International Certification Corp.
No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.
Tel: 886-3-271-8666 Fax: 886-3-318-0155

FCC Test Report

FCC ID	:	**MXF-WRTB283N**
Equipment	:	**Dual band Router**
Model No.	:	**WRTB-283N**
Brand Name	:	**Gemtek**
Applicant	:	**Gemtek Technology Co., Ltd.**
Address	:	**No. 15-1 Zhanghua Road, Hsinchu Industrial Park, Hukou, Hsinchu, Taiwan, 30352.**
Standard	:	**47 CFR FCC Part 15.247**
Received Date	:	**Feb. 08, 2013**
Tested Date	:	**Feb. 20 ~ Apr. 02, 2013**

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Approved & Reviewed by:

Gary Chang / Manager

Testing Laboratory
2732

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Release Record

Report No.	Version	Description	Issued Date
FR320801AI	Rev. 01	Initial issue	Apr. 16, 2013

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 4.696MHz 37.65 (Margin 8.35dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 229.82MHz 44.86 (Margin 1.14dB) - AV	Pass
15.247(b)(3)	Fundamental Emission Output Power	Power [dBm]: 11a: 24.69 HT20: 28.97 HT40: 28.55	Pass
15.247(a)(2)	6dB Bandwidth	Meet the requirement of limit	Pass
15.247(e)	Power Spectral Density	Meet the requirement of limit	Pass
15.203	Antenna Requirement	Meet the requirement of limit	Pass

1 General Description

1.1 Information

1.1.1 Specification of the Equipment under Test (EUT)

RF General Information					
Frequency Range (MHz)	**IEEE Std. 802.11**	**Ch. Freq. (MHz)**	**Channel Number**	**Transmit Chains (N_{TX})**	**Data Rate / MCS**
5725-5850	a	5745-5825	149-165 [5]	1	6-54 Mbps
5725-5850	n (HT20)	5745-5825	149-165 [5]	3	MCS 0-23
5725-5850	n (HT40)	5755-5795	151-159 [2]	3	MCS 0-23
Note 1: RF output power specifies that Maximum Conducted Output Power. Note 2: 802.11a/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.					

1.1.2 Antenna Details

Ant. No.	Type	Gain (dBi)	Connector	Remark
1	Embedded	5.46	UFL	---
2	Embedded	2.34	UFL	---
3	Printed	2.44	---	---

1.1.3 EUT Operational Condition

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

1.1.4 Accessories

Accessories		
No.	**Equipment**	**Description**
1	AC Adapter 1	Brand Name: DVE Model Name: DSA-26PFA-15 FUS 120200 Power Rating: I/P: 100-240Vac, 50-60Hz, 0.8A O/P: 12Vdc, 2.0A Power Line: 1.5m non-shielded cable w/o core
2	AC Adapter 2	Brand Name: CWT Model Name: SAG024F 4 US Power Rating: I/P: 100-240Vac, 47-63Hz, 0.8A O/P: 12Vdc, 2.0A Power Line: 1m non-shielded cable w/o core
3	RJ45 cable	RJ45 2m shielded w/o core.

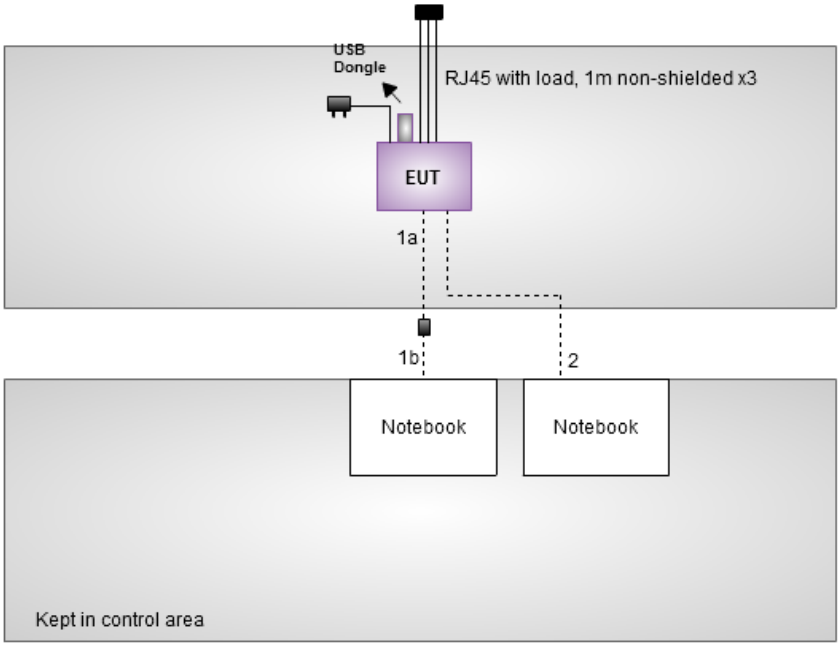
1.1.5 Channel List

Frequency band (MHz)		**5725~5850**	
802.11 a / HT20		**802.11n HT40**	
Channel	**Frequency(MHz)**	**Channel**	**Frequency(MHz)**
149	5745	151	5755
153	5765	159	5795
157	5785		
161	5805		
165	5825		

1.1.6 Test Tool and Duty Cycle

Test tool	Hyperterminal 5.1

1.2 Test Setup Chart

Test Setup Diagram


1.3 Local Support Equipment List

Support Equipment List						
No.	**Equipment**	**Brand**	**Model**	**S/N**	**FCC ID**	**Length (m)**
1	Notebook	DELL	E5420	---	DoC	a. RJ45 2m shielded w/o core. b. RJ45 10m non-shielded w/o core.
2	Notebook	DELL	E5420	---	DoC	RJ45 10m non-shielded w/o core.
3	USB Dongle	Transend	JetFlash V85	---	---	---

Note: Item 1a was provided by client.

1.4 The Equipment List

EMI	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
EMC Receiver	R&S	ESCS 30	100169	Dec. 12, 2012	Dec. 11, 2013
LISN	SCHWARZBECK MESS-ELEKTRONIK	Schwarzbeck 8127	8127-667	Dec. 04, 2012	Dec. 03, 2013
LISN (Support Unit)	SCHWARZBECK MESS-ELEKTRONIK	Schwarzbeck 8127	8127-666	Dec. 04, 2012	Dec. 03, 2013
ISN	TESEQ	ISN T800	23342	Feb. 17, 2013	Feb. 16, 2014
ISN	TESEQ	ISN T400	21653	Jun. 22, 2012	Jun. 21, 2013
ISN	TESEQ	ISN T8-Cat6	27262	Sep. 17, 2012	Sep. 16, 2013
ISN	TESEQ	ISN ST08	22589	Jan. 24, 2013	Jan. 23, 2014
RF Current Probe	FCC	F-33-4	121630	Dec. 04, 2012	Dec. 03, 2013
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Dec. 25, 2012	Dec. 24, 2013
ESH3-Z6 V-Network	R&S	ESH3-Z6	100920	Nov. 21, 2012	Nov. 20, 2013
Note: Calibration Interval of instruments listed above is one year.					

EMI	Radiated Emission				
Test Site	966 chamber1 / (03CH01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
3m semi-anechoic chamber	RIKEN	SAC-03	03CH01-WS	Jan. 04, 2013	Jan. 03, 2014
Amplifier	Burgeon	BPA-530	100219	Nov. 28, 2012	Nov. 27, 2013
Amplifier	Agilent	83017A	MY39501308	Dec. 18, 2012	Dec. 17, 2013
Bilog Antenna	ScHwarzbeck	VULB9168	VULB9168-522	Jan. 11, 2013	Jan. 10, 2014
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Feb. 18, 2013	Feb. 17, 2014
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Jan. 14, 2013	Jan. 13, 2014
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Dec. 25, 2012	Dec. 24, 2013
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 25, 2012	Dec. 24, 2013
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 25, 2012	Dec. 24, 2013
RF Cable-R03m	Woken	CFD400NL-LW	CFD400NL-001	Dec. 25, 2012	Dec. 24, 2013
RF Cable-R10m	Woken	CFD400NL-LW	CFD400NL-002	Dec. 25, 2012	Dec. 24, 2013
Spectrum Analyzer	R&S	FSV40	101498	Jan. 24, 2013	Jan. 23, 2014
Receiver	ROHDE&SCHWARZ	ESR3	101658	Jan. 30, 2013	Jan. 29, 2013
control	EM Electronics	EM1000	60612	N/A	N/A
Note: Calibration Interval of instruments listed above is one year.					

RF	RF Conducted				
Test Site	RF Conducted (TH01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV 40	101486	Nov. 14, 2012	Nov. 13, 2013
Spectrum Analyzer	R&S	FSP 40	100593	Aug. 14, 2012	Aug. 13, 2013
DC Power Source	G.W.	GPC-6030D	C671845	Jun. 19, 2012	Jun. 18, 2013
AC Power Source	G.W	APS-9102	EL920581	Jul. 02, 2012	Jul. 01, 2013
Temp. and Humidity Chamber	Giant Force	GTH-225-20-SP-SD	MAA1112-007	Nov. 21, 2012	Nov. 20, 2013
Signal Generator	R&S	SMR40	100116	Jun. 26, 2012	Jun. 25, 2013
Power Sensor	Anritsu	MA2411B	1027452	Sep. 08, 2012	Sep. 07, 2013
Power Meter	Anritsu	ML2495A	1124009	Sep. 08, 2012	Sep. 07, 2013
RF Cable-2m	HUBER+SUHNER	SUCOFLEX_104	SN 345675/4	NA	NA
RF Cable-3m	HUBER+SUHNER	SUCOFLEX_104	SN 345669/4	NA	NA

1.5 Test Standards

According to the specification of EUT, the EUT must comply with following standards and KDB documents.

47 CFR FCC Part 15.247
ANSI C63.10-2009
FCC KDB 558074 D01 DTS Meas Guidance v02
FCC KDB 789033 D01 General UNII Test procedures v01r02
FCC KDB 662911 D01 Multiple Transmitter Output v01r02

Note: The EUT has been tested and complied with FCC part 15B requirement. FCC Part 15B test results are issued to another report.

1.6 Measurement Uncertainty

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

Measurement Uncertainty	
Parameters	**Uncertainty**
Bandwidth	±35.286 Hz
Conducted power	±0.536 dB
Frequency error	±35.286 Hz
Temperature	±0.3 ^{o}C
Conducted emission	±2.946 dB
AC conducted emission	±2.43 dB
Radiated emission	±2.49 dB

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	20°C / 53%	Skys Huang
Radiated Emissions	03CH01-WS	25°C / 65%	Aska Huang Haru Yang
RF Conducted	TH01-WS	24°C / 63%	Felix Sung

- FCC site registration No.: 657002
- IC site registration No.: 10807A-1

2.2 The Worst Test Modes and Channel Details

The Worst Test Modes and Channel Details	
Test Item(s)	**Conducted Emissions**
Modulation, Data rate	HT20/MCS 16
Test channel (MHz)	5745
Test Mode	Operating Mode Description
A	DVE adapter
B	CWT adapter

The Worst Test Modes and Channel Details	
Test Item(s)	**Fundamental Emission Output Power** **6dB bandwidth** **Power spectral density**
Modulation, Data rate	11a/6Mbps
Test channel (MHz)	5745, 5785, 5825
Test Mode	Operating Mode Description
-	DVE adapter, ANT1 (chain 0)
-	DVE adapter, ANT2 (chain 1)
-	DVE adapter, ANT3 (chain 2)
The EUT was pretested with ANT1, ANT2 and ANT3, and found that ANT3 was the worst case for final test and only its data was record in this report.	
Modulation, Data rate	HT20/MCS 16, HT40/MCS 16
Test channel (MHz)	HT20: 5745, 5785, 5825 HT40: 5755, 5795
Test Mode	Operating Mode Description
-	DVE adapter, ANT1+ANT2+ANT3 (chain 0+chain 1+ chain 2)

The Worst Test Modes and Channel Details	
Test Item(s)	**Radiated emission (below 1GHz)**
Modulation, Data rate	HT20/MCS 16
Test channel (MHz)	5745
Test Mode	Operating Mode Description
A	DVE adapter
B	CWT adapter
Test Item(s)	**Radiated emission (above 1GHz)**
Modulation, Data rate	11a/6Mbps
Test channel (MHz)	11a: 5745, 5785, 5825
Test Mode	Operating Mode Description
A1	DVE adapter, ANT1 (chain 0)
A2	DVE adapter, ANT2 (chain 1)
A3	DVE adapter, ANT3 (chain 2)
The EUT was pretested with ANT1 and ANT2, and found that ANT1 was the worst case. Therefore, **ANT1 and ANT3** were for final test and only its data was record in this report.	
Modulation, Data rate	HT20/MCS 16, HT40/MCS 16
Test channel (MHz)	HT20: 5745, 5785, 5825 HT40: 5755, 5795
Test Mode	Operating Mode Description
A1	DVE adapter, ANT1+ANT2+ANT3 (chain 0+chain 1+ chain 2)

3 Transmitter Test Results

3.1 Conducted Emissions

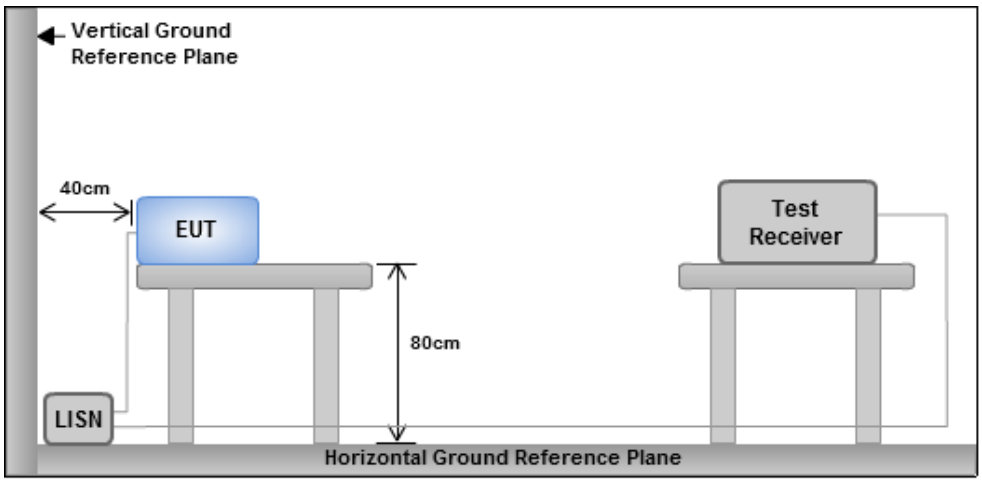
3.1.1 Limit of Conducted Emissions

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 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.

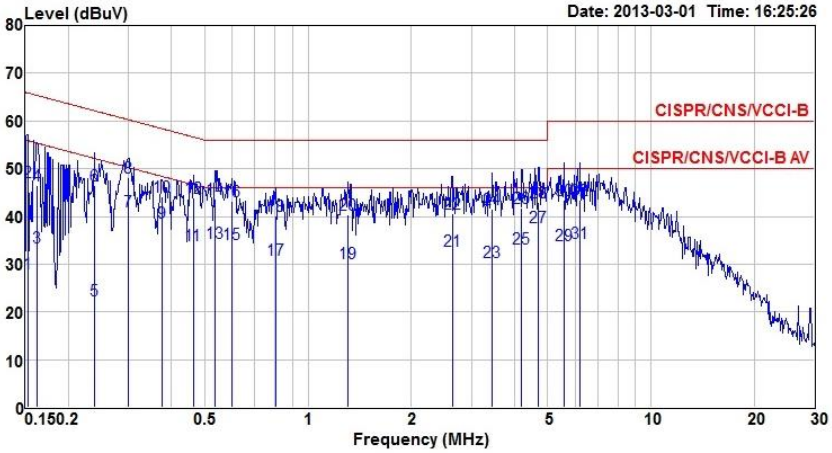
3.1.3 Test Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.4 Test Result of Conducted Emissions

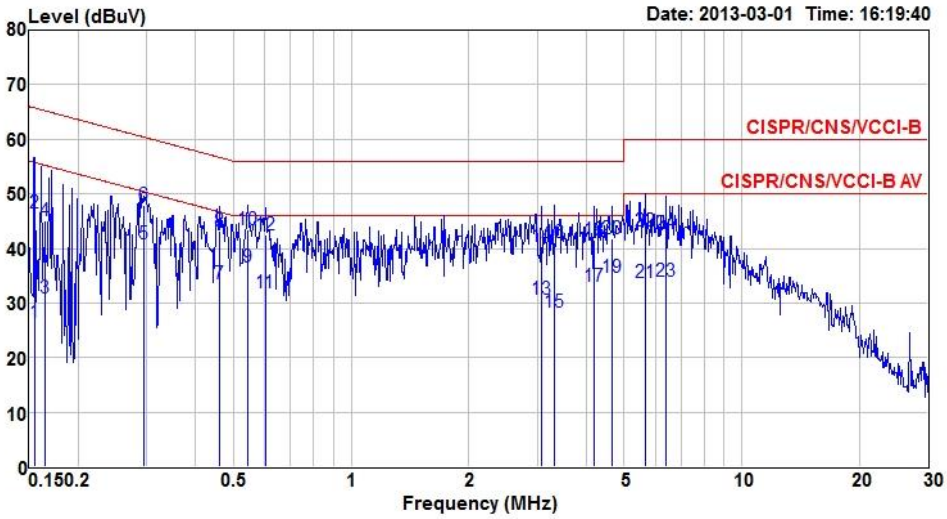
Power Phase	Line	Test Freq. (MHz)	5745
Test Mode	A		



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.152	28.20	55.87	-27.67	28.12	0.03	0.07	Average
2	0.152	47.15	65.87	-18.72	47.07	0.03	0.07	QP
3	0.162	33.47	55.34	-21.87	33.37	0.03	0.09	Average
4	0.162	46.42	65.34	-18.92	46.32	0.03	0.09	QP
5	0.238	22.40	52.17	-29.77	22.25	0.03	0.15	Average
6	0.238	46.45	62.17	-15.72	46.30	0.03	0.15	QP
7	0.299	41.06	50.28	-9.22	40.96	0.03	0.10	Average
8	0.299	48.17	60.28	-12.11	48.07	0.03	0.10	QP
9	0.375	38.82	48.39	-9.57	38.77	0.03	0.06	Average
10	0.375	44.16	58.39	-14.23	44.11	0.03	0.06	QP
11	0.464	33.89	46.63	-12.74	33.86	0.03	0.05	Average
12	0.464	43.83	56.63	-12.80	43.80	0.03	0.05	QP
13	0.535	34.57	46.00	-11.43	34.55	0.03	0.05	Average
14	0.535	43.73	56.00	-12.27	43.71	0.03	0.05	QP
15	0.598	34.30	46.00	-11.70	34.29	0.03	0.05	Average
16	0.598	43.19	56.00	-12.81	43.18	0.03	0.05	QP
17	0.804	30.97	46.00	-15.03	30.99	0.03	0.04	Average
18	0.804	40.02	56.00	-15.98	40.04	0.03	0.04	QP
19	1.303	30.31	46.00	-15.69	30.31	0.04	0.09	Average
20	1.303	40.44	56.00	-15.56	40.44	0.04	0.09	QP
21	2.636	32.87	46.00	-13.13	32.77	0.05	0.19	Average
22	2.636	40.70	56.00	-15.30	40.60	0.05	0.19	QP
23	3.454	30.38	46.00	-15.62	30.21	0.06	0.22	Average
24	3.454	41.49	56.00	-14.51	41.32	0.06	0.22	QP
25	4.202	33.21	46.00	-12.79	33.03	0.06	0.23	Average
26	4.202	41.66	56.00	-14.34	41.48	0.06	0.23	QP
27	4.696	37.65	46.00	-8.35	37.52	0.06	0.22	Average
28	4.696	42.85	56.00	-13.15	42.72	0.06	0.22	QP
29	5.564	34.10	50.00	-15.90	34.04	0.07	0.19	Average
30	5.564	43.32	60.00	-16.68	43.26	0.07	0.19	QP
31	6.219	34.56	50.00	-15.44	34.54	0.07	0.18	Average
32	6.219	43.54	60.00	-16.46	43.52	0.07	0.18	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dBuV) = Limit Line (dBuV) – Level (dBuV).

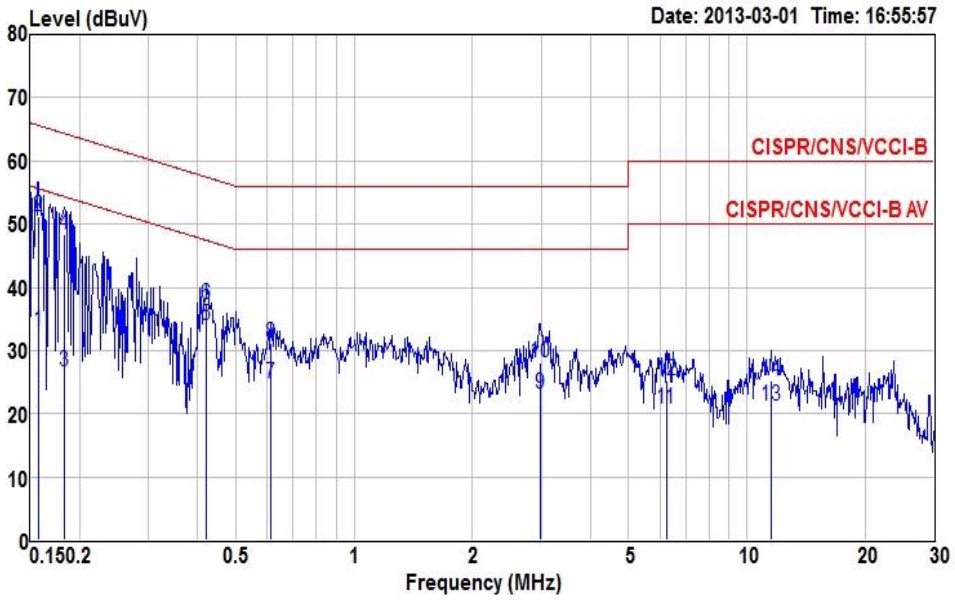
Power Phase	Neutral	Test Freq. (MHz)	5745
Test Mode	A		



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.155	26.49	55.74	-29.25	26.42	0.02	0.07	Average
2	0.155	46.54	65.74	-19.20	46.47	0.02	0.07	QP
3	0.165	30.93	55.21	-24.28	30.83	0.02	0.10	Average
4	0.165	45.05	65.21	-20.16	44.95	0.02	0.10	QP
5	0.294	40.74	50.41	-9.67	40.65	0.02	0.11	Average
6	0.294	47.83	60.41	-12.58	47.74	0.02	0.11	QP
7	0.461	33.47	46.67	-13.20	33.46	0.02	0.05	Average
8	0.461	43.18	56.67	-13.49	43.17	0.02	0.05	QP
9	0.544	36.60	46.00	-9.40	36.60	0.02	0.05	Average
10	0.544	43.35	56.00	-12.65	43.35	0.02	0.05	QP
11	0.604	31.88	46.00	-14.12	31.89	0.02	0.05	Average
12	0.604	42.39	56.00	-13.61	42.40	0.02	0.05	QP
13	3.074	30.70	46.00	-15.30	30.57	0.04	0.21	Average
14	3.074	40.45	56.00	-15.55	40.32	0.04	0.21	QP
15	3.310	28.43	46.00	-17.57	28.27	0.05	0.22	Average
16	3.310	41.08	56.00	-14.92	40.92	0.05	0.22	QP
17	4.180	32.94	46.00	-13.06	32.76	0.05	0.23	Average
18	4.180	41.54	56.00	-14.46	41.36	0.05	0.23	QP
19	4.672	34.69	46.00	-11.31	34.56	0.05	0.22	Average
20	4.672	41.84	56.00	-14.16	41.71	0.05	0.22	QP
21	5.653	33.72	50.00	-16.28	33.67	0.06	0.19	Average
22	5.653	43.21	60.00	-16.79	43.16	0.06	0.19	QP
23	6.420	34.04	50.00	-15.96	34.03	0.07	0.17	Average
24	6.420	42.74	60.00	-17.26	42.73	0.07	0.17	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dBuV) = Limit Line (dBuV) – Level (dBuV).

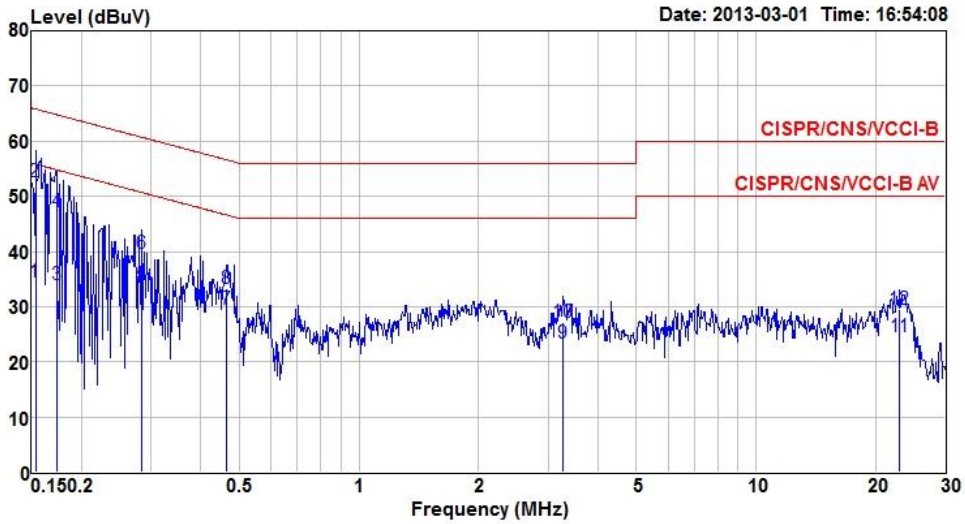
Power Phase	Line	Test Freq. (MHz)	5745
Test Mode	B		



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.157	33.03	55.60	-22.57	32.94	0.03	0.08	Average
2	0.157	51.14	65.60	-14.46	51.05	0.03	0.08	QP
3	0.183	26.73	54.33	-27.60	26.58	0.03	0.14	Average
4	0.183	48.36	64.33	-15.97	48.21	0.03	0.14	QP
5	0.421	33.93	47.42	-13.49	33.89	0.03	0.05	Average
6	0.421	37.19	57.42	-20.23	37.15	0.03	0.05	QP
7	0.614	24.90	46.00	-21.10	24.89	0.03	0.05	Average
8	0.614	31.23	56.00	-24.77	31.22	0.03	0.05	QP
9	2.978	23.23	46.00	-22.77	23.10	0.05	0.21	Average
10	2.978	28.14	56.00	-27.86	28.01	0.05	0.21	QP
11	6.252	20.76	50.00	-29.24	20.75	0.07	0.18	Average
12	6.252	25.38	60.00	-34.62	25.37	0.07	0.18	QP
13	11.498	21.14	50.00	-28.86	21.40	0.16	0.12	Average
14	11.498	25.15	60.00	-34.85	25.41	0.16	0.12	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dBuV) = Limit Line (dBuV) – Level (dBuV).

Power Phase	Neutral	**Test Freq. (MHz)**	5745
Test Mode	B		



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.153	34.50	55.82	-21.32	34.43	0.02	0.07	Average
2	0.153	52.65	65.82	-13.17	52.58	0.02	0.07	QP
3	0.173	34.05	54.81	-20.76	33.93	0.02	0.12	Average
4	0.173	47.25	64.81	-17.56	47.13	0.02	0.12	QP
5	0.283	33.89	50.72	-16.83	33.80	0.02	0.11	Average
6	0.283	39.68	60.72	-21.04	39.59	0.02	0.11	QP
7	0.464	29.55	46.63	-17.08	29.54	0.02	0.05	Average
8	0.464	33.39	56.63	-23.24	33.38	0.02	0.05	QP
9	3.276	23.27	46.00	-22.73	23.11	0.05	0.22	Average
10	3.276	27.07	56.00	-28.93	26.91	0.05	0.22	QP
11	23.018	24.59	50.00	-25.41	25.37	0.14	0.38	Average
12	23.018	29.54	60.00	-30.46	30.32	0.14	0.38	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dBuV) = Limit Line (dBuV) – Level (dBuV).

3.2 6dB Bandwidth

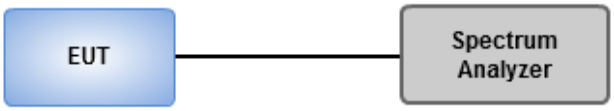
3.2.1 Limit of 6dB Bandwidth

The minimum 6dB bandwidth shall be at least 500 kHz.

3.2.2 Test Procedures

1. Set resolution bandwidth (RBW) = 100 kHz, Video bandwidth = 300 kHz.
2. Detector = Peak, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6dB relative to the maximum level measured in the fundamental emission.

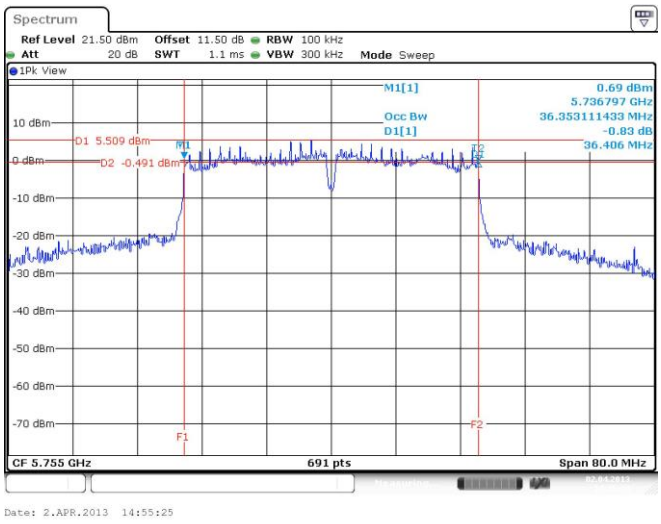
3.2.3 Test Setup



3.2.4 Test Result of Emission Bandwidth

Modulation Mode	N_{TX}	Freq. (MHz)	6dB Bandwidth (MHz)				Limit (kHz)
			Chain 0	Chain 1	Chain 2	Chain 3	
11a	1	5745	---	---	16.35	---	500
11a	1	5785	---	---	16.35	---	500
11a	1	5825	---	---	16.35	---	500
HT20	3	5745	16.81	17.33	16.70	---	500
HT20	3	5785	17.16	17.57	17.28	---	500
HT20	3	5825	17.28	17.57	16.70	---	500
HT40	3	5755	36.29	36.41	36.06	---	500
HT40	3	5795	36.06	36.41	36.06	---	500

Worst Plots



3.3 RF Output Power

3.3.1 Limit of RF Output Power

Conducted power shall not exceed 1Watt.

☒ Antenna gain <= 6dBi, no any corresponding reduction is in output power limit.

☐ Antenna gain > 6dBi

☐ Non Fixed, point to point operations.
The conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dB

☐ Fixed, point to point operations
Systems operating in the 2400–2483.5 MHz band that are used exclusively for fixed, point-to-point Operations, maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Systems operating in the 5725–5850 MHz band that are used exclusively for fixed, point-to-point operations ,no any corresponding reduction is in transmitter peak output power

3.3.2 Test Procedures

☒ Maximum Peak Conducted Output Power

☐ **Spectrum analyzer**

1. Set RBW = 1MHz, VBW = 3MHz, Detector = Peak.
2. Sweep time = auto, Trace mode = max hold, Allow trace to fully stabilize.
3. Use the spectrum analyzer channel power measurement function with the band limits set equal to the DTS bandwidth edges.

☒ **Power meter**

1. A broadband Peak RF power meter is used for output power measurement. The video bandwidth of power meter is greater than 6dB bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.

☐ Maximum Conducted Output Power

☐ **Spectrum analyzer**

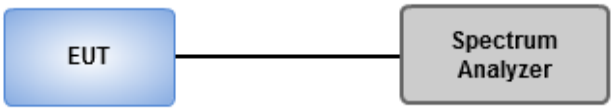
1. Set RBW = 1MHz, VBW = 3MHz, Detector = RMS.
2. Set the sweep time to: ≥10 x (number of measurement points in sweep) x (maximum data rate per stream).
3. Perform the measurement over a single sweep.
4. Use the spectrum analyzer's band power measurement function with band limits set equal to the EBW(26dBc) band edges.

☐ **Power meter**

1. A broadband Average RF power meter is used for output power measurement. The video bandwidth of power meter is greater than 6dB bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.

3.3.3 Test Setup

☐ RF Output Power (Spectrum Analyzer)



☒ RF Output Power (Power Meter)

3.3.4 Test Result of Maximum Output Power

Modulation Mode	N_{TX}	Freq. (MHz)	Peak Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)
			Chain 0	Chain 1	Chain 2	Chain 3			
11a	1	5745	---	---	24.68	---	293.765	24.68	30
11a	1	5785	---	---	24.69	---	294.442	24.69	30
11a	1	5825	---	---	24.38	---	274.157	24.38	30
HT20	3	5745	24.42	24.42	23.71	---	788.352	28.97	30
HT20	3	5785	24.27	24.25	23.64	---	764.580	28.83	30
HT20	3	5825	24.12	24.09	23.28	---	727.488	28.62	30
HT40	3	5755	24.19	24.24	22.73	---	715.382	28.55	30
HT40	3	5795	24.13	24.05	22.65	---	696.996	28.43	30

3.4 Power Spectral Density

3.4.1 Limit of Power Spectral Density

Power spectral density shall not be greater than 8 dBm in any 3 kHz band.

3.4.2 Test Procedures

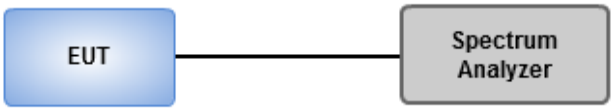
☒ Maximum peak conducted output power was used to demonstrate compliance to the fundamental output power limit.

1. Set the RBW = 3kHz, VBW = 10kHz.
2. Detector = Peak, Sweep time = auto couple.
3. Trace mode = max hold, allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

☐ Maximum (average) conducted output power was used to demonstrate compliance to the fundamental output power limit.

1. Set the RBW = 100kHz, VBW = 300 kHz.
2. Detector = RMS, Sweep time = auto couple.
3. Set the sweep time to: ≥ 10 x (number of measurement points in sweep) x (maximum data rate per stream).
4. Perform the measurement over a single sweep.
5. Use the peak marker function to determine the maximum amplitude level.\

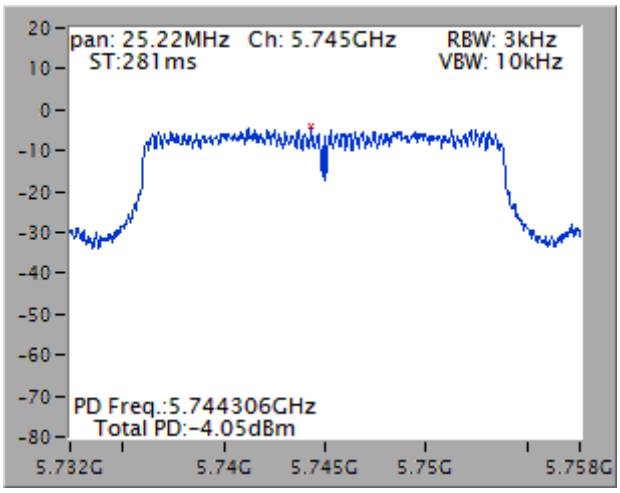
3.4.3 Test Setup



3.4.4 Test Result of Power Spectral Density

Modulation Mode	N_{TX}	Freq. (MHz)	Total Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
11a	1	5745	-5.89	8
11a	1	5785	-5.36	8
11a	1	5825	-5.30	8
HT20	3	5745	-4.05	8
HT20	3	5785	-4.32	8
HT20	3	5825	-4.90	8
HT40	3	5755	-5.70	8
HT40	3	5795	-4.37	8

Worst Plots



3.5 Unwanted Emissions into Restricted Frequency Bands

3.5.1 Limit of Unwanted Emissions into Restricted Frequency Bands

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:
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit
Note 2:
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

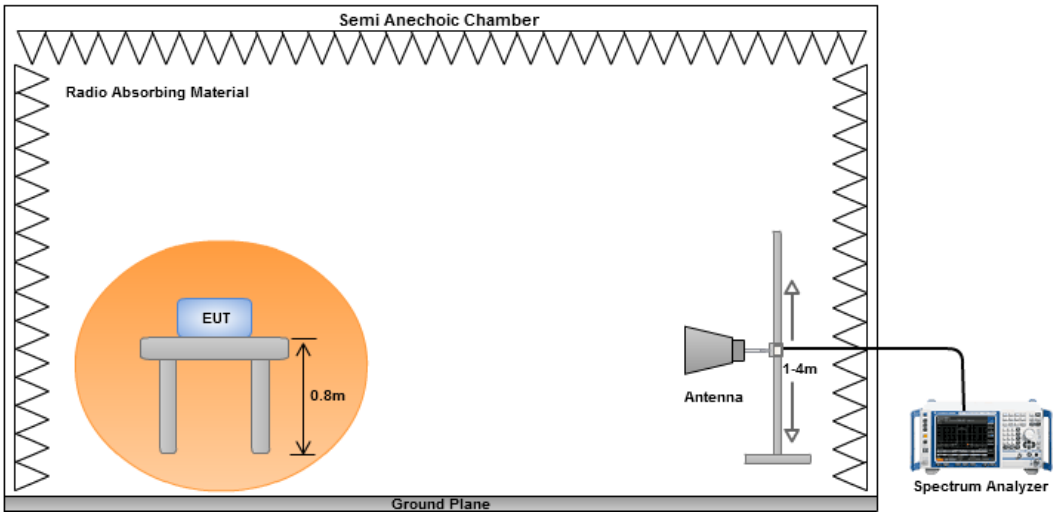
3.5.2 Test Procedures

1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at a height of 0.8 m test table above the ground plane.
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

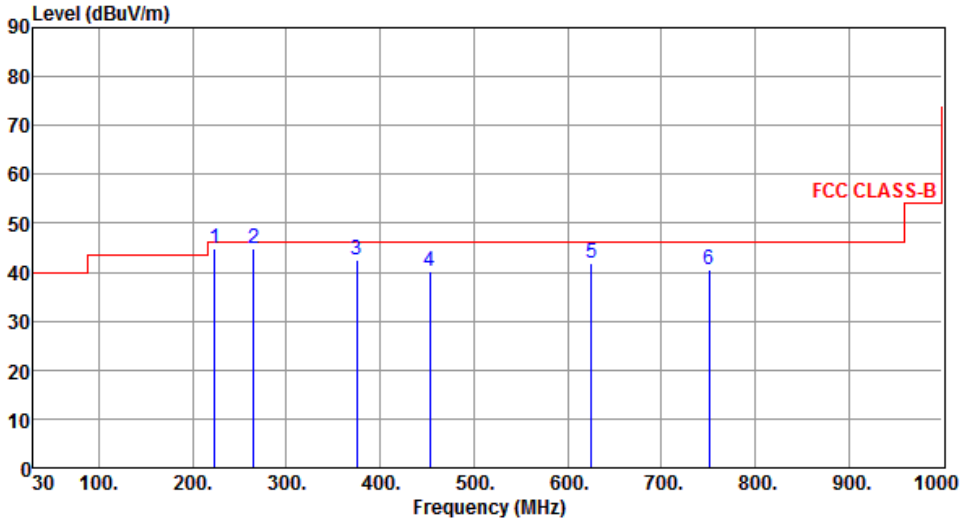
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=3MHz and RMS detector is for average measured value of radiated emission above 1GHz.

3.5.3 Test Setup



3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

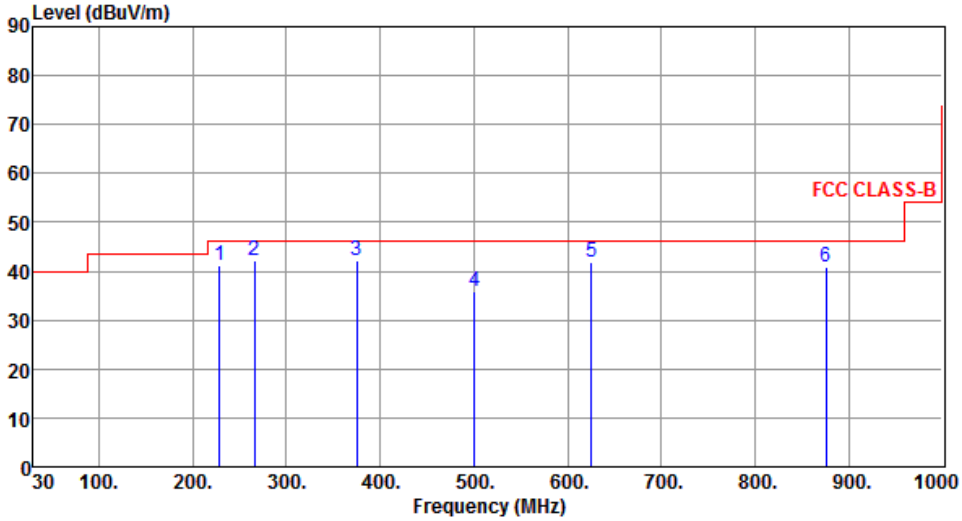
Polarization	Horizontal	Test Freq. (MHz)	5745
Test Mode	A		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	223.57	44.80	46.00	-1.20	63.99	-19.19	QP	----------	
2	265.37	44.71	46.00	-1.29	62.01	-17.30	QP	----------	
3	375.32	42.40	46.00	-3.60	56.67	-14.27	Peak	----------	
4	452.92	40.23	46.00	-5.77	52.63	-12.40	Peak	----------	
5	625.58	41.83	46.00	-4.17	51.20	-9.37	Peak	----------	
6	750.71	40.51	46.00	-5.49	47.72	-7.21	Peak	----------	

Note 1: Level (dBuV/m) = Read Level (dBuV/m) + Antenna Factor (dB) + Cable Loss (dB) - Preamp Factor (dB).
2: Over Limit (dBuV/m) = Limit Line (dBuV/m) – Level (dBuV/m).

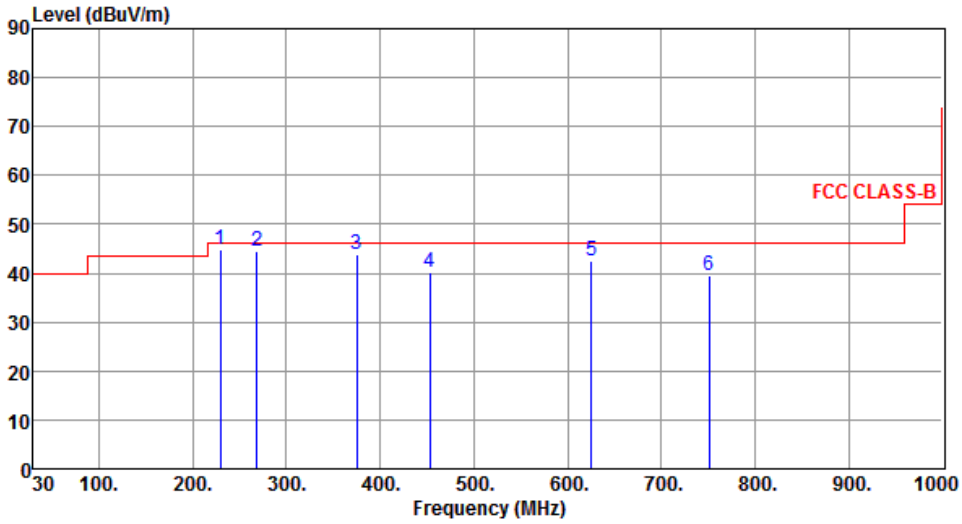
Polarization	Vertical	Test Freq. (MHz)	5745
Test Mode	A		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	228.85	41.16	46.00	-4.84	60.07	-18.91	Peak	----------	
2	265.71	42.02	46.00	-3.98	59.30	-17.28	Peak	----------	
3	375.32	42.23	46.00	-3.77	56.50	-14.27	Peak	----------	
4	500.45	35.75	46.00	-10.25	47.31	-11.56	Peak	----------	
5	625.58	41.73	46.00	-4.27	51.10	-9.37	Peak	----------	
6	875.84	41.01	46.00	-4.99	46.83	-5.82	Peak	----------	

Note 1: Level (dBuV/m) = Read Level (dBuV/m) + Antenna Factor (dB) + Cable Loss (dB) - Preamp Factor (dB).
2: Over Limit (dBuV/m) = Limit Line (dBuV/m) – Level (dBuV/m).

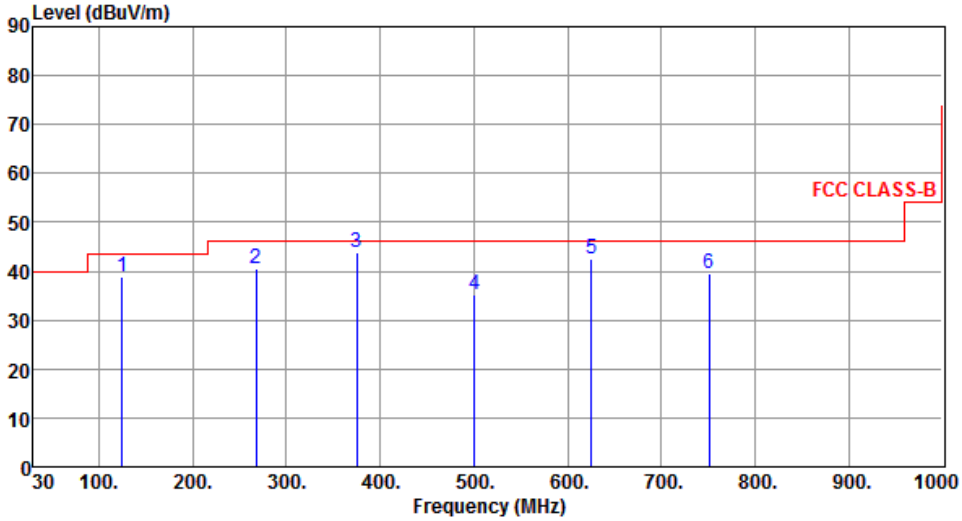
Polarization	Horizontal	Test Freq. (MHz)	5745
Test Mode	B		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	229.82	44.86	46.00	-1.14	63.72	-18.86	QP	----------	
2	268.62	44.63	46.00	-1.37	61.77	-17.14	QP	----------	
3	375.32	43.68	46.00	-2.32	57.95	-14.27	QP	----------	
4	452.92	40.13	46.00	-5.87	52.53	-12.40	Peak	----------	
5	625.58	42.40	46.00	-3.60	51.77	-9.37	Peak	----------	
6	750.71	39.63	46.00	-6.37	46.84	-7.21	Peak	----------	

Note 1: Level (dBuV/m) = Read Level (dBuV/m) + Antenna Factor (dB) + Cable Loss (dB) - Preamp Factor (dB).
2: Over Limit (dBuV/m) = Limit Line (dBuV/m) – Level (dBuV/m).

Polarization	Vertical	**Test Freq. (MHz)**	5745
Test Mode	B		

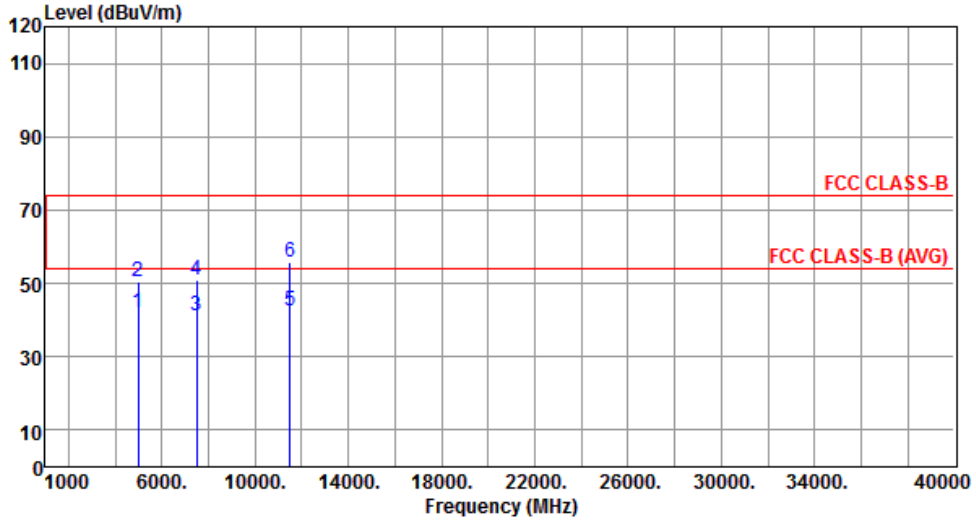


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	125.06	38.73	43.50	-4.77	57.35	-18.62	Peak	----------	
2	267.65	40.45	46.00	-5.55	57.64	-17.19	Peak	----------	
3	375.32	43.76	46.00	-2.24	58.03	-14.27	QP	----------	
4	500.45	35.07	46.00	-10.93	46.63	-11.56	Peak	----------	
5	625.58	42.37	46.00	-3.63	51.74	-9.37	Peak	----------	
6	750.71	39.65	46.00	-6.35	46.86	-7.21	Peak	----------	

Note 1: Level (dBuV/m) = Read Level (dBuV/m) + Antenna Factor (dB) + Cable Loss (dB) - Preamp Factor (dB).
2: Over Limit (dBuV/m) = Limit Line (dBuV/m) – Level (dBuV/m).

3.5.5 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11a

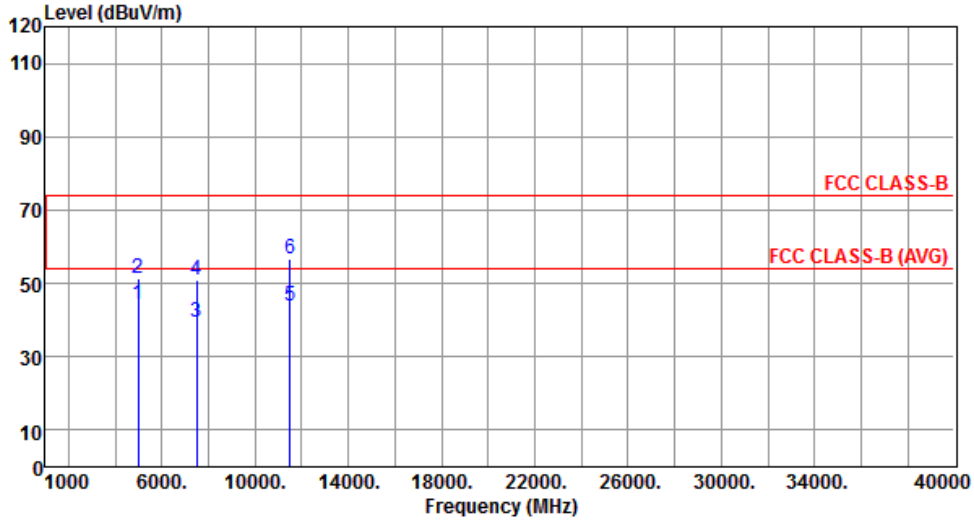
Polarization	Horizontal	**Test Freq. (MHz)**	5745
Test Mode	A1		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	41.86	54.00	-12.14	37.25	4.61	Average	----------	
2	5000.00	50.40	74.00	-23.60	45.79	4.61	Peak	----------	
3	7500.00	41.19	54.00	-12.81	31.87	9.32	Average	----------	
4	7500.00	51.09	74.00	-22.91	41.77	9.32	Peak	----------	
5	11490.00	42.41	54.00	-11.59	27.44	14.97	Average	----------	
6	11490.00	55.93	74.00	-18.07	40.96	14.97	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

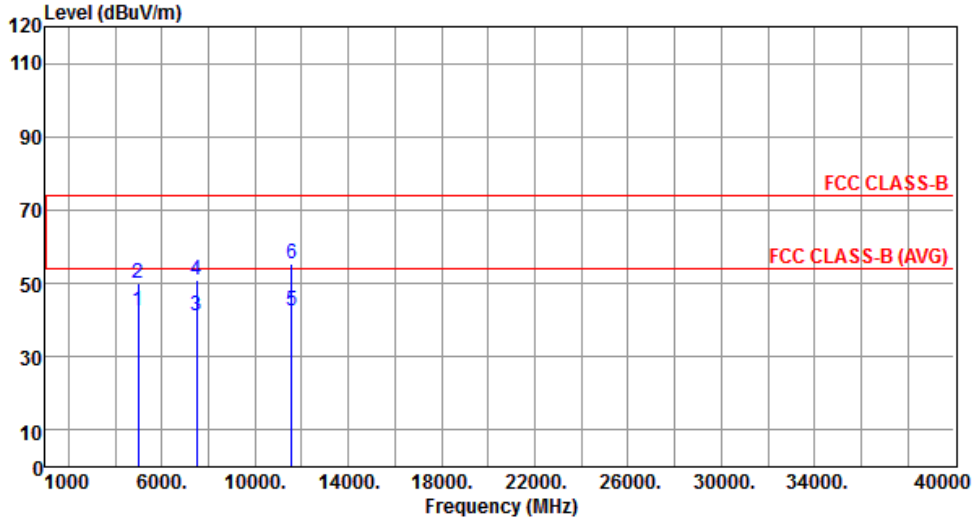
Polarization	Vertical	Test Freq. (MHz)	5745
Test Mode	A1		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	44.31	54.00	-9.69	39.70	4.61	Average	----------	
2	5000.00	51.23	74.00	-22.77	46.62	4.61	Peak	----------	
3	7500.00	39.47	54.00	-14.53	30.15	9.32	Average	----------	
4	7500.00	50.86	74.00	-23.14	41.54	9.32	Peak	----------	
5	11490.00	43.96	54.00	-10.04	28.99	14.97	Average	----------	
6	11490.00	56.74	74.00	-17.26	41.77	14.97	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

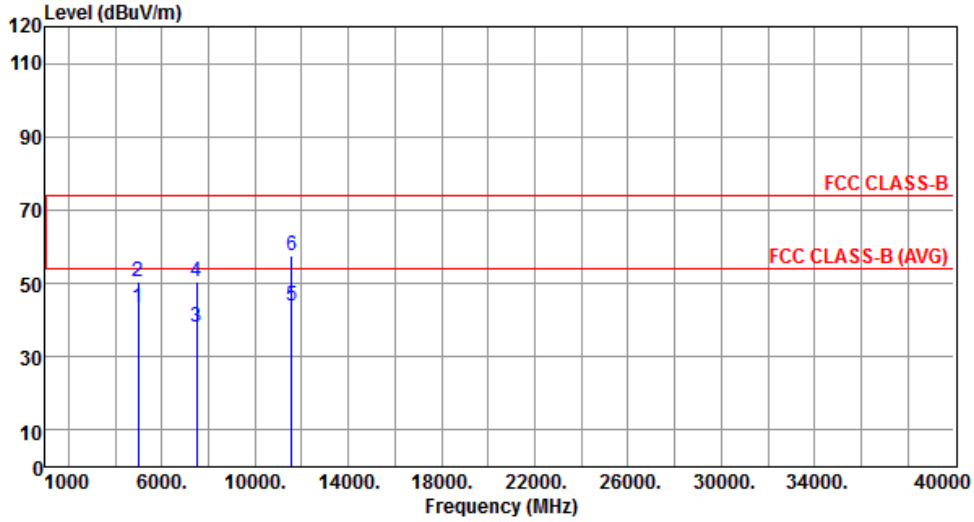
Polarization	Horizontal	Test Freq. (MHz)	5785
Test Mode	A1		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	42.65	54.00	-11.35	38.04	4.61	Average	----------	
2	5000.00	49.89	74.00	-24.11	45.28	4.61	Peak	----------	
3	7500.00	41.32	54.00	-12.68	32.00	9.32	Average	----------	
4	7500.00	50.82	74.00	-23.18	41.50	9.32	Peak	----------	
5	11570.00	42.61	54.00	-11.39	27.74	14.87	Average	----------	
6	11570.00	55.41	74.00	-18.59	40.54	14.87	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

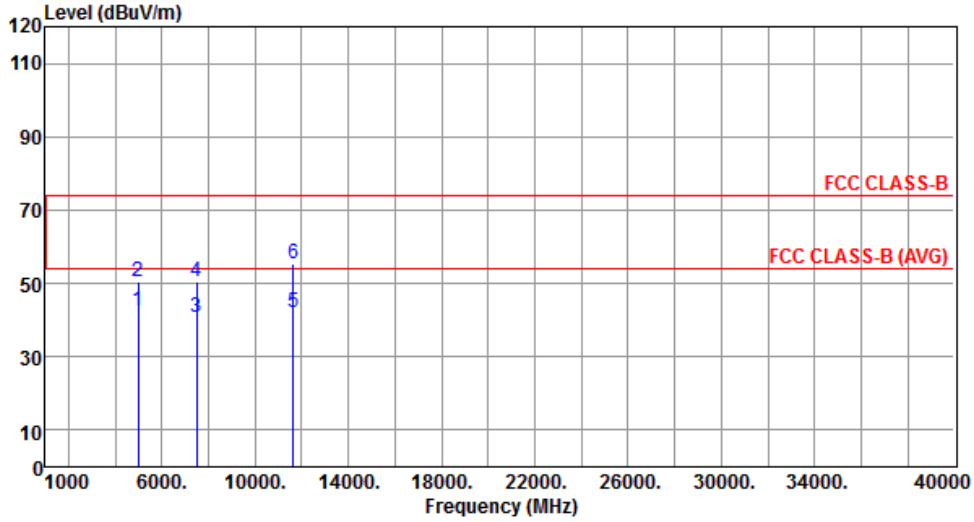
Polarization	Vertical	Test Freq. (MHz)	5785
Test Mode	A1		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	43.50	54.00	-10.50	38.89	4.61	Average	----------	
2	5000.00	50.34	74.00	-23.66	45.73	4.61	Peak	----------	
3	7500.00	38.10	54.00	-15.90	28.78	9.32	Average	----------	
4	7500.00	50.28	74.00	-23.72	40.96	9.32	Peak	----------	
5	11570.00	43.71	54.00	-10.29	28.84	14.87	Average	----------	
6	11570.00	57.45	74.00	-16.55	42.58	14.87	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

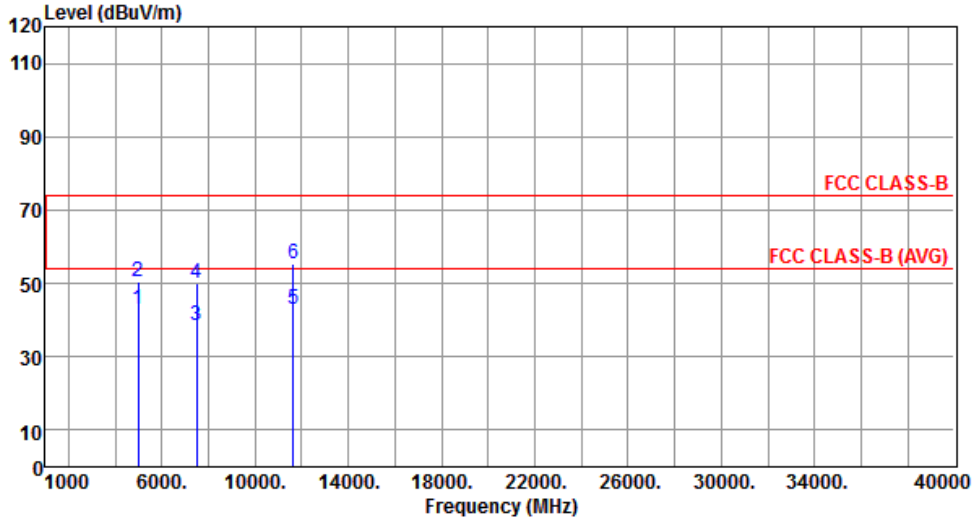
Polarization	Horizontal	Test Freq. (MHz)	5825
Test Mode	A1		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	42.39	54.00	-11.61	37.78	4.61	Average	----------	
2	5000.00	50.61	74.00	-23.39	46.00	4.61	Peak	----------	
3	7500.00	40.69	54.00	-13.31	31.37	9.32	Average	----------	
4	7500.00	50.45	74.00	-23.55	41.13	9.32	Peak	----------	
5	11650.00	42.12	54.00	-11.88	27.36	14.76	Average	----------	
6	11650.00	55.33	74.00	-18.67	40.57	14.76	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

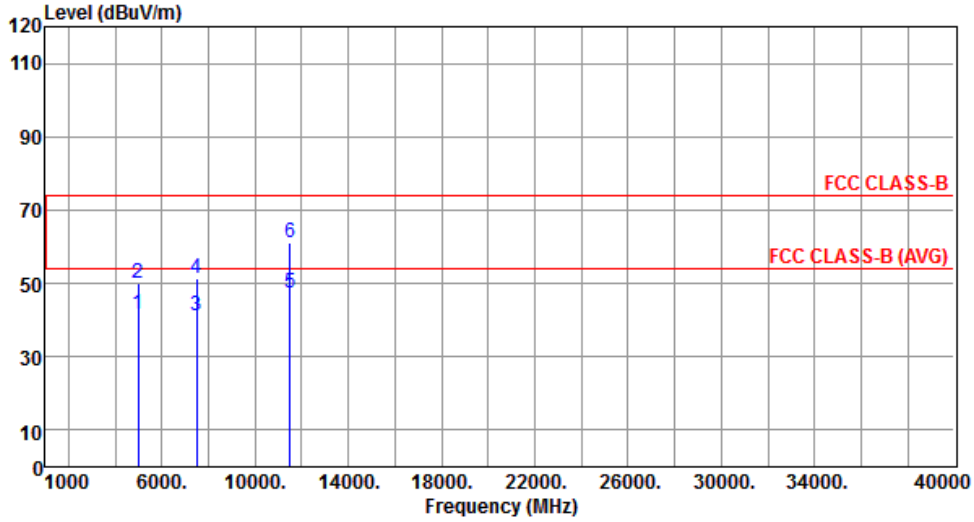
Polarization	Vertical	Test Freq. (MHz)	5825
Test Mode	A1		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	42.94	54.00	-11.06	38.33	4.61	Average	----------	
2	5000.00	50.66	74.00	-23.34	46.05	4.61	Peak	----------	
3	7500.00	38.56	54.00	-15.44	29.24	9.32	Average	----------	
4	7500.00	49.93	74.00	-24.07	40.61	9.32	Peak	----------	
5	11650.00	42.81	54.00	-11.19	28.05	14.76	Average	----------	
6	11650.00	55.30	74.00	-18.70	40.54	14.76	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

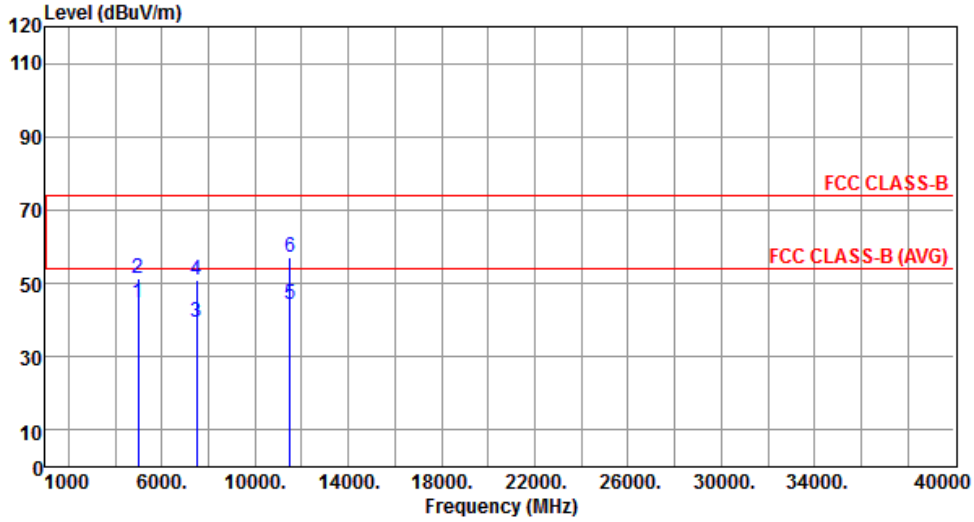
Polarization	Horizontal	Test Freq. (MHz)	5745
Test Mode	A3		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	41.75	54.00	-12.25	37.14	4.61	Average	----------	
2	5000.00	50.21	74.00	-23.79	45.60	4.61	Peak	----------	
3	7500.00	41.25	54.00	-12.75	31.93	9.32	Average	----------	
4	7500.00	51.15	74.00	-22.85	41.83	9.32	Peak	----------	
5	11490.00	47.35	54.00	-6.65	32.38	14.97	Average	----------	
6	11490.00	60.95	74.00	-13.05	45.98	14.97	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

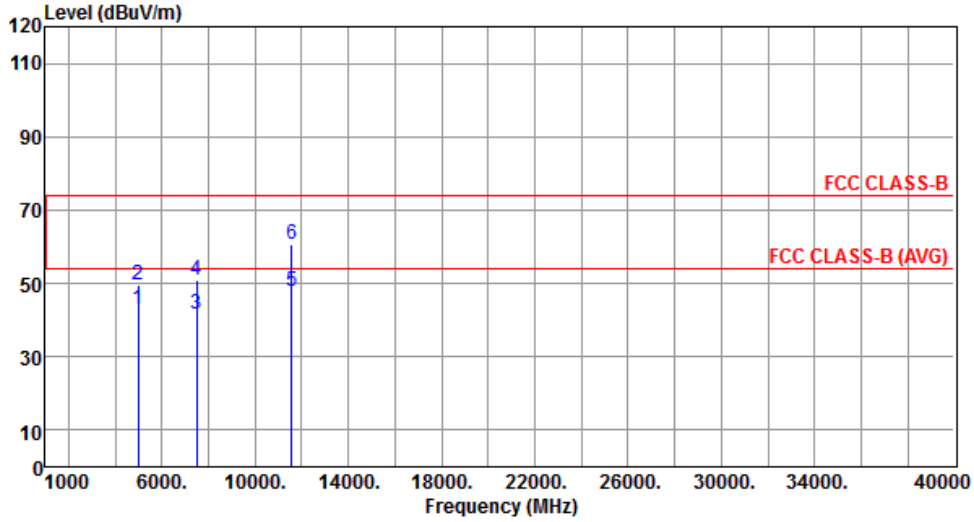
Polarization	Vertical	Test Freq. (MHz)	5745
Test Mode	A3		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	44.51	54.00	-9.49	39.90	4.61	Average	----------	
2	5000.00	51.46	74.00	-22.54	46.85	4.61	Peak	----------	
3	7500.00	39.58	54.00	-14.42	30.26	9.32	Average	----------	
4	7500.00	50.91	74.00	-23.09	41.59	9.32	Peak	----------	
5	11490.00	44.21	54.00	-9.79	29.24	14.97	Average	----------	
6	11490.00	56.98	74.00	-17.02	42.01	14.97	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

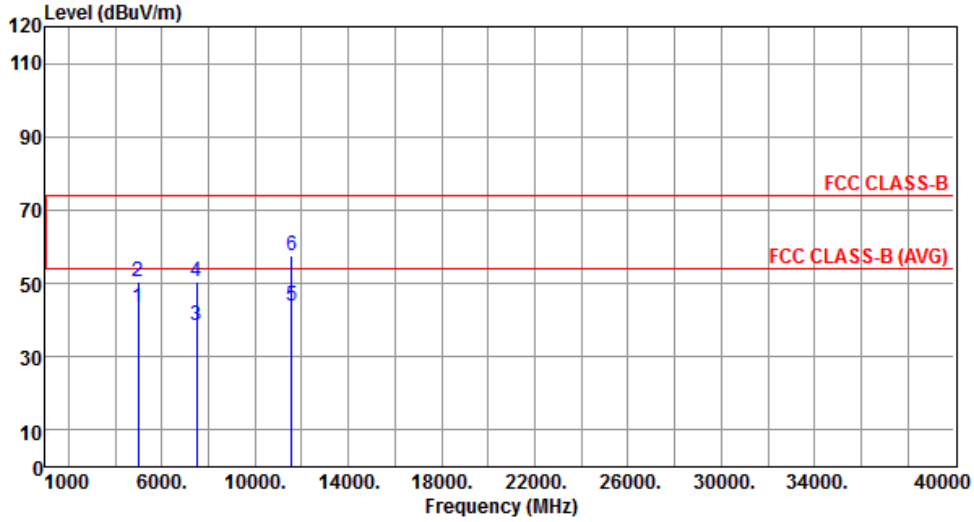
Polarization	Horizontal	Test Freq. (MHz)	5785
Test Mode	A3		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	42.76	54.00	-11.24	38.15	4.61	Average	----------	
2	5000.00	49.81	74.00	-24.19	45.20	4.61	Peak	----------	
3	7500.00	41.58	54.00	-12.42	32.26	9.32	Average	----------	
4	7500.00	50.96	74.00	-23.04	41.64	9.32	Peak	----------	
5	11570.00	47.75	54.00	-6.25	32.88	14.87	Average	----------	
6	11570.00	60.65	74.00	-13.35	45.78	14.87	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

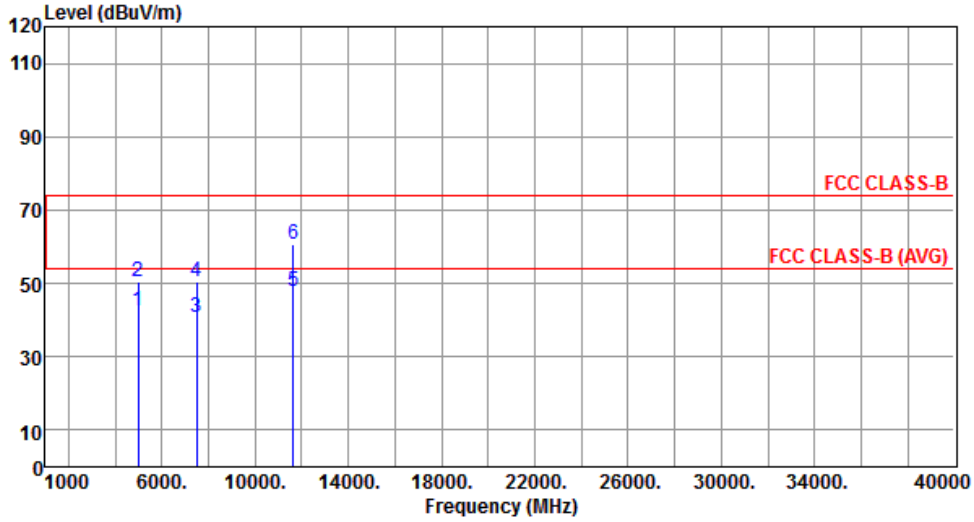
Polarization	Vertical	Test Freq. (MHz)	5785
Test Mode	A3		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	43.58	54.00	-10.42	38.97	4.61	Average	----------	
2	5000.00	50.46	74.00	-23.54	45.85	4.61	Peak	----------	
3	7500.00	38.42	54.00	-15.58	29.10	9.32	Average	----------	
4	7500.00	50.63	74.00	-23.37	41.31	9.32	Peak	----------	
5	11570.00	43.75	54.00	-10.25	28.88	14.87	Average	----------	
6	11570.00	57.58	74.00	-16.42	42.71	14.87	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

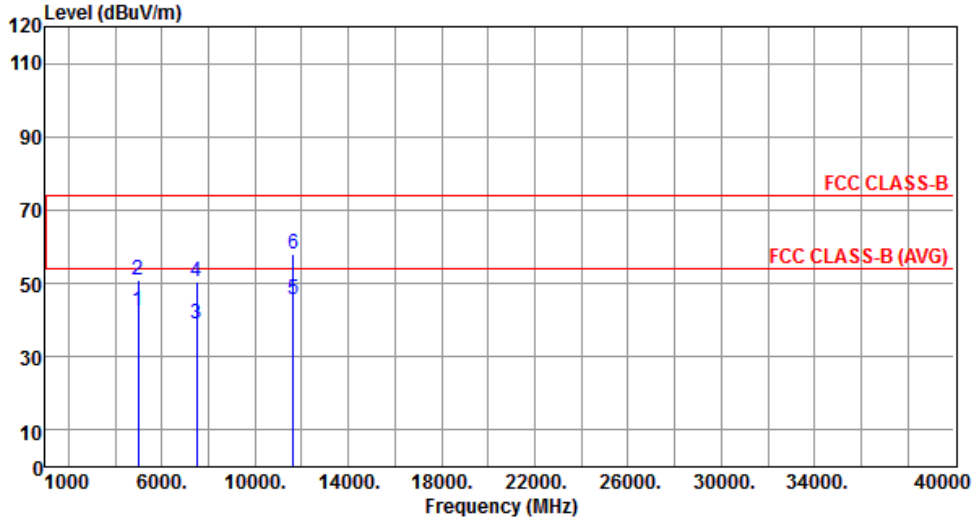
Polarization	Horizontal	Test Freq. (MHz)	5825
Test Mode	A3		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	42.35	54.00	-11.65	37.74	4.61	Average	----------	
2	5000.00	50.54	74.00	-23.46	45.93	4.61	Peak	----------	
3	7500.00	40.62	54.00	-13.38	31.30	9.32	Average	----------	
4	7500.00	50.41	74.00	-23.59	41.09	9.32	Peak	----------	
5	11650.00	47.95	54.00	-6.05	33.19	14.76	Average	----------	
6	11650.00	60.86	74.00	-13.14	46.10	14.76	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

Polarization	Vertical	Test Freq. (MHz)	5825
Test Mode	A3		

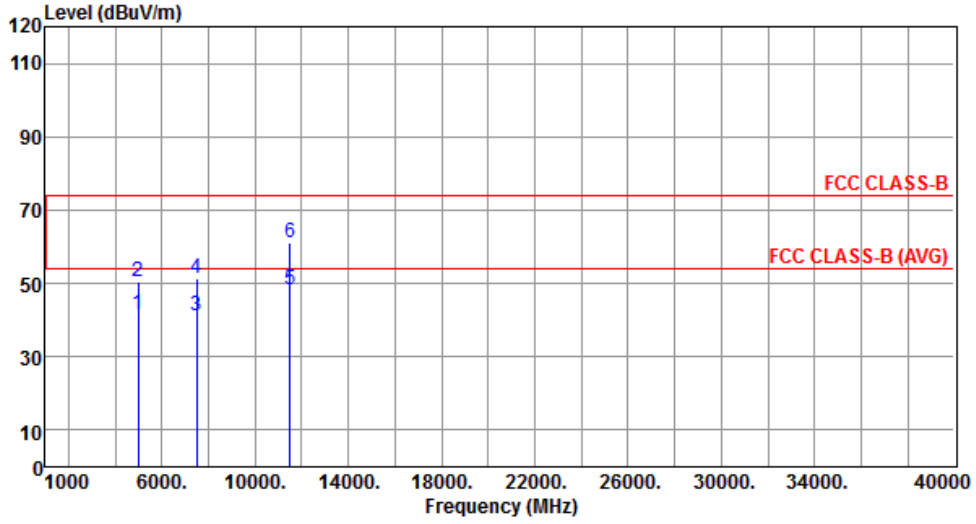


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	42.48	54.00	-11.52	37.87	4.61	Average	----------	
2	5000.00	50.76	74.00	-23.24	46.15	4.61	Peak	----------	
3	7500.00	38.92	54.00	-15.08	29.60	9.32	Average	----------	
4	7500.00	50.26	74.00	-23.74	40.94	9.32	Peak	----------	
5	11650.00	45.42	54.00	-8.58	30.66	14.76	Average	----------	
6	11650.00	58.04	74.00	-15.96	43.28	14.76	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

3.5.6 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT20

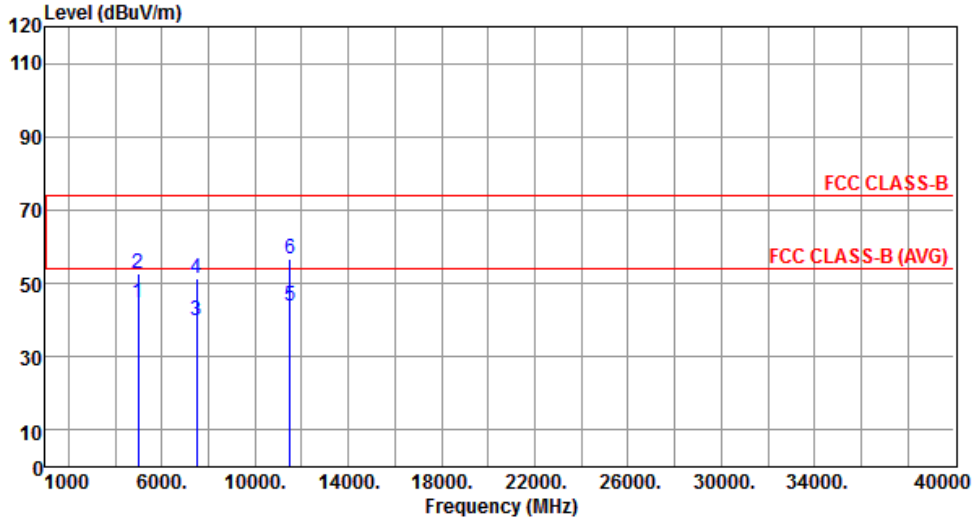
Polarization	Horizontal	**Test Freq. (MHz)**	5745
Test Mode	A1		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	41.75	54.00	-12.25	37.14	4.61	Average	----------	
2	5000.00	50.27	74.00	-23.73	45.66	4.61	Peak	----------	
3	7500.00	41.25	54.00	-12.75	31.93	9.32	Average	----------	
4	7500.00	51.23	74.00	-22.77	41.91	9.32	Peak	----------	
5	11490.00	48.43	54.00	-5.57	33.46	14.97	Average	----------	
6	11490.00	61.26	74.00	-12.74	46.29	14.97	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

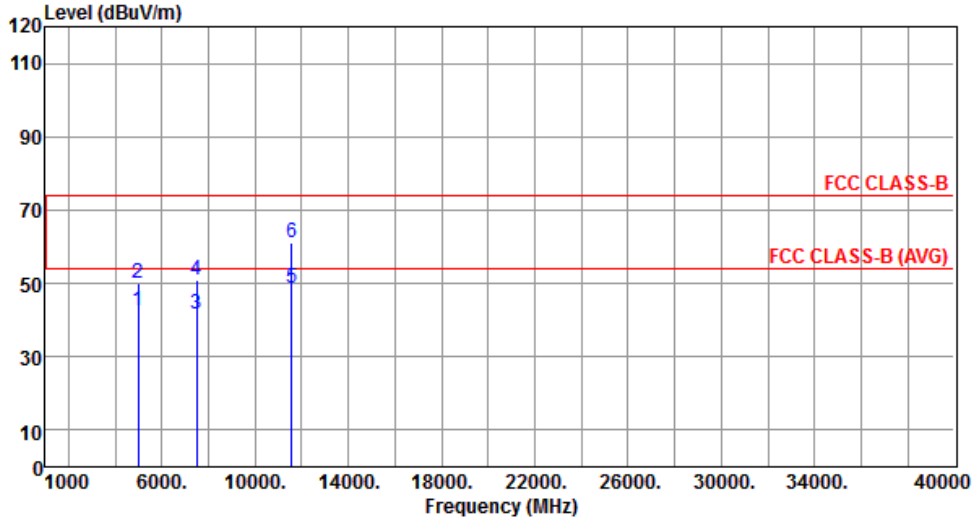
Polarization	Vertical	Test Freq. (MHz)	5745
Test Mode	A1		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	44.51	54.00	-9.49	39.90	4.61	Average	----------	
2	5000.00	52.48	74.00	-21.52	47.87	4.61	Peak	----------	
3	7500.00	39.85	54.00	-14.15	30.53	9.32	Average	----------	
4	7500.00	51.16	74.00	-22.84	41.84	9.32	Peak	----------	
5	11490.00	43.85	54.00	-10.15	28.88	14.97	Average	----------	
6	11490.00	56.85	74.00	-17.15	41.88	14.97	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

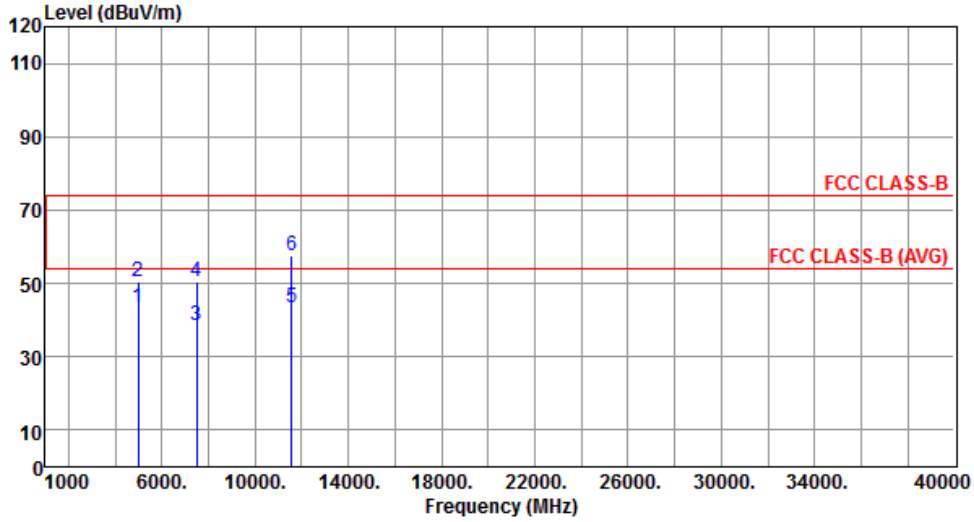
Polarization	Horizontal	Test Freq. (MHz)	5785
Test Mode	A1		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	42.72	54.00	-11.28	38.11	4.61	Average	----------	
2	5000.00	49.91	74.00	-24.09	45.30	4.61	Peak	----------	
3	7500.00	41.55	54.00	-12.45	32.23	9.32	Average	----------	
4	7500.00	50.86	74.00	-23.14	41.54	9.32	Peak	----------	
5	11570.00	48.49	54.00	-5.51	33.62	14.87	Average	----------	
6	11570.00	60.92	74.00	-13.08	46.05	14.87	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

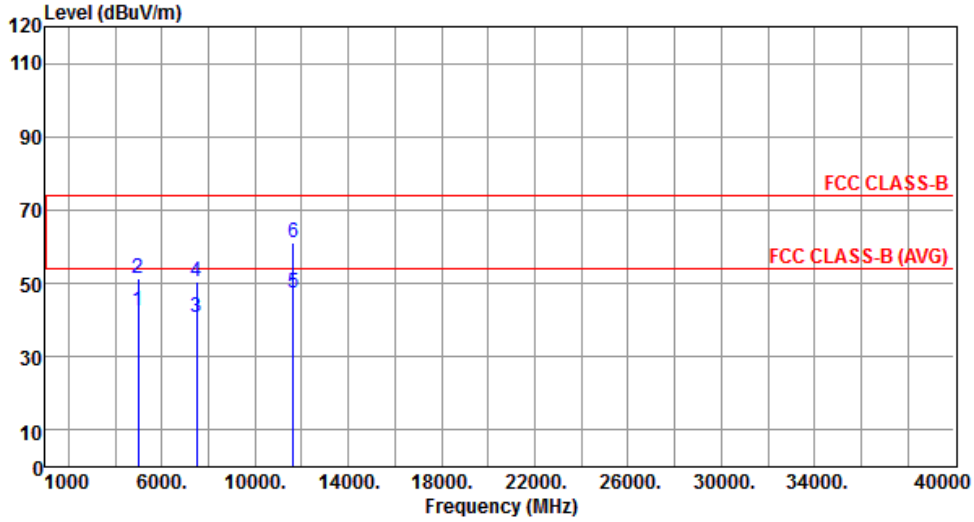
Polarization	Vertical	Test Freq. (MHz)	5785
Test Mode	A1		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	43.48	54.00	-10.52	38.87	4.61	Average	----------	
2	5000.00	50.45	74.00	-23.55	45.84	4.61	Peak	----------	
3	7500.00	38.63	54.00	-15.37	29.31	9.32	Average	----------	
4	7500.00	50.41	74.00	-23.59	41.09	9.32	Peak	----------	
5	11570.00	43.52	54.00	-10.48	28.65	14.87	Average	----------	
6	11570.00	57.68	74.00	-16.32	42.81	14.87	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

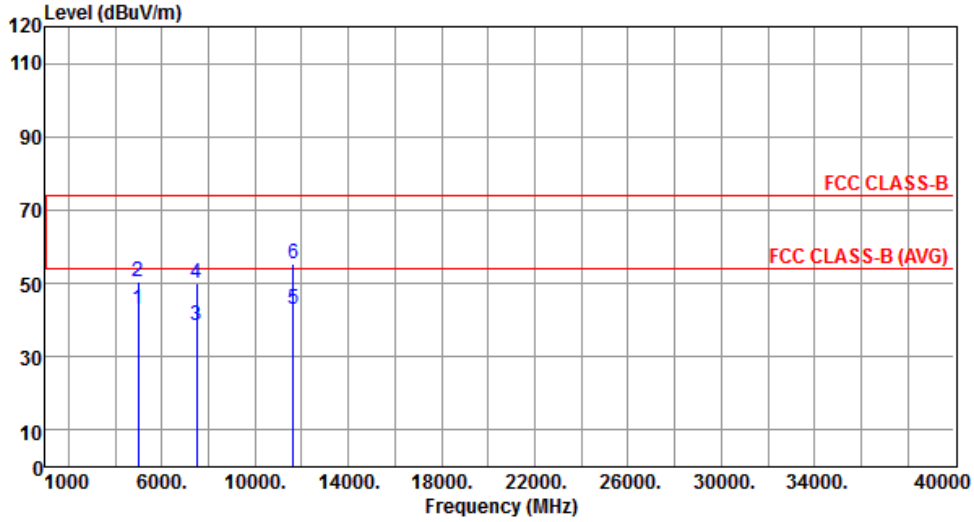
Polarization	Horizontal	Test Freq. (MHz)	5825
Test Mode	A1		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	42.48	54.00	-11.52	37.87	4.61	Average	----------	
2	5000.00	51.24	74.00	-22.76	46.63	4.61	Peak	----------	
3	7500.00	40.83	54.00	-13.17	31.51	9.32	Average	----------	
4	7500.00	50.66	74.00	-23.34	41.34	9.32	Peak	----------	
5	11650.00	47.38	54.00	-6.62	32.62	14.76	Average	----------	
6	11650.00	61.24	74.00	-12.76	46.48	14.76	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

Polarization	Vertical	Test Freq. (MHz)	5825
Test Mode	A1		

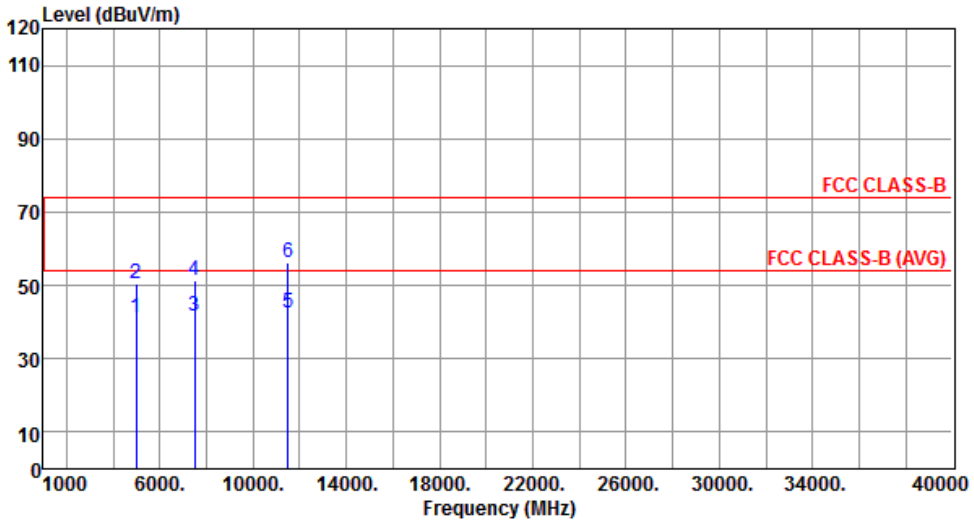


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	42.85	54.00	-11.15	38.24	4.61	Average	----------	
2	5000.00	50.69	74.00	-23.31	46.08	4.61	Peak	----------	
3	7500.00	38.69	54.00	-15.31	29.37	9.32	Average	----------	
4	7500.00	49.97	74.00	-24.03	40.65	9.32	Peak	----------	
5	11650.00	42.96	54.00	-11.04	28.20	14.76	Average	----------	
6	11650.00	55.48	74.00	-18.52	40.72	14.76	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

3.5.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT40

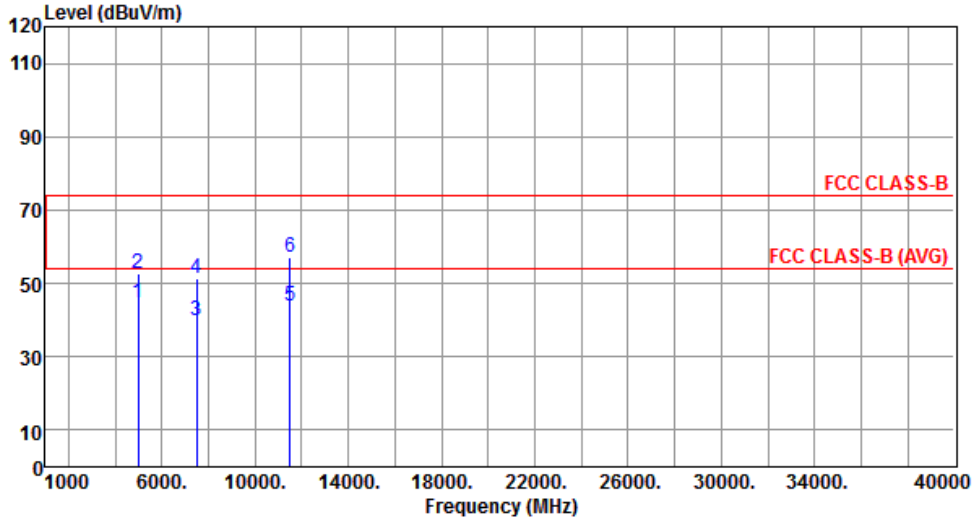
Polarization	Horizontal	**Test Freq. (MHz)**	5755
Test Mode	A1		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	41.25	54.00	-12.75	36.64	4.61	Average	----------	
2	5000.00	50.29	74.00	-23.71	45.68	4.61	Peak	----------	
3	7500.00	41.44	54.00	-12.56	32.12	9.32	Average	----------	
4	7500.00	51.48	74.00	-22.52	42.16	9.32	Peak	----------	
5	11510.00	42.41	54.00	-11.59	27.45	14.96	Average	----------	
6	11510.00	56.28	74.00	-17.72	41.32	14.96	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

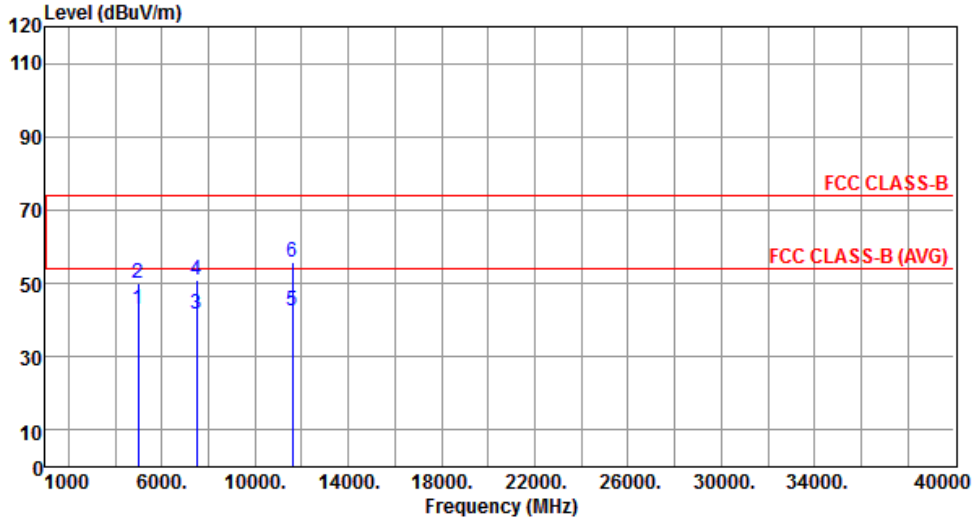
Polarization	Vertical	Test Freq. (MHz)	5755
Test Mode	A1		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	44.63	54.00	-9.37	40.02	4.61	Average	----------	
2	5000.00	52.53	74.00	-21.47	47.92	4.61	Peak	----------	
3	7500.00	39.68	54.00	-14.32	30.36	9.32	Average	----------	
4	7500.00	51.48	74.00	-22.52	42.16	9.32	Peak	----------	
5	11510.00	43.66	54.00	-10.34	28.70	14.96	Average	----------	
6	11510.00	56.91	74.00	-17.09	41.95	14.96	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

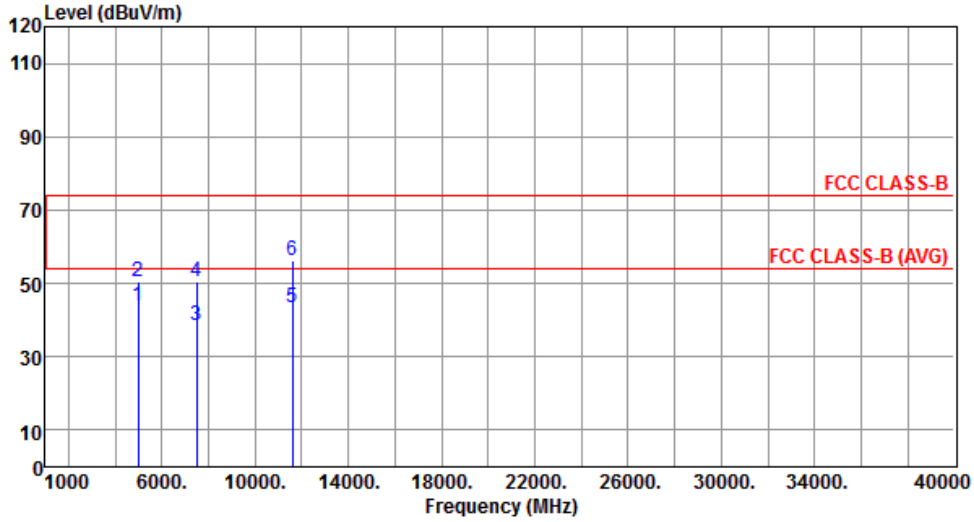
Polarization	Horizontal	Test Freq. (MHz)	5795
Test Mode	A1		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	42.88	54.00	-11.12	38.27	4.61	Average	----------	
2	5000.00	49.96	74.00	-24.04	45.35	4.61	Peak	----------	
3	7500.00	41.63	54.00	-12.37	32.31	9.32	Average	----------	
4	7500.00	50.92	74.00	-23.08	41.60	9.32	Peak	----------	
5	11590.00	42.66	54.00	-11.34	27.82	14.84	Average	----------	
6	11590.00	55.73	74.00	-18.27	40.89	14.84	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

Polarization	Vertical	Test Freq. (MHz)	5795
Test Mode	A1		



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	5000.00	43.62	54.00	-10.38	39.01	4.61	Average	----------	
2	5000.00	50.46	74.00	-23.54	45.85	4.61	Peak	----------	
3	7500.00	38.65	54.00	-15.35	29.33	9.32	Average	----------	
4	7500.00	50.52	74.00	-23.48	41.20	9.32	Peak	----------	
5	11590.00	43.46	54.00	-10.54	28.62	14.84	Average	----------	
6	11590.00	56.25	74.00	-17.75	41.41	14.84	Peak	----------	

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: 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 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

3.6 Unwanted Emissions into Non-Restricted Frequency Bands

3.6.1 Limit of Unwanted Emissions into Non-Restricted Frequency Bands

☒ The peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz.

☐ The peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz.

3.6.2 Test Procedures

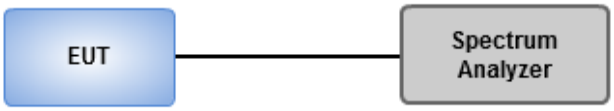
Reference Level Measurement

1. Set the RBW = 100 kHz, VBW = 300 kHz, Detector = peak.
2. Set Sweep time = auto couple, Trace mode = max hold.
3. Allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

Unwanted Emissions Level Measurement

1. Set RBW = 100 kHz, VBW = 300 kHz, Detector = peak.
2. Trace Mode = max hold, Sweep = auto couple.
3. Allow the trace to stabilize.
4. Use peak marker function to determine maximum amplitude of all unwanted emissions within any 100 kHz bandwidth.

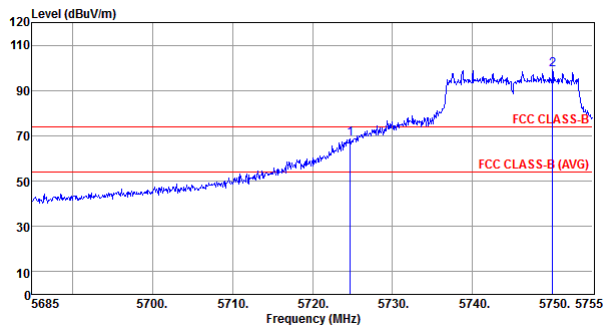
3.6.3 Test Setup



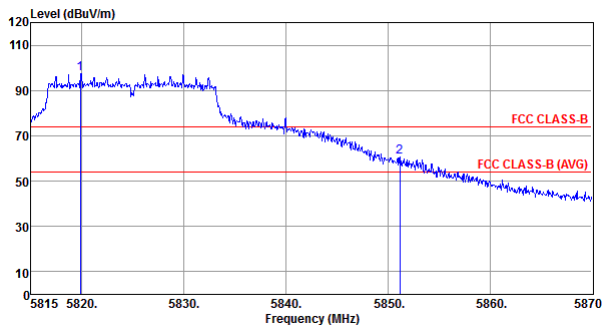
3.6.4 Unwanted Emissions into Non-Restricted Frequency Bands for 11a

Transmitter Radiated Bandedge Emissions Result								
Modulation	11a, chain 0			**N_{TX}**	1			
Non-restricted Band (MHz)	**Test Ch. Freq. (MHz)**	**In-band PSD [i] (dBuV/100kHz)**	**NBE Freq. (MHz)**	**Out-band PSD [o] (dBuV/100kHz)**	**[i] – [o] (dB)**	**Limit (dB)**	**Level Type**	**Pol. note 1**
5460-5725	5745	98.98	5724.69	68.79	30.19	20	PK	H
5460-5725	5745	108.96	5724.97	81.24	27.72	20	PK	V
5850-7250	5825	97.30	5851.19	60.45	36.85	20	PK	H
5850-7250	5825	110.08	5850.86	73.73	36.35	20	PK	V

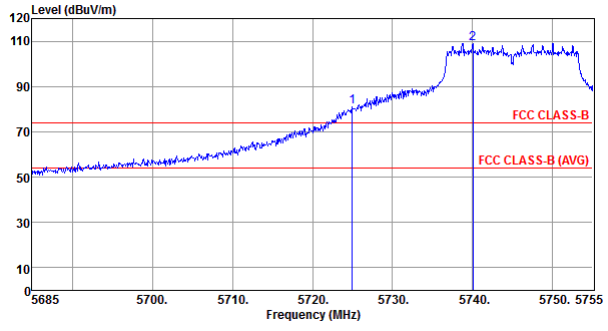
Low Bandedge - H



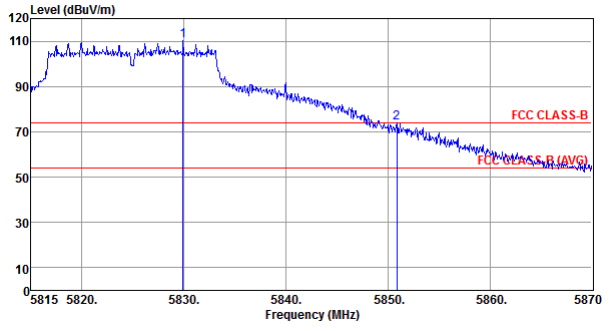
Up Bandedge - H



Low Bandedge - V



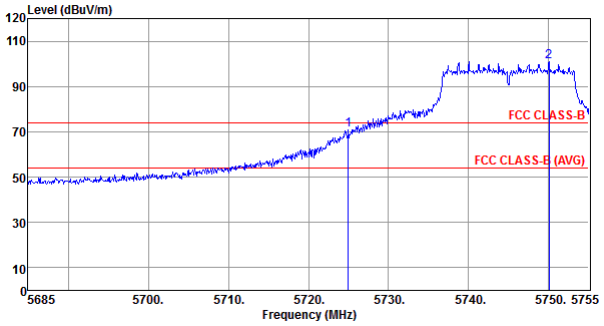
Up Bandedge - V



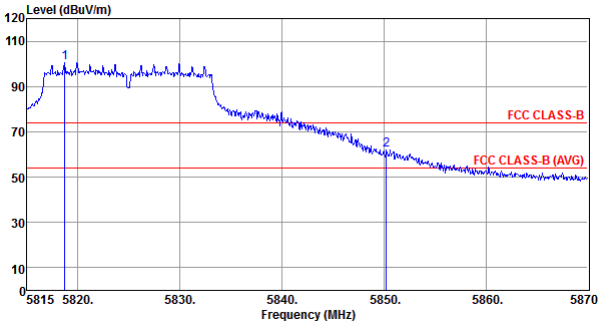
Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical)

Transmitter Radiated Bandedge Emissions Result								
Modulation	11a, chain 2			**N_{TX}**	1			
Non-restricted Band (MHz)	**Test Ch. Freq. (MHz)**	**In-band PSD [i] (dBuV/100kHz)**	**NBE Freq. (MHz)**	**Out-band PSD [o] (dBuV/100kHz)**	**[i] – [o] (dB)**	**Limit (dB)**	**Level Type**	**Pol. note 1**
5460-5725	5745	101.04	5724.97	70.96	30.08	20	PK	H
5460-5725	5745	99.39	5724.42	69.18	30.21	20	PK	V
5850-7250	5825	100.39	5850.26	61.91	38.48	20	PK	H
5850-7250	5825	102.01	5850.31	64.52	37.49	20	PK	V

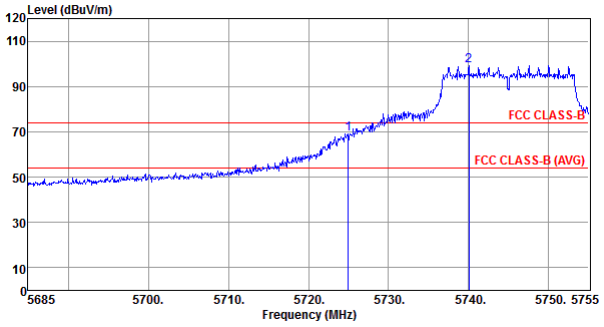
Low Bandedge - H



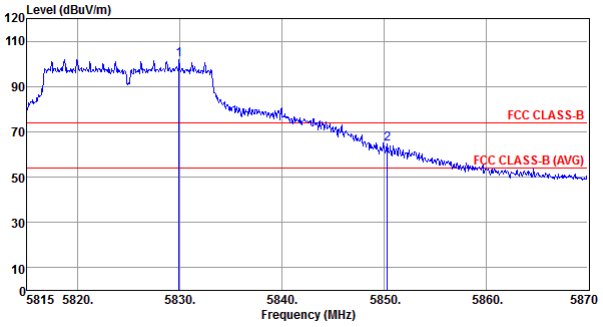
Up Bandedge - H



Low Bandedge - V



Up Bandedge - V

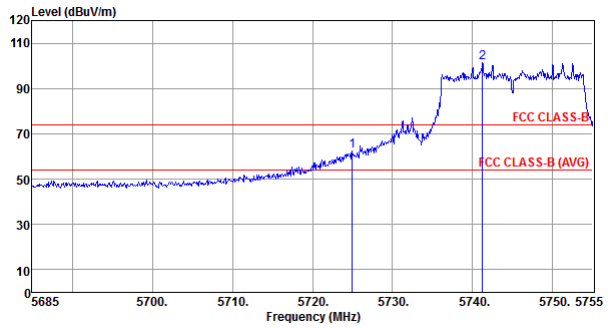


Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical)

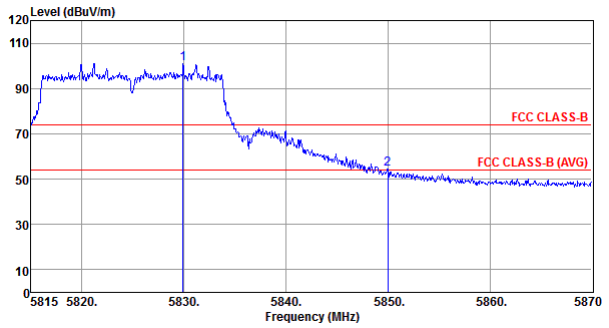
3.6.5 Unwanted Emissions into Non-Restricted Frequency Bands for HT20

Transmitter Radiated Bandedge Emissions Result								
Modulation	HT20			**N_{TX}**	3			
Non-restricted Band (MHz)	**Test Ch. Freq. (MHz)**	**In-band PSD [i] (dBuV/100kHz)**	**NBE Freq. (MHz)**	**Out-band PSD [o] (dBuV/100kHz)**	**[i] – [o] (dB)**	**Limit (dB)**	**Level Type**	**Pol. note 1**
5460-5725	5745	101.28	5724.97	62.39	38.89	20	PK	H
5460-5725	5745	108.80	5724.34	69.86	38.94	20	PK	V
5850-7250	5825	100.97	5850.00	54.46	46.51	20	PK	H
5850-7250	5825	107.73	5850.31	58.92	48.81	20	PK	V

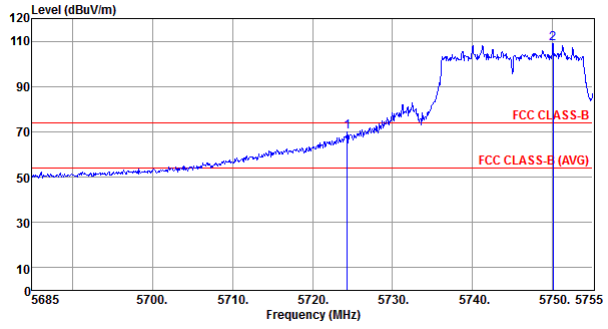
Low Bandedge - H



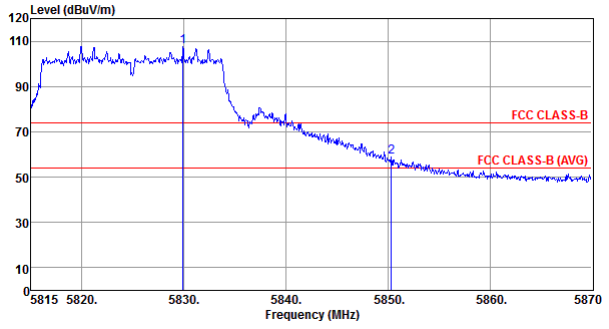
Up Bandedge - H



Low Bandedge - V



Up Bandedge - V

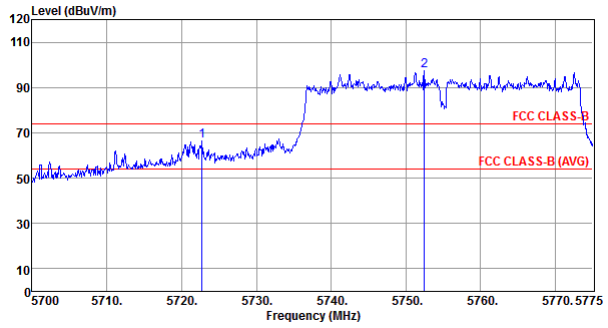


Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical)

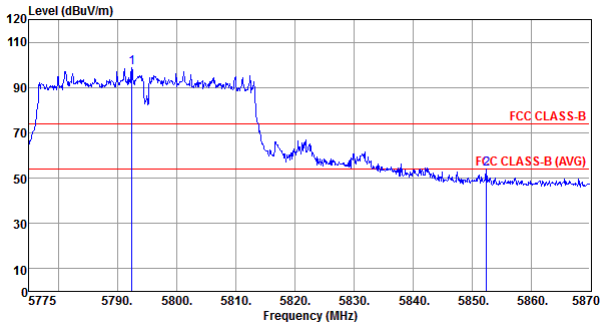
3.6.6 Unwanted Emissions into Non-Restricted Frequency Bands for HT40

Transmitter Radiated Bandedge Emissions Result								
Modulation	HT40			**N_{TX}**	3			
Non-restricted Band (MHz)	**Test Ch. Freq. (MHz)**	**In-band PSD [i] (dBuV/100kHz)**	**NBE Freq. (MHz)**	**Out-band PSD [o] (dBuV/100kHz)**	**[i] – [o] (dB)**	**Limit (dB)**	**Level Type**	**Pol. note 1**
5460-5725	5755	97.40	5722.73	66.43	30.97	20	PK	H
5460-5725	5755	105.45	5751.23	72.74	32.71	20	PK	V
5850-7250	5795	98.81	5852.52	54.12	44.69	20	PK	H
5850-7250	5795	104.92	5852.52	57.24	47.68	20	PK	V

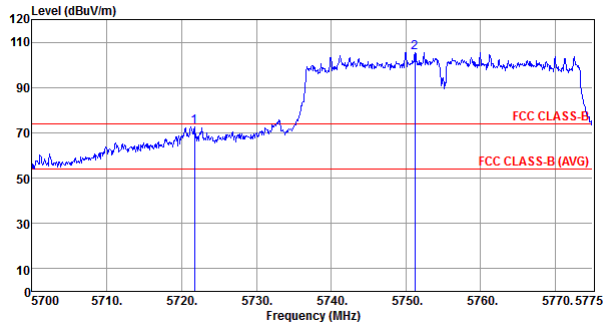
Low Bandedge - H



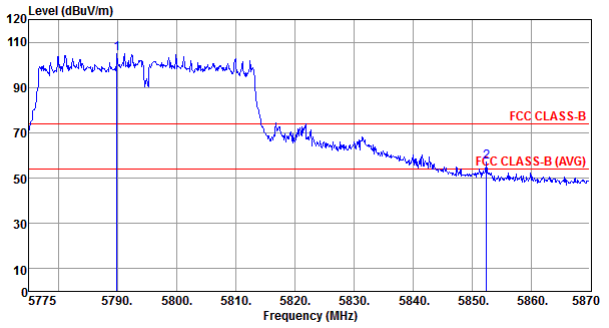
Up Bandedge - H



Low Bandedge - V



Up Bandedge - V



Note 1: Measurement worst emissions of receive antenna polarization: H (Horizontal) or V (Vertical)

==END==