

FCC Test Report

Equipment : RF_CC2541 MODULE
Brand Name : DIGI
Model No. : TRK-RF-05
FCC ID : SUFTRKRF05
Standard : 47 CFR FCC Part 15.249
Operating Band : 2400 MHz – 2483.5 MHz
FCC Classification : DXX
Applicant : Teraoka Weigh System Pte Ltd
4 Leng Kee Rd, #05-03/04/05&11, SIS Building,
Singapore 159088
Manufacturer : Teraoka Weigh System Pte Ltd
4 Leng Kee Rd, #05-03/04/05&11, SIS Building,
Singapore 159088

The product sample received on Mar. 05, 2013 and completely tested on Mar. 13, 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:

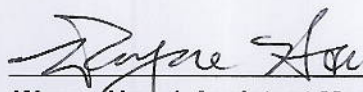

Wayne Hsu / Assistant Manager



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Summary of Test Result

Conformance Test Specifications					
Report Clause	Ref. Std. Clause	Description	Measured	Limit	Result
1.1.2	15.203	Antenna Requirement	Antenna connector mechanism complied	FCC 15.203	Complied
3.1	15.207	AC Power-line Conducted Emissions	[dBuV]: 21.150MHz 29.80 (Margin 20.20dB) - AV 34.82 (Margin 25.18dB) - QP	FCC 15.207	Complied
3.2	15.215(c)	Emission Bandwidth	0.47 MHz; fall in band	Information only	Complied
3.3	15.249(a)	Fundamental Emissions	[dBuV/m at 3m]: 48.72 (Margin 45.28dB) average	[dBuV/m at 3m]: average: 94	Complied
3.4	15.249(a)/(d)	Transmitter Radiated Unwanted Emissions	[dBuV/m at 3m]: 4960.00MHz 63.86 (Margin 10.14dB) - PK	Harmonics: 40 dBuV/m @3m Other band: 50 dB or FCC 15.209, whichever is the lesser attenuation.	Complied

Revision History

[illegible]

1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information					
Frequency Range (MHz)	Modulation	Ch. Frequency (MHz)	Channel Number	Fundamental Field Strength (dBuV/m)	Co-location
2400-2483.5	GFSK	2402-2480	0-78 [79]	48.72	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	
<input checked="" type="checkbox"/>	Integral antenna (antenna permanently attached)
<input type="checkbox"/>	External antenna (dedicated antennas) ; Unique antenna connector

1.1.3 Type of EUT

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

1.1.4 Test Signal Duty Cycle

Operated Mode for Worst Duty Cycle	
<input type="checkbox"/>	Operated normally mode for worst duty cycle
<input checked="" type="checkbox"/>	Operated test mode for worst duty cycle
Test Signal Duty Cycle (x)	Duty Cycle Correction Factor [dB] – (20 log x)
<input checked="" type="checkbox"/> 0.6767%	43.39
If worst duty < 100%, average emission = peak emission + 20 log x	

1.1.5 EUT Operational Condition

Supply Voltage	<input type="checkbox"/> AC mains	<input checked="" type="checkbox"/> DC	
Type of DC Source	<input type="checkbox"/> Internal DC supply	<input checked="" type="checkbox"/> Host	<input type="checkbox"/> Battery

1.2 Accessories and Support Equipment

Accessories				
No.	Equipment	Brand Name	Model Name	Serial No.
1	POWER SUPPLY	Gw INSTEK	GPC-6030D	-

Support Equipment				
No.	Equipment	Brand Name	Model Name	Serial No.
1	NOTEBOOK	DELL	E5420	-
2	CONTROLLER	Teraoka	SMARTRF05	-
3	USB CABLE	Maxxtro	2725	-
4	POWER SUPPLY	GEINSTEK	GPC-3060D	-

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				
<input checked="" type="checkbox"/>	HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C		
		TEL : 886-3-327-3456 FAX : 886-3-327-0973		
Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
AC Conduction	CO04-HY	Bill Hsiao	20°C / 53%	Mar. 13, 2013
RF Conducted	TH01-HY	Ian Du	24°C / 64%	Mar. 07, 2013
Radiated Emission	03CH05-HY	Daniel Hsu	21°C / 61%	Mar. 05, 2013
Test site registered number [643075] with FCC.				
Test site registered number [4086B-1] with IC.				

1.5 Measurement Uncertainty

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

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

2 Test Configuration of EUT

2.1 The Worst Case Modulation Configuration




Modulation Used for Conformance Testing	
Test Mode	Field Strength (dBuV/m at 3 m)
GFSK-Transmit	48.72

2.2 Test Channel Frequencies Configuration

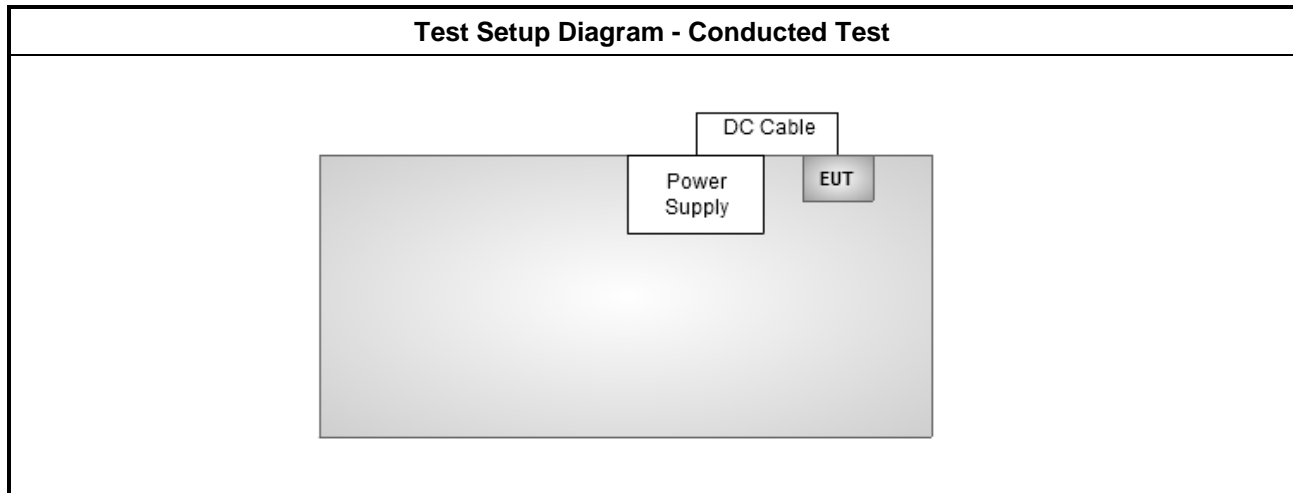
Test Channel Frequencies Configuration	
Test Mode	Test Channel Frequencies (MHz)
GFSK-Transmit	2402-(F1), 2440-(F2), 2480-(F3)

2.3 The Worst Case Measurement Configuration

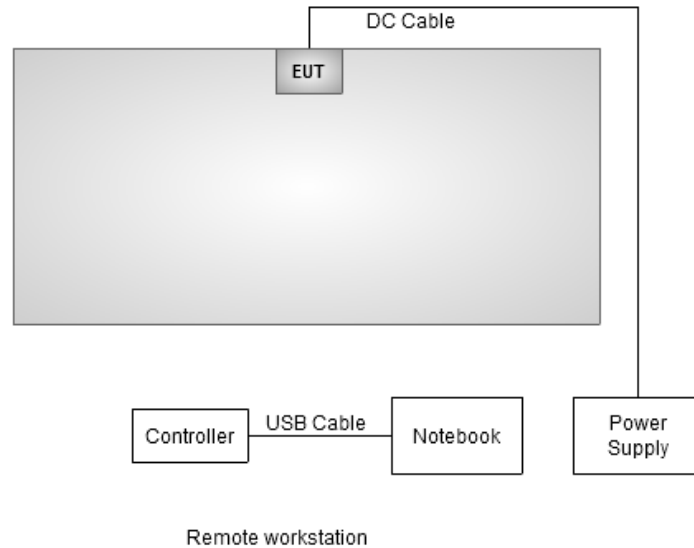
The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral (120Vac / 60Hz)
Operating Mode	Operating Mode Description
1	AC Power & Radio link

The Worst Case Mode for Following Conformance Tests			
Tests Item	Emission Bandwidth, Fundamental Emissions, Radiated Unwanted Emissions		
Test Condition	Radiated measurement		
User Position	<input type="checkbox"/> EUT will be placed in fixed position.		
	<input type="checkbox"/> EUT will be placed in mobile position and operating multiple positions. EUT shall be performed two orthogonal planes. The worst planes is X.		
	<input checked="" type="checkbox"/> EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions. EUT shall be performed three orthogonal planes. The worst planes is Y.		
Operating Mode < 1GHz	<input checked="" type="checkbox"/> 1. Transmit		
Test Mode	GFSK-Transmit		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			

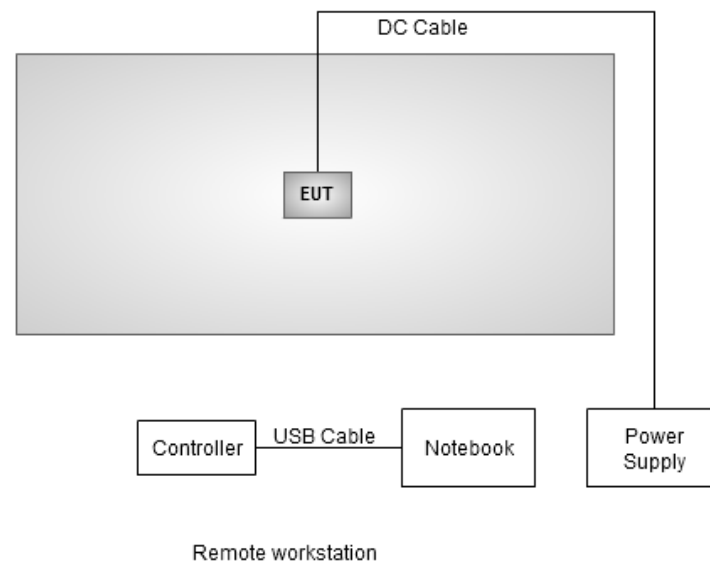
2.4 Test Setup Diagram



Test Setup Diagram - Radiated Below 1GHz Test



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.

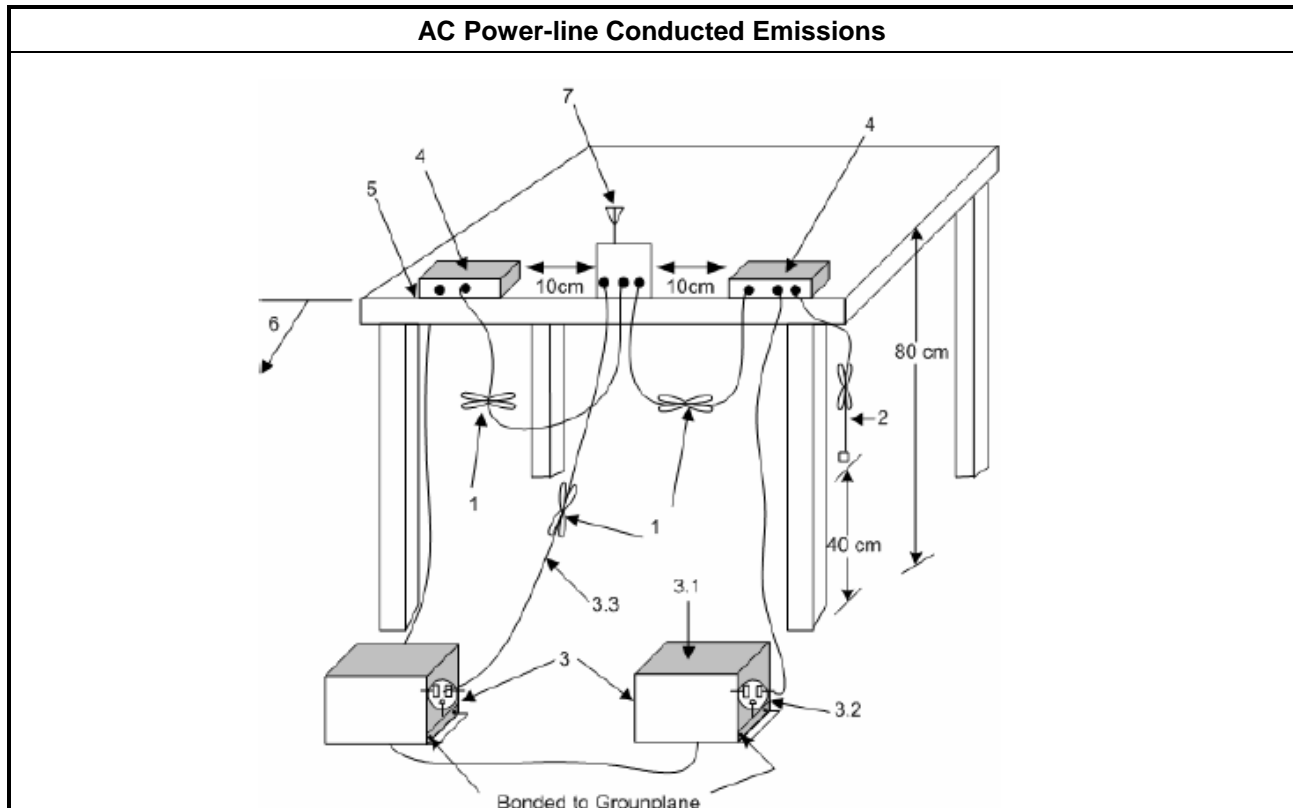
3.1.2 Measuring Instruments

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

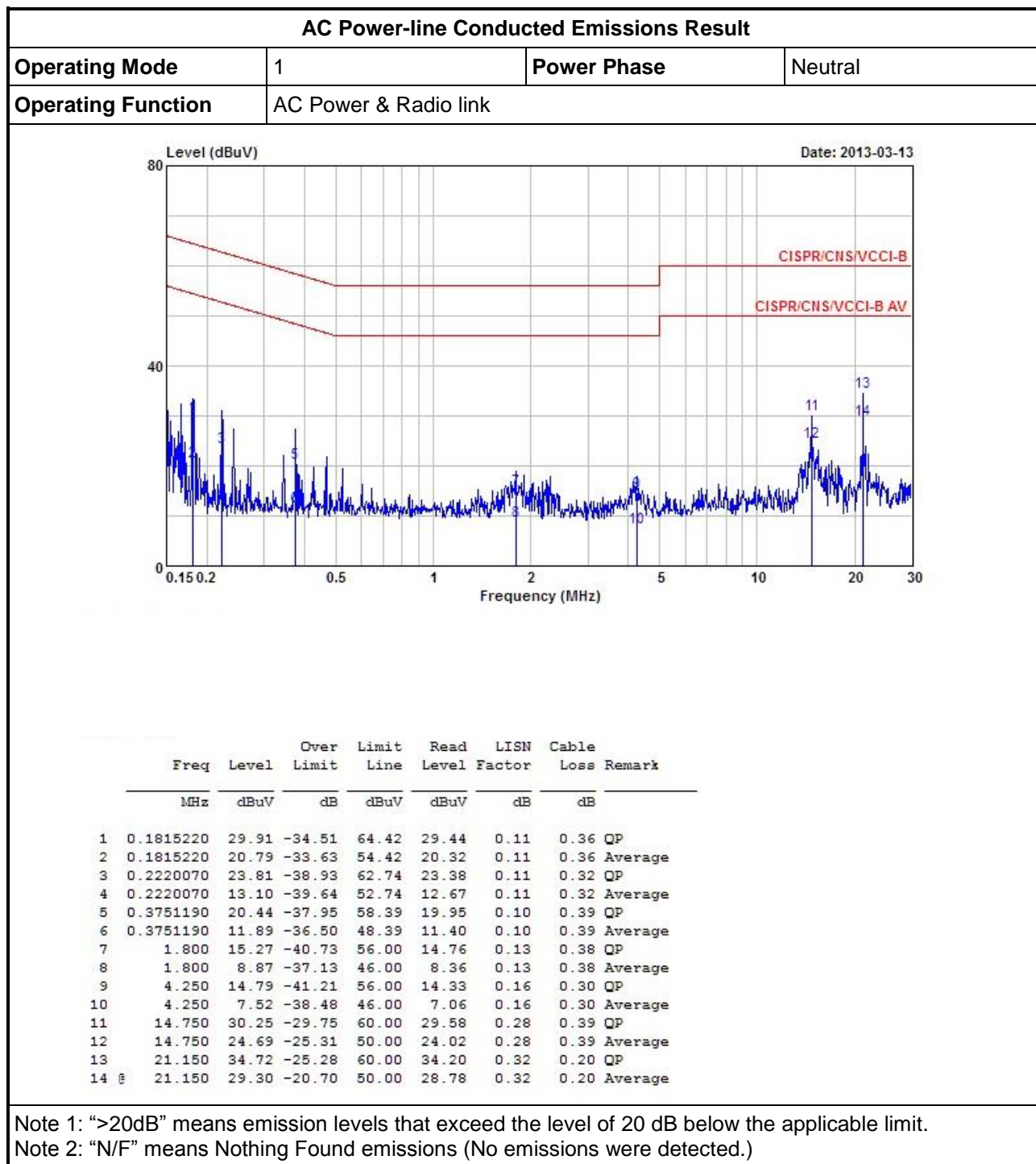
3.1.3 Test Procedures

Test Method
<input checked="" type="checkbox"/> Refer as ANSI C63.10-2009, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup

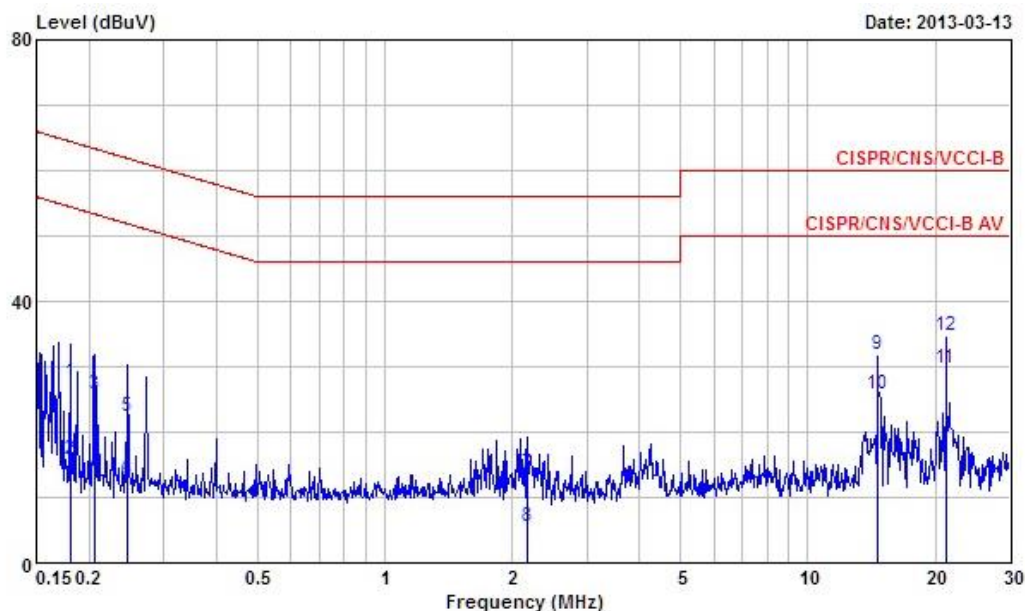


3.1.5 Test Result of AC Power-line Conducted Emissions



AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	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	0.1805620	27.54	-36.92	64.46	26.95	0.23	0.36	QP
2	0.1805620	15.91	-38.55	54.46	15.32	0.23	0.36	Average
3	0.2061360	25.88	-37.48	63.36	25.35	0.23	0.30	QP
4	0.2061360	13.30	-40.06	53.36	12.77	0.23	0.30	Average
5	0.2468240	22.25	-39.61	61.86	21.69	0.23	0.33	QP
6	0.2468240	12.71	-39.15	51.86	12.15	0.23	0.33	Average
7	2.170	13.76	-42.24	56.00	13.12	0.25	0.39	QP
8	2.170	5.49	-40.51	46.00	4.85	0.25	0.39	Average
9	14.670	31.97	-28.03	60.00	31.08	0.50	0.39	QP
10	14.670	25.88	-24.12	50.00	24.99	0.50	0.39	Average
11	21.150	29.80	-20.20	50.00	29.02	0.58	0.20	Average
12	21.150	34.82	-25.18	60.00	34.04	0.58	0.20	QP

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

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

3.2 Emission Bandwidth

3.2.1 Emission Bandwidth Limit

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

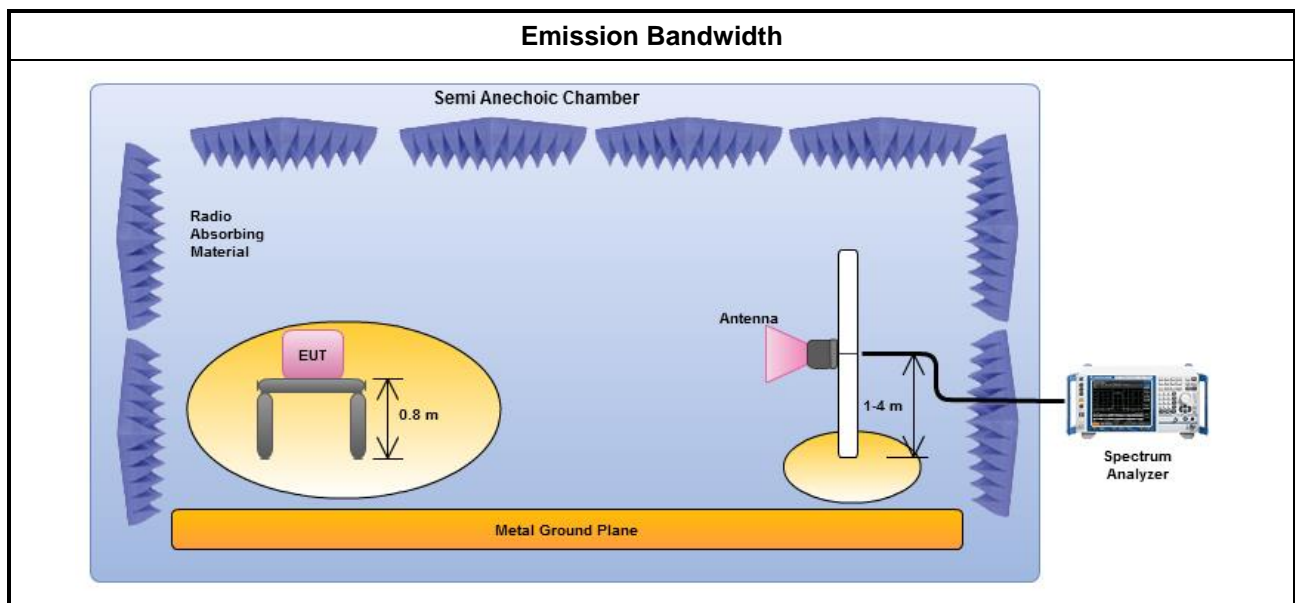
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

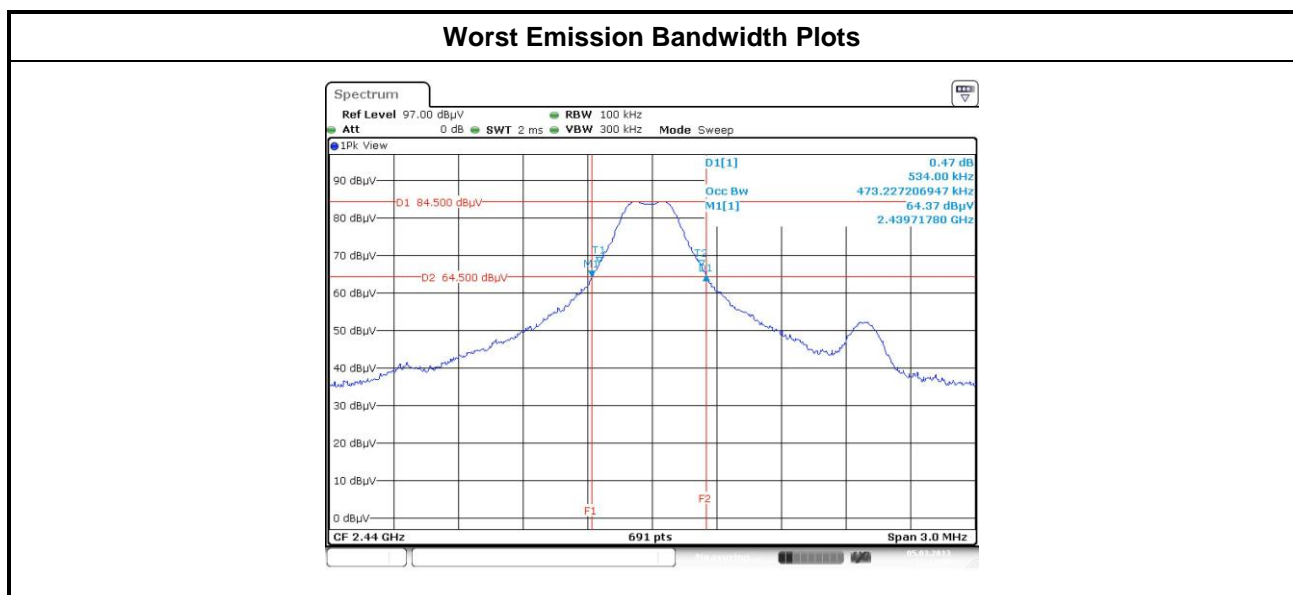
Test Method	
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.9.1 for 20 dB emission bandwidth and 99% occupied bandwidth measurement.

3.2.4 Test Setup



3.2.5 Test Result of Emission Bandwidth

Emission Bandwidth Result					
Modulation Mode	Frequency (MHz)	99% Bandwidth (MHz)	F _L at 20dB BW (MHz)	F _H at 20dB BW (MHz)	20dB BW (MHz)
GFSK-Transmit	2402	0.46	2401.7221	-	0.53
GFSK-Transmit	2440	0.47	-	-	0.53
GFSK-Transmit	2480	0.46	-	2480.2474	0.53
Limit		N/A	2400	2483.5	N/A
Result		Complied			



3.3 Fundamental Emissions

3.3.1 Fundamental Emissions Limit

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

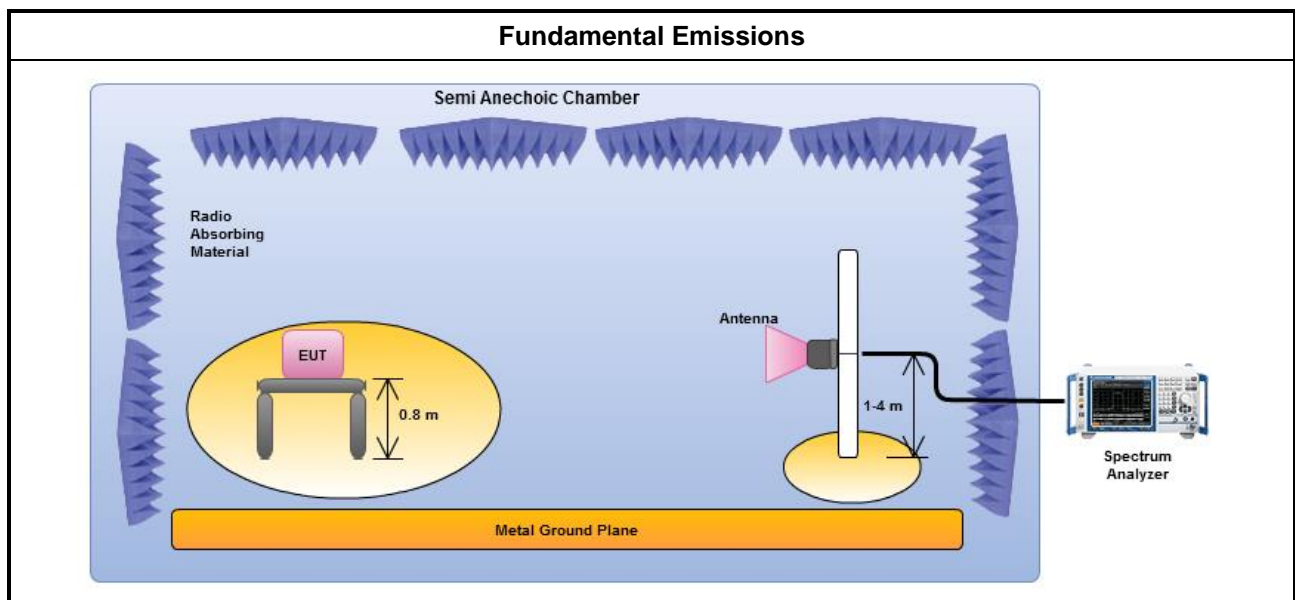
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

<input checked="" type="checkbox"/>	The average emission levels shall be measured in [duty cycle ≥ 100 or by duty cycle correction factor].
<input checked="" type="checkbox"/>	For the transmitter emissions shall be measured using following options below:
<input type="checkbox"/>	Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW) – Duty cycle $\geq 100\%$.
<input checked="" type="checkbox"/>	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 $20\log(\text{dwell time}/100 \text{ ms})$. Average emission = peak emission + 20 log (duty cycle).
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit.
<input checked="" type="checkbox"/>	For radiated measurement, refer as ANSI C63.10, clause 6.6 for radiated emissions

3.3.4 Test Setup



3.3.5 Test Result of Fundamental Emissions

Field Strength of Fundamental Emissions Result					
Modulation Mode	Frequency (MHz)	Fundamental (dBuV/m)@3m	Margin (dB)	Limit (dBuV/m)@3m	Type
GFSK-Transmit	2402	90.18	23.82	114	peak
GFSK-Transmit	2402	46.79	47.21	94	average
GFSK-Transmit	2440	91.78	22.22	114	peak
GFSK-Transmit	2440	48.39	45.61	94	average
GFSK-Transmit	2480	92.11	21.89	114	peak
GFSK-Transmit	2480	48.72	45.28	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:	
<input checked="" type="checkbox"/>	54 dBuV/m (average)
Other Unwanted Emissions:	
<input checked="" type="checkbox"/>	50 dB below the level of the fundamental or FCC 15.209, whichever is the lesser attenuation.

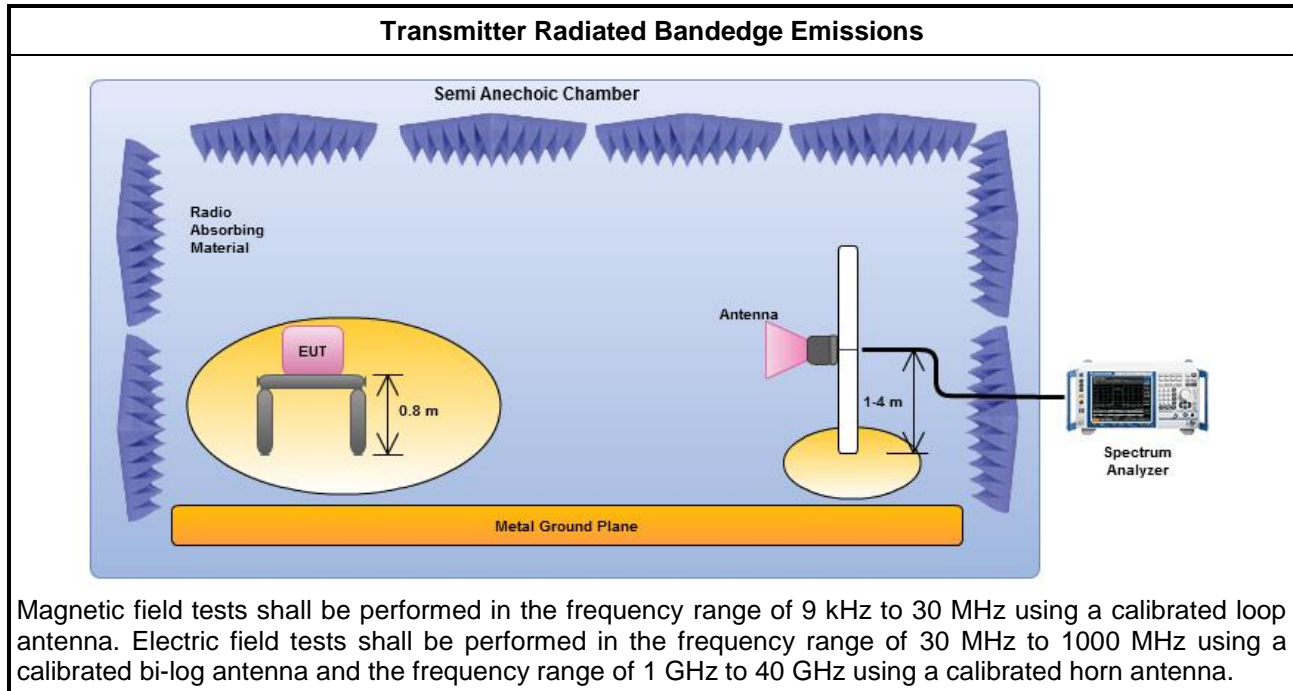
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

Test Method – General Information	
<input checked="" type="checkbox"/>	Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).
<input type="checkbox"/>	Measurements in the frequency range 5 GHz - 10GHz are typically made at a closer distance 1m, because the instrumentation noise floor is typically close to the radiated emission limit.
<input checked="" type="checkbox"/>	Measurements in the frequency range 10 GHz - 18GHz are typically made at a closer distance 1m, because the instrumentation noise floor is typically close to the radiated emission limit.
<input checked="" type="checkbox"/>	Measurements in the frequency range above 18 GHz - 25GHz are typically made at a closer distance 0.5m, because the instrumentation noise floor is typically close to the radiated emission limit.
<input checked="" type="checkbox"/>	The average emission levels shall be measured in [duty cycle \geq 98 or duty factor].
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.9.2.2 bandedge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.
<input checked="" type="checkbox"/>	For the transmitter unwanted emissions shall be measured using following options below:
<input type="checkbox"/>	Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW) – Duty cycle \geq 100%.
<input checked="" type="checkbox"/>	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 $20\log(\text{dwell time}/100 \text{ ms})$. Average emission = peak emission + 20 log (duty cycle).
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit.
<input checked="" type="checkbox"/>	For the transmitter bandedge emissions shall be measured using following options below:
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.9.2 for band-edge testing.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 6.9.3 for marker-delta method for band-edge measurements.
<input checked="" type="checkbox"/>	For radiated measurement.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1000 MHz.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.6 for radiated emissions from above 1 GHz.

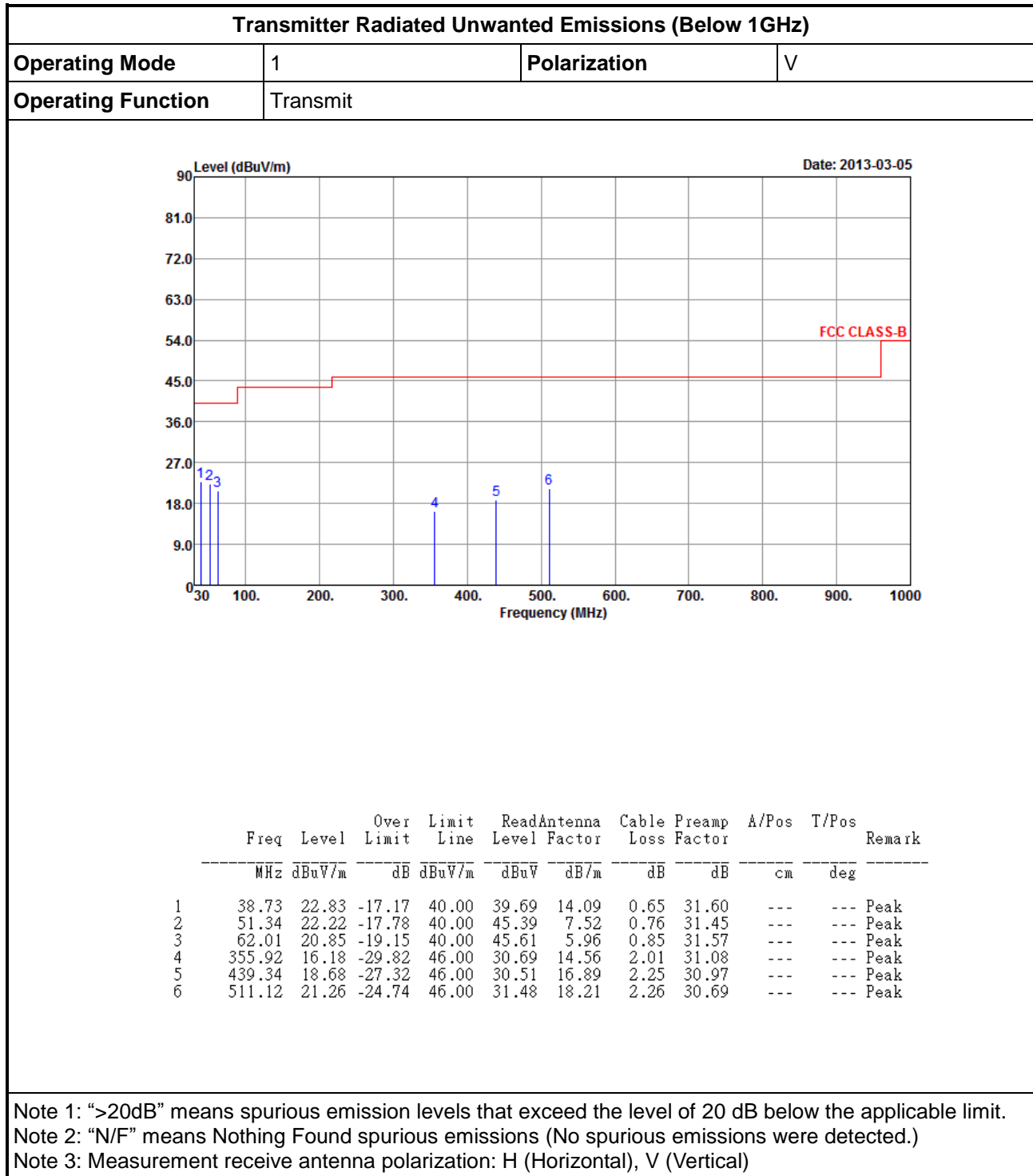
3.4.4 Test Setup



3.4.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

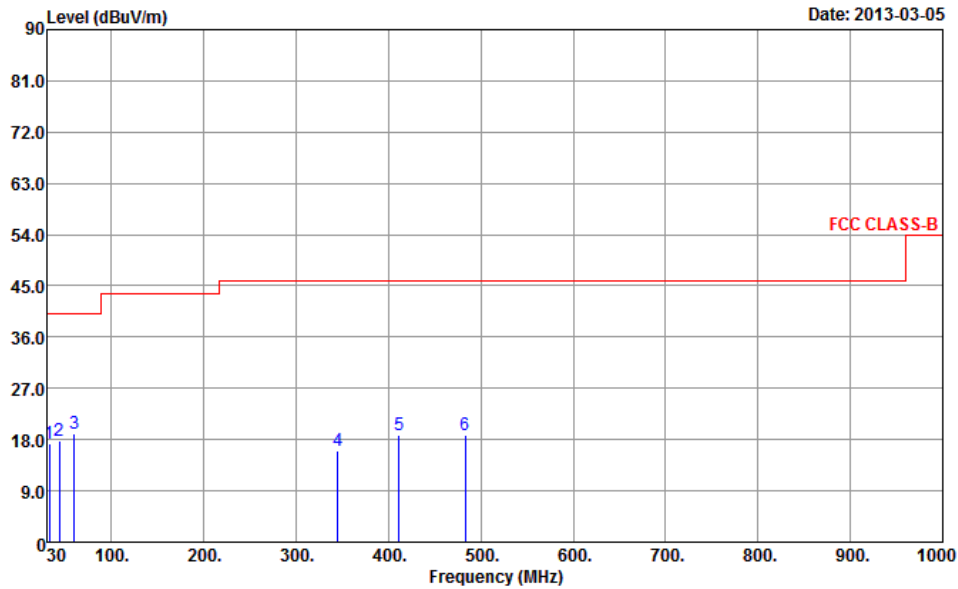
All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

3.4.6 Transmitter Radiated Unwanted Emissions (Below 1GHz)



Transmitter Radiated Unwanted Emissions (Below 1GHz)

Operating Mode	1	Polarization	H
Operating Function	Transmit		



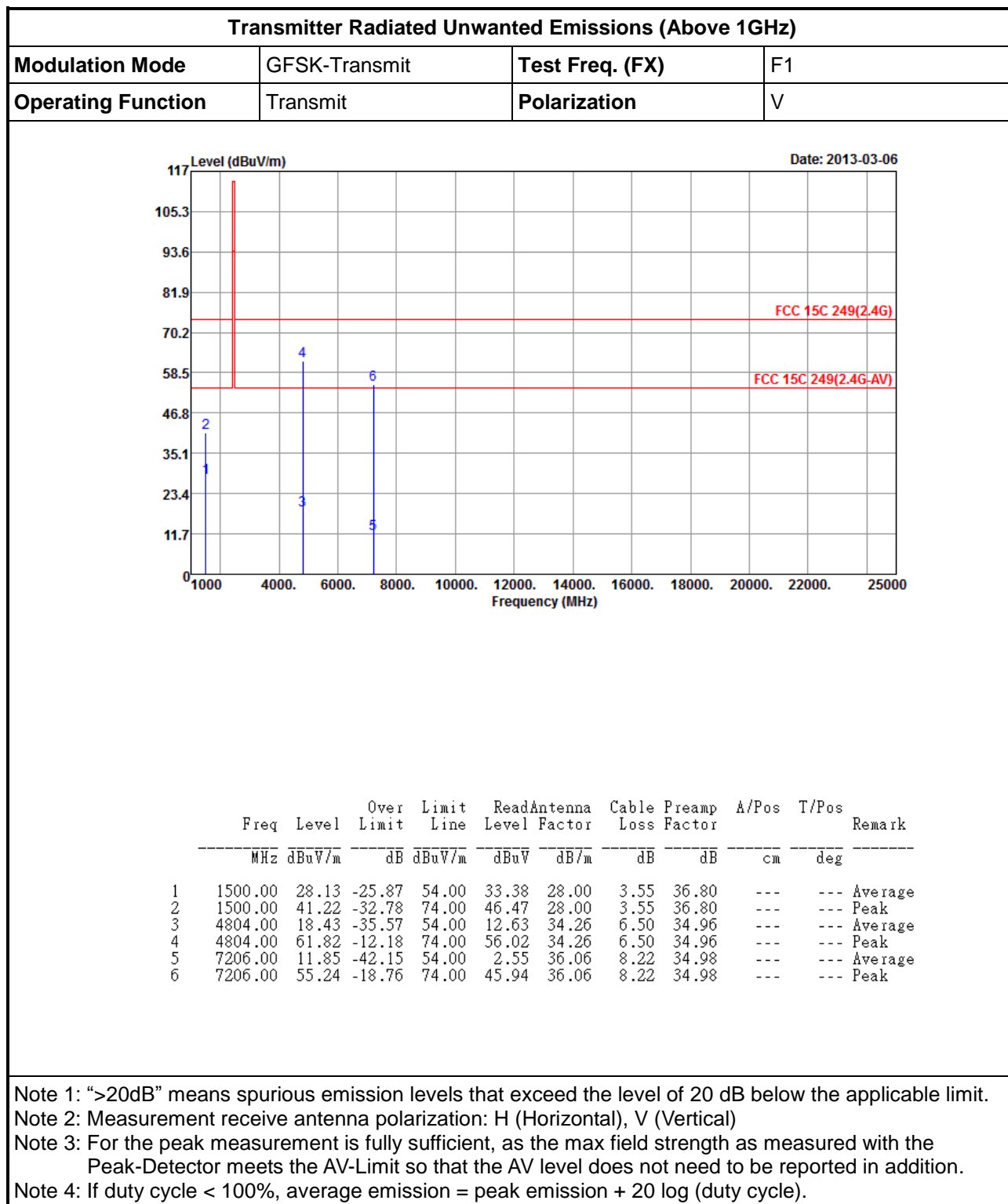
	Freq	Level	Over	Limit	ReadAntenna	Cable Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm deg
1	32.91	17.33	-22.67	40.00	30.49	17.82	0.65	31.63	--- --- Peak
2	43.58	17.73	-22.27	40.00	37.35	11.22	0.70	31.54	--- --- Peak
3	60.07	19.00	-21.00	40.00	43.76	6.00	0.83	31.59	--- --- Peak
4	345.25	16.12	-29.88	46.00	30.98	14.31	1.95	31.12	--- --- Peak
5	411.21	18.80	-27.20	46.00	31.52	16.34	2.07	31.13	--- --- Peak
6	482.99	18.74	-27.26	46.00	29.35	17.76	2.31	30.68	--- --- Peak

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

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

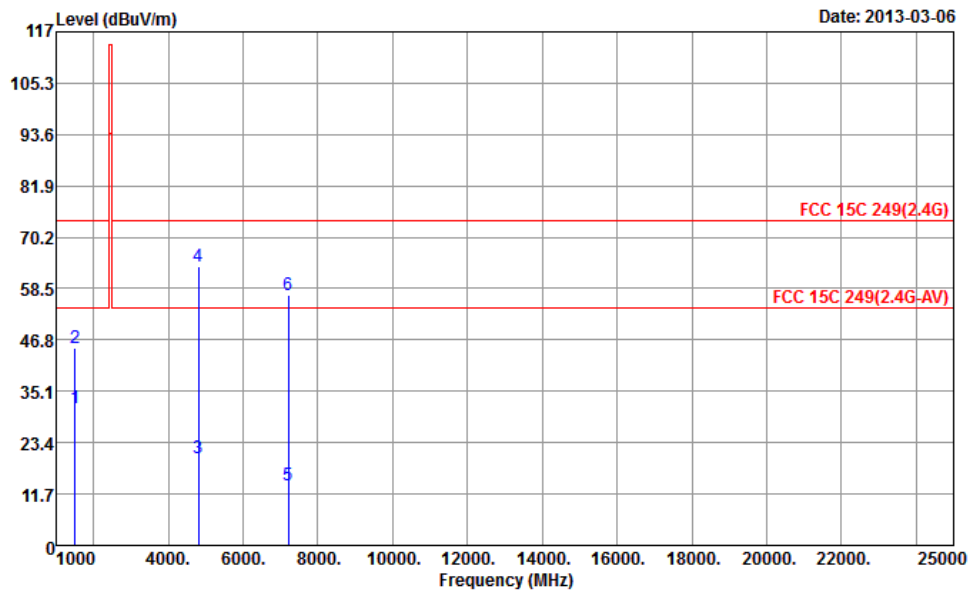
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

3.4.7 Transmitter Radiated Unwanted Emissions (Above 1GHz)



Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	GFSK-Transmit	Test Freq. (FX)	F1
Operating Function	Transmit	Polarization	H



	Freq	Level	Over	Limit	ReadAntenna	Cable Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	
			dB	dBuV/m	dBuV	dB/m	dB	dB	
1	1500.00	31.25	-22.75	54.00	36.50	28.00	3.55	36.80	--- Average
2	1500.00	44.88	-29.12	74.00	50.13	28.00	3.55	36.80	--- Peak
3	4804.00	20.04	-33.96	54.00	14.24	34.26	6.50	34.96	--- Average
4	4804.00	63.43	-10.57	74.00	57.63	34.26	6.50	34.96	--- Peak
5	7206.00	13.78	-40.22	54.00	4.48	36.06	8.22	34.98	--- Average
6	7206.00	57.17	-16.83	74.00	47.87	36.06	8.22	34.98	--- Peak

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

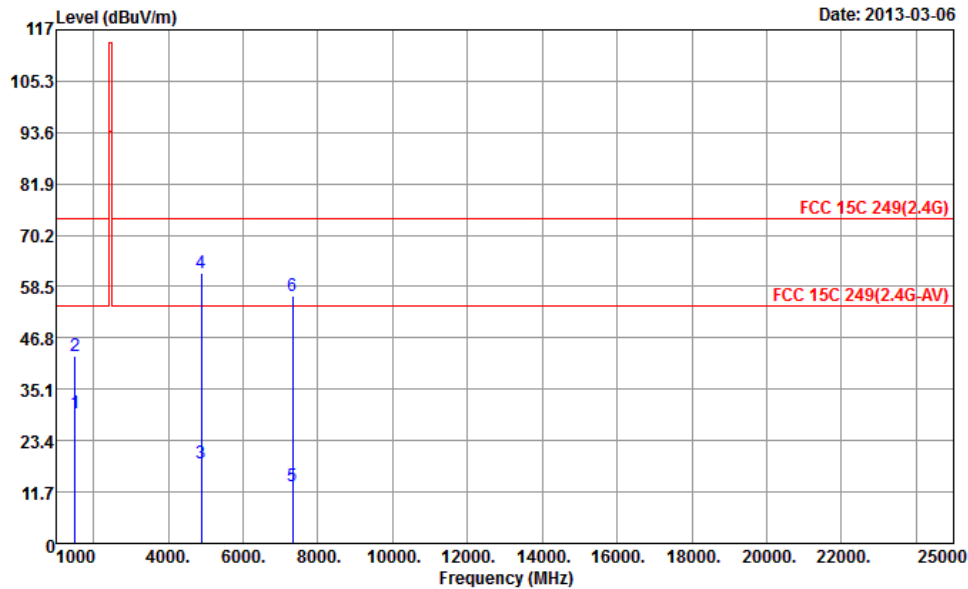
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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).

Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	GFSK-Transmit	Test Freq. (FX)	F2
Operating Function	Transmit	Polarization	V



	Freq	Level	Over	Limit	ReadAntenna	Cable Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	
			dB	dBuV/m	dBuV	dB/m	dB	dB	
1	1500.00	29.58	-24.42	54.00	34.83	28.00	3.55	36.80	--- Average
2	1500.00	42.56	-31.44	74.00	47.81	28.00	3.55	36.80	--- Peak
3	4880.00	18.21	-35.79	54.00	12.38	34.28	6.53	34.98	--- Average
4	4880.00	61.60	-12.40	74.00	55.77	34.28	6.53	34.98	--- Peak
5	7320.00	12.95	-41.05	54.00	3.52	36.04	8.42	35.03	--- Average
6	7320.00	56.34	-17.66	74.00	46.91	36.04	8.42	35.03	--- Peak

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

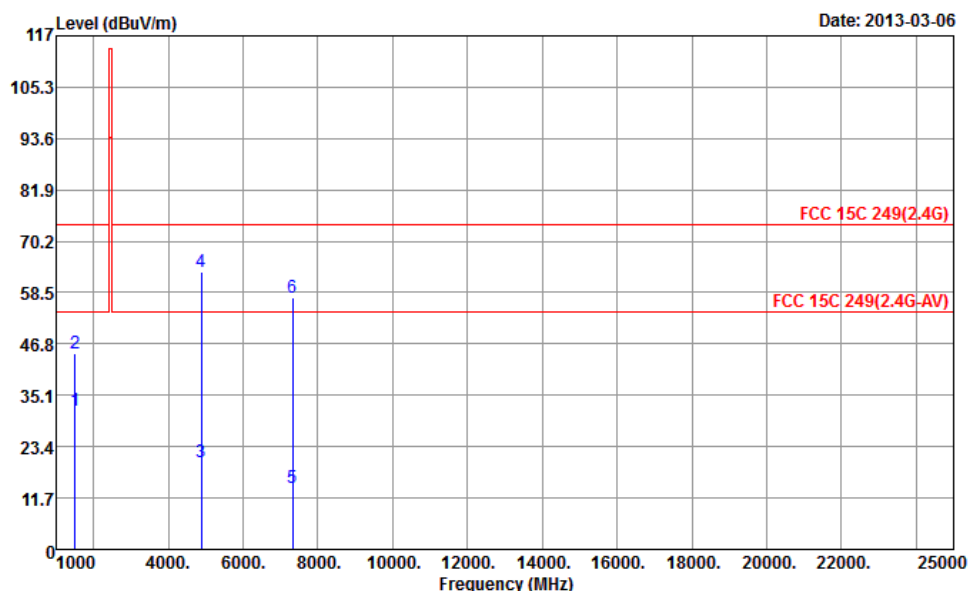
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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

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

Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	GFSK-Transmit	Test Freq. (FX)	F2
Operating Function	Transmit	Polarization	H



	Freq	Level	Over	Limit	ReadAntenna	Cable Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	
			dB	dBuV/m	dBuV	dB/m	dB	dB	
1	1500.00	31.46	-22.54	54.00	36.71	28.00	3.55	36.80	--- Average
2	1500.00	44.58	-29.42	74.00	49.83	28.00	3.55	36.80	--- Peak
3	4880.00	19.93	-34.07	54.00	14.10	34.28	6.53	34.98	--- Average
4	4880.00	63.32	-10.68	74.00	57.49	34.28	6.53	34.98	--- Peak
5	7320.00	14.07	-39.93	54.00	4.64	36.04	8.42	35.03	--- Average
6	7320.00	57.46	-16.54	74.00	48.03	36.04	8.42	35.03	--- Peak

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

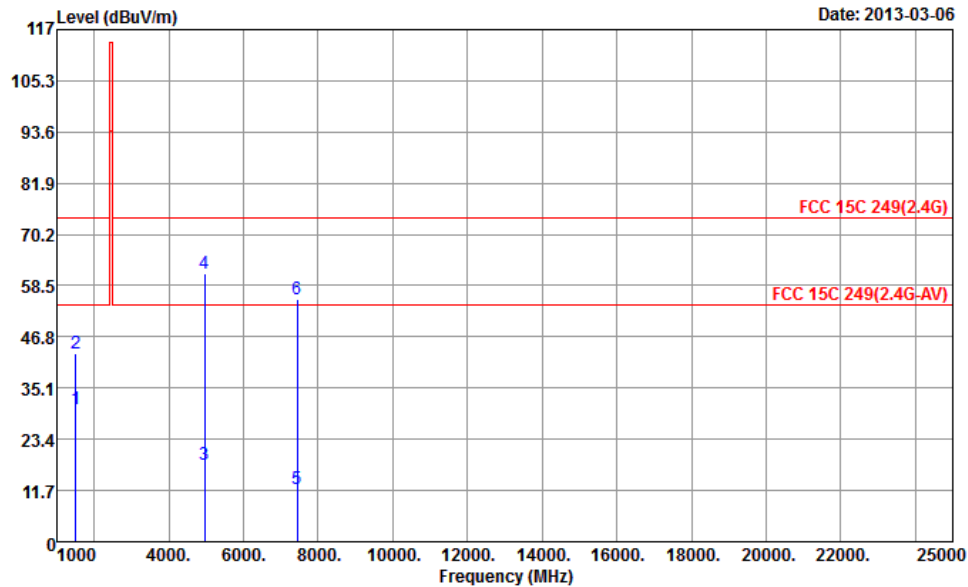
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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

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

Transmitter Radiated Unwanted Emissions (Above 1GHz)

Modulation Mode	GFSK-Transmit	Test Freq. (FX)	F3
Operating Function	Transmit	Polarization	V



	Freq	Level	Over	Limit	ReadAntenna	Cable Preamp	A/Pos	T/Pos	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	
			dB	dBuV/m	dBuV	dB/m	dB	dB	
1	1500.00	30.25	-23.75	54.00	35.50	28.00	3.55	36.80	--- Average
2	1500.00	42.95	-31.05	74.00	48.20	28.00	3.55	36.80	--- Peak
3	4960.00	17.74	-36.26	54.00	11.87	34.29	6.57	34.99	--- Average
4	4960.00	61.13	-12.87	74.00	55.26	34.29	6.57	34.99	--- Peak
5	7440.00	12.10	-41.90	54.00	2.51	36.01	8.66	35.08	--- Average
6	7440.00	55.49	-18.51	74.00	45.90	36.01	8.66	35.08	--- Peak

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

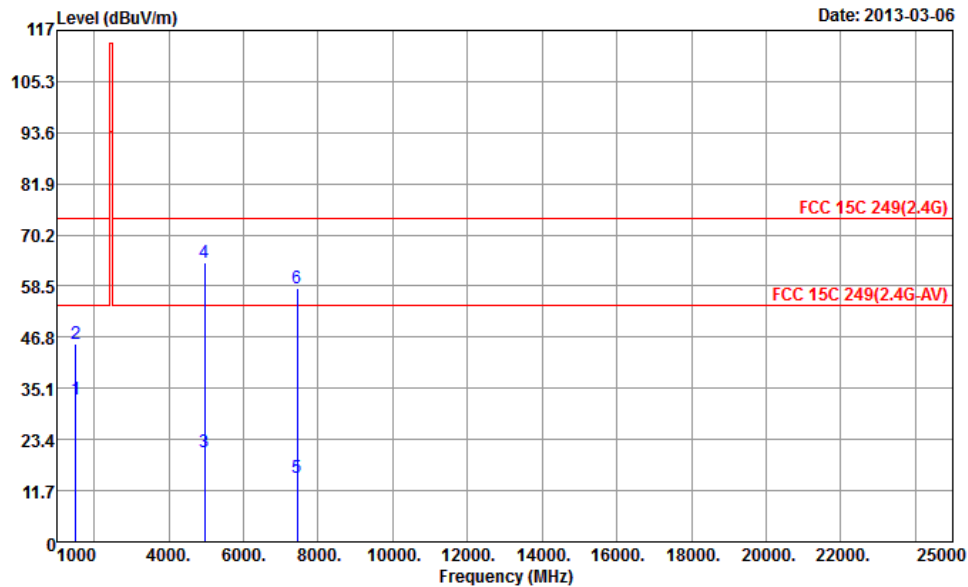
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

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).

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	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	1500.00	32.68	-21.32	54.00	37.93	28.00	3.55	36.80	---	---	Average
2	1500.00	45.43	-28.57	74.00	50.68	28.00	3.55	36.80	---	---	Peak
3	4960.00	20.47	-33.53	54.00	14.60	34.29	6.57	34.99	---	---	Average
4	4960.00	63.86	-10.14	74.00	57.99	34.29	6.57	34.99	---	---	Peak
5	7440.00	14.53	-39.47	54.00	4.94	36.01	8.66	35.08	---	---	Average
6	7440.00	57.92	-16.08	74.00	48.33	36.01	8.66	35.08	---	---	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).

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	Nov. 22, 2012	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. 20, 2012	Conduction (CO04-HY)
RF Cable-CON	HUBER+SUHNER	RG213/U	7.61183201e+012	9kHz ~ 30MHz	Nov. 09, 2012	Conduction (CO04-HY)
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	Conduction (CO04-HY)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSP 30	100023/030	9KHz ~ 30GHz	Apr. 27, 2012	Conducted (TH01-HY)
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Jun. 19, 2012	Conducted (TH01-HY)
Temp. and Humidity Chamber	Giant Force	GTH-225-20-SP-SD	MAA1112-007	-20 ~ 100°C	Nov. 21, 2012	Conducted (TH01-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Jun. 26, 2012	Conducted (TH01-HY)
Power Sensor	Anritsu	MA2411B	1027452	300MHz ~ 40GHz	Sep. 08, 2012	Conducted (TH01-HY)
Power Meter	Anritsu	ML2495A	1124009	300MHz ~ 40GHz	Sep. 08, 2012	Conducted (TH01-HY)
RF Cable-2m	HUBER+SUHNER	SUCOFLEX_104	SN 345675/4	1GHz ~ 26.5GHz	NA	Conducted (TH01-HY)
RF Cable-3m	HUBER+SUHNER	SUCOFLEX_104	SN 345669/4	1GHz ~ 26.5GHz	NA	Conducted (TH01-HY)

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
AC Power Source	G.W	APS-9102	EL920581	AC 0V ~ 300V	Jul. 02, 2012	Conducted (TH01-HY)

Note: calibration interval of instruments listed above is two year.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSP	100055	9Kz – 40GHz	Jun. 06, 2012	Radiation (03CH05-HY)
Receiver	R&S	ESIB26	100337	20Hz – 26.5GHz	Jun. 21, 2012	Radiation (03CH05-HY)
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH05-HY	30 MHz - 1 GHz 3m	N/A	Radiation (03CH05-HY)
Amplifier	COM-POWER	PA-103	161050	1 MHz ~ 1 GHz	Mar. 20, 2012	Radiation (03CH05-HY)
Amplifier	Agilent	8449B	3008A02665	1GHz – 26.5 GHz	Aug. 28, 2012	Radiation (03CH05-HY)
Horn Antenna	ETS-LINDGREN	3117	66584	1GHz~18GHz	Aug. 09, 2012	Radiation (03CH05-HY)
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170517	18G~40G	Jan. 14, 2013	Radiation (03CH05-HY)
RF Cable-R03m	Jye Bao	RG142	03CH05-HY	30 MHz - 1 GHz	Oct. 14, 2012	Radiation (03CH05-HY)
RF Cable-HIGH	SUHNER	SUCOFLEX104	03CH05-HY	1GHz~40GHz	Oct. 14, 2012	Radiation (03CH05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2725	30 MHz - 1 GHz	Oct. 06, 2012	Radiation (03CH05-HY)
Turn Table	HD	HD100	420/611	0 - 360 degree	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	HD100	240/666	1 m - 4 m	N/A	Radiation (03CH05-HY)

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Loop Antenna (note 1)	R&S	HFH2-Z2	860004/0001	9 kHz - 30 MHz	Jul. 03, 2012	Radiation (03CH05-HY)

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