FCC Test Report

Equipment	**:**	**2x2 802.11a/b/g/n +BT Module(SiP)**
Brand Name	**:**	**Qualcomm Atheros**
Model No.	**:**	**QCA6234**
FCC ID	**:**	**PPD-QCA6234**
Standard	**:**	**47 CFR FCC Part 15.247**
Operating Band	**:**	**2400 MHz – 2483.5 MHz**
Equipment Class	**:**	**DTS**
Applicant **Manufacturer**	**:**	**Dell Inc.** **One Dell Way, Round Rock, Texas 78682, USA**

The product sample received on Sep. 04, 2013 and completely tested on Sep. 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:

Testing Laboratory
1190

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Summary of Test Result

Conformance Test Specifications					
Report Clause	**Ref. Std. Clause**	**Description**	**Measured**	**Limit**	**Result**
1.1.1	15.203	Antenna Requirement	Antenna connector mechanism complied	FCC 15.203	Complied
3.1	15.247(b)	RF Output Power (Maximum Conducted (Average) Output Power)	Power [dBm] LE: 4.01	Power [dBm] LE:30	Complied
3.2	15.247(c)	Transmitter Radiated Bandedge Emissions	Non-Restricted Bands: 2479.920MHz: 46.03dB Restricted Bands [dBuV/m at 3m]: 2483.500MHz 59.84 (Margin 14.16) - PK 50.38 (Margin 3.62) - AV	Non-Restricted Bands: > 20 dBc Restricted Bands: FCC 15.209	Complied
3.3	15.247(c)	Transmitter Radiated Unwanted Emissions	Restricted Bands [dBuV/m at 3m]: 164.830MHz 40.00 (Margin 3.50dB) - PK	Non-Restricted Bands: > 20 dBc Restricted Bands: FCC 15.209	Complied

Revision History

Report No.	Version	Description	Issued Date
FR381242AL	Rev. 01	Initial issue of report	Sep. 17, 2013

1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information				
Frequency Range (MHz)	**Bluetooth Version**	**Ch. Frequency (MHz)**	**Channel Number**	**RF Output Power (dBm)**
2400-2483.5	v4.0 LE	2402-2480	0-39 [40]	4.01
Note 1: Bluetooth LE (Low Energy) using GFSK modulation for DTS digital modulation. Note 2: RF output power specifies that Maximum Conducted (Average) Output Power.				

1.1.2 Antenna Information

Antenna Category	
☒	Integral antenna (antenna permanently attached)
	☒ Temporary RF connector provided
	☐ No temporary RF connector provided Transmit chains bypass antenna and soldered temporary RF connector provided for connected measurement. In case of conducted measurements the transmitter shall be connected to the measuring equipment via a suitable attenuator and correct for all losses in the RF path.

Antenna General Information			
No.	**Ant. Cat.**	**Ant. Type**	**Gain (dBi)**
1	Integral	PIFA	-1.03

1.1.3 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)**
☒ 71.05%	-2.96
If worst duty < 100%, average emission = peak emission + 20 log x	

1.1.4 Type of EUT

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

1.2 Support Equipment

Support Equipment- Radiated Emission Test			
No.	**Equipment**	**Brand Name**	**Model Name**
1	Notebook	DELL	E5520
2	AC Adaptor (For Tablet PC use)	DVE	HA24NM130
3	Tablet PC (Built in Qualcomm Atheros module)	DELL	T06G.../T06G001 (“.” Can be 0-9, A-Z or blank)

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
- FCC KDB 558074
- FCC KDB 412172

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**
Radiated Emission		03CH03-HY		Eddie	23.7°C / 54.5%

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**
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
Duty Cycle		±1.42 %	N/A

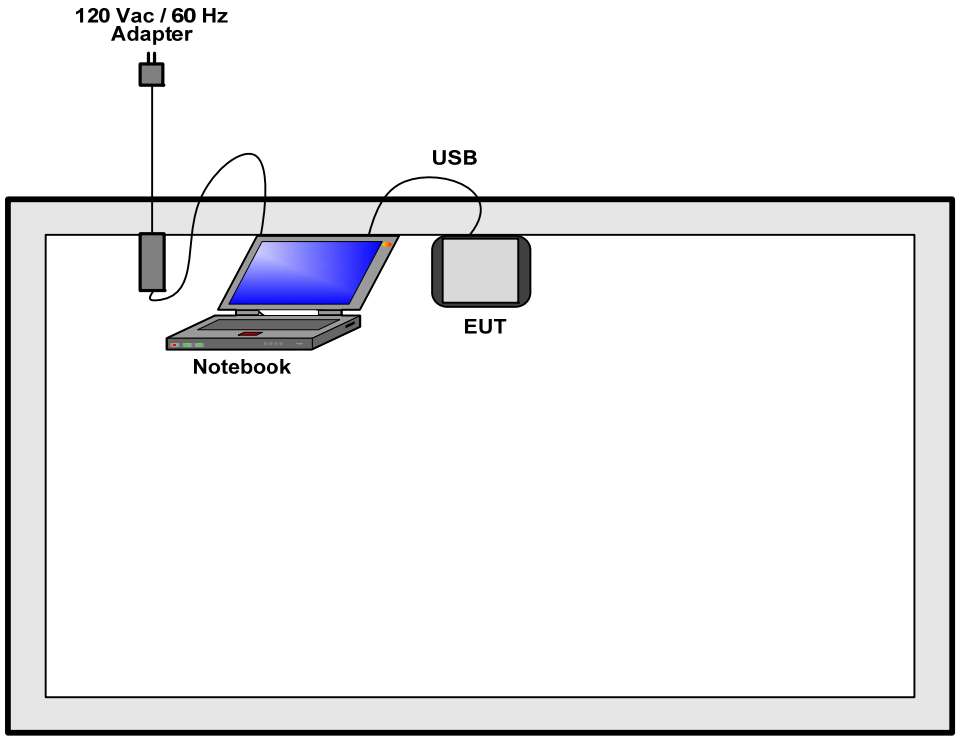
2 Test Configuration of EUT

2.1 The Worst Case Measurement Configuration

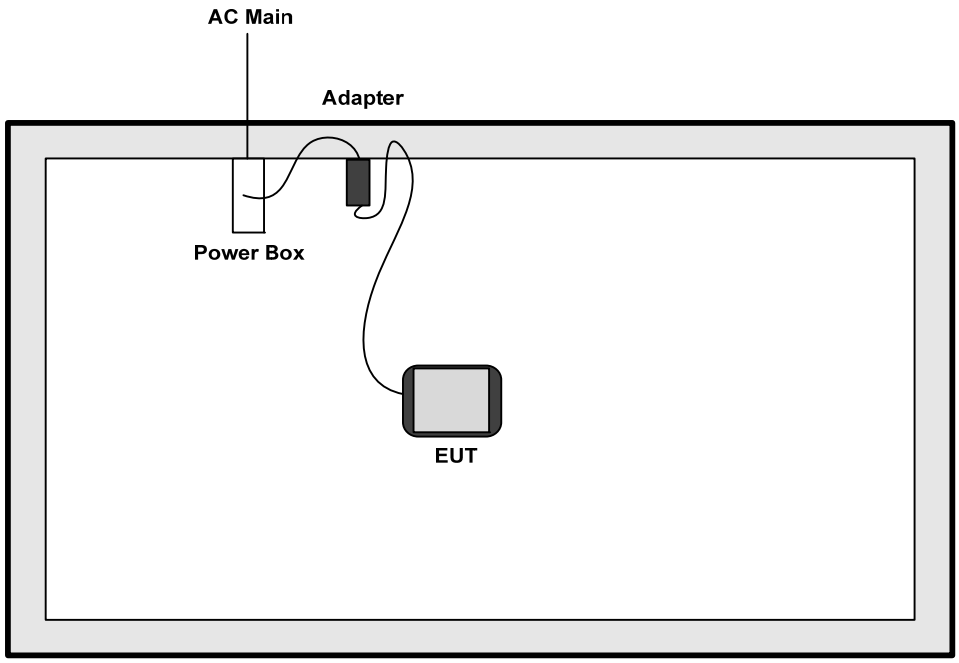
The Worst Case Mode for Following Conformance Tests			
Tests Item	Transmitter Radiated Unwanted Emissions Transmitter Radiated Bandedge Emissions		
Test Condition	Radiated measurement		
User Position	☐ EUT will be placed in fixed position.		
	☒ EUT will be placed in mobile position and operating multiple 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.		
Operating Mode < 1GHz	☒ 1. EUT with AC Power test		
	☒ 2. EUT with Notebook via USB cable		
	For operating mode 2 is the worst case and it was record in this test report.		
Operating Mode > 1GHz	☒ 1. EUT with AC Power test		
Modulation Mode	LE-1Mbps		
Orthogonal Planes of EUT	**X Plane**	**Y Plane**	**Z Plane**
			

2.2 Test Setup Diagram

Test Setup Diagram - Radiated Below 1GHz Test	
Operating Mode	2. EUT with Notebook via USB cable



Test Setup Diagram - Radiated Above 1GHz Test	
Operating Mode	1. EUT with AC Power test



3 Transmitter Test Result

3.1 RF Output Power

3.1.1 RF Output Power Limit

RF Output Power Limit for Digital Modulation Systems	
Maximum Peak Conducted Output Power or Maximum Conducted Output Power Limit	
☒	2400-2483.5 MHz Band:
☒	If G_{TX} ≤ 6 dBi, then P_{Out} ≤ 30 dBm (1 W)
☐	Point-to-multipoint systems (P2M): If G_{TX} > 6 dBi, then P_{Out} = 30 – (G_{TX} – 6) dBm
e.i.r.p. Power Limit:	
☒	2400-2483.5 MHz Band
☒	Point-to-multipoint systems (P2M): P_{eirp} ≤ 36 dBm (4 W)
P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, **G_{TX}** = the maximum transmitting antenna directional gain in dBi. **P_{eirp}** = e.i.r.p. Power in dBm.	

3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

Test Method	
☒	Maximum Peak Conducted Output Power
☒	Refer as ANSI C63.10, clause 6.10.2.1 a) for peak power meter.
☐	Refer as ANSI C63.10, clause 6.10.2.1 a) for spectrum analyzer - (RBW ≥ EBW).
☒	For conducted measurement.
☒	The EUT supports single transmit chain and measurements performed on this transmit chain.
☐	The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case.

3.1.4 Test Setup

RF Output Power (Peak Power Meter)

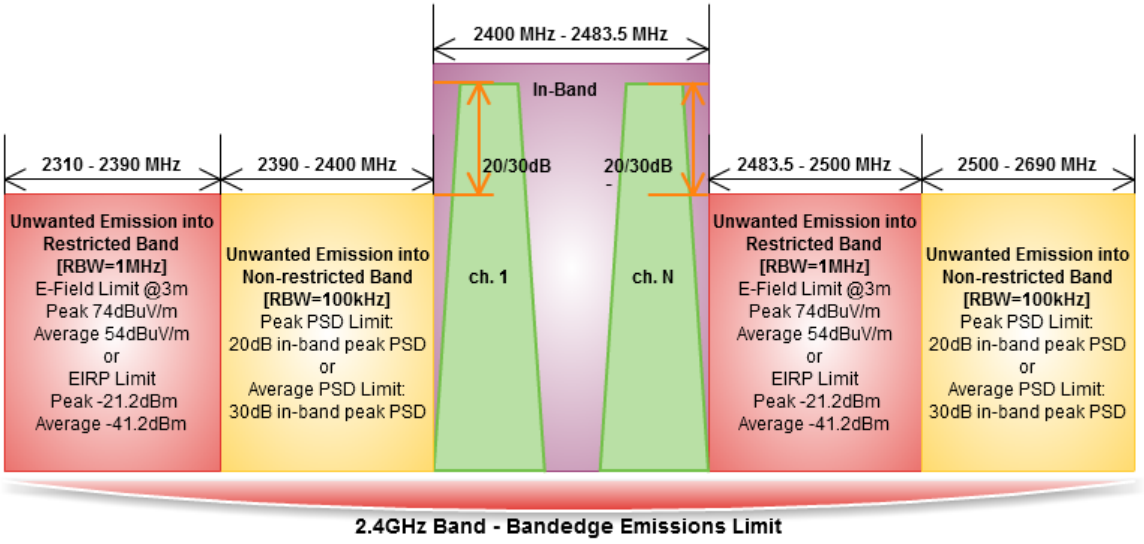
3.1.5 Test Result of Maximum Average Conducted Output Power

Maximum Average Conducted Output Power Result						
Condition		RF Output Power (dBm)				
Modulation Mode	Freq. (MHz)	RF Output Power	Power Limit	Antenna Gain (dBi)	EIRP Power	EIRP Limit
LE-1Mbps	2402	3.85	30	-1.03	2.82	36
LE-1Mbps	2440	4.01	30	-1.03	2.98	36
LE-1Mbps	2480	3.91	30	-1.03	2.88	36
Result		Complied				

3.2 Transmitter Radiated Bandedge Emissions

3.2.1 Transmitter Radiated Bandedge Emissions Limit

Transmitter Radiated Bandedge Emissions Limit



3.2.2 Measuring Instruments

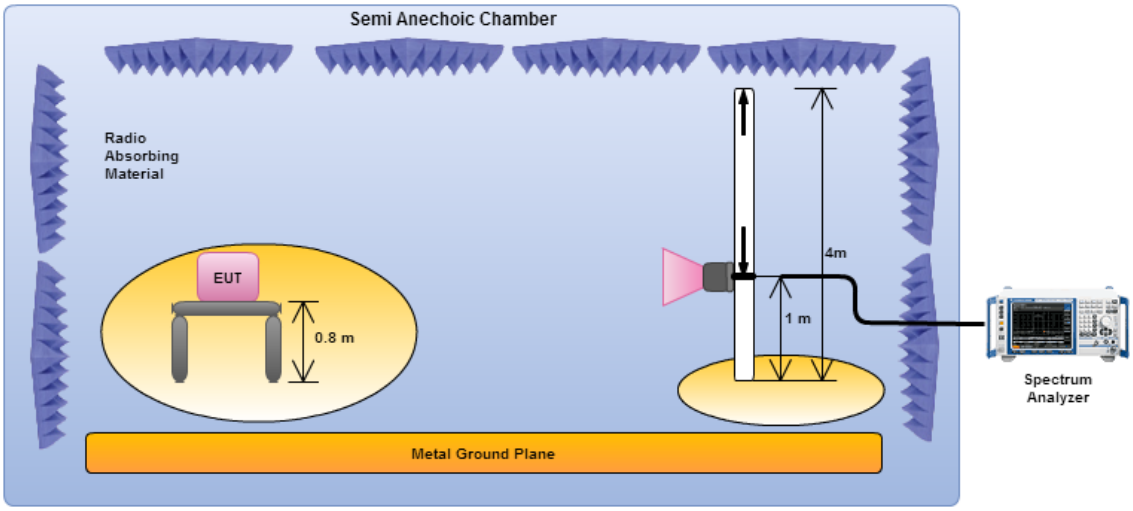
Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

Test Method			
☒	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 FCC KDB 558074, clause 11 for unwanted emissions into non-restricted bands.	
	☒	Refer as FCC KDB 558074, clause 12 for unwanted emissions into restricted bands.	
		☐	Refer as FCC KDB 558074, clause 12.2.5.1 Option 1 (trace averaging for duty cycle ≥98%)
		☐	Refer as FCC KDB 558074, clause 12.2.5.2 Option 2 (trace averaging + duty factor).
		☒	Refer as FCC KDB 558074, clause 12.2.5.3 Option 3 (Reduced VBW≥1/T).
		☐	Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time.
		☐	Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions.
		☒	Refer as FCC KDB 558074, clause 11.3 and 12.2.4 measurement procedure peak limit.
☒	For the transmitter bandedge emissions shall be measured using following options below:		
	☐	Refer as FCC KDB 558074, clause 13.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).	
	☒	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 FCC KDB 558074, clause 12.2.7.		
☐	For conducted measurement, refer as FCC KDB 558074, clause 12.2.2.		

3.2.4 Test Setup

Transmitter Radiated Bandedge Emissions



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

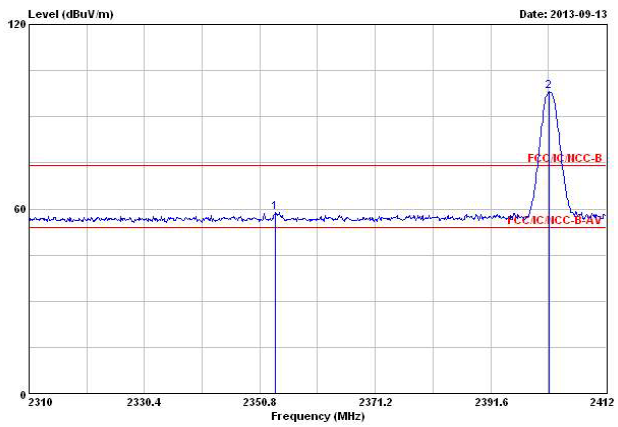
3.2.5 Test Result of Transmitter Radiated Bandedge Emissions

2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Non-restricted Band)							
Modulation	**Test Freq. (MHz)**	**In-band PSD [i] (dBuV/100kHz)**	**Freq. (MHz)**	**Out-band PSD [o] (dBuV/100kHz)**	**[i] – [o] (dB)**	**Limit (dB)**	**Pol.**
LE-1Mbps	2402	97.53	2402.000	51.43	46.10	20	V
LE-1Mbps	2480	98.72	2479.920	52.69	46.03	20	V
Note 1: Measurement worst emissions of receive antenna polarization							

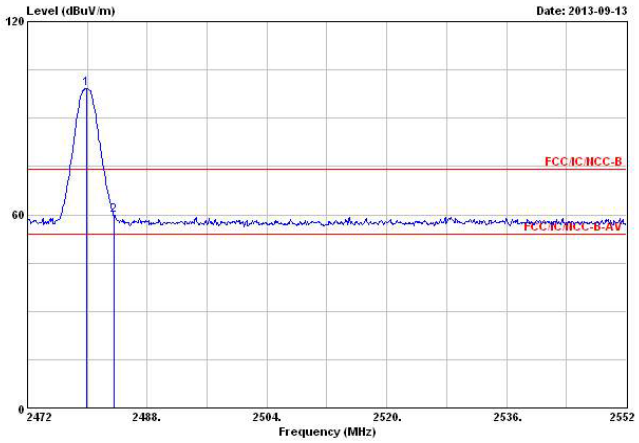
2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Restricted Band)									
Modulation Mode	**Freq. (MHz)**	**Measure Distance (m)**	**Freq. (MHz) PK**	**Level (dBuV/m) PK**	**Limit (dBuV/m) PK**	**Freq. (MHz) AV**	**Level (dBuV/m) AV**	**Limit (dBuV/m) AV**	**Pol.**
LE-1Mbps	2402	3	2353.550	58.96	74	2353.860	46.64	54	V
LE-1Mbps	2480	3	2483.500	59.84	74	2483.500	50.38	54	V
Note 1: Measurement worst emissions of receive antenna polarization. Note 2: Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is “Pulse On Time”, e.g., LE VBW≥1/625us, VBW=3kHz.									

2400-2483.5MHz - Transmitter Radiated Bandedge Emissions Plots

LE-1Mbps-(Lowest Ch.)



LE-1Mbps -(Highest Ch.)



3.3 Transmitter Radiated Unwanted Emissions

3.3.1 Transmitter Radiated Unwanted Emissions Limit

Restricted Band Emissions Limit			
Frequency Range (MHz)	**Field Strength (uV/m)**	**Field Strength (dBuV/m)**	**Measure Distance (m)**
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

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

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

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

3.3.2 Measuring Instruments

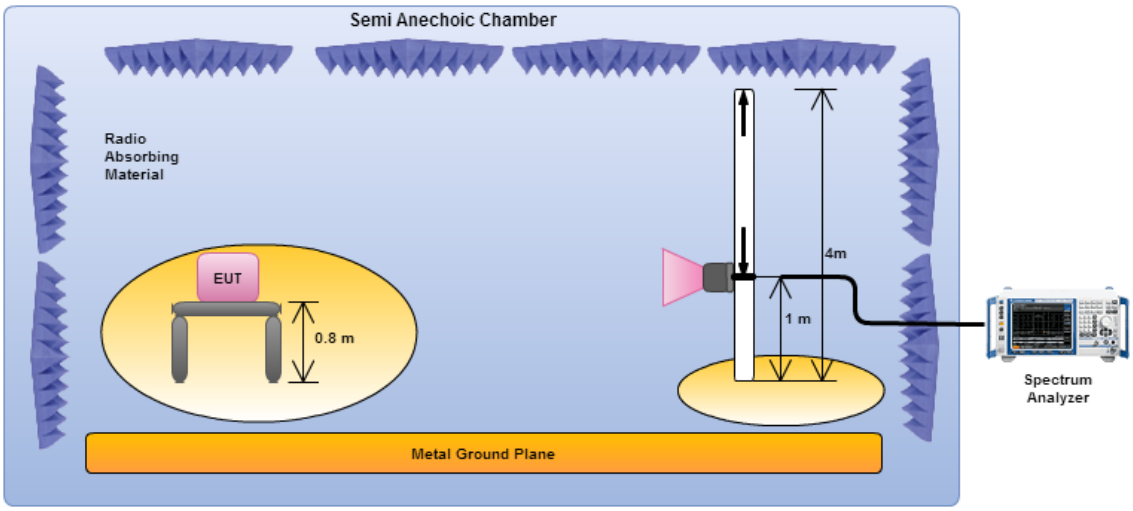
Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedures

Test Method			
☒	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 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].		
☒	For the transmitter unwanted emissions shall be measured using following options below:		
	☒	Refer as FCC KDB 558074, clause 11 for unwanted emissions into non-restricted bands.	
	☒	Refer as FCC KDB 558074, clause 12 for unwanted emissions into restricted bands.	
		☐	Refer as FCC KDB 558074, clause 12.2.5.1 Option 1 (trace averaging for duty cycle ≥98%)
		☐	Refer as FCC KDB 558074, clause 12.2.5.2 Option 2 (trace averaging + duty factor).
		☒	Refer as FCC KDB 558074, clause 12.2.5.3 Option 3 (Reduced VBW≥1/T).
		☐	Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time.
		☐	Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions.
		☒	Refer as FCC KDB 558074, clause 11.3 and 12.2.4 measurement procedure peak limit.
		☒	Refer as FCC KDB 558074, clause 12.2.3 measurement procedure Quasi-Peak limit.
☒	For radiated measurement, refer as FCC KDB 558074, clause 12.2.7.		
	☒	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.	
☐	For conducted and cabinet radiation measurement, refer as FCC KDB 558074, clause 12.2.2.		

3.3.4 Test Setup

Transmitter Radiated Unwanted Emissions



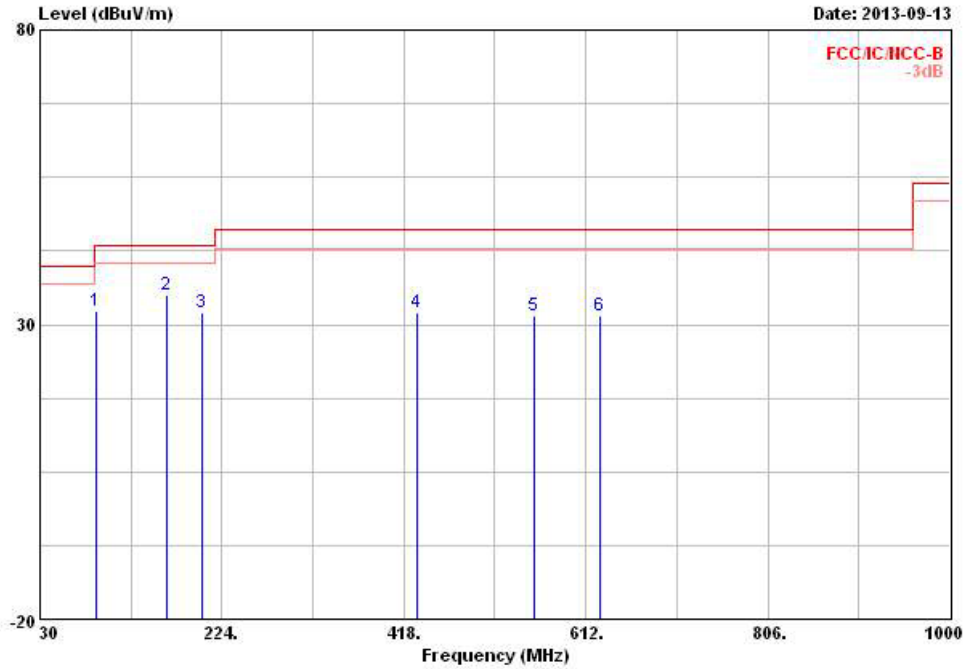
Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna. Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna and the frequency range of 1 GHz to 40 GHz using a calibrated horn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

3.3.5 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.

3.3.6 Transmitter Radiated Unwanted Emissions (Below 1GHz)

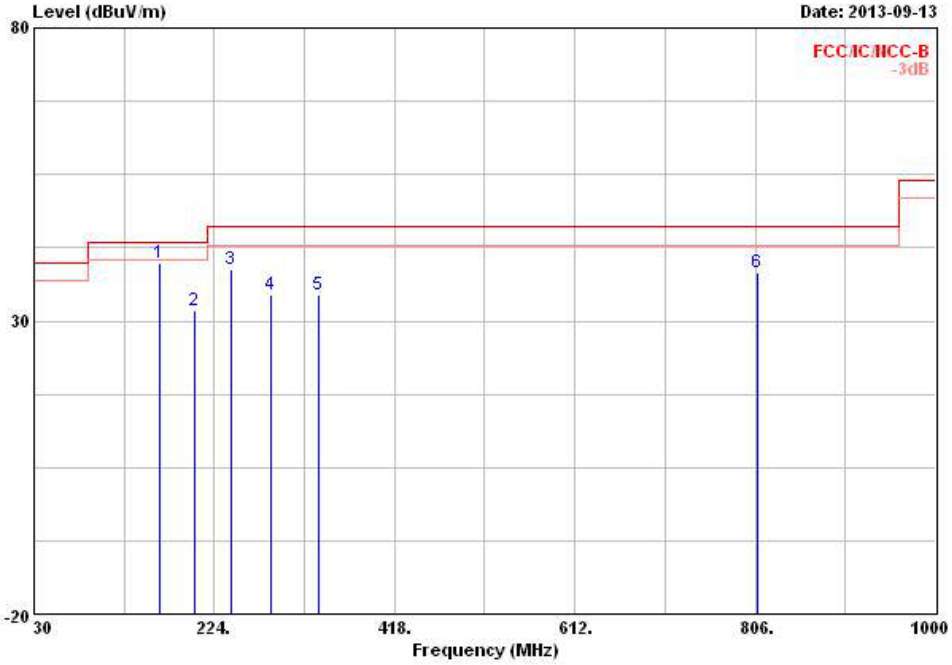
Transmitter Radiated Unwanted Emissions (Below 1GHz)			
Operating Mode	2	**Polarization**	V
Operating Function	EUT with Notebook via USB cable		



	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	90.140	32.43	-11.07	43.50	49.37	9.10	1.38	27.42	Peak	---	---
2	164.830	35.12	-8.38	43.50	50.60	9.79	1.86	27.13	Peak	---	---
3	202.660	32.10	-11.40	43.50	47.71	9.29	2.09	26.99	Peak	---	---
4	431.580	31.96	-14.04	46.00	40.06	16.31	3.10	27.51	Peak	---	---
5	556.710	31.46	-14.54	46.00	37.26	18.60	3.54	27.94	Peak	---	---
6	626.550	31.44	-14.56	46.00	36.67	18.96	3.79	27.98	Peak	---	---

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

Transmitter Radiated Unwanted Emissions (Below 1GHz)			
Operating Mode	2	**Polarization**	H
Operating Function	EUT with Notebook via USB cable		

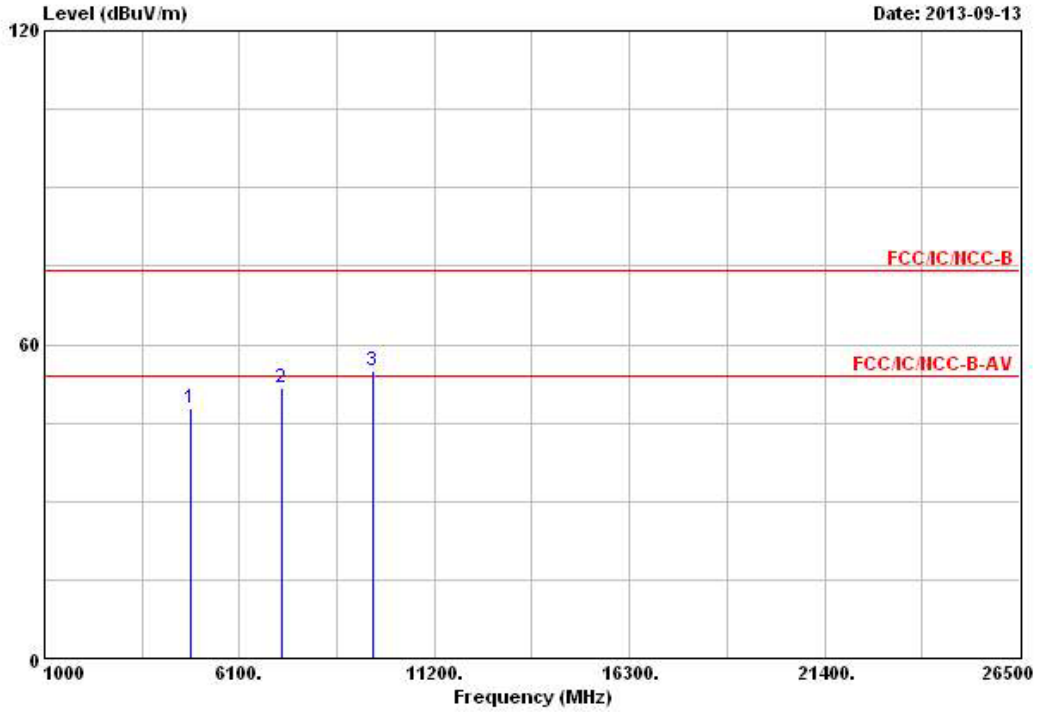


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB		cm	deg
1 @	164.830	40.00	-3.50	43.50	55.48	9.79	1.86	27.13	Peak	---	---
2	203.630	31.71	-11.79	43.50	47.32	9.28	2.10	26.99	QP	---	---
3	242.430	38.75	-7.25	46.00	51.67	11.65	2.28	26.85	Peak	---	---
4	285.110	34.59	-11.41	46.00	45.85	12.94	2.50	26.70	Peak	---	---
5	335.550	34.58	-11.42	46.00	44.94	13.80	2.73	26.89	Peak	---	---
6	808.910	38.39	-7.61	46.00	41.94	19.90	4.33	27.78	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)

3.3.7 Transmitter Radiated Unwanted Emissions (Above 1GHz)

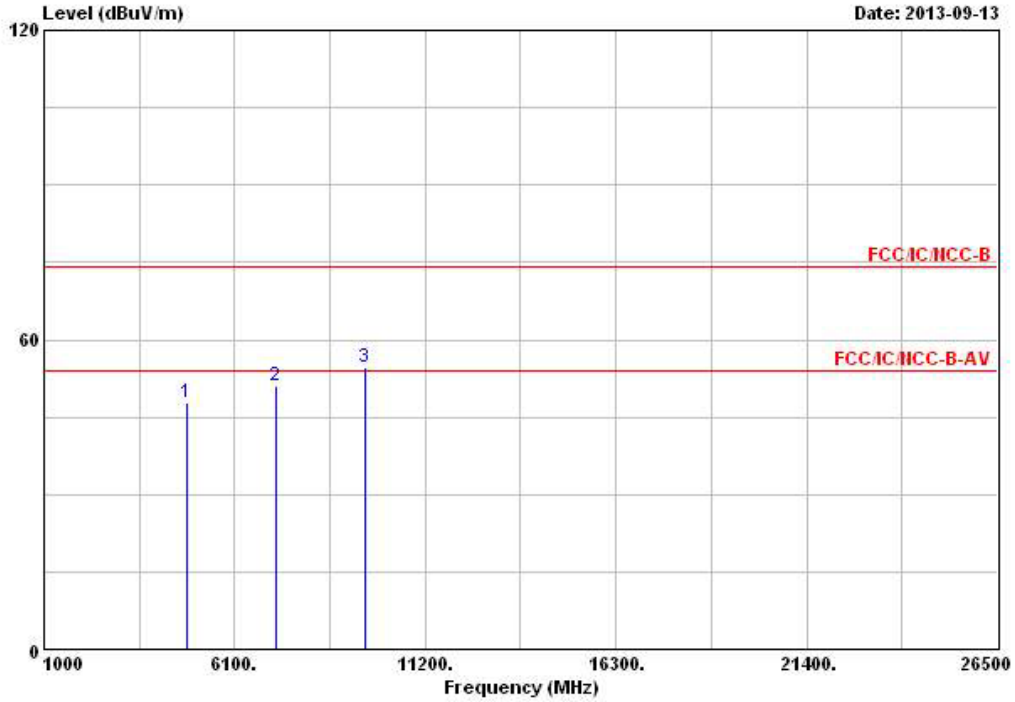
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	LE-1Mbps	**Test Freq. (FX)**	F1
Operating Function	Transmit	**Polarization**	V



	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	4804.390	47.67	-26.33	74.00	43.14	33.06	3.91	32.44	Peak	---	---
2	7206.000	51.66			44.21	35.80	4.29	32.64	Peak	---	---
3	9607.620	54.94			44.28	38.23	5.53	33.10	Peak	---	---

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.
Note 5: Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is “Pulse On Time”, e.g., LE VBW≥1/625us, VBW=3kHz.

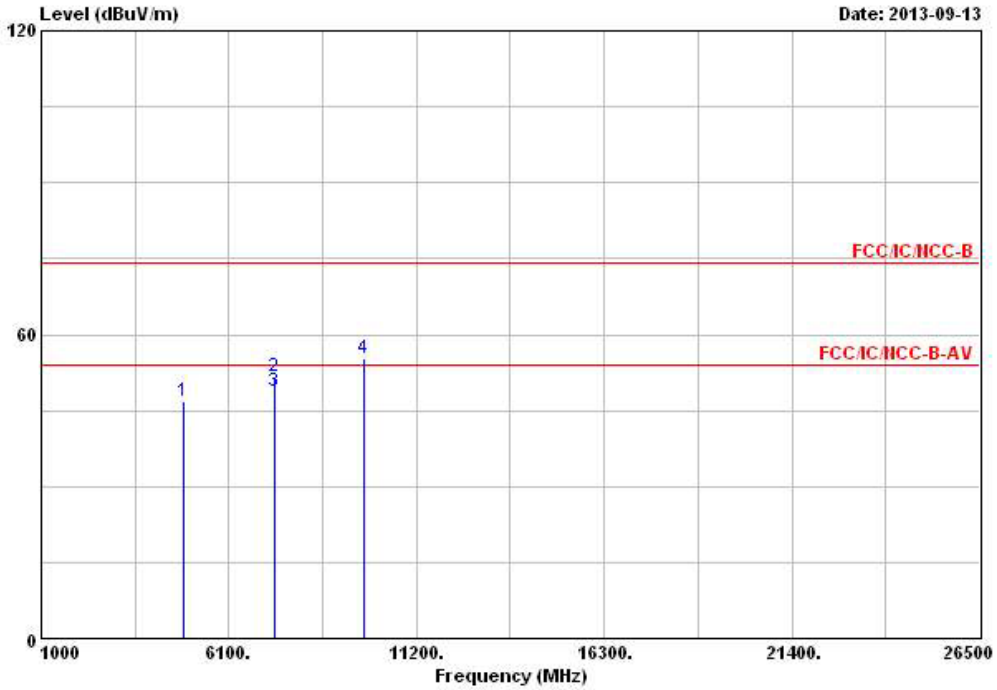
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	LE-1Mbps	**Test Freq. (FX)**	F1
Operating Function	Transmit	**Polarization**	H



	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	4804.000	47.75	-26.25	74.00	43.22	33.06	3.91	32.44	Peak	---	---
2	7205.620	50.91			43.46	35.80	4.29	32.64	Peak	---	---
3	9607.620	54.61			43.95	38.23	5.53	33.10	Peak	---	---

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.
Note 5: Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is “Pulse On Time”, e.g., LE VBW≥1/625us, VBW=3kHz.

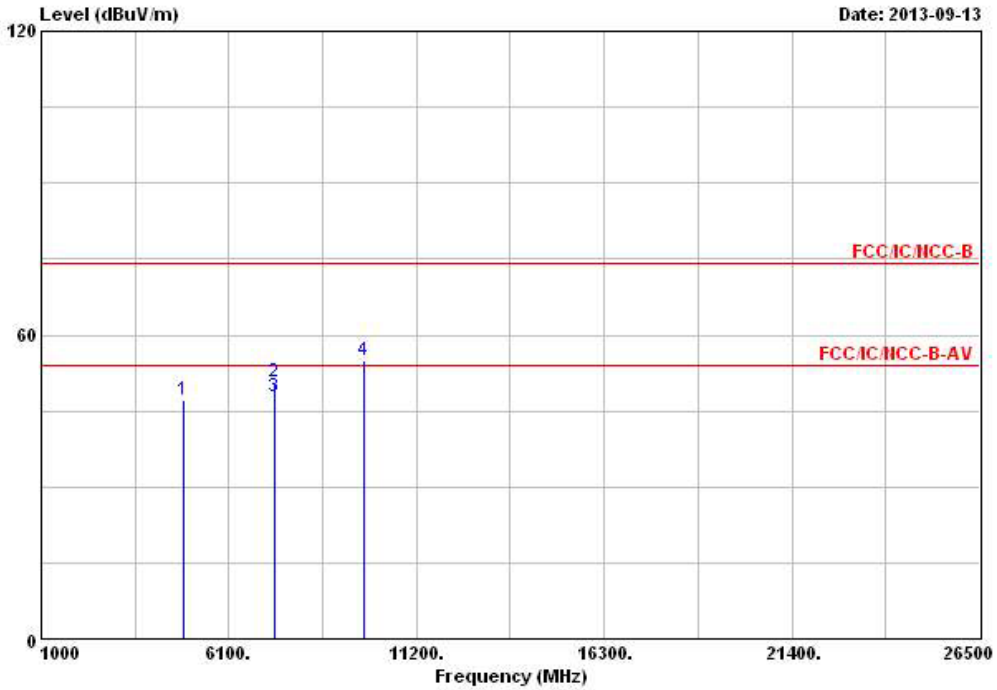
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	LE-1Mbps	**Test Freq. (FX)**	F2
Operating Function	Transmit	**Polarization**	V



	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	46.79	-27.21	74.00	42.09	33.18	3.94	32.42	Peak	---	---
2	7320.000	51.58	-22.42	74.00	43.93	36.09	4.23	32.67	Peak	---	---
3	7320.000	48.62	-5.38	54.00	40.97	36.09	4.23	32.67	Average	---	---
4	9759.390	55.22			44.26	38.57	5.47	33.08	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 restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.
Note 5: Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is “Pulse On Time”, e.g., LE VBW≥1/625us, VBW=3kHz.

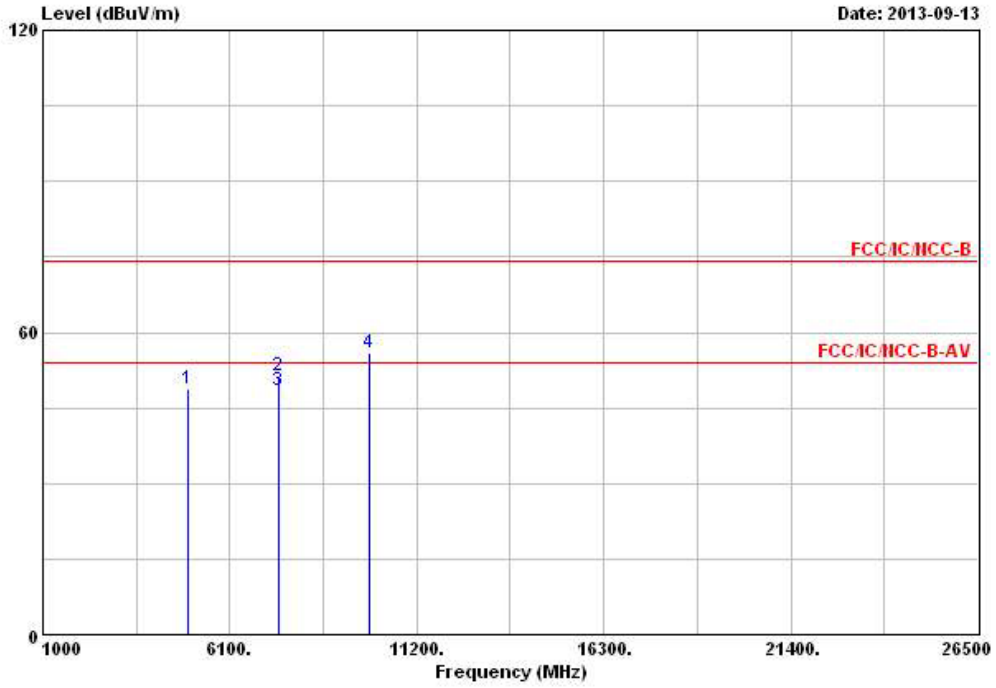
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	LE-1Mbps	**Test Freq. (FX)**	F2
Operating Function	Transmit	**Polarization**	H



	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	4879.620	47.12	-26.88	74.00	42.42	33.18	3.94	32.42	Peak	---	---
2	7319.390	50.68	-23.32	74.00	43.03	36.09	4.23	32.67	Peak	---	---
3	7319.390	47.72	-6.28	54.00	40.07	36.09	4.23	32.67	Average	---	---
4	9760.390	54.90			43.94	38.57	5.47	33.08	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 restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.
Note 5: Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is “Pulse On Time”, e.g., LE VBW≥1/625us, VBW=3kHz.

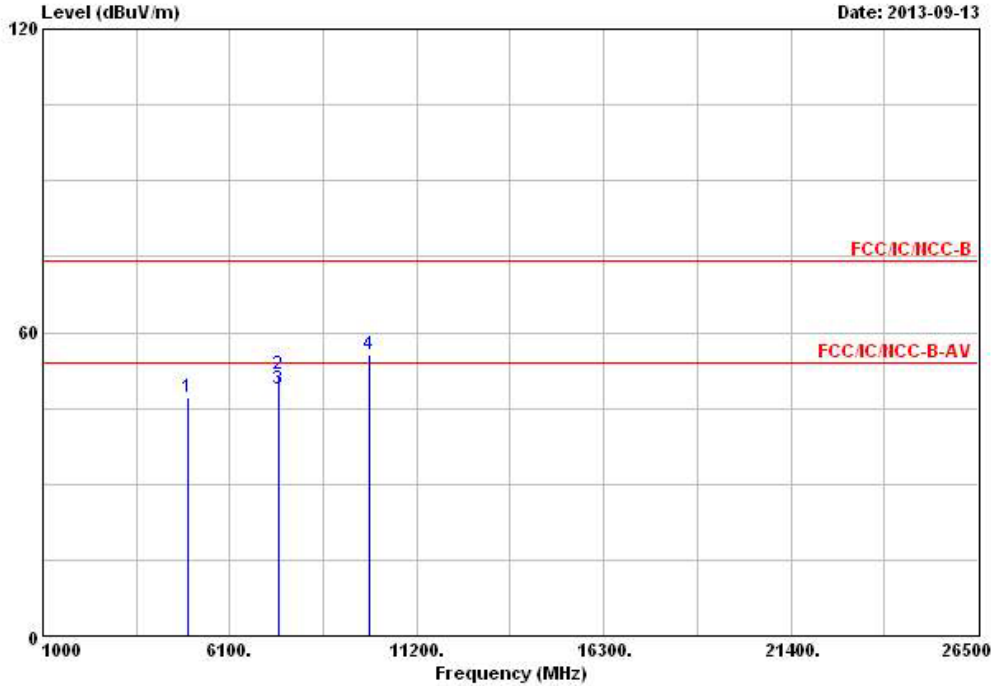
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	LE-1Mbps	**Test Freq. (FX)**	F3
Operating Function	Transmit	**Polarization**	V



	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	4960.620	48.80	-25.20	74.00	43.86	33.34	4.01	32.41	Peak	---	---
2	7439.390	51.26	-22.74	74.00	43.42	36.38	4.17	32.71	Peak	---	---
3	7439.390	48.30	-5.70	54.00	40.46	36.38	4.17	32.71	Average	---	---
4	9919.620	55.82			44.53	38.95	5.41	33.07	Peak	---	---

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.
Note 5: Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is “Pulse On Time”, e.g., LE VBW≥1/625us, VBW=3kHz.

Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	LE-1Mbps	**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	4960.000	47.23	-26.77	74.00	42.29	33.34	4.01	32.41	Peak	---	---
2	7440.000	51.80	-22.20	74.00	43.96	36.38	4.17	32.71	Peak	---	---
3	7440.000	48.84	-5.16	54.00	41.00	36.38	4.17	32.71	Average	---	---
4	9920.000	55.48			44.19	38.95	5.41	33.07	Peak	---	---

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 3: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 4: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.
Note 5: Average emission setting: RBW=1MHz; VBW ≥ 1/T, where T is “Pulse On Time”, e.g., LE VBW≥1/625us, VBW=3kHz.

4 Test Equipment and Calibration Data

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	3008A02364	1GHz ~ 26.5GHz	May. 06, 2013	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)
Horn Antenna	EMCO	3115	6741	1GHz ~ 18GHz	May 31, 2013	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	9MHz ~ 1GHz	Jan. 17, 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	9 kHz - 30 MHz	Dec. 02, 2012	Radiation (03CH02-HY)

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