

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)
47 CFR FCC Part 15, Subpart E (Section 15.407)

Report No.: RFBENL-WTW-P24060724B-7

FCC ID: RYK-WNFQ291BEBT

Product: WiFi 7/BT module

Brand: Sparklan

Model No.: WNFQ-292BE(BT)

Series Model: WNFQ-291BE(BT), WNFQ-291BEI(BT)

Received Date: 2025/3/5

Test Date: 2025/8/18 ~ 2025/9/4

Issued Date: 2025/9/17

Applicant: SparkLAN Communications, Inc.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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FCC Registration / 723255 / TW2022

Designation Number:

Approved by:



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, Date:

2025/9/17

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Prepared by : Phoenix Huang / Specialist



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Release Control Record

Issue No.	Description	Date Issued
RFBENL-WTW-P24060724B-7	Original release.	2025/9/17

1 Certificate

Product: WiFi 7/BT module

Brand: Sparklan

Test Model: WNFQ-292BE(BT)

Series Model: WNFQ-291BE(BT), WNFQ-291BEI(BT)

Sample Status: Engineering sample

Applicant: SparkLAN Communications, Inc.

Test Date: 2025/8/18 ~ 2025/9/4

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)
47 CFR FCC Part 15, Subpart E (Section 15.407)

Measurement procedure: ANSI C63.10-2020

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

2 Summary of Test Results

Standard / Clause	Test Item	Result	Remark
15.205 /15.209 /15.247(d) 15.407(b)(9)	Unwanted Emissions below 1 GHz	Pass	Meet the requirement of limit.
15.205 /15.209 /15.247(d) 15.407(b) (1/2/3/4(i)/10) 15.407(b)(5)/15.407(b)(10) 15.407(b)(6)/15.407(b)(10)	Unwanted Emissions above 1 GHz	Pass	Meet the requirement of limit.
15.247(d)	Conducted Out of Band Emissions	Pass	Meet the requirement of limit.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 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:

Parameter	Specification	Uncertainty (±)
Radiated Spurious Emissions below 1GHz	9 kHz ~ 30 MHz	3.1 dB
	30 MHz ~ 1 GHz	5.4 dB
Radiated Spurious Emissions above 1GHz	1 GHz ~ 18 GHz	5.1 dB
	18 GHz ~ 40 GHz	5.3 dB
Conducted Out of Band Emissions	9 kHz ~ 40 GHz	2.6 dB

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	WiFi 7/BT module
Brand	Sparklan
Test Model	WNFQ-292BE(BT)
Series Model	WNFQ-291BE(BT), WNFQ-291BEI(BT)
Modulation Technology	WLAN: DSSS, OFDM, OFDMA BT-EDR / QHS: FHSS BT-LE: DTS
Operating Frequency	WLAN: 2.4GHz: 2.412 ~ 2.472 GHz 5GHz: 5.18 GHz ~ 5.25 GHz 5.26 GHz ~ 5.32 GHz 5.5 GHz ~ 5.72 GHz 5.745 GHz ~ 5.825 GHz 5.9GHz: 5.815 GHz ~ 5.885 GHz 6GHz: 5.935 GHz ~ 6.415 GHz 6.425 GHz ~ 6.525 GHz 6.535 GHz ~ 6.865 GHz 6.875 GHz ~ 7.115 GHz BT-EDR/BT-LE: 2.402 GHz ~ 2.48 GHz QHS: 2.404 GHz ~ 2.478 GHz

Note:

- This report is prepared for FCC class II permissive change. The difference compared with the Report No.: RFBENL-WTW-P24060724-7 as the following:
 - ◆ Add model: WNFQ-292BE(BT)
 - ◆ Add 2nd source pin to pin chip: QCC2076 for model WNFQ-292BE(BT).
 - ◆ Disable WiFi-7 bandwidth 320 MHz for model WNFQ-292BE(BT).
 - ◆ Upgraded ANSI C63.10 standard version.
 - ◆ Remove NPTH for WNFQ-292BE(BT).
- According to above conditions, all test items need to be performed. All data for meeting the requirement is verified.
- All models are listed as below.

Brand	Model	Difference
Sparklan	WNFQ-291BEI(BT)	All models are electrically identical, different model names are for marketing purpose.
	WNFQ-291BE(BT)	
	WNFQ-292BE(BT)	1. Chip QCC2076 2. Disable WiFi-7 bandwidth 320 MHz

From the above models, model: WNFQ-292BE(BT) was selected as representative model for the test and its data was recorded in this report.

4. There are Bluetooth (EDR, BLE, QHS) and WLAN (2.4 GHz & 5 GHz & 5.9 GHz & 6 GHz) technology used for the EUT.

5. Simultaneously transmission combination.

DBS			
Combination	Technology		
1	WLAN(2.4GHz)_Ant 0+1	WLAN(5GHz)_Ant 0+1	
2	WLAN(2.4GHz)_Ant 0+1	WLAN(6GHz)_Ant 0+1	
HBS+BT			
Combination	Technology		
3	Bluetooth_Ant 0+1	WLAN(5GHz)_Ant 0+1	
4	Bluetooth_Ant 0+1	WLAN(6GHz)_Ant 0+1	
5	WLAN(5GHz_U-NII-1, U-NII-2A)_Ant 0+1	WLAN(5GHz_U-NII-2C, U-NII-3, U-NII-4)_Ant 0+1	Bluetooth
6	WLAN(5GHz_U-NII-1, U-NII-2A)_Ant 0+1	WLAN(6GHz)_Ant 0+1	Bluetooth

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna Set	RF Chain No.	Brand	Model	Antenna Net Gain (dBi)	Frequency Range (GHz)	Cable Loss (dB)	Antenna Type	Connector Type	Cable Length (mm)
1	Chain0/1	Hong-Bo	260-25094	3.53	2.4~2.4835	0.74	PIFA	MHF 4L	300
				3.06	5.15~5.25	1.16			
				3.07	5.25~5.35	1.18			
				4.81	5.47~5.725	1.26			
				4.2	5.725~5.850	1.28			
2	Chain0/1	Hong-Bo	260-25083	5.09	5.850~5.895	1.29	PIFA	MHF 4L	300
				5.14	5.925~6.425	1.35			
				5.09	6.425~6.525	1.38			
				5.16	6.525~6.875	1.45			
				5.12	6.875~7.125	1.50			
3	Chain0/1	Hong-Bo	260-25084	3.22	2.4~2.4835	0.49	Monopole	MHF 4L	200
				3.35	5.150~5.250	0.76			
				3.42	5.250~5.350	0.77			
				4.77	5.470~5.725	0.80			
				4.72	5.725~5.850	0.84			
				4.71	5.850~5.895	0.84			
				4.75	5.925~6.425	0.86			
				4.29	6.425~6.525	0.91			
				4.81	6.525~6.875	0.96			
				4.74	6.875~7.125	0.98			

Antenna Set	RF Chain No.	Brand	Model	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type	Cable Length (mm)
4	Chain0/1	SparkLAN	AD-513AX	3.11	2.4~2.4835	Dipole	I-PEX MHF4	150
				4.46	5.150~5.850			
				4.07	5.850~5.895			
				4.53	5.925~6.425			
				4.06	6.425~6.525			
				4.04	6.525~6.875			
				3.97	6.875~7.125			
5	Chain0/1	SparkLAN	AD-510AX	2.27	2.4~2.4835	Dipole	RP-SMA (M)	150
				2.88	5.150~5.850			
				2.6	5.850~5.895			
				3.23	5.925~6.425			
				3.34	6.425~6.525			
				3.52	6.525~6.875			
6	Chain0/1	SparkLAN	AD-512AX	3.52	6.875~7.125	Dipole	RP-SMA (M)	150
				2.35	2.4~2.4835			
				3.00	5.150~5.850			
				2.80	5.850~5.895			
				2.87	5.925~6.425			
				3.02	6.425~6.525			
7	Chain0/1	SparkLAN	AD-516AX	3.02	6.525~6.875	Dipole	I-PEX MHF4	250
				2.61	6.875~7.125			
				1.65	2.4~2.4835			
				4.3	5.150~5.850			
				4.38	5.850~5.895			
				4.43	5.925~6.425			
8	Chain0/1	Johanson	2450AD18A6050	4.45	6.425~6.525	Chip	MHF4L to SMA-F	-
				4.46	6.525~6.875			
				4.48	6.875~7.125			
				2	2.4~2.4835			
				1.5	5.150~5.850			
				2.7	5.850~5.895			
				2.7	5.925~6.425			
				2.7	6.425~6.525			
				2.7	6.525~6.875			
				2.7	6.875~7.125			

* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates.
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Following channel(s) was (were) selected for the final test as listed below:

Test Item	EUT Configure Mode	Combination	Mode	Tested Channel
Unwanted Emissions below 1 GHz	A, B	1	802.11b	1
			802.11be (EHT20)	116
		2	802.11b	1
			802.11be (EHT20)	45
		3	BT-LE 1M	19
			802.11be (EHT20)	116
		4	BT-LE 1M	19
			802.11be (EHT20)	45
		5	802.11be (EHT20)	52
			802.11be (EHT20)	116
		6	BT-LE 1M	19
			802.11be (EHT20)	52
			802.11be (EHT20)	45
		6	BT-LE 1M	19
			802.11be (EHT20)	52
			802.11be (EHT20)	45
		6	BT-LE 1M	19
			802.11be (EHT20)	52
			802.11be (EHT20)	45
Unwanted Emissions above 1 GHz	A, B	1	802.11b	1
			802.11be (EHT20)	116
		2	802.11b	1
			802.11be (EHT20)	45
		3	BT-LE 1M	19
			802.11be (EHT20)	116
		4	BT-LE 1M	19
			802.11be (EHT20)	45
		5	802.11be (EHT20)	52
			802.11be (EHT20)	116
		6	BT-LE 1M	19
			802.11be (EHT20)	52
			802.11be (EHT20)	45
		6	BT-LE 1M	19
			802.11be (EHT20)	52
			802.11be (EHT20)	45
		6	BT-LE 1M	19
			802.11be (EHT20)	52
			802.11be (EHT20)	45
Conducted Out of Band Emissions	A	1	802.11b	1
			802.11be (EHT20)	116
		2	802.11b	1
			802.11be (EHT20)	45
		3	BT-LE 1M	19
			802.11be (EHT20)	116
		4	BT-LE 1M	19
			802.11be (EHT20)	45
		5	802.11be (EHT20)	52
			802.11be (EHT20)	116
		6	BT-LE 1M	19
			802.11be (EHT20)	52
			802.11be (EHT20)	45
		6	BT-LE 1M	19
			802.11be (EHT20)	52
			802.11be (EHT20)	45
		6	BT-LE 1M	19
			802.11be (EHT20)	52
			802.11be (EHT20)	45
EUT Configure Mode:	A	EUT only (remove 50 ohm terminator and Connect to the appropriate equipment)		
	B	EUT with 50 ohm terminator		

4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1 Unwanted Emissions below 1 GHz

Mode A

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Fixed Attenuator Woken	00800A1K01A-10	00800A1K01A-10-01	2025/5/23	2026/5/22
PXA Signal Analyzer Keysight	N9030A	MY55330160	2025/1/16	2026/1/15
Software	ADT_RF Test Software V8	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2025/9/4

Mode B

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-361	2024/10/8	2025/10/7
Fix tool for Boresight antenna tower BV	FBA-01	FBA_SIP01	N/A	N/A
Fixed Attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	2025/2/8	2026/2/7
Loop Antenna TESEQ	HLA 6121	63620	2024/10/17	2025/10/16
MXE EMI Receiver Agilent	N9038A	MY50010156	2025/6/5	2026/6/4
Preamplifier EMCI	EMC330N	980852	2025/2/8	2026/2/7
	EMC001340	980142	2025/2/17	2026/2/16
RF Coaxial Cable PEWC	8D	001	2025/2/8	2026/2/7
		966-3-2	2025/2/8	2026/2/7
		966-3-3	2025/2/8	2026/2/7
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A

Notes:

1. The test was performed in 966 Chamber No. 3.
2. Tested Date: 2025/8/18

4.2 Unwanted Emissions above 1 GHz

Mode A

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Fixed Attenuator Woken	00800A1K01A-10	00800A1K01A-10-01	2025/5/23	2026/5/22
PXA Signal Analyzer Keysight	N9030A	MY55330160	2025/1/16	2026/1/15
Software	ADT_RF Test Software V8	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2025/9/1

Mode B

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	N/A	N/A
Fix tool for Boresight antenna tower BV	FBA-01	FBA_SIP01	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-406	2024/11/10	2025/11/9
	BBHA 9170	9170-739	2024/11/10	2025/11/9
MXE EMI Receiver Agilent	N9038A	MY50010156	2025/6/5	2026/6/4
Preamplifier EMCI	EMC12630SE	980384	2025/1/14	2026/1/13
	EMC184045SE	980387	2025/8/7	2026/8/6
PXA Signal Analyzer Keysight	N9030B	MY57141948	2025/5/20	2026/5/19
RF Coaxial Cable EMCI	EMC102-KM-KM-1200	160924	2025/1/24	2026/1/23
	EMC102-KM-KM-4000	200214	2025/1/24	2026/1/23
	EMC104-SM-SM-1500	180504	2025/1/18	2026/1/17
	EMC104-SM-SM-2000	180601	2025/1/18	2026/1/17
	EMC104-SM-SM-6000	210201	2025/1/18	2026/1/17
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A

Notes:

1. The test was performed in 966 Chamber No. 3.
2. Tested Date: 2025/8/18

4.3 Conducted Out of Band Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Fixed Attenuator Woken	00800A1K01A-10	00800A1K01A-10-01	2025/5/23	2026/5/22
PXA Signal Analyzer Keysight	N9030A	MY55330160	2025/1/16	2026/1/15
Software	ADT_RF Test Software V8	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2025/8/26

5 Limits of Test Items

5.1 Unwanted Emissions below 1 GHz

For FCC 15.247:

Frequencies (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
Above 960	500	3

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).

For FCC 15.407:

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (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
Above 960	500	3

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).

5.2 Unwanted Emissions above 1 GHz

For FCC 15.247:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
Above 960	500	3

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

For FCC 15.407 transmitters operating in the 5.150-5.850 GHz band:

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
Above 960	500	3

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

Limits of unwanted emission out of the restricted bands

Applicable To	Limit	
789033 D02 General UNII Test Procedure New Rules v02r01	Field Strength at 3 m	
	PK: 74 (dBμV/m)	AV: 54 (dBμV/m)

Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m) *
15.407(b)(2)	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m) *
15.407(b)(3)	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m) *
15.407(b)(4)(i)	PK: -27 (dBm/MHz) ^{*1} PK: 10 (dBm/MHz) ^{*2} PK: 15.6 (dBm/MHz) ^{*3} PK: 27 (dBm/MHz) ^{*4}	PK: 68.2 (dBμV/m) ^{*1} PK: 105.2 (dBμV/m) ^{*2} PK: 110.8 (dBμV/m) ^{*3} PK: 122.2 (dBμV/m) ^{*4}

^{*1} beyond 75 MHz or more above of the band edge.

^{*2} below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.

^{*3} below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.

^{*4} from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts).}$$

For transmitters operating in the 5.850-5.925 GHz band:

- (i) For an indoor access point or subordinate device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of 15 dBm/MHz and shall decrease linearly to an e.i.r.p. of -7 dBm/MHz at or above 5.925 GHz.
- (ii) For a client device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of -5 dBm/MHz and shall decrease linearly to an e.i.r.p. of -27 dBm/MHz at or above 5.925 GHz.
- (iii) For a client device or indoor access point or subordinate device, all emissions below 5.725 GHz shall not exceed an e.i.r.p. of -27 dBm/MHz at 5.65 GHz increasing linearly to 10 dBm/MHz at 5.7 GHz, and from 5.7 GHz increasing linearly to a level of 15.6 dBm/MHz at 5.72 GHz, and from 5.72 GHz increasing linearly to a level of 27 dBm/MHz at 5.725 GHz.

Note:

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where } P \text{ is the eirp (Watts).}$$

For FCC 15.407 transmitters operating in the 5.925-7.125 GHz band:

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
Above 960	500	3

Notes:

- 1. The lower limit shall apply at the transition frequencies.
- 2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
- 3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

Limits of unwanted emission out of the restricted bands

Frequencies (MHz)	EIRP Limit	Equivalent Field Strength at 3 m
5925 MHz > F > 7125 MHz	Peak: -7 (dBm/MHz)	88.2 (dBuV/m)
	Average: -27 (dBm/MHz)	68.2 (dBuV/m)

Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

5.3 Conducted Out of Band Emissions

Below 20 dB of the highest emission level of operating band (in 100 kHz Resolution Bandwidth).

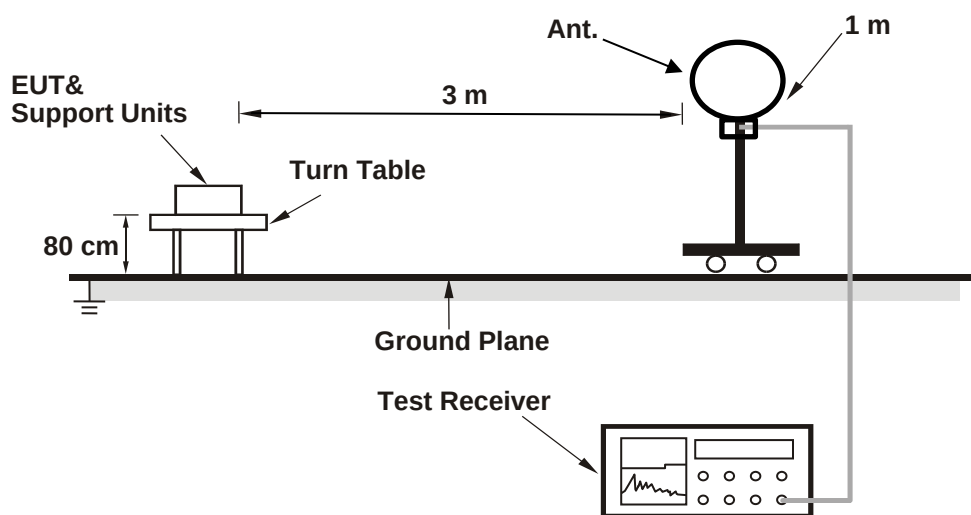
6 Test Arrangements

6.1 Unwanted Emissions below 1 GHz

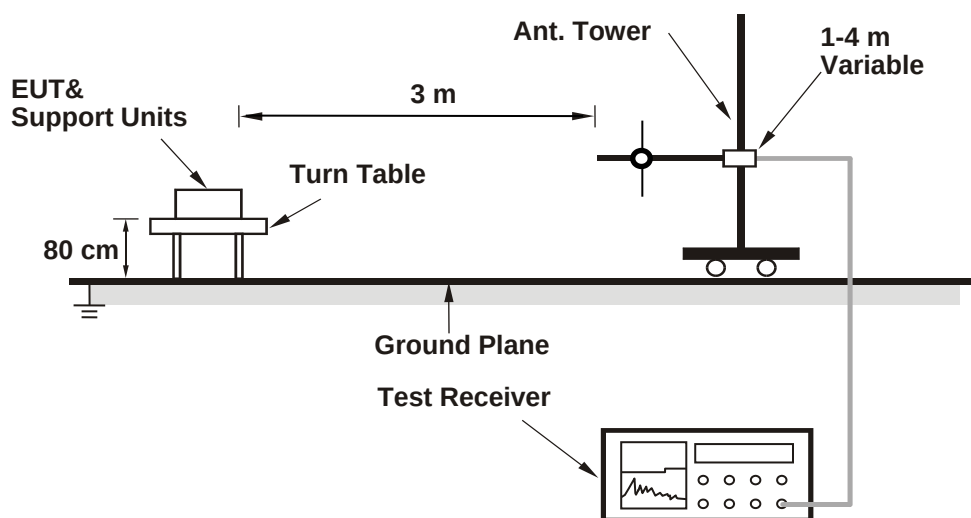
6.1.1 Test Setup

For Radiated Configuration:

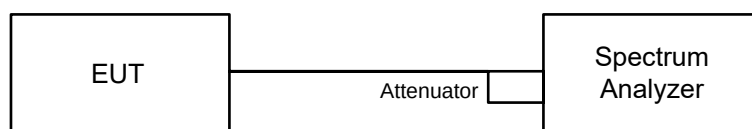
For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



For Conducted Configuration:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.1.2 Test Procedure

Radiated versus Conducted Measurement.

The unwanted emission limits in both the restricted and non-restricted bands are based on antenna-port conducted measurements in conjunction with cabinet emissions tests are permitted to demonstrate compliance.

The following steps was performed:

- a. Cabinet emissions measurements. Radiated measurement was performed to ensure that cabinet emissions are below the emission limits. For the cabinet-emission measurements the antenna was replaced by a termination matching the nominal impedance of the antenna.
- b. Conducted tests was performed using equipment that matches the nominal impedance of the antenna assembly used with the EUT.
- c. EIRP calculation. A value representative of an upper bound on out-of-band antenna gain (in dBi) shall be added to the measured antenna-port conducted emission power to compute EIRP within the specified measurement bandwidth. (For emissions in the restricted bands, additional calculations are required to convert EIRP to field strength at the specified distance.) The upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands or 2 dBi, whichever is greater.
- d. EIRP adjustments for multiple outputs. (Follow the procedures specified in FCC KDB Publication 662911)
- e. For all of Radiation emission test

For Radiated emission below 30 MHz

- e-1.1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- e-1.2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- e-1.3. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- e-1.4. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e-1.5. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode, except for the frequency band (9 kHz to 90 kHz and 110 kHz to 490 kHz) set to average detect function and peak detect function.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200 Hz at frequency below 150 kHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz or 10 kHz at frequency (150 kHz to 30 MHz).
3. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated emission above 30 MHz

- e-2.1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- e-2.2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- e-2.3. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e-2.4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e-2.5. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

Radiated versus Conducted Measurement

For Radiated measurement:

The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation).

For Conducted measurement:

The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).

Conducted Unwanted Emission Convert Formula

- a. Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.
- b. EIRP Level (dBm) = Raw Value(dBm) + Correction Factor(dB)
- c. Correction Factor is directional gain, and the composite gain will be used when signal support the correlated signal.
For the out of band spurious the gain for the specific band may have been used rather than the highest gain across all bands.
For the band edge the gain for the specific band may have been used.

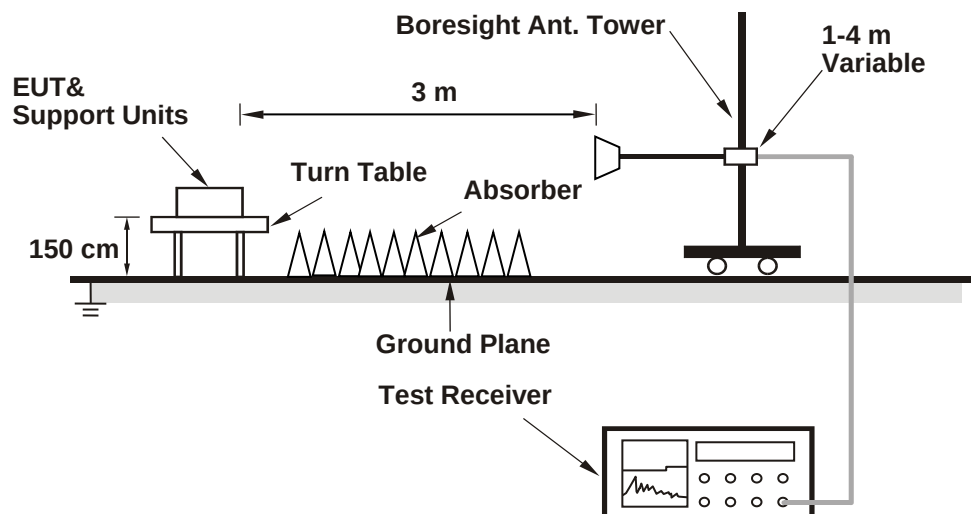
Notes:

1. In restricted bands below 1000 MHz, add upper bound on ground plane reflection:
For frequencies between 30 MHz and 1000 MHz, add 4.7 dB.
2. The conducted emission test was considered some factor to compute test result.

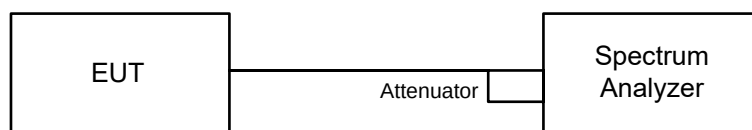
6.2 Unwanted Emissions above 1 GHz

6.2.1 Test Setup

For Radiated Configuration:



For Conducted Configuration:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.2.2 Test Procedure

Radiated versus Conducted Measurement.

The unwanted emission limits in both the restricted and non-restricted bands are based on antenna-port conducted measurements in conjunction with cabinet emissions tests are permitted to demonstrate compliance.

The following steps was performed:

- Cabinet emissions measurements. Radiated measurement was performed to ensure that cabinet emissions are below the emission limits. For the cabinet-emission measurements the antenna was replaced by a termination matching the nominal impedance of the antenna.
- Conducted tests was performed using equipment that matches the nominal impedance of the antenna assembly used with the EUT.
- EIRP calculation. A value representative of an upper bound on out-of-band antenna gain (in dBi) shall be added to the measured antenna-port conducted emission power to compute EIRP within the specified measurement bandwidth. (For emissions in the restricted bands, additional calculations are required to convert EIRP to field strength at the specified distance.) The upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands or 2 dBi, whichever is greater.
- EIRP adjustments for multiple outputs. (Follow the procedures specified in FCC KDB Publication 662911)
- For all of Radiation emission test
 - The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
 - The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

- e-3. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e-4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e-5. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Notes:

1. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1 GHz.
2. For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10 Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1 GHz.
3. All modes of operation were investigated and the worst-case emissions are reported.

Radiated versus Conducted Measurement

For Radiated measurement:

The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation).

For Conducted measurement:

The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).

For Verified radiated measurement:

The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation).

Conducted Unwanted Emission Convert Formula

a. Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8

d = measurement distance in 3 meters.

b. EIRP Level (dBm) = Raw Value(dBm) + Correction Factor(dB).

c. Correction Factor is directional gain, and the composite gain will be used when signal support the correlated signal.

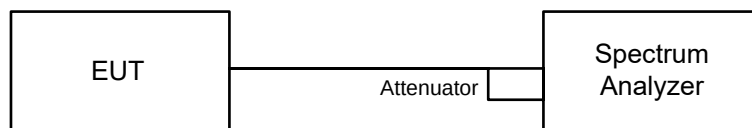
For the out of band spurious the gain for the specific band may have been used rather than the highest gain across all bands.

For the band edge the gain for the specific band may have been used.

Note: The conducted emission test was considered some factor to compute test result.

6.3 Conducted Out of Band Emissions

6.3.1 Test Setup



6.3.2 Test Procedure

MEASUREMENT PROCEDURE REF

- Set the RBW = 100 kHz.
- Set the VBW $\geq$ 300 kHz.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOB

- Set RBW = 100 kHz.
- Set VBW $\geq$ 300 kHz.
- Detector = peak.
- Sweep = auto couple.
- Trace Mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level.

7 Test Results of Test Item

7.1 Unwanted Emissions below 1 GHz

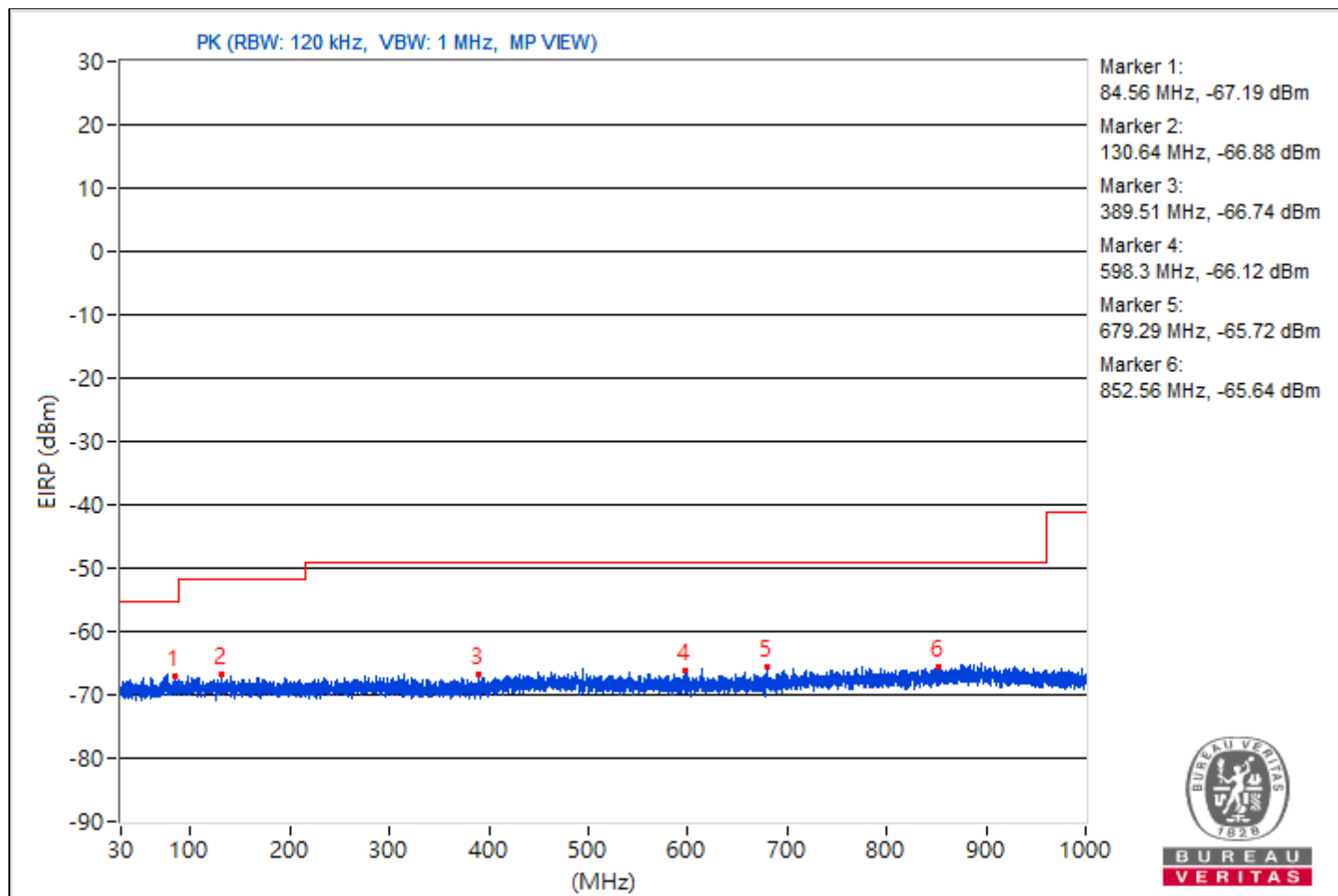
Mode A

Combination	1		
Frequency Range	30 MHz ~ 1 GHz	Environmental Conditions	21°C, 68% RH
Tested By	Kevin Ko		

Conducted Unwanted Emissions								
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value Chain 0 (dBm)	Raw Value Chain 1 (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	84.56	28.07 PK	40	-11.93	-85.82	-81.39	12.87	-67.19
2	130.64	28.38 PK	43.5	-15.12	-81.68	-84.21	12.87	-66.88
3	389.51	28.52 PK	46	-17.48	-86.32	-80.65	12.87	-66.74
4	598.3	29.14 PK	46	-16.86	-80.52	-84.27	12.87	-66.12
5	679.29	29.54 PK	46	-16.46	-83.52	-80.28	12.87	-65.72
6	852.56	29.62 PK	46	-16.38	-80.41	-83.02	12.87	-65.64

Notes:

1. Margin value = Emission Level - Limit value
2. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

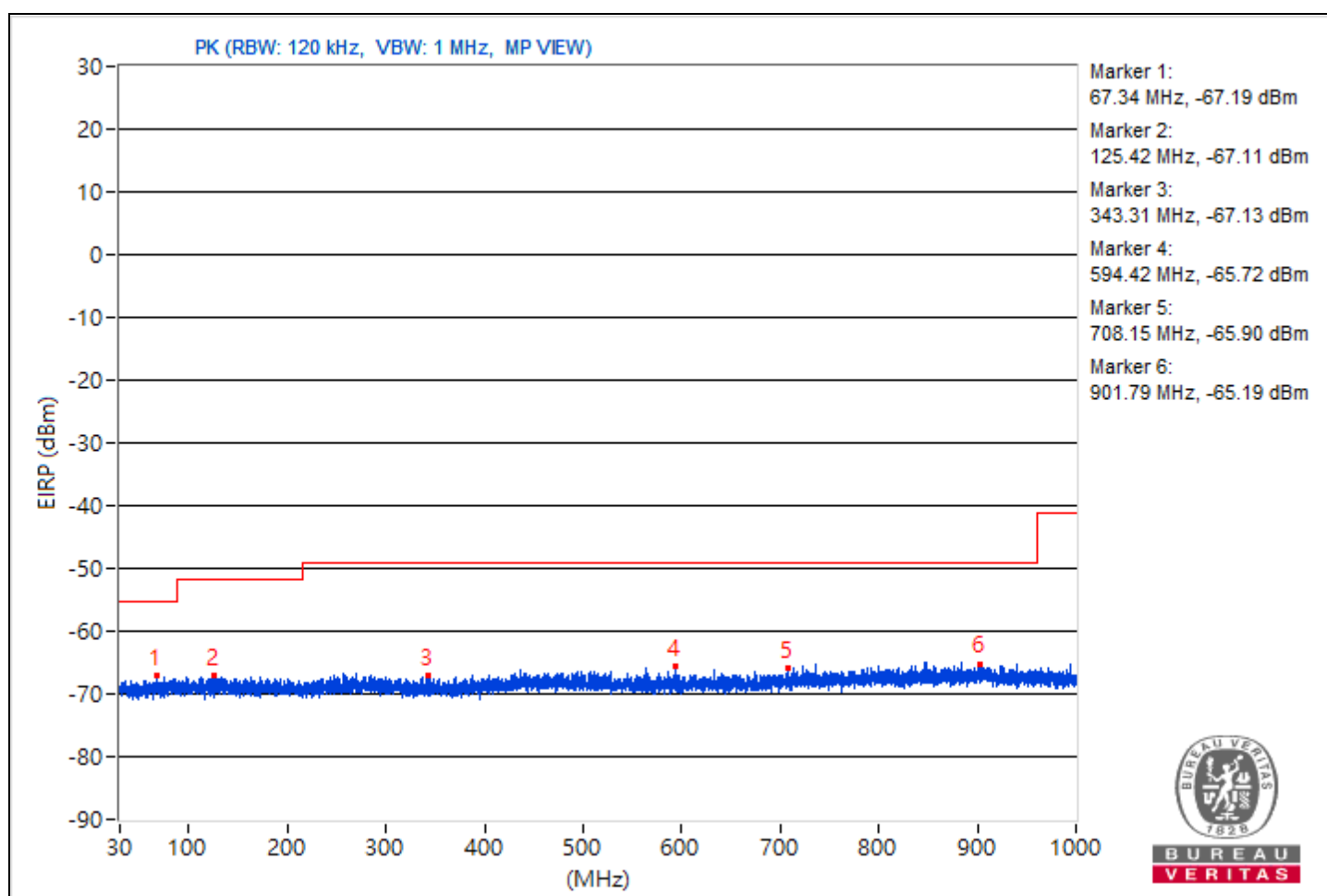


Combination	2		
Frequency Range	30 MHz ~ 1 GHz	Environmental Conditions	21°C, 68% RH
Tested By	Kevin Ko		

Conducted Unwanted Emissions								
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value Chain 0 (dBm)	Raw Value Chain 1 (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	67.34	28.07 PK	40	-11.93	-81.38	-85.89	12.87	-67.19
2	125.42	28.15 PK	43.5	-15.35	-82.27	-83.85	12.87	-67.11
3	343.31	28.13 PK	46	-17.87	-84.54	-81.88	12.87	-67.13
4	594.42	29.54 PK	46	-16.46	-80.59	-82.92	12.87	-65.72
5	708.15	29.36 PK	46	-16.64	-83.89	-80.36	12.87	-65.9
6	901.79	30.07 PK	46	-15.93	-80.11	-82.3	12.87	-65.19

Notes:

1. Margin value = Emission Level - Limit value
2. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

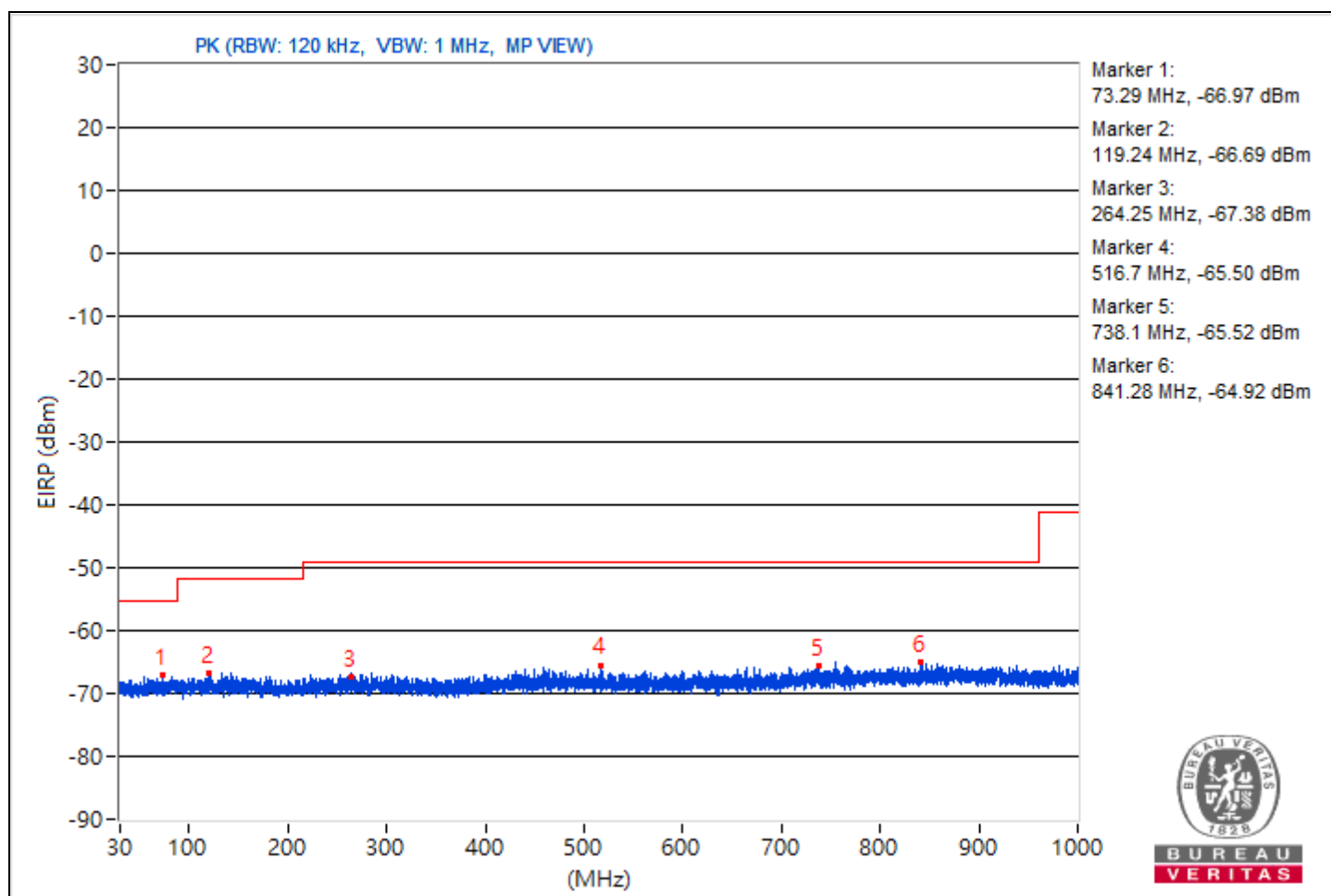


Combination	3		
Frequency Range	30 MHz ~ 1 GHz	Environmental Conditions	21°C, 68% RH
Tested By	Kevin Ko		

Conducted Unwanted Emissions								
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value Chain 0 (dBm)	Raw Value Chain 1 (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	73.29	28.29 PK	40	-11.71	-82.25	-83.55	12.87	-66.97
2	119.24	28.57 PK	43.5	-14.93	-81.5	-84	12.87	-66.69
3	264.25	27.88 PK	46	-18.12	-85.34	-81.86	12.87	-67.38
4	516.7	29.76 PK	46	-16.24	-83.02	-80.19	12.87	-65.5
5	738.1	29.74 PK	46	-16.26	-82.73	-80.38	12.87	-65.52
6	841.28	30.34 PK	46	-15.66	-80.1	-81.64	12.87	-64.92

Notes:

1. Margin value = Emission Level - Limit value
2. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

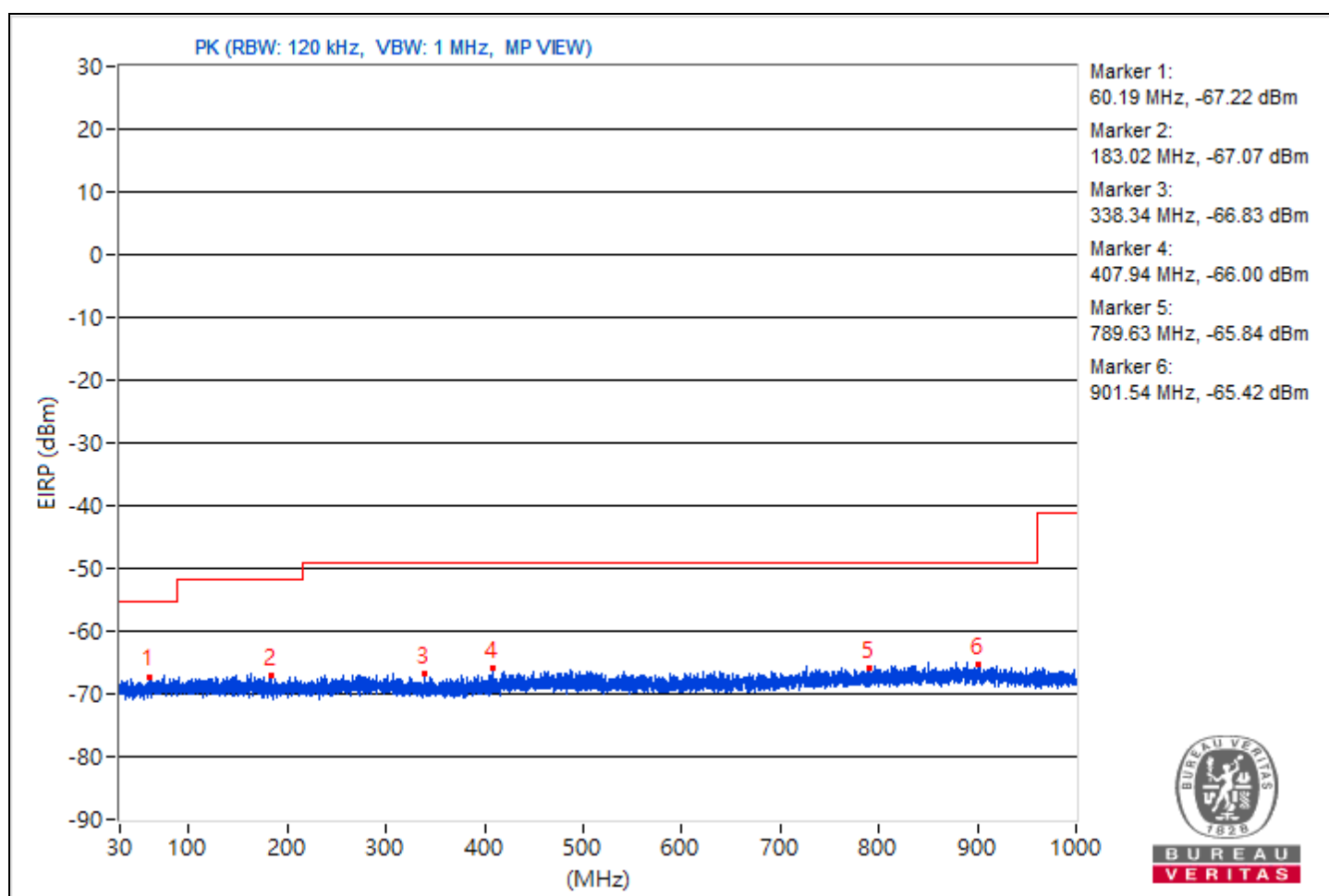


Combination	4		
Frequency Range	30 MHz ~ 1 GHz	Environmental Conditions	21°C, 68% RH
Tested By	Kevin Ko		

Conducted Unwanted Emissions								
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value Chain 0 (dBm)	Raw Value Chain 1 (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	60.19	28.04 PK	40	-11.96	-81.42	-85.87	12.87	-67.22
2	183.02	28.19 PK	43.5	-15.31	-81.53	-85.08	12.87	-67.07
3	338.34	28.43 PK	46	-17.57	-81.34	-84.72	12.87	-66.83
4	407.94	29.26 PK	46	-16.74	-83.38	-80.77	12.87	-66
5	789.63	29.42 PK	46	-16.58	-83.5	-80.46	12.87	-65.84
6	901.54	29.84 PK	46	-16.16	-79.72	-83.83	12.87	-65.42

Notes:

1. Margin value = Emission Level - Limit value
2. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

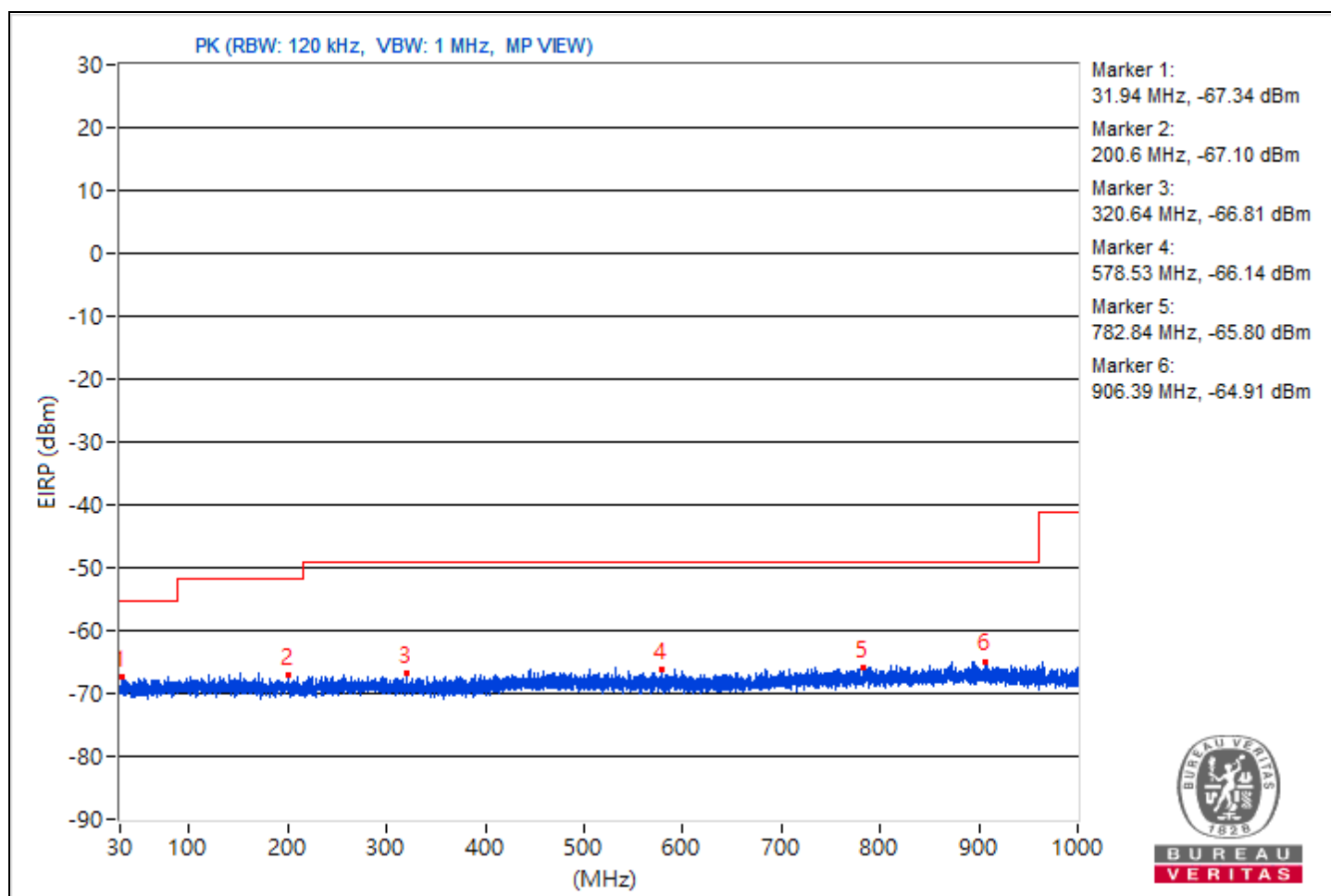


Combination	5		
Frequency Range	30 MHz ~ 1 GHz	Environmental Conditions	21°C, 68% RH
Tested By	Kevin Ko		

Conducted Unwanted Emissions								
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value Chain 0 (dBm)	Raw Value Chain 1 (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	31.94	27.92 PK	40	-12.08	-85.38	-81.78	12.87	-67.34
2	200.6	28.16 PK	43.5	-15.34	-85.51	-81.39	12.87	-67.1
3	320.64	28.45 PK	46	-17.55	-85.63	-80.95	12.87	-66.81
4	578.53	29.12 PK	46	-16.88	-80.83	-83.67	12.87	-66.14
5	782.84	29.46 PK	46	-16.54	-79.94	-84.63	12.87	-65.8
6	906.39	30.35 PK	46	-15.65	-80.07	-81.65	12.87	-64.91

Notes:

1. Margin value = Emission Level - Limit value
2. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

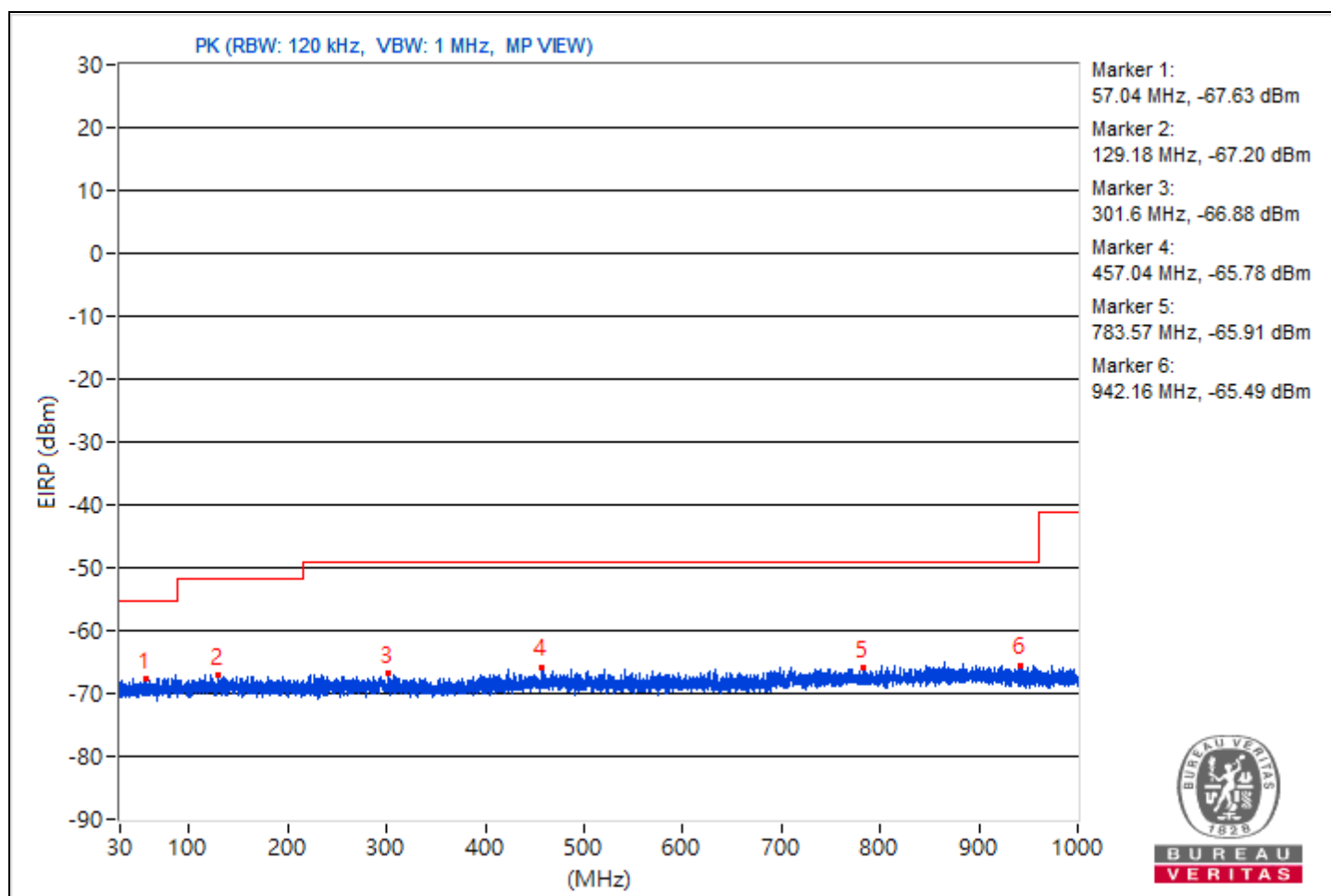


Combination	6		
Frequency Range	30 MHz ~ 1 GHz	Environmental Conditions	21°C, 68% RH
Tested By	Kevin Ko		

Conducted Unwanted Emissions								
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value Chain 0 (dBm)	Raw Value Chain 1 (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	57.04	27.63 PK	40	-12.37	-85.92	-81.98	12.87	-67.63
2	129.18	28.06 PK	43.5	-15.44	-81.88	-84.75	12.87	-67.2
3	301.6	28.38 PK	46	-17.62	-85.2	-81.21	12.87	-66.88
4	457.04	29.48 PK	46	-16.52	-84.17	-80.08	12.87	-65.78
5	783.57	29.35 PK	46	-16.65	-82.72	-81.03	12.87	-65.91
6	942.16	29.77 PK	46	-16.23	-84.28	-79.65	12.87	-65.49

Notes:

1. Margin value = Emission Level - Limit value
2. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



Mode B

FCC 15.247

FCC 15.407

Combination	1		
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	23 °C, 71% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	35.48	33.7 QP	40.0	-6.3	1.93 H	284	51.8	-18.1
2	106.47	37.1 QP	43.5	-6.4	2.17 H	360	57.8	-20.7
3	219.44	38.9 QP	46.0	-7.1	1.94 H	232	60.0	-21.1
4	294.72	37.9 QP	46.0	-8.1	1.46 H	241	55.0	-17.1
5	451.71	27.7 QP	46.0	-18.3	2.99 H	304	40.7	-13.0
6	501.88	42.5 QP	46.0	-3.5	1.47 H	250	54.5	-12.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	32.34	36.3 QP	40.0	-3.7	3.20 V	193	54.5	-18.2
2	104.71	39.0 QP	43.5	-4.5	1.85 V	303	59.9	-20.9
3	198.29	38.2 QP	43.5	-5.3	1.94 V	105	58.9	-20.7
4	293.5	34.0 QP	46.0	-12.0	1.00 V	206	51.2	-17.2
5	478.11	29.9 QP	46.0	-16.1	1.92 V	219	42.3	-12.4
6	499.87	39.4 QP	46.0	-6.6	1.58 V	265	51.5	-12.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

Combination	2		
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	23 °C, 71% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	35.44	34.1 QP	40.0	-5.9	2.15 H	320	52.2	-18.1
2	105.64	36.6 QP	43.5	-6.9	2.22 H	341	57.4	-20.8
3	217.81	37.1 QP	46.0	-8.9	1.63 H	199	58.2	-21.1
4	298.21	41.5 QP	46.0	-4.5	1.25 H	176	58.5	-17.0
5	450.69	27.0 QP	46.0	-19.0	3.17 H	339	40.0	-13.0
6	500.18	40.1 QP	46.0	-5.9	1.52 H	154	52.2	-12.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	32.35	35.4 QP	40.0	-4.6	2.96 V	312	53.6	-18.2
2	105.65	38.3 QP	43.5	-5.2	2.17 V	360	59.1	-20.8
3	198	38.0 QP	43.5	-5.5	1.54 V	149	58.8	-20.8
4	291.66	35.0 QP	46.0	-11.0	1.00 V	172	52.3	-17.3
5	480	29.2 QP	46.0	-16.8	2.01 V	220	41.6	-12.4
6	497.68	38.9 QP	46.0	-7.1	1.55 V	304	51.0	-12.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

Combination	3		
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	23 °C, 71% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	36.69	35.3 QP	40.0	-4.7	2.03 H	306	53.3	-18.0
2	104.81	35.3 QP	43.5	-8.2	2.06 H	288	56.2	-20.9
3	215.96	35.7 QP	43.5	-7.8	1.69 H	144	56.8	-21.1
4	296.82	40.0 QP	46.0	-6.0	1.46 H	151	57.1	-17.1
5	451.46	27.5 QP	46.0	-18.5	3.17 H	360	40.5	-13.0
6	499.97	40.4 QP	46.0	-5.6	1.73 H	204	52.5	-12.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	31.19	35.0 QP	40.0	-5.0	2.78 V	283	53.5	-18.5
2	102.75	37.0 QP	43.5	-6.5	2.06 V	340	58.3	-21.3
3	199.51	38.7 QP	43.5	-4.8	1.64 V	160	59.5	-20.8
4	293.54	35.8 QP	46.0	-10.2	1.10 V	173	53.0	-17.2
5	480.12	29.4 QP	46.0	-16.6	1.94 V	199	41.8	-12.4
6	496.7	37.1 QP	46.0	-8.9	1.53 V	304	49.2	-12.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

Combination	4		
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	23 °C, 71% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	37	35.5 QP	40.0	-4.5	1.92 H	304	53.4	-17.9
2	107.53	38.0 QP	43.5	-5.5	2.10 H	338	58.5	-20.5
3	218.68	37.8 QP	46.0	-8.2	1.68 H	177	58.9	-21.1
4	297.27	40.5 QP	46.0	-5.5	1.51 H	160	57.5	-17.0
5	451.99	28.0 QP	46.0	-18.0	3.10 H	347	41.0	-13.0
6	498.96	39.2 QP	46.0	-6.8	1.60 H	190	51.3	-12.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	30.41	33.8 QP	40.0	-6.2	2.92 V	305	52.0	-18.2
2	104.71	39.0 QP	43.5	-4.5	2.28 V	343	59.9	-20.9
3	199.7	39.7 QP	43.5	-3.8	1.46 V	195	60.6	-20.9
4	291.64	34.5 QP	46.0	-11.5	1.00 V	199	51.8	-17.3
5	478.95	28.8 QP	46.0	-17.2	2.05 V	159	41.2	-12.4
6	496.56	37.3 QP	46.0	-8.7	1.77 V	267	49.5	-12.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

Combination	5		
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	23 °C, 71% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	36.25	34.3 QP	40.0	-5.7	1.95 H	284	52.5	-18.2
2	103.24	34.6 QP	43.5	-8.9	2.09 H	306	55.8	-21.2
3	216.08	36.3 QP	46.0	-9.7	1.80 H	150	57.4	-21.1
4	297.93	41.0 QP	46.0	-5.0	1.34 H	180	58.0	-17.0
5	450.67	27.1 QP	46.0	-18.9	3.06 H	350	40.1	-13.0
6	501.26	41.2 QP	46.0	-4.8	1.59 H	124	53.2	-12.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	33.27	36.4 QP	40.0	-3.6	2.99 V	275	54.6	-18.2
2	104.21	37.8 QP	43.5	-5.7	2.18 V	360	58.8	-21.0
3	197.75	37.3 QP	43.5	-6.2	1.58 V	165	58.1	-20.8
4	293.61	35.9 QP	46.0	-10.1	1.00 V	204	53.1	-17.2
5	479.86	29.0 QP	46.0	-17.0	2.14 V	177	41.4	-12.4
6	497.14	37.4 QP	46.0	-8.6	1.54 V	258	49.5	-12.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

Combination	6		
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	23 °C, 71% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	35.45	33.9 QP	40.0	-6.1	1.86 H	254	52.0	-18.1
2	104.86	36.5 QP	43.5	-7.0	1.94 H	328	57.4	-20.9
3	217.92	37.0 QP	46.0	-9.0	1.73 H	155	58.1	-21.1
4	297.56	41.0 QP	46.0	-5.0	1.32 H	137	58.0	-17.0
5	451.69	27.2 QP	46.0	-18.8	3.06 H	360	40.2	-13.0
6	499.34	39.6 QP	46.0	-6.4	1.48 H	166	51.7	-12.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	34.03	36.9 QP	40.0	-3.1	2.98 V	297	55.4	-18.5
2	104.89	38.9 QP	43.5	-4.6	2.26 V	337	59.8	-20.9
3	200.3	39.3 QP	43.5	-4.2	1.58 V	170	60.2	-20.9
4	293.3	35.4 QP	46.0	-10.6	1.09 V	188	52.6	-17.2
5	481.7	31.0 QP	46.0	-15.0	2.17 V	160	43.4	-12.4
6	497.88	39.0 QP	46.0	-7.0	1.56 V	319	51.1	-12.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

7.2 Unwanted Emissions above 1 GHz

Mode A

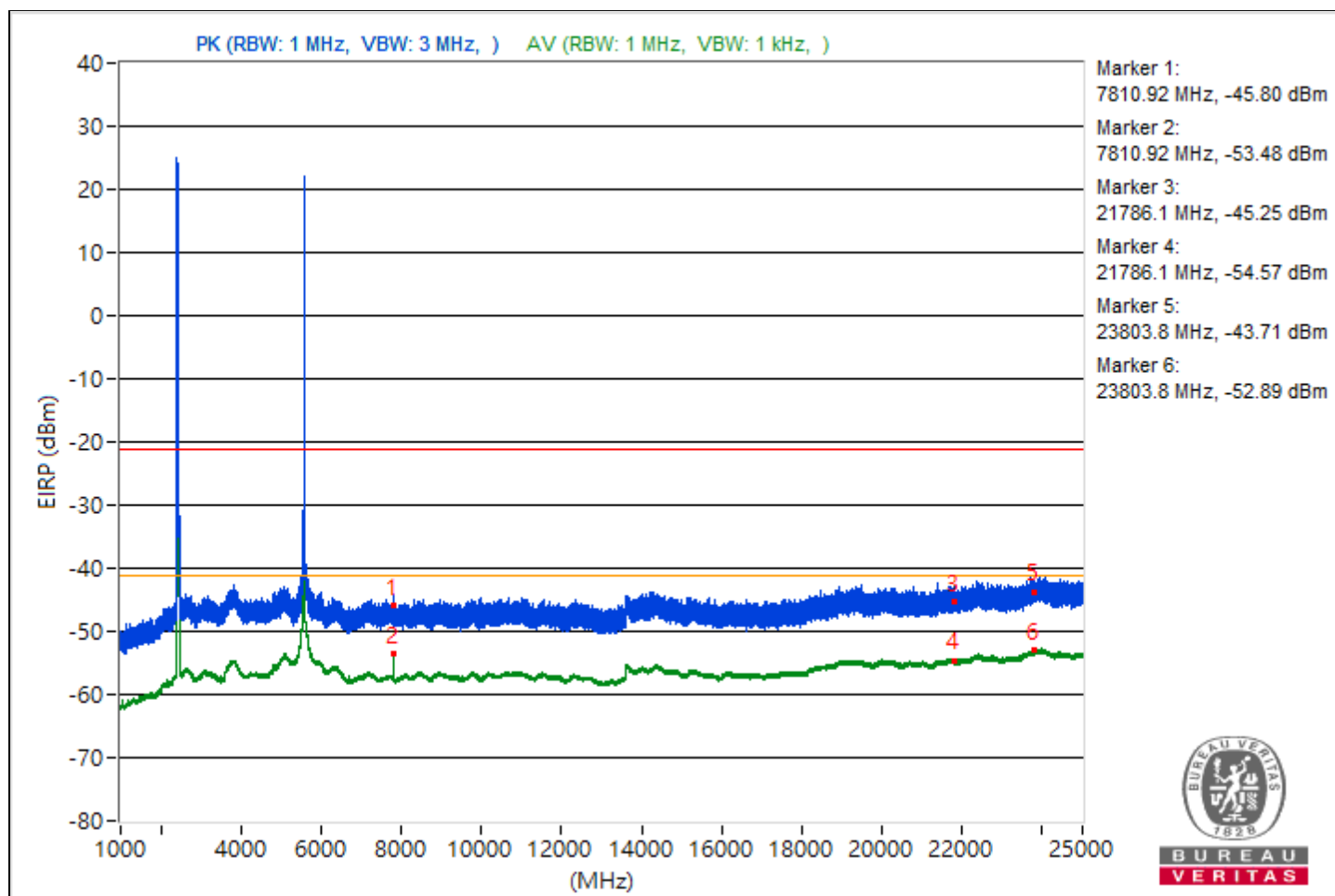
Conducted Unwanted Emissions

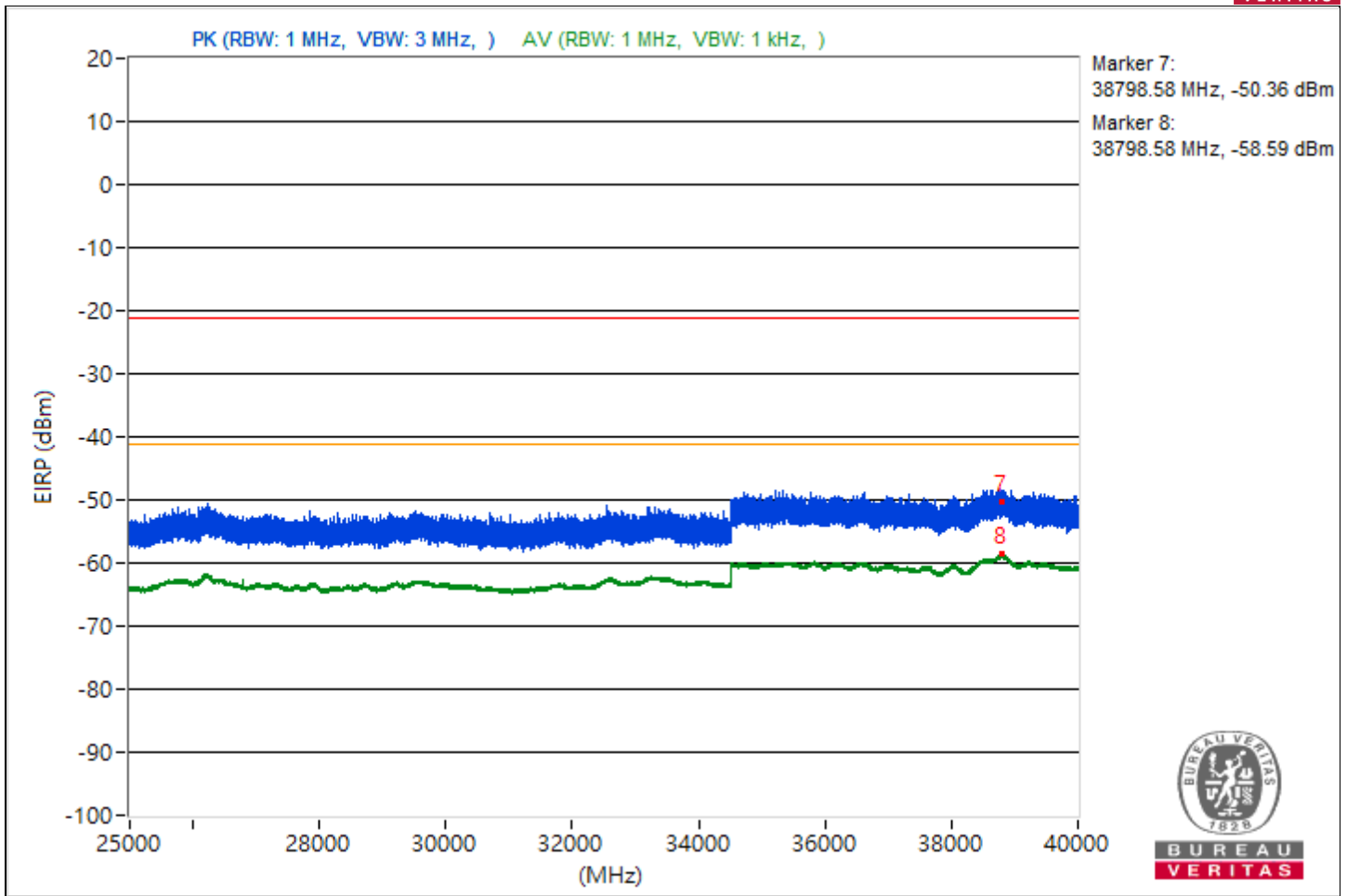
Combination	1		
Frequency Range	1 GHz ~ 40 GHz	Environmental Conditions	21°C, 68% RH
Tested By	Kevin Ko		

Conducted Unwanted Emissions								
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value Chain 0 (dBm)	Raw Value Chain 1 (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	#7810.92	49.46 PK	74	-24.54	-56.87	-57.09	8.17	-45.8
2	#7810.92	41.78 AV	54	-12.22	-64.61	-64.71	8.17	-53.48
3	#21786.1	50.01 PK	74	-23.99	-56.9	-56.01	8.17	-45.25
4	#21786.1	40.69 AV	54	-13.31	-65.39	-66.14	8.17	-54.57
5	23803.8	51.55 PK	74	-22.45	-55.83	-54.12	8.17	-43.71
6	23803.8	42.37 AV	54	-11.63	-64.46	-63.71	8.17	-52.89
7	38798.58	44.9 PK	74	-29.1	-62.57	-60.71	8.17	-50.36
8	38798.58	36.67 AV	54	-17.33	-70.07	-69.49	8.17	-58.59

Notes:

1. Margin value = Emission Level - Limit value
2. " # ": The radiated frequency is out of the restricted band.



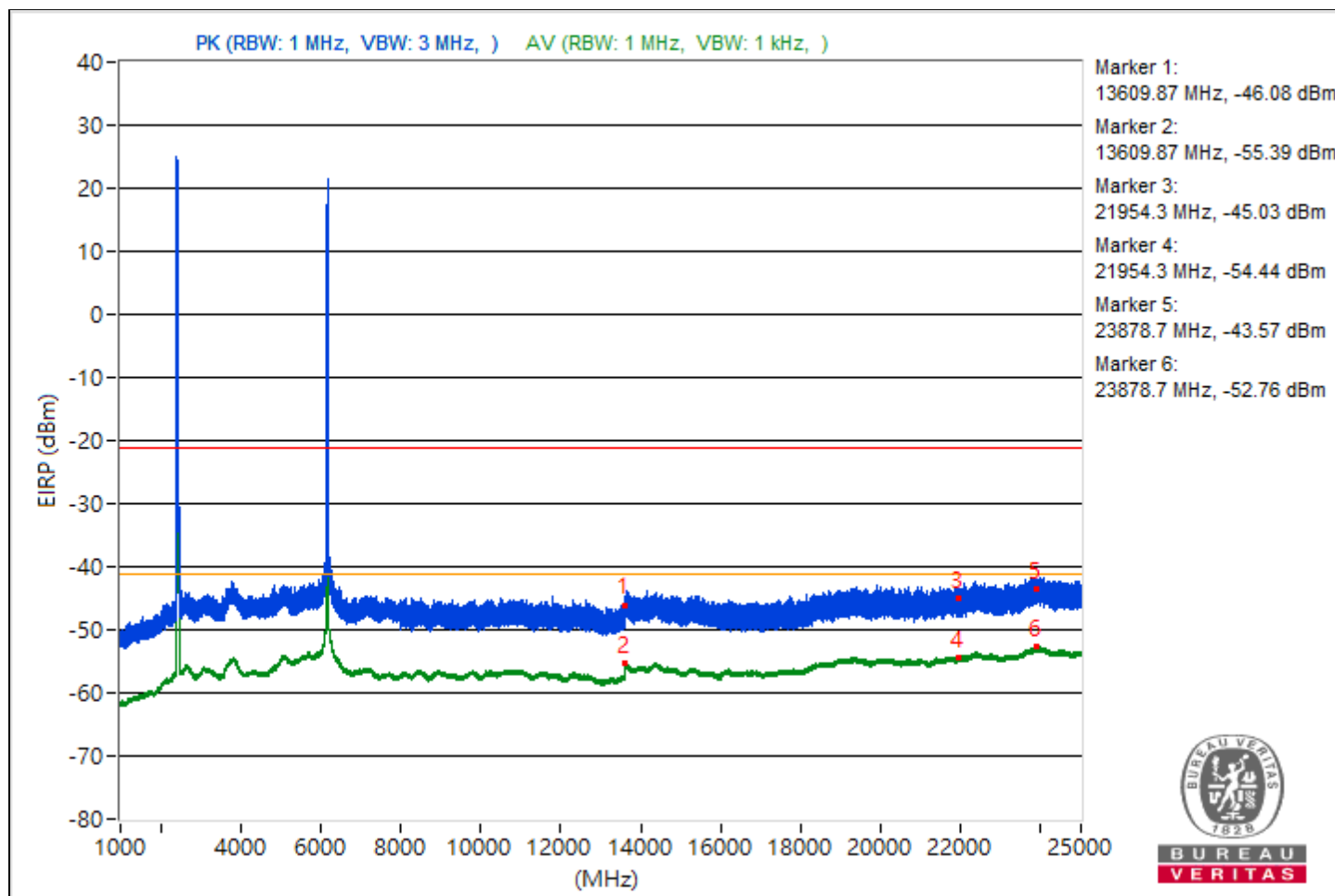


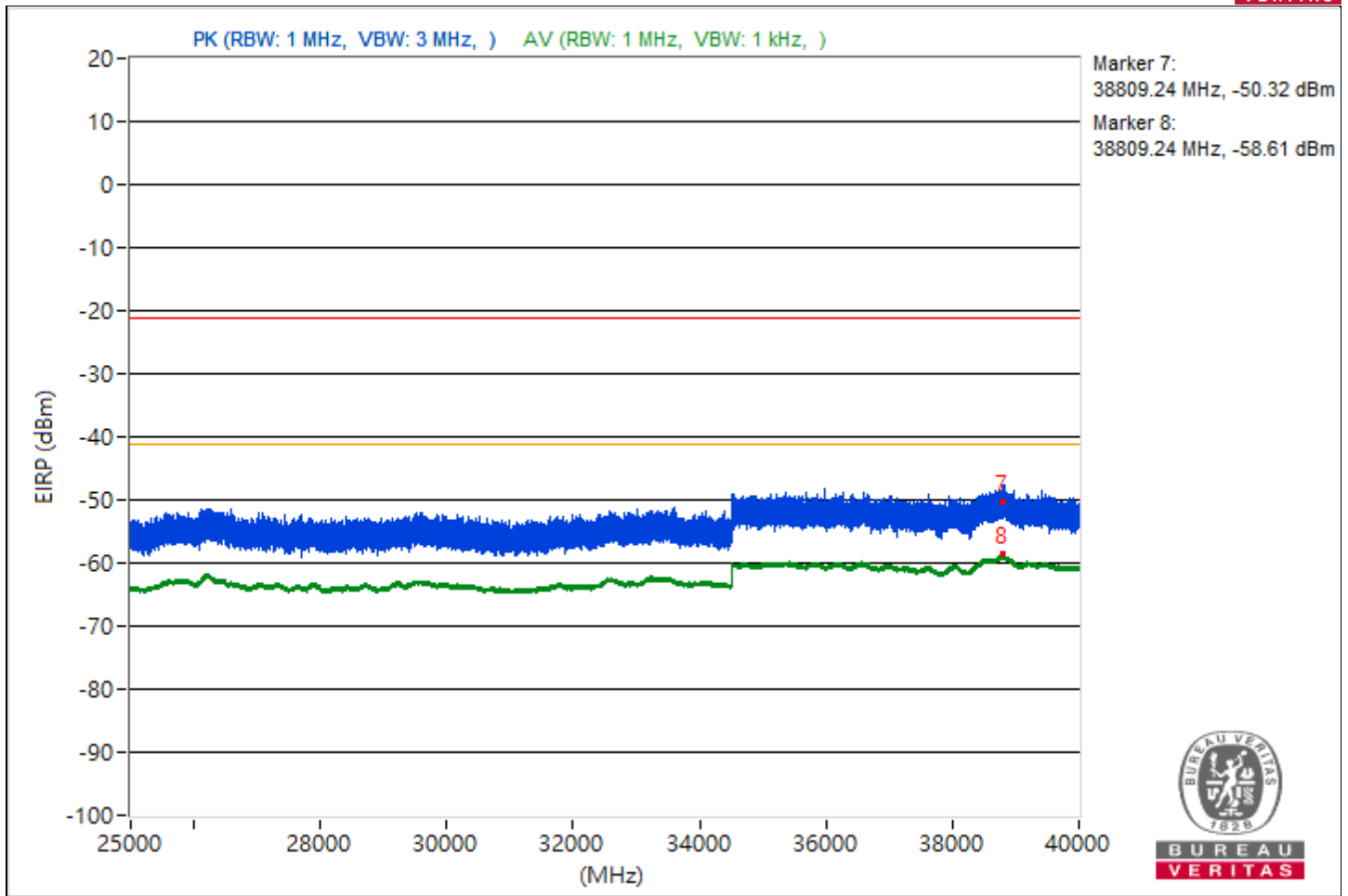
Combination	2		
Frequency Range	1 GHz ~ 40 GHz	Environmental Conditions	21°C, 68% RH
Tested By	Kevin Ko		

Conducted Unwanted Emissions								
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value Chain 0 (dBm)	Raw Value Chain 1 (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	#13609.87	49.18 PK	74	-24.82	-57.19	-57.32	8.17	-46.08
2	#13609.87	39.87 AV	54	-14.13	-66.31	-66.86	8.17	-55.39
3	#21954.3	50.23 PK	74	-23.77	-55.98	-56.45	8.17	-45.03
4	#21954.3	40.82 AV	54	-13.18	-65.89	-65.37	8.17	-54.44
5	23878.7	51.69 PK	74	-22.31	-54.99	-54.53	8.17	-43.57
6	23878.7	42.5 AV	54	-11.5	-63.7	-64.18	8.17	-52.76
7	38809.24	44.94 PK	74	-29.06	-61.8	-61.23	8.17	-50.32
8	38809.24	36.65 AV	54	-17.35	-69.68	-69.9	8.17	-58.61

Notes:

1. Margin value = Emission Level - Limit value
2. " # ": The radiated frequency is out of the restricted band.



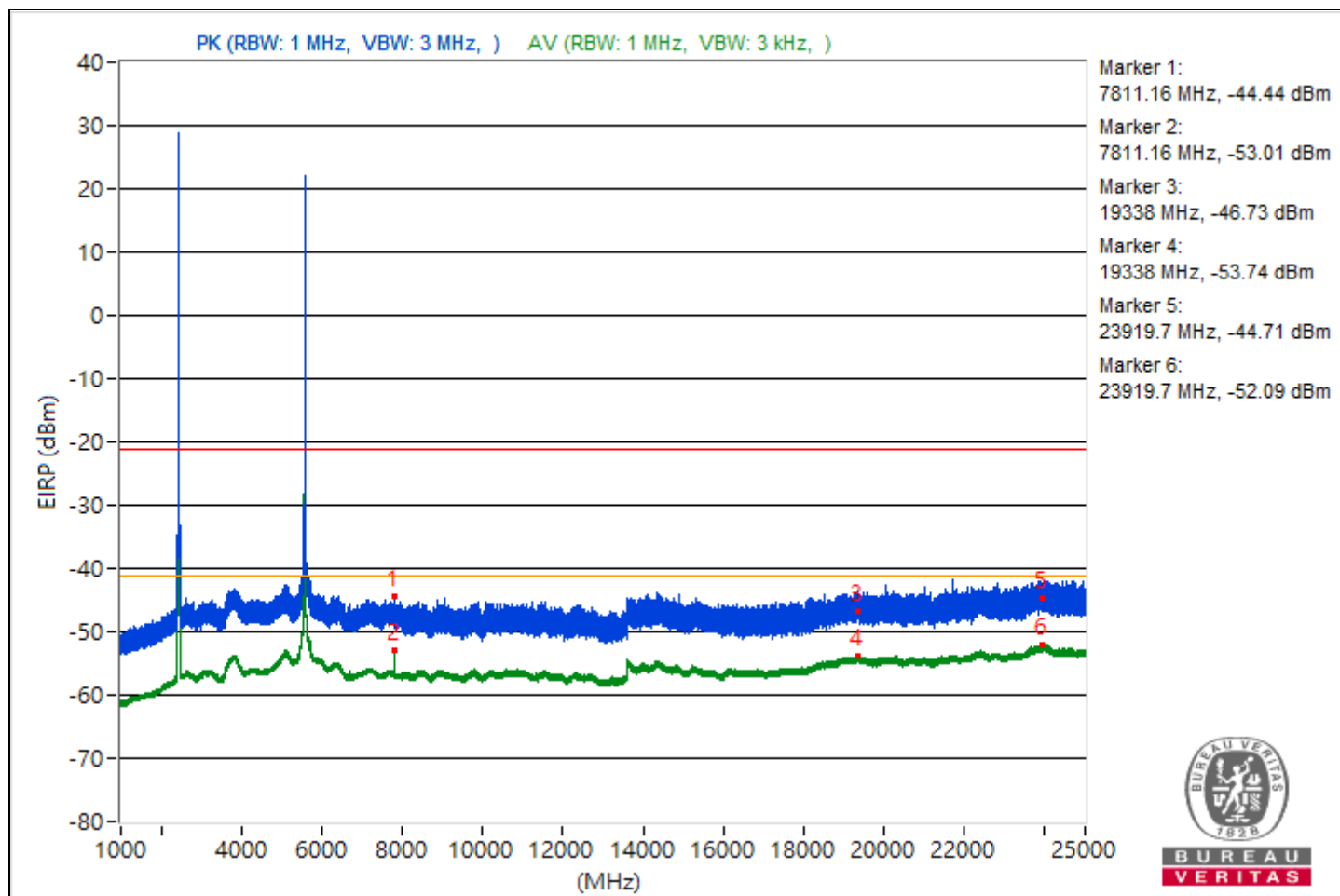


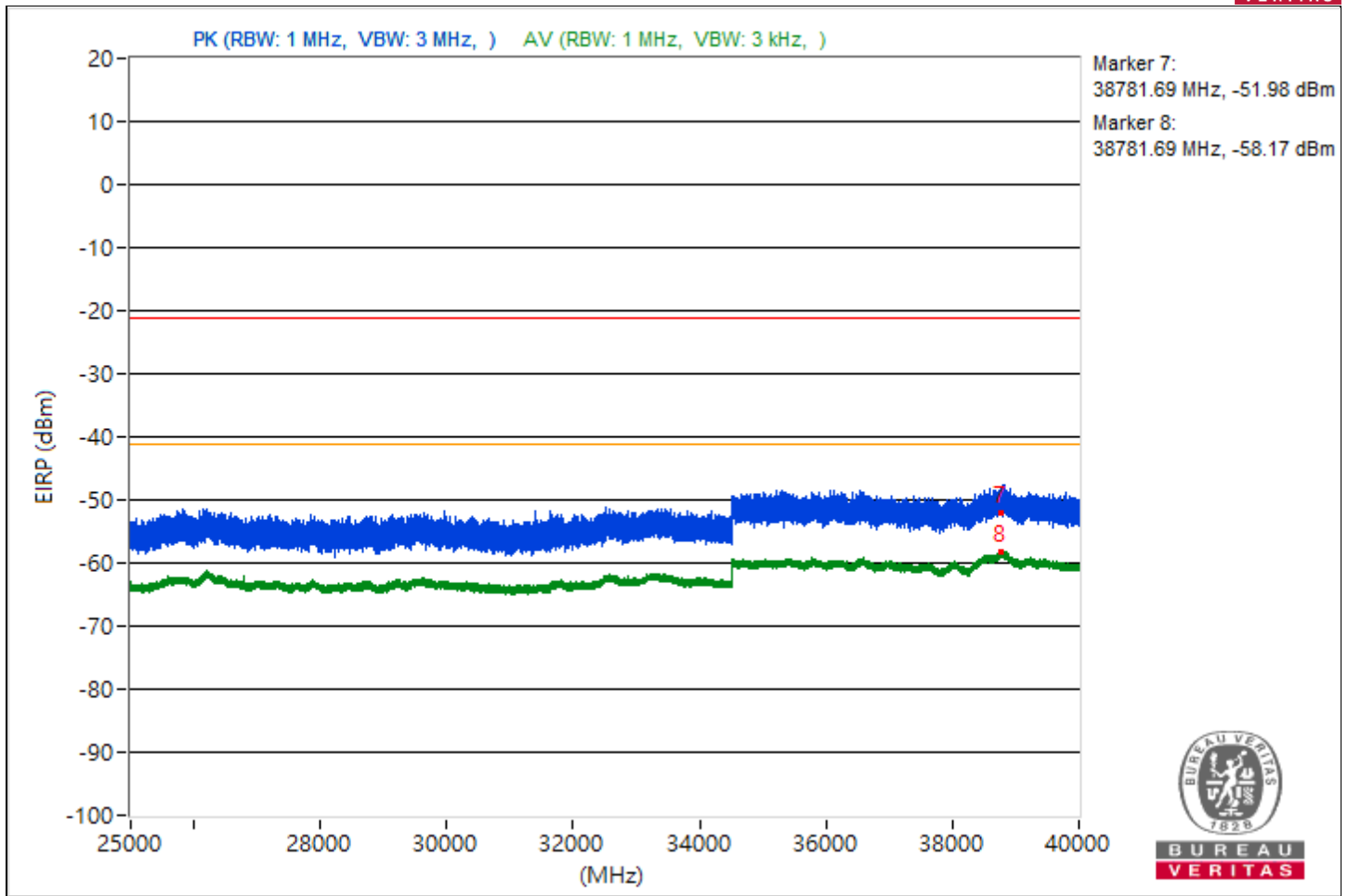
Combination	3		
Frequency Range	1 GHz ~ 40 GHz	Environmental Conditions	21°C, 68% RH
Tested By	Kevin Ko		

Conducted Unwanted Emissions								
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value Chain 0 (dBm)	Raw Value Chain 1 (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	#7811.16	50.82 PK	74	-23.18	-55.92	-55.34	8.17	-44.44
2	#7811.16	42.25 AV	54	-11.75	-64.33	-64.05	8.17	-53.01
3	19338	48.53 PK	74	-25.47	-59.08	-57	8.17	-46.73
4	19338	41.52 AV	54	-12.48	-64.56	-65.3	8.17	-53.74
5	23919.7	50.55 PK	74	-23.45	-55.95	-55.83	8.17	-44.71
6	23919.7	43.17 AV	54	-10.83	-63.64	-62.93	8.17	-52.09
7	38781.69	43.28 PK	74	-30.72	-62.87	-63.48	8.17	-51.98
8	38781.69	37.09 AV	54	-16.91	-68.97	-69.77	8.17	-58.17

Notes:

1. Margin value = Emission Level - Limit value
2. " # ": The radiated frequency is out of the restricted band.



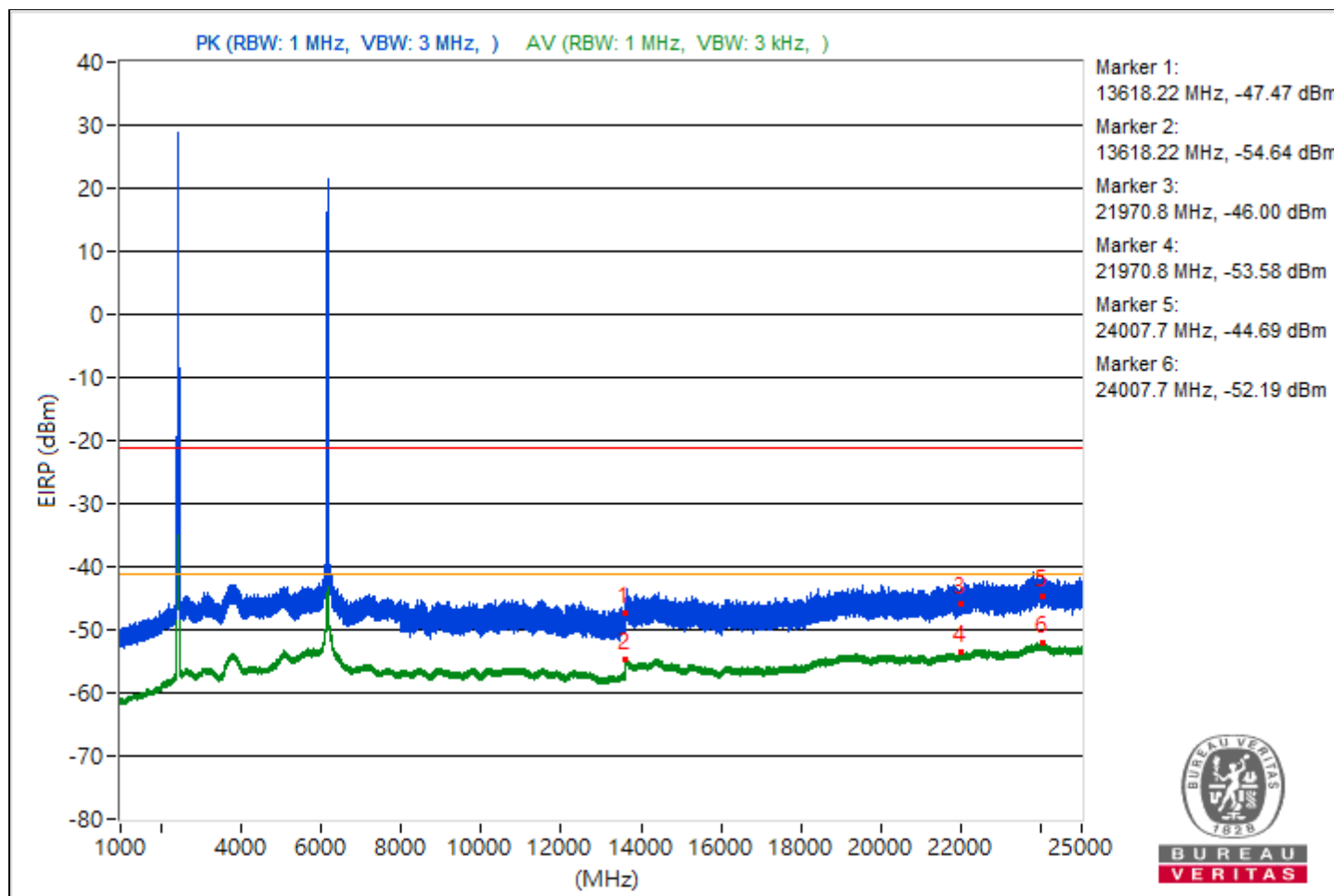


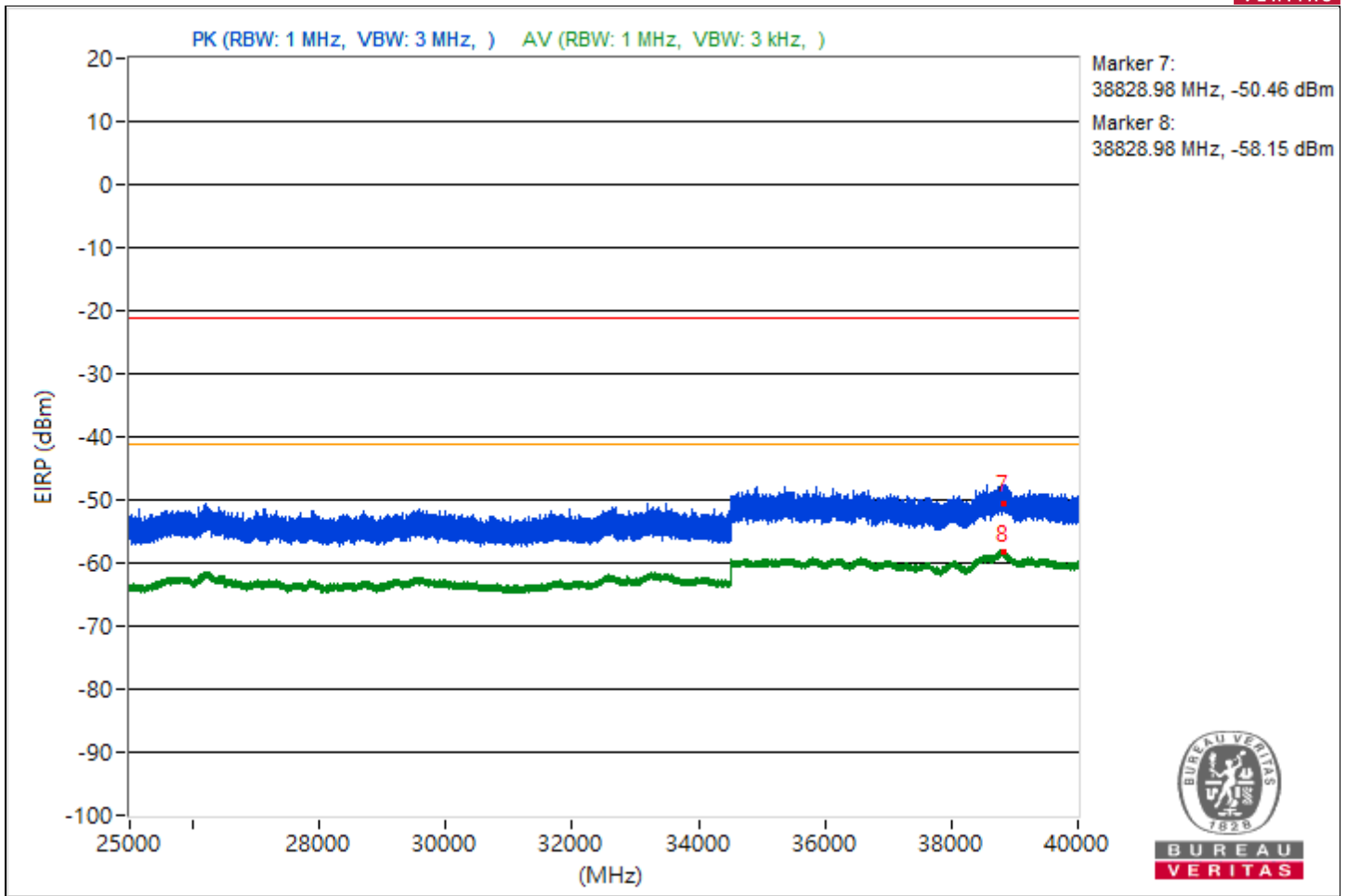
Combination	4		
Frequency Range	1 GHz ~ 40 GHz	Environmental Conditions	21°C, 68% RH
Tested By	Kevin Ko		

Conducted Unwanted Emissions								
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value Chain 0 (dBm)	Raw Value Chain 1 (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	#13618.22	47.79 PK	74	-26.21	-58.01	-59.4	8.17	-47.47
2	#13618.22	40.62 AV	54	-13.38	-65.44	-66.24	8.17	-54.64
3	#21970.8	49.26 PK	74	-24.74	-57.71	-56.7	8.17	-46
4	#21970.8	41.68 AV	54	-12.32	-64.3	-65.28	8.17	-53.58
5	#24007.7	50.57 PK	74	-23.43	-55.91	-55.82	8.17	-44.69
6	#24007.7	43.07 AV	54	-10.93	-63.03	-63.73	8.17	-52.19
7	38828.98	44.8 PK	74	-29.2	-61.55	-61.72	8.17	-50.46
8	38828.98	37.11 AV	54	-16.89	-68.83	-69.89	8.17	-58.15

Notes:

1. Margin value = Emission Level - Limit value
2. " # ": The radiated frequency is out of the restricted band.



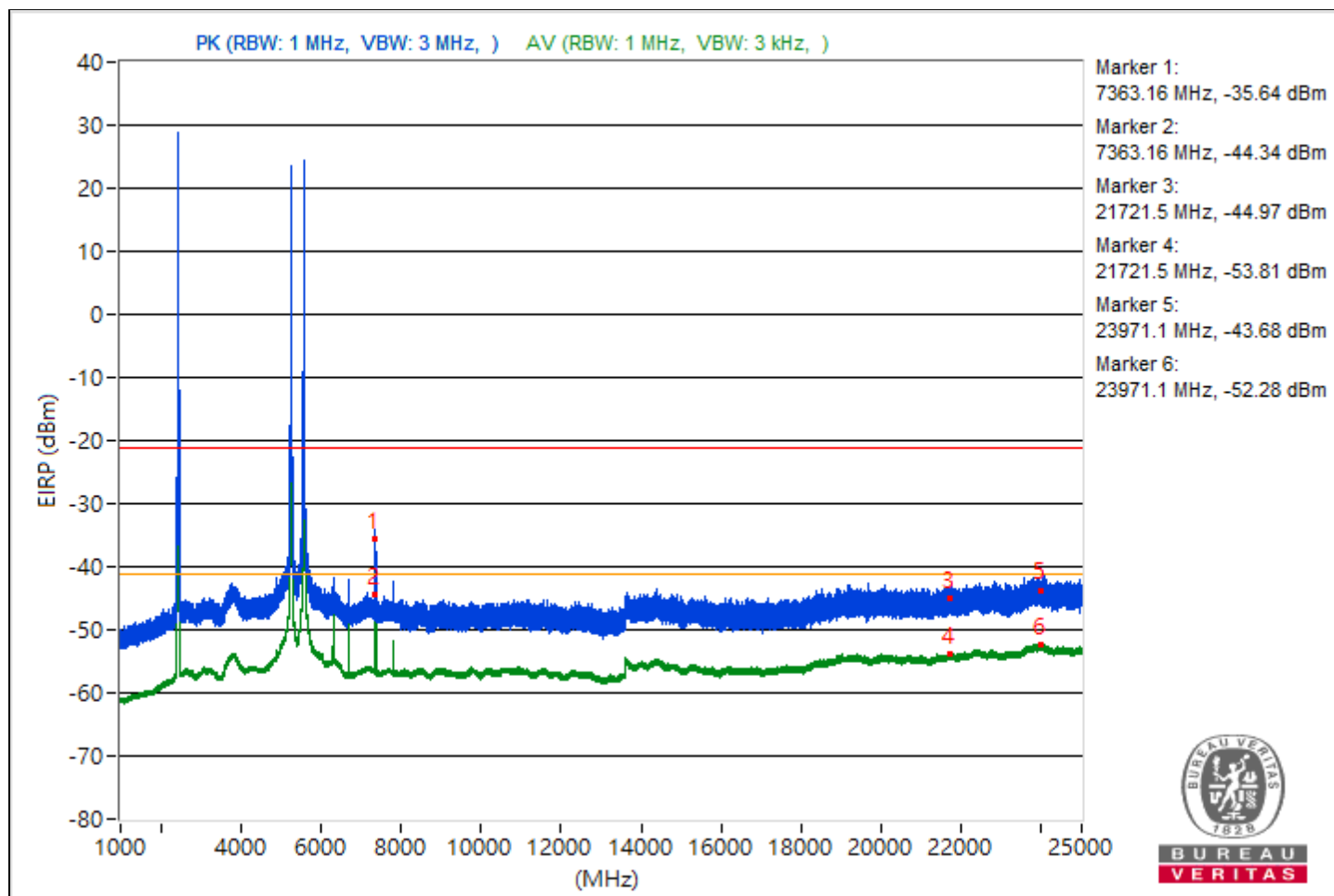


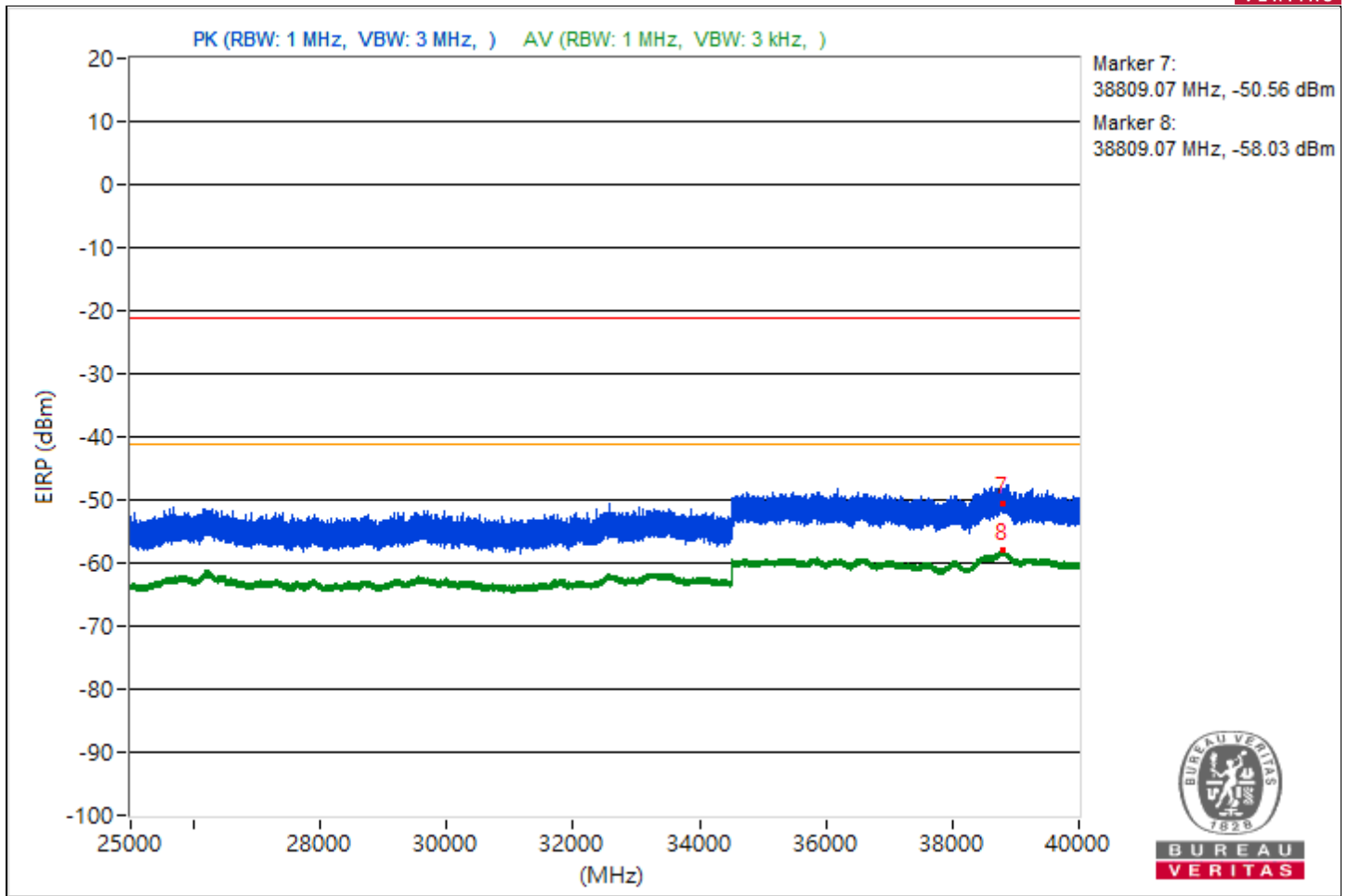
Combination	5		
Frequency Range	1 GHz ~ 40 GHz	Environmental Conditions	21°C, 68% RH
Tested By	Kevin Ko		

Conducted Unwanted Emissions								
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value Chain 0 (dBm)	Raw Value Chain 1 (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	7363.16	59.62 PK	74	-14.38	-47.66	-46.11	8.17	-35.64
2	7363.16	50.92 AV	54	-3.08	-55.13	-55.95	8.17	-44.34
3	#21721.5	50.29 PK	74	-23.71	-55.31	-57.18	8.17	-44.97
4	#21721.5	41.45 AV	54	-12.55	-64.63	-65.38	8.17	-53.81
5	23971.1	51.58 PK	74	-22.42	-54.51	-55.25	8.17	-43.68
6	23971.1	42.98 AV	54	-11.02	-63.91	-63.04	8.17	-52.28
7	38809.07	44.7 PK	74	-29.3	-61.42	-62.09	8.17	-50.56
8	38809.07	37.23 AV	54	-16.77	-69.04	-69.39	8.17	-58.03

Notes:

1. Margin value = Emission Level - Limit value
2. " # ": The radiated frequency is out of the restricted band.



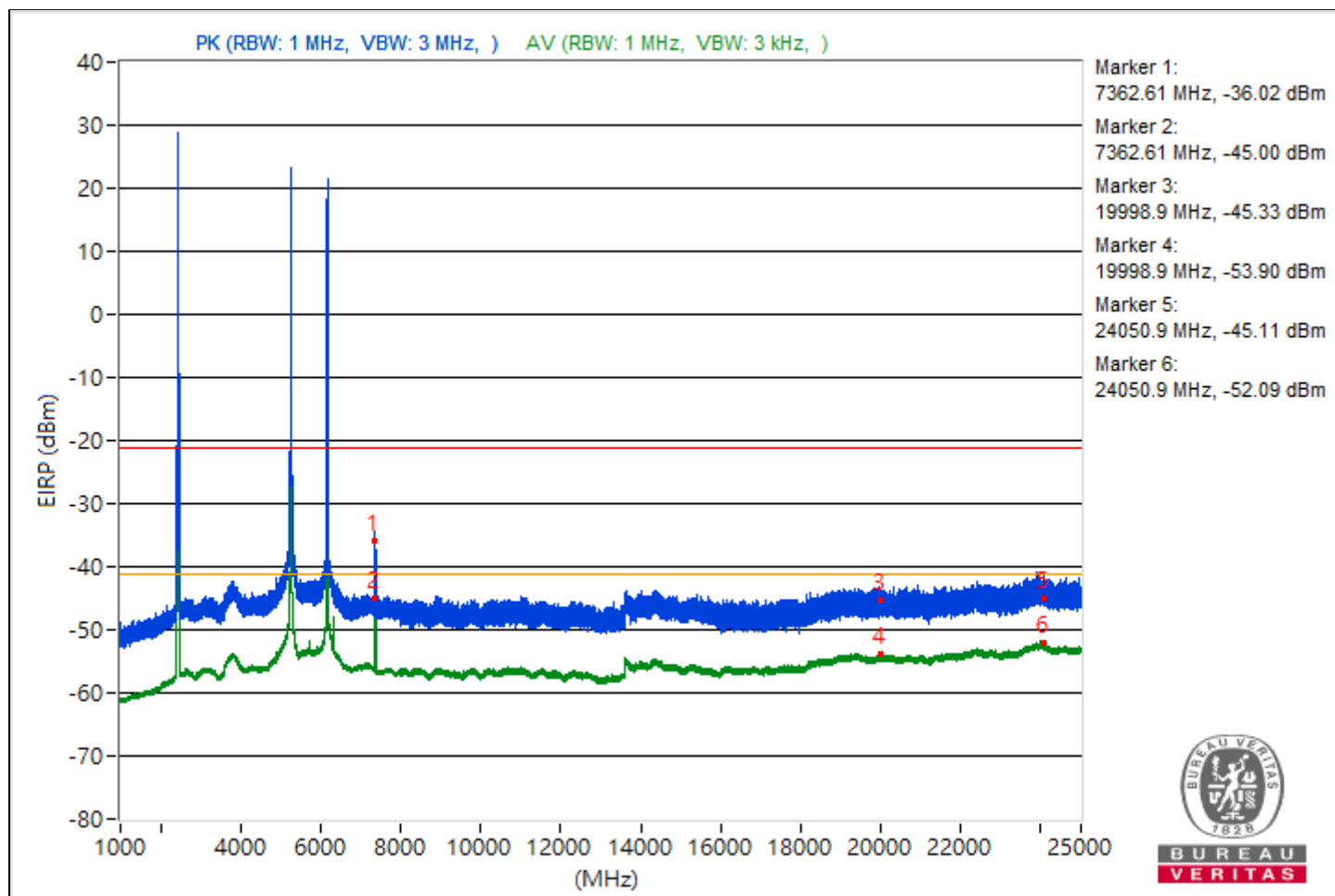


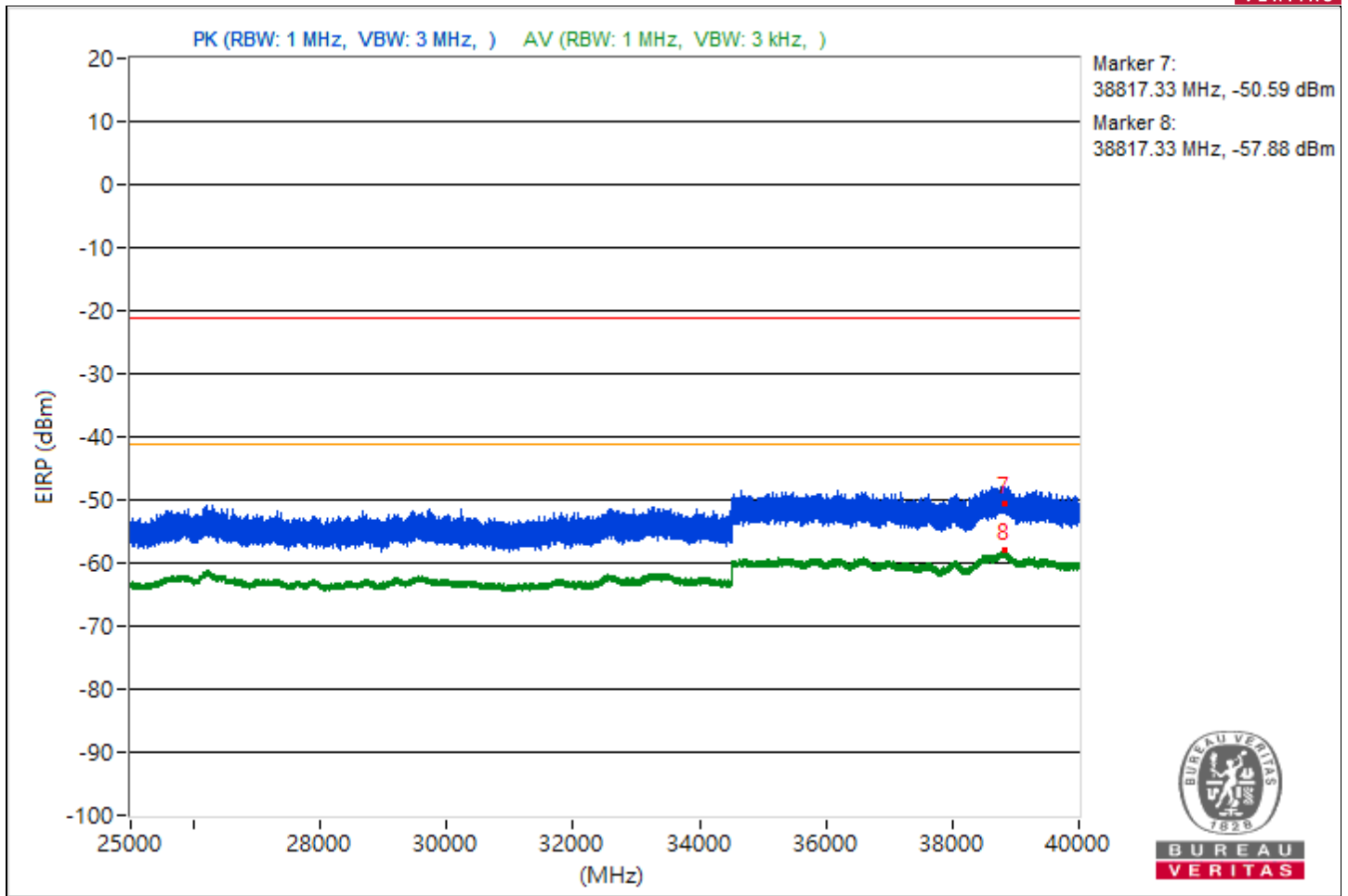
Combination	6		
Frequency Range	1 GHz ~ 40 GHz	Environmental Conditions	21°C, 68% RH
Tested By	Kevin Ko		

Conducted Unwanted Emissions								
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value Chain 0 (dBm)	Raw Value Chain 1 (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	7362.61	59.24 PK	74	-14.76	-46.68	-47.79	8.17	-36.02
2	7362.61	50.26 AV	54	-3.74	-56.36	-56	8.17	-45
3	19998.9	49.93 PK	74	-24.07	-56.68	-56.35	8.17	-45.33
4	19998.9	41.36 AV	54	-12.64	-65.48	-64.72	8.17	-53.9
5	#24050.9	50.15 PK	74	-23.85	-56.64	-55.97	8.17	-45.11
6	#24050.9	43.17 AV	54	-10.83	-62.86	-63.73	8.17	-52.09
7	38817.33	44.67 PK	74	-29.33	-61.35	-62.23	8.17	-50.59
8	38817.33	37.38 AV	54	-16.62	-68.9	-69.22	8.17	-57.88

Notes:

1. Margin value = Emission Level - Limit value
2. " # ": The radiated frequency is out of the restricted band.





Mode B

FCC 15.247

FCC 15.407

Combination	1		
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4824	41.7 PK	74.0	-32.3	1.62 H	89	40.0	1.7
2	4824	32.4 AV	54.0	-21.6	1.62 H	89	30.7	1.7
3	11160	45.9 PK	74.0	-28.1	1.15 H	173	34.6	11.3
4	11160	35.2 AV	54.0	-18.8	1.15 H	173	23.9	11.3
5	16740	46.4 PK	68.2	-21.8	1.19 H	202	31.0	15.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4824	41.2 PK	74.0	-32.8	1.68 V	190	39.5	1.7
2	4824	31.7 AV	54.0	-22.3	1.68 V	190	30.0	1.7
3	11160	44.8 PK	74.0	-29.2	1.09 V	227	33.5	11.3
4	11160	34.8 AV	54.0	-19.2	1.09 V	227	23.5	11.3
5	16740	46.2 PK	68.2	-22.0	1.06 V	181	30.8	15.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

Combination	2		
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4824	41.7 PK	74.0	-32.3	1.51 H	104	40.0	1.7
2	4824	31.7 AV	54.0	-22.3	1.51 H	104	30.0	1.7
3	12350	46.6 PK	74.0	-27.4	1.30 H	213	35.6	11.0
4	12350	36.8 AV	54.0	-17.2	1.30 H	213	25.8	11.0
5	18525	47.0 PK	74.0	-27.0	1.21 H	198	51.7	-4.7
6	18525	33.5 AV	54.0	-20.5	1.21 H	198	38.2	-4.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4824	41.3 PK	74.0	-32.7	1.62 V	145	39.6	1.7
2	4824	31.5 AV	54.0	-22.5	1.62 V	145	29.8	1.7
3	12350	46.0 PK	74.0	-28.0	1.11 V	194	35.0	11.0
4	12350	35.6 AV	54.0	-18.4	1.11 V	194	24.6	11.0
5	18525	47.5 PK	74.0	-26.5	1.18 V	229	52.2	-4.7
6	18525	34.3 AV	54.0	-19.7	1.18 V	229	39.0	-4.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

Combination	3		
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4880	42.3 PK	74.0	-31.7	1.59 H	89	40.6	1.7
2	4880	32.0 AV	54.0	-22.0	1.59 H	89	30.3	1.7
3	7320	44.5 PK	74.0	-29.5	1.80 H	240	37.7	6.8
4	7320	35.4 AV	54.0	-18.6	1.80 H	240	28.6	6.8
5	11160	44.1 PK	74.0	-29.9	1.04 H	158	32.8	11.3
6	11160	34.0 AV	54.0	-20.0	1.04 H	158	22.7	11.3
7	16740	45.0 PK	68.2	-23.2	1.25 H	217	29.6	15.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4880	40.6 PK	74.0	-33.4	1.84 V	131	38.9	1.7
2	4880	31.3 AV	54.0	-22.7	1.84 V	131	29.6	1.7
3	7320	45.9 PK	74.0	-28.1	1.89 V	293	39.1	6.8
4	7320	36.4 AV	54.0	-17.6	1.89 V	293	29.6	6.8
5	11160	45.3 PK	74.0	-28.7	1.12 V	201	34.0	11.3
6	11160	34.6 AV	54.0	-19.4	1.12 V	201	23.3	11.3
7	16740	46.7 PK	68.2	-21.5	1.14 V	218	31.3	15.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

Combination	4		
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4880	41.5 PK	74.0	-32.5	1.55 H	107	39.8	1.7
2	4880	31.9 AV	54.0	-22.1	1.55 H	107	30.2	1.7
3	7320	44.9 PK	74.0	-29.1	1.88 H	290	38.1	6.8
4	7320	35.8 AV	54.0	-18.2	1.88 H	290	29.0	6.8
5	12350	46.8 PK	74.0	-27.2	1.13 H	232	35.8	11.0
6	12350	36.5 AV	54.0	-17.5	1.13 H	232	25.5	11.0
7	18525	47.1 PK	74.0	-26.9	1.31 H	213	51.8	-4.7
8	18525	33.3 AV	54.0	-20.7	1.31 H	213	38.0	-4.7

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4880	43.3 PK	74.0	-30.7	1.75 V	141	41.6	1.7
2	4880	33.5 AV	54.0	-20.5	1.75 V	141	31.8	1.7
3	7320	45.2 PK	74.0	-28.8	1.89 V	298	38.4	6.8
4	7320	35.4 AV	54.0	-18.6	1.89 V	298	28.6	6.8
5	12350	45.0 PK	74.0	-29.0	1.13 V	218	34.0	11.0
6	12350	35.0 AV	54.0	-19.0	1.13 V	218	24.0	11.0
7	18525	46.7 PK	74.0	-27.3	1.10 V	195	51.4	-4.7
8	18525	32.9 AV	54.0	-21.1	1.10 V	195	37.6	-4.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

Combination	5		
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4880	41.0 PK	74.0	-33.0	1.52 H	119	39.3	1.7
2	4880	31.7 AV	54.0	-22.3	1.52 H	119	30.0	1.7
3	7320	44.9 PK	74.0	-29.1	1.81 H	246	38.1	6.8
4	7320	35.6 AV	54.0	-18.4	1.81 H	246	28.8	6.8
5	10520	46.2 PK	68.2	-22.0	1.16 H	132	35.3	10.9
6	11160	45.8 PK	74.0	-28.2	1.01 H	175	34.5	11.3
7	11160	35.1 AV	54.0	-18.9	1.01 H	175	23.8	11.3
8	15780	44.2 PK	74.0	-29.8	1.21 H	174	32.5	11.7
9	15780	34.2 AV	54.0	-19.8	1.21 H	174	22.5	11.7
10	16740	45.6 PK	68.2	-22.6	1.40 H	238	30.2	15.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4880	43.4 PK	74.0	-30.6	1.79 V	183	41.7	1.7
2	4880	33.5 AV	54.0	-20.5	1.79 V	183	31.8	1.7
3	7320	46.1 PK	74.0	-27.9	2.07 V	300	39.3	6.8
4	7320	36.1 AV	54.0	-17.9	2.07 V	300	29.3	6.8
5	10520	46.3 PK	68.2	-21.9	1.21 V	166	35.4	10.9
6	11160	46.5 PK	74.0	-27.5	1.14 V	174	35.2	11.3
7	11160	35.9 AV	54.0	-18.1	1.14 V	174	24.6	11.3
8	15780	44.8 PK	74.0	-29.2	1.09 V	261	33.1	11.7
9	15780	32.2 AV	54.0	-21.8	1.09 V	261	20.5	11.7
10	16740	45.4 PK	68.2	-22.8	1.07 V	188	30.0	15.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

Combination	6		
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 kHz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4880	41.2 PK	74.0	-32.8	1.65 H	105	39.5	1.7
2	4880	30.9 AV	54.0	-23.1	1.65 H	105	29.2	1.7
3	7320	45.6 PK	74.0	-28.4	1.58 H	295	38.8	6.8
4	7320	35.7 AV	54.0	-18.3	1.58 H	295	28.9	6.8
5	#10520	46.3 PK	68.2	-21.9	1.09 H	171	35.4	10.9
6	12350	46.1 PK	74.0	-27.9	1.20 H	204	35.1	11.0
7	12350	35.6 AV	54.0	-18.4	1.20 H	204	24.6	11.0
8	15780	44.1 PK	74.0	-29.9	1.24 H	212	32.4	11.7
9	15780	34.0 AV	54.0	-20.0	1.24 H	212	22.3	11.7
10	18525	45.7 PK	74.0	-28.3	1.18 H	195	50.4	-4.7
11	18525	33.0 AV	54.0	-21.0	1.18 H	195	37.7	-4.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4880	42.0 PK	74.0	-32.0	1.67 V	163	40.3	1.7
2	4880	31.7 AV	54.0	-22.3	1.67 V	163	30.0	1.7
3	7320	46.0 PK	74.0	-28.0	1.76 V	255	39.2	6.8
4	7320	36.4 AV	54.0	-17.6	1.76 V	255	29.6	6.8
5	#10520	45.2 PK	68.2	-23.0	1.03 V	224	34.3	10.9
6	12350	45.8 PK	74.0	-28.2	1.13 V	215	34.8	11.0
7	12350	35.4 AV	54.0	-18.6	1.13 V	215	24.4	11.0
8	15780	45.7 PK	74.0	-28.3	1.16 V	207	34.0	11.7
9	15780	33.7 AV	54.0	-20.3	1.16 V	207	22.0	11.7
10	18525	46.9 PK	74.0	-27.1	1.07 V	227	51.6	-4.7
11	18525	34.4 AV	54.0	-19.6	1.07 V	227	39.1	-4.7

Remarks:

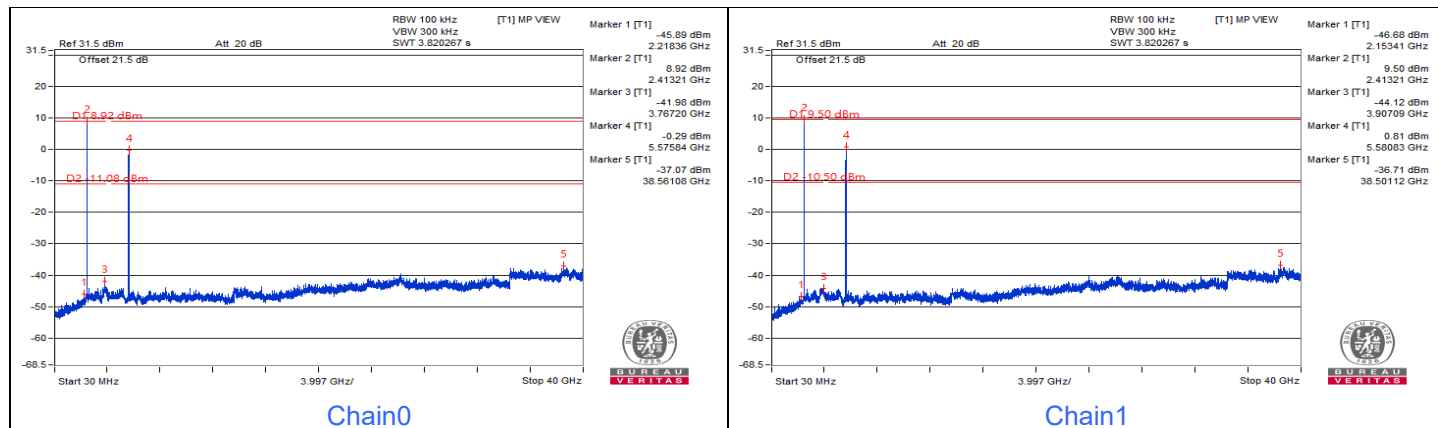
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

7.3 Conducted Out of Band Emissions

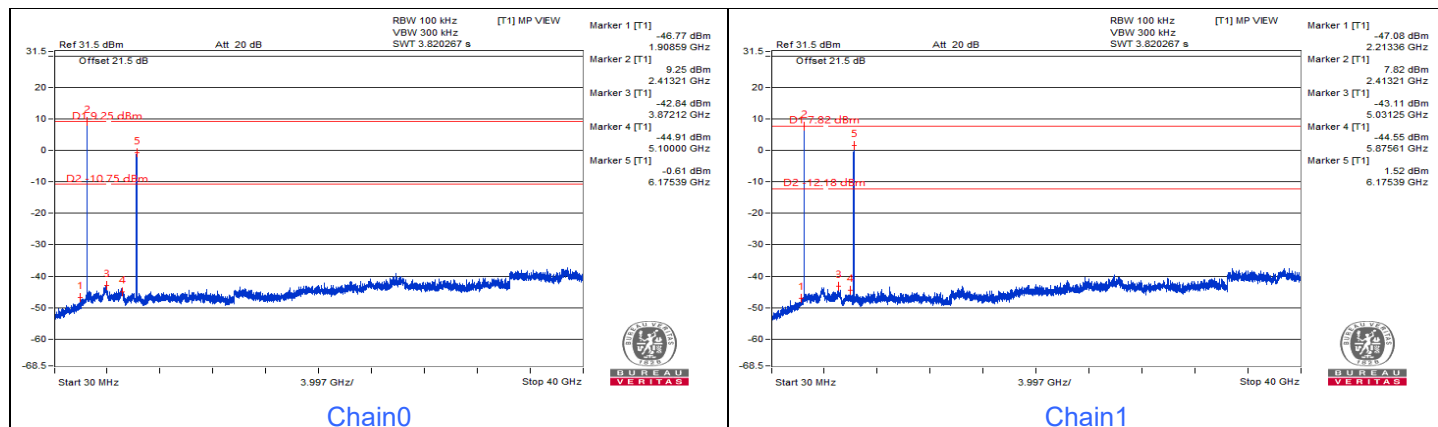
Environmental Conditions:	24°C, 72% RH	Tested By:	Kevin Ko
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Mode A

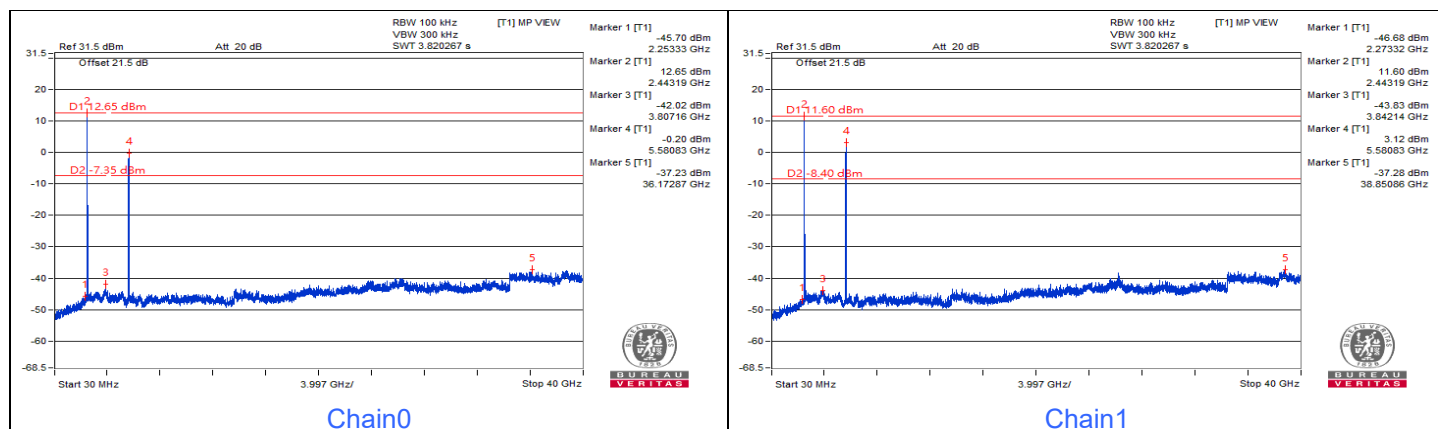
Combination 1



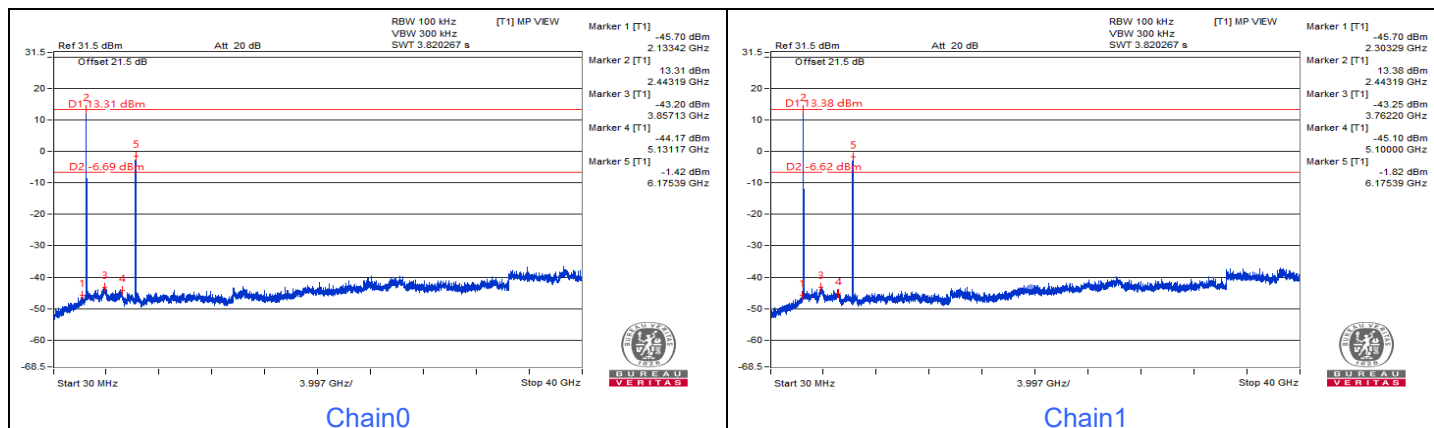
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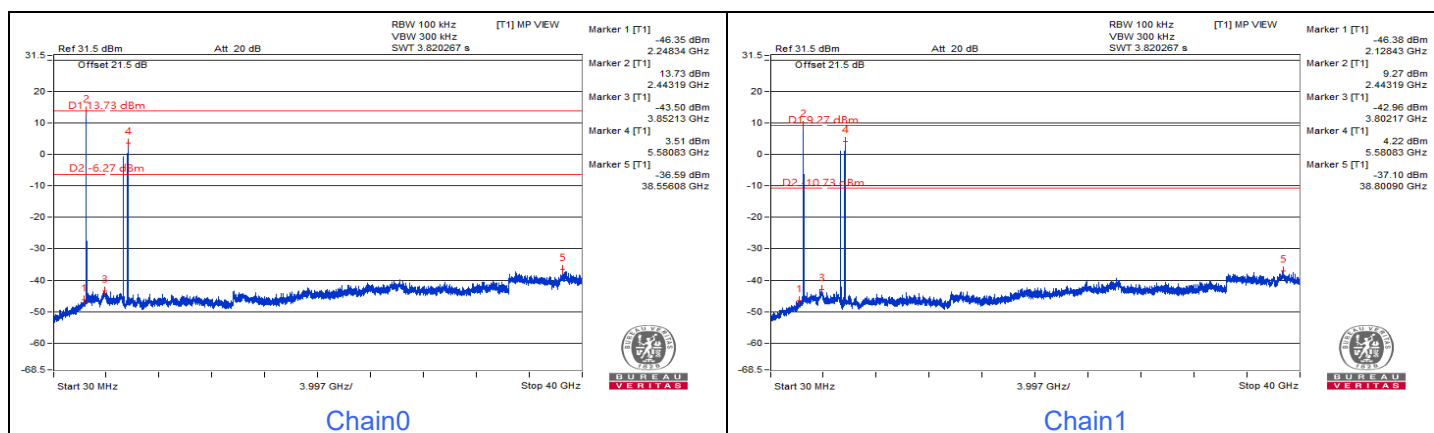
Combination 3



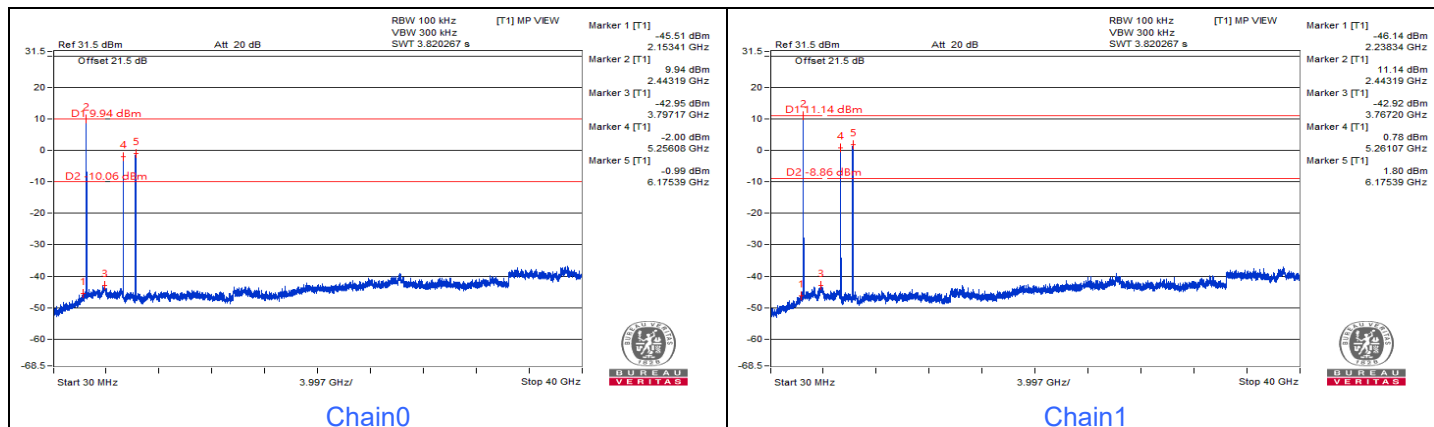
Combination 4



Combination 5



Combination 6



8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

9 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

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The address and road map of all our labs can be found in our web site also.

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