

# FCC Test Report

**Equipment** : Security Controller  
**Brand Name** : Tesla  
**Model No.** : 1089774  
**FCC ID** : 2AEIM-1089774  
**Standard** : 47 CFR FCC Part 15.225  
**Operating Band** : 13.553 – 13.567 MHz (channel freq. 13.56 MHz)  
**Applicant** : Tesla Motors, Inc.  
**Manufacturer** : 3500 Deer Creek Road Palo Alto, California US 94304  
United States Of America

The product sample received on May 03, 2017 and completely tested on Jun. 06, 2017. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 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.

  
Phoenix Chen  
SPORTON INTERNATIONAL INC.



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### APPENDIX A. TEST PHOTOS

#### PHOTOGRAPHS OF EUT V01

## Summary of Test Result

Conformance Test Specifications					
Report Clause	Ref. Std. Clause	Description	Measured	Limit	Result
1.1.2	15.203	Antenna Requirement	Antenna connector mechanism complied	FCC 15.203	Complied
3.1	15.207	AC Power-line Conducted Emissions	-	FCC 15.207	-
3.2	15.215(c)	Emission Bandwidth	20dB Bandwidth 2.62 [kHz] FL: 13.55914 MHz FH: 13.56169 MHz	Fall in band $F_L \geq 13.553$ MHz $F_H \leq 13.567$ MHz	Complied
3.3	15.225(a)~(d)	Field Strength of Fundamental Emissions and Spectrum Mask	Fundamental Emissions peak: 59.27 dBuV/m at 3m Device complies with spectrum mask – refer to test data	124 dBuV/m at 3	Complied
3.4	15.225(d)	Transmitter Radiated Unwanted Emissions	[dBuV/m at 3m]: 39.70MHz 30.72 (Margin 9.28dB) - PK	FCC 15.209	Complied
3.5	15.225(e)	Frequency Stability	47.20 ppm	$\pm 0.01\%$ (100ppm)	Complied

## Revision History

[illegible]

# 1 General Description

## 1.1 Information

### 1.1.1 RF General Information

NFC Chip	Brand Name	Model Name
	ST25R3915	1089774

RF General Information				
Frequency Range	Modulation	Ch. Frequency (MHz)	Channel Number	Field Strength (dBuV/m)
13.553 – 13.567 MHz	ISO 14443-3A (ASK)	13.56	1	59.27
Note 1: Field strength performed peak level at 3m.				

### 1.1.2 Antenna Information

Antenna Category	
<input type="checkbox"/>	Equipment placed on the market without antennas
<input checked="" type="checkbox"/>	Integral antenna (antenna permanently attached)
<input type="checkbox"/>	External antenna (dedicated antennas)

Antenna General Information		
No.	Ant. Cat.	Ant. Type
1	Integral	LOOP

### 1.1.3 Type of EUT

Identify EUT	
EUT Serial Number	N/A
Presentation of Equipment	<input type="checkbox"/> Production ; <input type="checkbox"/> Pre-Production ; <input checked="" type="checkbox"/> Prototype
Type of EUT	
<input checked="" type="checkbox"/>	Stand-alone
<input type="checkbox"/>	Combined (EUT where the radio part is fully integrated within another device) Combined Equipment - Brand Name / Model No.: ...
<input type="checkbox"/>	Plug-in radio (EUT intended for a variety of host systems) Host System - Brand Name / Model No.: ...
<input type="checkbox"/>	Other:

**1.1.4 Test Signal Duty Cycle**

Duty Cycle Operation Restriction	
The transmitter is used for	The transmitter is operated
<input checked="" type="checkbox"/> Inductive applications	<input checked="" type="checkbox"/> Automatically triggered
<input type="checkbox"/> Duty cycle fixed mode	<input checked="" type="checkbox"/> Duty cycle random mode
<input checked="" type="checkbox"/> <b>Duty cycle mode - NFC-A (ISO 14443-3A)</b>	
Declare transmitter duty cycle / 1 hour =	100%
<input type="checkbox"/> <b>Duty cycle mode - NFC-B (ISO 14443-3B)</b>	
Declare transmitter duty cycle / 1 hour =	100%
<input type="checkbox"/> <b>Duty cycle mode - NFC-F (ISO 18092)</b>	
Declare transmitter duty cycle / 1 hour =	100%
<input type="checkbox"/> <b>Duty cycle mode - NFC-V (ISO 15693)</b>	
Declare transmitter duty cycle / 1 hour =	100%

**1.1.5 EUT Operational Condition**

<b>Supply Voltage</b>	<input type="checkbox"/> AC mains	<input checked="" type="checkbox"/> DC	
<b>Type of DC Source</b>	<input checked="" type="checkbox"/> Internal DC supply	<input type="checkbox"/> External AC adapter	<input type="checkbox"/> Battery
<b>Test Voltage</b>	<input checked="" type="checkbox"/> Vnom (12 V)	<input checked="" type="checkbox"/> Vmax (13.8 V)	<input checked="" type="checkbox"/> Vmin (10.5 V)
<b>Test Climatic</b>	<input checked="" type="checkbox"/> Tnom (20°C)	<input checked="" type="checkbox"/> Tmax (85°C)	<input checked="" type="checkbox"/> Tmin (-40°C)

## 1.2 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 15
- ♦ ANSI C63.10-2013
- ♦ FCC KDB 174176 D01 v01r01

## 1.3 Testing Location Information

Testing Location				
<input checked="" type="checkbox"/>	HWA YA	ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, 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	TH06-HY	Gary	21.5°C / 61%	31/May/2017
Radiated	03CH02-HY	Lynus	24.5°C / 58%	06/Jun/2017

## 1.4 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
AC power-line conducted emissions		±2.2 dB
Emission bandwidth		±1.4 %
Unwanted emissions, conducted	9 – 150 kHz	±0.38 dB
	0.15 – 30 MHz	±0.42 dB
	30 – 1000 MHz	±0.51 dB
All emissions, radiated	9 – 150 kHz	±2.49 dB
	0.15 – 30 MHz	±2.28 dB
	30 – 1000 MHz	±2.56 dB
Temperature		±0.8 °C
Humidity		±3 %
DC and low frequency voltages		±3 %
Time		±1.4 %
Duty Cycle		±1.4 %

## 2 Test Configuration of EUT

### 2.1 The Worst Case Modulation Configuration



Modulation Used for Conformance Testing	
Modulation Mode	Field Strength (dBuV/m at 3 m)
NFC-Read/Write	59.27

### 2.2 Test Channel Frequencies Configuration

Modulation Mode	Test Channel Frequencies (MHz)
NFC-Read/Write	13.56



## 2.3 The Worst Case Measurement Configuration

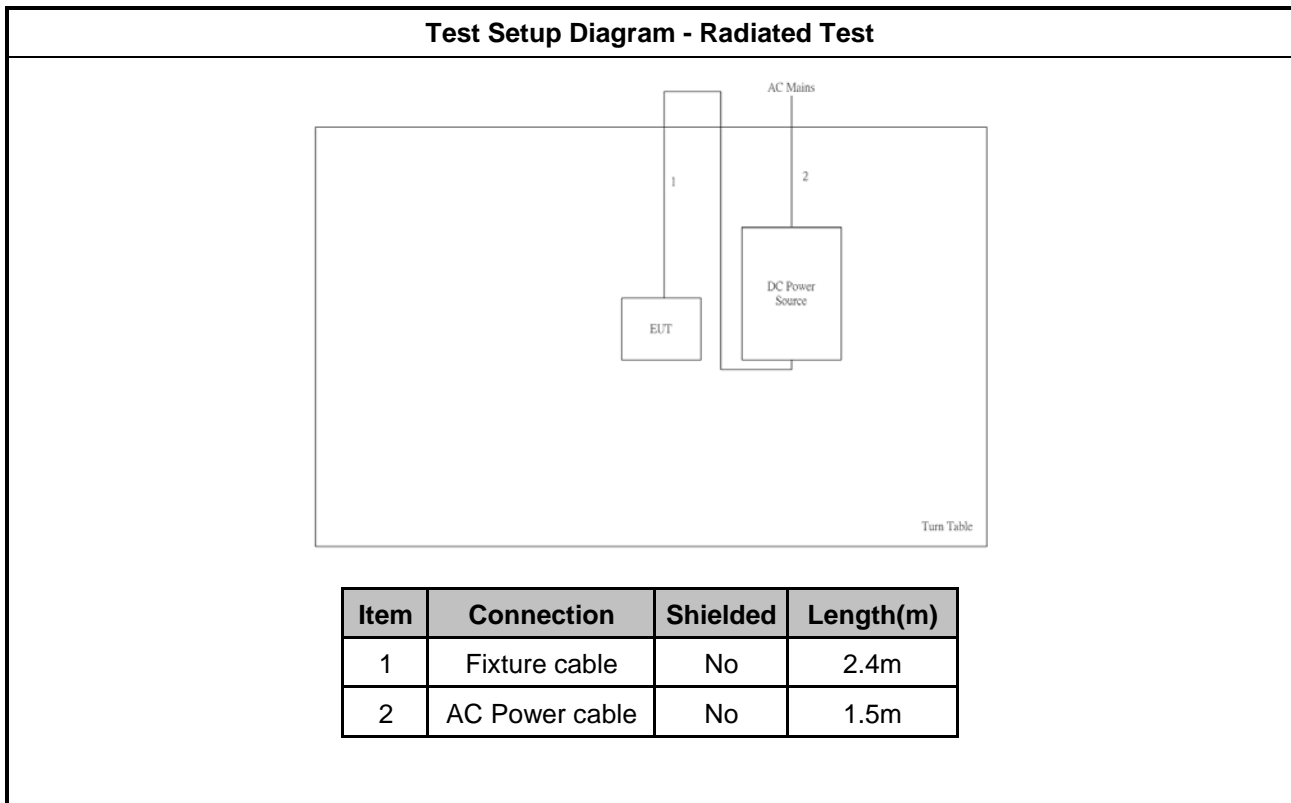
The Worst Case Mode for Following Conformance Tests		
<b>Tests Item</b>	Emission Bandwidth, Field Strength of Fundamental Emissions Spectrum Mask, Transmitter Radiated Unwanted Emissions, Frequency Stability	
<b>Test Condition</b>	Radiated measurement	
<b>User Position</b>	<input type="checkbox"/> EUT will be placed in fixed position. <input checked="" type="checkbox"/> EUT will be placed in mobile position and operating multiple positions. EUT shall be performed three orthogonal planes. <input type="checkbox"/> EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions. EUT shall be performed three orthogonal planes.	
<b>Pretest Mode</b>	<input checked="" type="checkbox"/> 1. EUT Built in NFC A type <input type="checkbox"/> 2. EUT Built in NFC B type <input type="checkbox"/> 3. EUT Built in NFC F type <input type="checkbox"/> 4. EUT Built in NFC V type	
<b>Operating Mode</b>	<input checked="" type="checkbox"/> 1. DC Power Supply	
<b>Modulation Mode</b>	NFC-Read/Write	
<b>Orthogonal Planes of EUT</b>	<b>Y Plane</b> 	<b>Z Plane</b> 
<b>Worst Planes of EUT</b>	V	

## 2.4 Support Equipment

Support Equipment - Radiated			
No.	Equipment	Brand Name	Model Name
1	DC power supply	GW	GPS-3030DD

Support Equipment - Radiated			
No.	Equipment	Brand Name	Model Name
1	DC power supply	GW	GPS-3030DD

## 2.5 Test Setup Diagram



### 3 Transmitter Test Result

#### 3.1 AC Power-line Conducted Emissions

##### 3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
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.

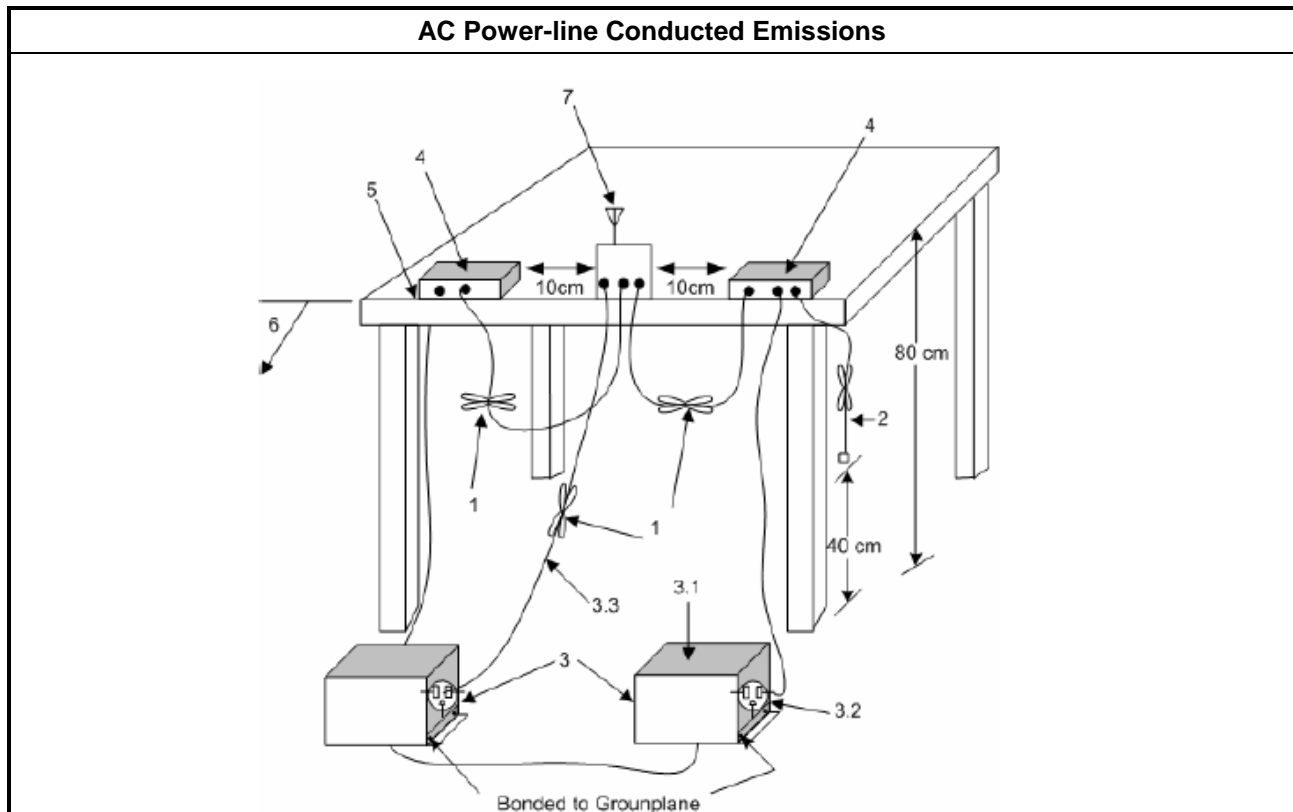
##### 3.1.2 Measuring Instruments

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

##### 3.1.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.
<input checked="" type="checkbox"/>	If AC conducted emissions fall in operating band, then following below test method confirm final result.
<input type="checkbox"/>	Accept measurements done with a suitable dummy load replacing the antenna under the following conditions: (1) Perform the AC line conducted tests with the antenna connected to determine compliance with FCC 15.207 limits outside the transmitter's fundamental emission band; (2) Retest with a dummy load to determine compliance with FCC 15.207 limits within the transmitter's fundamental emission band.
<input checked="" type="checkbox"/>	For a device with a permanent antenna operating at or below 30 MHz, accept measurements done with a suitable dummy load, in lieu of the permanent antenna under the following conditions: (1) Perform the AC line conducted tests with the permanent antenna to determine compliance with the FCC 15.207 limits outside the transmitter's fundamental emission band; (2) Retest with a dummy load in lieu of the permanent antenna to determine compliance with the FCC 15.207 limits within the transmitter's fundamental emission band.

### 3.1.4 Test Setup



### 3.1.5 Test Result of AC Power-line Conducted Emissions

Please refer to Part 15.247 which states, "Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ DC power source for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines". Therefore, for this device, AC Power Line Conducted Emissions investigation is not required.

## 3.2 Emission Bandwidth

### 3.2.1 Emission Bandwidth Limit

20dB Bandwidth Limit	
<input checked="" type="checkbox"/>	Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emissions in the specific band (13.553 – 13.567 MHz).

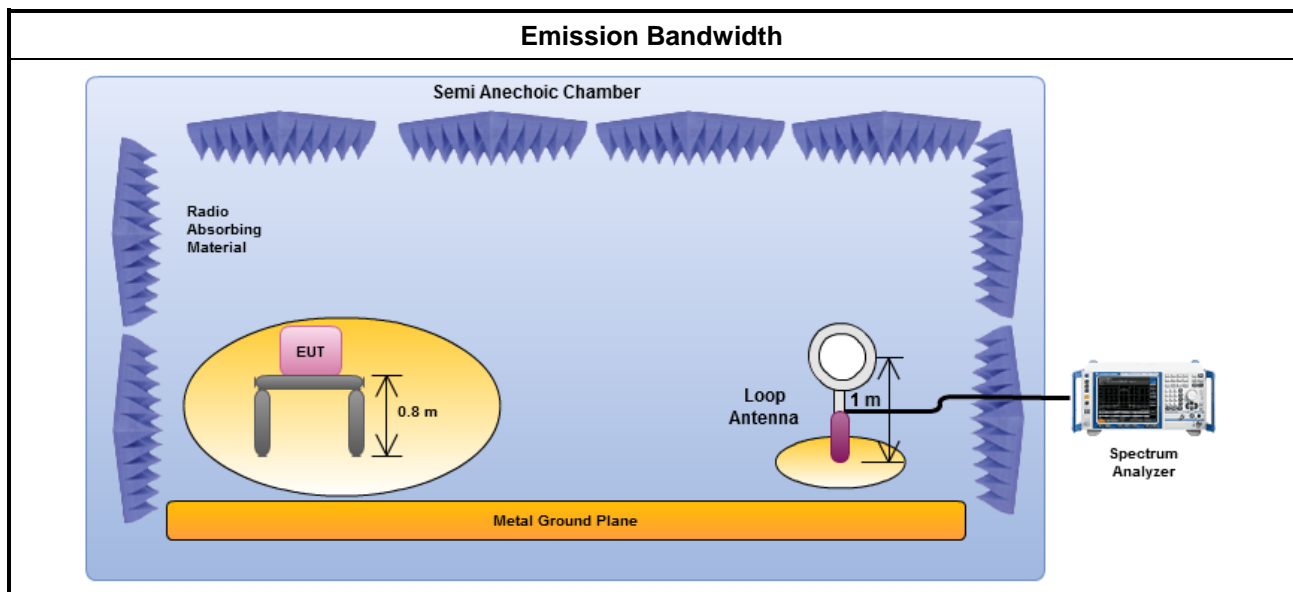
### 3.2.2 Measuring Instruments

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

### 3.2.3 Test Procedures

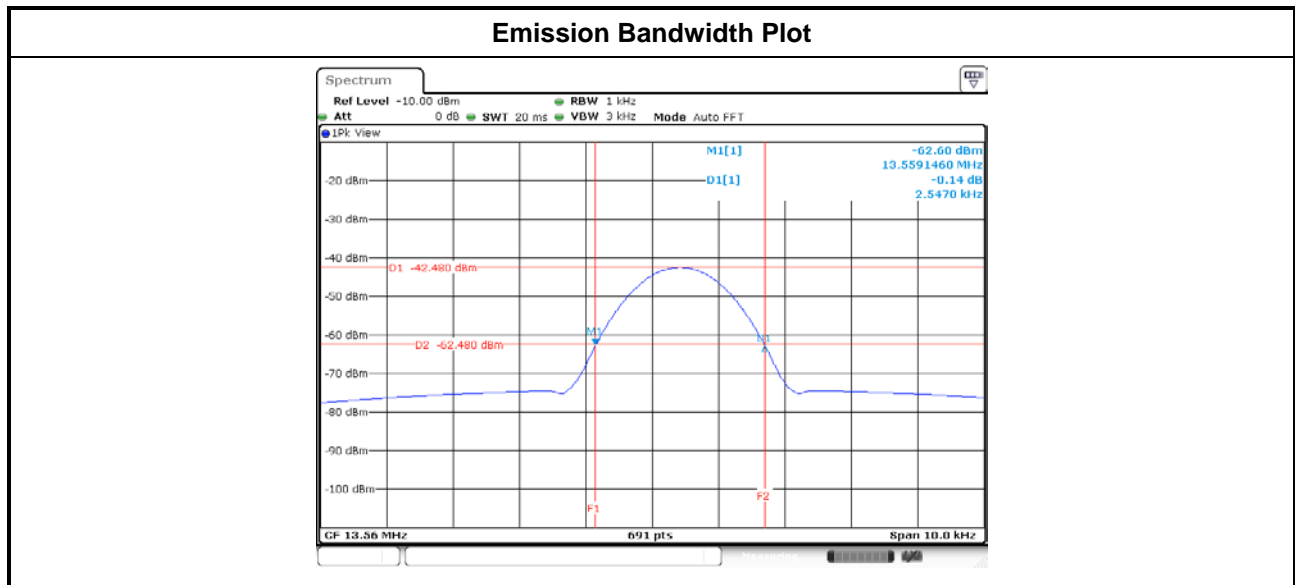
Test Method	
<input checked="" type="checkbox"/>	For the emission bandwidth refer ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.
<input checked="" type="checkbox"/>	For radiated measurement. Loop antenna was rotated about the horizontal and vertical axis and the equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted field strength level.

### 3.2.4 Test Setup



### 3.2.5 Test Result of Emission Bandwidth

Occupied Channel Bandwidth Result					
Modulation Mode	Frequency (MHz)	20dB Bandwidth (kHz)	F <sub>L</sub> at 20dB BW (MHz)	F <sub>H</sub> at 20dB BW (MHz)	99% Bandwidth (kHz)
NFC-Read/Write	13.56	2.54700	13.55914	13.56169	2.24312
Limit		N/A	13.553	13.567	N/A
Result		Complied			



### 3.3 Field Strength of Fundamental Emissions and Spectrum Mask

#### 3.3.1 Field Strength of Fundamental Emissions and Spectrum Mask Limit

Field Strength of Fundamental Emissions For FCC					
Emissions	(uV/m)@30m	(dBuV/m)@30m	(dBuV/m)@10m	(dBuV/m)@3m	(dBuV/m)@1m
fundamental	15848	84.0	103.1	124.0	143.1
Quasi peak measurement of the fundamental.					

Spectrum Mask For FCC					
Freq. of Emission (MHz)	(uV/m)@30m	(dBuV/m)@30m	(dBuV/m)@10m	(dBuV/m)@3m	(dBuV/m)@1m
1.705~13.110	30	29.5	48.6	69.5	88.6
13.110~13.410	106	40.5	59.6	80.5	99.6
13.410~13.553	334	50.5	69.6	90.5	109.6
13.553~13.567	15848	84.0	103.1	124.0	143.1
13.567~13.710	334	50.5	69.6	90.5	109.6
13.710~14.010	106	40.5	59.6	80.5	99.6
14.010~30.000	30	29.5	48.6	69.5	88.6

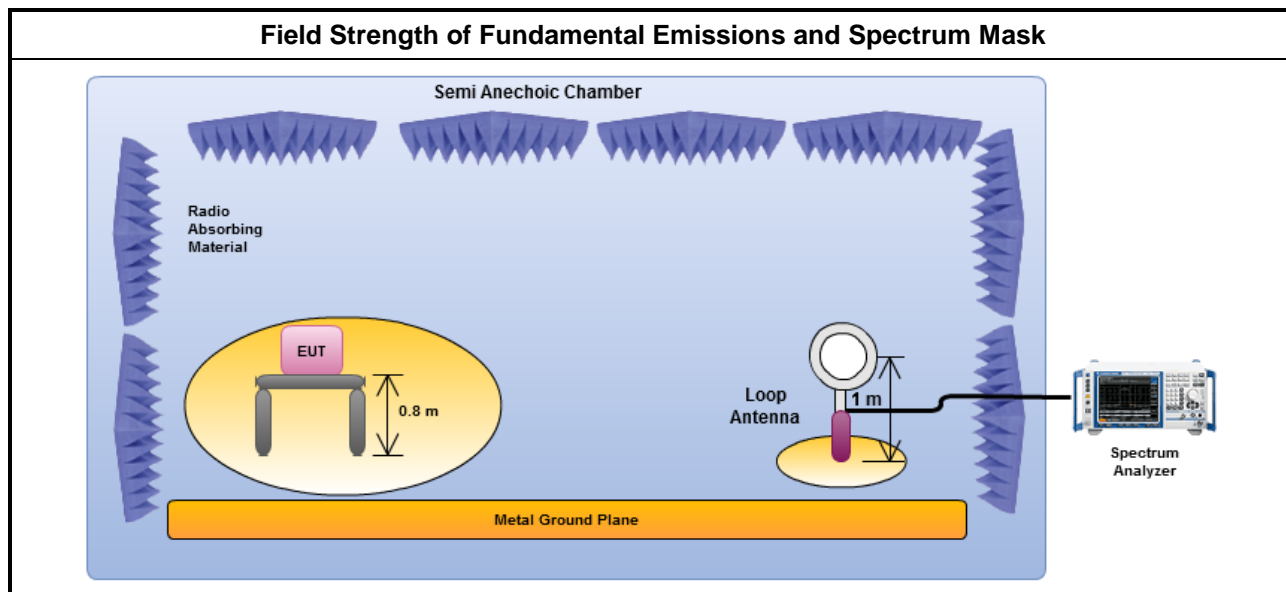
#### 3.3.2 Measuring Instruments

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

#### 3.3.3 Test Procedures

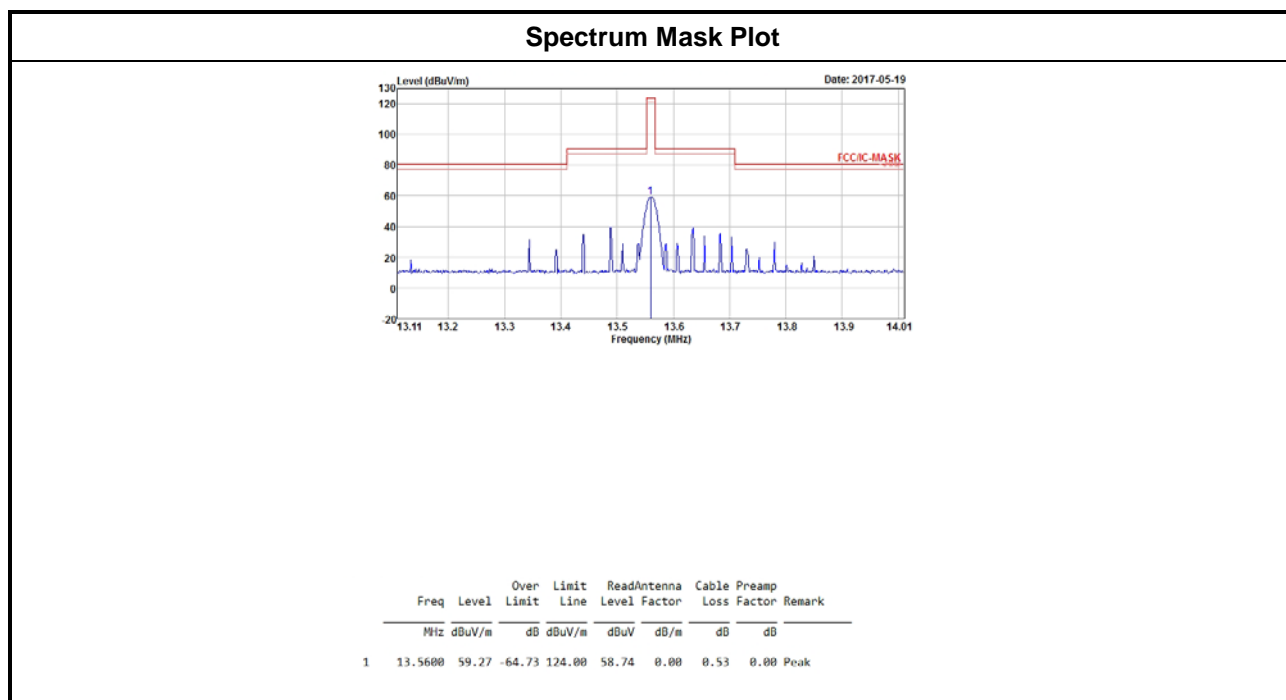
Test Method	
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz and test distance is 3m.
<input checked="" type="checkbox"/>	At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the requirements; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be following below methods.
<input type="checkbox"/>	The results shall be extrapolated to the specified distance by making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor.
<input checked="" type="checkbox"/>	The results shall be by using the square of an inverse linear distance extrapolation factor (40 dB/decade).
<input checked="" type="checkbox"/>	For radiated measurement. Loop antenna was rotated about the horizontal and vertical axis and the equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted field strength level.

### 3.3.4 Test Setup



### 3.3.5 Test Result of Field Strength of Fundamental Emissions and Spectrum Mask

Field Strength of Fundamental Emissions Result					
Modulation Mode	Frequency (MHz)	Fundamental (dBuV/m)@3m	Polarization	Margin (dB)	Limit (dBuV/m)@3m
NFC-Read/Write	13.56	59.27	H	64.73	124.00
Result		Complied			
Note 1: Measurement worst emissions of receive antenna polarization: H(Horizontal).					





### 3.4 Transmitter Radiated Unwanted Emissions

#### 3.4.1 Transmitter Radiated Unwanted Emissions Limit

Transmitter Radiated Unwanted Emissions Limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

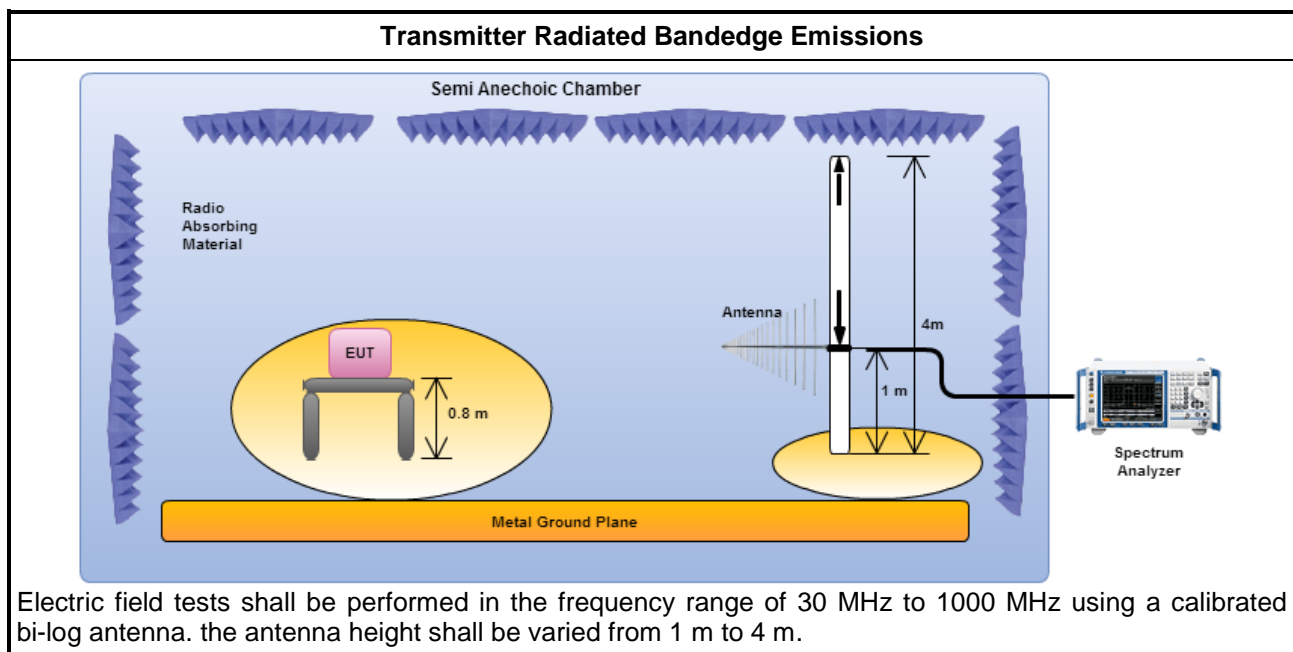
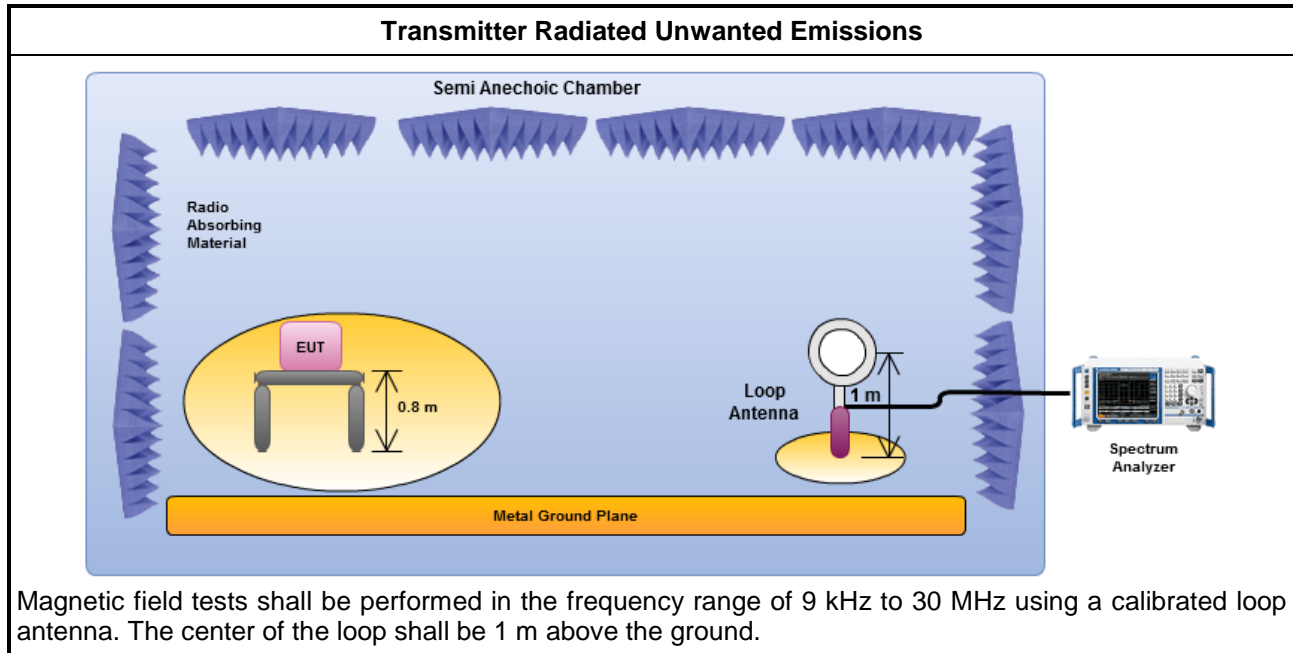
#### 3.4.2 Measuring Instruments

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

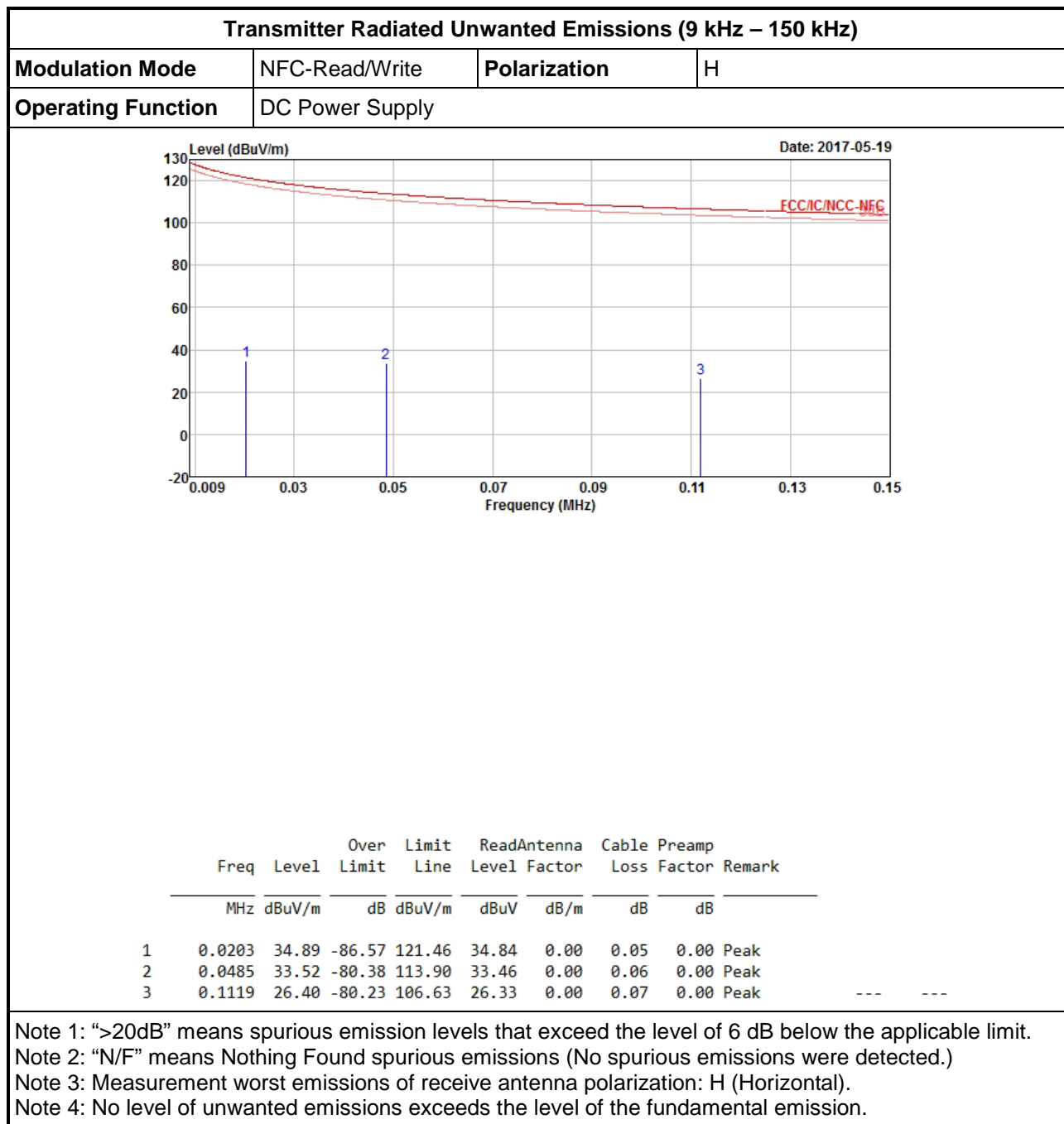
### 3.4.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1 GHz and test distance is 3m.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz and test distance is 3m.
<input checked="" type="checkbox"/>	At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the requirements; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be following below methods.
<input type="checkbox"/>	The results shall be extrapolated to the specified distance by making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor.
<input checked="" type="checkbox"/>	The results shall be by using the square of an inverse linear distance extrapolation factor (40 dB/decade).
<input checked="" type="checkbox"/>	For radiated measurement. Loop antenna was rotated about the horizontal and vertical axis and the equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted field strength level.
<input checked="" type="checkbox"/>	The any unwanted emissions level shall not exceed the fundamental emission level.
<input checked="" type="checkbox"/>	All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

### 3.4.4 Test Setup

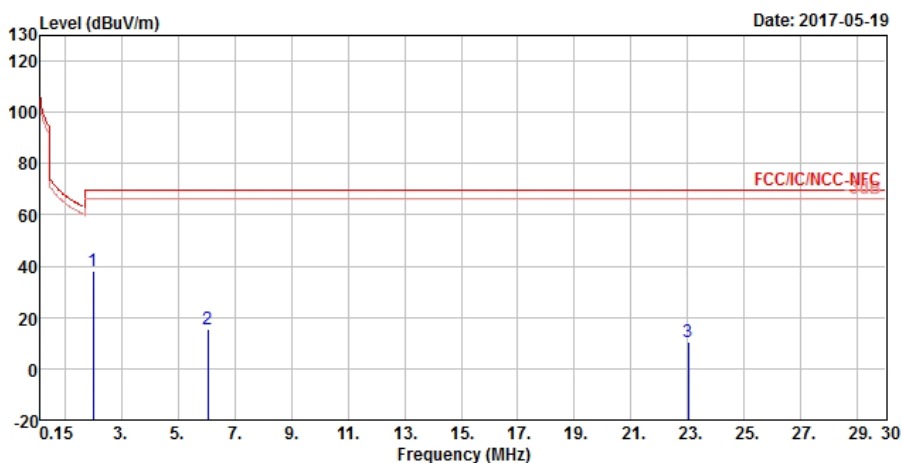


### 3.4.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)



**Transmitter Radiated Unwanted Emissions (150 kHz –30 MHz)**

<b>Modulation Mode</b>	NFC-Read/Write	<b>Polarization</b>	H
<b>Operating Function</b>	DC Power Supply		



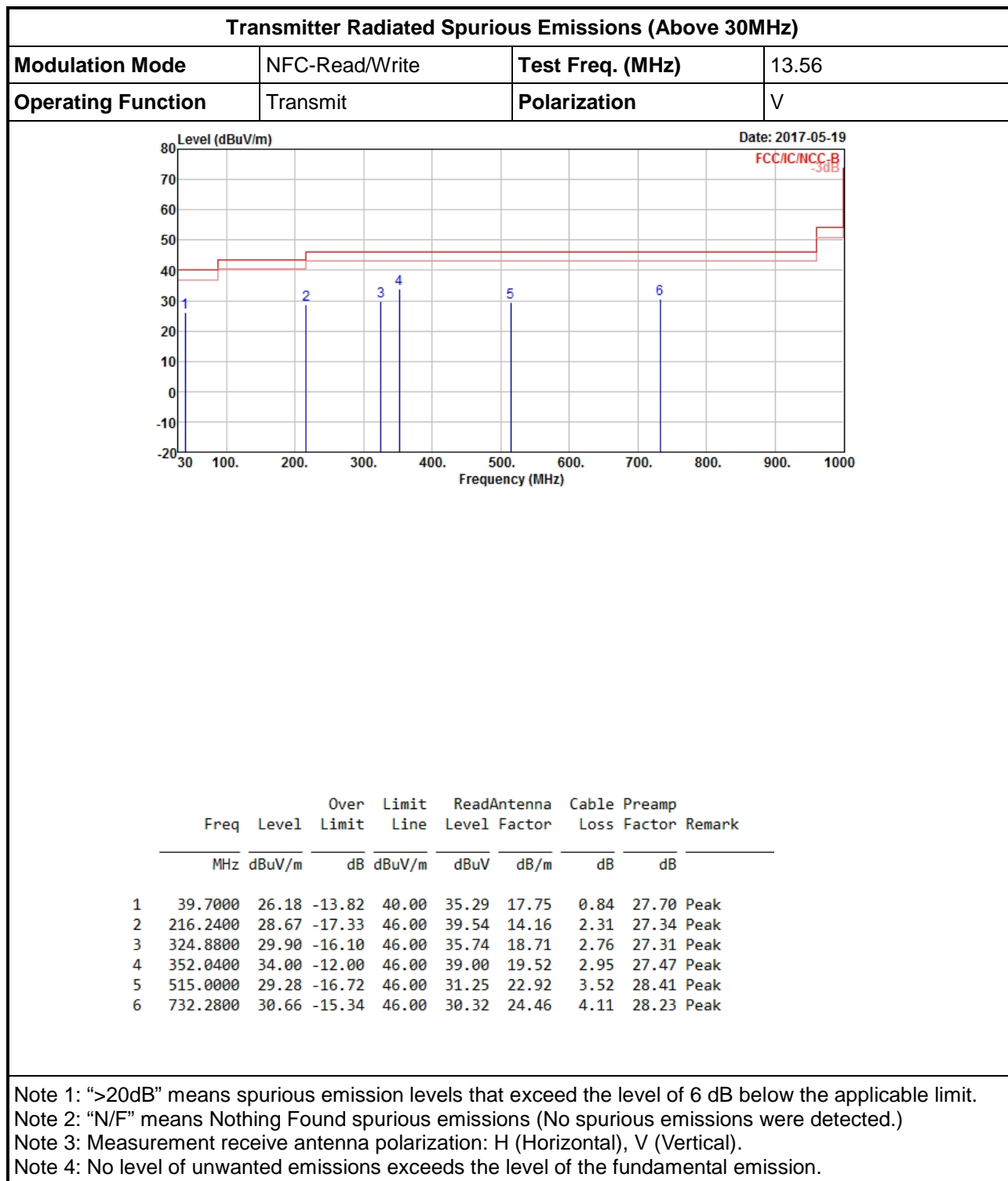
	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Preamp	Factor	Loss	Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	dB	
1	2.0007	37.97	-31.57	69.54	37.72	0.00	0.25	0.00	0.00	Peak
2	6.0603	15.59	-53.95	69.54	15.16	0.00	0.43	0.00	0.00	Peak
3	23.0151	10.63	-58.91	69.54	10.00	0.00	0.63	0.00	0.00	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 6 dB below the applicable limit.

Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

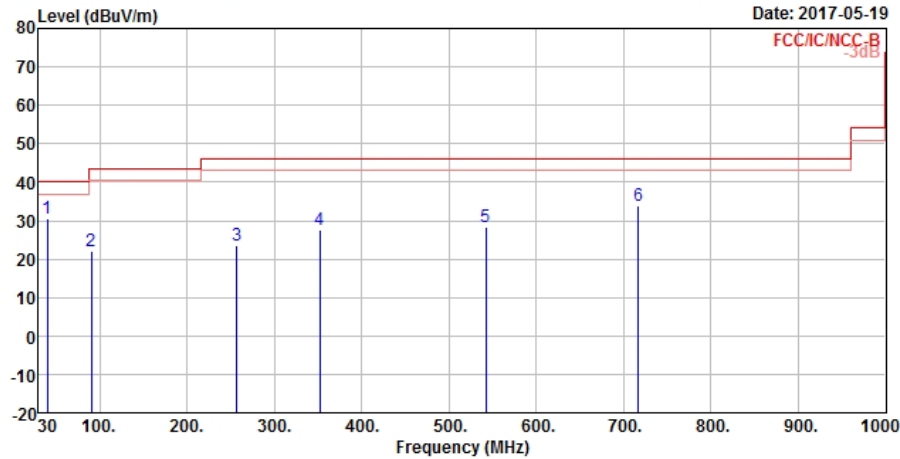
Note 3: Measurement worst emissions of receive antenna polarization: H (Horizontal).

Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

**3.4.6 Transmitter Radiated Unwanted Emissions (Above 30MHz)**


**Transmitter Radiated Spurious Emissions (Above 30MHz)**

<b>Modulation Mode</b>	NFC-Read/Write	<b>Test Freq. (MHz)</b>	13.56
<b>Operating Function</b>	Transmit	<b>Polarization</b>	H



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Factor	Preamp Loss	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	39.7000	30.72	-9.28	40.00	39.83	17.75	0.84	27.70 Peak
2	90.1400	22.12	-21.38	43.50	34.64	13.92	1.36	27.80 Peak
3	256.9800	23.60	-22.40	46.00	29.93	18.29	2.47	27.09 Peak
4	352.0400	27.47	-18.53	46.00	32.47	19.52	2.95	27.47 Peak
5	542.1600	28.34	-17.66	46.00	29.46	23.62	3.62	28.36 Peak
6	716.7600	34.01	-11.99	46.00	34.06	24.21	4.05	28.31 Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 6 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: No level of unwanted emissions exceeds the level of the fundamental emission.

### 3.5 Frequency Stability

#### 3.5.1 Frequency Stability Limit

Frequency Stability Limit	
<input checked="" type="checkbox"/>	Carrier frequency stability shall be maintained to $\pm 0.01\%$ ( $\pm 100$ ppm).

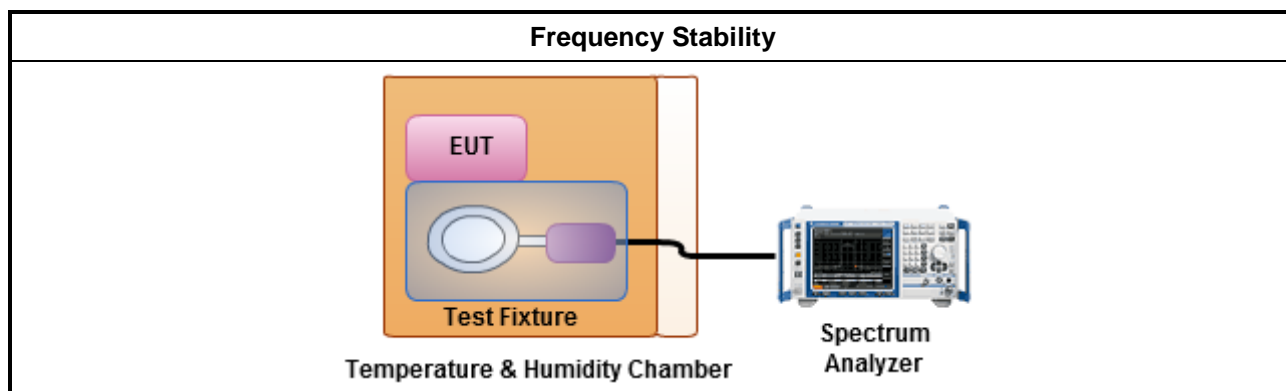
#### 3.5.2 Measuring Instruments

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

#### 3.5.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.8 for frequency stability tests
<input checked="" type="checkbox"/>	Frequency stability with respect to ambient temperature
<input checked="" type="checkbox"/>	Frequency stability when varying supply voltage
<input type="checkbox"/>	For conducted measurement.
<input checked="" type="checkbox"/>	For radiated measurement. The equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted power level.

#### 3.5.4 Test Setup





**3.5.5 Test Result of Frequency Stability**

Frequency Stability Result									
Condition	Ch. Freq. (MHz)	Frequency Stability (ppm)							
		Test Frequency (MHz)				Frequency Stability (ppm)			
		0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min
T <sub>20°C</sub> Vmax	13.56	13.56045	13.56045	13.56047	13.56048	33.19	33.19	34.66	35.40
T <sub>20°C</sub> Vmin	13.56	13.56028	13.56028	13.56029	13.56029	20.65	20.65	21.39	21.39
T <sub>85°C</sub> Vnom	13.56	13.56009	13.56010	13.56010	13.56010	6.64	7.37	7.37	7.37
T <sub>80°C</sub> Vnom	13.56	13.56008	13.56007	13.56008	13.56007	5.90	5.16	5.90	5.16
T <sub>70°C</sub> Vnom	13.56	13.56006	13.56006	13.56006	13.56006	4.42	4.42	4.42	4.42
T <sub>60°C</sub> Vnom	13.56	13.56009	13.56009	13.56009	13.56009	6.64	6.64	6.64	6.64
T <sub>50°C</sub> Vnom	13.56	13.56014	13.56015	13.56015	13.56015	10.32	11.06	11.06	11.06
T <sub>40°C</sub> Vnom	13.56	13.56022	13.56022	13.56023	13.56023	16.22	16.22	16.96	16.96
T <sub>30°C</sub> Vnom	13.56	13.56032	13.56030	13.56032	13.56033	23.60	22.12	23.60	24.34
T <sub>20°C</sub> Vnom	13.56	13.56039	13.56039	13.56039	13.56039	28.76	28.76	28.76	28.76
T <sub>10°C</sub> Vnom	13.56	13.56048	13.56048	13.56049	13.56048	35.40	35.40	36.14	35.40
T <sub>0°C</sub> Vnom	13.56	13.56055	13.56055	13.56054	13.56054	40.56	40.56	39.82	39.82
T <sub>-10°C</sub> Vnom	13.56	13.56061	13.56061	13.56061	13.56061	44.99	44.99	44.99	44.99
T <sub>-20°C</sub> Vnom	13.56	13.56063	13.56063	13.56064	13.56063	46.46	46.46	47.20	46.46
T <sub>-30°C</sub> Vnom	13.56	13.56063	13.56063	13.56064	13.56063	46.46	46.46	47.20	46.46
T <sub>-40°C</sub> Vnom	13.56	13.56059	13.56059	13.56059	13.56059	43.51	43.51	43.51	43.51
Limit (ppm)		100							
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.									
Note 2: Measure maximum deviation frequency at operating frequency at startup and two, five, and ten min.									

## 4 Test Equipment and Calibration Data

### Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Next Calibration Date
Spectrum Analyzer	R&S	FSV 40	101500	9KHz~40GHz	12/May/2016	11/May/2017
Temp. and Humidity Chamber	Giant Force	GTH-225-40-CP-AR	MAA1611-005	-40~100℃	21/Nov/2016	20/Nov/2018
Loop Antenna	TESEQ	HLA 6120	31244	9 kHz~30 MHz	02/Mar/2017	01/Mar/2018

### Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Next Calibration Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	9kHz ~ 1GHz 3m	05/Jun/2017	04/Jun/2018
RF Cable-R03m	Jye Bao	RG142	CB017	9kHz~1GHz	26/Jan/2017	25/Jan/2018
Spectrum Analyzer	R&S	FSP 40	100593	9kHz~40GHz	26/Oct/2016	25/Oct/2017
Loop Antenna	TESEQ	HLA 6120	31244	9 kHz~30 MHz	02/Mar/2017	01/Mar/2018