FCC Test Report

Equipment	:	**GTGC5401WL**
Brand Name	:	**Genies**
Model No.	:	**GWL5401**
FCC ID	:	**RDCGTGC5401WL**
Standard	:	**47 CFR FCC Part 95**
Operating Band	:	**5850 MHz – 5925 MHz**
Equipment Class	:	**TNB**
Applicant Manufacturer	:	**Genies Technologies Global Co., Ltd. 4F., No.58, Xianzheng 6th Rd., Zhubei City, Hsinchu County 302, Taiwan (R.O.C.)**

The product sample received on Dec. 06, 2012 and completely tested on Dec. 19, 2012. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI/TIA-603-D-2010 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:

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Summary of Test Result

Conformance Test Specifications					
Report Clause	**Ref. Std. Clause**	**Description**	**Measured**	**Limit**	**Result**
3.1.1	15.107	AC Power-line Conducted Emissions	[dBuV]: 4.770MHz 38.65 (Margin 7.35dB) - AV 45.37 (Margin 10.63dB) - QP	FCC 15.107 Class B	Complied
1.1.1	95.631	Emission Types	D1D (OFDM - BPSK,QPSK, 16QAM, 64QAM)	ASTM E2213-03	Complied
1.1.1	95.637	Modulation Standard	DSRC for IEEE 802.11p	ASTM E2213-03	Complied
3.2	95.633	Emission Bandwidth	Bandwidth [MHz] 10M:8.28	Information only	Complied
3.3	95.639	Maximum Transmitter Power	Power [dBm] Power Class C: 5860-5920MHz: 18.64	ASTM E2213-03 8.9.1 Power [dBm] 5860-5920MHz: 28.8	Complied
3.3	95.639	Effective Isotropic Radiated Power (EIRP)	EIRP [dBm] Power Class C 5860-5920MHz: 18.64	ASTM E2213-03 8.9.1 EIRP [dBm] 5860-5920MHz: 33	Complied
3.4	95.635	Transmit Spectrum Mask	Device complies with spectral mask – refer to test data	ASTM E2213-03 8.9.2 Mask Class C	Complied
3.5	2.1051	Transmitter Conducted Unwanted Emissions	9kHz-40GHz Band [dBm]: 592600.00MHz: -25.63 (Margin 0.63dB)	ASTM E2213-03 8.9.2 9kHz-40GHz Bands: =< -25 dBm	Complied
3.6	2.1053	Transmitter Radiated Unwanted Emissions	30MHz-40GHz Band [dBuV/m at 3m]: 11780.000MHz: 69.15 (Margin 1.05dB)	ASTM E2213-03 8.9.2 30MHz-40GHz Bands: =< -25 dBm e.i.r.p. [70.2 dBuV/m at 3m]	Complied
3.7	2.1055	Frequency Stability	3.40 ppm	ASTM E2213-03 8.9.4 ±10 [ppm]	Complied

Revision History

Report No.	Version	Description	Issued Date
FR2N3002	Rev. 01	Initial issue of report	Dec. 28, 2012

1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information							
Frequency Range (MHz)	**IEEE Std. 802.11**	**Ch. Frequency (MHz)**	**Channel Number**	**Transmit Chains (N_{TX})**	**RF Output Power (dBm)**	**Designation of Emission**	**Co-location**
5850-5925	p (10MHz)	5860-5920	172-184 [7]	1	18.64	8M28D1D	N/A
Note 1: IEEE Std. 802.11p-2010 modulation consists of BPSK, QPSK, 16QAM and 64QAM and multiple channel space [5MHz, 10MHz and 20MHz]. Then EUT support 10MHz channel space. Note 2: RF output power specifies that Conducted Output Power. Note 3: Co-location, Co-location is generally defined as simultaneously transmitting (co-transmitting) antennas within 20 cm of each other. (i.e., EUT has simultaneously co-transmitting that operating DSRC and 5GHz.)							

1.1.2 Antenna Information

Antenna Category	
☐	Equipment placed on the market without antennas
☐	Integral antenna (antenna permanently attached)
	☐ Temporary RF connector provided
	☐ No temporary RF connector provided Transmit chains bypass antenna and soldered temporary RF connector provided for connected measurement. In case of conducted measurements the transmitter shall be connected to the measuring equipment via a suitable attenuator and correct for all losses in the RF path.
☒	External antenna (dedicated antennas)
	☒ Single power level with corresponding antenna(s).
	☐ Multiple power level and corresponding antenna(s).
	☒ RF connector provided
	☒ Unique antenna connector. (e.g., MMCX, U.FL, IPX, and RP-SMA, RP-N type…)
	☐ Standard antenna connector. (e.g., SMA, N, BNC, and TNC type…)

Antenna General Information			
No.	**Ant. Cat.**	**Ant. Type**	**Gain (dBi)**
1	External	Dipole	0

1.1.3 Type of EUT

Identify EUT	
EUT Serial Number	N/A
Presentation of Equipment	☐ Production ; ☒ Pre-Production ; ☐ Prototype

Type of EUT	
☒	Stand-alone
☐	Combined (EUT where the radio part is fully integrated within another device) Combined Equipment - Brand Name / Model No.: …
☐	Plug-in radio (EUT intended for a variety of host systems) Host System - Brand Name / Model No.: …
☐	Other:

1.1.4 Test Signal Duty Cycle

Operated Mode for Worst Duty Cycle	
☐ Operated normally mode for worst duty cycle	
☒ Operated test mode for worst duty cycle	
Test Signal Duty Cycle (x)	**Power Duty Factor [dB] – (10 log 1/x)**
☒ 100% - IEEE 802.11p (10M)	0

1.1.5 EUT Operational Condition

Supply Voltage	☐ AC mains	☒ DC	
Type of DC Source	☐ Internal DC supply	☒ External DC adapter	☐ Battery
Operational Voltage	☒ Vnom (110 V)	☒ Vmax (126.5 V)	☒ Vmin (93.5 V)
Operational Climatic	☒ Tnom (20°C)	☒ Tmax (50°C)	☒ Tmin (-20°C)

1.2 Support Equipment

Support Equipment- AC Conduction				
No.	**Equipment**	**Brand Name**	**Model Name**	**Serial No.**
1	Notebook	DELL	E5500	DoC
2	(USB) Mouse	Microsoft	1113	DoC
3	iPod nano	Apple	A1199	N/A
4	DC Power Supply	GW	GTC-6030D	--
5	Test Fixture	--	--	--

Support Equipment- Radiated Emission				
No.	**Equipment**	**Brand Name**	**Model Name**	**Serial No.**
1	Notebook	DELL	E5500	DoC
2	Test Fixture	--	--	--
3	DC Power Supply (Remote Workstation)	GW	GTC-6030D	--

1.3 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR FCC Part 95
- ANSI/TIA-603-D-2010
- FCC KDB 971168
- FCC KDB 662911
- FCC KDB 412172

1.4 Testing Location Information

Testing Location					
☒	HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-327-0973			
Test Condition		**Test Site No.**	**Test Engineer**	**Test Environment**	**Test Date**
RF Conducted		TH01-HY	Ian	25.1°C / 34%	20-Nov.-12
AC Conduction		CO01-HY	David	23.4°C / 47.6%	07-Dec.-12
Radiated Emission		03CH02-HY	Daniel	25°C / 56%	06-Dec.-12 19-Dec.-12

1.5 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Measurement Uncertainty			
Test Item		**Uncertainty**	**Limit**
AC power-line conducted emissions		±2.26 dB	N/A
Emission bandwidth		±1.42 %	N/A
RF output power, conducted		±0.63 dB	N/A
Unwanted emissions, conducted	30 – 1000 MHz	±0.51 dB	N/A
	1 – 18 GHz	±0.67 dB	N/A
	18 – 40 GHz	±0.83 dB	N/A
	40 – 200 GHz	N/A	N/A
All emissions, radiated	30 – 1000 MHz	±2.56 dB	N/A
	1 – 18 GHz	±3.59 dB	N/A
	18 – 40 GHz	±3.82 dB	N/A
	40 – 200 GHz	N/A	N/A
Temperature		±0.8 °C	N/A
Humidity		±3 %	N/A
DC and low frequency voltages		±3 %	N/A
Time		±1.42 %	N/A
Duty Cycle		±1.42 %	N/A

2 Test Configuration of EUT

2.1 The Worst Case Modulation Configuration

Worst Modulation Used for Conformance Testing				
Modulation Mode	**Transmit Chains (N_{TX})**	**Data Rate**	**Worst Data Rate**	**Output Power (dBm)**
11p-10M	1	3-27 Mbps	9 Mbps	18.64
Note 1: Modulation modes consist of below configuration: 11p-10M: 802.11p10MHz bandwidth				

2.2 Test Channel Frequencies Configuration

Test Channel Frequencies Configuration	
IEEE Std. 802.11	**Test Channel Frequencies (MHz) – FX (Frequencies Abbreviations)**
11p-10M	5860-(F1), 5890-(F2), 5920-(F3), 5900-(F4), 5910-(F5)

2.3 The Worst Case Power Setting Parameter

The Worst Case Power Setting Parameter (5150-5250 MHz band)									
Test Software Version	Art_5.3								
Modulation Mode	**N_{TX}**	**Test Frequency (MHz)**							
		NCB: 10MHz					**NCB: 20MHz**		
		5860	**5890**	**5920**	**5900**	**5910**	**5875**	**5905**	**-**
11p-10M	1	19	19	18	19	16.5	-	-	-

2.4 The Worst Case Measurement Configuration

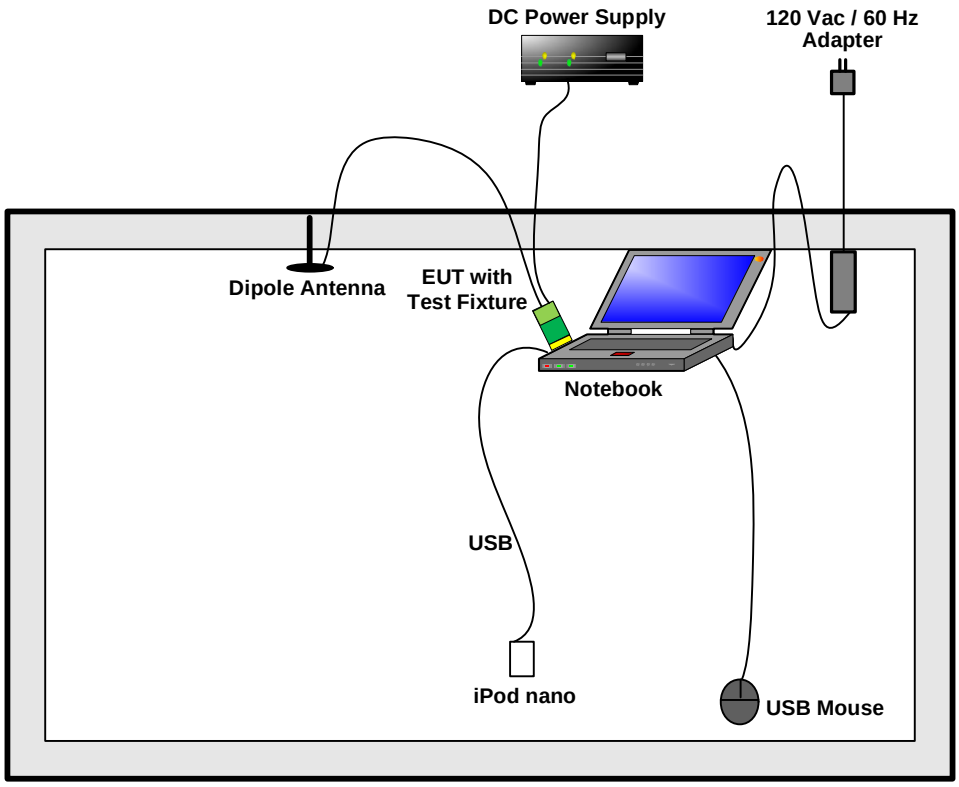
The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
Operating Mode	Operating Mode Description
1	DC Power & Radio link (DSRC)

The Worst Case Mode for Following Conformance Tests	
Tests Item	Emission Bandwidth, Maximum Transmitter Power, Effective Isotropic Radiated Power (EIRP), Transmit Spectrum Mask Transmitter Conducted Unwanted Emissions, Frequency Stability
Test Condition	Conducted measurement at transmit chains
Modulation Mode	11p-10M, 11p-20M

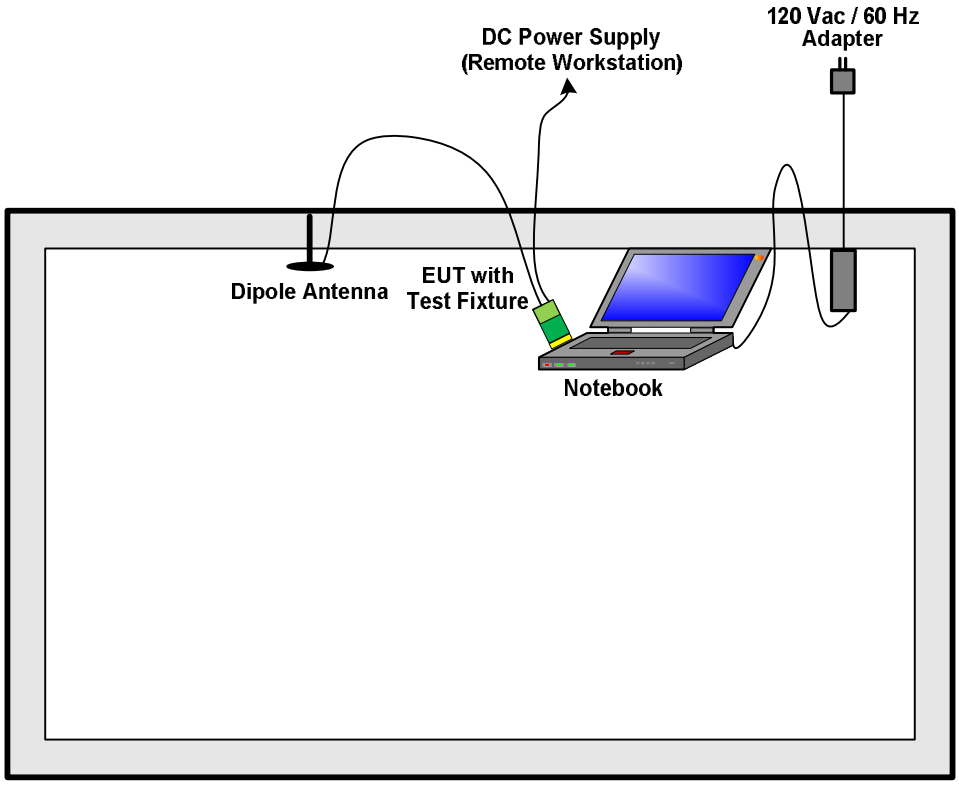
The Worst Case Mode for Following Conformance Tests	
Tests Item	Transmitter Radiated Unwanted Emissions
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.
User Position	☒ EUT will be placed in fixed position.
	☐ EUT will be placed in mobile position and operating multiple positions. EUT shall be performed two orthogonal planes.
	☐ EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions. EUT shall be performed two or three orthogonal planes.
Operating Mode < 1GHz	☒ 1. DC Power & Radio link (DSRC)
Modulation Mode	11p-10M

2.5 Test Setup Diagram

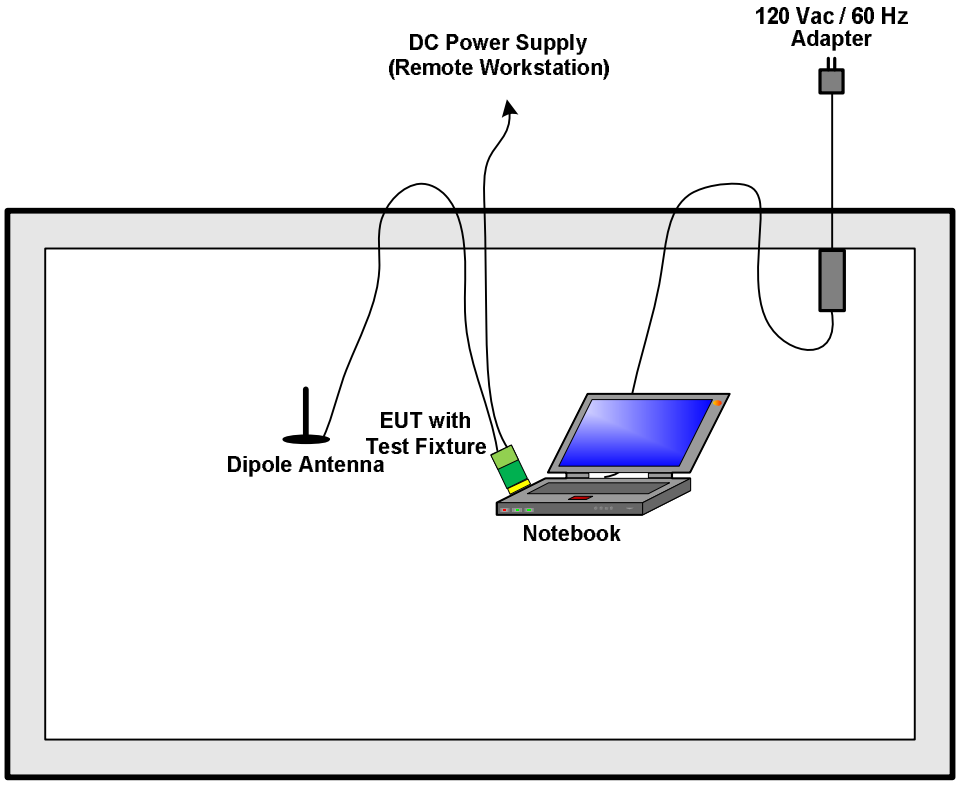
Test Setup Diagram- AC Conduction	
Operating Mode 1	DC Power & Radio link (DSRC)



Test Setup Diagram- Radiated Emission Below 1GHz	
Operating Mode 1	DC Power & Radio link (DSRC)



Test Setup Diagram- Radiated Emission Above 1GHz	
Operating Mode 1	DC Power & Radio link (DSRC)



3 Transmitter Test Result

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit [Class A]		
Frequency Emission (MHz)	**Quasi-Peak**	**Average**
0.15-0.5	79	66
0.5-30	73	60
AC Power-line Conducted Emissions Limit [Class B]		
Frequency Emission (MHz)	**Quasi-Peak**	**Average**
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm of the frequency.		

3.1.2 Measuring Instruments

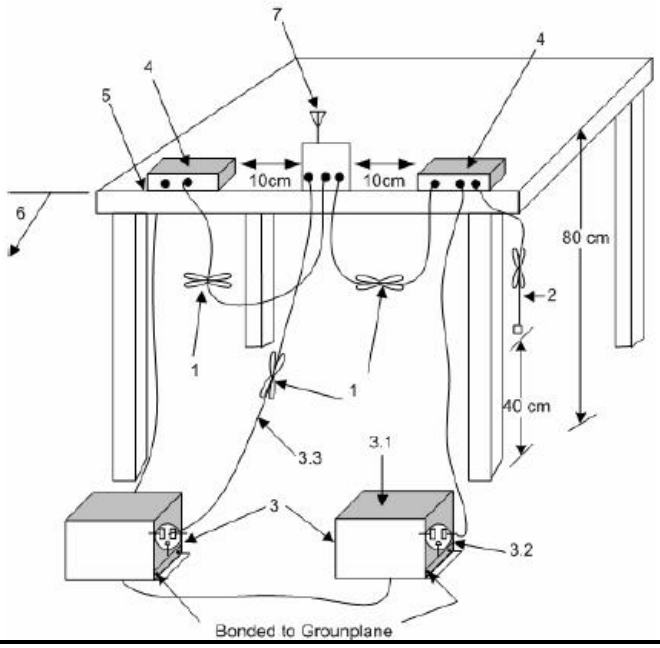
Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

Test Method
☒ Refer as ANSI/TIA-603-D-2010, clause 2.1.3 for AC power-line conducted emissions.

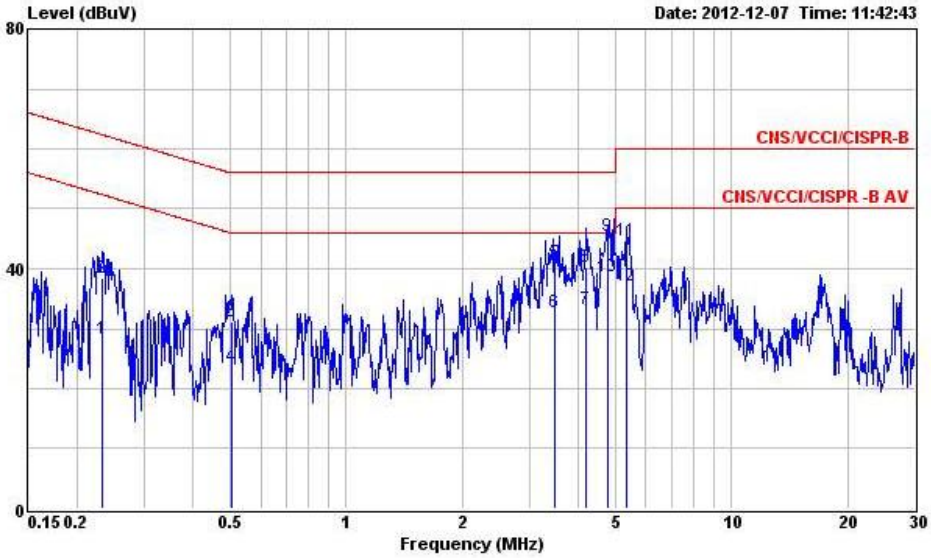
3.1.4 Test Setup

AC Power-line Conducted Emissions



3.1.5 Test Result of AC Power-line Conducted Emissions

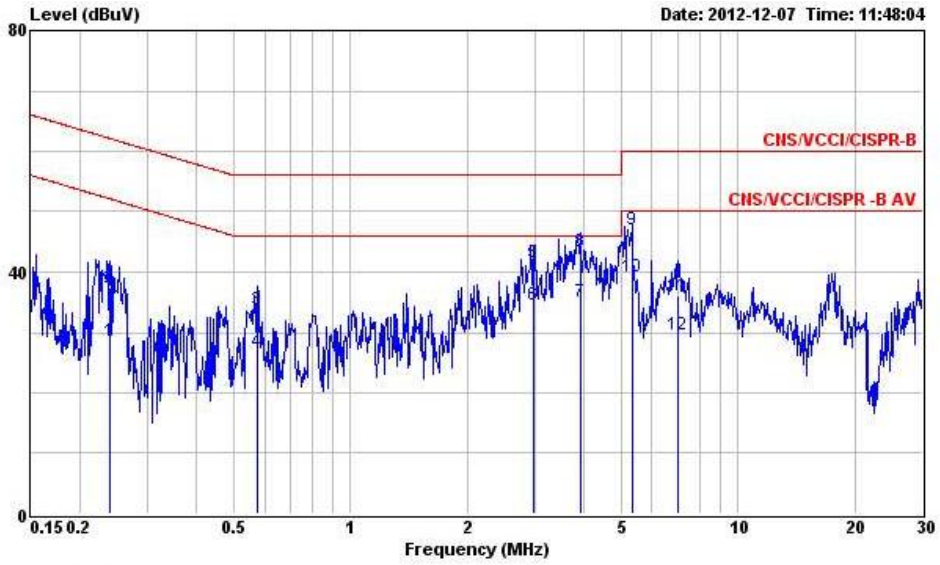
AC Power-line Conducted Emissions Result			
Operating Mode	1	**Power Phase**	Neutral
Operating Function	DC Power & Radio link (DSRC)		



	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.233	28.23	-24.11	52.34	27.99	0.12	0.12	Average
2	0.233	38.43	-23.91	62.34	38.19	0.12	0.12	QP
3	0.505	31.06	-24.94	56.00	30.76	0.13	0.17	QP
4	0.505	23.60	-22.40	46.00	23.30	0.13	0.17	Average
5	3.485	40.94	-15.06	56.00	40.56	0.20	0.18	QP
6	3.485	32.61	-13.39	46.00	32.23	0.20	0.18	Average
7	4.200	33.31	-12.69	46.00	32.90	0.22	0.19	Average
8	4.200	40.21	-15.79	56.00	39.80	0.22	0.19	QP
9	4.770	45.37	-10.63	56.00	44.96	0.23	0.18	QP
10	4.770	38.65	-7.35	46.00	38.24	0.23	0.18	Average
11	5.360	44.60	-15.40	60.00	44.19	0.24	0.17	QP
12	5.360	37.19	-12.81	50.00	36.78	0.24	0.17	Average

Note 1: “>20dB” means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found emissions (No emissions were detected.)

AC Power-line Conducted Emissions Result			
Operating Mode	1	**Power Phase**	Line
Operating Function	DC Power & Radio link (DSRC)		



	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.239	28.68	-23.45	52.13	28.47	0.08	0.13	Average
2	0.239	37.52	-24.61	62.13	37.31	0.08	0.13	QP
3	0.573	33.84	-22.16	56.00	33.58	0.10	0.16	QP
4	0.573	26.68	-19.32	46.00	26.42	0.10	0.16	Average
5	2.980	41.64	-14.36	56.00	41.31	0.17	0.16	QP
6	2.980	34.52	-11.48	46.00	34.19	0.17	0.16	Average
7	3.920	34.98	-11.02	46.00	34.59	0.19	0.20	Average
8	3.920	43.50	-12.50	56.00	43.11	0.19	0.20	QP
9	5.330	46.90	-13.10	60.00	46.51	0.22	0.17	QP
10	5.330	39.26	-10.74	50.00	38.87	0.22	0.17	Average
11	6.990	36.06	-23.94	60.00	35.68	0.24	0.14	QP
12	6.990	29.72	-20.28	50.00	29.34	0.24	0.14	Average

Note 1: “>20dB” means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found emissions (No emissions were detected.)

3.2 Emission Bandwidth

3.2.1 Emission Bandwidth Limit

Emission Bandwidth Limit
N/A. Information only
Note 1: 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 onditions.

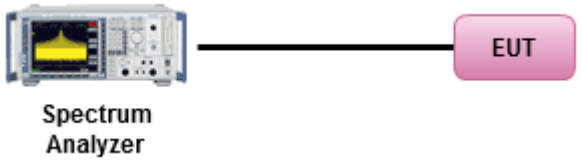
3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

Test Method			
☒	For the emission bandwidth shall be measured using one of the options below:		
	☒	Refer as ANSI/TIA-603-D, clause 1.3.4.4 for test bandwidth.	
	☐	Refer as KDB 971168, clause 3 for signal bandwidth.	
	☐	Refer as IC RSS-Gen, clause 6.4.1 for occupied bandwidth.	
	☐	Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.	
☒	For conducted measurement.		
	☒	The EUT supports single transmit chain and measurements performed on this transmit chain.	
	☒	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.	
	☒	The EUT supports multiple transmit chains using options given below:	
		☐	Option 1: Multiple transmit chains measurements need to be performed on one of the active transmit chains (antenna outputs). All measurement had be performed on transmit chains 1.
		☒	Option 2: Multiple transmit chains measurements need to be performed on each transmit chains individually (antenna outputs). All measurement had be performed on all transmit chains.
☐	For radiated measurement. The equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted power level.		

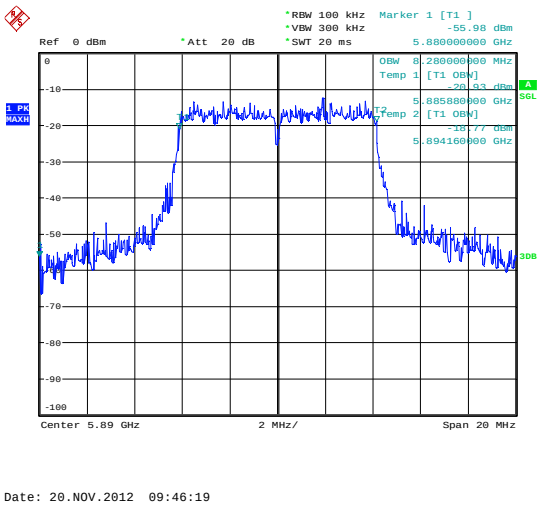
3.2.4 Test Setup

Emission Bandwidth


3.2.5 Test Result of Emission Bandwidth

Emission Bandwidth Result						
Condition			Emission Bandwidth (MHz)			
Modulation Mode	N_{TX}	Freq. (MHz)	99% Bandwidth			
			Chain- Port 1	Chain- Port 2	Chain- Port 3	Chain- Port 4
11p-10M	1	5860	5.52	-	-	-
11p-10M	1	5890	8.28	-	-	-
11p-10M	1	5920	8.28	-	-	-
Limit			N/A			
Result			Complied			
Note 1: N_{TX} = Number of Transmit Chains						

Worst Emission Bandwidth Plots
11p-10M



3.3 Maximum Transmitter Power

3.3.1 Maximum Transmitter Power Limit

5850–5925 MHz Band				
Portable DSRCS-OBUs is 1.0 mW, other as following as:				
Frequency Range	**Channel**	**BW: 5/10MHz**	**Cond. Power**	**EIRP Power**
5855-5865	172	5860 MHz	28.8 dBm	33 dBm
5865-5875	174	5870 MHz	28.8 dBm	33 dBm
5875-5885	176	5880 MHz	28.8 dBm	33 dBm
5885-5895	178	5890 MHz	28.8 dBm	33 dBm
5895-5905	180	5900 MHz	20 dBm	23 dBm
5905-5915	182	5910 MHz	20 dBm	23 dBm
5915-5925	184	5920 MHz	28.8 dBm	33 dBm
Frequency Range	**Channel**	**BW:20MHz**	**Cond. Power**	**EIRP Power**
5855-5865	175	5875 MHz	20 dBm	23 dBm
5865-5875	181	5905 MHz	20 dBm	23 dBm
Note 1: Conducted power could overcome limits but EIRP power shall under limits Note 2: Refer as ASTM E2213-03 Clause 8.9.1, FCC Part 95.639 & FCC ET Docket No. 98-95.				

3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

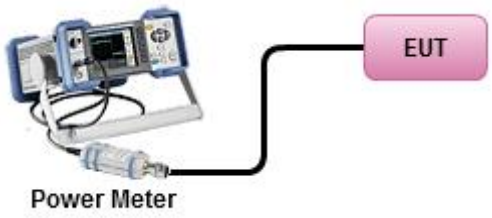
3.3.3 Test Procedures

Test Method	
☒	Maximum Transmitter Power
☒	Refer as ANSI/TIA-603-D, clause 3.2.1 for power meter measurement.
☐	Refer as KDB 971168, clause 4 average power over the fundamental signal bandwidth.
☒	Effective Isotropic Radiated Power (EIRP)
☒	Refer as KDB 412172, clause 1.3.2 following as power approach. e.i.r.p.= P_T+G_T.
☐	Refer as KDB 412172, clause 1.3.1 following as field strength approach. e.i.r.p.= $(E \times d)^2 / 30$.
☒	For conducted measurement.
☒	The EUT supports single transmit chain and measurements performed on this transmit chain.
☒	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
☒	The EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.

Test Method	
☐ For radiated measurement.	
	☐ Refer as KDB 412172, clause 2.2 following eirp can be used radiated test configuration.
	☐ Refer as KDB 412172, clause 5 following eirp can be directly determined using the field strength.
	☐ Refer as KDB 412172, clause 6 following eirp can be used signal/antenna substitution techniques.

3.3.4 Test Setup

RF Output Power (Power Meter)



3.3.5 Directional Gain for Power Measurement

Directional Gain (DG) Result					
Transmit Chains No.		1	-	-	-
Maximum G_{ANT} (dBi)		0	-	-	-
Modulation Mode	**DG (dBi)**	**N_{TX}**	**N_{SS}**	**STBC**	**Array Gain (dB)**
11p-10M	0	1	1	-	-

Note 1: For all transmitter outputs with equal antenna gains, directional gain is to be computed as follows:
Any transmit signals are correlated, Directional Gain = $G_{ANT} + 10 \log(N_{TX})$
All transmit signals are completely uncorrelated, Directional Gain = G_{ANT}
Note 2: For all transmitter outputs with unequal antenna gains, directional gain is to be computed as follows:
Any transmit signals are correlated, Directional Gain =$10 \log[(10^{G1/20} +\ldots + 10^{GN/20})^2 /N_{TX}]$
All transmit signals are completely uncorrelated, Directional Gain = $10 \log[(10^{G1/10} +\ldots + 10^{GN/10})/N_{TX}]$
Note 3: For Spatial Multiplexing, Directional Gain (DG) = $G_{ANT} + 10 \log(N_{TX}/N_{SS})$,
where Nss = the number of independent spatial streams data.
Note 4: For CDD transmissions, directional gain is calculated as power measurements:
Directional Gain (DG) = G_{ANT} + Array Gain, where Array Gain is as follows:
Array Gain = 0 dB (i.e., no array gain) for $N_{TX} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{TX};

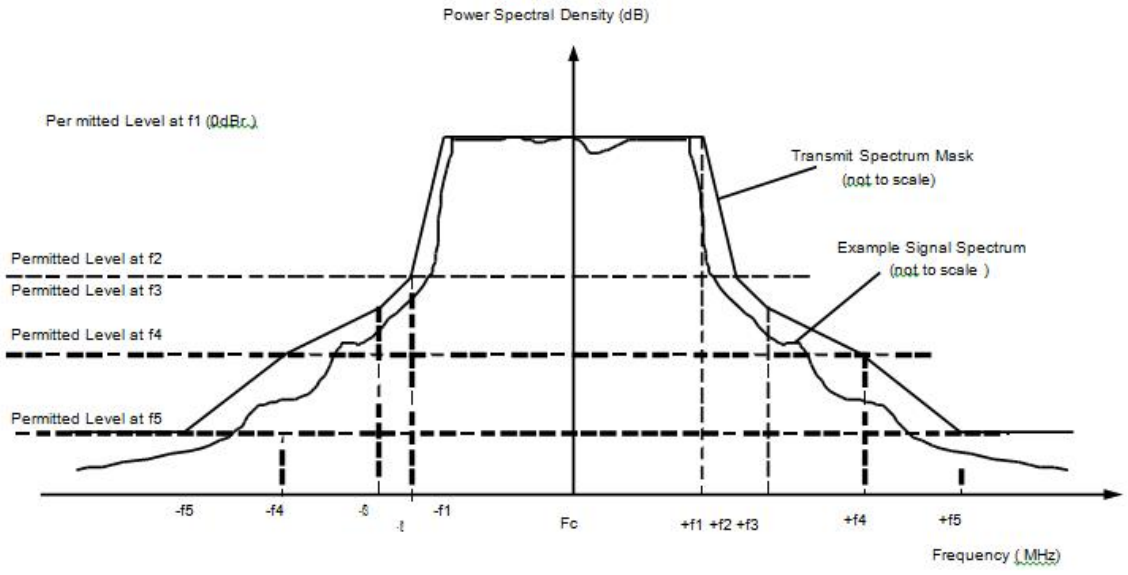
3.3.6 Test Result of Maximum Transmitter Power

Maximum Conducted Output Power (5150-5250MHz band)											
Condition			RF Output Power (dBm)								
Modulation Mode	N_{TX}	Freq. (MHz)	Chain Port 1	Chain Port 2	Chain Port 3	Chain Port 4	Sum Chain	Power Limit	DG (dBi)	EIRP Power	EIRP Limit
11p-10M	1	5860	18.61	-	-	-	18.61	28.8	0	18.61	33
11p-10M	1	5890	18.64	-	-	-	18.64	28.8	0	18.64	33
11p-10M	1	5920	17.32	-	-	-	17.32	28.8	0	17.32	33
11p-10M	1	5900	17.42	-	-	-	17.42	20	0	17.42	23
11p-10M	1	5910	17.68	-	-	-	17.68	20	0	17.68	23
Result			Complied								

3.4 Transmit Spectrum Mask

3.4.1 Transmit Spectrum Mask Limit

5850–5925 MHz Band					
Portable DSRCS-OBUs is 1.0 mW, other as following as:					
STA transmit power classification	**Maximum STA transmit power (mW)**		**Maximum permitted EIRP (dBm)**		
A	1		23		
B	10		23		
C	100		33		
D	760		33 for non-government / 44.8 for government		
STA transmit power classification	**± 4.5 MHz offset (±f1)**	**± 5.0 MHz offset (±f2)**	**± 5.5 MHz offset (±f3)**	**± 10 MHz offset (±f4)**	**± 15 MHz offset (±f5)**
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



Note 1: Refer as ASTM E2213-03 Clause 8.9.2.

3.4.2 Measuring Instruments

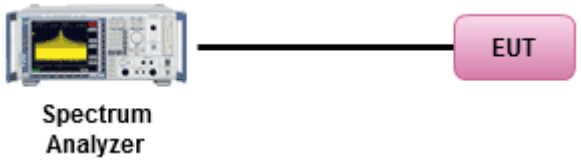
Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

Test Method		
☒	The 0 dBr level is the maximum power spectral density measured in the channel. The measurements of transmit spectral density are made using 100 kHz resolution bandwidth and 30 kHz video bandwidth.	
☒	For conducted measurement.	
	☒	The EUT supports single transmit chain and measurements performed on this transmit chain.
	☒	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.
	☒	The EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, when testing emissions against relative emission limits, tests may be performed on each output individually without summing or adding 10 log(N) if the measurements are made relative to the in-band emissions on the individual outputs. All measurements need only to be performed on one of the active transmit chains (antenna outputs). All measurement had be performed on transmit chains 1.
☐	For radiated measurement. The equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted power level.	

3.4.4 Test Setup

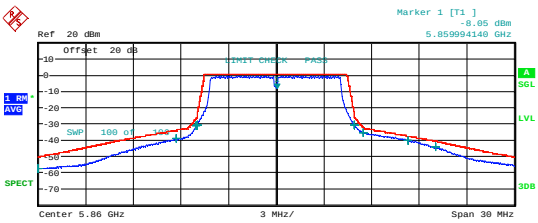
Transmit Spectrum Mask



3.4.5 Test Result of Transmit Spectrum Mask

Transmit Spectrum Mask Result					
Ant. Gain (dBi)			0	Transmit Spectrum Mask	
Condition	Modulation Mode	N_{TX}	Freq. (MHz)	Chain-Port 1	Result
TnomVnom	11p-10M	1	5860	Under Spectral Mask	Complied
TnomVnom	11p-10M	1	5890	Under Spectral Mask	Complied
TnomVnom	11p-10M	1	5920	Under Spectral Mask	Complied
TnomVnom	11p-10M	1	5900	Under Spectral Mask	Complied
TnomVnom	11p-10M	1	5910	Under Spectral Mask	Complied

11p-10M – F1



Tx Channel Bandwidth 100 kHz Peak Power -0.51 dBm

Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	PwrRel [dBc]	ΔLimit [dB]
-15.000 M	-10.000 M	100.00 k	5.845000 G	-57.43	-56.92	-6.92
-10.000 M	-5.500 M	100.00 k	5.853700 G	-39.03	-38.52	-5.10
-5.500 M	-5.000 M	100.00 k	5.854960 G	-31.21	-30.70	-4.22
-5.000 M	-4.500 M	100.00 k	5.855020 G	-30.40	-29.88	-3.88
4.500 M	5.000 M	100.00 k	5.864920 G	-30.60	-30.09	-8.25
5.000 M	5.500 M	100.00 k	5.865460 G	-35.04	-34.53	-3.01
5.500 M	10.000 M	100.00 k	5.868280 G	-39.76	-39.24	-2.30
10.000 M	15.000 M	100.00 k	5.870020 G	-44.12	-43.61	-3.61

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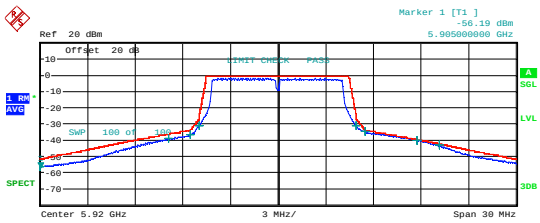
11p-10M – F3



Tx Channel Bandwidth 100 kHz Peak Power -1.84 dBm

Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	PwrRel [dBc]	ΔLimit [dB]
-15.000 M	-10.000 M	100.00 k	5.905000 G	-56.19	-54.35	-4.35
-10.000 M	-5.500 M	100.00 k	5.913100 G	-38.99	-37.14	-2.66
-5.500 M	-5.000 M	100.00 k	5.914500 G	-36.53	-34.69	-2.69
-5.000 M	-4.500 M	100.00 k	5.915020 G	-31.24	-29.40	-3.40
4.500 M	5.000 M	100.00 k	5.924920 G	-31.31	-29.46	-7.62
5.000 M	5.500 M	100.00 k	5.925460 G	-34.64	-32.79	-1.27
5.500 M	10.000 M	100.00 k	5.928760 G	-39.65	-37.81	-0.01
10.000 M	15.000 M	100.00 k	5.930140 G	-43.03	-41.19	-0.91

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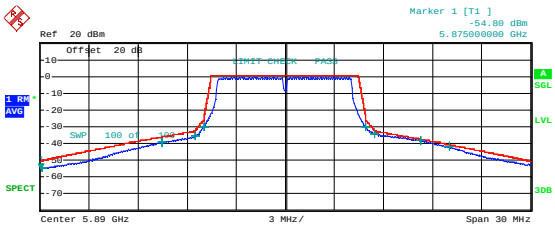
11p-10M – F2



Tx Channel Bandwidth 100 kHz Peak Power -0.55 dBm

Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	PwrRel [dBc]	ΔLimit [dB]
-15.000 M	-10.000 M	100.00 k	5.875120 G	-54.51	-53.96	-4.20
-10.000 M	-5.500 M	100.00 k	5.882440 G	-39.22	-38.67	-3.01
-5.500 M	-5.000 M	100.00 k	5.884500 G	-35.51	-34.96	-2.96
-5.000 M	-4.500 M	100.00 k	5.885020 G	-29.90	-29.35	-3.35
4.500 M	5.000 M	100.00 k	5.894920 G	-30.15	-29.60	-7.76
5.000 M	5.500 M	100.00 k	5.895460 G	-33.88	-33.33	-1.81
5.500 M	10.000 M	100.00 k	5.898280 G	-38.20	-37.65	-0.71
10.000 M	15.000 M	100.00 k	5.900020 G	-41.88	-41.33	-1.33

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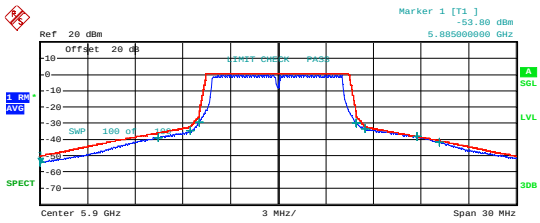
11p-10M – F4

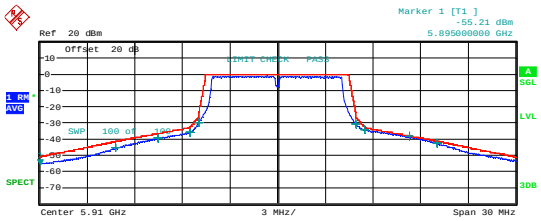


Tx Channel Bandwidth 100 kHz Peak Power -0.40 dBm

Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	PwrRel [dBc]	ΔLimit [dB]
-15.000 M	-10.000 M	100.00 k	5.885000 G	-53.80	-53.41	-3.41
-10.000 M	-5.500 M	100.00 k	5.892440 G	-38.49	-38.09	-2.43
-5.500 M	-5.000 M	100.00 k	5.894500 G	-34.84	-34.44	-2.44
-5.000 M	-4.500 M	100.00 k	5.895020 G	-29.47	-29.07	-3.07
4.500 M	5.000 M	100.00 k	5.904920 G	-29.81	-29.42	-7.58
5.000 M	5.500 M	100.00 k	5.905460 G	-33.33	-32.93	-1.41
5.500 M	10.000 M	100.00 k	5.908760 G	-38.20	-37.80	-0.01
10.000 M	15.000 M	100.00 k	5.910140 G	-41.45	-41.06	-0.78

Date: 20.NOV.2012 11:18:10

11p-10M – F5



Tx Channel
Bandwidth 100 kHz Peak Power -1.03 dBm

Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	PwrRel [dBc]	ΔLimit [dB]
-15.000 M	-10.000 M	100.00 k	5.899800 G	-45.20	-44.17	-3.77
-10.000 M	-5.500 M	100.00 k	5.902440 G	-39.21	-38.18	-2.52
-5.500 M	-5.000 M	100.00 k	5.904500 G	-35.61	-34.59	-2.59
-5.000 M	-4.500 M	100.00 k	5.905020 G	-30.21	-29.19	-3.19
4.500 M	5.000 M	100.00 k	5.914920 G	-30.61	-29.58	-7.74
5.000 M	5.500 M	100.00 k	5.915460 G	-34.17	-33.14	-1.62
5.500 M	10.000 M	100.00 k	5.918280 G	-38.35	-37.32	-0.38
10.000 M	15.000 M	100.00 k	5.920020 G	-42.18	-41.16	-1.16

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3.5 Transmitter Conducted Unwanted Emissions

3.5.1 Transmitter Conducted Unwanted Emissions Limit

Transmitter Conducted Unwanted Emissions Limit
The power of any emission outside a licensee'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).
Note 1: Refer as ASTM E2213-03 Clause 8.9.2.

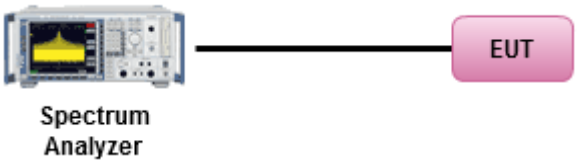
3.5.2 Measuring Instruments

Refer test equipment and calibration data list in test report clause 4.

3.5.3 Test Procedures

Test Method			
☒	Refer as ANSI/TIA-603-D-2010, clause 3.2.13 for conducted measurement.		
☐	In case a narrower measurement bandwidth was used, the following conversion formula has to be applied: (e.g. if reference bandwidth 1 MHz and measurement bandwidth 100 kHz, then measurement bandwidth conversion factor is 10 dB) $B = A + 10 \log (BW_{ref} / BW_{measured})$ • A is the value at the narrower measurement bandwidth; • B is the value referred to the reference bandwidth;		
☒	For conducted measurement.		
	☒	For conducted measurements on devices with single transmit chain.	
	☐	For conducted measurements on devices with multiple transmit chains using options given below:	
		☐	Option 1: measure and sum the spectra across the transmitter outputs.
		☐	Option 2: N transmitter outputs, then spurious emissions limits on each individual output. Measure and add 10 log (N) dB.

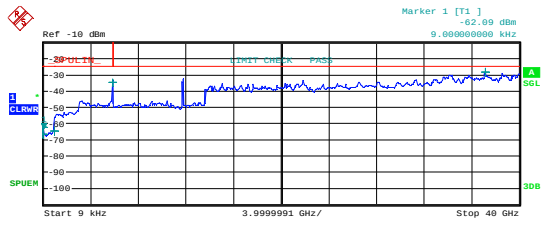
3.5.4 Test Setup

Transmitter Conducted Unwanted Emissions


3.5.5 Test Result of Transmitter Conducted Unwanted Emissions

Transmitter Conducted Unwanted Emissions Result							
Ant. Gain (dBi)			0	Transmitter Conducted Unwanted Emissions			
Condition	Modulation Mode	N_{TX}	Freq. (MHz)	Unwanted Freq. (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
TnomVnom	11p-10M	1	5860	371164.03	-28.62	3.62	-25
TnomVnom	11p-10M	1	5890	394079.47	-28.53	3.53	-25
TnomVnom	11p-10M	1	5920	592600.00	-25.63	0.63	-25
Result				Complied			

11p-10M – F1



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
9.000 k	150.000 k	1.00 k	9.000000 k	-62.09	-37.09
150.000 k	30.000 M	10.00 k	150.000000 k	-66.33	-41.33
30.000 M	1.000 G	100.00 k	934.161250 M	-64.79	-39.79
1.000 G	5.850 G	1.00 M	5.849394 G	-34.61	-9.61
5.925 G	40.000 G	1.00 M	37.116403 G	-28.62	-3.62

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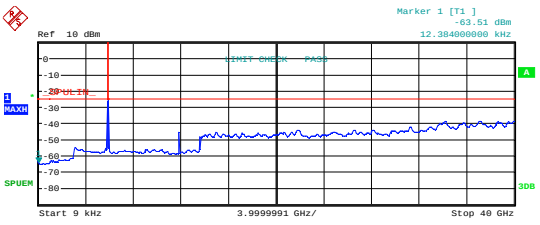
11p-10M – F3



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
9.000 k	150.000 k	1.00 k	12.384000 k	-63.51	-38.51
150.000 k	30.000 M	10.00 k	1.291762 M	-66.28	-41.28
30.000 M	1.000 G	100.00 k	93.777500 M	-63.85	-38.85
1.000 G	5.849 G	1.00 M	3.148713 G	-54.85	-29.85
5.849 G	5.850 G	100.00 k	5.849633 G	-61.22	-36.22
5.925 G	5.926 G	100.00 k	5.925002 G	-26.51	-1.51
5.926 G	40.000 G	1.00 M	5.926000 G	-25.63	-0.63

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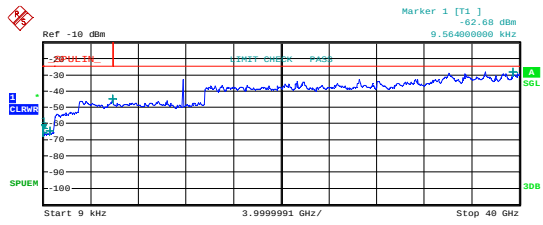
11p-10M – F2



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
9.000 k	150.000 k	1.00 k	9.564000 k	-62.68	-37.68
150.000 k	30.000 M	10.00 k	276.862500 k	-65.94	-40.94
30.000 M	1.000 G	100.00 k	575.261250 M	-64.93	-39.93
1.000 G	5.850 G	1.00 M	5.846969 G	-44.61	-19.61
5.925 G	40.000 G	1.00 M	39.407947 G	-28.53	-3.53

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3.6 Transmitter Radiated Unwanted Emissions

3.6.1 Transmitter Radiated Unwanted Emissions Limit

Transmitter Radiated Unwanted Emissions Limit
The power of any emission outside a licensee'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)] (e.i.r.p. -25dBm [70.2 dBuV/m at 3m]).
Note 1: Refer as ASTM E2213-03 Clause 8.9.2.

3.6.2 Measuring Instruments

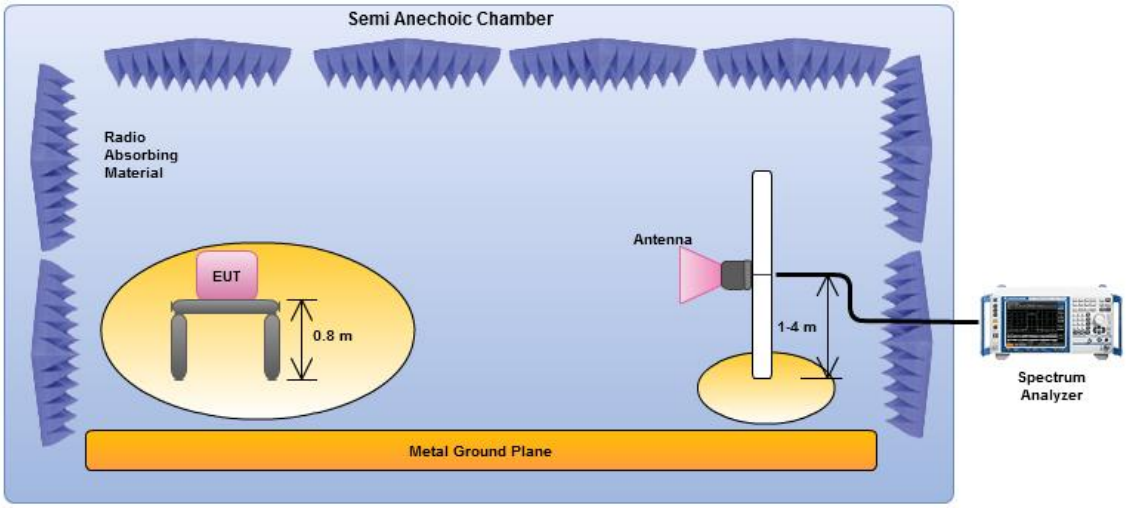
Refer a test equipment and calibration data table in this test report.

3.6.3 Test Procedures

Test Method	
☒	Refer as ANSI/TIA-603-D-2010, clause 3.2.12 for radiated measurement.
☐	In case a narrower measurement bandwidth was used, the following conversion formula has to be applied: (e.g. if reference bandwidth 1 MHz and measurement bandwidth 100 kHz, then measurement bandwidth conversion factor is 10 dB) $B = A + 10 \log (BW_{ref} / BW_{measured})$ • A is the value at the narrower measurement bandwidth; • B is the value referred to the reference bandwidth;
☒	Effective Isotropic Radiated Power (EIRP)
☐	Refer as KDB 412172, clause 1.3.2 following as power approach. e.i.r.p.= P_T+G_T.
☒	Refer as KDB 412172, clause 1.3.1 following as field strength approach. e.i.r.p.= $(E \times d)^2 / 30$.
☐	For radiated measurement.
☐	Refer as KDB 412172, clause 2.2 following eirp can be used radiated test configuration.
☒	Refer as KDB 412172, clause 5 following eirp can be directly determined using the field strength.
☐	Refer as KDB 412172, clause 6 following eirp can be used signal/antenna substitution techniques.

3.6.4 Test Setup

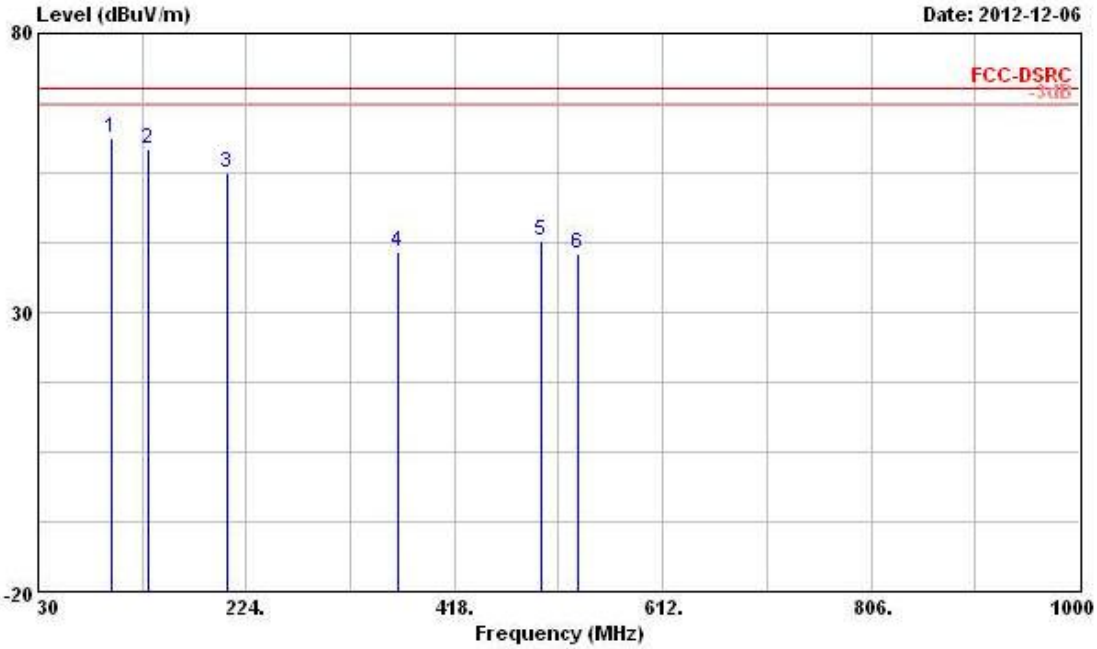
Transmitter Radiated Unwanted Emissions



Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna. Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna and the frequency range of 1 GHz to 40 GHz using a calibrated horn antenna.

3.6.5 Test Result of Transmitter Radiated Unwanted Emissions (Below 1GHz)

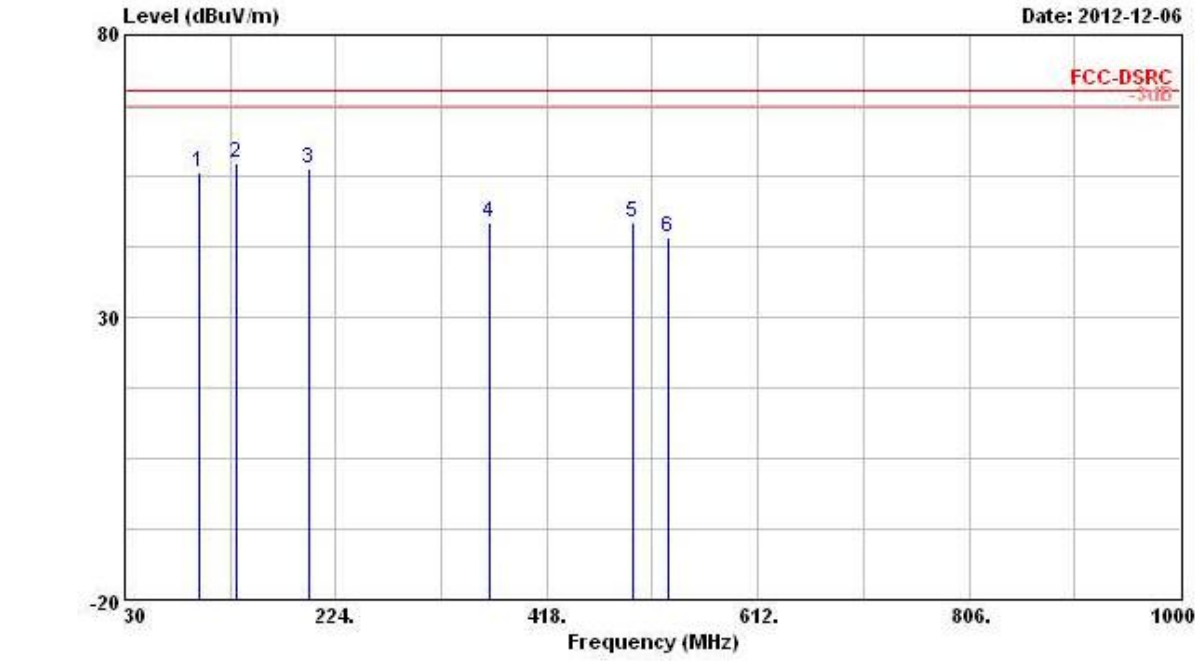
Transmitter Radiated Unwanted Emissions (Below 1GHz)			
Operating Mode	1	**Polarization**	V
Operating Function	DC Power & Radio link (DSRC)		



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	98.870	61.10	-9.10	70.20	76.29	11.01	1.65	27.85	Peak	---	---
2	132.820	59.33	-10.87	70.20	72.55	12.57	1.92	27.71	Peak	---	---
3	206.540	55.08	-15.12	70.20	68.43	11.57	2.47	27.39	Peak	---	---
4	365.620	40.76	-29.44	70.20	50.42	14.72	3.25	27.63	Peak	---	---
5	498.510	42.96	-27.24	70.20	50.24	17.26	3.82	28.36	Peak	---	---
6	532.460	40.38	-29.82	70.20	46.60	18.21	3.97	28.40	Peak	---	---

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Transmitter Radiated Unwanted Emissions (Below 1GHz)			
Operating Mode	1	**Polarization**	H
Operating Function	DC Power & Radio link (DSRC)		

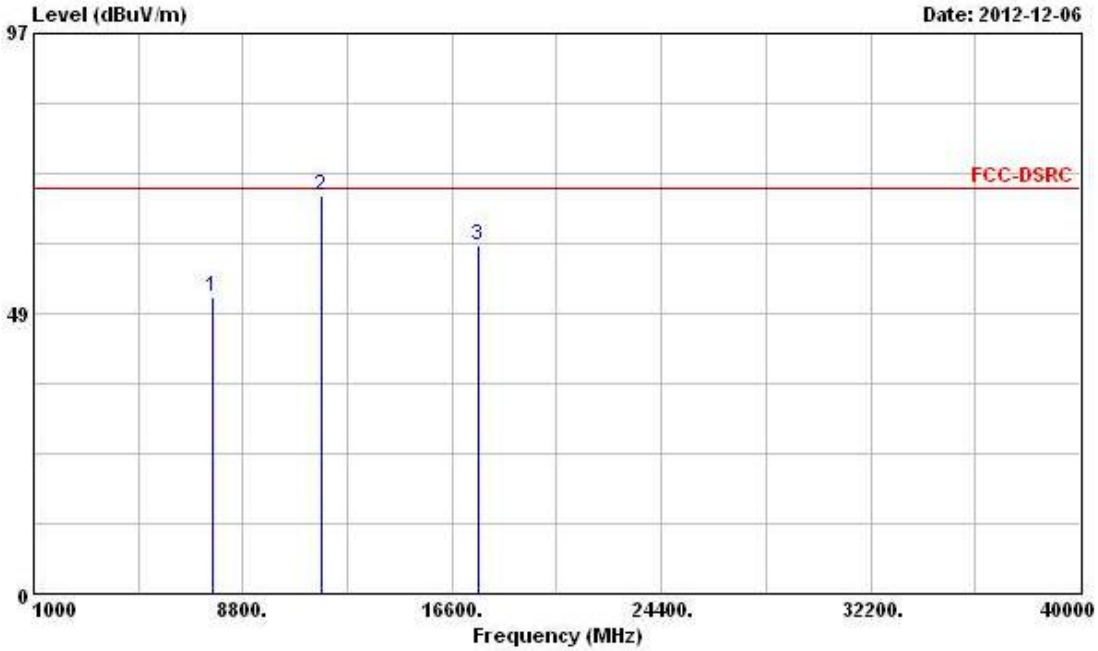


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	97.900	55.74	-14.46	70.20	71.11	10.84	1.64	27.85	Peak	---	---
2	132.820	57.24	-12.96	70.20	70.46	12.57	1.92	27.71	Peak	---	---
3	198.780	56.35	-13.85	70.20	70.07	11.28	2.42	27.42	Peak	---	---
4	365.620	46.80	-23.40	70.20	56.46	14.72	3.25	27.63	Peak	---	---
5	497.540	46.86	-23.34	70.20	54.16	17.24	3.82	28.36	Peak	---	---
6	529.550	44.13	-26.07	70.20	50.46	18.12	3.95	28.40	Peak	---	---

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

3.6.6 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11p-10M

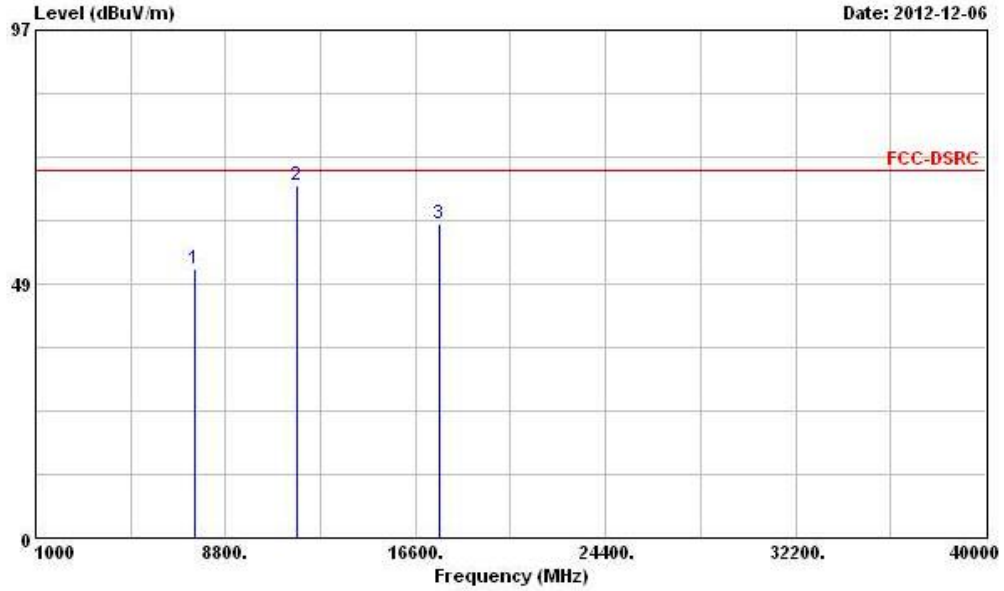
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11p-10M	**Test Freq. (FX)**	F1
Operating Function	Transmit	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	7693.000	51.25	-18.95	70.20	44.78	35.94	5.72	35.19	Peak	---	---
2	@11720.000	68.92	-1.28	70.20	58.34	38.77	6.64	34.83	Peak	---	---
3	17580.000	60.20	-10.00	70.20	45.20	40.83	8.23	34.06	Peak	---	---

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

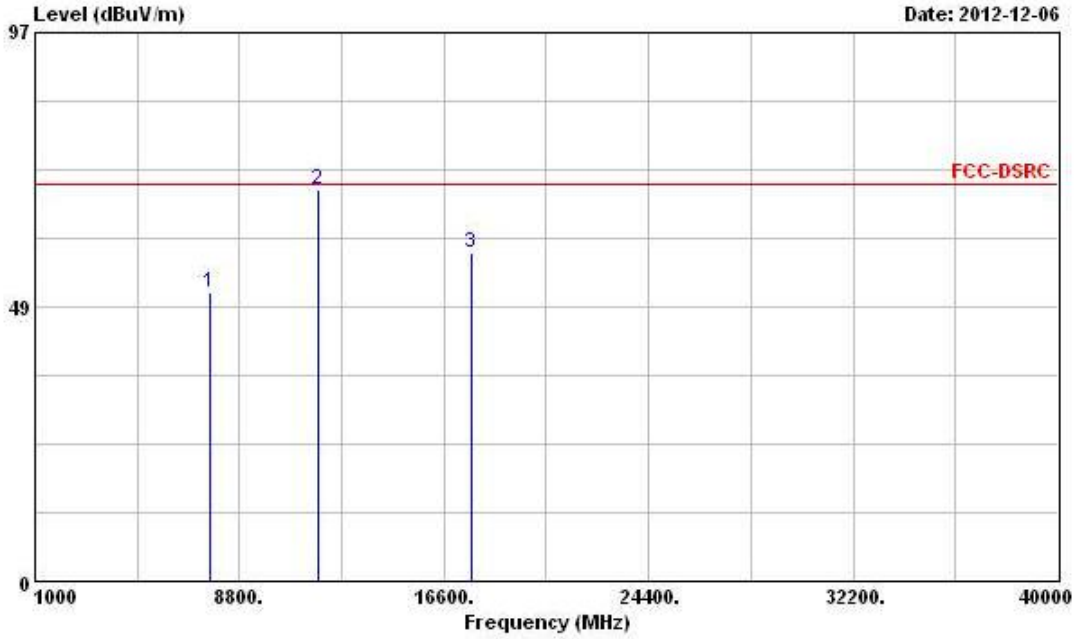
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11p-10M	**Test Freq. (FX)**	F1
Operating Function	Transmit	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	7531.000	51.31	-18.89	70.20	44.90	35.91	5.66	35.16	Peak	---	---
2	@11720.000	67.28	-2.92	70.20	56.70	38.77	6.64	34.83	Peak	---	---
3	17580.000	59.93	-10.27	70.20	44.93	40.83	8.23	34.06	Peak	---	---

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

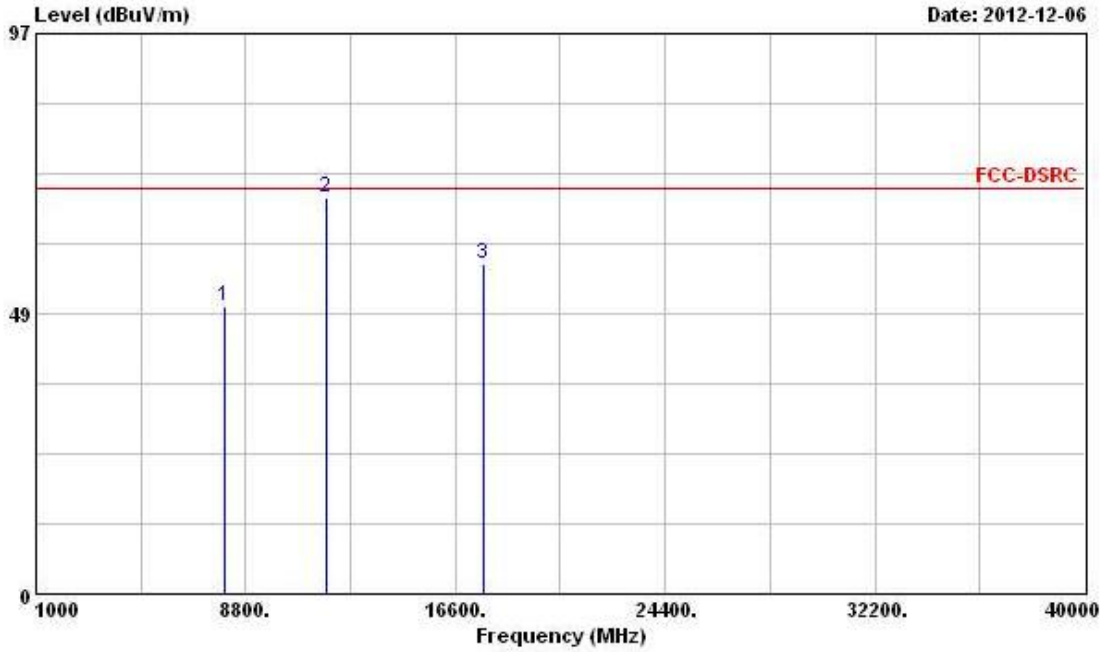
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11p-10M	**Test Freq. (FX)**	F2
Operating Function	Transmit	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	7649.000	50.90	-19.30	70.20	44.47	35.93	5.69	35.19	Peak	---	---
2	@11780.000	69.15	-1.05	70.20	58.56	38.83	6.64	34.88	Peak	---	---
3	17670.000	58.06	-12.14	70.20	43.45	40.73	8.04	34.16	Peak	---	---

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

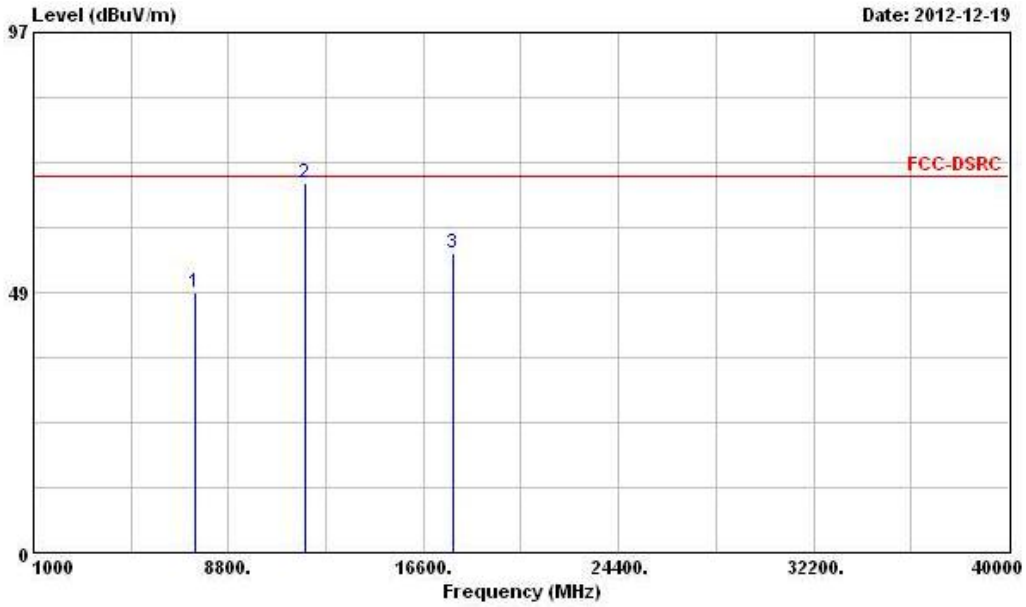
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11p-10M	**Test Freq. (FX)**	F2
Operating Function	Transmit	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	8001.000	49.63	-20.57	70.20	43.09	36.00	5.81	35.27	Peak	---	---
2	@11780.000	68.69	-1.51	70.20	58.10	38.83	6.64	34.88	Peak	---	---
3	17670.000	56.96	-13.24	70.20	42.35	40.73	8.04	34.16	Peak	---	---

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

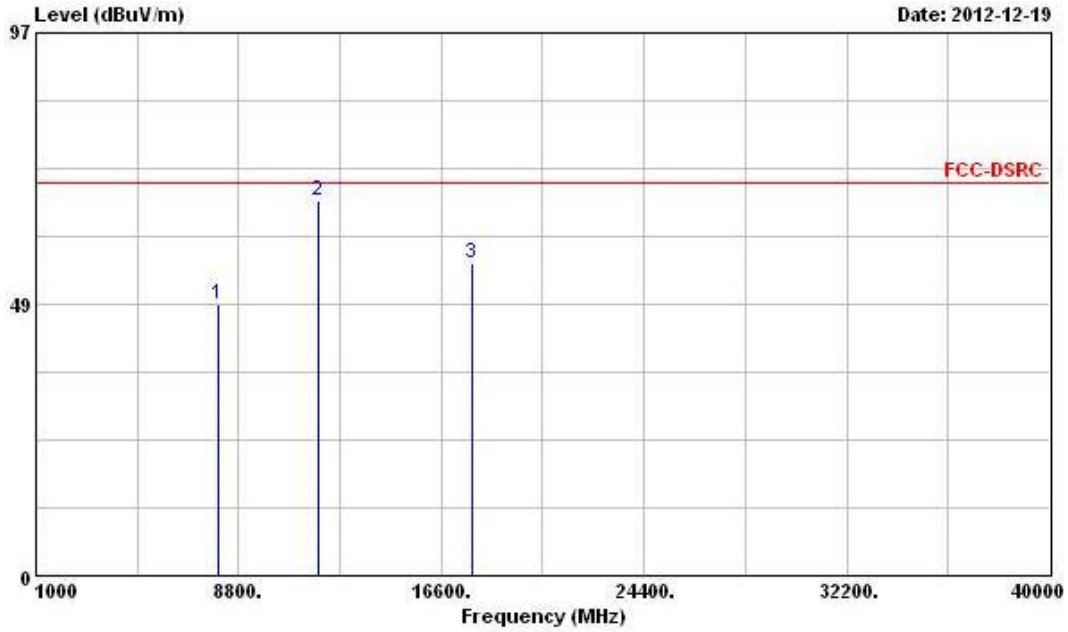
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11p-10M	**Test Freq. (FX)**	F3
Operating Function	Transmit	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	7473.000	48.44	-21.76	70.20	42.02	35.90	5.66	35.14	Peak	---	---
2	@11840.000	69.05	-1.15	70.20	58.40	38.91	6.64	34.90	Peak	---	---
3	17760.000	55.88	-14.32	70.20	41.72	40.64	7.76	34.24	Peak	---	---

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11p-10M	**Test Freq. (FX)**	F3
Operating Function	Transmit	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	8045.000	48.57	-21.63	70.20	42.01	36.01	5.82	35.27	Peak	---	---
2	@11840.000	66.88	-3.32	70.20	56.23	38.91	6.64	34.90	Peak	---	---
3	17760.000	55.78	-14.42	70.20	41.62	40.64	7.76	34.24	Peak	---	---

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

3.7 Frequency Stability

3.7.1 Frequency Stability Limit

Frequency Stability Limit	
ASTM E2213-03	
☒	The transmitter center frequency stability shall be ± 10 ppm maximum for DSRC 5.9GHz band.
☐	Type 1: 0 to 40°C for office environments.
☒	Type 2: -20 to 50°C for industrial environments.
☐	Type 3: -30 to 70°C for industrial environments.
☐	Type 4: -40 to 85°C for automotive environments.
Note 1: These measurements shall also be performed at normal and extreme test conditions.	

3.7.2 Measuring Instruments

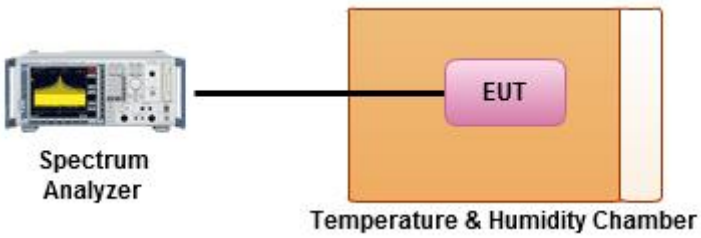
Refer a test equipment and calibration data table in this test report.

3.7.3 Test Procedures

Test Method	
☒	Refer as ANSI/TIA-603-D-2010, clause 3.2.2 for frequency stability tests
	☒ Frequency stability with respect to ambient temperature
	☒ Frequency stability when varying supply voltage
☒	For conducted measurement.
	☒ For conducted measurements on devices with multiple transmit chains: Measurements need only to be performed on one of the active transmit chains (antenna outputs)
☐	For radiated measurement. The equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted power level.

3.7.4 Test Setup

Frequency Stability



3.7.5 Test Result of Frequency Stability

Frequency Stability Result			
Mode		Frequency Stability (ppm)	
Condition	Freq. (MHz)	Frequency Stability (ppm)	Limit
$T_{20°C}$Vmax	5890	-0.42	10.0
$T_{20°C}$Vmin	5890	-0.42	10.0
$T_{50°C}$Vnom	5890	-0.42	10.0
$T_{40°C}$Vnom	5890	-0.42	10.0
$T_{30°C}$Vnom	5890	0.00	10.0
$T_{20°C}$Vnom	5890	-0.42	10.0
$T_{10°C}$Vnom	5890	0.85	10.0
$T_{0°C}$Vnom	5890	0.21	10.0
$T_{-10°C}$Vnom	5890	0.00	10.0
$T_{-20°C}$Vnom	5890	3.40	10.0
Result		Complied	
Note 1: Measure at 85 % [Vmin] and 115 % [Vmax] of the nominal voltage [Vnom]. The nominal voltage refer test report clause 1.1.5 for EUT operational condition.			

4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100132	9kHz ~ 2.75GHz	Nov. 14, 2012	Conduction (CO01-HY)
LISN	TESEQ	NNB-52	27380	9kHz ~ 30MHz	Apr. 09, 2012	Conduction (CO01-HY)
LISN (Support Unit)	MessTec	NNB-2/16Z	2001/009	9kHz ~ 30MHz	Feb. 20, 2012	Conduction (CO01-HY)
EMI Filter	LINDGREN	LRE-2060	1004	< 450Hz	N/A	Conduction (CO01-HY)
EMI Filter	LINDGREN	N6006	201052	0 ~ 60Hz	N/A	Conduction (CO01-HY)

Note: Calibration Interval of instruments listed above is one year.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSP 40	100305	9KHz ~ 40GHz	Feb. 21, 2012	Conducted (TH01-HY)
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Jun. 19, 2012	Conducted (TH01-HY)
AC Power Source	G.W	APS-9102	EL920581	AC 0V ~ 300V	Jul. 02, 2012	Conducted (TH01-HY)
Temp. and Humidity Chamber	Giant Force	GTH-225-20-SP-SD	MAA1112-007	-20 ~ 100℃	Dec. 07, 2011	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Jun. 26, 2012	Conducted (TH01-HY)
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	Jan. 12, 2012	Conducted (TH01-HY)
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	Jan. 12, 2012	Conducted (TH01-HY)
RF Cable-2m	HUBER+SUHNER	SUCOFLEX_104	SN 345675/4	1GHz ~ 26.5GHz	NA	Conducted (TH01-HY)
RF Cable-3m	HUBER+SUHNER	SUCOFLEX_104	SN 345669/4	1GHz ~ 26.5GHz	NA	Conducted (TH01-HY)

Note: Calibration Interval of instruments listed above is one year.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSP40	100593	9kHz ~ 40GHz	Sep. 14, 2012	Radiation (03CH02-HY)
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz ~ 1GHz 3m	May 10, 2012	Radiation (03CH02-HY)
Amplifier	Agilent	8447D	2944A11146	100kHz ~ 1.3GHz	Jul. 23, 2012	Radiation (03CH02-HY)
Amplifier	Agilent	8449B	3008A02373	1GHz ~ 26.5GHz	Aug. 10, 2012	Radiation (03CH02-HY)
Horn Antenna	ETS-LINDGREN	3117	00091920	1GHz ~ 18GHz	Nov. 16, 2012	Radiation (03CH02-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15GHz ~ 40GHz	Jan.13, 2012	Radiation (03CH02-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz ~ 1GHz	Nov. 10, 2012	Radiation (03CH02-HY)
RF Cable-high	SUHNER	SUCOFLEX106	03CH02-HY	1GHz ~ 40GHz	Mar. 06, 2012	Radiation (03CH02-HY)
Bilog Antenna	SCHAFFNER	CBL61128	2723	30MHz ~ 2GHz	Oct. 22, 2012	Radiation (03CH02-HY)
Turn Table	HD	DS 420	420/649/00	0~ 360 degree	N/A	Radiation (03CH02-HY)
Antenna Mast	HD	MA 240	240/559/00	1 ~ 4 m	N/A	Radiation (03CH02-HY)

Note: Calibration Interval of instruments listed above is one year.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Loop Antenna	R&S	HFH2-Z2	860004/0001	9 kHz ~ 30 MHz	Jul. 03, 2012	Radiation (03CH02-HY)

Note: Calibration Interval of instruments listed above is two year.