FCC RF TEST REPORT

ISSUED BY
Shenzhen BALUN Technology Co., Ltd.

FOR

Lcon Wireless Bluetooth Headphone

ISSUED TO
A- Audio Headphones, Inc

7200 Corporate Center Drive Miami, Florida 33126 USA

Prepared by: Zhang Yanqing
Zhang Yanqing
(Reporting Specialist)
Date Mar. 13, 2015

Approved by: Wei Yanquan
Wei Yanquan
(Chief Engineer)
Date Mar. 13, 2015

Report No.:	BL-SZ1470024-601
EUT Type:	Lcon Wireless Bluetooth Headphones
Model Name:	A21, A22
Brand Name:	A AUDIO
Test Standard:	47 CFR Part 15 Subpart C
FCC ID:	2AC4GA21A22
Test conclusion:	Pass
Test Date:	Jul. 29, 2014 ~ Sep. 14, 2014
Date of Issue:	Mar. 13, 2015

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Revision History

Version	Issue Date	Revisions
Rev. 01	Sep. 15, 2014	Initial Issue
Rev. 02	Mar. 13, 2015	The Second Issue

TABLE OF CONTENTS

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 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	A- Audio Headphones, Inc
Address	7200 Corporate Center Drive Miami, Florida 33126 USA

2.2 Manufacturer

Manufacturer	OCVACO Electronic Limited
Address	No 142, South Tanshen Road, Tanzhou Town, Zhongshan City, Guangdong, China

2.3 General Description for Equipment under Test (EUT)

EUT Type	Lcon Wireless Bluetooth Headphones
Model Name	A21, A22
Description of Model Name differentiation	The equipment model A21 and A22 are Lcon Wireless Bluetooth Headphones, the electrical parameters and internal structure of circuit are same, only the model name is different.
Hardware Version	V 1.2
Software Version	V 1.2
Network and Wireless connectivity	Bluetooth 3.0, Bluetooth 4.0 Low Energy (BLE)
About the Product	The equipment is Lcon Wireless Bluetooth Headphones, it contains Bluetooth 3.0 and Bluetooth 4.0 Low Energy (BLE) operating at 2.4GHz ISM band. Only the Bluetooth 3.0 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	

Note: The above EUT information in section 2.3 and 2.4 was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

2.5 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	N/A
	Model No	PT602248
	Serial No	N/A
	Capacitance	650 mAh
	Rated Voltage	3.7V
	Extreme Voltage	Low: 3.3V / High:4.2V
Ancillary Equipment 2	Audio Line	
Ancillary Equipment 3	Audio Line (Control)	

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15, Subpart C (10-1-13 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 C63.4-2014	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 C63.10-2013	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(d)	ANNEX A.8	Pass
10	Band Edge	15.209 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 (%)	45 - 55	
Atmospheric Pressure (kPa)	100 - 102	
Temperature	NT (Normal Temperature)	+22℃ to +25℃
Working Voltage of the EUT	NV (Normal Voltage)	3.7V

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	2013.10.07	2014.10.06

4.3 Test Configurations

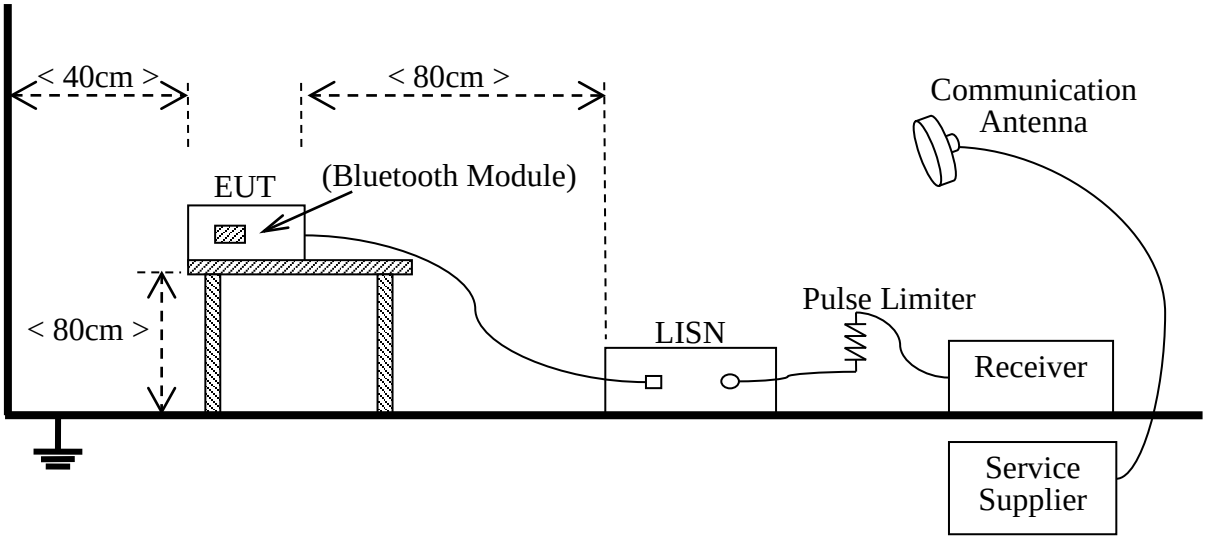
Test Configurations (TC) NO.	Description	
	Signal Description	Operating Frequency
Transmitter		
TC01	GFSK modulation, package type DH5, hopping on	--
TC02	GFSK modulation, package type DH5, hopping off	Ch No. 0/ 2402MHz
TC03	GFSK modulation, package type DH5, hopping off	Ch No. 39/ 2441MHz
TC04	GFSK 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

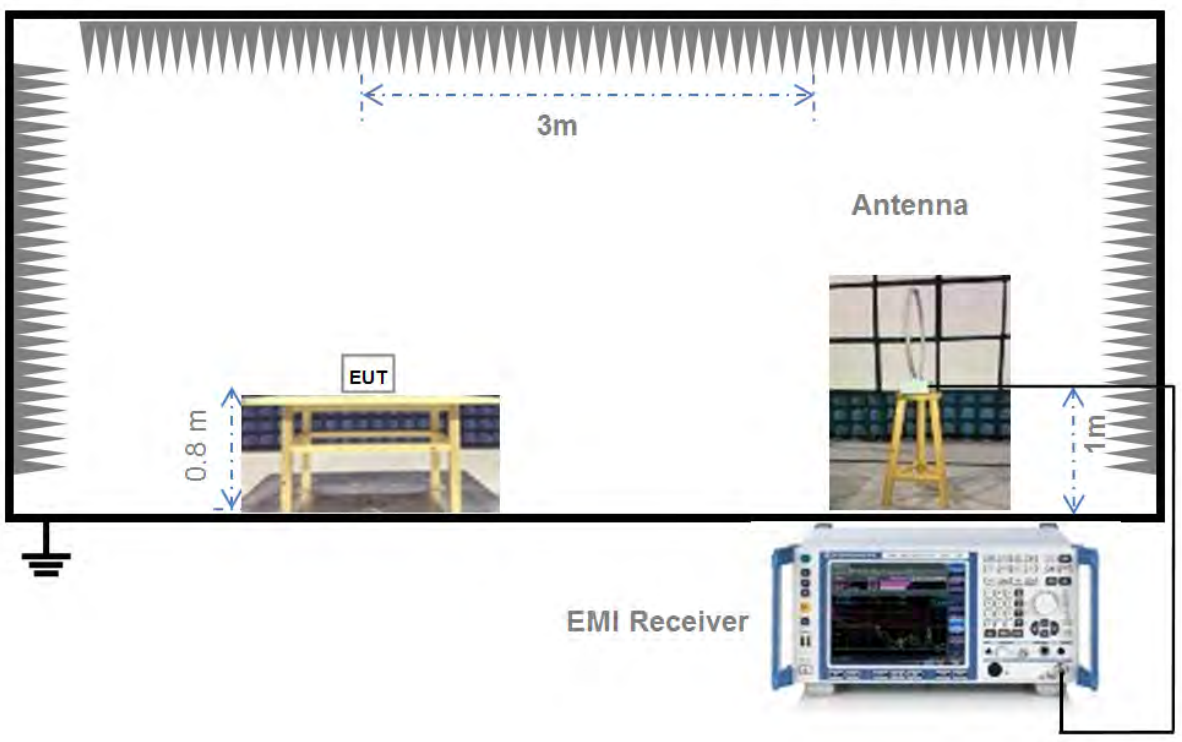
(Diagram 1)

4.4.2 For AC Power Supply Port Test



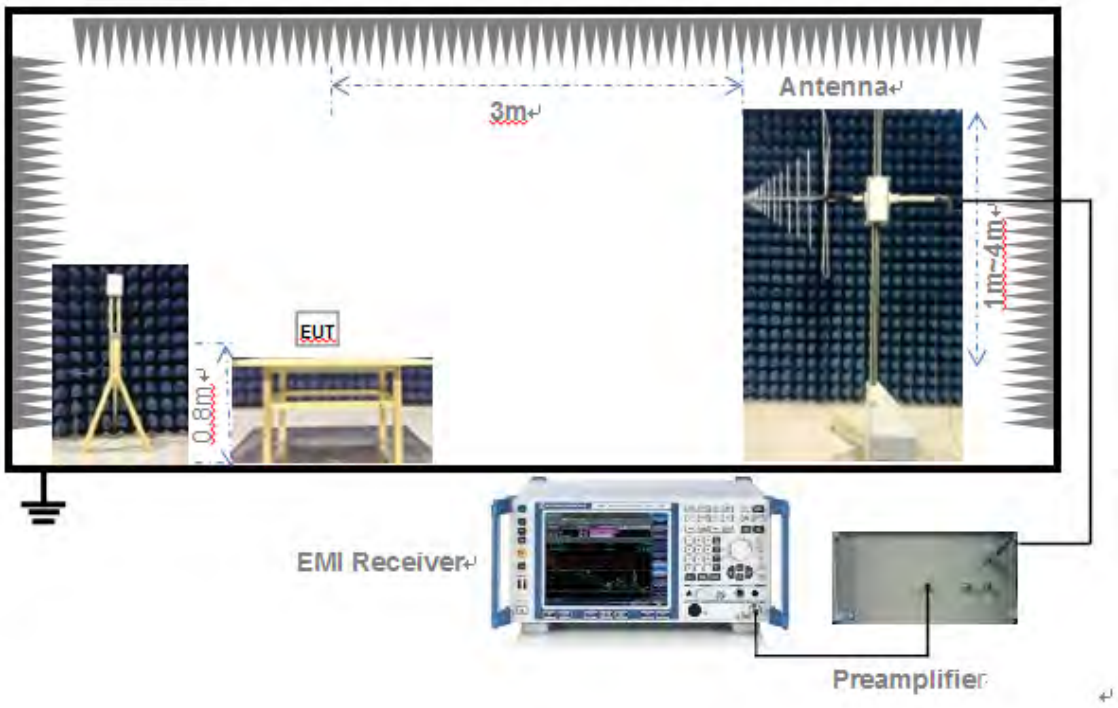
(Diagram 2)

4.4.3 For Radiated Test (Below 30MHz)



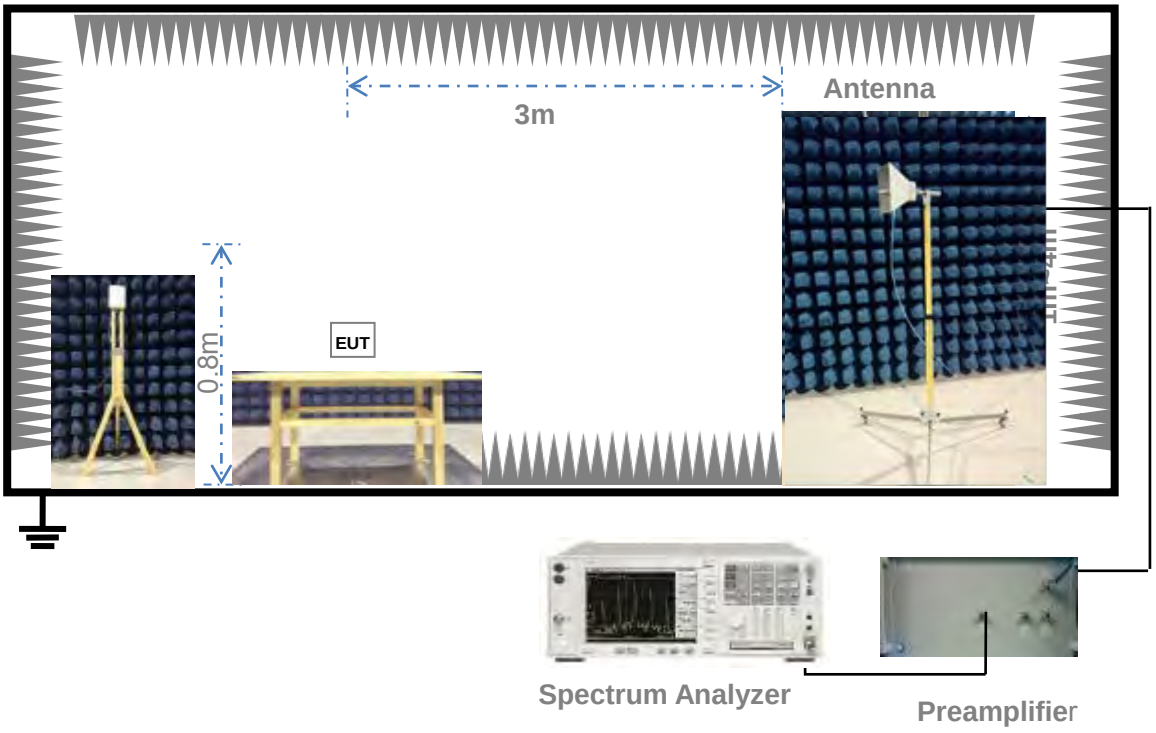
(Diagram 3)

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	TC02, TC03, TC04, TC06, TC07, TC08, TC10, TC11, TC12
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)

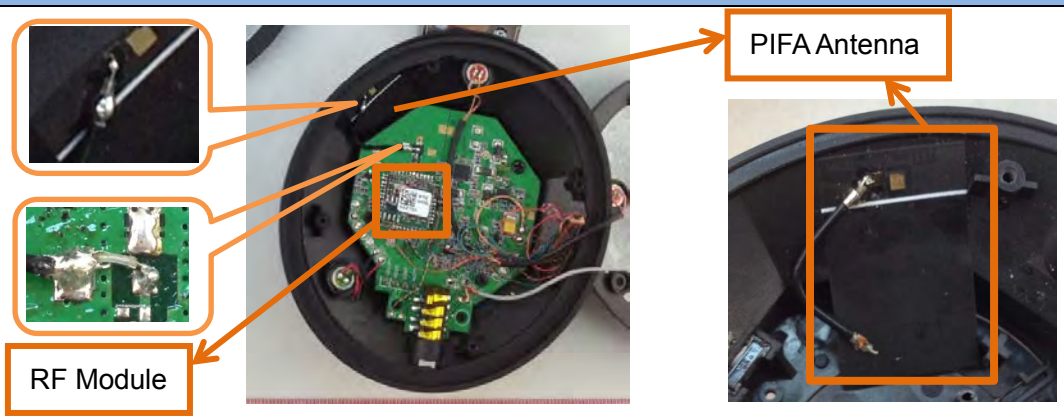
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply 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	The antenna feed point is welded on the mainboard, and the antenna fixed on the the inner wall of the shell, can't be replaced by the consumer.

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

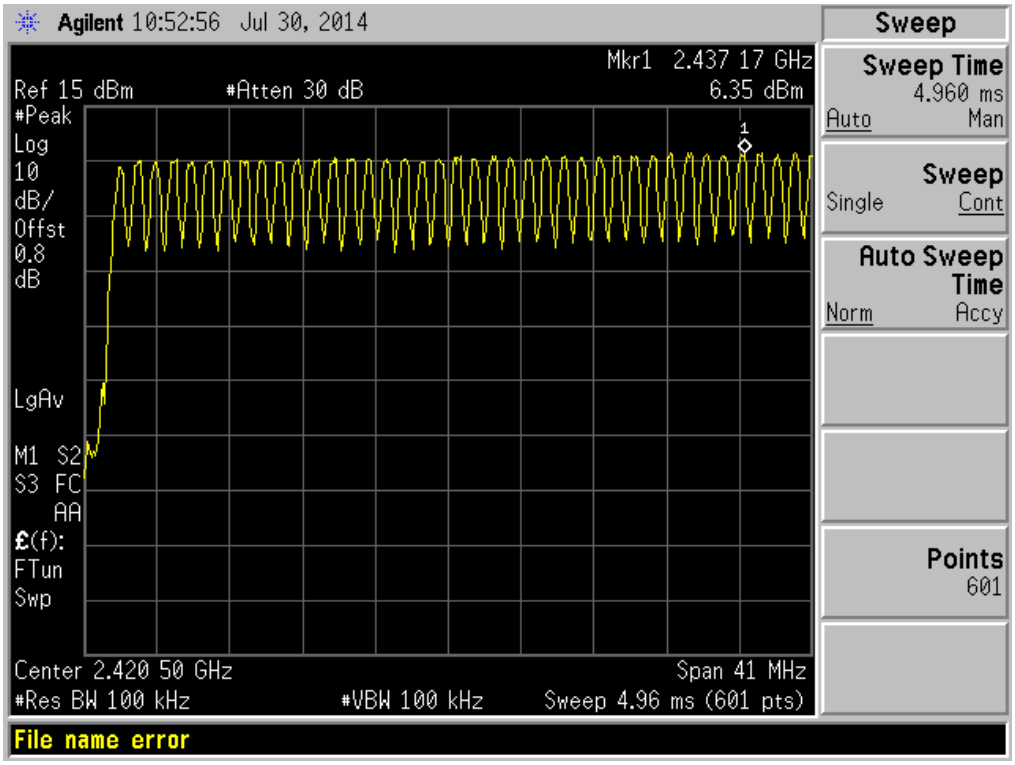
A.1 Number of Hopping Frequency

Test Data

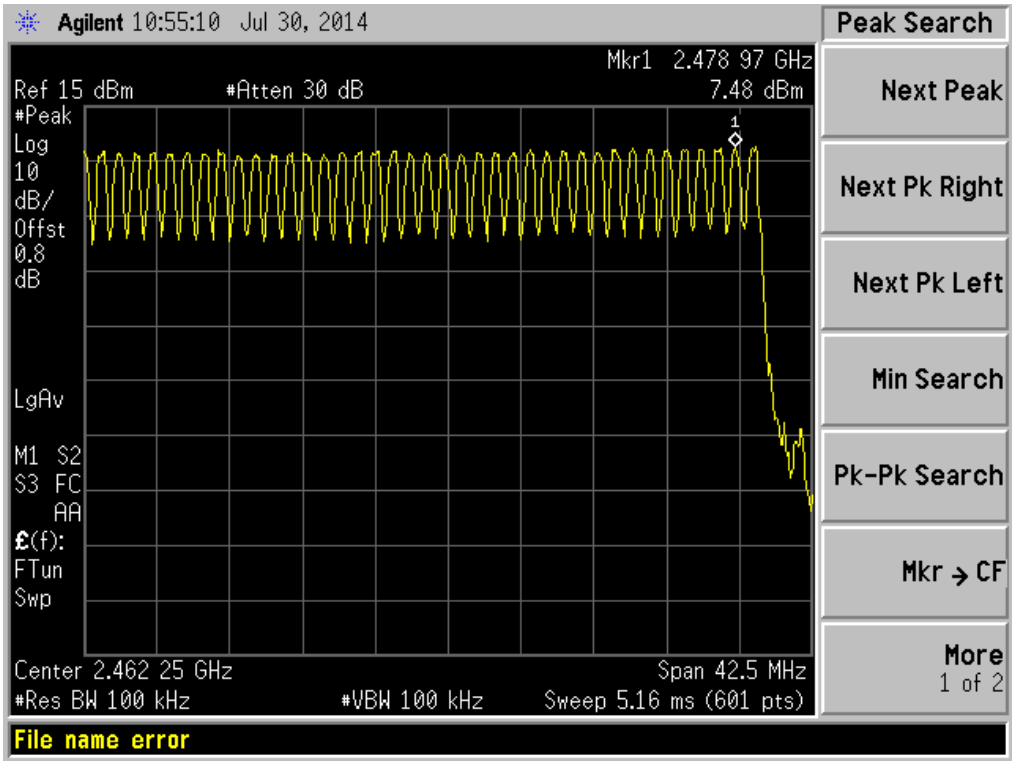
Test Mode	Frequency Block (MHz)	Measured Channel Numbers	Min. Limit	Verdict
GFSK	2400 - 2483.5	79	15	Pass
∏/4-DQPSK	2400 - 2483.5	79	15	Pass
8-DPSK	2400 - 2483.5	79	15	Pass

Test plots

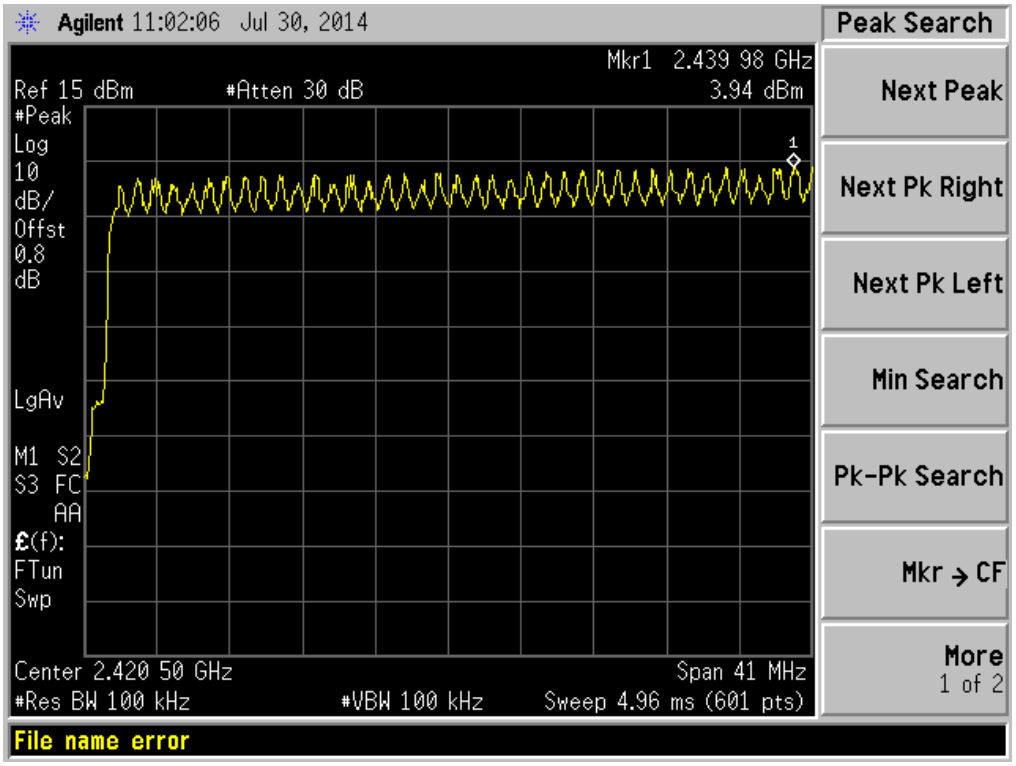
GFSK 2.4GHz~2.4415GHz



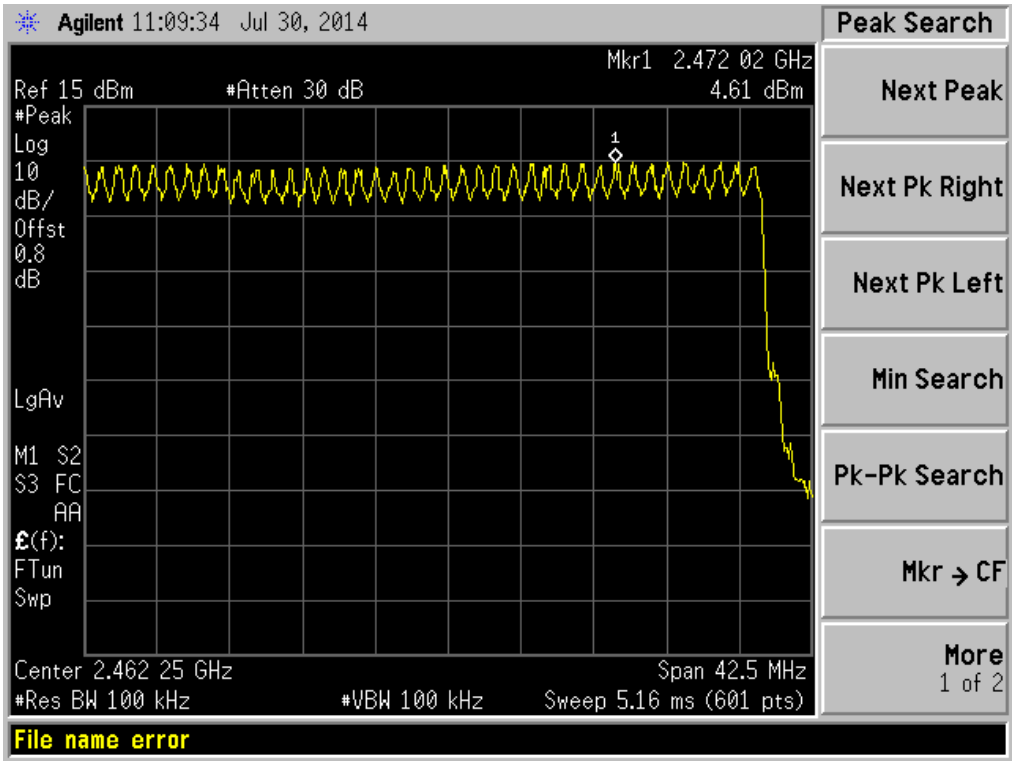
GFSK 2.4415GHz~2.4835GHz



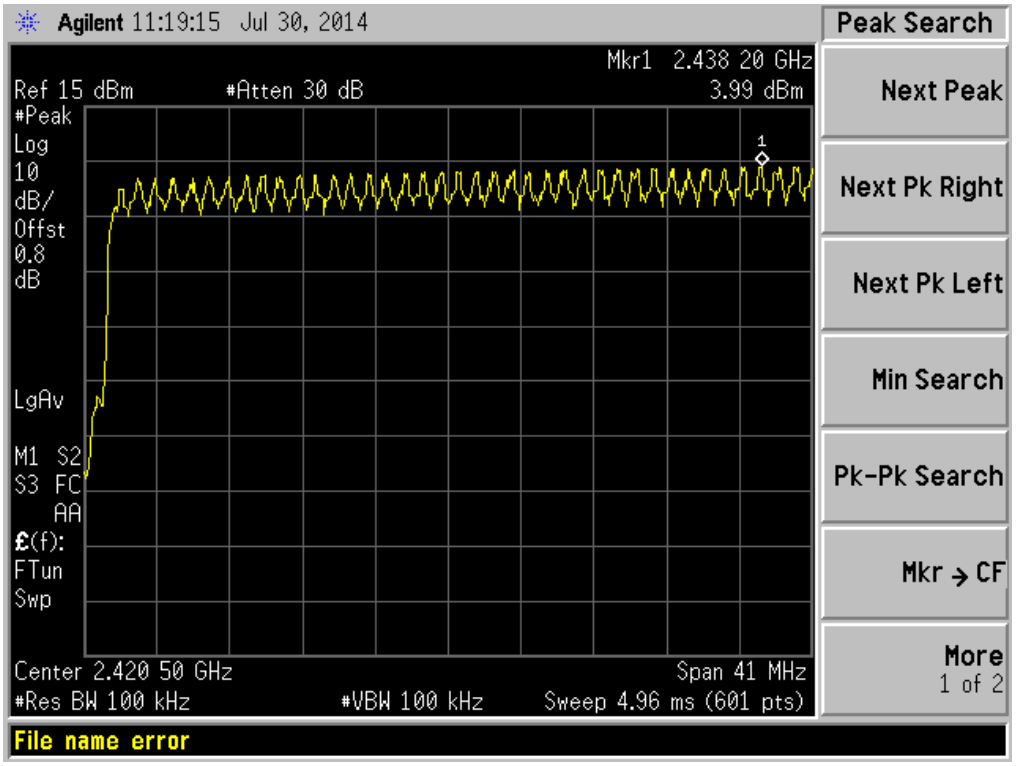
∏/4-DQPSK 2.4GHz~2.4415GHz



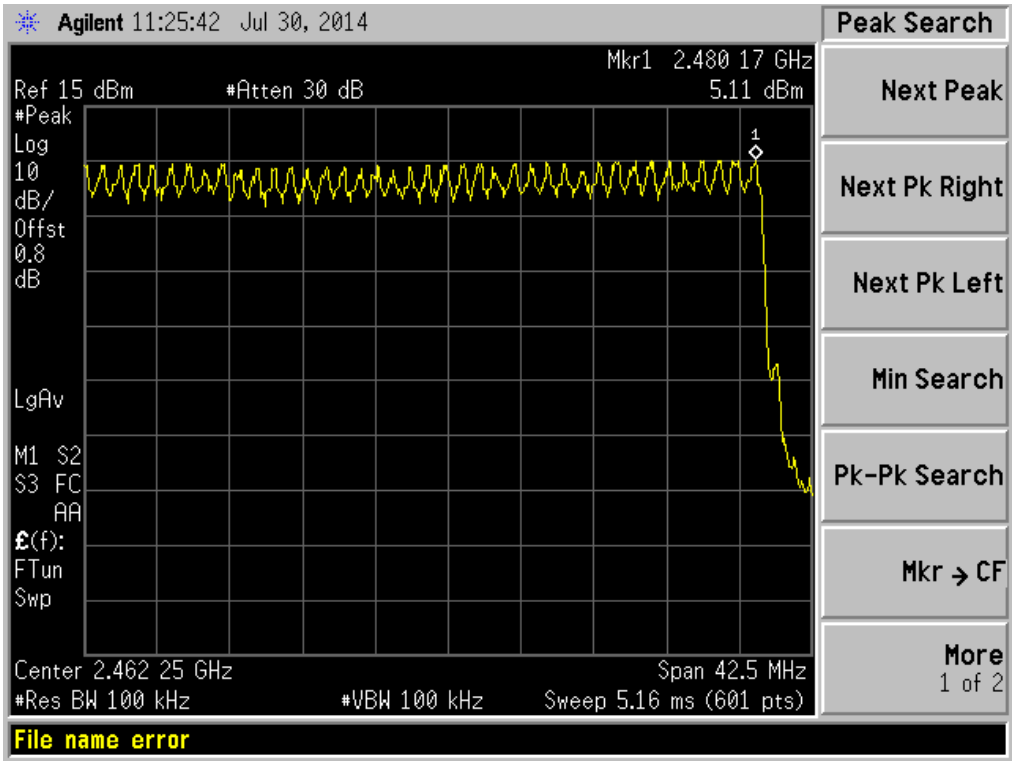
∏/4-DQPSK 2.4415GHz~2.4835GHz



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	4.05	2.54	30	1000	Pass
Middle	2441	6.76	4.74			Pass
High	2480	7.60	5.75			Pass

∏/4-DQPSK Mode:

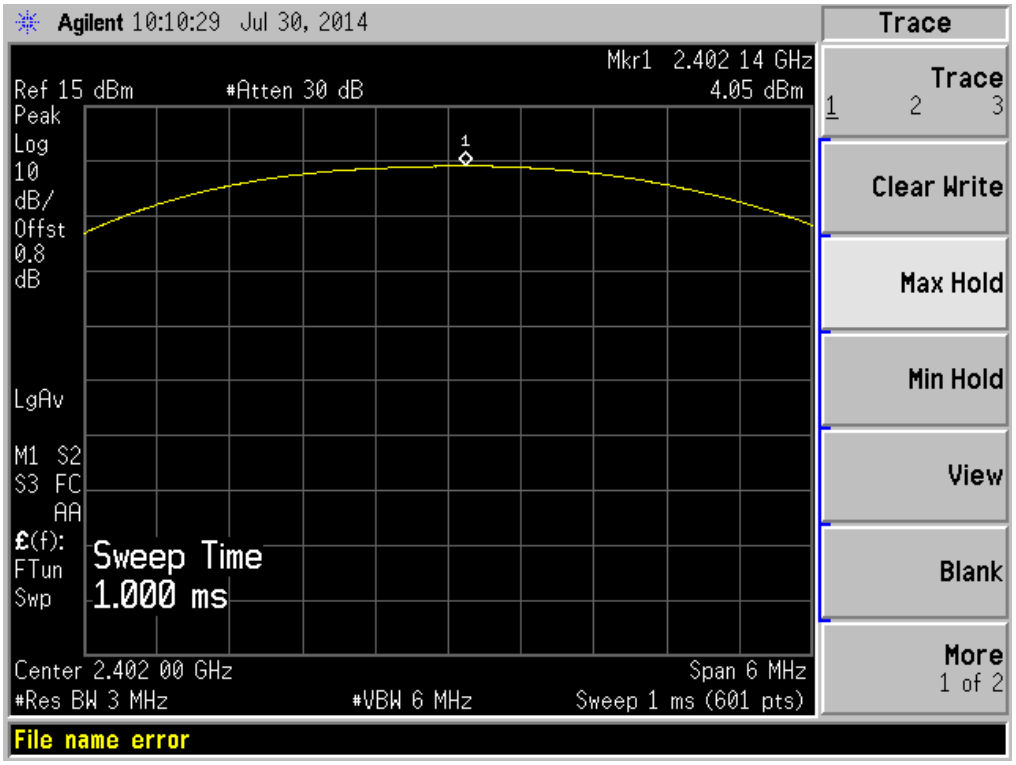
Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	mW	dBm	mW	
Low	2402	1.98	1.58	30	1000	Pass
Middle	2441	5.35	3.43			Pass
High	2480	6.28	4.25			Pass

8-DPSK Mode:

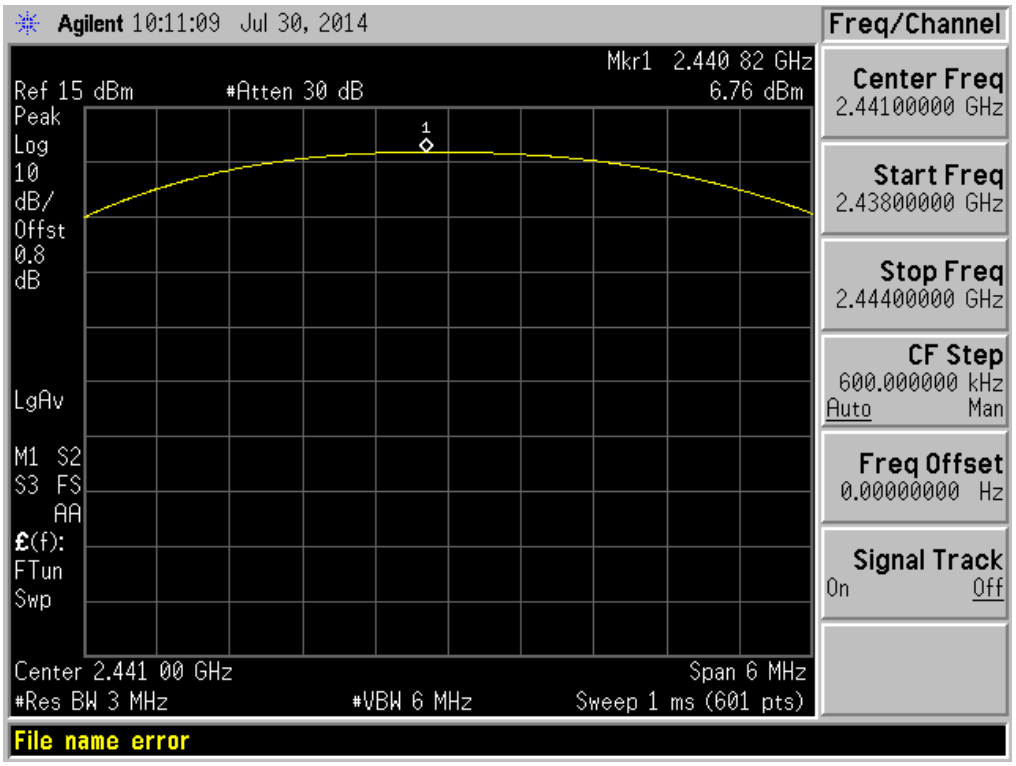
Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	mW	dBm	mW	
Low	2402	2.18	1.65	30	1000	Pass
Middle	2441	5.64	3.66			Pass
High	2480	6.57	4.54			Pass

Test plots

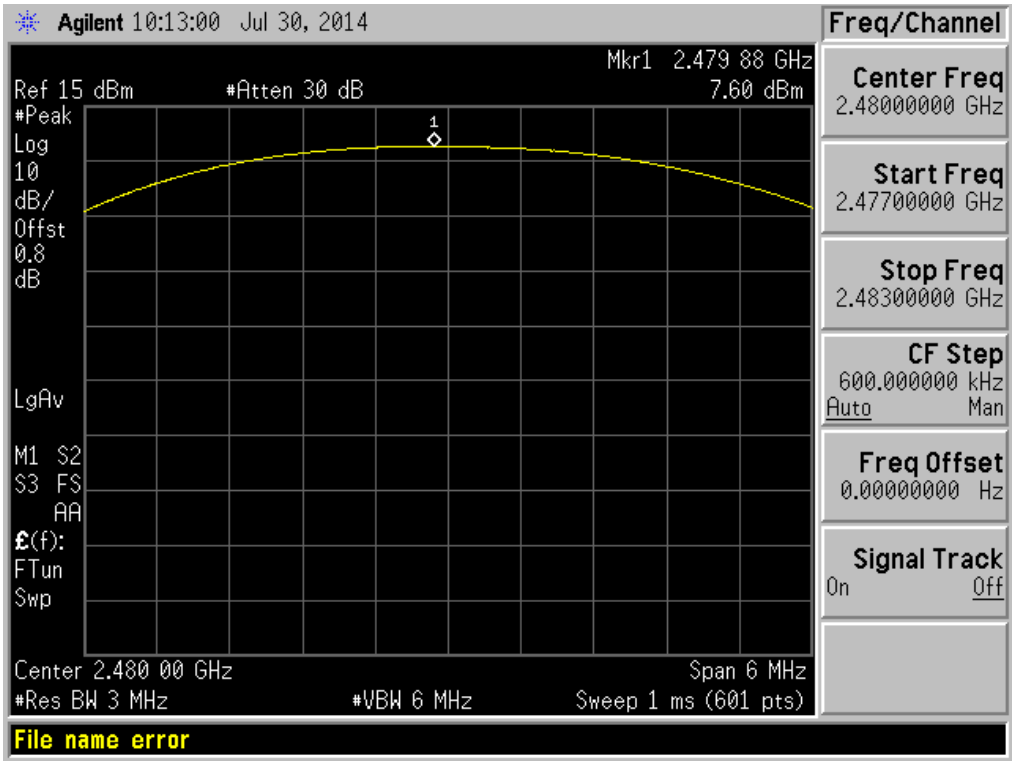
GFSK LOW CHANNEL



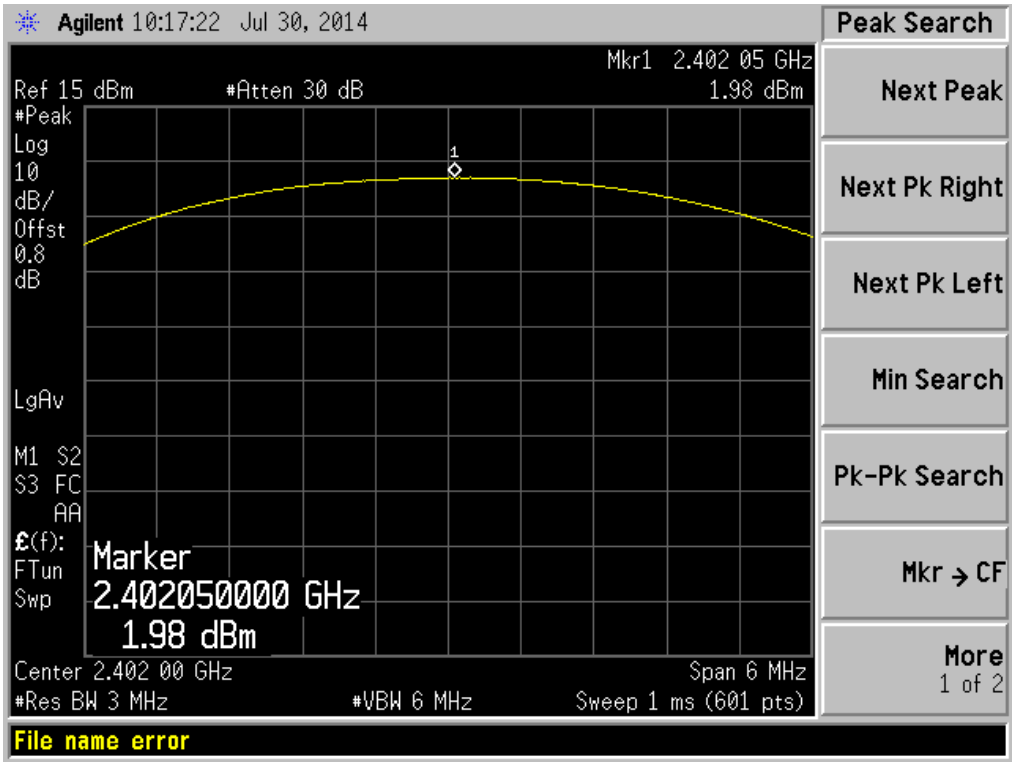
GFSK MID CHANAEL



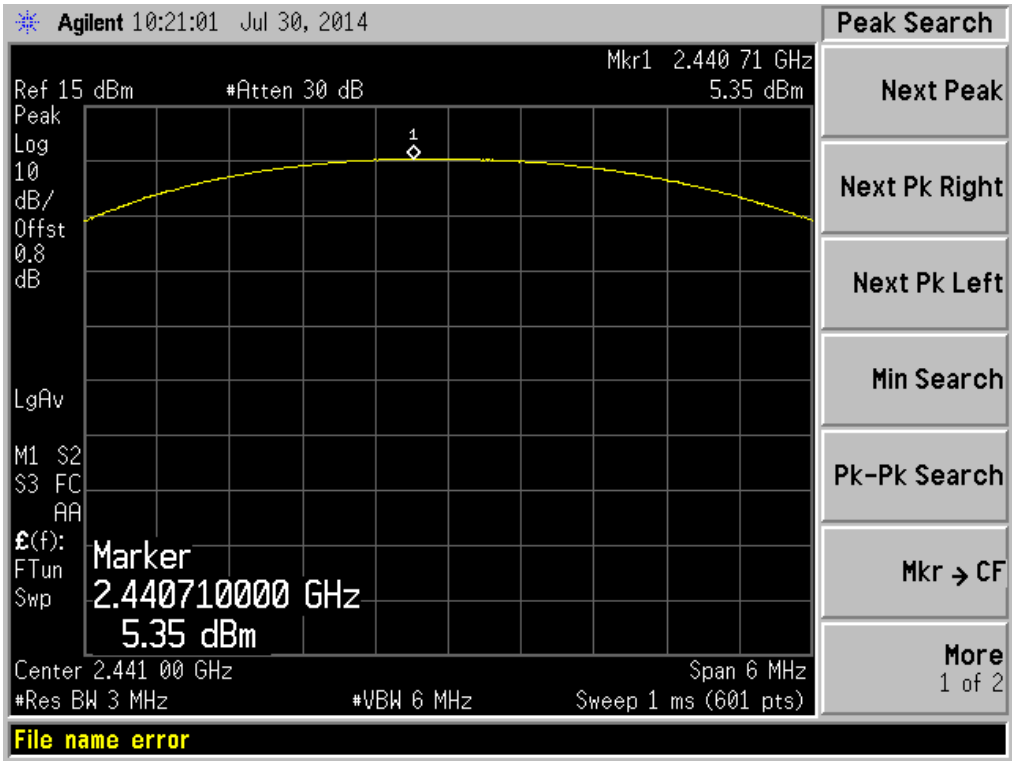
GFSK HIGH CHANNEL



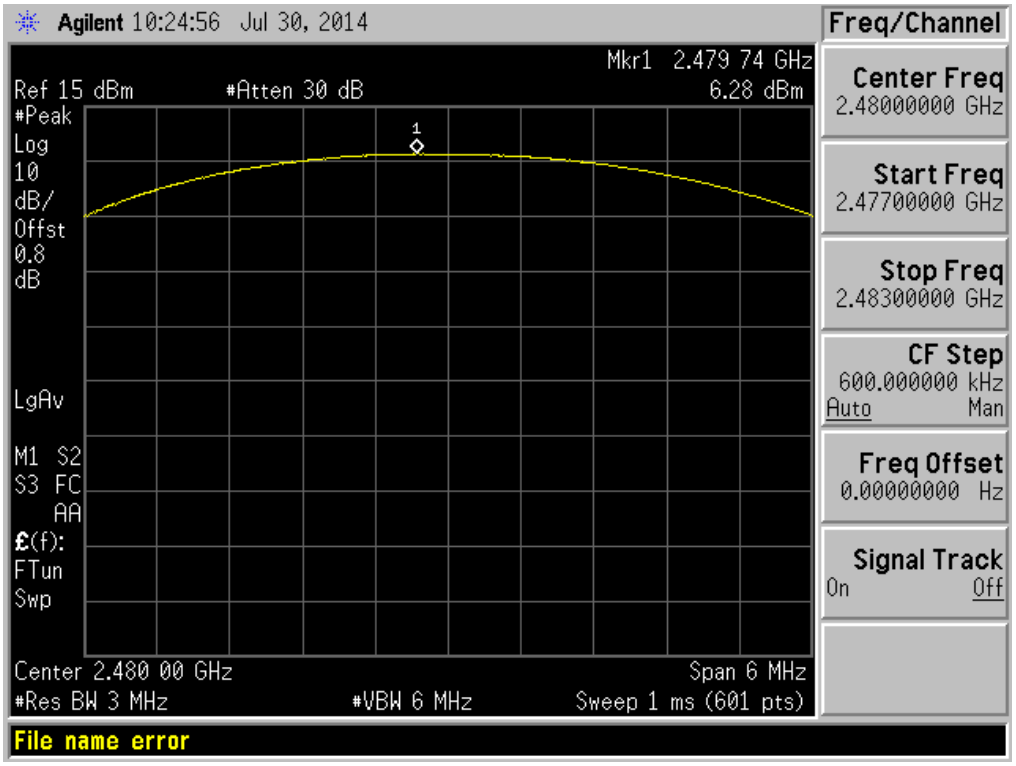
∏/4-DQPSK LOW CHANNEL



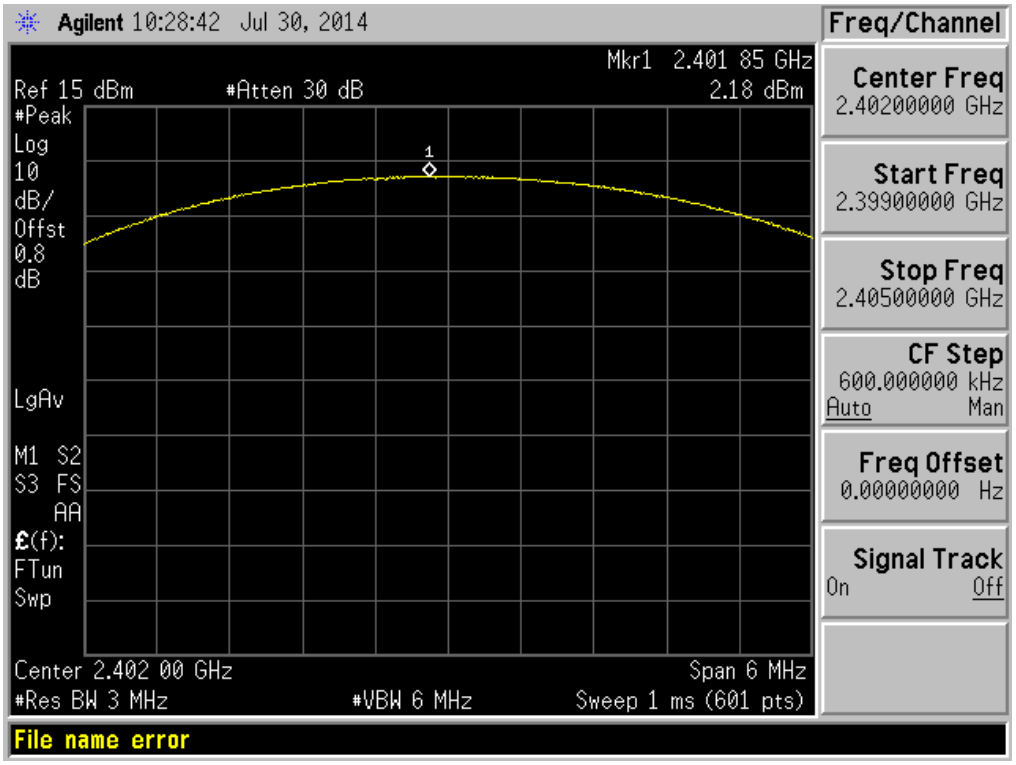
∏/4-DQPSK MID CHANAEL



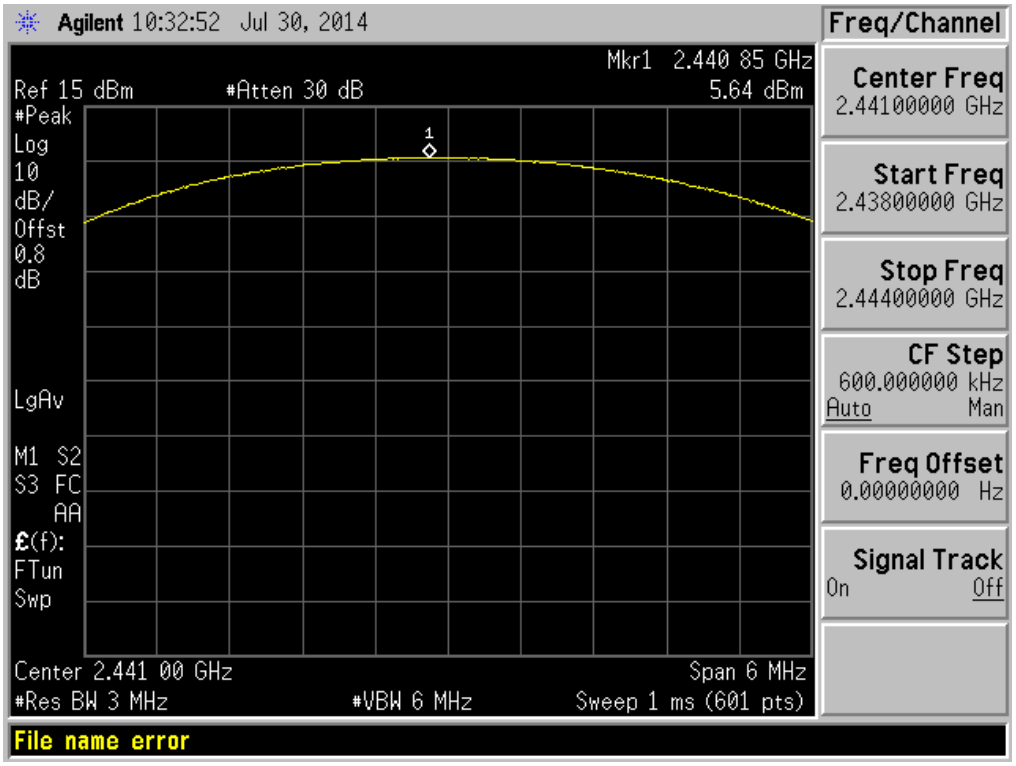
∏/4-DQPSK HIGH CHANNEL



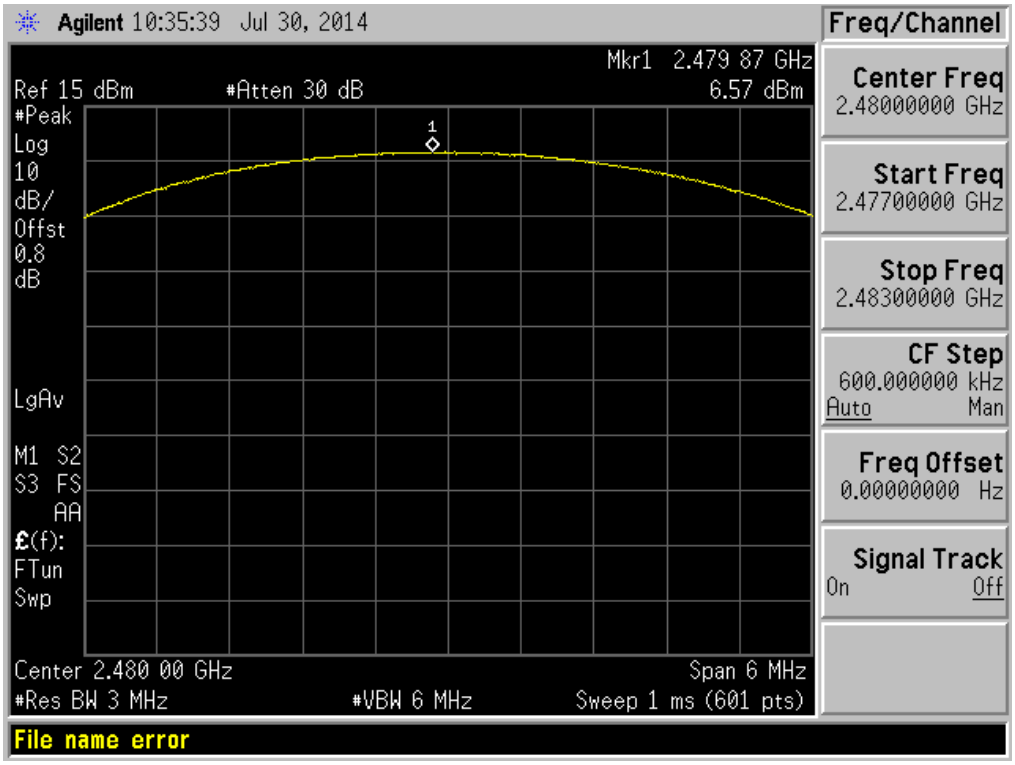
8-DPSK LOW CHANNEL



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 (kHz)
Low	2402	1.116	956.5579
Middle	2441	1.121	958.8749
High	2480	1.120	956.4616

∏/4-DQPSK Mode:

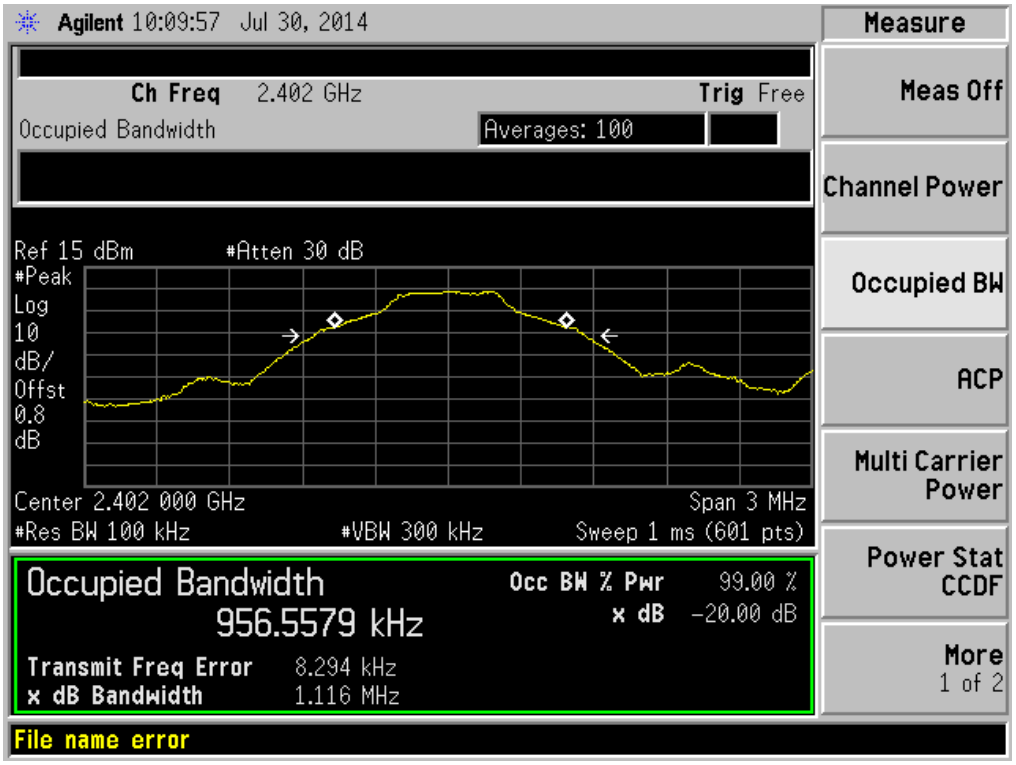
Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.390	1.2333
Middle	2441	1.374	1.2124
High	2480	1.368	1.2094

8-DPSK Mode:

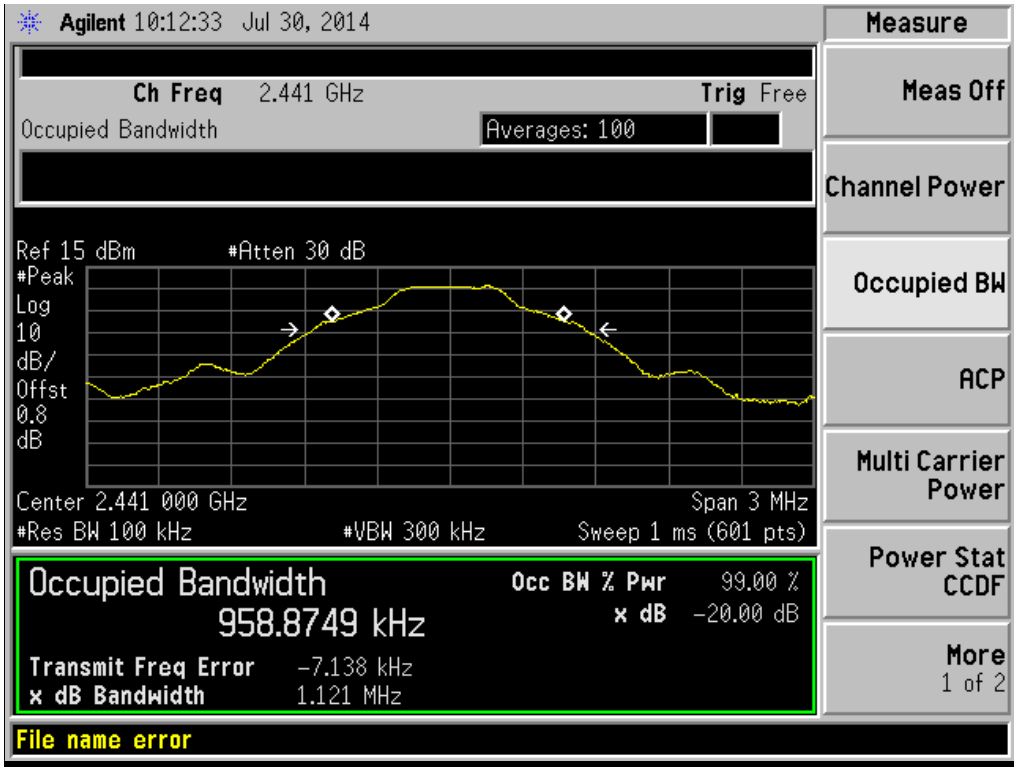
Channel	Frequency (MHz)	20 dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.378	1.2153
Middle	2441	1.378	1.2255
High	2480	1.378	1.2111

Test plots

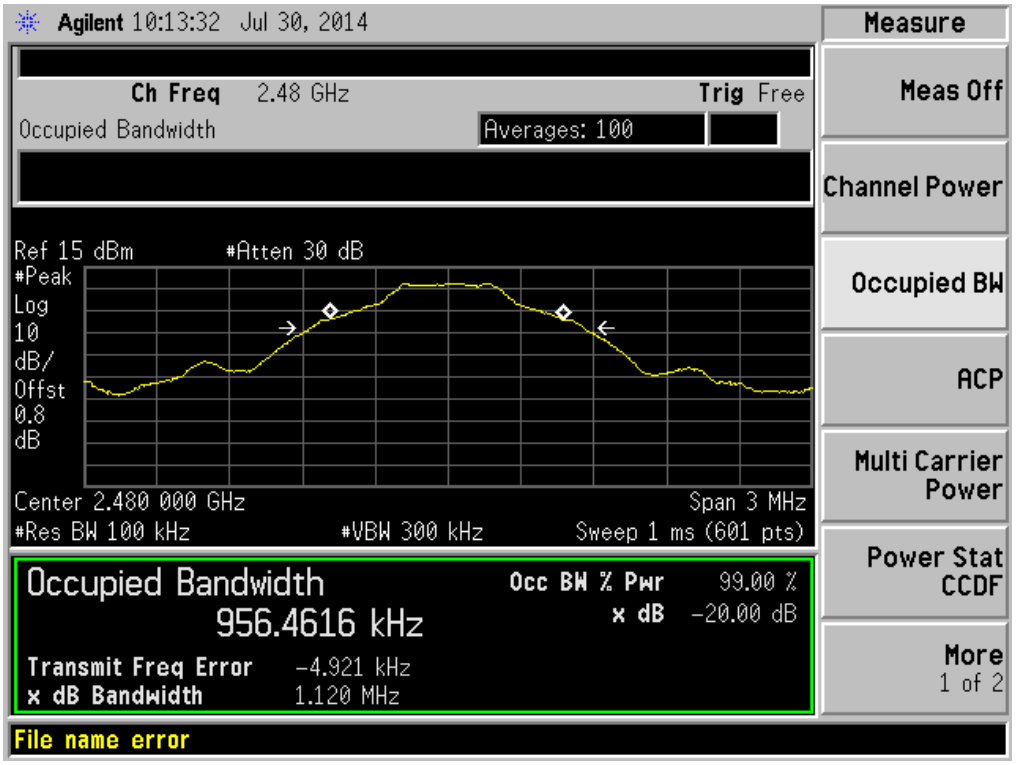
GFSK LOW CHANNEL



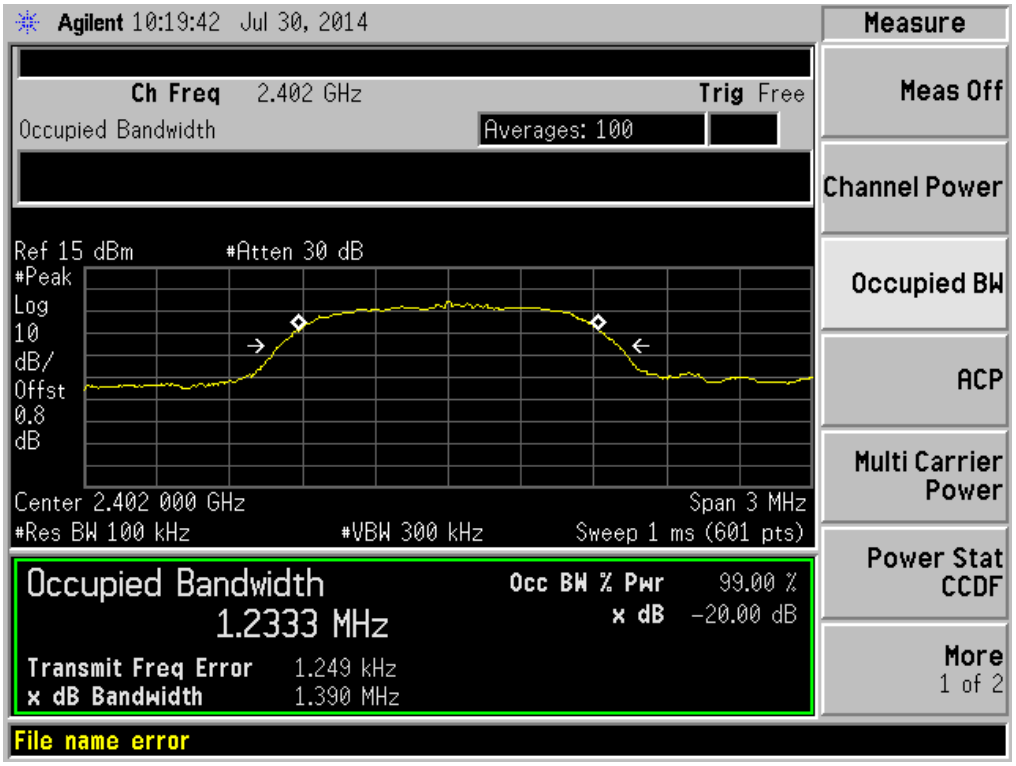
GFSK MID CHANAEL



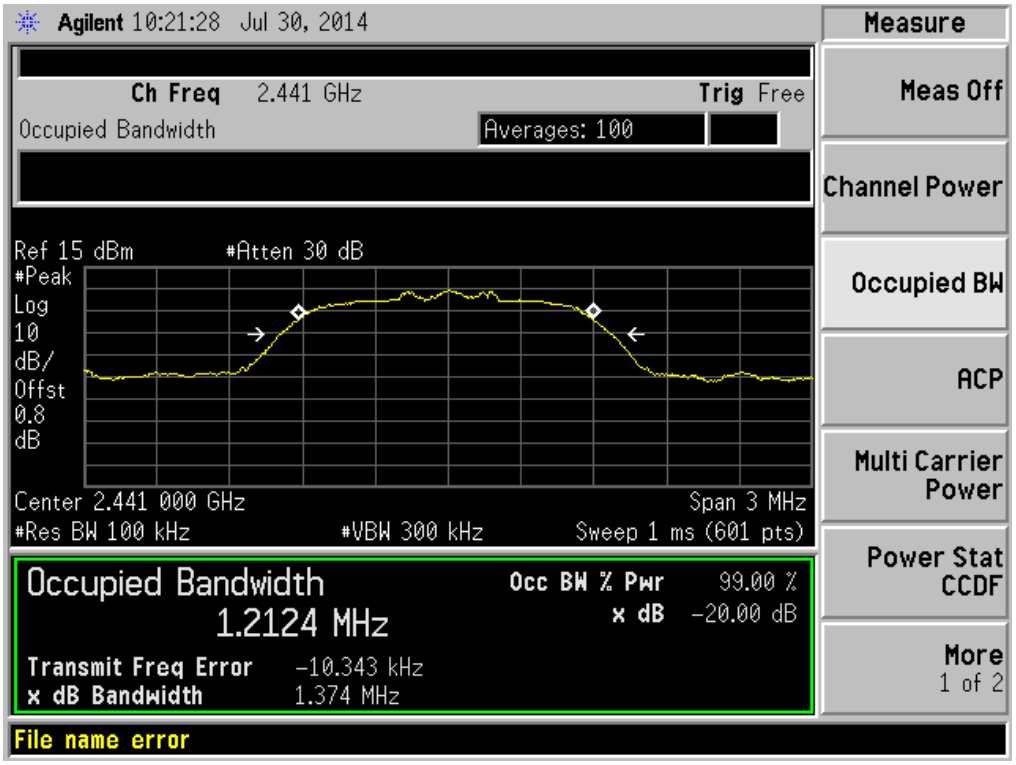
GFSK HIGH CHANNEL



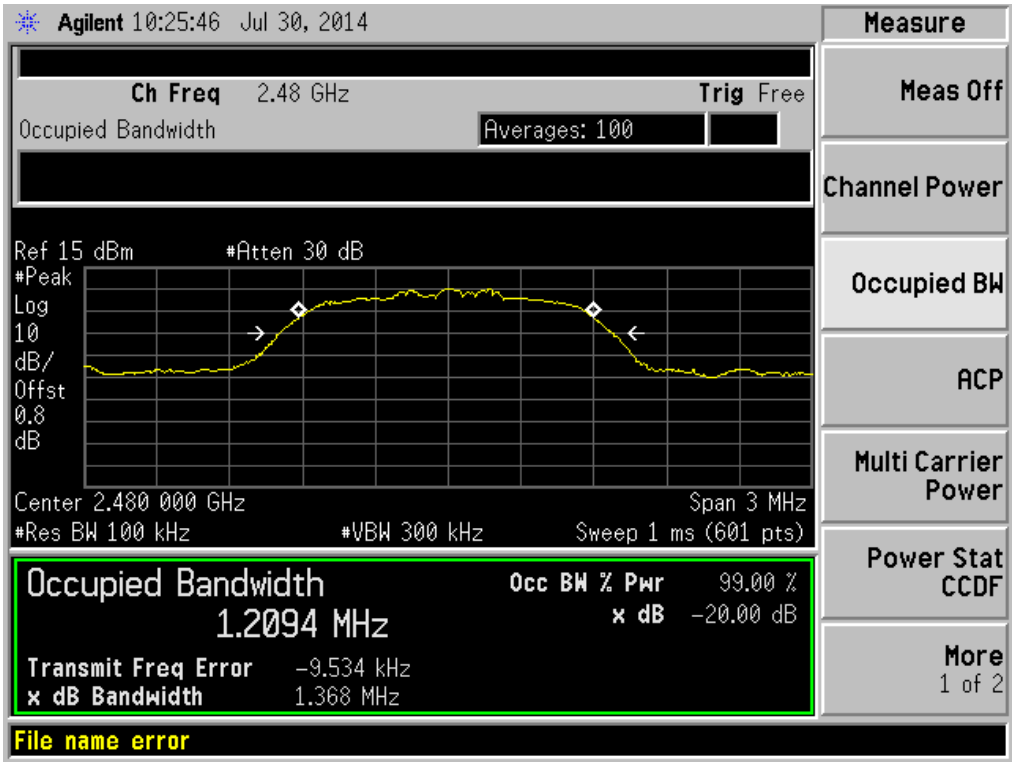
∏/4-DQPSK LOW CHANNEL



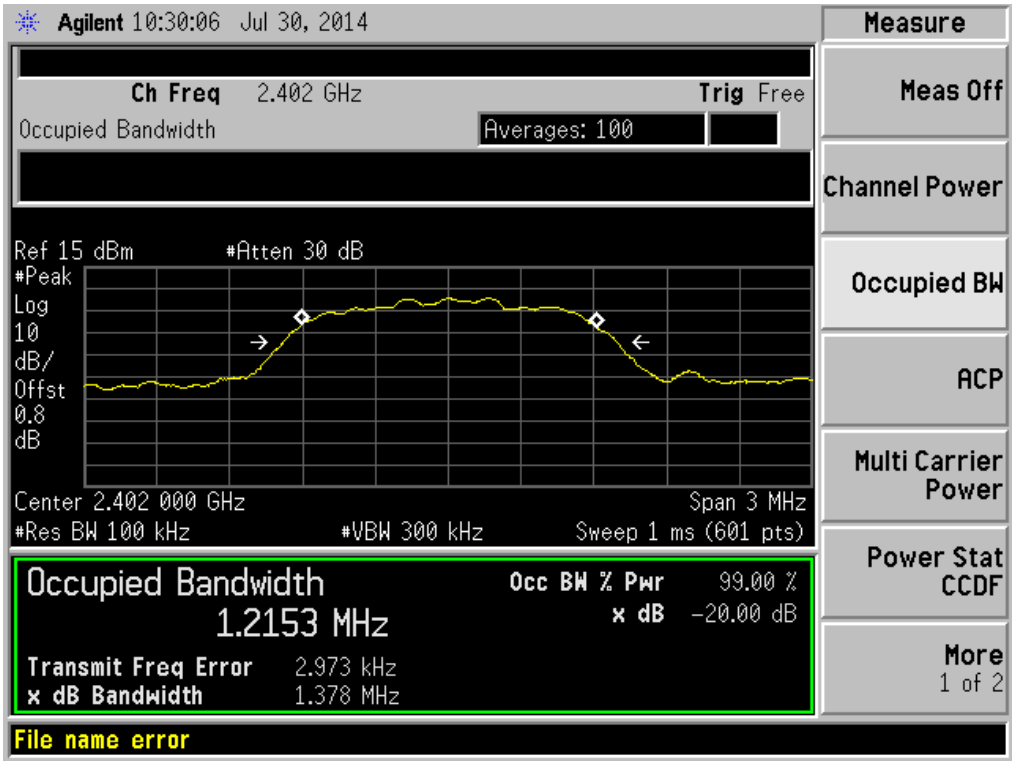
∏/4-DQPSK MID CHANAEL



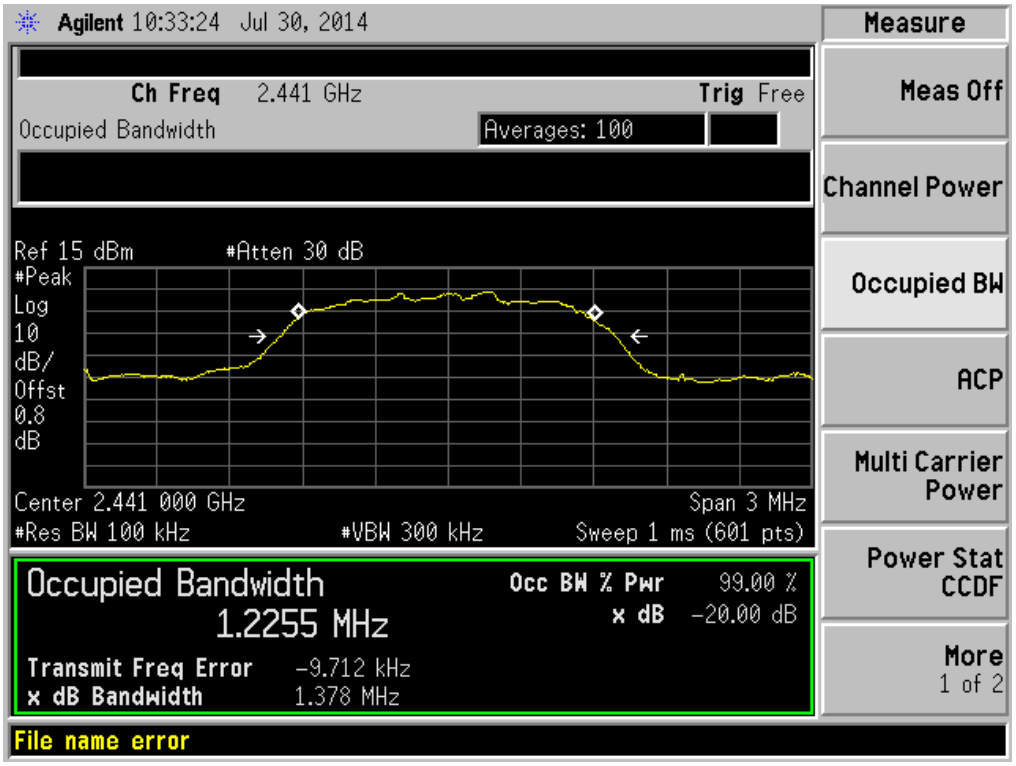
∏/4-DQPSK HIGH CHANNEL



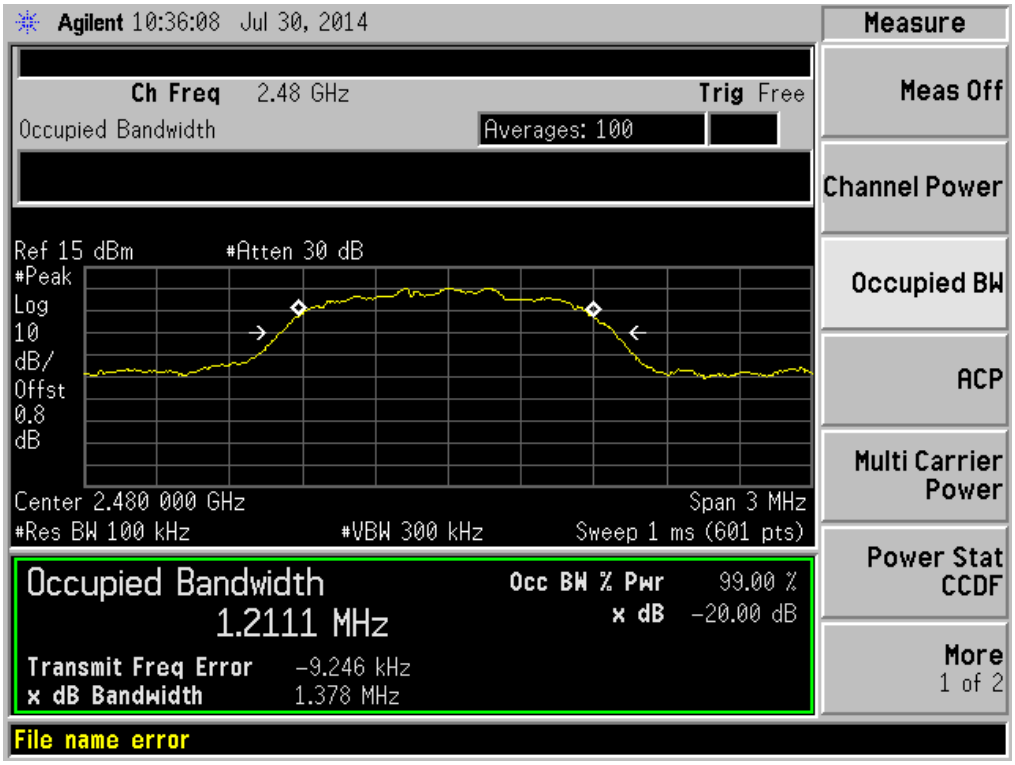
8-DPSK LOW CHANNEL



8-DPSK MID CHANAEL



8-DPSK HIGH CHANNEL



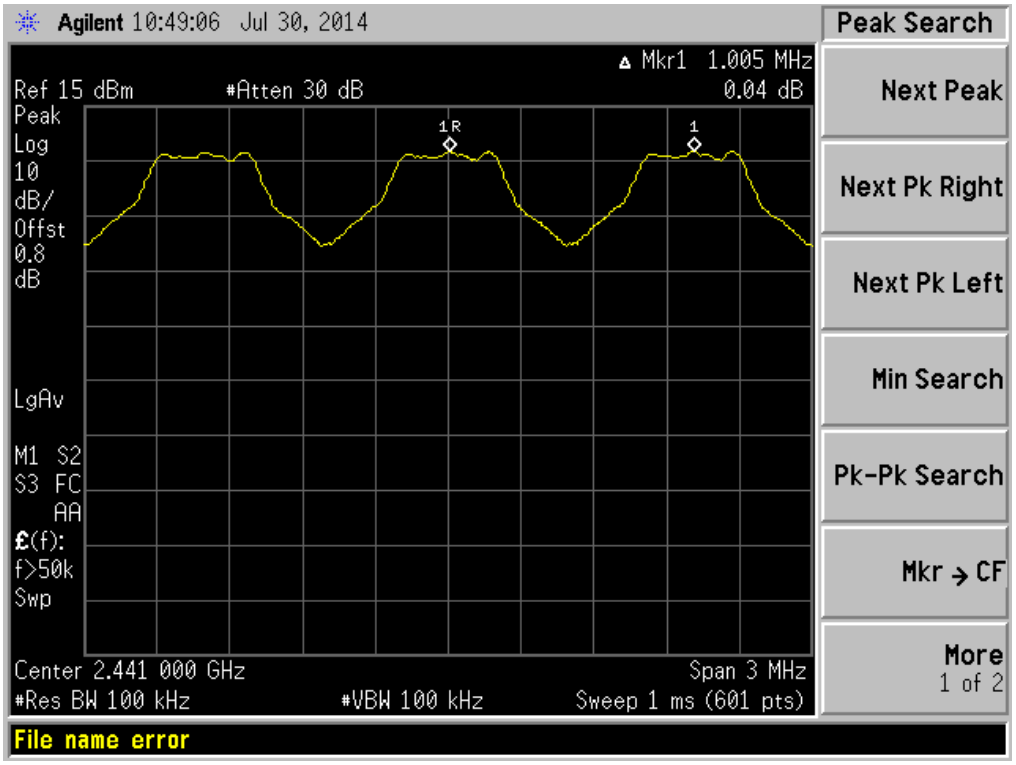
A.4 Hopping Frequency Separation

Test Data

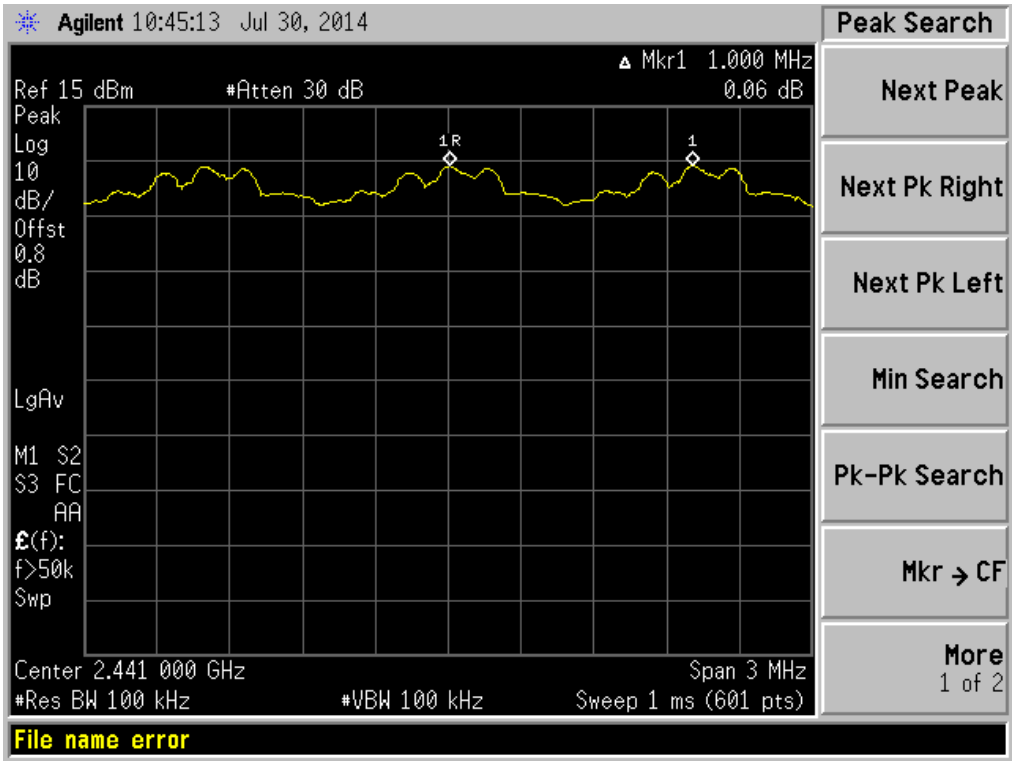
Mode	Frequency separation (MHz)	Max 20 dB Bandwidth (MHz)	Two-thirds of the 20dB bandwidth (MHz)	Verdict
GFSK	1.005	1.121	0.747	Pass
∏/4-DQPSK Mode	1.000	1.390	0.927	Pass
8-DPSK Mode	1.010	1.378	0.919	Pass

Test plots

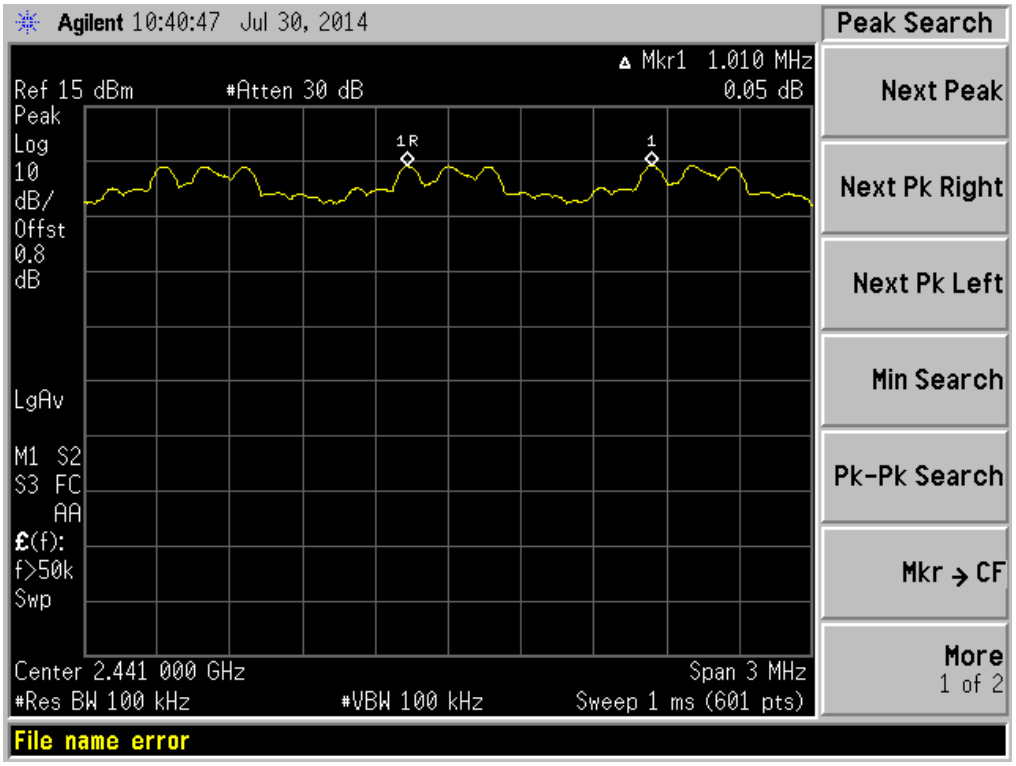
GFSK



∏/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	0.3933	125.860	0.4	Pass
DH 3	1.64	262.408	0.4	Pass
DH 5	2.9	309.343	0.4	Pass

∏/4-DQPSK Mode:

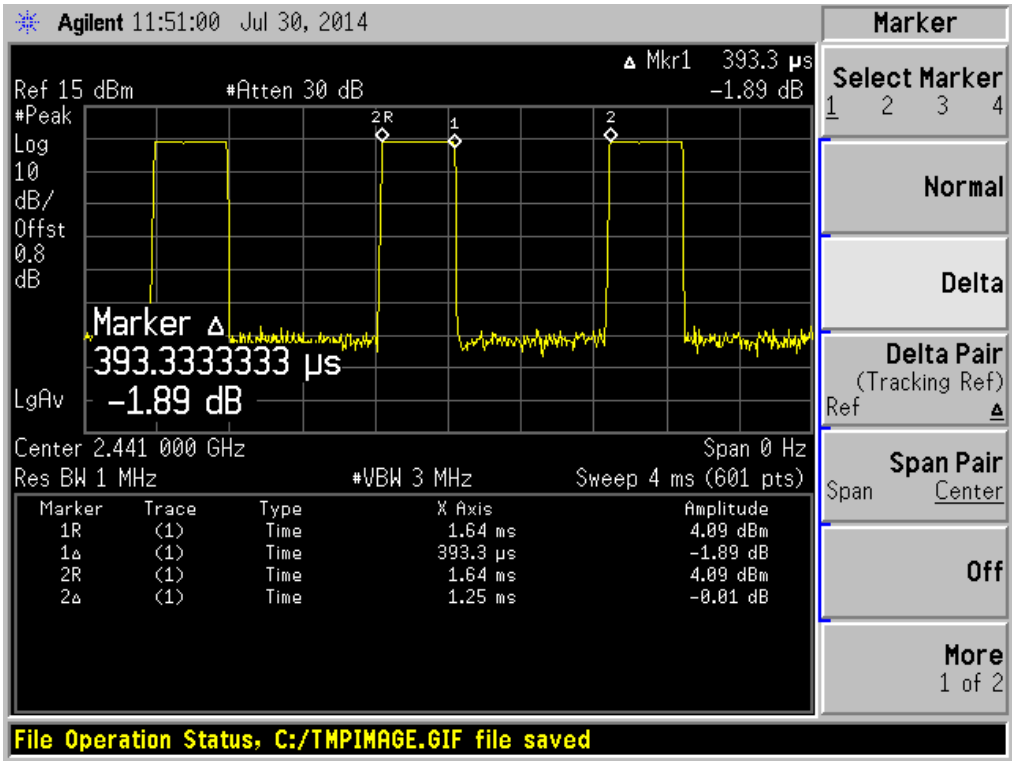
DH Packet	Pulse Width (ms)	Total of Dwell (ms)	Limit (sec)	Verdict
DH 1	0.4	128.004	0.4	Pass
DH 3	1.64	262.408	0.4	Pass
DH 5	2.9	309.343	0.4	Pass

8-DPSK Mode:

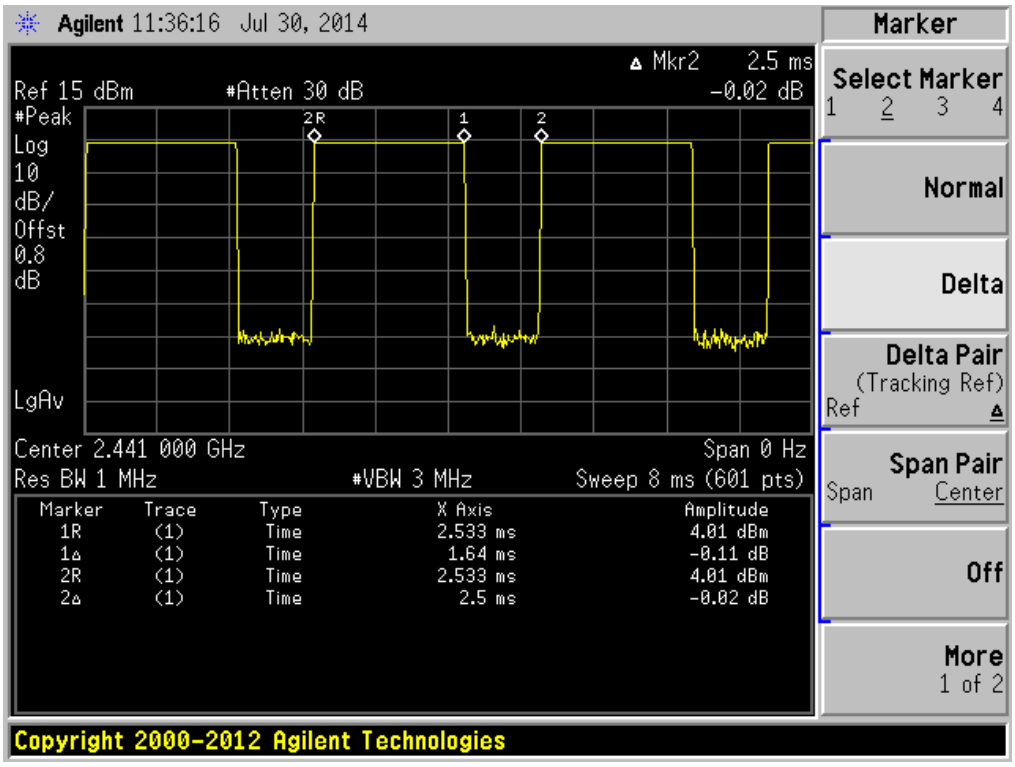
DH Packet	Pulse Width (ms)	Total of Dwell (ms)	Limit (sec)	Verdict
DH 1	0.4	128.004	0.4	Pass
DH 3	1.64	262.408	0.4	Pass
DH 5	2.9	309.343	0.4	Pass

Test Plots

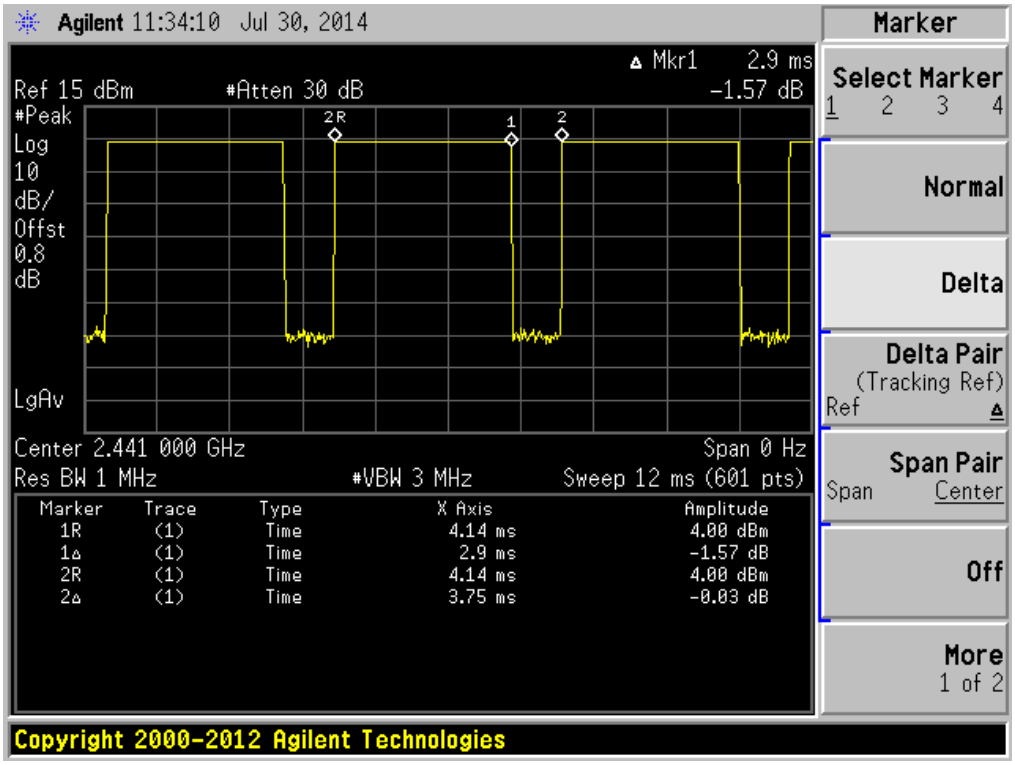
GFSK DH1



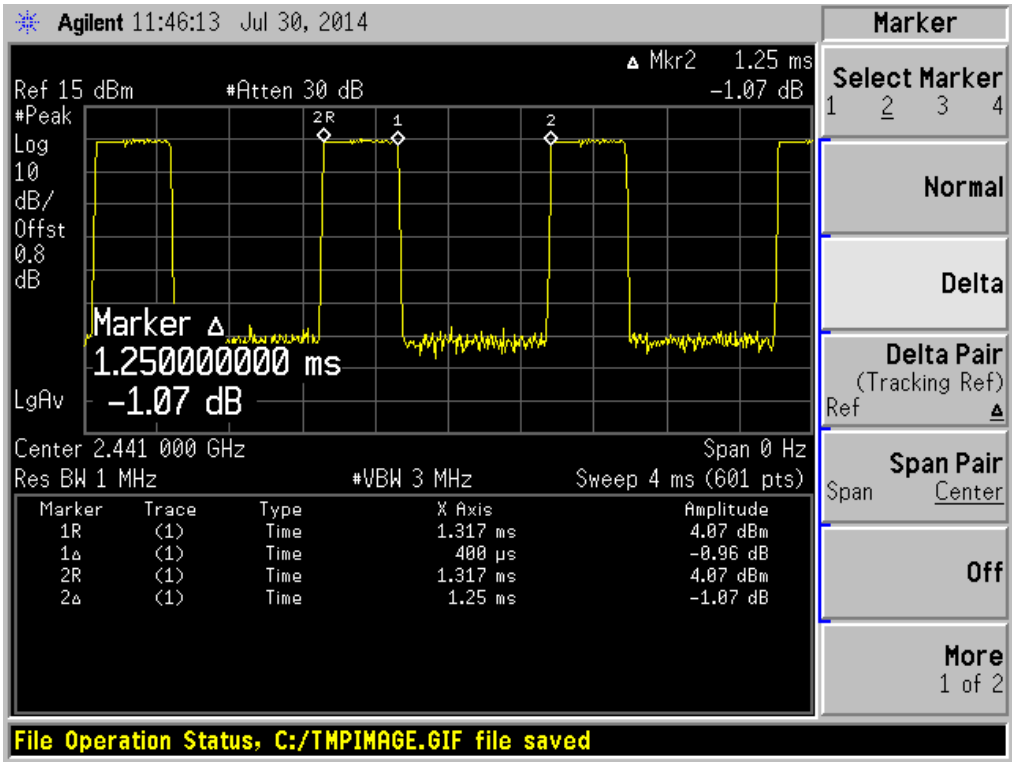
GFSK DH3



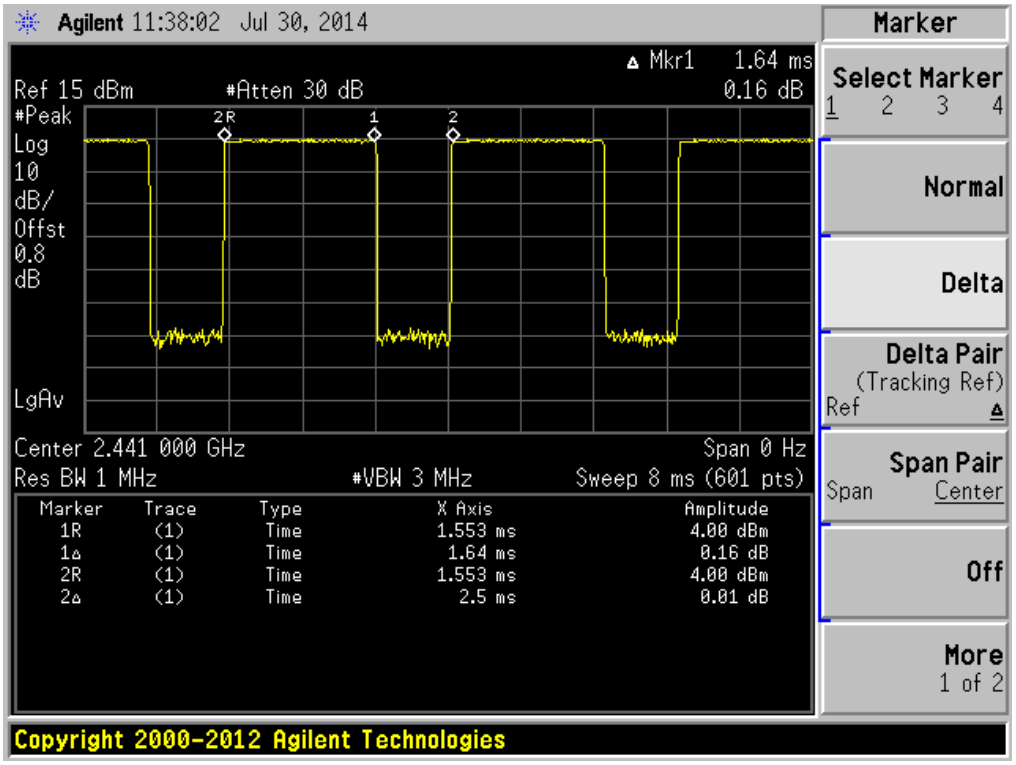
GFSK DH5



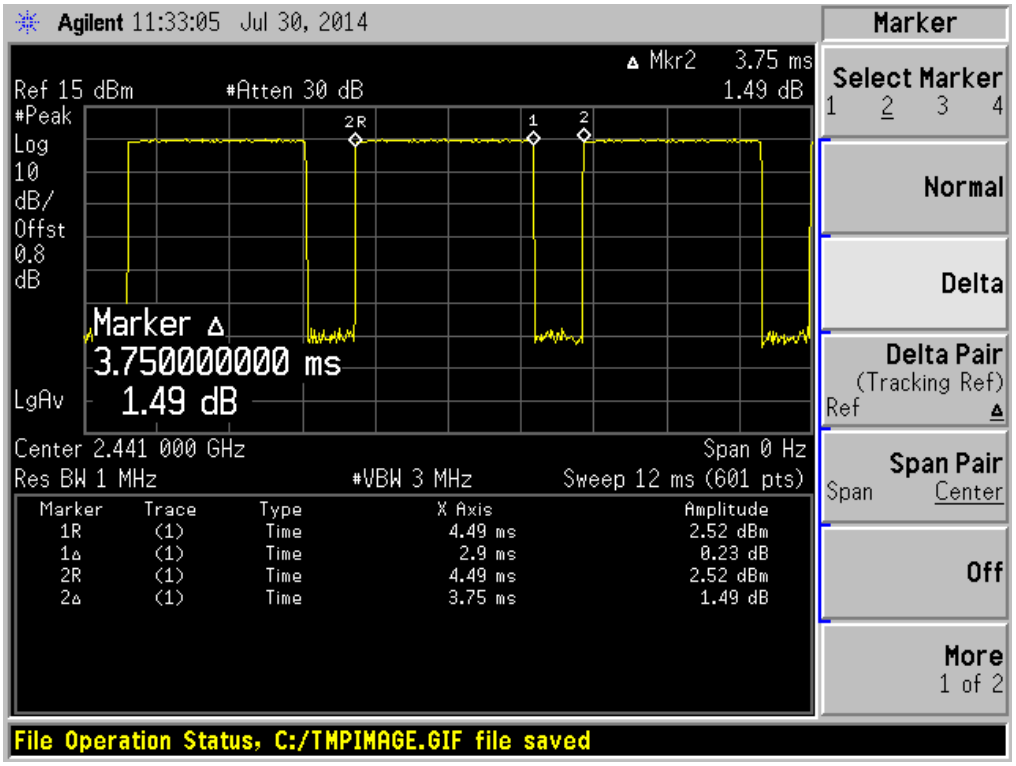
∏/4-DQPSK DH1



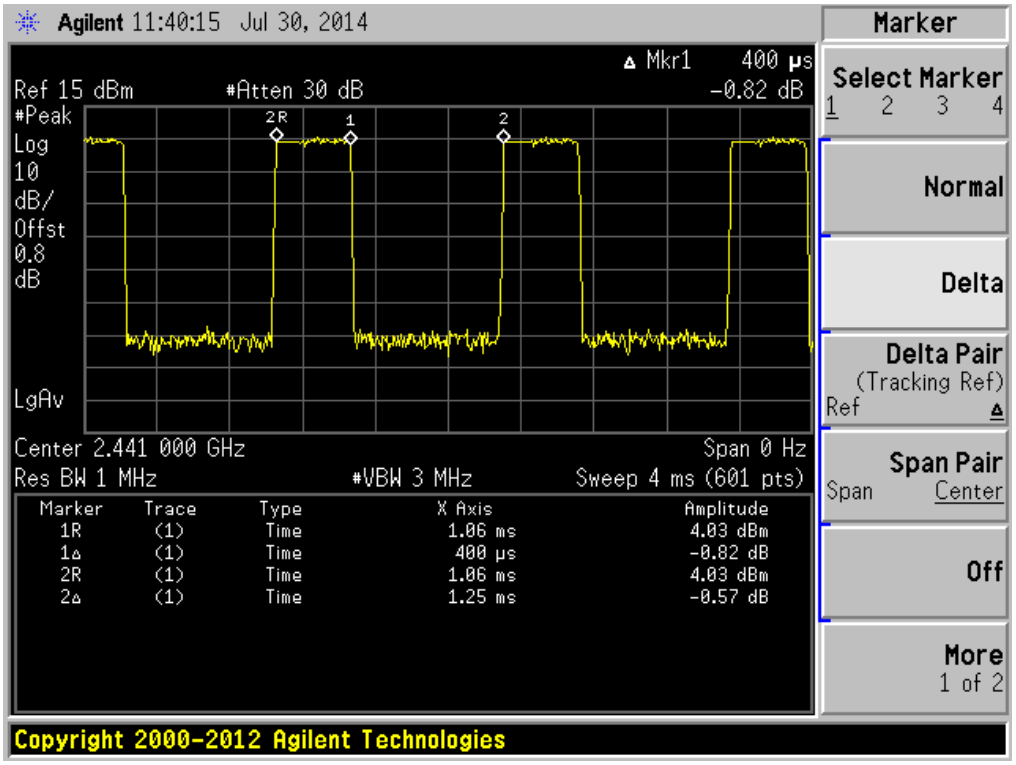
∏/4-DQPSK DH3



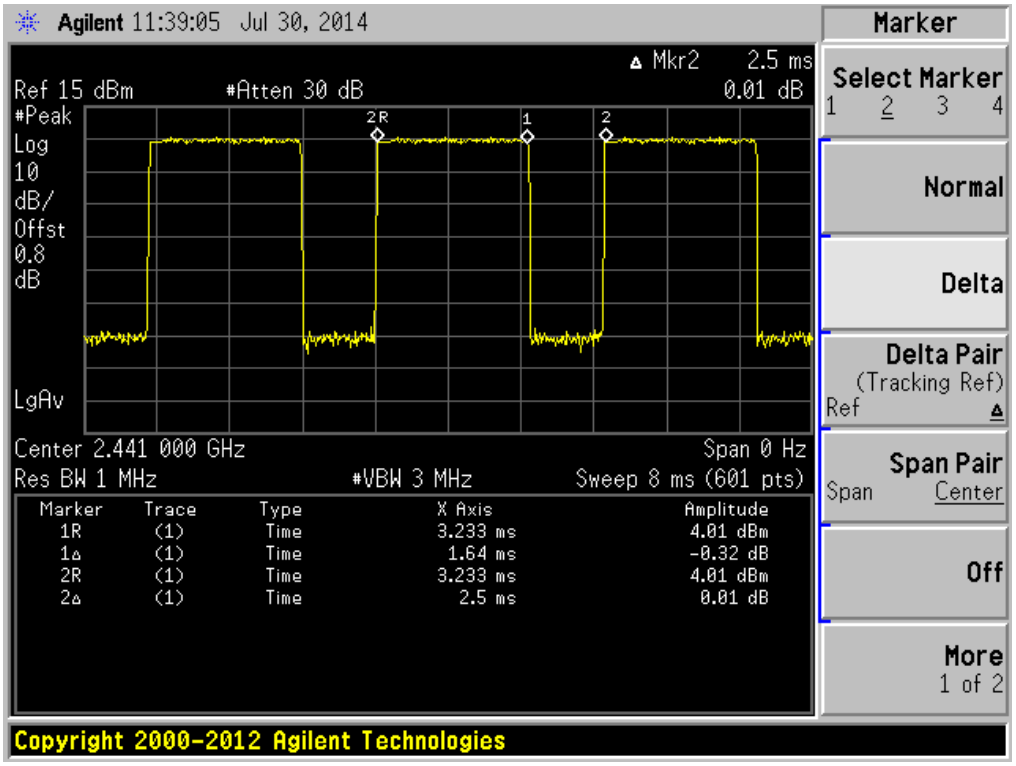
∏/4-DQPSK DH5



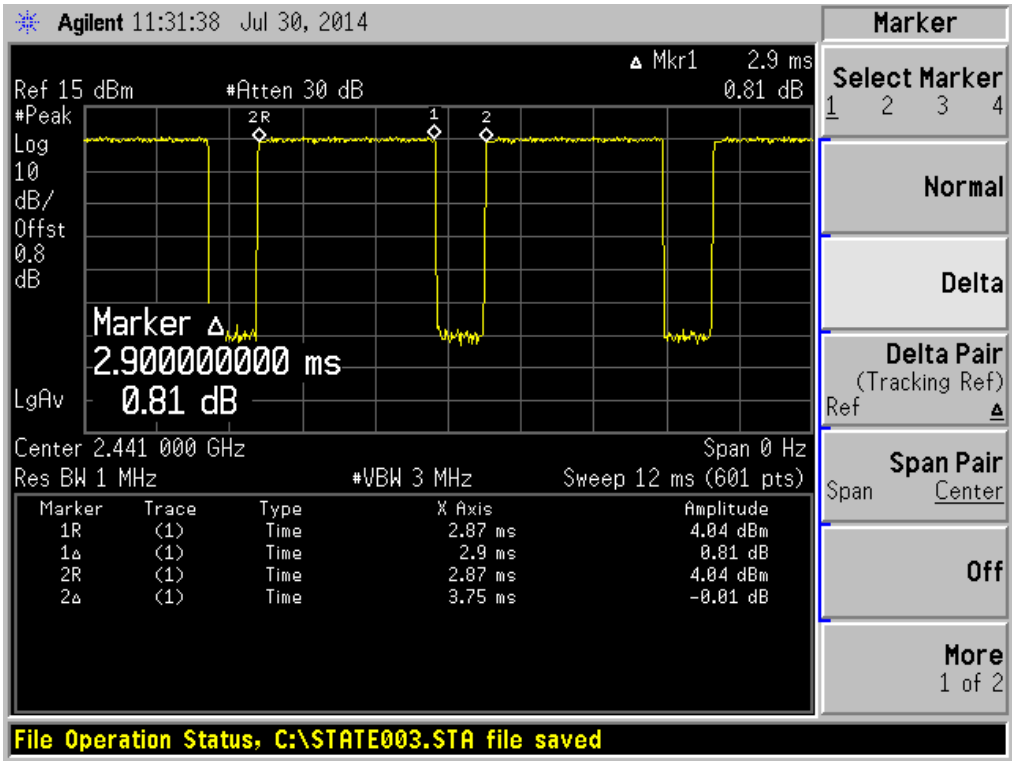
8-DPSK DH1



8-DPSK DH3



8-DPSK DH5


Agilent 11:31:38 Jul 30, 2014
Marker
Mkr1 2.9 ms
Ref 15 dBm
#Atten 30 dB
0.81 dB
#Peak
Log
10
dB/
Offst
0.8
dB
2R
1
2
Marker Δ
2.900000000 ms
0.81 dB
LgAv
Center 2.441 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 3 MHz
Sweep 12 ms (601 pts)
Marker Trace Type X Axis Amplitude
1R (1) Time 2.87 ms 4.04 dBm
1Δ (1) Time 2.9 ms 0.81 dB
2R (1) Time 2.87 ms 4.04 dBm
2Δ (1) Time 3.75 ms -0.01 dB
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:\STATE003.STA 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	-43.82	3.39	-16.6	Pass
Middle	2441	-47.34	5.99	-14.0	Pass
High	2480	-46.80	7.00	-13.0	Pass

∏/4-DQPSK Mode:

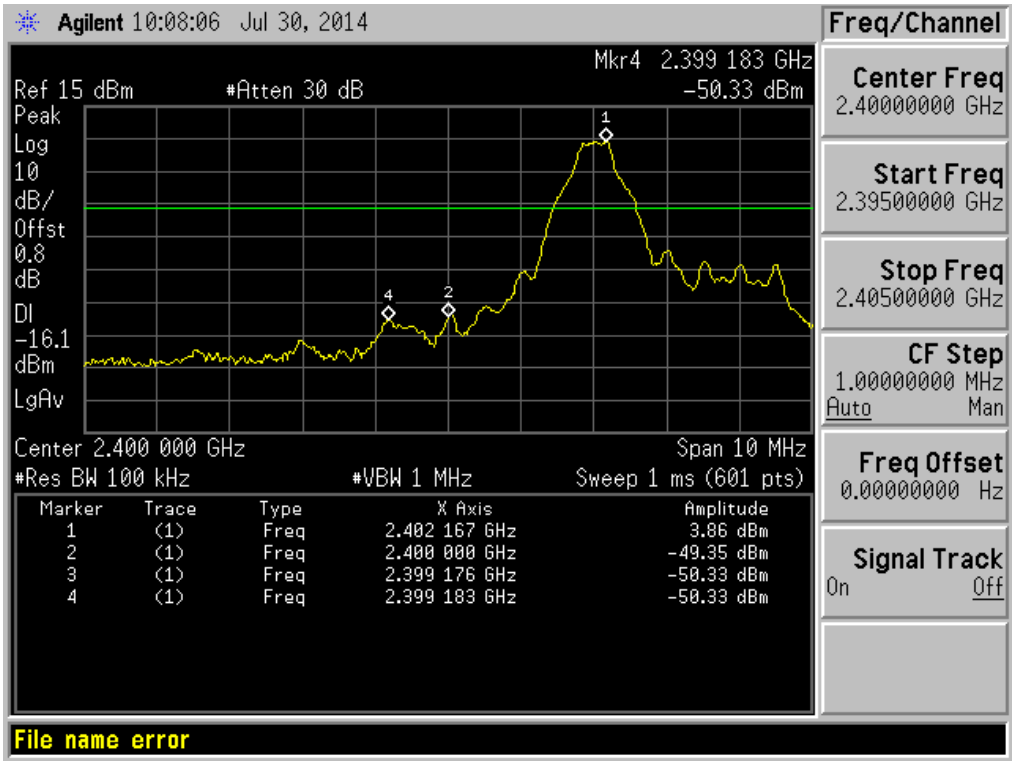
Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated 20 dBc Limit	
Low	2402	-49.45	0.38	-19.6	Pass
Middle	2441	-47.76	3.84	-16.2	Pass
High	2480	-48.34	4.73	-15.3	Pass

8-DPSK Mode:

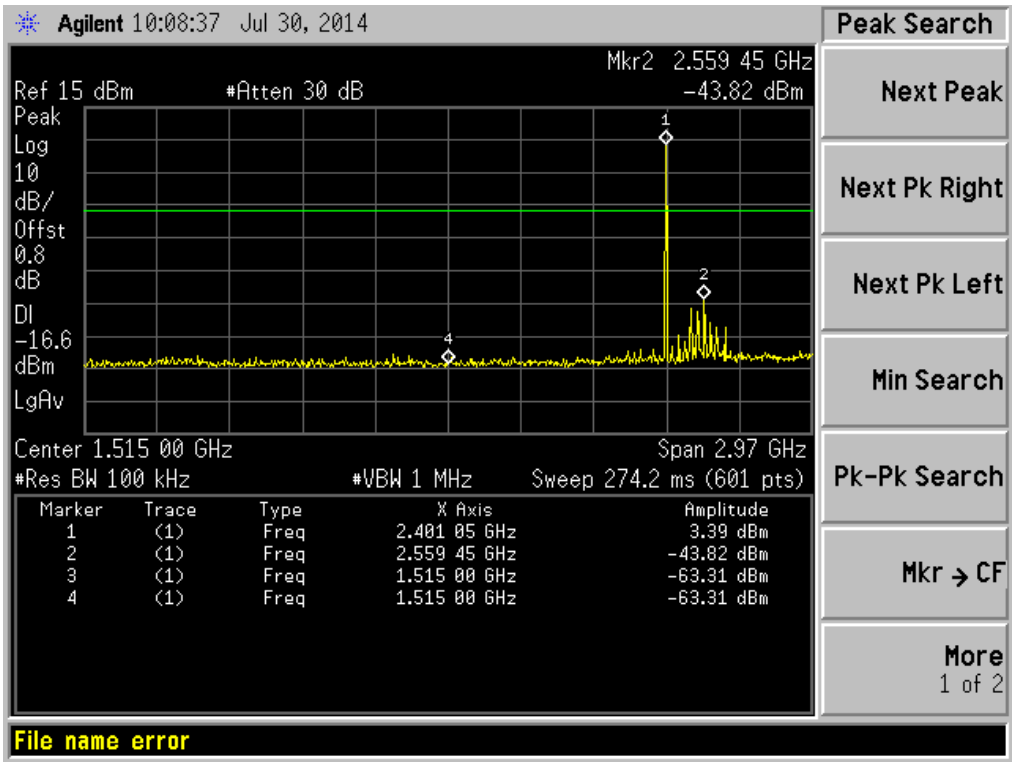
Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
			Carrier Level	Calculated 20 dBc Limit	
Low	2402	-45.44	0.29	-19.7	Pass
Middle	2441	-48.22	3.47	-16.5	Pass
High	2480	-47.79	4.05	-16.0	Pass

Test Plots

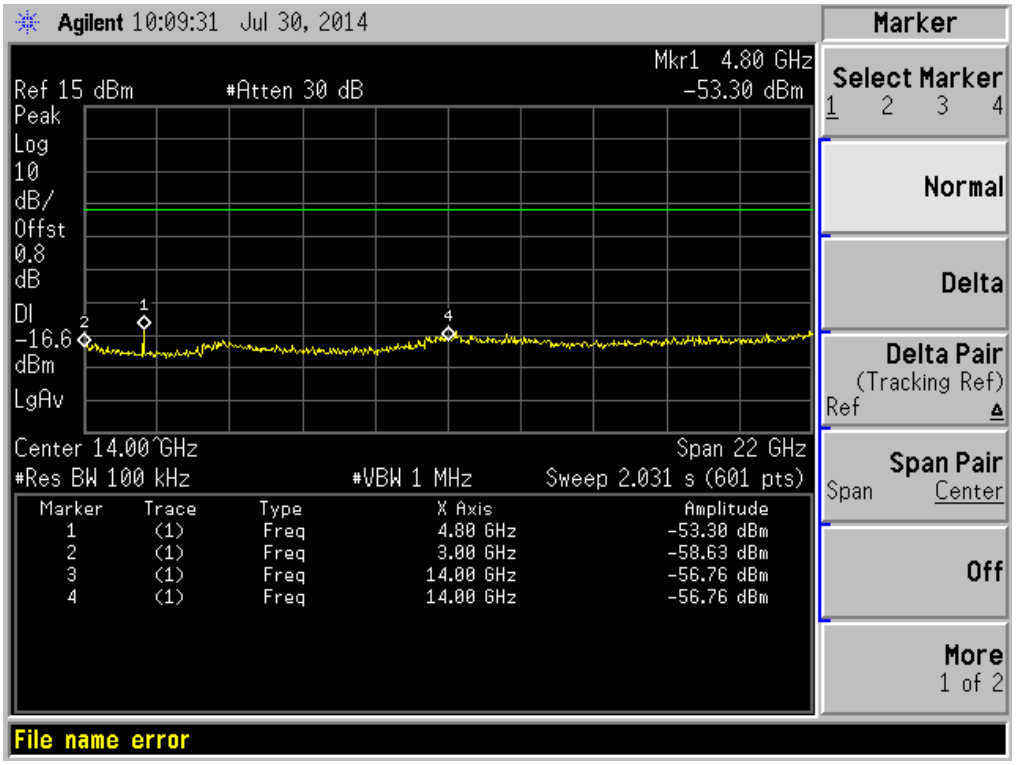
GFSK LOW CHANNEL , BANDEDGE



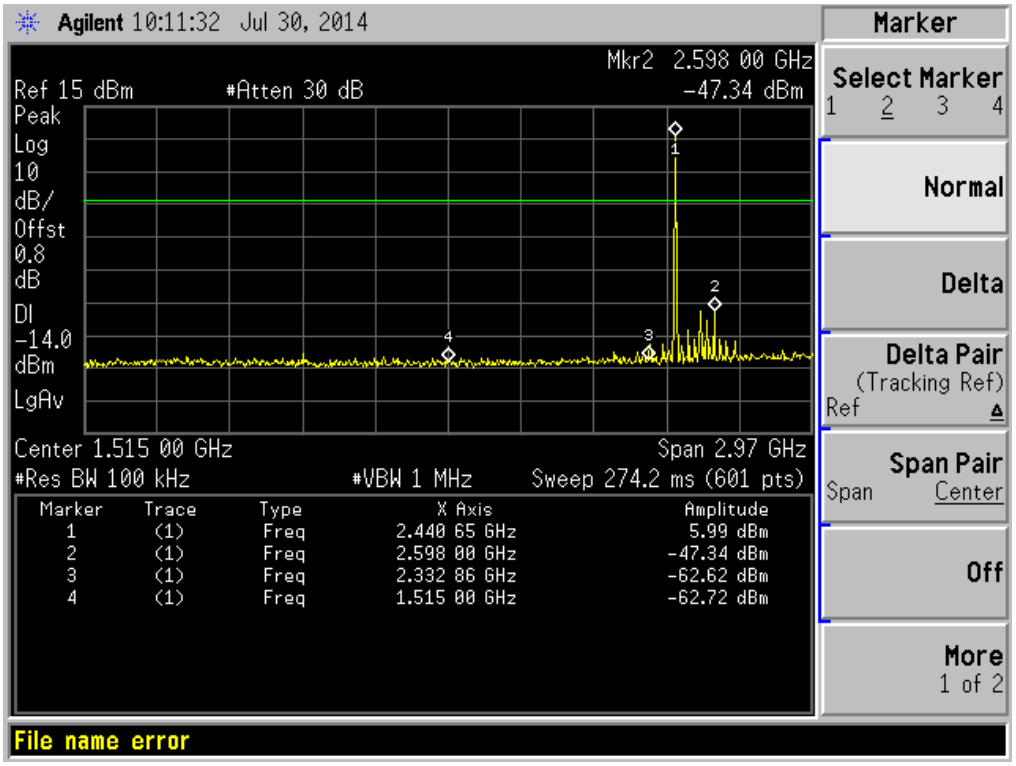
GFSK LOW CHANNEL , SPURIOUS 30MHz~3GHz



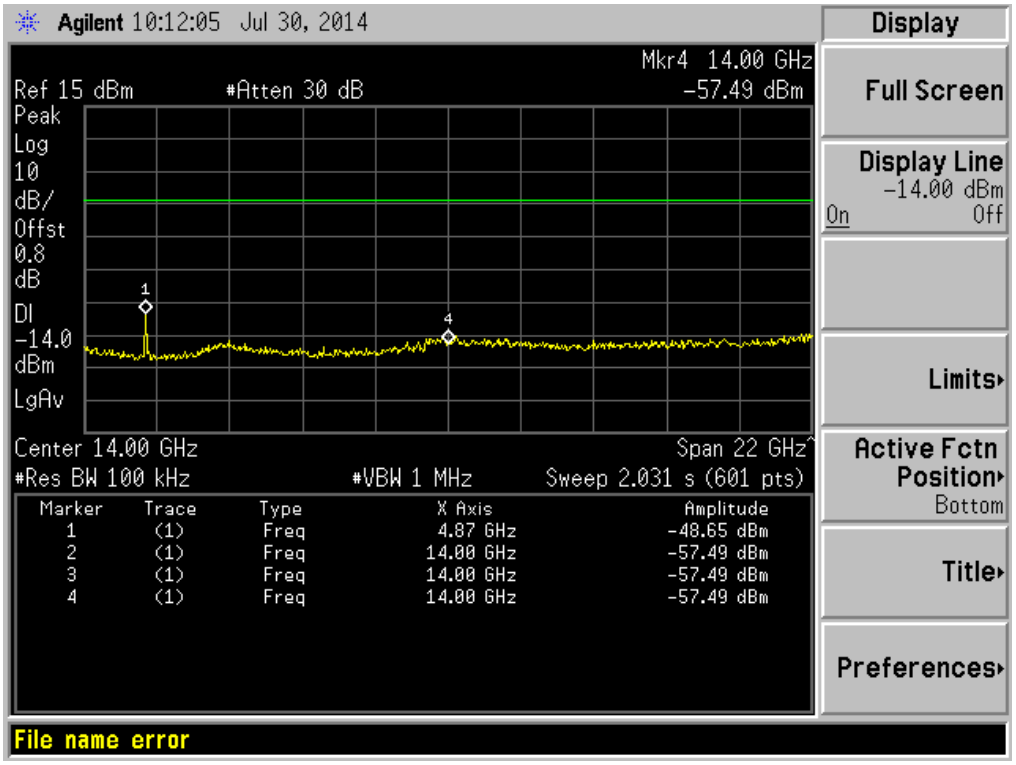
GFSK LOW CHANNEL , SPURIOUS 3GHz~25GHz



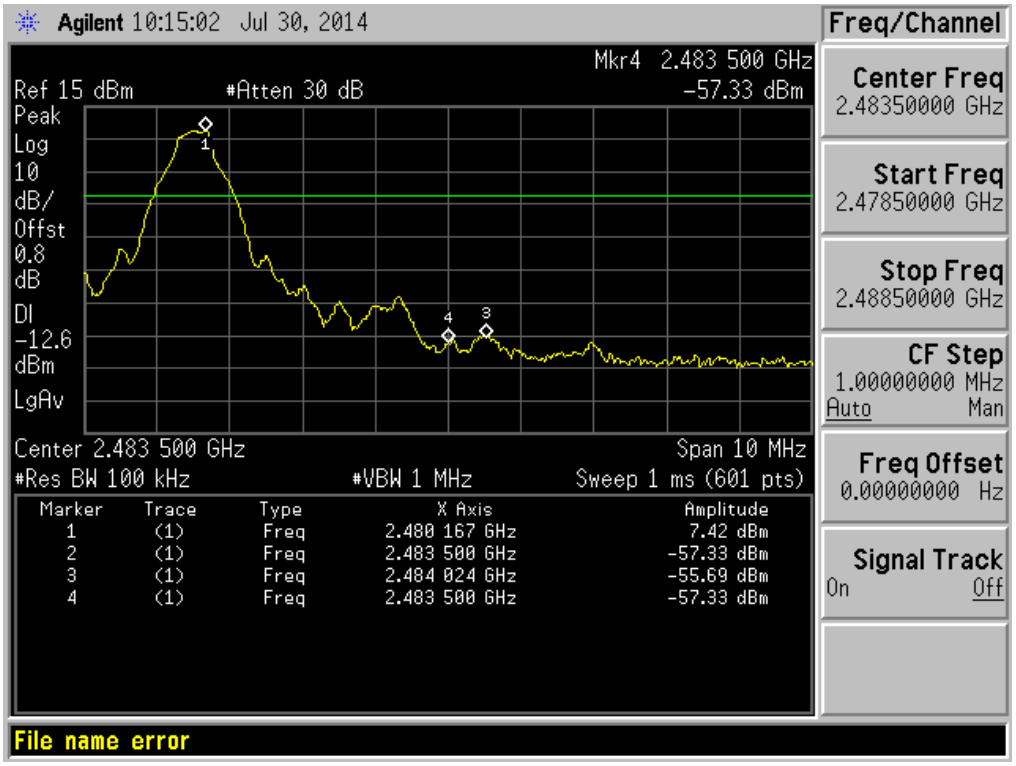
GFSK MID CHANNEL , SPURIOUS 30MHz~3GHz



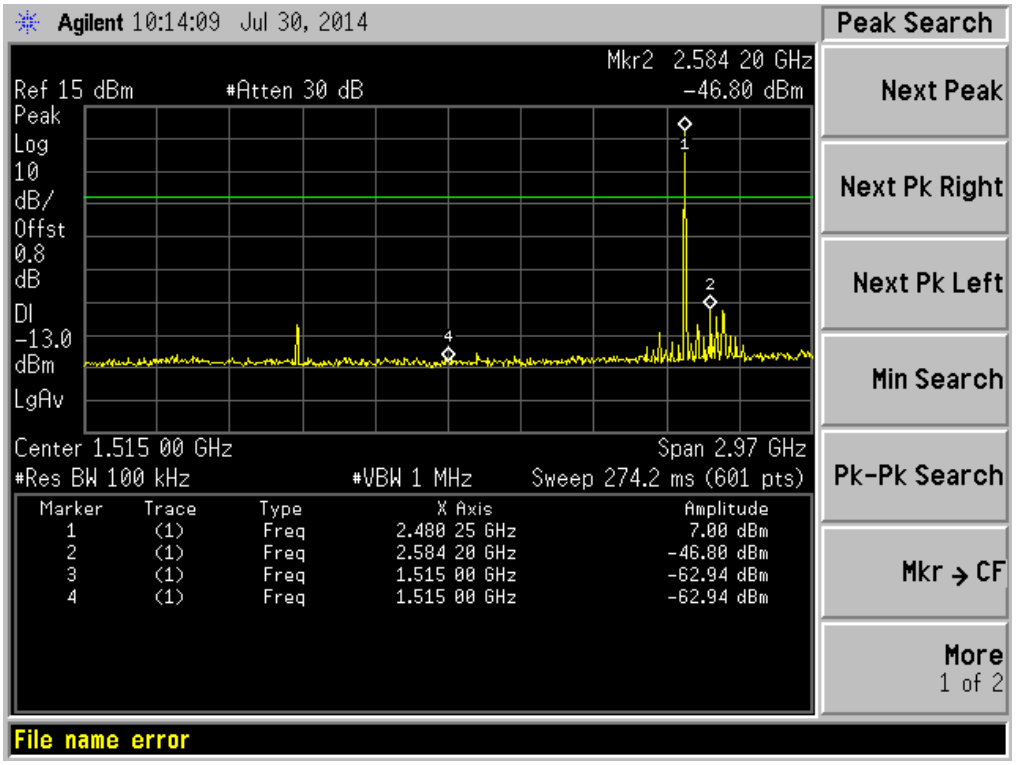
GFSK MID CHANNEL , SPURIOUS 3GHz~25GHz



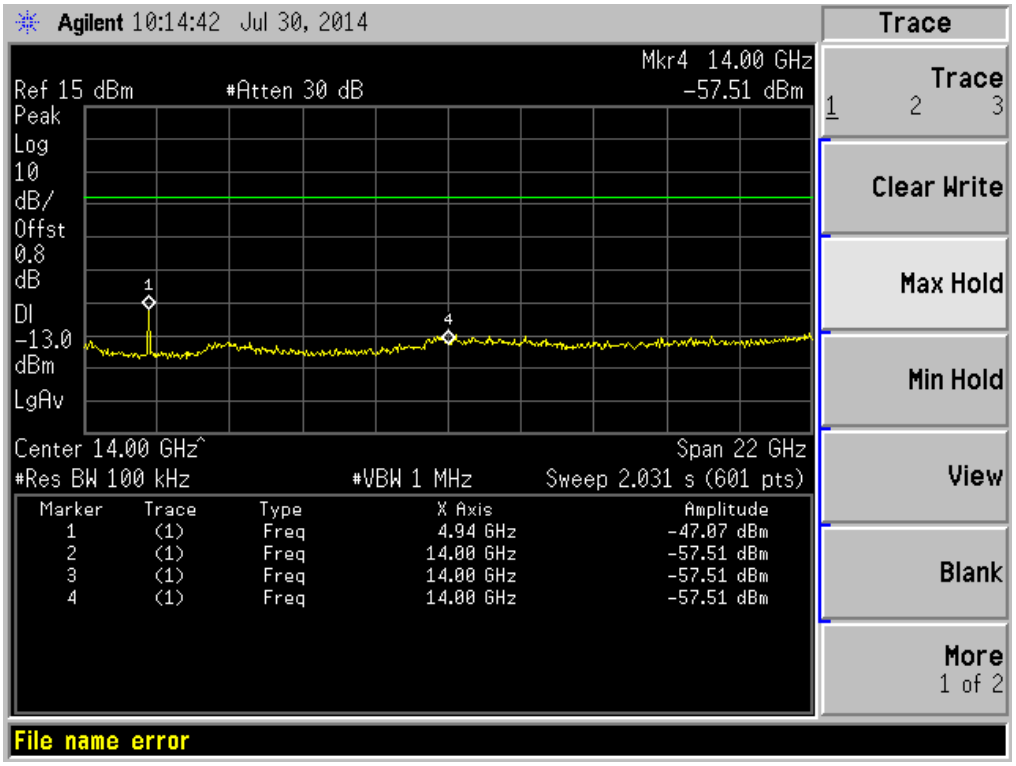
GFSK HIGH CHANNEL , BANDEDGE



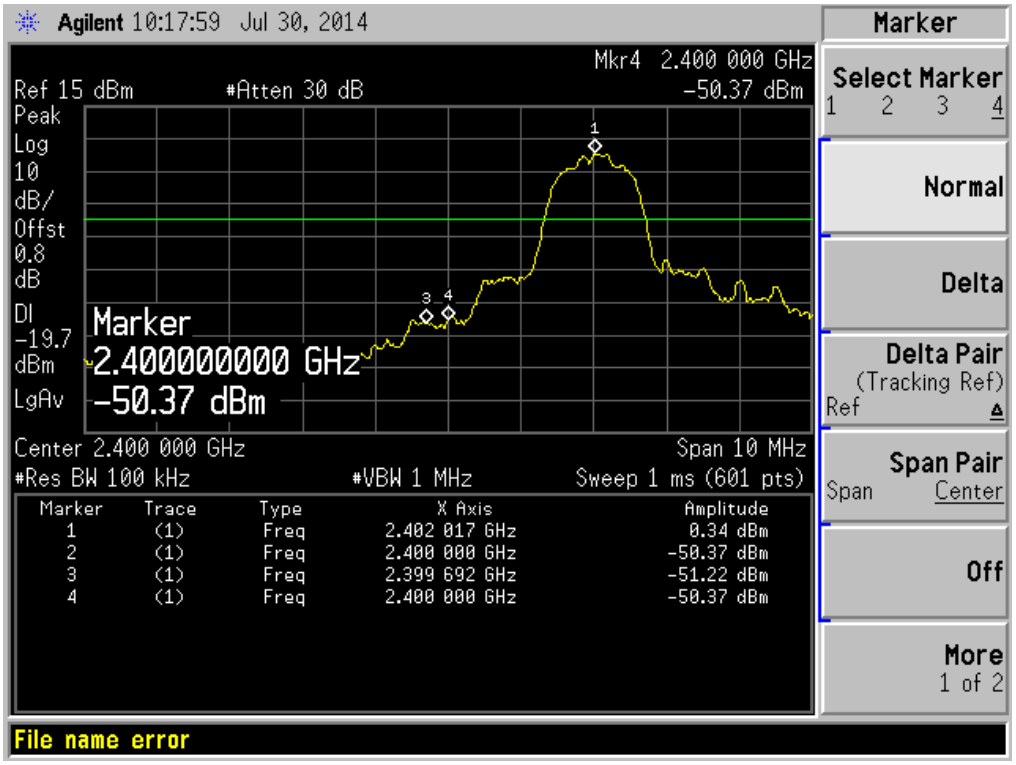
GFSK HIGH CHANNEL , SPURIOUS 30MHz~3GHz



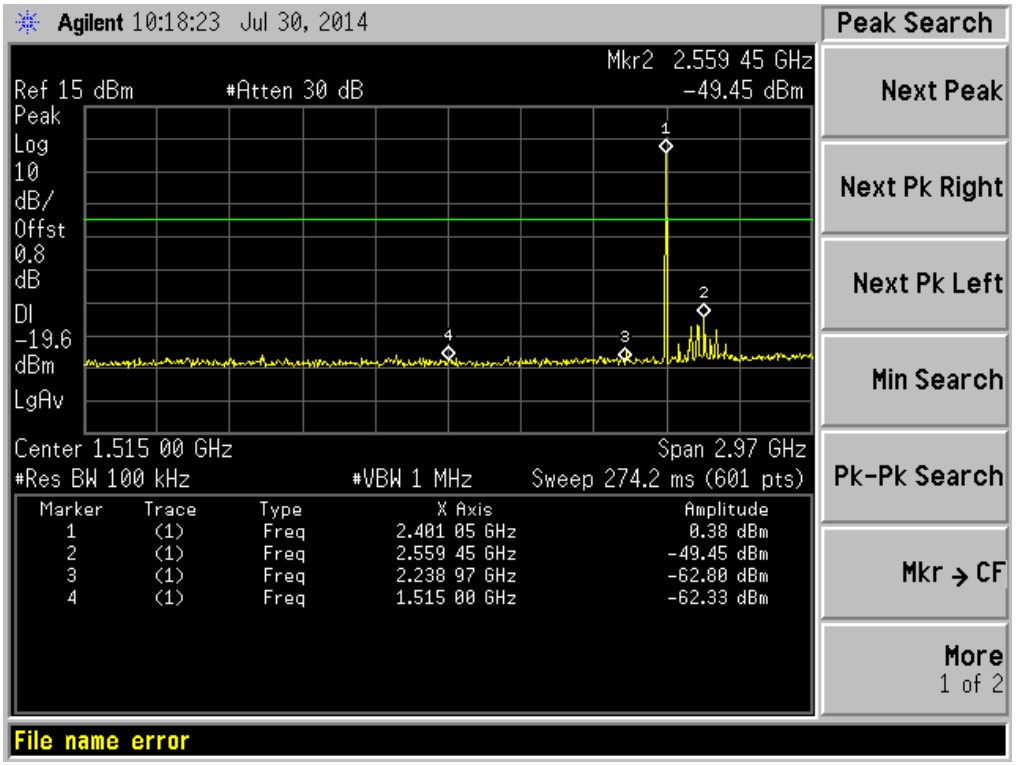
GFSK HIGH CHANNEL , SPURIOUS 3GHz~25GHz



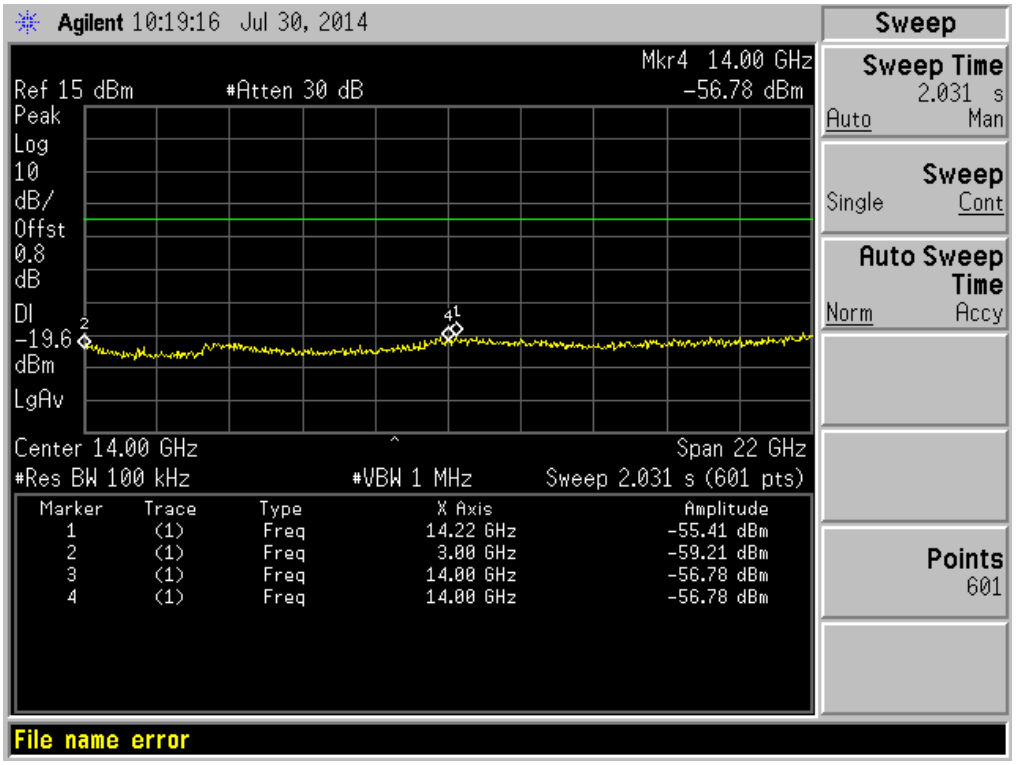
∏/4-DQPSK LOW CHANNEL , BANDEDGE



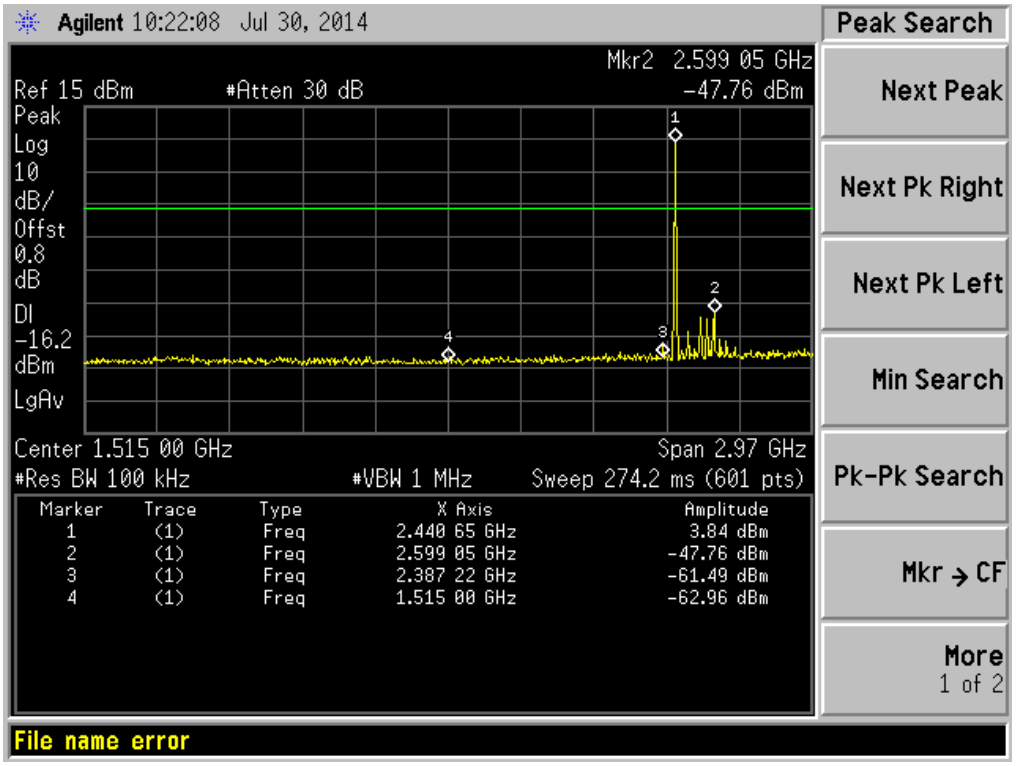
∏/4-DQPSK LOW CHANNEL , SPURIOUS 30MHz~3GHz



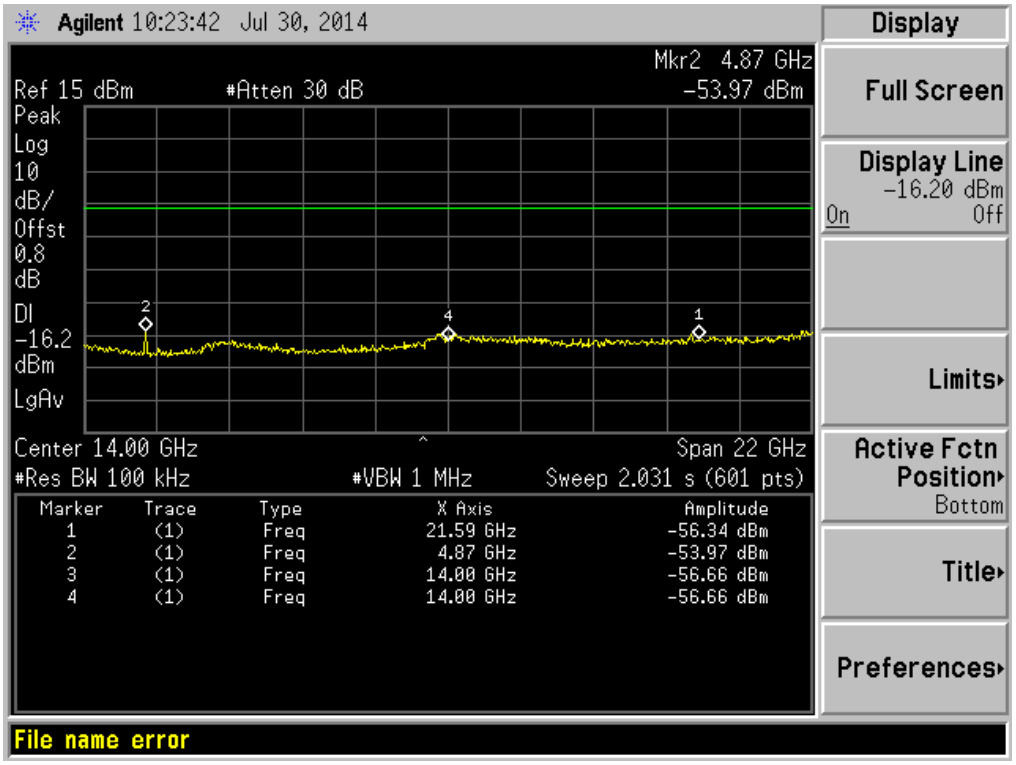
∏/4-DQPSK LOW CHANNEL , SPURIOUS 3GHz~25GHz



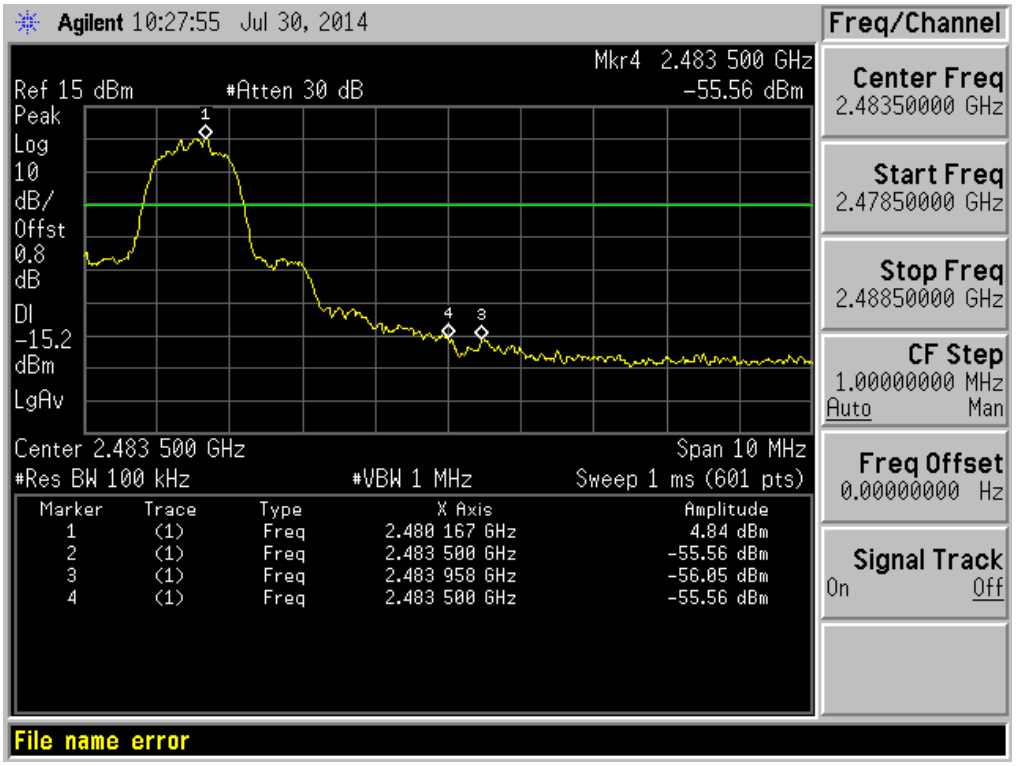
∏/4-DQPSK MID CHANNEL , SPURIOUS 30MHz~3GHz



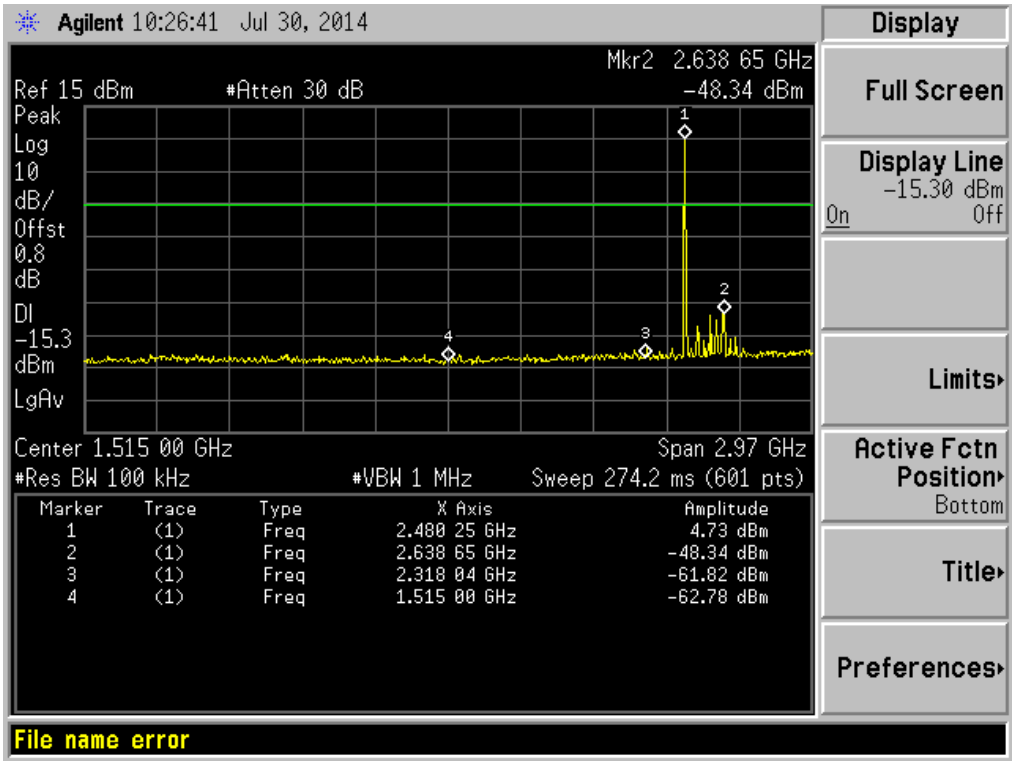
∏/4-DQPSK MID CHANNEL , SPURIOUS 3GHz~25GHz



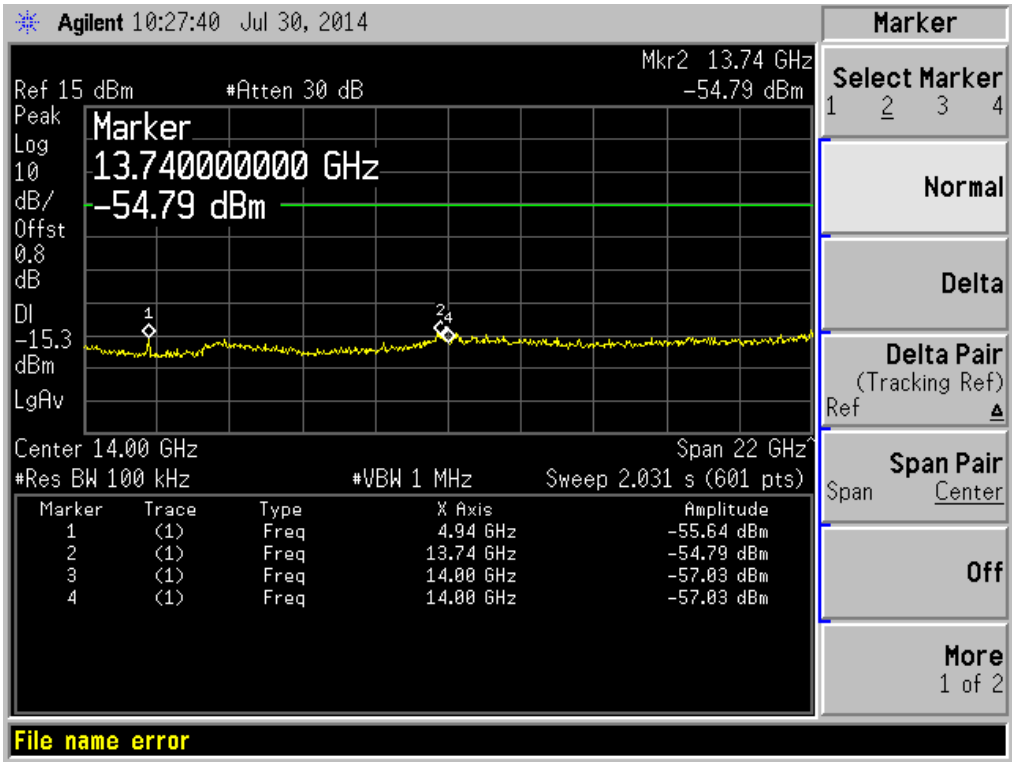
∏/4-DQPSK HIGH CHANNEL , BANDEDGE



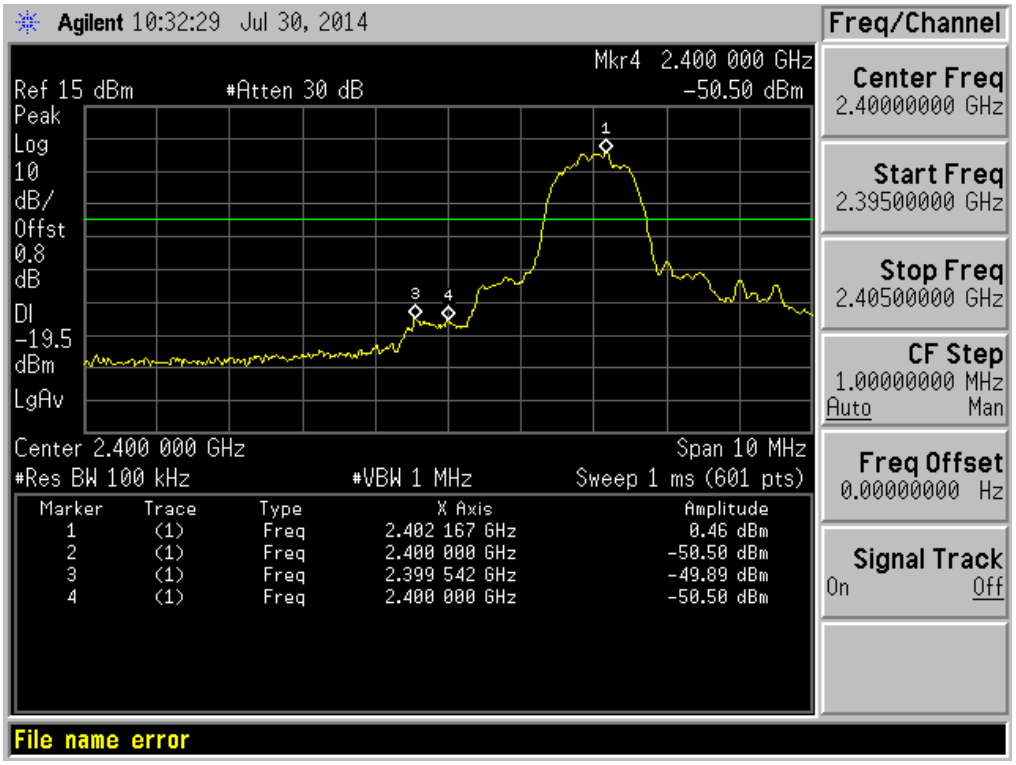
∏/4-DQPSK HIGH CHANNEL , SPURIOUS 30MHz~3GHz



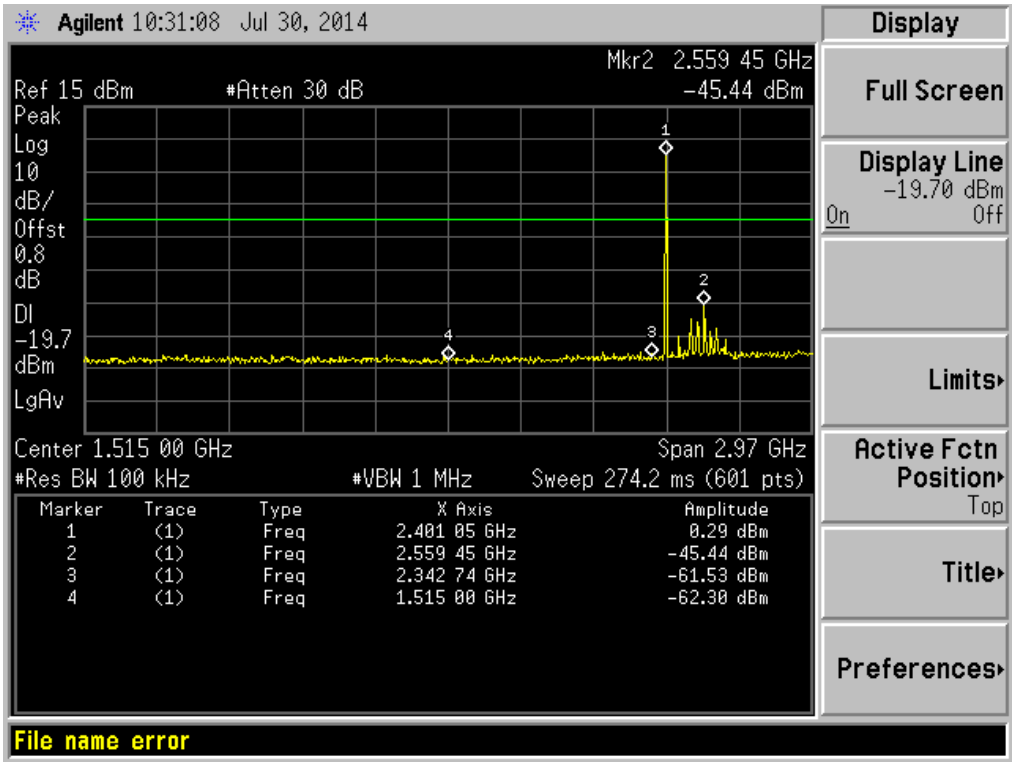
∏/4-DQPSK HIGH CHANNEL , SPURIOUS 3GHz~25GHz



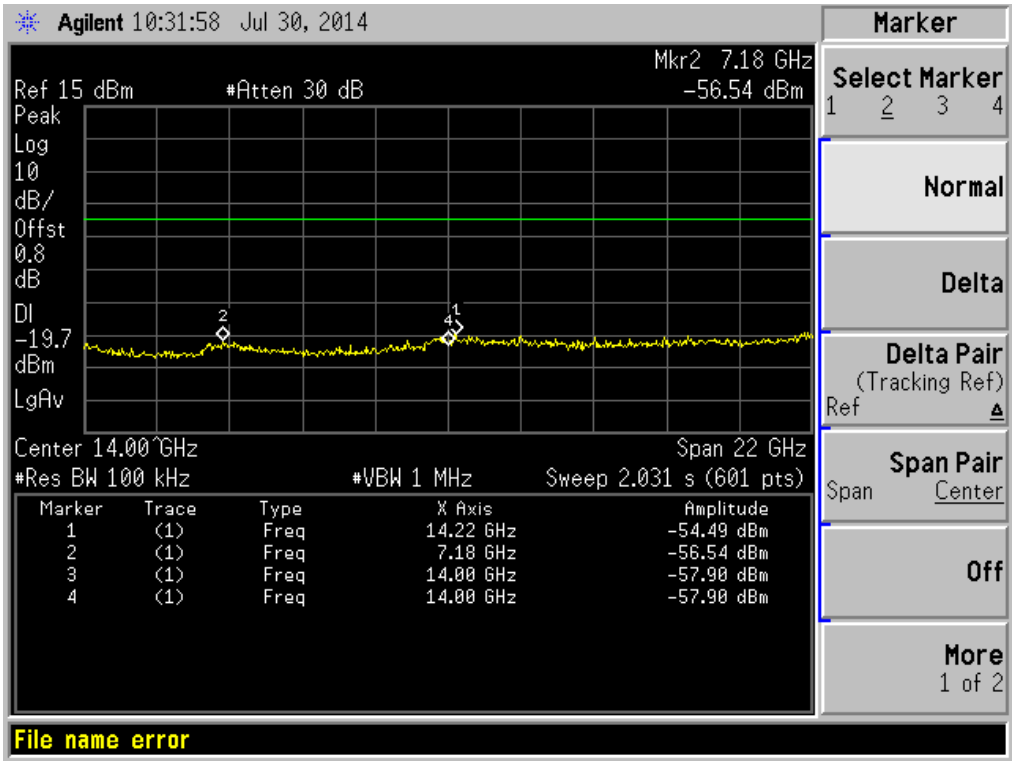
8-DPSK LOW CHANNEL , BANDEDGE



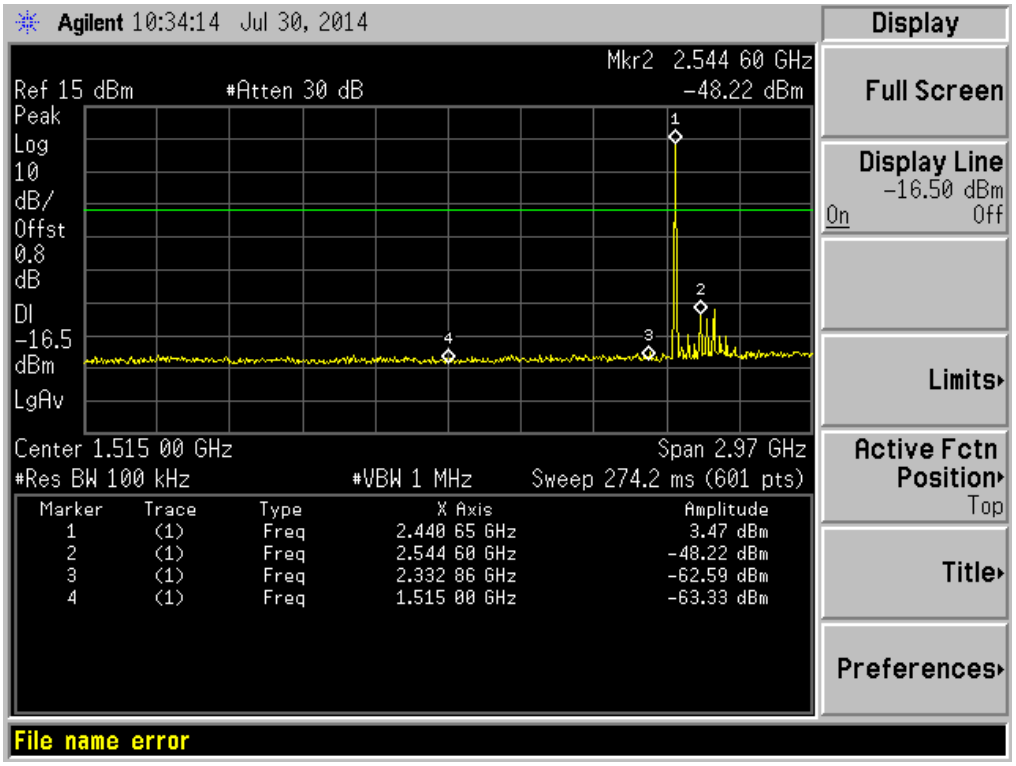
8-DPSK LOW CHANNEL , SPURIOUS 30MHz~3GHz



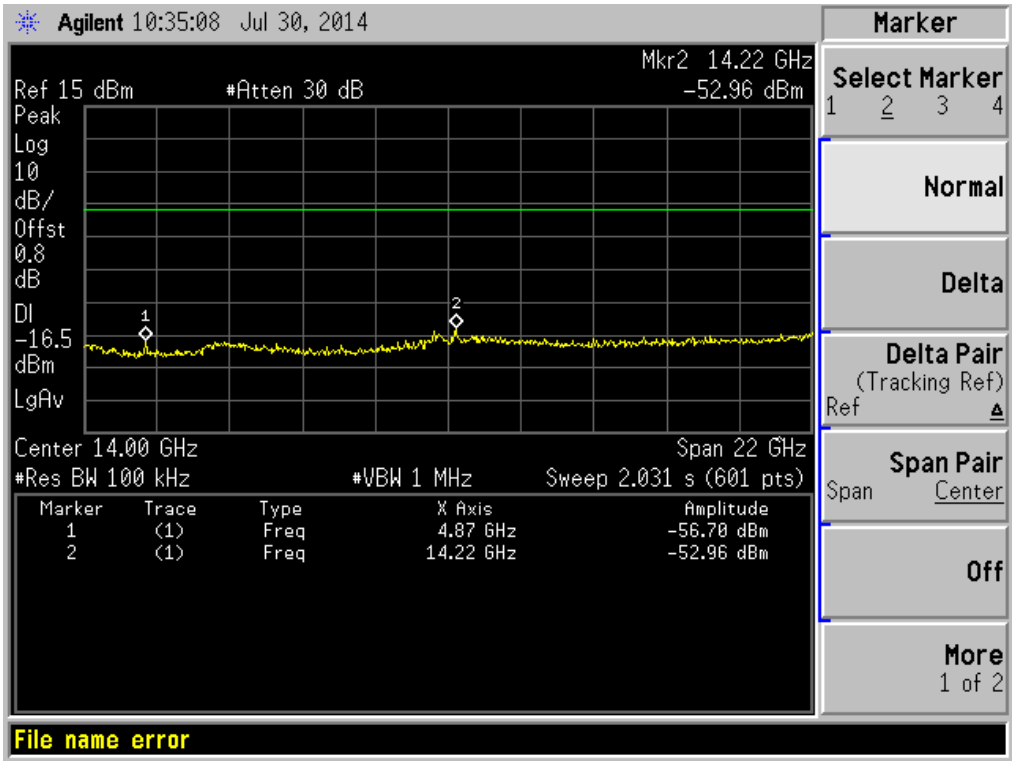
8-DPSK LOW CHANNEL , SPURIOUS 3GHz~25GHz



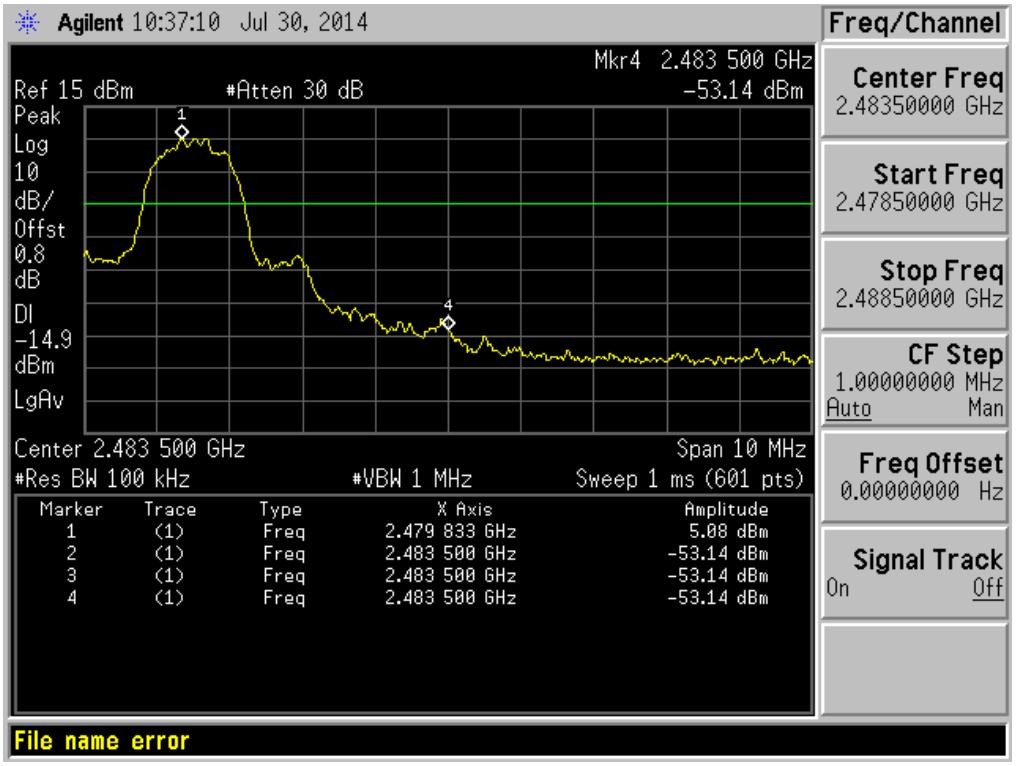
8-DPSK MID CHANNEL , SPURIOUS 30MHz~3GHz



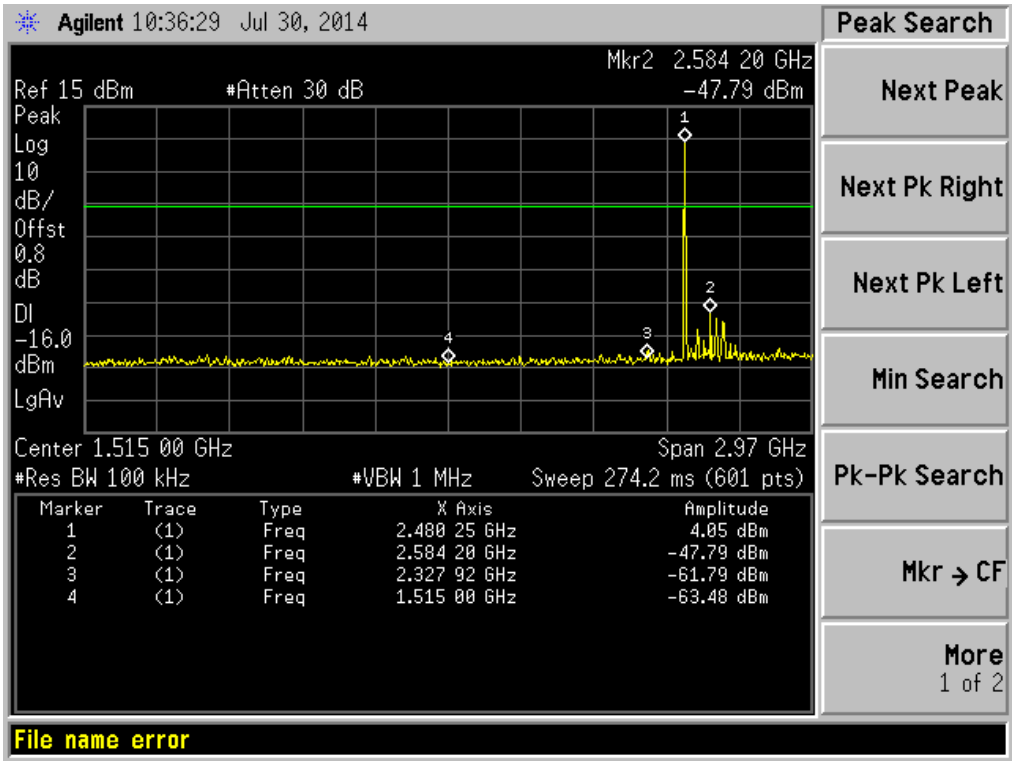
8-DPSK MID CHANNEL , SPURIOUS 3GHz~25GHz



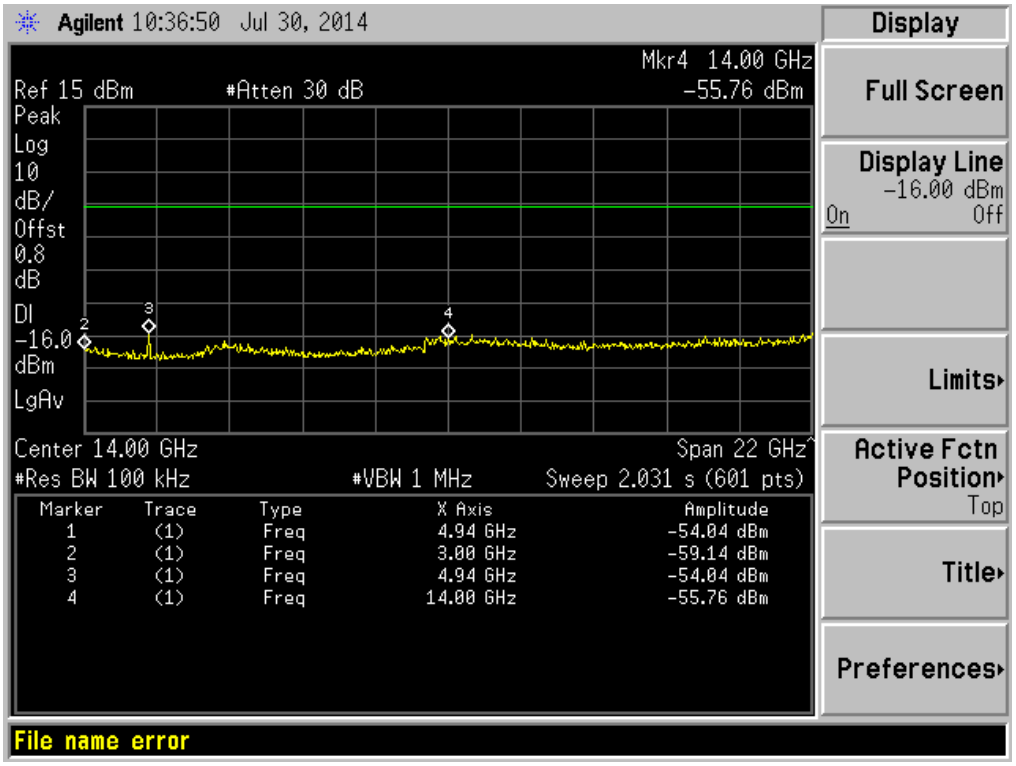
8-DPSK HIGH CHANNEL , BANDEDGE



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



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

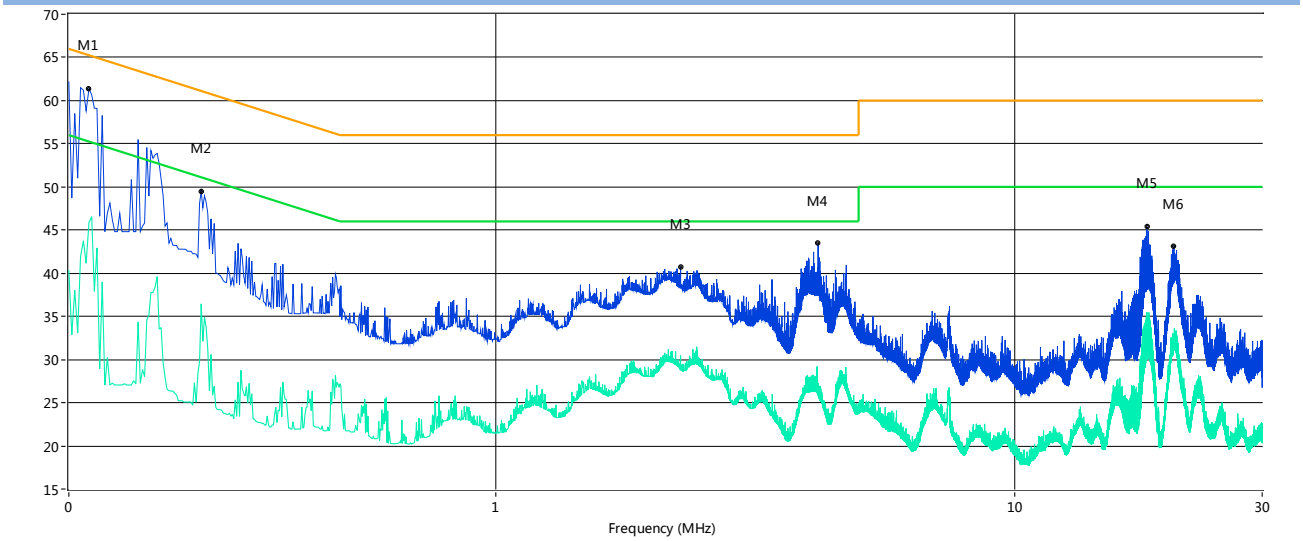


A.7 Conducted Emissions

Note: All configurations have been tested, only the worst configuration (GFSK High Channel) shown here.

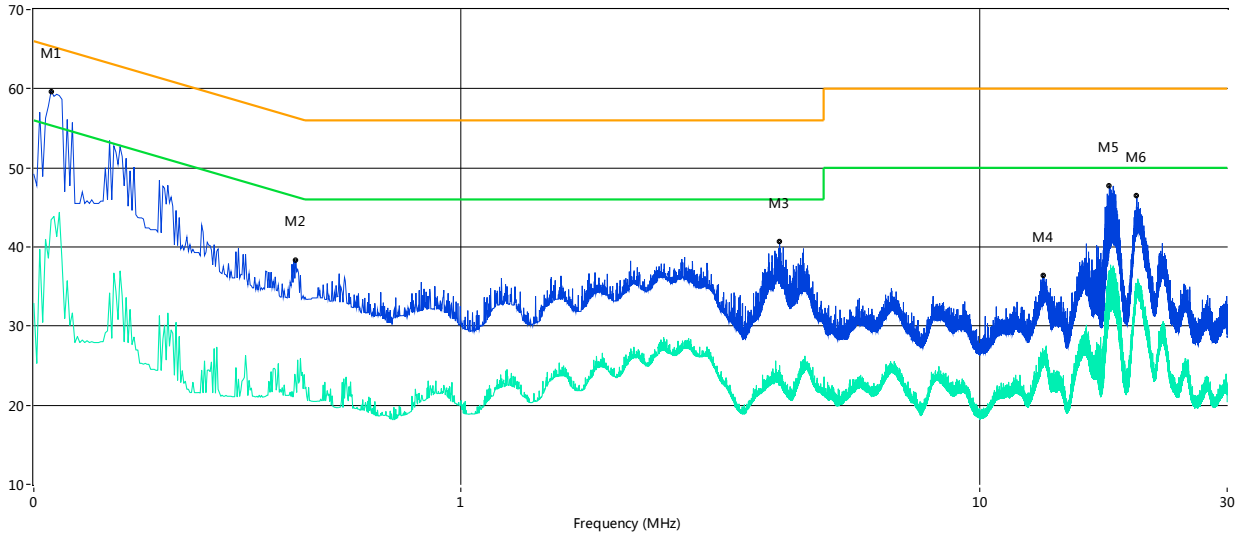
Test Data and Plots

PHASE L



Frequency (MHz)	Peak Level (dBuV)	Q-peak Level (dBuV)	Average Level (dBuV)	Factor (dB)	QP Limit (dBuV)	AV Limit (dBuV)	Margin (dB)	Line	Verdict
0.16	61.4	--	45.9	10.00	65.6	55.6	9.70	L Line	Pass
0.27	49.5	--	36.4	10.00	62.6	52.6	16.20	L Line	Pass
2.27	40.8	--	30.4	10.00	56.0	46.0	15.60	L Line	Pass
4.18	43.5	--	27.2	10.00	56.0	46.0	18.80	L Line	Pass
17.98	45.4	--	35.5	10.00	60.0	50.0	14.50	L Line	Pass
20.27	43.1	--	32.8	10.00	60.0	50.0	17.20	L Line	Pass

PHASE N



Frequency (MHz)	Peak Level (dBuV)	Q-peak Level (dBuV)	Average Level (dBuV)	Factor (dB)	QP Limit (dBuV)	AV Limit (dBuV)	Margin (dB)	Line	Verdict
0.16	59.7	--	43.4	10.00	65.7	55.7	12.30	N Line	Pass
0.48	38.3	--	22.8	10.00	56.6	46.6	23.80	N Line	Pass
4.11	40.6	--	25.0	10.00	56.0	46.0	21.00	N Line	Pass
13.23	36.4	--	27.1	10.00	60.0	50.0	22.90	N Line	Pass
17.78	47.8	--	36.9	10.00	60.0	50.0	13.10	N Line	Pass
20.09	46.4	--	34.0	10.00	60.0	50.0	16.00	N Line	Pass

A.8 Radiated Emission

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

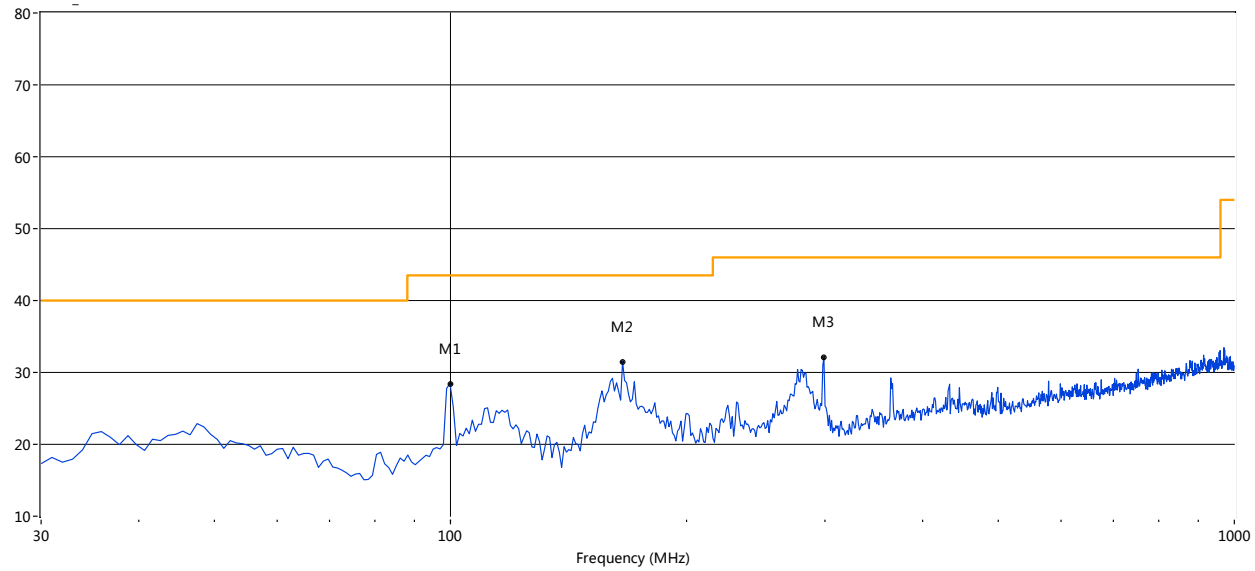
Note 2: For the test data above 1GHz，According the ANSI C63.4-2014, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Note 3: All configurations have been tested, only the worst configuration (GFSK High Channel) shown here.

Test Data and Plots

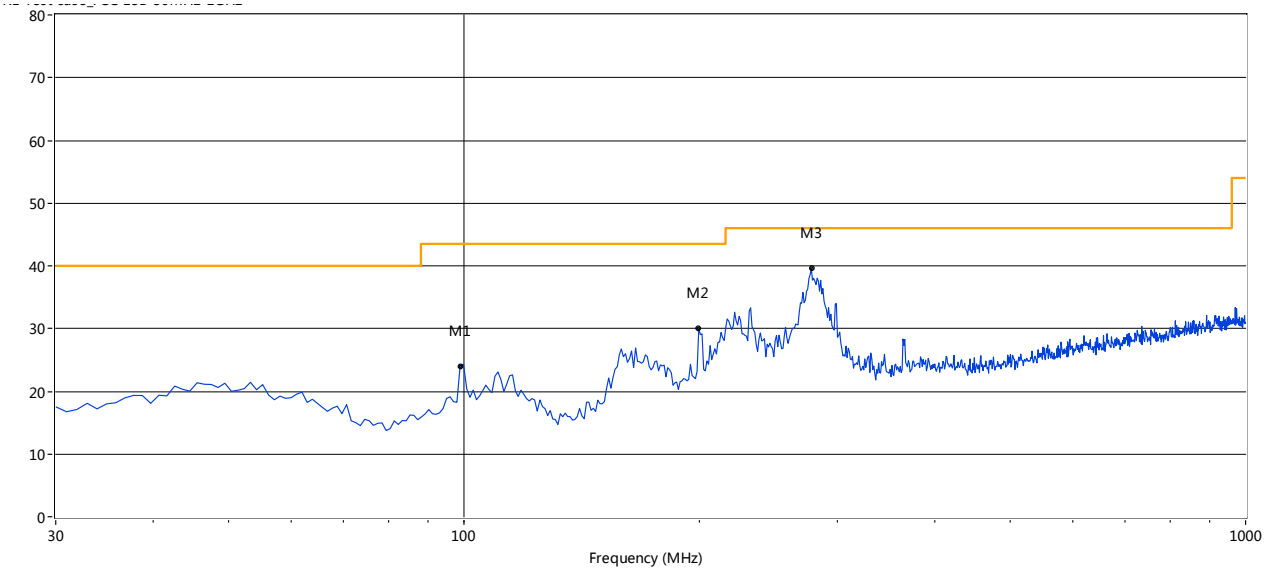
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

30MHz to 1GHz, ANT V



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
99.77	28.46			-20.13	--	43.5	--	15.04	357.10	100	Vertical	Pass
165.66	31.48			-22.87	--	43.5	--	12.02	307.10	100	Vertical	Pass
299.39	32.08			-17.95	--	46.0	--	13.92	0.40	100	Vertical	Pass

30MHz to 1GHz, ANT H

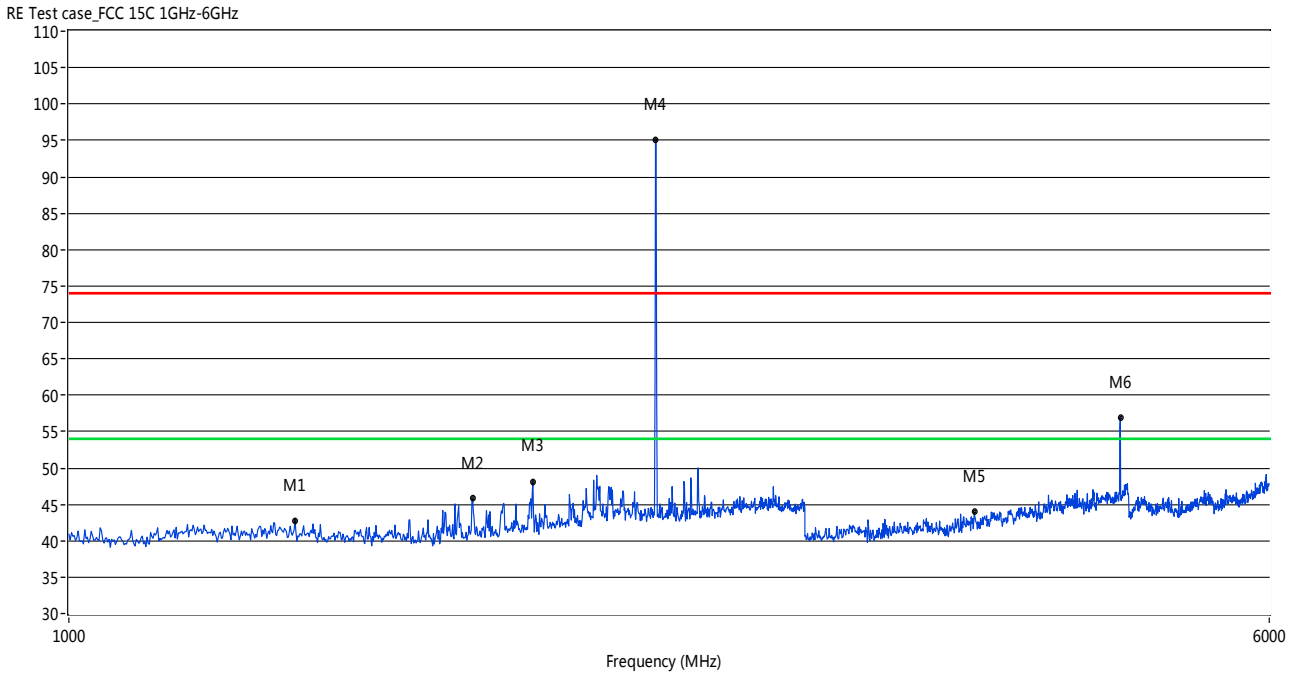


Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
98.80	24.01			-20.28	40.0	40.0	--	15.99	302.60	100	Horizontal	Pass
199.58	29.98			-20.41	40.0	40.0	--	10.02	298.50	100	Horizontal	Pass
278.07	39.63			-18.44	47.0	47.0	--	7.37	33.70	100	Horizontal	Pass

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

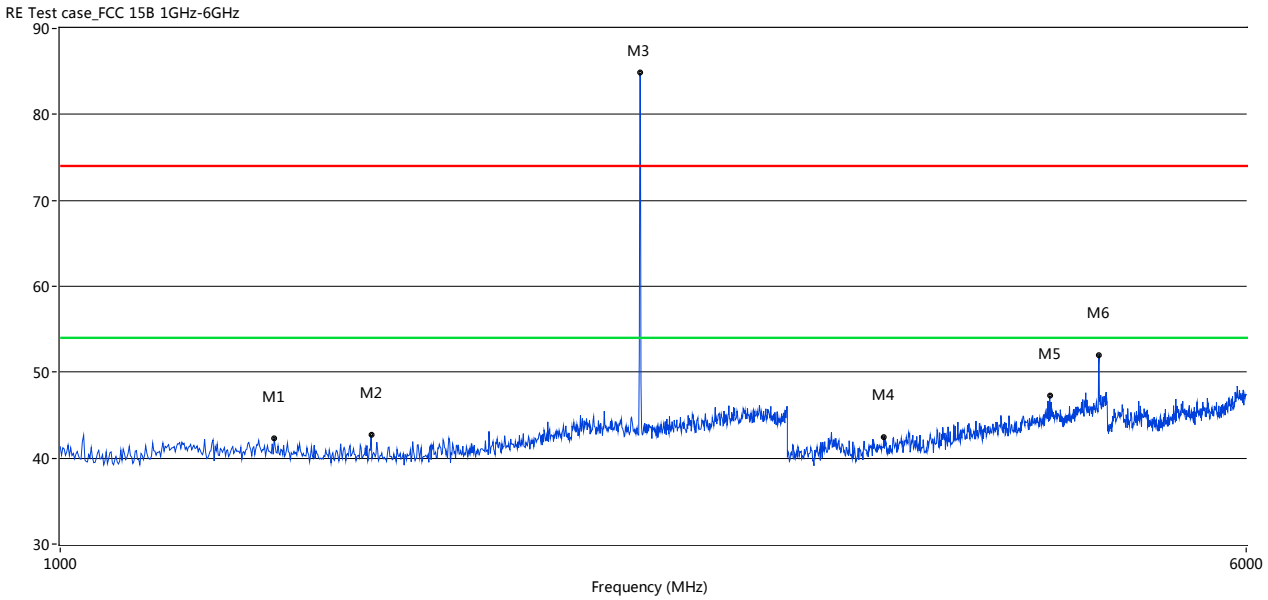
Test Data and Plots(1GHz ~ 10th Harmonic)

GFSK LOW CHANNEL 1GHz to 6GHz, ANT V



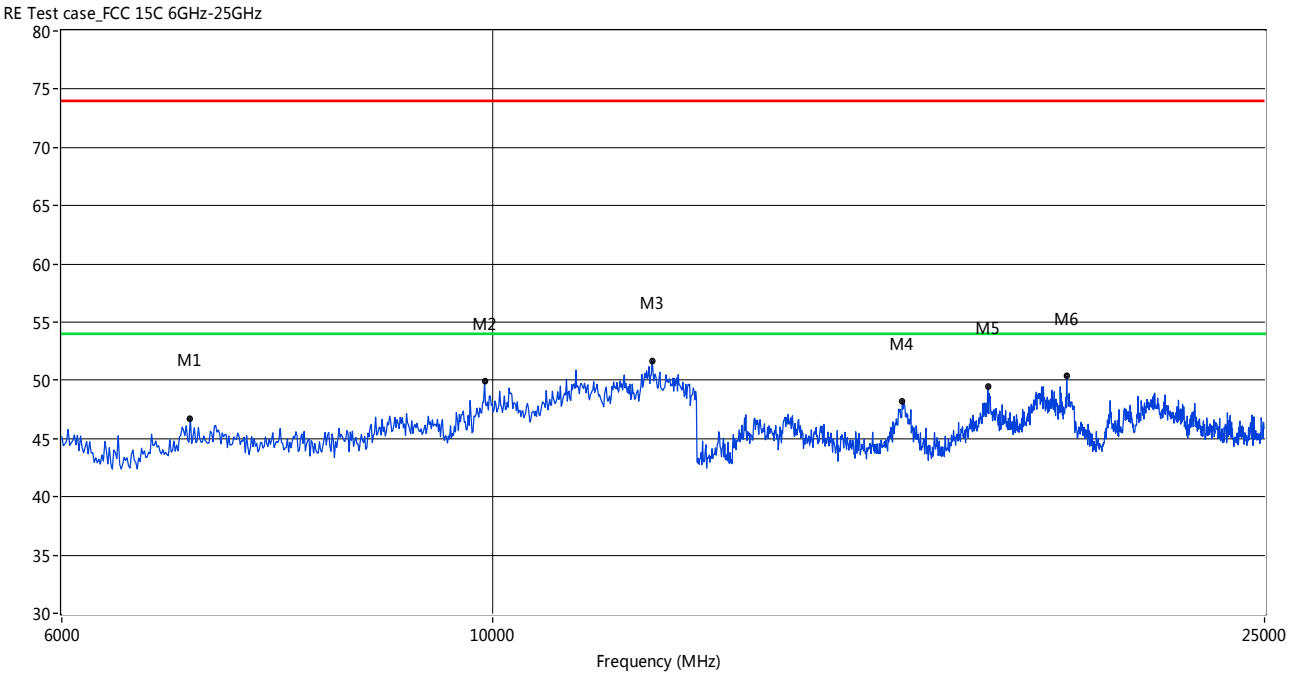
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1401.60	42.79			-4.27	74.0	--	54.0	11.21	282.90	100	Vertical	Pass
1827.17	45.81			-3.60	74.0	--	54.0	8.19	130.90	100	Vertical	Pass
1999.00	48.10			-2.92	74.0	--	54.0	5.90	130.90	100	Vertical	Pass
2400.60	95.11			-0.67	74.0	--	54.0	-41.11	138.40	100	Vertical	N/A
3863.14	43.96			10.02	74.0	--	54.0	10.04	125.00	100	Vertical	Pass
4804.00	56.74	--	49.71	12.35	74.0	--	54.0	4.29	95.40	102.80	Vertical	Pass

GFSK LOW CHANNEL 1GHz to 6GHz, ANT H



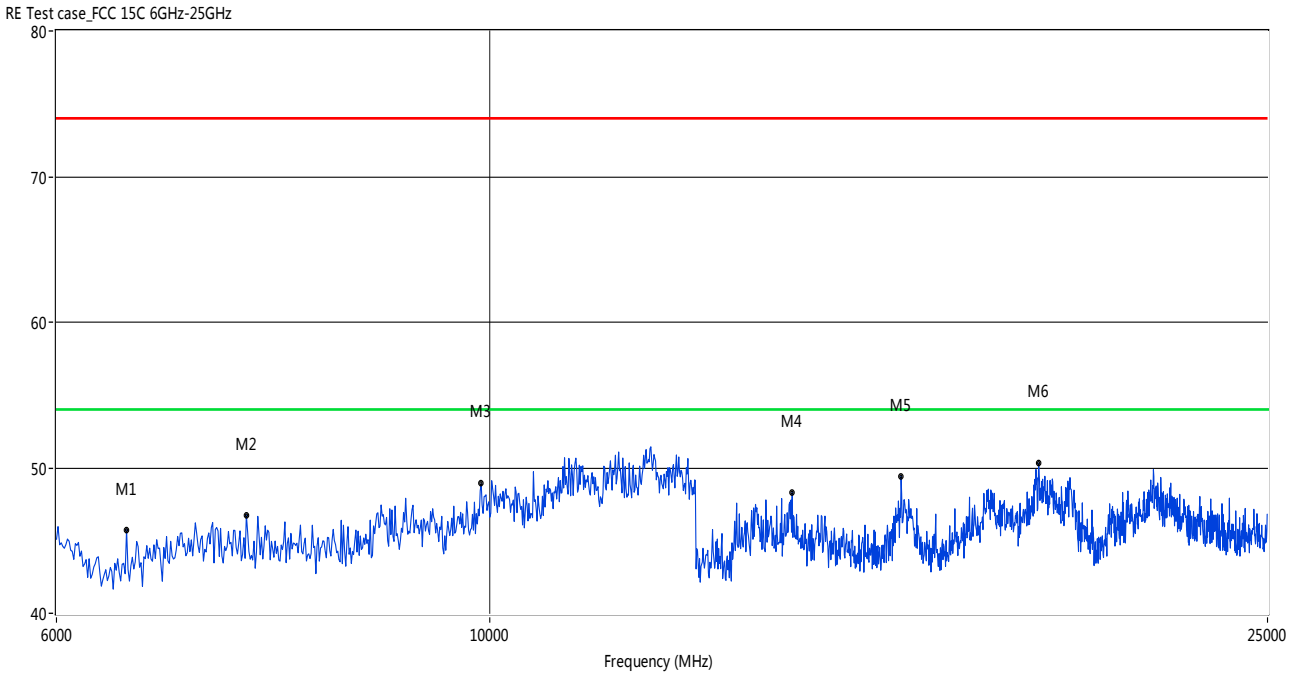
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1381.62	42.29			-4.33	74.0	--	54.0	11.71	4.60	100	Horizontal	Pass
1599.40	42.65			-4.34	74.0	--	54.0	11.35	27.80	100	Horizontal	Pass
2400.60	84.82			-0.67	74.0	--	54.0	-30.82	323.60	100	Horizontal	N/A
3470.53	42.49			8.82	74.0	--	54.0	11.51	54.20	100	Horizontal	Pass
4459.54	47.23			10.83	74.0	--	54.0	6.77	238.60	100	Horizontal	Pass
4804.20	51.98			12.35	74.0	--	54.0	2.02	360.70	100	Horizontal	Pass

GFSK LOW CHANNEL 6GHz to 25GHz, ANT V



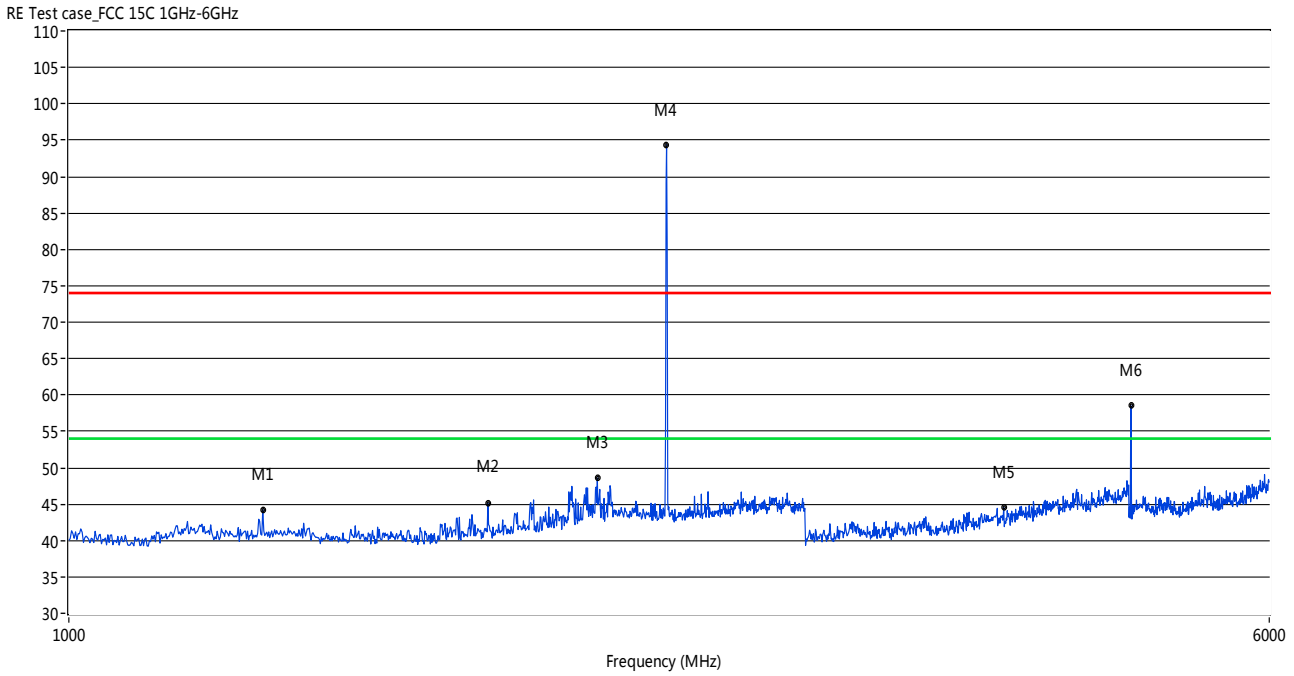
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
6988.35	46.76			74.0	--	54.0	7.24	Vertical	Pass
9908.49	49.90			74.0	--	54.0	4.10	Vertical	Pass
12087.35	51.67			74.0	--	54.0	2.33	Vertical	Pass
16264.98	48.20			74.0	--	54.0	5.80	Vertical	Pass
18001.66	49.52			74.0	--	54.0	4.48	Vertical	Pass
19768.72	50.37			74.0	--	54.0	3.63	Vertical	Pass

GFSK LOW CHANNEL 6GHz to 25GHz, ANT H



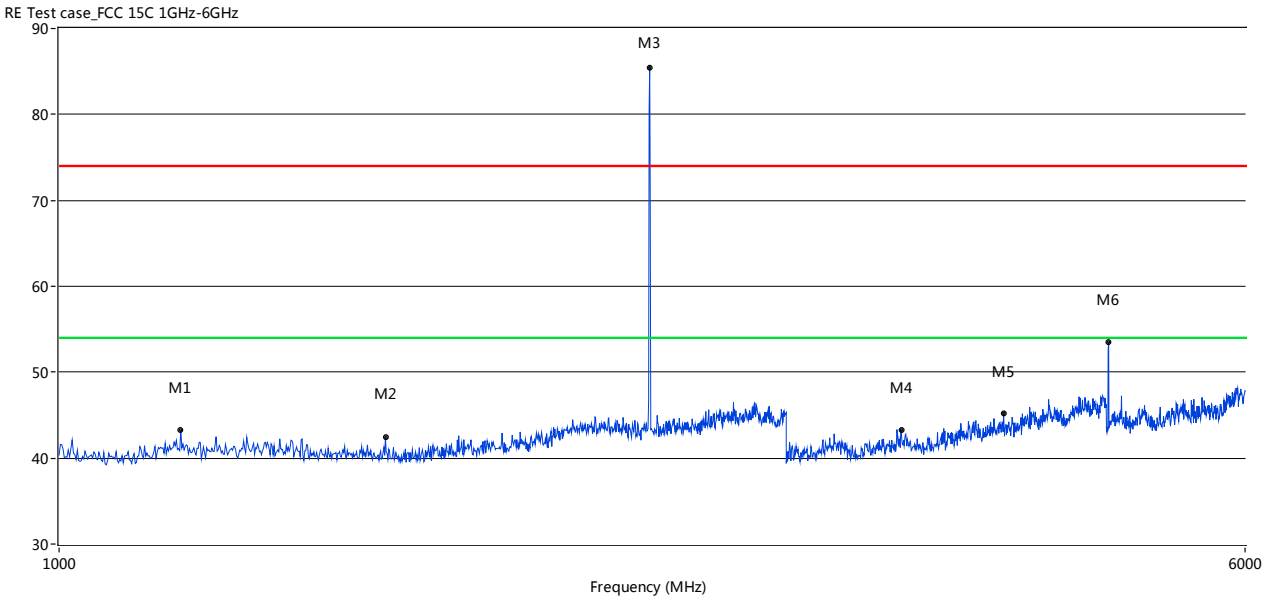
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
6516.64	45.74			74.0	--	54.0	8.26	Horizontal	Pass
7504.99	46.76			74.0	--	54.0	7.24	Horizontal	Pass
9897.25	48.90			74.0	--	54.0	5.10	Horizontal	Pass
14278.70	48.31			74.0	--	54.0	5.69	Horizontal	Pass
16233.78	49.41			74.0	--	54.0	4.59	Horizontal	Pass
19089.85	50.30			74.0	--	54.0	3.70	Horizontal	Pass

GFSK MID CHANNEL 1GHz to 6GHz, ANT V



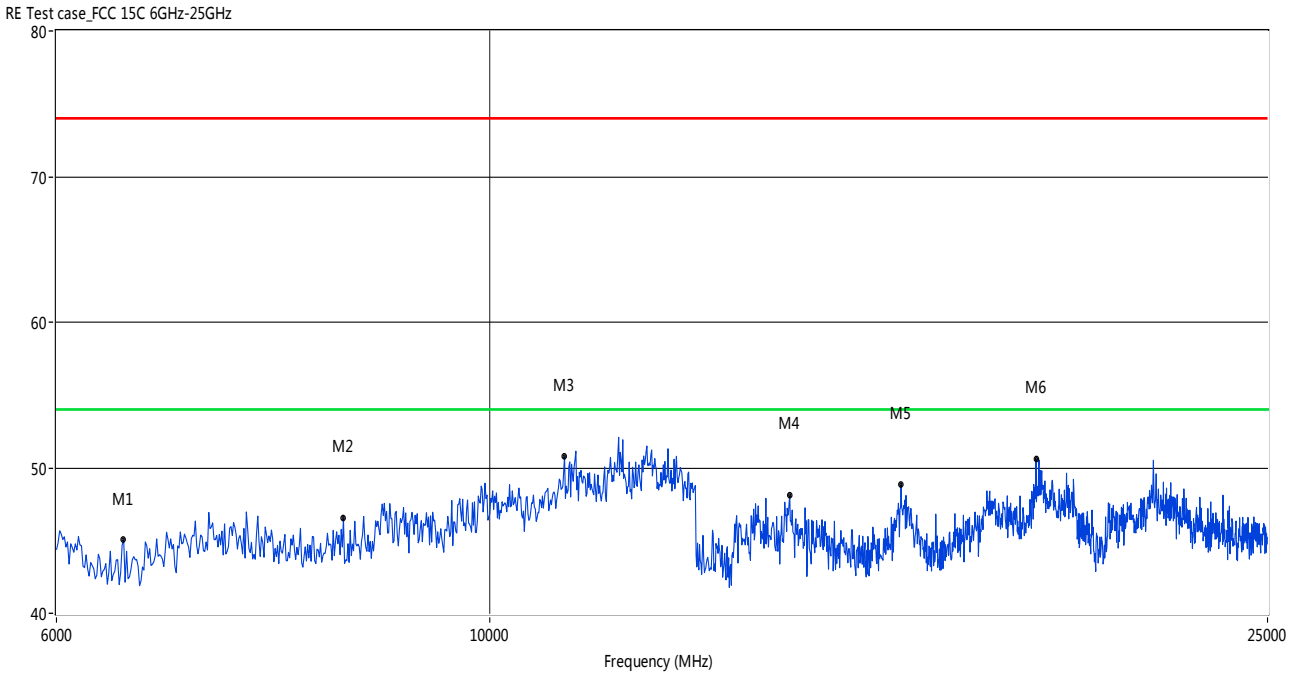
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1335.66	44.23			-4.19	74.0	--	54.0	9.77	333.50	100	Vertical	Pass
1869.13	45.12			-3.42	74.0	--	54.0	8.88	27.70	100	Vertical	Pass
2200.80	48.57			-0.74	74.0	--	54.0	5.43	132.10	100	Vertical	Pass
2440.56	94.36			-0.54	74.0	--	54.0	-40.36	111.30	100	Vertical	N/A
4036.96	44.54			9.89	74.0	--	54.0	9.46	218.00	100	Vertical	Pass
4881.62	58.61	--	50.44	12.34	74.0	--	54.0	3.56	158.50	158.10	Vertical	Pass

GFSK MID CHANNEL 1GHz to 6GHz, ANT H



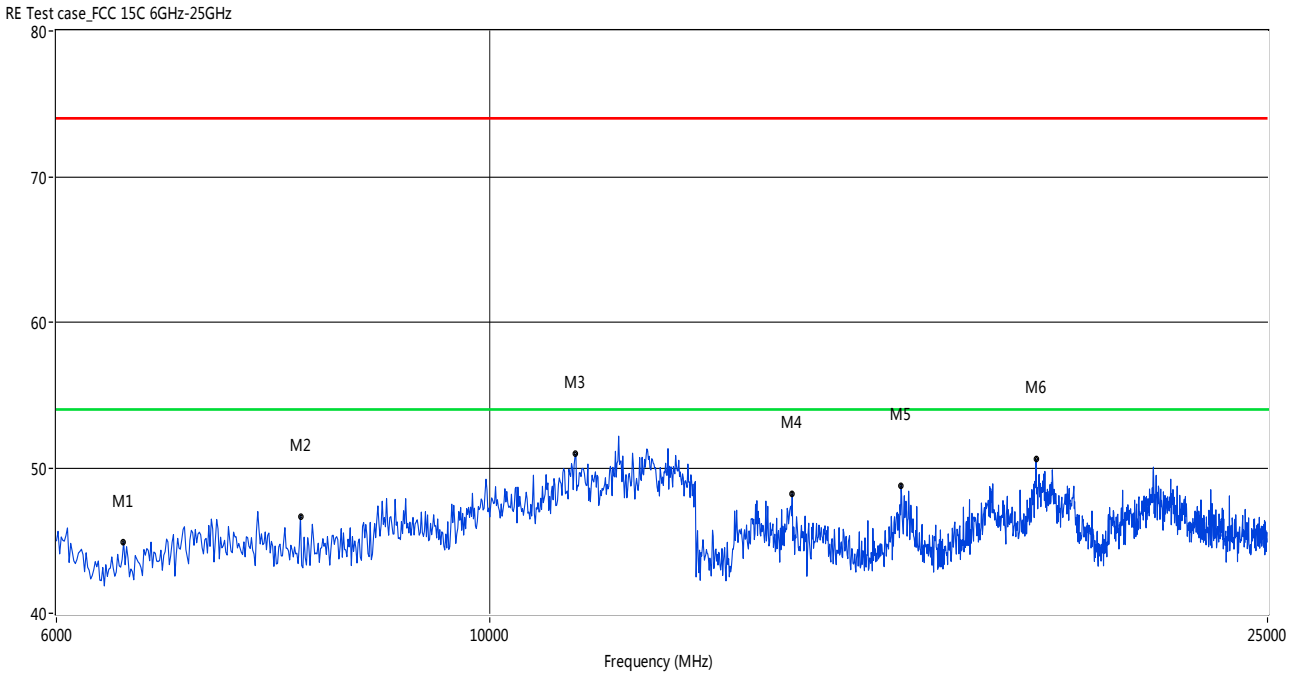
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1201.80	43.26			-4.09	74.0	--	54.0	10.74	96.50	100	Horizontal	Pass
1637.36	42.39			-4.32	74.0	--	54.0	11.61	55.00	100	Horizontal	Pass
2440.56	85.49			-0.54	74.0	--	54.0	-31.49	345.20	100	Horizontal	N/A
3569.43	43.22			8.78	74.0	--	54.0	10.78	306.70	100	Horizontal	Pass
4165.83	45.25			10.07	74.0	--	54.0	8.75	213.80	100	Horizontal	Pass
4882.12	53.51			12.34	74.0	--	54.0	0.49	32.50	100	Horizontal	Pass

GFSK MID CHANNEL 6GHz to 25GHz, ANT V



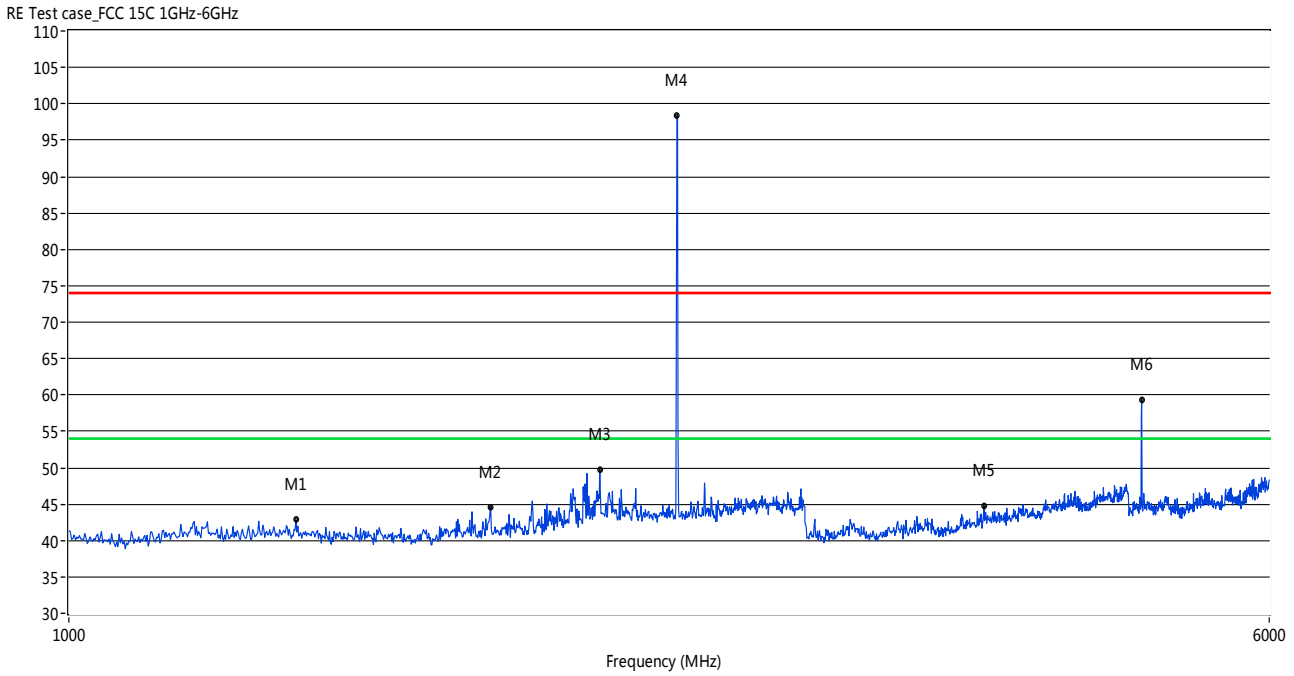
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
6494.18	45.08			74.0	--	54.0	8.92	Vertical	Pass
8414.73	46.58			74.0	--	54.0	7.42	Vertical	Pass
10919.30	50.76			74.0	--	54.0	3.24	Vertical	Pass
14237.10	48.10			74.0	--	54.0	5.90	Vertical	Pass
16233.78	49.41			74.0	--	54.0	4.59	Vertical	Pass
19029.95	50.62			74.0	--	54.0	3.38	Vertical	Pass

GFSK MID CHANNEL 6GHz to 25GHz, ANT H



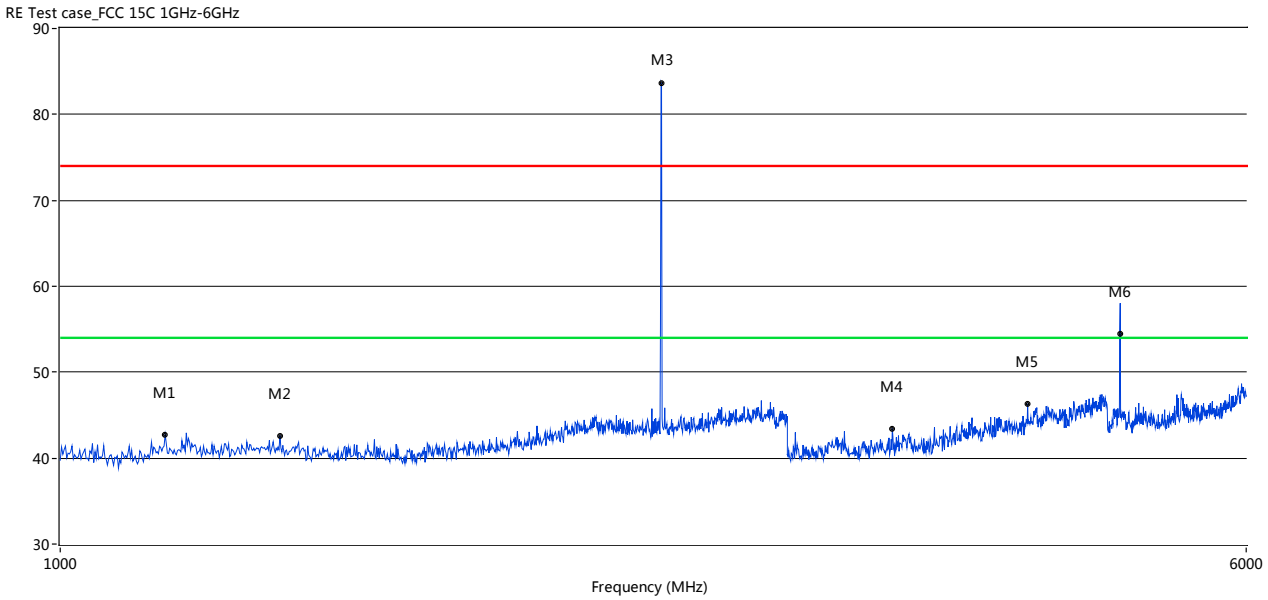
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
6494.18	45.08			74.0	--	54.0	8.92	Horizontal	Pass
7999.17	46.67			74.0	--	54.0	7.33	Horizontal	Pass
11065.31	50.95			74.0	--	54.0	3.05	Horizontal	Pass
14278.70	48.21			74.0	--	54.0	5.79	Horizontal	Pass
16233.78	49.41			74.0	--	54.0	4.59	Horizontal	Pass
19029.95	50.62			74.0	--	54.0	3.38	Horizontal	Pass

GFSK HIGH CHANNEL 1GHz to 6GHz, ANT V



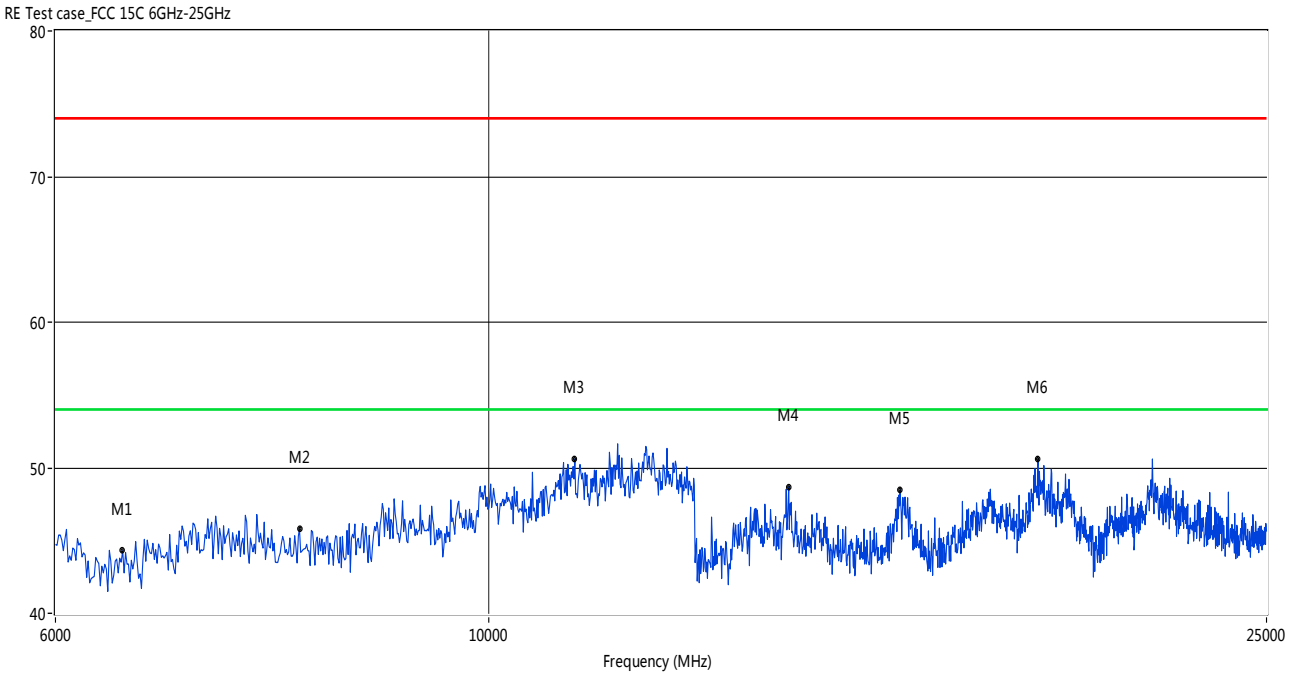
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1403.60	42.82			-4.29	74.0	--	54.0	11.18	8.90	100	Vertical	Pass
1877.12	44.51			-3.39	74.0	--	54.0	9.49	140.50	100	Vertical	Pass
2208.79	49.72			-0.70	74.0	--	54.0	4.28	154.20	100	Vertical	Pass
2478.52	98.38			-0.62	74.0	--	54.0	-44.38	133.40	100	Vertical	N/A
3920.08	44.71			10.11	74.0	--	54.0	9.29	179.40	100	Vertical	Pass
4959.74	59.32	--	53.14	12.64	74.0	--	54.0	0.86	189.40	141.90	Vertical	Pass

GFSK HIGH CHANNEL 1GHz to 6GHz, ANT H



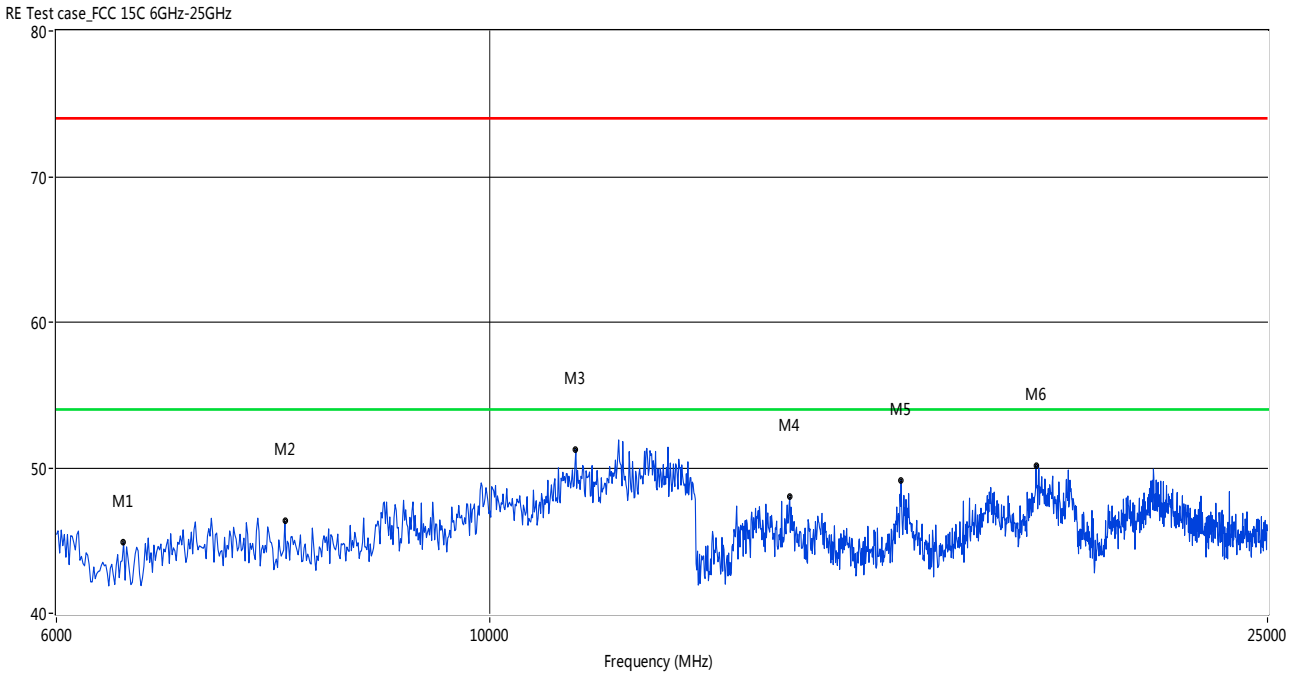
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1171.83	42.74			-4.54	74.0	--	54.0	11.26	322.50	100	Horizontal	Pass
1393.61	42.64			-4.26	74.0	--	54.0	11.36	8.10	100	Horizontal	Pass
2478.52	83.67			-0.62	74.0	--	54.0	-29.67	350.10	100	Horizontal	N/A
3515.48	43.45			8.97	74.0	--	54.0	10.55	57.60	100	Horizontal	Pass
4312.69	46.33			10.88	74.0	--	54.0	7.67	346.00	100	Horizontal	Pass
4959.64	58.04	--	50.94	12.64	74.0	--	54.0	3.06	8.80	100.00	Horizontal	Pass

GFSK HIGH CHANNEL 6GHz to 25GHz, ANT V



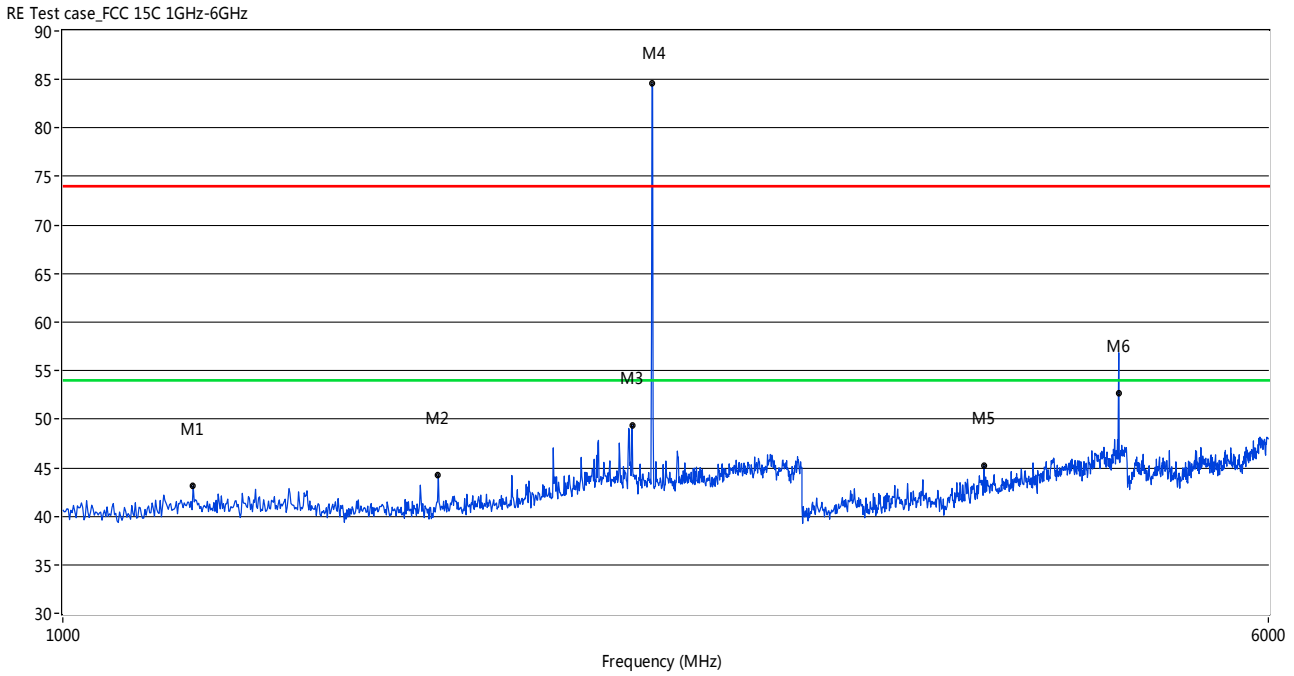
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
6494.18	45.08			74.0	--	54.0	8.92	Vertical	Pass
7999.17	46.67			74.0	--	54.0	7.33	Vertical	Pass
11065.31	50.95			74.0	--	54.0	3.05	Vertical	Pass
14237.10	48.69			74.0	--	54.0	5.31	Vertical	Pass
16233.78	49.41			74.0	--	54.0	4.59	Vertical	Pass
19099.83	50.63			74.0	--	54.0	3.37	Vertical	Pass

GFSK HIGH CHANNEL 6GHz to 25GHz, ANT H



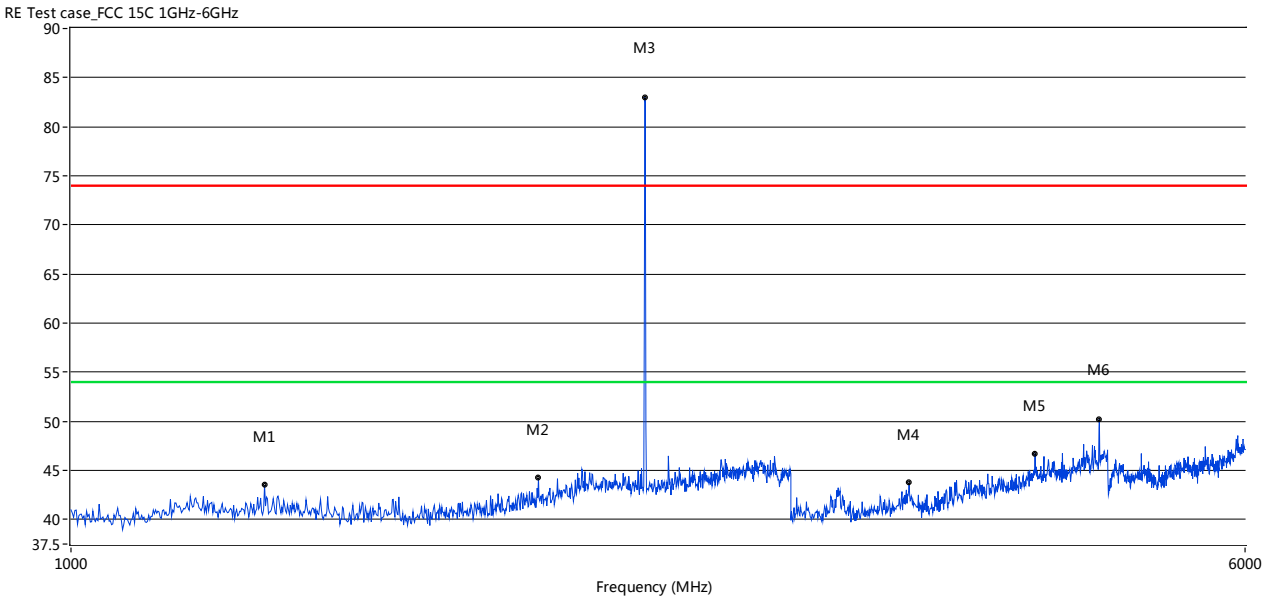
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
6494.18	45.08			74.0	--	54.0	8.92	Horizontal	Pass
7853.16	46.32			74.0	--	54.0	7.68	Horizontal	Pass
11065.31	50.95			74.0	--	54.0	3.05	Horizontal	Pass
14237.10	48.69			74.0	--	54.0	5.31	Horizontal	Pass
16233.78	49.41			74.0	--	54.0	4.59	Horizontal	Pass
19029.95	50.16			74.0	--	54.0	3.84	Horizontal	Pass

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



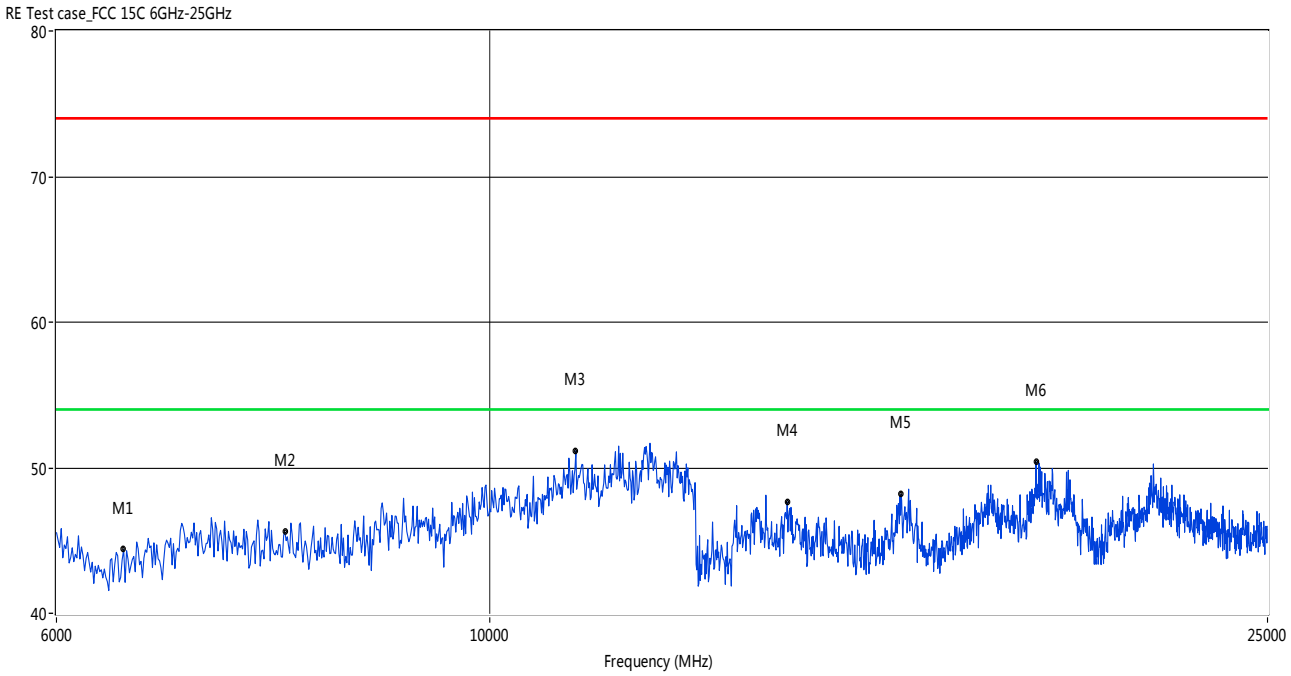
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK imit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1213.79	43.14			-4.12	74.0	--	54.	10.86	359.70	100	Vertical	Pass
1747.25	44.24			-3.85	74.0	--	54.0	9.76	56.60	100	Vertical	Pass
2330.67	49.33			-0.56	74.0	--	54.0	4.67	160.00	100	Vertical	Pass
2400.60	84.56			-0.67	74.0	--	54.0	-30.56	90.90	100	Vertical	N/A
3932.07	45.22			10.01	74.0	--	54.0	8.78	209.10	100	Vertical	Pass
4804.30	57.39	--	47.06	12.35	74.0	--	54.0	6.94	0.20	158.10	Vertical	Pass

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



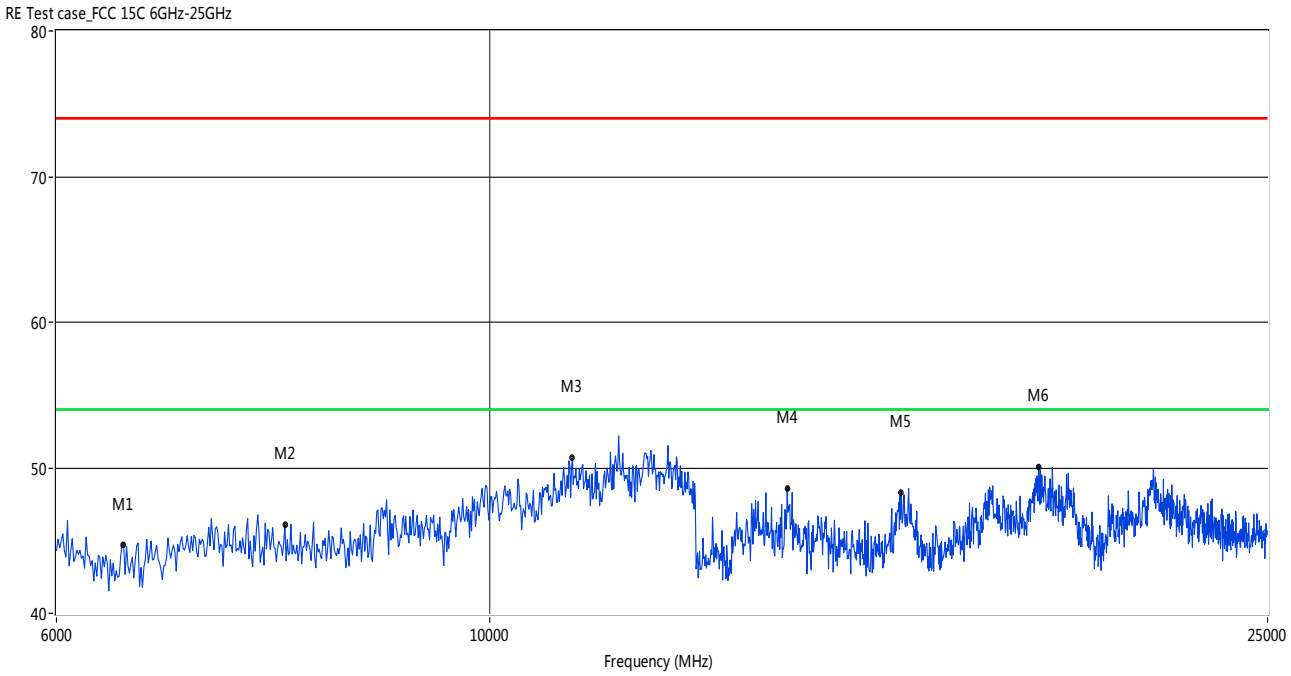
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1343.66	43.51			-4.31	74.0	--	54.	10.49	247.90	100	Horizontal	Pass
2040.96	44.21			-2.32	74.0	--	54.0	9.79	213.60	100	Horizontal	Pass
2400.60	83.03			-0.67	74.0	--	54.0	-29.03	316.40	100	Horizontal	N/A
3593.41	43.75			8.83	74.0	--	54.0	10.25	59.00	100	Horizontal	Pass
4354.65	46.74			11.05	74.0	--	54.0	7.26	278.30	100	Horizontal	Pass
4804.20	50.25			12.35	74.0	--	54.0	3.75	6.80	100	Horizontal	Pass

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



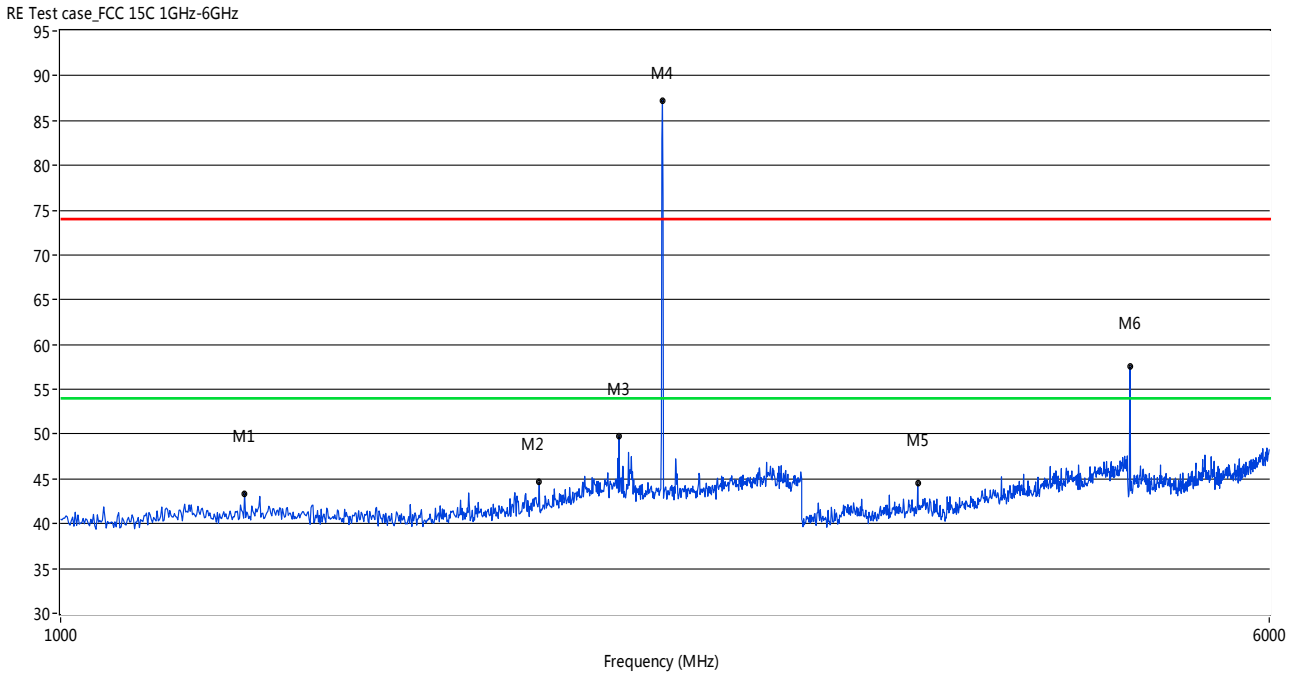
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
6494.18	45.08			74.0	--	54.0	8.92	Ve tical	Pass
7853.16	46.32			7 .0	--	54.0	7.68	Vertical	Pass
11065.31	50.95			74.0	--	54.0	3.05	Vertical	Pass
14195.51	47.64			74.0	--	54.0	6.36	Vertical	Pass
16233.78	49.41			74.0	--	54.0	4.59	Vertical	Pass
19029.95	50.16			74.0	--	54.0	3.84	Vertical	Pass

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



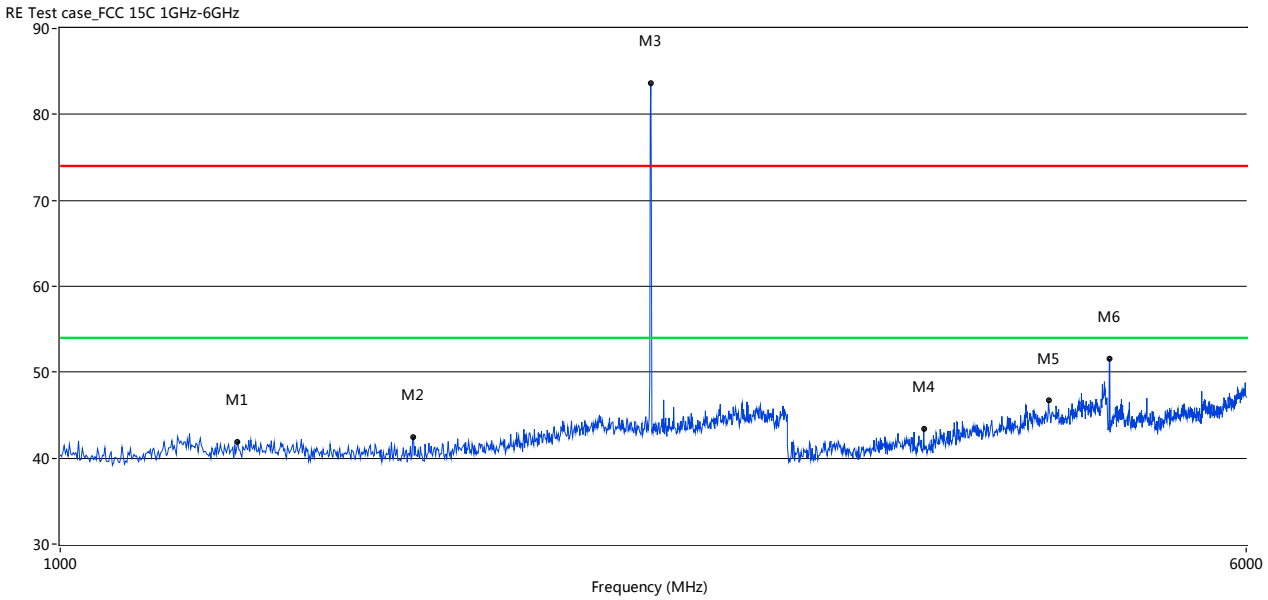
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
6494.18	45.08			74.0	--	54.0	8.92	Ho izontal	Pass
7853.16	46.32			74.0	--	54.0	7.68	Horizontal	Pass
11020.38	50.67			74.0	--	54.0	3.33	Horizontal	Pass
14195.51	47.64			74.0	--	54.0	6.36	Horizontal	Pass
16233.78	49.41			74.0	--	54.0	4.59	Horizontal	Pass
19089.85	50.08			74.0	--	54.0	3.92	Horizontal	Pass

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



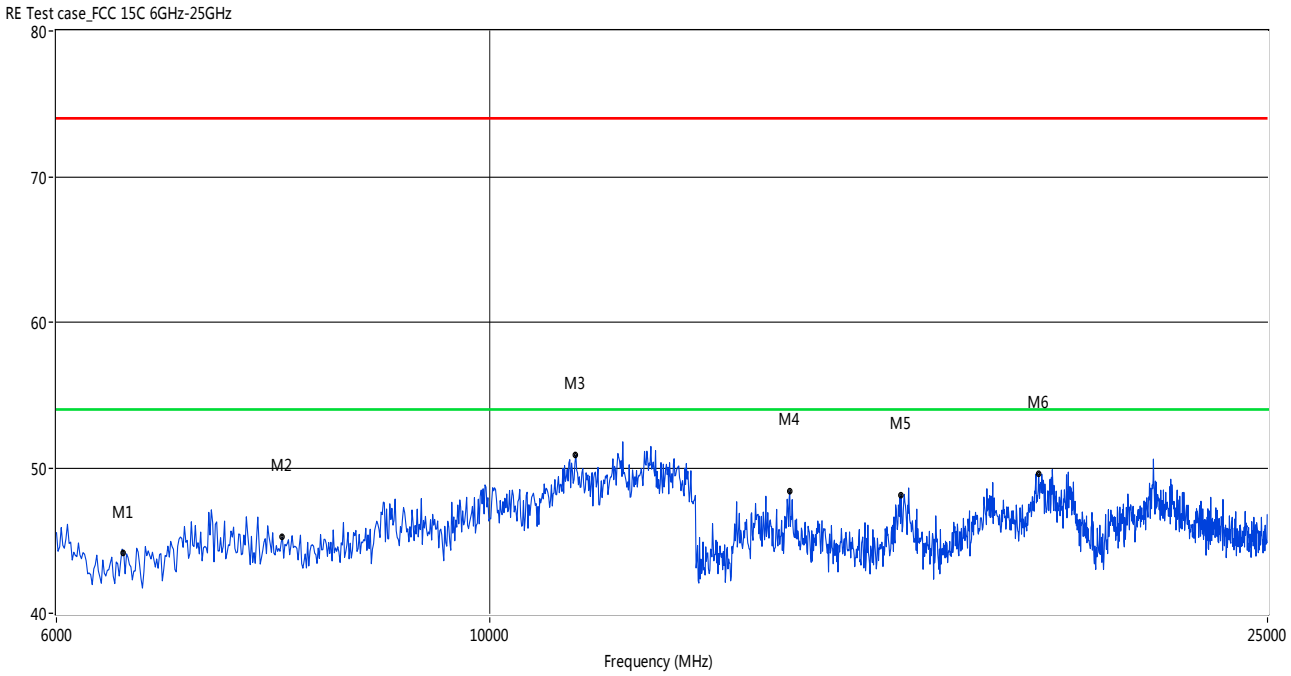
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1313.69	43.35			-4.13	74.0	--	54.	10.65	262.80	100	Vertical	Pass
2032. 7	44.65			-2.48	74.0	--	54.0	9.35	166.30	100	Vertical	Pass
2288.71	49.79			-0.68	74.0	--	54.0	4.21	159.30	100	Vertical	Pass
2440.56	87.28			-0.54	74.0	--	54.0	-33.28	83.60	100	Vertical	N/A
3563.44	44.45			8.83	74.0	--	54.0	9.55	194.30	100	Vertical	Pass
4882.12	57.52		48.57	12.34	74.0	--	54.0	5.43	358.30	100	Vertical	Pass

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



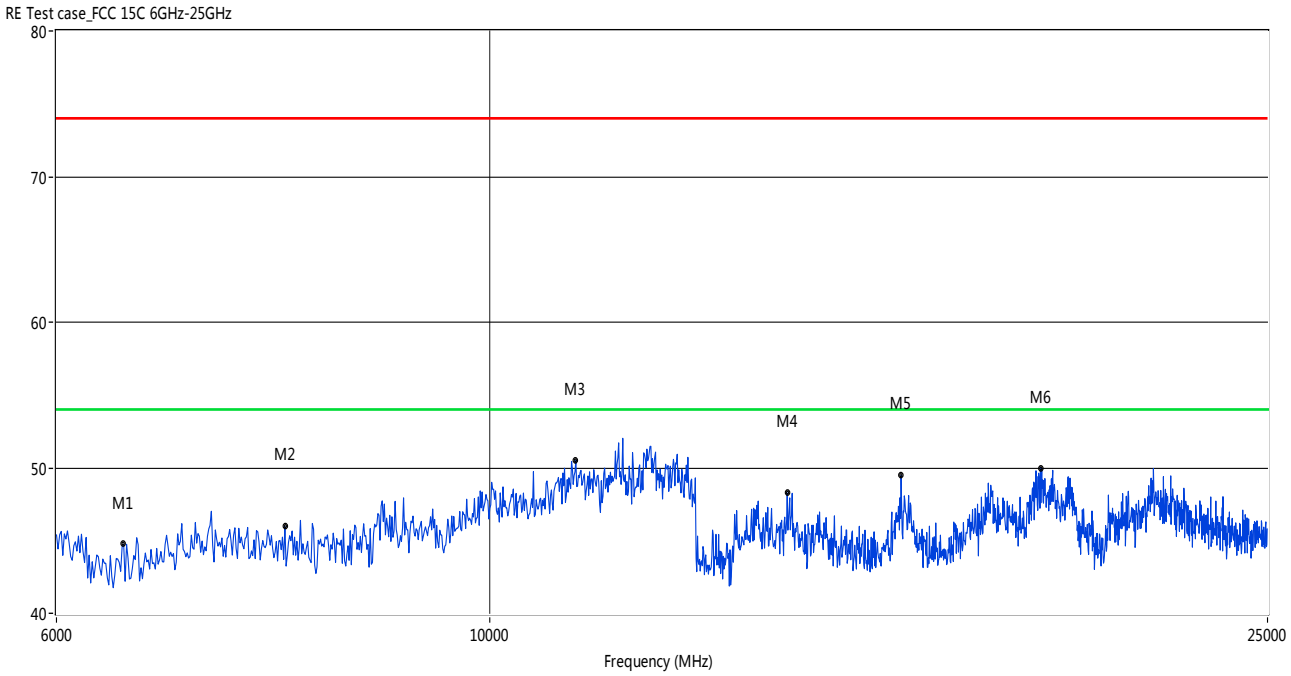
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1307.69	41.85			-4.05	74.0	--	54.0	12.15	157.80	100	Horizontal	Pass
1705.29	42.41			-4.05	74.0	--	54.0	11.59	61.90	100	Horizontal	Pass
2440.56	83.61			-0.54	74.0	--	54.0	-29.61	343.20	100	Horizontal	N/A
3686.31	43.45			8.80	74.0	--	54.0	10.55	359.10	100	Horizontal	Pass
4450.55	46.69			10.75	74.0	--	54.0	7.31	20.10	100	Horizontal	Pass
4879.12	51.54			12.36	74.0	--	54.0	2.46	6.30	100	Horizontal	Pass

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



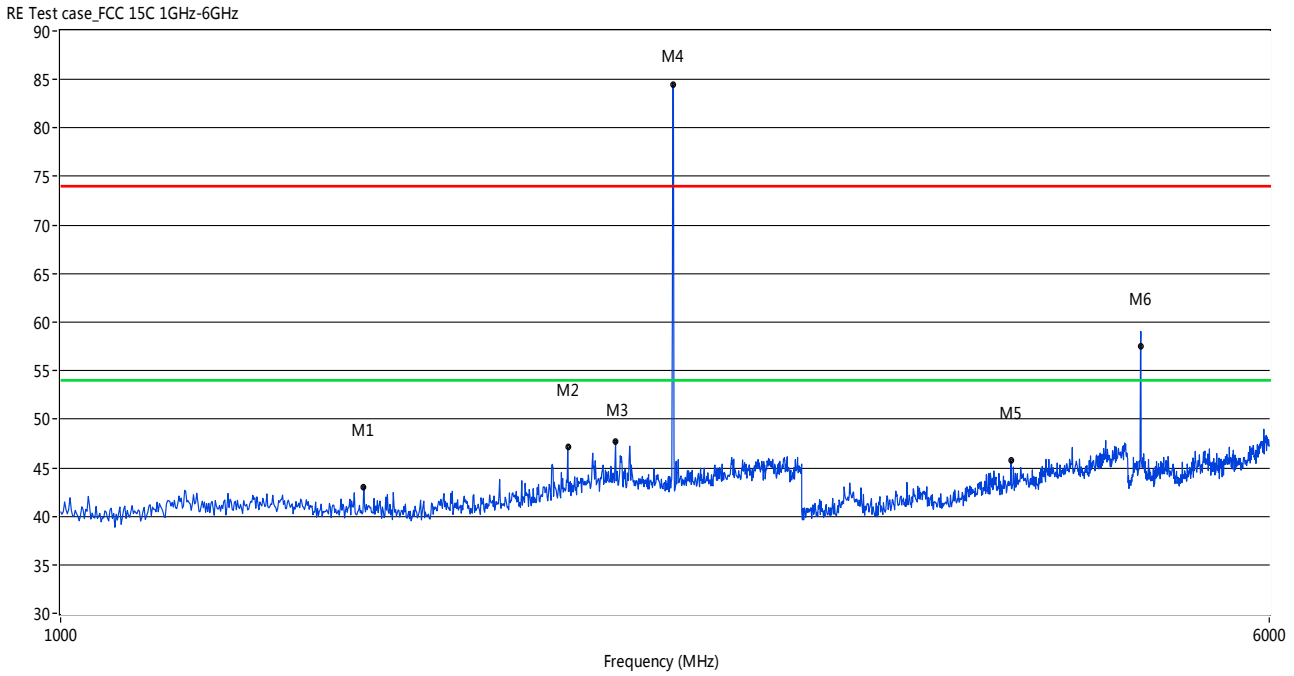
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
6494.18	45.08			74.0	--	54.0	8.92	Ve tical	Pass
7830.70	45.23			7 .0	--	54.0	8.77	Vertical	Pass
11065.31	50.85			74.0	--	54.0	3.15	Vertical	Pass
14237.10	48.36			74.0	--	54.0	5.64	Vertical	Pass
16233.78	49.41			74.0	--	54.0	4.59	Vertical	Pass
19089.85	50.08			74.0	--	54.0	3.92	Vertical	Pass

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



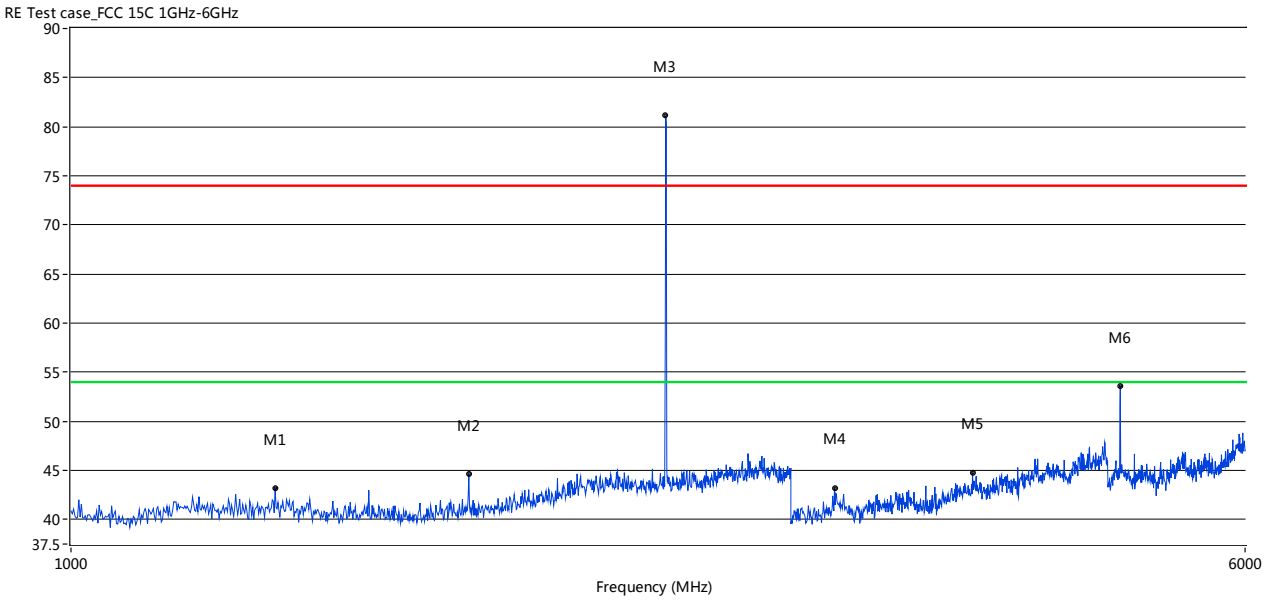
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
6494.18	45.08			74.0	--	54.0	8.92	Ho izontal	Pass
7853.16	45.96			74.0	--	54.0	8.04	Horizontal	Pass
11065.31	50.85			74.0	--	54.0	3.15	Horizontal	Pass
14195.51	48.27			74.0	--	54.0	5.73	Horizontal	Pass
16233.78	49.41			74.0	--	54.0	4.59	Horizontal	Pass
19129.78	50.00			74.0	--	54.0	4.00	Horizontal	Pass

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



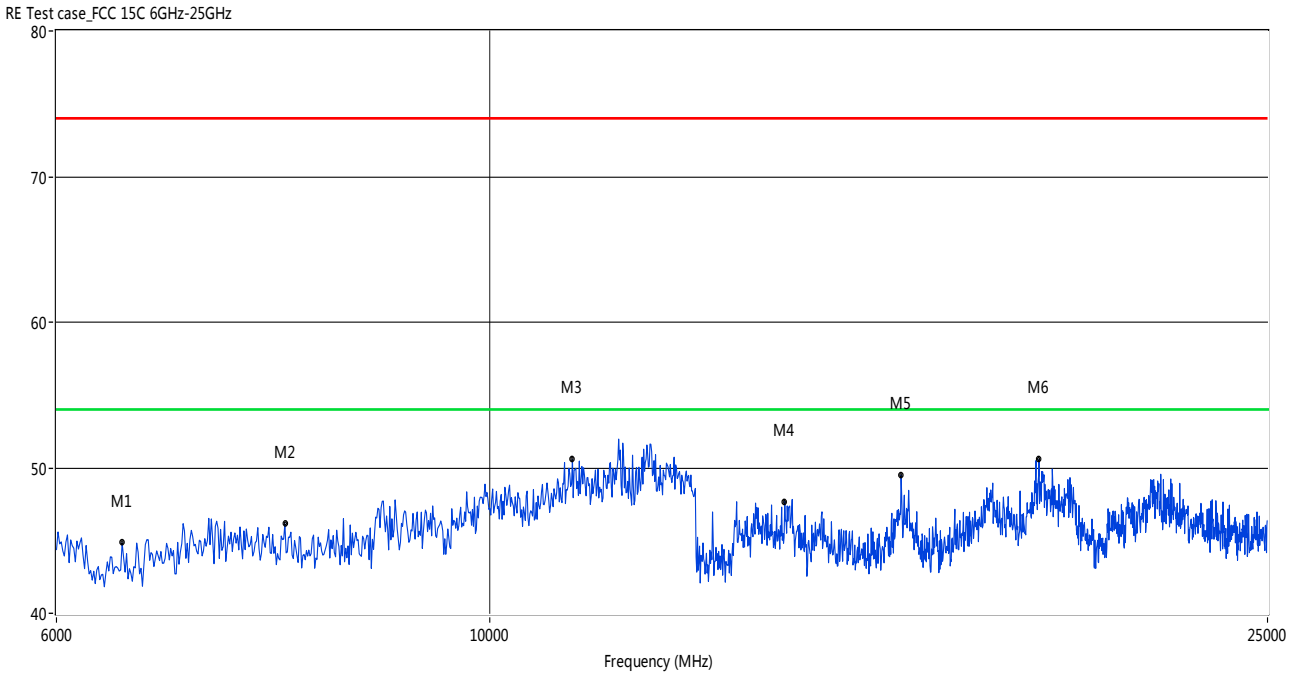
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1567.43	43.04			-4.41	74.0	--	54 0	10.96	247.50	100	Vertical	Pass
2120 88	47.08			-1.74	74.0	--	54.0	6.92	247.50	100	Vertical	Pass
2276.72	47.73			-0.72	74.0	--	54.0	6.27	151.30	100	Vertical	Pass
2478.52	84.50			-0.62	74.0	--	54.0	-30.50	89.30	100	Vertical	N/A
4090.91	45.73			10.20	74.0	--	54.0	8.27	321.50	100	Vertical	Pass
4960.04	59.03		50.50	12.64	74.0	--	54.0	3.50	360.30	100	Vertical	Pass

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



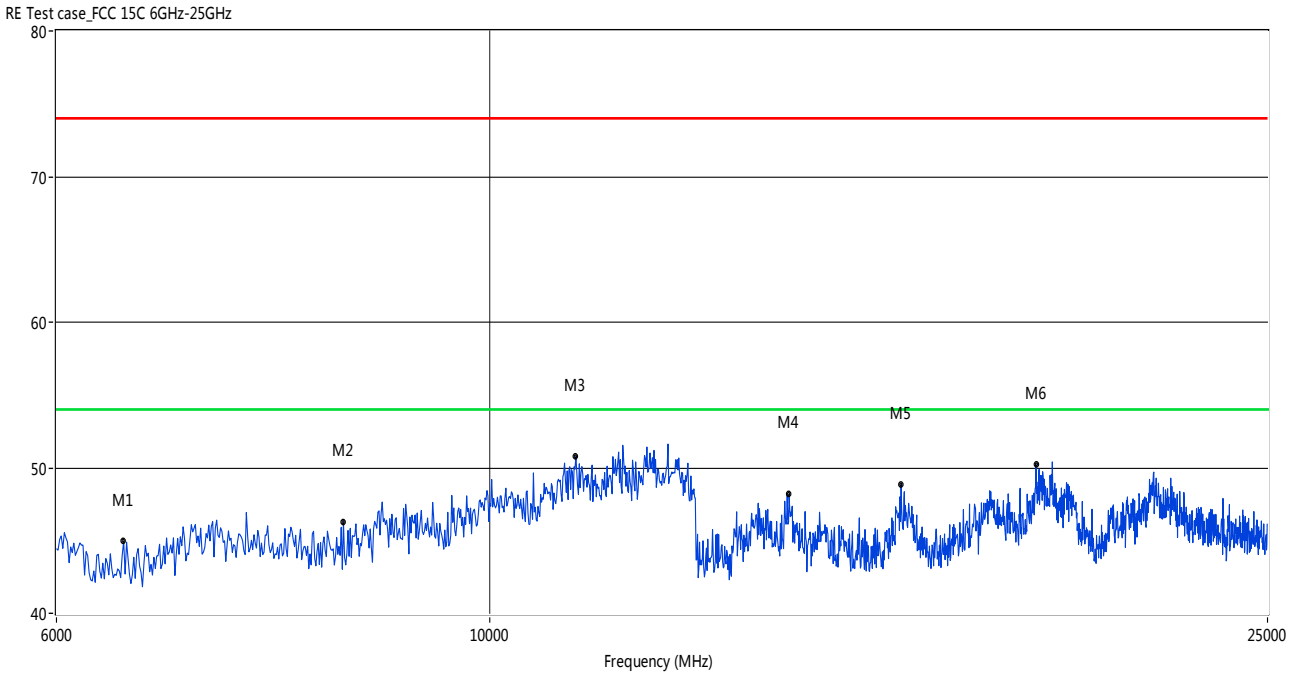
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1365.63	43.19			-4.09	74.0	--	54.0	10.81	336.30	100	Horizontal	Pass
1835.16	44.60			-3.73	74.0	--	54.0	9.40	89.00	100	Horizontal	Pass
2478.52	81.12			-0.62	74.0	--	54.0	-27.12	350.00	100	Horizontal	N/A
3206.79	43.17			8.20	74.0	--	54.0	10.83	243.00	100	Horizontal	Pass
3959.04	44.75			9.82	74.0	--	54.0	9.25	22.10	100	Horizontal	Pass
4960.04	53.57			12.64	74.0	--	54.0	0.43	17.30	100	Horizontal	Pass

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



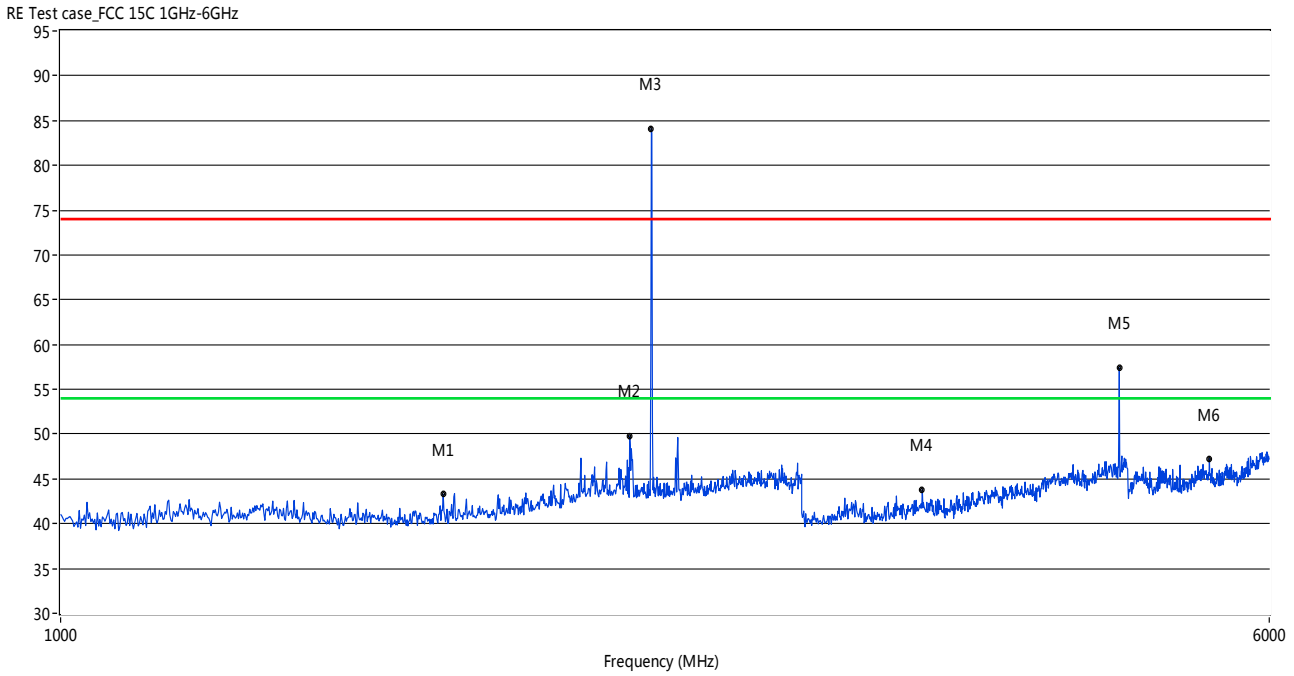
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
6482.94	44.84			74.0	--	54.0	9.16	V rtical	Pass
7853.16	45.96			4.0	--	54.0	8.04	Vertical	Pass
11020.38	50.56			74.0	--	54.0	3.44	Vertical	Pass
14153.91	47.69			74.0	--	54.0	6.31	Vertical	Pass
16233.78	49.41			74.0	--	54.0	4.59	Vertical	Pass
19099.83	50.57			74.0	--	54.0	3.43	Vertical	Pass

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



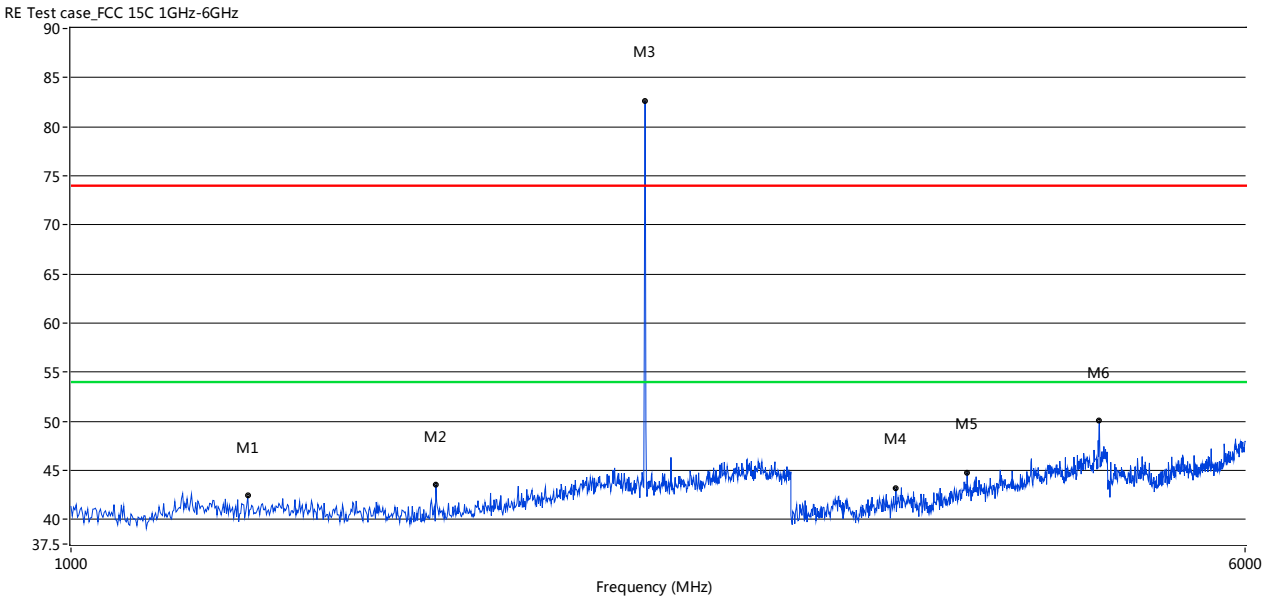
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
6494.18	44.95			74.0	--	54.0	9.05	H rizontal	Pass
8414.73	46.28			74.0	--	54.0	7.72	Horizontal	Pass
11065.31	50.77			74.0	--	54.0	3.23	Horizontal	Pass
14226.70	48.17			74.0	--	54.0	5.83	Horizontal	Pass
16233.78	49.41			74.0	--	54.0	4.59	Horizontal	Pass
19029.95	50.22			74.0	--	54.0	3.78	Horizontal	Pass

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



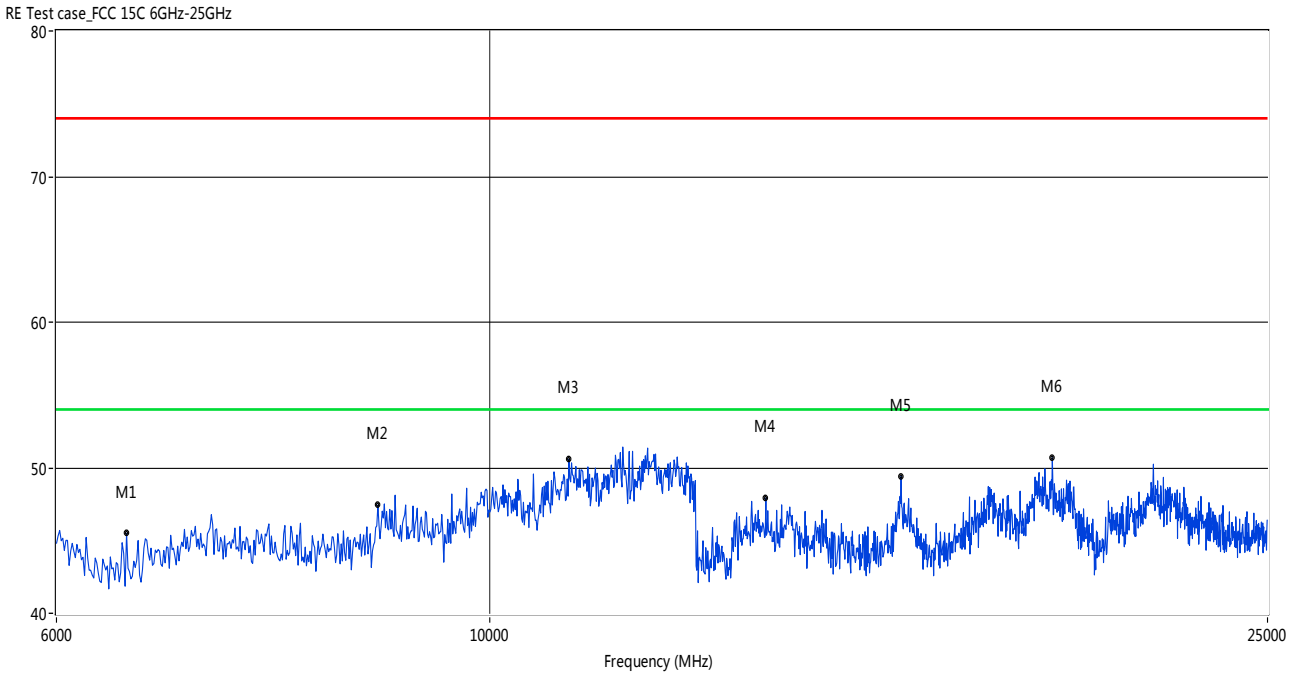
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1763.24	43.28			-3.57	74.0	--	54.0	10.72	42.40	100	Vertical	Pass
2324.68	49.76			-0.63	74.0	--	54.0	4.24	159.30	100	Vertical	Pass
2400.60	84.13			-0.67	74.0	--	54.0	-30.13	83.70	100	Vertical	N/A
3587.41	43.81			8.87	74.0	--	54.0	10.19	153.90	100	Vertical	Pass
4804.40	57.00	--	46.63	12.35	74.0	--	54.0	7.37	0.90	100.00	Vertical	Pass
5490.51	47.28			13.40	74.0	--	54.0	6.72	311.20	100	Vertical	Pass

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



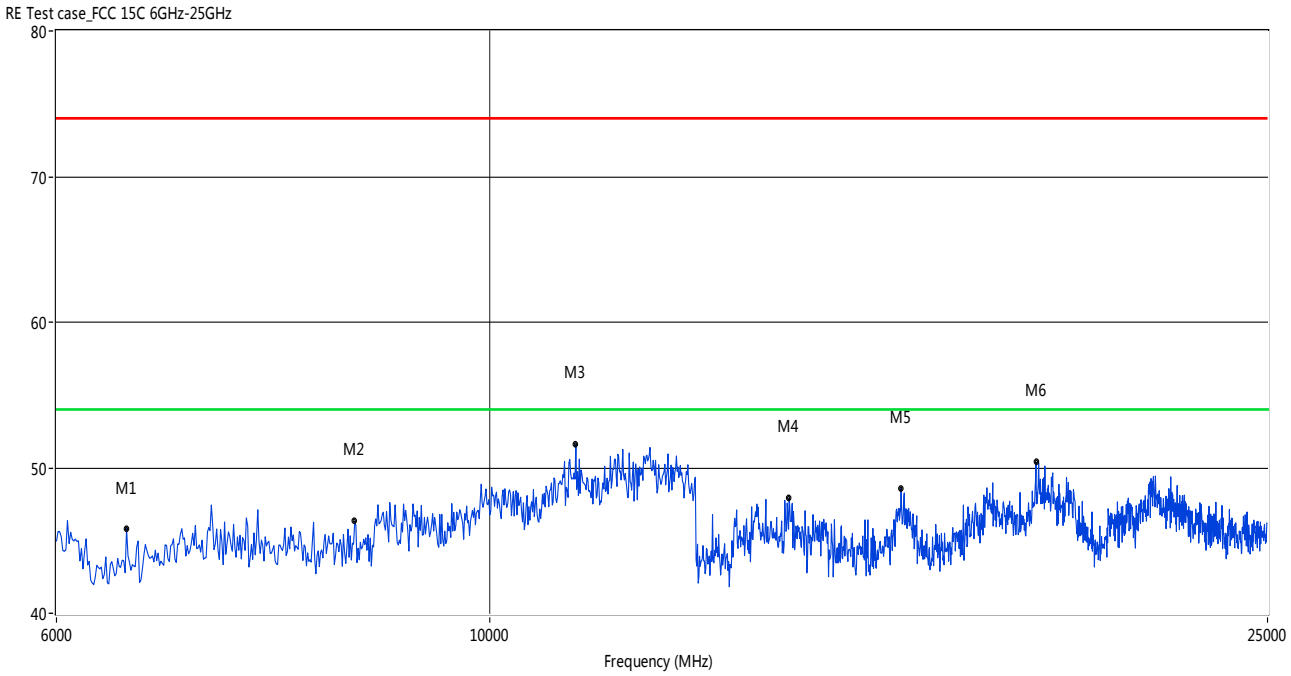
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1309.69	42.40			-4.12	74.0	--	54.0	11.60	113.40	100	Horizontal	Pass
1745.25	43.56			-4.01	74.0	--	54.0	10.44	52.90	100	Horizontal	Pass
2400.60	82.65			-0.67	74.0	--	54.0	-28.65	321.10	100	Horizontal	N/A
3521.48	43.15			8.96	74.0	--	54.0	10.85	21.20	100	Horizontal	Pass
3926.07	44.81			10.08	74.0	--	54.0	9.19	0.10	100	Horizontal	Pass
4804.20	50.05			12.35	74.0	--	54.0	3.95	0.50	100	Horizontal	Pass

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



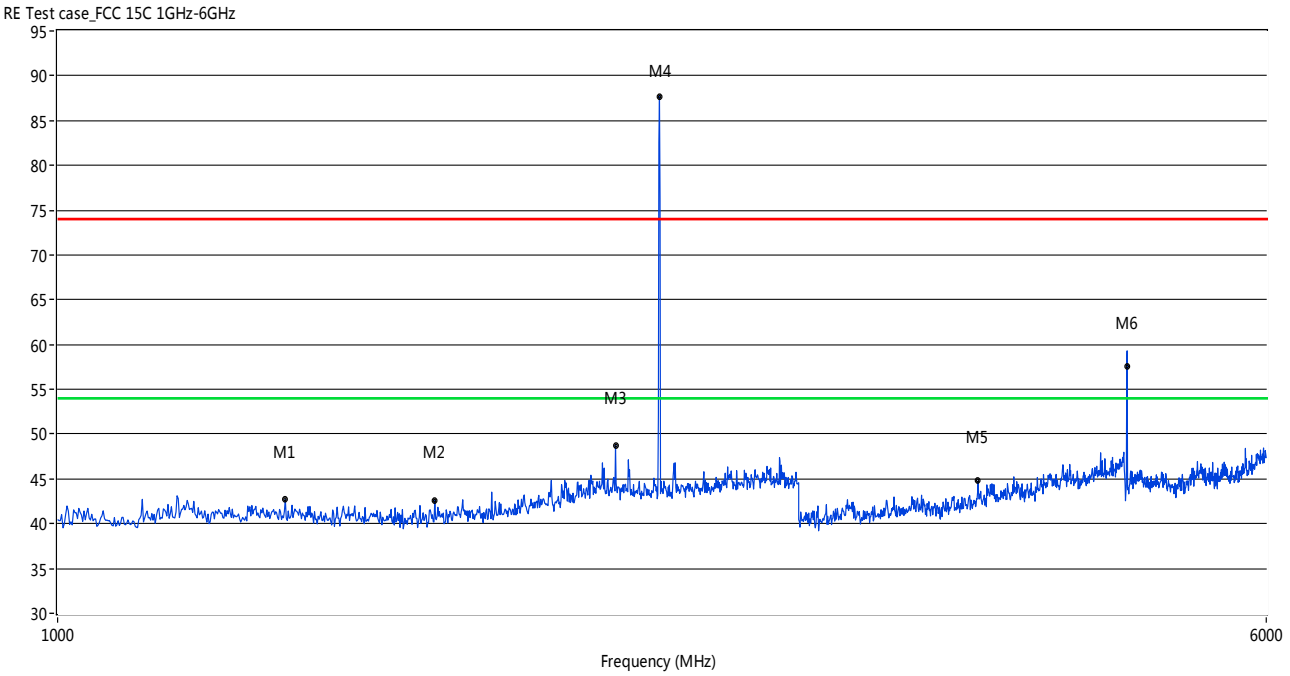
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
6516.64	45.81			74.0	--	54.0	8.19	Vertical	Pass
8762.90	47.44			74.0	--	54.0	6.56	Vertical	Pass
10975.46	50.59			74.0	--	54.0	3.41	Vertical	Pass
13841.93	47.93			74.0	--	54.0	6.07	Vertical	Pass
16233.78	49.41			74.0	--	54.0	4.59	Vertical	Pass
19399.33	50.68			74.0	--	54.0	3.32	Vertical	Pass

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



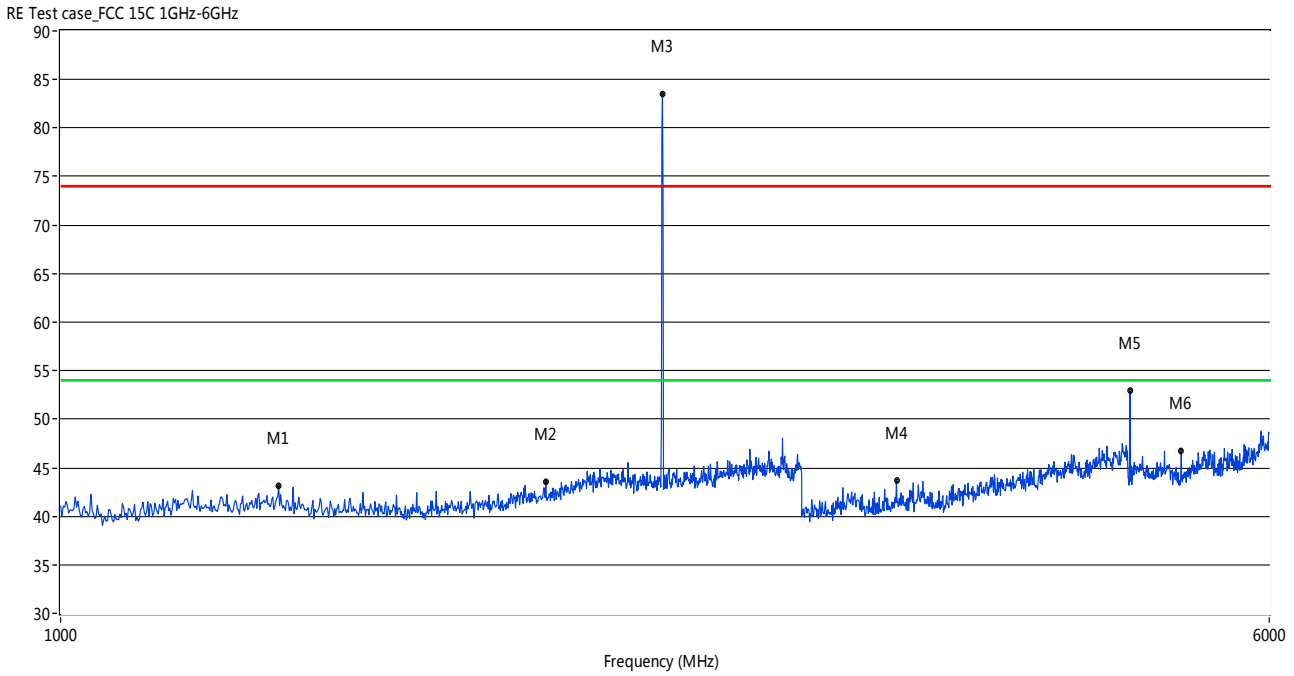
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
6516.64	45.81			74.0	--	54.0	8.19	Horizontal	Pass
8527.04	46.33			74.0	--	54.0	7.67	Horizontal	Pass
11065.31	50.77			74.0	--	54.0	3.23	Horizontal	Pass
14226.70	48.17			74.0	--	54.0	5.83	Horizontal	Pass
16233.78	49.41			74.0	--	54.0	4.59	Horizontal	Pass
19029.95	50.22			74.0	--	54.0	3.78	Horizontal	Pass

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



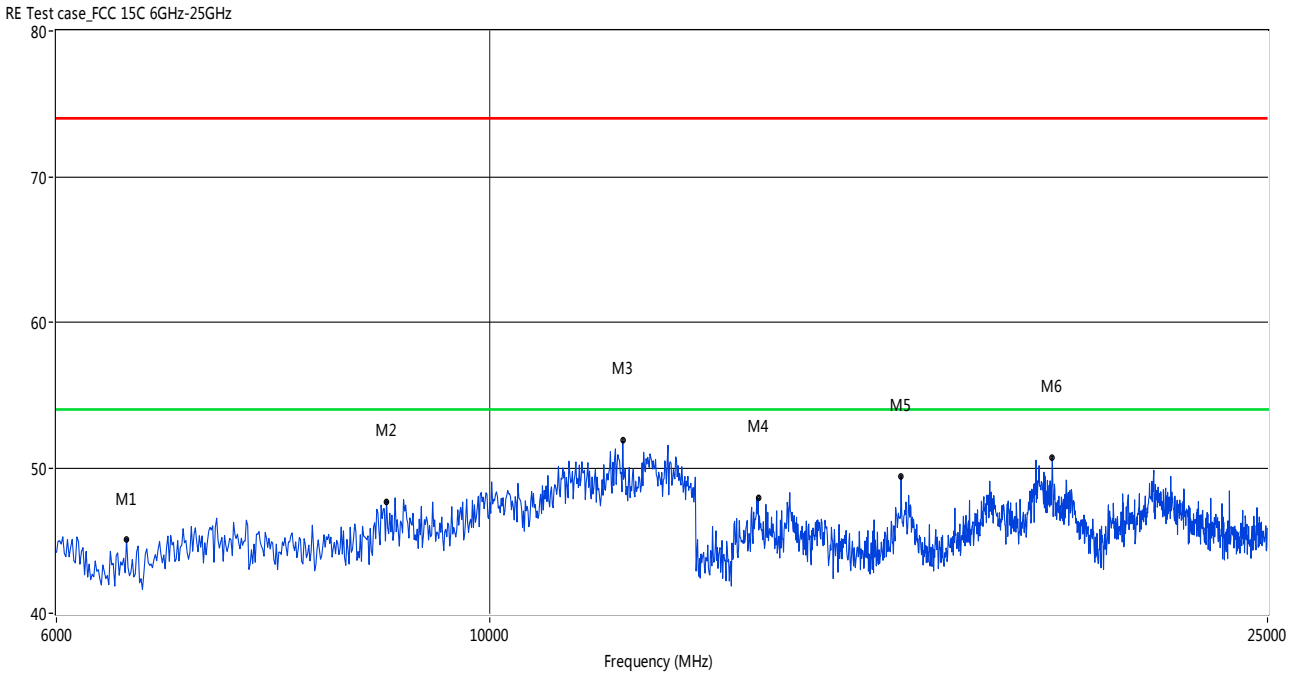
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1401.60	42.71			-4.27	74.0	--	54.0	11.29	199.60	100	Vertical	Pass
1749.25	42.62			-3.84	74.0	--	54.0	11.38	35.90	100	Vertical	Pass
2286.71	48.76			-0.67	74.0	--	54.0	5.24	159.10	100	Vertical	Pass
2440.56	87.66			-0.54	74.0	--	54.0	-33.66	83.70	100	Vertical	N/A
3914.09	44.79			10.19	74.0	--	54.0	9.21	306.60	100	Vertical	Pass
4882.32	59.37	--	50.31	12.34	74.0	--	54.0	3.69	0.80	150.10	Vertical	Pass

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



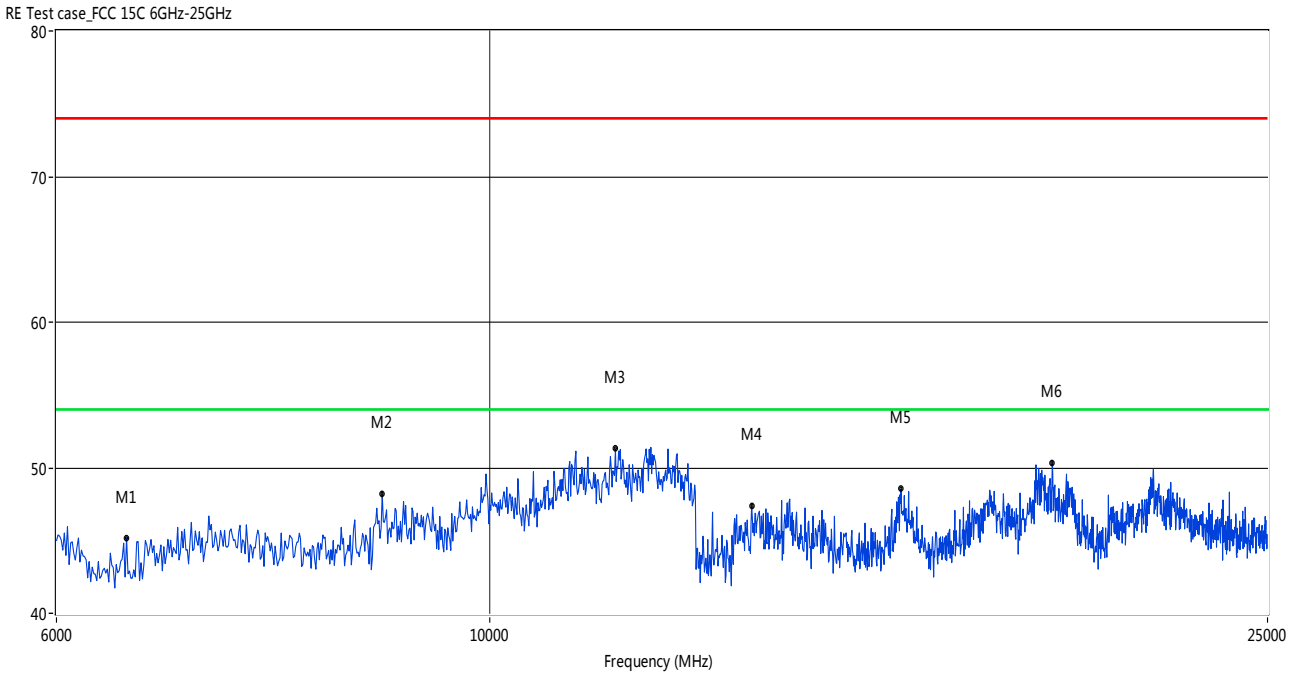
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1381.62	43.13			-4.33	74.0	--	54.0	10.87	346.30	100	Horizontal	Pass
2052.95	43.56			-2.21	74.0	--	54.0	10.44	87.60	100	Horizontal	Pass
2440.56	83.52			-0.54	74.0	--	54.0	-29.52	346.30	100	Horizontal	N/A
3452.55	43.63			9.08	74.0	--	54.0	10.37	255.40	100	Horizontal	Pass
4882.12	52.89			12.34	74.0	--	54.0	1.11	31.60	100	Horizontal	Pass
5265.73	46.66			12.90	74.0	--	54.0	7.34	180.80	100	Horizontal	Pass

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



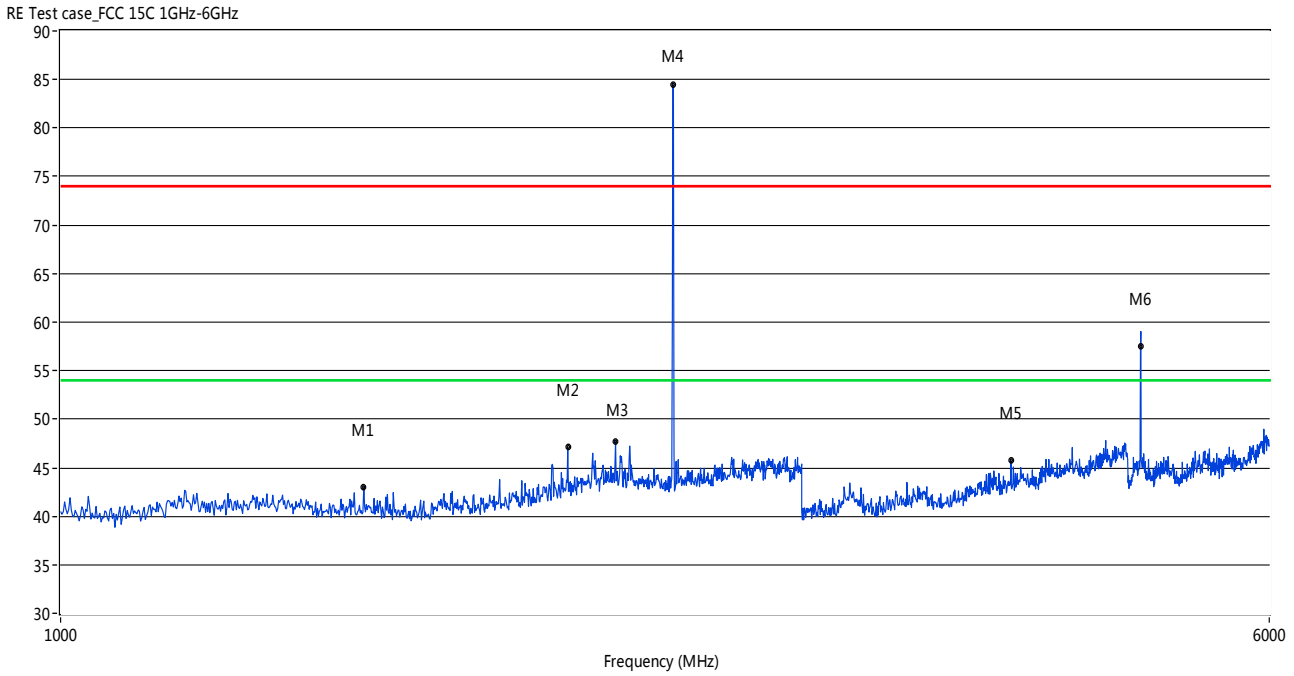
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
6516.64	45.81			74.0	--	54.0	8.19	Vertical	Pass
8852.75	47.69			74.0	--	54.0	6.31	Vertical	Pass
11694.26	51.85			74.0	--	54.0	2.15	Vertical	Pass
13717.14	47.89			74.0	--	54.0	6.11	Vertical	Pass
16233.78	49.41			74.0	--	54.0	4.59	Vertical	Pass
19399.33	50.68			74.0	--	54.0	3.32	Vertical	Pass

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



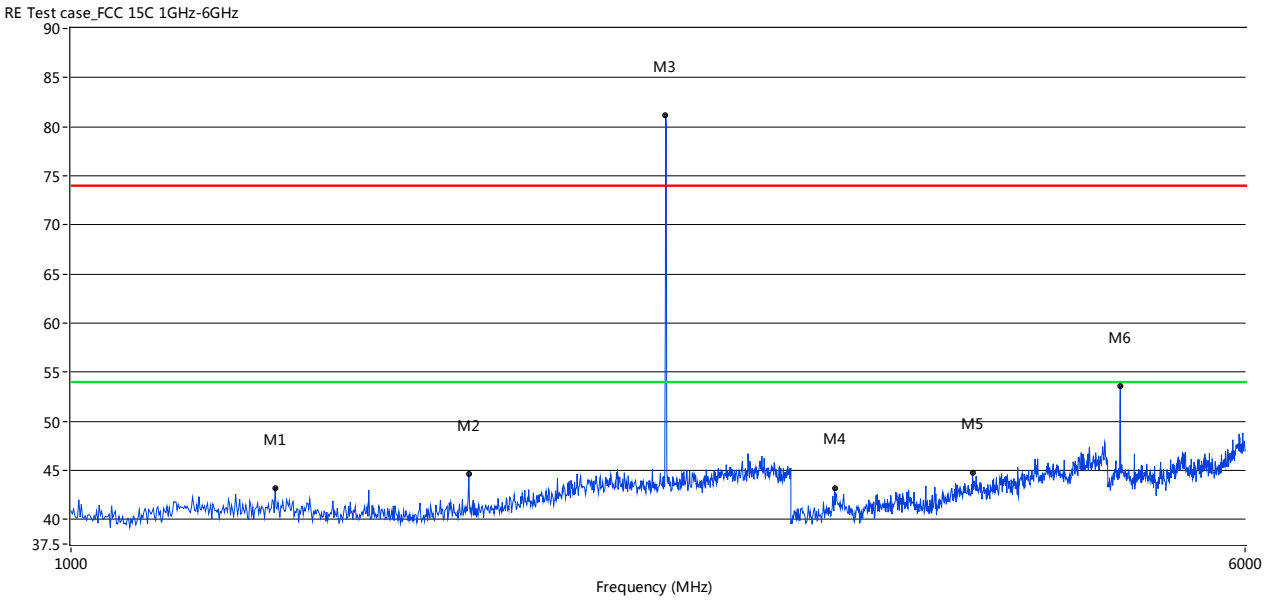
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
6516.64	45.81			74.0	--	54.0	8.19	Horizontal	Pass
8807.82	48.24			74.0	--	54.0	5.76	Horizontal	Pass
11593.18	51.30			74.0	--	54.0	2.70	Horizontal	Pass
13613.15	47.40			74.0	--	54.0	6.60	Horizontal	Pass
16233.78	49.41			74.0	--	54.0	4.59	Horizontal	Pass
19399.33	50.68			74.0	--	54.0	3.32	Horizontal	Pass

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



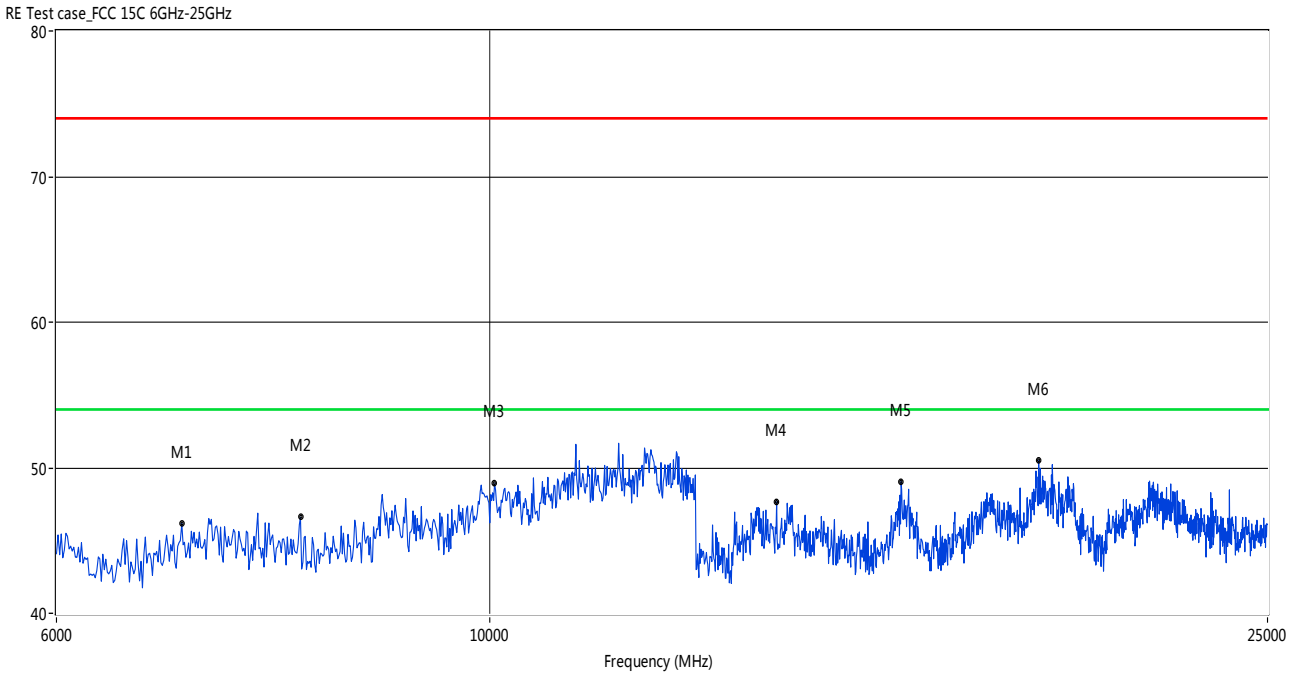
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1567.43	43.04			-4.41	74.0	--	54.0	10.96	247.50	100	Vertical	Pass
2120.88	47.08			-1.74	74.0	--	54.0	6.92	247.50	100	Vertical	Pass
2276.72	47.73			-0.72	74.0	--	54.0	6.27	151.30	100	Vertical	Pass
2478.52	84.50			-0.62	74.0	--	54.0	-30.50	89.30	100	Vertical	N/A
4090.91	45.73			10.20	74.0	--	54.0	8.27	321.50	100	Vertical	Pass
4960.04	59.03		50.50	12.64	74.0	--	54.0	3.50	360.30	100	Vertical	Pass

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



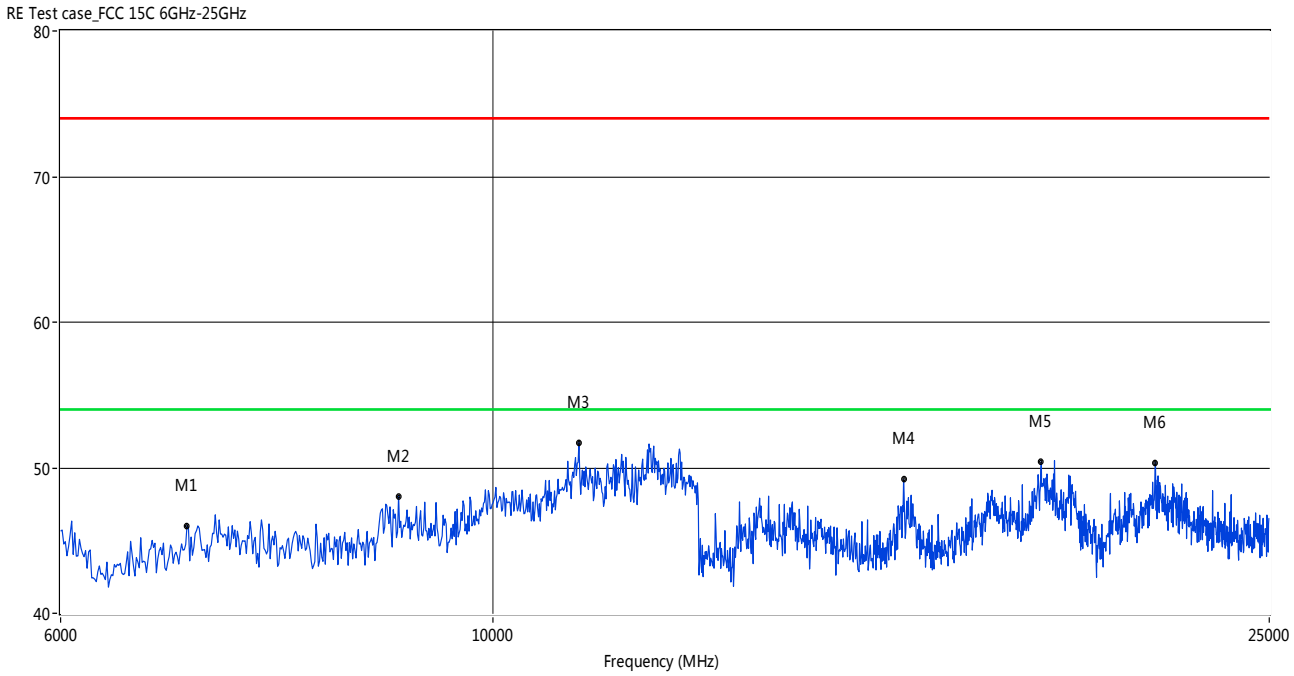
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1365.63	43.19			-4.09	74.0	--	54.0	10.81	336.30	100	Horizontal	Pass
1835.16	44.60			-3.73	74.0	--	54.0	9.40	89.00	100	Horizontal	Pass
2478.52	81.12			-0.62	74.0	--	54.0	-27.12	350.00	100	Horizontal	N/A
3206.79	43.17			8.20	74.0	--	54.0	10.83	243.00	100	Horizontal	Pass
3959.04	44.75			9.82	74.0	--	54.0	9.25	22.10	100	Horizontal	Pass
4960.04	53.57			12.64	74.0	--	54.0	0.43	17.30	100	Horizontal	Pass

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



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
6954.66	46.17			74.0	--	54.0	7.83	Vertical	Pass
7999.17	46.60			74.0	--	54.0	7.40	Vertical	Pass
10054.49	48.90			74.0	--	54.0	5.10	Vertical	Pass
14018.72	47.65			74.0	--	54.0	6.35	Vertical	Pass
16233.78	49.05			74.0	--	54.0	4.95	Vertical	Pass
19089.85	50.48			74.0	--	54.0	3.52	Vertical	Pass

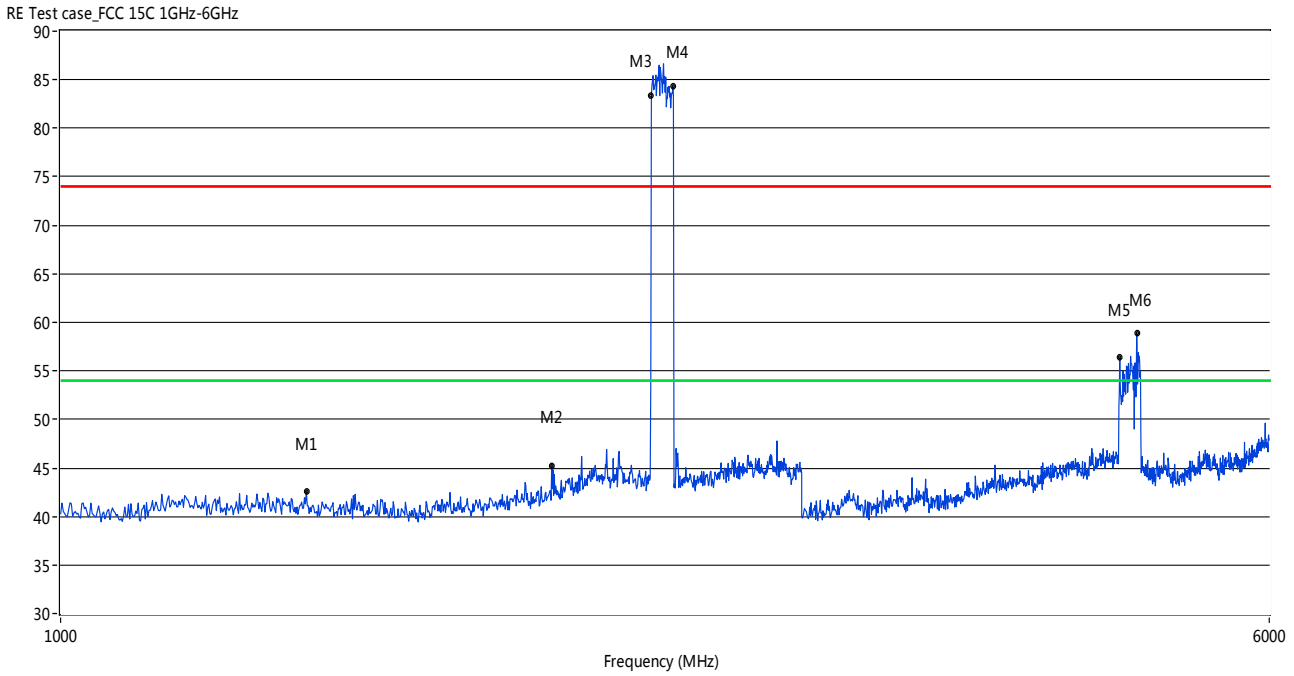
8-DPSK HIGH CHANNEL 6GHz to 25GHz, ANT H



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
6965.89	46.02			74.0	--	54.0	7.98	Horizontal	Pass
8942.60	48.05			74.0	--	54.0	5.95	Horizontal	Pass
11065.31	51.72			74.0	--	54.0	2.28	Horizontal	Pass
16233.78	49.17			74.0	--	54.0	4.83	Horizontal	Pass
19099.83	50.42			74.0	--	54.0	3.58	Horizontal	Pass
21855.24	50.34			74.0	--	54.0	3.66	Horizontal	Pass

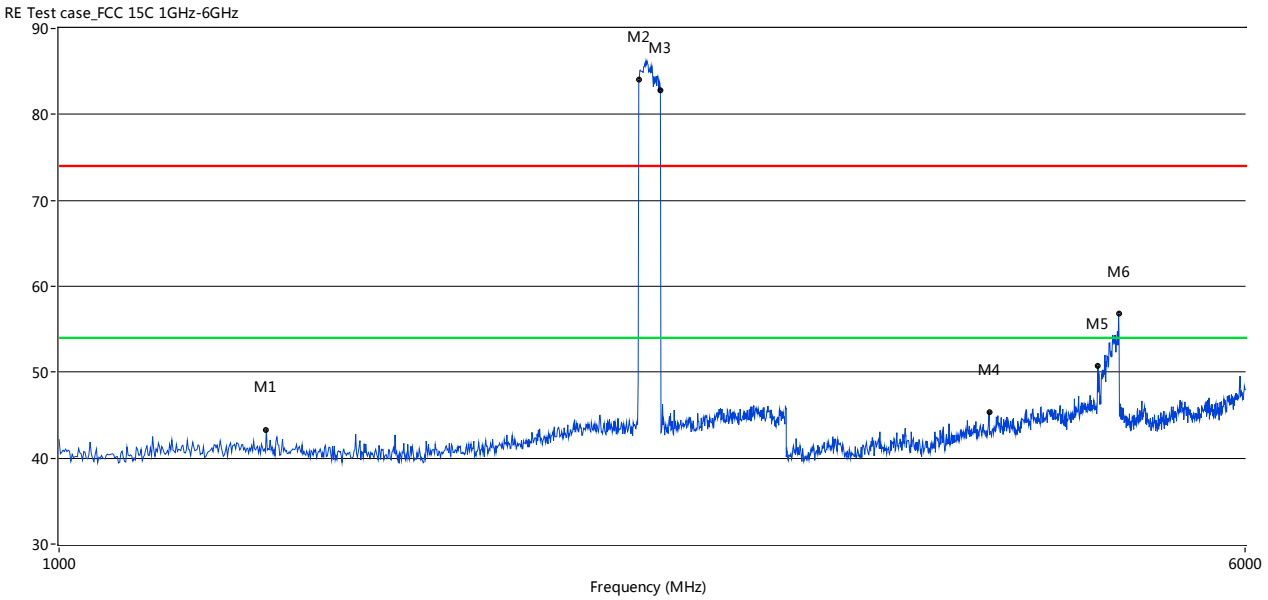
Hopping Mode:

GFSK MODE 1GHz to 6GHz, ANT V



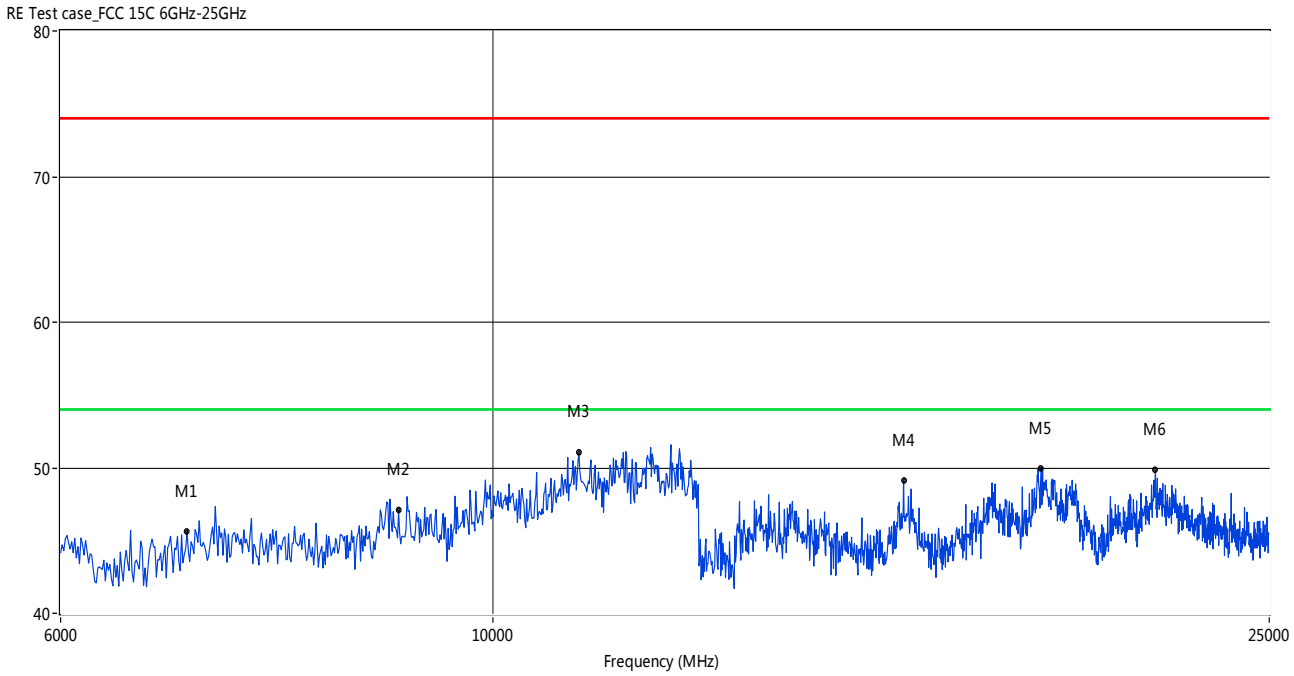
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1439.56	42.57			-4.17	74.0	--	54.0	11.43	103.00	100	Vertical	Pass
2070.93	45.21			-2.24	74.0	--	54.0	8.79	41.50	100	Vertical	Pass
2400.60	83.33			-0.67	74.0	--	54.0	-29.33	89.40	100	Vertical	N/A
2478.52	84.32			-0.62	74.0	--	54.0	-30.32	82.70	100	Vertical	N/A
4807.59	56.76	--	37.18	12.37	74.0	--	54.0	16.82	357.00	200.00	Vertical	Pass
4930.27	59.59	--	36.77	12.59	74.0	--	54.0	14.41	359.80	182.70	Vertical	Pass

GFSK MODE 1GHz to 6GHz, ANT H



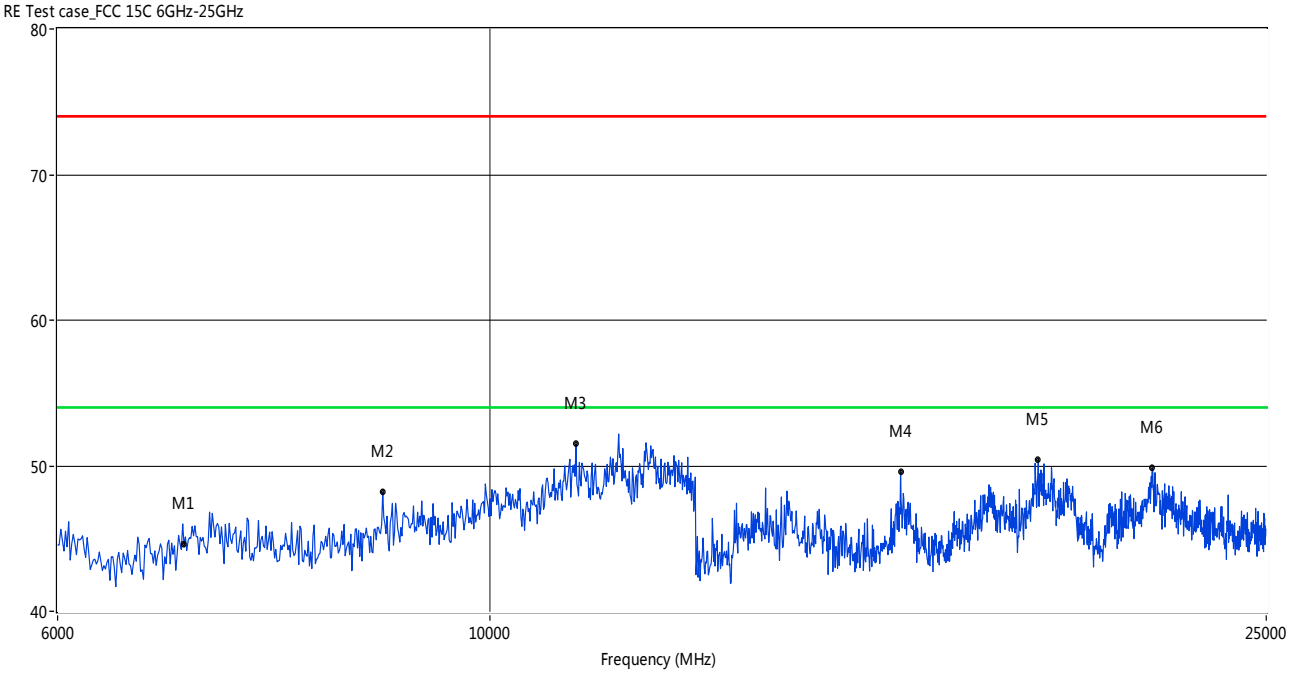
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1367.63	43.33			-4.09	74.0	--	54.0	10.67	324.70	100	Horizontal	Pass
2402.60	84.11			-0.71	74.0	--	54.0	-30.11	324.70	100	Horizontal	N/A
2480.52	82.86			-0.66	74.0	--	54.0	-28.86	345.40	100	Horizontal	N/A
4075.92	45.37			10.19	74.0	--	54.0	8.63	144.70	100	Horizontal	Pass
4804.20	50.71			12.35	74.0	--	54.0	3.29	12.70	100	Horizontal	Pass
4957.54	56.79	--	36.54	12.65	74.0	--	54.0	17.21	8.50	182.80	Horizontal	Pass

GFSK MODE 6GHz to 25GHz, ANT V



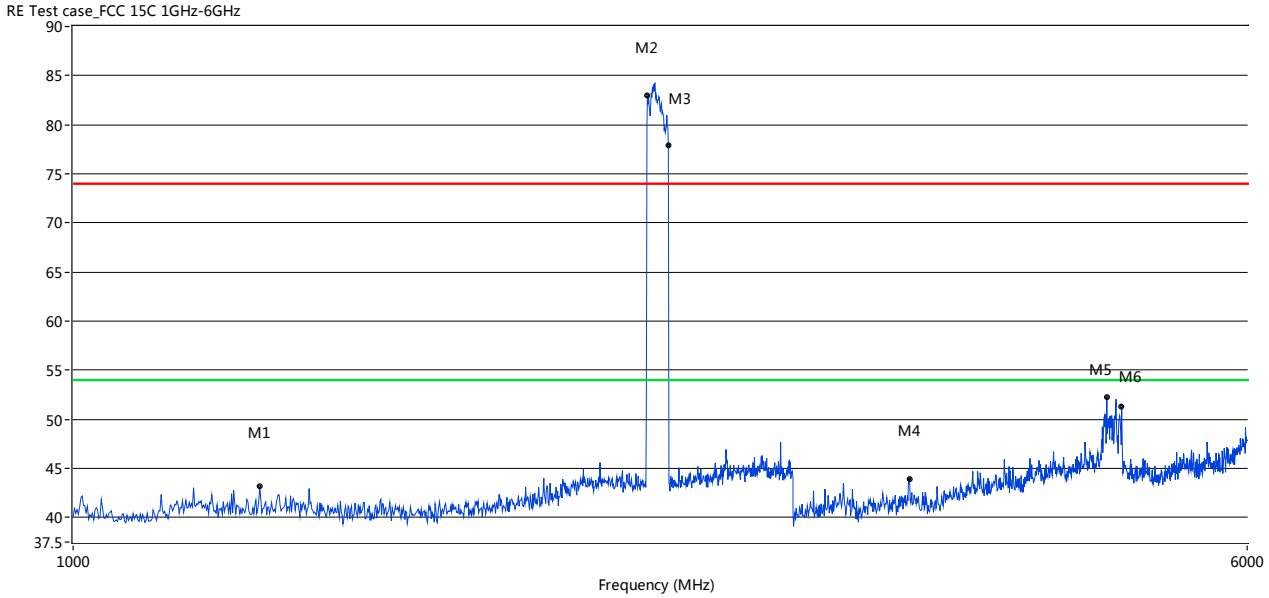
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
6965.89	46.02			74.0	--	54.0	7.98	Vertical	Pass
8942.60	48.05			74.0	--	54.0	5.95	Vertical	Pass
11065.31	51.72			74.0	--	54.0	2.28	Vertical	Pass
16233.78	49.17			74.0	--	54.0	4.83	Vertical	Pass
19099.83	50.42			74.0	--	54.0	3.58	Vertical	Pass
21855.24	50.34			74.0	--	54.0	3.66	Vertical	Pass

GFSK MODE 6GHz to 25GHz, ANT H



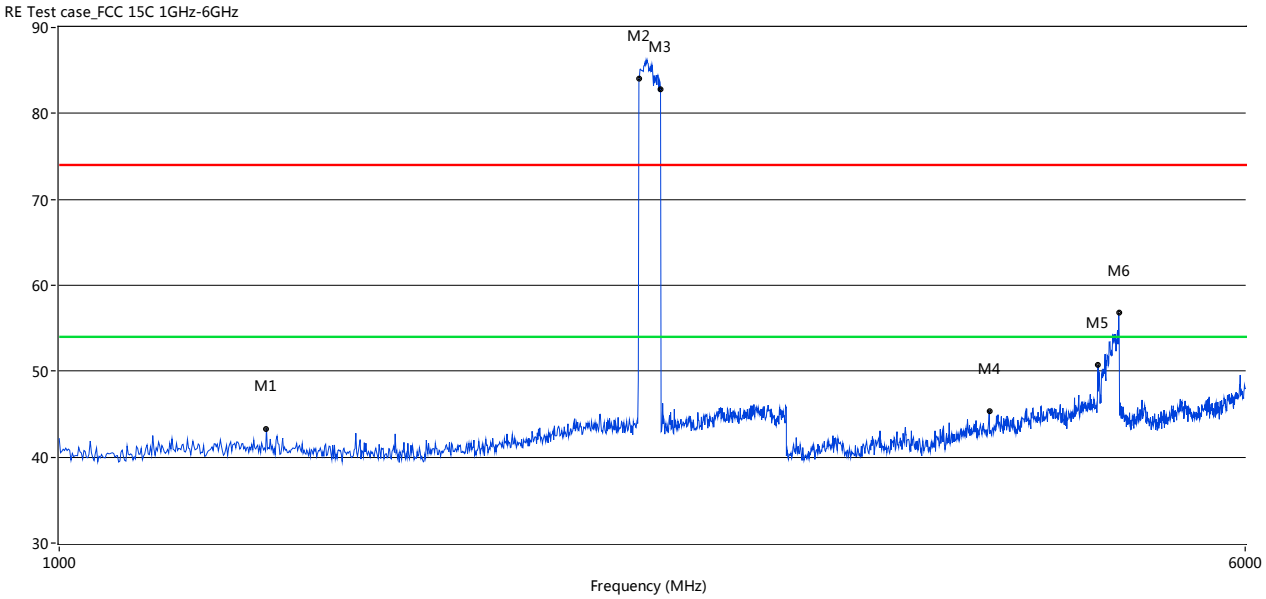
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
6965.89	46.02			74.0	--	54.0	7.98	Horizontal	Pass
8807.82	48.18			74.0	--	54.0	5.82	Horizontal	Pass
11065.31	51.72			74.0	--	54.0	2.28	Horizontal	Pass
16233.78	49.17			74.0	--	54.0	4.83	Horizontal	Pass
19099.83	50.42			74.0	--	54.0	3.58	Horizontal	Pass
21855.24	50.34			74.0	--	54.0	3.66	Horizontal	Pass

∏/4-DQPSK MODE 1GHz to 6GHz, ANT V



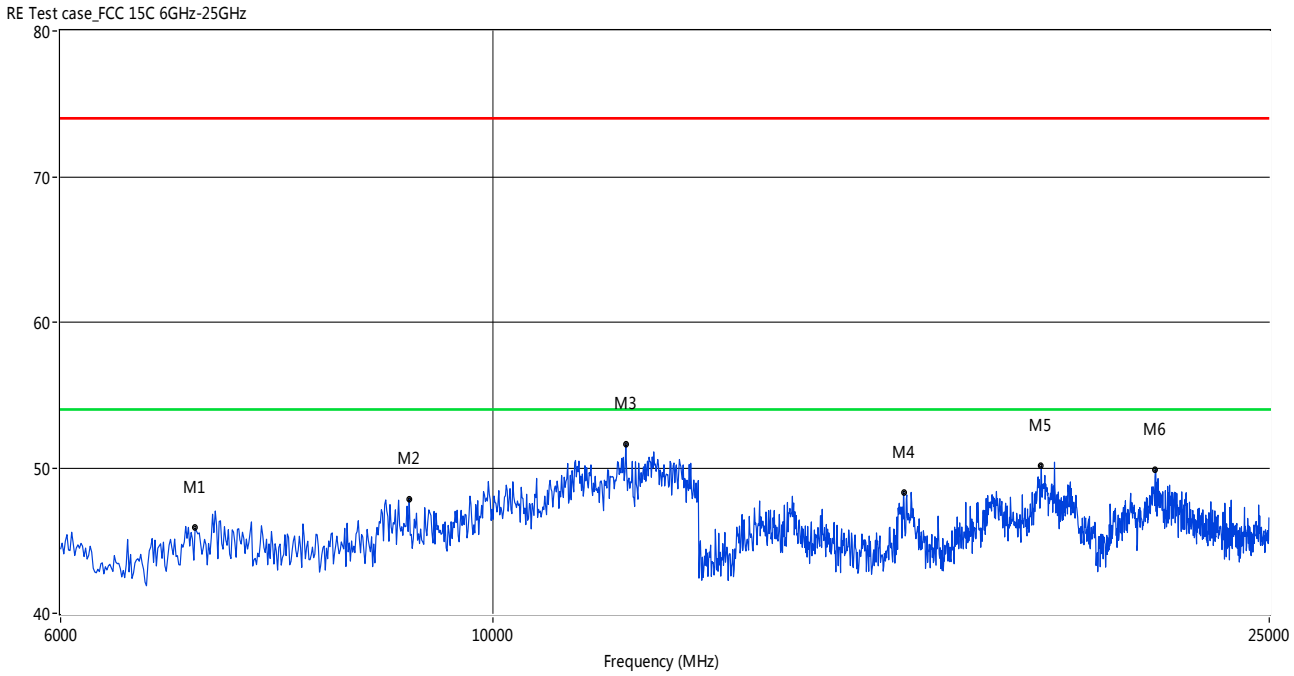
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1329.67	43.13			-4.10	4.0	--	54.0	10.87	346.10	100	Vertical	Pass
2402.60	82.95			-0.71	74.0	--	54.0	-28.95	318.40	100	Vertical	N/A
2480.52	77.89			-0.66	74.0	--	54.0	-23.89	50.10	100	Vertical	N/A
3584.42	43.94			8.90	74.0	--	54.0	10.06	273.80	100	Vertical	Pass
4843.16	52.23			13.03	74.0	--	54.0	1.77	0.30	100	Vertical	Pass
4954.05	51.27			12.66	74.0	--	54.0	2.73	355.90	100	Vertical	Pass

∏/4-DQPSK MODE 1GHz to 6GHz, ANT H



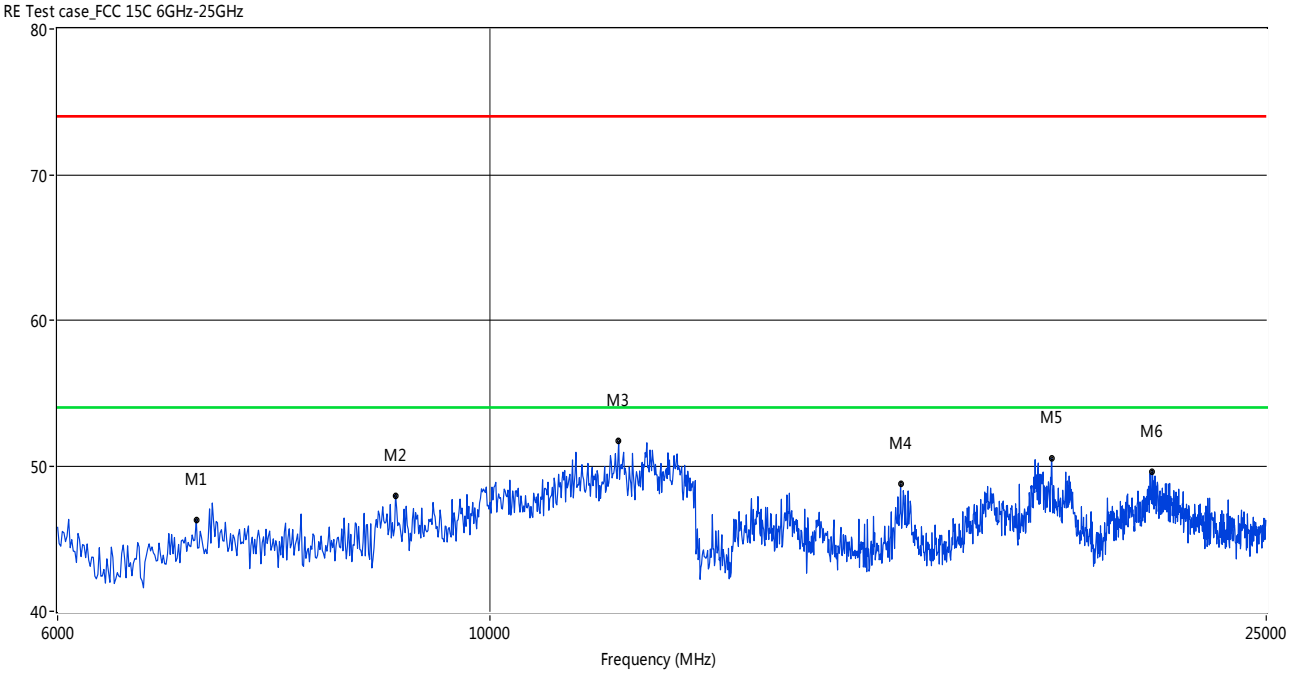
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1367.63	43.65			-4.09	4.0	--	54.0	10.35	256.20	100	Horizontal	Pass
2402.60	84.53			-0.71	74.0	--	54.0	-30.53	125.60	100	Horizontal	N/A
2480.52	82.15			-0.66	74.0	--	54.0	-28.15	268.20	100	Horizontal	N/A
4075.92	45.66			10.19	74.0	--	54.0	8.34	146.50	100	Horizontal	Pass
4804.56	50.43			12.35	74.0	--	54.0	3.57	49.80	100	Horizontal	Pass
4957.25	56.79	--	46.62	12.65	74.0	--	54.0	7.38	112.60	100	Horizontal	Pass

∏/4-DQPSK MODE 6GHz to 25GHz, ANT V



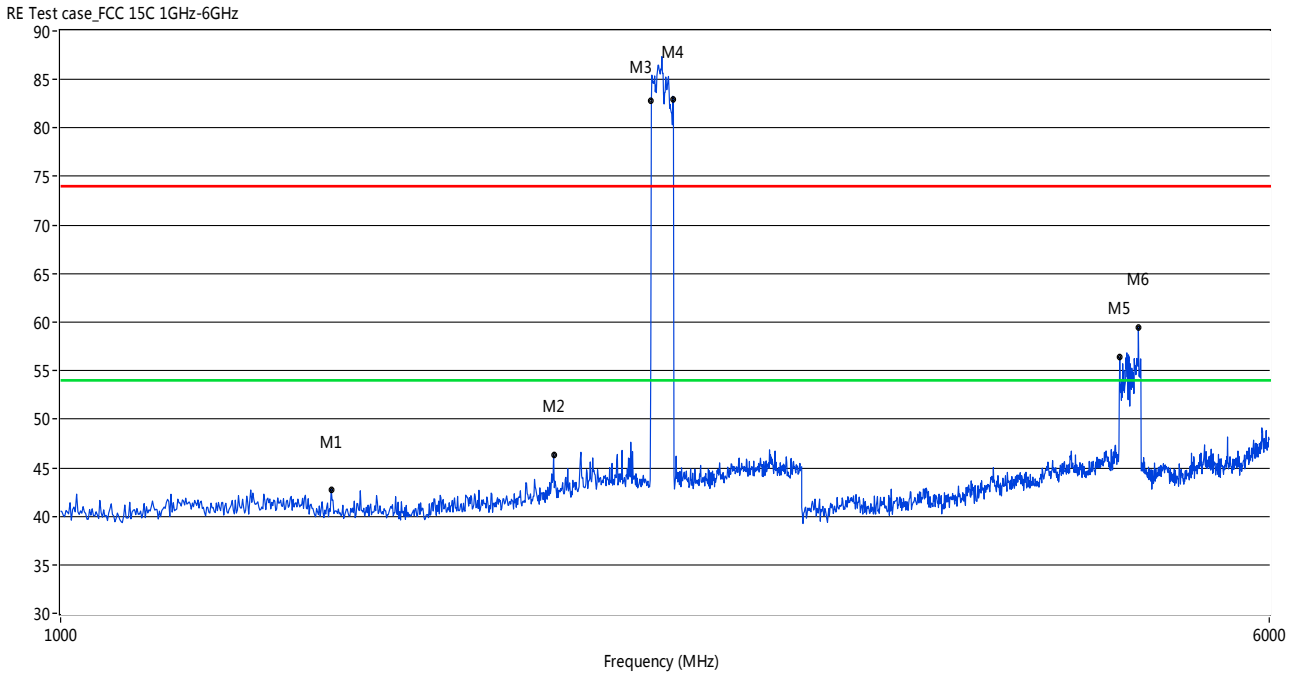
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
7033.28	46.25			74.0	--	54.0	7.75	Vertical	ASS
9054.91	47.50			74.0	-	4.0	6.50	Vertical	Pass
11694.26	51.61			74.0	--	54.0	2.39	Vertical	Pass
16233.78	49.17			74.0	--	54.0	4.83	Vertical	Pass
19099.83	50.12			74.0	--	54.0	3.88	Vertical	Pass
21855.24	50.34			74.0	--	54.0	3.66	Vertical	Pass

∏/4-DQPSK MODE 6GHz to 25GHz, ANT H



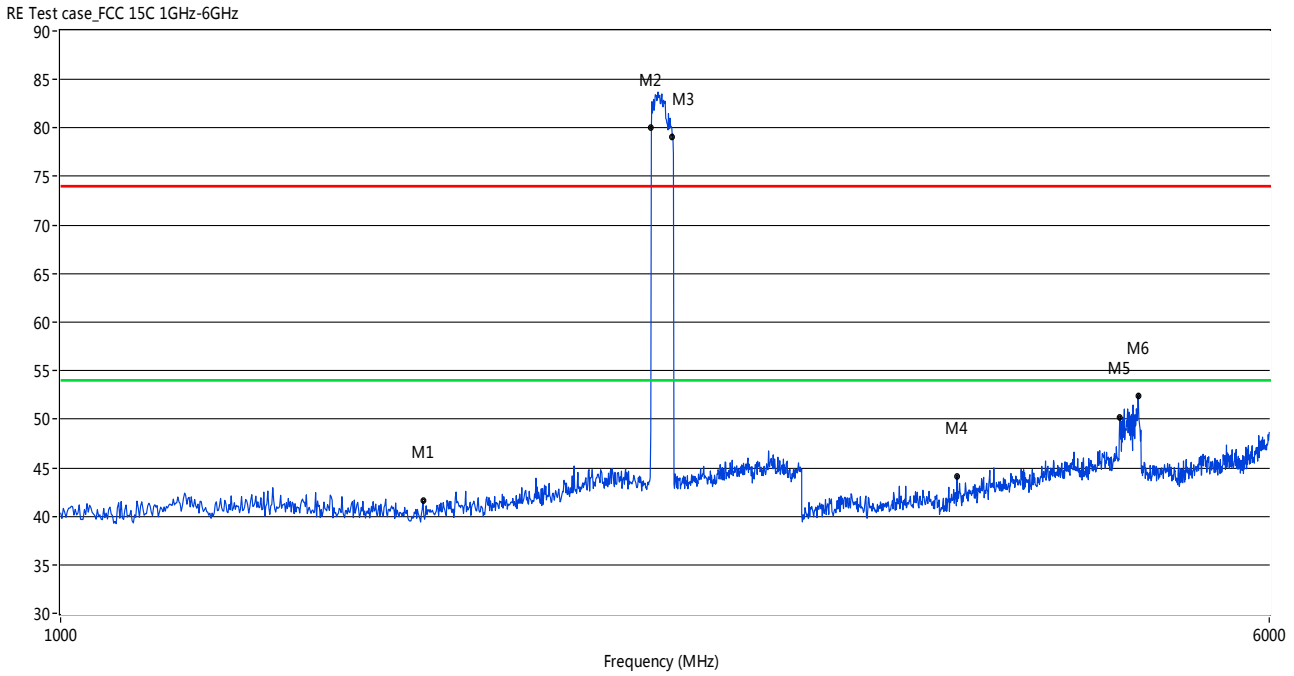
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
7066.97	46.29			74.0	--	54.0	7.71	Horizonta	Pass
8942.60	47.95			74.0	--	54.0	6.05	Horizontal	Pass
11638.10	51.68			74.0	--	54.0	2.32	Horizontal	Pass
16233.78	49.17			74.0	--	54.0	4.83	Horizontal	Pass
19399.33	50.48			74.0	--	54.0	3.52	Horizontal	Pass
21855.24	50.34			74.0	--	54.0	3.66	Horizontal	Pass

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



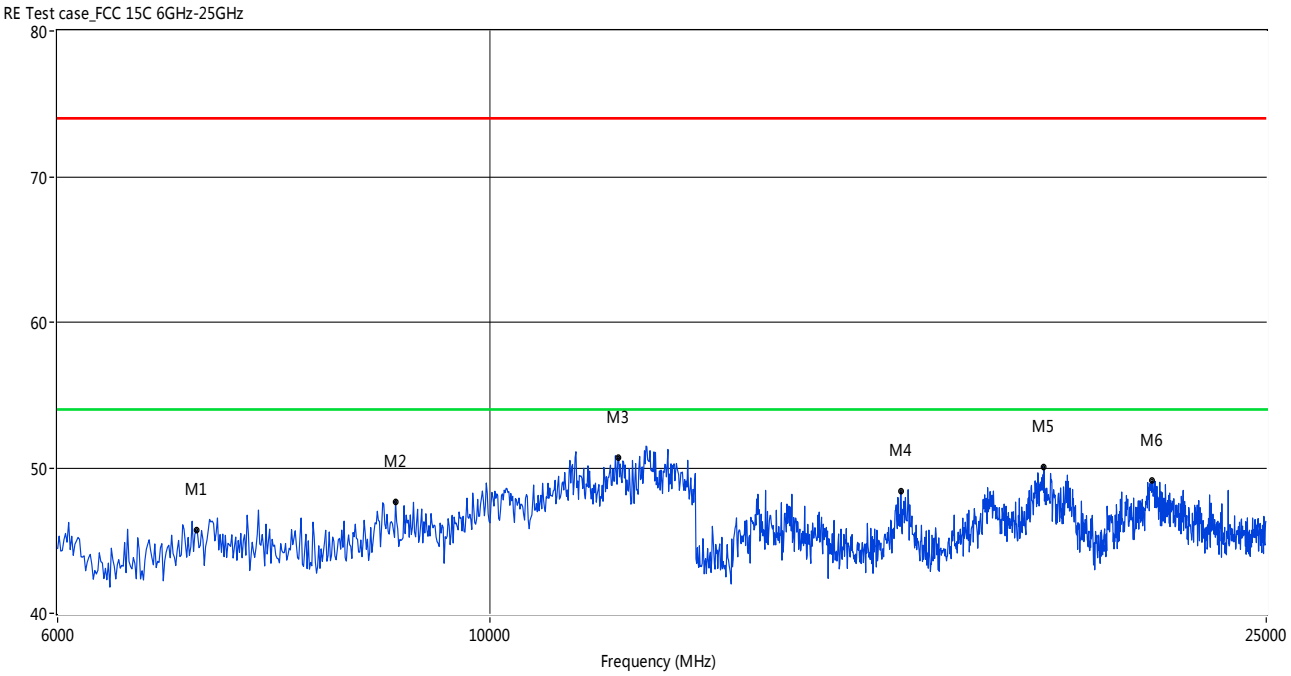
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1493.51	42.76			-4.18	74.0	--	54.0	11.24	119.40	100	Vertical	Pass
2076.92	46.36			-2.13	74.0	--	54.0	7.64	166.20	100	Vertical	Pass
2400.60	82.77			-0.67	74.0	--	54.0	-28.77	92.50	100	Vertical	N/A
2480.52	82.89			-0.66	74.0	--	54.0	-28.89	92.50	100	Vertical	N/A
4807.49	56.51	--	37.18	12.37	74.0	--	54.0	16.82	-0.00	182.40	Vertical	Pass
4942.06	59.42	--	36.94	12.48	74.0	--	54.0	14.58	0.30	197.20	Vertical	Pass

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



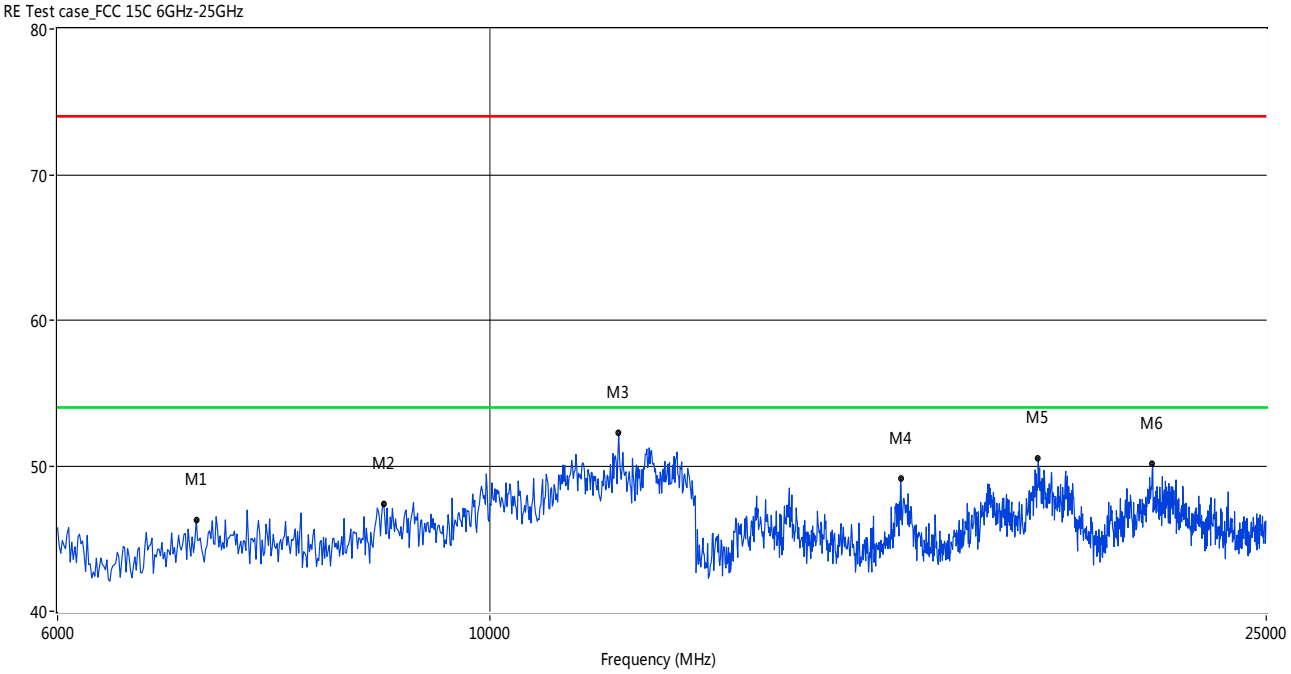
Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	Factor (dB)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)	ANT	Verdict
1711.29	41.55			-4.11	74.0	--	54.0	12.45	359.80	100	Horizontal	Pass
2400.60	80.10			-0.67	74.0	--	54.0	-26.10	359.30	100	Horizontal	N/A
2476.52	79.09			-0.57	74.0	--	54.0	-25.09	341.00	100	Horizontal	N/A
3776.22	44.15			9.29	74.0	--	54.0	9.85	264.70	100	Horizontal	Pass
4807.19	50.20			12.37	74.0	--	54.0	3.80	2.80	100	Horizontal	Pass
4939.06	52.46			12.46	74.0	--	54.0	1.54	10.80	100	Horizontal	Pass

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



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
7066.97	46.29			74.0	--	54.0	7.71	Vertical	Pass
8942.60	47.95			74.0	--	54.0	6.05	Vertical	Pass
11638.10	51.68			74.0	--	54.0	2.32	Vertical	Pass
16233.78	49.17			74.0	--	54.0	4.83	Vertical	Pass
19229.62	50.07			74.0	--	54.0	3.93	Vertical	Pass
21855.24	50.34			74.0	--	54.0	3.66	Vertical	Pass

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



Frequency (MHz)	Peak Level (dBuV/m)	Q-peak Level (dBuV/m)	Average Level (dBuV/m)	PK Limit (dBuV/m)	QP Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Table (o)	Height (cm)
7066.97	46.29			74.0	--	54.0	7.71	Horizontal	Pass
8819.05	47.38			74.0	--	54.0	6.62	Horizontal	Pass
11638.10	51.68			74.0	--	54.0	2.32	Horizontal	Pass
16233.78	49.17			74.0	--	54.0	4.83	Horizontal	Pass
19099.83	50.54			74.0	--	54.0	3.46	Horizontal	Pass
21855.24	50.34			74.0	--	54.0	3.66	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.

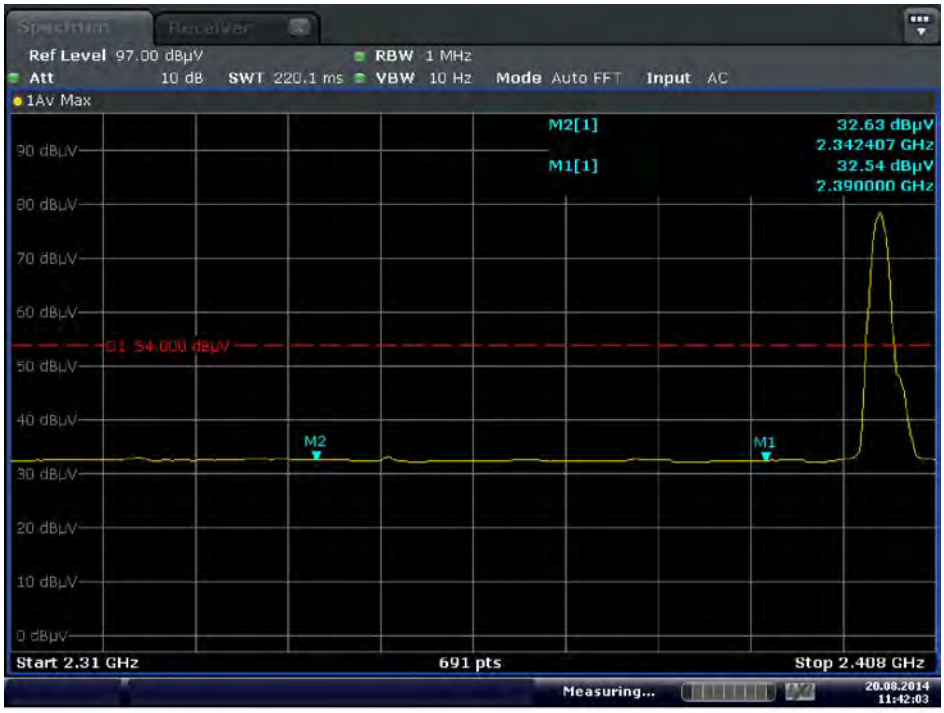
The test data all are tested in the vertical and horizontal antenna which the trace is max hold. So these plots have show the worst case.

Test Plots

GFSK LOW CHANNEL , PEAK

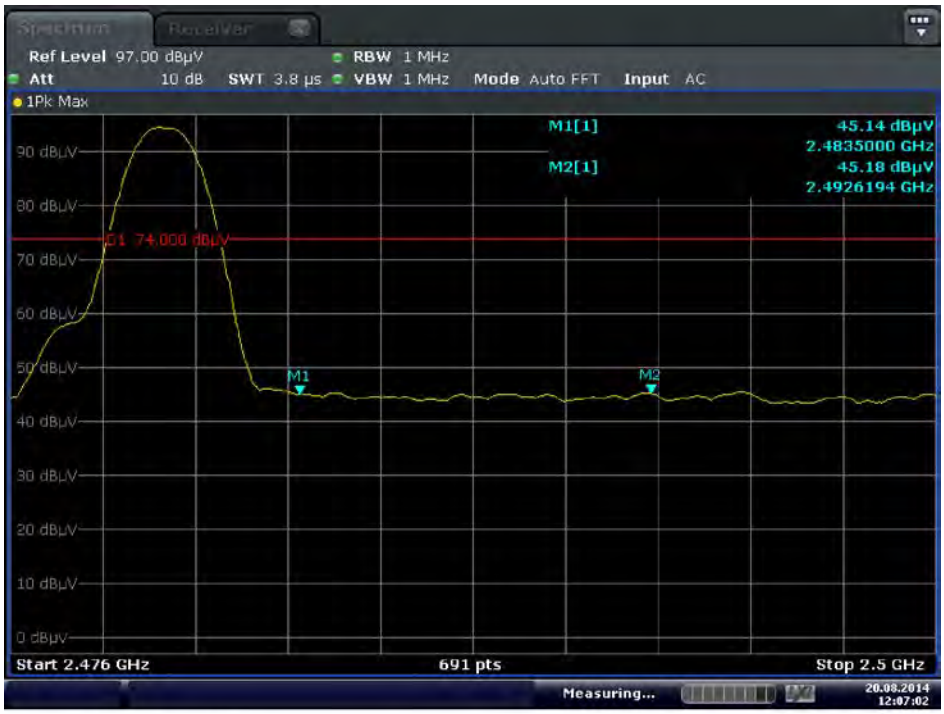
Date: 20.AUG.2014 11:26:24

GFSK LOW CHANNEL , AVERAGE



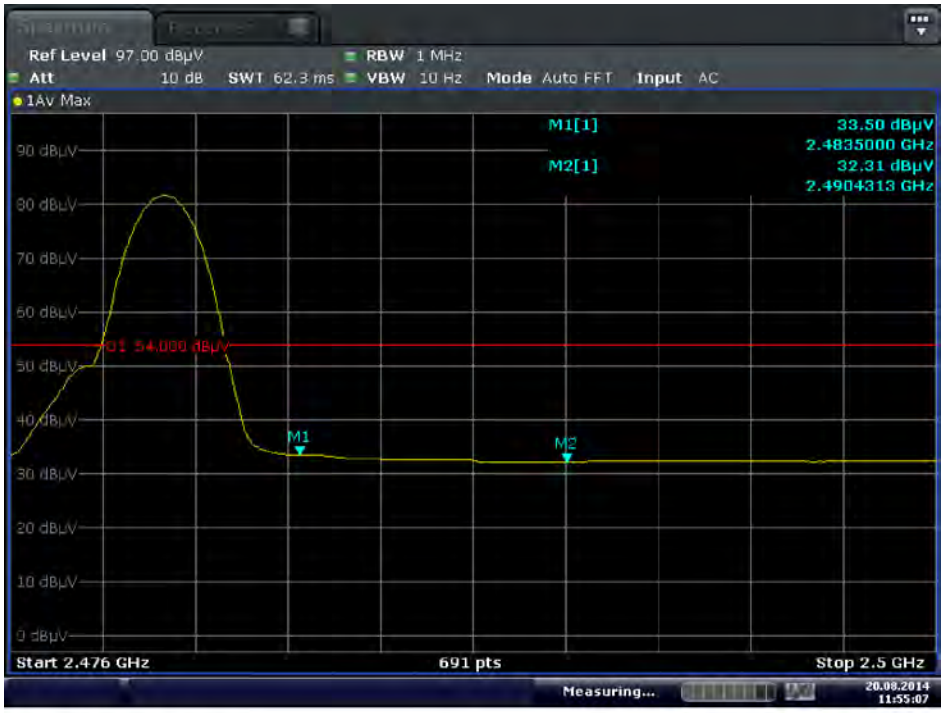
Date: 20.AUG.2014 11:42:03

GFSK HIGH CHANNEL , PEAK



Date: 20.AUG.2014 12:07:02

GFSK HIGH CHANNEL , AVERAGE

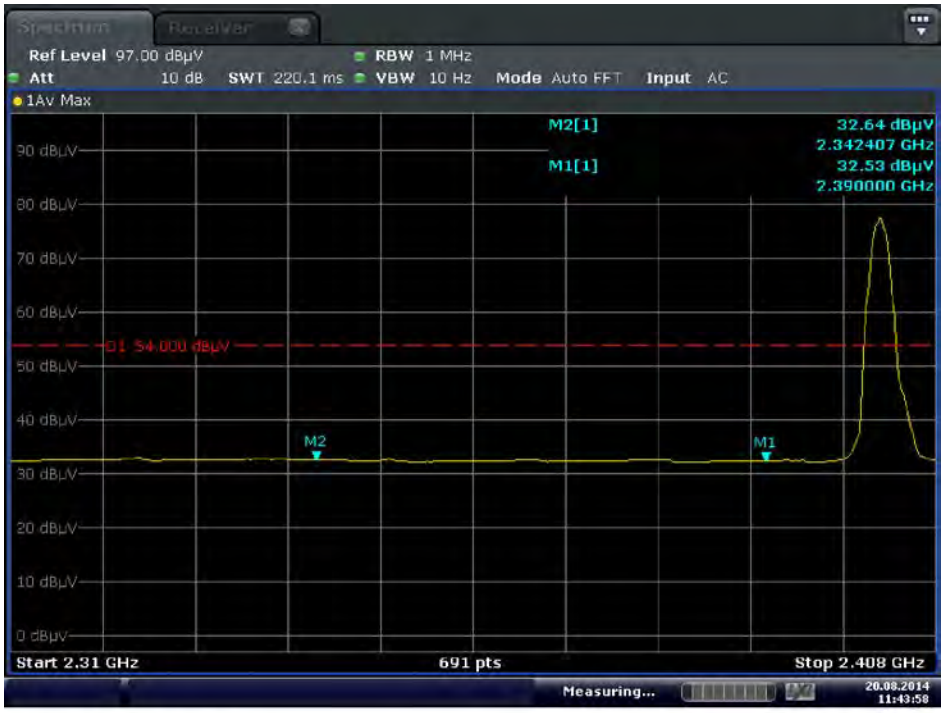


Date: 20.AUG.2014 11:55:07

π/4DQPSK LOW CHANNEL , PEAK

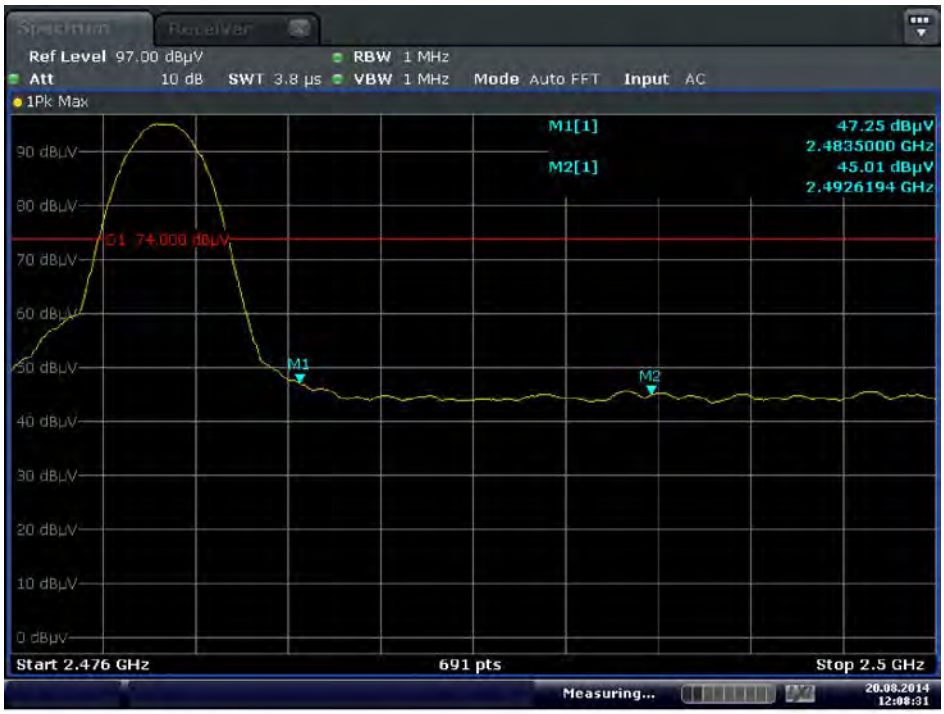
Date: 20.AUG.2014 11:37:25

π/4DQPSK LOW CHANNEL , AVERAGE



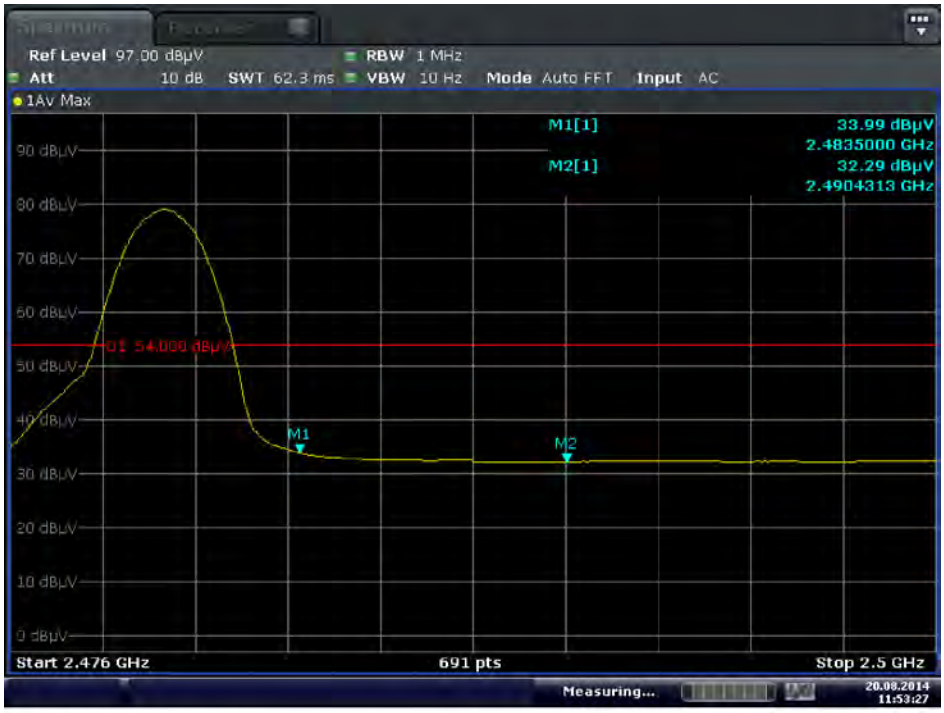
Date: 20.AUG.2014 11:43:58

π/4DQPSK HIGH CHANNEL , PEAK



Date: 20.AUG.2014 12:08:31

π/4DQPSK HIGH CHANNEL , AVERAGE



Date: 20.AUG.2014 11:53:27

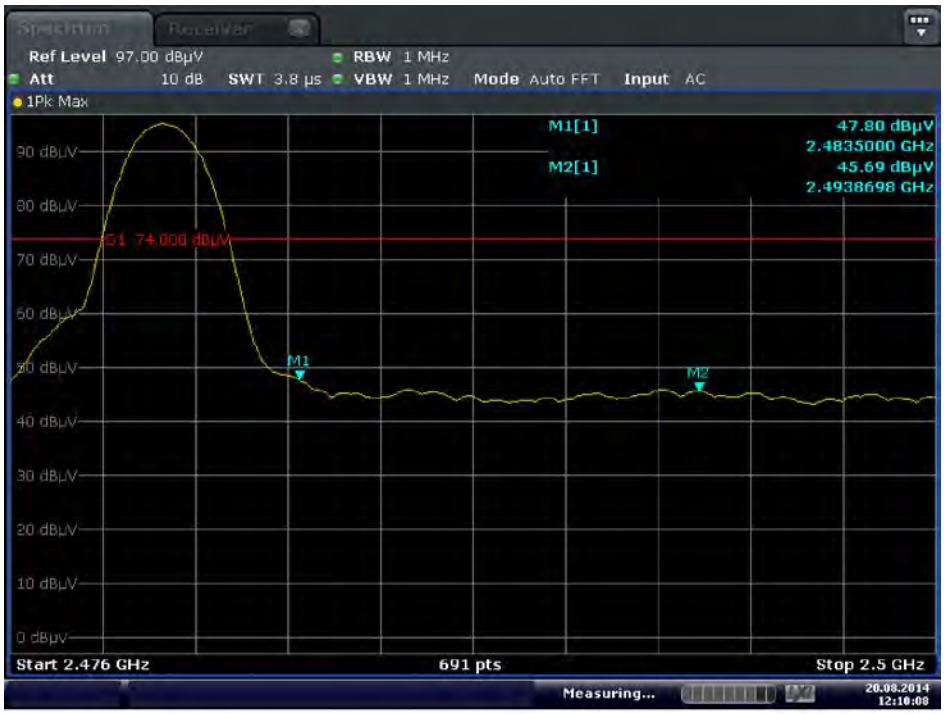
8-DPSK LOW CHANNEL , PEAK

Date: 20.AUG.2014 11:34:45

8-DPSK LOW CHANNEL , AVERAGE

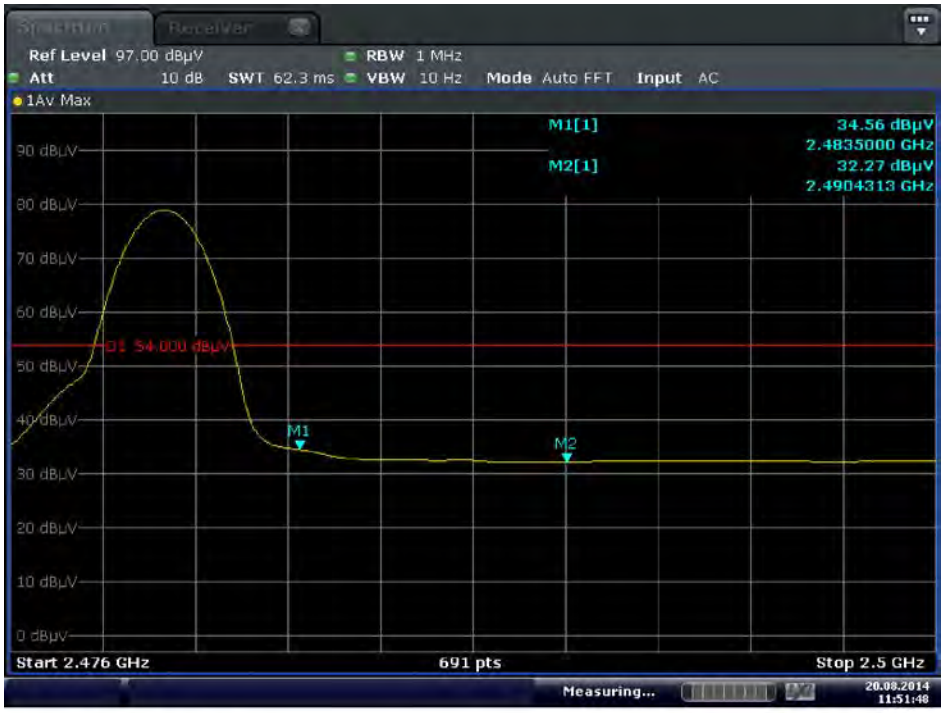
Date: 20.AUG.2014 11:45:59

8-DPSK HIGH CHANNEL , PEAK



Date: 20.AUG.2014 12:10:08

8-DPSK HIGH CHANNEL , AVERAGE



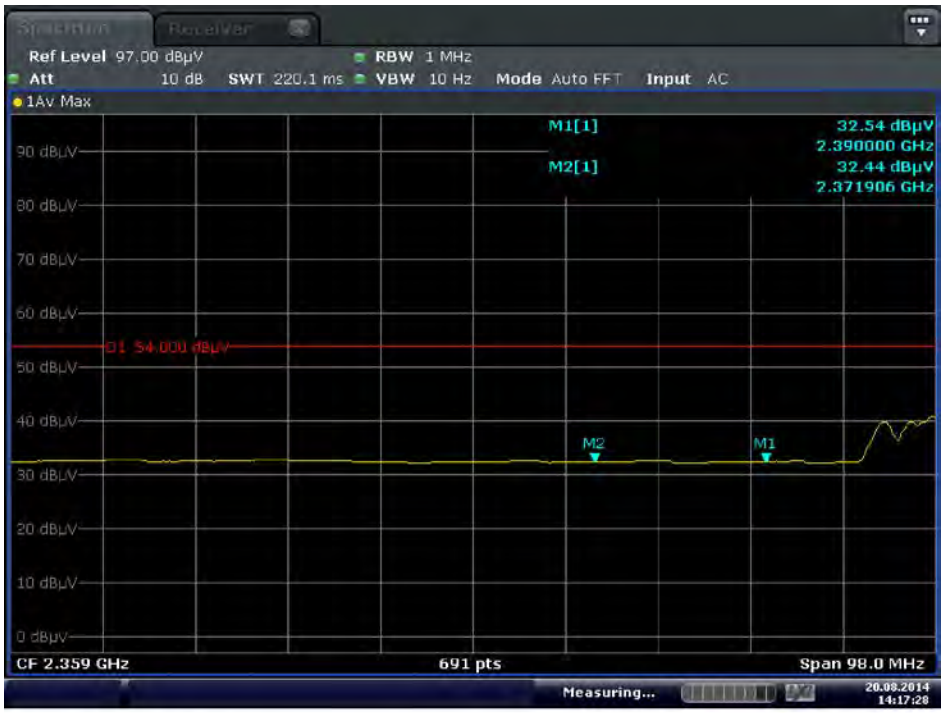
Date: 20.AUG.2014 11:51:48

Hopping Mode:

GFSK LOW FREQUENCY BAND, PEAK

Date: 20.AUG.2014 14:01:27

GFSK LOW FREQUENCY BAND, AVERAGE



Date: 20.AUG.2014 14:17:28

GFSK HIGH FREQUENCY BAND, PEAK

Date: 20.AUG.2014 13:58:08

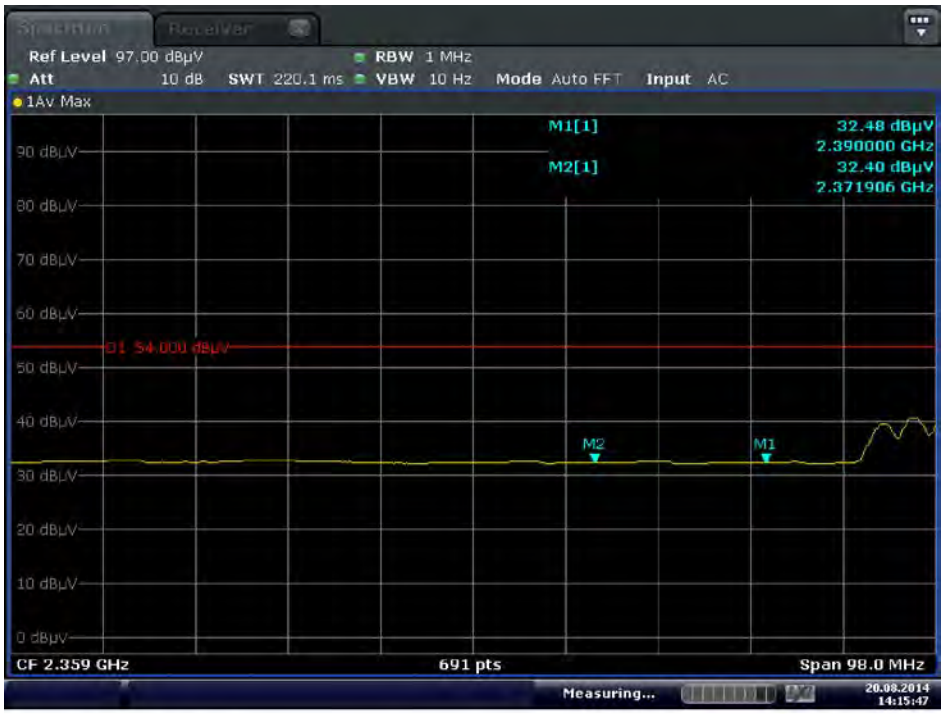
GFSK HIGH FREQUENCY BAND, AVERAGE

Date: 20.AUG.2014 14:19:59

π/4DQPSK LOW FREQUENCY BAND, PEAK

Date: 20.AUG.2014 14:04:01

π/4DQPSK LOW FREQUENCY BAND, AVERAGE



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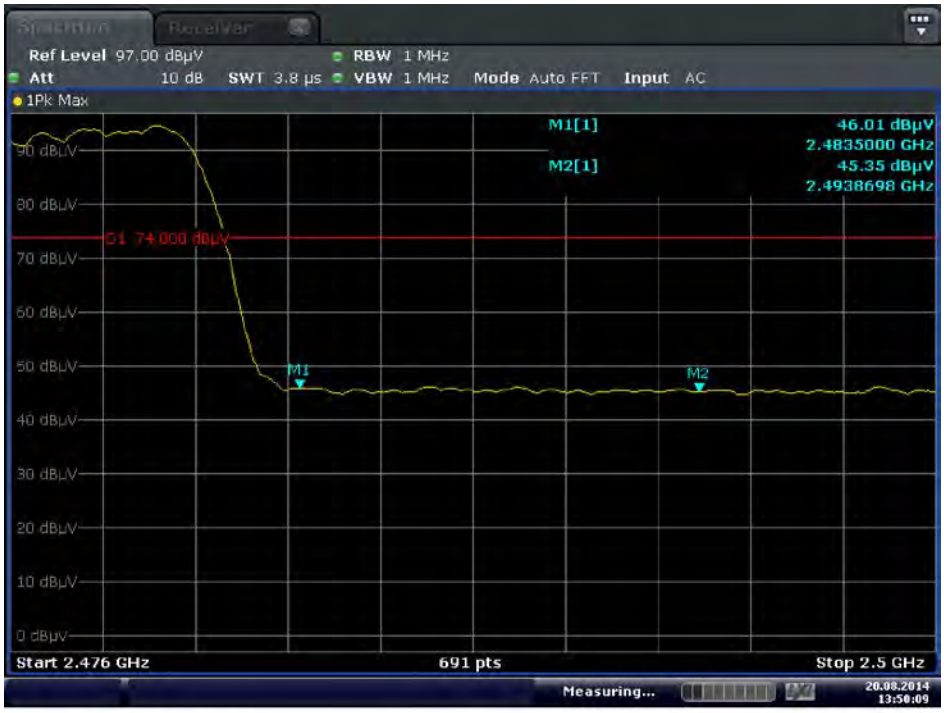
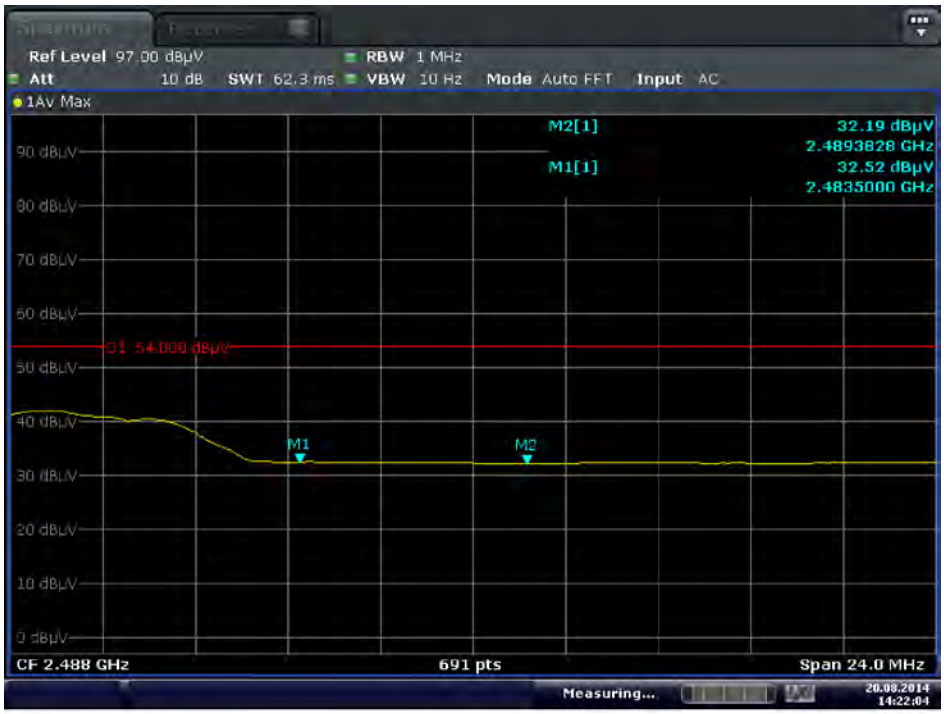
π/4DQPSK HIGH FREQUENCY BAND, PEAK



Date: 20.AUG.2014 13:50:09

π/4DQPSK HIGH FREQUENCY BAND, AVERAGE

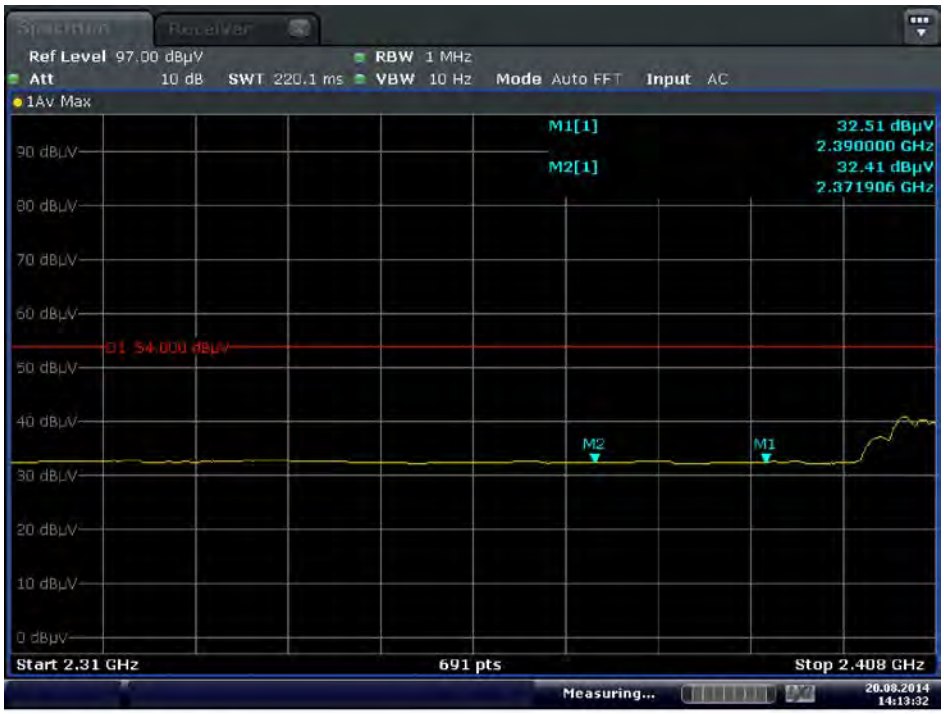


Date: 20.AUG.2014 14:22:04

8-DPSK LOW FREQUENCY BAND, PEAK

Date: 20.AUG.2014 14:06:07

8-DPSK LOW FREQUENCY BAND, AVERAGE



Date: 20.AUG.2014 14:13:32

8-DPSK HIGH FREQUENCY BAND, PEAK

Date: 20.AUG.2014 13:44:36

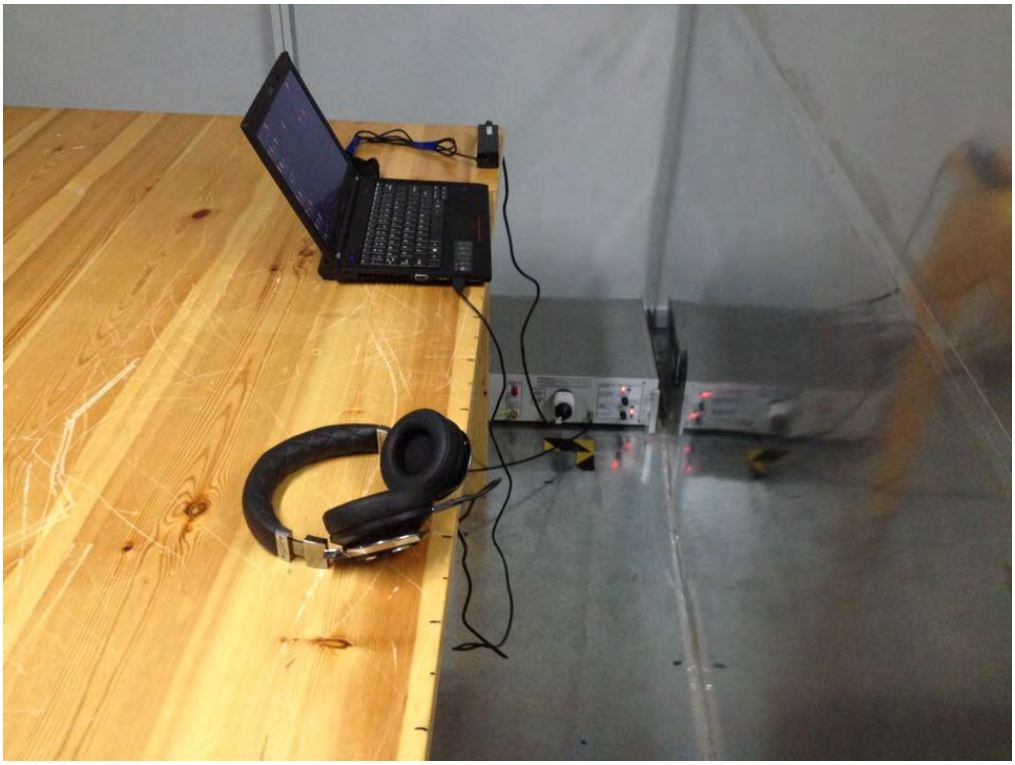
8-DPSK HIGH FREQUENCY BAND, AVERAGE

Date: 20.AUG.2014 14:24:54

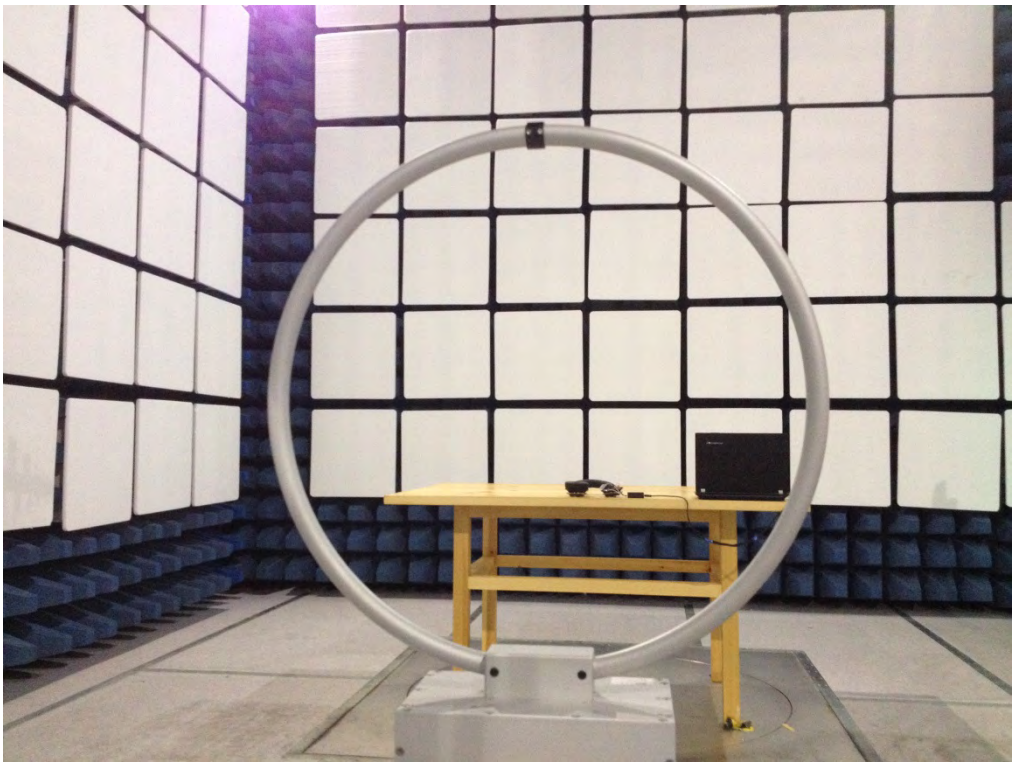
ANNEX B TEST SETUP PHOTOS

B.1 Conducted Test Photo

B.2 Conducted Emissions Test Photo

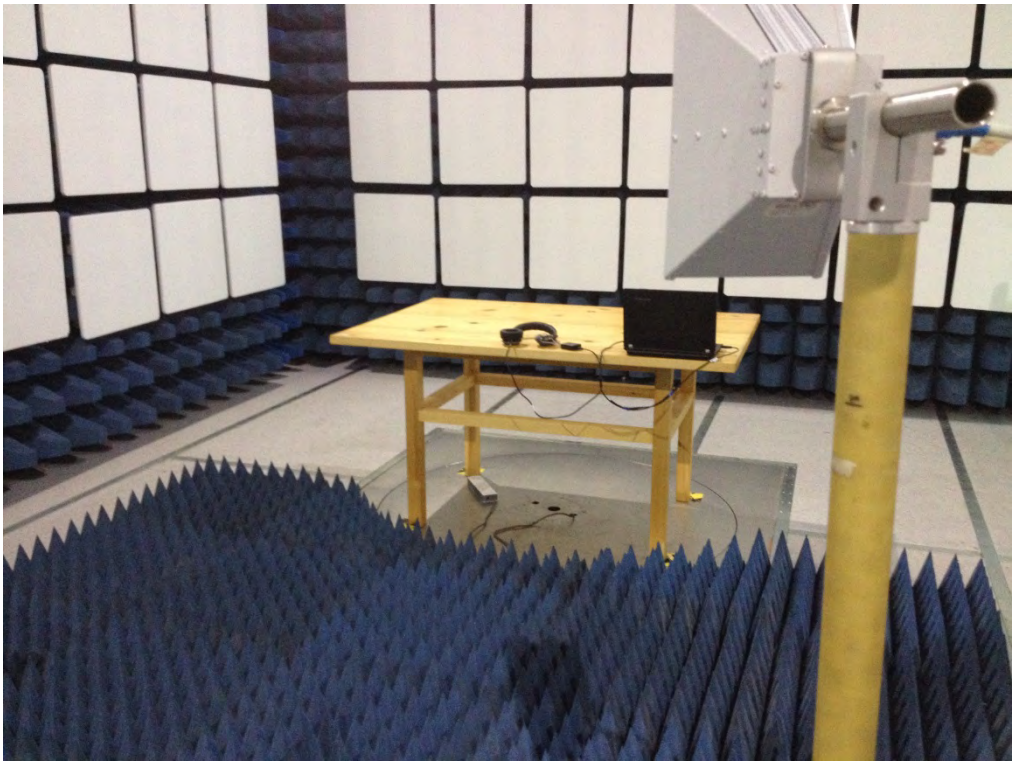


B.3 Radiated Test Photo



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

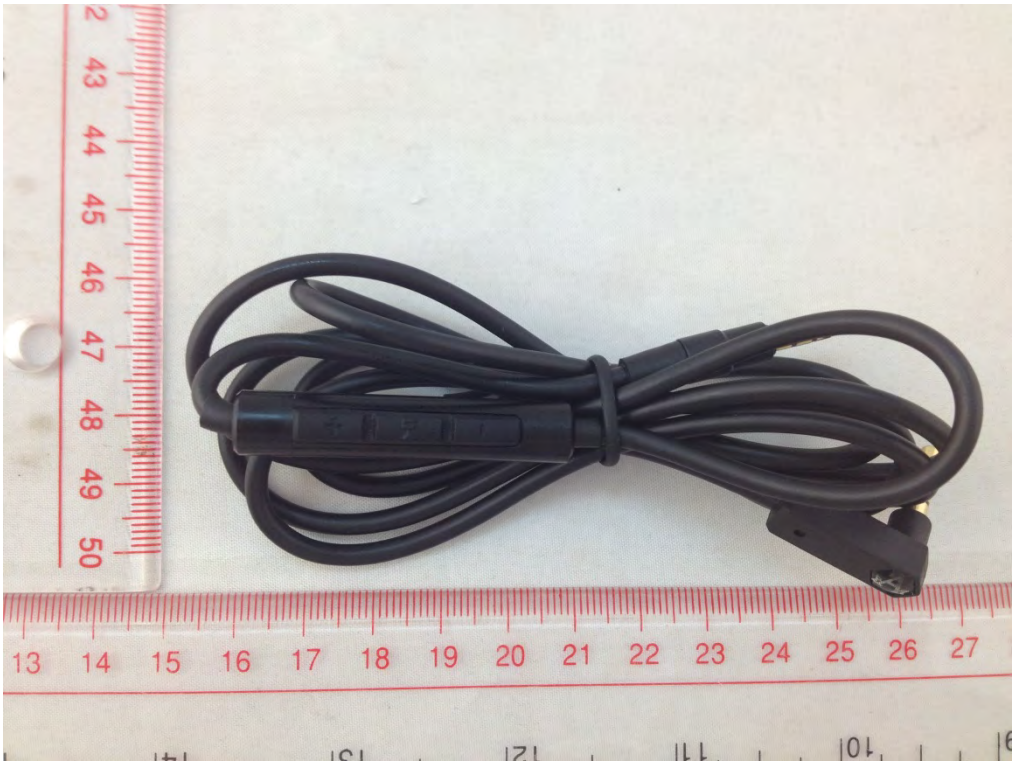
THE DOWN OF EUT

THE UP OF EUT

THE LEFT OF EUT

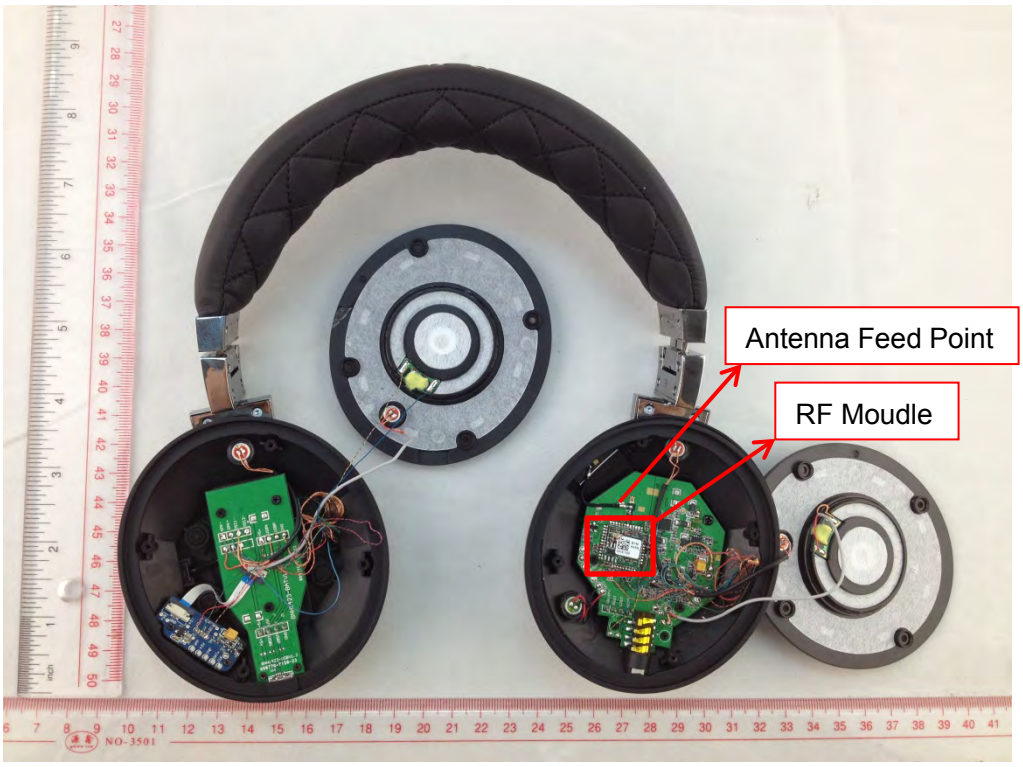
THE RIGHT OF EUT

AUDIO PHOTO

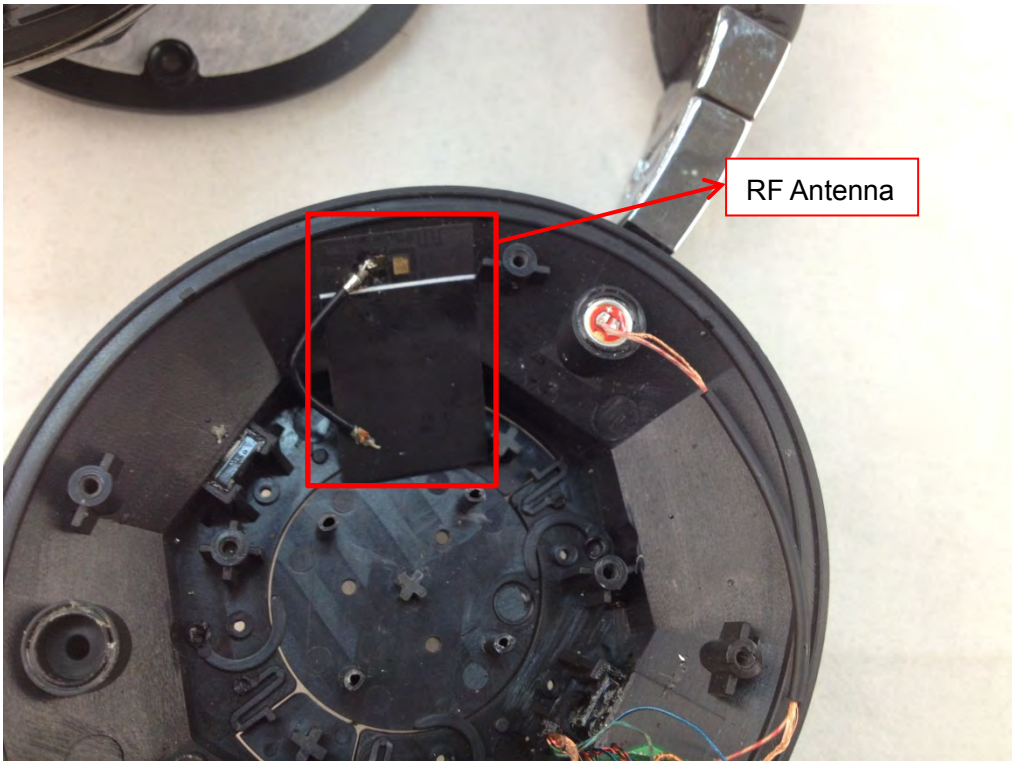


AUDIO (CONTROL) PHOTO

C.2 Inside of the EUT

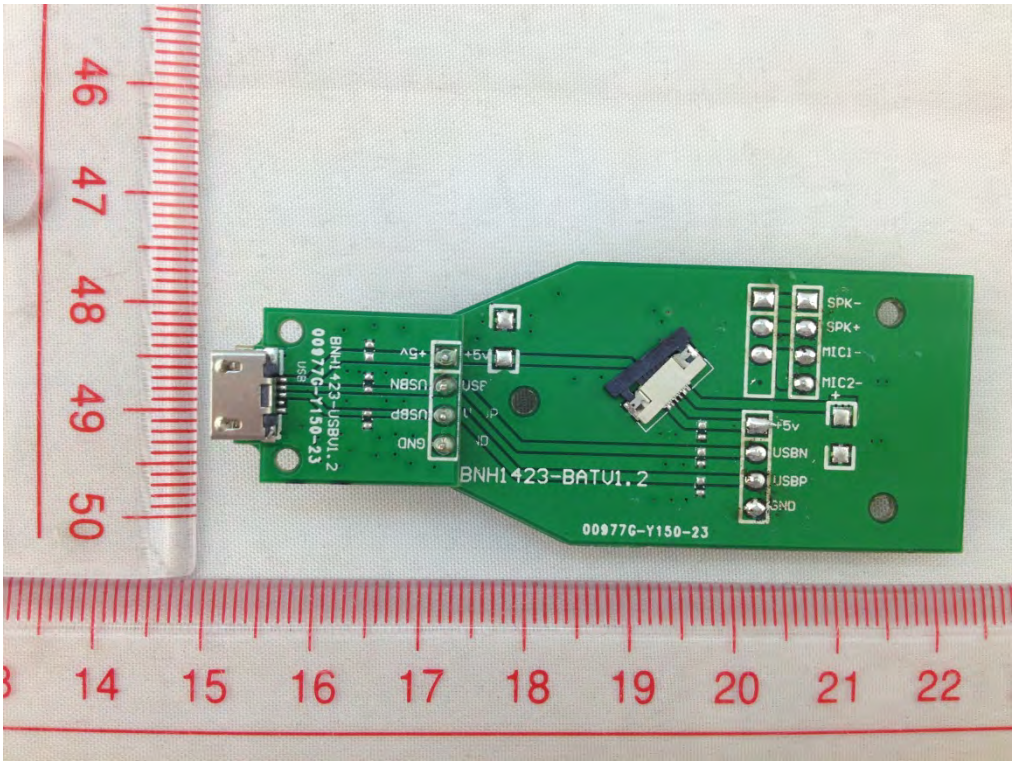


EUT UNCOVER VIEW (1)

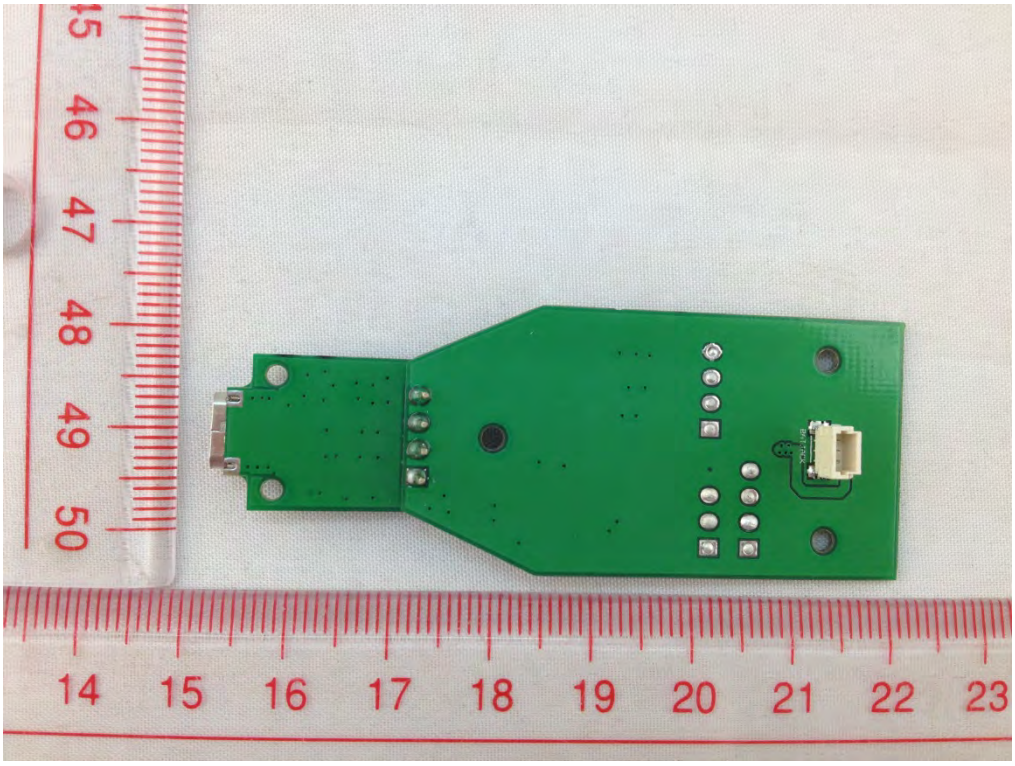


EUT UNCOVER VIEW (2)

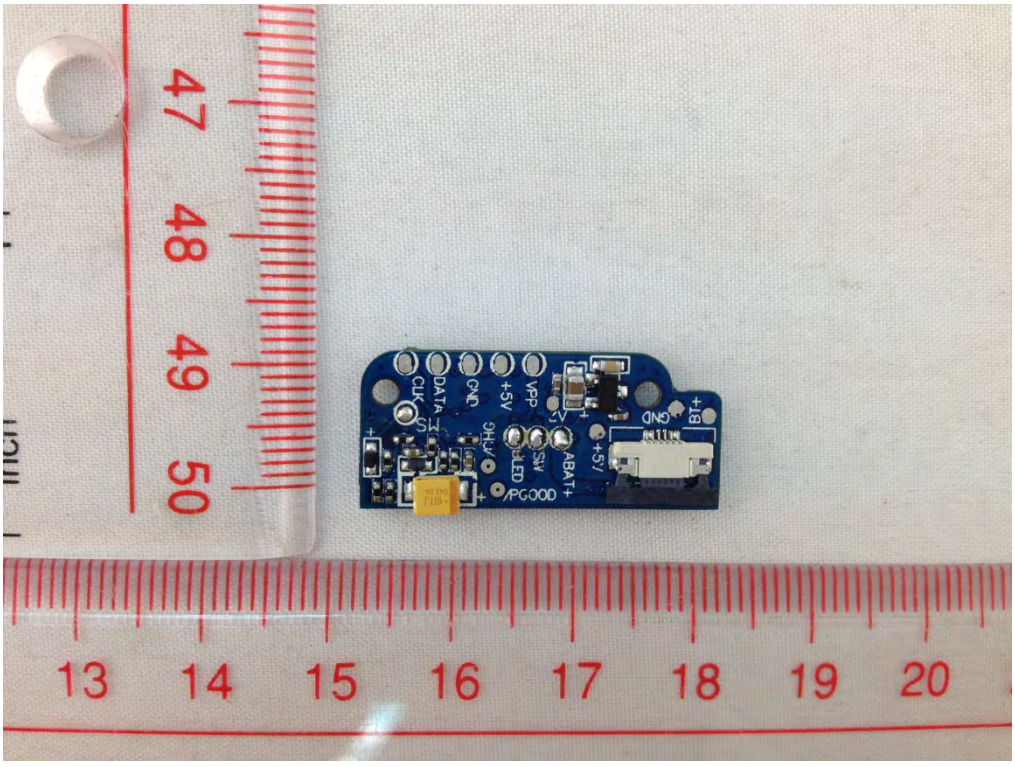
EUT UNCOVER VIEW (3)



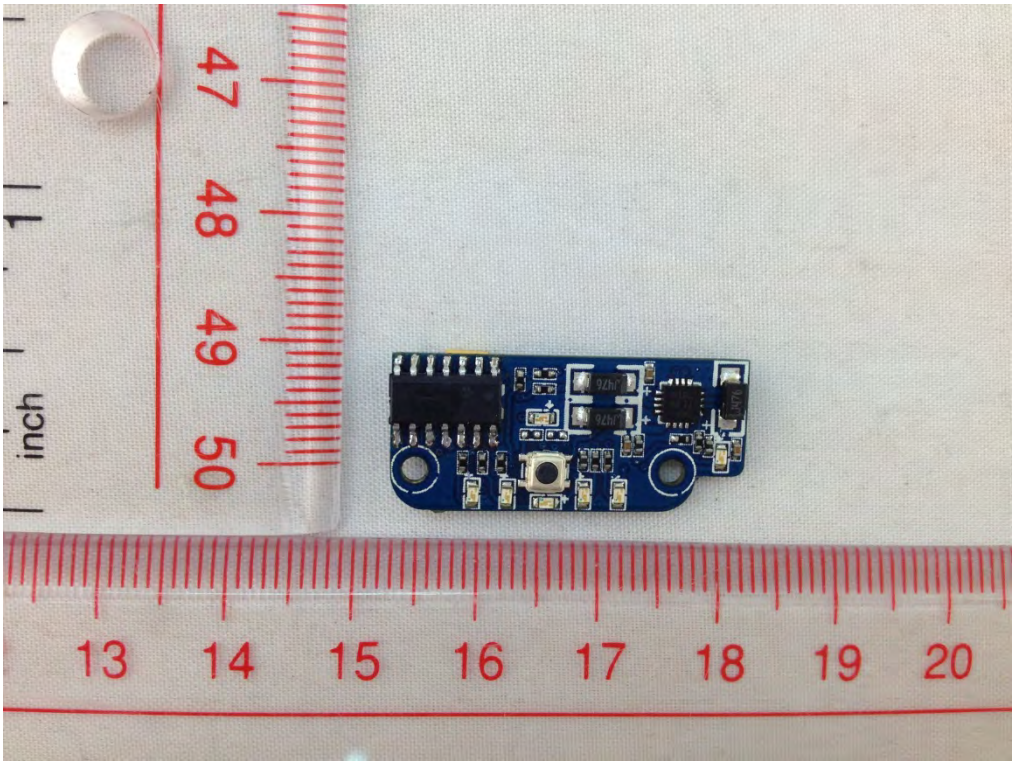
MAIN BOARD TOP VIEW 1



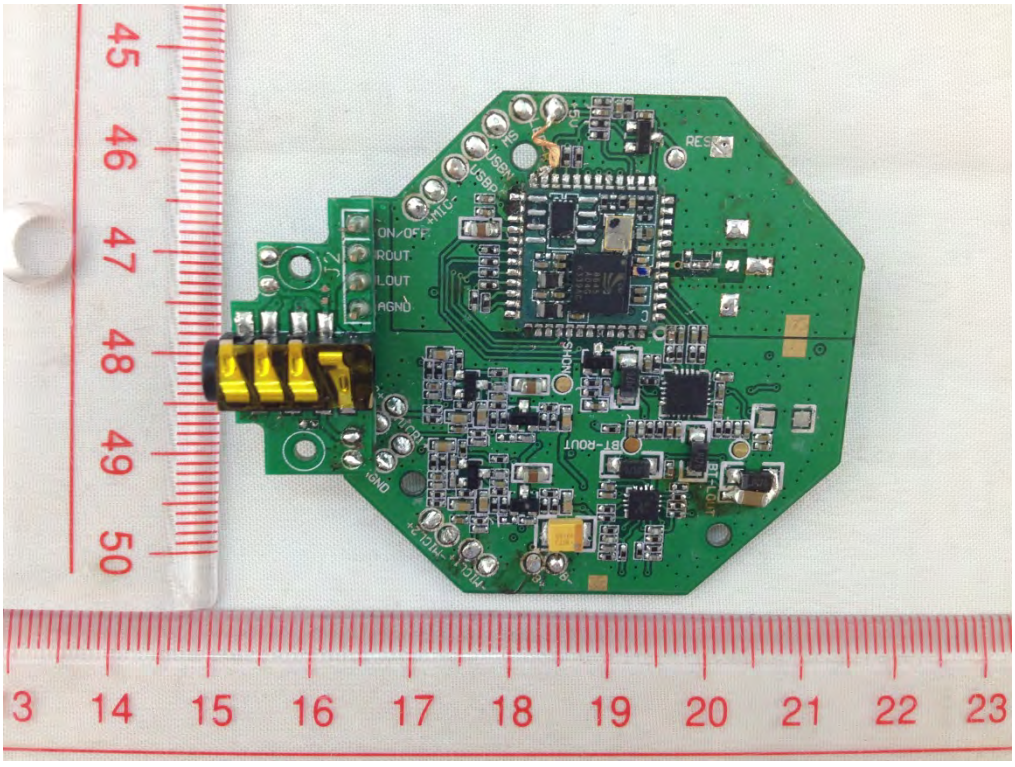
MAIN BOARD BACK VIEW 1



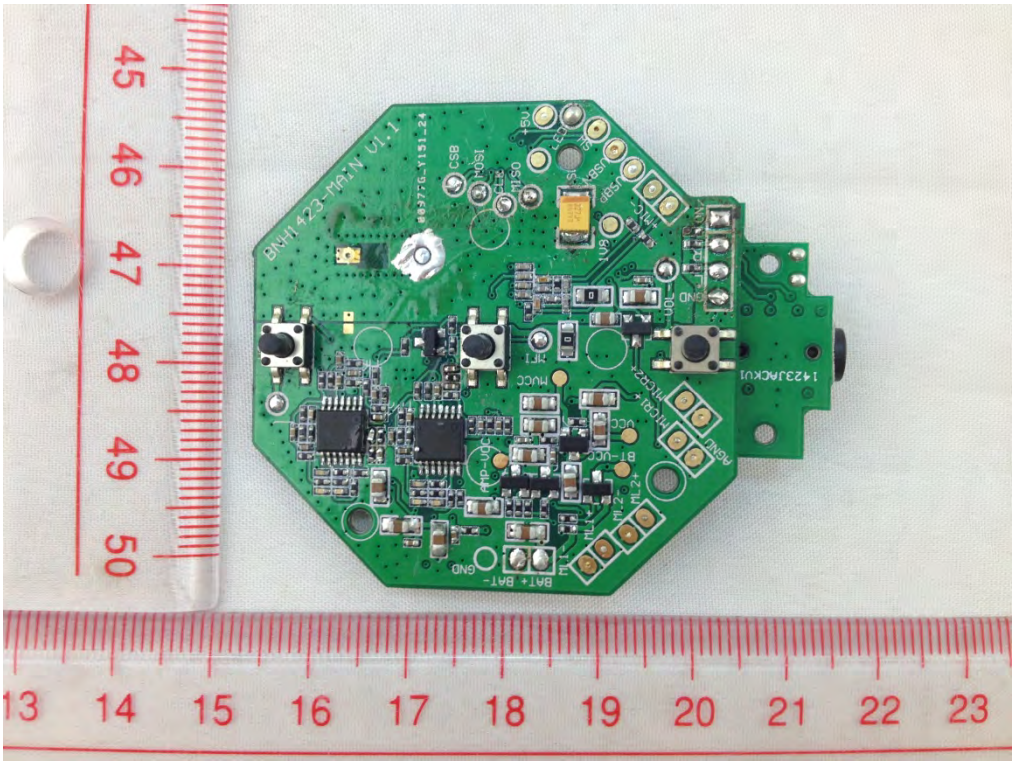
MAIN BOARD TOP VIEW 2



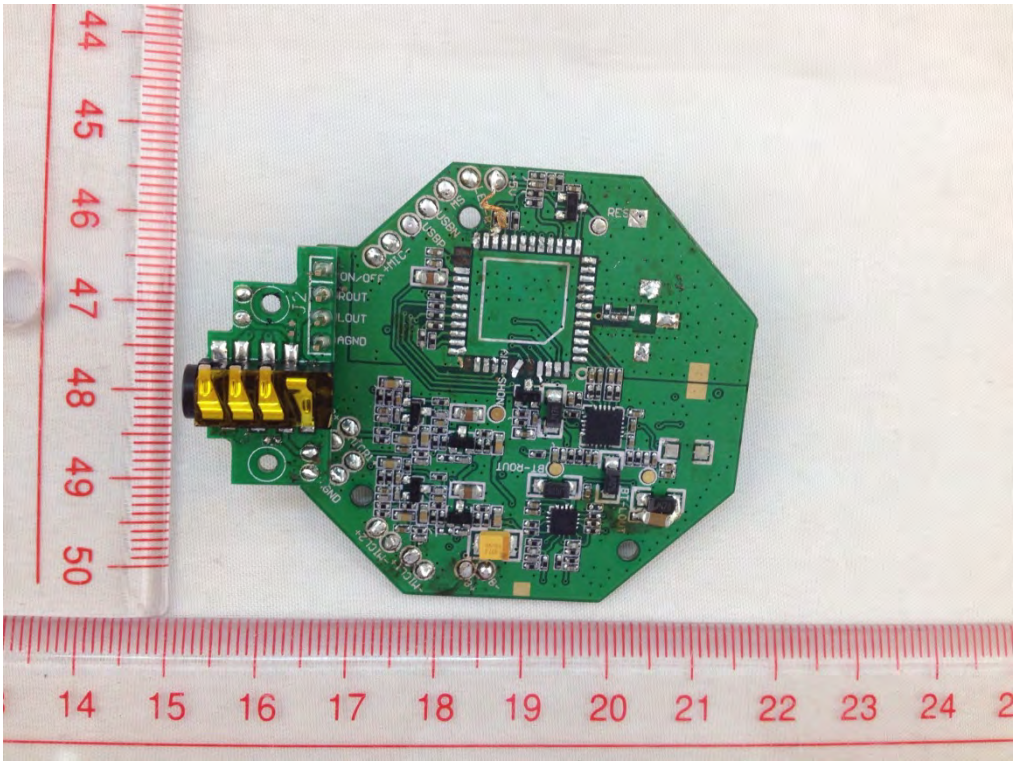
MAIN BOARD BACK VIEW 2



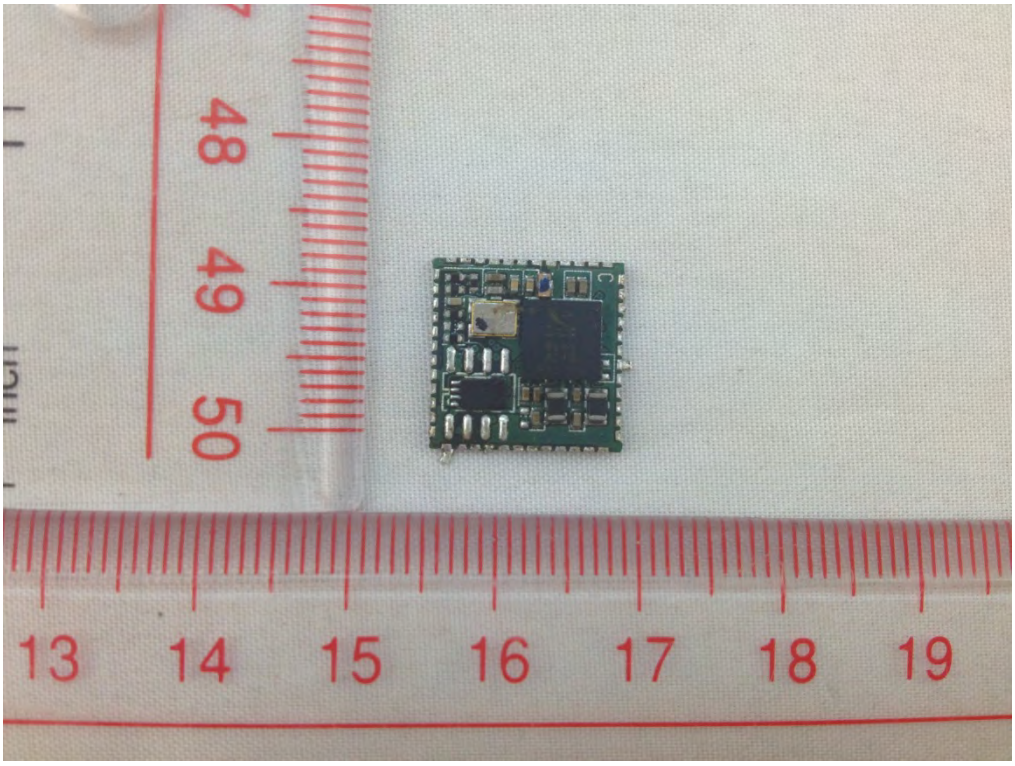
MAIN BOARD TOP VIEW 3



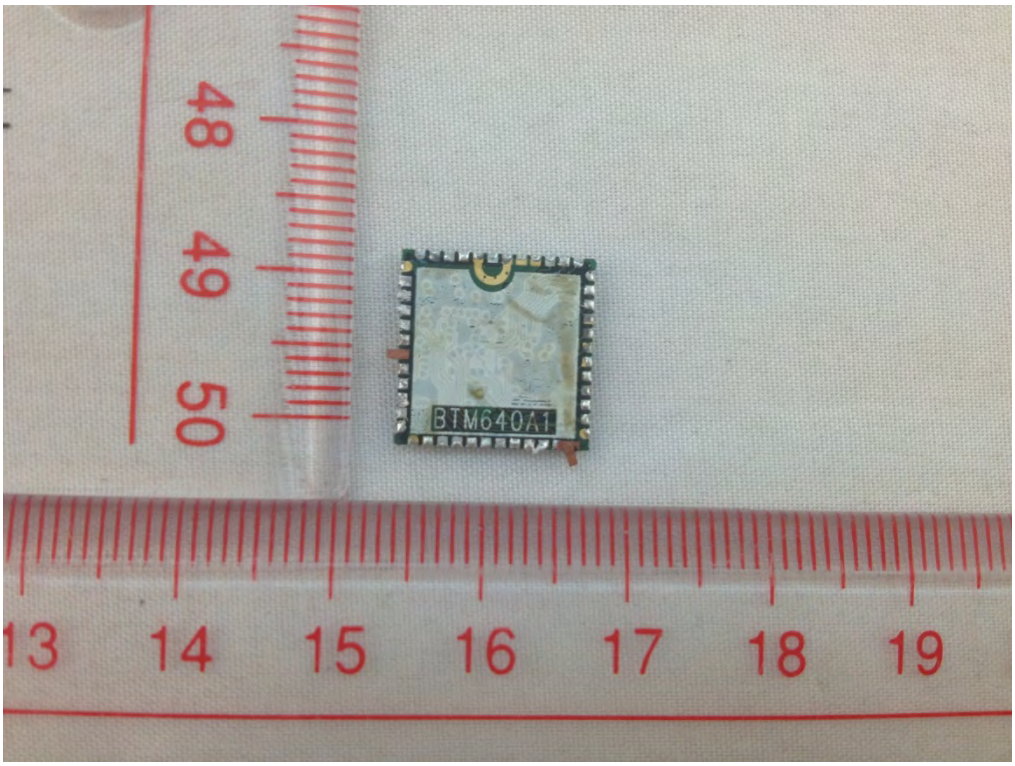
MAIN BOARD BACK VIEW 3



MAIN BOARD TOP VIEW 4



THE UP OF RF BOARD



THE DOWN OF RF BOARD

BATTERY

--END OF REPORT--