Test Report

Product Name ： H19TXT

Model No. ： H19TXT

FCC ID. ： IHDT6NG1

Applicant ： Motorola Mobility, Inc.

Address ： 8000W. Sunrise Blvd; Suite A. Plantation, FL 33322 U.S.A.

Date of Receipt ： 2012/04/24

Issued Date ： 2012/05/08

Report No. ： 124489R-RFUSP43V01

Report Version ： V1.0

Test Report Certification

Issued Date : 2012/05/08
Report No. : 124489R-RFUSP43V01

QuieTek

Product Name	：	H19TXT
Applicant	：	Motorola Mobility, Inc.
Address	：	8000W. Sunrise Blvd; Suite A. Plantation, FL 33322 U.S.A.
Manufacturer	：	Fugang Electric (Kunshan) Co., Ltd.
Model No.	：	H19TXT
FCC ID.	：	IHDT6NG1
EUT Voltage	：	DC 5V
Trade Name	：	Motorola
Applicable Standard	：	FCC CFR Title 47 Part 15 Subpart C Section 15.247: 2011
Test Result	：	Complied

The test results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

Documented By : Sandy Chuang

(Sandy Chuang / Engineering Adm. Specialist)

Reviewed By : Quale Tang

(Quale Tang / Engineer)

Approved By : Roy Wang

(Roy Wang / Manager)

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1. General Information

1.1. EUT Description

Product Name	H19TXT
Trade Name	Motorola
Model No.	H19TXT
Frequency Range	2402~2480MHz
Channel Number	79
Type of Modulation	GFSK (1Mbps), π/4-DQPSK (2Mbps), 8-DPSK (3Mbps)
Channel Control	Auto
Antenna Type	Monopole
Antenna Gain	3.3dBi

Working Frequency of Each Channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00	2402 MHz	Channel 20	2422 MHz	Channel 40	2442 MHz	Channel 60	2462 MHz
Channel 01	2403 MHz	Channel 21	2423 MHz	Channel 41	2443 MHz	Channel 61	2463 MHz
Channel 02	2404 MHz	Channel 22	2424 MHz	Channel 42	2444 MHz	Channel 62	2464 MHz
Channel 03	2405 MHz	Channel 23	2425 MHz	Channel 43	2445 MHz	Channel 63	2465 MHz
Channel 04	2406 MHz	Channel 24	2426 MHz	Channel 44	2446 MHz	Channel 64	2466 MHz
Channel 05	2407 MHz	Channel 25	2427 MHz	Channel 45	2447 MHz	Channel 65	2467 MHz
Channel 06	2408 MHz	Channel 26	2428 MHz	Channel 46	2448 MHz	Channel 66	2468 MHz
Channel 07	2409 MHz	Channel 27	2429 MHz	Channel 47	2449 MHz	Channel 67	2469 MHz
Channel 08	2410 MHz	Channel 28	2430 MHz	Channel 48	2450 MHz	Channel 68	2470 MHz
Channel 09	2411 MHz	Channel 29	2431 MHz	Channel 49	2451 MHz	Channel 69	2471 MHz
Channel 10	2412 MHz	Channel 30	2432 MHz	Channel 50	2452 MHz	Channel 70	2472 MHz
Channel 11	2413 MHz	Channel 31	2433 MHz	Channel 51	2453 MHz	Channel 71	2473 MHz
Channel 12	2414 MHz	Channel 32	2434 MHz	Channel 52	2454 MHz	Channel 72	2474 MHz
Channel 13	2415 MHz	Channel 33	2435 MHz	Channel 53	2455 MHz	Channel 73	2475 MHz
Channel 14	2416 MHz	Channel 34	2436 MHz	Channel 54	2456 MHz	Channel 74	2476 MHz
Channel 15	2417 MHz	Channel 35	2437 MHz	Channel 55	2457 MHz	Channel 75	2477 MHz
Channel 16	2418 MHz	Channel 36	2438 MHz	Channel 56	2458 MHz	Channel 76	2478 MHz
Channel 17	2419 MHz	Channel 37	2439 MHz	Channel 57	2459 MHz	Channel 77	2479 MHz
Channel 18	2420 MHz	Channel 38	2440 MHz	Channel 58	2460 MHz	Channel 78	2480 MHz
Channel 19	2421 MHz	Channel 39	2441 MHz	Channel 59	2461 MHz		

Component	
USB Cable	Shielded, 1.0m
Power Adapter	MOTOROLA, DC 4050US0301 I/P: 100V-240V~50/60Hz 0.2A O/P: 5.1V⎓850mA
Power Adapter	MOTOROLA, FMP5541A I/P: 100V-240V~50/60Hz 0.15A O/P: 5.0V⎓500mA Cable Out: Non-Shielded, 1.8m

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals

Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. The transmitter is presented with a continuous data stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its 79 channels and over the minimum number of hopping channels (75 channels).

The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hop sets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

Note:

1. This device is a H19TXT including a 2.4GHz receiving function, and transmitting function.
2. These test results on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
3. Regards to the frequency band operation; the lowest、middle and highest frequency of channel were selected to perform the test, and then shown on this report.
4. This device is a composite device in accordance with Part 15 regulations. The function receiving was measured and made a test report that the report number is 124489R-RFUSP37V02 under Declaration of Conformity.

1.3. Test Mode

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pre-Test Mode	
EMI	Mode 1: Transmit (Power by PC)
Final Test Mode	
EMI	Mode 1: Transmit (Power by PC)

Emission	Mode 1
Conducted Emission	Yes
Peak Power Output	Yes
Radiated Emission	Yes
RF antenna conducted test	Yes
Band Edge	Yes
Number of hopping Frequency	Yes
Carrier Frequency Separation	Yes
Occupied Bandwidth	Yes
Dwell Time	Yes

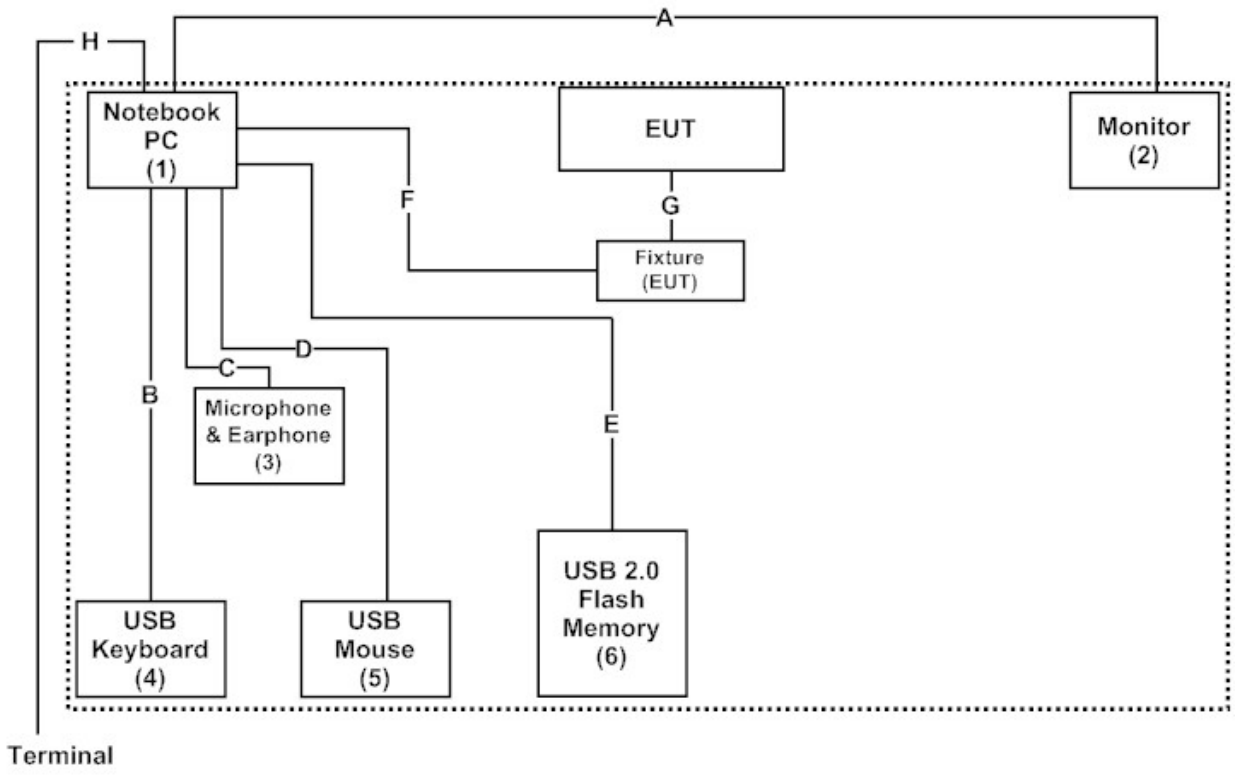
1.4. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	Notebook PC	DELL	PP26L	66TLZ1S	DoC	Non-Shielded, 1.8m
2	Monitor	DELL	U2410f	082WXD-72872-16R-0W2L	DoC	Non-Shielded, 1.8m
3	Microphone & Earphone	Fujiei	SBZ-38	N/A	DoC	--
4	USB Keyboard	DELL	SK-8115	0275	DoC	--
5	USB Mouse	Logitech	M-UV83	LZE35006052	DoC	--
6	USB 2.0 Flash Memory	Sony	USM2GJX	N/A	DoC	--

1.5. Configuration of tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	VGA Cable	Shielded, 1.1m
B	USB Keyboard Cable	Non-Shielded, 2.0m, one ferrite core bonded.
C	Microphone & Earphone Cable	Non-Shielded, 1.8m
D	USB Mouse Cable	Non-Shielded, 1.4m
E	USB 2.0 Flash Memory Cable	Shielded, 1.6m
F	USB Cable	Shielded, 1.0m
G	Console Cable	Non-Shielded, 5.0m
H	LAN Cable	Non-Shielded, 3.0m

1.6. EUT Exercise Software

1	Setup the EUT as shown in Section 1.5
2	Execute the Bluetool_MI_1.4.5.4 which is installed on the Notebook
3	Configure the test mode, the test channel to start the continuous Transmitter
4	Verify that the EUT works properly.

1.7. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	FCC PART 15 C 15.207 Conducted Emission	15 - 35	23
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Peak Power Output (FHSS)	15 - 35	23
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Radiated Emission (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	54
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Band Edge (FHSS)	15 - 35	25
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Number of hopping Frequency (FHSS)	15 - 35	23
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Carrier Frequency Separation (FHSS)	15 - 35	23
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Occupied Bandwidth (FHSS)	15 - 35	24
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	FCC PART 15 C 15.247 Dwell Time (FHSS)	15 - 35	23
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000

Site Description: September 27, 2010 File on
Federal Communications Commission
Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 365520
Accredited by TAF
Accreditation Number: 1313
Effective through: December 27, 2013

Accredited by NVLAP
NVLAP Lab Code: 200347-0
Effective through: September 30, 2012

Site Name: Quietek Corporation

Site Address: No.75-2, Wang-Yeh Valley, Yung-Hsing,
Chiung-Lin, Hsin-Chu County,
Taiwan
TEL : 886-3-592-8858 / FAX : 886-3-592-8859
E-Mail : service@quietek.com

2. Conducted Emission

2.1. Test Equipment

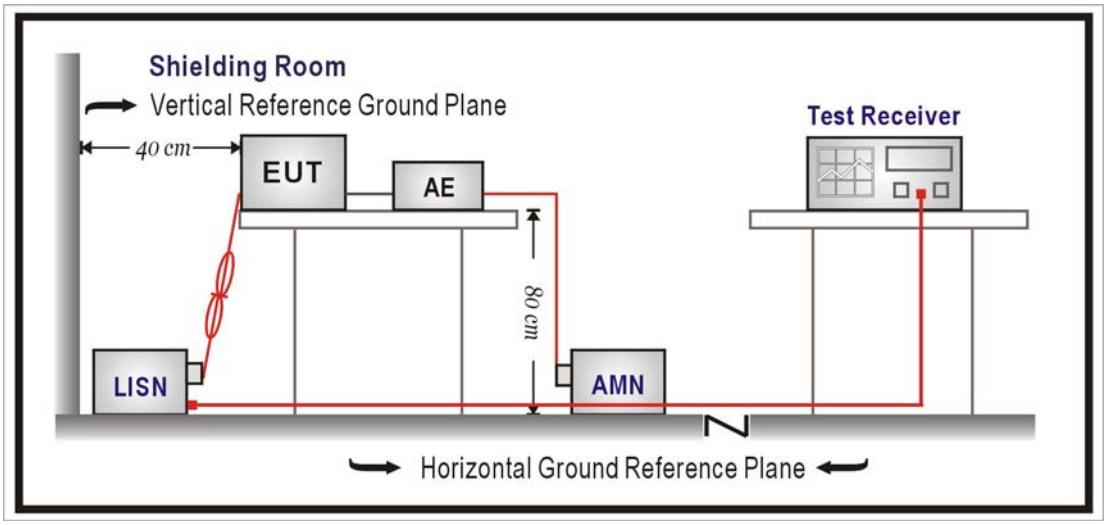
The following test equipments are used during the test:

Conducted Emission / SR3

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
LISN	R&S	ENV216	100096	2012/09/06
LISN	R&S	ESH3-Z5	836679/022	2013/02/06
Test Receiver	R&S	ESCS 30	825442/017	2013/01/01

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 Limits (dBuV)		
Frequency MHz	QP	AV
0.15 - 0.50	66-56	56-46
0.50 - 5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs.)
Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2009 on conducted measurement.
Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

2.5. Test Specification

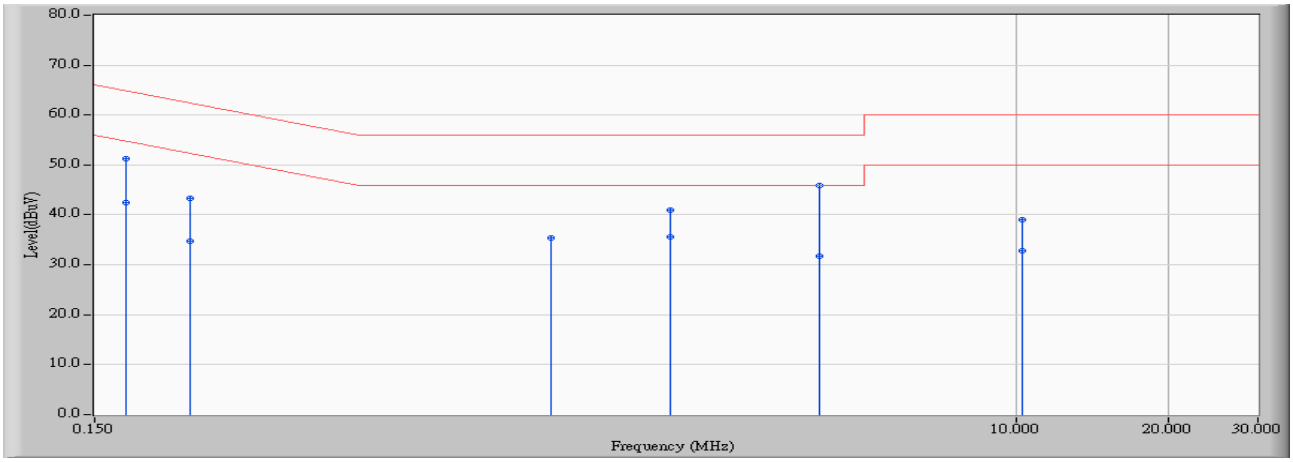
According to FCC Part 15 Subpart C Paragraph 15.207: 2011

2.6. Uncertainty

The measurement uncertainty is defined as ± 2.26 dB.

2.7. Test Result

Site : SR3	Time : 2012/04/27 - 15:26
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR3_LISN(16A)-1_0907 - Line1	Power : DC 5V
EUT : H19TXT	Note :

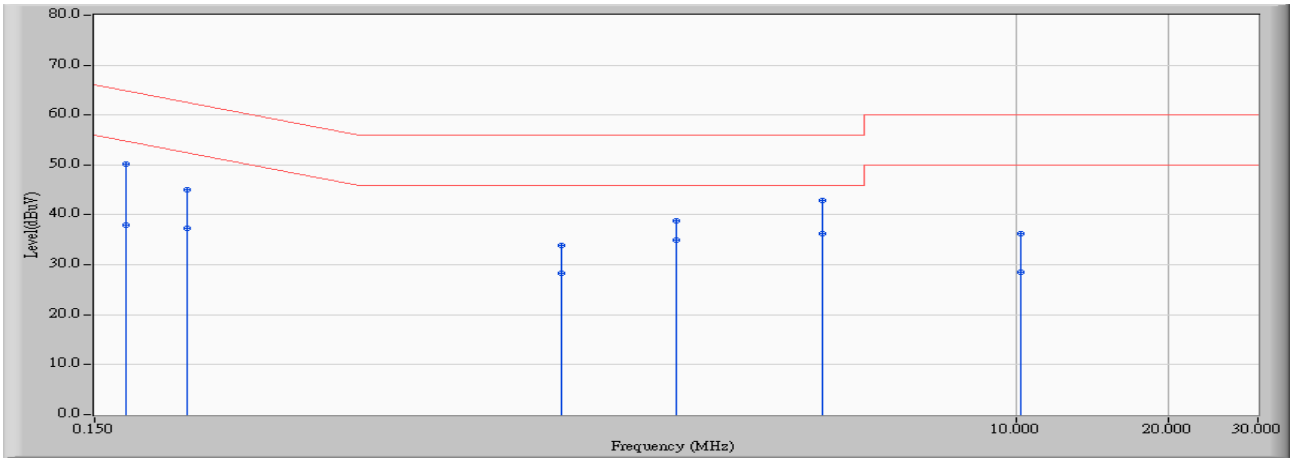


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.173	9.656	41.660	51.316	-13.478	64.794	QUASIPEAK
2		0.173	9.656	32.880	42.536	-12.258	54.794	AVERAGE
3		0.232	9.662	33.730	43.392	-18.985	62.377	QUASIPEAK
4		0.232	9.662	25.130	34.792	-17.585	52.377	AVERAGE
5		1.201	9.810	25.510	35.320	-20.680	56.000	QUASIPEAK
6		1.201	9.810	25.500	35.310	-10.690	46.000	AVERAGE
7		2.060	9.932	31.130	41.062	-14.938	56.000	QUASIPEAK
8		2.060	9.932	25.630	35.562	-10.438	46.000	AVERAGE
9	*	4.060	10.017	35.780	45.796	-10.204	56.000	QUASIPEAK
10		4.060	10.017	21.640	31.656	-14.344	46.000	AVERAGE
11		10.240	10.136	28.980	39.116	-20.884	60.000	QUASIPEAK
12		10.240	10.136	22.700	32.836	-17.164	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

Site : SR3	Time : 2012/04/27 - 15:30
Limit : CISPR_B_00M_QP	Margin : 10
Probe : SR3_LISN(16A)-1_0907 - Line2	Power : DC 5V
EUT : H19TXT	Note :



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.173	9.666	40.510	50.176	-14.618	64.794	QUASIPEAK
2		0.173	9.666	28.220	37.886	-16.908	54.794	AVERAGE
3		0.228	9.671	35.430	45.101	-17.417	62.518	QUASIPEAK
4		0.228	9.671	27.690	37.361	-15.157	52.518	AVERAGE
5		1.259	9.819	24.110	33.929	-22.071	56.000	QUASIPEAK
6		1.259	9.819	18.400	28.219	-17.781	46.000	AVERAGE
7		2.115	9.936	28.800	38.736	-17.264	56.000	QUASIPEAK
8		2.115	9.936	25.120	35.056	-10.944	46.000	AVERAGE
9		4.119	10.040	32.780	42.820	-13.180	56.000	QUASIPEAK
10	*	4.119	10.040	26.100	36.140	-9.860	46.000	AVERAGE
11		10.185	10.197	25.980	36.177	-23.823	60.000	QUASIPEAK
12		10.185	10.197	18.230	28.427	-21.573	50.000	AVERAGE

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.

3. Peak Power Output

3.1. Test Equipment

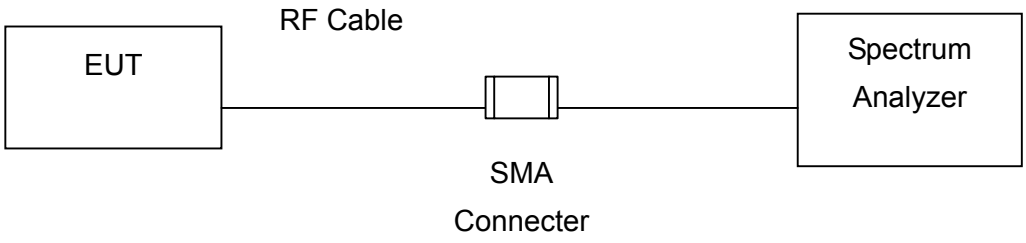
The following test equipment is used during the test:

Peak Power Output / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2013/02/19

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

3.2. Test Setup



3.3. Test procedures

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

3.4. Limits

For frequency hopping systems operating in the 902-928 MHz band: 1 Watt for systems employing at least 50 hopping channels; and, 0.25 Watts for systems employing less than 50 hopping channels.

For frequency hopping systems in the 2400-2483.5 MHz band employing at least 75 hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1Watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 Watt.

3.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2011

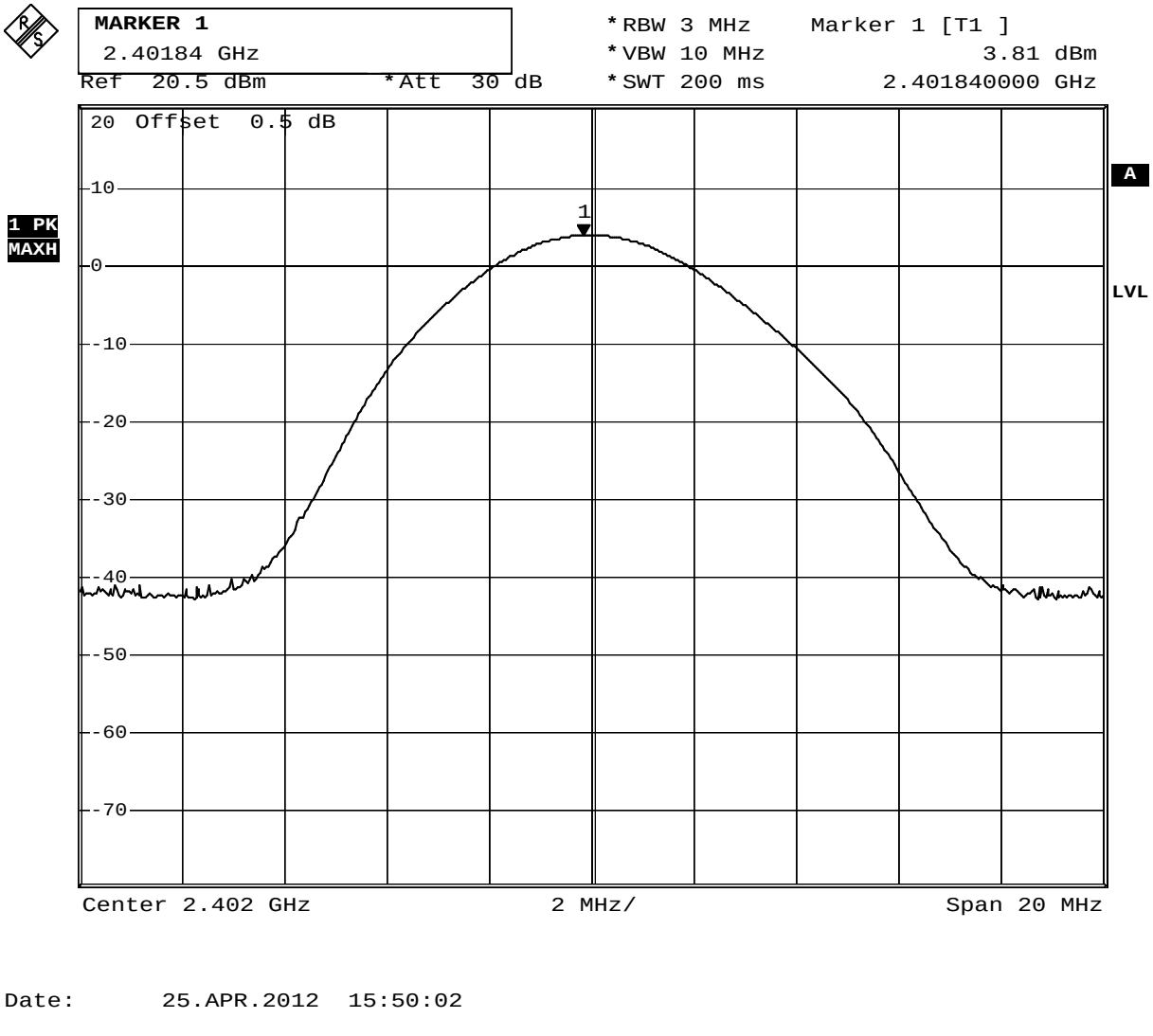
3.6. Test Result

Product	H19TXT		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/25	Test Site	SR7

GFSK

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2402	3.81	1Watt= 30 dBm	Pass

Channel 00

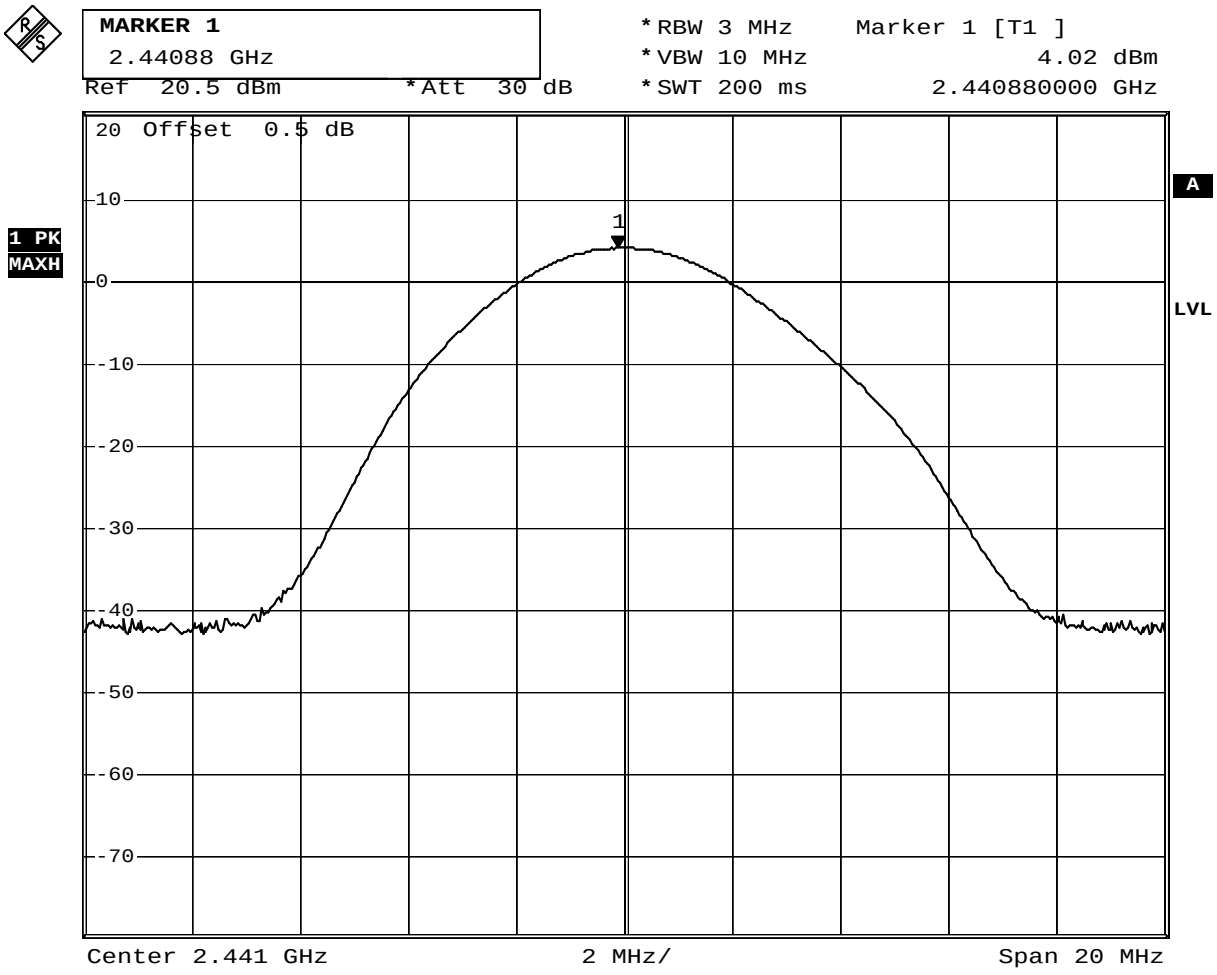


Product	H19TXT		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2012/04/25	Test Site	SR7

GFSK

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
39	2441	4.02	1Watt= 30 dBm	Pass

Channel 39

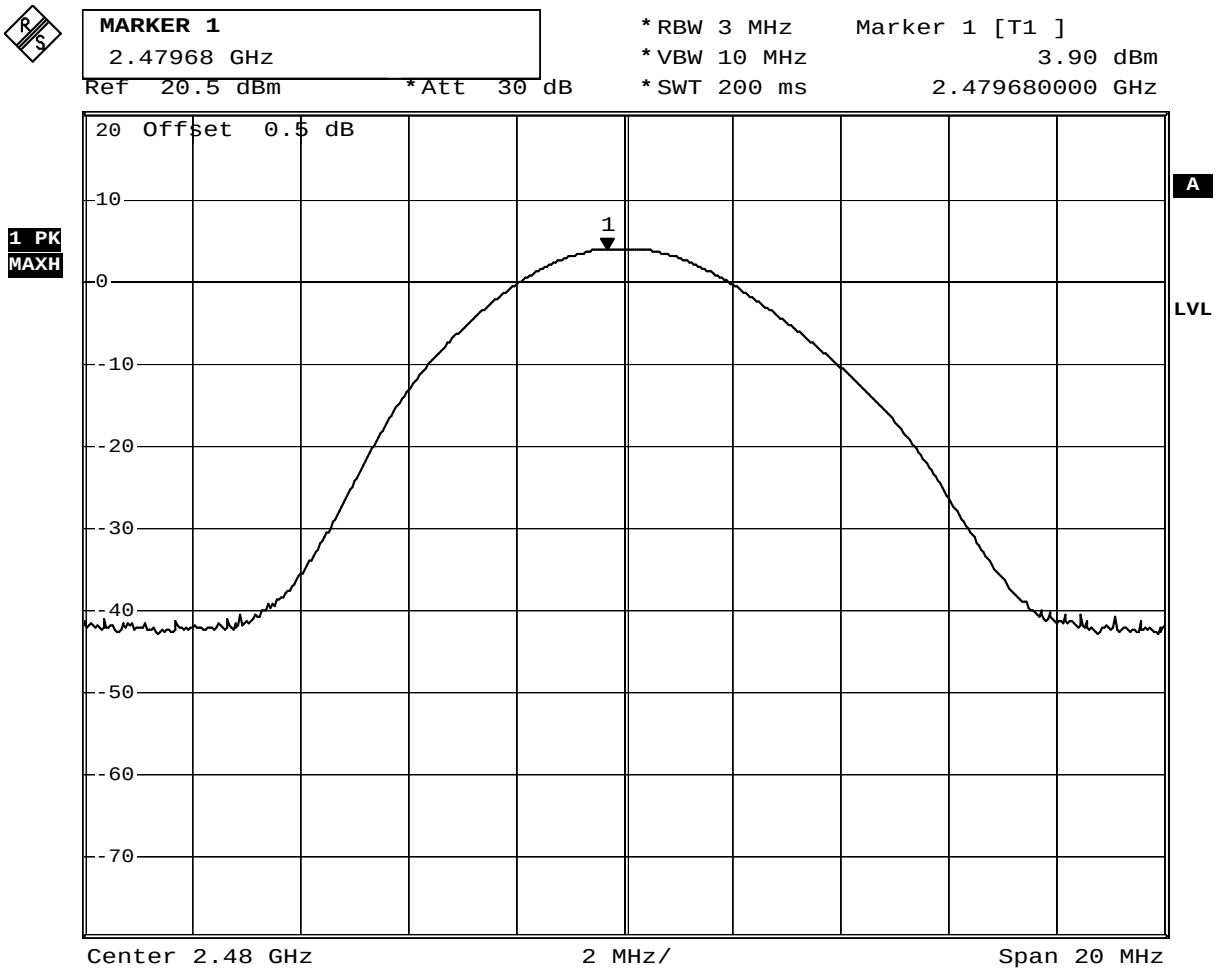


Product	H19TXT		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2012/04/25	Test Site	SR7

GFSK

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
78	2480	3.90	1Watt= 30 dBm	Pass

Channel 78

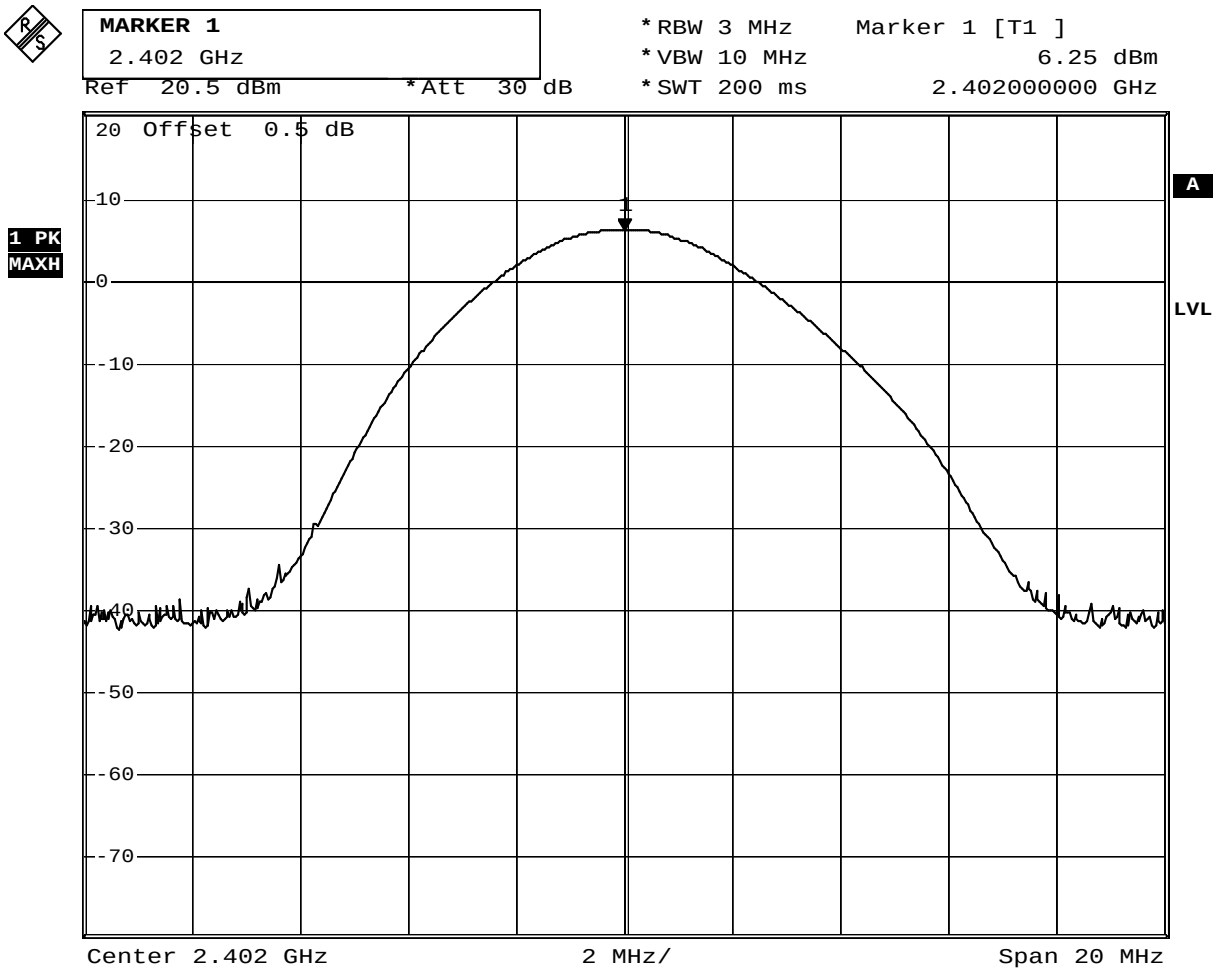


Product	H19TXT		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/25	Test Site	SR7

π/4-DQPSK

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2402	6.25	1Watt= 30 dBm	Pass

Channel 00

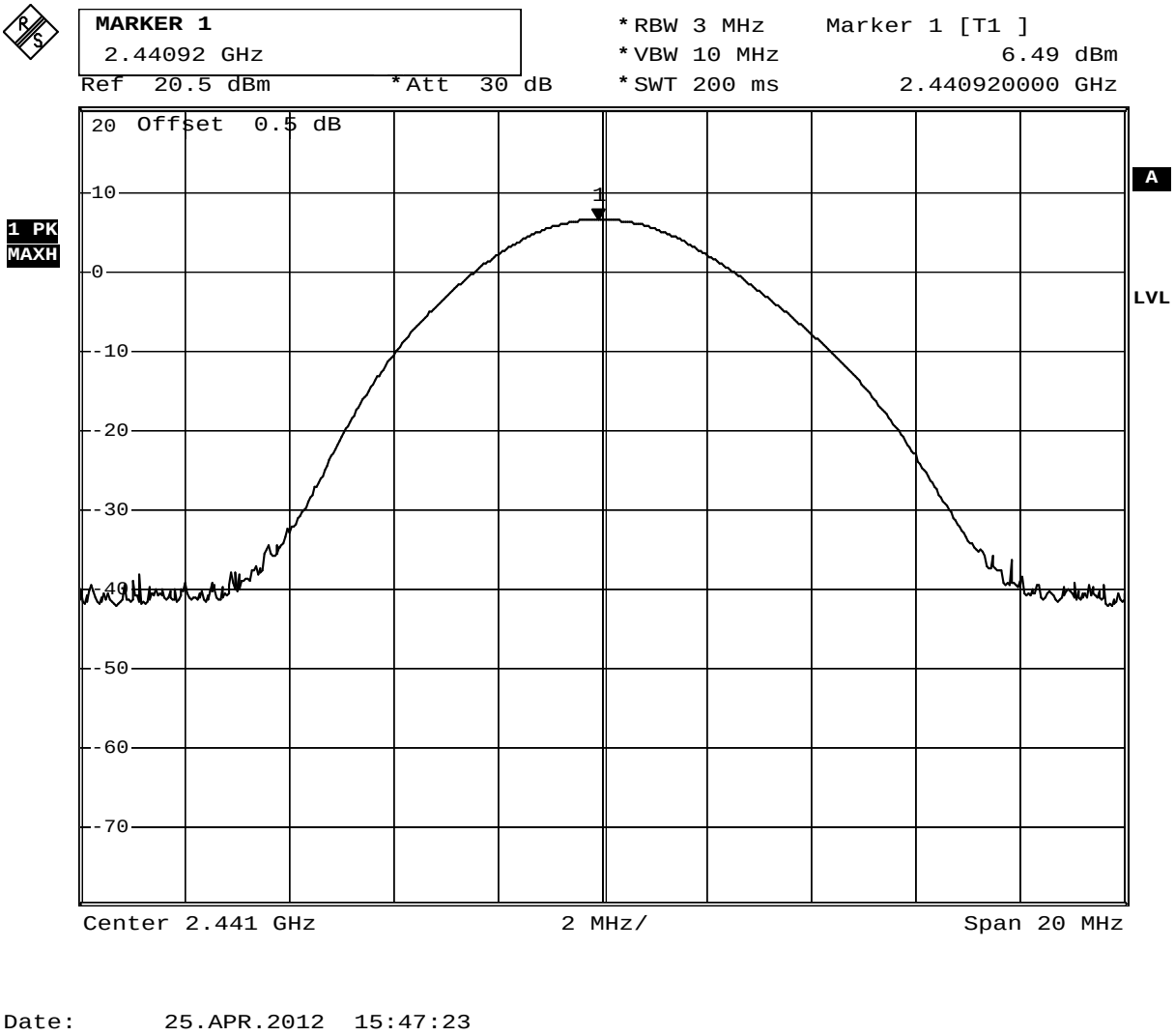


Product	H19TXT		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2012/04/25	Test Site	SR7

π/4-DQPSK

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
39	2441	6.49	1Watt= 30 dBm	Pass

Channel 39

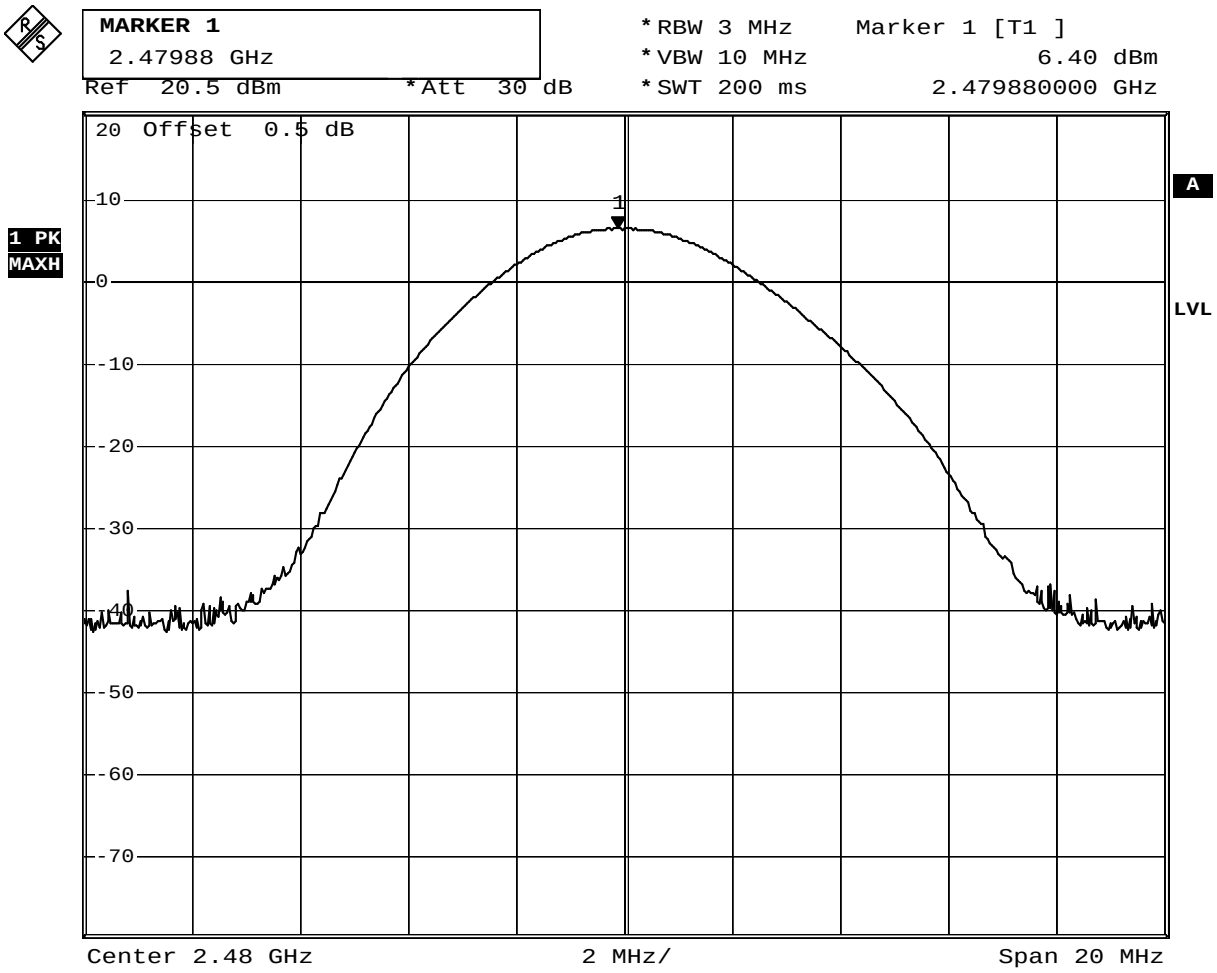


Product	H19TXT		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2012/04/25	Test Site	SR7

π/4-DQPSK

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
78	2480	6.40	1Watt= 30 dBm	Pass

Channel 78

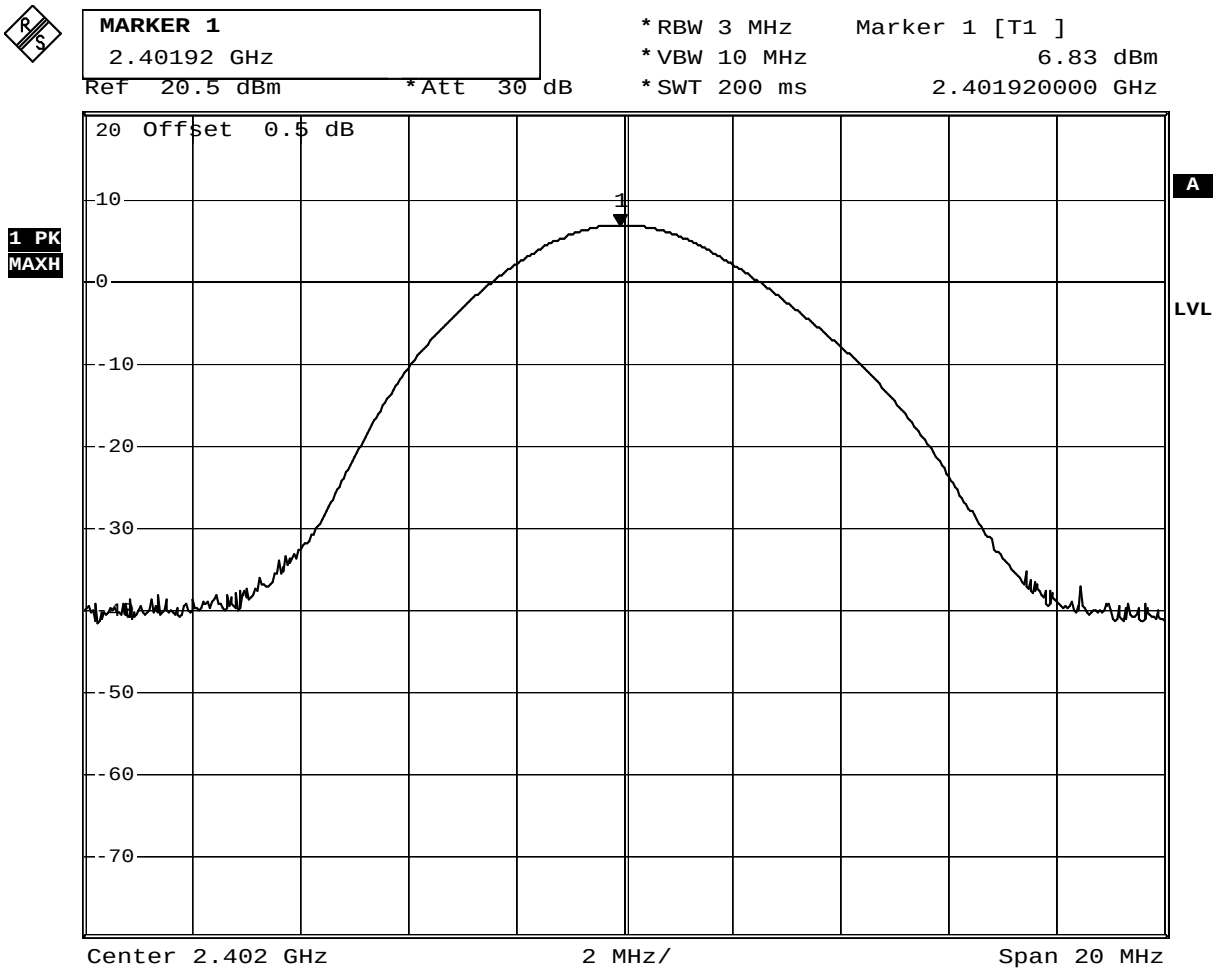


Product	H19TXT		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/25	Test Site	SR7

8-DPSK

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2402	6.83	1Watt= 30 dBm	Pass

Channel 00



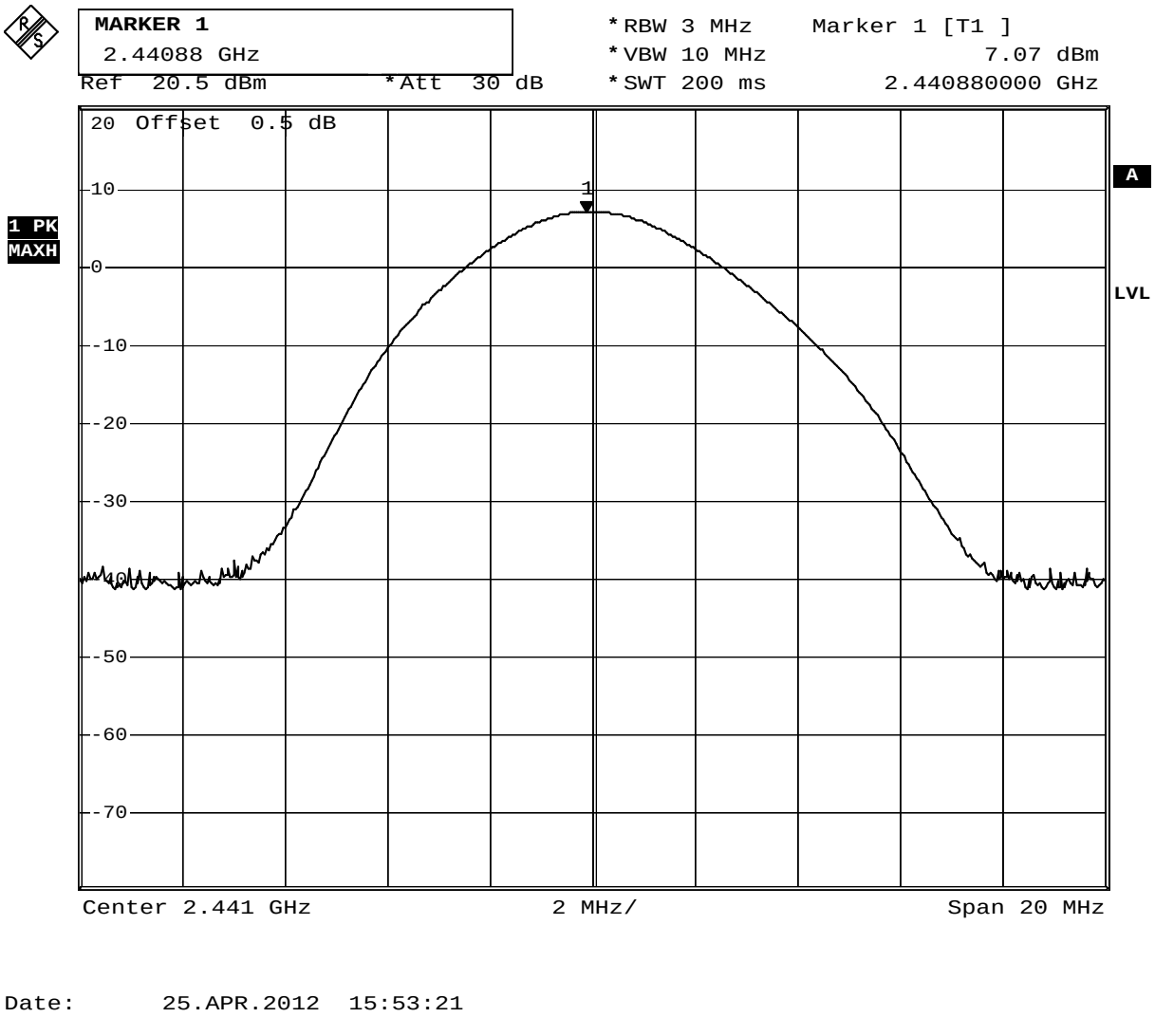
Date: 25.APR.2012 15:23:03

Product	H19TXT		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2012/04/25	Test Site	SR7

8-DPSK

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
39	2441	7.07	1Watt= 30 dBm	Pass

Channel 39

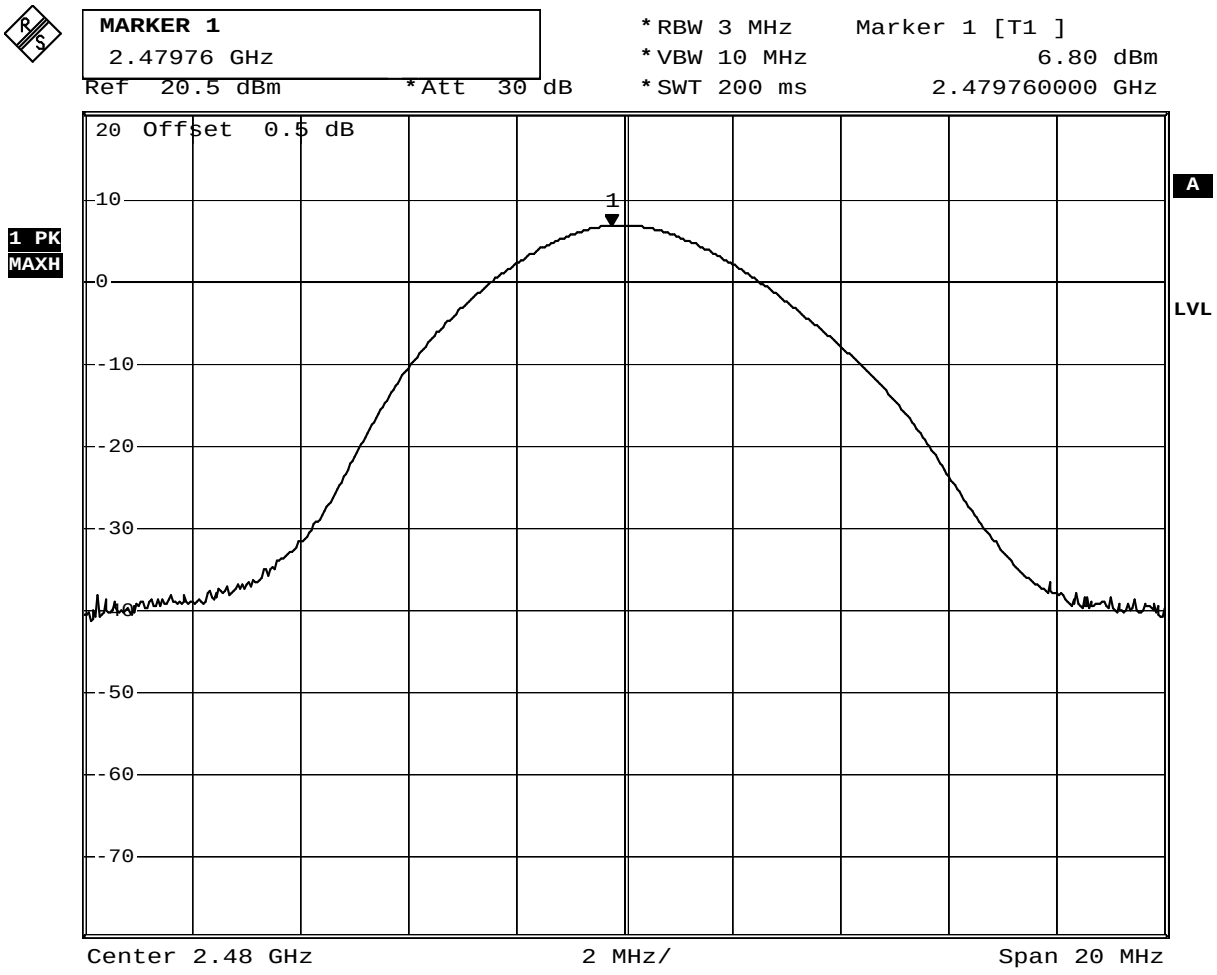


Product	H19TXT		
Test Item	Peak Power Output		
Test Mode	Mode 1: Transmit		
Date of Test	2012/04/25	Test Site	SR7

8-DPSK

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
78	2480	6.80	1Watt= 30 dBm	Pass

Channel 78



4. Radiated Emission

4.1. Test Equipment

The following test equipments are used during the test:

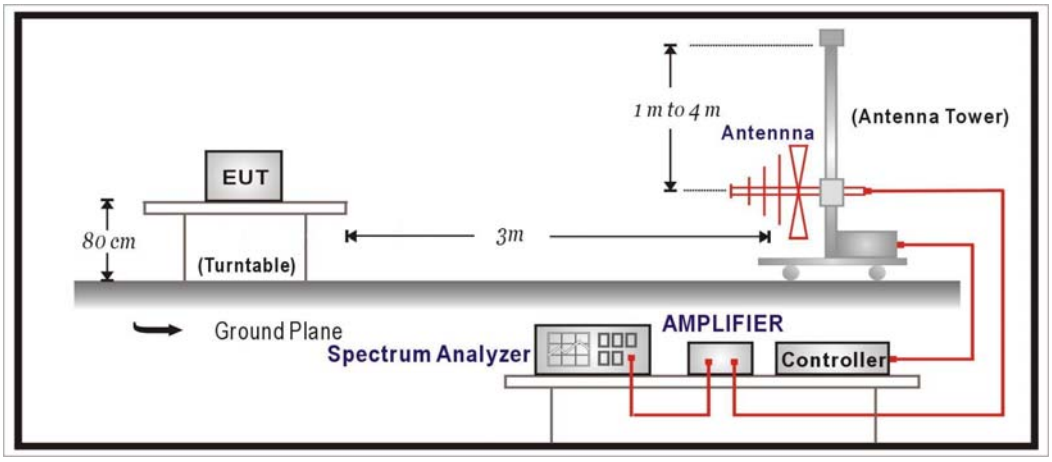
Radiated Emission / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Bilog Antenna	SCHAFFNER	CBL6112B	2895	2012/08/14
Double Ridged Guide Horn Antenna	Schwarzback	BBHA 9120D	743	2013/02/02
Pre-Amplifier	MITEQ	AMF-4D-005180-24-10P	888003	2012/12/05
Pre-Amplifier	QuieTek	AP-025C	CHM-0706049	2013/03/01
Spectrum Analyzer	Agilent	E4440A	MY46187335	2013/02/07
Coaxial Cable	Huber+Suhner AG	Sucoflex 102	25623/2	2013/03/04

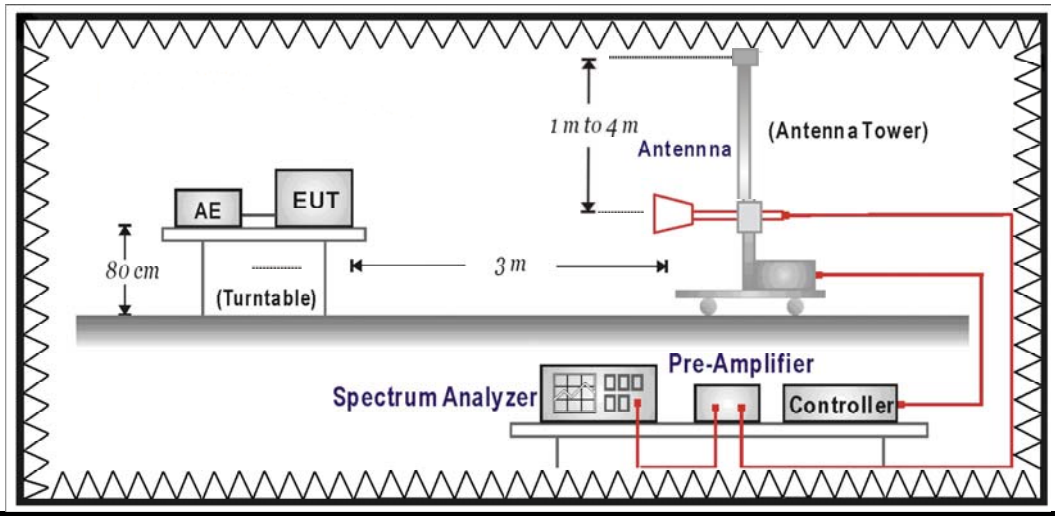
Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m	dBuV/m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks : 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

4.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2009 on radiated measurement.

On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a quasi-peak detector function and on any frequency or frequencies above 1000 MHz the radiated limits shown are based upon the use of measurement instrumentation employing an average detector function. When average radiated emission measurement are included emission measurement below 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit. The bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

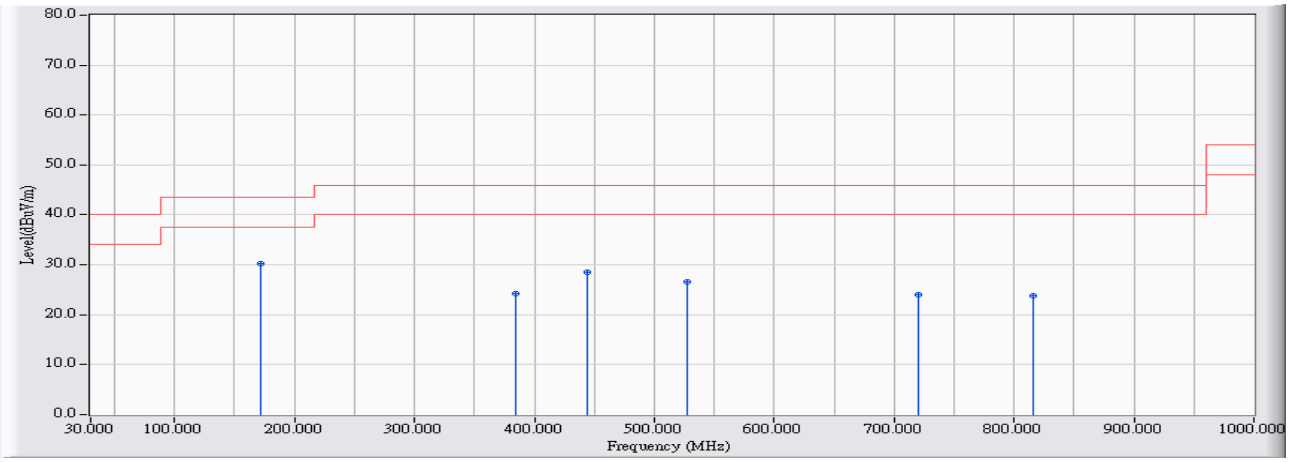
4.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2011

4.6. Test Result

30MHz-1GHz Spurious

Site : CB1	Time : 2012/04/28 - 11:16
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_EFS_30-1G-1_0901 - HORIZONTAL	Power : DC 5V
EUT : H19TXT	Note : Tx_8-DPSK_2441MHz

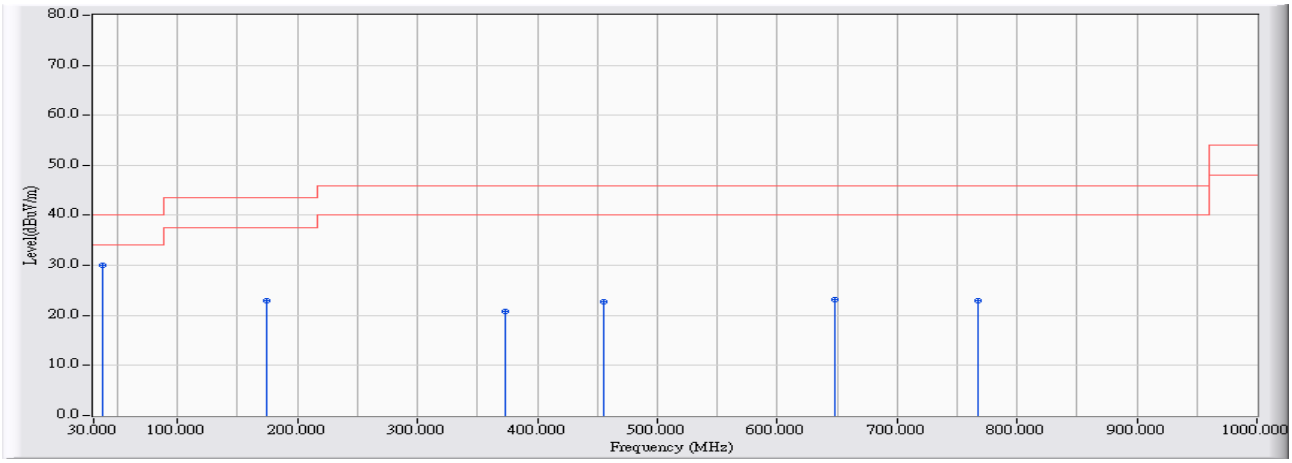


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	172.267	-14.414	44.603	30.190	-13.310	43.500	QUASIPEAK
2		384.050	-7.831	32.081	24.250	-21.750	46.000	QUASIPEAK
3		443.867	-6.459	34.951	28.491	-17.509	46.000	QUASIPEAK
4		527.933	-5.015	31.569	26.554	-19.446	46.000	QUASIPEAK
5		720.317	-3.673	27.751	24.077	-21.923	46.000	QUASIPEAK
6		815.700	-2.548	26.377	23.830	-22.170	46.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. “ * ”, means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Site : CB1	Time : 2012/04/28 - 11:16
Limit : FCC_CLASS_B_03M_QP	Margin : 6
Probe : CB1_FCC_EFS_30-1G-1_0901 - VERTICAL	Power : DC 5V
EUT : H19TXT	Note : Tx_8-DPSK_2441MHz



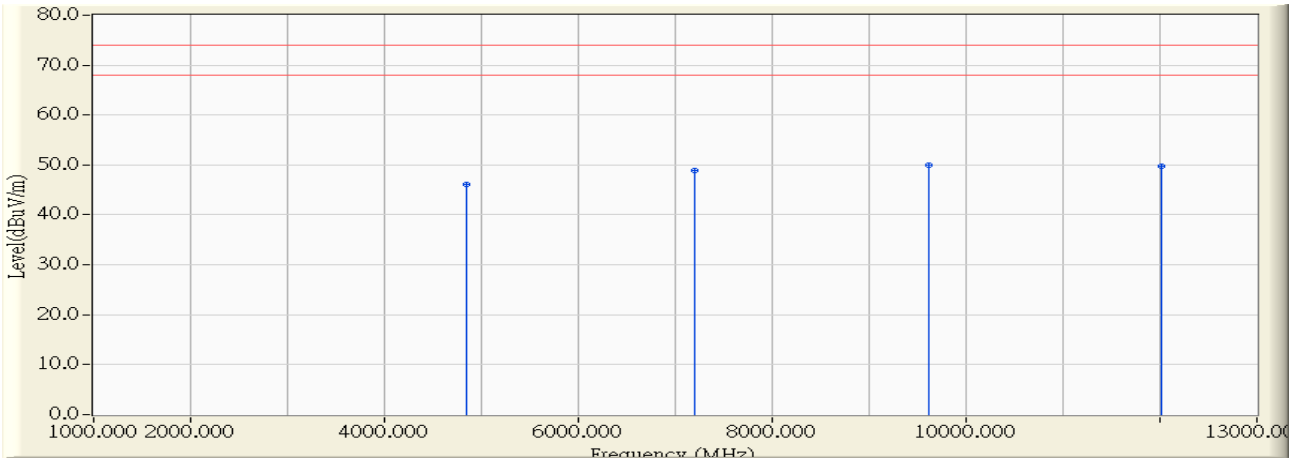
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	38.083	-11.772	41.732	29.961	-10.039	40.000	QUASIPEAK
2		173.883	-14.476	37.381	22.905	-20.595	43.500	QUASIPEAK
3		372.733	-8.157	29.028	20.871	-25.129	46.000	QUASIPEAK
4		455.183	-6.233	28.984	22.750	-23.250	46.000	QUASIPEAK
5		647.567	-4.095	27.317	23.222	-22.778	46.000	QUASIPEAK
6		767.200	-3.069	26.009	22.940	-23.060	46.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak value.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Harmonic & Spurious:

Site : CB1	Time : 2012/04/28 - 13:25
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 5V
EUT : H19TXT	Note : 8-DPSK_2402MHz_Y

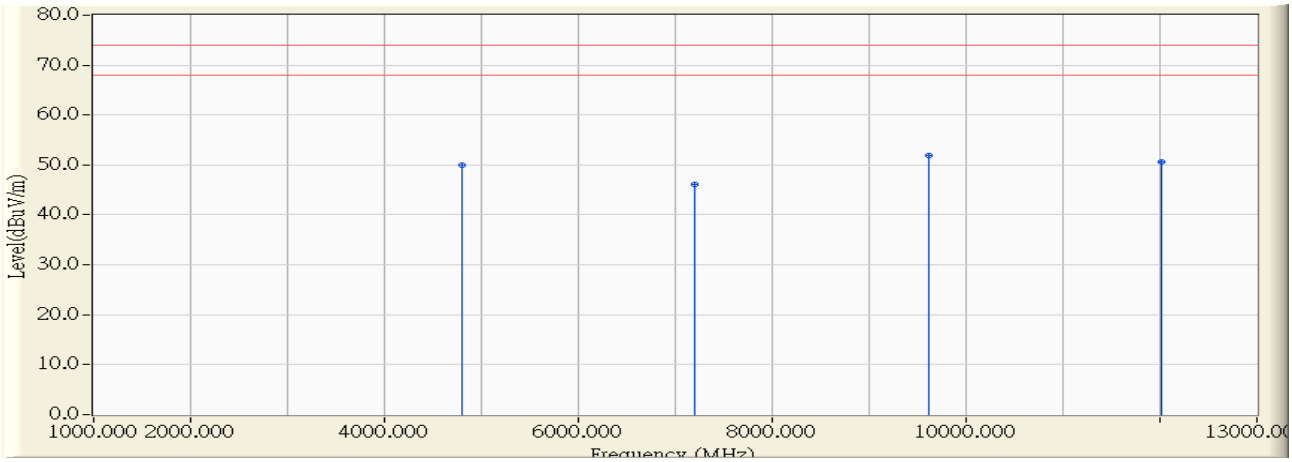


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4803.900	-0.761	46.830	46.069	-27.931	74.000	54.000	PEAK
2		7205.570	5.423	43.380	48.803	-25.197	74.000	54.000	PEAK
3	*	9607.770	43.896	41.030	49.969	-24.031	74.000	54.000	PEAK
4		12010.000	45.736	38.160	49.704	-24.296	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2012/04/28 - 13:34
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 5V
EUT : H19TXT	Note : 8-DPSK_2402MHz_Y

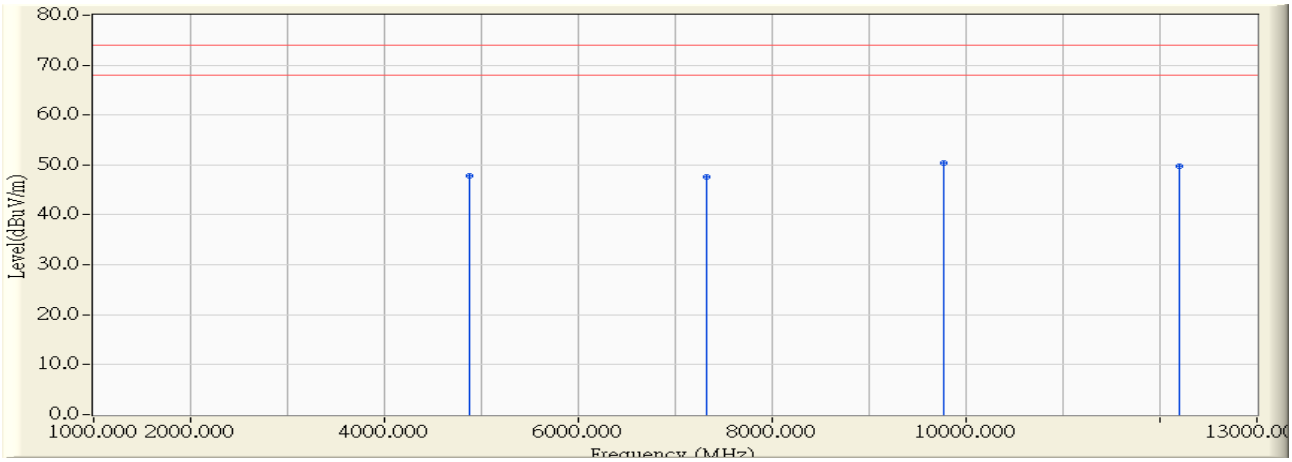


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4803.890	-0.856	50.800	49.944	-24.056	74.000	54.000	PEAK
2		7206.160	5.424	40.710	46.134	-27.866	74.000	54.000	PEAK
3	*	9608.100	8.942	43.060	52.002	-21.998	74.000	54.000	PEAK
4		12010.700	11.544	39.080	50.624	-23.376	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2012/04/28 - 13:52
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 5V
EUT : H19TXT	Note : 8-DPSK_2441MHz_Y

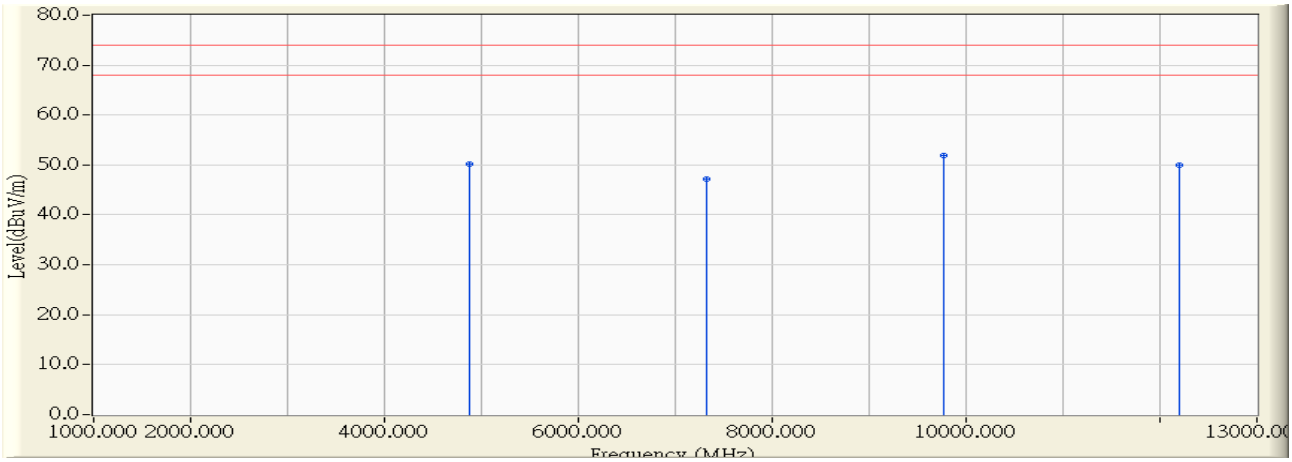


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4881.460	-0.652	48.520	47.868	-26.132	74.000	54.000	PEAK
2		7322.820	5.706	41.940	47.646	-26.354	74.000	54.000	PEAK
3	*	9763.930	10.072	40.310	50.381	-23.619	74.000	54.000	PEAK
4		12204.950	11.474	38.190	49.664	-24.336	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2012/04/28 - 14:03
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 5V
EUT : H19TXT	Note : 8-DPSK_2441MHz_Y

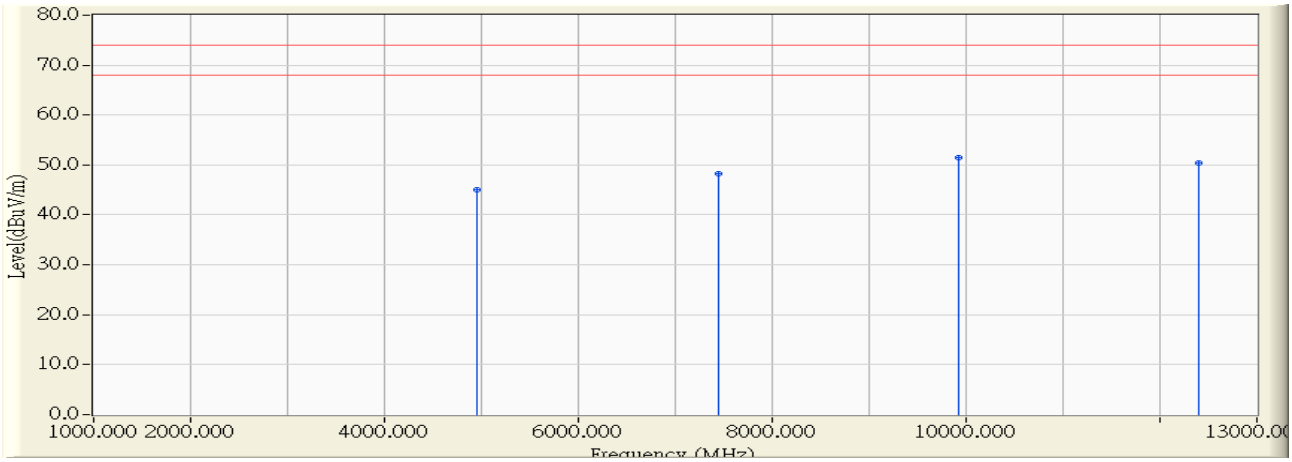


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4882.120	-0.651	50.830	50.179	-23.821	74.000	54.000	PEAK
2		7322.770	5.706	41.380	47.086	-26.914	74.000	54.000	PEAK
3	*	9763.530	10.067	41.760	51.828	-22.172	74.000	54.000	PEAK
4		12205.350	11.474	38.450	49.924	-24.076	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2012/04/28 - 14:17
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 5V
EUT : H19TXT	Note : 8-DPSK_2480MHz_Y

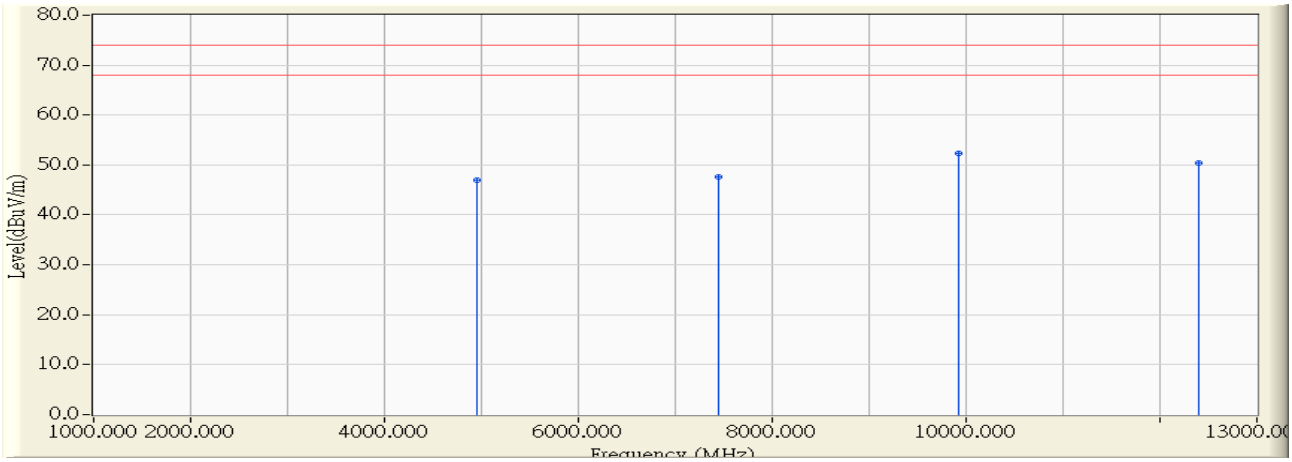


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4959.870	-0.446	45.450	45.003	-28.997	74.000	54.000	PEAK
2		7440.290	5.990	42.370	48.359	-25.641	74.000	54.000	PEAK
3	*	9918.730	11.192	40.360	51.553	-22.447	74.000	54.000	PEAK
4		12399.750	11.405	39.070	50.475	-23.525	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

Site : CB1	Time : 2012/04/28 - 14:26
Limit : FCC_SpartC_15.247_H_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 5V
EUT : H19TXT	Note : 8-DPSK_2480MHz_Y



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Detector Type
1		4960.140	-0.446	47.360	46.914	-27.086	74.000	54.000	PEAK
2		7440.160	5.989	41.730	47.719	-26.281	74.000	54.000	PEAK
3	*	9920.100	11.203	41.100	52.303	-21.697	74.000	54.000	PEAK
4		12400.070	11.405	38.990	50.395	-23.605	74.000	54.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The Emission above 13GHz were not included is because their levels are too low.

5. RF antenna conducted test

5.1. Test Equipment

The following test equipment is used during the test:

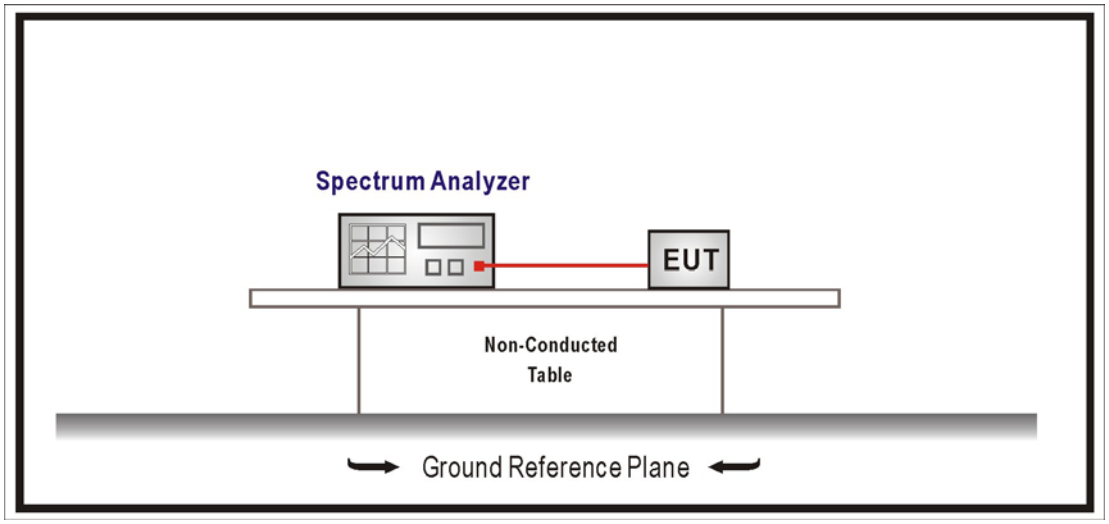
RF antenna conducted test / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2013/02/19

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

5.2. Test Setup

RF Conducted Measurement:



5.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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 an RF conducted or radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Set RBW = 100 kHz, Set VBW> RBW, scan up through 10th harmonic.

5.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2011

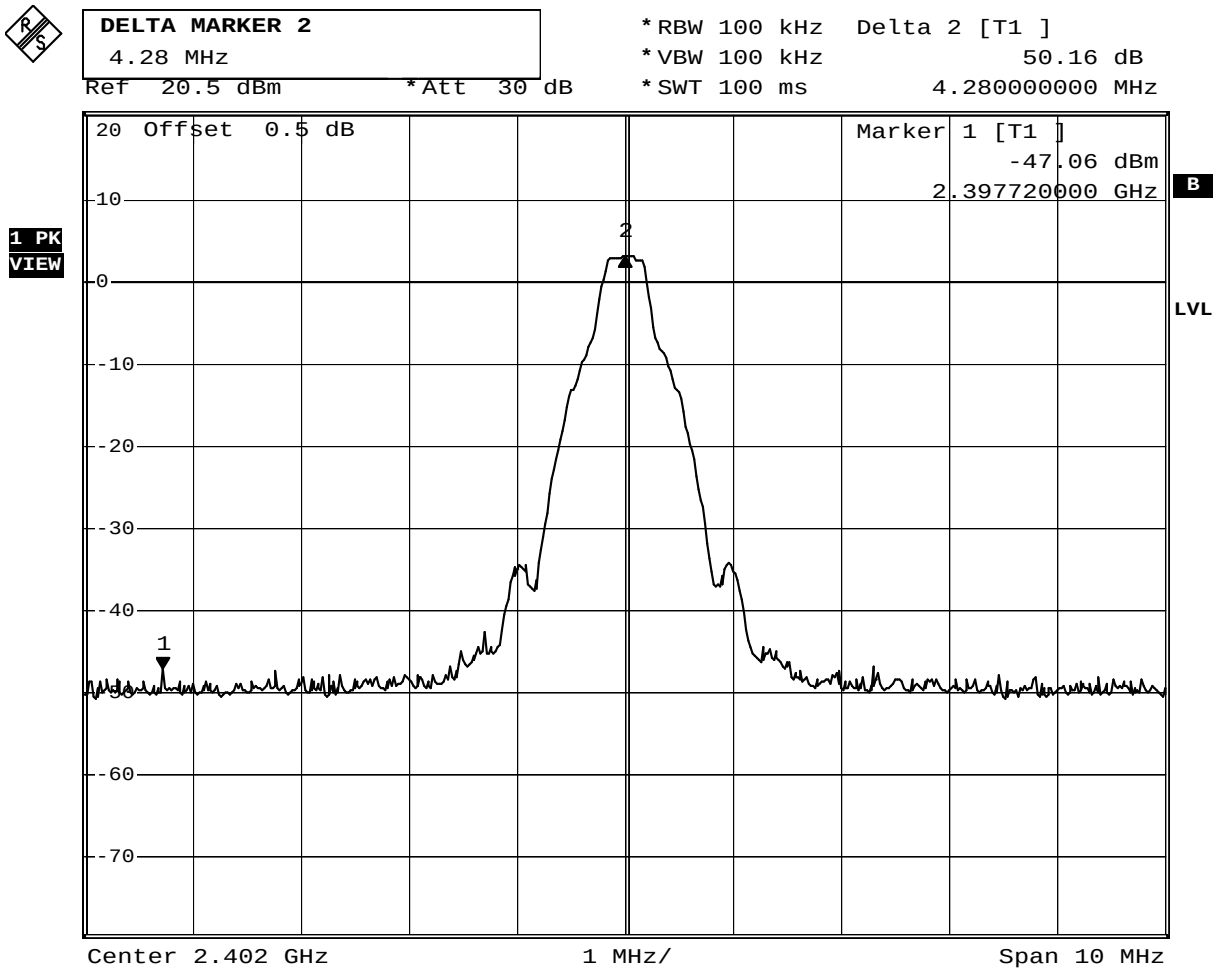
5.6. Test Result

Product	H19TXT		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/26	Test Site	SR7

GFSK

Channel No.	Frequency (MHz)	Measurement Level (dB)	Required Limit (dBc)	Result
00	2402	50.16	≧20	Pass

Channel 00



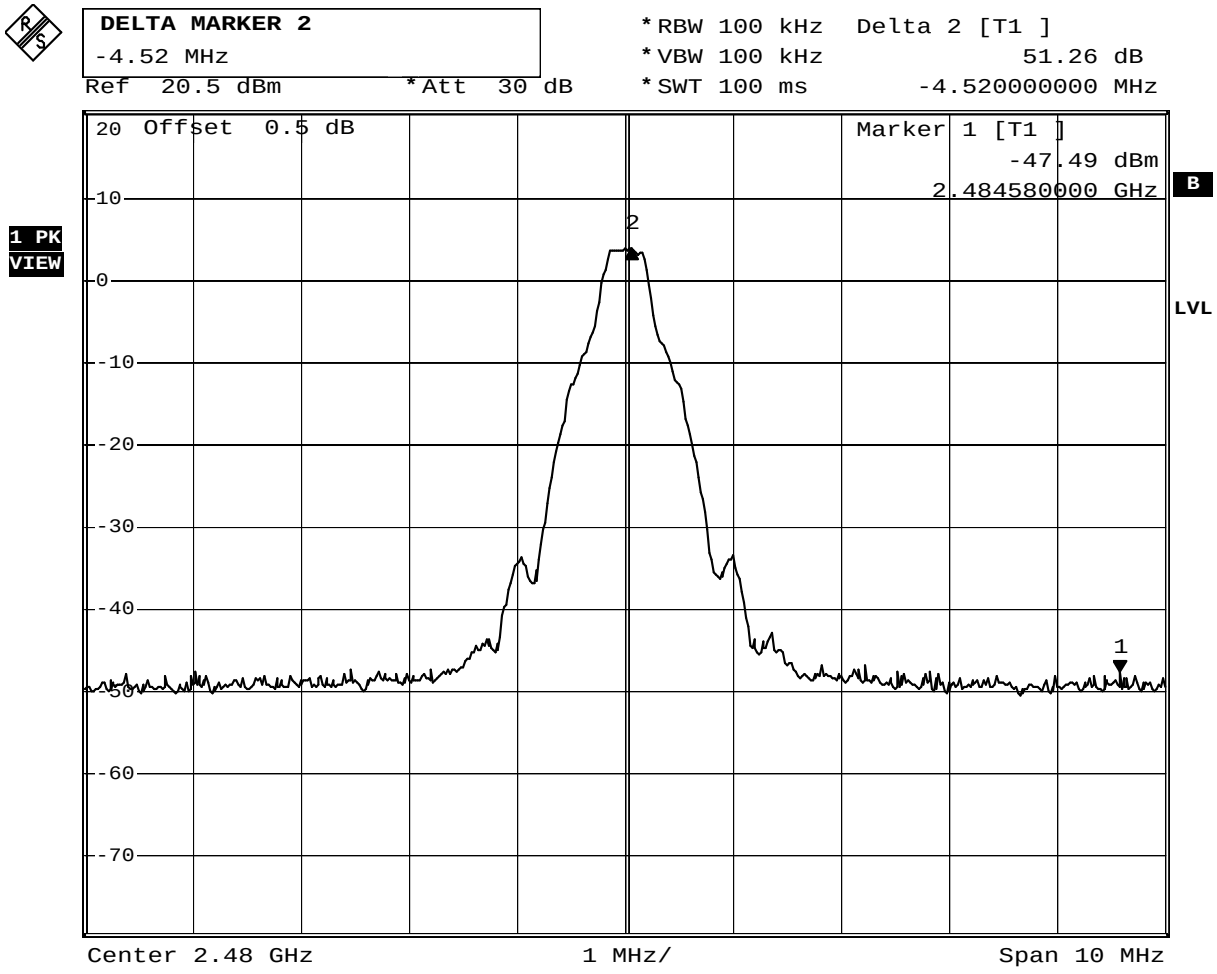
Comment: A:\2
Date: 26.APR.2012 10:26:12

Product	H19TXT		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/26	Test Site	SR7

GFSK

Channel No.	Frequency (MHz)	Measurement Level (dB)	Required Limit (dBc)	Result
78	2480	51.26	≧20	Pass

Channel 78



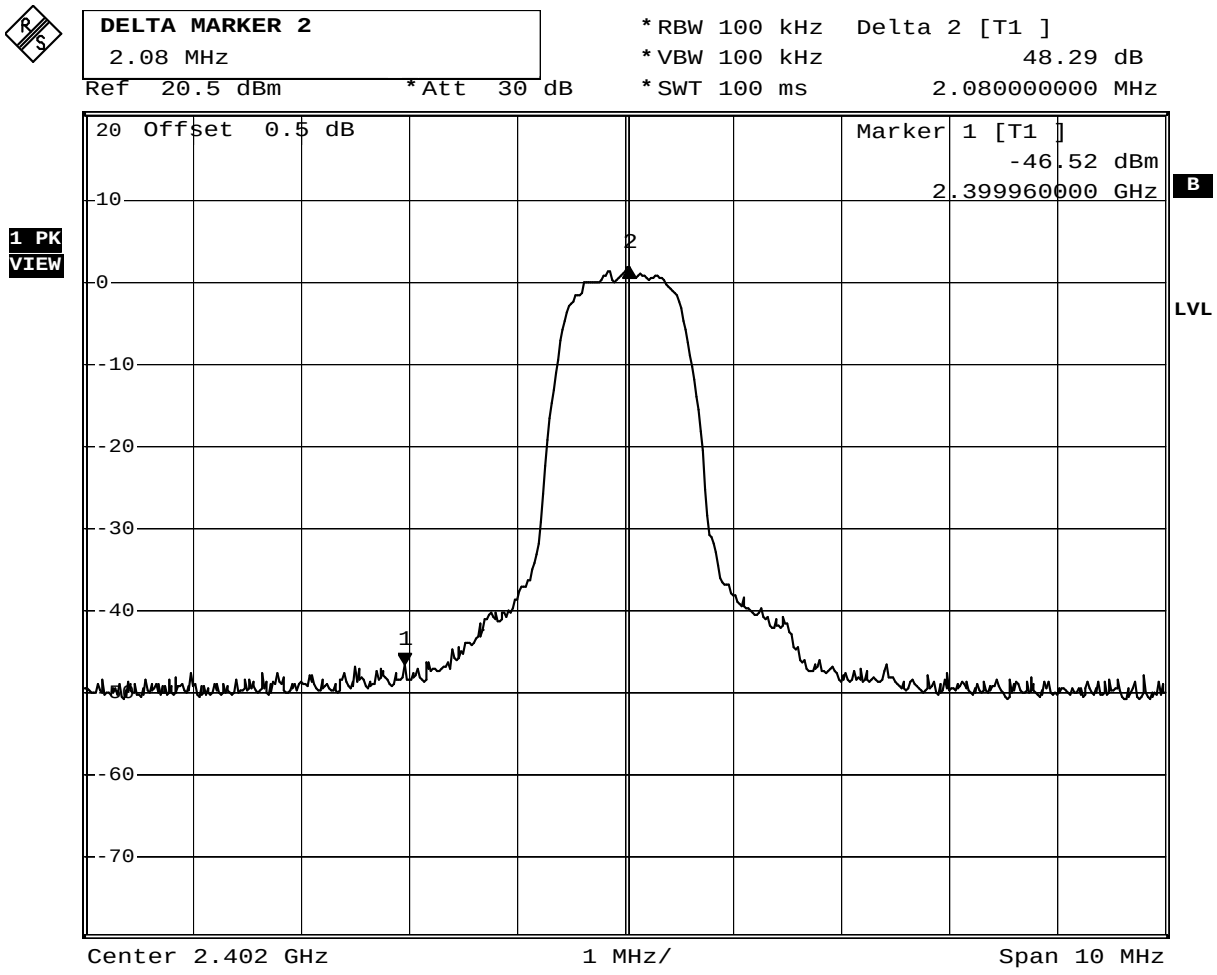
Comment: A:\2
Date: 26.APR.2012 10:23:11

Product	H19TXT		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/26	Test Site	SR7

π/4-DQPSK

Channel No.	Frequency (MHz)	Measurement Level (dB)	Required Limit (dBc)	Result
00	2402	48.29	≧20	Pass

Channel 00



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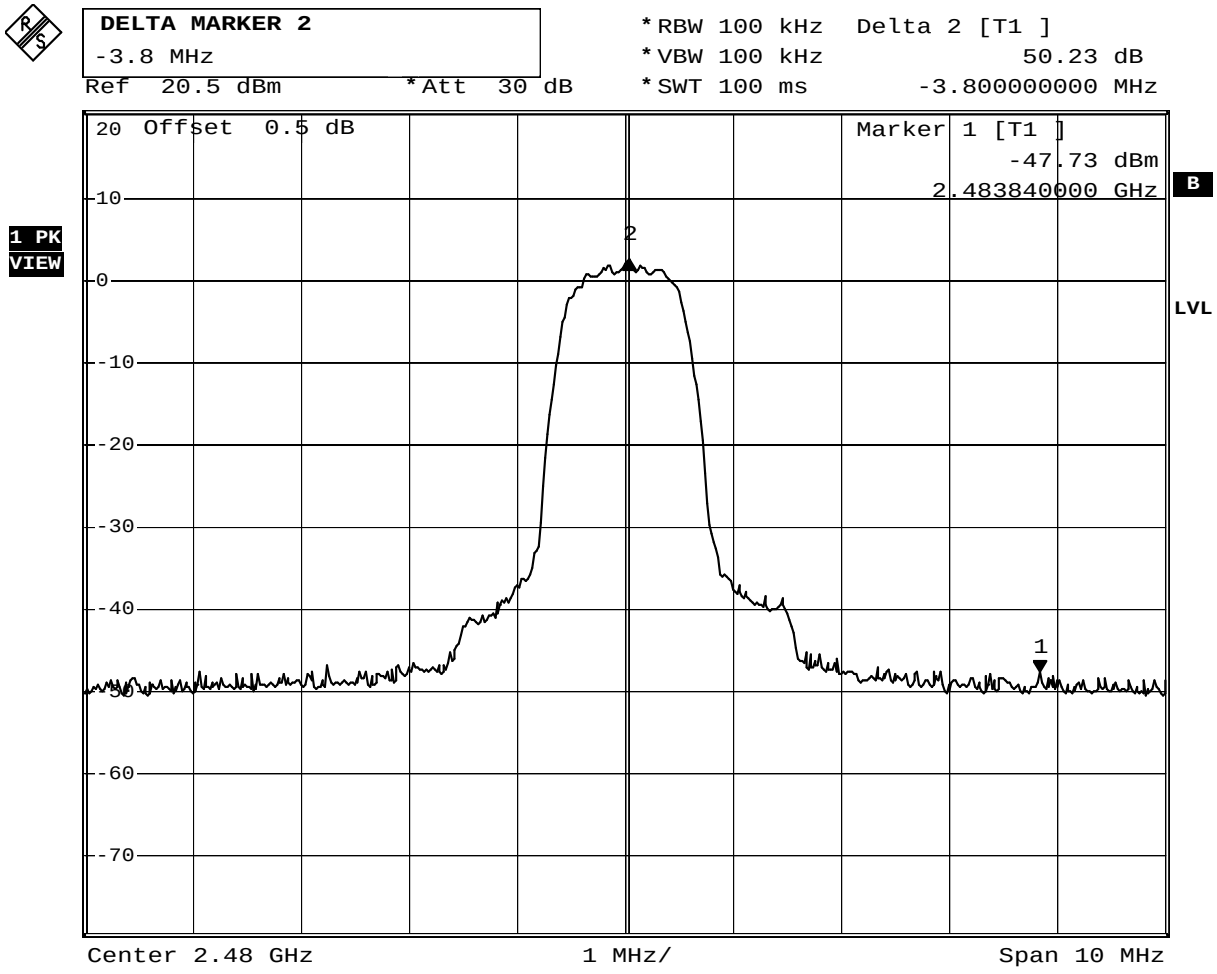
Date: 26.APR.2012 10:27:03

Product	H19TXT		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/26	Test Site	SR7

π/4-DQPSK

Channel No.	Frequency (MHz)	Measurement Level (dB)	Required Limit (dBc)	Result
78	2480	50.23	≧20	Pass

Channel 78



Comment: A:\2
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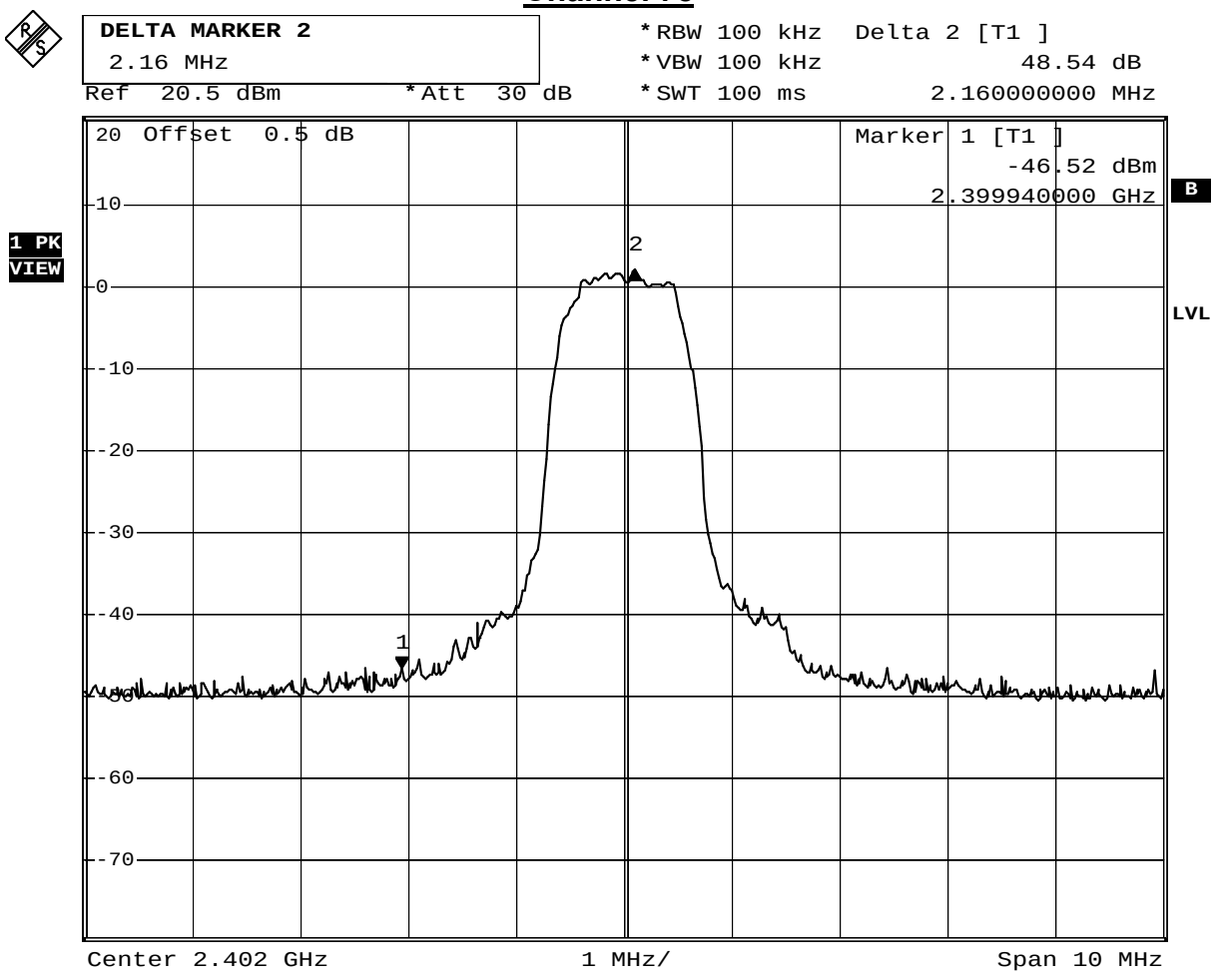
Product	H19TXT		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/26	Test Site	SR7

8-DPSK

Channel No.	Frequency (MHz)	Measurement Level (dB)	Required Limit (dBc)	Result
00	2402	48.54	≧20	Pass

Channel 78



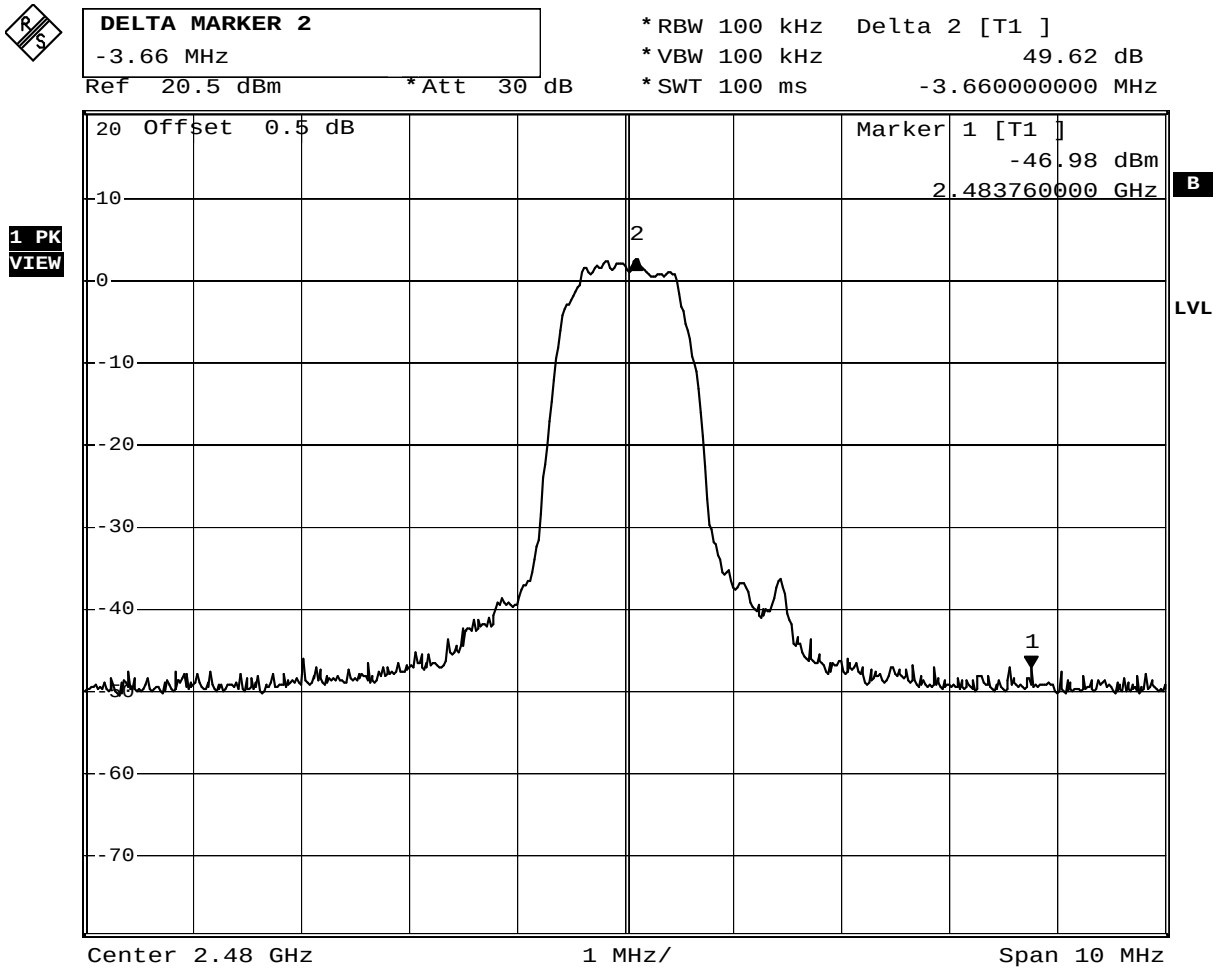
Comment: A:\2
Date: 26.APR.2012 10:28:49

Product	H19TXT		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/26	Test Site	SR7

8-DPSK

Channel No.	Frequency (MHz)	Measurement Level (dB)	Required Limit (dBc)	Result
78	2480	49.62	≧20	Pass

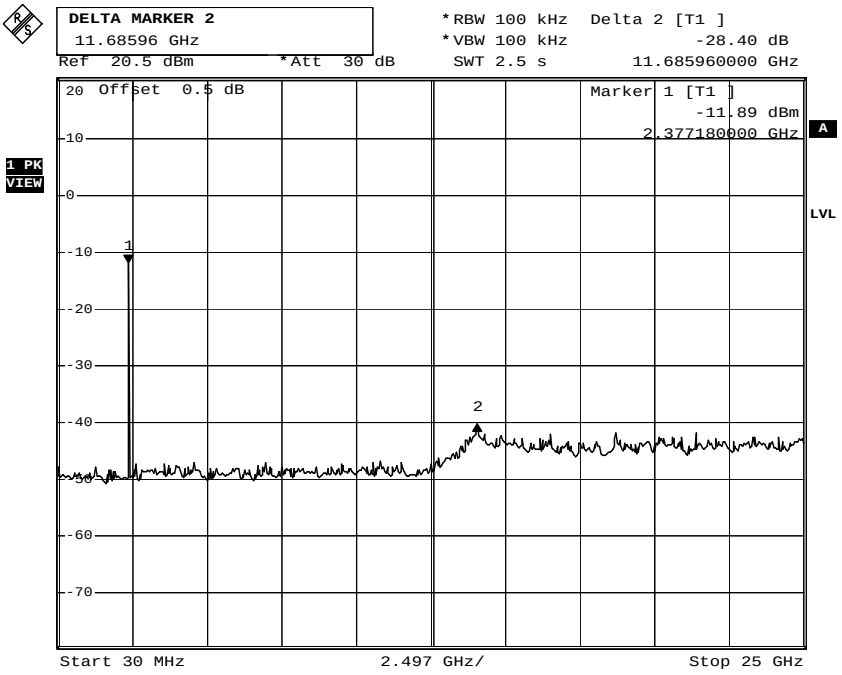
Channel 78



Comment: A:\2
Date: 26.APR.2012 10:20:39

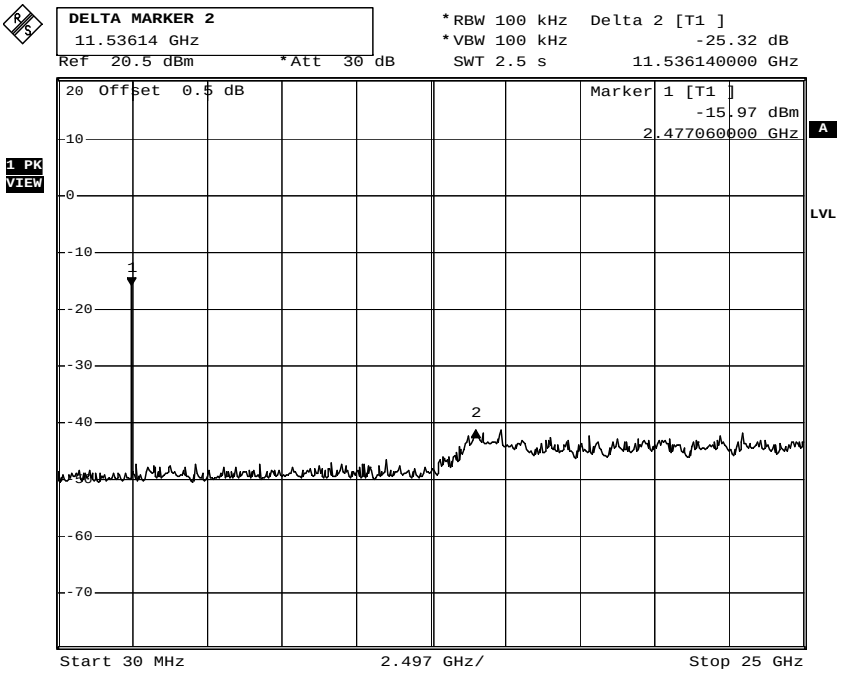
Product	H19TXT		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/26	Test Site	SR7

Channel 00 (30MHz-25GHz)- GFSK



Comment: A:\2
Date: 5.MAY.2012 09:37:13

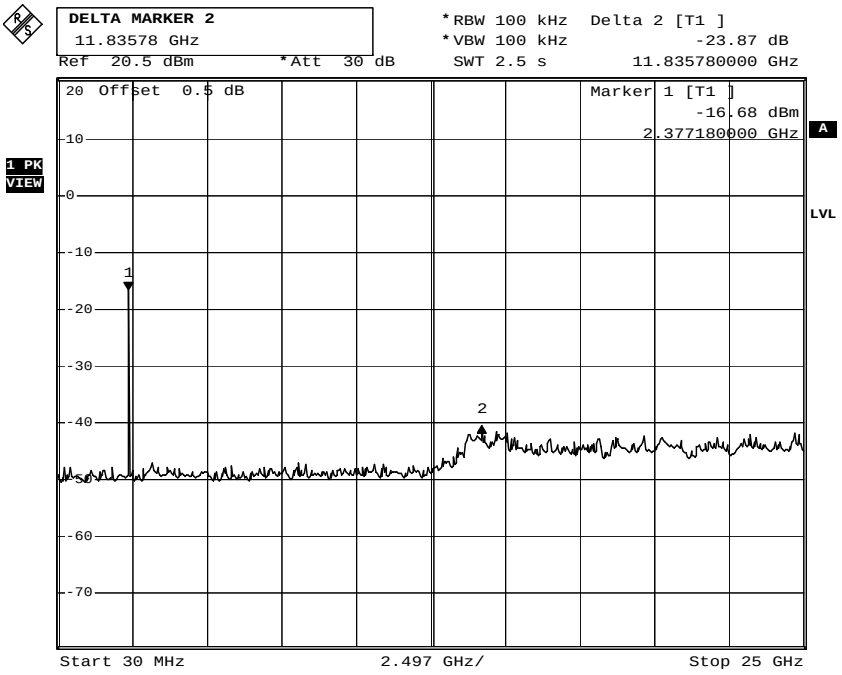
Channel 78 (30MHz~25GHz)- GFSK



Comment: A:\2
Date: 5.MAY.2012 09:39:03

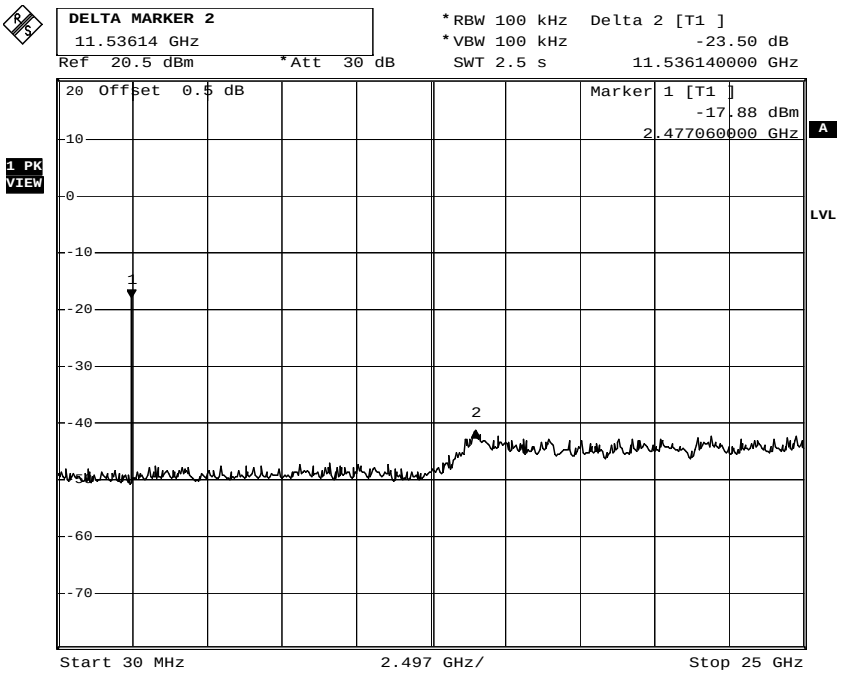
Product	H19TXT		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/26	Test Site	SR7

Channel 00 (30MHz-25GHz)- π/4-DQPSK



Comment: A:\2
Date: 5.MAY.2012 09:42:40

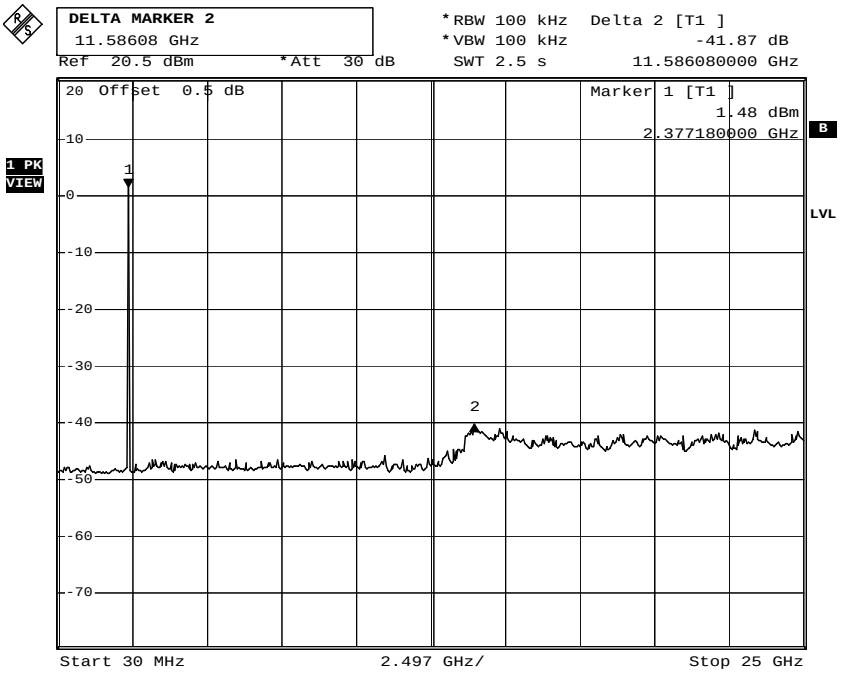
Channel 78 (30MHz~25GHz)- π/4-DQPSK



Comment: A:\2
Date: 5.MAY.2012 09:41:45

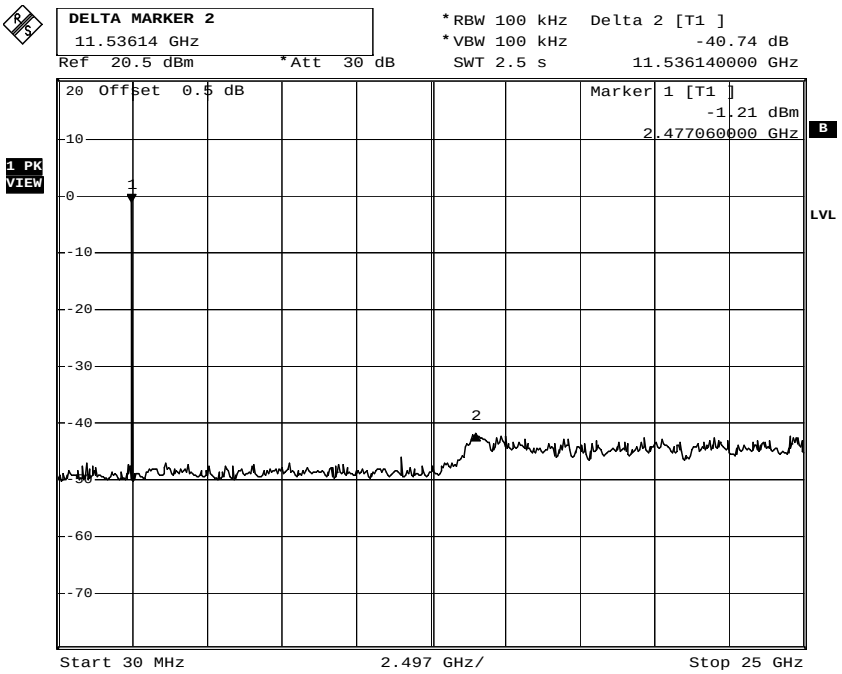
Product	H19TXT		
Test Item	RF antenna conducted test		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/26	Test Site	SR7

Channel 00 (30MHz-25GHz)- 8-DPSK



Comment: A:\2
Date: 26.APR.2012 10:42:24

Channel 78 (30MHz~25GHz)- 8-DPSK



Comment: A:\2
Date: 26.APR.2012 10:45:37

6. Band Edge

6.1. Test Equipment

The following test equipments are used during the test:

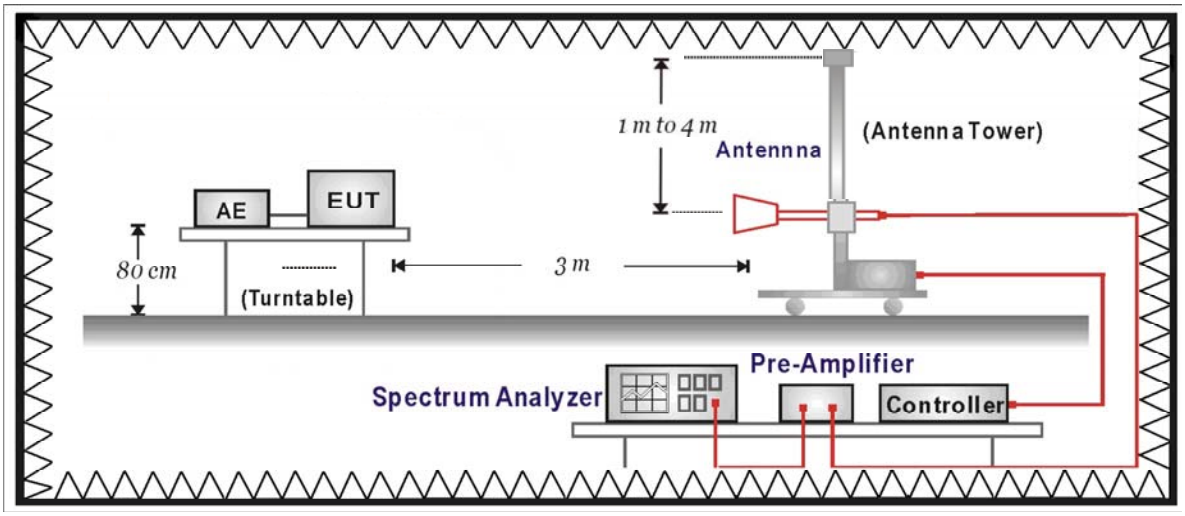
Band Edge / CB1

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Double Ridged Guide Horn Antenna	Schwarzback	BBHA 9120D	743	2013/02/02
Spectrum Analyzer	Agilent	E4440A	MY46187335	2013/02/07
Coaxial Cable	Huber+Suhner AG	Sucoflex 102	25623/2	2013/03/04

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

6.2. Test Setup

RF Radiated Measurement:



6.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

6.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

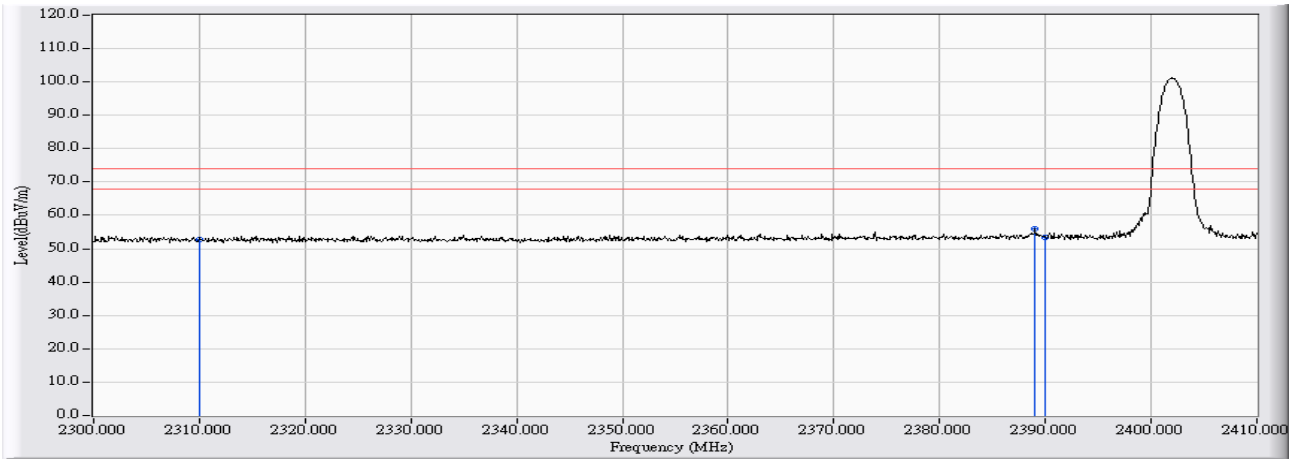
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2009 on radiated measurement.

6.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2011

6.6. Test Result

Site : CB1	Time : 2012/05/03 - 16:41
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 5V
EUT : H19TXT	Note : 8-DPSK_2402MHz

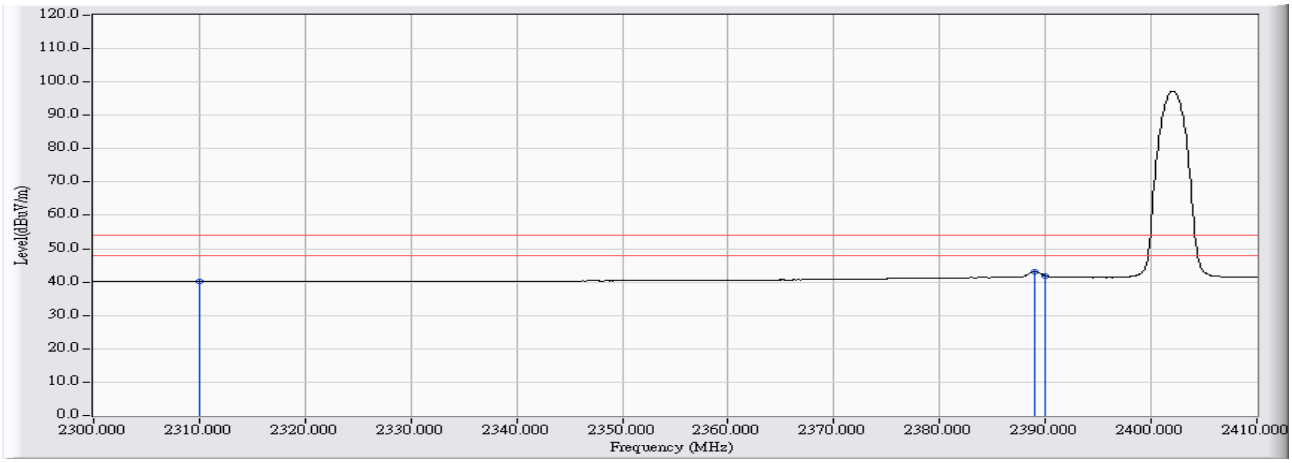


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	28.263	24.420	52.683	-21.317	74.000	PEAK
2	*	2389.008	28.572	27.490	56.061	-17.939	74.000	PEAK
3		2390.000	28.575	24.862	53.437	-20.563	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/05/03 - 16:42
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 5V
EUT : H19TXT	Note : 8-DPSK_2402MHz

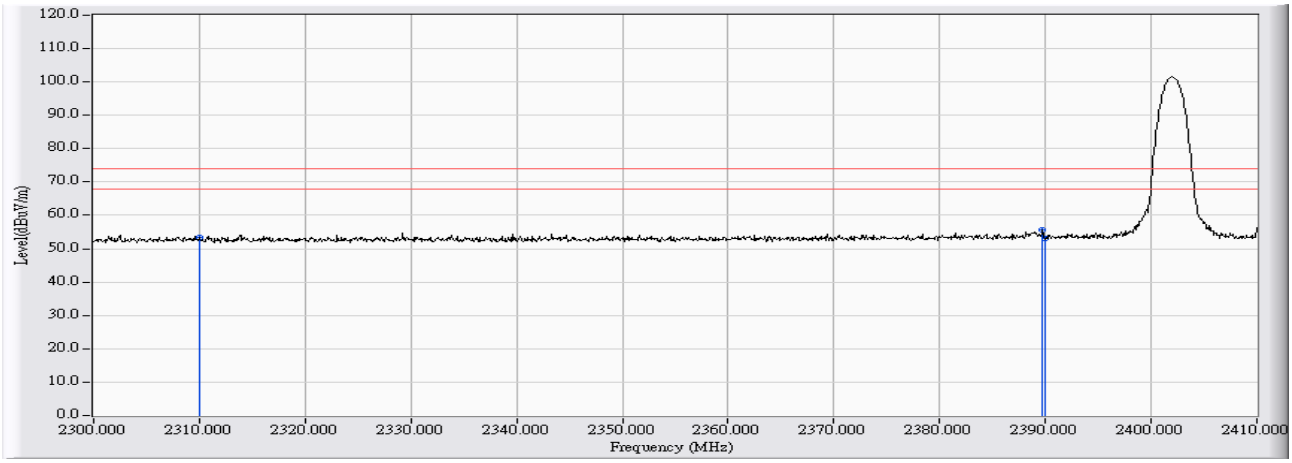


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	28.263	11.948	40.211	-13.789	54.000	AVERAGE
2	*	2388.917	28.571	14.452	43.023	-10.977	54.000	AVERAGE
3		2390.000	28.575	13.308	41.883	-12.117	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/05/03 - 16:45
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 5V
EUT : H19TXT	Note : 8-DPSK_2402MHz

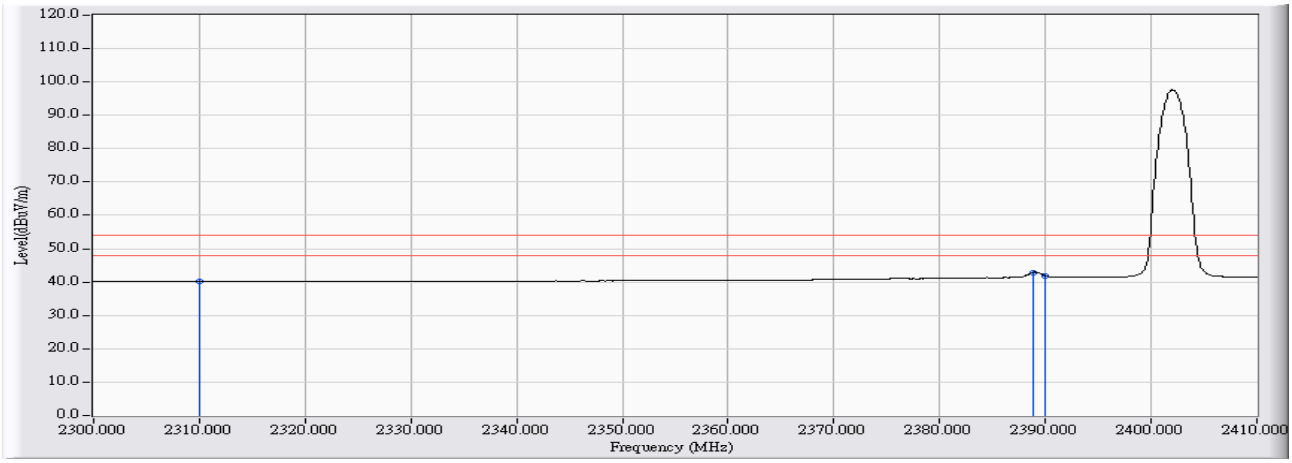


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	28.263	25.161	53.424	-20.576	74.000	PEAK
2	*	2389.742	28.574	27.145	55.719	-18.281	74.000	PEAK
3		2390.000	28.575	24.543	53.118	-20.882	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/05/03 - 16:46
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 5V
EUT : H19TXT	Note : 8-DPSK_2402MHz

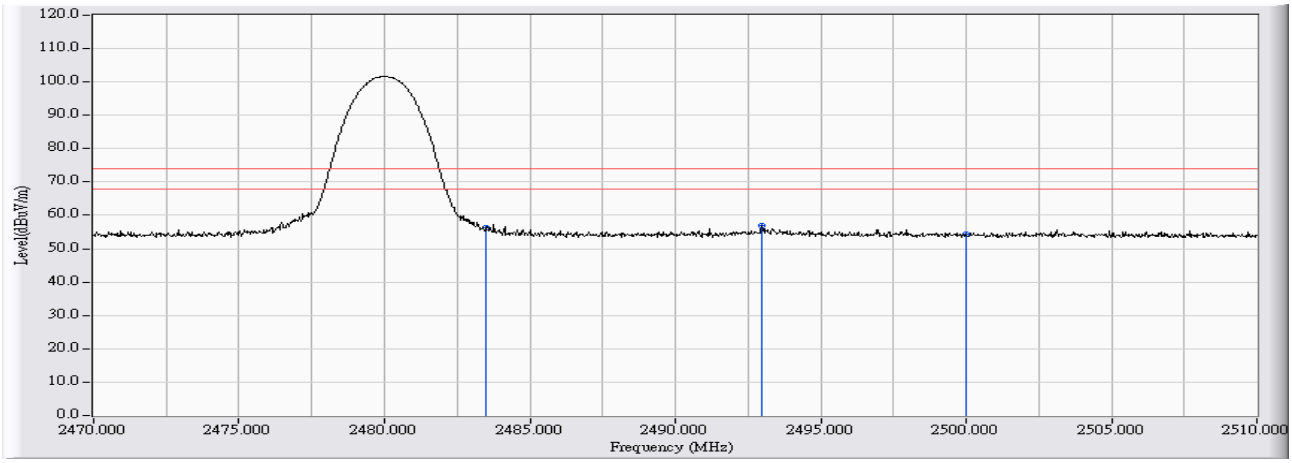


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2310.000	28.263	11.919	40.182	-13.818	54.000	AVERAGE
2	*	2388.825	28.571	14.361	42.932	-11.068	54.000	AVERAGE
3		2390.000	28.575	13.304	41.879	-12.121	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/05/03 - 16:09
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 5V
EUT : H19TXT	Note : 8-DPSK_2480MHz

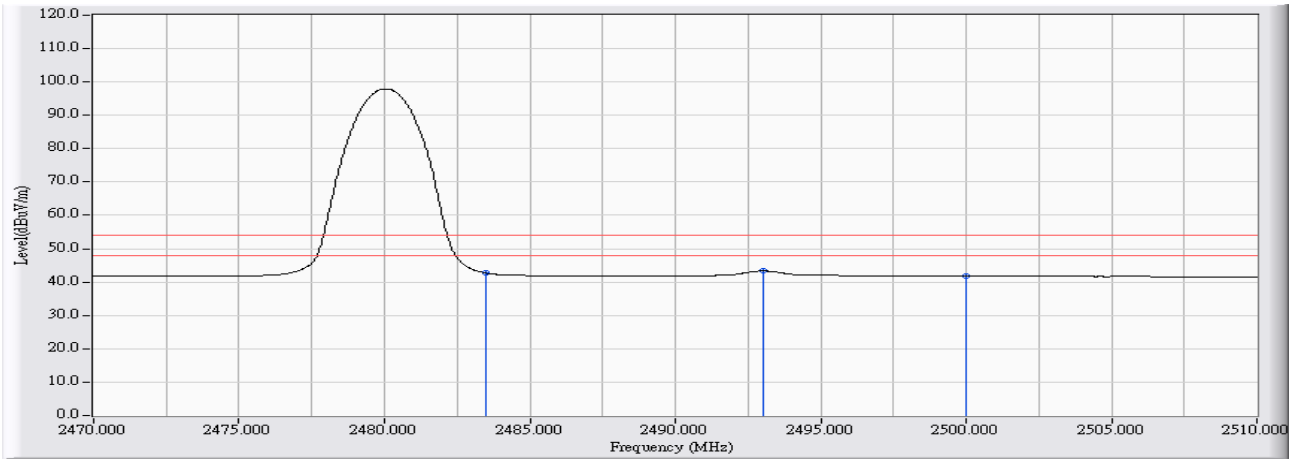


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	28.716	27.536	56.252	-17.748	74.000	PEAK
2	*	2492.967	28.724	28.206	56.930	-17.070	74.000	PEAK
3		2500.000	28.729	25.595	54.324	-19.676	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/05/03 - 16:12
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - HORIZONTAL	Power : DC 5V
EUT : H19TXT	Note : 8-DPSK_2480MHz

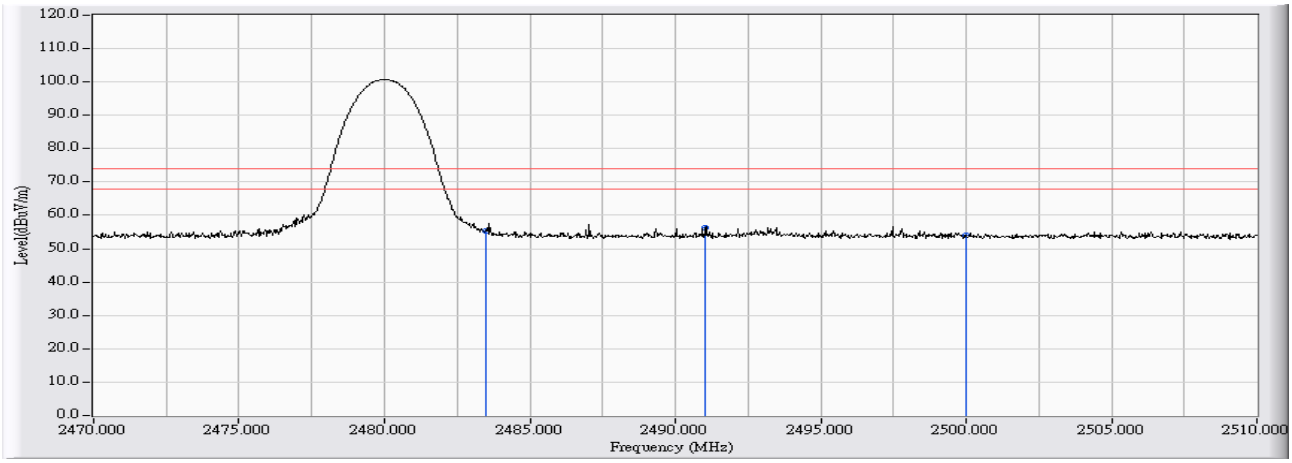


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	28.716	13.981	42.697	-11.303	54.000	AVERAGE
2	*	2493.033	28.724	14.620	43.344	-10.656	54.000	AVERAGE
3		2500.000	28.729	13.016	41.745	-12.255	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/05/03 - 16:36
Limit : FCC_SpartC_15.209_03M_PK	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 5V
EUT : H19TXT	Note : 8-DPSK_2480MHz

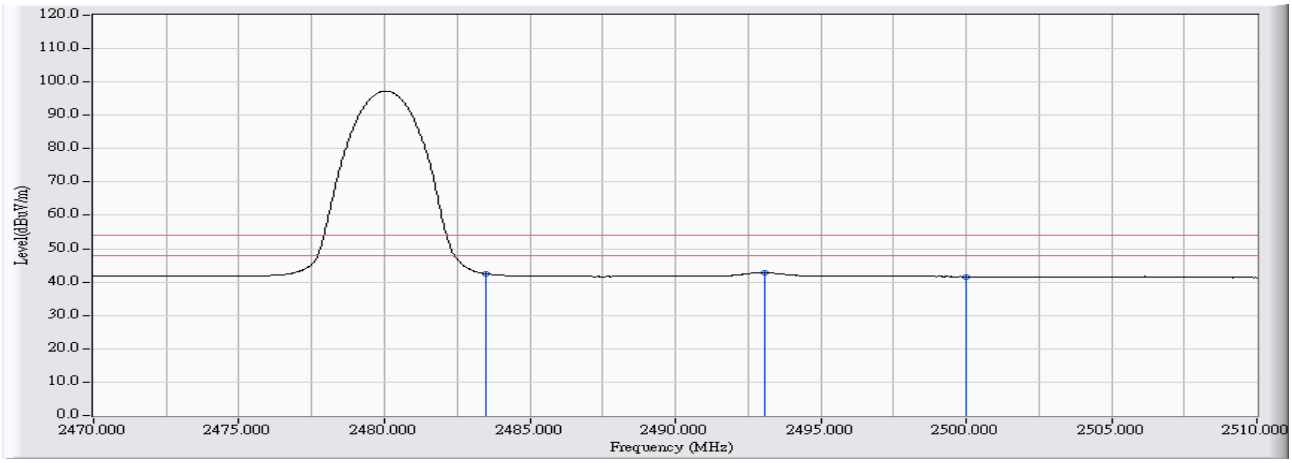


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	28.716	26.734	55.450	-18.550	74.000	PEAK
2	*	2491.033	28.722	27.425	56.147	-17.853	74.000	PEAK
3		2500.000	28.729	25.259	53.988	-20.012	74.000	PEAK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Site : CB1	Time : 2012/05/03 - 16:36
Limit : FCC_SpartC_15.209_03M_AV	Margin : 6
Probe : CB1_FCC_EFS_1-18G-1_0901 - VERTICAL	Power : DC 5V
EUT : H19TXT	Note : 8-DPSK_2480MHz



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2483.500	28.716	13.741	42.457	-11.543	54.000	AVERAGE
2	*	2493.067	28.724	14.132	42.856	-11.144	54.000	AVERAGE
3		2500.000	28.729	12.920	41.649	-12.351	54.000	AVERAGE

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

7. Number of hopping frequency

7.1. Test Equipment

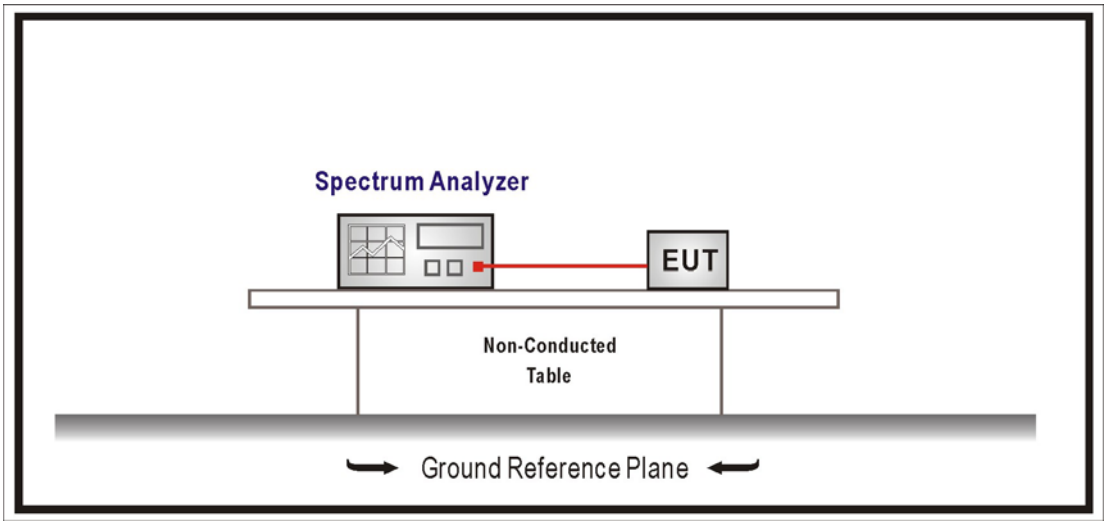
The following test equipment is used during the test:

Number of hopping frequency / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2013/02/19

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

7.2. Test Setup



7.3. Limits

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

For frequency hopping systems operating in the 2400-2483.5 MHz bands, which use fewer than 75 hopping frequencies, may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels are used.

For frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies.

7.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Span = the frequency band of operation

RBW ≥ 1% of the span ， VBW ≥ RBW

Sweep = auto, Detector function = peak, Trace = max hold

7.5. Test Specification

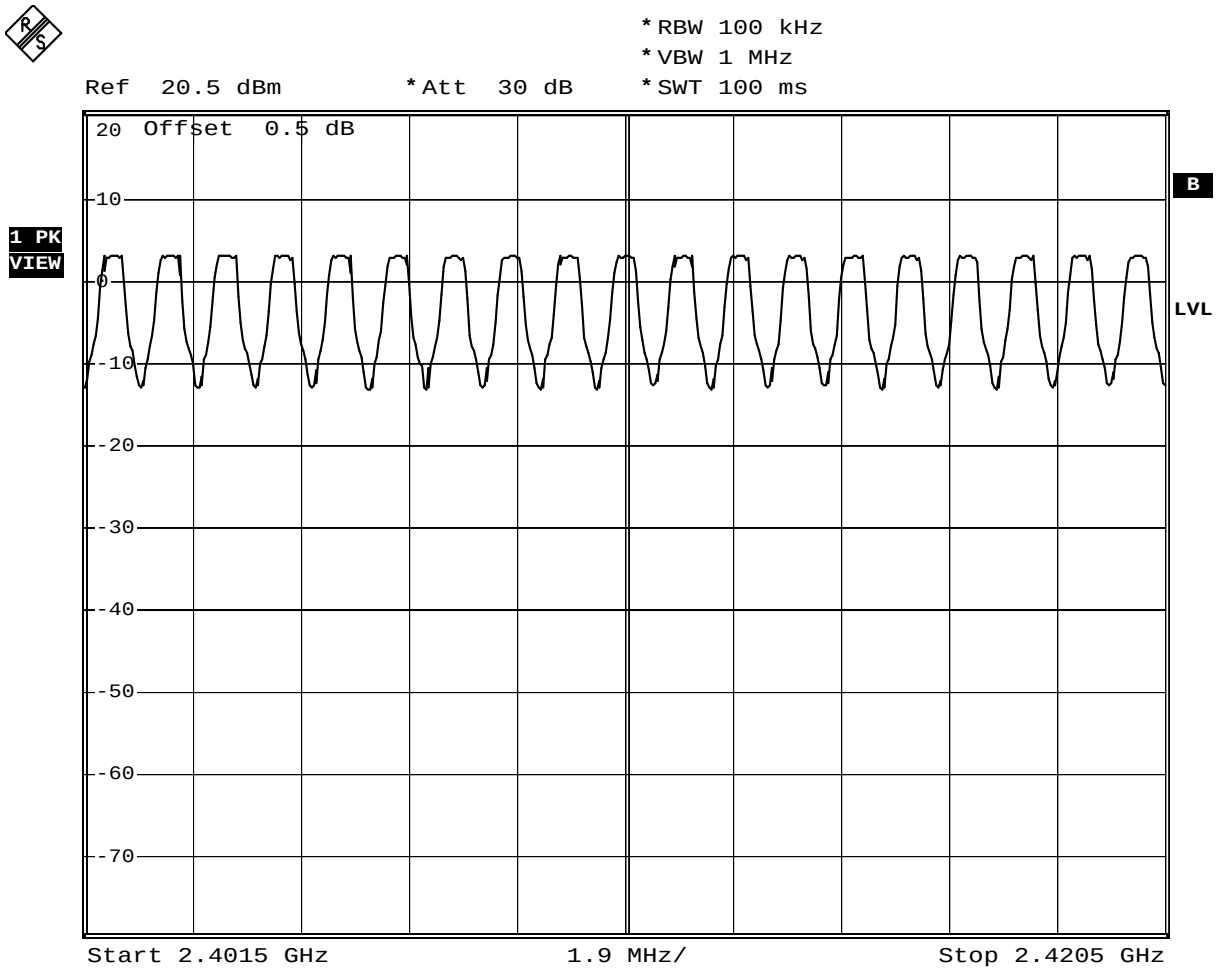
According to FCC Part 15 Subpart C Paragraph 15.247: 2011

7.6. Test Result

Product	H19TXT		
Test Item	Number of hopping frequency		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/26	Test Site	SR7

Frequency Range (MHz)	Measure Level (Channels)	Limit (Channels)	Result
2402 ~ 2480	79	>75	Pass

2401.5-2420.5MHz



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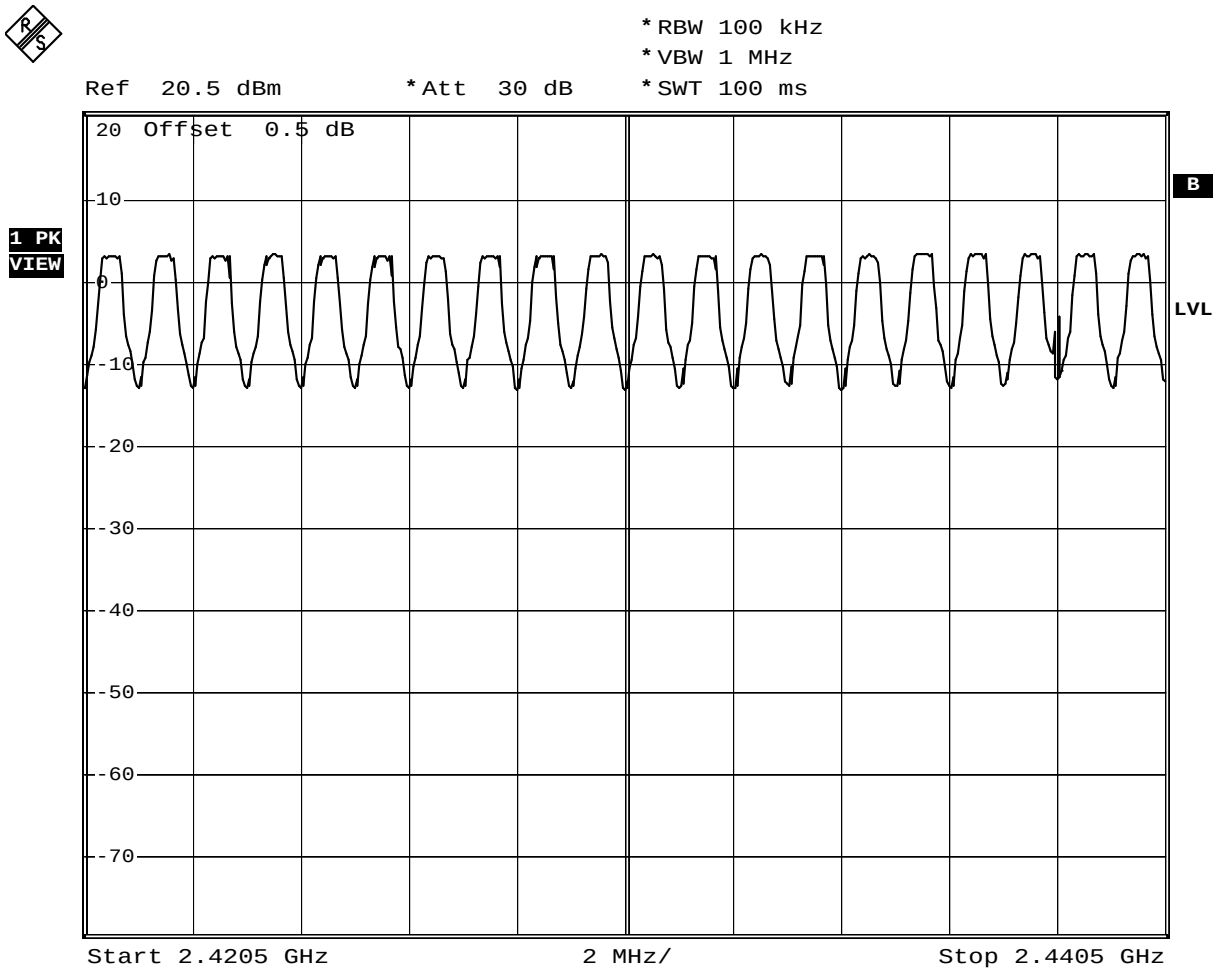
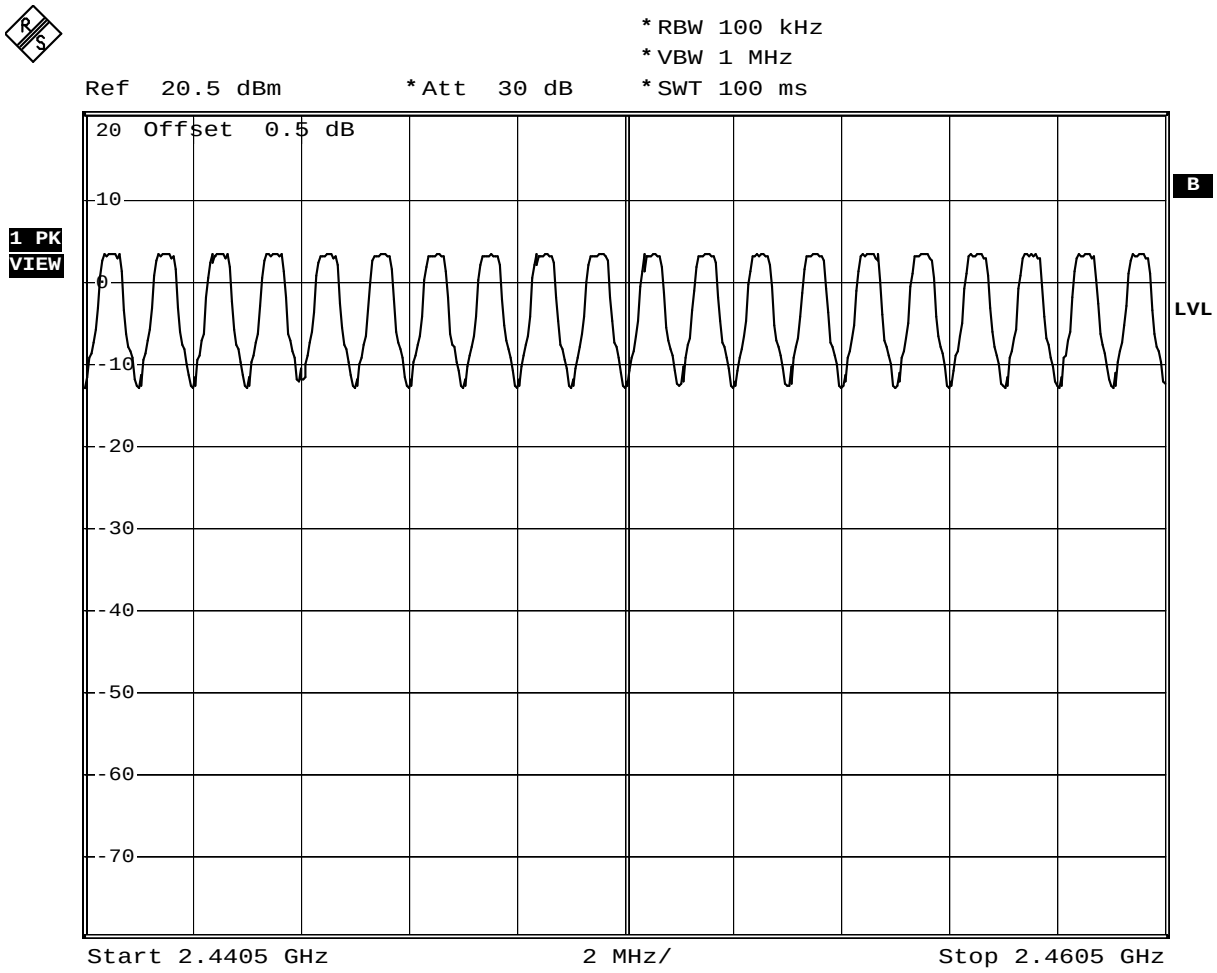
Date: 26.APR.2012 10:54:44

2420.5-2440.5MHz



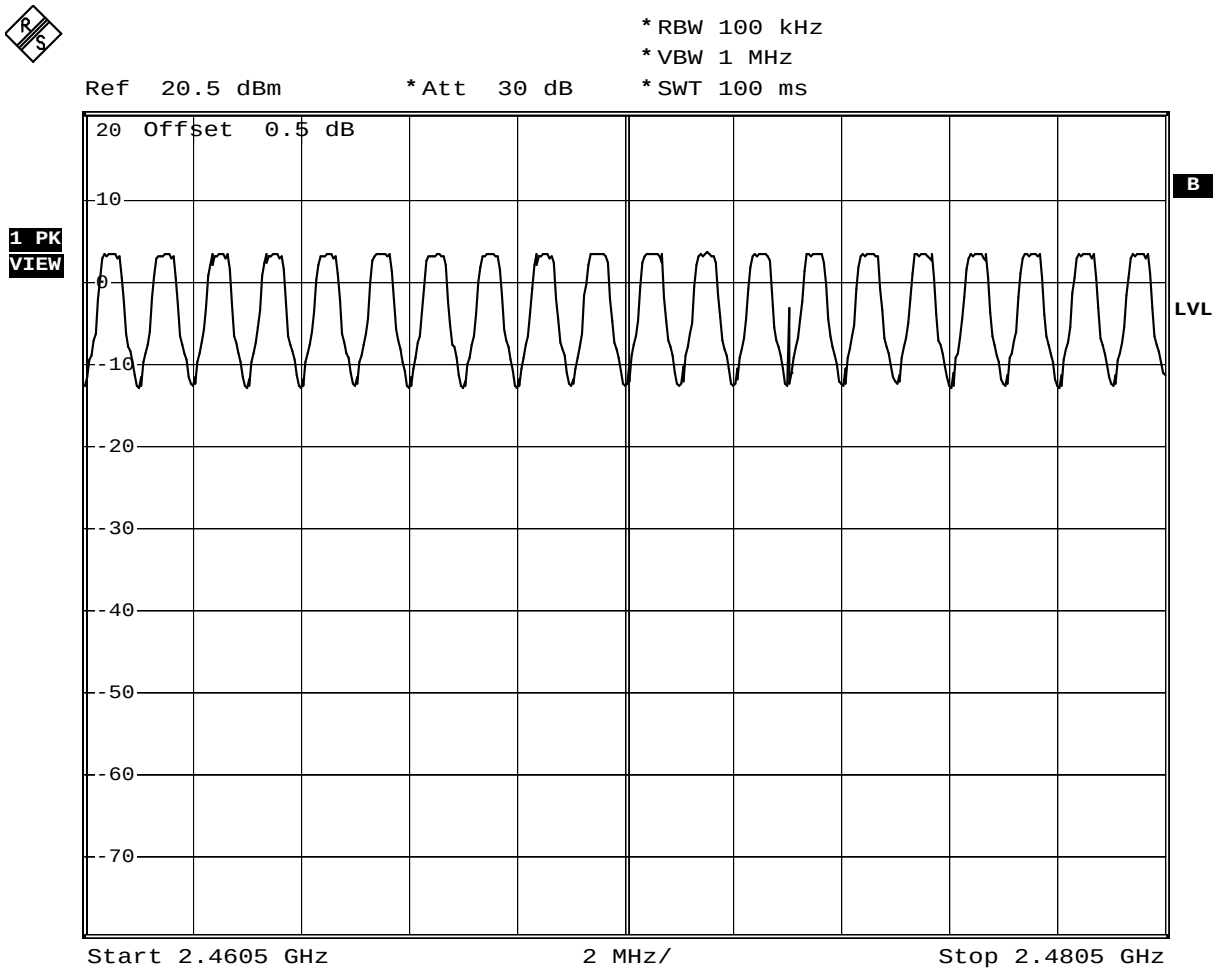
Comment: A:\2
Date: 26.APR.2012 11:05:40

2440.5-2460.5MHz



Comment: A:\2
Date: 26.APR.2012 11:11:47

2460.5-2480.5MHz



Comment: A:\2
Date: 26.APR.2012 11:16:36

8. Carrier Frequency Separation

8.1. Test Equipment

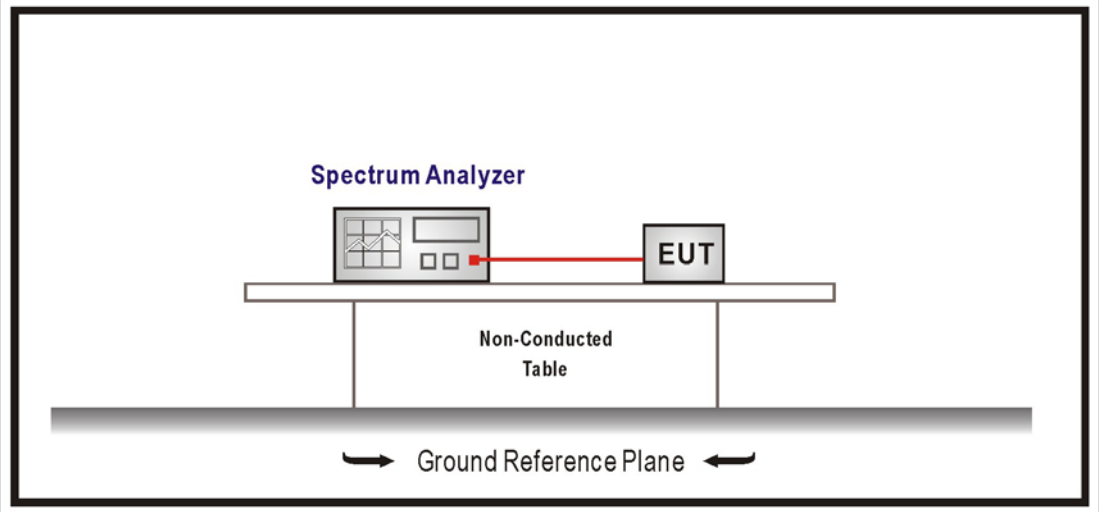
The following test equipment is used during the test:

Carrier Frequency Separation / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2013/02/19

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

8.2. Test Setup



8.3. Limits

For frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

8.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements

Span = wide enough to capture the peaks of two adjacent channels

Resolution Bandwidth (RBW) ≥ 1% of the span, VBW ≥ RBW

Sweep = auto, Detector function = peak, Trace = max hold

8.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2011

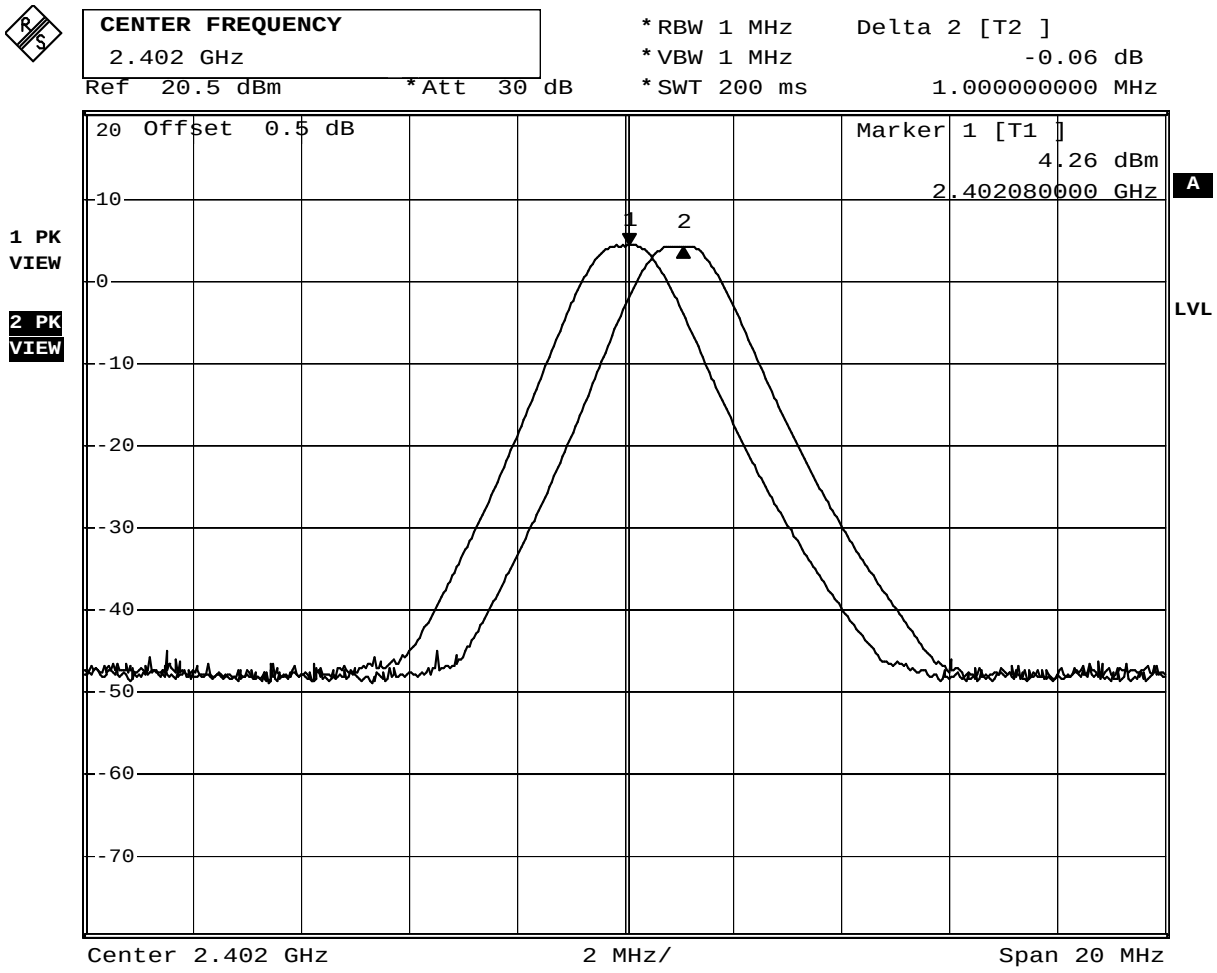
8.6. Test Result

Product	H19TXT		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/25	Test Site	SR7

GFSK

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
00	2402	1.00	>0.76	Pass

Channel 00

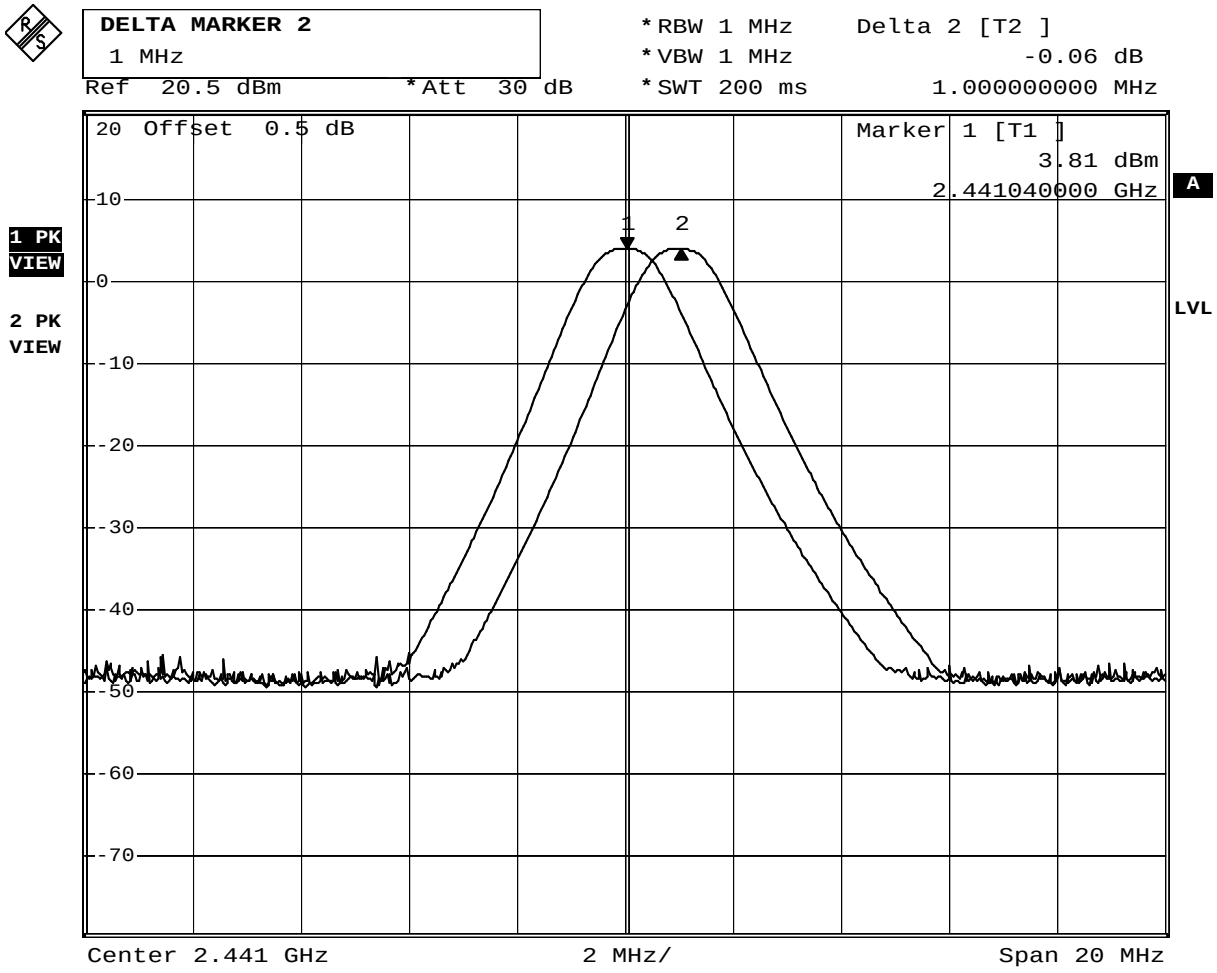


Product	H19TXT		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/25	Test Site	SR7

GFSK

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
39	2441	1.00	>0.75	Pass

Channel 39

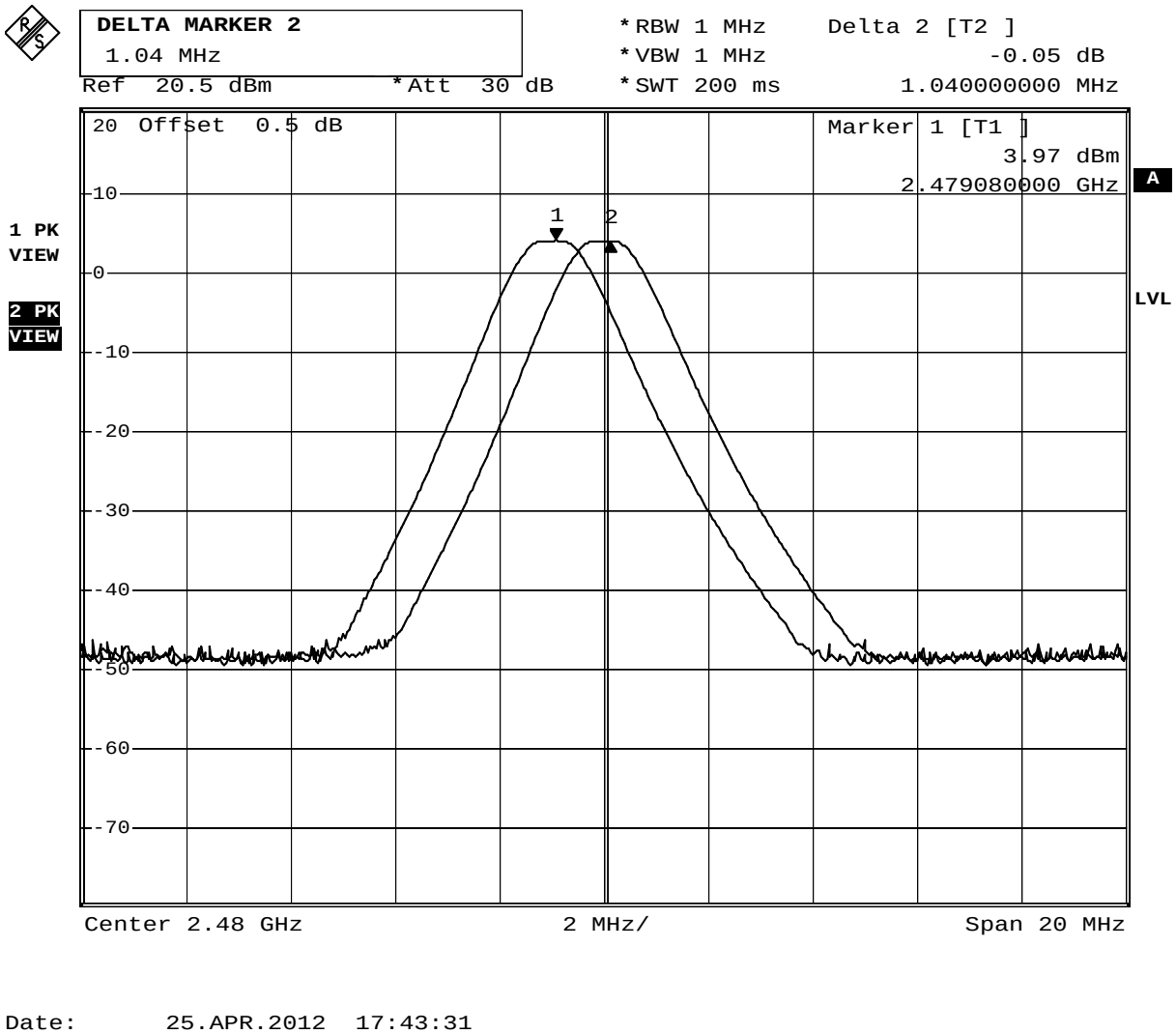


Product	H19TXT		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/25	Test Site	SR7

GFSK

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
78	2480	1.04	>0.76	Pass

Channel 78

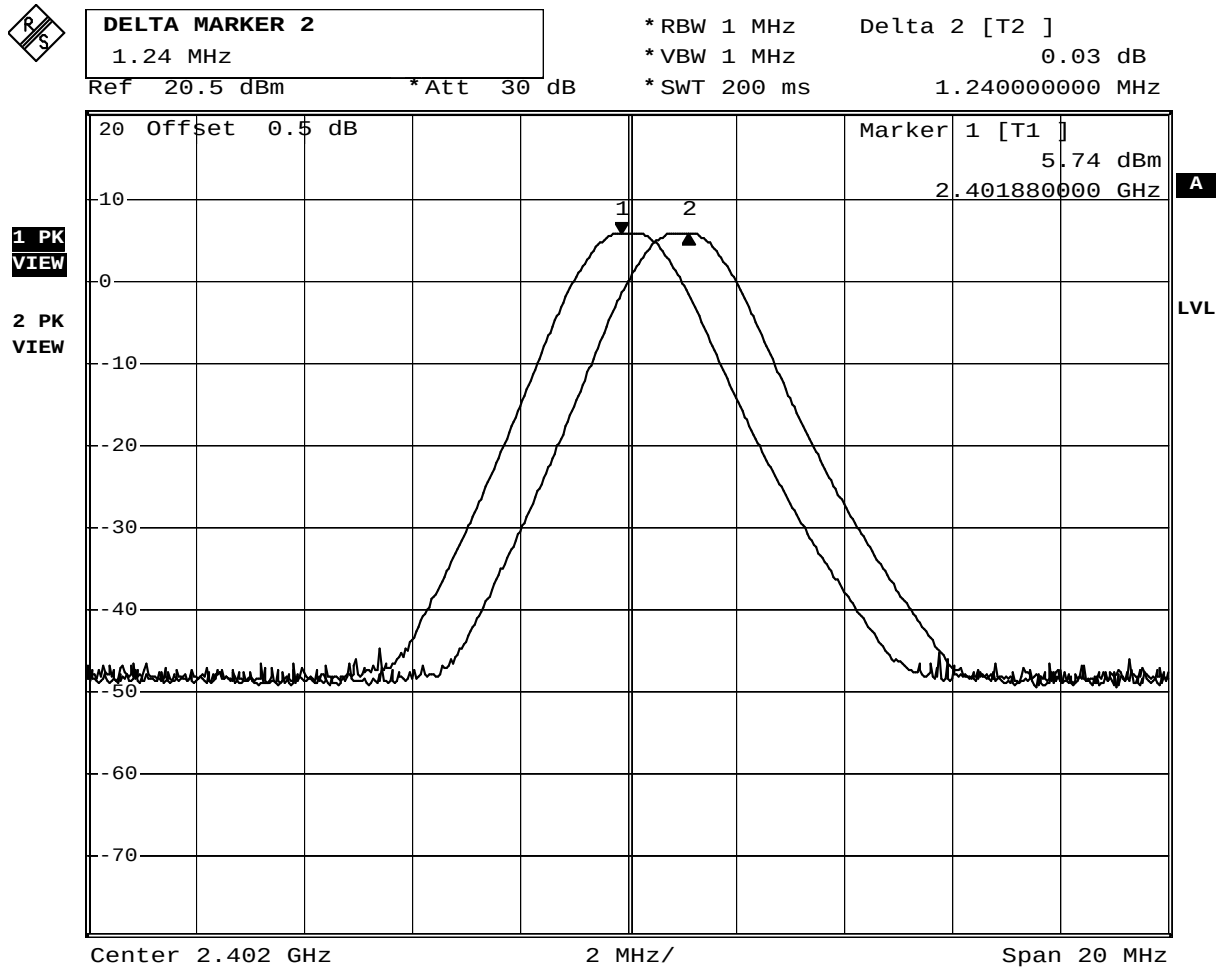


Product	H19TXT		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/25	Test Site	SR7

π/4-DQPSK

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
00	2402	1.24	>0.95	Pass

Channel 00

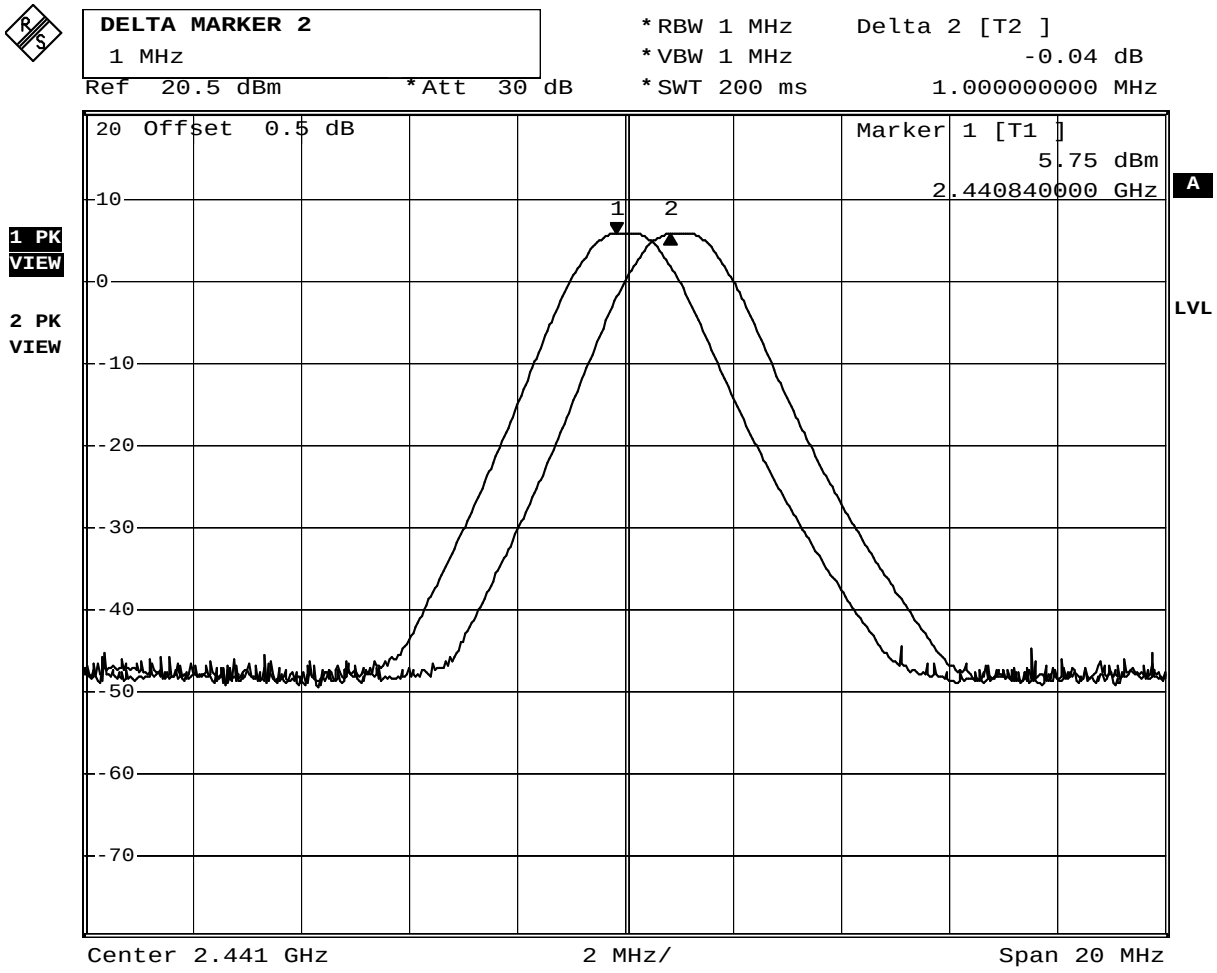


Product	H19TXT		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/25	Test Site	SR7

π/4-DQPSK

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
39	2441	1.00	>0.96	Pass

Channel 39

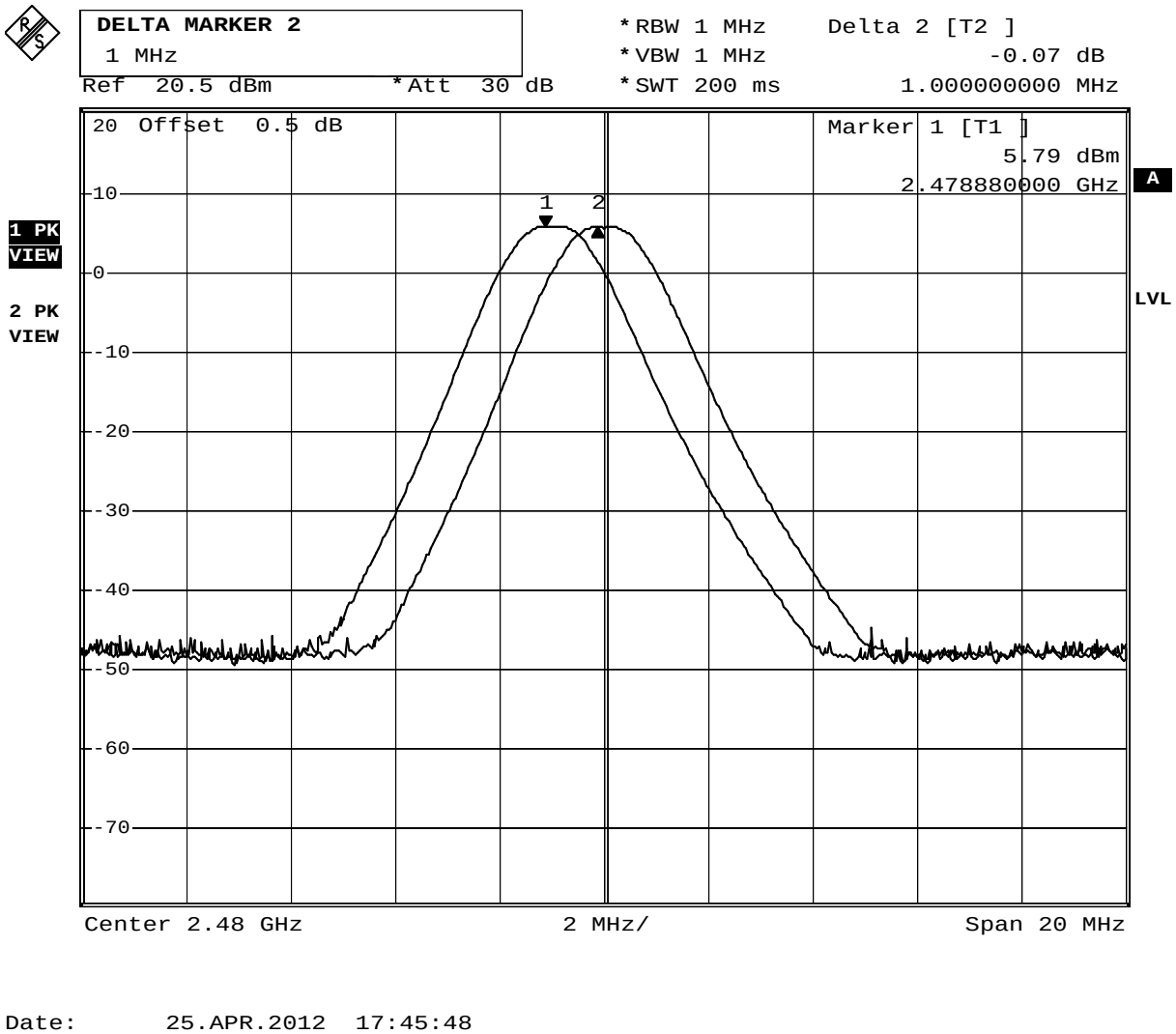


Product	H19TXT		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/25	Test Site	SR7

π/4-DQPSK

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
78	2480	1.00	>0.96	Pass

Channel 78

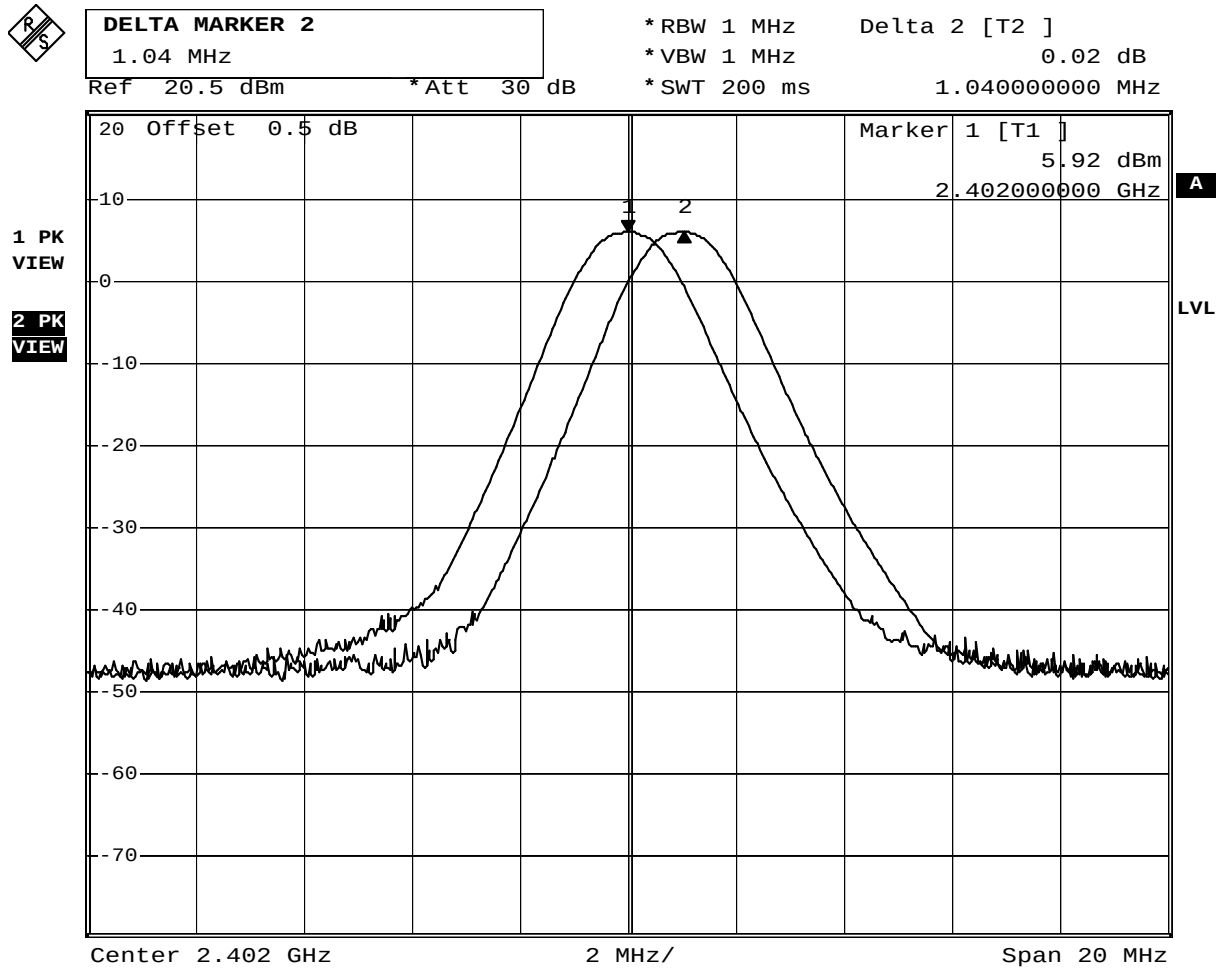


Product	H19TXT		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/25	Test Site	SR7

8-DPSK

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
00	2402	1.04	>0.94	Pass

Channel 00

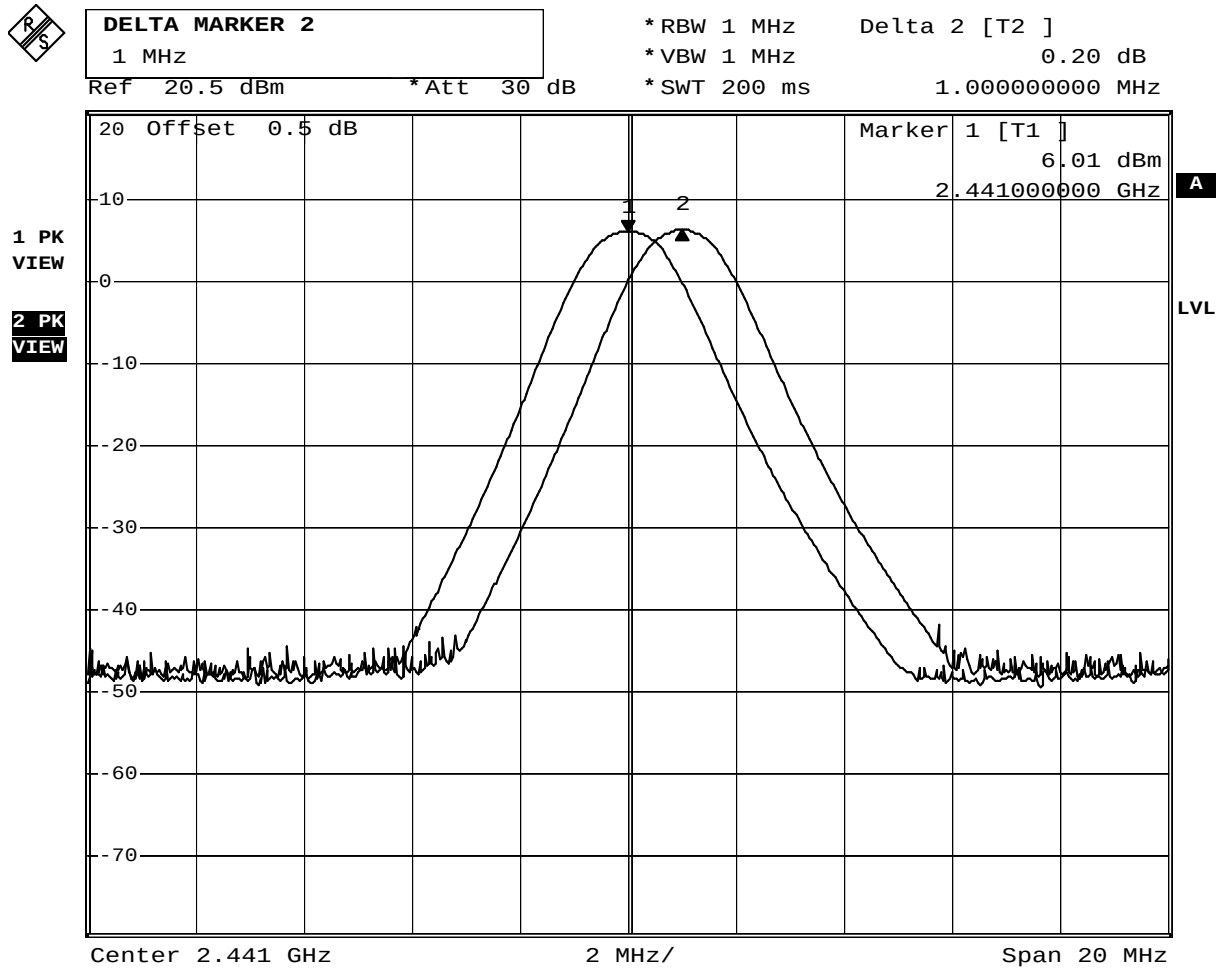


Product	H19TXT		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/25	Test Site	SR7

8-DPSK

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
39	2441	1.00	>0.95	Pass

Channel 39

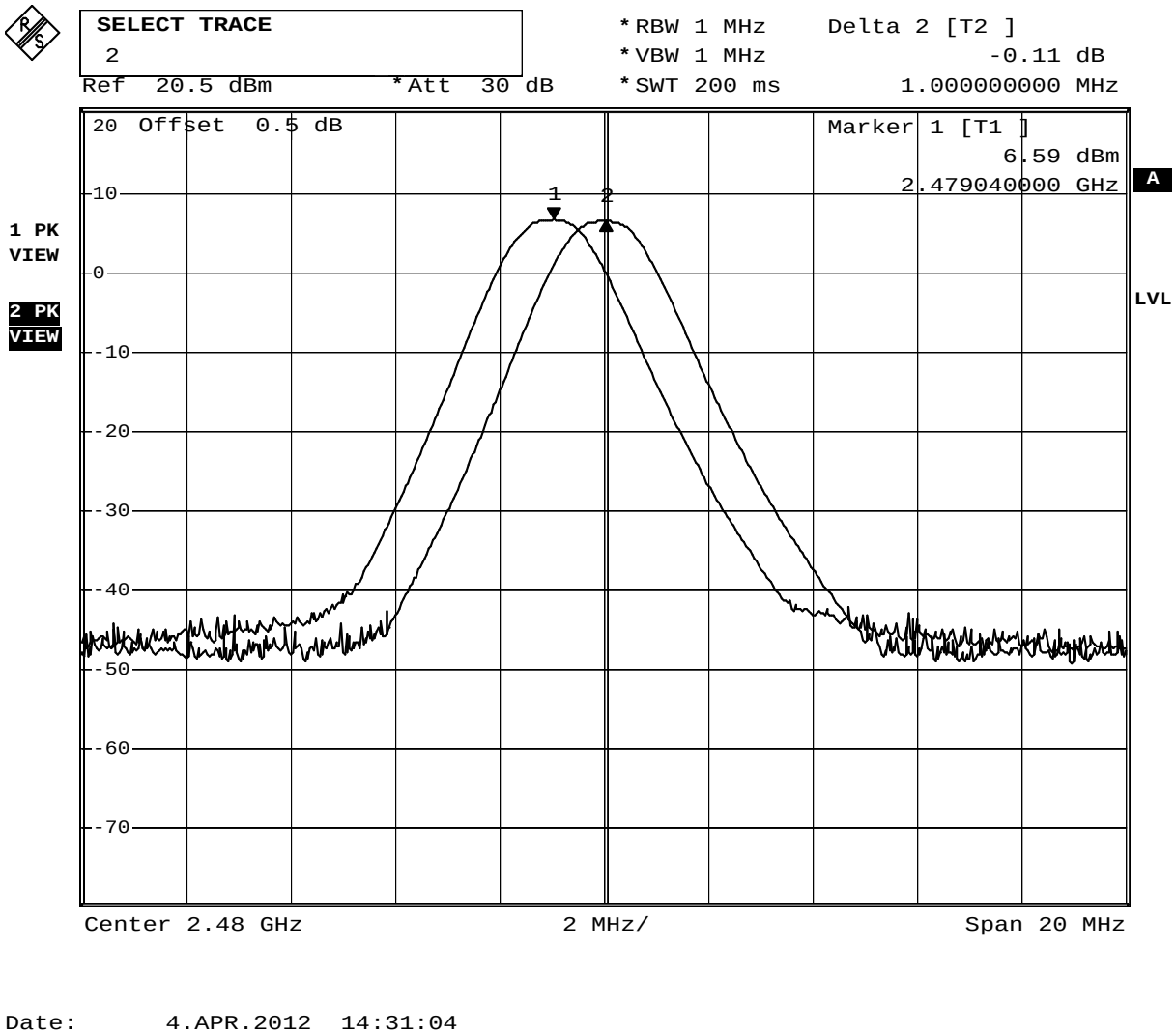


Product	H19TXT		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/25	Test Site	SR7

8-DPSK

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
78	2480	1.00	>0.95	Pass

Channel 78



9. Occupied Bandwidth

9.1. Test Equipment

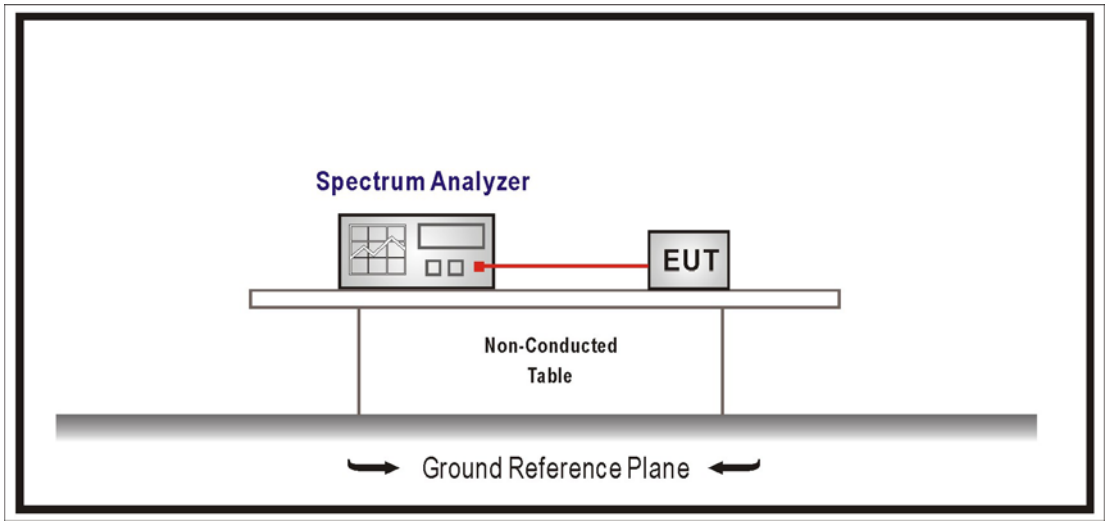
The following test equipment is used during the test:

Occupied Bandwidth / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2013/02/19

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

9.2. Test Setup



9.3. Limits

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.
For frequency hopping systems operating in the 5725-5850 MHz bands. The maximum 20 dB bandwidth of the hopping channel is 1 MHz.
For frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

9.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements
Use the following spectrum analyzer settings:
Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
RBW ≥ 1% of the 20 dB bandwidth, VBW ≥ RBW
Sweep = auto, Detector function = peak, Trace = max hold
The EUT should be transmitting at its maximum data rate.

9.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2011

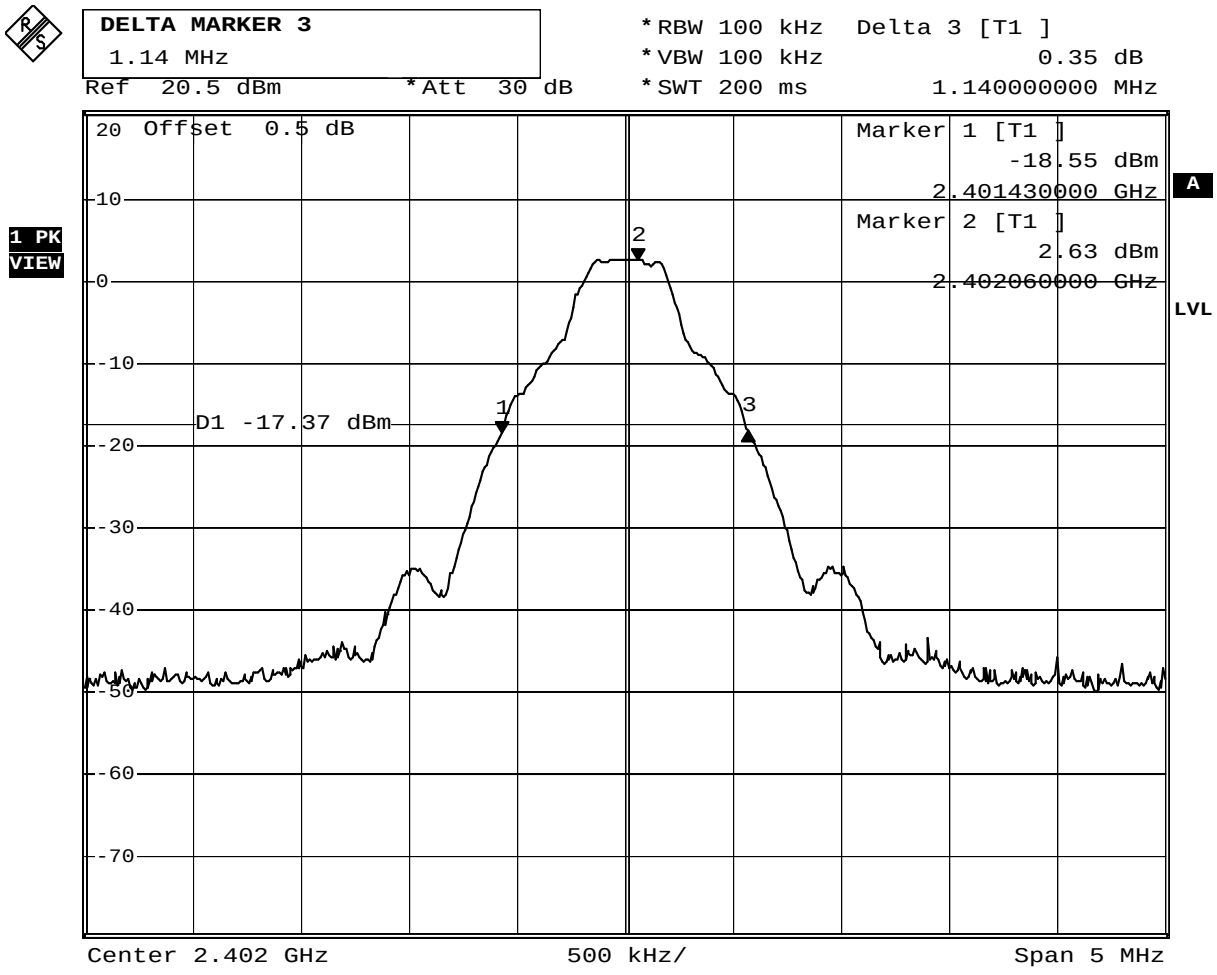
9.6. Test Result

Product	H19TXT		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/25	Test Site	SR7

GFSK

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
00	2402	1.14	--	Pass

Channel 00

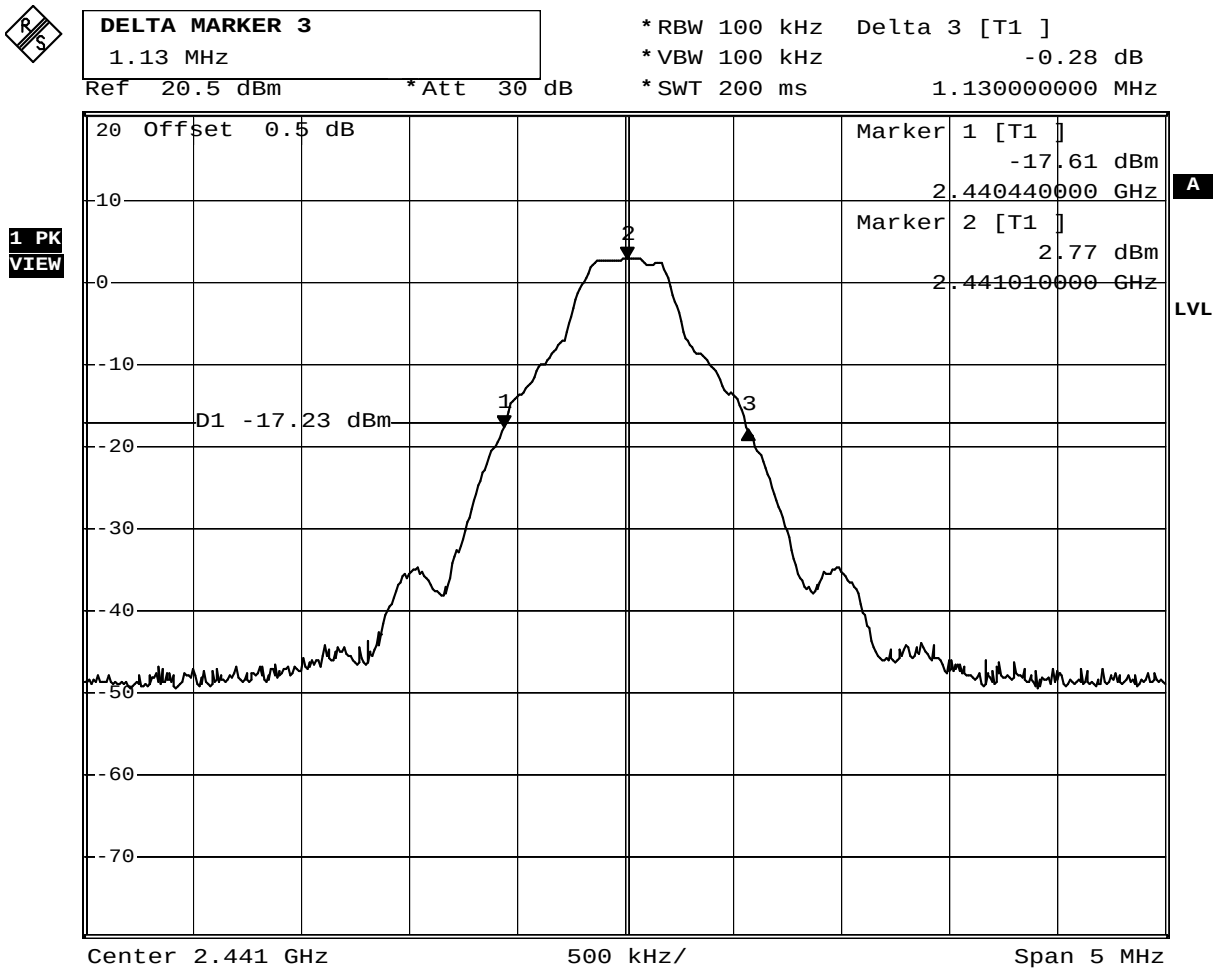


Product	H19TXT		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/25	Test Site	SR7

GFSK

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
39	2441	1.13	--	Pass

Channel 39

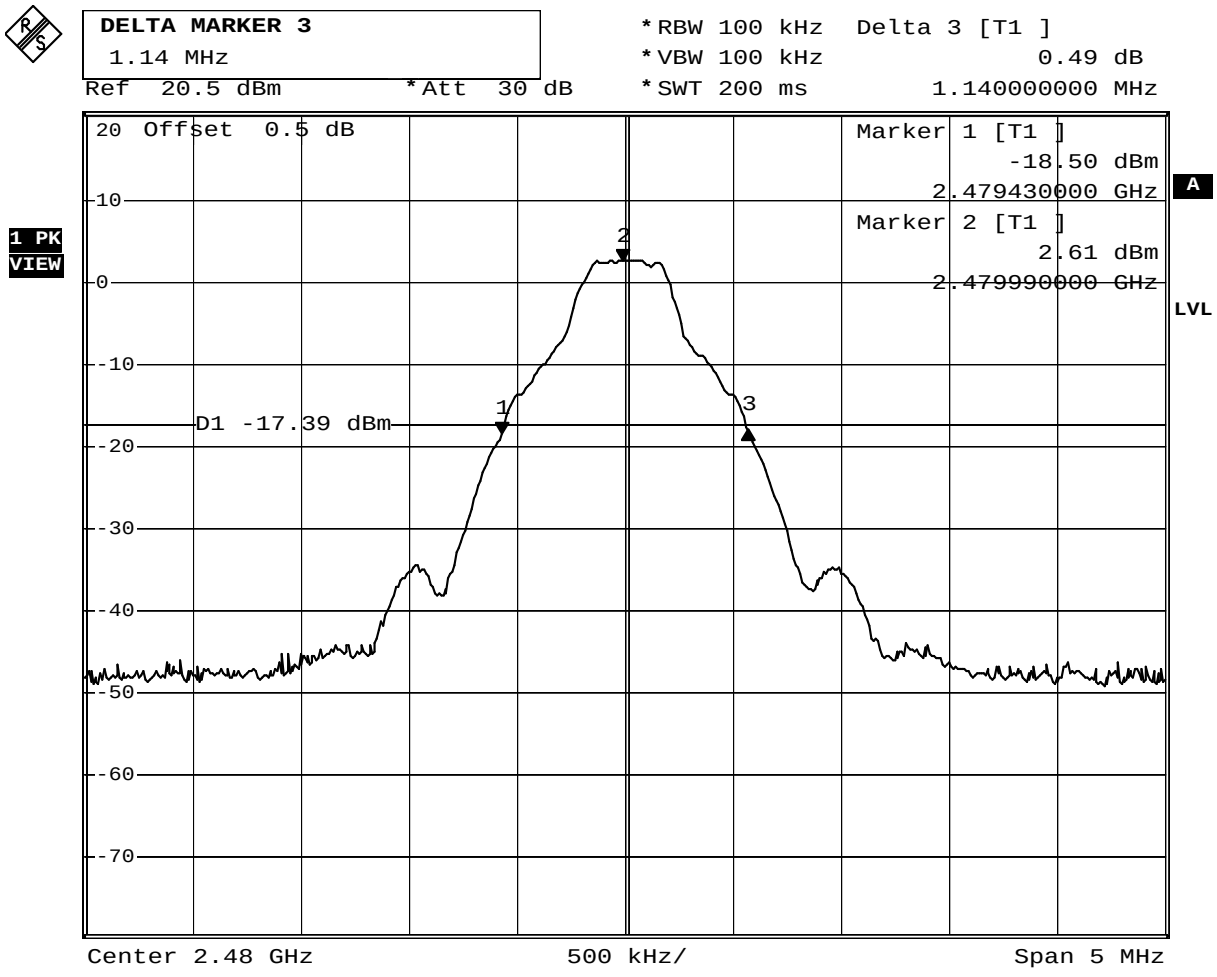


Product	H19TXT		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/25	Test Site	SR7

GFSK

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
78	2480	1.14	--	Pass

Channel 78

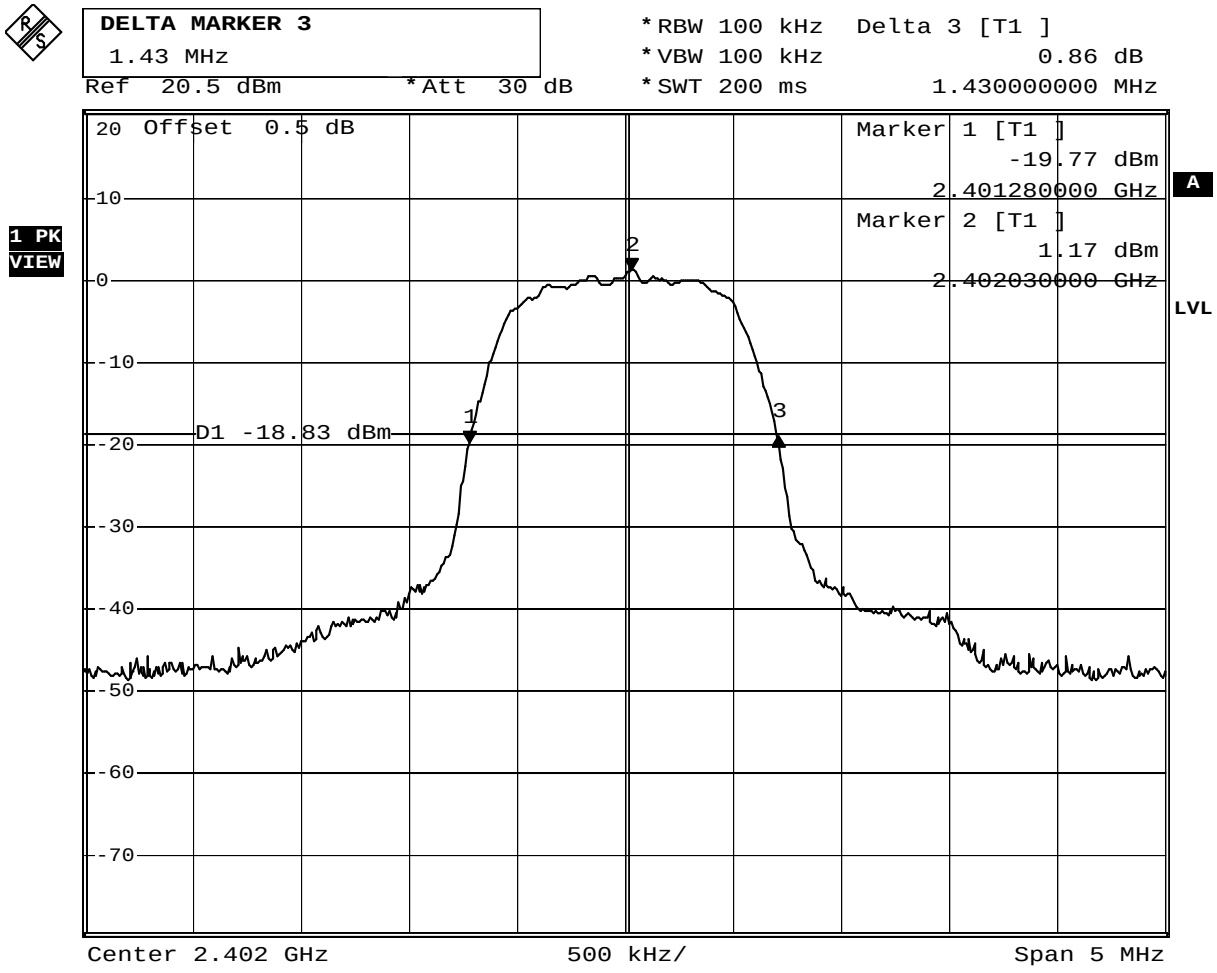


Product	H19TXT		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/25	Test Site	SR7

π/4-DQPSK

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
00	2402	1.43	--	Pass

Channel 00



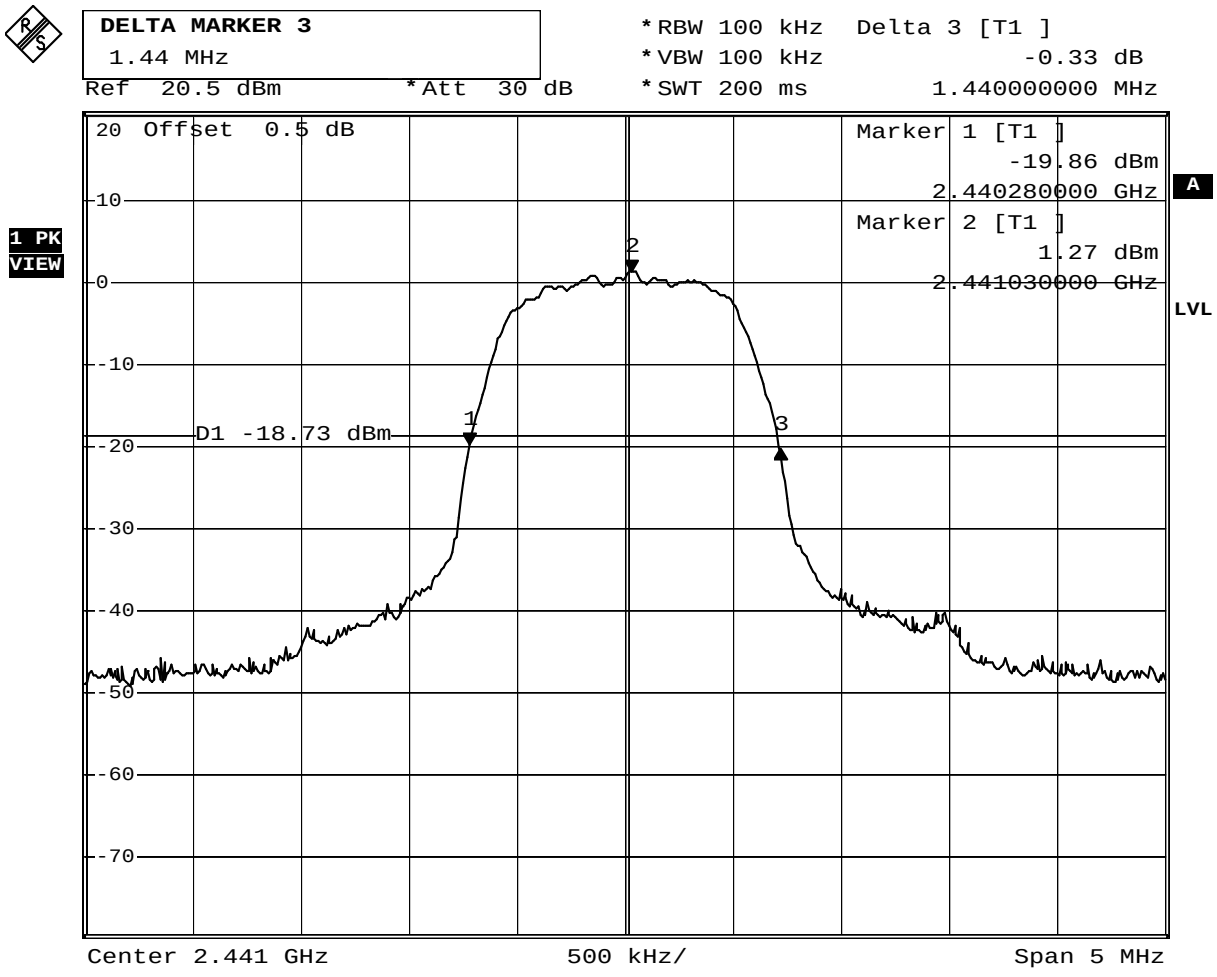
Date: 25.APR.2012 16:11:40

Product	H19TXT		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/25	Test Site	SR7

π/4-DQPSK

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
39	2441	1.44	--	Pass

Channel 39



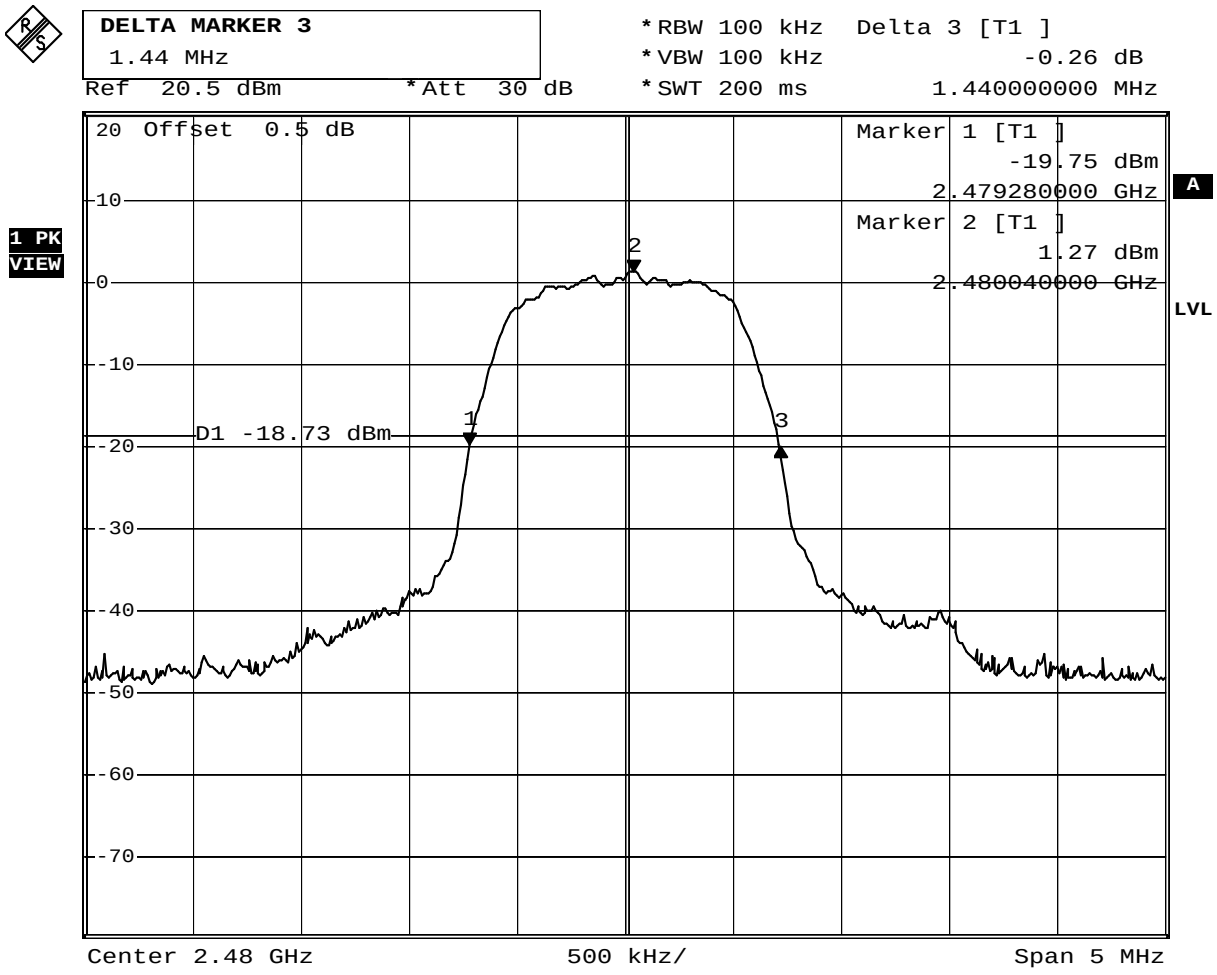
Date: 25.APR.2012 16:19:02

Product	H19TXT		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/25	Test Site	SR7

π/4-DQPSK

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
78	2480	1.44	--	Pass

Channel 78



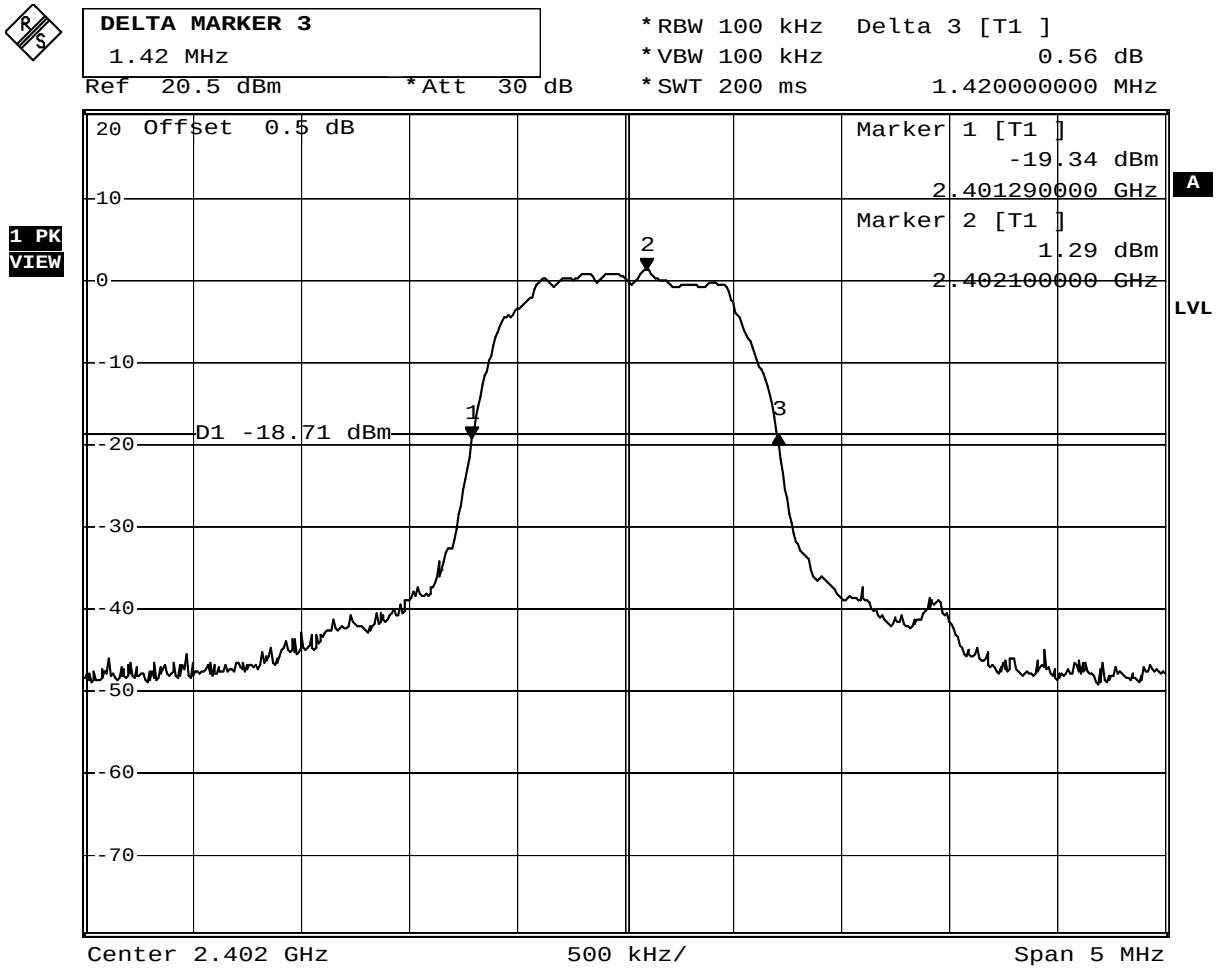
Date: 25.APR.2012 16:24:30

Product	H19TXT		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/25	Test Site	SR7

8-DPSK

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
00	2402	1.42	--	Pass

Channel 00



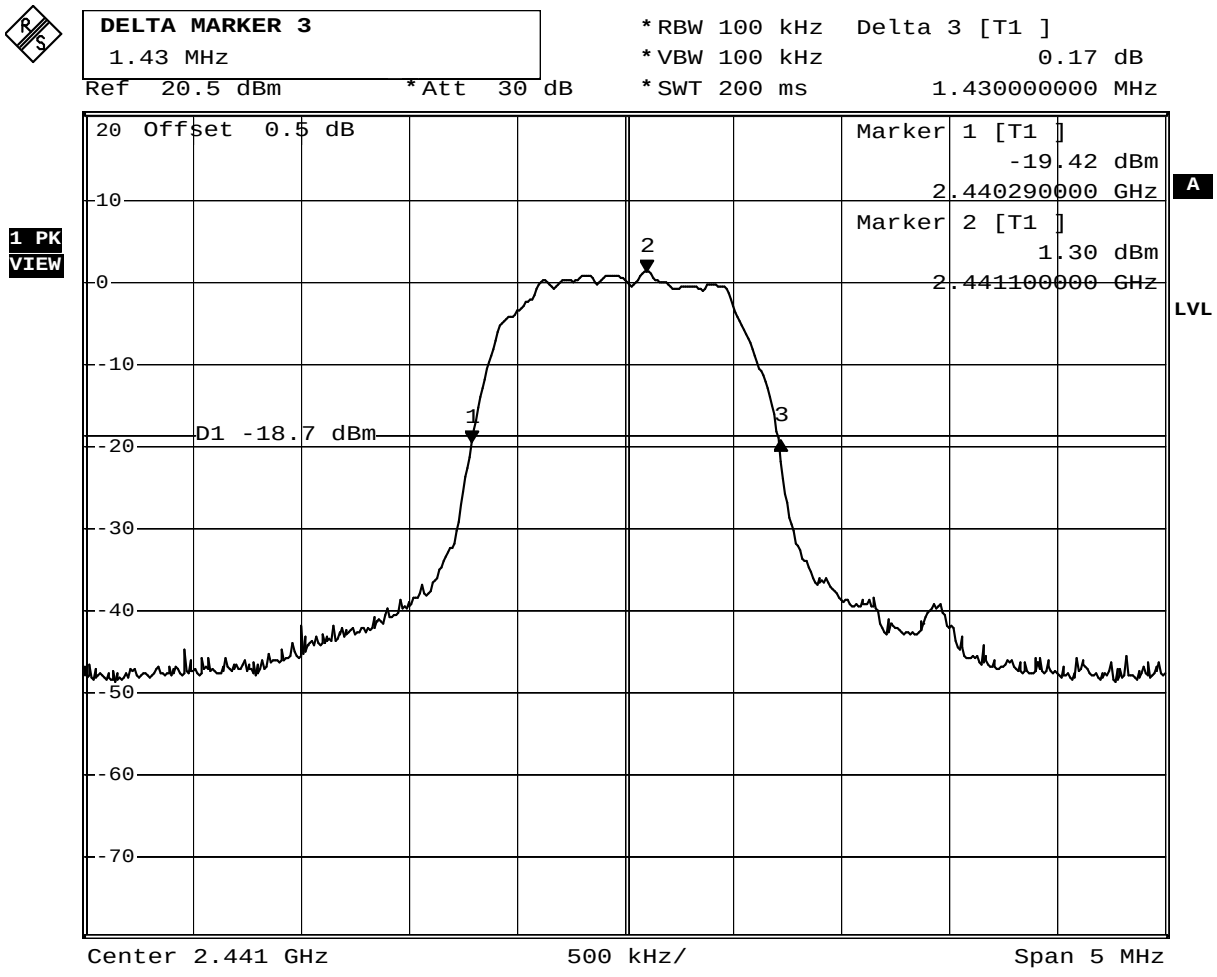
Date: 25.APR.2012 16:14:00

Product	H19TXT		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/25	Test Site	SR7

8-DPSK

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
39	2441	1.43	--	Pass

Channel 39

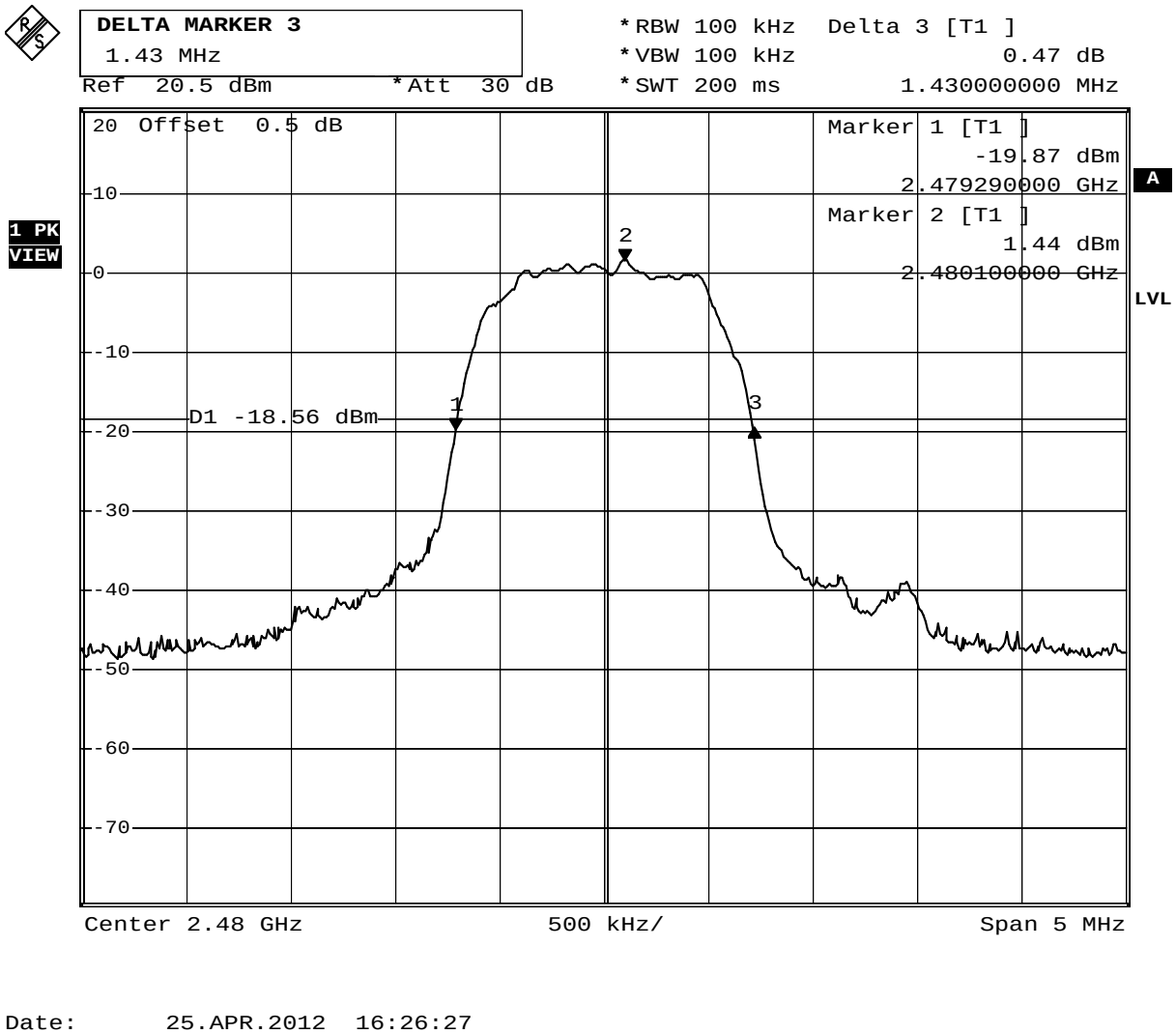


Product	H19TXT		
Test Item	Occupied Bandwidth		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/25	Test Site	SR7

8-DPSK

Channel No.	Frequency (MHz)	Measure Level (MHz)	Limit (MHz)	Result
78	2480	1.43	--	Pass

Channel 78



10. Dwell Time

10.1. Test Equipment

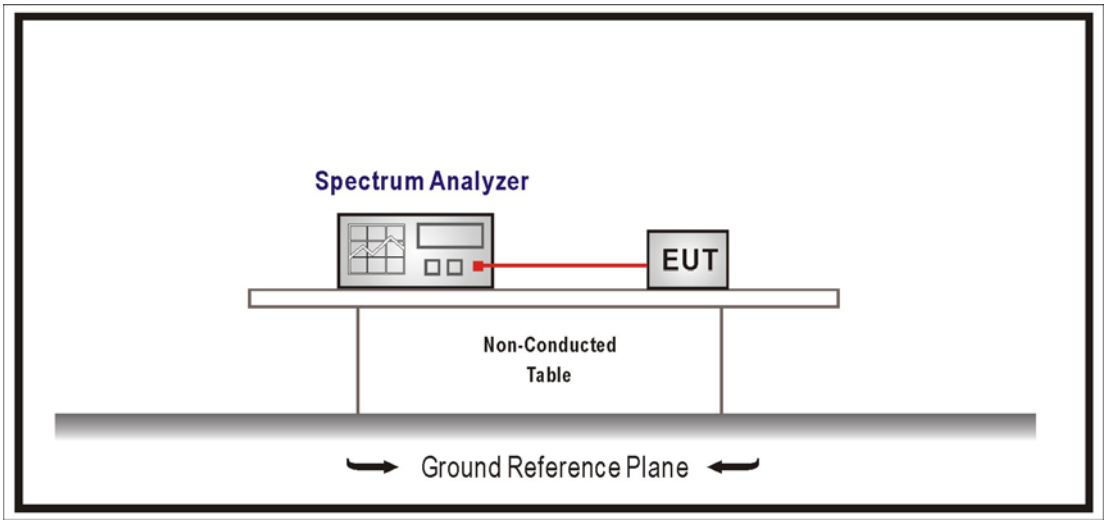
The following test equipment is used during the test:

Dwell Time / SR7

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	R&S	FSP	100561	2013/02/19

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.

10.2. Test Setup



10.3. Limits

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.
For frequency hopping systems operating in the 2400-2483.5 MHz bands. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.
For frequency hopping systems operating in the 5725-5850 MHz bands. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

10.4. Test Procedures

The EUT was setup according to ANSI C63.4, 2009 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements
Span = zero span, centered on a hopping channel
RBW = 1 MHz, VBW ≥ RBW
Sweep = as necessary to capture the entire dwell time per hopping channel
Detector function = peak, Trace = max hold

10.5. Test Specification

According to FCC Part 15 Subpart C Paragraph 15.247: 2011

10.6. Test Result

Product	H19TXT		
Test Item	Dwell Time		
Test Mode	Mode 1: Transmit (Power by PC)		
Date of Test	2012/04/28	Test Site	SR7

Occupancy Time of Frequency Hopping System

A) 2402MHz Test Time Period: 0.4*79=31.6sec，Hopping Times Within 1sec: 5/20msec=250 /sec

The Maximum Occupancy Time Within 3.06sec: 0.00296*(250/79)*31.6=0.296sec。

B) 2441MHz Test Time Period: 0.4*79=31.6sec，Hopping Times Within 1sec: 5/20msec=250 /sec

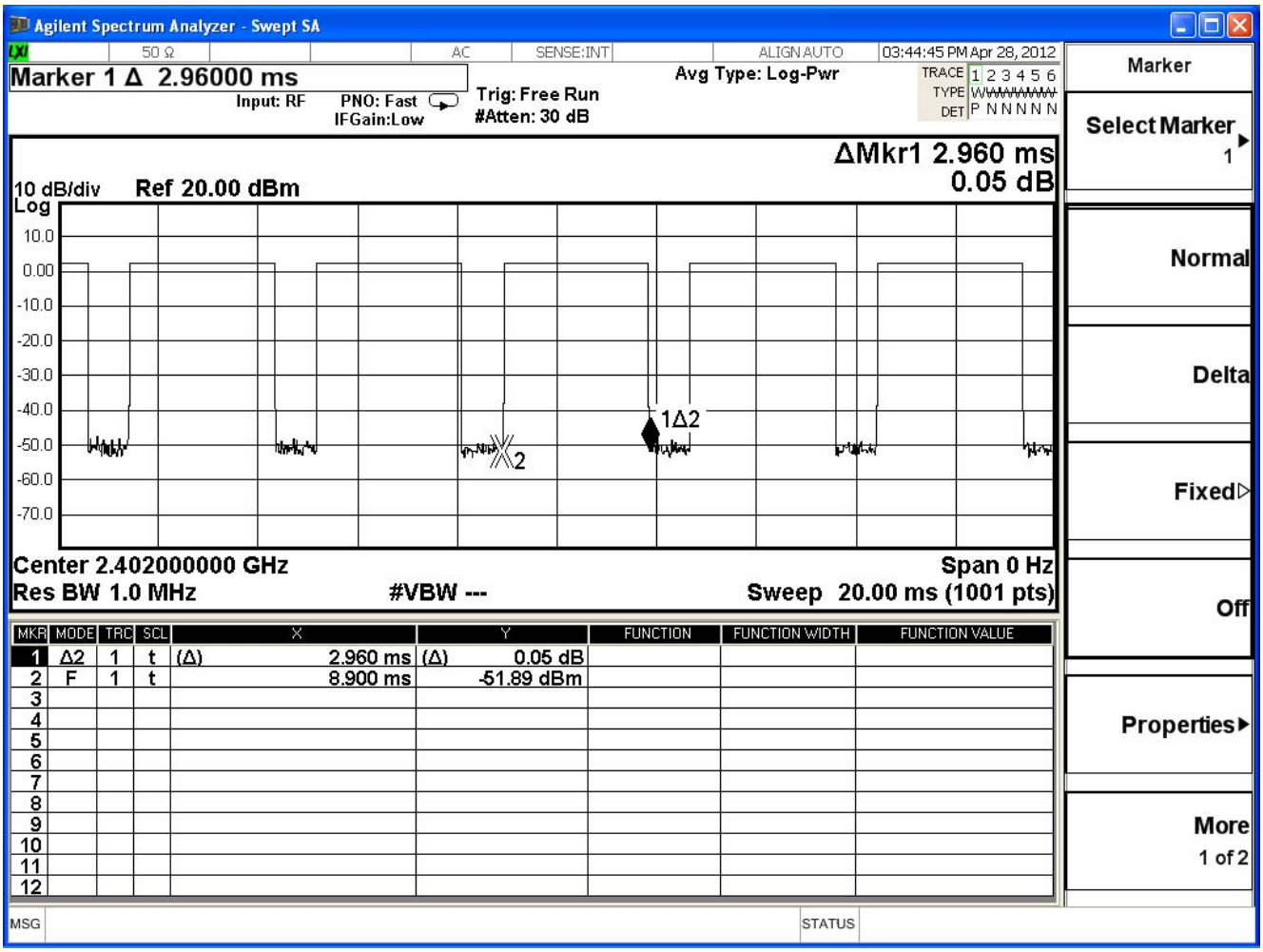
The Maximum Occupancy Time Within 3.06sec: 0.00298*(250/79)*31.6=0.298sec。

C) 2480MHz Test Time Period: 0.4*79=31.6sec，Hopping Times Within 1sec: 5/20msec=250 /sec

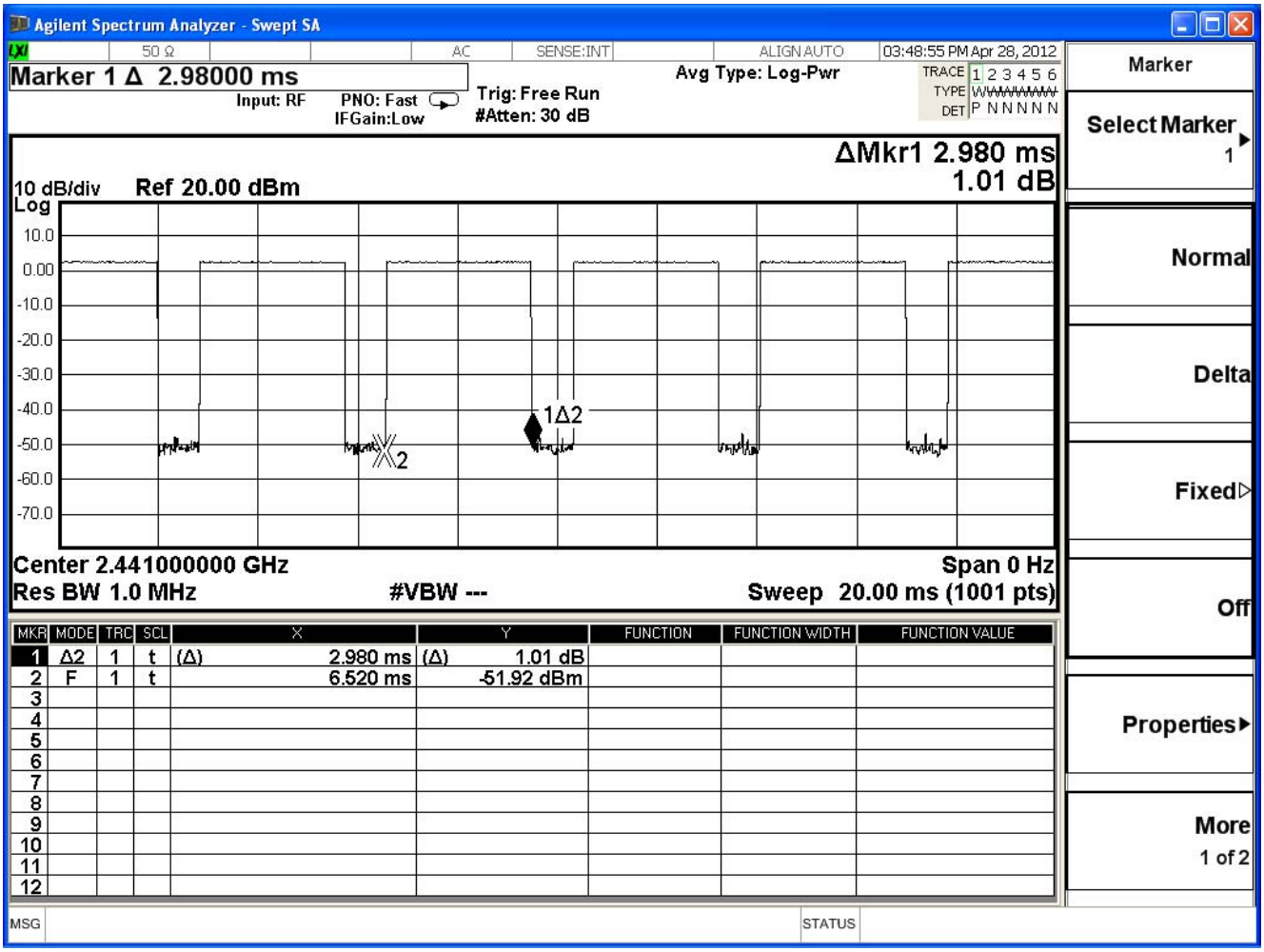
The Maximum Occupancy Time Within 3.06sec: 0.00296*(250/79)*31.6=0.269sec。

Test Result: The Average Occupancy Time of Each Highest，Middle and Lowest Channel Is Less Than 0.4sec，And Corresponds to The Standard。

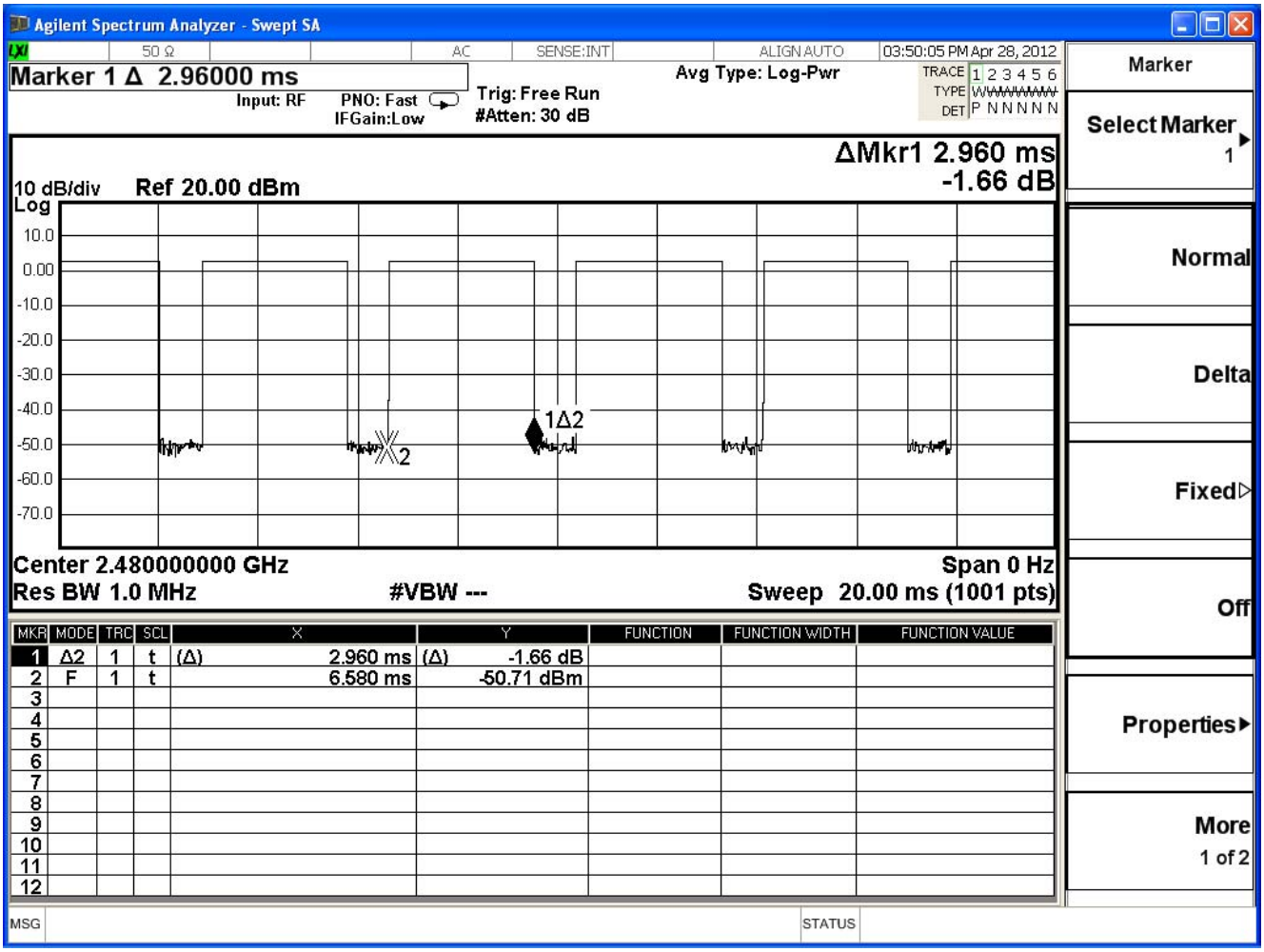
Hop rate-2402MHz



Hop rate-2441MHz



Hop rate-2480MHz



Note: Dwell time＝time slot length * hop rate / number of hopping channels * period