



## MEASUREMENT REPORT

### FCC PART 15.247 & IC RSS-247 902MHz~928MHz

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**FCC ID:** S9NS2915A  
**IC:** 8976C-S2915A1  
**APPLICANT:** ST Microelectronics S.R.L.  
**Application Type:** Certification  
**Product:** RF Evaluation kit  
**Model No.:** X-NUCLEO-S2915A1  
**FCC Classification:** (DTS) Digital Transmission System  
**FCC Rule Part(s):** Part 15.247  
**IC Standard:** RSS-247 Issue 2  
**Test Procedure(s):** ANSI C63.10-2013, KDB 558074 D01v05r02  
**Received Date:** May 28, 2019  
**Test Date:** June 17 ~ October 29, 2019

**Tested By** : *Peter Syu*

( Peter Syu )

**Reviewed By** : *Paddy Chen*

( Paddy Chen )

**Approved By** : *Chenz Ker*

( Chenz Ker )



Testing Laboratory  
3261

The test results only relate to the tested sample.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Taiwan) Co., Ltd.

### Revision History

Report No.	Version	Description	Issue Date	Note
1905TW5402-U2	1.0	Original Report	2019-11-01	

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## §2.1033 General Information

<b>Applicant</b>	ST Microelectronics S.R.L.
<b>Applicant Address</b>	Via C. Olivetti,2 Agrate Brianza Italy 20864
<b>Manufacturer</b>	DiZiC Co., Ltd.
<b>Manufacturer Address</b>	2F.,No.240, Minsheng W. Rd. Datong Dist., Taipei City 10356, Taiwan
<b>Test Site</b>	MRT Technology (Taiwan) Co., Ltd
<b>Test Site Address</b>	No. 38, Fuxing Second Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C)
<b>MRT FCC Registration No.</b>	291082
<b>FCC Rule Part(s)</b>	Part 15.247
<b>IC Standard:</b>	RSS-247 Issue 2
<b>Model No.</b>	X-NUCLEO-S2915A1
<b>Test Device Serial No.</b>	N/A <input type="checkbox"/> Production <input checked="" type="checkbox"/> Pre-Production <input type="checkbox"/> Engineering

### Test Facility / Accreditations

1. MRT facility is a FCC registered (Reg. No. 291082) test facility with the site description report on file and is designated by the FCC as an Accredited Test Firm.
2. MRT facility is an IC registered (MRT Reg. No. 21723) test laboratory with the site description on file at Industry Canada.
3. MRT Lab is accredited to ISO 17025 by the Taiwan Accreditation Foundation (TAF Cert. No. 3261) in EMC, Telecommunications and Radio testing for FCC (Designation Number: TW3261), Industry Taiwan, EU and TELEC Rules.

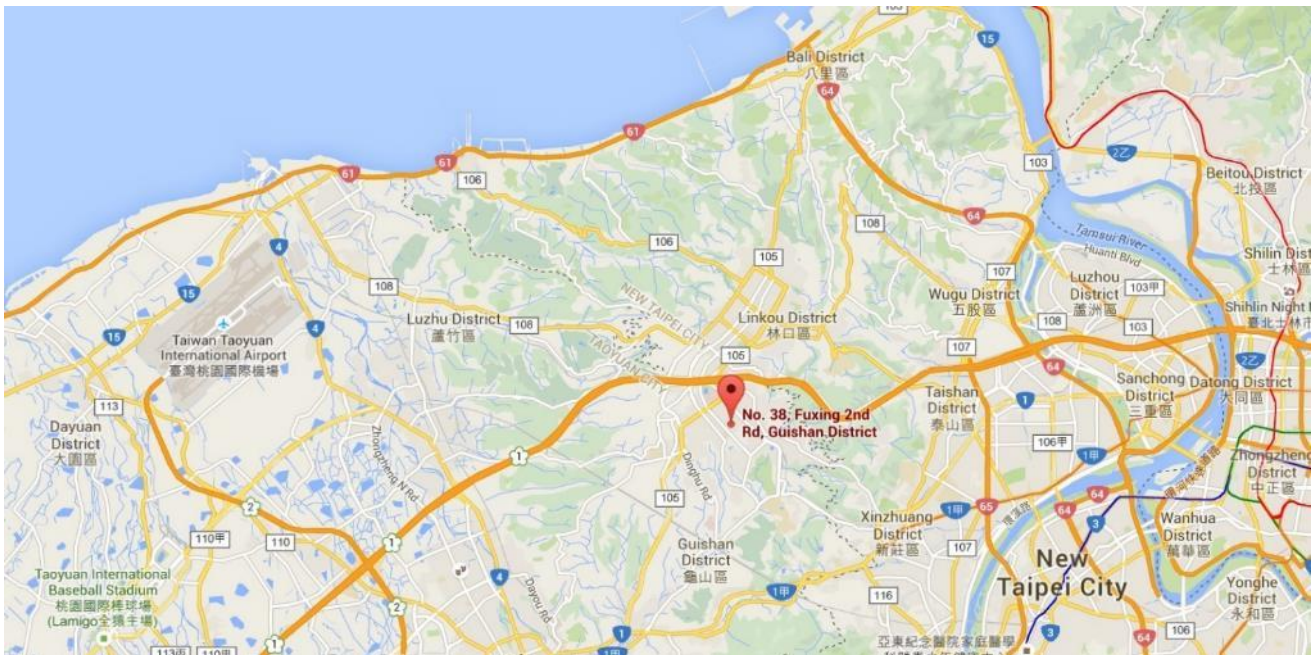
## 1. INTRODUCTION

### 1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

### 1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taoyuan City. These measurement tests were conducted at the MRT Technology (Taiwan) Co., Ltd. Facility located at No.38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 33377, Taiwan (R.O.C).



## 2. PRODUCT INFORMATION

### 2.1. Equipment Description

Product Name	RF Evaluation kit
Model No.	X-NUCLEO-S2915A1
Maximum Power	21.11dBm
Test Voltage	DC 5V (By USB)

### 2.2. Product Specification Subjective to this Standard

Operating Frequency	902MHz~928MHz
Channel List	1. 903.5MHz, 2. 915MHz; 3. 926.5MHz
Type of modulation	2FSK, 2GFSK05, 2GFSK1, 4FSK, 4GFSK05

### 2.3. Test Mode

Test Mode	Mode 1: Transmit – by 2FSK Mode 2: Transmit – by 2GFSK05 Mode 3: Transmit – by 2GFSK1 Mode 4: Transmit – by 4FSK Mode 5: Transmit – by 4GFSK05 Mode 6: Receive Mode
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Note: Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.

## 2.4. Duty Cycles

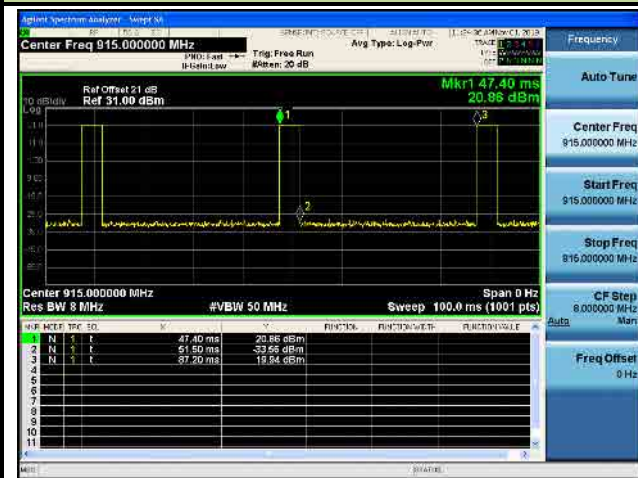
Test Mode	Duty Cycle (%)	Average Factor (dB)
2FSK	10.3%	19.74 dB
2GFSK05	10.3%	19.79 dB
2GFSK1	10.5%	19.58 dB
4FSK	5.5%	25.19 dB
4GFSK05	5.8%	24.79 dB

Note1: Duty Cycle = TX ON / (TX ON + TX OFF)

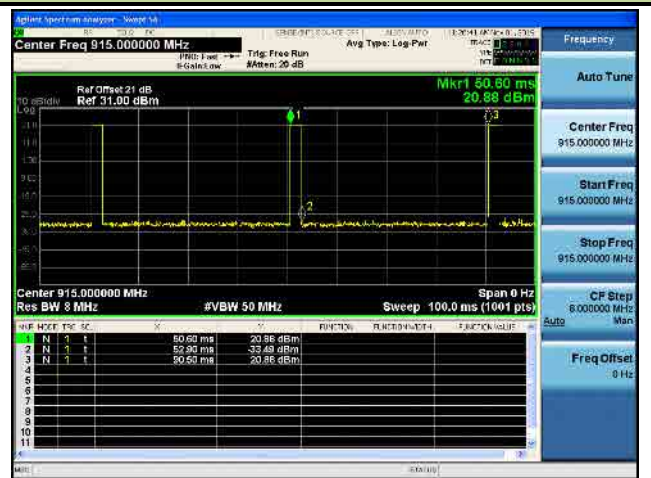
Note2: Average Factor = 20\*LOG (1/Duty Cycle)



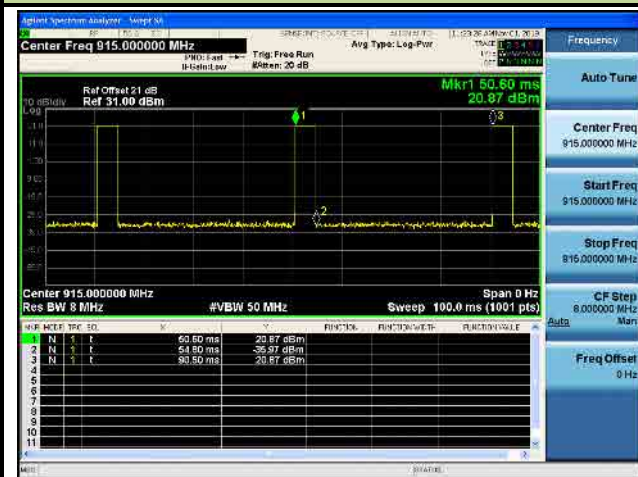
### Duty Cycle - 2FSK



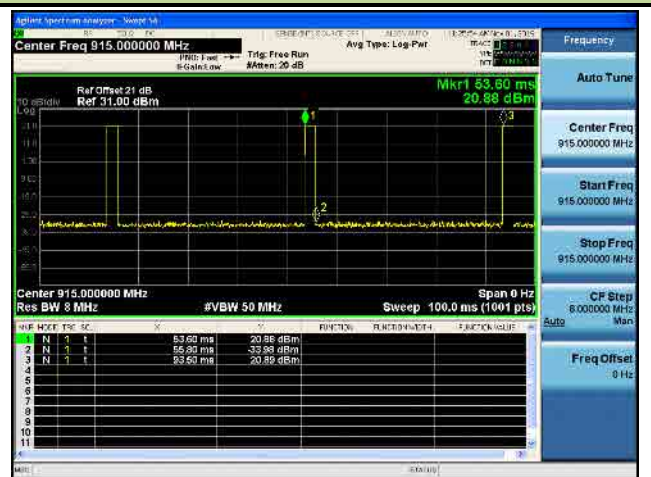
### Duty Cycle - 2GFSK05



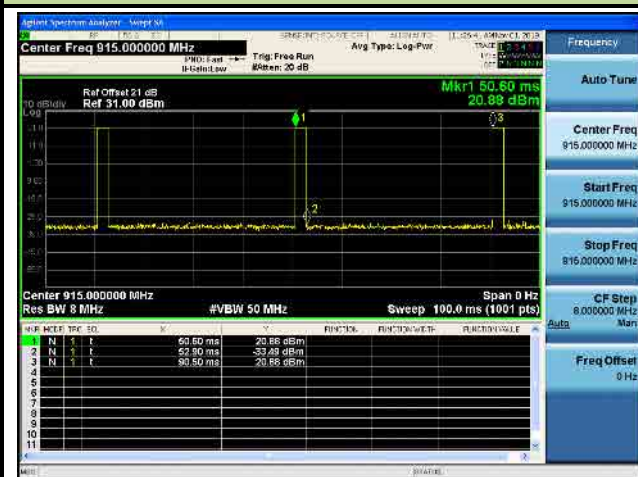
### Duty Cycle - 2GFSK1



### Duty Cycle - 4FSK



### Duty Cycle - 4GFSK05



## 2.5. Test Configuration

This device was tested per the guidance of ANSI C63.10-2013. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing.

## 2.6. Test Software

The test utility software used during testing was “S2-LP DK V1.2.1”.

## 2.7. EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

## 2.8. Labeling Requirements

Per 2.1074 & 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the FCC ID must be displayed on the device per Section 15.19(a)(5). Please see attachment for FCC ID label and label location.

### 3. DESCRIPTION of TEST

#### 3.1. Evaluation Procedure

The measurement procedures described in the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2013), and the guidance provided in KDB 558074 D01v05r02 were used in the measurement of the **RF Evaluation kit**.

**Deviation from measurement procedure.....None**

#### 3.2. AC Line Conducted Emissions

The line-conducted facility is located inside an 9'x4'x3' shielded enclosure. A 1m x 2m wooden table 80cm high is placed 40cm away from the vertical wall and 80cm away from the sidewall of the shielded room. Two 10kHz-30MHz, 50Ω/50uH Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room floor. Power to the LISNs is filtered by external high-current high-insertion loss power line filters. These filters attenuate ambient signal noise from entering the measurement lines. These filters are also bonded to the shielded enclosure.

The EUT is powered from one LISN and the support equipment is powered from the second LISN. All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference ground-plane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the receiver and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The receiver was scanned from 150kHz to 30MHz. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 9kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Each emission was also maximized by varying: power lines, the mode of operation or data exchange speed, or support equipment which determined the worst-case emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions are used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz resolution bandwidth for final measurements.

An extension cord was used to connect to a single LISN which powered by EUT. The extension cord was calibrated with LISN, the impedance and insertion loss are compliance with the requirements as stated in ANSI C63.10-2013.

Line conducted emissions test results are shown in Section 7.8.

### 3.3. Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. A MF Model 210SS turntable is used for radiated measurement. It is a continuously rotatable, remote controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm high PVC support structure is placed on top of the turntable. For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up for frequencies below 1GHz was placed on top of the 0.8 meter high, 1 x 1.5 meter table; and test set-up for frequencies 1-40GHz was placed on top of the 1.5 meter high, 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, if applicable, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, which produced the worst-case emissions. According to 3dB Beam-Width of horn antenna, the horn antenna should be always directed to the EUT when rising height.

Radiated emissions test results are shown in Section 7.6 & 7.7 .

#### 4. ANTENNA REQUIREMENTS

**Excerpt from §15.203 of the FCC Rules/Regulations:**

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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 antenna of the **RF Evaluation kit**, is permanently attached.
- There are no provisions for connection to an external antenna.

**Conclusion:**

The EUT unit complies with the requirement of §15.203.

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	Low Power Radio Solutions	ANT-900MS/ ANT-900MR	Dipole	3dBi

## 5. TEST EQUIPMENT CALIBRATION DATE

### Conducted Emissions – SR2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Two-Line V-Network	R&S	ENV216	MRTTWA00020	1 year	2020/4/25
Cable	Rosnol	N1C50-RG400- B1C50-500CM	MRTTWE00013	1 year	2020/6/18
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2020/3/25

### Radiated Emissions – AC1

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Broadband TRILOG Antenna	SCHWARZBECK	VULB 9162	MRTTWA00001	1 year	2020/6/4
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2020/3/25
Active Loop Antenna	Schwarzbeck	FMZB 1519B	MRTTWA00002	1 year	2020/4/29
Broadband Horn antenna	SCHWARZBECK	BBHA 9120D	MRTTWA00003	1 year	2020/4/22
Breitband Hornantenna	Schwarzbeck	BBHA 9170	MRTTWA00004	1 year	2020/4/23
Broadband Amplifier	Schwarzbeck	BBV 9721	MRTTWA00006	1 year	2020/4/24
Broadband Preamplifier	SCHWARZBECK	BBV 9718	MRTTWA00005	1 year	2020/4/24
Cable	HUBERSUHNER	SF106	MRTTWE00010	1 year	2020/4/22
Cable	Rosnol	K1K50-UP0264- K1K50-4M	MRTTWE00012	1 year	2020/6/18

### Conducted Test Equipment – SR2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2020/10/2
Spectrum Analyzer	KEYSIGHT	N9010B	MRTTWA00074	1 year	2020/7/11
USB Wideband Power Sensor	KEYSIGHT	U2021XA	MRTTWA00015	1 year	2020/3/26

### Test Software

Software	Version	Function
e3	9.160520a	EMI Test Software
EMI	V3	EMI Test Software

## 6. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k = 2$ .

<b>Conducted Emission- Power Line</b>
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): 2.53dB
<b>Conducted Emission- Impedance Stabilization Network Measurement</b>
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): 3.96dB
<b>Radiated Spurious Emission</b>
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): 3.92dB (Below 30M)
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): 4.25dB (30M~1G)
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): 4.40dB (1G~18G)
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): 4.45dB (18G~40G)
<b>Frequency Error</b>
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): $\pm 78.4\text{Hz}$
<b>Conducted Power</b>
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): $\pm 0.84\text{dB}$
<b>Conducted Spurious Emission</b>
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): $\pm 2.65\text{ dB}$
<b>Occupied Bandwidth</b>
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): 3.3%
<b>Temp. / Humidity</b>
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): $\pm 0.82^\circ\text{C} / \pm 3\%$
<b>DC Voltage</b>
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): $\pm 0.3\%$

## 7. TEST RESULT

### 7.1. Summary

**Product Name:** RF Evaluation kit

**FCC Classification:** (DTS) Digital Transmission System

FCC/IC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.247(a)(2)/ 5.2	6dB Bandwidth	$\geq 500\text{kHz}$	Conducted	Pass	Section 7.2
15.247(b)(3)/ 5.4	Output Power	$\leq 30.00\text{dBm}$		Pass	Section 7.3
15.247(e)/ 5.2	Power Spectral Density	$\leq 8.00\text{dBm}/3\text{kHz}$		Pass	Section 7.4
15.247(d)/ 5.5	Out-of-Band Emissions	Conducted $\geq 30\text{dBc}$		Pass	Section 7.5
15.205,15.209/ 8.9,8.10	Spurious Emission	$\leq 74\text{dBuV}/\text{m}(\text{Peak})$ $\leq 54\text{dBuV}/\text{m}(\text{Average})$	Radiated	Pass	Section 7.6
15.205,15.209/ 8.9,8.10	Band Edge Measurement	$\leq 74\text{dBuV}/\text{m}(\text{Peak})$ $\leq 54\text{dBuV}/\text{m}(\text{Average})$		Pass	Section 7.7
15.207/ 8.8	AC Conducted Emissions 150kHz - 30MHz	< FCC 15.207 limits/ RSS Gen § 8.8 limits	Line Conducted	Pass	Section 7.8

#### Notes:

- 1) Determining compliance is based on the test results met the regulation limits or requirements declared by clients, and the test results don't take into account the value of measurement uncertainty.
- 2) All modes of operation and data rates were investigated. For radiated emission test, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst case emissions.
- 3) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
- 4) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables and attenuators.



## 7.2. 6dB Bandwidth Measurement

### 7.2.1. Test Limit

The minimum 6dB bandwidth shall be at least 500 kHz.

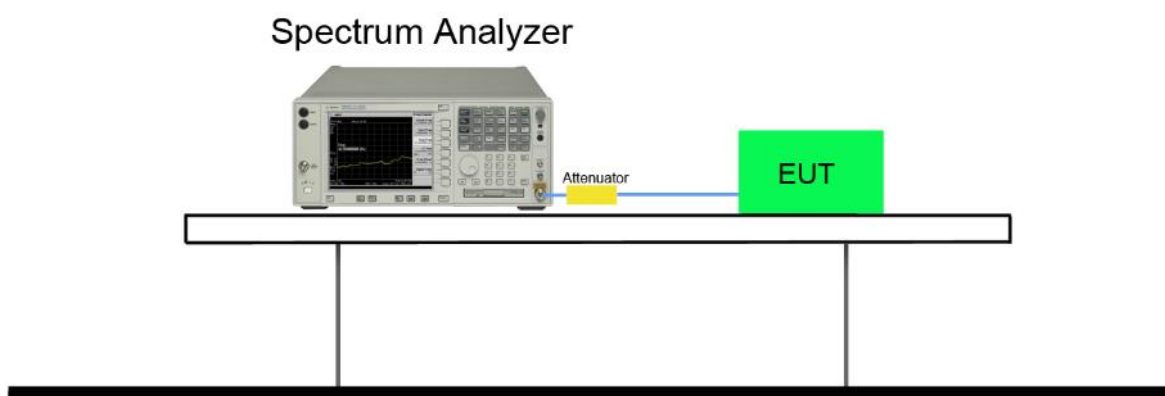
### 7.2.2. Test Procedure used

KDB 558074 D01v05r02- Section 8.2 Option 2

### 7.2.3. Test Setting

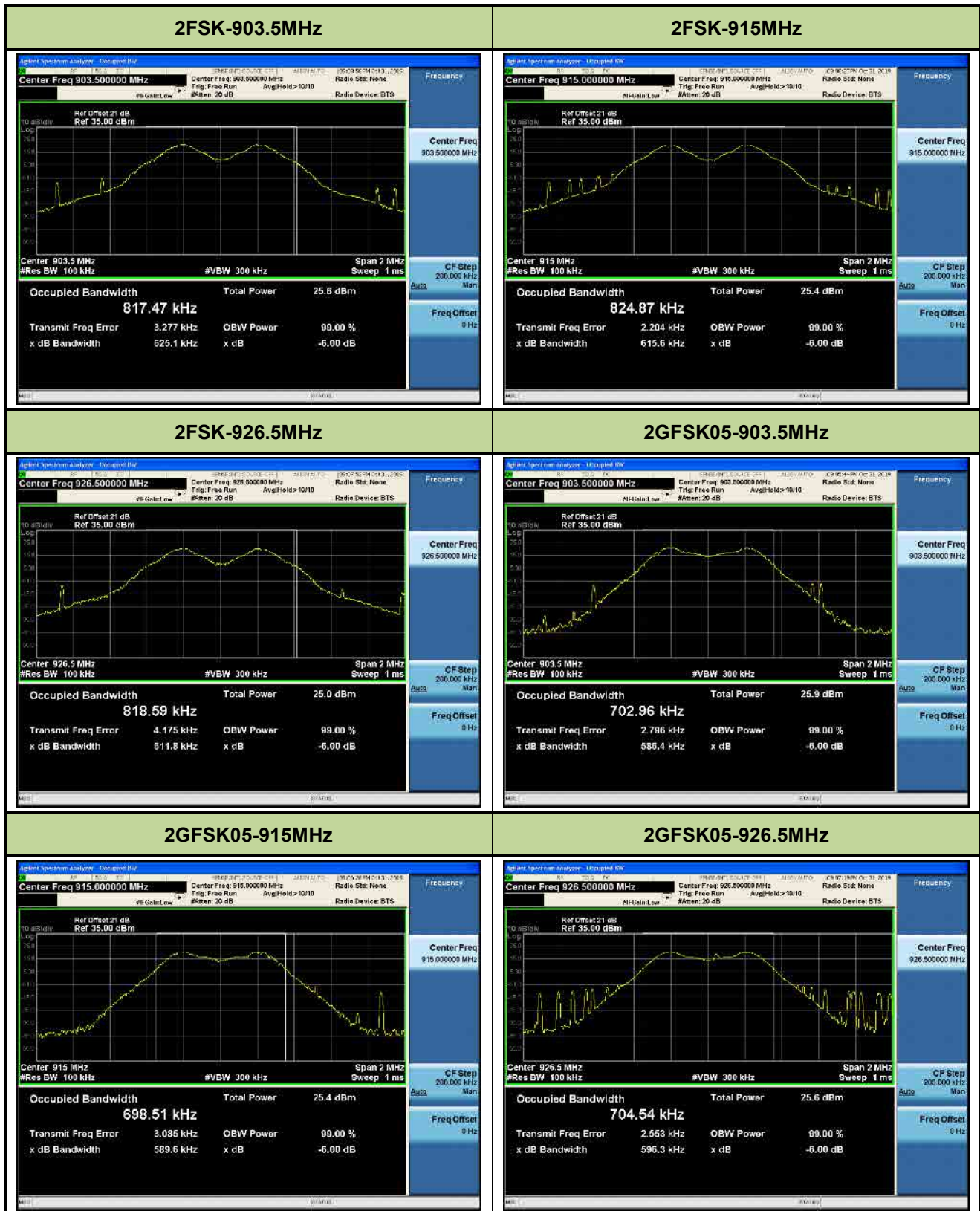
1. The Spectrum's automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to  $X = 6$ . The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. Set RBW = 100 kHz
3. VBW  $\geq 3 \times$  RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. Allow the trace was allowed to stabilize

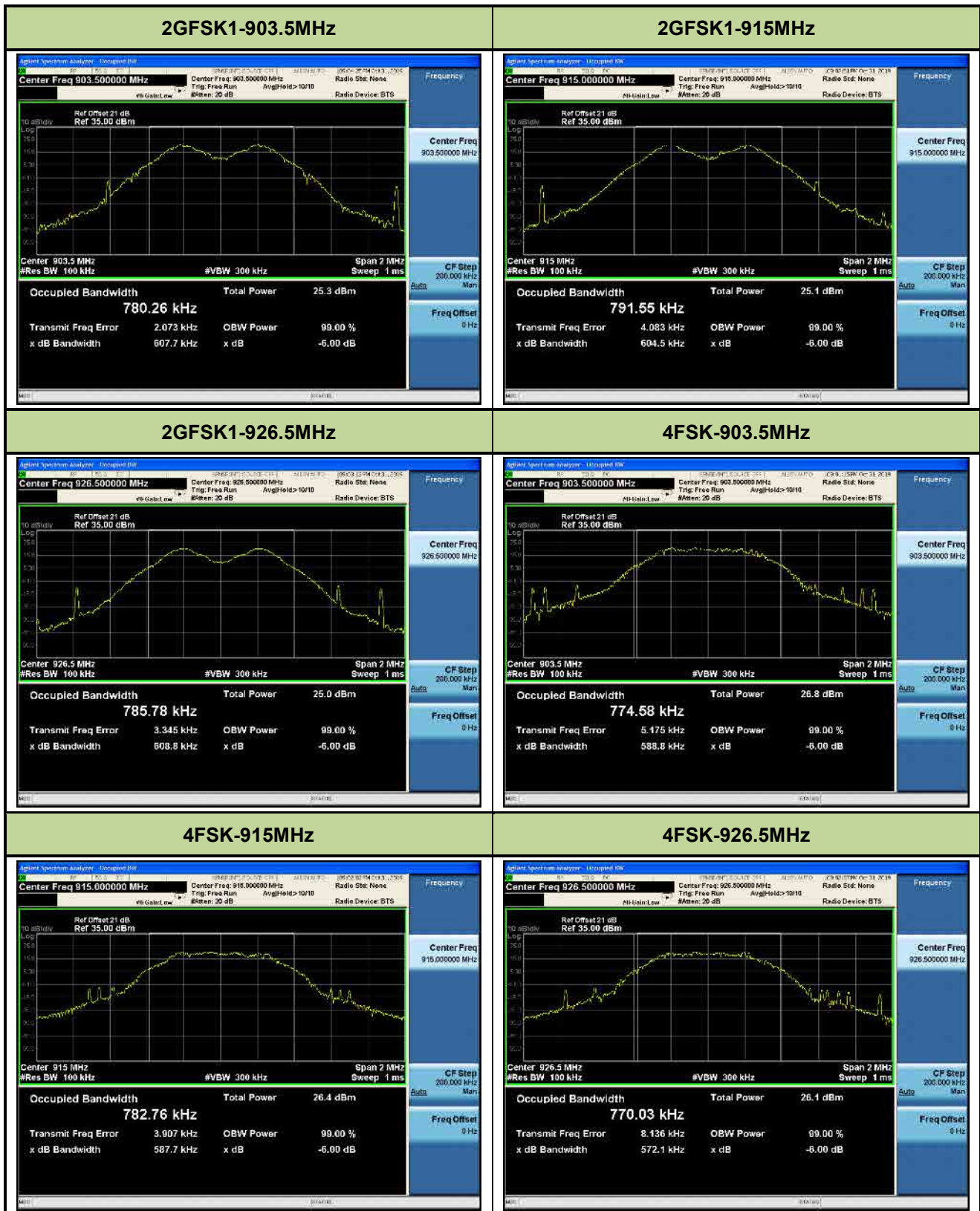
### 7.2.4. Test Setup



**7.2.5. Test Result**
**6dB Bandwidth:**

Test Mode	Frequency (MHz)	6dB Bandwidth (kHz)	99% Bandwidth (kHz)	Limit (MHz)	Result
2FSK	903.5	625.1	817.47	$\geq 0.5$	Pass
	915.0	615.6	824.87	$\geq 0.5$	Pass
	926.5	611.8	818.59	$\geq 0.5$	Pass
2GFSK05	903.5	586.4	702.96	$\geq 0.5$	Pass
	915.0	589.6	698.51	$\geq 0.5$	Pass
	926.5	596.3	704.54	$\geq 0.5$	Pass
2GFSK1	903.5	607.7	780.26	$\geq 0.5$	Pass
	915.0	604.5	791.55	$\geq 0.5$	Pass
	926.5	608.8	785.78	$\geq 0.5$	Pass
4FSK	903.5	588.8	774.58	$\geq 0.5$	Pass
	915.0	587.7	782.76	$\geq 0.5$	Pass
	926.5	572.1	770.03	$\geq 0.5$	Pass
4GFSK05	903.5	584.7	664.43	$\geq 0.5$	Pass
	915.0	561.4	659.12	$\geq 0.5$	Pass
	926.5	567.2	659.39	$\geq 0.5$	Pass

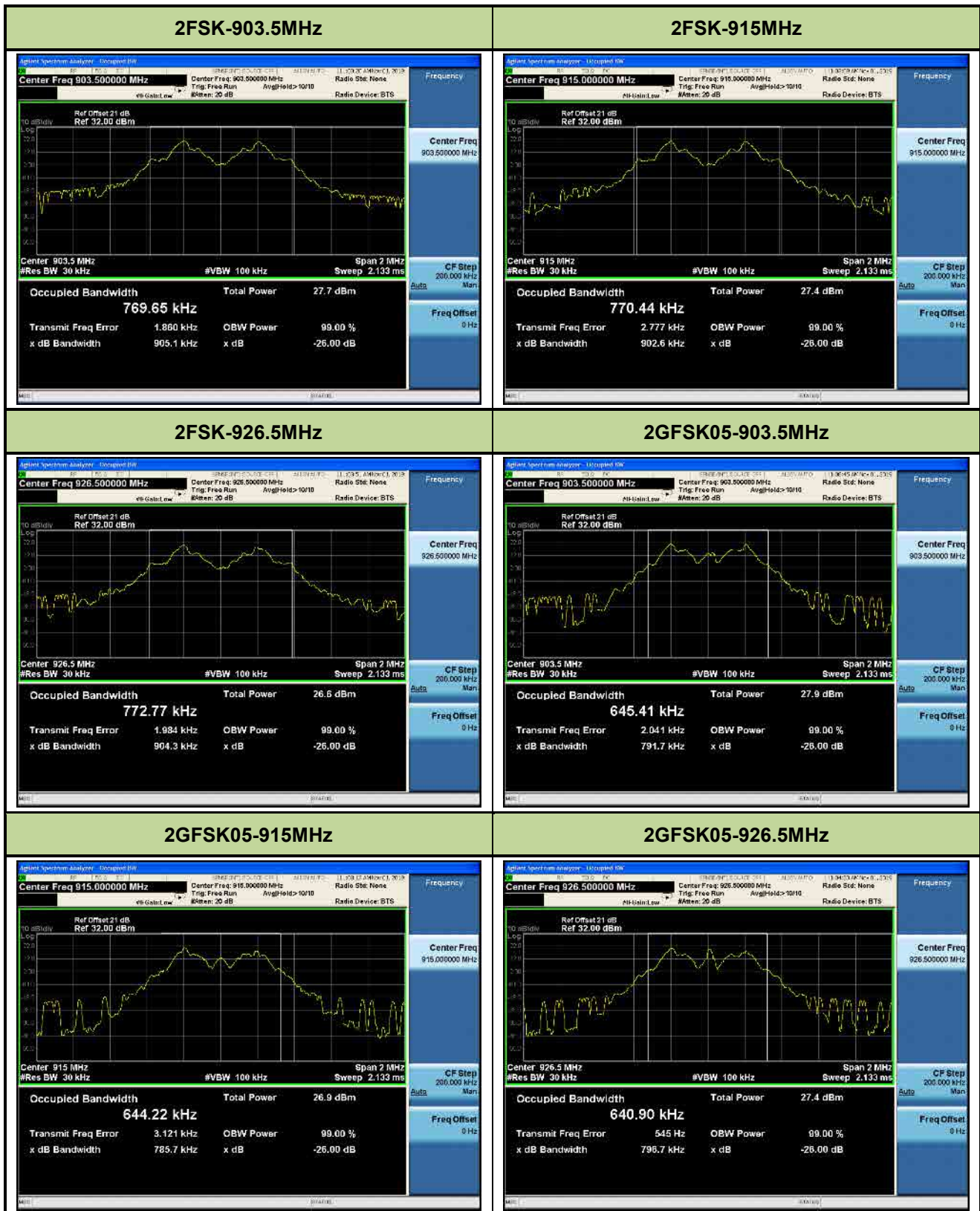


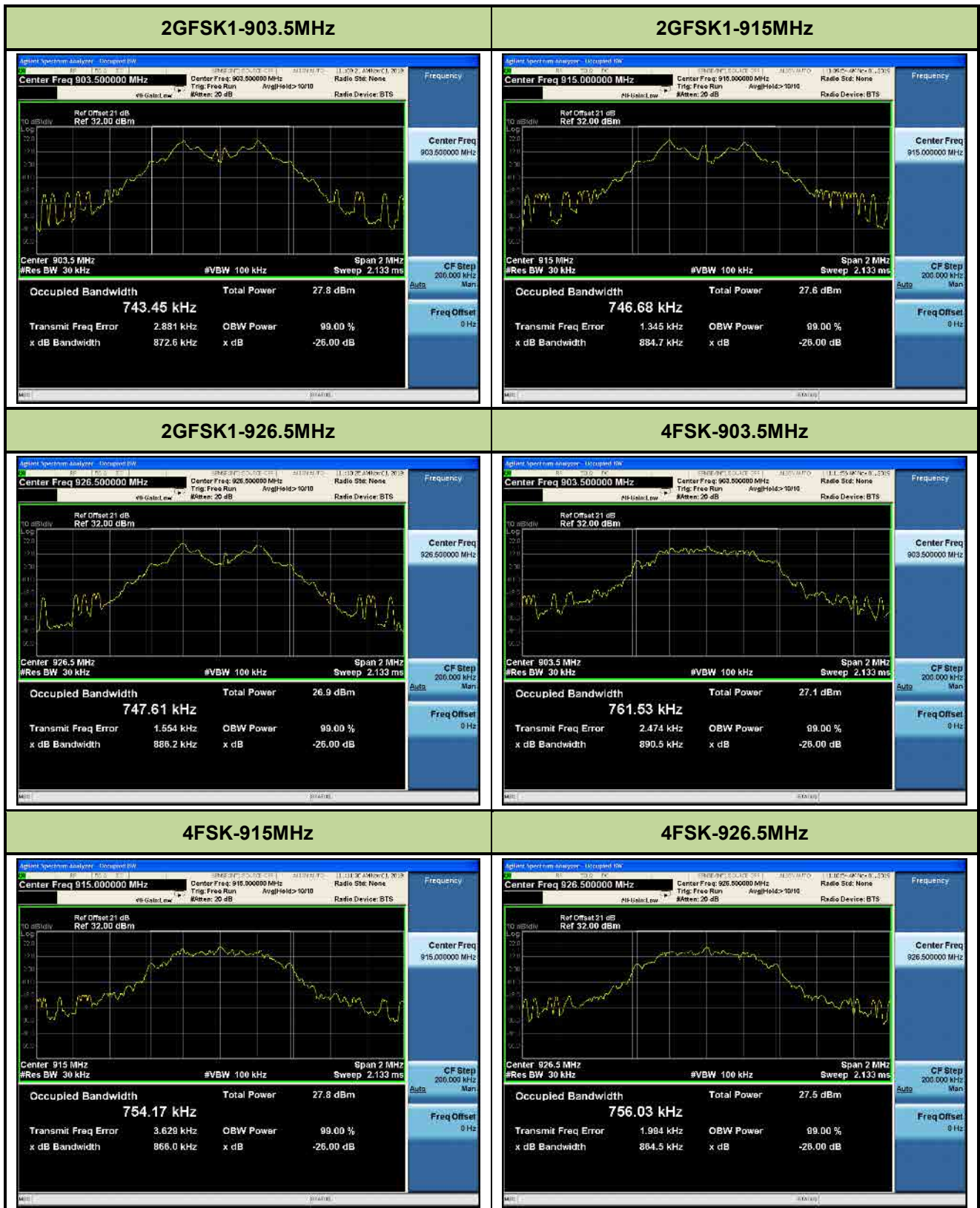




**99% Bandwidth:**

Test Mode	Frequency (MHz)	99% Bandwidth (kHz)	Limit (MHz)	Result
2FSK	903.5	769.65	≥ 0.5	Pass
	915.0	770.44	≥ 0.5	Pass
	926.5	772.77	≥ 0.5	Pass
2GFSK05	903.5	645.41	≥ 0.5	Pass
	915.0	644.22	≥ 0.5	Pass
	926.5	640.9	≥ 0.5	Pass
2GFSK1	903.5	743.45	≥ 0.5	Pass
	915.0	746.68	≥ 0.5	Pass
	926.5	747.61	≥ 0.5	Pass
4FSK	903.5	761.53	≥ 0.5	Pass
	915.0	754.17	≥ 0.5	Pass
	926.5	756.03	≥ 0.5	Pass
4GFSK05	903.5	595.58	≥ 0.5	Pass
	915.0	588.22	≥ 0.5	Pass
	926.5	588.45	≥ 0.5	Pass









### 7.3. Output Power Measurement

#### 7.3.1. Test Limit

The maximum out power shall be less 1 Watt (30dBm).

#### 7.3.2. Test Procedure Used

KDB 558074 D01v05r02 - Section 9.1.2 & 9.2.3.2

#### 7.3.3. Test Setting

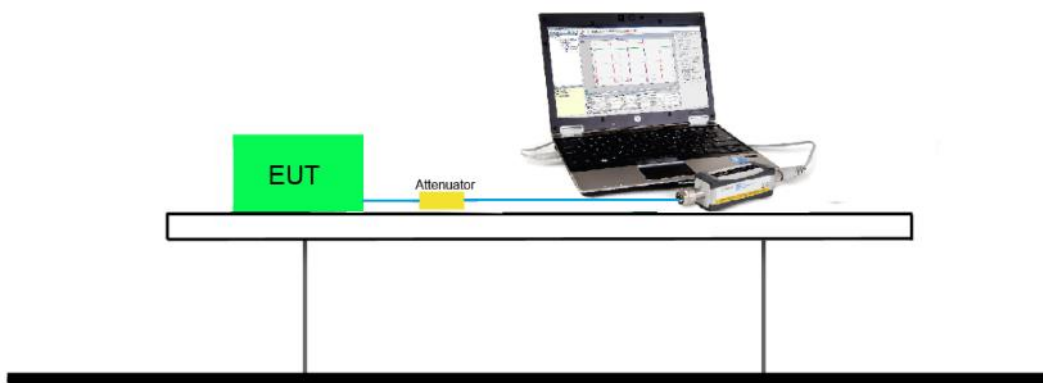
##### Peak Power Measurement

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

##### Average Power Measurement

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.

#### 7.3.4. Test Setup



**7.3.5. Test Result of Output Power**

Test Mode	Frequency (MHz)	Average Power (dBm)	Peak Power (dBm) <sup>*1</sup>	EIRP Power (dBm)	Limit (dBm)	EIRP Limit (dBm)
2FSK	903.5	11.100	21.100	14.100	< 30	< 36
	915.0	10.810	20.810	13.810	< 30	< 36
	926.5	10.540	20.550	13.540	< 30	< 36
2GFSK05	903.5	11.110	21.110	14.110	< 30	< 36
	915.0	10.820	20.810	13.820	< 30	< 36
	926.5	10.560	20.550	13.550	< 30	< 36
2GFSK1	903.5	11.120	21.100	14.120	< 30	< 36
	915.0	10.820	20.810	13.820	< 30	< 36
	926.5	10.570	20.550	13.570	< 30	< 36
4FSK	903.5	8.240	21.100	11.240	< 30	< 36
	915.0	7.950	20.800	10.950	< 30	< 36
	926.5	7.690	20.540	10.690	< 30	< 36
4GFSK05	903.5	11.110	21.110	14.110	< 30	< 36
	915.0	10.820	20.810	13.820	< 30	< 36
	926.5	10.570	20.550	13.570	< 30	< 36

**Note:**

1. Peak Power are only used for report.
2. Output Power = Reading value on power meter + cable loss.
3. EIRP Power = Output Power + Antenna Gain (3dBi)

## 7.4. Power Spectral Density Measurement

### 7.4.1. Test Limit

The maximum permissible power spectral density is 8dBm in any 3 kHz band.

### 7.4.2. Test Procedure Used

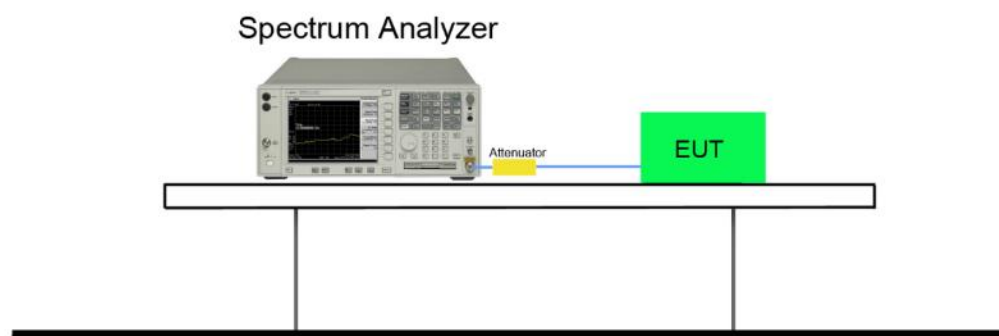
KDB 558074 D01v05r02 - Section 10.2 Method PKPSD

### 7.4.3. Test Setting

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance, and is optional if the maximum conducted (average) output power was used to demonstrate compliance.

- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span to 1.5 times the DTS bandwidth.
- c) Set the RBW to: 3 kHz.
- d) Set the VBW  $\geq 3 \times$  RBW.
- e) Detector = Average.
- f) Sweep time = auto couple.
- g) Trace mode = Average hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.

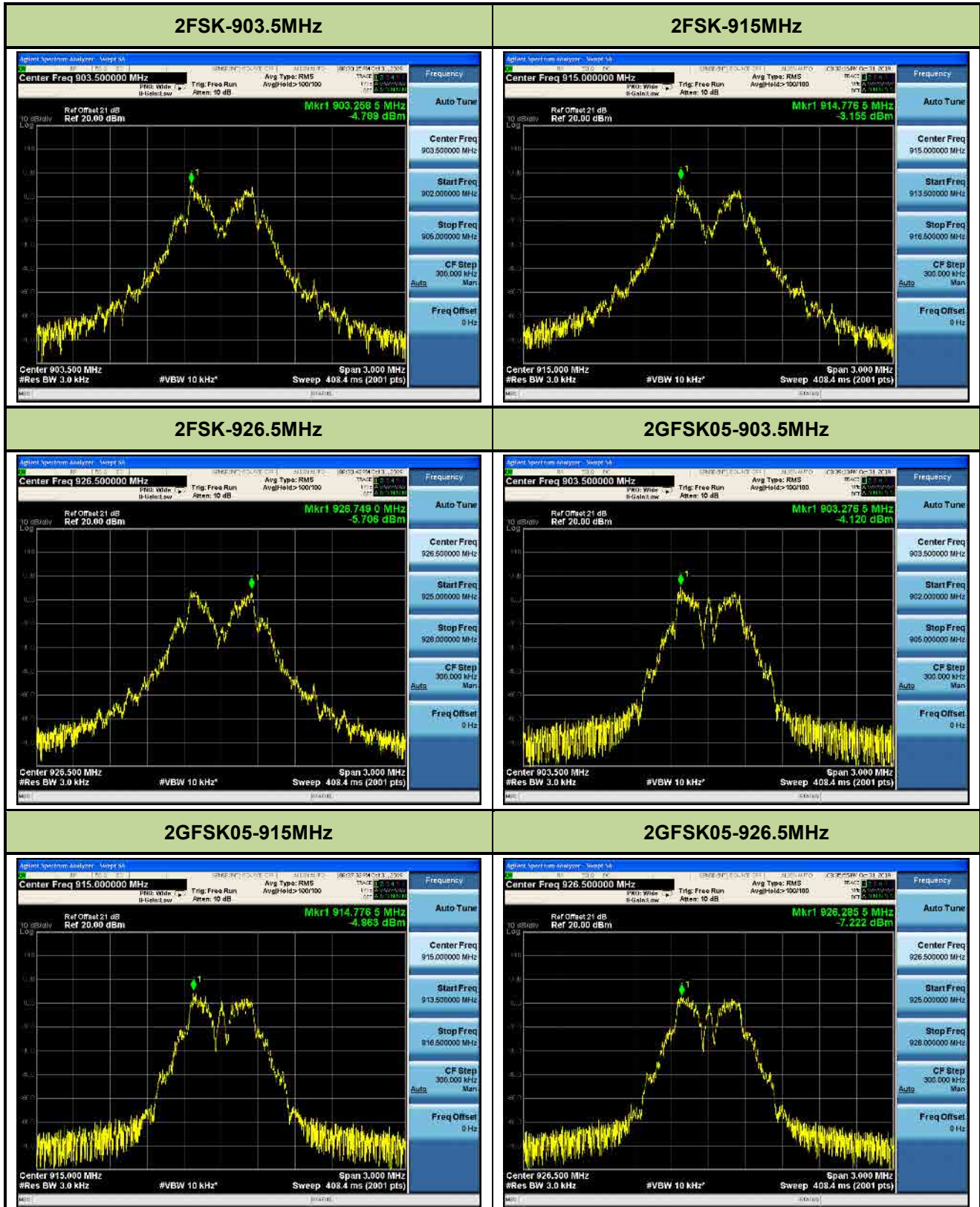
### 7.4.4. Test Setup

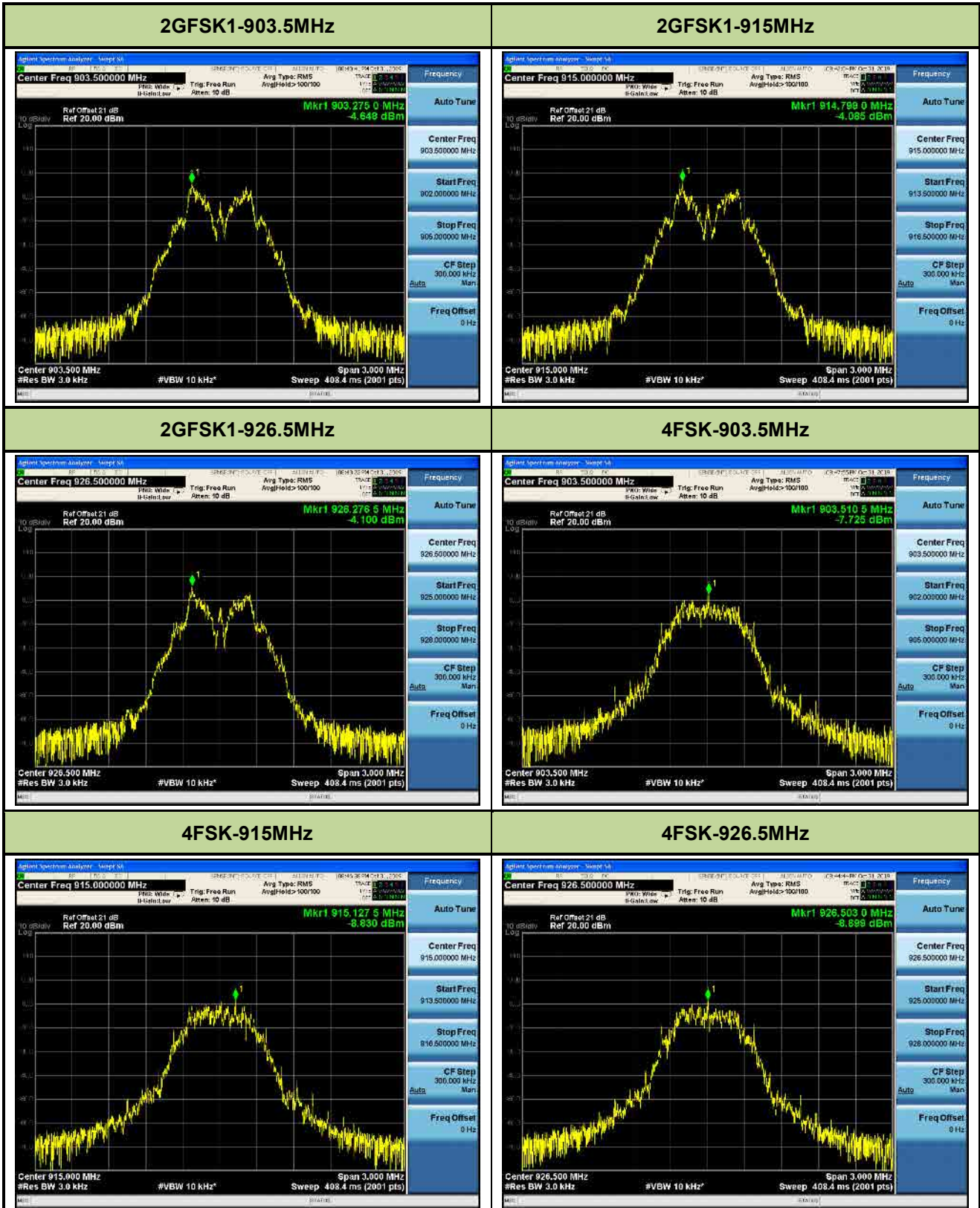


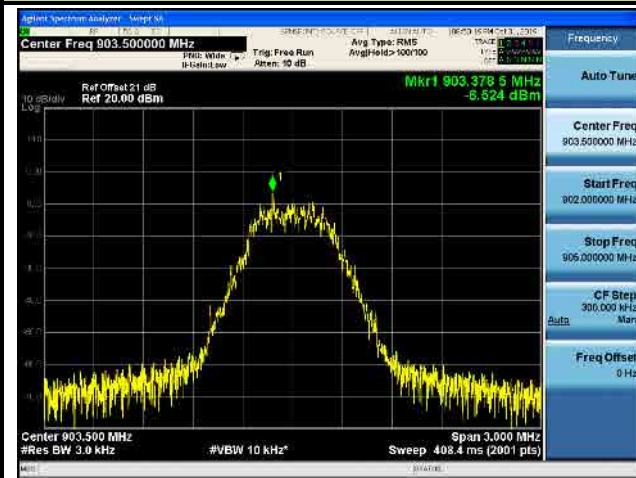
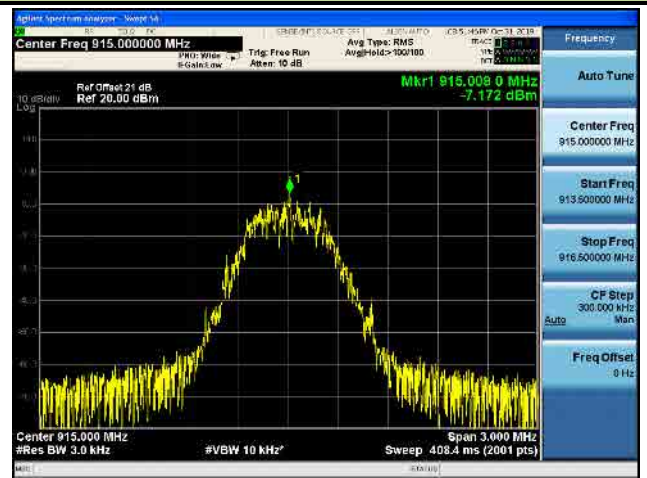
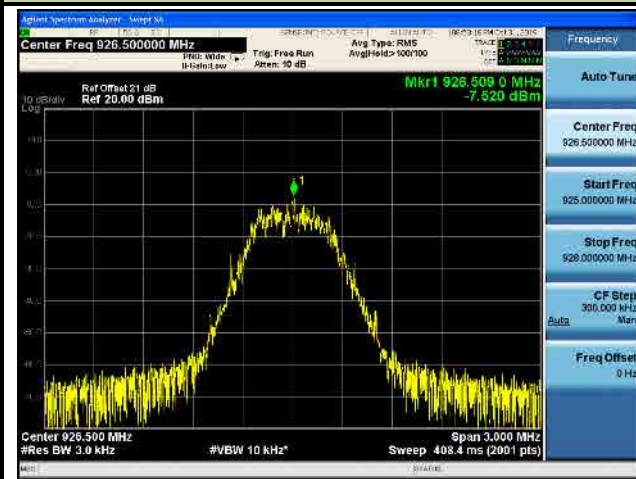
**7.4.5. Test Result**

Test Mode	Frequency (MHz)	PSD (dBm)	Duty Cycles (%)	Total PSD (dBm)	Limit (dBm)	Result
2FSK	903.5	-4.789	10.3%	5.083	≤ 8	Pass
	915.0	-3.155	10.3%	6.717	≤ 8	Pass
	926.5	-5.706	10.3%	4.166	≤ 8	Pass
2GFSK05	903.5	-4.120	10.3%	5.773	≤ 8	Pass
	915.0	-4.963	10.3%	4.930	≤ 8	Pass
	926.5	-7.222	10.3%	2.671	≤ 8	Pass
2GFSK1	903.5	-4.648	10.5%	5.140	≤ 8	Pass
	915.0	-4.085	10.5%	5.703	≤ 8	Pass
	926.5	-4.100	10.5%	5.688	≤ 8	Pass
4FSK	903.5	-7.725	5.5%	4.871	≤ 8	Pass
	915.0	-8.830	5.5%	3.766	≤ 8	Pass
	926.5	-8.699	5.5%	3.897	≤ 8	Pass
4GFSK05	903.5	-6.524	5.8%	5.872	≤ 8	Pass
	915.0	-7.172	5.8%	5.224	≤ 8	Pass
	926.5	-7.520	5.8%	4.876	≤ 8	Pass

Note: Total PSD (dBm) = PSD (dBm)+ 10\*log(1/duty cycle).





**4GFSK05-903.5MHz**

**4GFSK05-915MHz**

**4GFSK05-926.5MHz**




## 7.5. Out-of-Band Spurious Emissions Emissions Measurement

### 7.5.1. Test Limit

In any 100 kHz 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 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on RF conducted measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

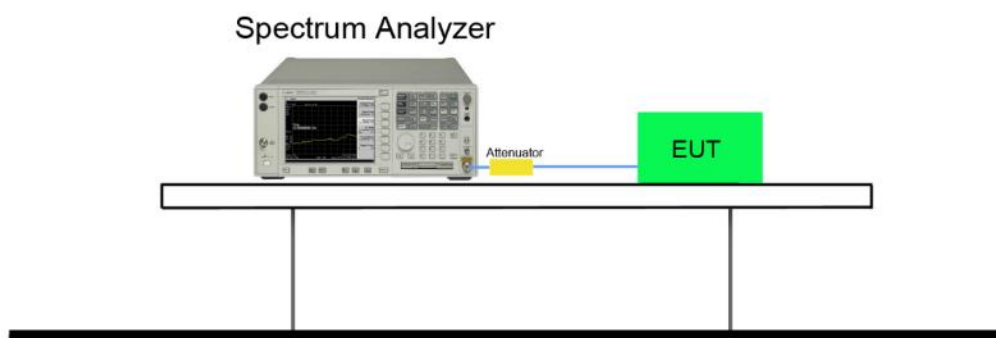
### 7.5.2. Test Procedure Used

KDB 558074 D01v05r02- Section 11.1 & 11.2

### 7.5.3. Test Settling

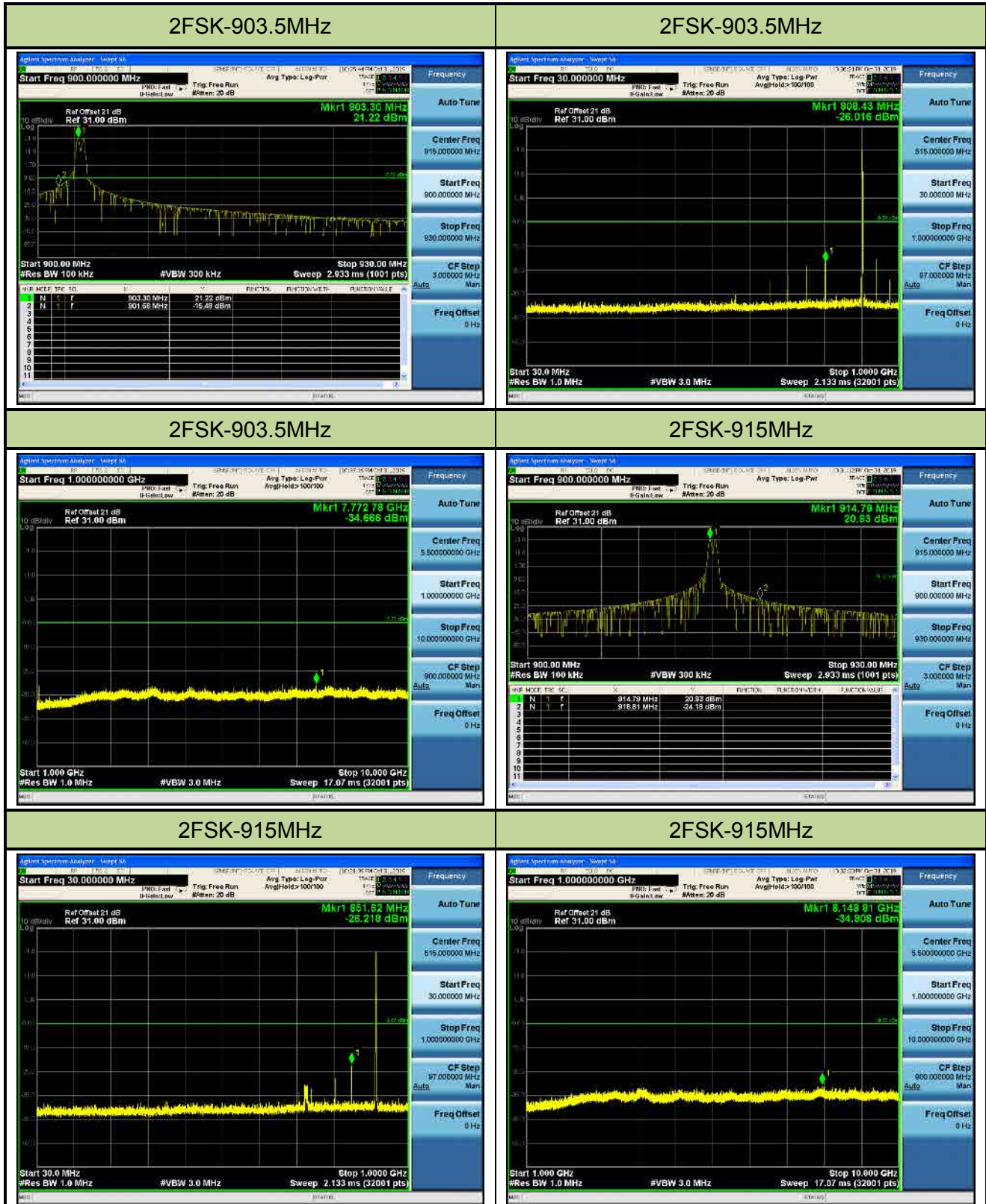
- (a) Set instrument center frequency to DTS channel center frequency
- (b) Set the span to  $\geq 1.5$  times the DTS bandwidth
- (c) Set the RBW = 100 kHz
- (d) Set the VBW  $\geq 3 \times$  RBW
- (e) Detector = peak
- (f) Sweep time = auto couple
- (g) Trace mode = peak hold
- (h) Allow trace to fully stabilize

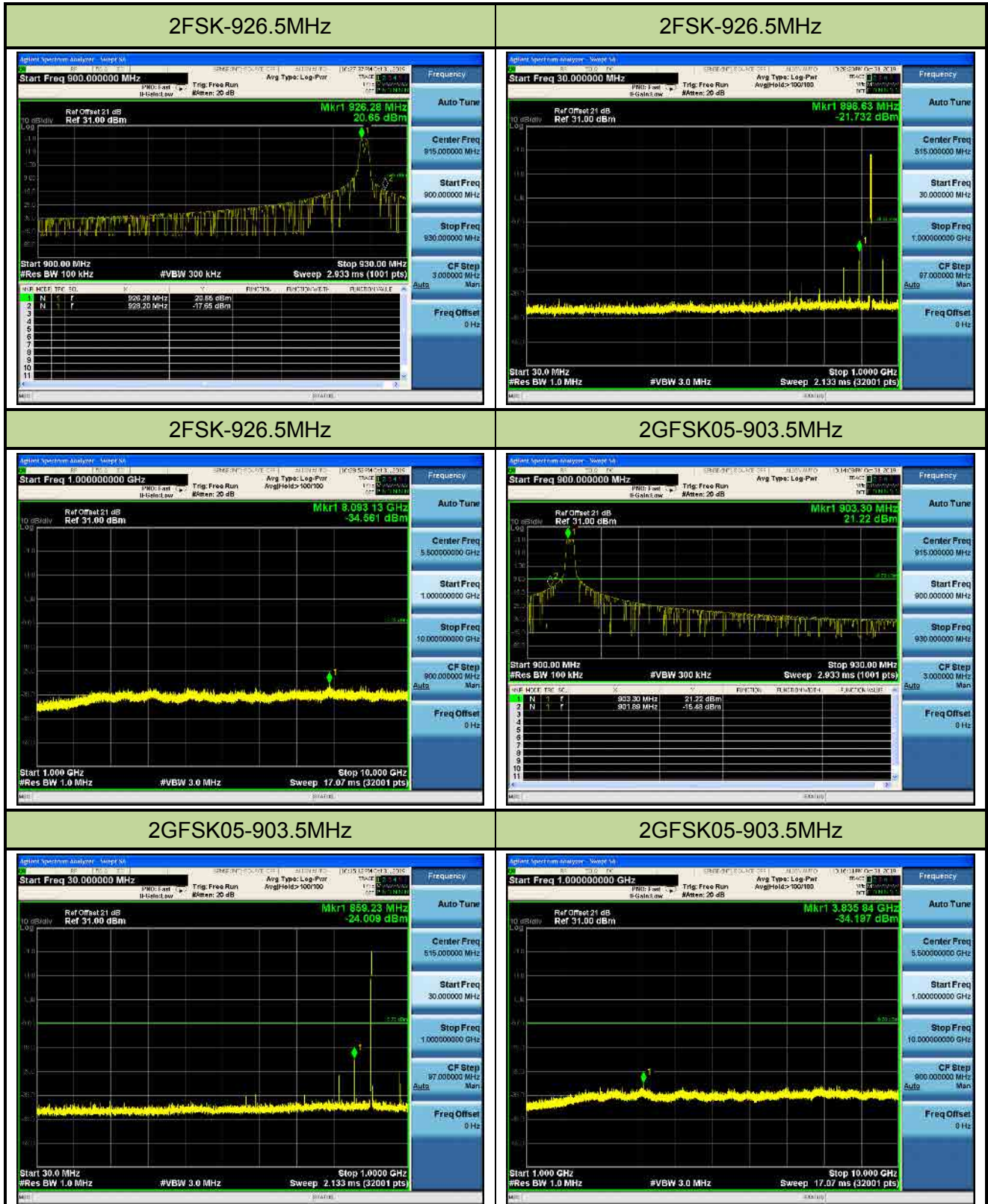
### 7.5.4. Test Setup

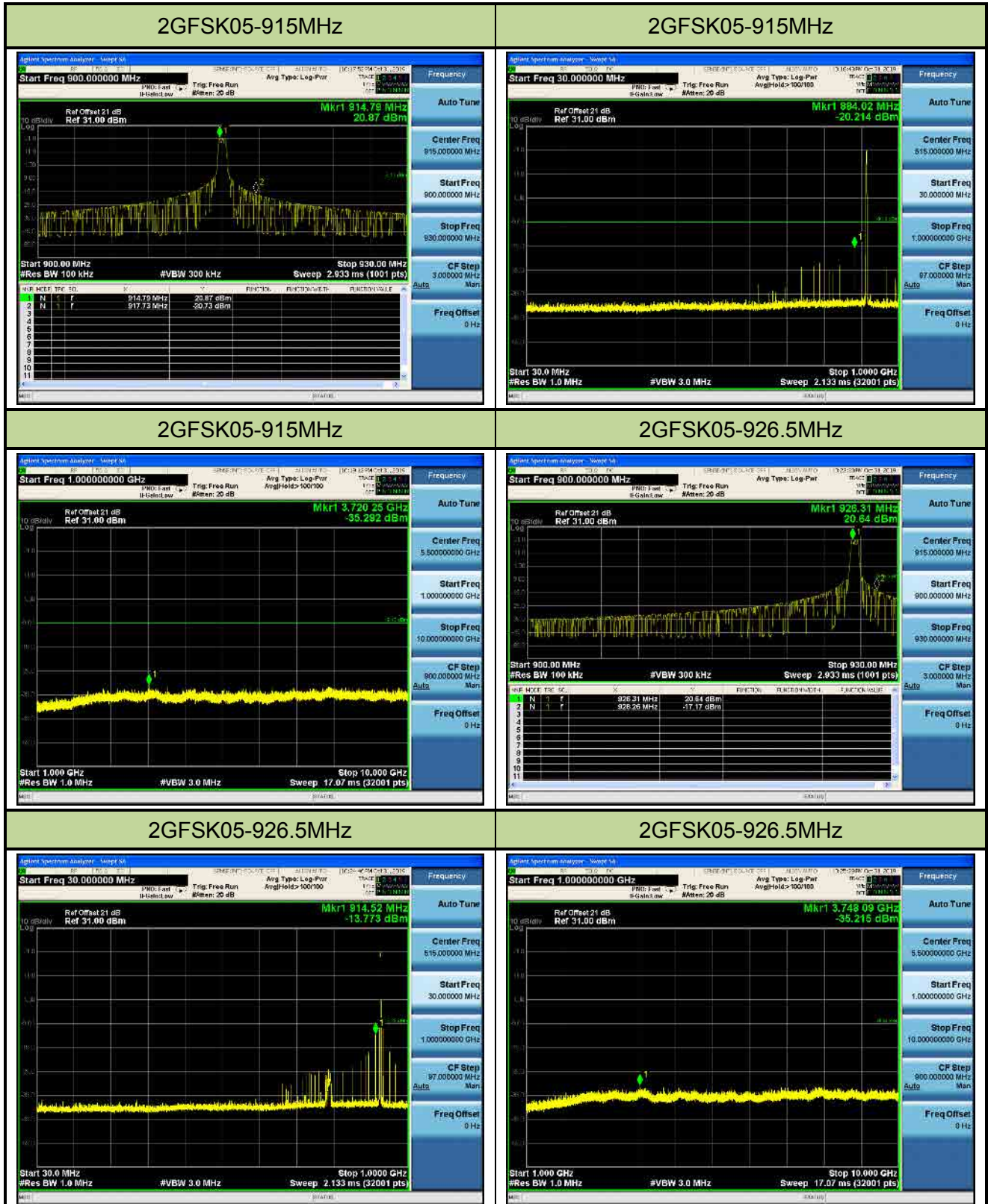


**7.5.5. Test Result**

Test Mode	Frequency (MHz)	Limit	Result
2FSK	903.5	30dBc	Pass
	915.0	30dBc	Pass
	926.5	30dBc	Pass
2GFSK05	903.5	30dBc	Pass
	915.0	30dBc	Pass
	926.5	30dBc	Pass
2GFSK1	903.5	30dBc	Pass
	915.0	30dBc	Pass
	926.5	30dBc	Pass
4FSK	903.5	30dBc	Pass
	915.0	30dBc	Pass
	926.5	30dBc	Pass
4GFSK05	903.5	30dBc	Pass
	915.0	30dBc	Pass
	926.5	30dBc	Pass



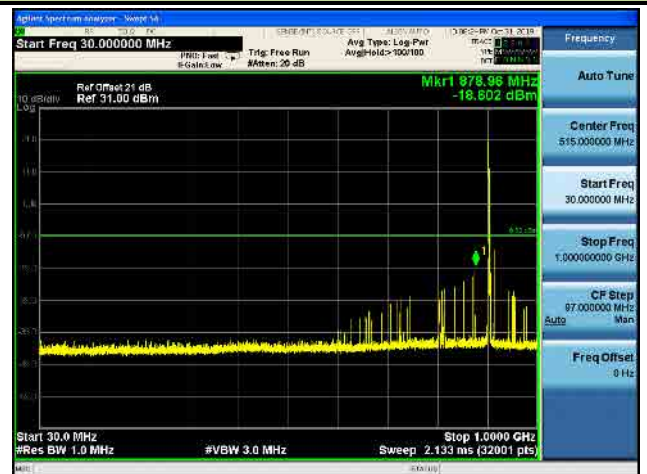




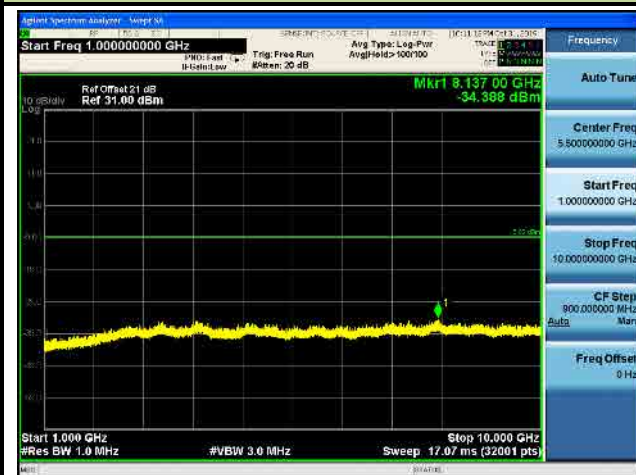
## 2GFSK1-903.5MHz



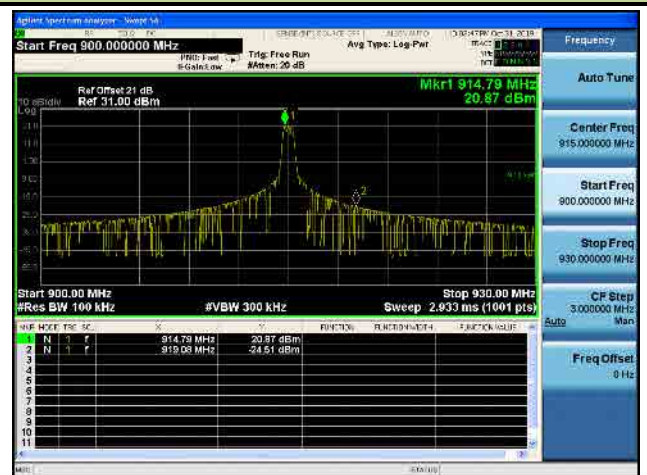
## 2GFSK1-903.5MHz



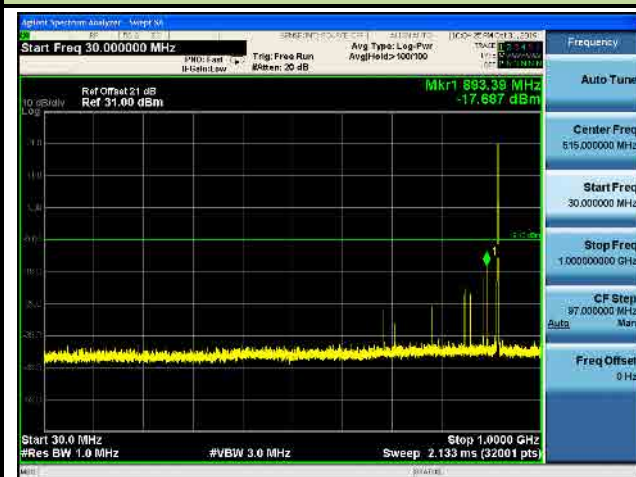
## 2GFSK1-903.5MHz



## 2GFSK1-915MHz

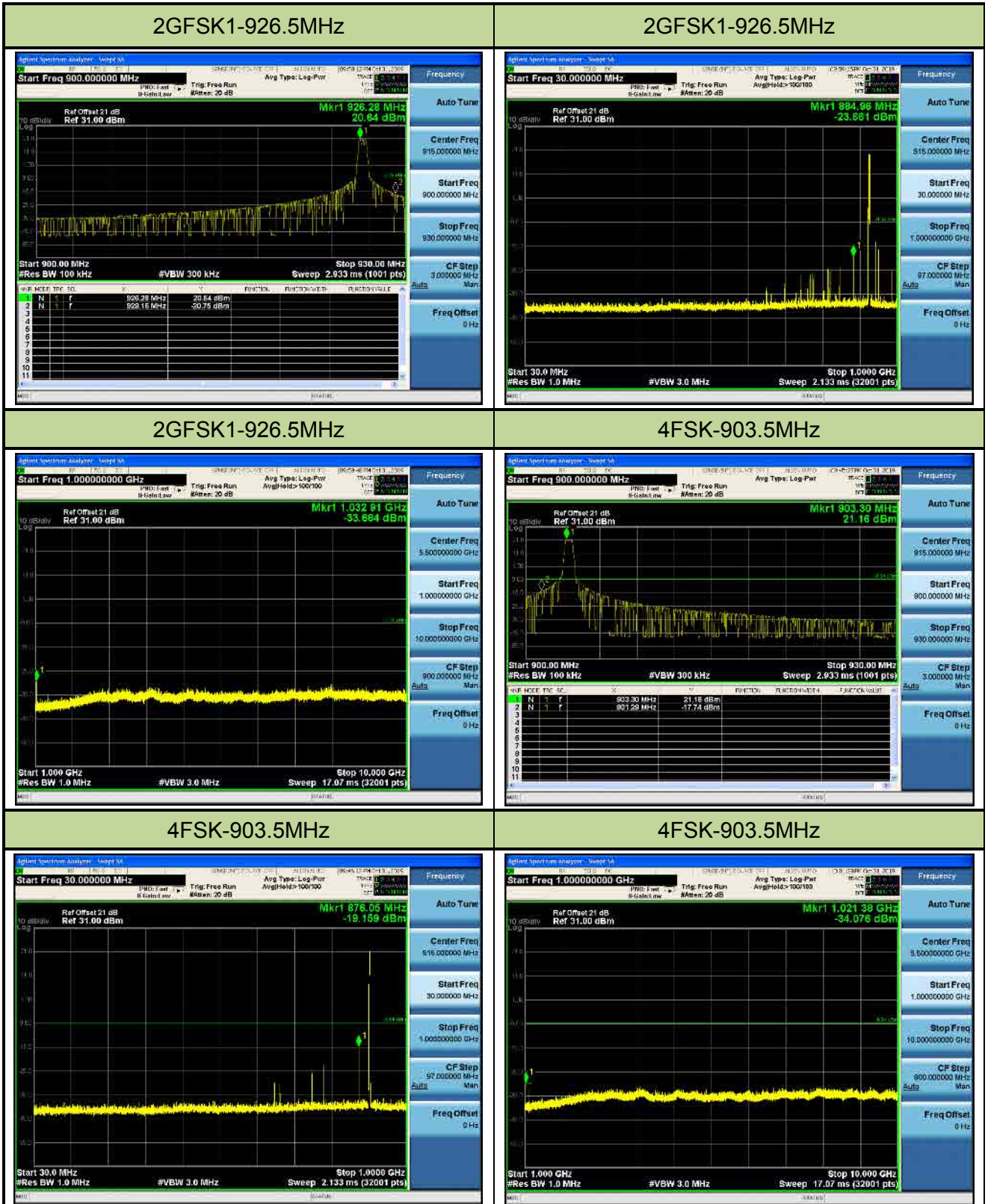


## 2GFSK1-915MHz



## 2GFSK1-915MHz

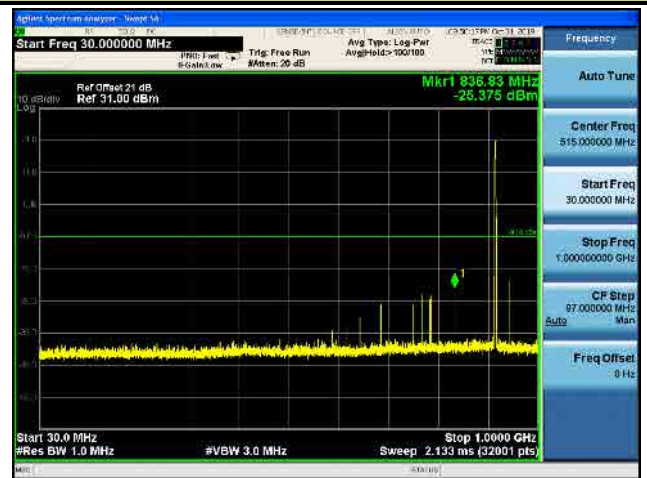




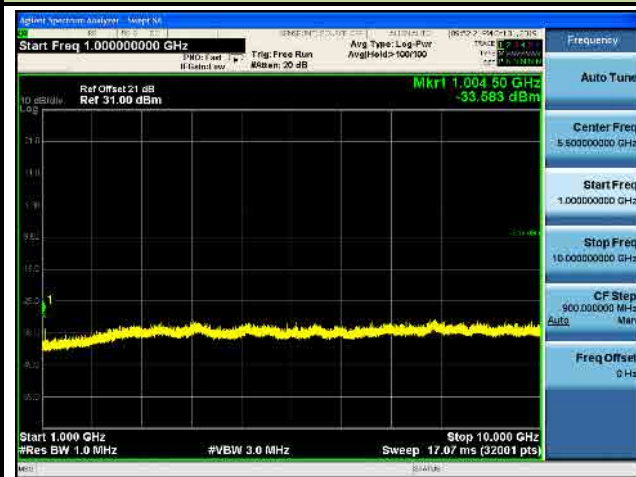
## 4FSK-915MHz



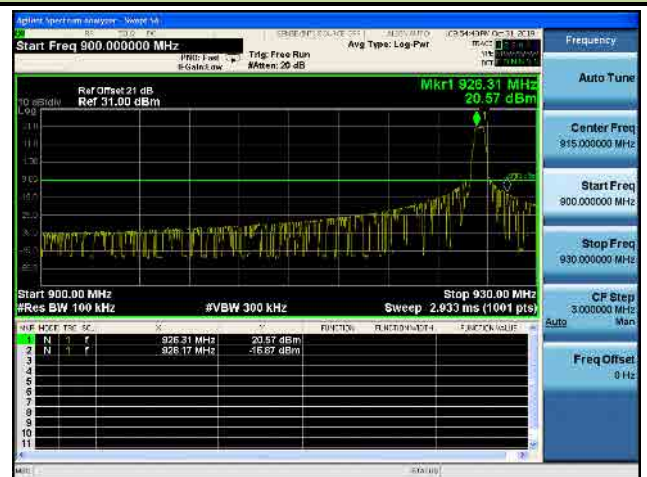
## 4FSK-915MHz



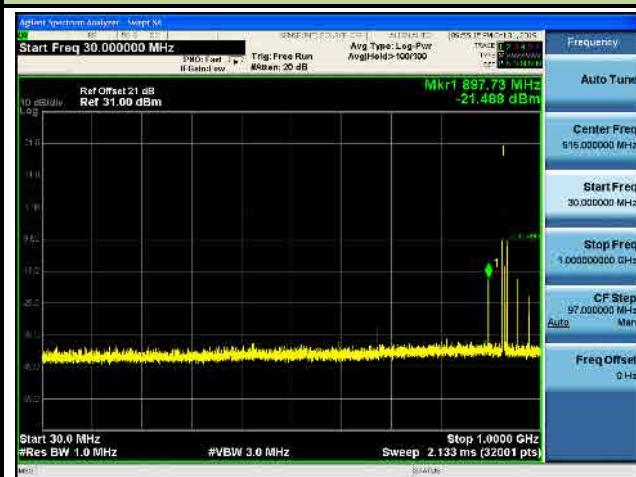
## 4FSK-915MHz



## 4FSK-926.5MHz



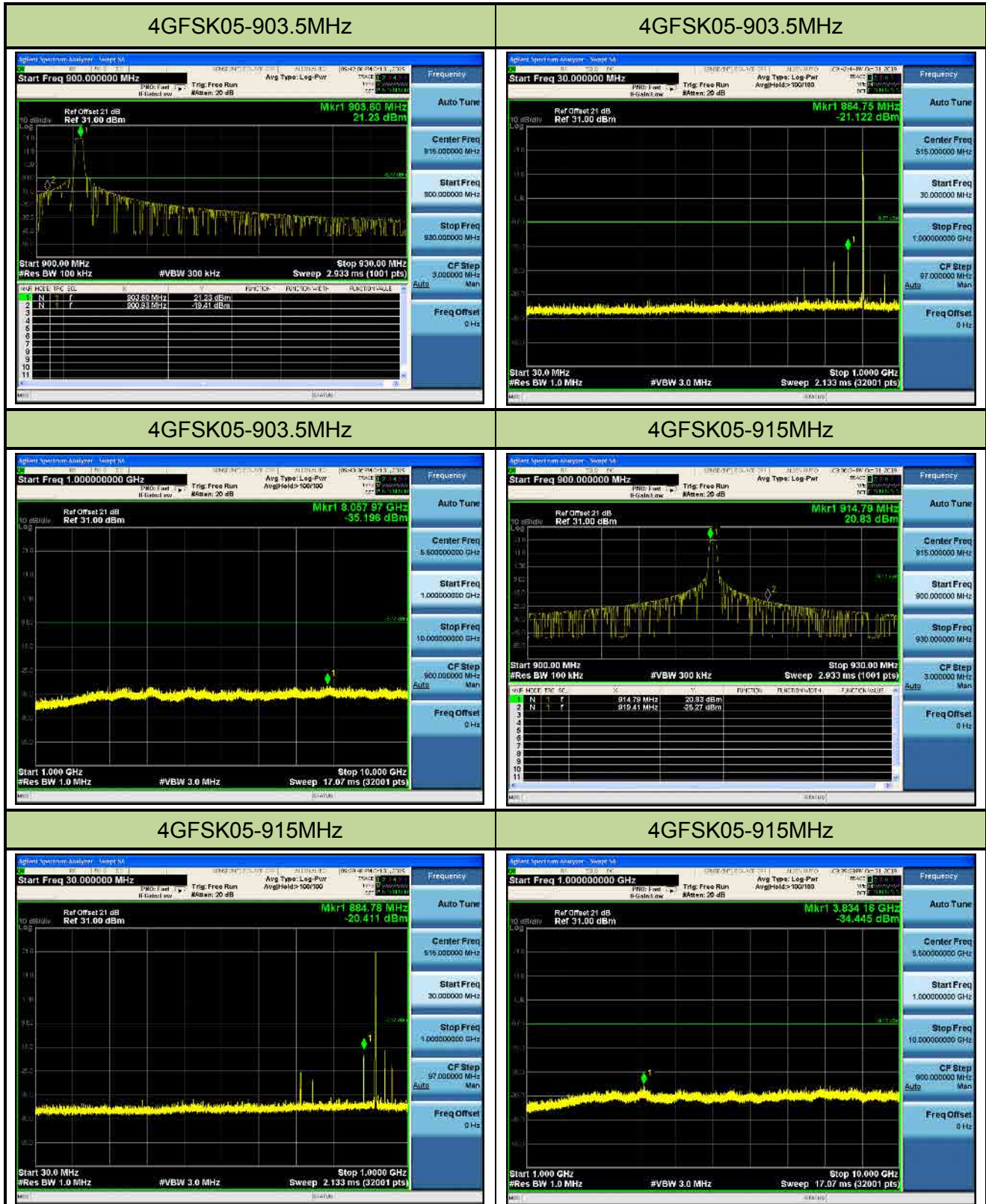
## 4FSK-926.5MHz

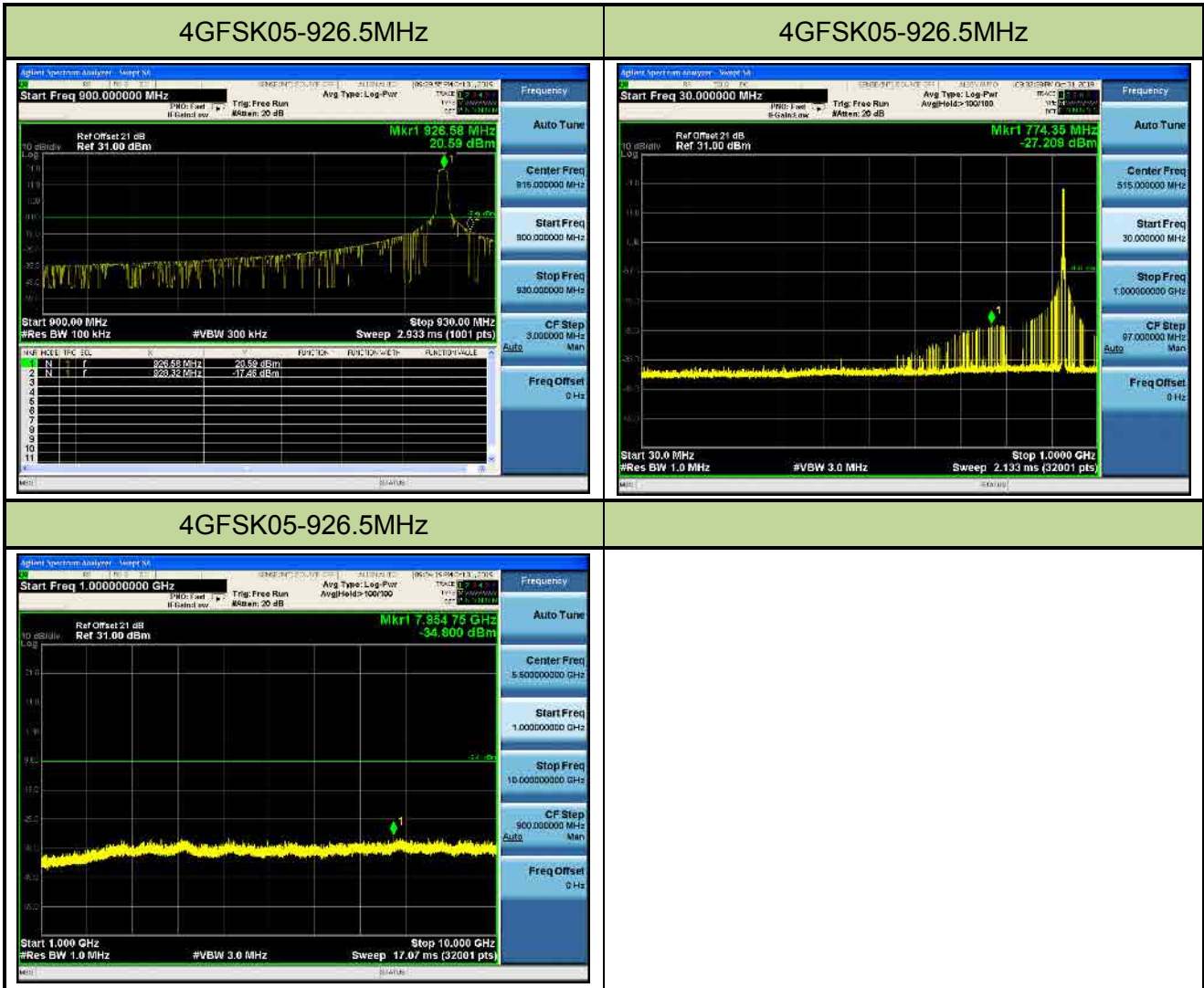


## 4FSK-926.5MHz









## 7.6. Radiated Spurious Emission Measurement

### 7.6.1. Test Limit

All out of band emissions appearing in a restricted band as specified in FCC Section 15.205 /IC Section 8.10 of the Title 47 CFR must not exceed the limits shown in Table per FCC Section 15.209/ IC Section 8.9.

FCC Part 15 Subpart C Paragraph 15.209 / IC Section 8.19		
Frequency [MHz]	Field Strength [V/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

### 7.6.2. Test Procedure Used

ANSI C63.10 Section 11.12.2.3 (quasi-peak measurements)

ANSI C63.10 Section 11.12.2.4 (peak power measurements)

ANSI C63.10 Section 11.12.2.5 (average power measurements)

### 7.6.3. Test Setting

#### Quasi-peak Field Strength Measurements

The specifications for measurements using the CISPR quasi-peak detector can be found in CISPR 16-1-1. As an alternative to CISPR quasi-peak measurement, compliance can be determined for the applicable emission requirements using a peak detector.

#### Peak power measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest.
2. RBW = as specified in Table 1
3. VBW =  $3 \times \text{RBW}$
4. Detector = peak
5. Sweep time = auto couple

Table 1 - RBW as a function of frequency

Frequency	RBW
9 kHz ~ 150 kHz	200 Hz ~ 300 Hz
0.15 MHz ~ 30 MHz	9 kHz ~ 10 kHz
30 MHz ~ 1000 MHz	100 kHz ~ 120 kHz
> 1000 MHz	1 MHz

#### Average Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW  $\geq 1/T$
4. Video bandwidth mode or display mode:
  - 1) The instrument shall be set to ensure that video filtering is applied in the power domain.

Typically, this requires setting the detector mode to RMS (power averaging) and setting the average-VBW type to power (rms).

2) As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode to accomplish this. Others have a setting for average-VBW type, which can be set to “voltage” regardless of the display mode. Detector = Peak

5. Sweep time = auto
6. Trace mode = max hold
7. Allow max hold to run for at least 50 times (1/duty cycle) traces

P.S when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 s (100 ms). In cases where the pulse train exceeds 0.1 s, the measured field strength shall be determined during a 0.1 s interval. The following procedure is an example of how the average value may be determined. The average field strength may be found by measuring the peak pulse amplitude (in log equivalent units) and determining the duty cycle correction factor (in dB) associated with the pulse modulation as shown in as below:

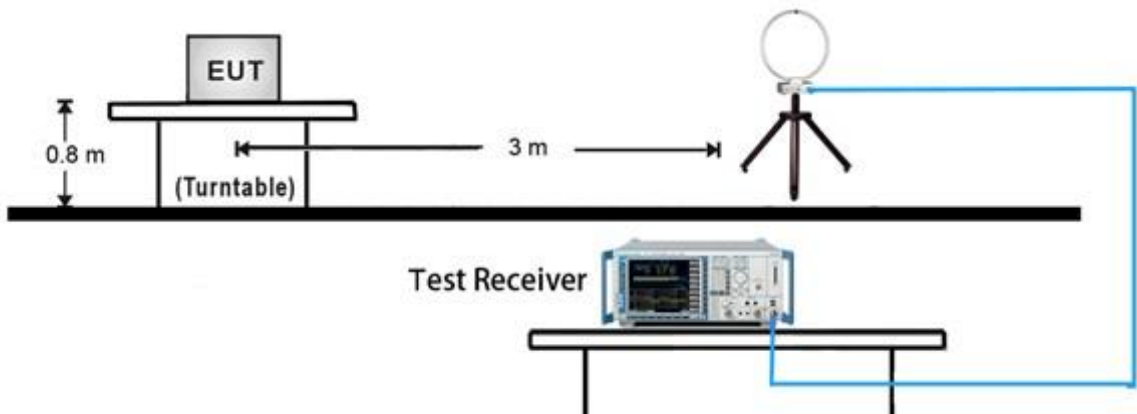
$$\delta(\text{dB}) = 20 \log(\Delta)$$

where

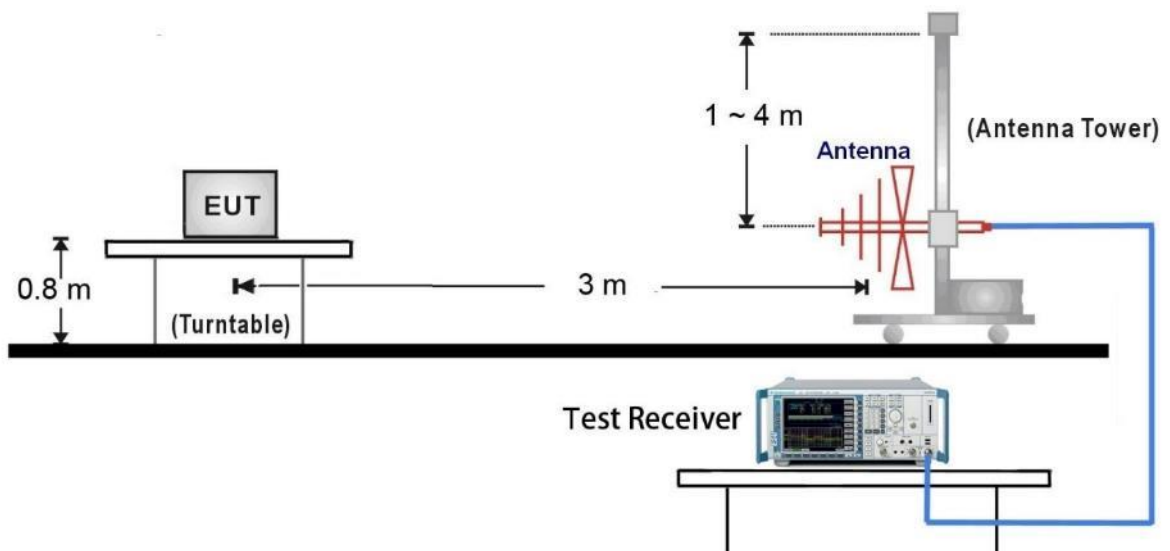
$\delta$  is the duty cycle correction factor (dB)  
 $\Delta$  is the duty cycle (dimensionless)

### 7.6.4. Test Setup

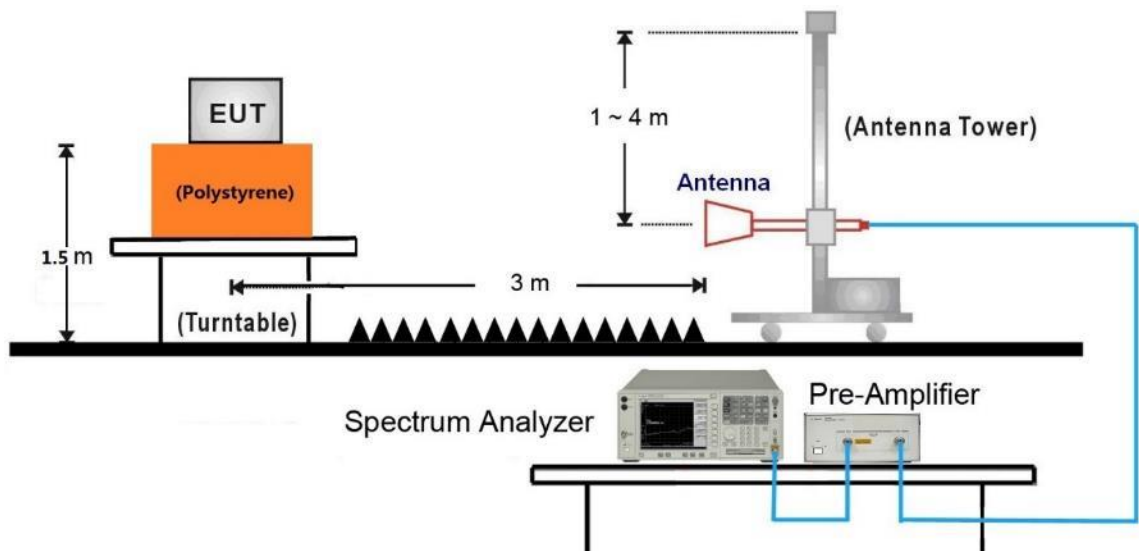
#### 9kHz ~ 30MHz Test Setup:



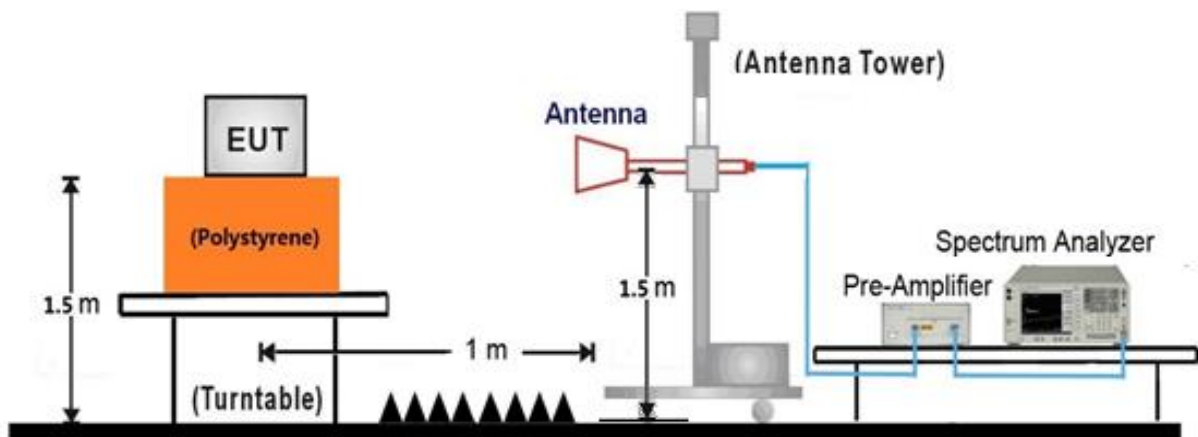
#### 30MHz ~ 1GHz Test Setup:



1GHz ~ 18GHz Test Setup:

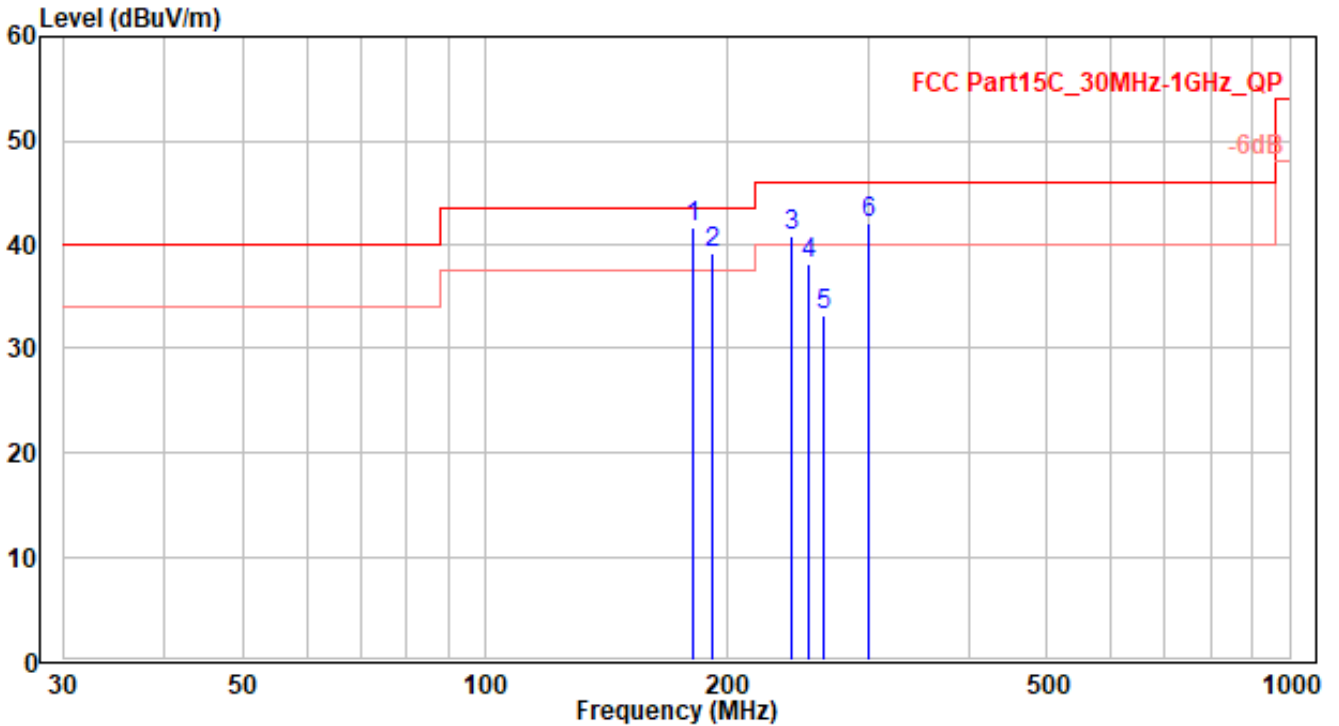


18GHz ~25GHz Test Setup:



**7.6.5. Test Result**

EUT	RF Evaluation kit	Test Date	2019/7/10
Factor	VULB 9162	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Peter
Test Mode	TX_2FSK_915MHz	Test Voltage	AC 120V/60Hz



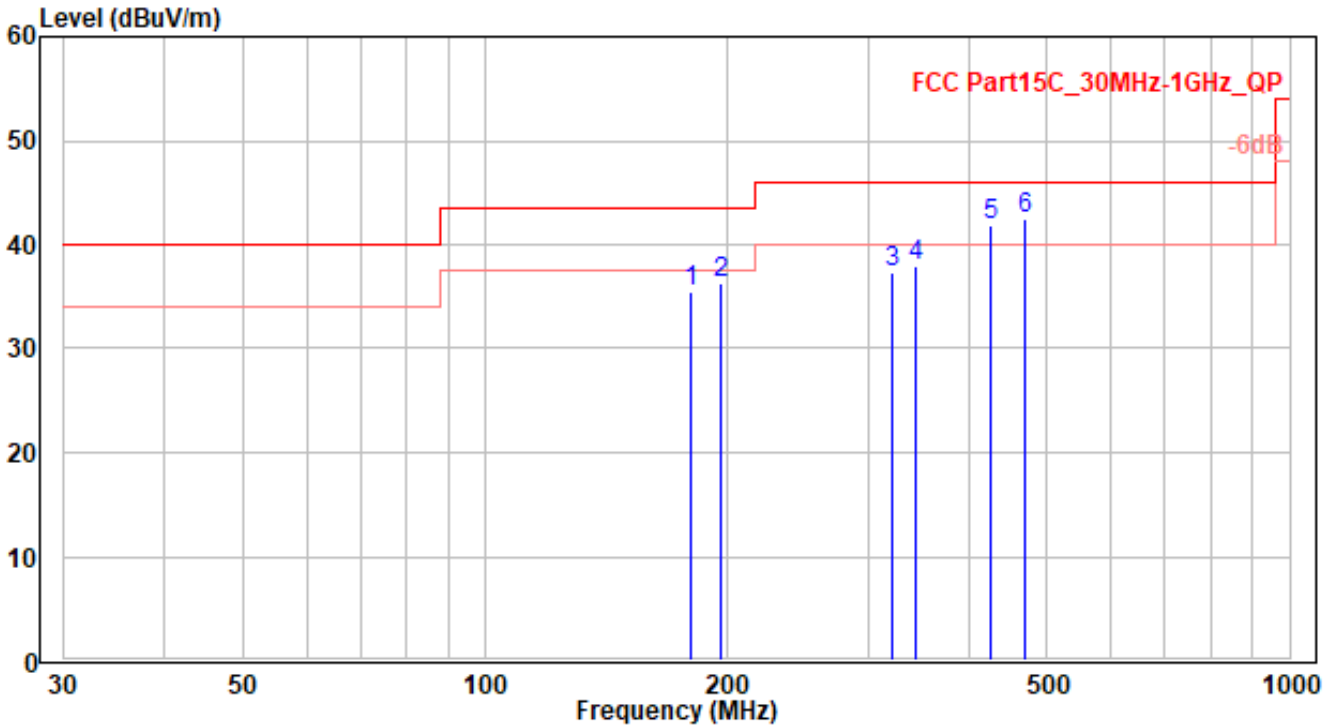
No	Frequency (MHz)	Reading (dBUV)	C.F (dB)	Measurement (dBUV/m)	Margin (dB)	Limit (dBUV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)	
1	*	180.986	24.26	17.42	41.68	-1.82	43.5	100	340	QP
2		191.82	20.34	18.76	39.1	-4.4	43.5	100	175	QP
3		239.995	20.59	20.2	40.79	-5.21	46	100	25	QP
4		252.366	17.5	20.55	38.05	-7.95	46	100	185	QP
5		264.266	12.5	20.63	33.13	-12.87	46	105	230	QP
6		300.045	20.76	21.4	42.16	-3.84	46	100	60	QP

Note: The EUT Power by Notebook PC USB

1. " \* " means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
3. Measurement (dBUV/m) = Reading(dBUV) + C.F (Correction Factor).



EUT	RF Evaluation kit	Test Date	2019/7/10
Factor	VULB 9162	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Peter
Test Mode	TX_2FSK_915MHz	Test Voltage	AC 120V/60Hz

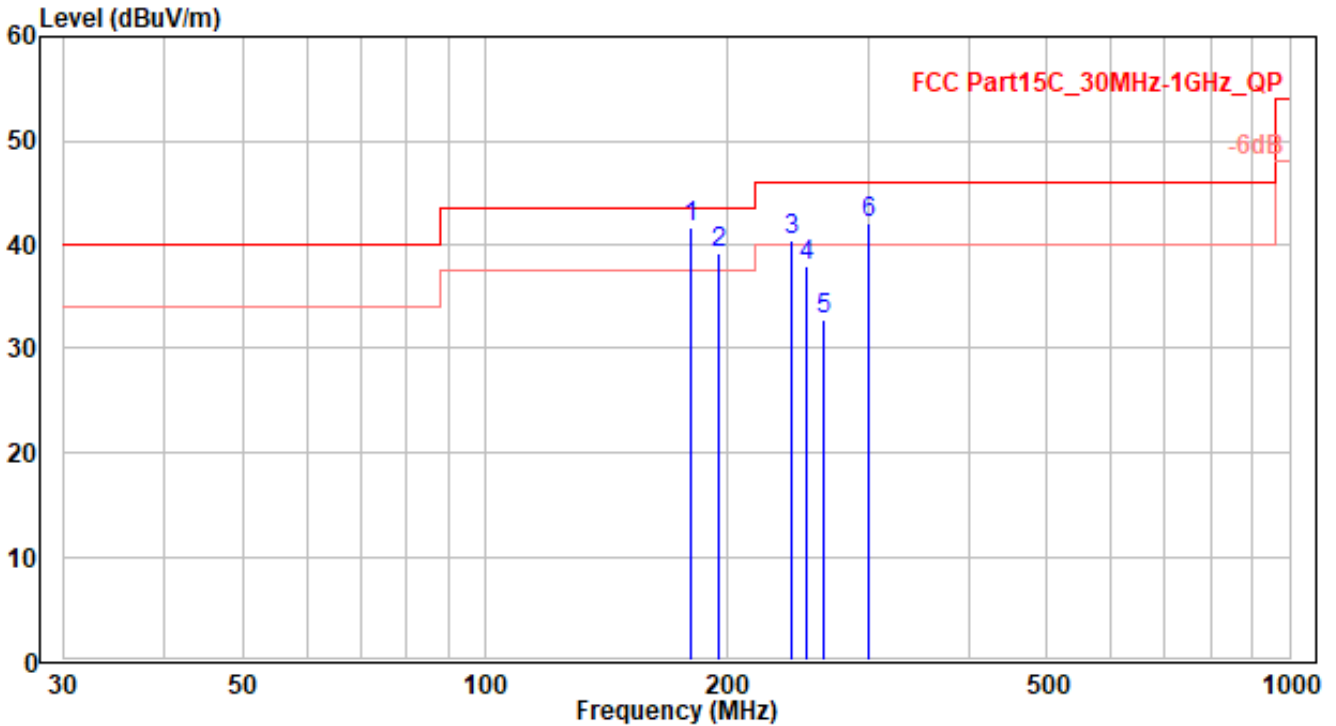


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	180.052	18.25	17.29	35.54	-7.96	43.5	100	30	QP
2	195.95	17.38	18.86	36.24	-7.26	43.5	100	400	QP
3	320.237	15.18	22.22	37.4	-8.6	46	100	320	QP
4	343.383	14.86	23.16	38.02	-7.98	46	100	310	QP
5	425.256	17.27	24.53	41.8	-4.2	46	100	105	QP
6	* 468.395	17.25	25.23	42.48	-3.52	46	100	70	QP

Note: The EUT Power by Notebook PC USB

1. " \* " means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).

EUT	RF Evaluation kit	Test Date	2019/7/10
Factor	VULB 9162	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Peter
Test Mode	TX_2GFSK05_915MHz	Test Voltage	AC 120V/60Hz

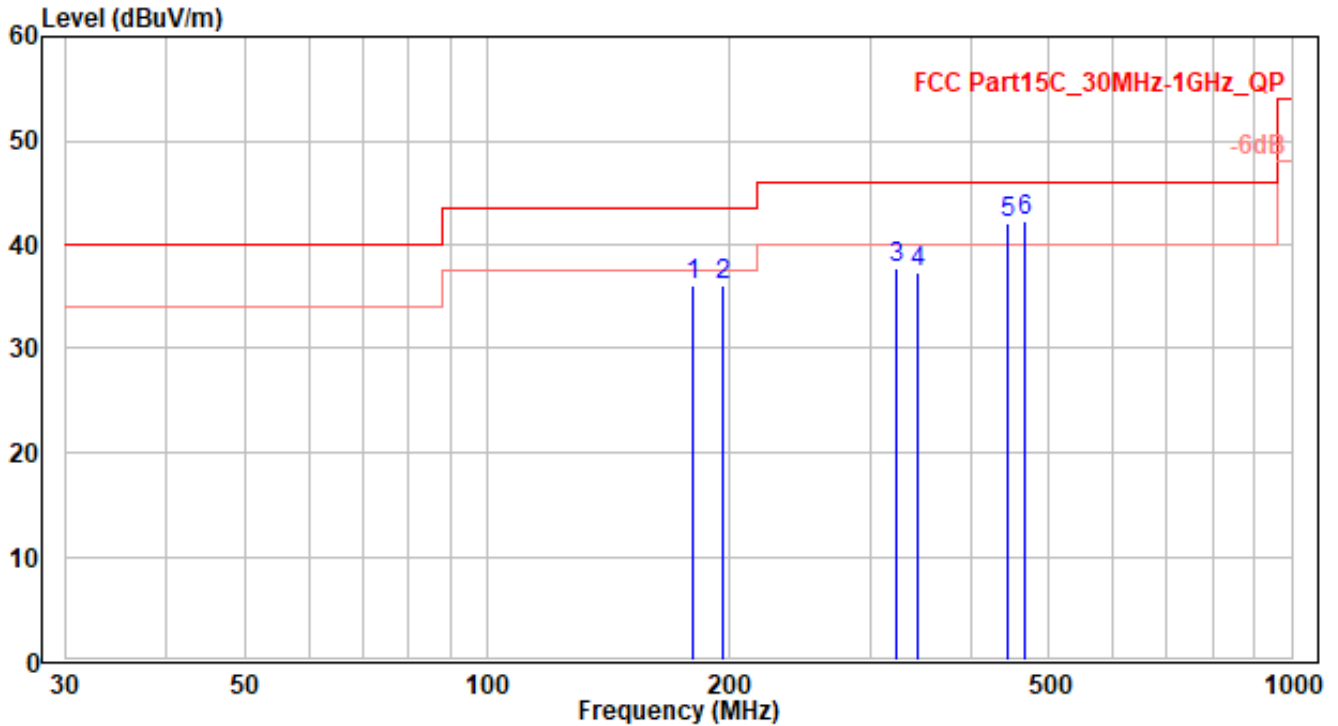


No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	180.26	24.25	17.32	41.57	-1.93	43.5	100	270	QP
2		195.27	20.34	18.84	39.18	-4.32	43.5	100	190	QP
3		240.024	20.26	20.2	40.46	-5.54	46	100	20	QP
4		251.254	17.33	20.54	37.87	-8.13	46	100	210	QP
5		263.257	12.27	20.61	32.88	-13.12	46	100	240	QP
6		299.963	20.62	21.4	42.02	-3.98	46	100	70	QP

Note: The EUT Power by Notebook PC USB

1. " \* " means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).

EUT	RF Evaluation kit	Test Date	2019/7/10
Factor	VULB 9162	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Peter
Test Mode	TX_2GFSK05_915MHz	Test Voltage	AC 120V/60Hz

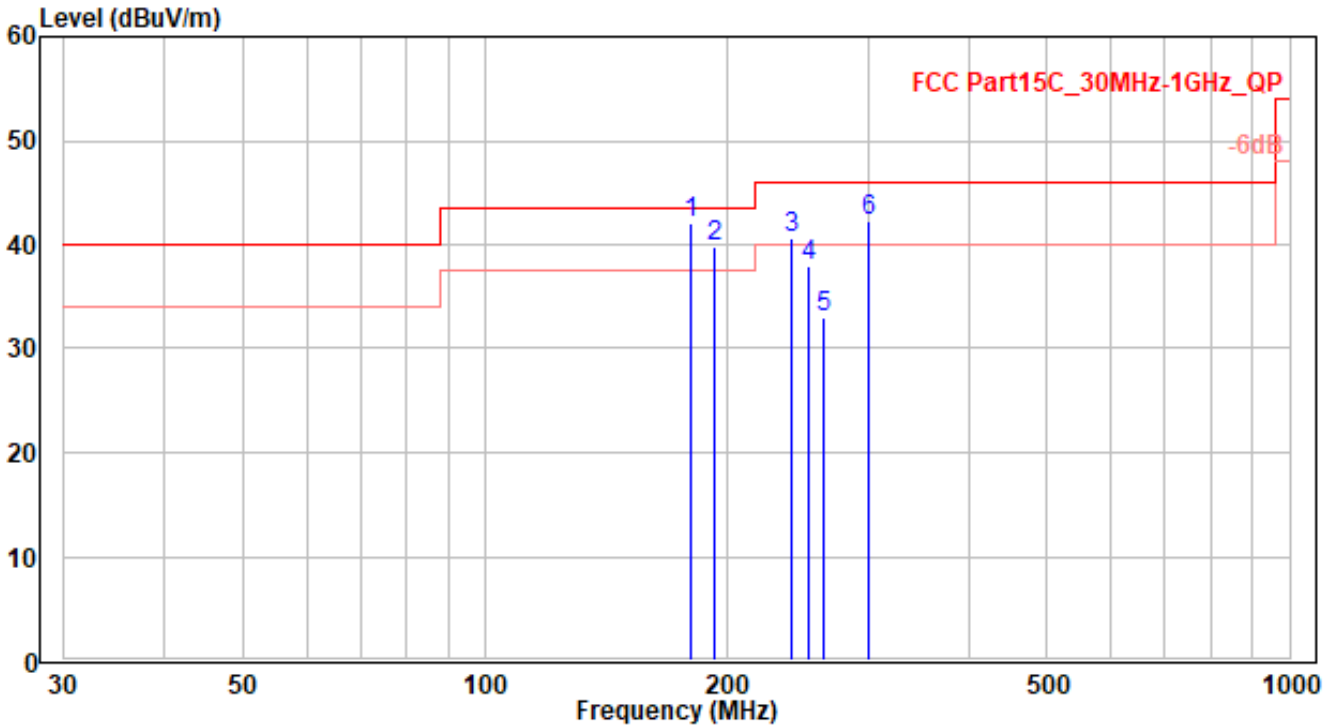


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	180.069	18.75	17.29	36.04	-7.46	43.5	100	40	QP
2	196.325	17.28	18.87	36.15	-7.35	43.5	100	90	QP
3	323.266	15.49	22.34	37.83	-8.17	46	100	40	QP
4	342.187	14.27	23.11	37.38	-8.62	46	100	400	QP
5	443.854	17.27	24.8	42.07	-3.93	46	100	120	QP
6	* 467.37	17.12	25.22	42.34	-3.66	46	100	90	QP

Note: The EUT Power by Notebook PC USB

1. " \* " means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).

EUT	RF Evaluation kit	Test Date	2019/7/10
Factor	VULB 9162	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Peter
Test Mode	TX_2GFSK1_915MHz	Test Voltage	AC 120V/60Hz

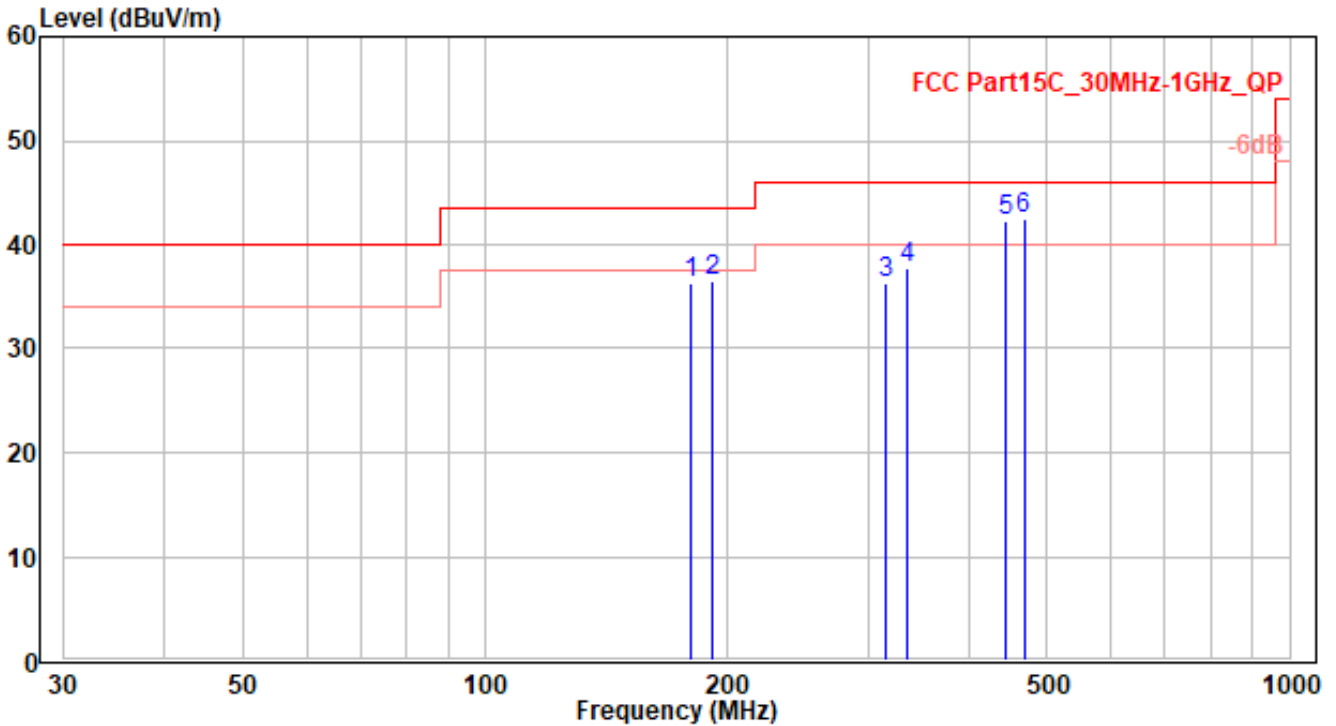


No	Frequency (MHz)	Reading (dBUV)	C.F (dB)	Measurement (dBUV/m)	Margin (dB)	Limit (dBUV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)	
1	*	180.257	24.8	17.32	42.12	-1.38	43.5	100	330	QP
2		193.196	20.99	18.79	39.78	-3.72	43.5	100	185	QP
3		240.025	20.33	20.2	40.53	-5.47	46	100	35	QP
4		252.959	17.33	20.55	37.88	-8.12	46	100	210	QP
5		263.259	12.31	20.61	32.92	-13.08	46	100	240	QP
6		299.982	20.89	21.4	42.29	-3.71	46	100	50	QP

Note: The EUT Power by Notebook PC USB

1. " \* " means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
3. Measurement (dBUV/m) = Reading(dBUV) + C.F (Correction Factor).

EUT	RF Evaluation kit	Test Date	2019/7/10
Factor	VULB 9162	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Peter
Test Mode	TX_2GFSK1_915MHz	Test Voltage	AC 120V/60Hz

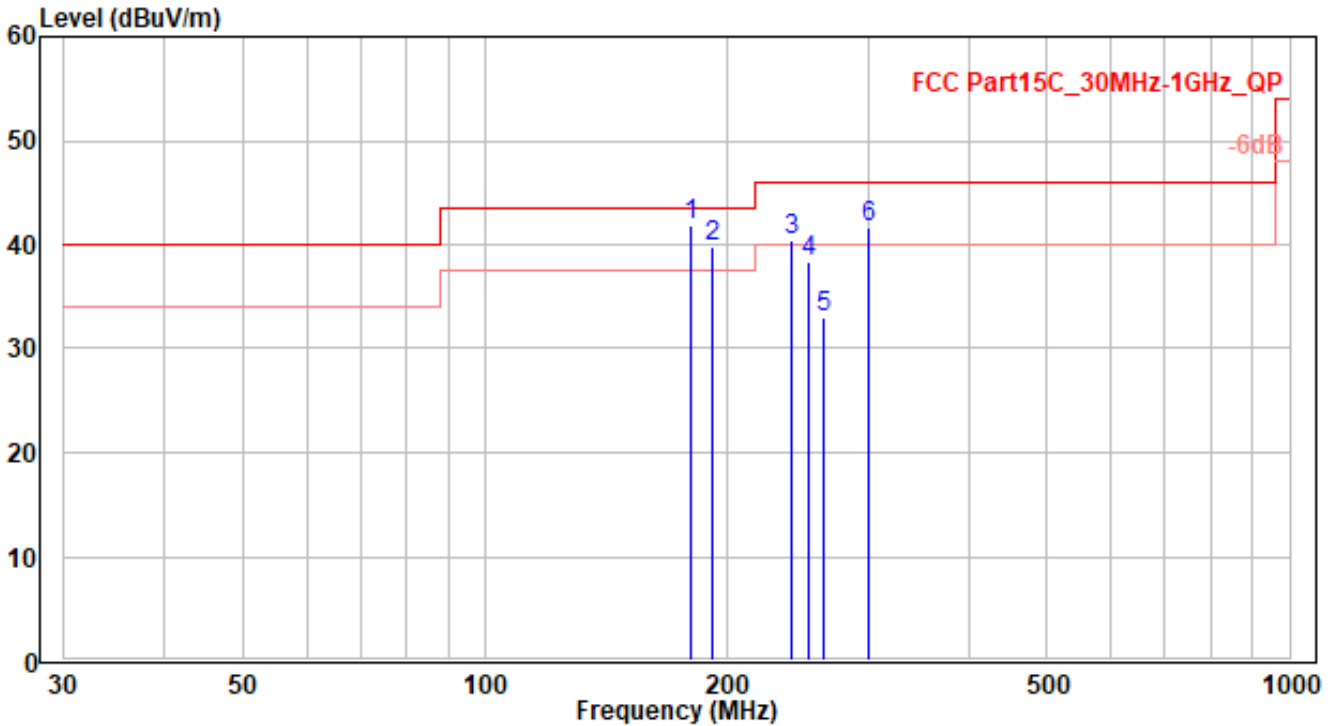


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	180.152	18.93	17.3	36.23	-7.27	43.5	100	80	QP
2	191.983	17.74	18.76	36.5	-7	43.5	100	400	QP
3	315.584	14.26	22.03	36.29	-9.71	46	100	30	QP
4	335.296	14.86	22.83	37.69	-8.31	46	100	345	QP
5	444.585	17.46	24.82	42.28	-3.72	46	100	350	QP
6	* 467.564	17.26	25.22	42.48	-3.52	46	100	90	QP

Note: The EUT Power by Notebook PC USB

1. " \* " means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).

EUT	RF Evaluation kit	Test Date	2019/7/10
Factor	VULB 9162	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Peter
Test Mode	TX_4FSK_915MHz	Test Voltage	AC 120V/60Hz

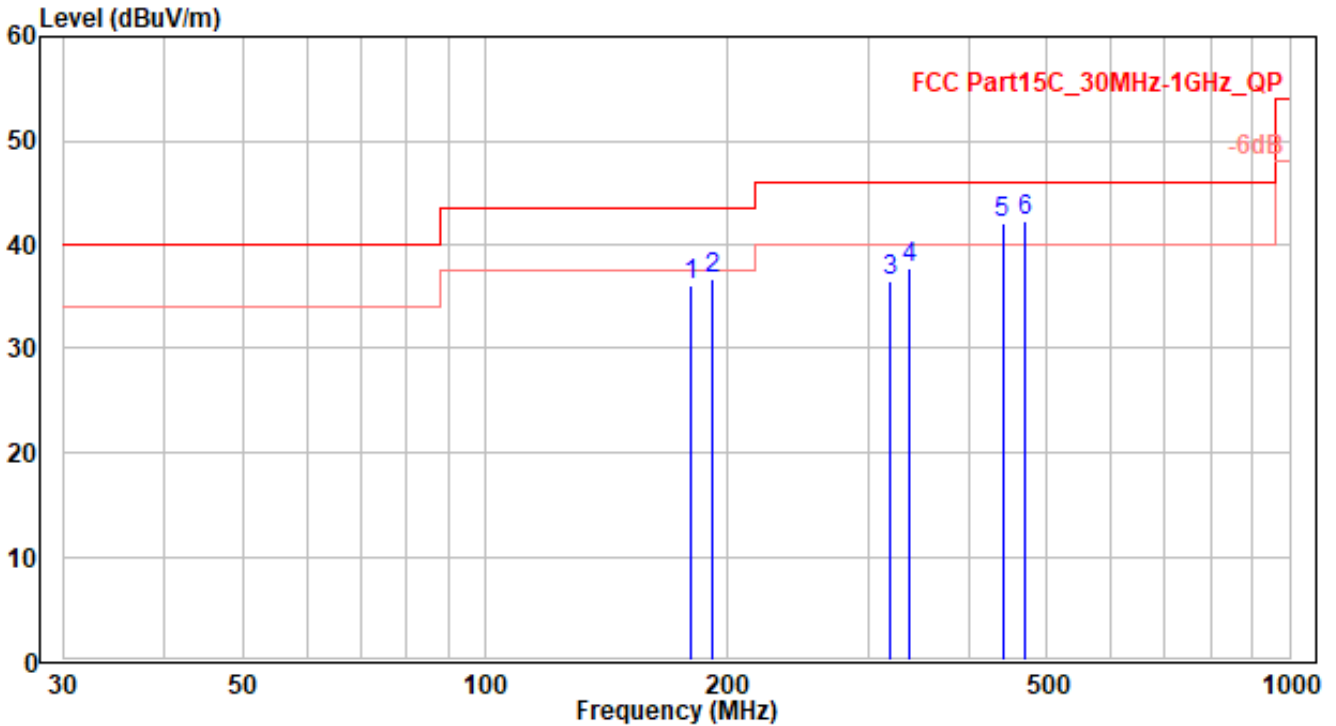


No		Frequency (MHz)	Reading (dBUV)	C.F (dB)	Measurement (dBUV/m)	Margin (dB)	Limit (dBUV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	180.259	24.6	17.32	41.92	-1.58	43.5	100	-20	QP
2		191.288	20.97	18.75	39.72	-3.78	43.5	100	175	QP
3		240.005	20.3	20.2	40.5	-5.5	46	100	40	QP
4		252.685	17.82	20.55	38.37	-7.63	46	100	200	QP
5		263.29	12.29	20.61	32.9	-13.1	46	100	200	QP
6		300.005	20.29	21.4	41.69	-4.31	46	100	55	QP

Note: The EUT Power by Notebook PC USB

1. " \* " means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
3. Measurement (dBUV/m) = Reading(dBUV) + C.F (Correction Factor).

EUT	RF Evaluation kit	Test Date	2019/7/10
Factor	VULB 9162	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Peter
Test Mode	TX_4FSK_915MHz	Test Voltage	AC 120V/60Hz

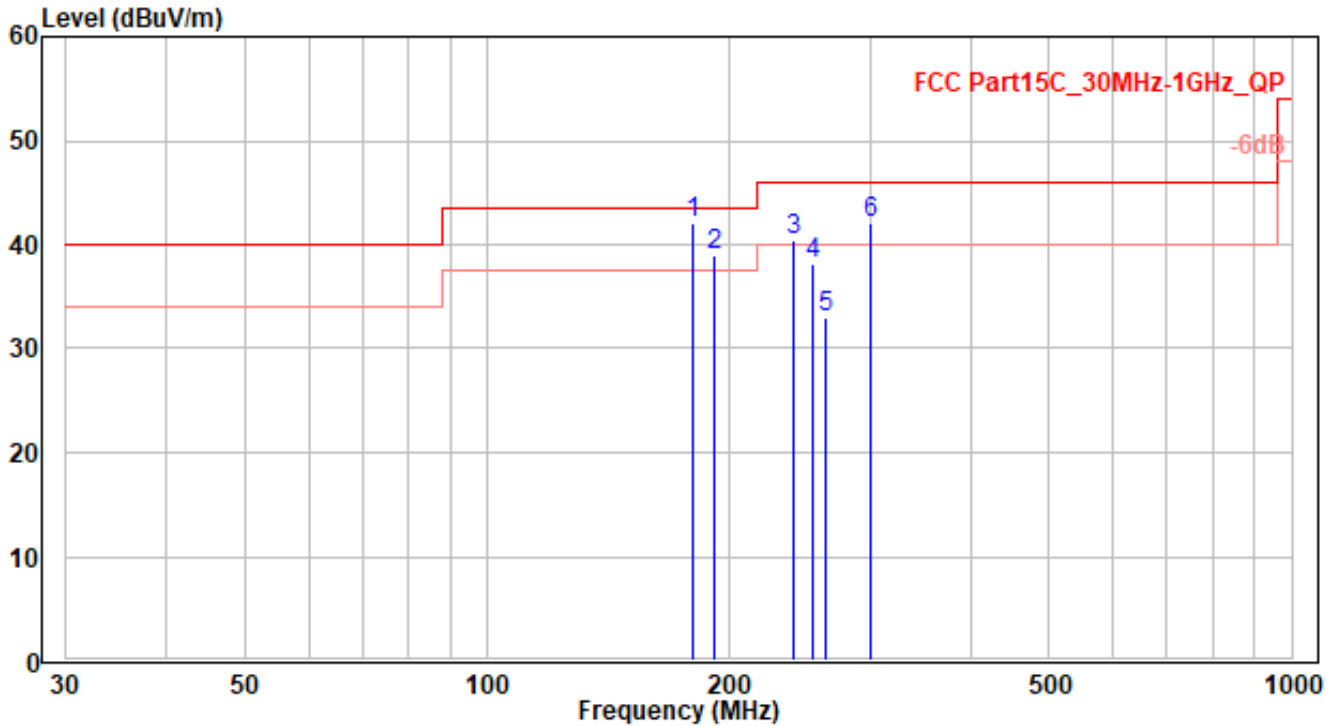


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	180.684	18.75	17.38	36.13	-7.37	43.5	100	70	QP
2	191.398	17.98	18.75	36.73	-6.77	43.5	100	90	QP
3	318.257	14.29	22.14	36.43	-9.57	46	100	60	QP
4	336.146	14.89	22.86	37.75	-8.25	46	100	350	QP
5	439.815	17.26	24.74	42	-4	46	100	90	QP
6	* 468.151	17.09	25.23	42.32	-3.68	46	100	80	QP

Note: The EUT Power by Notebook PC USB

1. " \* " means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).

EUT	RF Evaluation kit	Test Date	2019/7/10
Factor	VULB 9162	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Peter
Test Mode	TX_4GFSK05_915MHz	Test Voltage	AC 120V/60Hz



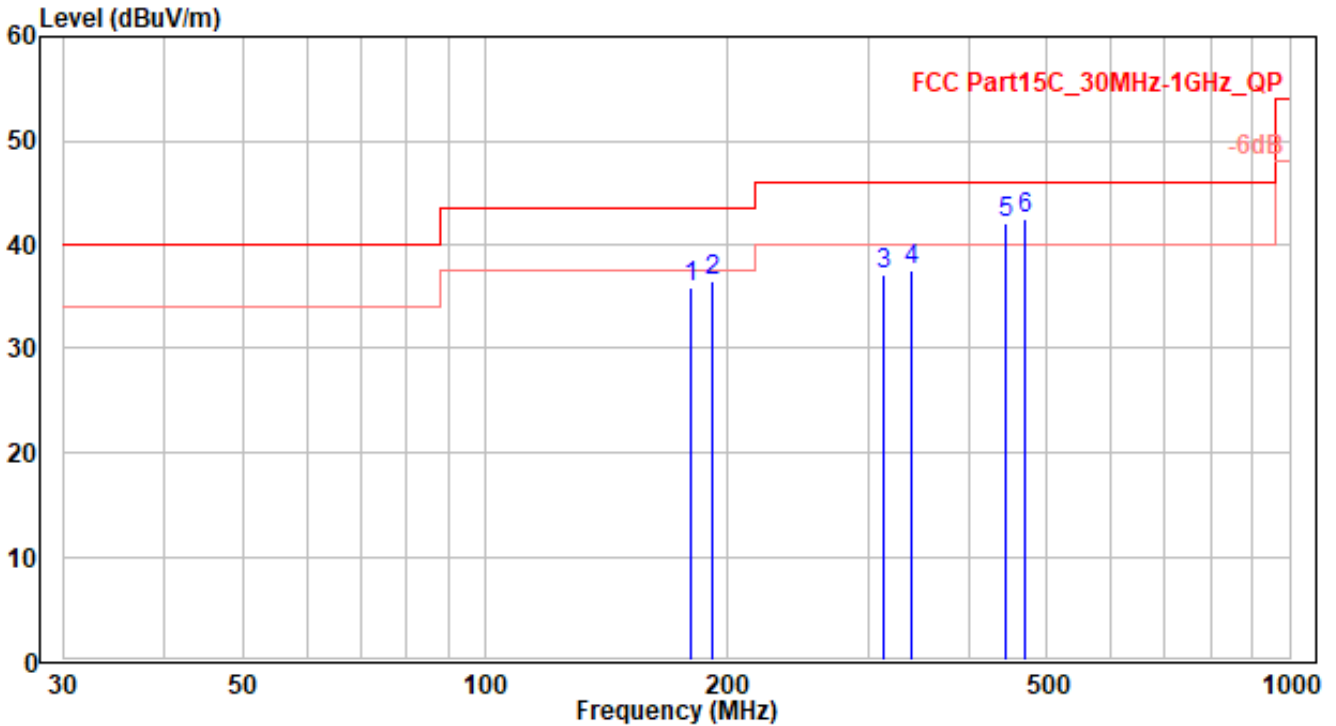
No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	180.399	24.7	17.34	42.04	-1.46	43.5	100	355	QP
2		191.287	20.23	18.75	38.98	-4.52	43.5	100	-40	QP
3		240.005	20.29	20.2	40.49	-5.51	46	100	50	QP
4		253.549	17.67	20.55	38.22	-7.78	46	100	160	QP
5		263.289	12.48	20.61	33.09	-12.91	46	100	200	QP
6		299.986	20.59	21.4	41.99	-4.01	46	100	70	QP

Note: The EUT Power by Notebook PC USB

1. " \* " means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).



EUT	RF Evaluation kit	Test Date	2019/7/10
Factor	VULB 9162	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Peter
Test Mode	TX_4GFSK05_915MHz	Test Voltage	AC 120V/60Hz

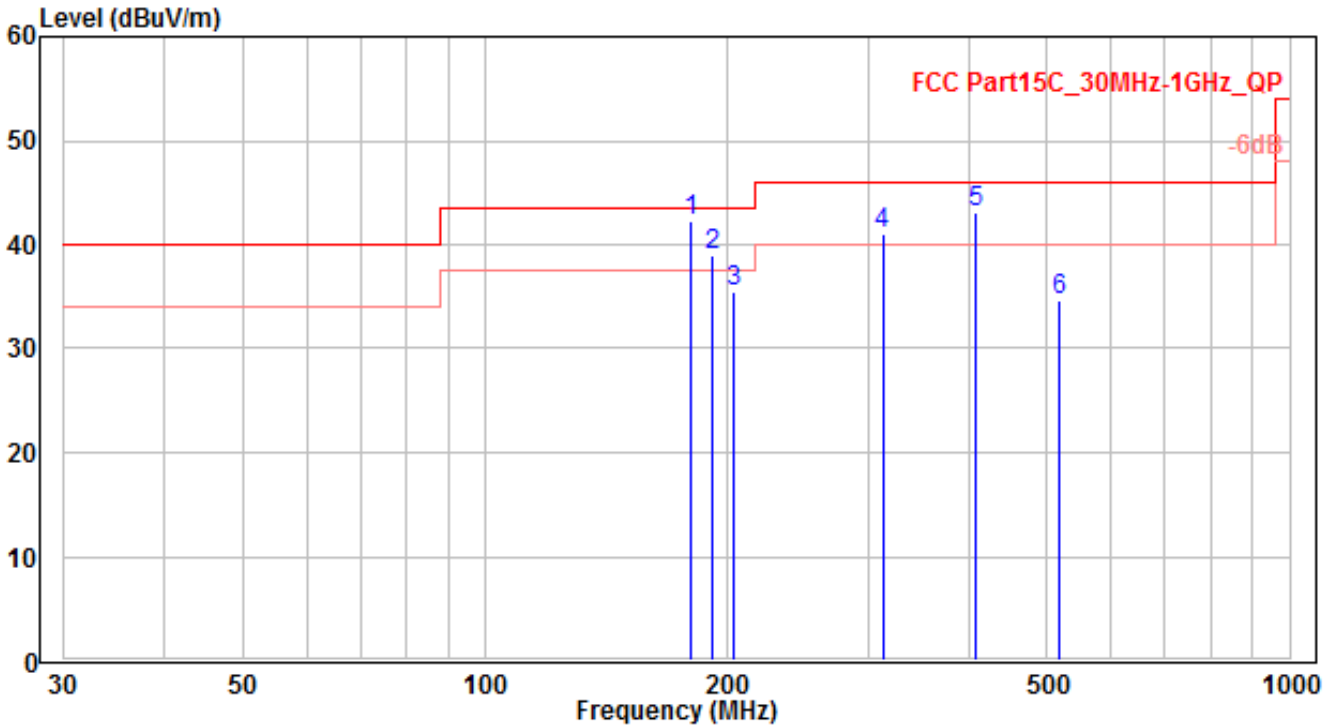


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	180.047	18.67	17.29	35.96	-7.54	43.5	100	70	QP
2	191.982	17.7	18.76	36.46	-7.04	43.5	100	35	QP
3	313.583	15.12	21.96	37.08	-8.92	46	100	375	QP
4	338.583	14.46	22.97	37.43	-8.57	46	100	-5	QP
5	444.296	17.29	24.81	42.1	-3.9	46	100	105	QP
6	* 468.15	17.15	25.23	42.38	-3.62	46	100	50	QP

Note: The EUT Power by Notebook PC USB

1. " \* " means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).

EUT	RF Evaluation kit	Test Date	2019/7/10
Factor	VULB 9162	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Peter
Test Mode	RX_2FSK_915MHz	Test Voltage	AC 120V/60Hz

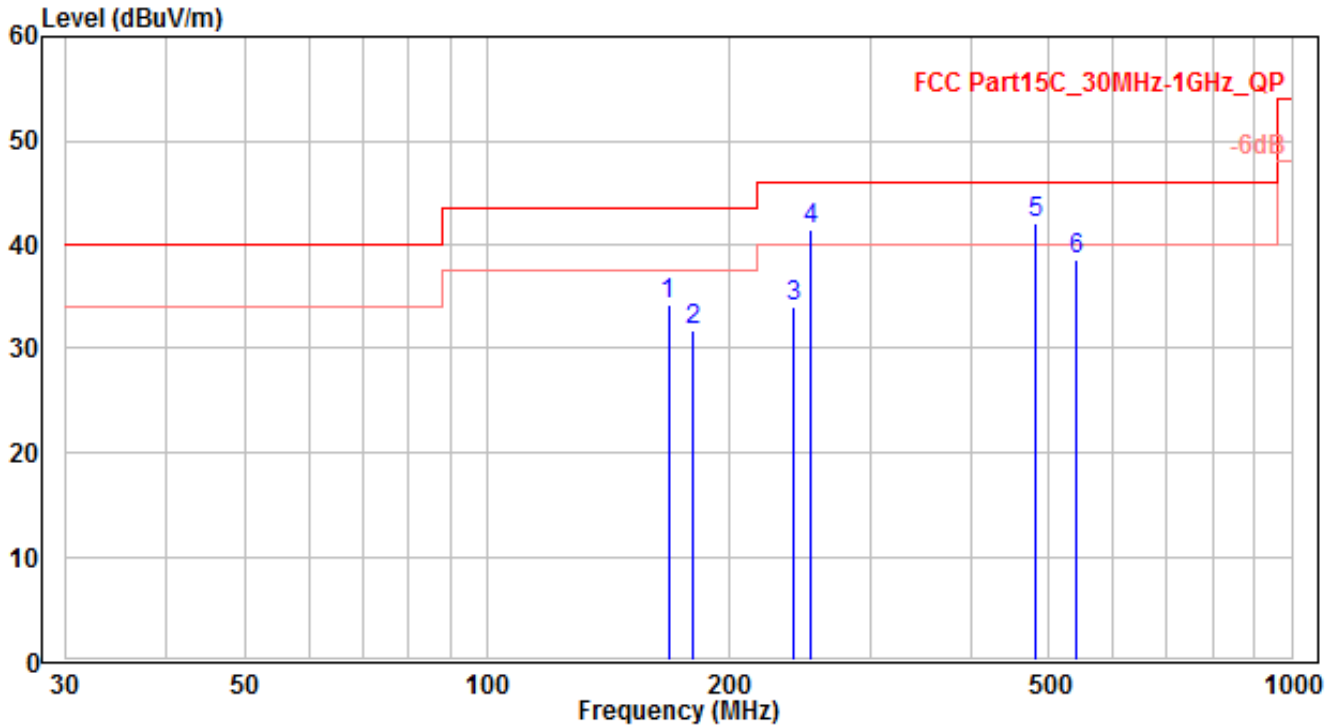


No		Frequency (MHz)	Reading (dBUV)	C.F (dB)	Measurement (dBUV/m)	Margin (dB)	Limit (dBUV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	179.865	25	17.27	42.27	-1.23	43.5	100	-5	QP
2		191.99	20.3	18.76	39.06	-4.44	43.5	100	180	QP
3		203.994	16.7	18.81	35.51	-7.99	43.5	150	5	QP
4		311.997	19.15	21.89	41.04	-4.96	46	100	50	QP
5		407.997	18.76	24.28	43.04	-2.96	46	150	255	QP
6		516	8.6	26.07	34.67	-11.33	46	160	255	QP

Note: The EUT Power by Notebook PC USB

1. " \* " means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
3. Measurement (dBUV/m) = Reading(dBUV) + C.F (Correction Factor).

EUT	RF Evaluation kit	Test Date	2019/7/10
Factor	VULB 9162	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Peter
Test Mode	RX_2FSK_915MHz	Test Voltage	AC 120V/60Hz



No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	167.983	17.83	16.3	34.13	-9.37	43.5	100	105	QP
2	179.986	14.4	17.28	31.68	-11.82	43.5	100	110	QP
3	239.975	13.73	20.2	33.93	-12.07	46	100	120	QP
4	251.978	20.87	20.55	41.42	-4.58	46	100	115	QP
5	* 479.989	16.61	25.45	42.06	-3.94	46	100	350	QP
6	540.008	12.05	26.45	38.5	-7.5	46	100	210	QP

Note: The EUT Power by Notebook PC USB

1. " \* " means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2FSK_903.5MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1807.000	81.63	-4.99	76.64	-23.71	100.35	150	400	Peak
2	2710.500	65.78	-2.52	63.26	-10.74	74.00	150	400	Peak
3	2710.500	N/A	N/A	43.52	-10.48	54	150	400	Average
4	* 3614.000	70.99	-0.94	70.05	-3.95	74.00	150	400	Peak
5	* 3614.000	N/A	N/A	50.31	-3.69	54	150	400	Average
6	4517.500	51.71	2.59	54.30	-19.70	74.00	150	400	Peak
7	4517.500	N/A	N/A	34.56	-19.44	54	150	400	Average
8	5421.000	58.22	3.82	62.04	-11.96	74.00	150	400	Peak
9	5421.000	N/A	N/A	42.30	-11.70	54	150	400	Average
10	6324.500	54.96	7.03	61.98	-38.37	100.35	150	400	Peak
11	7228.000	46.90	11.11	58.01	-15.99	74.00	150	400	Peak
12	7228.000	N/A	N/A	38.27	-15.73	54	150	400	Average
13	8131.500	41.33	12.29	53.62	-20.38	74.00	150	400	Peak
14	9035.000	36.35	13.77	50.12	-23.88	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2FSK_903.5MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBUV)	C.F (dB)	Measurement (dBUV/m)	Margin (dB)	Limit (dBUV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1807.000	79.41	-4.99	74.42	-18.13	92.55	150	400	Peak
2	* 2710.500	72.95	-2.52	70.43	-3.57	74.00	150	400	Peak
3	* 2710.500	N/A	N/A	50.69	-3.31	54	150	400	Average
4	3614.000	70.13	-0.94	69.19	-4.81	74.00	150	400	Peak
5	3614.000	N/A	N/A	49.45	-4.55	54	150	400	Average
6	4517.500	58.88	2.59	61.47	-12.53	74.00	150	400	Peak
7	4517.500	N/A	N/A	41.73	-12.27	54	150	400	Average
8	5421.000	63.75	3.82	67.57	-6.43	74.00	150	400	Peak
9	6324.500	58.46	7.03	65.49	-27.06	92.55	150	400	Peak
10	7228.000	53.67	11.11	64.78	-9.22	74.00	150	400	Peak
11	7228.000	N/A	N/A	45.04	-8.96	54	150	400	Average
12	8131.500	41.89	12.29	54.18	-19.82	74.00	150	400	Peak
13	8131.500	N/A	N/A	34.44	-19.56	54	150	400	Average
14	9035.000	43.58	13.77	57.34	-16.66	74.00	150	400	Peak
15	9035.000	N/A	N/A	37.60	-16.40	54	150	400	Average

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBUV/m) = Reading(dBUV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2FSK_915MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1830.000	80.16	-4.93	75.23	-24.82	100.05	150	400	Peak
2	2745.000	62.63	-2.57	60.06	-13.94	74.00	150	400	Peak
3	2745.000	N/A	N/A	40.32	-13.68	54	150	400	Average
4	* 3660.000	67.62	-0.82	66.81	-7.19	74.00	150	400	Peak
5	* 3660.000	N/A	N/A	47.07	-6.93	54	150	400	Average
6	4575.000	49.18	2.70	51.88	-22.12	74.00	150	400	Peak
7	5490.000	56.34	3.86	60.20	-39.85	100.05	150	400	Peak
8	6405.000	47.18	7.33	54.52	-45.53	100.05	150	400	Peak
9	7320.000	45.17	11.31	56.48	-17.52	74.00	150	400	Peak
10	7320.000	N/A	N/A	36.74	-17.26	54	150	400	Average
11	8235.000	34.05	12.34	46.38	-27.62	74.00	150	400	Peak
12	9150.000	31.90	13.73	45.64	-28.36	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Pre-amplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2FSK_915MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1830.000	76.39	-4.93	71.45	-20.8	92.25	150	400	Peak
2	2745.000	70.99	-2.57	68.42	-5.58	74.00	150	400	Peak
3	2745.000	N/A	N/A	48.68	-5.32	54	150	400	Average
4	* 3660.000	70.08	-0.82	69.26	-4.74	74.00	150	400	Peak
5	* 3660.000	N/A	N/A	49.52	-4.48	54	150	400	Average
6	4575.000	57.47	2.70	60.17	-13.83	74.00	150	400	Peak
7	4575.000	N/A	N/A	40.43	-13.57	54	150	400	Average
8	5490.000	62.18	3.86	66.05	-7.95	74.00	150	400	Peak
9	5490.000	N/A	N/A	46.31	-7.69	54	150	400	Average
10	6405.000	50.44	7.33	57.77	-34.48	92.25	150	400	Peak
11	7320.000	50.99	11.31	62.31	-11.69	74.00	150	400	Peak
12	7320.000	N/A	N/A	42.57	-11.43	54	150	400	Average
13	8235.000	44.21	12.34	56.54	-17.46	74.00	150	400	Peak
14	8235.000	N/A	N/A	36.80	-17.20	54	150	400	Average
15	9150.000	40.34	13.73	54.07	-19.93	74.00	150	400	Peak
16	9150.000	N/A	N/A	34.33	-19.67	54	150	400	Average

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2FSK_926.5MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1853.000	79.12	-4.88	74.24	-26.89	101.13	150	400	Peak
2	* 2779.500	60.17	-2.62	57.55	-16.44	74.00	150	400	Peak
3	* 2779.500	N/A	N/A	37.82	-16.18	54	150	400	Average
4	3706.000	57.54	-0.70	56.84	-17.16	74.00	150	400	Peak
5	3706.000	N/A	N/A	37.10	-16.90	54	150	400	Average
6	4632.500	44.48	2.82	47.29	-26.71	74.00	150	400	Peak
7	5559.000	55.74	4.10	59.84	-41.29	101.13	150	400	Peak
8	6485.500	45.24	7.64	52.88	-48.25	101.13	150	400	Peak
9	7412.000	40.31	11.52	51.83	-22.17	74.00	150	400	Peak
10	8338.500	31.66	12.38	44.04	-29.96	74.00	150	400	Peak
11	9265.000	31.16	13.70	44.85	-29.15	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level



EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2FSK_926.5MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1853.000	74.11	-4.88	69.24	-22.80	92.04	150	400	Peak
2	* 2779.500	66.14	-2.62	63.52	-10.48	74.00	150	400	Peak
3	* 2779.500	N/A	N/A	43.78	-10.22	54	150	400	Average
4	3706.000	64.06	-0.70	63.37	-10.63	74.00	150	400	Peak
5	3706.000	N/A	N/A	43.63	-10.37	54	150	400	Average
6	4632.500	55.06	2.82	57.87	-16.13	74.00	150	400	Peak
7	4632.500	N/A	N/A	38.13	-15.87	54	150	400	Average
8	5559.000	62.56	4.10	66.65	-25.39	92.04	150	400	Peak
9	6485.500	47.38	7.64	55.02	-37.02	92.04	150	400	Peak
10	7412.000	48.72	11.52	60.23	-13.77	74.00	150	400	Peak
11	7412.000	N/A	N/A	40.49	-13.51	54	150	400	Average
12	8338.500	38.78	12.38	51.16	-22.84	74.00	150	400	Peak
13	9265.000	37.41	13.70	51.10	-22.90	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2GFSK05_903.5MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1807.000	83.56	-4.99	78.57	-22.10	100.67	150	400	Peak
2	2710.500	65.52	-2.52	63.00	-11.00	74.00	150	400	Peak
3	2710.500	N/A	N/A	43.21	-10.79	54	150	400	Average
4	* 3614.000	71.17	-0.94	70.23	-3.77	74.00	150	400	Peak
5	* 3614.000	N/A	N/A	50.44	-3.56	54	150	400	Average
6	4517.500	48.01	2.59	50.60	-23.41	74.00	150	400	Peak
7	5421.000	58.77	3.82	62.59	-11.41	74.00	150	400	Peak
8	5421.000	N/A	N/A	42.80	-11.20	54	150	400	Average
9	6324.500	51.49	7.03	58.52	-42.15	100.67	150	400	Peak
10	7228.000	47.62	11.11	58.73	-15.27	74.00	150	400	Peak
11	7228.000	N/A	N/A	38.94	-15.06	54	150	400	Average
12	8131.500	39.52	12.29	51.81	-22.19	74.00	150	400	Peak
13	9035.000	36.75	13.77	50.52	-23.48	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2GFSK05_903.5MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1807.000	78.89	-4.99	73.90	-18.63	92.53	150	400	Peak
2	* 2710.500	72.89	-2.52	70.37	-3.63	74.00	150	400	Peak
3	* 2710.500	N/A	N/A	50.58	-3.42	54	150	400	Average
4	3614.000	70.48	-0.94	69.54	-4.46	74.00	150	400	Peak
5	3614.000	N/A	N/A	49.75	-4.25	54	150	400	Average
6	4517.500	56.64	2.59	59.22	-14.78	74.00	150	400	Peak
7	4517.500	N/A	N/A	39.43	-14.57	54	150	400	Average
8	5421.000	63.83	3.82	67.65	-6.35	74.00	150	400	Peak
9	5421.000	N/A	N/A	47.86	-6.14	54	150	400	Average
10	6324.500	57.20	7.03	64.23	-28.30	92.53	150	400	Peak
11	7228.000	53.06	11.11	64.17	-9.83	74.00	150	400	Peak
12	7228.000	N/A	N/A	44.38	-9.62	54	150	400	Average
13	8131.500	45.46	12.29	57.75	-16.25	74.00	150	400	Peak
14	8131.500	N/A	N/A	37.96	-16.04	54	150	400	Average
15	9035.000	43.02	13.77	56.79	-17.21	74.00	150	400	Peak
16	9035.000	N/A	N/A	37.00	-17.00	54	150	400	Average

Note:

- " \* ", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Pre-amplifier(dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.
- The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2GFSK05_915MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1830.000	80.76	-4.93	75.83	-24.54	100.37	150	400	Peak
2	2745.000	62.11	-2.57	59.54	-14.46	74.00	150	400	Peak
3	2745.000	N/A	N/A	39.75	-14.25	54	150	400	Average
4	* 3660.000	67.59	-0.82	66.77	-7.23	74.00	150	400	Peak
5	* 3660.000	N/A	N/A	46.98	-7.02	54	150	400	Average
6	4575.000	49.02	2.70	51.72	-22.28	74.00	150	400	Peak
7	5490.000	56.14	3.86	60.01	-40.36	100.37	150	400	Peak
8	6405.000	46.64	7.33	53.97	-46.40	100.37	150	400	Peak
9	7320.000	44.49	11.31	55.80	-18.20	74.00	150	400	Peak
10	7320.000	N/A	N/A	36.01	-17.99	54	150	400	Average
11	8235.000	37.20	12.34	49.54	-24.46	74.00	150	400	Peak
12	9150.000	31.08	13.73	44.81	-29.19	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2GFSK05_915MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBUV)	C.F (dB)	Measurement (dBUV/m)	Margin (dB)	Limit (dBUV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1830.000	77.11	-4.93	72.18	-20.05	92.23	150	400	Peak
2	2745.000	70.44	-2.57	67.87	-6.13	74.00	150	400	Peak
3	2745.000	N/A	N/A	48.08	-5.92	54	150	400	Average
4	* 3660.000	69.38	-0.82	68.57	-5.43	74.00	150	400	Peak
5	* 3660.000	N/A	N/A	48.78	-5.22	54	150	400	Average
6	4575.000	57.52	2.70	60.22	-13.78	74.00	150	400	Peak
7	4575.000	N/A	N/A	40.43	-13.57	54	150	400	Average
8	5490.000	61.54	3.86	65.40	-8.60	74.00	150	400	Peak
9	5490.000	N/A	N/A	45.61	-8.39	54	150	400	Average
10	6405.000	51.90	7.33	59.23	-33.00	92.23	150	400	Peak
11	7320.000	48.96	11.31	60.28	-13.72	74.00	150	400	Peak
12	7320.000	N/A	N/A	40.49	-13.51	54	150	400	Average
13	8235.000	43.48	12.34	55.81	-18.19	74.00	150	400	Peak
14	8235.000	N/A	N/A	36.02	-17.98	54	150	400	Average
15	9150.000	39.77	13.73	53.50	-20.50	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBUV/m) = Reading(dBUV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2GFSK05_926.5MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1853.000	79.09	-4.88	74.21	-26.87	101.08	150	400	Peak
2	2779.500	58.88	-2.62	56.26	-17.74	74.00	150	400	Peak
3	2779.500	N/A	N/A	36.47	-17.53	54	150	400	Average
4	* 3706.000	58.01	-0.70	57.31	-16.69	74.00	150	400	Peak
5	* 3706.000	N/A	N/A	37.52	-16.48	54	150	400	Average
6	4632.500	44.42	2.82	47.24	-26.76	74.00	150	400	Peak
7	5559.000	55.16	4.10	59.26	-41.82	101.08	150	400	Peak
8	6485.500	46.28	7.64	53.92	-47.16	101.08	150	400	Peak
9	7412.000	41.46	11.52	52.98	-21.02	74.00	150	400	Peak
10	8338.500	33.68	12.38	46.06	-27.94	74.00	150	400	Peak
11	9265.000	32.98	13.70	46.68	-27.32	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2GFSK05_926.5MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1853.000	74.10	-4.88	69.22	-22.79	92.01	150	400	Peak
2	2779.500	65.01	-2.62	62.39	-11.61	74.00	150	400	Peak
3	2779.500	N/A	N/A	42.60	-11.40	54	150	400	Average
4	* 3706.000	64.36	-0.70	63.67	-10.33	74.00	150	400	Peak
5	* 3706.000	N/A	N/A	43.88	-10.12	54	150	400	Average
6	4632.500	54.71	2.82	57.52	-16.48	74.00	150	400	Peak
7	4632.500	N/A	N/A	37.73	-16.27	54	150	400	Average
8	5559.000	62.25	4.10	66.35	-25.66	92.01	150	400	Peak
9	6485.500	47.96	7.64	55.60	-18.40	74.00	150	400	Peak
10	6485.500	N/A	N/A	35.81	-18.19	54	150	400	Average
11	7412.000	48.38	11.52	59.90	-14.10	74.00	150	400	Peak
12	8338.500	37.81	12.38	50.19	-23.81	74.00	150	400	Peak
13	9265.000	37.01	13.70	50.71	-23.29	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2GFSK1_903.5MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1807.000	83.07	-4.99	78.09	-22.33	100.42	150	400	Peak
2	2710.500	66.33	-2.52	63.81	-10.19	74.00	150	400	Peak
3	2710.500	N/A	N/A	44.23	-9.77	54	150	400	Average
4	* 3614.000	71.36	-0.94	70.42	-3.58	74.00	150	400	Peak
5	* 3614.000	N/A	N/A	50.84	-3.16	54	150	400	Average
6	4517.500	49.39	2.59	51.98	-22.02	74.00	150	400	Peak
7	5421.000	58.03	3.82	61.85	-12.15	74.00	150	400	Peak
8	5421.000	N/A	N/A	42.27	-11.73	54	150	400	Average
9	6324.500	51.75	7.03	58.78	-41.64	100.42	150	400	Peak
10	7228.000	48.21	11.11	59.32	-14.68	74.00	150	400	Peak
11	7228.000	N/A	N/A	39.74	-14.26	54	150	400	Average
12	8131.500	42.45	12.29	54.74	-19.26	74.00	150	400	Peak
13	8131.500	N/A	N/A	35.16	-18.84	54	150	400	Average
14	9035.000	36.74	13.77	50.51	-23.49	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Pre-amplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level



EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2GFSK1_903.5MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1807.000	78.95	-4.99	73.96	-18.56	92.52	150	400	Peak
2	* 2710.500	72.93	-2.52	70.41	-3.59	74.00	150	400	Peak
3	* 2710.500	N/A	N/A	50.83	-3.17	54	150	400	Average
4	3614.000	70.67	-0.94	69.73	-4.27	74.00	150	400	Peak
5	3614.000	N/A	N/A	50.15	-3.85	54	150	400	Average
6	4517.500	57.92	2.59	60.51	-13.49	74.00	150	400	Peak
7	4517.500	N/A	N/A	40.93	-13.07	54	150	400	Average
8	5421.000	64.03	3.82	67.85	-6.15	74.00	150	400	Peak
9	5421.000	N/A	N/A	48.27	-5.73	54	150	400	Average
10	6324.500	57.03	7.03	64.05	-28.47	92.52	150	400	Peak
11	7228.000	54.69	11.11	65.80	-8.20	74.00	150	400	Peak
12	7228.000	N/A	N/A	46.22	-7.78	54	150	400	Average
13	8131.500	45.47	12.29	57.76	-16.24	74.00	150	400	Peak
14	8131.500	N/A	N/A	38.18	-15.82	54	150	400	Average
15	9035.000	43.34	13.77	57.10	-16.90	74.00	150	400	Peak
16	9035.000	N/A	N/A	37.52	-16.48	54	150	400	Average

Note:

- " \* ", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.
- The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2GFSK1_915MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1830.000	80.14	-4.93	75.21	-24.91	100.12	150	400	Peak
2	2745.000	62.11	-2.57	59.54	-14.46	74.00	150	400	Peak
3	2745.000	N/A	N/A	39.96	-14.04	54	150	400	Average
4	* 3660.000	67.61	-0.82	66.79	-7.21	74.00	150	400	Peak
5	* 3660.000	N/A	N/A	47.21	-6.79	54	150	400	Average
6	4575.000	48.97	2.70	51.67	-22.33	74.00	150	400	Peak
7	5490.000	56.19	3.86	60.06	-40.06	100.12	150	400	Peak
8	6405.000	47.24	7.33	54.57	-45.55	100.12	150	400	Peak
9	7320.000	44.32	11.31	55.64	-18.36	74.00	150	400	Peak
10	7320.000	N/A	N/A	36.06	-17.94	54	150	400	Average
11	8235.000	36.70	12.34	49.03	-24.97	74.00	150	400	Peak
12	9150.000	31.93	13.73	45.66	-28.34	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2GFSK1_915MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1830.000	76.41	-4.93	71.48	-20.74	92.22	150	400	Peak
2	2745.000	70.30	-2.57	67.73	-6.27	74.00	150	400	Peak
3	2745.000	N/A	N/A	48.15	-5.85	54	150	400	Average
4	* 3660.000	70.36	-0.82	69.54	-4.46	74.00	150	400	Peak
5	* 3660.000	N/A	N/A	49.96	-4.04	54	150	400	Average
6	4575.000	56.72	2.70	59.42	-14.58	74.00	150	400	Peak
7	4575.000	N/A	N/A	39.84	-14.16	54	150	400	Average
8	5490.000	62.78	3.86	66.65	-25.57	92.22	150	400	Peak
9	6405.000	50.58	7.33	57.91	-34.31	92.22	150	400	Peak
10	7320.000	50.85	11.31	62.17	-11.83	74.00	150	400	Peak
11	7320.000	N/A	N/A	42.59	-11.41	54	150	400	Average
12	8235.000	45.01	12.34	57.34	-16.66	74.00	150	400	Peak
13	8235.000	N/A	N/A	37.76	-16.24	54	150	400	Average
14	9150.000	39.65	13.73	53.38	-20.62	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Pre-amplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2GFSK1_926.5MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1853.000	79.52	-4.88	74.64	-26.43	101.07	150	400	Peak
2	2779.500	59.62	-2.62	57.00	-17.00	74.00	150	400	Peak
3	2779.500	N/A	N/A	37.42	-16.58	54	150	400	Average
4	* 3706.000	57.91	-0.70	57.21	-16.79	74.00	150	400	Peak
5	* 3706.000	N/A	N/A	37.63	-16.37	54	150	400	Average
6	4632.500	42.37	2.82	45.19	-28.81	74.00	150	400	Peak
7	5559.000	55.30	4.10	59.40	-41.67	101.07	150	400	Peak
8	6485.500	46.99	7.64	54.63	-46.44	101.07	150	400	Peak
9	7412.000	41.78	11.52	53.30	-20.70	74.00	150	400	Peak
10	8338.500	36.65	12.38	49.03	-24.97	74.00	150	400	Peak
11	9265.000	33.12	13.70	46.82	-27.18	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2GFSK1_926.5MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1853.000	75.81	-4.88	70.93	-20.95	91.88	150	400	Peak
2	2779.500	65.70	-2.62	63.08	-10.92	74.00	150	400	Peak
3	2779.500	N/A	N/A	43.50	-10.50	54	150	400	Average
4	* 3706.000	64.56	-0.70	63.86	-10.14	74.00	150	400	Peak
5	* 3706.000	N/A	N/A	44.28	-9.72	54	150	400	Average
6	4632.500	53.71	2.82	56.53	-17.48	74.00	150	400	Peak
7	4632.500	N/A	N/A	36.95	-17.05	54	150	400	Average
8	5559.000	61.86	4.10	65.96	-25.92	91.88	150	400	Peak
9	6485.500	47.47	7.64	55.11	-36.77	91.88	150	400	Peak
10	7412.000	47.95	11.52	59.47	-14.53	74.00	150	400	Peak
11	7412.000	N/A	N/A	39.89	-14.11	54	150	400	Average
12	8338.500	39.11	12.38	51.49	-22.51	74.00	150	400	Peak
13	9265.000	38.65	13.70	52.35	-21.65	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_4FSK_903.5MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1807.000	81.57	-4.99	76.58	-24.04	100.62	150	400	Peak
2	2710.500	63.80	-2.52	61.28	-12.72	74.00	150	400	Peak
3	2710.500	N/A	N/A	36.09	-17.91	54	150	400	Average
4	* 3614.000	71.12	-0.94	70.18	-3.82	74.00	150	400	Peak
5	* 3614.000	N/A	N/A	44.99	-9.01	54	150	400	Average
6	4517.500	51.61	2.59	54.19	-19.81	74.00	150	400	Peak
7	4517.500	N/A	N/A	29.00	-25.00	54	150	400	Average
8	5421.000	58.23	3.82	62.05	-11.95	74.00	150	400	Peak
9	5421.000	N/A	N/A	36.86	-17.14	54	150	400	Average
10	6324.500	55.17	7.03	62.20	-38.42	100.62	150	400	Peak
11	7228.000	47.27	11.11	58.37	-15.63	74.00	150	400	Peak
12	7228.000	N/A	N/A	33.18	-20.82	54	150	400	Average
13	8131.500	41.10	12.29	53.39	-20.61	74.00	150	400	Peak
14	9035.000	36.63	13.77	50.40	-23.60	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Pre-amplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_4FSK_903.5MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1807.000	78.94	-4.99	73.95	-18.43	92.38	150	400	Peak
2	* 2710.500	72.36	-2.52	69.84	-4.16	74.00	150	400	Peak
3	* 2710.500	N/A	N/A	44.65	-9.35	54	150	400	Average
4	3614.000	70.58	-0.94	69.64	-4.36	74.00	150	400	Peak
5	3614.000	N/A	N/A	44.45	-9.55	54	150	400	Average
6	4517.500	56.73	2.59	59.31	-14.69	74.00	150	400	Peak
7	4517.500	N/A	N/A	34.12	-19.88	54	150	400	Average
8	5421.000	63.96	3.82	67.78	-6.22	74.00	150	400	Peak
9	5421.000	N/A	N/A	42.59	-11.41	54	150	400	Average
10	6324.500	56.89	7.03	63.91	-28.47	92.38	150	400	Peak
11	7228.000	52.79	11.11	63.90	-10.10	74.00	150	400	Peak
12	7228.000	N/A	N/A	38.71	-15.29	54	150	400	Average
13	8131.500	45.44	12.29	57.73	-16.27	74.00	150	400	Peak
14	8131.500	N/A	N/A	32.54	-21.46	54	150	400	Average
15	9035.000	42.87	13.77	56.63	-17.37	74.00	150	400	Peak
16	9035.000	N/A	N/A	31.44	-22.56	54	150	400	Average

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_4FSK_915MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1830.000	80.71	-4.93	75.78	-24.54	100.32	150	400	Peak
2	2745.000	61.26	-2.57	58.69	-15.31	74.00	150	400	Peak
3	2745.000	N/A	N/A	33.50	-20.50	54	150	400	Average
4	* 3660.000	67.19	-0.82	66.37	-7.63	74.00	150	400	Peak
5	* 3660.000	N/A	N/A	41.18	-12.82	54	150	400	Average
6	4575.000	48.30	2.70	51.00	-23.00	74.00	150	400	Peak
7	5490.000	54.82	3.86	58.68	-41.64	100.32	150	400	Peak
8	6405.000	45.40	7.33	52.73	-47.59	100.32	150	400	Peak
9	7320.000	45.28	11.31	56.59	-17.41	74.00	150	400	Peak
10	7320.000	N/A	N/A	31.40	-22.60	54	150	400	Average
11	8235.000	34.95	12.34	47.29	-26.71	74.00	150	400	Peak
12	9150.000	35.65	13.73	49.38	-24.62	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level



EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_4FSK_915MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1830.000	76.07	-4.93	71.14	-20.94	92.08	150	400	Peak
2	2745.000	70.11	-2.57	67.55	-6.45	74.00	150	400	Peak
3	2745.000	N/A	N/A	42.36	-11.64	54	150	400	Average
4	* 3660.000	69.02	-0.82	68.20	-5.80	74.00	150	400	Peak
5	* 3660.000	N/A	N/A	43.01	-10.99	54	150	400	Average
6	4575.000	57.23	2.70	59.93	-14.07	74.00	150	400	Peak
7	4575.000	N/A	N/A	34.74	-19.26	54	150	400	Average
8	5490.000	61.10	3.86	64.96	-27.12	92.08	150	400	Peak
9	6405.000	50.60	7.33	57.93	-34.15	92.08	150	400	Peak
10	7320.000	49.64	11.31	60.95	-13.05	74.00	150	400	Peak
11	7320.000	N/A	N/A	35.76	-18.24	54	150	400	Average
12	8235.000	43.55	12.34	55.88	-18.12	74.00	150	400	Peak
13	8235.000	N/A	N/A	30.69	-23.31	54	150	400	Average
14	9150.000	40.09	13.73	53.82	-20.18	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Pre-amplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_4FSK_926.5MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1853.000	79.08	-4.88	74.20	-26.84	101.04	150	400	Peak
2	* 2779.500	59.73	-2.62	57.11	-16.89	74.00	150	400	Peak
3	* 2779.500	N/A	N/A	31.92	-22.08	54	150	400	Average
4	3706.000	57.15	-0.70	56.45	-17.55	74.00	150	400	Peak
5	3706.000	N/A	N/A	31.26	-22.74	54	150	400	Average
6	4632.500	43.97	2.82	46.79	-27.22	74.00	150	400	Peak
7	5559.000	56.08	4.10	60.18	-40.86	101.04	150	400	Peak
8	6485.500	46.15	7.64	53.79	-47.25	101.04	150	400	Peak
9	7412.000	40.93	11.52	52.45	-21.55	74.00	150	400	Peak
10	8338.500	34.75	12.38	47.13	-26.87	74.00	150	400	Peak
11	9265.000	32.11	13.70	45.81	-28.19	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_4FSK_926.5MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	* 1853.000	73.82	-4.88	68.94	-23.03	91.97	150	400	Peak
2	2779.500	64.82	-2.62	62.20	-11.80	74.00	150	400	Peak
3	2779.500	N/A	N/A	37.01	-16.99	54	150	400	Average
4	3706.000	64.61	-0.70	63.91	-10.09	74.00	150	400	Peak
5	3706.000	N/A	N/A	38.72	-15.28	54	150	400	Average
6	4632.500	54.90	2.82	57.72	-16.29	74.00	150	400	Peak
7	4632.500	N/A	N/A	32.53	-21.47	54	150	400	Average
8	5559.000	62.50	4.10	66.60	-25.37	91.97	150	400	Peak
9	6485.500	47.85	7.64	55.49	-36.48	91.97	150	400	Peak
10	7412.000	45.81	11.52	57.33	-16.67	74.00	150	400	Peak
11	7412.000	N/A	N/A	32.14	-21.86	54	150	400	Average
12	8338.500	36.95	12.38	49.33	-24.67	74.00	150	400	Peak
13	9265.000	36.36	13.70	50.06	-23.94	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_4GFSK05_903.5MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1807.000	82.71	-4.99	77.72	-22.91	100.63	150	400	Peak
2	2710.500	65.69	-2.52	63.17	-10.83	74.00	150	400	Peak
3	2710.500	N/A	N/A	38.38	-15.62	54	150	400	Average
4	* 3614.000	71.14	-0.94	70.20	-3.80	74.00	150	400	Peak
5	* 3614.000	N/A	N/A	45.41	-8.59	54	150	400	Average
6	4517.500	49.74	2.59	52.33	-21.67	74.00	150	400	Peak
7	5421.000	58.47	3.82	62.29	-11.71	74.00	150	400	Peak
8	5421.000	N/A	N/A	37.50	-16.50	54	150	400	Average
9	6324.500	51.38	7.03	58.41	-42.22	100.63	150	400	Peak
10	7228.000	47.33	11.11	58.44	-15.56	74.00	150	400	Peak
11	7228.000	N/A	N/A	33.65	-20.35	54	150	400	Average
12	8131.500	42.66	12.29	54.94	-19.06	74.00	150	400	Peak
13	8131.500	N/A	N/A	30.15	-23.85	54	150	400	Average
14	9035.000	37.24	13.77	51.01	-22.99	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Pre-amplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_4GFSK05_903.5MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1807.000	79.23	-4.99	74.24	-18.26	92.50	150	400	Peak
2	* 2710.500	72.71	-2.52	70.19	-3.81	74.00	150	400	Peak
3	* 2710.500	N/A	N/A	45.40	-8.60	54	150	400	Average
4	3614.000	70.35	-0.94	69.41	-4.59	74.00	150	400	Peak
5	3614.000	N/A	N/A	44.62	-9.38	54	150	400	Average
6	4517.500	56.80	2.59	59.39	-14.61	74.00	150	400	Peak
7	4517.500	N/A	N/A	34.60	-19.40	54	150	400	Average
8	5421.000	63.83	3.82	67.65	-6.35	74.00	150	400	Peak
9	5421.000	N/A	N/A	42.86	-11.14	54	150	400	Average
10	6324.500	57.10	7.03	64.13	-28.37	92.50	150	400	Peak
11	7228.000	53.55	11.11	64.66	-9.35	74.00	150	400	Peak
12	7228.000	N/A	N/A	39.87	-14.13	54	150	400	Average
13	8131.500	44.93	12.29	57.22	-16.78	74.00	150	400	Peak
14	8131.500	N/A	N/A	32.43	-21.57	54	150	400	Average
15	9035.000	41.90	13.77	55.67	-18.33	74.00	150	400	Peak
16	9035.000	N/A	N/A	30.88	-23.12	54	150	400	Average

Note:

- " \* ", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Pre-amplifier(dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.
- The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_4GFSK05_915MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1830.000	80.23	-4.93	75.30	-25.03	100.33	150	400	Peak
2	2745.000	61.22	-2.57	58.65	-15.35	74.00	150	400	Peak
3	2745.000	N/A	N/A	33.86	-20.14	54	150	400	Average
4	* 3660.000	67.14	-0.82	66.32	-7.68	74.00	150	400	Peak
5	* 3660.000	N/A	N/A	41.53	-12.47	54	150	400	Average
6	4575.000	49.04	2.70	51.74	-22.26	74.00	150	400	Peak
7	5490.000	56.57	3.86	60.43	-39.90	100.33	150	400	Peak
8	6405.000	44.70	7.33	52.03	-48.30	100.33	150	400	Peak
9	7320.000	44.85	11.31	56.16	-17.84	74.00	150	400	Peak
10	7320.000	N/A	N/A	31.37	-22.63	54	150	400	Average
11	8235.000	37.57	12.34	49.91	-24.09	74.00	150	400	Peak
12	9150.000	33.86	13.73	47.59	-26.41	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_4GFSK05_915MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1830.000	75.99	-4.93	71.06	-21.14	92.20	150	400	Peak
2	2745.000	70.26	-2.57	67.69	-6.31	74.00	150	400	Peak
3	2745.000	N/A	N/A	42.90	-11.10	54	150	400	Average
4	* 3660.000	70.20	-0.82	69.38	-4.62	74.00	150	400	Peak
5	* 3660.000	N/A	N/A	44.59	-9.41	54	150	400	Average
6	4575.000	56.74	2.70	59.44	-14.56	74.00	150	400	Peak
7	4575.000	N/A	N/A	34.65	-19.35	54	150	400	Average
8	5490.000	62.03	3.86	65.89	-26.31	92.20	150	400	Peak
9	6405.000	49.26	7.33	56.59	-35.61	92.20	150	400	Peak
10	7320.000	49.36	11.31	60.67	-13.33	74.00	150	400	Peak
11	7320.000	N/A	N/A	35.88	-18.12	54	150	400	Average
12	8235.000	44.28	12.34	56.62	-17.38	74.00	150	400	Peak
13	8235.000	N/A	N/A	31.83	-22.17	54	150	400	Average
14	9150.000	39.61	13.73	53.34	-20.66	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Pre-amplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_4GFSK05_926.5MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1853.000	79.06	-4.88	74.18	-26.75	100.93	150	400	Peak
2	2779.500	58.97	-2.62	56.35	-17.65	74.00	150	400	Peak
3	2779.500	N/A	N/A	31.56	-22.44	54	150	400	Average
4	* 3706.000	57.39	-0.70	56.69	-17.31	74.00	150	400	Peak
5	* 3706.000	N/A	N/A	31.90	-22.10	54	150	400	Average
6	4632.500	44.77	2.82	47.59	-26.42	74.00	150	400	Peak
7	5559.000	54.40	4.10	58.50	-42.43	100.93	150	400	Peak
8	6485.500	42.86	7.64	50.50	-50.43	100.93	150	400	Peak
9	7412.000	40.85	11.52	52.37	-21.63	74.00	150	400	Peak
10	8338.500	34.11	12.38	46.49	-27.51	74.00	150	400	Peak
11	9265.000	34.15	13.70	47.85	-26.15	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level



EUT	RF Evaluation kit	Date of Test	2019/10/29
Factor	BBHA 9120D	Temp. / Humidity	26°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_4GFSK05_926.5MHz	Test Voltage	AC 120V/60Hz

No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	* 1853.000	73.58	-4.88	68.70	-23.28	91.98	150	400	Peak
2	2779.500	65.86	-2.62	63.24	-10.76	74.00	150	400	Peak
3	2779.500	N/A	N/A	38.45	-15.55	54	150	400	Average
4	* 3706.000	64.50	-0.70	63.80	-10.20	74.00	150	400	Peak
5	* 3706.000	N/A	N/A	39.01	-14.99	54	150	400	Average
6	4632.500	54.17	2.82	56.99	-17.02	74.00	150	400	Peak
7	4632.500	N/A	N/A	32.20	-21.80	54	150	400	Average
8	5559.000	61.14	4.10	65.24	-26.74	91.98	150	400	Peak
9	6485.500	48.12	7.64	55.76	-36.31	91.98	150	400	Peak
10	7412.000	45.35	11.52	56.87	-17.13	74.00	150	400	Peak
11	7412.000	N/A	N/A	32.08	-21.92	54	150	400	Average
12	8338.500	38.67	12.38	51.05	-22.95	74.00	150	400	Peak
13	9265.000	39.61	13.70	53.31	-20.69	74.00	150	400	Peak

Note:

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB) – Preamplifier(dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. The average for restricted bands is converted by Average Factor(can refer 2.4), In non-restricted bands, the limit is 30dBc of the fundamental emission level

## 7.7. Radiated Restricted Band Edge Measurement

### 7.7.1. Test Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [V/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 – 30	30	30
30 – 88	100	3
88 – 216	150	3
216 – 960	200	3
Above 960	500	3

### 7.7.2. Test Procedure Used

ANSI C63.10-2013 - Section 11.12.1

### 7.7.3. Test Setting

#### Peak power measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest.
2. RBW = as specified in Table 1
3. VBW =  $3 \times \text{RBW}$
4. Detector = peak
5. Sweep time = auto couple

Table 1 - RBW as a function of frequency

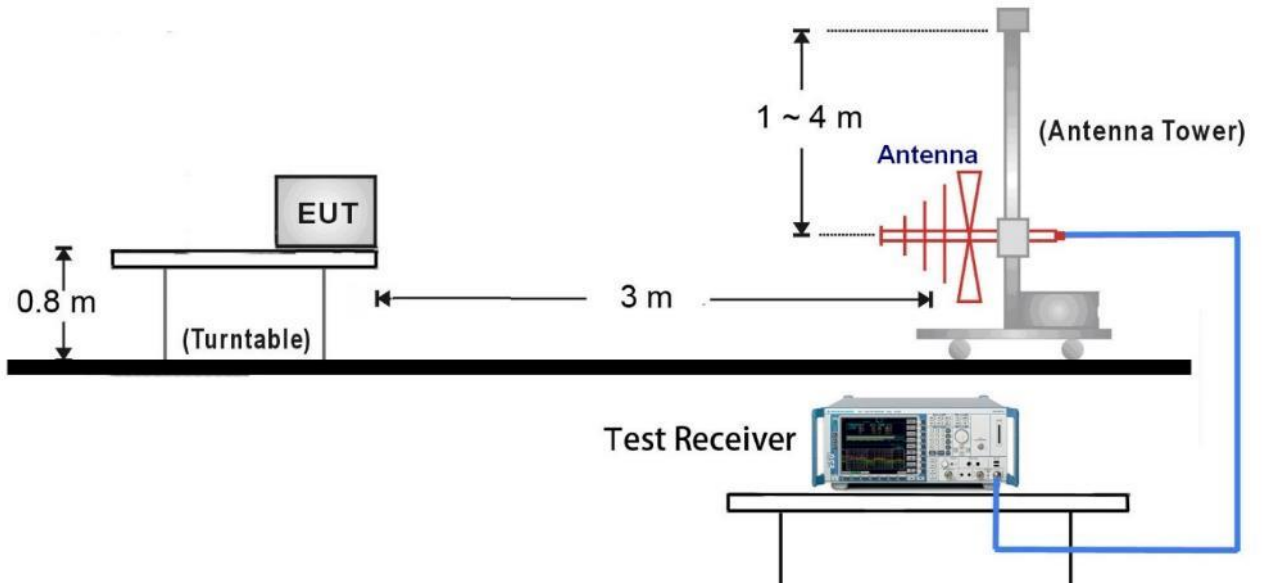
Frequency	RBW
9 kHz ~ 150 kHz	200 Hz ~ 300 Hz
0.15 MHz ~ 30 MHz	9 kHz ~ 10 kHz
30 MHz ~ 1000 MHz	100 kHz ~ 120 kHz
> 1000 MHz	1 MHz

### **Average Field Strength Measurements**

8. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
9. RBW = 1MHz
10. VBW  $\geq 1/T$
11. Video bandwidth mode or display mode:
  - 1) The instrument shall be set to ensure that video filtering is applied in the power domain. Typically, this requires setting the detector mode to RMS (power averaging) and setting the average-VBW type to power (rms).
  - 2) As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode to accomplish this. Others have a setting for average-VBW type, which can be set to "voltage" regardless of the display mode. Detector = Peak
12. Sweep time = auto
13. Trace mode = max hold
14. Allow max hold to run for at least 50 times (1/duty cycle) traces

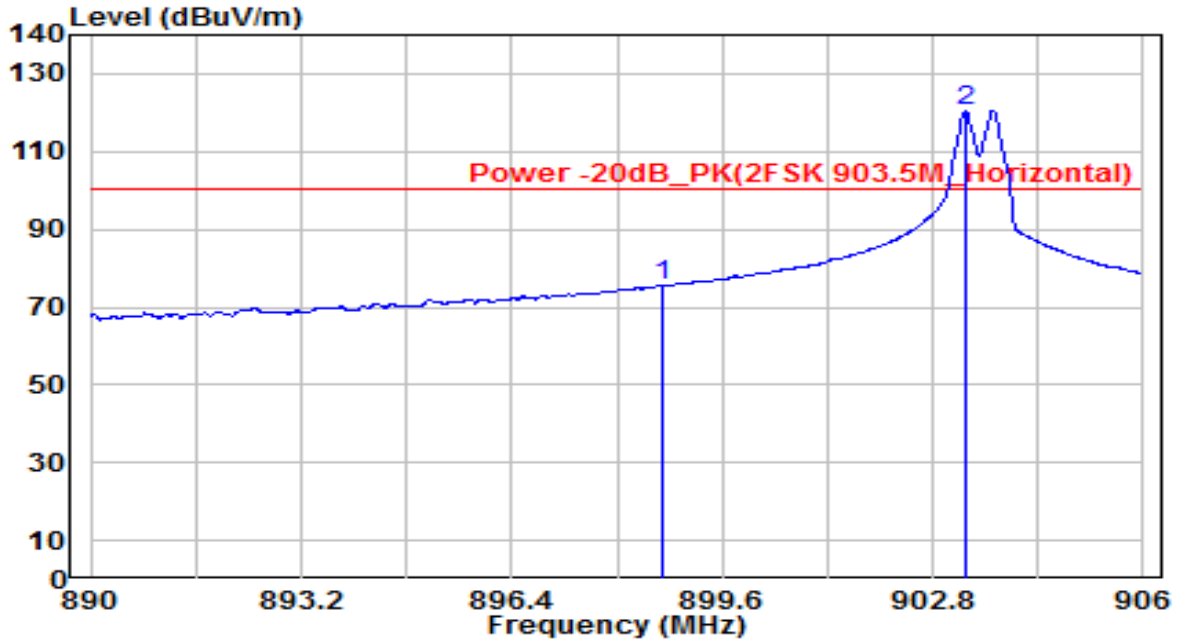
### 7.7.4. Test Setup

30MHz ~ 1GHz Test Setup:



**7.7.5. Test Result**

EUT	RF Evaluation kit	Date of Test	2019/10/23
Factor	VULB 9162	Temp. / Humidity	24°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2FSK_903.5MHz	Test Voltage	AC 120V/60Hz

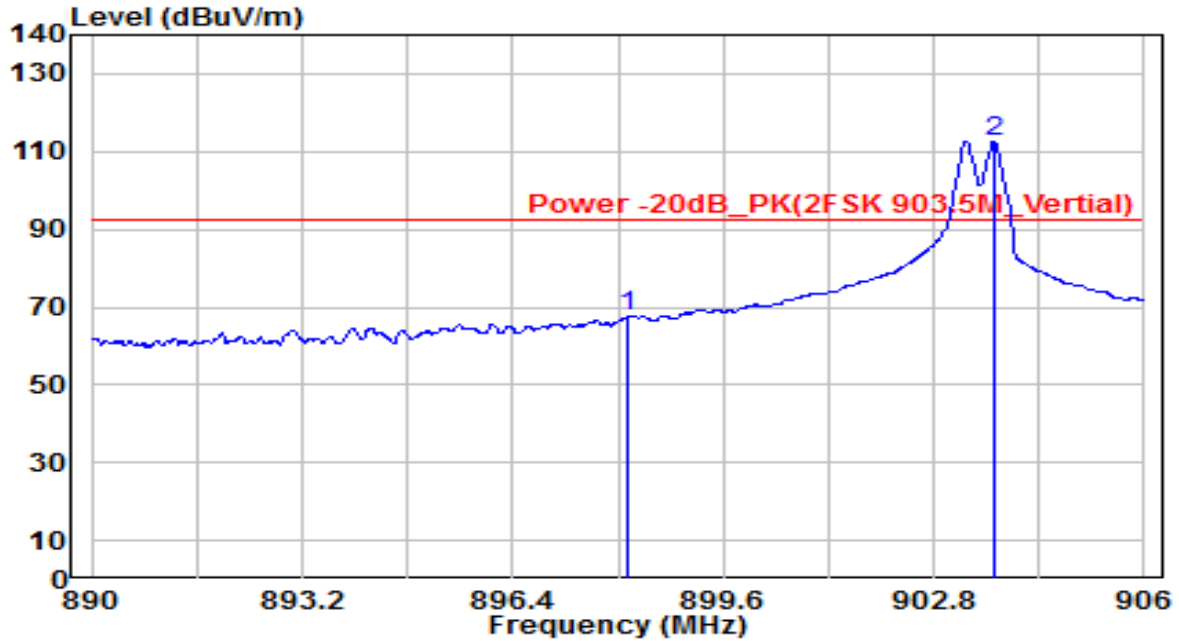


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)	
1	*	898.688	44.28	31.47	75.75	-24.60	100.35	160	310	Peak
2		903.312	88.86	31.49	120.35	20.00	100.35	160	310	Peak

**Note:**

1. " \*", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	RF Evaluation kit	Date of Test	2019/10/23
Factor	VULB 9162	Temp. / Humidity	24°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2FSK_903.5MHz	Test Voltage	AC 120V/60Hz

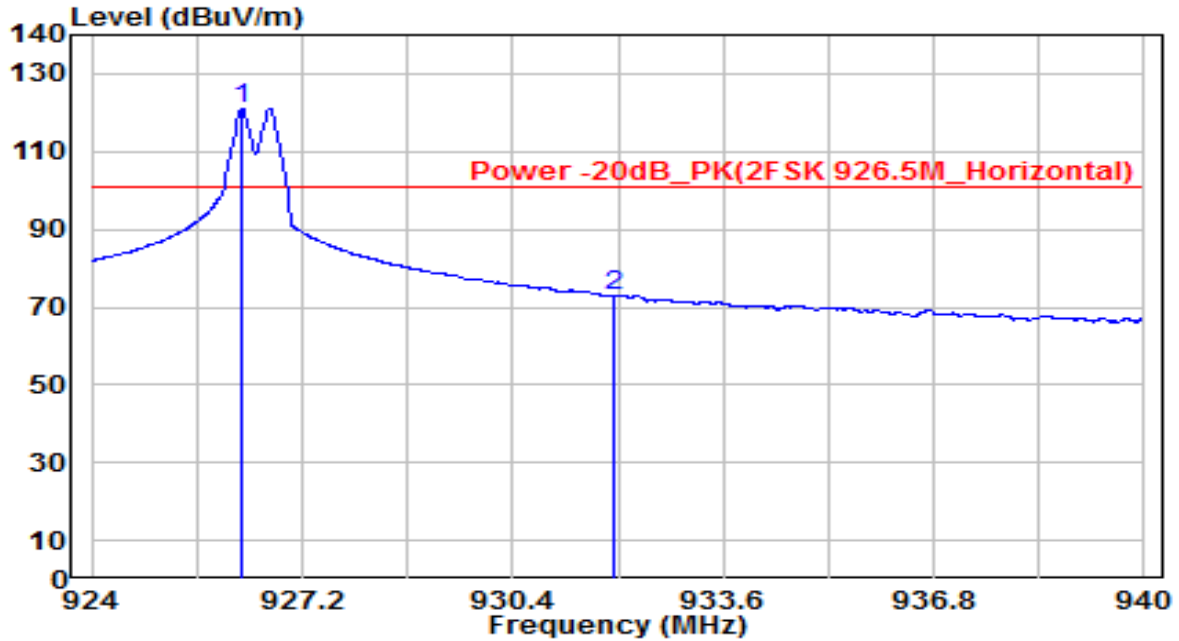


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	36.03	31.46	67.49	-25.06	92.55	100	-20	Peak
2		81.06	31.49	112.55	20.00	92.55	100	-20	Peak

Note:

- "\*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	RF Evaluation kit	Date of Test	2019/10/23
Factor	VULB 9162	Temp. / Humidity	24°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2FSK_926.5MHz	Test Voltage	AC 120V/60Hz

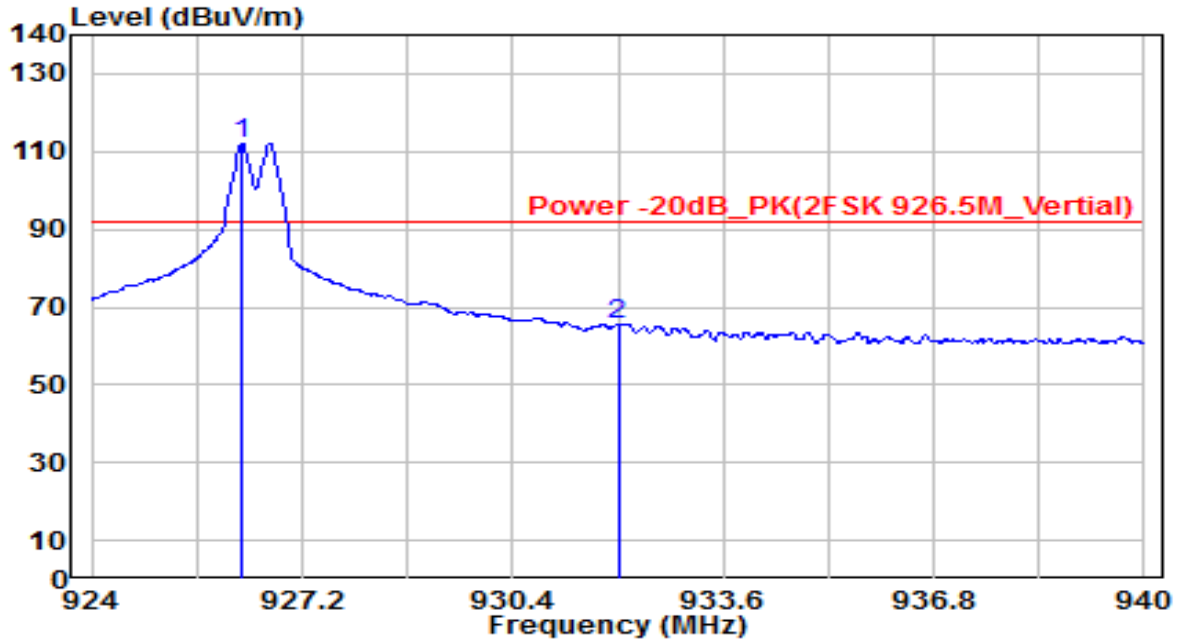


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	926.288	89.51	31.62	121.13	20.00	101.13	150	300	Peak
2	* 931.952	41.40	31.66	73.05	-28.08	101.13	150	300	Peak

Note:

- "\*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	RF Evaluation kit	Date of Test	2019/10/23
Factor	VULB 9162	Temp. / Humidity	24°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2FSK_926.5MHz	Test Voltage	AC 120V/60Hz



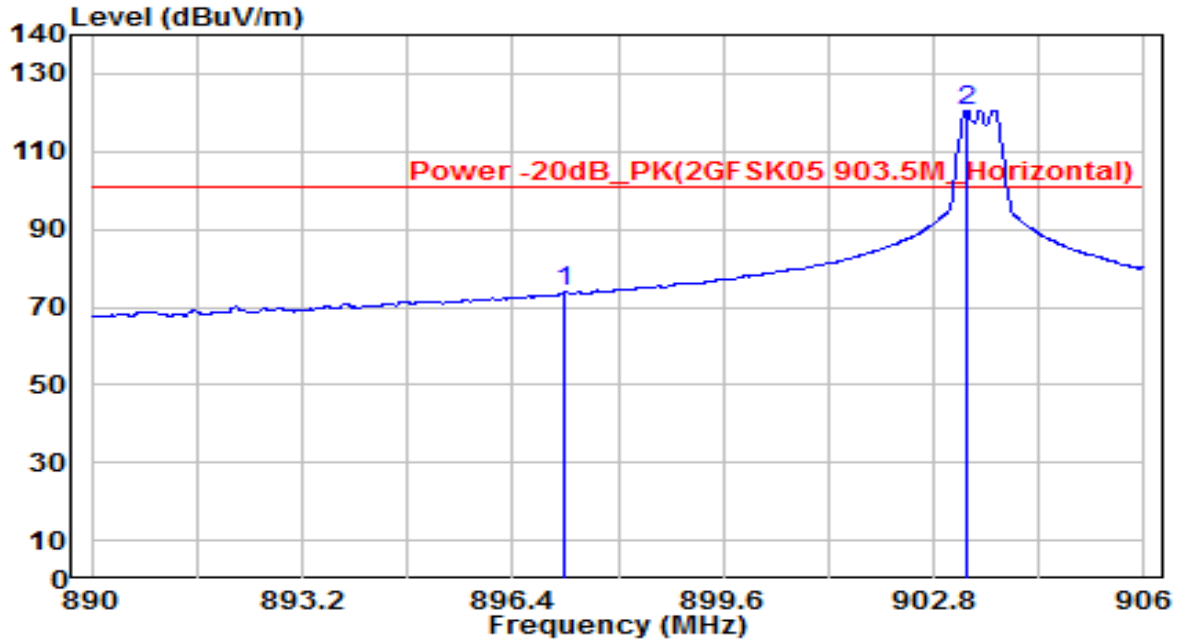
No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	926.288	80.42	31.62	112.04	20.00	92.04	100	-30	Peak
2	* 932.000	34.02	31.66	65.67	-26.37	92.04	100	-30	Peak

Note:

- "\*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.



EUT	RF Evaluation kit	Date of Test	2019/10/23
Factor	VULB 9162	Temp. / Humidity	24°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2GFSK05_903.5MHz	Test Voltage	AC 120V/60Hz

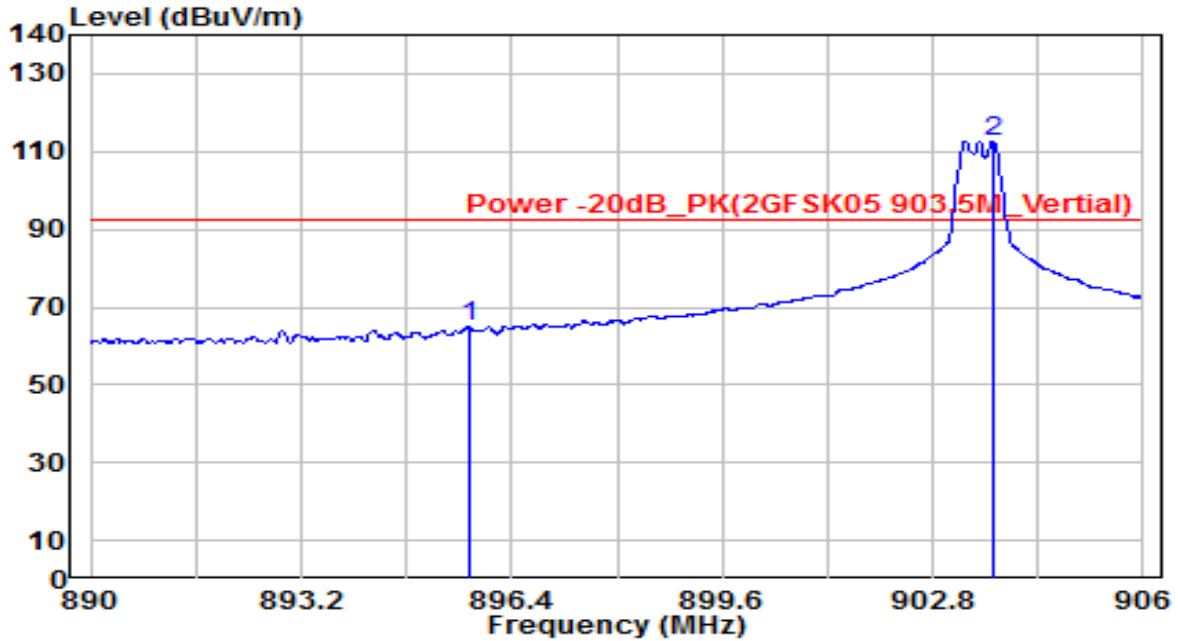


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	* 897.200	42.33	31.46	73.79	-26.88	100.67	160	310	Peak
2	903.312	89.18	31.49	120.67	20.00	100.67	160	310	Peak

Note:

1. " \*", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	RF Evaluation kit	Date of Test	2019/10/23
Factor	VULB 9162	Temp. / Humidity	24°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2GFSK05_903.5MHz	Test Voltage	AC 120V/60Hz

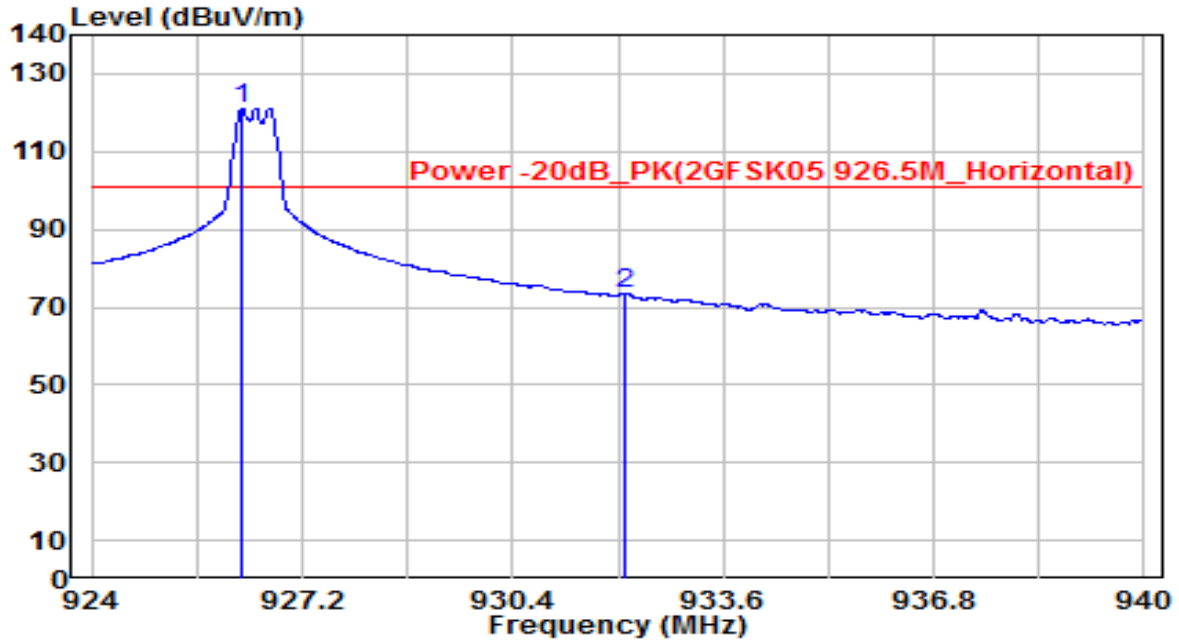


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	* 895.744	33.35	31.45	64.80	-27.73	92.53	100	-20	Peak
2	903.712	81.04	31.49	112.53	20.00	92.53	100	-20	Peak

Note:

- "\*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	RF Evaluation kit	Date of Test	2019/10/23
Factor	VULB 9162	Temp. / Humidity	24°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2GFSK05_926.5MHz	Test Voltage	AC 120V/60Hz

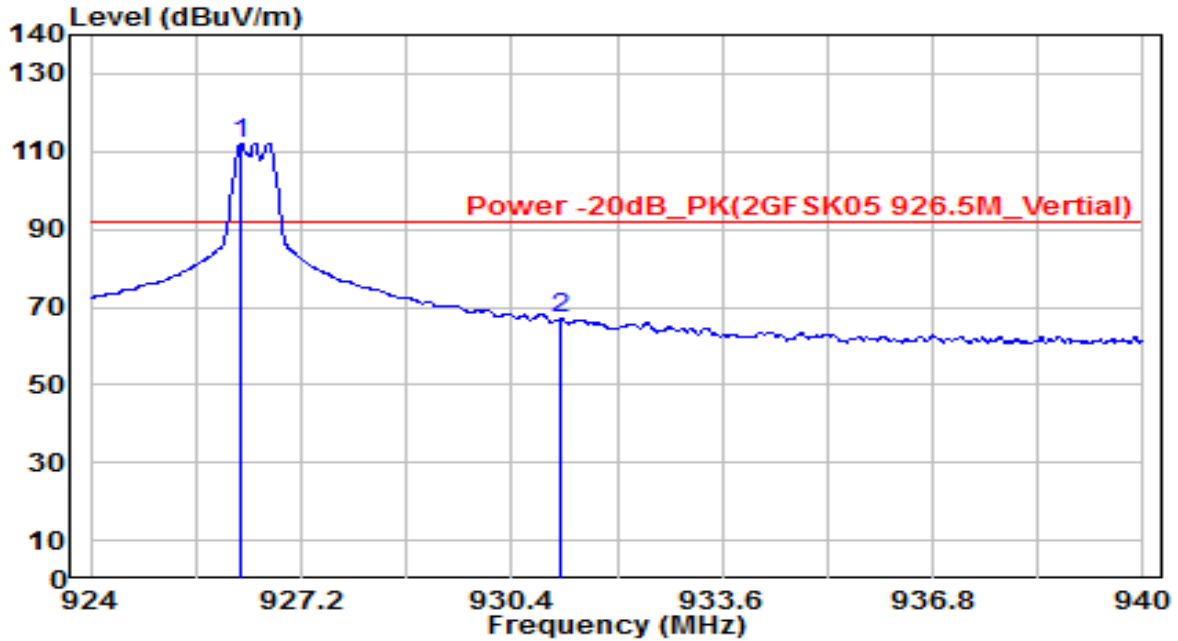


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	926.288	89.46	31.62	121.08	20.00	101.08	150	300	Peak
2	* 932.096	41.94	31.66	73.60	-27.48	101.08	150	300	Peak

Note:

- "\*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	RF Evaluation kit	Date of Test	2019/10/23
Factor	VULB 9162	Temp. / Humidity	24°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2GFSK05_926.5MHz	Test Voltage	AC 120V/60Hz

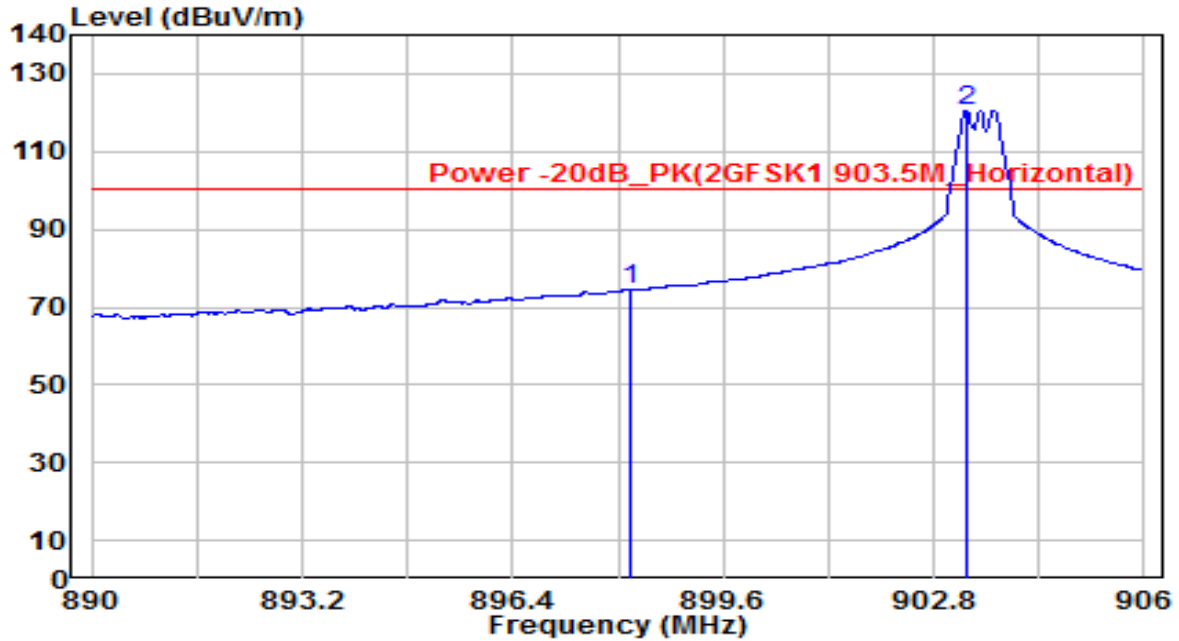


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	926.288	80.38	31.62	112.01	20.00	92.01	100	-30	Peak
2	* 931.152	35.42	31.65	67.07	-24.94	92.01	100	-30	Peak

Note:

- "\*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	RF Evaluation kit	Date of Test	2019/10/23
Factor	VULB 9162	Temp. / Humidity	24°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2GFSK1_903.5MHz	Test Voltage	AC 120V/60Hz

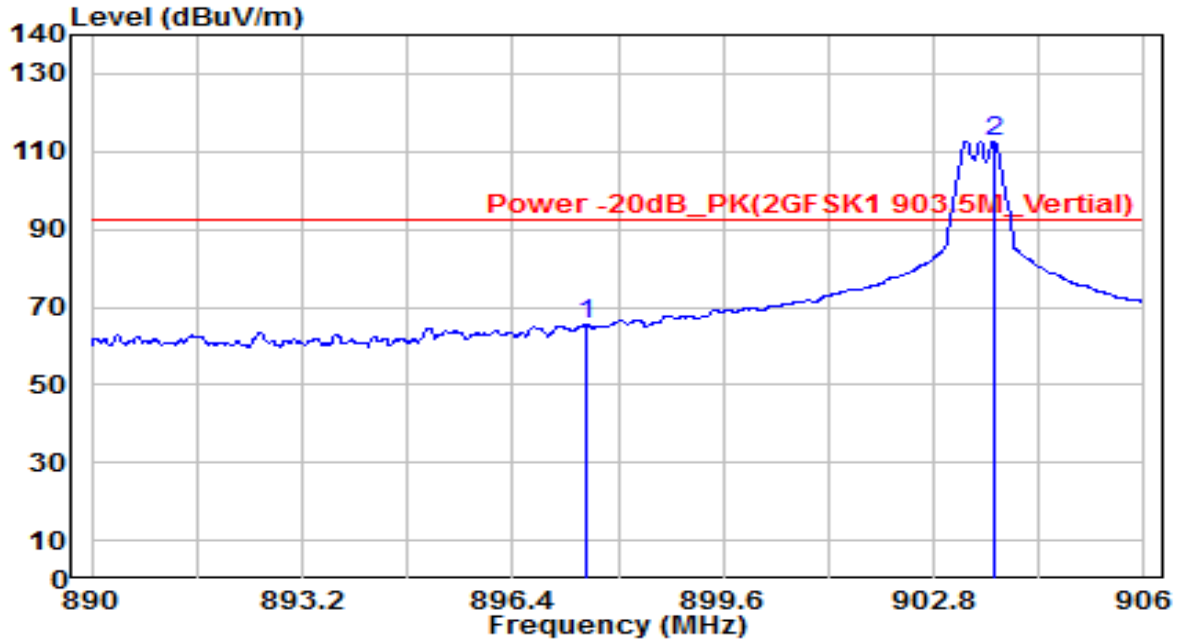


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	* 898.176	43.24	31.46	74.70	-25.72	100.42	160	310	Peak
2	903.312	88.93	31.49	120.42	20.00	100.42	160	310	Peak

Note:

1. " \*", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	RF Evaluation kit	Date of Test	2019/10/23
Factor	VULB 9162	Temp. / Humidity	24°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2GFSK1_903.5MHz	Test Voltage	AC 120V/60Hz

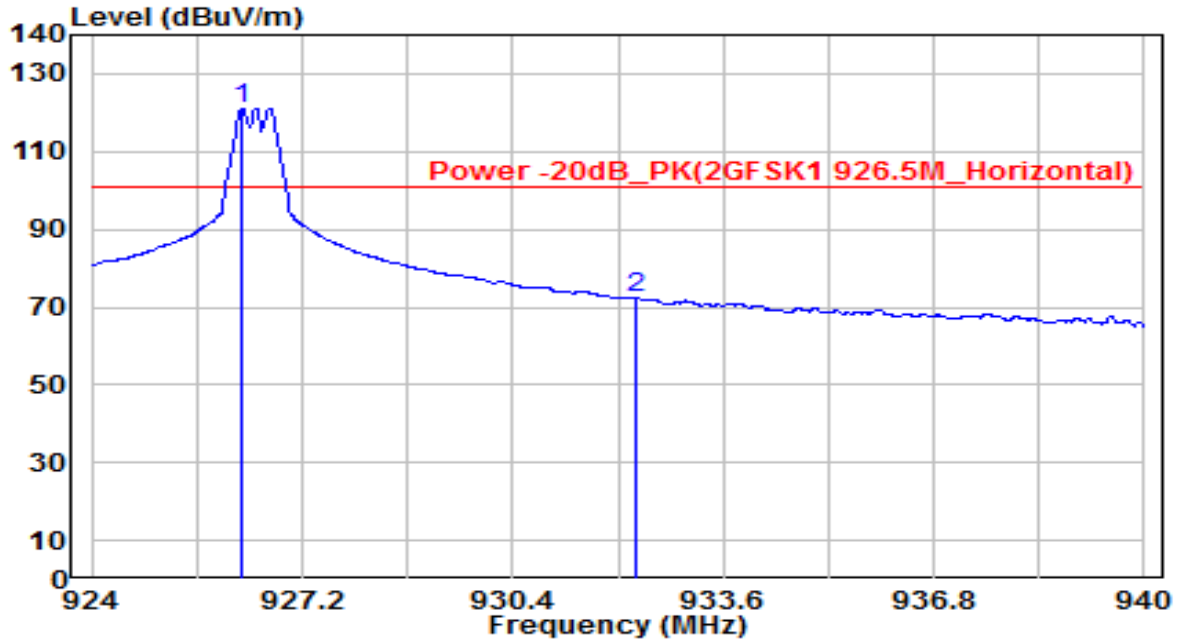


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	* 897.504	34.19	31.46	65.65	-26.87	92.52	100	-20	Peak
2	903.712	81.03	31.49	112.52	20.00	92.52	100	-20	Peak

Note:

- "\*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	RF Evaluation kit	Date of Test	2019/10/23
Factor	VULB 9162	Temp. / Humidity	24°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2GFSK1_926.5MHz	Test Voltage	AC 120V/60Hz

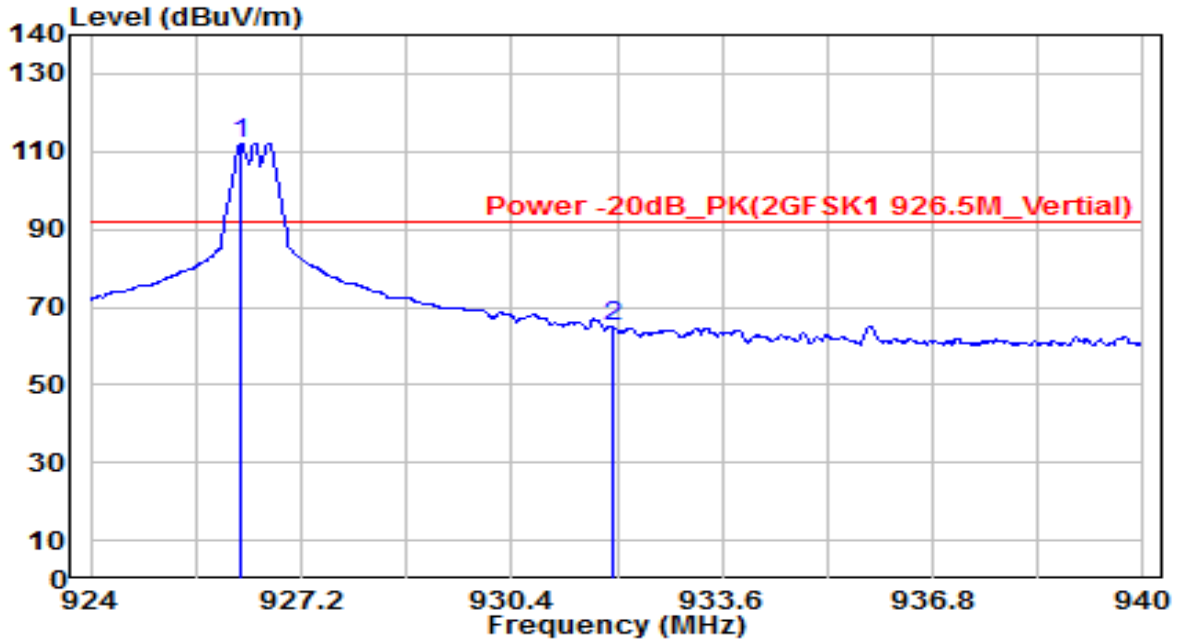


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	926.288	89.45	31.62	121.07	20.00	101.07	150	300	Peak
2	* 932.288	40.68	31.66	72.34	-28.73	101.07	150	300	Peak

Note:

1. " \*", means this data is the worst emission level.
2. C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
3. Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
4. The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	RF Evaluation kit	Date of Test	2019/10/23
Factor	VULB 9162	Temp. / Humidity	24°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_2GFSK1_926.5MHz	Test Voltage	AC 120V/60Hz



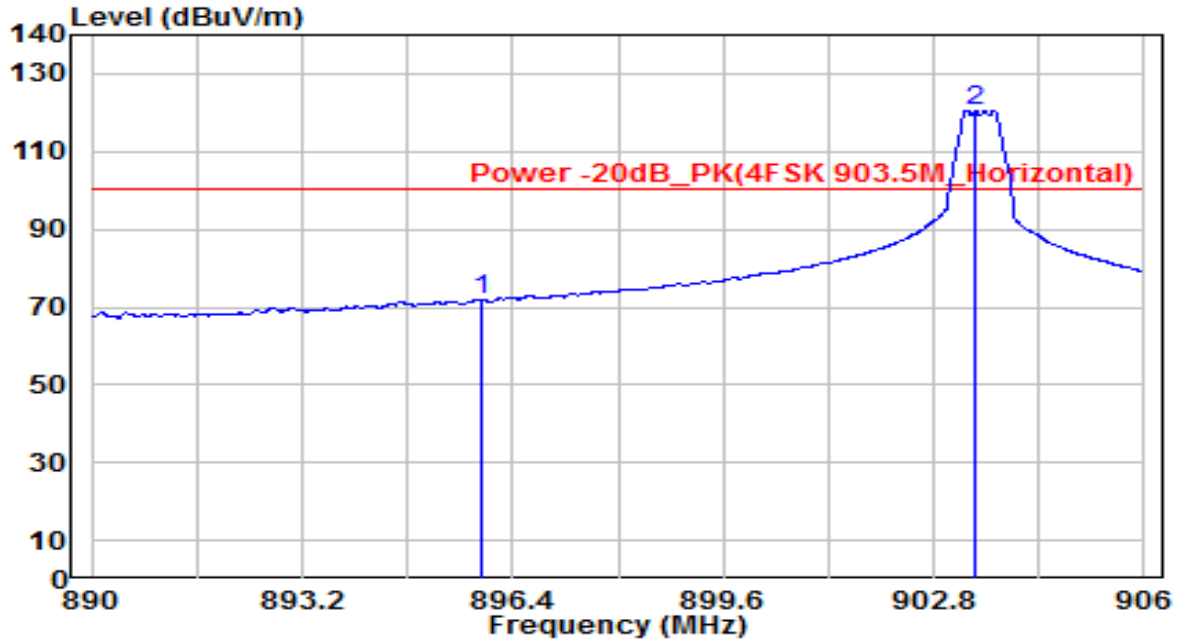
No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	926.288	80.36	31.62	111.98	20.00	91.98	100	-30	Peak
2	* 931.952	33.23	31.66	64.88	-27.10	91.98	100	-30	Peak

Note:

- "\*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.



EUT	RF Evaluation kit	Date of Test	2019/10/23
Factor	VULB 9162	Temp. / Humidity	24°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_4FSK_903.5MHz	Test Voltage	AC 120V/60Hz

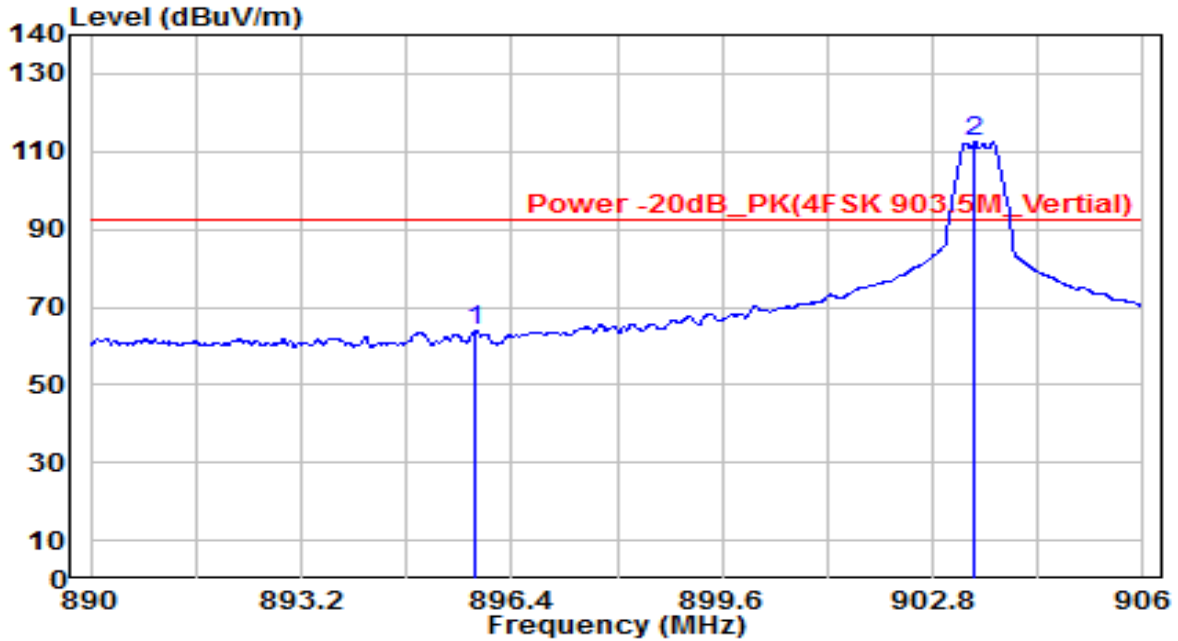


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	* 895.936	40.51	31.45	71.97	-28.65	100.62	160	310	Peak
2	903.440	89.13	31.49	120.62	20.00	100.62	160	310	Peak

Note:

- "\*" means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	RF Evaluation kit	Date of Test	2019/10/23
Factor	VULB 9162	Temp. / Humidity	24°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_4FSK_903.5MHz	Test Voltage	AC 120V/60Hz

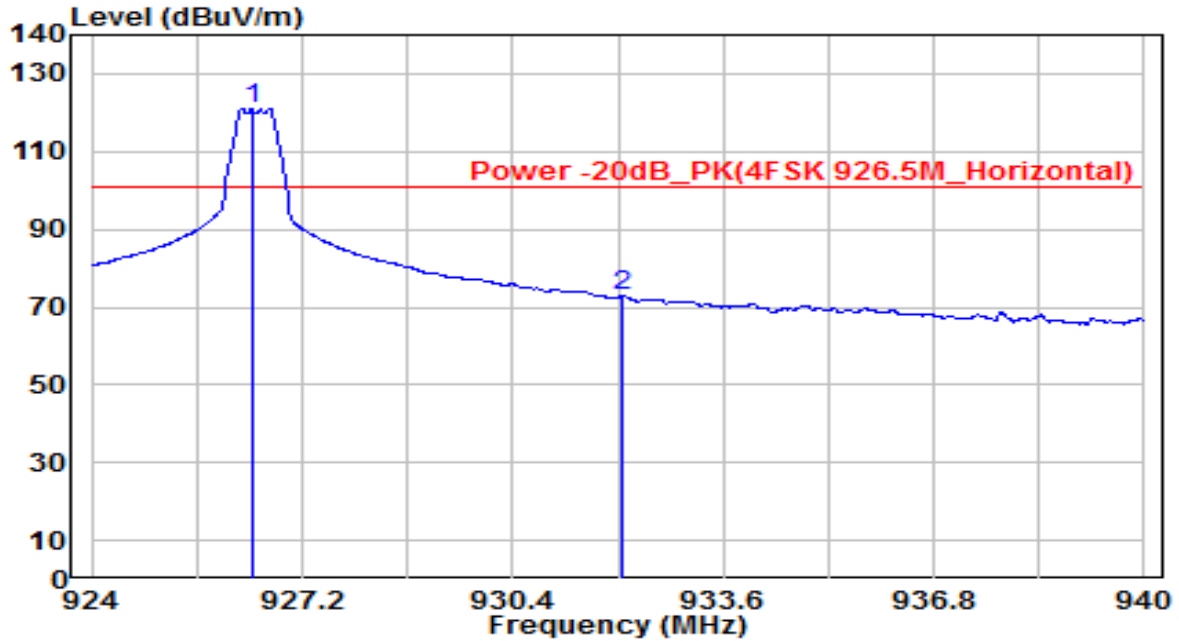


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	* 895.856	32.33	31.45	63.79	-28.59	92.38	100	-20	Peak
2	903.440	80.89	31.49	112.38	20.00	92.38	100	-20	Peak

Note:

- "\*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	RF Evaluation kit	Date of Test	2019/10/23
Factor	VULB 9162	Temp. / Humidity	24°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_4FSK_926.5MHz	Test Voltage	AC 120V/60Hz

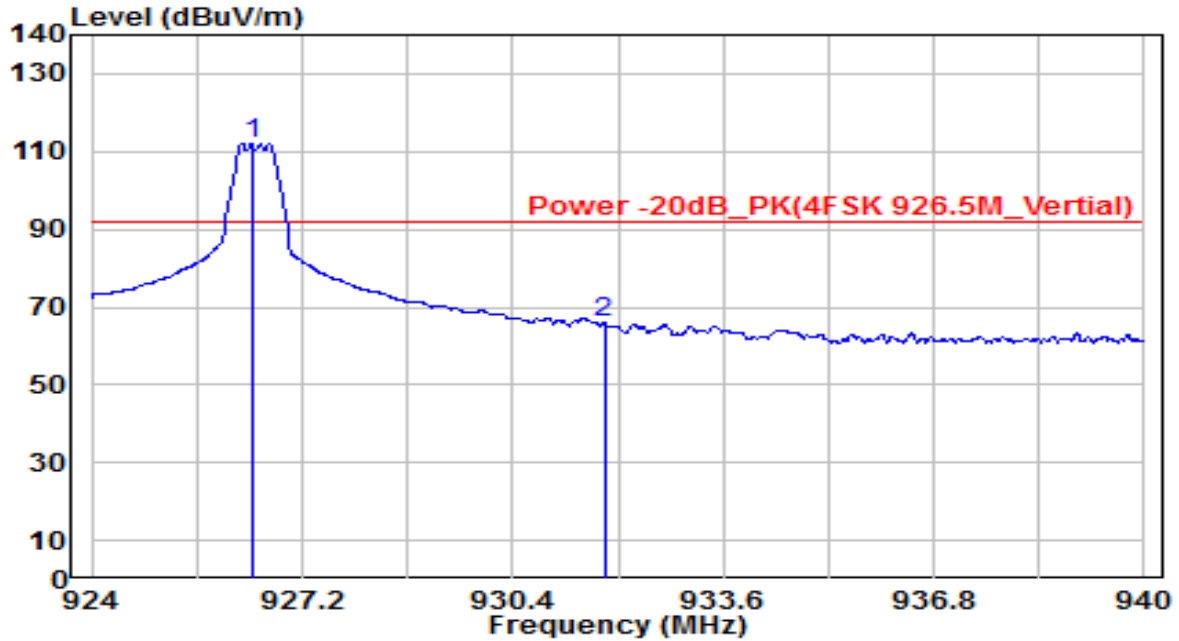


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	926.432	89.42	31.62	121.04	20.00	101.04	150	300	Peak
2	* 932.064	41.27	31.66	72.92	-28.12	101.04	150	300	Peak

Note:

- "\*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	RF Evaluation kit	Date of Test	2019/10/23
Factor	VULB 9162	Temp. / Humidity	24°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_4FSK_926.5MHz	Test Voltage	AC 120V/60Hz

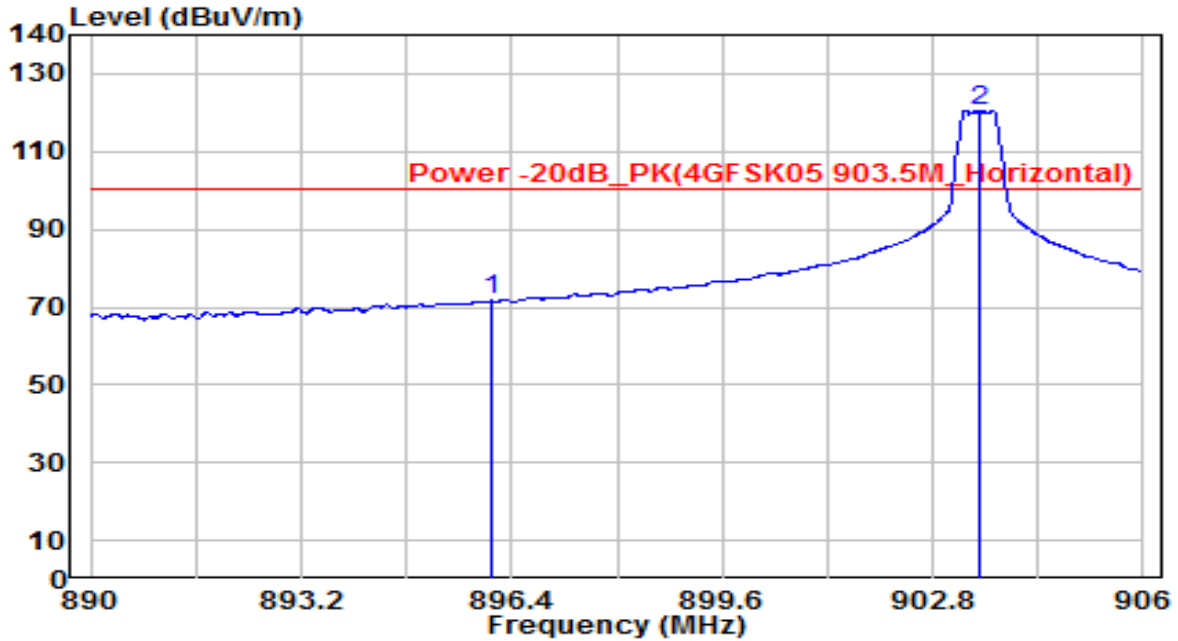


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	926.432	80.35	31.62	111.97	20.00	91.97	100	-30	Peak
2	* 931.792	34.27	31.65	65.92	-26.05	91.97	100	-30	Peak

Note:

- "\*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	RF Evaluation kit	Date of Test	2019/10/23
Factor	VULB 9162	Temp. / Humidity	24°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_4GFSK05_903.5MHz	Test Voltage	AC 120V/60Hz

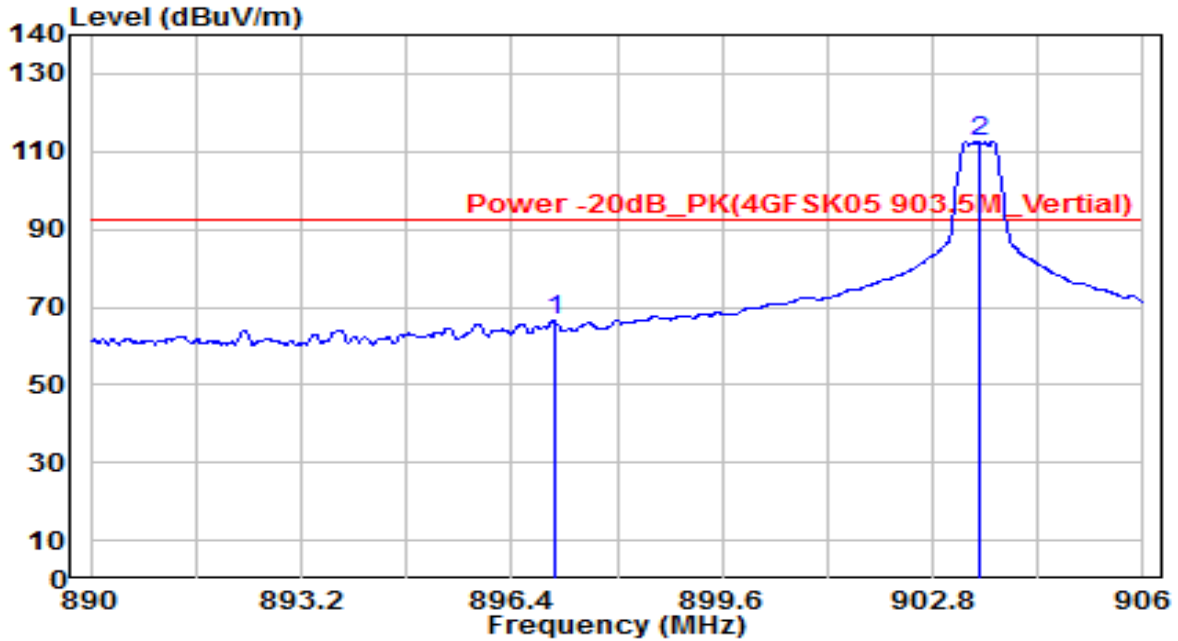


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	* 896.080	40.14	31.46	71.60	-29.03	100.63	160	310	Peak
2	903.504	89.14	31.49	120.63	20.00	100.63	160	310	Peak

Note:

- "\*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	RF Evaluation kit	Date of Test	2019/10/23
Factor	VULB 9162	Temp. / Humidity	24°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_4GFSK05_903.5MHz	Test Voltage	AC 120V/60Hz

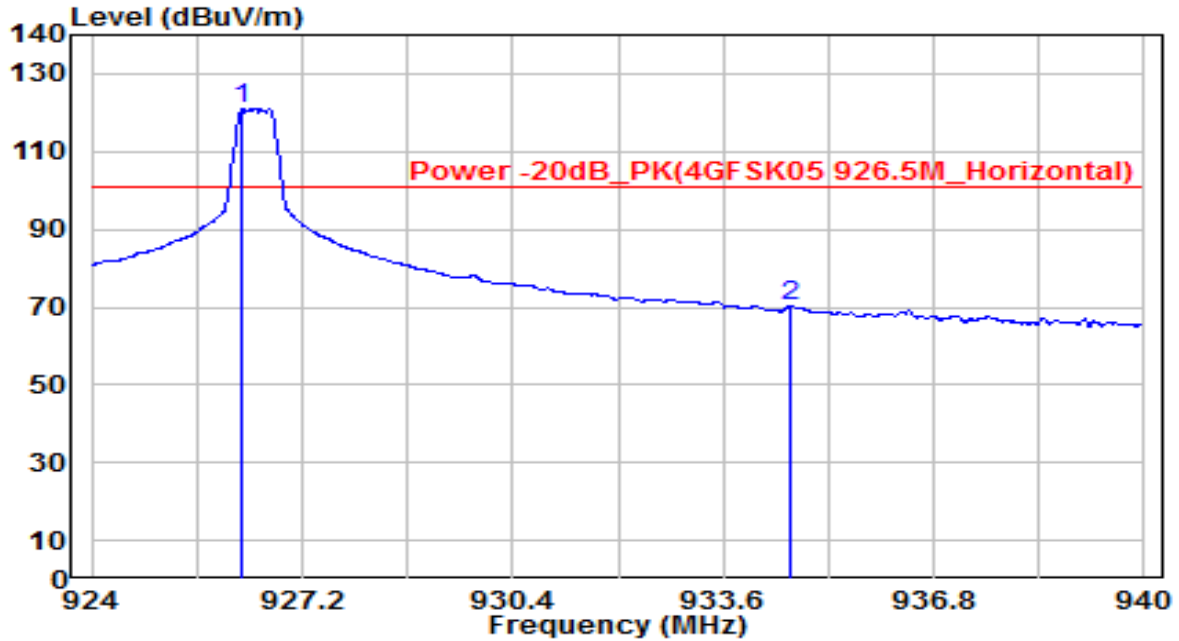


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	* 897.040	34.89	31.46	66.35	-26.15	92.50	100	-20	Peak
2	903.504	81.01	31.49	112.50	20.00	92.50	100	-20	Peak

Note:

- "\*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	RF Evaluation kit	Date of Test	2019/10/23
Factor	VULB 9162	Temp. / Humidity	24°C /60%
Polarity	Horizontal	Site / Test Engineer	AC1 / Jay
Test Mode	TX_4GFSK05_926.5MHz	Test Voltage	AC 120V/60Hz

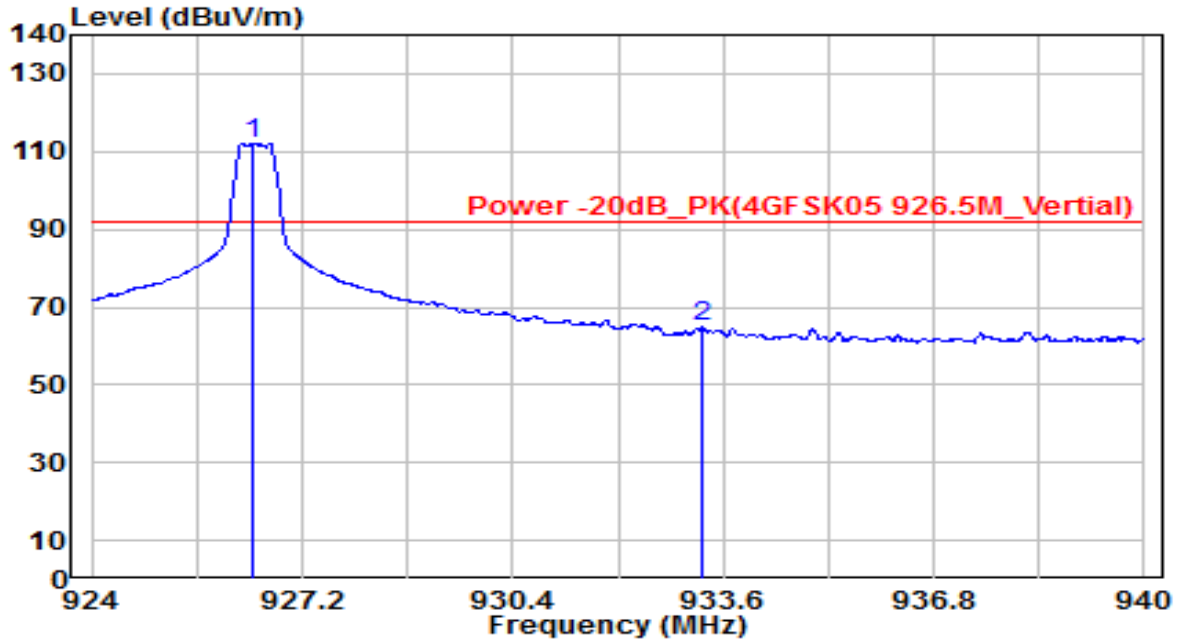


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	926.288	89.31	31.62	120.93	20.00	100.93	150	300	Peak
2	* 934.608	38.78	31.67	70.45	-30.48	100.93	150	300	Peak

Note:

- "\*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.

EUT	RF Evaluation kit	Date of Test	2019/10/23
Factor	VULB 9162	Temp. / Humidity	24°C /60%
Polarity	Vertical	Site / Test Engineer	AC1 / Jay
Test Mode	TX_4GFSK05_926.5MHz	Test Voltage	AC 120V/60Hz



No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	926.432	80.36	31.62	111.98	20.00	91.98	100	-30	Peak
2	* 933.280	33.17	31.66	64.83	-27.15	91.98	100	-30	Peak

Note:

- "\*", means this data is the worst emission level.
- C.F (Correction Factor) = Antenna Factor (dB)+ Cable Loss (dB).
- Measurement (dBuV/m) = Reading(dBuV) + C.F (Correction Factor).
- The emission levels of other frequencies are very lower than the limit and not show in test report.



## 7.8. AC Conducted Emissions Measurement

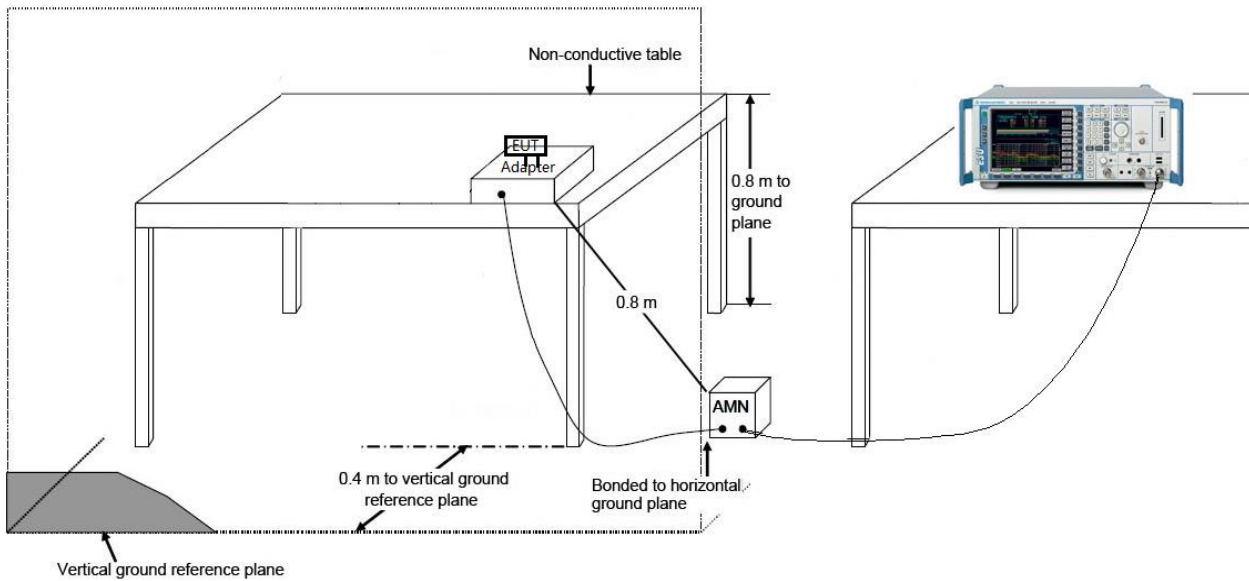
### 7.8.1. Test Limit

FCC Part 15 Subpart C Paragraph 15.207 / RSS-Gen §8.8 Limits		
Frequency (MHz)	QP (dB $\mu$ V)	Average (dB $\mu$ V)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

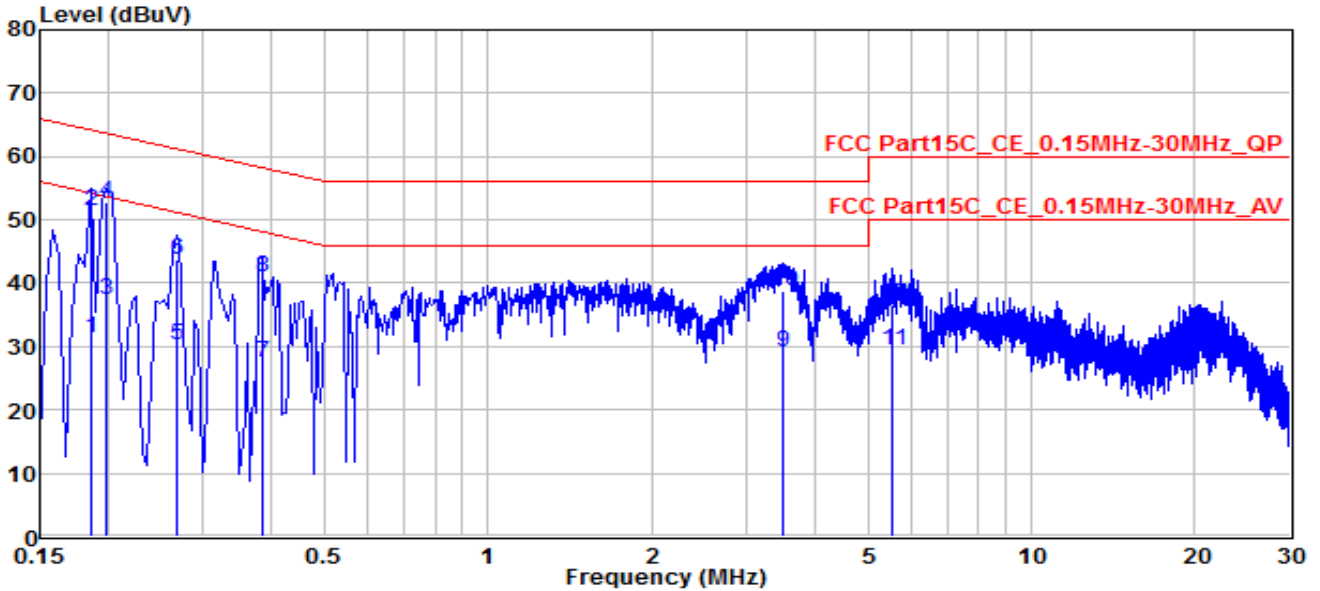
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

### 7.8.2. Test Setup



**7.8.3. Test Result**

EUT	RF Evaluation kit	Test Date	2019/6/17
Factor	CE_ENV216-L1 (Filter ON)	Temp. / Humidity	24°C / 55%
Polarity	Line1	Site / Engineer	SR2 / Peter
Test Mode	MODE1-926.5MHz	Test Voltage	AC120V/60Hz

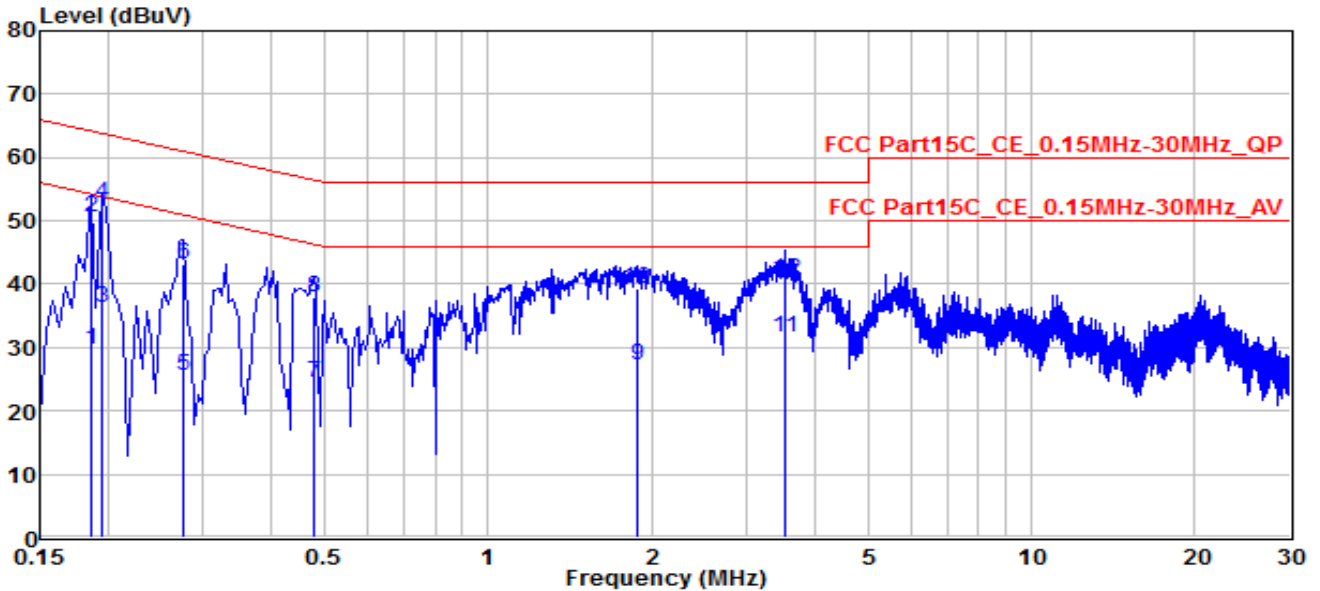


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV)	Margin (dB)	Limit (dBuV)	Remark (QP/PK/AV)
1	0.186	21.65	9.57	31.22	-22.99	54.21	Average
2	0.186	41.87	9.57	51.44	-12.77	64.21	QP
3	* 0.1995	27.72	9.61	37.33	-16.3	53.63	Average
4	* 0.1995	43.3	9.61	52.91	-10.72	63.63	QP
5	0.26699	20.67	9.61	30.28	-20.93	51.21	Average
6	0.26699	34.24	9.61	43.85	-17.36	61.21	QP
7	0.38398	17.75	9.6	27.35	-20.84	48.19	Average
8	0.38398	31.47	9.6	41.07	-17.12	58.19	QP
9	3.484	19.54	9.71	29.25	-16.75	46	Average
10	3.484	29.09	9.71	38.8	-17.2	56	QP
11	5.572	19.56	9.75	29.31	-20.69	50	Average
12	5.572	26.79	9.75	36.54	-23.46	60	QP

Note: The EUT Power by Notebook PC USB

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Factor (dB)+ Cable Loss (dB).
3. Measurement (dBuV) = Reading(dBuV)+ C.F (Correction Factor).

EUT	RF Evaluation kit	Test Date	2019/6/17
Factor	CE_ENV216-N (Filter ON)	Temp. / Humidity	24°C / 55%
Polarity	Neutral	Site / Engineer	SR2 / Peter
Test Mode	MODE1-926.5MHz	Test Voltage	AC120V/60Hz



No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV)	Margin (dB)	Limit (dBuV)	Remark (QP/PK/AV)
1	0.186	20.09	9.6	29.69	-24.52	54.21	Average
2	0.186	40.95	9.6	50.55	-13.66	64.21	QP
3	* 0.195	26.76	9.61	36.37	-17.45	53.82	Average
4	* 0.195	43.13	9.61	52.74	-11.08	63.82	QP
5	0.27599	15.93	9.61	25.54	-25.4	50.94	Average
6	0.27599	33.61	9.61	43.22	-17.72	60.94	QP
7	0.47847	14.91	9.61	24.52	-21.85	46.37	Average
8	0.47847	28.22	9.61	37.83	-18.54	56.37	QP
9	1.878	17.42	9.68	27.1	-18.9	46	Average
10	1.878	29.65	9.68	39.33	-16.67	56	QP
11	3.52	21.8	9.71	31.51	-14.49	46	Average
12	3.52	31.01	9.71	40.72	-15.28	56	QP

Note: The EUT Power by Notebook PC USB

1. " \* ", means this data is the worst emission level.
2. C.F (Correction Factor) = Factor (dB)+ Cable Loss (dB).
3. Measurement (dBuV) = Reading(dBuV)+ C.F (Correction Factor).

## 8. CONCLUSION

The data collected relate only the item(s) tested and show that the **RF Evaluation kit**, is in compliance with Part 15C & IC RSS-247 of the FCC & IC Rules.

————— The End —————