SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

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1 Cover Page

RF TEST REPORT

Application No.:	SZEM1712012610CR (SHEM1711007470CR)
Applicant:	Hansong (Nanjing) Technology Ltd.
FCC ID:	XCO-DYN
IC:	7756A-DYN
Equipment Under Test (EUT): **NOTE:** The following sample(s) was/were submitted and identified by the client as	
Product Name:	Wireless Speaker
Model No.(EUT):	Xeo 20 Master, Xeo 30 Master
Standards:	FCC PART 15 Subpart C: 2016 RSS-247 Issue 2 (February 2017) RSS-Gen Issue 4 (November 2014)
Date of Receipt:	2017-11-03
Date of Test:	2017-12-28 to 2018-01-10
Date of Issue:	2018-01-15
Test Result:	**Pass***

* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Keny Xu
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
00	/	2018-01-15	/	Original

Authorized for issue by:				
		 **Foray Chen /Project Engineer**		
		 **Eric Fu /Reviewer**		

2 Test Summary

Radio Spectrum Technical Requirement				
Item	**Standard**	**Method**	**Requirement**	**Result**
Antenna Requirement	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.203 & 15.247(c)	Note1
Other requirements Frequency Hopping Spread Spectrum System Hopping Sequence	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.247(a)(1),(g),(h)	Note1
Radio Spectrum Matter Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Note1
Conducted Peak Output Power	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.5	47 CFR Part 15, Subpart C 15.247(b)(1)	Pass
20dB Bandwidth	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.7	47 CFR Part 15, Subpart C 15.247(a)(1)	Note1
Carrier Frequencies Separation	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.2	47 CFR Part 15, Subpart C 15.247a(1)	Note1
Hopping Channel Number	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.3	47 CFR Part 15, Subpart C 15.247a(1)(iii)	Note1
Dwell Time	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.4	47 CFR Part 15, Subpart C 15.247a(1)(iii)	Note1
Conducted Band Edges Measurement	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.6	47 CFR Part 15, Subpart C 15.247(d)	Note1
Conducted Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.8	47 CFR Part 15, Subpart C 15.247(d)	Note1
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.10.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.4,6.5,6.6	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
99% Bandwidth	RSS-247 Issue 2, February 2017	ANSI C63.10 Section 6.9.3	RSS-Gen Section 6.6	Note1

Note1: Refer to report no. SHEM150900308302.

Note2: The two models mentioned in this report used same wireless module as the original model(RXM). Which were already certification ,The original model(RXM) FCC ID:. XCO-XEO2, IC: 7756A-XEO2

3 Contents

Page

1 COVER PAGE 1

2 TEST SUMMARY 3

3 CONTENTS 4

4 GENERAL INFORMATION 5

4.1 CLIENT INFORMATION 5
4.2 GENERAL DESCRIPTION OF E.U.T. 5
4.3 TECHNICAL SPECIFICATIONS 5
4.4 DESCRIPTION OF SUPPORT UNITS 5
4.5 TEST MODE 6
4.6 TEST LOCATION 6
4.7 TEST FACILITY 7
4.8 MEASUREMENT UNCERTAINTY 8

5 EQUIPMENTS USED DURING TEST 9

6 TEST RESULTS 10

6.1 E.U.T. TEST CONDITIONS 10
6.2 FREQUENCY HOPPING SYSTEM REQUIREMENT 11
6.3 ANTENNA REQUIREMENT 13
6.4 CONDUCTED PEAK OUTPUT POWER 14
6.5 RADIATED SPURIOUS EMISSIONS 24
6.5.1 Radiated Spurious Emissions 27
6.5.2 Radiated Band edge 33

7 TEST SETUP PHOTOGRAPHS 53

8 EUT CONSTRUCTIONAL DETAILS 53

4 General Information

4.1 Client Information

Applicant:	Hansong (Nanjing) Technology Ltd.
Address of Applicant:	8th Kangping Road, Jiangning Economy and Technology Development Zone, Nanjing, 211106, China
Manufacturer:	Dynaudio A/S
Address of Manufacturer:	Sverigesvej 15, 8660 Skanderborg, DENMARK
Factory:	Dynaudio A/S
Address of Factory:	Sverigesvej 15, 8660 Skanderborg, DENMARK

4.2 General Description of E.U.T.

Product Description:	Fixed product with BT function and DTS function
Brand Name:	Dynaudio
Power Supply:	AC 100-240V 50/60Hz 100W
Test Voltage:	AC 120V 60Hz

4.3 Technical Specifications

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	3.0+HS
Modulation Technique:	FHSS (GFSK, π/4DQPSK, 8DPSK)
Number of Channel:	79
Antenna Type	Integral
Antenna Gain	2 dBi

4.4 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.	Supplied by
Laptop	Lenovo	ThinkPad X100e	SGS
BT test board	/	RF01	SGS

Software name	Manufacturer	Version	Supplied By
Blue Test3 (For CSR)	/	2.5.0	SGS

4.5 Test Mode

Test Mode	Description of Test Mode
Hopping disabled mode	Using test software to control EUT working in continuous transmitting, and select channel and modulation type.
Hopping enabled mode	Using test software to control EUT working in continuous transmitting, and hopping on status.

The packet type used for the final test:

Test Item	Packet Type									Hopping Status	
	DH1	DH3	DH5	2DH1	2DH3	2DH5	3DH1	3DH3	3DH5	Disabled	Enabled
CE	-	-	√	-	-	√	-	-	√	√	√
20dB OBW	-	-	√	-	-	√	-	-	√	√	-
Peak Power	-	-	√	-	-	√	-	-	√	√	-
CFS	-	-	√	-	-	√	-	-	√	-	√
HCN	-	-	√	-	-	√	-	-	√	-	√
Dwell Time	√	√	√	√	√	√	√	√	√	-	√
CSE	-	-	√	-	-	√	-	-	√	√	-
Conducted Band-edge	-	-	√	-	-	√	-	-	√	√	√
RSE & Band-edge	-	-	√	-	-	√	-	-	√	√	-
99% OBW	-	-	√	-	-	√	-	-	√	√	-

4.6 Test Location

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053

Fax: +86 755 2671 0594

4.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A-1.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3868, C-4336, T-2221, G-830 respectively.

The test facility is recognized, certified, or accredited by the following organizations:

• CNAS (No. CNAS L2929)

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• VCCI

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

• FCC –Designation Number: CN1178

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

• Industry Canada (IC)

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

4.8 Measurement Uncertainty

No.	Parameter	Measurement Uncertainty
1	Radio Frequency	< ±1 x 10^{-5}
2	Total RF power, conducted	< ±1.5 dB
3	RF power density, conducted	< ±3 dB
4	Spurious emissions, conducted	< ±3 dB
5	All emissions, radiated	< ±6 dB (Below 1GHz) < ±6 dB (Above 1GHz)
6	Temperature	< ±1°C
7	Humidity	< ±5 %
8	DC and low frequency voltages	< ±3 %

5 Equipments Used during Test

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Conducted Emission at AC Power Line					
EMI test receiver	R&S	ESR7	SHEM162-1	2017-12-20	2018-12-19
LISN	Schwarzbeck	NSLK8127	SHEM061-1	2017-12-20	2018-12-19
LISN	EMCO	3816/2	SHEM019-1	2017-12-20	2018-12-19
Pulse limiter	R&S	ESH3-Z2	SHEM029-1	2017-12-20	2018-12-19
CE test Cable	/	CE01	/	2017-12-26	2018-12-25
Conducted Test					
Spectrum Analyzer	R&S	FSP-30	SHEM002-1	2017-12-20	2018-12-19
Spectrum Analyzer	Agilent	N9020A	SHEM181-1	2017-09-26	2018-09-25
Power meter	R&S	NRP	SHEM057-1	2017-12-26	2018-12-25
Power Sensor	R&S	NRP-Z22	SHEM136-1	2017-07-22	2018-07-21
Power Sensor	R&S	NRP-Z91	SHEM057-2	2017-12-26	2018-12-25
Signal Generator	R&S	SMR40	SHEM058-1	2017-07-03	2018-07-02
Signal Generator	Agilent	N5182A	SHEM182-1	2017-09-26	2018-09-25
Communication Tester	R&S	CMW270	SHEM183-1	2017-10-22	2018-10-21
Switcher	Tonscend	JS0806	SHEM184-1	2017-09-26	2018-09-25
Splitter	Anritsu	MA1612A	SHEM185-1	/	/
Coupler	e-meca	803-S-1	SHEM186-1	/	/
High-low Temp Cabinet	Suzhou Zhihe	TL-40	SHEM087-1	2017-09-26	2018-09-25
AC Power Stabilizer	WOCEN	6100	SHEM045-1	2017-12-26	2018-12-25
DC Power Supply	QJE	QJ30003SII	SHEM046-1	2017-12-26	2018-12-25
Conducted test Cable	/	RF01, RF 02	/	2017-12-26	2018-12-25
Radiated Test					
EMI test receiver	R&S	ESU40	SHEM051-1	2017-12-20	2018-12-19
Spectrum Analyzer	R&S	FSP-30	SHEM002-1	2017-12-20	2018-12-19
Loop Antenna (9kHz-30MHz)	Schwarzbeck	FMZB1519	SHEM135-1	2017-04-10	2020-04-09
Antenna (25MHz-2GHz)	Schwarzbeck	VULB9168	SHEM048-1	2017-02-28	2020-02-27
Antenna (25MHz-3GHz)	Schwarzbeck	HL562	SHEM010-1	2017-02-28	2020-02-27
Horn Antenna (1-8GHz)	Schwarzbeck	HF906	SHEM009-1	2017-10-24	2020-10-23
Horn Antenna (1-18GHz)	Schwarzbeck	BBHA9120D	SHEM050-1	2017-01-14	2020-01-13
Horn Antenna (14-40GHz)	Schwarzbeck	BBHA 9170	SHEM049-1	2017-12-03	2020-12-02
Pre-amplifier (9KHz-2GHz)	CLAVIIO	BDLNA-0001-412010	SHEM164-1	2017-08-22	2018-08-21
Pre-amplifier (1-18GHz)	CLAVIIO	BDLNA-0118-352810	SHEM050-2	2017-08-22	2018-08-21
High-amplifier (14-40GHz)	Schwarzbeck	10001	SHEM049-2	2017-12-20	2018-12-19
Band filter	LORCH	9BRX-875/X150-SR	SHEM156-1	/	/
Band filter	LORCH	13BRX-1950/X500-SR	SHEM083-2	/	/
Band filter	LORCH	5BRX-2400/X200-SR	SHEM155-1	/	/
Band filter	LORCH	5BRX-5500/X1000-SR	SHEM157-2	/	/
High pass Filter	Wainwright	WHK3.0/18G-100SS	SHEM157-1	/	/
High pass Filter	Wainwright	WHKS1700-3SS	SHEM157-3	/	/
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2017-07-22	2020-07-21
RE test Cable	/	RE01, RE02, RE06	/	2017-12-26	2018-12-25

6 Test Results

6.1 E.U.T. test conditions

Requirements: 15.31(e) For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

Operating Environment:

Temperature:	20.0 -25.0 °C
Humidity:	35-75 % RH
Atmospheric Pressure:	99.2 -102 kPa

Test frequencies: According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and. if required. reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table:

Frequency range over which device operates	Number of frequencies	Location in the range of operation
1 MHz or less	1	Middle
1 to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top. 1 near middle and 1 near bottom

Pursuant to Part 15.31(c) For swept frequency equipment, measurements shall be made with the frequency sweep stopped at those frequencies chosen for the measurements to be reported.

Test frequency is the lowest channel: 0 channel (2402MHz), middle channel: 39 channel (2441MHz) and highest channel: 78 channel (2480MHz) with fixed at channel.

6.2 Frequency Hopping System Requirement

Test Requirement: Section 15.247 (a)(1), (g), (h) requirement:

The system shall hop to channel frequencies that are selected at the system hopping rate from a Pseudorandom ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. However, the system, consisting of both the transmitter and the receiver, must be designed to comply with all of the regulations in this section should the transmitter be presented with a continuous data (or information) stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its transmissions over the minimum number of hopping channels specified in this section.

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

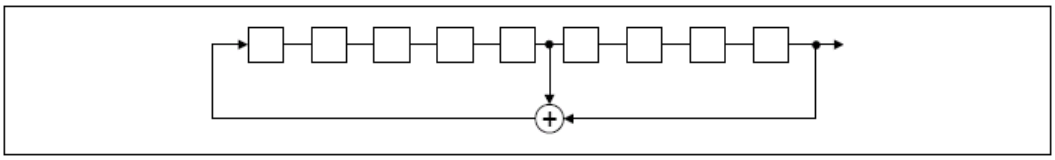
Compliance for section 15.247(a)(1)

According to Bluetooth Core Specification, the pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONEs; i.e. the shift register is initialized with nine ones.

• Number of shift register stages: 9

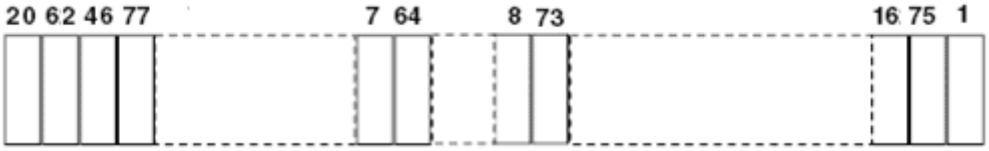
• Length of pseudo-random sequence: 2^9 -1 = 511 bits

• Longest sequence of zeros: 8 (non-inverted signal)



Linear Feedback Shift Register for Generation of the PRBS sequence

An example of Pseudorandom Frequency Hopping Sequence as follow:



Each frequency used equally on the average by each transmitter.

According to Bluetooth Core Specification, Bluetooth receivers are designed to have input and IF bandwidths that match the hopping channel bandwidths of any Bluetooth transmitters and shift frequencies in synchronization with the transmitted signals.

Compliance for section 15.247(g)

According to Bluetooth Core Specification, the Bluetooth system transmits the packet with the pseudorandom hopping frequency with a continuous data and the short burst transmission from the Bluetooth system is also transmitted under the frequency hopping system with the pseudorandom hopping frequency system.

Compliance for section 15.247(h)

According to Bluetooth Core specification, the Bluetooth system incorporates with an adaptive system to detect other user within the spectrum band so that it individually and independently to avoid hopping on the occupied channels.

According to the Bluetooth Core specification, the Bluetooth system is designed not have the ability to coordinate with other FHSS System in an effort to avoid the simultaneous occupancy of individual hopping frequencies by multiple transmitter.

6.3 Antenna Requirement

Standard requirement:

15.203 requirement:

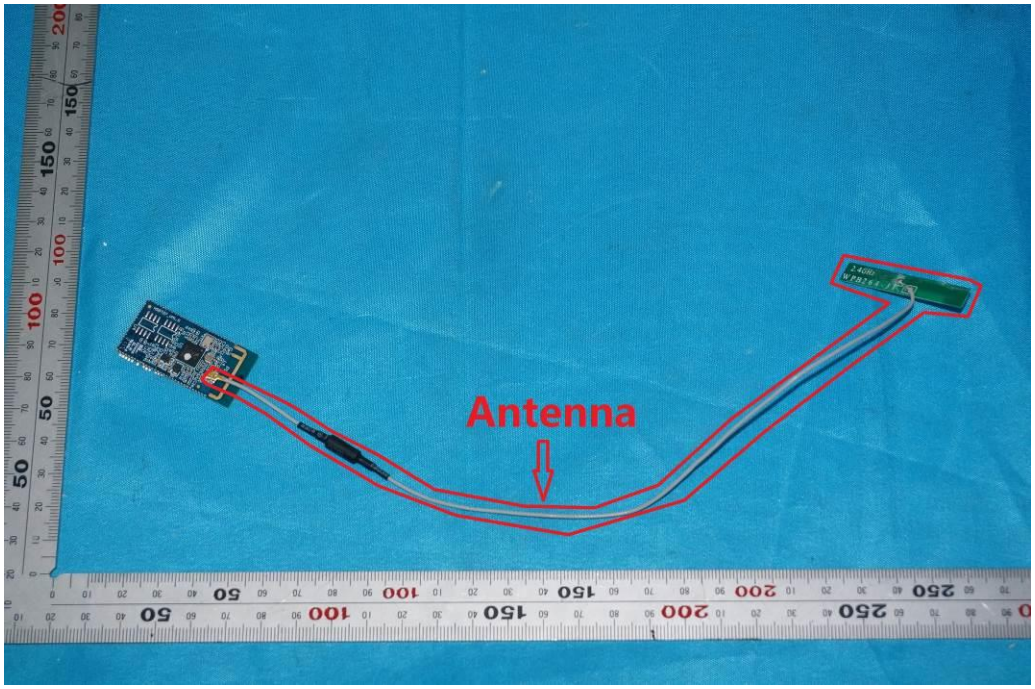
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

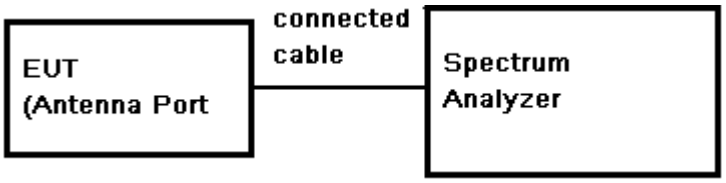
EUT Antenna:

The BT antenna is integral antenna and no consideration of replacement. The gain of the antenna is less than 2.0 dBi.



6.4 Conducted Peak Output Power

Test Configuration:



Test Procedure:

1) Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2) Set the spectrum analyzer: RBW = 3 MHz, VBW = 8 MHz, Sweep = auto; Detector Function = Peak.
3) Keep the EUT in transmitting at lowest, middle and highest channel individually. Record the max value.

Test Limit: Regulation 15.247 (b)(1)For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts. Refer to the result “Hopping channel number” of this document. The 1 watt (30.0dBm) limit applies.

Test Data:

Xeo 20 Master

Test Mode	Test Channel	Power[dBm]	Limit[dBm]	Verdict
GFSK	2402	2.721	30	PASS
	2441	2.905	30	PASS
	2480	3.794	30	PASS
π/4DQPSK	2402	-0.485	30	PASS
	2441	1.742	30	PASS
	2480	0.704	30	PASS
8DPSK	2402	1.56	30	PASS
	2441	3.423	30	PASS
	2480	2.442	30	PASS

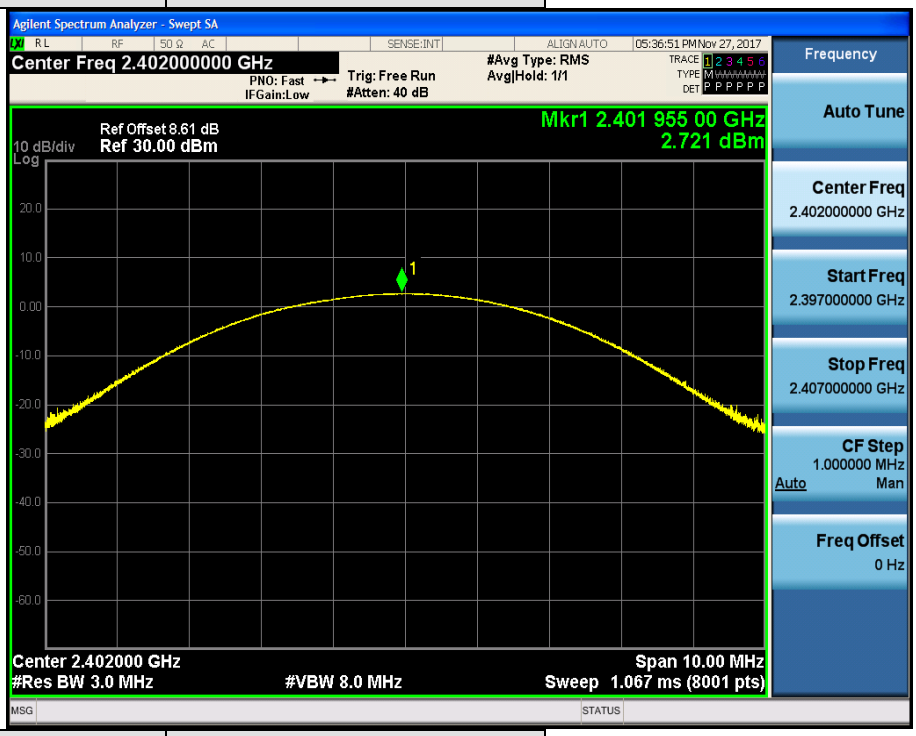
Xeo 30 Master

Test Mode	Test Channel	Power[dBm]	Limit[dBm]	Verdict
GFSK	2402	2.631	30	PASS
	2441	2.415	30	PASS
	2480	2.256	30	PASS
π/4DQPSK	2402	-0.511	30	PASS
	2441	2.269	30	PASS
	2480	1.177	30	PASS
8DPSK	2402	1.565	30	PASS
	2441	3.923	30	PASS
	2480	2.886	30	PASS

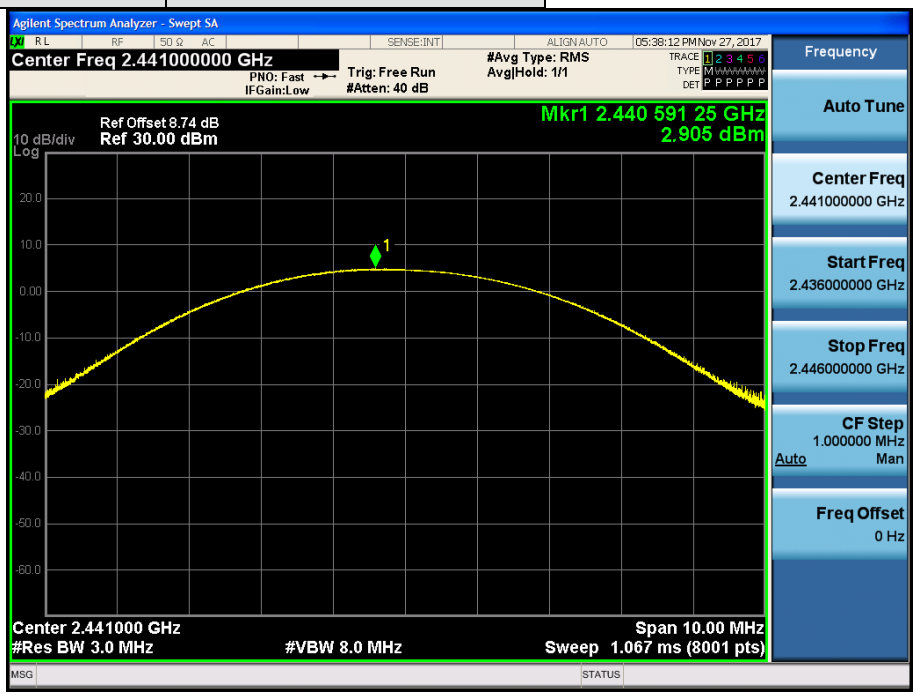
Test plot as follows:

Xeo 20 Master

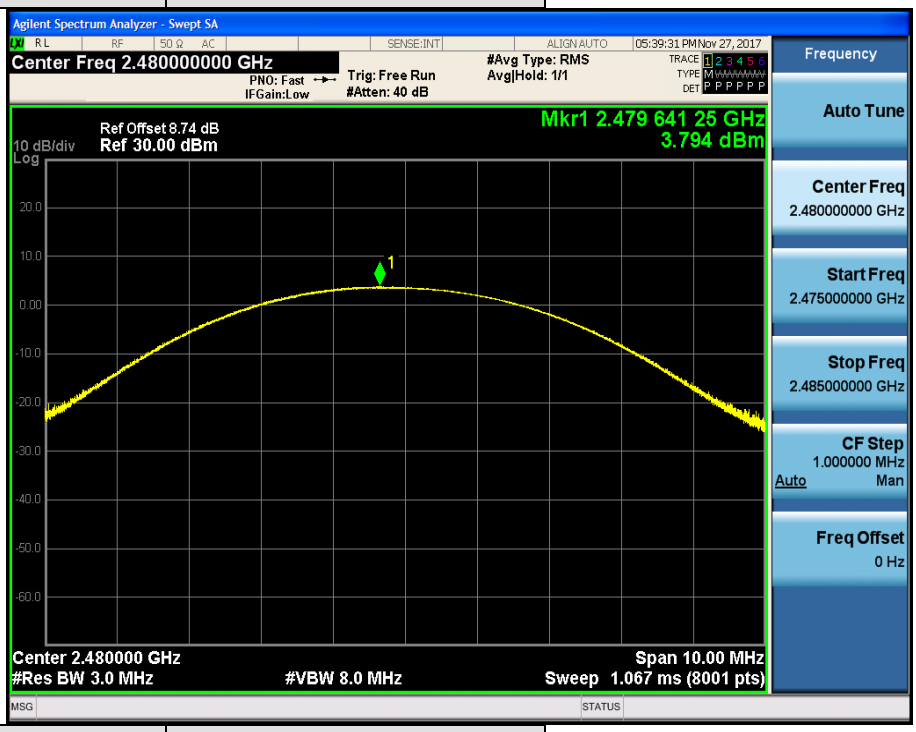
Test mode: GFSK	Test channel: 2402



Test mode: GFSK	Test channel: 2441

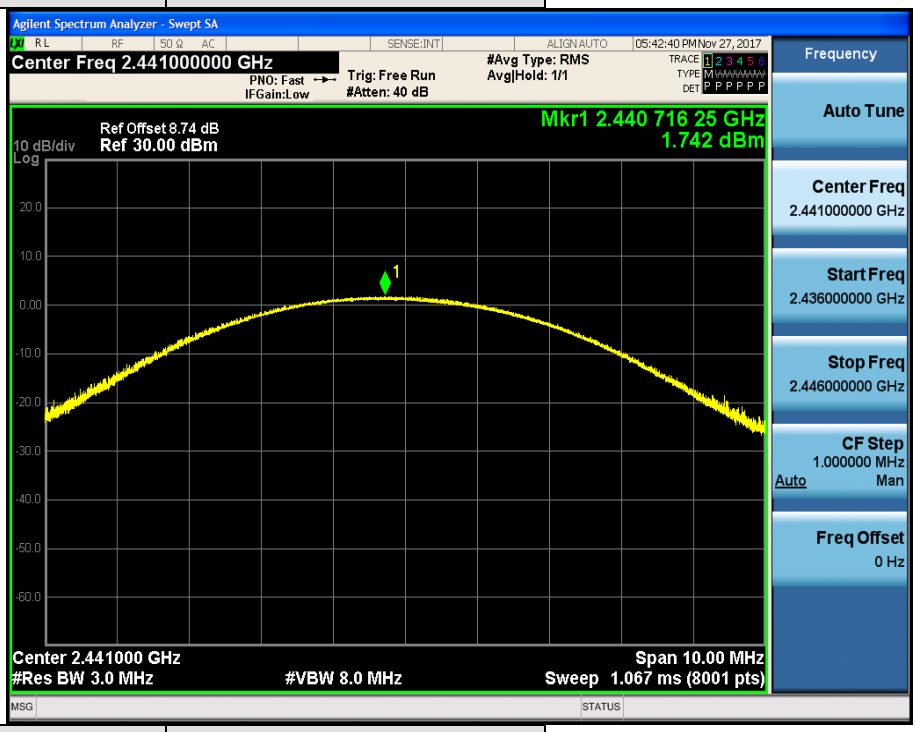


Test mode: GFSK	Test channel: 2480

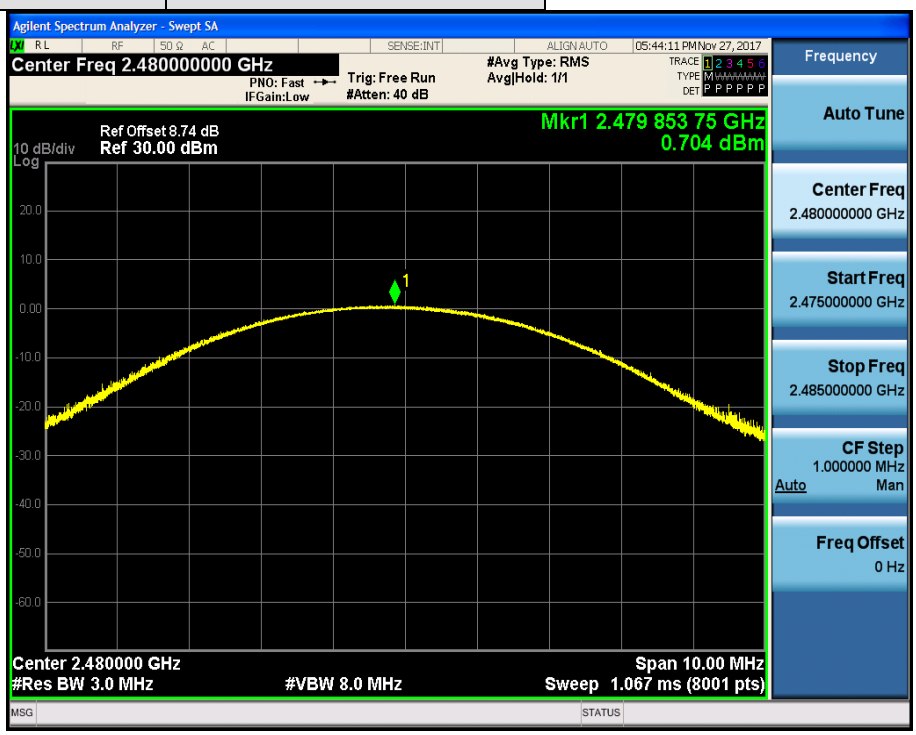


Test mode: π/4DQPSK	Test channel: 2402

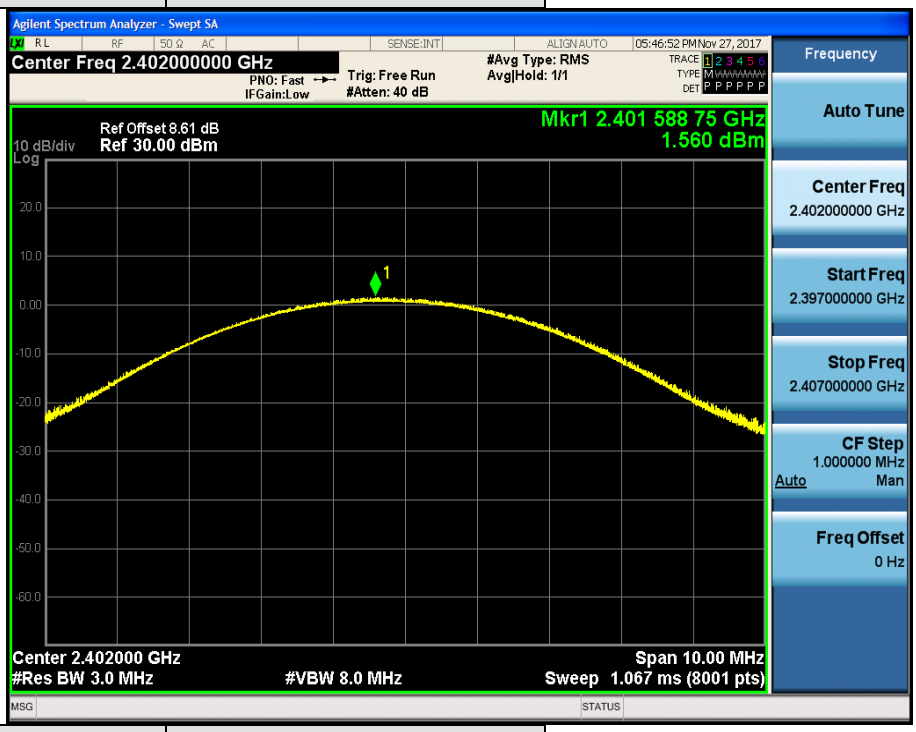
Test mode: π/4DQPSK	Test channel: 2441



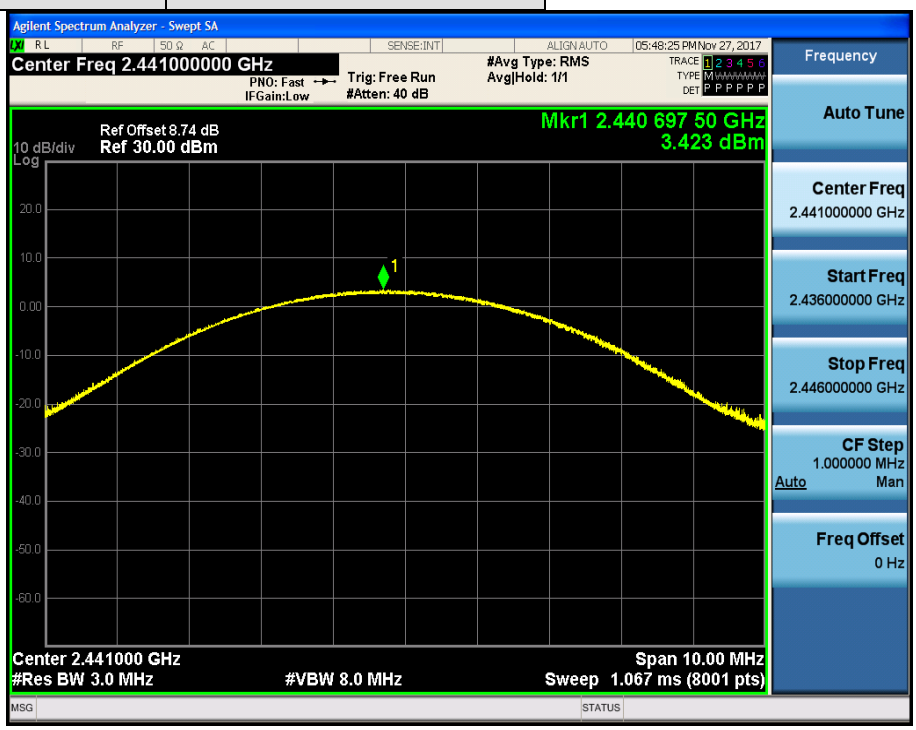
Test mode: π/4DQPSK	Test channel: 2480



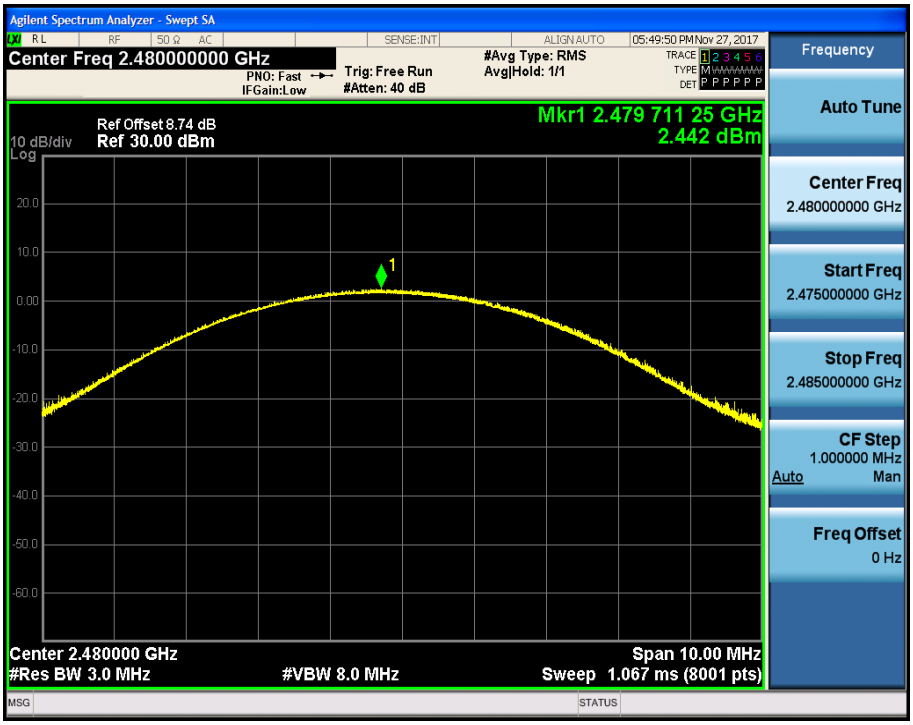
Test mode: 8DPSK	Test channel: 2402



Test mode: 8DPSK	Test channel: 2441

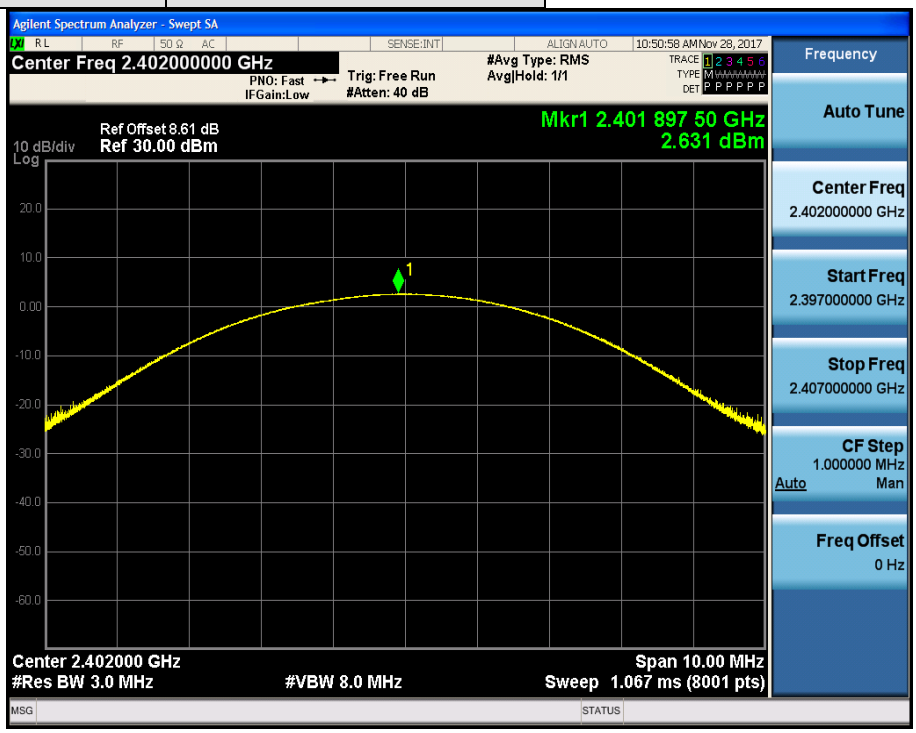


Test mode: 8DPSK	Test channel: 2480

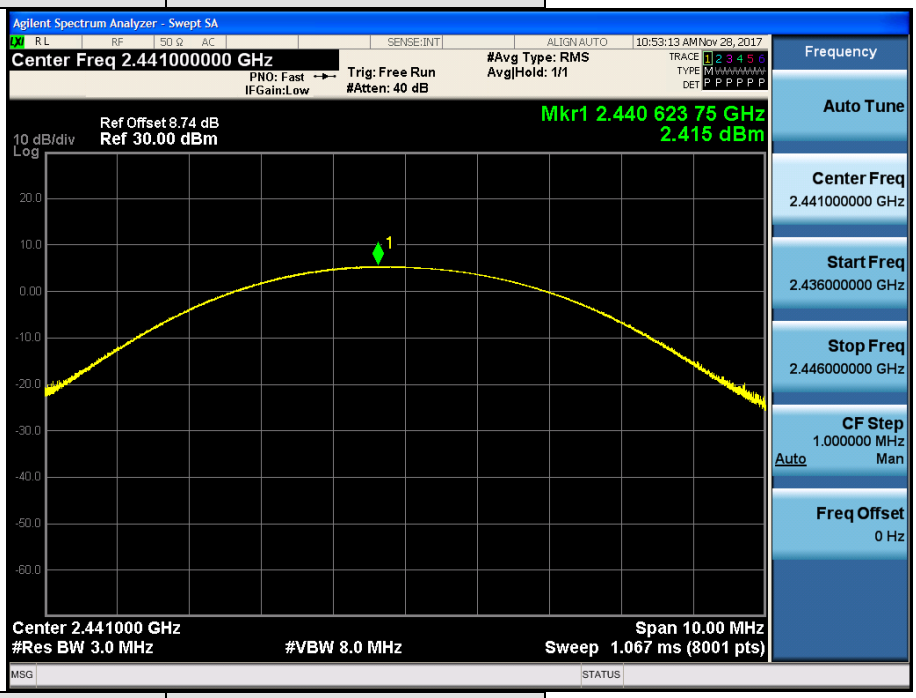


Xeo 30 Master

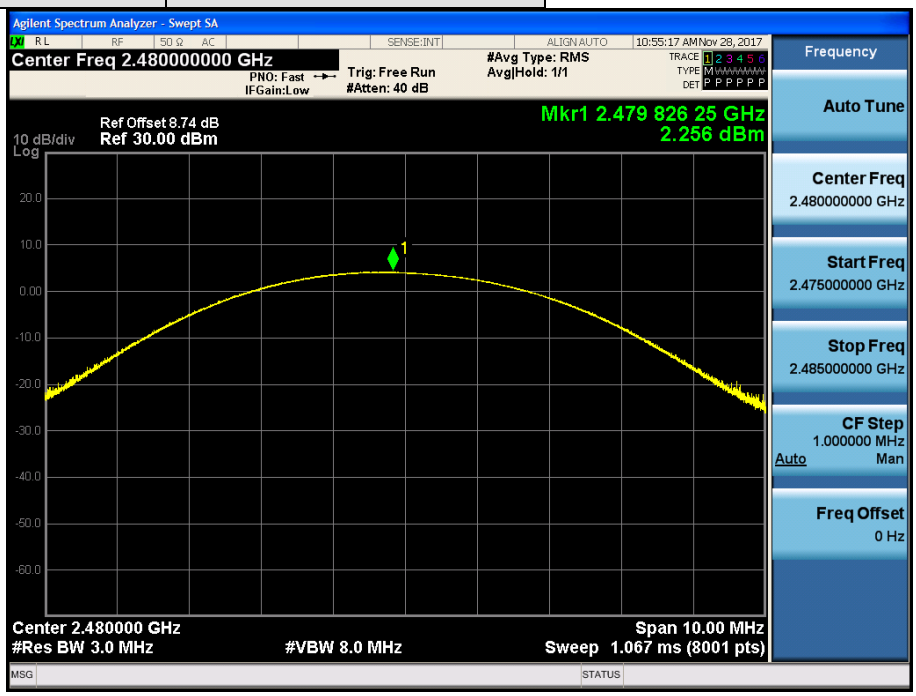
Test mode: GFSK	Test channel: 2402



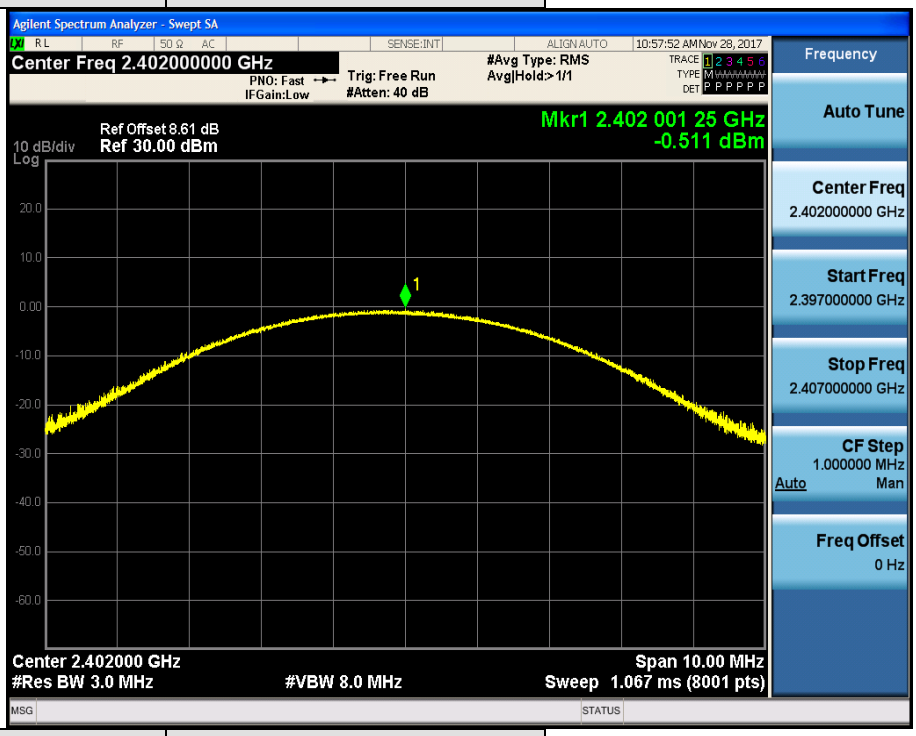
Test mode: GFSK	Test channel: 2441



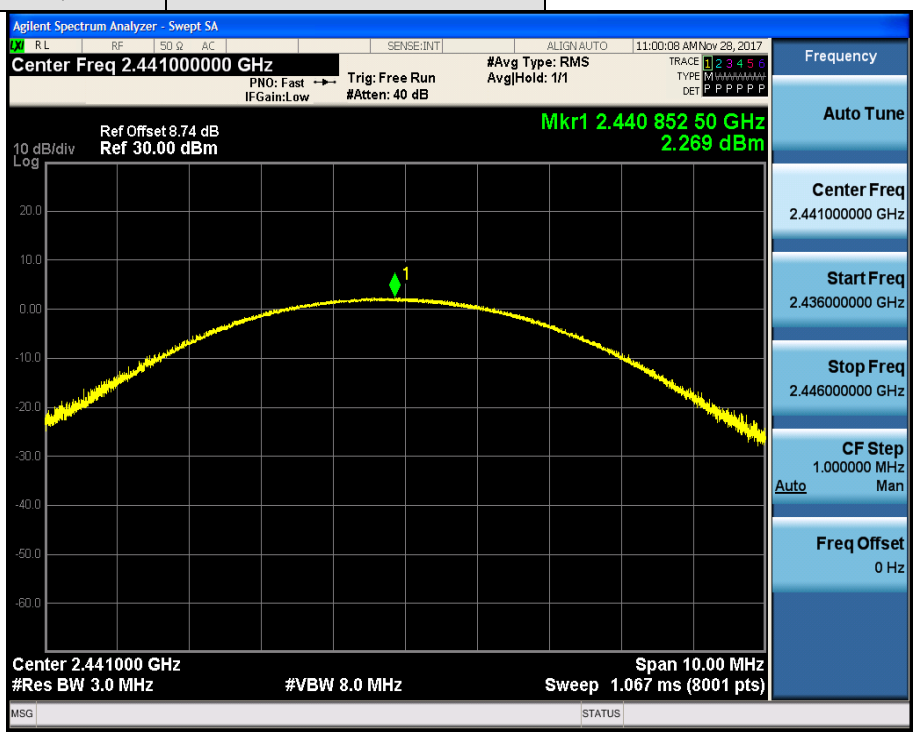
Test mode: GFSK	Test channel: 2480



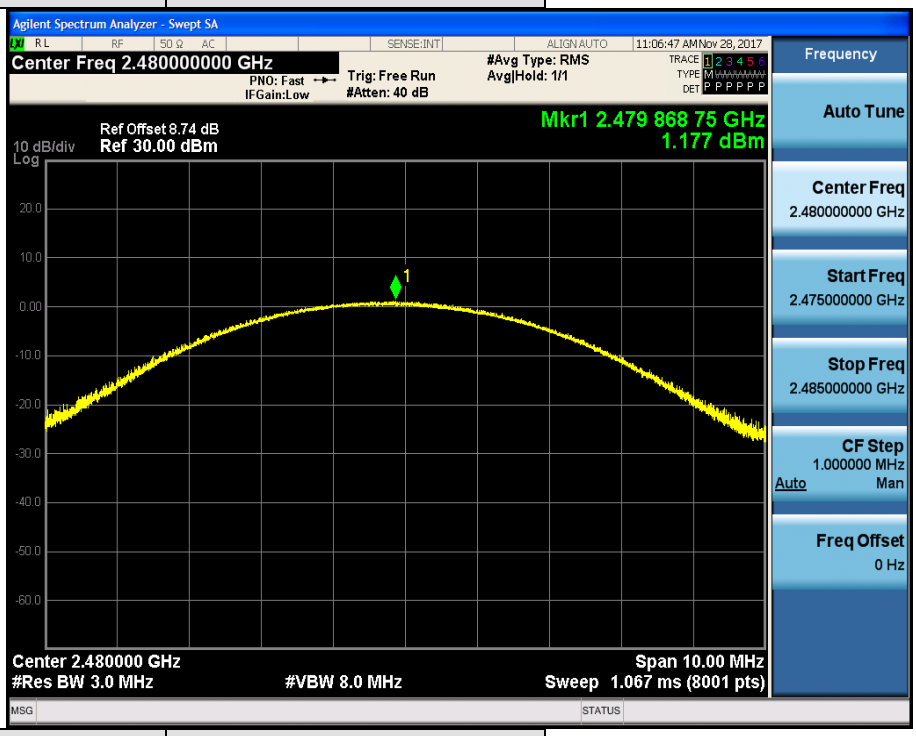
Test mode: π/4DQPSK	Test channel: 2402



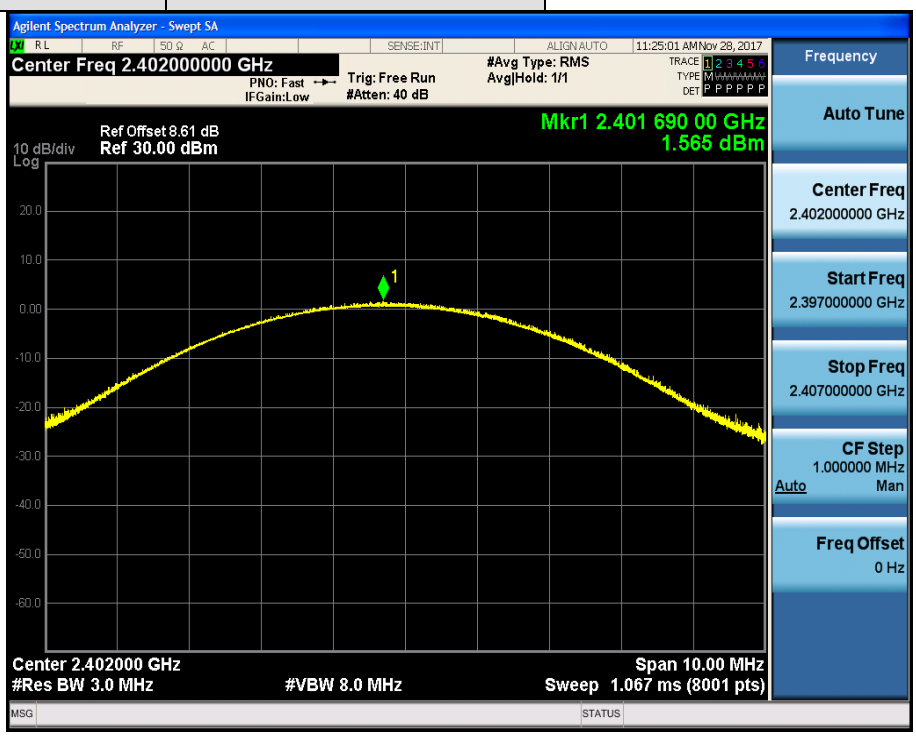
Test mode: π/4DQPSK	Test channel: 2441



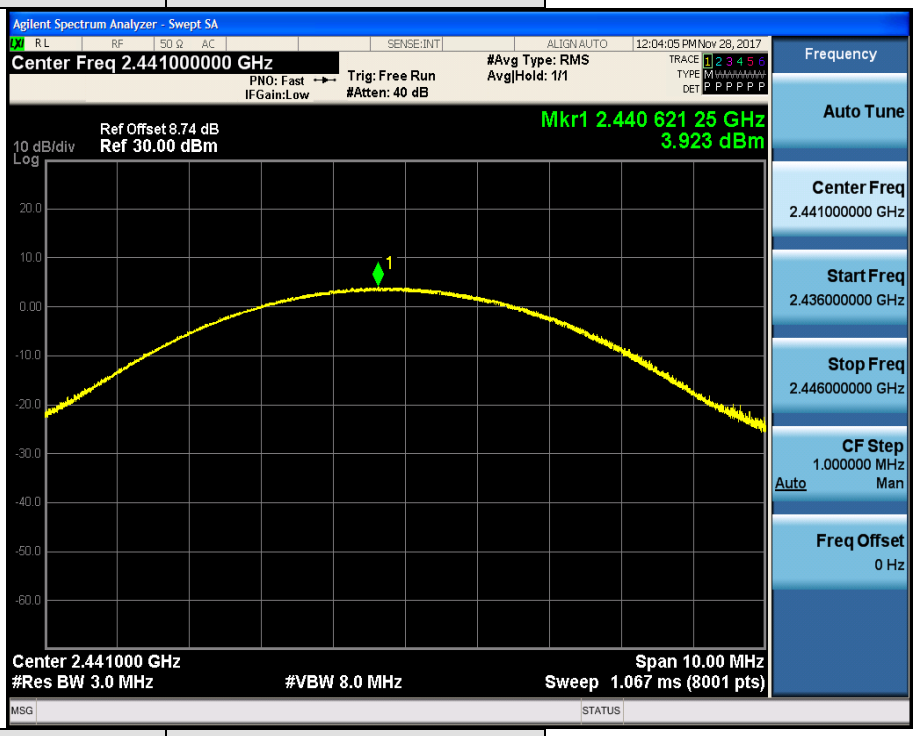
Test mode: π/4DQPSK	Test channel: 2480



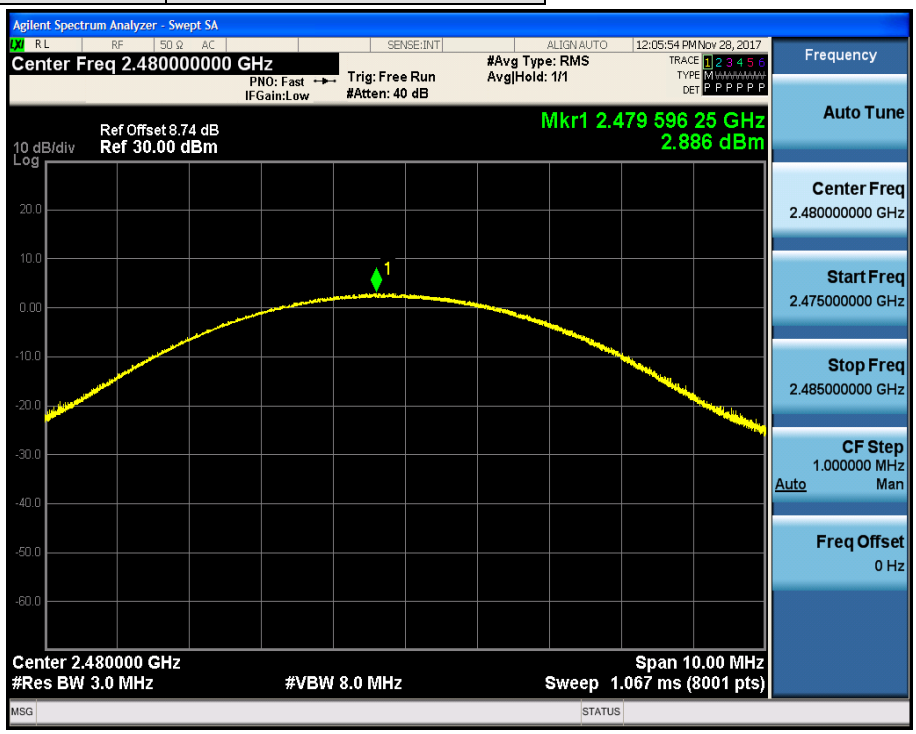
Test mode: 8DPSK	Test channel: 2402



Test mode: 8DPSK	Test channel: 2441



Test mode: 8DPSK	Test channel: 2480



6.5 Radiated Spurious Emissions

Frequency Range: 9KHz to 25GHz

Test site/setup: Measurement Distance: 3m

Test instrumentation set-up:

Frequency Range	Detector	RBW	VBW
0.009MHz-0.090MHz	Peak	10kHz	30kHz
0.009MHz-0.090MHz	Average	10kHz	30kHz
0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz
0.110MHz-0.490MHz	Peak	10kHz	30kHz
0.110MHz-0.490MHz	Average	10kHz	30kHz
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz
30MHz-1GHz	Quasi-peak	100kHz	300kHz
Above 1GHz	Peak	RBW=1MHz	VBW≥RBW
	Average		VBW=10Hz

Sweep=Auto

15.209 Limit:

Frequency	Limit (dBuV/m)
0.009MHz-0.490MHz	128.5 ~ 93.8
0.490MHz-1.705MHz	73.8 ~63.0
1.705MHz-30MHz	69.5
30MHz-88MHz	40.0
88MHz-216MHz	43.5
216MHz-960MHz	46.0
960MHz-1GHz	54.0
Above 1GHz	54.0

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

Test Configuration: Receive antenna scan height 1 m - 4 m. polarization Vertical / Horizontal

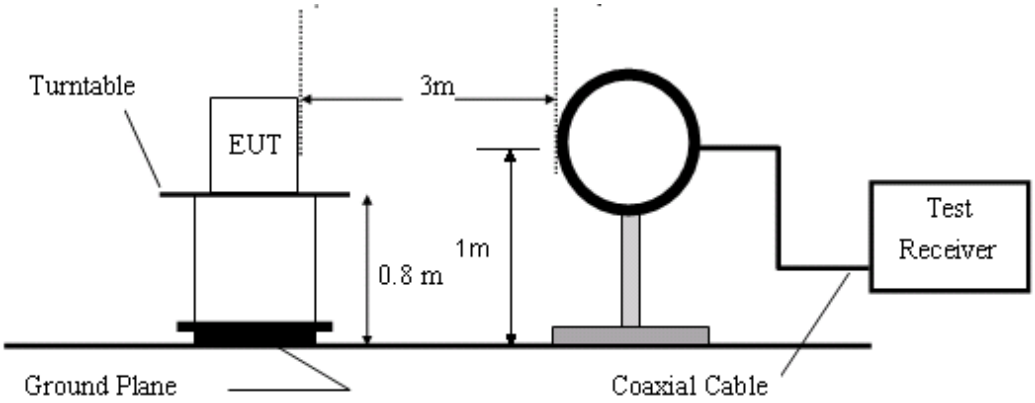


Figure1. Below 30MHz radiated emissions test configuration

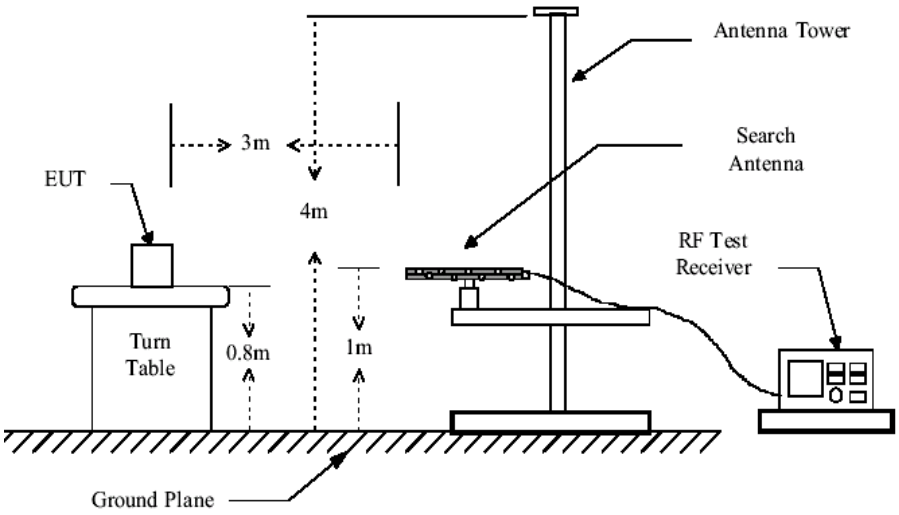


Figure2. 30MHz to 1GHz radiated emissions test configuration

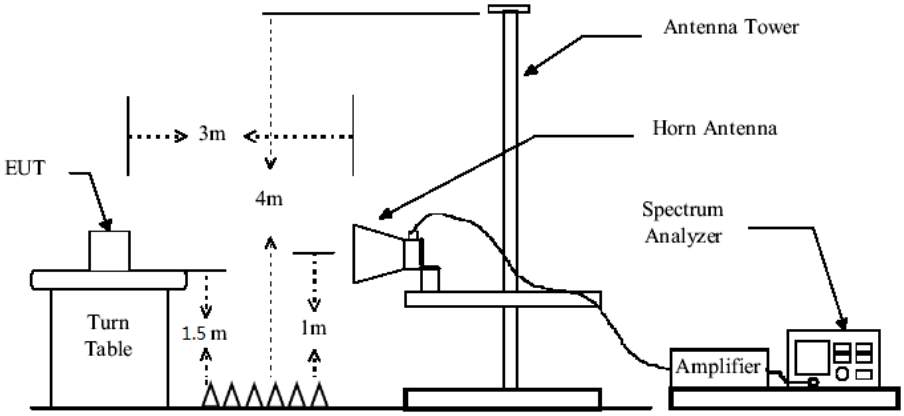


Figure3. Above 1GHz radiated emissions test configuration

Test Procedure: The procedure used was ANSI Standard C63.10. The receiver was scanned from 9KHz to 25GHz.When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. The worst case emissions were reported.

Low noise amplifier was used below 1GHz, High pass Filter was used above 3GHz.

Between 1G and 3GHz, we did not use any amplifier or filter.

Pre-test was performed on all modes, Compliance test was performed on worse case (GFSK mode).

Test were performed for their spatial orthogonal(X, Y, Z), the worst test data (X orthogonal) was submitted.

1) For this intentional radiator operates below 25 GHz. the spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. And above the third harmonic of this intentional radiator, the disturbance is very low. So the test result only displays to 5rd harmonic.
2) As shown in Section, for frequencies above 1000MHz. the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

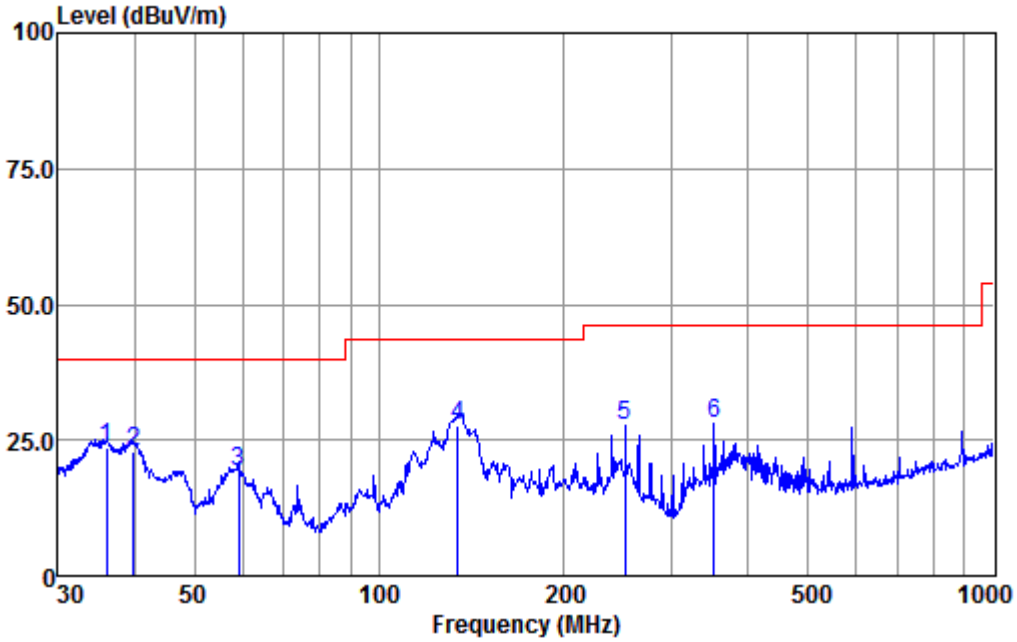
The test only perform the EUT in transmitting status since the test frequencies were over 1GHz only required transmitting status.

Test Result: Pass

6.5.1 Radiated Spurious Emissions

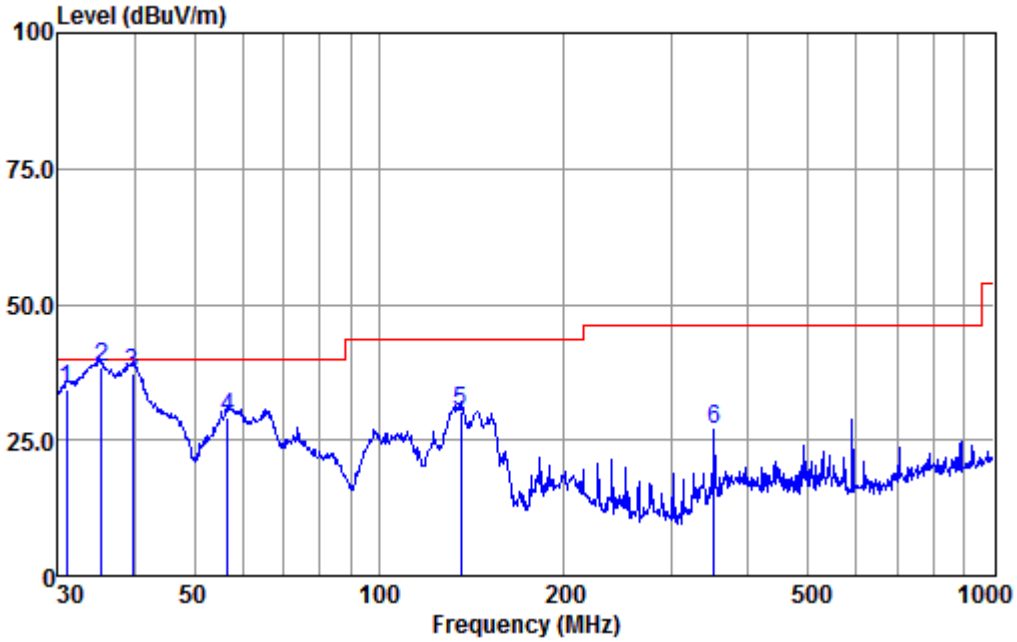
30MHz-1GHz:

Xeo 20 Master



Condition : HORIZONTAL
Condition :
EUT/Project: 7471CR
Test Mode : b

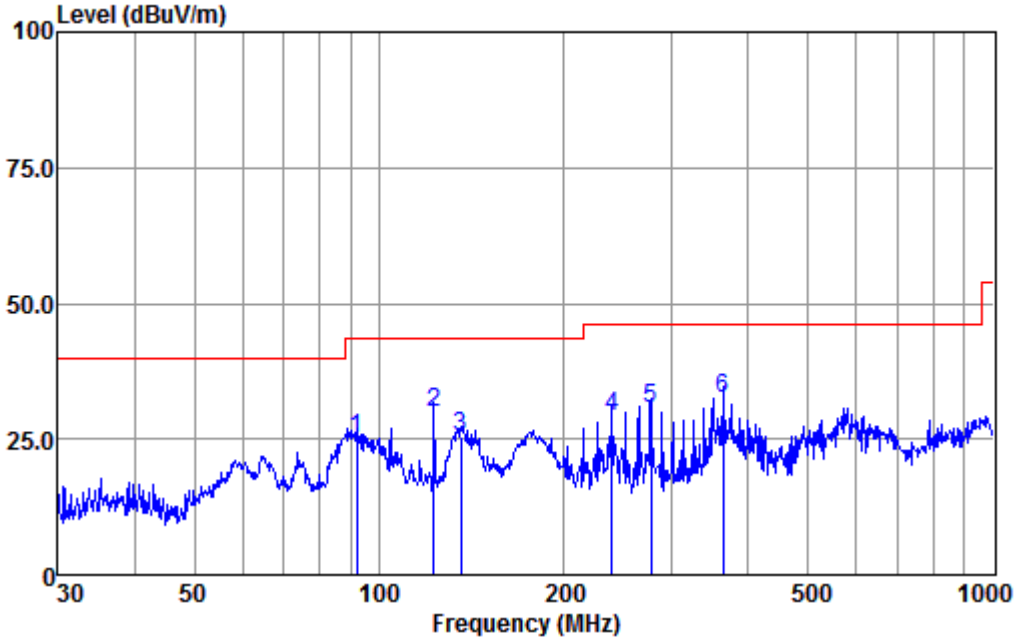
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	36.00	50.02	15.93	0.21	42.61	23.55	40.00	-16.45	QP
2	39.85	48.86	16.29	0.22	42.62	22.75	40.00	-17.25	QP
3	59.03	49.10	12.41	0.30	42.65	19.16	40.00	-20.84	QP
4 q	134.56	57.74	12.09	0.60	42.64	27.79	43.50	-15.71	QP
5	252.06	57.79	11.56	0.77	42.45	27.67	46.00	-18.33	QP
6	351.71	55.26	14.24	0.92	42.23	28.19	46.00	-17.81	QP



Condition : VERTICAL
Condition :
EUT/Project: 7471CR
Test Mode : b

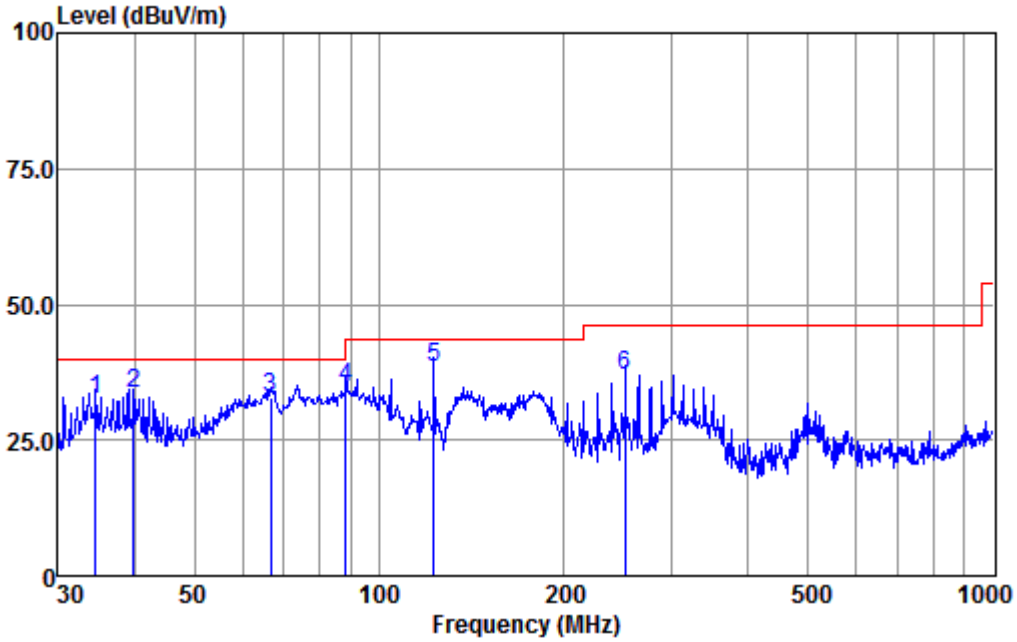
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	30.96	61.23	15.41	0.19	42.60	34.23	40.00	-5.77	QP
2 q	35.26	65.10	15.86	0.20	42.61	38.55	40.00	-1.45	QP
3	39.71	63.54	16.28	0.22	42.62	37.42	40.00	-2.58	QP
4	56.79	59.40	11.98	0.29	42.65	29.02	40.00	-10.98	QP
5	135.98	60.38	11.87	0.60	42.64	30.21	43.50	-13.29	QP
6	351.71	53.89	14.24	0.92	42.23	26.82	46.00	-19.18	QP

Xeo 30 Master



Condition : HORIZONTAL
Condition :
EUT/Project: 7471CR
Test Mode : b

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	92.14	58.75	8.43	0.42	42.69	24.91	43.50	-18.59	QP
2	122.83	61.14	10.85	0.55	42.67	29.87	43.50	-13.63	QP
3	135.98	55.56	11.87	0.60	42.64	25.39	43.50	-18.11	QP
4	239.99	59.85	11.10	0.75	42.47	29.23	46.00	-16.77	QP
5	277.09	59.73	12.45	0.81	42.43	30.56	46.00	-15.44	QP
6 q	362.98	59.33	14.45	0.94	42.20	32.52	46.00	-13.48	QP



Condition : VERTICAL
Condition :
EUT/Project: 7471CR
Test Mode : b

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	34.52	59.01	15.79	0.20	42.61	32.39	40.00	-7.61	QP
2	39.85	59.55	16.29	0.22	42.62	33.44	40.00	-6.56	QP
3	66.73	63.23	11.78	0.32	42.66	32.67	40.00	-7.33	QP
4	88.34	68.70	8.08	0.41	42.68	34.51	43.50	-8.99	QP
5 q	122.83	69.48	10.85	0.55	42.67	38.21	43.50	-5.29	QP
6	252.06	66.94	11.56	0.77	42.45	36.82	46.00	-9.18	QP

Above 1GHz:

Xeo 20 Master

Lowest Channel(2402MHz)

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4804	35.19	6.18	41.37	54	-12.63	peak	Horizontal
2	7206	36.64	10.63	47.27	54	-6.73	peak	Horizontal
3	9608	33.14	14.38	47.52	54	-6.48	peak	Horizontal
4	4804	32.38	6.18	38.56	54	-15.44	peak	Vertical
5	7206	34.87	10.63	45.5	54	-8.5	peak	Vertical
6	9608	33.91	14.38	48.29	54	-5.71	peak	Vertical

Middle Channel(2441MHz)

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4882	38	7	45	54	-9	peak	Horizontal
2	7323	36.51	11.13	47.64	54	-6.36	peak	Horizontal
3	9764	38.18	14.36	52.54	54	-1.46	peak	Horizontal
4	4882	39.26	7	46.26	54	-7.74	peak	Vertical
5	7323	37.86	11.13	48.99	54	-5.01	peak	Vertical
6	9764	35.36	14.36	49.72	54	-4.28	peak	Vertical

Highest Channel(2480MHz)

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4960	37.22	7.49	44.71	54	-9.29	peak	Horizontal
2	7440	36.72	11.65	48.37	54	-5.63	peak	Horizontal
3	9920	37.33	14.4	51.73	54	-2.27	peak	Horizontal
4	4960	38.57	7.49	46.06	54	-7.94	peak	Vertical
5	7440	38.7	11.65	50.35	54	-3.65	peak	Vertical
6	9920	31.54	14.4	45.94	54	-8.06	peak	Vertical

Xeo 30 Master

Lowest Channel(2402MHz)

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4804	35.17	6.18	41.35	54	-12.65	peak	Horizontal
2	7206	35.03	10.63	45.66	54	-8.34	peak	Horizontal
3	9608	32.05	14.38	46.43	54	-7.57	peak	Horizontal
4	4804	36.22	6.18	42.4	54	-11.6	peak	Vertical
5	7206	34.83	10.63	45.46	54	-8.54	peak	Vertical
6	9608	34.21	14.38	48.59	54	-5.41	peak	Vertical

Middle Channel(2441MHz)

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4882	38.5	7	45.5	54	-8.5	peak	Horizontal
2	7323	39.74	11.13	50.87	54	-3.13	peak	Horizontal
3	9764	37.22	14.36	51.58	54	-2.42	peak	Horizontal
4	4882	37.11	7	44.11	54	-9.89	peak	Vertical
5	7323	39.43	11.13	50.56	54	-3.44	peak	Vertical
6	9764	36.85	14.36	51.21	54	-2.79	peak	Vertical

Highest Channel(2480MHz)

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	4960	34.57	7.49	42.06	54	-11.94	peak	Horizontal
2	7440	40.13	11.65	51.78	54	-2.22	peak	Horizontal
3	9920	33.38	14.4	47.78	54	-6.22	peak	Horizontal
4	4960	36.05	7.49	43.54	54	-10.46	peak	Vertical
5	7440	34.07	11.65	45.72	54	-8.28	peak	Vertical
6	9920	34.25	14.4	48.65	54	-5.35	peak	Vertical

Remark: 1) Emission = Receiver Reading + Factor

2) Factor = Antenna Factor + Cable Loss + Pre-amplifier Factor.

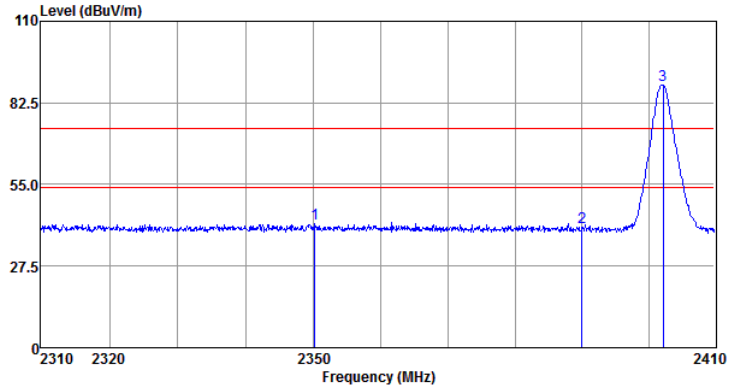
3) If the Peak value below the AV Limit, the AV test doesn't perform for this submission.

6.5.2 Radiated Band edge

Xeo 20 Master

Lowest Channel(2402MHz) **Modulation: GFSK**

Vertical:

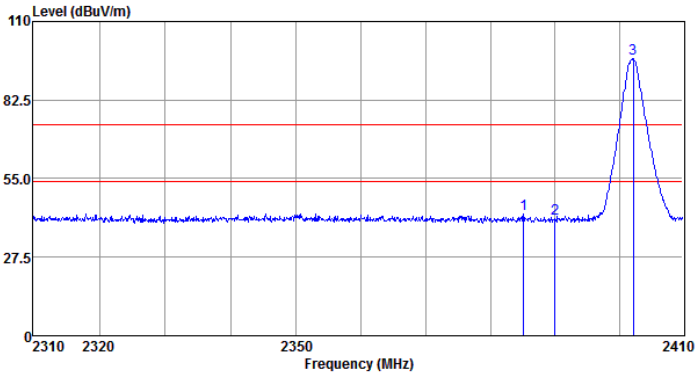


Antenna Polarity :VERTICAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2350.19	46.63	25.98	6.40	37.36	41.65	74.00	-32.35	Peak
2	2390.00	45.37	26.03	6.47	37.36	40.51	74.00	-33.49	Peak
3	2402.25	93.39	26.05	6.50	37.35	88.59	74.00	14.59	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Horizontal:



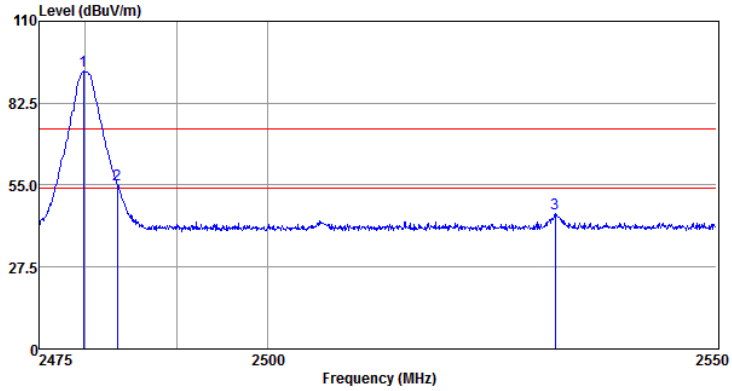
Antenna Polarity :HORIZONTAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2385.11	47.57	26.03	6.47	37.36	42.71	74.00	-31.29	Peak
2	2390.00	45.80	26.03	6.47	37.36	40.94	74.00	-33.06	Peak
3	2402.25	101.77	26.05	6.50	37.35	96.97	74.00	22.97	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Highest Channel(2480MHz) **Modulation: GFSK**

Horizontal
Peak:

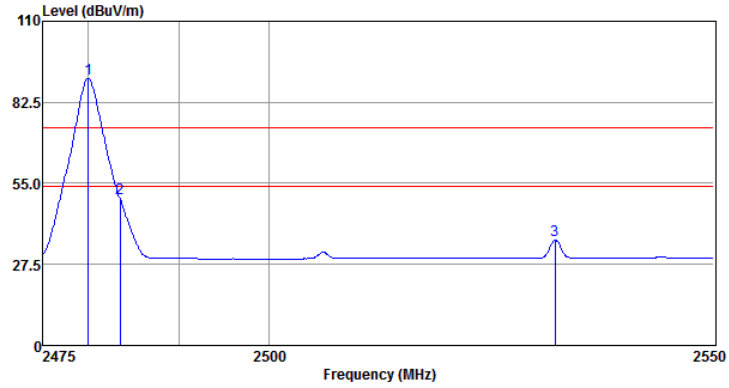


Antenna Polarity :HORIZONTAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2479.81	97.74	26.17	6.74	37.49	93.16	74.00	19.16	Peak
2	2483.50	59.82	26.18	6.80	37.51	55.29	74.00	-18.71	Peak
3	2531.87	49.64	26.29	7.01	37.59	45.35	74.00	-28.65	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Horizontal
Average:



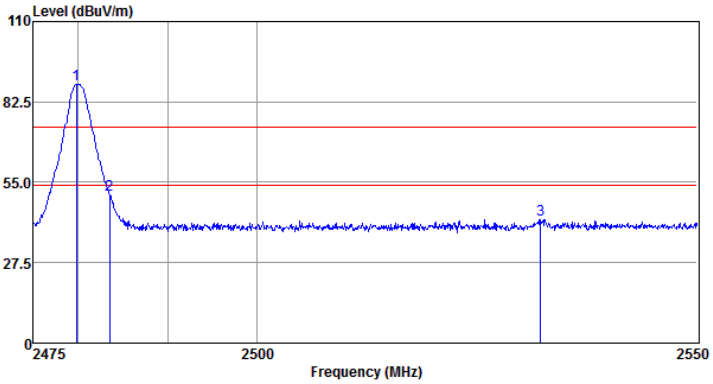
Antenna Polarity :HORIZONTAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2479.96	95.24	26.17	6.74	37.49	90.66	54.00	36.66	Average
2	2483.50	54.31	26.18	6.80	37.51	49.78	54.00	-4.22	Average
3	2532.02	40.18	26.29	7.01	37.59	35.89	54.00	-18.11	Average

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Highest Channel(2480MHz) **Modulation: GFSK**

Vertical:



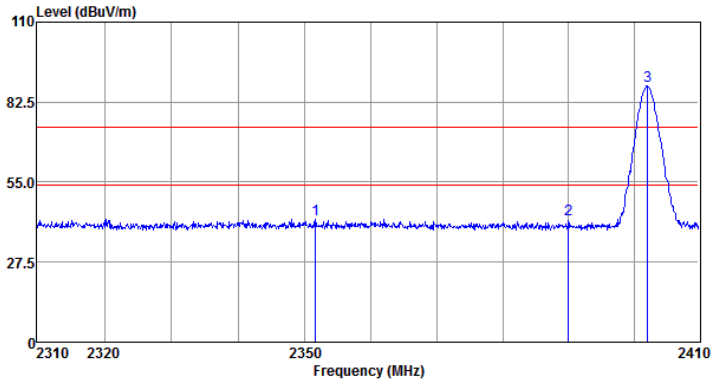
Antenna Polarity :VERTICAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2479.81	93.19	26.17	6.74	37.49	88.61	74.00	14.61	Peak
2	2483.50	55.34	26.18	6.80	37.51	50.81	74.00	-23.19	Peak
3	2532.10	46.69	26.29	7.01	37.59	42.40	74.00	-31.60	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Lowest Channel(2402MHz) **Modulation: π/4DQPSK**

Vertical:

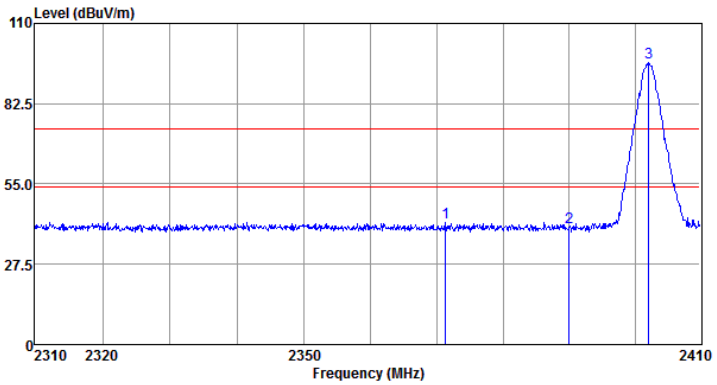


Antenna Polarity :VERTICAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2351.58	47.06	25.98	6.42	37.36	42.10	74.00	-31.90	Peak
2	2390.00	46.96	26.03	6.47	37.36	42.10	74.00	-31.90	Peak
3	2402.15	92.90	26.05	6.50	37.35	88.10	74.00	14.10	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Horizontal:



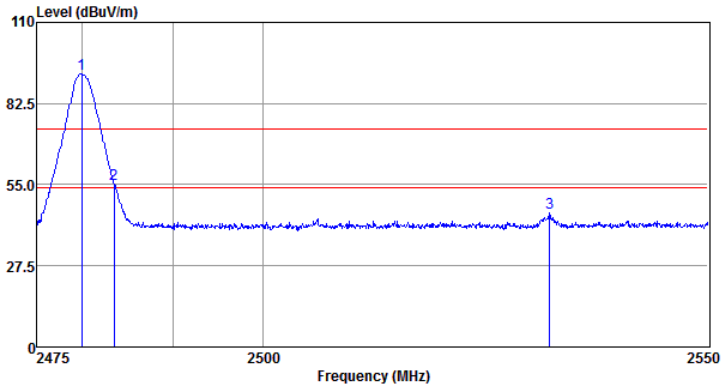
Antenna Polarity :HORIZONTAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2371.20	46.72	26.01	6.45	37.36	41.82	74.00	-32.18	Peak
2	2390.00	44.97	26.03	6.47	37.36	40.11	74.00	-33.89	Peak
3	2402.15	101.25	26.05	6.50	37.35	96.45	74.00	22.45	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Highest Channel(2480MHz) **Modulation: π/4DQPSK**

Horizontal
Peak:

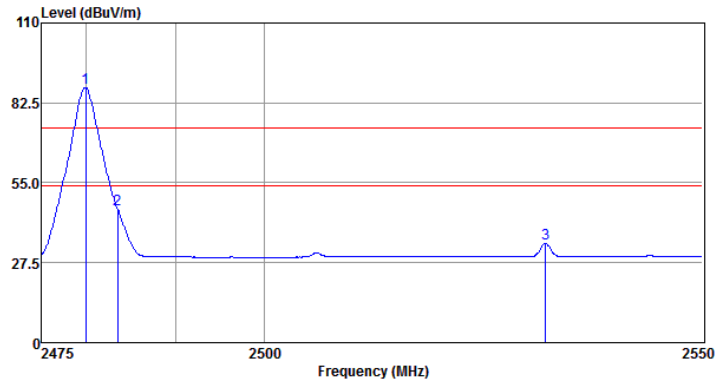


Antenna Polarity :HORIZONTAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2479.88	97.04	26.17	6.74	37.49	92.46	74.00	18.46	Peak
2	2483.50	59.91	26.18	6.80	37.51	55.38	74.00	-18.62	Peak
3	2532.10	49.57	26.29	7.01	37.59	45.28	74.00	-28.72	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Horizontal
Average:



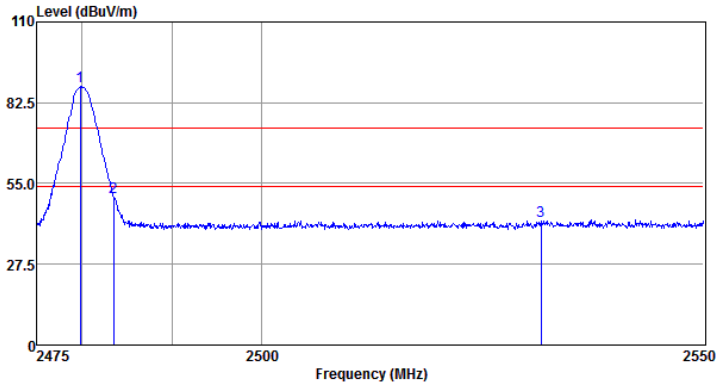
Antenna Polarity :HORIZONTAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2479.88	92.45	26.17	6.74	37.49	87.87	54.00	33.87	Average
2	2483.50	50.58	26.18	6.80	37.51	46.05	54.00	-7.95	Average
3	2531.95	38.49	26.29	7.01	37.59	34.20	54.00	-19.80	Average

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Highest Channel(2480MHz) **Modulation: π/4DQPSK**

Vertical:



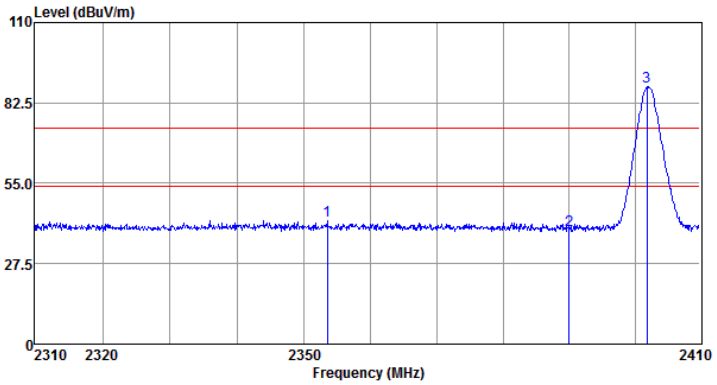
Antenna Polarity :VERTICAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2479.81	92.64	26.17	6.74	37.49	88.06	74.00	14.06	Peak
2	2483.50	55.04	26.18	6.80	37.51	50.51	74.00	-23.49	Peak
3	2531.49	46.53	26.29	6.94	37.59	42.17	74.00	-31.83	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Lowest Channel(2402MHz) **Modulation: 8DPSK**

Vertical:

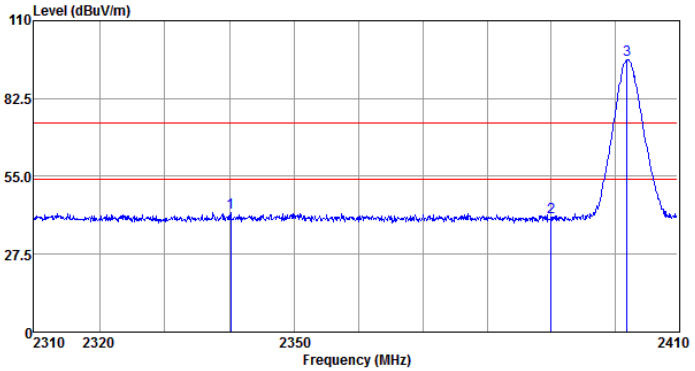


Antenna Polarity :VERTICAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2353.48	47.23	25.98	6.42	37.36	42.27	74.00	-31.73	Peak
2	2390.00	43.85	26.03	6.47	37.36	38.99	74.00	-35.01	Peak
3	2401.84	92.77	26.05	6.50	37.35	87.97	74.00	13.97	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Horizontal:



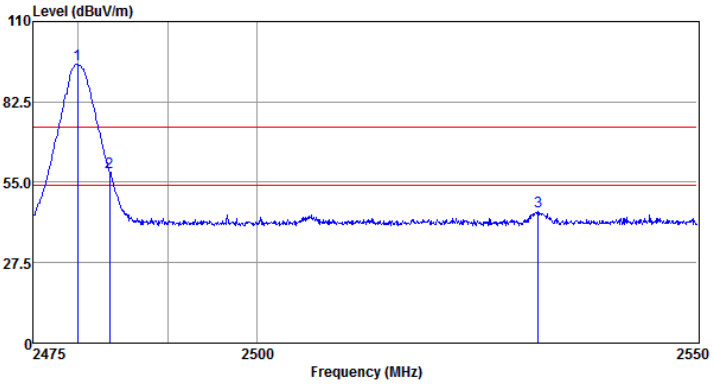
Antenna Polarity :HORIZONTAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2340.15	47.16	25.96	6.40	37.37	42.15	74.00	-31.85	Peak
2	2390.00	45.38	26.03	6.47	37.36	40.52	74.00	-33.48	Peak
3	2401.95	101.19	26.05	6.50	37.35	96.39	74.00	22.39	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Highest Channel(2480MHz) **Modulation: 8DPSK**

Horizontal
Peak:

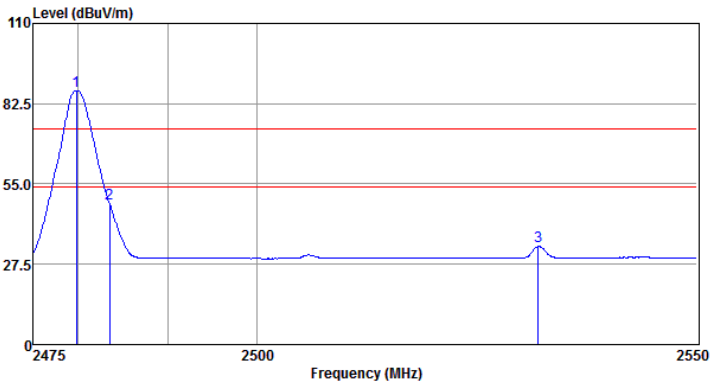


Antenna Polarity :HORIZONTAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2479.88	100.07	26.17	6.74	37.49	95.49	74.00	21.49	Peak
2	2483.50	63.09	26.18	6.80	37.51	58.56	74.00	-15.44	Peak
3	2531.80	49.44	26.29	7.01	37.59	45.15	74.00	-28.85	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Horizontal
Average:



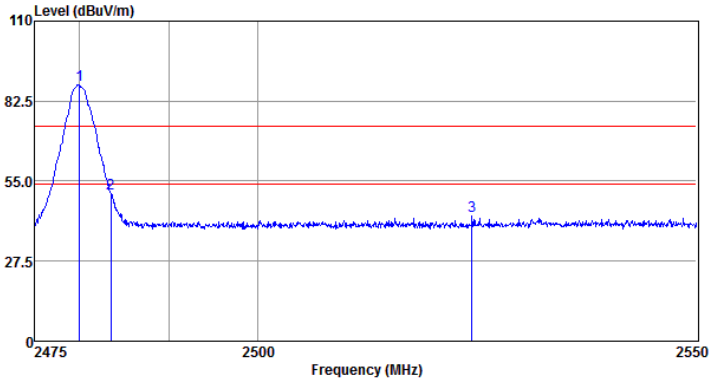
Antenna Polarity :HORIZONTAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2479.81	91.62	26.17	6.74	37.49	87.04	54.00	33.04	Average
2	2483.50	52.76	26.18	6.80	37.51	48.23	54.00	-5.77	Average
3	2531.80	37.88	26.29	7.01	37.59	33.59	54.00	-20.41	Average

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Highest Channel(2480MHz) **Modulation: 8DPSK**

Vertical:



Antenna Polarity :VERTICAL

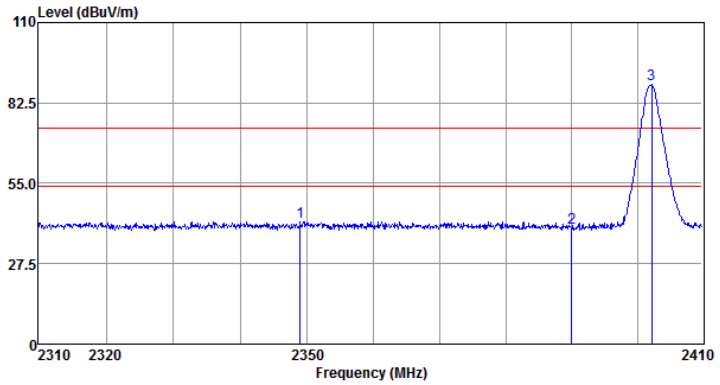
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2479.96	92.60	26.17	6.74	37.49	88.02	74.00	14.02	Peak
2	2483.50	55.35	26.18	6.80	37.51	50.82	74.00	-23.18	Peak
3	2524.25	47.38	26.27	6.94	37.58	43.01	74.00	-30.99	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Xeo 30 Master

Lowest Channel(2402MHz) **Modulation: GFSK**

Vertical:

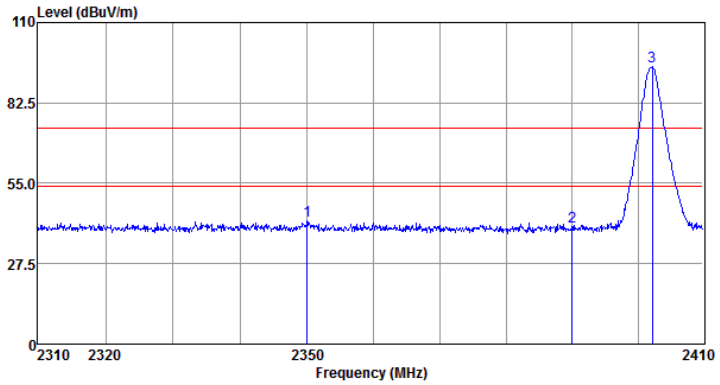


Antenna Polarity :VERTICAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2348.90	46.93	25.97	6.40	37.37	41.93	74.00	-32.07	Peak
2	2390.00	44.58	26.03	6.47	37.36	39.72	74.00	-34.28	Peak
3	2402.25	93.53	26.05	6.50	37.35	88.73	74.00	14.73	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Horizontal:



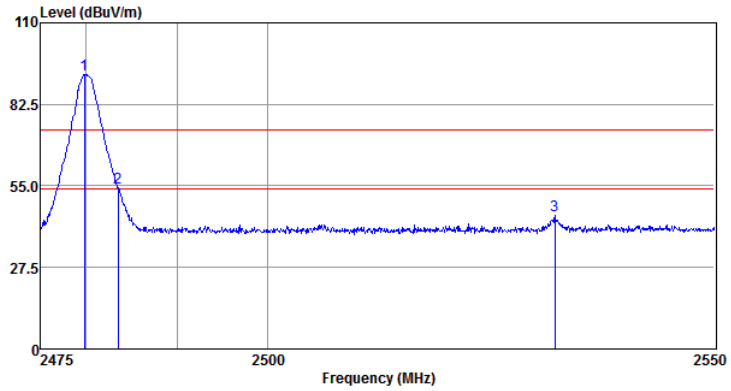
Antenna Polarity :HORIZONTAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2349.99	47.06	25.98	6.40	37.36	42.08	74.00	-31.92	Peak
2	2390.00	45.13	26.03	6.47	37.36	40.27	74.00	-33.73	Peak
3	2402.25	99.62	26.05	6.50	37.35	94.82	74.00	20.82	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Highest Channel(2480MHz) **Modulation: GFSK**

Horizontal
Peak:

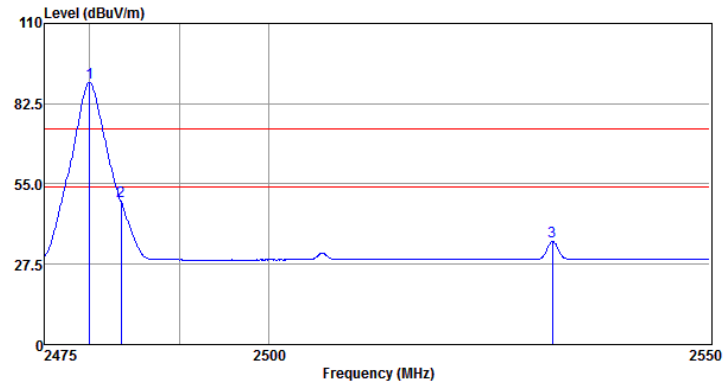


Antenna Polarity :HORIZONTAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2479.81	97.02	26.17	6.74	37.49	92.44	74.00	18.44	Peak
2	2483.50	58.93	26.18	6.80	37.51	54.40	74.00	-19.60	Peak
3	2532.02	49.19	26.29	7.01	37.59	44.90	74.00	-29.10	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Horizontal
Average:



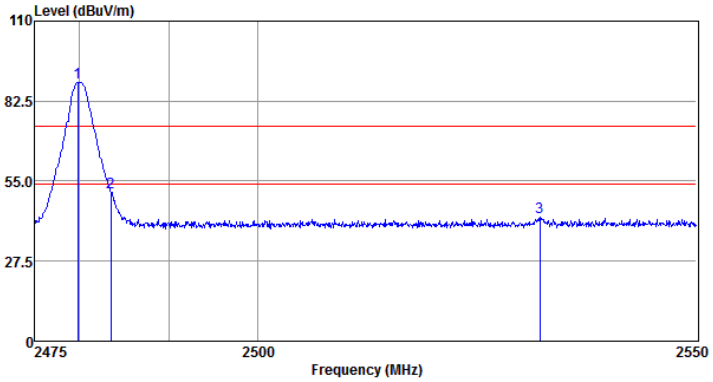
Antenna Polarity :HORIZONTAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2479.96	94.43	26.17	6.74	37.49	89.85	74.00	15.85	Peak
2	2483.50	53.45	26.18	6.80	37.51	48.92	74.00	-25.08	Peak
3	2532.02	39.70	26.29	7.01	37.59	35.41	74.00	-38.59	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Highest Channel(2480MHz) **Modulation: GFSK**

Vertical:



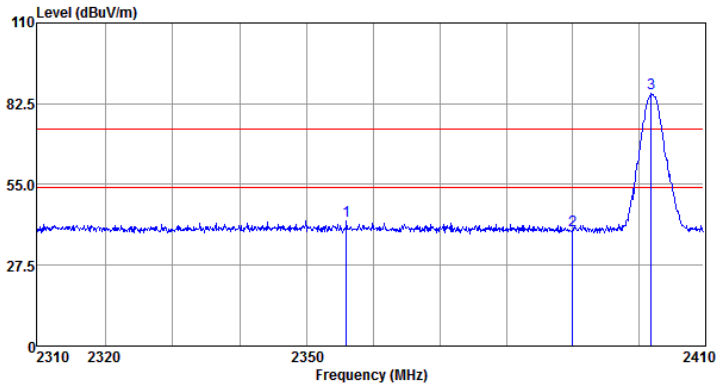
Antenna Polarity :VERTICAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2479.81	93.62	26.17	6.74	37.49	89.04	74.00	15.04	Peak
2	2483.50	55.87	26.18	6.80	37.51	51.34	74.00	-22.66	Peak
3	2532.02	46.96	26.29	7.01	37.59	42.67	74.00	-31.33	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Lowest Channel(2402MHz) **Modulation: π/4DQPSK**

Vertical:

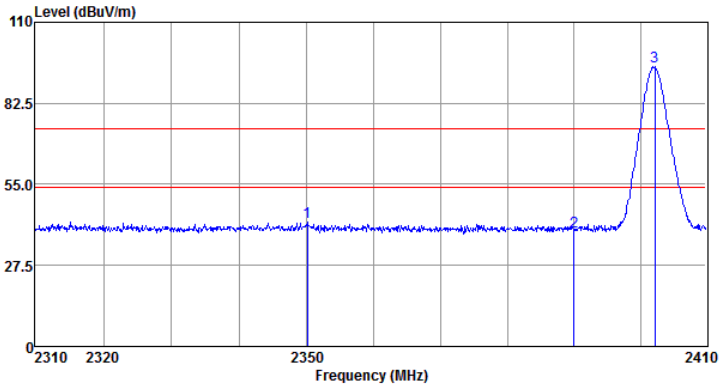


Antenna Polarity :VERTICAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2355.87	47.71	25.98	6.42	37.36	42.75	74.00	-31.25	Peak
2	2390.00	44.18	26.03	6.47	37.36	39.32	74.00	-34.68	Peak
3	2401.95	90.69	26.05	6.50	37.35	85.89	74.00	11.89	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Horizontal:



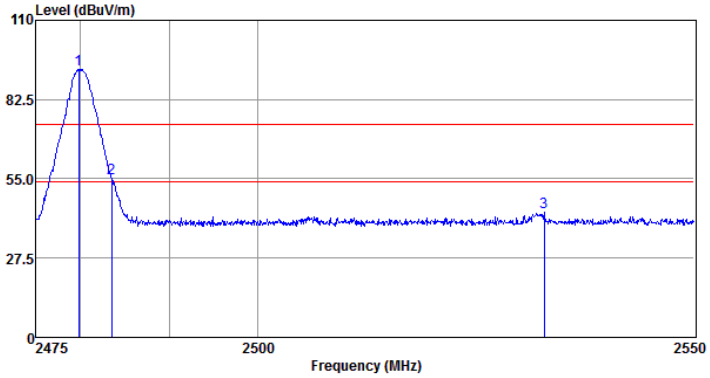
Antenna Polarity :HORIZONTAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2350.09	47.07	25.98	6.40	37.36	42.09	74.00	-31.91	Peak
2	2390.00	43.93	26.03	6.47	37.36	39.07	74.00	-34.93	Peak
3	2402.25	99.95	26.05	6.50	37.35	95.15	74.00	21.15	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Highest Channel(2480MHz) **Modulation: π/4DQPSK**

Horizontal
Peak:

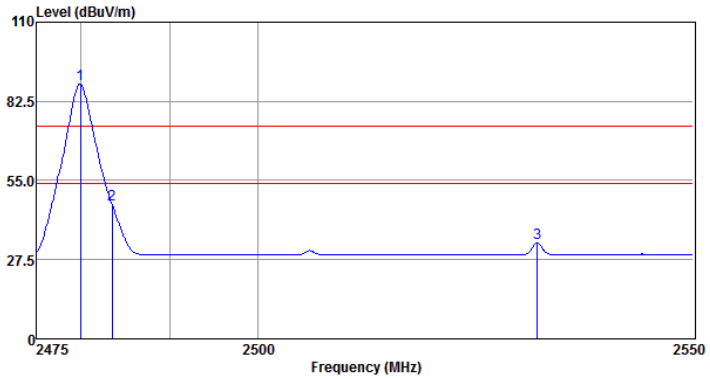


Antenna Polarity :HORIZONTAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2479.81	97.60	26.17	6.74	37.49	93.02	74.00	19.02	Peak
2	2483.50	59.65	26.18	6.80	37.51	55.12	74.00	-18.88	Peak
3	2532.70	47.55	26.31	7.01	37.59	43.28	74.00	-30.72	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Horizontal
Average:



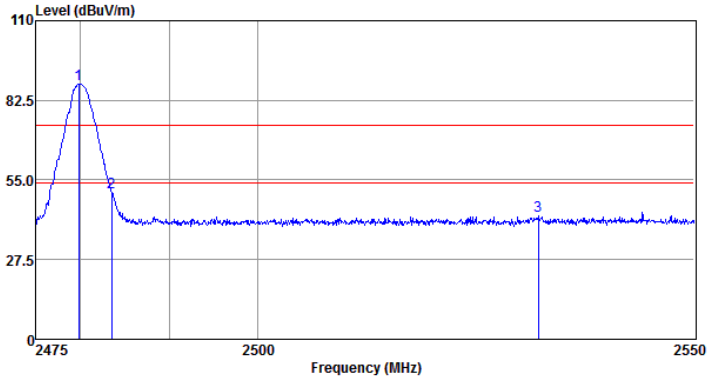
Antenna Polarity :HORIZONTAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2479.88	93.13	26.17	6.74	37.49	88.55	74.00	14.55	Peak
2	2483.50	51.12	26.18	6.80	37.51	46.59	74.00	-27.41	Peak
3	2531.95	37.70	26.29	7.01	37.59	33.41	74.00	-40.59	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Highest Channel(2480MHz) **Modulation: π/4DQPSK**

Vertical:



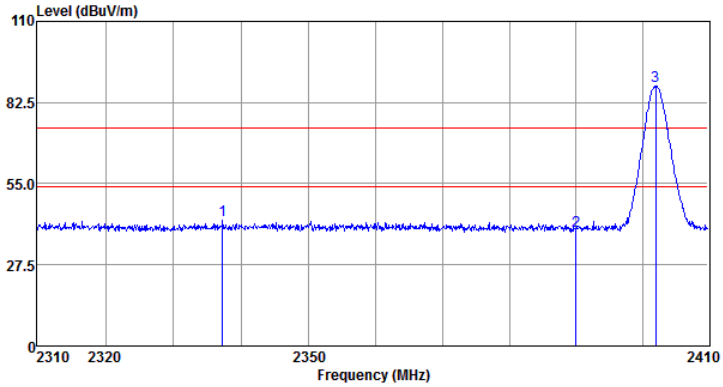
Antenna Polarity :VERTICAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2479.81	92.72	26.17	6.74	37.49	88.14	74.00	14.14	Peak
2	2483.50	55.32	26.18	6.80	37.51	50.79	74.00	-23.21	Peak
3	2532.02	46.77	26.29	7.01	37.59	42.48	74.00	-31.52	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Lowest Channel(2402MHz) **Modulation: 8DPSK**

Vertical:

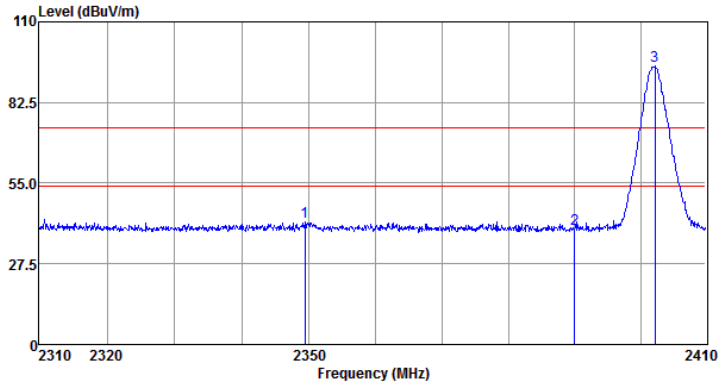


Antenna Polarity :VERTICAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2337.18	47.78	25.96	6.40	37.37	42.77	74.00	-31.23	Peak
2	2390.00	43.85	26.03	6.47	37.36	38.99	74.00	-35.01	Peak
3	2402.05	93.04	26.05	6.50	37.35	88.24	74.00	14.24	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Horizontal:



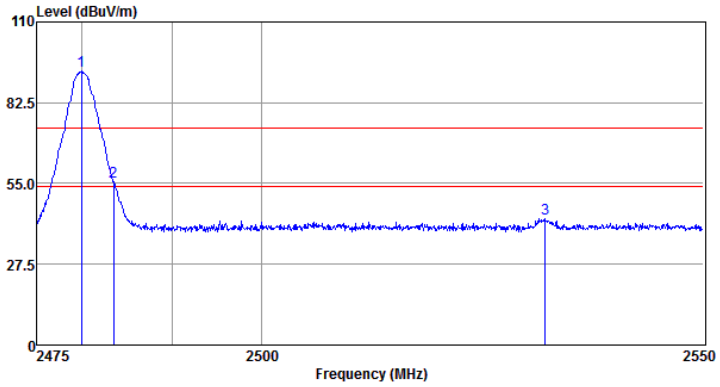
Antenna Polarity :HORIZONTAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2349.39	46.74	25.98	6.40	37.36	41.76	74.00	-32.24	Peak
2	2390.00	44.35	26.03	6.47	37.36	39.49	74.00	-34.51	Peak
3	2402.25	99.66	26.05	6.50	37.35	94.86	74.00	20.86	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Highest Channel(2480MHz) **Modulation: 8DPSK**

Horizontal
Peak:

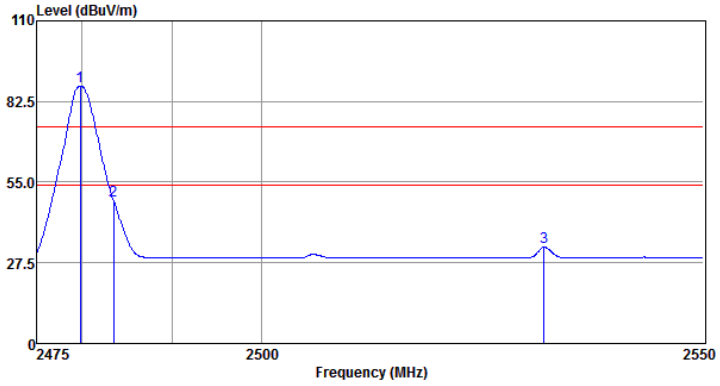


Antenna Polarity :HORIZONTAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2479.88	97.81	26.17	6.74	37.49	93.23	74.00	19.23	Peak
2	2483.50	59.97	26.18	6.80	37.51	55.44	74.00	-18.56	Peak
3	2531.95	47.36	26.29	7.01	37.59	43.07	74.00	-30.93	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Horizontal
Average:



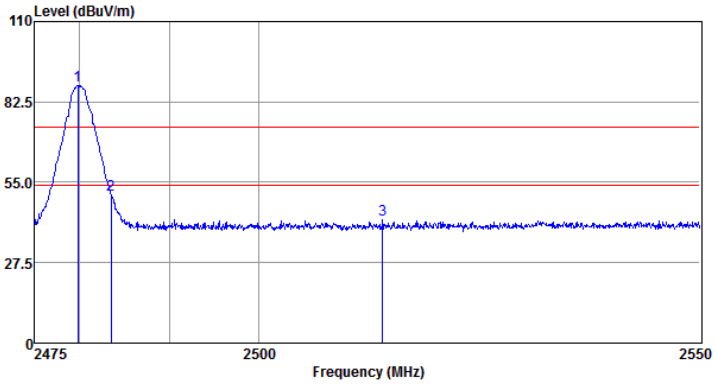
Antenna Polarity :HORIZONTAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2479.81	92.33	26.17	6.74	37.49	87.75	74.00	13.75	Peak
2	2483.50	53.33	26.18	6.80	37.51	48.80	74.00	-25.20	Peak
3	2531.80	37.15	26.29	7.01	37.59	32.86	74.00	-41.14	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Highest Channel(2480MHz) **Modulation: 8DPSK**

Vertical:



Antenna Polarity :VERTICAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	2479.81	92.59	26.17	6.74	37.49	88.01	74.00	14.01	Peak
2	2483.50	55.38	26.18	6.80	37.51	50.85	74.00	-23.15	Peak
3	2513.95	46.72	26.24	6.86	37.56	42.26	74.00	-31.74	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Remark: 1). Test Level = Receiver Reading + Antenna Factor + Cable Loss- Preamplifier Factor

2). If the Peak value below the AV Limit, the AV test doesn't perform for this submission.

All frequencies within the "Restricted bands" have been evaluated to compliance. Except as shown in paragraph of this section, only spurious emissions are permitted in any of the frequency bands listed below:

a. FCC Part 15, Subpart C Section 15.205 Restricted bands of operation.

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.5 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	
13.36 - 13.41			

b. RSS-Gen section 7.2.2 Restricted bands of operation

MHz	MHz	GHz
0.090-0.110	240-285	9.0-9.2
2.1735-2.1905	322-335.4	9.3-9.5
3.020-3.026	399.9-410	10.6-12.7
4.125-4.128	608-614	13.25-13.4
4.17725-4.17775	960-1427	14.47-14.5
4.20725-4.20775	1435-1626.5	15.35-16.2
5.677-5.683	1645.5-1646.5	17.7-21.4
6.215-6.218	1660-1710	22.01-23.12
6.26775-6.26825	1718.8-1722.2	23.6-24.0
6.31175-6.31225	2200-2300	31.2-31.8
8.291-8.294	2310-2390	36.43-36.5
8.362-8.366	2655-2900	Above 38.6
8.37625-8.38675	3260-3267	
8.41425-8.41475	3332-3339	
12.29-12.293	3345.8-3358	
12.51975-12.52025	3500-4400	
12.57675-12.57725	4500-5150	
13.36-13.41	5350-5460	
16.42-16.423	7250-7750	
16.69475-16.69525	8025-8500	
16.80425-16.80475		

7 Test Setup Photographs

Refer to the < Test Setup photos-FCC>.

8 EUT Constructional Details

Refer to the < External Photos > & < Internal Photos >.

--End of the Report--