FCC Test Report

Equipment	:	**RF Module**
Brand Name	:	**Chicony**
Model No.	:	**AR5B22**
FCC ID	:	**E8H-AR5B22**
Standard	:	**47 CFR FCC Part 15.247**
Operating Band	:	**2400 MHz – 2483.5 MHz**
FCC Classification	:	**DTS**
Applicant **Manufacturer**	:	**Chicony Electronics Co., Ltd.** No.25,Wugong 6th RD.,Wugu Dist., New Taipei City 248 , Taiwan (R.O.C)

The product sample received on Jun. 16, 2015 and completely tested on Jul. 20, 2015. 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:

Vic Hsiao / Supervisor

Testing Laboratory
1190

Table of Contents

Summary of Test Result

Conformance Test Specifications					
Report Clause	**Ref. Std. Clause**	**Description**	**Measured**	**Limit**	**Result**
1.1.2	15.203	Antenna Requirement	Antenna connector mechanism complied	FCC 15.203	Complied
3.1	15.207	AC Power-line Conducted Emissions	[dBuV]: 0.4736030MHz 20.52 (Margin 25.93dB) - AV 35.77 (Margin 20.68dB) - QP	FCC 15.207	Complied
-	15.247(a)	6dB Bandwidth	-	≥500kHz	-
3.2	15.247(b)	RF Output Power (Maximum Peak Conducted Output Power)	Power [dBm]: 26.07	Power [dBm]:30	Complied
-	15.247(e)	Power Spectral Density	-	PSD [dBm/3kHz]:8	-
3.3	15.247(d)	Transmitter Radiated Bandedge Emissions	Non-Restricted Bands: 2399.824MHz: 26.71dB Restricted Bands [dBuV/m at 3m]: 2483.500MHz 72.52 (Margin 1.48dB) - PK 52.89(Margin 1.11dB) - AV	Non-Restricted Bands: > 20 dBc Restricted Bands: FCC 15.209	Complied
3.4	15.247(d)	Transmitter Radiated Unwanted Emissions	Restricted Bands **Below 1GHz** [dBuV/m at 3m]: 394.720MHz 41.85 (Margin 4.15dB) – PK **Above 1GHz (Worst)** [dBuV/m at 3m]: 4924MHz 56.98 (Margin 17.02dB) – PK 52.98 (Margin 1.02dB) – AV	Non-Restricted Bands: > 20 dBc Restricted Bands: FCC 15.209	Complied

Note: Standard clause 15.247(a)、15.247(e) have been done module test by Atheros / AR5B22.

Revision History

Report No.	Version	Description	Issued Date
FR561307AC	Rev. 04	Initial issue of report	Jul. 31, 2015

1 General Description

1.1 Information

1.1.1 RF General Information

RF General Information						
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N_{TX})	RF Output Power (dBm)	Co-location
2400-2483.5	b	2412-2462	1-11 [11]	1	19.61	Yes
2400-2483.5	b	2412-2462	1-11 [11]	2	22.06	Yes
2400-2483.5	g	2412-2462	1-11 [11]	1	25.47	Yes
2400-2483.5	g	2412-2462	1-11 [11]	2	26.07	Yes
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	2	25.95	Yes
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	2	22.12	Yes
Note 1: RF output power specifies that Maximum Peak Conducted Output Power. Note 2: 802.11b uses a combination of DSSS-DBPSK, DQPSK, CCK modulation. Note 3: 802.11g/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.						

1.1.2 Antenna Information

EUT may match the two group antennas use. The only difference is the antennas. For more detailed features description, please refer to the specifications or user's manual.

Antenna Group	Port. No.	Antenna Model Name
1	1	WPB107-1(Mini 1.13 Antenna with MHF L70mm)
	2	WPB107-1(Mini 1.13 Antenna with MHF L49mm)
2	1	WPB220 (Mini 1.13 Antenna with MHF L70mm)
	2	WPB220 (Mini 1.13 Antenna with MHF L49mm)

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				
Group	**Port. No.**	**Ant. Cat.**	**Ant. Type**	**Gain (dBi)**
1	1/2	Integral	PCB	1.79 / 1.79
2	1/2	Integral	PIFA	3.31 / 0.32

Remark:
1. In modulation mode 11g, this EUT supports 1TX and diversity. Port 2 is the worst case of the EUT. The test result of Port 2 was recorded in this report.
2. In modulation mode 11gn, this EUT supports 2TX.
3. Original equipment is PIFA antenna. The additional PIFA antenna not the higher gain and worst configuration that all items didn't retest. Therefore, we tested and recorded PCB antenna in this report.

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 EUT Operational Condition

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

1.2 Support Equipment

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
1	Notebook	DELL	E5540	DoC
2	Test Fixture	NA	NA	NA

Note：The test fixture provides is by customer.

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 D01 v03r03
- FCC KDB 662911 D01v02r01

1.4 Testing Location Information

Testing Location					
☒	HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.			
		TEL : 886-3-327-3456	FAX : 886-3-327-0973		
Test Condition		**Test Site No.**		**Test Engineer**	**Test Environment**
AC Conduction		CO04-HY		Zeus	23°C / 59%
RF Conducted		TH06-HY		Rory	22.2°C / 65%
Radiated Emission		03CH03-HY		Hunter	25.4°C / 56.1%

1.5 Measurement Uncertainty

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

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

2 Test Configuration of EUT

2.1 The Worst Case Modulation Configuration

Worst Modulation Used for Conformance Testing			
Modulation Mode	**Transmit Chains (N_{TX})**	**Data Rate / MCS**	**Worst Data Rate / MCS**
11b	1	1-11 Mbps	1 Mbps
11b	2	1-11 Mbps	1 Mbps
11g	1	6-54 Mbps	6 Mbps
11g	2	6-54 Mbps	6 Mbps
HT20	2	MCS 0-15	MCS 0
HT40	2	MCS 0-15	MCS 0
Note 1: IEEE Std. 802.11n modulation consists of HT20 and HT40 (HT: High Throughput). The EUT supports HT20 and HT40. Worst modulation mode of Guard Interval (GI) is 800ns. Note 2: Modulation modes consist below configuration: 11b: IEEE 802.11b, 11g: IEEE 802.11g, HT20/HT40: IEEE 802.11n Note 3: RF output power specifies that Maximum Peak Conducted Output Power.			

2.2 The Worst Case Power Setting Parameter

The Worst Case Power Setting Parameter (2400-2483.5MHz band)							
Test Software Version	ART2						
Modulation Mode	**N_{TX}**	**Test Frequency (MHz)**					
		NCB: 20MHz			**NCB: 40MHz**		
		2412	**2437**	**2462**	**2422**	**2437**	**2452**
11b	1	16.5	17	16.5	-	-	-
11b	2	16	16	16.5	-	-	-
11g	1	16	21.5	16	-	-	-
11g	2	13	18.5	13.5	-	-	-
HT20	2	13	18.5	13	-	-	-
HT40	2	-	-	-	10	13.5	11

2.3 The Worst Case Measurement Configuration

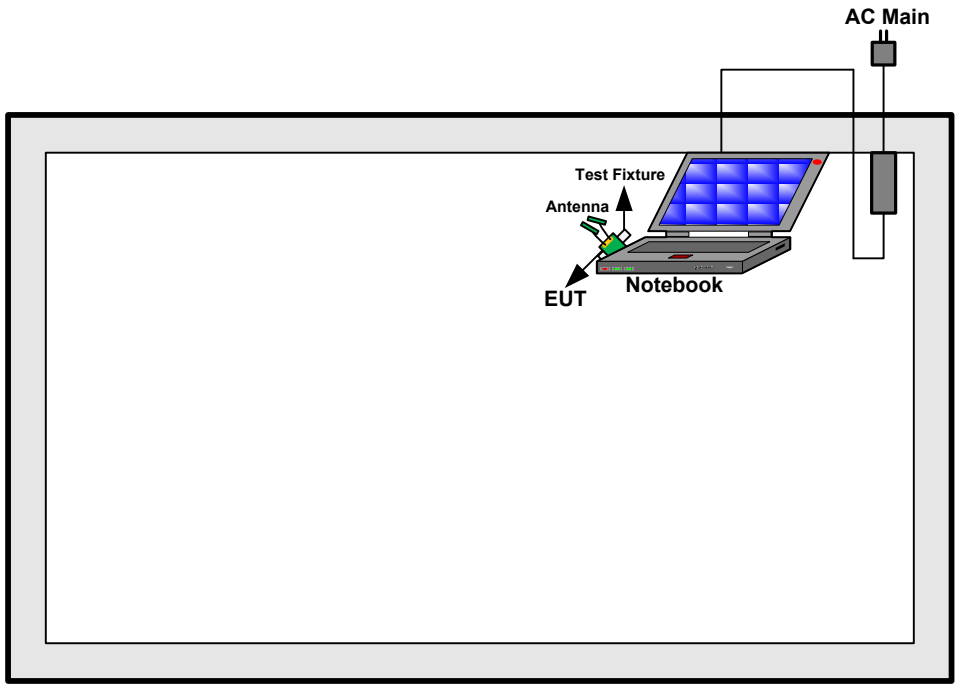
The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
Operating Mode	Operating Mode Description
1	Transmit Mode (WLAN)

The Worst Case Mode for Following Conformance Tests	
Tests Item	RF Output Power
Test Condition	Conducted measurement at transmit chains
Modulation Mode	11b, 11g, HT20, HT40

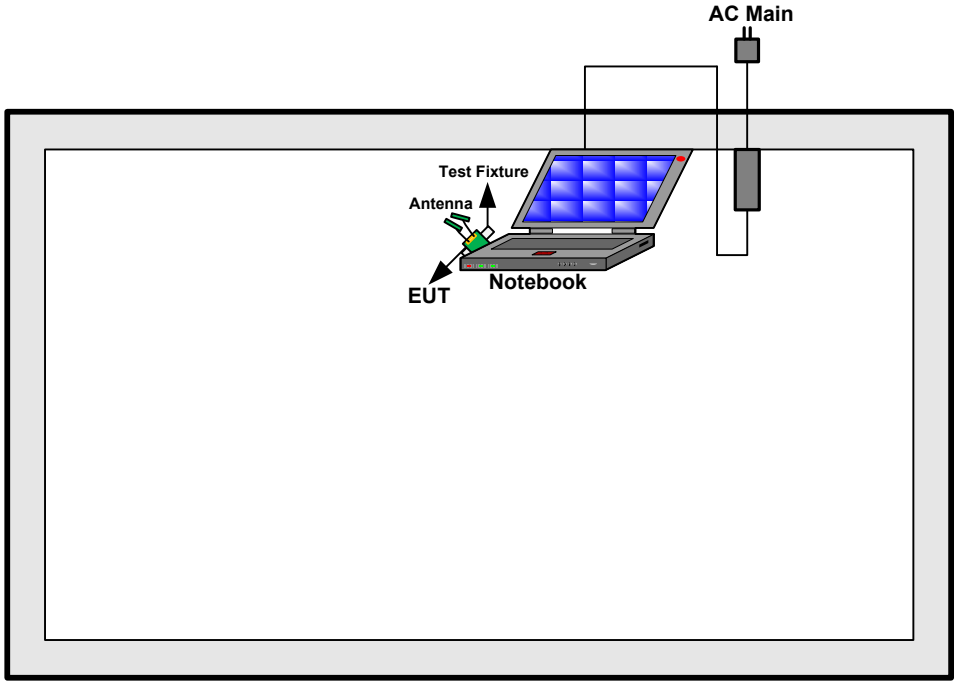
The Worst Case Mode for Following Conformance Tests			
Tests Item	Transmitter Radiated Unwanted Emissions Transmitter Radiated Bandedge Emissions		
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.		
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.		
Operating Mode	Operating Mode Description		
Radiated Emissions	1. Transmit Mode (WLAN)		
Modulation Mode	11b, 11g, HT20, HT40		
Orthogonal Planes of EUT	**X Plane**	**Y Plane**	**Z Plane**
			
Worst Planes of EUT	V		

2.4 Test Setup Diagram

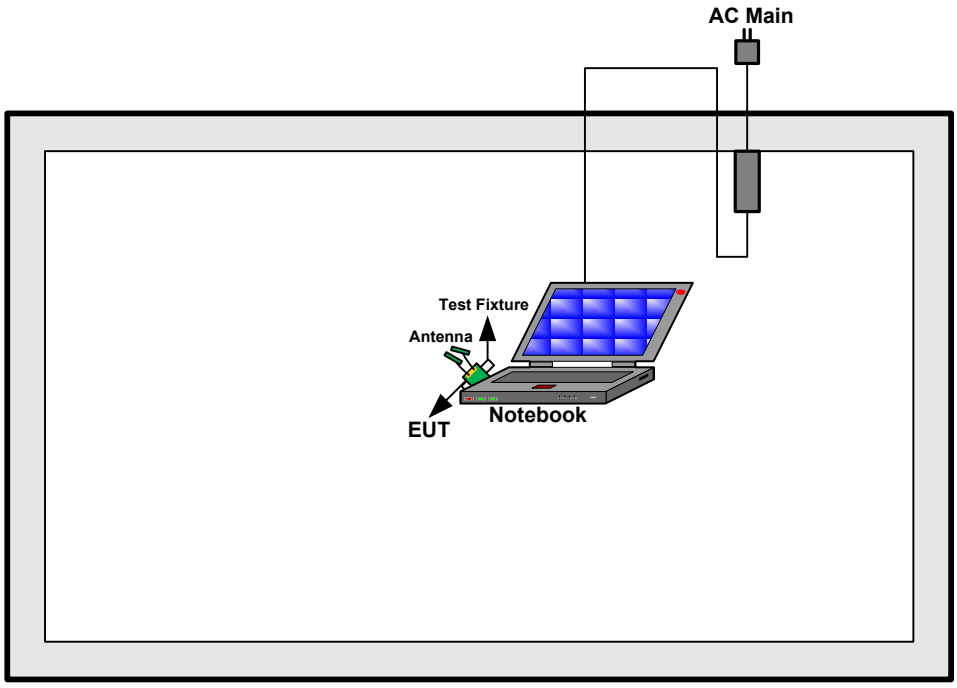
Test Setup Diagram – AC Line Conducted Emission Test



Test Setup Diagram - Radiated Test Below 1GHz



Test Setup Diagram - Radiated Test Above 1GHz



3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	**Quasi-Peak**	**Average**
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm of the frequency.		

3.1.2 Measuring Instruments

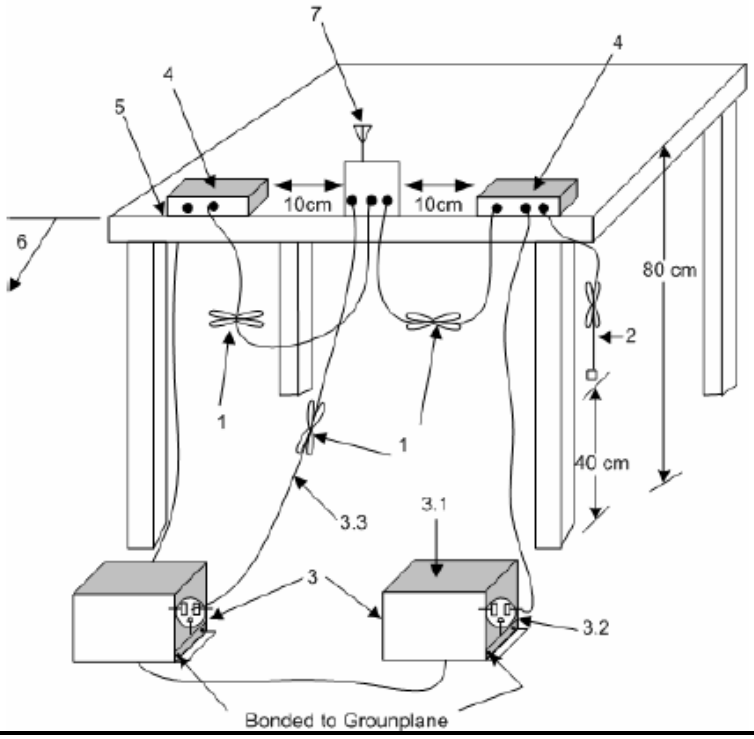
Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

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

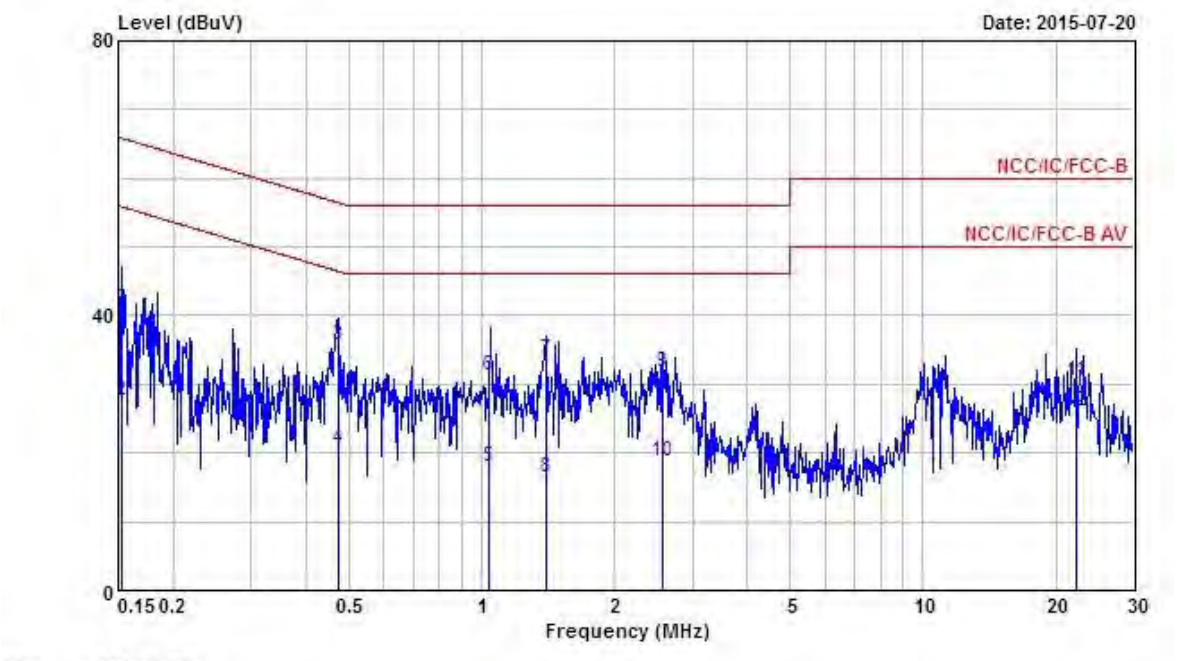
3.1.4 Test Setup

AC Power-line Conducted Emissions



3.1.5 Test Result of AC Power-line Conducted Emissions

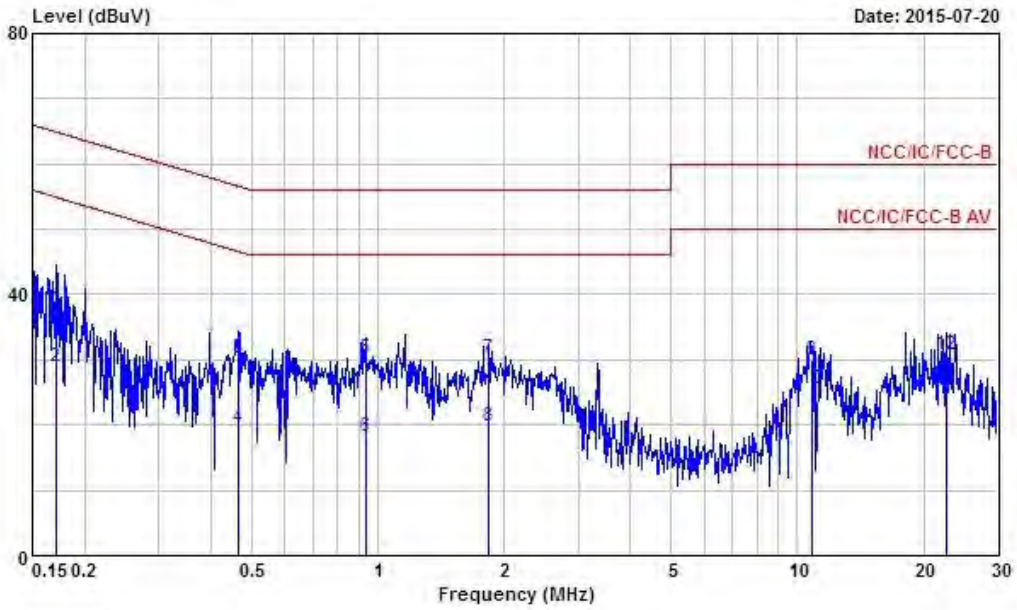
AC Power-line Conducted Emissions Result			
Operating Mode	1	**Power Phase**	Neutral
Operating Function	Transmit Mode (WLAN)		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1532130	41.17	-24.65	65.82	40.76	0.07	0.34	QP
2	0.1532130	27.67	-28.15	55.82	27.26	0.07	0.34	Average
3	0.4736030	35.77	-20.68	56.45	35.06	0.07	0.64	QP
4	0.4736030	20.52	-25.93	46.45	19.81	0.07	0.64	Average
5	1.040	18.00	-28.00	46.00	17.11	0.09	0.80	Average
6	1.040	31.40	-24.60	56.00	30.51	0.09	0.80	QP
7	1.400	33.65	-22.35	56.00	32.76	0.09	0.80	QP
8	1.400	16.35	-29.65	46.00	15.46	0.09	0.80	Average
9	2.580	31.66	-24.34	56.00	30.79	0.11	0.76	QP
10	2.580	18.83	-27.17	46.00	17.96	0.11	0.76	Average
11	22.300	30.38	-29.62	60.00	29.31	0.42	0.65	QP
12	22.300	26.09	-23.91	50.00	25.02	0.42	0.65	Average

Note 1: “>20dB” means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found emissions (No emissions were detected.)

AC Power-line Conducted Emissions Result			
Operating Mode	1	**Power Phase**	Line
Operating Function	Transmit Mode (WLAN)		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1703400	37.76	-27.18	64.94	37.30	0.05	0.41	QP
2	0.1703400	28.82	-26.12	54.94	28.36	0.05	0.41	Average
3	0.4636720	30.31	-26.32	56.63	29.61	0.07	0.63	QP
4	0.4636720	19.52	-27.11	46.63	18.82	0.07	0.63	Average
5	0.9331400	30.29	-25.71	56.00	29.43	0.08	0.78	QP
6	0.9331400	18.36	-27.64	46.00	17.50	0.08	0.78	Average
7	1.840	30.33	-25.67	56.00	29.43	0.10	0.80	QP
8	1.840	19.82	-26.18	46.00	18.92	0.10	0.80	Average
9	10.850	29.99	-30.01	60.00	28.94	0.25	0.80	QP
10	10.850	25.56	-24.44	50.00	24.51	0.25	0.80	Average
11	22.660	25.81	-24.19	50.00	24.78	0.38	0.65	Average
12	22.660	30.69	-29.31	60.00	29.66	0.38	0.65	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 RF Output Power

3.2.1 RF Output Power Limit

RF Output Power Limit			
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	
	☐	Point-to-point systems (P2P): If G_{TX} > 6 dBi, then P_{Out} = 30 – (G_{TX} – 6)/3 dBm	
	☐	Smart antenna system (SAS):	
		☐	Single beam: If G_{TX} > 6 dBi, then P_{Out} = 30 – (G_{TX} – 6)/3 dBm
		☐	Overlap beam: If G_{TX} > 6 dBi, then P_{Out} = 30 – (G_{TX} – 6)/3 dBm
		☐	Aggregate power on all beams: If G_{TX} > 6 dBi, then P_{Out} = 30 – (G_{TX} – 6)/3 + 8dB dBm
e.i.r.p. Power Limit:			
☒	2400-2483.5 MHz Band		
	☒	Point-to-multipoint systems (P2M): P_{eirp} ≤ 36 dBm (4 W)	
	☐	Point-to-point systems (P2P): P_{eirp} ≤ MAX(36, [P_{Out} + G_{TX}]) dBm	
	☐	Smart antenna system (SAS)	
		☐	Single beam: P_{eirp} ≤ MAX(36, P_{Out} + G_{TX}) dBm
		☐	Overlap beam: P_{eirp} ≤ MAX(36, P_{Out} + G_{TX}) dBm
		☐	Aggregate power on all beams: P_{eirp} ≤ MAX(36, [P_{Out} + G_{TX} + 8]) dBm
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.			

3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method	
☒	Maximum Peak Conducted Output Power
	☐ Refer as FCC KDB 558074, clause 9.1.1 (RBW ≥ EBW method).
	☒ Refer as FCC KDB 558074, clause 9.1.2 (peak power meter for VBW ≥ DTS BW).
☒	Maximum Conducted Output Power
	[duty cycle ≥ 98% or external video / power trigger]
	☐ Refer as FCC KDB 558074, clause 9.2.2.2 Method AVGSA-1 (spectral trace averaging).
	☐ Refer as FCC KDB 558074, clause 9.2.2.3 Method AVGSA-1 Alt. (slow sweep speed)
	duty cycle < 98% and average over on/off periods with duty factor
	☐ Refer as FCC KDB 558074, clause 9.2.2.4 Method AVGSA-2 (spectral trace averaging).
	☐ Refer as FCC KDB 558074, clause 9.2.2.5 Method AVGSA-2 Alt. (slow sweep speed)
	RF power meter and average over on/off periods with duty factor or gated trigger
	☒ Refer as FCC KDB 558074, clause 9.2.3 Method AVGPM (using an RF average power meter).
☒	For conducted measurement.
	☐ The EUT supports single transmit chain and measurements performance on this transmit chain.
	☒ The EUT supports diversity transmitting and the results on transmit chain port 2 is the worst case.
	☒ The EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.
	☒ If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \ldots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$

3.2.4 Test Setup

RF Output Power (Power Meter)


3.2.5 Directional Gain for Power Measurement

Directional Gain (DG) Result					
Transmit Chains No.		1	2	-	-
Maximum G_{ANT} (dBi)		1.79	1.79	-	-
Modulation Mode	**DG (dBi)**	**N_{TX}**	**N_{SS} (Min.)**	**STBC**	**Array Gain (dB)**
11b	1.79	1	1	-	0
11b	4.80	2	1		3.01 (Note1)
11g	1.79	1	1		0
11g	4.80	2	1	-	3.01 (Note1)
HT20	4.80	2	1	-	3.01 (Note1)
HT40	4.80	2	1	-	3.01 (Note1)

Note 1: For all transmitter outputs with equal antenna gains, directional gain is to be computed as follows:
Any transmit signals are correlated, Directional Gain = G_{ANT} + 10 log(N_{TX}) = 1.79+10 log(2)= 4.80
All transmit signals are completely uncorrelated, Directional Gain = G_{ANT}
Note 2: For all transmitter outputs with unequal antenna gains, directional gain is to be computed as follows:
Any transmit signals are correlated, Directional Gain =10 log[$(10^{G1/20} + \ldots + 10^{GN/20})^2$ /N_{TX}]
All transmit signals are completely uncorrelated, Directional Gain = 10 log[$(10^{G1/10} + \ldots + 10^{GN/10})$/$N_{TX}$]
Note 3: For Spatial Multiplexing, Directional Gain (DG) = G_{ANT} + 10 log(N_{TX}/N_{SS}),
where Nss = the number of independent spatial streams data.
Note 4: For CDD transmissions, directional gain is calculated as power measurements:
Directional Gain (DG) = G_{ANT} + Array Gain, where Array Gain is as follows:
Array Gain = 0 dB (i.e., no array gain) for $N_{TX} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{TX};

3.2.6 Test Result of Maximum Peak Conducted Output Power

Maximum Peak Conducted Output Power Result									
Test Date: Jul. 01, 2015			RF Output Power (dBm)						
Condition									
Modulation Mode	N_{TX}	Freq. (MHz)	Chain Port 1	Chain Port 2	Sum Chain	Power Limit	DG (dBi)	EIRP Power	EIRP Limit
11b	1	2412	-	19.17	19.17	30.00	1.79	20.96	36
11b	1	2437	-	19.61	19.61	30.00	1.79	21.40	36
11b	1	2462	-	18.74	18.74	30.00	1.79	20.53	36
11b	2	2412	19.36	18.72	22.06	29.98	4.80	26.86	36
11b	2	2437	18.32	18.98	21.67	29.98	4.80	26.47	36
11b	2	2462	18.89	18.73	21.82	29.98	4.80	26.62	36
11g	1	2412	-	20.54	20.54	30.00	1.79	22.33	36
11g	1	2437	-	25.47	25.47	30.00	1.79	27.26	36
11g	1	2462	-	20.44	20.44	30.00	1.79	22.23	36
11g	2	2412	18.63	17.79	21.24	29.98	4.80	26.04	36
11g	2	2437	22.84	23.26	26.07	29.98	4.80	30.87	36
11g	2	2462	18.56	18.59	21.59	29.98	4.80	26.39	36
HT20	2	2412	18.58	17.95	21.29	29.98	4.80	26.09	36
HT20	2	2437	22.83	23.04	25.95	29.98	4.80	30.75	36
HT20	2	2462	17.55	17.48	20.53	29.98	4.80	25.33	36
HT40	2	2422	15.72	15.06	18.41	29.98	4.80	23.21	36
HT40	2	2437	19.23	18.98	22.12	29.98	4.80	26.92	36
HT40	2	2452	16.27	16.45	19.37	29.98	4.80	24.17	36
Result			Complied						

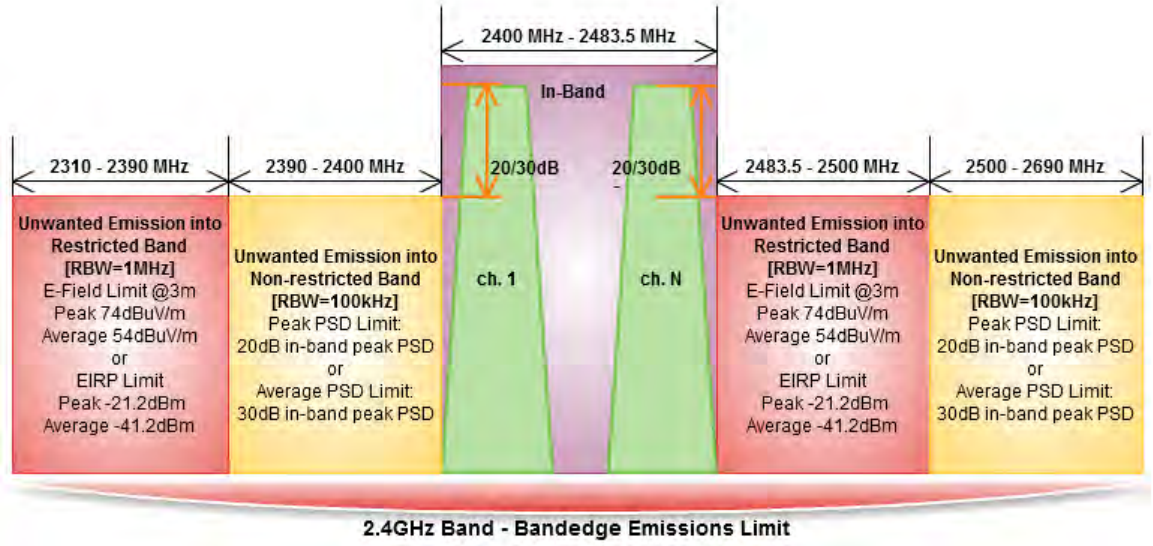
3.2.7 Test Result of Maximum Conducted Output Power

Maximum Conducted Output Power									
Test Date: Jul. 01, 2015			RF Output Power (dBm)						
Condition									
Modulation Mode	N_{TX}	Freq. (MHz)	Chain Port 1	Chain Port 2	Sum Chain	Power Limit	DG (dBi)	EIRP Power	EIRP Limit
11b	1	2412	-	16.25	16.25	30.00	1.79	18.04	36
11b	1	2437	-	16.70	16.70	30.00	1.79	18.49	36
11b	1	2462	-	15.84	15.84	30.00	1.79	17.63	36
11b	2	2412	16.44	15.79	19.14	29.98	4.80	23.94	36
11b	2	2437	15.41	16.06	18.76	29.98	4.80	23.56	36
11b	2	2462	15.97	15.79	18.89	29.98	4.80	23.69	36
11g	1	2412	-	15.57	15.57	30.00	1.79	17.36	36
11g	1	2437	-	20.43	20.43	30.00	1.79	22.22	36
11g	1	2462	-	15.38	15.38	30.00	1.79	17.17	36
11g	2	2412	13.45	12.73	16.12	29.98	4.80	20.92	36
11g	2	2437	17.94	18.17	21.07	29.98	4.80	25.87	36
11g	2	2462	13.71	13.44	16.59	29.98	4.80	21.39	36
HT20	2	2412	13.48	12.84	16.18	29.98	4.80	20.98	36
HT20	2	2437	17.85	17.99	20.93	29.98	4.80	25.73	36
HT20	2	2462	12.56	12.44	15.51	29.98	4.80	20.31	36
HT40	2	2422	10.56	10.04	13.32	29.98	4.80	18.12	36
HT40	2	2437	14.04	13.90	16.98	29.98	4.80	21.78	36
HT40	2	2452	11.20	11.40	14.31	29.98	4.80	19.11	36
Result			Complied						

3.3 Transmitter Bandedge Emissions

3.3.1 Transmitter Radiated Bandedge Emissions Limit

Transmitter Radiated Bandedge Emissions Limit



3.3.2 Measuring Instruments

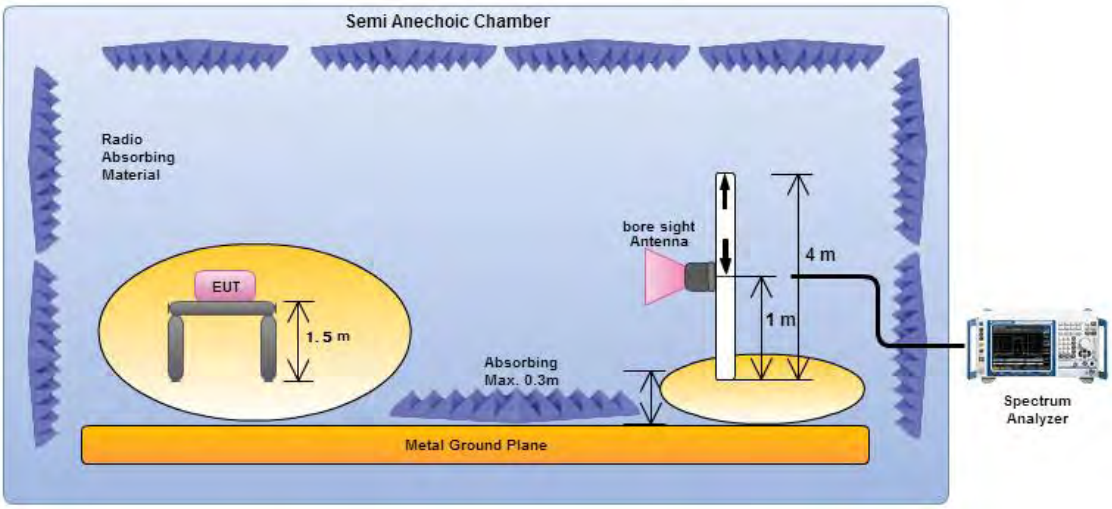
Refer a test equipment and calibration data table in this test report.

3.3.3 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 and the test distance is 3m.
	☐	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.	

3.3.4 Test Setup

Transmitter Radiated Bandedge Emissions



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

Note: FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 02, 2014.

3.3.5 Transmitter Radiated Bandedge Emissions

2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Non-restricted Band)								
Modulation	N_{TX}	Test Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Pol.
11b	1	2412	100.31	2397.136	64.93	35.38	20	H
11b	1	2462	101.70	2508.400	64.05	37.65	20	H
11b	2	2412	104.27	2397.136	65.25	39.02	20	H
11b	2	2462	104.09	2549.800	63.97	40.12	20	H
11g	1	2412	96.57	2399.824	69.86	26.71	20	H
11g	1	2462	96.18	2519.400	64.36	31.82	20	H
11g	2	2412	98.83	2399.488	68.90	29.93	20	H
11g	2	2462	99.97	2533.400	63.88	36.09	20	H
HT20	2	2412	99.43	2399.712	69.44	29.99	20	H
HT20	2	2462	99.16	2540.800	63.95	35.21	20	H
HT40	2	2422	94.68	2399.760	67.84	26.84	20	H
HT40	2	2452	96.07	2507.120	63.87	32.20	20	H
Note 1: Measurement worst emissions of receive antenna polarization								

2400-2483.5MHz Transmitter Radiated Bandedge Emissions (Restricted Band)										
Modulation Mode	N_{TX}	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.
11b	1	2412	3	2367.344	60.39	74	2386.384	47.05	54	V
11b	1	2462	3	2522.000	60.26	74	2483.500	48.12	54	V
11b	2	2412	3	2327.920	59.96	74	2386.160	48.51	54	V
11b	2	2462	3	2488.400	60.18	74	2487.800	48.27	54	V
11g	1	2412	3	2389.856	70.29	74	2389.968	52.41	54	V
11g	1	2462	3	2483.600	74.06	74	2483.600	52.84	54	V
11g	2	2412	3	2389.968	69.79	74	2389.968	52.20	54	V
11g	2	2462	3	2483.800	72.52	74	2483.500	52.89	54	V
HT20	2	2412	3	2389.632	70.19	74	2389.968	52.48	54	V
HT20	2	2462	3	2484.800	68.89	74	2483.500	52.18	54	V
HT40	2	2422	3	2389.068	68.59	74	2389.992	52.75	54	V
HT40	2	2452	3	2483.720	69.22	74	2483.840	52.57	54	V
Note 1: Measurement worst emissions of receive antenna polarization.										

3.4 Transmitter Unwanted Emissions

3.4.1 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.

3.4.2 Measuring Instruments

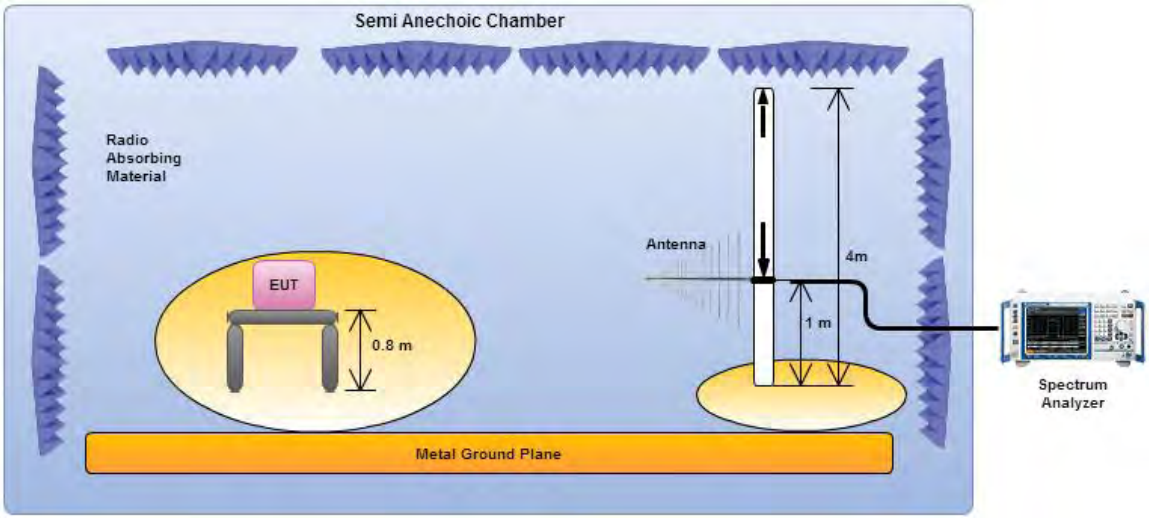
Refer a test equipment and calibration data table in this test report.

3.4.3 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).	
☒	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 below 30 MHz and test distance is 3m.
	☒	Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.
	☒	Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1 GHz and test distance is 3m.

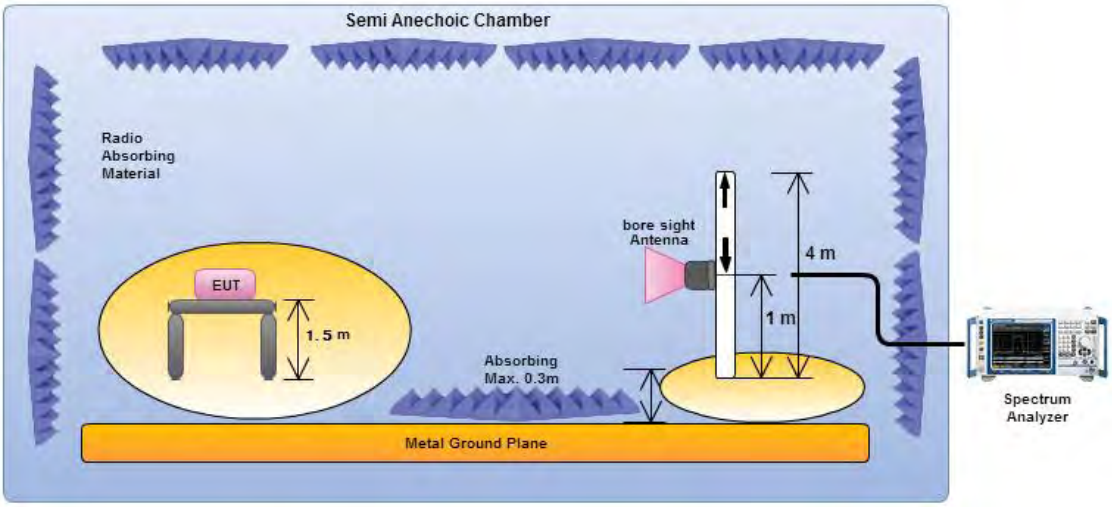
3.4.4 Test Setup

Transmitter Radiated Unwanted Emissions Below 1GHz



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.

Transmitter Radiated Unwanted Emissions Above 1GHz



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

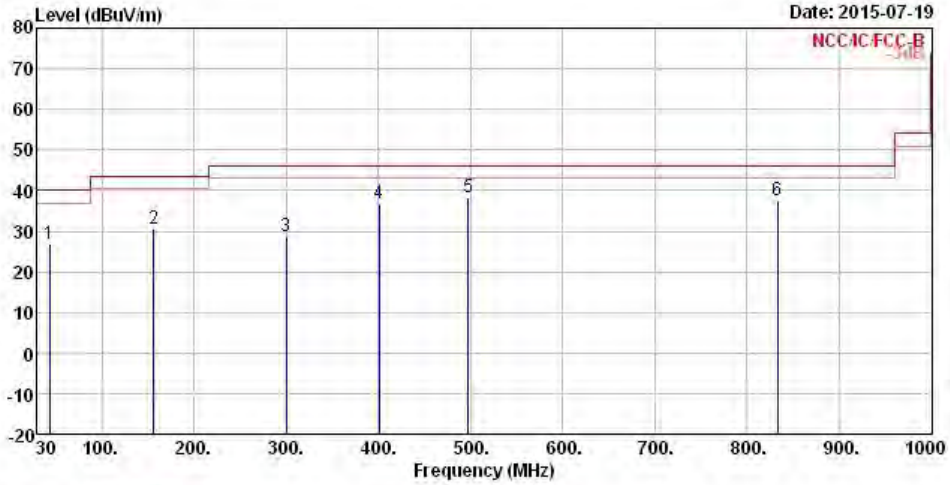
Note: FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 02, 2014.

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)

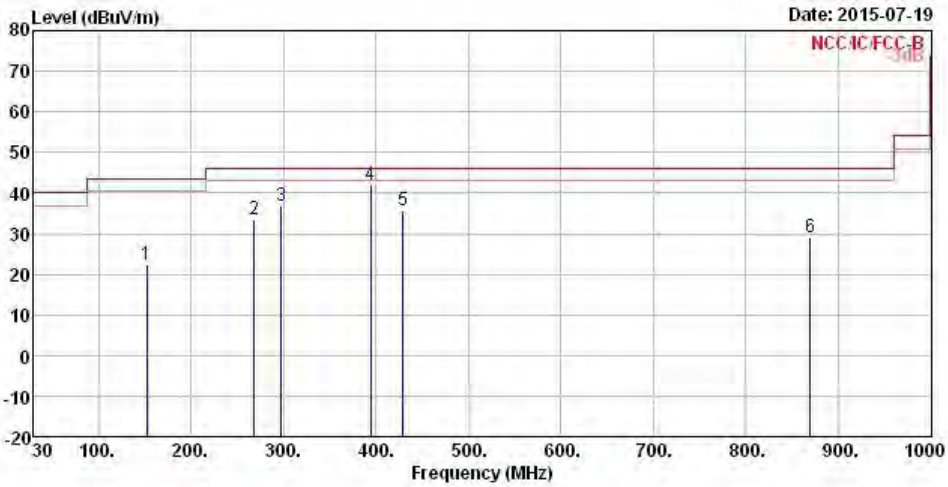
Transmitter Radiated Unwanted Emissions (Below 1GHz)			
Modulation Mode	HT40	**Test Freq. (MHz)**	2437
N_{TX}	1	**Polarization**	V
Operating Fuction	Transmit Mode		



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	43.580	26.87	-13.13	40.00	43.14	10.19	1.07	27.53	Peak
2	156.100	30.59	-12.91	43.50	45.94	9.72	2.06	27.13	Peak
3	299.660	28.85	-17.15	46.00	39.74	12.87	2.90	26.66	Peak
4	400.540	36.85	-9.15	46.00	45.52	15.32	3.34	27.33	Peak
5	497.540	38.33	-7.67	46.00	45.36	17.04	3.77	27.84	Peak
6	833.160	37.64	-8.36	46.00	40.60	19.84	4.93	27.73	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)			
Modulation Mode	HT40	**Test Freq. (MHz)**	2437
N_{TX}	1	**Polarization**	H
Operating Fuction	Transmit Mode		

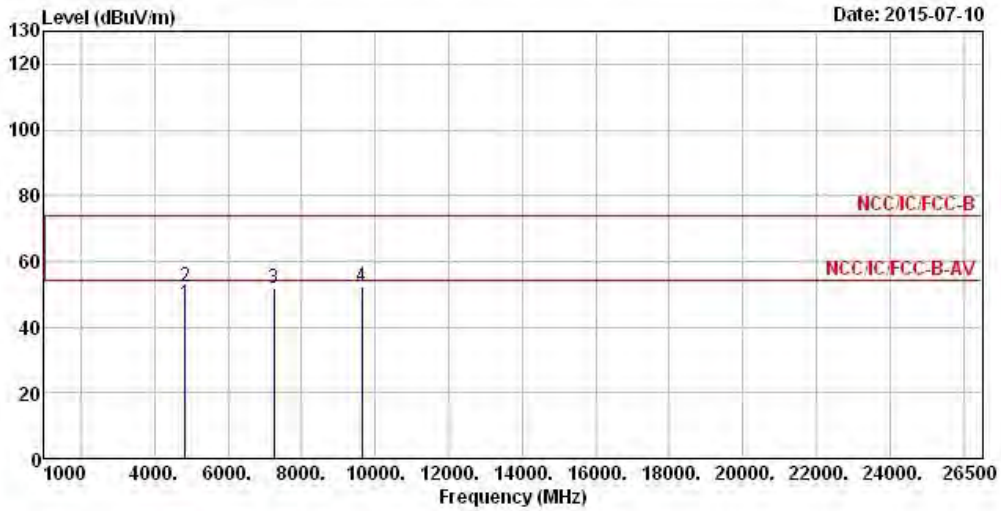


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	152.220	22.56	-20.94	43.50	37.60	10.06	2.04	27.14	Peak
2	268.620	33.52	-12.48	46.00	45.04	12.51	2.72	26.75	Peak
3	297.720	36.84	-9.16	46.00	47.79	12.83	2.89	26.67	Peak
4	394.720	41.85	-4.15	46.00	50.74	15.09	3.32	27.30	Peak
5	429.640	35.87	-10.13	46.00	43.95	15.96	3.44	27.48	Peak
6	870.020	29.23	-16.77	46.00	31.64	20.22	5.03	27.66	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)

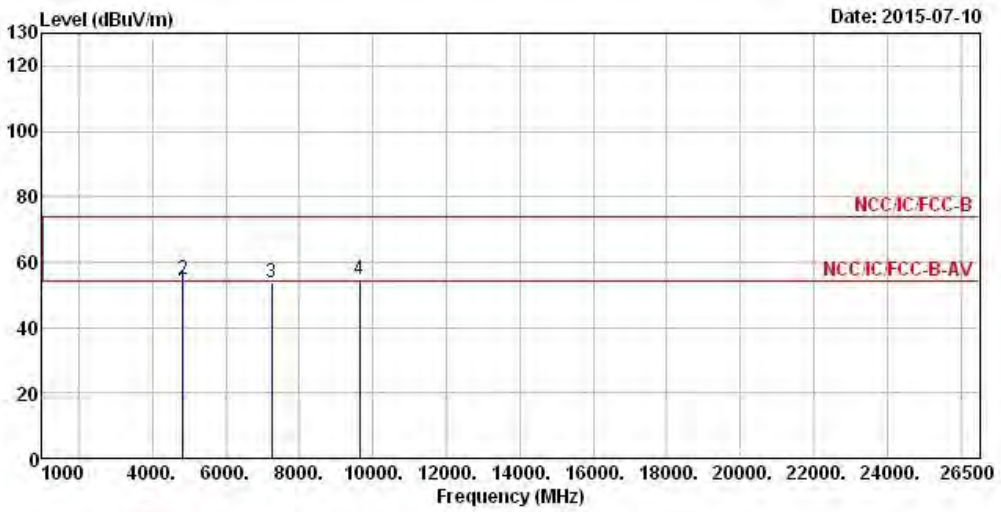
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11b	**Test Freq. (MHz)**	2412
N_{TX}	1	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4824.000	47.14	-6.86	54.00	41.78	33.33	4.49	32.46	Average
2	4824.000	52.27	-21.73	74.00	46.91	33.33	4.49	32.46	Peak
3	7236.000	51.63			42.31	36.24	5.72	32.64	Peak
4	9648.000	52.10			41.00	37.57	6.67	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (103.35 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

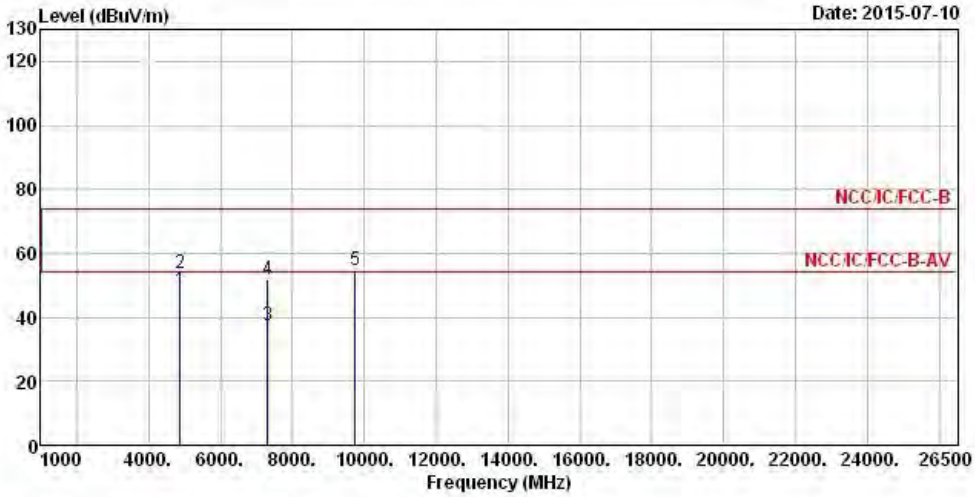
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11b	**Test Freq. (MHz)**	2412
N_{TX}	1	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4824.000	51.47	-2.53	54.00	46.11	33.33	4.49	32.46	Average
2	4824.000	54.58	-19.42	74.00	49.22	33.33	4.49	32.46	Peak
3	7236.000	53.54			44.22	36.24	5.72	32.64	Average
4	9648.000	54.75			43.65	37.57	6.67	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (103.35 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

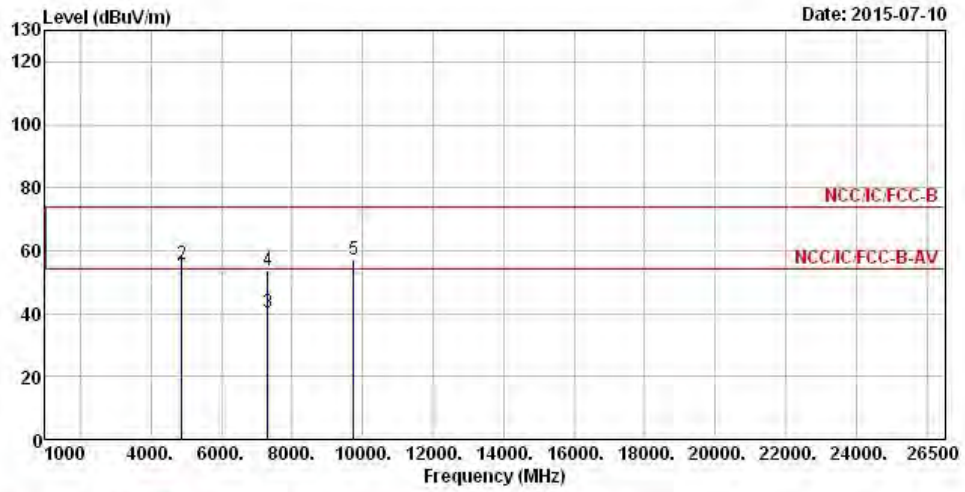
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11b	**Test Freq. (MHz)**	2437
N_{TX}	1	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4874.000	48.64	-5.36	54.00	43.20	33.38	4.51	32.45	Average
2	4874.000	53.58	-20.42	74.00	48.14	33.38	4.51	32.45	Peak
3	7311.000	37.49	-16.51	54.00	28.08	36.33	5.75	32.67	Average
4	7311.000	51.78	-22.22	74.00	42.37	36.33	5.75	32.67	Peak
5	9748.000	54.85			43.73	37.55	6.71	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (104.69 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

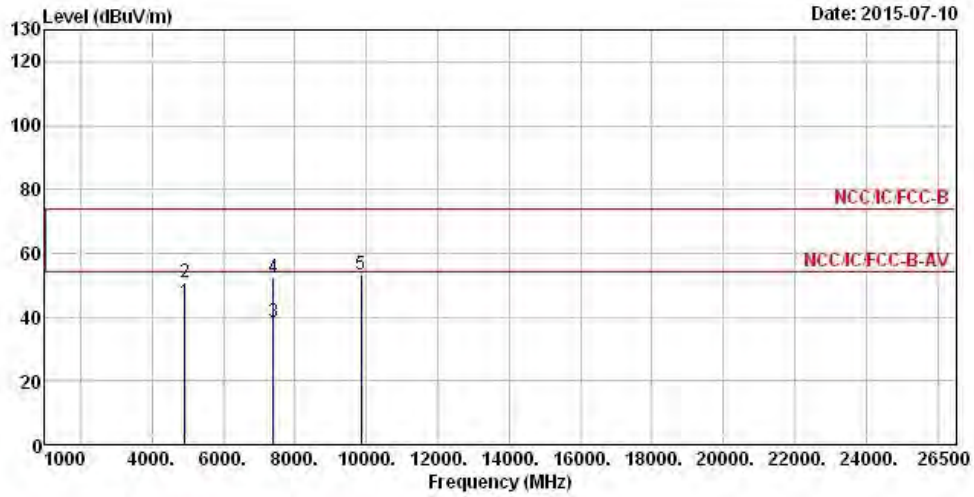
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11b	**Test Freq. (MHz)**	2437
N_{TX}	1	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4874.000	52.45	-1.55	54.00	47.01	33.38	4.51	32.45	Average
2	4874.000	55.43	-18.57	74.00	49.99	33.38	4.51	32.45	Peak
3	7311.000	40.24	-13.76	54.00	30.83	36.33	5.75	32.67	Average
4	7311.000	53.79	-20.21	74.00	44.38	36.33	5.75	32.67	Peak
5	9748.000	56.90			45.78	37.55	6.71	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (104.69 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

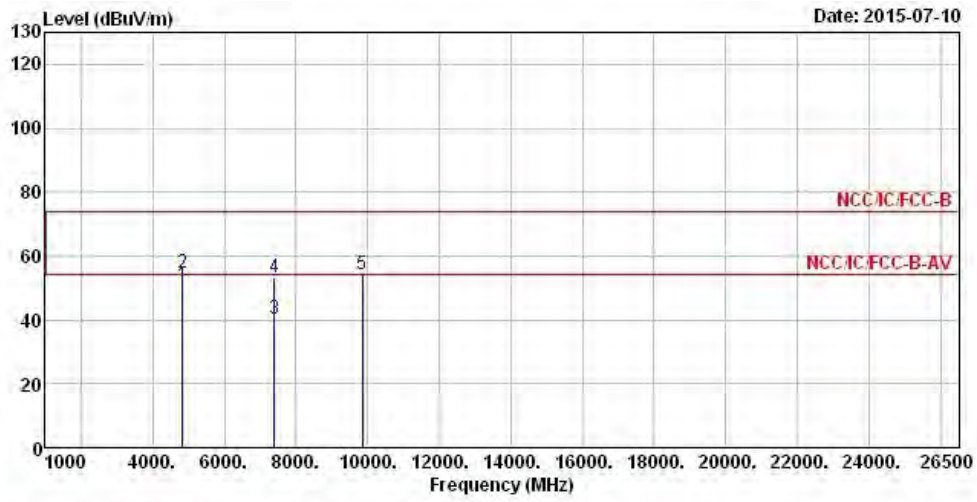
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11b	**Test Freq. (MHz)**	2462
N_{TX}	1	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4924.000	44.46	-9.54	54.00	38.92	33.43	4.55	32.44	Average
2	4924.000	50.74	-23.26	74.00	45.20	33.43	4.55	32.44	Peak
3	7386.000	38.49	-15.51	54.00	28.95	36.46	5.78	32.70	Average
4	7386.000	52.39	-21.61	74.00	42.85	36.46	5.78	32.70	Peak
5	9848.000	53.24			42.07	37.53	6.77	33.13	Average

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (104.24 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

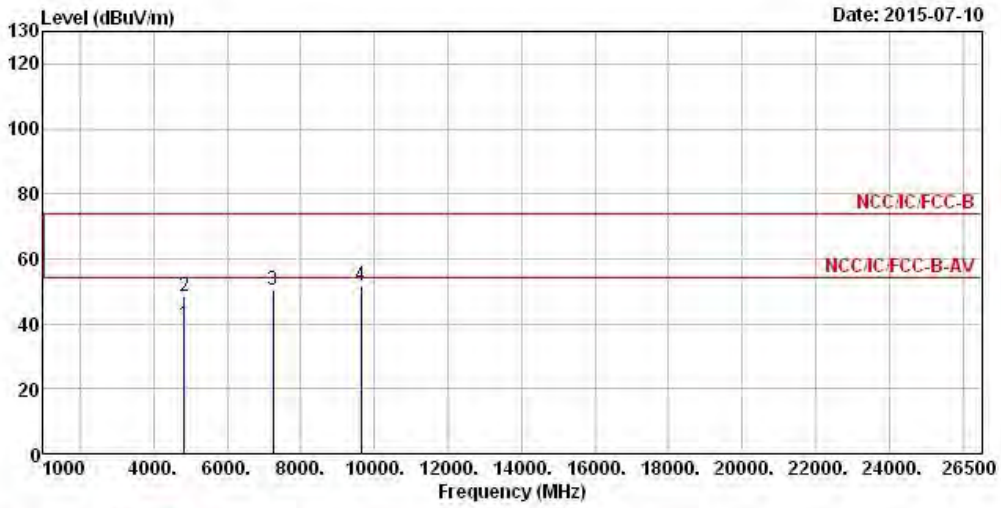
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11b	**Test Freq. (MHz)**	2462
N_{TX}	1	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4824.000	51.08	-2.92	54.00	45.72	33.33	4.49	32.46	Average
2	4824.000	54.80	-19.20	74.00	49.44	33.33	4.49	32.46	Peak
3	7386.000	40.30	-13.70	54.00	30.76	36.46	5.78	32.70	Average
4	7386.000	53.33	-20.67	74.00	43.79	36.46	5.78	32.70	Peak
5	9848.000	54.04			42.87	37.53	6.77	33.13	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (104.69 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

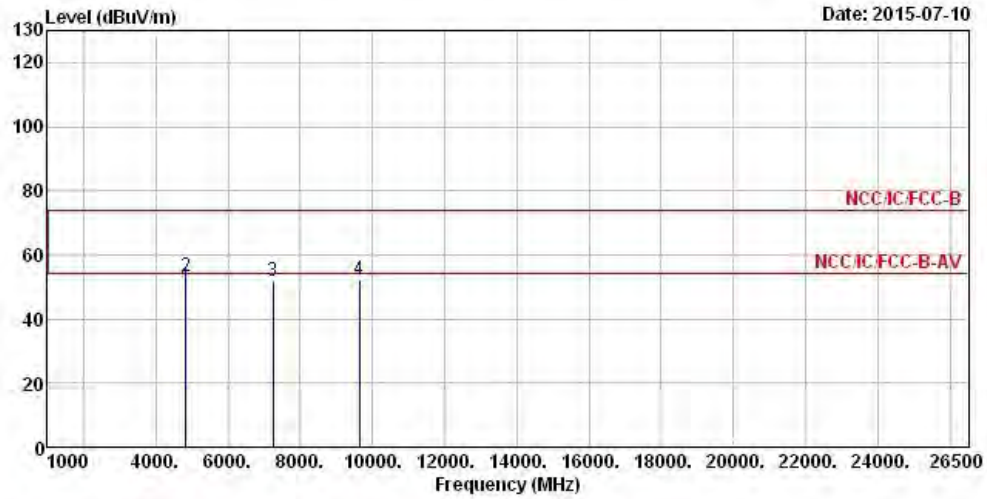
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11b	**Test Freq. (MHz)**	2412
N_{TX}	2	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4824.000	39.91	-14.09	54.00	34.55	33.33	4.49	32.46	Average
2	4824.000	48.41	-25.59	74.00	43.05	33.33	4.49	32.46	Peak
3	7236.000	50.41			41.09	36.24	5.72	32.64	Peak
4	9648.000	51.75			40.65	37.57	6.67	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (107.18 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

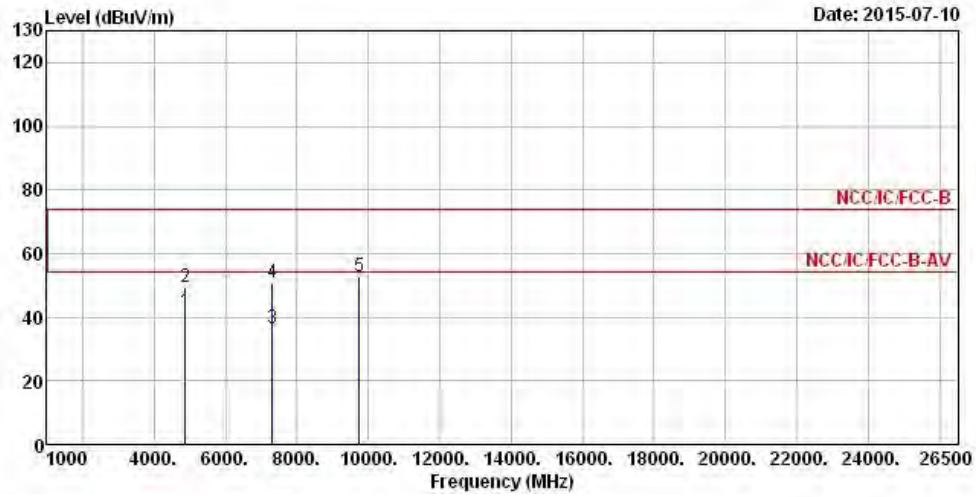
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11b	**Test Freq. (MHz)**	2412
N_{TX}	2	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4824.000	49.96	-4.04	54.00	44.60	33.33	4.49	32.46	Average
2	4824.000	53.29	-20.71	74.00	47.93	33.33	4.49	32.46	Peak
3	7236.000	51.65			42.33	36.24	5.72	32.64	Peak
4	9648.000	52.43			41.33	37.57	6.67	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (107.18 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

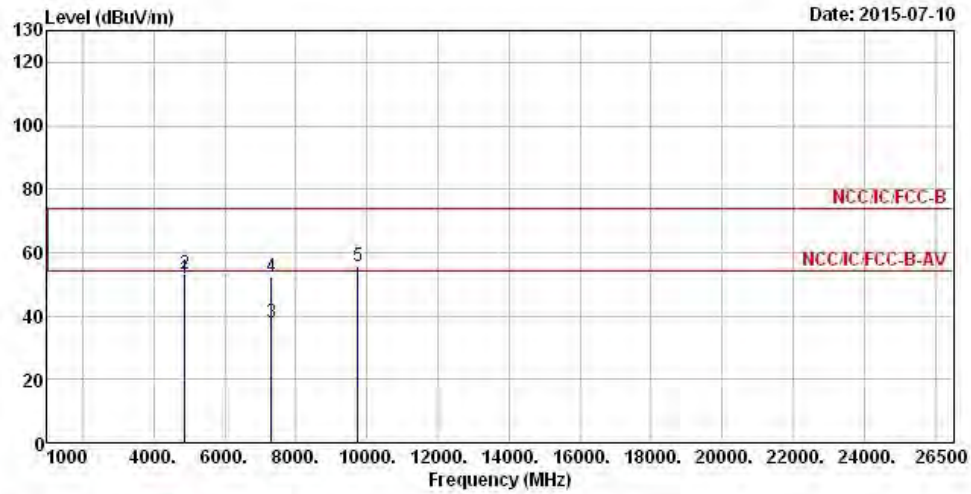
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11b	**Test Freq. (MHz)**	2437
N_{TX}	2	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4874.000	41.74	-12.26	54.00	36.30	33.38	4.51	32.45	Average
2	4874.000	49.56	-24.44	74.00	44.12	33.38	4.51	32.45	Peak
3	7311.000	36.33	-17.67	54.00	26.92	36.33	5.75	32.67	Average
4	7311.000	51.06	-22.94	74.00	41.65	36.33	5.75	32.67	Peak
5	9748.000	52.59			41.47	37.55	6.71	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (106.24 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

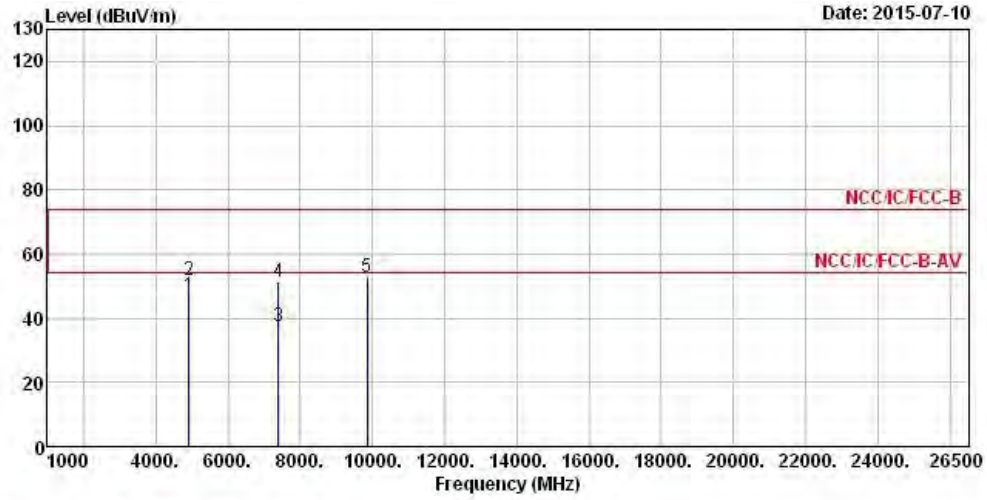
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11b	**Test Freq. (MHz)**	2437
N_{TX}	2	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4874.000	51.66	-2.34	54.00	46.22	33.38	4.51	32.45	Average
2	4874.000	53.20	-20.80	74.00	47.76	33.38	4.51	32.45	Peak
3	7311.000	38.07	-15.93	54.00	28.66	36.33	5.75	32.67	Average
4	7311.000	52.25	-21.75	74.00	42.84	36.33	5.75	32.67	Peak
5	9748.000	55.45			44.33	37.55	6.71	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (106.24 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

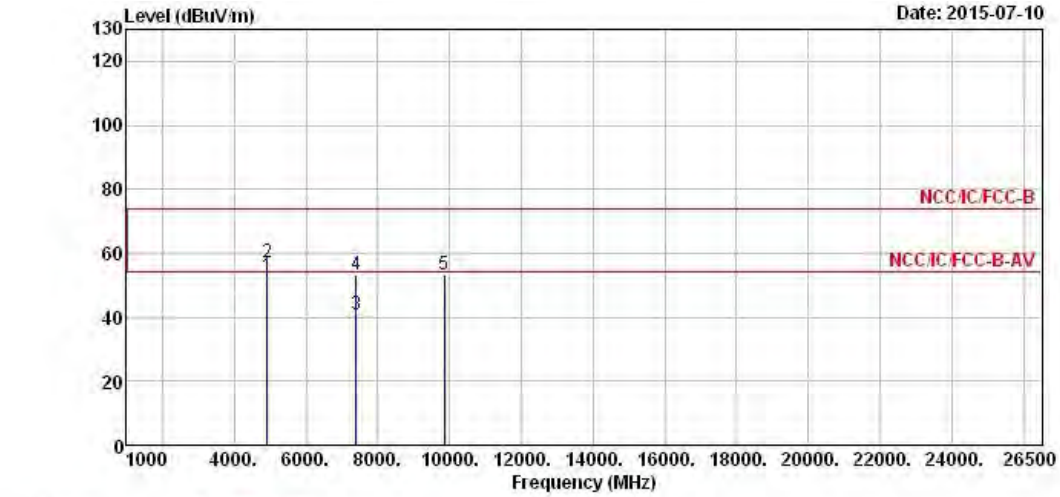
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11b	**Test Freq. (MHz)**	2462
N_{TX}	2	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4924.000	46.84	-7.16	54.00	41.30	33.43	4.55	32.44	Average
2	4924.000	52.00	-22.00	74.00	46.46	33.43	4.55	32.44	Peak
3	7386.000	37.52	-16.48	54.00	27.98	36.46	5.78	32.70	Average
4	7386.000	51.23	-22.77	74.00	41.69	36.46	5.78	32.70	Peak
5	9848.000	52.88			41.71	37.53	6.77	33.13	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (106.99 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

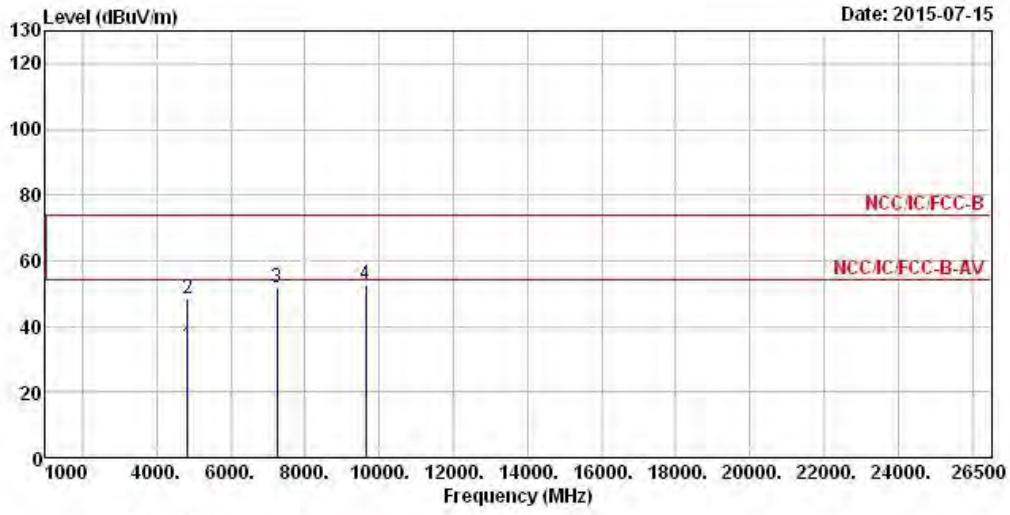
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11b	**Test Freq. (MHz)**	2462
N_{TX}	2	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4924.000	52.98	-1.02	54.00	47.44	33.43	4.55	32.44	Average
2	4924.000	56.98	-17.02	74.00	51.44	33.43	4.55	32.44	Peak
3	7386.000	40.78	-13.22	54.00	31.24	36.46	5.78	32.70	Average
4	7386.000	53.01	-20.99	74.00	43.47	36.46	5.78	32.70	Peak
5	9848.000	53.26			42.09	37.53	6.77	33.13	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (106.99 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

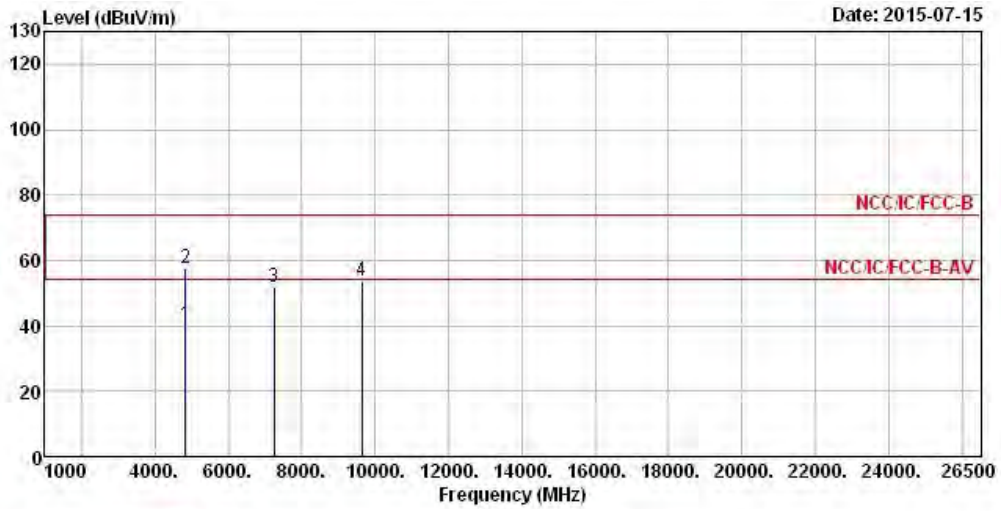
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11g	**Test Freq. (MHz)**	2412
N_{TX}	1	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4824.000	34.05	-19.95	54.00	28.69	33.33	4.49	32.46	Average
2	4824.000	48.26	-25.74	74.00	42.90	33.33	4.49	32.46	Peak
3	7236.000	51.83			42.51	36.24	5.72	32.64	Peak
4	9648.000	52.74			41.64	37.57	6.67	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (103.98 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

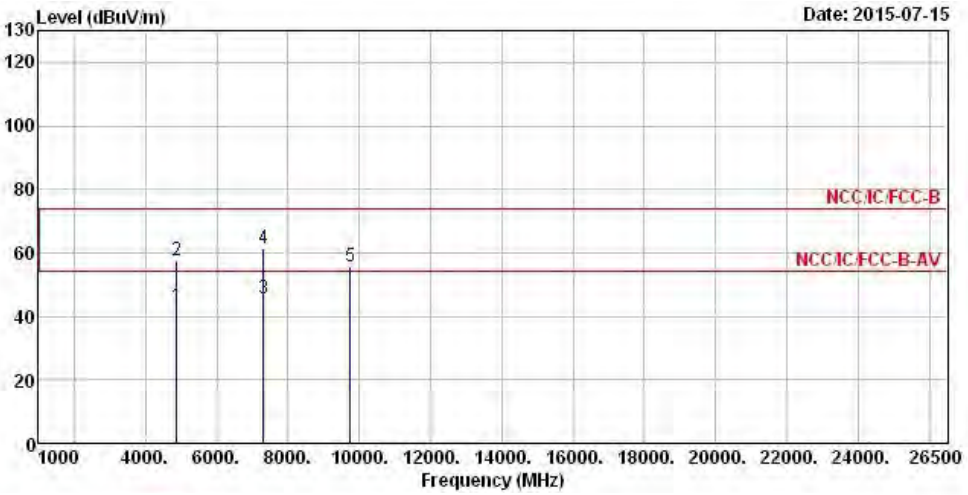
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11g	**Test Freq. (MHz)**	2412
N_{TX}	1	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4824.000	40.44	-13.56	54.00	35.08	33.33	4.49	32.46	Average
2	4824.000	57.41	-16.59	74.00	52.05	33.33	4.49	32.46	Peak
3	7236.000	51.64			42.32	36.24	5.72	32.64	Peak
4	9648.000	53.51			42.41	37.57	6.67	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (103.98 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

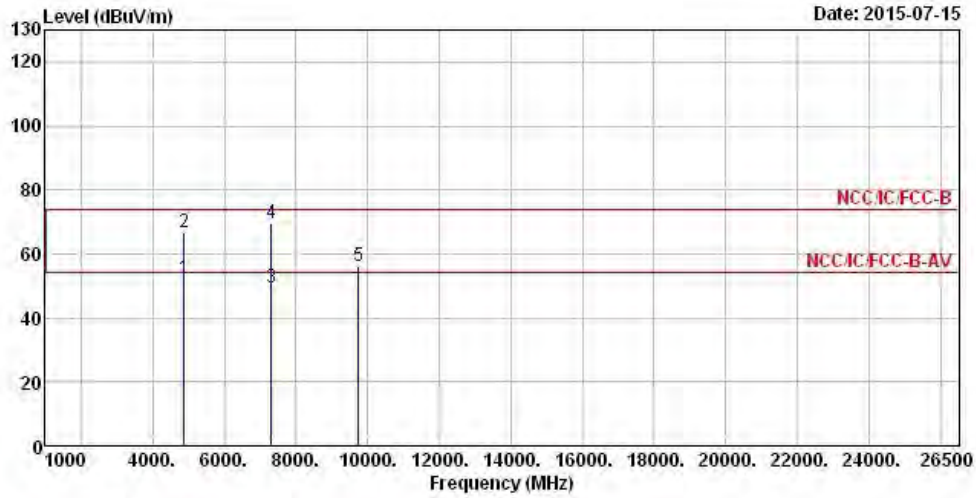
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11g	**Test Freq. (MHz)**	2437
N_{TX}	1	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4874.000	43.40	-10.60	54.00	37.96	33.38	4.51	32.45	Average
2	4874.000	57.62	-16.38	74.00	52.18	33.38	4.51	32.45	Peak
3	7311.000	45.76	-8.24	54.00	36.35	36.33	5.75	32.67	Average
4	7311.000	61.21	-12.79	74.00	51.80	36.33	5.75	32.67	Peak
5	9748.000	55.61			44.49	37.55	6.71	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (108.80 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

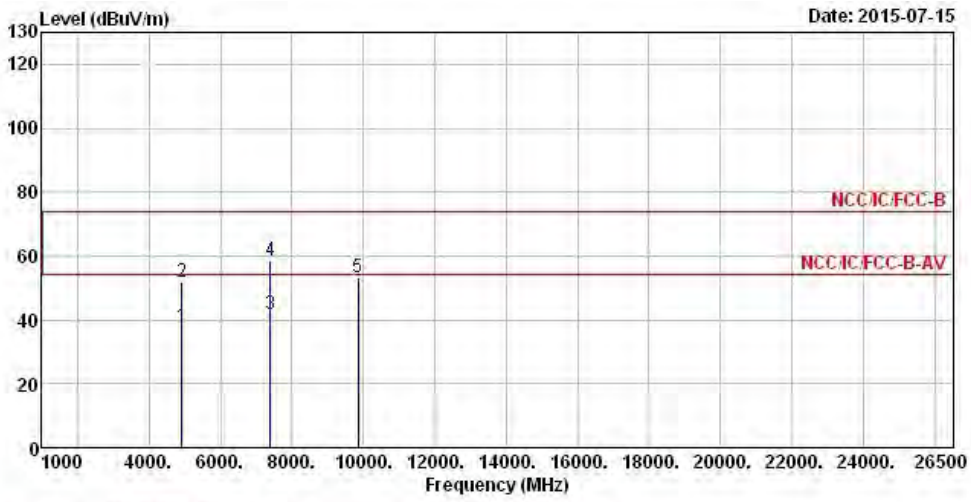
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11g	**Test Freq. (MHz)**	2437
N_{TX}	1	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4874.000	52.42	-1.58	54.00	46.98	33.38	4.51	32.45	Average
2	4874.000	66.62	-7.38	74.00	61.18	33.38	4.51	32.45	Peak
3	7311.000	49.35	-4.65	54.00	39.94	36.33	5.75	32.67	Average
4	7311.000	69.51	-4.49	74.00	60.10	36.33	5.75	32.67	Peak
5	9748.000	56.04			44.92	37.55	6.71	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (108.80dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

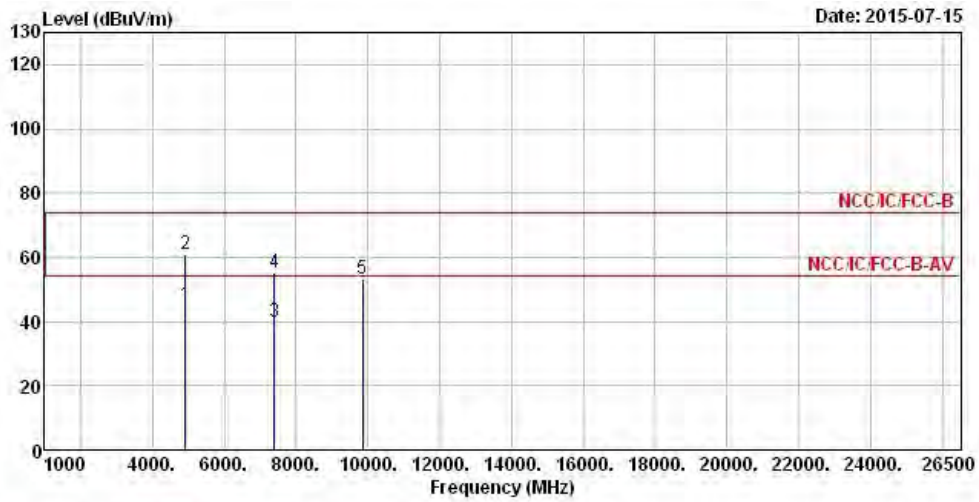
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11g	**Test Freq. (MHz)**	2462
N_{TX}	1	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4924.000	37.92	-16.08	54.00	32.38	33.43	4.55	32.44	Average
2	4924.000	52.02	-21.98	74.00	46.48	33.43	4.55	32.44	Peak
3	7386.000	41.80	-12.20	54.00	32.26	36.46	5.78	32.70	Average
4	7386.000	58.41	-15.59	74.00	48.87	36.46	5.78	32.70	Peak
5	9848.000	53.12			41.95	37.53	6.77	33.13	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (103.93 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

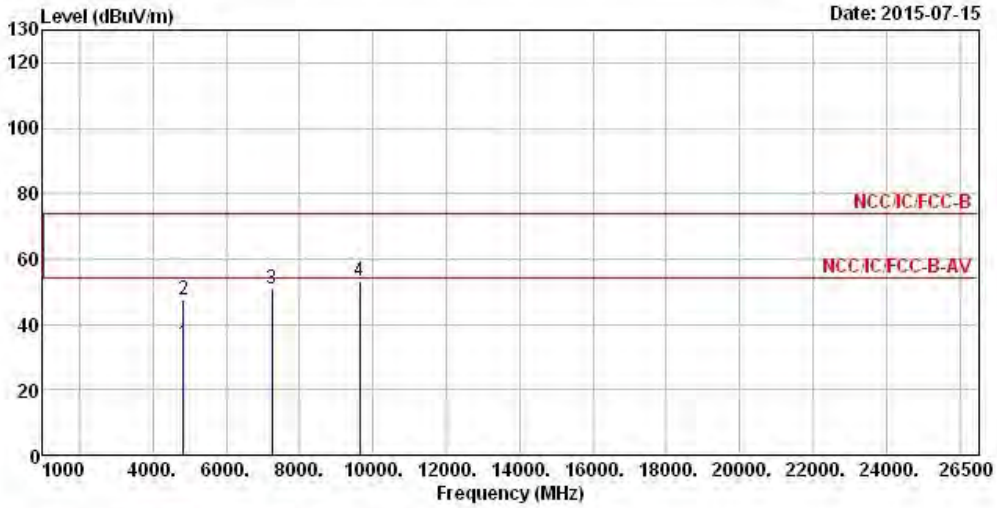
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11g	**Test Freq. (MHz)**	2462
N_{TX}	1	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4924.000	44.86	-9.14	54.00	39.32	33.43	4.55	32.44	Average
2	4924.000	61.00	-13.00	74.00	55.46	33.43	4.55	32.44	Peak
3	7386.000	39.94	-14.06	54.00	30.40	36.46	5.78	32.70	Average
4	7386.000	54.95	-19.05	74.00	45.41	36.46	5.78	32.70	Peak
5	9848.000	53.32			42.15	37.53	6.77	33.13	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (103.93 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

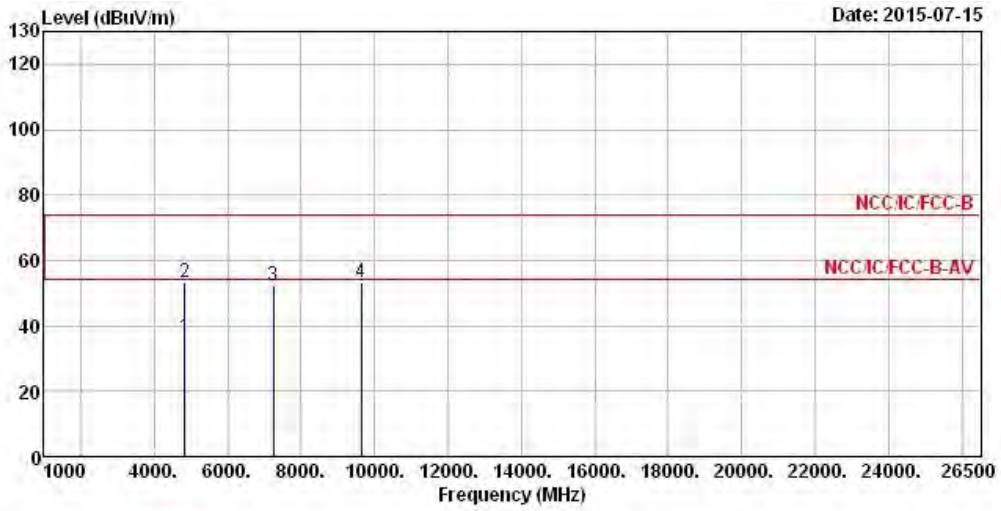
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11g	**Test Freq. (MHz)**	2412
N_{TX}	2	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4824.000	34.11	-19.89	54.00	28.75	33.33	4.49	32.46	Average
2	4824.000	47.27	-26.73	74.00	41.91	33.33	4.49	32.46	Peak
3	7236.000	50.76			41.44	36.24	5.72	32.64	Peak
4	9648.000	53.23			42.13	37.57	6.67	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (105.06 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

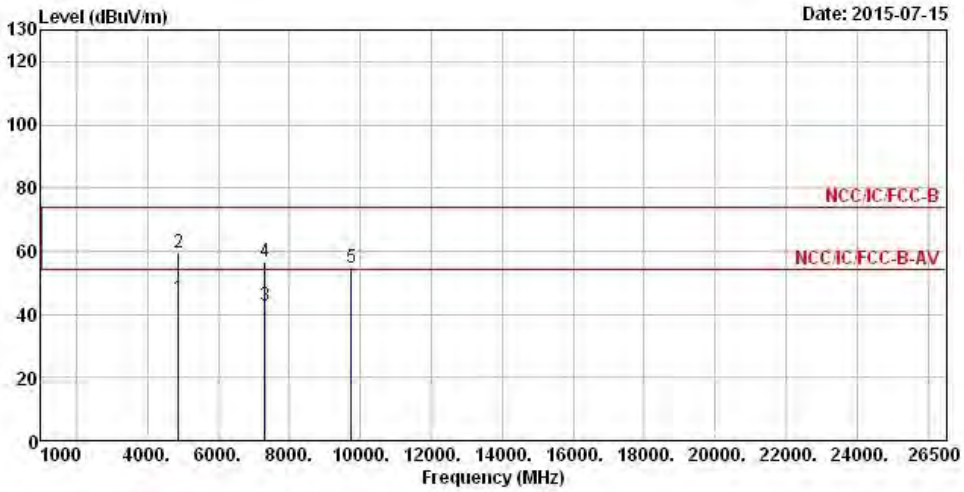
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11g	**Test Freq. (MHz)**	2412
N_{TX}	2	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4824.000	36.47	-17.53	54.00	31.11	33.33	4.49	32.46	Average
2	4824.000	53.25	-20.75	74.00	47.89	33.33	4.49	32.46	Peak
3	7236.000	52.31			42.99	36.24	5.72	32.64	Peak
4	9648.000	53.10			42.00	37.57	6.67	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (105.06 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

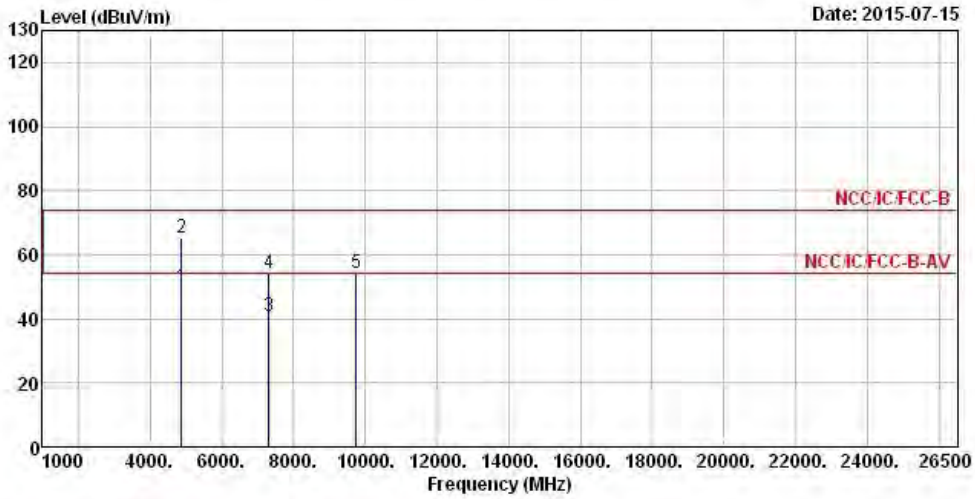
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11g	**Test Freq. (MHz)**	2437
N_{TX}	2	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4874.000	45.15	-8.85	54.00	39.71	33.38	4.51	32.45	Average
2	4874.000	59.43	-14.57	74.00	53.99	33.38	4.51	32.45	Peak
3	7311.000	42.82	-11.18	54.00	33.41	36.33	5.75	32.67	Average
4	7311.000	56.64	-17.36	74.00	47.23	36.33	5.75	32.67	Peak
5	9748.000	54.60			43.48	37.55	6.71	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (109.60 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

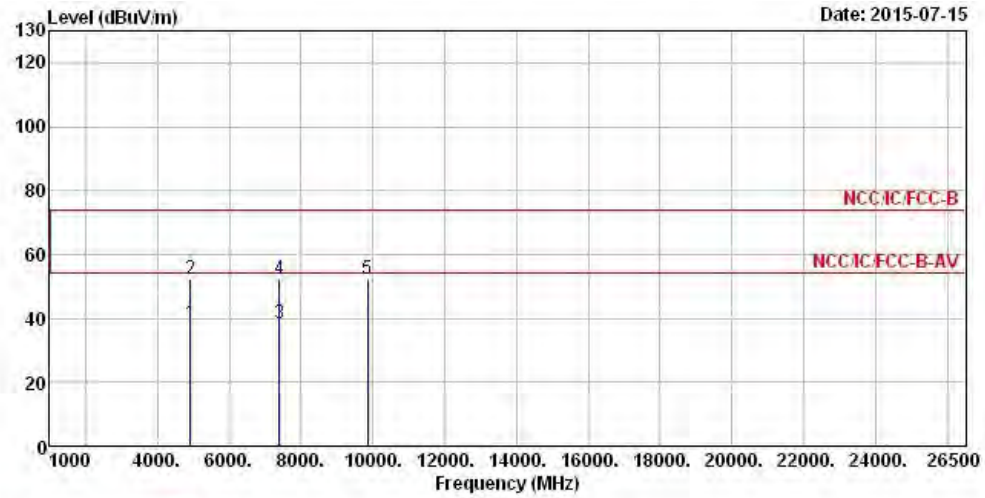
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11g	**Test Freq. (MHz)**	2437
N_{TX}	2	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4874.000	50.05	-3.95	54.00	44.61	33.38	4.51	32.45	Average
2	4874.000	65.16	-8.84	74.00	59.72	33.38	4.51	32.45	Peak
3	7311.000	40.70	-13.30	54.00	31.29	36.33	5.75	32.67	Average
4	7311.000	54.02	-19.98	74.00	44.61	36.33	5.75	32.67	Peak
5	9748.000	54.05			42.93	37.55	6.71	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (109.60 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

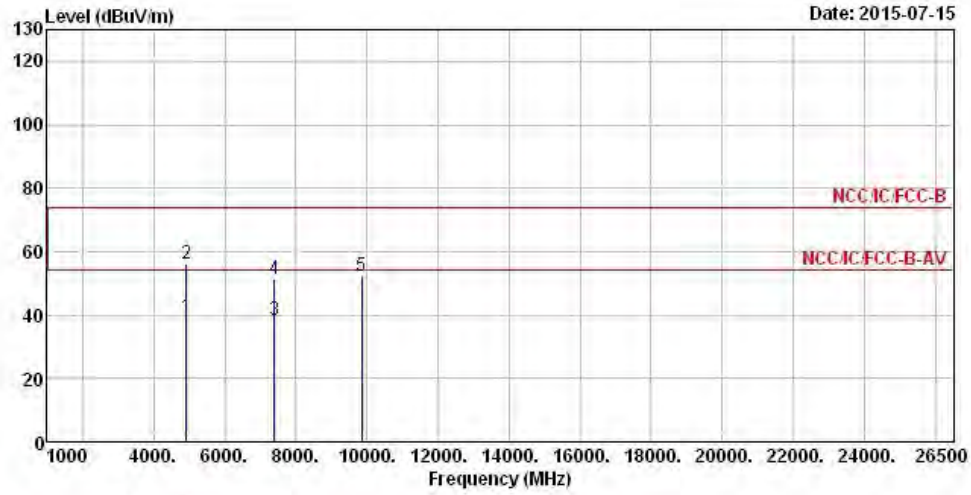
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11g	**Test Freq. (MHz)**	2462
N_{TX}	2	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4924.000	38.15	-15.85	54.00	32.61	33.43	4.55	32.44	Average
2	4924.000	52.34	-21.66	74.00	46.80	33.43	4.55	32.44	Peak
3	7386.000	38.47	-15.53	54.00	28.93	36.46	5.78	32.70	Average
4	7386.000	52.31	-21.69	74.00	42.77	36.46	5.78	32.70	Peak
5	9848.000	52.39			41.22	37.53	6.77	33.13	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (106.68 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

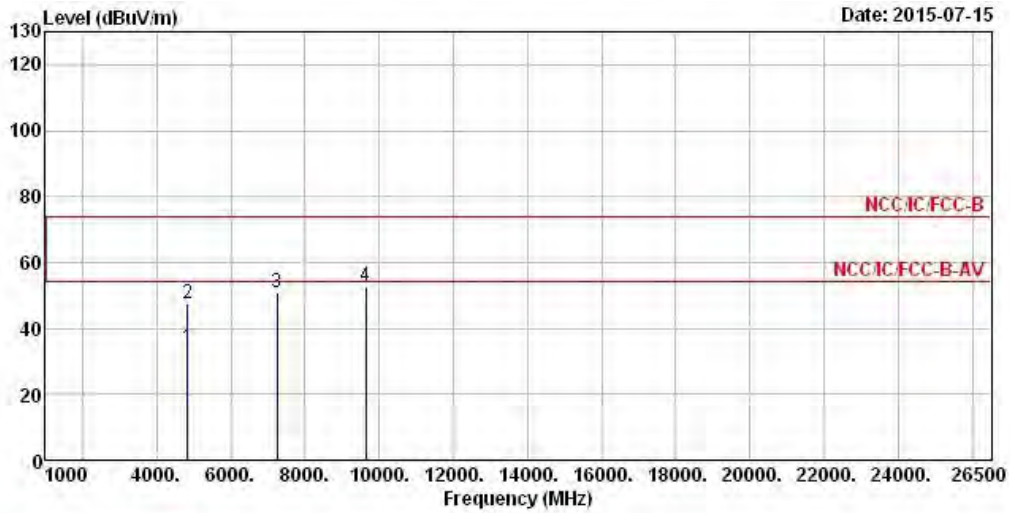
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11g	**Test Freq. (MHz)**	2462
N_{TX}	2	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4924.000	39.35	-14.65	54.00	33.81	33.43	4.55	32.44	Average
2	4924.000	56.25	-17.75	74.00	50.71	33.43	4.55	32.44	Peak
3	7386.000	38.14	-15.86	54.00	28.60	36.46	5.78	32.70	Average
4	7386.000	51.50	-22.50	74.00	41.96	36.46	5.78	32.70	Peak
5	9848.000	52.37			41.20	37.53	6.77	33.13	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (106.68 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

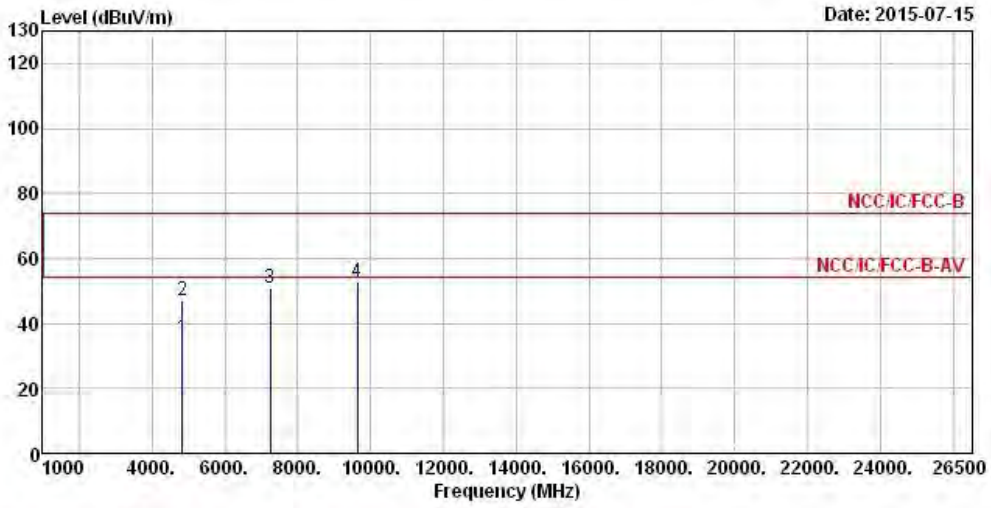
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT20	**Test Freq. (MHz)**	2412
N_{TX}	2	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4824.000	34.15	-19.85	54.00	28.79	33.33	4.49	32.46	Average
2	4824.000	47.72	-26.28	74.00	42.36	33.33	4.49	32.46	Peak
3	7236.000	50.99			41.67	36.24	5.72	32.64	Peak
4	9648.000	52.68			41.58	37.57	6.67	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (106.08 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

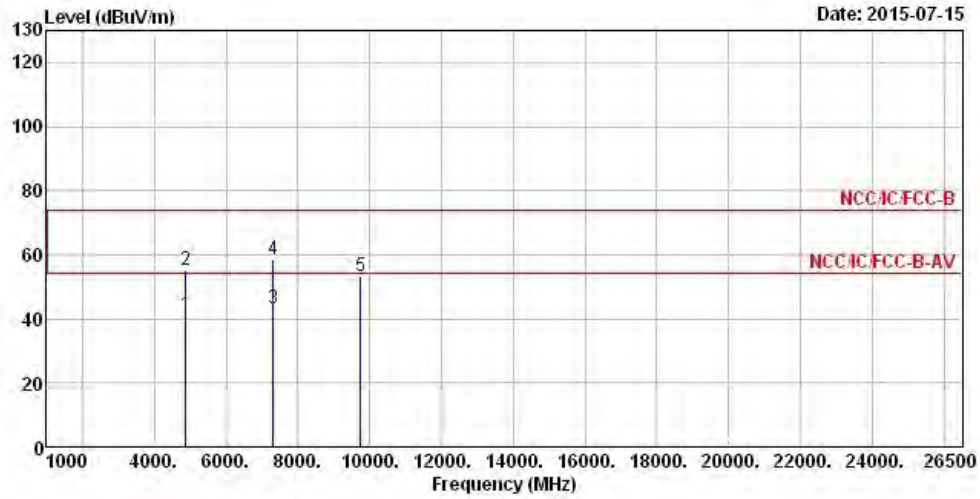
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT20	**Test Freq. (MHz)**	2412
N_{TX}	2	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4824.000	35.52	-18.48	54.00	30.16	33.33	4.49	32.46	Average
2	4824.000	46.99	-27.01	74.00	41.63	33.33	4.49	32.46	Peak
3	7236.000	50.72			41.40	36.24	5.72	32.64	Peak
4	9648.000	52.75			41.65	37.57	6.67	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (106.08 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

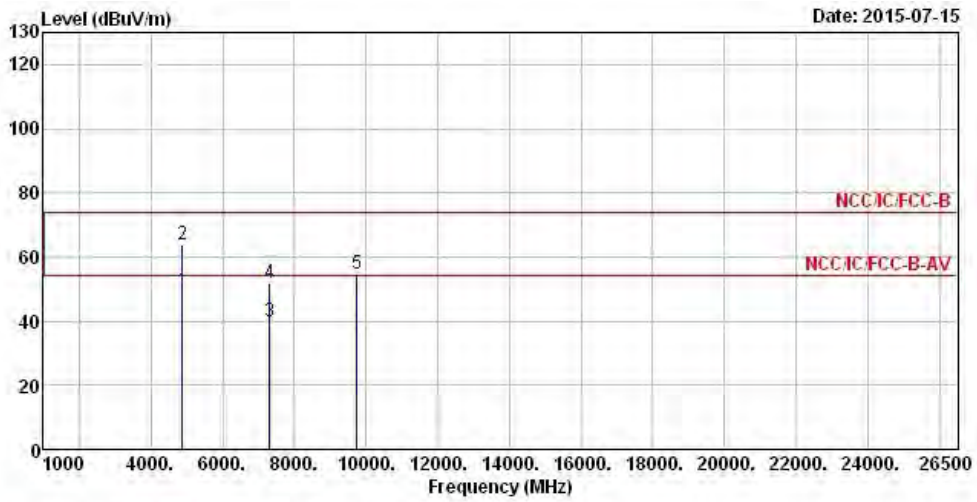
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT20	**Test Freq. (MHz)**	2437
N_{TX}	2	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4874.000	41.05	-12.95	54.00	35.61	33.38	4.51	32.45	Average
2	4874.000	55.08	-18.92	74.00	49.64	33.38	4.51	32.45	Peak
3	7311.000	43.17	-10.83	54.00	33.76	36.33	5.75	32.67	Average
4	7311.000	58.32	-15.68	74.00	48.91	36.33	5.75	32.67	Peak
5	9748.000	53.06			41.94	37.55	6.71	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (108.72 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

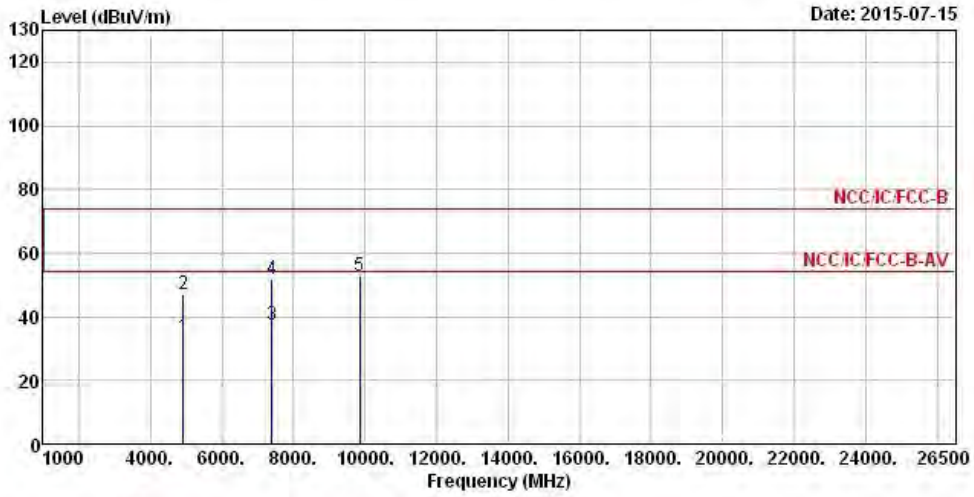
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT20	**Test Freq. (MHz)**	2437
N_{TX}	2	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4874.000	49.47	-4.53	54.00	44.03	33.38	4.51	32.45	Average
2	4874.000	63.63	-10.37	74.00	58.19	33.38	4.51	32.45	Peak
3	7311.000	40.02	-13.98	54.00	30.61	36.33	5.75	32.67	Average
4	7311.000	52.02	-21.98	74.00	42.61	36.33	5.75	32.67	Peak
5	9748.000	54.79			43.67	37.55	6.71	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (108.72 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

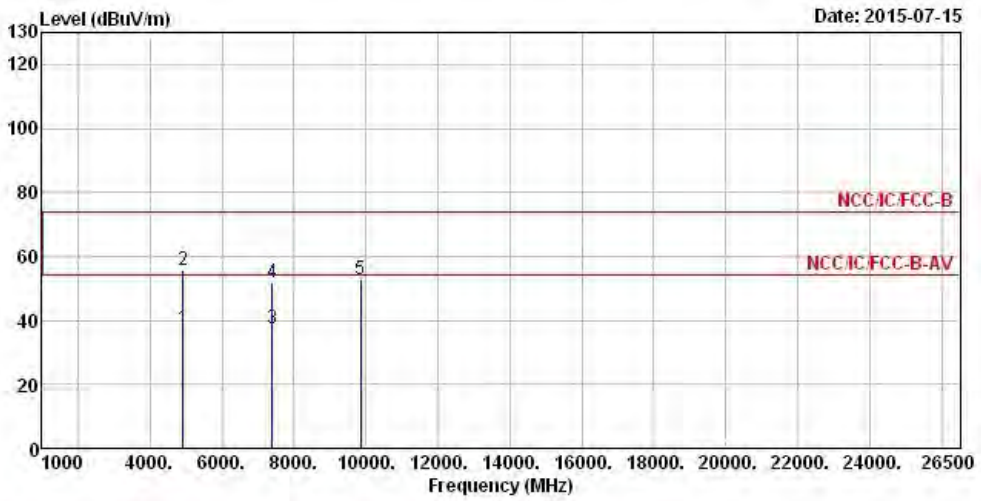
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT20	**Test Freq. (MHz)**	2462
N_{TX}	2	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4924.000	33.50	-20.50	54.00	27.96	33.43	4.55	32.44	Average
2	4924.000	47.17	-26.83	74.00	41.63	33.43	4.55	32.44	Peak
3	7386.000	37.56	-16.44	54.00	28.02	36.46	5.78	32.70	Average
4	7386.000	51.84	-22.16	74.00	42.30	36.46	5.78	32.70	Peak
5	9848.000	52.53			41.36	37.53	6.77	33.13	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (105.49 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

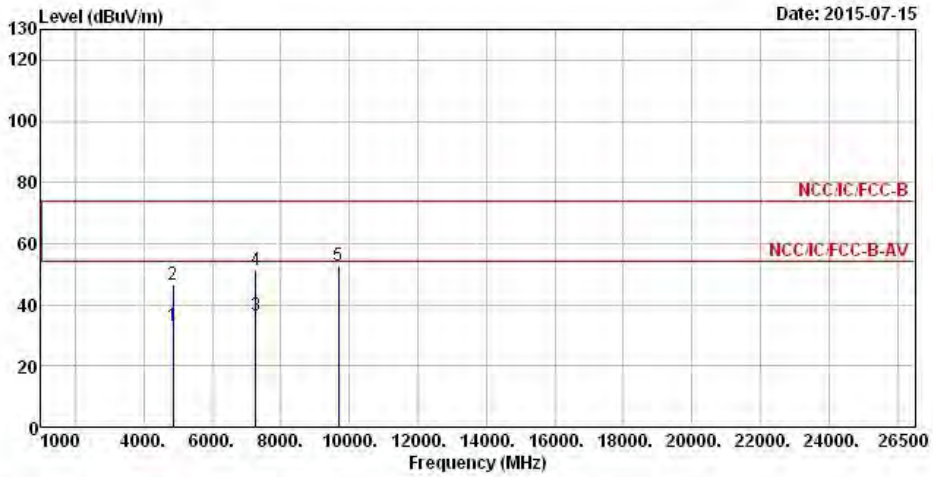
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT20	**Test Freq. (MHz)**	2462
N_{TX}	2	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4924.000	37.46	-16.54	54.00	31.92	33.43	4.55	32.44	Average
2	4924.000	55.77	-18.23	74.00	50.23	33.43	4.55	32.44	Peak
3	7386.000	37.37	-16.63	54.00	27.83	36.46	5.78	32.70	Average
4	7386.000	51.72	-22.28	74.00	42.18	36.46	5.78	32.70	Peak
5	9848.000	52.60			41.43	37.53	6.77	33.13	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (105.49 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

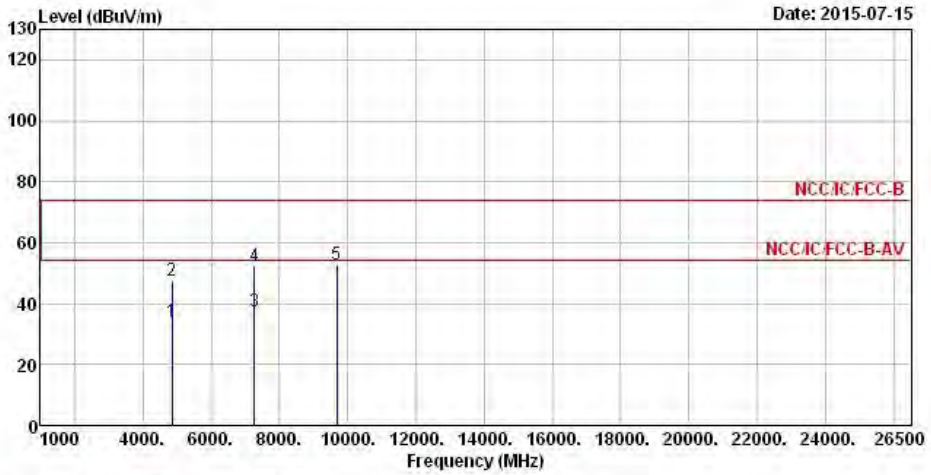
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT40	**Test Freq. (MHz)**	2422
N_{TX}	2	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4844.000	32.96	-21.04	54.00	27.57	33.34	4.51	32.46	Average
2	4844.000	46.51	-27.49	74.00	41.12	33.34	4.51	32.46	Peak
3	7266.000	36.38	-17.62	54.00	27.00	36.29	5.74	32.65	Average
4	7266.000	51.50	-22.50	74.00	42.12	36.29	5.74	32.65	Peak
5	9688.000	52.99			41.88	37.56	6.69	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (101.23 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

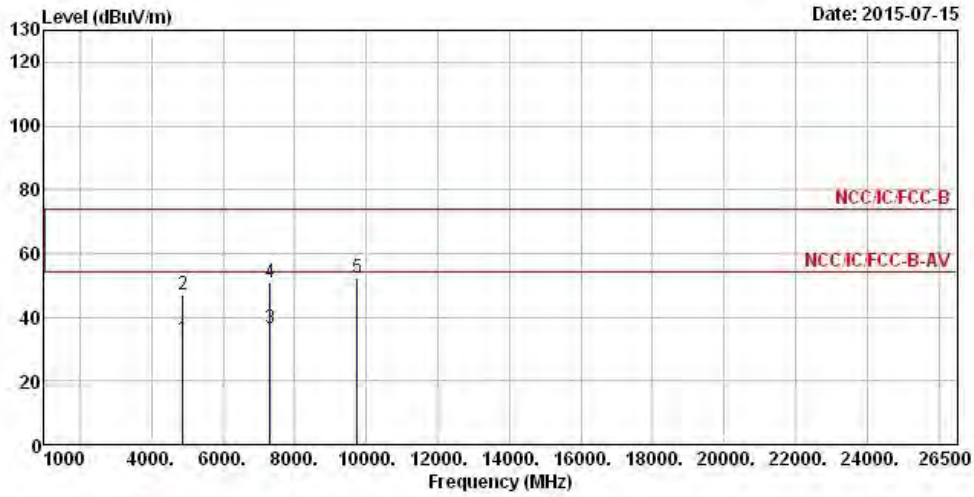
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT40	**Test Freq. (MHz)**	2422
N_{TX}	2	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4844.000	33.96	-20.04	54.00	28.57	33.34	4.51	32.46	Average
2	4844.000	47.51	-26.49	74.00	42.12	33.34	4.51	32.46	Peak
3	7266.000	37.38	-16.62	54.00	28.00	36.29	5.74	32.65	Average
4	7266.000	52.50	-21.50	74.00	43.12	36.29	5.74	32.65	Peak
5	9688.000	52.99			41.88	37.56	6.69	33.14	Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (101.23 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

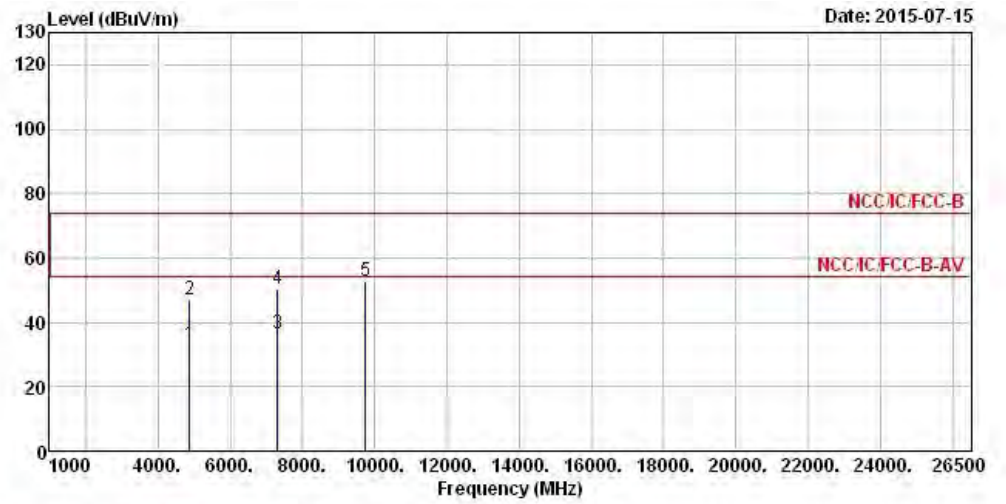
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT40	**Test Freq. (MHz)**	2437
N_{TX}	2	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4874.000	32.98	-21.02	54.00	27.54	33.38	4.51	32.45	Average
2	4874.000	47.18	-26.82	74.00	41.74	33.38	4.51	32.45	Peak
3	7311.000	36.47	-17.53	54.00	27.06	36.33	5.75	32.67	Average
4	7311.000	50.92	-23.08	74.00	41.51	36.33	5.75	32.67	Peak
5	9748.000	52.33			41.21	37.55	6.71	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (104.28 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

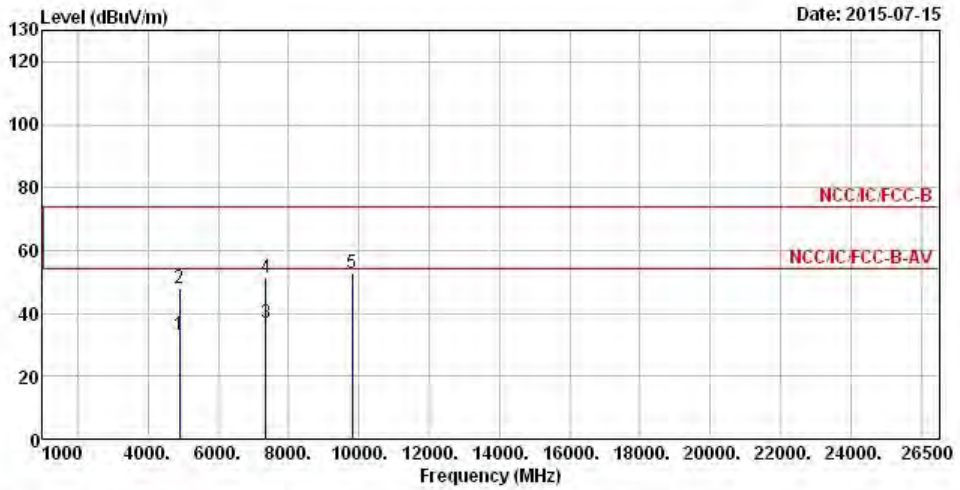
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT40	**Test Freq. (MHz)**	2437
N_{TX}	2	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4874.000	32.90	-21.10	54.00	27.46	33.38	4.51	32.45	Average
2	4874.000	47.08	-26.92	74.00	41.64	33.38	4.51	32.45	Peak
3	7311.000	36.57	-17.43	54.00	27.16	36.33	5.75	32.67	Average
4	7311.000	50.44	-23.56	74.00	41.03	36.33	5.75	32.67	Peak
5	9748.000	52.90			41.78	37.55	6.71	33.14	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (104.28 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

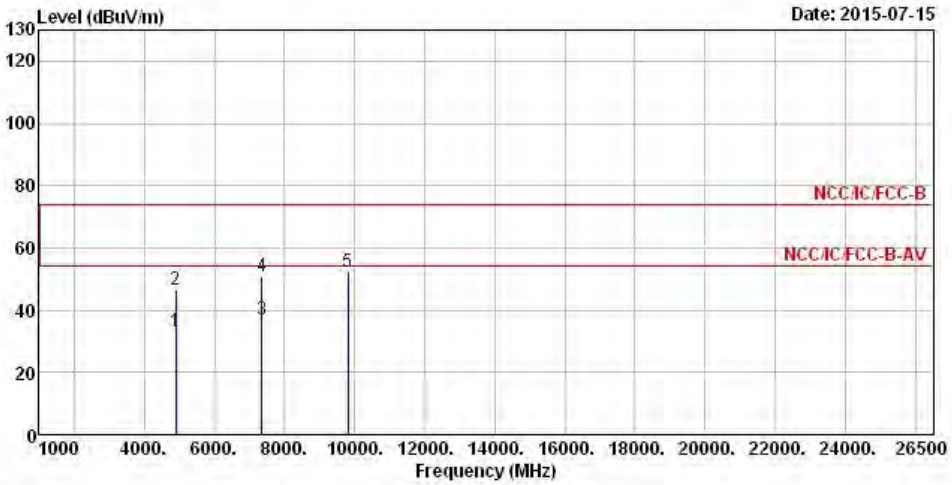
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT40	**Test Freq. (MHz)**	2452
N_{TX}	2	**Polarization**	V



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4904.000	32.99	-21.01	54.00	27.50	33.41	4.53	32.45	Average
2	4904.000	48.19	-25.81	74.00	42.70	33.41	4.53	32.45	Peak
3	7356.000	37.12	-16.88	54.00	27.64	36.41	5.76	32.69	Average
4	7356.000	51.12	-22.88	74.00	41.64	36.41	5.76	32.69	Peak
5	9808.000	52.64			41.48	37.54	6.75	33.13	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (102.55 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT40	**Test Freq. (MHz)**	2452
N_{TX}	2	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4904.000	33.19	-20.81	54.00	27.70	33.41	4.53	32.45	Average
2	4904.000	46.77	-27.23	74.00	41.28	33.41	4.53	32.45	Peak
3	7356.000	36.84	-17.16	54.00	27.36	36.41	5.76	32.69	Average
4	7356.000	50.85	-23.15	74.00	41.37	36.41	5.76	32.69	Peak
5	9808.000	52.18			41.02	37.54	6.75	33.13	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: 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 5: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level (102.55 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

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	Apr. 15. 2015	AC Conduction
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-477	9kHz ~ 30MHz	Jan. 22, 2015	AC Conduction
RF Cable-CON	HUBER+SUHNER	RG213/U	07611832020001	9kHz ~ 30MHz	Oct. 31, 2014	AC Conduction
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	N/A	AC Conduction

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	Jul. 31, 2014	RF Conducted
Power Sensor	Anritsu	MA2411B	1027452	300MHz ~ 40GHz	Jan. 29, 2015	RF Conducted
Power Meter	Anritsu	ML2495A	1124009	300MHz ~ 40GHz	Jan. 29, 2015	RF Conducted

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

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz ~ 1GHz 3m	Nov. 29, 2014	Radiated Emission
Amplifier	HP	8447D	2944A08033	10kHz ~ 1.3GHz	May 11, 2015	Radiated Emission
Amplifier	Agilent	8449B	3008A02120	1GHz ~ 26.5GHz	Sep. 01, 2014	Radiated Emission
Spectrum	R&S	FSP40	100004	9kHz ~ 40GHz	Apr. 02, 2015	Radiated Emission
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30MHz ~ 1GHz	Sep. 20, 2014	Radiated Emission
Horn Antenna	AARONIA AG	POWERLOG 70180	05192	1GHz ~ 18GHz	May 01, 2015	Radiated Emission
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	18GHz ~ 40GHz	Jan. 27, 2015	Radiated Emission
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz ~ 1GHz	Nov. 15, 2014	Radiated Emission
RF Cable-high	SUHNER	SUCOFLEX 106	03CH03-HY	1GHz ~ 40GHz	Dec. 12, 2014	Radiated Emission
Turn Table	EM Electronics	EM Electronics	060615	0 ~ 360 degree	N/A	Radiated Emission
Antenna Mast	MF	MF-7802	MF780208179	1 ~ 4 m	N/A	Radiated Emission

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	Feb. 02, 2015	Radiated Emission

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