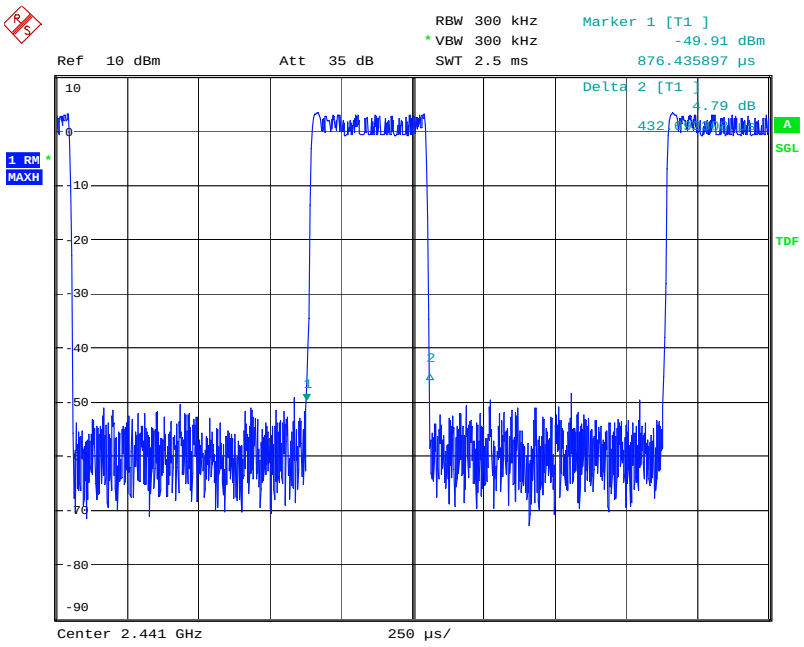
Dwell Time									
Mode	Number of Hopping Channel	Number of transmission in a period (channel number *0.4sec				Length of transmission time (ms)	Dewell Time	Limit (ms)	Result
		Period (Sec)	Sweep time (Sec)	Times in a sweep	Times in a period				
GFSK									
DH1	79	31.6	4	40	316.0	0.433	136.828	400	PASS
DH3	79	31.6	4	20	158.0	1.683	265.914	400	PASS
DH5	79	31.6	4	13	102.7	2.933	301.219	400	PASS
8DPSK									
DH1	79	31.6	4	40	316.0	0.429	135.564	400	PASS
DH3	79	31.6	4	21	165.9	1.746	289.661	400	PASS
DH5	79	31.6	4	14	110.6	2.719	300.721	400	PASS

Minimum Frequency Occupation						
Mode	Number of Hopping Channel	Number of transmission in a period of 4*Dwell time*number of hopping channel	Length of transmission time (ms)	Result (ms)	Minimum Limit (ms)	Result (Pass/ Fail)
GFSK						
DH1	79	2	0.433	0.866	0.433	PASS
DH3	79	3	1.683	5.049	1.683	PASS
DH5	79	3	2.933	8.799	2.933	PASS
8DPSK						
DH1	79	2	0.429	0.858	0.429	PASS
DH3	79	3	1.746	5.238	1.746	PASS
DH5	79	3	2.719	8.157	2.719	PASS

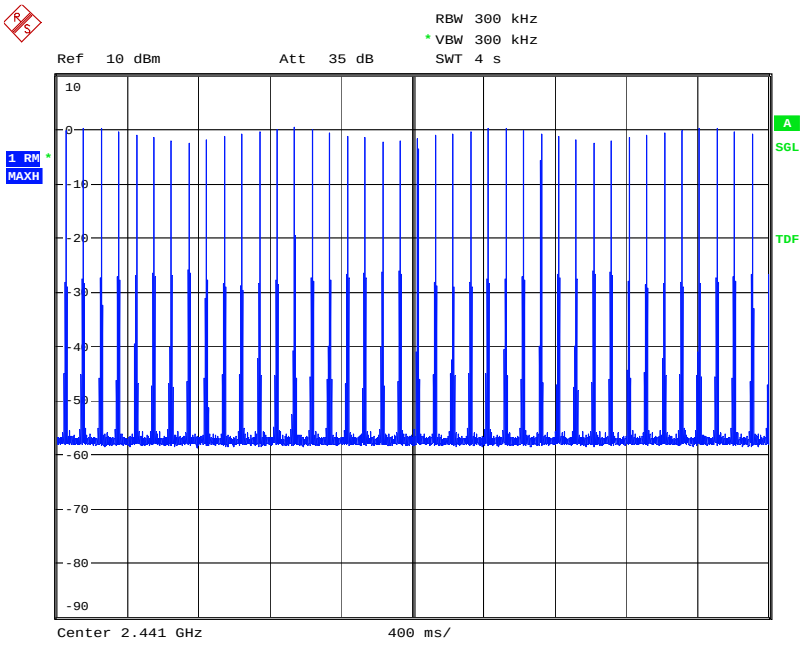
Temperature :	24 ℃	Humidity :	53%
Test Date :	November 04, 2014	Test Result:	PASS
Test By:	Sance		

Hopping Sequence						
Hopping Channels	Hopping Channels Limits	F_l 20dB (MHz)	F_h 20dB (MHz)	Min. Hopping Range (%)	Min. Hopping Range Limit(%)	Result
GFSK						
79	15	2401.338	2480.690	95.03%	70.00%	PASS
8DPSK						
79	15	2401.204	2480.958	95.51%	70.00%	PASS

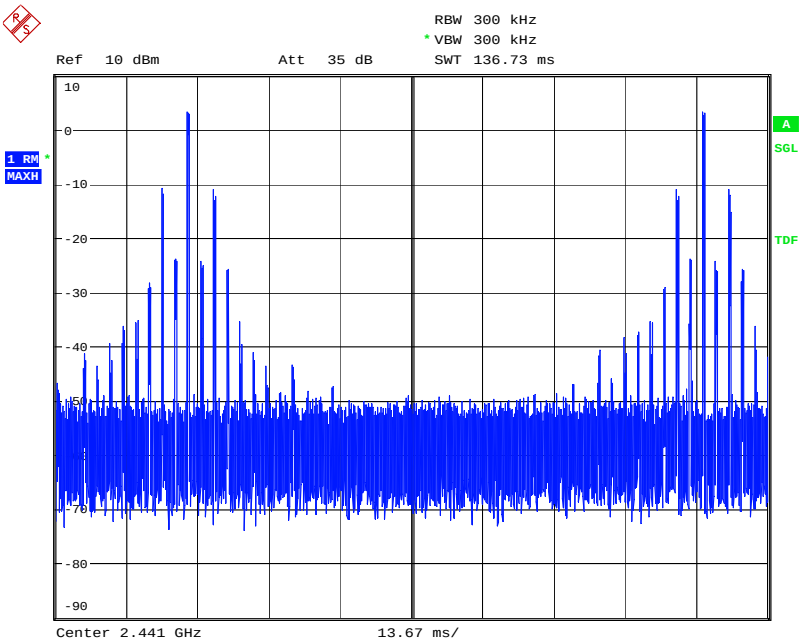
GFSK DH1



Date: 4.NOV.2014 16:02:07

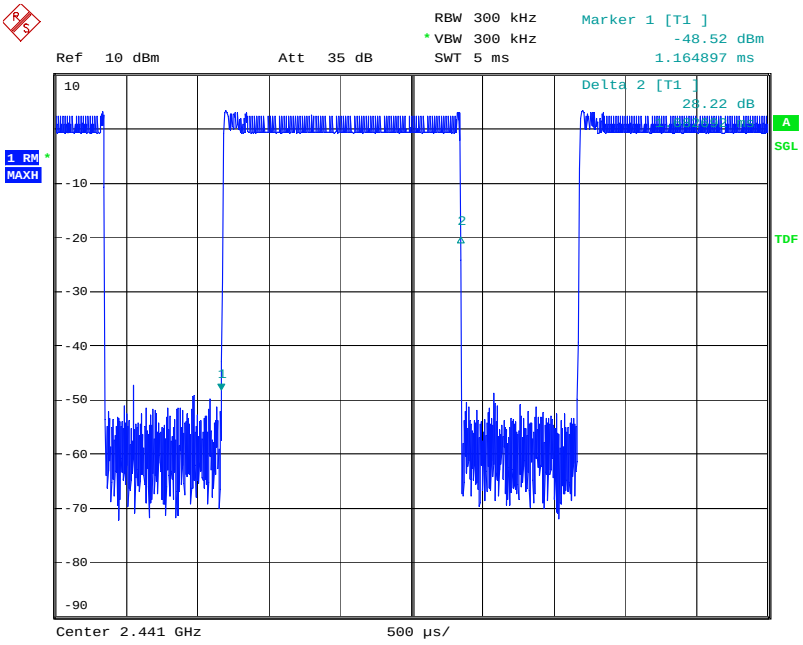


Date: 4.NOV.2014 16:21:40

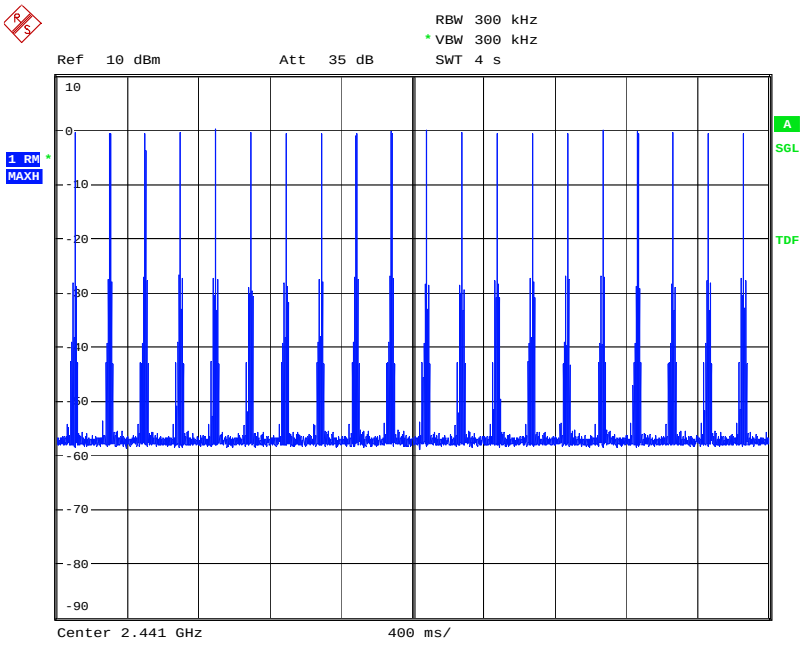


Date: 4.NOV.2014 16:16:48

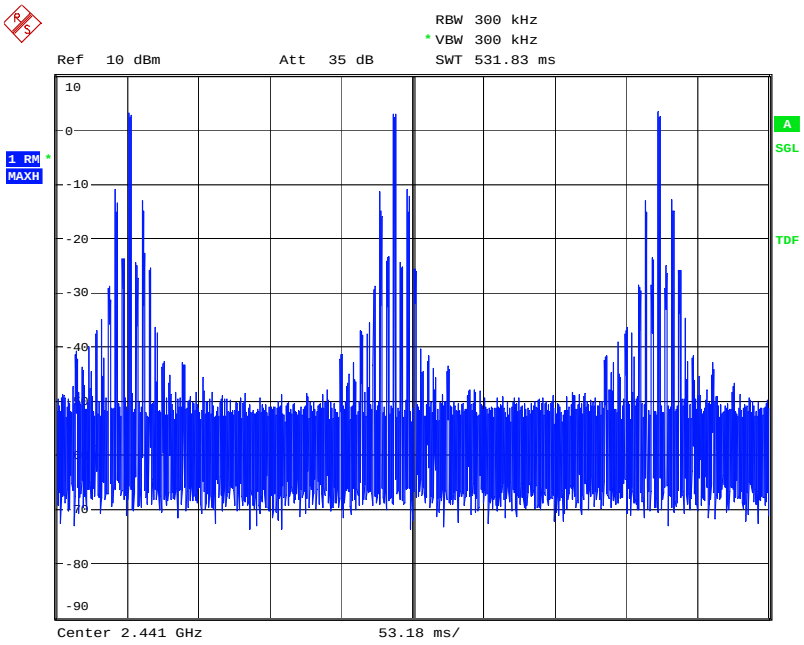
GFSK DH3



Date: 4.NOV.2014 16:02:52

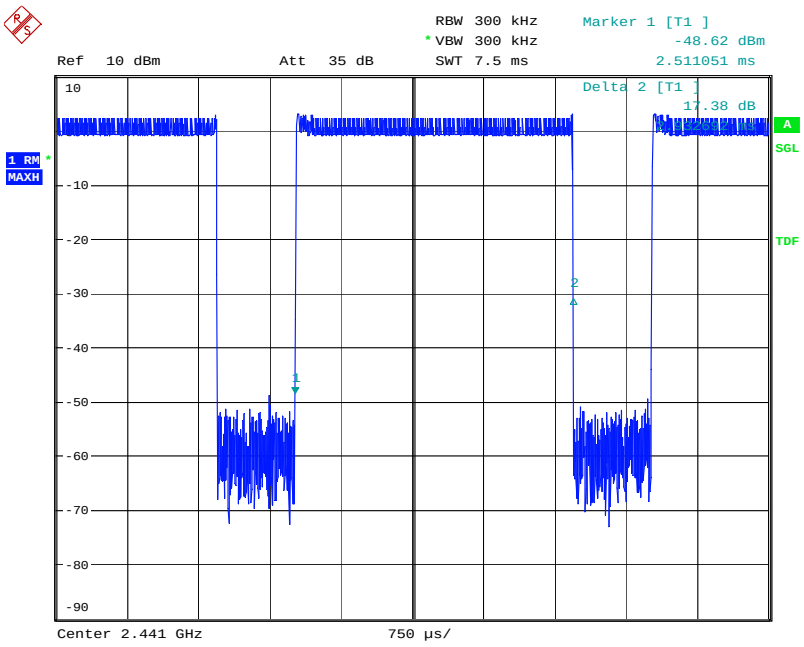


Date: 4.NOV.2014 16:22:03

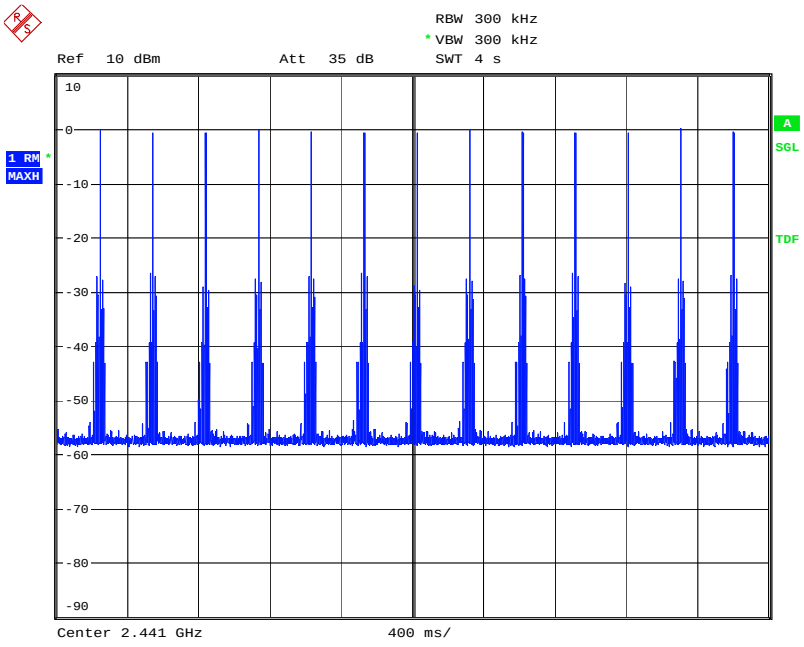


Date: 4.NOV.2014 16:17:13

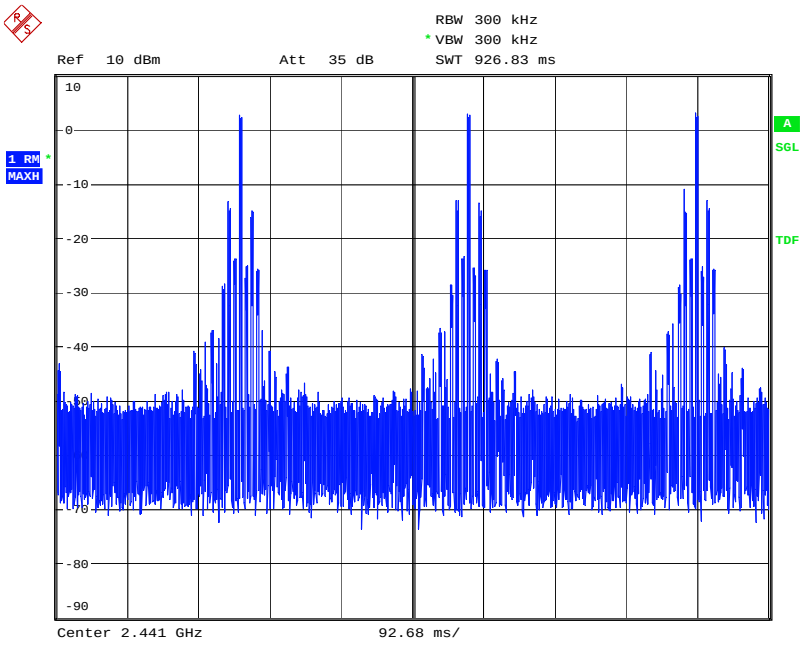
GFSK DH5



Date: 4.NOV.2014 16:03:32

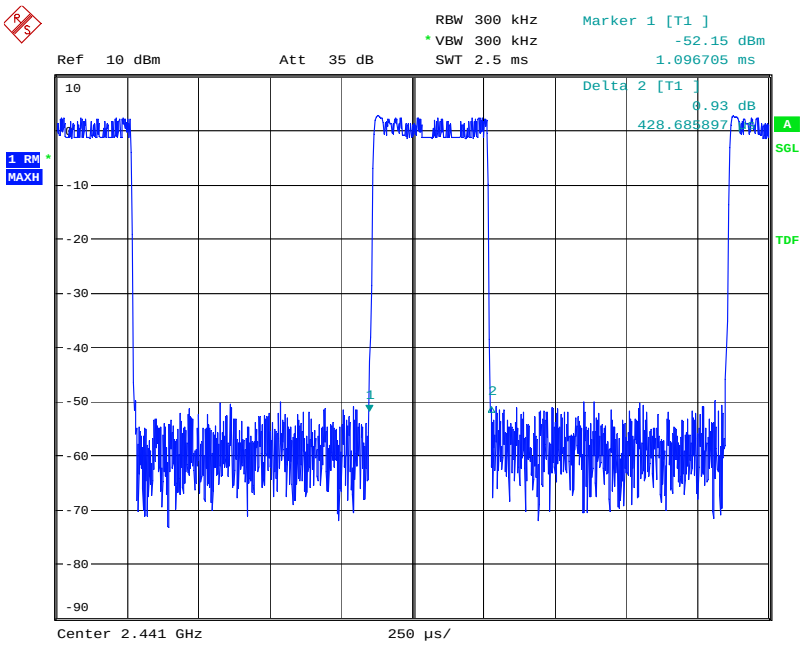


Date: 4.NOV.2014 16:22:31

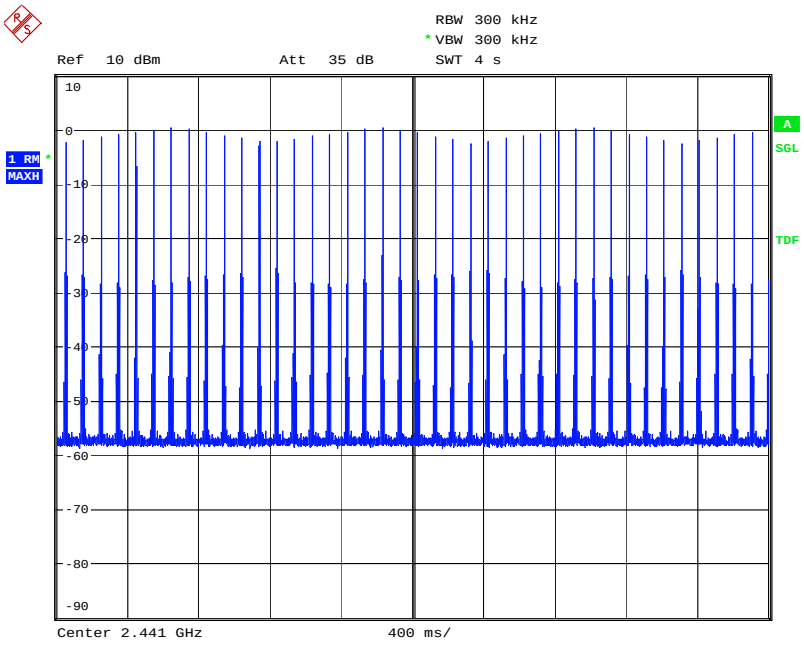


Date: 4.NOV.2014 16:17:40

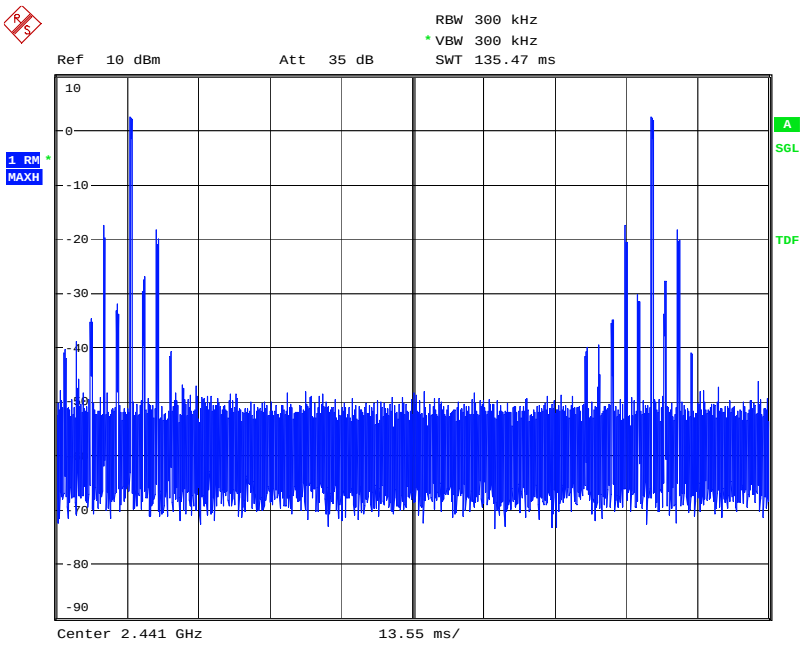
8DPSK 3-DH1



Date: 4.NOV.2014 16:06:37

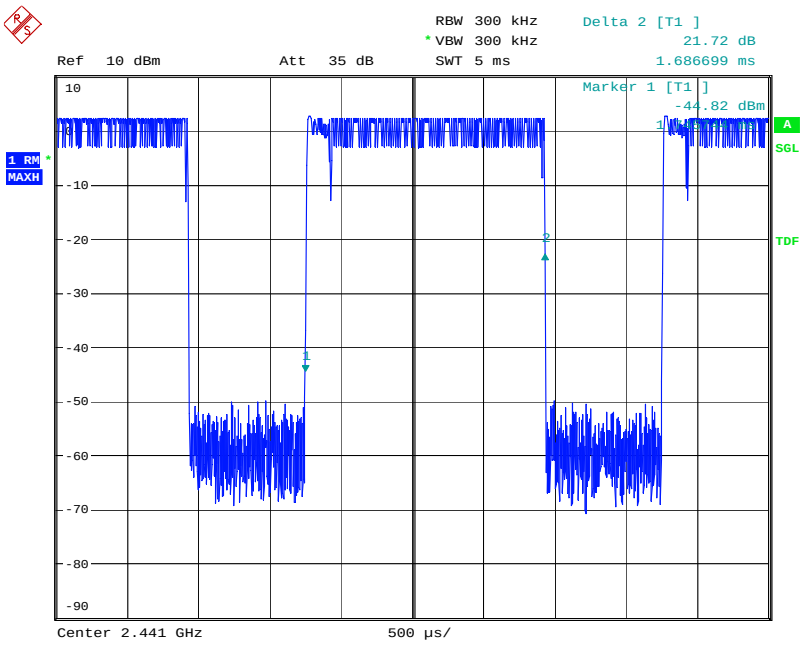


Date: 4.NOV.2014 16:24:21

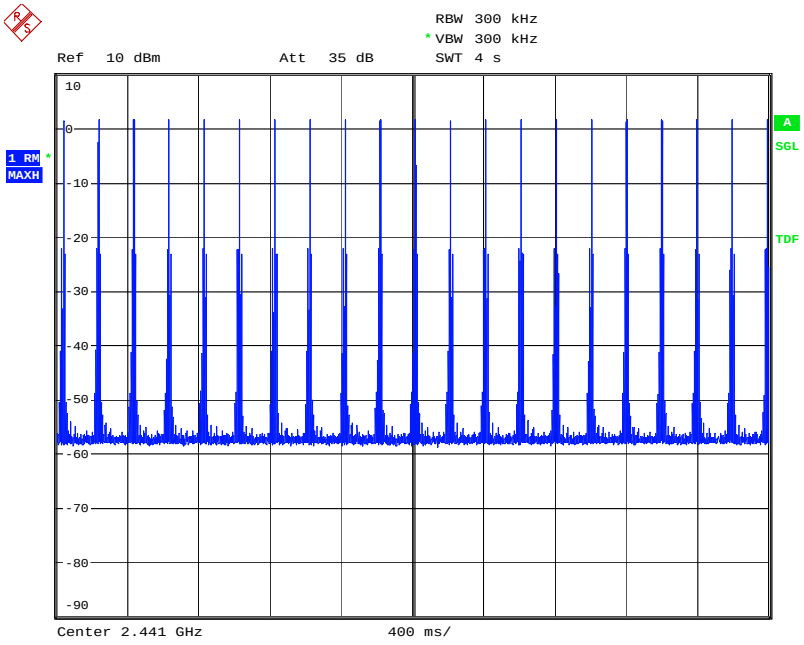


Date: 4.NOV.2014 16:19:21

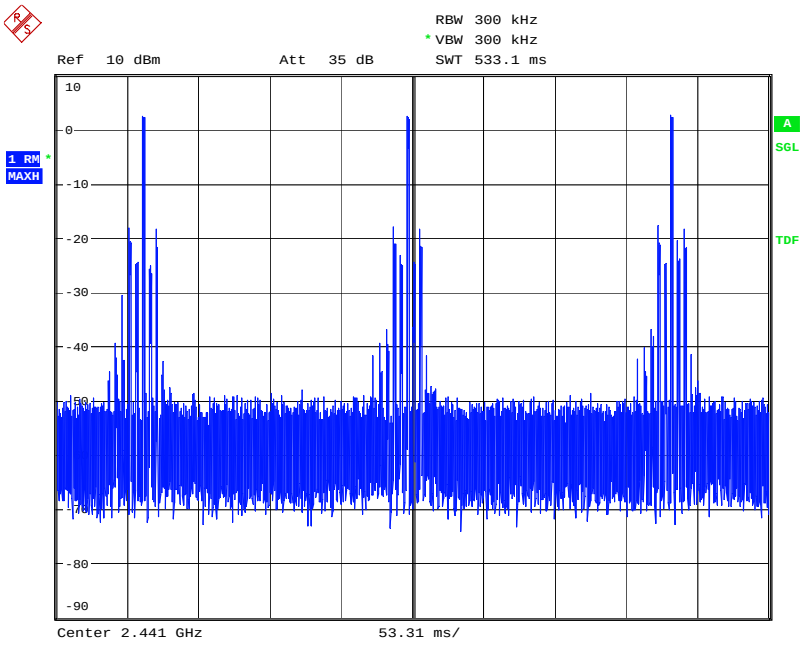
8DPSK 3-DH3



Date: 4.NOV.2014 16:10:40

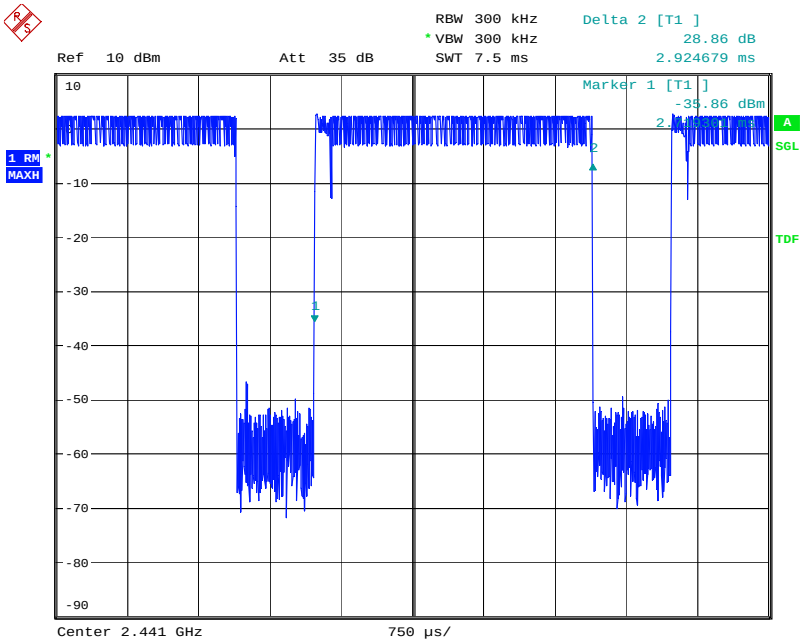


Date: 4.NOV.2014 16:24:41

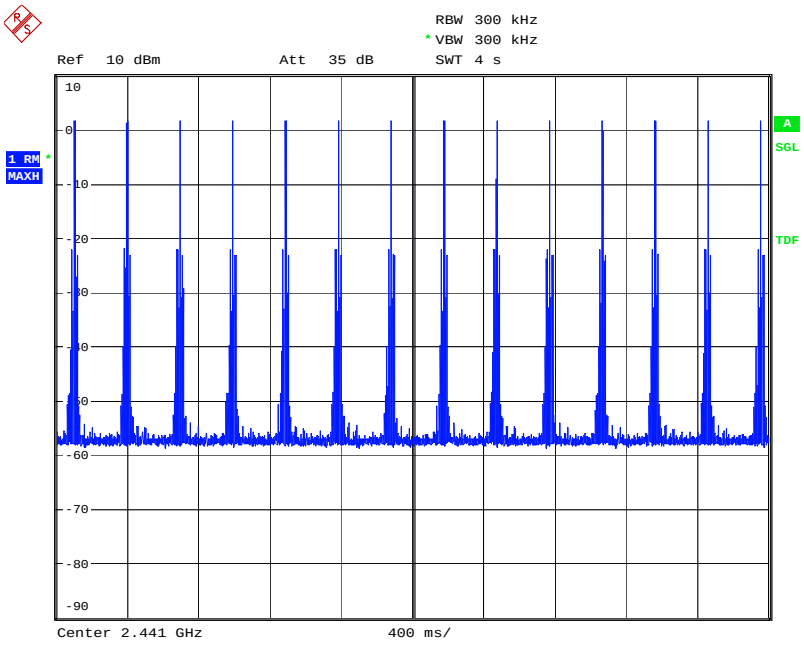


Date: 4.NOV.2014 16:19:42

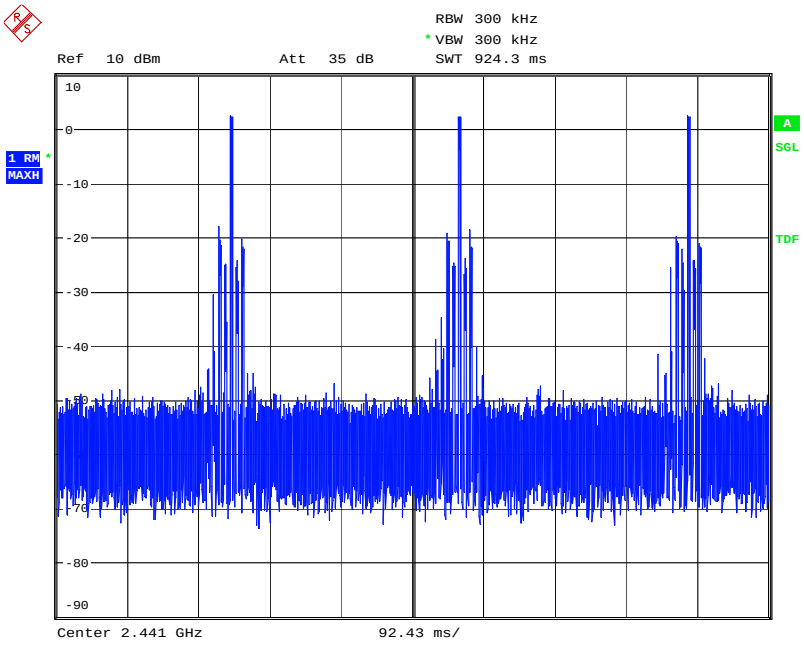
8DPSK 3-DH5



Date: 4.NOV.2014 16:11:24



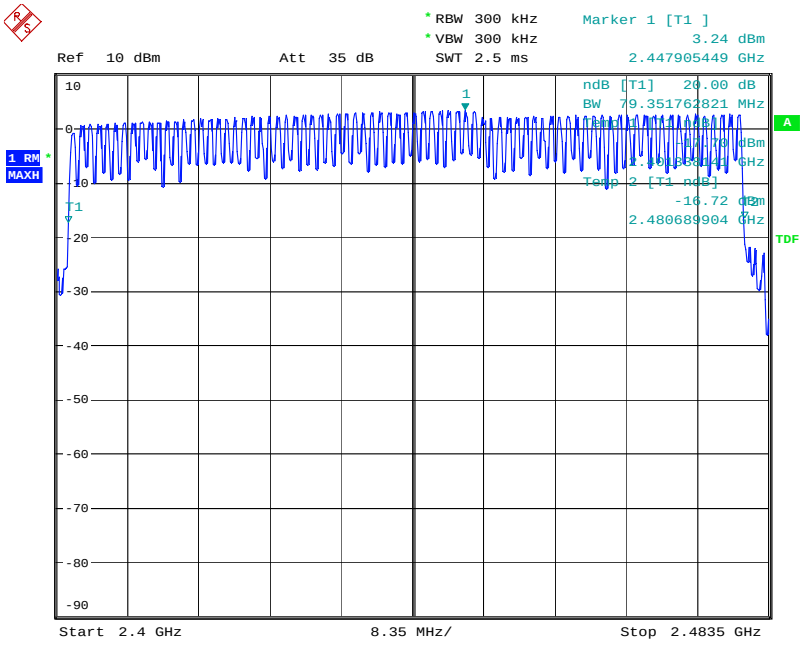
Date: 4.NOV.2014 16:25:02



Date: 4.NOV.2014 16:20:11

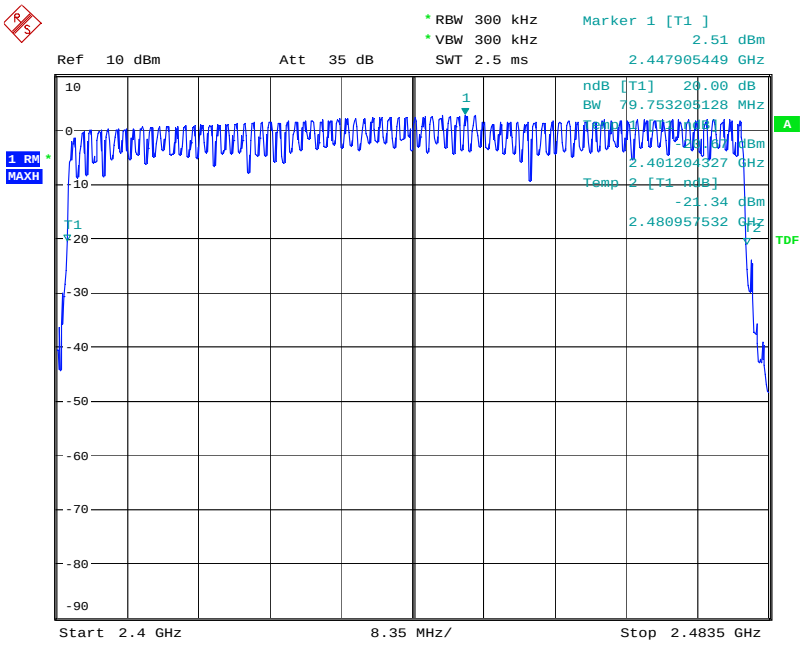
Hopping Sequence

GFSK



Date: 4.NOV.2014 16:30:37

8DPSK



Date: 4.NOV.2014 16:43:39

11. OCCUPIED CHANNEL BANDWIDTH

Limits

Condition	Limit
All types of equipment	Shall fall completely within the band 2400 to 2483.5 MHz
For non-adaptive using wide band modulations other than FHSS system and e.i.r.p > 10dBm	Less than 20MHz
For non-adaptive Frequency Hopping system and e.i.r.p > 10dBm	Less than 5MHz

Test Method

1. Please refer to ETSI EN 300328 ($V_{1.8.1}$) clause 5.3.8.2.1 for conducted measurement method.
2. The measurements shall be performed at normal environmental condition.

Test Configuration

Test Result

Pass.

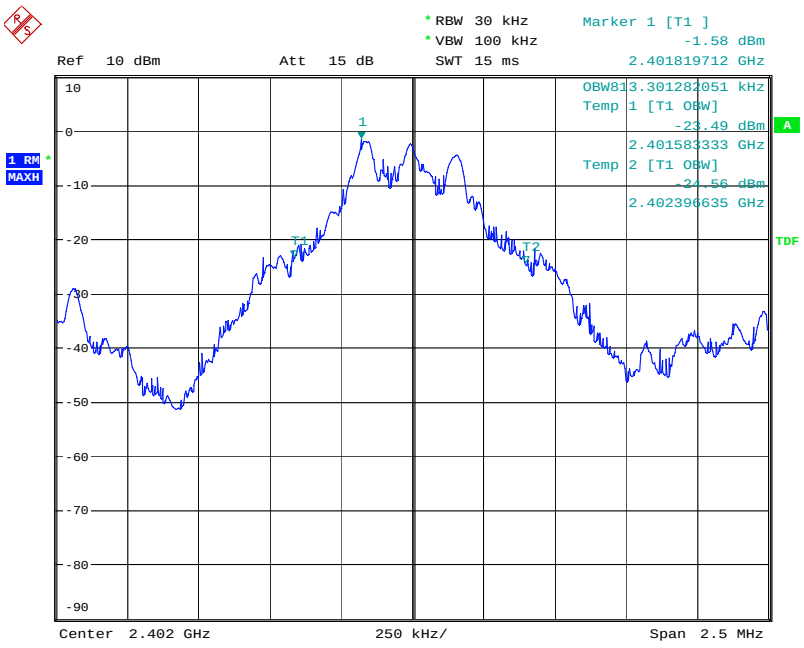
Please refer to following data tables and test plots.

Temperature :	24 ℃	Humidity :	53%
Test Date :	November 04, 2014	Test Result:	PASS
Test By:	Sance		

Channel frequency (MHz)	99% Bandwidth (MHz)	FL at 99% BW (MHz)	FH at 99% BW (MHz)	Limit	Result
GFSK					
2402	0.813	2401.583	2402.397	FL > 2.4 GHz and FH < 2.4835 GHz	Pass
2441	0.841	---	---		Pass
2480	0.845	2479.579	2480.425		Pass
8DPSK					
2402	1.062	2401.463	2402.525	FL > 2.4 GHz and FH < 2.4835 GHz	Pass
2441	1.066	---	---		Pass
2480	1.062	2479.451	2480.513		Pass

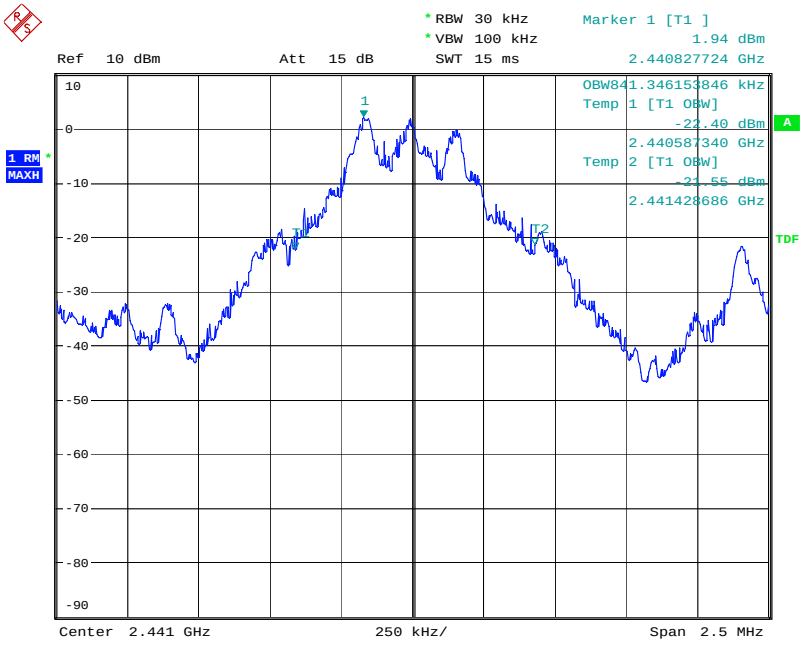
Note: FL is the lowest frequency of the 99% occupied bandwidth of power envelope.
FH is the highest frequency of the 99% occupied bandwidth of power envelope.

GFSK Lowest Channel



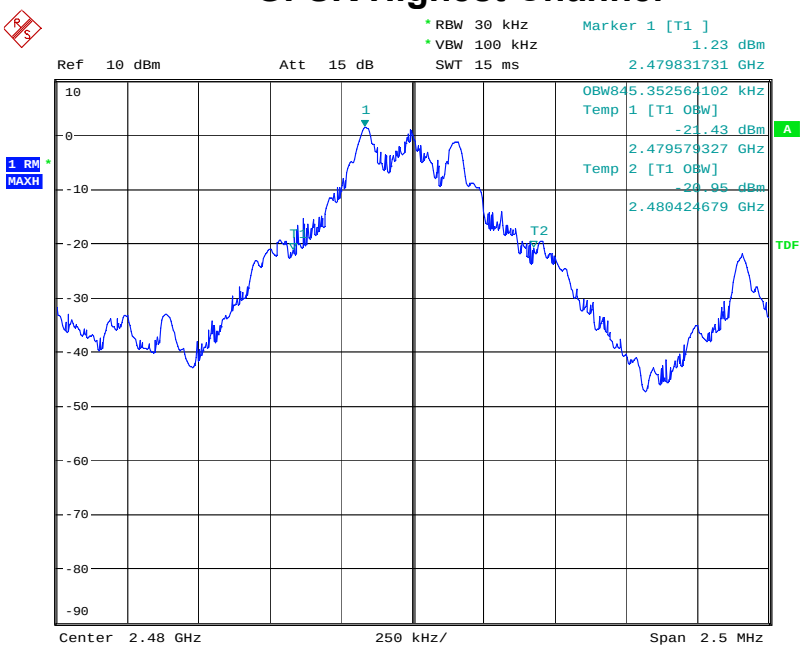
Date: 4.NOV.2014 15:04:31

GFSK Middle Channel



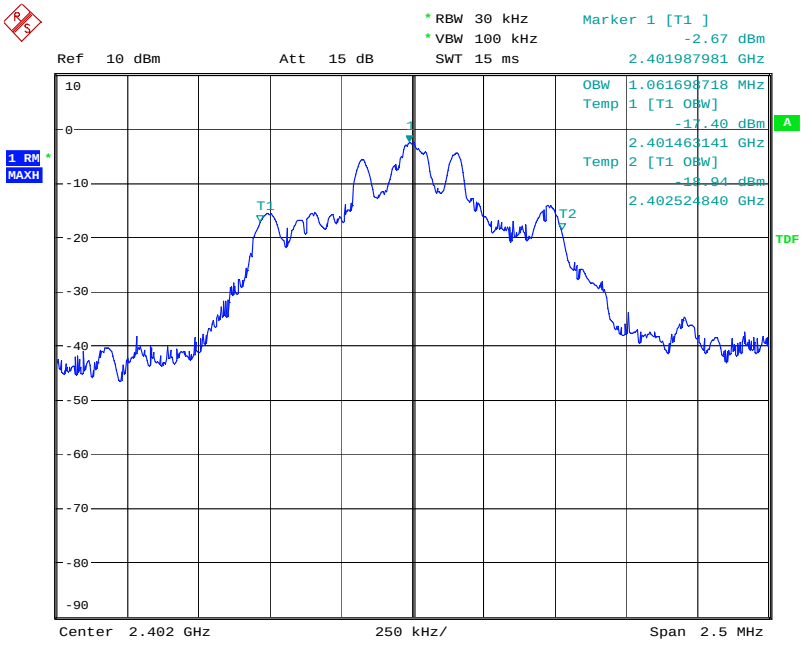
Date: 4.NOV.2014 15:05:27

GFSK Highest Channel



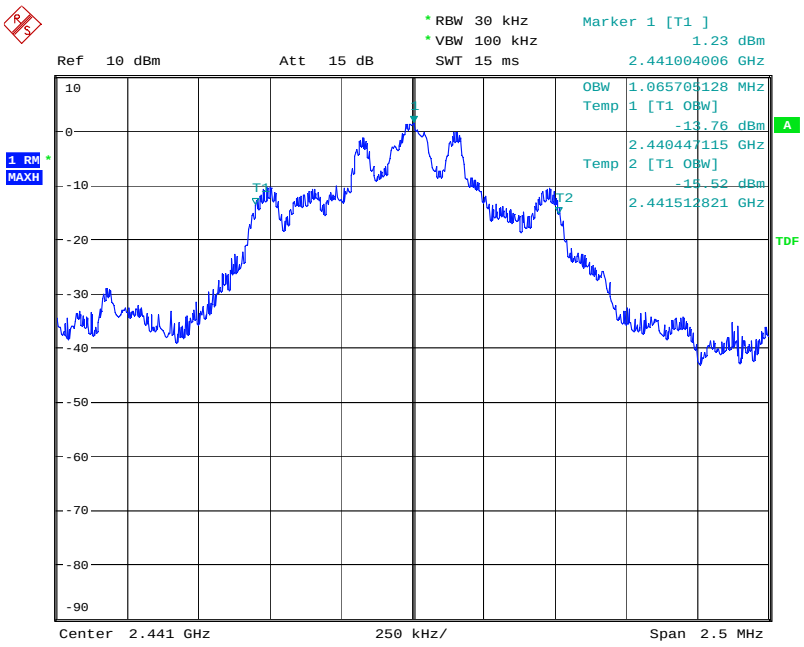
Date: 4.NOV.2014 15:06:58

8DPSK Lowest Channel



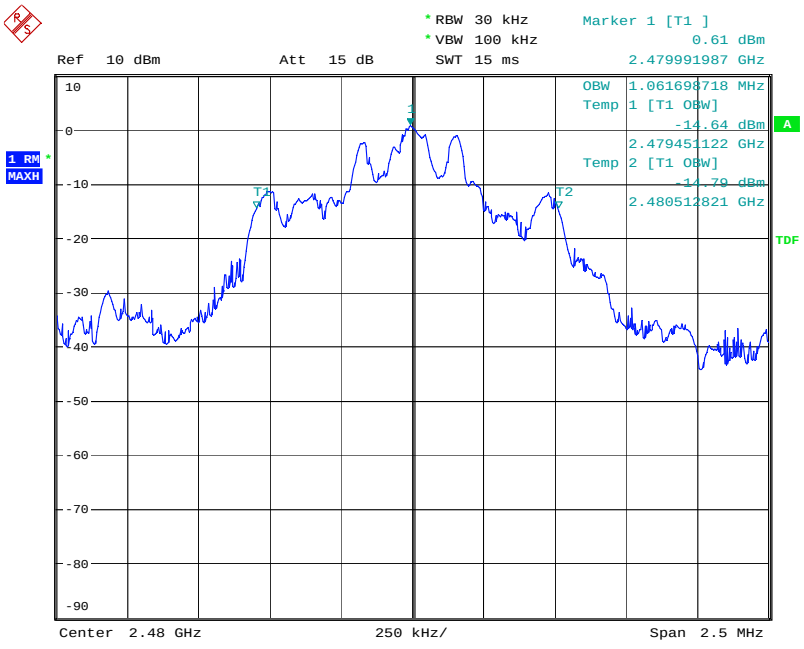
Date: 4.NOV.2014 15:13:18

8DPSK Middle Channel



Date: 4.NOV.2014 15:14:55

8DPSK Highest Channel



Date: 4.NOV.2014 15:16:06

12. HOPPING FREQUENCY SEPARATION

Limits

Condition	Limit
Nom-adaptive frequency hopping systems	The minimum Hopping Frequency Separation shall be equal to Occupied Channel Bandwidth of a single hop, with a minimum separation of 100 kHz.
Adaptive frequency hopping systems	The minimum Hopping Frequency Separation shall be 100 kHz.

Test Method

1. Please refer to ETSI EN 300328 ($V_{1.8.1}$) clause 5.3.5.2.1 for conducted measurement method.
2. The measurements shall be performed at normal environmental condition.

Test Configuration

Test Result

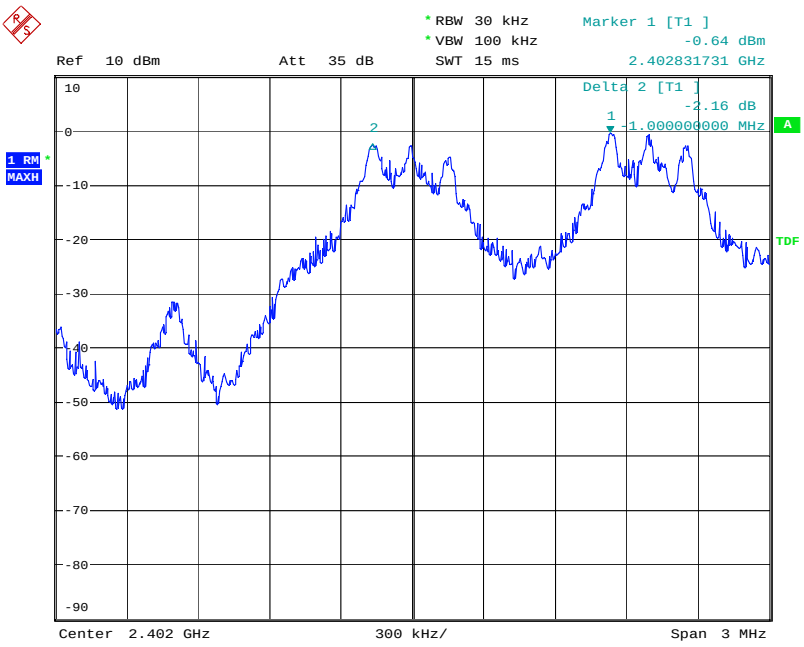
Pass.

Please refer to following data tables and test plots.

Temperature :	24 ℃	Humidity :	53%
Test Date :	November 04, 2014	Test Result:	PASS
Test By:	Sance		

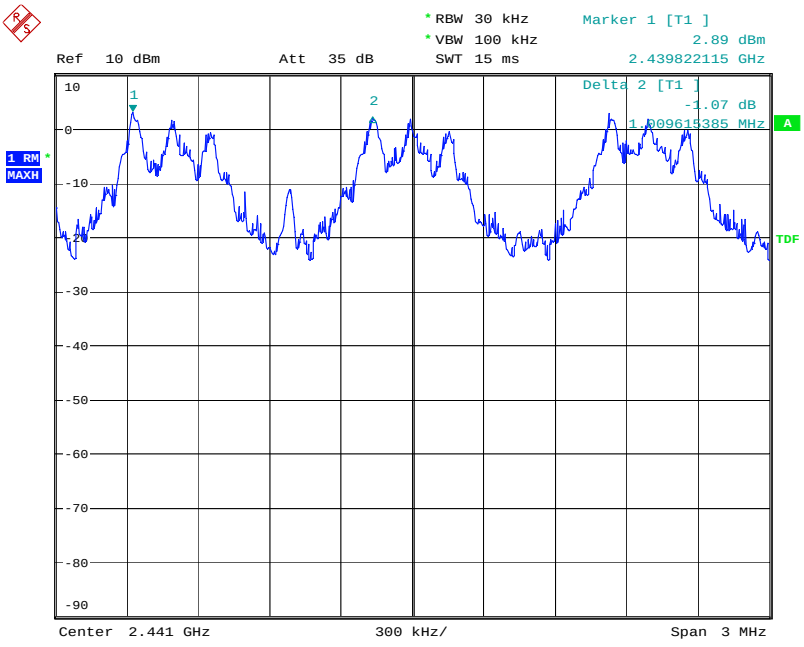
Channel frequency (MHz)	Channel Separation (MHz)	Limit (MHz) Minimum	Result
GFSK			
2402	1.000	0.1	Pass
2441	1.010	0.1	Pass
2480	1.005	0.1	Pass
8DPSK			
2402	1.000	0.1	Pass
2441	1.005	0.1	Pass
2480	1.005	0.1	Pass

GFSK Lowest Channel



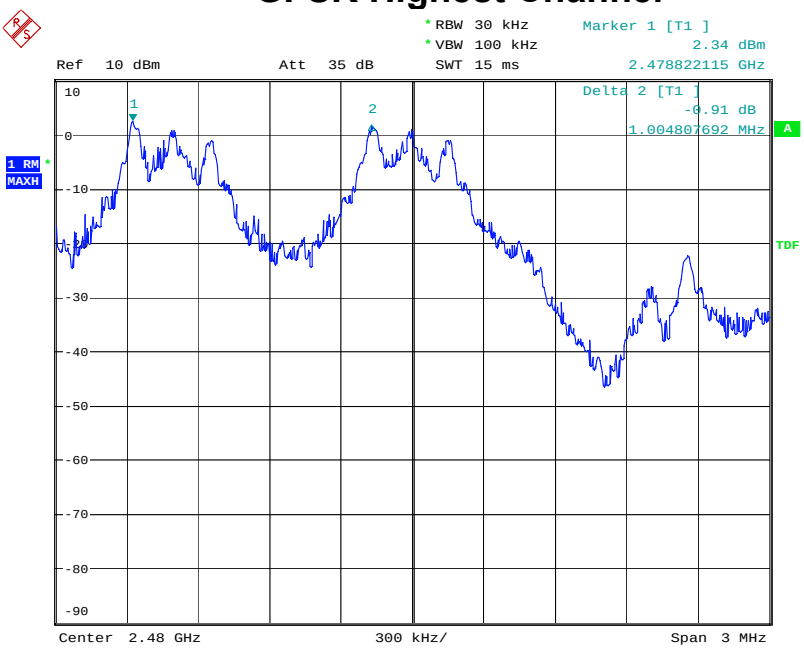
Date: 4.NOV.2014 15:20:44

GFSK Middle Channel



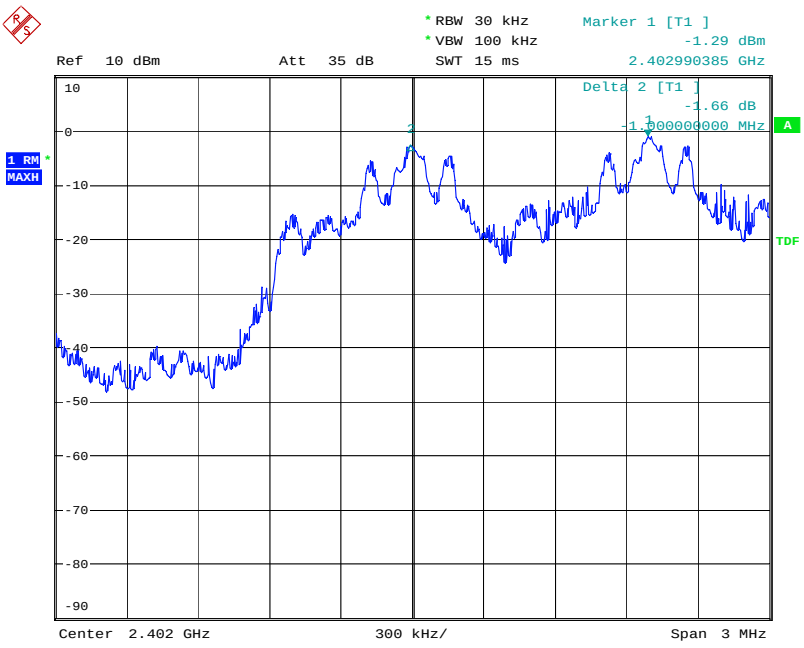
Date: 4.NOV.2014 15:23:06

GFSK Highest Channel



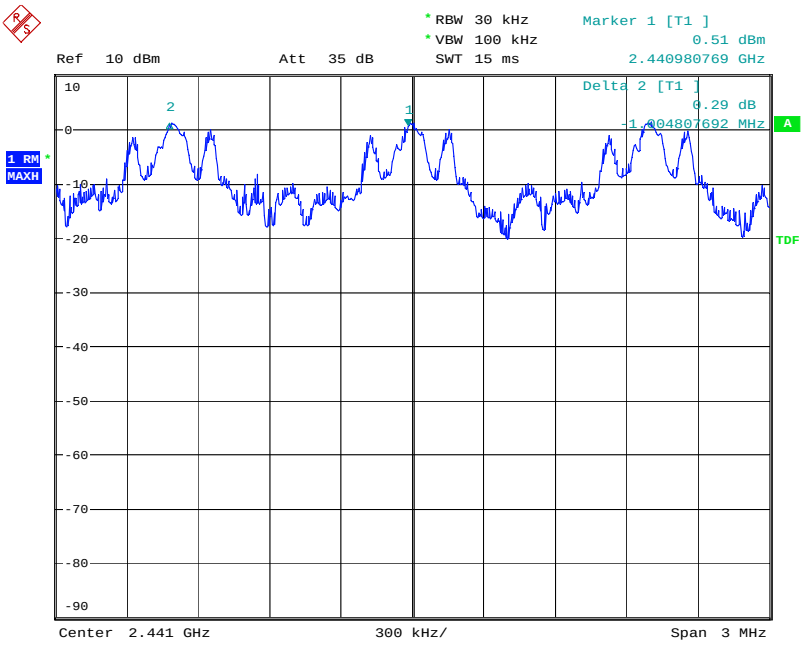
Date: 4.NOV.2014 15:25:23

8DPSK Lowest Channel



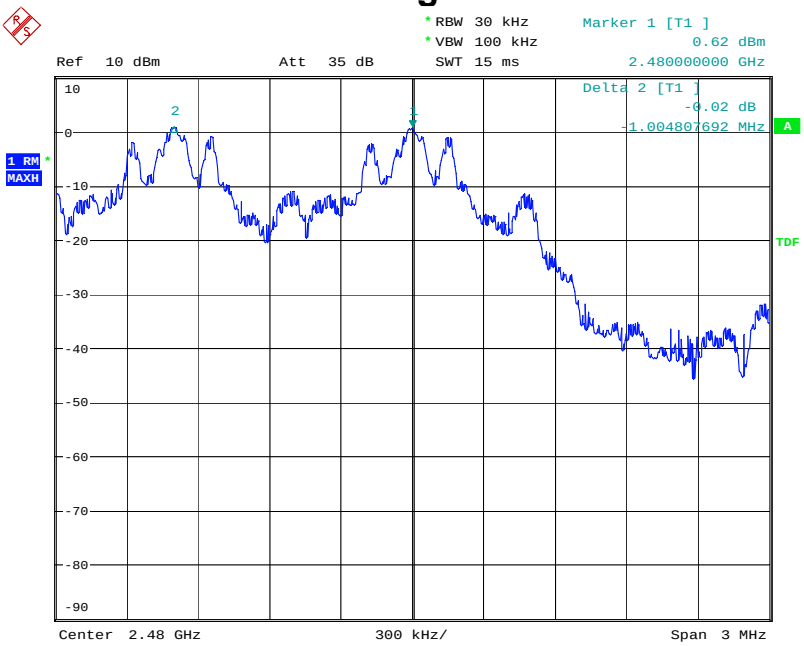
Date: 4.NOV.2014 15:44:58

8DPSK Middle Channel



Date: 4.NOV.2014 15:47:26

8DPSK Highest Channel



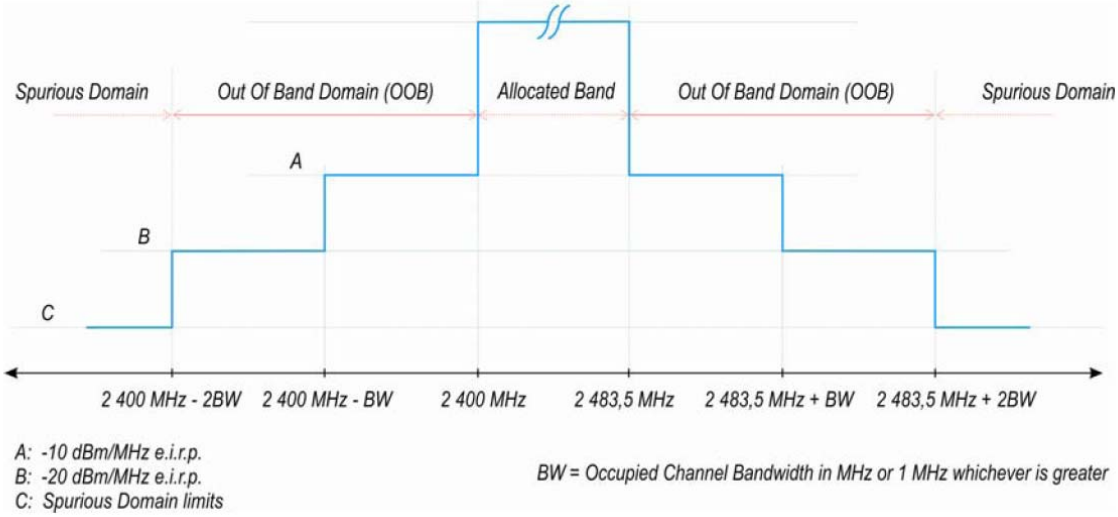
Date: 4.NOV.2014 15:49:45

13. TRANSMITTER UNWANTED EMISSIONS IN THE OUT-OF BAND DOMAIN

Limits

The transmitter unwanted emissions in the out-of-band domain but outside the allocated band, shall not exceed the values provided by the mask

Transmit mask

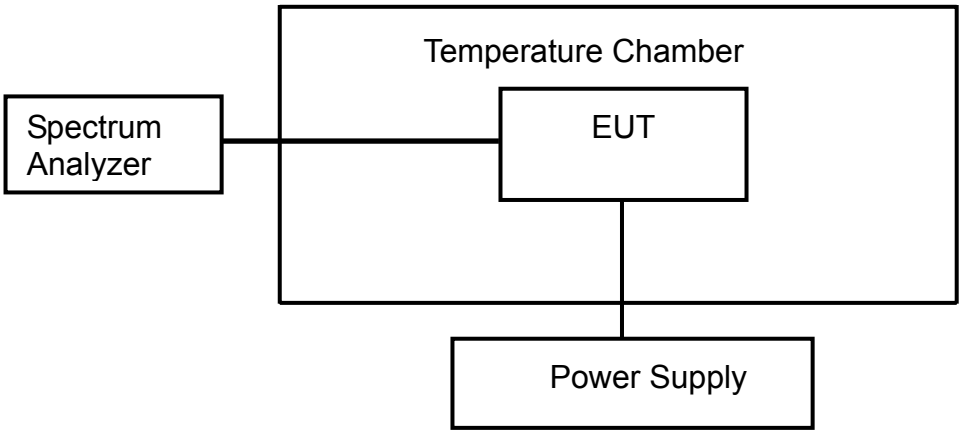


Test Method

1. Please refer to ETSI EN 300328 ($V_{1.8.1}$) clause 5.3.9.2.1 for conducted measurement method.
2. The measurements shall be performed at both normal environmental conditions and at The extremes of the operating temperature range.

Test Configuration

Temperature and Voltage Measurement



Test Result

Pass.

Please refer to following data tables.

Temperature : 24 ℃ Humidity : 53%
Test Date : November 04, 2014 Test Result: PASS
Test By: Sance

Condition		2400-BW~2400 / 2483.5+BW ~2483.5 (dBm/MHz)	Limit (dBm/MHz)	2400-2*BW~2400-BW / 2483.5+2*BW ~2483.5+BW (dBm/MHz)	Limit (dBm/MHz)	Result
GFSK (2402MHz)						
25	AC 230V	-24.95	-10	-27.36	-20	PASS
0	AC 198V	-24.98	-10	-27.39	-20	PASS
	AC 264V	-24.93	-10	-27.37	-20	PASS
45	AC 198V	-24.98	-10	-27.33	-20	PASS
	AC 264V	-24.99	-10	-27.36	-20	PASS
GFSK (2480MHz)						
25	AC 230V	-27.18	-10	-33.12	-20	PASS
0	AC 198V	-27.19	-10	-33.06	-20	PASS
	AC 264V	-27.19	-10	-33.08	-20	PASS
45	AC 198V	-27.22	-10	-33.12	-20	PASS
	AC 264V	-27.17	-10	-33.09	-20	PASS
8DPSK (2402MHz)						
25	AC 230V	-23.56	-10	-38.89	-20	PASS
0	AC 198V	-23.58	-10	-38.86	-20	PASS
	AC 264V	-23.61	-10	-38.93	-20	PASS
45	AC 198V	-23.65	-10	-38.88	-20	PASS
	AC 264V	-23.62	-10	-38.90	-20	PASS
8DPSK (2480MHz)						
25	AC 230V	-37.98	-10	-42.03	-20	PASS
0	AC 198V	-38.02	-10	-42.01	-20	PASS
	AC 264V	-38.01	-10	-42.02	-20	PASS
45	AC 198V	-37.95	-10	-41.97	-20	PASS
	AC 264V	-38.00	-10	-42.01	-20	PASS

14. TRANSIMITTER SPURIOUS EMISSIONS

Limits:

The transmitter unwanted emissions in the spurious domain shall not exceed the values.

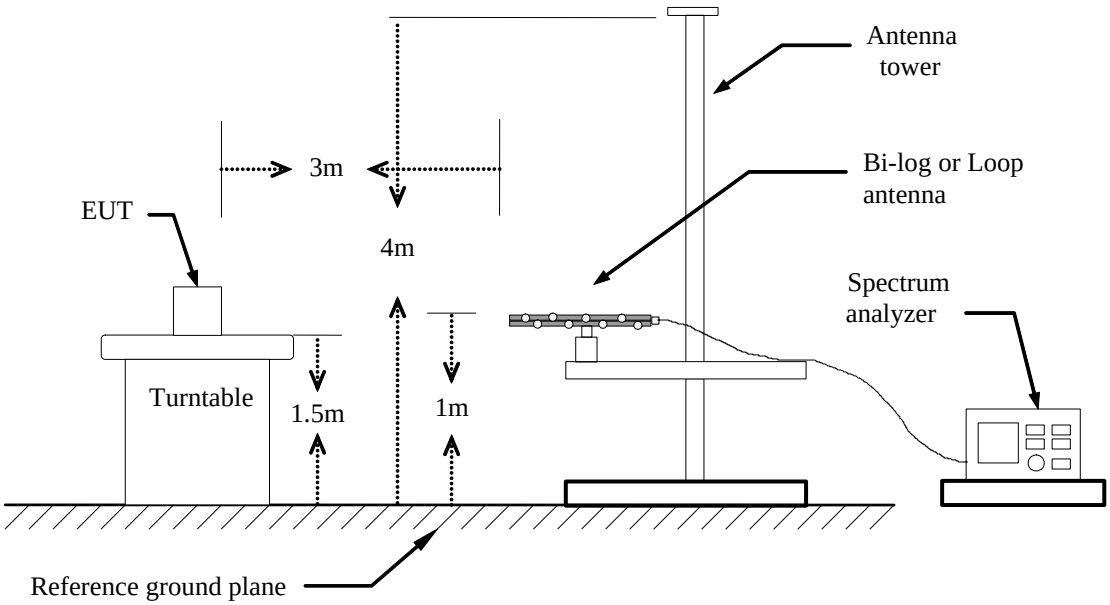
Frequency Range	Maximum power e.r.p. (≤ 1 GHz) e.i.r.p. (> 1 GHz)	Bandwidth
30 MHz to 47MHz	-36 dBm	100KHz
47 MHz to 74MHz	-54 dBm	100KHz
74 MHz to 87.5MHz	-36 dBm	100KHz
87.5 MHz to 118MHz	-54 dBm	100KHz
118 MHz to 174MHz	-36 dBm	100KHz
174 MHz to 230MHz	-54 dBm	100KHz
230 MHz to 470MHz	-36 dBm	100KHz
470 MHz to 862MHz	-54 dBm	100KHz
862 MHz to 1GHz	-36 dBm	100KHz
1GHz to 12.75GHz	-30 dBm	1MHz

Test Method

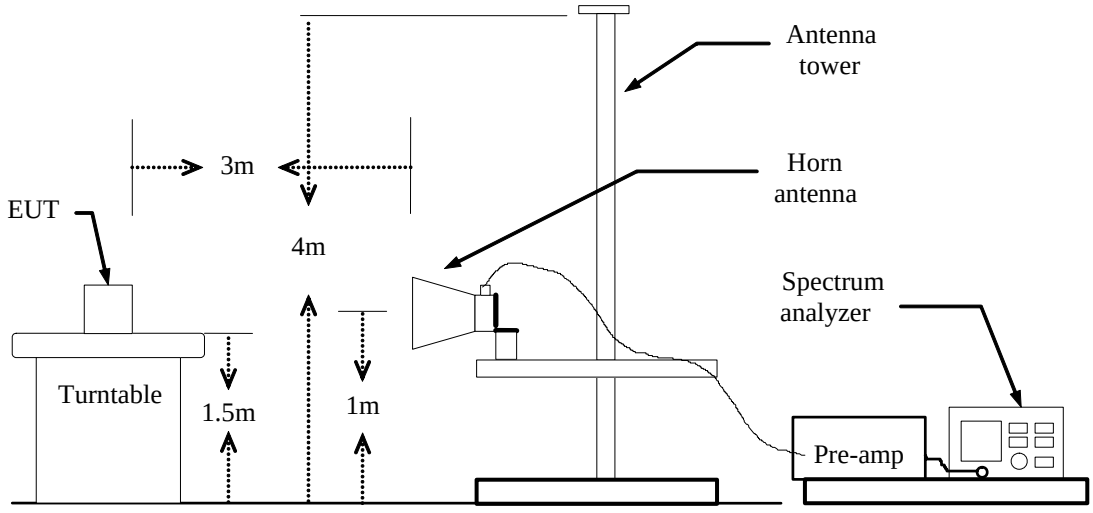
1. Please refer to ETSI EN 300328 ($V_{1.8.1}$) clause 5.3.10.2.2 for radiated measurement method.
2. The measurements shall be performed at normal environmental condition.

Test Configuration

Below 1GHz



Above 1GHz



Test Result

Pass.

Please refer to following data tables (The worst case GFSK).

Below 1GHz Low Channel				
Humidity : 53 %		Temperature : 24 ℃		
Test Result: PASS		Test By: Sance		
Test Mode: TX				
Frequency (MHz)	**Antenna Polarization**	**Emission level (dBm)**	**Limit (dBm)**	**Margin (dB)**
216.2400	Vertical	-67.01	-54.00	-13.01
359.8000	Vertical	-65.29	-36.00	-29.29
647.8900	Vertical	-59.72	-54.00	-5.72

137.6700	Horizontal	-73.09	-36.00	-37.09
216.2400	Horizontal	-68.65	-54.00	-14.65
504.3300	Horizontal	-60.07	-54.00	-6.07

Below 1GHz High Channel				
Humidity : 53 %		Temperature : 24 ℃		
Test Result: PASS		Test By: Sance		
Test Mode: TX				
Frequency (MHz)	Antenna Polarization	Emission level (dBm)	Limit (dBm)	Margin (dB)
49.4000	Vertical	-67.75	-54.00	-13.75
63.9500	Vertical	-67.85	-54.00	-13.85
71.7100	Vertical	-69.33	-54.00	-15.33

101.7800	Horizontal	-68.30	-54.00	-14.30
120.2100	Horizontal	-72.95	-36.00	-36.95
141.5500	Horizontal	-73.25	-36.00	-37.25

Note: 1. Emission Level (dBm) = Reading level (dBm)+Correction Factor (dB)
2. Data of measurement within this frequency range shown " ---" in the table above means the reading of emissions are attenuated more than 10dB below the permissible limits.
3. The other spurious emissions are not found in stand-by mode.

Above 1GHz Low Channel				
Humidity : 53 %		Temperature : 24 ℃		
Test Result: PASS		Test By: Sance		
Test Mode: TX				
Frequency (MHz)	**Antenna** Polarization	**Emission level (dBm)**	**Limit (dBm)**	**Margin (dB)**
4804	Vertical	-48.76	-30	-18.76

4804	Horizontal	-47.29	-30	-17.29

Above 1GHz High Channel				
Humidity : 53 %		Temperature : 21 ℃		
Test Result: PASS		Test By: Sance		
Test Mode: TX				
Frequency (MHz)	**Antenna** Polarization	**Emission level (dBm)**	**Limit (dBm)**	**Margin (dB)**
4960	Vertical	-46.82	-30	-16.82

4960	Horizontal	-45.37	-30	-15.37

Note: 1. Emission Level (dBm) = Reading level (dBm)+Correction Factor (dB)
2. Data of measurement within this frequency range shown " ---" in the table above means the reading of emissions are attenuated more than 10dB below the permissible limits.
3. The other spurious emissions are not found in stand-by mode.

15. RECEIVER SPURIOUS EMISSIONS

Limits

Frequency Range	Maximum power e.r.p. (≤ 1 GHz) e.i.r.p. (> 1 GHz)	Bandwidth
30 MHz to 1GHz	-57 dBm	100KHz
1GHz to 12.75GHz	-47 dBm	1MHz

Test Method

1. Please refer to ETSI EN 300328 ($V_{1.8.1}$) clause 5.3.11.2.2 for radiated measurement method.
2. The measurements shall be performed at normal environmental condition.

Test Configuration

(Same as section 14 in this test report)

Test Result

Pass.

Please refer to following data tables (the worst case GFSK).

Below 1GHz Low Channel				
Humidity : 53%		Temperature : 24 ℃		
Test Result: PASS		Test By: Sance		
Test Mode: RX				
Frequency (MHz)	**Antenna Polarization**	**Emission level (dBm)**	**Limit (dBm)**	**Margin (dB)**
31.9400	Vertical	-63.60	-57.00	-6.60
49.4000	Vertical	-67.94	-57.00	-10.94
63.9500	Vertical	-68.03	-57.00	-11.03

101.7800	Horizontal	-68.66	-57.00	-11.66
122.1500	Horizontal	-72.08	-57.00	-15.08
135.7300	Horizontal	-73.14	-57.00	-16.14

Below 1GHz High Channel				
Humidity : 53%		Temperature : 24 ℃		
Test Result: PASS		Test By: Sance		
Test Mode: RX				
Frequency (MHz)	**Antenna Polarization**	**Emission level (dBm)**	**Limit (dBm)**	**Margin (dB)**
30.9700	Vertical	-63.70	-57.00	-6.70
49.4000	Vertical	-68.23	-57.00	-11.23
63.9500	Vertical	-68.17	-57.00	-11.17

95.9600	Horizontal	-66.18	-57.00	-9.18
101.7800	Horizontal	-68.03	-57.00	-11.03
118.2700	Horizontal	-72.82	-57.00	-15.82

Note: 1. Emission Level (dBm) = Reading level (dBm)+Correction Factor (dB)
2. Data of measurement within this frequency range shown " ---" in the table above means the reading of emissions are attenuated more than 10dB below the permissible limits.

Above 1GHz Low Channel				
Humidity : 53 %		Temperature : 24 ℃		
Test Result: PASS		Test By: Sance		
Test Mode: RX				
Frequency (MHz)	**Antenna Polarization**	**Emission level (dBm)**	**Limit (dBm)**	**Margin (dB)**
4804	Vertical	-59.27	-47	-12.27

4804	Horizontal	-60.12	-47	-13.12

Above 1GHz High Channel				
Humidity : 53 %		Temperature : 24 ℃		
Test Result: PASS		Test By: Sance		
Test Mode: RX				
Frequency (MHz)	**Antenna Polarization**	**Emission level (dBm)**	**Limit (dBm)**	**Margin (dB)**
4960	Vertical	-59.57	-47	-12.57

4960	Horizontal	-59.88	-47	-12.88

NOTE: 1. Remark”---“ means that the other spurious emissions are not found.
2. Emission Level (dBm) = Reading level (dBm) + Correction Factor (dB)

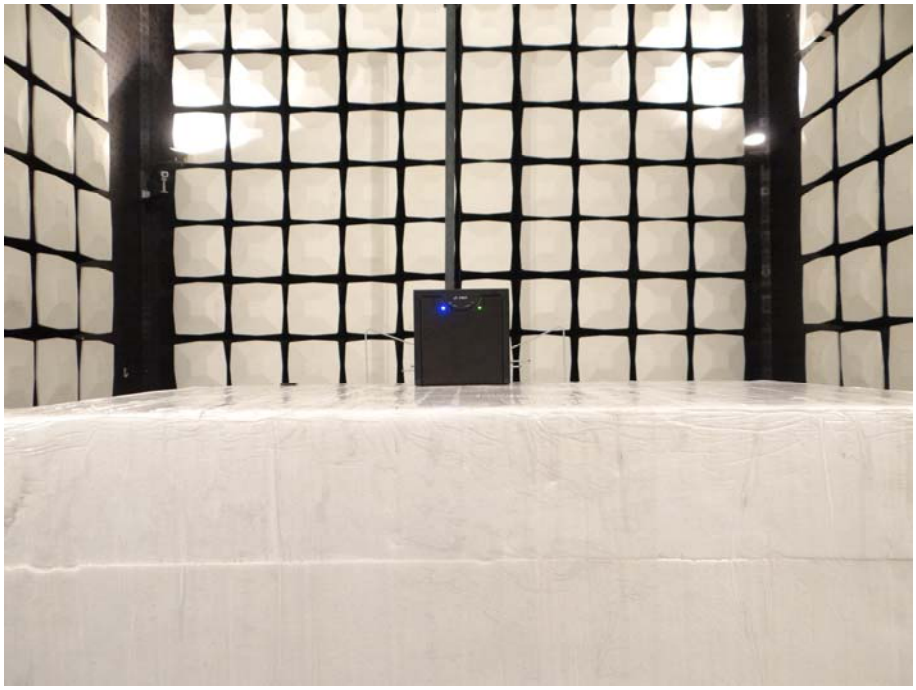
16. TEST EQUIPMENT LIST

Description	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due Date
Receiver	Rohde & Schwarz	ESCI7	100837	Nov.25, 2013	Nov.24, 2014
DC Power Source	HUA YI	HY5003-2	N/A	Nov.05, 2014	Nov.04, 2015
Temperature & Humidity Chamber	HAIDA	DH-225T	N/A	Nov.07, 2014	Nov.06, 2014
Spectrum Analyzer	Rohde & Schwarz	FSU26	200409/026	Sep.02, 2014	Sep.01, 2015
Horn Antenna	COM-Power	AH-118	071078	Nov. 07, 2013	Nov. 06, 2014
Pre-Amplifier	COM-Power	PAM-118	443007	Nov. 05, 2014	Nov. 04, 2015
Horn Antenna	Schwarzbeck	BBHA9170	9170-372	Oct.24, 2014	Oct.23, 2015
Broadband Antenna	Schwarzbeck	VULB9162	9162-010	Nov. 28, 2013	Nov. 27, 2014
Pre-Amplifier	Agilent	8449B	3008A02964	Nov.05, 2014	Nov.04, 2015
Pre-Amplifier	HP	HP 8447D	1145A00203	Nov.09, 2013	Nov.08, 2014
Power Meter	Anritsu	ML2495A	1139001	Nov.05, 2014	Nov.04, 2015
Cable	Huber+Suhner	CIL02	N/A	Nov.09, 2013	Nov.08, 2014

APPENDIX I

PHOTOGRPHS OF TEST SETUP

Radiated Emission Below 1 GHz



Radiated Emission Above 1 GHz

---End of report---