FCC Test Report

Equipment	:	**Scanner**
Brand Name	:	**Ambir Technology**
Model No.	:	**Model Name :** **nScan 915i ;nScan 9**** **(The " * " can be 0-9 , A-Z ,a-z, or blank for marketing purpose)** **/ Model No.: NS915i ,NS9**** **(The " * " can be 0-9 , A-Z ,a-z, or blank for marketing purpose)**
FCC ID	:	**2AH6G-NS915I**
Standard	:	**47 CFR FCC Part 15.247**
Operating Band	:	**2400 MHz – 2483.5 MHz**
FCC Classification	:	**DTS**
Applicant / Manufacturer	:	**Ambir Technology, Inc.** **928 N. OakLawn Ave. Elmhurst, IL 60126 USA**

The product sample received on May 09, 2016 and completely tested on Jul. 12, 2016. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 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:

Kevin Liang / Assistant Manager

TAF Testing Laboratory 1190

Table of Contents

1 GENERAL DESCRIPTION 5

1.1 Information 5
1.2 Accessories and Support Equipment 7
1.3 Testing Applied Standards 7
1.4 Testing Location Information 7
1.5 Measurement Uncertainty 8

2 TEST CONFIGURATION OF EUT 9

2.1 The Worst Case Modulation Configuration 9
2.2 The Worst Case Power Setting Parameter 9
2.3 The Worst Case Measurement Configuration 10
2.4 Test Setup Diagram 11

3 TRANSMITTER TEST RESULT 12

3.1 AC Power-line Conducted Emissions 12
3.2 6dB Bandwidth 15
3.3 RF Output Power 17
3.4 Power Spectral Density 21
3.5 Transmitter Bandedge Emissions 23
3.6 Transmitter Radiated Unwanted Emissions 50

4 TEST EQUIPMENT AND CALIBRATION DATA 80

APPENDIX A. TEST PHOTOS

APPENDIX B. PHOTOGRAPHS OF EUT

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]: 0.3762040 MHz 30.42 (Margin 17.94dB) - AV 36.33 (Margin 22.03dB) - QP	FCC 15.207	Complied
3.2	15.247(a)	6dB Bandwidth	6dB Bandwidth Unit [MHz] 20M: 9.12 / 40M: 36.32	≥500kHz	Complied
3.3	15.247(b)	RF Output Power (Maximum Peak Conducted Output Power)	Power [dBm]: 16.20	Power [dBm]:30	Complied
3.4	15.247(e)	Power Spectral Density	PSD [dBm/3kHz]: -17.53	PSD [dBm/3kHz]:8	Complied
3.5	15.247(d)	Transmitter Radiated Bandedge Emissions	Non-Restricted Bands: 2412 MHz: 27.83dB Restricted Bands [dBuV/m at 3m]: 2489.600 MHz 53.01 (Margin 20.99dB) - PK 2487.800 MHz 41.65 (Margin 12.35dB) - AV	Non-Restricted Bands: > 20 dBc Restricted Bands: FCC 15.209	Complied
3.6	15.247(d)	Transmitter Radiated Unwanted Emissions	Restricted Bands [dBuV/m at 3m]: 4824 MHz 54.40 (Margin 19.60dB) - PK 51.71 (Margin 2.29dB) - AV	Non-Restricted Bands: > 20 dBc Restricted Bands: FCC 15.209	Complied

Revision History

Report No.	Version	Description	Issued Date
FR482634-02	Rev. 01	Initial issue of report	Aug. 01, 2016

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	14.48	N/A
2400-2483.5	g	2412-2462	1-11 [11]	1	16.20	N/A
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	1	15.88	N/A
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	1	15.52	N/A
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

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.	
☐	External antenna (dedicated antennas)		
	☐	Single power level with corresponding antenna(s).	
	☐	Multiple power level and corresponding antenna(s).	
	☐	RF connector provided	
		☐	Unique antenna connector. (e.g., MMCX, U.FL, IPX, and RP-SMA, RP-N type…)
		☐	Standard antenna connector. (e.g., SMA, N, BNC, and TNC type…)

Antenna General Information			
No.	**Ant. Cat.**	**Ant. Type**	**Gain (dBi)**
1	Integral	TBC	2

1.1.3 Type of EUT

Identify EUT	
EUT Serial Number	N/A
Presentation of Equipment	☐ Production ; ☒ Pre-Production ; ☐ Prototype

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

1.1.4 Test Signal Duty Cycle

Operated Mode for Worst Duty Cycle	
☐ Operated normally mode for worst duty cycle	
☒ Operated test mode for worst duty cycle	
Test Signal Duty Cycle (x)	**Power Duty Factor [dB] – (10 log 1/x)**
☒ 100% - IEEE 802.11b	0
☒ 100% - IEEE 802.11g	0
☒ 100% - IEEE 802.11n (HT20)	0
☒ 100% - IEEE 802.11n (HT40)	0

1.1.5 EUT Operational Condition

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

1.2 Accessories and Support Equipment

Specification of Accessory				
AC Adapter	Brand Name	ENG	Model Name	6A-401WP24
	Power Rating	I/P: 100-240Vac, 1A, O/P: 24Vdc, 1.7A		
	Signal Line	1.7meter, non-shielded cable, with w/o ferrite core		

Support Equipment - AC Conduction and Radiated Emission			
No.	**Equipment**	**Brand Name**	**Model Name**
-	-	-	-

Support Equipment - RF Conducted			
No.	**Equipment**	**Brand Name**	**Model Name**
1	Notebook	DELL	E6400
2	AC Adapter for NB	DELL	LA65NS2-01

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 C63.10-2013
- FCC KDB 558074 D01 v03r05

1.4 Testing Location Information

Testing Location					
☒	HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-327-0973			
Test Condition	**Test Site No.**	**Test Engineer**	**Test Environment**	**Test Date**	
AC Conduction	CO04-HY	Ryan	23°C / 58%	19/05/2016	
RF Conducted	TH06-HY	Jeremy	23°C / 62%	12/05/2016	
Radiated Emission	03CH09-HY	Joe	22.2°C / 51.8%	12/07/2016	

Test site registered number [553509] with FCC

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, 26dB bandwidth		±0.5%
RF output power, conducted		±0.1 dB
Power density, conducted		±0.5 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
	N/A	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
	N/A	N/A
Temperature		±0.8 °C
Humidity		±5 %
DC and low frequency voltages		±0.9%
Time		±1.4 %
Duty Cycle		±0.5 %

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,1-11Mbps	1	1-11 Mbps	1 Mbps
11g,6-54Mbps	1	6-54 Mbps	6 Mbps
HT20,M0-7	1	M0-7	MCS 0
HT40,M0-7	1	M0-7	MCS 0

2.2 The Worst Case Power Setting Parameter

The Worst Case Power Setting Parameter (2400-2483.5MHz band)							
Test Software Version	REALTEK MP TOOL V1.0						
Modulation Mode	**N_{TX}**	**Test Frequency (MHz)**					
		NCB: 20MHz			**NCB: 40MHz**		
		2412	**2437**	**2462**	**2422**	**2437**	**2452**
11b,1-11Mbps	1	33	33	33	-	-	-
11g,6-54Mbps	1	33	33	33	-	-	-
HT20,M0-7	1	33	33	33	-	-	-
HT40,M0-7	1	-	-	-	33	33	33

2.3 The Worst Case Measurement Configuration

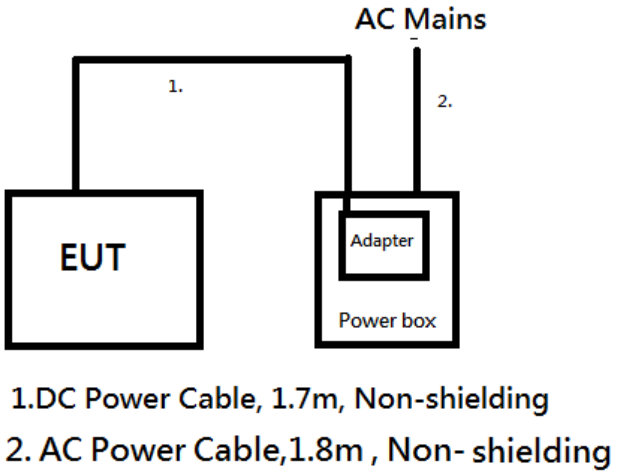
The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
Operating Mode	Operating Mode Description
1	Transmitter Mode

The Worst Case Mode for Following Conformance Tests	
Tests Item	RF Output Power, Power Spectral Density, 6 dB Bandwidth
Test Condition	Conducted measurement at transmit chains
Modulation Mode	11b, 11g, HT20, HT40

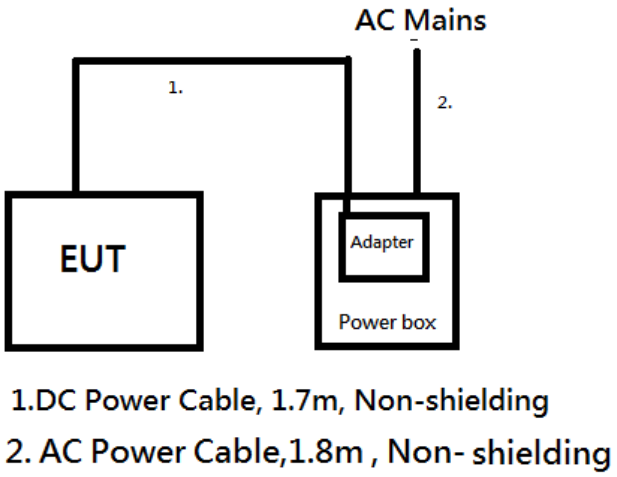
The Worst Case Mode for Following Conformance Tests	
Tests Item	Transmitter Radiated Unwanted Emissions Transmitter Radiated Bandedge Emissions
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), 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 will be a hand-held or body-worn battery-powered devices and operating multiple positions.
Operating Mode < 1GHz	☒ Transmitter Mode
Modulation Mode	11b, 11g, HT20, HT40
Orthogonal Planes of EUT	**X Plane**
	V

2.4 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



Test Setup Diagram - Radiated Test



3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

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

3.1.2 Measuring Instruments

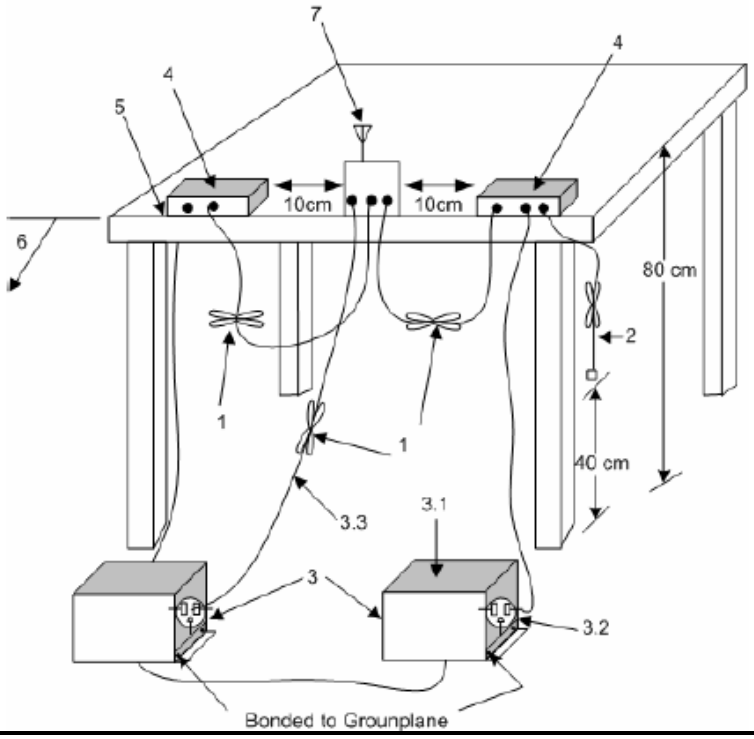
Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

Test Method
☒ Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

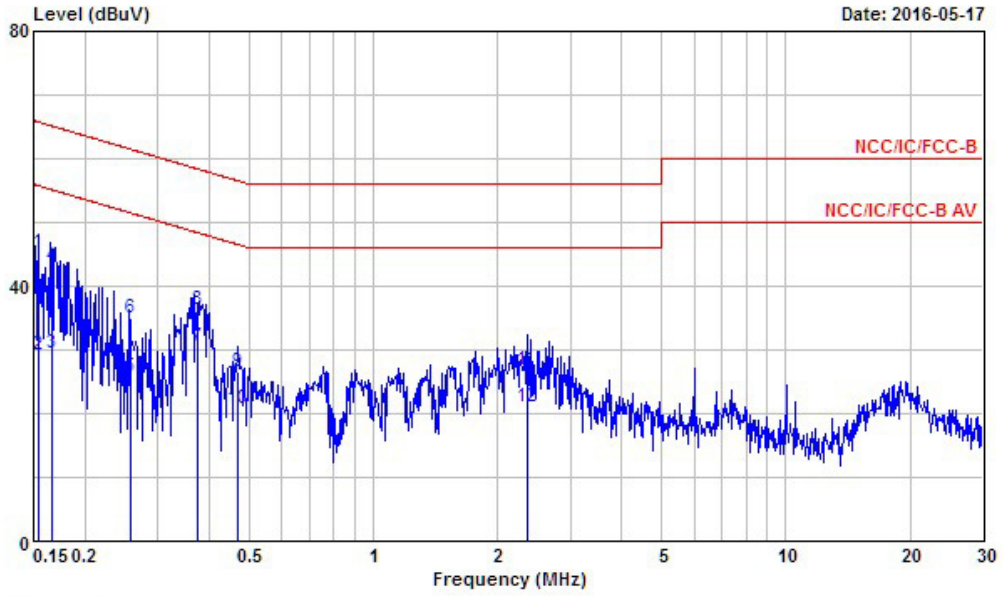
3.1.4 Test Setup

AC Power-line Conducted Emissions



3.1.5 Test Result of AC Power-line Conducted Emissions

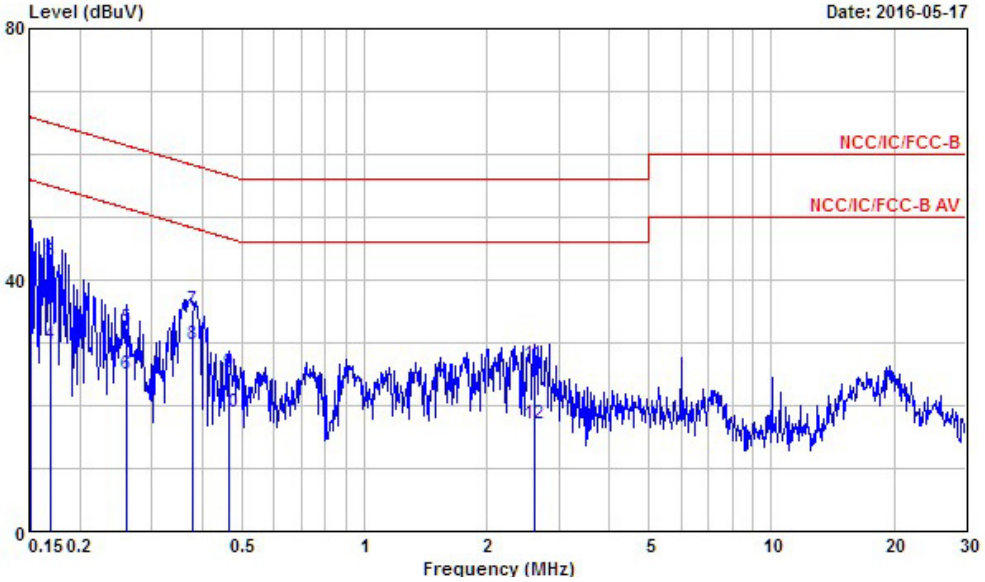
AC Power-line Conducted Emissions Result			
Operating Mode	1	**Power Phase**	Neutral
Operating Function	Transmitter Mode		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1540270	45.36	-20.42	65.78	45.04	0.10	0.22	QP
2	0.1540270	29.15	-26.63	55.78	28.83	0.10	0.22	Average
3	0.1658400	29.57	-25.60	55.17	29.22	0.10	0.25	Average
4	0.1658400	43.21	-21.96	65.17	42.86	0.10	0.25	QP
5	0.2577510	25.69	-25.81	51.50	25.35	0.11	0.23	Average
6	0.2577510	35.06	-26.44	61.50	34.72	0.11	0.23	QP
7	@0.3762040	30.42	-17.94	48.36	30.18	0.12	0.12	Average
8	0.3762040	36.33	-22.03	58.36	36.09	0.12	0.12	QP
9	0.4695010	26.63	-29.89	56.52	26.41	0.12	0.10	QP
10	0.4695010	20.85	-25.67	46.52	20.63	0.12	0.10	Average
11	2.359	26.91	-29.09	56.00	26.50	0.16	0.25	QP
12	2.359	21.03	-24.97	46.00	20.62	0.16	0.25	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	Transmitter Mode		



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.1515980	46.01	-19.90	65.91	45.68	0.11	0.22	QP
2	0.1515980	30.50	-25.41	55.91	30.17	0.11	0.22	Average
3	0.1700450	42.84	-22.12	64.96	42.48	0.11	0.25	QP
4	0.1700450	29.65	-25.31	54.96	29.29	0.11	0.25	Average
5	0.2598550	32.30	-29.14	61.44	31.97	0.11	0.22	QP
6	0.2598550	25.00	-26.44	51.44	24.67	0.11	0.22	Average
7	0.3771190	35.33	-23.01	58.34	35.09	0.12	0.12	QP
8	0.3771190	29.70	-18.64	48.34	29.46	0.12	0.12	Average
9	0.4636720	25.26	-31.37	56.63	25.04	0.12	0.10	QP
10	0.4636720	18.83	-27.80	46.63	18.61	0.12	0.10	Average
11	2.610	26.54	-29.46	56.00	26.16	0.16	0.22	QP
12	2.610	17.19	-28.81	46.00	16.81	0.16	0.22	Average

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

3.2 6dB Bandwidth

3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit
Systems using digital modulation techniques:
☒ 6 dB bandwidth ≥ 500 kHz.

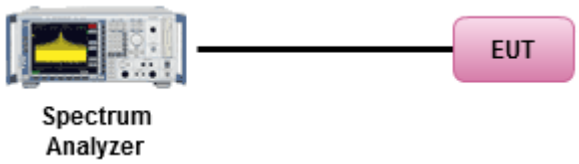
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method			
☒	For the emission bandwidth shall be measured using one of the options below:		
	☒	Refer as FCC KDB 558074, clause 8.1 Option 1 for 6 dB bandwidth measurement.	
	☐	Refer as FCC KDB 558074, clause 8.2 Option 2 for 6 dB bandwidth measurement.	
	☐	Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.	
☒	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.	
	☐	The EUT supports multiple transmit chains using options given below:	
		☐	Option 1: Multiple transmit chains measurements need to be performed on one of the active transmit chains (antenna outputs). All measurement had be performed on transmit chains 1.
		☐	Option 2: Multiple transmit chains measurements need to be performed on each transmit chains individually (antenna outputs). All measurement had be performed on all transmit chains.

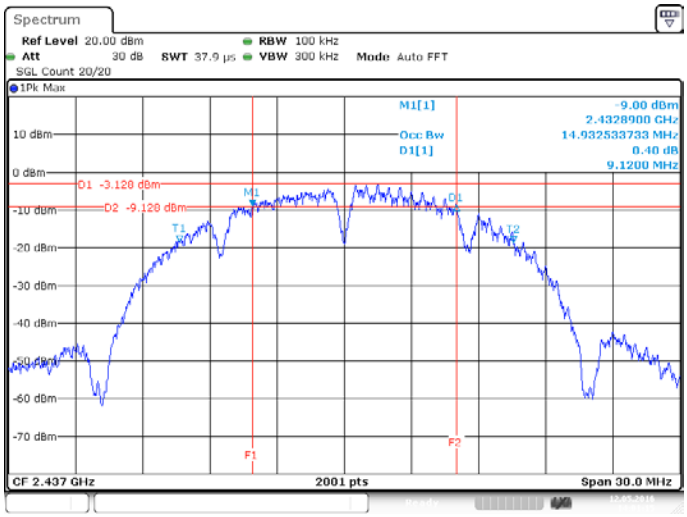
3.2.4 Test Setup

Emission Bandwidth


3.2.5 Test Result of Emission Bandwidth

Emission Bandwidth Result				
Condition			Emission Bandwidth (MHz)	
Modulation Mode	N_{TX}	Freq. (MHz)	99% Bandwidth	6dB Bandwidth
11b	1	2412	14.97	10.06
11b	1	2437	14.93	9.12
11b	1	2462	14.99	9.87
11g	1	2412	16.43	16.50
11g	1	2437	16.50	16.56
11g	1	2462	16.50	16.54
HT20	1	2412	17.66	17.70
HT20	1	2437	17.66	17.65
HT20	1	2462	17.69	17.77
HT40	1	2422	35.94	36.32
HT40	1	2437	35.86	36.32
HT40	1	2452	35.94	36.32
Limit			N/A	≥500 kHz
Result			Complied	
Note 1: N_{TX} = Number of Transmit Chains				

Worst Emission Bandwidth Plots
11b



3.3 RF Output Power

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

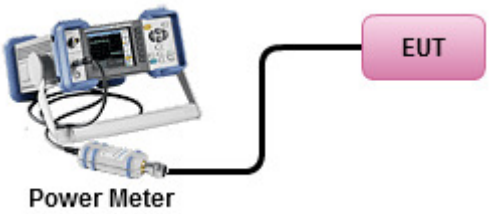
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
☒	Maximum Peak Conducted Output Power
	☐ Refer as FCC KDB 558074, clause 9.1.1 Option 1 (RBW ≥ EBW method).
	☒ Refer as FCC KDB 558074, clause 9.1.2 Option 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 performed on this transmit chain.
	☐ The EUT supports diversity transmitting and the results on transmit chain port 1 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]) $EIRP_{total} = P_{total} + DG$

3.3.4 Test Setup

RF Output Power (Power Meter)


3.3.5 Directional Gain for Power Measurement

Directional Gain (DG) Result					
Transmit Chains No.		1	-	-	-
Maximum G_{ANT} (dBi)		2.00	-	-	-
Modulation Mode	**DG (dBi)**	**N_{TX}**	**N_{SS} (Min.)**	**STBC**	**Array Gain (dB)**
11b,1-11Mbps	2.00	1	1	-	-
11g,6-54Mbps	2.00	1	1	-	-
HT20,M0-7	2.00	1	1	-	-
HT40,M0-7	2.00	1	1	-	-

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 = $G_{ANT} + 10 \log(N_{TX})$
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};

3.3.6 Test Result of Maximum Peak Conducted Output Power

Maximum Peak Conducted Output Power Result							
Condition			RF Output Power (dBm)				
Modulation Mode	N_{TX}	Freq. (MHz)	Chain Port 1	Power Limit	DG (dBi)	EIRP Power	EIRP Limit
11b	1	2412	13.20	30.00	2.00	15.20	36.00
11b	1	2437	13.97	30.00	2.00	15.97	36.00
11b	1	2462	14.48	30.00	2.00	16.48	36.00
11g	1	2412	15.09	30.00	2.00	17.09	36.00
11g	1	2437	15.70	30.00	2.00	17.70	36.00
11g	1	2462	16.20	30.00	2.00	18.20	36.00
HT20	1	2412	14.59	30.00	2.00	16.59	36.00
HT20	1	2437	15.30	30.00	2.00	17.30	36.00
HT20	1	2462	15.88	30.00	2.00	17.88	36.00
HT40	1	2422	14.90	30.00	2.00	16.90	36.00
HT40	1	2437	15.24	30.00	2.00	17.24	36.00
HT40	1	2452	15.52	30.00	2.00	17.52	36.00
Result			Complied				

3.3.7 Test Result of Maximum Average Conducted Output Power

Maximum Average Conducted Output Power							
Condition			RF Output Power (dBm)				
Modulation Mode	N_{TX}	Freq. (MHz)	Chain Port 1	Power Limit	DG (dBi)	EIRP Power	EIRP Limit
11b	1	2412	10.89	30.00	2.00	12.89	36.00
11b	1	2437	11.64	30.00	2.00	13.64	36.00
11b	1	2462	12.14	30.00	2.00	14.14	36.00
11g	1	2412	5.45	30.00	2.00	7.45	36.00
11g	1	2437	6.15	30.00	2.00	8.15	36.00
11g	1	2462	6.71	30.00	2.00	8.71	36.00
HT20	1	2412	5.43	30.00	2.00	7.43	36.00
HT20	1	2437	6.17	30.00	2.00	8.17	36.00
HT20	1	2462	6.74	30.00	2.00	8.74	36.00
HT40	1	2422	5.45	30.00	2.00	7.45	36.00
HT40	1	2437	5.75	30.00	2.00	7.75	36.00
HT40	1	2452	6.06	30.00	2.00	8.06	36.00
Result			Complied				

3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

Power Spectral Density Limit
☒ Power Spectral Density (PSD) ≤ 8 dBm/3kHz

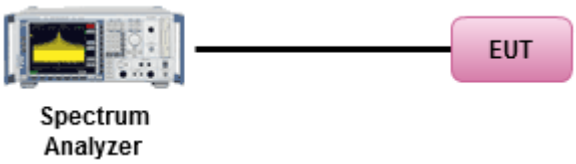
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

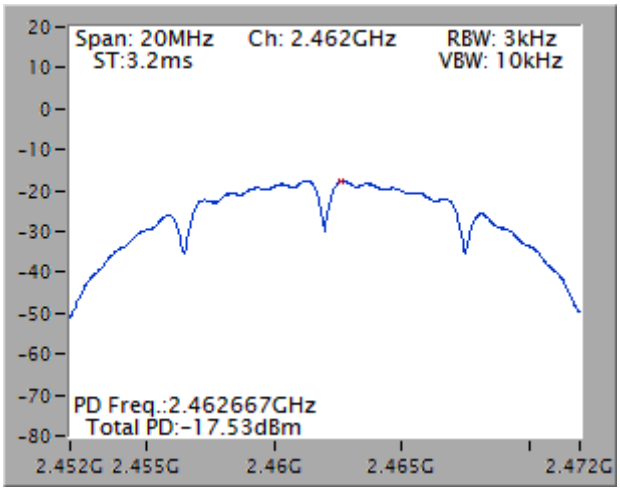
Test Method			
☒	Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).		
	☒ Refer as FCC KDB 558074, clause 10.2 Method PKPSD (RBW=3-100kHz;detector=peak)..		
	[duty cycle ≥ 98% or external video / power trigger]		
	☐ Refer as FCC KDB 558074, clause 10.3 Method AVGPSD-1 (spectral trace averaging).		
	☐ Refer as FCC KDB 558074, clause 10.4 Method AVGPSD-1 Alt. (slow sweep speed)		
	duty cycle < 98% and average over on/off periods with duty factor		
	☐ Refer as FCC KDB 558074, clause 10.5 Method AVGPSD-2 (spectral trace averaging).		
	☐ Refer as FCC KDB 558074, clause 10.6 Method AVGPSD-2 Alt. (slow sweep speed)		
☒	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.		
	☐ The EUT supports multiple transmit chains using options given below:		
		☐ Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the N_{TX} output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.	
		☐ Option 2: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit.	
		☐ Option 3: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,	

3.4.4 Test Setup

Power Spectral Density


3.4.5 Test Result of Power Spectral Density

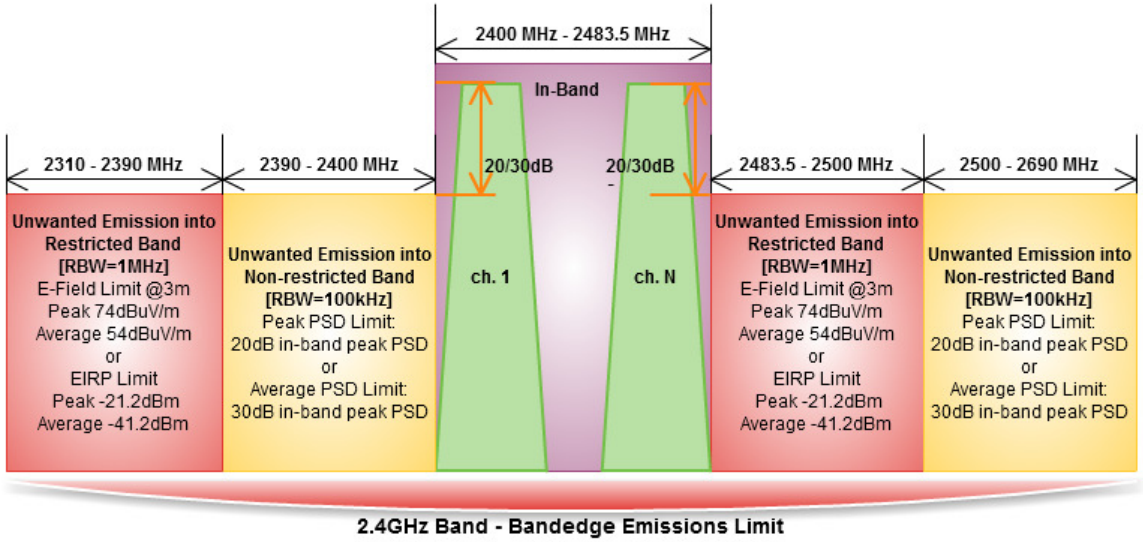
Power Spectral Density Result				
Condition			Power Spectral Density (dBm/3kHz)	
Modulation Mode	N_{TX}	Freq. (MHz)	Chain Port 1	Power Limit
11b	1	2412	-19.06	8
11b	1	2437	-18.31	8
11b	1	2462	-17.53	8
11g	1	2412	-22.88	8
11g	1	2437	-21.88	8
11g	1	2462	-21.44	8
HT20	1	2412	-22.40	8
HT20	1	2437	-21.28	8
HT20	1	2462	-21.10	8
HT40	1	2422	-23.31	8
HT40	1	2437	-21.84	8
HT40	1	2452	-21.60	8
Result			Complied	

Worst Power Spectral Density Plots
11b [Sum All Chains]


3.5 Transmitter Bandedge Emissions

3.5.1 Transmitter Radiated Bandedge Emissions Limit

Transmitter Radiated Bandedge Emissions Limit



3.5.2 Measuring Instruments

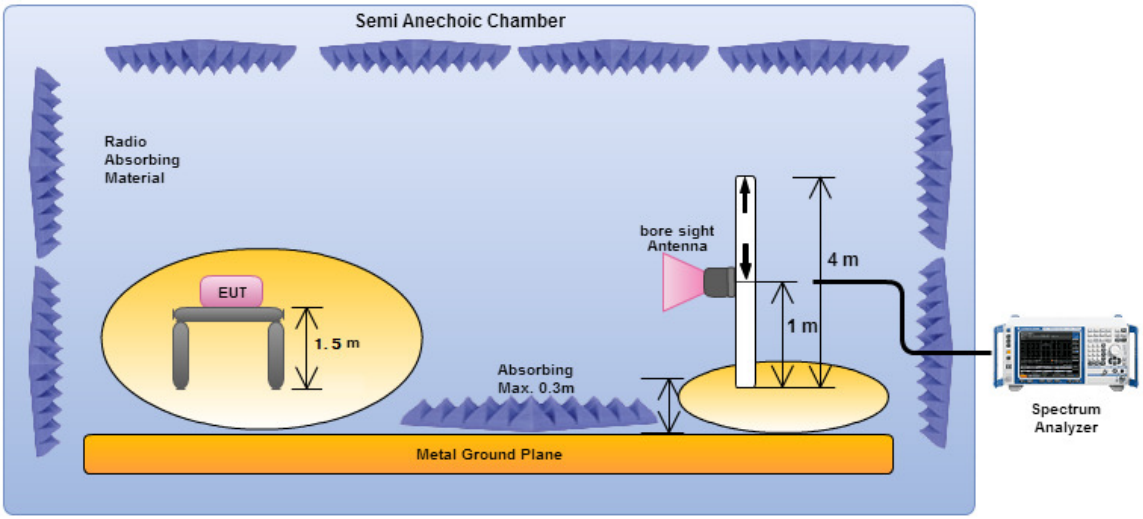
Refer a test equipment and calibration data table in this test report.

3.5.3 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 and ANSI C63.10, clause 6.6. Test distance is 3m.		

3.5.4 Test Setup

Transmitter Radiated Bandedge Emissions



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

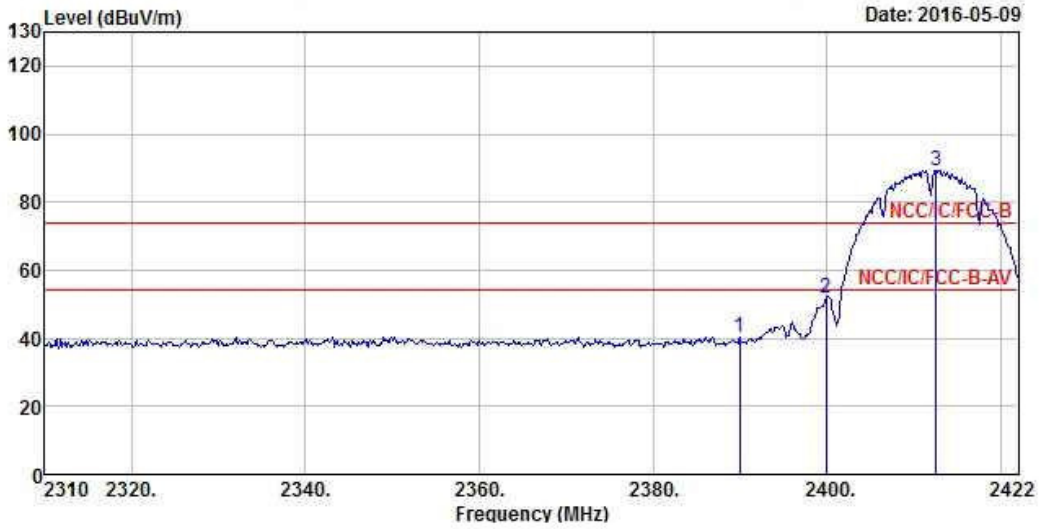
3.5.5 Transmitter Radiated Bandedge Emissions

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	89.31	2399.936	51.70	37.61	20	H
11b	1	2462	93.52	2530.400	41.46	52.06	20	H
11g	1	2412	80.77	2400.000	52.24	28.53	20	H
11g	1	2462	84.96	2513.200	41.19	43.77	20	H
HT20,M0-7	1	2412	81.05	2400.000	53.22	27.83	20	H
HT20,M0-7	1	2462	84.31	2544.600	41.43	42.88	20	H
HT40,M0-7	1	2422	77.98	2398.176	50.03	27.95	20	H
HT40,M0-7	1	2452	78.53	2525.840	41.53	37.00	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	2388.176	51.91	74	2385.712	40.34	54	H
11b	1	2462	3	2489.600	53.01	74	2487.800	41.65	54	H
11g	1	2412	3	2380.784	50.95	74	2388.848	39.90	54	H
11g	1	2462	3	2497.800	51.11	74	2483.500	40.48	54	H
HT20,M0-7	1	2412	3	2388.176	50.85	74	2389.968	39.85	54	H
HT20,M0-7	1	2462	3	2497.800	51.50	74	2483.600	40.62	54	H
HT40,M0-7	1	2422	3	2389.200	51.39	74	2389.200	40.00	54	H
HT40,M0-7	1	2452	3	2486.240	51.98	74	2483.600	40.96	54	H
Note 1: Measurement worst emissions of receive antenna polarization.										

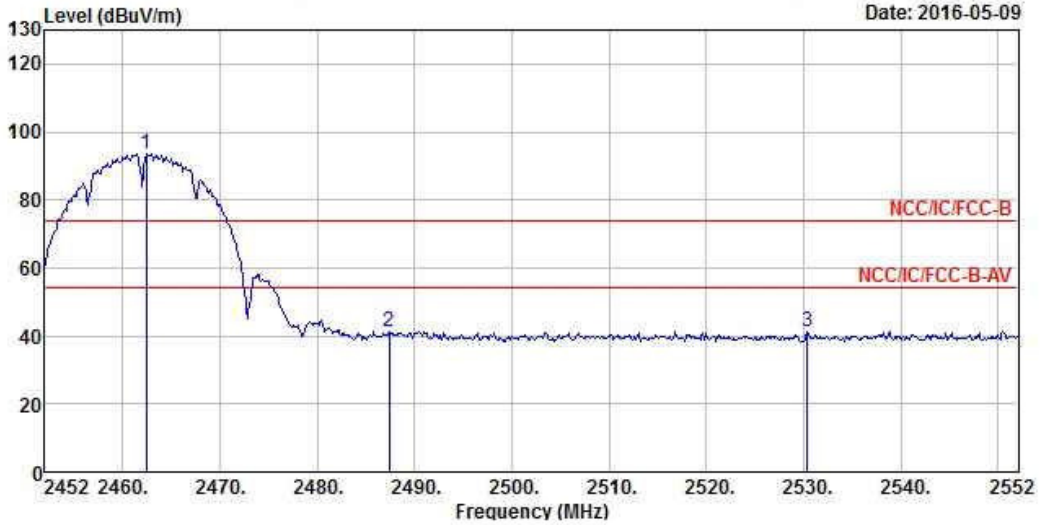
3.5.6 Transmitter Radiated Bandedge Emissions (Non-restricted Band)

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



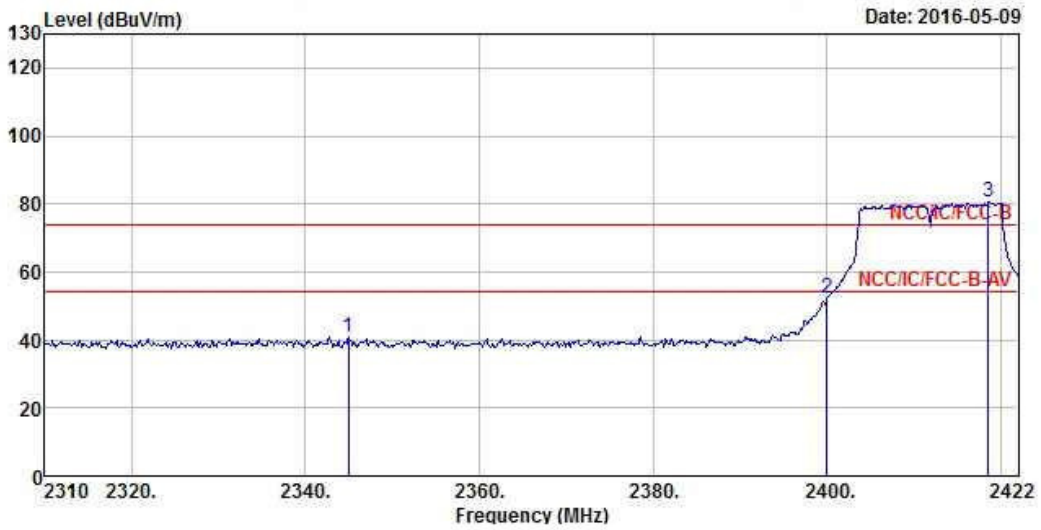
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2389.968	40.34			44.18	27.01	4.28	35.13	Peak
2	2399.936	51.70			55.51	27.04	4.28	35.13	Peak
3	2412.592	89.31			93.10	27.07	4.28	35.14	Peak

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



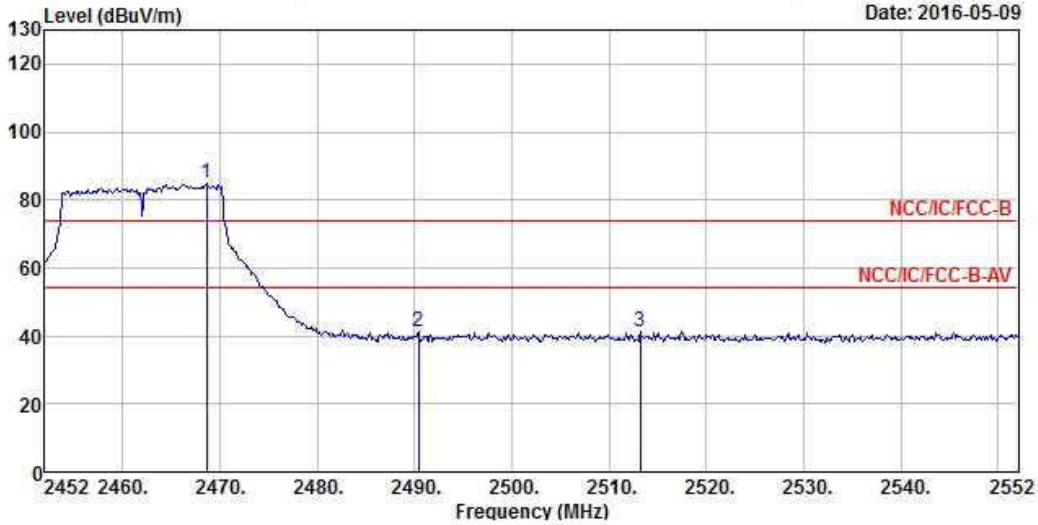
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2462.400	93.52			97.16	27.20	4.32	35.16	Peak
2	2487.400	41.48			45.03	27.27	4.35	35.17	Peak
3	2530.400	41.46			44.89	27.37	4.38	35.18	Peak

Modulation Mode	11g	Test Freq. (MHz)	2412
N_{TX}	1	Polarization	H



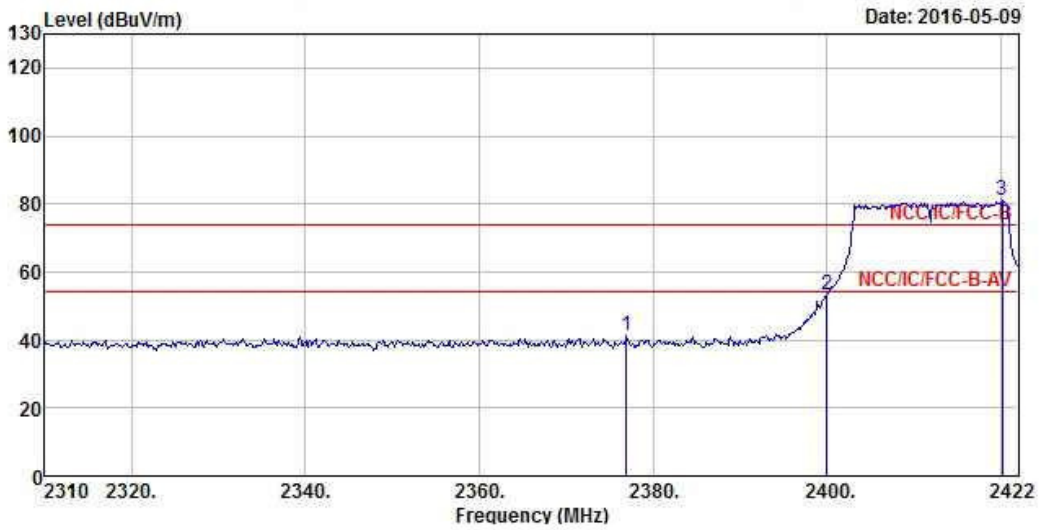
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2344.944	40.99			44.99	26.90	4.21	35.11	Peak
2	2400.000	52.24			56.05	27.04	4.28	35.13	Peak
3	2418.640	80.77			84.54	27.09	4.28	35.14	Peak

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



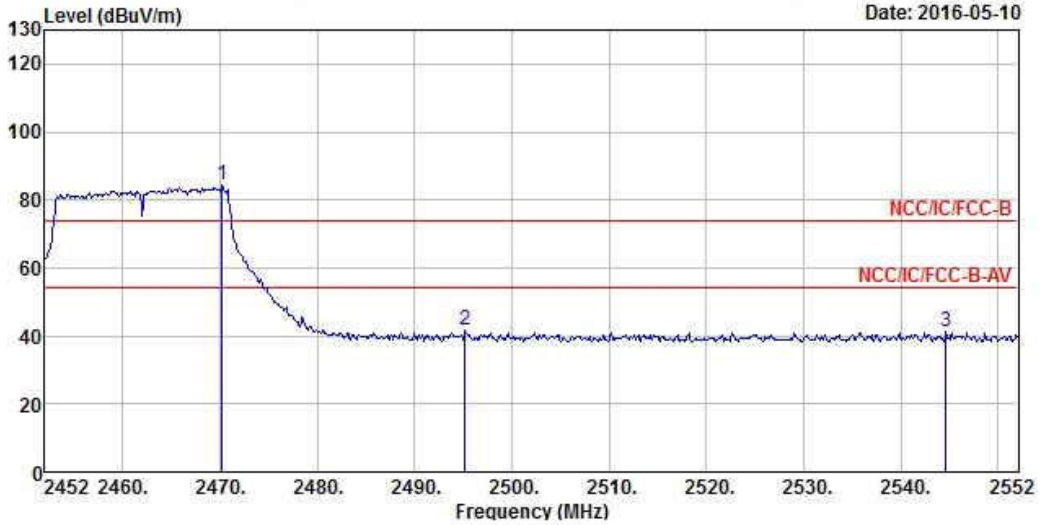
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2468.600	84.96			88.55	27.22	4.35	35.16	Peak
2	2490.400	41.08			44.62	27.28	4.35	35.17	Peak
3	2513.200	41.19			44.65	27.33	4.38	35.17	Peak

Modulation Mode	HT20	Test Freq. (MHz)	2412
N_{TX}	1	Polarization	H



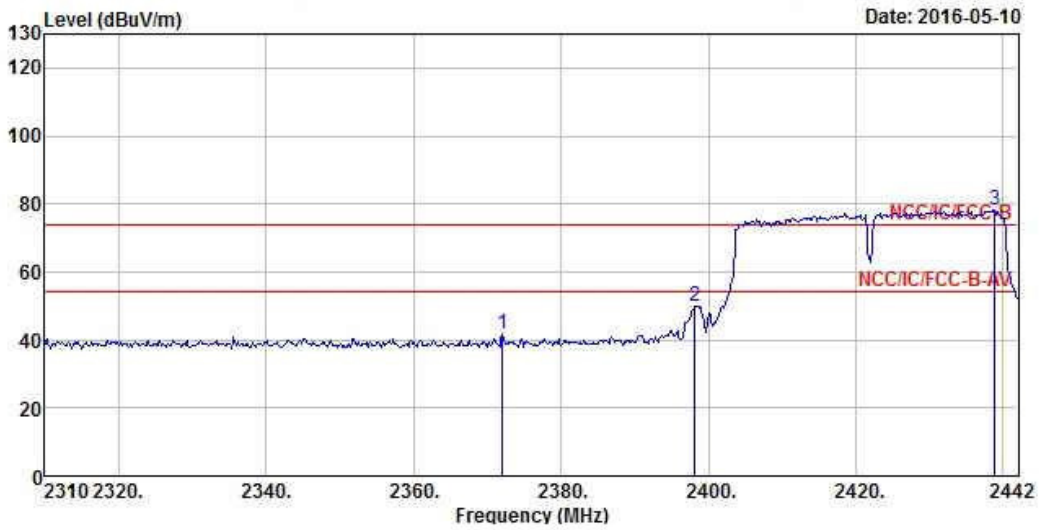
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2376.976	41.09			44.98	26.98	4.25	35.12	Peak
2	2400.000	53.22			57.03	27.04	4.28	35.13	Peak
3	2420.208	81.05			84.82	27.09	4.28	35.14	Peak

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



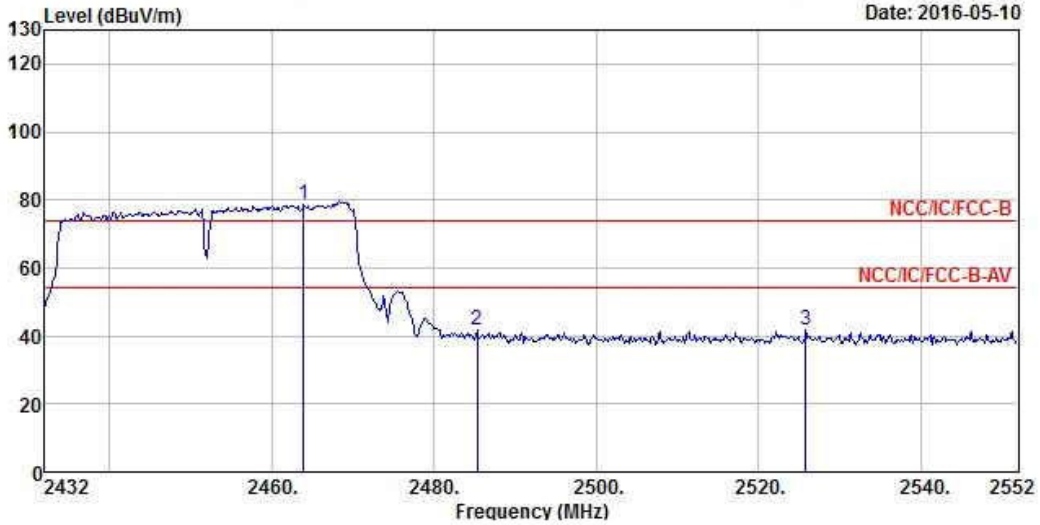
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2470.200	84.31			87.90	27.22	4.35	35.16	Peak
2	2495.200	41.57			45.10	27.29	4.35	35.17	Peak
3	2544.600	41.43			44.78	27.41	4.42	35.18	Peak

Modulation Mode	HT40	Test Freq. (MHz)	2422
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	2372.040	41.62			45.52	26.97	4.25	35.12	Peak
2	2398.176	50.03			53.84	27.04	4.28	35.13	Peak
3	2438.832	77.98			81.67	27.14	4.32	35.15	Peak

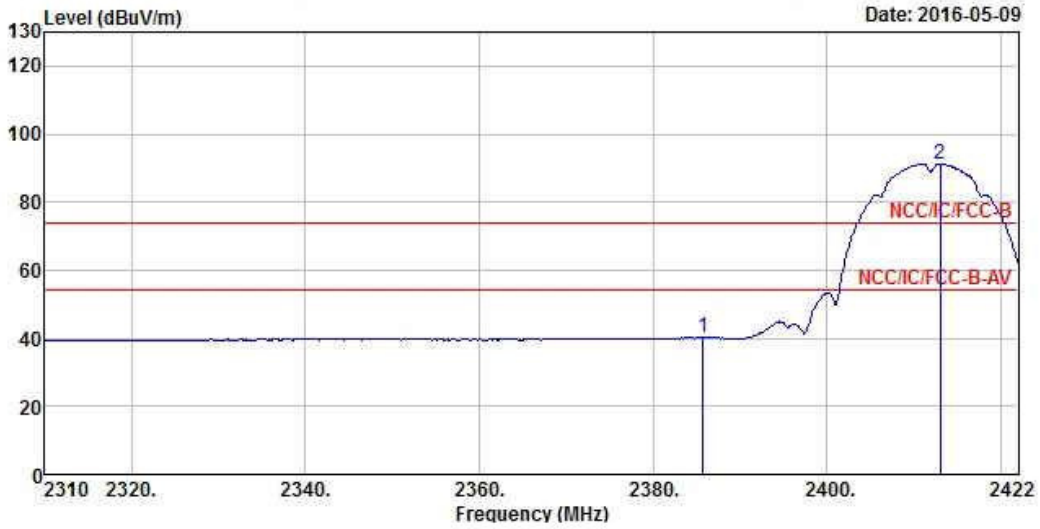
Transmitter Radiated Bandedge Emissions			
Modulation Mode	HT40	**Test Freq. (MHz)**	2452
N_{TX}	1	**Polarization**	H



	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	2463.920	78.53			82.13	27.21	4.35	35.16	Peak
2	2485.280	41.64			45.19	27.26	4.35	35.16	Peak
3	2525.840	41.53			44.97	27.36	4.38	35.18	Peak

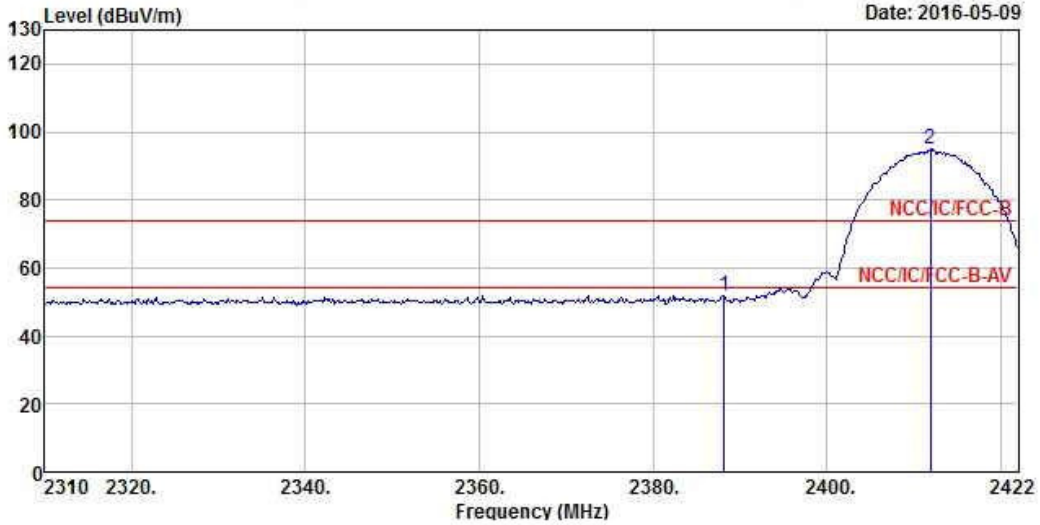
3.5.7 Transmitter Radiated Bandedge Emissions (Restricted Band)

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



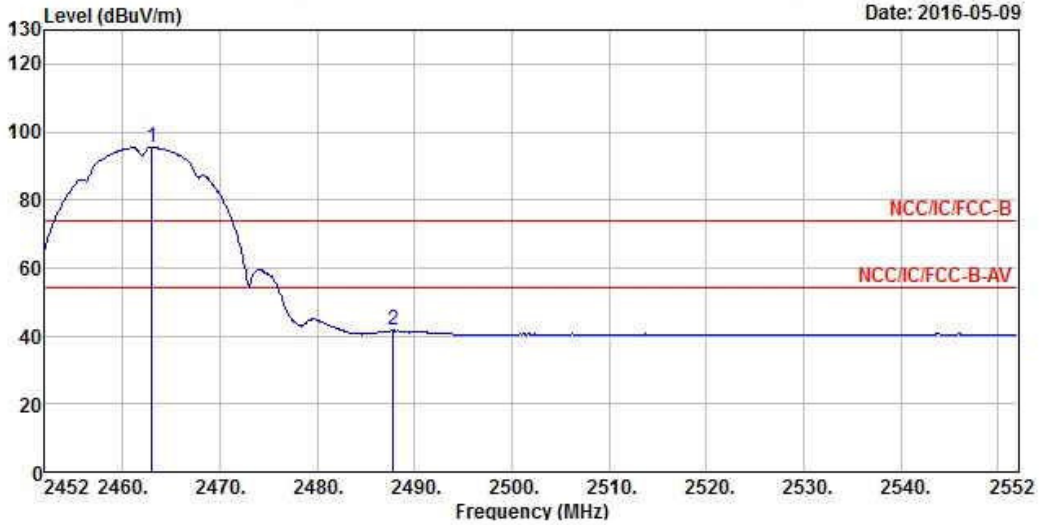
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2385.712	40.34	-13.66	54.00	44.19	27.00	4.28	35.13	Average
2	2413.040	91.35			95.14	27.07	4.28	35.14	Average

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



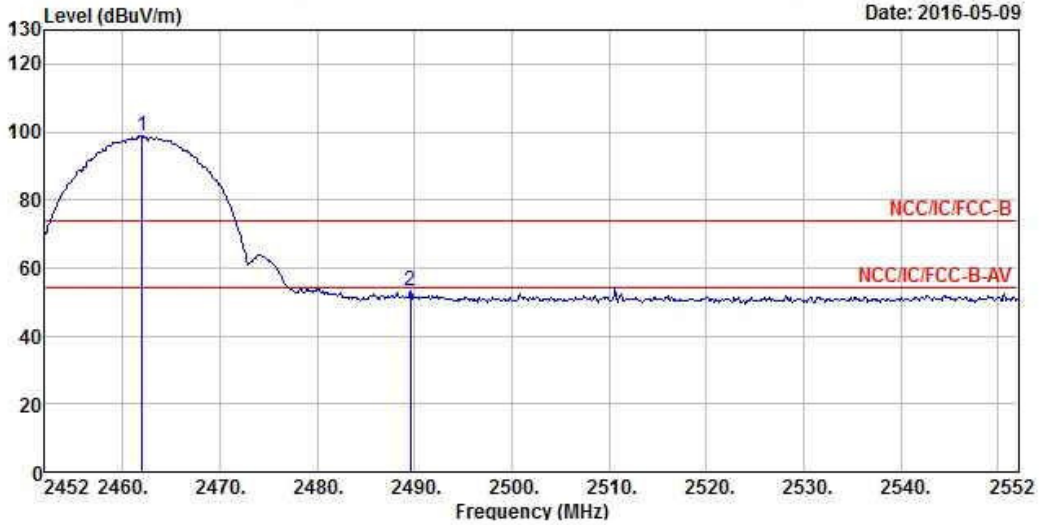
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2388.176	51.91	-22.09	74.00	55.75	27.01	4.28	35.13	Peak
2	2411.920	94.86			98.65	27.07	4.28	35.14	Peak

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



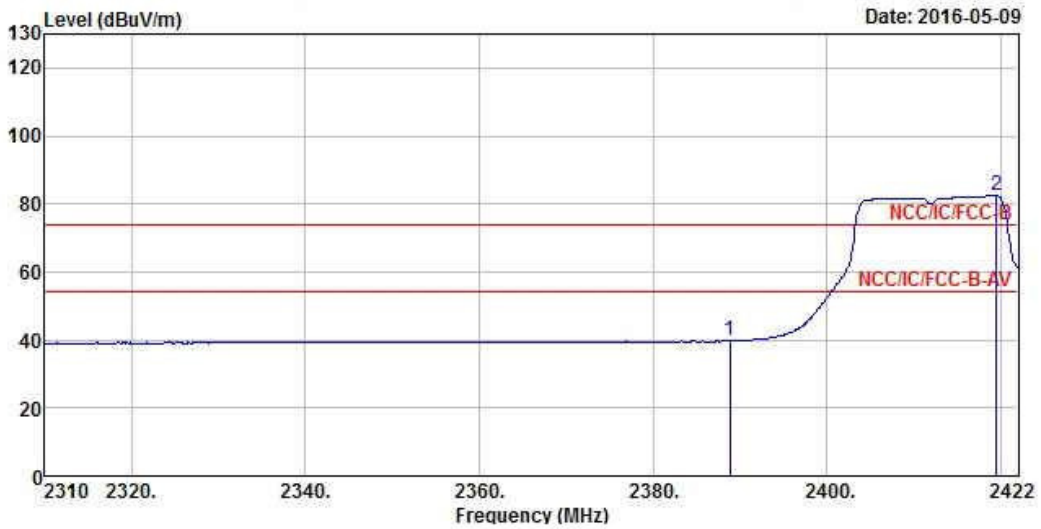
	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2463.000	95.59			99.20	27.20	4.35	35.16	Average
2	2487.800	41.65	-12.35	54.00	45.20	27.27	4.35	35.17	Average

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



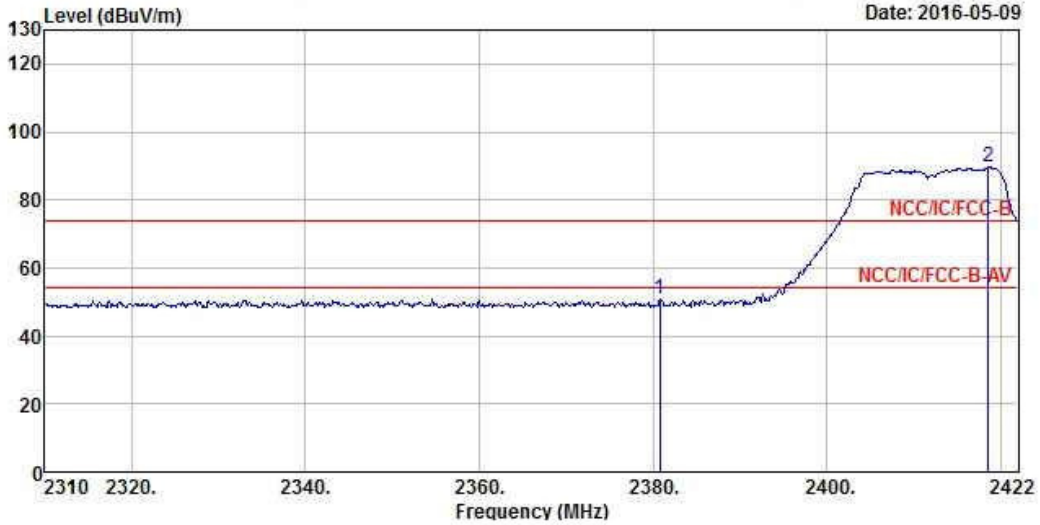
	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2462.000	99.01			102.65	27.20	4.32	35.16	Peak
2	2489.600	53.01	-20.99	74.00	56.56	27.27	4.35	35.17	Peak

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



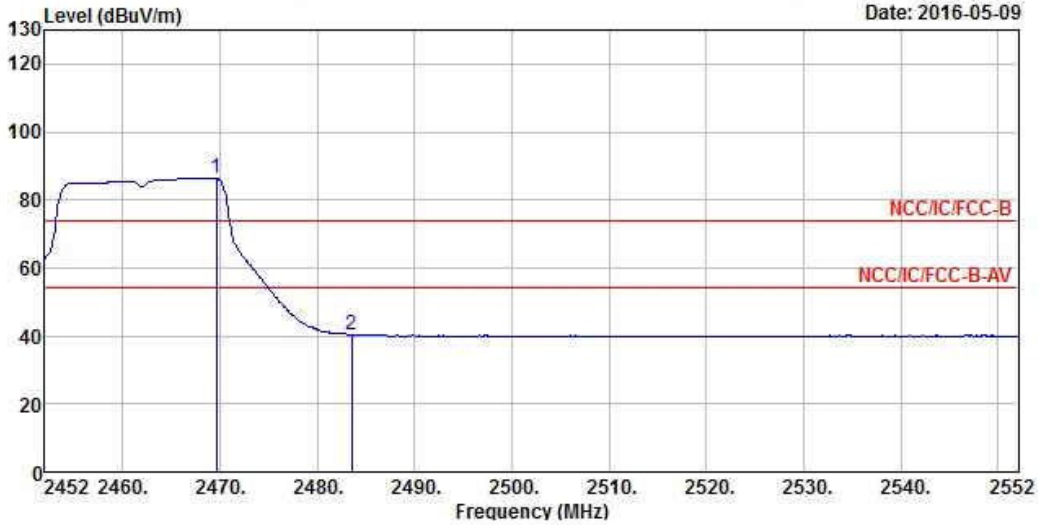
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2388.848	39.90	-14.10	54.00	43.74	27.01	4.28	35.13	Average
2	2419.536	82.39			86.16	27.09	4.28	35.14	Average

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



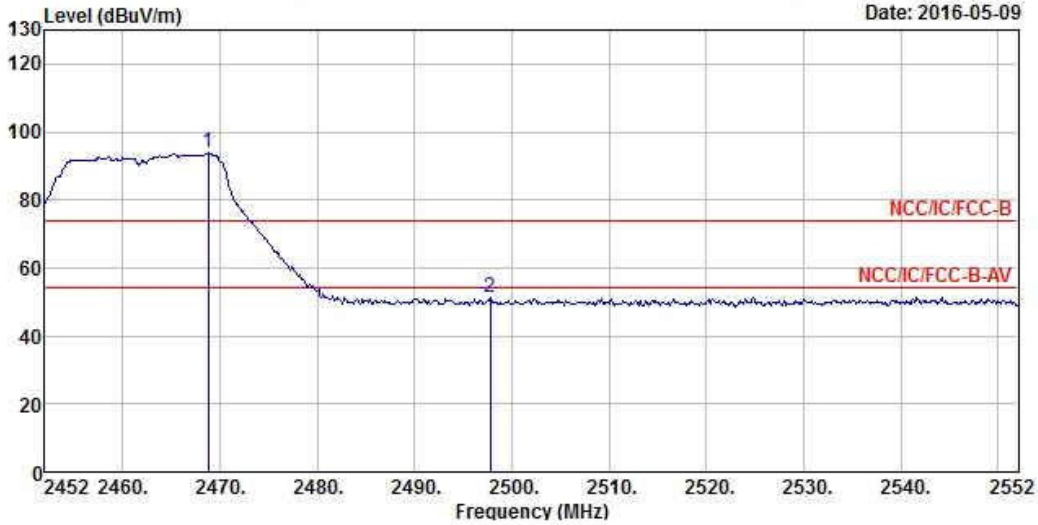
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2380.784	50.95	-23.05	74.00	54.83	26.99	4.25	35.12	Peak
2	2418.640	89.74			93.51	27.09	4.28	35.14	Peak

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



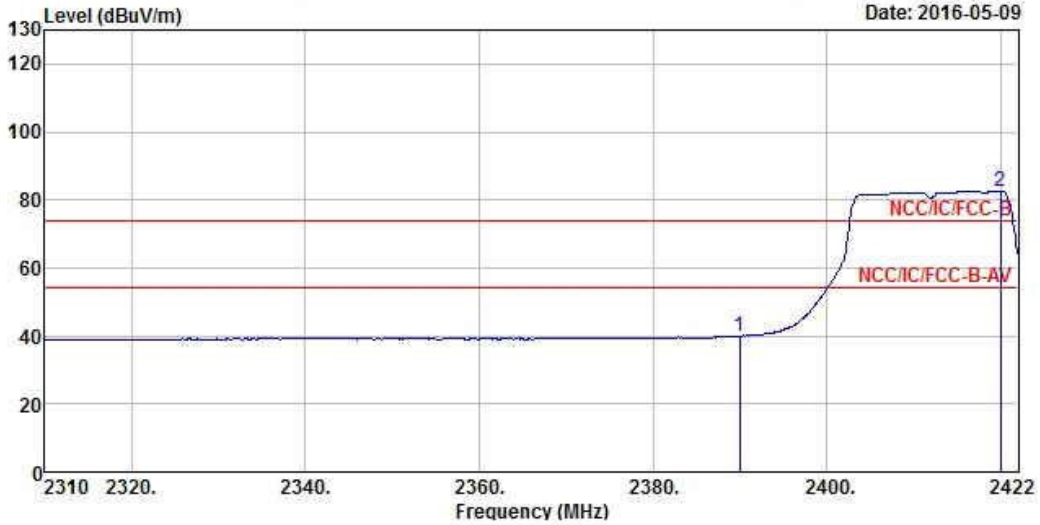
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2469.600	86.46			90.05	27.22	4.35	35.16	Average
2	2483.500	40.48	-13.52	54.00	44.03	27.26	4.35	35.16	Average

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



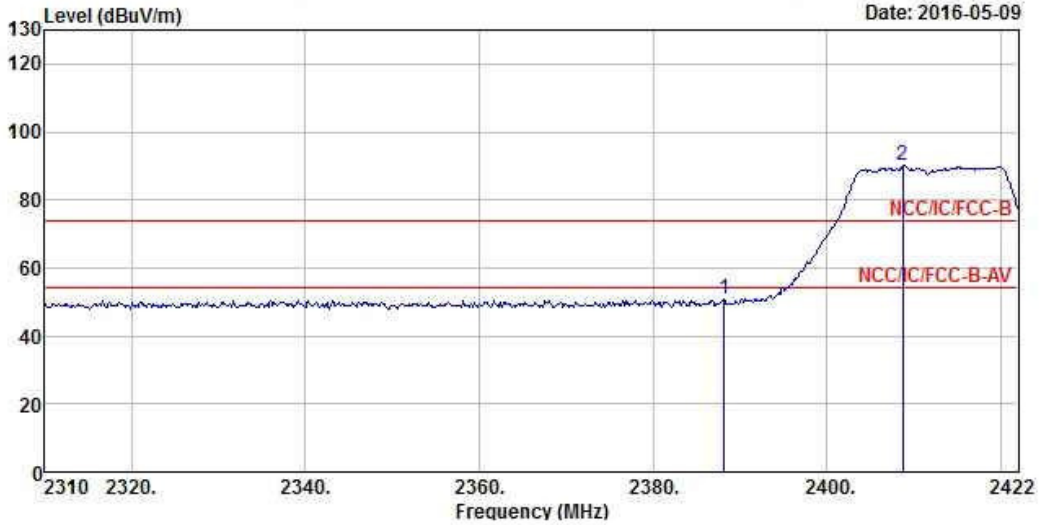
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2468.800	93.82			97.41	27.22	4.35	35.16	Peak
2	2497.800	51.11	-22.89	74.00	54.64	27.29	4.35	35.17	Peak

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



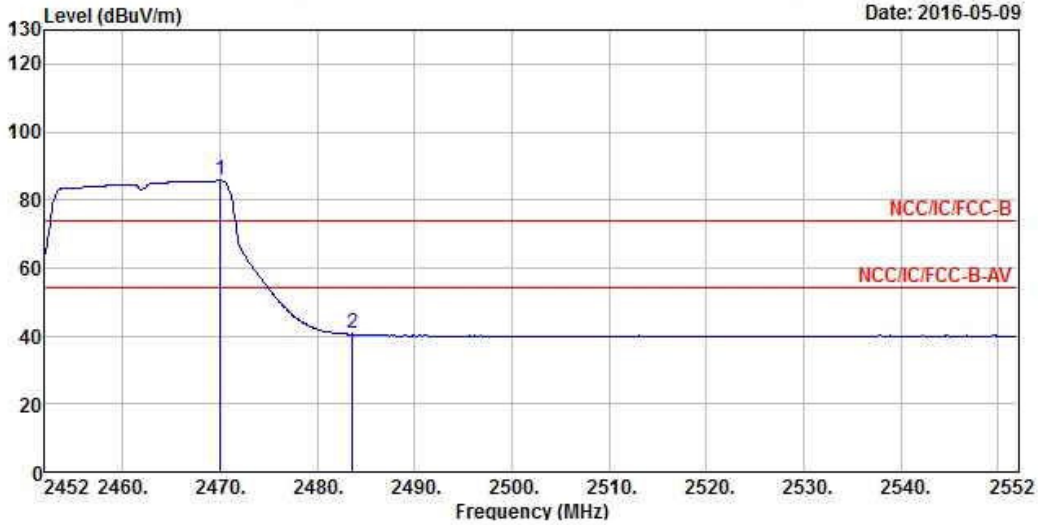
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2389.968	39.85	-14.15	54.00	43.69	27.01	4.28	35.13	Average
2	2419.984	82.54			86.31	27.09	4.28	35.14	Average

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



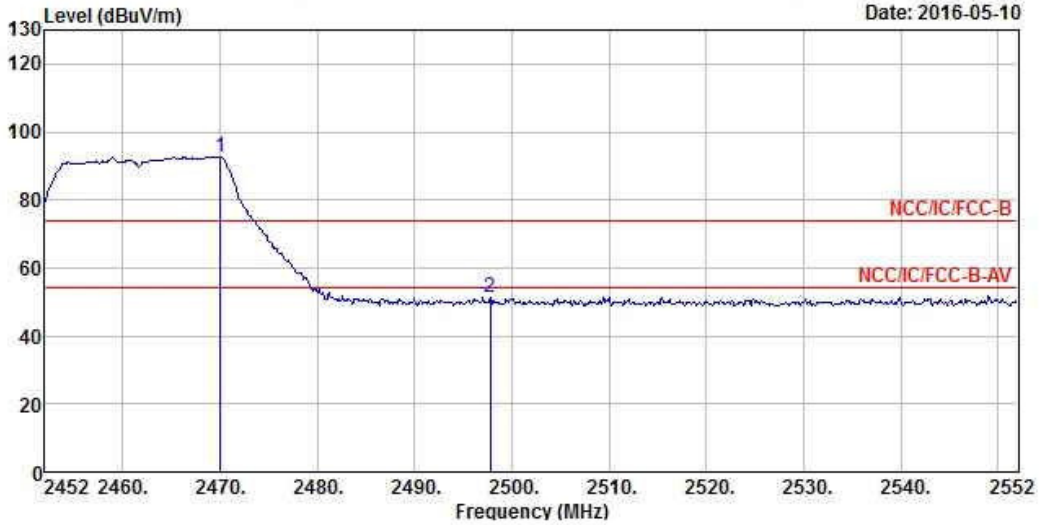
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2388.176	50.85	-23.15	74.00	54.69	27.01	4.28	35.13	Peak
2	2408.784	90.18			93.98	27.06	4.28	35.14	Peak

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



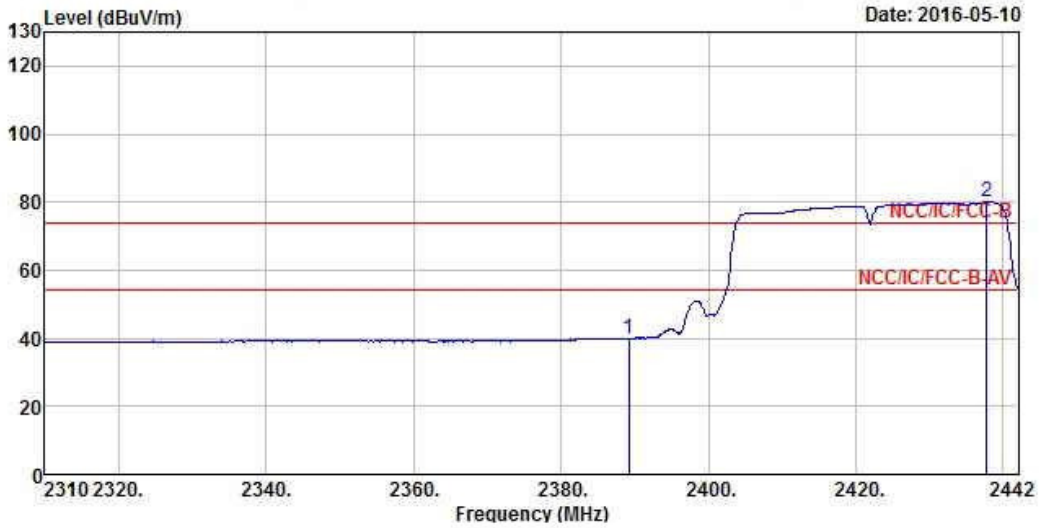
	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2470.000	85.67			89.26	27.22	4.35	35.16	Average
2	2483.600	40.62	-13.38	54.00	44.17	27.26	4.35	35.16	Average

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



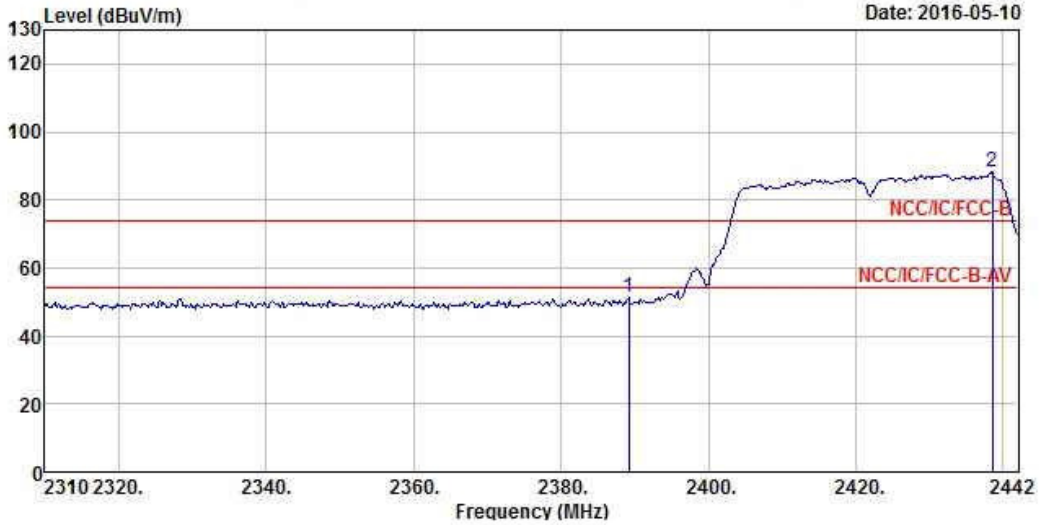
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2470.000	92.68			96.27	27.22	4.35	35.16	Peak
2	2497.800	51.50	-22.50	74.00	55.03	27.29	4.35	35.17	Peak

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



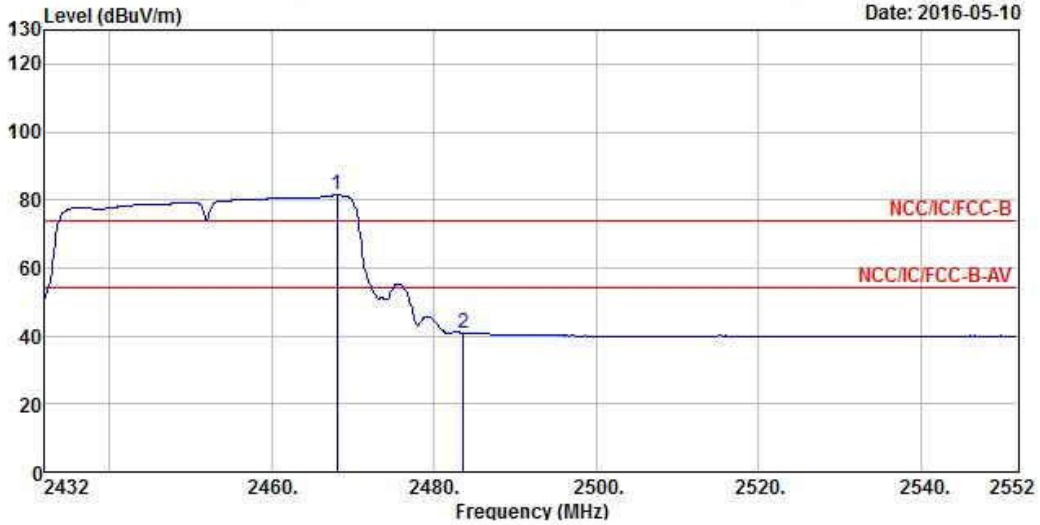
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2389.200	40.00	-14.00	54.00	43.84	27.01	4.28	35.13	Average
2	2437.776	80.01			83.70	27.14	4.32	35.15	Average

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



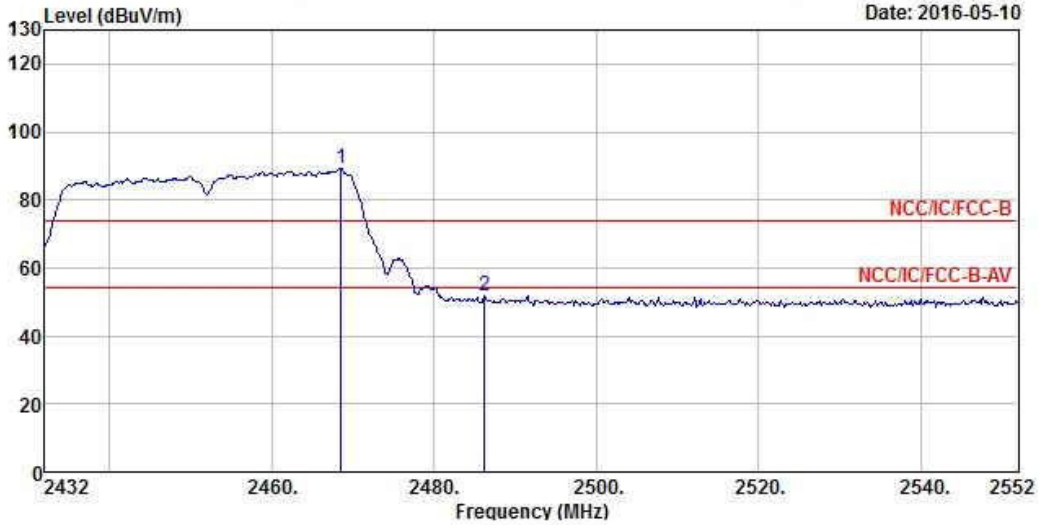
	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	2389.200	51.39	-22.61	74.00	55.23	27.01	4.28	35.13	Peak
2	2438.568	88.08			91.77	27.14	4.32	35.15	Peak

Transmitter Radiated Bandedge Emissions			
Modulation Mode	HT40	**Test Freq. (MHz)**	2452
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	2468.000	81.40			84.99	27.22	4.35	35.16	Average
2	2483.600	40.96	-13.04	54.00	44.51	27.26	4.35	35.16	Average

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



	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	2468.480	89.43			93.02	27.22	4.35	35.16	Peak
2	2486.240	51.98	-22.02	74.00	55.53	27.26	4.35	35.16	Peak

3.6 Transmitter Radiated Unwanted Emissions

3.6.1 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.

3.6.2 Measuring Instruments

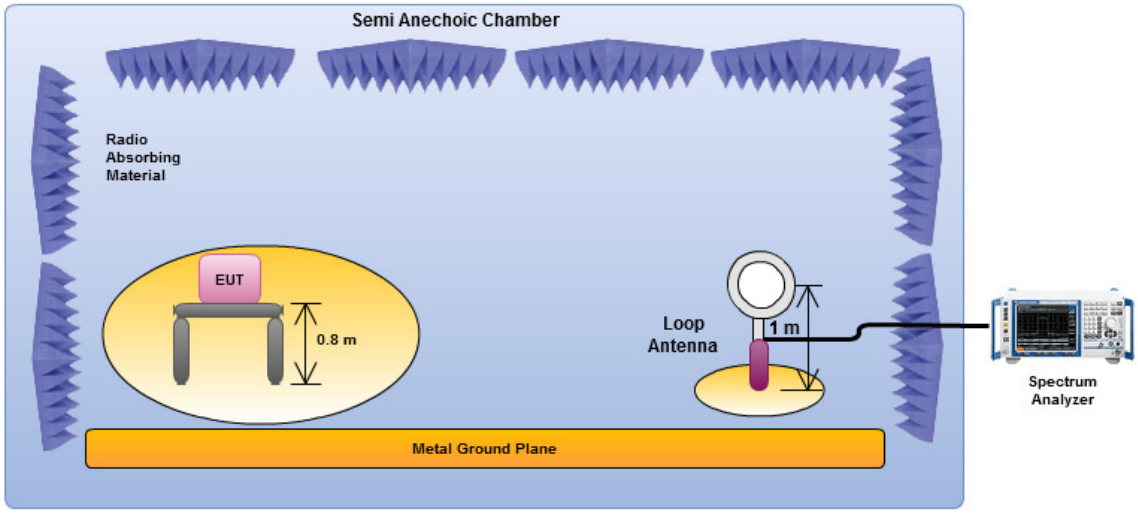
Refer a test equipment and calibration data table in this test report.

3.6.3 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.	
☒	The any unwanted emissions level shall not exceed the fundamental emission level.		
☒	All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.		

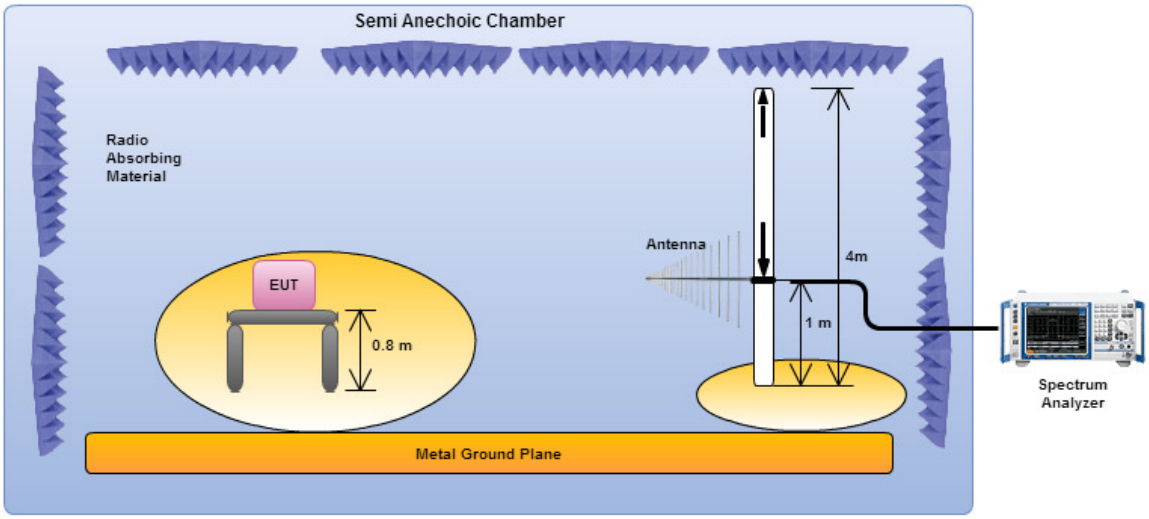
3.6.4 Test Setup

Transmitter Spurious and Out of Band Emissions (9 kHz - 30 MHz)



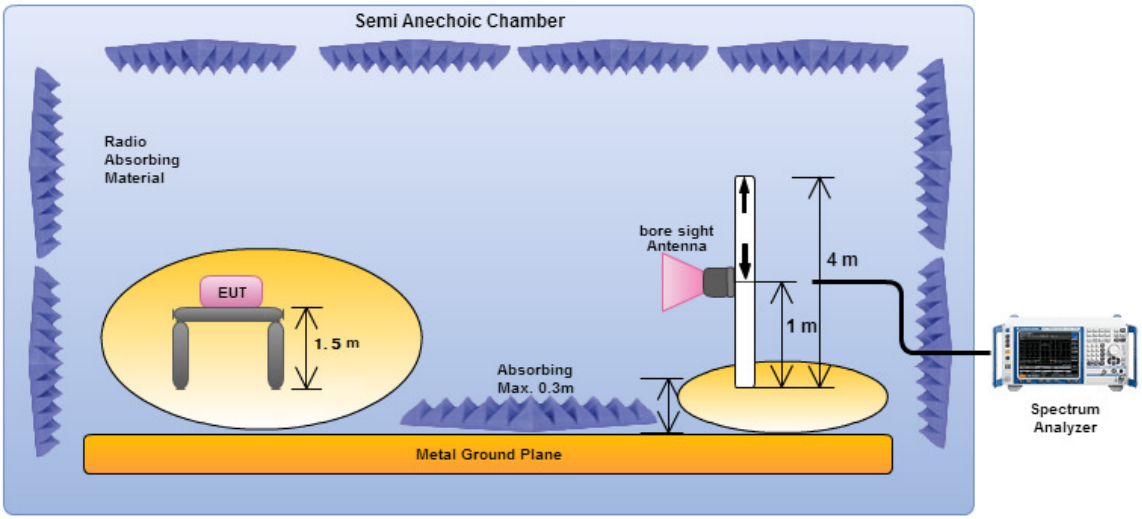
Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna.

Transmitter Radiated Unwanted Emissions (below 1GHz)



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)



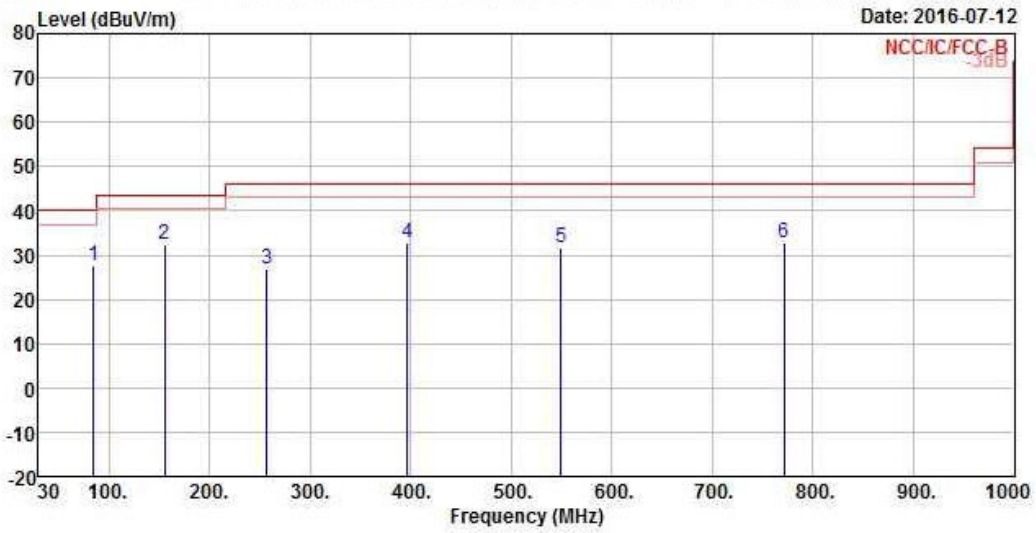
Electric field tests shall be performed in the frequency range of 1 GHz to 10th harmonic of highest fundamental frequency or 40 GHz using a calibrated horn antenna.

3.6.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
any spurious which has more than 20 dB of margin compared to the applicable limit is not necessarily reported.

3.6.6 Transmitter Radiated Unwanted Emissions (Below 1GHz)

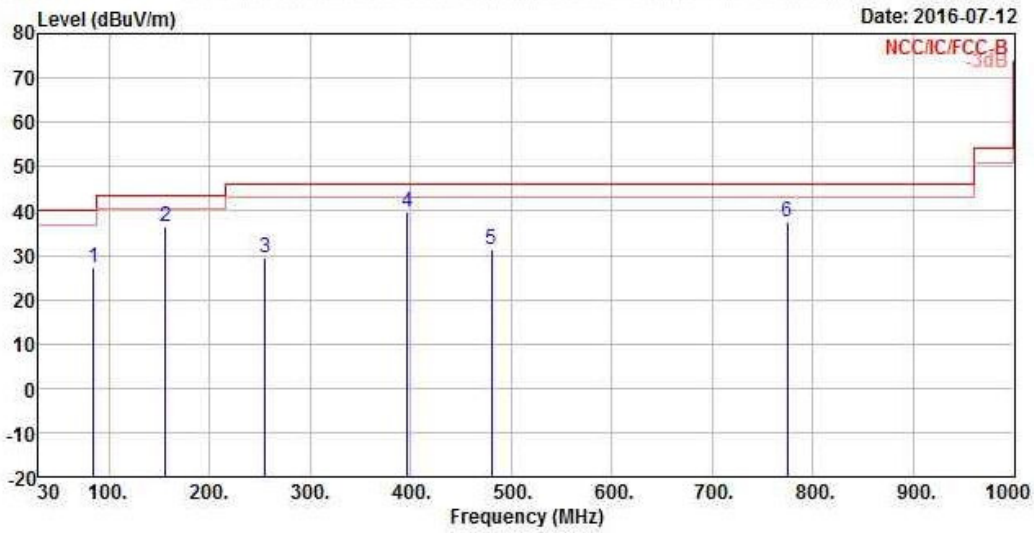
Transmitter Radiated Unwanted Emissions (Below 1GHz)			
Operating Mode	1	**Polarization**	V
Operating Function	Transmitter Mode		



	Freq	Level	Over Limit	Limit Line	ReadLevel	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	84.320	27.77	-12.23	40.00	50.76	13.42	0.53	36.94	Peak
2	155.130	32.24	-11.26	43.50	51.77	16.34	0.71	36.58	Peak
3	256.980	26.94	-19.06	46.00	43.75	18.70	0.89	36.40	Peak
4	396.660	32.84	-13.16	46.00	46.96	21.42	1.11	36.65	Peak
5	549.920	31.64	-14.36	46.00	43.51	23.90	1.35	37.12	Peak
6	771.080	32.61	-13.39	46.00	41.40	27.11	1.63	37.53	Peak

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

Transmitter Radiated Unwanted Emissions (Below 1GHz)			
Operating Mode	1	**Polarization**	H
Operating Function	Transmitter Mode		

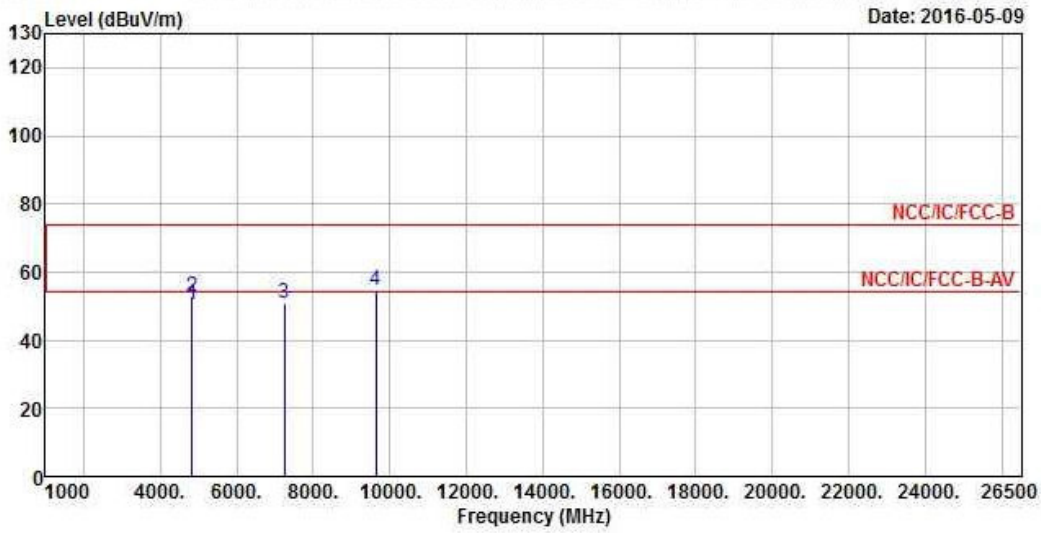


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	84.320	27.13	-12.87	40.00	50.12	13.42	0.53	36.94	Peak
2	156.100	36.34	-7.16	43.50	55.91	16.30	0.71	36.58	Peak
3	255.040	29.26	-16.74	46.00	46.27	18.50	0.89	36.40	Peak
4	396.660	39.65	-6.35	46.00	53.77	21.42	1.11	36.65	Peak
5	480.080	31.39	-14.61	46.00	44.11	22.94	1.26	36.92	Peak
6	774.960	37.49	-8.51	46.00	46.23	27.15	1.64	37.53	Peak

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

3.6.7 Transmitter Radiated Unwanted Emissions (Above 1GHz)

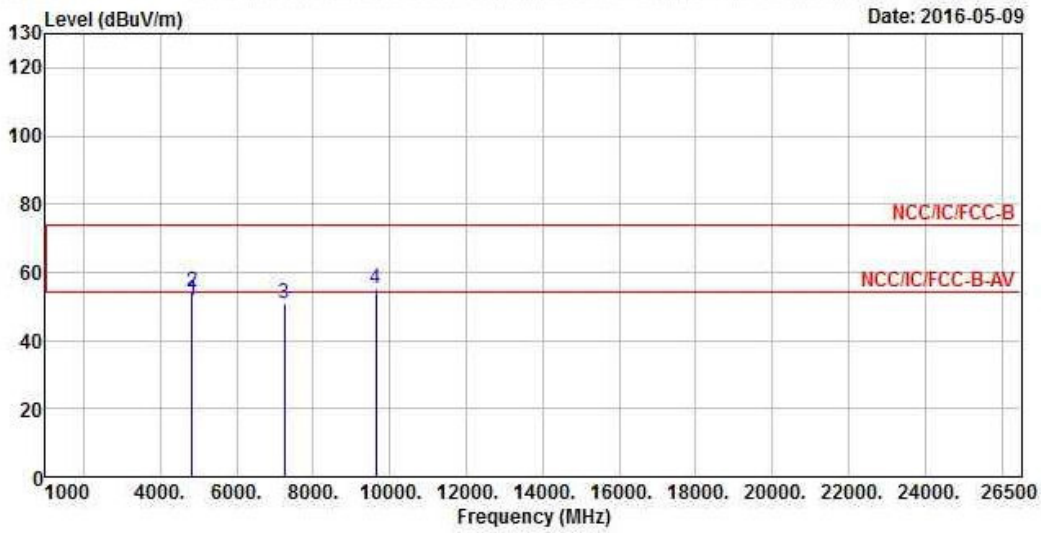
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11b	**Test Freq. (MHz)**	2412
N_{TX}	1	**Polarization**	V



	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	50.40	-3.60	54.00	48.30	31.15	6.11	35.16	Average
2	4824.000	52.60	-21.40	74.00	50.50	31.15	6.11	35.16	Peak
3	7236.000	50.97			42.90	35.91	7.57	35.41	Peak
4	9648.000	54.83			43.29	38.69	8.80	35.95	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 (94.86 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

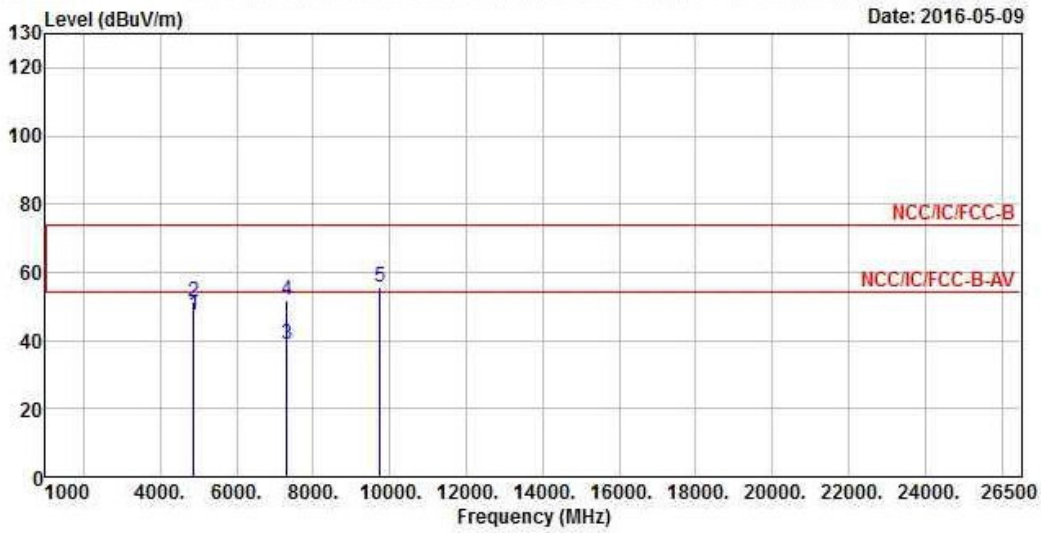
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11b	**Test Freq. (MHz)**	2412
N_{TX}	1	**Polarization**	H



	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	51.71	-2.29	54.00	49.61	31.15	6.11	35.16	Average
2	4824.000	54.40	-19.60	74.00	52.30	31.15	6.11	35.16	Peak
3	7236.000	51.07			43.00	35.91	7.57	35.41	Peak
4	9648.000	54.93			43.39	38.69	8.80	35.95	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 (94.86 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

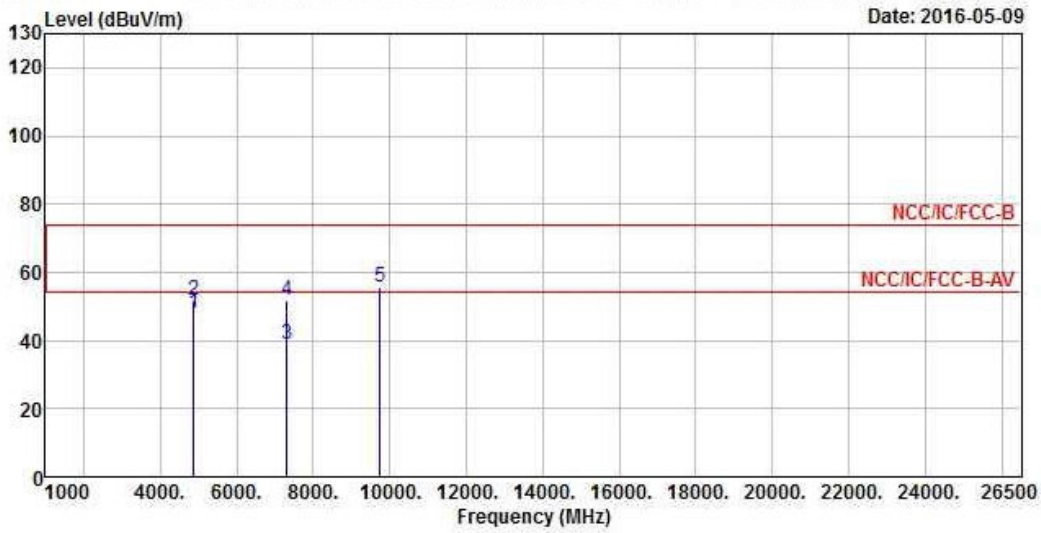
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11b	**Test Freq. (MHz)**	2437
N_{TX}	1	**Polarization**	V



	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	47.34	-6.66	54.00	45.15	31.22	6.13	35.16	Average
2	4874.000	51.10	-22.90	74.00	48.91	31.22	6.13	35.16	Peak
3	7311.000	38.99	-15.01	54.00	30.70	36.11	7.60	35.42	Average
4	7311.000	51.59	-22.41	74.00	43.30	36.11	7.60	35.42	Peak
5	9748.000	55.89			44.20	38.75	8.89	35.95	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 (97.78 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

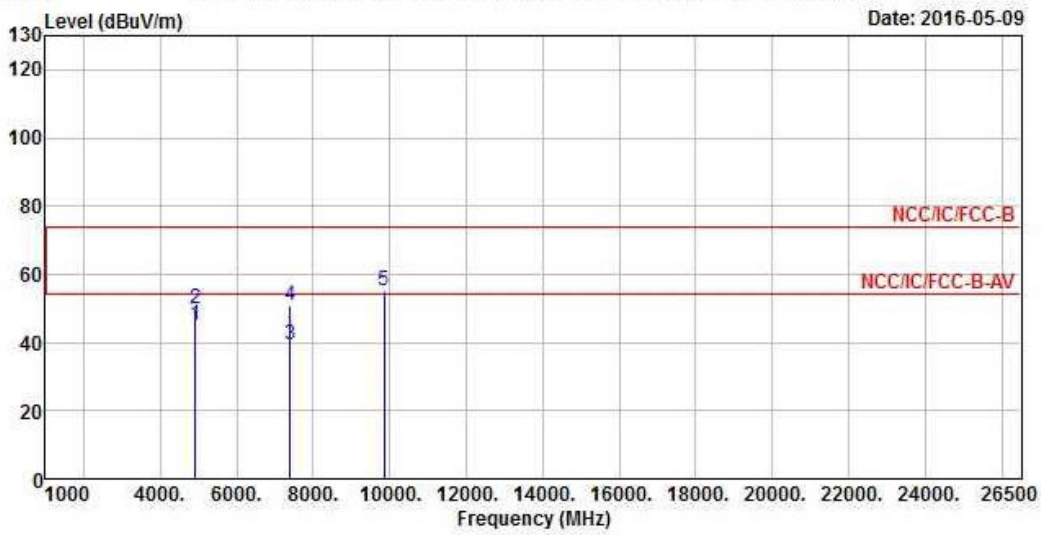
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11b	**Test Freq. (MHz)**	2437
N_{TX}	1	**Polarization**	H



	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	47.80	-6.20	54.00	45.61	31.22	6.13	35.16	Average
2	4874.000	51.80	-22.20	74.00	49.61	31.22	6.13	35.16	Peak
3	7311.000	38.89	-15.11	54.00	30.60	36.11	7.60	35.42	Average
4	7311.000	51.69	-22.31	74.00	43.40	36.11	7.60	35.42	Peak
5	9748.000	55.89			44.20	38.75	8.89	35.95	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 (97.78 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

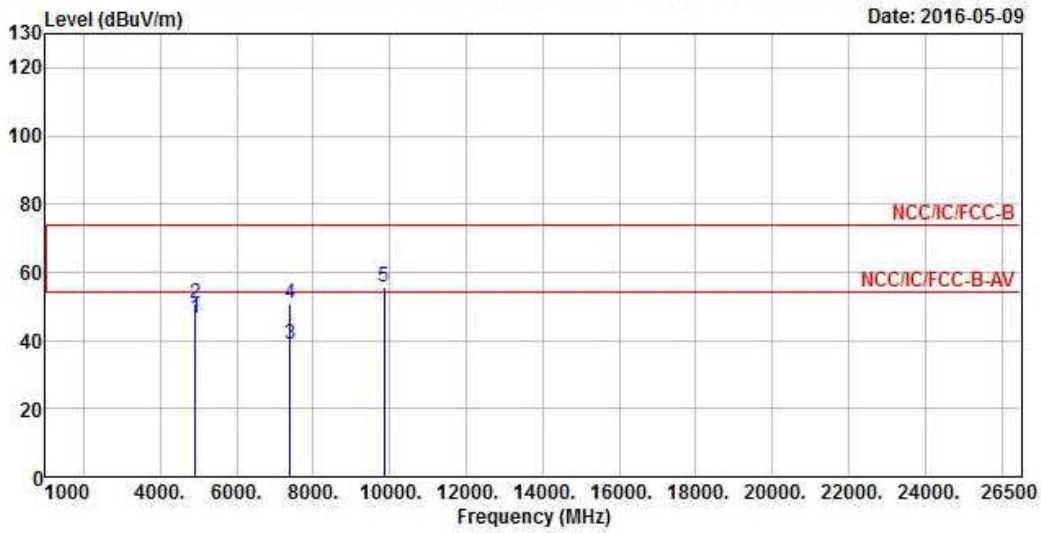
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11b	**Test Freq. (MHz)**	2462
N_{TX}	1	**Polarization**	V



	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	45.21	-8.79	54.00	42.90	31.29	6.17	35.15	Average
2	4924.000	49.81	-24.19	74.00	47.50	31.29	6.17	35.15	Peak
3	7386.000	39.20	-14.80	54.00	30.70	36.30	7.63	35.43	Average
4	7386.000	51.00	-23.00	74.00	42.50	36.30	7.63	35.43	Peak
5	9848.000	55.26			43.38	38.81	9.03	35.96	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 (99.01 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

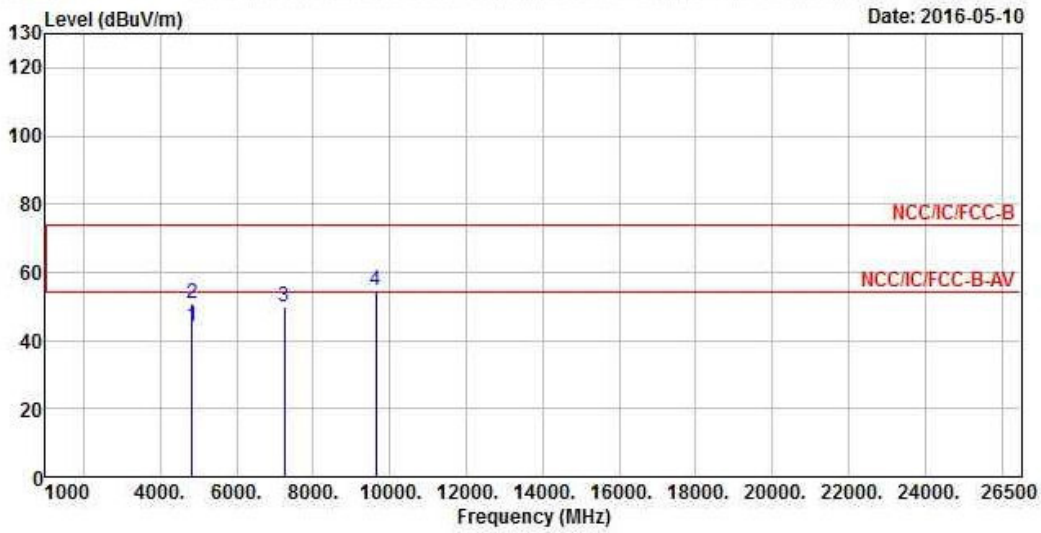
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11b	**Test Freq. (MHz)**	2462
N_{TX}	1	**Polarization**	H



	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	4924.000	46.32	-7.68	54.00	44.01	31.29	6.17	35.15	Average
2	4924.000	50.81	-23.19	74.00	48.50	31.29	6.17	35.15	Peak
3	7386.000	38.90	-15.10	54.00	30.40	36.30	7.63	35.43	Average
4	7386.000	50.80	-23.20	74.00	42.30	36.30	7.63	35.43	Peak
5	9848.000	55.58			43.70	38.81	9.03	35.96	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 (89.74 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

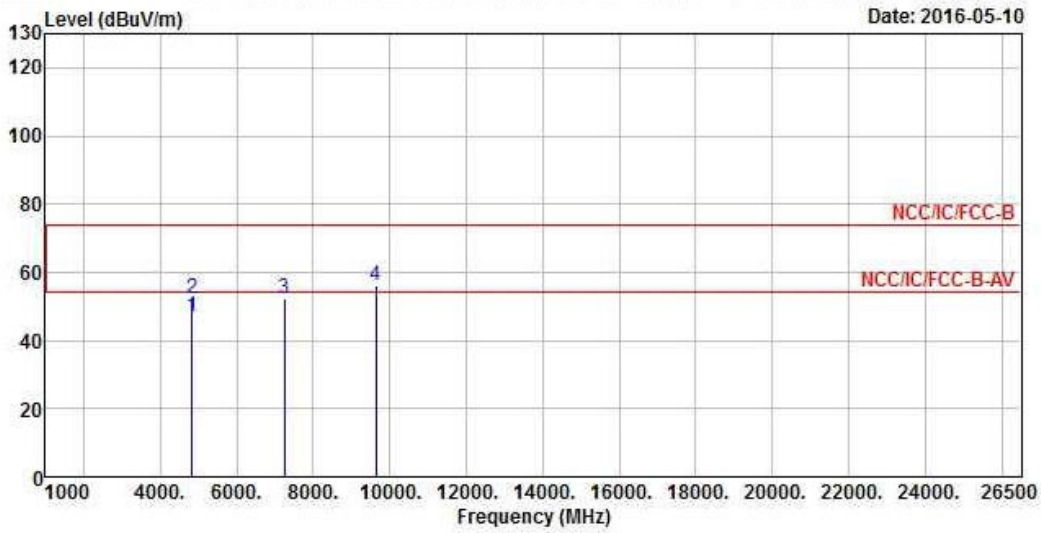
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11g	**Test Freq. (MHz)**	2412
N_{TX}	1	**Polarization**	V



	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	44.12	-9.88	54.00	42.02	31.15	6.11	35.16	Average
2	4824.000	51.06	-22.94	74.00	48.96	31.15	6.11	35.16	Peak
3	7236.000	50.09			42.02	35.91	7.57	35.41	Peak
4	9648.000	54.49			42.95	38.69	8.80	35.95	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 (89.74 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

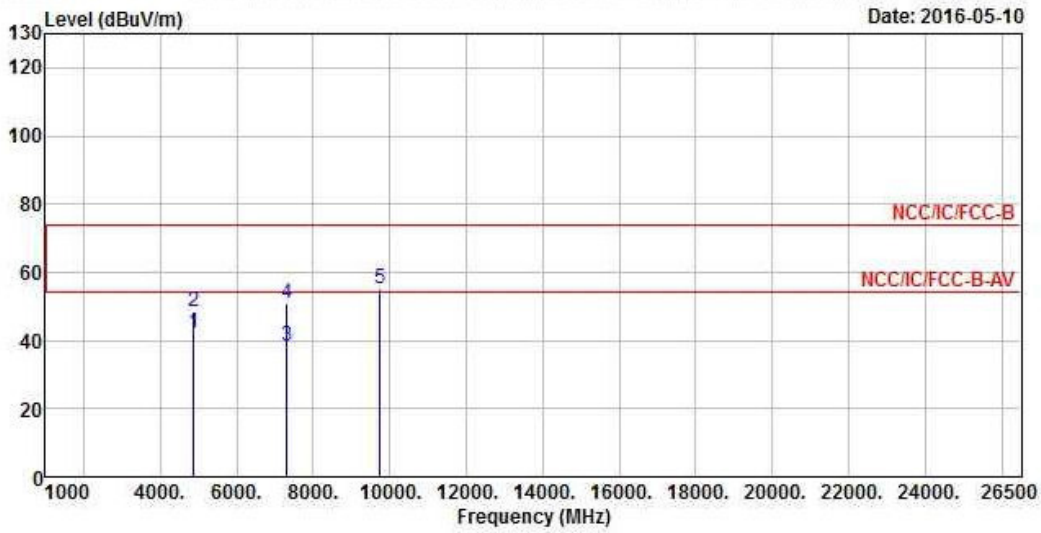
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11g	**Test Freq. (MHz)**	2412
N_{TX}	1	**Polarization**	H



	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	47.13	-6.87	54.00	45.03	31.15	6.11	35.16	Average
2	4824.000	52.30	-21.70	74.00	50.20	31.15	6.11	35.16	Peak
3	7236.000	52.37			44.30	35.91	7.57	35.41	Peak
4	9648.000	56.23			44.69	38.69	8.80	35.95	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 (89.74 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

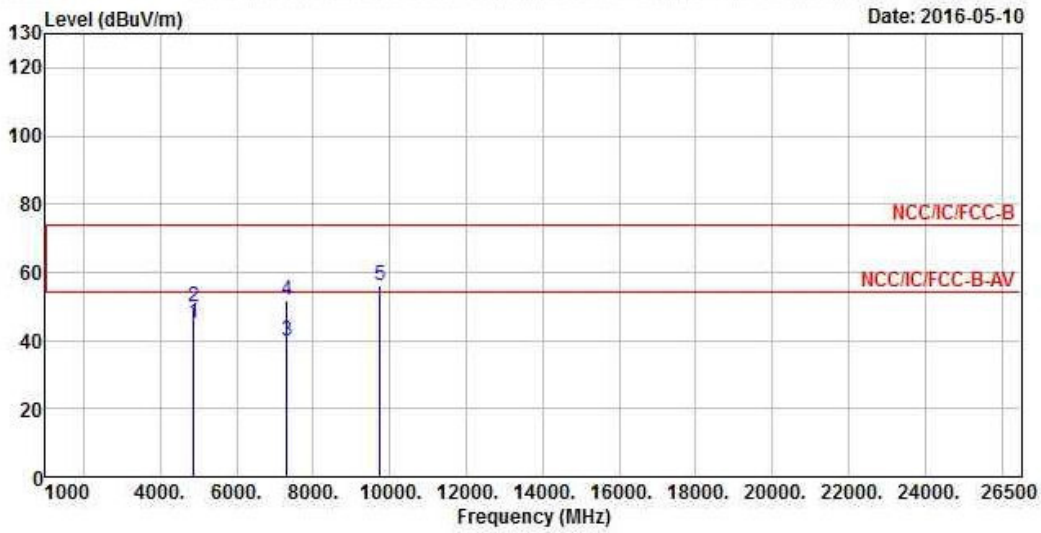
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11g	**Test Freq. (MHz)**	2437
N_{TX}	1	**Polarization**	V



	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	42.32	-11.68	54.00	40.13	31.22	6.13	35.16	Average
2	4874.000	48.46	-25.54	74.00	46.27	31.22	6.13	35.16	Peak
3	7311.000	38.31	-15.69	54.00	30.02	36.11	7.60	35.42	Average
4	7311.000	50.98	-23.02	74.00	42.69	36.11	7.60	35.42	Peak
5	9748.000	54.95			43.26	38.75	8.89	35.95	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 (93.09 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

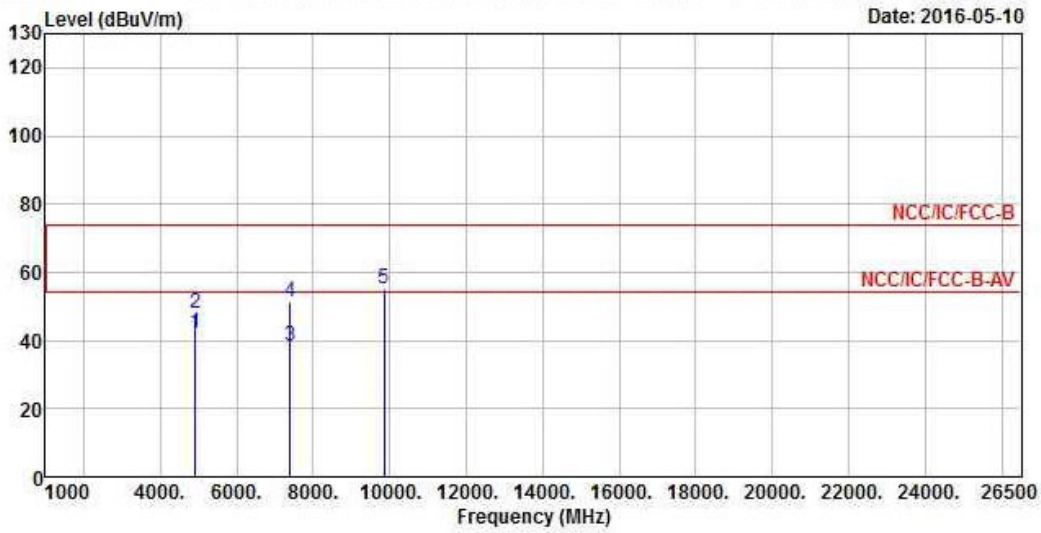
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11g	**Test Freq. (MHz)**	2437
N_{TX}	1	**Polarization**	H



	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	44.90	-9.10	54.00	42.71	31.22	6.13	35.16	Average
2	4874.000	50.10	-23.90	74.00	47.91	31.22	6.13	35.16	Peak
3	7311.000	39.59	-14.41	54.00	31.30	36.11	7.60	35.42	Average
4	7311.000	51.69	-22.31	74.00	43.40	36.11	7.60	35.42	Peak
5	9748.000	56.29			44.60	38.75	8.89	35.95	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 (93.09 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

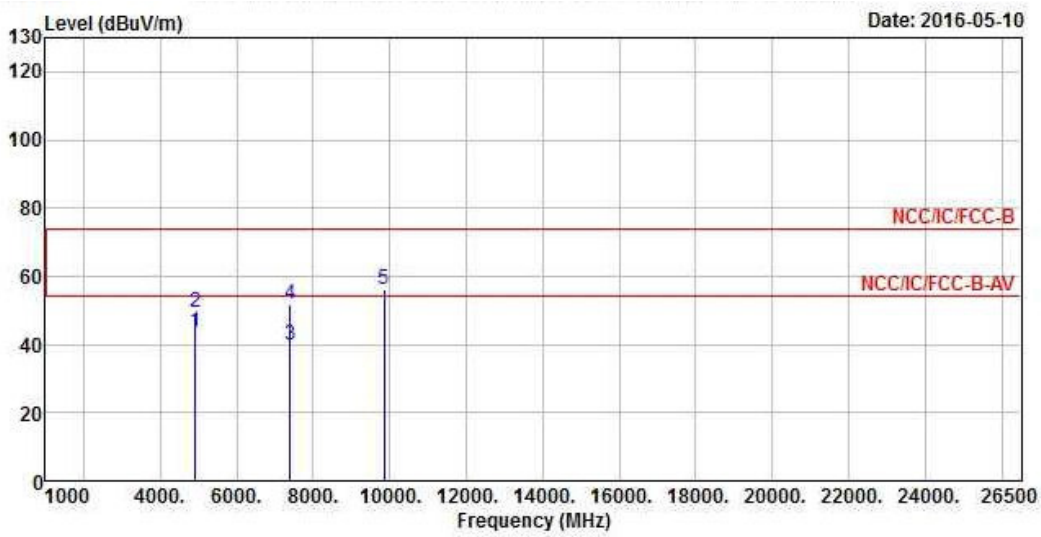
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11g	**Test Freq. (MHz)**	2462
N_{TX}	1	**Polarization**	V



	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	42.33	-11.67	54.00	40.02	31.29	6.17	35.15	Average
2	4924.000	48.21	-25.79	74.00	45.90	31.29	6.17	35.15	Peak
3	7386.000	38.52	-15.48	54.00	30.02	36.30	7.63	35.43	Average
4	7386.000	51.28	-22.72	74.00	42.78	36.30	7.63	35.43	Peak
5	9848.000	55.04			43.16	38.81	9.03	35.96	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 (93.82 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

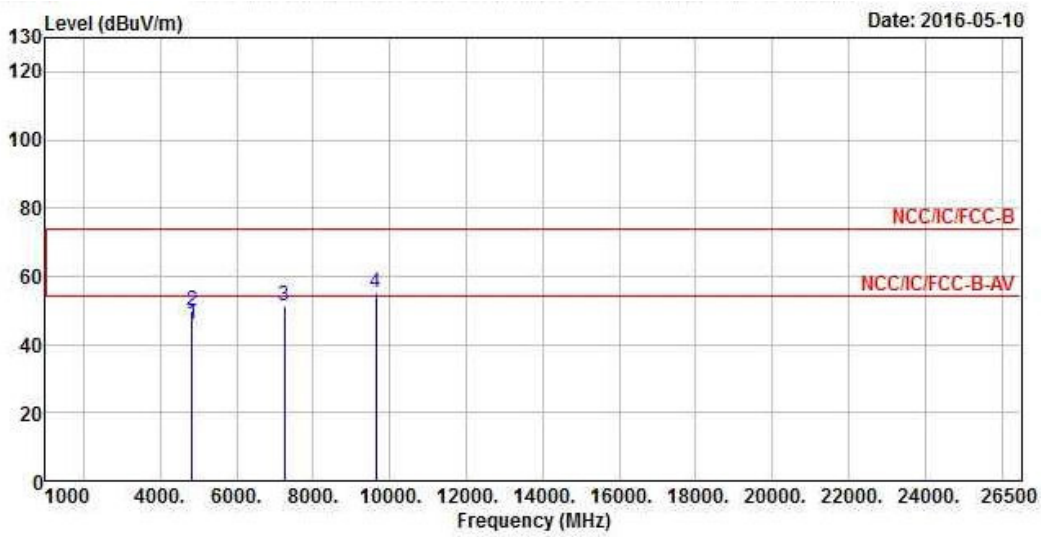
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	11g	**Test Freq. (MHz)**	2462
N_{TX}	1	**Polarization**	H



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1	4924.000	43.81	-10.19	54.00	41.50	31.29	6.17	35.15	Average
2	4924.000	49.41	-24.59	74.00	47.10	31.29	6.17	35.15	Peak
3	7386.000	39.80	-14.20	54.00	31.30	36.30	7.63	35.43	Average
4	7386.000	51.90	-22.10	74.00	43.40	36.30	7.63	35.43	Peak
5	9848.000	56.18			44.30	38.81	9.03	35.96	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 (93.82 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

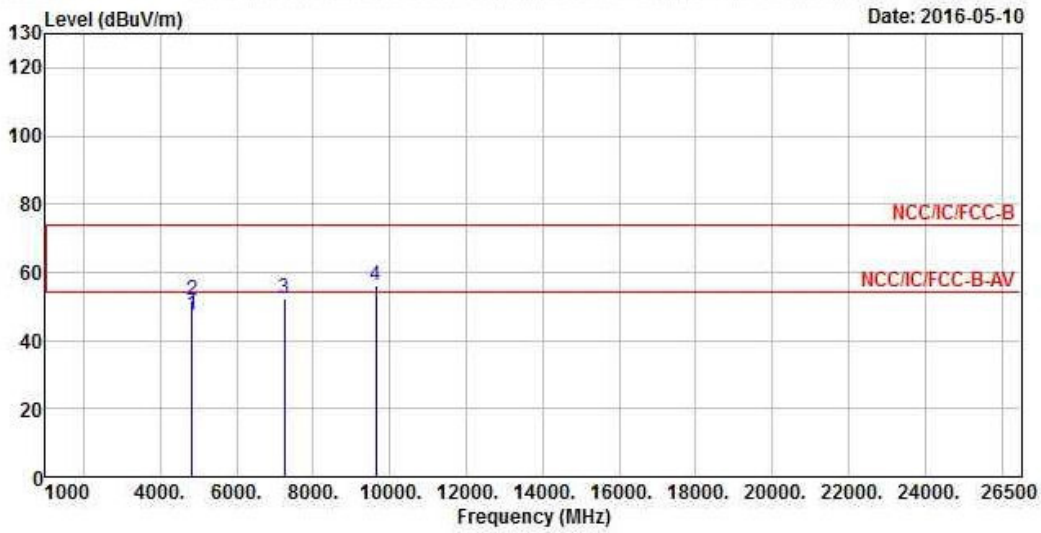
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT20	**Test Freq. (MHz)**	2412
N_{TX}	1	**Polarization**	V



	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	45.95	-8.05	54.00	43.85	31.15	6.11	35.16	Average
2	4824.000	49.79	-24.21	74.00	47.69	31.15	6.11	35.16	Peak
3	7236.000	51.16			43.09	35.91	7.57	35.41	Peak
4	9648.000	55.11			43.57	38.69	8.80	35.95	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 (90.18 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

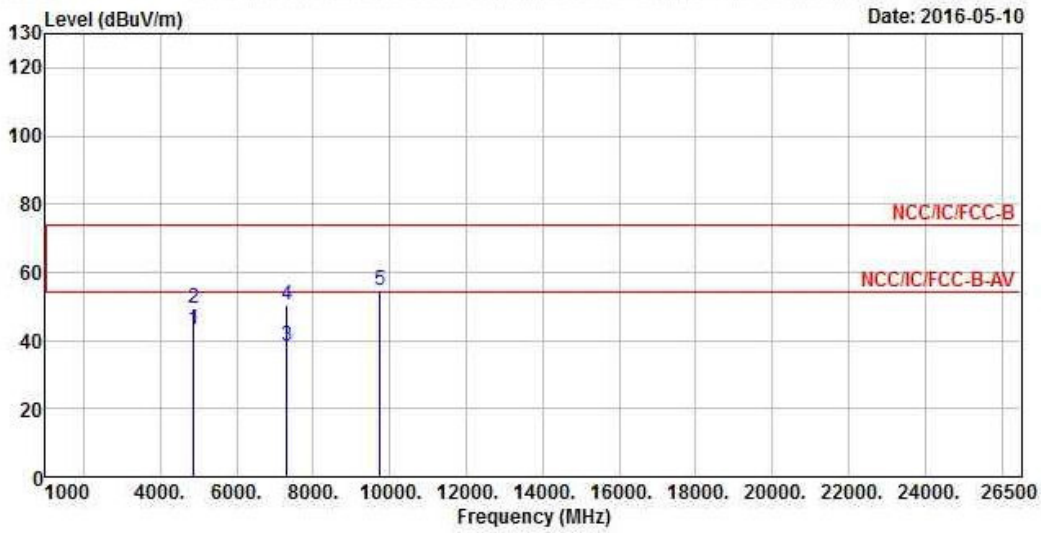
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT20	**Test Freq. (MHz)**	2412
N_{TX}	1	**Polarization**	H



	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	47.27	-6.73	54.00	45.17	31.15	6.11	35.16	Average
2	4824.000	51.70	-22.30	74.00	49.60	31.15	6.11	35.16	Peak
3	7236.000	52.27			44.20	35.91	7.57	35.41	Peak
4	9648.000	56.13			44.59	38.69	8.80	35.95	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 (90.18 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

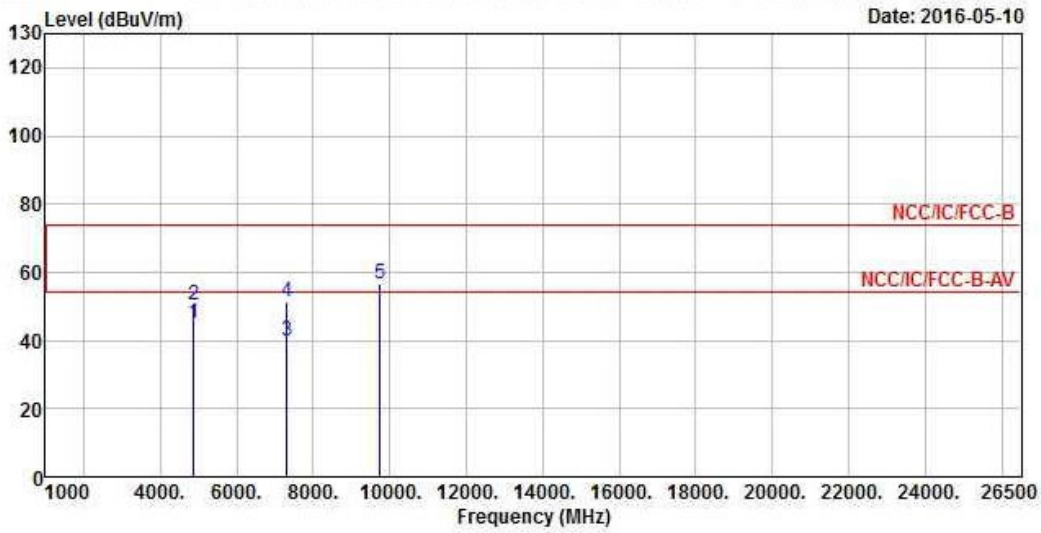
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT20	**Test Freq. (MHz)**	2437
N_{TX}	1	**Polarization**	V



	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	43.22	-10.78	54.00	41.03	31.22	6.13	35.16	Average
2	4874.000	49.23	-24.77	74.00	47.04	31.22	6.13	35.16	Peak
3	7311.000	38.30	-15.70	54.00	30.01	36.11	7.60	35.42	Average
4	7311.000	50.19	-23.81	74.00	41.90	36.11	7.60	35.42	Peak
5	9748.000	54.77			43.08	38.75	8.89	35.95	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 (92.45 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

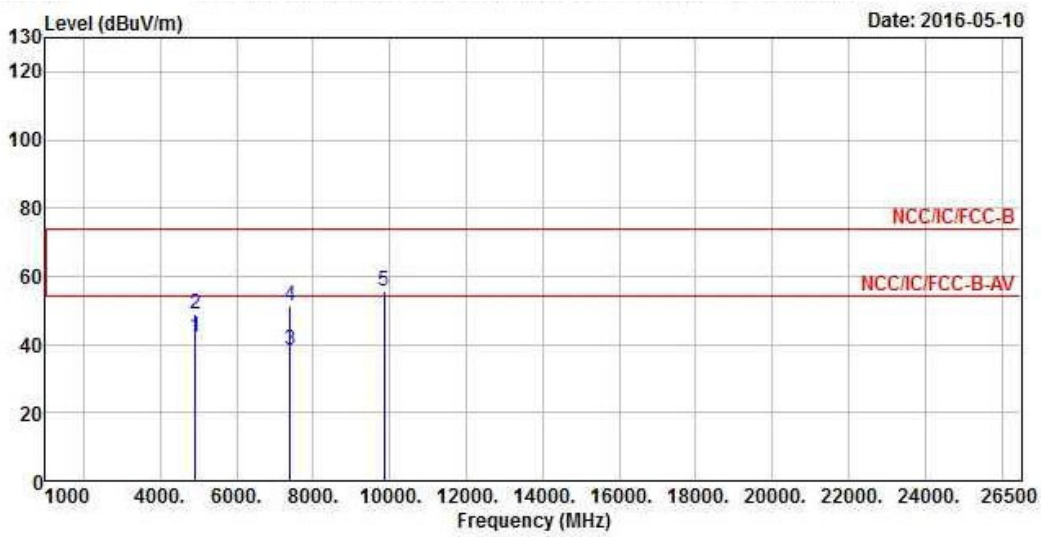
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT20	**Test Freq. (MHz)**	2437
N_{TX}	1	**Polarization**	H



	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	45.10	-8.90	54.00	42.91	31.22	6.13	35.16	Average
2	4874.000	50.30	-23.70	74.00	48.11	31.22	6.13	35.16	Peak
3	7311.000	39.59	-14.41	54.00	31.30	36.11	7.60	35.42	Average
4	7311.000	51.49	-22.51	74.00	43.20	36.11	7.60	35.42	Peak
5	9748.000	56.49			44.80	38.75	8.89	35.95	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 (92.45 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

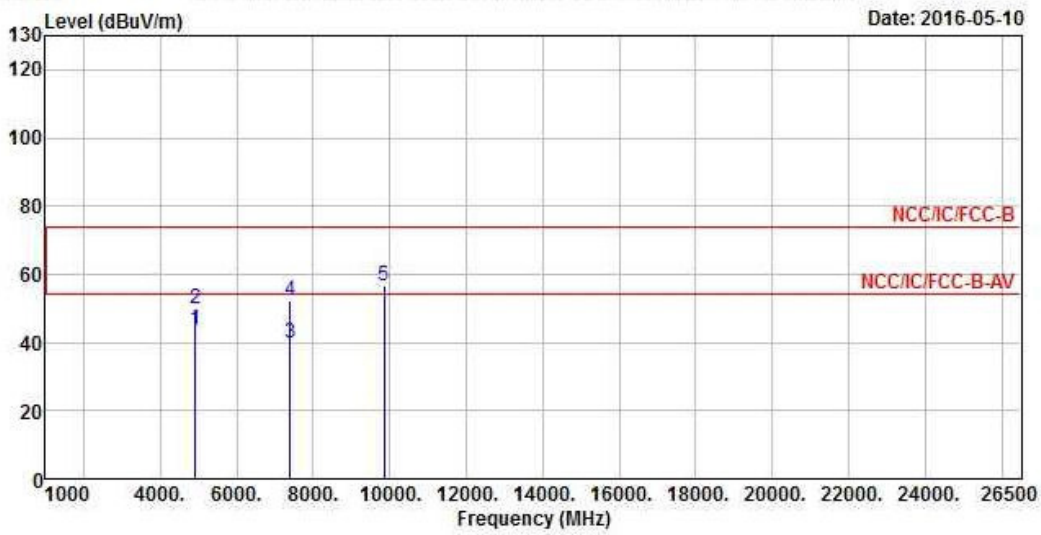
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT20	**Test Freq. (MHz)**	2462
N_{TX}	1	**Polarization**	V



	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	42.32	-11.68	54.00	40.01	31.29	6.17	35.15	Average
2	4924.000	49.16	-24.84	74.00	46.85	31.29	6.17	35.15	Peak
3	7386.000	38.52	-15.48	54.00	30.02	36.30	7.63	35.43	Average
4	7386.000	51.28	-22.72	74.00	42.78	36.30	7.63	35.43	Peak
5	9848.000	55.73			43.85	38.81	9.03	35.96	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 (92.68 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

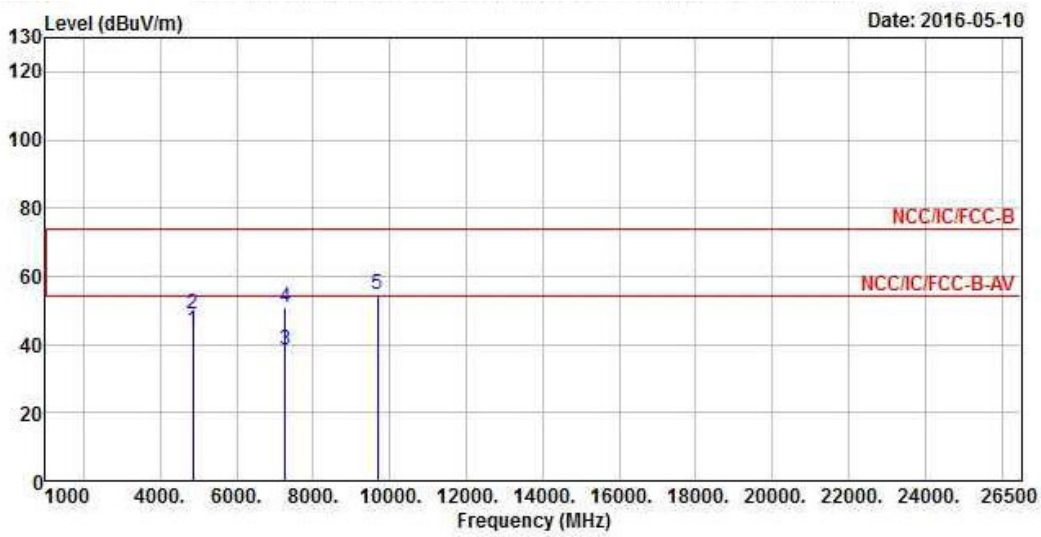
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT20	**Test Freq. (MHz)**	2462
N_{TX}	1	**Polarization**	H



	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	4924.000	43.81	-10.19	54.00	41.50	31.29	6.17	35.15	Average
2	4924.000	50.01	-23.99	74.00	47.70	31.29	6.17	35.15	Peak
3	7386.000	39.60	-14.40	54.00	31.10	36.30	7.63	35.43	Average
4	7386.000	52.20	-21.80	74.00	43.70	36.30	7.63	35.43	Peak
5	9848.000	56.48			44.60	38.81	9.03	35.96	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 (92.68 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

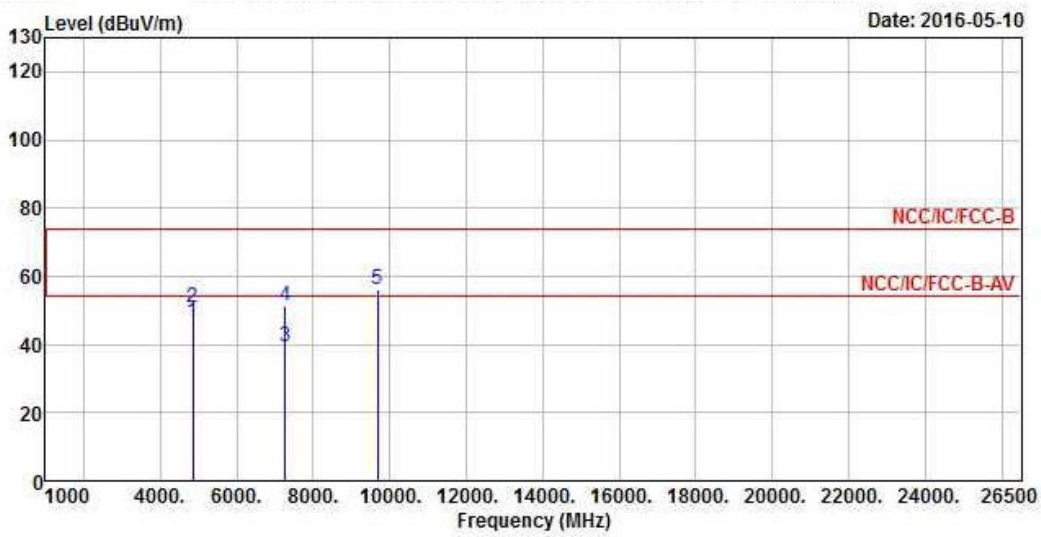
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT40	**Test Freq. (MHz)**	2422
N_{TX}	1	**Polarization**	V



	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	4844.000	44.16	-9.84	54.00	42.01	31.18	6.13	35.16	Average
2	4844.000	48.93	-25.07	74.00	46.78	31.18	6.13	35.16	Peak
3	7266.000	38.18	-15.82	54.00	30.02	35.99	7.59	35.42	Average
4	7266.000	51.01	-22.99	74.00	42.85	35.99	7.59	35.42	Peak
5	9688.000	54.88			43.28	38.71	8.84	35.95	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 (88.08 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

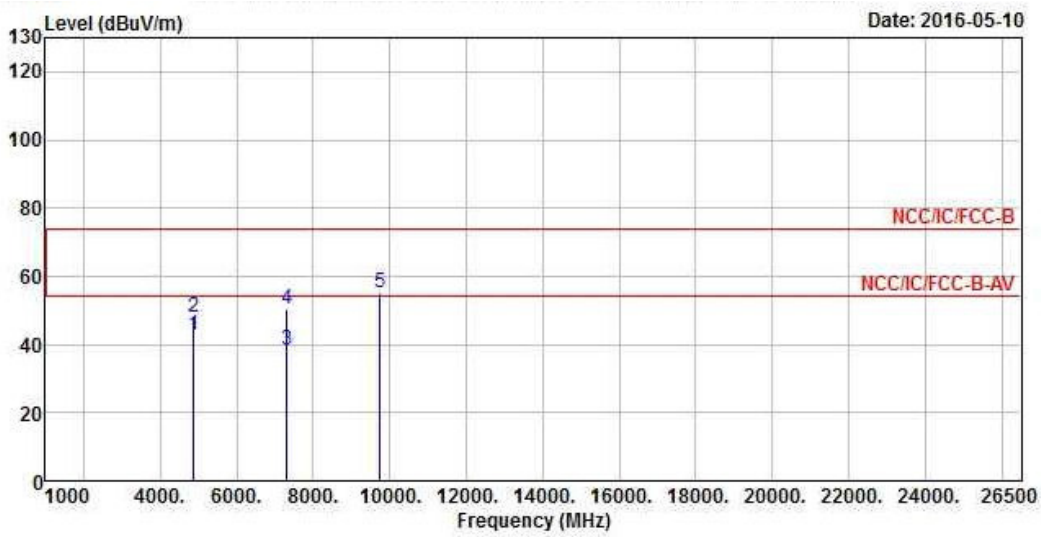
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT40	**Test Freq. (MHz)**	2422
N_{TX}	1	**Polarization**	H



	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	4844.000	46.35	-7.65	54.00	44.20	31.18	6.13	35.16	Average
2	4844.000	50.75	-23.25	74.00	48.60	31.18	6.13	35.16	Peak
3	7266.000	39.56	-14.44	54.00	31.40	35.99	7.59	35.42	Average
4	7266.000	51.56	-22.44	74.00	43.40	35.99	7.59	35.42	Peak
5	9688.000	55.90			44.30	38.71	8.84	35.95	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 (88.08 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

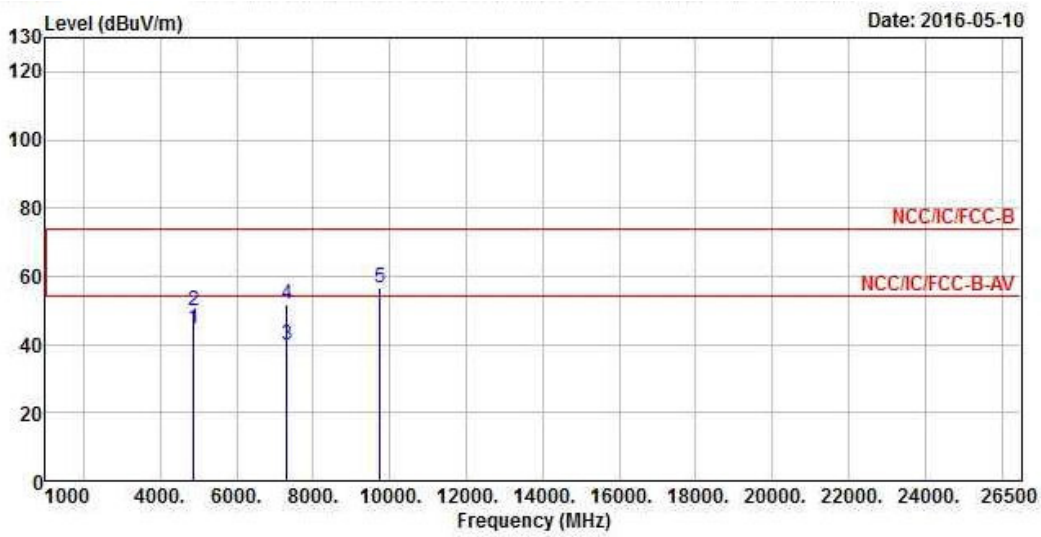
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT40	**Test Freq. (MHz)**	2437
N_{TX}	1	**Polarization**	V



	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	42.72	-11.28	54.00	40.53	31.22	6.13	35.16	Average
2	4874.000	48.21	-25.79	74.00	46.02	31.22	6.13	35.16	Peak
3	7311.000	38.31	-15.69	54.00	30.02	36.11	7.60	35.42	Average
4	7311.000	50.19	-23.81	74.00	41.90	36.11	7.60	35.42	Peak
5	9748.000	55.27			43.58	38.75	8.89	35.95	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 (88.18 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

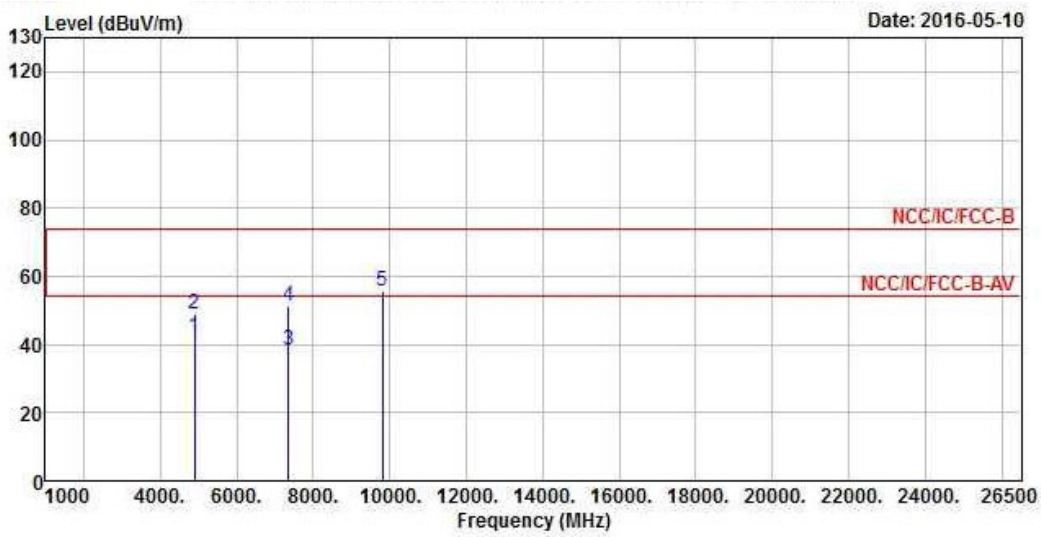
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT40	**Test Freq. (MHz)**	2437
N_{TX}	1	**Polarization**	H



	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	44.50	-9.50	54.00	42.31	31.22	6.13	35.16	Average
2	4874.000	49.80	-24.20	74.00	47.61	31.22	6.13	35.16	Peak
3	7311.000	39.69	-14.31	54.00	31.40	36.11	7.60	35.42	Average
4	7311.000	51.59	-22.41	74.00	43.30	36.11	7.60	35.42	Peak
5	9748.000	56.39			44.70	38.75	8.89	35.95	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 (88.18 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

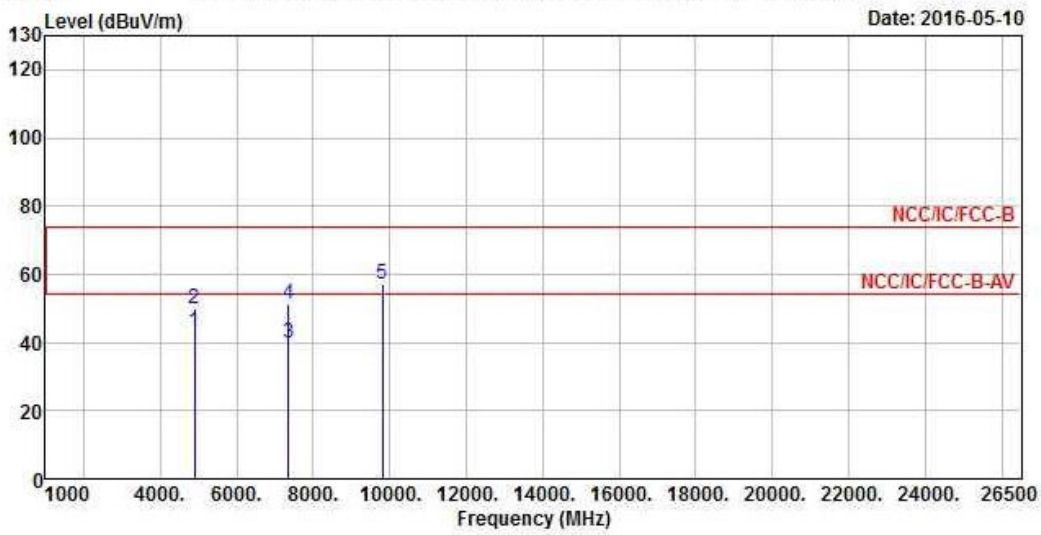
Transmitter Radiated Unwanted Emissions (Above 1GHz)			
Modulation Mode	HT40	**Test Freq. (MHz)**	2452
N_{TX}	1	**Polarization**	V



	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	4904.000	42.28	-11.72	54.00	40.01	31.27	6.15	35.15	Average
2	4904.000	48.84	-25.16	74.00	46.57	31.27	6.15	35.15	Peak
3	7356.000	38.44	-15.56	54.00	30.03	36.23	7.61	35.43	Average
4	7356.000	51.27	-22.73	74.00	42.86	36.23	7.61	35.43	Peak
5	9808.000	55.82			44.01	38.78	8.99	35.96	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 (89.43 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}	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	4904.000	43.36	-10.64	54.00	41.09	31.27	6.15	35.15	Average
2	4904.000	49.86	-24.14	74.00	47.59	31.27	6.15	35.15	Peak
3	7356.000	39.81	-14.19	54.00	31.40	36.23	7.61	35.43	Average
4	7356.000	51.51	-22.49	74.00	43.10	36.23	7.61	35.43	Peak
5	9808.000	57.01			45.20	38.78	8.99	35.96	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 (89.43 dBuV/m).
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

4 Test Equipment and Calibration Data

Instrument for AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
EMC Receiver	KEYSIGHT	N9038A	MY54130031	20Hz ~ 8.4GHz	14/04/2016	13/04/2017
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	8127-477	9kHz ~ 30MHz	26/01/2016	25/01/2017
RF Cable-CON	HUBER+SUHNER	RG213/U	07611832020001	9kHz ~ 30MHz	30/10/2015	29/10/2016
EMI Filter	LINDGREN	LRE-2030	2651	< 450 Hz	NCR	NCR

Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101013	9KHz~40GHz	16/02/2016	15/02/2017
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	28/07/2015	27/07/2013
DC Power Source	G.W.	GPC-6030D	C671845	DC 1V ~ 60V	22/07/2015	21/07/2016
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	04/02/2016	03/02/2017
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	04/02/2016	03/02/2017

Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Last Cal.	Calibration Due Date
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	30MHz ~ 1GHz 3m	25/04/2016	24/04/2017
3m Semi Anechoic Chamber	TDK	SAC-3M	03CH09-HY	1GHz ~ 18GHz 3m	30/06/2016	29/06/2017
Amplifier	EMC	EMC9135	980232	9kHz ~ 1.0GHz	29/01/2016	28/01/2017
Amplifier	Agilent	8449B	3008A02096	1GHz ~ 26.5GHz	11/04/2016	10/04/2017
Spectrum	KEYSIGHT	N9010A	MY54200882	10Hz ~ 44GHz	14/07/2015	13/07/2016
Spectrum	KEYSIGHT	N9010A	MY54200885	10Hz ~ 44GHz	04/07/2016	03/07/2017
Bilog Antenna & 5dB Attenuator	TESEQ & MTJ	CBL 6111D & MTJ6102	35418	30MHz ~ 1GHz	31/03/2016	30/03/2017
Horn Antenna	SCHWARZBECK	BBHA 9120D	BBHA 9120D 1534	1GHz ~ 18GHz	22/04/2016	21/04/2017
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170614	18GHz ~ 40GHz	04/01/2016	03/01/2017
Loop Antenna	ROHDE&SCHWARZ	HFH2-Z2	100330	9 kHz~30 MHz	10/11/2014	09/11/2016