

KDB 178919 D01

FCC RADIO TEST REPORT

FCC ID: 2BBDI20003502MTCA05

Product: BYD Di5.0F

Trade Mark: 

Model No.: MTCA05

Family Model: N/A

Report No.: S23110303562004

Issue Date: Dec 20, 2023

Prepared for

Wuxi Auto-link World Information Technology Co., Ltd
No. 2, Gaokai Road, Economic Development Zone, Wuxi City,
Jiangsu Province, P .R. China

Prepared by

Shenzhen NTEK Testing Technology Co., Ltd.
1/F, Building E, Fenda Science Park, Sanwei Community,
Xixiang Street Bao'an District, Shenzhen 518126 P.R. China
Tel. 400-800-6106, 0755-2320 0050, 0755-2320 0090
Website: <http://www.ntek.org.cn>

TEST RESULT CERTIFICATION

Applicant's name : Wuxi Auto-link World Information Technology Co., Ltd
Address : No. 2, Gaokai Road, Economic Development Zone, Wuxi City, Jiangsu Province, P.R. China
Manufacturer's Name : Wuxi Auto-link World Information Technology Co., Ltd
Address : No. 2, Gaokai Road, Economic Development Zone, Wuxi City, Jiangsu Province, P.R. China

Product description

Product name : BYD Di5.0F

Trademark : 

Model and/or type reference : MTCA05

Family Model : N/A

Test Sample number : S231103035052

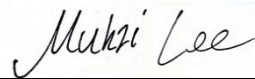
Date of Test : Nov 03, 2023 ~ Dec 20, 2023

Standards : FCC Part15.407

Test procedure : ANSI C63.10-2013
KDB 789033 D02 General UNII Test Procedures New Rules v02r01
KDB 905462 D03 Client Without DFS New Rules v01r02
KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02
KDB 178919 D01

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of NTEK, this document may be altered or revised by NTEK, personnel only, and shall be noted in the revision of the document.

Prepared By : 
Mukzi Lee
(Project Engineer)

Reviewed By : 
Aaron Cheng
(Supervisor)

Approved By : 
Alex Li
(Manager)

Table of Contents
Page

1. SUMMARY OF TEST RESULTS	5
1.1 FACILITIES AND ACCREDITATIONS	6
1.2 MEASUREMENT UNCERTAINTY	6
1 . GENERAL INFORMATION	7
1.1 GENERAL DESCRIPTION OF EUT	7
1.2 DESCRIPTION OF TEST MODES	9
1.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	10
1.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)	11
1.5 EQUIPMENTS LIST FOR ALL TEST ITEMS	12
2 . EMC EMISSION TEST	13
2.1 RADIATED EMISSION MEASUREMENT	13
2.1.1 APPLICABLE STANDARD	13
2.1.2 CONFORMANCE LIMIT	13
2.1.3 MEASURING INSTRUMENTS	13
2.1.4 TEST CONFIGURATION	14
2.1.5 TEST PROCEDURE	15
2.1.6 TEST RESULTS (9KHZ – 30 MHZ)	16
2.1.7 TEST RESULTS (30MHZ – 1GHZ)	17
2.1.8 TEST RESULTS (1GHZ-18GHZ)	19
2.1.9 SPURIOUS EMISSION IN BAND EDGE	23
2.1.10 TEST RESULTS (18GHZ-40GHZ)	35
2.2. DYNAMIC FREQUENCY SELECTION(DFS)	43
2.2.1 APPLICABILITY OF DFS REQUIREMENTS	43
2.2.2 INTERFERENCE THRESHOLD VALUES, MASTER OR CLIENT INCORPORATING IN-SERVICE MONITORING	43
2.2.3 DFS RESPONSE REQUIREMENT VALUES	44
2.2.4 SHORT PULSE RADAR TEST WAVEFORMS	44
2.2.5 CALIBRATION SETUP AND DFS TEST RESULTS	45
2.2.6 CONDUCTED CALIBRATION SETUP	45
2.2.7 RADAR WAVEFORM CALIBRATION RESULT	46
2.2.8 IN-SERVICE MONITORING: CHANNEL MOVE TIME, CHANNEL CLOSING TRANSMISSION TIME AND NON-OCCUPANCY PERIOD	49
2.2.9 RESULT OF CHANNEL MOVE TIME, CHANNEL CLOSING TRANSMISSION TIME AND NON-OCCUPANCY PERIOD FOR CLIENT BEACON TEST	50
2.3 ANTENNA REQUIREMENT	57
2.3.1 STANDARD REQUIREMENT	57
2.3.2 EUT ANTENNA	57

Revision History

Report No.	Version	Description	Issued Date
S23110303562004	Rev.01	Initial issue of report	Dec 20, 2023

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.407) , Subpart E			
Standard Section	Test Item	Judgment	Remark
15.209(a), 15.407 (b)(1) 15.407 (b)(2) 15.407 (b)(3) 15.407 (b)(4) 15.407(b)(8)(9)	Radiated Emissions and Band Edge	PASS	
15.407(h)	Dynamic Frequency Selection(DFS)	PASS	
15.203	Antenna Requirement	PASS	
15.407(c)	Automatically discontinue transmission	PASS	(Note 3)

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

(2) The product is a client device, and the data transmission is limited by the AP.
When the information to be sent is missing or the operation fails,
the device will automatically stop sending and directly connect to the AP correctly again.

1.1 FACILITIES AND ACCREDITATIONS

FACILITIES

All measurement facilities used to collect the measurement data are located at
1/F, Building E, Fenda Science Park Sanwei, Xixiang, Bao'an District
Shenzhen, Guangdong, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 22.

LABORATORY ACCREDITATIONS AND LISTINGS

Site Description

CNAS-Lab. : The Certificate Registration Number is L5516.

IC-Registration : The Certificate Registration Number is 9270A.
CAB identifier:CN0074

FCC- Accredited : Test Firm Registration Number: 463705.
Designation Number: CN1184

A2LA-Lab. : The Certificate Registration Number is 4298.01

Name of Firm : Shenzhen NTEK Testing Technology Co., Ltd.

Site Location : 1/F, Building E, Fenda Science Park Sanwei, Xixiang, Bao'an District
Shenzhen, Guangdong, China

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 2.80\text{dB}$
2	RF power, conducted	$\pm 0.16\text{dB}$
3	Spurious emissions, conducted	$\pm 0.21\text{dB}$
4	All emissions, radiated(9KHz~30MHz)	$\pm 6\text{dB}$
5	All emissions, radiated(30MHz~1GHz)	$\pm 2.64\text{dB}$
6	All emissions, radiated(1GHz~6GHz)	$\pm 2.40\text{dB}$
7	All emissions, radiated(> 6GHz)	$\pm 2.52\text{dB}$
8	Temperature	$\pm 0.5^{\circ}\text{C}$
9	Humidity	$\pm 2\%$

1. GENERAL INFORMATION

1.1 GENERAL DESCRIPTION OF EUT

Equipment	BYD Di5.0F	
Trade Mark		
Model Name	MTCA05	
Family Model	N/A	
Model Difference	N/A	
FCC ID	2BBDI20003502MTCA05	
Product Description	Mode Supported	☒ 802.11a ☒ 802.11n(HT20) ☒ 802.11n(HT40) ☒ 802.11ac/ax(HT20) ☒ 802.11ac/ax(HT40) ☒ 802.11ac/ax(HT80)
	Data Rate	802.11a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20/HT40):MCS0-MCS15; 802.11ac/ax(VHT20): NSS1, MCS0-MCS8 802.11ac/ax(VHT40/VHT80):NSS1, MCS0-MCS9
	Modulation	OFDM with BPSK/QPSK/16QAM/64QAM/256QAM for 802.11a/n/ac; OFDMA with BPSK/QPSK/16QAM/64QAM/256QAM/1024QAM for 802.11ax
	Operating Frequency Range	☒ U-NII-1: 5150 MHz ~5250MHz ☒ U-NII-2A: 5250MHz~5350MHz ☒ U-NII-2C: 5470MHz~5725MHz ☒ U-NII-3: 5725 MHz ~5850 MHz
	Function:	☐ Outdoor AP ☐ Indoor AP ☐ Fixed P2P ☒ Client
	DFS type:	☐ master devices ☐ Slave devices with radar detection ☒ Slave devices without radar detection
	Support TPC	☐ YES ☒ NO
	Smart system	☒ SISO for 802.11a/n/ac/ax ☒ MIMO for 802.11n/ac/ax
	Antenna Type	Ant 1: Ceramic Antenna; Ant 2 Ceramic Antenna
	Antenna Gain	Ant 1: 5.18 dBi; Ant 2: 5.18 dBi
	Based on the application, features, or specification exhibited in User's Manual, More details of EUT technical specification, please refer to the User's Manual.	
Adapter	N/A	
Battery	N/A	
Power supply	DC 12.0V, 2.88A (Max)	
Connecting I/O Port(s)	Please refer to the User's Manual	
HW Version	0.0.6	
SW Version	4.00.3	

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2. Frequency and Channel list:

Band	20MHz		40MHz		80MHz	
	Channel	Frequency	Channel	Frequency	Channel	Frequency
U-NII-1	36	5180 MHz	38	5190 MHz	42	5210 MHz
	40	5200 MHz	46	5230 MHz	-	-
	44	5220 MHz				
	48	5240 MHz				
U-NII-2A	52	5260 MHz	54	5270 MHz	58	5290 MHz
	56	5280 MHz	62	5310 MHz		
	60	5300 MHz				
	64	5320 MHz				
U-NII-2C	100	5500 MHz	102	5510 MHz	106	5530 MHz
	104	5520 MHz	110	5550 MHz	122	5610 MHz
	108	5540 MHz	118	5590 MHz		
	112	5560 MHz	126	5630 MHz		
	116	5580 MHz	134	5670 MHz		
	120	5600 MHz				
	124	5620 MHz				
	128	5640 MHz				
	132	5660 MHz				
	136	5680 MHz				
	140	5700 MHz				
U-NII-3	149	5745 MHz	151	5755 MHz	155	5775 MHz
	153	5765 MHz	159	5795 MHz		
	157	5785 MHz				
	161	5805 MHz				
	165	5825 MHz				

3. The module for 5G WIFI have two antenna. please refer to antenna list for more antenna information.

Table 1:

Antenna	Antenna Type	Antenna Gain(dBi)
		5GWIFI
1(main)	Ceramic Antenna	5.18
2(aux)	Ceramic Antenna	5.18

Mode	Tx/Rx
802.11a	1Tx, 1Rx
802.11n/ac/ax	1Tx, 1Rx , 2Tx, 2Rx

1.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

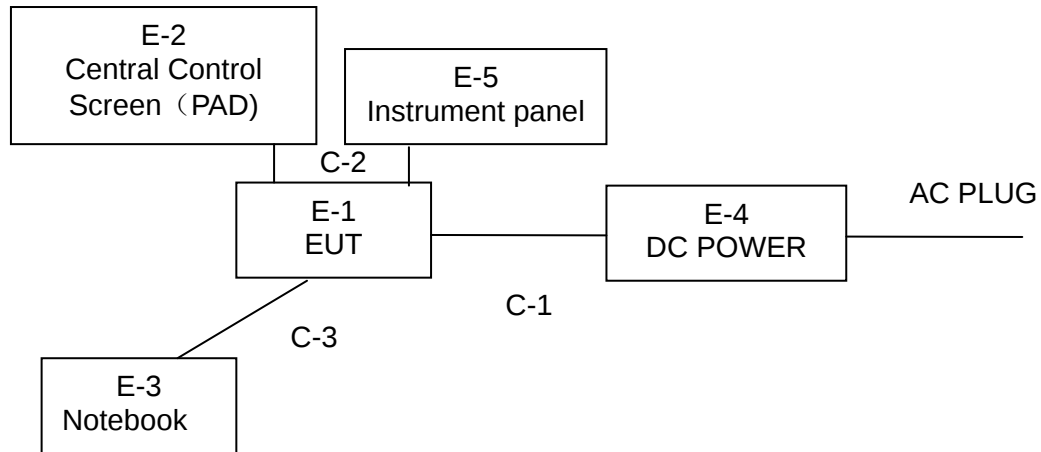
For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11a / n/ ac20/ax20 CH36/ CH40/ CH48/CH52/CH56/CH64/CH100/CH120/CH140/CH149/ CH157/CH165
Mode 2	802.11n40/ac40/ax40 CH38/CH46/CH54/CH62/CH102/CH118/CH134/CH151/ CH159
Mode 3	802.11ac80/ax80 CH42/CH58/CH106/CH122/CH155

Mode	Frequency (MHz)	Power Setting
802.11n HT20	5180	17
	5200	17
	5240	17
	5260	17
	5280	16.5
	5320	18
	5500	20.5
	5580	19
	5700	19
	5745	16
	5785	17
	5825	18

Note:

The measurements are performed at the highest, middle, lowest available channels.

1.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



1.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Manufacturer	Model	Series No.	Note
E-1	BYD Di5.0F	Auto-link	MTCA05	N/A	EUT
E-2	Central Control Screen (PAD)	Xi'an BYD Electronics Co.,Ltd. Jixian Branch	D156	HCEEC-792410 0AA	Peripherals
E-3	Notebook	N/A	N/A	N/A	Peripherals
E-4	DC POWER	N/A	N/A	N/A	Peripherals
E-5	Instrument panel	FinDreams Technology Co., Ltd.	YBN403	UKEA-3820010	Peripherals

Item	Cable Type	Shielded Type	Ferrite Core	Note
C-1	Power Cable	N/A	NO	
C-2	Power Cable	N/A	NO	
C-3	Power Cable	N/A	NO	

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) During the battery power test, the battery is fully charged.

1.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	MY45108040	2023.03.27	2024.03.26	1 year
2	Spectrum Analyzer	Agilent	N9020A	MY49100060	2023.05.29	2024.05.28	1 year
3	Spectrum Analyzer	R&S	FSV40	101417	2023.05.29	2024.05.28	1 year
4	Test Receiver	R&S	ESPI7	101318	2023.03.27	2024.04.26	1 year
5	Bilog Antenna	TESEQ	CBL6111D	31216	2023.03.16	2024.03.16	1 year
6	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2023.05.06	2026.05.05	3 year
7	Horn Antenna	SCHWARZBECK	BBHA 9120D	2816	2023.01.12	2024.01.11	1 year
8	Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	803	2022.11.07	2025.11.06	3 year
9	Amplifier	EMC	EMC051835SE	980246	2023.05.29	2024.05.28	1 year
10	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	055	2023.11.03	2026.11.02	3 year
11	Power Meter	DARE	RPR3006W	15I00041SN084	2023.05.29	2024.05.28	1 year
12	Test Cable (9KHz-30MHz)	N/A	R-01	N/A	2022.06.17	2025.06.16	3 year
13	Test Cable (30MHz-1GHz)	N/A	R-02	N/A	2022.06.17	2025.06.16	3 year
14	High Test Cable(1G-40GHz)	N/A	R-03	N/A	2022.06.17	2025.06.16	3 year
15	Filter	TRILTHIC	2400MHz	29	2023.03.26	2026.03.25	3 year

Note: Each piece of equipment is scheduled for calibration once a year except the Test Cable& Aux Equipment which is scheduled for calibration every 3 years.

2. EMC EMISSION TEST

2.1 RADIATED EMISSION MEASUREMENT

2.1.1 APPLICABLE STANDARD

According to FCC Part 15.407(d) and 15.209

2.1.2 CONFORMANCE LIMIT

According to FCC Part 15.407(b)(7): radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
According to FCC Part 15.205, Restricted bands

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Restricted Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance
0.009~0.490	2400/F(KHz)	20 log (uV/m)	300
0.490~1.705	24000/F(KHz)	20 log (uV/m)	30
1.705~30.0	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Limits of Radiated Emission Measurement(Above 1000MHz)

Frequency(MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Remark :1. Emission level in dBuV/m=20 log (uV/m)

2. Measurement was performed at an antenna to the closed point of EUT distance of meters.

3. For Frequency 9kHz~30MHz:

Distance extrapolation factor =40log(Specific distance/ test distance)(dB);

Limit line=Specific limits(dBuV) + distance extrapolation factor.

For Frequency above 30MHz:

Distance extrapolation factor =20log(Specific distance/ test distance)(dB);

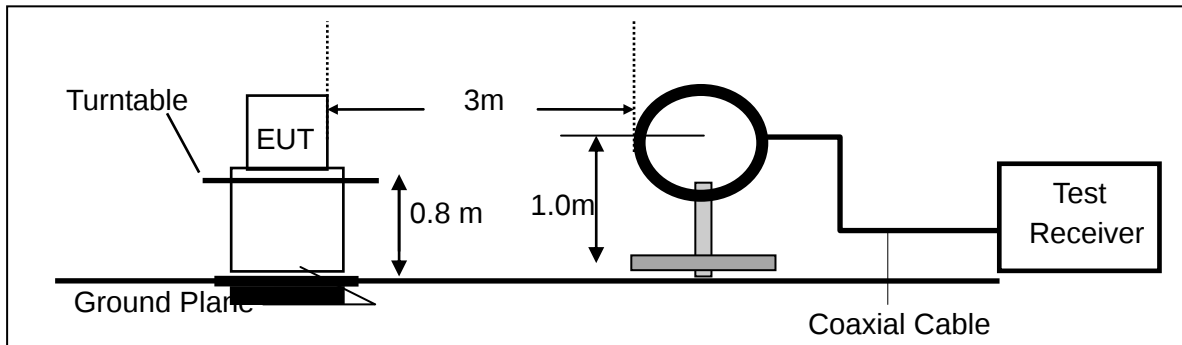
Limit line=Specific limits(dBuV) + distance extrapolation factor.

2.1.3 MEASURING INSTRUMENTS

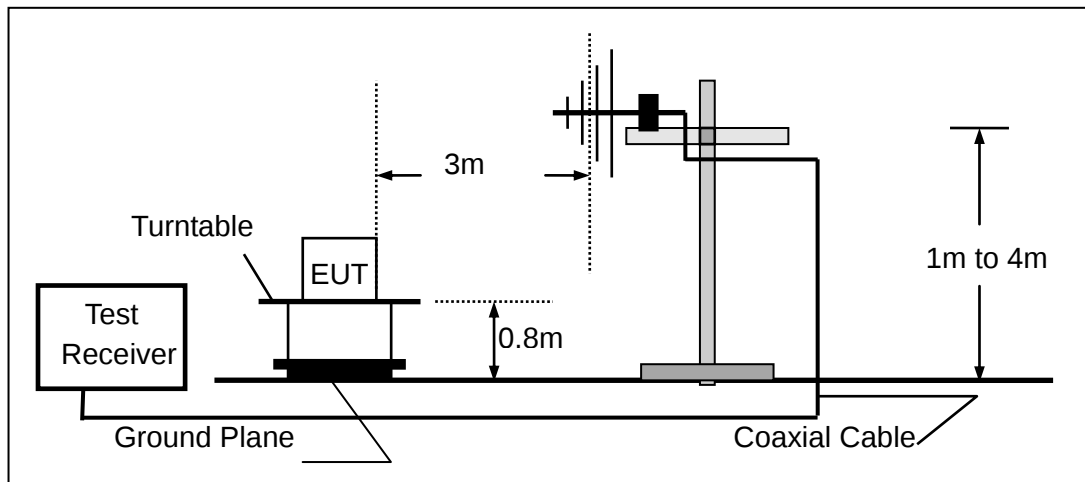
The Measuring equipment is listed in the section 1.2 of this test report.

2.1.4 TEST CONFIGURATION

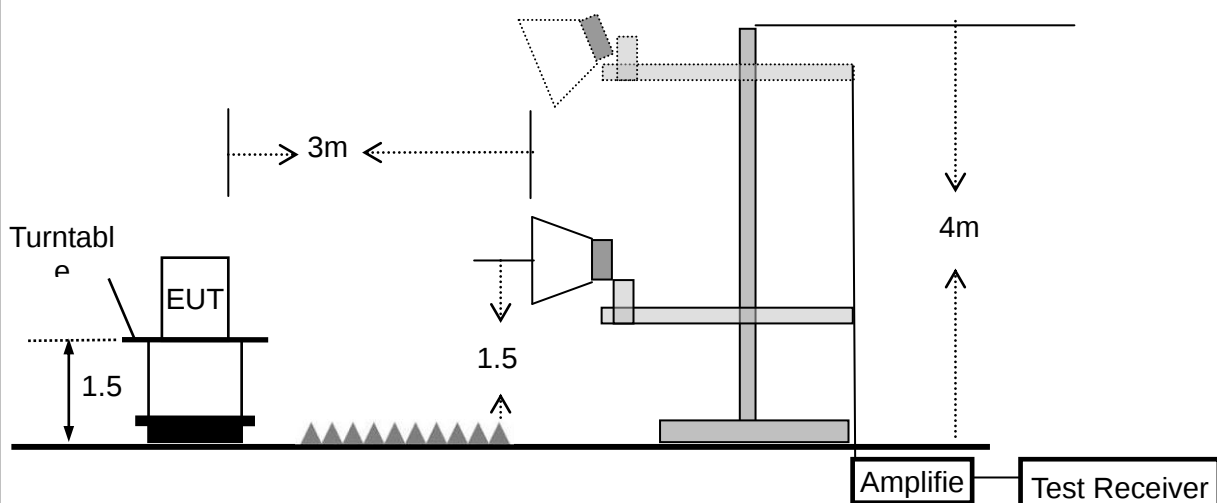
(a) For radiated emissions below 30MHz



(b) For radiated emissions from 30MHz to 1000MHz



(c) For radiated emissions above 1000MHz



2.1.5 TEST PROCEDURE

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10-2013. The test distance is 3m. The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT.

Use the following spectrum analyzer settings:

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

- The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.8 m for below 1GHz and 1.5m for above 1GHz the ground at a 3 meter. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m for below 1GHz and 1.5m for above 1GHz; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	1 MHz
	Average	1 MHz	10 Hz

Note: for the frequency ranges below 30 MHz, a narrower RBW is used for these ranges but the measured value should add a RBW correction factor (RBWCF) where $RBWCF [dB] = 10 \cdot \lg(100 [kHz] / \text{narrower RBW} [kHz])$. , the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

2.1.6 TEST RESULTS (9KHZ – 30 MHZ)

EUT :	BYD Di5.0F	Model Name :	MTCA05
Temperature :	26 °C	Relative Humidity :	54%
Pressure:	1010 hPa	Test Voltage :	DC 12V
Test Mode :	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	N/A
--	--	--	--	N/A

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

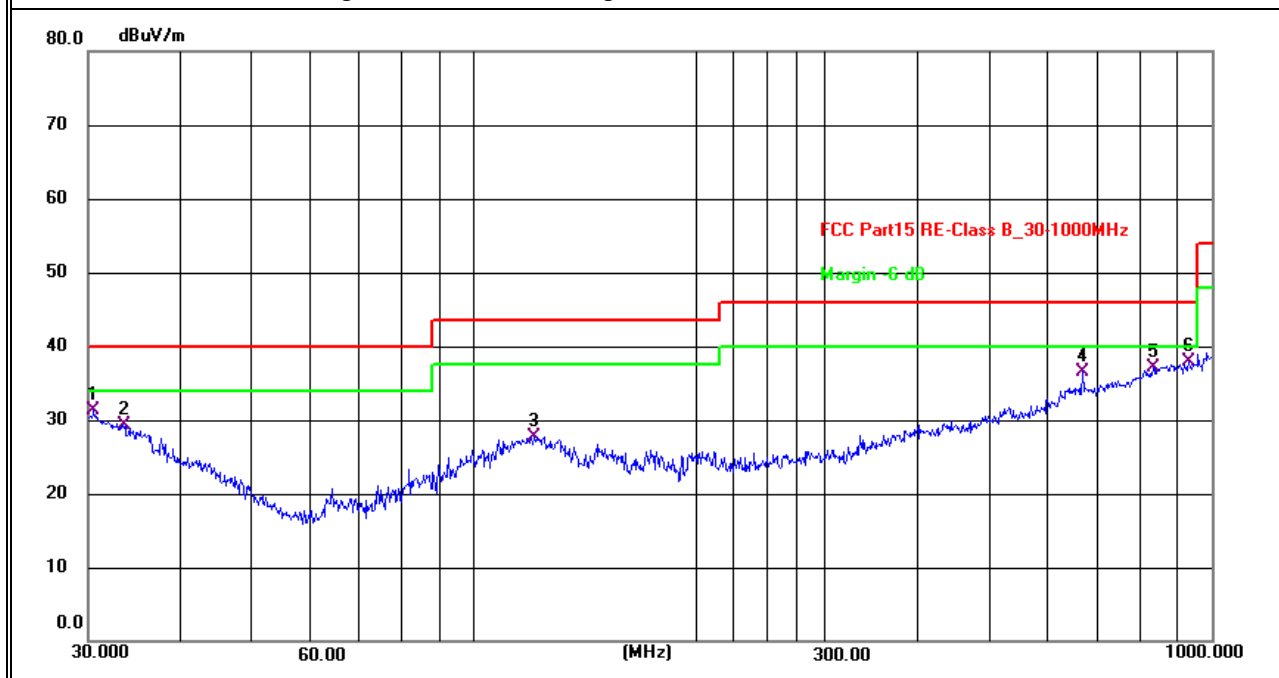
2.1.7 TEST RESULTS (30MHZ – 1GHZ)

EUT :	BYD Di5.0F	Model Name :	MTCA05
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Voltage :	DC 12V
Test Mode :	802.11n20 CH40 mimo mode		

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
V	30.5304	5.27	26.12	31.39	40.00	-8.61	QP
V	33.6802	5.03	24.37	29.40	40.00	-10.60	QP
V	120.6991	9.16	18.63	27.79	43.50	-15.71	QP
V	668.1422	9.20	27.35	36.55	46.00	-9.45	QP
V	833.3170	7.16	29.87	37.03	46.00	-8.97	QP
V	932.2712	6.86	30.97	37.83	46.00	-8.17	QP

Remark:

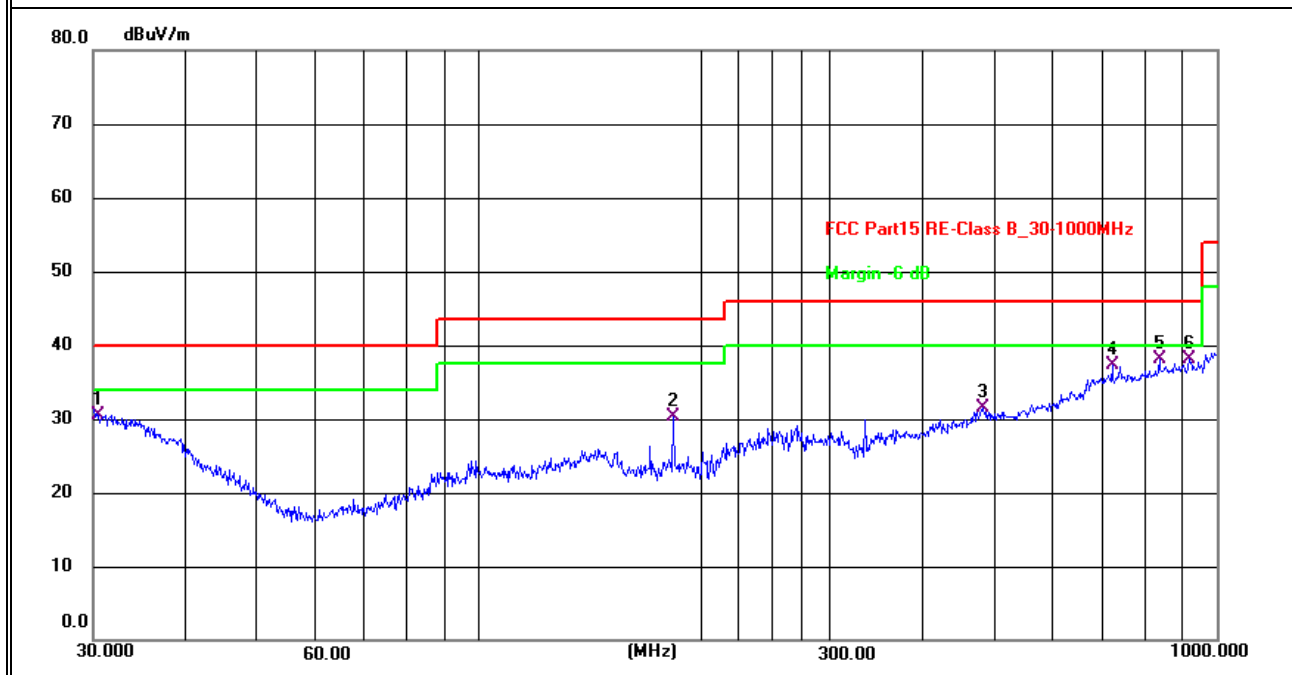
Emission Level= ReadingLevel+ Factor, Margin= Emission Level - Limit



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
H	30.5304	4.31	26.12	30.43	40.00	-9.57	QP
H	183.2005	13.71	16.59	30.30	43.50	-13.20	QP
H	482.2155	7.03	24.55	31.58	46.00	-14.42	QP
H	721.7258	9.21	28.15	37.36	46.00	-8.64	QP
H	836.2441	8.10	29.91	38.01	46.00	-7.99	QP
H	919.2865	7.26	30.82	38.08	46.00	-7.92	QP

Remark:

Emission Level= ReadingLevel+ Factor, Margin= Emission Level - Limit



Note: All modes have been tested, just the worst mode has been recorded in the report.

2.1.8 TEST RESULTS (1GHz-18GHz)

EUT :	BYD Di5.0F	Model Name. :	MTCA05
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 12V
Test Mode :	TX(5.2G) - 802.11n20 mimo mode		

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G									
Vertical	3694.67	49.79	5.94	35.40	44.00	47.13	74.00	-26.87	Pk
Vertical	3694.47	30.63	5.94	35.40	44.00	27.97	54.00	-26.03	AV
Vertical	10360.58	46.85	8.46	39.75	44.50	50.56	68.20	-17.64	Pk
Vertical	15540.56	49.36	10.12	38.80	44.10	54.18	74.00	-19.82	Pk
Vertical	15540.67	27.88	10.12	38.80	42.70	34.10	54.00	-19.90	AV
Horizontal	3713.25	51.58	5.94	35.18	44.00	48.70	74.00	-25.30	Pk
Horizontal	3713.40	31.98	5.94	35.18	44.00	29.10	54.00	-24.90	AV
Horizontal	10361.05	47.11	8.46	38.71	44.50	49.78	68.20	-18.42	Pk
Horizontal	15540.83	45.89	10.12	38.38	44.10	50.29	74.00	-23.71	Pk
Horizontal	15540.94	29.18	10.12	38.38	44.10	33.58	54.00	-20.42	AV
middle Channel (5200 MHz)-Above 1G									
Vertical	3624.50	46.80	6.48	36.35	44.05	45.58	74.00	-28.42	Pk
Vertical	3624.70	31.22	6.48	36.35	44.05	30.00	54.00	-24.00	AV
Vertical	10400.44	48.26	8.47	37.88	44.51	50.10	68.20	-18.10	Pk
Vertical	15600.69	48.61	10.12	38.80	44.10	53.43	74.00	-20.57	Pk
Vertical	15600.70	27.76	10.12	38.80	42.70	33.98	54.00	-20.02	AV
Horizontal	4202.69	46.49	6.48	36.37	44.05	45.29	74.00	-28.71	Pk
Horizontal	4202.54	33.28	6.48	36.37	44.05	32.08	54.00	-21.92	AV
Horizontal	10400.59	49.67	8.47	38.64	44.50	52.28	68.20	-15.92	Pk
Horizontal	15600.88	48.38	10.12	38.38	44.10	52.78	74.00	-21.22	Pk
Horizontal	15600.96	29.66	10.12	38.38	44.10	34.06	54.00	-19.94	AV
High Channel (5240 MHz)-Above 1G									
Vertical	4598.27	52.22	7.10	37.24	43.50	53.06	74.00	-20.94	Pk
Vertical	4598.19	31.50	7.10	37.24	43.50	32.34	54.00	-21.66	AV
Vertical	10480.53	48.63	8.46	37.68	44.50	50.27	68.20	-17.93	Pk
Vertical	15720.71	49.84	10.12	38.80	44.10	54.66	74.00	-19.34	Pk
Vertical	15720.69	28.59	10.12	38.80	42.70	34.81	54.00	-19.19	AV
Horizontal	4589.66	49.64	7.10	37.24	43.50	50.48	74.00	-23.52	Pk
Horizontal	4589.67	29.88	7.10	37.24	43.50	30.72	54.00	-23.28	AV
Horizontal	10480.94	50.64	8.46	38.57	44.50	53.17	68.20	-15.03	Pk
Horizontal	15720.62	48.19	10.12	38.38	44.10	52.59	74.00	-21.41	Pk
Horizontal	15720.68	31.53	10.12	38.38	44.10	35.93	54.00	-18.07	AV

Note:"802.11n20 mimo(5.2G)" mode is the worst mode,date from FCC ID: 2BBD120003502MTCA05.
Emission level (dBuV/m) = 20 log Emission level (uV/m).
Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

EUT :	BYD Di5.0F	Model Name. :	MTCA05
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 12V
Test Mode :	TX(5.3G) - 802.11n20 mimo mode		

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5260 MHz)-Above 1G									
Vertical	4633.55	51.21	5.44	35.40	44.00	48.06	74.00	-25.94	Pk
Vertical	4633.65	32.72	5.74	35.40	44.00	29.86	54.00	-24.14	AV
Vertical	10520.50	48.92	8.26	39.75	44.50	52.43	68.20	-15.77	Pk
Vertical	15780.57	50.08	10.12	38.80	44.10	54.90	74.00	-19.10	Pk
Vertical	15780.71	29.06	9.62	38.80	42.70	34.78	54.00	-19.22	AV
Horizontal	4366.53	53.59	5.57	35.18	44.00	50.33	74.00	-23.67	Pk
Horizontal	4366.47	32.67	5.74	35.18	44.00	29.59	54.00	-24.41	AV
Horizontal	10520.79	48.66	8.38	38.71	44.50	51.25	68.20	-16.95	Pk
Horizontal	15780.92	46.64	9.88	38.38	44.10	50.80	74.00	-23.20	Pk
Horizontal	15780.61	41.85	9.94	38.38	44.10	46.07	54.00	-7.93	AV
middle Channel (5280 MHz)-Above 1G									
Vertical	4122.63	48.18	6.08	36.35	44.05	46.56	74.00	-27.44	Pk
Vertical	4122.74	31.84	6.39	36.35	44.05	30.53	54.00	-23.47	AV
Vertical	10560.60	49.01	8.28	37.88	44.51	50.66	68.20	-17.54	Pk
Vertical	15840.79	50.74	9.79	38.8	44.10	55.22	74.00	-18.78	Pk
Vertical	15840.61	28.72	9.70	38.8	42.70	34.52	54.00	-19.48	AV
Horizontal	3869.99	48.03	6.11	36.37	44.05	46.46	74.00	-27.54	Pk
Horizontal	3869.75	35.06	6.27	36.37	44.05	33.65	54.00	-20.35	AV
Horizontal	10561.16	44.26	8.33	38.64	44.50	46.73	68.20	-21.47	Pk
Horizontal	15840.95	49.24	9.99	38.38	44.10	53.51	74.00	-20.49	Pk
Horizontal	15840.63	30.11	9.81	38.38	44.10	34.20	54.00	-19.80	AV
High Channel (5320 MHz)-Above 1G									
Vertical	5367.06	51.52	6.96	37.24	43.50	52.22	74.00	-21.78	Pk
Vertical	5366.82	32.43	7.07	37.24	43.50	33.23	54.00	-20.77	AV
Vertical	10640.85	51.07	8.14	37.68	44.50	52.39	74.00	-21.61	Pk
Vertical	10640.88	30.55	8.35	37.68	44.50	32.08	54.00	-21.92	AV
Vertical	15960.96	49.74	10.11	38.8	44.10	54.54	74.00	-19.46	Pk
Vertical	15960.86	28.09	9.64	38.8	42.70	33.84	54.00	-20.16	AV
Horizontal	5436.94	50.42	7.05	37.24	43.50	51.21	74.00	-22.79	Pk
Horizontal	5436.83	30.64	7.05	37.24	43.50	31.43	54.00	-22.57	AV
Horizontal	10640.58	49.69	8.20	38.57	44.50	51.96	74.00	-22.04	Pk
Horizontal	10640.54	32.53	8.03	38.57	44.50	34.63	54.00	-19.37	AV
Horizontal	15961.13	49.44	9.81	38.38	44.10	53.54	74.00	-20.46	Pk
Horizontal	15961.30	32.55	9.96	38.38	44.10	36.79	54.00	-17.21	AV

Note:"802.11n20 mimo(5.3G)" mode is the worst mode,date from FCC ID: 2BBDI20003502MTCA05.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

EUT :	BYD Di5.0F	Model Name. :	MTCA05
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 12V
Test Mode :	TX(5.6G) - 802.11n20 mimo mode		

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5500 MHz)-Above 1G									
Vertical	5433.34	53.17	5.61	35.40	44.00	50.18	74.00	-23.82	Pk
Vertical	5433.52	33.79	5.76	35.40	44.00	30.95	54.00	-23.05	AV
Vertical	11000.68	48.90	8.24	39.75	44.50	52.39	74.00	-21.61	Pk
Vertical	11000.68	30.88	8.35	39.75	44.50	34.48	54.00	-19.52	AV
Vertical	16500.80	39.76	10.05	38.80	44.10	44.51	68.20	-23.69	Pk
Horizontal	5126.71	49.56	5.78	35.18	44.00	46.52	74.00	-27.48	Pk
Horizontal	5126.97	31.21	5.66	35.18	44.00	28.06	54.00	-25.94	AV
Horizontal	11000.88	47.12	8.22	38.71	44.50	49.55	74.00	-24.45	Pk
Horizontal	11000.70	30.58	8.14	38.71	44.50	32.93	54.00	-21.07	AV
Horizontal	16500.99	45.67	10.04	38.38	44.10	49.99	68.20	-18.21	Pk
Middle Channel (5600 MHz)-Above 1G									
Vertical	4933.71	51.50	6.29	36.35	44.05	50.08	74.00	-23.92	Pk
Vertical	4933.69	33.22	6.24	36.35	44.05	31.76	54.00	-22.24	AV
Vertical	11200.82	48.82	8.24	37.88	44.51	50.44	74.00	-23.56	Pk
Vertical	11201.01	33.32	8.13	37.88	44.51	34.81	54.00	-19.19	AV
Vertical	16800.74	47.46	9.71	38.80	44.10	51.87	68.20	-16.33	Pk
Horizontal	4766.64	49.45	6.44	36.37	44.05	48.21	74.00	-25.79	Pk
Horizontal	4766.72	32.35	6.13	36.37	44.05	30.81	54.00	-23.19	AV
Horizontal	11201.02	49.74	8.31	38.64	44.50	52.19	74.00	-21.81	Pk
Horizontal	11201.03	31.97	8.04	38.64	44.50	34.15	54.00	-19.85	AV
Horizontal	16800.89	45.99	10.09	38.38	44.10	50.36	68.20	-17.84	Pk
High Channel (5700 MHz)-Above 1G									
Vertical	5647.87	50.04	6.79	37.24	43.50	50.57	68.20	-17.63	Pk
Vertical	11400.56	49.04	8.10	37.68	44.50	50.32	74.00	-23.68	Pk
Vertical	11400.68	30.43	8.23	37.68	44.50	31.84	54.00	-22.16	AV
Vertical	17100.73	44.19	9.70	38.80	44.10	48.59	68.20	-19.61	Pk
Horizontal	5433.49	48.87	6.74	37.24	43.50	49.35	74.00	-24.65	Pk
Horizontal	5433.67	30.52	6.74	37.24	43.50	31.00	54.00	-23.00	AV
Horizontal	11400.69	48.18	8.25	38.57	44.50	50.50	74.00	-23.50	Pk
Horizontal	11400.70	30.45	8.35	38.57	44.50	32.87	54.00	-21.13	AV
Horizontal	17100.56	47.43	9.70	38.38	44.10	51.41	68.20	-16.79	Pk

Note:"802.11n20 mimo(5.6G)" mode is the worst mode,date from FCC ID: 2BBDI20003502MTCA05.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

EUT :	BYD Di5.0F	Model Name. :	MTCA05
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 12V
Test Mode :	TX (5.8G) -- 802.11n20 mimo		

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	(dB/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G									
Vertical	5122.85	52.01	5.94	35.40	44.00	49.35	74.00	-24.65	Pk
Vertical	5122.81	33.90	5.94	35.40	44.00	31.24	54.00	-22.76	AV
Vertical	11490.89	48.38	8.46	39.75	44.50	52.09	74.00	-21.91	Pk
Vertical	11490.95	31.67	8.46	39.75	44.50	35.38	54.00	-18.62	AV
Vertical	17236.09	40.42	10.12	38.80	44.10	45.24	68.20	-22.96	Pk
Horizontal	5166.97	47.98	5.94	35.18	44.00	45.10	68.20	-23.10	Pk
Horizontal	11491.03	47.49	8.46	38.71	44.50	50.16	74.00	-23.84	Pk
Horizontal	11490.97	30.62	8.46	38.71	44.50	33.29	54.00	-20.71	AV
Horizontal	17236.02	39.84	10.12	38.38	44.10	44.24	68.20	-23.96	Pk
middle Channel (5785 MHz)-Above 1G									
Vertical	5433.88	51.04	6.48	36.35	44.05	49.82	74.00	-24.18	Pk
Vertical	5433.73	31.46	6.48	36.35	44.05	30.24	54.00	-23.76	AV
Vertical	11570.75	48.84	8.47	37.88	44.51	50.68	74.00	-23.32	Pk
Vertical	11570.65	31.23	8.47	37.88	44.51	33.07	54.00	-20.93	AV
Vertical	17356.12	43.96	10.12	38.80	44.10	48.78	68.20	-19.42	Pk
Horizontal	4867.06	48.35	6.48	36.37	44.05	47.15	74.00	-26.85	Pk
Horizontal	4867.00	31.06	6.48	36.37	44.05	29.86	54.00	-24.14	AV
Horizontal	11570.71	51.04	8.47	38.64	44.50	53.65	74.00	-20.35	Pk
Horizontal	11570.78	32.30	8.47	38.64	44.50	34.91	54.00	-19.09	AV
Horizontal	17356.02	44.92	10.12	38.38	44.10	49.32	68.20	-18.88	Pk
High Channel (5825 MHz)-Above 1G									
Vertical	5243.58	50.10	7.10	37.24	43.50	50.94	68.20	-17.26	Pk
Vertical	11651.80	49.80	8.46	37.68	44.50	51.44	74.00	-22.56	Pk
Vertical	11651.71	31.11	8.46	37.68	44.50	32.75	54.00	-21.25	AV
Vertical	17473.15	48.69	10.12	38.80	44.10	53.51	68.20	-14.69	Pk
Vertical	17472.87	48.82	10.12	38.80	44.10	53.64	68.20	-14.56	Pk
Horizontal	5284.43	48.42	7.10	37.24	43.50	49.26	68.20	-18.94	Pk
Horizontal	11652.07	48.46	8.46	38.57	44.50	50.99	74.00	-23.01	Pk
Horizontal	11652.01	29.91	8.46	38.57	44.50	32.44	54.00	-21.56	AV
Horizontal	17473.92	46.22	10.12	38.38	44.10	50.62	68.20	-17.58	Pk
Horizontal	17473.91	46.45	10.12	38.38	44.10	50.85	68.20	-17.35	Pk

Note:"802.11n20 mimo(5.8G)" mode is the worst mode,date from FCC ID: 2BBDI20003502MTCA05.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

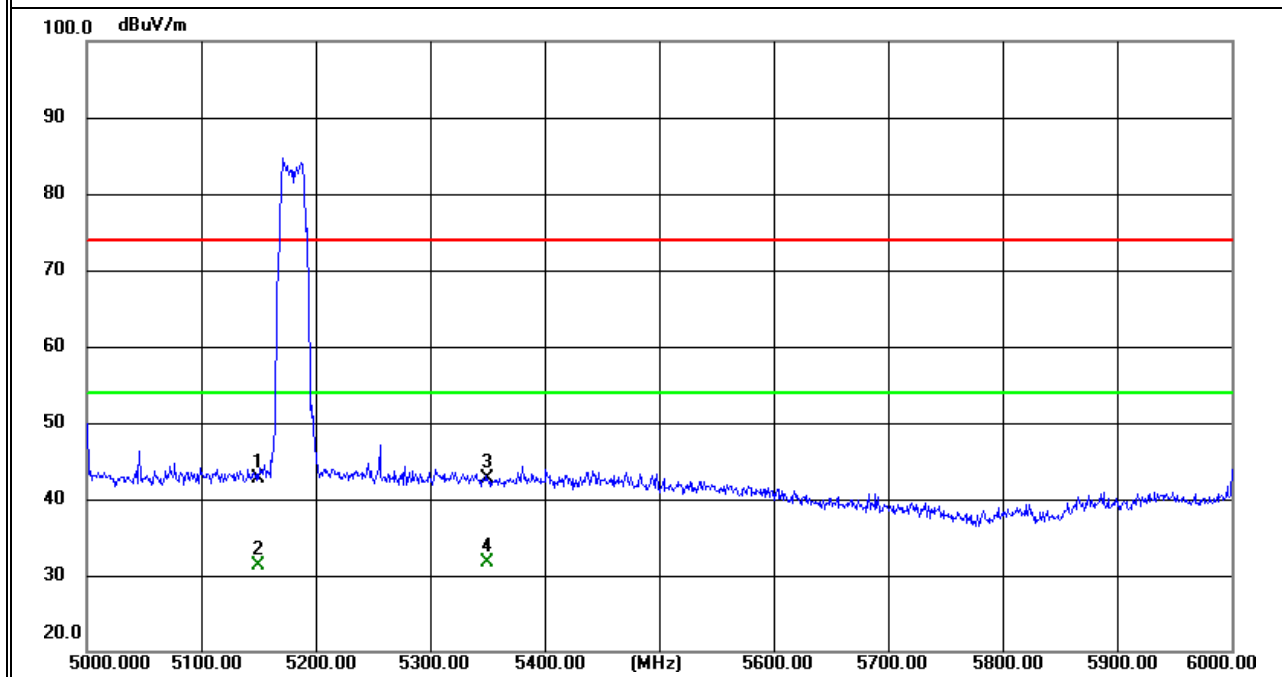
2.1.9 SPURIOUS EMISSION IN BAND EDGE

EUT :	BYD Di5.0F	Model Name. :	MTCA05
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 12V
Test Mode :	TX (5.2G)-802.11n20 CH36 mimo mode		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	5150.000	50.94	-8.15	42.79	74.00	-31.21	peak
V	5150.000	39.52	-8.15	31.37	54.00	-22.63	AVG
V	5350.000	50.68	-8.06	42.62	74.00	-31.38	peak
V	5350.000	39.85	-8.06	31.79	54.00	-22.21	AVG

Remark:

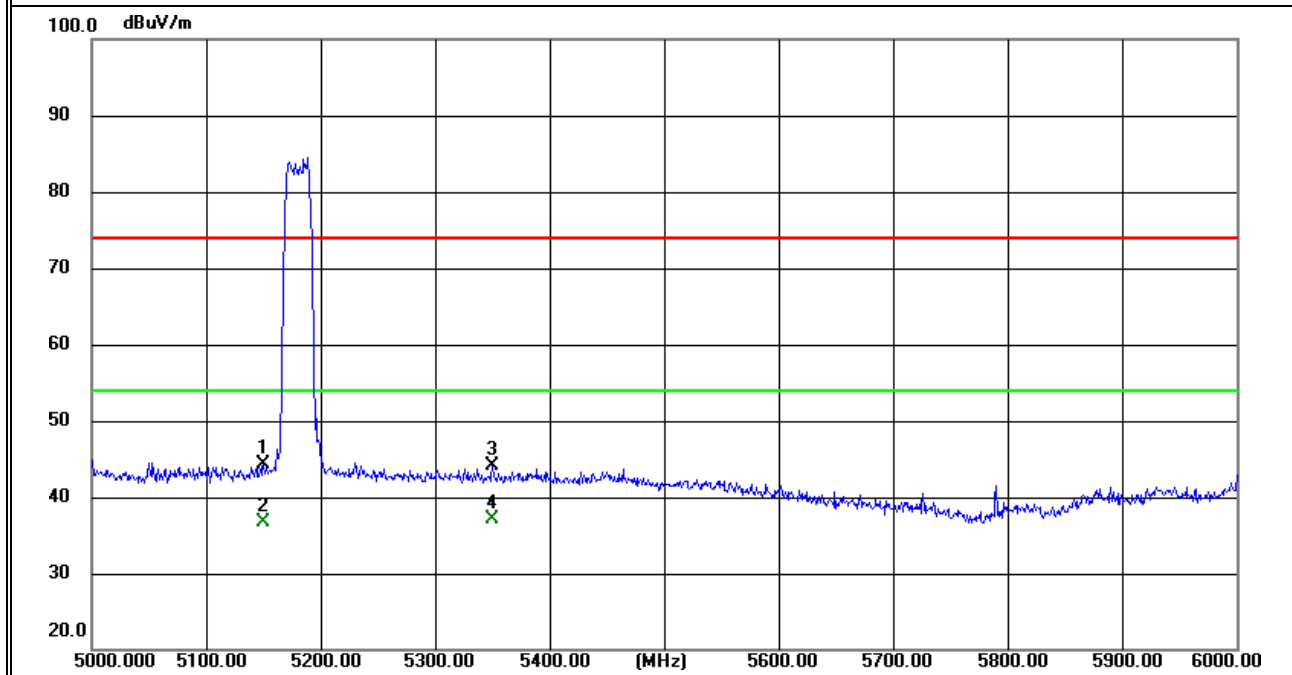
Emission Level= ReadingLevel+ Factor, Margin= Emission Level - Limit



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
H	5150.000	52.46	-8.15	44.31	74.00	-29.69	peak
H	5150.000	44.86	-8.15	36.71	54.00	-17.29	AVG
H	5350.000	52.18	-8.06	44.12	74.00	-29.88	peak
H	5350.000	45.23	-8.06	37.17	54.00	-16.83	AVG

Remark:

Emission Level= ReadingLevel+ Factor, Margin= Emission Level - Limit

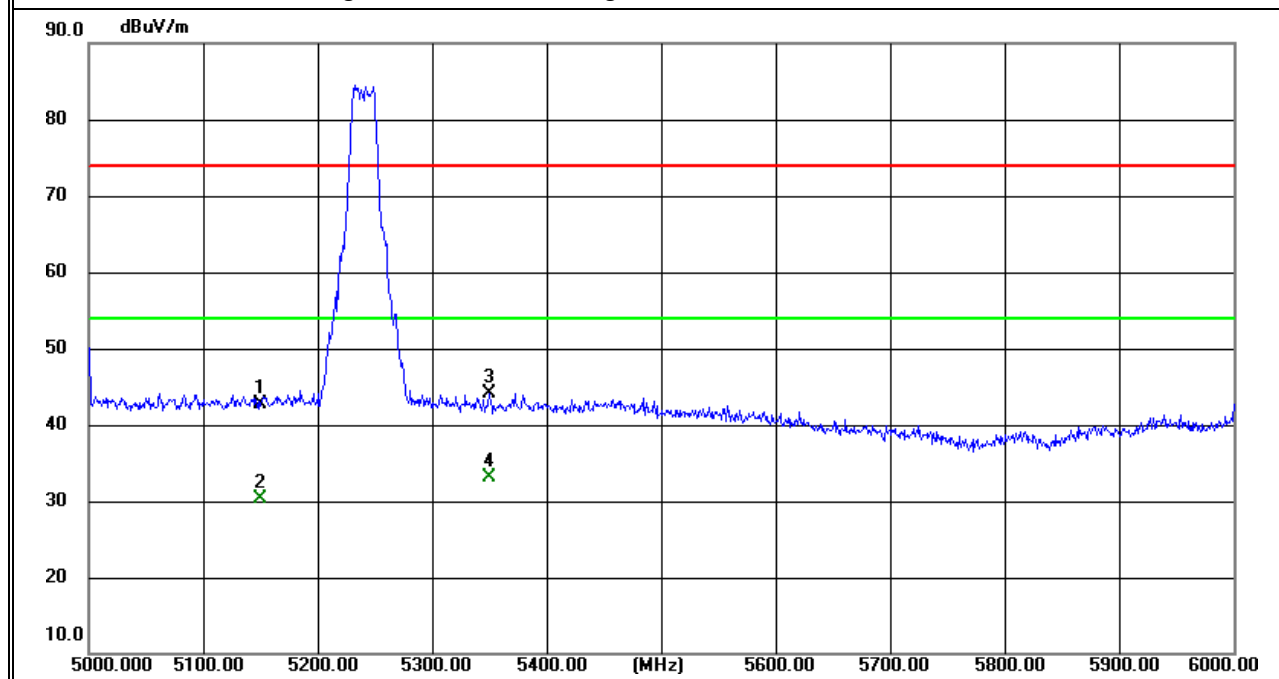


EUT :	BYD Di5.0F	Model Name. :	MTCA05
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 12V
Test Mode :	TX (5.2G)-802.11n20 CH48 mimo mode		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	5150.000	50.76	-8.15	42.61	74.00	-31.39	peak
V	5150.000	38.49	-8.15	30.34	54.00	-23.66	AVG
V	5350.000	52.14	-8.06	44.08	74.00	-29.92	peak
V	5350.000	41.25	-8.06	33.19	54.00	-20.81	AVG

Remark:

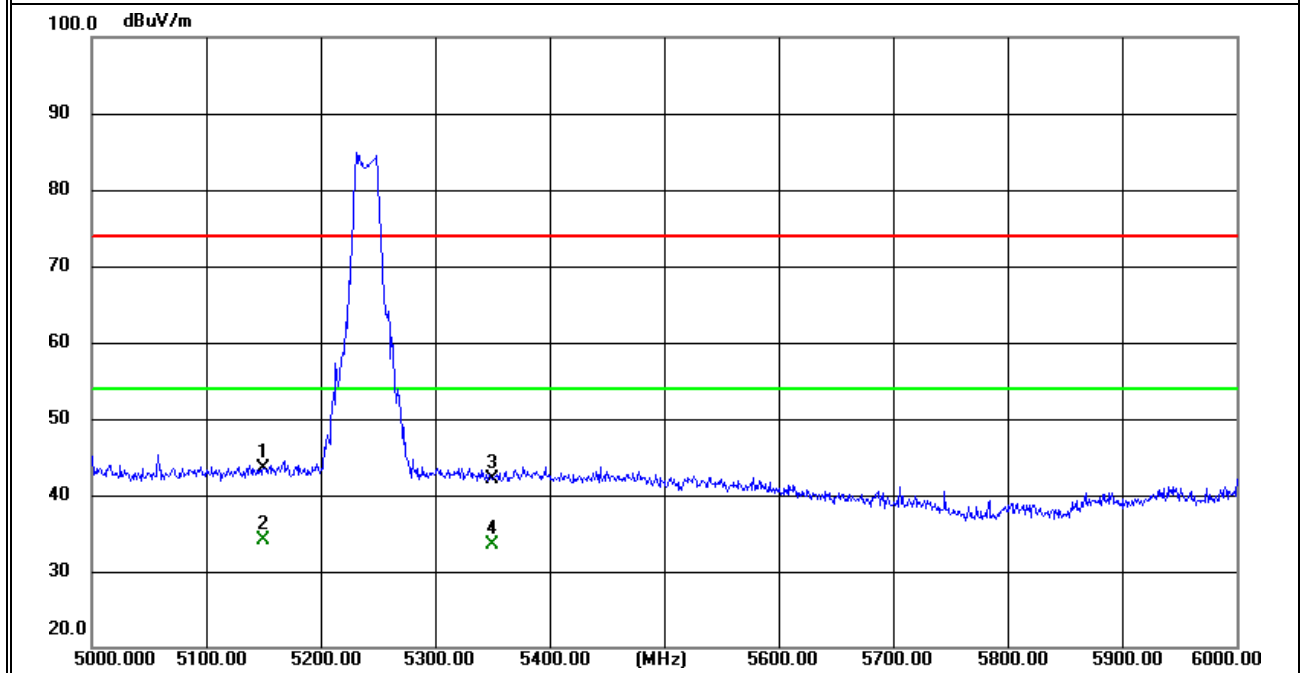
Emission Level= ReadingLevel+ Factor, Margin= Emission Level - Limit



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
H	5150.000	51.67	-8.15	43.52	74.00	-30.48	peak
H	5150.000	42.33	-8.15	34.18	54.00	-19.82	AVG
H	5350.000	50.16	-8.06	42.10	74.00	-31.90	peak
H	5350.000	41.58	-8.06	33.52	54.00	-20.48	AVG

Remark:

Emission Level= ReadingLevel+ Factor, Margin= Emission Level - Limit

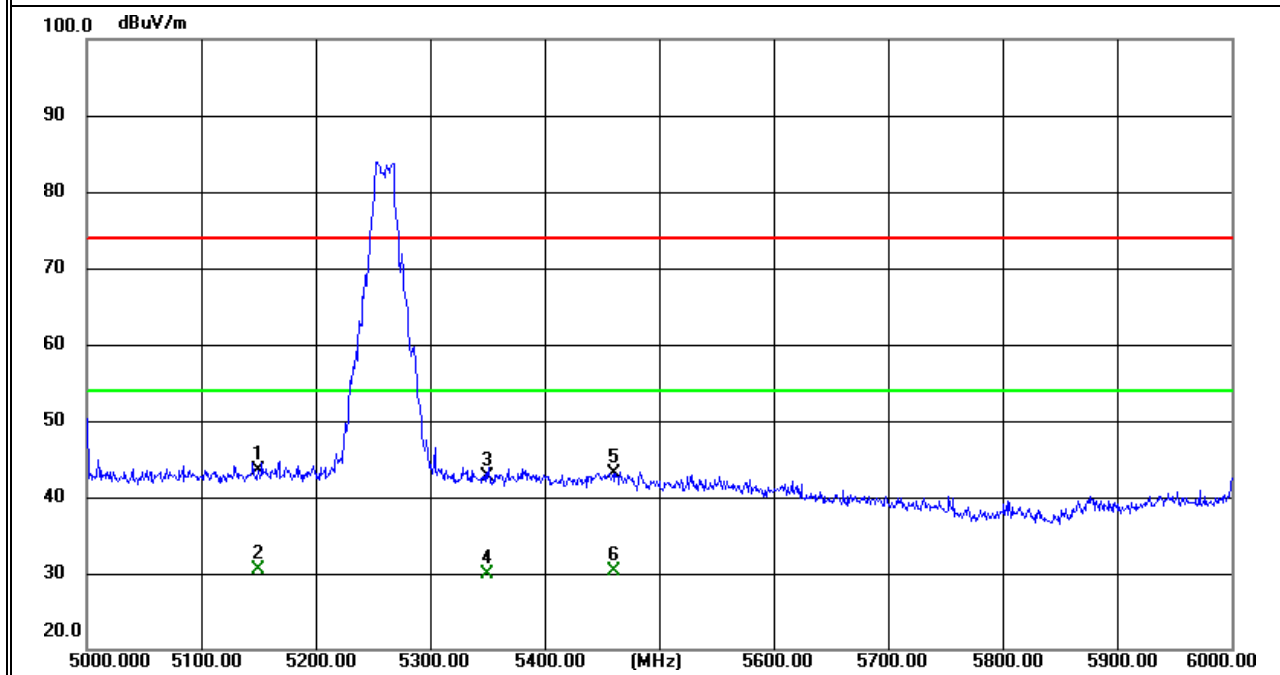


EUT :	BYD Di5.0F	Model Name. :	MTCA05
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 12V
Test Mode :	TX (5.3G)-802.11n20 CH52 mimo mode		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	5150.000	51.70	-8.15	43.55	74.00	-30.45	peak
V	5150.000	38.62	-8.15	30.47	54.00	-23.53	AVG
V	5350.000	50.68	-8.06	42.62	74.00	-31.38	peak
V	5350.000	37.98	-8.06	29.92	54.00	-24.08	AVG
V	5460.000	50.98	-7.96	43.02	74.00	-30.98	peak
V	5460.000	38.24	-7.96	30.28	54.00	-23.72	AVG

Remark:

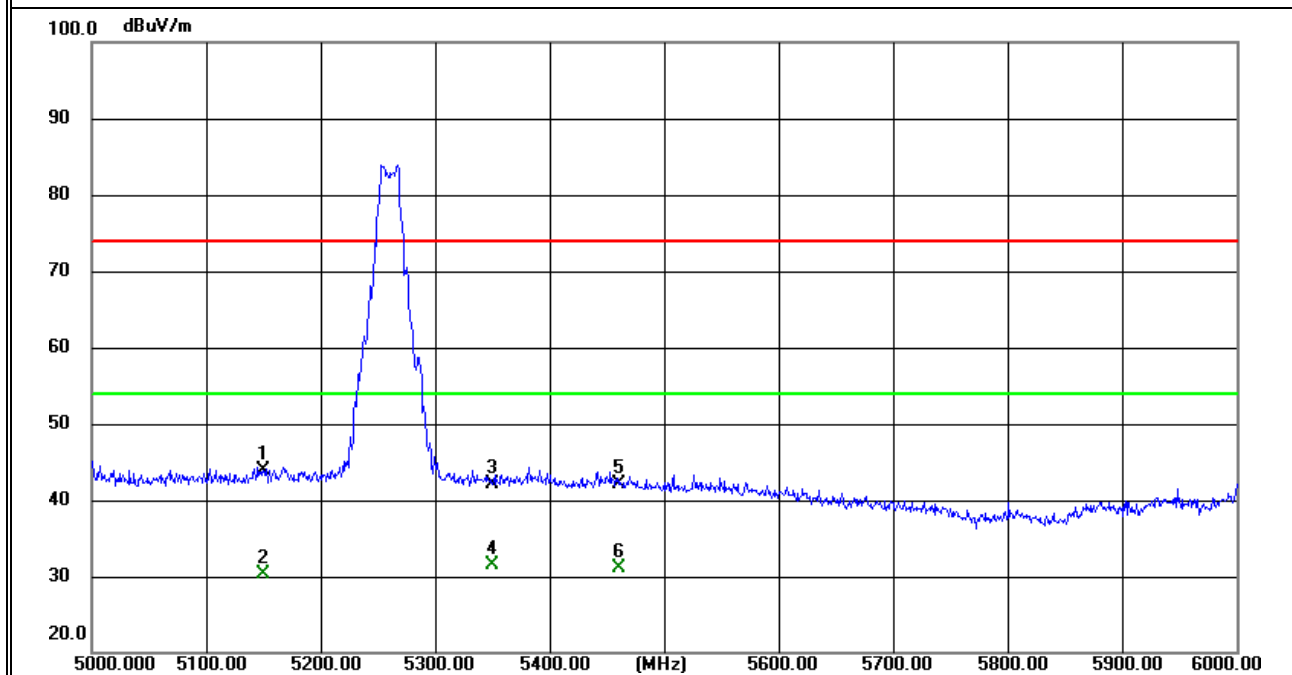
Emission Level= ReadingLevel+ Factor, Margin= Emission Level - Limit



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
H	5150.000	51.96	-8.15	43.81	74.00	-30.19	peak
H	5150.000	38.54	-8.15	30.39	54.00	-23.61	AVG
H	5350.000	50.12	-8.06	42.06	74.00	-31.94	peak
H	5350.000	39.52	-8.06	31.46	54.00	-22.54	AVG
H	5460.000	50.02	-7.96	42.06	74.00	-31.94	peak
H	5460.000	38.97	-7.96	31.01	54.00	-22.99	AVG

Remark:

Emission Level= ReadingLevel+ Factor, Margin= Emission Level - Limit

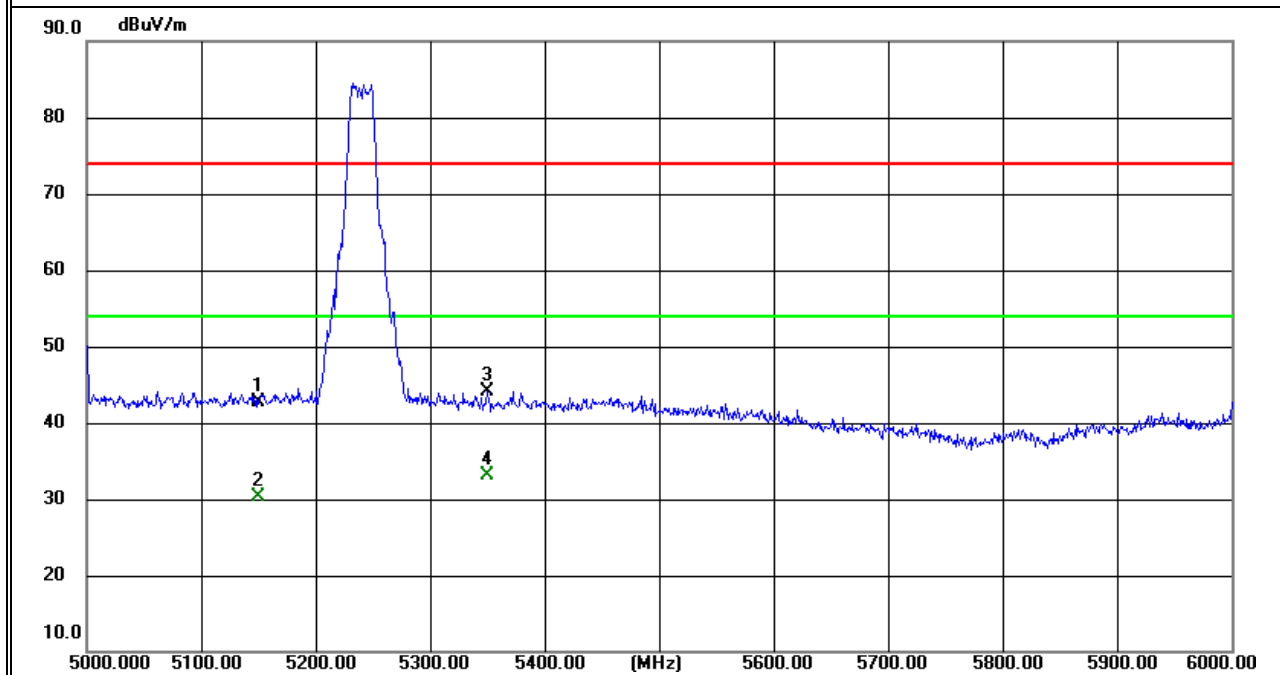


EUT :	BYD Di5.0F	Model Name. :	MTCA05
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 12V
Test Mode :	TX (5.3G)-802.11n20 CH64 mimo mode		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	5150.000	51.65	-8.15	43.50	74.00	-30.50	peak
V	5150.000	37.98	-8.15	29.83	54.00	-24.17	AVG
V	5350.000	58.94	-8.06	50.88	74.00	-23.12	peak
V	5350.000	43.57	-8.06	35.51	54.00	-18.49	AVG
V	5460.000	50.58	-7.96	42.62	74.00	-31.38	peak
V	5460.000	37.68	-7.96	29.72	54.00	-24.28	AVG

Remark:

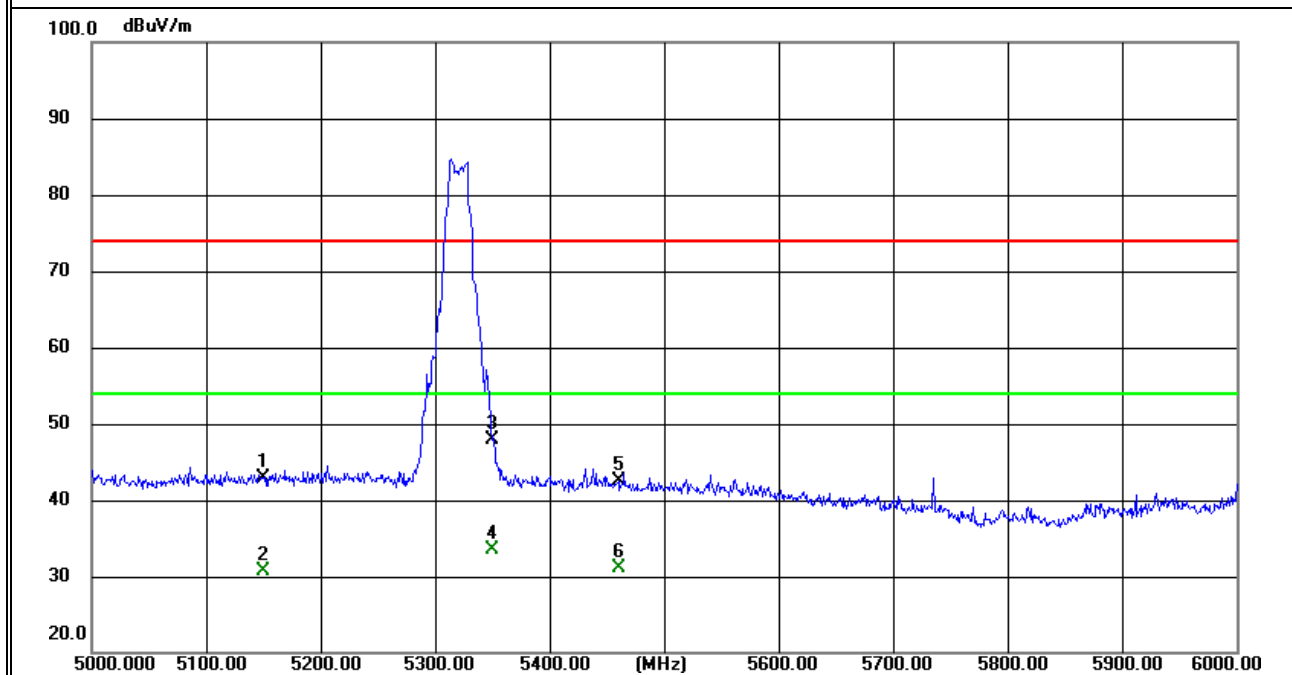
Emission Level= ReadingLevel+ Factor, Margin= Emission Level - Limit



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
H	5150.000	51.05	-8.15	42.90	74.00	-31.10	peak
H	5150.000	38.95	-8.15	30.80	54.00	-23.20	AVG
H	5350.000	56.02	-8.06	47.96	74.00	-26.04	peak
H	5350.000	41.57	-8.06	33.51	54.00	-20.49	AVG
H	5460.000	50.44	-7.96	42.48	74.00	-31.52	peak
H	5460.000	38.99	-7.96	31.03	54.00	-22.97	AVG

Remark:

Emission Level= ReadingLevel+ Factor, Margin= Emission Level - Limit

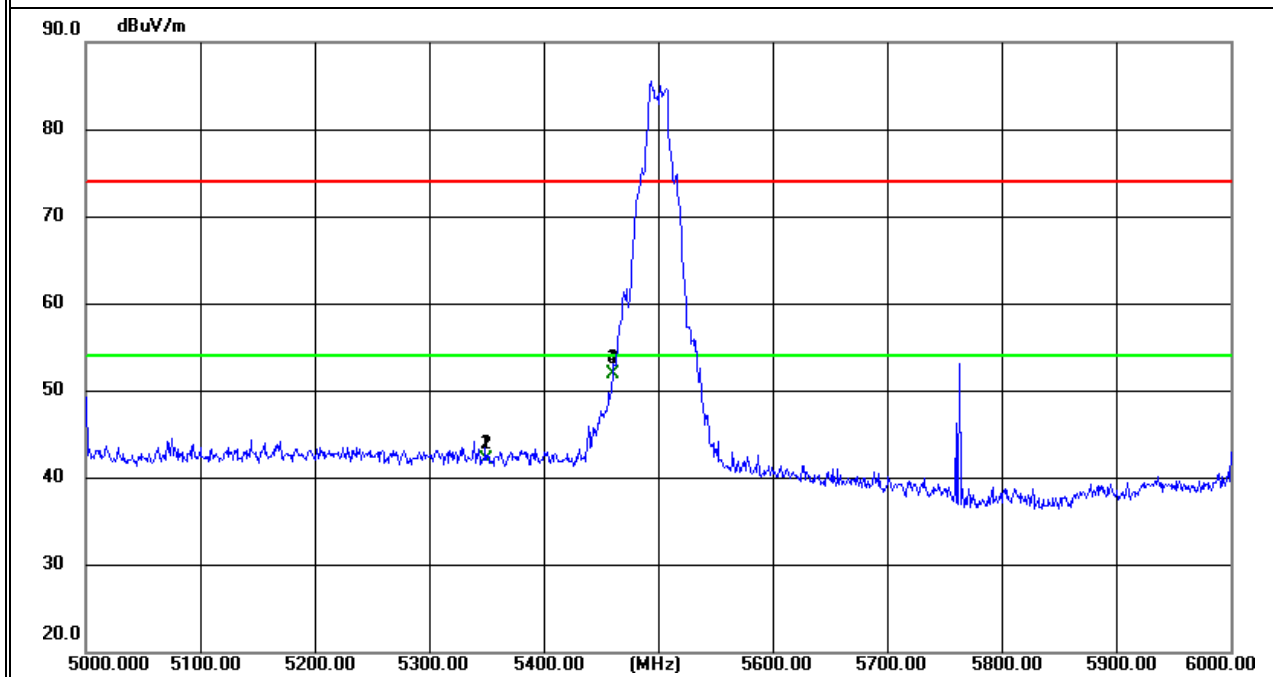


EUT :	BYD Di5.0F	Model Name. :	MTCA05
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 12V
Test Mode :	TX (5.6G)-802.11n20 CH100 mimo mode		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	5350.000	50.22	-8.06	42.16	74.00	-31.84	peak
V	5350.000	50.22	-8.06	42.16	54.00	-11.84	AVG
V	5460.000	59.86	-7.96	51.90	74.00	-22.10	peak
V	5460.000	59.86	-7.96	51.90	54.00	-2.10	AVG

Remark:

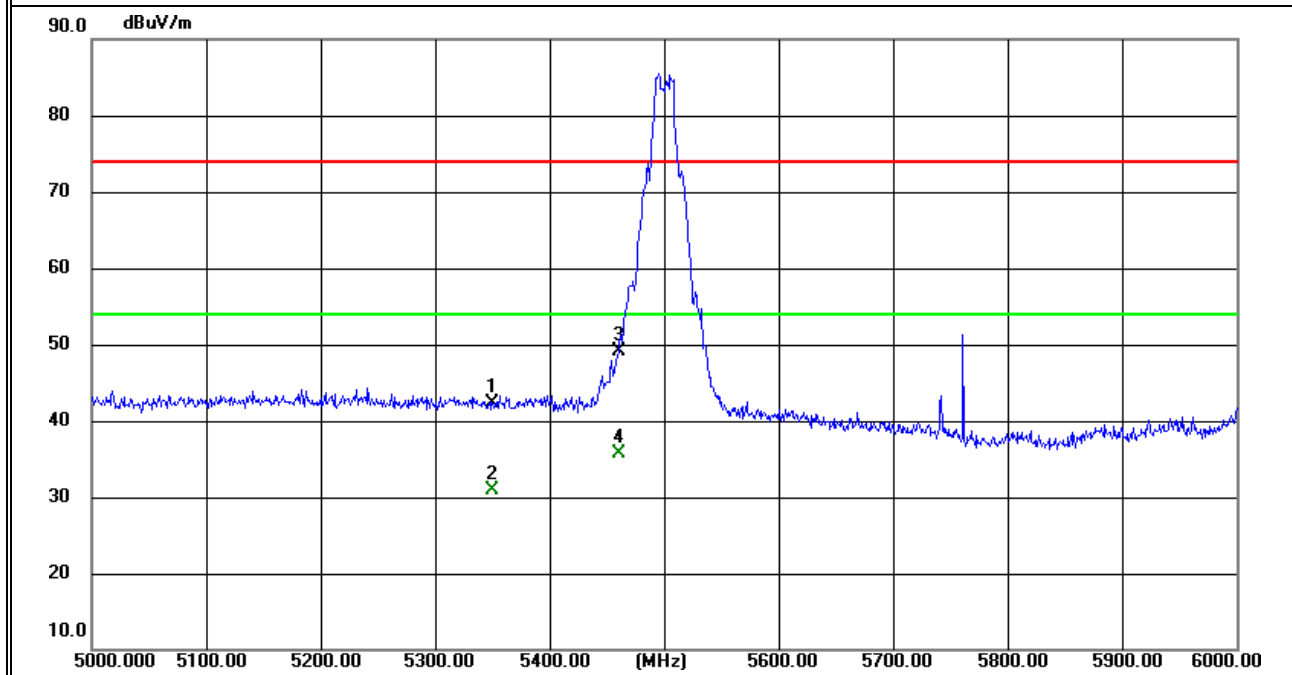
Emission Level= ReadingLevel+ Factor, Margin= Emission Level - Limit



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
H	5350.000	50.33	-8.06	42.27	74.00	-31.73	peak
H	5350.000	38.87	-8.06	30.81	54.00	-23.19	AVG
H	5460.000	57.00	-7.96	49.04	74.00	-24.96	peak
H	5460.000	43.59	-7.96	35.63	54.00	-18.37	AVG

Remark:

Emission Level= ReadingLevel+ Factor, Margin= Emission Level - Limit

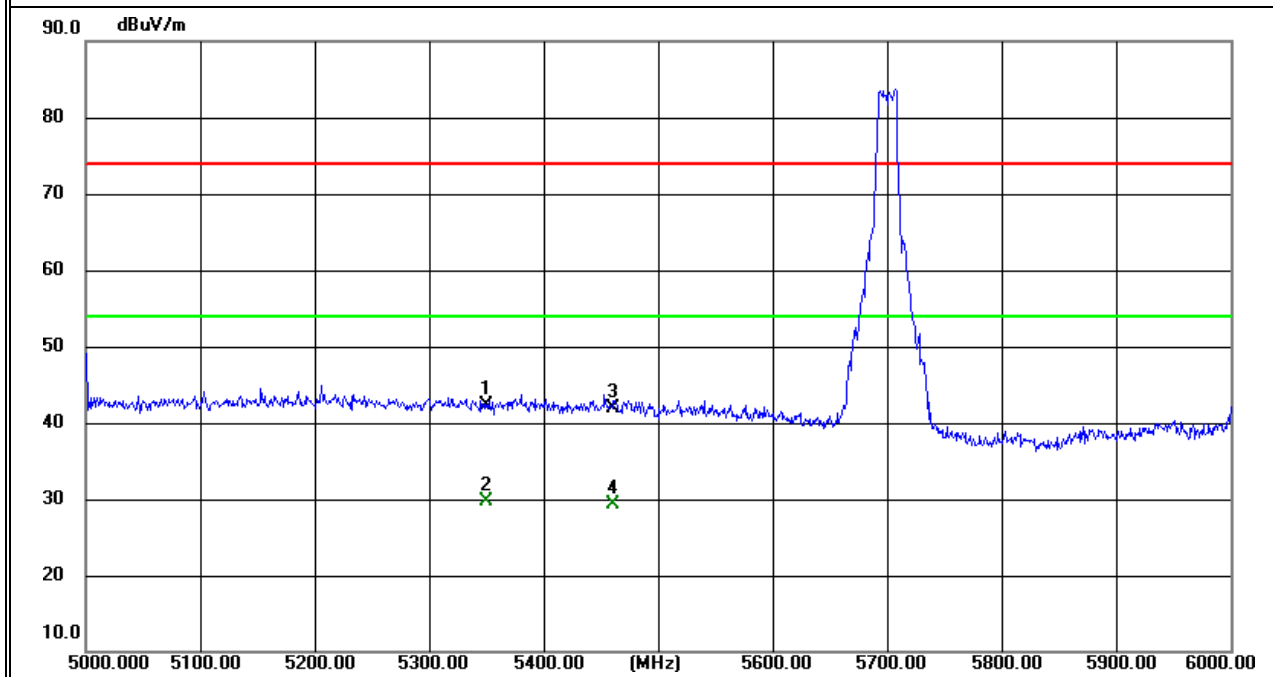


EUT :	BYD Di5.0F	Model Name. :	MTCA05
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 12V
Test Mode :	TX (5.6G)-802.11n20 CH140 mimo mode		

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
V	5350.000	50.36	-8.06	42.30	74.00	-31.70	peak
V	5350.000	37.82	-8.06	29.76	54.00	-24.24	AVG
V	5460.000	49.82	-7.96	41.86	74.00	-32.14	peak
V	5460.000	37.25	-7.96	29.29	54.00	-24.71	AVG

Remark:

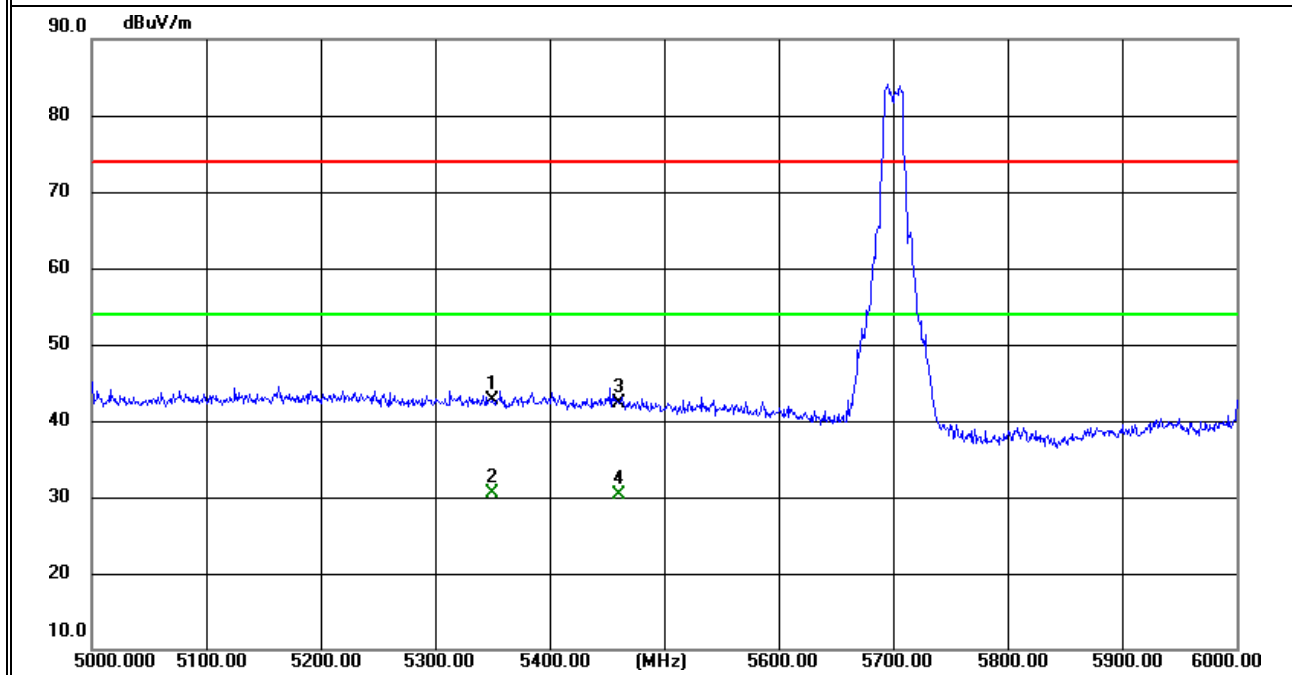
Emission Level= ReadingLevel+ Factor, Margin= Emission Level - Limit



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
H	5350.000	50.83	-8.06	42.77	74.00	-31.23	peak
H	5350.000	38.54	-8.06	30.48	54.00	-23.52	AVG
H	5460.000	50.36	-7.96	42.40	74.00	-31.60	peak
H	5460.000	38.27	-7.96	30.31	54.00	-23.69	AVG

Remark:

Emission Level= ReadingLevel+ Factor, Margin= Emission Level - Limit



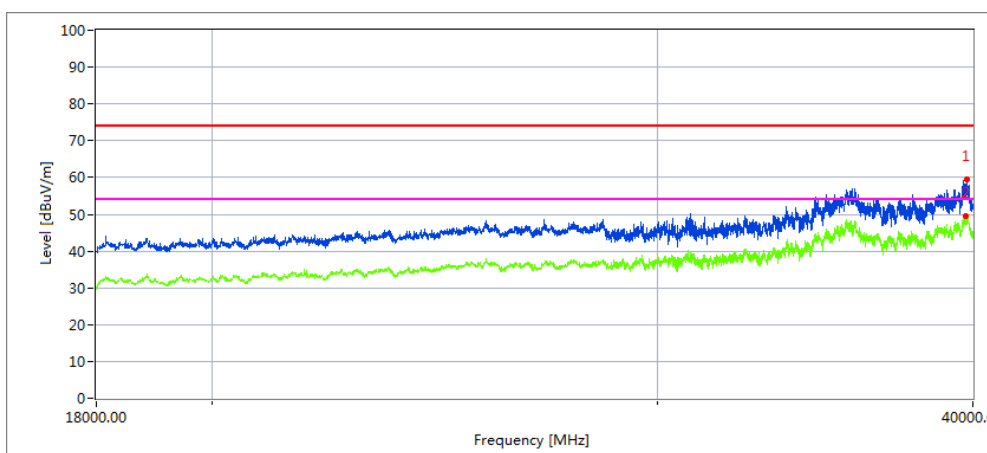
2.1.10 TEST RESULTS (18GHz-40GHz)

EUT :	BYD Di5.0F	Model Name. :	MTCA05
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 12V
Test Mode :	TX (5.2G)-802.11n20 mimo ;TX (5.3G)-802.11n20 mimo TX (5.6G)-802.11n20 mimo ;TX (5.8G)-802.11n20 mimo		

All the modulation modes have been tested, and the worst result was report as below:

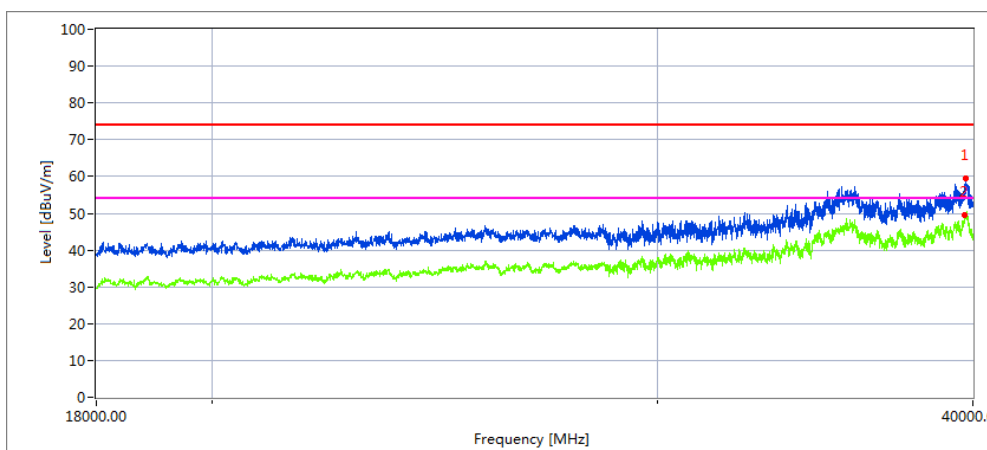
Low Channel (5180 MHz)-Above 1G

Horizontal



Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
39768.97	38.99	20.09	44.07	43.48	59.67	68.2	8.53	Peak
39766.94	27.49	20.09	44.04	43.48	48.14	54	5.86	AVG

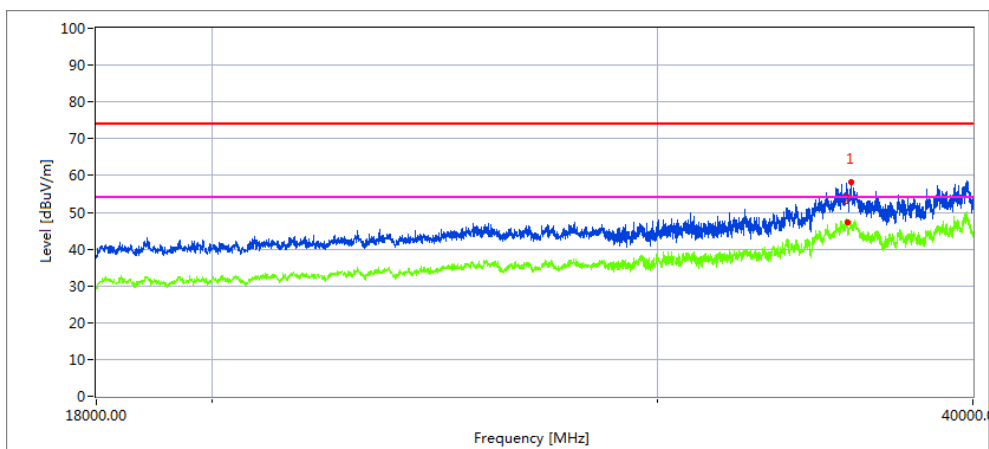
Vertical



Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
39769.246	36.1	20.09	44.07	43.48	56.78	68.2	11.42	Peak
39769.155	27.33	20.09	44.04	43.48	47.98	54	6.02	AVG

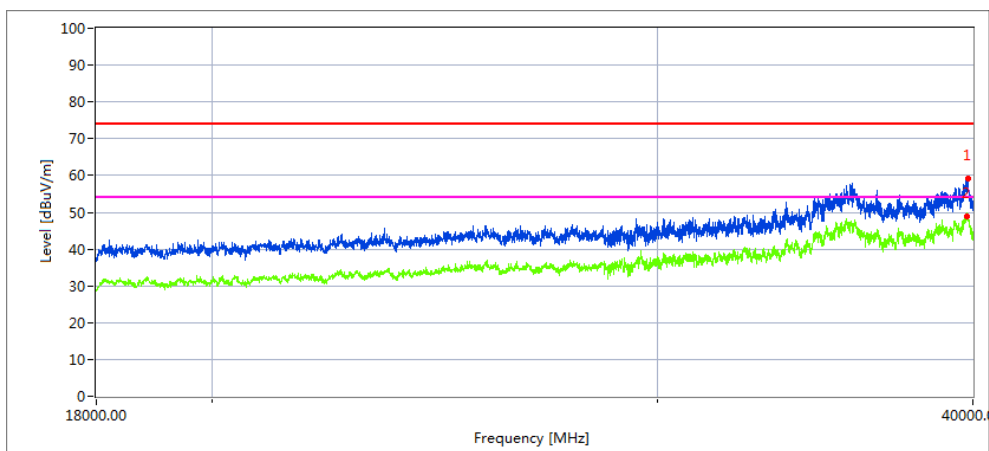
High Channel (5240 MHz)-Above 1G

Horizontal



Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
35627.88	40.98	19.11	42.73	44.61	58.21	68.2	9.99	Peak
35596.426	31.32	19.11	42.73	44.61	48.55	54	5.45	AVG

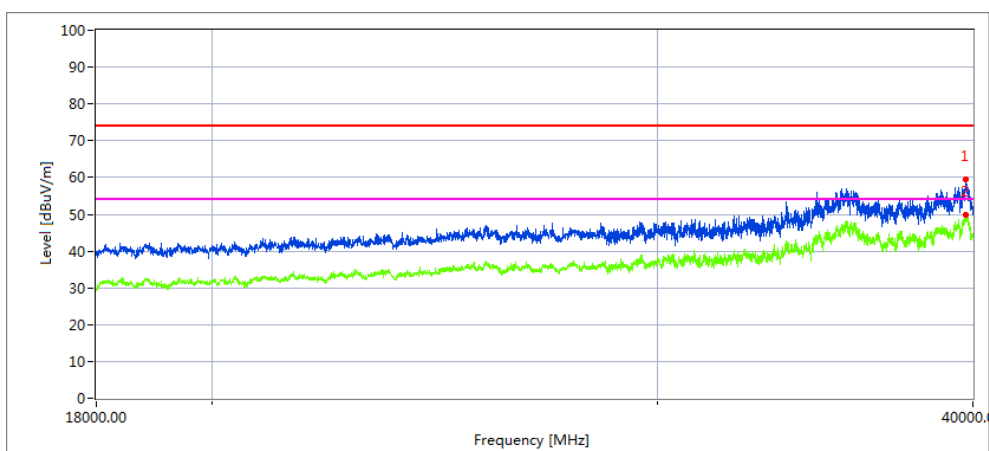
Vertical



Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
39769.226	37.31	20.09	44.07	43.48	57.99	68.2	10.21	Peak
39769.356	25.5	20.09	44.04	43.48	46.15	54	7.85	AVG

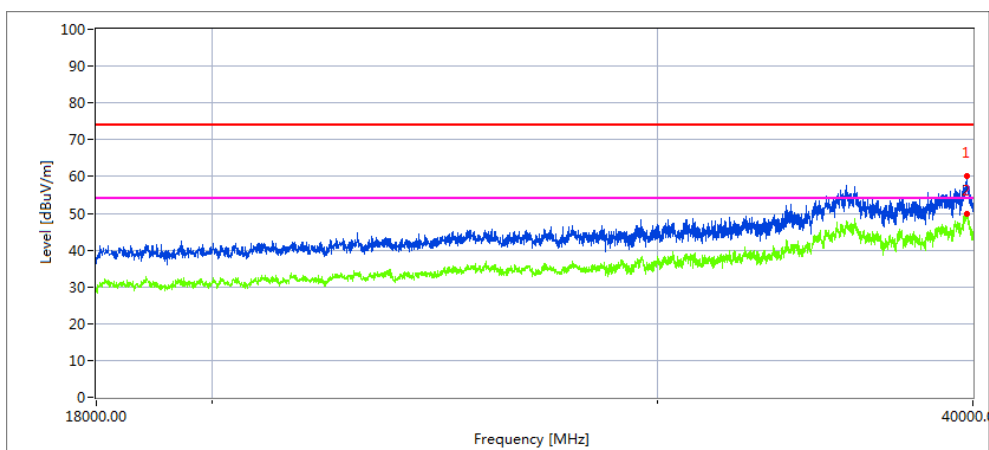
Low Channel (5260 MHz)-Above 1G

Horizontal



Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
39175.9	38.86	19.98	43.84	44.62	58.06	68.2	10.14	Peak
39176.02	29.93	19.98	43.84	44.62	49.13	54	4.87	AVG

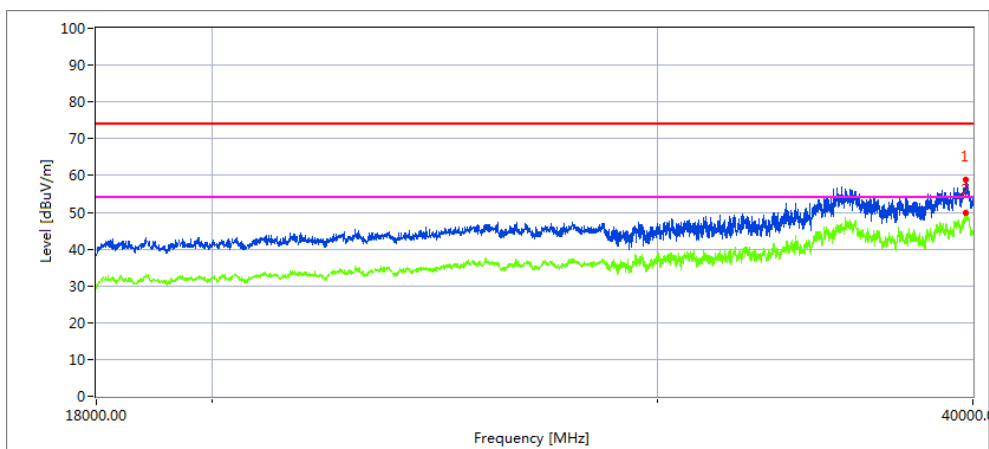
Vertical



Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
39385.54	39.12	20.01	44.06	42.69	60.5	68.2	7.7	Peak
39385.65	28.89	20.01	44.06	42.69	50.27	54	3.73	AVG

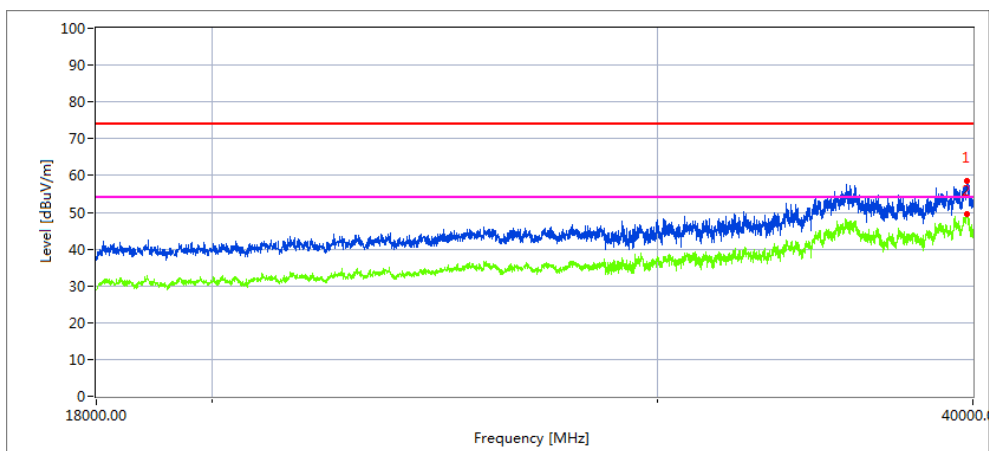
High Channel (5320 MHz)-Above 1G

Horizontal



Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
39176.79	38.93	19.98	43.84	44.62	58.13	68.2	10.07	Peak
39176.69	30.85	19.98	43.84	44.62	50.05	54	3.95	AVG

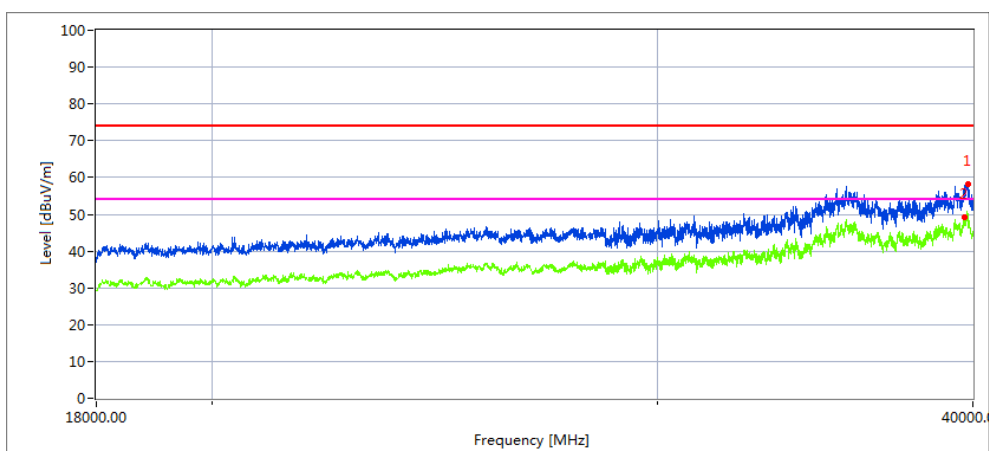
Vertical



Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
39369.034	35.93	20.01	44.06	42.69	57.31	68.2	10.89	Peak
39368.864	27.51	20.01	44.06	42.69	48.89	54	5.11	AVG

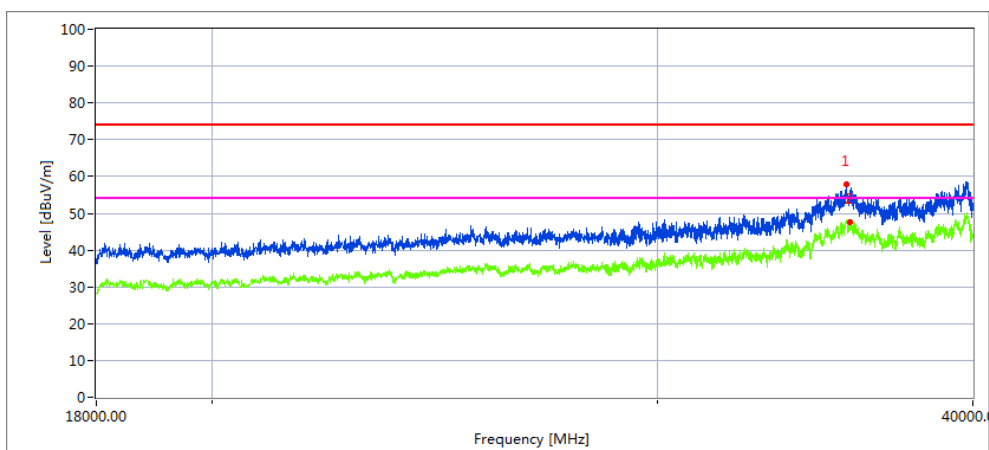
Low Channel (5500 MHz)-Above 1G

Horizontal



Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
39696.347	37.14	20.09	44.07	43.48	57.82	68.2	10.38	Peak
39652.961	29.18	20.07	44.06	43.48	49.83	54	4.17	AVG

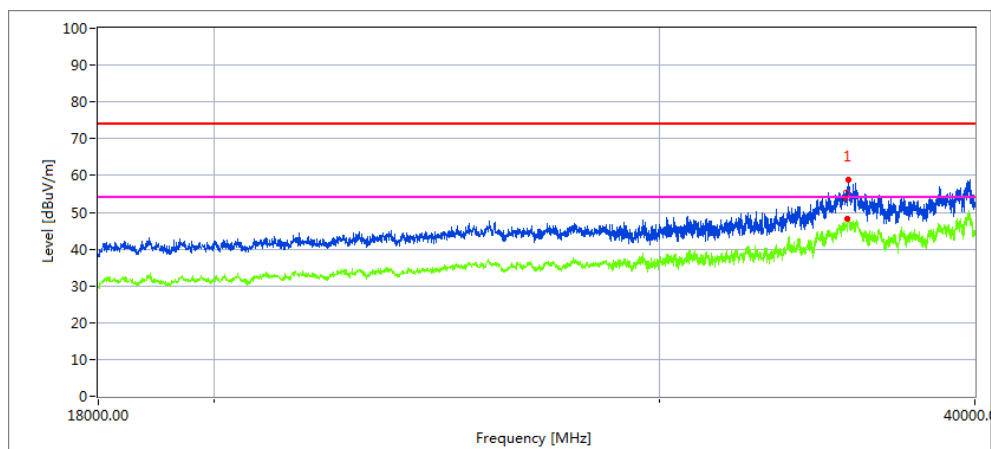
Vertical



Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
36575.351	37.47	19.16	42.61	41.56	57.68	68.2	10.52	Peak
36575.601	27.3	19.16	42.61	41.56	47.51	54	6.49	AVG

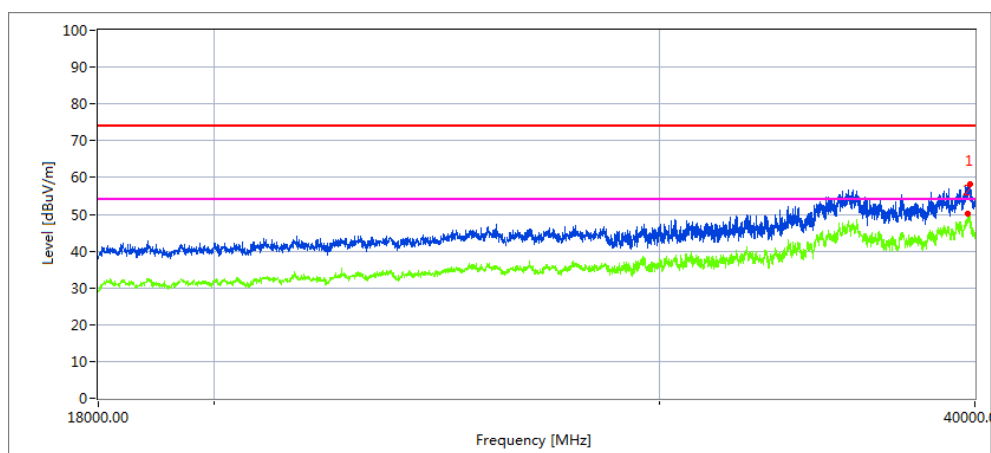
High Channel (5700 MHz)-Above 1G

Horizontal



Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
35794.32	37.65	19.17	42.63	42.74	56.71	68.2	11.49	Peak
35763.368	29	19.14	42.61	42.71	48.04	54	5.96	AVG

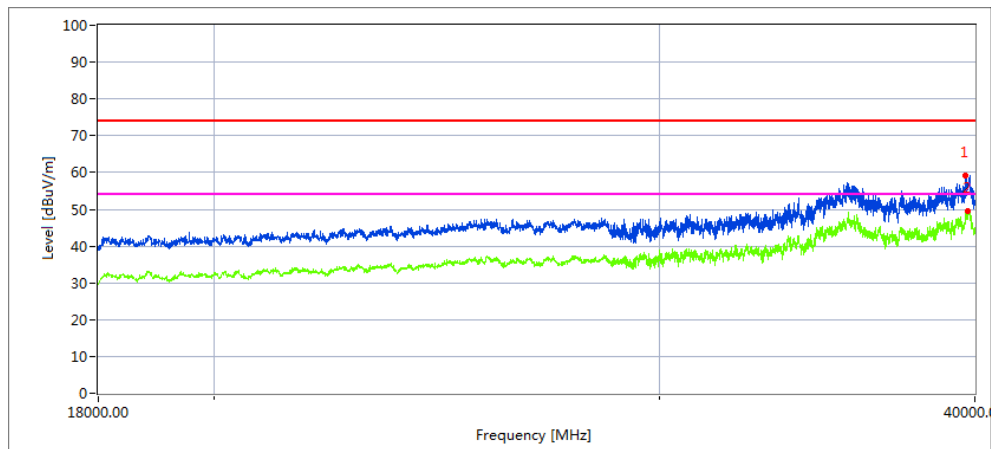
Vertical



Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
39816.583	38.58	20.09	42.63	43.48	57.82	68.2	10.38	Peak
39803.718	30.82	20.09	42.61	43.48	50.04	54	3.96	AVG

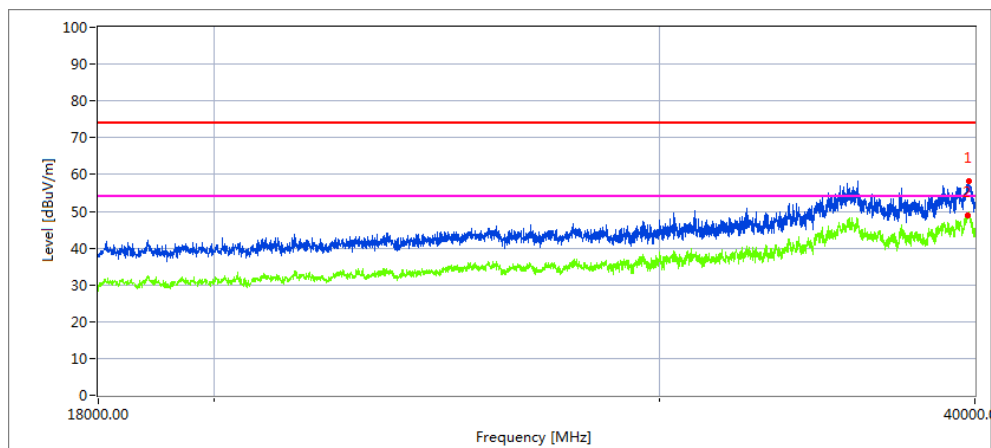
Low Channel (5745 MHz)-Above 1G

Horizontal



Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
39669.824	38.47	20.09	44.16	43.48	59.24	68.2	8.96	Peak
39669.784	29.55	20.09	44.16	43.48	50.32	54	3.68	AVG

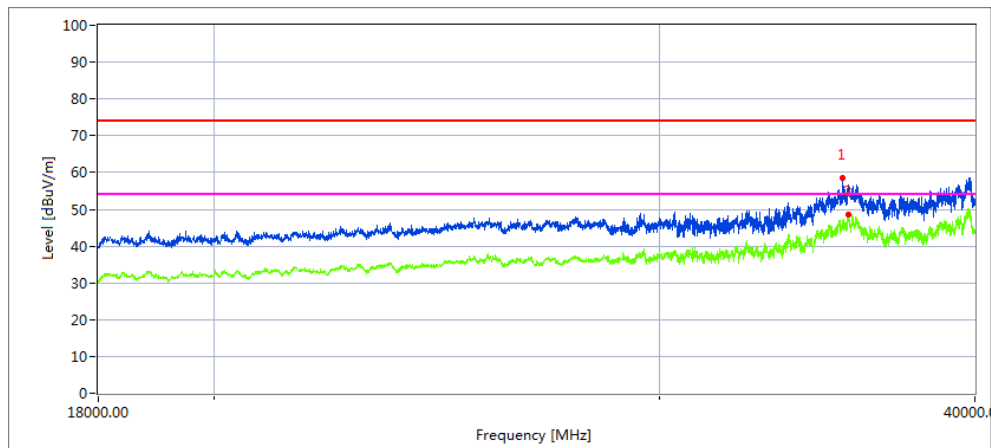
Vertical



Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
39731.122	37.64	20.06	44.07	43.21	58.56	68.2	9.64	Peak
39731.232	28.65	20.06	44.07	43.21	49.57	54	4.43	AVG

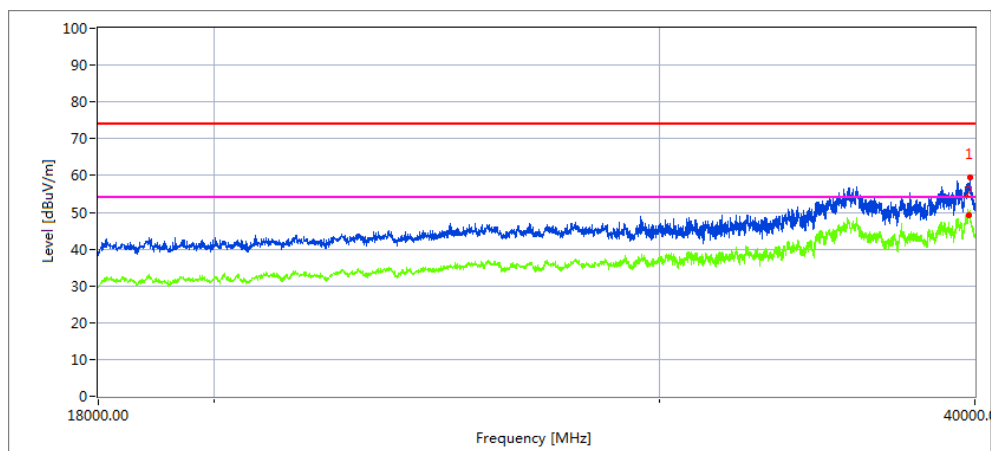
High Channel (5825 MHz)-Above 1G

Horizontal



Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
35628.074	39.53	19.11	42.63	43.48	57.79	68.2	10.41	Peak
35635.798	30.22	19.12	42.63	43.48	48.49	54	5.51	AVG

Vertical



Frequency (MHz)	Meter Reading (dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
39821.683	38.39	20.1	44.1	43.22	59.37	68.2	8.83	Peak
39821.433	29.15	20.1	44.1	43.22	50.13	54	3.87	AVG

2.2. DYNAMIC FREQUENCY SELECTION(DFS)

2.2.1 APPLICABILITY OF DFS REQUIREMENTS

EUT is client and operates as client without radar detection function.

Table 1: Applicability of DFS Requirements Prior to Use of a Channel

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
DFS Detection Threshold	Yes	Not required	Yes
Channel Closing Transmission Time	Yes	Yes	Yes
Channel Move Time	Yes	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required	Yes
Client Beacon Test	N/A	Yes	Yes

Additional requirements for devices with multiple bandwidth modes	Operational Mode	
	Master or Client With Radar Detection	Client Without Radar Detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required
Note Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.		

2.2.2 INTERFERENCE THRESHOLD VALUES, MASTER OR CLIENT INCORPORATING IN-SERVICE MONITORING

Maximum Transmit Power	Value (see notes 1, 2, and 3)
EIRP $\geq$ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna. Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response. Note 3: EIRP is based on the highest antenna gain.	

2.2.3 DFS RESPONSE REQUIREMENT VALUES

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 100% of the 99% power bandwidth See Note 3.

Note 1: The instant that the Channel Move Time and the Channel Closing Transmission Time begins is as follows:

- For the Short pulse radar Test Signals this instant is the end of the Burst.
- For the Frequency Hopping radar Test Signal, this instant is the end of the last radar Burst generated.
- For the Long Pulse radar Test Signal this instant is the end of the 12 second period defining the radar transmission.

Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate Channel changes (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 is used and for each frequency step the minimum percentage of detection is 90%. Measurements are performed with no data traffic.

2.2.4 SHORT PULSE RADAR TEST WAVEFORMS

As the EUT is a Client Device with no Radar Detection, only one type radar pulse is required for the testing. Radar Pulse type 0 was used in the evaluation of the Client device for the purpose of measuring the Channel Move Time and the Channel Closing Transmission Time.

Radar Type	Pulse Width (μsec)	PRI (μsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Trials
0	1	1428	18	60%	30
1	1	Test A Test B	$\text{Roundup}\left(\frac{1}{360} \cdot \frac{19 \cdot 10^6}{\text{PRI}_{\text{min}}}\right)$	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a

Test B: 15 unique PRI values randomly selected within the range of 518-3066 μsec, with a minimum increment of 1 μsec, excluding PRI values selected in Test A

A minimum of 30 unique waveforms are required for each of the short pulse radar types 2 through 4. For short pulse radar type 1, the same waveform is used a minimum of 30 times. If more than 30 waveforms are used for short pulse radar types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms.

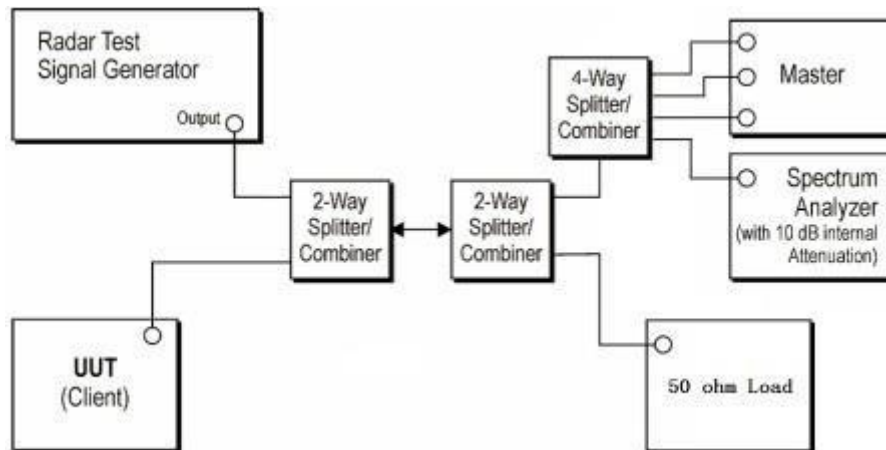
If more than 30 waveforms are used for Short Pulse Radar Type 1, then each additional waveform is generated with Test B and must also be unique and not repeated from the previous waveforms in Tests A or B. The aggregate is the average of the percentage of successful detections of short pulse radar types 1-4.

2.2.5 CALIBRATION SETUP AND DFS TEST RESULTS

Radar Waveform Calibration Procedure

- 1) A 50 ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected to place of the master
- 2) The interference Radar Detection Threshold Level is $-62\text{dBm} - 2\text{dBi} + 1\text{dB} = -63\text{dBm}$ that had been taken into account the output power range and antenna gain.
- 3) The following equipment setup was used to calibrate the conducted radar waveform. A vector signal generator was utilized to establish the test signal level for radar type 0. During this process there were no transmissions by either the master or client device. The spectrum analyzer was switched to the zero spans (time domain) at the frequency of the radar waveform generator. Peak detection was used. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3 MHz. The spectrum analyzer had offset -1.0dB to compensate RF cable loss 1.0dB.
- 4) The vector signal generator amplitude was set so that the power level measured at the spectrum analyzer was $-62\text{dBm} - 2\text{dBi} + 1\text{dB} = -63\text{dBm}$. Capture the spectrum analyzer plots on short pulse radar waveform.

2.2.6 CONDUCTED CALIBRATION SETUP



Wireless AP	Manufacturer	ASUSTek Computer Inc
	Model NO.	AX5400
	FCC ID	MSQ-RTAXJ300

Note:1. The Slave device associated with the EUT during these tests does not have radar detection capability.

2. WLAN traffic is generated by using the iperf software to send packets from the Master IP address to the Slave IP address.

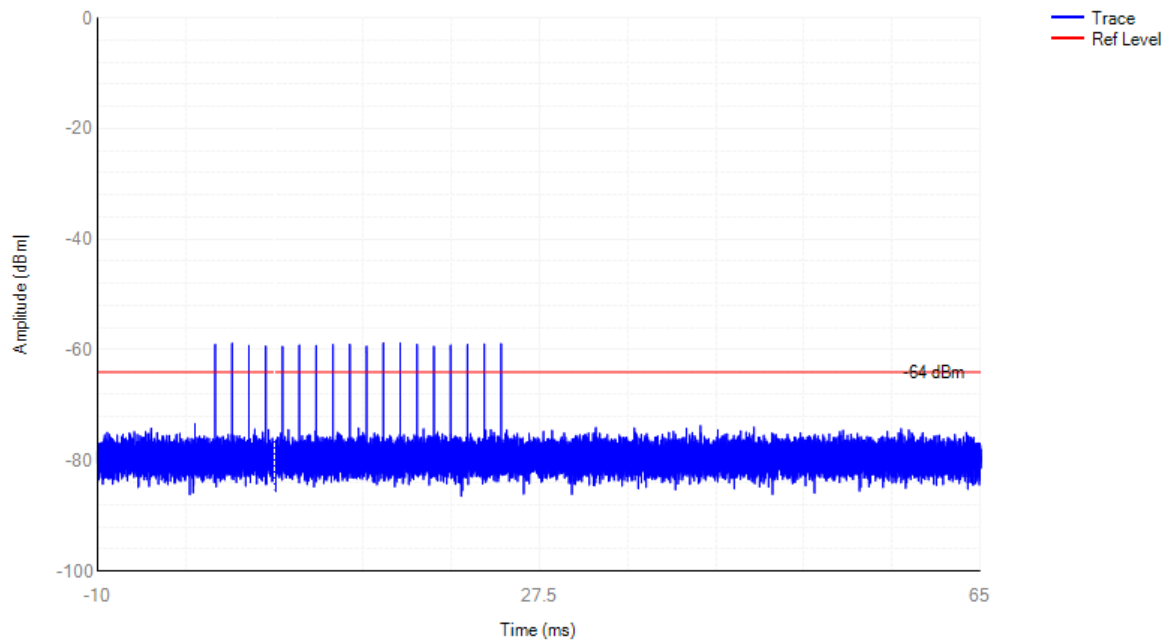
3. The time required for the master and slave devices to fully start up is 120s.

4. EUT does not support TPC.

2.2.7 RADAR WAVEFORM CALIBRATION RESULT

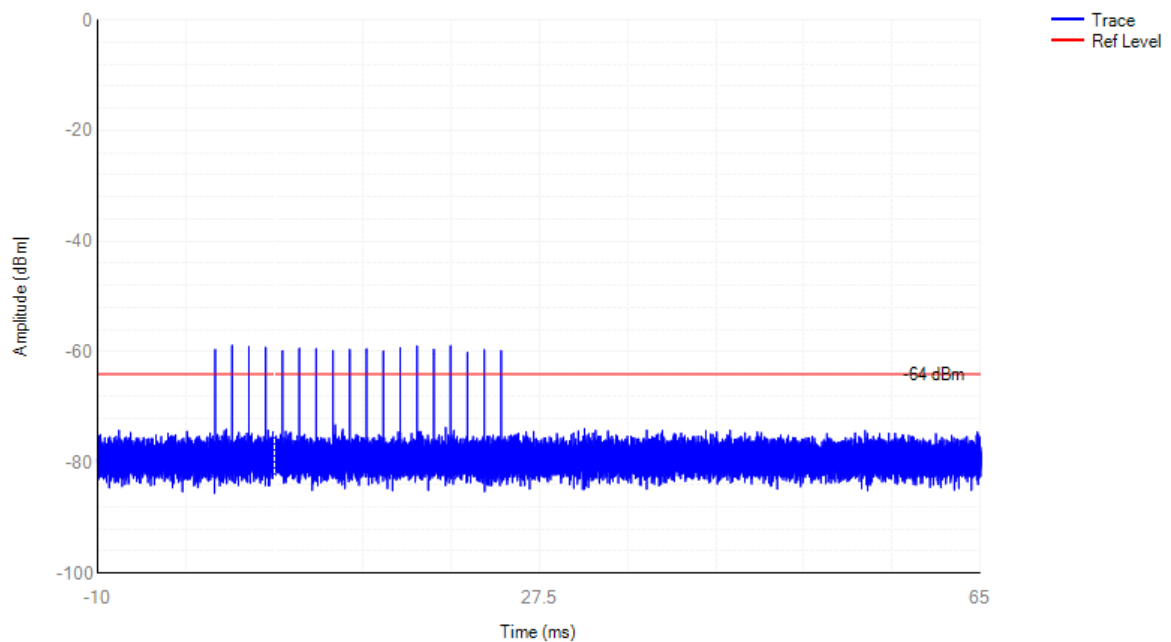
5290MHz ac80 DFS_FCC_T0

Radar Calibration



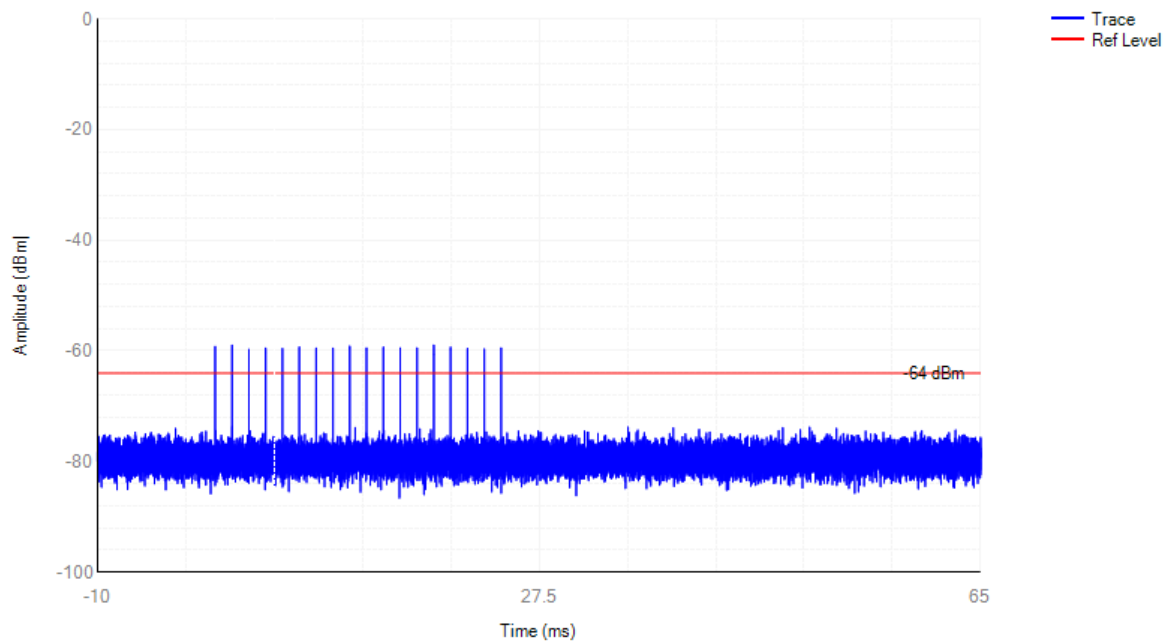
5530MHz ac80 DFS_FCC_T0

Radar Calibration



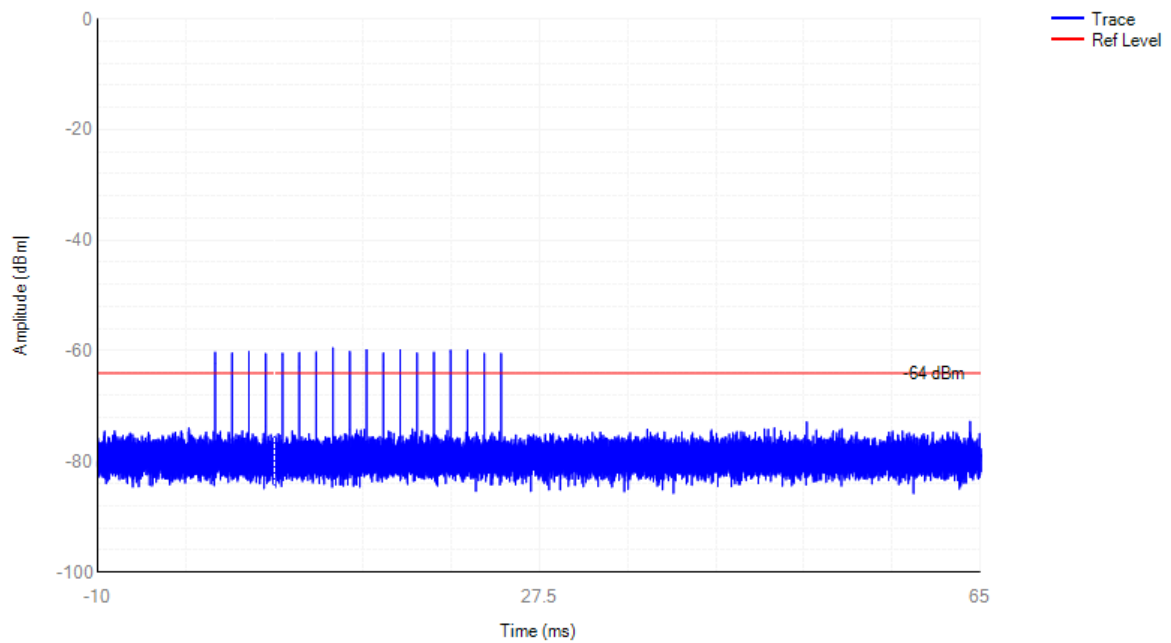
5310MHz n40 DFS_FCC_T0

Radar Calibration



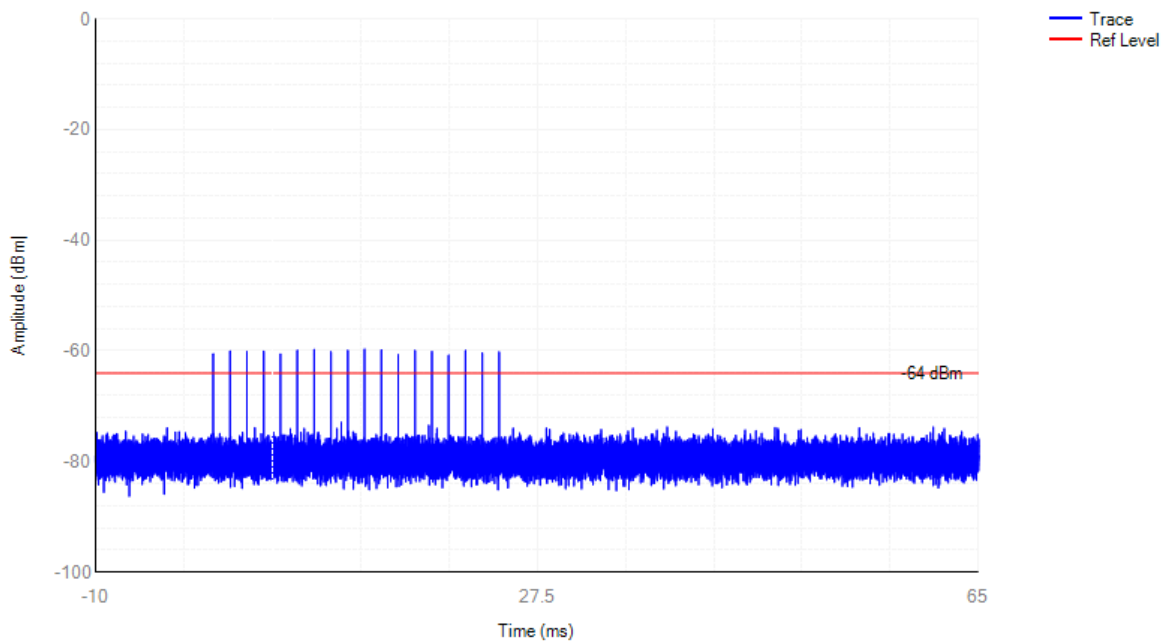
5510MHz n40 DFS_FCC_T0

Radar Calibration



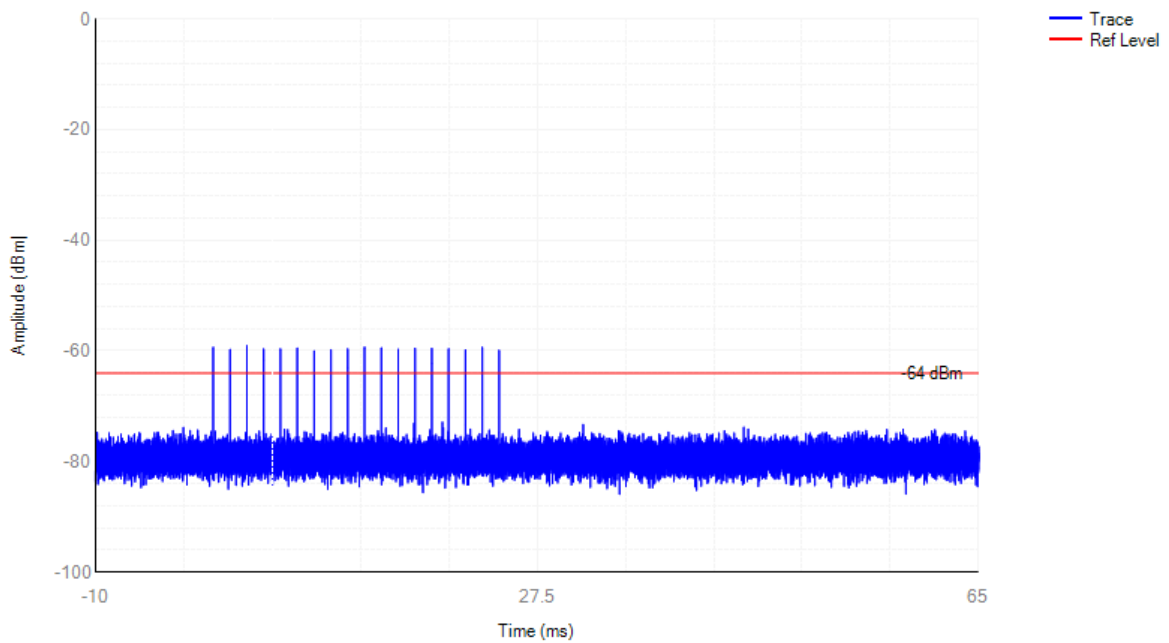
5320MHz a DFS_FCC_T0

Radar Calibration



5500MHz a DFS_FCC_T0

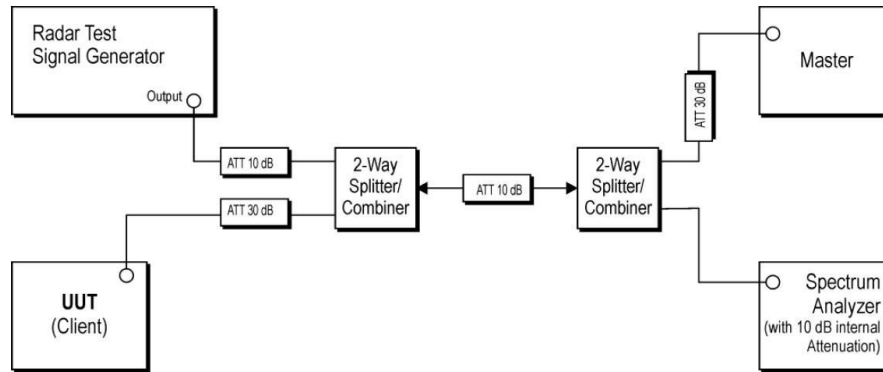
Radar Calibration



2.2.8 IN-SERVICE MONITORING: CHANNEL MOVE TIME, CHANNEL CLOSING TRANSMISSION TIME AND NON-OCCUPANCY PERIOD

TEST CONFIGURATION:

Setup for Client with injection at the Master



TEST PROCEDURE:

1. The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.
2. The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device
3. A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.
4. EUT will associate with the master at channel. The file "iperf.exe" specified by the FCC is Streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network for the entire period of the test.
5. When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.
6. Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom In 600ms plot of the Short Pulse Radar Type
7. Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: $Dwell (0.3ms) = S (12000ms) / B (4000)$; where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: $C (ms) = N \times Dwell (0.3ms)$; where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.
8. Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

TEST MODE:

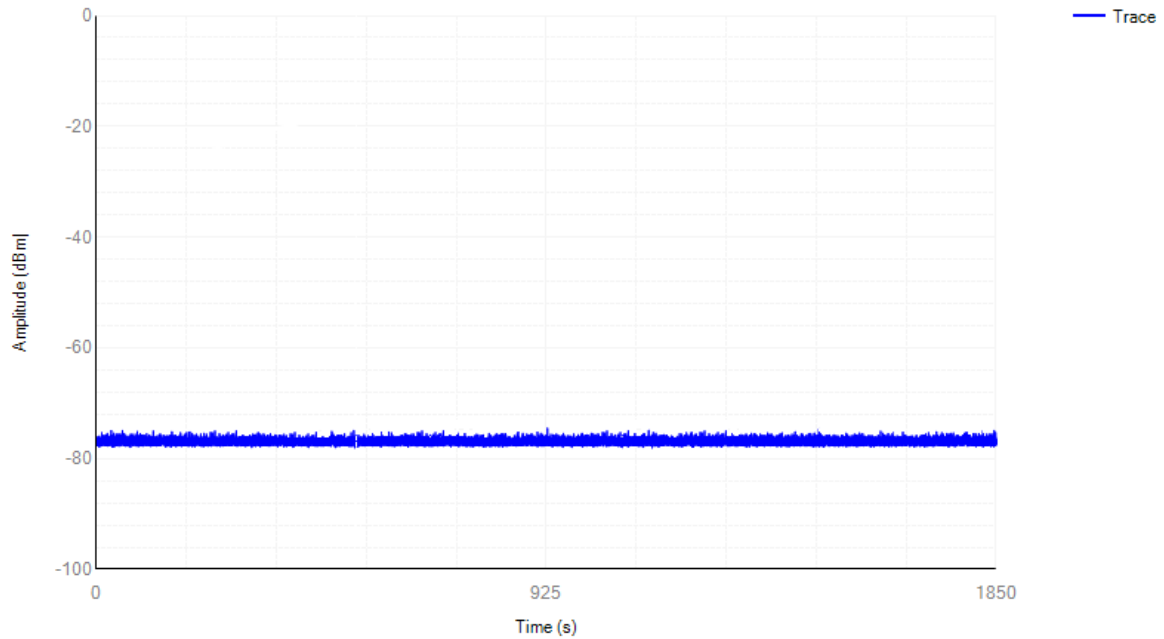
Please refer to the clause 2.2

2.2.9 RESULT OF CHANNEL MOVE TIME, CHANNEL CLOSING TRANSMISSION TIME AND NON-OCCUPANCY PERIOD FOR CLIENT BEACON TEST

Non-Occupancy

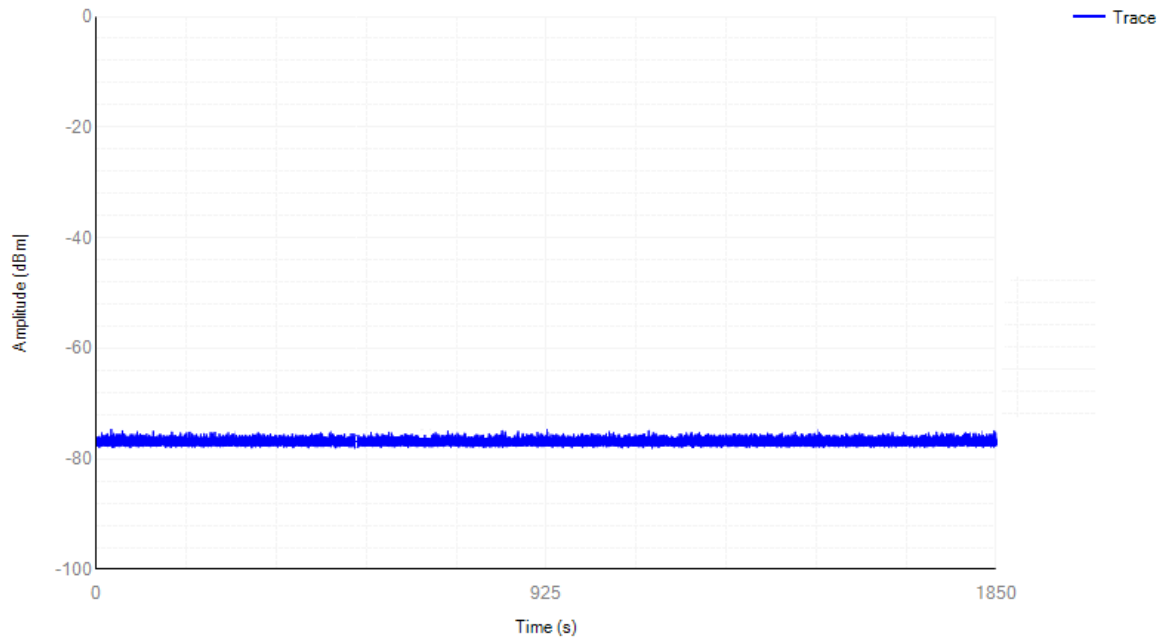
5290MHz ac80 Non-Occupancy

Non-Occupancy period



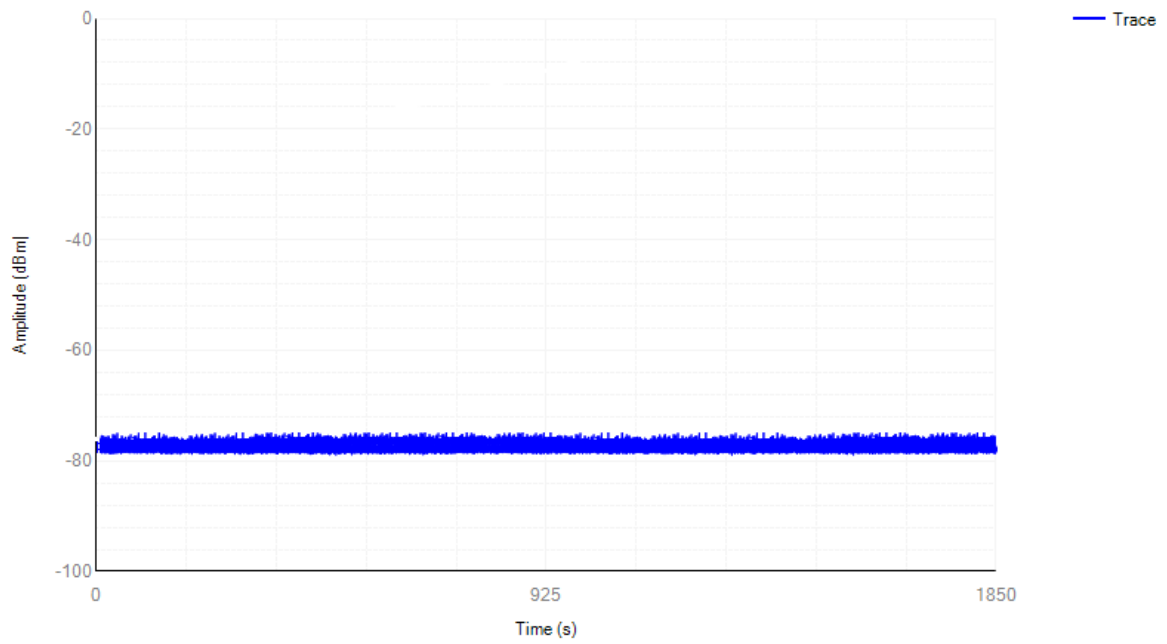
5530MHz ac80 Non-Occupancy

Non-Occupancy period



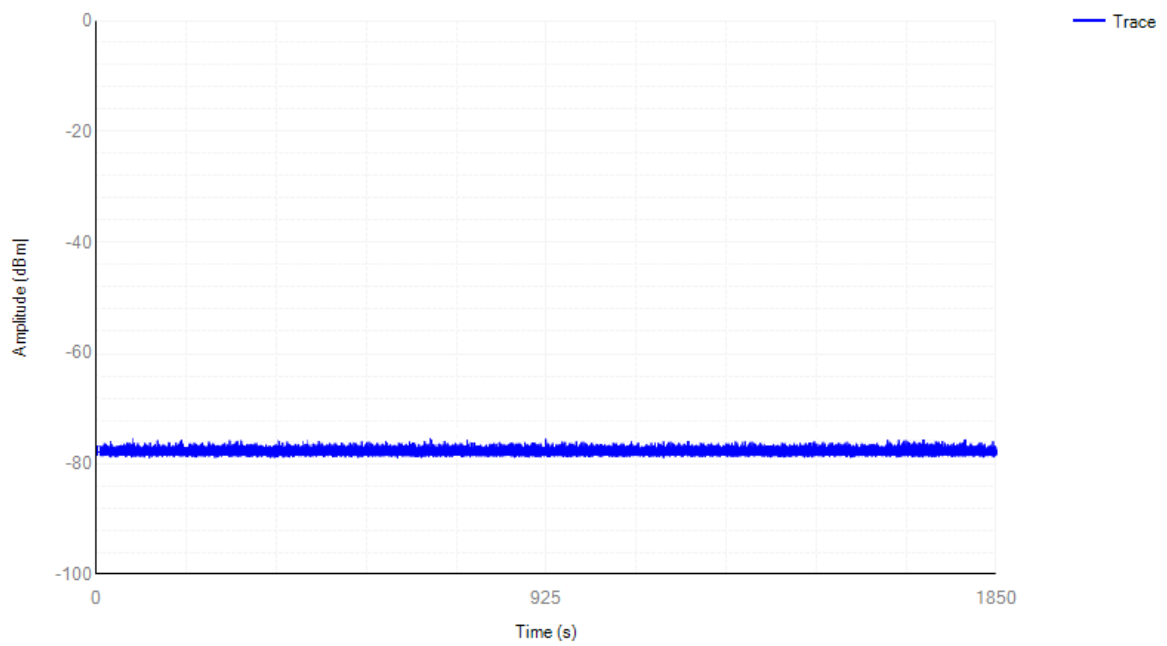
5310MHz n40 Non-Occupancy

Non-Occupancy period



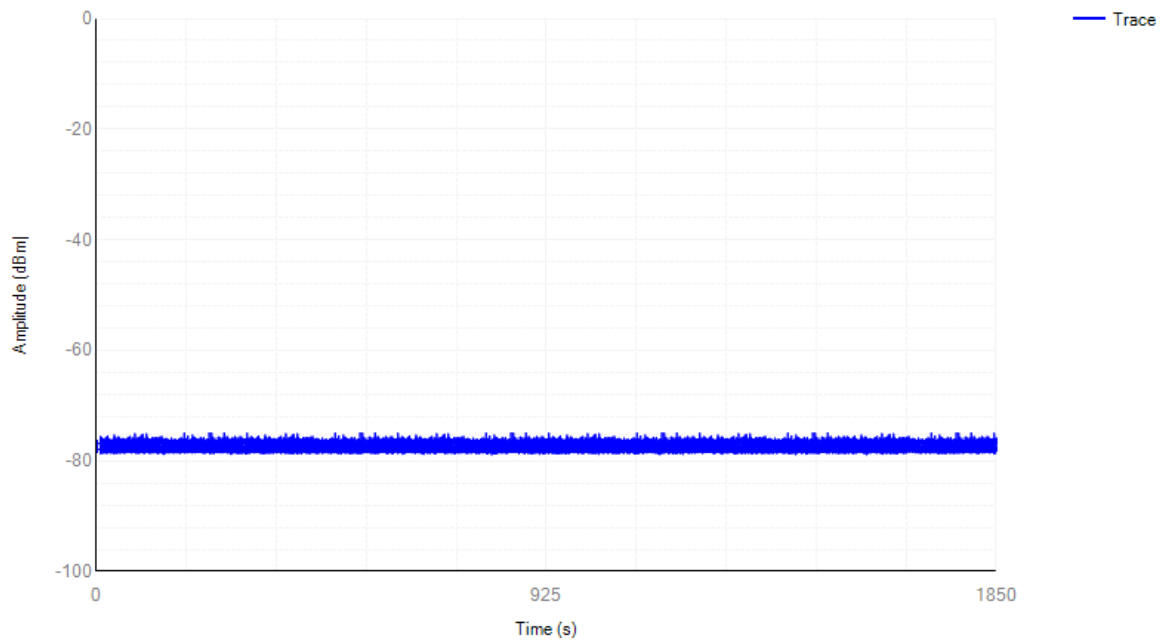
5510MHz n40 Non-Occupancy

Non-Occupancy period



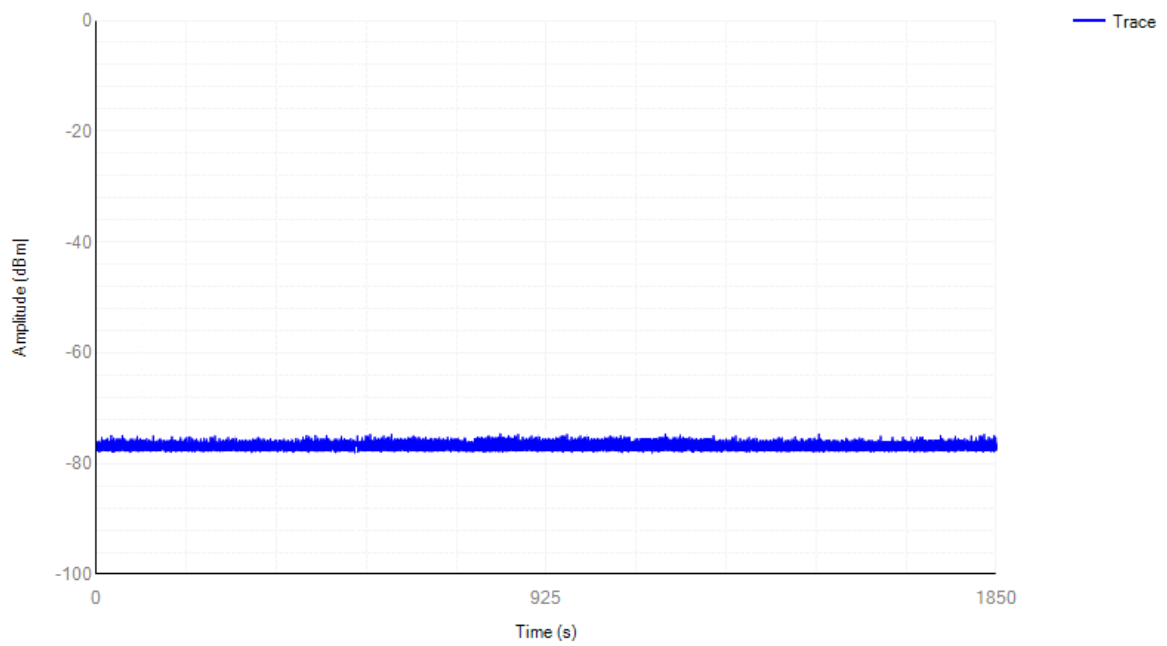
5320MHz a Non-Occupancy

Non-Occupancy period



5500MHz a Non-Occupancy

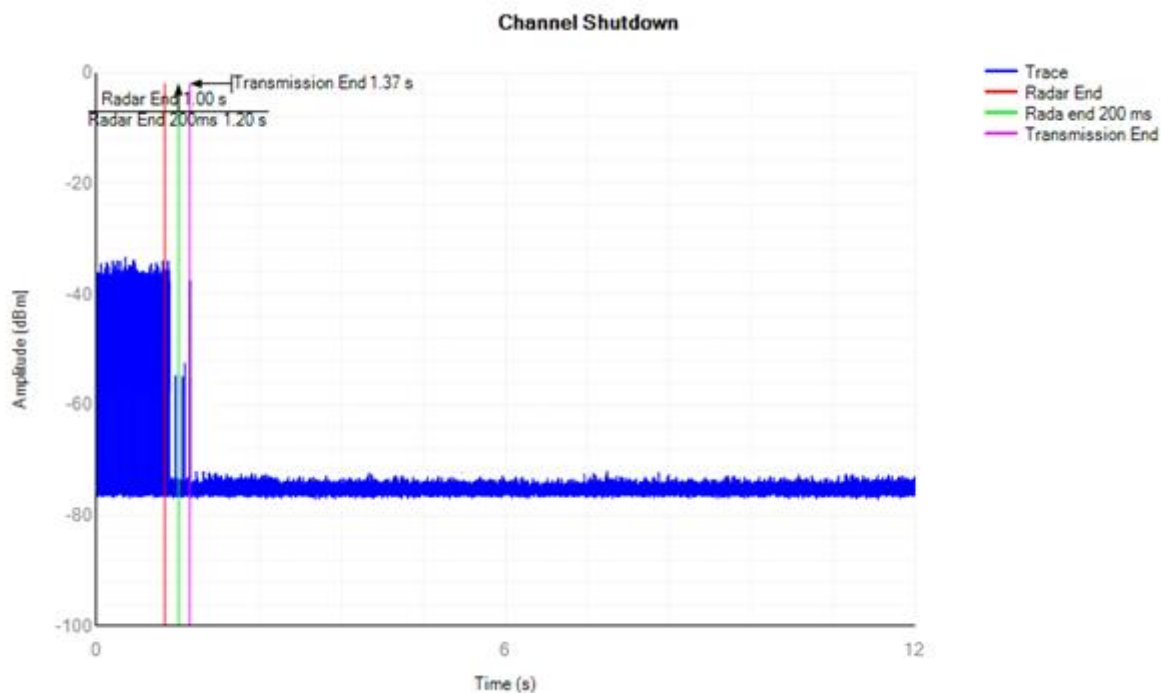
Non-Occupancy period



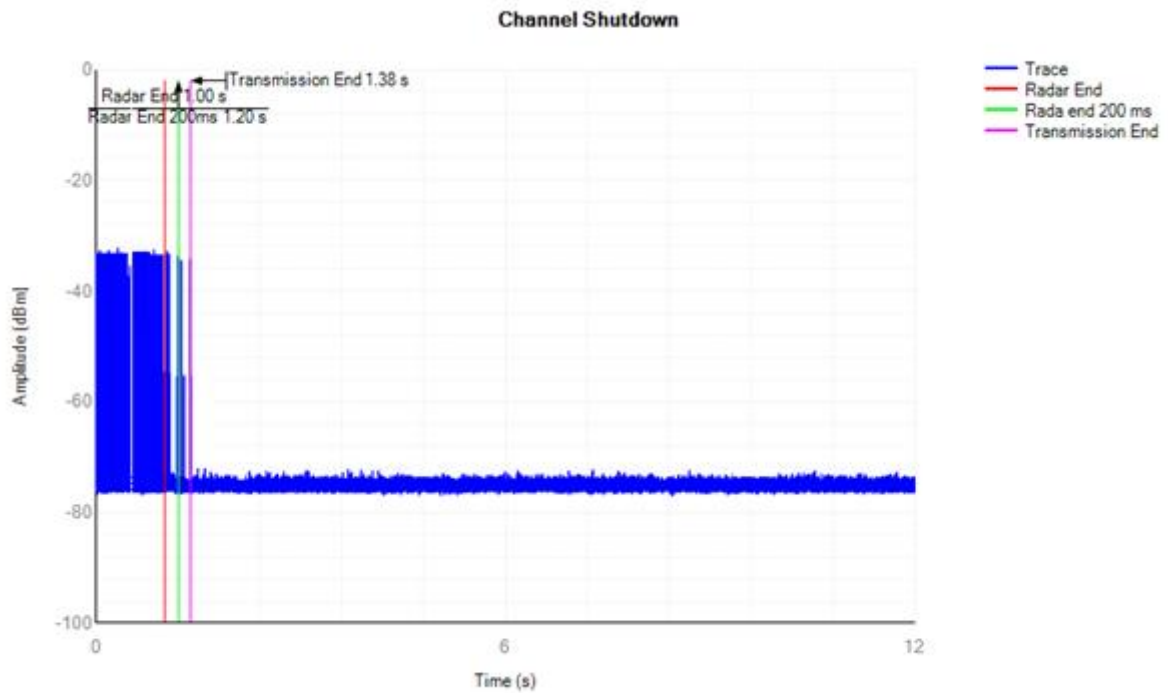
Shutdown Time

Mode	Frequency (MHz)	Channel Move Time (s)	Limit Channel Move Time (s)	Close Transmission Time (s)	Limit Close Transmission Time (s)	Close Transmission Time after 200ms(s)	Limit Close Transmission Time after 200ms (s)	Verdict
ac80	5290	0.366	10	0.0096	0.26	0.0008	0.06	Pass
ac80	5530	0.3752	10	0.0052	0.26	0.0008	0.06	Pass
n40	5310	0.4284	10	0.004	0.26	0.0024	0.06	Pass
n40	5510	0.4312	10	0.004	0.26	0.0024	0.06	Pass
a	5320	0.4284	10	0.0084	0.26	0.002	0.06	Pass
a	5500	0.514	10	0.0092	0.26	0.0024	0.06	Pass

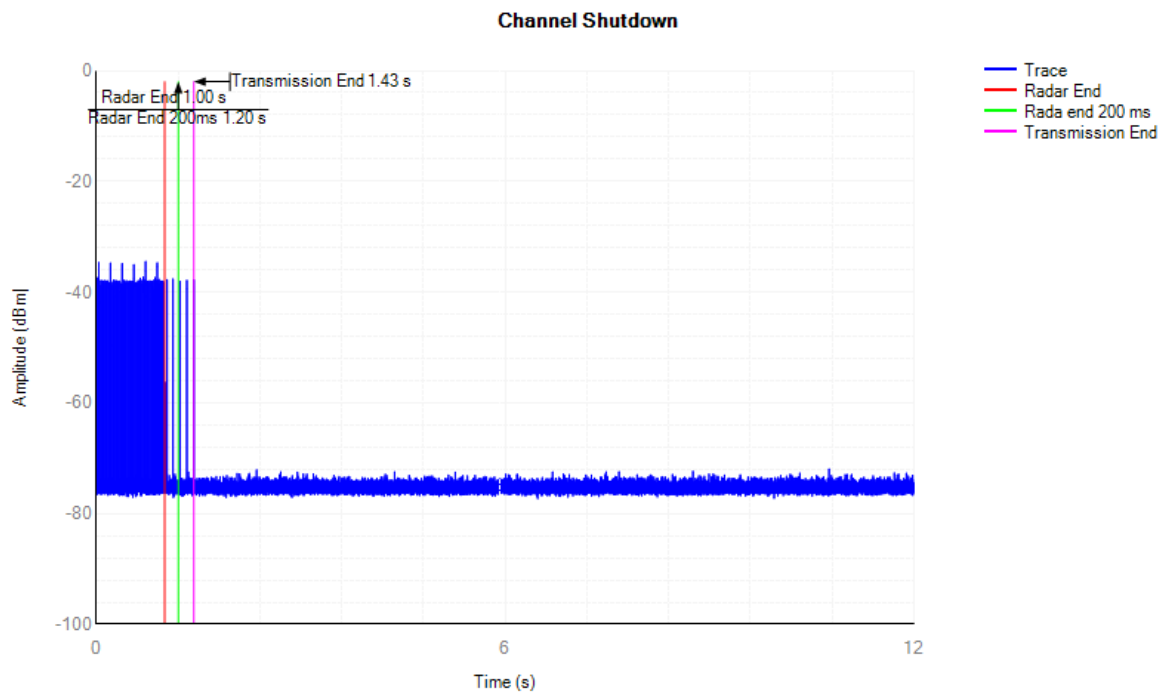
5290MHz ac80 Shutdown



5530MHz ac80 Shutdown

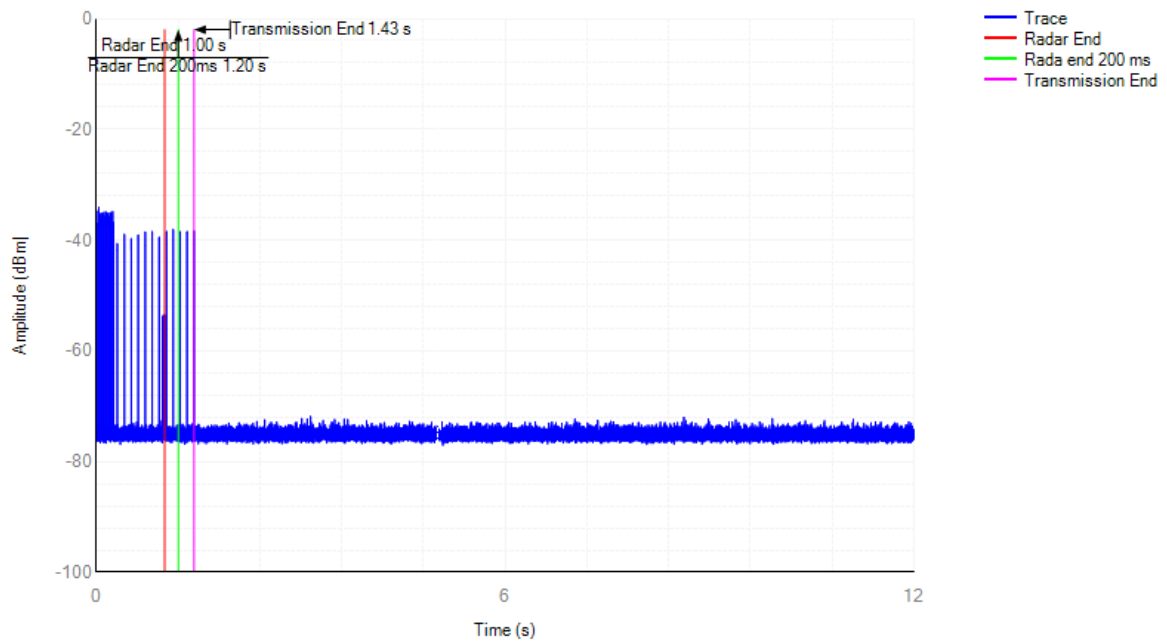


5310MHz n40 Shutdown



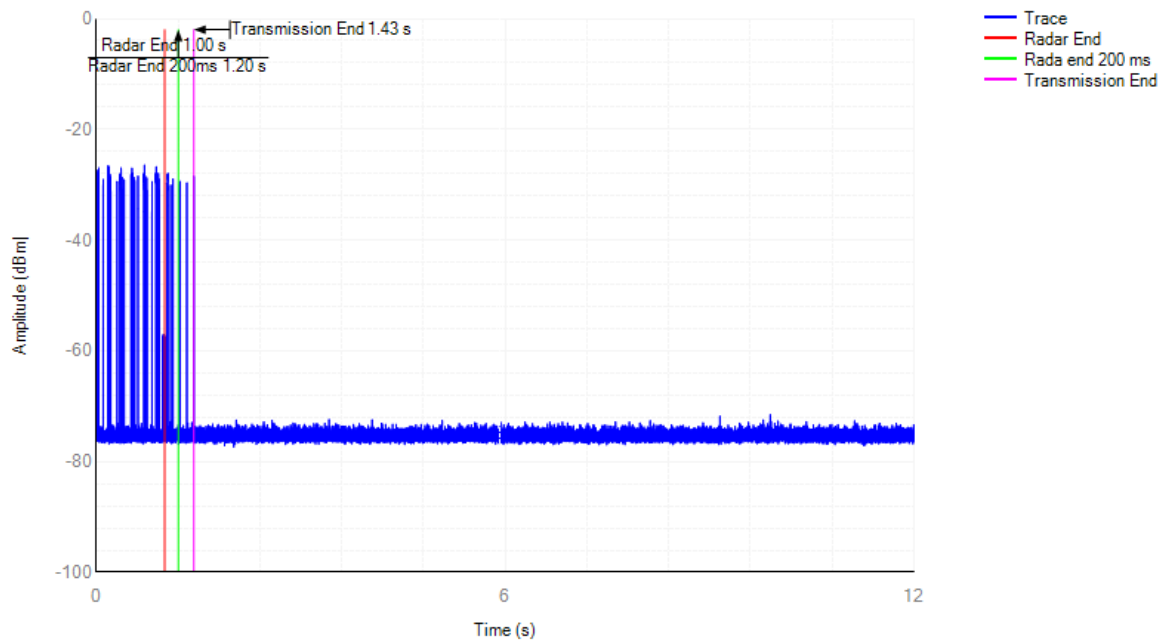
5510MHz n40 Shutdown

Channel Shutdown



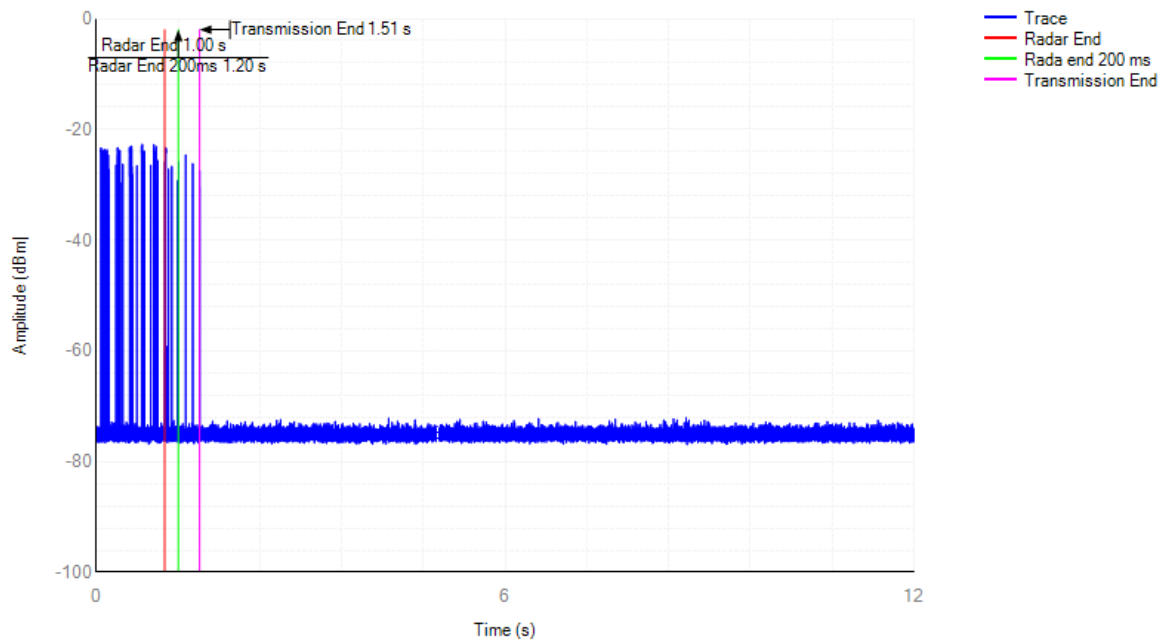
5320MHz a Shutdown

Channel Shutdown



5500MHz a Shutdown

Channel Shutdown



2.3 ANTENNA REQUIREMENT

2.3.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

2.3.2 EUT ANTENNA

The EUT antenna is permanent attached Ceramic Antenna. It comply with the standard requirement

END OF REPORT