

FCC PART 15E & RSS-247 TEST REPORT FOR CERTIFICATION On Behalf of

Razer Inc.

Notebook PC

RZ09-0239

FCC ID: RWO-RZ090239

IC: 8092D-RZ090239

Prepared for: Razer Inc.

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Date of Test : Aug.30~Sep.19, 2017

Date of Report : Sep.21, 2017



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TEST REPORT CERTIFICATION

Applicant : Razer Inc.

Manufacturer : Razer Inc.

Product : Notebook PC

FCC ID : RWO-RZ090239

IC : 8092D-RZ090239

(A) Model No. : RZ09-0239

(B) Serial No. : N/A

(C) Test Voltage : DC 20V From Adaptor Input AC 120V/60Hz

Tested for comply with:

FCC CFR47 Part 15 Subpart E RSS-247, ISSUE 2, Feb 2017

RSS-Gen, ISSUE 4, November 2014

Test procedure used: ANSI C63.10: 2013 KDB789033D02

This Report is made under FCC Part 2.1075. No modifications were required during testing to bring this product into compliance.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of UL Verification Services (Guangzhou) Co., Ltd, Song Shan Lake Branch.

Date of Test: Aug.30~Sep.19,2017 Report of date: Sep.21,2017

Prepared by:

Reviewed by:

Kebo Zhang / Engineer Shawn Wen/ Laboratory Leader

Approved & Authorized Signer :

Stephen Guo / Laboratory Manager

1. SUMMARY OF STANDARDS AND RESULTS

1.1.Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

	EMISSION	
Description of Test Item	Standard	Results
Power Line Conducted Emission	FCC Part 15: 15.207 RSS-247, ISSUE 2 RSS-Gen, ISSUE 4 ANSI C63.10	PASS
Radiated Emission	FCC Part 15: 15.209 RSS-247, ISSUE 2 RSS-Gen, ISSUE 4 ANSI C63.10	PASS
Band Edge Compliance	FCC Part 15: 15.407 RSS-247, ISSUE 2 RSS-Gen, ISSUE 4 ANSI C63.10	PASS
99%&26Bandwidth Test	FCC Part 15: 15.407(a) RSS-247, ISSUE 2 RSS-Gen, ISSUE 4 ANSI C63.10	
Output Power Test	FCC Part 15: 15.407(a) RSS-247, ISSUE 2 RSS-Gen, ISSUE 4 ANSI C63.10	PASS
Equivalent Isotropic Radiated Power Test	RSS-247, ISSUE 2 ANSI C63.10	PASS
Power Spectral Density Test	ity Test FCC Part 15: 15.407(a) RSS-247, ISSUE 2 RSS-Gen, ISSUE 4 ANSI C63.10 PAS	
Frequency Stability	FCC Part 15: 15.407(g) RSS-247, ISSUE 2 RSS-Gen, ISSUE 4 ANSI C63.10	PASS
Antenna requirement	FCC Part 15: 15.203	PASS

2. GENERAL INFORMATION

2.1.Description of Device (EUT)

Product : Notebook PC

Model No. : RZ09-0239

FCC ID : RWO-RZ090239

IC : 8092D-RZ090239

Radio : IEEE802.11 a/b/g/n/ac; Bluetooth V3.0+EDR; Bluetooth V4.1

Operation : IEEE 802.11a:

Frequency 5180MHz—5240MHz; 5260MHz—5320MHz

5500MHz—5700MHz; 5745MHz—5825MHz

IEEE 802.11ac VHT20:

5180MHz—5240MHz; 5260MHz—5320MHz 5500MHz—5700MHz; 5745MHz—5825MHz

IEEE 802.11ac VHT40:

5190MHz—5230MHz; 5270MHz—5310MHz 5510MHz—5670MHz; 5755MHz—5795MHz

IEEE 802.11ac VHT80: 5210MHz, 5290MHz; 5530MHz—5610MHz;

5775MHz

IEEE 802.11b: 2412MHz—2462MHz IEEE 802.11g: 2412MHz—2462MHz IEEE802.11nHT20: 2412MHz—2462MHz; 5180MHz—5240MHz; 5260MHz—5320MHz 5500MHz—5700MHz; 5745MHz—5825MHz IEEE802.11nHT40: 2422MHz—2452MHz; 5190MHz—5230MHz; 5270MHz—5310MHz 5510MHz—5670MHz; 5755MHz—5795MHz

Bluetooth: 2402-2480MHz

Modulation : IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK)

Technology IEEE 802.11a/g: OFDM(64QAM, 16QAM, QPSK, BPSK)

IEEE 802.11ac VHT20, VHT40, VHT80: OFDM(16QAM, 64QAM,

256QAM, QPSK, BPSK)

IEEE 802.11n HT20, HT40: OFDM (64QAM, 16QAM, QPSK, BPSK)

Bluetooth V3.0+EDR: GFSK, π/4DQPSK,8-DPSK

Bluetooth V4.1:GFSK

Antenna Assembly: Antenna Type: PIFA Gain Bluetooth: 1.89dBi

WIFI 2.4GHz:ANT 0: 1.89dBi; ANT 1: 3.08dBi

WIFI 5GHz:

Band 1: ANT 0: 2.91dBi; ANT 1: 2.96dBi Band 2: ANT 0: 3.08dBi; ANT 1: 2.96dBi Band 3: ANT 0: 1.61dBi; ANT 1: 2.99dBi Band 4: ANT 0: 3.16dBi; ANT 1: 2.88dBi

Applicant : Razer Inc.

201 3rd Street, Suite 900, San Francisco, CA 94103

Manufacturer : Razer Inc.

201 3rd Street, Suite 900, San Francisco, CA 94103

Factory : BYD Precision Manufacture Co., Ltd

No.3001, Bao He Road, Baolong Industrial, Longgang Street,

Longgang

Zone, Shenzhen, 518116, P.R., China

Power Adaptor : Manufacturer: Razer Inc. M/N: RC30-0239

Input: 100-240Vac; 50/60Hz, 2.0A

Output: 20V; 3.25A

DC Cable: Shielded, Undetachable, 2.0m

Power Cable : Unshielded, Detachable, 1.0m

Date of Test : Aug.30~Sep.19, 2017

Date of Receipt : Aug.28, 2017

Sample Type Prototype production

2.2.Test Information

A special test software was used to control EUT work in Continuous TX mode (nearly 100% duty cycle), and select test channel, wireless mode and data rate.

Tested mode, channel, a	nd data rate information	on	
Mode	data rate (Mbps)(see Note)	Channel	Frequency (MHz)
	6	Low:CH36	5180
	6	Middle: CH40	5200
	6	High: CH48	5240
	6	Low :CH52	5260
	6	Middle: CH60	5300
IEEE 000 11-	6	High: CH64	5320
IEEE 802.11a	6	Low:CH100	5500
	6	Middle: CH120	5600
	6	High: CH140	5700
	6	Low:CH149	5745
	6	Middle: CH157	5785
	6	High: CH165	5825
	MCS0	Low:CH36	5180
	MCS0	Middle: CH40	5200
	MCS0	High: CH48	5240
	MCS0	Low:CH52	5260
	MCS0	Middle: CH60	5300
IEEE 802.11nHT20	MCS0	High: CH64	5320
IEEE 602.11III1120	MCS0	Low:CH100	5500
	MCS0	Middle: CH120	5600
	MCS0	High: CH140	5700
	MCS0	Low:CH149	5745
	MCS0	Middle: CH157	5785
	MCS0	High: CH165	5825
	MCS0	Low:CH38	5190
	MCS0	High: CH46	5230
	MCS0	Low:CH54	5270
	MCS0	High: CH62	5310
IEEE 802.11nHT40	MCS0	Low:CH102	5510
	MCS0	Middle: CH118	5590
	MCS0	High: CH134	5670
	MCS0	Low:CH151	5755
	MCS0	High: CH159	5795

MCS0	Low:CH36	5180
MCS0	Middle: CH40	5200
MCS0	High: CH48	5240
MCS0	Low:CH52	5260
MCS0	Middle: CH60	5300
MCS0	High: CH64	5320
MCS0	Low:CH100	5500
MCS0	Middle: CH120	5600
MCS0	High: CH140	5700
MCS0	Low :CH149	5745
MCS0	Middle: CH157	5785
MCS0	High: CH165	5825
MCS0	Low:CH38	5190
MCS0	High: CH46	5230
MCS0	Low:CH54	5270
MCS0	High: CH62	5310
MCS0	Low:CH102	5510
MCS0	Middle: CH118	5590
MCS0	High: CH134	5670
MCS0	Low:CH151	5755
MCS0	High: CH159	5795
MCS0	CH42	5210
MCS0	CH58	5290
MCS0	Low:CH106	5530
MCS0	High:CH122	5610
MCS0	CH155	5775
	MCS0 MCS0 MCS0 MCS0 MCS0 MCS0 MCS0 MCS0	MCS0 Middle: CH40 MCS0 High: CH48 MCS0 Low :CH52 MCS0 Middle: CH60 MCS0 High: CH64 MCS0 Low :CH100 MCS0 Middle: CH120 MCS0 High: CH140 MCS0 Low :CH149 MCS0 Middle: CH157 MCS0 High: CH165 MCS0 Low :CH38 MCS0 High: CH46 MCS0 High: CH46 MCS0 High: CH62 MCS0 Middle: CH118 MCS0 Middle: CH118 MCS0 High: CH134 MCS0 Low :CH151 MCS0 CH42 MCS0 CH58 MCS0 CH58 MCS0 Low :CH106 MCS0 High: CH122

Note: 1. According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test.

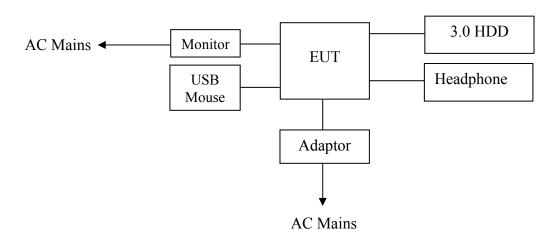
Note: 2. 11a use SISO Mode. Use ANT1 which has the worst case emission for the Radiated emission and band edge measurement, 11ac/n use MIMO Mode, test with two antenna transmit simultaneously and comply with KDB662911D02.

Note: 3. The channel falling in the frequency range 5600-5640MHz can't be used in Canada in the report (e.g.: Channel 122: 5610MHz, Channel 118: 5590MHz, Channel 120: 5600MHz)

2.3. Tested Supporting System Details

No.	Description		Manufacturer Model		Serial No.			
1	Monitor		Lenovo	L2264W	N/A			
1.		Power Cord: Unshielded, Detachable, 1.8m HDMI Cable: Shielded, Detachable, 2.0m						
2.	Headphone	Headphone OVANN 0V-T800V		0V-T800V	N/A			
۷.	Псаарноне	Data Cable: Shielded, Undetachable, 4.0m						
3.	USB Mouse		M0C5UO	Dell	512022645			
3.		USB Cable: Shielded	d, Detachable, 1.0	m				
1	3.0 HDD		SONY	HD-E	3PDLOT15515005C			
4.		USB Cable: Shielded	d, Detachable, 1.0	m				

2.4.Block diagram of connection between the EUT and simulators



(EUT: Notebook PC)

2.5. Test Facility

Test Location	UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch.
Address	Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China
Accreditation Certificate	UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Cali bration Laboratories and any additional program requirements in the identified field of testing. The Certificate Registration Number is 4102.01. UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The Designation Number is CN1187. UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. EMC Laboratory has been registered and fully described in a report filed with Industry Canada. The Company Number is 21320.

2.6. Measurement Uncertainty:

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	± 3.52 dB
Radiated Disturbance, 30 to 1000 MHz	± 4.94 dB
Radiated Disturbance, 1 to 6 GHz	± 3.86 dB
Radiated Disturbance, 6 to 18 GHz	± 4.23 dB
Radiated Disturbance, 18 to 26 GHz	± 5.30 dB
Radiated Disturbance, 26 to 40 GHz	± 5.23 dB

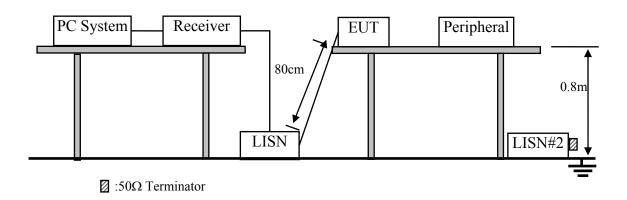
Uncertainty figures are valid to a confidence level of 95%.

3. MEASURING INSTRUMENT AND SOFTWARE USED

Conducted Emissions									
			Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.			
$\overline{\checkmark}$	EMI Test Receiver	R&S	ESR3	101961	Dec.20, 2016	Dec.19, 2017			
V	Two-Line V-Network	R&S	ENV216	101983	Dec.20, 2016	Dec.19, 2017			
$\overline{\checkmark}$	Artificial Mains Networks	Schwarzbeck	NSLK 8126	8126465	Feb.10, 2017	Feb.10, 2018			
		Rac	diated Emission	ns					
			Instrument						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.			
V	MXE EMI Receiver	KESIGHT	N9038A	MY564000 36	Feb. 24, 2017	Feb. 24, 2018			
V	Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Jan.09, 2016	Jan.09, 2019			
V	Preamplifier	HP	8447D	2944A090 99	Feb. 13, 2017	Feb. 13, 2018			
V	EMI Measurement Receiver	R&S	ESR26	101377	Dec. 20, 2016	Dec. 20, 2017			
	Horn Antenna	TDK	HRN-0118	130939	Jan. 09, 2016	Jan. 09, 2019			
V	High Gain Horn Antenna	Schwarzbeck	BBHA-9170	691	Jan.06, 2016	Jan.06, 2019			
V	Preamplifier	TDK	PA-02-0118	TRS-305-0 0066	Jan. 14, 2017	Jan. 14, 2018			
V	Preamplifier	TDK	PA-02-2	TRS-307-0 0003	Dec. 20, 2016	Dec. 20, 2017			
$\overline{\checkmark}$	Loop antenna	Schwarzbeck	1519B	00008	Mar. 26, 2016	Mar. 26, 2019			
		Ot	her instrument	s					
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.			
V	Spectrum Analyzer	Keysight	N9030A	MY554105 12	Dec. 20, 2016	Dec. 20, 2017			
V	Power Meter	Keysight	N9031A	MY554160 24	Feb. 13, 2017	Feb. 13, 2018			
V	Power Sensor	Keysight	N9323A	MY554400 13	Feb. 13, 2017	Feb. 13, 2018			
	Power sensor	R&S	OSP120	100921	Dec.20,2016	Dec.19,2017			

4. POWER LINE CONDUCTED EMISSION TEST

4.1.Block Diagram of Test Setup



4.2. Power Line Conducted Emission Test Limits

	Maximum RF Line Voltage				
Frequency	Quasi-Peak Level	Average Level			
	$dB(\mu V)$	dB(µV)			
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*			
500kHz ~ 5MHz	56	46			
5MHz ~ 30MHz	60	50			

Notes: 1. * Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

4.3. Configuration of EUT on Test

The following equipment are installed on Power Line Conducted Emission Test to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

4.3.1. Notebook PC (EUT)

Model No. : RZ09-0239

Serial No. : N/A

4.3.2. Support Equipment: As Tested Supporting System Details, in Section 2.2.

4.4.Operating Condition of EUT

- 4.4.1. Setup the EUT and simulator as shown as Section 4.1.
- 4.4.2. Turn on the power of all equipments.
- 4.4.3. PC run test software to control EUT work in Tx mode.

4.5.Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power Via PC connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm coupling impedance for the EUT (Please refer the block diagram of the test setup and photographs). The AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Test.

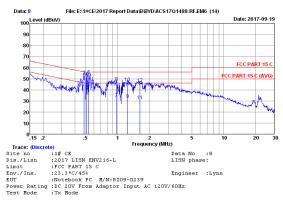
The bandwidth of test receiver (R & S ESCI) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

4.6. Power Line Conducted Emission Test Results

PASS. (All emissions not reported below are too low against the prescribed limits.)

5180-5240MHz Band:



No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.486	9.50	0.03	30.52	40.05	46.23	6.18	Average
2	0.486	9.50	0.03	43.14	52.67	56.23	3.56	QP
3	0.513	9.50	0.03	30.25	39.78	46.00	6.22	Average
4	0.513	9.50	0.03	41.84	51.37	56.00	4.63	QP
5	0.538	9.50	0.03	32.52	42.05	46.00	3.95	Average
6	0.538	9.50	0.03	43.67	53.20	56.00	2.80	QP
7	0.984	9.49	0.05	22.71	32.25	46.00	13.75	Average
8	0.984	9.49	0.05	37.50	47.04	56.00	8.96	QP
9	1.242	9.49	0.06	21.64	31.19	46.00	14.81	Average
10	1.242	9.49	0.06	37.06	46.61	56.00	9.39	QP
11	1.628	9.49	0.06	20.82	30.37	46.00	15.63	Average
12	1.628	9.49	0.06	36.18	45.73	56.00	10.27	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
2.If the average limit is met when using a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

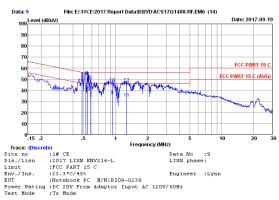
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No	Freq	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.166	9.47	0.02	26.26	35.75	55.16	19.41	Average
2	0.166	9.47	0.02	41.85	51.34	65.16	13.82	QP
3	0.494	9.32	0.03	30.85	40.20	46.10	5.90	Average
4	0.494	9.32	0.03	43.77	53.12	56.10	2.98	QP
5	0.513	9.31	0.03	29.85	39.19	46.00	6.81	Average
6	0.513	9.31	0.03	42.34	51.68	56.00	4.32	QP
7	0.546	9.31	0.03	29.69	39.03	46.00	6.97	Average
8	0.546	9.31	0.03	44.31	53.65	56.00	2.35	QP
9	0.948	9.34	0.05	22.71	32.10	46.00	13.90	Average
10	0.948	9.34	0.05	37.32	46.71	56.00	9.29	QP
11	1.216	9.35	0.06	23.82	33.23	46.00	12.77	Average
12	1.216	9.35	0.06	37.43	46.84	56.00	9.16	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
2.If the average limit is met when using a quasi-peak detector,
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

5260-5320MHz Band:



No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.486	9.50	0.03	31.30	40.83	46.23	5.40	Average
2	0.486	9.50	0.03	41.77	51.30	56.23	4.93	QP
3	0.527	9.50	0.03	30.20	39.73	46.00	6.27	Average
4	0.527	9.50	0.03	43.18	52.71	56.00	3.29	QP
5	0.549	9.50	0.03	28.30	37.83	46.00	8.17	Average
6	0.549	9.50	0.03	42.64	52.17	56.00	3.83	QP
7	0.582	9.50	0.03	30.10	39.63	46.00	6.37	Average
8	0.582	9.50	0.03	39.02	48.55	56.00	7.45	QP
9	0.938	9.49	0.05	25.60	35.14	46.00	10.86	Average
10	0.938	9.49	0.05	36.96	46.50	56.00	9.50	QP
11	1.276	9.49	0.06	23.30	32.85	46.00	13.15	Average
12	1.276	9.49	0.06	36.91	46.46	56.00	9.54	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
2.If the average limit is met when using a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

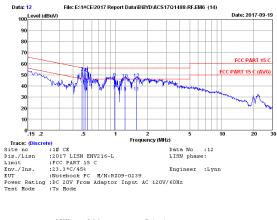
00 Level (dB	uV)							Date	e: 2017-09
90									
80	_						+++	-	_
70								-	
60	-						+++	FC	C PART 1
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10									
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0.15 .2		.5	1		2	5		10	20
e: (Discrete				Frequ	ency (MHz)				

Dis./Lism :2017 LISM ENV216-M LISM LIMIT : FCC PART 15 C Env./Ins. :23.3*C/45* Engir : Notebook PC M/N:R209-0239 Fower Rating :DC 20V From Adaptor Input AC 120V/60Hz Test Mode : 17% Mode Engineer :Lynn

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.489	9.32	0.03	30.20	39.55	46.19	6.64	Average
2	0.489	9.32	0.03	43.12	52.47	56.19	3.72	QP
3	0.527	9.31	0.03	30.20	39.54	46.00	6.46	Average
4	0.527	9.31	0.03	42.85	52.19	56.00	3.81	QP
5	0.555	9.31	0.03	29.61	38.95	46.00	7.05	Average
6	0.555	9.31	0.03	42.99	52.33	56.00	3.67	QP
7	0.598	9.31	0.04	27.60	36.95	46.00	9.05	Average
8	0.598	9.31	0.04	38.27	47.62	56.00	8.38	QP
9	0.876	9.34	0.05	25.09	34.48	46.00	11.52	Average
10	0.876	9.34	0.05	37.25	46.64	56.00	9.36	QP
11	1.129	9.35	0.05	23.50	32.90	46.00	13.10	Average
12	1.129	9.35	0.05	36.42	45.82	56.00	10.18	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
2.If the average limit is met when using a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

5500-5700MHz Band:



Cable Loss (dB)

Average QP Average QP Average QP Average QP Average QP Average QP 6.40 3.74 3.27 4.16 4.97 4.38 9.66 9.28 11.85 9.70 11.85 9.54 30.30 42.96 33.20 42.31 31.50 42.09 26.80 37.18 24.60 36.75 24.60 36.91 46.23 56.23 46.00 56.00 46.00 56.00 46.00 56.00 46.00 56.00 56.00 0.541 0.541 0.984 0.984 1.236 1.236 1.585

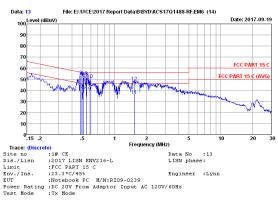
Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
2.If the average limit is met when using a quasi-peak detector,
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

Date: 2017-09-19 100 Level (dBuV) FCC PART 15 (FCC PART 15 C (AVG 0.75.2 Trace: (Discrete) Site no : 1# CE Dis./Lisn : 2017 LISN ENV216-N LISN | Limit : FCC PART 15 C Env./Ins. : 23.3*C/45* Engine EUT : (Notebook PC M/N:RZ09-0239 Power Rating : DC 20V From Adaptor Input AC 120V/60Hz Test Mode : TX Mode 0.15 .2 Data No :11 LISN phase: Engineer :Lynn

No	Freq	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emissio: Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.486	9.33	0.03	30.09	39.45	46.23	6.78	Average
2	0.486	9.33	0.03	42.02	51.38	56.23	4.85	QP
3	0.513	9.31	0.03	30.20	39.54	46.00	6.46	Average
4	0.513	9.31	0.03	43.39	52.73	56.00	3.27	QP
5	0.541	9.31	0.03	31.50	40.84	46.00	5.16	Average
6	0.541	9.31	0.03	43.25	52.59	56.00	3.41	QP
7	0.595	9.31	0.03	30.61	39.95	46.00	6.05	Average
8	0.595	9.31	0.03	40.56	49.90	56.00	6.10	QP
9	0.844	9.33	0.05	24.40	33.78	46.00	12.22	Average
10	0.844	9.33	0.05	38.37	47.75	56.00	8.25	QP
11	1.160	9.35	0.05	24.91	34.31	46.00	11.69	Average
12	1.160	9.35	0.05	38.77	48.17	56.00	7.83	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
2.If the average limit is met when using a quasi-peak detector,
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

5745-5825MHz Band:



No	Freq	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emissio Level (dBuV)	n Limits (dBuV)	Margin (dB)	Remark
1	0.481	9.50	0.03	30.30	39.83	46.32	6.49	Average
2	0.481	9.50	0.03	43.77	53.30	56.32	3.02	QP
3	0.494	9.50	0.03	31.50	41.03	46.10	5.07	Average
4	0.494	9.50	0.03	43.21	52.74	56.10	3.36	QP
5	0.513	9.50	0.03	30.40	39.93	46.00	6.07	Average
6	0.513	9.50	0.03	41.89	51.42	56.00	4.58	QP
7	0.546	9.50	0.03	31.20	40.73	46.00	5.27	Average
8	0.546	9.50	0.03	42.77	52.30	56.00	3.70	QP
9	0.589	9.50	0.03	29.20	38.73	46.00	7.27	Average
10	0.589	9.50	0.03	40.26	49.79	56.00	6.21	QP
11	1.535	9.49	0.06	25.80	35.35	46.00	10.65	Average
12	1.535	9.49	0.06	38.04	47.59	56.00	8.41	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
2.If the average limit is met when using a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

100 Level (dB	uV)				Dat	te: 2017-09-19
90						
80						
70						
60					FC	CC PART 15 C
50	Alle	18 12	Ottoria va		FCC PAR	RT 15 C (AVG)
40	when will sound	/ W W	Uhankarusaru	man man man man	~~~	
30					man	ma M
20						- W
10						-
0.15 .2	.5	1	2	5	10	20
e: (Discrete)	Fre	quency (MHz)			
	1# CE		T.	ata No :	14	

Engineer :Lynn

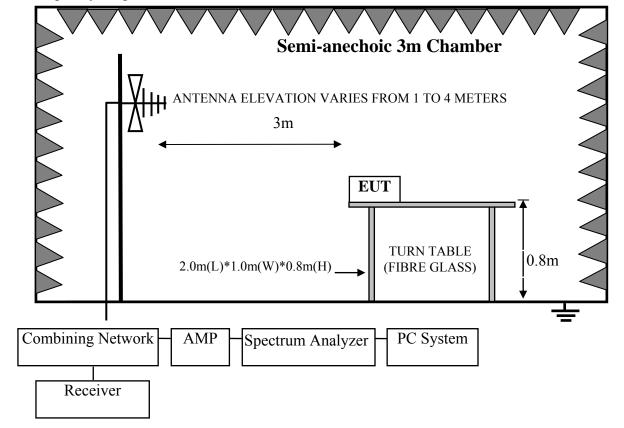
No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.486	9.33	0.03	31.49	40.85	46.23	5.38	Average
2	0.486	9.33	0.03	43.77	53.13	56.23	3.10	QP
3	0.518	9.31	0.03	32.10	41.44	46.00	4.56	Average
4	0.518	9.31	0.03	42.29	51.63	56.00	4.37	QP
5	0.549	9.31	0.03	31.61	40.95	46.00	5.05	Average
6	0.549	9.31	0.03	42.18	51.52	56.00	4.48	QP
7	0.585	9.31	0.03	30.71	40.05	46.00	5.95	Average
8	0.585	9.31	0.03	39.05	48.39	56.00	7.61	QP
9	0.968	9.35	0.05	28.10	37.50	46.00	8.50	Average
10	0.968	9.35	0.05	38.24	47.64	56.00	8.36	QP
11	1.236	9.35	0.06	25.90	35.31	46.00	10.69	Average
12	1.236	9.35	0.06	38.01	47.42	56.00	8.58	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
2.If the average limit is met when using a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

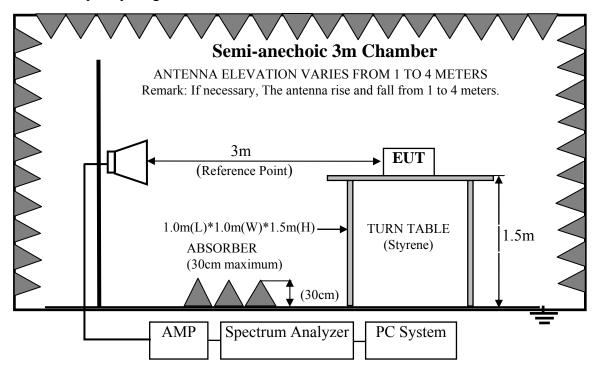
5. RADIATED EMISSION TEST

5.1.Block Diagram of Test Setup

For frequency range 30MHz-1000MHz



For frequency range 1GHz-25GHz



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5.2 Radiated Emission Limit

For transmitters operating in the 5.15-5.25 GHz; 5.25-5.35GHz; 5.47-5.725GHz, 5.725-5.850GHz band: all emissions outside of those band shall not exceed an EIRP of -27 dBm/MHz. Unwanted emissions below 1 GHz and those emissions appearing within 15.205 restricted frequency bands must comply with the general field strength limits set forth in Section 15.209

5.2.1.15.209 limits

FREQUENCY	DISTANCE	FIELD STREN	NGTHS LIMIT	
MHz	Meters	μV/m	dB(μV)/m	
30 ~ 88	3	100	40.0	
88 ~ 216	3	150	43.5	
216 ~ 960	3	200	46.0	
960 ~ 1000	3	500	54.0	
Above 1000	3	74.0 dB(μV)/m (Peak)		
		54.0 dB(μV)/m (Average)		

Remarks : (1) Emission level dB μ V = 20 log Emission level μ V/m

- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

5.2.2.15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 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	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	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)

5.3.EUT Configuration on Test

The following equipment are installed on Power Line Conducted Emission Test to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

5.3.1. Notebook PC (EUT)

Model No. : RZ09-0239

Serial No. : N/A

5.3.2. Support Equipment: As Tested Supporting System Details, in Section 2.2.

5.4. Operating Condition of EUT

- 5.4.1. Setup the EUT and simulator as shown as Section 4.2.
- 5.4.2. Turn on the power of all equipments.
- 5.4.3. Let EUT work in Tx mode.

5.5. Test Procedure

Frequency below 30MHz:

The EUT setup on the turn table which has 0.8 m height to the ground. The turn table rotated 360 degrees and antenna fixed to 1 m to find the maximum emission level. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground for frequency 30MHz~1000MHz, 1.5 meter high above ground for frequency above 1GHz and put the absorbing with 2.4m(L)*2.4m(W)*0.3m(H) on the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. Power on the EUT and let it working in test mode, then test it.EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna for frequency 30MHz~1000MHz, and the Horm antenna is used as receiving antenna for frequency above 1GHz. Both horizontal and vertical polarization of the antenna is set on Test. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.10-2013 on radiated emission Test.

For emissions below 1GHz and those emissions appearing within 15.205 restricted frequency bands use below procedure:

The bandwidth of the EMI test receiver (R&S ESR7) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

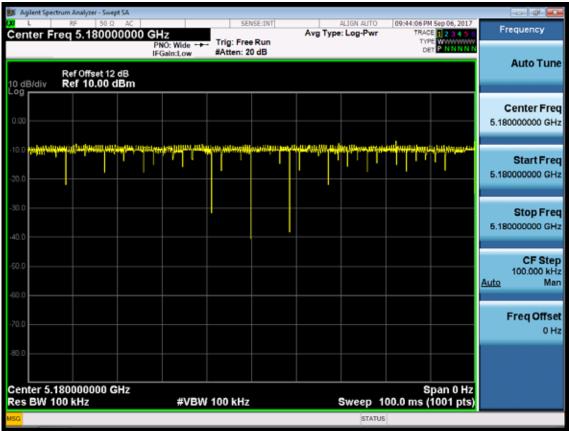
The bandwidth of the Spectrum's VBW is set at 1MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz

For the emissions above 1GHz and not appearing within 15.205 restricted frequency bands use below procedure:

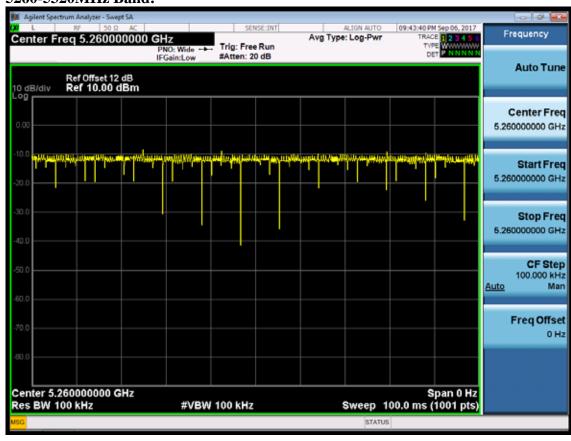
- (1). The maximum emission at 3m distance was measured and recorded with receive antenna in both vertical and horizontal by rotating the turntable and by lowering the receive antenna.
- (2). The EUT was then removed and replaced with a substitution antenna in the same position and the substitution antenna must have the same polarization with the receive antenna.
- (3). A signal which have the same frequency obtained in step 2 was fed to the substitution, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver, the level of the signal generator was adjusted until the measured field strength level in step 2 was obtained, recorded the level of the signal generator.
- (4). Repeated step 4 with both antenna polarizations
- (5). The spurious emissions is equal to the power supplied by the signal generator and corrections due to the gain of the substitution antenna and the cable loss between the signal generator and the substitution antenna. or use procedure (6).

FCC ID: RWO-RZ090239 (6). Per KDB789033 clause H 2)d).if the test distance is 3m,the EIRP(dBm)=E(dBuv/m)-95.2 Get the result of all unwanted emission outside the restricted band is less than the -27dBm/MHz. We had checked frequency range that is 30MHz to 10th harmonic (40GHz) and no any emissions were found from 18GHz to 40GHz, so the radiated emission from 18GHz to 40GHz were not record. 5.6. Radiated Emission Test Results PASS. All the emissions from 30MHz to 1 GHz were comply with 15.209 limits. All other emission comply with 15.407 (b)(1) requirements. Note: The emissions (9kHz~30MHz) not reported for there is no emission be found.

Duty Cycle 5180-5240MHz Band:



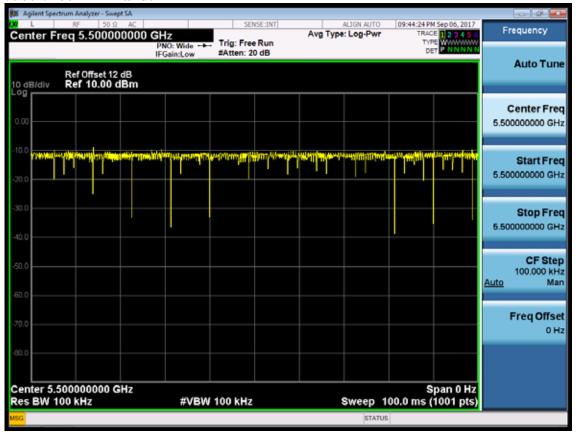
5260-5320MHz Band:



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5500-5700MHz Band:



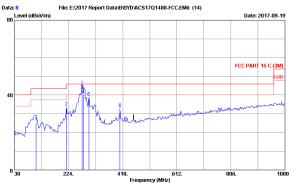
5745-5825MHz Band:



Note: The Duty Cycle is close to 100%.

5180-5240MHz Band:

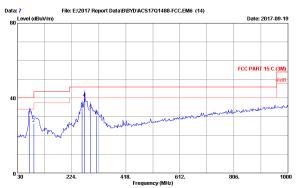
Frequency: 30MHz~1GHz



Site no. : 3m Chamber Data no. : 8
Dis. / Ant. : 3m 2017 9168-493 Ant. pol. : HORIZONTAL
Limit : FCC PART 15 C (3H)
EUT. : 30.44C/53.64 Engineer : Lynn
EUT : Notebook PC N/N:RZO9-0239
Power rating : DC 2007 From Adaptor Input &C 120V/60Hz
Test Mode : Tx Mode

No.	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	107.600	15.79	1.14	8.43	25.36	43.50	18.14	QP
2	216.240	16.90	1.74	14.94	33.58	46.00	12.42	QP
3	272.500	19.16	2.08	21.42	42.66	46.00	3.34	QP
4	277.350	19.37	2.11	18.57	40.05	46.00	5.95	QP
5	296.750	19.84	2.23	16.67	38.74	46.00	7.26	QP
6	408.300	22.36	2.91	7.46	32.73	46.00	13.27	QP

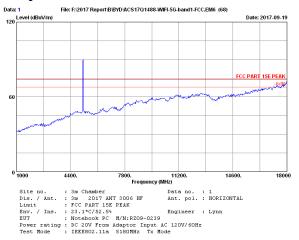
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

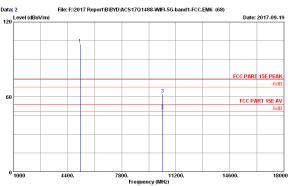


No.	Freq.	Factor (dB/m)	Loss (dB)	Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	73.650	16.73	0.94	12.80	30.47	40.00	9.53	QP
2	88.200	14.08	1.03	11.45	26.56	43.50	16.94	QP
3	260.860	18.64	2.01	13.74	34.39	46.00	11.61	QP
4	270.560	19.07	2.07	18.67	39.81	46.00	6.19	QP
5	292.870	19.76	2.21	11.63	33.60	46.00	12.40	QP
6	313.240	20.21	2.33	8.08	30.62	46.00	15.38	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Frequency: 1GHz~18GHz

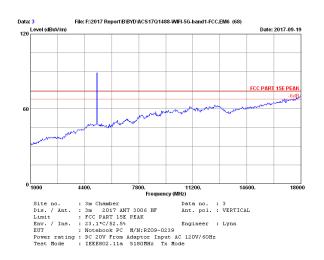


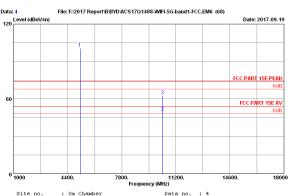


Data no. : 2 Ant. pol. : HORIZONTAL

No.	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Amp factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5180.00	33.47	12.76	90.03	33.91	102.35	74.00	-28.35	Peak
2	10360.00	38.29	18.14	28.50	35.58	49.35	54.00	4.65	Average
3	10360.00	38.29	18.14	41.40	35.58	62.25	74.00	11.75	Peak

Remarks: 1. Emission Level- Antenna Factor + Cable Loss + Reading
-Amp factor.
2. The emission levels that are 20dB below the official
limit are not reported.



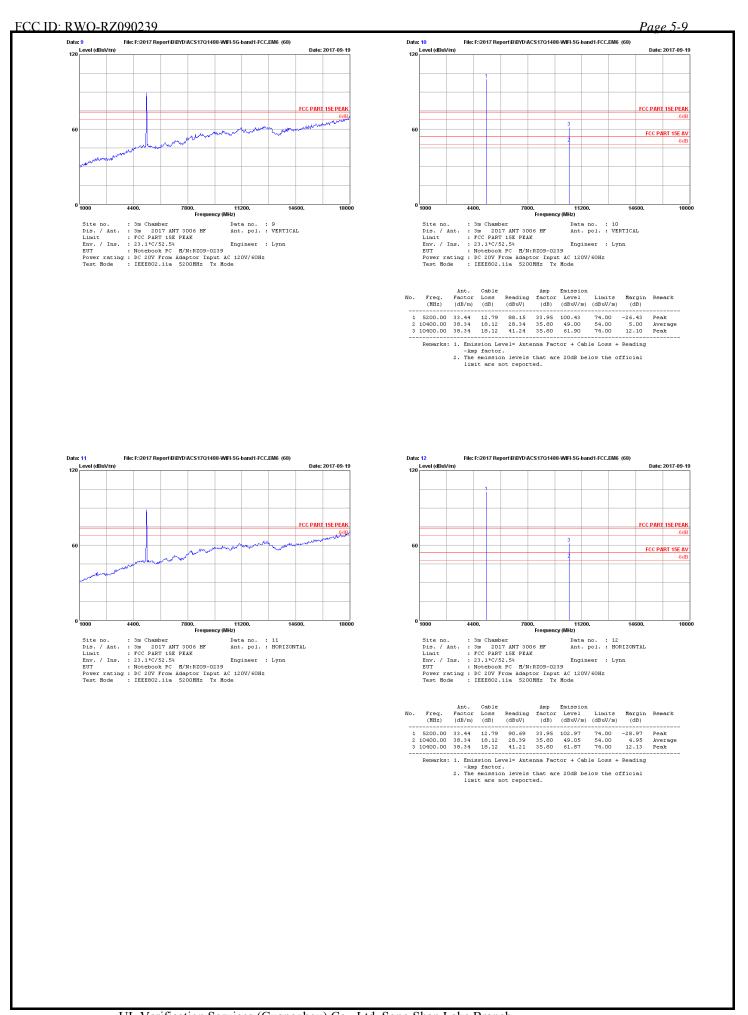


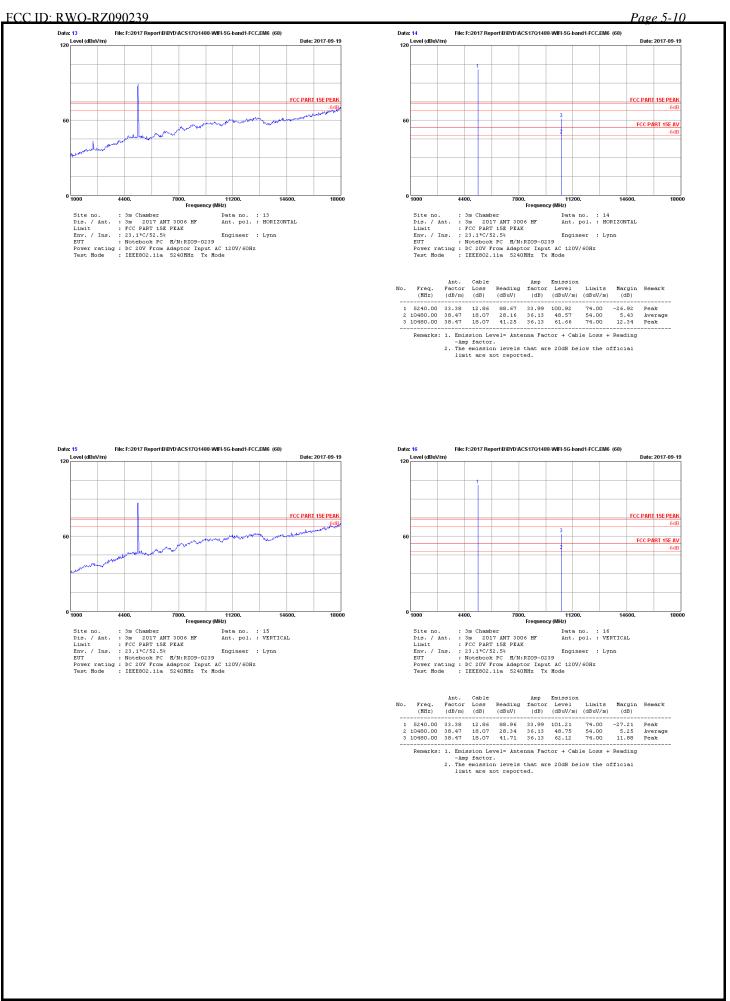
Data no. : 4 Ant. pol. : VERTICAL

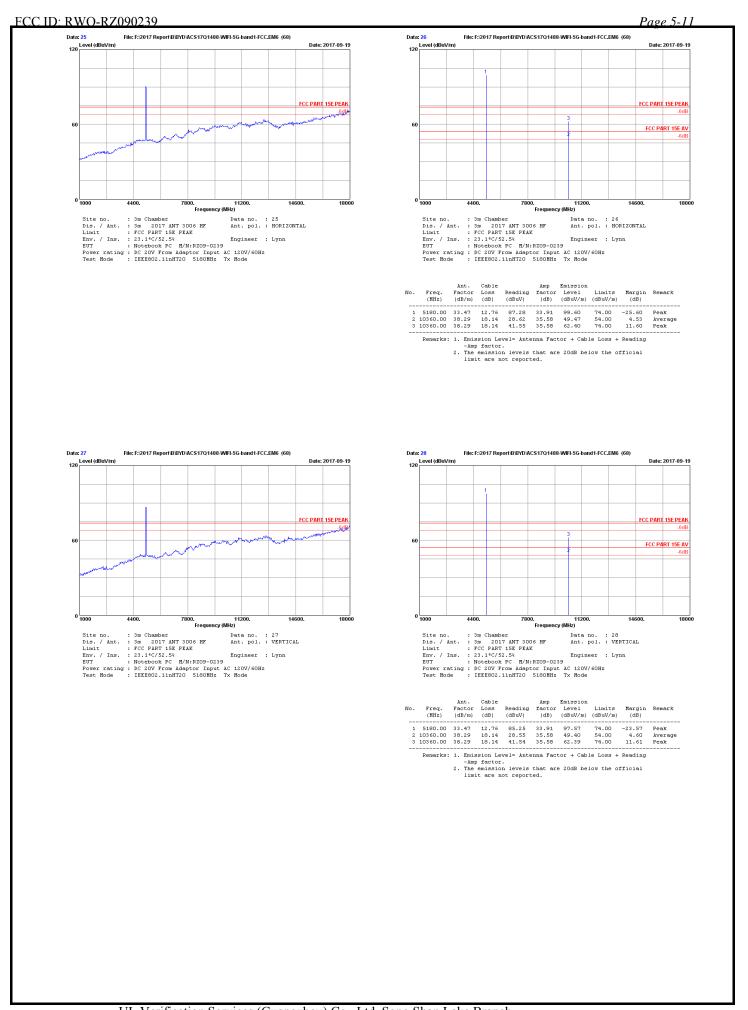
No.	Freq.	Factor (dB/m)	Loss (dB)	Reading (dBuV)	factor (dB)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5180.00	33.47	12.76	88.13	33.91	100.45	74.00	-26.45	Peak
2	10360.00	38.29	18.14	28.60	35.58	49.45	54.00	4.55	Average
3	10360.00	38.29	18.14	41.55	35.58	62.40	74.00	11.60	Peak

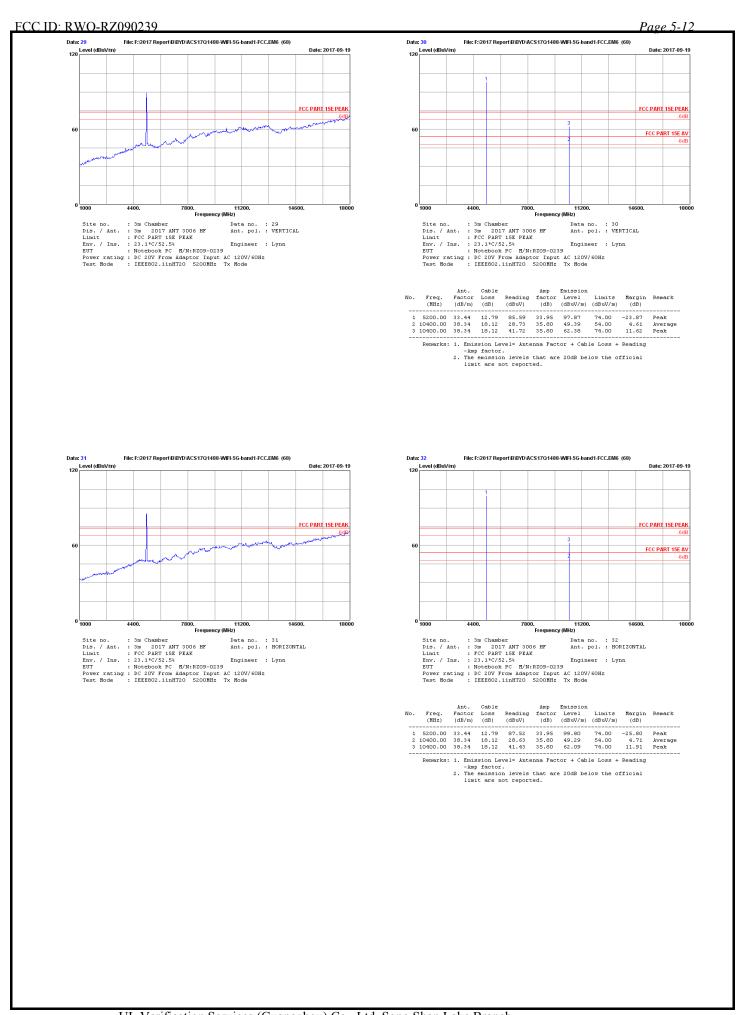
-Amp factor.

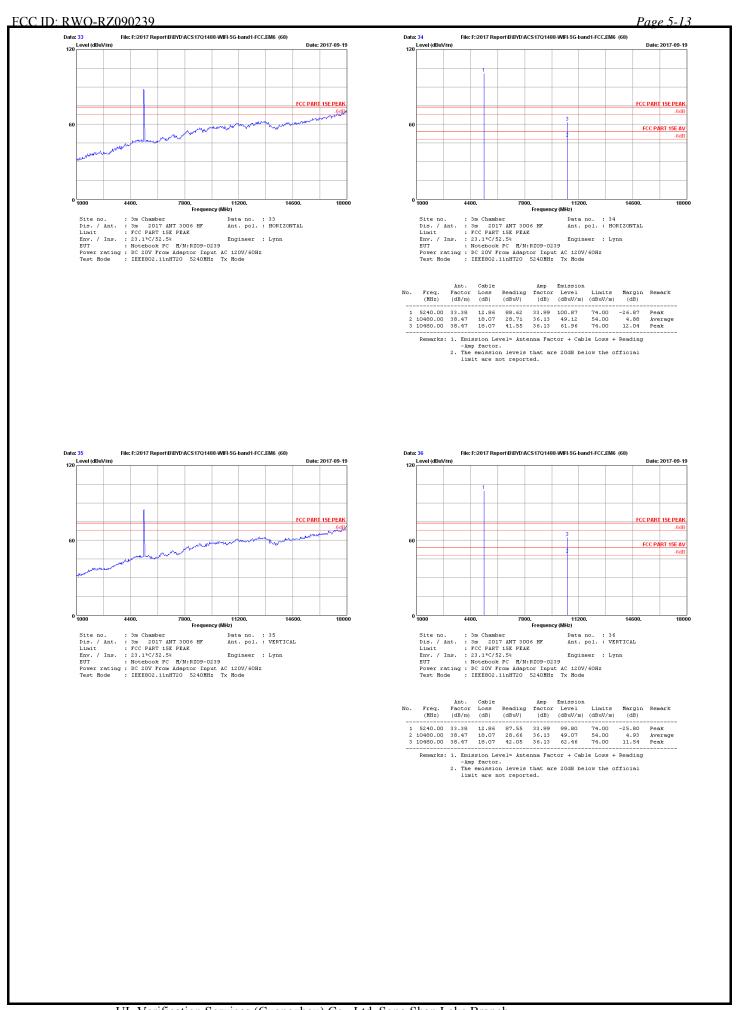
2. The emission levels that are 20dB below the official limit are not reported.

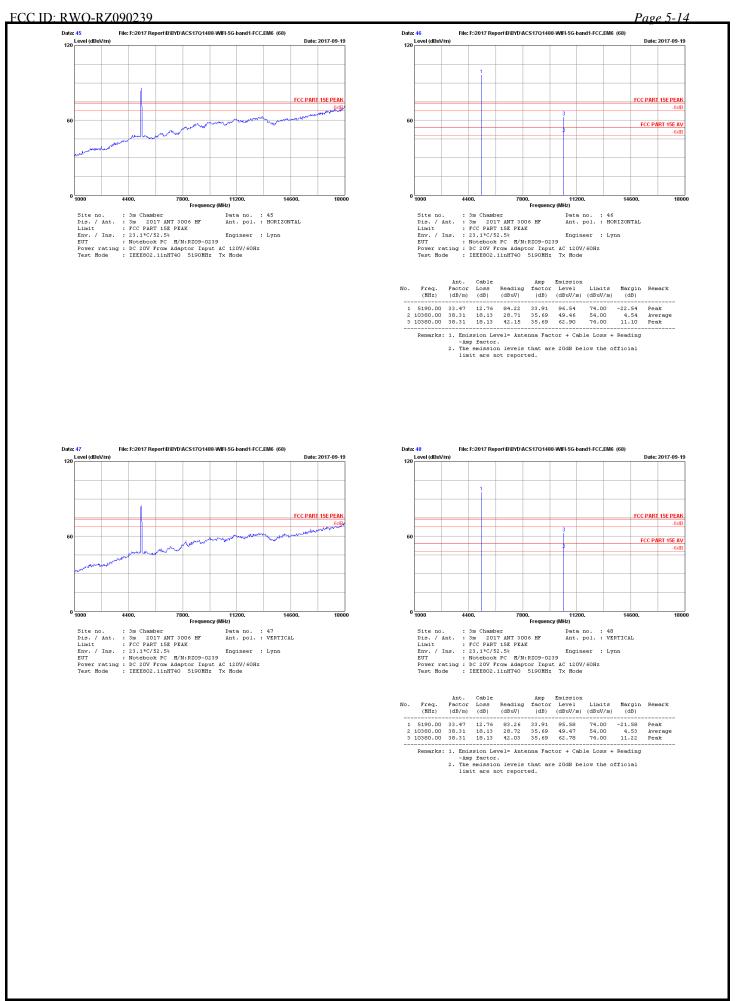


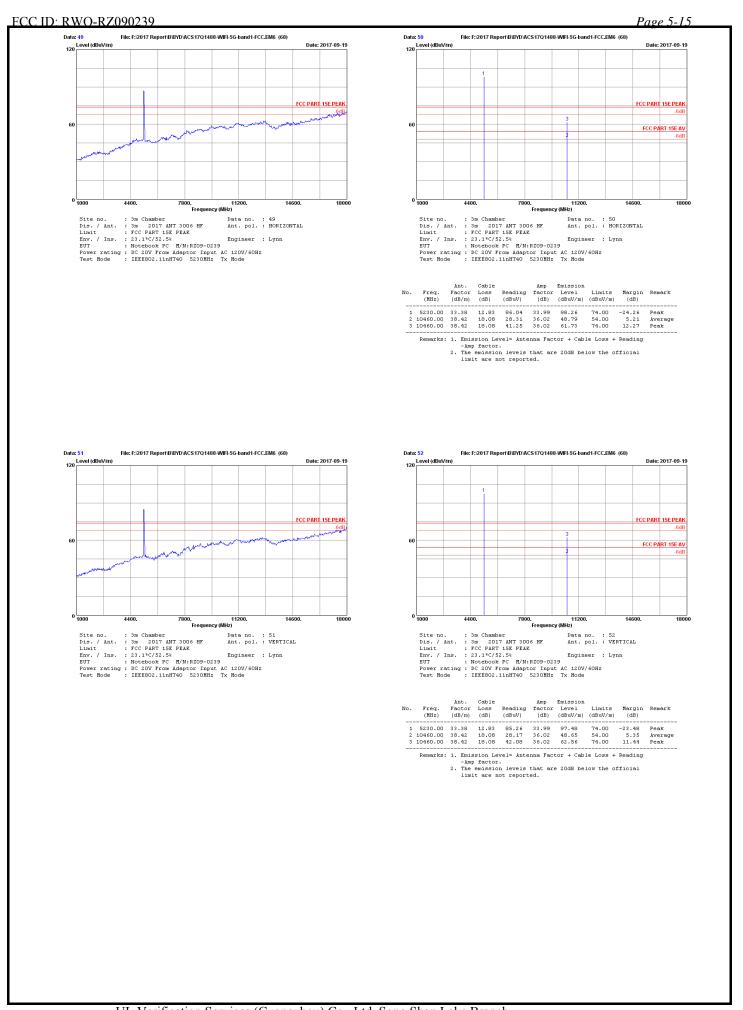


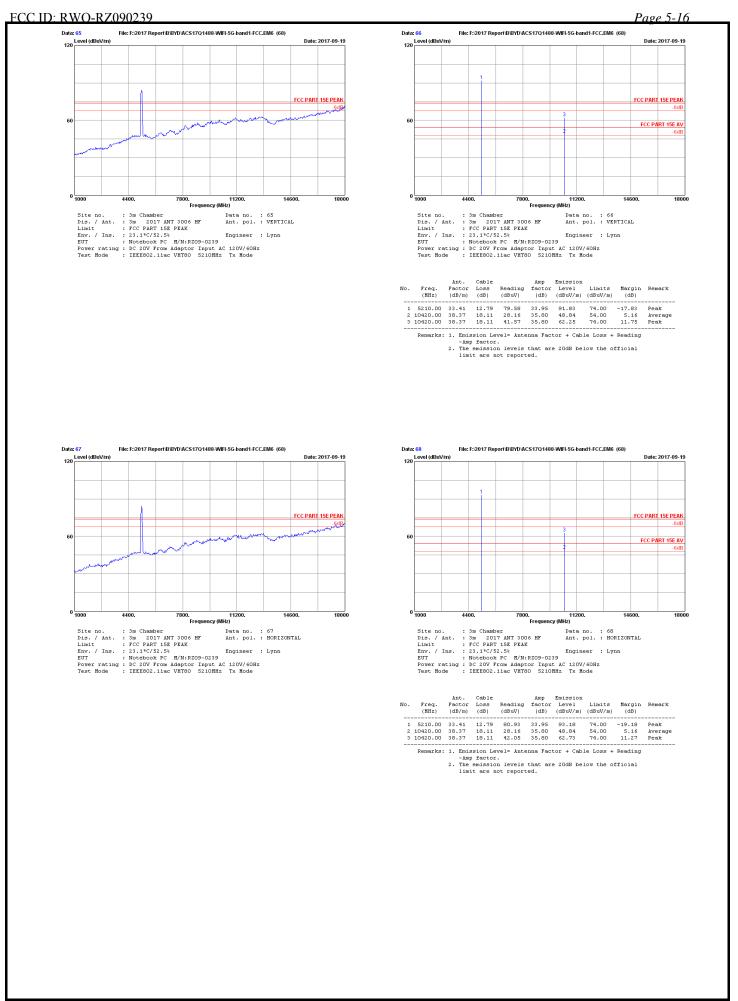




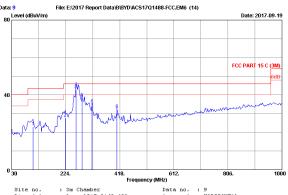






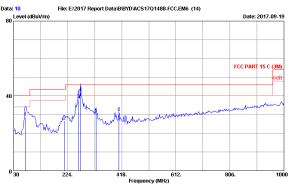


5260-5320MHz Band: Frequency: 30MHz~1GHz



No.	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	107.600	15.79	1.14	6.01	22.94	43.50	20.56	OP
2	222.060	17.02	1.77	8.78	27.57	46.00	18.43	QP
3	260.860	18.64	2.01	22.19	42.84	46.00	3.16	QP
4	282.200	19.54	2.14	16.69	38.37	46.00	7.63	QP
5	319.060	20.35	2.37	11.98	34.70	46.00	11.30	QP
6	408.300	22.36	2.91	6.71	31.98	46.00	14.02	QP

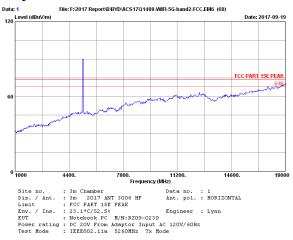
Remarks: 1. Emission Level- Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

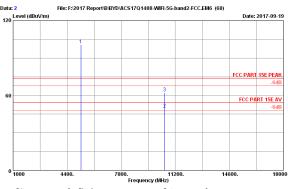


No.	Freq.	Factor (dB/m)	Loss (dB)	Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	73.650	16.73	0.94	10.95	28.62	40.00	11.38	OP
2	212.360	16.90	1.72	7.81	26.43	43.50	17.07	QP
3	262.800	18.73	2.02	17.46	38.21	46.00	7.79	OP
4	270.560	19.07	2.07	20.49	41.63	46.00	4.37	OP
5	325.850	20.50	2.42	7.65	30.57	46.00	15.43	QP
6	408.300	22.36	2.91	5.82	31.09	46.00	14.91	QP

Remarks: 1. Emission Level- Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

Frequency: 1GHz~18GHz





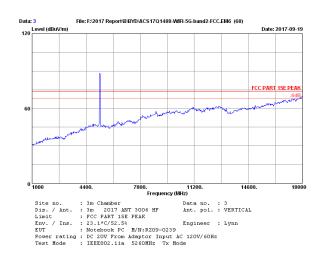
Data no. : 2 Ant. pol. : HORIZONTAL

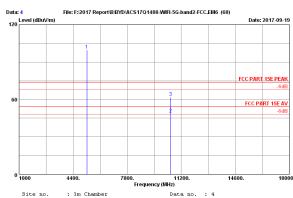
No.	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Amp factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5260.00	33.32	12.89	88.31	34.02	100.50	74.00	-26.50	Peak
2	10520.00	38.51	18.22	28.61	36.24	49.10	54.00	4.90	Average
3	10520.00	38.51	18.22	41.82	36.24	62.31	74.00	11.69	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading

-Amp factor.

2. The emission levels that are 20dB below the official limit are not reported.

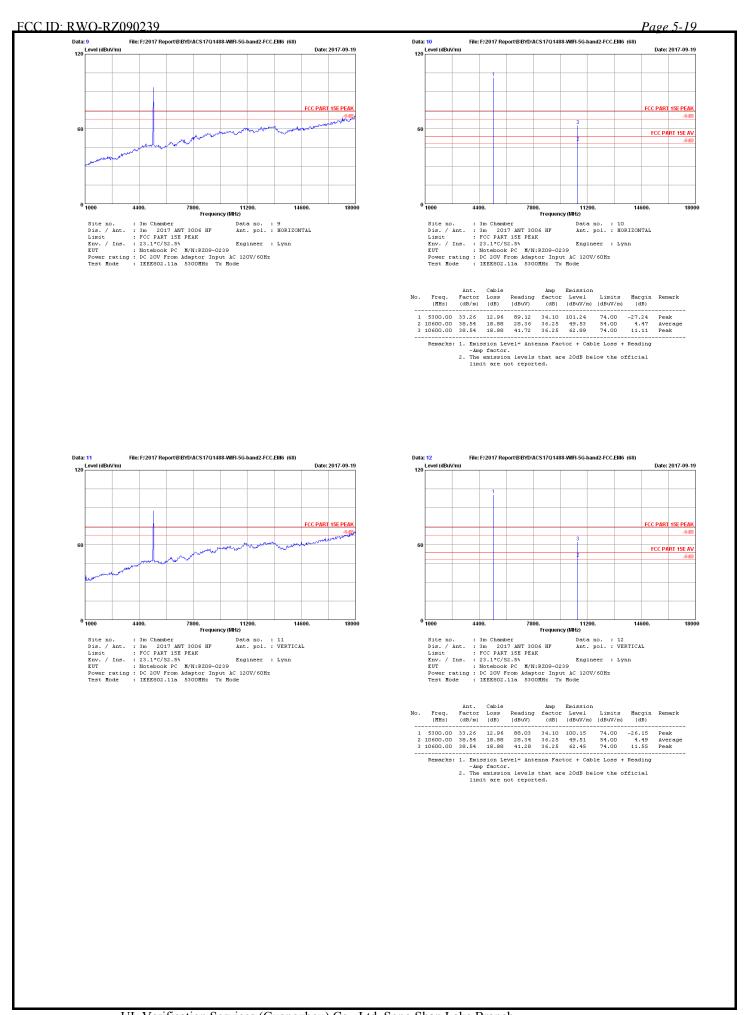


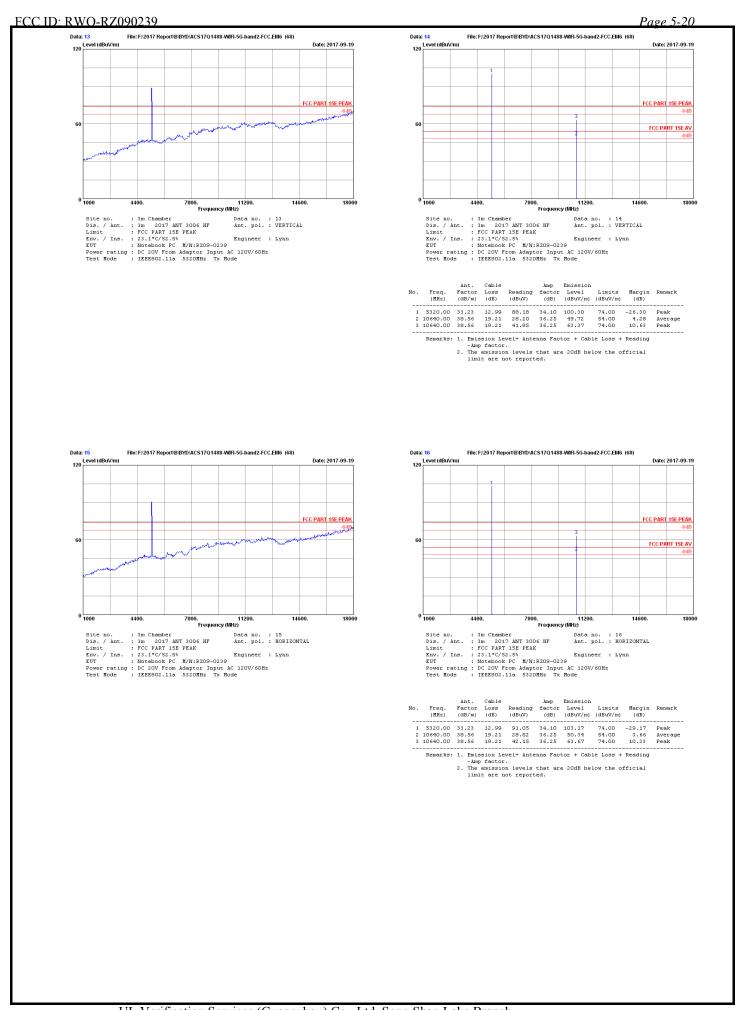


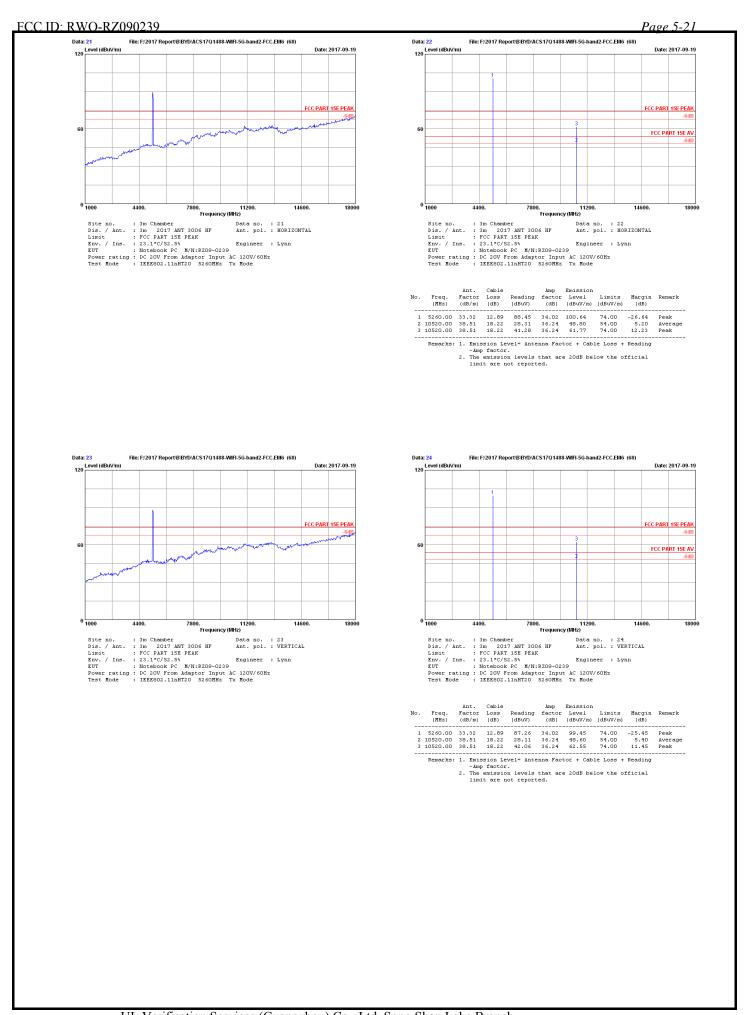
Data no. : 4 Ant. pol. : VERTICAL

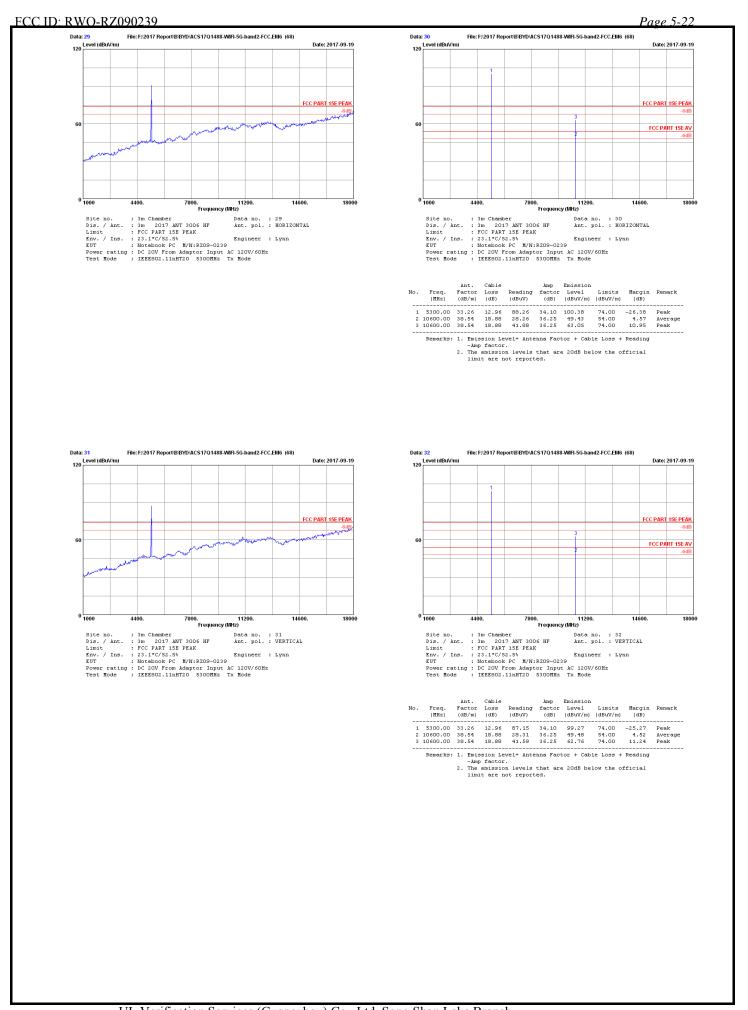
No.	Freq.	Factor (dB/m)	Loss (dB)	Reading (dBuV)	factor (dB)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5260.00	33.32	12.89	87.31	34.02	99.50	74.00	-25.50	Peak
2	10520.00	38.51	18.22	28.07	36.24	48.56	54.00	5.44	Average
3	10520.00	38.51	18.22	41.33	36.24	61.82	74.00	12.18	Peak
	Damarke	1 Fmis	gion Le	rels inte	nna Fact	tor + Ceb	la Torr +	Panding	

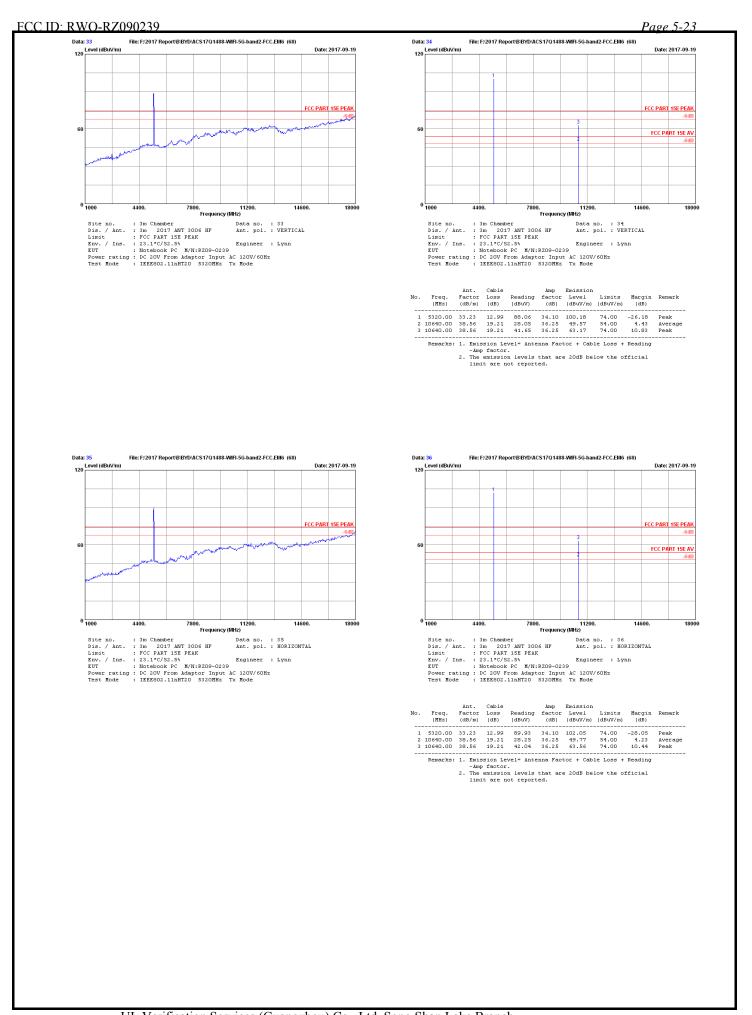
Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.
 The emission levels that are 20dB below the official limit are not reported.

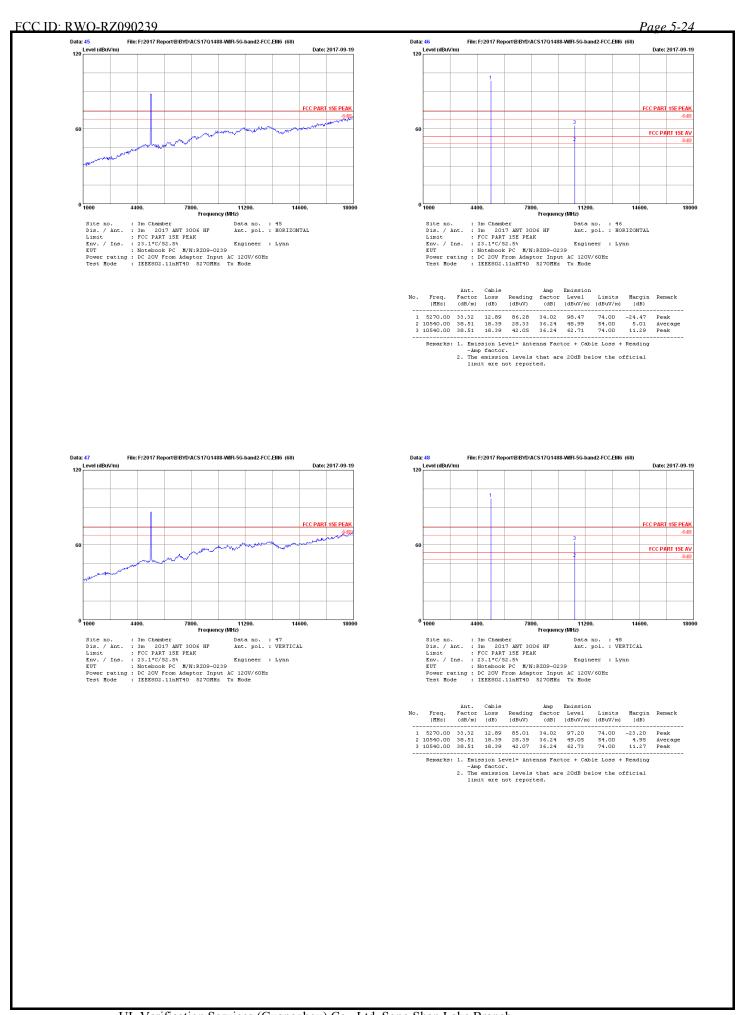


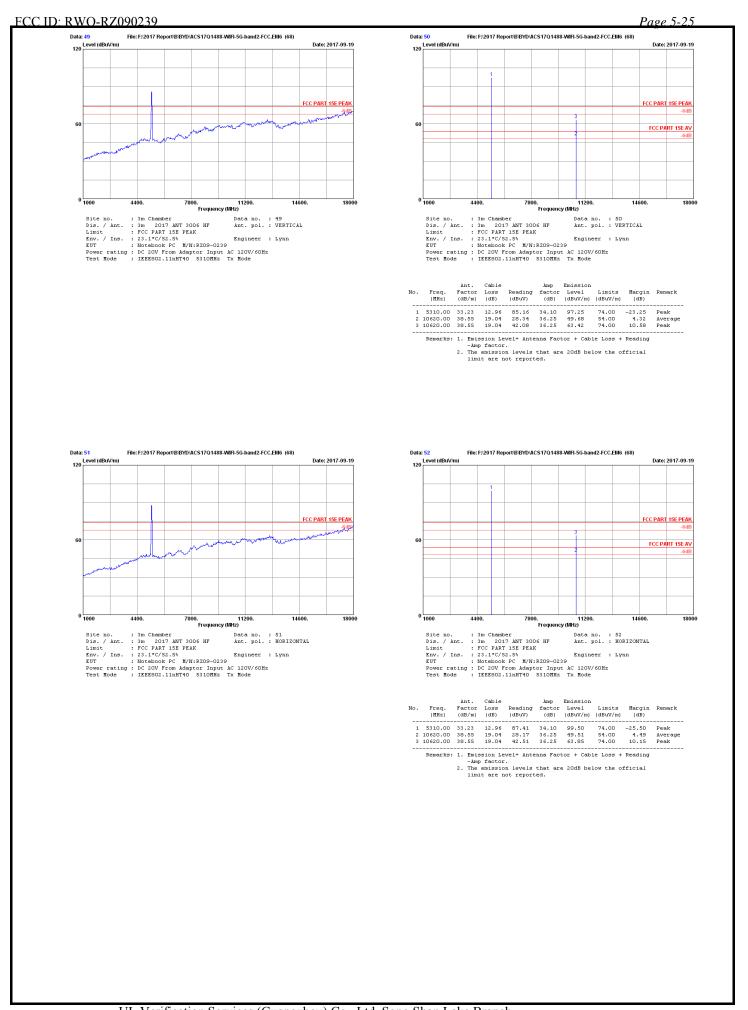


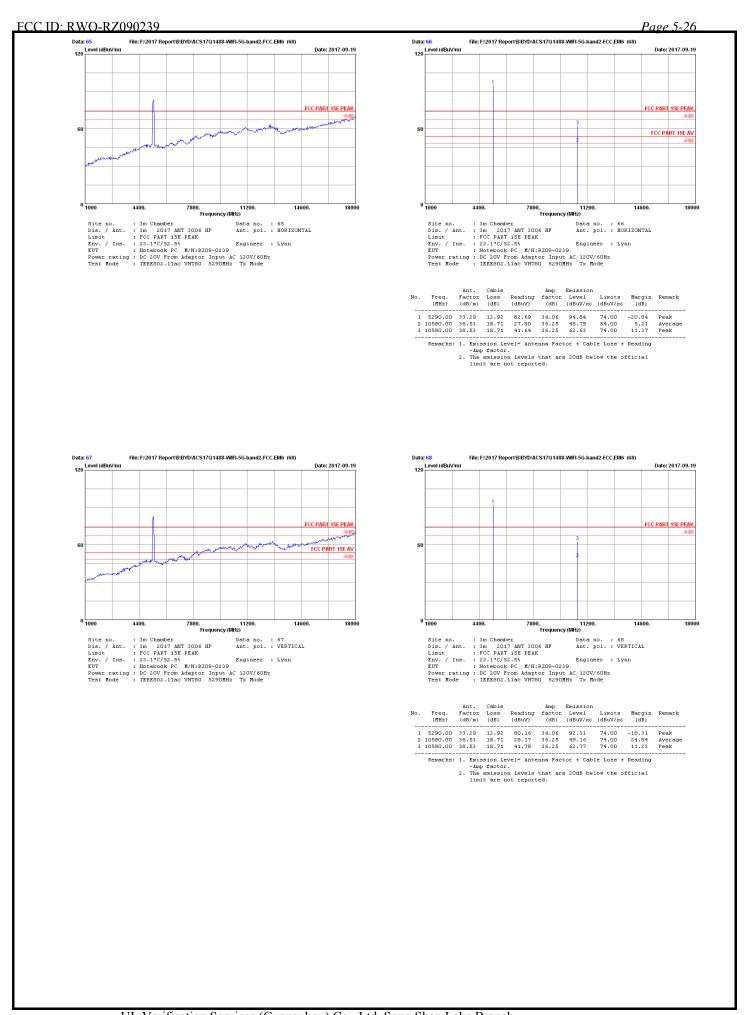






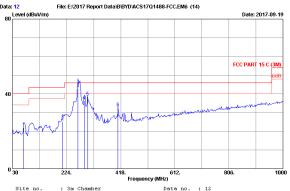






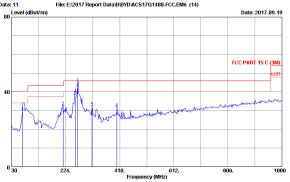
FCC ID: RWO-RZ090239 Page 5-27

5500-5700MHz Band: Frequency: 30MHz~1GHz



No.	Freq.	Factor (dB/m)	Loss (dB)	Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	70.740	17.38	0.92	3.44	21.74	40.00	18.26	QP
2	209.450	16.90	1.70	6.48	25.08	43.50	18.42	QP
3	264.740	18.81	2.03	22.04	42.88	46.00	3.12	QP
4	287.050	19.64	2.17	14.57	36.38	46.00	9.62	QP
5	299.660	19.90	2.25	16.10	38.25	46.00	7.75	QP
6	408.300	22.36	2.91	7.21	32.48	46.00	13.52	QP

Remarks: 1. Emission Level- Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

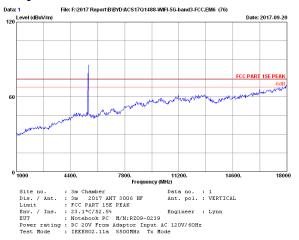


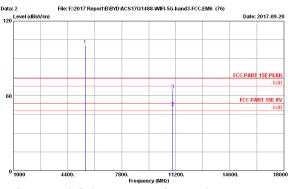
No.	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	70.740	17.38	0.92	10.74	29.04	40.00	10.96	QP
2	214.300	16.90	1.73	13.51	32.14	43.50	11.36	QP
3	257.950	18.55	1.99	17.12	37.66	46.00	8.34	QP
4	267.650	18.94	2.05	20.87	41.86	46.00	4.14	QP
5	319.060	20.35	2.37	8.84	31.56	46.00	14.44	QP
6	408.300	22.36	2.91	5.64	30.91	46.00	15.09	QP

Remarks: 1. Emission Level- Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: RWO-RZ090239 Page 5-28

Frequency: 1GHz~18GHz

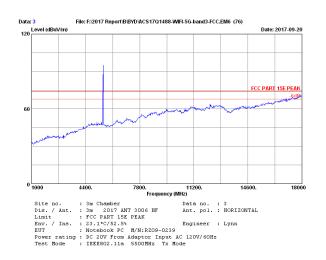


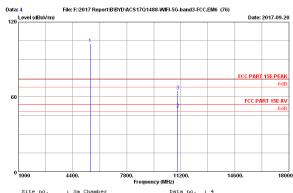


Data no. : 2 Ant. pol. : VERTICAL

No.	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Amp factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5500.00	32.90	13.29	88.72	34.37	100.54	74.00	-26.54	Peak
2	11000.00	38.70	22.15	26.14	36.28	50.71	54.00	3.29	Average
3	11000.00	38.70	22.15	40.28	36.28	64.85	74.00	9.15	Peak

Remarks: 1. Emission Level- Antenna Factor + Cable Loss + Reading
-Amp factor.
2. The emission levels that are 20dB below the official
limit are not reported.

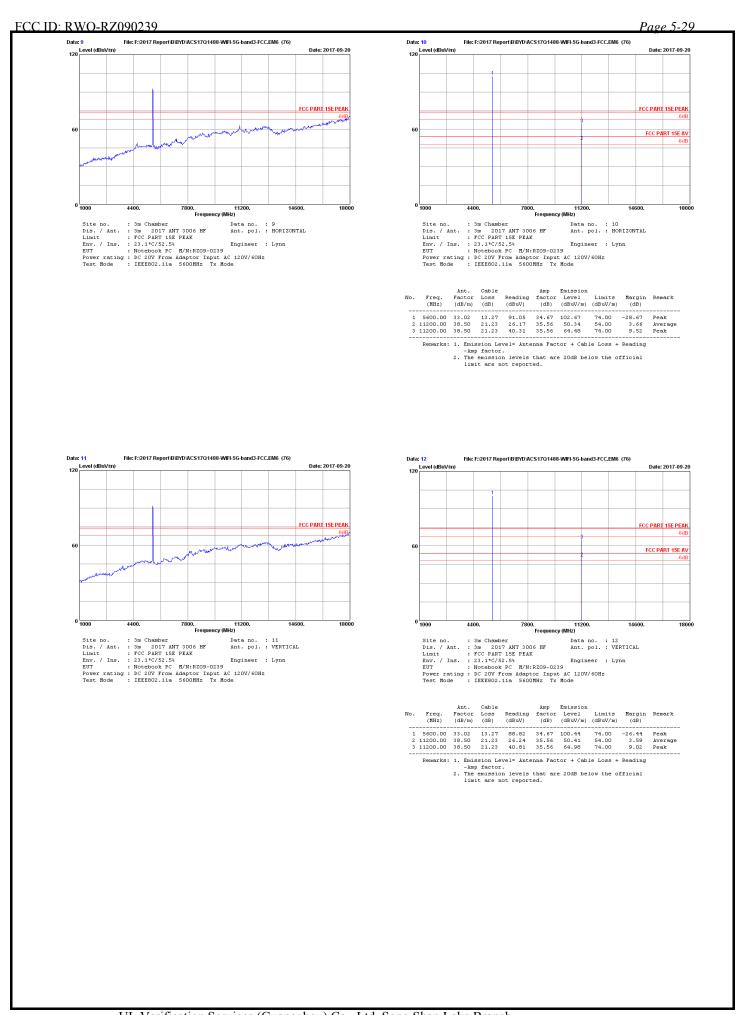


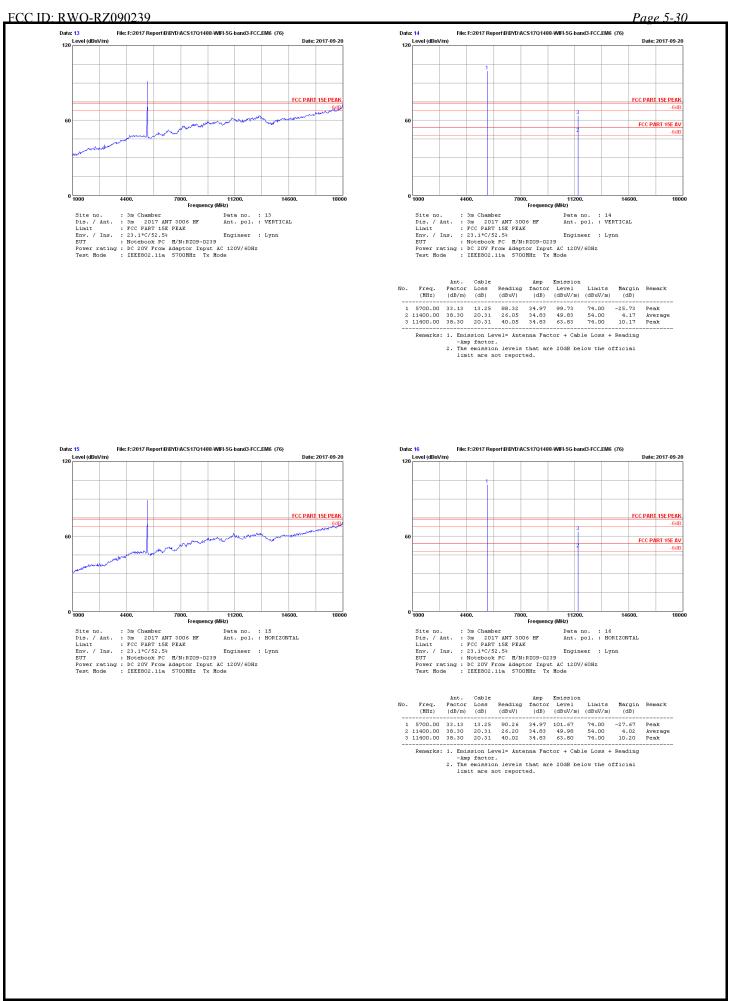


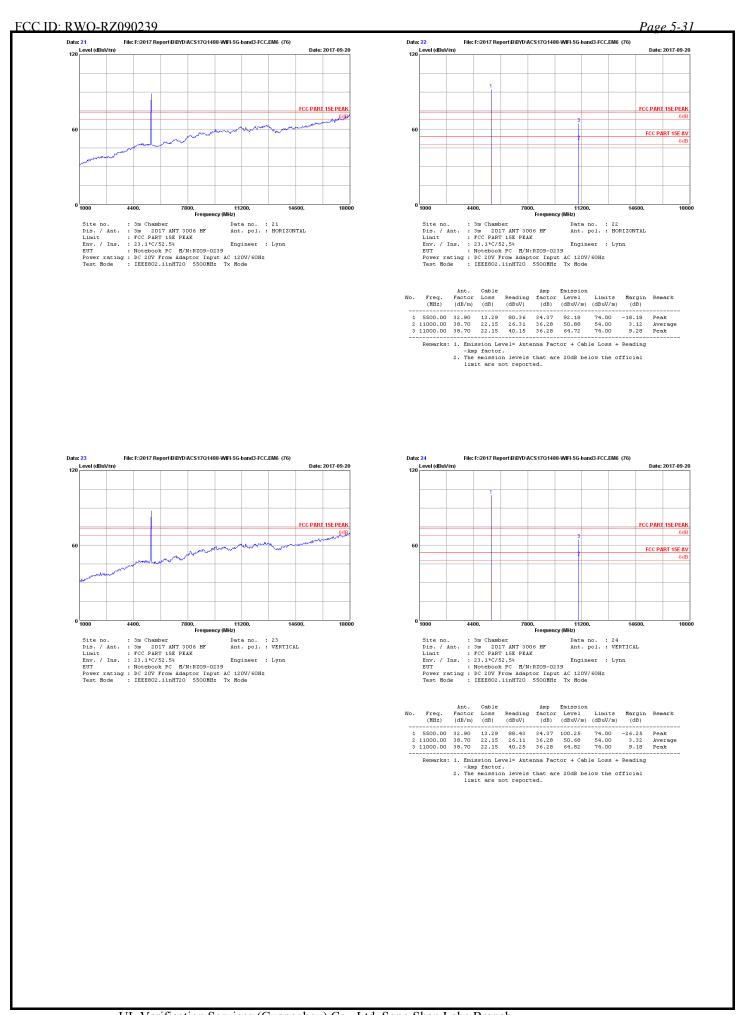
Data no. : 4 Ant. pol. : HORIZONTAL

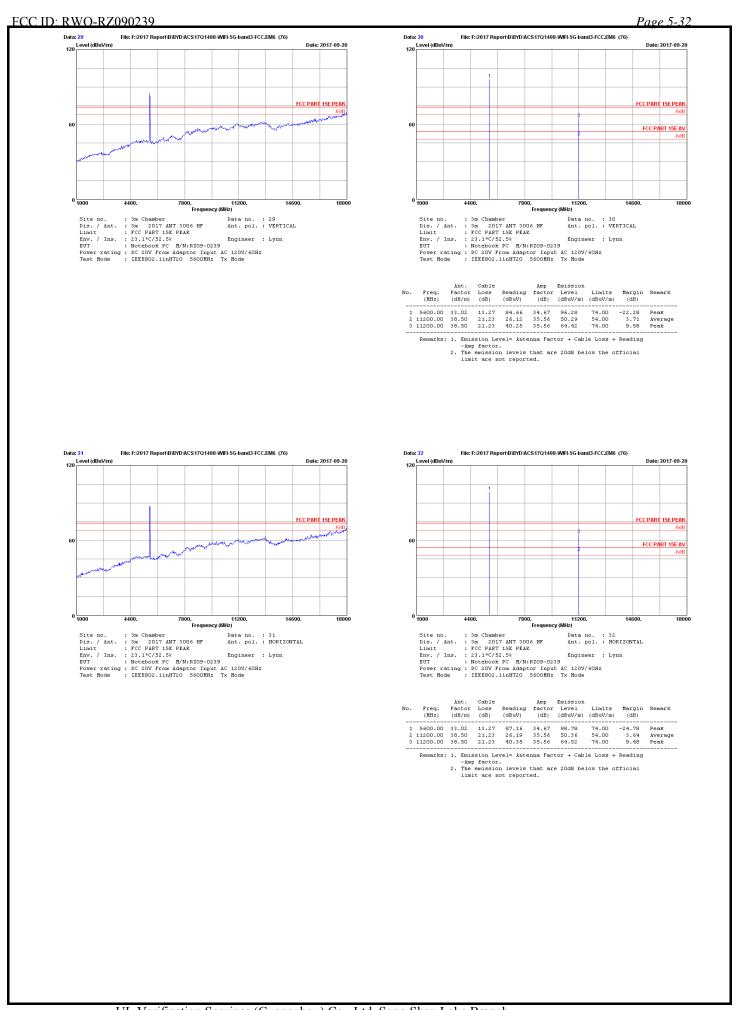
No.	Freq.	Ant. Factor (dB/m)	Loss (dB)	Reading (dBuV)	Amp factor (dB)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5500.00	32.90	13.29	90.90	34.37	102.72	74.00	-28.72	Peak
2	11000.00	38.70	22.15	26.07	36.28	50.64	54.00	3.36	Average
3	11000.00	38.70	22.15	40.25	36.28	64.82	74.00	9.18	Peak
	Remarks:	1. Fmis	sion Le	wel= inte	nna Fact	tor + Cabl	e Loss +	Reading	

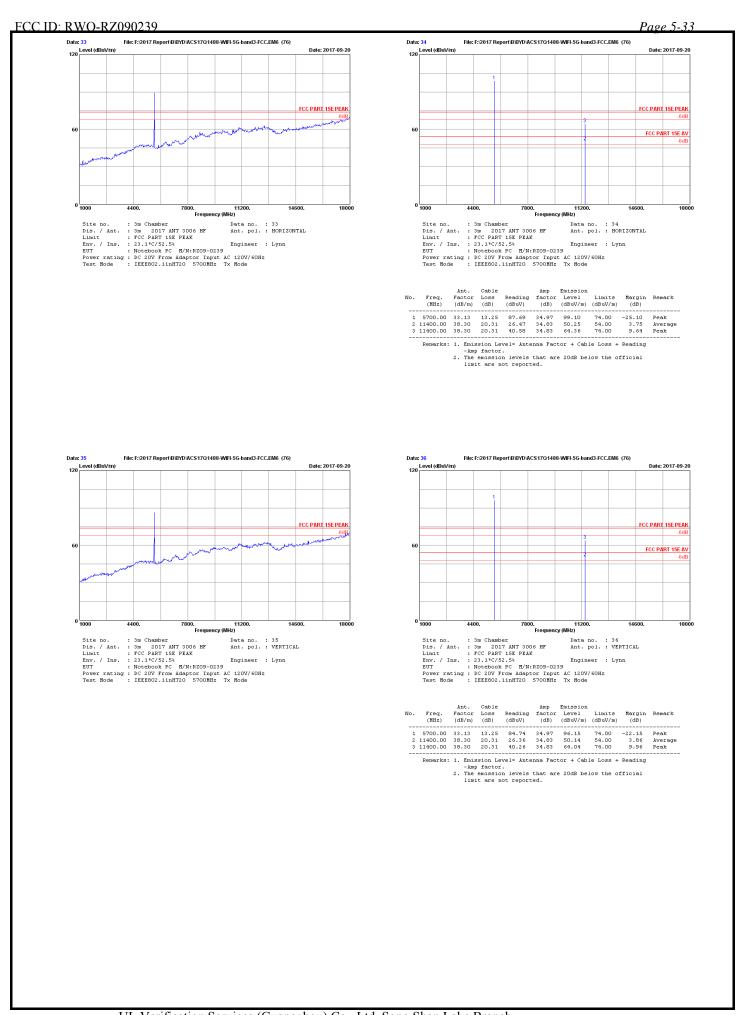
Emission Level= Antenna Factor + Cable Loss + Reading
-Amp factor.
 The emission levels that are 20dB below the official
limit are not reported.

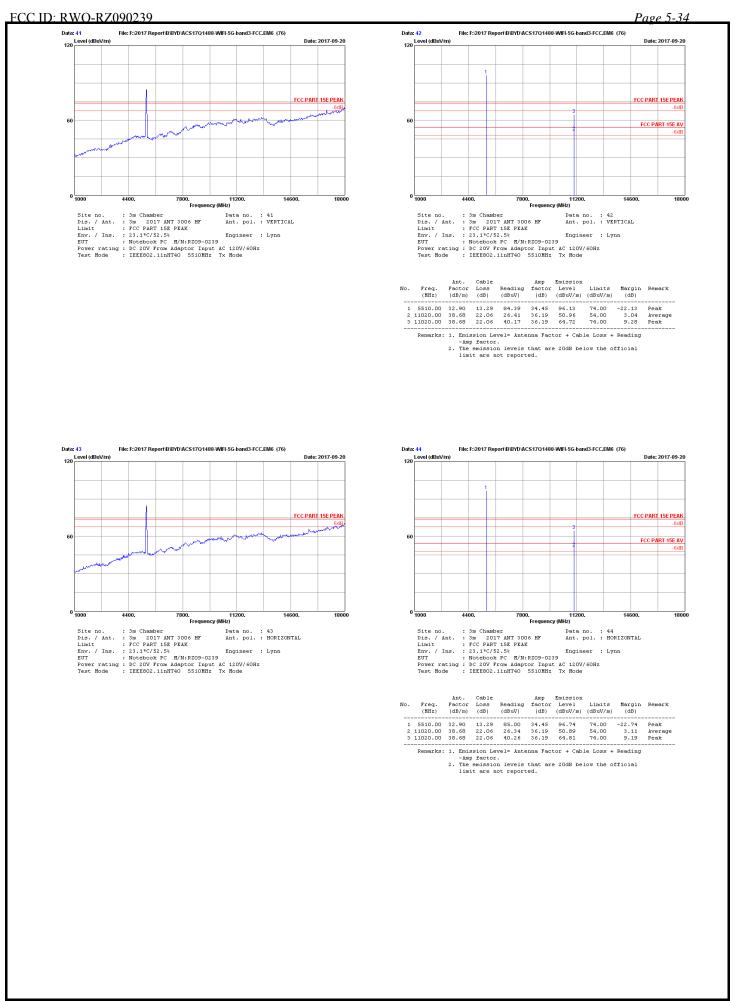


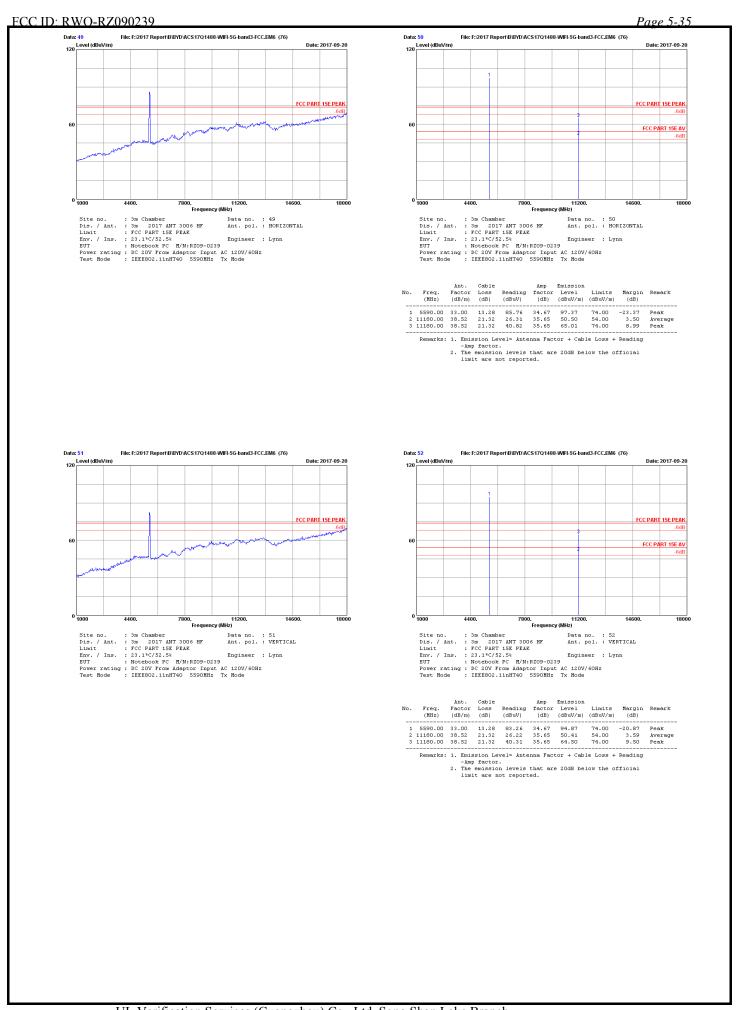


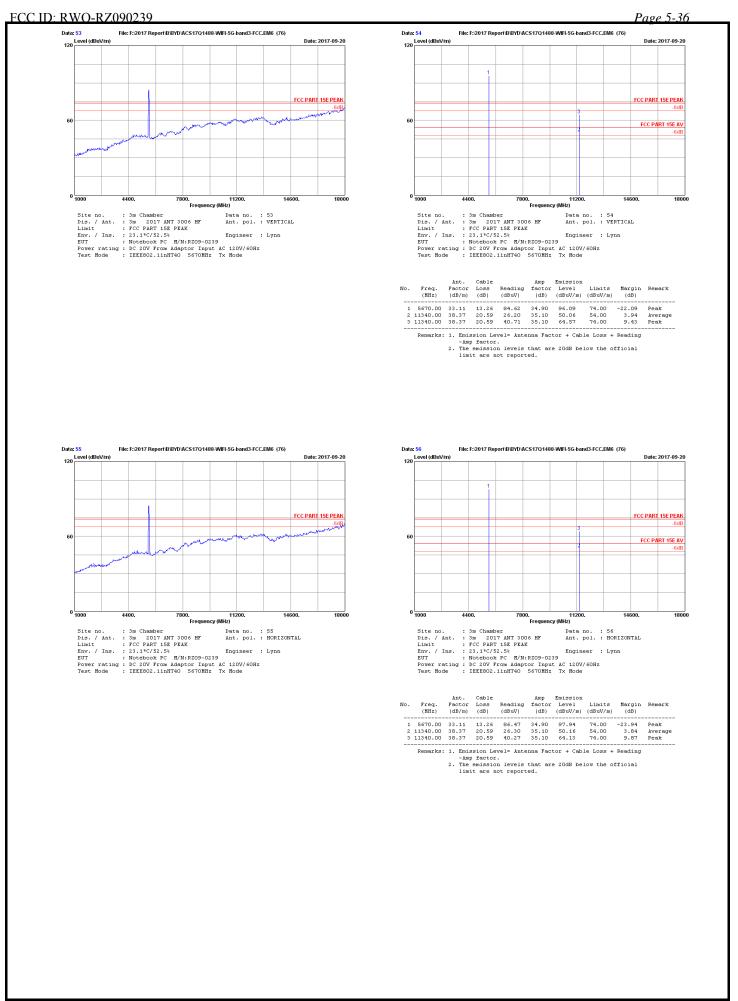


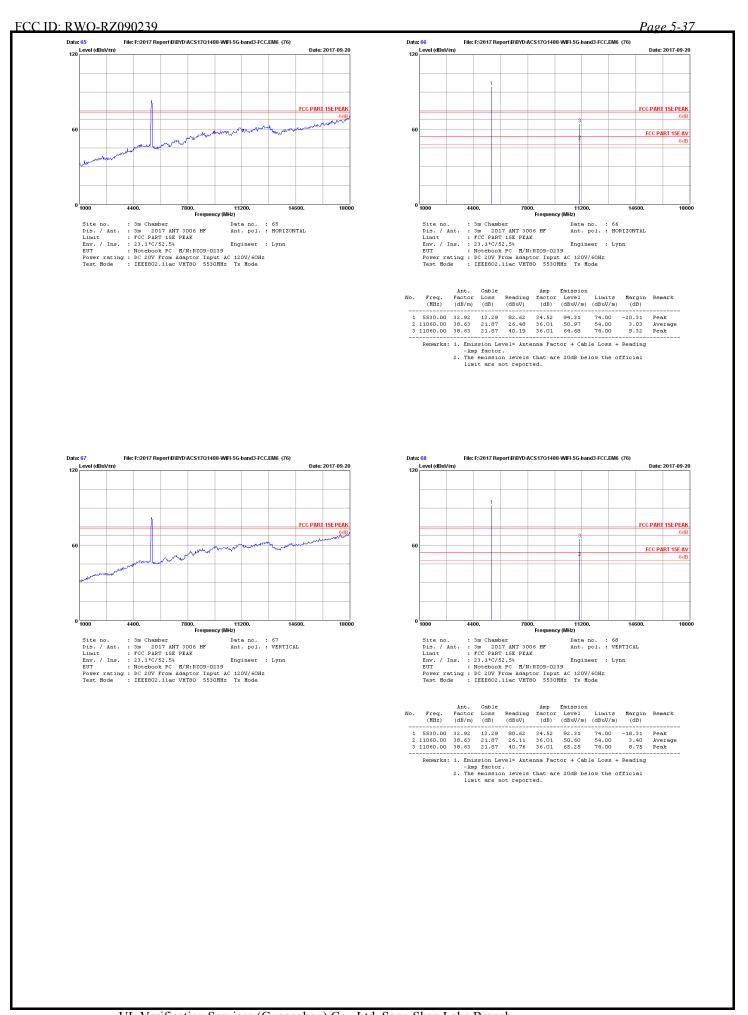


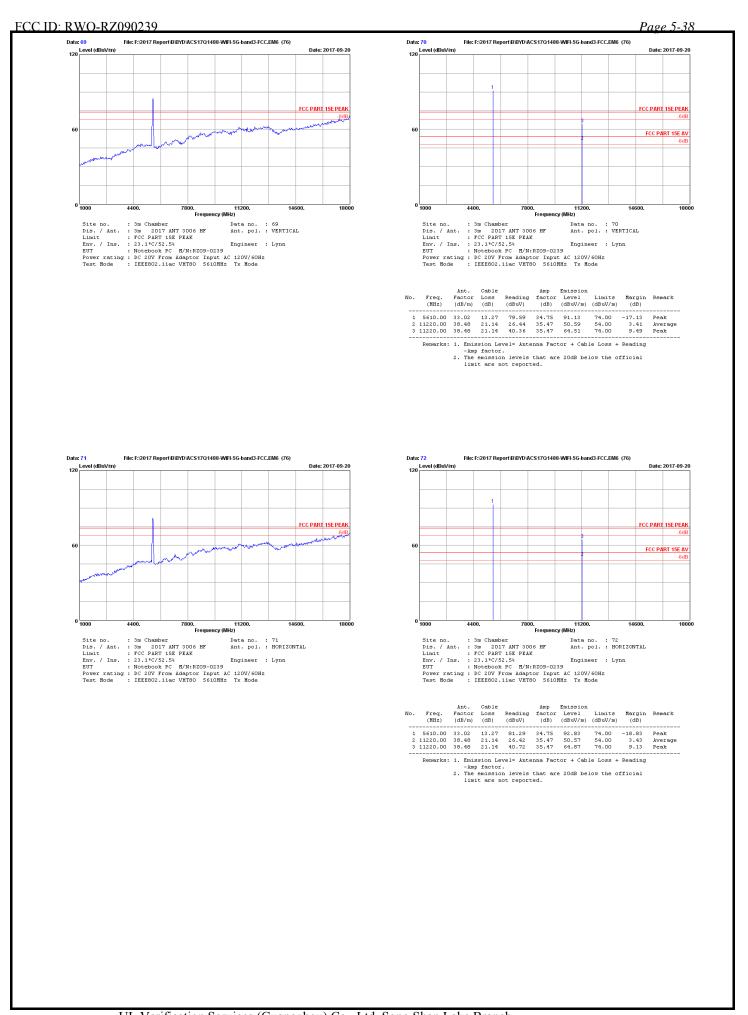






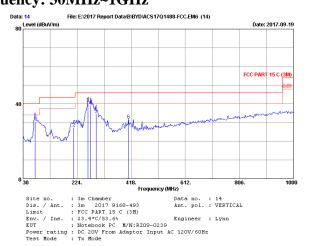






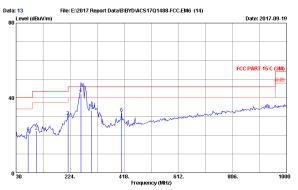
FCC ID: RWO-RZ090239 Page 5-39

5745-5825MHz Band: Frequency: 30MHz~1GHz



No.	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	73.650	16.73	0.94	12.57	30.24	40.00	9.76	OP
2	212.360	16.90	1.72	8.63	27.25	43.50	16.25	QP
3	262.800	18.73	2.02	19.63	40.38	46.00	5.62	QP
4	272.500	19.16	2.08	18.06	39.30	46.00	6.70	QP
5	291.900	19.74	2.20	12.50	34.44	46.00	11.56	QP
6	408.300	22.36	2.91	6.12	31.39	46.00	14.61	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



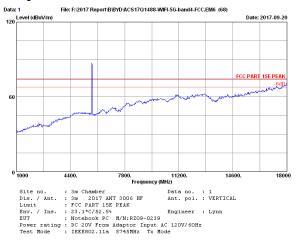
Site no.	: 3m Chamber	Data no.	:	13
Dis. / Ant.	: 3m 2017 9168-493	Ant. pol.	:	HORIZONTAL
Limit	: FCC PART 15 C (3M)			
Env. / Ins.	: 23.4*C/53.6%	Engineer	:	Lynn
EUT	: Notebook PC M/N:RZ09-0239			
Power rating	: DC 20V From Adaptor Input A	C 120V/60H2	2	
Test Mode	· Tv Mode			

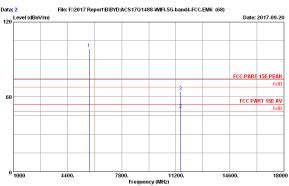
-	No.	Freq.	Factor (dB/m)	Loss (dB)	Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
	1	73.650	16.73	0.94	2.73	20.40	40.00	19.60	QP
	2	102.750	15.17	1.11	6.05	22.33	43.50	21.17	QP
	3	216.240	16.90	1.74	11.54	30.18	46.00	15.82	QP
	4	262.800	18.73	2.02	21.55	42.30	46.00	3.70	QP
	5	301.600	19.94	2.26	10.99	33.19	46.00	12.81	QP
	6	408.300	22.36	2.91	6.64	31.91	46.00	14.09	QP

Remarks: 1. Emission Level- Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20d8 below the official limit are not reported.

FCC ID: RWO-RZ090239 Page 5-40

Frequency: 1GHz~18GHz

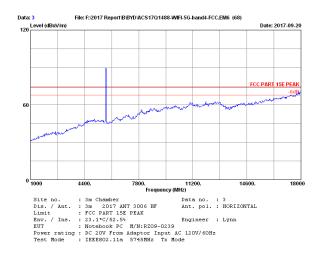


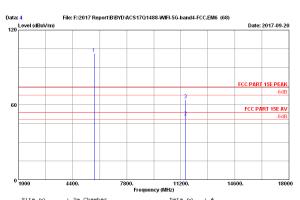


Data no. : 2 Ant. pol. : VERTICAL

No.	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Amp factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5745.00	33.19	13.25	87.36	35.12	98.68	74.00	-24.68	Peak
2	11490.00	38.22	19.94	26.45	34.56	50.05	54.00	3.95	Average
3	11490.00	38.22	19.94	40.58	34.56	64.18	74.00	9.82	Peak

Remarks: 1. Emission Level- Antenna Factor + Cable Loss + Reading -Amp factor. 2. The emission levels that are 20dB below the official limit are not reported.

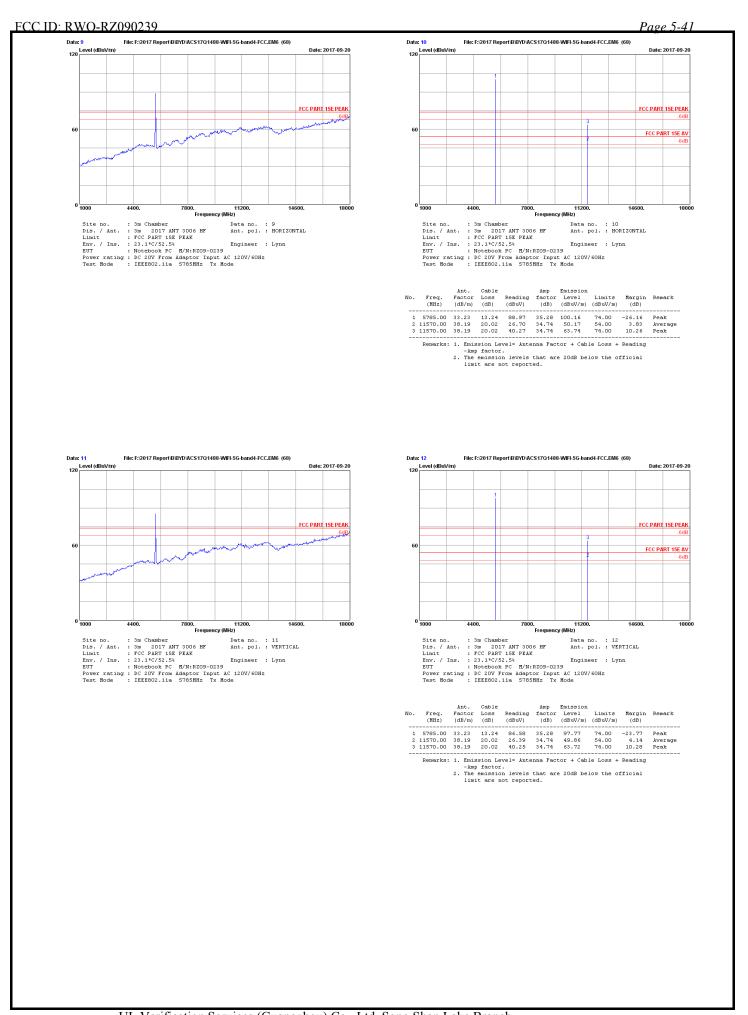


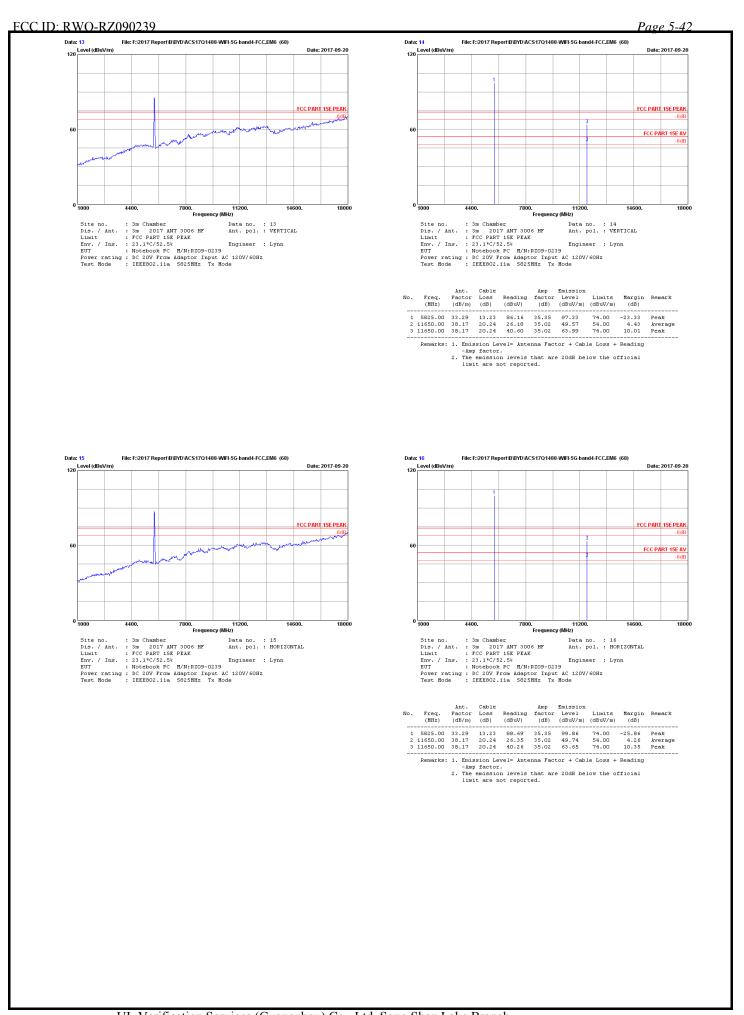


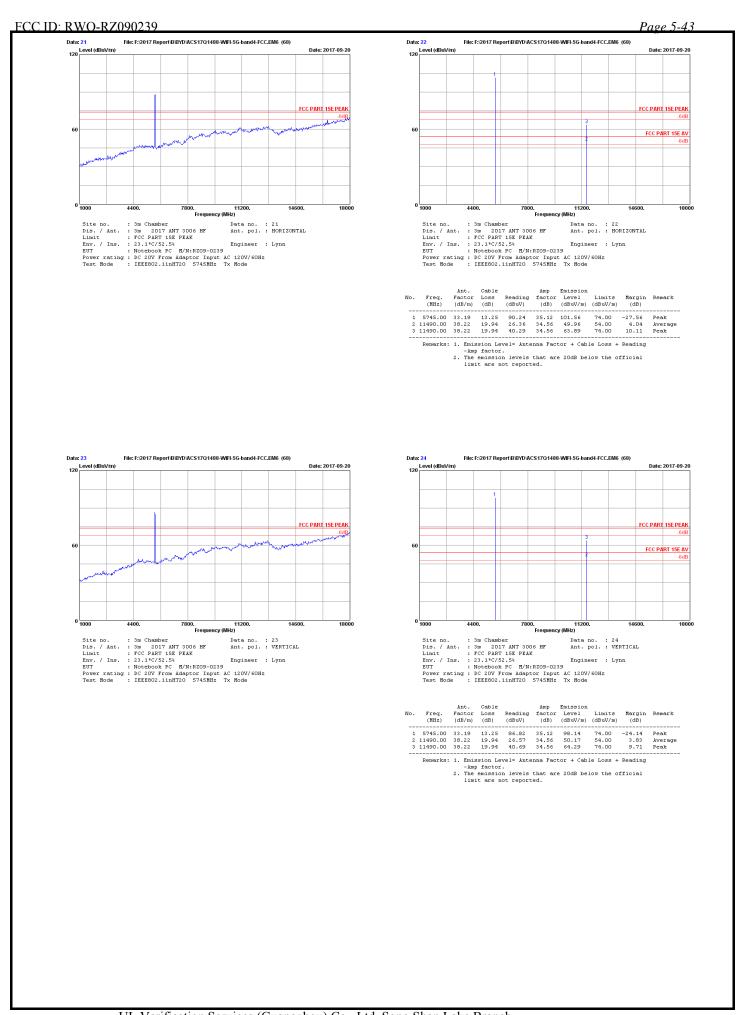
Data no. : 4 Ant. pol. : HORIZONTAL

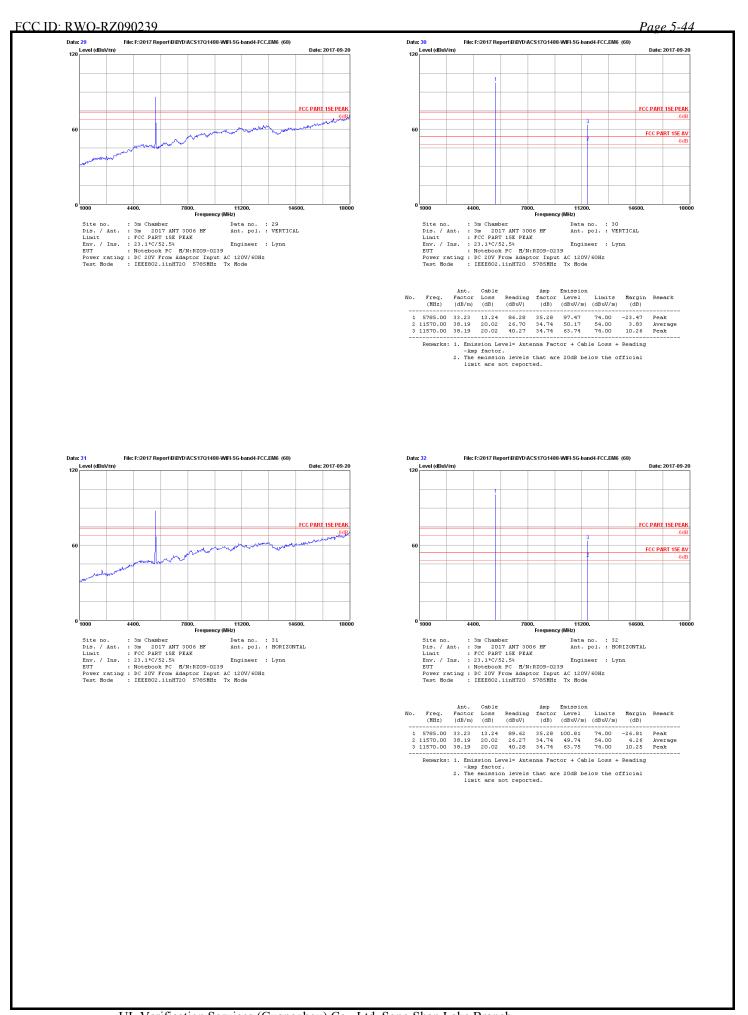
No.	Freq.	Factor (dB/m)	Loss (dB)	Reading (dBuV)	factor (dB)		Limits (dBuV/m)	Margin (dB)	Remark
1	5745.00	33.19	13.25	89.81	35.12	101.13	74.00	-27.13	Peak
2	11490.00	38.22	19.94	26.76	34.56	50.36	54.00	3.64	Average
3	11490.00	38.22	19.94	40.52	34.56	64.12	74.00	9.88	Peak
	Downwises	1 Francis	oton To	rol- Into	nno Foot	or I Cob l		Dooding	

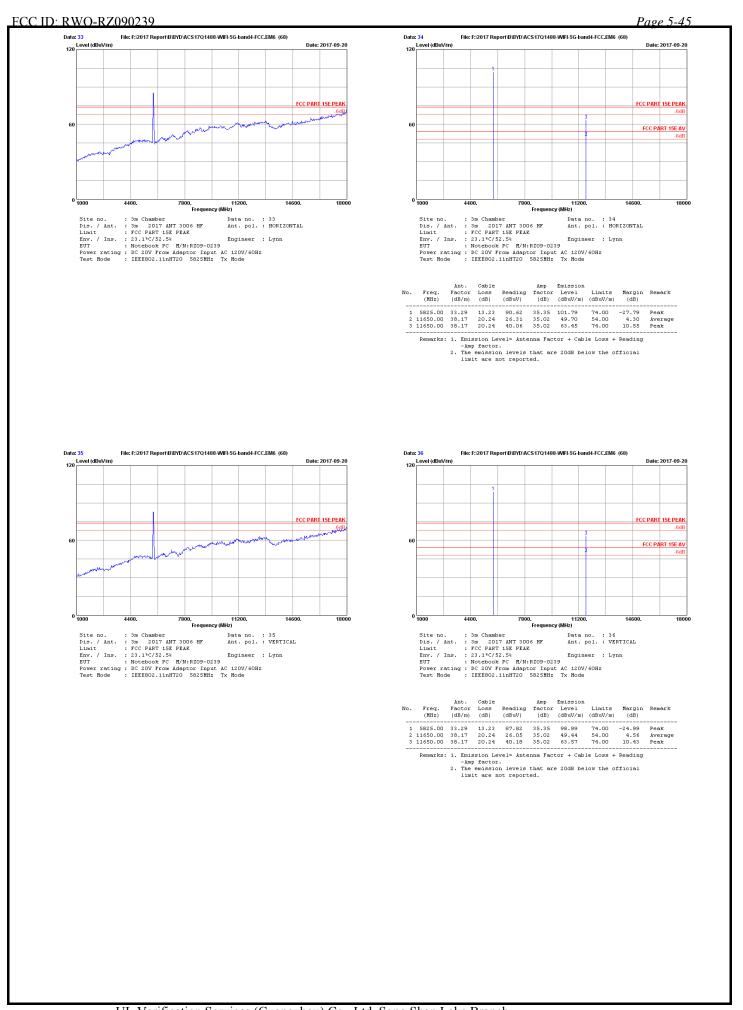
ks: 1. Emission Level- Antenna Factor + Cable Loss + Reading -Amp factor.
2. The emission levels that are 20dB below the official limit are not reported.

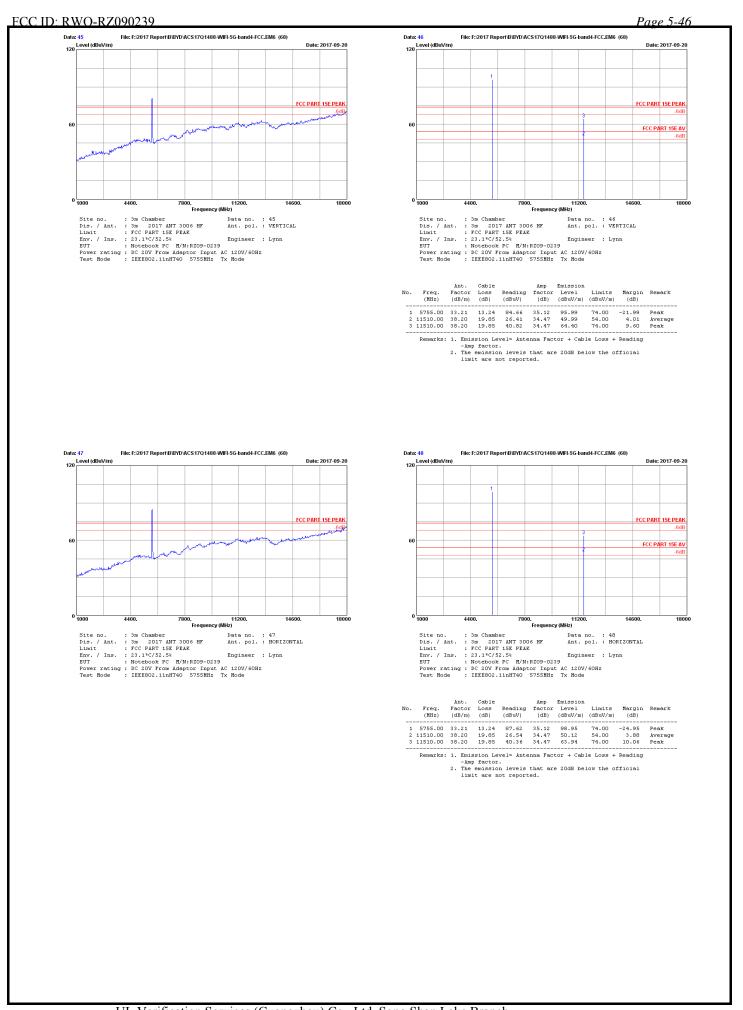


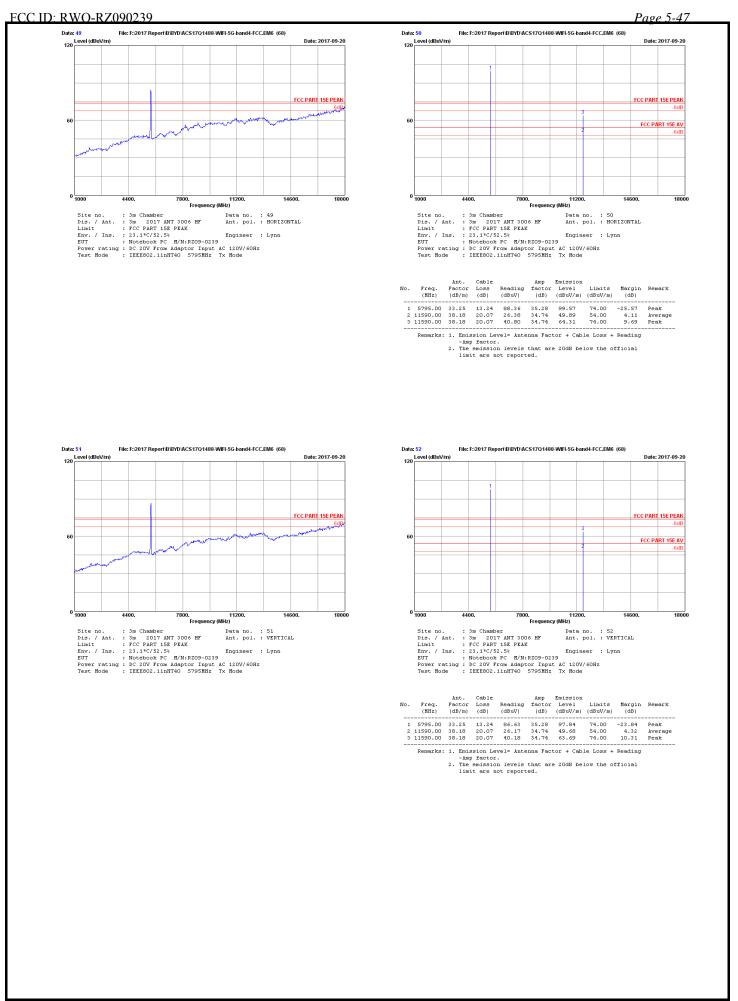


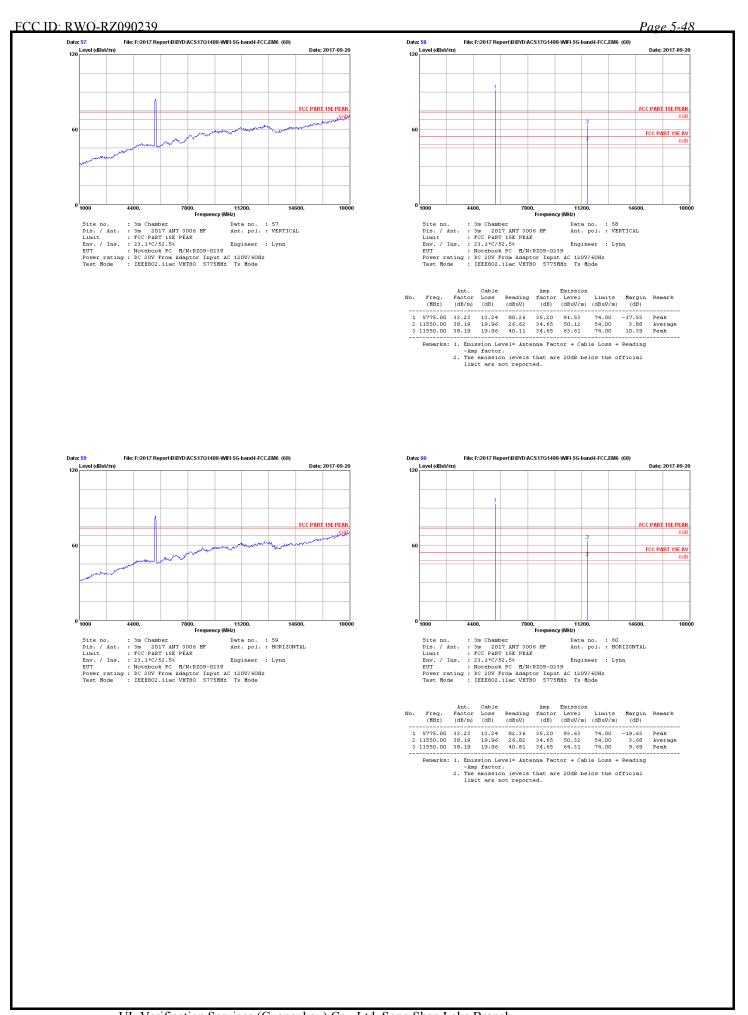












FCC ID: RWO-RZ090239 Page 6-1

6. BAND EDGE COMPLIANCE TEST

6.1.Limit

For transmitters operating in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p.

For devices with both operating frequencies and channel bandwidths contained within the band 5250-5350 MHz.

All emissions outside the band 5250-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p.

For transmitters operating in the band 5470-5725MHz, Emissions outside the band 5470-5725 MHz shall not exceed -27 dBm/MHz e.i.r.p.

For the band 5725-5850 MHz, emissions at frequencies from the band edges to 10 MHz above or below the band edges shall not exceed -17 dBm/MHz e.i.r.p.

For emissions at frequencies more than 10 MHz above or below the band edges, the emissions power shall not exceed -27 dBm/MHz.

6.2. Test Procedure

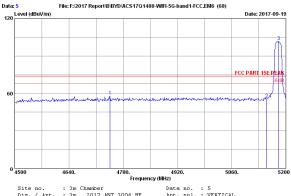
- 1. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.
- 2. The turntable was rotated for 360 degrees to determine the position of maximum emission level
- 3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
- 4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
 - (a) PEAK: RBW=1MHz; VBW=3MHz; Sweep=AUTO
 - (b) AVERAGE: RBW=1MHz; VBW=10Hz; Sweep=AUTO
- 5. Per KDB789033 clause H 2)d).if the test distance is 3m,the EIRP(dBm)=E(dBuv/m)-95.2 Get the final compare with limit.

6.3. Test Results

Pass (The testing data was attached in the next pages.)

FCC ID: RWO-RZ090239 <u>Page 6-2</u>

5180-5240MHz Band:

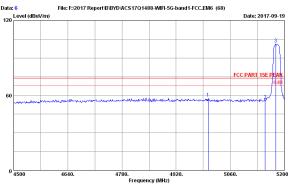


Ant. pol.	:	VERTICAL
Engineer	:	Lynn
120V/60H	ž.	
ie		
	Engineer	Ant. pol. : Engineer : C 120V/60Hz

No.	Freq.	Factor (dB/m)	Loss (dB)	Reading (dBuV)	factor (dB)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	4746.40	33.28	11.95	46.47	33.87	57.83	74.00	16.17	Peak
2	5150.00	33.53	12.69	43.12	33.87	55.47	74.00	18.53	Peak
3	5181.10	33.47	12.76	89.26	33.91	101.58	74.00	-27.58	Peak

marks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
-Amp factor.

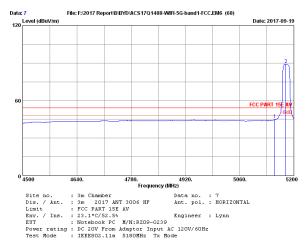
2. The emission levels that are 20dB below the official
limit are not reported.



Data no. : 6 Ant. pol. : HORIZONTAL

No.	Freq.	Factor (dB/m)	Loss (dB)	Reading (dBuV)	factor (dB)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	
1	5002.60	33.80	12.46	45.33	33.64	57.95	74.00	16.05	Peak	
2	5150.00	33.53	12.69	43.67	33.87	56.02	74.00	17.98	Peak	
3	5177.60	33.47	12.76	89.00	33.91	101.32	74.00	-27.32	Peak	
										-

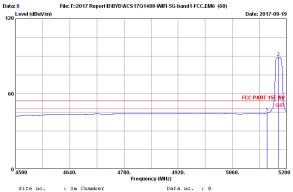
Remarks: 1. Emission Level- Antenna Factor + Cable Loss + Reading
-Amp factor.
2. The emission levels that are 20dB below the official
limit are not reported.



Amp Emission

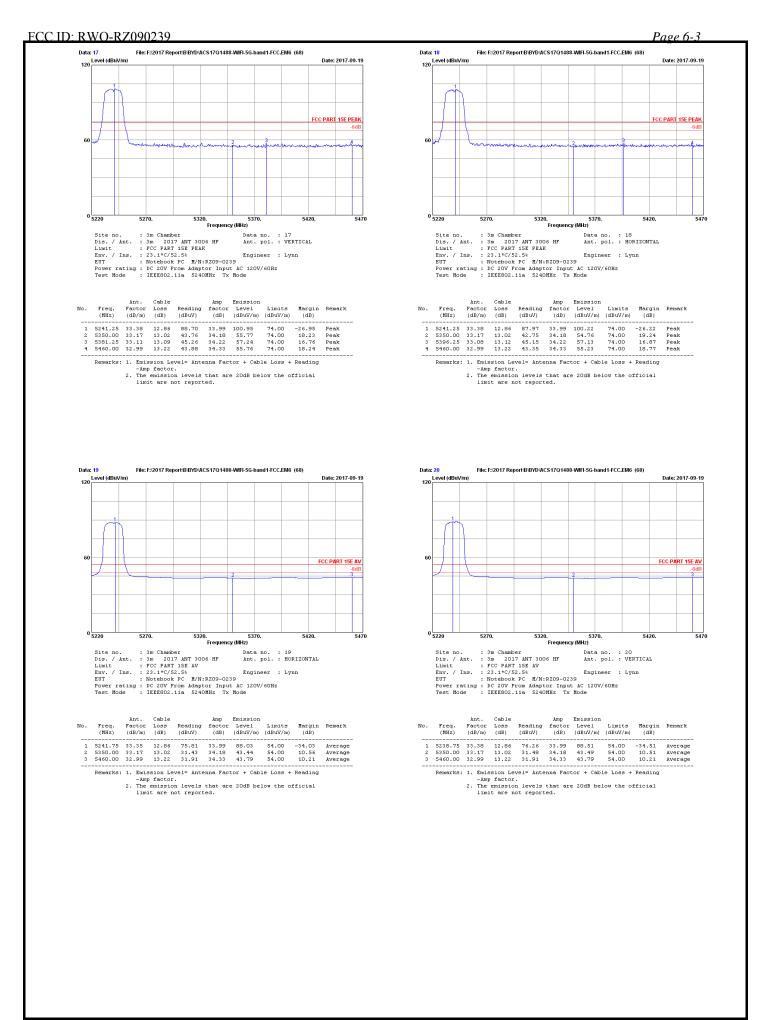
No.	Freq.	Factor (dB/m)	Loss (dB)	Reading (dBuV)	factor (dB)	Level (dBuV/m)	Limits (dBuV/m)	Hargin (dB)	Remark
1	5150.00	33.53	12.69	32.31	33.87	44.66	54.00	9.34	Average
2	5179.00	33.47	12.76	76.60	33.91	88.92	54.00	-34.92	Average
	Damarke.	1 Fmis	eion Le	wels into	nne Fect	or + Cab	le Inee ±	Deading	

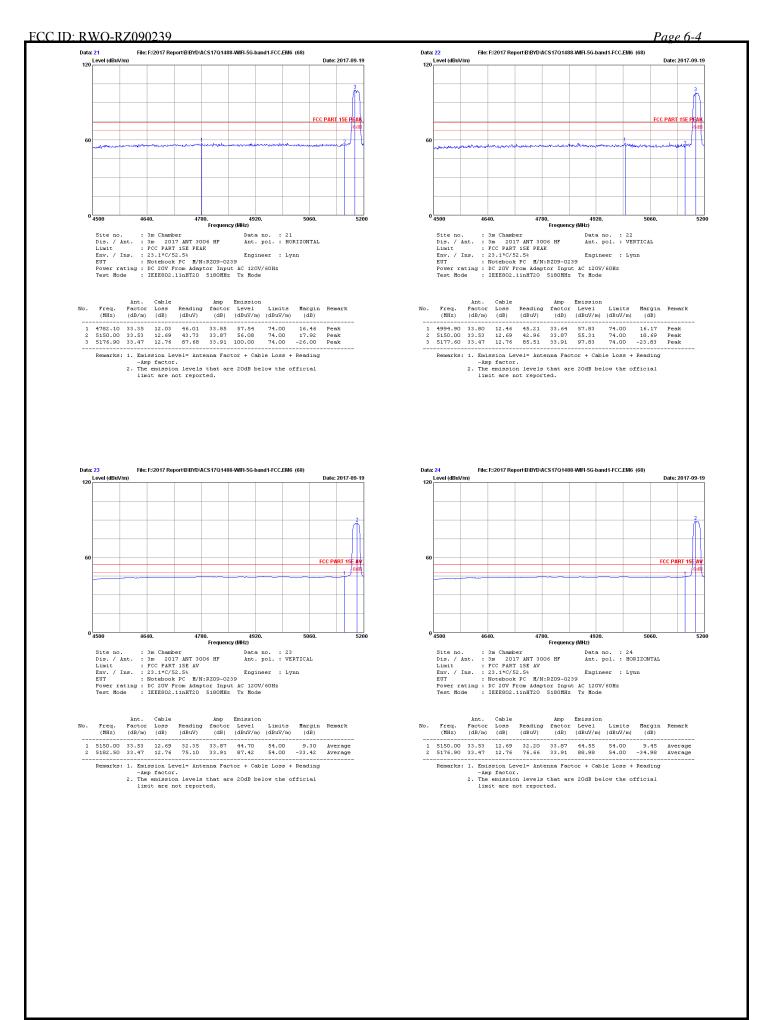
Emission Level= Antenna Factor + Caple Loss + Reading-Amp factor.
 The emission levels that are 20dB below the official limit are not reported.

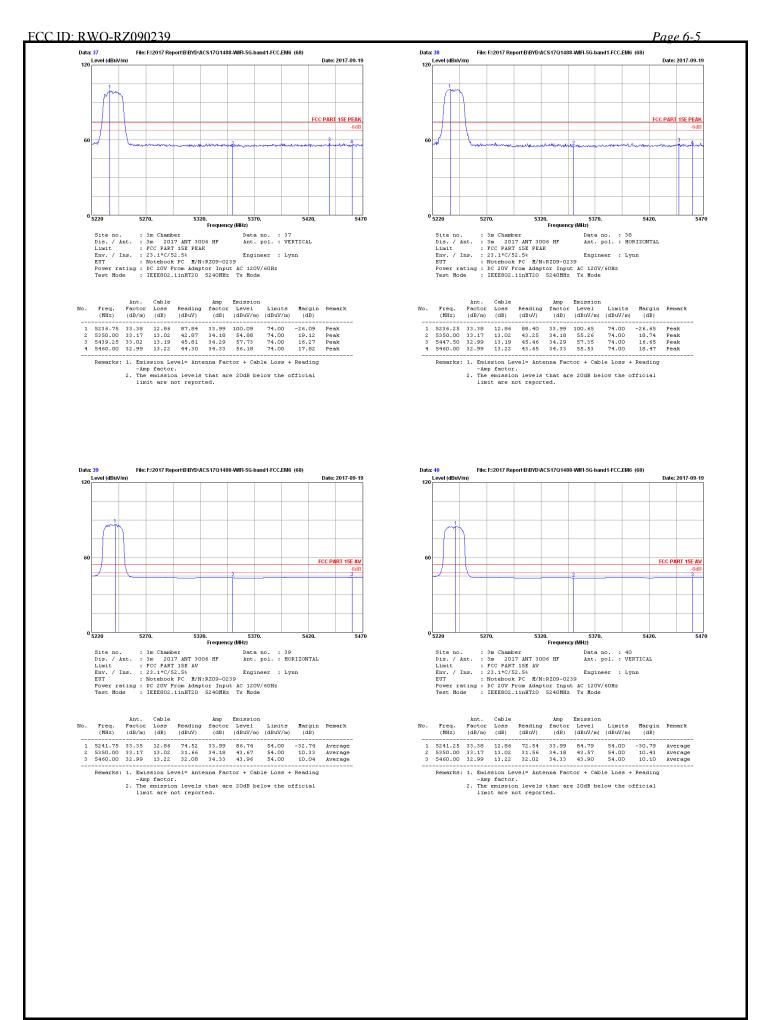


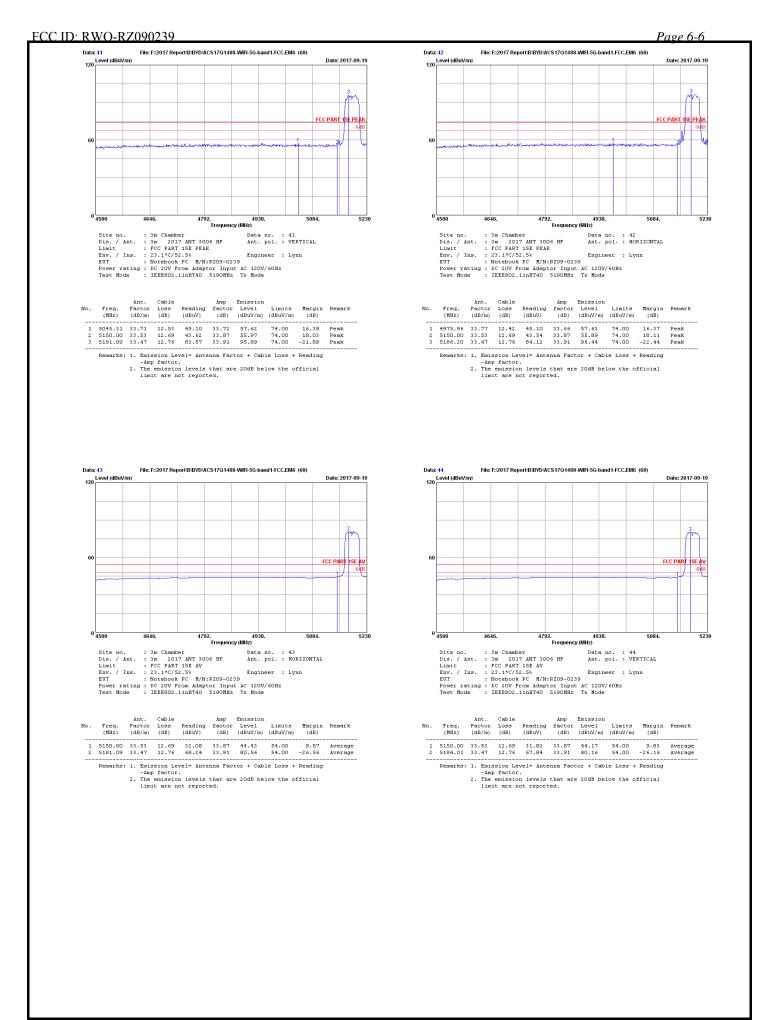
No.	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Amp factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2	5150.00	33.53	12.69	32.11	33.87	44.46	54.00	9.54	Average
	5179.00	33.47	12.76	76.43	33.91	88.75	54.00	-34.75	Average

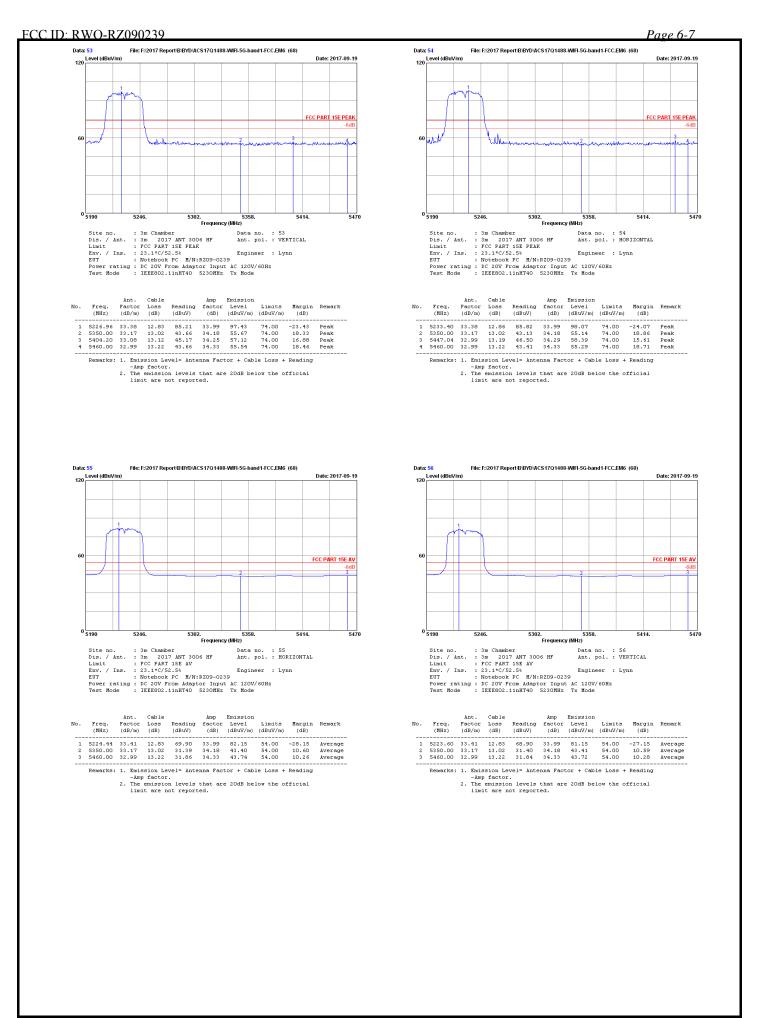
Remarks: 1. Emission Level* Antenna Factor + Cable Loss + Reading
-Amp factor.
2. The emission levels that are 20dB below the official
limit are not reported.

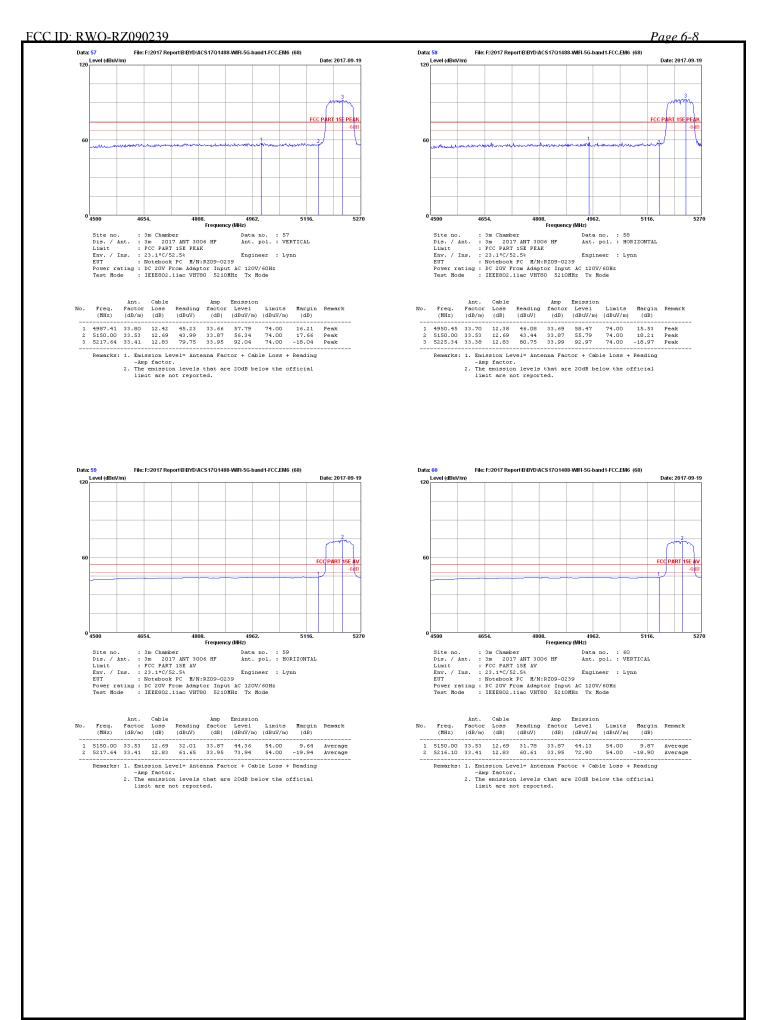


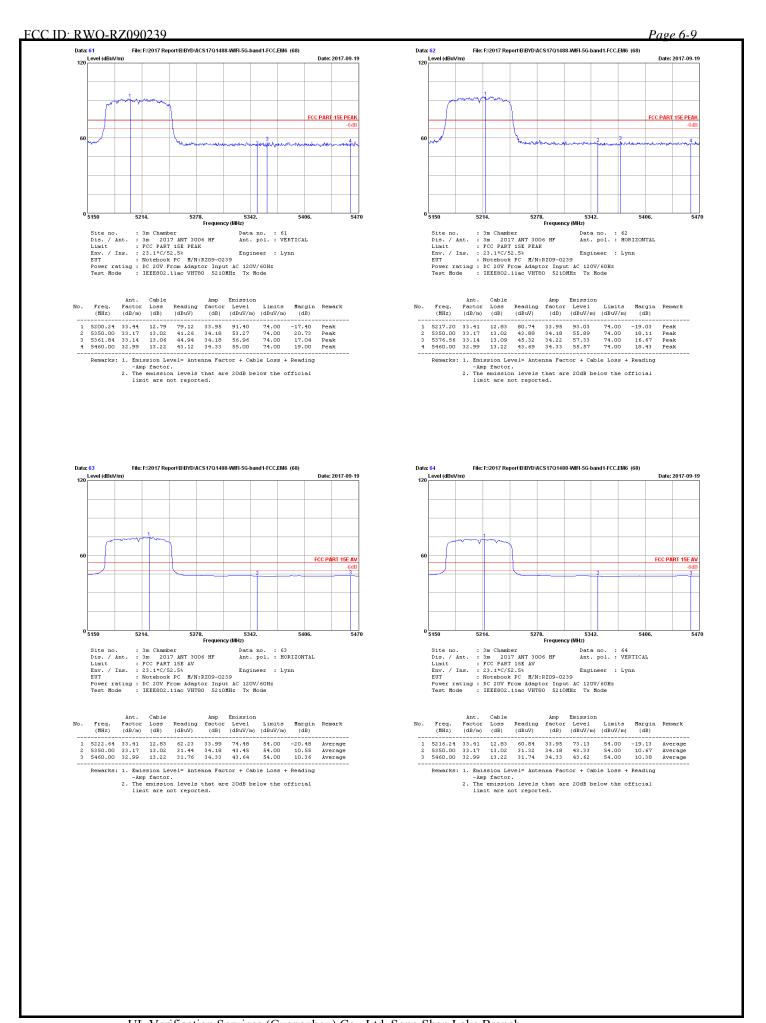






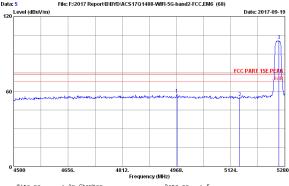






FCC ID: RWO-RZ090239 Page 6-10

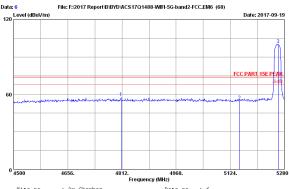
5260-5320MHz Band:



Data no. : 5 Ant. pol. : HORIZONTAL

No.	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Amp factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	4969.56	33.77	12.38	45.19	33.66	57.68	74.00	16.32	Peak
2	5150.00	33.53	12.69	42.80	33.87	55.15	74.00	18.85	Peak
3	5262.84	33.32	12.89	88.91	34.02	101.10	74.00	-27.10	Peak

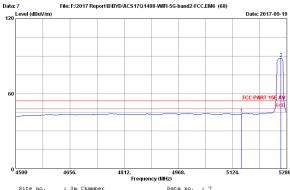
Remarks: 1. Emission Level- Antenna Factor + Cable Loss + Reading -Amp factor. 2. The emission levels that are 20dB below the official limit are not reported.



Data no. : 6 Ant. pol. : VERTICAL

No.	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Amp factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	
1	4809.66	33.42	12.07	45.97	33.82	57.64	74.00	16.36	Peak	
2	5150.00	33.53	12.69	42.37	33.87	54.72	74.00	19.28	Peak	
3	5262.06	33.32	12.89	87.90	34.02	100.09	74.00	-26.09	Peak	

Remarks: 1. Emission Level- Antenna Factor + Cable Loss + Reading
-Amp factor.
2. The emission levels that are 20dB below the official
limit are not reported.

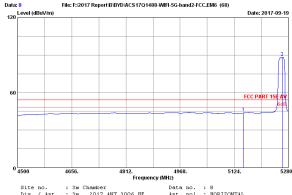


Data no. : 7 Ant. pol. : VERTICAL

No.	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Amp factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Hargin (dB)	Remark
1 2	5150.00	33.53	12.69	31.30	33.87	43.65	54.00	10.35	Average
	5262.84	33.32	12.89	76.13	34.02	88.32	54.00	-34.32	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp factor.

2. The emission levels that are 20dB below the official limit are not reported.



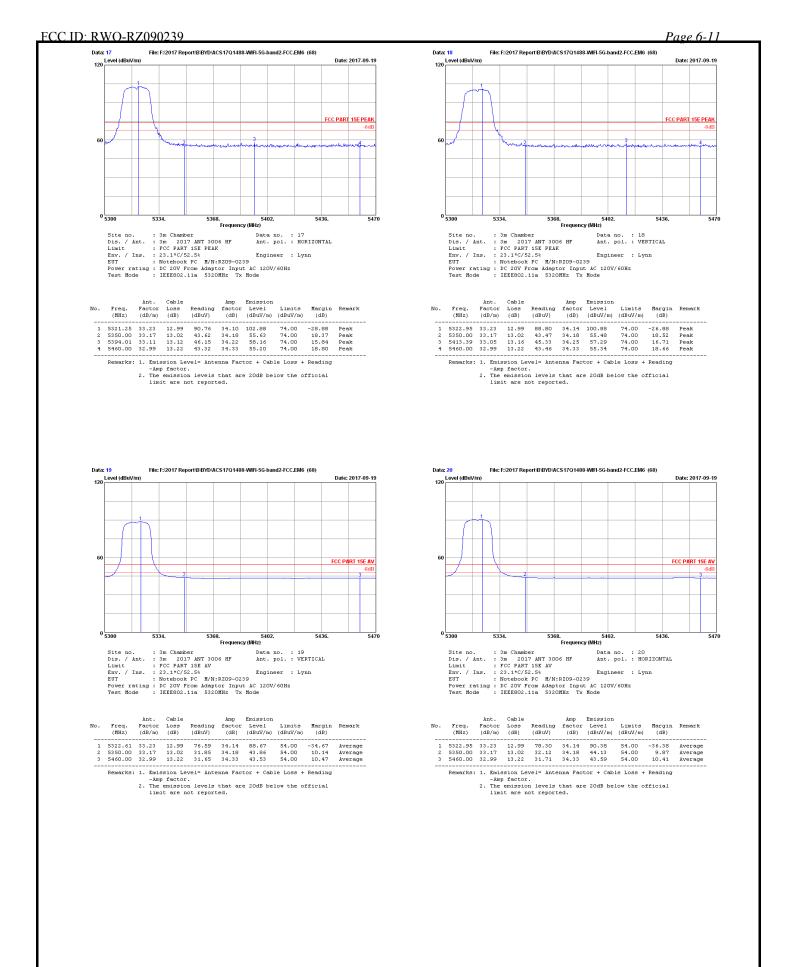
Data no. : 8 Ant. pol. : HORIZONTAL

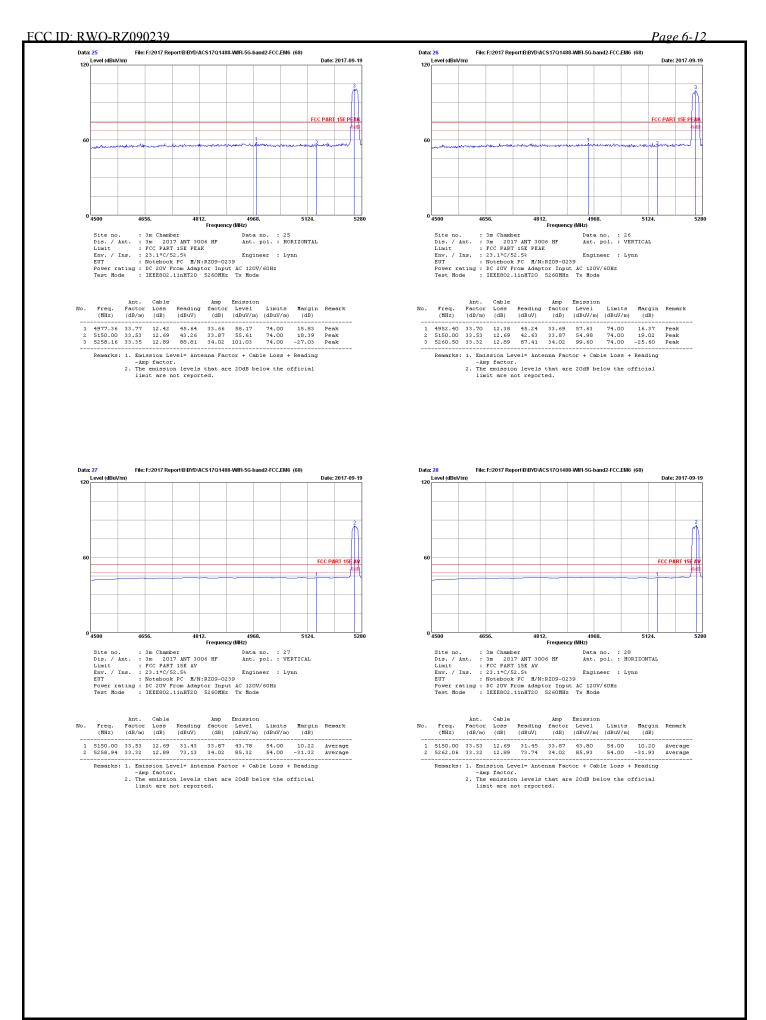
No.	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Amp factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5150.00	33.53	12.69	31.30	33.87	43.65	54.00	10.35	Average
2	5262.06	33.32	12.89	76.20	34.02	88.39	54.00	-34.39	Average

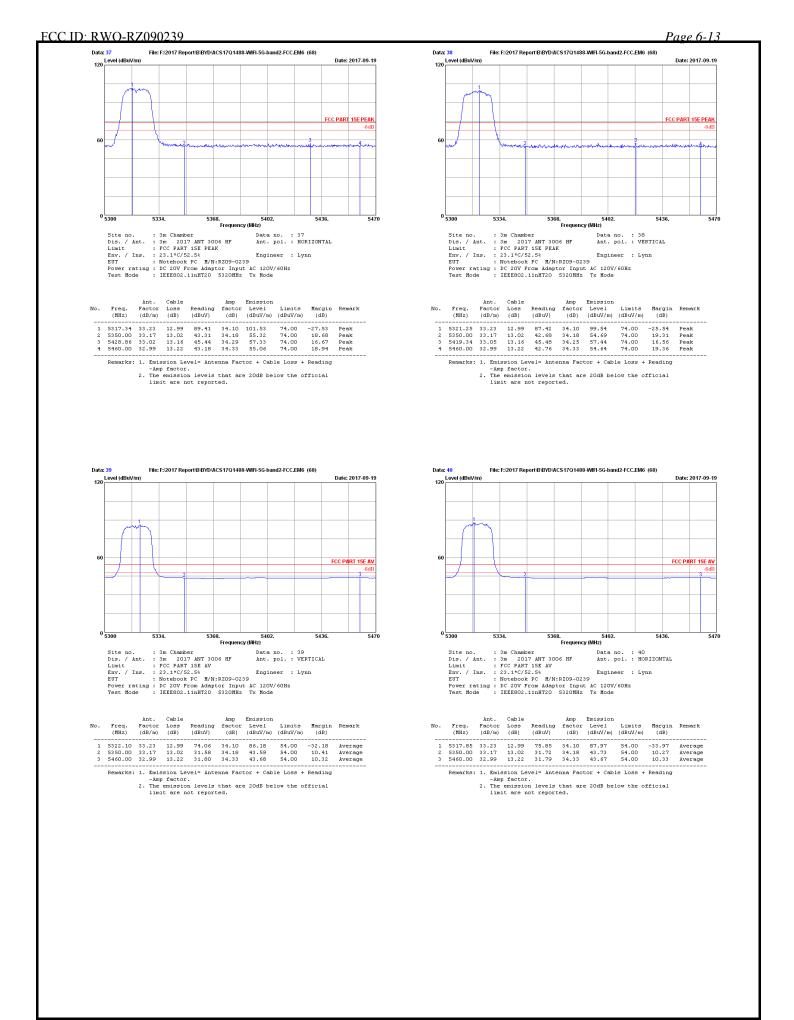
Remarks: 1. Emission Level- Antenna Factor + Cable Loss + Reading

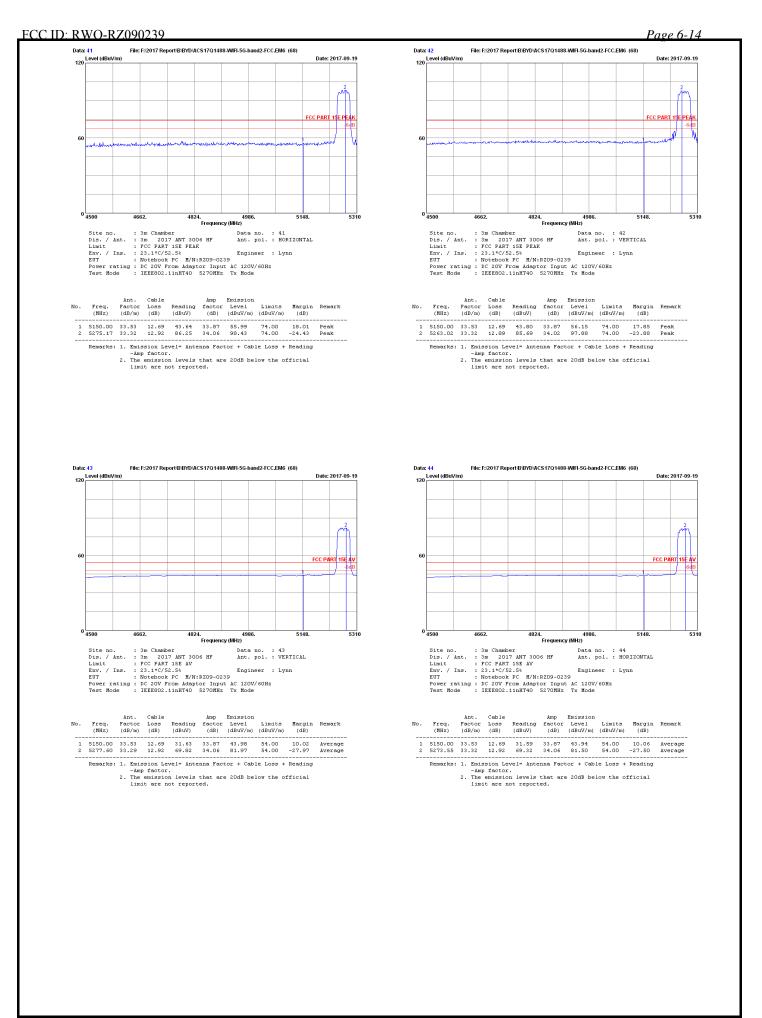
-Amp factor.

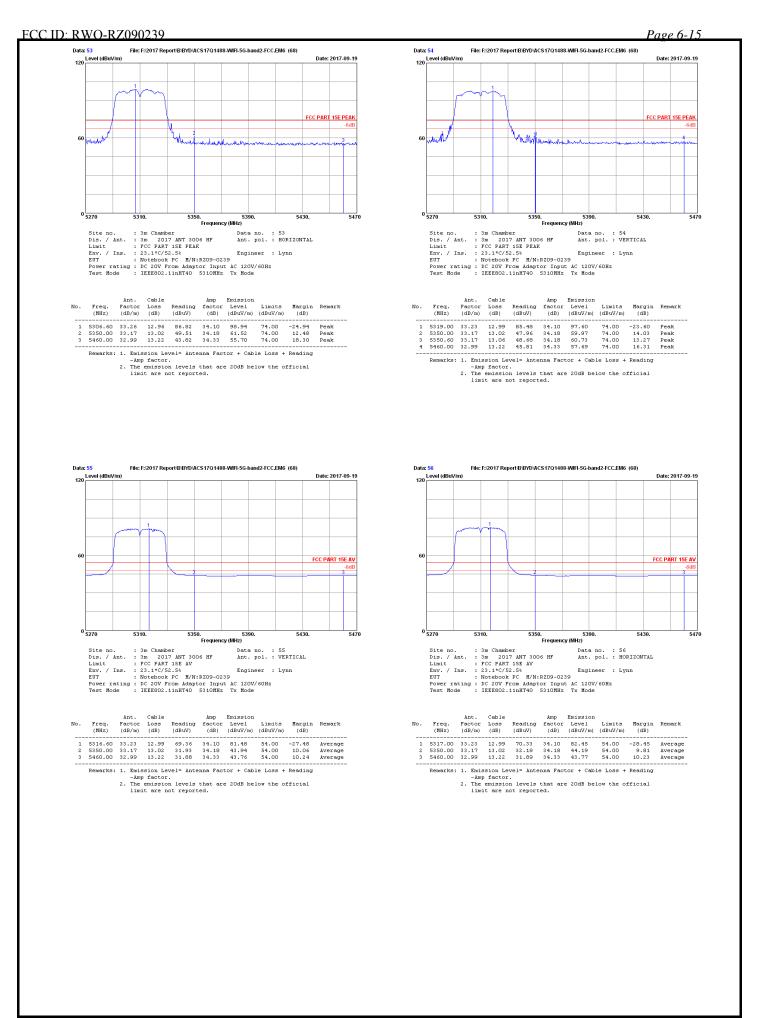
2. The emission levels that are 20dB below the official limit are not reported.

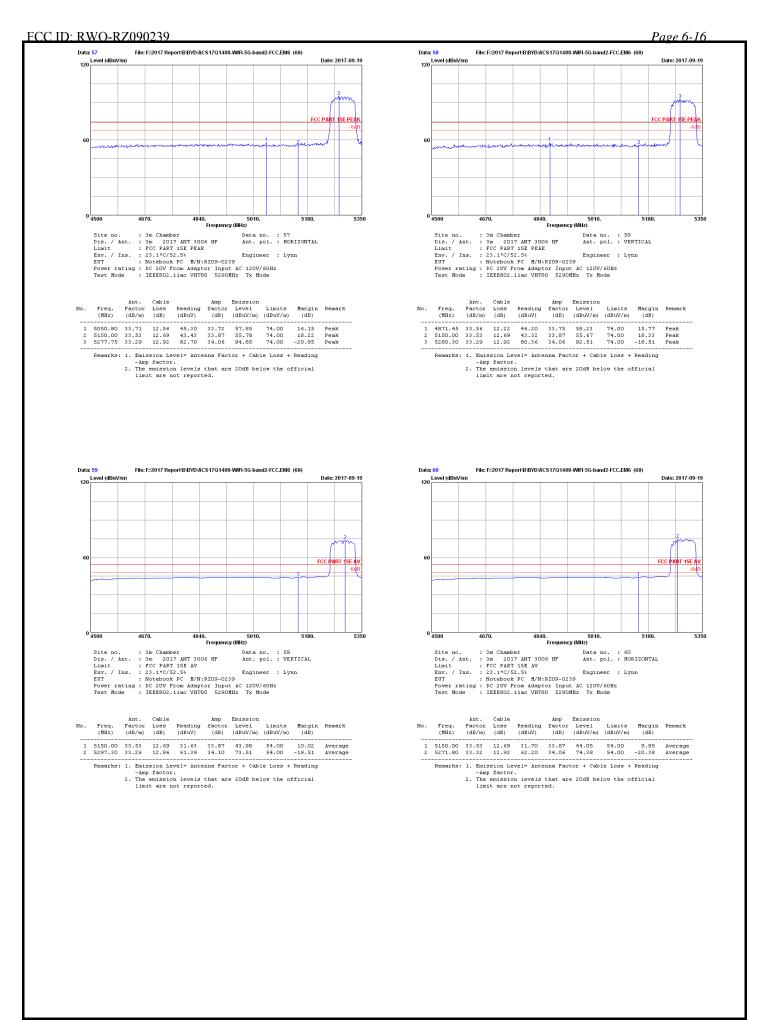


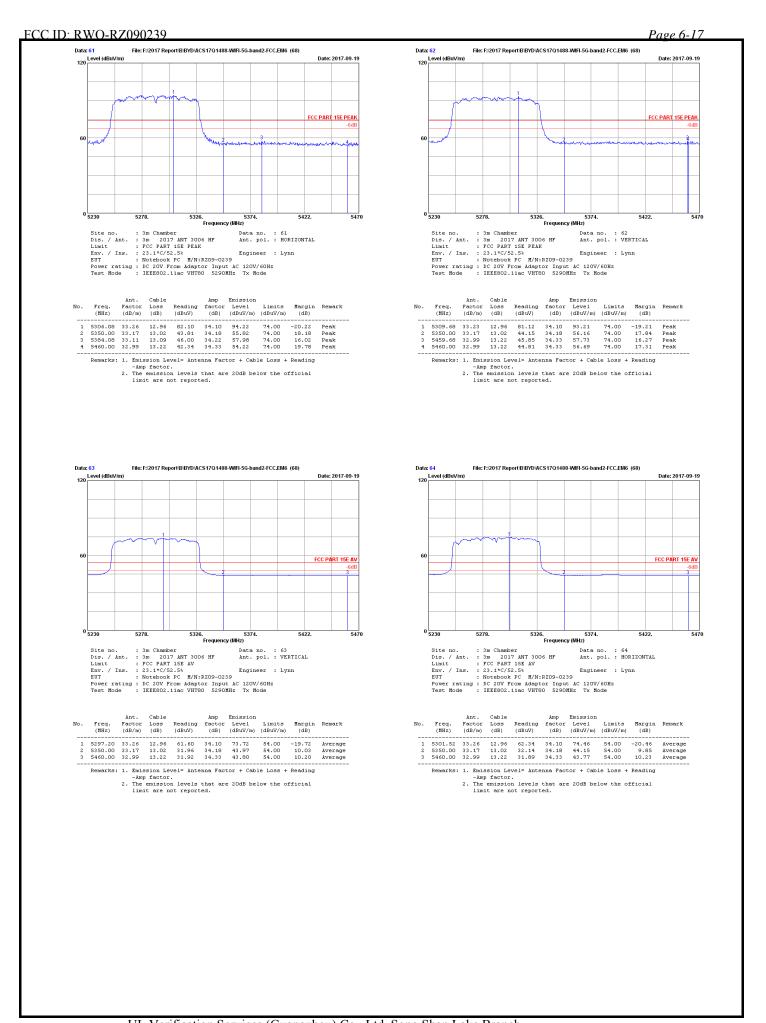






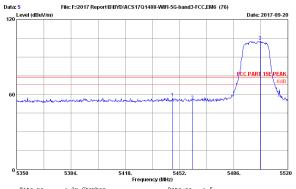






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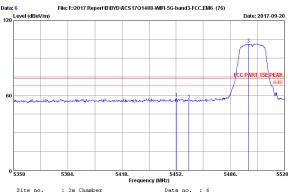
5500-5700MHz Band:



Data no. : 5 Ant. pol. : HORIZONTAL

No.	Freq.	Factor (dB/m)	Loss (dB)	Reading (dBuV)	factor (dB)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5447.75	32.99	13.19	45.33	34.29	57.22	74.00	16.78	Peak
2	5460.00	32.99	13.22	42.82	34.33	54.70	74.00	19.30	Peak
3	5502.66	32.90	13.29	90.95	34.45	102.69	74.00	-28.69	Peak

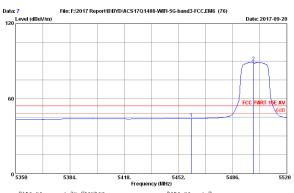
Remarks: 1. Emission Level- Antenna Factor + Cable Loss + Reading -Amp factor. 2. The emission levels that are 20dB below the official limit are not reported.



| Site no. | 3 m Chamber | Frequency winds | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d | 1 d Data no. : 6 Ant. pol. : VERTICAL

No.	Freq.	Factor (dB/m)	Loss (dB)	Reading (dBuV)	factor (dB)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	
1	5452.34	32.99	13.22	45.85	34.33	57.73	74.00	16.27	Peak	
2	5460.00	32.99	13.22	44.11	34.33	55.99	74.00	18.01	Peak	
3	5497.56	32.90	13.29	89.53	34.37	101.35	74.00	-27.35	Peak	
										-

Remarks: 1. Emission Level- Antenna Factor + Cable Loss + Reading
-Amp factor.
2. The emission levels that are 20dB below the official
limit are not reported.



Data no. : 7 Ant. pol. : VERTICAL

No.	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Amp factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2	5460.00 5499.09	32.99 32.90	13.22 13.29	32.30 77.30	34.33 34.37	44.18 89.12	54.00 54.00	9.82 -35.12	Average Average
	Remarks:	1. Emis	sion Le	vel= Ante	nna Fact	or + Cabl	le Loss +	Reading	

-Amp factor.

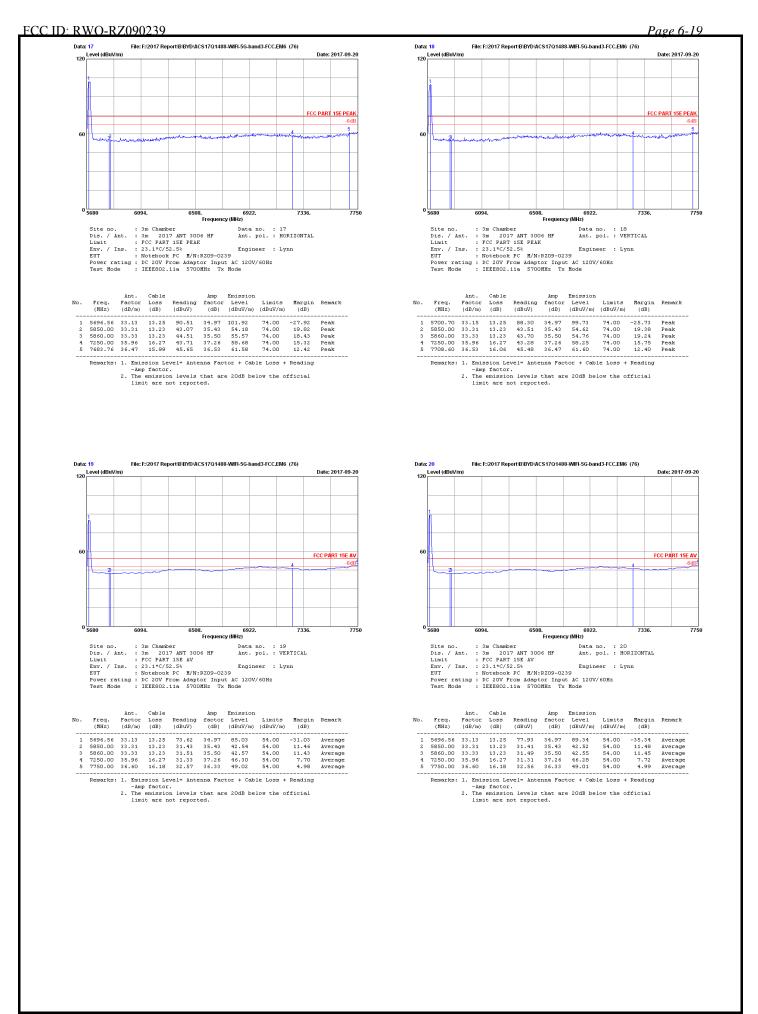
2. The emission levels that are 20dB below the official limit are not reported.

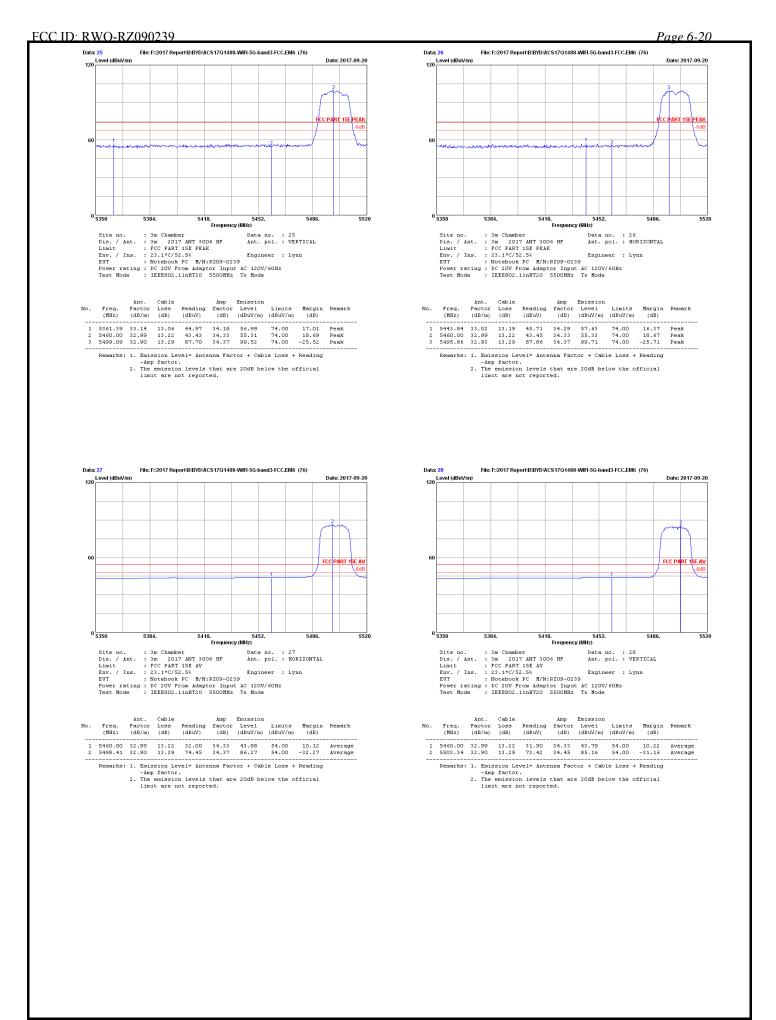


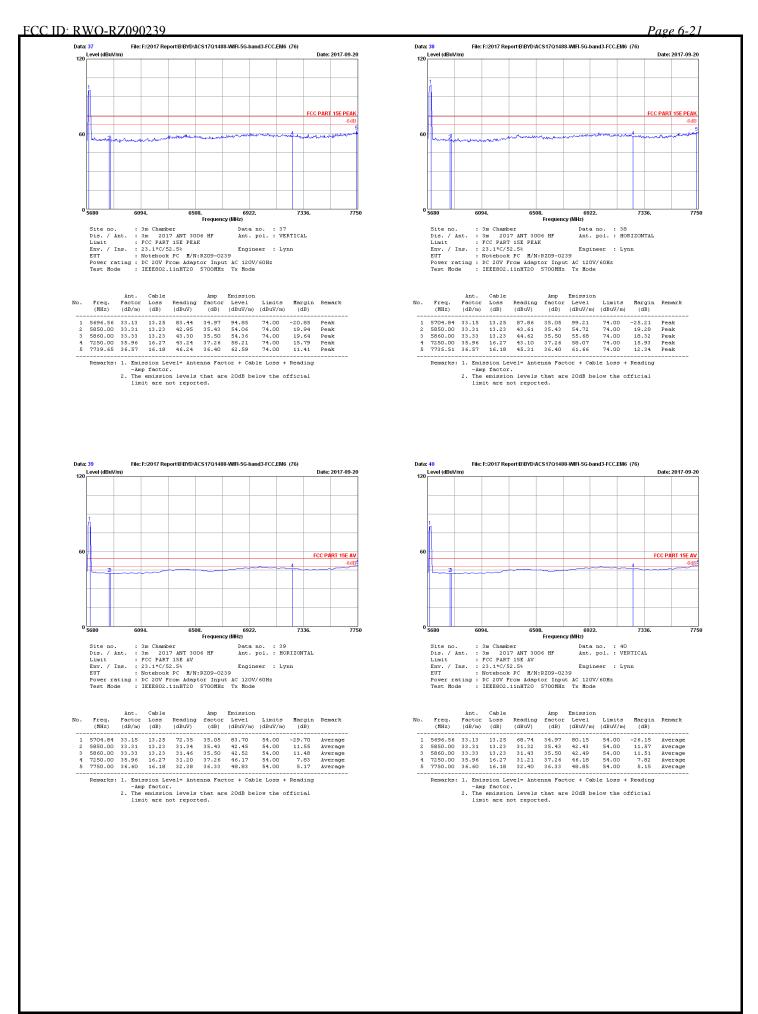
| Site no. | Sim Chamber | Data no. | Sim Cham

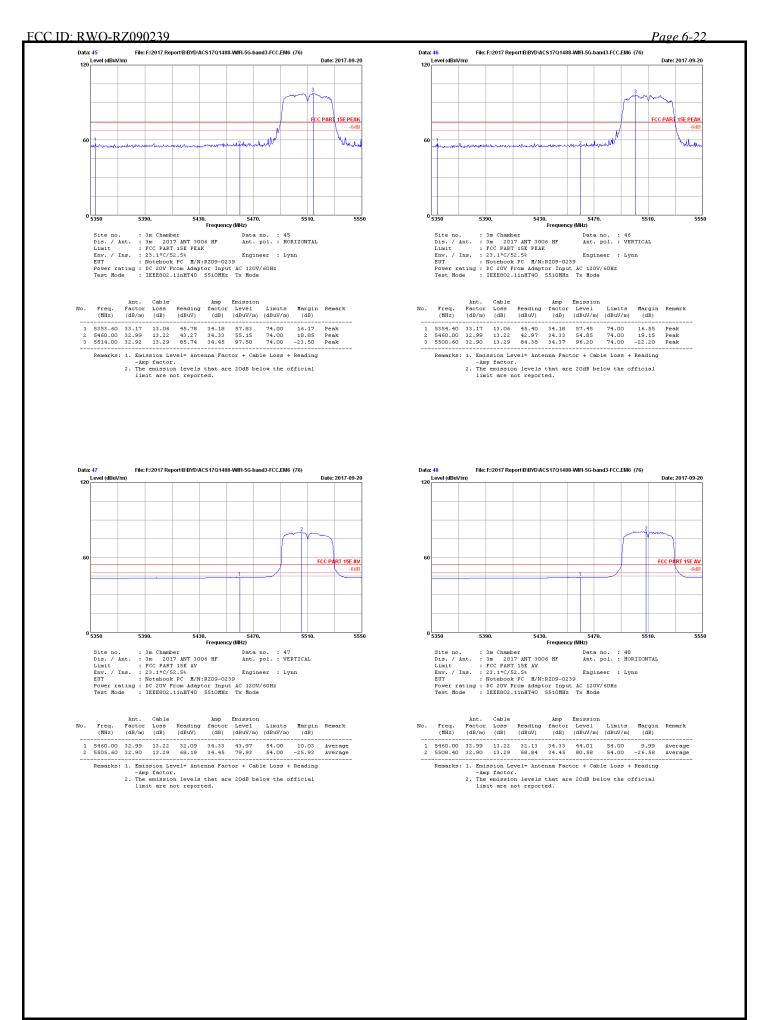
No.	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Amp factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2	5460.00	32.99	13.22	32.30	34.33	44.18	54.00	9.82	Average
	5499.09	32.90	13.29	78.58	34.37	90.40	54.00	-36.40	Average

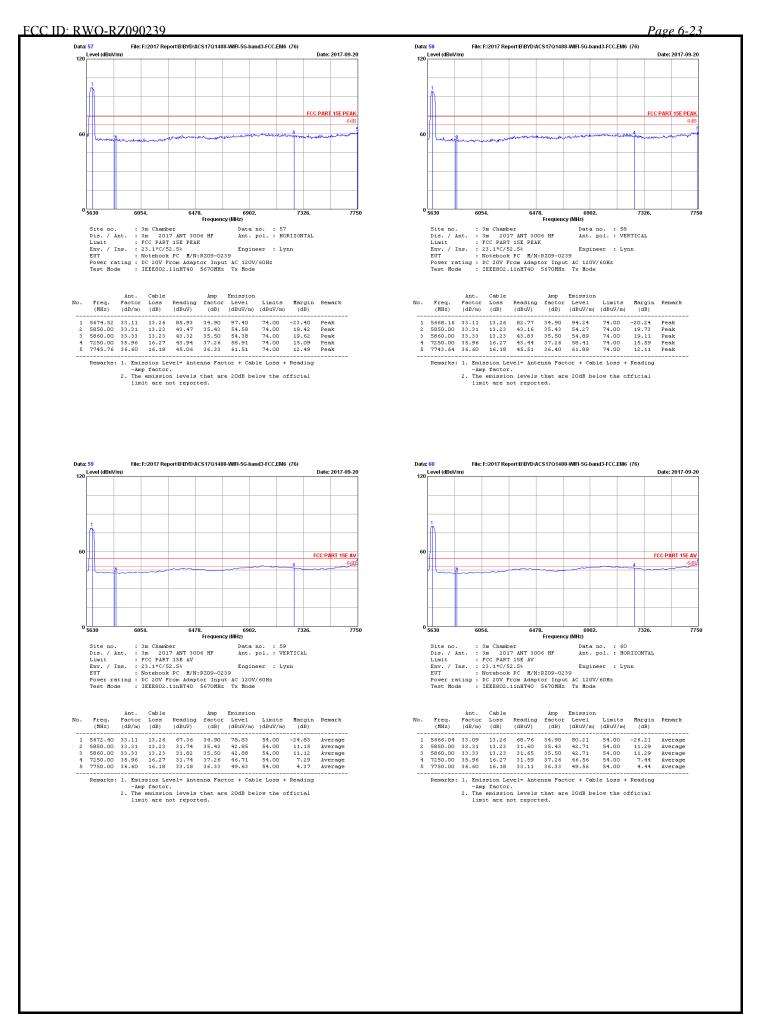
Remarks: 1. Emission Level- Antenna Factor + Cable Loss + Reading -Amp factor. 2. The emission levels that are 20dB below the official limit are not reported.

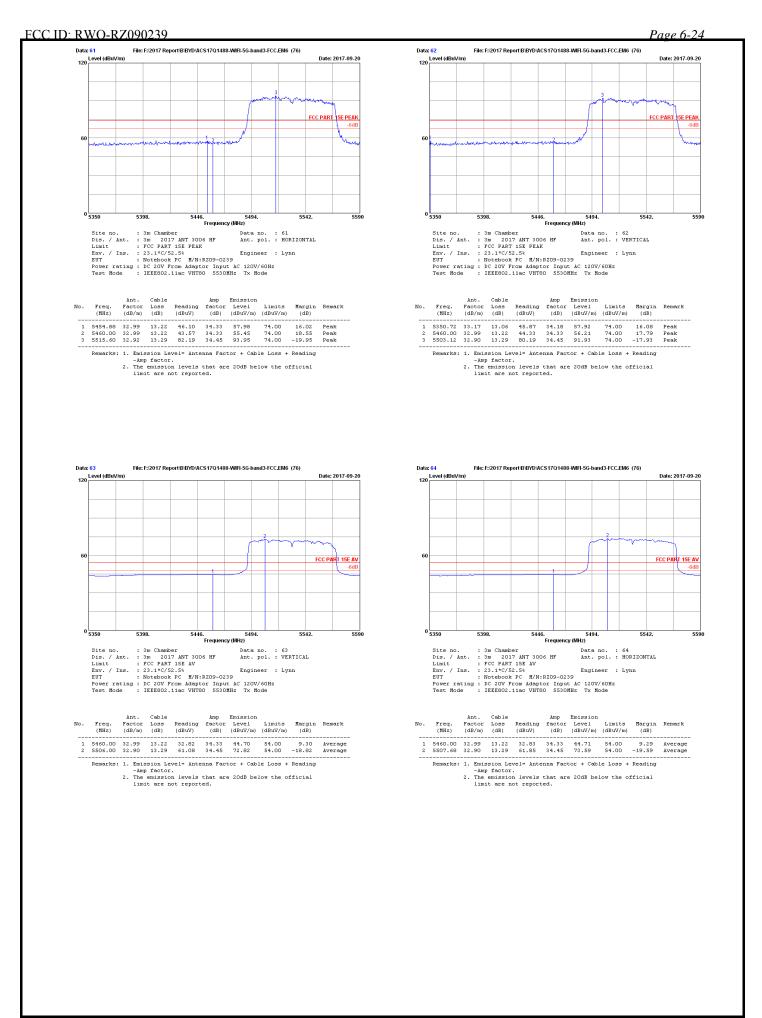


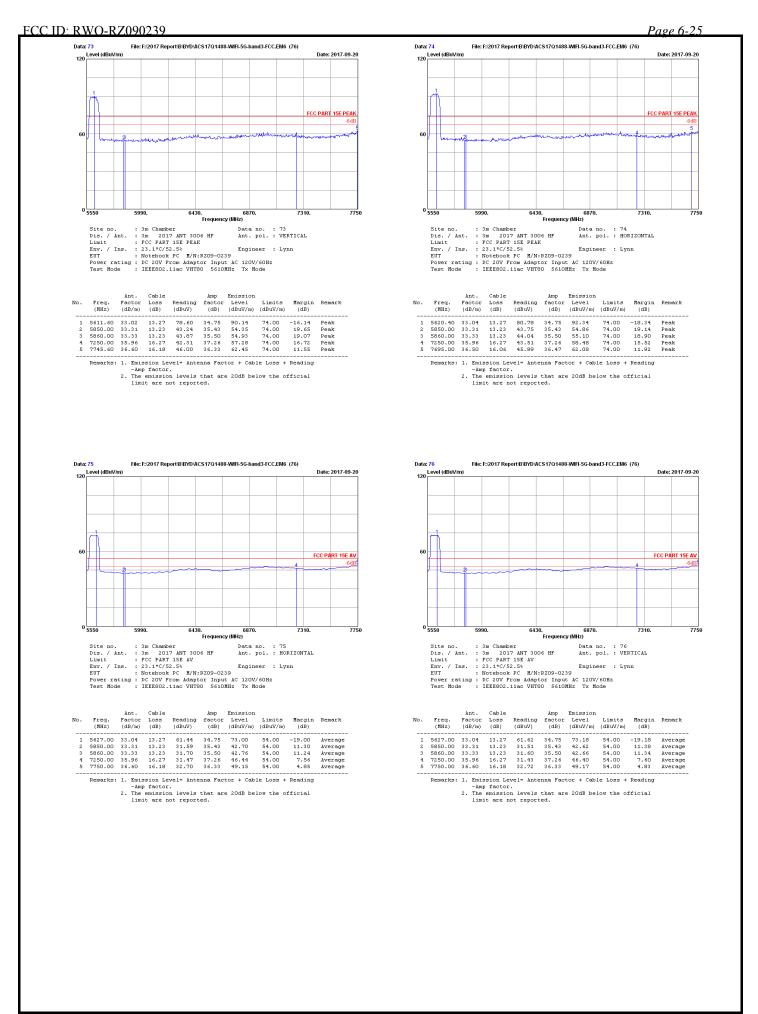






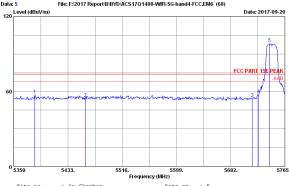






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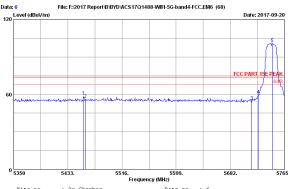
5745-5825MHz Band:



Data no. : 5 Ant. pol. : VERTICAL

No.	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Amp factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	5382.37	33.11	13.09	45.10	34.22	57.08	74.00	16.92	Peak
2	5460.00	32.99	13.22	42.59	34.33	54.47	74.00	19.53	Peak
3	5715.00	33.15	13.25	43.30	35.05	54.65	74.00	19.35	Peak
4	5725.00	33.17	13.25	46.18	35.05	57.55	74.00	16.45	Peak
5	5741.35	33.19	13.25	86.97	35.12	98.29	74.00	-24.29	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
-Amp factor.
2. The emission levels that are 20dB below the official
limit are not reported.



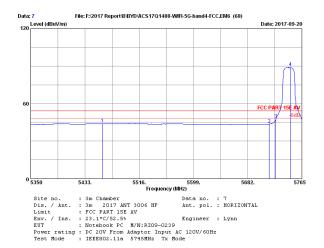
Data no. : 6 Ant. pol. : HORIZONTAL

No.	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Amp factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	_
1	5457.07	32.99	13.22	46.66	34.33	58.54	74.00	15.46	Peak	
2	5460.00	32.99	13.22	44.11	34.33	55.99	74.00	18.01	Peak	
3	5715.00	33.15	13.25	43.09	35.05	54.44	74.00	19.56	Peak	
4	5725.00	33.17	13.25	48.23	35.05	59.60	74.00	14.40	Peak	
5	5746.33	33.19	13.25	89.46	35.12	100.78	74.00	-26.78	Peak	

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading

-Amp factor.

2. The emission levels that are 20dB below the official limit are not reported.



 Ant.
 Cable Factor Loss
 Reading (dB/m) (dB/m)
 Emission (dB/m) (dB/m)
 Limits (dB/m/m)

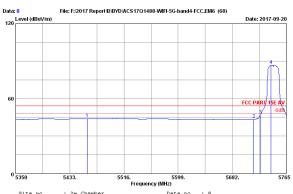
 32.99
 13.22
 31.91
 34.33
 43.79
 54.00

 33.17
 13.25
 32.24
 35.05
 43.59
 54.00

 33.17
 13.25
 36.09
 35.05
 49.46
 54.00

 33.17
 13.25
 77.68
 35.12
 89.00
 54.00
 5460.00 32.99 5715.00 33.15 5725.00 33.17 5747.57 33.19

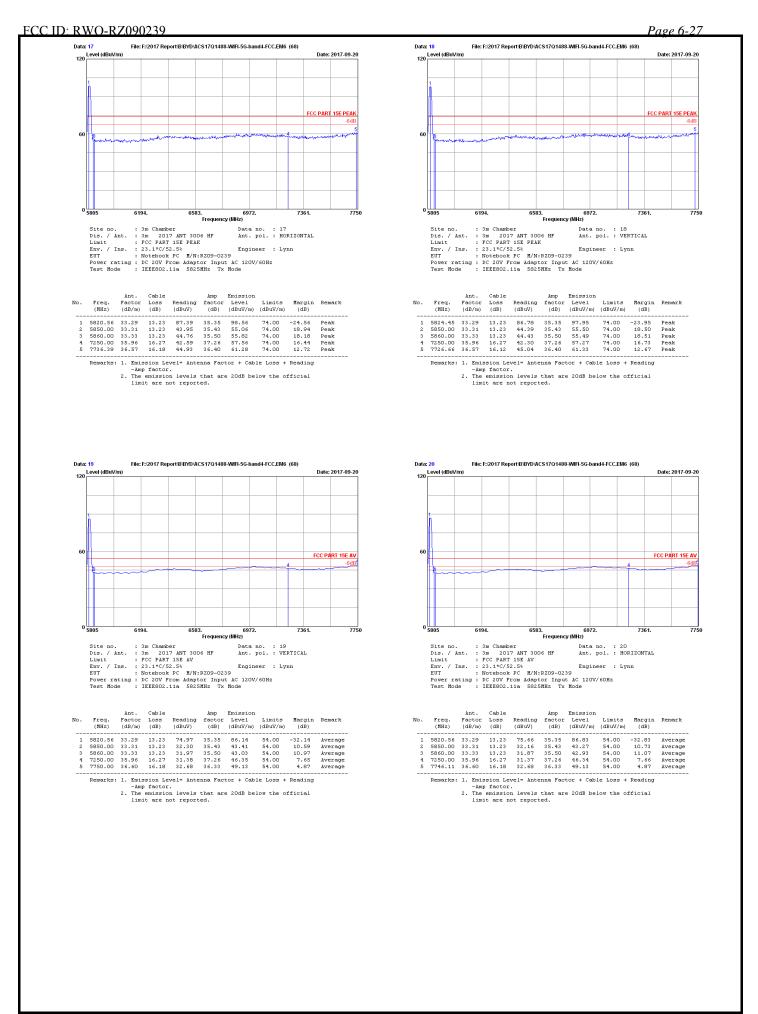
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
-Amp factor.
2. The emission levels that are 20dB below the official
limit are not reported.

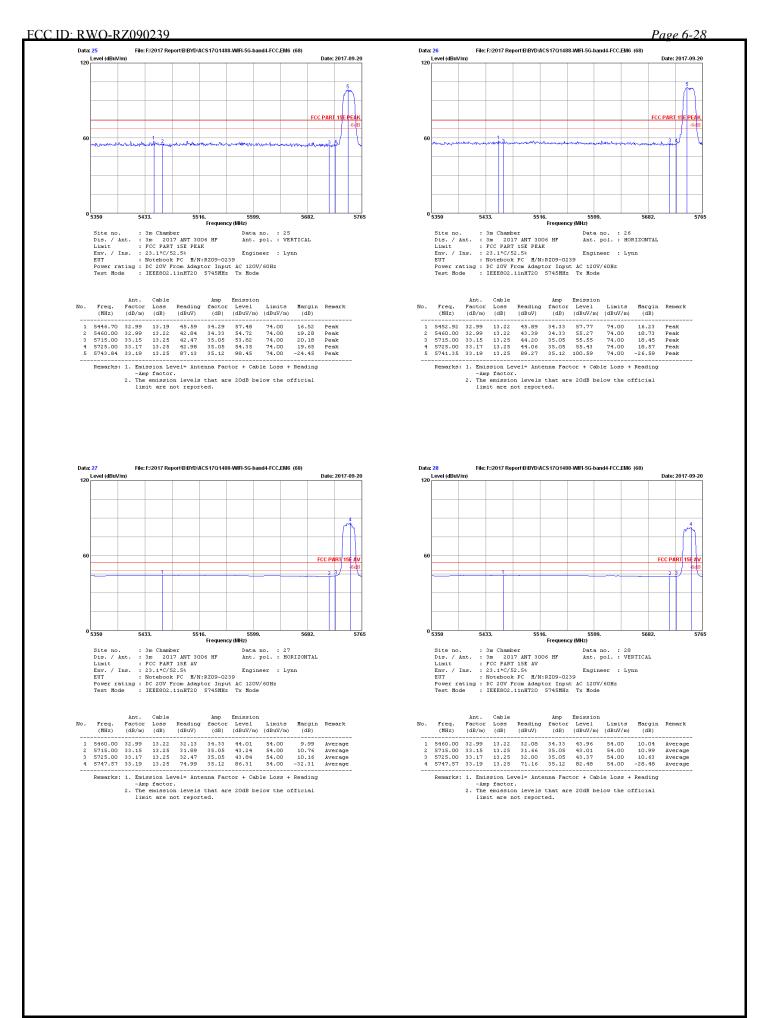


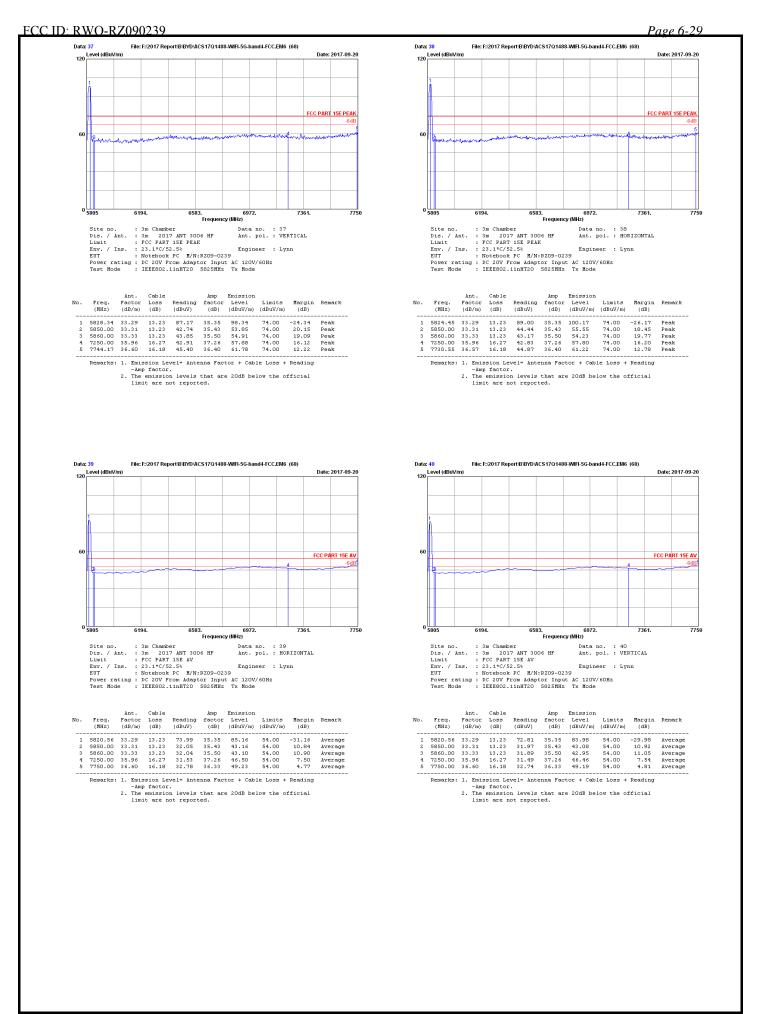
| Site no. | Sim Chamber | Data no. | Site no. | Sim Chamber | Data no. | Site no. | Sit Engineer : Lynn

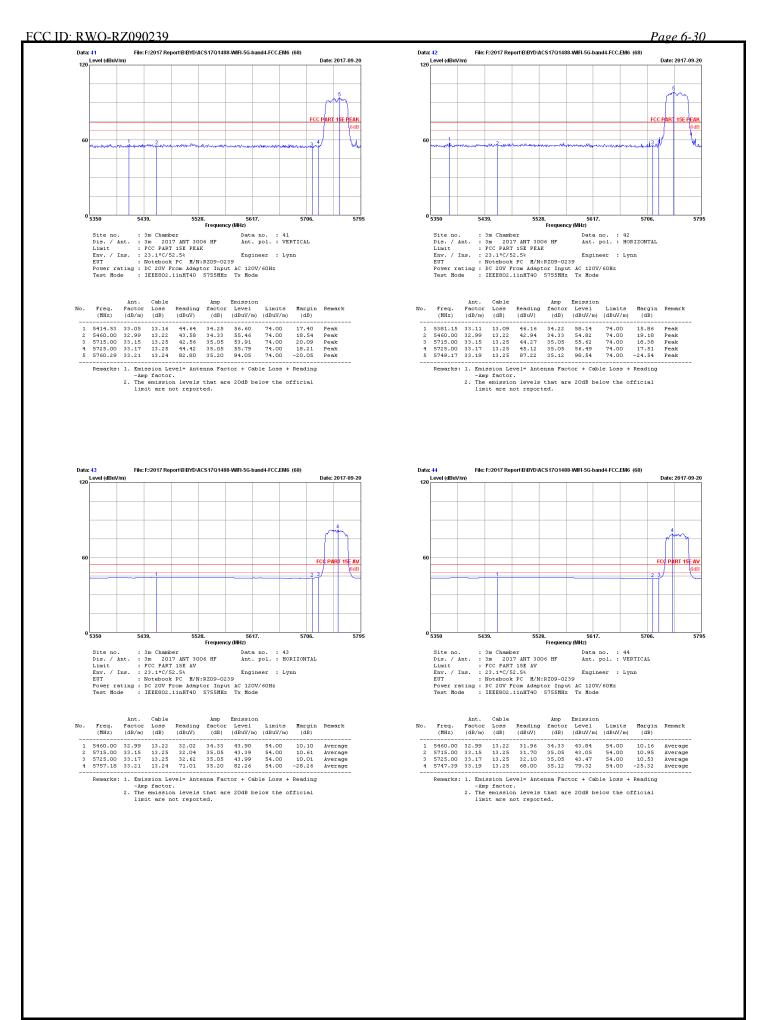
No.	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Amp factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2	5460.00	32.99	13.22	31.92	34.33	43.80	54.00	10.20	Average
	5715.00	33.15	13.25	31.94	35.05	43.29	54.00	10.71	Average
3	5725.00	33.17	13.25	35.30	35.05	46.67	54.00	7.33	Average
4	5741.35	33.19	13.25	75.17	35.12	86.49	54.00	-32.49	Average

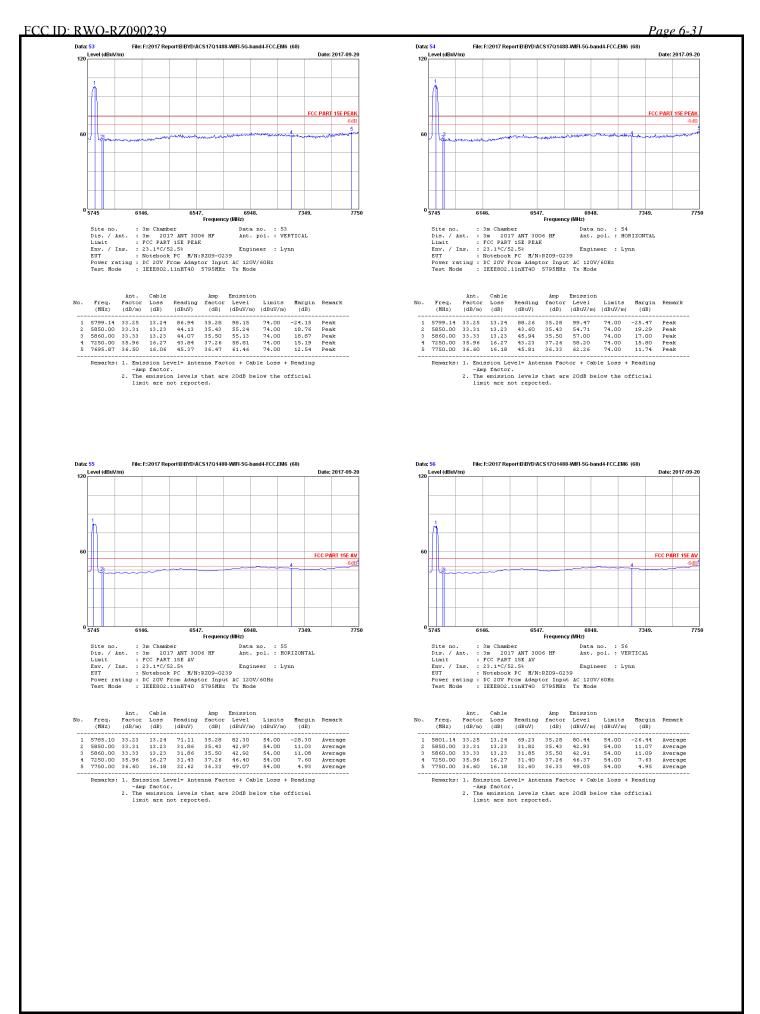
Remarks: 1. Emission Level- Antenna Factor + Cable Loss + Reading
-Amp factor.
2. The emission levels that are 20dB below the official
limit are not reported.

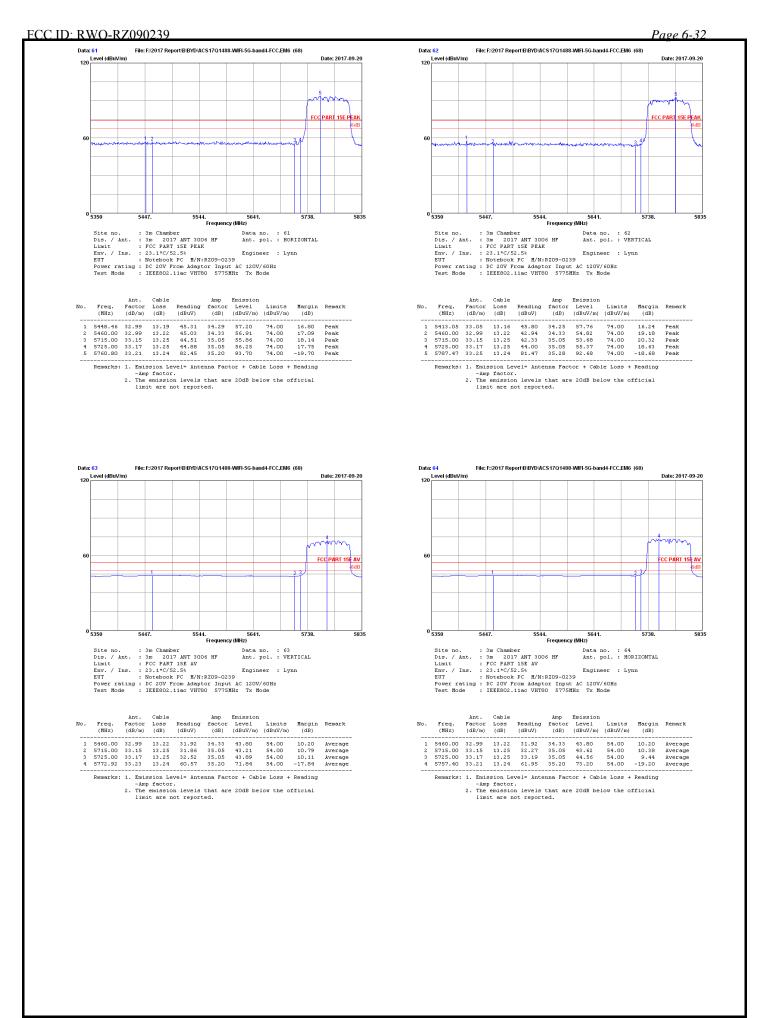


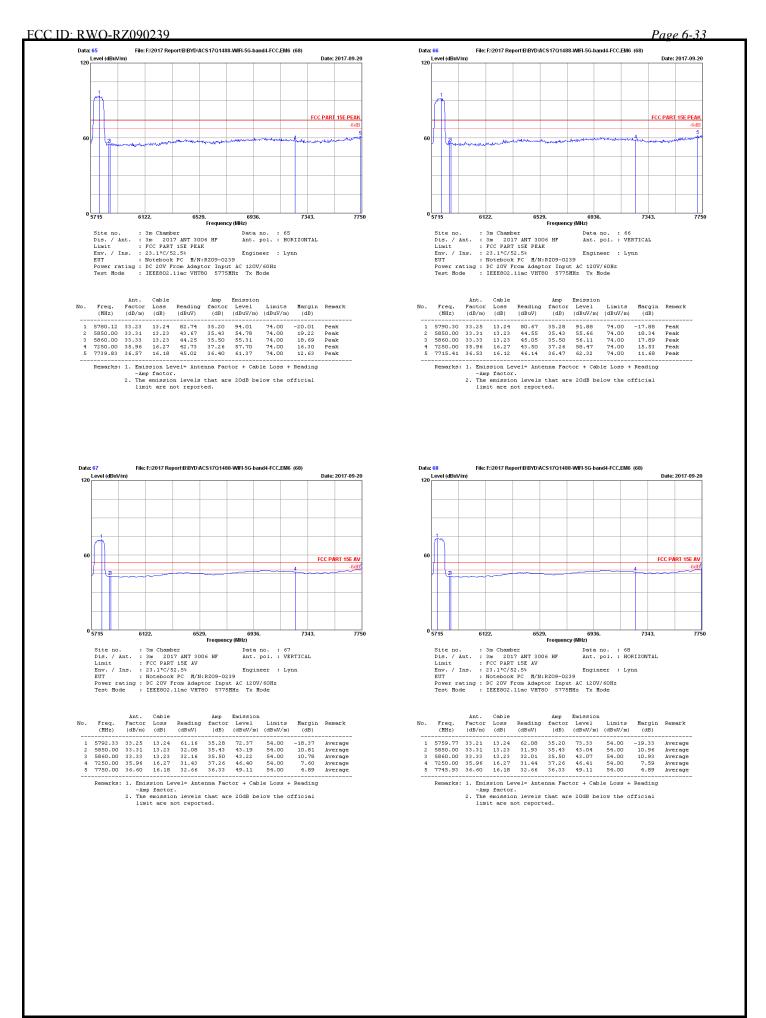












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7. 6dB & 99% &26dB Bandwidth Test

7.1.Limit

6dB Bandwidth should be not less than 500kHz

7.2.Test Procedure

6dB Bandwidth:

The transmitter output was connected to a spectrum analyzer, The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 300 KHz VBW for signal width below 20MHz and 300KHz RBW ,1MHz VBW for Above 20MHz signal Bandwidth.

26dB Bandwidth:

The transmitter output was connected to a spectrum analyzer, The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 300 KHz VBW The 26dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 26dB.

7.3. Test Results

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5180-5240MHz Band: 6dB bandwidth

EUT: Notebook PC		
M/N: RZ09-0239		
Test date: 2017-08-30~09-07	Pressure: 102.5±1.0 kpa	Humidity: 53.1±3.0%
Tested by: Kebo	Test site: RF site	Temperature:22.6±0.6 °C

Test Mode	Frequency (MHz)	6dB bandwidth (MHz)		Limit		
		ANT0	ANT1	(KHz)		
11a	5180	15.27	15.07	≥ 500		
	5200	15.15	15.17	≥ 500		
	5240	15.35	15.16	≥ 500		
11n HT20	5180	15.15	15.16	≥ 500		
	5200	15.09	15.45	≥ 500		
	5240	15.17	15.14	≥ 500		
11n HT40	5190	35.12	35.16	≥ 500		
	5230	35.15	35.17	≥ 500		
11ac VHT20	5180	15.09	15.45	≥ 500		
	5200	15.11	15.86	≥ 500		
	5240	15.11	15.15	≥ 500		
11ac VHT40	5190	35.14	35.15	≥ 500		
	5230	35.14	35.10	≥ 500		
11ac VHT80	5210	75.24	75.23	≥ 500		
Conclusion: PASS						

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99% bandwidth

EUT: Notebook PC							
M/N: RZ09-0239							
Test date: 2017-08-30~09-07	Pressure: 102.5±1.0 kpa	Humidity: 53.1±3.0%					
Tested by: Kebo	Test site: RF site	Temperature:22.6±0.6 ℃					

Test Mode	Frequency (MHz)	99% bandwidth (MHz)		Limit
		ANT0	ANT1	(MHz)
11a	5180	16.235	16.224	N/A
	5200	16.216	16.236	N/A
	5240	16.227	16.220	N/A
11n HT20	5180	17.364	17.369	N/A
	5200	17.393	17.392	N/A
	5240	17.363	17.369	N/A
11n HT40	5190	35.654	35.668	N/A
	5230	35.648	35.654	N/A
11ac VHT20	5180	17.380	17.391	N/A
	5200	17.399	17.379	N/A
	5240	17.399	17.374	N/A
11ac VHT40	5190	35.652	35.671	N/A
	5230	35.629	35.681	N/A
11ac VHT80	5210	75.014	75.021	N/A
Conclusion: PA	SS		'	