FCC Test Report

Equipment	:	**3G M2M Router Plus**
Brand Name	:	**NetComm Wireless**
Model No.	:	**NTC-6200-01**
FCC ID	:	**XIA-NTC620001**
Standard	:	**47 CFR FCC Part 15.249**
Operating Band	:	**2400 MHz – 2483.5 MHz**
FCC Classification	:	**DXX**
Applicant **Manufacturer**	:	**NetComm Wireless Limited** **Level 2, 18-20 Orion Road Lane Cove,** **NSW Australia 2066**

The product sample received on Aug. 28, 2013 and completely tested on Oct. 04, 2013. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2009 and shown compliance with the applicable technical standards.

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

Reviewed by:

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Summary of Test Result

Conformance Test Specifications					
Report Clause	**Ref. Std. Clause**	**Description**	**Measured**	**Limit**	**Result**
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]:0.1703400MHz 46.72 (Margin 18.22dB) – QP 40.82 (Margin 14.12dB) - AV	FCC 15.207	Complied
3.2	15.215(c)	Emission Bandwidth	2.7000 MHz; fall in band	Information only	Complied
3.3	15.249(a)	Fundamental Emissions	[dBuV/m at 3m]:2405MHz 103.63 (Margin 10.378dB) - PK 77.99 (Margin 16.01dB) - AV	[dBuV/m at 3m]: average: 94	Complied
3.4	15.249(a)/ (d)	Transmitter Radiated Unwanted Emissions	[dBuV/m at 3m]:7425.000MHz 71.92 (Margin 2.08dB) - PK 46.28 (Margin 7.72dB) - AV	Harmonics: 54 dBuV/m@3m Other band: 50 dB or FCC 15.209, whichever is the lesser attenuation.	Complied

Revision History

Report No.	Version	Description	Issued Date
FR380534	Rev. 01	Initial issue of report	Nov. 05, 2013

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)**	**Co-location**
2400-2483.5	O-QPSK	2405-2475	1-15 [15]	77.99	N/A
Note 1: Field strength performed average level at 3m. Note 2: Co-location, Co-location is generally defined as simultaneously transmitting (co-transmitting) antennas within 20 cm of each other. (i.e., EUT has simultaneously co-transmitting that operating 2.4GHz and 5GHz.)					

1.1.2 Antenna Information

Antenna Category	
☒	Integral antenna (antenna permanently attached)
☐	External antenna (dedicated antennas) ; Unique antenna connector

1.1.3 Type of EUT

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

1.1.4 Test Signal Duty Cycle

Operated Mode for Worst Duty Cycle	
☐ Operated normally mode for worst duty cycle	
☒ Operated test mode for worst duty cycle	
Test Signal Duty Cycle (x)	**Duty Cycle Correction Factor [dB] = (20 log x)**
☒ 5.23%	25.64
If worst duty < 100%, average emission = peak emission + 20 log x	

1.1.5 EUT Operational Condition

Supply Voltage	☒ AC mains	☒ DC	
Type of DC Source	☐ Internal DC supply	☒ External DC adapter	☐ Battery

1.2 Support Equipment

Support Equipment				
AC Adapter	Brand Name	Tenpao	Model Name	S018KM1200150
	Power Rating	I/P: 100-240V~ 50/60Hz 500mA ; O/P: 12V⎓1500mA		

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 C63.10-2009

1.4 Testing Location Information

Testing Location					
☒	HWA YA	ADD :	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.		
		TEL :	886-3-327-3456	FAX :	886-3-327-0973

Test Condition	Test Site No.	Test Engineer	Test Environment
AC Conduction	CO04-HY	Zeus	24°C / 45%
RF Conducted	TH01-HY	Ian	24.9°C / 61%
Radiated Emission	03CH02-HY	Daniel	23°C / 58%

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		±2.26 dB
Emission bandwidth, 20dB bandwidth		±1.42 %
RF output power, conducted		±0.63 dB
All emissions, radiated	9 – 150 kHz	±2.49 dB
	0.15 – 30 MHz	±2.28 dB
	30 – 1000 MHz	±2.56 dB
	1 – 18 GHz	±3.59 dB
	18 – 40 GHz	±3.82 dB
	40 – 200 GHz	N/A
Temperature		±0.8 °C
Humidity		±3 %
DC and low frequency voltages		±3 %
Time		±1.42 %
Duty Cycle		±1.42 %

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)**
GFSK-Transmit	77.99

2.2 Test Channel Frequencies Configuration

Test Channel Frequencies Configuration	
Test Mode	**Test Channel Frequencies (MHz)**
GFSK-Transmit	2405-(F1), 2440-(F2), 2475-(F3)

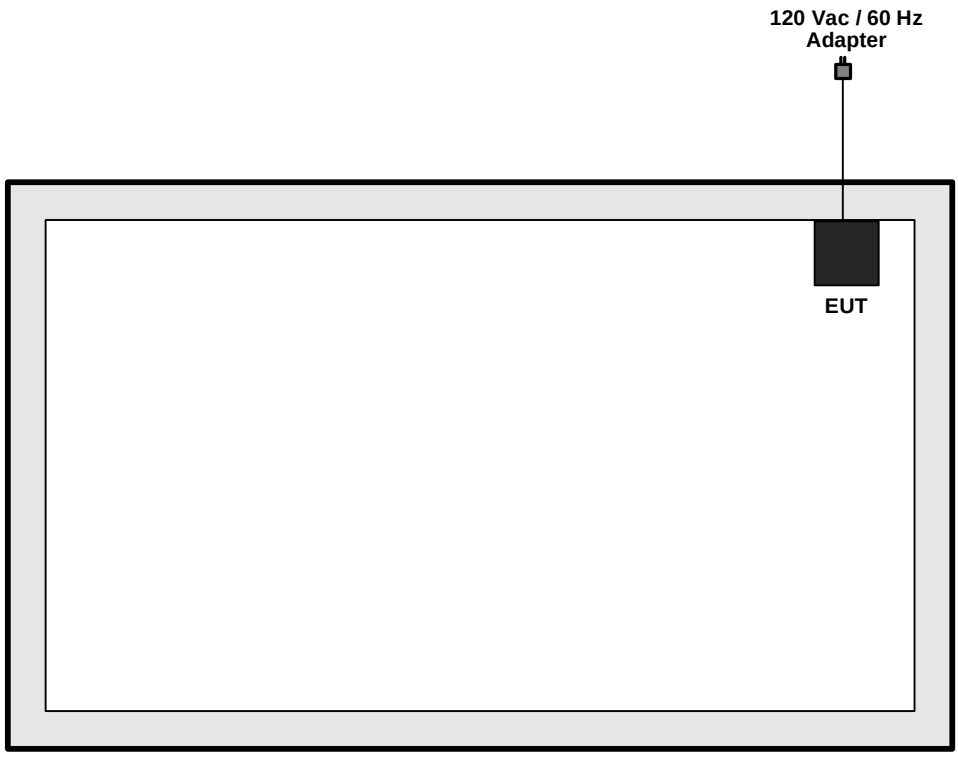
2.3 The Worst Case Measurement Configuration

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 (120Vac / 60Hz)
Operating Mode	Operating Mode Description
1	AC Power & Radio link

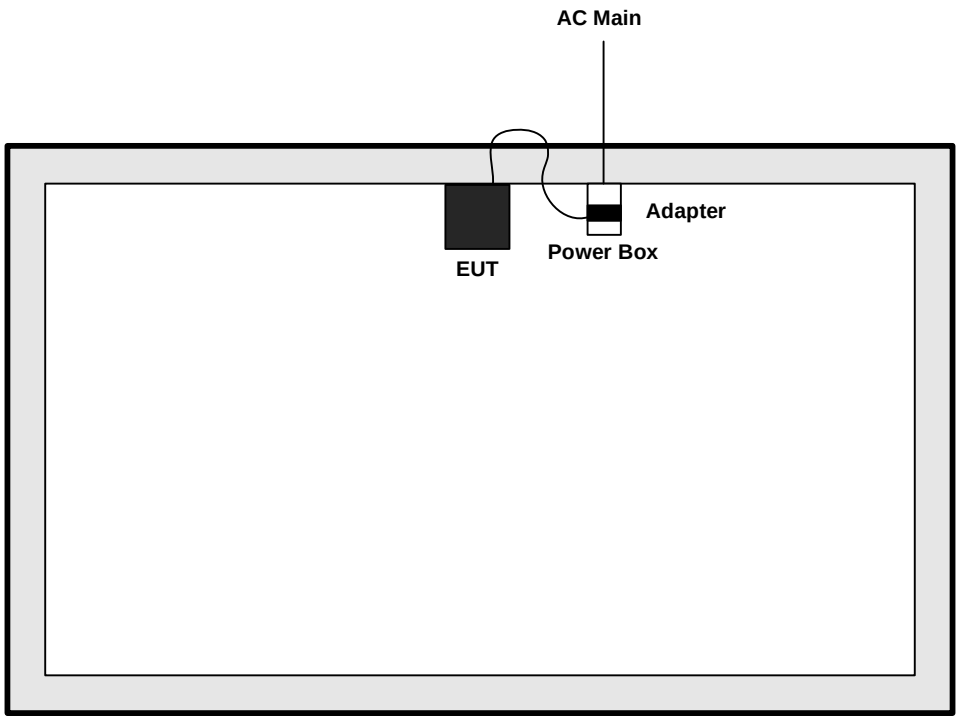
The Worst Case Mode for Following Conformance Tests	
Tests Item	Emission Bandwidth, Fundamental Emissions, Radiated Unwanted Emissions
Test Condition	Radiated measurement
User Position	☒ EUT will be placed in fixed position.
	☐ EUT will be placed in mobile position and operating multiple positions. EUT shall be performed two orthogonal planes. The worst planes is X.
	☐ EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions. EUT shall be performed two or three orthogonal planes. The worst planes is X.
Operating Mode	☒ 1. AC Power & Radio link
Test Mode	GFSK-Transmit

2.4 Test Setup Diagram

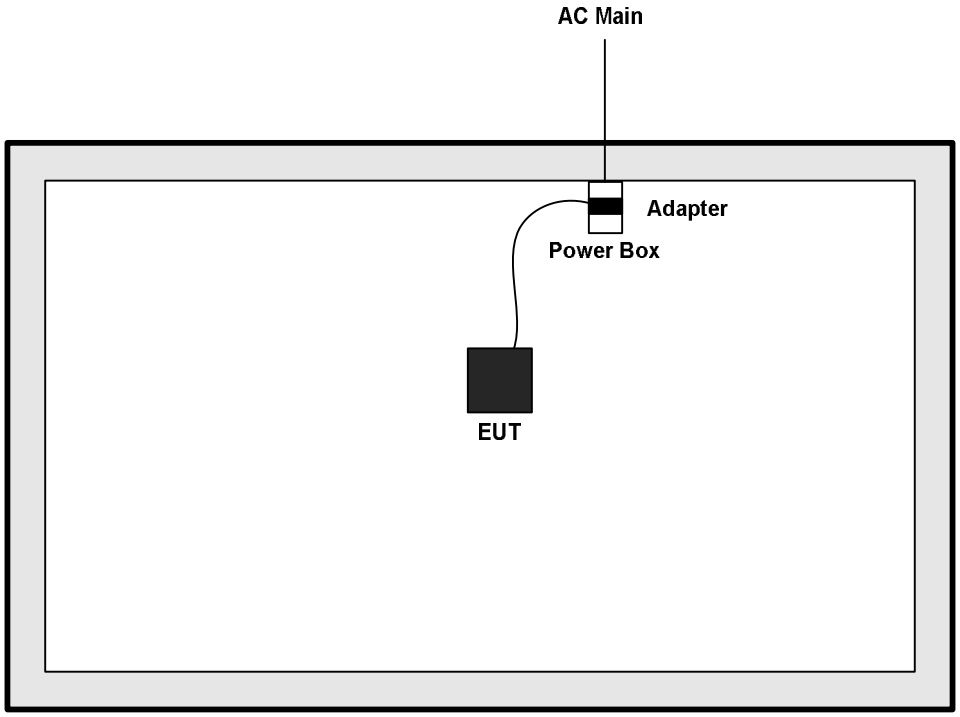
Test Setup Diagram – AC Line Conducted Emission Test



Test Setup Diagram - Radiated Test (Below 1GHz)



Test Setup Diagram - Radiated Test (Above 1GHz)



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

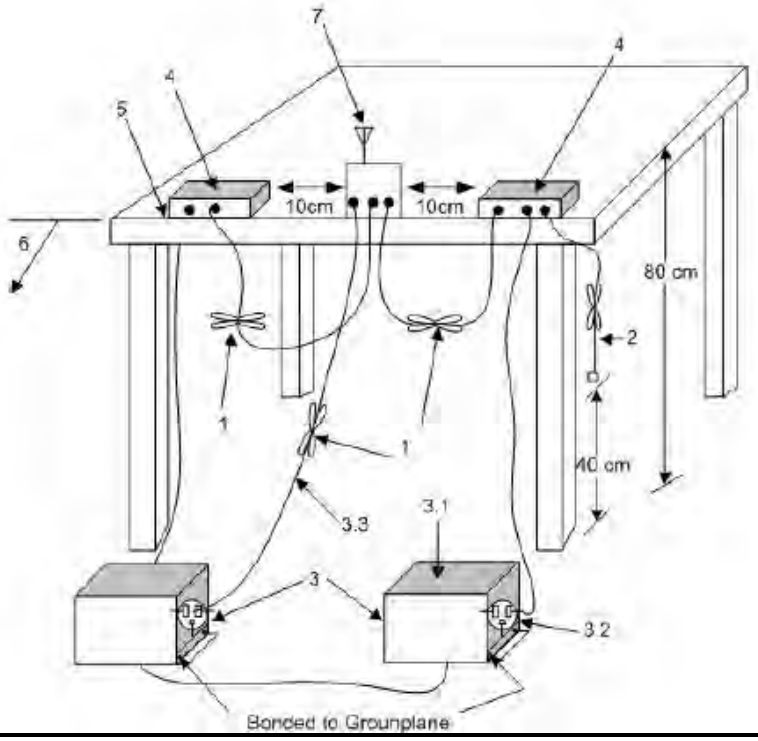
Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

Test Method
☒ Refer as ANSI C63.10-2009, clause 6.2 for AC power-line conducted emissions.

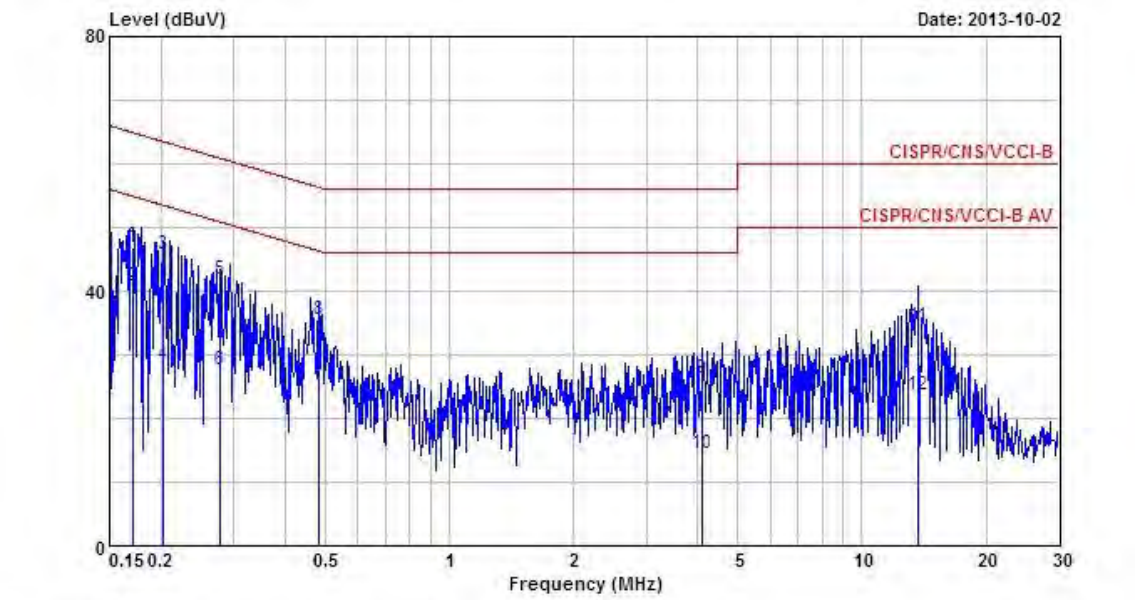
3.1.4 Test Setup

AC Power-line Conducted Emissions



3.1.5 Test Result of AC Power-line Conducted Emissions

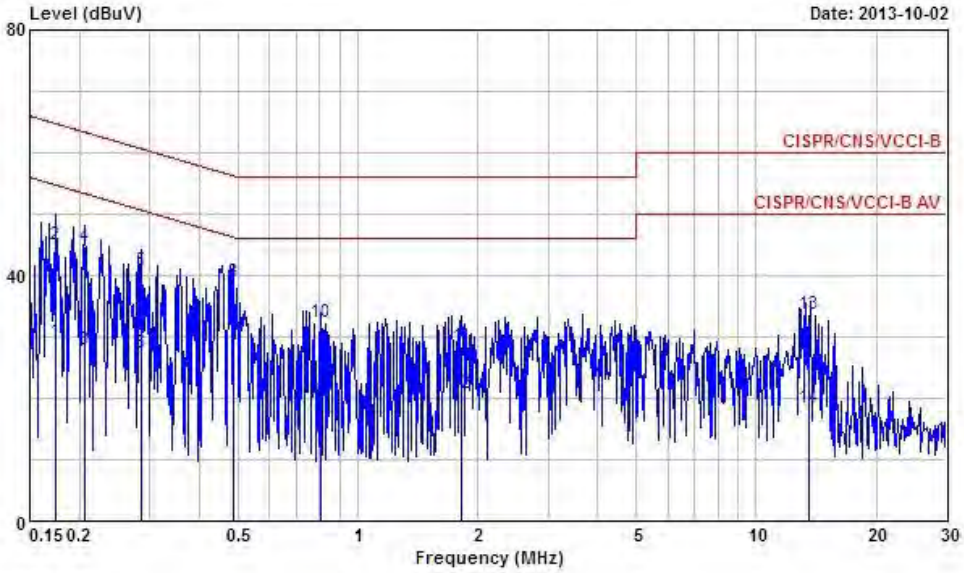
AC Power-line Conducted Emissions Result			
Operating Mode	1	**Power Phase**	Neutral
Operating Function	AC Power & Radio link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1703400	46.72	-18.22	64.94	46.29	0.24	0.19	QP
2	@0.1703400	40.82	-14.12	54.94	40.39	0.24	0.19	Average
3	0.2018130	45.88	-17.66	63.54	45.55	0.23	0.10	QP
4	0.2018130	28.36	-25.18	53.54	28.03	0.23	0.10	Average
5	0.2788120	41.82	-19.03	60.85	41.49	0.23	0.10	QP
6	0.2788120	27.67	-23.18	50.85	27.34	0.23	0.10	Average
7	0.4837480	27.29	-18.98	46.27	26.95	0.22	0.12	Average
8	0.4837480	35.65	-20.62	56.27	35.31	0.22	0.12	QP
9	4.110	26.20	-29.80	56.00	25.71	0.29	0.20	QP
10	4.110	14.47	-31.53	46.00	13.98	0.29	0.20	Average
11	13.700	34.46	-25.54	60.00	33.80	0.48	0.18	QP
12	13.700	23.67	-26.33	50.00	23.01	0.48	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	1	**Power Phase**	Line
Operating Function	AC Power & Radio link		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1749130	29.27	-25.45	54.72	28.98	0.11	0.18	Average
2	0.1749130	45.06	-19.66	64.72	44.77	0.11	0.18	QP
3	0.2061360	27.97	-25.39	53.36	27.76	0.11	0.10	Average
4	0.2061360	44.61	-18.75	63.36	44.40	0.11	0.10	QP
5	0.2847840	40.68	-20.00	60.68	40.48	0.10	0.10	QP
6	0.2847840	27.44	-23.24	50.68	27.24	0.10	0.10	Average
7	0.4863180	31.64	-14.59	46.23	31.42	0.10	0.12	Average
8	0.4863180	39.00	-17.23	56.23	38.78	0.10	0.12	QP
9	0.8044850	19.38	-26.62	46.00	19.09	0.11	0.18	Average
10	0.8044850	32.28	-23.72	56.00	31.99	0.11	0.18	QP
11	1.820	28.50	-27.50	56.00	28.08	0.13	0.29	QP
12	1.820	20.84	-25.16	46.00	20.42	0.13	0.29	Average
13	13.620	33.79	-26.21	60.00	33.34	0.27	0.18	QP
14	13.620	18.35	-31.65	50.00	17.90	0.27	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.)

3.2 Emission Bandwidth

3.2.1 Emission Bandwidth Limit

Emission Bandwidth Limit
☒ Emission bandwidth falls completely within authorized band.

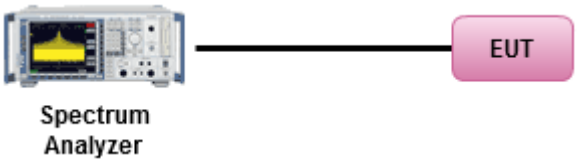
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method
☒ Refer as ANSI C63.10, clause 6.9.1 for 20 dB emission bandwidth and 99% occupied bandwidth measurement.

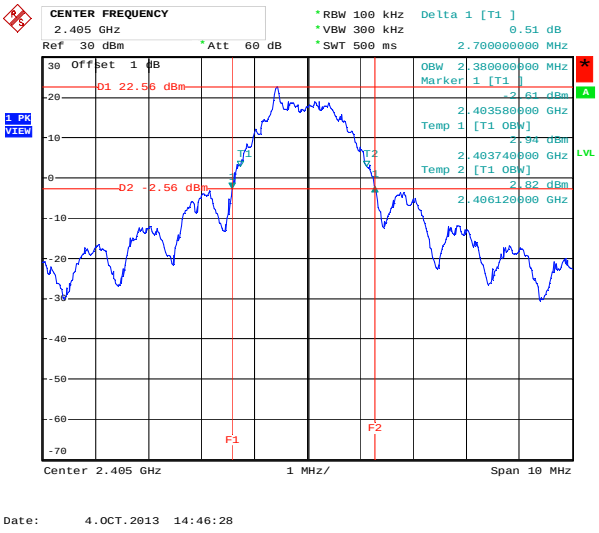
3.2.4 Test Setup

Emission Bandwidth


3.2.5 Test Result of Emission Bandwidth

Emission Bandwidth Result					
Modulation Mode	**Frequency (MHz)**	**99% Bandwidth (MHz)**	**20dB BW (MHz)**	**F_L at 20dB BW (MHz)**	**F_H at 20dB BW (MHz)**
GFSK-Transmit	2405	2.3800	2.7000	2403.5800	-
GFSK-Transmit	2440	2.3800	2.5000	-	-
GFSK-Transmit	2475	2.3800	2.5200	-	2476.2000
Limit		**N/A**	**N/A**	**2400**	**2483.5**
Result		**Complied**			

Worst Emission Bandwidth Plots



3.3 Fundamental Emissions

3.3.1 Fundamental Emissions Limit

Fundamental Emissions E-Field Strength Limit (3m)	
☐	902-928 MHz Band: 94 dBuV/m (quasi peak)
☒	2400-2483.5 MHz Band: 94 dBuV/m (average)
☐	5725-5785 MHz Band: 94 dBuV/m (average)

3.3.2 Measuring Instruments

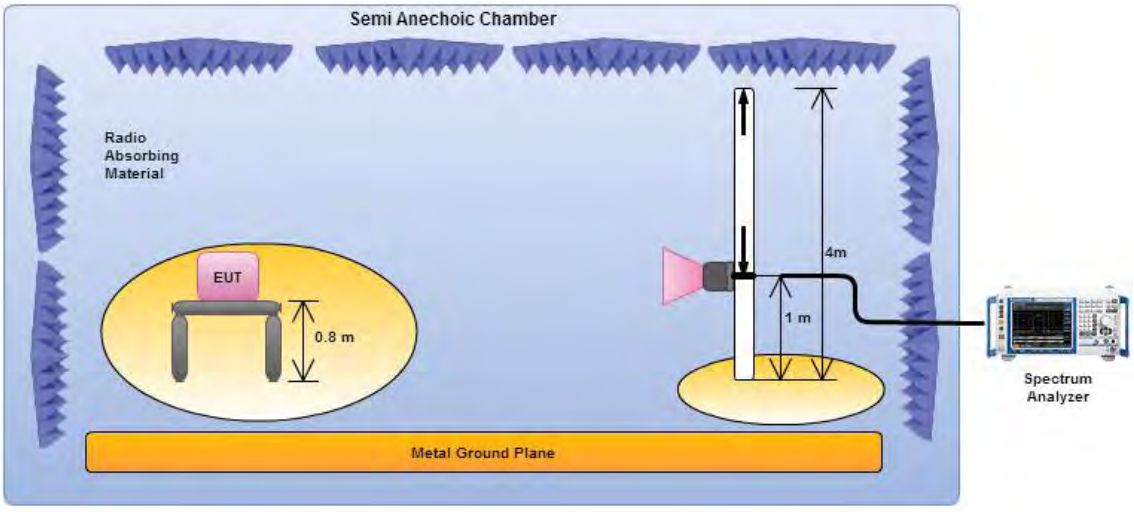
Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedures

☒	The average emission levels shall be measured in [by duty cycle correction factor].	
☒	For the transmitter emissions shall be measured using following options below:	
	☐	Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW) – Duty cycle ≥ 100%.
	☒	Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions. Adjusted by a “duty cycle correction factor”, derived from 20log (dwell time/100 ms). Average emission = peak emission + 20 log (duty cycle).
	☒	Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit.
☒	Refer as ANSI C63.10, clause 6.6 for radiated emissions and test distance is 3m.	

3.3.4 Test Setup

Fundamental Emissions



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**
GFSK-Transmit	2405	103.63	10.37	114	peak
GFSK-Transmit	2405	77.99	16.01	94	average
GFSK-Transmit	2440	101.36	12.64	114	peak
GFSK-Transmit	2440	75.72	18.28	94	average
GFSK-Transmit	2475	100.95	13.05	114	peak
GFSK-Transmit	2475	75.31	18.69	94	average
Result		**Complied**			
Note 1: Measurement worst emissions of receive antenna polarization: Horizontal. Note 2: If duty cycle < 100%, average emission = peak emission + 20 log (duty cycle).					

3.4 Transmitter Radiated Unwanted Emissions

3.4.1 Transmitter Radiated Unwanted Emissions Limit

Transmitter Radiated Unwanted Emissions Limit
Harmonics:
☒ 54 dBuV/m (average)
Other Unwanted Emissions:
☒ 50 dB below the level of the fundamental or FCC 15.209, whichever is the lesser attenuation.

3.4.2 Measuring Instruments

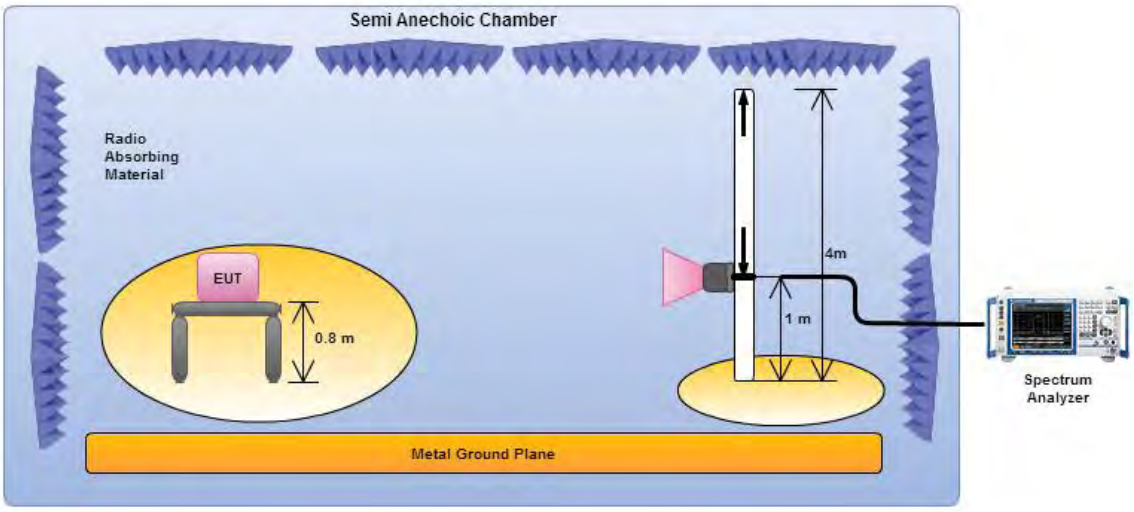
Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

Test Method – General Information	
☒	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].
☒	Refer as ANSI C63.10, clause 6.9.2.2 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:
☐	Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW) – Duty cycle ≥ 100%.
☒	Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions. Adjusted by a “duty cycle correction factor”, derived from 20log (dwell time/100 ms). Average emission = peak emission + 20 log (duty cycle).
☒	Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit.
☒	For the transmitter bandedge emissions shall be measured using following options below:
☒	Refer as ANSI C63.10, clause 6.9.2 for band-edge testing.
☐	Refer as ANSI C63.10, clause 6.9.3 for marker-delta method for band-edge measurements.
☒	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.

3.4.4 Test Setup

Transmitter Radiated Bandedge Emissions



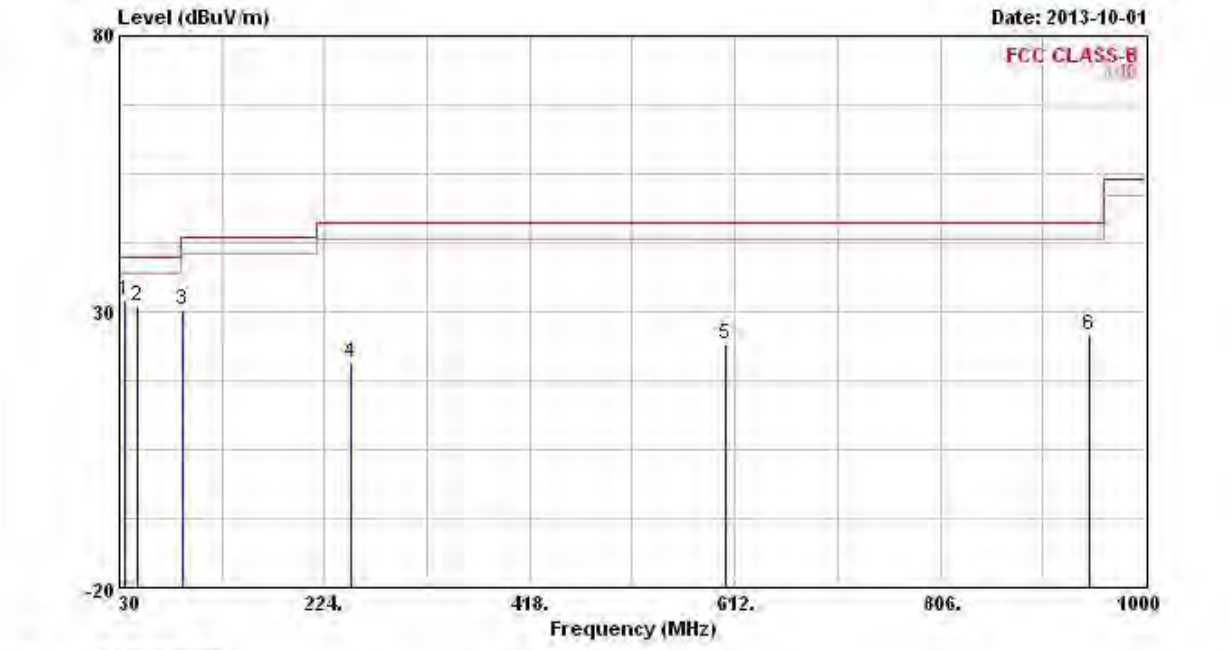
Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna. Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna and the frequency range of 1 GHz to 40 GHz using a calibrated horn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

3.4.5 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)

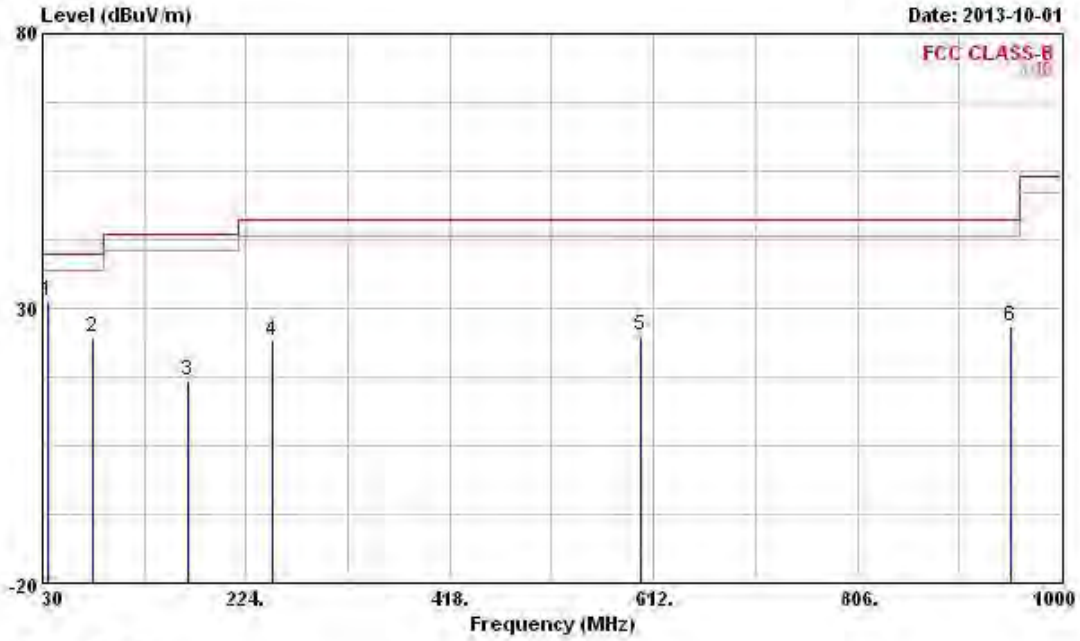
Transmitter Radiated Unwanted Emissions (Below 1GHz)			
Operating Mode	1	**Polarization**	V
Operating Function	AC Power & Radio link		



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	35.820	32.12	-7.88	40.00	44.87	14.15	0.82	27.72	Peak	---	---
2	47.460	30.89	-9.11	40.00	46.65	10.82	0.97	27.55	Peak	---	---
3	90.140	30.46	-13.04	43.50	47.33	9.50	1.34	27.71	Peak	---	---
4	249.220	20.95	-25.05	46.00	32.89	12.97	2.38	27.29	Peak	---	---
5	602.300	24.24	-21.76	46.00	28.89	20.15	3.69	28.49	Peak	---	---
6	947.620	25.86	-20.14	46.00	27.55	21.21	4.81	27.71	Peak	---	---

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical).
Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

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

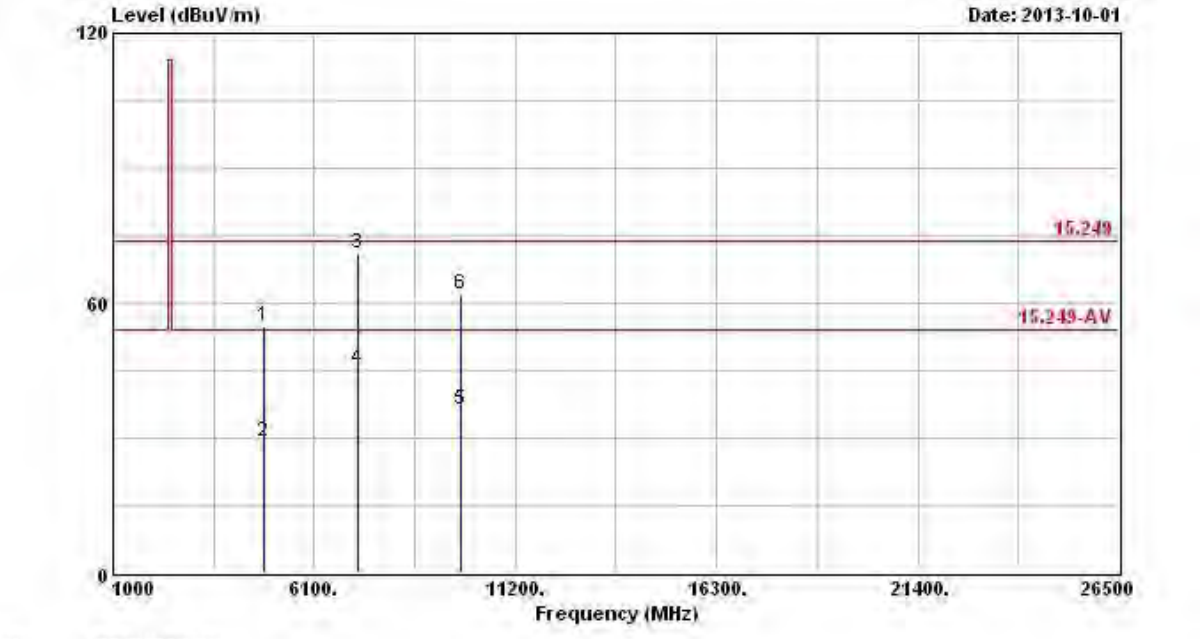


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	35.820	31.47	-8.53	40.00	44.22	14.15	0.82	27.72	Peak	---	---
2	78.500	24.86	-15.14	40.00	43.92	7.30	1.29	27.65	Peak	---	---
3	168.710	16.89	-26.61	43.50	32.39	10.17	1.86	27.53	Peak	---	---
4	249.220	24.24	-21.76	46.00	36.18	12.97	2.38	27.29	Peak	---	---
5	599.390	24.99	-21.01	46.00	29.66	20.15	3.68	28.50	Peak	---	---
6	952.470	26.60	-19.40	46.00	28.15	21.32	4.83	27.70	Peak	---	---

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical).
Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

3.4.7 Transmitter Radiated Unwanted Emissions (Above 1GHz)

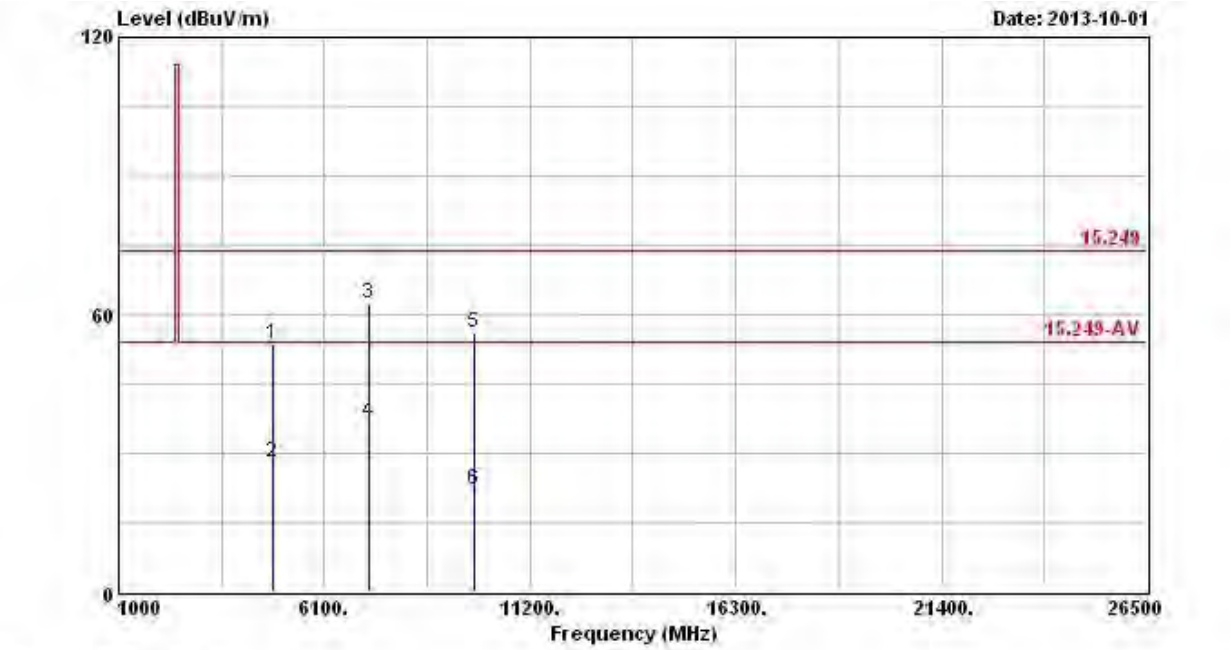
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	GFSK-Transmit	**Test Freq. (FX)**	F1
Operating Function	Transmit	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	4810.000	55.03	-18.97	74.00	50.21	34.81	4.70	34.69	Peak	---	---
2	4810.000	29.39	-24.61	54.00	24.57	34.81	4.70	34.69	Average	---	---
3 @	7215.000	71.18	-2.82	74.00	64.89	35.90	5.33	34.94	Peak	---	---
4 @	7215.000	45.54	-8.46	54.00	39.25	35.90	5.33	34.94	Average	---	---
5	9820.000	36.19	-17.81	54.00	27.87	37.22	6.47	35.37	Average	---	---
6	9820.000	61.83	-12.17	74.00	53.51	37.22	6.47	35.37	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.

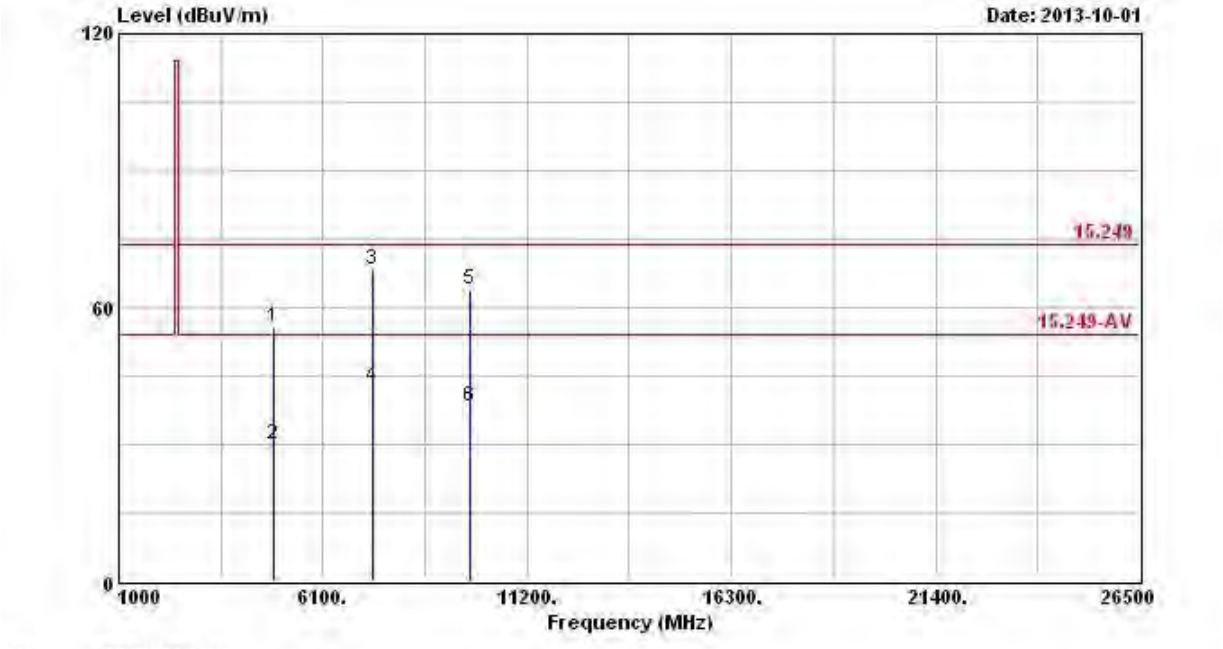
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	GFSK-Transmit	**Test Freq. (FX)**	F1
Operating Function	Transmit	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	4810.000	53.52	-20.48	74.00	48.70	34.81	4.70	34.69	Peak	---	---
2	4810.000	27.88	-26.12	54.00	23.06	34.81	4.70	34.69	Average	---	---
3	7215.000	62.54	-11.46	74.00	56.25	35.90	5.33	34.94	Peak	---	---
4	7215.000	36.90	-17.10	54.00	30.61	35.90	5.33	34.94	Average	---	---
5	9820.000	56.12	-17.88	74.00	47.80	37.22	6.47	35.37	Peak	---	---
6	9820.000	22.15	-31.85	54.00	13.83	37.22	6.47	35.37	Average	---	---

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.

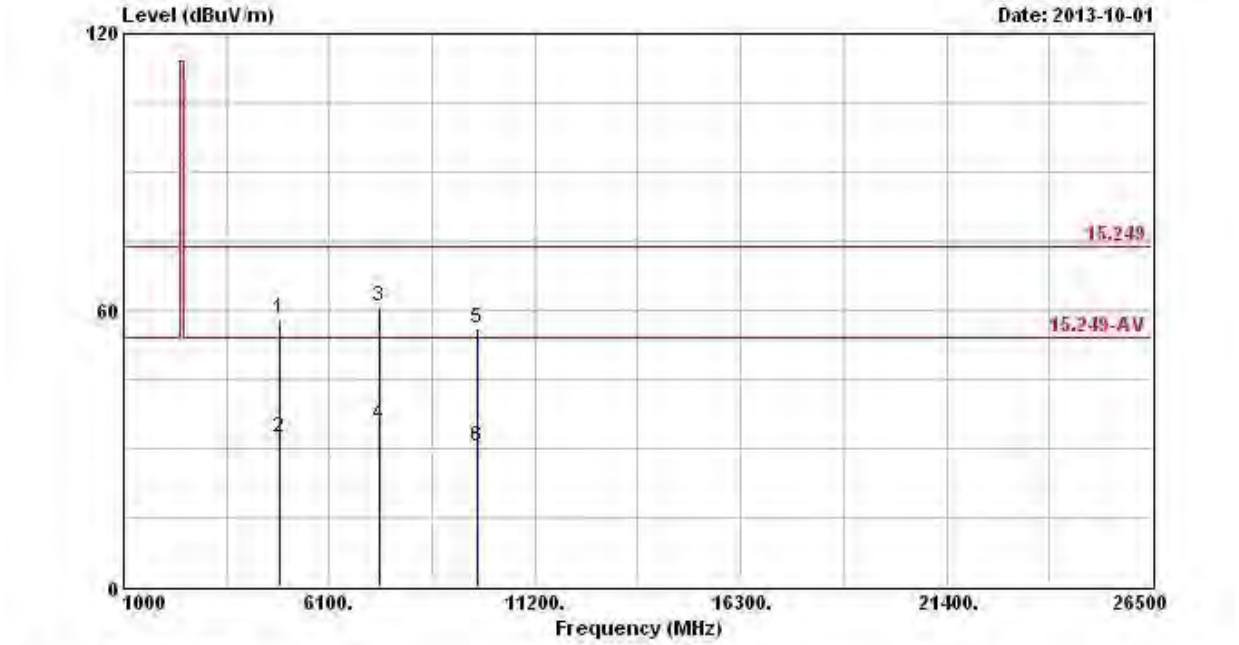
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	GFSK-Transmit	**Test Freq. (FX)**	F2
Operating Function	Transmit	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	4880.000	55.55	-18.45	74.00	50.72	34.77	4.73	34.67	Peak	---	---
2	4880.000	29.91	-24.09	54.00	25.08	34.77	4.73	34.67	Average	---	---
3 @	7320.000	68.14	-5.86	74.00	61.73	35.90	5.47	34.96	Peak	---	---
4	7320.000	42.50	-11.50	54.00	36.09	35.90	5.47	34.96	Average	---	---
5	9760.000	63.99	-10.01	74.00	55.80	37.11	6.44	35.36	Peak	---	---
6	9760.000	38.35	-15.65	54.00	30.16	37.11	6.44	35.36	Average	---	---

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.

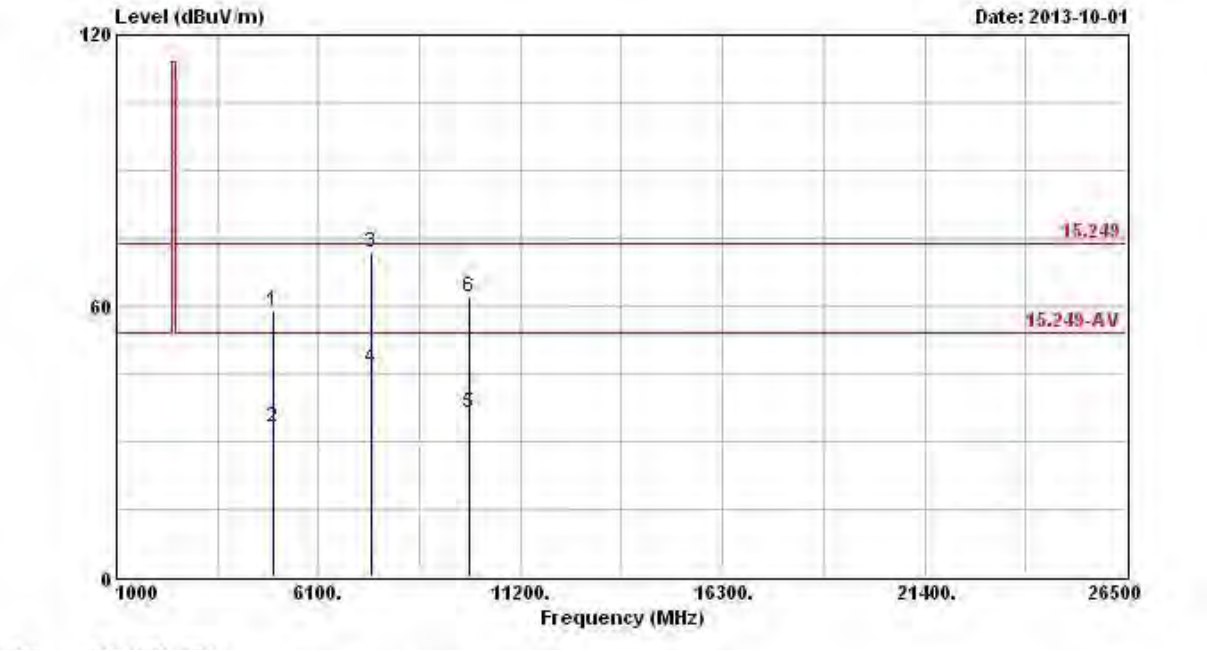
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	GFSK-Transmit	**Test Freq. (FX)**	F2
Operating Function	Transmit	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	4880.000	57.87	-16.13	74.00	53.04	34.77	4.73	34.67	Peak	---	---
2	4880.000	32.23	-21.77	54.00	27.40	34.77	4.73	34.67	Average	---	---
3	7320.000	60.89	-13.11	74.00	54.48	35.90	5.47	34.96	Peak	---	---
4	7320.000	35.25	-18.75	54.00	28.84	35.90	5.47	34.96	Average	---	---
5	9760.000	55.89	-18.11	74.00	47.70	37.11	6.44	35.36	Peak	---	---
6	9760.000	30.25	-23.75	54.00	22.06	37.11	6.44	35.36	Average	---	---

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.

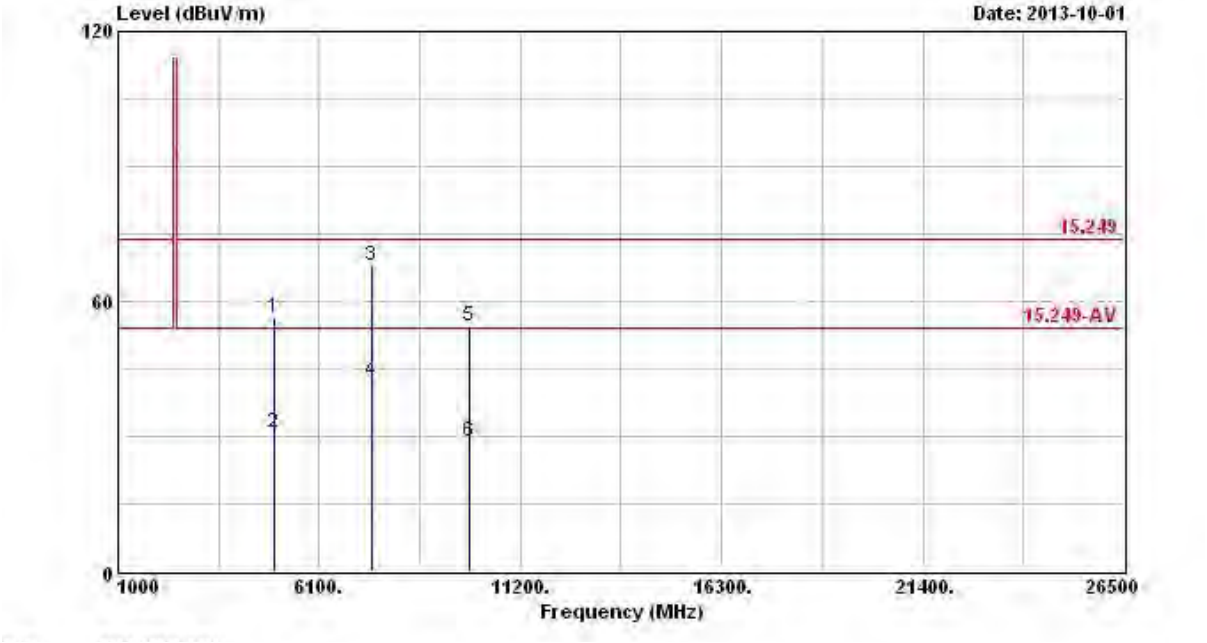
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	GFSK-Transmit	**Test Freq. (FX)**	F3
Operating Function	Transmit	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	4950.000	58.70	-15.30	74.00	53.83	34.73	4.79	34.65	Peak	---	---
2	4950.000	33.06	-20.94	54.00	28.19	34.73	4.79	34.65	Average	---	---
3 @	7425.000	71.92	-2.08	74.00	65.39	35.90	5.61	34.98	Peak	---	---
4 @	7425.000	46.28	-7.72	54.00	39.75	35.90	5.61	34.98	Average	---	---
5	9900.000	36.15	-17.85	54.00	27.63	37.36	6.53	35.37	Average	---	---
6	9900.000	61.79	-12.21	74.00	53.27	37.36	6.53	35.37	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	GFSK-Transmit	**Test Freq. (FX)**	F3
Operating Function	Transmit	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	4950.000	56.45	-17.55	74.00	51.58	34.73	4.79	34.65	Peak	---	---
2	4950.000	30.81	-23.19	54.00	25.94	34.73	4.79	34.65	Average	---	---
3 @	7425.000	67.91	-6.09	74.00	61.38	35.90	5.61	34.98	Peak	---	---
4	7425.000	42.27	-11.73	54.00	35.74	35.90	5.61	34.98	Average	---	---
5	9900.000	54.43	-19.57	74.00	45.91	37.36	6.53	35.37	Peak	---	---
6	9900.000	28.79	-25.21	54.00	20.27	37.36	6.53	35.37	Average	---	---

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

2400-2483.5MHz Transmitter Radiated Bandedge Emissions									
Modulation Mode	**Test 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.**
GFSK-Transmit	2405	3	2400.00	65.50	74	2400.00	48.19	54	H
GFSK-Transmit	2475	3	2492.06	60.	74	2499.63	47.98	54	H
Note 1: Measurement worst emissions of receive antenna polarization.									

4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver	R&S	ESCS 30	100174	9kHz ~ 2.75GHz	Mar. 26, 2013	Conduction (CO04-HY)
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-477	9kHz ~ 30MHz	Jan. 21, 2013	Conduction (CO04-HY)
LISN (Support Unit)	EMCO	3810/2NM	9703-1839	9kHz ~ 30MHz	Apr. 18, 2013	Conduction (CO04-HY)
RF Cable-CON	HUBER+SUHNER	RG213/U	7.61183201e+012	9kHz ~ 30MHz	Nov. 09, 2012	Conduction (CO04-HY)

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSP 40	100305	9KHz~40GHz	Mar. 20, 2013	Conducted (TH01-HY)
AC Power Source	G.W	APS-9102	EL920581	AC 0V ~ 300V	Jul. 16, 2013	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Jun. 27, 2013	Conducted (TH01-HY)
RF Cable-2m	HUBER+SUHNER	SUCOFLEX_104	SN 345675/4	30MHz ~ 26.5GHz	Dec.04, 2012	Conducted (TH01-HY)
RF Cable-3m	HUBER+SUHNER	SUCOFLEX_104	SN 345669/4	30MHz ~ 26.5GHz	Dec.04, 2012	Conducted (TH01-HY)

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz ~ 1GHz 3m	May 11, 2013	Radiation (03CH02-HY)
Amplifier	Agilent	8447D	2944A11146	100kHz ~ 1.3GHz	Jul. 17, 2013	Radiation (03CH02-HY)
Amplifier	Agilent	8449B	3008A02364	1GHz ~ 26.5GHz	May 06, 2013	Radiation (03CH02-HY)
Horn Antenna	ETS-LINDGREN	3117	00091920	1GHz ~ 18GHz	Nov. 16, 2012	Radiation (03CH02-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15GHz ~ 40GHz	Jan. 08, 2013	Radiation (03CH02-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz ~ 1GHz	Nov. 10, 2012	Radiation (03CH02-HY)
RF Cable-high	SUHNER	SUCOFLEX106	03CH02-HY	1GHz ~ 40GHz	Mar. 05, 2013	Radiation (03CH02-HY)
Bilog Antenna	SCHAFFNER	CBL61128	2723	30MHz ~ 2GHz	Oct. 22, 2012	Radiation (03CH02-HY)
Turn Table	Chaintek Instruments	3000	MF7802058	0~ 360 degree	N/A	Radiation (03CH02-HY)
Antenna Mast	MF	MF7802	MF780208205	1 ~ 4 m	N/A	Radiation (03CH02-HY)
Spectrum Analyzer	R&S	FSP40	100593	9kHz ~ 40GHz	Oct, 03, 2013	Radiation (03CH02-HY)

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Magnetic Loop Antenna	Teseq GmbH	HLA 6120	31244	0.01MHz ~ 30MHz	Dec. 02, 2012	Radiation (03CH02-HY)

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