

FCC Test Report

Equipment : Home Audio Soundbar System
Brand Name : Evolve Audio
Model No. : SB-2500, SB-3500, SB-2600, SB-3600
FCC ID : 2AG6T-SB2500
Standard : 47 CFR FCC Part 15.249
Operating Band : 2400 MHz – 2483.5 MHz
FCC Classification : DXX
Applicant : Janky Technology Co. Ltd
Manufacturer : No 66, MingZu Rd., Tanzi, Taichung, Taiwan 407

The product sample received on Dec. 15, 2015 and completely tested on May 04, 2016. 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.

Reviewed by:

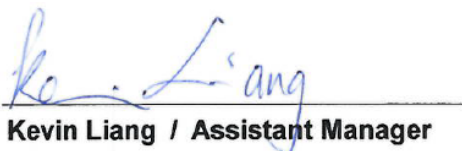

Kevin Liang / Assistant Manager

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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	[dBuV]: 0.4437900MHz 39.24 (Margin 17.75dB) - QP 30.72 (Margin 16.27dB) - AV	FCC 15.207	Complied
3.2	15.215(c)	Emission Bandwidth	0.2473 MHz; fall in band	Information only	Complied
3.3	15.249(a)	Fundamental Emissions	[dBuV/m at 3m]: 90.19 (Margin 3.81dB) average	[dBuV/m at 3m]: average: 94	Complied
3.4	15.249 (a)/(d)	Transmitter Radiated Unwanted Emissions	[dBuV/m at 3m]: 212.36MHz 43.26 (Margin 0.24dB) - QP	Harmonics: 54 dBuV/m@3m Other band: 50 dB or FCC 15.209, whichever is the lesser attenuation.	Complied

Revision History

[illegible]

1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information				
Frequency Range (MHz)	Modulation	Ch. Frequency (MHz)	Channel Number	Fundamental Field Strength (dBuV/m)
2400-2483.5	FSK	2403, 2439, 2478	26	90.19
Note 1: Field strength performed average 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)

1.1.3 Type of EUT

Identify EUT	
EUT Serial Number	N/A
Presentation of Equipment	<input type="checkbox"/> Production ; <input checked="" type="checkbox"/> Pre-Production ; <input 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**

Operated Mode for Worst Duty Cycle	
<input type="checkbox"/> Operated normally mode for worst duty cycle	
<input checked="" type="checkbox"/> Operated test mode for worst duty cycle	
Test Signal Duty Cycle (x)	Duty Cycle Correction Factor [dB] – (20 log x)
<input checked="" type="checkbox"/> 100%	0
If worst duty < 100%, average emission = peak emission + 20 log x	

1.1.5 EUT Operational Condition

Supply Voltage	<input checked="" type="checkbox"/> AC mains	<input type="checkbox"/> DC	- -
Type of DC Source	<input type="checkbox"/> Internal DC supply	<input checked="" type="checkbox"/> From Adapter	<input type="checkbox"/> From Li-ion Battery

1.2 Accessories and Support Equipment

Accessories Information				
AC Adapter 1 (SB-3500)	Brand Name	AC/DC Adapter	Model Name	GKYPA-320180UL1
	Power Rating	I/P: 100-240V _{ac} , 1.5A; O/P: 18V _{dc} , 3.2A		
AC Adapter 2 (SB-2500)	Brand Name	AC/DC Adapter	Model Name	GKYPA0200180UL
	Power Rating	I/P: 100-240V _{ac} , 1.5A; O/P: 18V _{dc} , 2A		

Reminder: Regarding to more detail and other information, please refer to user manual.

Support Equipment - RF Conducted				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E5540	R33002 / DOC

Support Equipmet - Radiated Emission				
No.	Equipment	Brand Name	Model Name	FCC ID
1	DVD player	Pioneer	DV-600AV	R31271-ETC
2	Phone	ASUS	ASUS T00I(A400CG)	-
3	Headphones	EVOLVE	EVO-1	-
4	remote control	EVOLVE	-	-
5	USB cable	-	-	-
6	Audio line	-	-	-
7	Optical Digital line	-	-	-

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 15
- ♦ ANSI C63.10-2013

1.4 Testing Location Information

Testing Location					
<input checked="" type="checkbox"/>	HWA YA	ADD	:	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.	
		TEL	:	886-3-327-3456	FAX : 886-3-327-0973
Test Site Registration Number: FCC 553509					
Test Condition		Test Site No.		Test Engineer	
AC Conduction		CO04-HY		Ryan	
RF Conducted		TH06-HY		Howard	
Radiated Emission		03CH03-HY		Terry	
				22.1°C / 57%	

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
AC power-line conducted emissions		±2.2 dB
Emission bandwidth, 20dB bandwidth		±1.4 %
RF output power, conducted		±0.6 dB
All emissions, radiated	9 – 150 kHz	±2.4 dB
	0.15 – 30 MHz	±2.2 dB
	30 – 1000 MHz	±2.5 dB
	1 – 18 GHz	±3.5 dB
	18 – 40 GHz	±3.8 dB
	40 – 200 GHz	N/A
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	
Test Mode	Field Strength (dBuV/m at 3 m)
Transmit	90.19

2.2 Test Channel Frequencies Configuration

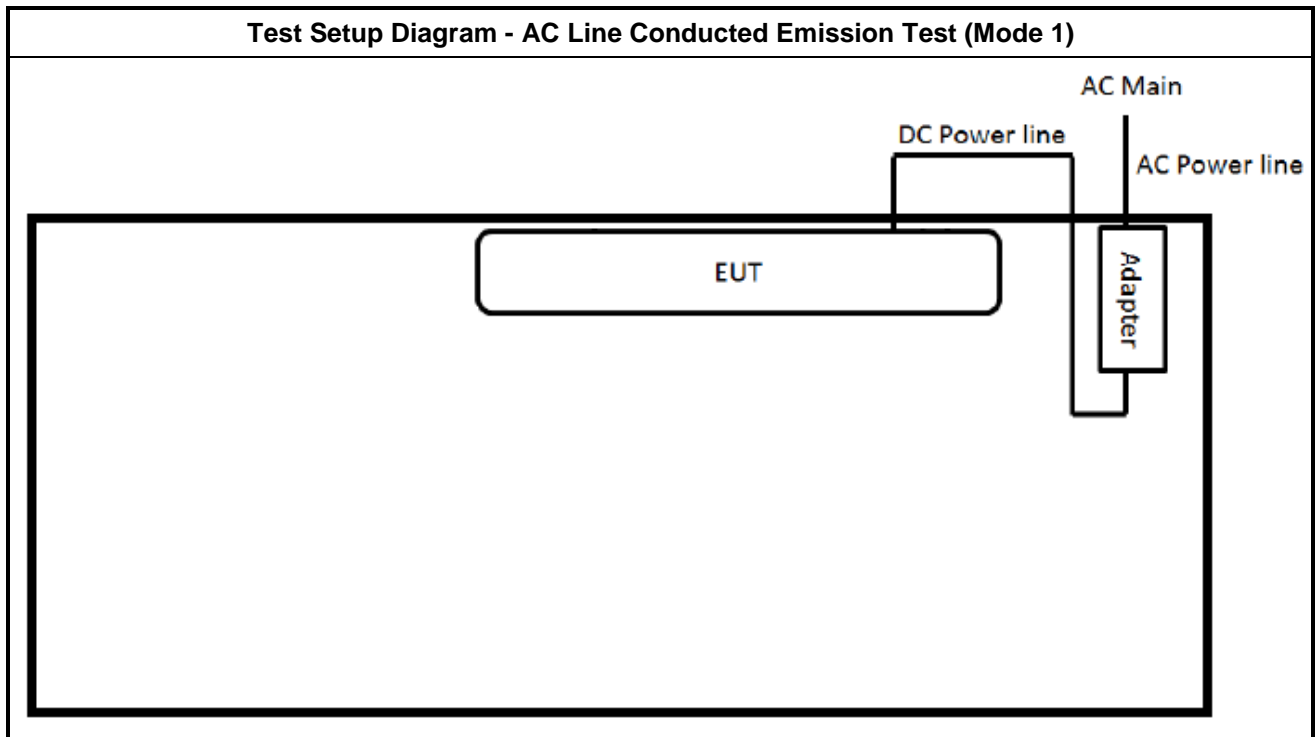
Test Channel Frequencies Configuration	
Test Mode	Test Channel Frequencies (MHz)
Transmit	2403, 2439, 2478

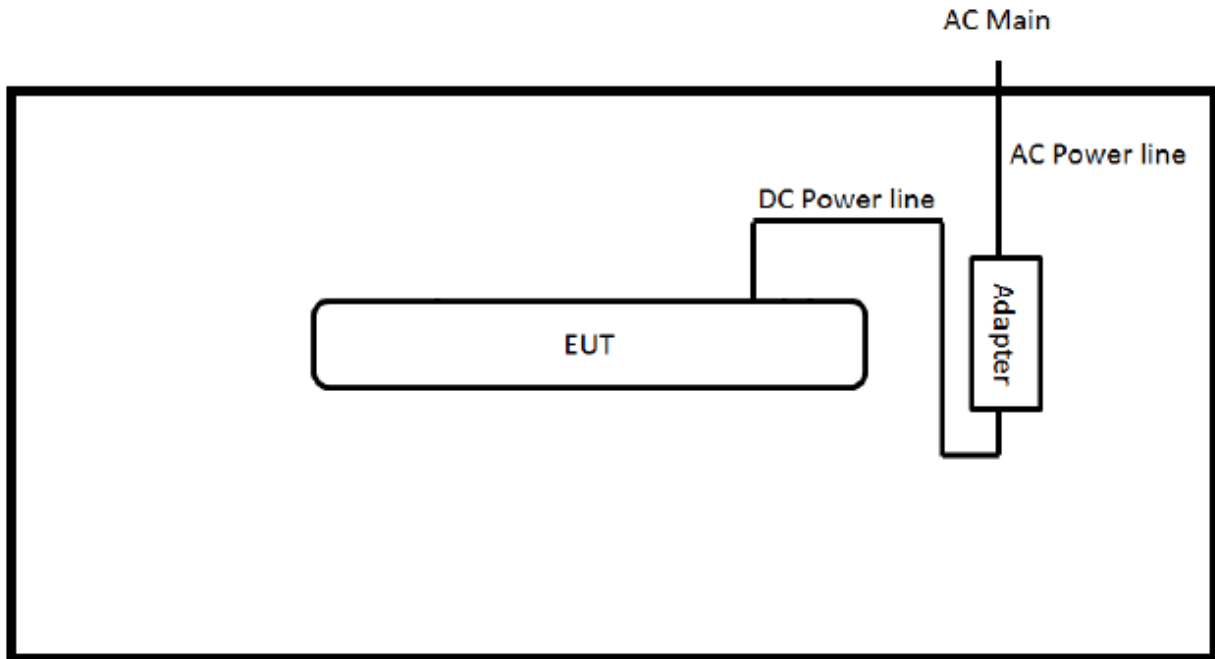
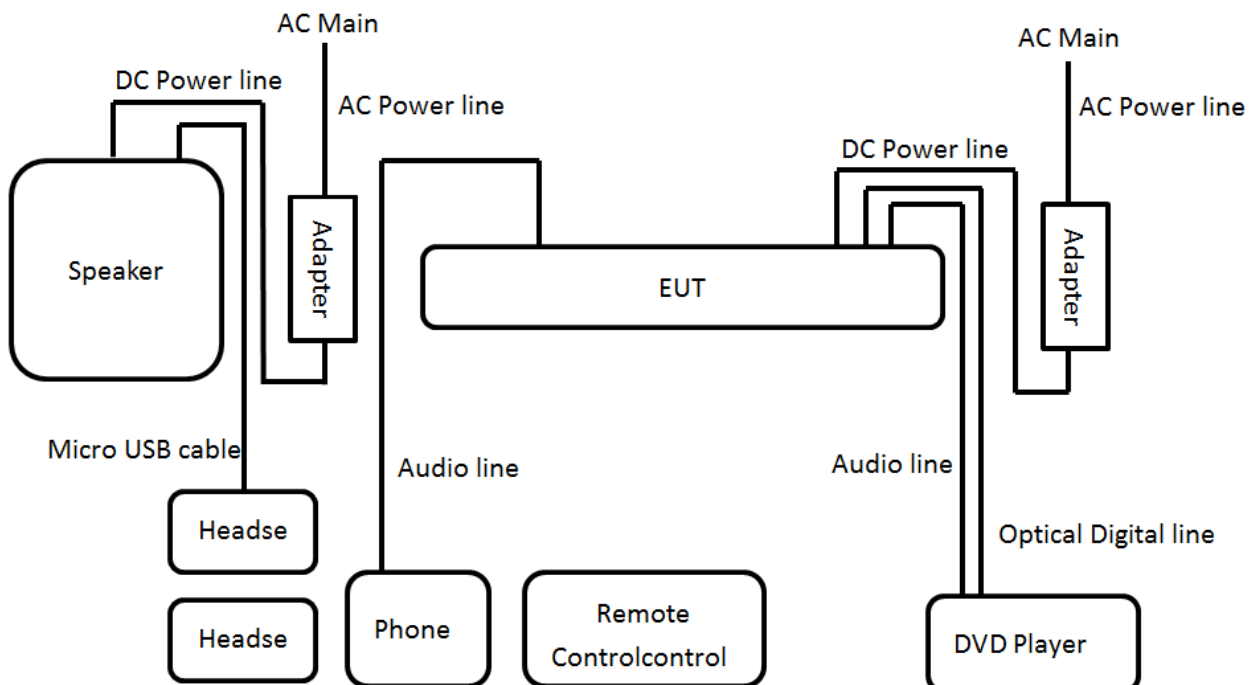
2.3 The Worst Case Measurement Configuration

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. Transmit mode with Adapter

The Worst Case Mode for Following Conformance Tests			
Tests Item	Emission Bandwidth, Fundamental Emissions, Radiated Unwanted Emissions		
Test Condition	Radiated measurement		
User Position	<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.		
Operating Mode	Operating Mode Description		
	1. Transmit mode with Adapter		
	2. Normal mode with Adapter(worse than mode 3)		
	3. Normal mode with Adapter(small sample)		
Modulation Mode	Transmit		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Worst Planes of EUT	V		

2.4 Test Setup Diagram



Test Setup Diagram - Radiated Test in Transmit mode (Mode 1)

Test Setup Diagram - Radiated Test in Normal mode (Mode 2)


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.

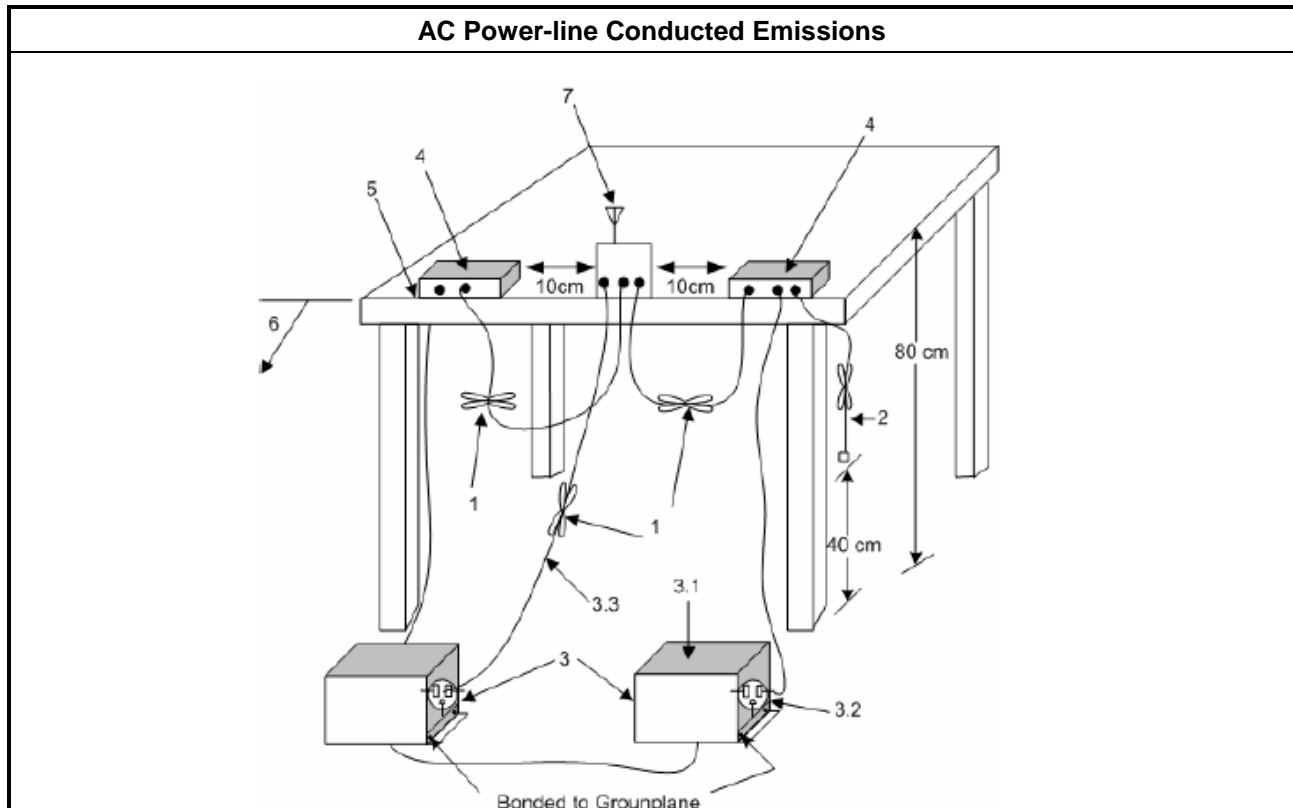
3.1.2 Measuring Instruments

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

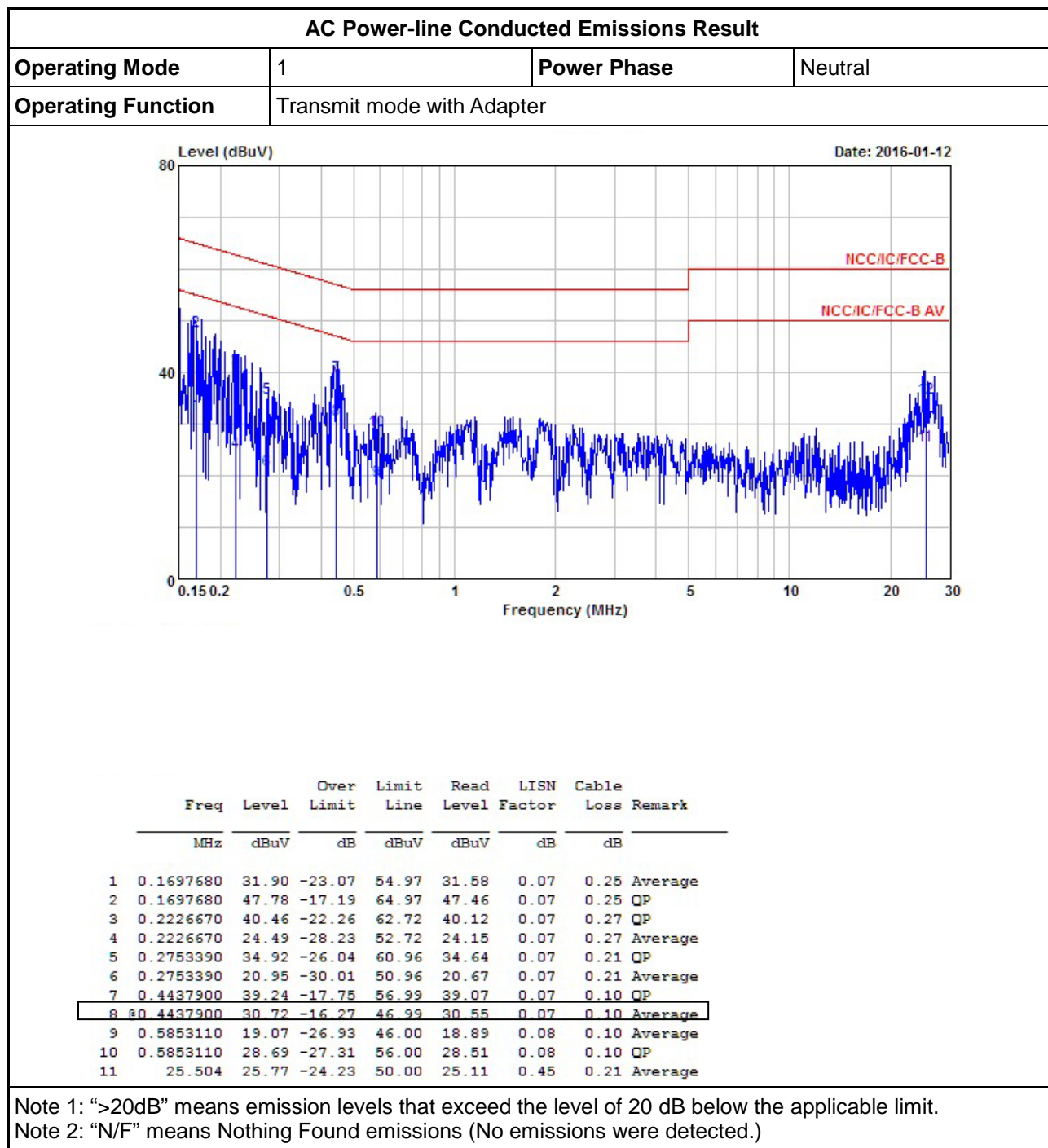
3.1.3 Test Procedures

Test Method
<input checked="" type="checkbox"/> Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup

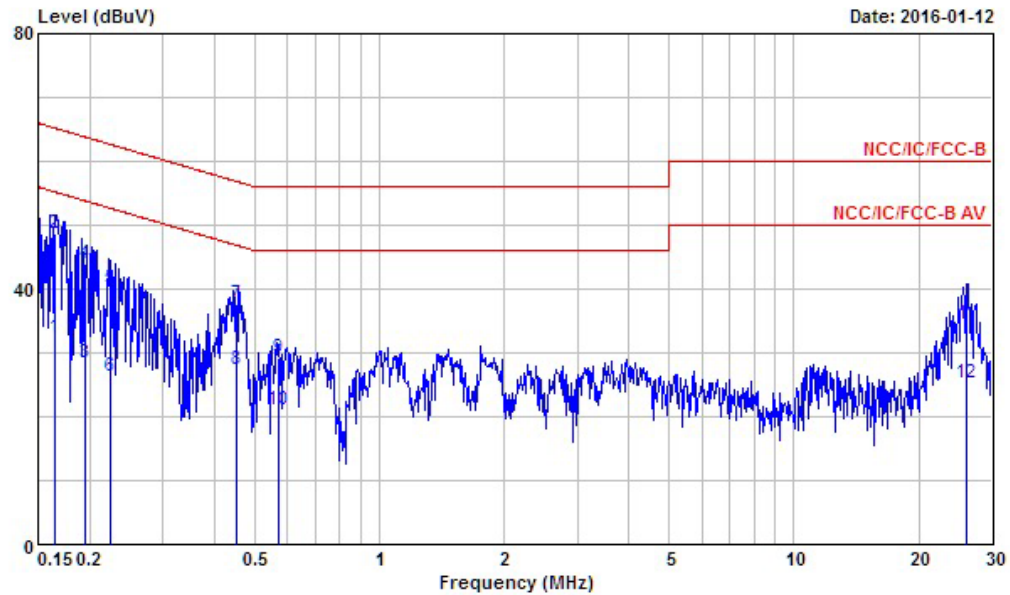


3.1.5 Test Result of AC Power-line Conducted Emissions



AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	Transmit mode with Adapter		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1647680	32.35	-22.87	55.22	32.06	0.05	0.24	Average
2	0.1647680	48.81	-16.41	65.22	48.52	0.05	0.24	QP
3	0.1948850	28.35	-25.48	53.83	28.00	0.06	0.29	Average
4	0.1948850	43.87	-19.96	63.83	43.52	0.06	0.29	QP
5	0.2250070	40.11	-22.52	62.63	39.78	0.06	0.27	QP
6	0.2250070	26.21	-26.42	52.63	25.88	0.06	0.27	Average
7	0.4503600	37.68	-19.19	56.87	37.51	0.07	0.10	QP
8	0.4503600	27.29	-19.58	46.87	27.12	0.07	0.10	Average
9	0.5730910	29.23	-26.77	56.00	29.06	0.07	0.10	QP
10	0.5730910	21.03	-24.97	46.00	20.86	0.07	0.10	Average
11	26.128	34.35	-25.65	60.00	33.72	0.41	0.22	QP

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	
<input checked="" type="checkbox"/>	Emission bandwidth falls completely within authorized band.

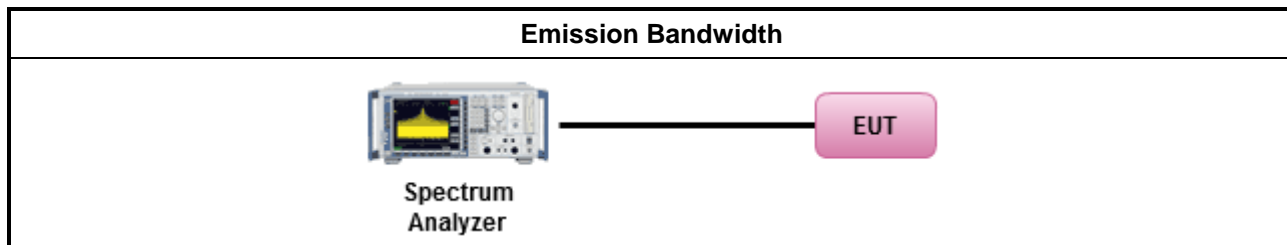
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

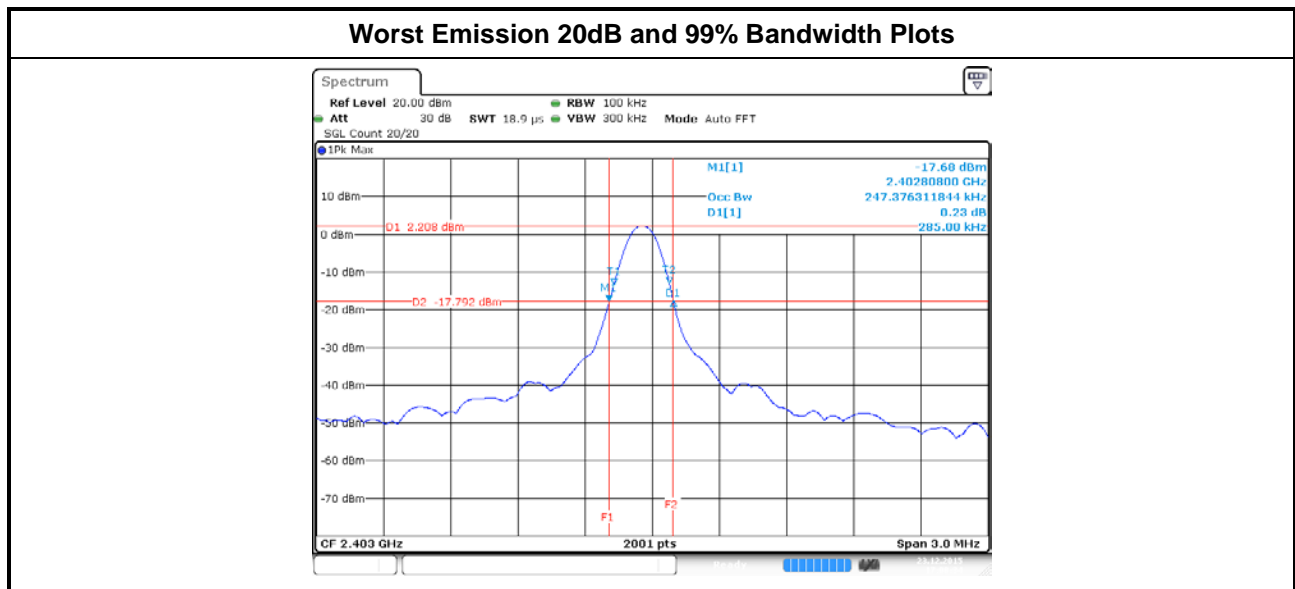
Test Method	
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.9.2 for 20 dB emission bandwidth and 99% occupied bandwidth measurement.

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 _L at 20dB BW (MHz)	F _H at 20dB BW (MHz)	99% Bandwidth (kHz)
Transmit	2403	0.2473	2402.8280	-	0.2850
Transmit	2439	0.2413	-	-	0.2775
Transmit	2478	0.2398	-	2478.0760	0.2760
Limit		N/A	2400	2483.5	N/A
Result		Complied			



3.3 Fundamental Emissions

3.3.1 Fundamental Emissions Limit

Fundamental Emissions E-Field Strength Limit (3m)	
<input type="checkbox"/>	902-928 MHz Band: 94 dBuV/m (quasi peak)
<input checked="" type="checkbox"/>	2400-2483.5 MHz Band: 94 dBuV/m (average)
<input type="checkbox"/>	5725-5785 MHz Band: 94 dBuV/m (average)

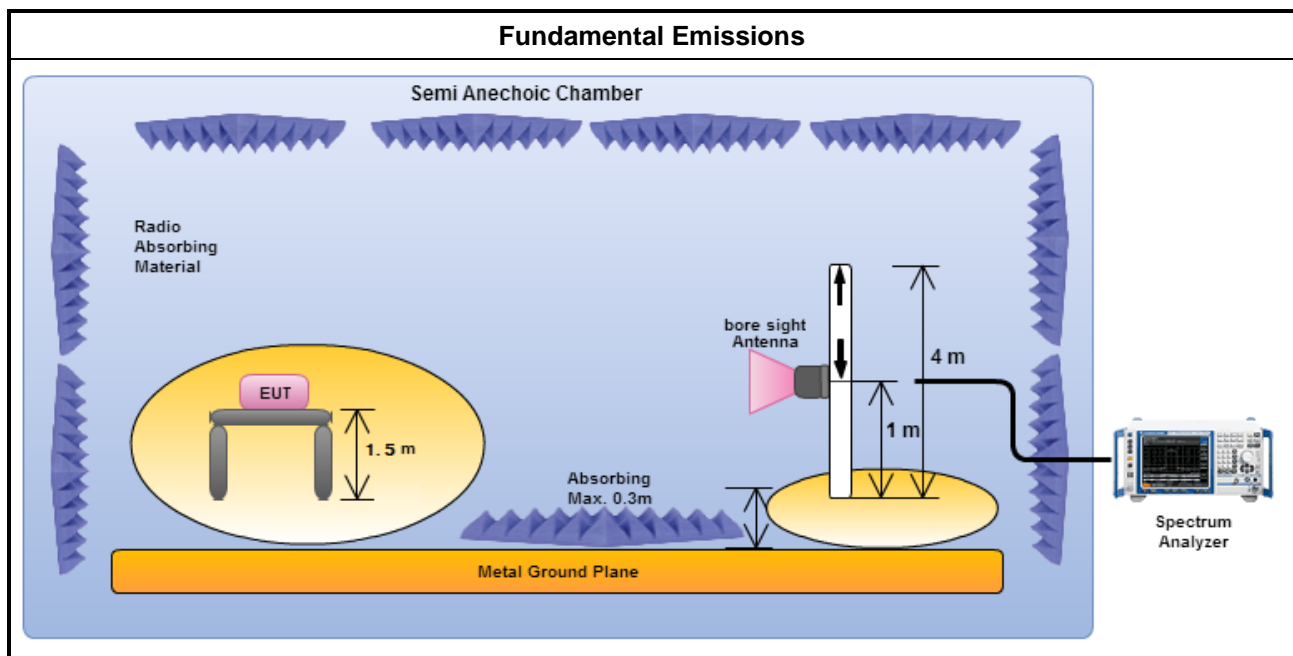
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

<input checked="" type="checkbox"/>	The average emission levels shall be measured in [duty cycle ≥ 100 or by duty cycle correction factor].
<input checked="" type="checkbox"/>	For the transmitter emissions shall be measured using following options below:
<input type="checkbox"/>	Refer as ANSI C63.10, clause 4.1.2.3 (Reduced VBW) – Duty cycle $\geq 100\%$.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 4.1.4.2.4 average value of pulsed emissions. Adjusted by a “duty cycle correction factor”, derived from $20\log(\text{dwell time}/100 \text{ ms})$. Average emission = peak emission + $20\log(\text{duty cycle})$.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.5 for radiated emissions and test distance is 3m.

3.3.4 Test Setup



3.3.5 Test Result of Fundamental Emissions

Field Strength of Fundamental Emissions Result					
Modulation Mode	Frequency (MHz)	Fundamental (dBuV/m)@3m	Margin (dB)	Limit (dBuV/m)@3m	Type
Transmit	2403	90.60	23.40	114	PK
Transmit	2403	90.19	3.81	94	AV
Transmit	2439	89.20	24.8	114	PK
Transmit	2439	88.66	5.34	94	AV
Transmit	2478	87.93	26.07	114	PK
Transmit	2478	87.43	6.57	94	AV
Result		Complied			
Note 1: Measurement worst emissions of receive antenna polarization: Vertical					

3.4 Transmitter Radiated Unwanted Emissions

3.4.1 Transmitter Radiated Unwanted Emissions Limit

Transmitter Radiated Unwanted Emissions Limit	
Harmonics:	
<input checked="" type="checkbox"/>	54 dBuV/m (average)
Other Unwanted Emissions:	
<input checked="" type="checkbox"/>	50 dB below the level of the fundamental or FCC 15.209, whichever is the lesser attenuation.

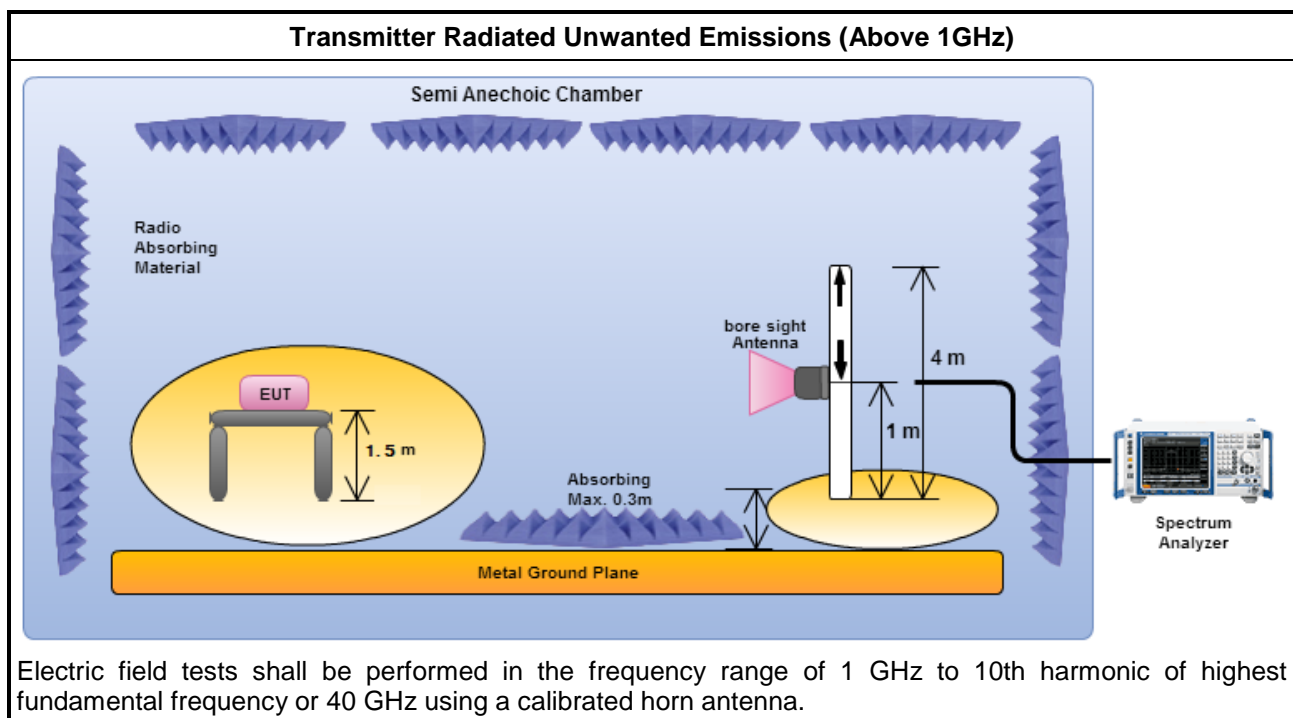
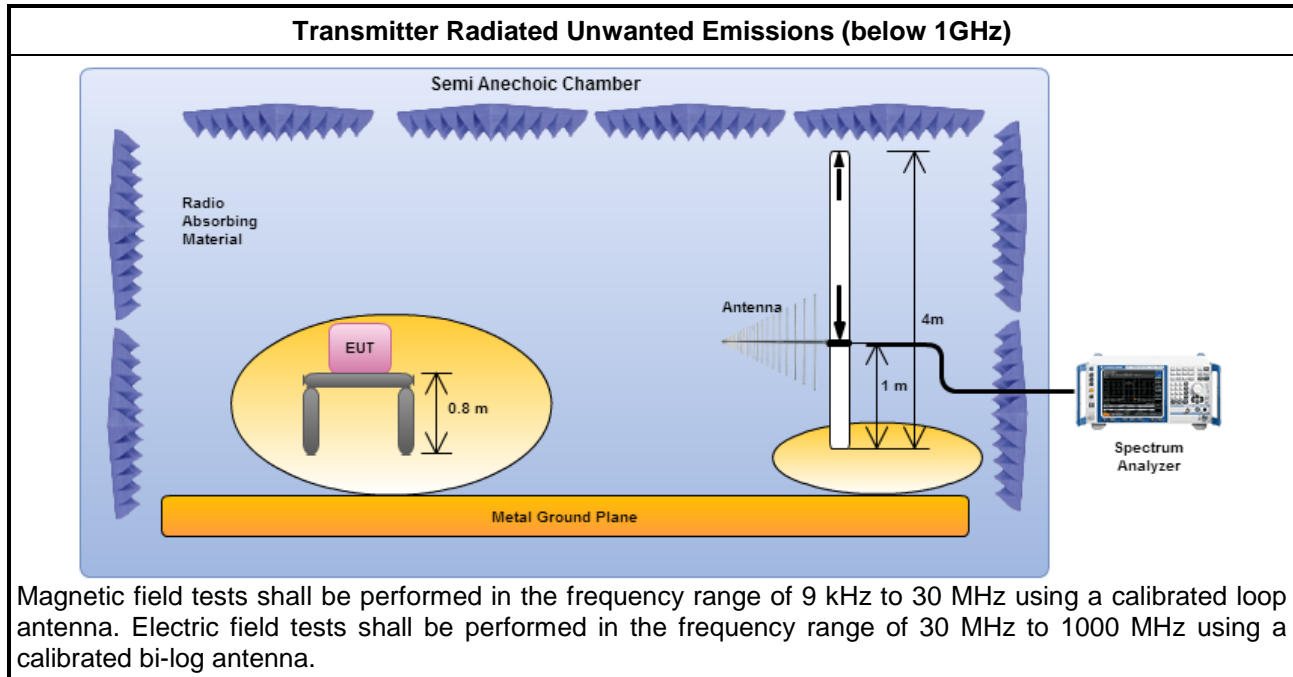
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

Test Method – General Information	
<input checked="" type="checkbox"/>	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).
<input checked="" type="checkbox"/>	The average emission levels shall be measured in [duty cycle \geq 98 or duty factor].
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.10.3 bandedge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.
<input checked="" type="checkbox"/>	For the transmitter unwanted emissions shall be measured using following options below:
<input type="checkbox"/>	Refer as ANSI C63.10, clause 4.1.2.3 (Reduced VBW) – Duty cycle \geq 100%.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 4.1.4.2.4 average value of pulsed emissions. Adjusted by a “duty cycle correction factor”, derived from $20\log(\text{dwell time}/100 \text{ ms})$. Average emission = peak emission + 20 log (duty cycle).
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.
<input checked="" type="checkbox"/>	For the transmitter bandedge emissions shall be measured using following options below:
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.10 for band-edge testing.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 6.10.6 for marker-delta method for band-edge measurements.
<input checked="" type="checkbox"/>	For radiated measurement.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1 GHz and test distance is 3m.
<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)

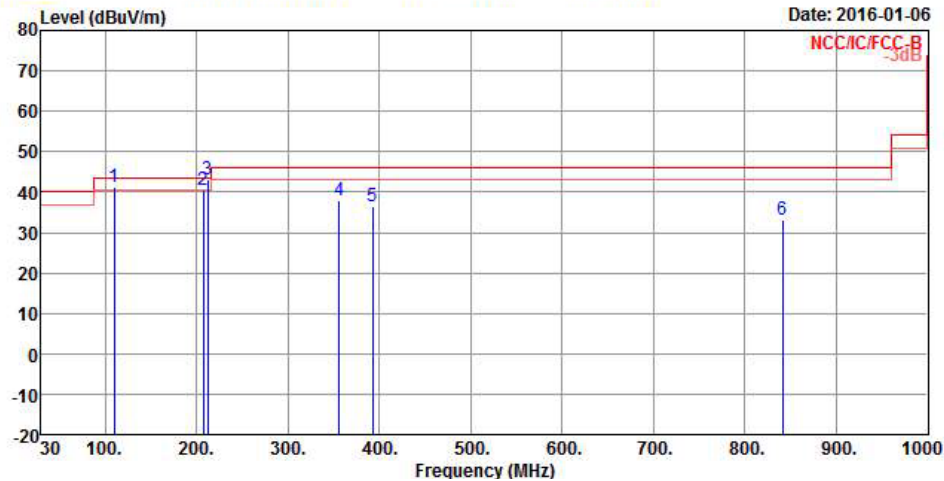
All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

3.4.6 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Transmitter Radiated Unwanted Emissions (Below 1GHz)									
Operating Mode		1				Polarization		V	
Operating Function		Transmit mode with Adapter							
<div><div><div>Level (dBuV/m)</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div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Transmitter Radiated Unwanted Emissions (Below 1GHz)

Operating Mode	1	Polarization	H
Operating Function	Transmit mode with Adapter		



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 !	109.540	41.29	-2.21	43.50	48.60	18.38	1.62	27.31	QP
2	207.510	40.44	-3.06	43.50	48.74	16.33	2.31	26.94	Peak
3 !	212.360	43.26	-0.24	43.50	51.53	16.33	2.32	26.92	QP
4	355.920	37.77	-8.23	46.00	40.30	21.40	3.10	27.03	Peak
5	392.780	36.55	-9.45	46.00	38.41	22.20	3.22	27.28	Peak
6	840.920	33.05	-12.95	46.00	29.04	27.06	4.67	27.72	Peak

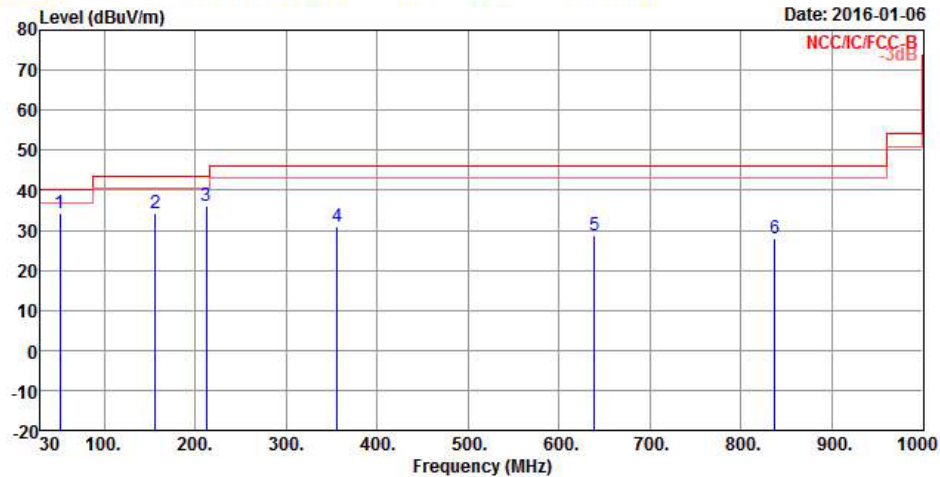
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

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	2	Polarization	V
Operating Function	Normal mode with Adapter		



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	51.340	34.41	-5.59	40.00	46.44	14.45	1.04	27.52	Peak
2	156.100	34.23	-9.27	43.50	42.78	16.62	1.96	27.13	Peak
3	212.360	36.06	-7.44	43.50	44.33	16.33	2.32	26.92	Peak
4	355.920	31.10	-14.90	46.00	33.63	21.40	3.10	27.03	Peak
5	639.160	28.76	-17.24	46.00	27.27	25.24	4.21	27.96	Peak
6	837.040	28.02	-17.98	46.00	24.07	27.01	4.66	27.72	Peak

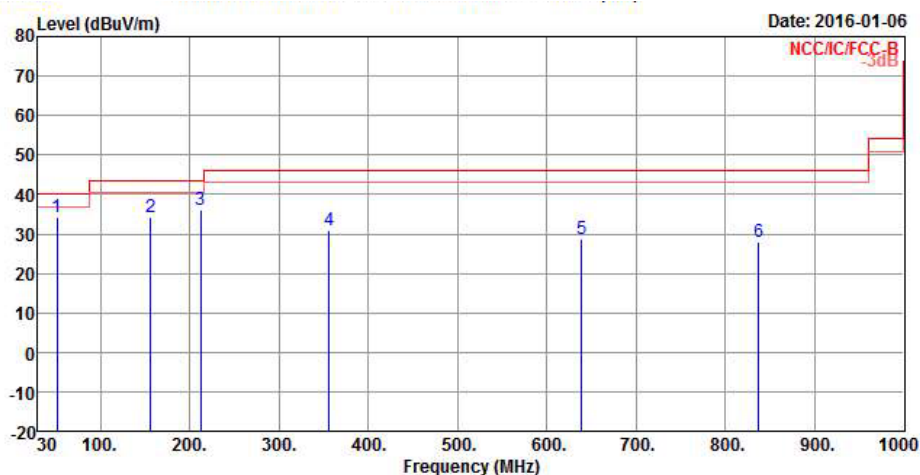
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

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	2	Polarization	H
Operating Function	Normal mode with Adapter		

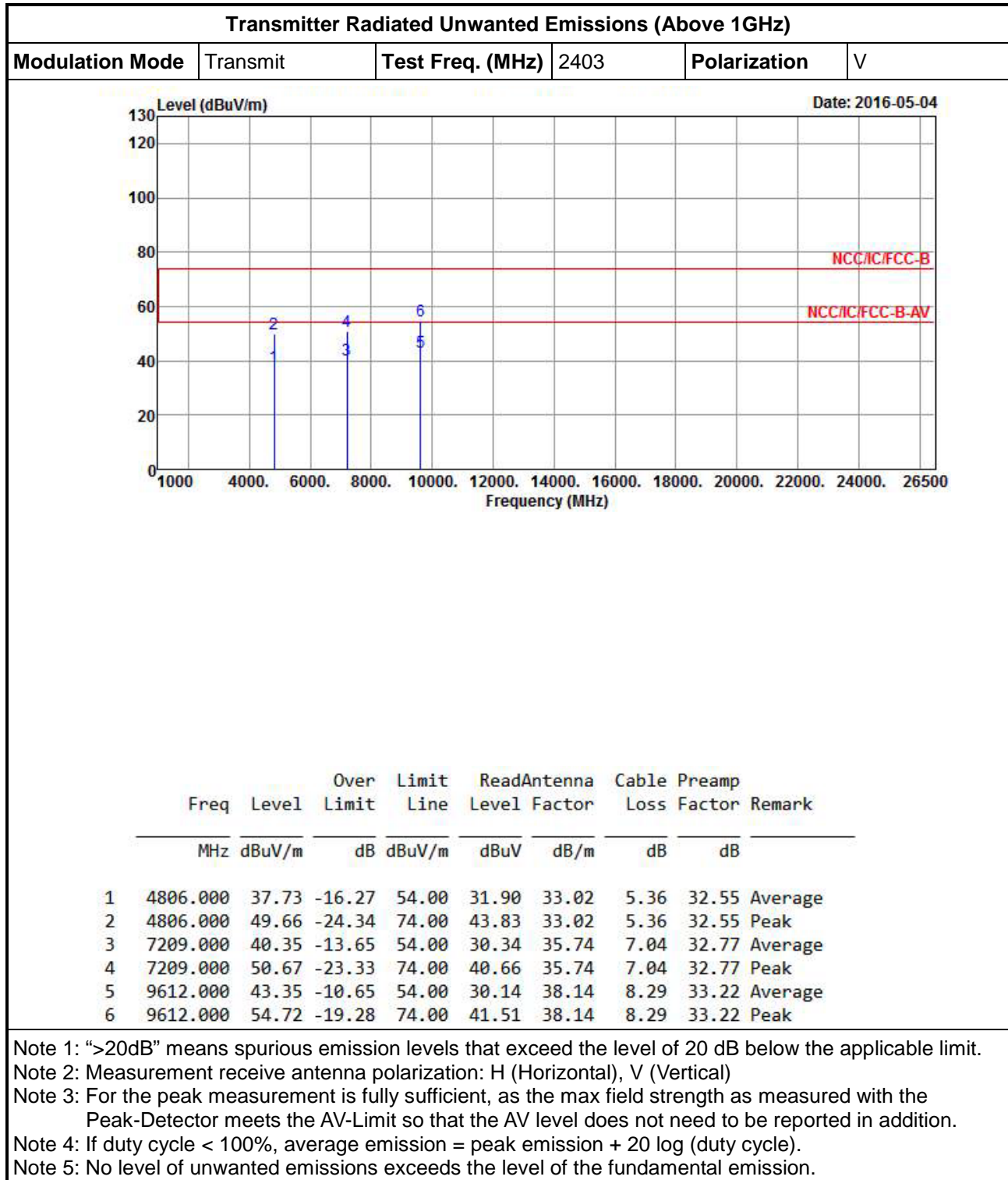


	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Preamp	Loss Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	51.340	34.41	-5.59	40.00	46.44	14.45	1.04	27.52 Peak
2	156.100	34.23	-9.27	43.50	42.78	16.62	1.96	27.13 Peak
3	212.360	36.06	-7.44	43.50	44.33	16.33	2.32	26.92 Peak
4	355.920	31.10	-14.90	46.00	33.63	21.40	3.10	27.03 Peak
5	639.160	28.76	-17.24	46.00	27.27	25.24	4.21	27.96 Peak
6	837.040	28.02	-17.98	46.00	24.07	27.01	4.66	27.72 Peak

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

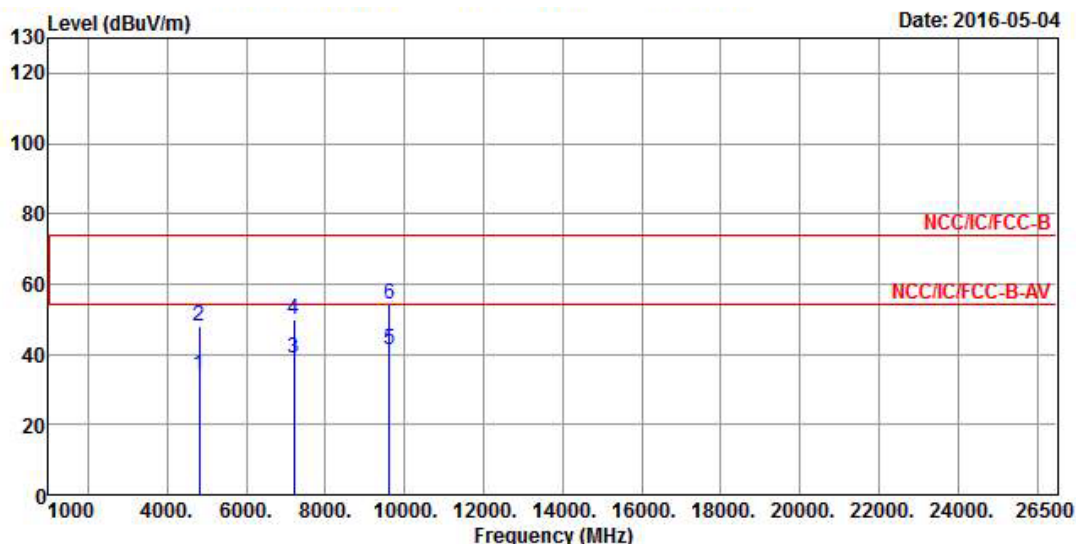
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

3.4.7 Transmitter Radiated Unwanted Emissions (Above 1GHz)


Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	Transmit	Test Freq. (MHz)	2403	Polarization	H
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	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4806.000	34.08	-19.92	54.00	29.17	33.02	4.44	32.55	Average
2	4806.000	48.09	-25.91	74.00	43.18	33.02	4.44	32.55	Peak
3	7209.000	38.83	-15.17	54.00	30.38	35.74	5.48	32.77	Average
4	7209.000	49.89	-24.11	74.00	41.44	35.74	5.48	32.77	Peak
5	9612.000	41.29	-12.71	54.00	29.66	38.14	6.71	33.22	Average
6	9612.000	54.01	-19.99	74.00	42.38	38.14	6.71	33.22	Peak

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

Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

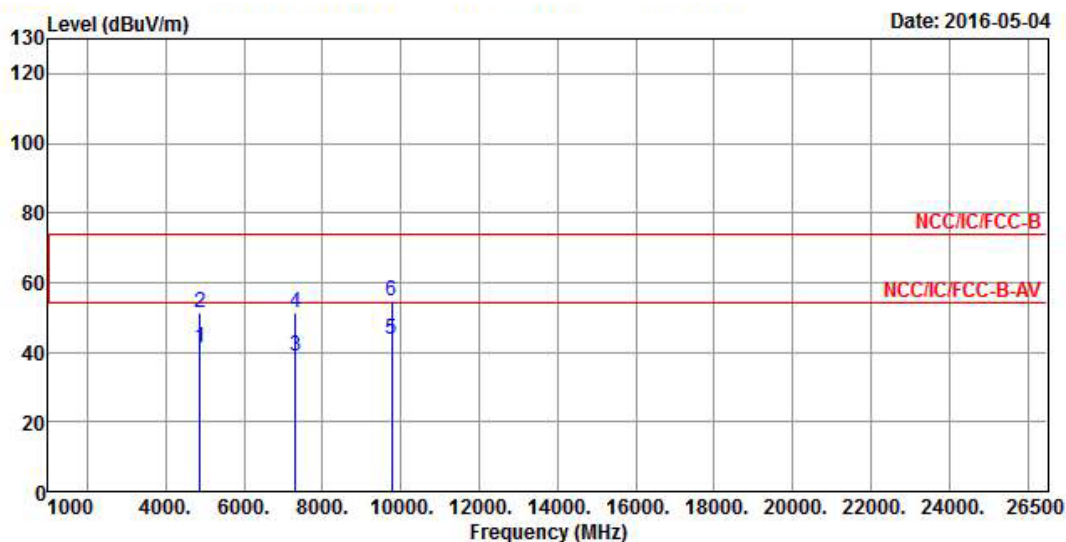
Note 3: For the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 4: If duty cycle < 100%, average emission = peak emission + 20 log (duty cycle).

Note 5: No level of unwanted emissions exceeds the level of the fundamental emission.

Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	Transmit	Test Freq. (MHz)	2439	Polarization	V
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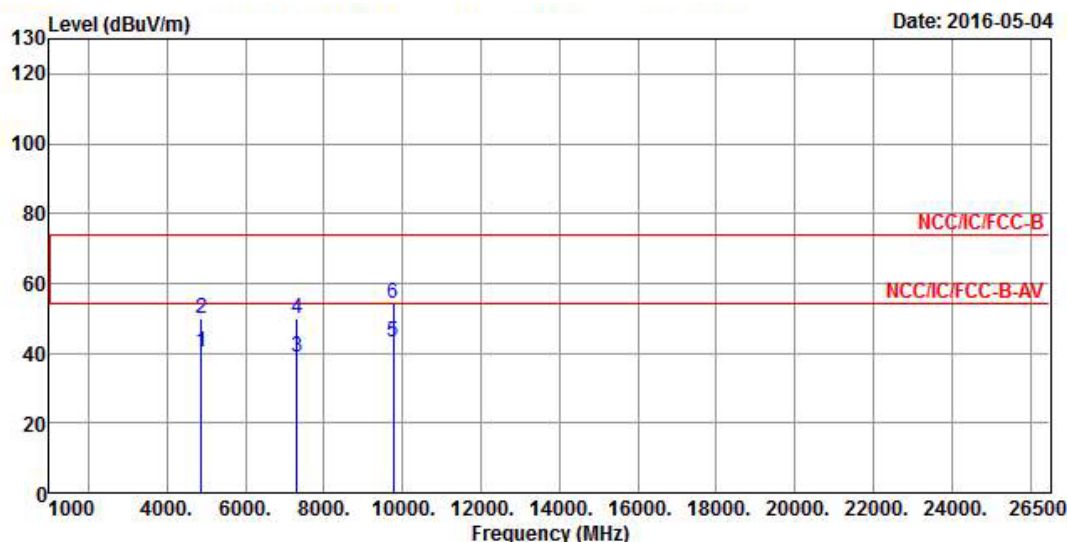


	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	4878.000	41.49	-12.51	54.00	35.36	33.16	5.50	32.53 Average
2	4878.000	51.16	-22.84	74.00	45.03	33.16	5.50	32.53 Peak
3	7317.000	38.78	-15.22	54.00	28.52	36.05	7.02	32.81 Average
4	7317.000	51.38	-22.62	74.00	41.12	36.05	7.02	32.81 Peak
5	9756.000	43.60	-10.40	54.00	30.20	38.42	8.20	33.22 Average
6	9756.000	54.87	-19.13	74.00	41.47	38.42	8.20	33.22 Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
 Note 3: For 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.
 Note 4: If duty cycle < 100%, average emission = peak emission + 20 log (duty cycle).
 Note 5: No level of unwanted emissions exceeds the level of the fundamental emission.

Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	Transmit	Test Freq. (MHz)	2439	Polarization	H
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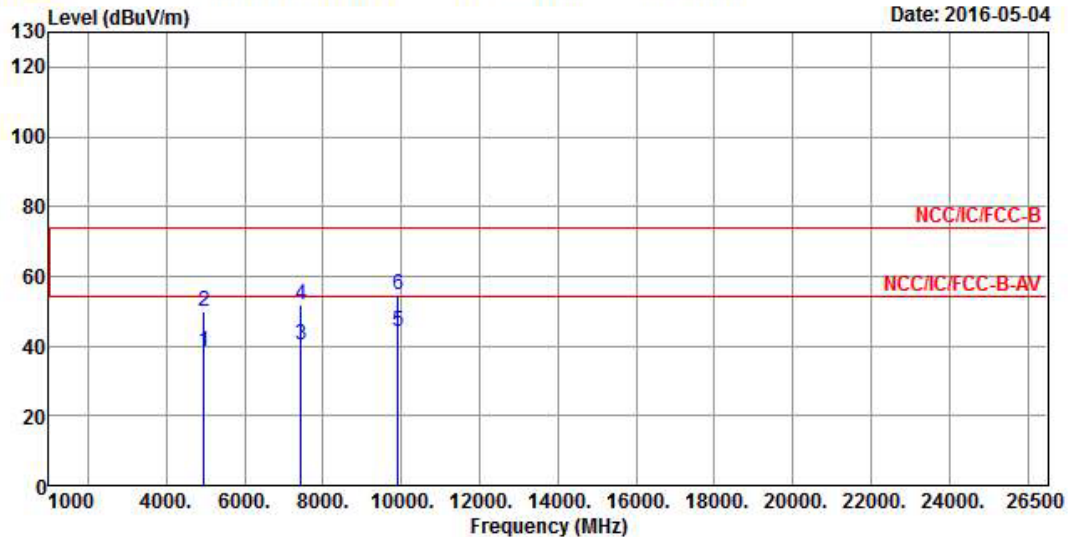


	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	4878.000	40.42	-13.58	54.00	34.29	33.16	5.50	32.53 Average
2	4878.000	49.97	-24.03	74.00	43.84	33.16	5.50	32.53 Peak
3	7317.000	38.68	-15.32	54.00	28.42	36.05	7.02	32.81 Average
4	7317.000	49.89	-24.11	74.00	39.63	36.05	7.02	32.81 Peak
5	9756.000	43.11	-10.89	54.00	29.71	38.42	8.20	33.22 Average
6	9756.000	54.28	-19.72	74.00	40.88	38.42	8.20	33.22 Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
 Note 3: For 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.
 Note 4: If duty cycle < 100%, average emission = peak emission + 20 log (duty cycle).
 Note 5: No level of unwanted emissions exceeds the level of the fundamental emission.

Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	Transmit	Test Freq. (MHz)	2478	Polarization	V
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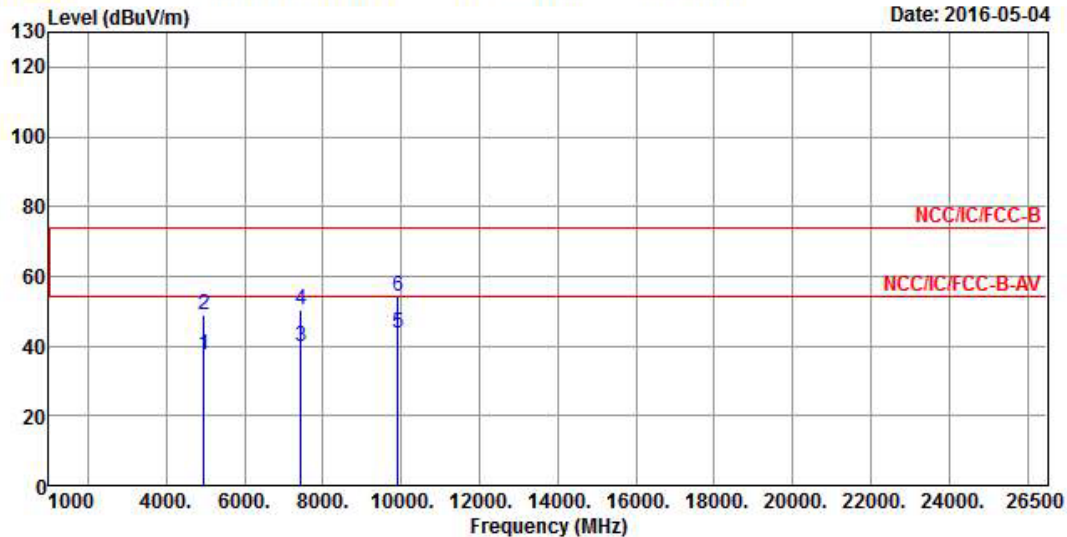


	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Preamp Loss	Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB
1	4956.000	38.22	-15.78	54.00	31.76	33.33	5.65	32.52 Average
2	4956.000	49.81	-24.19	74.00	43.35	33.33	5.65	32.52 Peak
3	7434.000	40.38	-13.62	54.00	29.87	36.32	7.03	32.84 Average
4	7434.000	51.62	-22.38	74.00	41.11	36.32	7.03	32.84 Peak
5	9912.000	43.92	-10.08	54.00	30.20	38.73	8.20	33.21 Average
6	9912.000	54.90	-19.10	74.00	41.18	38.73	8.20	33.21 Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
 Note 3: For 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.
 Note 4: If duty cycle < 100%, average emission = peak emission + 20 log (duty cycle).
 Note 5: No level of unwanted emissions exceeds the level of the fundamental emission.

Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	Transmit	Test Freq. (MHz)	2478	Polarization	H
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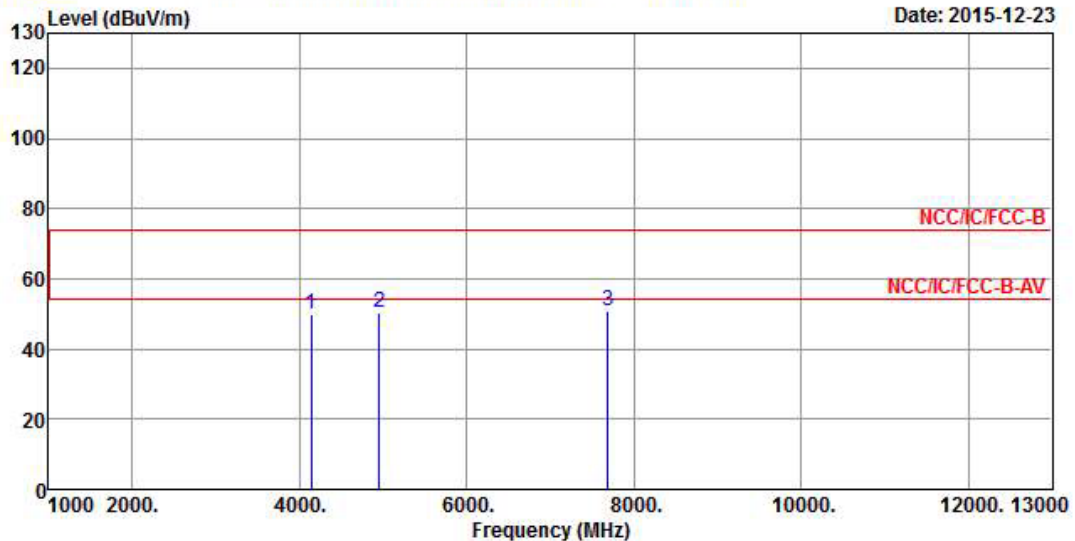


	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Factor	Preamp Loss	Remark
	MHz	dBUV/m	dB	dBUV/m	dBuV	dB/m	dB	dB
1	4956.000	37.62	-16.38	54.00	31.16	33.33	5.65	32.52 Average
2	4956.000	48.88	-25.12	74.00	42.42	33.33	5.65	32.52 Peak
3	7434.000	39.90	-14.10	54.00	29.39	36.32	7.03	32.84 Average
4	7434.000	50.57	-23.43	74.00	40.06	36.32	7.03	32.84 Peak
5	9912.000	43.56	-10.44	54.00	29.84	38.73	8.20	33.21 Average
6	9912.000	54.16	-19.84	74.00	40.44	38.73	8.20	33.21 Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
 Note 3: For 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.
 Note 4: If duty cycle < 100%, average emission = peak emission + 20 log (duty cycle).
 Note 5: No level of unwanted emissions exceeds the level of the fundamental emission.

Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	Normal	Polarization	V
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	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Factor	Preamp Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4138.3400	50.12	-23.88	74.00	52.27	32.61	0.00	34.76	Peak
2	4956.1200	50.38	-23.62	74.00	51.67	33.33	0.00	34.62	Peak
3	7687.2100	50.70	-23.30	74.00	49.02	36.72	0.00	35.04	Peak

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

Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

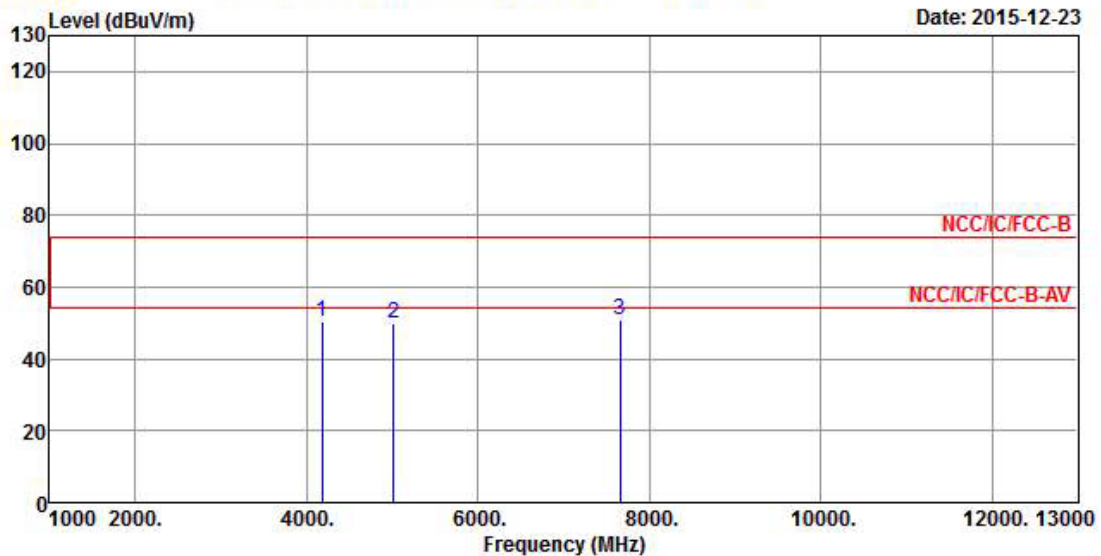
Note 3: For the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 4: If duty cycle < 100%, average emission = peak emission + 20 log (duty cycle).

Note 5: No level of unwanted emissions exceeds the level of the fundamental emission.

Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	Normal	Polarization	H
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	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	4184.6300	50.31	-23.69	74.00	52.48	32.59	0.00	34.76 Peak
2	5010.6300	49.67	-24.33	74.00	50.86	33.42	0.00	34.61 Peak
3	7661.2600	50.74	-23.26	74.00	49.07	36.70	0.00	35.03 Peak

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

Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Note 3: For 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.

Note 4: If duty cycle < 100%, average emission = peak emission + 20 log (duty cycle).

Note 5: No level of unwanted emissions exceeds the level of the fundamental emission.

3.4.8 Transmitter Radiated Bandedge Emissions

2400-2483.5 MHz Transmitter Radiated Bandedge Emissions									
Modulation Mode	Test Freq. (MHz)	Measure Distance (m)	Freq. (MHz) PK	Level (dBuV/m) PK	Limit (dBuV/m) QPK	Freq. (MHz) AV	Level (dBuV/m) AV	Limit (dBuV/m) AV	Pol.
Transmit	2403	3	2336.112	55.59	74	2330.910	44.88	54	V
Transmit	2478	3	2499.360	56.37	74	2492.320	43.97	54	V
Note 1: Measurement worst emissions of receive antenna polarization.									

4 Test Equipment and Calibration Data

< AC Conduction >

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
EMC Receiver	KEYSIGHT	N9038A	MY54130031	20Hz ~ 8.4GHz	Apr. 08, 2015	Apr. 07, 2016
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-477	9kHz ~ 30MHz	Jan. 22, 2015	Jan. 21, 2016
RF Cable-CON	HUBER+SUHNER	RG213/U	07611832020001	9kHz ~ 30MHz	Oct. 30, 2015	Oct. 29, 2016
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	NCR	NCR

< RF Conducted >

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101500	9KHz~40GHz	May 06, 2015	May 05, 2016
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Jul. 28, 2015	Jul. 27, 2016
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	Feb. 04, 2016	Feb. 03, 2017
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	Feb. 04, 2016	Feb. 03, 2017

< Radiated Emission >

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz ~ 1GHz 3m	Nov. 28, 2015	Nov. 27, 2016
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	1GHz ~ 18GHz 3m	Dec. 16, 2015	Dec. 15, 2016
Amplifier	HP	8447D	2944A08033	10kHz ~ 1.3GHz	May 11, 2015	May 10, 2016
Amplifier	Agilent	8449B	3008A02120	1GHz ~ 26.5GHz	Sep. 02, 2015	Sep. 01, 2016
Spectrum	R&S	FSP40	100004	9kHz ~ 40GHz	Apr. 02, 2015	Apr. 01, 2016
Spectrum	R&S	FSV40	101513	9kHz ~ 40GHz	Feb. 16, 2016	Feb. 15, 2017
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30MHz ~ 1GHz	Sep. 18, 2015	Sep. 17, 2016
Horn Antenna	ETS · LINDGREN	3115	6741	1GHz ~ 18GHz	Jul. 15, 2015	Jul. 14, 2016
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	18GHz ~ 40GHz	Jan. 27, 2015	Jan. 26, 2016
Loop Antenna	R&S	HFH2-Z2	100330	9 kHz~30 MHz	Nov. 16, 2015	Nov. 15, 2016