FCC Radio Test Report

FCC ID: M82-FWA1012VC

This report concerns: Original Grant

Project No.	:	1807T071
Equipment	:	Network Security Platform
Test Model	:	FWA-1012VC
Series Model	:	FWA-1012VCXXXXXXXXXXXXXXXX (where X may be any alphanumeric character , blank or “-”.)
Applicant	:	Advantech Co., Ltd.
Address	:	No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 11491, Taiwan, R.O.C.

Date of Receipt	:	Oct. 25, 2018
Date of Test	:	Oct. 25, 2018 ~ Oct. 26, 2018
Issued Date	:	Oct. 30, 2018
Tested by	:	BTL Inc.

Testing Engineer : _____
(Kay Wu)

Technical Manager : _____
(James Chiu)

Authorized Signatory : _____
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Testing Laboratory
0659

Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

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BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

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REPORT ISSUED HISTORY

Issue No.	Description	Issued Date
BTL-FCCP-6-1807T071	Original Issue.	Oct. 30, 2018

1 CERTIFICATION

Equipment	:	Network Security Platform
Brand Name	:	ADVANTECH
Test Model	:	FWA-1012VC
Series Model	:	FWA-1012VCXXXXXXXXXXXXXXXX (where X may be any alphanumeric character , blank or "-".)
Applicant	:	Advantech Co., Ltd.
Manufacturer	:	Advantech Co., Ltd.
Address	:	No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 11491, Taiwan, R.O.C.
Date of Test	:	Aug. 02, 2018 ~ Sep. 04, 2018
Test Sample	:	Production Unit
Standard(s)	:	FCC Part15, Subpart C (§15.247) FCC Part15, Subpart E (§15.407) ANSI C63.10-2013 47 CRF FCC Part 2 47 CRF FCC Part 22, Subpart H 47 CRF FCC Part 27 47 CRF FCC Part 24, Subpart E KDB 971168 D01 Power Meas License Digital Systems v03r01 ANSI/TIA-603-D-2010

The above equipment has been tested and found in compliance with the requirement of the relative standards by BTL Inc.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-6-1807T071) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

Test results included in this report is only for the Transmit Simultaneously part.

2 SUMMARY OF TEST RESULTS

Test procedures according to the technical standards.

FCC Part15, Subpart C (§15.247), FCC Part15, Subpart E (§15.407), FCC Part 2, FCC Part 22, FCC Part 24, FCC Part 27				
FCC Clause No	**Description**	**Test Result**	**Judgement**	**Remark**
§15.205 §15.209 §15.247(d) §15.407(b)	Radiated Emissions	APPENDIX A	Pass	------
§2.1053 §27.53(h)	Field strength of spurious radiation			

NOTE:
(1) ”N/A” denotes test is not applicable in this Test Report.

2.1 TEST FACILITY

The test facilities used to collect the test data in this report:
CB15: (VCCI RN: R-20020; FCC RN:674415; FCC DN:TW0659; ISED Assigned Code:20088-5)
No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan (R.O.C.)

2.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. The BTL measurement uncertainty is less than the CISPR 16-4-2 U_{cispr} requirement.

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

A. Radiated emissions above 1 GHz test:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U (dB)
CB15 (3m)	CISPR	1 GHz ~ 6 GHz	V	4.46
		1 GHz ~ 6 GHz	H	4.40
		6 GHz ~18 GHz	V	3.88
		6 GHz ~18 GHz	H	4.00

Test Site	Method	Measurement Frequency Range	U (dB)
CB15 (1m)	CISPR	18 GHz ~ 26.5 GHz	4.62
		26.5 GHz ~ 40 GHz	5.12

NOTE:
Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.
Our calculated Measurement Instrumentation Uncertainty is shown in the tables above. These are our U_{lab} values in CISPR 16-4-2 terminology.
Since Table 1 of CISPR 16-4-2 has values of measurement instrumentation uncertainty, called U_{CISPR}, as follows:

Conducted Disturbance (mains port) – 150 kHz – 30 MHz : 3.6 dB
Radiated Disturbance (electric field strength on an open area test site or alternative test site) – 30 MHz – 1000 MHz : 5.2 dB

3 GENERAL INFORMATION

3.1 DESCRIPTION OF EUT

Equipment	Network Security Platform	
Brand Name	ADVANTECH	
Test Model	FWA-1012VC	
Series Model	FWA-1012VCXXXXXXXXXXXXXXXX (where X may be any alphanumeric character , blank or "-".)	
Model Difference	Different model distribute to different area.	
Power Source	DC Voltage supplied from AC/DC adapter.	
Power Rating	I/P: 100-240V~, 1.5A, 50-60Hz O/P: 12.0V⎓ 5.0A MAX	
Product Specification for WLAN	Operation Frequency	2412 MHz to 2462 MHz
	Modulation Type	IEEE 802.11b: DSSS IEEE 802.11g: OFDM IEEE 802.11n: OFDM
	Bit Rate of Transmitter	IEEE 802.11b: 11/5.5/2/1 Mbps IEEE 802.11g: 54/48/36/24/18/12/9/6 Mbps IEEE 802.11n: up to 300 Mbps
	Maximum Output Power	IEEE 802.11b: 25.50 dBm (0.3550 W) IEEE 802.11g: 24.63 dBm (0.2901 W) IEEE 802.11n (HT20): 23.61 dBm (0.2295 W) IEEE 802.11n (HT40): 23.62 dBm (0.2302 W)
Product Specification for RLAN	Operation Frequency	UNII-1: 5150 MHz to 5250 MHz UNII-3: 5725 MHz to 5850 MHz
	Modulation Type	OFDM
	Bit Rate of Transmitter	up to 866 Mbps
	Maximum Output Power for UNII-1	IEEE 802.11a: 16.32 dBm (0.0429 W) IEEE 802.11n (HT20): 15.85 dBm (0.0384 W) IEEE 802.11n (HT40): 15.35 dBm (0.0343 W) IEEE 802.11ac (HT20): 14.87 dBm (0.0307 W) IEEE 802.11ac (HT40): 14.41 dBm (0.0276 W) IEEE 802.11ac (VHT80): 12.22 dBm (0.0167 W)
	Maximum Output Power for UNII-3	IEEE 802.11a: 16.29 dBm (0.0426 W) IEEE 802.11n (HT20): 15.52 dBm (0.0356 W) IEEE 802.11n (HT40): 15.33 dBm (0.0341 W) IEEE 802.11ac (HT20): 14.61 dBm (0.0289 W) IEEE 802.11ac (HT40): 14.47 dBm (0.0280 W) IEEE 802.11ac (VHT80): 13.89 dBm (0.0245 W)
Product Covered	1 * CPU: Intel/C3858 2.00GHz 1 * MB: NAMB-1012VCMB 2 * Memory: DDR4 2400 16GB 1 * HDD: SEAGATE/ST1000LM035 (1TB) 1 * SSD: LITE-ON/CV1-8B64 (64GB) 1 * Adapter: FSP/FSP060-DIBAN2 1 * Wifi module: Senao/PCE4302AN 1 * LTE module: Sierra/EM7455	

Product Specification for WWAN:

WCDMA Band V and LTE Band 5							
Modulation Type		WCDMA	UL: BPSK DL: QPSK				
		LTE	UL: QPSK,16QAM DL: QPSK,16QAM				
Frequency Range		TX: 824-849 MHz, RX: 869-894 MHz					
Band	Frequency	Channel Bandwidth	Modulation Type	Maximum ERP RF Power Output		Maximum Frequency Tolerance	Emission Designator
	MHz	MHz	-----	dBm	W	ppm	
WCDMA Band V	836.4	-	BPSK	20.16	0.104	0.0010	4M14F9W
LTE Band 5	836.5	10	QPSK	20.67	0.117	-0.0012	8M94G7D
	844	10	16QAM	20.07	0.102		8M94W7D

WCDMA Band II and LTE Band 2, 25							
Modulation Type		WCDMA	UL: BPSK DL: QPSK				
		LTE	UL: QPSK,16QAM DL: QPSK,16QAM				
Frequency Range		WCDMA	TX: 1850-1910 MHz, RX: 1930-1990 MHz				
		LTE	Band 2: TX: 1850-1910 MHz, RX: 1930-1990 MHz Band 25: TX: 1850-1915 MHz, RX: 1930-1995 MHz				
Band	Frequency	Channel Bandwidth	Modulation Type	Maximum EIRP RF Power Output		Maximum Frequency Tolerance	Emission Designator
	MHz	MHz	-----	dBm	W	ppm	
WCDMA Band II	1880	-	BPSK	24.67	0.293	0.0004	4M17F9W
LTE Band 2	1880	20	QPSK	25.09	0.323	0.0005	17M9G7D
			16QAM	24.26	0.267		17M9W7D
	1905	10	16QAM	24.35	0.272		
LTE Band 25	1882.5	20	QPSK	24.95	0.313	0.0005	17M9G7D
			16QAM	24.21	0.264		17M9W7D

WCDMA Band IV and LTE Band 4, 7, 12, 13, 30 and 41		
Modulation Type	WCDMA	UL: BPSK DL: QPSK
	LTE	UL: QPSK,16QAM DL: QPSK,16QAM
Frequency Range	WCDMA	TX: 1710-1755 MHz, RX: 2110-2155 MHz
	LTE	Band 4: TX: 1710-1755 MHz, RX: 2110-2155 MHz Band 7: TX: 2500-2570 MHz, RX: 2620-2690 MHz Band 12: TX: 699-716 MHz, RX: 729-746 MHz Band 13: TX: 777-787 MHz, RX: 746-756MHz Band 30: TX: 2305-2315 MHz, RX: 2350-2360 MHz Band 41: TX: 2496-2690 MHz, RX: 2496-2690 MHz

Band	Frequency	Channel Bandwidth	Modulation Type	Maximum EIRP RF Power Output		Maximum Frequency Tolerance	Emission Designator
	MHz	MHz	-----	dBm	W	ppm	
WCDMA Band IV	1732.6	-	BPSK	24.11	0.258	0.0005	4M14F9W
LTE Band 4	1732.5	20	QPSK	24.75	0.299	0.0006	17M9G7D
	1720	20	16QAM	23.91	0.246		17M9W7D
LTE Band 7	2535	20	QPSK	24.48	0.281	-0.0004	17M9G7D
			16QAM	24.16	0.261		17M9W7D
LTE Band 30	2310	10	QPSK	20.33	0.108	-0.0004	8M93G7D
			16QAM	19.93	0.098		8M93W7D
LTE Band 41	2593	20	QPSK	24.88	0.308	-0.0004	17M9G7D
			16QAM	24.20	0.263		17M9W7D

Band	Frequency	Channel Bandwidth	Modulation Type	Maximum ERP RF Power Output		Maximum Frequency Tolerance	Emission Designator
	MHz	MHz	-----	dBm	W	ppm	
LTE Band 12	707.5	10	QPSK	23.27	0.212	-0.0014	8M98G7D
			16QAM	22.66	0.185		8M98W7D
LTE Band 13	782	10	QPSK	20.83	0.121	-0.0009	8M97G7D
			16QAM	20.04	0.101		8M97W7D

NOTE:
(1) For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

(2) Table for Filed Antenna:
For WLAN

Ant.	Brand	Model	Type	Connector	Gain (dBi)
1	Walsin	RFDPA131000SBLB808	Dipole	SMA	2.93
2	Invax	AN2450-92K02BRS	Dipole	SMA	2.86

NOTE:
(a) The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and receivers (2T2R). 2.4 GHz and 5GHz can't transmit simultaneously.
(b) For Power Spectral Density (CDD mode)
Directional Gain = 10log $[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{Gn/20})^2/N_{ANT}]$ = 5.91 dBi.
The Direction gain is less than 6 dBi, so conducted power limits will not be reduced.
(c) For Conducted Output Power (CDD mode)
For $N_{ANT} = 2 < 5$,
Direction gain = $G_{ANT} + 0 = 2.93 + 0 = 2.93$ dBi .
The Direction gain is less than 6 dBi, so conducted power limits will not be reduced.

Operating Mode / TX Mode	2TX
802.11b	V (ANT 1+ANT 2)
802.11g	V (ANT 1+ANT 2)
802.11n (HT20)	V (ANT 1+ANT 2)
802.11n (HT40)	V (ANT 1+ANT 2)

For RLAN
UNII-1:

Ant.	Brand	Model	Type	Connector	Gain (dBi)
1	Walsin	RFDPA131000SBLB808	Dipole	SMA	3.44
2	Invax	AN2450-92K02BRS	Dipole	SMA	3.11

UNII-3:

Ant.	Brand	Model	Type	Connector	Gain (dBi)
1	Walsin	RFDPA131000SBLB808	Dipole	SMA	3.95
2	Invax	AN2450-92K02BRS	Dipole	SMA	3.79

NOTE:
(d) The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and receivers (2T2R). 2.4 GHz and 5GHz can't transmit simultaneously.
(e) For Power Spectral Density(CDD mode):
Directional Gain = 10log $[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{Gn/20})^2/N_{ANT}]$ = 6.71 dBi.
The Direction gain exceeds 6 dBi, so the reduced power spectral density limits = Limit - (Directional Gain - 6 dBi) = 17 - (6.71 - 6) = 16.29 dBm/MHz.
.
(f) For Conducted Output Power (CDD mode)
For UNII-1:
For $N_{ANT} = 2 < 5$,
Direction gain = $G_{ANT} + 0 = 3.44 + 0 = 3.44$ dBi.
The Direction gain is less than 6 dBi, so conducted power limits will not be reduced.
For UNII-3:
For $N_{ANT} = 2 < 5$,
Direction gain = $G_{ANT} + 0 = 3.95 + 0 = 3.95$ dBi.
The Direction gain is less than 6 dBi, so conducted power limits will not be reduced.

Operating Mode / TX Mode	2TX
802.11a	V (ANT 1+ANT 2)
802.11n (HT20)	V (ANT 1+ANT 2)
802.11n (HT40)	V (ANT 1+ANT 2)
802.11ac (HT20)	V (ANT 1+ANT 2)
802.11ac (HT40)	V (ANT 1+ANT 2)
802.11ac (VHT80)	V (ANT 1+ANT 2)

For WWAN

Brand	Model	Connector	Type	Antenna Gain(dBi)	
				WCDMA Band V	LTE Band 5
Advantech	TE FULL BAND DIPOLE ANTENNA(148)	SMA	DIPOLE	-0.06	-0.06

Brand	Model	Connector	Type	Antenna Gain(dBi)		
				WCDMA Band II	LTE Band 2	LTE Band 25
Advantech	TE FULL BAND DIPOLE ANTENNA(148)	SMA	DIPOLE	2.04	2.04	2.04

Brand	Model	Connector	Type
Advantech	TE FULL BAND DIPOLE ANTENNA(148)	SMA	DIPOLE

Antenna Gain(dBi)						
WCDMA Band IV	LTE Band 4	LTE Band 7	LTE Band 12	LTE Band 13	LTE Band 30	LTE Band 41
1.57	1.57	3.37	2.05	-0.14	-0.83	3.81

3.2 TEST MODES

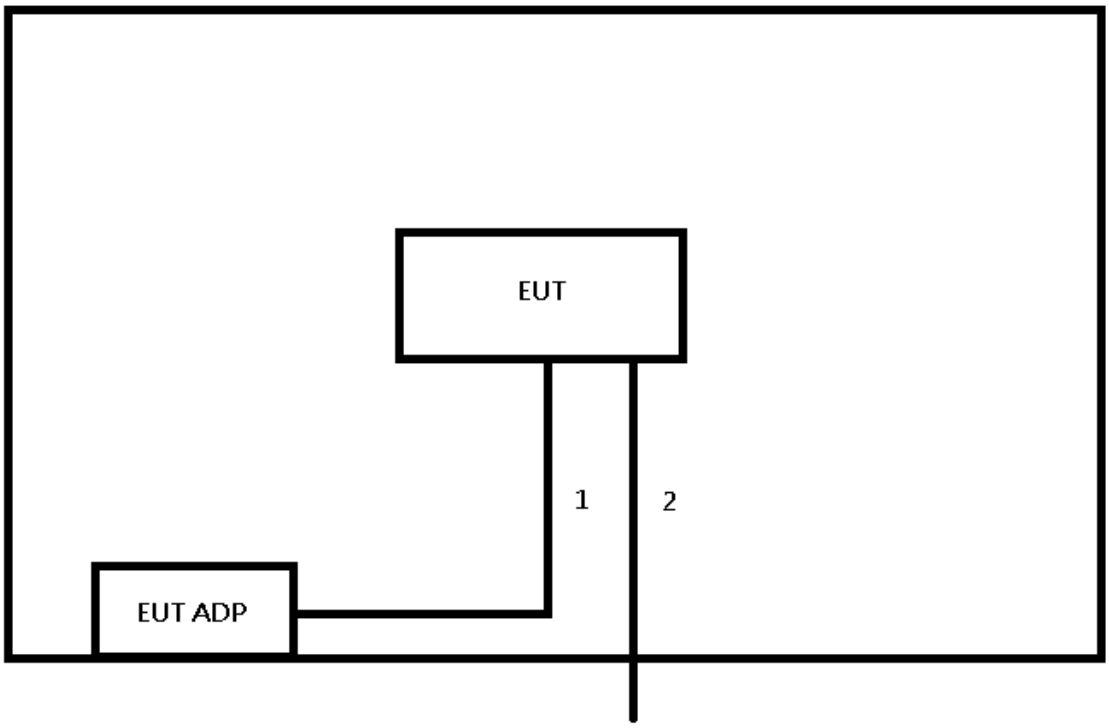
The test system was pre-tested based on the consideration of all possible combinations of EUT operation mode.
Following mode(s) as (were) found to be the worst case(s) and selected for the final test.

Radiated emissions test	
Test Mode	Description
1	TX N G MODE CHANNEL 01 + LTE Band 4
2	UNII-1_TX N (HT40) MODE CHANNEL 38 + LTE Band 4

NOTE:
(1) For radiated emission tests, the highest output powers were set for final test.

3.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Equipment letters and Cable numbers refer to item numbers described in the tables of clause 3.4.



3.4 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.	Remarks
-	-	-	-	-	-

Item	Shielded	Ferrite Core	Length	Cable Type	Remarks
1	YES	NO	1.5 m	Power Cable	Furnished at test lab
2	NO	NO	3.0 m	LAN Cable	Furnished at test lab

4 RADIATED EMISSIONS TEST

4.1 LIMIT

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

LIMITS OF RADIATED EMISSIONS MEASUREMENT (9 kHz to 1000 MHz)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

NOTE:
(1) The limit for radiated test was performed according to FCC Part 15, Subpart C.
(2) The tighter limit applies at the band edges.
(3) Emission level (dBuV/m)=20log Emission level (uV/m).
(4) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)
Margin Level = Measurement Value - Limit Value

LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

Frequency (MHz)	Radiated Emissions (dBuV/m)		Measurement Distance (meters)
	Peak	Average	
Above 1000	74	54	3

Frequency (MHz)	EIRP Limit (dBm)	Equivalent Field Strength at 3m (dBμV/m)
5150-5250	-27	68.3
5250-5350	-27	68.3
5470-5725	-27	68.3
5725-5850	-27 (NOTE 2)	68.3
	10 (NOTE 2)	105.3
	15.6 (NOTE 2)	110.9
	27 (NOTE 2)	122.3

NOTE:
1. The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength: $E = \frac{1000000\sqrt{30P}}{3}$ μV/m, where P is the eirp (Watts)
2. According to FCC 16-24,All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

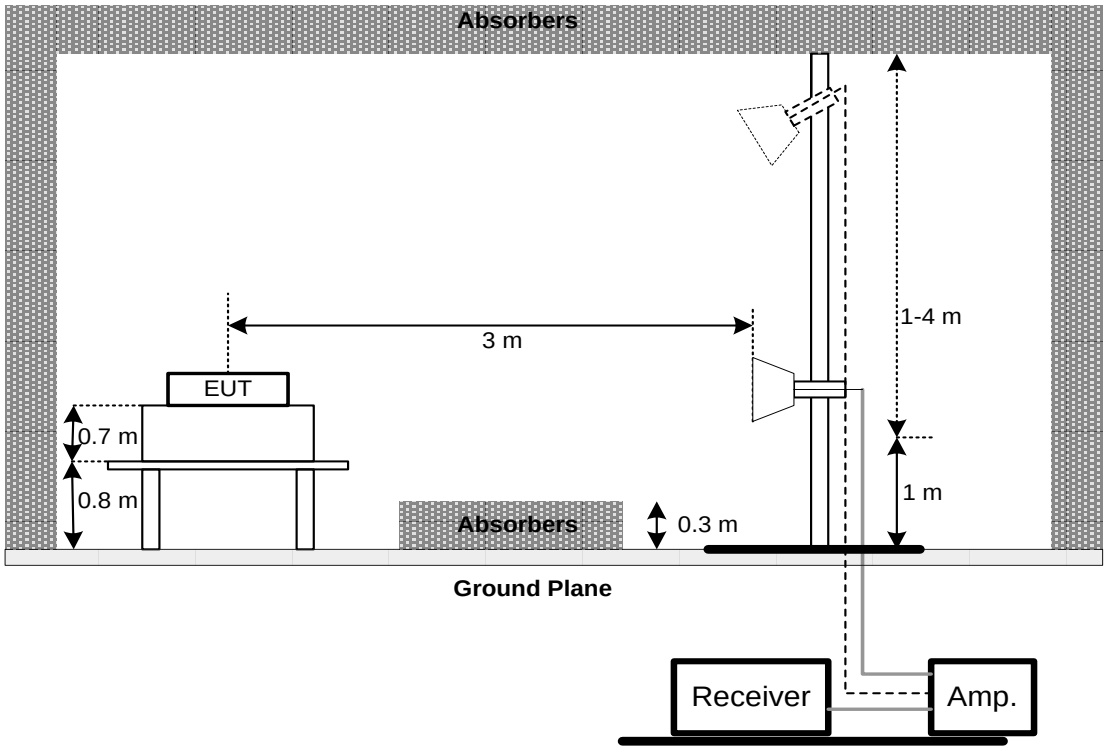
4.2 TEST PROCEDURE

a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The height of the equipment or of the substitution antenna shall be 1.5 m, the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
c. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
d. The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1GHz.
e. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
f. All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn‘t perform.
g. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.3 DEVIATION FROM TEST STANDARD

No deviation.

4.4 TEST SETUP



4.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.6 TEST RESULT

Temperature: 23 °C Relative Humidity: 70 % Test Voltage: AC 120V/50Hz

Please refer to the APPENDIX A.

NOTE:

(1) No limit: This is fundamental signal, the judgment is not applicable.
For fundamental signal judgment was referred to Peak output test.

5 LIST OF MEASURING EQUIPMENTS

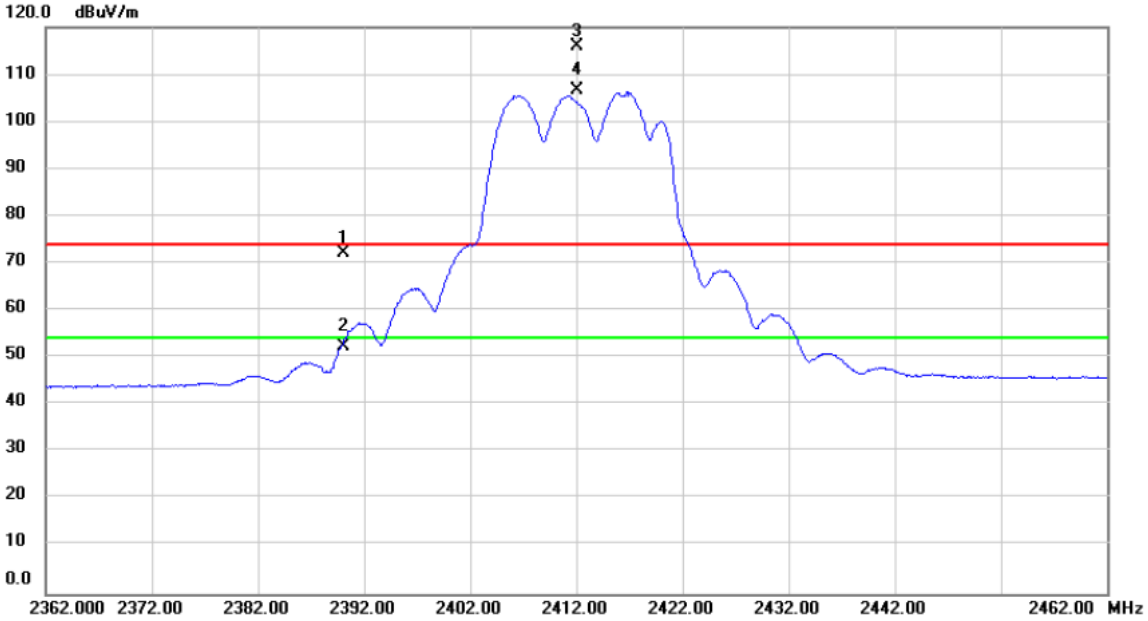
Radiated Emissions					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Preamplifier	EMCI	012645B	980267	Feb. 27, 2019
2	Preamplifier	EMCI	EMC02325	980217	Dec. 27, 2018
3	Preamplifier	EMCI	EMC2654045	980030	Feb. 13, 2019
4	Test Cable	EMCI	EMC104-SM-SM-8000	8m	Jan. 03, 2019
5	Test Cable	EMCI	EMC104-SM-SM-800	150207	Jan. 03, 2019
6	Test Cable	EMCI	EEMC104-SM-SM-3000	151205	Jan. 03, 2019
7	MXE EMI Receiver	Agilent	N9038A	MY55420127	Jan. 08, 2019
8	Signal Analyzer	Agilent	N9010A	MY52220990	Feb. 21, 2019
9	Loop Ant	EMCI	LPA600	274	May 03, 2019
10	Horm Ant	SCHWARZBECK	BBHA 9120D	9120D-1342	Feb. 27, 2019
11	Horm Ant	Schwarzbeck	BBHA 9170	187	Dec. 05, 2018
12	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-548	Jan. 15, 2019
13	5dB Attenuator	EMCI	EMCI-N-6-05	AT-N0623	Jan. 15, 2019

Remark: “N/A” denotes no model name, no serial no. or no calibration specified.
All calibration period of equipment list is one year.

APPENDIX A RADIATED EMISSIONS

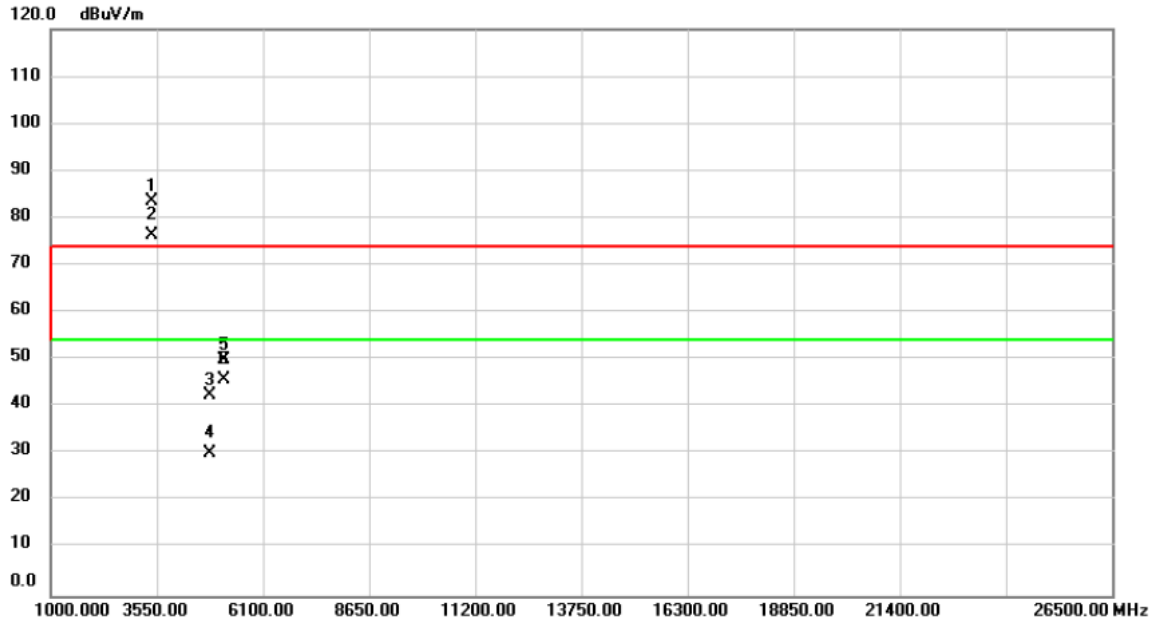
CONTINUE ON NEXT PAGE

Test Mode	TX N G MODE CHANNEL 01 + LTE Band 4	Polarization	Vertical



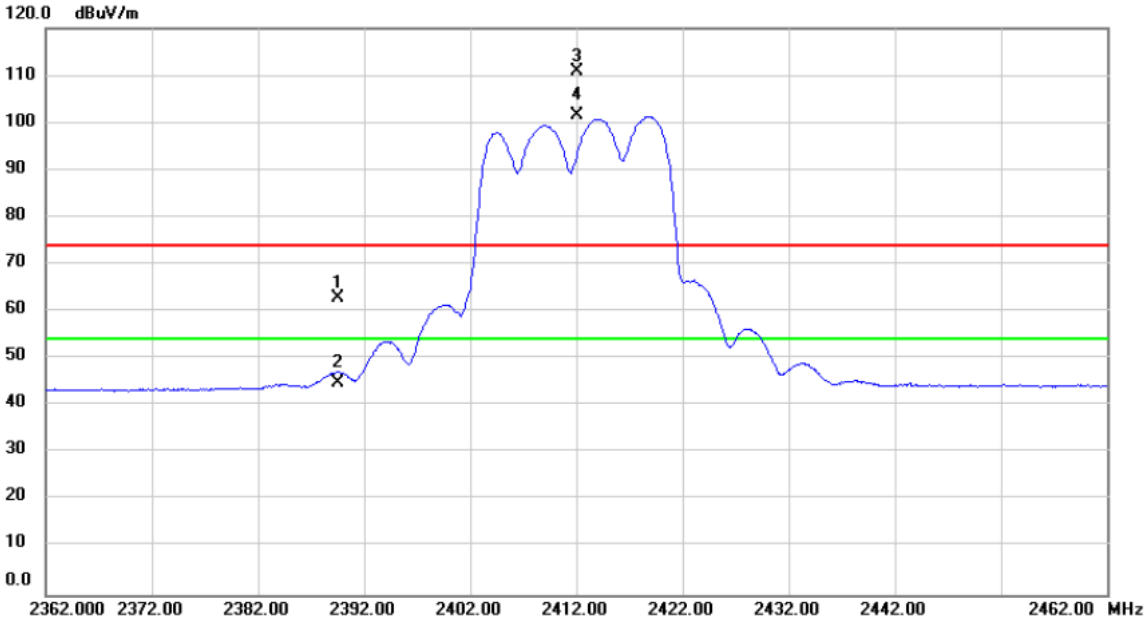
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2390.000	41.23	30.84	72.07	74.00	-1.93	peak	
2		2390.000	21.52	30.84	52.36	54.00	-1.64	AVG	
3	X	2412.000	85.10	30.92	116.02	74.00	42.02	peak	No Limit
4	*	2412.000	75.69	30.92	106.61	54.00	52.61	AVG	No Limit

Test Mode	TX N G MODE CHANNEL 01 + LTE Band 4	Polarization	Vertical



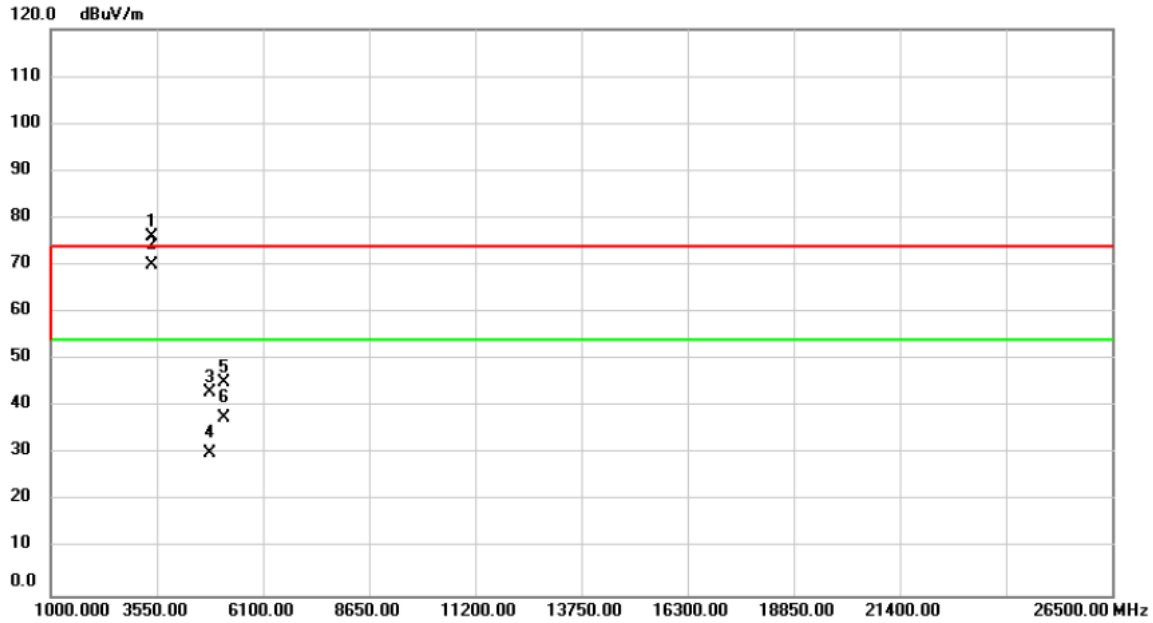
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	3447.400	98.38	-14.88	83.50	96.02	-12.53	peak	
2	*	3447.400	91.37	-14.88	76.49	86.61	-10.12	AVG	
3		4824.000	54.00	-11.48	42.52	74.00	-31.48	peak	
4		4824.000	41.64	-11.48	30.16	54.00	-23.84	AVG	
5		5171.100	61.22	-11.16	50.06	74.00	-23.94	peak	
6		5171.100	57.01	-11.16	45.85	54.00	-8.15	AVG	

Test Mode	TX N G MODE CHANNEL 01 + LTE Band 4	Polarization	Horizontal



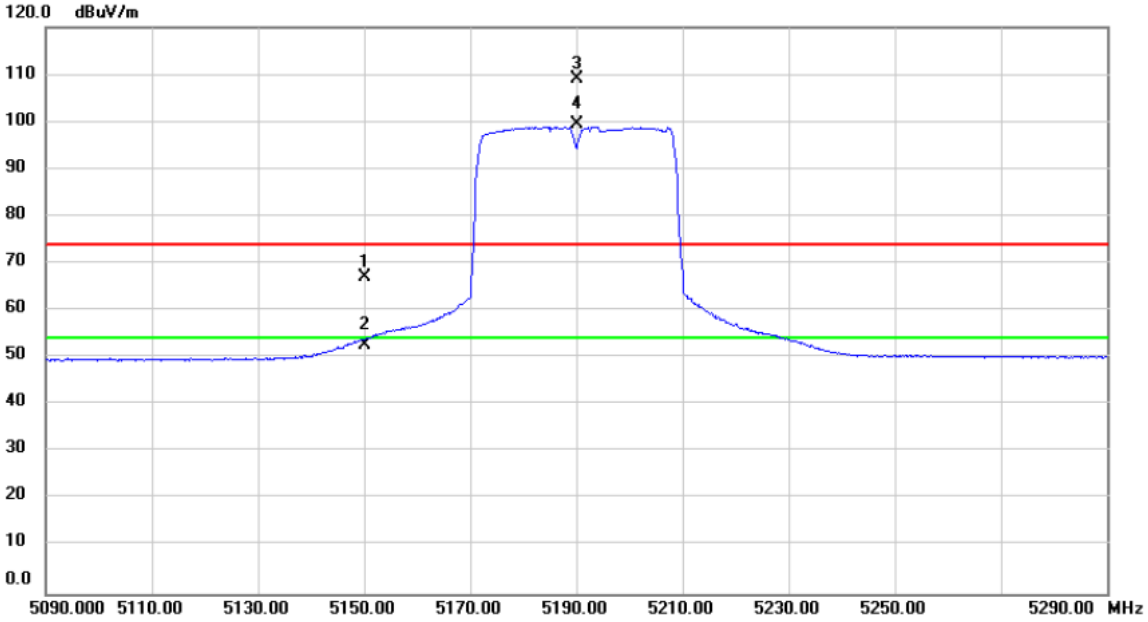
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2389.496	32.12	30.84	62.96	74.00	-11.04	peak	
2		2389.496	14.07	30.84	44.91	54.00	-9.09	AVG	
3	X	2412.000	79.98	30.92	110.90	74.00	36.90	peak	No Limit
4	*	2412.000	70.58	30.92	101.50	54.00	47.50	AVG	No Limit

Test Mode	TX N G MODE CHANNEL 01 + LTE Band 4	Polarization	Horizontal



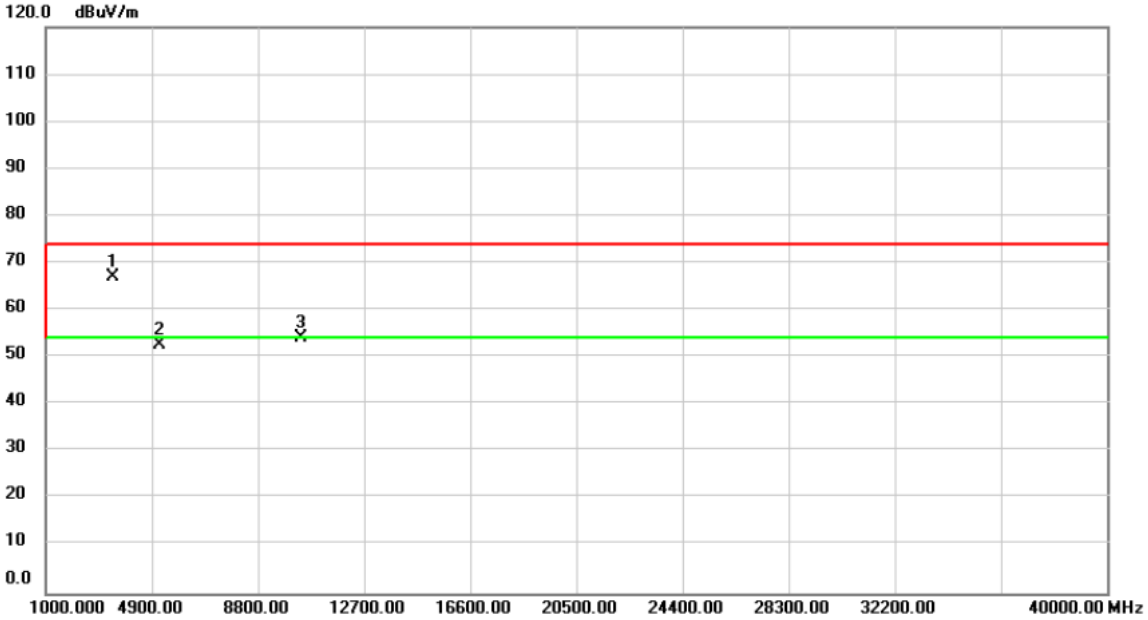
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	X	3447.400	91.07	-14.88	76.19	90.90	-14.71	peak	
2	*	3447.400	84.89	-14.88	70.01	81.50	-11.49	AVG	
3		4824.000	54.48	-11.48	43.00	74.00	-31.00	peak	
4		4824.000	41.61	-11.48	30.13	54.00	-23.87	AVG	
5		5171.100	56.24	-11.16	45.08	74.00	-28.92	peak	
6		5171.100	48.75	-11.16	37.59	54.00	-16.41	AVG	

Test Mode	UNII-1_TX N (HT40) MODE CHANNEL 38 + LTE Band 4	Polarization	Vertical



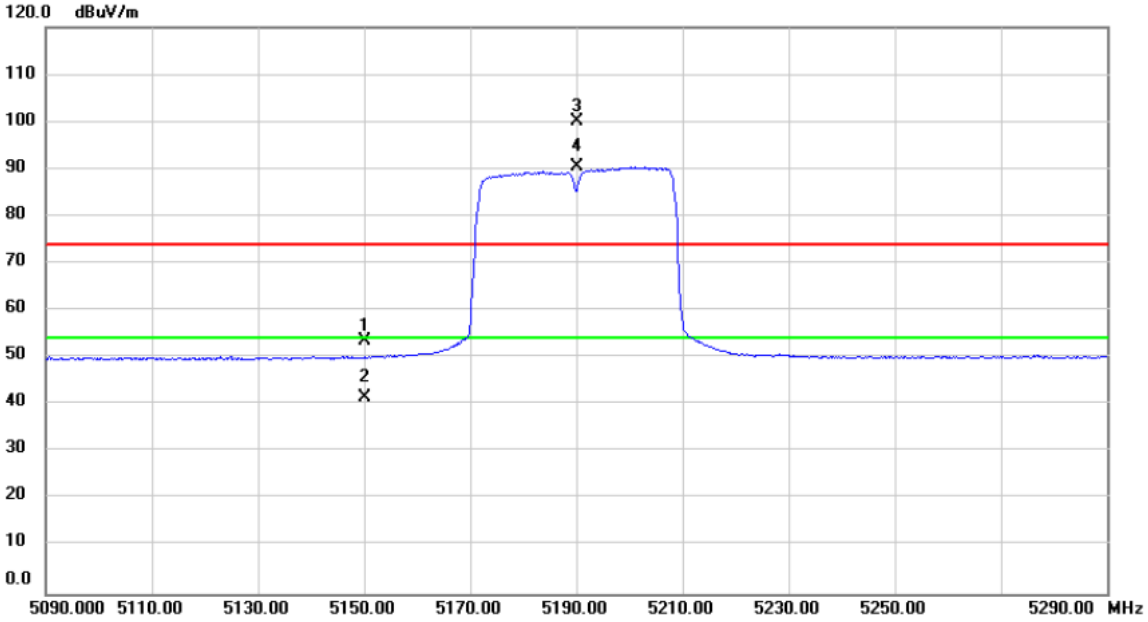
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5150.000	29.61	37.31	66.92	74.00	-7.08	peak	
2		5150.000	15.38	37.31	52.69	54.00	-1.31	AVG	
3	X	5190.000	71.85	37.34	109.19	74.00	35.19	peak	No Limit
4	*	5190.000	62.24	37.34	99.58	54.00	45.58	AVG	No Limit

Test Mode	UNII-1_TX N (HT40) MODE CHANNEL 38 + LTE Band 4	Polarization	Vertical



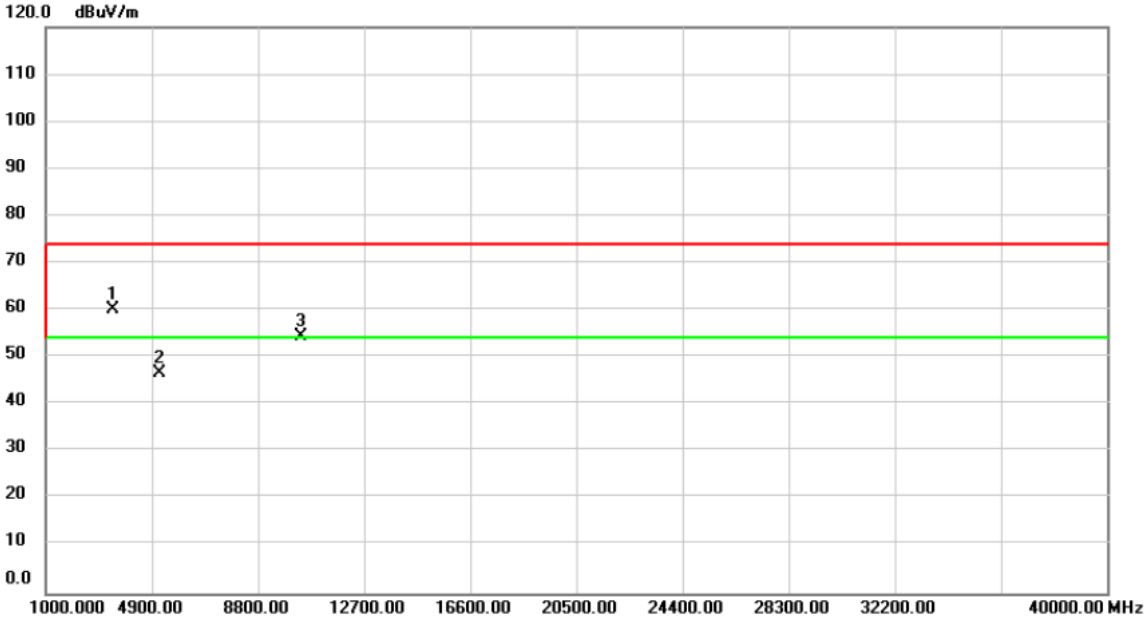
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	3447.400	82.02	-14.88	67.14	68.20	-1.06	peak	
2		5171.100	63.86	-11.16	52.70	68.20	-15.50	peak	
3		10380.00	52.42	1.59	54.01	68.20	-14.19	peak	

Test Mode	UNII-1_TX N (HT40) MODE CHANNEL 38 + LTE Band 4	Polarization	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5150.000	16.26	37.31	53.57	74.00	-20.43	peak	
2		5150.000	4.14	37.31	41.45	54.00	-12.55	AVG	
3	X	5190.000	62.64	37.34	99.98	74.00	25.98	peak	No Limit
4	*	5190.000	53.02	37.34	90.36	54.00	36.36	AVG	No Limit

Test Mode	UNII-1_TX N (HT40) MODE CHANNEL 38 + LTE Band 4	Polarization	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	3447.400	75.15	-14.88	60.27	68.20	- 7.93	peak	
2		5171.100	57.91	-11.16	46.75	68.20	-21.45	peak	
3		10380.00	52.89	1.59	54.48	68.20	-13.72	peak	