FCC Test Report

Product Name	：	V2X DSRC Module
Trade Name	：	Unex
Model No.	：	VTX-201, VTX-201E, VTX-201U, VTX-201J, VTX-201W
FCC ID.	：	NUK-VTX201

Applicant	：	Unex Technology Corporation
Address	：	11F-3, No. 100, Sec. 1, Jiafeng 11th Rd., Zhubei City, Hsinchu County 30273, Taiwan, R.O.C.

Date of Receipt	：	Mar. 03, 2017
Issued Date	：	May 25, 2017
Report No.	：	1730061R-RFUSP22V00
Report Version	：	V1.0

Testing Laboratory
3024

Test Report Certification

Issued Date : May 25, 2017
Report No. : 1730061R-RFUSP22V00

Product Name	：	V2X DSRC Module
Applicant	：	Unex Technology Corporation
Address	：	11F-3, No. 100, Sec. 1, Jiafeng 11th Rd., Zhubei City, Hsinchu County 30273, Taiwan, R.O.C.
Manufacturer	：	Unex Technology Corporation
Model No.	：	VTX-201, VTX-201E, VTX-201U, VTX-201J, VTX-201W
FCC ID.	：	NUK-VTX201
EUT Voltage	：	DC 12V
Testing Voltage	：	DC 12V
Trade Name	：	Unex
Applicable Standard	：	47 CFR FCC Part 95
Test Lab	：	Hsin Chu Laboratory
Test Result	：	Complied

The test results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of DEKRA Testing and Certification Co., Ltd..

Documented By ： Lyla Yang
(Lyla Yang / Engineering Adm. Assistant)

Tested By ： JuBo Shen
(JuBo Shen / Senior Engineer)

Approved By ： Roy Wang
(Roy Wang / Director)

Revision History

Report No.	Version	Description	Issued Date
1730061R-RFUSP22V00	V1.0	Initial issue of report.	May 25, 2017

Laboratory Information

We, **DEKRA Testing and Certification Co., Ltd.**, are an independent RF consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted (audited or listed) by the following related bodies in compliance with ISO 17025 specified testing scopes:

Taiwan R.O.C.	**:**	**TAF, Accreditation Number: 3024**
USA	**:**	**FCC, Registration Number: 834100**
Canada	**:**	**IC, Submission No: 181665 /** **IC Registration Number: 22397-1 / 22397-2**

The related certificate for our laboratories about the test site and management system can be downloaded from DEKRA Testing and Certification Co., Ltd. Web Site:
http://www.dekra.com.tw/english/about/certificates.aspx?bval=5
The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site : http://www.dekra.com.tw/index_en.aspx
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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1. General Information

1.1. EUT Description

Product Name	V2X DSRC Module
Trade Name	Unex
Model No.	VTX-201, VTX-201E, VTX-201U, VTX-201J, VTX-201W
Frequency Range	5860-5920MHz / 7 Channels
Type of Modulation	OFDM

Antenna Information			
Vendor	Model No.	Gain [dBi]	Antenna Type
Unex	EX-32	7.6 dBi	OMNI Antenna
Unex	EX-30	5.13 dBi	OMNI Antenna

Note

1. This device power level is Class C

Test Mode

DEKRA has verified the construction and function in typical operation. The preliminary tests were performed in different data rate, and to find the worst condition, which was shown in this test report. The following table is the final test mode.

TX	Mode 1: Transmit-ANT1 Mode 2: Transmit-ANT2

Test Items	Ref. Std. Section	Channel	Mode	Result
Emission Bandwidth	95.633	172/178/184	1/2	Complies
Maximum Transmitter power	95.639	172/178/184	1/2	Complies
Transmit Spectrum Mask	95.635	172/178/184	1/2	Complies
Transmitter Conducted Unwanted Emission	2.1051	172/178/184	1/2	Complies
Transmitter Radiated Unwanted Emission	2.1053	172/178/184	1/2	Complies
Frequency Stability	2.1055	172/178/184	1/2	Complies

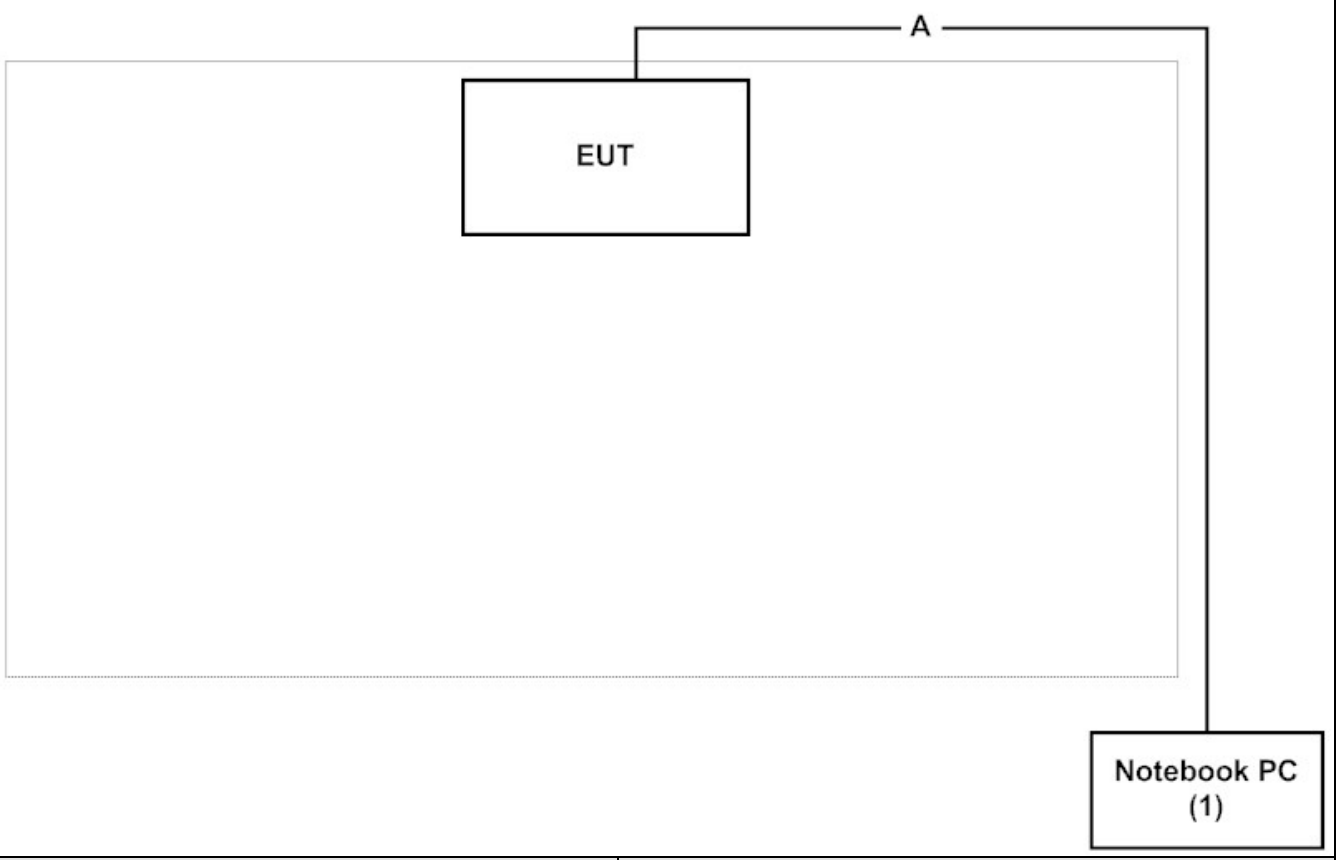
1.2. Tested System Details

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

Product		Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1	Notebook PC	ASUS	U3S	U33PsT73PD-HCQCCA	DoC	--

1.3. Configuration of tested System

Connection Diagram



Signal Cable Type		Signal cable Description
A	LAN Cable	Non-Shielded, 3m

1.4. EUT Exercise Software

1	Setup the EUT as shown in Section 1.4.
2	Execute the TX software SnmpB on the laptop.
3	Configure the test channel
4	Verify that the EUT works properly.

1.5. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	Emission Bandwidth	15 - 35	20
Humidity (%RH)		25 - 75	50
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	Maximum Transmitter power	15 - 35	25
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	Transmit Spectrum Mask	15 - 35	25
Humidity (%RH)		25 - 75	65
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	Transmitter Conducted Unwanted Emission	15 - 35	24
Humidity (%RH)		25 - 75	49
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	Transmitter Radiated Unwanted Emission	15 - 35	25
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000
Temperature (°C)	Frequency Stability	15 - 35	25
Humidity (%RH)		25 - 75	48
Barometric pressure (mbar)		860 - 1060	950-1000

2. Emission Bandwidth

2.1. Test Equipment

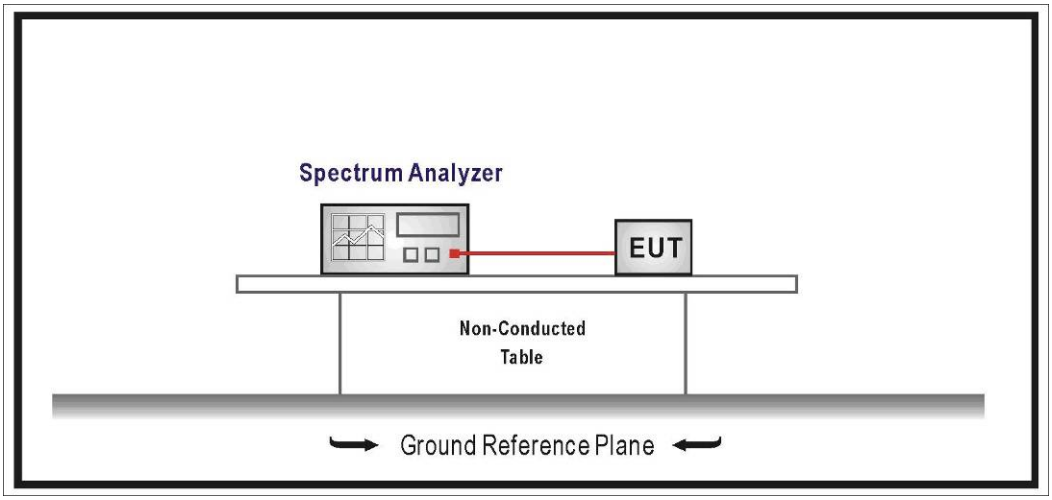
The following test equipments are used during the test:

Emission Bandwidth / SR10-H

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A	US47140172	2017/08/08

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

2.2. Test Setup



2.3. Limits

The 99% Occupied bandwidth is the frequency bandwidth of the signal power at the 99% channel power of occupied bandwidth when resolution bandwidth should be approximately 1% to 5% of the occupied bandwidth (OBW). These measurements shall also be performed at normal test conditions.

2.4. Test Procedure

Refer as ANSI/TIA-603-D, Clause 1.3.4.4.

2.5. Uncertainty

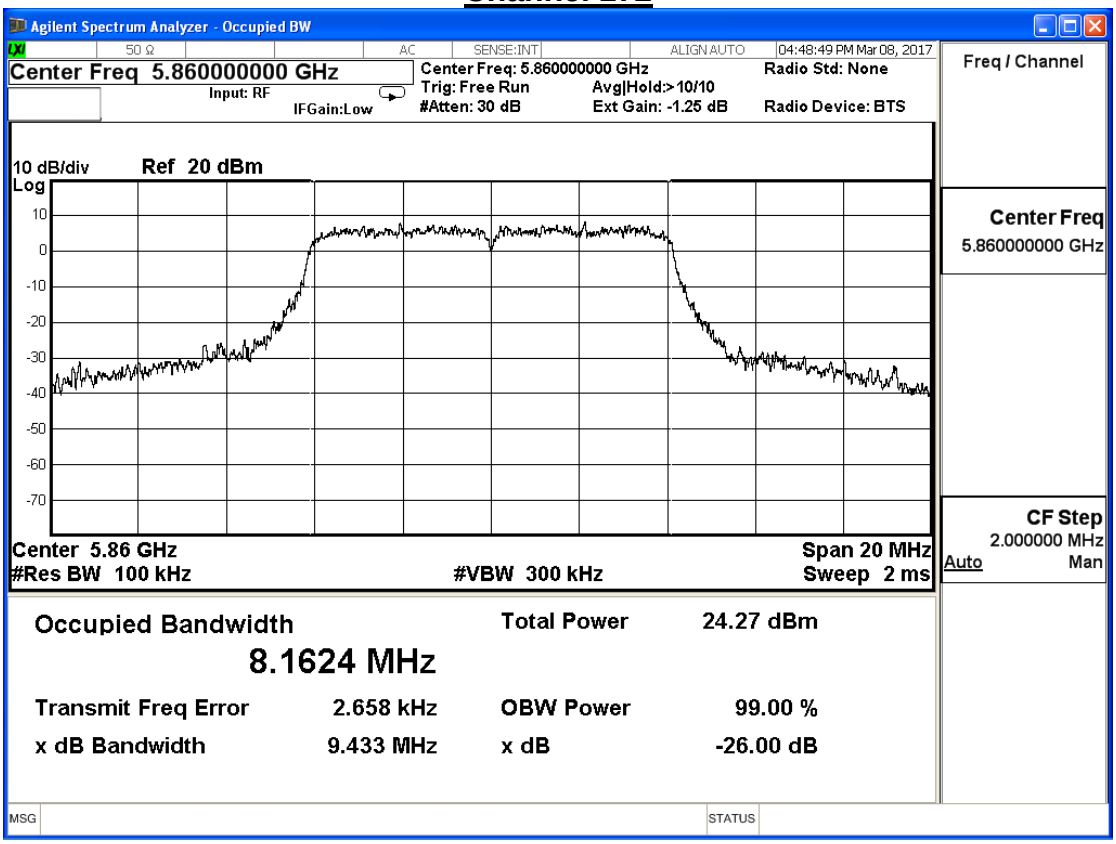
The measurement uncertainty is defined as ± 150Hz

2.6. Test Result

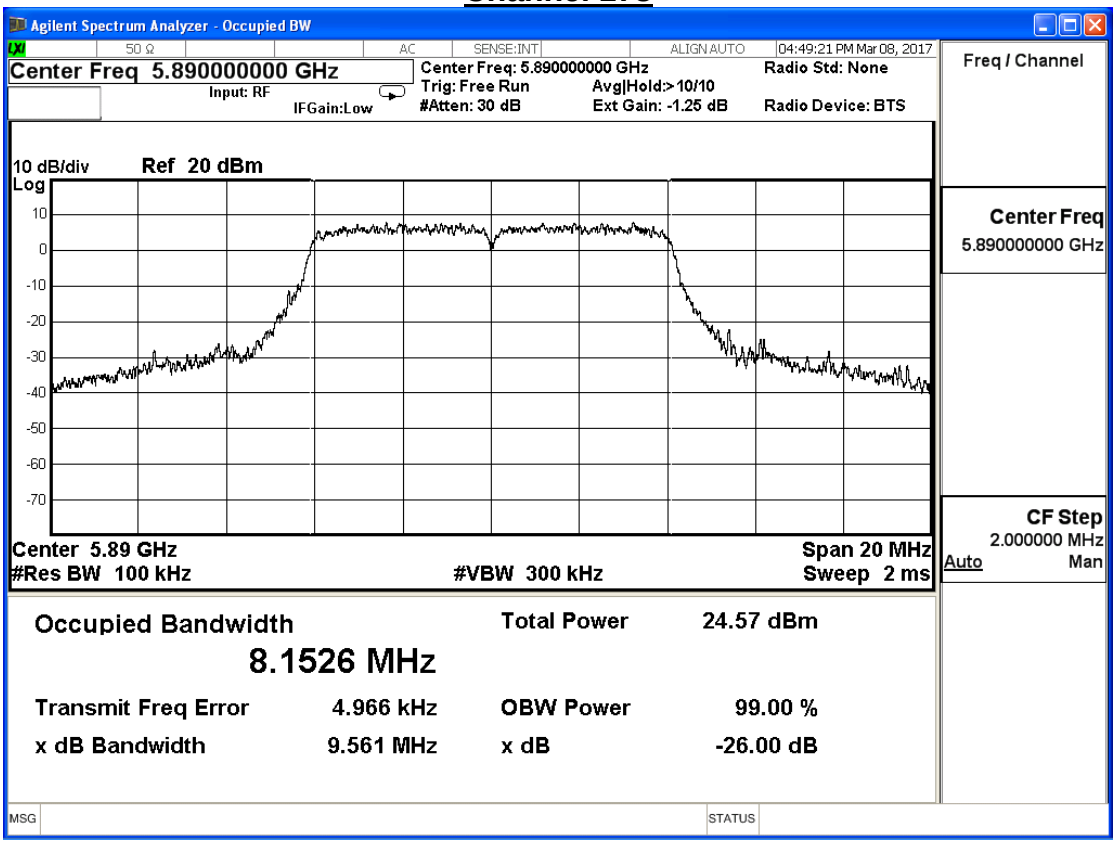
Product	V2X DSRC Module		
Test Item	Emission Bandwidth		
Test Mode	Mode 1: Transmit-ANT1		
Date of Test	2017/03/08	Test Site	SR10-H

IEEE 802.11p (ANT 1), Antenna Gain: 7.6 dBi				
Channel No.	Frequency (MHz)	Measurement Level (MHz)	Required Limit (MHz)	Result
172	5860	8.1624	--	Pass
178	5890	8.1526	--	Pass
184	5920	8.1378	--	Pass

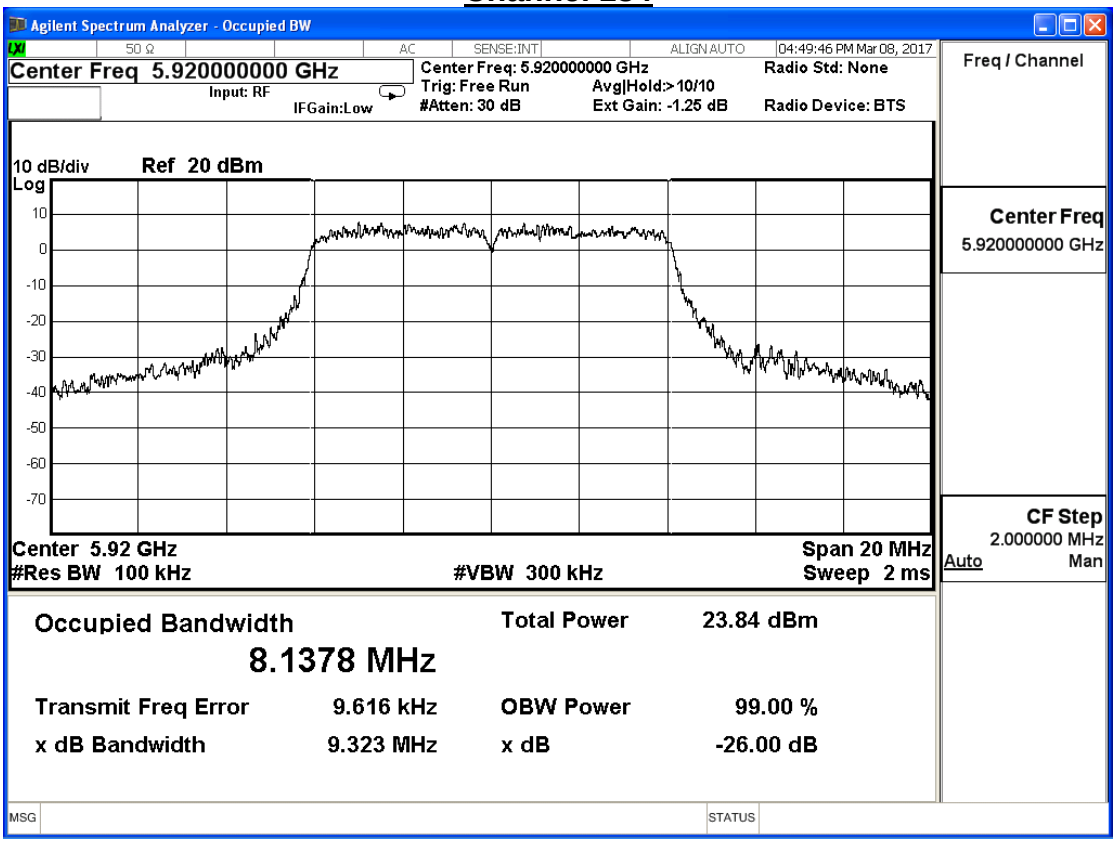
Channel 172



Channel 178



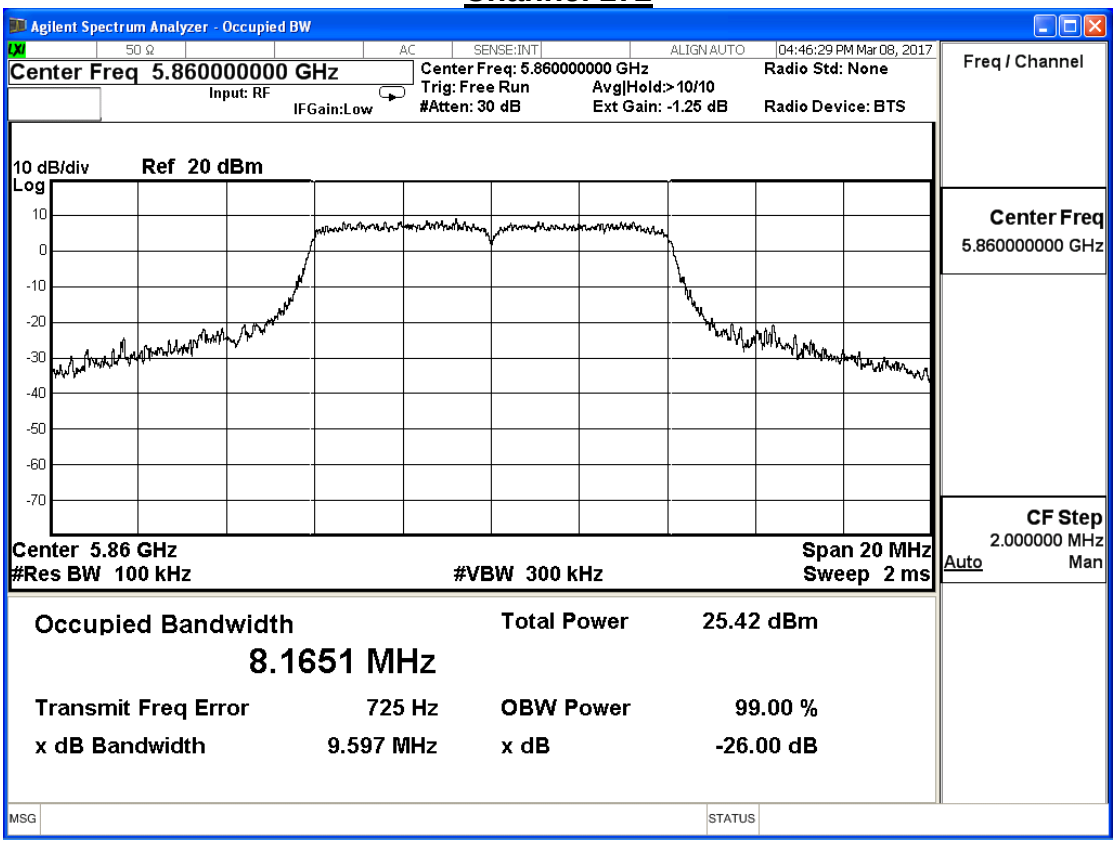
Channel 184



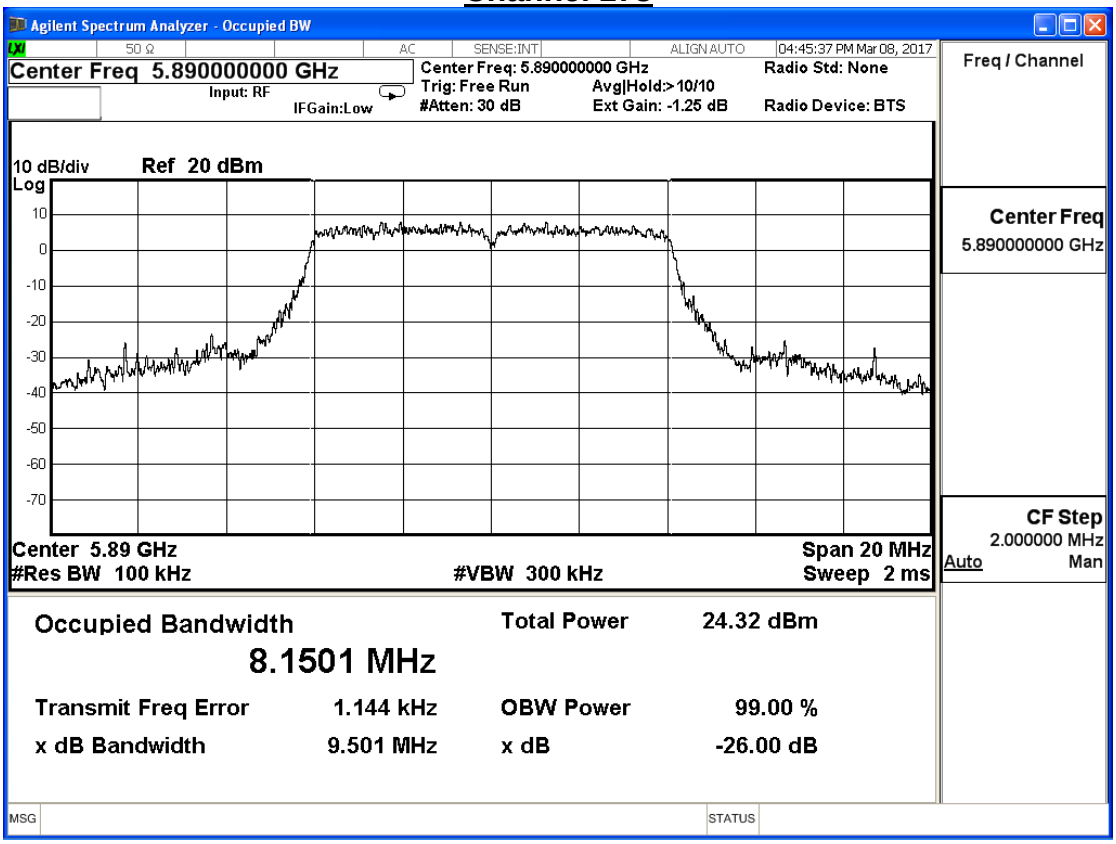
Product	V2X DSRC Module		
Test Item	Emission Bandwidth		
Test Mode	Mode 2: Transmit-ANT2		
Date of Test	2017/03/08	Test Site	SR10-H

IEEE 802.11p (ANT 2), Antenna Gain: 7.6 dBi				
Channel No.	Frequency (MHz)	Measurement Level (MHz)	Required Limit (MHz)	Result
172	5860	8.1651	--	Pass
178	5890	8.1501	--	Pass
184	5920	8.1461	--	Pass

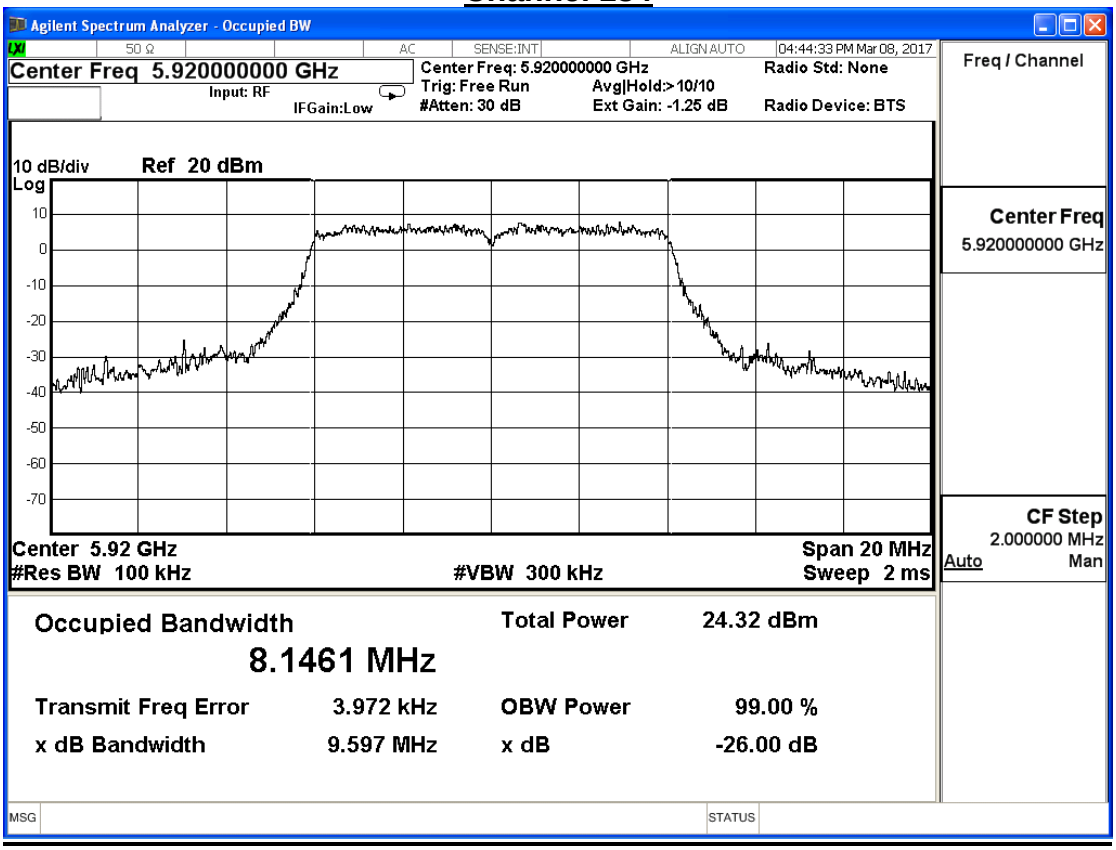
Channel 172



Channel 178



Channel 184



3. Maximum Transmitter Power

3.1. Test Equipment

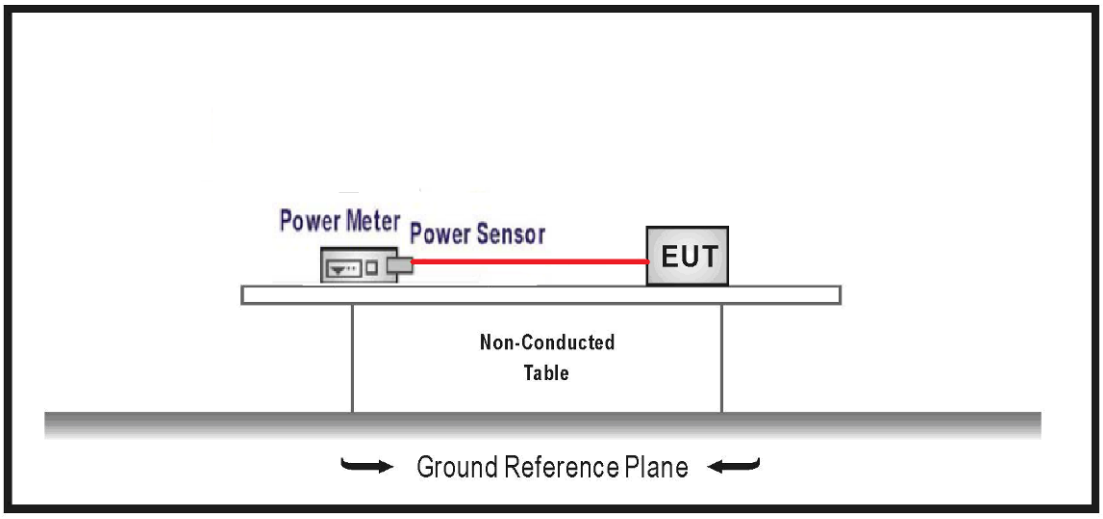
The following test equipments are used during the radiated emission tests:

Maximun Transmitter Power / SR10-H

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2018/01/19
Pulse Power Sensor	Anritsu	MA2411B	1531043	2018/01/19
Pulse Power Sensor	Anritsu	MA2411B	1531044	2018/01/19

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

3.2. Test Setup



3.3. Limits

5850~5925MHz			
Channel No.	Frequency Range (MHz)	Max. EIRP (dBm)	Channel Use
170	5850-5855	33	Reserved
172	5855-5865	33	Service Channel
174	5865-5875	33	Service Channel
175	5865-5885	23	Service Channel
176	5875-5885	33	Service Channel
178	5885-5895	33/44.8	Control Channel
180	5895-5905	23	Service Channel
181	5895-5915	23	Service Channel
182	5905-5915	23	Service Channel
184	5915-5925	33/40	Service Channel

Note:

1. Public Safety RSU installation transmissions in Channel 178 shall not exceed 28.8 dBm antenna input power and 44.8 dBm EIRP. Private RSU installation transmissions in Channel 178 shall not exceed 28.8 dBm antenna input power and 33 dBm EIRP.
2. Public Safety RSU and OBU operations in Channel 184 shall not exceed 28.8 dBm antenna input power and 40 dBm EIRP. Private RSU operations in Channel 184 shall not exceed 28.8 dBm antenna input power and 33 dBm EIRP.

3.4. Test Procedure

Refer as ANSI/TIA-603-D, Clause 3.2.1.

3.5. Uncertainty

The measurement uncertainty is defined as ±1.27dB

3.6. Test Result

Product	V2X DSRC Module		
Test Item	Maximum Transmitter Power		
Test Mode	Mode 1: Transmit-ANT1		
Date of Test	2017/05/23	Test Site	SR10-H

IEEE 802.11p (ANT 1), Antenna Gain: 7.6 dBi					
Channel No.	Frequency (MHz)	Cond. Power Level (dBm)	EIRP Measure Level (dBm)	Cond. Power Limit (dBm)	EIRP Power Limit (dBm)
172	5860	19.85	27.45	28.8	33
178	5890	19.62	27.22	28.8	33
184	5920	19.89	27.49	28.8	33

EIRP = Conducted Power + Antenna Gain
Conducted power could overcome limits but EIRP power shall under limits.

Product	V2X DSRC Module		
Test Item	Maximum Transmitter Power		
Test Mode	Mode 2: Transmit-ANT2		
Date of Test	2017/05/23	Test Site	SR10-H

IEEE 802.11p (ANT 2), Antenna Gain: 7.6 dBi					
Channel No.	Frequency (MHz)	Cond. Power Level (dBm)	EIRP Measure Level (dBm)	Cond. Power Limit (dBm)	EIRP Power Limit (dBm)
172	5860	19.77	27.37	28.8	33
178	5890	19.83	27.43	28.8	33
184	5920	19.62	27.22	28.8	33

EIRP = Conducted Power + Antenna Gain
Conducted power could overcome limits but EIRP power shall under limits.

Test Result	PASS

4. Transmit Spectrum Mask

4.1. Test Equipment

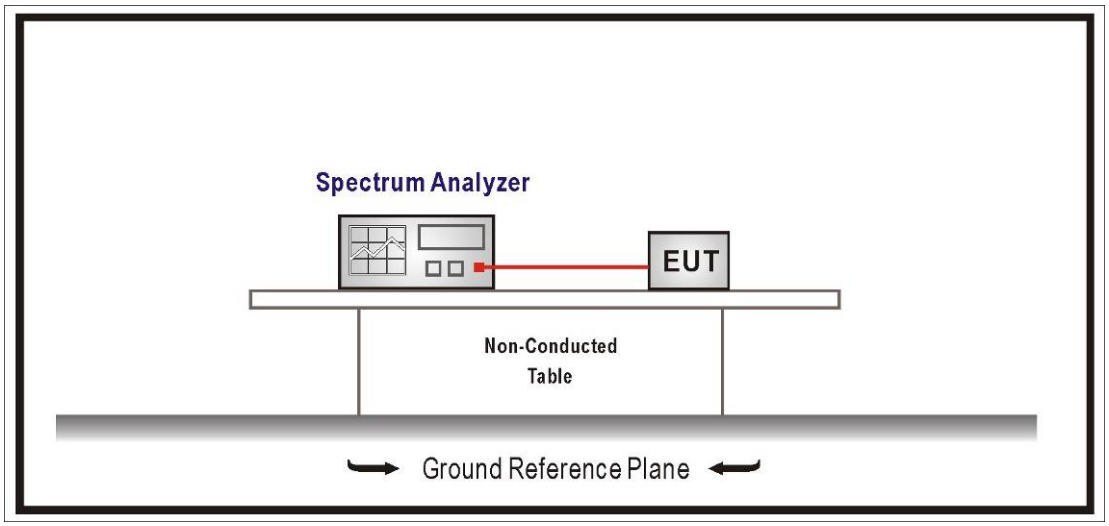
The following test equipments are used during the radiated emission tests:

Transmit Spectrum Mask / SR10-H

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A	US47140172	2017/08/08

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

4.2. Test Setup



4.3. Limits

NOTE—Reduction in Power Spectral Density, dBr.

Class	± 4.5-MHz Offset	± 5.0-MHz Offset	± 5.5-MHz Offset	± 10-MHz Offset	± 15-MHz Offset
Class A	0	-10	-20	-28	-40
Class B	0	-16	-20	-28	-40
Class C	0	-26	-32	-40	-50
Class D	0	-35	-45	-55	-65

[A] From IEEE 802.11a. Copyright 1999 IEEE. All rights reserved.

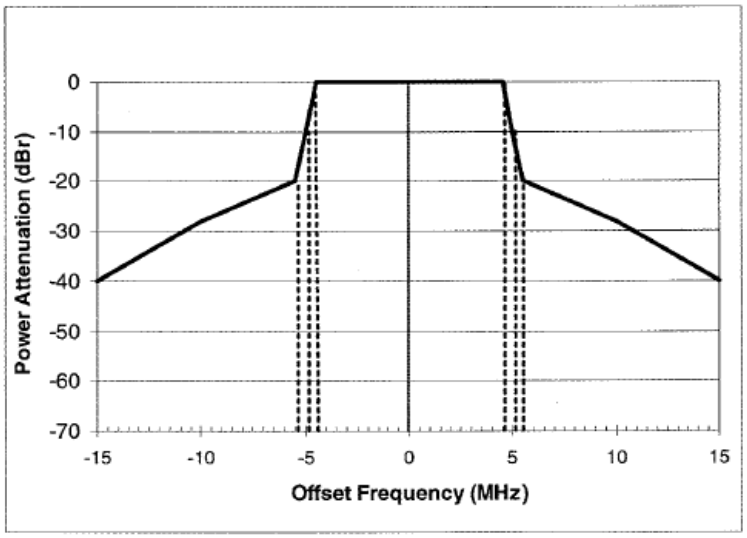


FIG. 12 Class A Transmit Spectrum Mask

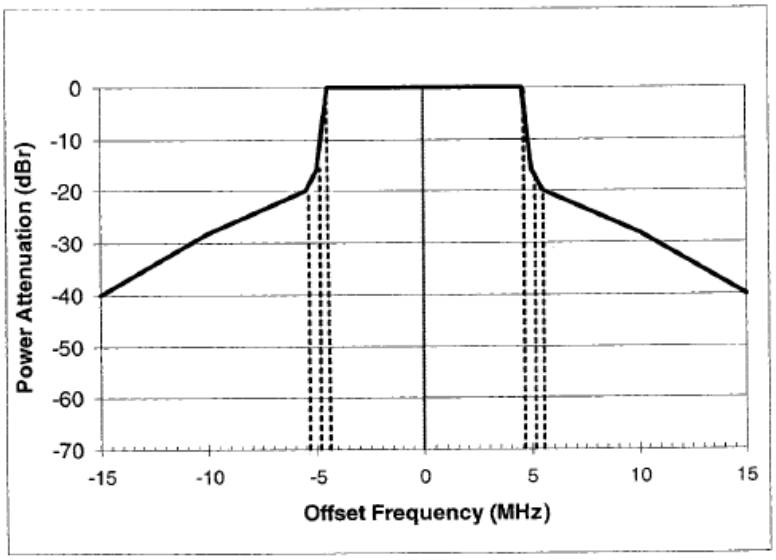


FIG. 13 Class B Transmit Spectrum Mask

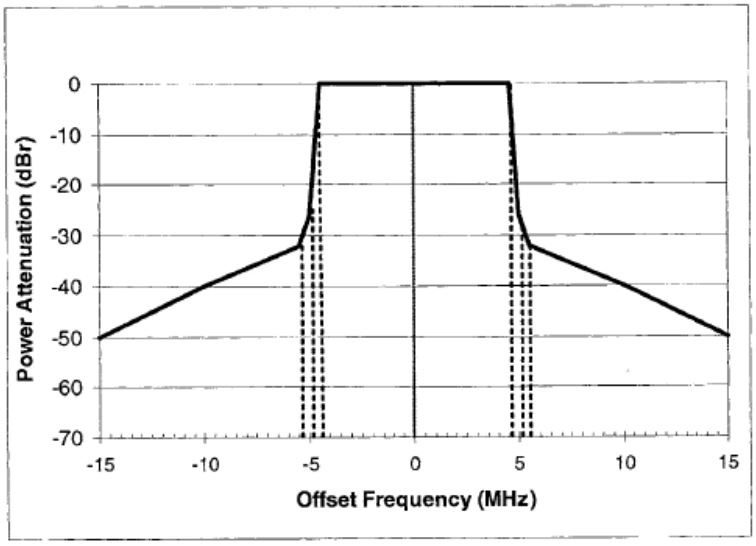


FIG. 14 Class C Transmit Spectrum Mask

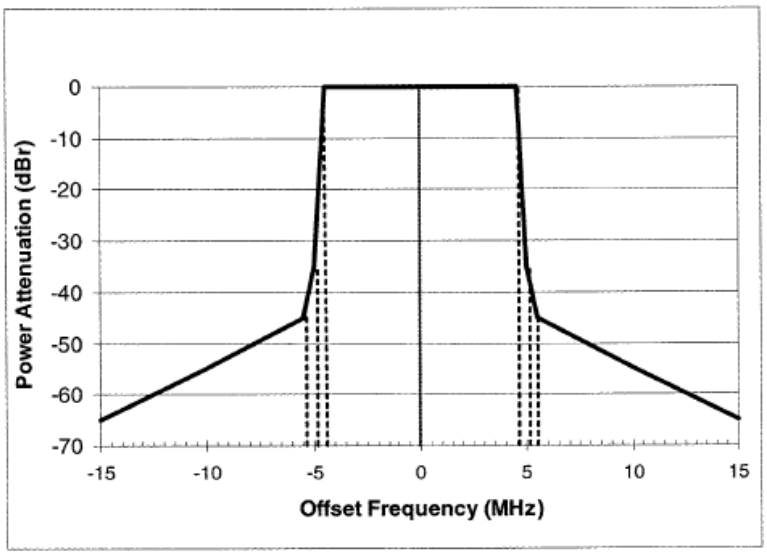


FIG. 15 Class D Transmit Spectrum Mask

4.4. Test Procedure

The measurements of transmit spectral density are made using RBW=100KHz,VBW=30KHz

4.5. Uncertainty

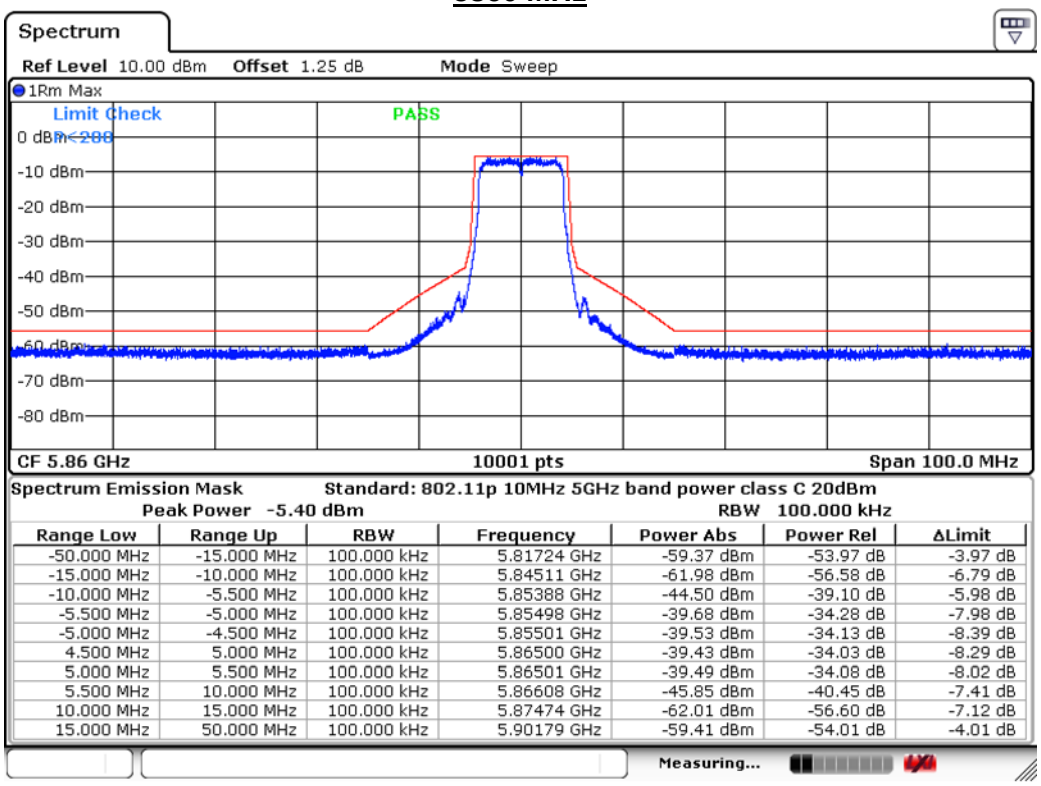
The measurement uncertainty is defined as ± 1.27 dB

4.6. Test Result

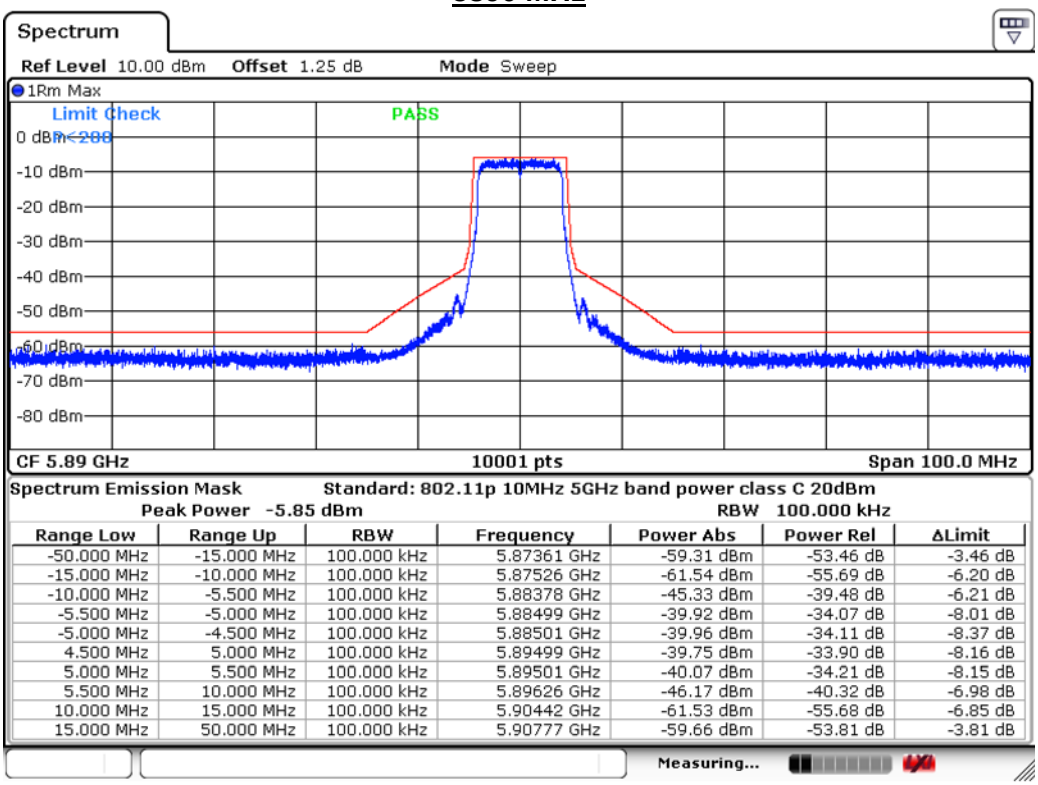
Product	V2X DSRC Module		
Test Item	Transmit Spectrum Mask		
Test Mode	Mode 1: Transmit-ANT1		
Date of Test	2017/05/23	Test Site	SR10-H

Channel No.	Frequency (MHz)	Result
172	5860	Pass
178	5890	Pass
184	5920	Pass

5860 MHz



5890 MHz



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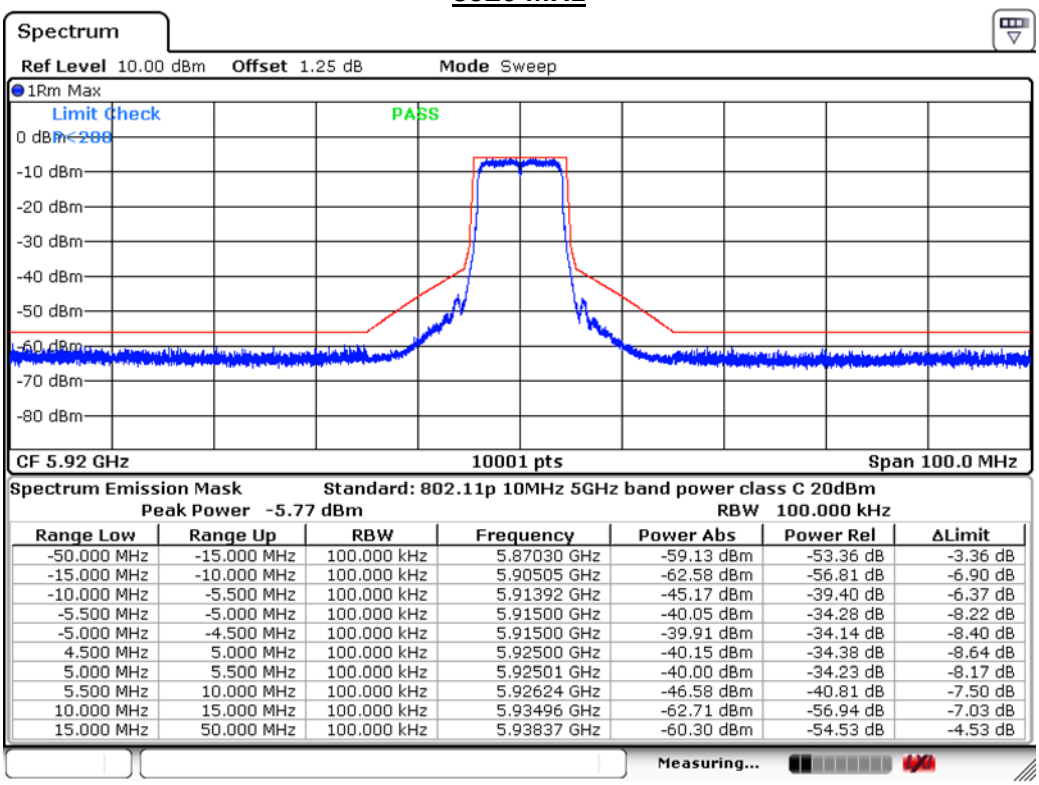
5920 MHz



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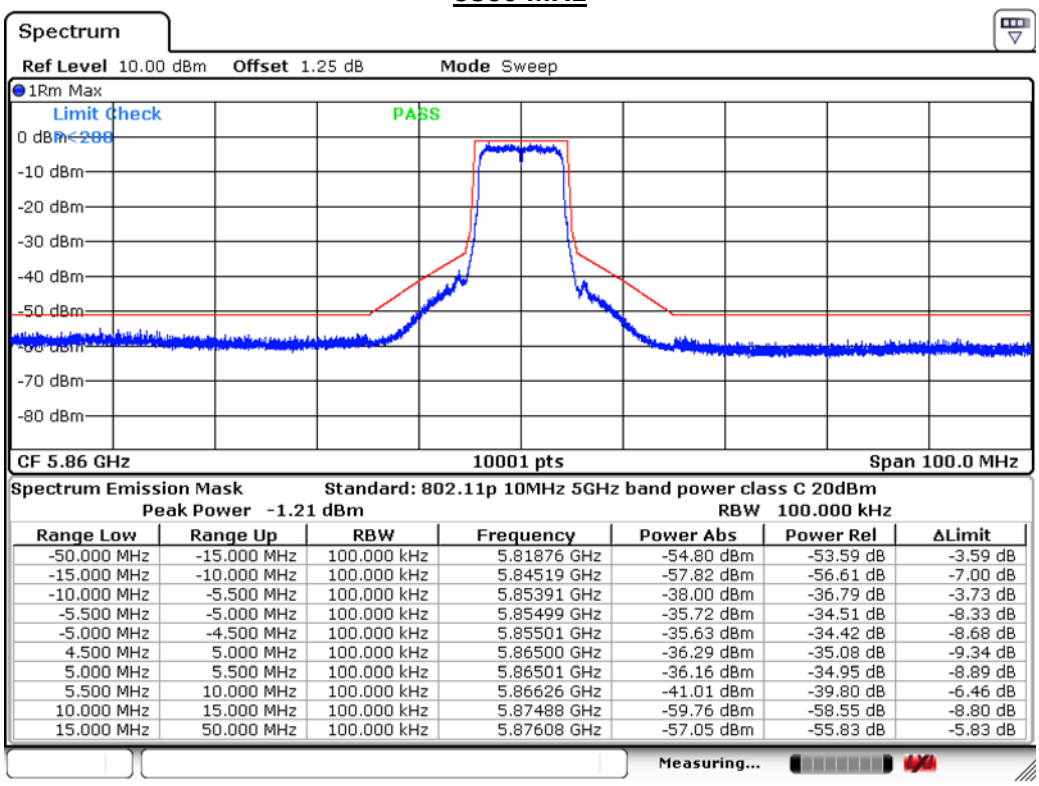
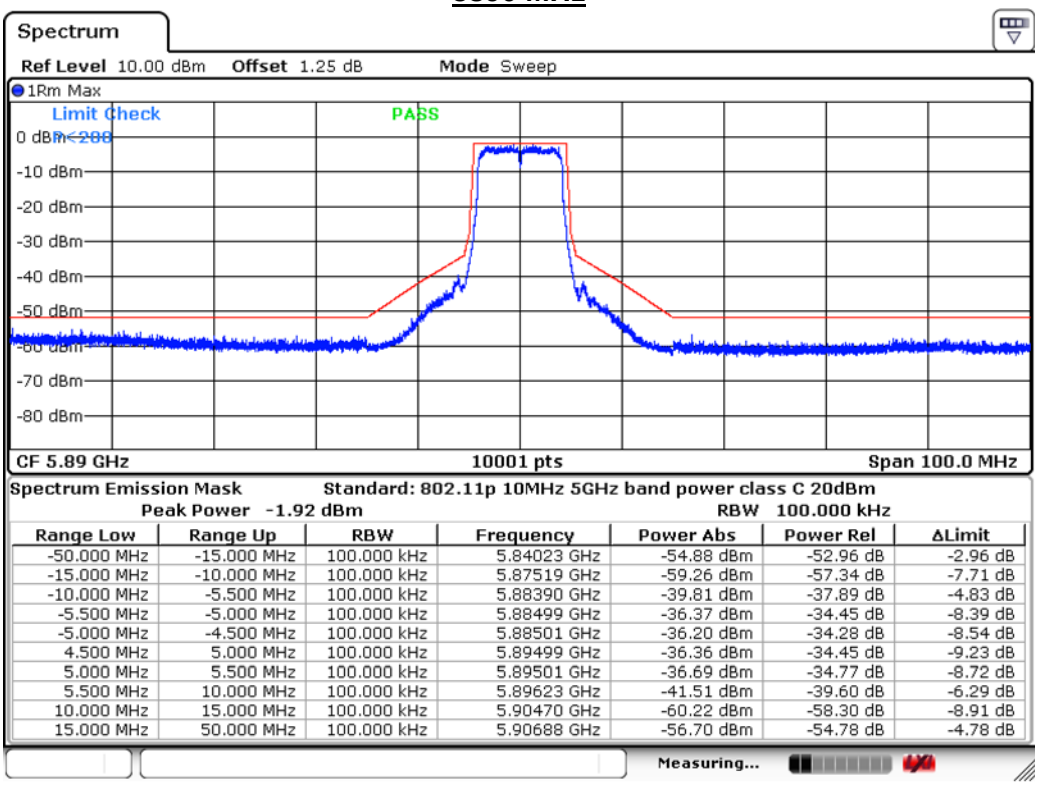
Product	V2X DSRC Module		
Test Item	Transmit Spectrum Mask		
Test Mode	Mode 2: Transmit-ANT2		
Date of Test	2017/05/23	Test Site	SR10-H

Channel No.	Frequency (MHz)	Result
172	5860	Pass
178	5890	Pass
184	5920	Pass

5860 MHz



5890 MHz



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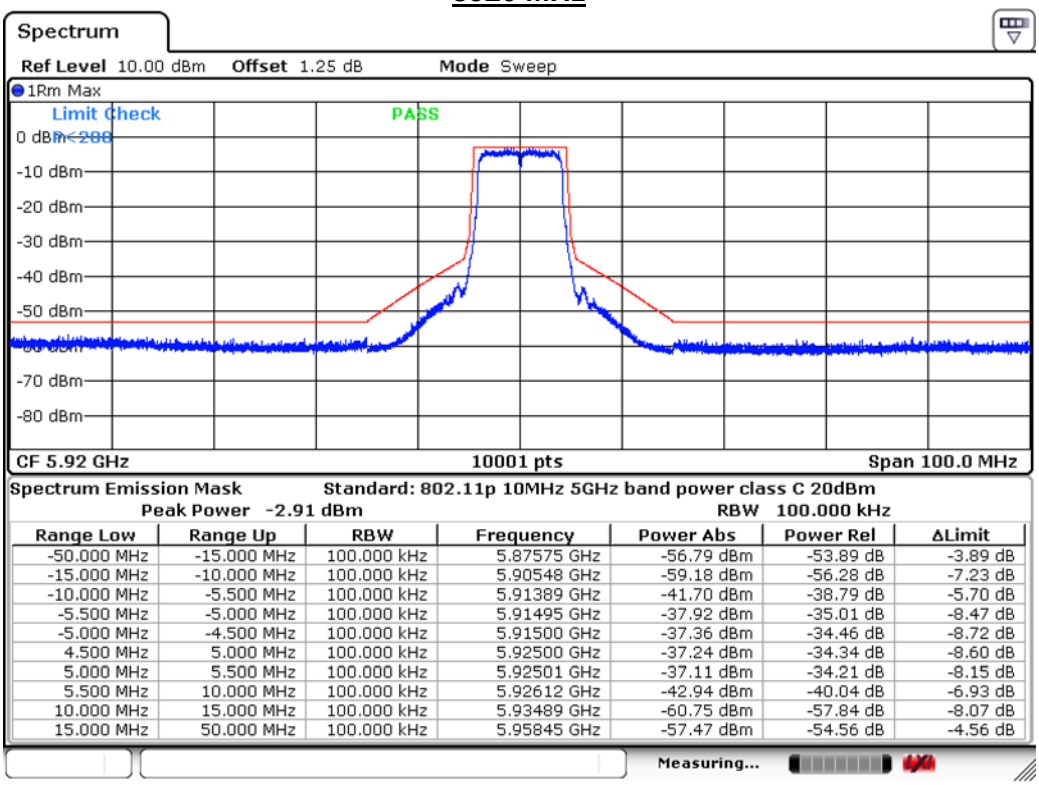
5920 MHz



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5. Transmitter Conducted Unwanted Emission

5.1. Test Equipment

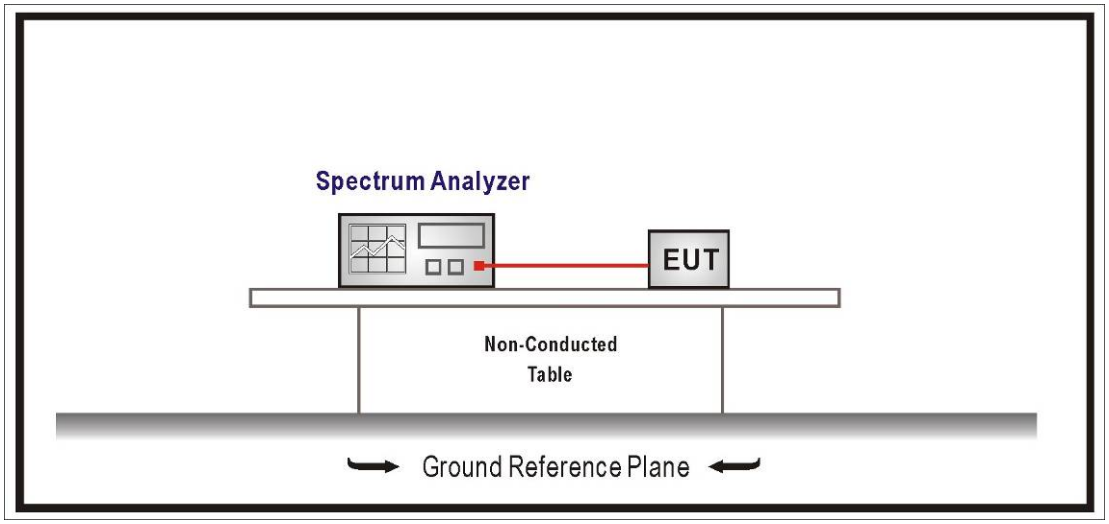
The following test equipments are used during the radiated emission test:

Transmitter Conducted Unwanted Emission / SR10-H

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2018/01/22

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

5.2. Test Setup



5.3. Limits

The power of any emission outside a license's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least [55 + 10 log (P)] (-25dBm).

5.4. Test Procedure

Refer as ANSI/TIA-603-D-2010, clause 3.2.13.

5.5. Uncertainty

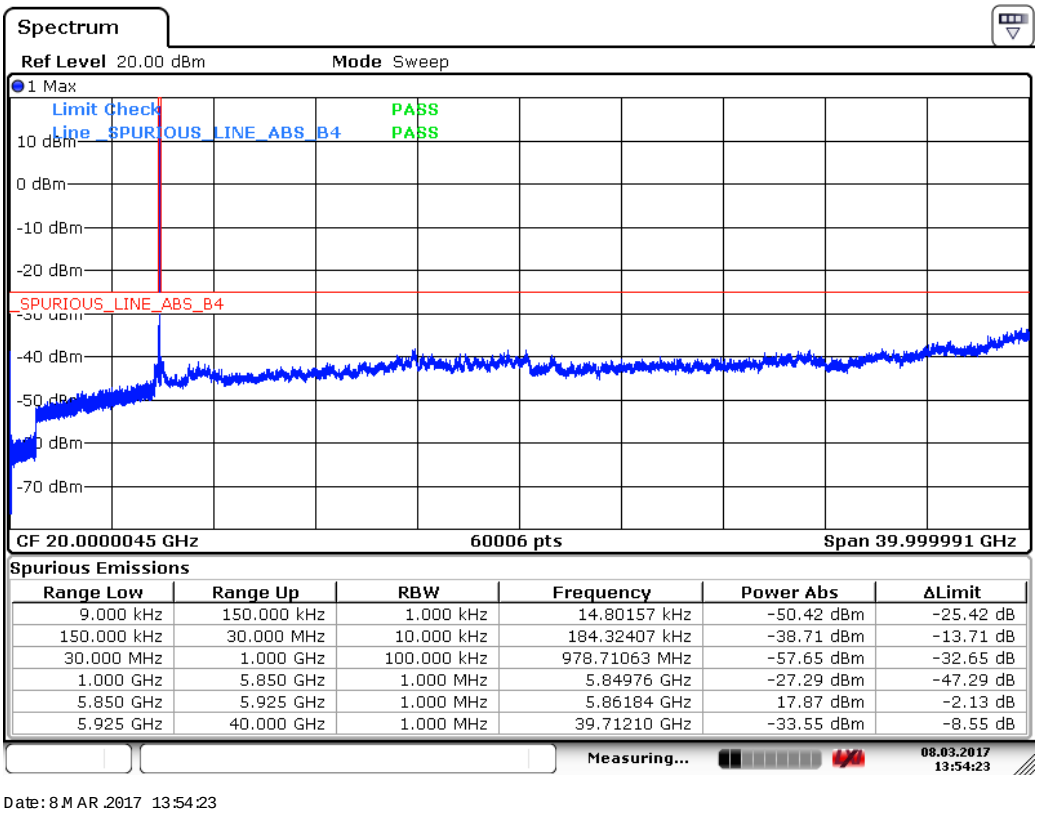
The measurement uncertainty is defined as ± 1.27 dB

5.6. Test Result

Product	V2X DSRC Module		
Test Item	Transmitter Conducted Unwanted Emission		
Test Mode	Mode 1: Transmit-ANT1		
Date of Test	2017/03/08	Test Site	SR10-H

IEEE 802.11p (ANT 1), Antenna Gain: 7.6 dBi		
Channel No.	Frequency (MHz)	Limit (dBm)
172	5860	≦-25
178	5890	≦-25
184	5920	≦-25

5860MHz



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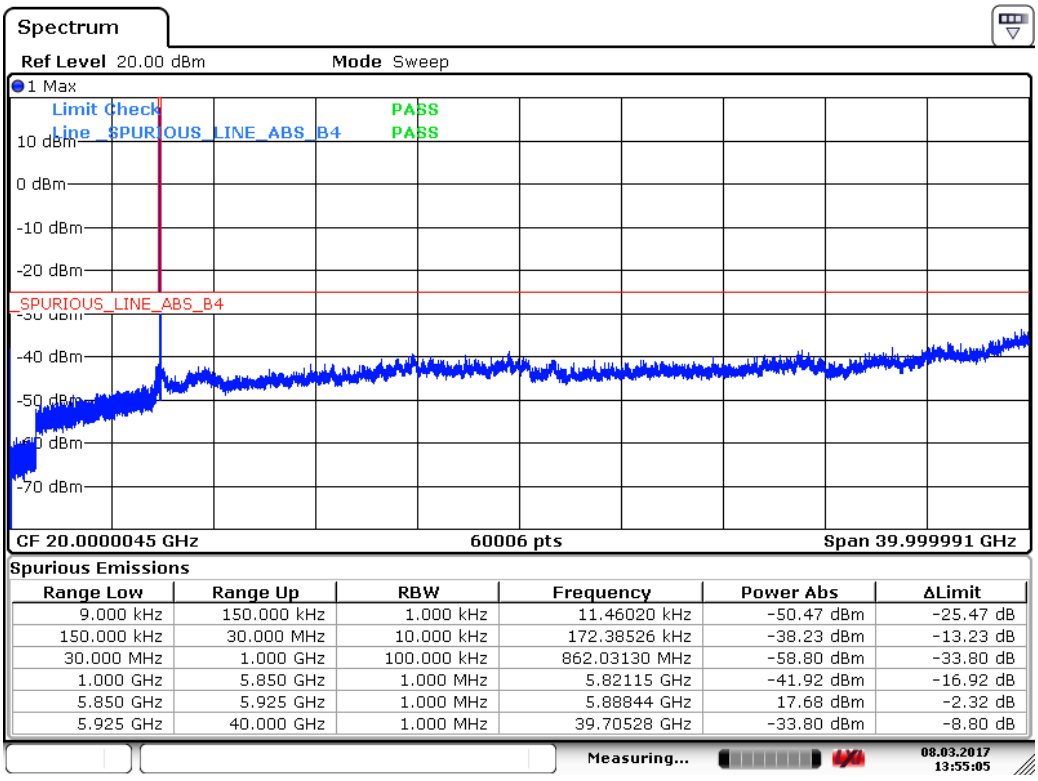
5890MHz



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
9.000 kHz	150.000 kHz	1.000 kHz	11.46020 kHz	-50.47 dBm	-25.47 dB
150.000 kHz	30.000 MHz	10.000 kHz	172.38526 kHz	-38.23 dBm	-13.23 dB
30.000 MHz	1.000 GHz	100.000 kHz	862.03130 MHz	-58.80 dBm	-33.80 dB
1.000 GHz	5.850 GHz	1.000 MHz	5.82115 GHz	-41.92 dBm	-16.92 dB
5.850 GHz	5.925 GHz	1.000 MHz	5.88844 GHz	17.68 dBm	-2.32 dB
5.925 GHz	40.000 GHz	1.000 MHz	39.70528 GHz	-33.80 dBm	-8.80 dB

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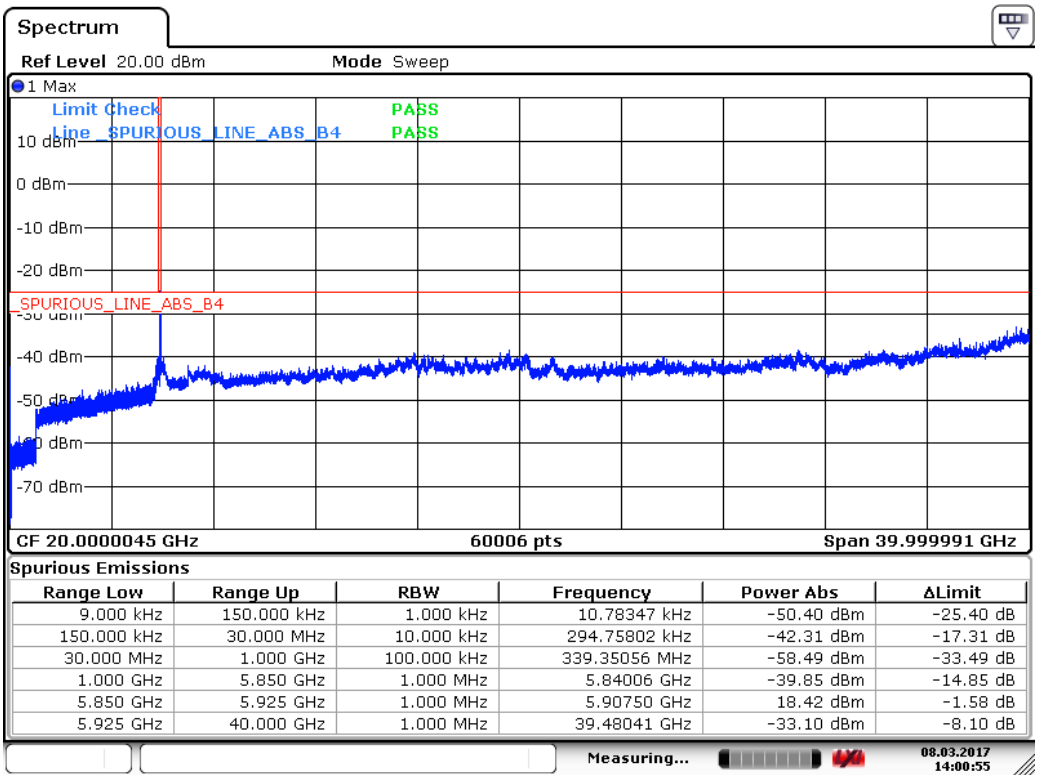
5920MHz



Spurious Emissions

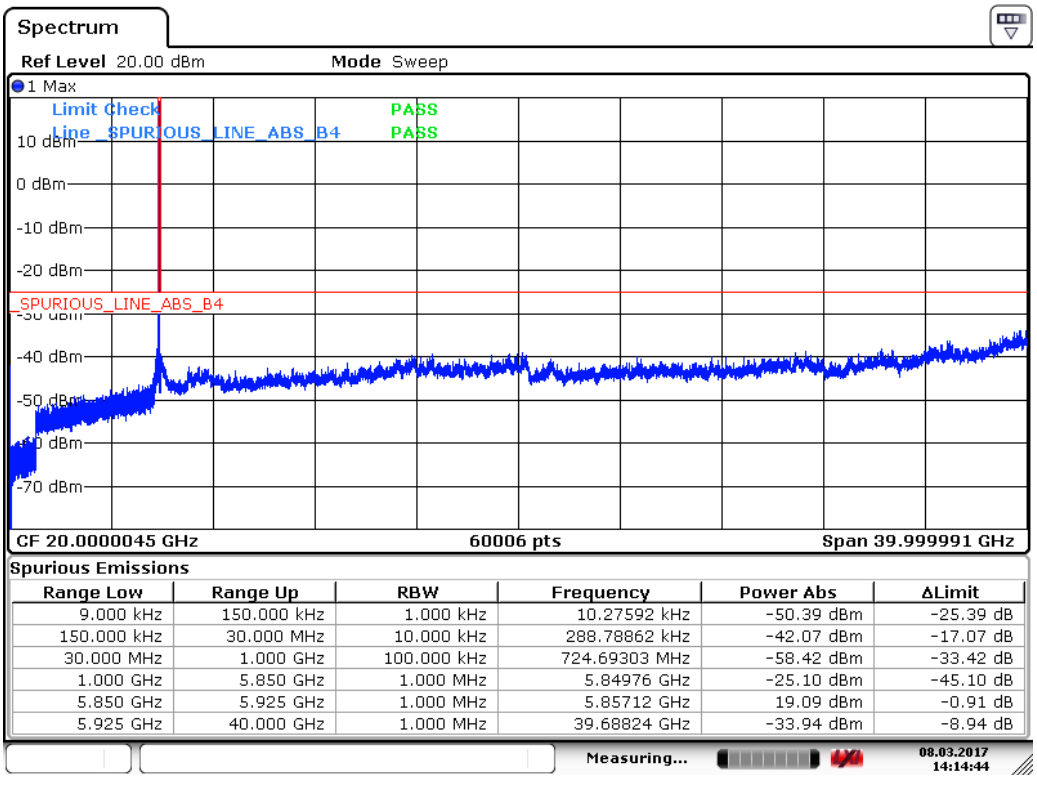
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
9.000 kHz	150.000 kHz	1.000 kHz	10.78347 kHz	-50.40 dBm	-25.40 dB
150.000 kHz	30.000 MHz	10.000 kHz	294.75802 kHz	-42.31 dBm	-17.31 dB
30.000 MHz	1.000 GHz	100.000 kHz	339.35056 MHz	-58.49 dBm	-33.49 dB
1.000 GHz	5.850 GHz	1.000 MHz	5.84006 GHz	-39.85 dBm	-14.85 dB
5.850 GHz	5.925 GHz	1.000 MHz	5.90750 GHz	18.42 dBm	-1.58 dB
5.925 GHz	40.000 GHz	1.000 MHz	39.48041 GHz	-33.10 dBm	-8.10 dB

Date: 8.MAR.2017 14:00:55

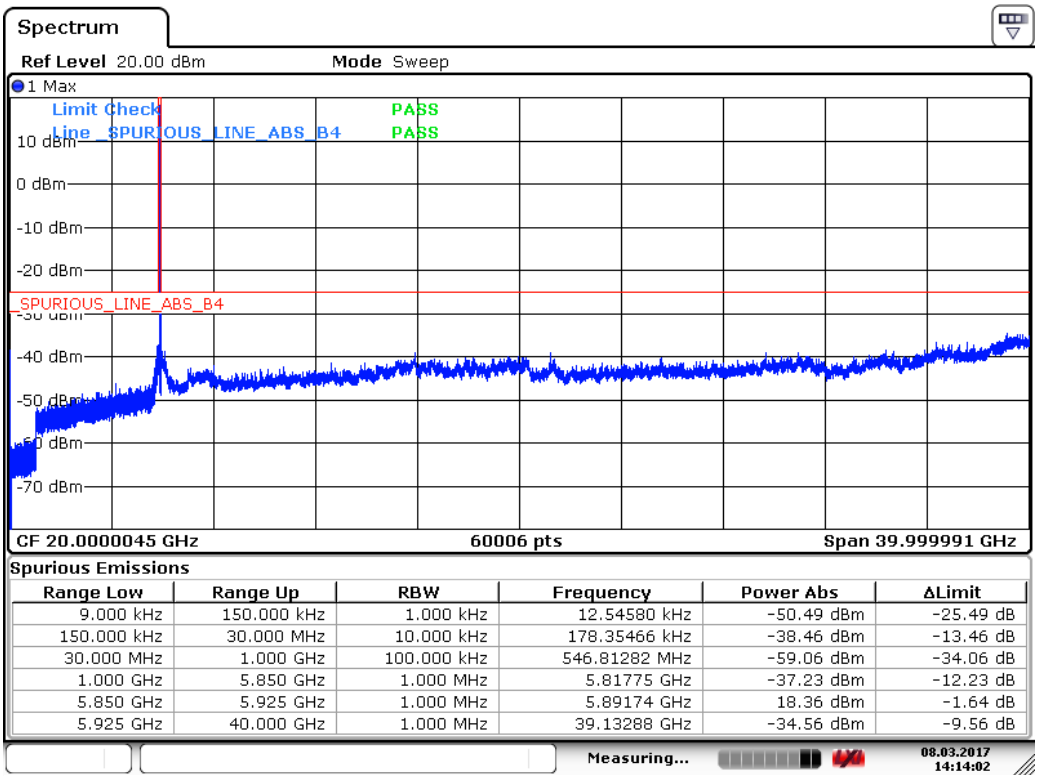
Product	V2X DSRC Module		
Test Item	Transmitter Conducted Unwanted Emission		
Test Mode	Mode 2: Transmit-ANT2		
Date of Test	2017/03/08	Test Site	SR10-H

IEEE 802.11p (ANT 2), Antenna Gain: 7.6 dBi		
Channel No.	Frequency (MHz)	Limit (dBm)
172	5860	≦-25
178	5890	≦-25
184	5920	≦-25

5860MHz

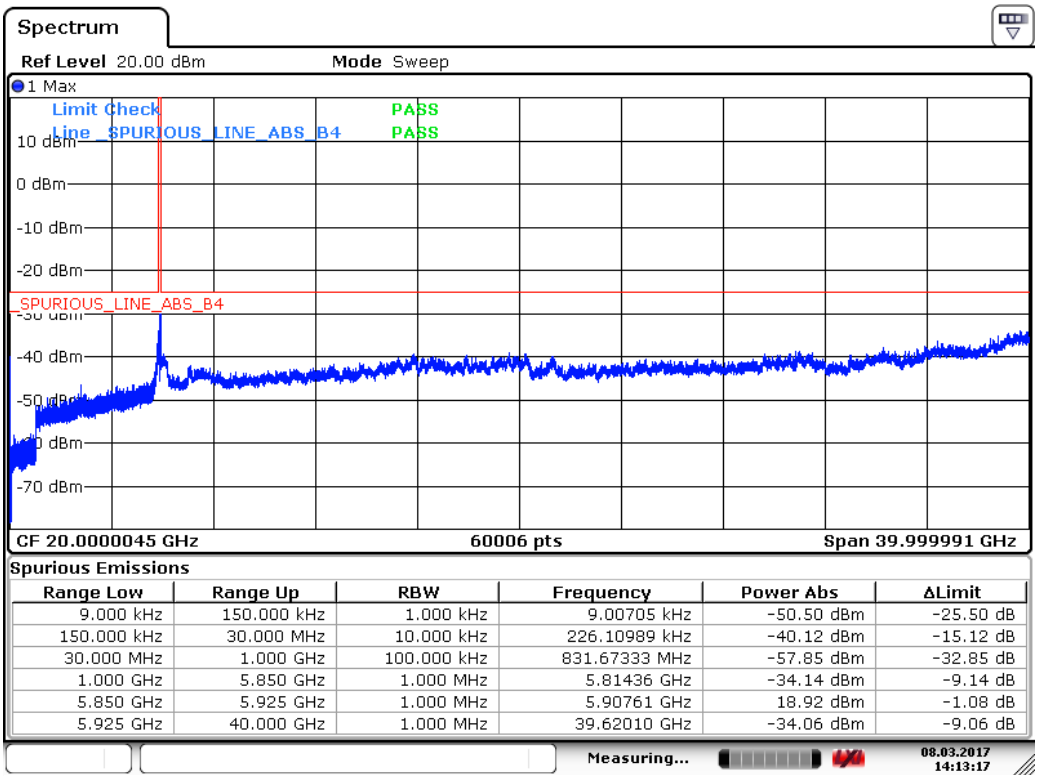


5890MHz



Date: 8.MAR.2017 14:14:01

5920MHz



Date: 8.MAR.2017 14:13:16

6. Transmitter Radiated Unwanted Emission

6.1. Test Equipment

The following test equipments are used during the band edge tests:

Transmitter Radiated Unwanted Emission/ CB4-H

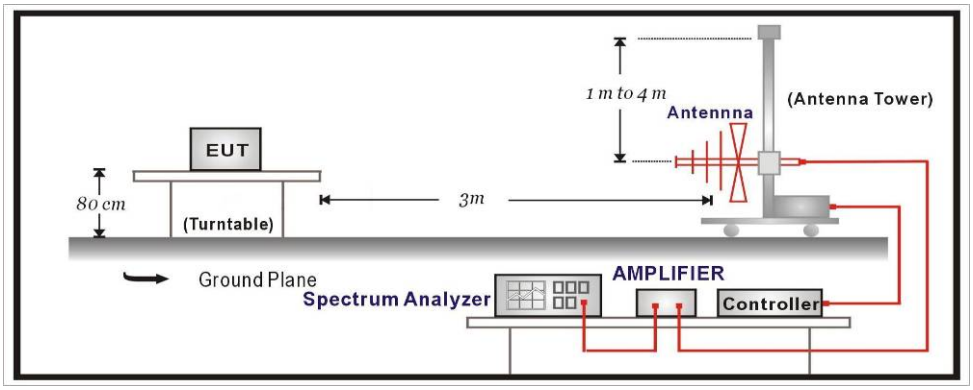
Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Bilog Antenna	Schaffner	CBL6112B	2891	2017/08/14
Horn Antenna	Schwarzbeck	BBHA 9120	D312	2017/10/25
Pre-Amplifier	EMCI	EMC0031835	980233	2018/02/02
Pre-Amplifier	Schwarzbeck	DBL-1840N506	013	2017/09/29
Pre-Amplifier	Miteq	JS41-001040000-58-5P	1573954	2017/10/04
Horn Antenna	Schwarzbeck	BBHA 9170	203	2017/08/28
Signal & Spectrum Analyzer	R&S	FSV40	101049	2018/01/22

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

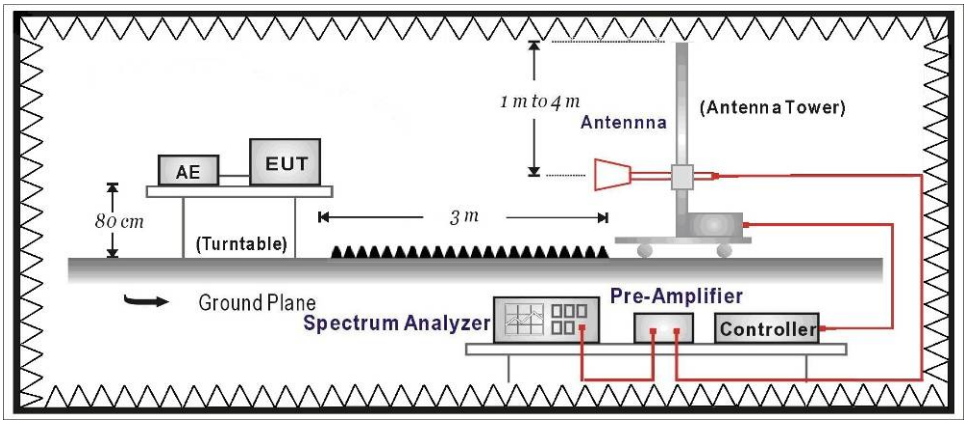
6.2. Test Setup

RF Radiated Measurement:

Under 1GHz Test Setup:



Above 1GHz Test Setup:



6.3. Limits

Refer as ASTM E2213-03 Clause 8.9.2

6.4. Test Procedure

Refer as ANSI/TIA-603-D-2010. Clause 3.2.12.

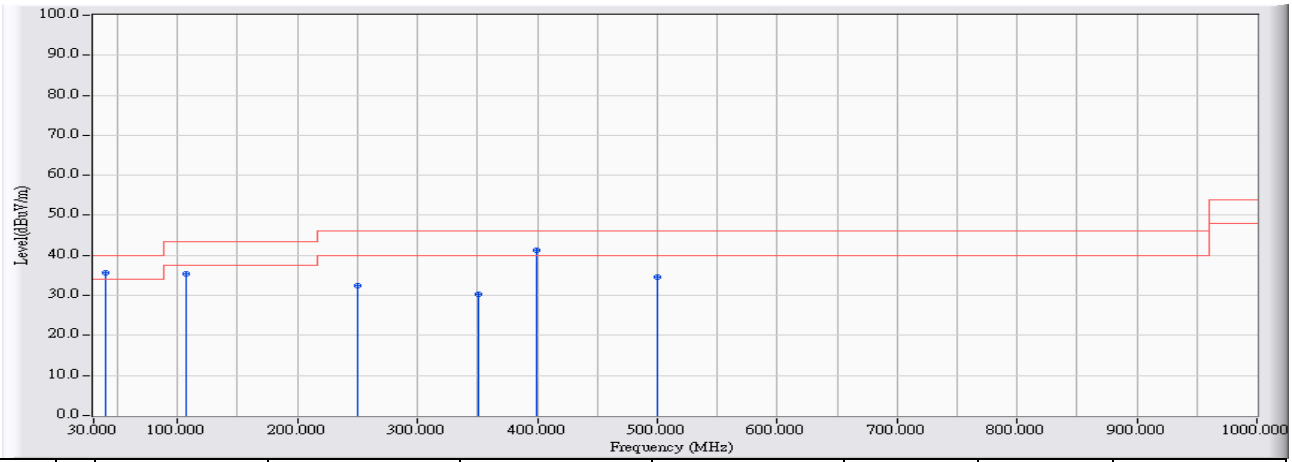
6.5. Uncertainty

The measurement uncertainty is defined as ± 3.65dB

6.6. Test Result

30MHz-1GHz Spurious

Site : CB4-H	**Time : 2017/03/08**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB4-H_FCC_EFS_S2_30M-1GHz_1116 - HORIZONTAL	**Power : DC 12V**
EUT : V2X DSRC Module	**Note : Mode 1: Transmit-ANT1_5890MHz**

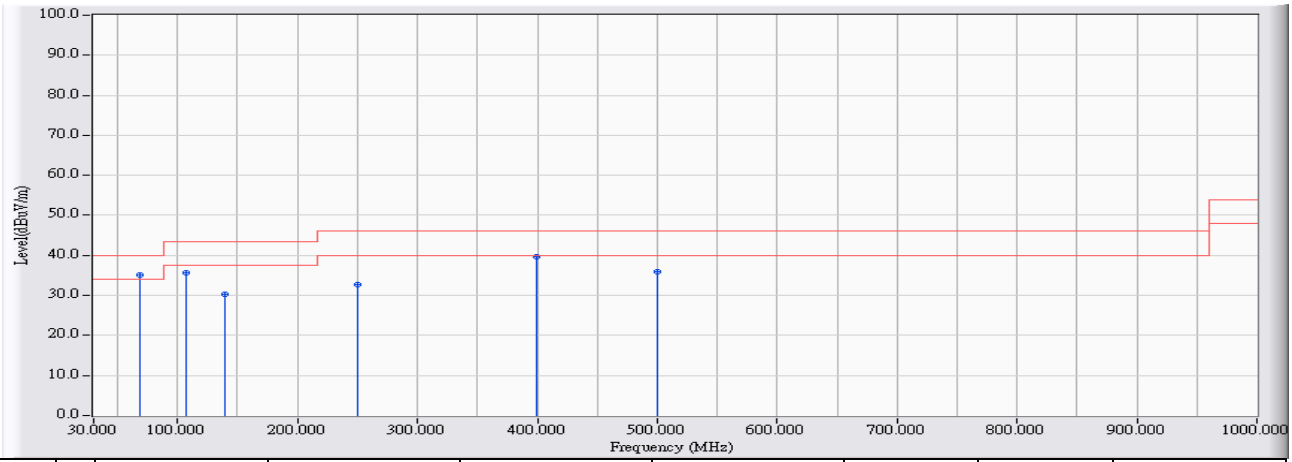


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	39.505	-16.390	52.101	35.712	-4.288	40.000	QUASIPEAK
2		106.719	-22.612	57.996	35.384	-8.116	43.500	QUASIPEAK
3		249.974	-20.130	52.636	32.506	-13.494	46.000	QUASIPEAK
4		351.426	-17.299	47.550	30.251	-15.749	46.000	QUASIPEAK
5		399.921	-15.750	56.922	41.172	-4.828	46.000	QUASIPEAK
6		499.918	-14.041	48.661	34.620	-11.380	46.000	QUASIPEAK

Note:

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

Site : CB4-H	**Time : 2017/03/08**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB4-H_FCC_EFS_S2_30M-1GHz_1116 - VERTICAL	**Power : DC 12V**
EUT : V2X DSRC Module	**Note : Mode 1: Transmit-ANT1_5890MHz**

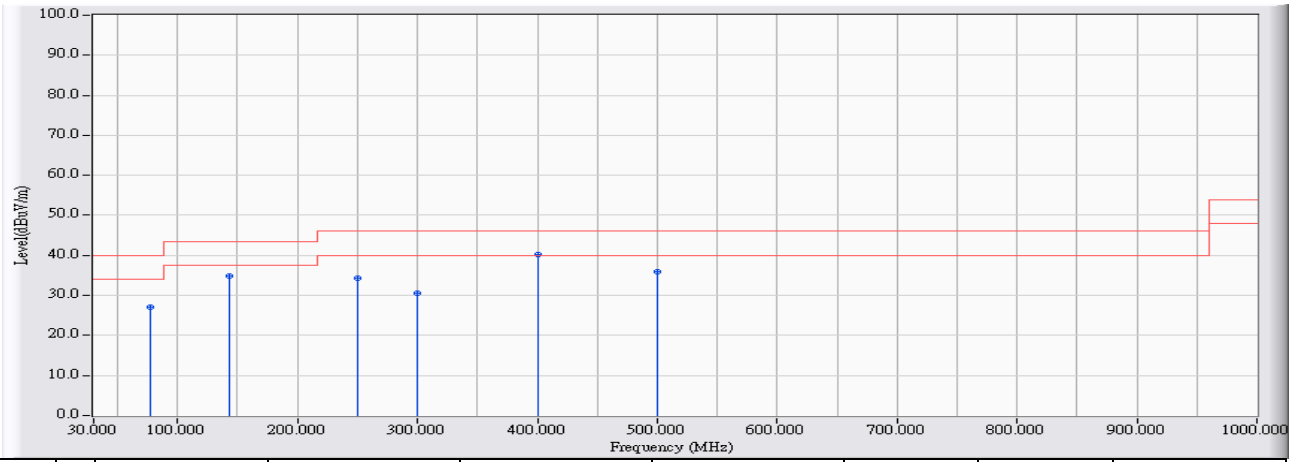


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	68.990	-27.966	63.036	35.070	-4.930	40.000	QUASIPEAK
2		106.719	-22.612	58.245	35.633	-7.867	43.500	QUASIPEAK
3		139.211	-21.567	51.961	30.395	-13.105	43.500	QUASIPEAK
4		249.974	-20.130	52.764	32.634	-13.366	46.000	QUASIPEAK
5		399.921	-15.750	55.411	39.661	-6.339	46.000	QUASIPEAK
6		499.918	-14.041	50.032	35.991	-10.009	46.000	QUASIPEAK

Note:

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

Site : CB4-H	**Time : 2017/03/08**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB4-H_FCC_EFS_S2_30M-1GHz_1116 - HORIZONTAL	**Power : DC 12V**
EUT : V2X DSRC Module	**Note : Mode 2: Transmit-ANT2_5890MHz**

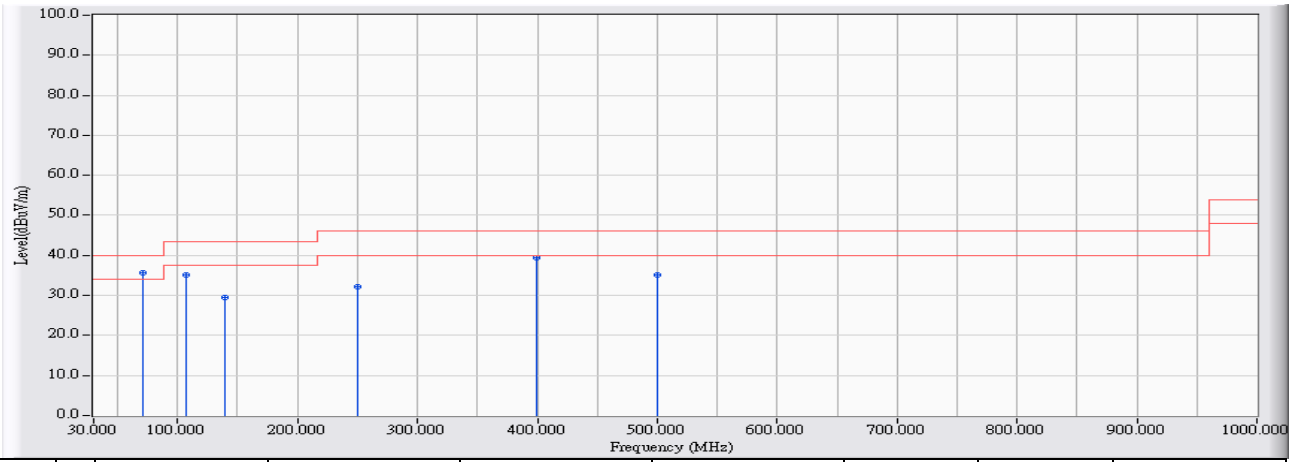


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		77.137	-27.288	54.358	27.069	-12.931	40.000	QUASIPEAK
2		143.285	-21.795	56.697	34.903	-8.597	43.500	QUASIPEAK
3		249.974	-20.130	54.573	34.443	-11.557	46.000	QUASIPEAK
4		299.924	-19.404	49.897	30.493	-15.507	46.000	QUASIPEAK
5	*	400.018	-15.746	56.069	40.323	-5.677	46.000	QUASIPEAK
6		499.918	-14.041	49.856	35.815	-10.185	46.000	QUASIPEAK

Note:

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

Site : CB4-H	**Time : 2017/03/08**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Probe : CB4-H_FCC_EFS_S2_30M-1GHz_1116 - VERTICAL	**Power : DC 12V**
EUT : V2X DSRC Module	**Note : Mode 2: Transmit-ANT2_5890MHz**



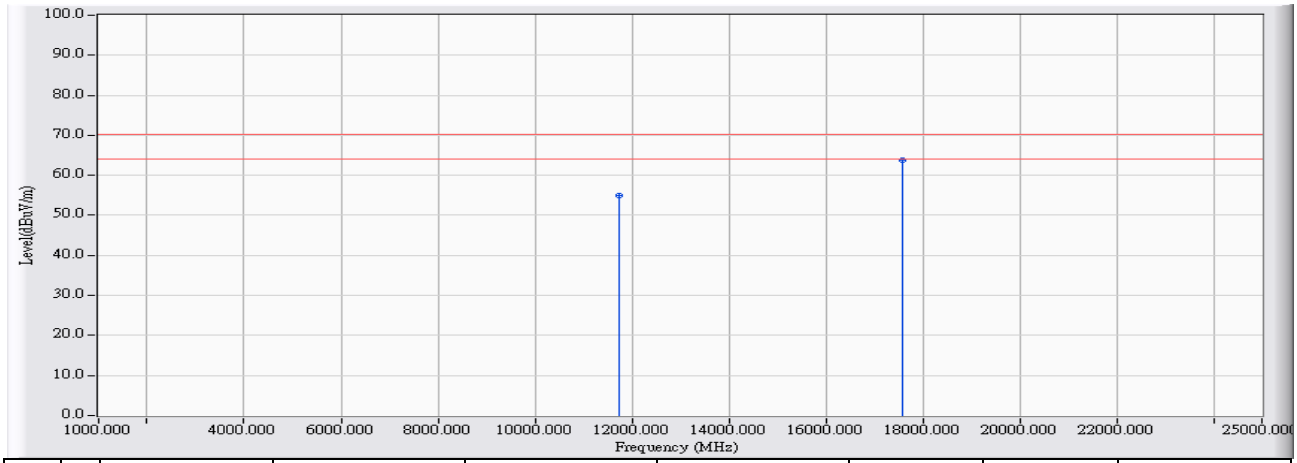
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	71.027	-27.839	63.441	35.602	-4.398	40.000	QUASIPEAK
2		106.622	-22.623	57.686	35.063	-8.437	43.500	QUASIPEAK
3		139.211	-21.567	51.070	29.504	-13.996	43.500	QUASIPEAK
4		249.974	-20.130	52.306	32.176	-13.824	46.000	QUASIPEAK
5		399.921	-15.750	55.162	39.412	-6.588	46.000	QUASIPEAK
6		499.918	-14.041	49.185	35.144	-10.856	46.000	QUASIPEAK

Note:

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

Harmonic & Spurious:

Site : CB4-H	**Time : 2017/03/08**
Limit : FCC Part90	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 12V**
EUT : V2X DSRC Module	**Note : Mode 1: Transmit-ANT1_5860MHz**

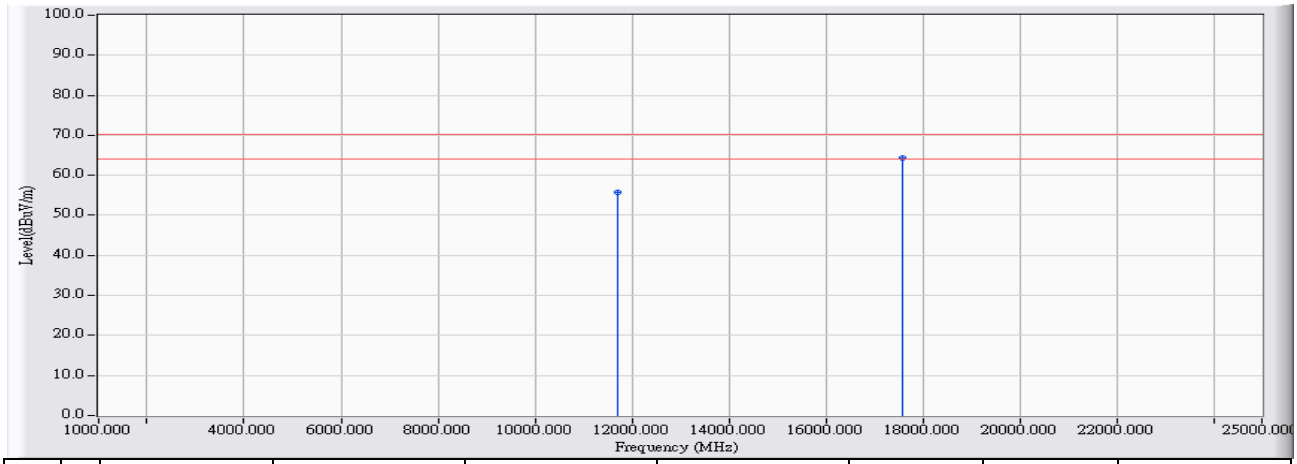


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11734.000	24.963	30.070	55.033	-15.167	70.200	PEAK
2	*	17570.000	32.482	31.210	63.692	-6.508	70.200	PEAK

Note:

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

Site : CB4-H	**Time : 2017/03/08**
Limit : FCC Part90	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 12V**
EUT : V2X DSRC Module	**Note : Mode 1: Transmit-ANT1_5860MHz**

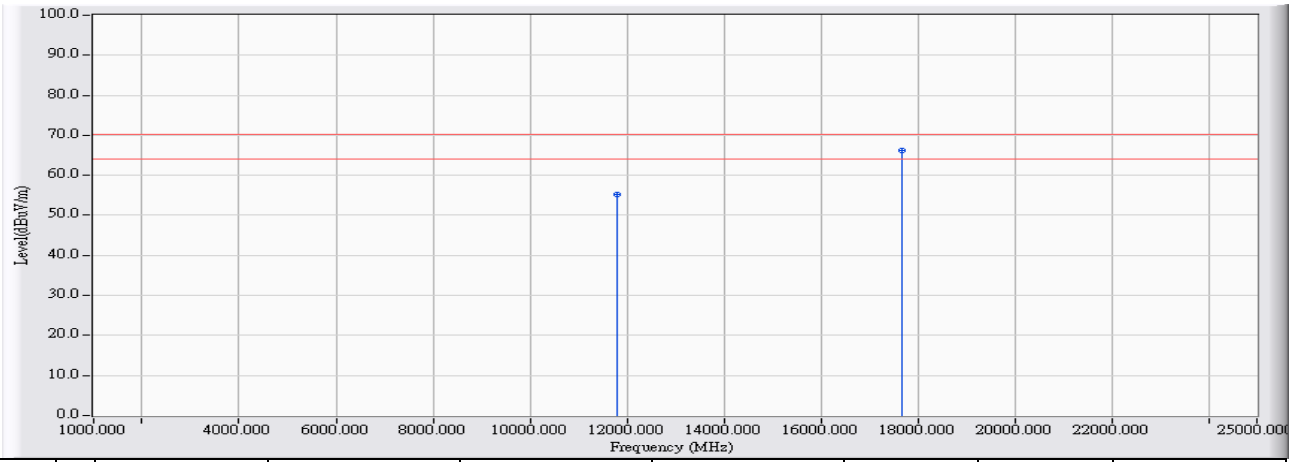


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11715.000	24.943	30.920	55.862	-14.338	70.200	PEAK
2	*	17589.000	32.759	31.510	64.269	-5.931	70.200	PEAK

Note:

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

Site : CB4-H	**Time : 2017/03/08**
Limit : FCC Part90	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 12V**
EUT : V2X DSRC Module	**Note : Mode 1: Transmit-ANT1_5890MHz**

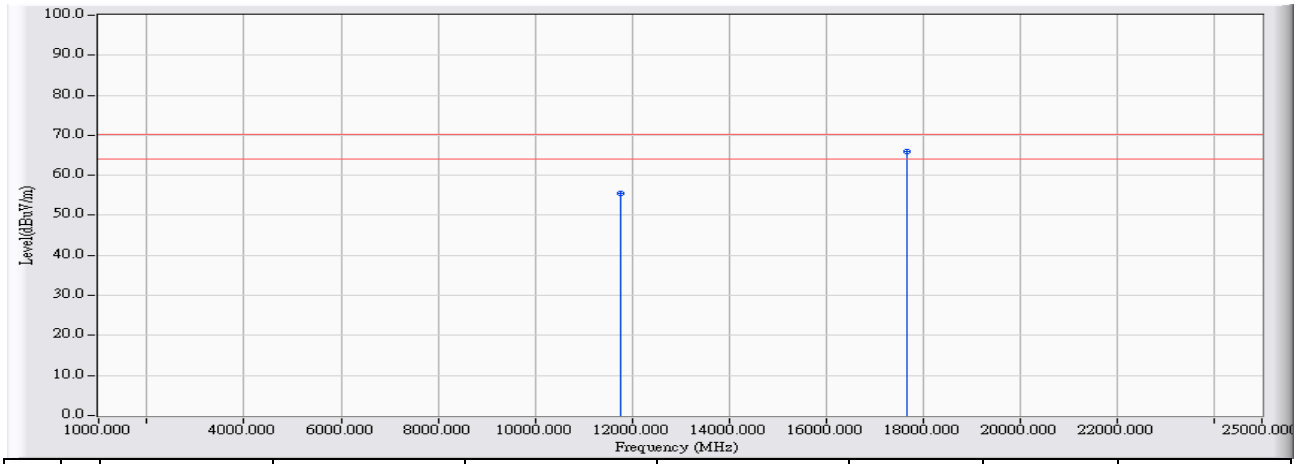


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11786.000	25.019	30.230	55.249	-14.951	70.200	PEAK
2	*	17681.000	34.103	32.000	66.103	-4.097	70.200	PEAK

Note:

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

Site : CB4-H	**Time : 2017/03/08**
Limit : FCC Part90	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 12V**
EUT : V2X DSRC Module	**Note : Mode 1: Transmit-ANT1_5890MHz**

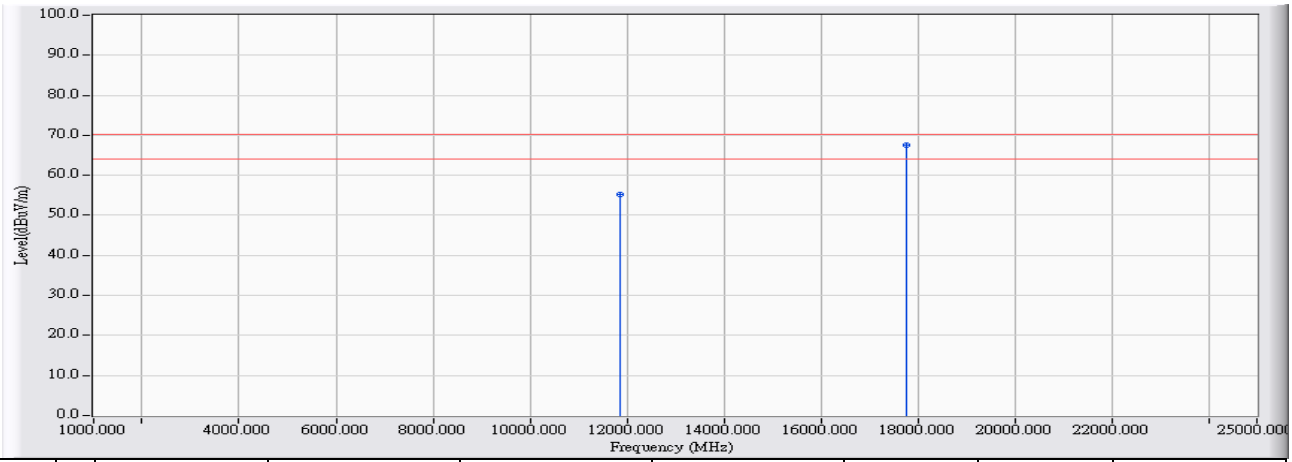


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11775.000	25.007	30.460	55.467	-14.733	70.200	PEAK
2	*	17688.000	34.205	31.690	65.895	-4.305	70.200	PEAK

Note:

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

Site : CB4-H	**Time : 2017/03/08**
Limit : FCC Part90	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 12V**
EUT : V2X DSRC Module	**Note : Mode 1: Transmit-ANT1_5920MHz**

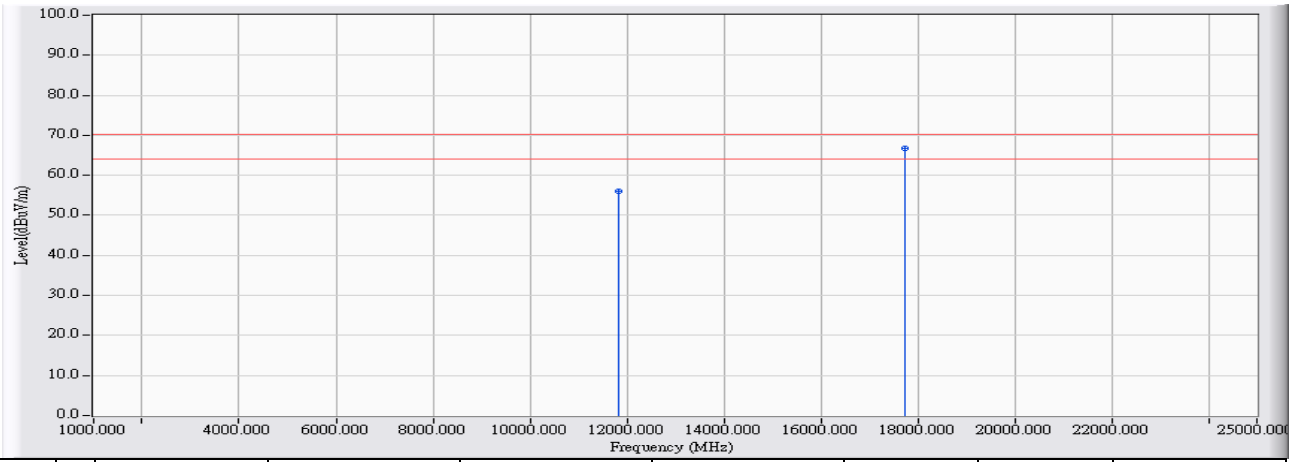


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11849.000	25.087	30.150	55.237	-14.963	70.200	PEAK
2	*	17767.000	35.358	32.220	67.578	-2.622	70.200	PEAK

Note:

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

Site : CB4-H	**Time : 2017/03/08**
Limit : FCC Part90	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 12V**
EUT : V2X DSRC Module	**Note : Mode 1: Transmit-ANT1_5920MHz**

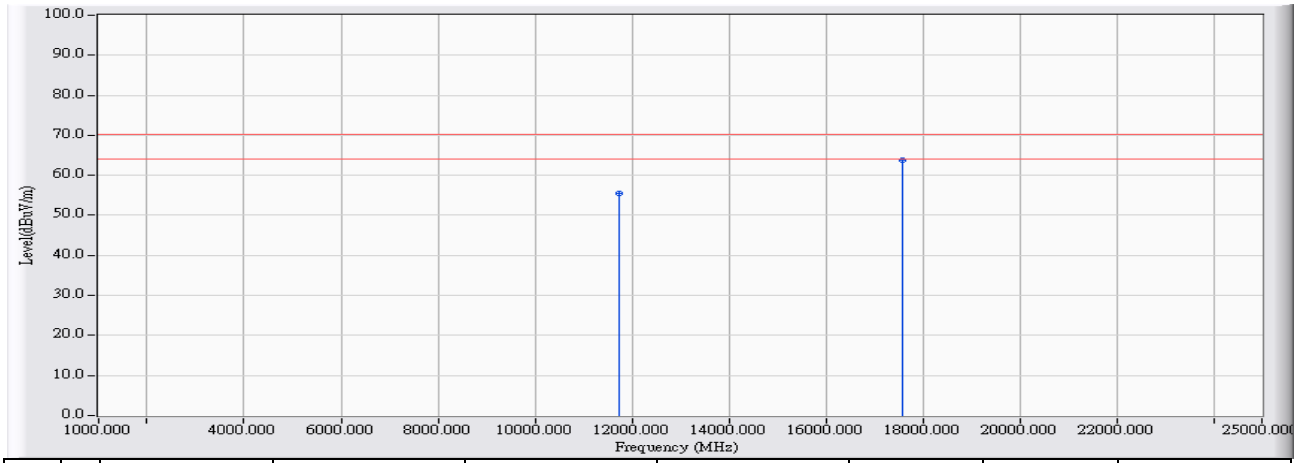


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11840.000	25.078	30.830	55.907	-14.293	70.200	PEAK
2	*	17751.000	35.125	31.580	66.705	-3.495	70.200	PEAK

Note:

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

Site : CB4-H	**Time : 2017/03/08**
Limit : FCC Part90	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 12V**
EUT : V2X DSRC Module	**Note : Mode 2: Transmit-ANT2_5860MHz**

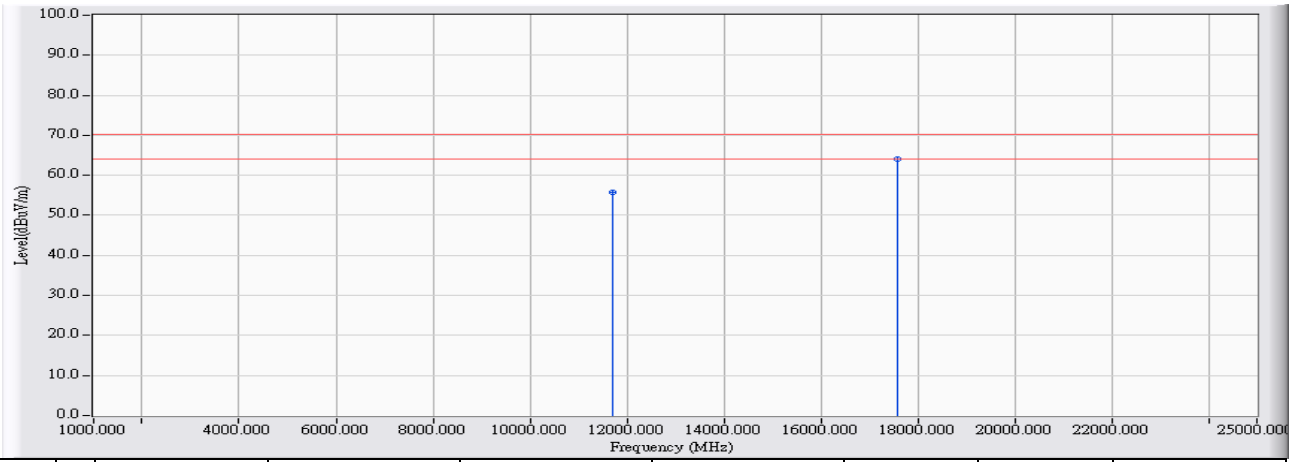


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11728.000	24.956	30.510	55.466	-14.734	70.200	PEAK
2	*	17579.000	32.613	31.200	63.813	-6.387	70.200	PEAK

Note:

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

Site : CB4-H	**Time : 2017/03/08**
Limit : FCC Part90	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 12V**
EUT : V2X DSRC Module	**Note : Mode 2: Transmit-ANT2_5860MHz**

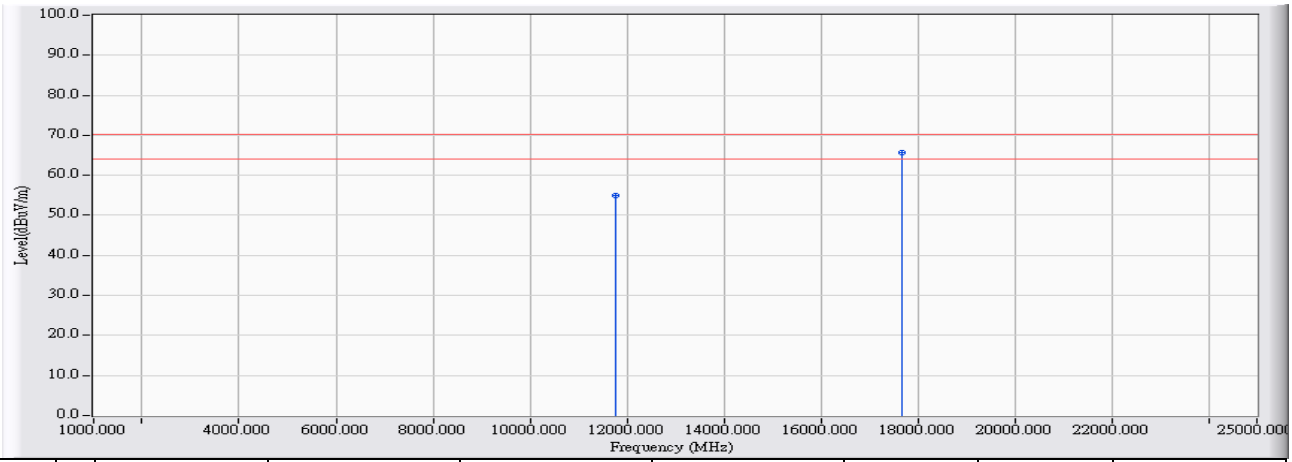


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11718.000	24.945	30.860	55.805	-14.395	70.200	PEAK
2	*	17582.000	32.657	31.520	64.177	-6.023	70.200	PEAK

Note:

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

Site : CB4-H	**Time : 2017/03/08**
Limit : FCC Part90	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 12V**
EUT : V2X DSRC Module	**Note : Mode 2: Transmit-ANT2_5890MHz**

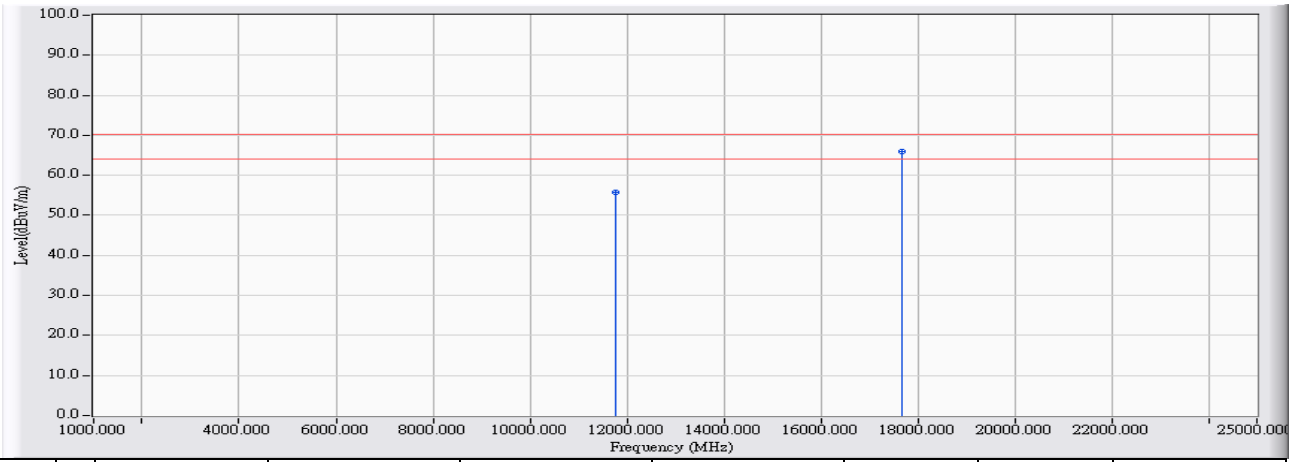


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11766.000	24.997	29.870	54.867	-15.333	70.200	PEAK
2	*	17662.000	33.825	31.730	65.555	-4.645	70.200	PEAK

Note:

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

Site : CB4-H	**Time : 2017/03/08**
Limit : FCC Part90	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 12V**
EUT : V2X DSRC Module	**Note : Mode 2: Transmit-ANT2_5890MHz**

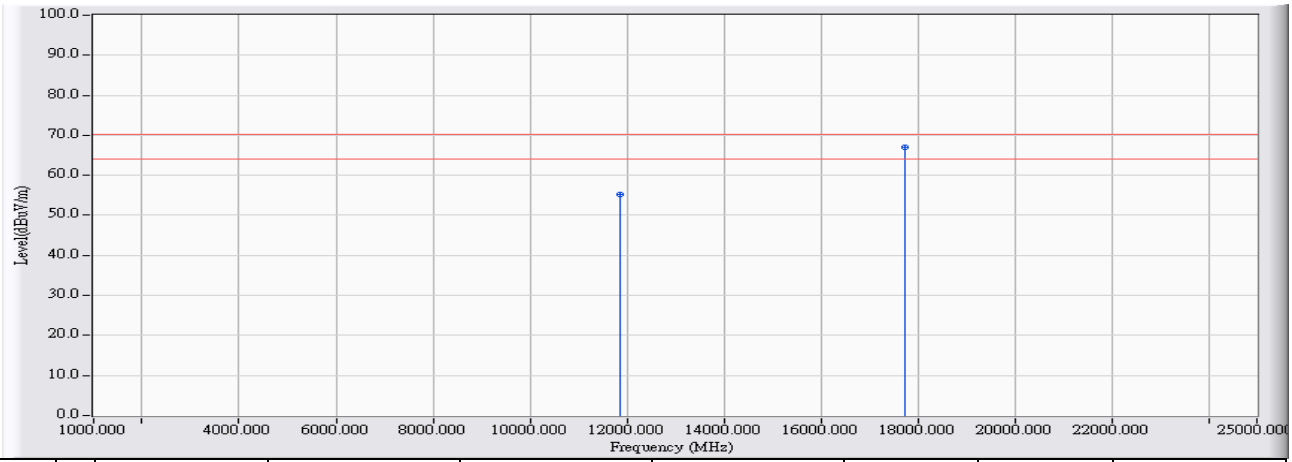


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11780.000	25.012	30.710	55.722	-14.478	70.200	PEAK
2	*	17679.000	34.073	31.900	65.973	-4.227	70.200	PEAK

Note:

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

Site : CB4-H	**Time : 2017/03/08**
Limit : FCC Part90	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - HORIZONTAL	**Power : DC 12V**
EUT : V2X DSRC Module	**Note : Mode 2: Transmit-ANT2_5920MHz**

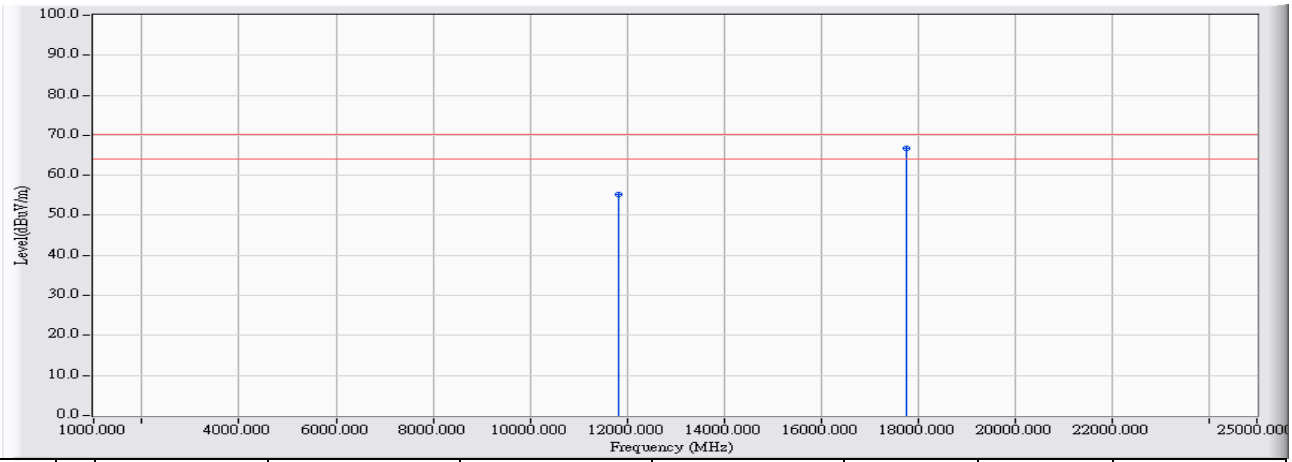


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11850.000	25.088	30.050	55.138	-15.062	70.200	PEAK
2	*	17753.000	35.154	31.790	66.944	-3.256	70.200	PEAK

Note:

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

Site : CB4-H	**Time : 2017/03/08**
Limit : FCC Part90	**Margin : 6**
Probe : CB4-H_FCC_EFS_B432_1-18GHz_3M_1116 - VERTICAL	**Power : DC 12V**
EUT : V2X DSRC Module	**Note : Mode 2: Transmit-ANT2_5920MHz**



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		11837.000	25.074	30.110	55.184	-15.016	70.200	PEAK
2	*	17765.000	35.329	31.440	66.769	-3.431	70.200	PEAK

Note:

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

7. Frequency Stability

7.1. Test Equipment

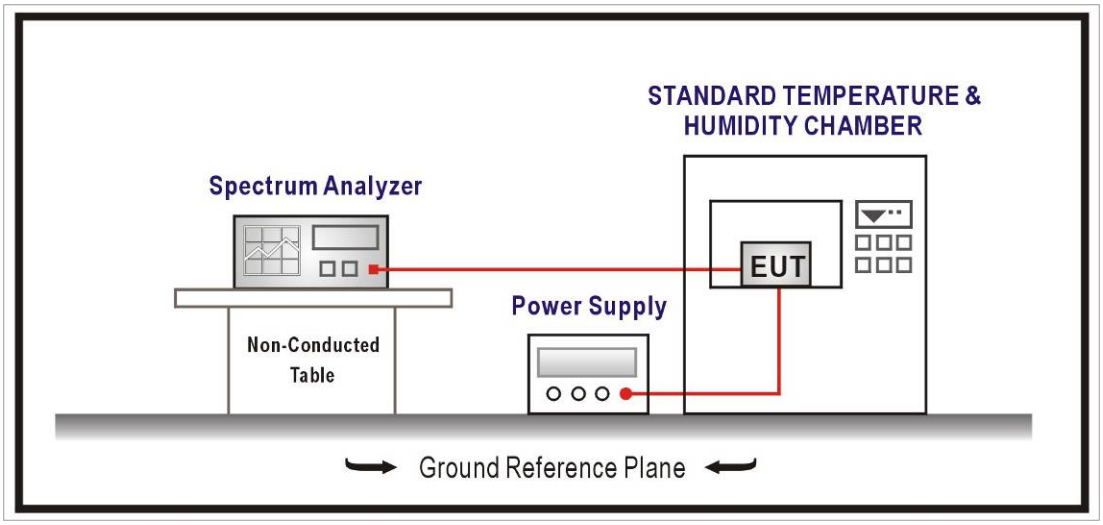
The following test equipments are used during the radiated emission tests:

Frequency Stability / SR10-H

Instrument	Manufacturer	Model No.	Serial No	Next Cal. Date
Signal & Spectrum Analyzer	R&S	FSV40	101049	2018/01/22

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

7.2. Test Setup



7.3. Limits

Temperature range requirements: -20 to +50º C.

Voltage Variation +, -15%

±10 PPM

7.4. Test Procedure

The frequency stability was measured per ANSI/TIA 603-D: 2010 clause 3.2.2

7.5. Uncertainty

The measurement uncertainty is defined as ± 150 Hz

7.6. Test Result

Product	V2X DSRC Module		
Test Item	Frequency Stability		
Test Mode	Mode 1: Transmit-ANT1-5890MHz		
Date of Test	2017/03/08	Test Site	SR10-H

Temperature Interval(°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Limit(ppm)
-20	120	5890.00439	0.7515	10
-10		5890.02944	4.9990	10
0		5890.01042	1.7685	10
10		5889.98788	-2.0578	10
20		5889.99464	-0.9108	10
30		5889.97419	-4.3819	10
40		5889.94887	-8.6811	10
50		5889.99216	-1.3311	10

Temperature Interval(°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Limit(ppm)
25	102	5889.99731	-0.4567	10
	120	5889.97943	-3.4918	10
	138	5889.98207	-3.0434	10

Product	V2X DSRC Module		
Test Item	Frequency Stability		
Test Mode	Mode 2: Transmit-ANT2-5890MHz		
Date of Test	2017/03/08	Test Site	SR10-H

Temperature Interval(°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Limit(ppm)
-20	120	5890.02581	4.3877	10
-10		5890.01433	2.4337	10
0		5890.00571	0.9692	10
10		5889.99577	-0.7174	10
20		5889.98960	-1.7657	10
30		5889.97642	-4.0028	10
40		5889.95877	-6.9995	10
50		5889.98284	-2.9142	10

Temperature Interval(°C)	AC Voltage (V)	Frequency (MHz)	Deviation (ppm)	Limit(ppm)
25	102	5889.99756	-0.4135	10
	120	5889.97289	-4.6033	10
	138	5889.96142	-6.5506	10