FCC RF TEST REPORT

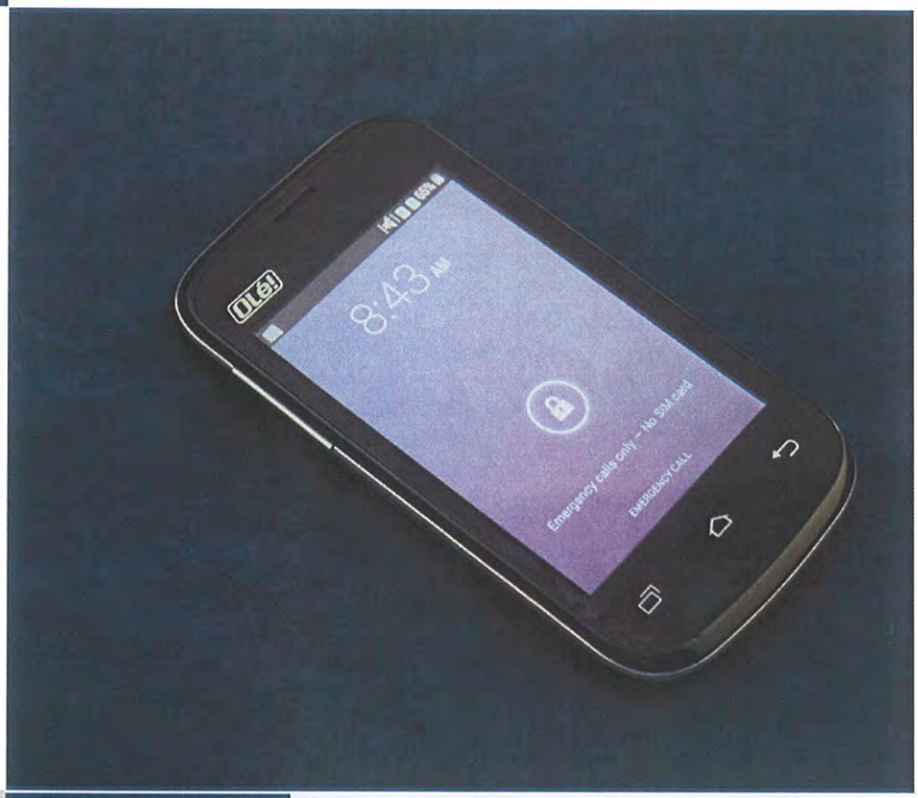
ISSUED BY
Shenzhen BALUN Technology Co., Ltd.

FOR

Mobile Phone

ISSUED TO
ShenZhen Hipad Telecommunication Technology Co., LTD.

Room 502-503, Unit 3,Building C, Kexing Science Park, Keyuan Road, Hi-tech industrial Park, NanShan District, Shenzhen, GuangDong, China



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Date Oct. 8, 2014

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Date Oct 8. 2014

Report No.:	BL-SZ1490065-601
EUT Type:	Mobile Phone
Model Name:	MK5022, MK5022-CA, MK5022-MX
Brand Name:	N/A
Test Standard:	47 CFR Part 15 Subpart C
FCC ID:	2ABOU5022
Test conclusion:	PASS
Test Date:	Sep 10, 2014 ~ Oct 8, 2014
Date of Issue:	Oct 8, 2014

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Revision History

Version	Issue Date	Revisions
Rev. 01	Oct 8, 2014	Initial Issue

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1 ADMINISTRATIVE DATA (GENERAL INFORMATION)

1.1 Identification of the Testing Laboratory

Company Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6683 3402
Fax Number	+86 755 6182 4271

1.2 Identification of the Responsible Testing Location

Test Location	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 11524A-1. The laboratory has been listed by US Federal Communications Commission to perform electromagnetic emission measurements. The recognition numbers of test site are 832625. The laboratory has met the requirements of the IAS Accreditation Criteria for Testing Laboratories (AC89), has demonstrated compliance with ISO/IEC Standard 17025:2005. The accreditation certificate number is TL-588. The laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L6791.
Description	All measurement facilities used to collect the measurement data are located at Block B, FL 1, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China 518055

1.3 Test Environment Condition

Ambient Temperature	15 to 35℃
Ambient Relative Humidity	30 to 60%
Ambient Pressure	86 to106 kPa

1.4 Announce

(1) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.

(2) The test report is invalid if there is any evidence and/or falsification.

(3) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.

(4) This document may not be altered or revised in any way unless done so by BALUN and all revisions are duly noted in the revisions section.

(5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

2 PRODUCT INFORMATION

2.1 Applicant

Applicant	ShenZhen Hipad Telecommunication Technology Co., LTD.
Address	Room 502-503, Unit 3,Building C, Kexing Science Park, Keyuan Road, Hi-tech industrial Park, NanShan District, Shenzhen, GuangDong, China

2.2 Manufacturer

Manufacturer	ShenZhen Hipad Telecommunication Technology Co., LTD.
Address	Room 502-503, Unit 3,Building C, Kexing Science Park, Keyuan Road, Hi-tech industrial Park, NanShan District, Shenzhen, GuangDong, China

2.3 General Description for Equipment under Test (EUT)

EUT Type	Mobile Phone
The Under Test Model Name	MK5022
Series Model Name	MK5022, MK5022-CA, MK5022-MX
Description of Model Name differentiation	The equipment model MK5022 and MK5022-CA, MK5022-MX are mobile phone, the electrical parameters and internal structure of circuit are same, only the model name is different.
Hardware Version	WS4050_V1.2
Software Version	N/A
Network and Wireless connectivity	WIFI 802.11b, 802.11g and 802.11n(20MHz), Bluetooth 2.1+EDR
About the Product	The equipment is Smart Phone, it contains Bluetooth and WIFI Modules operating at 2.4GHz ISM band. Only the Bluetooth 2.1+EDR was tested in this report

2.4 Technical Information

TX/ RX Operating Range	2400~2483.5MHz band f_c = 2402 MHz + N*1 MHz, where - f_c = “Operating Frequency” in MHz, - N = “Channel Number” with the range from 0 to 78.	
Modulation Type	Carrier	Frequency Hopping Spread Spectrum
	Digital	GFSK, π/4-DQPSK, 8DPSK
Antenna Type	PIFA Antenna	
Antenna Gain	0dBi	

2.5 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	KingerPower
	Model No	29.B0628000008
	Serial No	N/A
	Capacitance	1100 mAh
	Rated Voltage	3.7V
	Extreme Voltage	Low: 3.5V / High:4.2V
Ancillary Equipment 2	Brand Name	AOHAI
	Model No	A75-500550-US
	Serial No	(N/A. marked #1 by test site)
	Rated Input	AC 100V~240V, 150mA, 36W, 50/60Hz
	Rated Output	DC 5V, 550mA, 2.75W
Ancillary Equipment 3	USB Cable	
Ancillary Equipment 4	Earphone	

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15, Subpart C (12-30-13 Edition)	Miscellaneous Wireless Communications Services
2	FCC PUBLIC NOTICE DA 00-705 (Mar. 30, 2000)	Filling and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems
3	ANSI C63.4-2009	American National Standard for Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
4	ANSI C63.10-2009	American National Standard for Testing Unlicensed Wireless Devices

3.2 Verdict

No.	Description	FCC Part No.	Test Result	Verdict
1	Antenna Requirement	15.203	--	PASS Note 1
2	Number of Hopping Frequency	15.247(a)	ANNEX A.1	PASS
3	Peak Output Power	15.247(b)	ANNEX A.2	PASS
4	Occupied Bandwidth	15.247(a)	ANNEX A.3	PASS
5	Carrier Frequency Separation	15.247(a)	ANNEX A.4	PASS
6	Time of Occupancy (Dwell time)	15.247(a)	ANNEX A.5	PASS
7	Conducted Spurious Emission	15.247(d)	ANNEX A.6	PASS
8	Conducted Emission	15.207	ANNEX A.7	PASS
9	Radiated Spurious Emission	15.209 15.247(c)	ANNEX A.8	PASS
10	Band Edge	15.247(d)	ANNEX A.9	PASS
Note 1: The EUT has a permanently and irreplaceable attached antenna, which complies with the requirement FCC 15.203.				

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

During the measurement, the normal environmental conditions were within the listed ranges:

Relative Humidity (%)	30 -60	
Atmospheric Pressure (kPa)	86-106	
Temperature	NT (Normal Temperature)	+20℃ to +25℃
	LT (Low Temperature)	-20℃
	HT (High Temperature)	+55℃
Working Voltage of the EUT	NV (Normal Voltage)	3.7V
	LV (Low Voltage)	3.3V
	HV (High Voltage)	4.2V

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	AGILENT	E4440A	MY45304434	2014.07.07	2015.07.06
Spectrum Analyzer	ROHDE&SCHWARZ	FSL3	103640/003	2014.07.07	2015.07.06
Bluetooth Tester	ROHDE&SCHWARZ	CBT	101005	2014.07.07	2015.07.06
Power Splitter	KMW	DCPD-LDC	1305003215	2014.07.07	2015.07.06
Power Sensor	ROHDE&SCHWARZ	NRP-Z21	103971	2014.07.07	2015.07.06
Attenuator (20dB)	KMW	ZA-S1-201	110617091	--	--
Attenuator (6dB)	KMW	ZA-S1-61	1305003189	--	--
DC Power Supply	ROHDE&SCHWARZ	HMP2020	018141664	2014.07.07	2015.07.06
Temperature Chamber	ANGELANTIONI SCIENCE	NTH64-40A	1310	2014.07.07	2015.07.06
Test Antenna-Loop(9kHz-30MHz)	SCHWARZBECK	FMZB 1519	1519-037	2013.07.03	2015.07.02
Test Antenna-Bi-Log(30MHz-3GHz)	SCHWARZBECK	VULB 9163	9163-624	2013.07.02	2015.07.01
Test Antenna-Horn(1-18GHz)	SCHWARZBECK	BBHA 9120D	9120D-1148	2013.07.02	2015.07.01
Test Antenna-Horn(15-26.5GHz)	SCHWARZBECK	BBHA 9170	9170-305	2013.07.02	2015.07.01
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2014.10.07	2015.10.06

4.3 Test Configurations

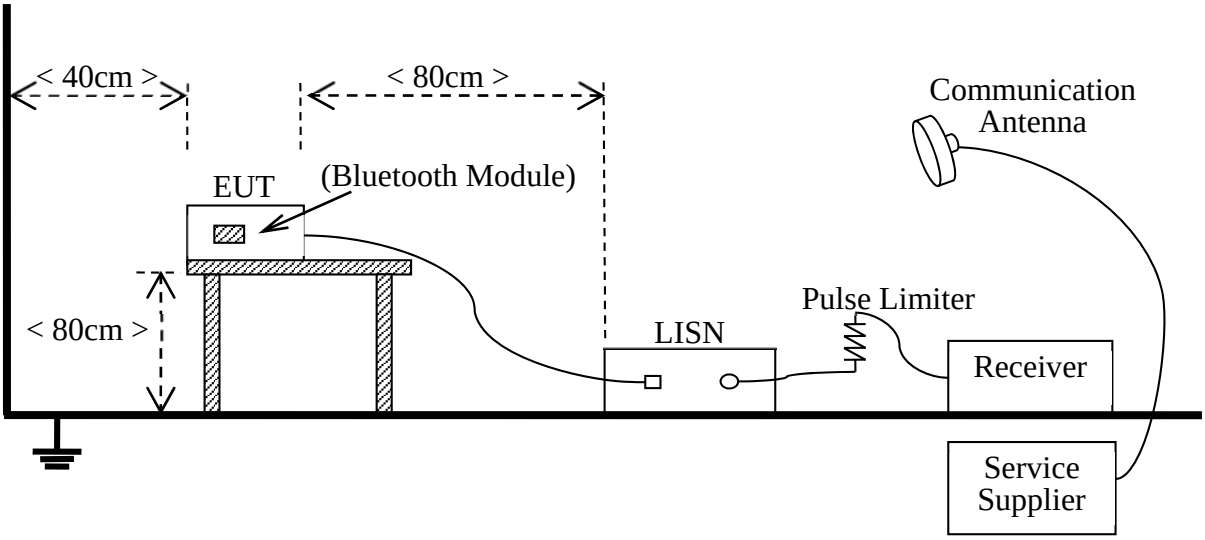
Test Configurations (TC) NO.	Description	
	Signal Description	Operating Frequency
Transmitter		
TC01	GFSK modulation, package type DH5, hopping on	--
TC02	GFSK modulation, package type DH5, hopping off	Ch No. 0/ 2402MHz
TC03	GFSK modulation, package type DH5, hopping off	Ch No. 39/ 2441MHz
TC04	GFSK modulation, package type DH5, hopping off	Ch No. 78/ 2480MHz
TC05	π/4-DQPSK modulation, package type DH5, hopping on	--
TC06	π/4-DQPSK modulation, package type DH5, hopping off	Ch No. 0/ 2402MHz
TC07	π/4-DQPSK modulation, package type DH5, hopping off	Ch No. 39/ 2441MHz
TC08	π/4-DQPSK modulation, package type DH5, hopping off	Ch No. 78/ 2480MHz
TC09	8DPSK modulation, package type DH5, hopping on	--
TC10	8DPSK modulation, package type DH5, hopping off	Ch No. 0/ 2402MHz
TC11	8DPSK modulation, package type DH5, hopping off	Ch No. 39/ 2441MHz
TC12	8DPSK modulation, package type DH5, hopping off	Ch No. 78/ 2480MHz

4.4 Description of Test Setup

4.4.1 For Antenna Port Test

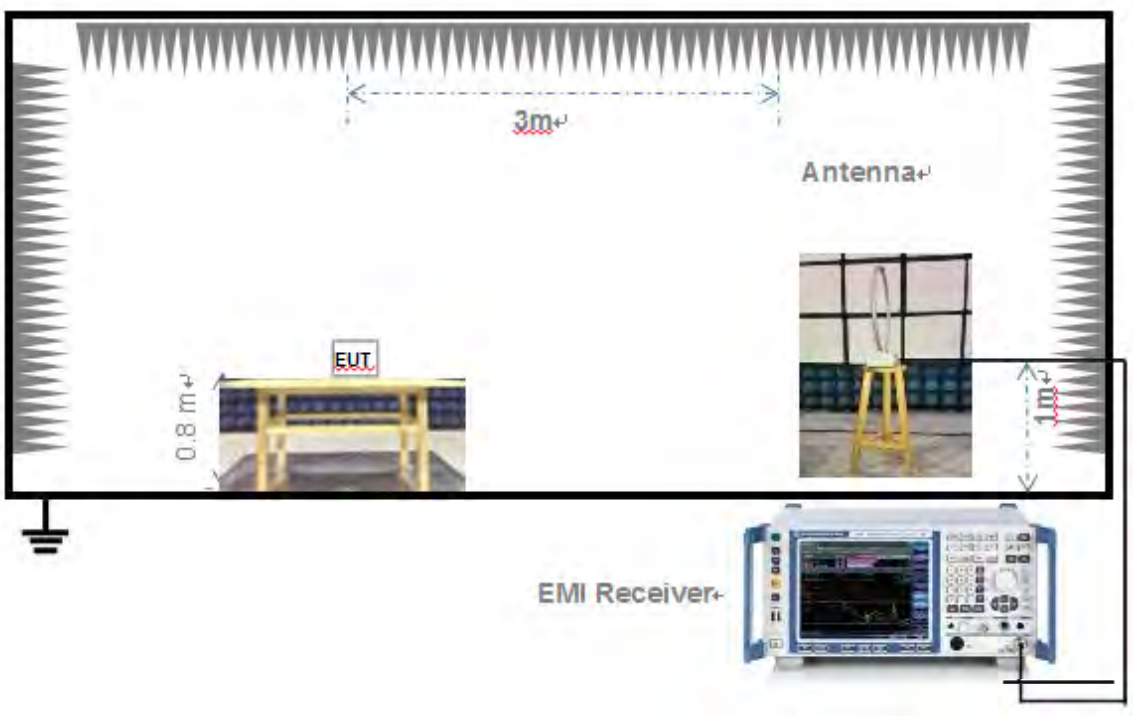
(Diagram 1)

4.4.2 For AC Power Supply Port Test



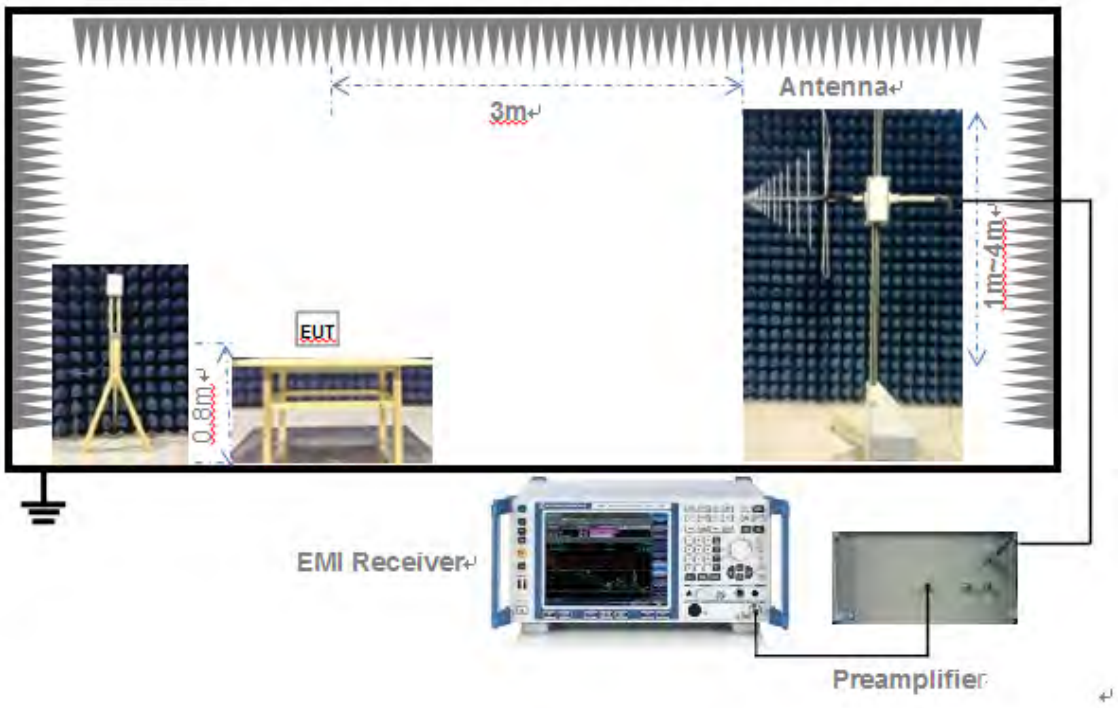
(Diagram 2)

4.4.3 For Radiated Test (Below 30MHz)



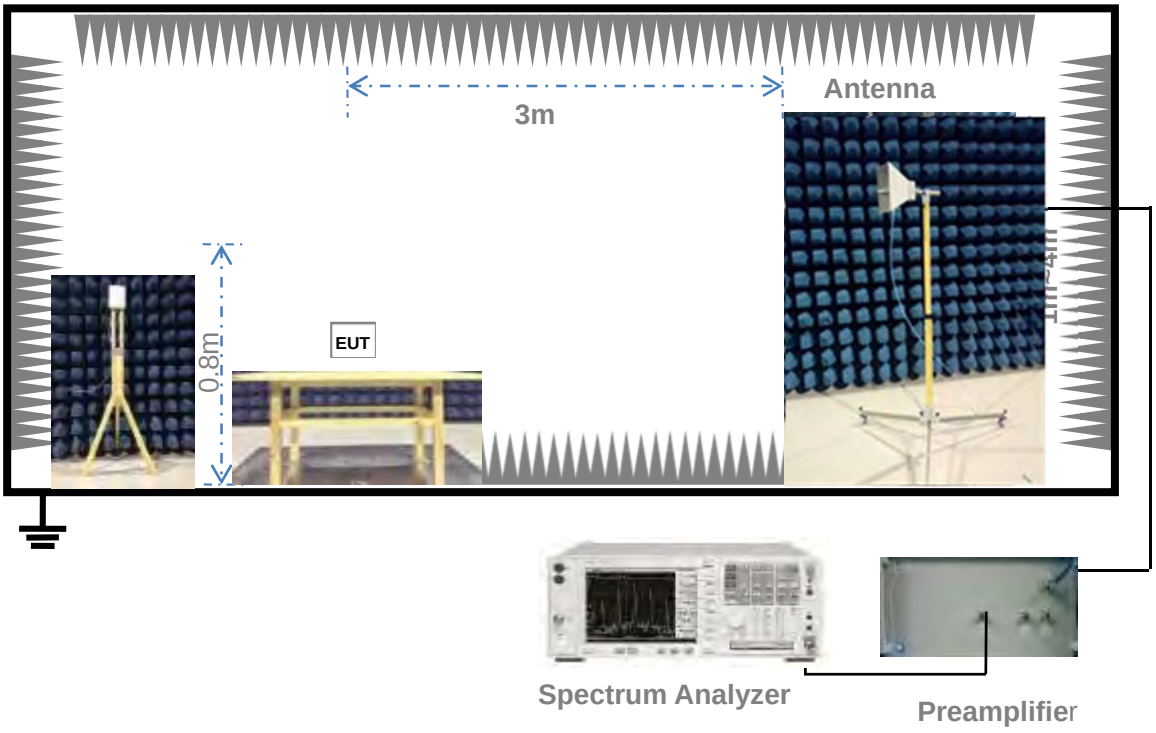
(Diagram 3)

4.4.4 For Radiated Test (30MHz-1GHz)



(Diagram 4)

4.4.5 For Radiated Test (Above 1GHz)



(Diagram 5)

4.5 Test Conditions

Test Case	Test Conditions		
	Test Env.	Test Setup Note 1	Test Configuration Note 2
Number of Hopping Frequency	NTNV	Test Setup 1	TC01, TC05, TC09
Peak Output Power	NTNV	Test Setup 1	TC02, TC03, TC04, TC06, TC07, TC08, TC10, TC11, TC12
Occupied Bandwidth	NTNV	Test Setup 1	TC03, TC07, TC011
Carrier Frequency Separation	NTNV	Test Setup 1	TC01, TC05, TC09
Time of Occupancy (Dwell time)	NTNV	Test Setup 1	TC01, TC05, TC09
Conducted Spurious Emission	NTNV	Test Setup 1	TC02, TC03, TC04, TC06, TC07, TC08, TC10, TC11, TC12
Conducted Emission	NTNV	Test Setup 2	TC02, TC03, TC04, TC06, TC07, TC08, TC10, TC11, TC12
Radiated Emission	NTNV	Test Setup 3 Test Setup 4 Test Setup 5	TC01, TC02, TC03, TC04, TC05, TC06, TC07, TC08, TC09, TC10, TC11, TC12
Band Edge	NTNV	Test Setup 5	TC01, TC02, TC04, TC05, TC06, TC08, TC09, TC10, TC12

Note:
1. Please refer to section 4.4 for test setup details.
2. Please refer to section 4.3 for test setup details.

5 TEST ITEMS

5.1 Antenna Requirements

5.1.1 Standard Applicable

FCC §15.203 & 15.247(b)

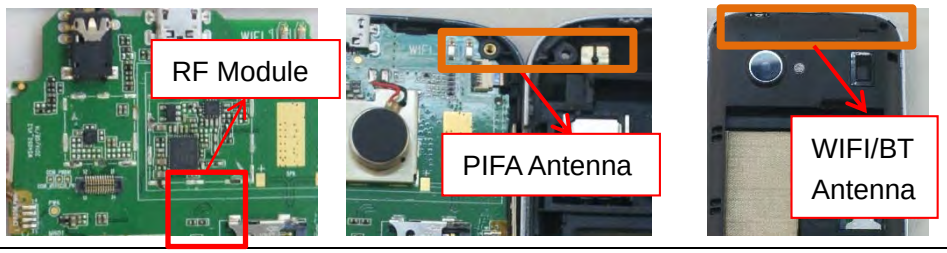
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

5.1.2 Antenna Anti-Replacement Construction

The Antenna Anti-Replacement as following method:

Protected Method	Description
The antenna is An embedded-in	An embedded-in antenna design is used.

Reference Documents	Item
Photo	

5.1.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

5.2 Number of Hopping Frequency

5.2.1 Limit

FCC §15.247(a)(1)(iii)

Frequency hopping systems operating in the 2400MHz to 2483.5MHz bands shall use at least 15 hopping frequencies.

5.2.2 Test Procedure

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

Span = the frequency band of operation

RBW ≥ 1% of the span

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize

5.3 Peak Output Power

5.3.1 Test Limit

FCC § 15.247(b)

For frequency hopping systems that operates in the 2400MHz to 2483.5MHz band employing at least 75 hopping channels, the maximum peak output power of the intentional radiator shall not exceed 1Watt.

5.3.2 Test Procedure

The Bluetooth Module operates at hopping-off test mode. The lowest, middle and highest channels are selected to perform testing to verify the conducted RF output peak power of the Module.

Use the following spectrum analyzer settings:

Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel

RBW > the 20 dB bandwidth of the emission being measured

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

5.4 Occupied Bandwidth

5.4.1 Limit

FCC §15.247(a)

The 20dB bandwidth is known as the 99% emission bandwidth, or 20dB bandwidth (10*log1%=20dB) taking the total RF output power.

5.4.2 Test Procedure

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

5.5 Carrier Frequency Separation

5.5.1 Limit

FCC §15.247(a)

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

5.5.2 Test Procedure

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

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

Resolution (or IF) Bandwidth (RBW) ≥ 1% of the span

Video (or Average) Bandwidth (VBW) ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

5.6 Time of Occupancy (Dwell time)

5.6.1 Limit

FCC §15.247(a)

Frequency hopping systems in the 2400 - 2483.5MHz band shall use at least 15 non-overlapping channels. 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. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

5.6.2 Test Procedure

The average time of occupancy on any channel within the Period can be calculated with formulas:

For DH1 package type

{Total of Dwell} = {Pulse Time} * (1600 / 2) / {Number of Hopping Frequency} * {Period}

{Period} = 0.4s * {Number of Hopping Frequency}

For DH3 package type

{Total of Dwell} = {Pulse Time} * (1600 / 4) / {Number of Hopping Frequency} * {Period}

{Period} = 0.4s * {Number of Hopping Frequency}

For DH5 package type

{Total of Dwell} = {Pulse Time} * (1600 / 6) / {Number of Hopping Frequency} * {Period}

{Period} = 0.4s * {Number of Hopping Frequency}

The lowest, middle and highest channels are selected to perform testing to record the dwell time of each occupation measured in this channel, which is called Pulse Time here.

5.7 Conducted Spurious Emission

5.7.1 Limit

FCC §15.247(d)

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

5.7.2 Test Procedure

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.
RBW = 100 kHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
Allow the trace to stabilize

5.8 Conducted Emission

5.8.1 Limit

FCC §15.207

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dBμV)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
0.50 - 30	60	50

5.8.2 Test Procedure

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.

5.9 Radiated Spurious Emission

5.9.1 Limit

FCC §15.209&15.247(c)

Radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

Note:

1. For Above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

2. For above 1000MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK).

5.9.2 Test Procedure

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

The power of the EUT transmitting frequency should be ignored.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold

5.10 Band Edge

5.10.1 Limit

FCC §15.209&15.247(d)

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

5.10.2 Test Procedure

Span = wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation

RBW ≥ 1% of the span

VBW ≥ RBW

Sweep = auto

Detector function = peak /AV

Trace = max hold

Allow the trace to stabilize.

E [dBμV/m] =UR + AT + AFactor [dB]; AT =LCable loss [dB]-Gpreamp [dB]

AT: Total correction Factor except Antenna

UR: Receiver Reading

Gpreamp: Preamplifier Gain

AFactor: Antenna Factor at 3m

ANNEX A TEST RESULT

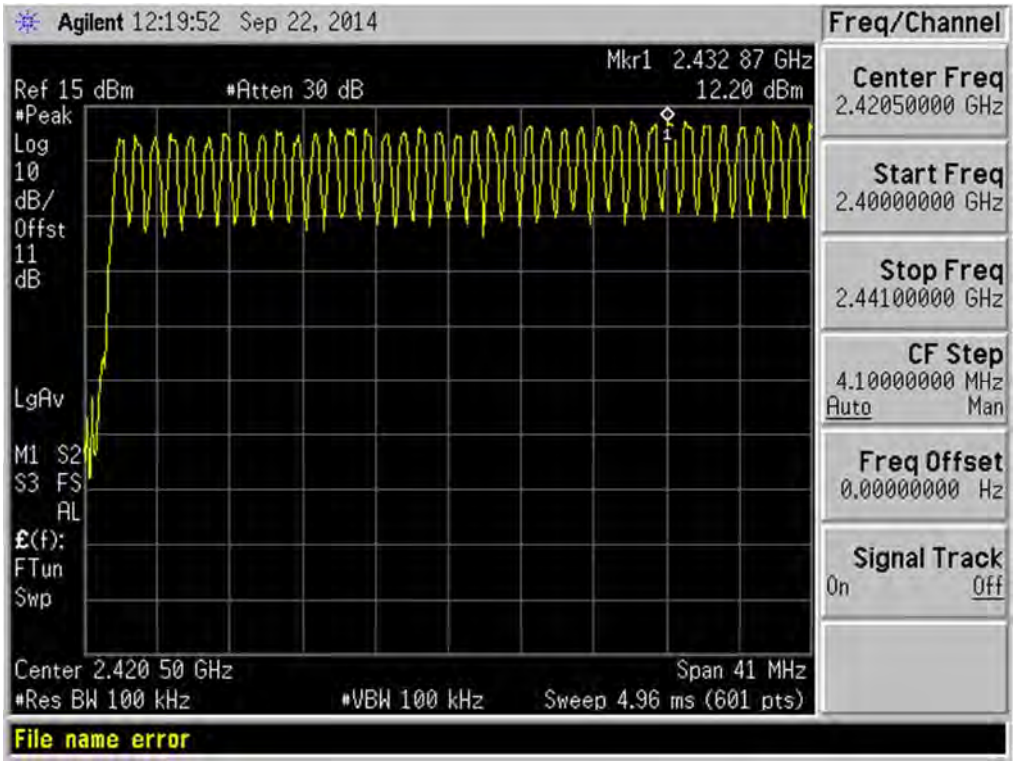
A.1 Number of Hopping Frequency

Test Data

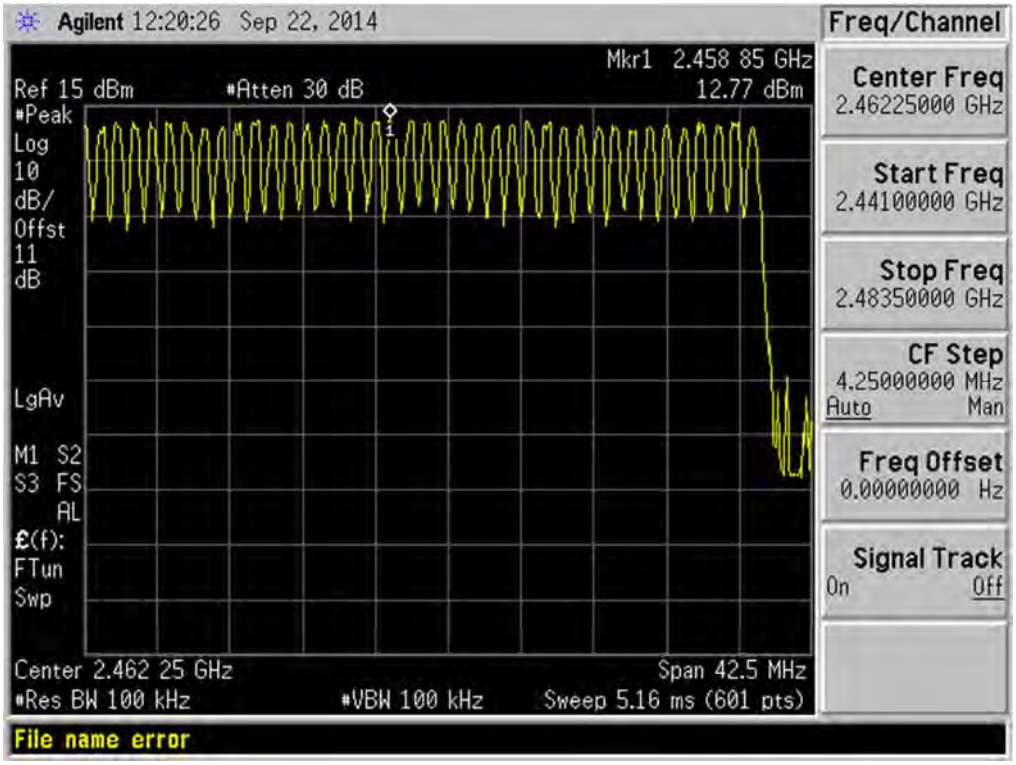
Test Mode	Frequency Block (MHz)	Measured Channel Numbers	Min. Limit	Verdict
GFSK	2400 - 2483.5	79	15	PASS
∏/4-DQPSK	2400 - 2483.5	79	15	PASS
8-DPSK	2400 - 2483.5	79	15	PASS

Test plots

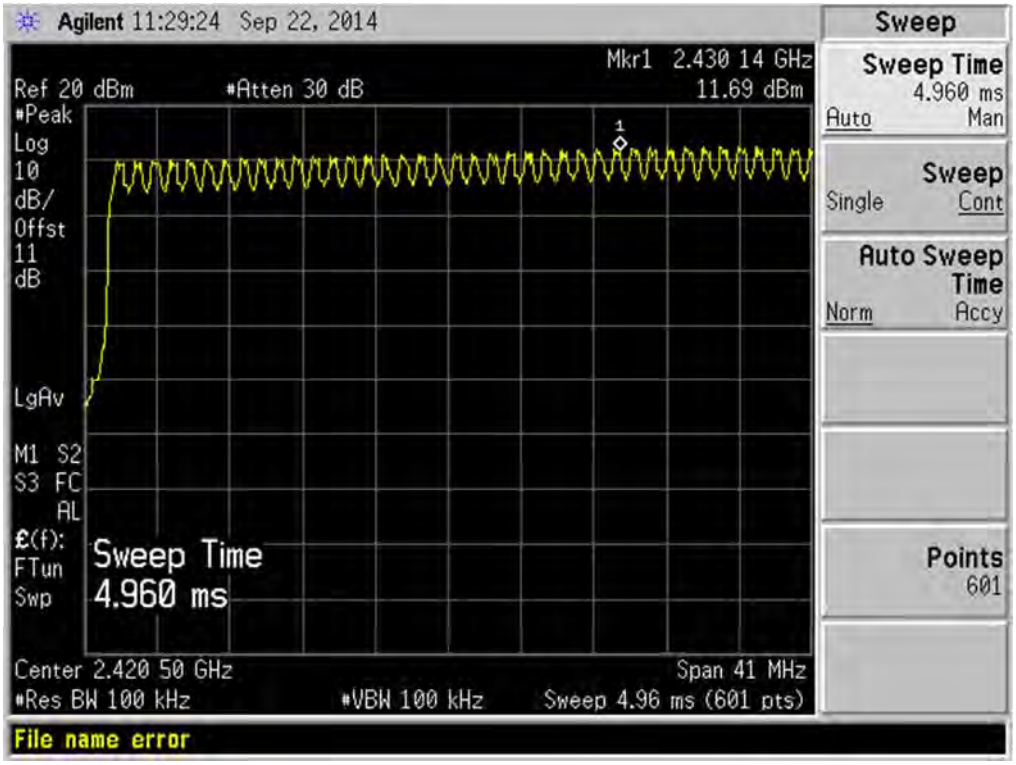
GFSK 2.4GHz~2.4415GHz



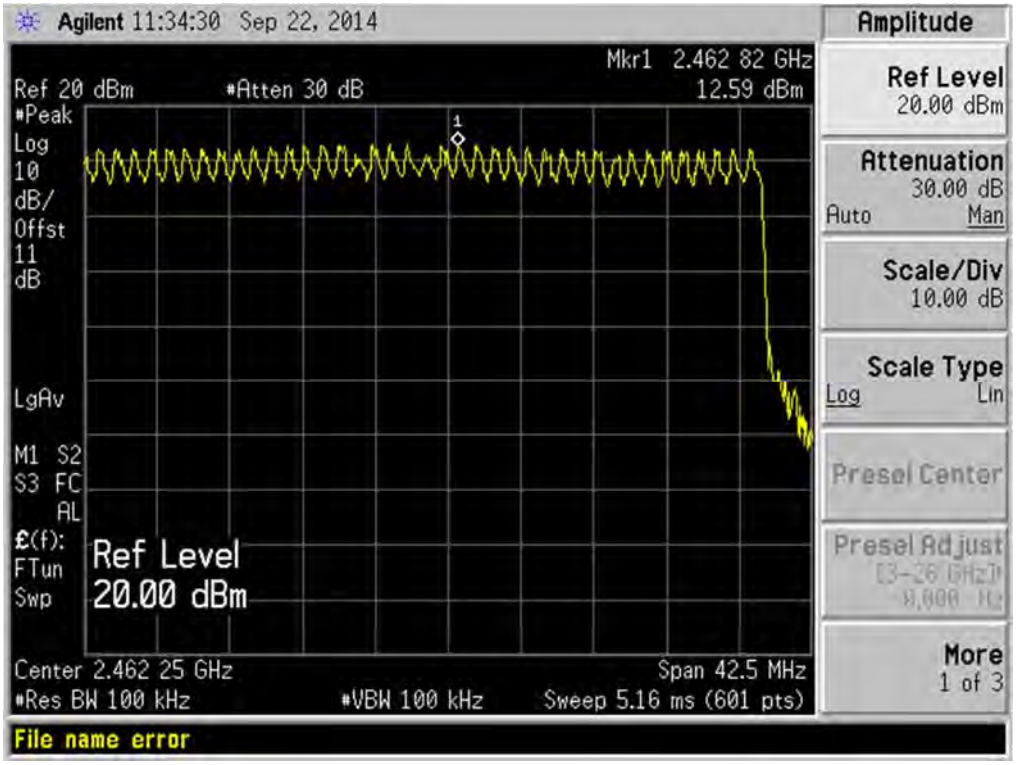
GFSK 2.4415GHz~2.4835GHz



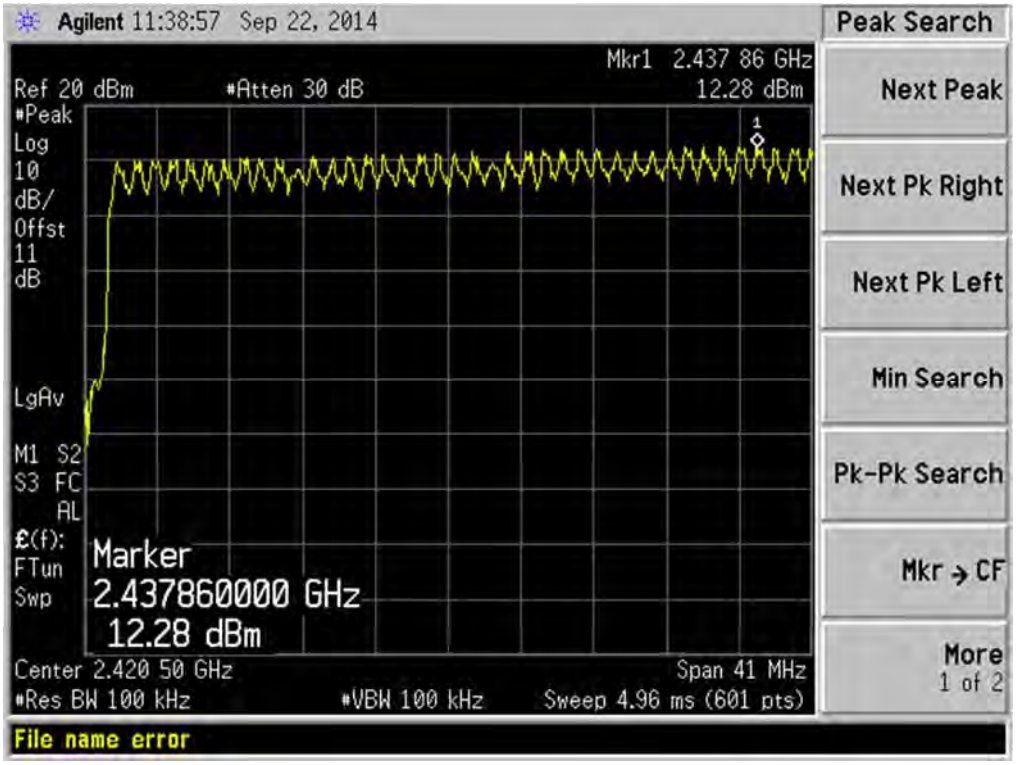
Π/4-DQPSK 2.4GHz~2.4415GHz



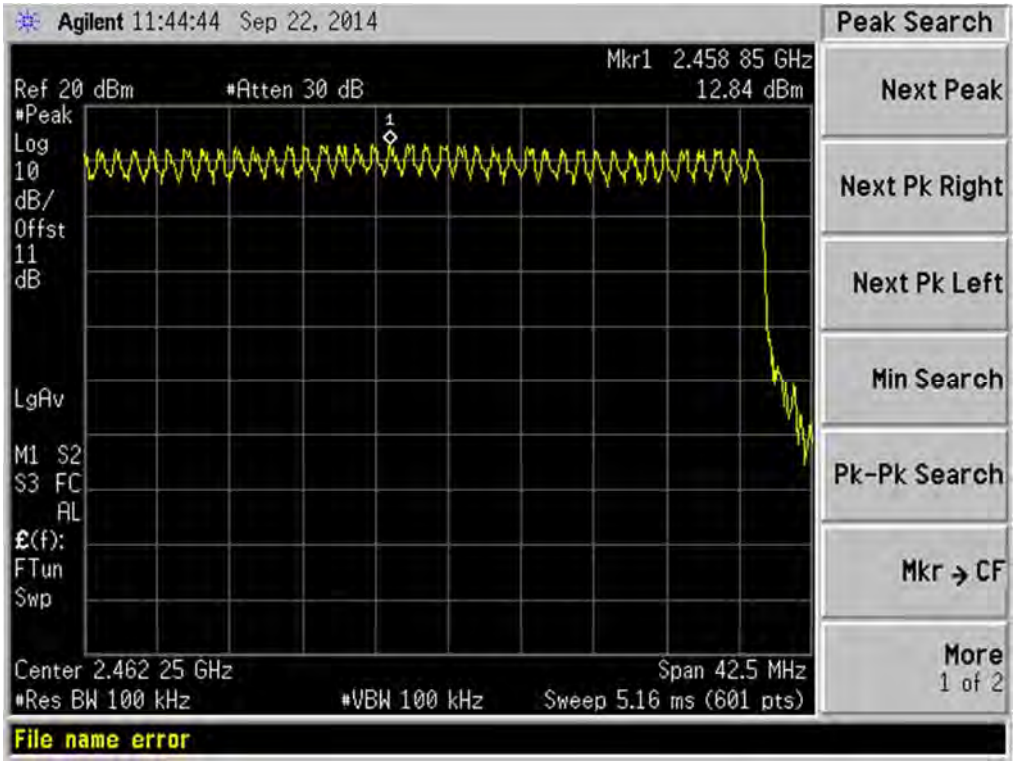
Π/4-DQPSK 2.4415GHz~2.4835GHz



8-DPSK 2.4GHz~2.4415GHz



8-DPSK 2.4415GHz~2.4835GHz



A.2 Peak Output Power

Test Data

GFSK Mode:

Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	mW	dBm	mW	
Low	2402	9.70	9.33	30	1000	PASS
Middle	2441	12.09	16.18			PASS
High	2480	12.03	15.96			PASS

∏/4-DQPSK Mode:

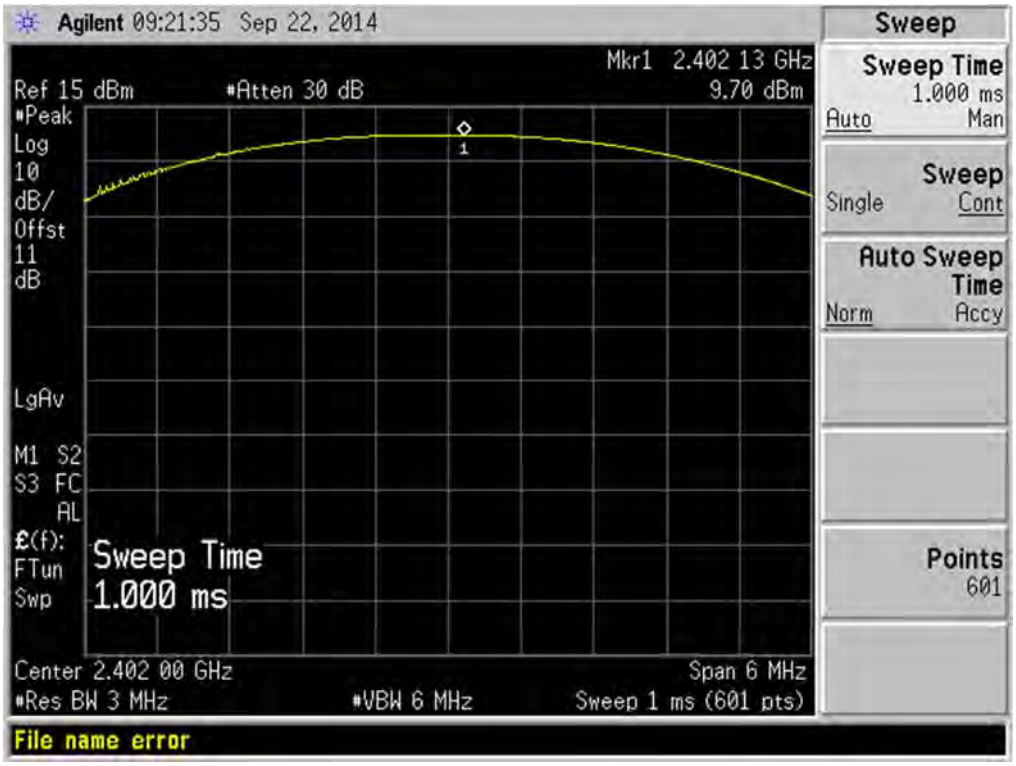
Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	mW	dBm	mW	
Low	2402	11.60	14.45	30	1000	PASS
Middle	2441	13.83	24.15			PASS
High	2480	13.46	22.18			PASS

8-DPSK Mode:

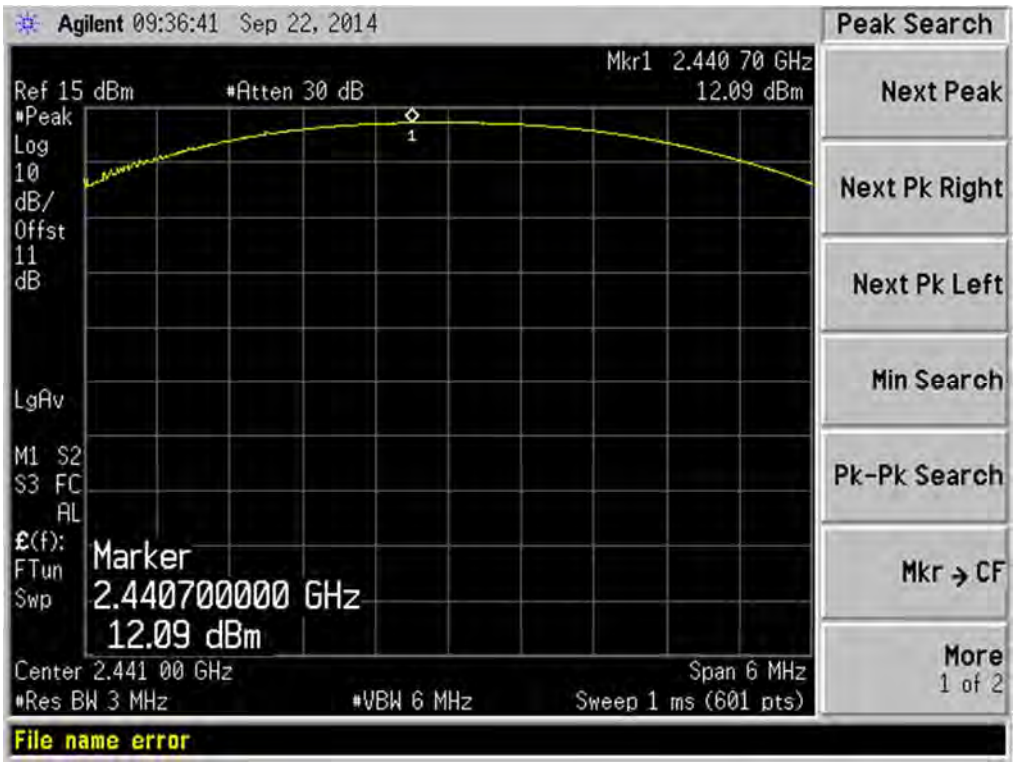
Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	mW	dBm	mW	
Low	2402	12.51	17.82	30	1000	PASS
Middle	2441	14.29	26.85			PASS
High	2480	13.66	23.23			PASS

Test plots

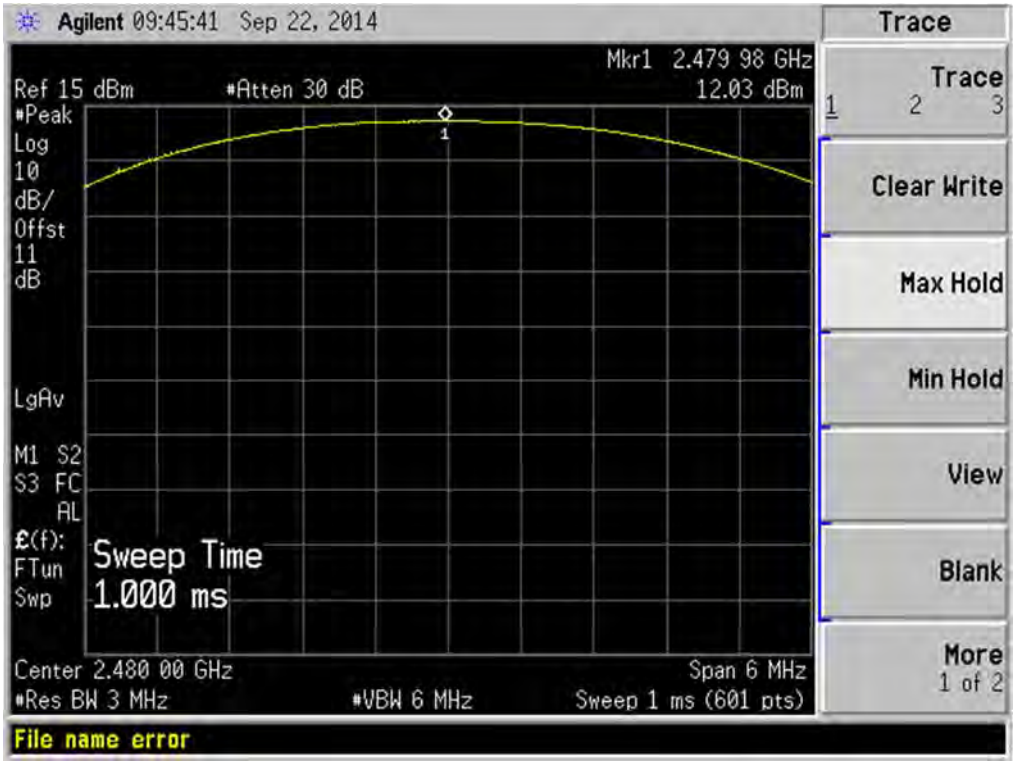
GFSK LOW CHANNEL



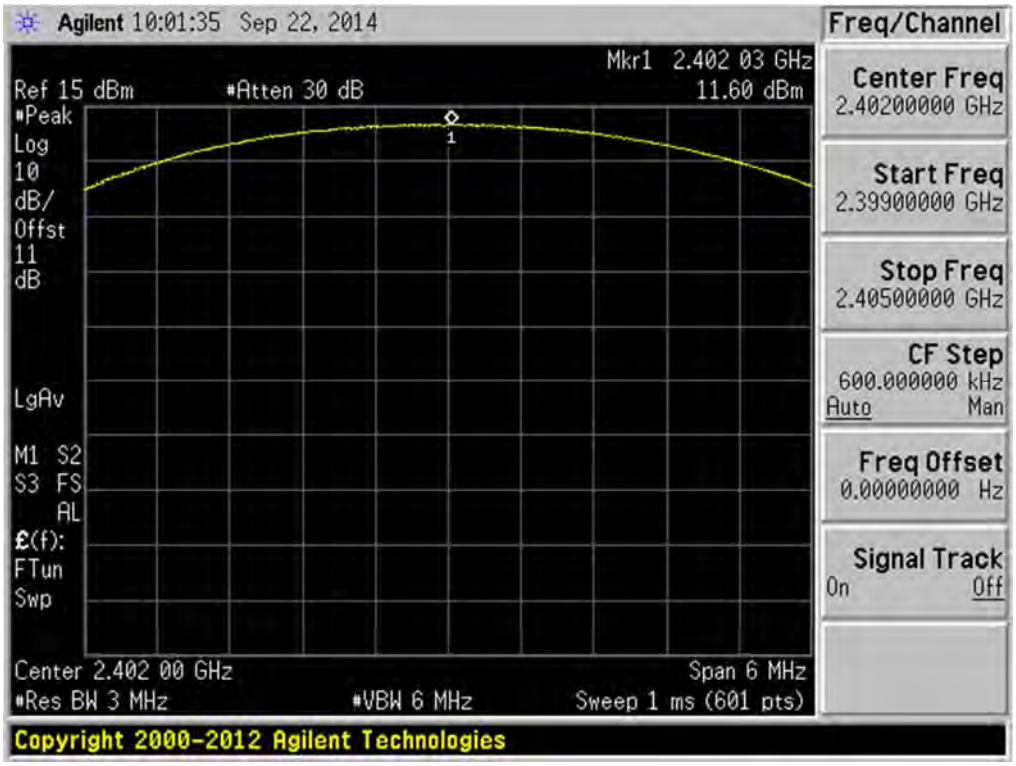
GFSK MID CHANAEL



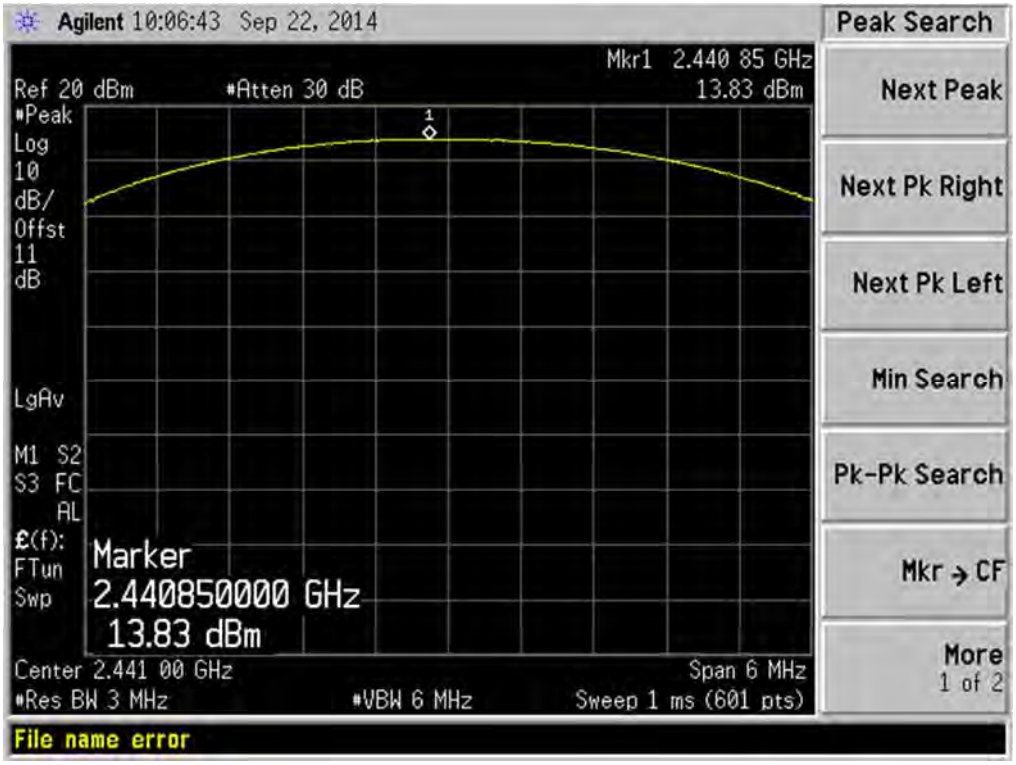
GFSK HIGH CHANNEL



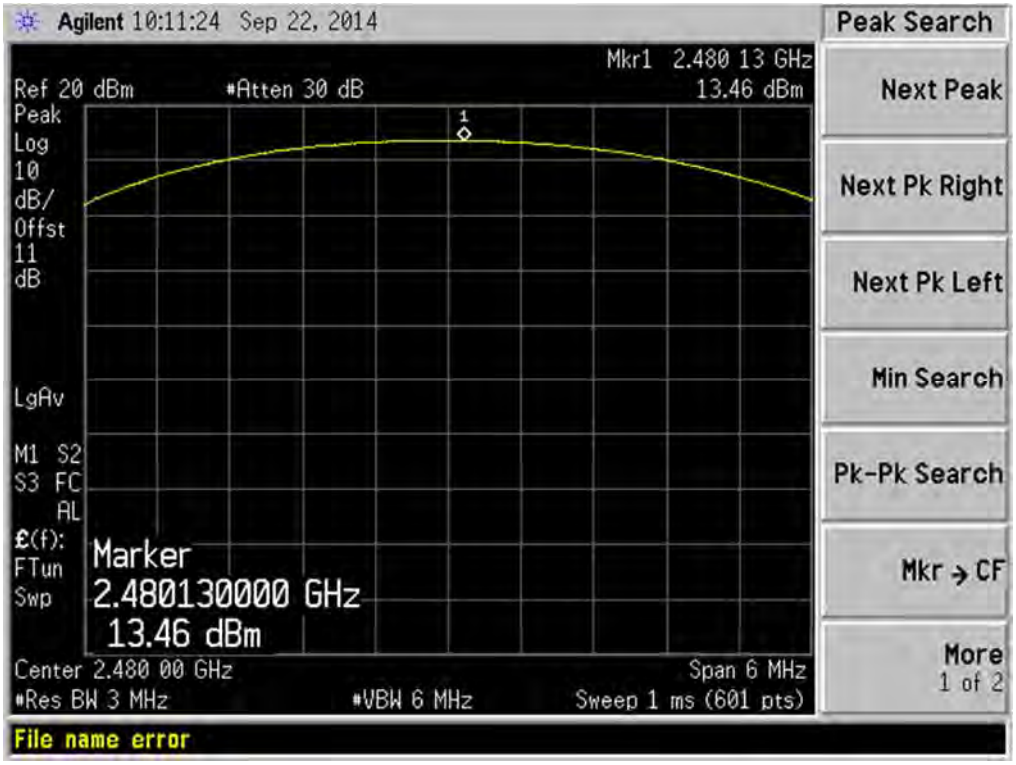
Π/4-DQPSK LOW CHANNEL



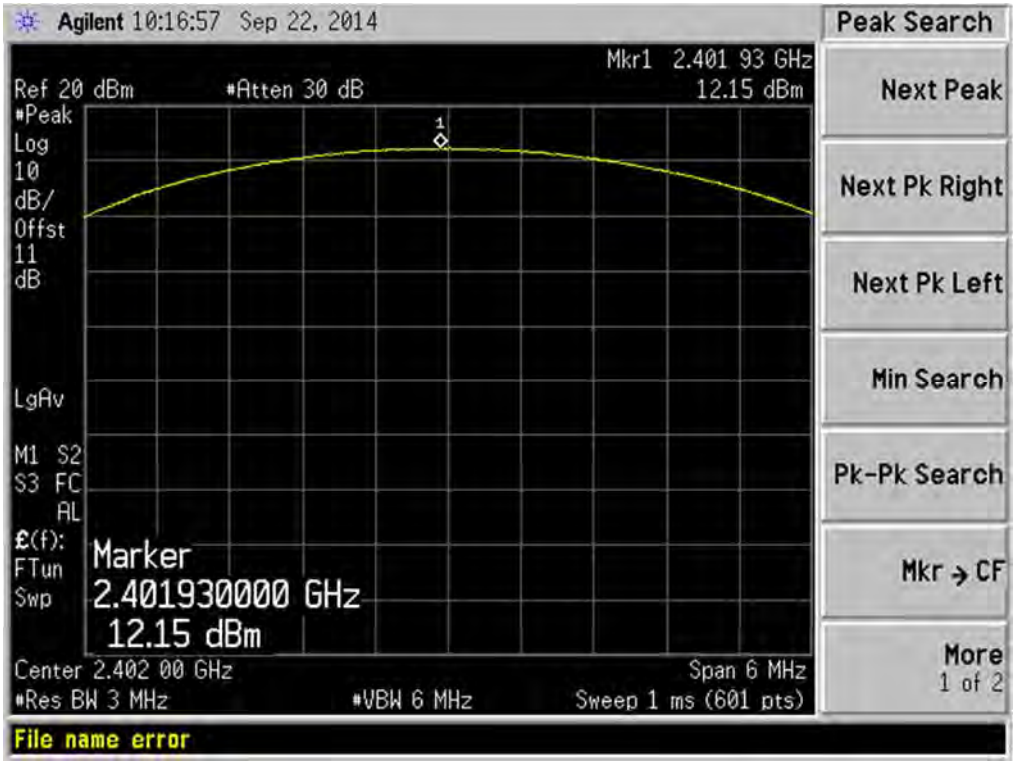
Π/4-DQPSK MID CHANAEL



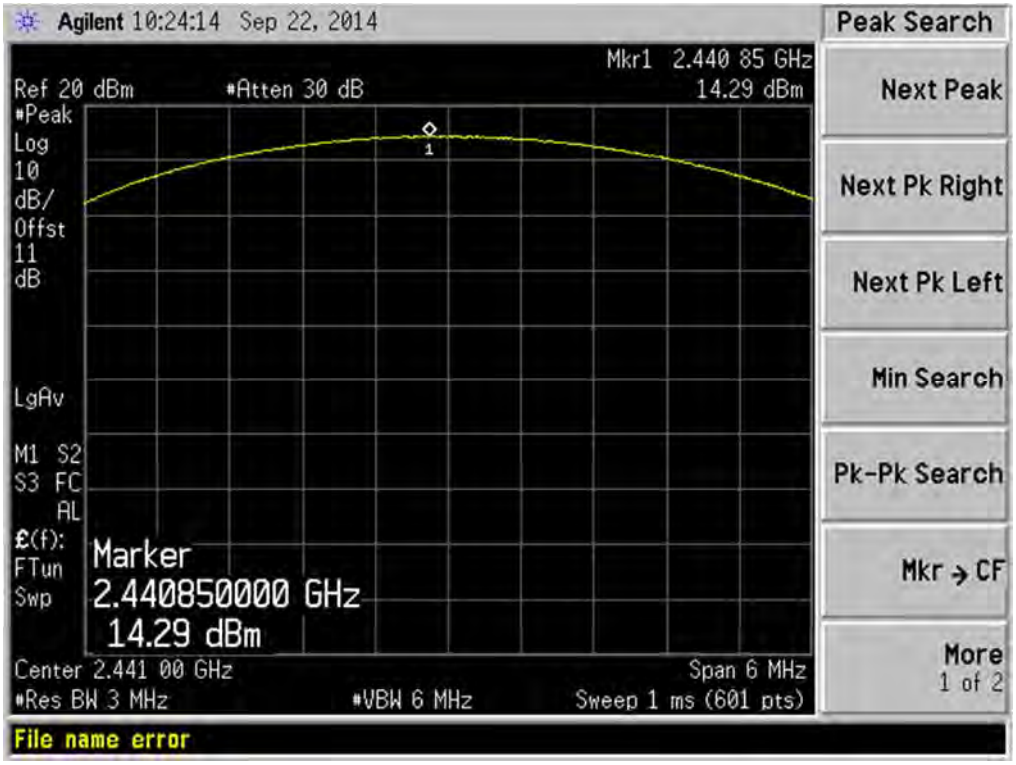
Π/4-DQPSK HIGH CHANNEL



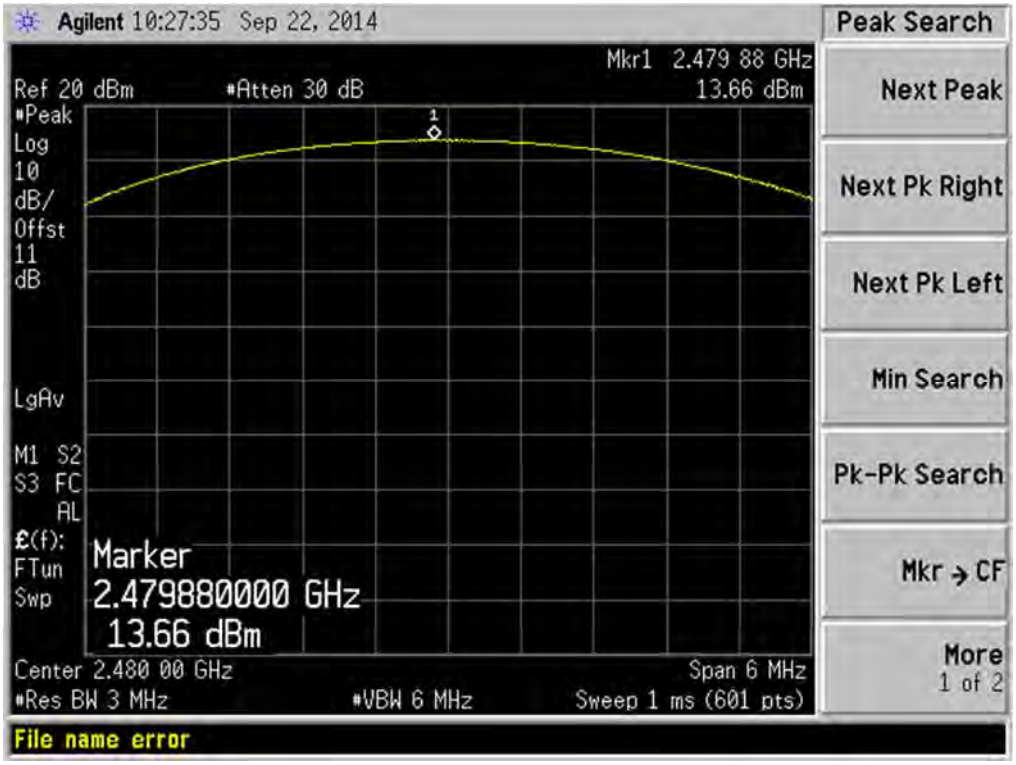
8-DPSK LOW CHANNEL



8-DPSK MID CHANAEL



8-DPSK HIGH CHANNEL



A.3 20dB and 99% bandwidth

Test Data

GFSK Mode:

Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.239	1.0145
Middle	2441	1.215	1.0493
High	2480	1.197	1.0139

∏/4-DQPSK Mode:

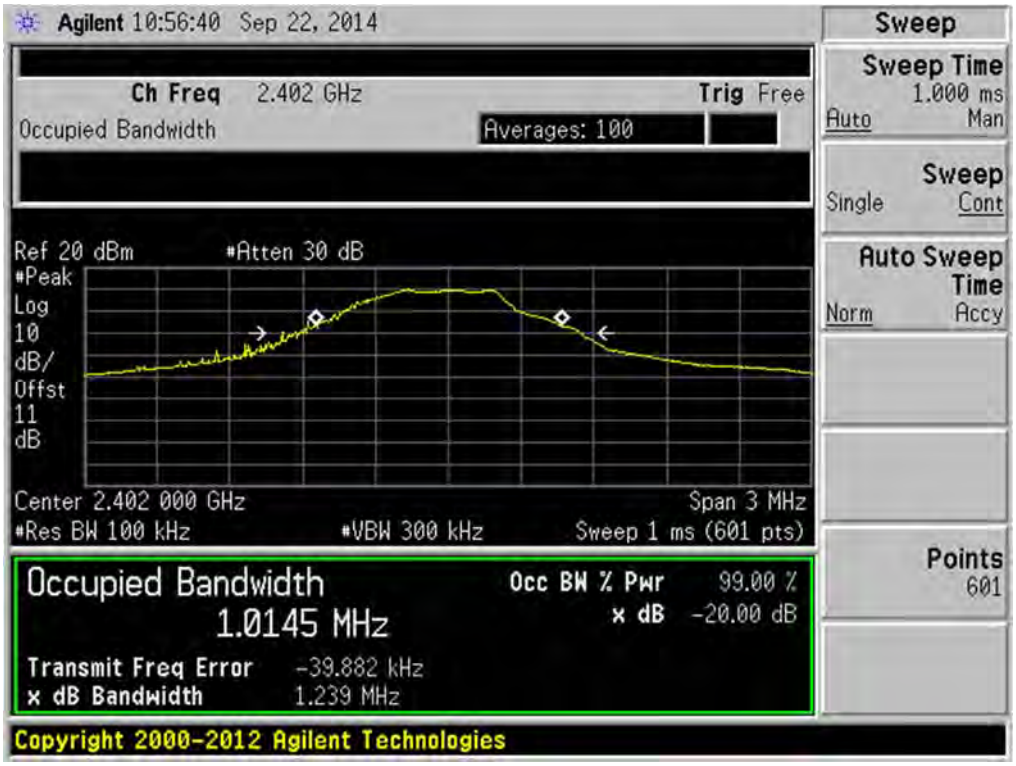
Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.387	1.2085
Middle	2441	1.399	1.2261
High	2480	1.408	1.2263

8-DPSK Mode:

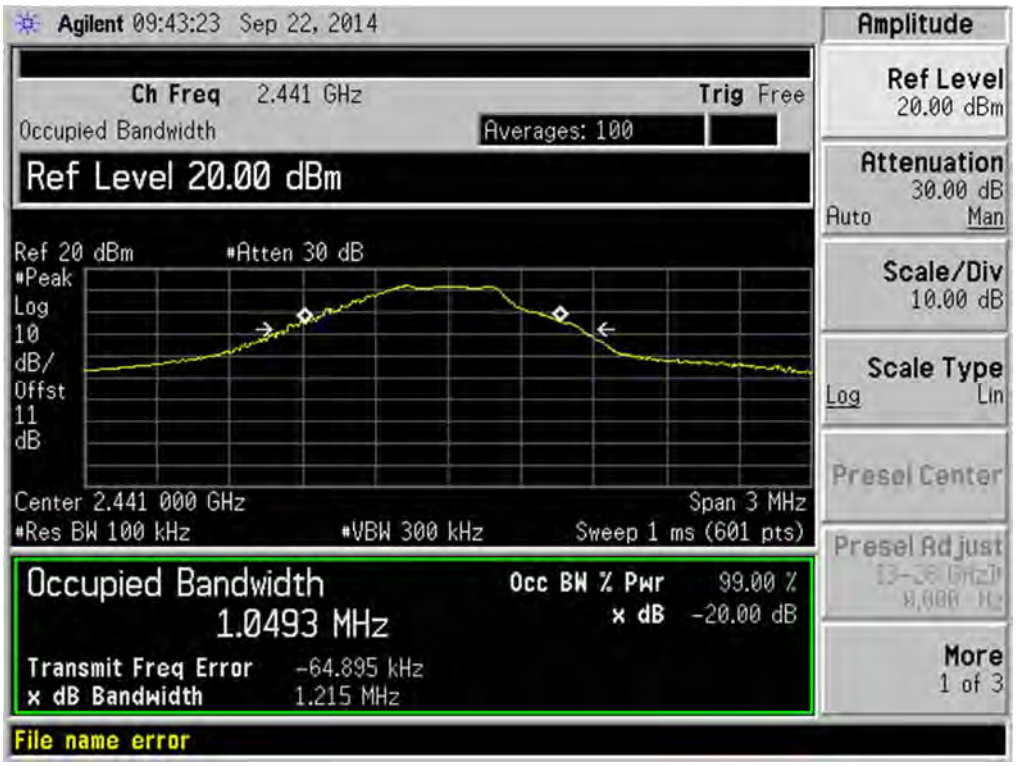
Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.404	1.2400
Middle	2441	1.381	1.2261
High	2480	1.383	1.2185

Test plots

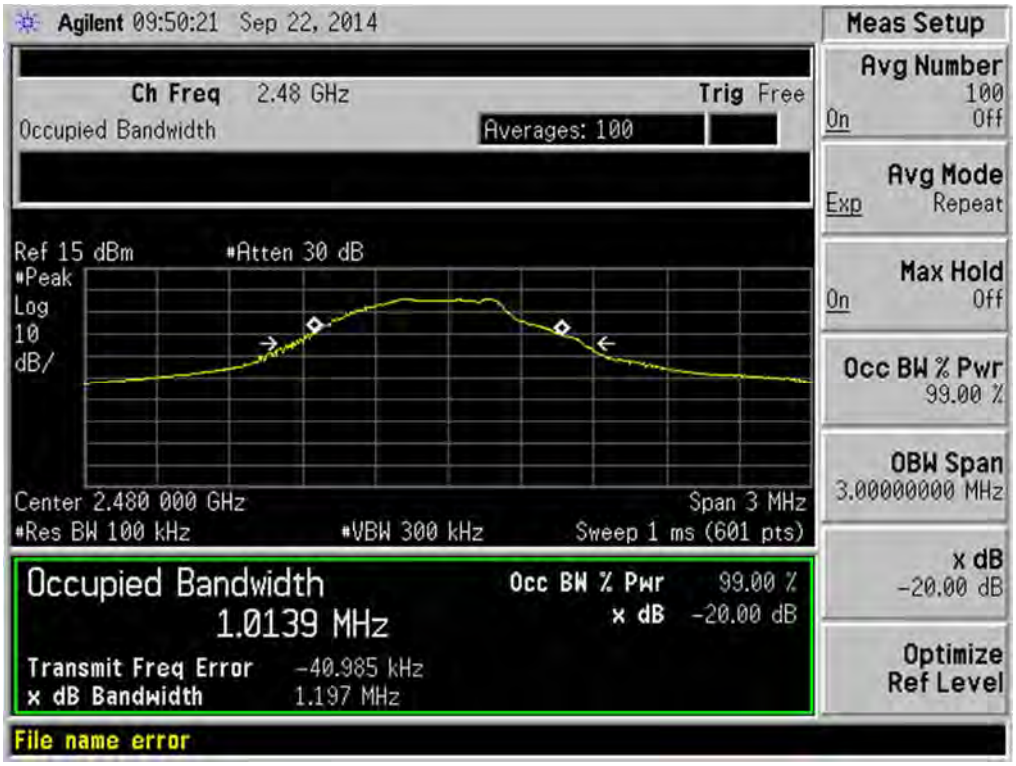
GFSK LOW CHANNEL



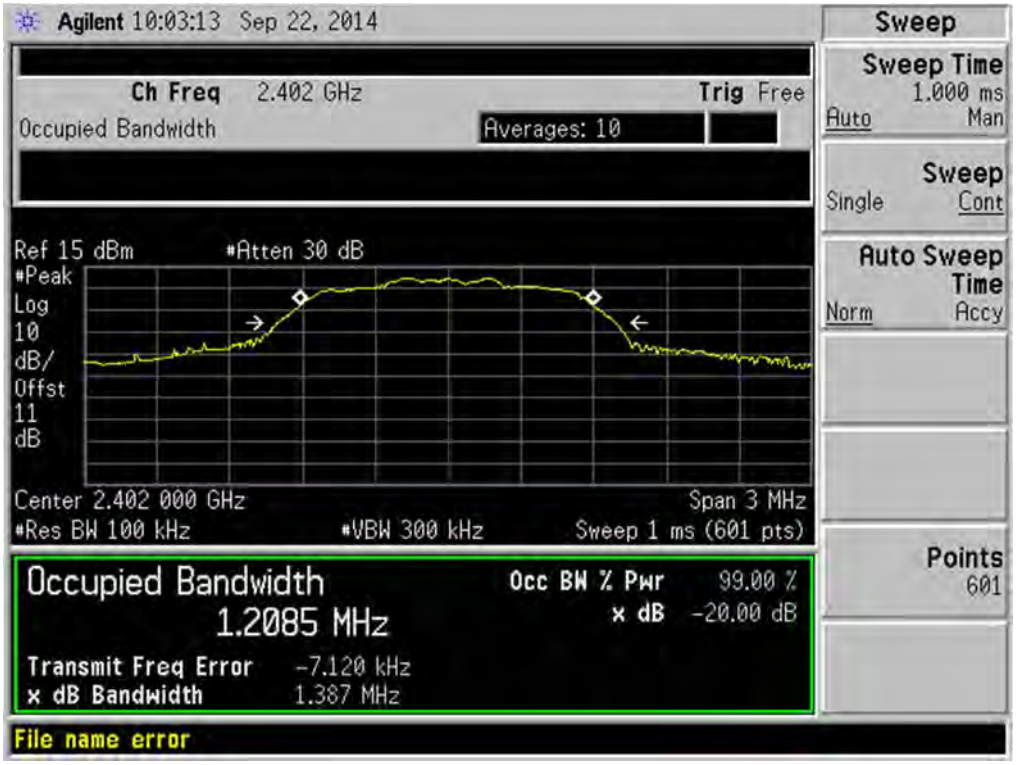
GFSK MID CHANAEL



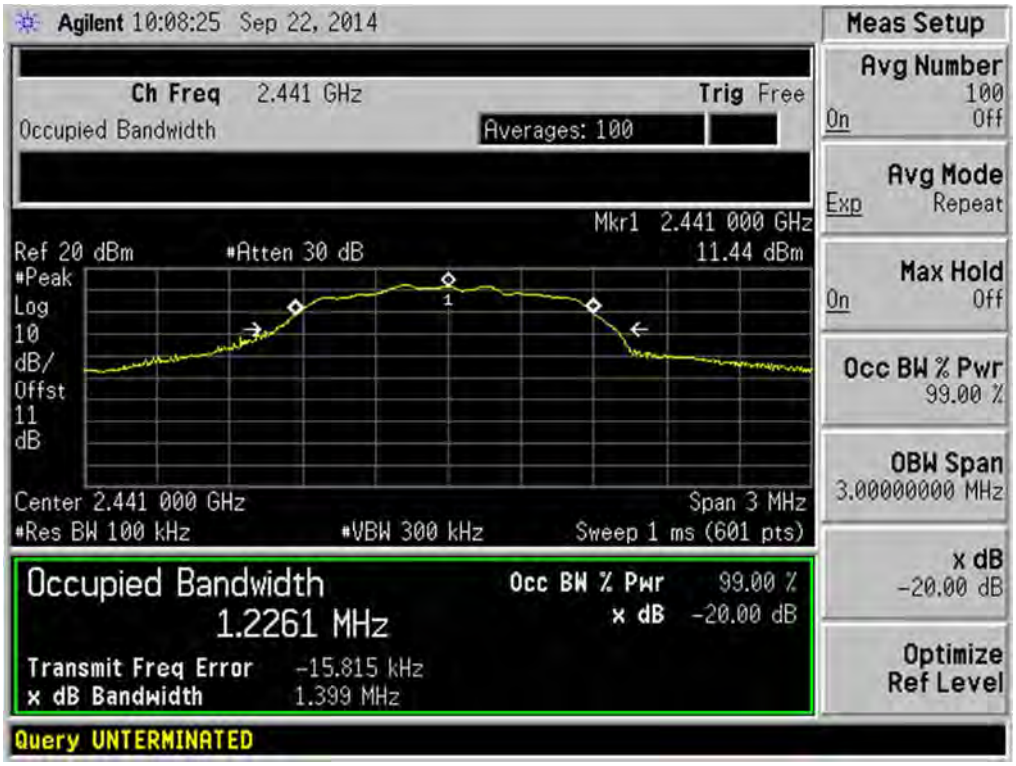
GFSK HIGH CHANNEL



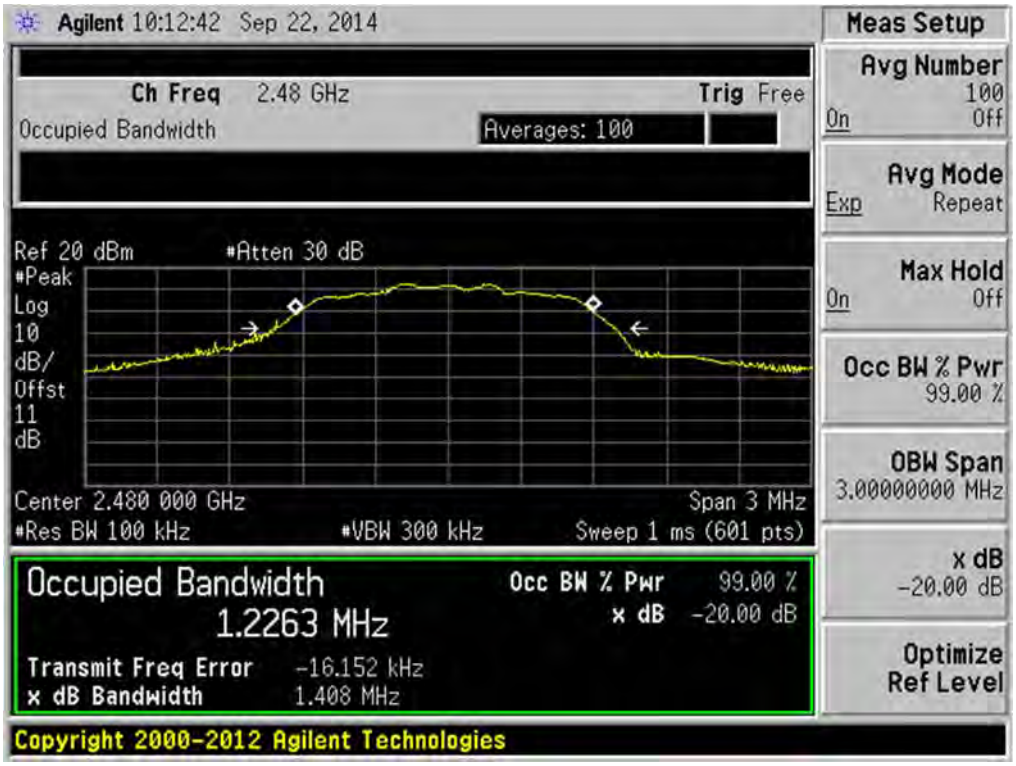
Π/4-DQPSK LOW CHANNEL



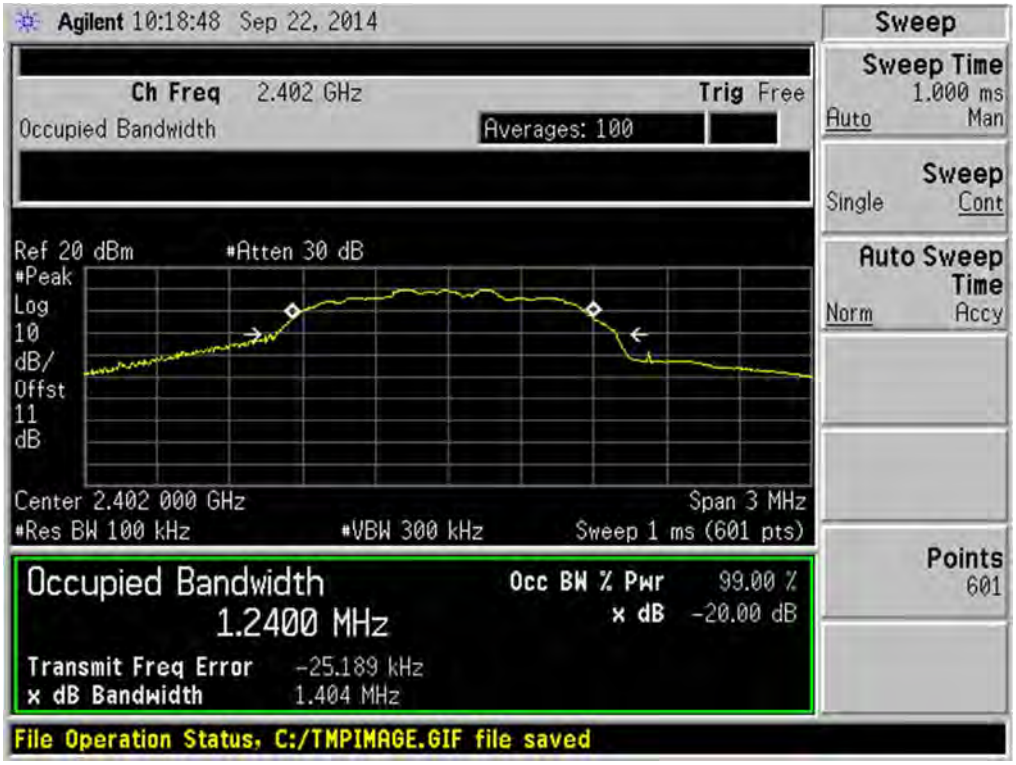
Π/4-DQPSK MID CHANAEL



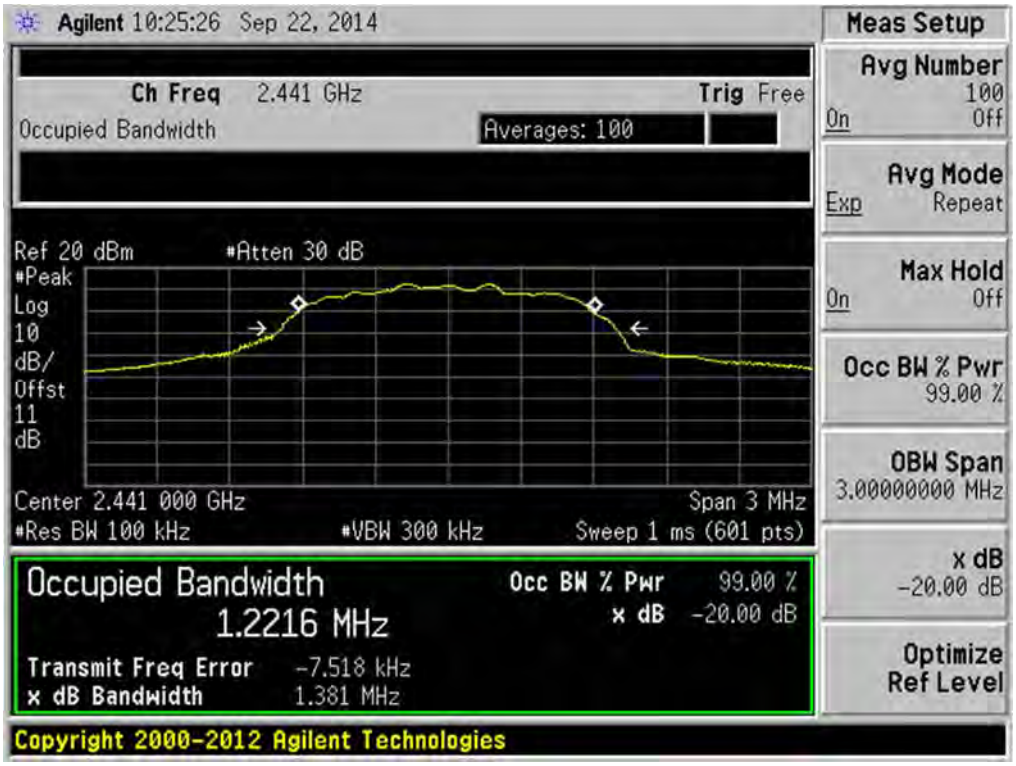
Π/4-DQPSK HIGH CHANNEL



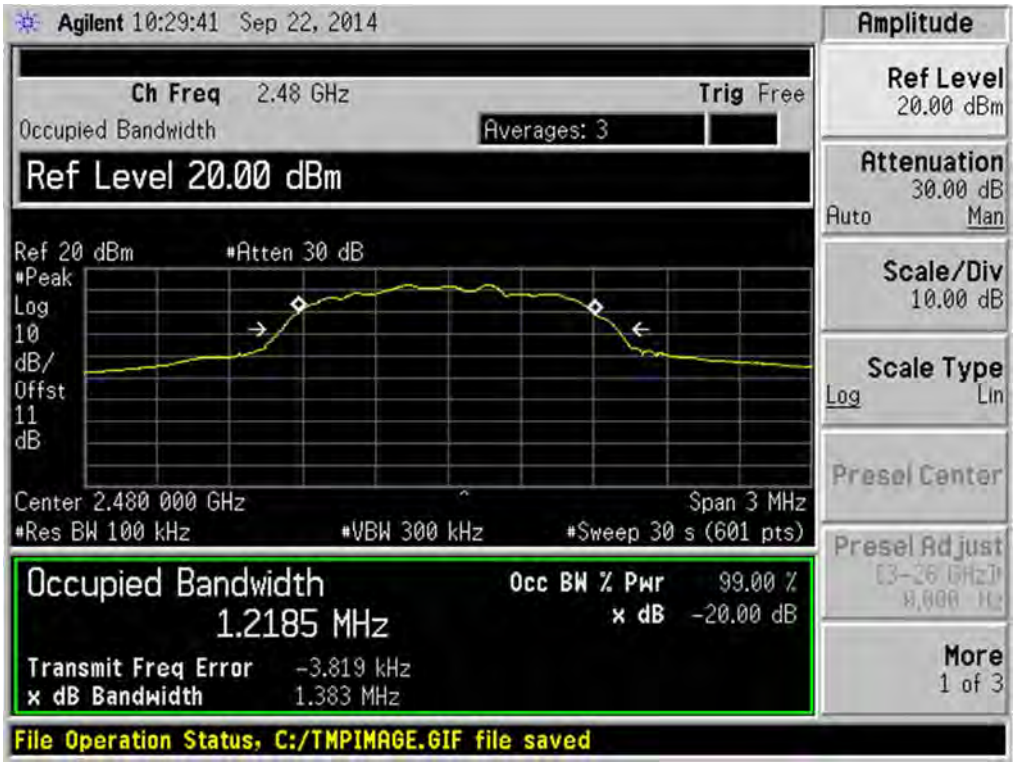
8-DPSK LOW CHANNEL



8-DPSK MID CHANAEL



8-DPSK HIGH CHANNEL



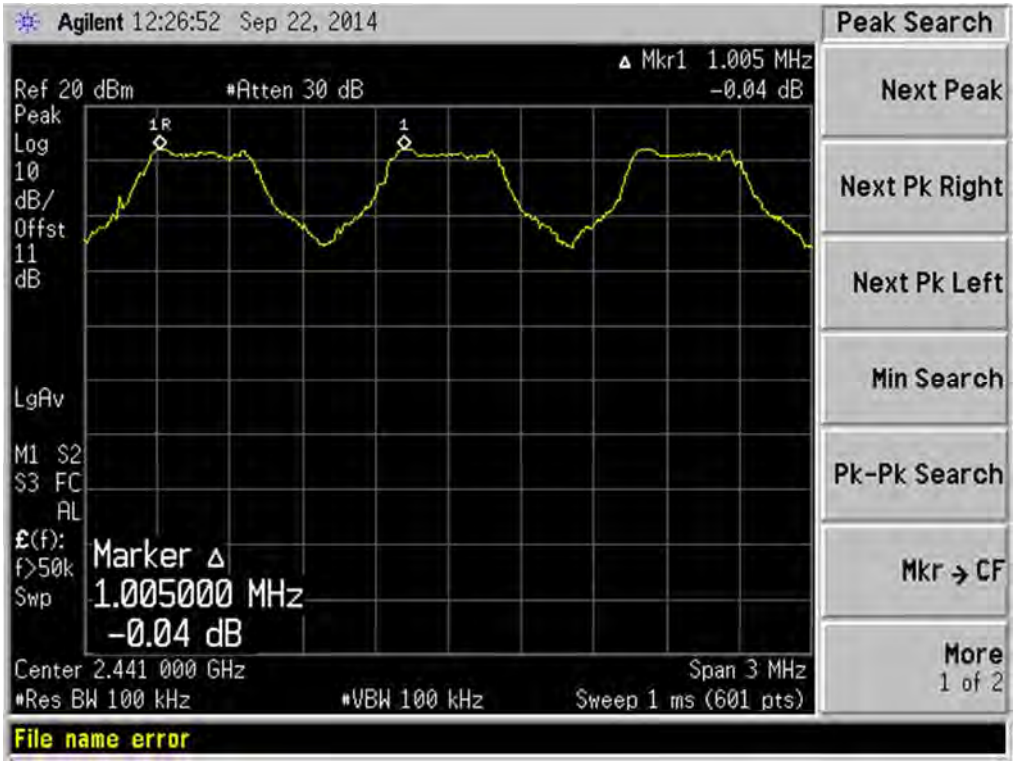
A.4 Hopping Frequency Separation

Test Data

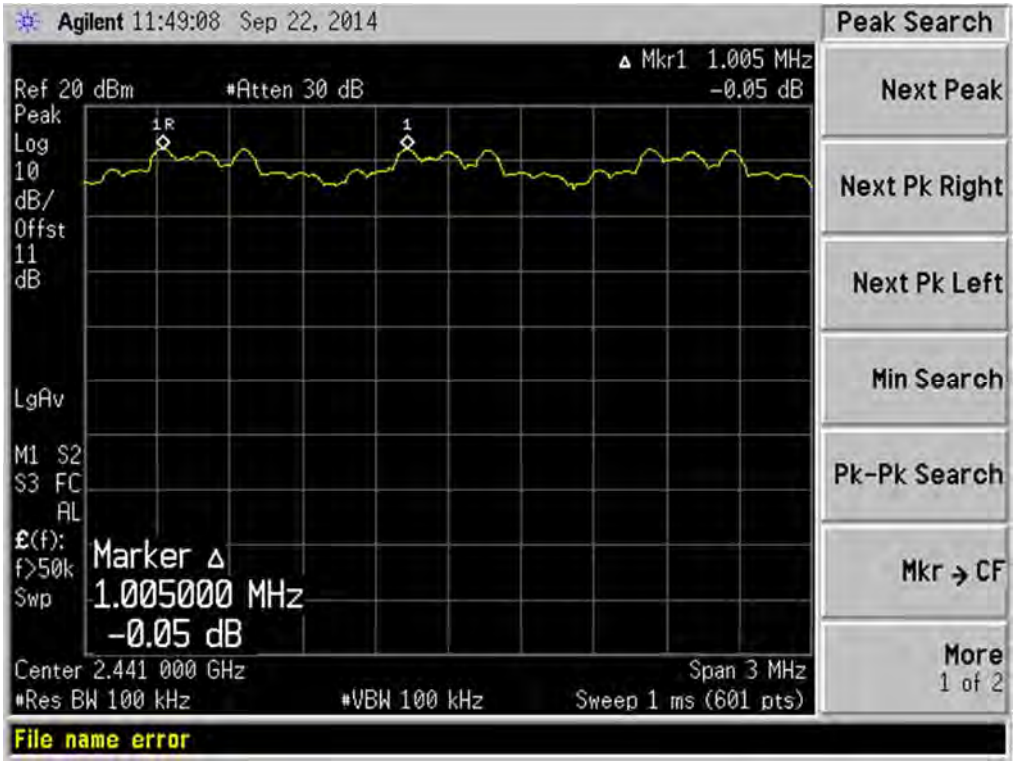
Mode	Frequency separation (MHz)	Max 20 dB Bandwidth (MHz)	Two-thirds of the 20dB bandwidth (MHz)	Verdict
GFSK	1.005	1.239	0.826	PASS
Π/4-DQPSK Mode	1.005	1.408	0.939	PASS
8-DPSK Mode	1.005	1.404	0.936	PASS

Test plots

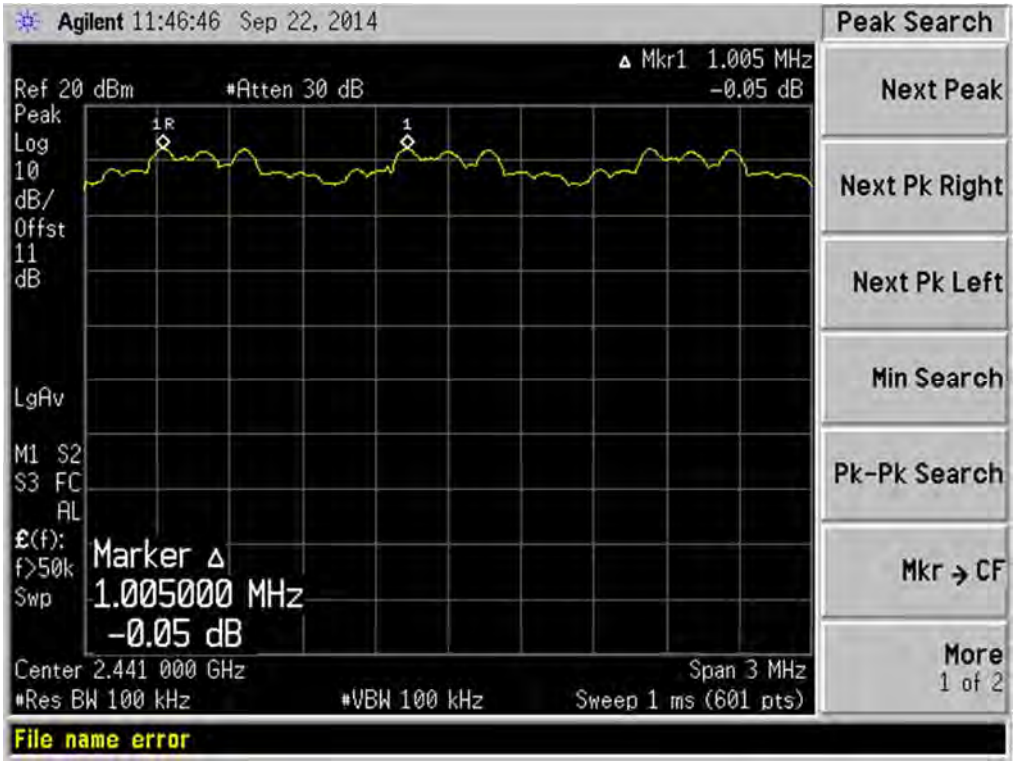
GFSK



Π/4-DQPSK



8-DPSK



A.5 Average Time of Occupancy

Test Data

GFSK Mode:

DH Packet	Pulse Width (ms)	Total of Dwell (ms)	Limit (sec)	Verdict
DH 1	0.4783	153.061	0.4	PASS
DH 3	1.733	277.289	0.4	PASS
DH 5	2.98	317.877	0.4	PASS

∏/4-DQPSK Mode:

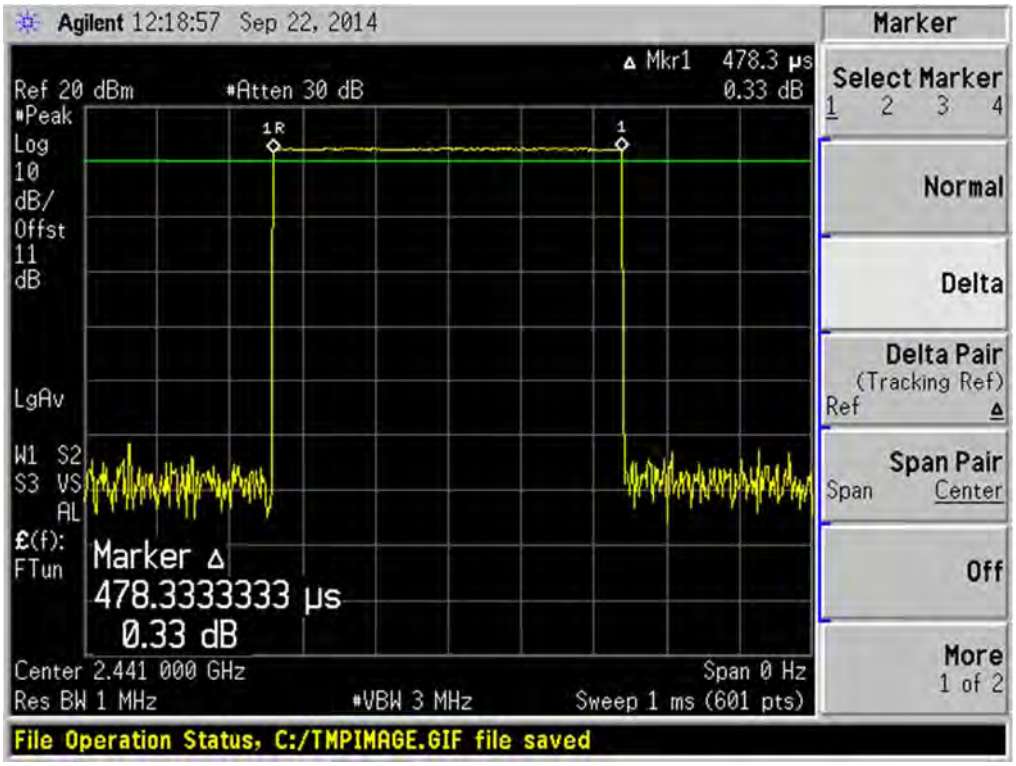
DH Packet	Pulse Width (ms)	Total of Dwell (ms)	Limit (sec)	Verdict
DH 1	0.4767	152.549	0.4	PASS
DH 3	1.727	276.329	0.4	PASS
DH 5	2.97	316.810	0.4	PASS

8-DPSK Mode:

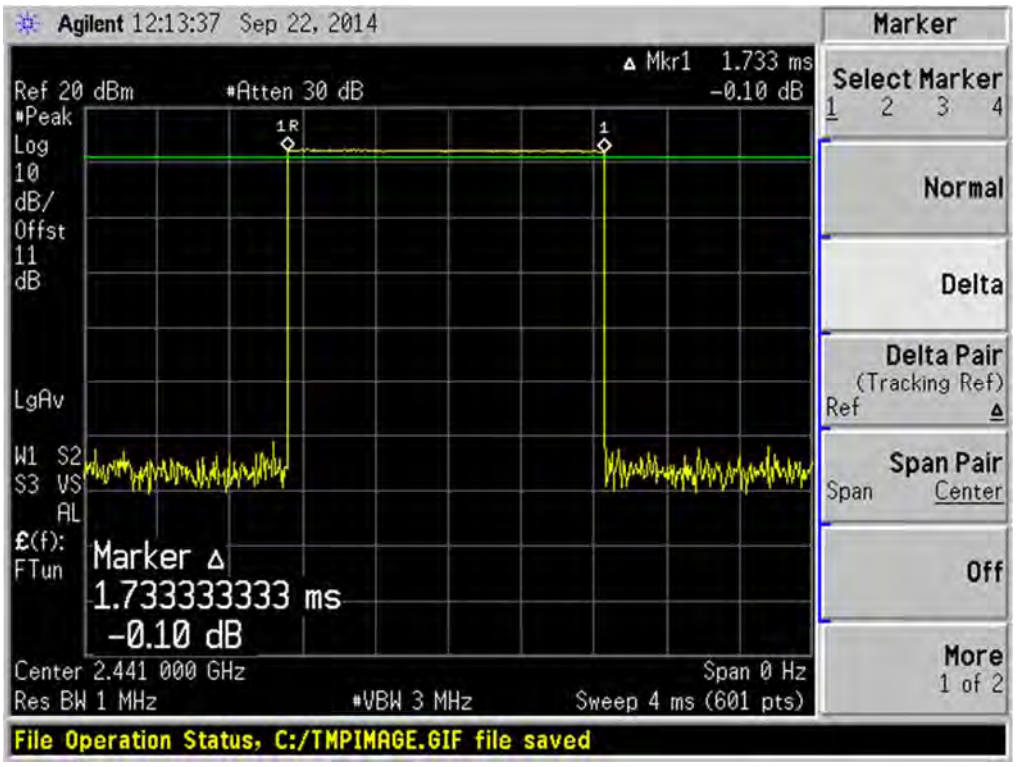
DH Packet	Pulse Width (ms)	Total of Dwell (ms)	Limit (sec)	Verdict
DH 1	0.4767	152.549	0.4	PASS
DH 3	1.727	276.329	0.4	PASS
DH 5	2.98	317.877	0.4	PASS

Test Plots

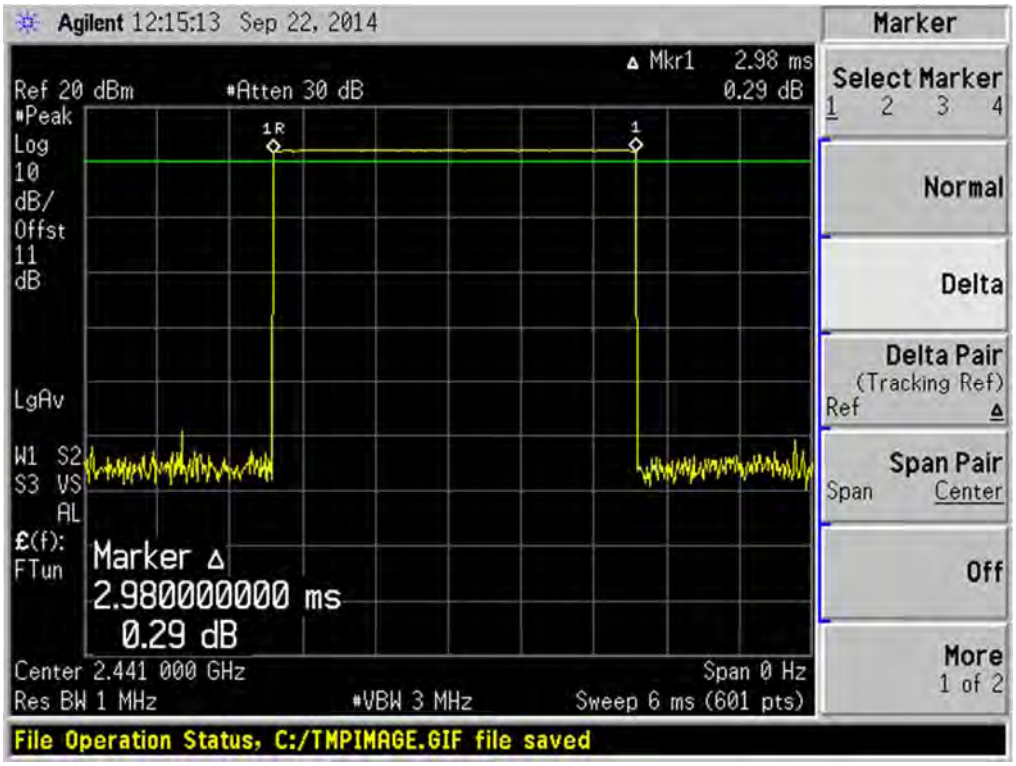
GFSK DH1



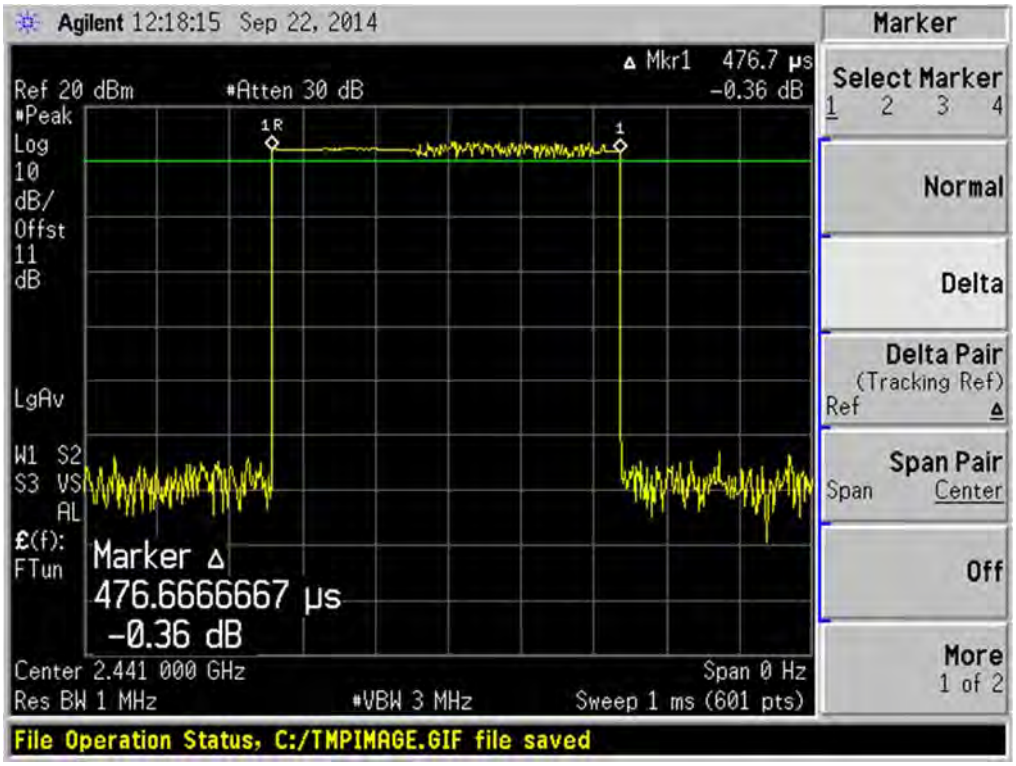
GFSK DH3



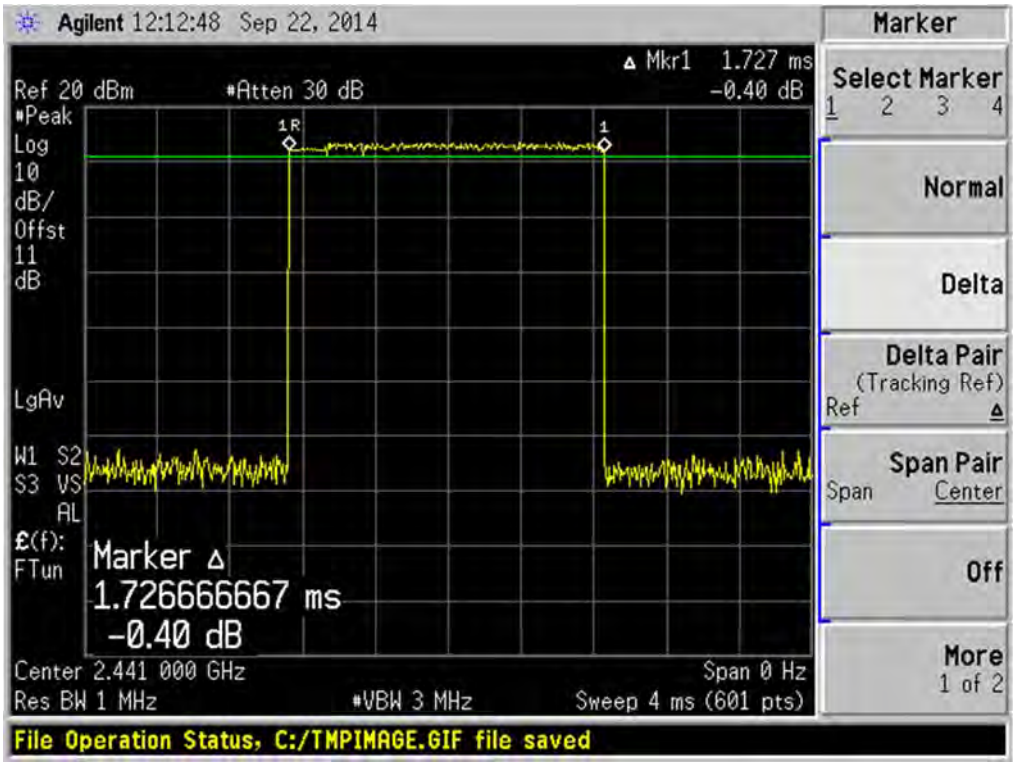
GFSK DH5



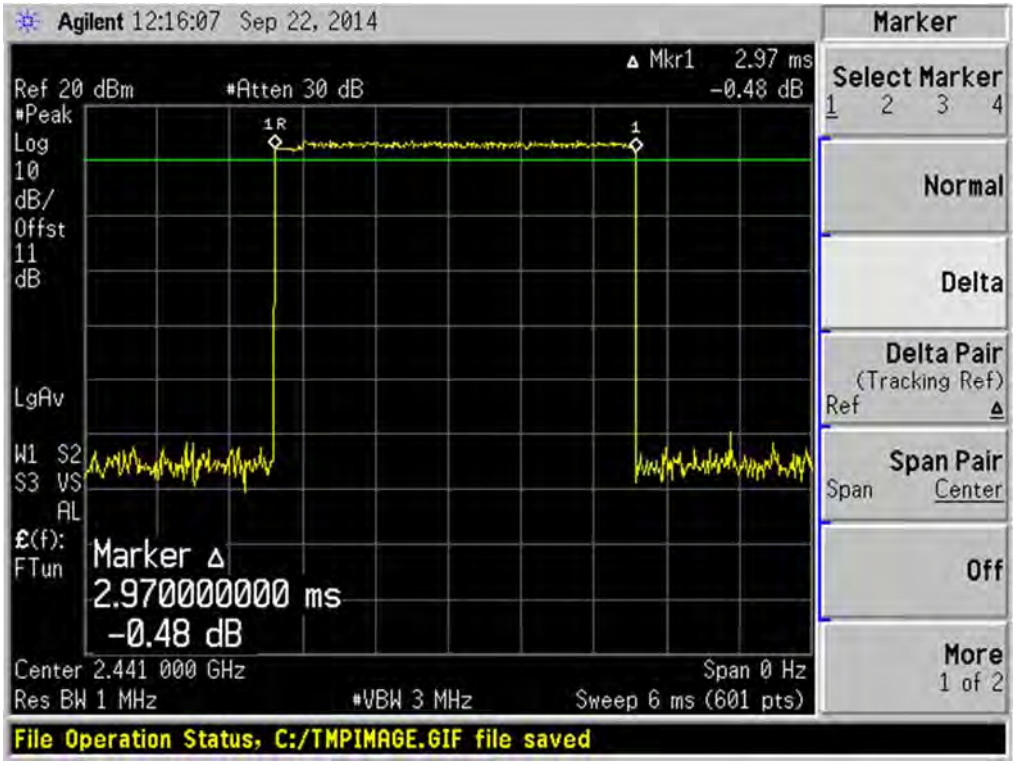
Π/4-DQPSK DH1



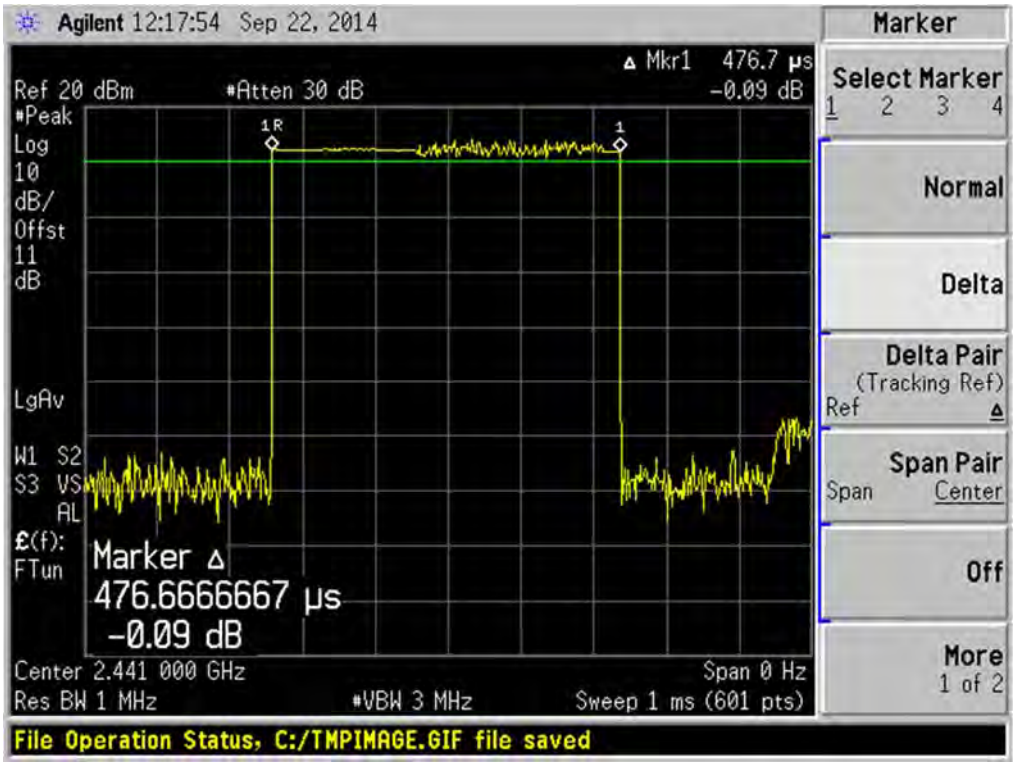
Π/4-DQPSK DH3



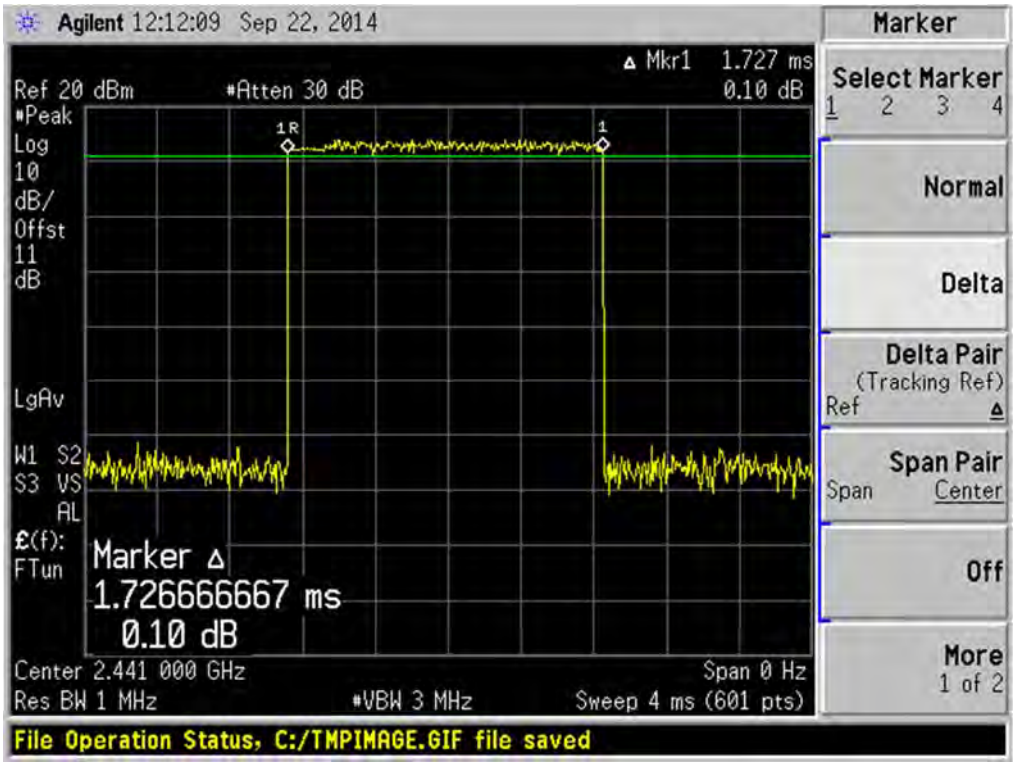
Π/4-DQPSK DH5



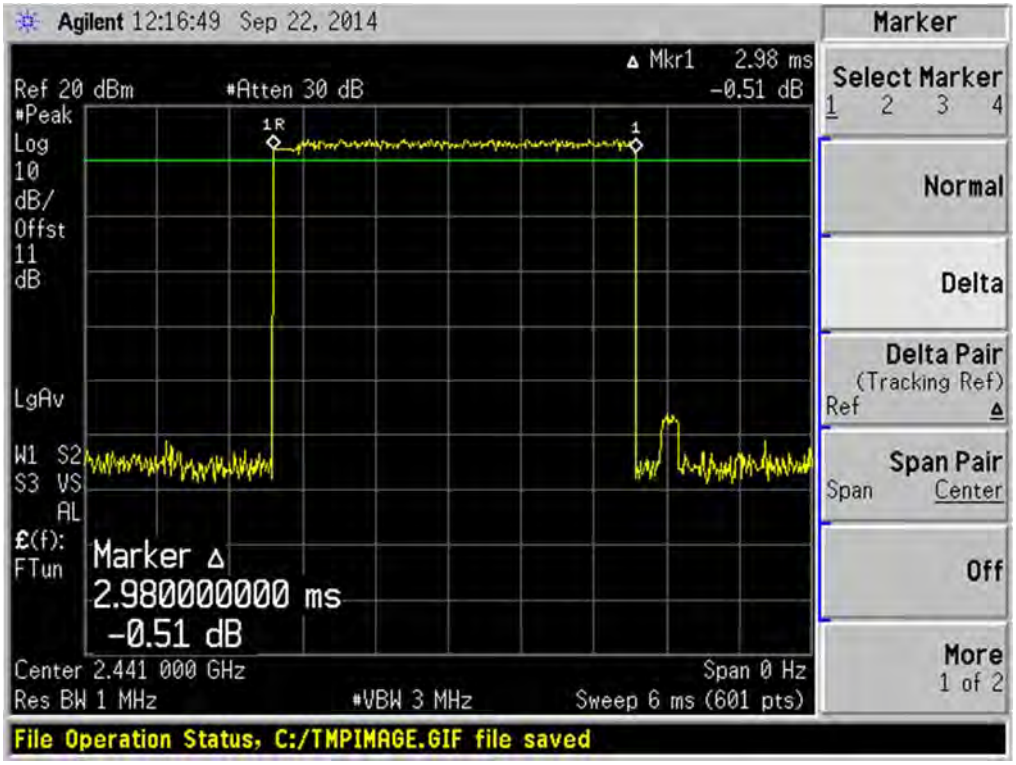
8-DPSK DH1



8-DPSK DH3



8-DPSK DH5


Agilent 12:16:49 Sep 22, 2014
Marker
Mkr1 2.98 ms
Ref 20 dBm
#Atten 30 dB
-0.51 dB
#Peak
Log
10
dB/
Offst
11
dB
1R
1
LgAv
W1 S2
S3 VS
AL
£(f):
FTun
Marker Δ
2.980000000 ms
-0.51 dB
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 3 MHz
Sweep 6 ms (601 pts)
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref
Span Pair
Span Center
Off
More
1 of 2
File Operation Status, C:/TMPIMAGE.GIF file saved

A.6 Conducted Spurious Emissions

Test Data

GFSK Mode:

Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated 20 dBc Limit	
Low	2402	-44.39	9.45	-10.6	PASS
Middle	2441	-44.21	11.82	-8.2	PASS
High	2480	-44.82	11.66	-8.3	PASS

∏/4-DQPSK Mode:

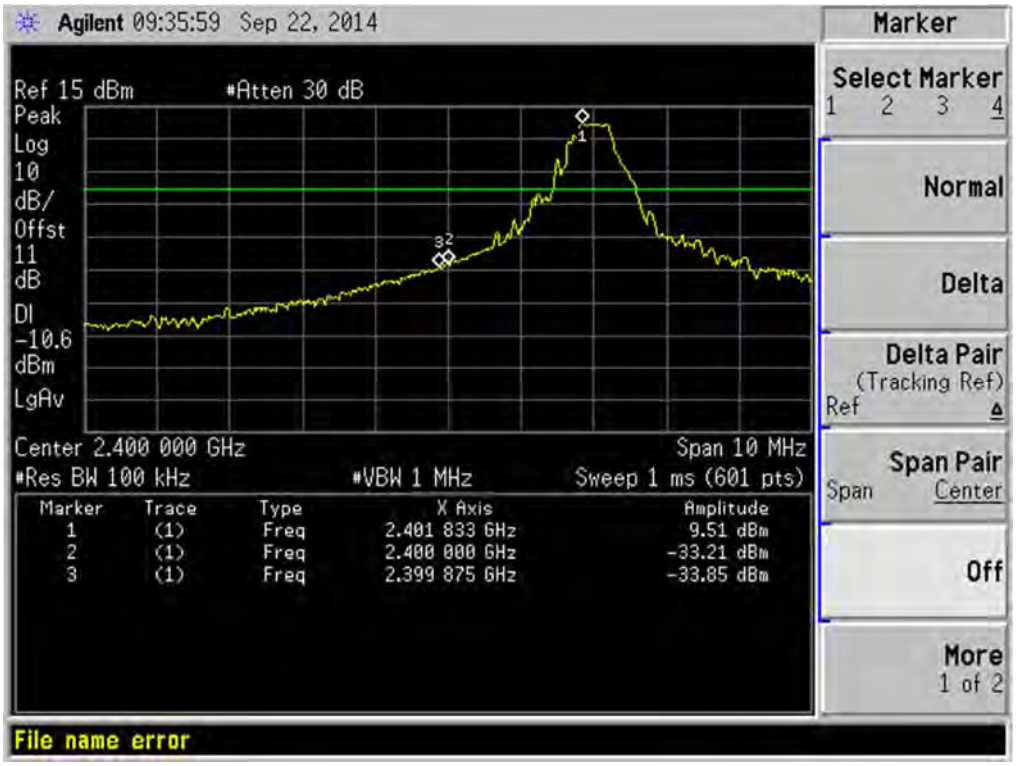
Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated 20 dBc Limit	
Low	2402	-44.45	9.00	-11.0	PASS
Middle	2441	-43.81	10.40	-9.6	PASS
High	2480	-43.59	12.04	-8.0	PASS

8-DPSK Mode:

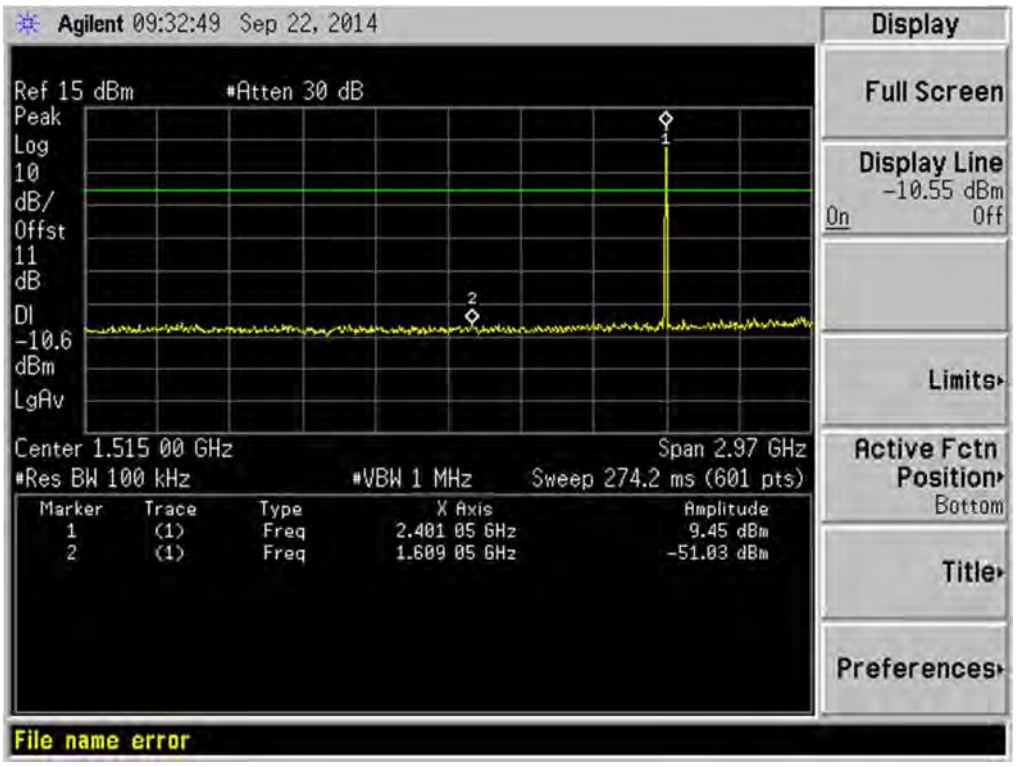
Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated 20 dBc Limit	
Low	2402	-43.66	9.65	-10.4	PASS
Middle	2441	-44.75	11.99	-8.0	PASS
High	2480	-43.83	12.09	-7.9	PASS

Test Plots

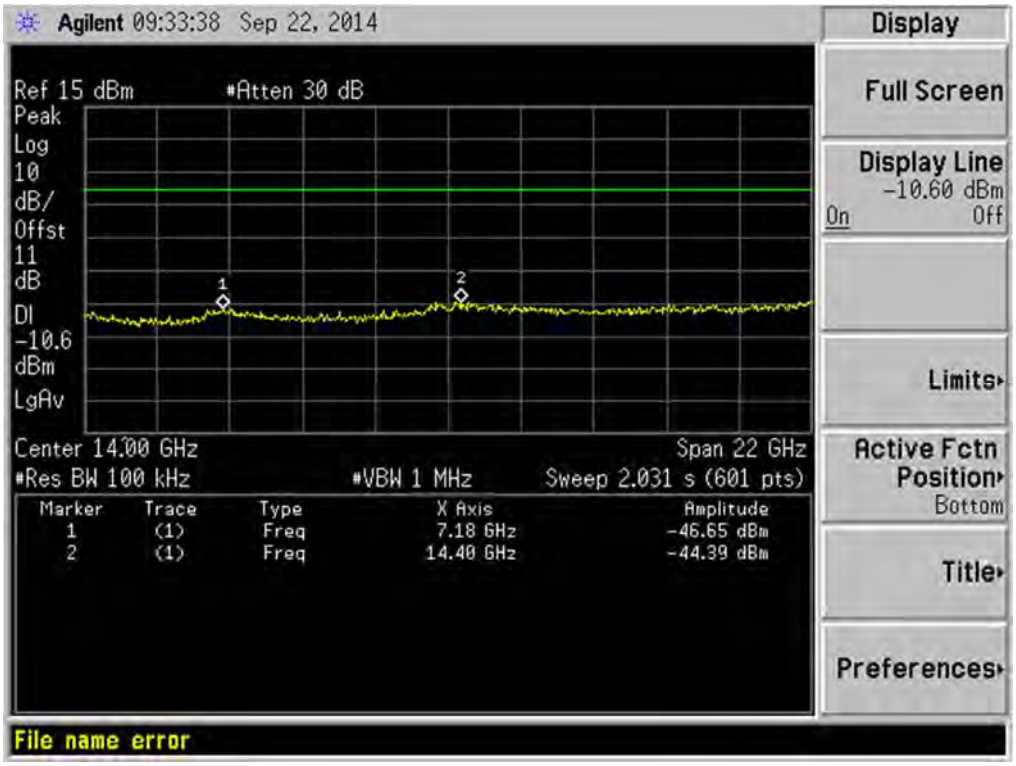
GFSK LOW CHANNEL , BANDEDGE



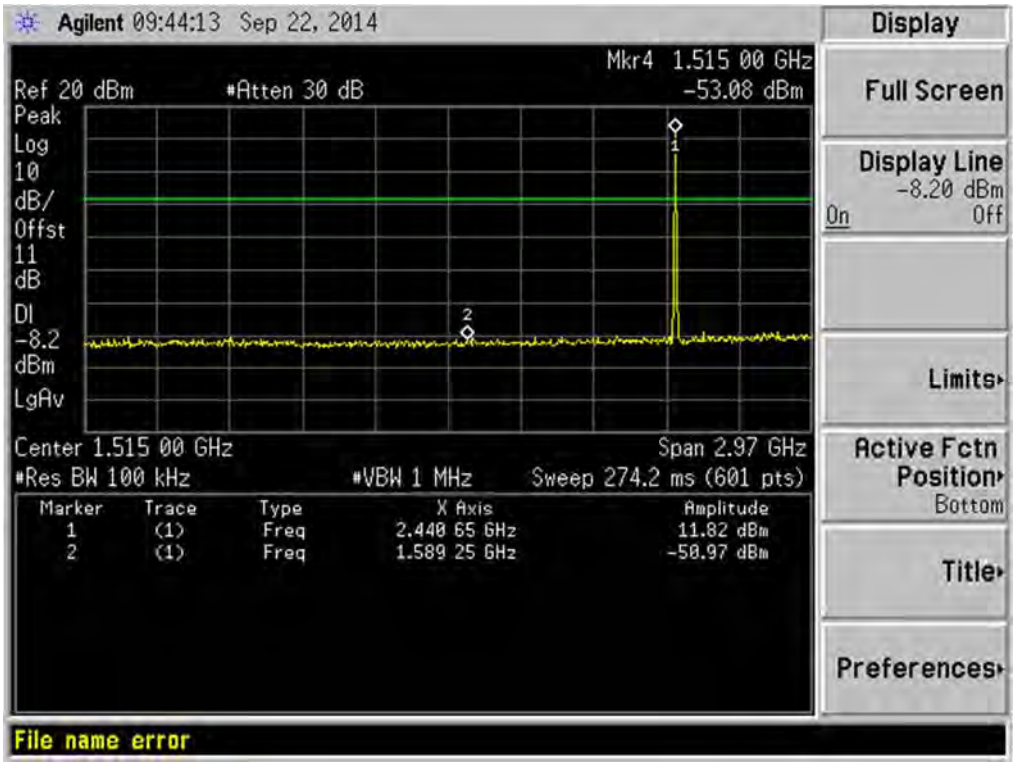
GFSK LOW CHANNEL , SPURIOUS 30MHz~3GHz



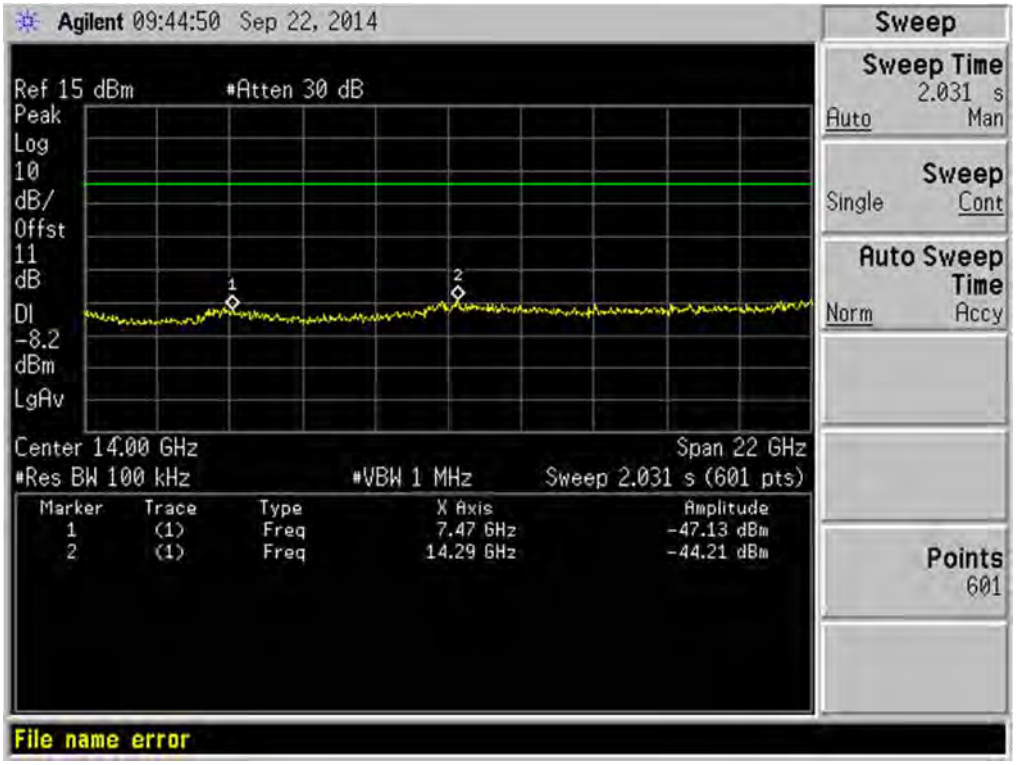
GFSK LOW CHANNEL , SPURIOUS 3GHz~25GHz



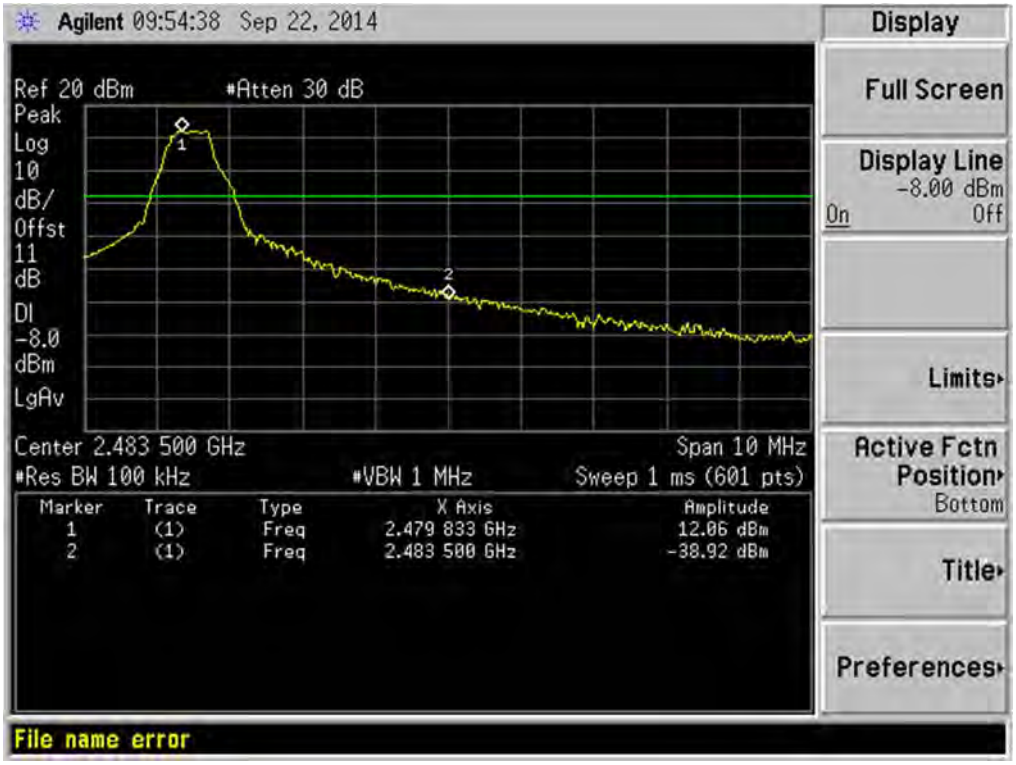
GFSK MID CHANNEL , SPURIOUS 30MHz~3GHz



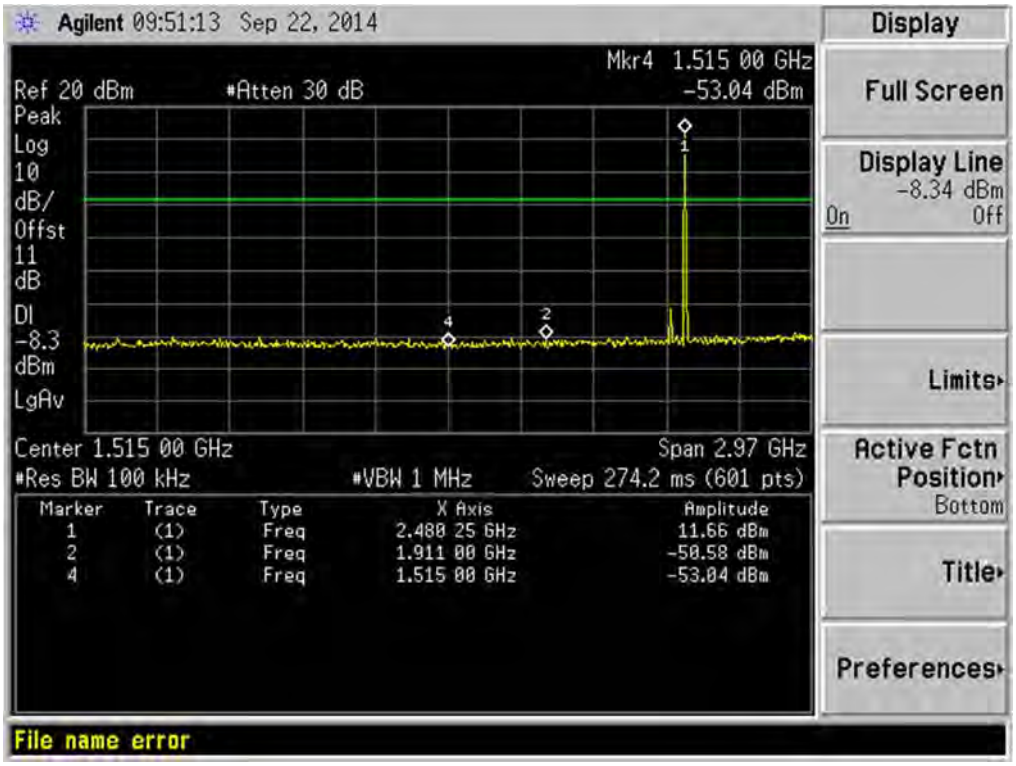
GFSK MID CHANNEL , SPURIOUS 3GHz~25GHz



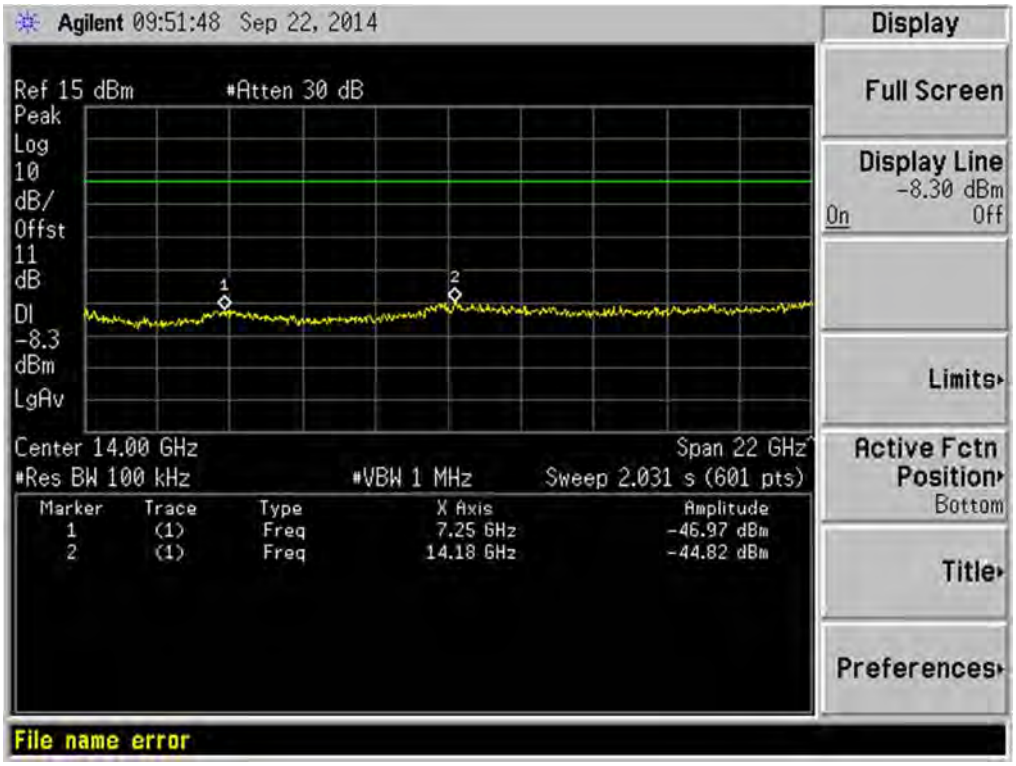
GFSK HIGH CHANNEL , BANDEDGE



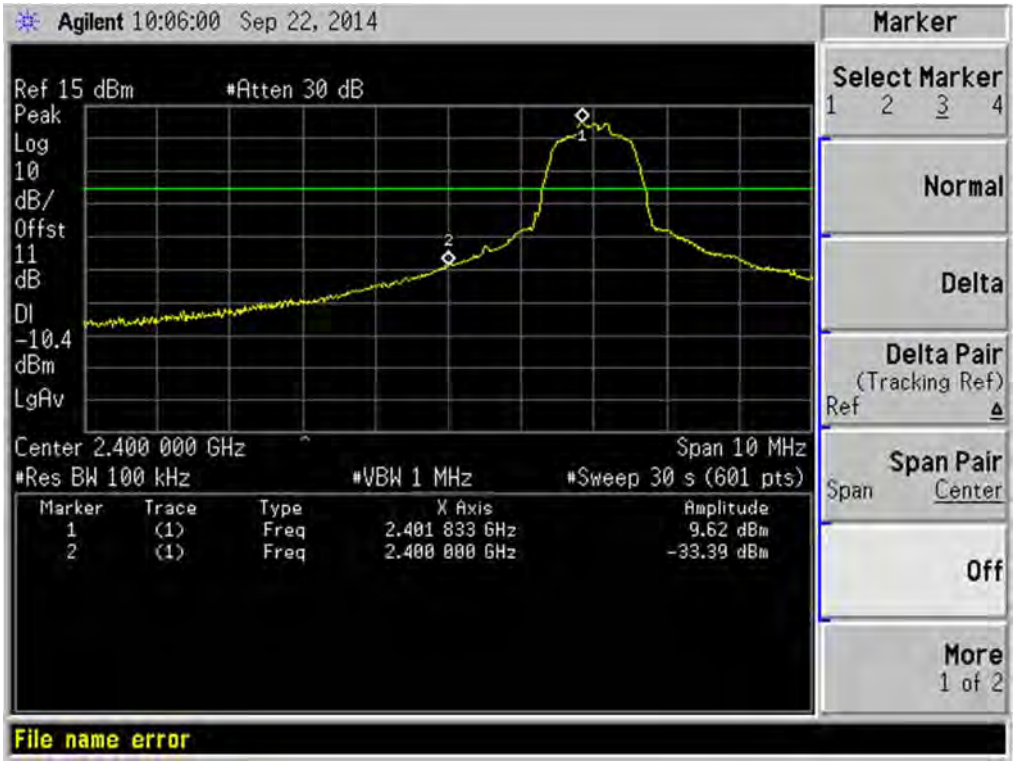
GFSK HIGH CHANNEL , SPURIOUS 30MHz~3GHz



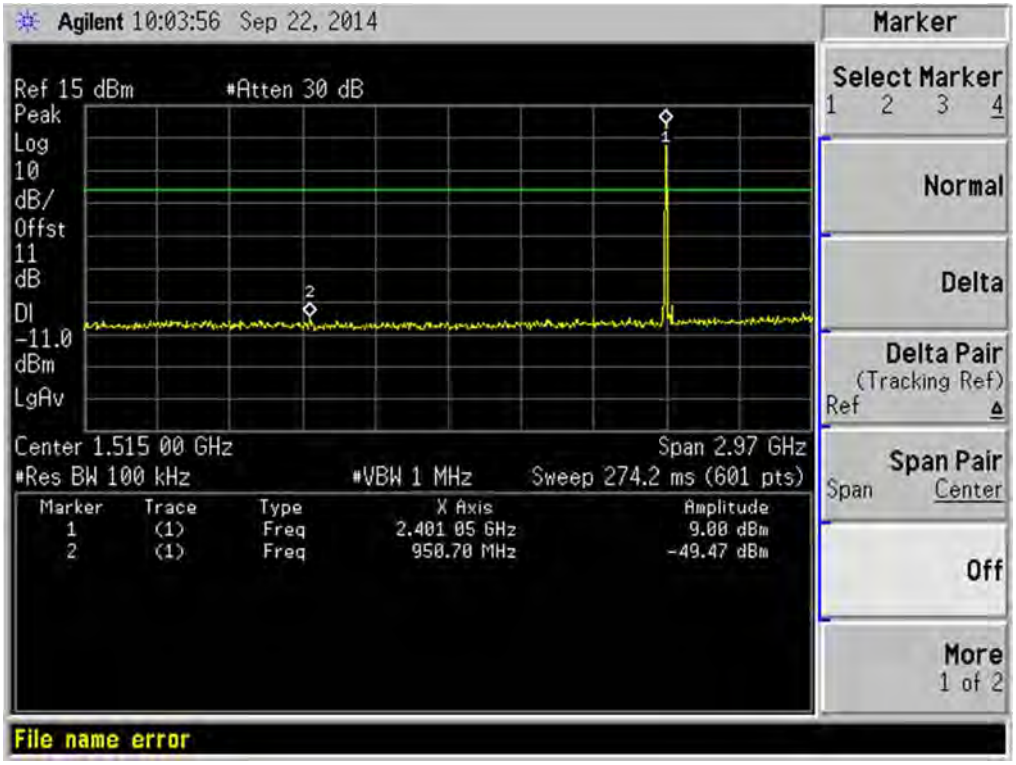
GFSK HIGH CHANNEL , SPURIOUS 3GHz~25GHz



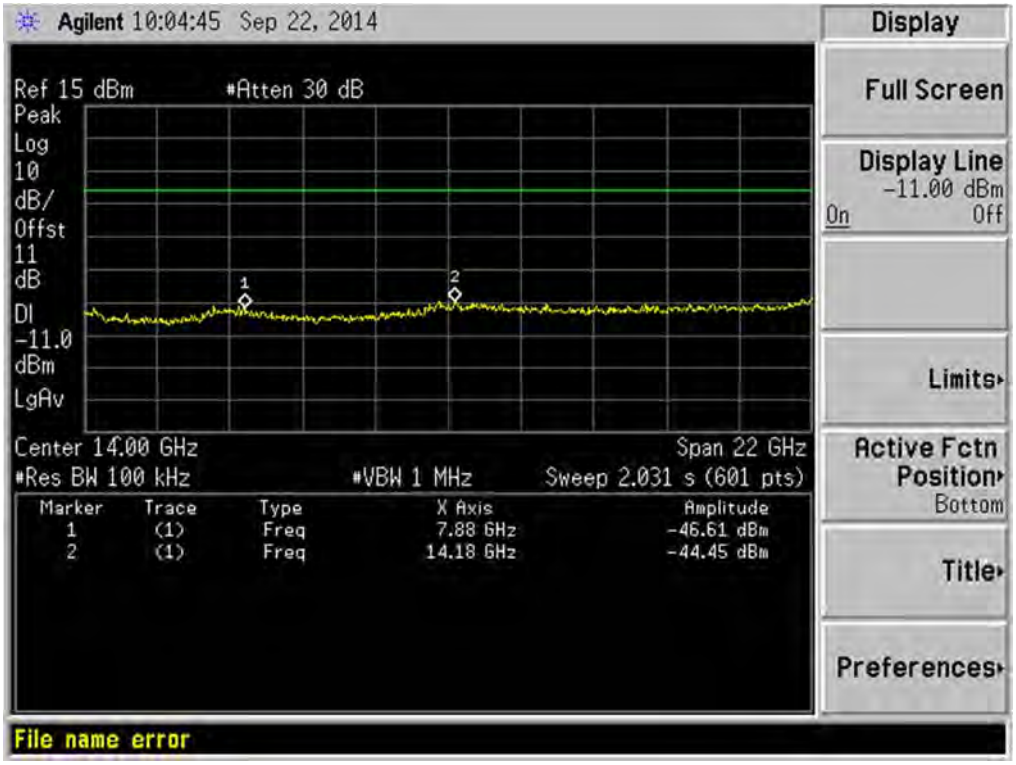
Π/4-DQPSK LOW CHANNEL , BANDEDGE



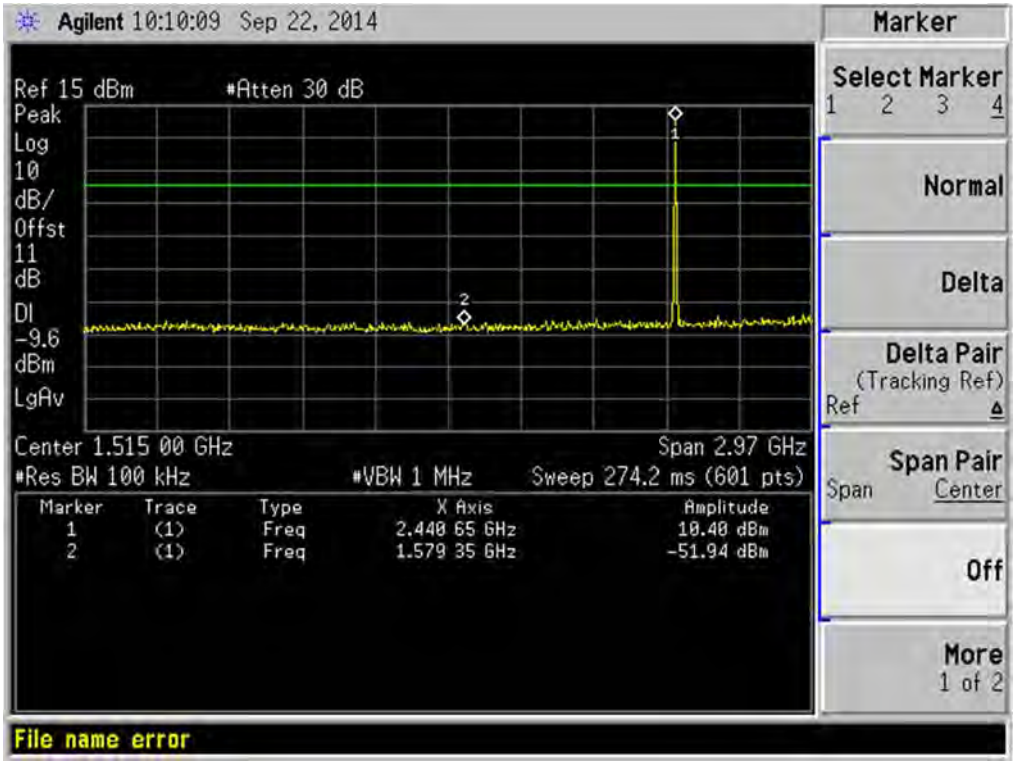
Π/4-DQPSK LOW CHANNEL , SPURIOUS 30MHz~3GHz



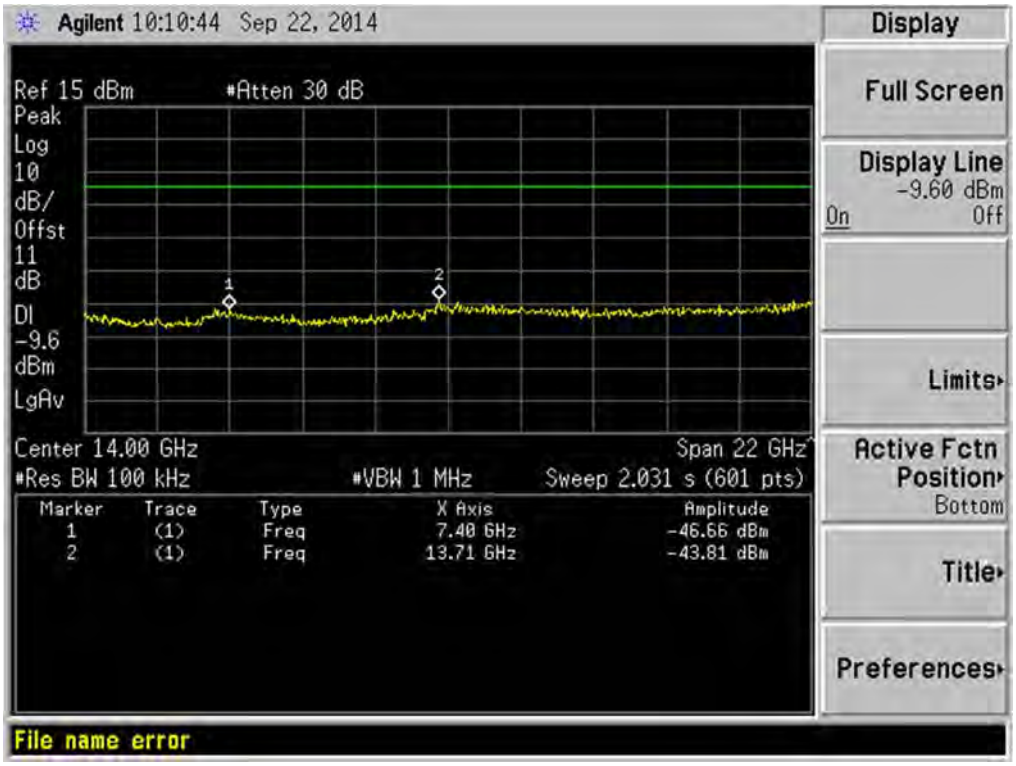
Π/4-DQPSK LOW CHANNEL , SPURIOUS 3GHz~25GHz



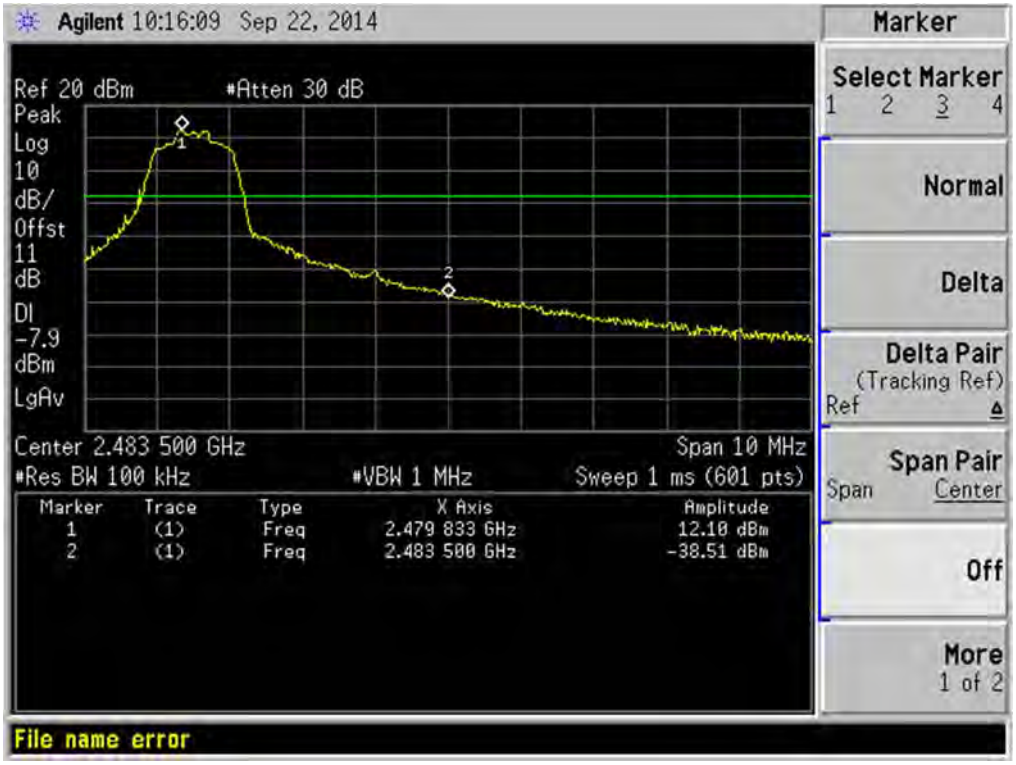
Π/4-DQPSK MID CHANNEL , SPURIOUS 30MHz~3GHz



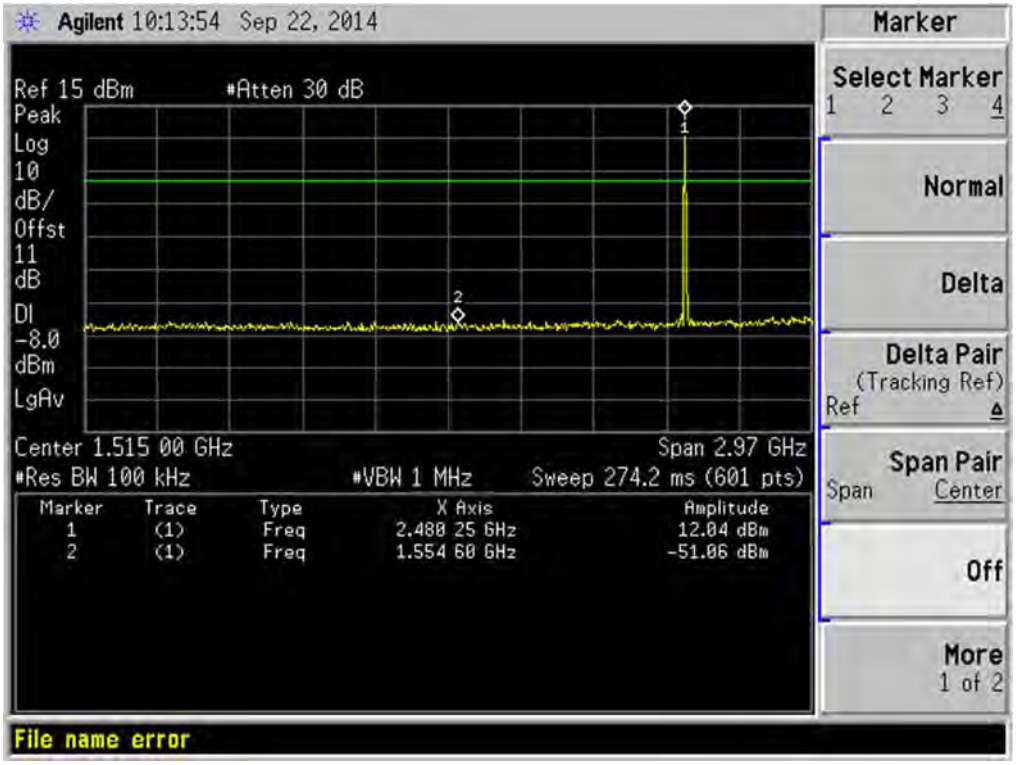
Π/4-DQPSK MID CHANNEL , SPURIOUS 3GHz~25GHz



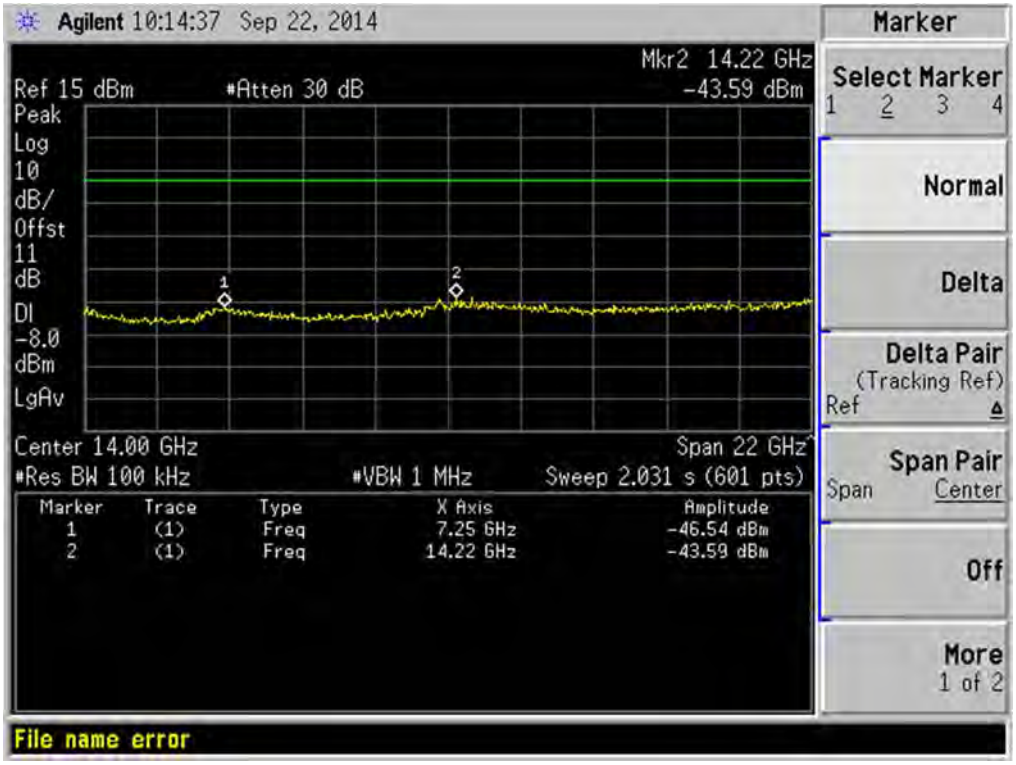
Π/4-DQPSK HIGH CHANNEL , BANDEDGE



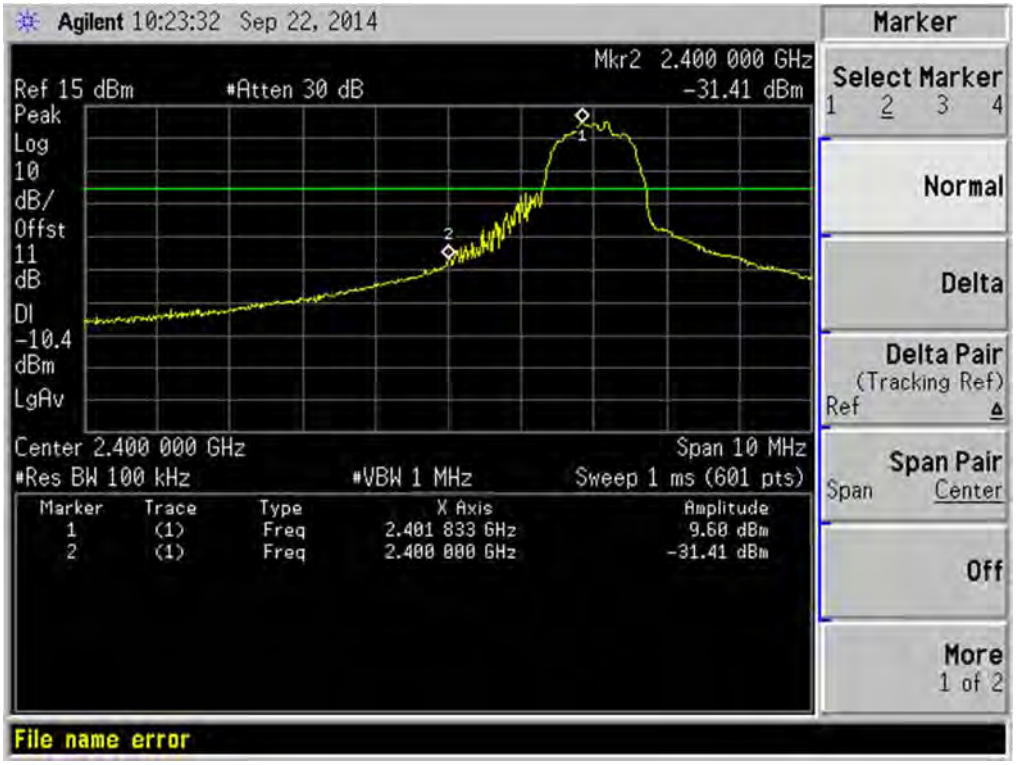
Π/4-DQPSK HIGH CHANNEL , SPURIOUS 30MHz~3GHz



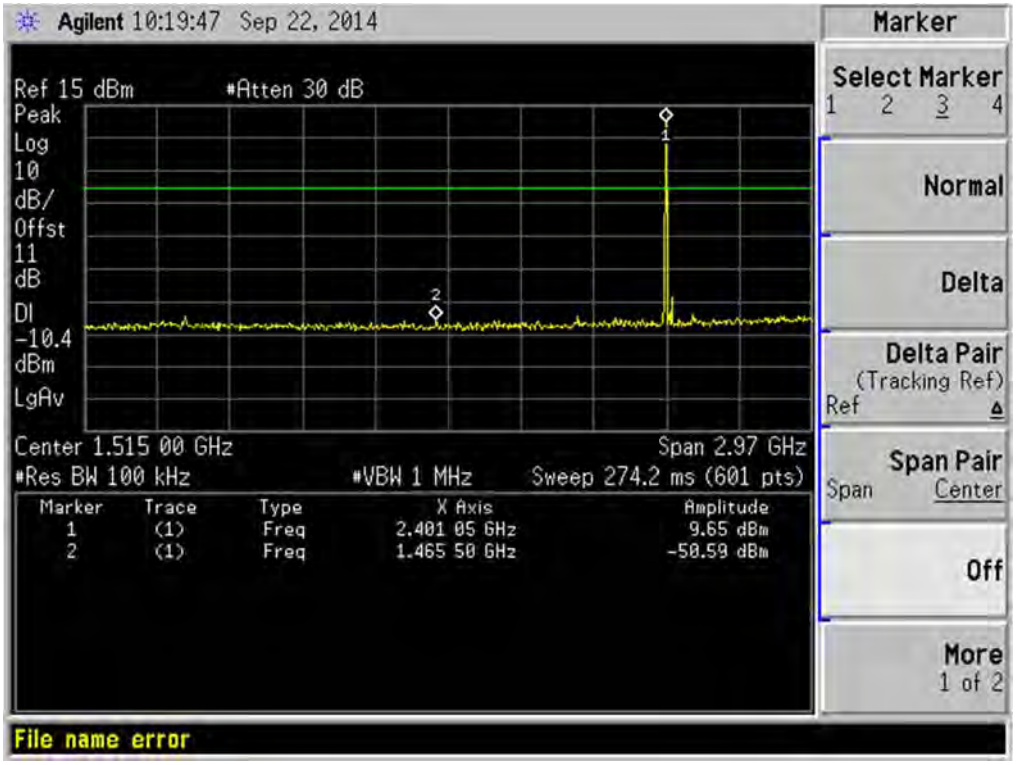
Π/4-DQPSK HIGH CHANNEL , SPURIOUS 3GHz~25GHz



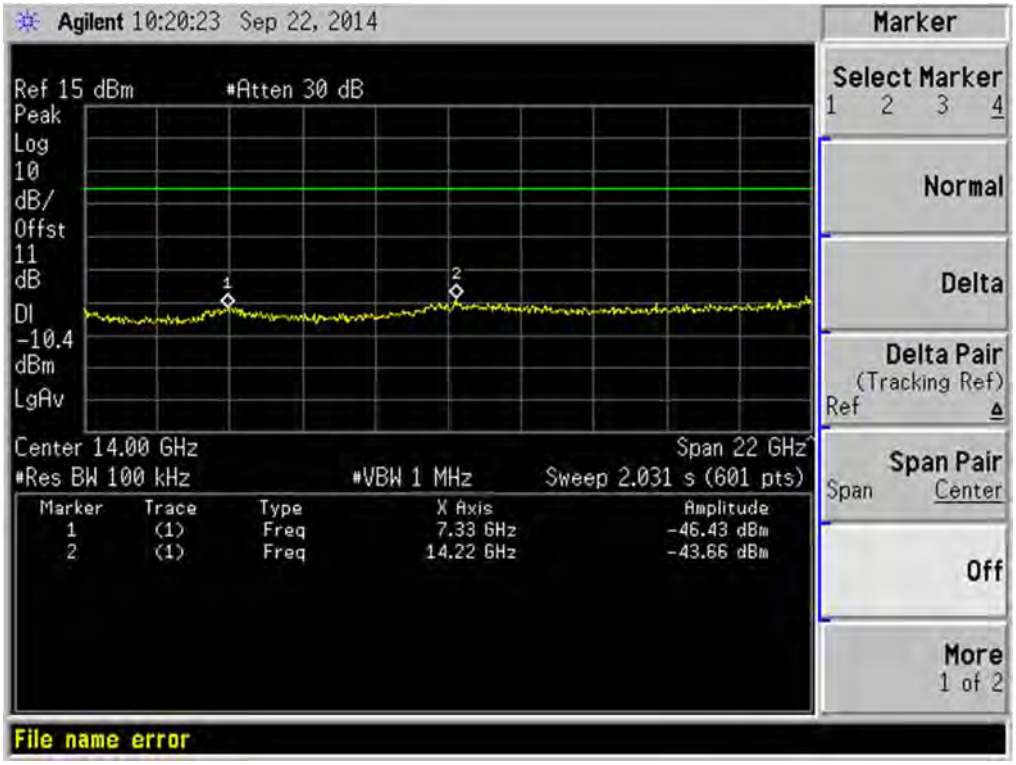
8-DPSK LOW CHANNEL , BANDEDGE



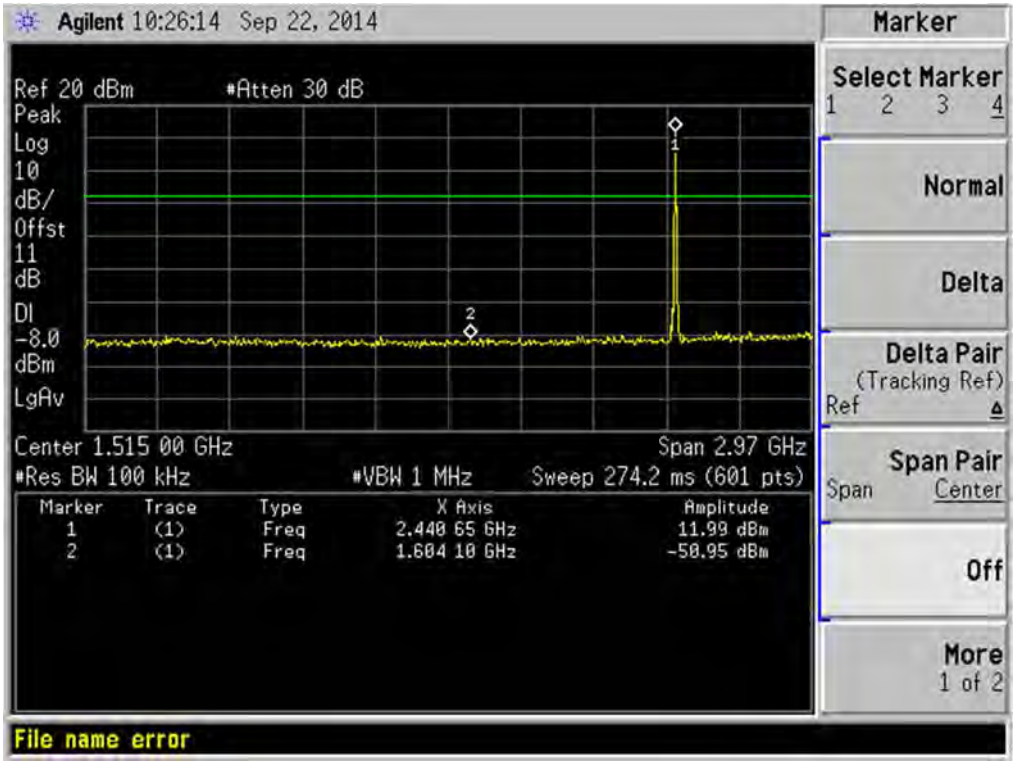
8-DPSK LOW CHANNEL , SPURIOUS 30MHz~3GHz



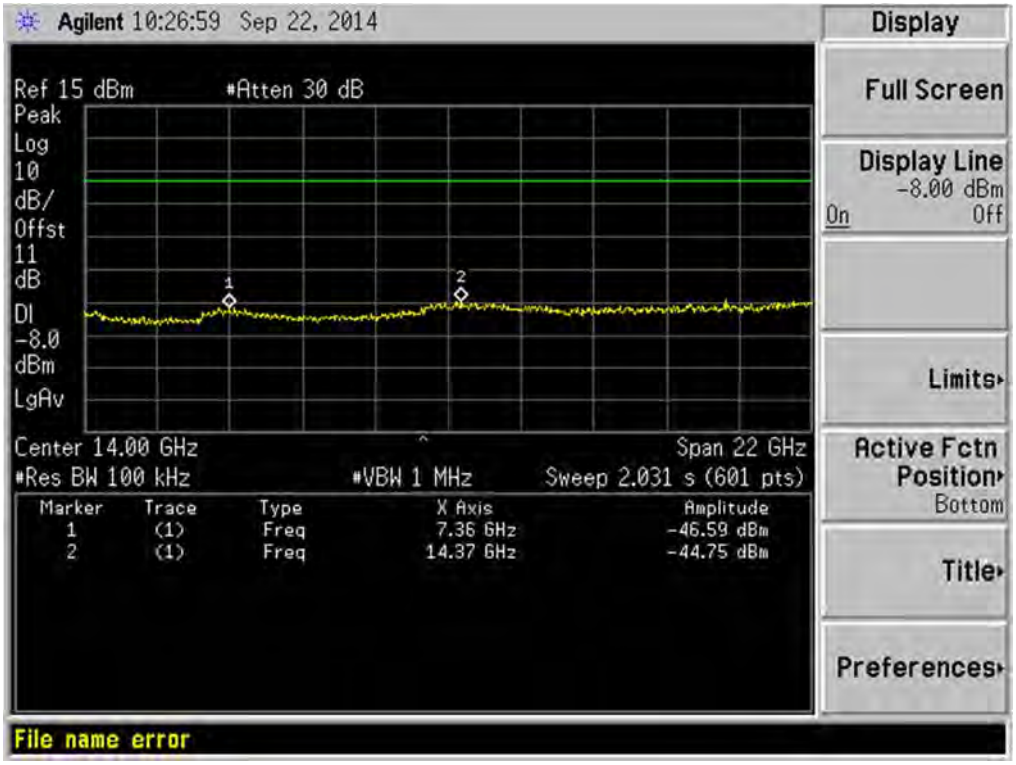
8-DPSK LOW CHANNEL , SPURIOUS 3GHz~25GHz



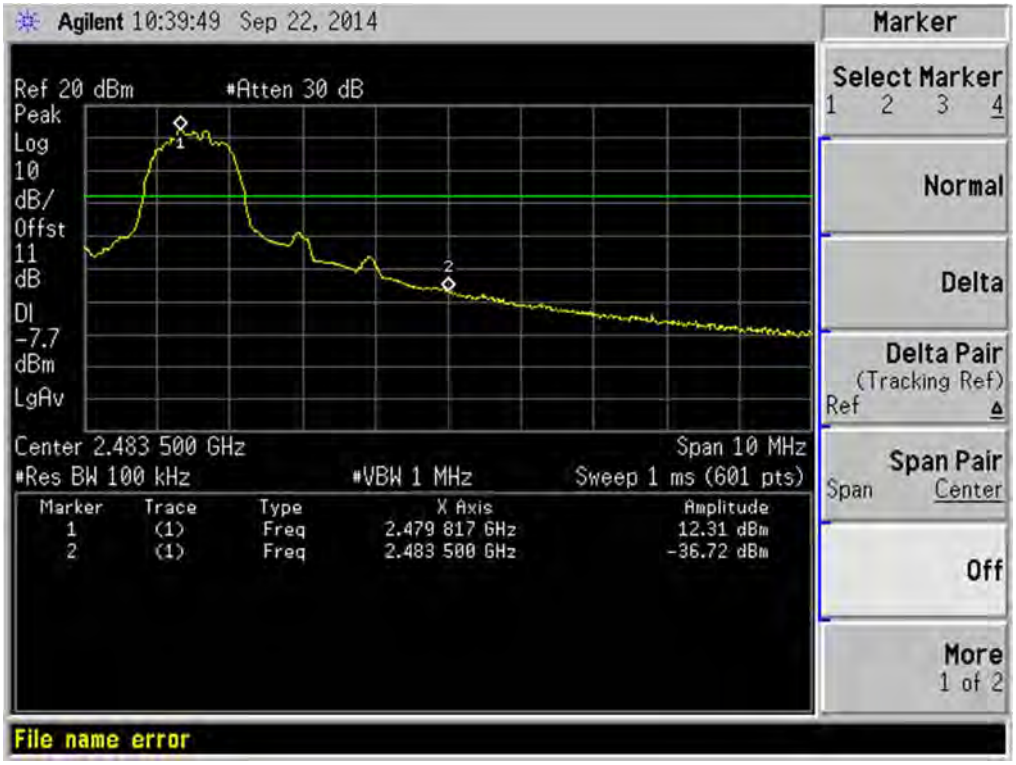
8-DPSK MID CHANNEL , SPURIOUS 30MHz~3GHz



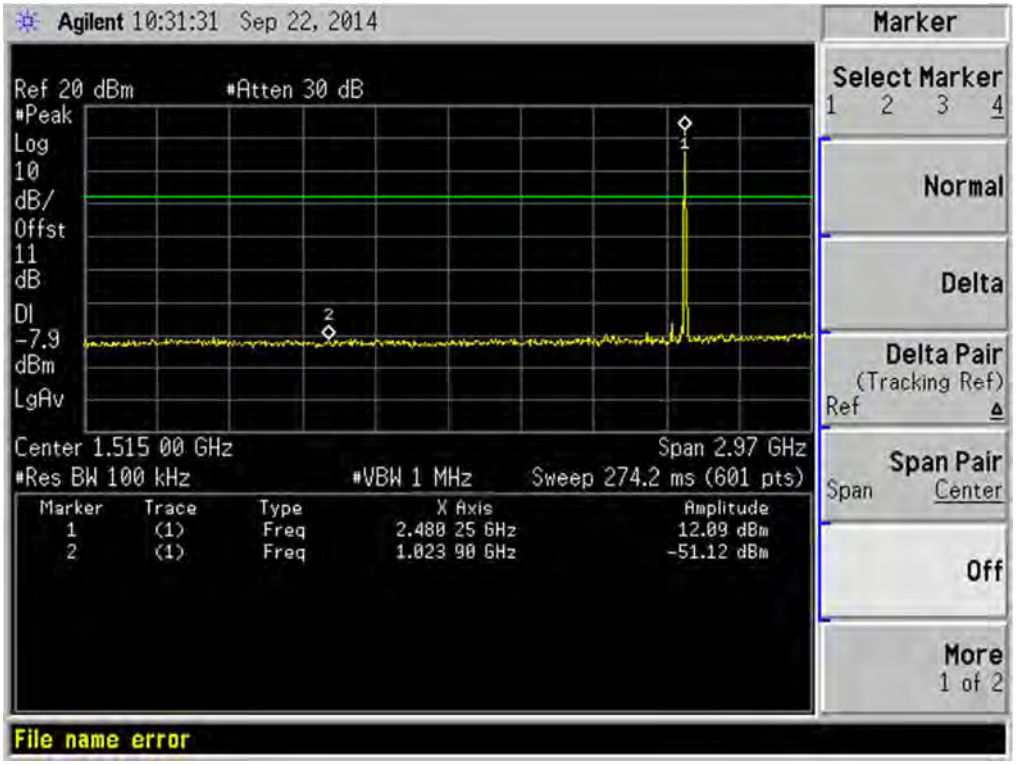
8-DPSK MID CHANNEL , SPURIOUS 3GHz~25GHz



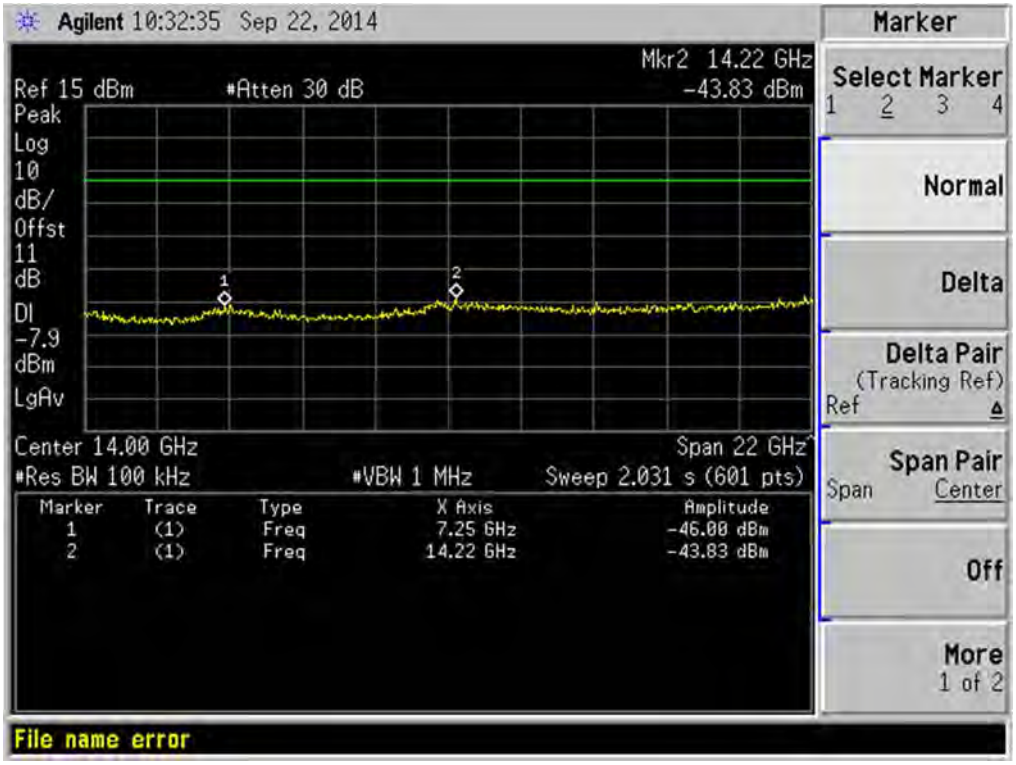
8-DPSK HIGH CHANNEL , BANDEDGE



8-DPSK HIGH CHANNEL , SPURIOUS 30MHz~3GHz



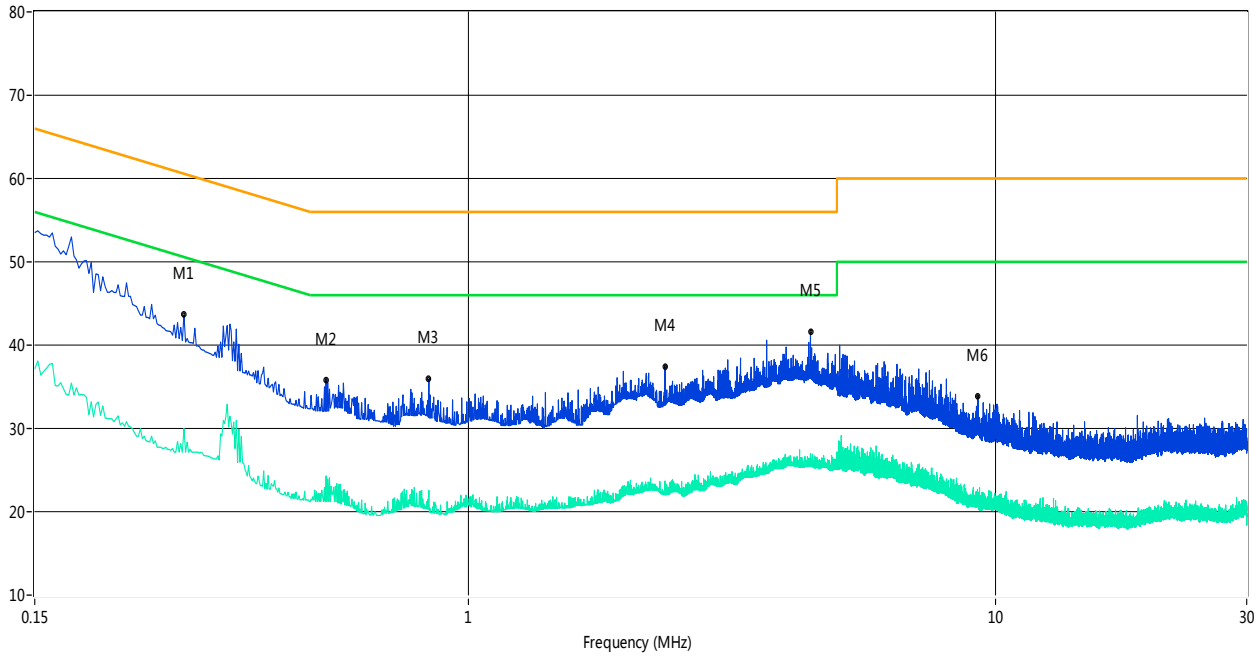
8-DPSK HIGH CHANNEL , SPURIOUS 3GHz~25GHz



A.7 Conducted Emissions

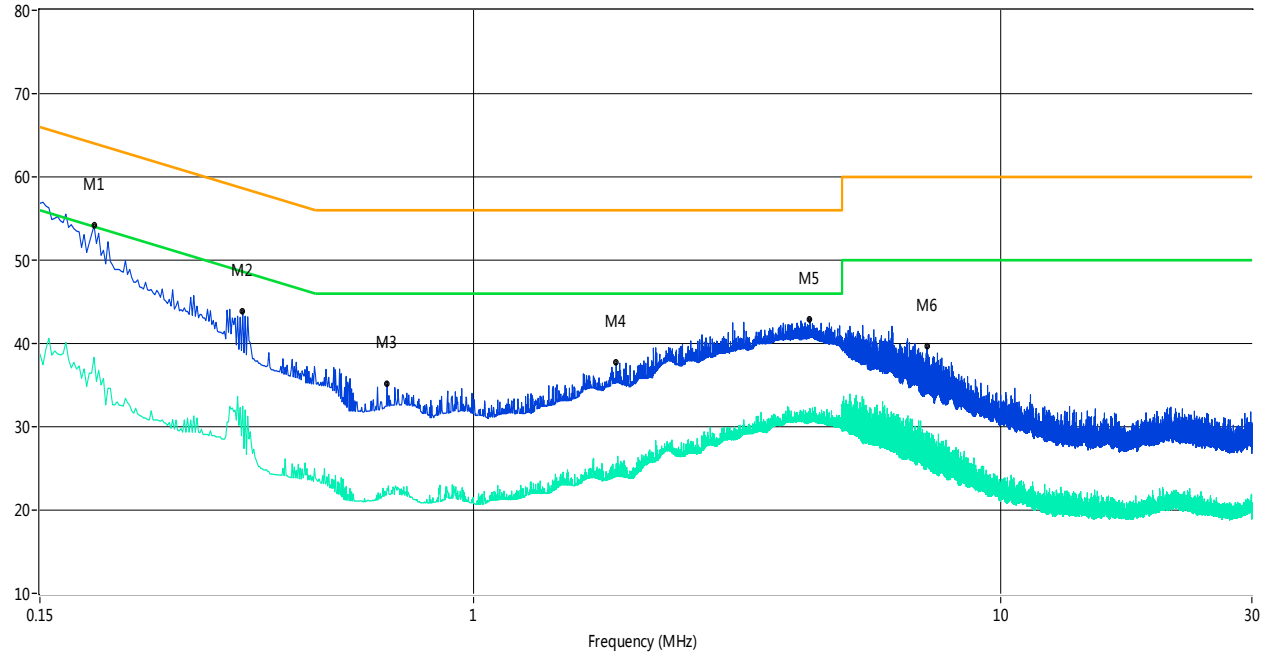
Test Data and Plots

PHASE L



Frequency (MHz)	Peak (dBm)	Q-peak (dBuV)	Average (dBuV)	Factor (dB)	QP Limit (dBuV)	AV Limit (dBuV)	Margin (dB)	Line	Verdict
0.29	43.6	--	30.0	10.00	62.1	52.1	22.10	L Line	PASS
0.54	35.9	--	24.3	10.00	56.0	46.0	21.70	L Line	PASS
0.84	35.9	--	22.6	10.00	56.0	46.0	23.40	L Line	PASS
2.36	37.5	--	23.7	10.00	56.0	46.0	22.30	L Line	PASS
4.45	41.6	--	27.0	10.00	56.0	46.0	19.00	L Line	PASS
9.26	33.9	--	22.3	10.00	60.0	50.0	27.70	L Line	PASS

PHASE N



Frequency (MHz)	Peak (dBm)	Q-peak (dBuV)	Average (dBuV)	Factor (dB)	QP Limit (dBuV)	AV Limit (dBuV)	Margin (dB)	Line	Verdict
0.19	54.2	--	38.3	10.00	64.9	54.9	16.60	N Line	PASS
0.36	43.9	--	32.5	10.00	59.9	49.9	17.40	N Line	PASS
0.68	35.2	--	22.6	10.00	56.0	46.0	23.40	N Line	PASS
1.86	37.7	--	25.6	10.00	56.0	46.0	20.40	N Line	PASS
4.34	42.9	--	30.6	10.00	56.0	46.0	15.40	N Line	PASS
7.25	39.6	--	29.2	10.00	60.0	50.0	20.80	N Line	PASS

A.8 Radiated Emission

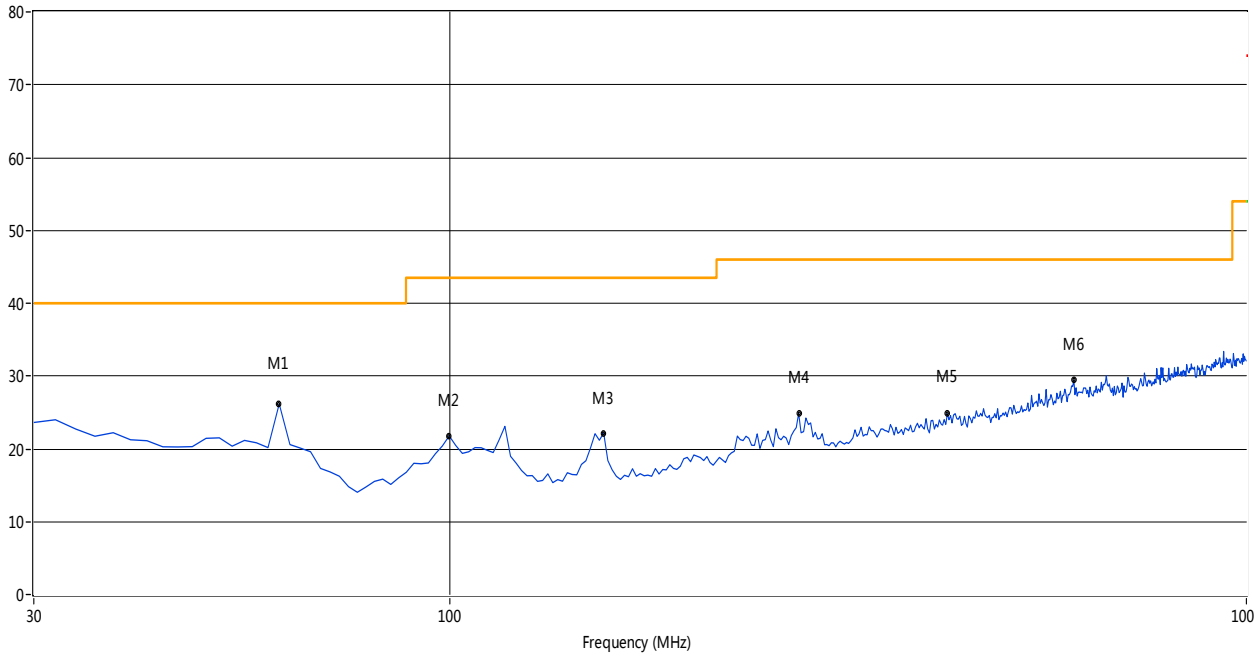
Note 1: The symbol of “--” in the table which means not application.

Note 2: For the test data above 1GHz，According the ANSI C63.4-2009, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Note 3: The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

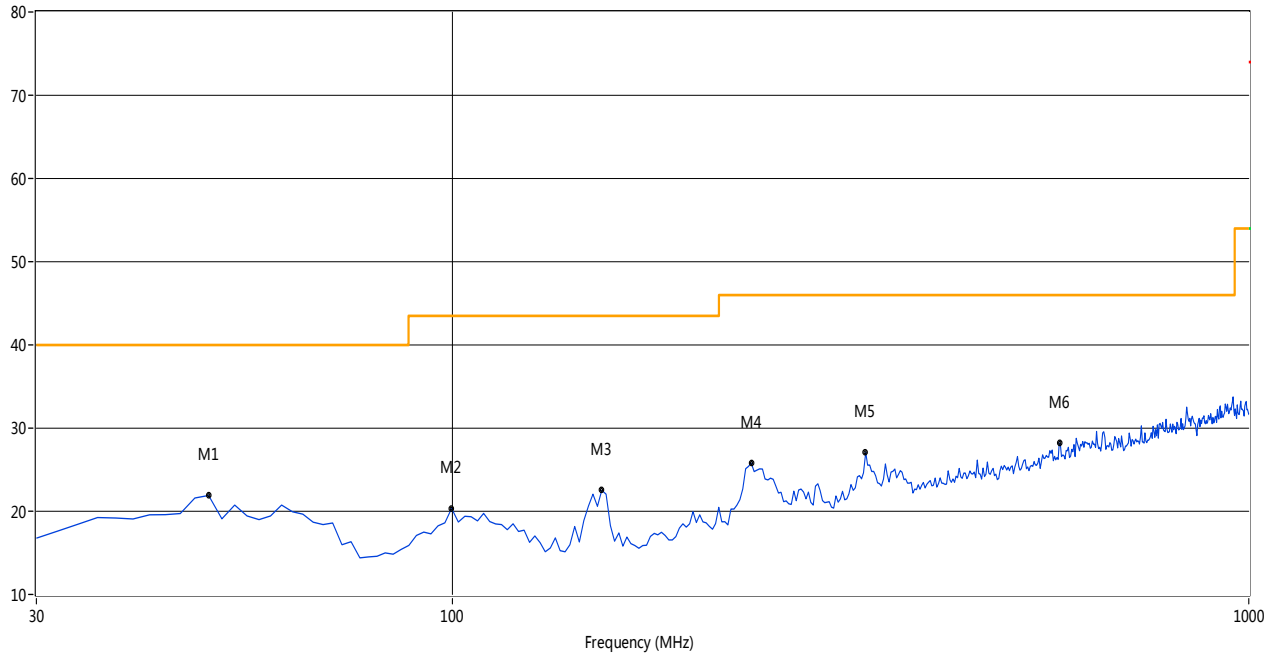
The Data and Plots

30MHz to 1GHz, ANT V



Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
60.98	--	26.17	--	-19.60	--	40.0	--	13.83	323.00	100	Vertical	PASS
99.70	--	21.79	--	-19.60	--	43.5	--	21.71	248.50	100	Vertical	PASS
155.85	--	22.17	--	-22.69	--	43.5	--	21.33	308.90	100	Vertical	PASS
273.95	--	24.89	--	-17.84	--	46.0	--	21.11	359.60	100	Vertical	PASS
421.10	--	24.83	--	-14.22	--	46.0	--	21.17	248.50	100	Vertical	PASS
606.97	--	29.48	--	-10.01	--	46.0	--	16.52	308.90	100	Vertical	PASS

30MHz to 1GHz, ANT H

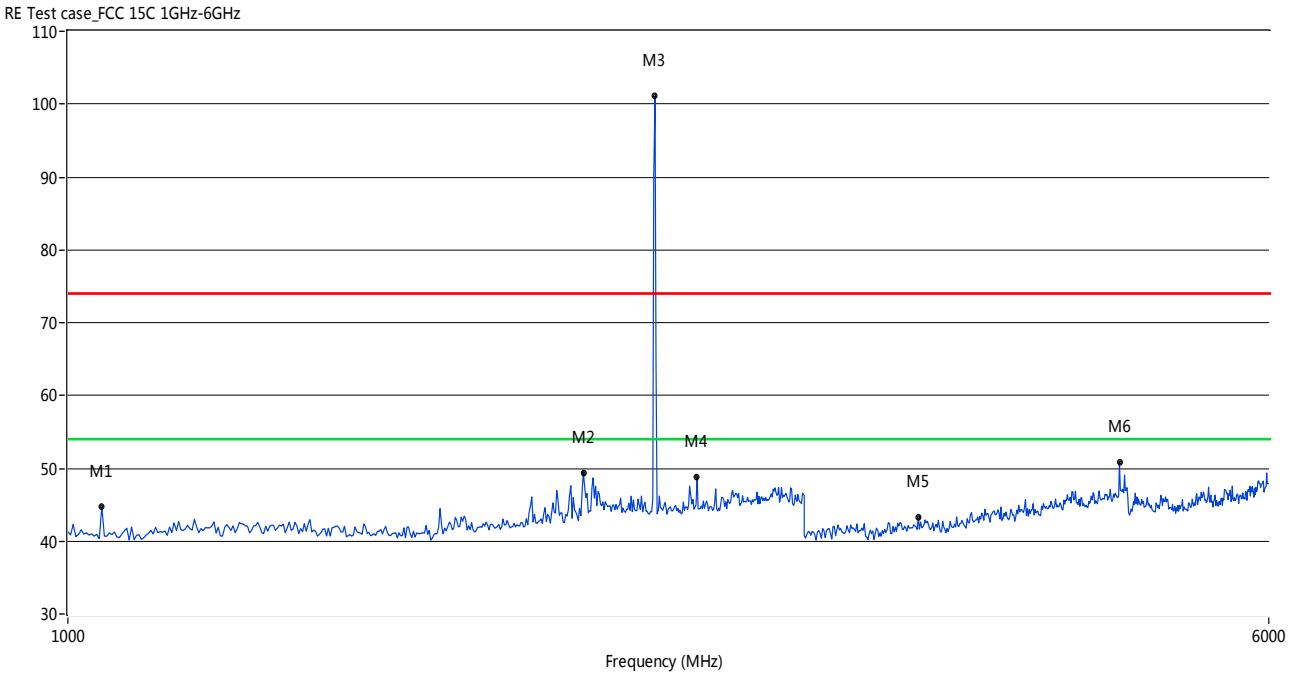


Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
49.36	--	21.92	--	-17.98	--	40.0	--	18.08	238.70	100	Horizontal	PASS
99.70	--	20.36	--	-19.60	--	43.5	--	23.14	145.40	100	Horizontal	PASS
153.91	--	22.54	--	-22.79	--	43.5	--	20.96	31.80	100	Horizontal	PASS
237.17	--	25.80	--	-18.72	--	46.0	--	20.20	3.50	100	Horizontal	PASS
330.10	--	27.08	--	-16.16	--	46.0	--	18.92	8.30	100	Horizontal	PASS
577.92	--	28.23	--	-10.68	--	46.0	--	17.77	159.50	100	Horizontal	PASS

Note: The marked spikes near 2400MHz with circle should be ignored because they are Fundamental signal.

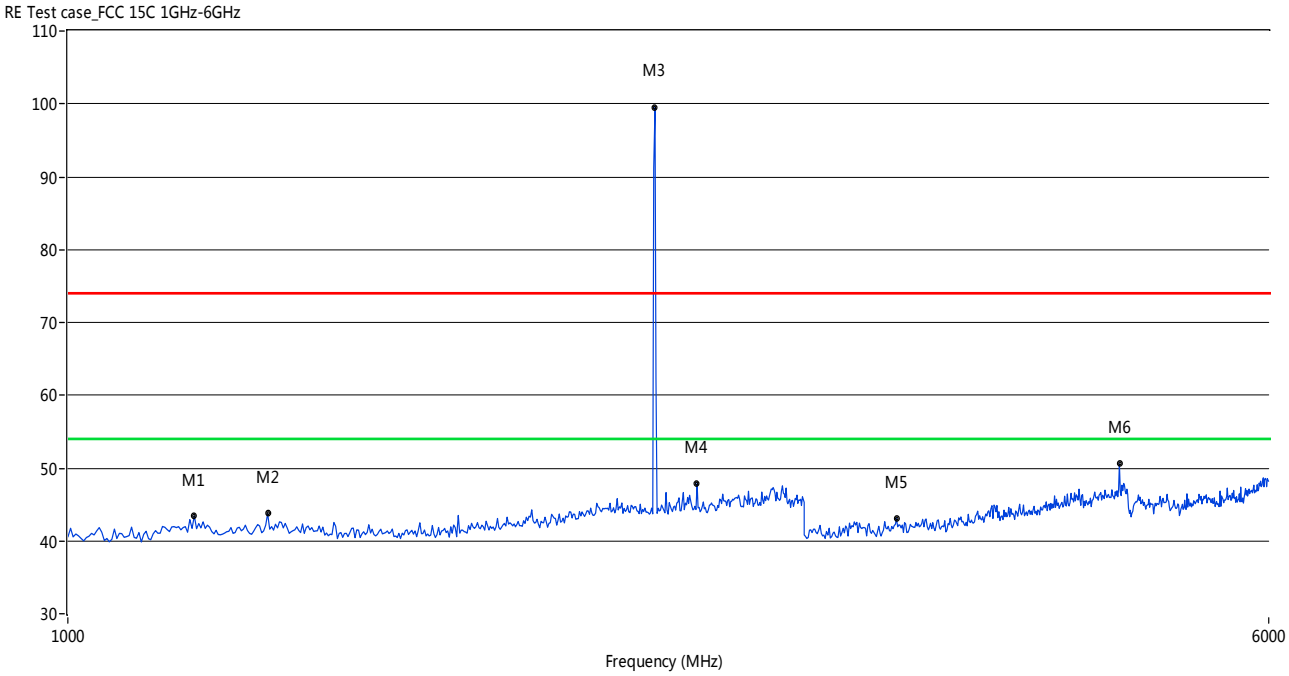
Test Data and Plots

GFSK LOW CHANNEL 1GHz to 6GHz, ANT V



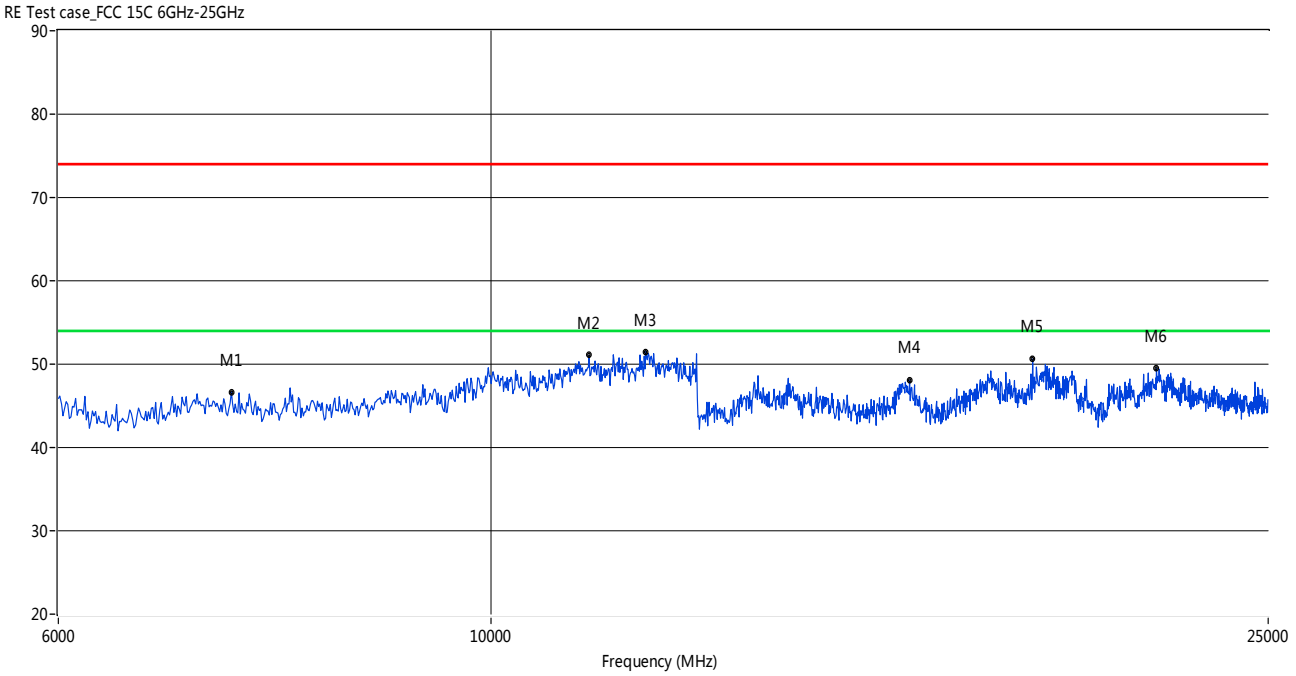
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1051.90	44.72	--	--	-4.76	74.0	--	54.0	9.28	239.50	100	Vertical	PASS
2157.68	49.42	--	--	-0.99	74.0	--	54.0	4.58	156.30	100	Vertical	PASS
2401.20	101.09	--	--	0.01	74.0	--	54.0	-47.09	289.10	100	Vertical	N/A
2556.89	48.85	--	--	0.43	74.0	--	54.0	5.15	305.40	100	Vertical	PASS
3556.89	43.19	--	--	8.78	74.0	--	54.0	10.81	336.70	100	Vertical	PASS
4802.40	50.77	--	--	12.37	74.0	--	54.0	3.23	260.30	100	Vertical	PASS

GFSK LOW CHANNEL 1GHz to 6GHz, ANT H



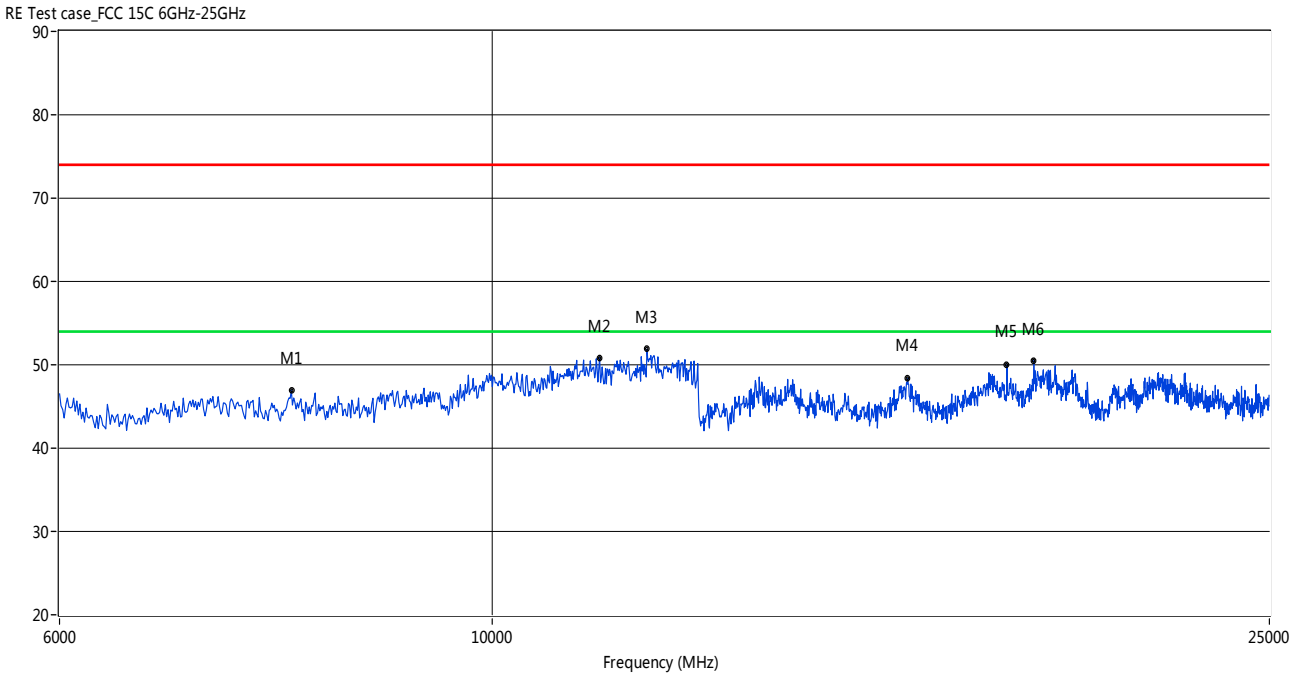
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1207.58	43.43	--	--	-3.68	74.0	--	54.0	10.57	298.80	100	Horizontal	PASS
1347.31	43.74	--	--	-3.93	74.0	--	54.0	10.26	0.40	100	Horizontal	PASS
2401.20	99.49	--	--	0.01	74.0	--	54.0	-45.49	357.70	100	Horizontal	N/A
2556.89	47.87	--	--	0.43	74.0	--	54.0	6.13	6.90	100	Horizontal	PASS
3443.11	43.10	--	--	8.94	74.0	--	54.0	10.90	360.00	100	Horizontal	PASS
4802.40	50.57	--	--	12.37	74.0	--	54.0	3.43	169.00	100	Horizontal	PASS

GFSK LOW CHANNEL 6GHz to 25GHz, ANT V



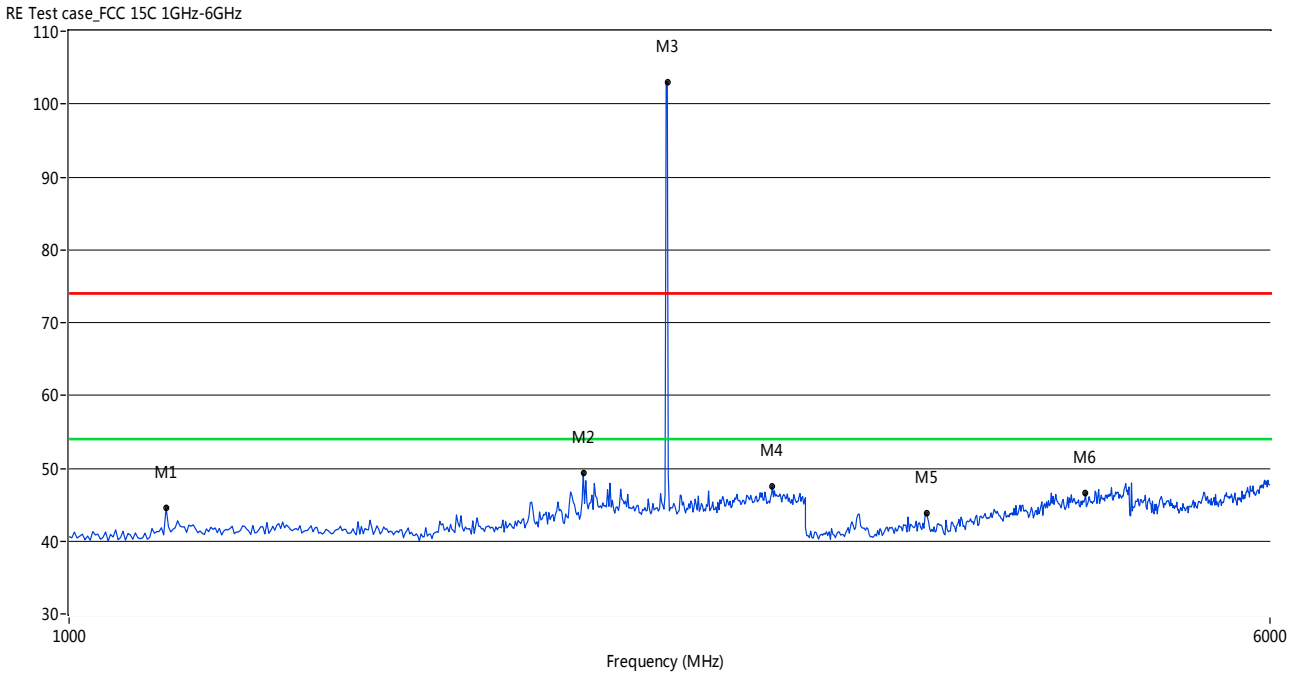
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7358.98	46.67	--	--	11.86	74.0	--	54.0	7.33	161.20	100.00	Vertical	PASS
11222.55	51.41	--	--	13.65	74.0	--	54.0	2.59	6.60	100.00	Vertical	PASS
11997.50	51.51	--	--	19.48	74.0	--	54.0	2.49	0.90	100.00	Vertical	PASS
16379.37	48.08	--	--	9.56	74.0	--	54.0	5.92	277.50	100.00	Vertical	PASS
18937.60	50.48	--	--	11.41	74.0	--	54.0	3.52	157.20	100.00	Vertical	PASS
21915.14	49.56	--	--	11.64	74.0	--	54.0	4.44	148.70	100.00	Vertical	PASS

GFSK LOW CHANNEL 6GHz to 25GHz, ANT H



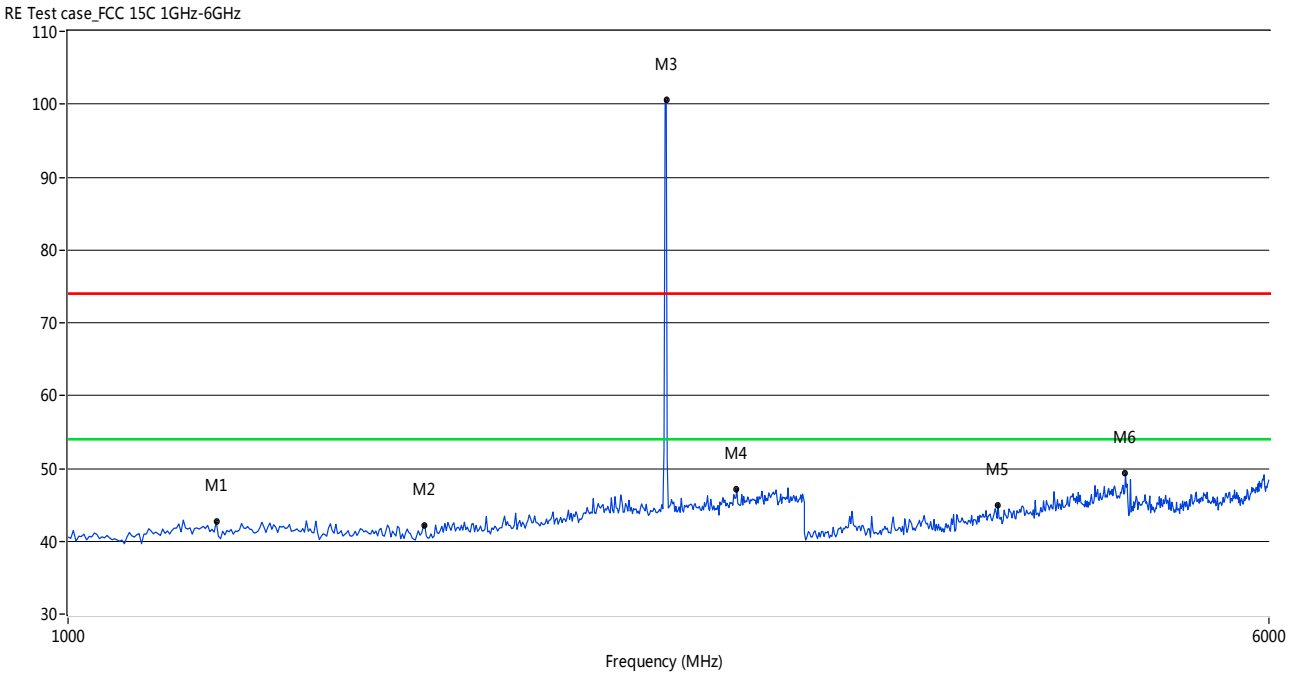
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7886.85	46.98	--	--	11.57	74.0	--	54.0	7.02	101.10	100.00	Horizontal	PASS
11346.09	50.87	--	--	14.52	74.0	--	54.0	3.13	7.50	100.00	Horizontal	PASS
11997.50	51.89	--	--	19.52	74.0	--	54.0	2.11	0.00	100.00	Horizontal	PASS
16316.97	48.37	--	--	9.51	74.0	--	54.0	5.63	270.50	100.00	Horizontal	PASS
18344.84	49.99	--	--	10.88	74.0	--	54.0	4.01	1.00	100.00	Horizontal	PASS
18937.60	50.56	--	--	11.87	74.0	--	54.0	3.44	164.90	100.00	Horizontal	PASS

GFSK MID CHANNEL 1GHz to 6GHz, ANT V



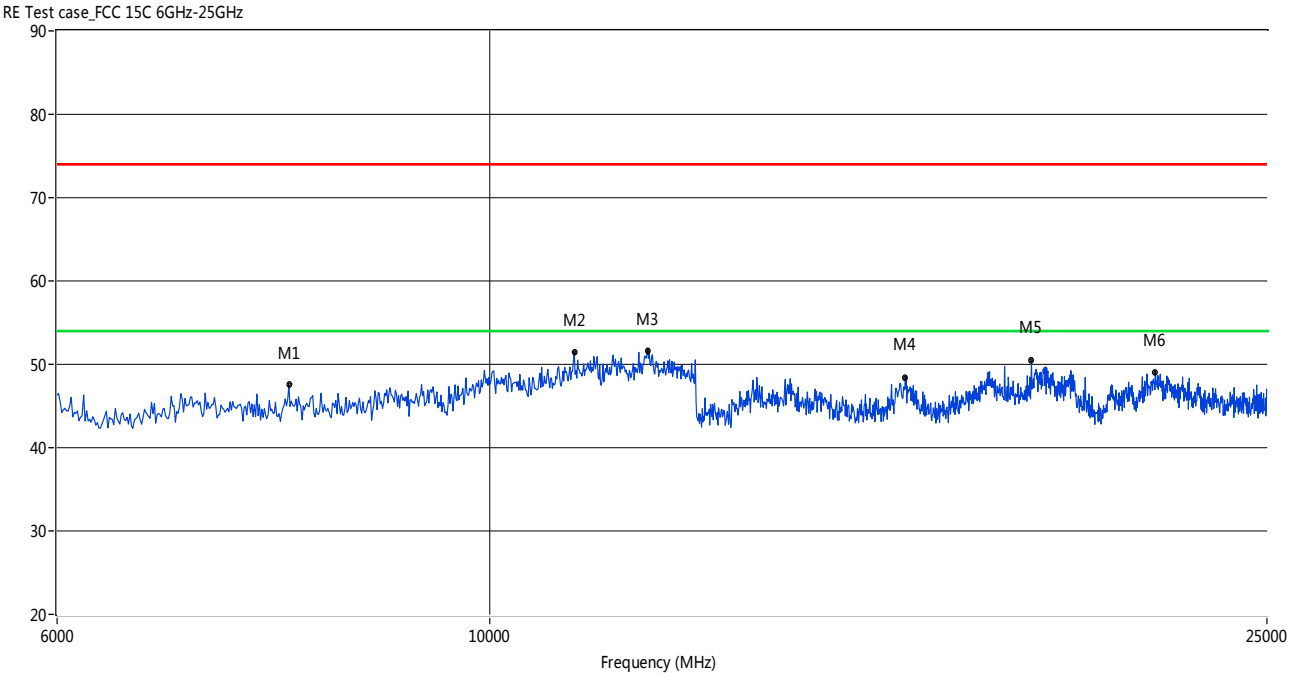
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1155.69	44.56	--	--	-4.26	74.0	--	54.0	9.44	350.30	100	Vertical	PASS
2153.69	49.35	--	--	-0.99	74.0	--	54.0	4.65	155.40	100	Vertical	PASS
2441.12	103.02	--	--	-0.03	74.0	--	54.0	-49.02	144.30	100	Vertical	N/A
2856.29	47.54	--	--	3.56	74.0	--	54.0	6.46	0.90	100	Vertical	PASS
3592.81	43.79	--	--	8.82	74.0	--	54.0	10.21	314.50	100	Vertical	PASS
4556.89	46.58	--	--	11.11	74.0	--	54.0	7.42	157.90	100	Vertical	PASS

GFSK MID CHANNEL 1GHz to 6GHz, ANT H



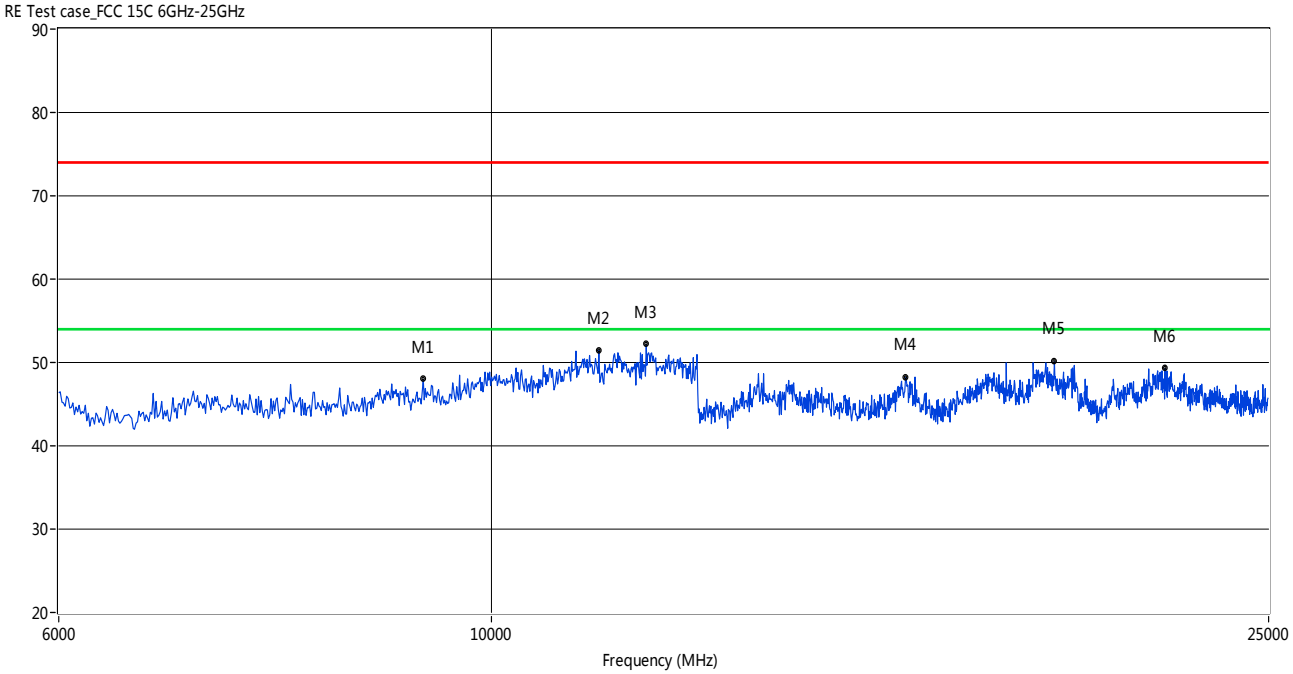
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1247.50	42.69	--	--	-3.98	74.0	--	54.0	11.31	357.30	100	Horizontal	PASS
1702.59	42.22	--	--	-3.63	74.0	--	54.0	11.78	100.50	100	Horizontal	PASS
2441.12	100.58	--	--	-0.03	74.0	--	54.0	-46.58	359.30	100	Horizontal	N/A
2712.57	47.08	--	--	1.97	74.0	--	54.0	6.92	30.90	100	Horizontal	PASS
4005.99	45.01	--	--	9.95	74.0	--	54.0	8.99	17.90	100	Horizontal	PASS
4844.31	49.36	--	--	12.98	74.0	--	54.0	4.64	170.70	100	Horizontal	PASS

GFSK MID CHANNEL 6GHz to 25GHz, ANT V



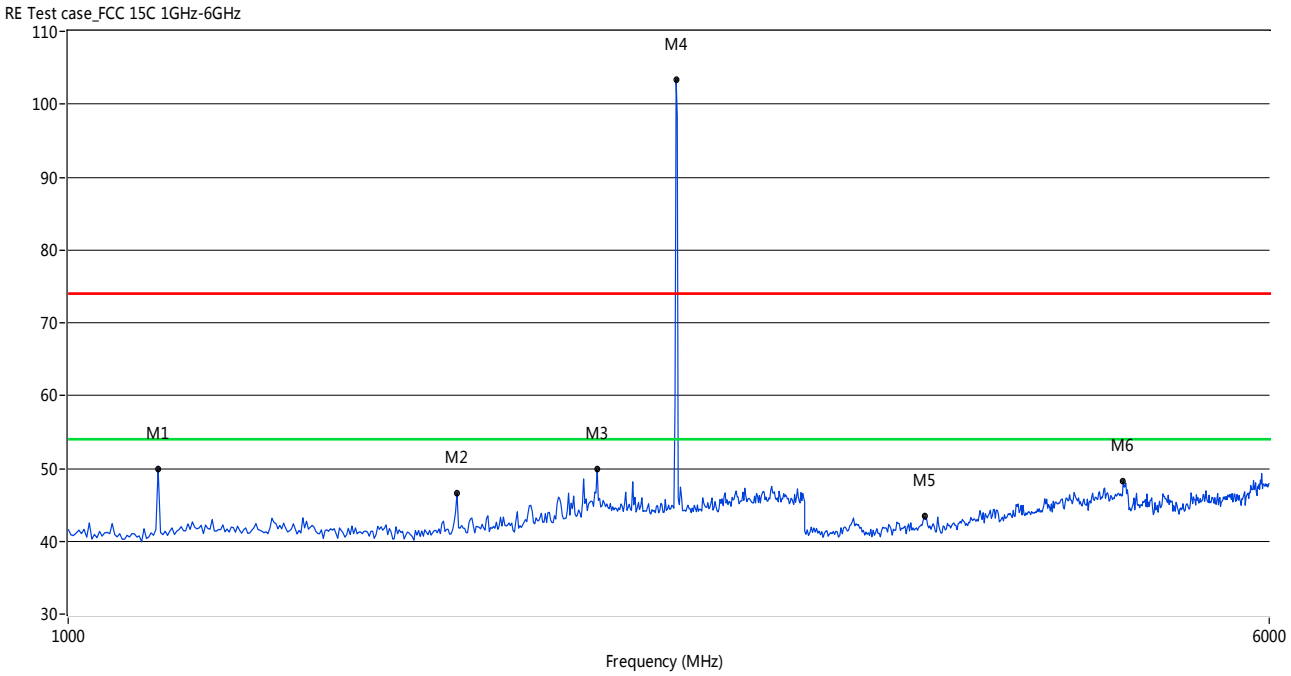
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7886.85	46.98	--	--	11.18	74.0	--	54.0	7.02	105.30	100.00	Vertical	PASS
11042.84	51.44	--	--	13.83	74.0	--	54.0	2.56	1.10	100.00	Vertical	PASS
12042.43	51.66	--	--	19.25	74.0	--	54.0	2.34	360.10	100.00	Vertical	PASS
16316.97	48.37	--	--	9.12	74.0	--	54.0	5.63	289.60	100.00	Vertical	PASS
18937.60	50.43	--	--	10.63	74.0	--	54.0	3.57	81.20	100.00	Vertical	PASS
21915.14	49.03	--	--	12.08	74.0	--	54.0	4.97	128.30	100.00	Vertical	PASS

GFSK MID CHANNEL 6GHz to 25GHz, ANT H



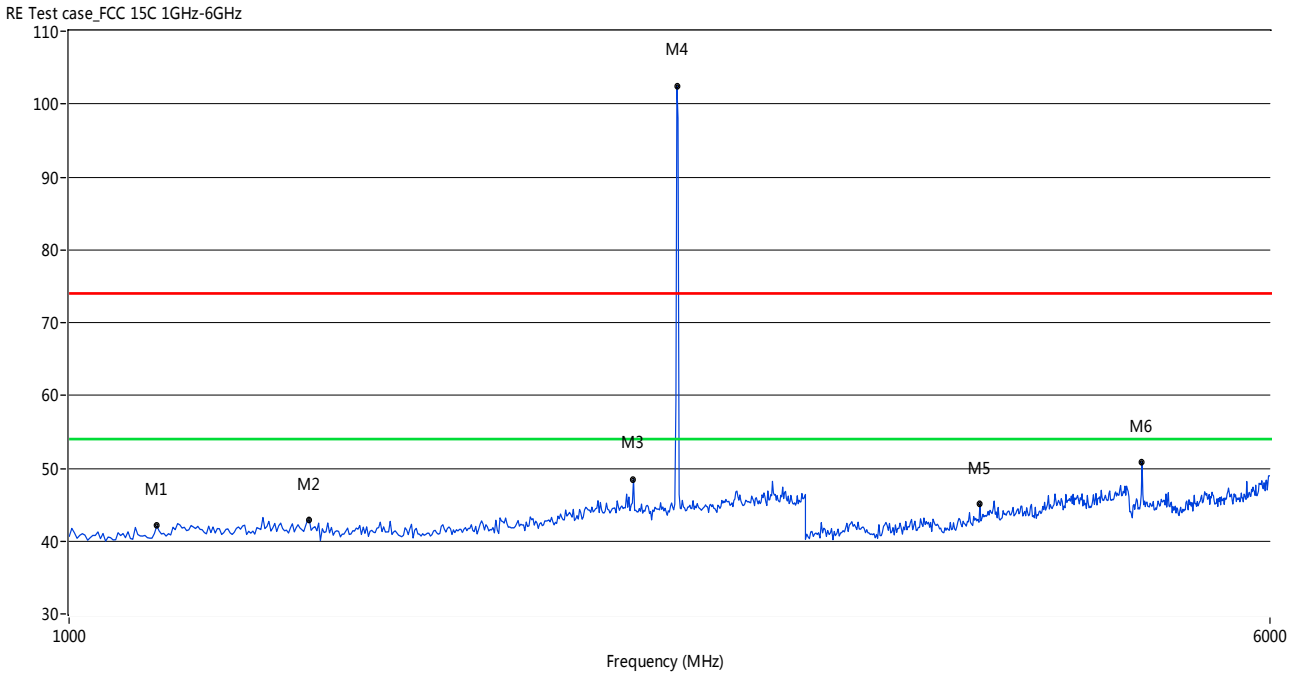
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
9223.38	47.99	--	--	11.25	74.0	--	54.0	6.01	67.90	100.00	Horizontal	PASS
11346.09	51.46	--	--	13.62	74.0	--	54.0	2.54	0.10	100.00	Horizontal	PASS
11997.50	52.18	--	--	19.34	74.0	--	54.0	1.82	267.50	100.00	Horizontal	PASS
16296.17	48.21	--	--	9.12	74.0	--	54.0	5.79	273.80	100.00	Horizontal	PASS
19419.30	50.10	--	--	10.73	74.0	--	54.0	3.90	359.30	100.00	Horizontal	PASS
22124.79	49.29	--	--	12.47	74.0	--	54.0	4.71	261.70	100.00	Horizontal	PASS

GFSK HIGH CHANNEL 1GHz to 6GHz, ANT V



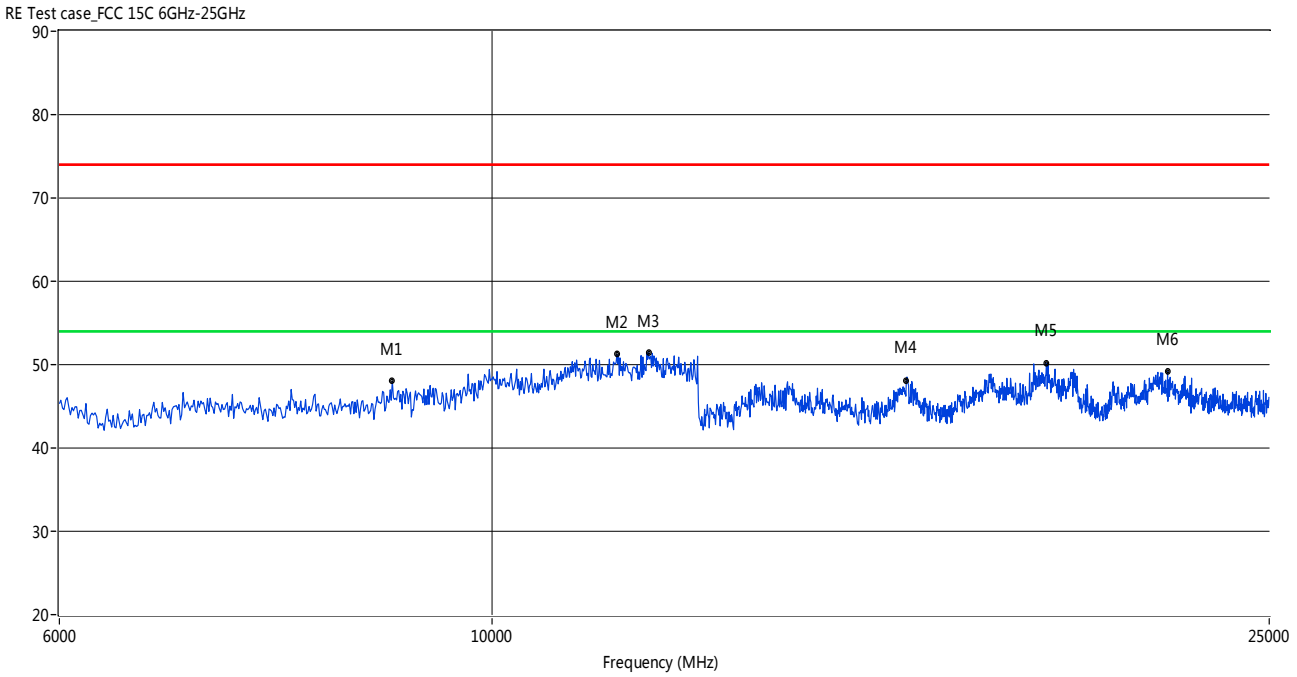
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1143.71	49.99	--	--	-4.26	74.0	--	54.0	4.01	211.80	100	Vertical	PASS
1786.43	46.57	--	--	-3.34	74.0	--	54.0	7.43	39.00	100	Vertical	PASS
2201.60	49.92	--	--	-0.27	74.0	--	54.0	4.08	161.70	100	Vertical	PASS
2477.05	103.37	--	--	-0.14	74.0	--	54.0	-49.37	145.00	100	Vertical	N/A
3586.83	43.37	--	--	8.88	74.0	--	54.0	10.63	138.90	100	Vertical	PASS
4826.35	48.28	--	--	12.69	74.0	--	54.0	5.72	98.60	100	Vertical	PASS

GFSK HIGH CHANNEL 1GHz to 6GHz, ANT H



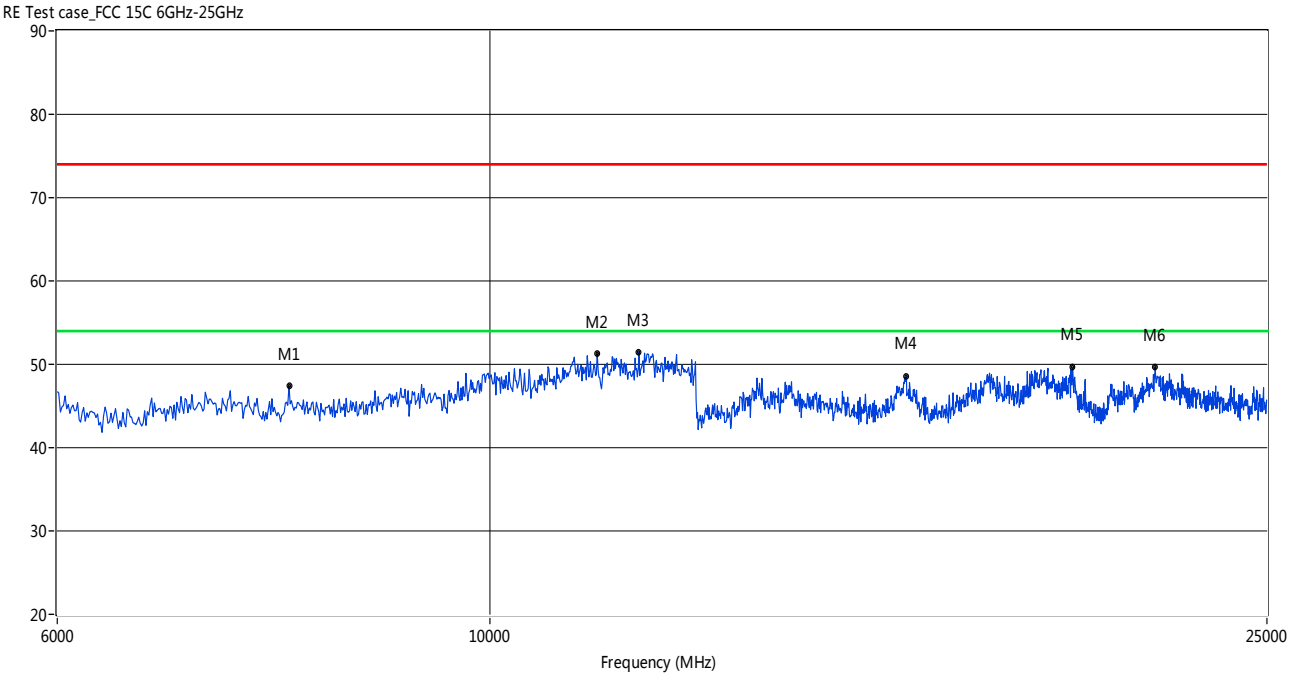
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1139.72	42.09	--	--	-4.32	74.0	--	54.0	11.91	115.30	100	Horizontal	PASS
1431.14	42.87	--	--	-3.42	74.0	--	54.0	11.13	360.00	100	Horizontal	PASS
2321.36	48.51	--	--	0.12	74.0	--	54.0	5.49	3.50	100	Horizontal	PASS
2477.05	102.52	--	--	-0.14	74.0	--	54.0	-48.52	1.20	100	Horizontal	N/A
3892.22	45.10	--	--	9.89	74.0	--	54.0	8.90	52.30	100	Horizontal	PASS
4958.08	50.91	--	--	12.66	74.0	--	54.0	3.09	213.70	100	Horizontal	PASS

GFSK HIGH CHANNEL 6GHz to 25GHz, ANT V



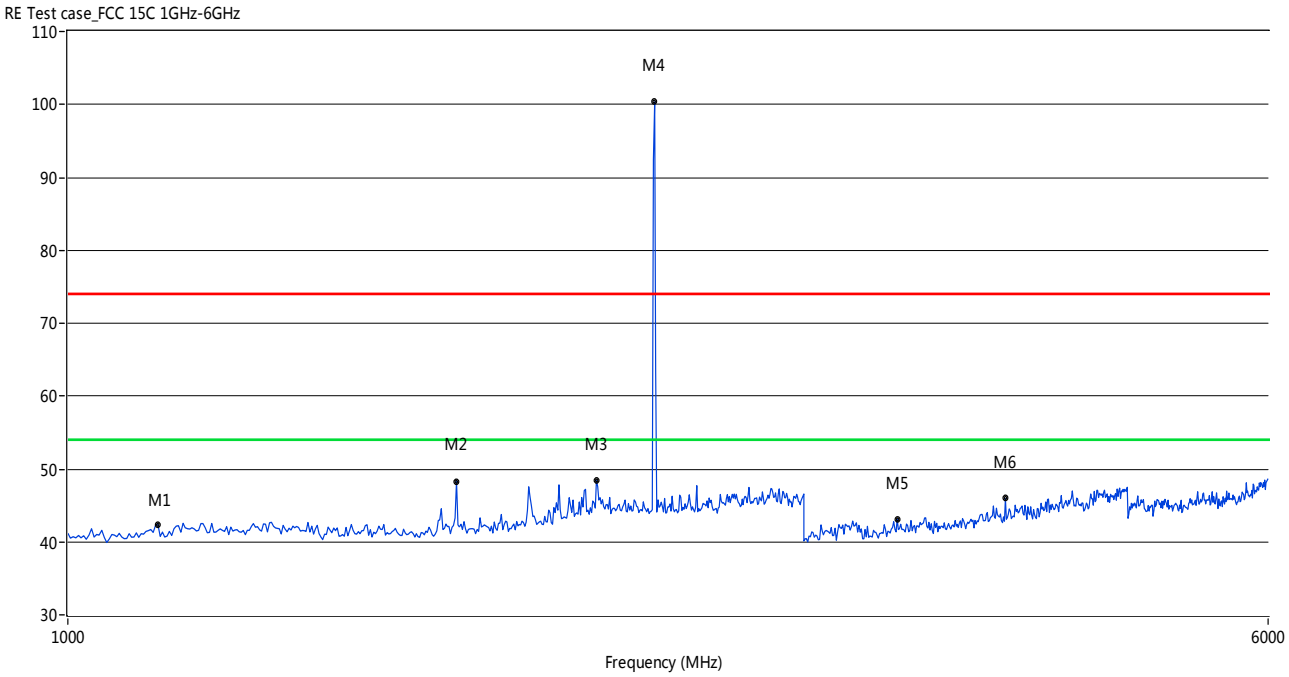
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
8886.44	48.01	--	--	11.51	74.0	--	54.0	5.99	39.10	100.00	Vertical	PASS
11581.95	51.24	--	--	13.52	74.0	--	54.0	2.76	15.00	100.00	Vertical	PASS
12019.97	51.43	--	--	19.67	74.0	--	54.0	2.57	0.70	100.00	Vertical	PASS
16296.17	48.21	--	--	8.80	74.0	--	54.0	5.79	1.00	100.00	Vertical	PASS
19219.63	50.17	--	--	11.24	74.0	--	54.0	3.83	140.10	100.00	Vertical	PASS
22174.71	49.19	--	--	11.7	74.0	--	54.0	4.81	197.50	100.00	Vertical	PASS

GFSK HIGH CHANNEL 6GHz to 25GHz, ANT H



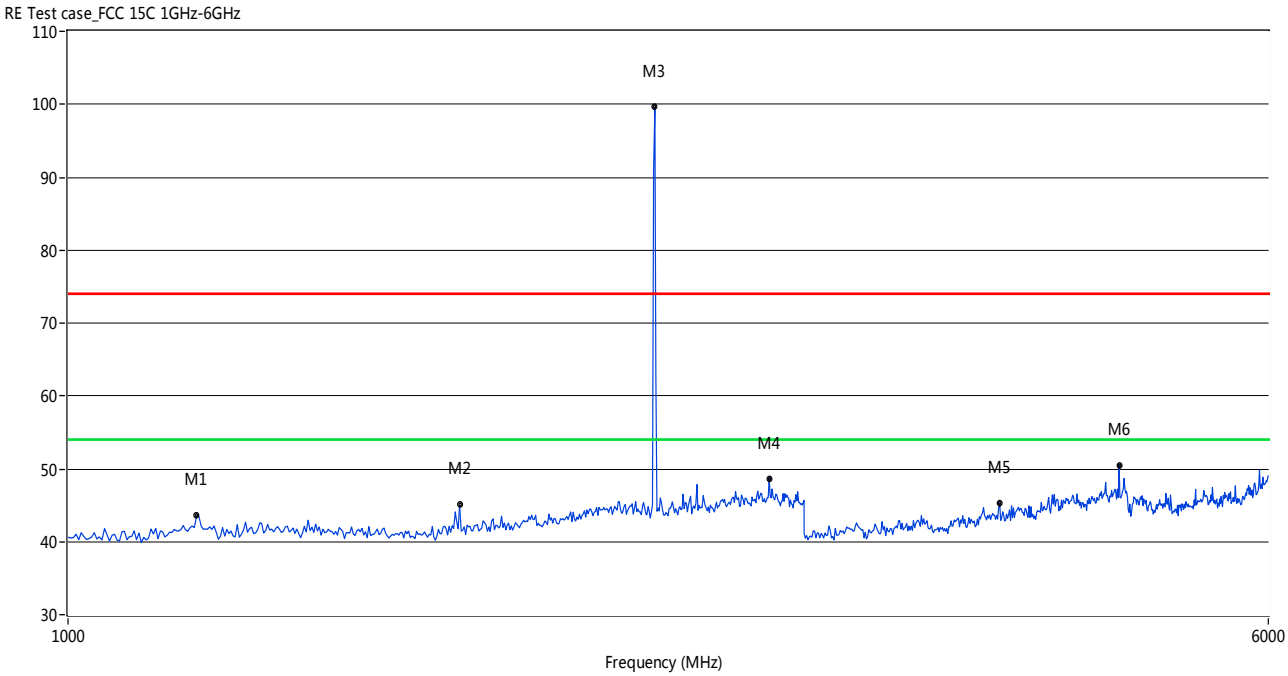
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7886.85	47.44	--	--	11.96	74.0	--	54.0	6.56	302.20	100.00	Horizontal	PASS
11346.09	51.32	--	--	14.09	74.0	--	54.0	2.68	205.40	100.00	Horizontal	PASS
11918.89	51.47	--	--	19.96	74.0	--	54.0	2.53	5.00	100.00	Horizontal	PASS
16337.77	48.61	--	--	9.12	74.0	--	54.0	5.39	169.60	100.00	Horizontal	PASS
19878.54	49.64	--	--	11.49	74.0	--	54.0	4.36	27.50	100.00	Horizontal	PASS
21915.14	49.71	--	--	12.52	74.0	--	54.0	4.29	164.40	100.00	Horizontal	PASS

Π/4-DQPSK LOW CHANNEL 1GHz to 6GHz, ANT V



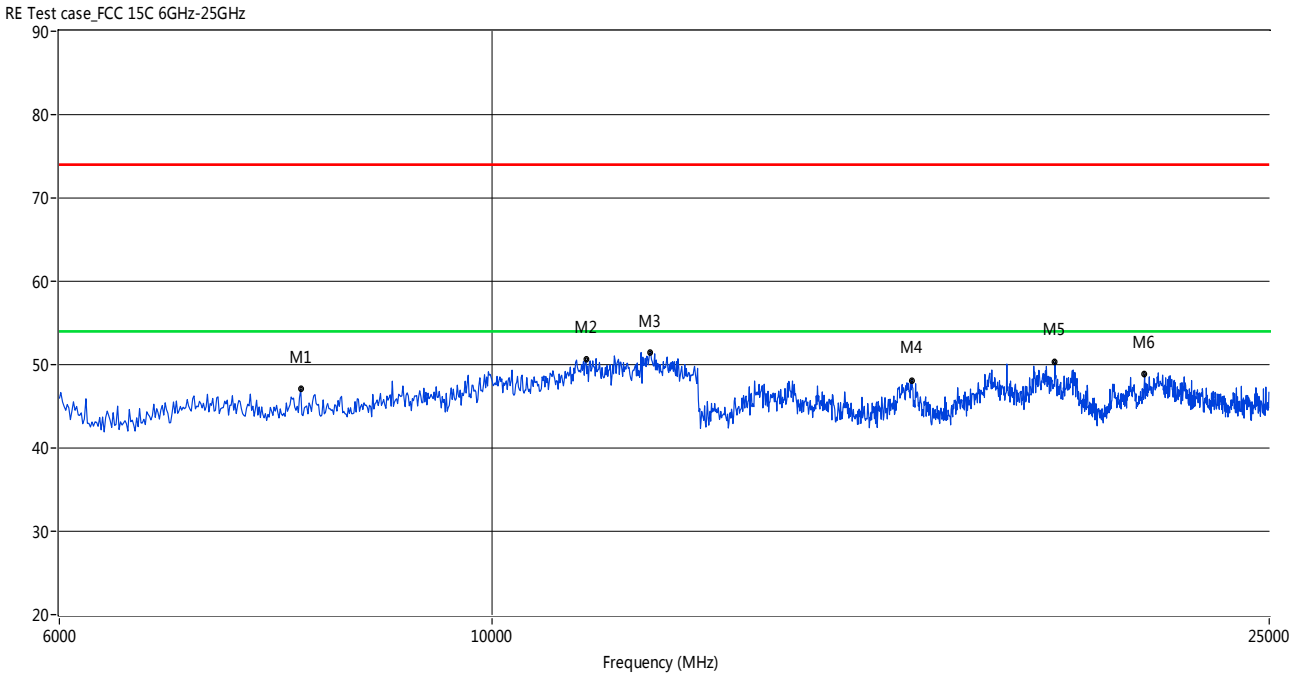
Freque cy (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1143.71	42.44	--	--	-4.26	74.0	--	54.0	11.56	359.40	100	Vertical	PASS
1786.43	48.34	--	--	-3.34	74.0	--	54.0	5.66	30.90	100	Vertical	PASS
2201.60	48.44	--	--	-0.27	74.0	--	54.0	5.56	159.10	100	Vertical	PASS
2401.20	100.35	--	--	0.01	74.0	--	54.0	-46.35	153.50	100	Vertical	N/A
3449.10	43.13	--	--	9.06	74.0	--	54.0	10.87	301.20	100	Vertical	PASS
4053.89	45.95	--	--	10.15	74.0	--	54.0	8.05	93.50	100	Vertical	PASS

Π/4-DQPSK LOW CHANNEL 1GHz to 6GHz, ANT H



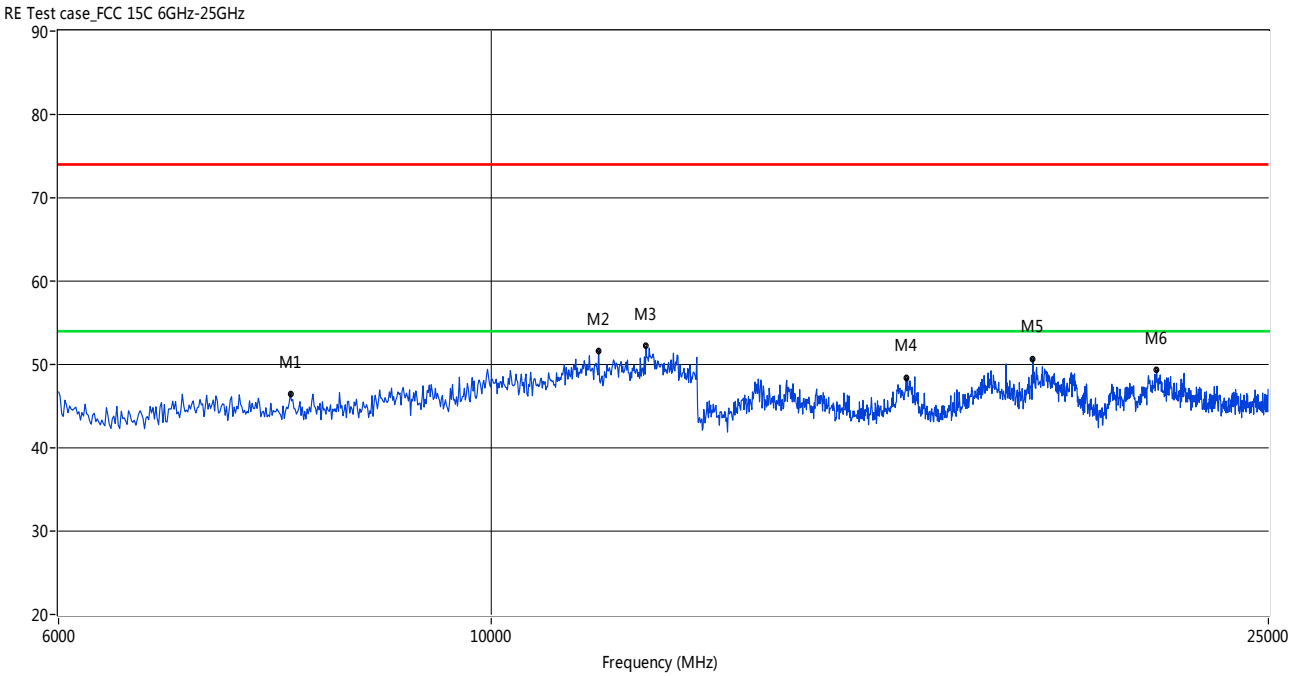
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table ( )	Height (cm)	ANT	Verdict
1211.58	43.55	--	--	-3.73	74.0	--	54.0	10.45	0.40	100	Horizontal	PASS
1794.41	45.06	--	--	-3.24	74.0	--	54.0	8.94	49.70	100	Horizontal	PASS
2401.20	99.65	--	--	0.01	74.0	--	54.0	-45.65	357.20	100	Horizontal	N/A
2848.30	48.68	--	--	3.41	74.0	--	54.0	5.32	357.20	100	Horizontal	PASS
4017.96	45.30	--	--	9.94	74.0	--	54.0	8.70	130.80	100	Horizontal	PASS
4802.40	50.52	--	--	12.37	74.0	--	54.0	3.48	160.80	100	Horizontal	PASS

Π/4-DQPSK LOW CHANNEL 6GHz to 25GHz, ANT V



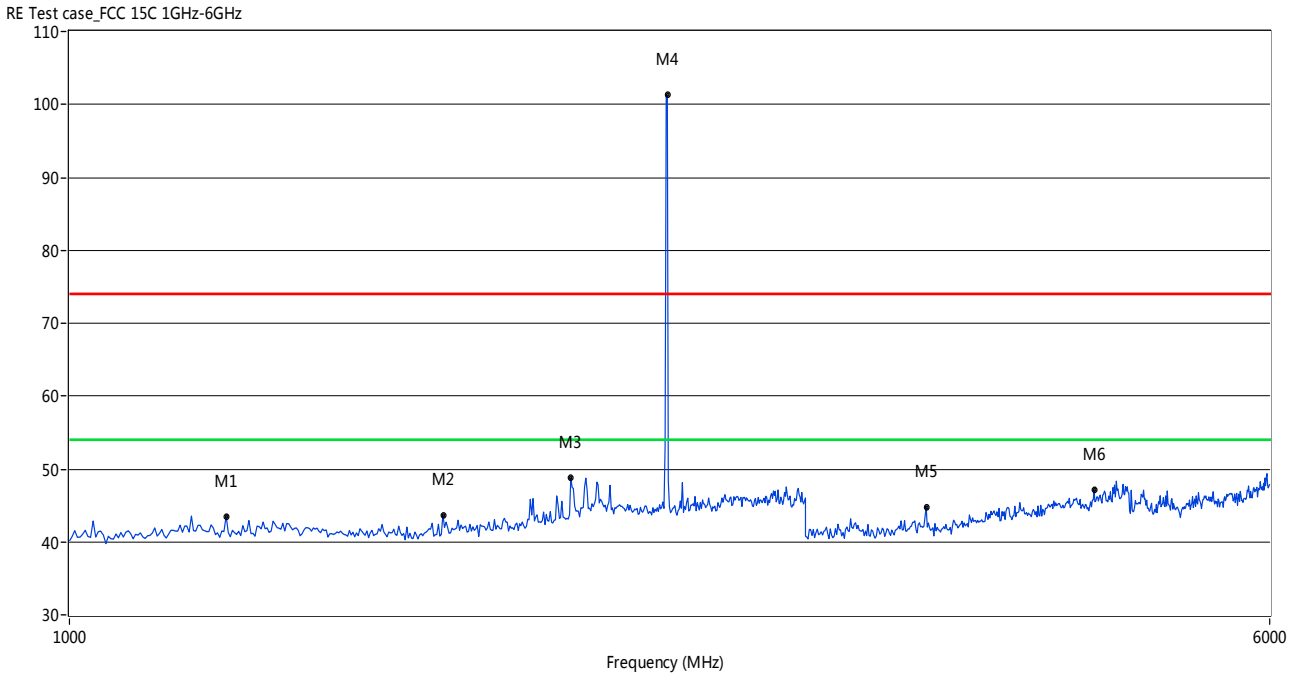
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7976.70	47.02	--	--	11.24	74.0	--	54.0	6.98	140.80	100.00	Vertical	PASS
11166.39	50.59	--	--	13.66	74.0	--	54.0	3.41	283.70	100.00	Vertical	PASS
12042.43	51.40	--	--	19.42	74.0	--	54.0	2.60	231.30	100.00	Vertical	PASS
16400.17	48.09	--	--	9.14	74.0	--	54.0	5.91	274.50	100.00	Vertical	PASS
19419.30	50.27	--	--	11.29	74.0	--	54.0	3.73	359.60	100.00	Vertical	PASS
21585.69	48.83	--	--	11.69	74.0	--	54.0	5.17	76.10	100.00	Vertical	PASS

Π/4-DQPSK LOW CHANNEL 6GHz to 25GHz, ANT H



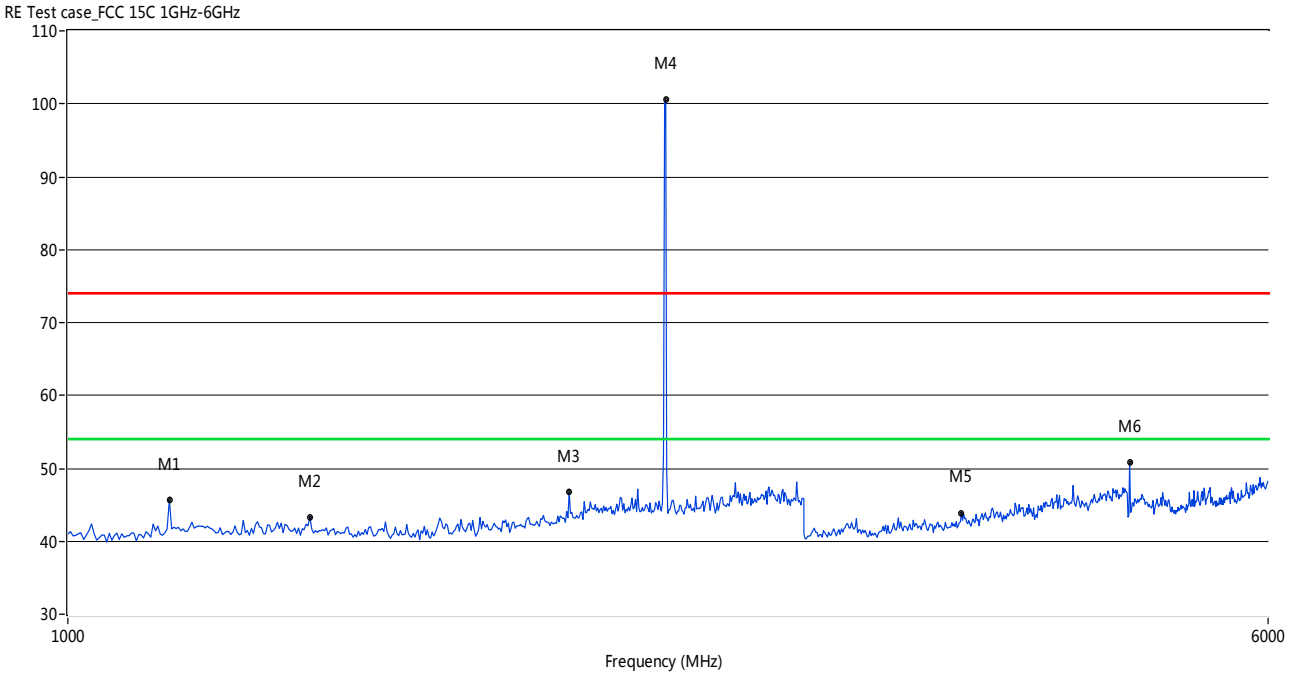
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7886.85	46.48	--	--	10.74	74.0	--	54.0	7.52	116.70	100.00	Horizontal	PASS
11346.09	51.60	--	--	14.12	74.0	--	54.0	2.40	232.50	100.00	Horizontal	PASS
11997.50	52.19	--	--	19.7	74.0	--	54.0	1.81	163.50	100.00	Horizontal	PASS
16306.57	48.34	--	--	9.57	74.0	--	54.0	5.66	274.70	100.00	Horizontal	PASS
18937.60	50.68	--	--	11.12	74.0	--	54.0	3.32	359.80	100.00	Horizontal	PASS
21915.14	49.28	--	--	12.18	74.0	--	54.0	4.72	238.30	100.00	Horizontal	PASS

Π/4-DQPSK MID CHANNEL 1GHz to 6GHz, ANT V



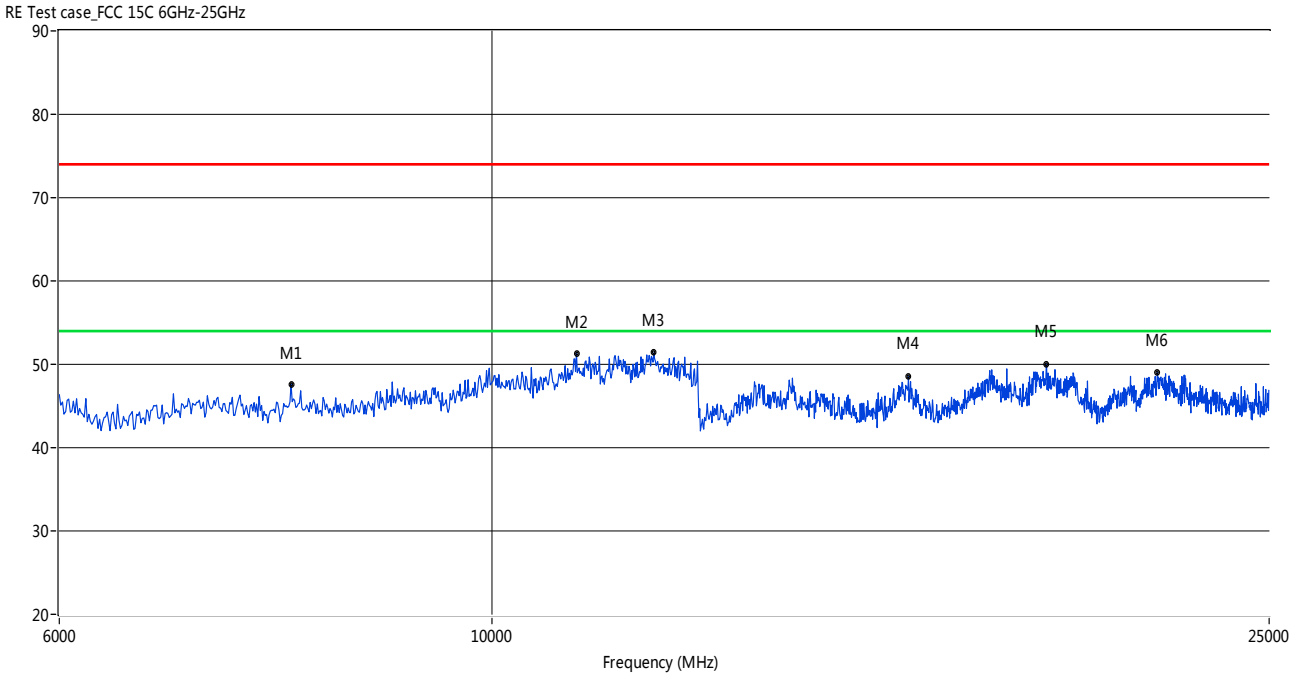
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1263.47	43.55	--	--	-3.70	74.0	--	54 0	10.45	155.40	100	Vertical	PASS
1746.51	43.71	--	--	-3.37	74.0	--	54.0	10.29	38.60	100	Vertical	PASS
2113.77	48.80	--	--	-1.04	74.0	--	54.0	5.20	160.90	100	Vertical	PASS
2441.12	101.32	--	--	-0.03	74.0	--	54.0	-47.32	144.30	100	Vertical	N/A
3592.81	44.84	--	--	8.82	74.0	--	54.0	9.16	152.30	100	Vertical	PASS
4616.77	47.15	--	--	11.54	74.0	--	54.0	6.85	2.20	100	Vertical	PASS

Π/4-DQPSK MID CHANNEL 1GHz to 6GHz, ANT H



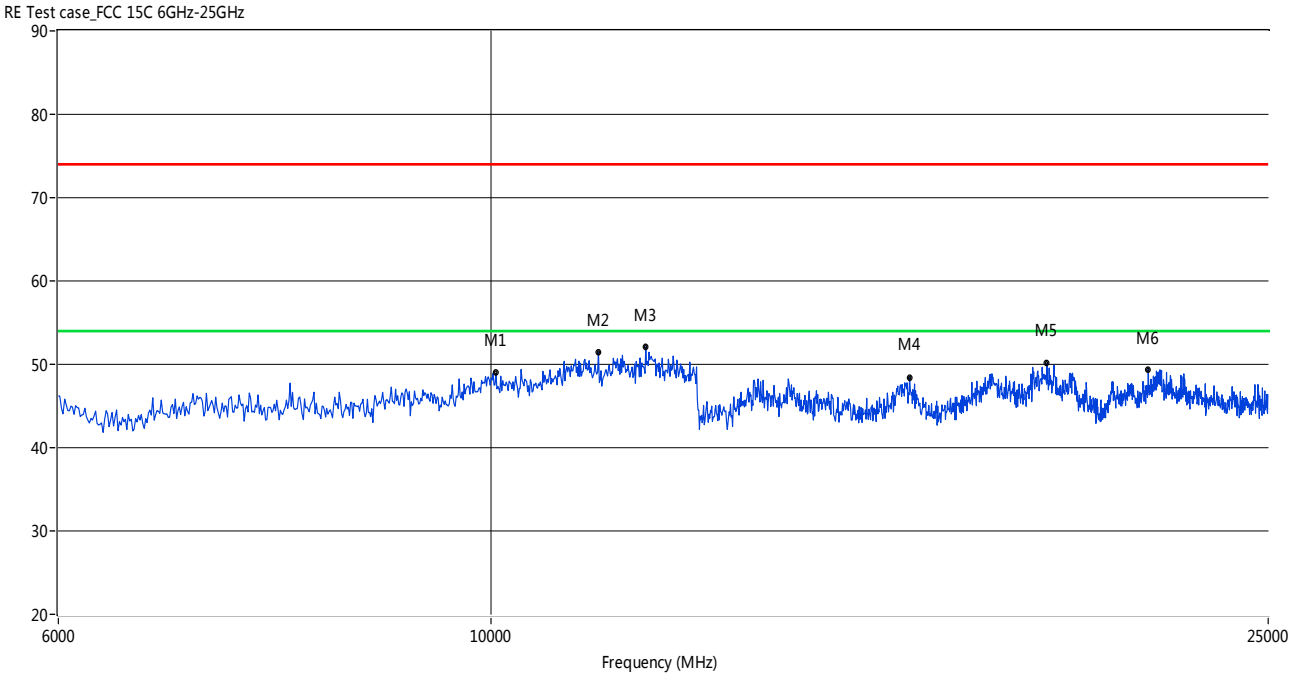
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1163.67	45.62	--	--	-4.19	74.0	--	54.0	8.38	98.70	100	Horizontal	PASS
1435.13	43.33	--	--	-3.49	74.0	--	54.0	10.67	285.20	100	Horizontal	PASS
2113.77	46.73	--	--	-1.04	74.0	--	54.0	7.27	87.50	100	Horizontal	PASS
2441.12	100.59	--	--	-0.03	74.0	--	54.0	-46.59	350.60	100	Horizontal	N/A
3796.41	43.85	--	--	9.41	74.0	--	54.0	10.15	359.70	100	Horizontal	PASS
4880.24	50.86	--	--	12.33	74.0	--	54.0	3.14	159.40	100	Horizontal	PASS

Π/4-DQPSK MID CHANNEL 6GHz to 25GHz, ANT V



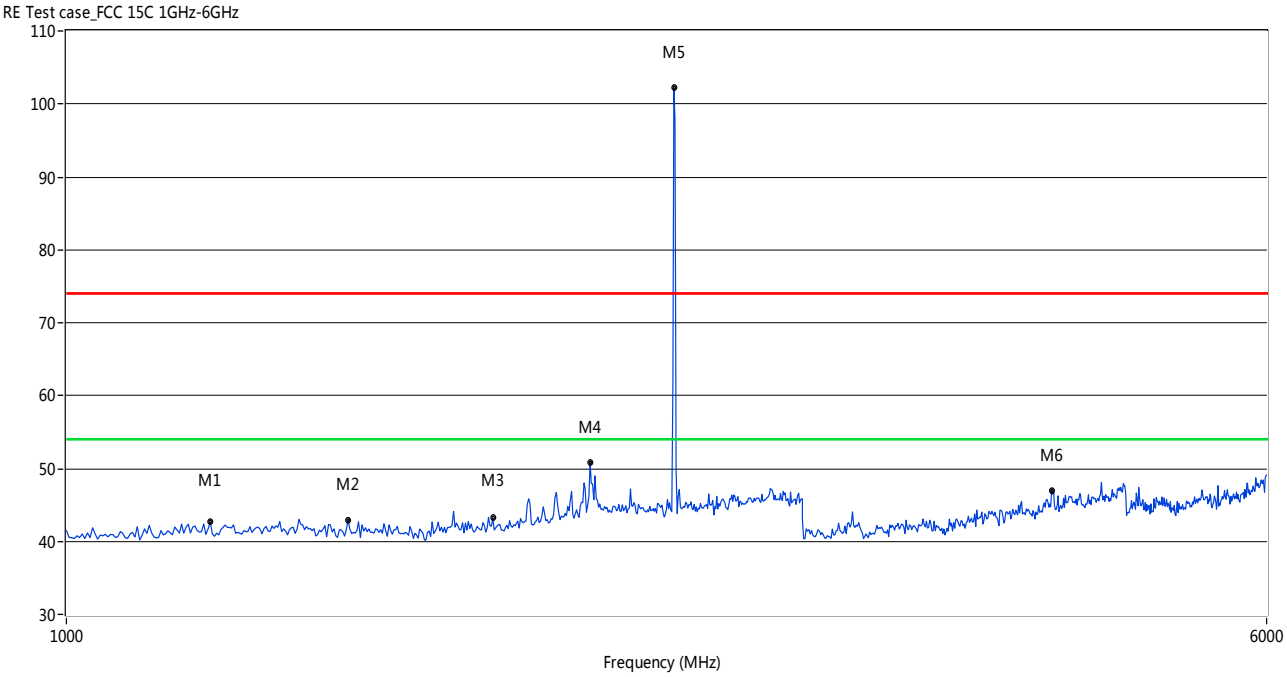
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7886.85	46.48	--	--	11.95	74.0	--	54.0	7.52	2.00	100.00	Vertical	PASS
11042.84	51.37	--	--	13.71	74.0	--	54.0	2.63	354.10	100.00	Vertical	PASS
12098.59	51.38	--	--	19.91	74.0	--	54.0	2.62	101.50	100.00	Vertical	PASS
16337.77	48.53	--	--	9.02	74.0	--	54.0	5.47	275.70	100.00	Vertical	PASS
19219.63	50.02	--	--	10.96	74.0	--	54.0	3.98	62.80	100.00	Vertical	PASS
21915.14	49.06	--	--	11.94	74.0	--	54.0	4.94	5.00	100.00	Vertical	PASS

Π/4-DQPSK MID CHANNEL 6GHz to 25GHz, ANT H



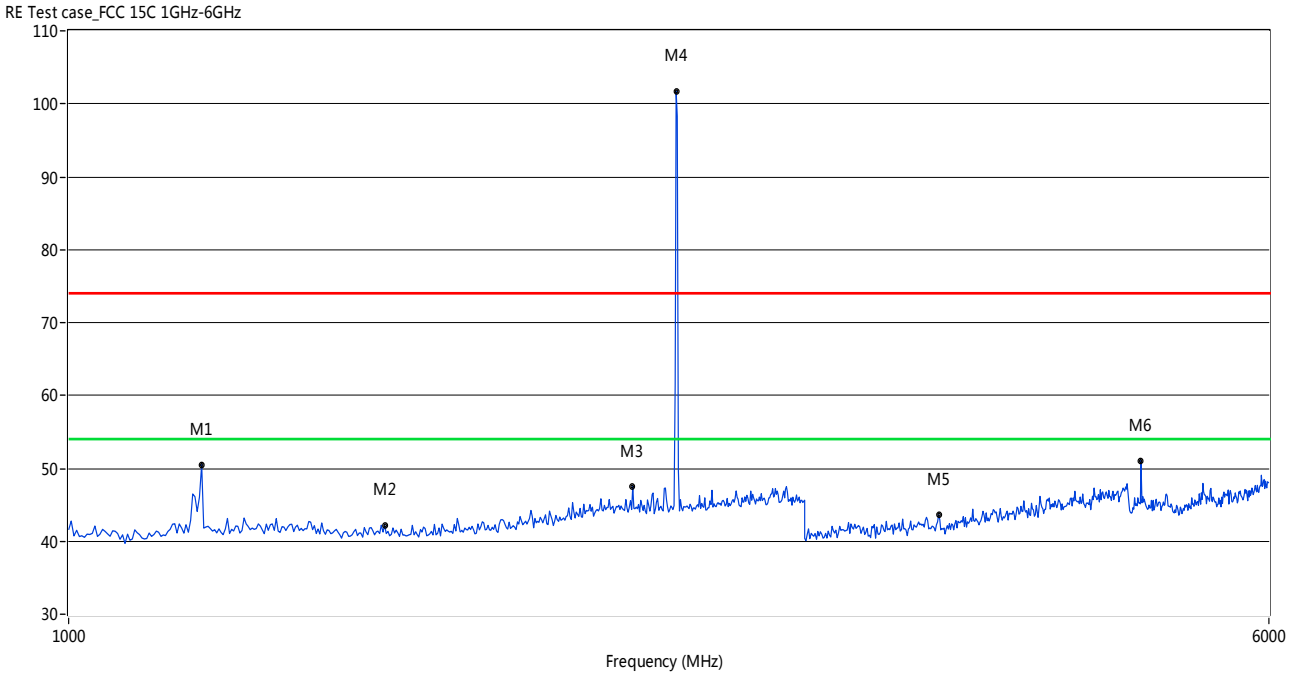
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
10054.49	48.95	--	--	11.42	74.0	--	54.0	5.05	310.00	100.00	Horizontal	PASS
11346.09	51.46	--	--	13.39	74.0	--	54.0	2.54	103.40	100.00	Horizontal	PASS
11997.50	52.09	--	--	20.16	74.0	--	54.0	1.91	144.40	100.00	Horizontal	PASS
16379.37	48.44	--	--	9.54	74.0	--	54.0	5.56	13.40	100.00	Horizontal	PASS
19259.57	50.14	--	--	11.21	74.0	--	54.0	3.86	224.20	100.00	Horizontal	PASS
21705.49	49.43	--	--	11.71	74.0	--	54.0	4.57	214.30	100.00	Horizontal	PASS

Π/4-DQPSK HIGH CHANNEL 1GHz to 6GHz, ANT V



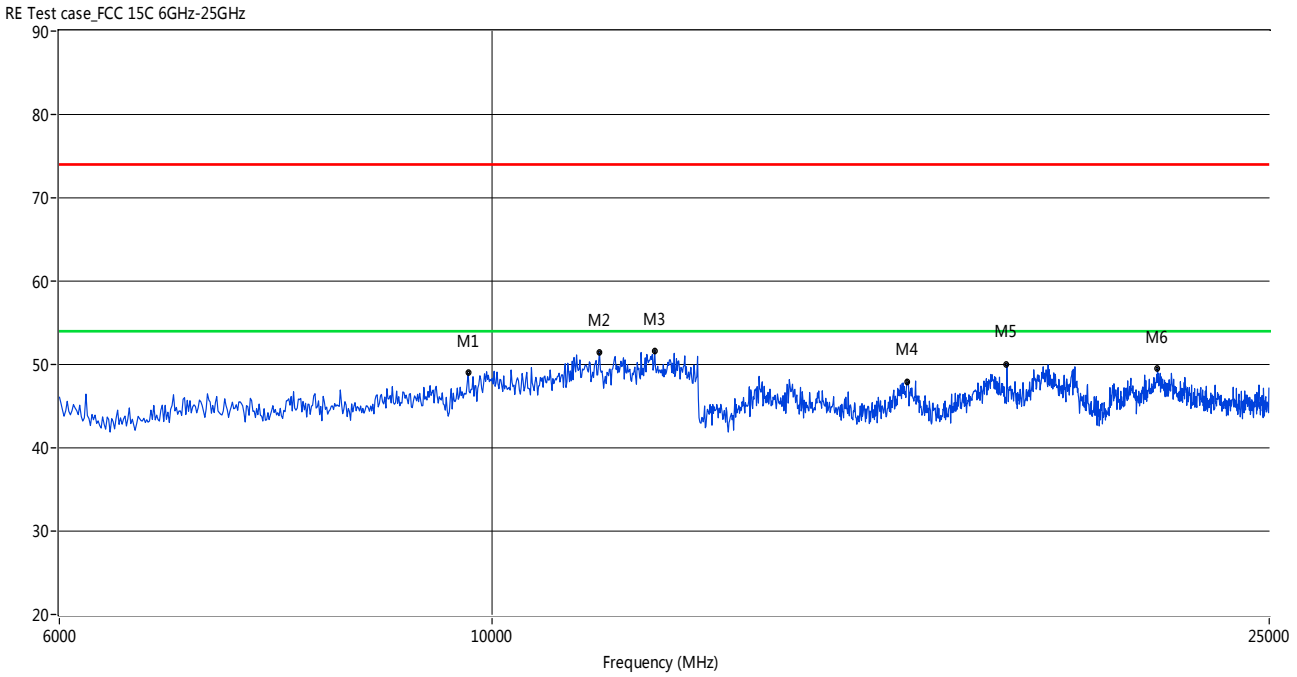
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1239.52	42.65	--	--	-3.82	74.0	--	5 .0	11.35	2.50	100	Vertical	PASS
1522.95	42.94	--	--	-3.79	74.0	--	54.0	11.06	292.90	100	Vertical	PASS
1890.22	43.22	--	--	-2.64	74.0	--	54.0	10.78	1.50	141.70	Vertical	PASS
2185.63	50.84	--	--	-0.15	74.0	--	54.0	3.16	223.50	100	Vertical	PASS
2477.05	102.25	--	--	-0.14	74.0	--	54.0	-48.25	148.70	100	Vertical	N/A
4353.29	46.96	--	--	10.99	74.0	--	54.0	7.04	0.10	100	Vertical	PASS

Π/4-DQPSK HIGH CHANNEL 1GHz to 6GHz, ANT H



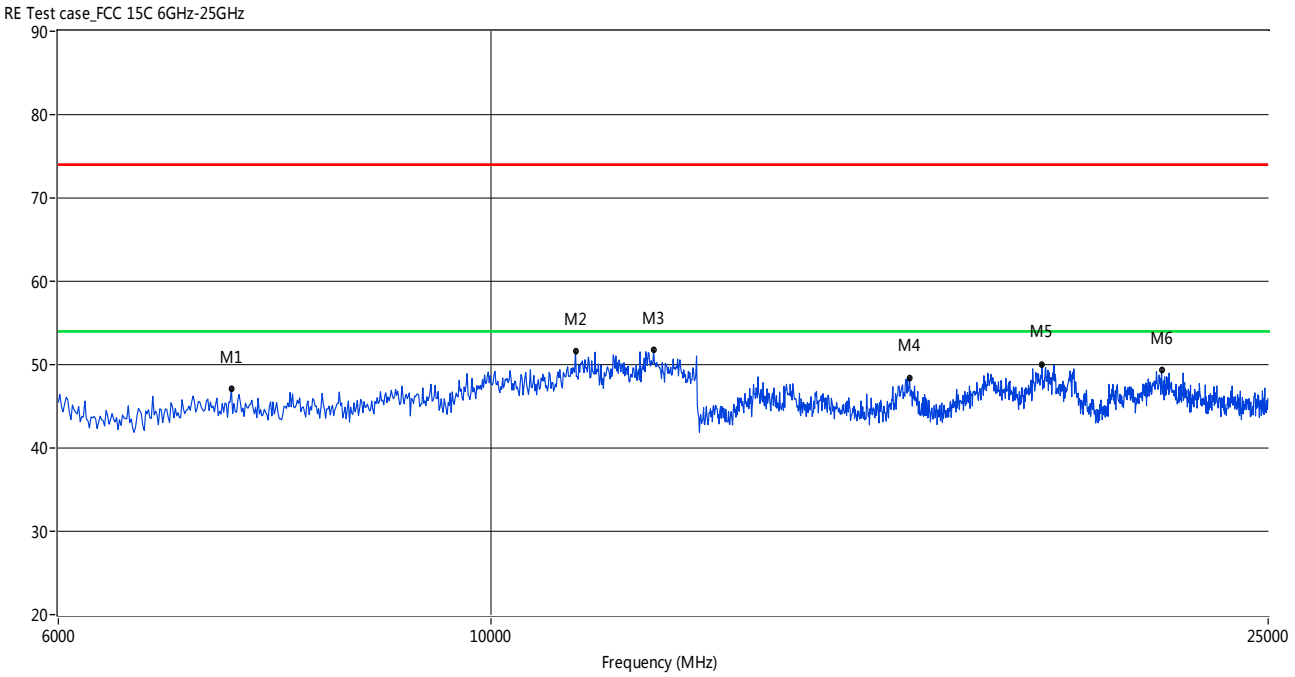
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1219.56	50.50	--	--	-3.87	74.0	--	54.0	3.50	112.00	100	Horizontal	PASS
1602.79	42.20	--	--	-3.90	74.0	--	54.0	11.80	131.00	100	Horizontal	PASS
2321.36	47.51	--	--	0.12	74.0	--	54.0	6.49	342.30	100	Horizontal	PASS
2477.05	101.72	--	--	-0.14	74.0	--	54.0	-47.72	359.80	100	Horizontal	N/A
3664.67	43.62	--	--	8.94	74.0	--	54.0	10.38	130.50	100	Horizontal	PASS
4958.08	51.08	--	--	12.66	74.0	--	54.0	2.92	148.60	100	Horizontal	PASS

Π/4-DQPSK HIGH CHANNEL 6GHz to 25GHz, ANT V



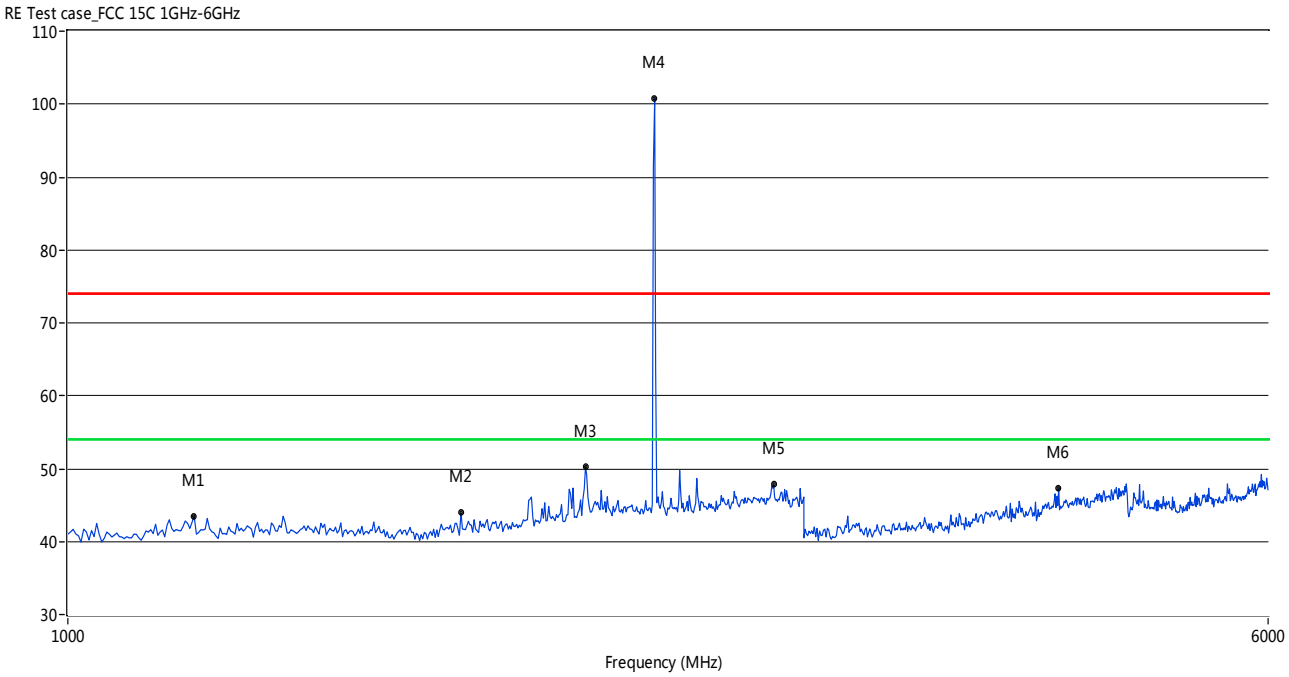
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
9717.55	48.96	--	--	11.61	74.0	--	54.0	5.04	303.30	100.00	Vertical	PASS
11346.09	51.52	--	--	12.92	74.0	--	54.0	2.48	108.00	100.00	Vertical	PASS
12109.82	51.68	--	--	19.91	74.0	--	54.0	2.32	261.10	100.00	Vertical	PASS
16316.97	47.83	--	--	9.58	74.0	--	54.0	6.17	224.00	100.00	Vertical	PASS
18344.84	49.99	--	--	11.46	74.0	--	54.0	4.01	245.20	100.00	Vertical	PASS
21915.14	49.54	--	--	12.28	74.0	--	54.0	4.46	360.00	100.00	Vertical	PASS

Π/4-DQPSK HIGH CHANNEL 6GHz to 25GHz, ANT H



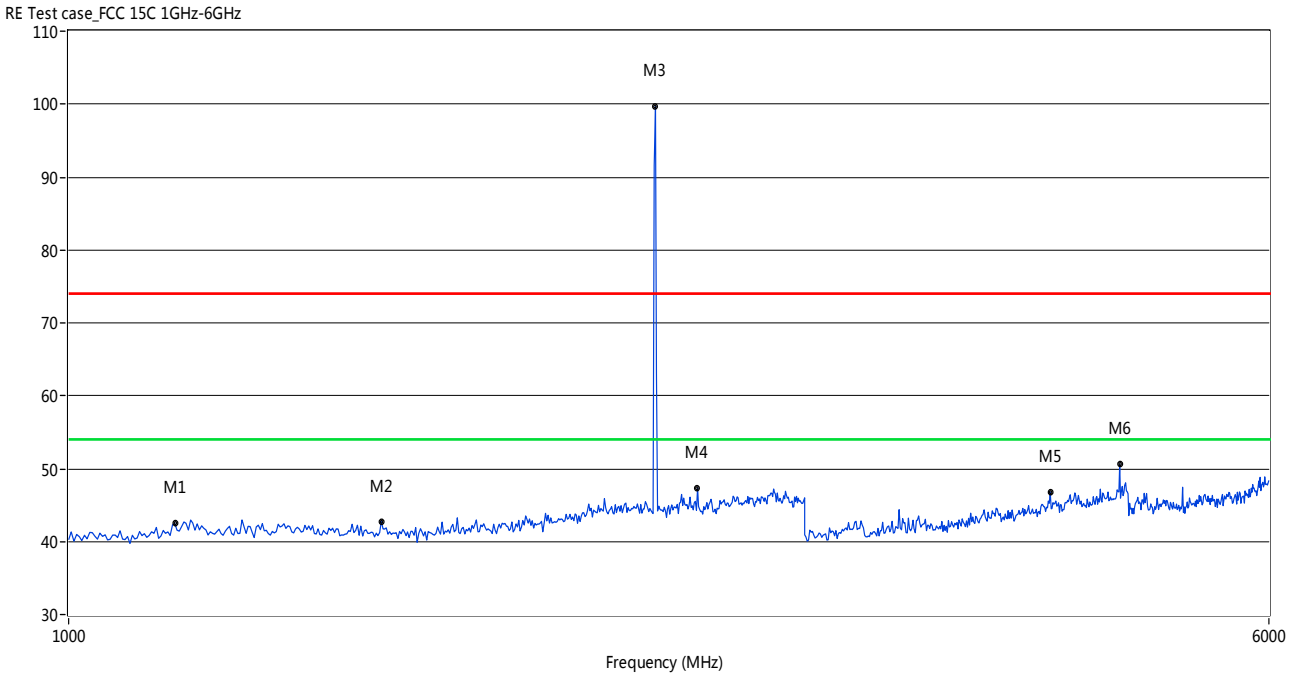
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7358.98	47.09	--	--	11.44	74.0	--	54.0	6.91	302.90	100.00	Horizontal	PASS
11042.84	51.66	--	--	13.49	74.0	--	54.0	2.34	150.00	100.00	Horizontal	PASS
12109.82	51.76	--	--	19.42	74.0	--	54.0	2.24	27.30	100.00	Horizontal	PASS
16379.37	48.40	--	--	9.40	74.0	--	54.0	5.60	123.90	100.00	Horizontal	PASS
19149.75	49.97	--	--	10.52	74.0	--	54.0	4.03	81.30	100.00	Horizontal	PASS
22044.92	49.30	--	--	11.86	74.0	--	54.0	4.70	134.70	100.00	Horizontal	PASS

8-DPSK LOW CHANNEL 1GHz to 6GHz, ANT V



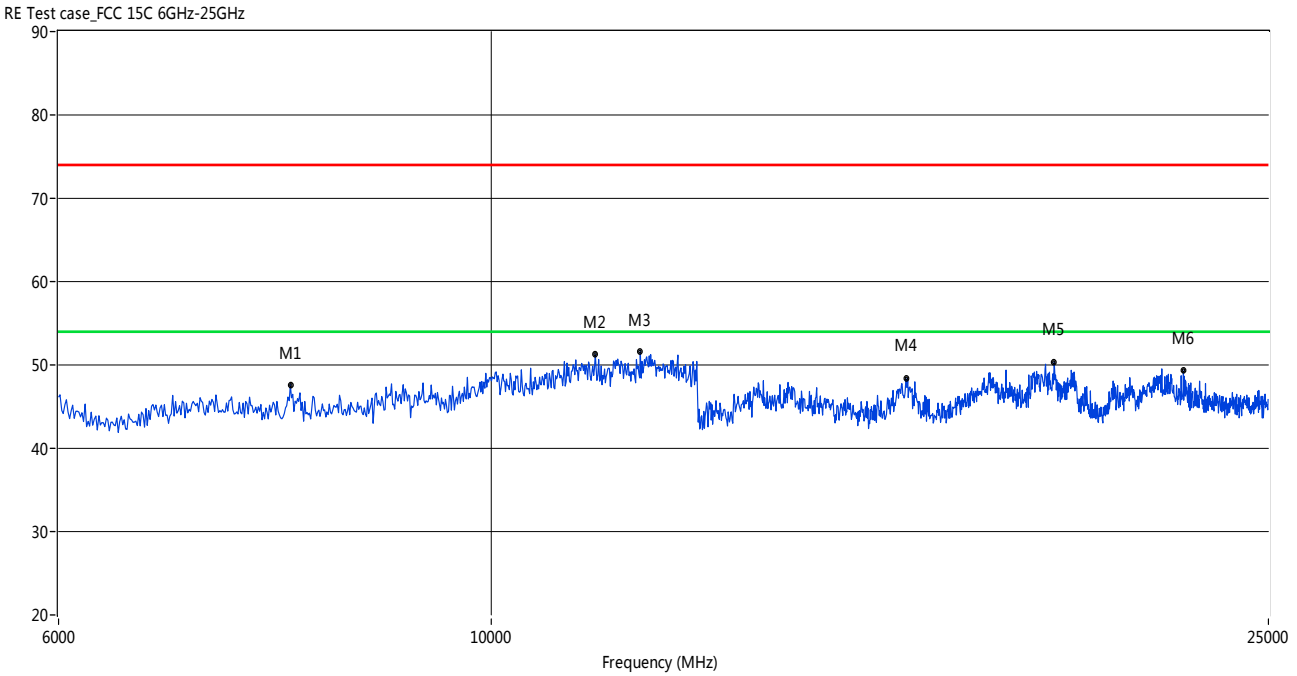
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1207.58	43.49	--	--	-3.68	74.0	--	54.0	10.51	16.60	100	Vertical	PASS
1798.40	43.95	--	--	-3.26	74.0	--	54.0	10.05	33.30	100	Vertical	PASS
2165.67	50.29	--	--	-0.53	74.0	--	54.0	3.71	165.60	100	Vertical	PASS
2401.20	100.77	--	--	0.01	74.0	--	54.0	-46.77	143.70	100	Vertical	N/A
2868.26	47.88	--	--	2.92	74.0	--	54.0	6.12	209.80	100	Vertical	PASS
4389.22	47.35	--	--	10.69	74.0	--	54.0	6.65	360.00	100	Vertical	PASS

8-DPSK LOW CHANNEL 1GHz to 6GHz, ANT H



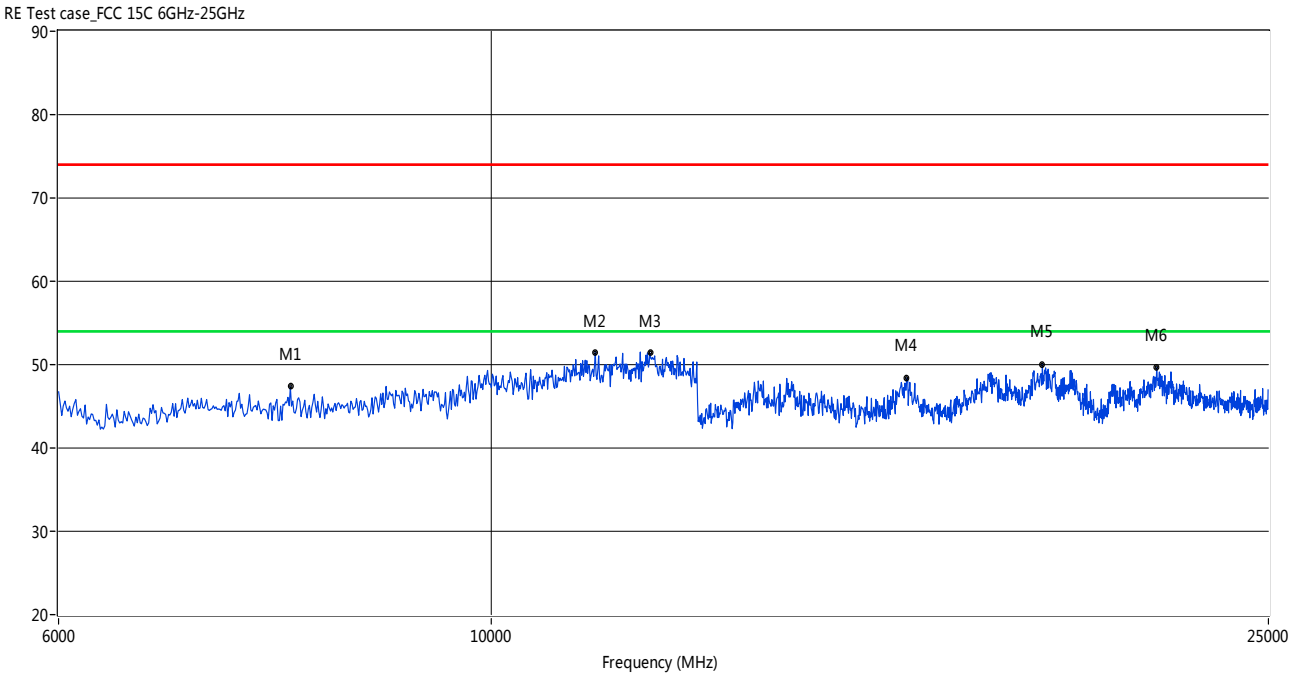
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1171.66	42.46	--	--	-4.10	74.0	--	54.0	11.54	287.20	100	Horizontal	PASS
1594.81	42.80	--	--	-3.76	74.0	--	54.0	11.20	309.50	100	Horizontal	PASS
2401.20	99.71	--	--	0.01	74.0	--	54.0	-45.71	336.90	100	Horizontal	N/A
2556.89	47.37	--	--	0.43	74.0	--	54.0	6.63	359.90	100	Horizontal	PASS
4329.34	46.76	--	--	10.65	74.0	--	54.0	7.24	171.20	100	Horizontal	PASS
4802.40	50.60	--	--	12.37	74.0	--	54.0	3.40	158.60	100	Horizontal	PASS

8-DPSK LOW CHANNEL 6GHz to 25GHz, ANT V



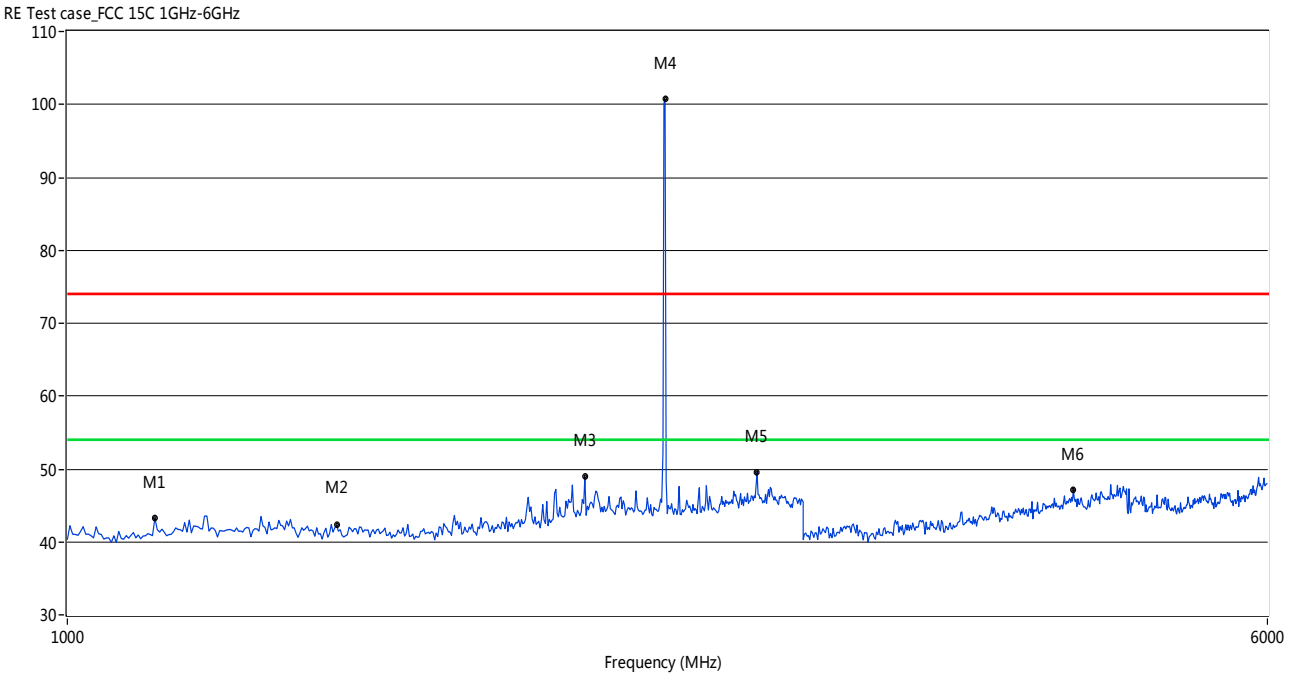
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7886.85	47.64	--	--	11.14	74.0	--	54.0	6.36	350.50	100.00	Vertical	PASS
11301.17	51.29	--	--	14.14	74.0	--	54.0	2.71	356.80	100.00	Vertical	PASS
11918.89	51.62	--	--	19.76	74.0	--	54.0	2.38	37.50	100.00	Vertical	PASS
16306.57	48.34	--	--	9.10	74.0	--	54.0	5.66	354.30	100.00	Vertical	PASS
19419.30	50.33	--	--	10.69	74.0	--	54.0	3.67	82.10	100.00	Vertical	PASS
22613.98	49.29	--	--	11.65	74.0	--	54.0	4.71	0.10	100.00	Vertical	PASS

8-DPSK LOW CHANNEL 6GHz to 25GHz, ANT H



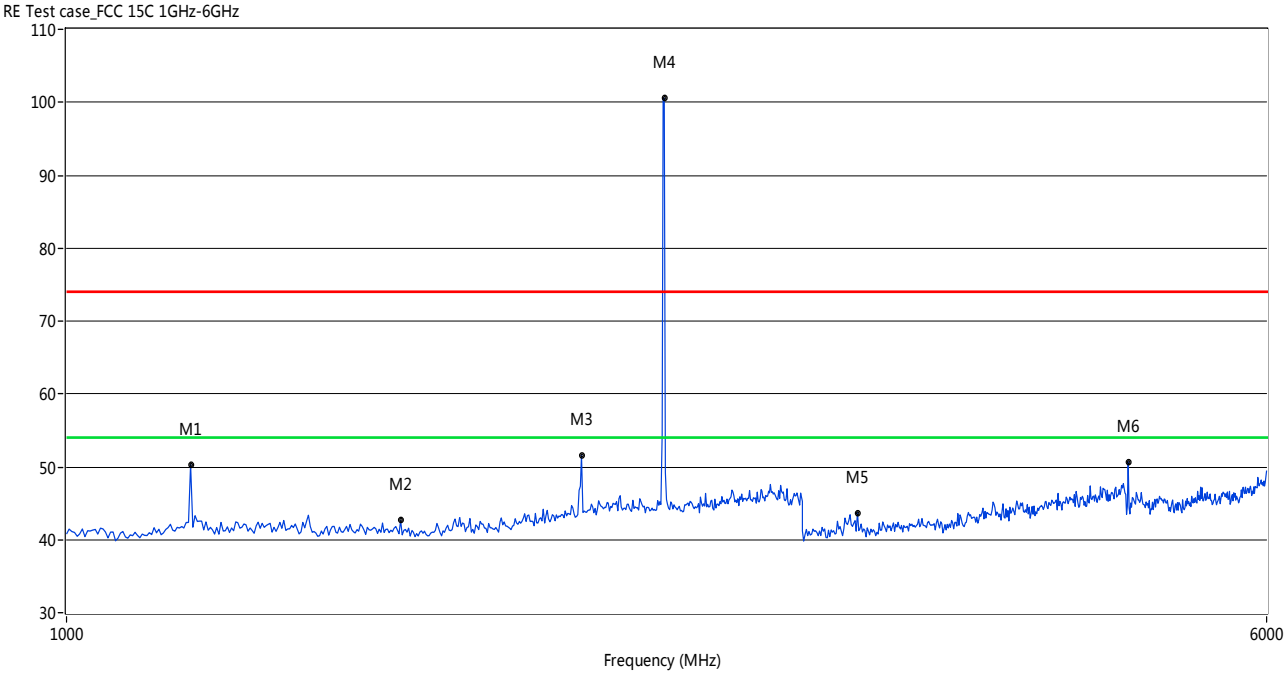
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7886.85	47.64	--	--	11.49	74.0	--	54.0	6.36	139.30	100.00	Horizontal	PASS
11301.17	51.44	--	--	13.93	74.0	--	54.0	2.56	284.80	100.00	Horizontal	PASS
12053.66	51.41	--	--	19.52	74.0	--	54.0	2.59	107.00	100.00	Horizontal	PASS
16316.97	48.41	--	--	9.48	74.0	--	54.0	5.59	219.60	100.00	Horizontal	PASS
19149.75	50.02	--	--	11.11	74.0	--	54.0	3.98	254.50	100.00	Horizontal	PASS
21915.14	49.63	--	--	12.10	74.0	--	54.0	4.37	233.30	100.00	Horizontal	PASS

8-DPSK MID CHANNEL 1GHz to 6GHz, ANT V



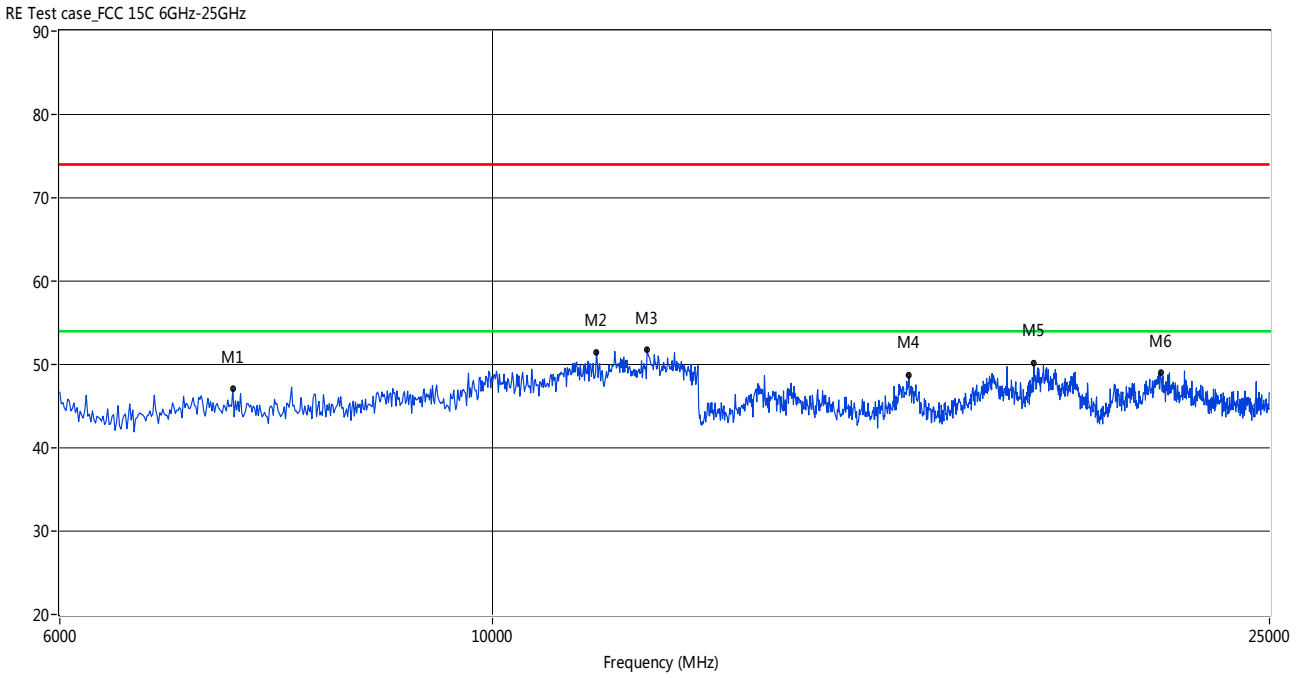
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1139.72	43.23	--	--	-4.32	74.0	--	54.0	10.77	297.80	100	Vertical	PASS
1495.01	42.31	--	--	-3.56	74.0	--	54.0	11.69	242.90	100	Vertical	PASS
2165.67	48.97	--	--	-0.53	74.0	--	54.0	5.03	160.80	100	Vertical	PASS
2441.12	100.75	--	--	-0.03	74.0	--	54.0	-46.75	138.80	100	Vertical	N/A
2800.40	49.56	--	--	2.56	74.0	--	54.0	4.44	133.60	100	Vertical	PASS
4491.02	47.18	--	--	10.97	74.0	--	54.0	6.82	56.30	100	Vertical	PASS

8-DPSK MID CHANNEL 1GHz to 6GHz, ANT H



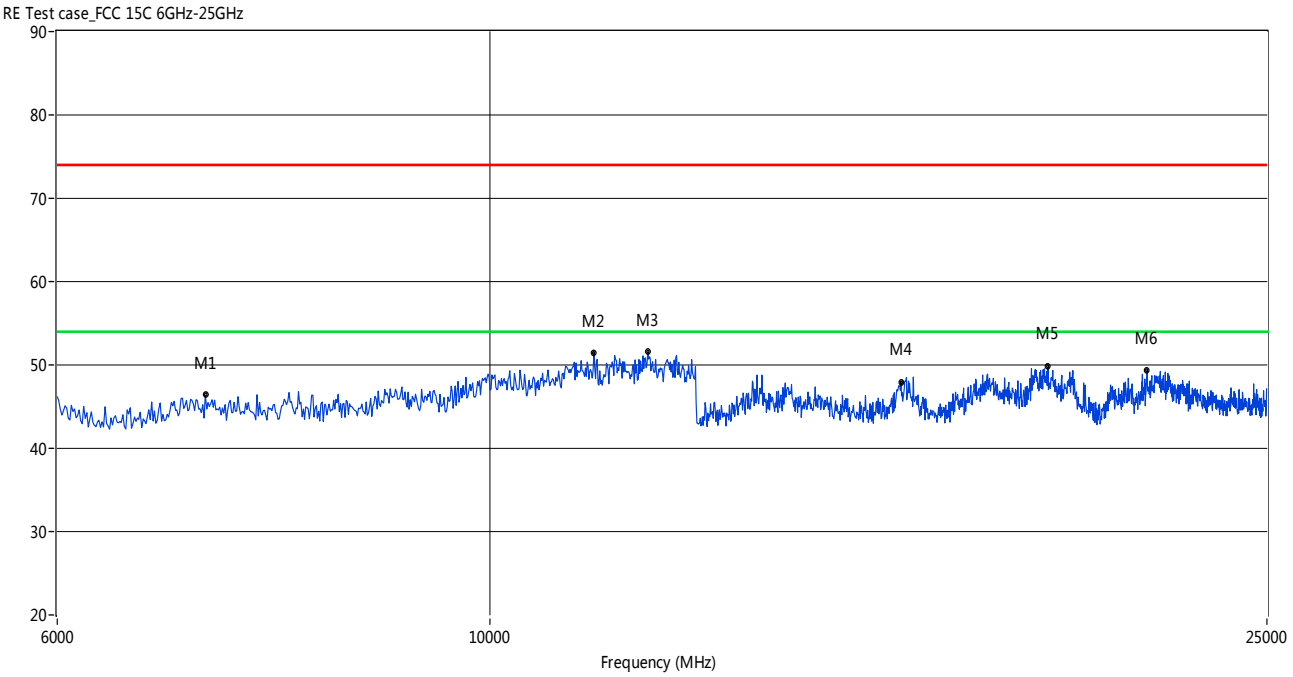
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1203.59	50.34	--	--	-3.67	74.0	--	54.0	3.66	303.30	100	Horizontal	PASS
1646.71	42.64	--	--	-3.89	74.0	--	54.0	11.36	60.00	100	Horizontal	PASS
2157.68	51.60	--	--	-0.99	74.0	--	54.0	2.40	237.90	100	Horizontal	PASS
2441.12	100.57	--	--	-0.03	74.0	--	54.0	-46.57	358.30	100	Horizontal	N/A
3257.49	43.69	--	--	8.12	74.0	--	54.0	10.31	9.00	100	Horizontal	PASS
4880.24	50.67	--	--	12.33	74.0	--	54.0	3.33	149.10	100	Horizontal	PASS

8-DPSK MID CHANNEL 6GHz to 25GHz, ANT V



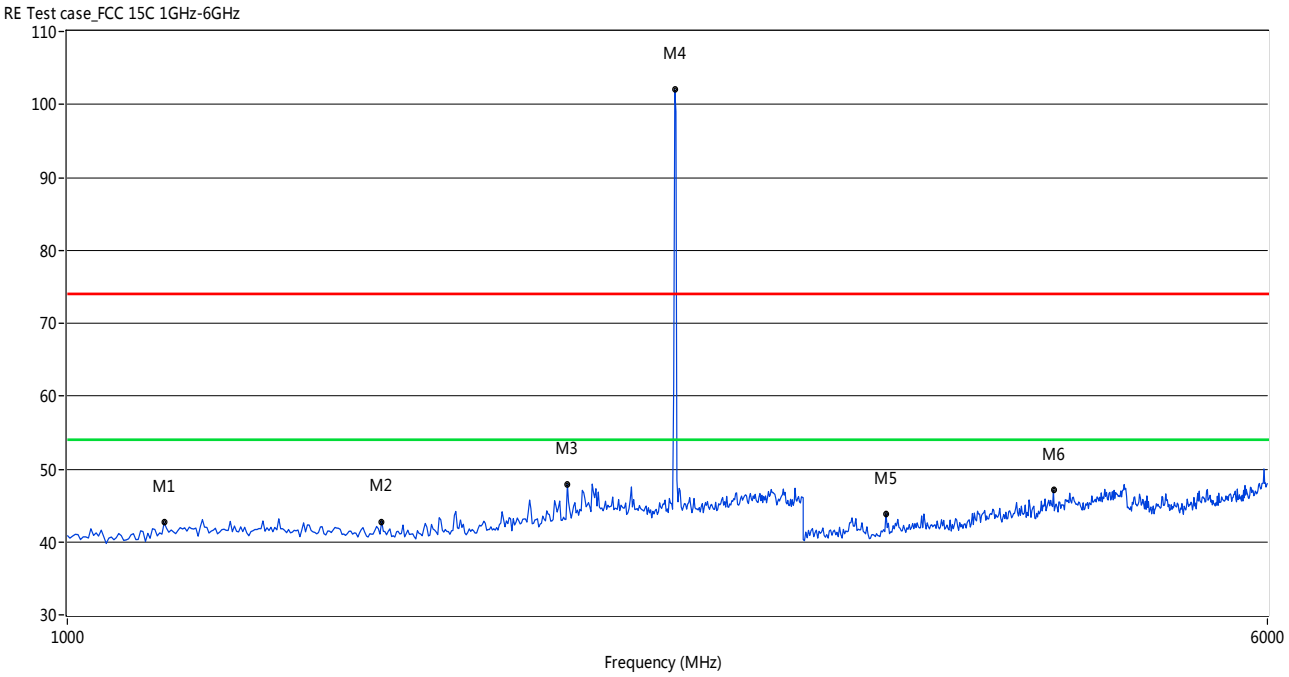
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7358.98	47.04	--	--	12.27	74.0	--	54.0	6.96	99.30	100.00	Vertical	PASS
11301.17	51.44	--	--	13.78	74.0	--	54.0	2.56	25.60	100.00	Vertical	PASS
11997.50	51.82	--	--	19.21	74.0	--	54.0	2.18	238.10	100.00	Vertical	PASS
16337.77	48.66	--	--	9.62	74.0	--	54.0	5.34	360.00	100.00	Vertical	PASS
18937.60	50.09	--	--	11.41	74.0	--	54.0	3.91	238.00	100.00	Vertical	PASS
21985.03	49.03	--	--	11.76	74.0	--	54.0	4.97	30.00	100.00	Vertical	PASS

8-DPSK MID CHANNEL 6GHz to 25GHz, ANT H



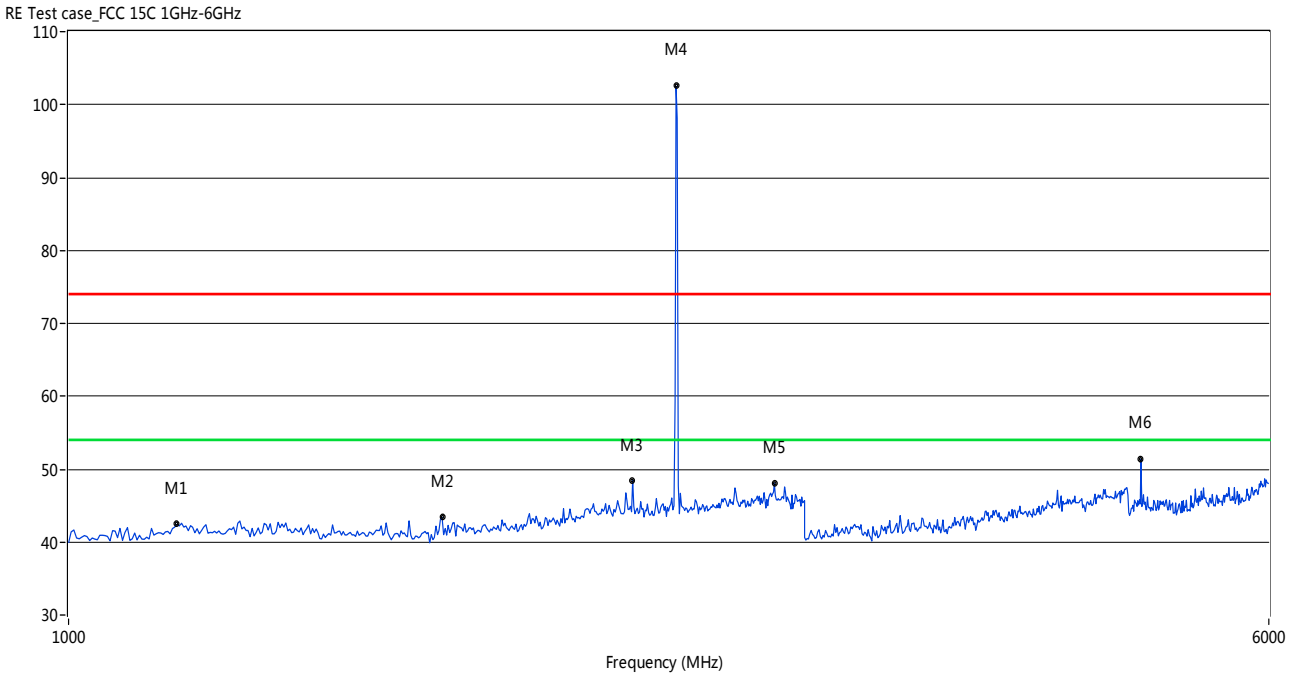
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7145.59	46.38	--	--	11.37	74.0	--	54.0	7.62	142.20	100.00	Horizontal	PASS
11301.17	51.44	--	--	13.91	74.0	--	54.0	2.56	135.60	100.00	Horizontal	PASS
12042.43	51.57	--	--	20.18	74.0	--	54.0	2.43	144.40	100.00	Horizontal	PASS
16233.78	47.92	--	--	8.76	74.0	--	54.0	6.08	197.50	100.00	Horizontal	PASS
19309.48	49.79	--	--	11.26	74.0	--	54.0	4.21	272.90	100.00	Horizontal	PASS
21705.49	49.39	--	--	12.00	74.0	--	54.0	4.61	4.90	100.00	Horizontal	PASS

8-DPSK HIGH CHANNEL 1GHz to 6GHz, ANT V



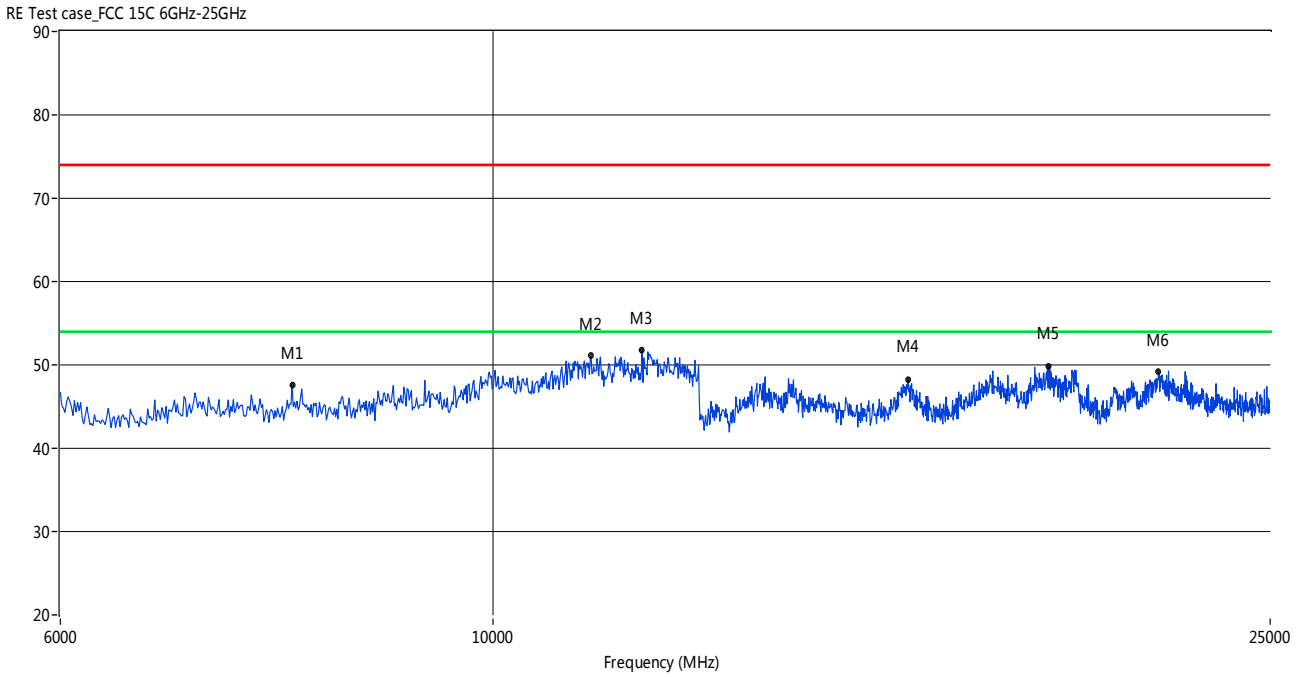
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1155.69	42.63	--	--	-4.26	74.0	--	54.0	11.37	54.80	100	Vertical	PASS
1598.80	42.80	--	--	-3.79	74.0	--	54.0	11.20	2.50	100	Vertical	PASS
2109.78	47.94	--	--	-1.20	74.0	--	54.0	6.06	160.80	100	Vertical	PASS
2477.05	102.02	--	--	-0.14	74.0	--	54.0	-48.02	144.10	100	Vertical	N/A
3395.21	43.86	--	--	8.18	74.0	--	54.0	10.14	58.30	100	Vertical	PASS
4359.28	47.11	--	--	11.12	74.0	--	54.0	6.89	189.30	100	Vertical	PASS

8-DPSK HIGH CHANNEL 1GHz to 6GHz, ANT H



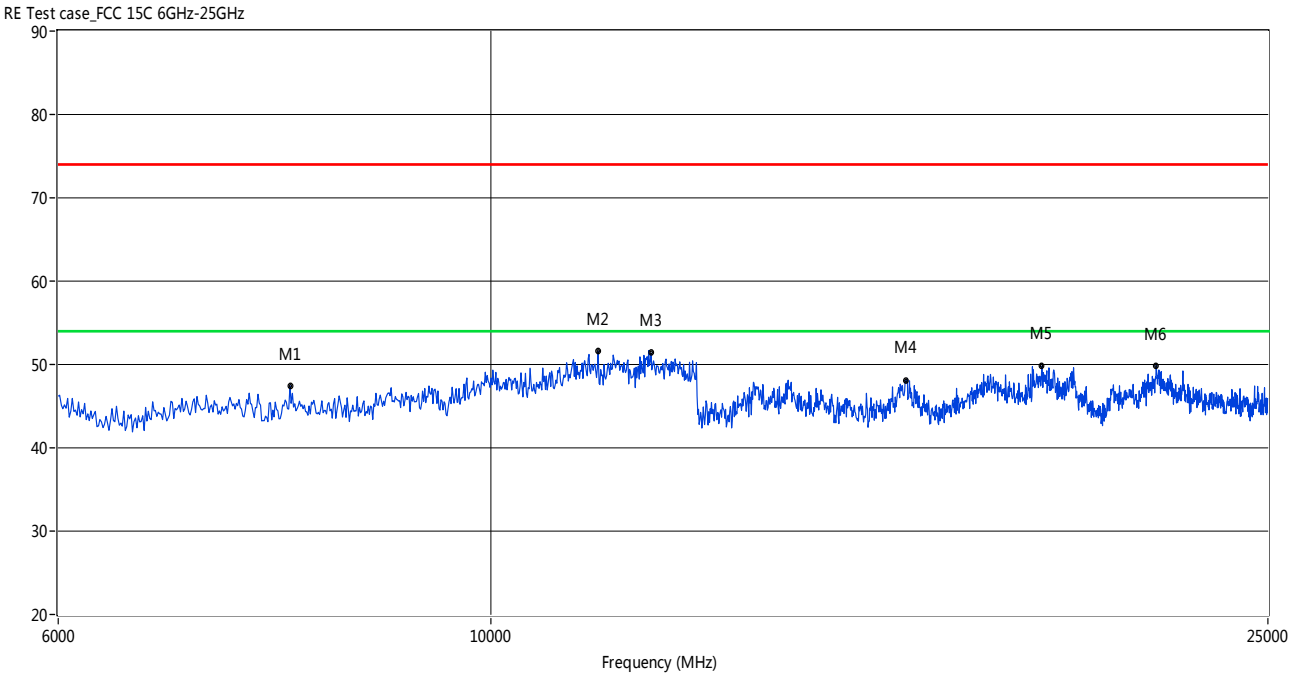
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1175.65	42.45	--	--	-4.08	74.0	--	54.0	11.55	309.80	100	Horizontal	PASS
1746.51	43.44	--	--	-3.37	74.0	--	54.0	10.56	96.10	100	Horizontal	PASS
2321.36	48.49	--	--	0.12	74.0	--	54.0	5.51	187.20	100	Horizontal	PASS
2477.05	102.54	--	--	-0.14	74.0	--	54.0	-48.54	360.00	100	Horizontal	N/A
2868.26	48.08	--	--	2.92	74.0	--	54.0	5.92	256.70	100	Horizontal	PASS
4958.08	51.38	--	--	12.66	74.0	--	54.0	2.62	149.80	100	Horizontal	PASS

8-DPSK HIGH CHANNEL 6GHz to 25GHz, ANT V



Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7886.85	47.53	--	--	11.02	74.0	--	54.0	6.47	359.50	100.00	Vertical	PASS
11222.55	51.06	--	--	13.21	74.0	--	54.0	2.94	133.00	100.00	Vertical	PASS
11918.89	51.73	--	--	20.13	74.0	--	54.0	2.27	125.28	100.00	Vertical	PASS
16306.57	48.23	--	--	8.85	74.0	--	54.0	5.77	263.40	100.00	Vertical	PASS
19259.57	49.86	--	--	10.94	74.0	--	54.0	4.14	65.20	100.00	Vertical	PASS
21915.14	49.19	--	--	11.66	74.0	--	54.0	4.81	172.80	100.00	Vertical	PASS

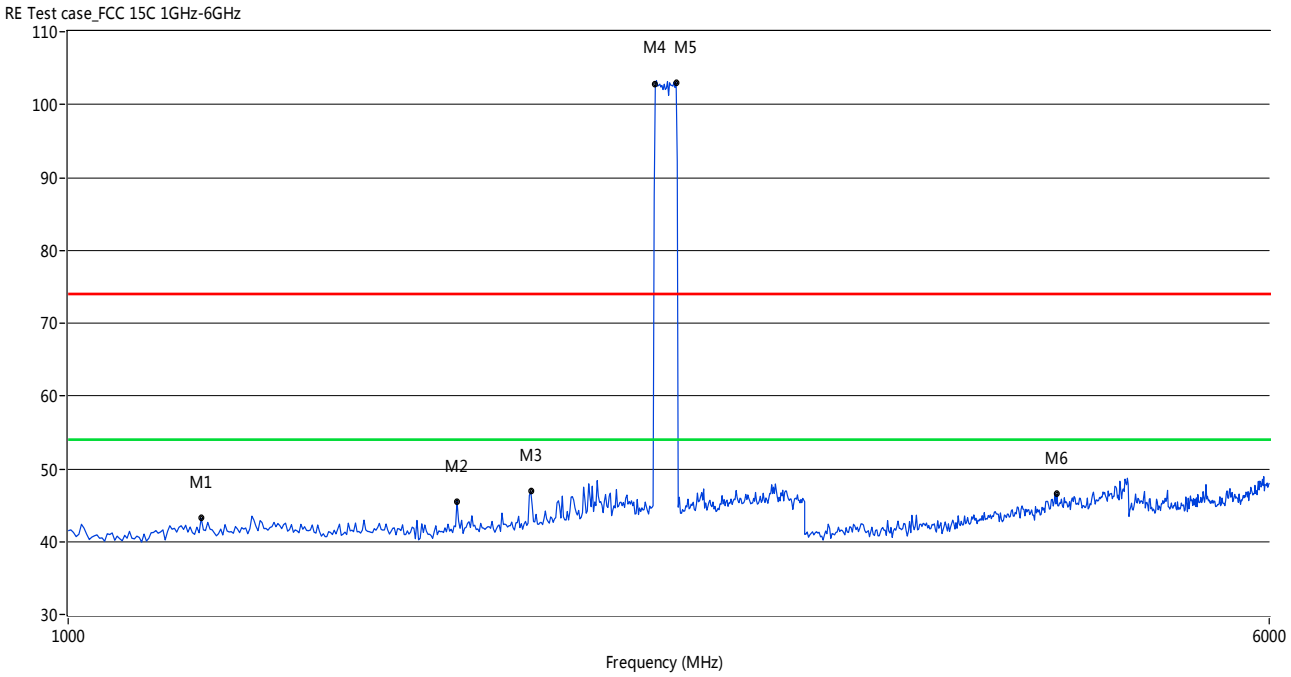
8-DPSK HIGH CHANNEL 6GHz to 25GHz, ANT H



Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7886.85	47.53	--	--	11.96	74.0	--	54.0	6.47	139.70	100.00	Horizontal	PASS
11346.09	51.61	--	--	14.42	74.0	--	54.0	2.39	153.70	100.00	Horizontal	PASS
12076.12	51.39	--	--	19.44	74.0	--	54.0	2.61	133.10	100.00	Horizontal	PASS
16306.57	48.23	--	--	9.02	74.0	--	54.0	5.77	263.40	100.00	Horizontal	PASS
19149.75	49.80	--	--	10.94	74.0	--	54.0	4.20	277.60	100.00	Horizontal	PASS
21915.14	49.19	--	--	12.14	74.0	--	54.0	4.81	131.80	100.00	Horizontal	PASS

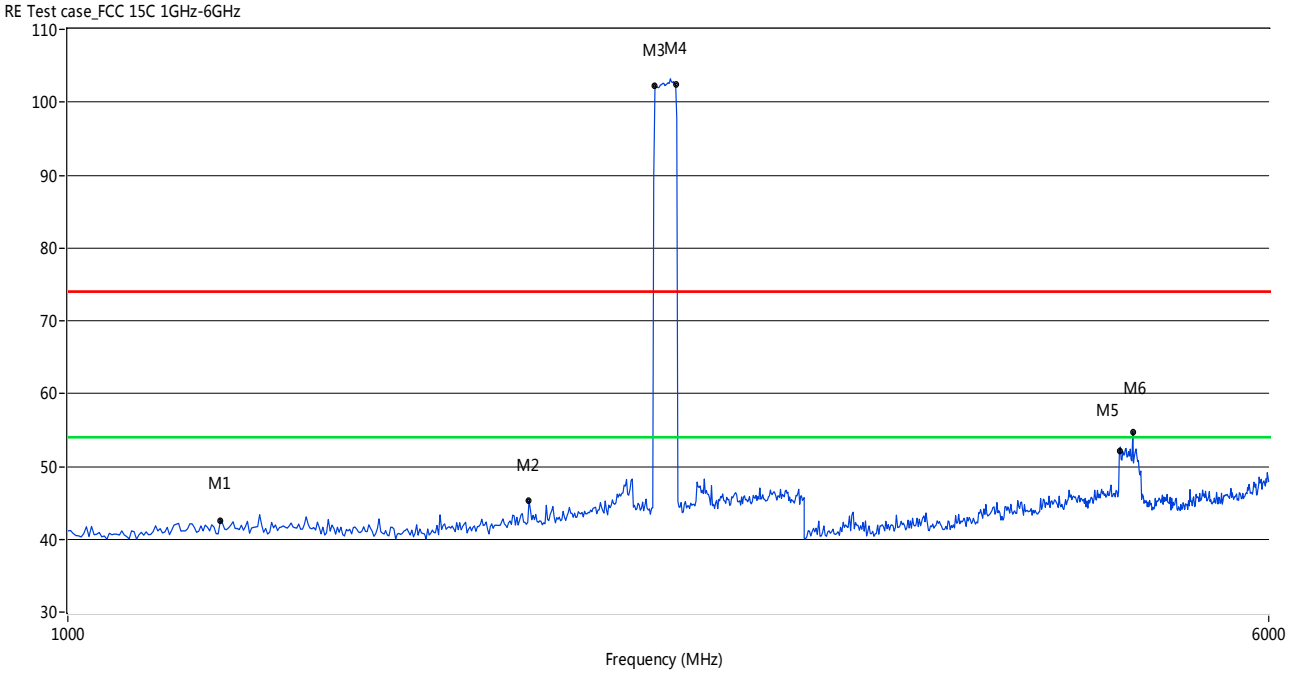
Hopping Mode:

GFSK MODE 1GHz to 6GHz, ANT V



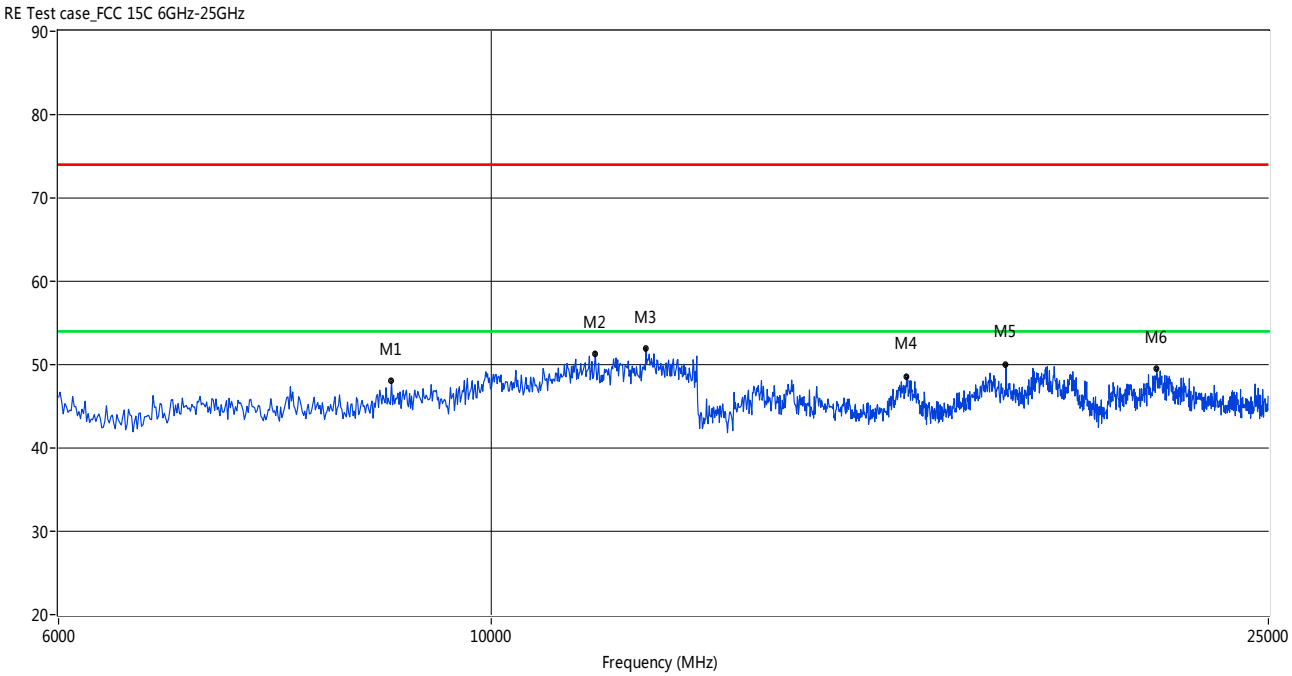
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1219.56	43.19	--	--	-3.87	74.0	--	54.0	10.81	359.20	100	Vertical	PASS
1786.43	45.55	--	--	-3.34	74.0	--	54.0	8.45	33.50	100	Vertical	PASS
1994.01	46.88	--	--	-2.12	74.0	--	54.0	7.12	156.00	100	Vertical	PASS
2401.20	102.75	--	--	0.01	74.0	--	54.0	-48.75	144.80	100	Vertical	N/A
2477.05	102.99	--	--	-0.14	74.0	--	54.0	-48.99	144.80	100	Vertical	N/A
4371.26	46.56	--	--	10.91	74.0	--	54.0	7.44	61.70	100	Vertical	PASS

GFSK MODE 1GHz to 6GHz, ANT H



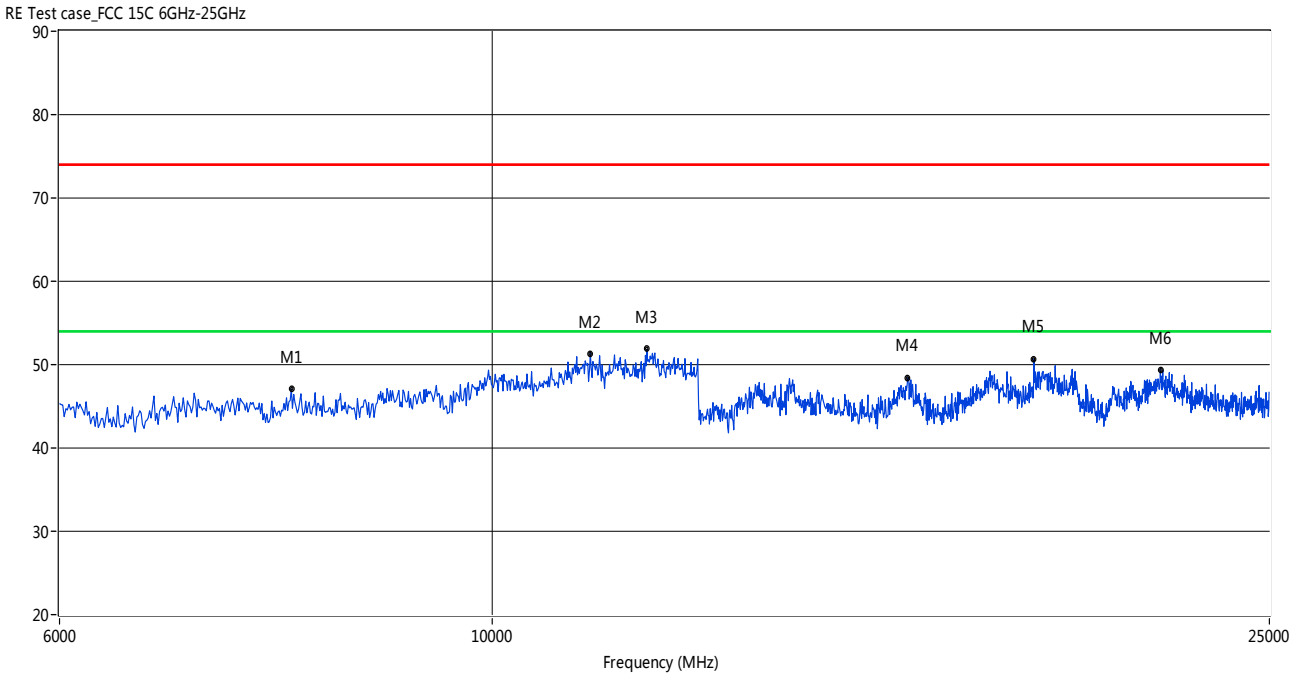
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1255.49	42.55	--	--	-3.91	74.0	--	54.0	11.45	106.00	100	Horizontal	PASS
1990.02	45.31	--	--	-2.03	74.0	--	54.0	8.69	68.20	100	Horizontal	PASS
2401.20	102.33	--	--	0.01	74.0	--	54.0	-48.33	342.10	100	Horizontal	N/A
2477.05	102.45	--	--	-0.14	74.0	--	54.0	-48.45	360.00	100	Horizontal	N/A
4808.38	52.66	--	35.22	12.36	74.0	--	54.0	18.78	182.80	100	Horizontal	PASS
4898.20	54.70	--	35.81	12.52	74.0	--	54.0	18.19	152.80	100.90	Horizontal	PASS

GFSK MODE 6GHz to 25GHz, ANT V



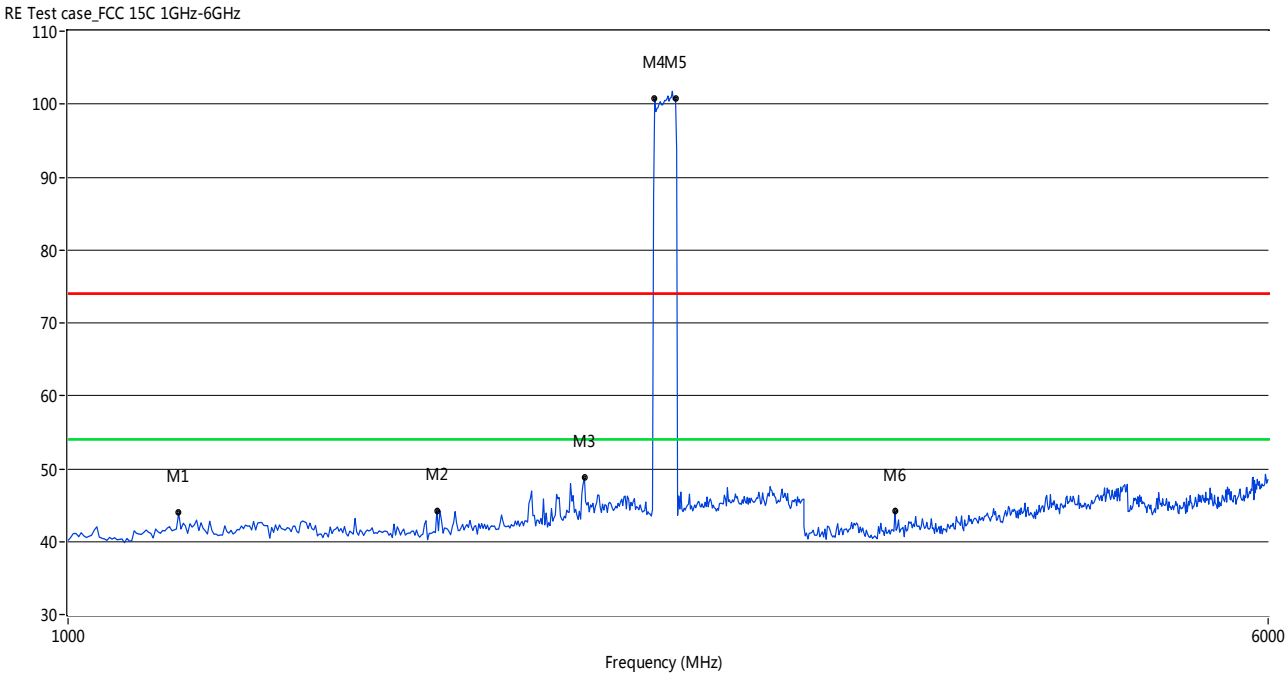
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
8886.44	48.05	--	--	11.39	74.0	--	54.0	5.95	159.10	100.00	Vertical	PASS
11301.17	51.37	--	--	14.15	74.0	--	54.0	2.63	109.00	100.00	Vertical	PASS
11997.50	52.01	--	--	19.72	74.0	--	54.0	1.99	244.90	100.00	Vertical	PASS
16316.97	48.53	--	--	9.03	74.0	--	54.0	5.47	109.00	100.00	Vertical	PASS
18344.84	49.99	--	--	11.14	74.0	--	54.0	4.01	93.40	100.00	Vertical	PASS
21915.14	49.19	--	--	12.23	74.0	--	54.0	4.81	312.00	100.00	Vertical	PASS

GFSK MODE 6GHz to 25GHz, ANT H



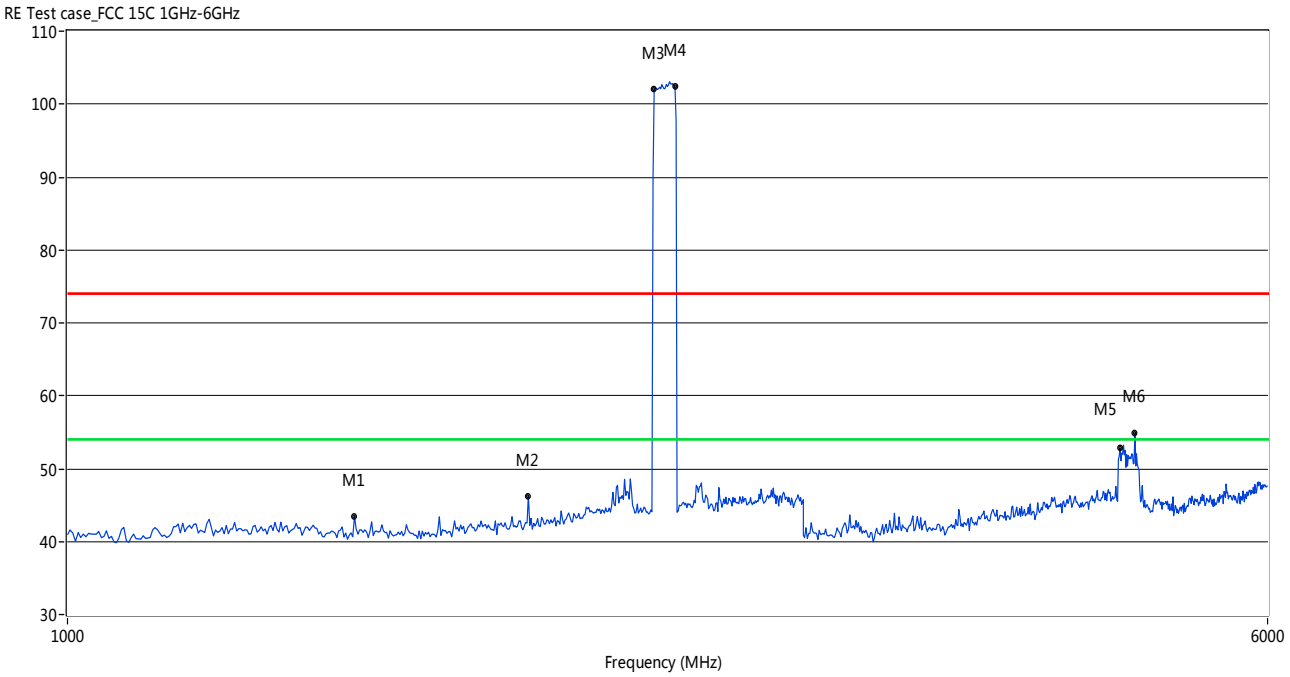
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7886.85	47.08	--	--	12.03	74.0	--	54.0	6.92	166.50	100.00	Horizontal	PASS
11222.55	51.37	--	--	13.35	74.0	--	54.0	2.63	105.40	100.00	Horizontal	PASS
11997.50	52.01	--	--	19.88	74.0	--	54.0	1.99	360.00	100.00	Horizontal	PASS
16316.97	48.53	--	--	9.51	74.0	--	54.0	5.47	118.90	100.00	Horizontal	PASS
18937.60	50.66	--	--	10.78	74.0	--	54.0	3.34	108.90	100.00	Horizontal	PASS
21985.03	49.41	--	--	11.73	74.0	--	54.0	4.59	311.60	100.00	Horizontal	PASS

Π/4-DQPSK MODE 1GHz to 6GHz, ANT V



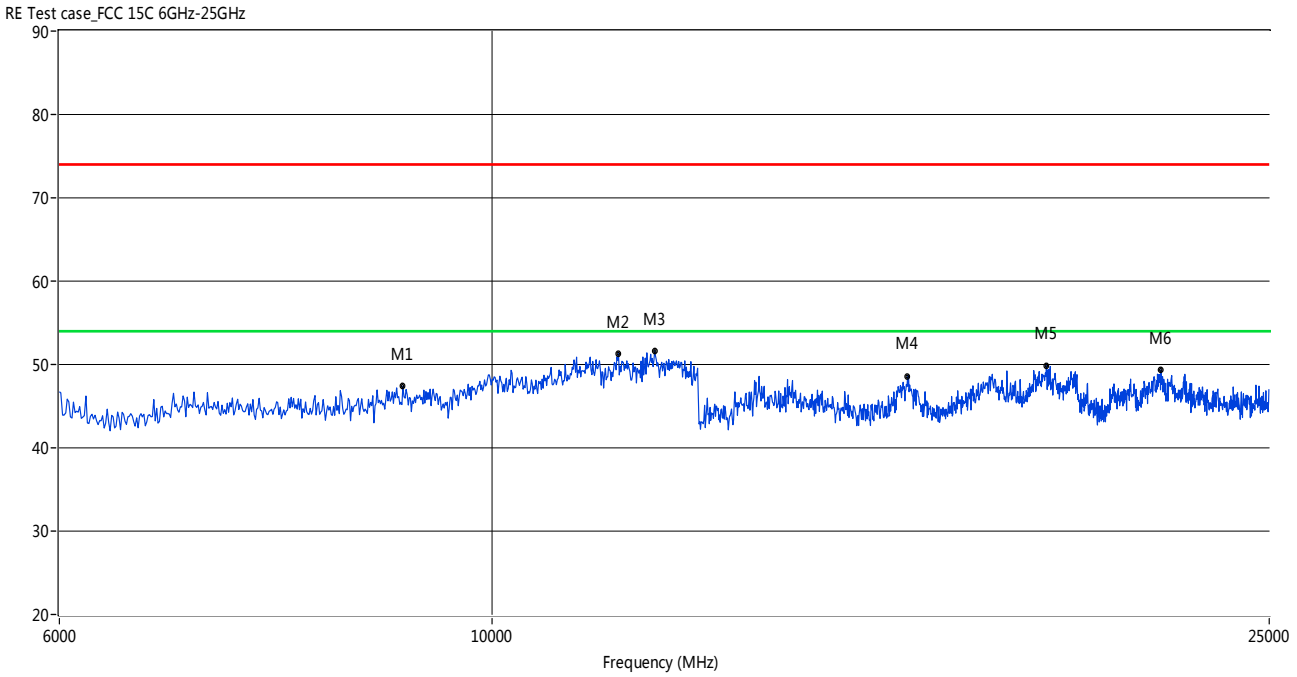
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1179.64	43.92	--	--	-4.15	74.0	--	54.0	10.0	250.40	100	Vertical	PASS
1734.53	44.26	--	--	-3.60	74.0	--	54.0	9.74	44.80	100	Vertical	PASS
2161.68	48.74	--	--	-0.79	74.0	--	54.0	5.26	156.20	100	Vertical	PASS
2401.20	100.74	--	--	0.01	74.0	--	54.0	-46.74	150.60	100	Vertical	N/A
2477.05	100.71	--	--	-0.14	74.0	--	54.0	-46.71	150.60	100	Vertical	N/A
3437.13	44.14	--	--	8.75	74.0	--	54.0	9.86	229.70	100	Vertical	PASS

Π/4-DQPSK MODE 1GHz to 6GHz, ANT H



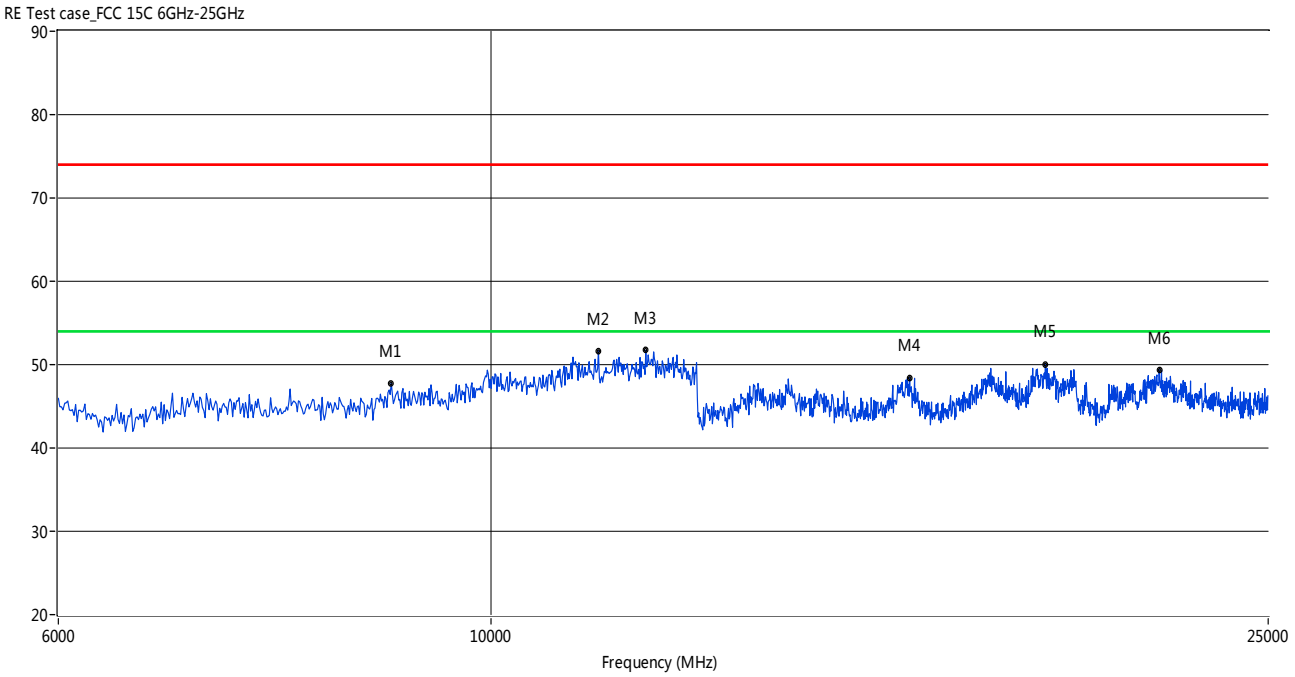
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1534.93	43.44	--	--	-3.64	74.0	--	54.0	10.56	111.90	100	Horizontal	PASS
1990.02	46.30	--	--	-2.03	74.0	--	54.0	7.70	62.20	100	Horizontal	PASS
2401.20	102.01	--	--	0.01	74.0	--	54.0	-48.01	358.50	100	Horizontal	N/A
2477.05	102.41	--	--	-0.14	74.0	--	54.0	-48.41	360.00	100	Horizontal	N/A
4814.37	52.81	--	38.57	12.45	74.0	--	54.0	15.43	152.20	100	Horizontal	PASS
4922.16	54.85	--	39.50	12.88	74.0	--	54.0	14.50	148.10	100	Horizontal	PASS

Π/4-DQPSK MODE 6GHz to 25GHz, ANT V



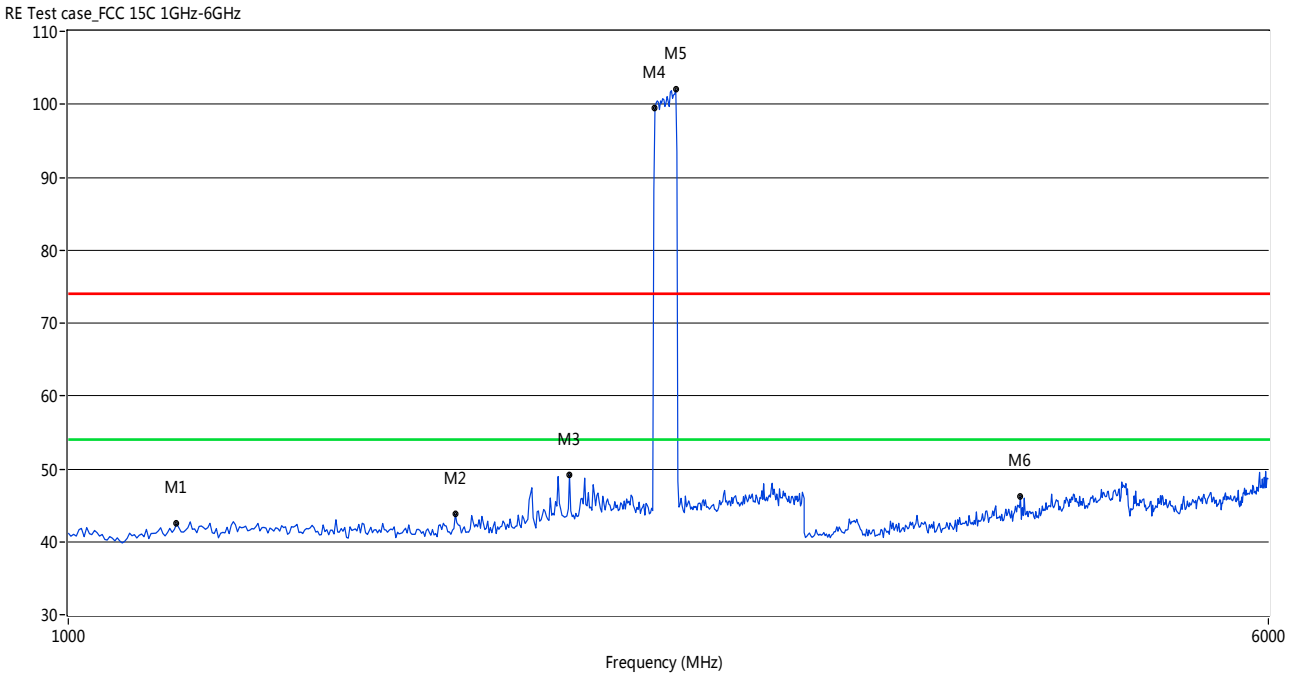
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
8998.75	47.39	--	--	11.26	74.0	--	54.0	6.61	54.80	100.00	Vertical	PASS
11604.41	51.33	--	--	13.38	74.0	--	54.0	2.67	295.80	100.00	Vertical	PASS
12109.82	51.67	--	--	19.88	74.0	--	54.0	2.33	116.60	100.00	Vertical	PASS
16316.97	48.53	--	--	8.96	74.0	--	54.0	5.47	47.70	100.00	Vertical	PASS
19219.63	49.85	--	--	10.90	74.0	--	54.0	4.15	105.70	100.00	Vertical	PASS
22004.99	49.36	--	--	11.97	74.0	--	54.0	4.64	223.80	100.00	Vertical	PASS

Π/4-DQPSK MODE 6GHz to 25GHz, ANT H



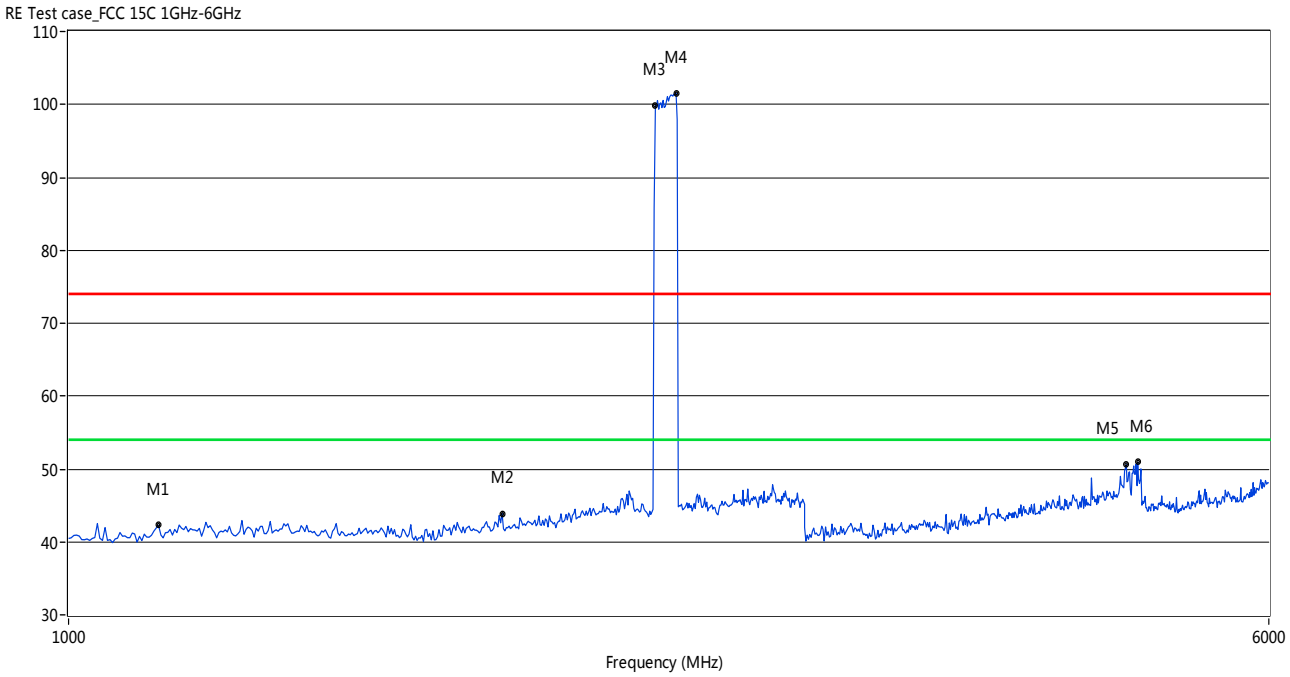
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
8886.44	47.82	--	--	11.27	74.0	--	54.0	6.18	4.20	100.00	Horizontal	PASS
11346.09	51.66	--	--	13.71	74.0	--	54.0	2.34	226.00	100.00	Horizontal	PASS
11997.50	51.74	--	--	19.53	74.0	--	54.0	2.26	287.50	100.00	Horizontal	PASS
16379.37	48.47	--	--	9.57	74.0	--	54.0	5.53	150.80	100.00	Horizontal	PASS
19219.63	50.06	--	--	11.45	74.0	--	54.0	3.94	-0.00	100.00	Horizontal	PASS
21985.03	49.41	--	--	12.19	74.0	--	54.0	4.59	360.30	100.00	Horizontal	PASS

8-DPSK MODE 1GHz to 6GHz, ANT V



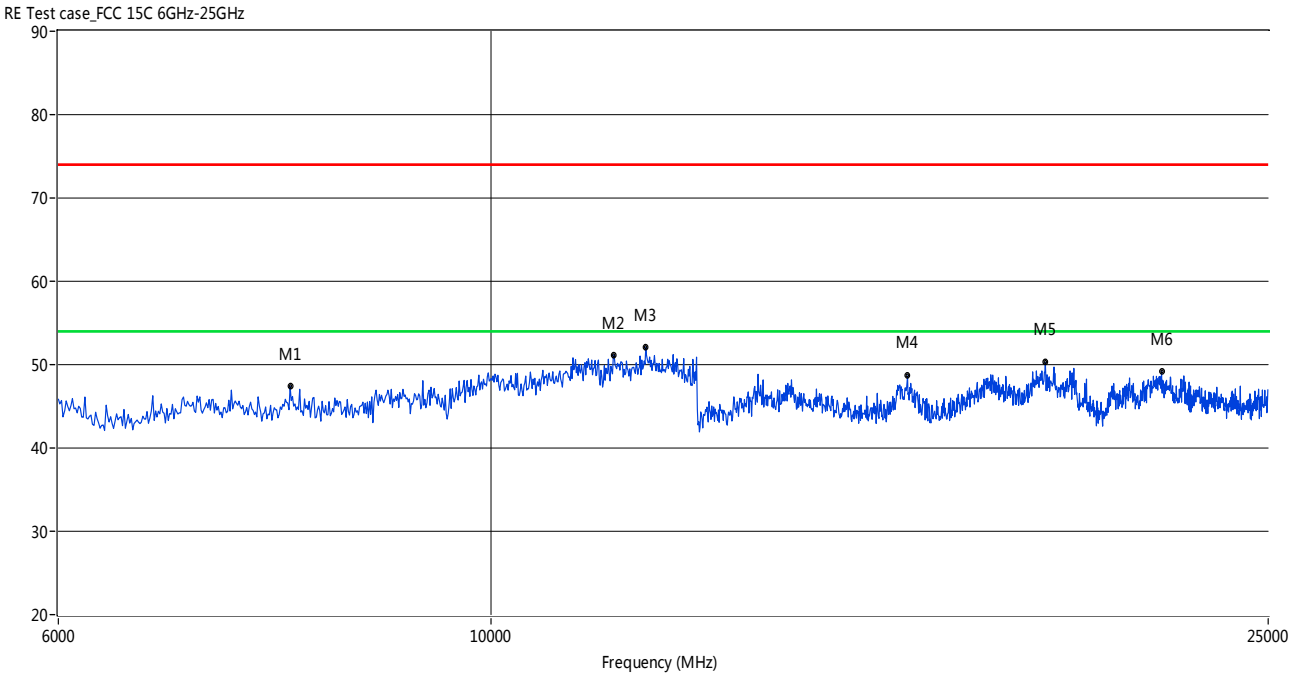
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1175.65	42.45	--	--	-4.08	74.0	--	54.0	11.55	359.20	100	Vertical	PASS
1782.43	43.75	--	--	-3.37	74.0	--	54.0	10.25	-0.60	100	Vertical	PASS
2113.77	49.16	--	--	-1.04	74.0	--	54.0	4.84	305.10	100	Vertical	PASS
2401.20	99.41	--	--	0.01	74.0	--	54.0	-45.41	165.90	100	Vertical	N/A
2477.05	102.00	--	--	-0.14	74.0	--	54.0	-48.00	143.60	100	Vertical	N/A
4143.71	46.21	--	--	10.12	74.0	--	54.0	7.79	36.70	100	Vertical	PASS

8-DPSK MODE 1GHz to 6GHz, ANT H



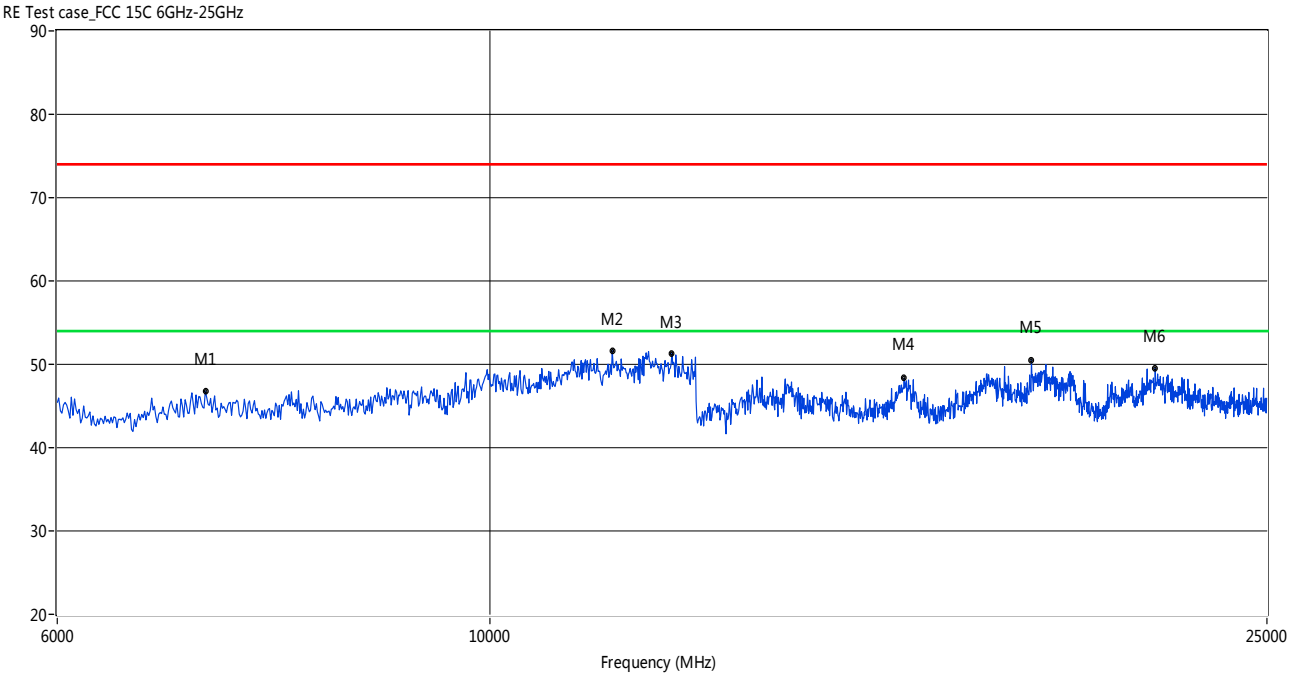
Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1143.71	42.28	--	--	-4.26	74.0	--	54.0	11.72	113.40	100	Horizontal	PASS
1910.18	43.89	--	--	-2.43	74.0	--	54.0	10.11	91.90	100	Horizontal	PASS
2401.20	99.87	--	--	0.01	74.0	--	54.0	-45.87	336.50	100	Horizontal	N/A
2477.05	101.54	--	--	-0.14	74.0	--	54.0	-47.54	359.80	100	Horizontal	N/A
4850.30	50.59	--	--	12.79	74.0	--	54.0	3.41	226.70	100	Horizontal	PASS
4934.13	50.95	--	--	12.50	74.0	--	54.0	3.05	159.30	100	Horizontal	PASS

8-DPSK MODE 6GHz to 25GHz, ANT V



Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7886.85	47.39	--	--	11.24	74.0	--	54.0	6.61	355.00	100.00	Vertical	PASS
11559.48	51.19	--	--	13.63	74.0	--	54.0	2.81	7.80	100.00	Vertical	PASS
11997.50	51.74	--	--	19.54	74.0	--	54.0	2.26	288.60	100.00	Vertical	PASS
16337.77	48.66	--	--	8.92	74.0	--	54.0	5.34	169.80	100.00	Vertical	PASS
19219.63	50.06	--	--	10.75	74.0	--	54.0	3.94	1.10	100.00	Vertical	PASS
22044.92	49.18	--	--	12.19	74.0	--	54.0	4.82	355.80	100.00	Vertical	PASS

8-DPSK MODE 6GHz to 25GHz, ANT H



Frequency (MHz)	Peak (dBuV/m)	Q-peak (dBuV/m)	Average (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
7145.59	46.78	--	--	12.28	74.0	--	54.0	7.22	14.80	100.00	Horizontal	PASS
11548.25	51.63	--	--	13.37	74.0	--	54.0	2.37	8.70	100.00	Horizontal	PASS
12390.60	51.30	--	--	20.14	74.0	--	54.0	2.70	296.70	100.00	Horizontal	PASS
16296.17	48.36	--	--	9.50	74.0	--	54.0	5.64	273.80	100.00	Horizontal	PASS
18937.60	50.54	--	--	10.59	74.0	--	54.0	3.46	0.70	100.00	Horizontal	PASS
21915.14	49.57	--	--	12.61	74.0	--	54.0	4.43	322.30	100.00	Horizontal	PASS

A.9 Band Edge

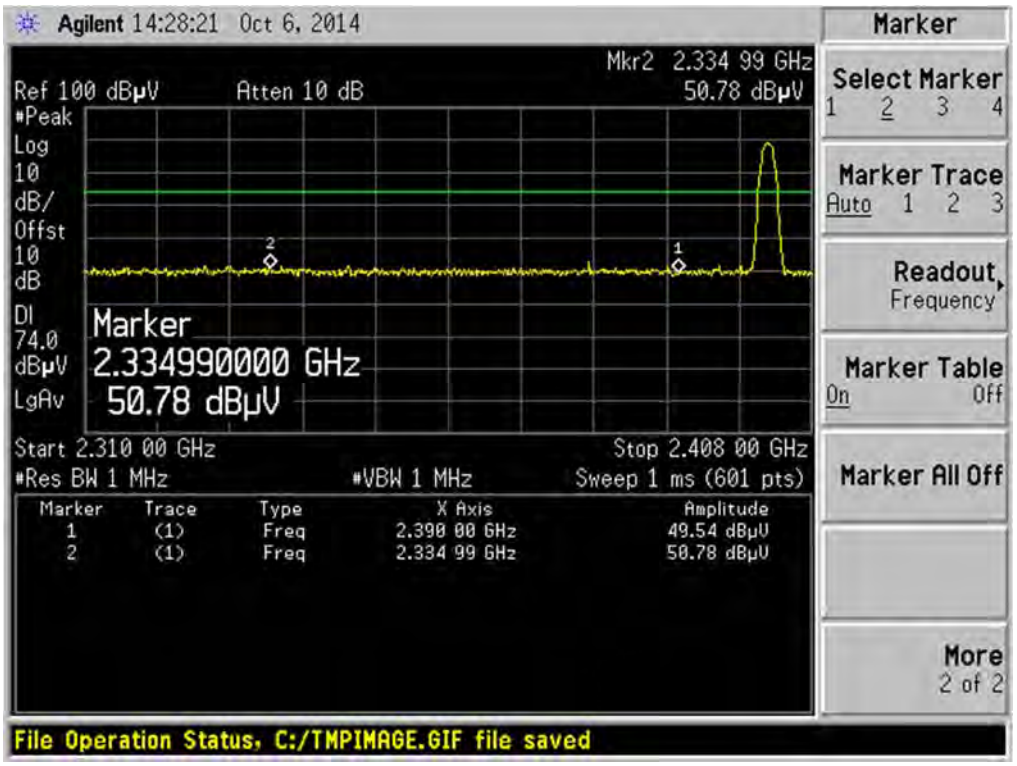
Test Data

The lowest and highest channels are tested to verify the band edge emissions. Please refer to the following the plots for emissions values.

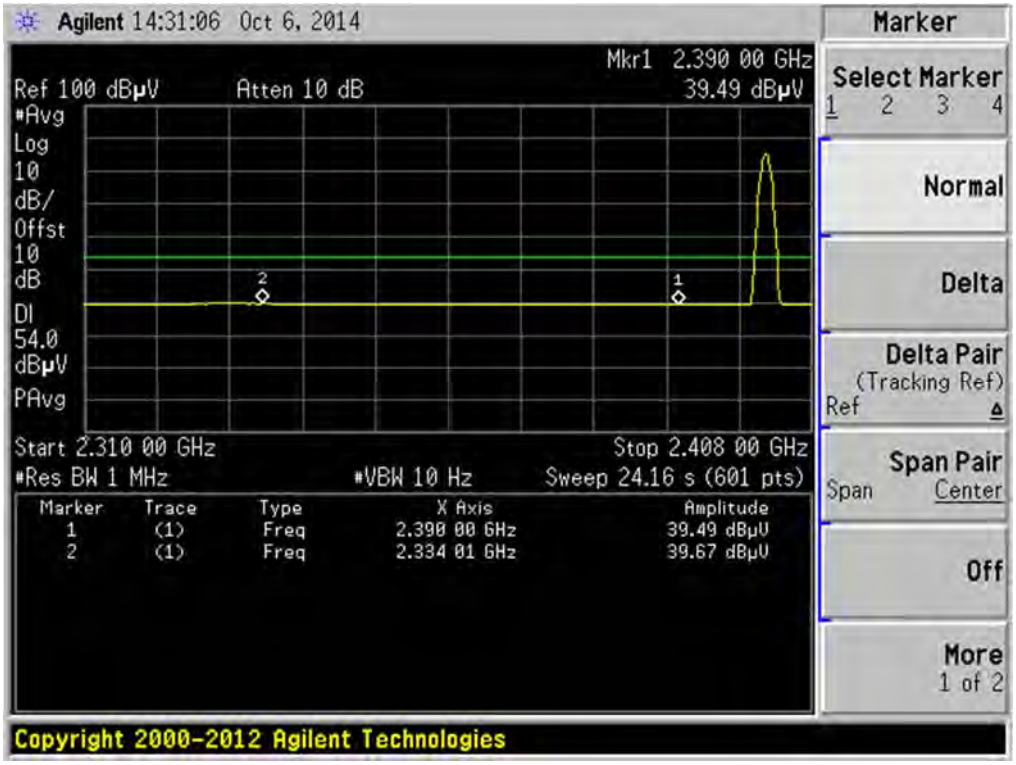
The test data all are tested in the vertical and horizontal antenna which the trace is max hold. So these plots have show the worst case.

Test Plots

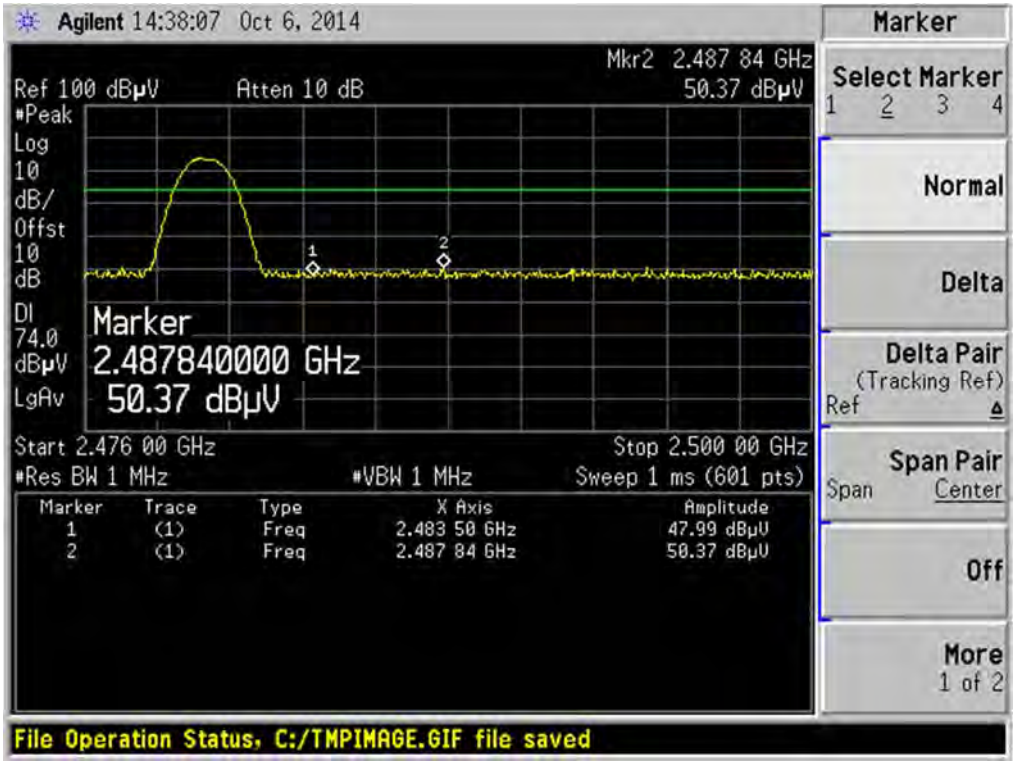
GFSK LOW CHANNEL , PEAK



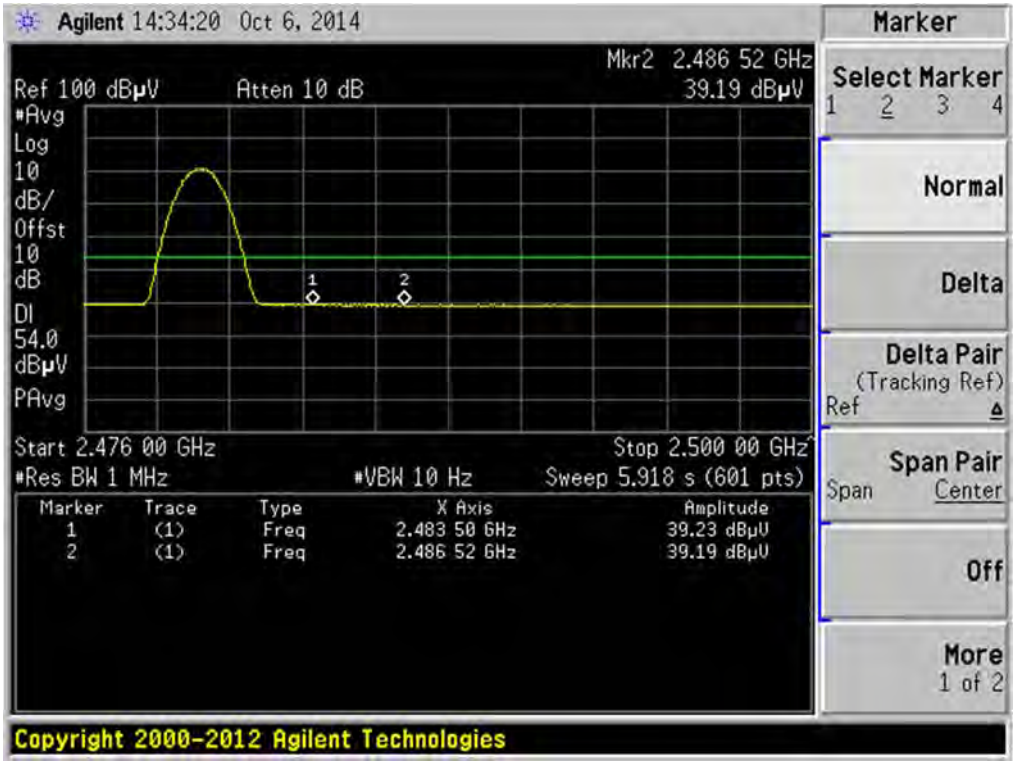
GFSK LOW CHANNEL , AVERAGE



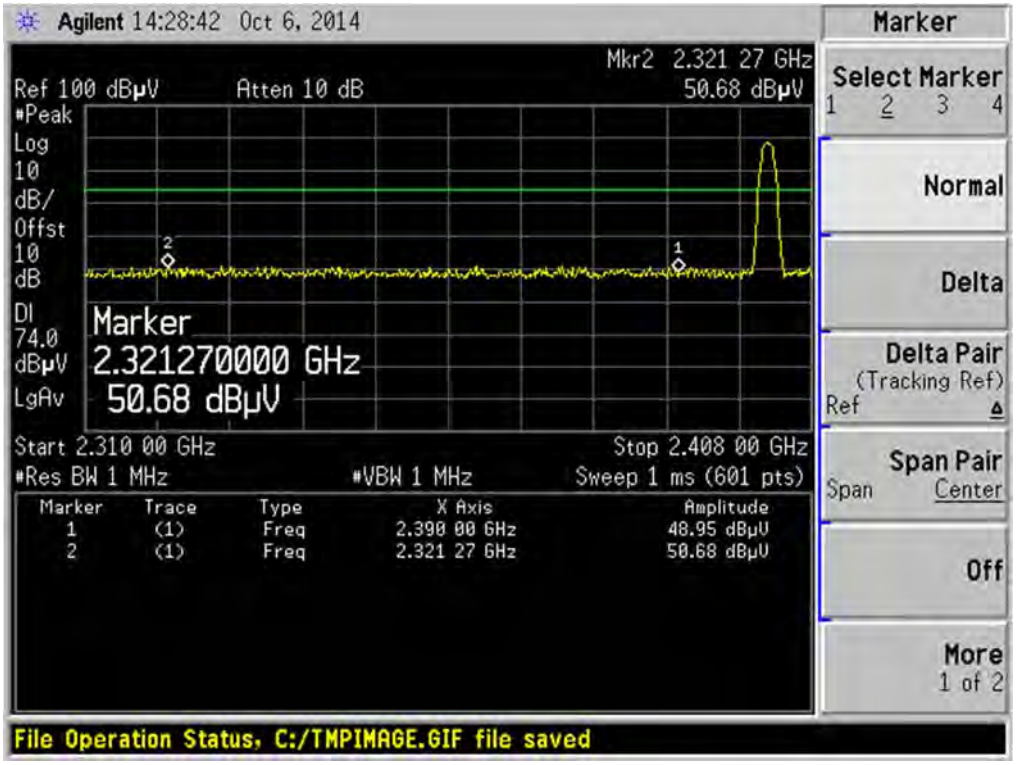
GFSK HIGH CHANNEL , PEAK



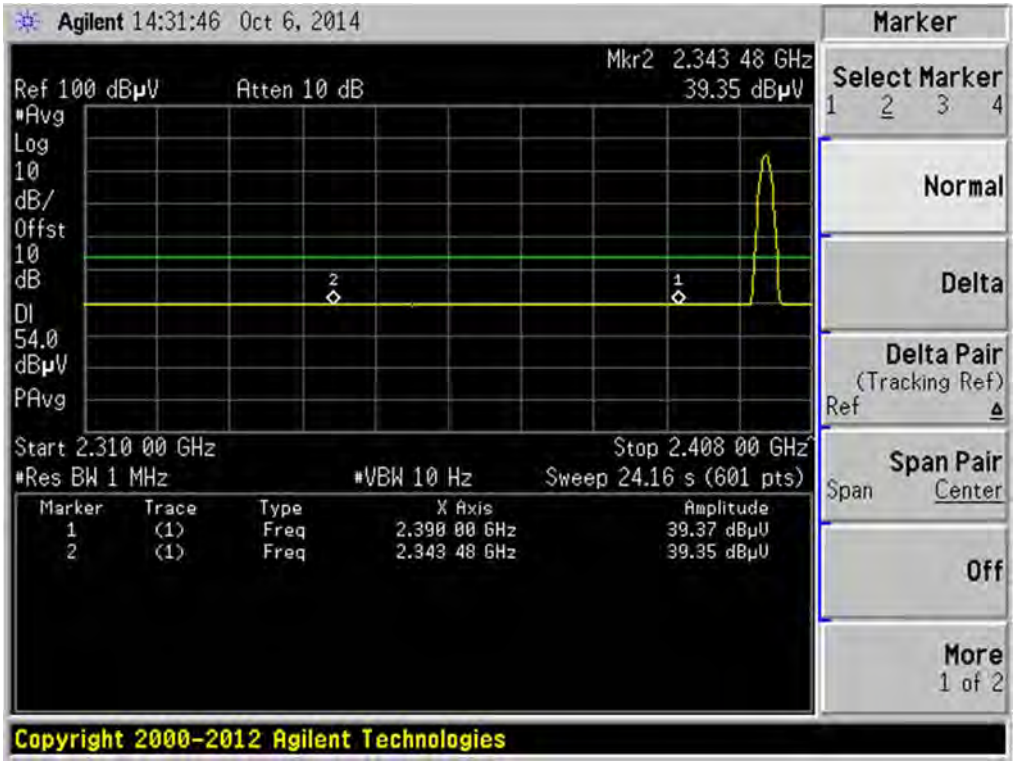
GFSK HIGH CHANNEL , AVERAGE



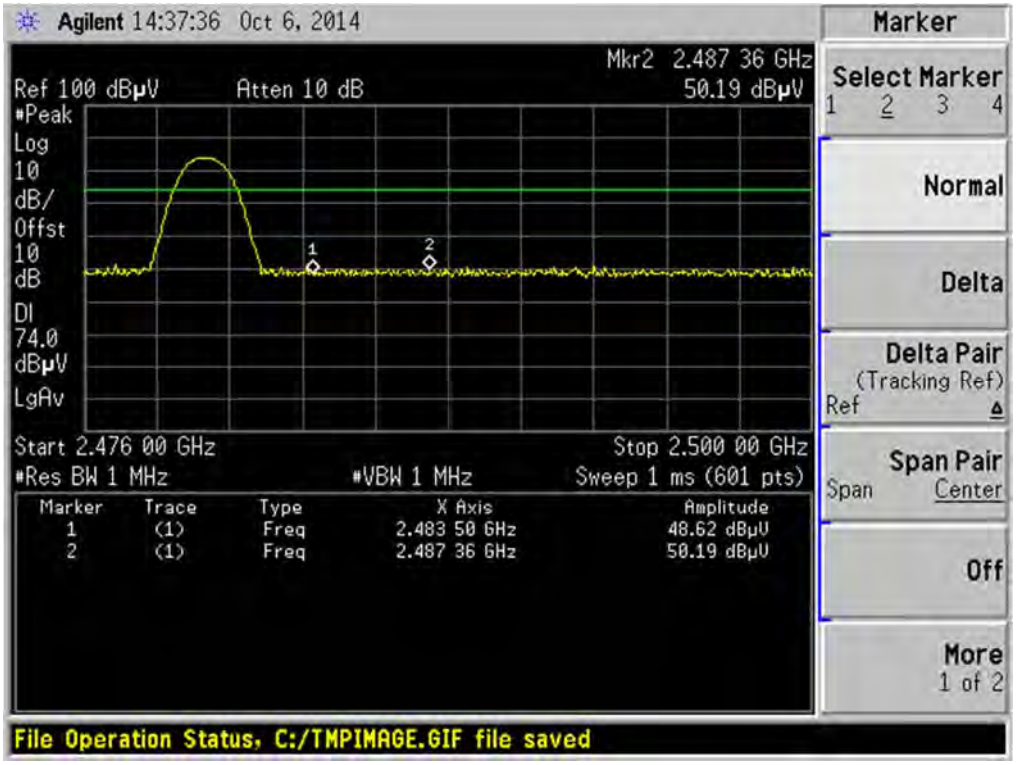
π /4DQPSK LOW CHANNEL , PEAK



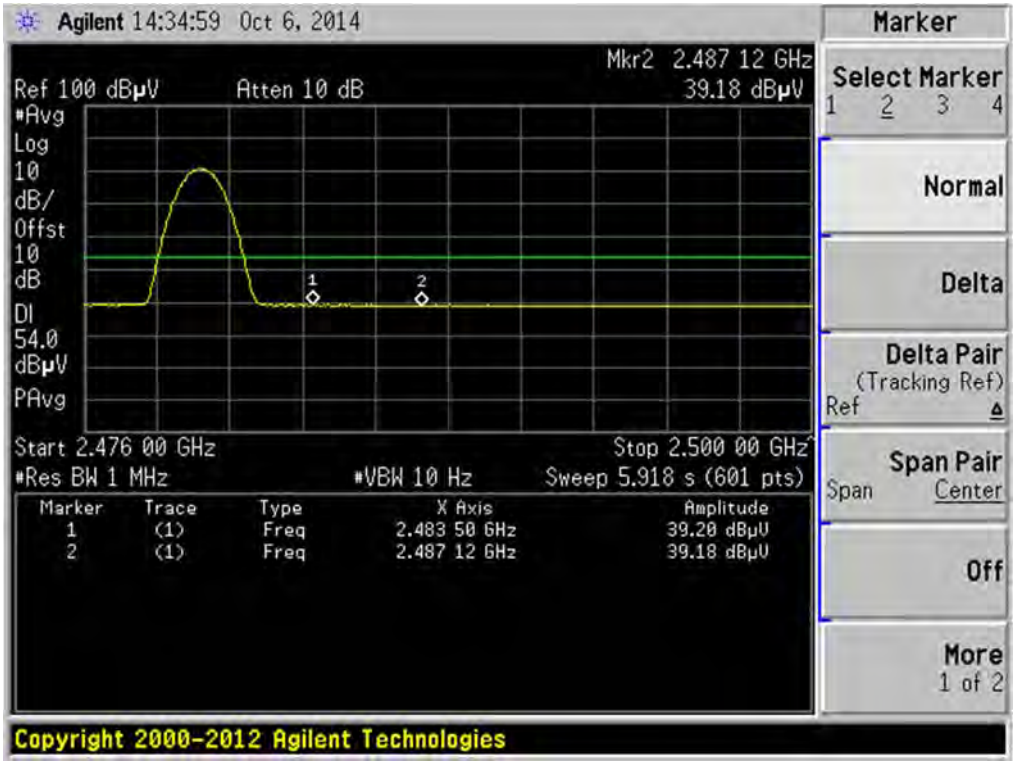
π /4DQPSK LOW CHANNEL , AVERAGE



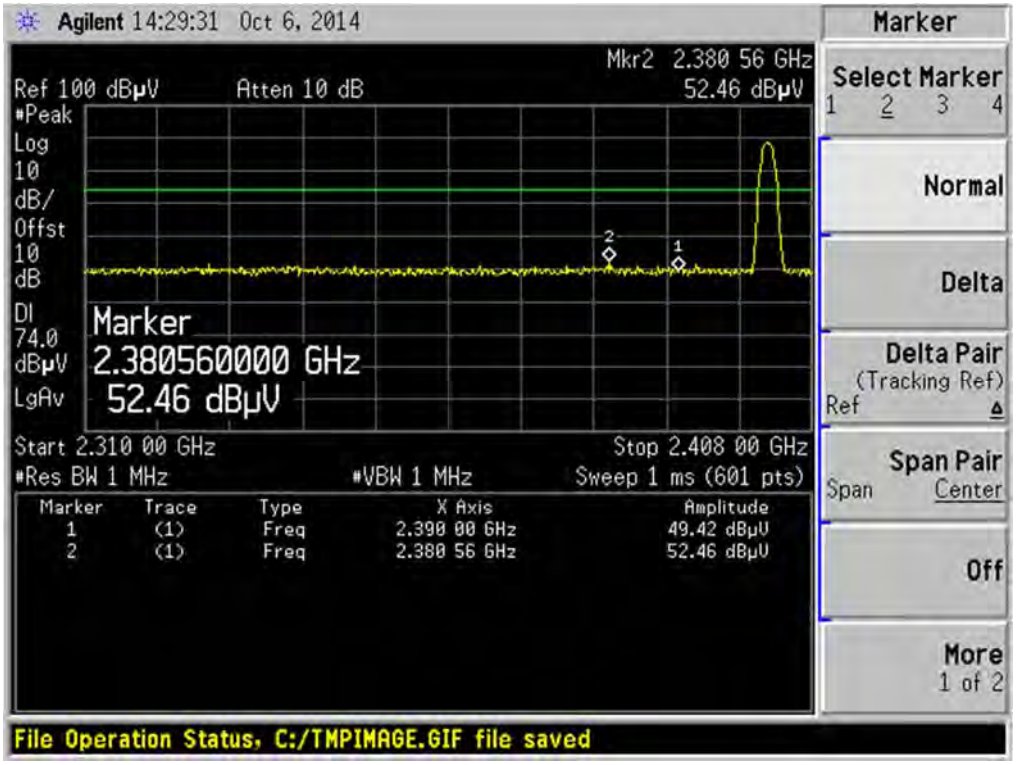
π /4DQPSK HIGH CHANNEL , PEAK



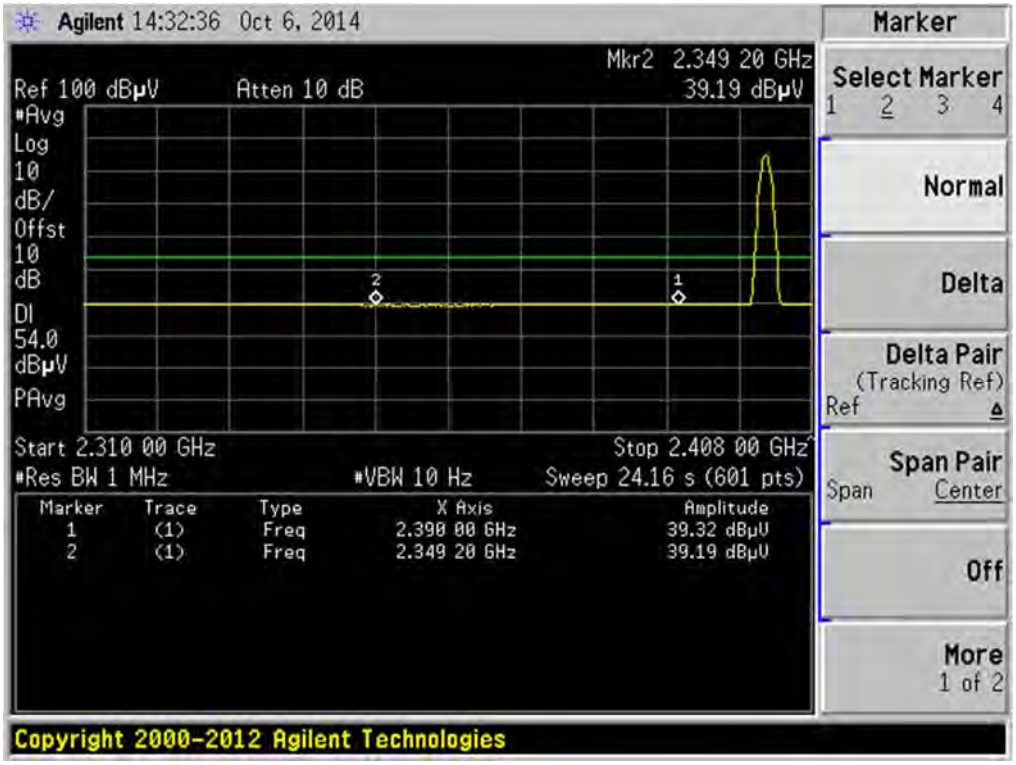
π /4DQPSK HIGH CHANNEL , AVERAGE



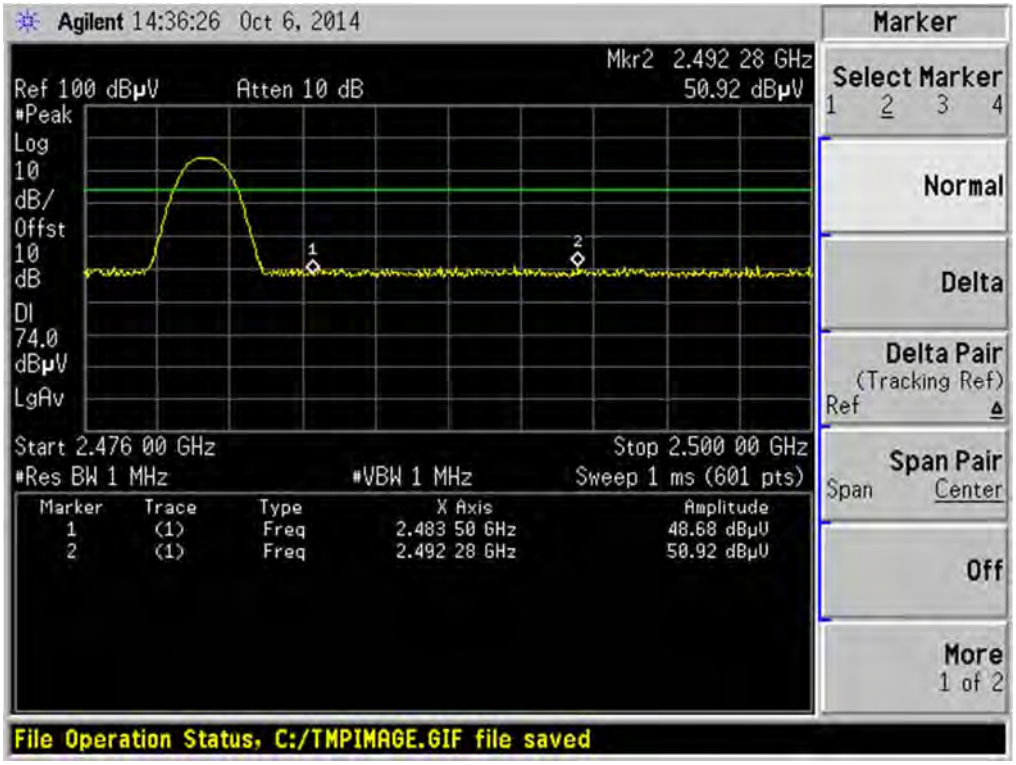
8-DPSK LOW CHANNEL , PEAK



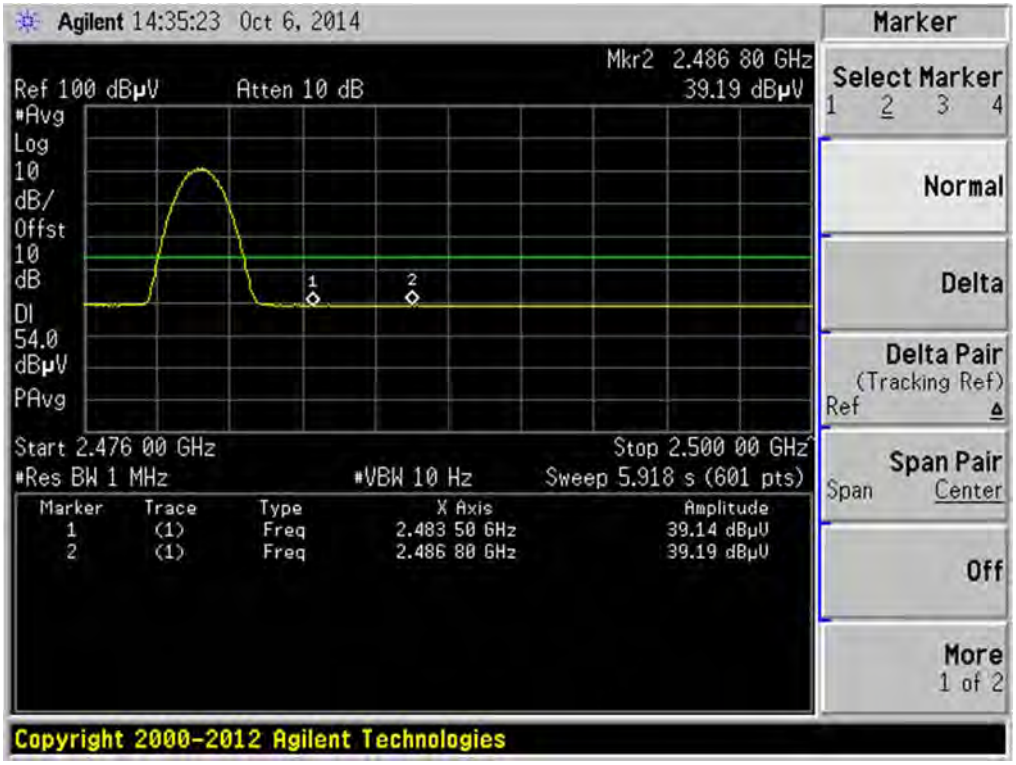
8-DPSK LOW CHANNEL , AVERAGE



8-DPSK HIGH CHANNEL , PEAK

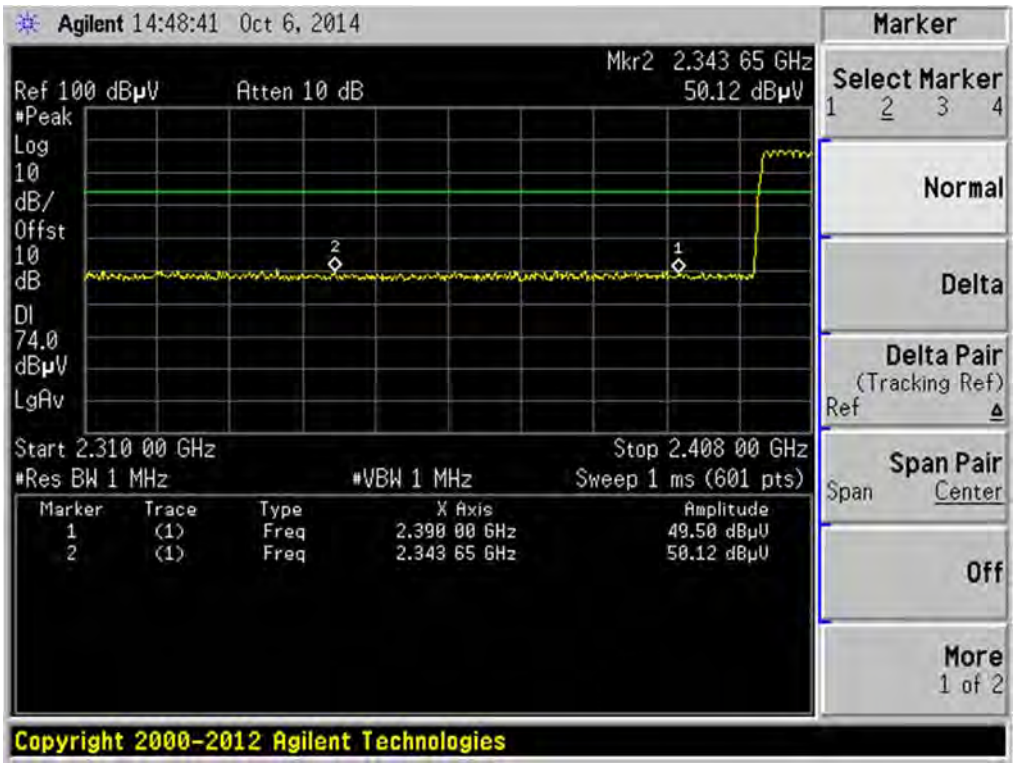


8-DPSK HIGH CHANNEL , AVERAGE

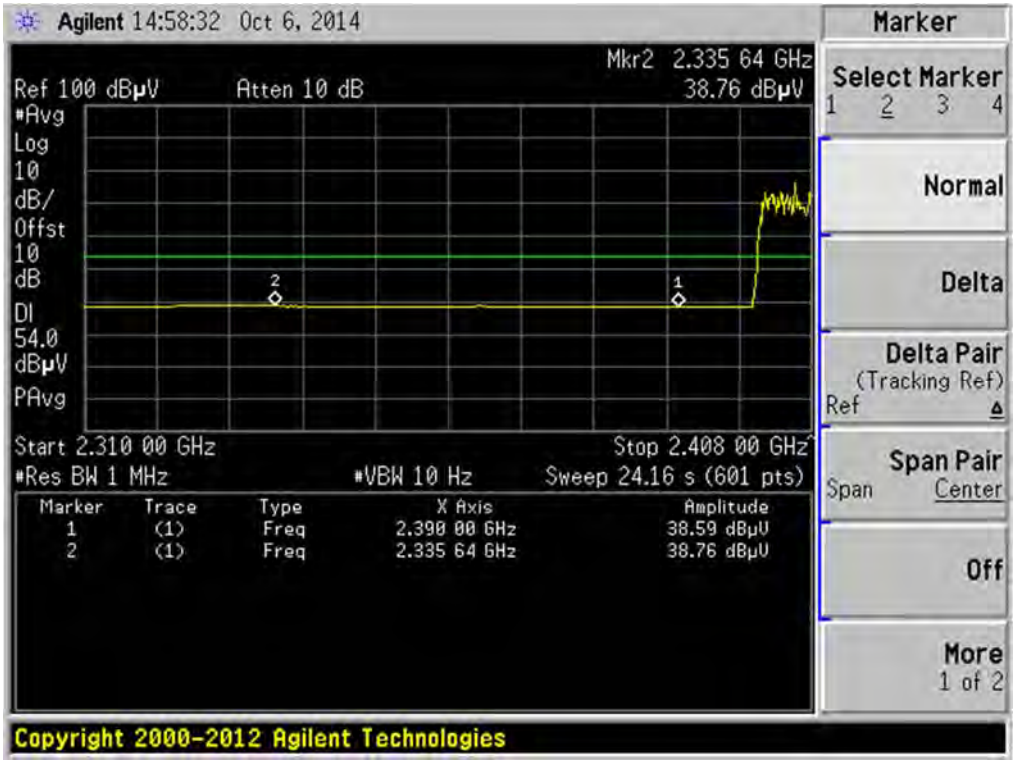


Hopping Mode:

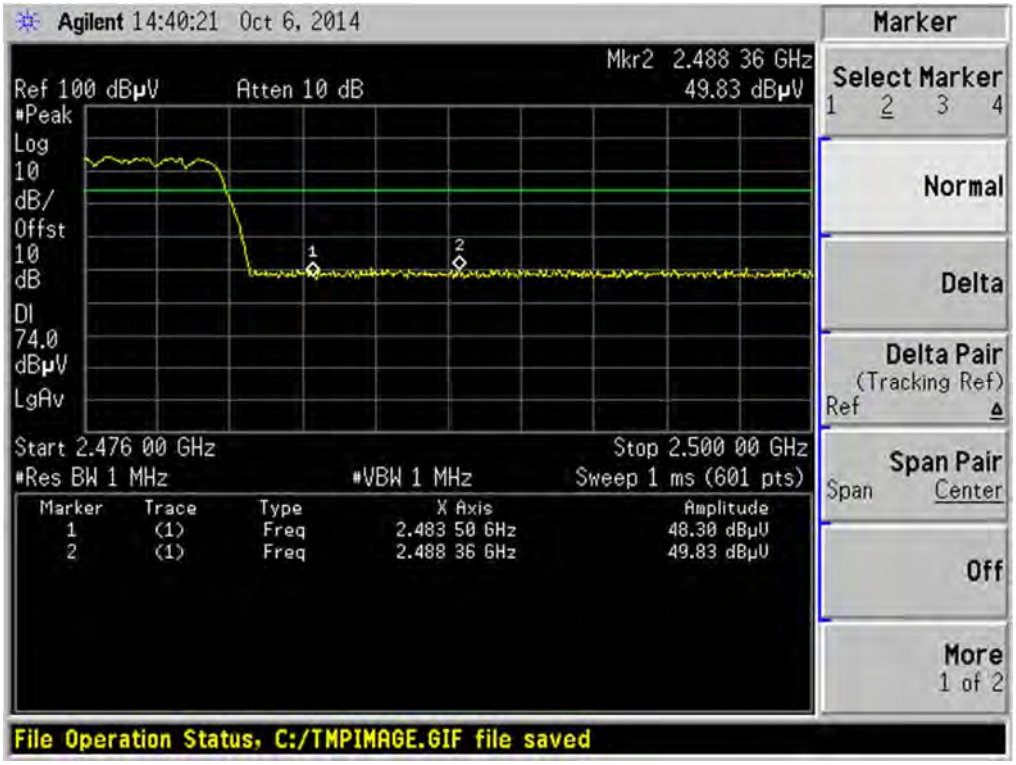
GFSK LOW FREQUENCY BAND, PEAK



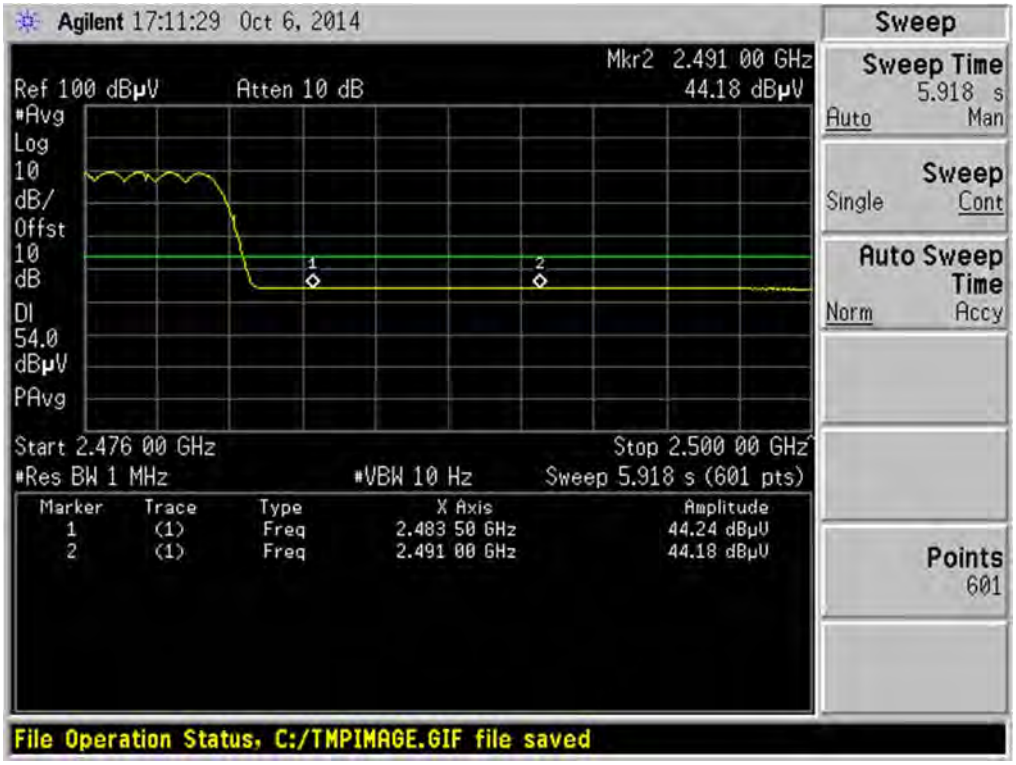
GFSK LOW FREQUENCY BAND, AVERAGE



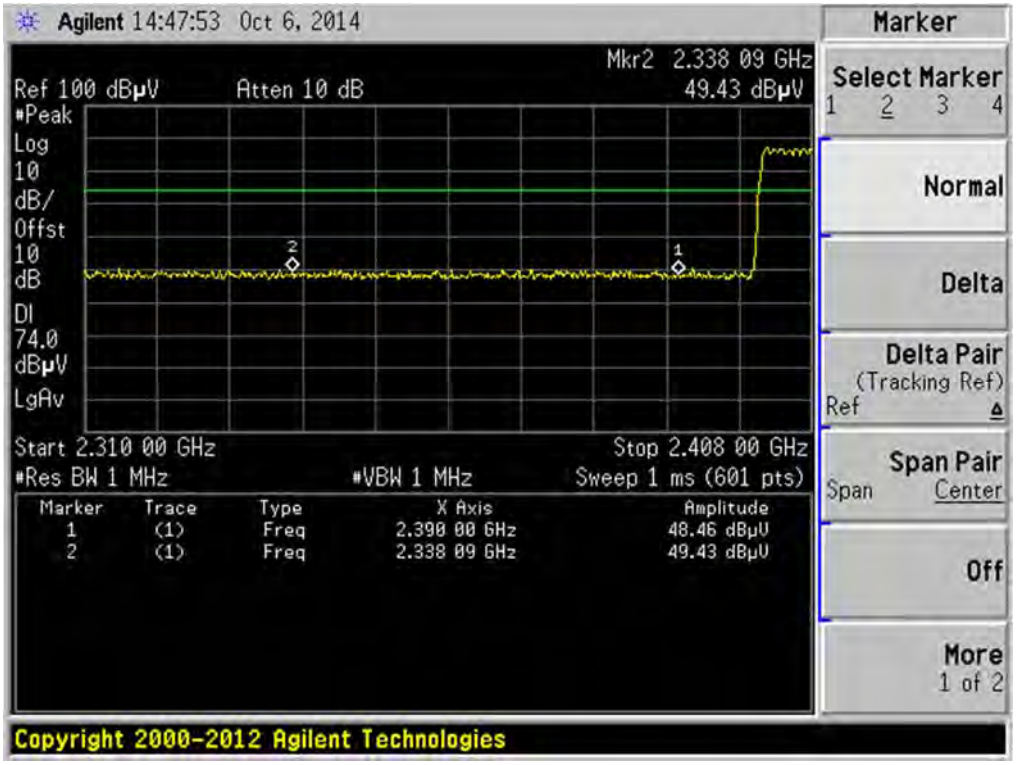
GFSK HIGH FREQUENCY BAND, PEAK



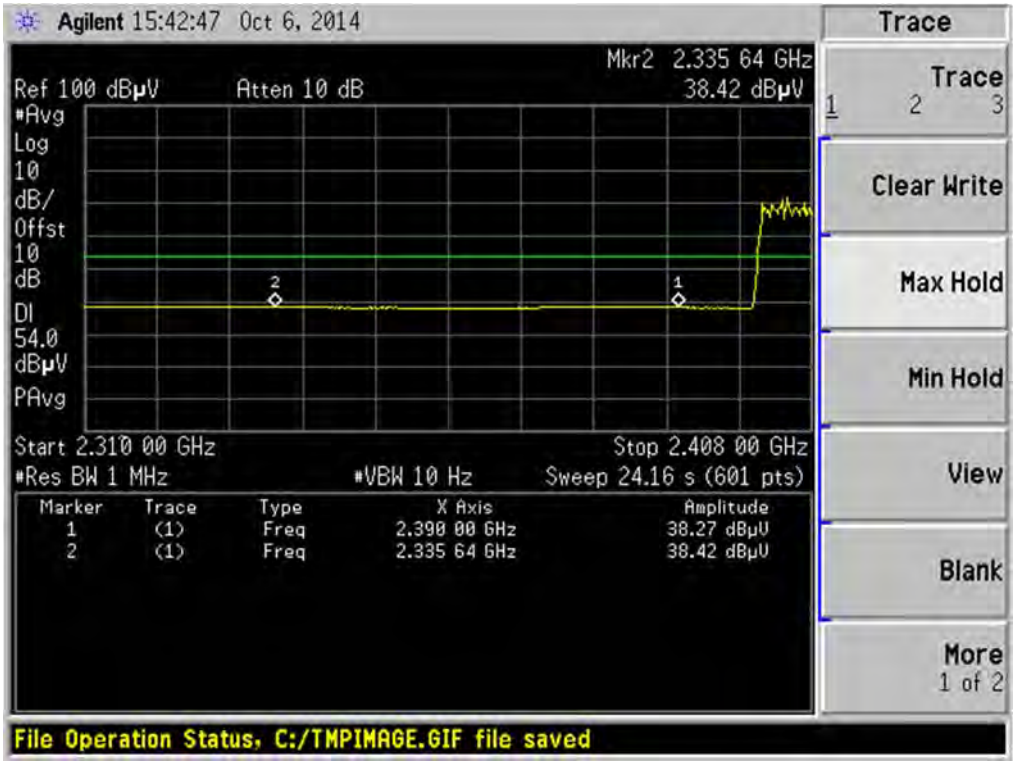
GFSK HIGH FREQUENCY BAND, AVERAGE



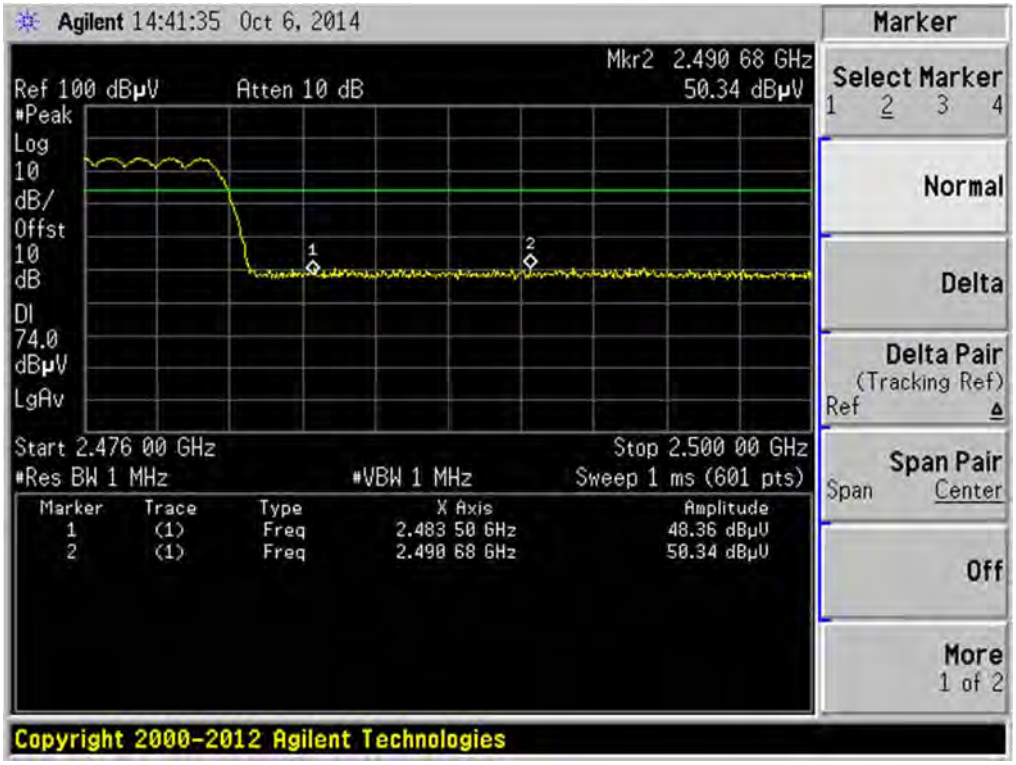
π /4DQPSK LOW FREQUENCY BAND, PEAK



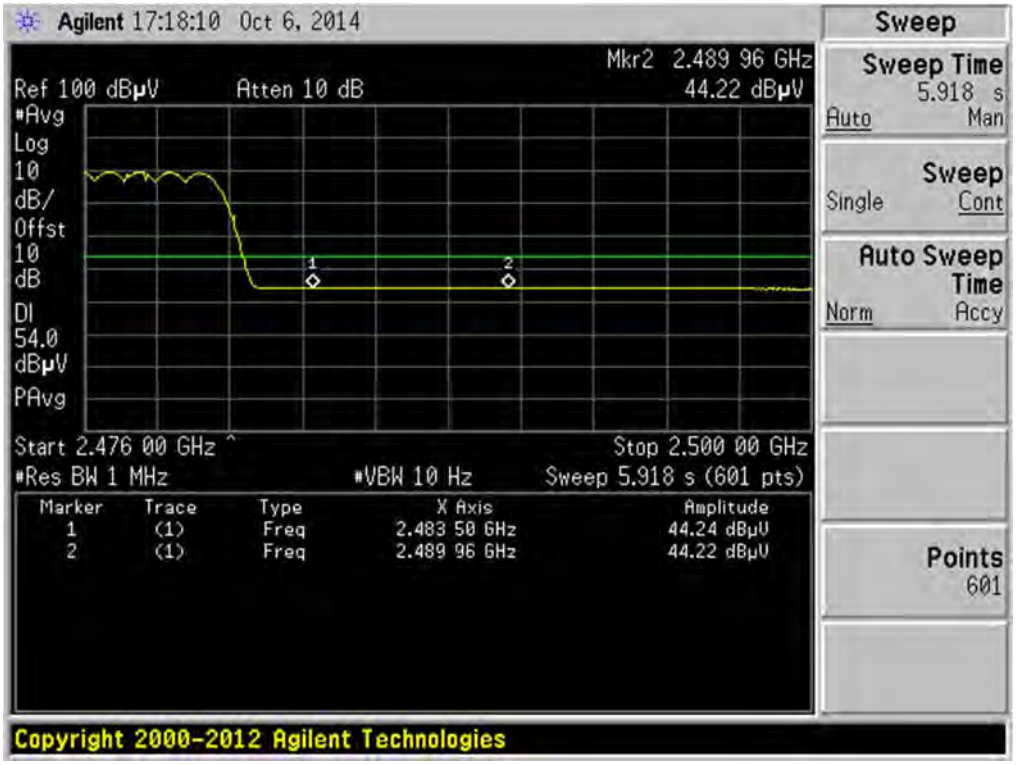
π /4DQPSK LOW FREQUENCY BAND, AVERAGE



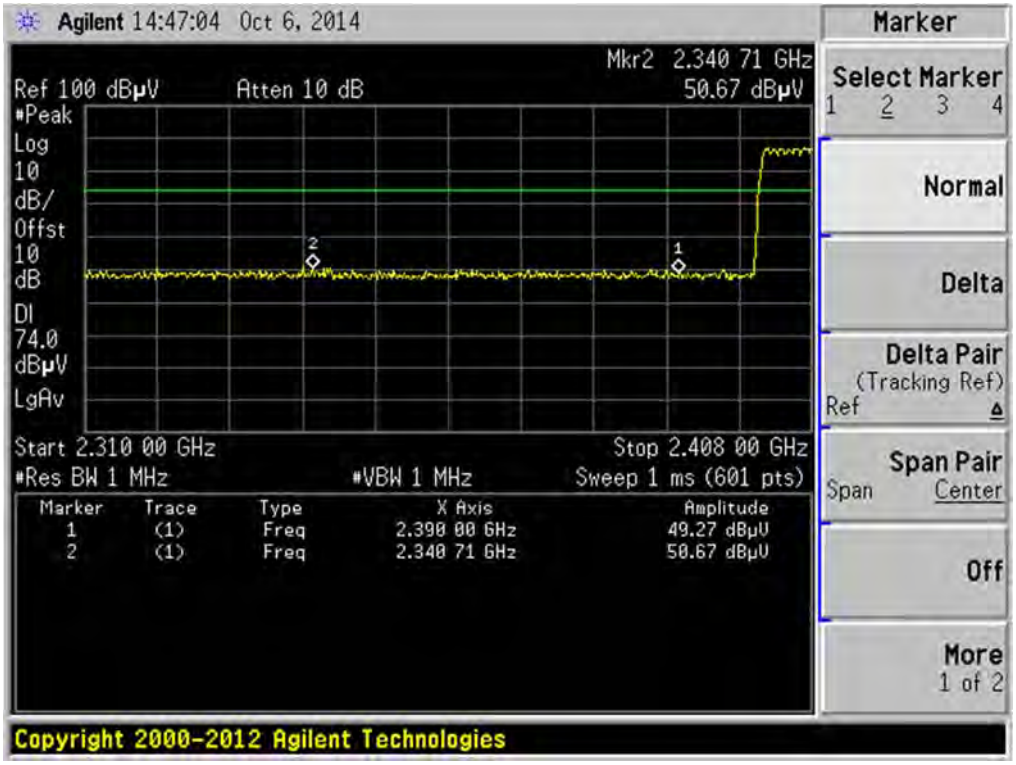
π /4DQPSK HIGH FREQUENCY BAND, PEAK



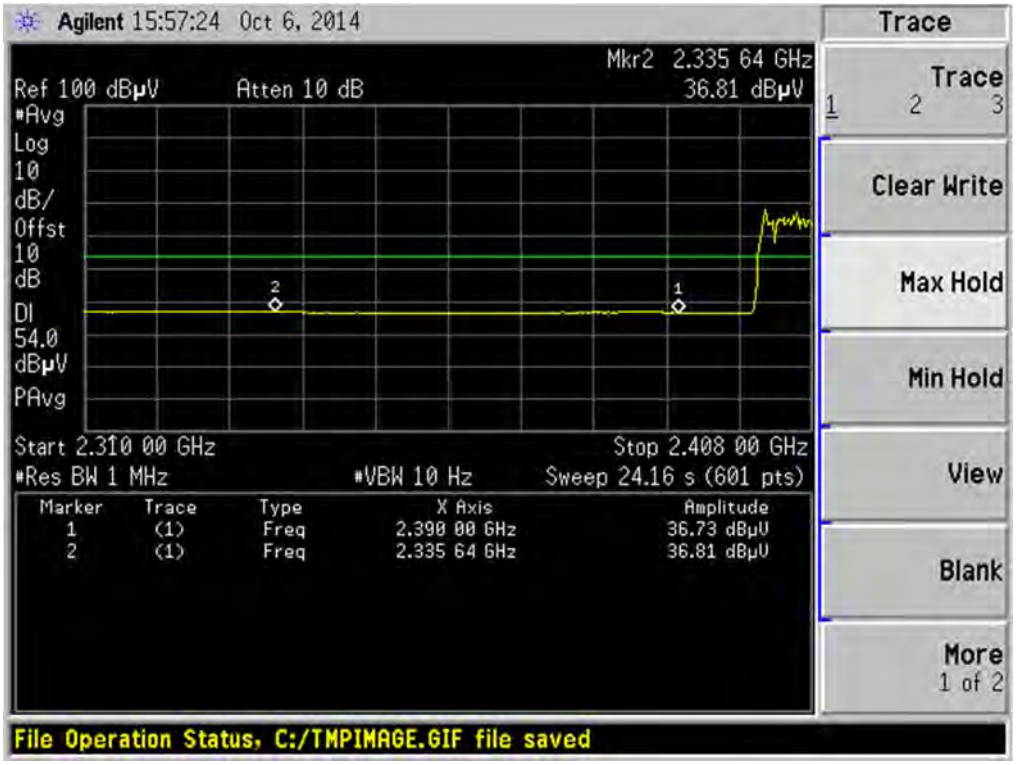
π /4DQPSK HIGH FREQUENCY BAND, AVERAGE



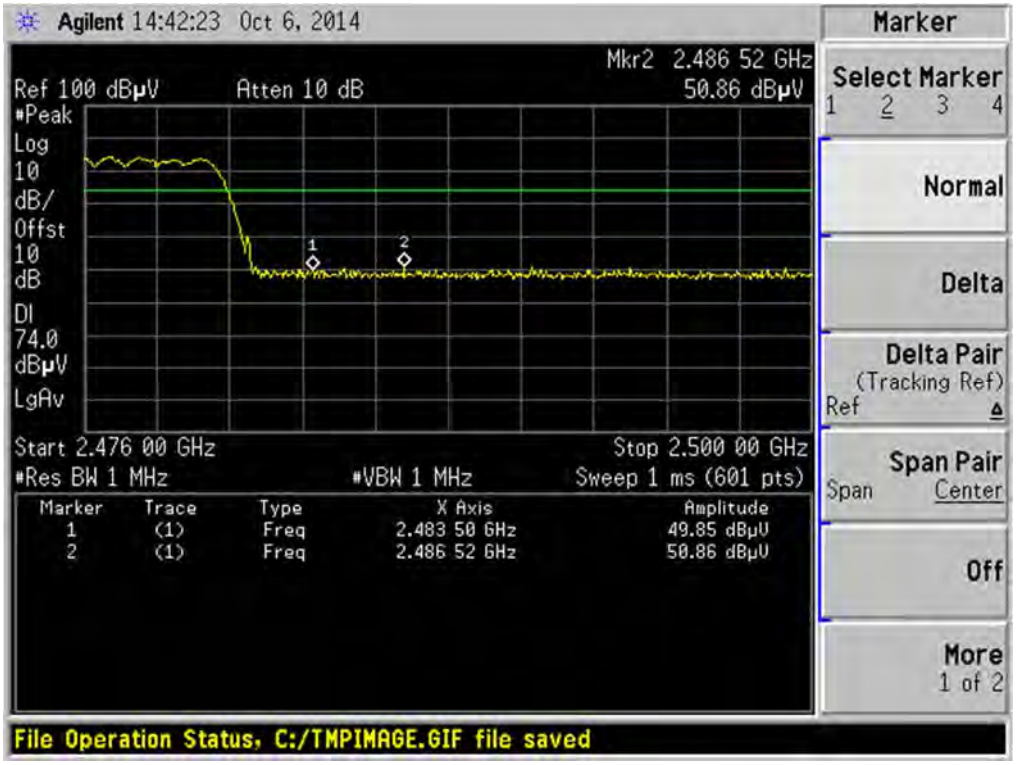
8-DPSK LOW FREQUENCY BAND, PEAK



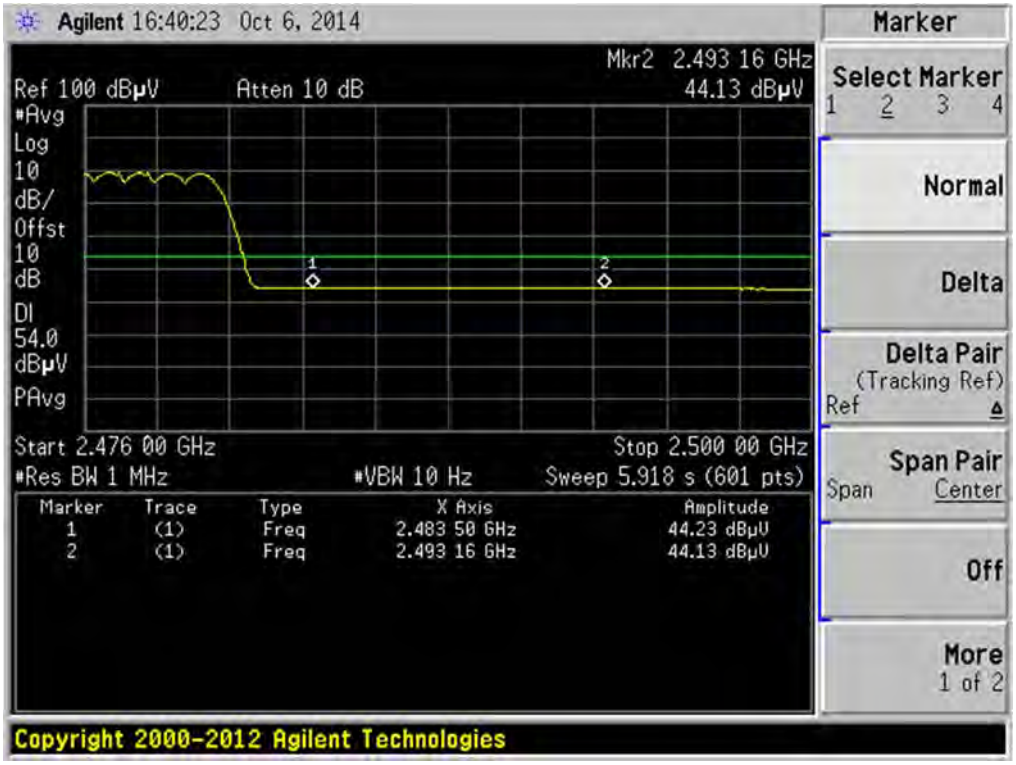
8-DPSK LOW FREQUENCY BAND, AVERAGE



8-DPSK HIGH FREQUENCY BAND, PEAK

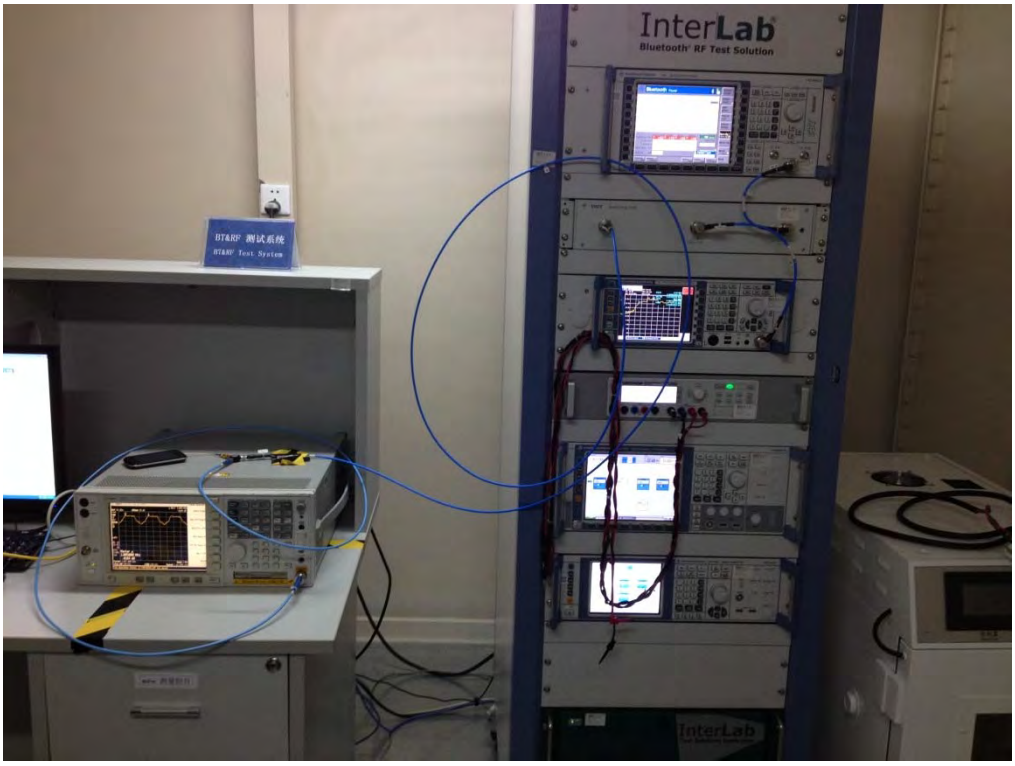


8-DPSK HIGH FREQUENCY BAND, AVERAGE

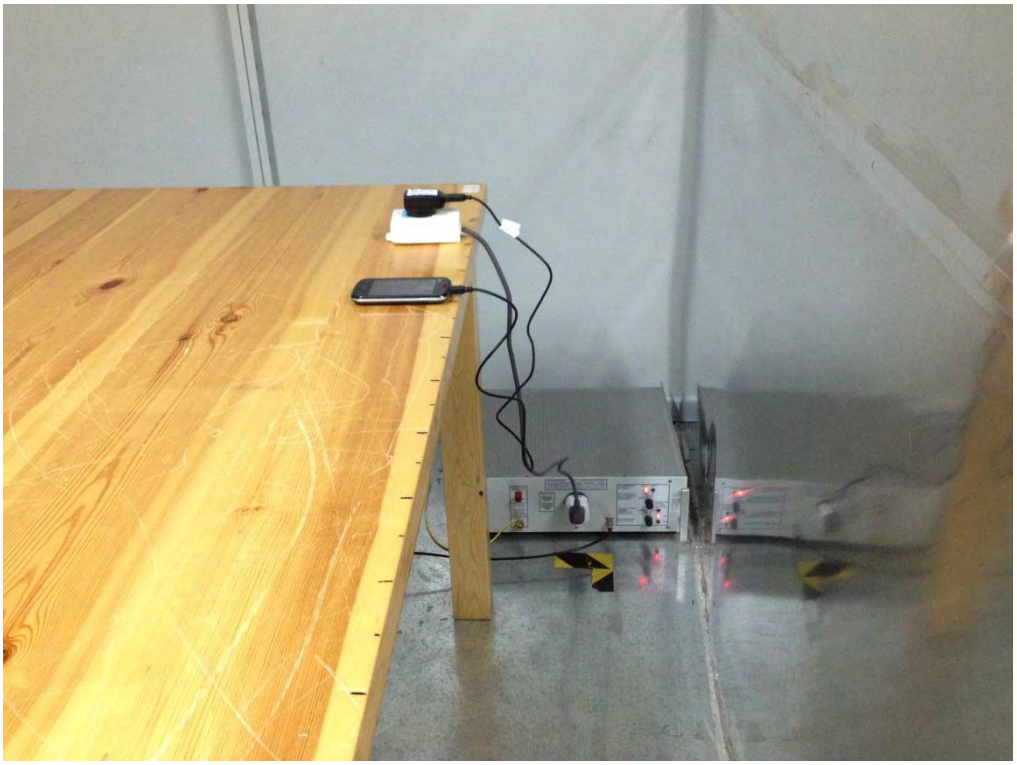


ANNEX B TEST SETUP PHOTOS

B.1 Conducted Test Photo

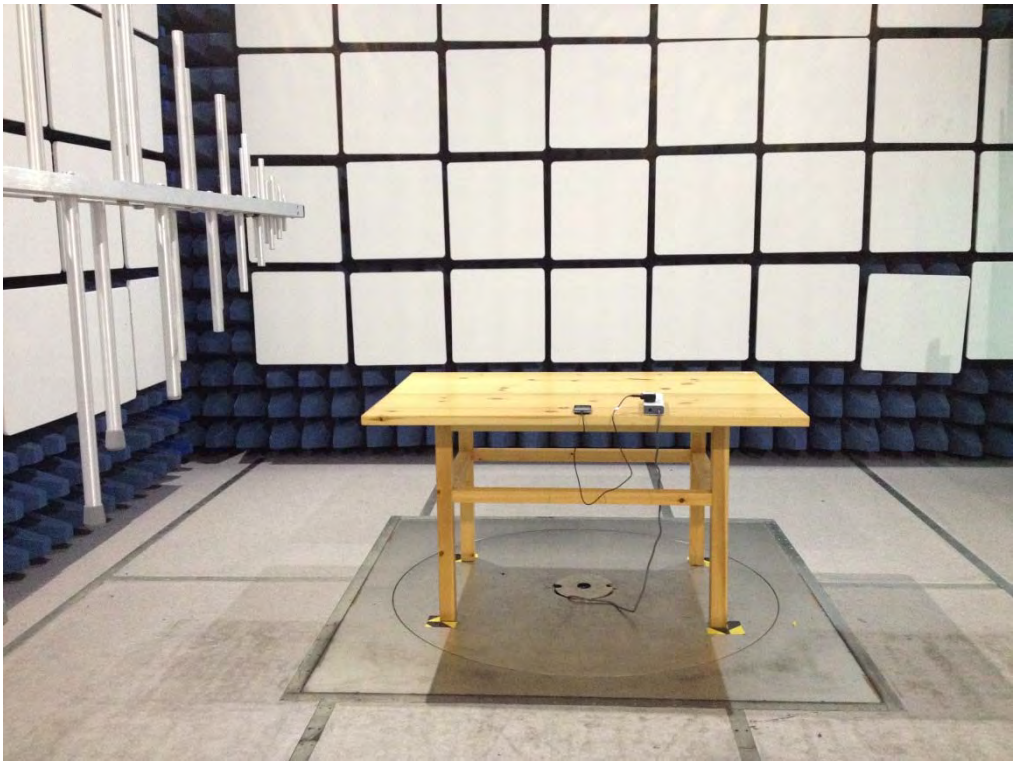


B.2 Conducted Emissions Test Photo

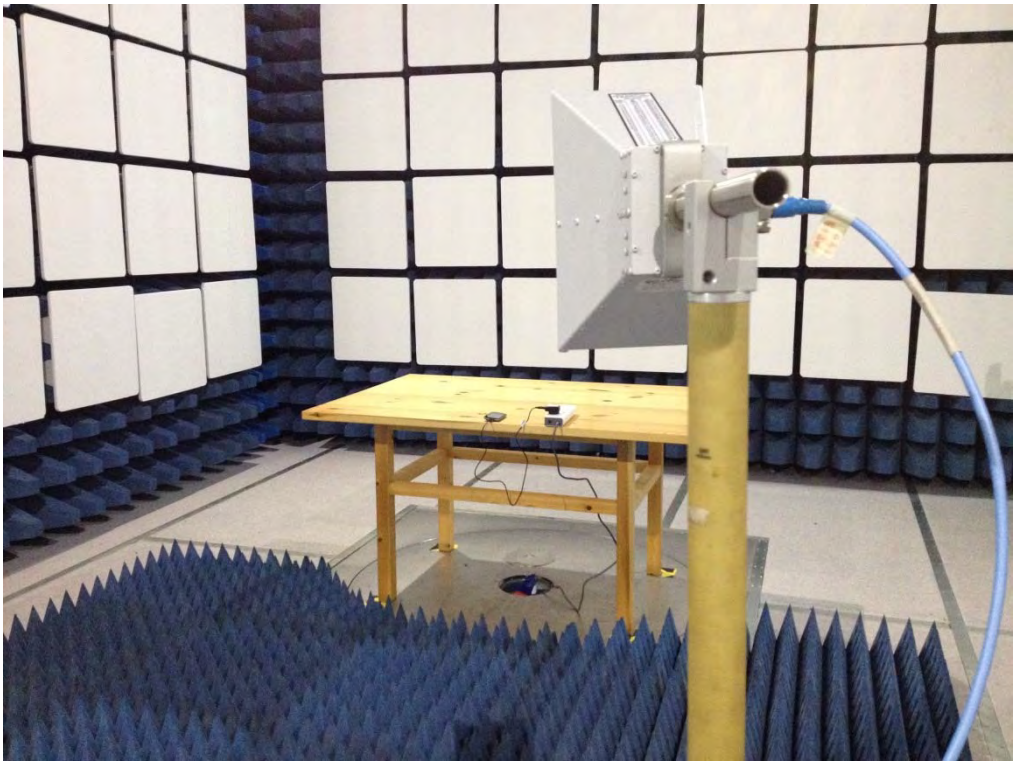


B.3 Radiated Test Photo

Below 30MHz



30MHz to 1GHz



Above 1GHz

ANNEX C EUT PHOTOS

C.1 Appearance of the EUT

THE FRONT OF EUT

THE BACK OF EUT

THE LEFT OF EUT

THE RIGHT OF EUT

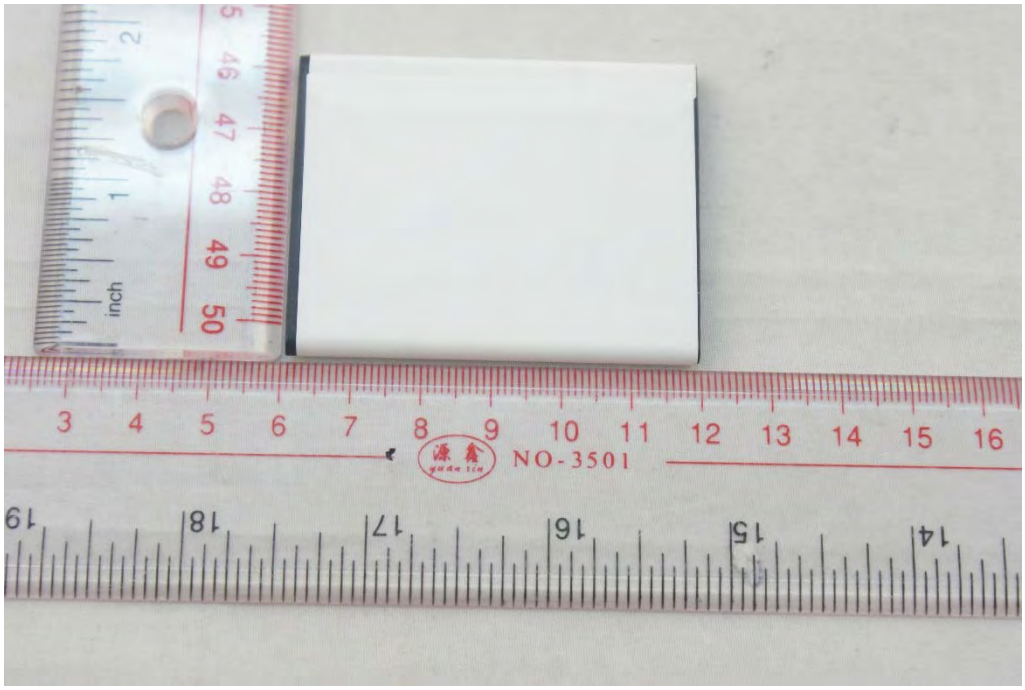
THE UP OF EUT

THE DOWN OF EUT

CHARGER

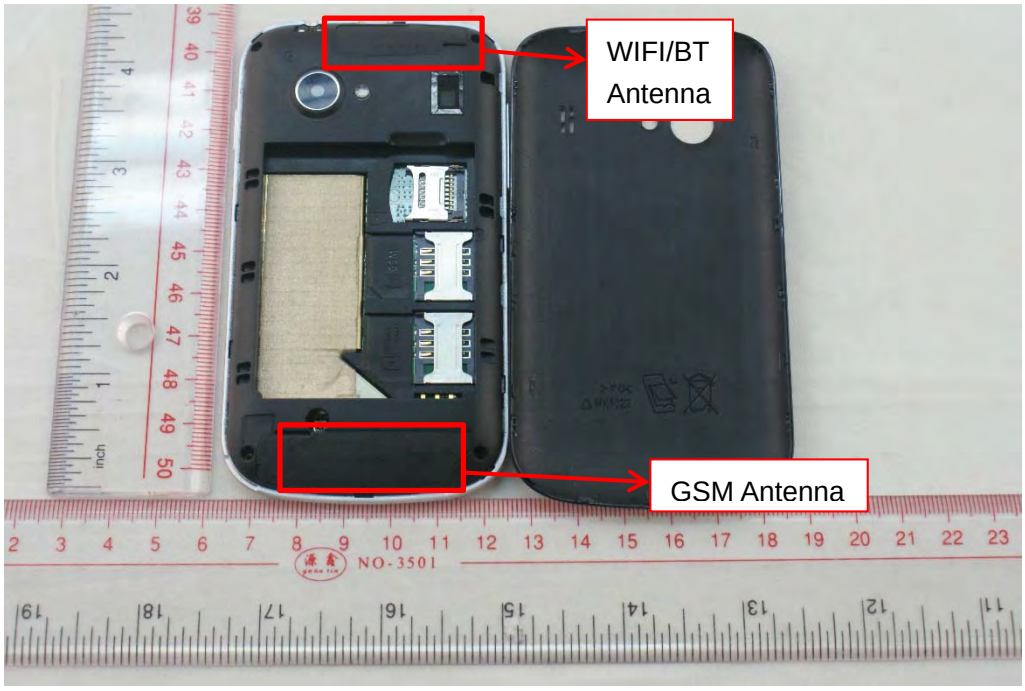
DATA CABLE

HEADPHONE CABLE

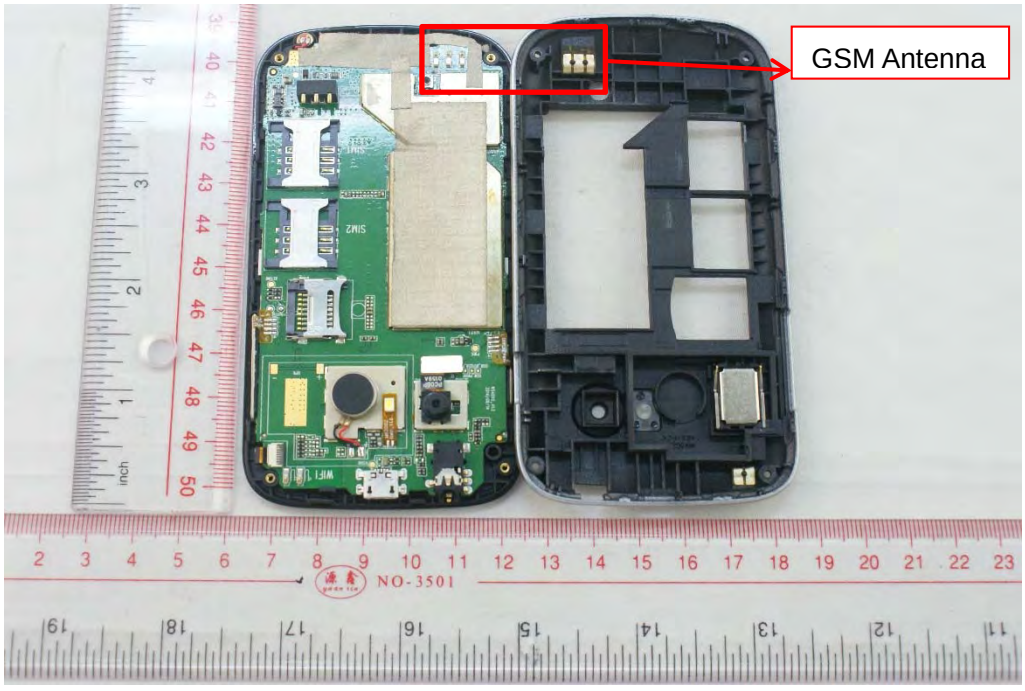


CHARGER

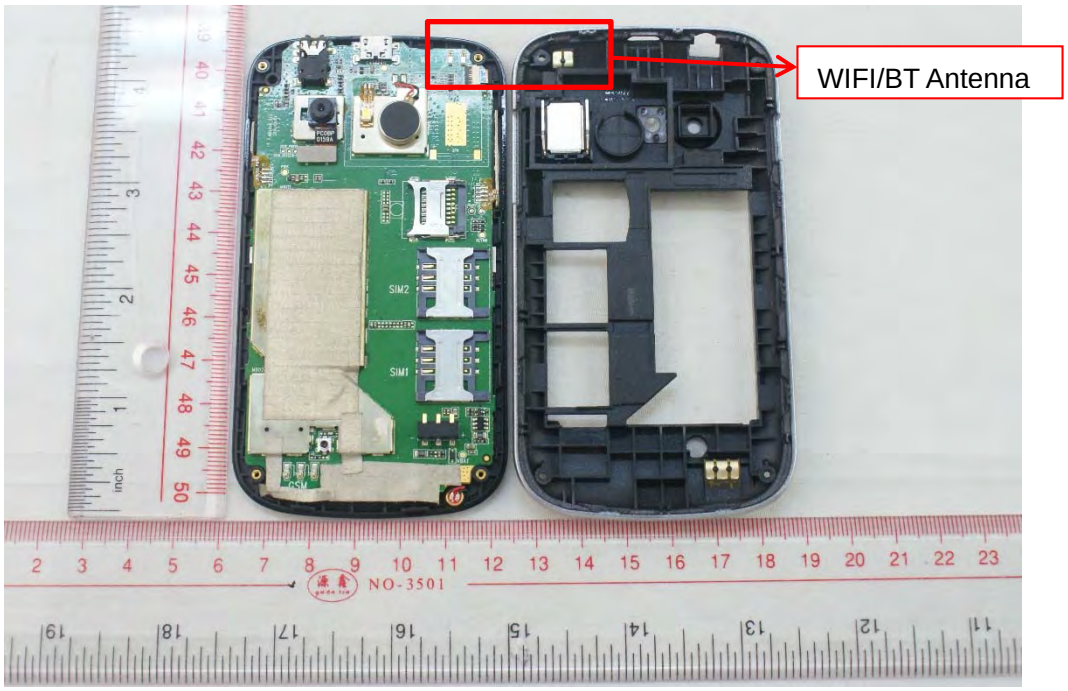
C.2 Inside of the EUT



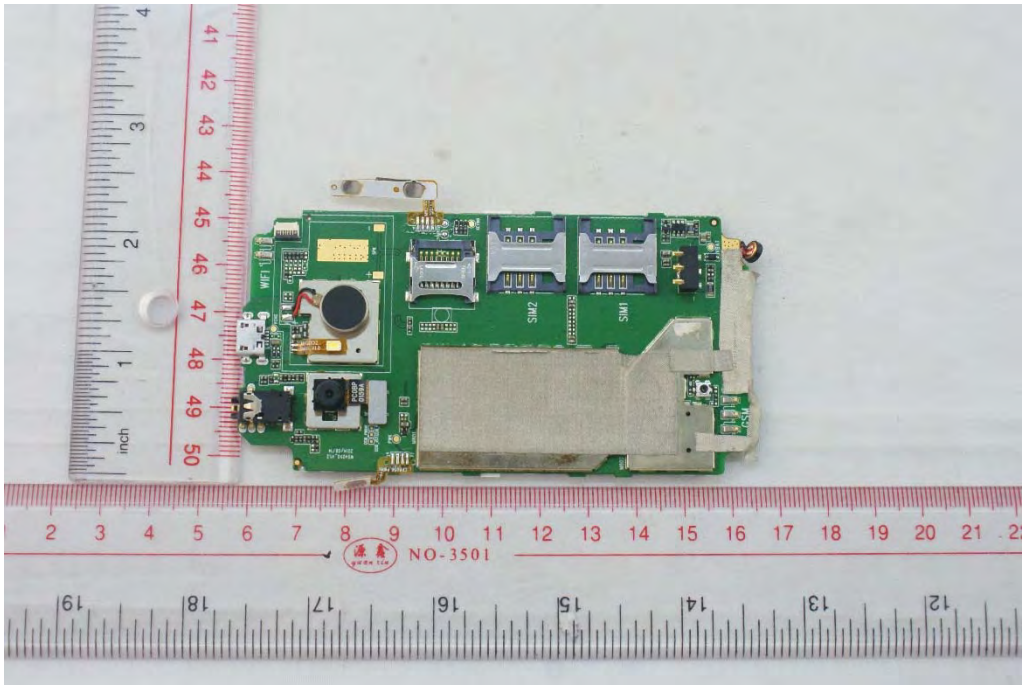
EUT UNCOVER VIEW 1



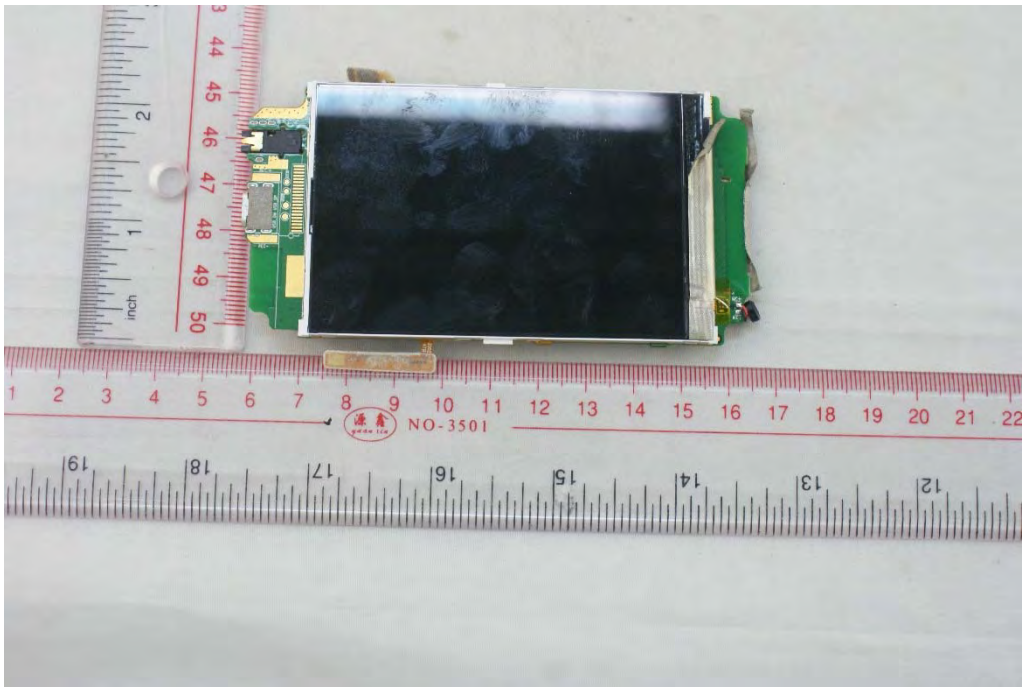
EUT UNCOVER VIEW 2



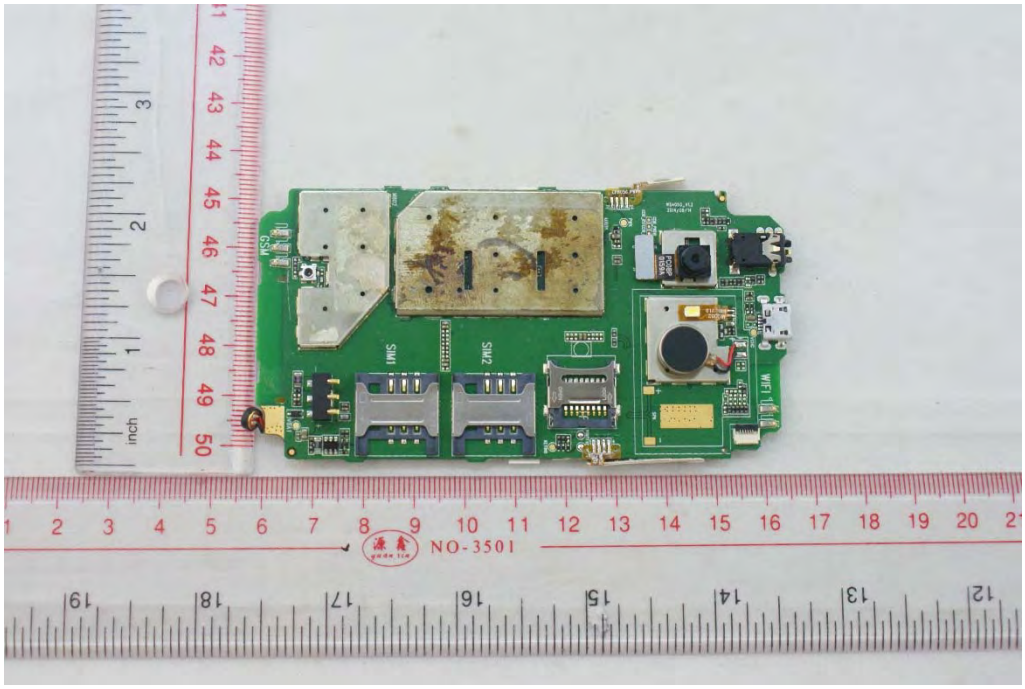
EUT UNCOVER VIEW 3



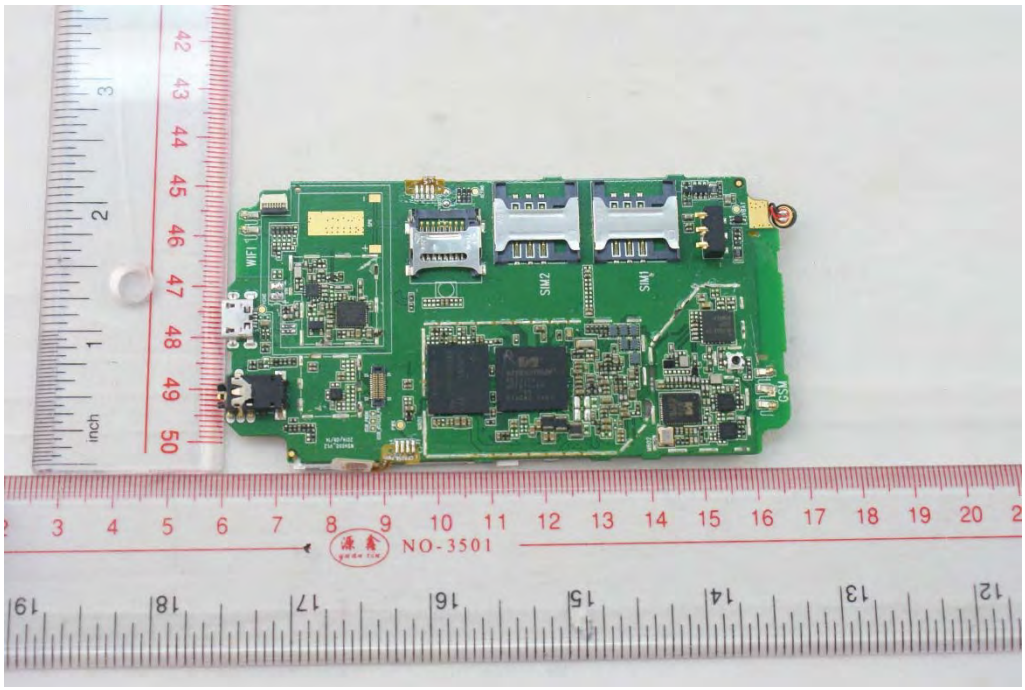
MAIN BOARD TOP VIEW 1



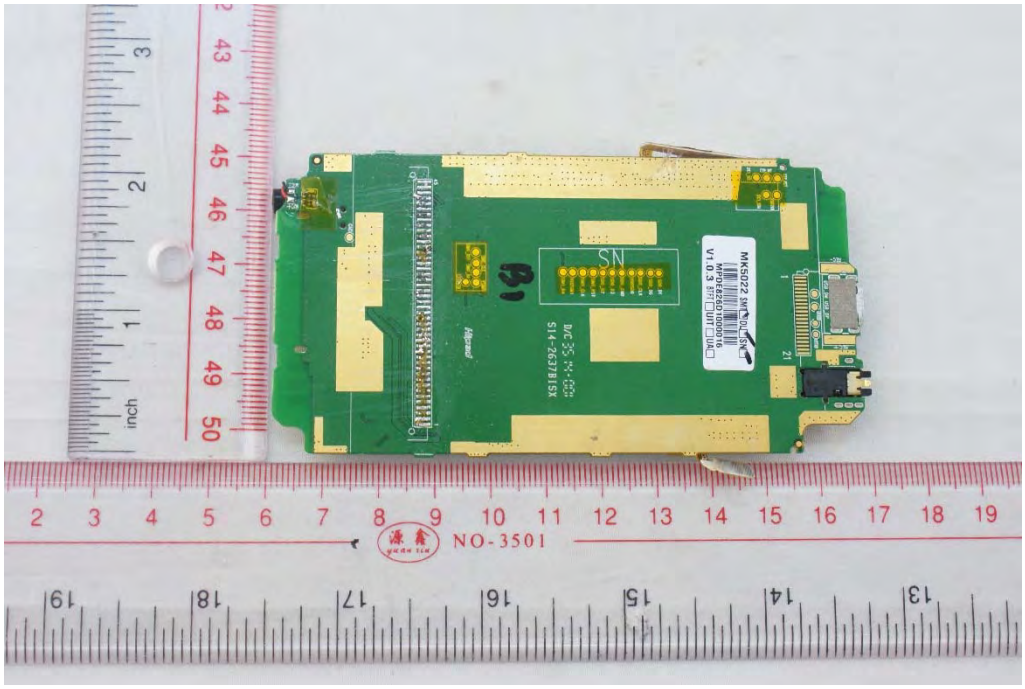
MAIN BOARD BACK VIEW 1



MAIN BOARD TOP VIEW 2



MAIN BOARD TOP VIEW 3



MAIN BOARD TOP VIEW 4

--END OF REPORT--