FCC Test Report

Equipment	:	**2.1 Audio Docking Station**
Brand Name	:	**j5create**
Model No.	:	**JSS800**
FCC ID	:	**2AD37JSS800**
Standard	:	**47 CFR FCC Part 15.247**
Operating Band	:	**2400 MHz – 2483.5 MHz**
FCC Classification	:	**DSS**
Applicant	:	**KaiJet Technology International Limited** 6F., No.113, Zhongcheng Rd., Tucheng Dist., New Taipei City 236, Taiwan, R.O.C.
Manufacturer	:	**Magic Control Technology Corp.** 10F., No.123, Zhongcheng Rd., Tucheng Dist., New Taipei City 236, Taiwan R.O.C.

The product sample received on Nov. 19, 2015 and completely tested on Dec. 21, 2015. 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

Testing Laboratory
1190

Table of Contents

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]: 0.4210520MHz 46.98 (Margin 10.45dB) - QP 40.78 (Margin 6.65 dB) - AV	FCC 15.207	Complied
3.3	15.247(a)	20dB Bandwidth	EDR: 1.2460MHz	N/A	Complied
3.3	15.247(a)	Carrier Frequency Separation (ChS)	EDR: 1.0029MHz	ChS ≥ BW_{20dB} x2/3.	Complied
3.4	15.247(a)	Number of Hopping Frequencies (N)	Max: 79 Min: 15	N ≥ 15	Complied
3.5	15.247(a)	Time of Occupancy (Dwell Time)	EDR: 0.315sec	0.4 s within 0.4 x N	Complied
3.6	15.247(b)	RF Output Power (Maximum Peak Conducted Output Power)	Power [dBm] BR: 0.34 EDR: -0.37	Power [dBm] BR:21 EDR:21	Complied
3.7	15.247(d)	Transmitter Radiated Bandedge Emissions	Restricted Bands [dBuV/m at 3m]: 2483.52MHz 57.42 (Margin 16.58dB) - PK 45.34 (Margin 8.66dB) - AV	Non-Restricted Bands: > 20 dBc Restricted Bands: FCC 15.209	Complied
3.8	15.247(d)	Transmitter Radiated Unwanted Emissions	Restricted Bands [dBuV/m at 3m]:158.04MHz 40.42 (Margin 3.08dB) - PK	Non-Restricted Bands: > 20 dBc Restricted Bands: FCC 15.209	Complied

Revision History

Report No.	Version	Description	Issued Date
FR5N1918	Rev. 03	Initial issue of report	Jun. 29, 2016

1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information				
Frequency Range (MHz)	**Bluetooth Mode**	**Ch. Frequency (MHz)**	**Channel Number**	**RF Output Power (dBm)**
2400-2483.5	BR / EDR	2402-2480	0-78 [79]	0.34
Note 1: Bluetooth BR uses a GFSK (1Mbps). Note 2: Bluetooth EDR uses a combination of π/4-DQPSK (2Mbps) and 8DPSK (3Mbps). Note 3: RF output power specifies that Maximum Peak Conducted Output Power.				

1.1.2 Antenna Information

Antenna Category	
☒	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.

Antenna General Information		
Ant. Cat.	**Ant. Type**	**Gain (dBi)**
Integral	Build-in PCB	1.76

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 test mode for worst duty cycle	
Test Signal Duty Cycle (x)	**Power Duty Factor [dB] – (10 log 1/x)**
☒ 78.38% - test mode single channel-DH5	1.06
☒ 78.76% - test mode single channel-DH5	1.04
Bluetooth ACL packets can be 1, 3, or 5 time slots. The DH1 packet can cover a single time slot. The DH3 packet can cover up to 3 time slots. The DH5 packet can cover up to 5 time slots. Operate DH5 at maximum dwell time and maximum duty cycle.	

1.1.5 EUT Operational Condition

Supply Voltage	☒ AC mains	☒ DC	
Type of DC Source	☒ External AC adapter	☒ From Host System	☐ From Battery

1.2 Accessories and Support Equipment

Accessories Information				
AC Adapter 1	Brand Name	Asian Power Devices Inc	Model Name	WA-40E19FU-AAAF
	Power Rating	I/P: 100-240V ~ 50-60Hz, 1A Max ; O/P: 19V ⎓ 2.1A		
	Power Cord	Wall mount, no power cord.		
AC Adapter 2	Brand Name	Powertron Electronics Corp.	Model Name	PA1030-190T3A189
	Power Rating	I/P: 100-240V ~ 50-60Hz, 0.8A ; O/P: 19V ⎓ 1.89A 36W Max		
	Power Cord	0.8 meter, non-shielded cable, w/o ferrite core		
USB Cable 1	Brand Name	Hisetec Electronic Co.,Ltd.	Model Name	5CU12060000001
	Type	USB C Type M to USB 2.0 AM		
	Signal Line	0.6 meter, Shielded cable, w/o ferrite core		
USB Cable 2	Brand Name	Hisetec Electronic Co.,Ltd.	Model Name	5CU12060000001
	Type	USB C Type M to USB 2.0 AM		
	Signal Line	0.6 meter, Shielded cable, w/o ferrite core		
Audio Cable	Brand Name	Hisetec Electronic Co.,Ltd.	Model Name	5CZ02100000001
	Signal Line	1 meter, non-shielded cable, w/o ferrite core		

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

Support Equipment - Radiated Emission			
No.	**Equipment**	**Brand Name**	**Model Name**
1	Notebook	DELL	E5540
2	AC Adapter for Notebook	DELL	HA65NM130

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
- FCC Public Notice DA 00-705

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 City, Taiwan, R.O.C.
		TEL :	886-3-327-3456 FAX : 886-3-327-0973

Test Site Registration Number: 636805			
Test Condition	**Test Site No.**	**Test Engineer**	**Test Environment**
AC Conduction	CO04-HY	Anthony	22°C / 59%
RF Conducted	TH01-HY	Howard	23°C / 64%
Radiated Emission	03CH09-HY	Terry	21.9°C / 59%

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		±2.3 dB
Emission bandwidth, 6dB bandwidth		±0.6 %
RF output power, conducted		±0.1 dB
Power density, conducted		±0.6 dB
Unwanted emissions, conducted	9 – 150 kHz	±0.4 dB
	0.15 – 30 MHz	±0.4 dB
	30 – 1000 MHz	±0.6 dB
	1 – 18 GHz	±0.5 dB
	18 – 40 GHz	±0.5 dB
	40 – 200 GHz	N/A
All emissions, radiated	9 – 150 kHz	±2.5 dB
	0.15 – 30 MHz	±2.3 dB
	30 – 1000 MHz	±2.6 dB
	1 – 18 GHz	±3.6 dB
	18 – 40 GHz	±3.8 dB
	40 – 200 GHz	N/A
Temperature		±0.8 °C
Humidity		±5 %
DC and low frequency voltages		±0.9%
Time		±1.4 %
Duty Cycle		±0.6 %

2 Test Configuration of EUT

2.1 The Worst Case Modulation Configuration

Worst Modulation Used for Conformance Testing					
Bluetooth Mode	**Transmit Chains (N_{TX})**	**Data Rate**	**Modulation Mode**	**RF Output Power (dBm)**	**Worst Mode**
BR	1	1 Mbps	BR-1Mbps	0.34	BR-1Mbps
EDR	1	2 Mbps	EDR-2Mbps	-0.78	
EDR	1	3 Mbps	EDR-3Mbps	-0.37	
Note 1: Bluetooth BR uses a combination of GFSK (1Mbps). Note 2: Bluetooth EDR uses a combination of π/4-DQPSK (2Mbps) and 8DPSK (3Mbps). Note 3: Modulation modes consist below configuration: FHSS BR-1Mbps: GFSK (1Mbps), EDR-2Mbps: π/4-DQPSK (2Mbps), EDR-3Mbps: 8DPSK(3Mbps) Note 4: RF output power specifies that Maximum Peak Conducted Output Power.					

2.2 The Worst Case Power Setting Parameter

The Worst Case Power Setting Parameter			
Test Software Version	ISRT_ 2.1.10.3488		
Modulation Mode	**2402 MHz**	**2441 MHz**	**2480 MHz**
BR,1Mbps	Default	Default	Default
EDR,2Mbps	Default	Default	Default
EDR,3Mbps	Default	Default	Default

2.3 The Worst Case Measurement Configuration

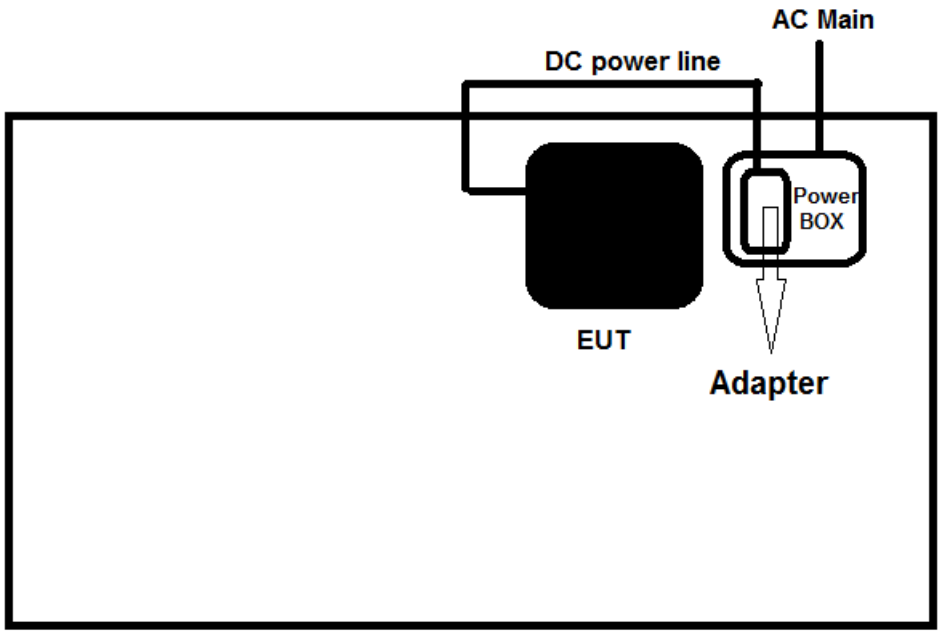
The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
Operating Mode	Operating Mode Description
1	Radio link with adapter 1
2	Radio link with adapter 2

The Worst Case Mode for Following Conformance Tests	
Tests Item	RF Output Power, 20dB Bandwidth, Carrier Frequency Separation (ChS) Number of Hopping Frequencies (N), Time of Occupancy (Dwell Time)
Test Condition	Conducted measurement at transmit chains
Modulation Mode	BR-1Mbps, EDR-3Mbps

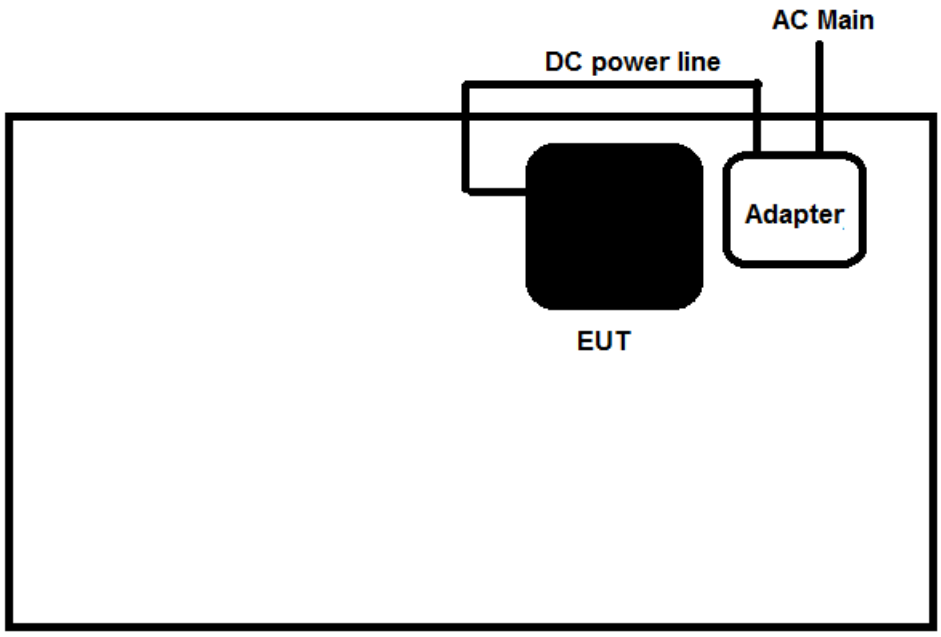
The Worst Case Mode for Following Conformance Tests		
Tests Item	Transmitter Radiated Bandedge Emissions Transmitter Radiated Unwanted Emissions	
Test Condition	Radiated measurement	
User Position	☐ EUT will be placed in fixed position.	
	☒ EUT will be placed in mobile position and operating multiple positions.	
	☐ EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions.	
Operating Mode	Operating Mode Description	
1	Radio link with adapter 1	
2	Radio link with adapter 2	
Modulation Mode	BR-1Mbps、EDR-2Mbps、EDR-3Mbps	
Orthogonal Planes of EUT	**X Plane**	**Z Plane**
		
	V	

2.4 Test Setup Diagram

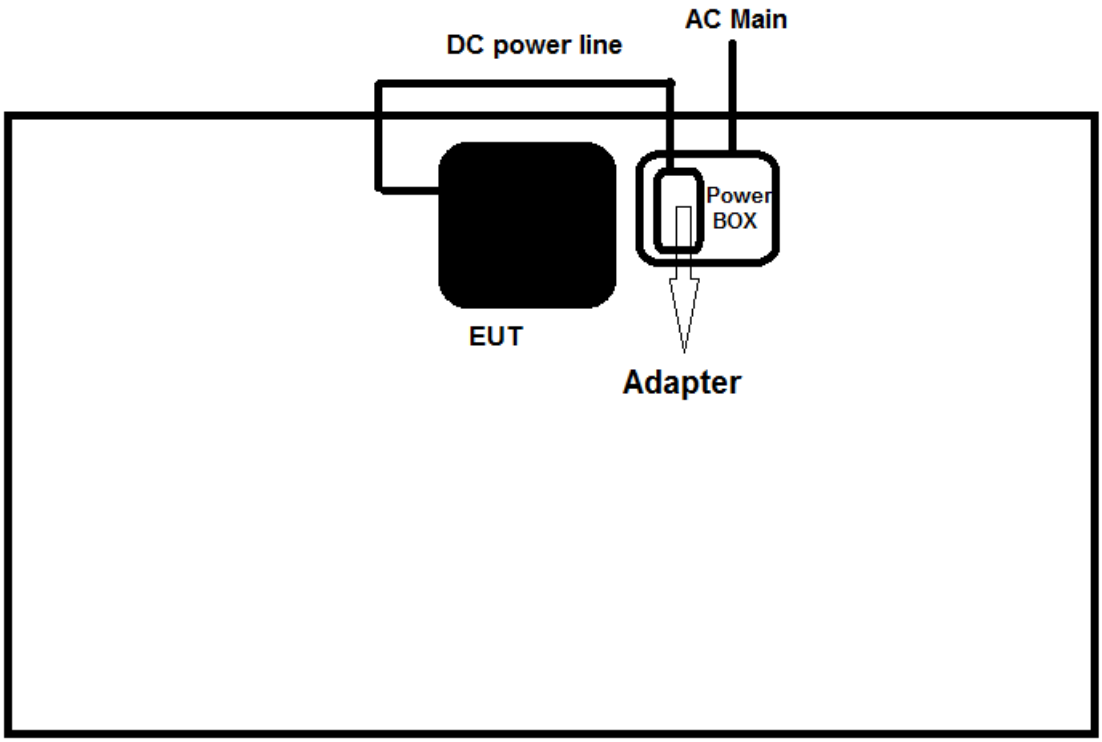
Test Setup Diagram – AC Line Conducted Emission Test (Mode 1)



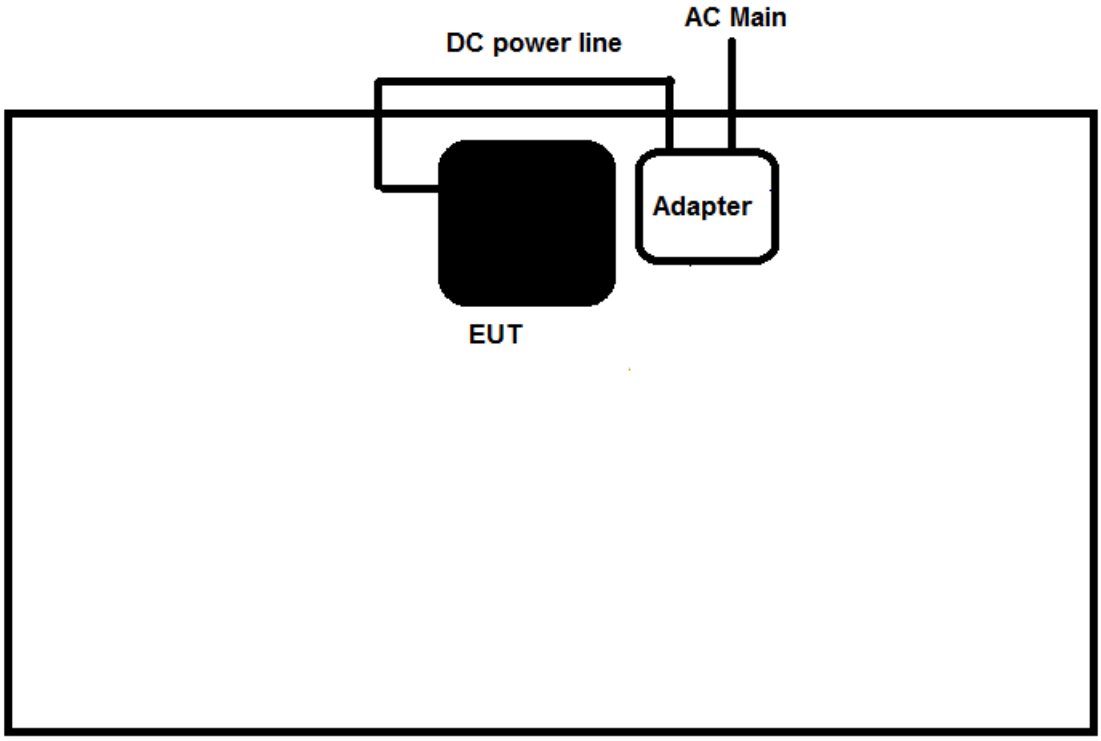
Test Setup Diagram – AC Line Conducted Emission Test (Mode 2)



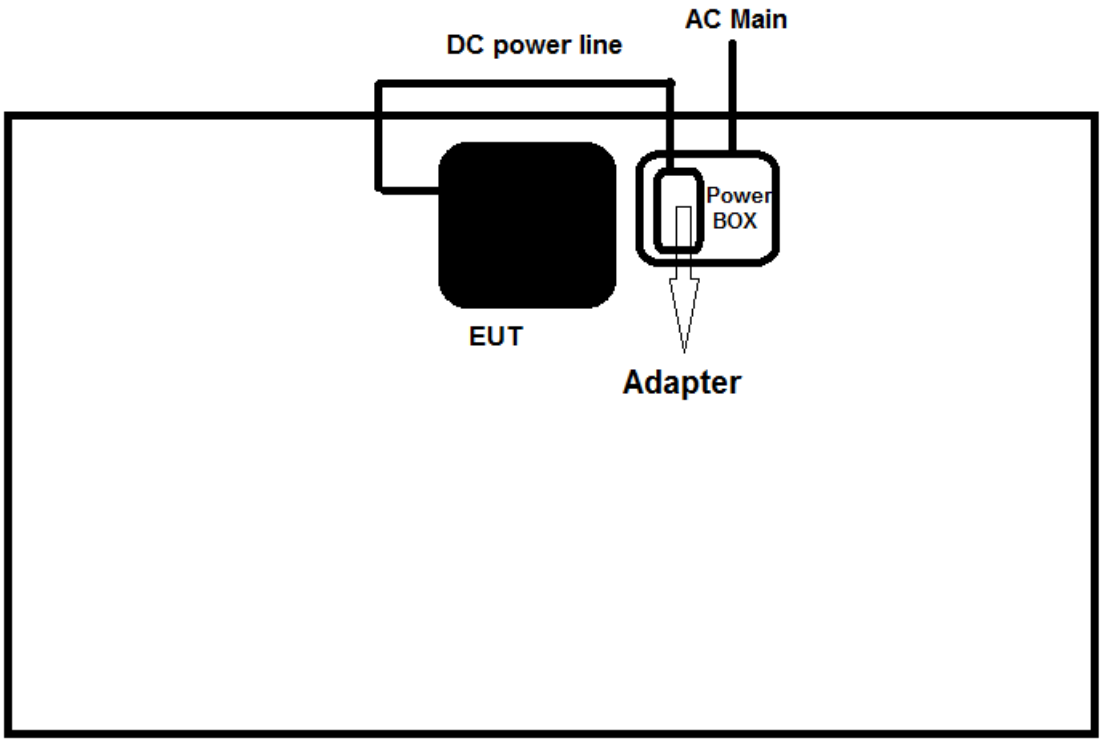
Test Setup Diagram - Radiated Below 1GHz Test (Mode 1)



Test Setup Diagram - Radiated Below 1GHz Test (Mode 2)



Test Setup Diagram - Radiated Above 1GHz Test



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.		

3.2 Measuring Instruments

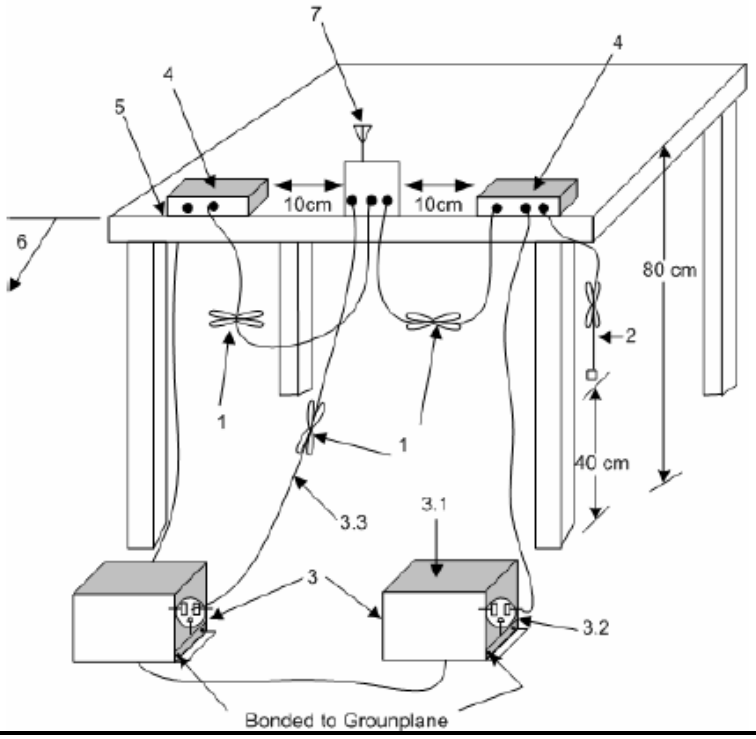
Refer a test equipment and calibration data table in this test report.

3.2.1 Test Procedures

Test Method
☒ Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

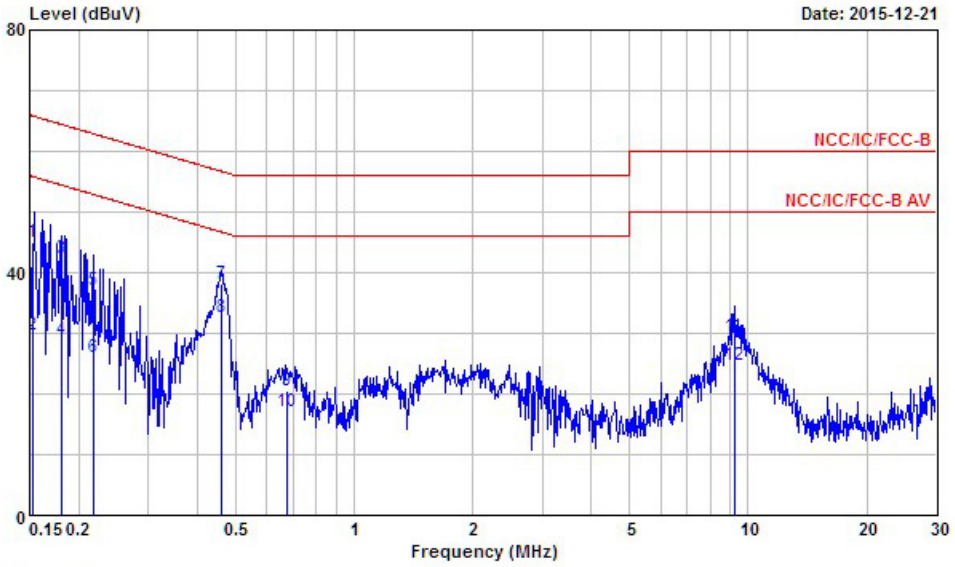
3.2.2 Test Setup

AC Power-line Conducted Emissions



3.2.3 Test Result of AC Power-line Conducted Emissions

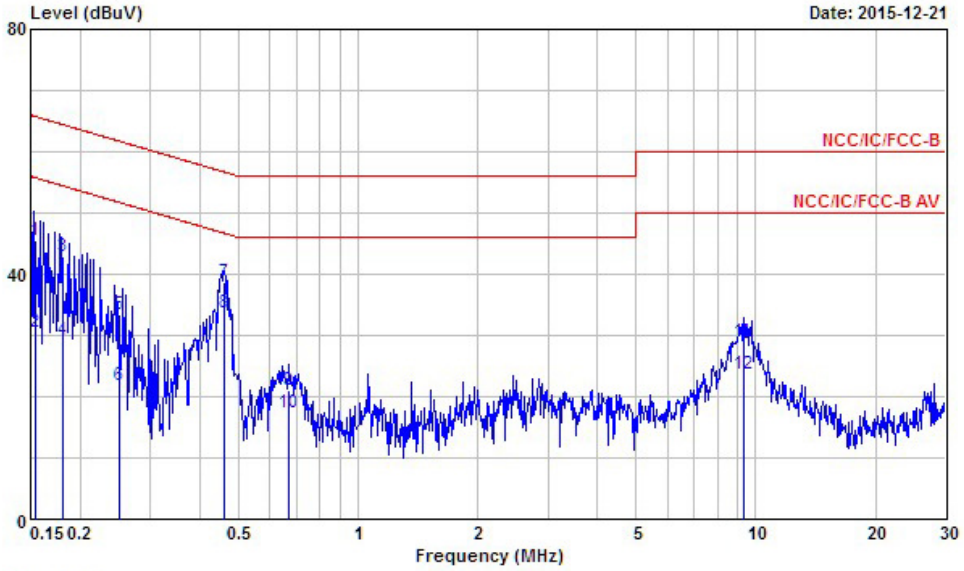
AC Power-line Conducted Emissions Result			
Operating Mode	1	**Power Phase**	Neutral
Operating Function	Radio link with adapter 1		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1530270	44.96	-20.87	65.83	44.67	0.07	0.22	QP
2	0.1530270	29.80	-26.03	55.83	29.51	0.07	0.22	Average
3	0.1812300	42.34	-22.09	64.43	42.00	0.07	0.27	QP
4	0.1812300	28.96	-25.47	54.43	28.62	0.07	0.27	Average
5	0.2189070	37.07	-25.79	62.86	36.73	0.07	0.27	QP
6	0.2189070	26.14	-26.72	52.86	25.80	0.07	0.27	Average
7	0.4617840	38.06	-18.60	56.66	37.89	0.07	0.10	QP
8	0.4617840	32.76	-13.90	46.66	32.59	0.07	0.10	Average
9	0.6758660	20.65	-35.35	56.00	20.47	0.08	0.10	QP
10	0.6758660	17.07	-28.93	46.00	16.89	0.08	0.10	Average
11	9.228	29.54	-30.46	60.00	29.12	0.23	0.19	QP
12	9.228	24.70	-25.30	50.00	24.28	0.23	0.19	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.)

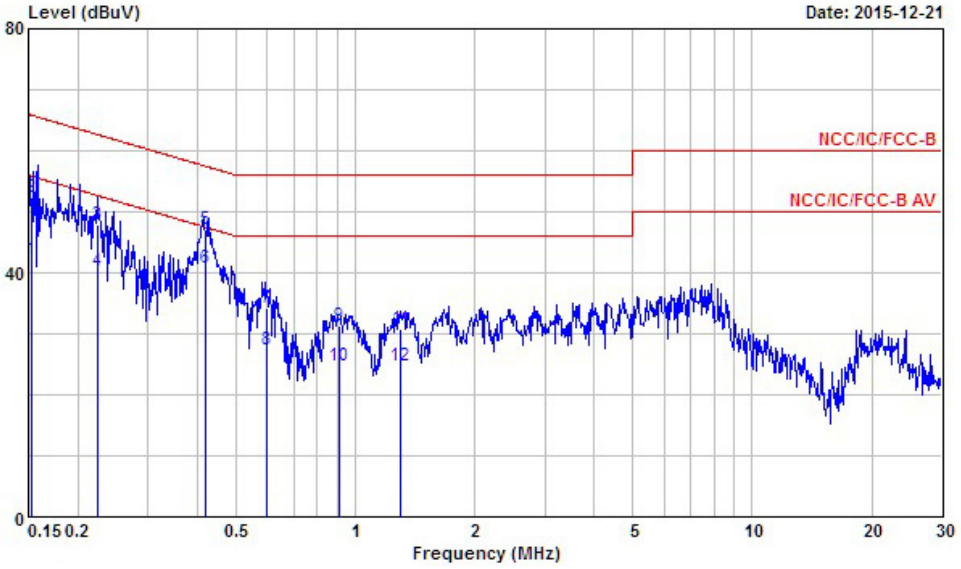
AC Power-line Conducted Emissions Result			
Operating Mode	1	**Power Phase**	Line
Operating Function	Radio link with adapter 1		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1537620	45.59	-20.20	65.79	45.32	0.05	0.22	QP
2	0.1537620	30.49	-25.30	55.79	30.22	0.05	0.22	Average
3	0.1808080	42.80	-21.65	64.45	42.47	0.06	0.27	QP
4	0.1808080	29.19	-25.26	54.45	28.86	0.06	0.27	Average
5	0.2497510	33.30	-28.47	61.77	33.01	0.06	0.23	QP
6	0.2497510	21.81	-29.96	51.77	21.52	0.06	0.23	Average
7	0.4603600	38.80	-17.89	56.69	38.63	0.07	0.10	QP
8	0.4603600	33.63	-13.06	46.69	33.46	0.07	0.10	Average
9	0.6678660	21.06	-34.94	56.00	20.88	0.08	0.10	QP
10	0.6678660	17.29	-28.71	46.00	17.11	0.08	0.10	Average
11	9.300	29.04	-30.96	60.00	28.63	0.22	0.19	QP
12	9.300	23.70	-26.30	50.00	23.29	0.22	0.19	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.)

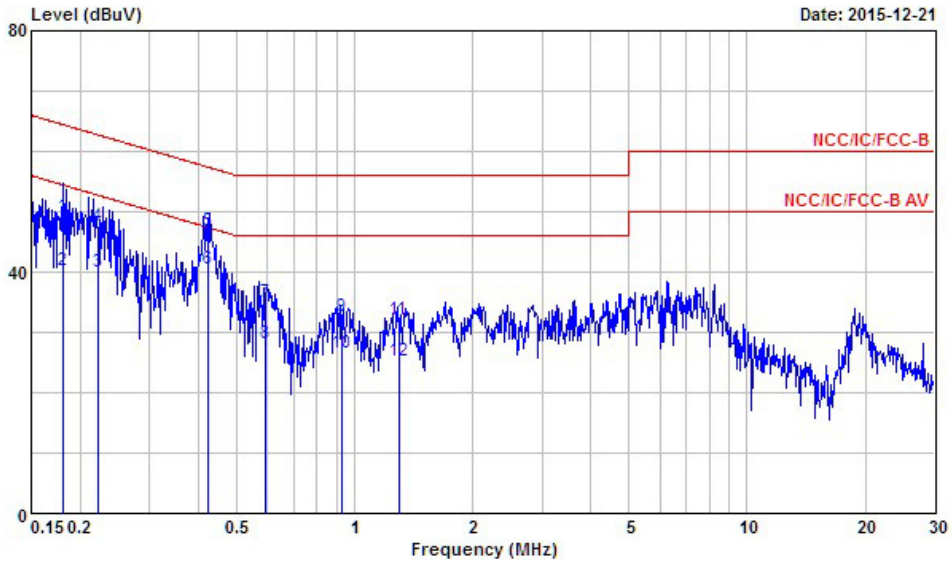
AC Power-line Conducted Emissions Result			
Operating Mode	2	**Power Phase**	Neutral
Operating Function	Radio link with adapter 2		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1530020	42.10	-13.74	55.84	41.81	0.07	0.22	Average
2	0.1530020	52.45	-13.39	65.84	52.16	0.07	0.22	QP
3	0.2231870	47.99	-14.71	62.70	47.65	0.07	0.27	QP
4	@0.2231870	40.19	-12.51	52.70	39.85	0.07	0.27	Average
5	@0.4210520	46.98	-10.45	57.43	46.81	0.07	0.10	QP
6	@0.4210520	40.78	-6.65	47.43	40.61	0.07	0.10	Average
7	0.5953110	34.10	-21.90	56.00	33.92	0.08	0.10	QP
8	0.5953110	27.48	-18.52	46.00	27.30	0.08	0.10	Average
9	0.9135710	31.35	-24.65	56.00	31.16	0.09	0.10	QP
10	0.9135710	24.78	-21.22	46.00	24.59	0.09	0.10	Average
11	1.302	30.89	-25.11	56.00	30.62	0.09	0.18	QP
12	1.302	24.63	-21.37	46.00	24.36	0.09	0.18	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	2	**Power Phase**	Line
Operating Function	Radio link with adapter 2		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1815220	49.33	-15.09	64.42	49.00	0.06	0.27	QP
2	0.1815220	40.17	-14.25	54.42	39.84	0.06	0.27	Average
3	@0.2214300	40.00	-12.77	52.77	39.67	0.06	0.27	Average
4	0.2214300	47.70	-15.07	62.77	47.37	0.06	0.27	QP
5	@0.4224480	46.75	-10.65	57.40	46.58	0.07	0.10	QP
6	@0.4224480	40.61	-6.79	47.40	40.44	0.07	0.10	Average
7	0.5939430	34.88	-21.12	56.00	34.71	0.07	0.10	QP
8	0.5939430	28.08	-17.92	46.00	27.91	0.07	0.10	Average
9	0.9304250	32.66	-23.34	56.00	32.48	0.08	0.10	QP
10	0.9304250	26.64	-19.36	46.00	26.46	0.08	0.10	Average
11	1.294	31.98	-24.02	56.00	31.72	0.09	0.17	QP
12	1.294	25.39	-20.61	46.00	25.13	0.09	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.)

3.3 20dB Bandwidth and Carrier Frequency Separation

3.3.1 20dB Bandwidth and Carrier Frequency Separation Limit

20dB Bandwidth and Carrier Frequency Separation Limit for Frequency Hopping Systems	
☒	2400-2483.5 MHz Band:
	☐ N ≥ 75 and ChS ≥ MAX (20 dB bandwidth, 25 kHz).
	☒ N ≥ 15 and ChS ≥ MAX (20 dB bandwidth x 2/3, 25 kHz).
N: Number of Hopping Frequencies; **ChS**: Hopping Channel Separation	

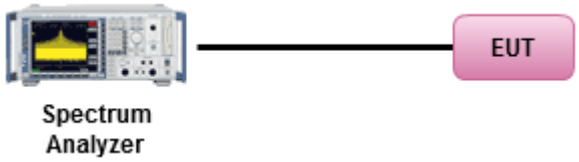
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

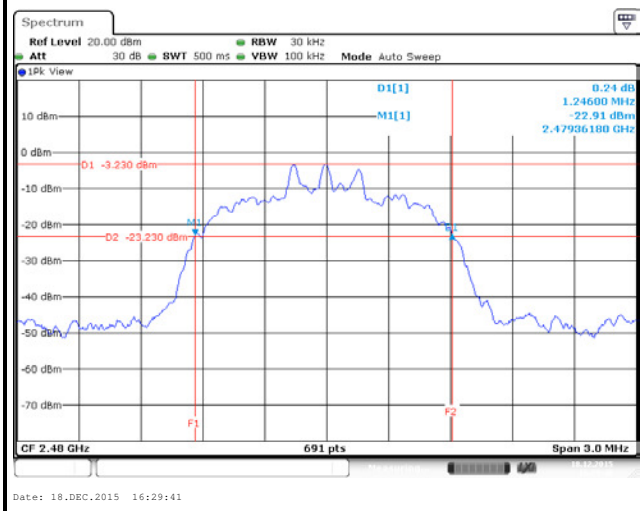
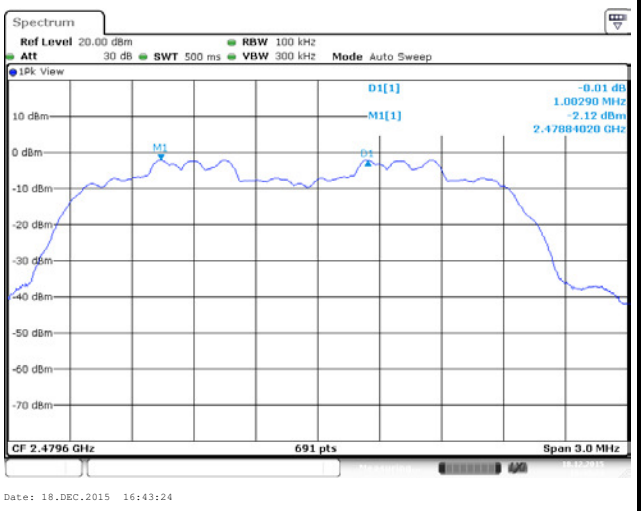
Test Method	
☒	Refer as ANSI C63.10, clause 6.9.2 for 20 dB bandwidth measurement.
☒	Refer as ANSI C63.10, clause 7.8.2 for carrier frequency separation measurement.
☒	For conducted measurement.
	☒ The EUT supports single transmit chain and measurements performed on this transmit chain.
	☐ The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.

3.3.4 Test Setup

20dB Bandwidth and Carrier Frequency Separation
 Spectrum Analyzer

3.3.5 Test Result of 20dB Bandwidth and Carrier Frequency Separation

20dB Bandwidth and Carrier Frequency Separation Result					
Modulation Mode	**Freq. (MHz)**	**20dB Bandwidth (MHz)**	**99% Bandwidth (MHz)**	**Channel Separation (MHz)**	**Channel Separation Limits (MHz)**
BR-1Mbps	2402	0.6599	0.7120	1.0029	0.440
BR-1Mbps	2441	0.6643	0.7163	1.0029	0.443
BR-1Mbps	2480	0.6886	0.7206	1.0029	0.459
EDR-3Mbps	2402	1.2460	1.1461	1.0029	0.831
EDR-3Mbps	2441	1.2460	1.1461	1.0029	0.831
EDR-3Mbps	2480	1.2460	1.1461	1.0029	0.831
Result		**Complied**			

Worst 20dB Bandwidth Plots	**Worst Carrier Frequency Separation Plots**
EDR-3Mbps	**EDR-3Mbps**
	

3.4 Number of Hopping Frequencies

3.4.1 Number of Hopping Frequencies Limit

Number of Hopping Frequencies Limit for Frequency Hopping Systems	
☒	2400-2483.5 MHz Band:
	☐ N ≥ 75 and ChS ≥ MAX (20 dB bandwidth, 25 kHz).
	☒ N ≥ 15 and ChS ≥ MAX (20 dB bandwidth x 2/3, 25 kHz).
N: Number of Hopping Frequencies; **ChS**: Hopping Channel Separation	

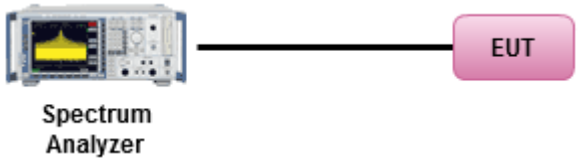
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

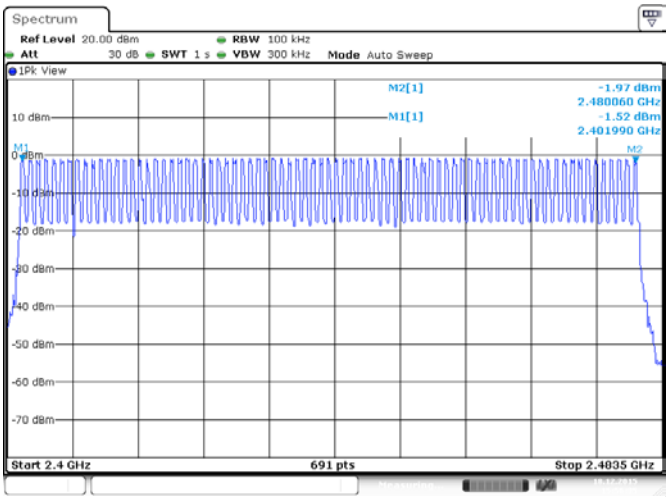
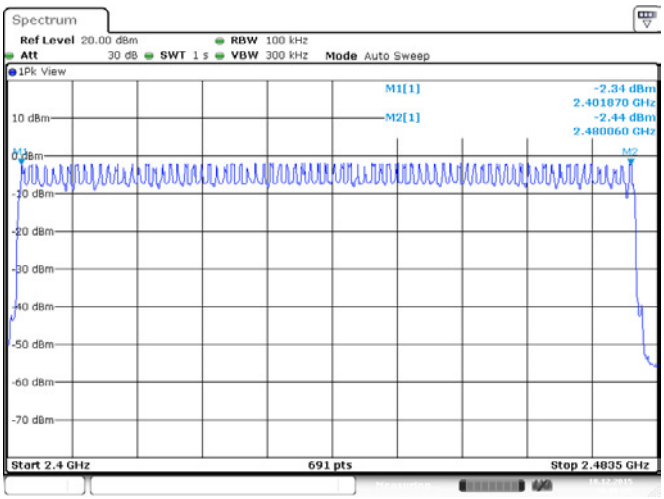
Test Method	
☒	Refer as ANSI C63.10, clause 7.8.3 for number of hopping frequencies measurement.
☒	For conducted measurement.
	☒ The EUT supports single transmit chain and measurements performed on this transmit chain.
	☐ The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.

3.4.4 Test Setup

Number of Hopping Frequencies


3.4.5 Test Result of Number of Hopping Frequencies

Number of Hopping Frequencies Result			
Modulation Mode	**Freq. (MHz)**	**Hopping Channel Number (N)**	**Hopping Channel Number Limits**
EDR-1Mbps	2402-2480	79	15
EDR-3Mbps	2402-2480	79	15
Result	**Complied**		

Number of Hopping Frequencies Plots
EDR-1Mbps

EDR-3Mbps


3.5 Time of Occupancy (Dwell Time)

3.5.1 Time of Occupancy (Dwell Time) Limit

Time of Occupancy (Dwell Time) Limit for Frequency Hopping Systems
☒ 2400-2483.5 MHz Band: Dwell time ≤ 0.4 second within 0.4 x N
N: Number of Hopping Frequencies

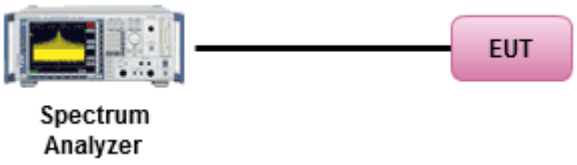
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

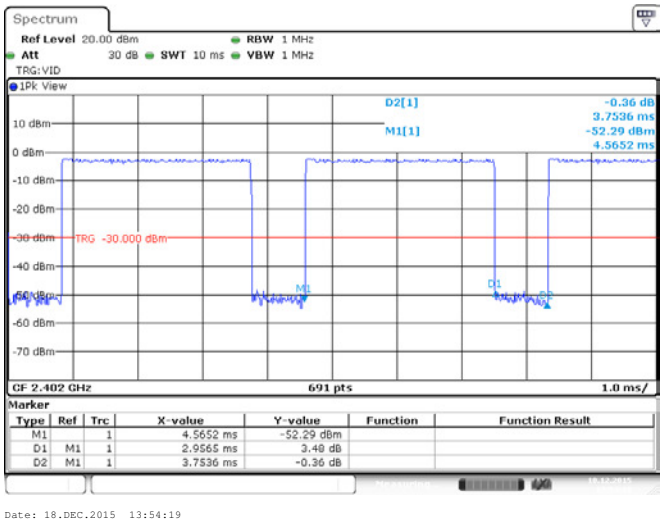
Test Method	
☒	Refer as ANSI C63.10, clause 7.7.4 for dwell time measurement.
☒	Bluetooth ACL packets can be 1, 3, or 5 time slots. Following as dwell time. Operate DH5 at maximum dwell time and maximum duty cycle.
☒	The DH1 packet can cover a single time slot. A maximum length packet has duration of 1 time slots. The hopping rate is 1600 hops/second so the maximum dwell time is 1/1600 seconds, or 0.625ms. DH1 Packet permit maximum 1600 / 79 /2 = 10.12 hops per second in each channel (1 time slot RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times 10.12 x 31.6 = 320 within 31.6 seconds.
☒	The DH3 packet can cover up to 3 time slots. A maximum length packet has duration of 3 time slots. The hopping rate is 1600 hops/second so the maximum dwell time is 3/1600 seconds, or 1.875ms. DH3 Packet permit maximum 1600 / 79 / 4 = 5.06 hops per second in each channel (3 time slots TX, 1 time slot RX). So, the dwell time is the time duration of the pulse times 5.06 x 31.6 = 160 within 31.6 seconds.
☒	The DH5 packet can cover up to 5 time slots. Operate DH5 at maximum dwell time and maximum duty cycle. A maximum length packet has duration of 5 time slots. The hopping rate is 1600 hops/second so the maximum dwell time is 5/1600 seconds, or 3.125ms. DH5 Packet permit maximum 1600/ 79 / 6 = 3.37 hops per second in each channel (5 time slots TX, 1 time slot RX). So, the dwell time is the time duration of the pulse times 3.37 x 31.6 = 106.6 within 31.6 seconds
☒	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.

3.5.4 Test Setup

Time of Occupancy (Dwell Time)


3.5.5 Test Result of Time of Occupancy (Dwell Time)

Time of Occupancy (Dwell Time) Result					
Modulation Mode	**Freq. (MHz)**	**Pulse Time per Hop (ms)**	**Number of Pulse in [0.4 x N sec]**	**Dwell Time in [0.4 x N sec] (s)**	**Dwell Time Limits (s)**
EDR-1Mbps	2402	2.94	106.7	0.314	0.4
EDR-3Mbps	2402	2.96	106.7	0.315	0.4
Result		**Complied**			
Bluetooth ACL packets can be 1, 3, or 5 time slots. The DH1 packet can cover a single time slot. The DH3 packet can cover up to 3 time slots. The DH5 packet can cover up to 5 time slots. Operate DH5 at maximum dwell time and maximum duty cycle. A maximum length packet has duration of 5 time slots. The hopping rate is 1600 hops/second so the maximum dwell time is 5/1600 seconds, or 3.125ms.					

Worst Pulse Time per Hop Plots
EDR-3Mbps


3.6 RF Output Power

3.6.1 RF Output Power Limit

RF Output Power Limit for Frequency Hopping Systems			
Maximum Peak Conducted Output Power Limit			
☒	2400-2483.5 MHz Band:		
	☐	For Hopping Channel: N ≥ 75	
		☐	If G_{TX} ≤ 6 dBi, then P_{Out} ≤ 30 dBm (1 W)
		☐	If G_{TX} > 6 dBi, then P_{Out} = 30 – (G_{TX} – 6) dBm
	☒	For Hopping Channel: N ≥ 15	
		☒	If G_{TX} ≤ 6 dBi, then P_{Out} ≤ 21 dBm (0.125 W)
		☐	If G_{TX} > 6 dBi, then P_{Out} = 21 – (G_{TX} – 6) dBm
e.i.r.p. Power Limit:			
☒	2400-2483.5 MHz Band:		
	☐	For Hopping Channel: N ≥ 75 - P_{eirp} ≤ 36 dBm (4 W)	
	☒	For Hopping Channel: N ≥ 15 - P_{eirp} ≤ 27 dBm (0.5 W)	
G_{TX} = the maximum transmitting antenna directional gain in dBi. **P_{eirp}** = e.i.r.p. Power in dBm. **N:** Number of Hopping Frequencies **ChS**: Hopping Channel Separation			

3.6.2 Measuring Instruments

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

3.6.3 Test Procedures

Test Method		
☒	Maximum Peak Conducted Output Power	
	☐	Refer as FCC DA 00-0705, spectrum analyzer for peak power.
	☒	Refer as FCC DA 00-0705, peak power meter for peak power.
	☐	Refer as ANSI C63.10, clause 6.10.2.1 a) for peak power meter.
	☐	Refer as ANSI C63.10, clause 6.10.2.1 a) for spectrum analyzer - (RBW ≥ EBW).
☒	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.

3.6.4 Test Setup

RF Output Power (Peak Power Meter)


3.6.5 Test Result of Maximum Peak Conducted Output Power

Maximum Peak Conducted Output Power Result						
Condition		RF Output Power (dBm)				
Modulation Mode	Freq. (MHz)	RF Output Power	Power Limit	Antenna Gain (dBi)	EIRP Power	EIRP Limit
BR-1Mbps	2402	-0.04	21	1.76	1.72	27
BR-1Mbps	2441	0.26	21	1.76	2.02	27
BR-1Mbps	2480	0.34	21	1.76	2.1	27
EDR-3Mbps	2402	-0.83	21	1.76	0.93	27
EDR-3Mbps	2441	-0.41	21	1.76	1.35	27
EDR-3Mbps	2480	-0.37	21	1.76	1.39	27
Result		Complied				

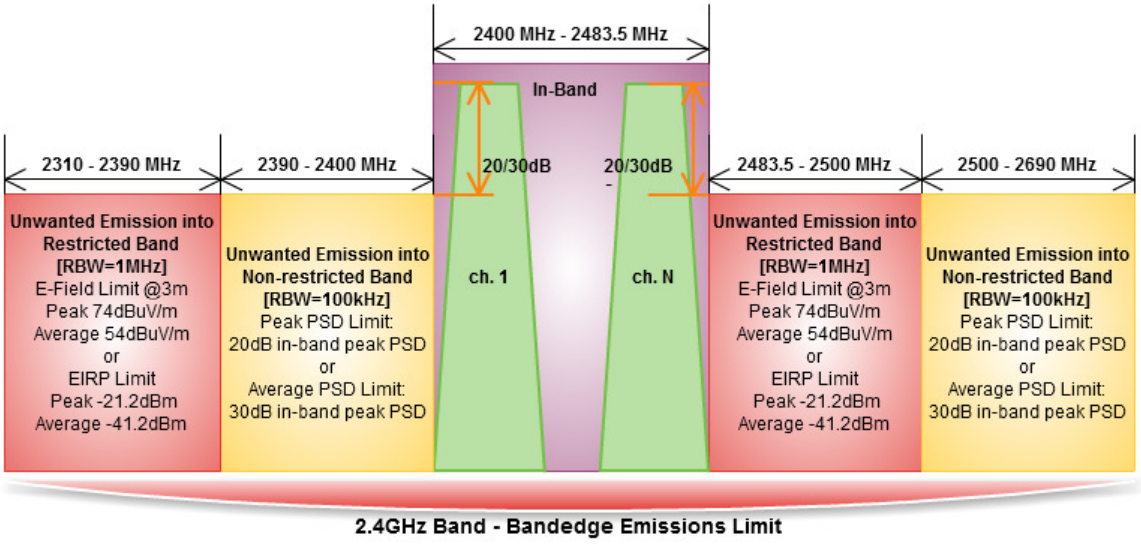
3.6.6 Test Result of Maximum Average Conducted Output Power

Maximum Average Conducted Output Power Result						
Condition		RF Output Power (dBm)				
Modulation Mode	Freq. (MHz)	Average Power	Duty Factor (dB)	RF Output Power	Antenna Gain (dBi)	EIRP Power
BR-1Mbps	2402	-1.48	1.06	-0.42	1.76	1.34
BR-1Mbps	2441	-1.27	1.06	-0.21	1.76	1.55
BR-1Mbps	2480	-1.09	1.06	-0.03	1.76	1.73
EDR-3Mbps	2402	-4.42	1.04	-3.38	1.76	-1.62
EDR-3Mbps	2441	-4.06	1.04	-3.02	1.76	-1.26
EDR-3Mbps	2480	-4.02	1.04	-2.98	1.76	-1.22
Result		Complied				

3.7 Transmitter Radiated Bandedge Emissions

3.7.1 Transmitter Radiated Bandedge Emissions Limit

Transmitter Radiated Bandedge Emissions Limit



3.7.2 Measuring Instruments

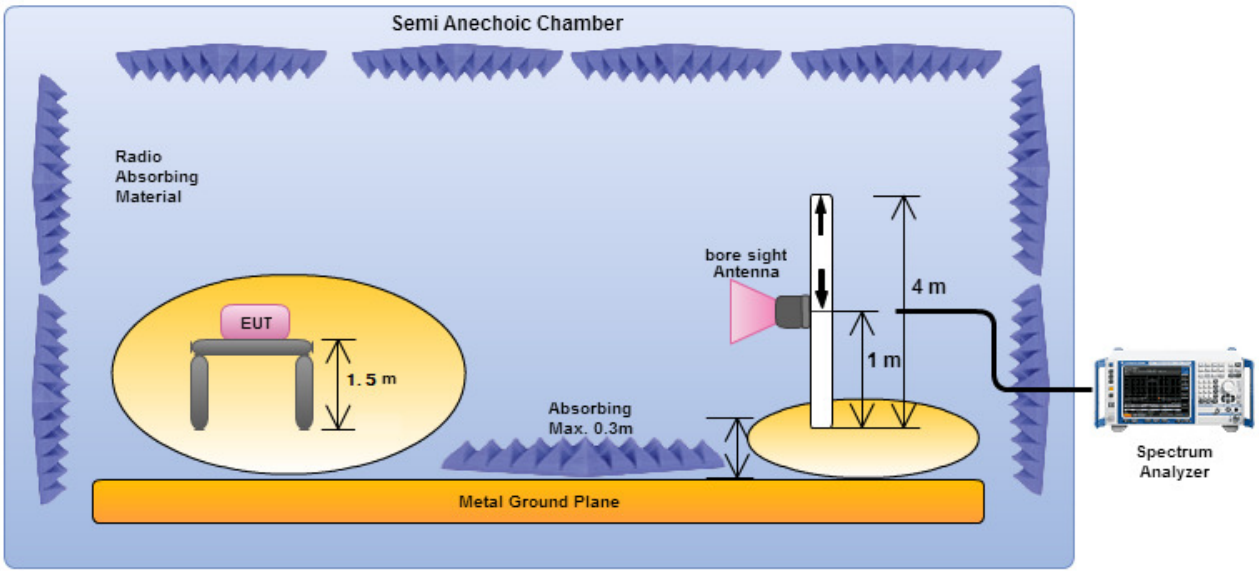
Refer a test equipment and calibration data table in this test report.

3.7.3 Test Procedures

Test Method – General Information		
☒	The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].	
☒	Refer as ANSI C63.10, clause 6.10 bandedge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.	
☒	For the transmitter unwanted emissions shall be measured using following options below:	
	☒	For unwanted emissions into non-restricted bands. Peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.
	☒	For unwanted emissions into restricted bands.
		☒ Refer as ANSI C63.10, clause 4.1.4.2.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time.
		☐ Refer as ANSI C63.10, clause 4.1.4.2.4 average value of pulsed emissions.
		☒ Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.
☒	For the transmitter bandedge emissions shall be measured using following options below:	
	☒	Refer as ANSI C63.10, clause 6.10 for band-edge testing.
	☐	Refer as ANSI C63.10, clause 6.10.6.2 for marker-delta method for band-edge measurements.
	☐	Refer as ANSI C63.10, clause 7.8.6 for band-edge testing into non-restricted bands.
☒	Refer as ANSI C63.10, clause 6.6 for radiated emissions and test distance is 3m.	

3.7.4 Test Setup

Transmitter Radiated Bandedge Emissions



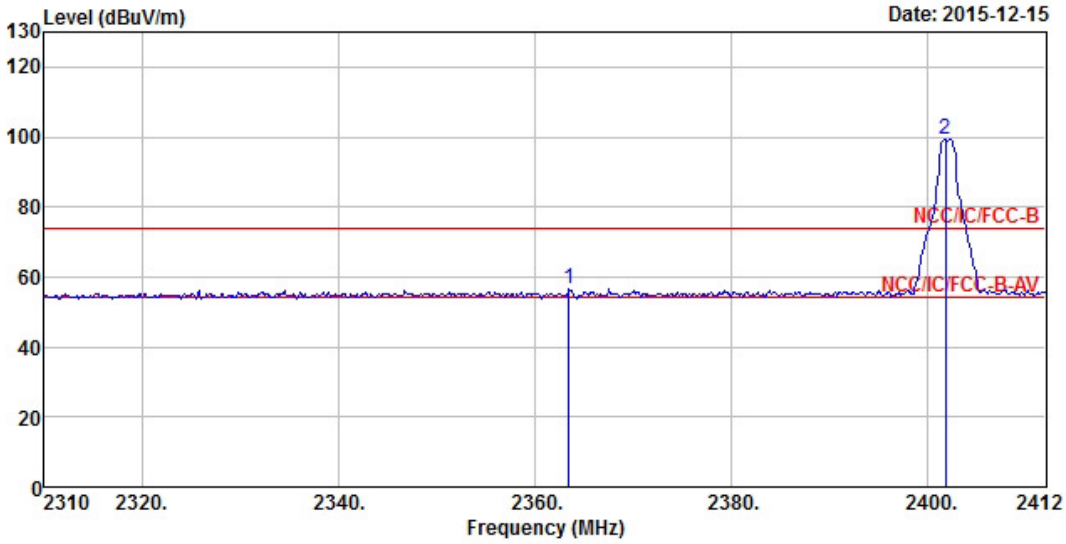
Electric field tests shall be performed in transmitter bandedge emissions using a calibrated horn antenna.

3.7.5 Test Result of Transmitter Radiated Bandedge Emissions

Transmitter Radiated Bandedge Emissions (Non-restricted Band)							
Modulation	Test Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Pol.
BR-1Mbps	2402	99.14	2399.96	54.94	44.20	20	V
BR -1Mbps	2480	97.17	2546.08	46.83	50.34	20	V
EDR-2Mbps	2402	96.80	2399.98	48.00	48.80	20	V
EDR-2Mbps	2480	95.24	2530.40	46.51	48.73	20	V
EDR-3Mbps	2402	96.93	2399.96	48.76	48.17	20	V
EDR-3Mbps	2480	95.59	2549.76	46.87	48.72	20	V
Note 1: Measurement worst emissions of receive antenna polarization							

Transmitter Radiated Bandedge Emissions (Restricted Band)									
Modulation Mode	Freq. (MHz)	Measure Distance (m)	Freq. (MHz) PK	Level (dBuV/m) PK	Limit (dBuV/m) PK	Freq. (MHz) AV	Level (dBuV/m) AV	Limit (dBuV/m) AV	Pol.
BR-1Mbps	2402	3	2363.45	56.47	74	2386.09	44.66	54	V
BR -1Mbps	2480	3	2486.56	57.42	74	2483.52	45.34	54	V
EDR-2Mbps	2402	3	2347.21	56.37	74	2389.42	44.35	54	V
EDR-2Mbps	2480	3	2492.48	56.91	74	2495.52	45.12	54	V
EDR-3Mbps	2402	3	2380.99	56.35	74	2389.76	44.39	54	V
EDR-3Mbps	2480	3	2489.28	56.90	74	2493.28	45.12	54	V
Note 1: Measurement worst emissions of receive antenna polarization. Note 2: Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is “Pulse On Time”, e.g., DH5 VBW≥1/3.125ms, VBW=1kHz									

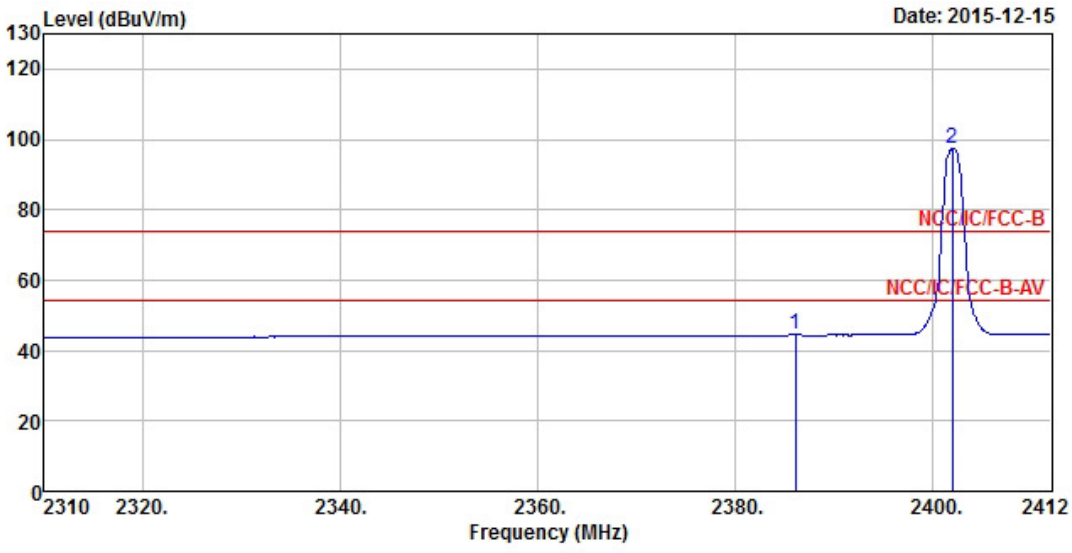
Worst Transmitter Radiated Bandedge Emissions Plots			
Operating Mode	BR-1Mbps	**Polarization**	V
Operating frequency	2402	**mode**	Peak



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2363.45	56.47	-17.53	74.00	55.06	31.70	4.25	34.54	Peak
2	2401.80	99.50			97.88	31.90	4.28	34.56	Peak

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

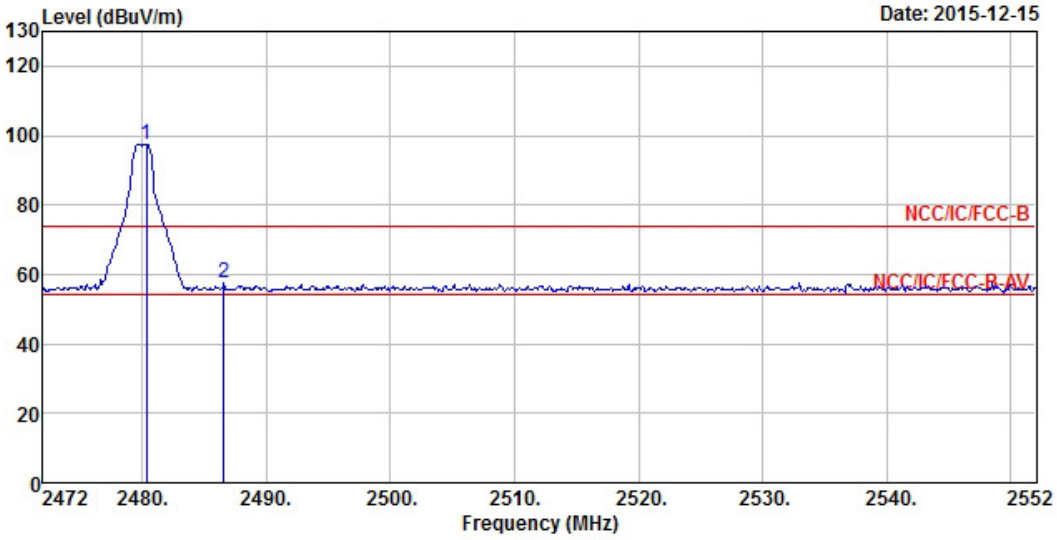
Worst Transmitter Radiated Bandedge Emissions Plots			
Operating Mode	BR-1Mbps	**Polarization**	V
Operating frequency	2402	**mode**	Average



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2386.09	44.66	-9.34	54.00	43.03	31.90	4.28	34.55	Average
2	2402.00	97.17			95.55	31.90	4.28	34.56	Average

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

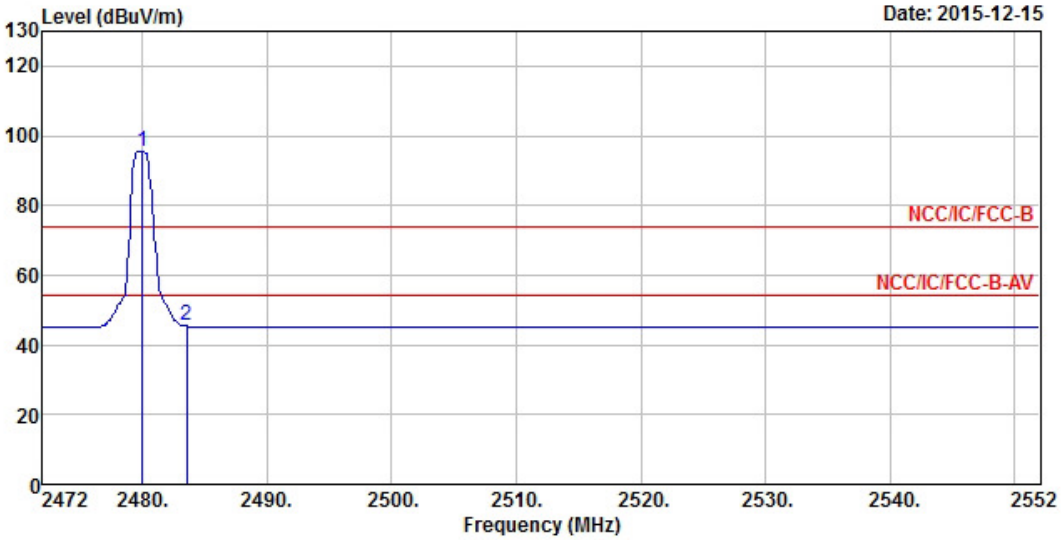
Worst Transmitter Radiated Bandedge Emissions Plots			
Operating Mode	BR-1Mbps	**Polarization**	V
Operating frequency	2480	**mode**	Peak



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2480.32	97.60			95.44	32.40	4.35	34.59	Peak
2	2486.56	57.42	-16.58	74.00	55.26	32.40	4.35	34.59	Peak

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

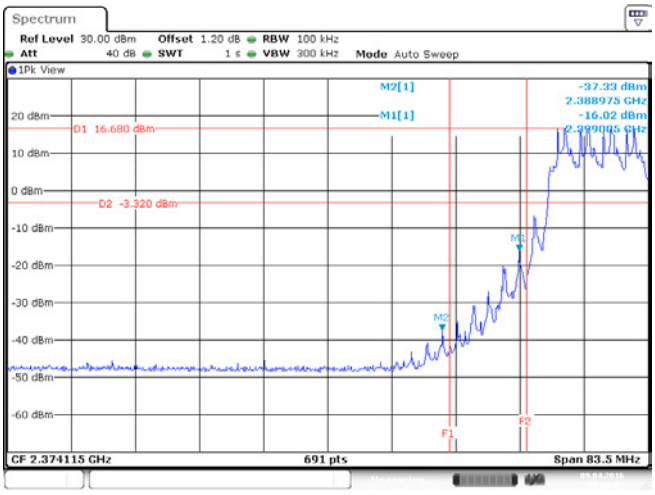
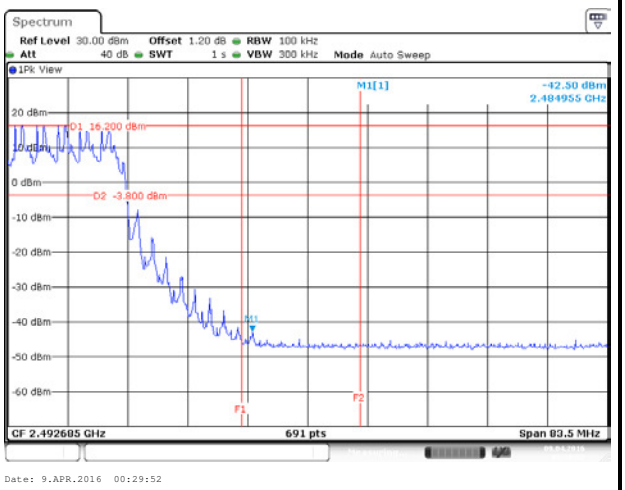
Worst Transmitter Radiated Bandedge Emissions Plots			
Operating Mode	BR-1Mbps	**Polarization**	V
Operating frequency	2480	**mode**	Average



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2480.00	95.48			93.32	32.40	4.35	34.59	Average
2	2483.52	45.34	-8.66	54.00	43.18	32.40	4.35	34.59	Average

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

3.7.6 Test Result of Transmitter Hopping Bandedge Emissions

Transmitter Hopping Bandedge Emissions test Result	
Low sub-Hopping Bandedge	High sub -Hopping Bandedge
	

3.8 Transmitter Radiated Unwanted Emissions

3.8.1 Transmitter Radiated Unwanted Emissions Limit

Restricted Band 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.

Un-restricted Band Emissions Limit	
RF output power procedure	**Limit (dB)**
Peak output power procedure	20
Average output power procedure	30

Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

3.8.2 Measuring Instruments

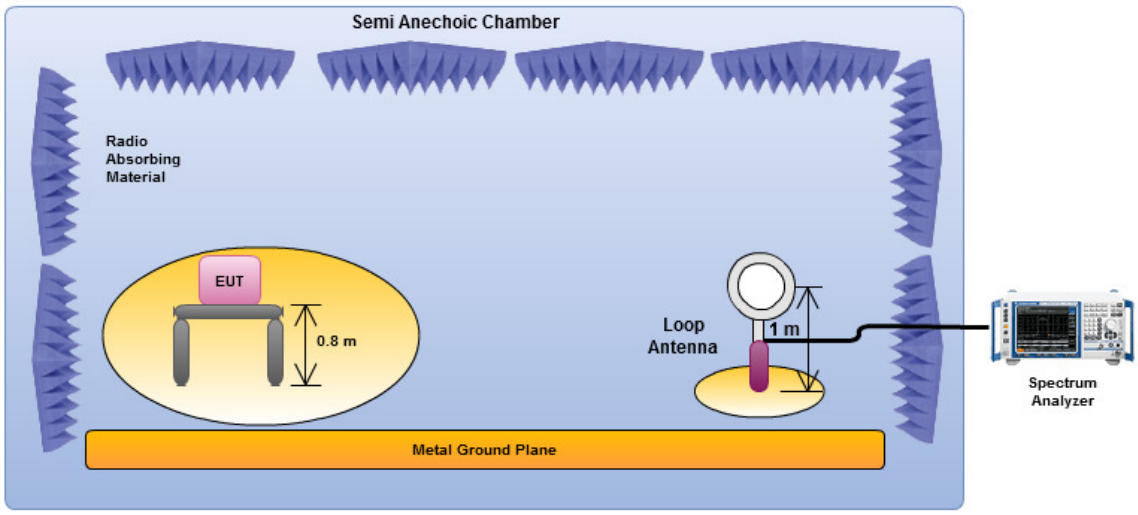
Refer a test equipment and calibration data table in this test report.

3.8.3 Test Procedures

Test Method – General Information			
☒	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).		
☒	The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].		
☒	For the transmitter unwanted emissions shall be measured using following options below:		
	☒	Refer as FCC DA 00-0705, for spurious radiated emissions. The dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a “duty cycle correction factor”, derived from 20log (dwell time/100 ms)	
	☒	For unwanted emissions into non-restricted bands. Peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.	
	☒	For unwanted emissions into restricted bands.	
		☐	Refer as ANSI C63.10, clause 4.1.4.2.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time.
		☒	Refer as ANSI C63.10, clause 4.1.4.2.4 average value of pulsed emissions.
		☒	Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.
☒	For radiated measurement.		
	☒	Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.	
	☒	Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.	
	☒	Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1 GHz and test distance is 3m.	
☒	The any unwanted emissions level shall not exceed the fundamental emission level.		
☒	All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.		

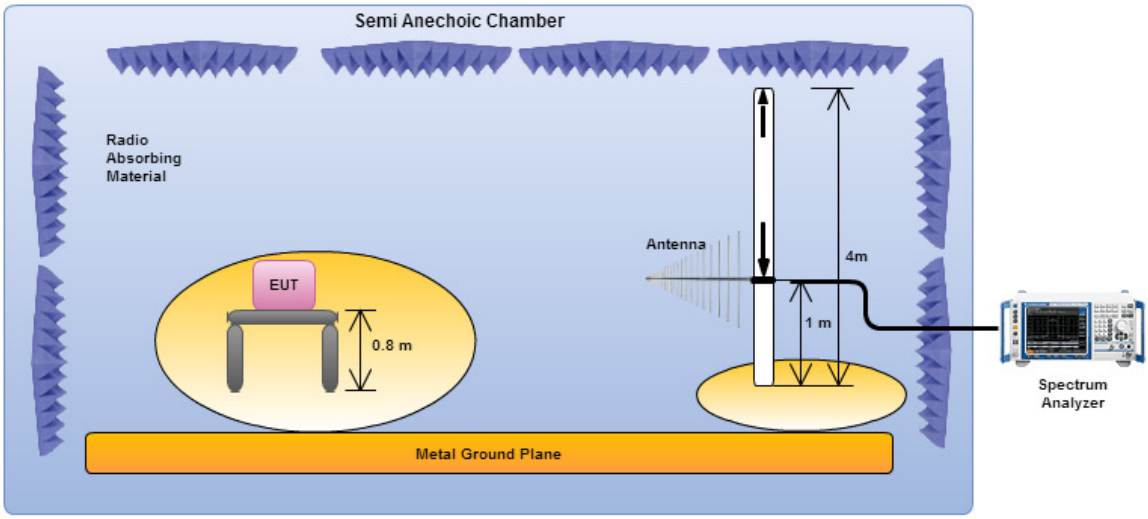
3.8.4 Test Setup

Transmitter Radiated Unwanted Emissions (below 30MHz)



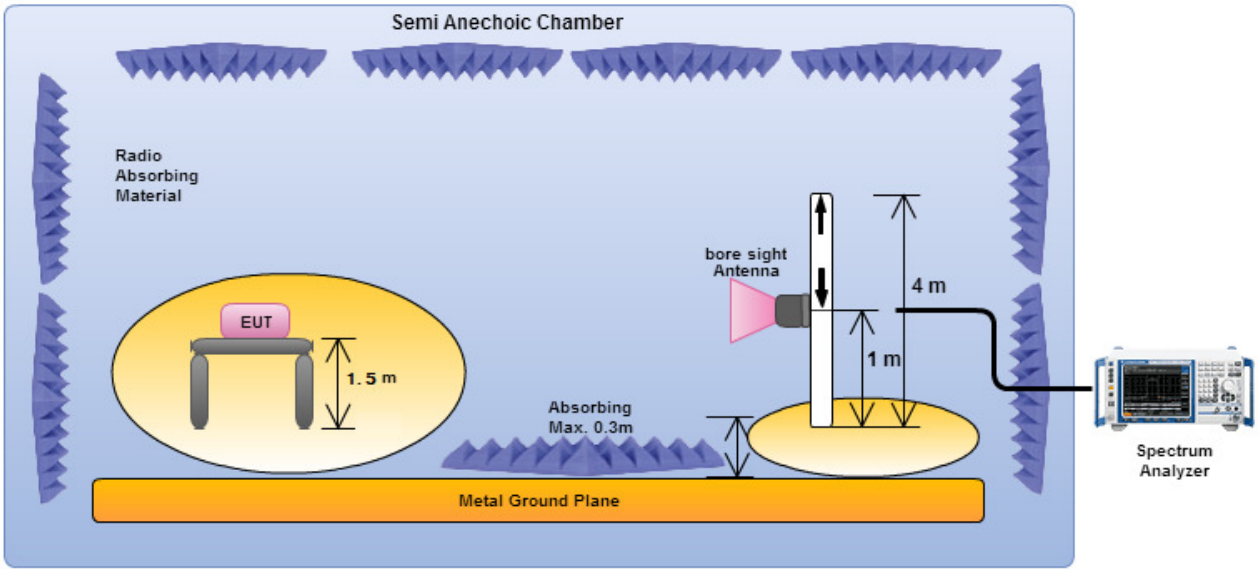
Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna. The center of the loop shall be 1 m above the ground.

Transmitter Radiated Unwanted Emissions (below 1GHz)



Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna. the antenna height shall be varied from 1 m to 4 m.

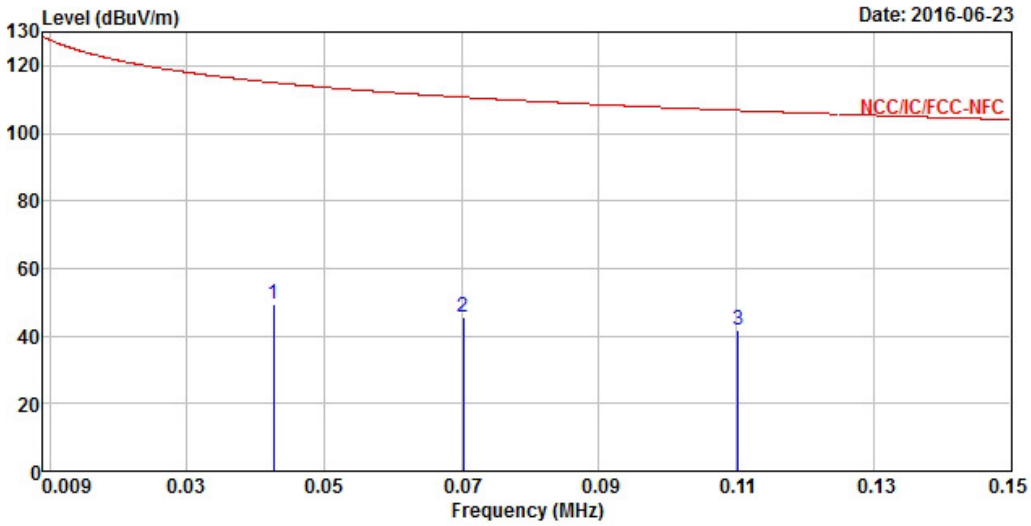
Transmitter Radiated Unwanted Emissions (Above 1GHz)



Electric field tests shall be performed in the frequency range of 1 GHz to 10th harmonic of highest fundamental frequency or 40 GHz using a calibrated horn antenna.

3.8.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

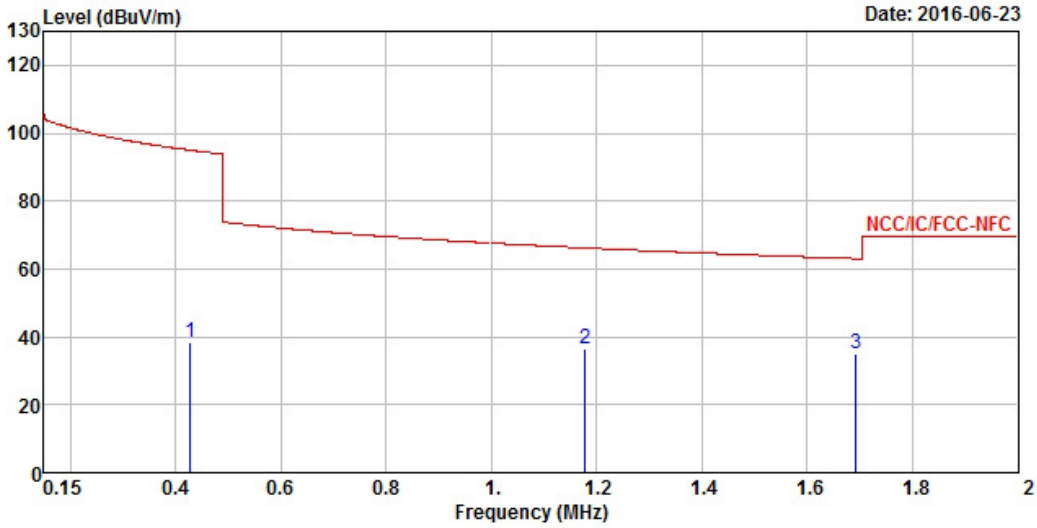
Transmitter Radiated Unwanted Emissions (9k – 150kHz)			
Operating Mode	1	**Polarization**	H
Operating Function	Radio link (Bluetooth)		



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	0.043	49.61	-65.42	115.03	28.63	20.97	0.01	0.00	Peak
2	0.070	45.70	-64.98	110.68	24.71	20.98	0.01	0.00	Peak
3	0.110	41.76	-65.00	106.76	20.67	21.08	0.01	0.00	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.)

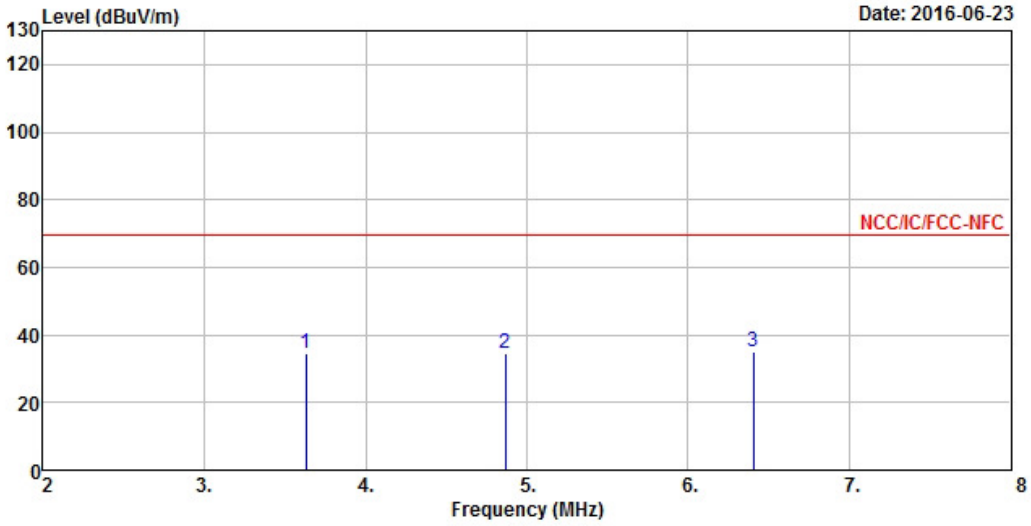
Transmitter Radiated Unwanted Emissions (150k – 2MHz)			
Operating Mode	1	**Polarization**	H
Operating Function	Radio link (Bluetooth)		



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	0.428	38.21	-56.78	94.99	17.43	20.74	0.04	0.00	Peak
2	1.179	36.54	-29.64	66.18	15.73	20.74	0.07	0.00	Peak
3	1.693	34.93	-28.10	63.03	14.30	20.56	0.07	0.00	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.)

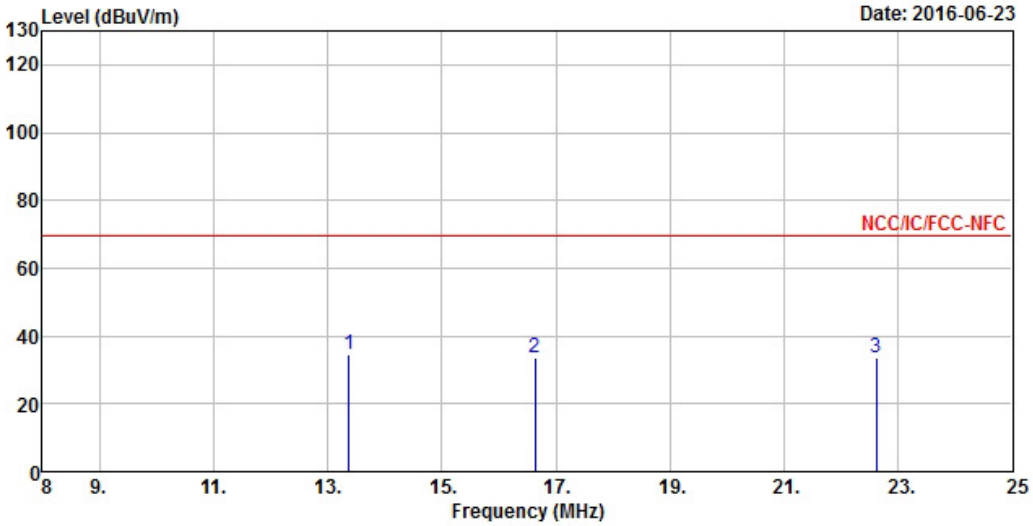
Transmitter Radiated Unwanted Emissions (2M – 8MHz)			
Operating Mode	1	**Polarization**	H
Operating Function	Radio link (Bluetooth)		



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	3.632	34.61	-34.93	69.54	14.15	20.35	0.11	0.00	Peak
2	4.868	34.66	-34.88	69.54	13.64	20.85	0.17	0.00	Peak
3	6.404	34.88	-34.66	69.54	13.68	21.01	0.19	0.00	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.)

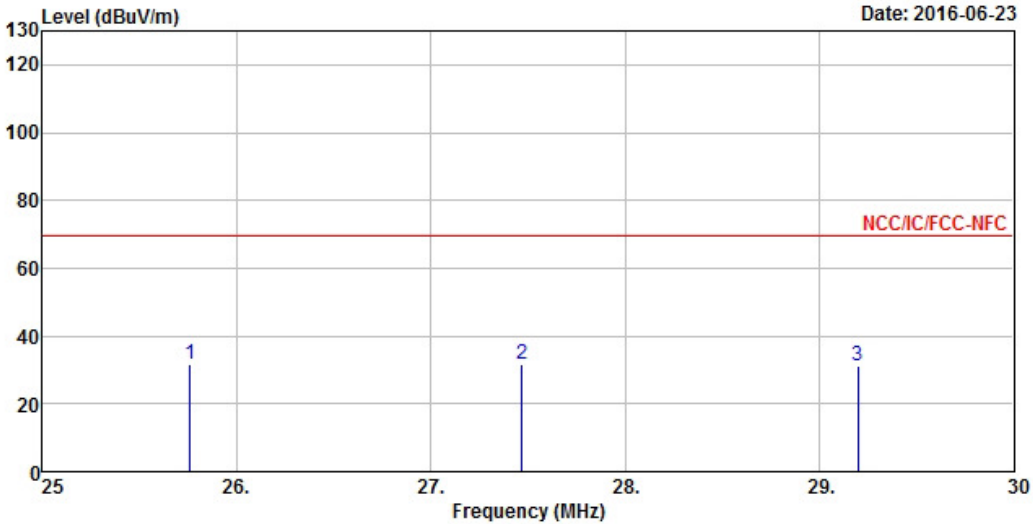
Transmitter Radiated Unwanted Emissions (8M – 25MHz)			
Operating Mode	1	**Polarization**	H
Operating Function	Radio link (Bluetooth)		



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	13.372	34.57	-34.97	69.54	12.97	21.37	0.23	0.00	Peak
2	16.636	33.78	-35.76	69.54	12.10	21.43	0.25	0.00	Peak
3	22.620	33.63	-35.91	69.54	11.80	21.55	0.28	0.00	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.)

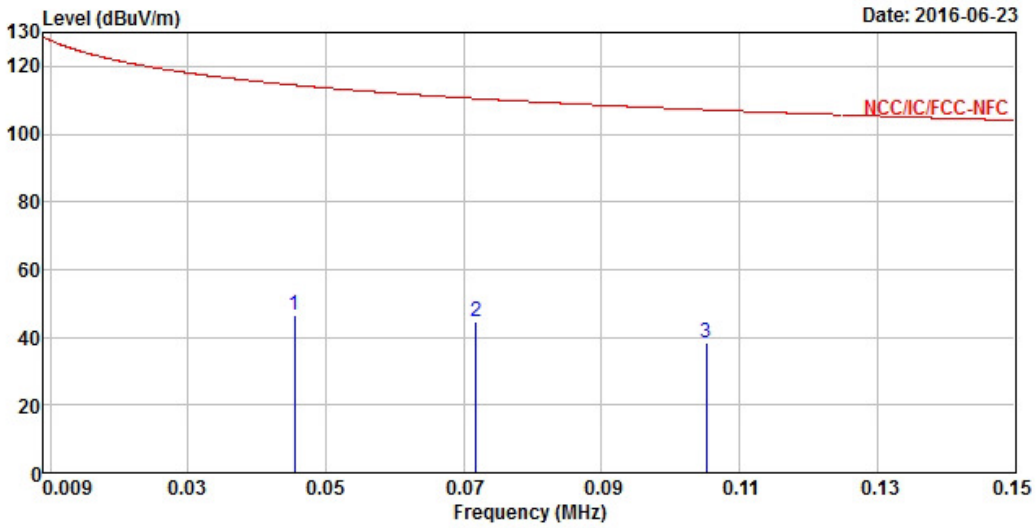
Transmitter Radiated Unwanted Emissions (25M – 30MHz)			
Operating Mode	1	**Polarization**	H
Operating Function	Radio link (Bluetooth)		



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	25.760	31.68	-37.86	69.54	9.77	21.62	0.29	0.00	Peak
2	27.470	31.44	-38.10	69.54	9.49	21.65	0.30	0.00	Peak
3	29.200	31.41	-38.13	69.54	9.42	21.68	0.31	0.00	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.)

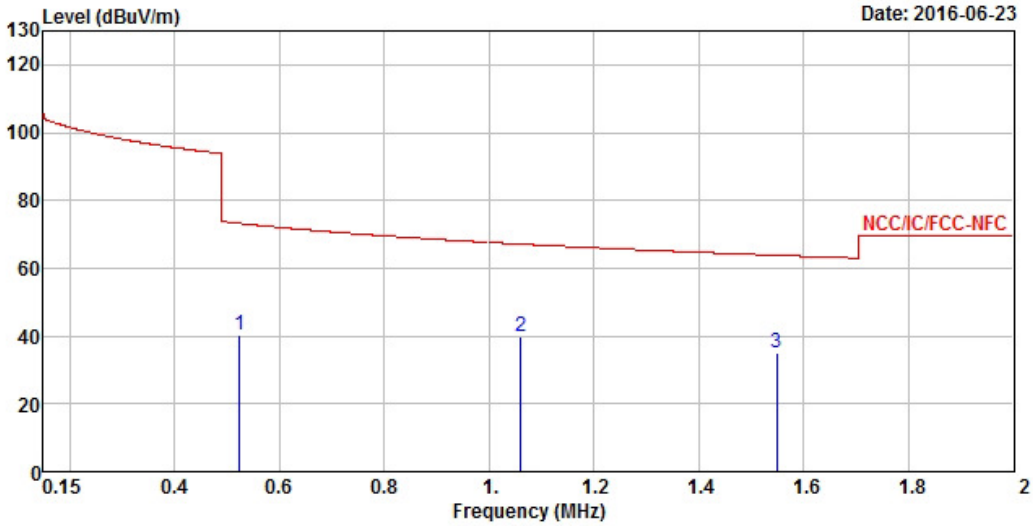
Transmitter Radiated Unwanted Emissions (9k – 150kHz)			
Operating Mode	2	**Polarization**	H
Operating Function	Radio link (Bluetooth)		



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	0.045	46.66	-67.81	114.47	25.70	20.95	0.01	0.00	Peak
2	0.072	44.44	-66.05	110.49	23.44	20.99	0.01	0.00	Peak
3	0.105	38.55	-68.62	107.17	17.45	21.09	0.01	0.00	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.)

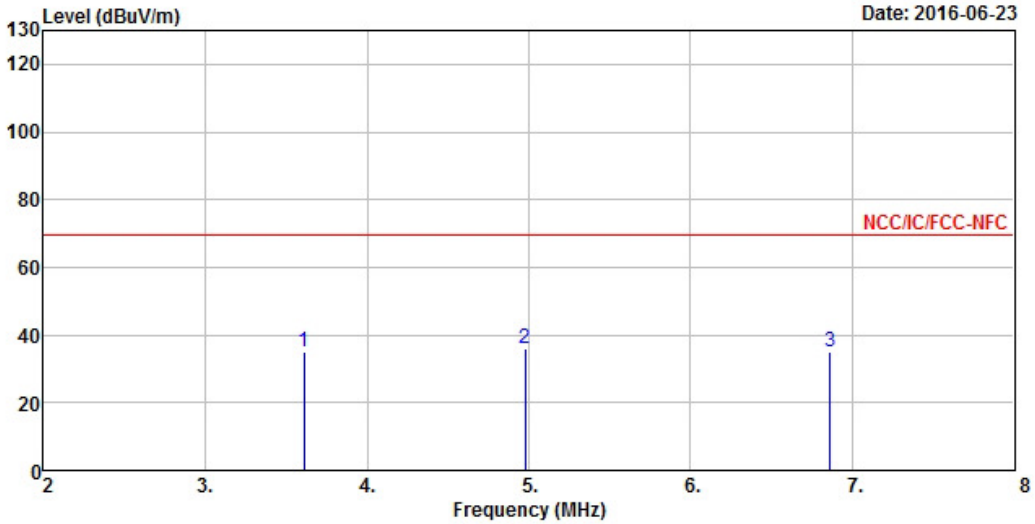
Transmitter Radiated Unwanted Emissions (150k – 2MHz)			
Operating Mode	2	**Polarization**	H
Operating Function	Radio link (Bluetooth)		



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	0.524	40.29	-32.94	73.23	19.57	20.70	0.02	0.00	Peak
2	1.060	39.80	-27.30	67.10	18.95	20.78	0.07	0.00	Peak
3	1.549	34.94	-28.87	63.81	14.26	20.61	0.07	0.00	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.)

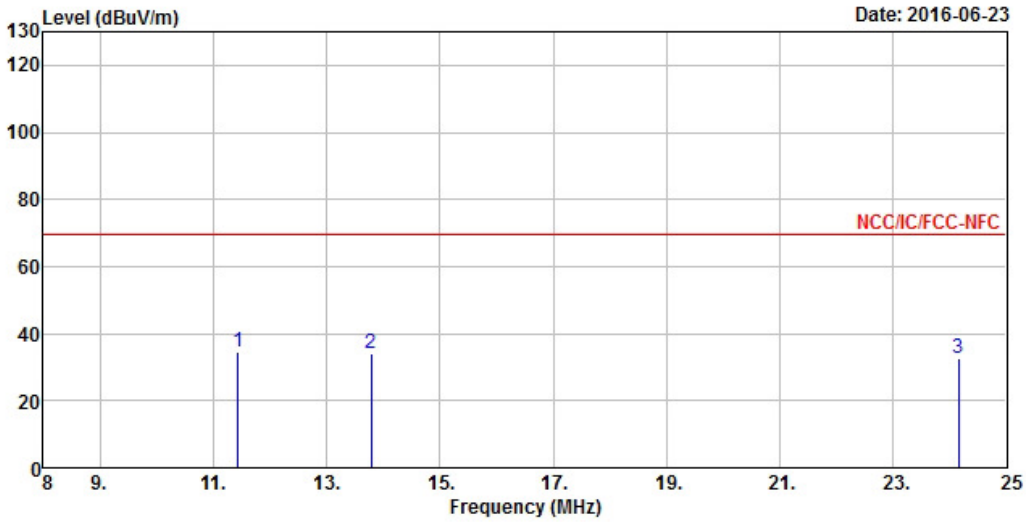
Transmitter Radiated Unwanted Emissions (2M – 8MHz)			
Operating Mode	2	**Polarization**	H
Operating Function	Radio link (Bluetooth)		



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	3.608	34.84	-34.70	69.54	14.39	20.34	0.11	0.00	Peak
2	4.976	36.08	-33.46	69.54	15.01	20.89	0.18	0.00	Peak
3	6.860	34.97	-34.57	69.54	13.73	21.05	0.19	0.00	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.)

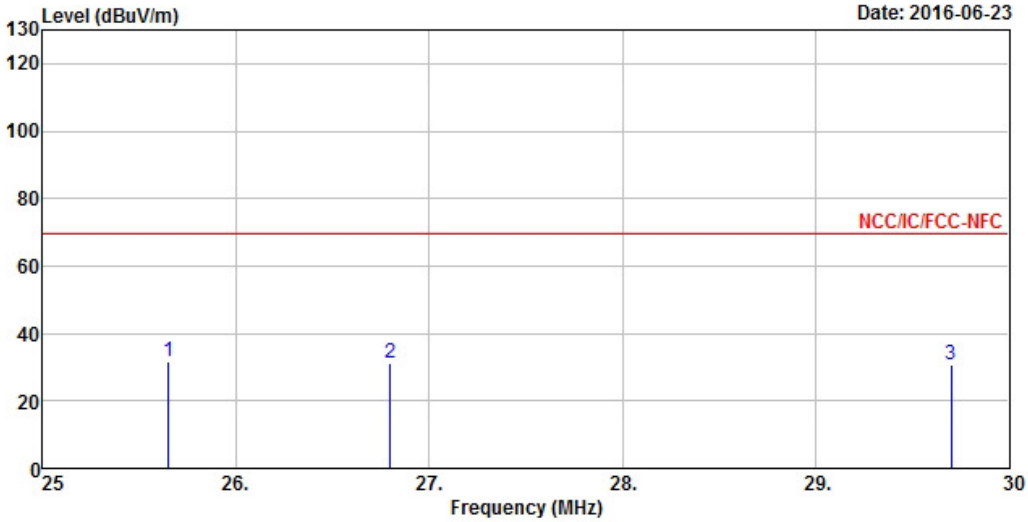
Transmitter Radiated Unwanted Emissions (8M – 25MHz)			
Operating Mode	2	**Polarization**	H
Operating Function	Radio link (Bluetooth)		



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	11.434	34.30	-35.24	69.54	12.76	21.33	0.21	0.00	Peak
2	13.780	33.94	-35.60	69.54	12.33	21.38	0.23	0.00	Peak
3	24.150	32.85	-36.69	69.54	10.99	21.58	0.28	0.00	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.)

Transmitter Radiated Unwanted Emissions (25M – 30MHz)			
Operating Mode	2	**Polarization**	H
Operating Function	Radio link (Bluetooth)		

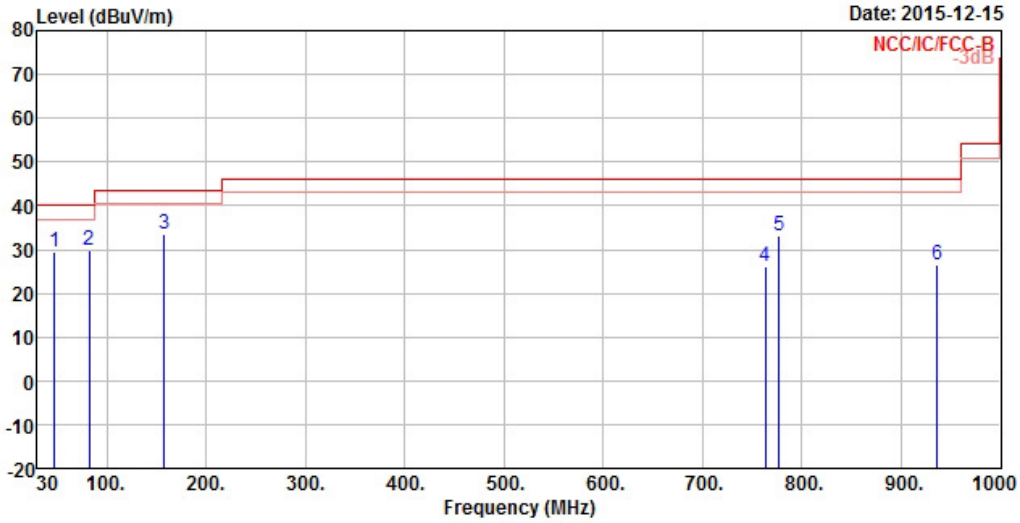


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	25.650	31.66	-37.88	69.54	9.76	21.61	0.29	0.00	Peak
2	26.800	31.08	-38.46	69.54	9.15	21.64	0.29	0.00	Peak
3	29.700	30.48	-39.06	69.54	8.47	21.69	0.32	0.00	Peak

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.)

3.8.6 Transmitter Radiated Unwanted Emissions (Below 1GHz)

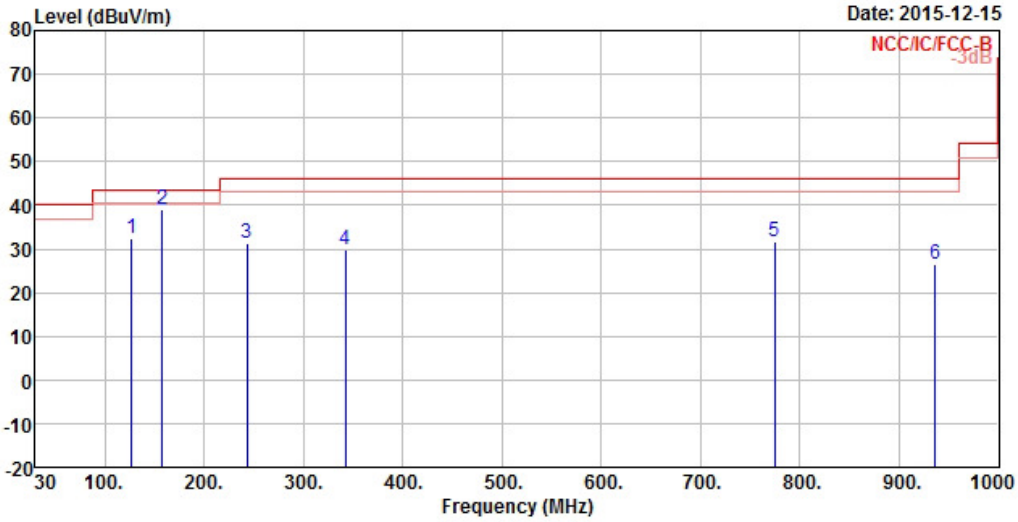
Transmitter Radiated Unwanted Emissions (Below 1GHz)			
Operating Mode	1	**Polarization**	V
Operating Function	Radio link (Bluetooth)		



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	47.46	29.33	-10.67	40.00	56.00	10.10	0.40	37.17	Peak
2	82.38	29.87	-10.13	40.00	58.18	8.06	0.52	36.89	Peak
3	158.04	33.46	-10.04	43.50	58.28	11.00	0.71	36.53	Peak
4	763.32	26.09	-19.91	46.00	40.06	21.81	1.62	37.40	Peak
5	776.90	33.09	-12.91	46.00	46.95	21.92	1.64	37.42	Peak
6	935.98	26.62	-19.38	46.00	38.00	24.27	1.83	37.48	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)

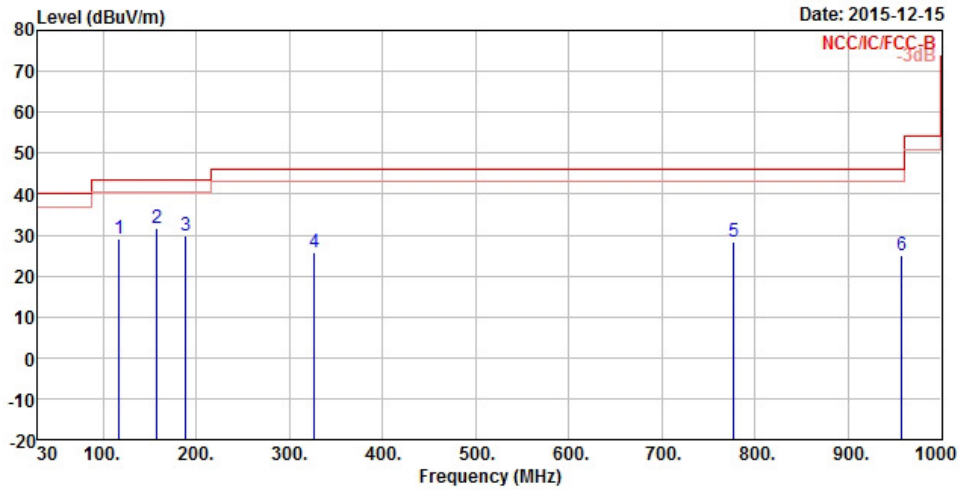
Transmitter Radiated Unwanted Emissions (Below 1GHz)			
Operating Mode	1	**Polarization**	H
Operating Function	Radio link (Bluetooth)		



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	127.00	32.29	-11.21	43.50	56.29	12.01	0.64	36.65	Peak
2	158.04	39.10	-4.40	43.50	63.92	11.00	0.71	36.53	QP
3	243.40	31.30	-14.70	46.00	54.72	12.10	0.87	36.39	Peak
4	342.34	29.73	-16.27	46.00	50.20	14.97	1.03	36.47	Peak
5	774.96	31.61	-14.39	46.00	45.49	21.90	1.64	37.42	Peak
6	935.98	26.61	-19.39	46.00	37.99	24.27	1.83	37.48	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)

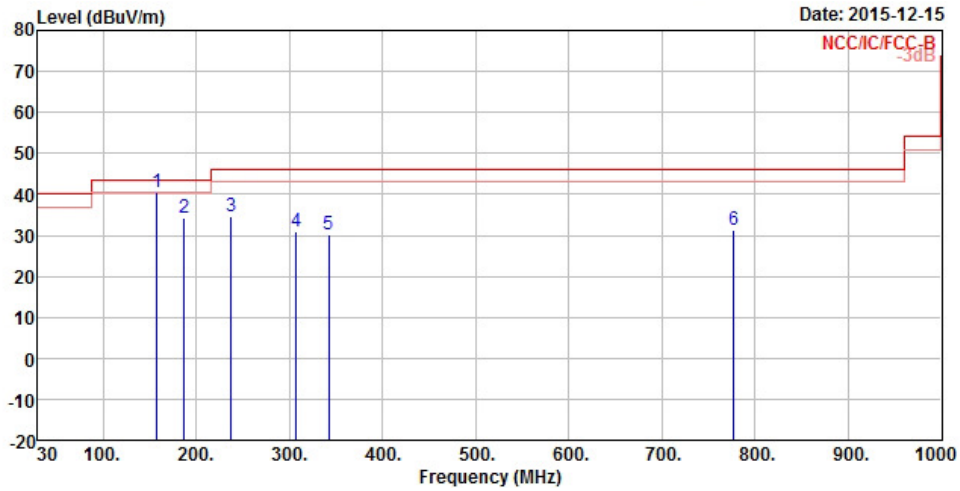
Transmitter Radiated Unwanted Emissions (Below 1GHz)			
Operating Mode	2	**Polarization**	V
Operating Function	Radio link (Bluetooth)		



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	117.30	29.22	-14.28	43.50	53.66	11.66	0.59	36.69	Peak
2	158.04	31.50	-12.00	43.50	56.32	11.00	0.71	36.53	Peak
3	189.08	29.92	-13.58	43.50	56.08	9.48	0.77	36.41	Peak
4	326.82	25.67	-20.33	46.00	46.60	14.51	1.01	36.45	Peak
5	776.90	28.18	-17.82	46.00	42.04	21.92	1.64	37.42	Peak
6	957.32	24.97	-21.03	46.00	35.82	24.69	1.85	37.39	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	Radio link (Bluetooth)		

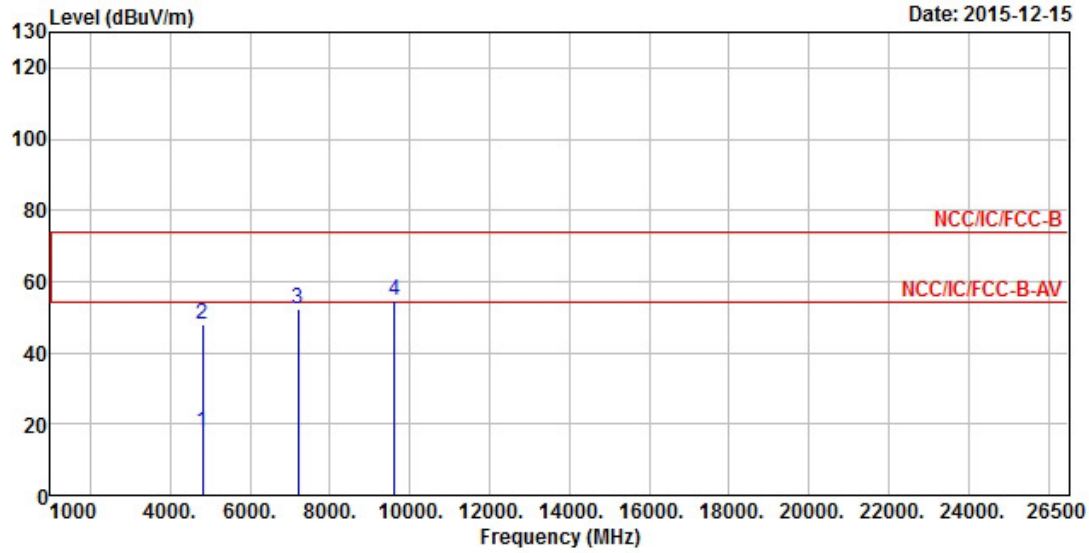


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	158.04	40.42	-3.08	43.50	65.24	11.00	0.71	36.53	Peak
2	187.14	34.22	-9.28	43.50	60.43	9.44	0.77	36.42	Peak
3	237.58	34.73	-11.27	46.00	58.68	11.58	0.86	36.39	Peak
4	307.42	30.92	-15.08	46.00	52.43	13.93	0.98	36.42	Peak
5	342.34	30.27	-15.73	46.00	50.74	14.97	1.03	36.47	Peak
6	776.90	31.20	-14.80	46.00	45.06	21.92	1.64	37.42	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)

3.8.7 Transmitter Radiated Unwanted Emissions (Above 1GHz)

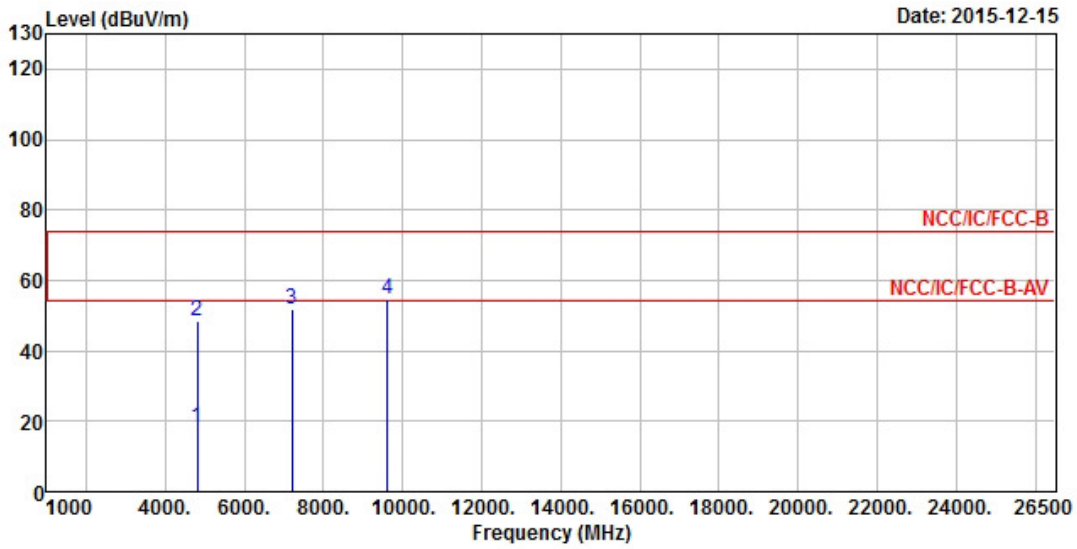
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	BR-1Mbps	**Test Freq. (MHz)**	2402
Operating Function	Transmit	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4804.00	17.86	-36.14	54.00	13.04	33.31	6.11	34.60	Average
2	4804.00	47.96	-26.04	74.00	43.14	33.31	6.11	34.60	Peak
3	7206.00	52.11			43.24	36.19	7.56	34.88	Peak
4	9608.00	54.76			43.71	37.58	8.75	35.28	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 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.
Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (99.50 dBuV/m).

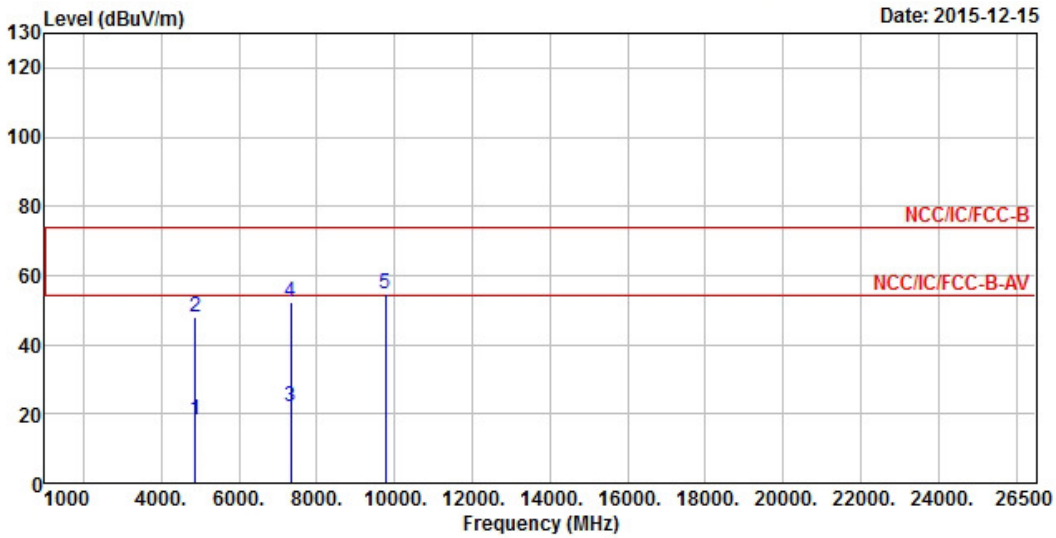
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	BR-1Mbps	**Test Freq. (MHz)**	2402
Operating Function	Transmit	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4804.00	18.18	-35.82	54.00	13.36	33.31	6.11	34.60	Average
2	4804.00	48.28	-25.72	74.00	43.46	33.31	6.11	34.60	Peak
3	7206.00	51.62			42.75	36.19	7.56	34.88	Peak
4	9608.00	54.57			43.52	37.58	8.75	35.28	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 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.
Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (99.50 dBuV/m).

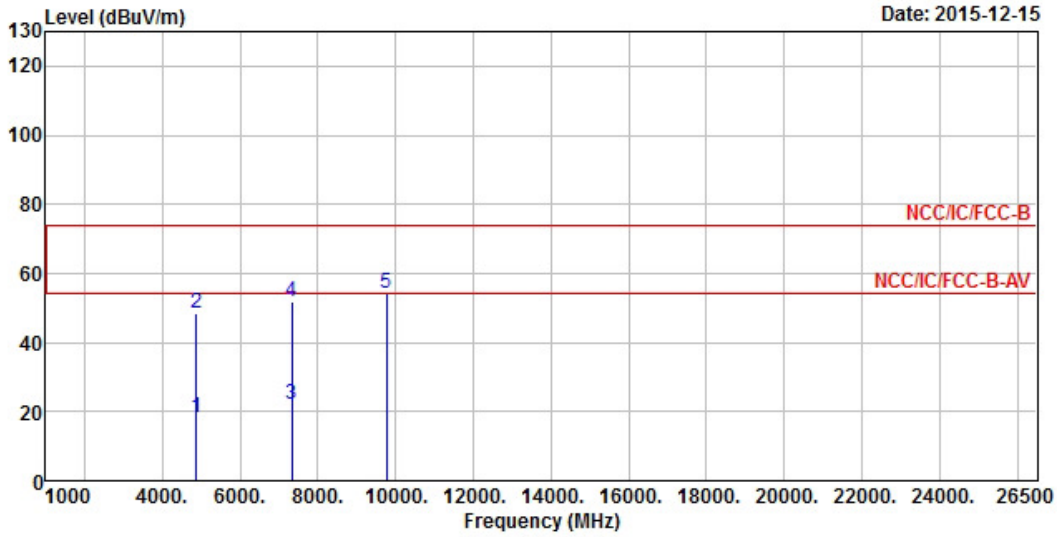
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	BR-1Mbps	**Test Freq. (MHz)**	2441
Operating Function	Transmit	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4882.00	18.00	-36.00	54.00	13.05	33.38	6.15	34.58	Average
2	4882.00	48.10	-25.90	74.00	43.15	33.38	6.15	34.58	Peak
3	7323.00	22.16	-31.84	54.00	13.11	36.36	7.60	34.91	Average
4	7323.00	52.26	-21.74	74.00	43.21	36.36	7.60	34.91	Peak
5	9764.00	54.83			43.65	37.54	8.94	35.30	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 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.
Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (98.50 dBuV/m).

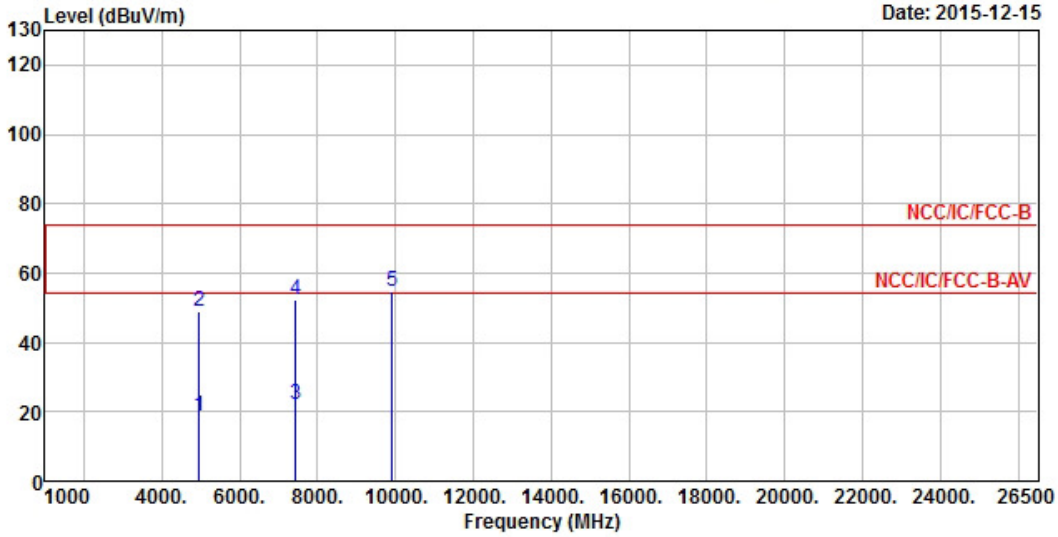
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	BR-1Mbps	**Test Freq. (MHz)**	2441
Operating Function	Transmit	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4882.00	18.42	-35.58	54.00	13.47	33.38	6.15	34.58	Average
2	4882.00	48.52	-25.48	74.00	43.57	33.38	6.15	34.58	Peak
3	7323.00	21.94	-32.06	54.00	12.89	36.36	7.60	34.91	Average
4	7323.00	52.04	-21.96	74.00	42.99	36.36	7.60	34.91	Peak
5	9764.00	54.18			43.00	37.54	8.94	35.30	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 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.
Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (98.50 dBuV/m).

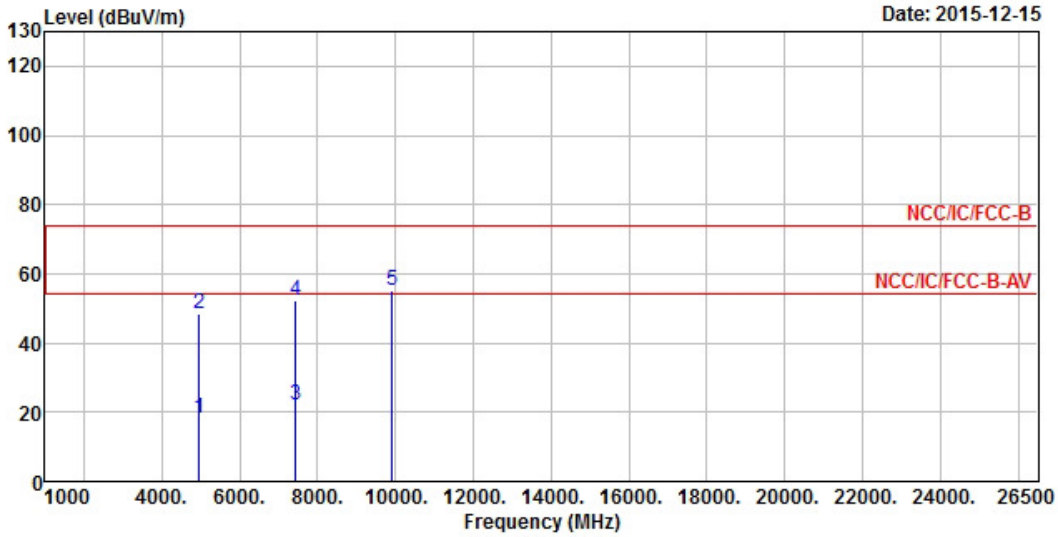
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	BR-1Mbps	**Test Freq. (MHz)**	2480
Operating Function	Transmit	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4960.00	18.72	-35.28	54.00	13.62	33.47	6.19	34.56	Average
2	4960.00	48.82	-25.18	74.00	43.72	33.47	6.19	34.56	Peak
3	7440.00	22.09	-31.91	54.00	12.87	36.53	7.64	34.95	Average
4	7440.00	52.19	-21.81	74.00	42.97	36.53	7.64	34.95	Peak
5	9920.00	54.59			43.26	37.51	9.13	35.31	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 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.
Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (97.60 dBuV/m).

Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	BR-1Mbps	**Test Freq. (MHz)**	2480
Operating Function	Transmit	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4960.00	18.26	-35.74	54.00	13.16	33.47	6.19	34.56	Average
2	4960.00	48.36	-25.64	74.00	43.26	33.47	6.19	34.56	Peak
3	7440.00	21.97	-32.03	54.00	12.75	36.53	7.64	34.95	Average
4	7440.00	52.07	-21.93	74.00	42.85	36.53	7.64	34.95	Peak
5	9920.00	55.04			43.71	37.51	9.13	35.31	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 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.
Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (97.60 dBuV/m).

4 Test Equipment and Calibration Data

< AC Conduction >

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
EMC Receiver	R&S	ESCS 30	100174	9kHz ~ 2.75GHz	Apr. 15, 2015	Apr. 14, 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	N/A	N/A

< 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	1027452	300MHz ~ 40GHz	Jan. 29, 2015	Jan. 28, 2016
Power Meter	Anritsu	ML2495A	1124009	300MHz ~ 40GHz	Jan. 29, 2015	Jan. 28, 2016

< Radiated Emission >

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	30MHz ~ 1GHz 3m	Jul. 01, 2015	Jun. 30, 2016
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1GHz ~ 18GHz 3m	Jul. 01, 2015	Jun. 30, 2016
Amplifier	EMC	EMC9135	980232	9kHz ~ 1.0GHz	Jan. 27, 2015	Jan. 26, 2016
Amplifier	Agilent	8449B	3008A02373	1GHz ~ 26.5GHz	Sep. 10, 2015	Sep. 09, 2016
Spectrum	KEYSIGHT	N9010A	MY54200885	10Hz ~ 44GHz	Jul. 15, 2015	Jul. 14, 2016
Bilog Antenna	TESEQ	CBL 6112D	35418	30MHz ~ 1GHz	Mar. 30, 2015	Mar. 29, 2016
Horn Antenna	AARONIA AG	POWERLOG 70180	05192	1GHz ~ 18GHz	Jan. 05, 2015	Jan. 04, 2016
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170614	18GHz ~ 40GHz	Dec. 29, 2014	Dec. 28, 2016
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz ~ 1GHz	Jul. 23, 2015	Jul. 22, 2016
RF Cable-high	Jye Bao	RG142	03CH09-HY	1GHz ~ 40GHz	Jul. 23, 2015	Jul. 22, 2016
Turn Table	Chain Tek	T-200S	1308028	0 ~ 360 degree	N/A	N/A
Antenna Mast	Chain Tek	MBS-400	1308049	1 ~ 4 m	N/A	N/A

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
Loop Antenna	ROHDE&SCHWARZ	HFH2-Z2	100330	9 kHz~30 MHz	Nov. 10, 2014	Nov. 09, 2016