FCC Test Report

Equipment	:	**Dual Face Motion Remote Control**
Brand Name	:	**PHILIPS**
Model No.	:	**KWR101830/01BU; KWR101830/01BS; KWR101830/01B; KWR101831/01BU; KWR101831/01BS; KWR101832/01U; KWR101832/01S; KWR101833/01BU; KWR101833/01BS; KWR101834/01BU; KWR101834/01BS; KWR1018xx/01BU; KWR1018xx/01BS; KWR1018xx/01U; KWR1018xx/01S The xx represented by 00 ~ 99**
FCC ID	:	**2AADIKWR1018M0**
Standard	:	**47 CFR FCC Part 15.249**
Operating Band	:	**2400 MHz – 2483.5 MHz**
FCC Classification	:	**DXX**
Applicant	:	**Home Control Singapore Pte. Ltd. Philips Home Control 620A Lorong 1 Toa Payoh Singapore 319762.**
Manufacturer	:	**PT HonFoong Plastics Industries Jalan Beringin Lot 327,328,329,330 Jalan Gaharu, Lot 232,233,247 Batamindo Industrial Park Mukakuning P. Batam Indonesia.**
Multiple Listing	:	**Please refer to section 1.2**

The product sample received on Jun. 06, 2013 and completely tested on Aug. 26, 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:

Testing Laboratory
1190

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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	-	FCC 15.207	NA
3.2	15.215(c)	Emission Bandwidth	6.96 MHz; fall in band	Information only	Complied
3.3	15.249(a)	Fundamental Emissions	[dBuV/m at 3m]: 82.79 (Margin 11.21dB) average	[dBuV/m at 3m]: average: 94	Complied
3.4	15.249(a)/ (d)	Transmitter Radiated Unwanted Emissions	[dBuV/m at 3m]:9900.000MHz 67.29 (Margin 6.71dB) - PK 47.72 (Margin 6.28dB) - AV	Harmonics: 54 dBuV/m@3m Other band: 50 dB or FCC 15.209, whichever is the lesser attenuation.	Complied
NA = Not Applicable					

Revision History

Report No.	Version	Description	Issued Date
FR352403	Rev. 01	Initial issue of report	Sep. 03, 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	2425~2475	3	82.79	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)
	☐ 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			
No.	**Ant. Cat.**	**Ant. Type**	**Gain (dBi)**
1	Integral	PCB	-4.00

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)**
☒ 10.20%	19.83
If worst duty < 100%, average emission = peak emission + 20 log x	

1.1.5 EUT Operational Condition

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

1.2 Table for Multiple Listing

The models are exactly same in both physical and electrical. The different in model number for marketing purpose.

Brand	Finish Good (Bundled with battery and dongle)		Remote Control Unit (Bundled with battery only)		Remarks
	Model	Serial Number (12NC)	Model	Serial Number (12NC)	
Philips	KWR101830/01BS	3139 228 12221	KWR101830/01BU	3139 228 12211	Testing sample
	KWR101831/01BS	3139 228 12311	KWR101831/01BU	3139 228 12301	Add on
R TV	KWR101833/01BS	3139 228 12571	KWR101833/01BU	3139 228 12581	Add on
Viggo	KWR101834/01BS	3139 228 12591	KWR101834/01BU	3139 228 12601	Add on
	KWR1018xx/01BS	3139 228 ZZZZZ	KWR1018xx/01BU	3139 228 ZZZZZ	Reserved for future use.

Brand	Remote Control Unit (Bundled with battery only, without carton box).		Remarks
	Model	Serial Number (12NC)	
Philips	KWR101830/01B	3139 228 ZZZZZ	Testing sample

Brand	Finish Good (Bundled with dongle only)		Remote Control Unit (without battery and dongle)		Remarks
	Model	Serial Number (12NC)	Model	Serial Number (12NC)	
Engel / twist! motion	KWR101832/01S	3139 228 12331	KWR101832/01U	3139 228 12321	Add on
	KWR1018xx/01S	3139 228 ZZZZZ	KWR1018xx/01U	3139 228 ZZZZZ	Reserved for future use.

Reminder: where xx = 00 ~ 99, ZZZZZ = 00000 ~ 99999

1.3 Support Equipment

Support Equipment- Radiated Emission Test				
No.	**Equipment**	**Brand Name**	**Model Name**	**Serial No.**
1	Notebook	DELL	E5520	DoC
2	(USB) Mouse	Microsoft	1004	DoC
3	(USB) Printer	HP	C61	DoC
4	Dongle (Client Provide)	-	-	-

1.4 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

1.5 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**	**Test Date**
RF Conducted		TH06-HY	Shiming	22.8°C / 55%	Jun. 25, 2013
Radiated Emission (Below 1GHz)		03CH03-HY	Daniel	24°C / 53%	Aug. 26, 2013
Radiated Emission (Above 1GHz)		03CH03-HY	Daniel	26°C / 55%	Jun. 22, 2013~Jun. 26, 2013

1.6 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)**
O-QPSK-Transmit	82.79

2.2 Test Channel Frequencies Configuration

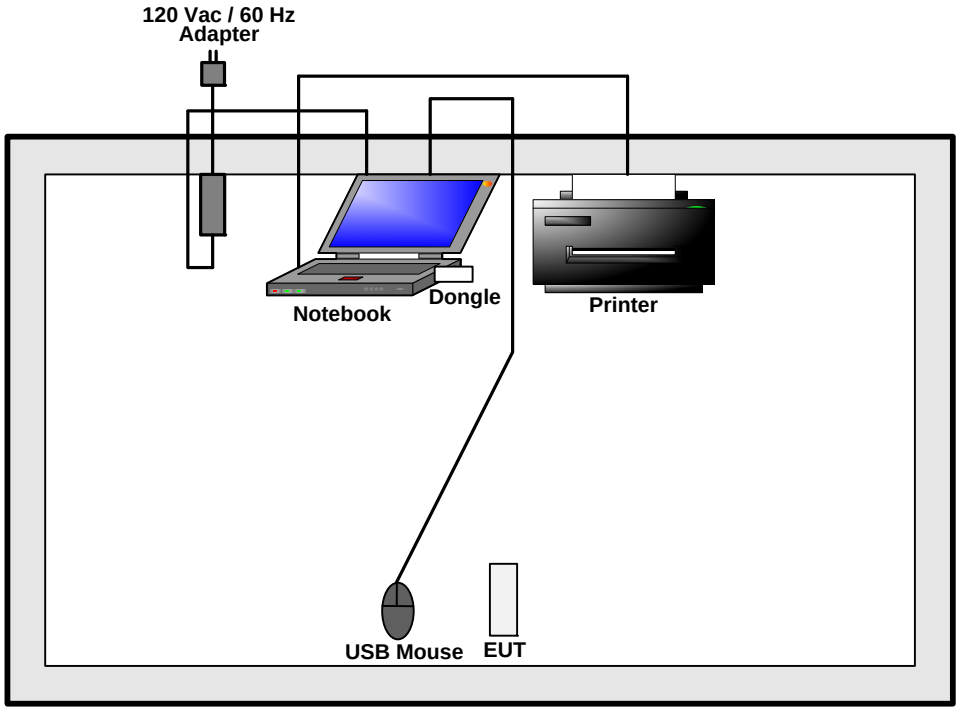
Test Channel Frequencies Configuration	
Test Mode	**Test Channel Frequencies (MHz)**
O-QPSK-Transmit	2425-(F1), 2450-(F2), 2475-(F3)

2.3 The Worst Case Measurement Configuration

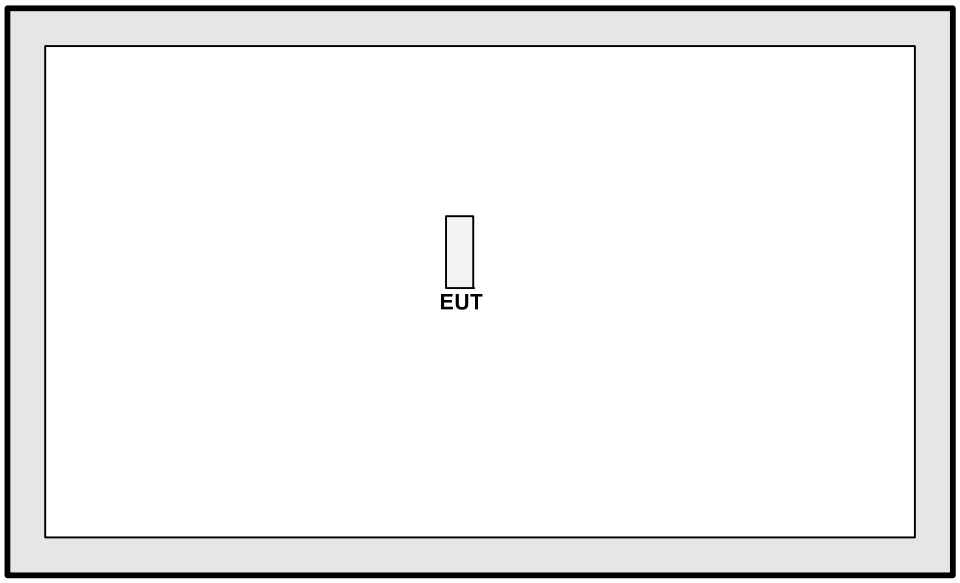
The Worst Case Mode for Following Conformance Tests			
Tests Item	Emission Bandwidth, Fundamental Emissions, Radiated Unwanted Emissions		
Test Condition	Radiated measurement		
User Position	☐ EUT will be placed in fixed position.		
	☐ EUT will be placed in mobile position and operating multiple positions. EUT shall be performed two orthogonal planes.		
	☒ 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 < 1GHz	☒ 1. Normal Mode		
Test Mode	O-QPSK-Transmit		
Orthogonal Planes of EUT	**X Plane**	**Y Plane**	**Z Plane**
			

2.4 Test Setup Diagram

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

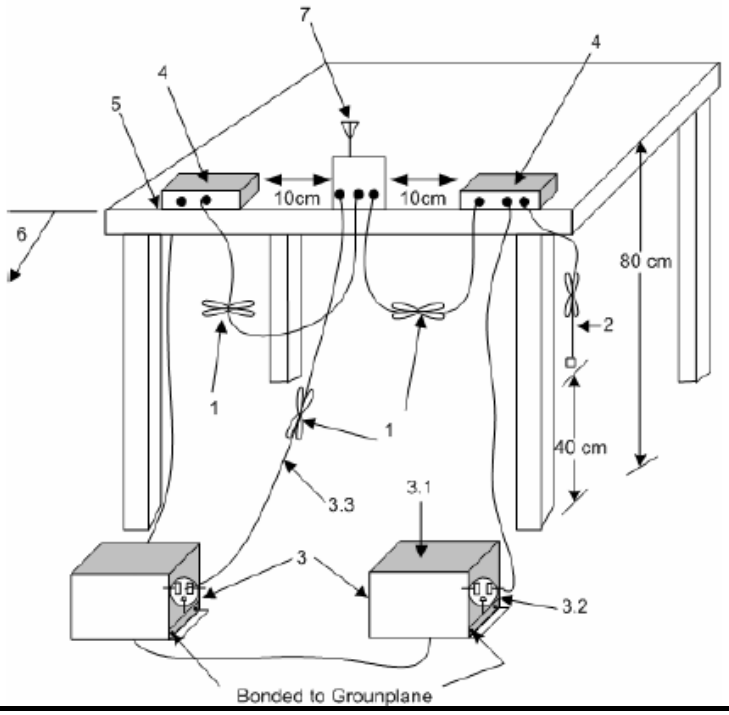
Refer a test equipment and calibration data table in this test report.

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

The test is not applicable for this EUT.

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

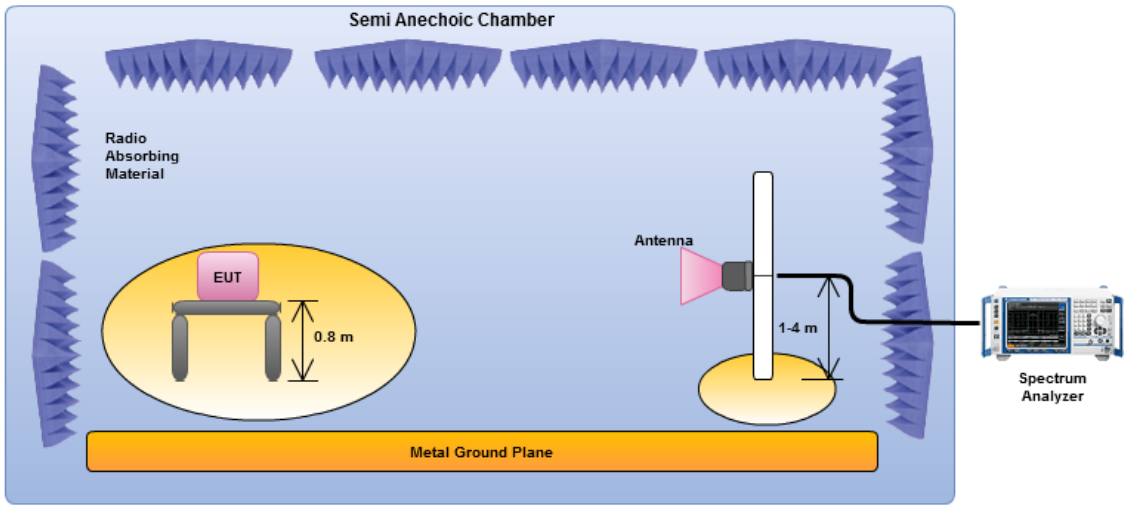
Refer a test equipment and calibration data table in this test report.

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

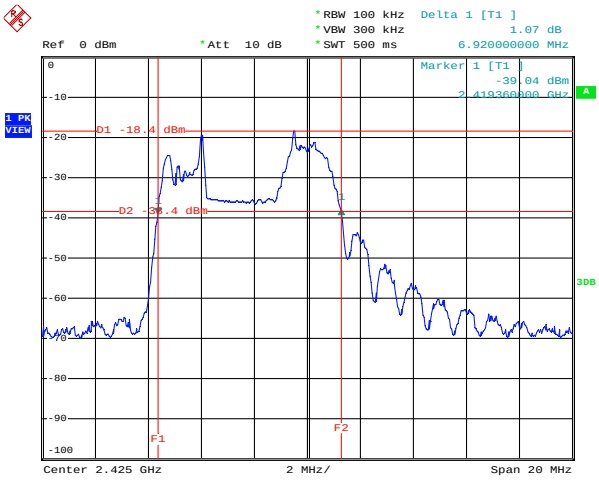
Emission Bandwidth



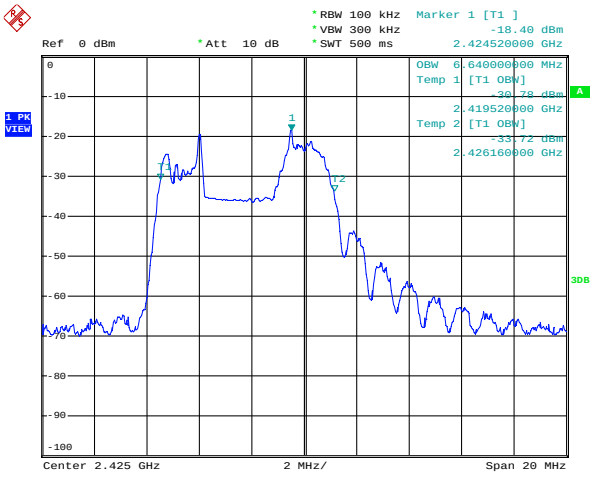
3.2.5 Test Result of Emission Bandwidth

Emission Bandwidth Result					
Modulation Mode	**Frequency (MHz)**	**20dB BW (MHz)**	**99% Bandwidth (MHz)**	**F_L at 20dB BW (MHz)**	**F_H at 20dB BW (MHz)**
O-QPSK-Transmit	2425	6.92	6.64	2419.3600	-
O-QPSK-Transmit	2450	6.92	6.64	-	-
O-QPSK-Transmit	2475	6.96	6.64	-	2476.2800
Limit		**N/A**	**N/A**	**2400**	**2483.5**
Result		**Complied**			

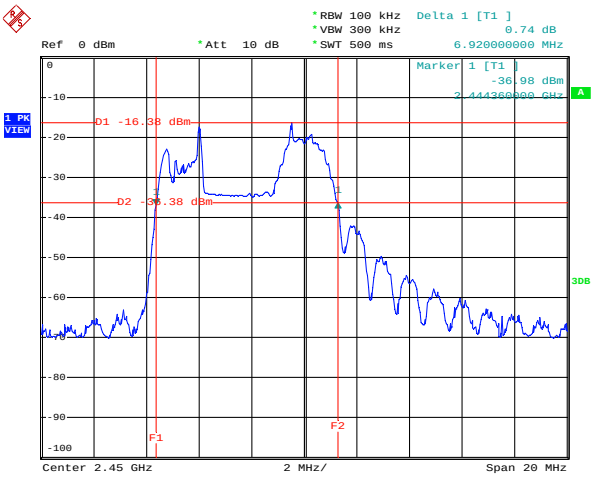
20 dB Bandwidth Plot on 2425 MHz



99% Bandwidth Plot on 2425 MHz

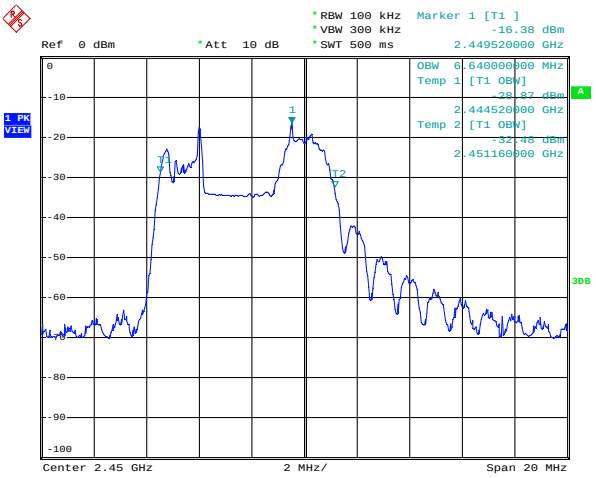


20 dB Bandwidth Plot on 2450 MHz



Date: 25.JUN.2013 19:35:00

99% Bandwidth Plot on 2450 MHz



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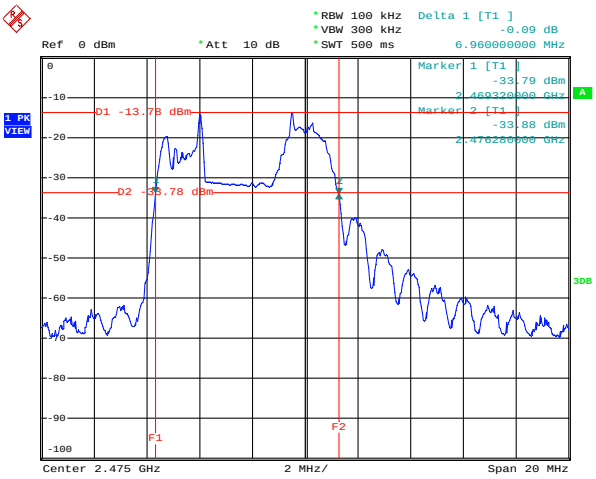
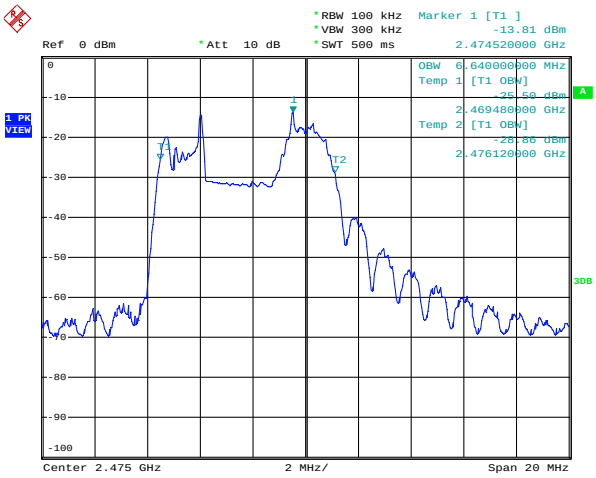
20 dB Bandwidth Plot on 2475 MHz



Date: 25.JUN.2013 19:43:47

99% Bandwidth Plot on 2475 MHz



Date: 25.JUN.2013 19:47:52

3.3 Fundamental and Band Edge Emissions

3.3.1 Fundamental and Band Edge Emissions Limits

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)
Band Edge Emissions:
50 dB below the level of the fundamental or FCC 15.209, whichever is the lesser attenuation.

3.3.2 Measuring Instruments

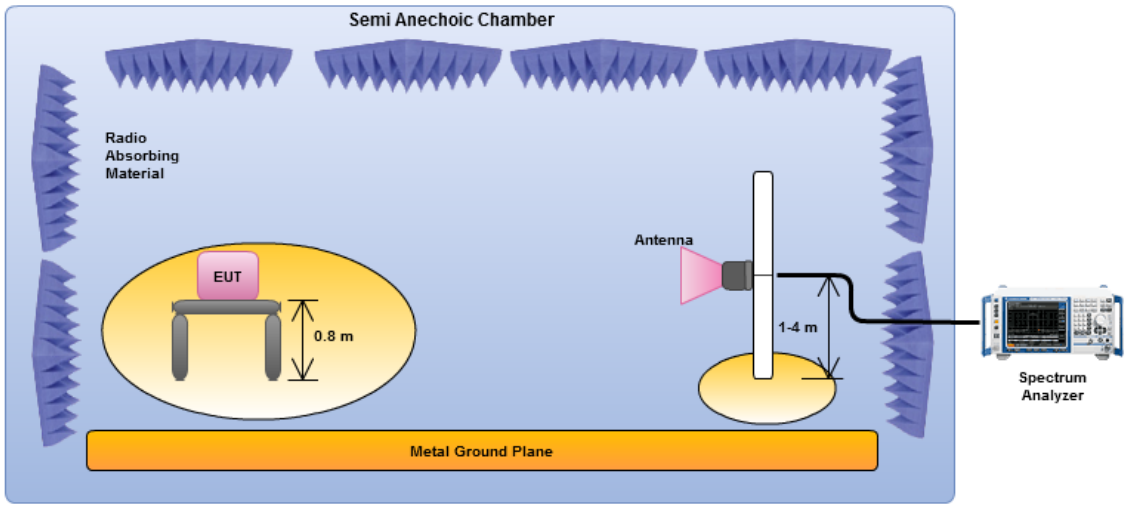
Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedures

☒	The average emission levels shall be measured in [duty cycle ≥ 100 or 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.
☒	For radiated measurement, refer as ANSI C63.10, clause 6.6 for radiated emissions	
☒	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.

3.3.4 Test Setup

Fundamental and Band Edge Emissions



3.3.5 Test Result of Fundamental and Band Edge

Field Strength of Fundamental Result

2425 MHz

	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
3 @	2425.530	100.22	-13.78	114.00	69.21	28.35	2.66	0.00	Peak	---	---
3 @	2425.050	80.65	-13.35	94.00	49.64	28.35	2.66	0.00	Average	---	---

2450 MHz

	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 @	2444.900	102.36	-11.64	114.00	71.31	28.39	2.66	0.00	Peak	---	---
1 @	2449.650	82.79	-11.21	94.00	51.74	28.39	2.66	0.00	Average	---	---

2475 MHz

	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 @	2469.440	99.81	-14.19	114.00	68.70	28.42	2.69	0.00	Peak	---	---
1 @	2474.920	80.24	-13.76	94.00	49.09	28.46	2.69	0.00	Average	---	---

Note 1: Measurement worst emissions of receive antenna polarization: Vertical.
Note 2: If duty cycle < 100%, average emission = peak emission + 20 log (duty cycle).

Field Strength of Band Edge Result

2425 MHz

	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 @	2384.050	60.02	-13.98	74.00	29.18	28.23	2.61	0.00	Peak	---	---
2 @	2399.060	59.14	-14.86	74.00	28.24	28.27	2.63	0.00	Peak	---	---
1 @	2377.100	46.19	-7.81	54.00	15.35	28.23	2.61	0.00	Average	---	---
2 @	2399.180	46.13	-7.87	54.00	15.23	28.27	2.63	0.00	Average	---	---

2475 MHz

	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
2 @	2486.750	60.17	-13.83	74.00	29.02	28.46	2.69	0.00	Peak	---	---
2 @	2483.530	47.48	-6.52	54.00	16.33	28.46	2.69	0.00	Average	---	---

Note 1: Measurement worst emissions of receive antenna polarization: Vertical.
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

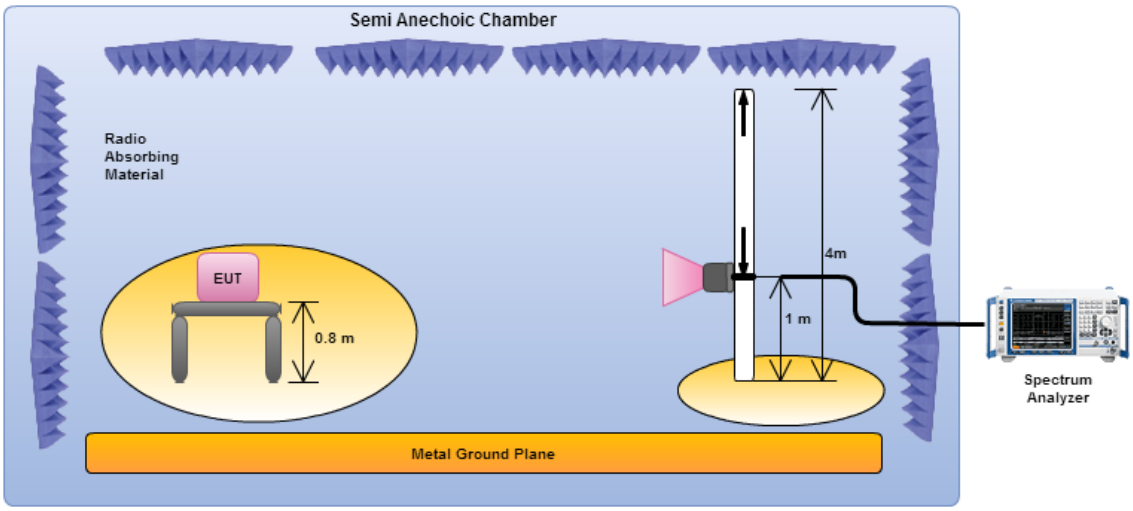
Refer a test equipment and calibration data table in this test report.

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).
☐	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.
☒	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.
☒	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.
☒	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 from below 30 MHz.
☒	Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1000 MHz.
☒	Refer as ANSI C63.10, clause 6.6 for radiated emissions from above 1 GHz.

3.4.4 Test Setup

Transmitter Radiated Unwanted Emissions



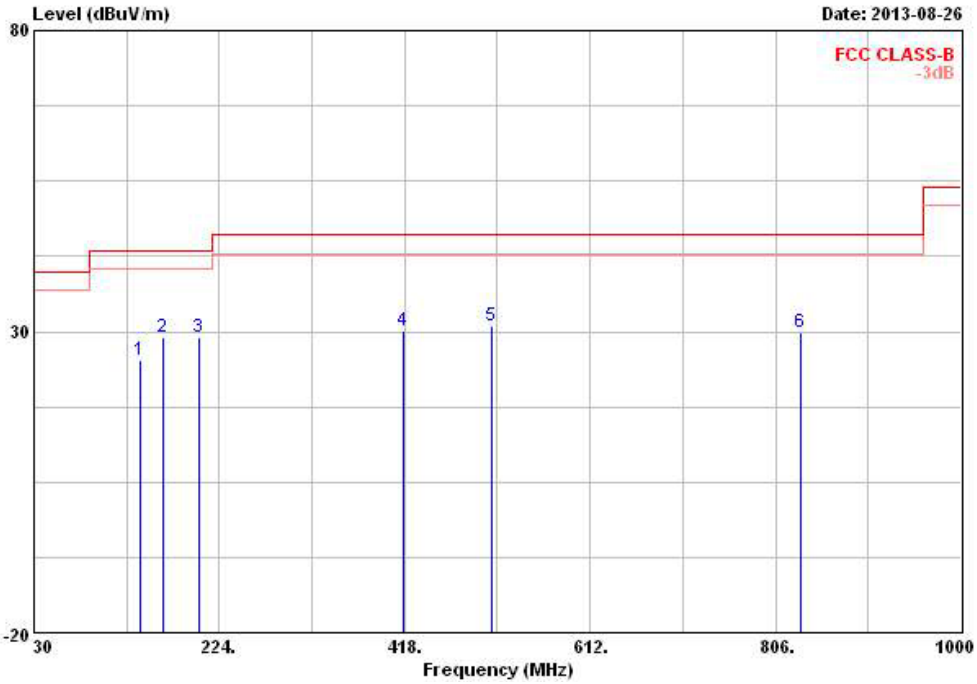
Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna. Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna and the frequency range of 1 GHz to 40 GHz using a calibrated horn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

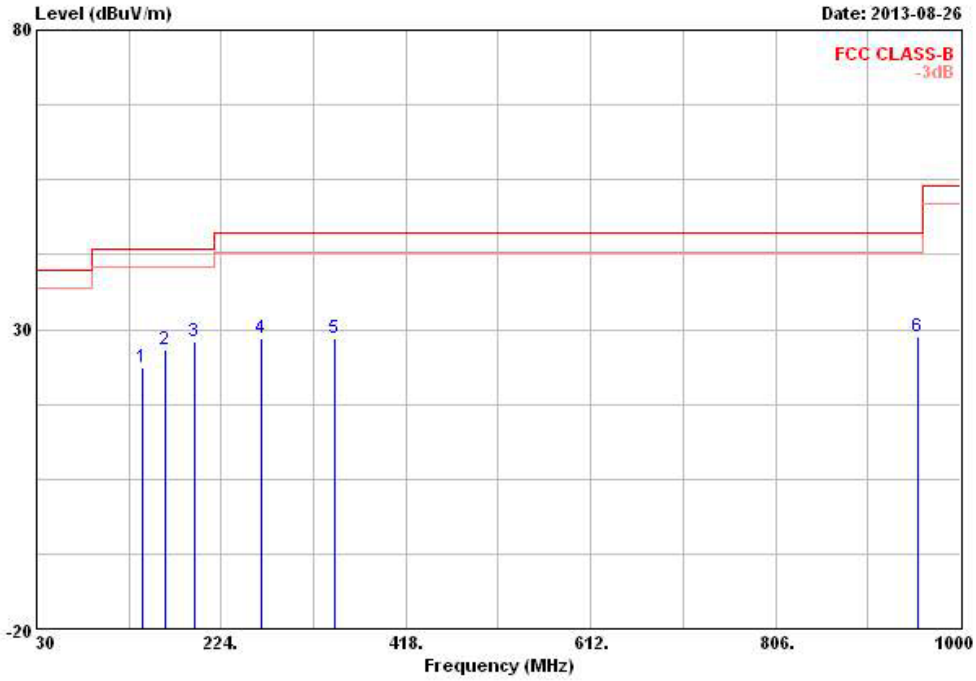
Radiated Emissions			
Operating Mode	1	**Polarization**	V
Operating Function	Normal Mode		



	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	141.550	25.24	-18.26	43.50	39.72	10.98	1.76	27.22	Peak	---	---
2	164.830	28.93	-14.57	43.50	44.41	9.79	1.86	27.13	Peak	---	---
3 @	203.630	29.11	-14.39	43.50	44.72	9.28	2.10	26.99	Peak	---	---
4	416.060	30.05	-15.95	46.00	38.13	16.30	3.04	27.42	Peak	---	---
5	509.180	31.02	-14.98	46.00	38.15	17.38	3.38	27.89	Peak	---	---
6	832.190	29.87	-16.13	46.00	33.00	20.19	4.40	27.72	Peak	---	---

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

Radiated Emissions			
Operating Mode	1	**Polarization**	H
Operating Function	Normal Mode		

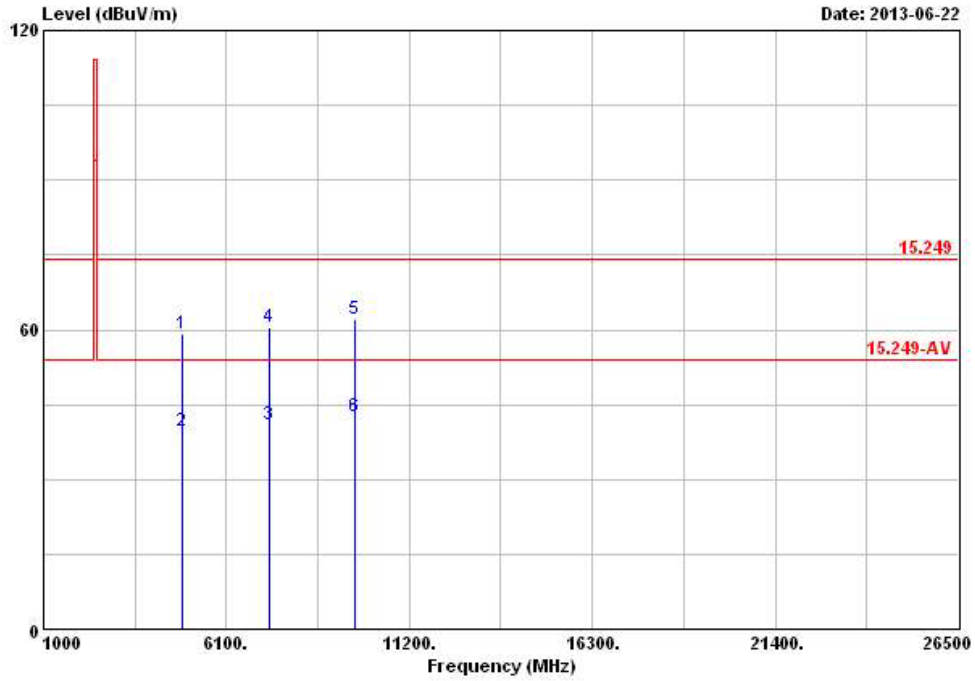


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1	141.550	23.66	-19.84	43.50	38.14	10.98	1.76	27.22	Peak	---	---
2	164.830	26.70	-16.80	43.50	42.18	9.79	1.86	27.13	Peak	---	---
3	195.870	27.98	-15.52	43.50	43.81	9.13	2.05	27.01	Peak	---	---
4	265.710	28.61	-17.39	46.00	40.03	12.96	2.39	26.77	Peak	---	---
5	343.310	28.42	-17.58	46.00	38.58	14.03	2.76	26.95	Peak	---	---
6	955.380	28.80	-17.20	46.00	30.45	20.92	4.82	27.39	Peak	---	---

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

3.4.7 Transmitter Radiated Unwanted Emissions (Above 1GHz)

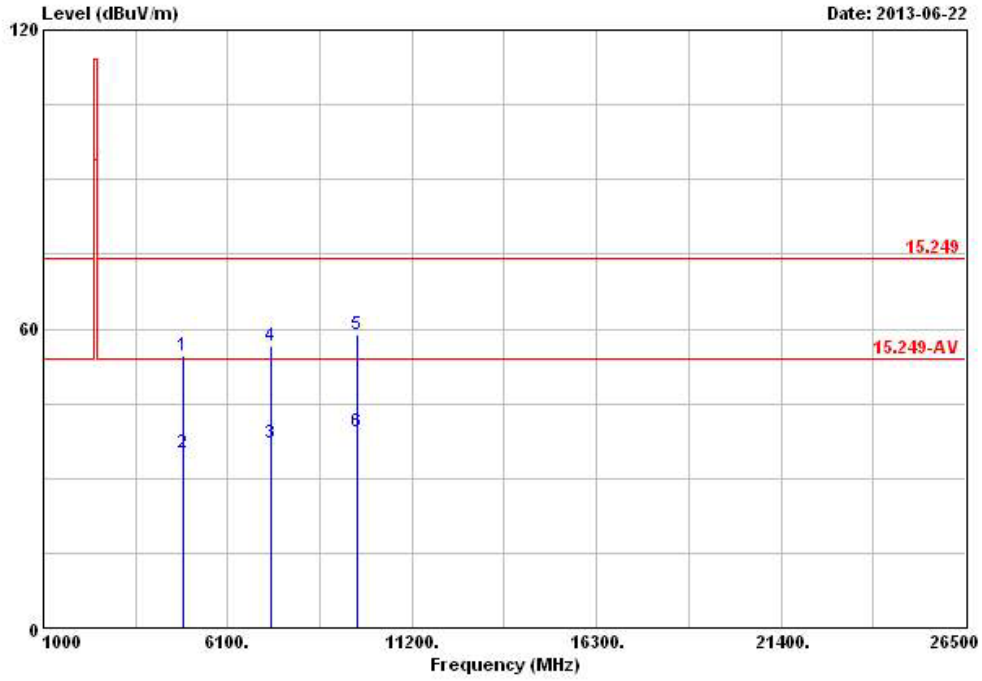
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	O-QPSK-Transmit	**Test Freq. (FX)**	F1
Operating Function	Transmit	**Polarization**	V



	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 @	4850.000	59.17	-14.83	74.00	54.71	33.12	3.94	32.60	Peak	---	---
2 @	4850.000	39.60	-14.40	54.00	35.14	33.12	3.94	32.60	Average	---	---
3 @	7275.000	40.92	-13.08	54.00	33.56	35.96	4.25	32.85	Average	---	---
4 @	7275.000	60.49	-13.51	74.00	53.13	35.96	4.25	32.85	Peak	---	---
5 @	9700.000	62.04	-11.96	74.00	51.39	38.46	5.50	33.31	Peak	---	---
6 @	9700.000	42.47	-11.53	54.00	31.82	38.46	5.50	33.31	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).

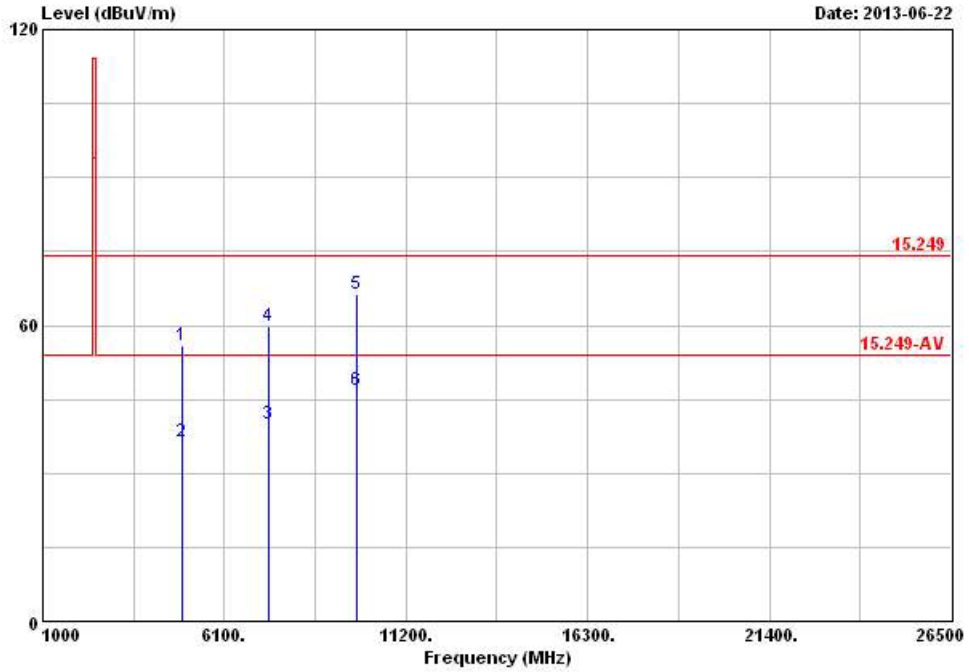
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	O-QPSK-Transmit	**Test Freq. (FX)**	F1
Operating Function	Transmit	**Polarization**	H



	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	4850.000	54.57	-19.43	74.00	50.11	33.12	3.94	32.60	Peak	---	---
2	4850.000	35.00	-19.00	54.00	30.54	33.12	3.94	32.60	Average	---	---
3	7275.000	37.02	-16.98	54.00	29.66	35.96	4.25	32.85	Average	---	---
4	7275.000	56.59	-17.41	74.00	49.23	35.96	4.25	32.85	Peak	---	---
5 @	9700.000	58.88	-15.12	74.00	48.23	38.46	5.50	33.31	Peak	---	---
6 @	9700.000	39.31	-14.69	54.00	28.66	38.46	5.50	33.31	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).

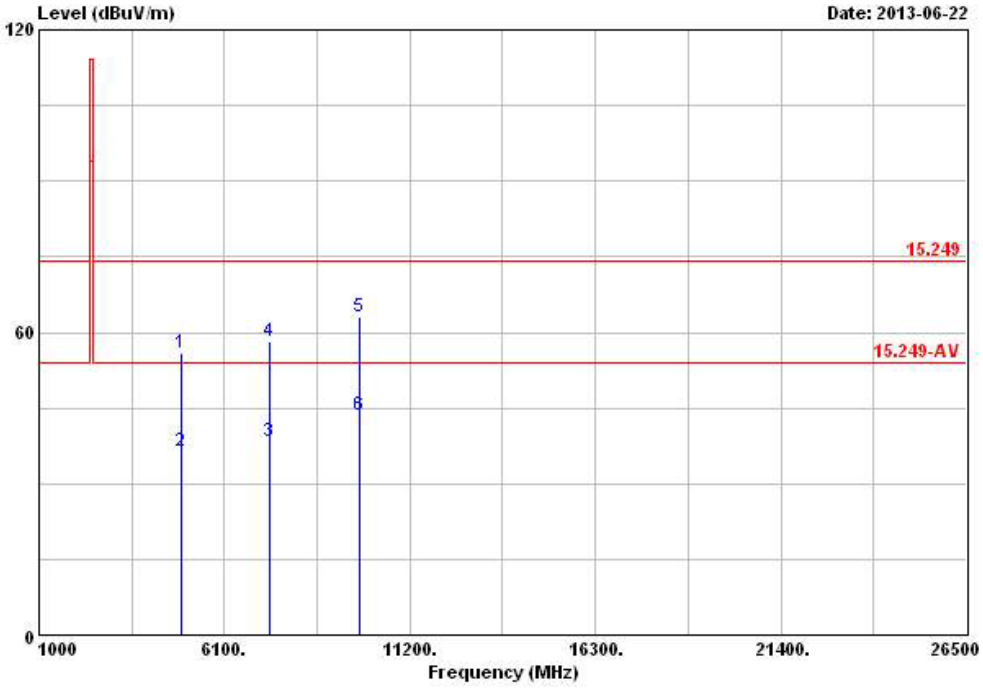
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	O-QPSK-Transmit	**Test Freq. (FX)**	F2
Operating Function	Transmit	**Polarization**	V



	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	4900.000	55.86	-18.14	74.00	51.28	33.21	3.96	32.59	Peak	---	---
2	4900.000	36.29	-17.71	54.00	31.71	33.21	3.96	32.59	Average	---	---
3 @	7350.000	40.13	-13.87	54.00	32.63	36.17	4.21	32.88	Average	---	---
4 @	7350.000	59.70	-14.30	74.00	52.20	36.17	4.21	32.88	Peak	---	---
5 @	9800.000	66.48	-7.52	74.00	55.64	38.68	5.46	33.30	Peak	---	---
6 @	9800.000	46.91	-7.09	54.00	36.07	38.68	5.46	33.30	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).

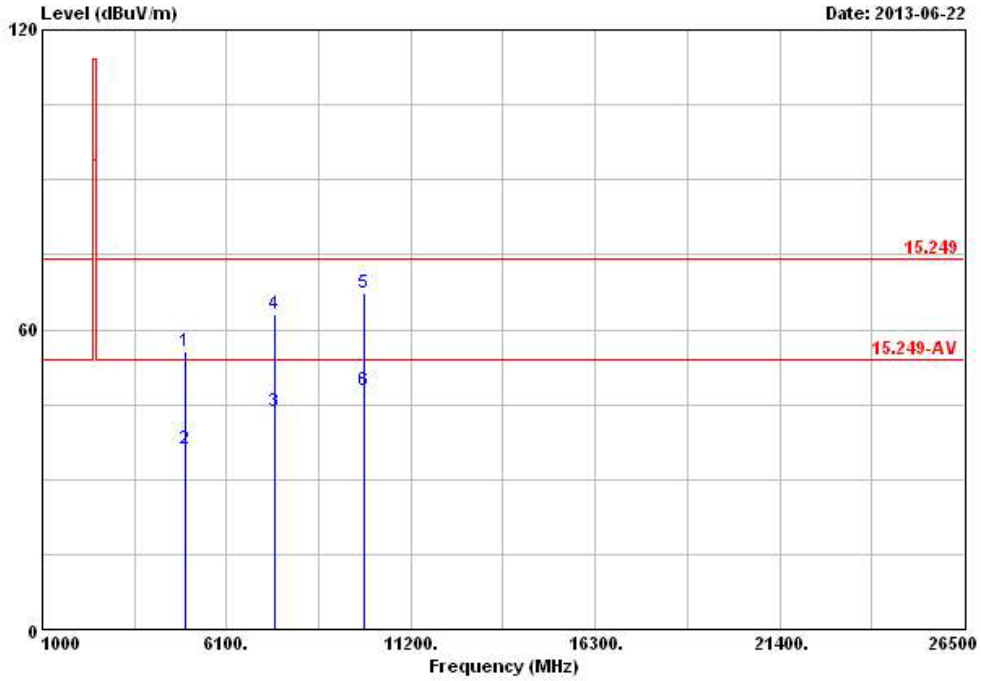
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	O-QPSK-Transmit	**Test Freq. (FX)**	F2
Operating Function	Transmit	**Polarization**	H



	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	4900.000	56.07	-17.93	74.00	51.49	33.21	3.96	32.59	Peak	---	---
2	4900.000	36.50	-17.50	54.00	31.92	33.21	3.96	32.59	Average	---	---
3 @	7350.000	38.49	-15.51	54.00	30.99	36.17	4.21	32.88	Average	---	---
4 @	7350.000	58.06	-15.94	74.00	50.56	36.17	4.21	32.88	Peak	---	---
5 @	9800.000	63.17	-10.83	74.00	52.33	38.68	5.46	33.30	Peak	---	---
6 @	9800.000	43.60	-10.40	54.00	32.76	38.68	5.46	33.30	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).

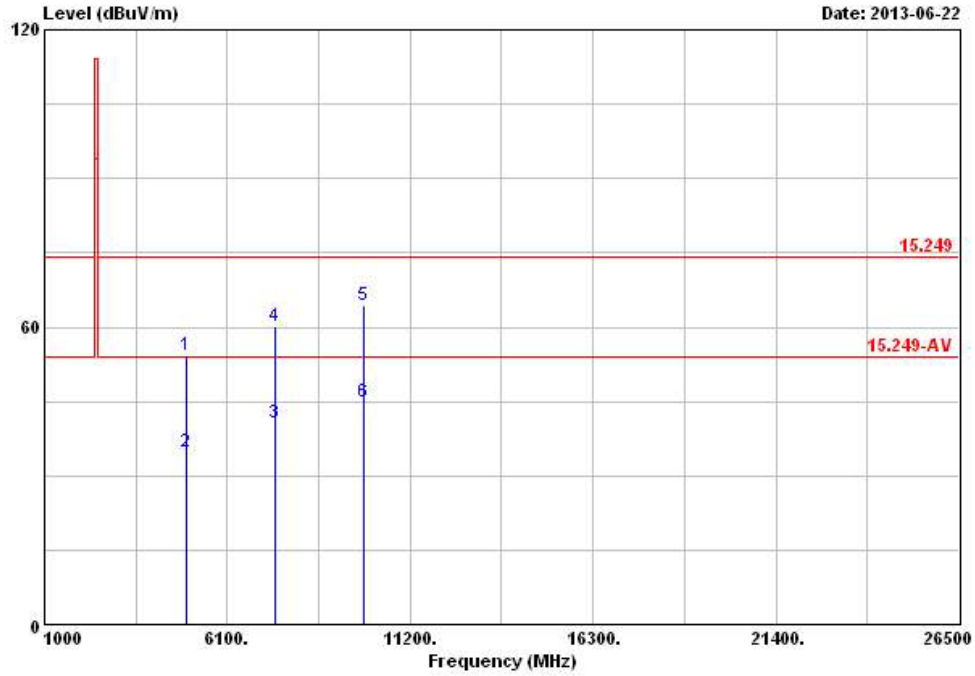
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	O-QPSK-Transmit	**Test Freq. (FX)**	F3
Operating Function	Transmit	**Polarization**	V



	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	55.57	-18.43	74.00	50.86	33.31	3.98	32.58	Peak	---	---
2	4950.000	36.00	-18.00	54.00	31.29	33.31	3.98	32.58	Average	---	---
3 @	7425.000	43.68	-10.32	54.00	36.08	36.33	4.17	32.90	Average	---	---
4 @	7425.000	63.25	-10.75	74.00	55.65	36.33	4.17	32.90	Peak	---	---
5 @	9900.000	67.29	-6.71	74.00	56.25	38.91	5.43	33.30	Peak	---	---
6 @	9900.000	47.72	-6.28	54.00	36.68	38.91	5.43	33.30	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).

Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	O-QPSK-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	54.39	-19.61	74.00	49.68	33.31	3.98	32.58	Peak	---	---
2	4950.000	34.82	-19.18	54.00	30.11	33.31	3.98	32.58	Average	---	---
3 @	7425.000	40.71	-13.29	54.00	33.11	36.33	4.17	32.90	Average	---	---
4 @	7425.000	60.28	-13.72	74.00	52.68	36.33	4.17	32.90	Peak	---	---
5 @	9900.000	64.30	-9.70	74.00	53.26	38.91	5.43	33.30	Peak	---	---
6 @	9900.000	44.73	-9.27	54.00	33.69	38.91	5.43	33.30	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).

4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSV 40	101013	9KHz~40GHz	Jan. 29, 2013	Conducted (TH06-HY)
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	Jun. 21, 2013	Conducted (TH06-HY)
Temp. and Humidity Chamber	Giant Force	GTH-225-20-S	MAB0103-001	-20 ~ 100℃	Nov. 21, 2012	Conducted (TH06-HY)
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Jun. 27, 2013	Conducted (TH06-HY)
RF Cable-2m	HUBER+SUHNER	SUCOFLEX_104	SN 345673/4	1GHz ~ 26.5GHz	NA	Conducted (TH06-HY)
RF Cable-3m	HUBER+SUHNER	SUCOFLEX_104	SN 345668/4	1GHz ~ 26.5GHz	NA	Conducted (TH06-HY)

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

Radiated Emission (Below 1GHz)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz ~ 1GHz 3m	Dec. 01, 2012	Radiation (03CH03-HY)
Amplifier	HP	8447D	2944A08033	10kHz ~ 1.3GHz	May. 03, 2013	Radiation (03CH03-HY)
Spectrum Analyzer	R&S	FSP30	100793	9kHz ~ 30GHz	Sep. 26, 2012	Radiation (03CH03-HY)
Receiver	R&S	ESU26	1302.6005.26	20Hz ~ 26.5GHz	Apr. 02, 2013	Radiation (03CH03-HY)
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30MHz ~ 1GHz	Sep. 22, 2012	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz ~ 1GHz	Jan. 17, 2013	Radiation (03CH03-HY)
Turn Table	EM Electronics	EM Electronics	060615	0 ~ 360 degree	N/A	Radiation (03CH03-HY)
Antenna Mast	MF	MF-7802	MF780208179	1 ~ 4 m	N/A	Radiation (03CH03-HY)

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

Radiated Emission (Above 1GHz)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz ~ 1GHz 3m	Dec. 01, 2012	Radiation (03CH03-HY)
Amplifier	HP	8447D	2944A08033	10kHz ~ 1.3GHz	May. 03, 2013	Radiation (03CH03-HY)
Amplifier	Agilent	8449B	3008A02120	1GHz ~ 26.5GHz	Aug. 16, 2012	Radiation (03CH03-HY)
Receiver	R&S	ESU26	1302.6005.26	20Hz ~ 26.5GHz	Apr. 02, 2013	Radiation (03CH03-HY)
Horn Antenna	EMCO	3115	6741	1GHz ~ 18GHz	May. 31, 2013	Radiation (03CH03-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15GHz ~ 40GHz	Jan. 08, 2013	Radiation (03CH03-HY)
RF Cable-high	SUHNER	SUCOFLEX 106	03CH03-HY	1GHz ~ 40GHz	Jan. 17, 2013	Radiation (03CH03-HY)
Turn Table	EM Electronics	EM Electronics	060615	0 ~ 360 degree	N/A	Radiation (03CH03-HY)
Antenna Mast	MF	MF-7802	MF780208179	1 ~ 4 m	N/A	Radiation (03CH03-HY)

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Loop Antenna	TESEQ	HLA 6120	31244	9kHz ~ 30MHz	Dec. 02, 2012	Radiation (03CH03-HY)

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