TESTING LABORATORY
CERTIFICATE#4323.01

FCC PART 15.247

TEST REPORT

For

CHENGDU JOUAV DA PENG TECH CO., LTD

6A-7F, Jingrong Innovation Hub, No. 200 5th TianFu St., Hi-tech District, Chengdu, 610000
China

Tested Model: GCS-202
FCC ID: 2AVXCGCS-202

Report Type:	**Product Type:**
Original Report	Ground Control Station

Report Number:	RSHA200310003-00B
Report Date:	2020-07-06
Reviewed By:	Sula Huang
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant:	CHENGDU JOUAV DA PENG TECH CO., LTD
Tested Model:	GCS-202
Product Type:	Ground Control Station
Power Supply:	DC 12.6 V
RF Function:	2.4G Wi-Fi
Operating Band/Frequency:	2412~2462 MHz (802.11b/g/n20), 2422~2452 MHz (802.11n40)
Channel Number:	11 (802.11b/g/n20), 7 (802.11n40)
Channel Separation:	5 MHz
Modulation Type	DSSS, OFDM
Antenna Type:	Omni Antenna
Maximum Antenna Gain:	3.0 dBi

******All measurement and test data in this report was gathered from production sample serial number: 20200310003 (Assigned by the BACL). The EUT supplied by the applicant was received on 2020-03-10.*

Objective

This report is prepared on behalf of *CHENGDU JOUAV DA PENG TECH CO., LTD* in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commissions' rules.

The tests were performed in order to determine Compliant with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

Related Submittal(s)/Grant(s)

FCC Part 15.247 DSS submissions with FCC ID: 2AVXCGCS-202.
FCC Part 15.247 DSS submissions with FCC ID: 2AVXCCW-007.

Measurement Uncertainty

Item			Uncertainty
AC power line conducted emission			2.48 dB
Radiated Emission(Field Strength)	30MHz-200MHz	H	4.31 dB
		V	4.57 dB
	200MHz-1GHz	H	4.68 dB
		V	5.78 dB
	1GHz-6GHz		4.56 dB
	6GHz-18GHz		4.57 dB
	18GHz-40GHz		5.44 dB
RF output power, conducted			±0.65 dB
Occupied Bandwidth			±5 %
Power Spectrum Density, conducted			±2.5 dB
Humidity			±5 %
Temperature			±1 ℃
Voltage(DC)			±0.4 %
Voltage(AC,<10kHz)			±1 %
Time			±1 %

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the corresponding inclusion factor K when the inclusion probability is about 95%.

Test Methodology

All measurements contained in this report were conducted with:

1. ANSI C63.10-2013 American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

2. KDB558074 D01 DTS Meas Guidance v05r02.

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Chengdu) to collect test data is located No.5040, Huilongwan Plaza, No. 1, Shawan Road, Jinniu District, Chengdu, Sichuan, China.

Bay Area Compliance Laboratories Corp. (Chengdu) lab is accredited to ISO/IEC 17025 by A2LA (Lab code: 4324.01) and the FCC designation No. CN1186 under the FCC KDB 974614 D01. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured in testing mode, which was provided by manufacturer.

For 802.11b, 802.11g, and 802.11n-HT20 mode, 11 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437	-	-

EUT were tested with Channel 1, 6 and 11.

For 802.11n-HT40 mode, 7 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
3	2422	7	2442
4	2427	8	2447
5	2432	9	2452
6	2437	-	-

802.11n HT40 was tested with Channel 3, 6 and 9.

Equipment Modifications

No modification was made to the EUT tested.

EUT Exercise Software

The setting by the software built-in the device as following table:

Test Mode	Test Software Version	RT5350QA		
802.11b	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	1Mbps	1Mbps	1Mbps
	Power Level	15	15	15
802.11g	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	6Mbps	6Mbps	6Mbps
	Power Level	12	12	12
802.11n-HT20	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	MCS0	MCS0	MCS0
	Power Level	12	12	12
802.11n-HT40	Test Frequency	2422MHz	2437MHz	2452MHz
	Data Rate	MCS0	MCS0	MCS0
	Power Level	12	12	12

Support Equipment List and Details

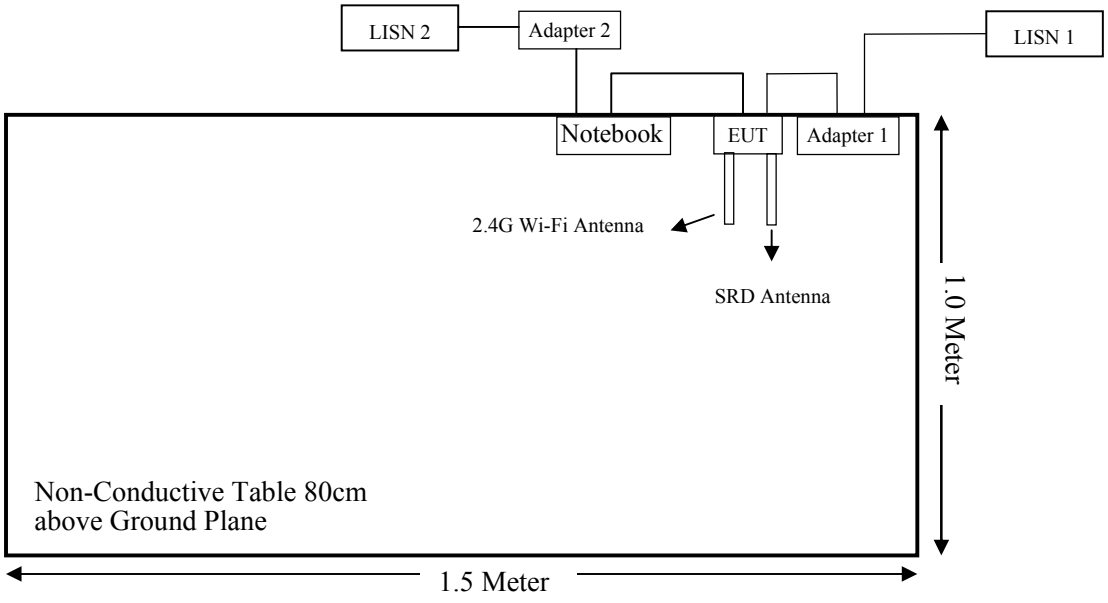
Manufacturer	Description	Model	Serial Number
JOUAV	2.4G Wi-Fi Antenna	/	/
JOUAV	SRD Antenna	/	/
Delippo	Adapter 1	B06120050	/
DELL	Notebook	E6410	3094742521
SHEN ZHEN TIANYIN ELECTRONICS CO.,LTD.	Adapter 2	SC24W-1202000U	/

External I/O Cable

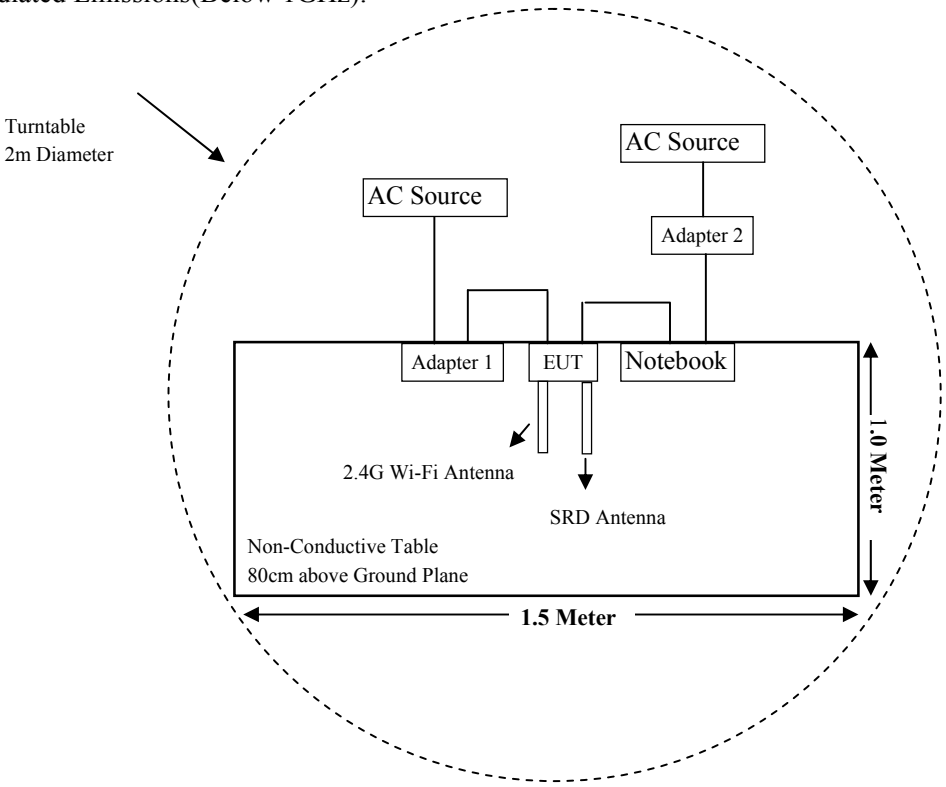
Cable Description	Length (m)	From Port	To
Cable	1.0	EUT	Adapter 1
Cable	1.5	EUT	Notebook
Cable	1.0	Notebook	Adapter 2
Cable	1.0	Adapter	LISN/AC Source

Block Diagram of Test Setup

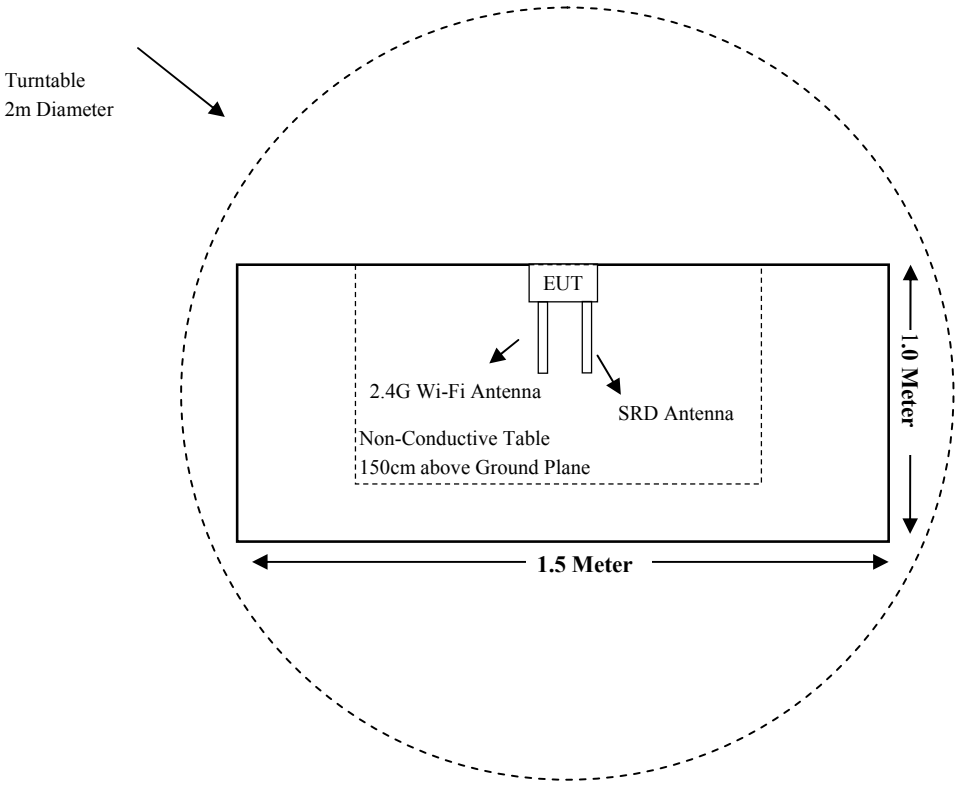
For Conducted Emissions:



For Radiated Emissions(Below 1GHz):



For Radiated Emissions(Above 1GHz):



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1310 & §2.1091	Maximum Permissible Exposure (MPE)	Compliant*
§15.203	Antenna Requirement	Compliant*
§15.207 (a)	AC Line Conducted Emissions	Compliant
§15.247(d)	Spurious Emissions at Antenna Port	Compliant*
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliant
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliant*
§15.247(b)(3)	Maximum Conducted Output Power	Compliant*
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliant*
§15.247(e)	Power Spectral Density	Compliant*

Compliant*: Refer to report No. RSHA200310003-00C.

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emission					
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2019-04-13	2020-04-12
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2020-04-13	2021-04-12
Rohde & Schwarz	L.I.S.N.	ENV216	3560.6550.16	2020-01-13	2021-01-12
EMCO	L.I.S.N.	3810/2BR	9509-1102	2020-02-24	2021-02-23
HP	RF Limiter	11947A	3107A01270	2019-10-18	2020-10-17
Micro-coax	Conducted Cable	L-E003	000003	2019-08-05	2020-08-04
Rohde & Schwarz	EMC32	EMC32	V 8.52.0	NCR	NCR
Radiated Emission					
EMCT	Semi-Anechoic Chamber	966	001	2017-05-18	2022-05-17
SONOMA INSTRUMENT	Amplifier	310 N	186684	2019-09-06	2020-09-05
SUNOL SCIENCES	Broadband Antenna	JB3	A121808	2019-12-10	2022-12-09
INMET	Attenuator	18N-6dB	N/A	2019-10-17	2020-10-16
Rohde & Schwarz	EMI Test Receiver	ESR3	102456	2020-04-13	2021-04-12
Rohde & Schwarz	Spectrum Analyzer	FSU26	200835	2020-04-13	2021-04-12
EMCO	Horn Antenna	3115	2192	2019-09-25	2021-09-24
Mini-circuits	Pre-Amplifier	ZVA-183-S+	771001215	2019-09-20	2020-09-19
EM Electronics	Pre-Amplifier	EM18G40	060725	2019-07-24	2020-07-23
A.H. Systems, Inc	Horn Antenna	SAS-574	510	2019-09-02	2021-09-01
MICRO-TRONICS	2.4GHz Notch Filter	BRM50702	G396	2020-02-22	2021-02-21
Unknown	RF Cable (Below 1GHz)	L-E005	000005	2019-09-06	2020-09-05
Unknown	RF Cable (Below 1GHz)	T-E128	000128	2019-10-17	2020-10-16
UTiFLEX	RF Cable (Below 1GHz)	T-E237	233522-001	2019-07-19	2020-07-18
Unknown	RF Cable (Above 1GHz)	T-E069	000069	2019-07-24	2020-07-23
UTiFLEX	RF Cable (Above 1GHz)	T-E222	2551/2	2019-07-24	2020-07-23
UTiFLEX	RF Cable (Above 1GHz)	T-E210	1042	2019-07-24	2020-07-23
Rohde & Schwarz	EMC32	EMC32	V9.10.00	NCR	NCR

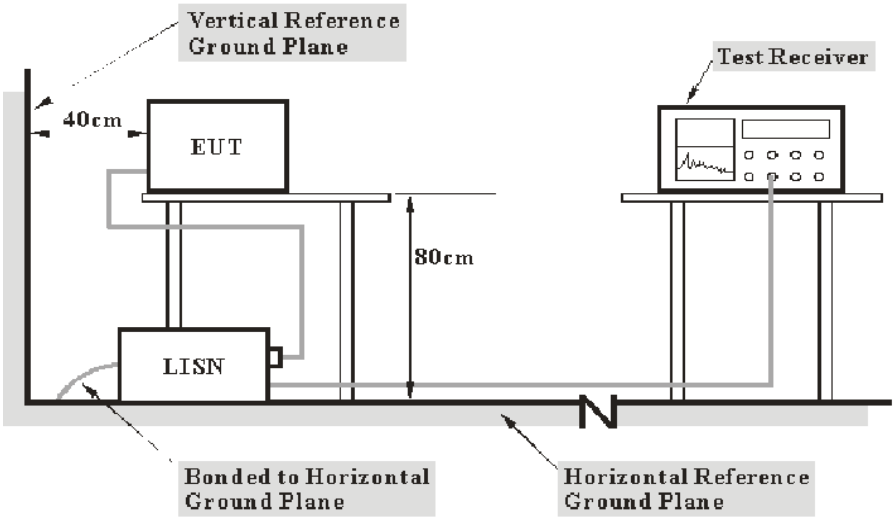
*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Chengdu) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §15.207 (a) - AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207

EUT Setup



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

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the first L.I.S.N.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Factor & Over Limit Calculation

The Corrected factor is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

Corrected Factor (dB) = LISN VDF (dB) + Cable Loss (dB) + Transient Limiter Attenuation (dB)

The "**Over Limit**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over Limit of 7 dB means the emission is 7 dB above the limit. The equation for Over Limit calculation is as follows:

Over Limit (dB) = Read level (dBμV) + Factor (dB) - Limit (dBμV)

Test Data

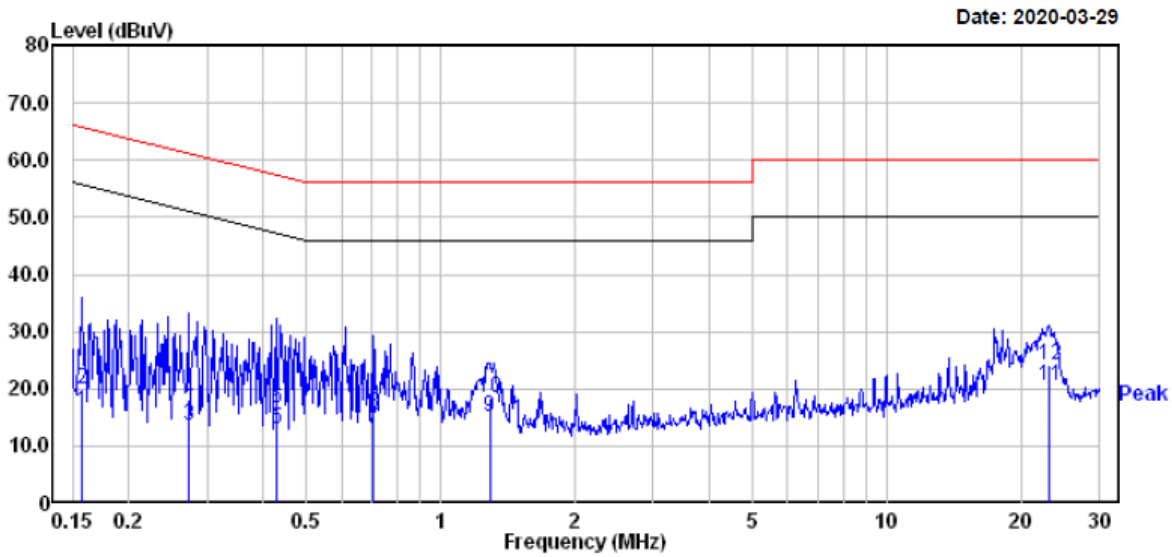
Environmental Conditions

Temperature:	20.2-25.5 ℃
Relative Humidity:	46-51 %
ATM Pressure:	101.3-102.3 kPa

The testing was performed by Winfred Wang from 2020-03-29 to 2020-07-03.

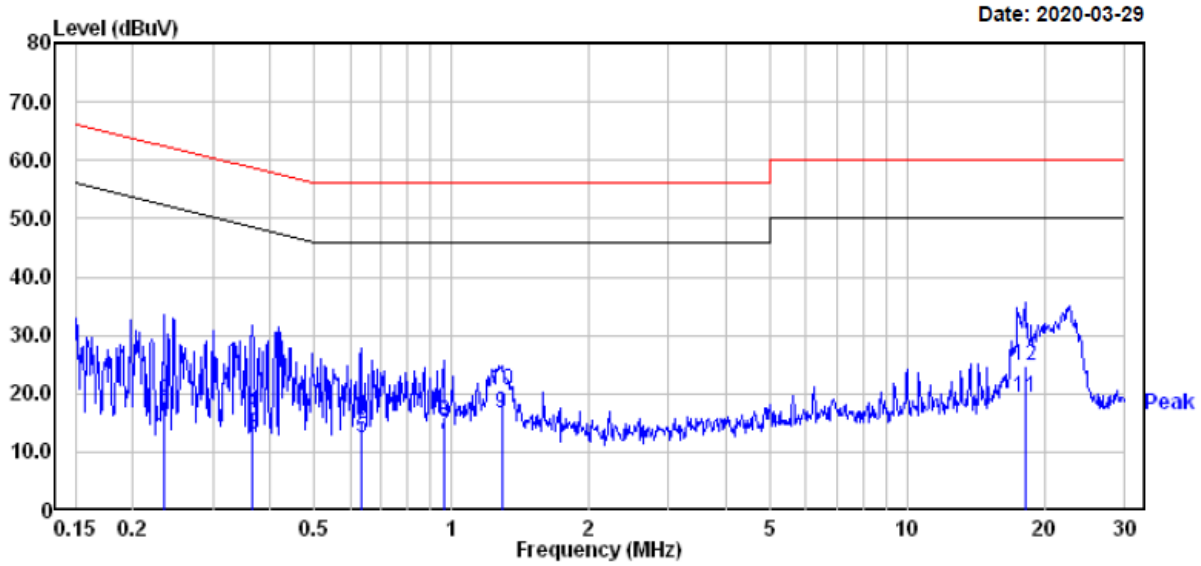
EUT operation mode: Transmitting in 802.11b mode low channel (worst case)

AC 120V/60 Hz, Line



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.157	-3.70	19.82	16.12	55.60	-39.48	Average
2	0.157	0.20	19.82	20.02	65.60	-45.58	QP
3	0.272	-6.20	19.82	13.62	51.07	-37.45	Average
4	0.272	-1.80	19.82	18.02	61.07	-43.05	QP
5	0.428	-6.90	19.75	12.85	47.29	-34.44	Average
6	0.428	-3.10	19.75	16.65	57.29	-40.64	QP
7	0.708	-6.70	19.75	13.05	46.00	-32.95	Average
8	0.708	-4.20	19.75	15.55	56.00	-40.45	QP
9	1.289	-4.60	19.82	15.22	46.00	-30.78	Average
10	1.289	-1.30	19.82	18.52	56.00	-37.48	QP
11	23.140	0.79	19.79	20.58	50.00	-29.42	Average
12	23.140	4.29	19.79	24.08	60.00	-35.92	QP

AC 120V/60 Hz, Neutral



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.235	-5.90	19.82	13.92	52.26	-38.34	Average
2	0.235	-1.10	19.82	18.72	62.26	-43.54	QP
3	0.367	-6.70	19.78	13.08	48.56	-35.48	Average
4	0.367	-3.30	19.78	16.48	58.56	-42.08	QP
5	0.634	-7.30	19.75	12.45	46.00	-33.55	Average
6	0.634	-4.50	19.75	15.25	56.00	-40.75	QP
7	0.963	-6.80	19.79	12.99	46.00	-33.01	Average
8	0.963	-4.80	19.79	14.99	56.00	-41.01	QP
9	1.289	-3.20	19.82	16.62	46.00	-29.38	Average
10	1.289	0.80	19.82	20.62	56.00	-35.38	QP
11	18.135	-0.40	19.84	19.44	50.00	-30.56	Average
12	18.135	4.80	19.84	24.64	60.00	-35.36	QP

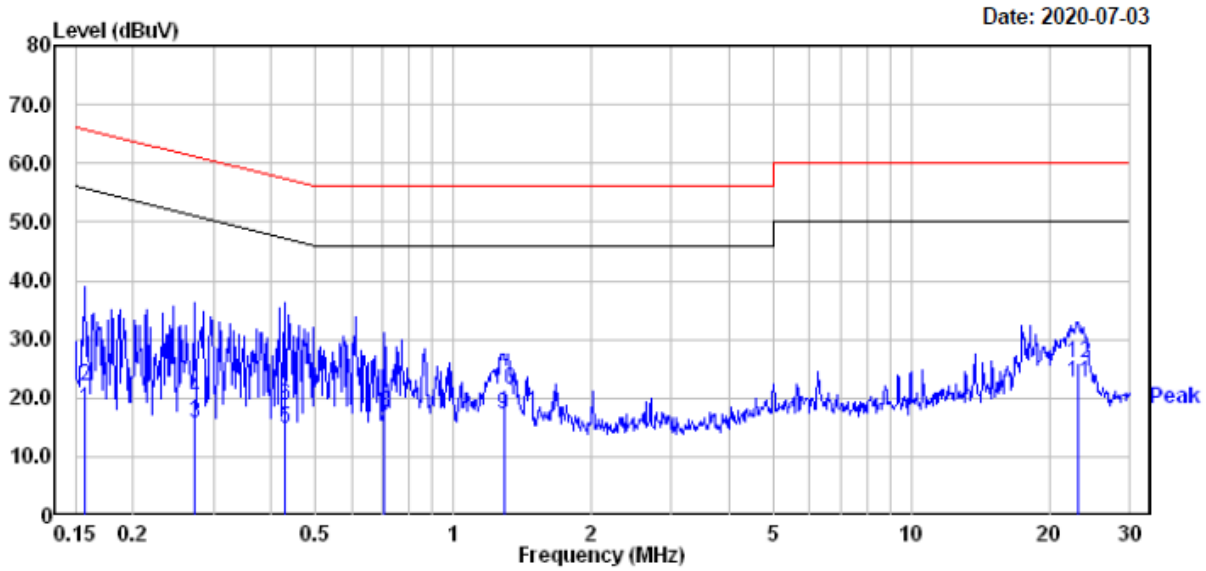
Note:

1) Factor (dB) = LISN VDF (dB) + Cable Loss (dB) + Transient Limiter Attenuation (dB)
2) Over Limit (dB) = Read level (dBµV) + Factor (dB) - Limit (dBµV)

Transmitting simultaneously test:

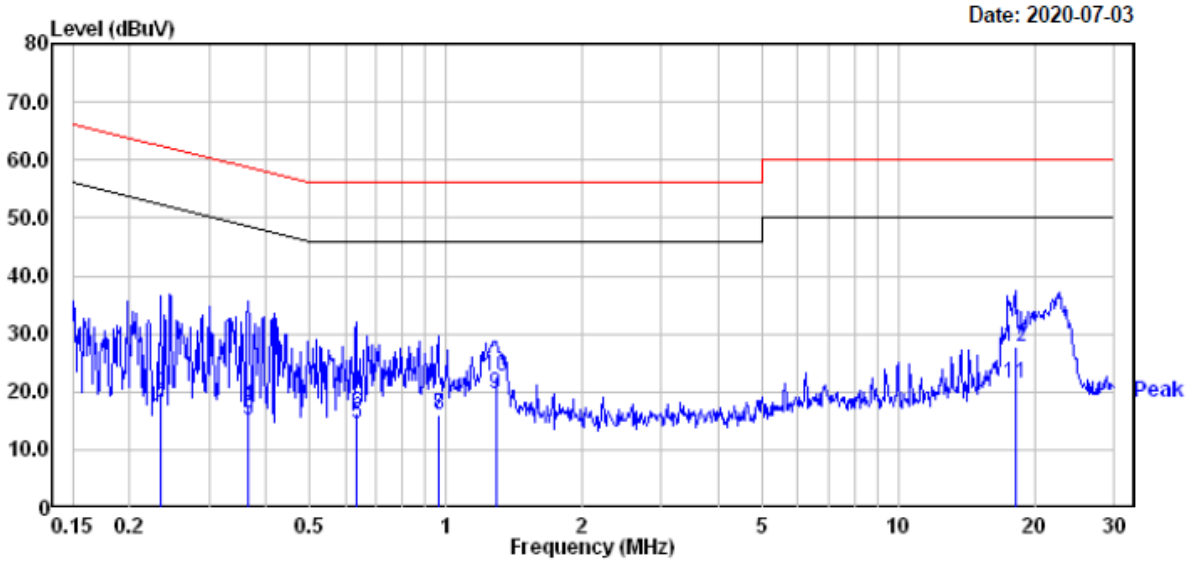
*(The worst case **Wi-Fi 802.11b mode low channel & SRD mode high channel** transmitting simultaneously was recorded)*

AC 120V/60 Hz, Line



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.157	-1.70	19.82	18.12	55.60	-37.48	Average
2	0.157	2.20	19.82	22.02	65.60	-43.58	QP
3	0.272	-4.20	19.82	15.62	51.07	-35.45	Average
4	0.272	0.20	19.82	20.02	61.07	-41.05	QP
5	0.428	-4.90	19.75	14.85	47.29	-32.44	Average
6	0.428	-1.10	19.75	18.65	57.29	-38.64	QP
7	0.708	-4.70	19.75	15.05	46.00	-30.95	Average
8	0.708	-2.20	19.75	17.55	56.00	-38.45	QP
9	1.289	-2.60	19.82	17.22	46.00	-28.78	Average
10	1.289	1.70	19.82	21.52	56.00	-34.48	QP
11	23.140	2.79	19.79	22.58	50.00	-27.42	Average
12	23.140	6.29	19.79	26.08	60.00	-33.92	QP

AC 120V/60 Hz, Neutral



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.235	-3.90	19.82	15.92	52.26	-36.34	Average
2	0.235	-0.10	19.82	19.72	62.26	-42.54	QP
3	0.367	-4.70	19.78	15.08	48.56	-33.48	Average
4	0.367	-2.30	19.78	17.48	58.56	-41.08	QP
5	0.634	-5.30	19.75	14.45	46.00	-31.55	Average
6	0.634	-3.50	19.75	16.25	56.00	-39.75	QP
7	0.963	-3.80	19.79	15.99	46.00	-30.01	Average
8	0.963	-3.80	19.79	15.99	56.00	-40.01	QP
9	1.289	-0.20	19.82	19.62	46.00	-26.38	Average
10	1.289	2.80	19.82	22.62	56.00	-33.38	QP
11	18.135	1.60	19.84	21.44	50.00	-28.56	Average
12	18.135	7.80	19.84	27.64	60.00	-32.36	QP

Note:
1) Factor (dB) = LISN VDF (dB) + Cable Loss (dB) + Transient Limiter Attenuation (dB)
2) Over Limit (dB) = Read level (dBµV) + Factor (dB) - Limit (dBµV)

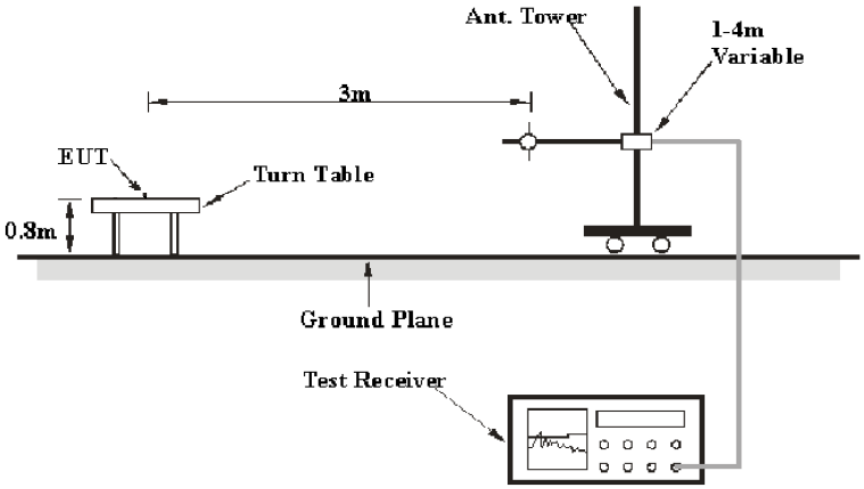
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

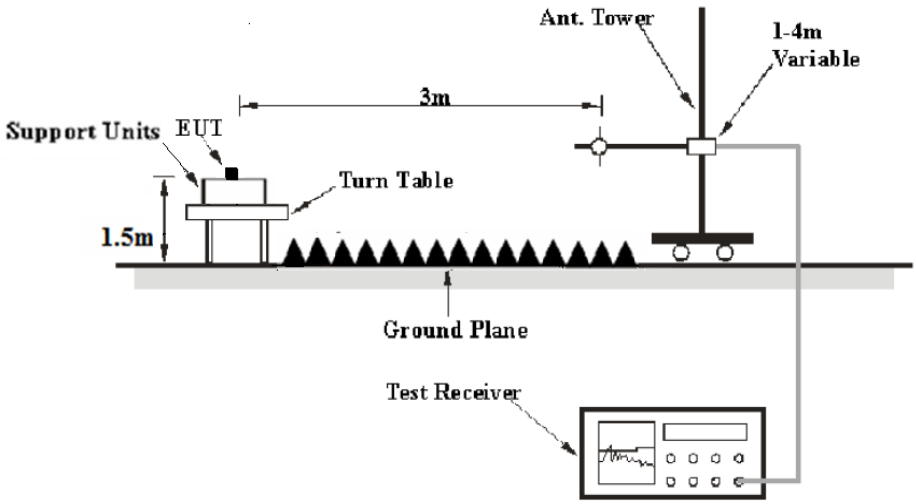
FCC §15.247 (d); §15.209; §15.205;

EUT Setup

Below 1 GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.247 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver Setup was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	3 MHz	/	AV

If the maximized peak measured value complies with under the QP/Average limit more than 6dB, then it is unnecessary to perform an QP/Average measurement.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1 GHz, peak and Average detection modes for frequencies above 1 GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude (dBμV /m) = Meter Reading (dBμV) + Antenna Factor (dB/m) + Cable Loss (dB) - Amplifier Gain (dB)

The "**Margin**" column of the following data tables indicates the degree of Compliant with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin (dB) = Limit (dBμV/m) – Corrected Amplitude (dBμV /m)

Test Data

Environmental Conditions

Temperature:	21.6~25.5 ℃
Relative Humidity:	48~51 %
ATM Pressure:	101.1~101.2 kPa

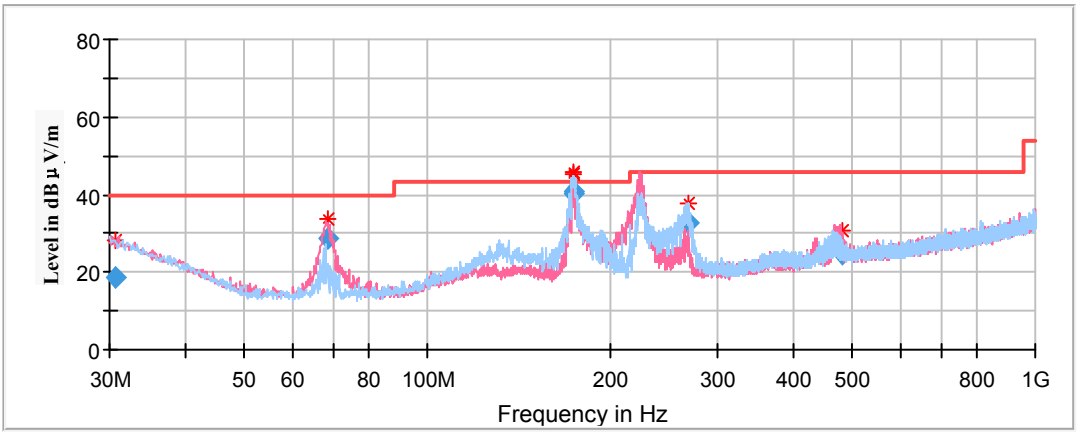
The testing was performed by Winfred Wang from 2020-05-31 to 2020-07-03.

EUT operation mode: Transmitting

Spurious Emission Test:

30MHz-1GHz:

Pre-scan with 802.11b, 802.11g, 802.11n-HT20 and 802.11n-HT40 modes of operation in the X,Y and Z axes of orientation, the worst case ***low channel of 802.11b mode in Z-axis of orientation*** *was recorded*



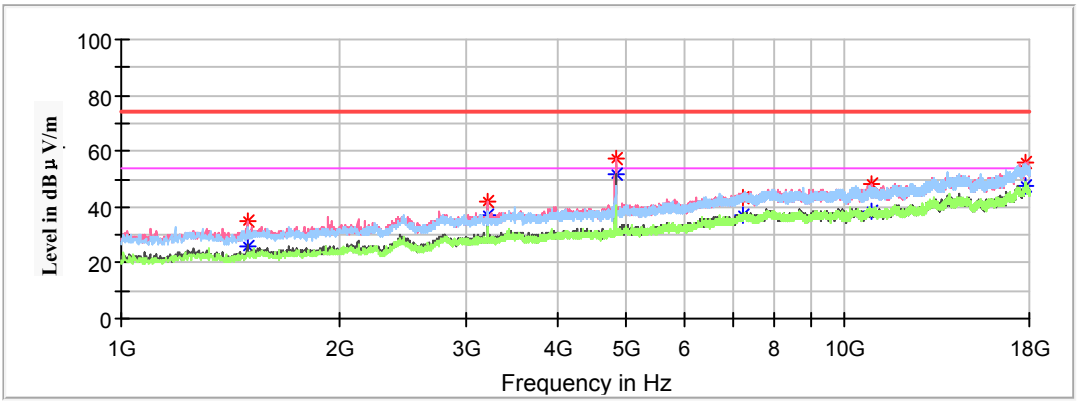
Frequency (MHz)	Corrected Amplitude QuasiPeak (dBµV/m)	Rx Antenna Height (cm)	Rx Antenna Polar (H/V)	Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
30.68	18.69	200	H	67	-4.4	40.00	21.31
68.45	28.88	200	V	173	-17.4	40.00	11.12
173.50	40.45	200	H	352	-13.3	43.50	3.05
174.36	40.59	100	H	203	-13.4	43.50	2.91
268.29	32.76	100	H	172	-11.5	46.00	13.24
479.83	24.67	200	V	43	-6.7	46.00	21.33

1GHz-18GHz:

802.11b Mode:
*(Pre-scan in the X,Y and Z axes of orientation, the worst case **Z-axis of orientation** was recorded)*

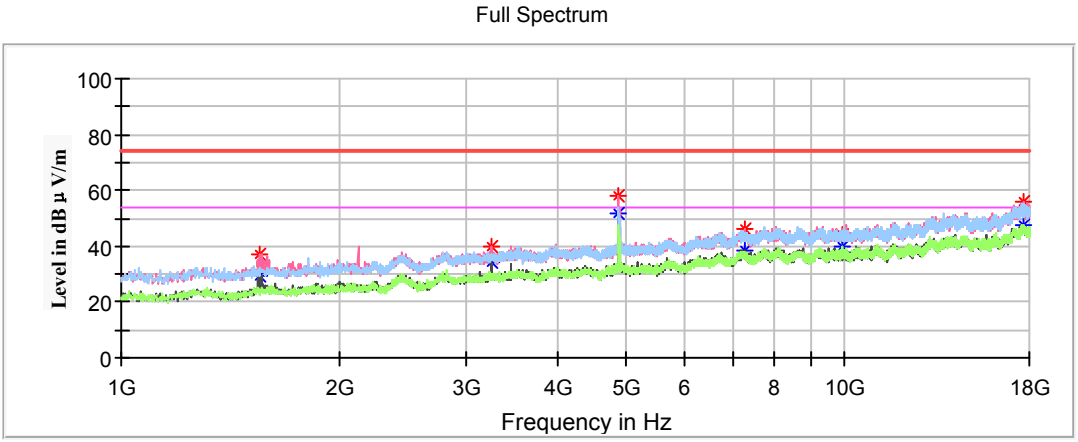
Note:
1. This test was performed with the 2.4-2.5GHz notch filter.
2. Corrected Factor (dB/m) = Antenna factor (RX) (dB/m) + Cable Loss (dB) – Amplifier Factor (dB)
   Corrected Amplitude (dBµV/m) = Corrected Factor (dB/m) + Reading (dBµV)
   Margin (dB) = Limit (dBµV/m) – Corrected Amplitude (dBµV/m)

Low Channel: 2412MHz



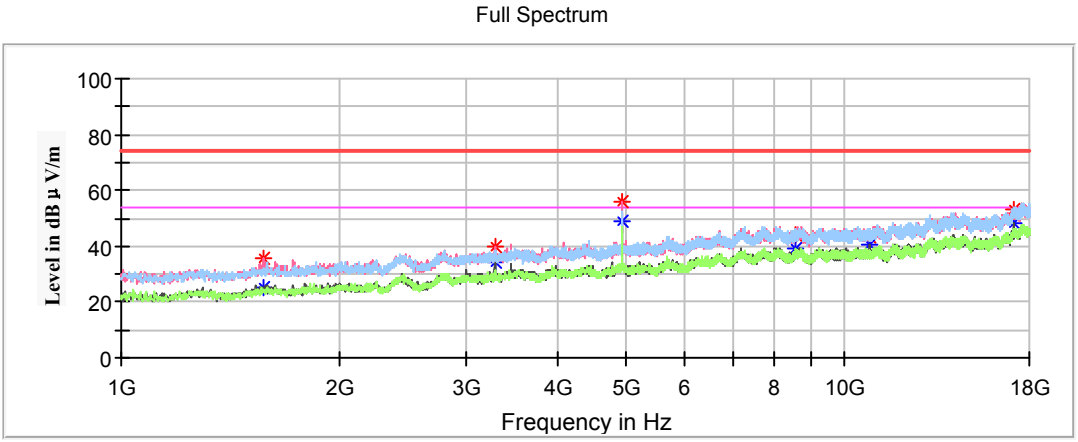
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1493.00	---	26.18	150	V	155	-16.4	54.00	27.82
1493.00	34.84	---	150	V	155	-16.4	74.00	39.16
3215.10	---	36.88	200	V	256	-9.5	54.00	17.12
3215.10	42.19	---	200	V	256	-9.5	74.00	31.81
4824.00	---	50.80	200	H	286	-5.5	54.00	3.20
4824.00	57.38	---	200	H	286	-5.5	74.00	16.62
7236.00	---	37.18	200	H	1	0.5	54.00	16.82
7236.00	43.63	---	200	H	1	0.5	74.00	30.37
10924.60	---	38.58	150	V	95	2.8	54.00	15.42
10924.60	47.98	---	150	V	95	2.8	74.00	26.02
17768.80	---	47.21	150	V	9	8.8	54.00	6.79
17768.80	55.97	---	150	V	9	8.8	74.00	18.03

Middle Channel: 2437MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1554.20	---	29.18	150	V	213	-16.2	54.00	24.82
1554.20	36.87	---	150	V	213	-16.2	74.00	37.13
3249.10	---	34.41	200	H	300	-9.5	54.00	19.59
3249.10	40.16	---	200	H	300	-9.5	74.00	33.84
4874.00	---	50.97	150	V	300	-5.4	54.00	3.03
4874.00	58.18	---	150	V	300	-5.4	74.00	15.82
7311.00	---	38.22	200	V	183	0.6	54.00	15.78
7311.00	46.11	---	200	V	183	0.6	74.00	27.89
9942.00	---	39.64	150	H	6	1.9	54.00	14.36
9942.00	43.89	---	150	H	6	1.9	74.00	30.11
17646.40	---	47.40	150	V	169	8.9	54.00	6.60
17646.40	56.27	---	150	V	169	8.9	74.00	17.73

High Channel: 2462MHz

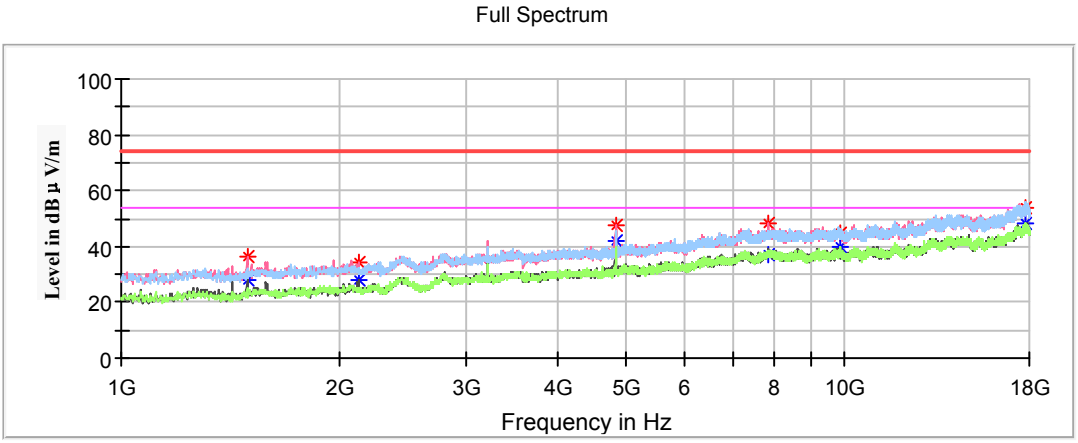


Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1571.20	---	25.01	150	V	0	-16.1	54.00	28.99
1571.20	35.60	---	150	V	0	-16.1	74.00	38.40
3281.40	---	34.00	200	V	200	-9.4	54.00	20.00
3281.40	40.03	---	200	V	200	-9.4	74.00	33.97
4924.00	---	48.86	150	V	323	-5.3	54.00	5.14
4924.00	55.82	---	150	V	323	-5.3	74.00	18.18
8576.90	---	39.35	200	H	184	1.4	54.00	14.65
8576.90	44.31	---	200	H	184	1.4	74.00	29.69
10800.50	---	40.36	150	V	0	2.7	54.00	13.64
10800.50	43.63	---	150	V	0	2.7	74.00	30.37
17173.80	---	48.06	150	V	8	7.8	54.00	5.94
17173.80	53.46	---	150	V	8	7.8	74.00	20.54

802.11g Mode:
*(Pre-scan in the X,Y and Z axes of orientation, the worst case **Z-axis of orientation** was recorded)*

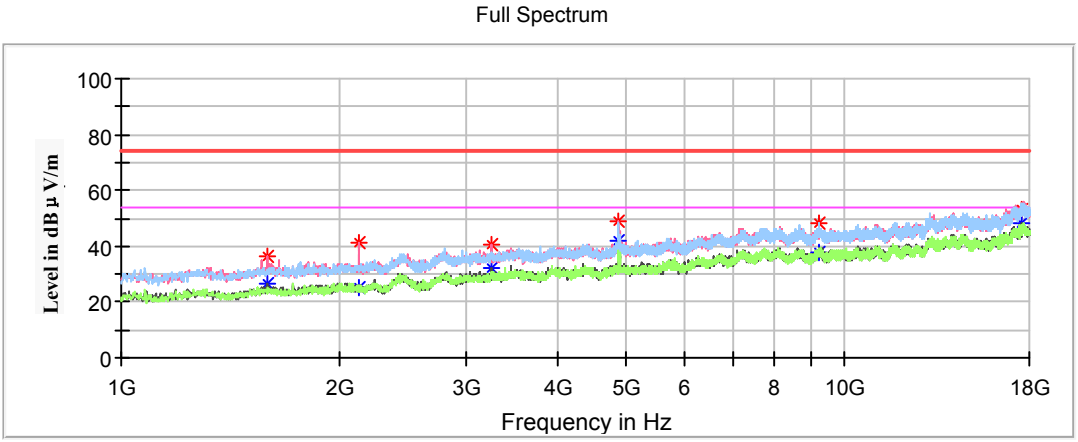
Note:
1. This test was performed with the 2.4-2.5GHz notch filter.
2. Corrected Factor (dB/m) = Antenna factor (RX) (dB/m) + Cable Loss (dB) – Amplifier Factor (dB)
   Corrected Amplitude (dBµV/m) = Corrected Factor (dB/m) + Reading (dBµV)
   Margin (dB) = Limit (dBµV/m) – Corrected Amplitude (dBµV/m)

Low Channel: 2412MHz



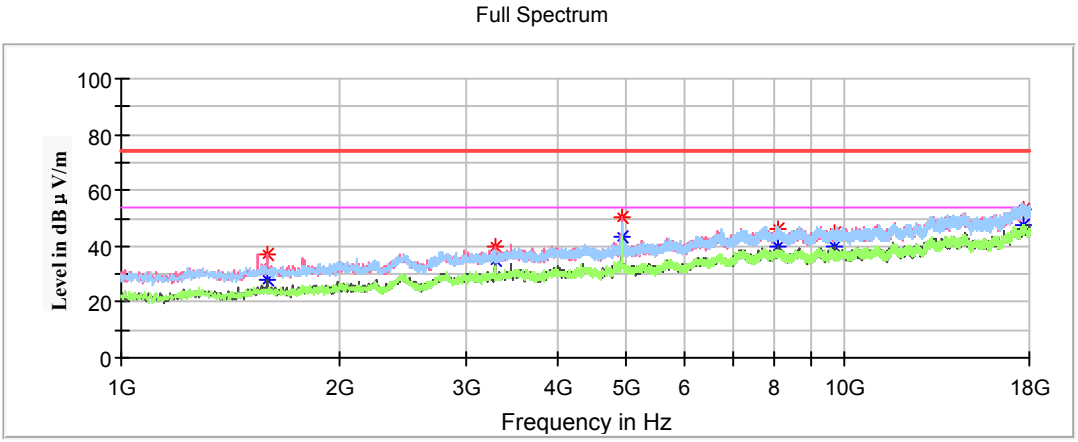
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1493.00	---	28.07	200	V	219	-16.4	54.00	25.93
1493.00	36.21	---	200	V	219	-16.4	74.00	37.79
2127.10	---	27.85	200	H	219	-13.9	54.00	26.15
2127.10	34.54	---	200	H	219	-13.9	74.00	39.46
4824.00	---	41.84	150	V	256	-5.5	54.00	12.16
4824.00	47.90	---	150	V	256	-5.5	74.00	26.10
7854.40	---	37.18	200	V	0	1.6	54.00	16.82
7854.40	48.02	---	200	V	0	1.6	74.00	25.98
9857.00	---	39.81	200	V	357	2.0	54.00	14.19
9857.00	44.52	---	200	V	357	2.0	74.00	29.48
17799.40	---	48.37	200	H	209	8.8	54.00	5.63
17799.40	54.10	---	200	H	209	8.8	74.00	19.90

Middle Channel: 2437MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1591.60	---	26.25	150	H	250	-16.0	54.00	27.75
1591.60	36.29	---	150	H	250	-16.0	74.00	37.71
2130.50	---	25.18	200	V	205	-13.9	54.00	28.82
2130.50	41.07	---	200	V	205	-13.9	74.00	32.93
3249.10	---	32.14	150	H	235	-9.5	54.00	21.86
3249.10	40.30	---	150	H	235	-9.5	74.00	33.70
4874.00	---	41.68	200	V	312	-5.4	54.00	12.32
4874.00	49.16	---	200	V	312	-5.4	74.00	24.84
9226.30	---	37.64	150	H	296	2.0	54.00	16.36
9226.30	48.29	---	150	H	296	2.0	74.00	25.71
17568.20	---	48.00	150	V	156	8.9	54.00	6.00
17568.20	52.82	---	150	V	156	8.9	74.00	21.18

High Channel: 2462MHz

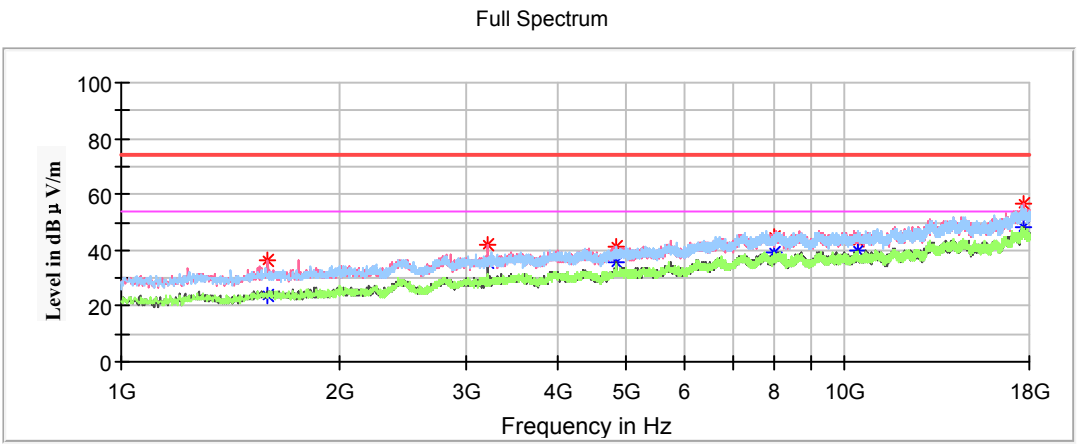


Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1591.60	---	27.70	200	V	244	-16.0	54.00	26.30
1591.60	37.04	---	200	V	244	-16.0	74.00	36.96
3281.40	---	35.27	150	H	306	-9.4	54.00	18.73
3281.40	39.61	---	150	H	306	-9.4	74.00	34.39
4924.00	---	43.70	200	V	322	-5.3	54.00	10.30
4924.00	50.55	---	200	V	322	-5.3	74.00	23.45
8070.30	---	39.61	150	V	82	1.7	54.00	14.39
8070.30	46.15	---	150	V	82	1.7	74.00	27.85
9707.40	---	40.02	100	V	306	2.0	54.00	13.98
9707.40	44.73	---	100	V	306	2.0	74.00	29.27
17683.80	---	47.73	150	H	304	8.9	54.00	6.27
17683.80	53.04	---	150	H	304	8.9	74.00	20.96

802.11n-HT20 Mode:
*(Pre-scan in the X,Y and Z axes of orientation, the worst case **Z-axis of orientation** was recorded)*

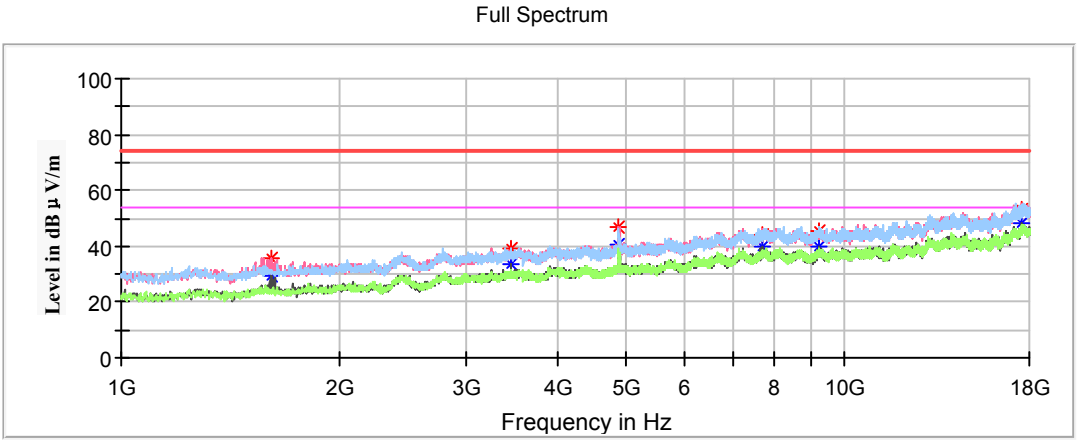
Note:
1. This test was performed with the 2.4-2.5GHz notch filter.
2. Corrected Factor (dB/m) = Antenna factor (RX) (dB/m) + Cable Loss (dB) – Amplifier Factor (dB)
   Corrected Amplitude (dBµV/m) = Corrected Factor (dB/m) + Reading (dBµV)
   Margin (dB) = Limit (dBµV/m) – Corrected Amplitude (dBµV/m)

Low Channel : 2412MHz



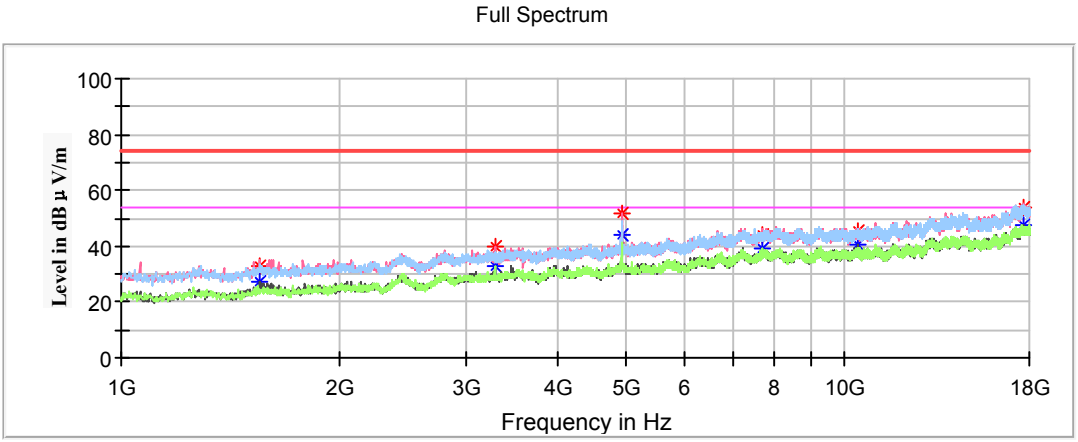
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1596.70	---	24.03	150	V	250	-16.0	54.00	29.97
1596.70	36.56	---	150	V	250	-16.0	74.00	37.44
3215.10	---	35.84	200	H	297	-9.5	54.00	18.16
3215.10	42.22	---	200	H	297	-9.5	74.00	31.78
4824.00	---	35.99	150	V	312	-5.5	54.00	18.01
4824.00	41.52	---	150	V	312	-5.5	74.00	32.48
8010.80	---	38.92	200	H	199	1.8	54.00	15.08
8010.80	44.45	---	200	H	199	1.8	74.00	29.55
10457.10	---	39.64	150	V	88	2.3	54.00	14.36
10457.10	43.46	---	150	V	88	2.3	74.00	30.54
17668.50	---	48.12	150	V	7	8.9	54.00	5.88
17668.50	56.53	---	150	V	7	8.9	74.00	17.47

Middle Channel: 2437MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1613.70	---	29.14	200	V	249	-15.9	54.00	24.86
1613.70	35.96	---	200	V	249	-15.9	74.00	38.04
3454.80	---	33.66	150	H	296	-8.9	54.00	20.34
3454.80	39.04	---	150	H	296	-8.9	74.00	34.96
4874.00	---	40.91	200	H	312	-5.4	54.00	13.09
4874.00	46.80	---	200	H	312	-5.4	74.00	27.20
7718.40	---	39.95	150	V	87	1.4	54.00	14.05
7718.40	44.18	---	150	V	87	1.4	74.00	29.82
9234.80	---	39.93	150	V	29	2.0	54.00	14.07
9234.80	45.75	---	150	V	29	2.0	74.00	28.25
17568.20	---	47.93	150	H	0	8.9	54.00	6.07
17568.20	53.21	---	150	H	0	8.9	74.00	20.79

High Channel : 2462MHz

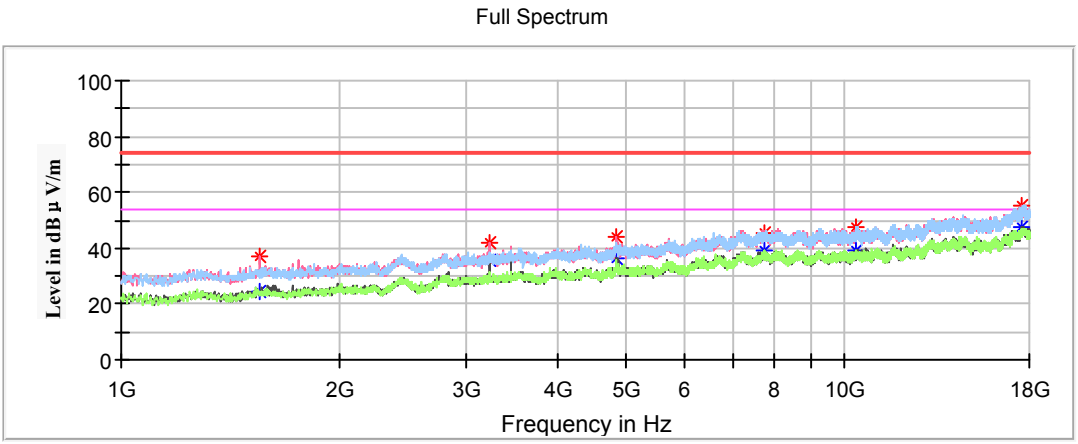


Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1550.80	---	27.15	200	H	220	-16.2	54.00	26.85
1550.80	32.90	---	200	H	220	-16.2	74.00	41.10
3281.40	---	33.18	150	V	235	-9.4	54.00	20.82
3281.40	40.03	---	150	V	235	-9.4	74.00	33.97
4924.00	---	43.84	200	V	313	-5.3	54.00	10.16
4924.00	51.68	---	200	V	313	-5.3	74.00	22.32
7711.60	---	39.48	150	H	264	1.4	54.00	14.52
7711.60	43.96	---	150	H	264	1.4	74.00	30.04
10450.30	---	40.71	150	V	4	2.3	54.00	13.29
10450.30	45.40	---	150	V	4	2.3	74.00	28.60
17665.10	---	47.74	150	V	112	8.9	54.00	6.26
17665.10	54.09	---	150	V	112	8.9	74.00	19.91

802.11n-HT40 Mode:
*(Pre-scan in the X,Y and Z axes of orientation, the worst case **Z-axis of orientation** was recorded)*

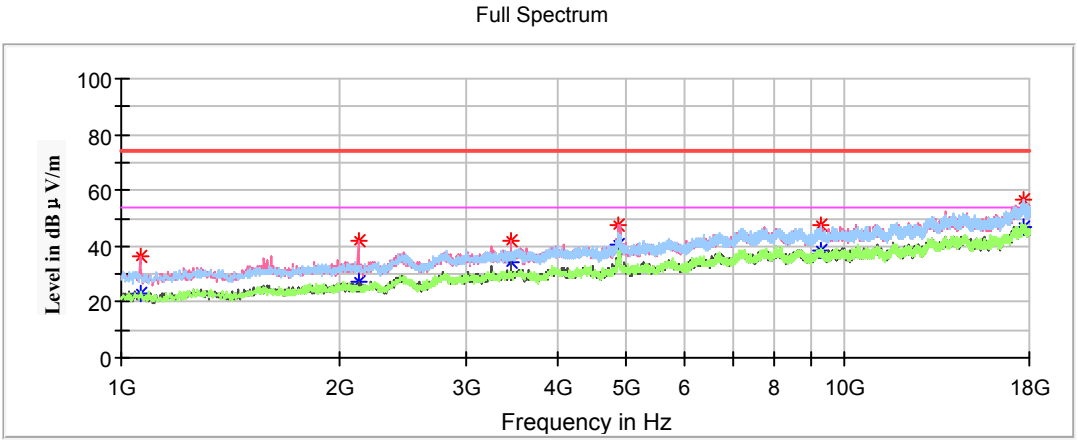
Note:
1. This test was performed with the 2.4-2.5GHz notch filter.
2. Corrected Factor (dB/m) = Antenna factor (RX) (dB/m) + Cable Loss (dB) – Amplifier Factor (dB)
   Corrected Amplitude (dBµV/m) = Corrected Factor (dB/m) + Reading (dBµV)
   Margin (dB) = Limit (dBµV/m) – Corrected Amplitude (dBµV/m)

Low Channel : 2422MHz



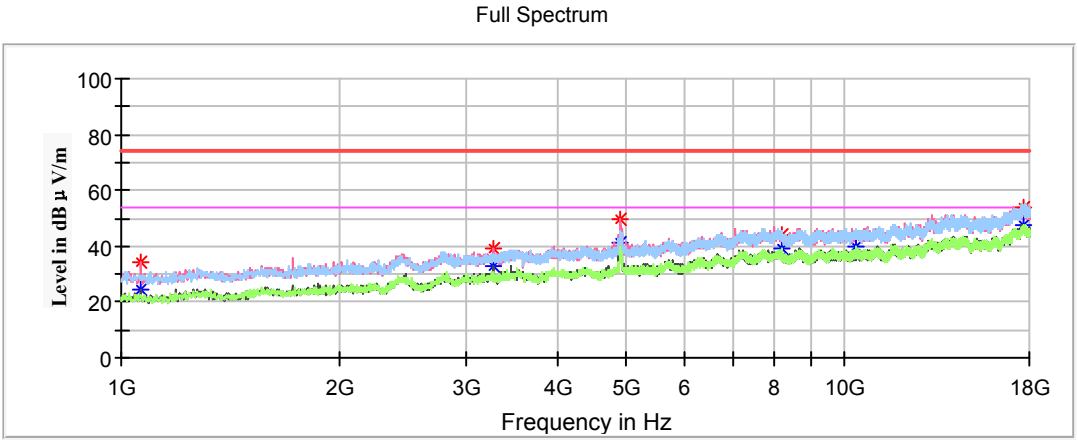
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1554.20	---	24.22	150	V	266	-16.2	54.00	29.78
1554.20	36.86	---	150	V	266	-16.2	74.00	37.14
3228.70	---	35.46	200	V	298	-9.5	54.00	18.54
3228.70	41.86	---	200	V	298	-9.5	74.00	32.14
4844.00	---	36.31	150	V	313	-5.5	54.00	17.69
4844.00	44.18	---	150	V	313	-5.5	74.00	29.82
7742.20	---	39.23	200	H	292	1.4	54.00	14.77
7742.20	45.24	---	200	H	292	1.4	74.00	28.76
10350.00	---	39.37	150	H	249	2.2	54.00	14.63
10350.00	47.22	---	150	H	249	2.2	74.00	26.78
17568.20	---	47.62	150	V	220	8.9	54.00	6.38
17568.20	55.46	---	150	V	220	8.9	74.00	18.54

Middle Channel: 2437MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1061.20	---	22.75	150	H	275	-18.7	54.00	31.25
1061.20	36.34	---	150	H	275	-18.7	74.00	37.66
2125.40	---	27.20	200	V	214	-14.0	54.00	26.80
2125.40	41.76	---	200	V	214	-14.0	74.00	32.24
3454.80	---	34.30	150	V	296	-8.9	54.00	19.70
3454.80	41.86	---	150	V	296	-8.9	74.00	32.14
4874.00	---	40.79	150	V	312	-5.4	54.00	13.21
4874.00	47.25	---	150	V	312	-5.4	74.00	26.75
9292.60	---	38.44	150	V	312	2.0	54.00	15.56
9292.60	47.58	---	150	V	312	2.0	74.00	26.42
17653.20	---	46.72	200	H	0	8.9	54.00	7.28
17653.20	56.92	---	200	H	0	8.9	74.00	17.08

High Channel : 2452MHz

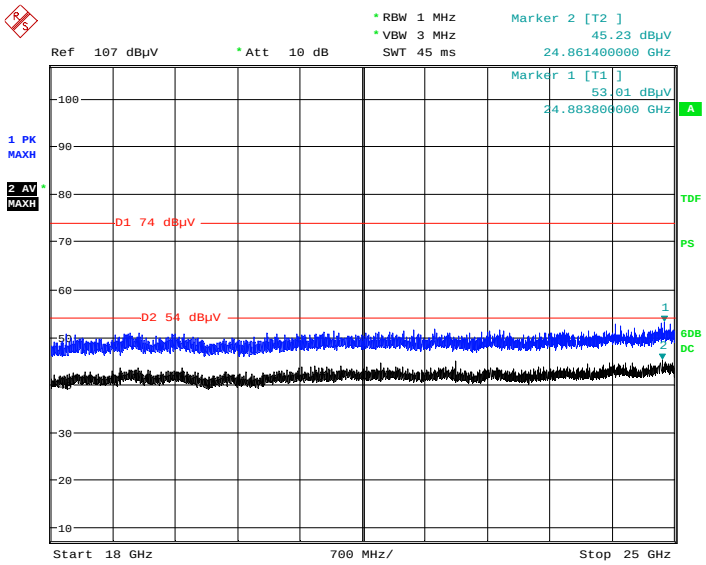


Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1062.90	---	24.29	150	V	267	-18.7	54.00	29.71
1062.90	34.02	---	150	V	267	-18.7	74.00	39.98
3267.80	---	33.11	200	V	298	-9.4	54.00	20.89
3267.80	39.31	---	200	V	298	-9.4	74.00	34.69
4904.00	---	41.38	150	V	314	-5.3	54.00	12.62
4904.00	49.93	---	150	V	314	-5.3	74.00	24.07
8199.50	---	39.02	200	H	0	1.6	54.00	14.98
8199.50	44.17	---	200	H	0	1.6	74.00	29.83
10334.70	---	39.56	150	V	308	2.2	54.00	14.44
10334.70	43.36	---	150	V	308	2.2	74.00	30.64
17619.20	---	47.59	150	H	33	8.9	54.00	6.41
17619.20	53.92	---	150	H	33	8.9	74.00	20.08

18GHz-25GHz:

Pre-scan with 802.11b, 802.11g, 802.11n-HT20 and 802.11n-HT40 modes of operation in the X,Y and Z axes of orientation, the worst case ***low channel of 802.11b mode in Z-axis of orientation*** *was recorded*

Vertical



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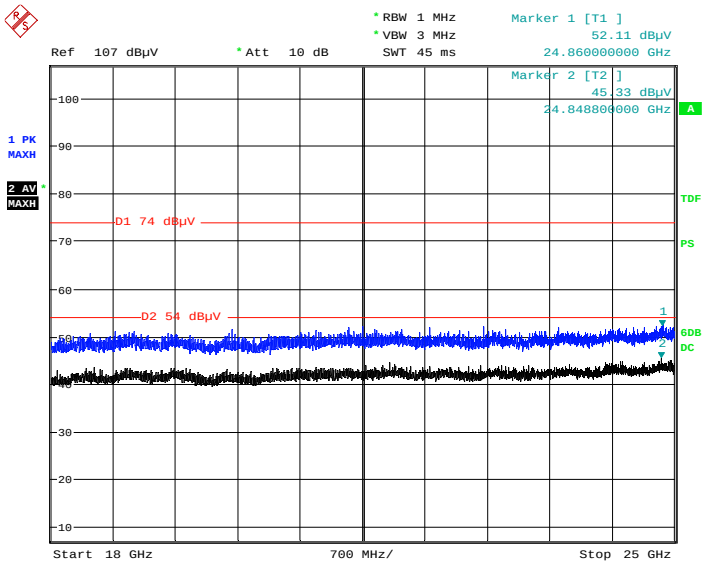
Horizontal



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Restricted Bands Emissions Test:

Note:
Corrected Factor (dB/m) = Antenna factor (RX) (dB/m) + Cable Loss (dB)
Corrected Amplitude (dBμV/m) = Corrected Factor (dB/m) + Reading (dBμV)
Margin (dB) = Limit (dBμV/m) – Corrected Amplitude (dBμV/m)

802.11b Mode: *(Pre-scan in the X, Y and Z axes of orientation, the worst case Z-axis of orientation was recorded)*

Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
Low Channel: 2412MHz								
2390.00	---	38.47	150	H	163	-2.9	54.00	15.53
2390.00	45.45	---	150	H	163	-2.9	74.00	28.55
High Channel: 2462MHz								
2483.50	---	39.89	200	H	190	-2.5	54.00	14.11
2483.50	46.41	---	200	H	190	-2.5	74.00	27.59

802.11g Mode: *(Pre-scan in the X,Y and Z axes of orientation, the worst case Z-axis of orientation was recorded)*

Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
Low Channel: 2412MHz								
2390.00	---	42.95	150	H	186	-2.9	54.00	11.05
2390.00	53.96	---	150	H	186	-2.9	74.00	20.04
High Channel: 2462MHz								
2483.50	---	38.48	200	H	193	-2.5	54.00	15.52
2483.50	48.36	---	200	H	193	-2.5	74.00	25.64

802.11n-HT20 Mode: *(Pre-scan in the X,Y and Z axes of orientation, the worst case Z-axis of orientation was recorded)*

Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
Low Channel: 2412MHz								
2390.00	---	46.23	150	H	185	-2.9	54.00	7.77
2390.00	57.72	---	150	H	185	-2.9	74.00	16.28
High Channel: 2462MHz								
2483.50	---	41.81	200	H	88	-2.5	54.00	12.19
2483.50	49.79	---	200	H	88	-2.5	74.00	24.21

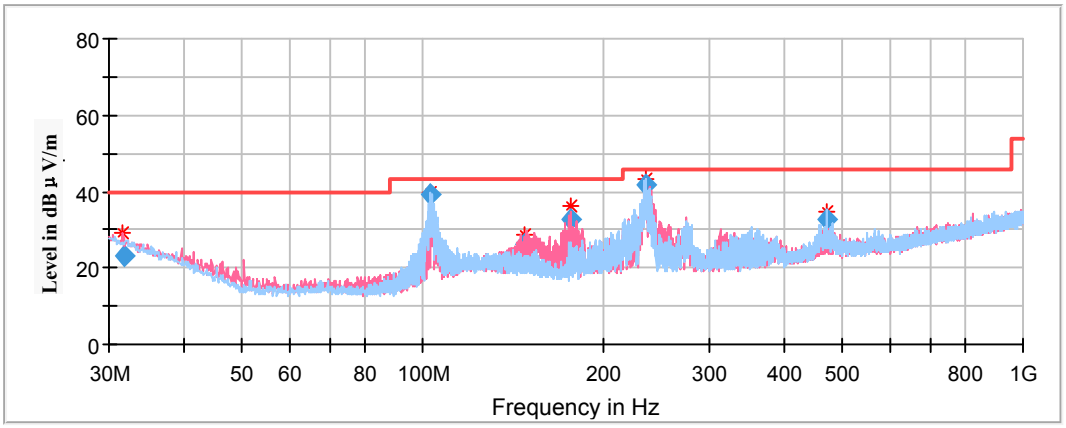
802.11n-HT40 Mode: *(Pre-scan in the X,Y and Z axes of orientation, the worst case Z-axis of orientation was recorded)*

Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
Low Channel: 2422MHz								
2390.00	---	49.12	150	H	194	-2.9	54.00	4.88
2390.00	57.74	---	150	H	194	-2.9	74.00	16.26
High Channel: 2452MHz								
2483.50	---	42.00	150	H	91	-2.5	54.00	12.00
2483.50	50.62	---	150	H	91	-2.5	74.00	23.38

Transmitting simultaneously test:

*(The worst case **Wi-Fi 802.11b mode low channel &SRD mode high channel** transmitting simultaneously in Z-axis of orientation was recorded)*

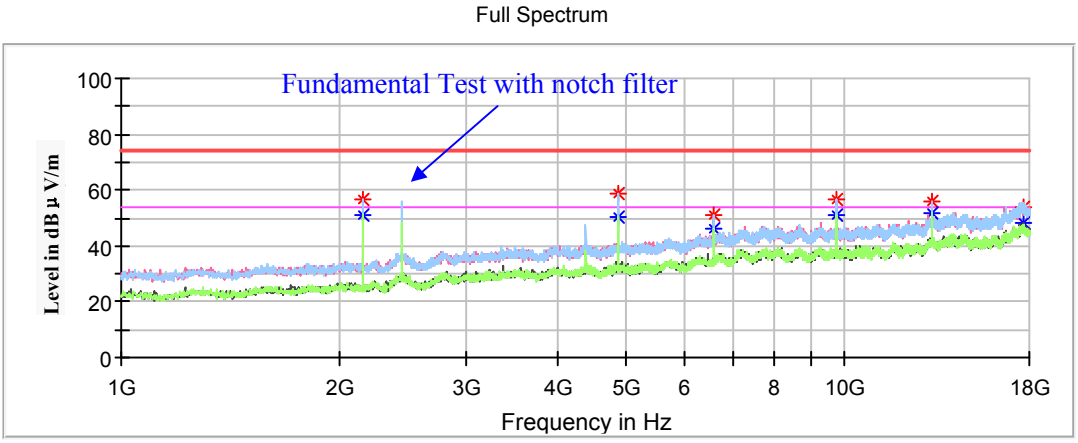
30MHz-1GHz



Frequency (MHz)	Corrected Amplitude QuasiPeak (dBµV/m)	Rx Antenna Height (cm)	Rx Antenna Polar (H/V)	Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
31.821200	22.96	100.0	V	117.0	-4.9	40.00	17.04
103.241000	39.17	200.0	H	11.0	-14.7	43.50	4.33
147.947350	26.28	100.0	V	315.0	-12.7	43.50	17.22
176.186350	32.84	100.0	V	93.0	-13.9	43.50	10.66
234.787350	41.70	200.0	H	155.0	-12.6	46.00	4.30
472.020750	32.68	101.0	H	220.0	-6.8	46.00	13.32

1GHz-18GHz

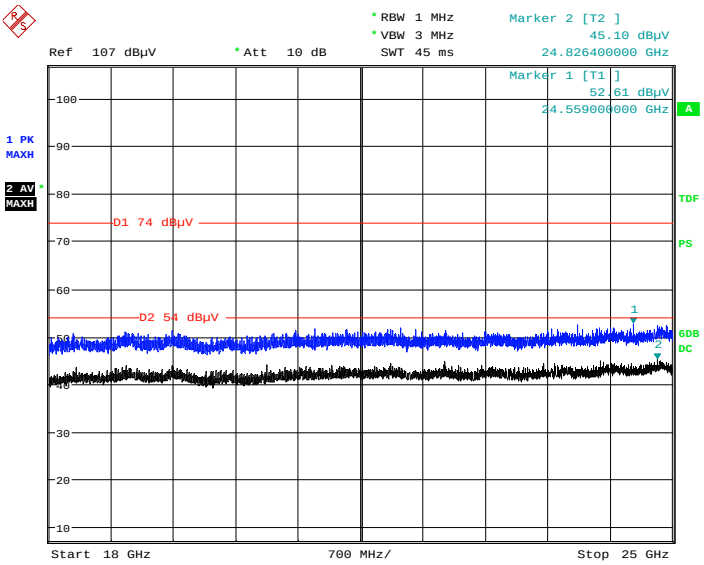
Note:
1. Corrected Factor (dB/m) = Antenna factor (RX) (dB/m) + Cable Loss (dB) – Amplifier Factor (dB)
   Corrected Amplitude (dBµV/m) = Corrected Factor (dB/m) + Reading (dBµV)
   Margin (dB) = Limit (dBµV/m) – Corrected Amplitude (dBµV/m)



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
2156.000000	---	50.74	150.0	H	39.0	-13.8	54.00	3.26
2156.000000	56.73	---	150.0	H	39.0	-13.8	74.00	17.27
4874.300000	---	50.60	150.0	H	131.0	-5.4	54.00	3.40
4874.300000	58.40	---	150.0	H	131.0	-5.4	74.00	15.60
6586.200000	---	46.13	200.0	H	69.0	-1.0	54.00	7.87
6586.200000	50.97	---	200.0	H	69.0	-1.0	74.00	23.03
9758.400000	---	51.23	200.0	H	357.0	2.0	54.00	2.77
9758.400000	56.88	---	200.0	H	357.0	2.0	74.00	17.12
13173.700000	---	51.59	200.0	H	279.0	5.4	54.00	2.41
13173.700000	56.06	---	200.0	H	279.0	5.4	74.00	17.94
17716.100000	---	48.18	150.0	V	95.0	8.9	54.00	5.82
17716.100000	53.57	---	150.0	V	95.0	8.9	74.00	20.43

18GHz-25GHz

Horizontal



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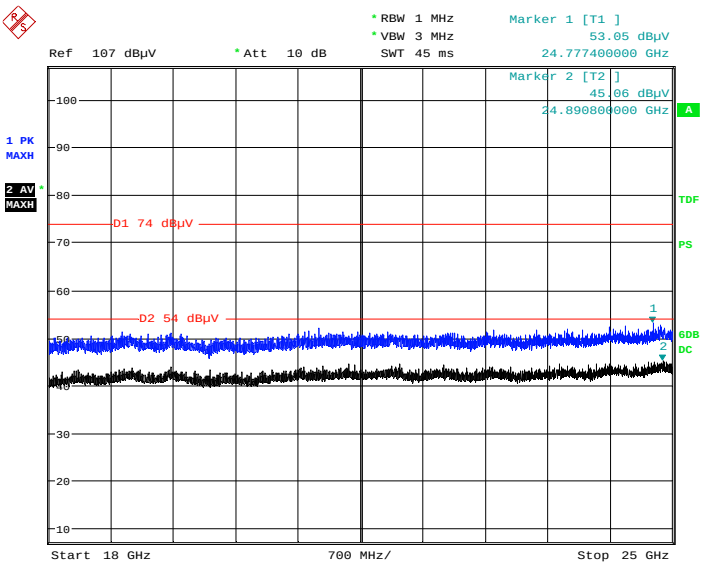
Vertical



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******* END OF REPORT *******