



Spectrum Research & Testing Lab., Inc.

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A19021501
Report No.: FCCA19021501
FCC ID : JIC-HSCFX
Page: 1 of 87
Date: Mar. 25, 2019

Product Name: HyperX CloudX Flight Wireless Gaming Headset
Model No.: HX-HSCFX***** (the meaning of "*" is "difference of color or shipping location" and may be alphanumeric characters or blank)
Applicant: Kingston Technology Company, Inc.
17600 Newhope Street, Fountain Valley, CA 92708, United States
Date of Receipt: Feb. 15, 2019
Finished date of Test: Mar. 08, 2019
Applicable Standards: 47 CFR Part 15, Subpart C, 15.247
ANSI C63.10: 2013
FCC publication KDB 558074 D01 15.247 Meas Guidance v05r01 Feb 11, 2019

We, **Spectrum Research & Testing Laboratory Inc.**, hereby certify that one sample of the above was tested in our laboratory with positive results according to the above-mentioned standards. The records in the report are an accurate account of the results. Details of the results are given in the subsequent pages of this report.

Tested By : Richard Lin , Date: 3/25/2019
(Richard Lin)

Approved By : J. Ho , Date: 3/25/2019
(Johnson Ho, Director)



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Revisions History

Report No.	Issue Date	Revisions
FCCA19021501	Mar. 25, 2019	Initial issue



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1. DOCUMENT POLICY AND TEST STATEMENT

1.1 DOCUMENT POLICY

- The report shall not be reproduced except in full, without the written approval of SRT Lab, Inc.
- FCC Registered Test Site Number : TW1016

1.2 TEST STATEMENT

- The test results in the report apply only to the unit tested by SRT Lab.
- There was no deviation from the requirements of test standards during the test.
- DC power source, DC 3.7V of charge battery or DC 5.0V from PC USB Port.

1.3 EUT MODIFICATION

- No modification in SRT Lab.

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2. DESCRIPTION OF EUT AND TEST MODE

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	HyperX CloudX Flight Wireless Gaming Headset
MODEL NO.	Cloud Flight, *****HX-HSCF***** (the meaning of “*” is “difference of color or shipping location” and may be alphanumeric characters or blank) HX-HSCFX***** (the meaning of “*” is “difference of color or shipping location” and may be alphanumeric characters or blank)
POWER SUPPLY	DC power source, DC 3.7V of charge battery or DC 5.0V from PC USB Port
CABLE	NA
FREQUENCY BAND	2.4 GHz ~ 2.4835 GHz
CARRIER FREQUENCY	2.401.35 GHz ~ 2.479.35 GHz
NUMBER OF CHANNEL	40
RATED RF OUTPUT POWER	1.10 dBm (1.29 mW)
MODULATION TYPE	Pi/4 DQPSK
MODE OF OPERATION	Duplex
ANTENNA TYPE	Printed Antenna
ANTENNA GAIN	ANT0 : 2.99 dBi ANT1 : 2.84 dBi

NOTE:

For more detailed information, please refer to the EUT's specification or user's manual provided by manufacturer.

2.2 DESCRIPTION OF EUT INTERNAL DEVICE

DEVICE	BRAND / MAKER	MODEL #	FCC ID / DOC	REMARK
Micro USB Cable	N/A	N/A	N/A	1.m shielded power cable
Microphone	N/A	N/A	N/A	N/A
HyperX CloudX Flight Wireless Gaming Headset USB Dongle	Kingston	HXS-HSCFX	N/A	N/A



2.3 DESCRIPTION OF TEST MODE

There are test modes for each test configuration as below:

Mode		Frequency
1	TX1_ANT1	2401.35 MHz
2	TX1_ANT2	2401.35 MHz
3	TX2_ANT1	2439.35 MHz
4	TX2_ANT2	2439.35 MHz
5	TX3_ANT1	2479.35 MHz
6	TX3_ANT2	2479.35 MHz
7	Standby	N/A
8	Link	N/A

NOTE:

1. Below 1 GHz were pre-tested in chamber and chosen the worst case for conducted and radiated emission test.
2. Above 1 GHz were tested individually.
3. The axis X,Y and Z we evaluate in chamber, the X axis is worst case.

2.4 EUT OPERATING CONDITION

TX1, TX2, TX3, Standby :

1. Setup the EUT and all peripheral devices .
2. Turn on the power of all equipment and EUT.
3. We will use the following programs under Windows 10 system to test EUT.
4. Open program "VMIttest-1.1.6.56". Into mode TX1,. TX2, TX3, Standby

Link :

1. Setup the EUT and all peripheral devices .
2. Turn on the power of all equipment and EUT.
3. We will use the following programs under Windows 10 system to test EUT.
4. Play music & Use the recorder to record.

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2.5 DESCRIPTION OF SUPPORT UNIT

The EUT was configured by the requirement of ANSI C63.10:2013. All interface ports were connected to the appropriate support units via specific cables. The support units and cables are listed below.

NO	DEVICE	BRAND	MODEL #	FCC ID/DOC	CABLE
1	PC	ASUS	M32AA1	R31018	1.5m unshielded power cable.
2	LCD Monitor	DELL	U2412Mb	R43002	1.8m unshielded power cable. 1.5m shielded data cable.
3	Keyboard	ASUS	PK1100U	D41108	1.8m unshielded data cable.
4	Mouse	Acer	M-UVACR1	R41126	1.5m unshielded data cable.
5	Printer	HP	C8991A	R33001	1.5m unshielded power cable. 1.5m shielded data cable.
6	USB 2.0 HDD	TERASYS	F12-U	4912A002	1.5m unshielded power cable.

NOTE: For the actual test configuration, please refer to the photos of testing.

2.6 CHANNEL AND FREQUENCY TABLE

Channel	Frequency	Channel	Frequency
CH01	2401.35 MHz	CH21	2441.35 MHz
CH02	2403.35 MHz	CH22	2443.35 MHz
CH03	2405.35 MHz	CH23	2445.35 MHz
CH04	2407.35 MHz	CH24	2447.35 MHz
CH05	2409.35 MHz	CH25	2449.35 MHz
CH06	2411.35 MHz	CH26	2451.35 MHz
CH07	2413.35 MHz	CH27	2453.35 MHz
CH08	2415.35 MHz	CH28	2455.35 MHz
CH09	2417.35 MHz	CH29	2457.35 MHz
CH10	2419.35 MHz	CH30	2459.35 MHz
CH11	2421.35 MHz	CH31	2461.35 MHz
CH12	2423.35 MHz	CH32	2463.35 MHz
CH13	2425.35 MHz	CH33	2465.35 MHz
CH14	2427.35 MHz	CH34	2467.35 MHz
CH15	2429.35 MHz	CH35	2469.35 MHz
CH16	2431.35 MHz	CH36	2471.35 MHz
CH17	2433.35 MHz	CH37	2473.35 MHz
CH18	2435.35 MHz	CH38	2475.35 MHz
CH19	2437.35 MHz	CH39	2477.35 MHz
CH20	2439.35 MHz	CH40	2479.35 MHz



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3. DESCRIPTION OF APPLIED STANDARDS

The EUT is a wireless product. According to the specifications provided by the applicant, it must comply with the requirements of the following standards:

47 CFR Part 15, Subpart C, 15.247

ANSI C63.10: 2013

FCC publication KDB 558074 D01 15.247 Meas Guidance v05r01 Feb 11, 2019

All tests have been performed and recorded as the above standards.

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3.1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

STANDARD SECTION	TEST TYPE AND LIMIT RESULTS	RESULTS
15.203 15.247(c)(1)(i)	Antenna requirement	PASS
15.207	AC Power Line Conducted Emission	PASS
15.247(a)(2)	6 dB Bandwidth	PASS
15.247(b)	Maximum Peak Conducted Output Power	PASS
15.247(d)	Band Edge Measurement:	PASS
15.247(d)	Transmitter Radiated Emissions Limit: Table 15.209	PASS
15.247(e)	Power Density: Limit: 8dBm/3kHz	PASS

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4. TECHNICAL CHARACTERISTICS TEST

4.1 CONDUCTED EMISSION TEST

4.1.1 LIMIT

Frequency (MHz)	Class A (dBμV)		Class B (dBμV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

4.1.2 TEST EQUIPMENT

The following test equipment was used for the test:

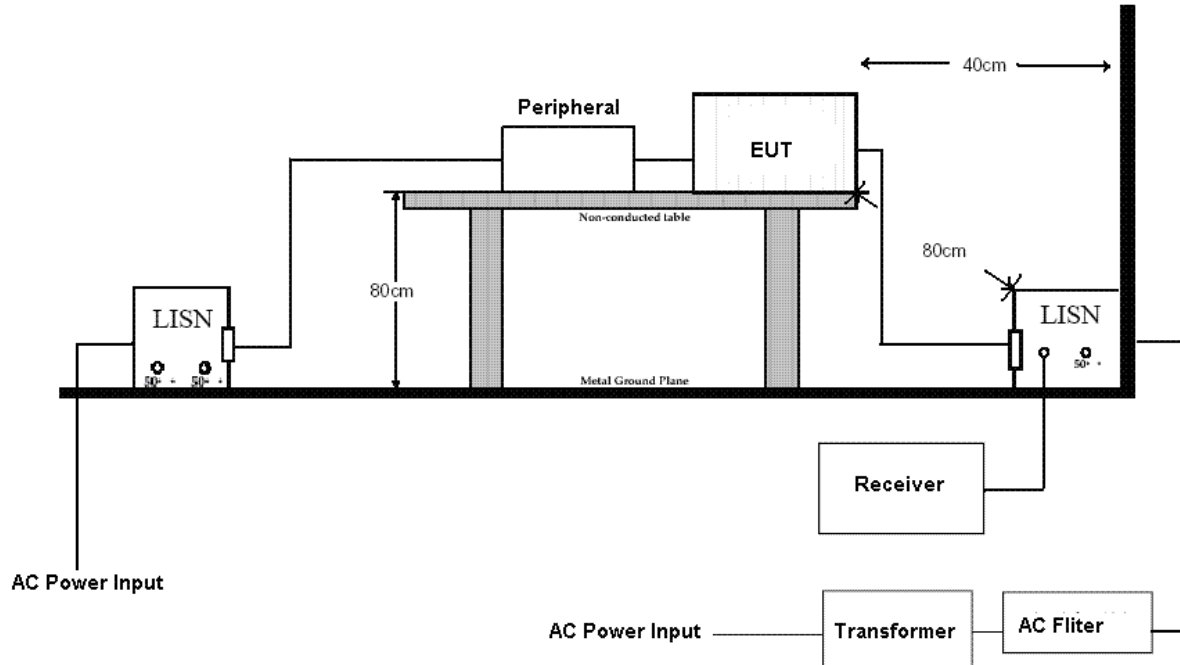
EQUIPMENT/FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/SERIAL#	DUE DATE OF CAL. & CAL. CENTER	FINAL TEST BE USED
EMI TEST RECEIVER	9 kHz ~ 30 MHz	ROHDE & SCHWARZ	ESHS30 / 826003/008	JAN. 14, 2020 ETC	■
LISN	50 μH, 50 ohm	SOLAR	9252-50-R-24-BNC /951315	OCT. 28, 2019 ETC	■
50Ω BNC TYPE TERMINATOR	50 ohm	N/A	11593A/ L1TEQU005	NOV. 06, 2019 ETC	■
50Ω BNC TYPE TERMINATOR	50 ohm	N/A	B00-CD-357/ L1TEQU009	MAY 17, 2019 ETC	■
COAXIAL CABLE	5 m	HUBER+SUHNER	RG214/U / #5M (L1TCAB013)	MAY 13, 2019 ETC	■
FILTER	2 LINE, 30 A	FIL.COIL	FC-943 / 771	NCR	■
GROUND PLANE	2 m (H) x 3 m (W)	SRT	N/A	NCR	■
GROUND PLANE	2.5 m (H) x 3 m (W)	SRT	N/A	NCR	■
PULSE LIMITER	9 kHz ~ 30 MHz Insertion Loss= 10dB±0.3dB	ROHDE & SCHWARZ	ESH3Z2/ L1TTES009	MAR. 24, 2020 ETC	■
THERMO-HYGR O	15 - 40 °C, 0- 100% RH	TOP	20-A / 6644	SEP. 16, 2019 ETC	■

NOTE:

The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.



4.1.3 TEST SETUP



NOTE :

1. The EUT was put on a wooden table with 0.8m heights above ground plane, and 0.4m away from reference ground plane (> 2mx2m).
2. For the actual test configuration, please refer to the photos of testing.

4.1.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.10:2013 and CISPR22:2003. The frequency spectrum from 0.15 MHz to 30 MHz was investigated. The LISN used was 50 ohm/50 μ H as specified. All readings were quasi-peak and average values with 10 kHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. Both lines of the power mains of EUT were measured and the cables connected to EUT and support units were moved to find the maximum emission levels for each frequency. First, find the margin or higher points at least 6 points by software, then use manual to find the maximum data. The procedure is referred on the test procedure of SRT LAB.

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4.1.5 TEST RESULT

Temperature: 18 °C

Humidity: 74 %RH

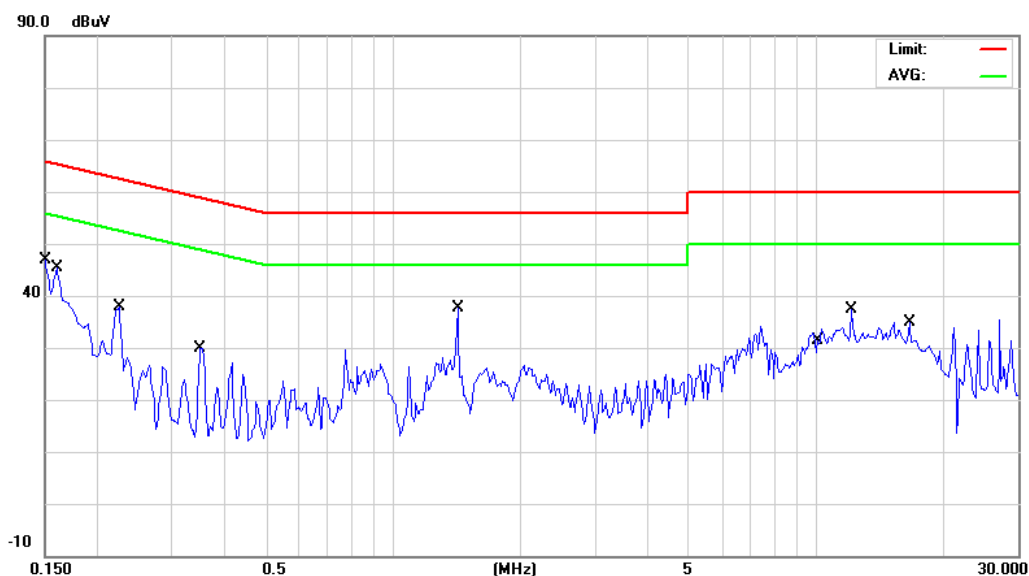
Frequency Range: 0.15 – 30 MHz

Tested Mode: TX1_ANT0

Receiver Detector: Q.P. and AV.

Tested Date: Feb. 22, 2019

Power Line Measured : Line



Mk.	No.	Frequency (MHz)	Reading (dBuV)	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
	1	0.1500	39.34	-0.13	39.21	66.00	-26.79	QP	
	2	0.1500	34.44	-0.13	34.31	56.00	-21.69	AVG	
	3	0.1600	39.92	-0.13	39.79	65.46	-25.67	QP	
	4	0.1600	38.62	-0.13	38.49	55.46	-16.97	AVG	
	5	0.2250	38.45	-0.12	38.33	62.63	-24.30	QP	
	6	0.2250	36.89	-0.12	36.77	52.63	-15.86	AVG	
	7	0.3500	28.47	-0.13	28.34	58.96	-30.62	QP	
	8	0.3500	24.58	-0.13	24.45	48.96	-24.51	AVG	
	9	1.4200	36.75	-0.07	36.68	56.00	-19.32	QP	
*	10	1.4200	33.69	-0.07	33.62	46.00	-12.38	AVG	
	11	10.0000	18.66	0.20	18.86	60.00	-41.14	QP	
	12	10.0000	11.71	0.20	11.91	50.00	-38.09	AVG	
	13	12.0950	35.07	0.26	35.33	60.00	-24.67	QP	
	14	12.0950	31.89	0.26	32.15	50.00	-17.85	AVG	
	15	16.6350	28.76	0.38	29.14	60.00	-30.86	QP	
	16	16.6350	17.24	0.38	17.62	50.00	-32.38	AVG	

NOTE :

1. Measurement uncertainty is 2.92 dB.
2. Result = Reading + Correction factor.
3. Corrected Factor = Cable loss + Insertion loss of LISN
Difference of Pulse Limiter Factor between EMI Test Receiver corrected 10dB insertion loss.
4. Margin = Result – Limit.

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Temperature: 18 °C

Humidity: 74 %RH

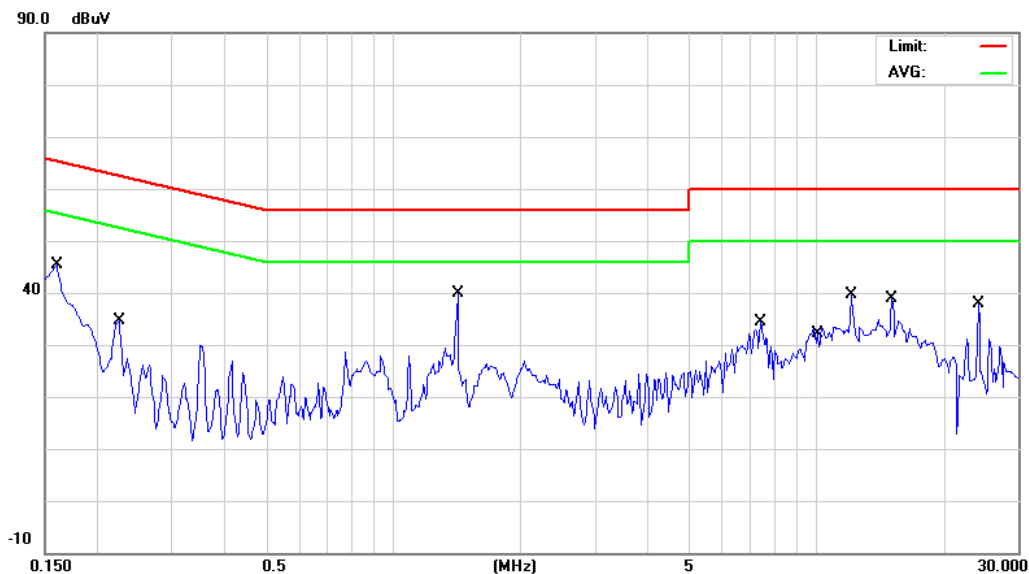
Frequency Range: 0.15 – 30 MHz

Tested Mode: TX1_ANT0

Receiver Detector: Q.P. and AV.

Tested Date: Feb. 22, 2019

Power Line Measured : Neutral



Mk.	No.	Frequency (MHz)	Reading (dBuV)	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
	1	0.1600	40.88	-0.12	40.76	65.46	-24.70	QP	
	2	0.1600	39.13	-0.12	39.01	55.46	-16.45	AVG	
	3	0.2250	33.68	-0.11	33.57	62.63	-29.06	QP	
	4	0.2250	32.98	-0.11	32.87	52.63	-19.76	AVG	
	5	1.4200	37.07	-0.07	37.00	56.00	-19.00	QP	
*	6	1.4200	34.22	-0.07	34.15	46.00	-11.85	AVG	
	7	7.3800	33.36	0.11	33.47	60.00	-26.53	QP	
	8	7.3800	32.53	0.11	32.64	50.00	-17.36	AVG	
	9	10.0000	15.91	0.19	16.10	60.00	-43.90	QP	
	10	10.0000	9.19	0.19	9.38	50.00	-40.62	AVG	
	11	12.1000	34.66	0.24	34.90	60.00	-25.10	QP	
	12	12.1000	31.99	0.24	32.23	50.00	-17.77	AVG	
	13	15.1200	32.02	0.31	32.33	60.00	-27.67	QP	
	14	15.1200	24.08	0.31	24.39	50.00	-25.61	AVG	
	15	24.1950	31.80	0.50	32.30	60.00	-27.70	QP	
	16	24.1950	28.08	0.50	28.58	50.00	-21.42	AVG	

NOTE :

1. Measurement uncertainty is 2.92 dB.
2. Result = Reading + Correction factor.
3. Corrected Factor = Cable loss + Insertion loss of LISN
Difference of Pulse Limiter Factor between EMI Test Receiver corrected 10dB insertion loss.
4. Margin = Result – Limit.

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Temperature: 18 °C

Humidity: 74 %RH

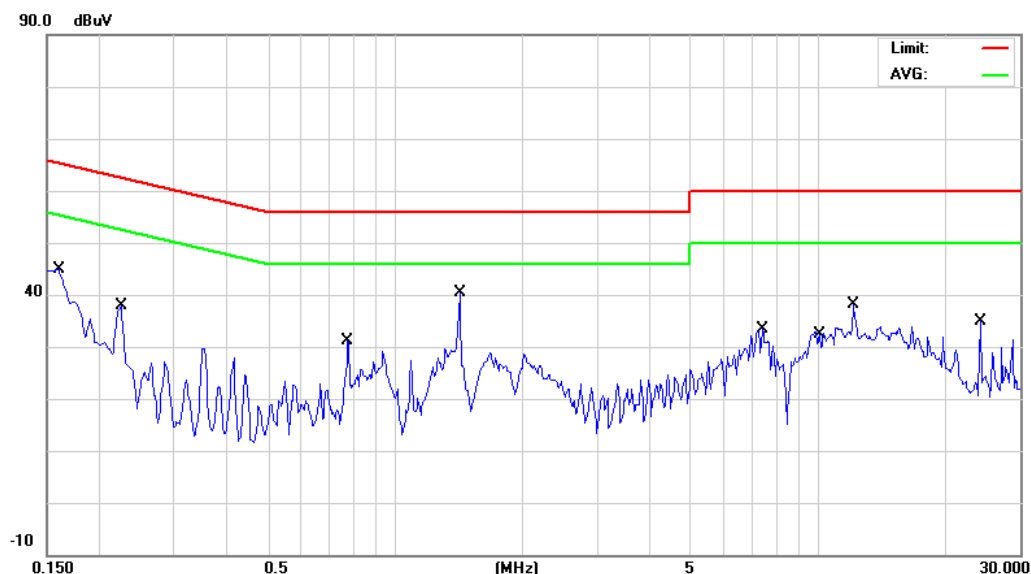
Frequency Range: 0.15 – 30 MHz

Tested Mode: TX1_ANT1

Receiver Detector: Q.P. and AV.

Tested Date: Feb. 22, 2019

Power Line Measured : Line



Mk.	No.	Frequency (MHz)	Reading (dBuV)	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
	1	0.1600	41.55	-0.13	41.42	65.46	-24.04	QP	
	2	0.1600	38.62	-0.13	38.49	55.46	-16.97	AVG	
	3	0.2250	37.85	-0.12	37.73	62.63	-24.90	QP	
	4	0.2250	36.89	-0.12	36.77	52.63	-15.86	AVG	
	5	0.7750	29.08	-0.10	28.98	56.00	-27.02	QP	
	6	0.7750	23.30	-0.10	23.20	46.00	-22.80	AVG	
	7	1.4200	38.57	-0.07	38.50	56.00	-17.50	QP	
*	8	1.4200	35.12	-0.07	35.05	46.00	-10.95	AVG	
	9	7.3800	33.14	0.12	33.26	60.00	-26.74	QP	
	10	7.3800	32.31	0.12	32.43	50.00	-17.57	AVG	
	11	10.0000	15.71	0.20	15.91	60.00	-44.09	QP	
	12	10.0000	9.14	0.20	9.34	50.00	-40.66	AVG	
	13	12.0950	35.15	0.26	35.41	60.00	-24.59	QP	
	14	12.0950	31.94	0.26	32.20	50.00	-17.80	AVG	
	15	24.1700	29.31	0.55	29.86	60.00	-30.14	QP	
	16	24.1700	10.10	0.55	10.65	50.00	-39.35	AVG	

NOTE :

1. Measurement uncertainty is 2.92 dB.
2. Result = Reading + Correction factor.
3. Corrected Factor = Cable loss + Insertion loss of LISN
Difference of Pulse Limiter Factor between EMI Test Receiver corrected 10dB insertion loss.
4. Margin = Result – Limit.

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Temperature: 18 °C

Humidity: 74 %RH

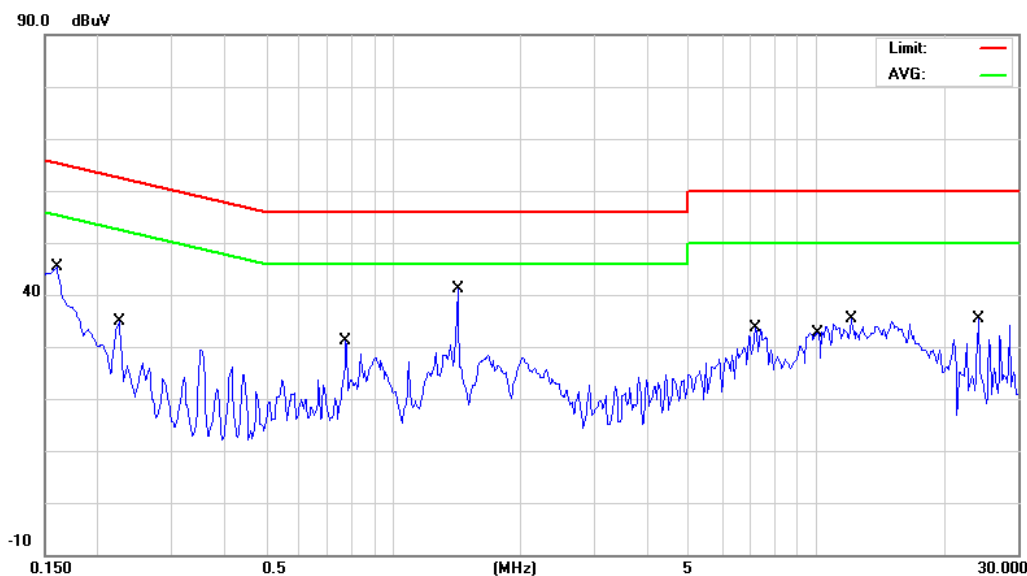
Frequency Range: 0.15 – 30 MHz

Tested Mode: TX1_ANT1

Receiver Detector: Q.P. and AV.

Tested Date: Feb. 22, 2019

Power Line Measured : Neutral



Mk.	No.	Frequency (MHz)	Reading (dBuV)	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
	1	0.1600	41.89	-0.12	41.77	65.46	-23.69	QP	
	2	0.1600	39.54	-0.12	39.42	55.46	-16.04	AVG	
	3	0.2250	33.54	-0.11	33.43	62.63	-29.20	QP	
	4	0.2250	32.98	-0.11	32.87	52.63	-19.76	AVG	
	5	0.7750	29.76	-0.08	29.68	56.00	-26.32	QP	
	6	0.7750	23.38	-0.08	23.30	46.00	-22.70	AVG	
	7	1.4200	39.16	-0.07	39.09	56.00	-16.91	QP	
*	8	1.4200	35.44	-0.07	35.37	46.00	-10.63	AVG	
	9	7.2050	33.06	0.11	33.17	60.00	-26.83	QP	
	10	7.2050	32.15	0.11	32.26	50.00	-17.74	AVG	
	11	10.0000	16.39	0.19	16.58	60.00	-43.42	QP	
	12	10.0000	9.19	0.19	9.38	50.00	-40.62	AVG	
	13	12.0950	35.35	0.24	35.59	60.00	-24.41	QP	
	14	12.0950	32.22	0.24	32.46	50.00	-17.54	AVG	
	15	24.2200	29.29	0.50	29.79	60.00	-30.21	QP	
	16	24.2200	12.76	0.50	13.26	50.00	-36.74	AVG	

NOTE :

1. Measurement uncertainty is 2.92 dB.
2. Result = Reading + Correction factor.
3. Corrected Factor = Cable loss + Insertion loss of LISN
Difference of Pulse Limiter Factor between EMI Test Receiver corrected 10dB insertion loss.
4. Margin = Result – Limit.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A19021501
Report No.: FCCA19021501
FCC ID : JIC-HSCFX
Page: 17 of 87
Date: Mar. 25, 2019

Temperature: 18 °C

Humidity: 74 %RH

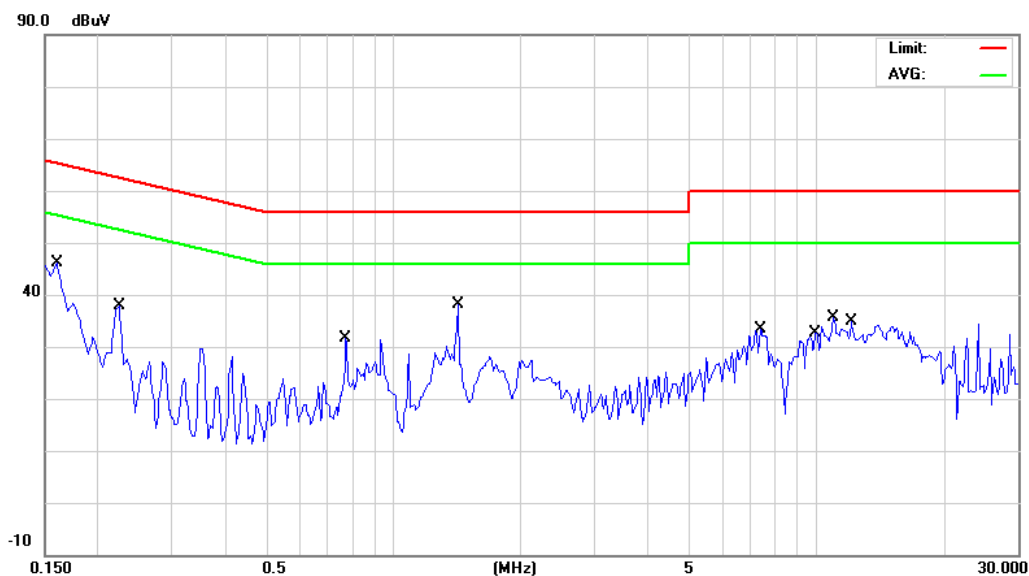
Frequency Range: 0.15 – 30 MHz

Tested Mode: TX2_ANT0

Receiver Detector: Q.P. and AV.

Tested Date: Feb. 22, 2019

Power Line Measured : Line



Mk.	No.	Frequency (MHz)	Reading (dBuV)	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
	1	0.1600	40.98	-0.13	40.85	65.46	-24.61	QP	
	2	0.1600	38.80	-0.13	38.67	55.46	-16.79	AVG	
	3	0.2250	37.71	-0.12	37.59	62.63	-25.04	QP	
	4	0.2250	36.84	-0.12	36.72	52.63	-15.91	AVG	
	5	0.7750	29.20	-0.10	29.10	56.00	-26.90	QP	
	6	0.7750	22.89	-0.10	22.79	46.00	-23.21	AVG	
	7	1.4250	36.53	-0.07	36.46	56.00	-19.54	QP	
*	8	1.4250	31.95	-0.07	31.88	46.00	-14.12	AVG	
	9	7.3800	32.70	0.12	32.82	60.00	-27.18	QP	
	10	7.3800	31.84	0.12	31.96	50.00	-18.04	AVG	
	11	10.0000	15.48	0.20	15.68	60.00	-44.32	QP	
	12	10.0000	8.82	0.20	9.02	50.00	-40.98	AVG	
	13	11.0050	34.58	0.23	34.81	60.00	-25.19	QP	
	14	11.0050	32.04	0.23	32.27	50.00	-17.73	AVG	
	15	12.0950	35.11	0.26	35.37	60.00	-24.63	QP	
	16	12.0950	31.94	0.26	32.20	50.00	-17.80	AVG	

NOTE :

1. Measurement uncertainty is 2.92 dB.
2. Result = Reading + Correction factor.
3. Corrected Factor = Cable loss + Insertion loss of LISN
Difference of Pulse Limiter Factor between EMI Test Receiver corrected 10dB insertion loss.
4. Margin = Result – Limit.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A19021501
Report No.: FCCA19021501
FCC ID : JIC-HSCFX
Page: 18 of 87
Date: Mar. 25, 2019

Temperature: 18 °C

Humidity: 74 %RH

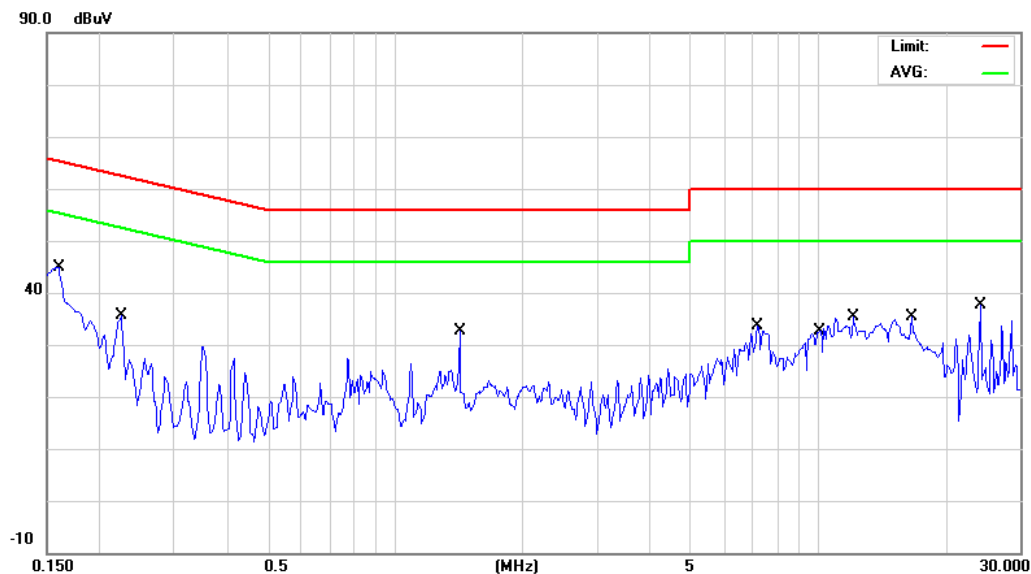
Frequency Range: 0.15 – 30 MHz

Tested Mode: TX2_ANT0

Receiver Detector: Q.P. and AV.

Tested Date: Feb. 22, 2019

Power Line Measured : Neutral



Mk.	No.	Frequency (MHz)	Reading (dBuV)	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
	1	0.1600	40.88	-0.12	40.76	65.46	-24.70	QP	
*	2	0.1600	39.22	-0.12	39.10	55.46	-16.36	AVG	
	3	0.2250	33.56	-0.11	33.45	62.63	-29.18	QP	
	4	0.2250	33.06	-0.11	32.95	52.63	-19.68	AVG	
	5	1.4200	30.82	-0.07	30.75	56.00	-25.25	QP	
	6	1.4200	29.62	-0.07	29.55	46.00	-16.45	AVG	
	7	7.2050	33.26	0.11	33.37	60.00	-26.63	QP	
	8	7.2050	32.42	0.11	32.53	50.00	-17.47	AVG	
	9	10.0000	15.89	0.19	16.08	60.00	-43.92	QP	
	10	10.0000	9.69	0.19	9.88	50.00	-40.12	AVG	
	11	12.0950	35.41	0.24	35.65	60.00	-24.35	QP	
	12	12.0950	32.27	0.24	32.51	50.00	-17.49	AVG	
	13	16.6350	29.15	0.35	29.50	60.00	-30.50	QP	
	14	16.6350	17.49	0.35	17.84	50.00	-32.16	AVG	
	15	24.1950	31.88	0.50	32.38	60.00	-27.62	QP	
	16	24.1950	28.08	0.50	28.58	50.00	-21.42	AVG	

NOTE :

1. Measurement uncertainty is 2.92 dB.
2. Result = Reading + Correction factor.
3. Corrected Factor = Cable loss + Insertion loss of LISN
Difference of Pulse Limiter Factor between EMI Test Receiver corrected 10dB insertion loss.
4. Margin = Result – Limit.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A19021501
Report No.: FCCA19021501
FCC ID : JIC-HSCFX
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Date: Mar. 25, 2019

Temperature: 18 °C

Humidity: 74 %RH

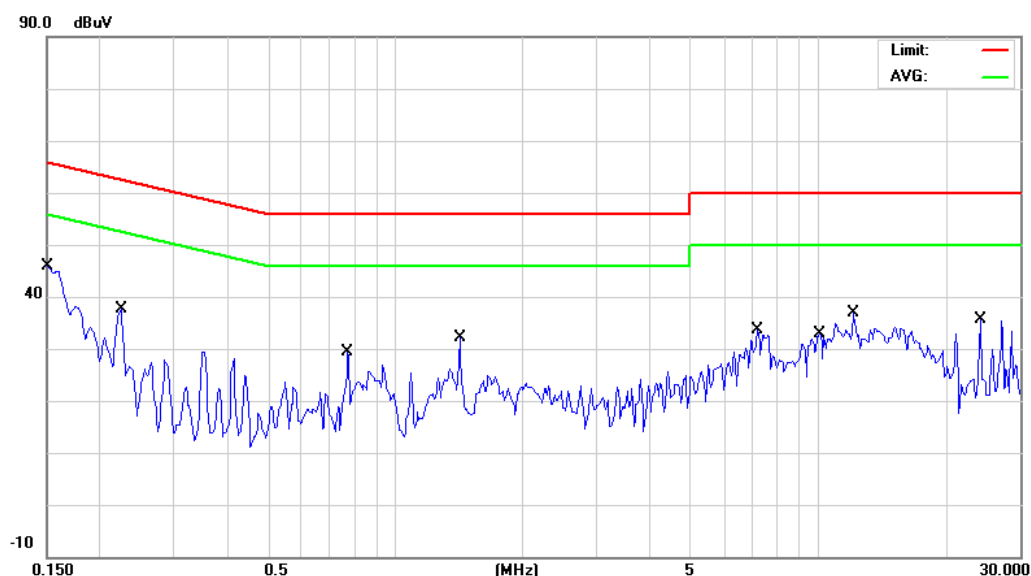
Frequency Range: 0.15 – 30 MHz

Tested Mode: TX2_ANT1

Receiver Detector: Q.P. and AV.

Tested Date: Feb. 22, 2019

Power Line Measured : Line



Mk.	No.	Frequency (MHz)	Reading (dBuV)	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
	1	0.1500	39.66	-0.13	39.53	66.00	-26.47	QP	
	2	0.1500	33.85	-0.13	33.72	56.00	-22.28	AVG	
	3	0.2250	37.61	-0.12	37.49	62.63	-25.14	QP	
	4	0.2250	36.78	-0.12	36.66	52.63	-15.97	AVG	
	5	0.7750	27.55	-0.10	27.45	56.00	-28.55	QP	
	6	0.7750	21.05	-0.10	20.95	46.00	-25.05	AVG	
	7	1.4200	33.29	-0.07	33.22	56.00	-22.78	QP	
*	8	1.4200	30.30	-0.07	30.23	46.00	-15.77	AVG	
	9	7.2050	33.22	0.11	33.33	60.00	-26.67	QP	
	10	7.2050	32.38	0.11	32.49	50.00	-17.51	AVG	
	11	10.0000	15.36	0.20	15.56	60.00	-44.44	QP	
	12	10.0000	8.76	0.20	8.96	50.00	-41.04	AVG	
	13	12.0950	34.82	0.26	35.08	60.00	-24.92	QP	
	14	12.0950	31.70	0.26	31.96	50.00	-18.04	AVG	
	15	24.1700	29.53	0.55	30.08	60.00	-29.92	QP	
	16	24.1700	10.85	0.55	11.40	50.00	-38.60	AVG	

NOTE :

1. Measurement uncertainty is 2.92 dB.
2. Result = Reading + Correction factor.
3. Corrected Factor = Cable loss + Insertion loss of LISN
Difference of Pulse Limiter Factor between EMI Test Receiver corrected 10dB insertion loss.
4. Margin = Result – Limit.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A19021501
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Date: Mar. 25, 2019

Temperature: 18 °C

Humidity: 74 %RH

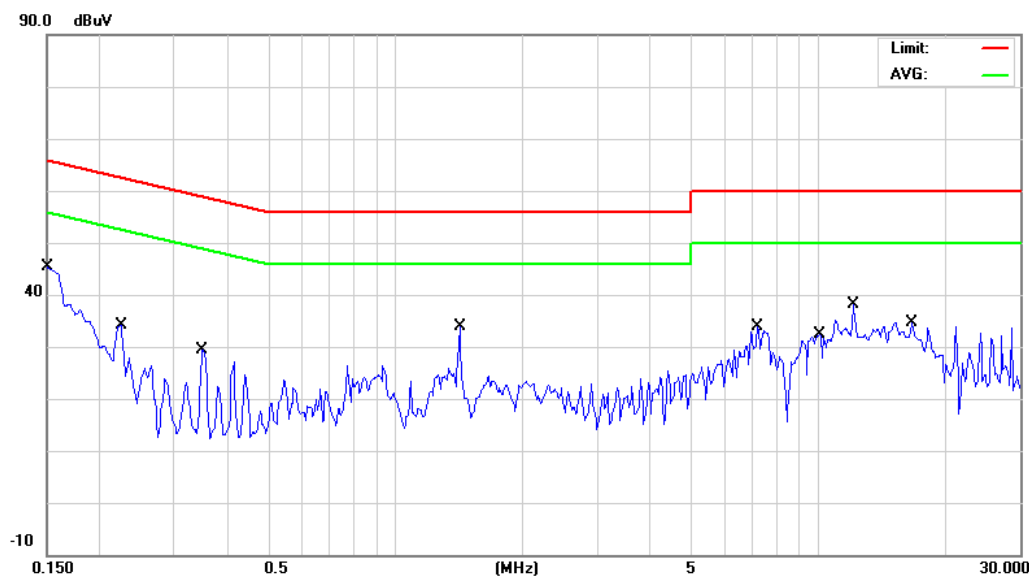
Frequency Range: 0.15 – 30 MHz

Tested Mode: TX2_ANT1

Receiver Detector: Q.P. and AV.

Tested Date: Feb. 22, 2019

Power Line Measured : Neutral



Mk.	No.	Frequency (MHz)	Reading (dBuV)	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
	1	0.1500	38.77	-0.12	38.65	66.00	-27.35	QP	
	2	0.1500	30.64	-0.12	30.52	56.00	-25.48	AVG	
	3	0.2250	33.72	-0.11	33.61	62.63	-29.02	QP	
	4	0.2250	32.89	-0.11	32.78	52.63	-19.85	AVG	
	5	0.3500	28.65	-0.11	28.54	58.96	-30.42	QP	
	6	0.3500	24.44	-0.11	24.33	48.96	-24.63	AVG	
	7	1.4200	34.34	-0.07	34.27	56.00	-21.73	QP	
*	8	1.4200	31.00	-0.07	30.93	46.00	-15.07	AVG	
	9	7.2050	33.34	0.11	33.45	60.00	-26.55	QP	
	10	7.2050	32.51	0.11	32.62	50.00	-17.38	AVG	
	11	10.0000	16.21	0.19	16.40	60.00	-43.60	QP	
	12	10.0000	9.30	0.19	9.49	50.00	-40.51	AVG	
	13	12.0950	35.15	0.24	35.39	60.00	-24.61	QP	
	14	12.0950	32.03	0.24	32.27	50.00	-17.73	AVG	
	15	16.6600	30.47	0.35	30.82	60.00	-29.18	QP	
	16	16.6600	26.00	0.35	26.35	50.00	-23.65	AVG	

NOTE :

1. Measurement uncertainty is 2.92 dB.
2. Result = Reading + Correction factor.
3. Corrected Factor = Cable loss + Insertion loss of LISN
Difference of Pulse Limiter Factor between EMI Test Receiver corrected 10dB insertion loss.
4. Margin = Result – Limit.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A19021501
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Date: Mar. 25, 2019

Temperature: 18 °C

Humidity: 74 %RH

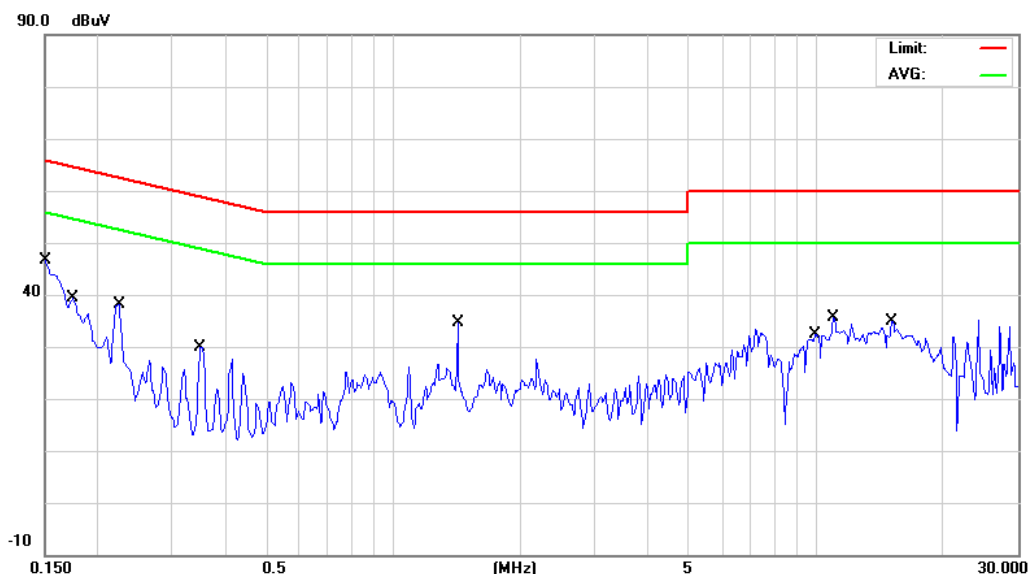
Frequency Range: 0.15 – 30 MHz

Tested Mode: TX3_ANT0

Receiver Detector: Q.P. and AV.

Tested Date: Feb. 22, 2019

Power Line Measured : Line



Mk.	No.	Frequency (MHz)	Reading (dBuV)	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
	1	0.1500	39.22	-0.13	39.09	66.00	-26.91	QP	
	2	0.1500	34.44	-0.13	34.31	56.00	-21.69	AVG	
	3	0.1750	32.80	-0.13	32.67	64.72	-32.05	QP	
	4	0.1750	28.89	-0.13	28.76	54.72	-25.96	AVG	
	5	0.2250	37.77	-0.12	37.65	62.63	-24.98	QP	
	6	0.2250	36.89	-0.12	36.77	52.63	-15.86	AVG	
	7	0.3500	28.47	-0.13	28.34	58.96	-30.62	QP	
	8	0.3500	24.72	-0.13	24.59	48.96	-24.37	AVG	
	9	1.4200	33.64	-0.07	33.57	56.00	-22.43	QP	
*	10	1.4200	30.41	-0.07	30.34	46.00	-15.66	AVG	
	11	10.0000	15.81	0.20	16.01	60.00	-43.99	QP	
	12	10.0000	8.76	0.20	8.96	50.00	-41.04	AVG	
	13	11.0050	34.62	0.23	34.85	60.00	-25.15	QP	
	14	11.0050	31.90	0.23	32.13	50.00	-17.87	AVG	
	15	15.1450	27.92	0.34	28.26	60.00	-31.74	QP	
	16	15.1450	15.05	0.34	15.39	50.00	-34.61	AVG	

NOTE :

1. Measurement uncertainty is 2.92 dB.
2. Result = Reading + Correction factor.
3. Corrected Factor = Cable loss + Insertion loss of LISN
Difference of Pulse Limiter Factor between EMI Test Receiver corrected 10dB insertion loss.
4. Margin = Result – Limit.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A19021501
Report No.: FCCA19021501
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Date: Mar. 25, 2019

Temperature: 18 °C

Humidity: 74 %RH

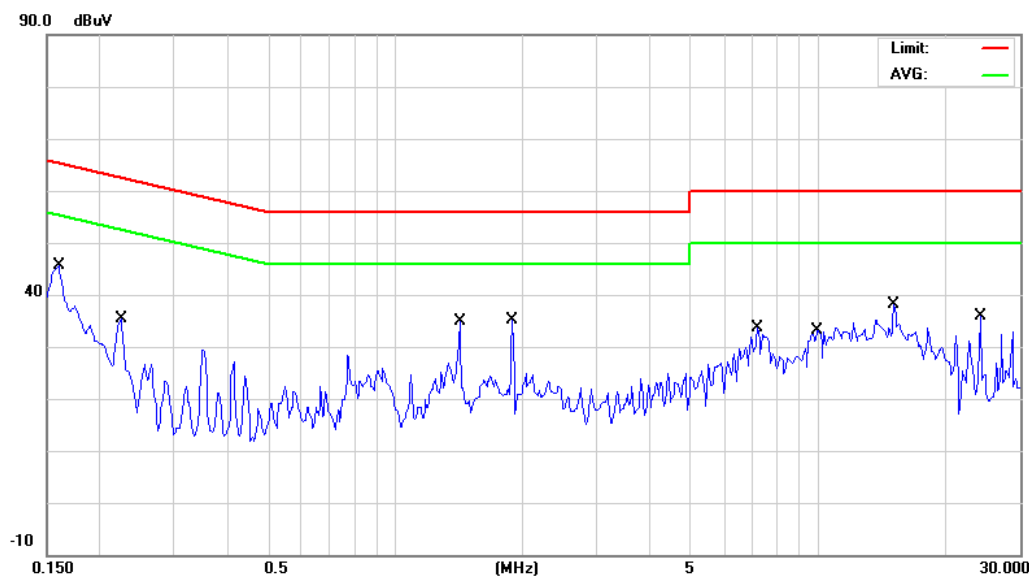
Frequency Range: 0.15 – 30 MHz

Tested Mode: TX3_ANT0

Receiver Detector: Q.P. and AV.

Tested Date: Feb. 22, 2019

Power Line Measured : Neutral



Mk.	No.	Frequency (MHz)	Reading (dBuV)	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
	1	0.1600	40.30	-0.12	40.18	65.46	-25.28	QP	
	2	0.1600	39.13	-0.12	39.01	55.46	-16.45	AVG	
	3	0.2250	33.40	-0.11	33.29	62.63	-29.34	QP	
	4	0.2250	33.46	-0.11	33.35	52.63	-19.28	AVG	
	5	1.4200	34.30	-0.07	34.23	56.00	-21.77	QP	
*	6	1.4200	30.78	-0.07	30.71	46.00	-15.29	AVG	
	7	1.8900	12.39	-0.04	12.35	56.00	-43.65	QP	
	8	1.8900	5.67	-0.04	5.63	46.00	-40.37	AVG	
	9	7.2050	33.10	0.11	33.21	60.00	-26.79	QP	
	10	7.2050	32.24	0.11	32.35	50.00	-17.65	AVG	
	11	10.0000	15.73	0.19	15.92	60.00	-44.08	QP	
	12	10.0000	8.92	0.19	9.11	50.00	-40.89	AVG	
	13	15.1200	30.91	0.31	31.22	60.00	-28.78	QP	
	14	15.1200	23.63	0.31	23.94	50.00	-26.06	AVG	
	15	24.1700	30.29	0.50	30.79	60.00	-29.21	QP	
	16	24.1700	11.44	0.50	11.94	50.00	-38.06	AVG	

NOTE :

1. Measurement uncertainty is 2.92 dB.
2. Result = Reading + Correction factor.
3. Corrected Factor = Cable loss + Insertion loss of LISN
Difference of Pulse Limiter Factor between EMI Test Receiver corrected 10dB insertion loss.
4. Margin = Result – Limit.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A19021501
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Temperature: 18 °C

Humidity: 74 %RH

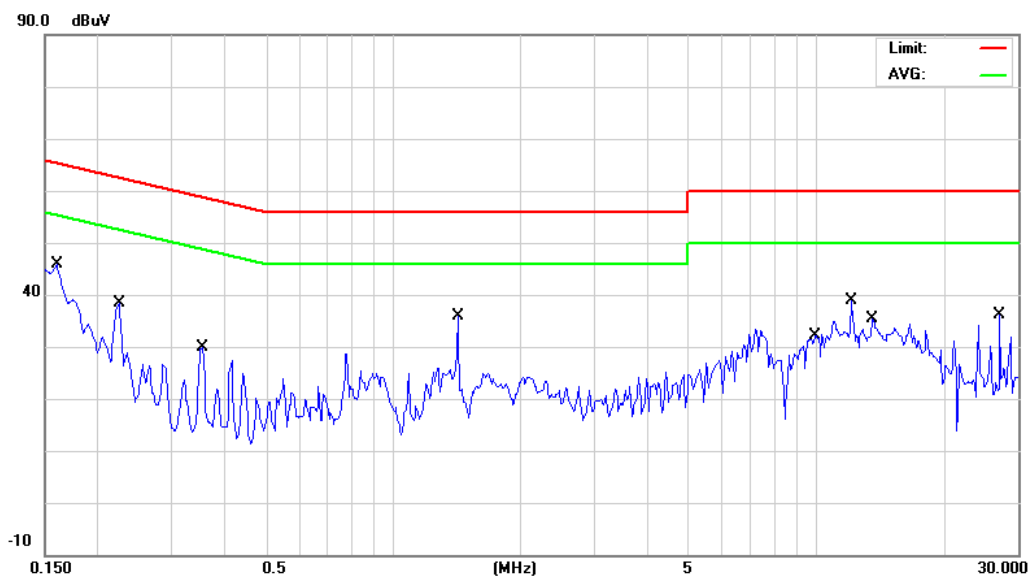
Frequency Range: 0.15 – 30 MHz

Tested Mode: TX3_ANT1

Receiver Detector: Q.P. and AV.

Tested Date: Feb. 22, 2019

Power Line Measured : Line



Mk.	No.	Frequency (MHz)	Reading (dBuV)	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
	1	0.1600	40.46	-0.13	40.33	65.46	-25.13	QP	
	2	0.1600	38.80	-0.13	38.67	55.46	-16.79	AVG	
	3	0.2250	37.99	-0.12	37.87	62.63	-24.76	QP	
	4	0.2250	36.78	-0.12	36.66	52.63	-15.97	AVG	
	5	0.3550	27.77	-0.13	27.64	58.84	-31.20	QP	
	6	0.3550	23.62	-0.13	23.49	48.84	-25.35	AVG	
	7	1.4200	34.54	-0.07	34.47	56.00	-21.53	QP	
*	8	1.4200	31.21	-0.07	31.14	46.00	-14.86	AVG	
	9	10.0000	15.64	0.20	15.84	60.00	-44.16	QP	
	10	10.0000	8.92	0.20	9.12	50.00	-40.88	AVG	
	11	12.1000	34.49	0.26	34.75	60.00	-25.25	QP	
	12	12.1000	32.08	0.26	32.34	50.00	-17.66	AVG	
	13	13.6100	29.19	0.30	29.49	60.00	-30.51	QP	
	14	13.6100	25.83	0.30	26.13	50.00	-23.87	AVG	
	15	27.2200	30.13	0.61	30.74	60.00	-29.26	QP	
	16	27.2200	23.05	0.61	23.66	50.00	-26.34	AVG	

NOTE :

1. Measurement uncertainty is 2.92 dB.
2. Result = Reading + Correction factor.
3. Corrected Factor = Cable loss + Insertion loss of LISN
Difference of Pulse Limiter Factor between EMI Test Receiver corrected 10dB insertion loss.
4. Margin = Result – Limit.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A19021501
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Date: Mar. 25, 2019

Temperature: 18 °C

Humidity: 74 %RH

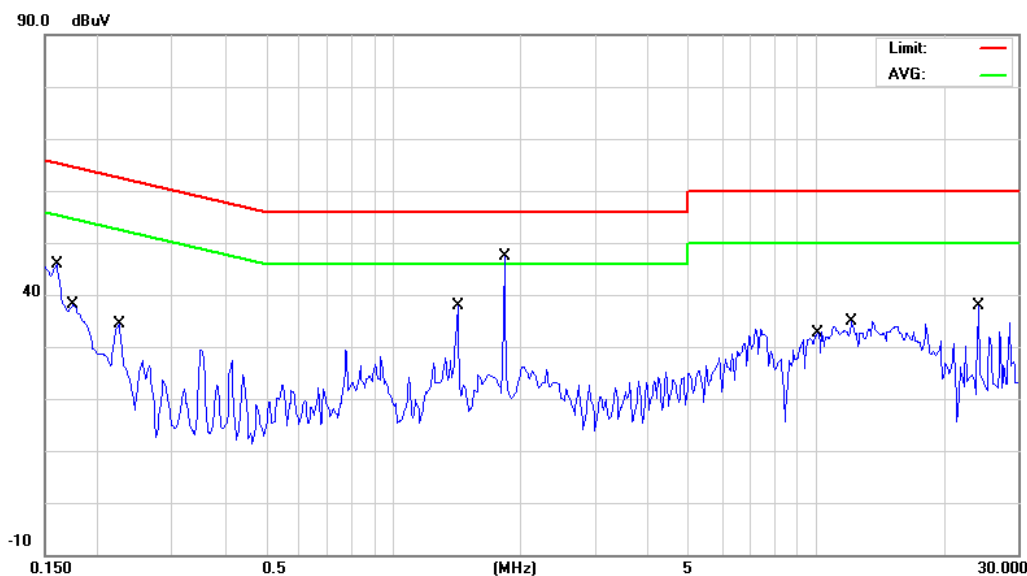
Frequency Range: 0.15 – 30 MHz

Tested Mode: TX3_ANT1

Receiver Detector: Q.P. and AV.

Tested Date: Feb. 22, 2019

Power Line Measured : Neutral



Mk.	No.	Frequency (MHz)	Reading (dBuV)	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
	1	0.1600	40.46	-0.12	40.34	65.46	-25.12	QP	
	2	0.1600	38.88	-0.12	38.76	55.46	-16.70	AVG	
	3	0.1750	32.10	-0.12	31.98	64.72	-32.74	QP	
	4	0.1750	26.85	-0.12	26.73	54.72	-27.99	AVG	
	5	0.2250	33.78	-0.11	33.67	62.63	-28.96	QP	
	6	0.2250	33.06	-0.11	32.95	52.63	-19.68	AVG	
	7	1.4200	37.05	-0.07	36.98	56.00	-19.02	QP	
*	8	1.4200	34.51	-0.07	34.44	46.00	-11.56	AVG	
	9	1.8300	19.61	-0.04	19.57	56.00	-36.43	QP	
	10	1.8300	12.13	-0.04	12.09	46.00	-33.91	AVG	
	11	10.0000	15.67	0.19	15.86	60.00	-44.14	QP	
	12	10.0000	9.03	0.19	9.22	50.00	-40.78	AVG	
	13	12.1000	34.78	0.24	35.02	60.00	-24.98	QP	
	14	12.1000	32.17	0.24	32.41	50.00	-17.59	AVG	
	15	24.1950	31.84	0.50	32.34	60.00	-27.66	QP	
	16	24.1950	28.27	0.50	28.77	50.00	-21.23	AVG	

NOTE :

1. Measurement uncertainty is 2.92 dB.
2. Result = Reading + Correction factor.
3. Corrected Factor = Cable loss + Insertion loss of LISN
Difference of Pulse Limiter Factor between EMI Test Receiver corrected 10dB insertion loss.
4. Margin = Result – Limit.

**Spectrum Research & Testing Lab., Inc.**

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TEST REPORT

Reference No.: A19021501
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Temperature: 18 °C

Humidity: 74 %RH

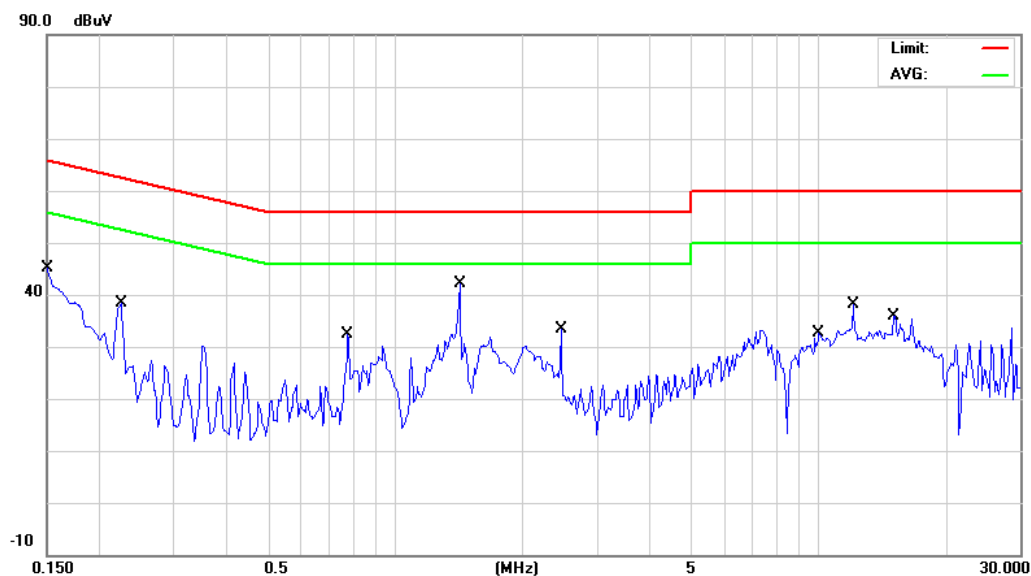
Frequency Range: 0.15 – 30 MHz

Tested Mode: Standby

Receiver Detector: Q.P. and AV.

Tested Date: Feb. 22, 2019

Power Line Measured : Line



Mk.	No.	Frequency (MHz)	Reading (dBuV)	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
	1	0.1500	39.02	-0.13	38.89	66.00	-27.11	QP	
	2	0.1500	34.07	-0.13	33.94	56.00	-22.06	AVG	
	3	0.2250	37.63	-0.12	37.51	62.63	-25.12	QP	
*	4	0.2250	36.56	-0.12	36.44	52.63	-16.19	AVG	
	5	0.7750	24.66	-0.10	24.56	56.00	-31.44	QP	
	6	0.7750	18.78	-0.10	18.68	46.00	-27.32	AVG	
	7	1.4200	29.24	-0.07	29.17	56.00	-26.83	QP	
	8	1.4200	26.22	-0.07	26.15	46.00	-19.85	AVG	
	9	2.4650	10.04	-0.02	10.02	56.00	-45.98	QP	
	10	2.4650	4.51	-0.02	4.49	46.00	-41.51	AVG	
	11	10.0000	16.59	0.20	16.79	60.00	-43.21	QP	
	12	10.0000	9.74	0.20	9.94	50.00	-40.06	AVG	
	13	12.0950	35.63	0.26	35.89	60.00	-24.11	QP	
	14	12.0950	32.71	0.26	32.97	50.00	-17.03	AVG	
	15	15.1450	28.14	0.34	28.48	60.00	-31.52	QP	
	16	15.1450	14.67	0.34	15.01	50.00	-34.99	AVG	

NOTE :

1. Measurement uncertainty is 2.92 dB.
2. Result = Reading + Correction factor.
3. Corrected Factor = Cable loss + Insertion loss of LISN
Difference of Pulse Limiter Factor between EMI Test Receiver corrected 10dB insertion loss.
4. Margin = Result – Limit.

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Temperature: 18 °C

Humidity: 74 %RH

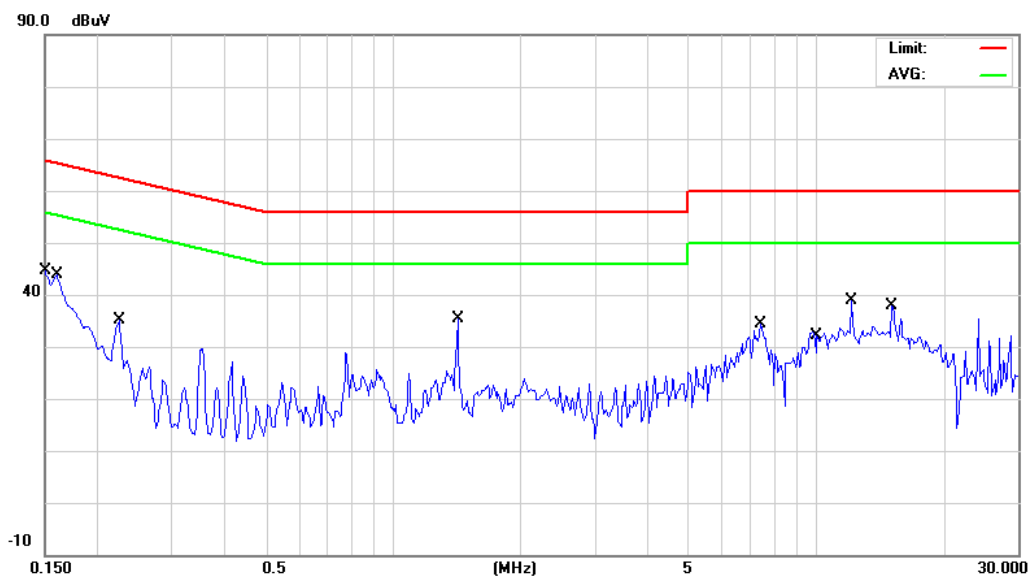
Frequency Range: 0.15 – 30 MHz

Tested Mode: Standby

Receiver Detector: Q.P. and AV.

Tested Date: Feb. 22, 2019

Power Line Measured : Neutral



Mk.	No.	Frequency (MHz)	Reading (dBuV)	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
	1	0.1500	39.04	-0.12	38.92	66.00	-27.08	QP	
	2	0.1500	30.78	-0.12	30.66	56.00	-25.34	AVG	
	3	0.1600	40.26	-0.12	40.14	65.46	-25.32	QP	
	4	0.1600	38.88	-0.12	38.76	55.46	-16.70	AVG	
	5	0.2250	33.92	-0.11	33.81	62.63	-28.82	QP	
	6	0.2250	32.98	-0.11	32.87	52.63	-19.76	AVG	
	7	1.4200	32.43	-0.07	32.36	56.00	-23.64	QP	
*	8	1.4200	29.62	-0.07	29.55	46.00	-16.45	AVG	
	9	7.3800	33.36	0.11	33.47	60.00	-26.53	QP	
	10	7.3800	32.58	0.11	32.69	50.00	-17.31	AVG	
	11	10.0000	17.11	0.19	17.30	60.00	-42.70	QP	
	12	10.0000	10.58	0.19	10.77	50.00	-39.23	AVG	
	13	12.0950	35.29	0.24	35.53	60.00	-24.47	QP	
	14	12.0950	32.08	0.24	32.32	50.00	-17.68	AVG	
	15	15.1250	30.37	0.31	30.68	60.00	-29.32	QP	
	16	15.1250	21.96	0.31	22.27	50.00	-27.73	AVG	

NOTE :

1. Measurement uncertainty is 2.92 dB.
2. Result = Reading + Correction factor.
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4. Margin = Result – Limit.

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Temperature: 18 °C

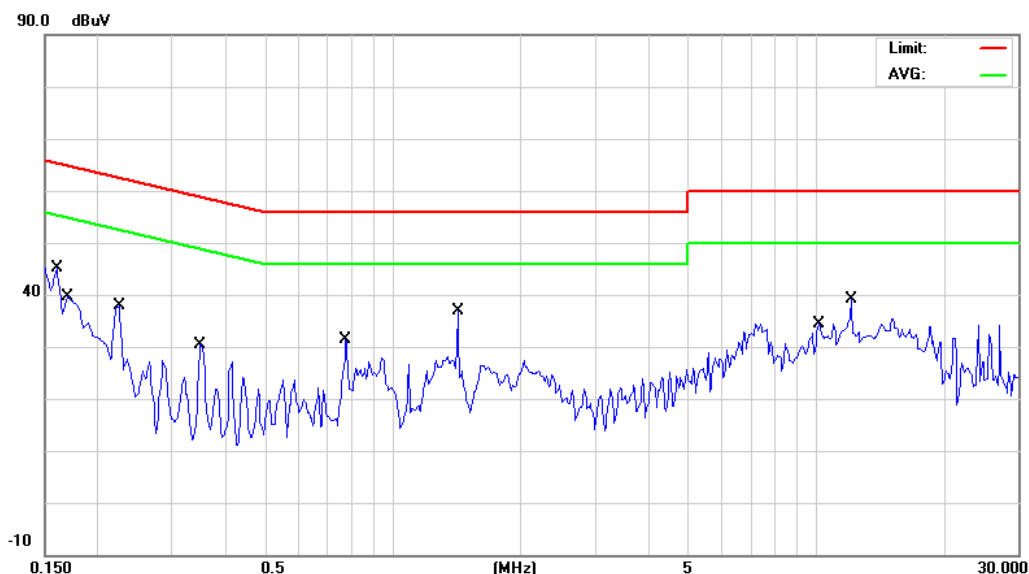
Humidity: 74 %RH

Frequency Range: 0.15 – 30 MHz

Tested Mode: Link

Receiver Detector: Q.P. and AV.

Tested Date: Feb. 22, 2019

Power Line Measured : Line

Mk.	No.	Frequency (MHz)	Reading (dBuV)	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
	1	0.1600	41.04	-0.13	40.91	65.46	-24.55	QP	
	2	0.1600	39.54	-0.13	39.41	55.46	-16.05	AVG	
	3	0.1700	31.97	-0.13	31.84	64.96	-33.12	QP	
	4	0.1700	17.23	-0.13	17.10	54.96	-37.86	AVG	
	5	0.2250	37.99	-0.12	37.87	62.63	-24.76	QP	
	6	0.2250	37.00	-0.12	36.88	52.63	-15.75	AVG	
	7	0.3500	29.10	-0.13	28.97	58.96	-29.99	QP	
	8	0.3500	25.19	-0.13	25.06	48.96	-23.90	AVG	
	9	0.7750	29.84	-0.10	29.74	56.00	-26.26	QP	
	10	0.7750	23.69	-0.10	23.59	46.00	-22.41	AVG	
	11	1.4200	38.01	-0.07	37.94	56.00	-18.06	QP	
*	12	1.4200	34.58	-0.07	34.51	46.00	-11.49	AVG	
	13	10.0000	17.43	0.20	17.63	60.00	-42.37	QP	
	14	10.0000	10.97	0.20	11.17	50.00	-38.83	AVG	
	15	12.1000	35.05	0.26	35.31	60.00	-24.69	QP	
	16	12.1000	32.40	0.26	32.66	50.00	-17.34	AVG	

NOTE :

1. Measurement uncertainty is 2.92 dB.
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4. Margin = Result – Limit.

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Temperature: 18 °C

Humidity: 74 %RH

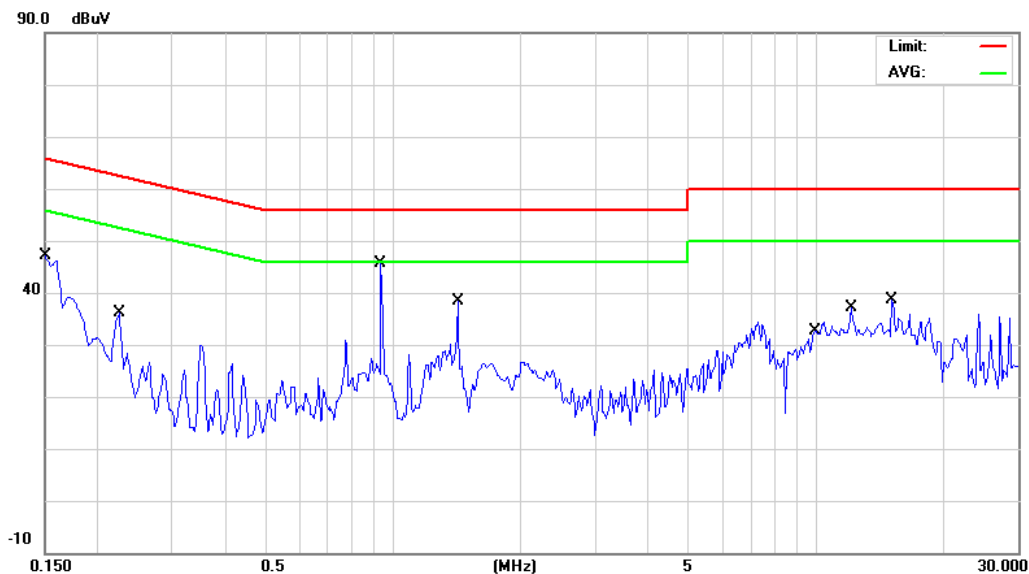
Frequency Range: 0.15 – 30 MHz

Tested Mode: Link

Receiver Detector: Q.P. and AV.

Tested Date: Feb. 22, 2019

Power Line Measured : Neutral



Mk.	No.	Frequency (MHz)	Reading (dBuV)	Corrected factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	Comment
	1	0.1500	39.58	-0.12	39.46	66.00	-26.54	QP	
	2	0.1500	39.92	-0.12	39.80	66.00	-26.20	QP	
	3	0.1500	31.26	-0.12	31.14	56.00	-24.86	AVG	
	4	0.1500	31.15	-0.12	31.03	56.00	-24.97	AVG	
	5	0.2250	34.22	-0.11	34.11	62.63	-28.52	QP	
	6	0.2250	33.30	-0.11	33.19	52.63	-19.44	AVG	
	7	0.9350	27.19	-0.08	27.11	56.00	-28.89	QP	
	8	0.9350	21.66	-0.08	21.58	46.00	-24.42	AVG	
	9	1.4200	38.47	-0.07	38.40	56.00	-17.60	QP	
*	10	1.4200	35.19	-0.07	35.12	46.00	-10.88	AVG	
	11	10.0000	17.54	0.19	17.73	60.00	-42.27	QP	
	12	10.0000	9.14	0.19	9.33	50.00	-40.67	AVG	
	13	12.0700	30.11	0.24	30.35	60.00	-29.65	QP	
	14	12.0700	25.79	0.24	26.03	50.00	-23.97	AVG	
	15	15.1200	32.20	0.31	32.51	60.00	-27.49	QP	
	16	15.1200	26.23	0.31	26.54	50.00	-23.46	AVG	

NOTE :

1. Measurement uncertainty is 2.92 dB.
2. Result = Reading + Correction factor.
3. Corrected Factor = Cable loss + Insertion loss of LISN
Difference of Pulse Limiter Factor between EMI Test Receiver corrected 10dB insertion loss.
4. Margin = Result – Limit.



4.2 RADIATED EMISSION TEST

4.2.1 LIMIT

FCC Part15, Subpart C Section 15.209 limit of radiated emission for frequency below1000MHz. The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

FREQUENCY (MHz)	FIELD STRENGTH (microvolts/meter)	DISTANCE (m)	FIELD STRENGTH (dB μ V/m)
0.009 - 0.490	2400/F(kHz)	300	67.6-20log(kHz)
0.490 - 1.705	24000/F(kHz)	30	87.6-20log(kHz)
1.705 - 30	30	30	30
30 - 88	100	3	40.0
88 - 216	150	3	43.5
216 - 960	200	3	46.0
Above 960	500	3	54.0

NOTE:

1. 30 dBuV (in 30m) = 70 dBuV (in 3m).
2. In the emission tables above , the tighter limit applies at the band edges.
3. Distance refers to the distance between measuring instrument, antenna, and the closest point of any part of the device or system.

FCC Part 15, Section15.35(b) limit of radiated emission for frequency above 1000 MHz

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80.0	60.0	74.0	54.0

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4.2.2 TEST EQUIPMENT

Below 1 GHz The following test equipment was used during the radiated emission test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER	FINAL TEST BE USED
EMI TEST RECEIVER	9 kHz ~ 2.75 GHz	ROHDE & SCHWARZ	ESCS30 / 100376	JAN. 01, 2020 ETC	■
LOOP ANTENNA	9 kHz ~ 30 MHz	ROHDE & SCHWARZ	HFH2-Z2 / 860605/002	FEB. 24, 2020 ETC	■
BICONICAL ANTENNA	30 MHz ~ 200 MHz	EMCO	3110/ 11966C	JUN. 12, 2019 ETC	■
LOG PERIODIC ANTENNA	200 MHz ~ 1 GHz	EMCO	3146/ 9002-2686	DEC. 24, 2019 ETC	■
OPEN AREA TEST SITE	3 – 10 M MEASUREMENT	SRT	A02 / SRT002	MAR. 08, 2019 SRT	■
COAXIAL CABLE	30 M	TIMES	LMR-400 / #30M(L1TCAB014)	JUN. 03, 2019 ETC	■
FILTER	2 LINE, 30 A	FIL.COIL	FC-943 /869	NCR	■
CDN	0.15 MHz ~ 300 MHz	LUTHI	CDN L-801 M2/M3 / 2790	MAY 28, 2019 ETC	□
PRE-AMPLIFIER	0.1 MHz ~ 1.3 GHz	HP	8447D / 2944A06746	DEC. 14, 2019 ETC	■
THERMO-HYGRO	15 – 40°C, 0- 100% RH	TOP	20-A / 7685	SEP. 16, 2019 ETC	■

NOTE: The Open Area Test Site (SRT-1) is registered by FCC with No. 90957

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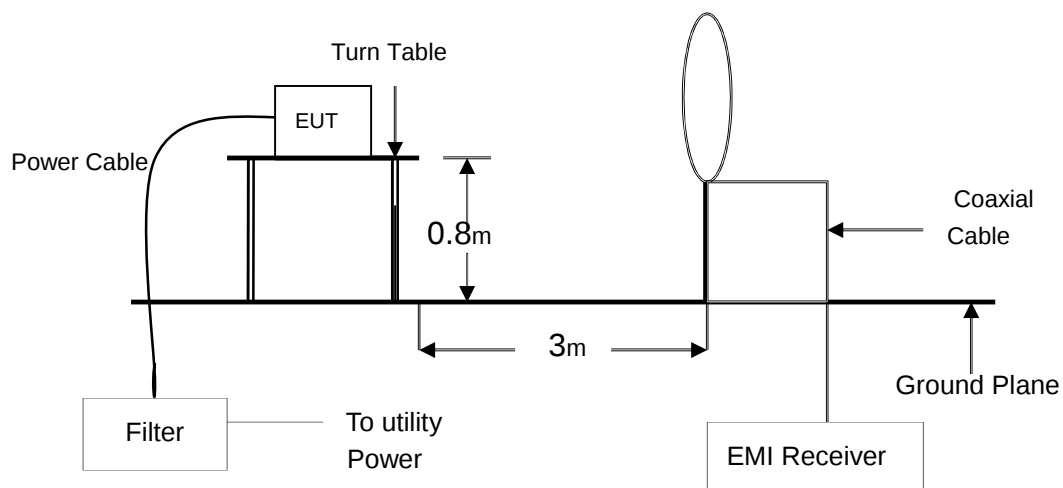
Above 1 GHz The following test equipment was used during the radiated emission test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER	FINAL TEST BE USED
SPECTRUM ANALYZER	9 kHz ~ 40GHz	ROHDE & SCHWARZ	FSP40 / 100093	JAN. 01, 2020 ETC	■
PRE-AMPLIFIER	1 GHz ~ 26.5 GHz	AGILENT	8449B/ 3008A01995	DEC. 27, 2019 ETC	■
HORN ANTENNA	1 GHz ~ 18 GHz	EMCO	3115/ 9602-4681	NOV. 14, 2019 ETC	■
HORN ANTENNA	18 ~ 40 GHZ	ETS-LINDGREN	3116 /00032255	JAN. 15, 2020 ETC	■
OPEN AREA TEST SITE	3 – 10 M MEASUREMENT	SRT	A02 / SRT002	MAR. 08, 2019 SRT	■
RF CABLE	UP TO 18 GHz 1.5 m	JYEBAO	A30A30-L 142 / EQF-0035(001)	NOV. 18, 2019 ETC	■
RF CABLE	UP TO 26.5 GHz 3.5 m	EMCI	EMC104-SM-SM-3 500 / 150601	AUG. 16, 2019 ETC	■
K-TYPE CABLE	UP TO 40 GHz 3 m	HUBER+SUHNE R	SF102-46/2*11SK2 52 /MY2611/2	MAR. 05, 2019 ETC	■
K-TYPE CABLE	UP TO 40 GHz, 1 m	HUBER+SUHNE R	SF102/2*11SK252 /MY3331/2	OCT. 01, 2019 ETC	■
FILTER	2 LINE, 30 A	FIL.COIL	FC-943/869	NCR	■
THERMO-HYGRO	15 - 40 °C, 0- 100% RH	TOP	20-A / 7685	SEP. 16, 2019 ETC	■

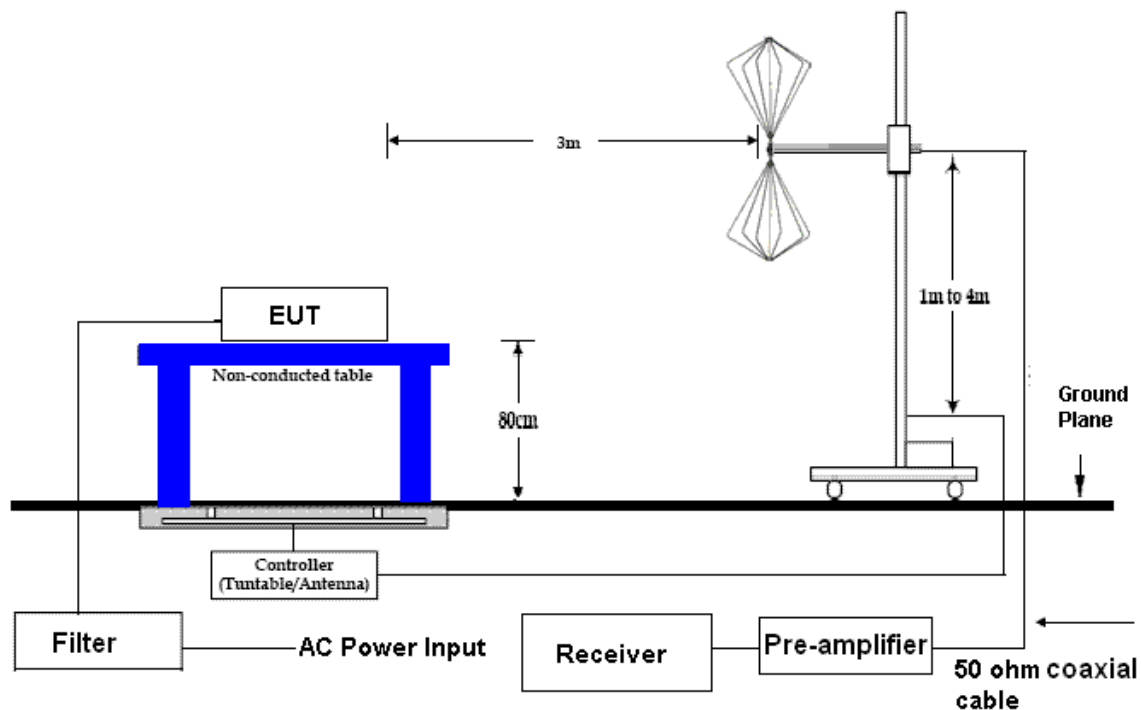


4.2.3 TEST SET-UP

9KHz ~ 30MHz

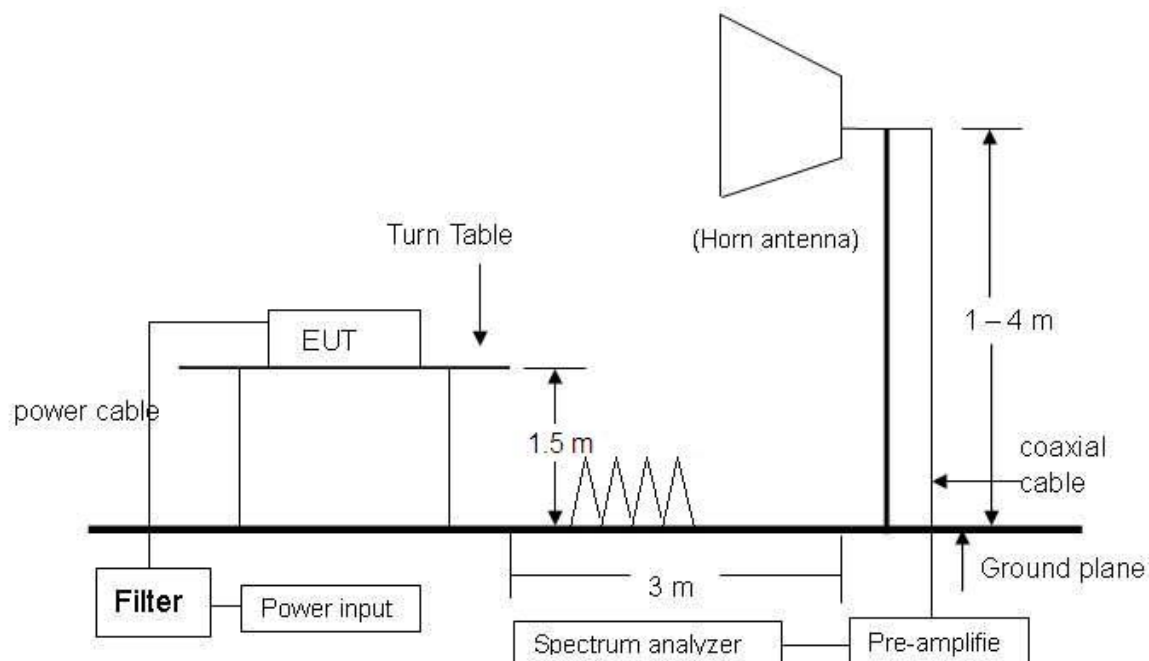


30 MHz ~ 1 GHz





Above 1 GHz



NOTE: The EUT system was put on a wooden table with 1.5m heights above a ground plane.
For the actual test configuration, please refer to the photos of testing.



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4.2.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.10:2013 and CISPR 22:2003. When the frequency spectrum measured started from 9 kHz to 30 MHz, then use antenna is a loop antenna. The measurements were made at an open area test site with 3 meter measurement distance under 1 GHz and with 3m distance above 1GHz. The frequency spectrum measured started from 9kHz to 30MHz and 30 MHz to 1 GHz, all readings were quasi-peak values with 120 kHz resolution bandwidth of the test receiver. Above 1 GHz, the measurements were made at an open area test site with 3 meter measurement distance and all readings were peak or average values with 1 MHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. The cables connected to EUT and support units were moved to find the maximum emission levels for each frequency. First, find the margin or higher points at least 6 points by software, then use manual to find the maximum data. The procedure is referred on the test procedure of SRT LAB.

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4.2.5 TEST RESULT

Temperature:	22 °C	Humidity:	64 %RH
Frequency Range:	9 kHz – 30 MHz	Measured Distance:	3 m
Receiver Detector:	AV.	Tested Mode:	TX1_ANT0
Tested By:	Richard Lin	Tested Date:	Mar. 08, 2019

Frequency (KHz)	Cable Loss (dB)	Ant. Fac. (dB/m)	Reading (dBμV)	Emission (dBμV/m)	Limit Line (dBμV/m)	Margin (dB)
9.52	0.75	20.36	6.50	27.61	70.00	-42.39
12.08	0.86	20.69	9.01	30.56	70.00	-39.44
16.79	1.03	21.35	6.68	29.06	70.00	-40.94
19.58	1.12	21.73	6.91	29.76	70.00	-40.24
21.66	1.18	21.87	5.57	28.62	70.00	-41.38
22.30	1.20	21.89	6.08	29.17	70.00	-40.83

Temperature:	22 °C	Humidity:	64 %RH
Frequency Range:	9 kHz – 30 MHz	Measured Distance:	3 m
Receiver Detector:	AV.	Tested Mode:	TX1_ANT1
Tested By:	Richard Lin	Tested Date:	Mar. 08, 2019

Frequency (KHz)	Cable Loss (dB)	Ant. Fac. (dB/m)	Reading (dBμV)	Emission (dBμV/m)	Limit Line (dBμV/m)	Margin (dB)
2.99	0.41	19.30	8.34	28.05	70.00	-41.95
9.50	0.75	20.36	7.39	28.50	70.00	-41.50
16.35	1.02	21.28	8.73	31.04	70.00	-38.96
18.14	1.07	21.53	5.61	28.22	70.00	-41.78
21.26	1.17	21.85	5.43	28.45	70.00	-41.55
23.38	1.23	21.94	4.79	27.96	70.00	-42.04

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Temperature: 22 °C

Humidity: 64 %RH

Frequency Range: 9 kHz – 30 MHz

Measured Distance: 3 m

Receiver Detector: AV.

Tested Mode: TX2_ANT0

Tested By: Richard Lin

Tested Date: Mar. 08, 2019

Frequency (KHz)	Cable Loss (dB)	Ant. Fac. (dB/m)	Reading (dBμV)	Emission (dBμV/m)	Limit Line (dBμV/m)	Margin (dB)
8.72	0.71	20.30	5.39	26.40	70.00	-43.60
9.56	0.75	20.36	6.31	27.43	70.00	-42.57
16.57	1.03	21.32	6.72	29.06	70.00	-40.94
19.51	1.12	21.72	4.88	27.72	70.00	-42.28
24.59	1.27	21.98	5.19	28.44	70.00	-41.56
26.62	1.35	22.06	9.73	33.15	70.00	-36.85

Temperature: 22 °C

Humidity: 64 %RH

Frequency Range: 9 kHz – 30 MHz

Measured Distance: 3 m

Receiver Detector: AV.

Tested Mode: TX2_ANT1

Tested By: Richard Lin

Tested Date: Mar. 08, 2019

Frequency (KHz)	Cable Loss (dB)	Ant. Fac. (dB/m)	Reading (dBμV)	Emission (dBμV/m)	Limit Line (dBμV/m)	Margin (dB)
3.33	0.43	19.42	8.55	28.40	70.00	-41.60
16.51	1.03	21.31	8.35	30.68	70.00	-39.32
19.38	1.11	21.70	6.14	28.96	70.00	-41.04
19.86	1.13	21.77	7.29	30.19	70.00	-39.81
22.29	1.20	21.89	5.15	28.24	70.00	-41.76
25.24	1.29	22.01	5.20	28.50	70.00	-41.50

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Temperature: 22 °C

Humidity: 64 %RH

Frequency Range: 9 kHz – 30 MHz

Measured Distance: 3 m

Receiver Detector: AV.

Tested Mode: TX3_ANT0

Tested By: Richard Lin

Tested Date: Mar. 08, 2019

Frequency (KHz)	Cable Loss (dB)	Ant. Fac. (dB/m)	Reading (dBμV)	Emission (dBμV/m)	Limit Line (dBμV/m)	Margin (dB)
2.87	0.40	19.32	8.06	27.78	70.00	-42.22
9.53	0.75	20.36	7.52	28.63	70.00	-41.37
11.24	0.82	20.57	11.90	33.30	70.00	-36.70
16.33	1.02	21.28	6.76	29.06	70.00	-40.94
17.85	1.07	21.49	7.46	30.02	70.00	-39.98
20.45	1.14	21.82	6.22	29.18	70.00	-40.82

Temperature: 22 °C

Humidity: 64 %RH

Frequency Range: 9 kHz – 30 MHz

Measured Distance: 3 m

Receiver Detector: AV.

Tested Mode: TX3_ANT1

Tested By: Richard Lin

Tested Date: Mar. 08, 2019

Frequency (KHz)	Cable Loss (dB)	Ant. Fac. (dB/m)	Reading (dBμV)	Emission (dBμV/m)	Limit Line (dBμV/m)	Margin (dB)
2.83	0.40	19.33	8.03	27.75	70.00	-42.25
9.56	0.75	20.36	6.87	27.99	70.00	-42.01
14.39	0.95	21.01	6.61	28.57	70.00	-41.43
16.56	1.03	21.31	7.63	29.97	70.00	-40.03
19.91	1.13	21.78	4.77	27.68	70.00	-42.32
20.83	1.15	21.83	5.70	28.69	70.00	-41.31

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A19021501
Report No.: FCCA19021501
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Temperature:	22 °C	Humidity:	64 %RH
Frequency Range:	9 kHz – 30 MHz	Measured Distance:	3 m
Receiver Detector:	AV.	Tested Mode:	Standby
Tested By:	Richard Lin	Tested Date:	Mar. 08, 2019

Frequency (KHz)	Cable Loss (dB)	Ant. Fac. (dB/m)	Reading (dBμV)	Emission (dBμV/m)	Limit Line (dBμV/m)	Margin (dB)
18.07	1.07	21.52	6.32	28.91	70.00	-41.09
19.84	1.13	21.77	6.67	29.56	70.00	-40.44
20.75	1.15	21.83	5.67	28.65	70.00	-41.35
24.02	1.25	21.96	5.73	28.94	70.00	-41.06
25.28	1.29	22.01	5.22	28.52	70.00	-41.48
28.36	1.43	22.13	4.90	28.47	70.00	-41.53

Temperature:	22 °C	Humidity:	64 %RH
Frequency Range:	9 kHz – 30 MHz	Measured Distance:	3 m
Receiver Detector:	AV.	Tested Mode:	Link
Tested By:	Richard Lin	Tested Date:	Mar. 08, 2019

Frequency (KHz)	Cable Loss (dB)	Ant. Fac. (dB/m)	Reading (dBμV)	Emission (dBμV/m)	Limit Line (dBμV/m)	Margin (dB)
9.50	0.75	20.36	7.53	28.64	70.00	-41.36
14.07	0.94	20.97	10.57	32.48	70.00	-37.52
16.43	1.02	21.30	6.28	28.60	70.00	-41.40
20.46	1.14	21.82	5.67	28.63	70.00	-41.37
23.69	1.24	21.95	5.01	28.20	70.00	-41.80
25.22	1.29	22.01	6.01	29.31	70.00	-40.69

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A19021501
Report No.: FCCA19021501
FCC ID : JIC-HSCFX
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Date: Mar. 25, 2019

Temperature:	19 °C	Humidity:	72 %RH
Frequency Range:	30 M – 1 GHz	Tested Mode:	TX1_ANT0
Detector Type:	Quasi-peak	IF Bandwidth:	120 kHz
Tested By:	Richard	Tested Date:	Feb. 21, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
260.31	3.45	13.00	27.42	37.76	26.79	46	-19.21	162	3.27
335.95	4.11	15.47	27.54	36.12	28.16	46	-17.84	275	3.04
449.27	4.94	17.42	28.22	34.34	28.48	46	-17.52	39	2.78
514.53	5.38	18.67	28.49	36.06	31.62	46	-14.38	184	2.52
747.88	6.81	22.06	28.28	29.95	30.53	46	-15.47	119	1.70
856.65	7.50	23.50	27.90	28.74	31.83	46	-14.17	64	1.43

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
123.08	2.34	13.84	27.97	32.92	21.13	44	-22.37	255	1.26
341.76	4.16	15.45	27.58	31.29	23.32	46	-22.68	307	1.98
398.99	4.60	16.19	27.96	31.11	23.95	46	-22.05	219	2.11
499.41	5.27	19.03	28.47	29.36	25.18	46	-20.82	55	2.45
514.38	5.38	18.67	28.49	32.20	27.76	46	-18.24	182	2.56
925.49	7.94	24.05	27.61	29.25	33.64	46	-12.36	92	3.57

NOTE :

1. Measurement uncertainty is 4.20 dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss – Pre-Amplifier.
4. The field strength of other emission frequencies were very low against the limit.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A19021501
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FCC ID : JIC-HSCFX
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Date: Mar. 25, 2019

Temperature:	19 °C	Humidity:	72 %RH
Frequency Range:	30 M – 1 GHz	Tested Mode:	TX1_ANT1
Detector Type:	Quasi-peak	IF Bandwidth:	120 kHz
Tested By:	Richard	Tested Date:	Feb. 21, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
182.71	2.78	16.54	27.67	34.88	26.53	44	-16.97	153	3.55
264.08	3.48	13.20	27.41	38.28	27.55	46	-18.45	265	3.29
322.34	3.99	15.44	27.46	34.36	26.34	46	-19.66	188	3.13
330.68	4.06	15.46	27.51	34.39	26.41	46	-19.59	261	2.84
498.94	5.27	18.95	28.47	32.63	28.38	46	-17.62	134	2.51
513.18	5.37	18.66	28.49	35.86	31.40	46	-14.60	57	1.99

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
124.20	2.35	13.92	27.96	34.03	22.34	44	-21.16	98	1.28
394.65	4.57	16.36	27.93	32.08	25.09	46	-20.91	170	2.04
488.32	5.20	18.33	28.42	33.69	28.80	46	-17.20	319	2.43
514.07	5.38	18.67	28.49	33.41	28.97	46	-17.03	65	2.58
728.99	6.70	21.91	28.33	32.55	32.82	46	-13.18	302	3.18
745.45	6.80	22.03	28.29	30.68	31.22	46	-14.78	45	3.25

NOTE :

1. Measurement uncertainty is 4.20 dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss – Pre-Amplifier.
4. The field strength of other emission frequencies were very low against the limit.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

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Temperature:	19 °C	Humidity:	72 %RH
Frequency Range:	30 M – 1 GHz	Tested Mode:	TX2_ANT0
Detector Type:	Quasi-peak	IF Bandwidth:	120 kHz
Tested By:	Richard	Tested Date:	Feb. 21, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
197.08	2.89	13.81	27.60	34.24	23.34	44	-20.16	225	3.48
264.31	3.48	13.20	27.41	38.12	27.39	46	-18.61	293	3.26
322.95	3.99	15.44	27.46	33.83	25.81	46	-20.19	86	3.07
335.24	4.11	15.47	27.54	35.33	27.37	46	-18.63	167	2.77
745.70	6.80	22.03	28.29	33.63	34.17	46	-11.83	110	1.78
844.66	7.41	23.33	27.96	28.64	31.43	46	-14.57	124	1.49

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
124.48	2.35	13.92	27.96	33.45	21.76	44	-21.74	52	1.26
335.03	4.11	15.47	27.54	30.98	23.02	46	-22.98	169	1.83
349.97	4.23	15.23	27.63	31.47	23.30	46	-22.70	334	1.96
386.14	4.51	16.44	27.88	32.25	25.32	46	-20.68	305	2.15
394.29	4.57	16.36	27.93	33.23	26.24	46	-19.76	192	2.27
521.55	5.43	18.75	28.49	31.87	27.56	46	-18.44	53	2.44

NOTE :

1. Measurement uncertainty is 4.20 dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss – Pre-Amplifier.
4. The field strength of other emission frequencies were very low against the limit.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A19021501
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Temperature:	19 °C	Humidity:	72 %RH
Frequency Range:	30 M – 1 GHz	Tested Mode:	TX2_ANT1
Detector Type:	Quasi-peak	IF Bandwidth:	120 kHz
Tested By:	Richard	Tested Date:	Feb. 21, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
244.21	3.32	12.40	27.46	37.16	25.42	46	-20.58	132	3.37
264.85	3.48	13.20	27.41	37.11	26.38	46	-19.62	268	3.21
322.02	3.99	15.44	27.46	34.01	25.99	46	-20.01	57	3.06
335.97	4.11	15.47	27.54	36.32	28.36	46	-17.64	270	2.97
520.16	5.43	18.74	28.49	32.95	28.62	46	-17.38	183	2.28
745.39	6.80	22.03	28.29	29.66	30.20	46	-15.80	229	1.78

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
126.52	2.36	14.08	27.95	32.46	20.95	44	-22.55	65	1.32
335.08	4.11	15.47	27.54	31.68	23.72	46	-22.28	187	1.94
394.11	4.57	16.36	27.93	30.86	23.87	46	-22.13	70	2.11
499.96	5.27	19.03	28.47	29.59	25.41	46	-20.59	176	2.46
514.24	5.38	18.67	28.49	32.63	28.19	46	-17.81	311	2.53
728.75	6.70	21.91	28.33	29.38	29.65	46	-16.35	304	3.18

NOTE :

1. Measurement uncertainty is 4.20 dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss – Pre-Amplifier.
4. The field strength of other emission frequencies were very low against the limit.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A19021501
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Temperature:	19 °C	Humidity:	72 %RH
Frequency Range:	30 M – 1 GHz	Tested Mode:	TX3_ANT0
Detector Type:	Quasi-peak	IF Bandwidth:	120 kHz
Tested By:	Richard	Tested Date:	Feb. 21, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
190.18	2.83	17.10	27.63	30.63	22.93	44	-20.57	250	3.51
244.29	3.32	12.40	27.46	38.41	26.67	46	-19.33	163	3.33
264.51	3.48	13.20	27.41	37.82	27.09	46	-18.91	334	3.18
334.83	4.10	15.47	27.53	34.39	26.42	46	-19.58	261	3.02
514.96	5.38	18.67	28.49	34.39	29.95	46	-16.05	56	2.51
526.12	5.47	18.81	28.50	32.44	28.22	46	-17.78	187	2.27

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
124.45	2.35	13.92	27.96	34.64	22.95	44	-20.55	42	1.28
386.84	4.51	16.44	27.88	31.09	24.16	46	-21.84	170	1.99
394.13	4.57	16.36	27.93	32.01	25.02	46	-20.98	310	2.15
514.96	5.38	18.67	28.49	32.10	27.66	46	-18.34	189	2.53
728.57	6.70	21.91	28.33	29.79	30.06	46	-15.94	39	3.14
978.95	8.25	24.97	27.36	27.79	33.65	54	-20.35	143	3.66

NOTE :

1. Measurement uncertainty is 4.20 dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss – Pre-Amplifier.
4. The field strength of other emission frequencies were very low against the limit.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A19021501
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Temperature:	19 °C	Humidity:	72 %RH
Frequency Range:	30 M – 1 GHz	Tested Mode:	TX3_ANT1
Detector Type:	Quasi-peak	IF Bandwidth:	120 kHz
Tested By:	Richard	Tested Date:	Feb. 21, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
249.65	3.37	12.65	27.45	37.21	25.78	46	-20.22	128	3.34
260.34	3.45	13.00	27.42	38.50	27.53	46	-18.47	265	3.27
326.02	4.03	15.45	27.48	34.65	26.65	46	-19.35	107	3.01
335.87	4.11	15.47	27.54	36.45	28.49	46	-17.51	330	2.94
728.59	6.70	21.91	28.33	31.49	31.76	46	-14.24	206	1.85
928.14	7.96	24.08	27.59	28.86	33.31	46	-12.69	136	1.24

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
81.62	1.92	6.49	28.15	43.45	23.72	40	-16.28	67	1.17
335.98	4.11	15.47	27.54	31.00	23.04	46	-22.96	169	1.96
386.17	4.51	16.44	27.88	29.85	22.92	46	-23.08	58	2.11
456.05	4.99	17.72	28.26	29.04	23.50	46	-22.50	172	2.33
499.34	5.27	19.03	28.47	28.94	24.76	46	-21.24	318	2.46
517.10	5.40	18.70	28.49	33.55	29.17	46	-16.83	183	2.53

NOTE :

1. Measurement uncertainty is 4.20 dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss – Pre-Amplifier.
4. The field strength of other emission frequencies were very low against the limit.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

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Temperature:	19 °C	Humidity:	72 %RH
Frequency Range:	30 M – 1 GHz	Tested Mode:	Standby
Detector Type:	Quasi-peak	IF Bandwidth:	120 kHz
Tested By:	Richard	Tested Date:	Feb. 21, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
142.78	2.47	14.68	27.87	30.35	19.63	44	-23.87	165	3.63
190.26	2.83	17.10	27.63	29.81	22.11	44	-21.39	344	3.50
198.11	2.89	13.34	27.59	32.52	21.16	44	-22.34	257	3.38
244.87	3.32	12.40	27.46	39.73	27.99	46	-18.01	84	3.21
253.90	3.40	12.79	27.44	42.12	30.87	46	-15.13	193	3.01
335.48	4.11	15.47	27.54	36.78	28.82	46	-17.18	50	2.77

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
49.35	1.72	12.94	28.26	41.13	27.53	40	-12.47	18	1.08
63.02	1.77	8.34	28.21	41.54	23.44	40	-16.56	59	1.15
338.88	4.13	15.48	27.56	32.80	24.85	46	-21.15	224	1.89
383.67	4.49	16.36	27.86	30.47	23.46	46	-22.54	160	2.07
519.18	5.42	18.73	28.49	36.41	32.06	46	-13.94	308	2.52
771.51	6.94	22.17	28.22	28.69	29.58	46	-16.42	76	3.27

NOTE :

1. Measurement uncertainty is 4.20 dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss – Pre-Amplifier.
4. The field strength of other emission frequencies were very low against the limit.

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TEST REPORT

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Temperature:	19 °C	Humidity:	72 %RH
Frequency Range:	30 M – 1 GHz	Tested Mode:	Link
Detector Type:	Quasi-peak	IF Bandwidth:	120 kHz
Tested By:	Richard	Tested Date:	Feb. 21, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
66.28	1.79	7.68	28.20	51.52	32.79	40	-7.21	240	3.62
76.06	1.88	6.50	28.17	50.06	30.27	40	-9.73	159	3.48
190.11	2.83	17.10	27.63	35.95	28.25	44	-15.25	67	3.30
322.89	3.99	15.44	27.46	44.01	35.99	46	-10.01	199	3.07
334.37	4.10	15.47	27.53	39.19	31.22	46	-14.78	274	2.81
514.02	5.38	18.67	28.49	34.88	30.44	46	-15.56	125	2.52

Antenna Polarization : Vertical

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Pre-Amp (dB)	Reading Data (dBμV)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	AZ(°)	EL(m)
322.19	3.99	15.44	27.46	36.16	28.14	46	-17.86	316	1.78
347.25	4.21	15.28	27.62	33.01	24.89	46	-21.11	348	1.96
383.64	4.49	16.36	27.86	32.71	25.70	46	-20.30	107	2.07
394.80	4.57	16.36	27.93	33.17	26.18	46	-19.82	235	2.14
467.57	5.06	18.04	28.31	31.37	26.16	46	-19.84	68	2.33
764.38	6.90	22.11	28.24	28.75	29.53	46	-16.47	300	3.24

NOTE :

1. Measurement uncertainty is 4.20 dB.
2. "*": Measurement does not apply for this frequency.
3. Emission Level = Reading Value + Ant. Factor + Cable Loss – Pre-Amplifier.
4. The field strength of other emission frequencies were very low against the limit.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

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Temperature:	21 °C	Humidity:	66 %RH
Frequency Range:	1 GHz – 25 GHz	Tested Mode:	TX1_ANT0
Detector Type:	PK. and AV.	IF Bandwidth:	1 MHz
Tested By:	Richard Lin	Tested Date:	Feb. 22, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1788.50	-32.18	26.50	45.95	35.42	40.28	29.75	74	54	-33.72	-24.25	226	2.29
3872.87	-30.07	32.34	42.84	33.39	45.11	35.66	74	54	-28.89	-18.34	105	1.74
4056.22	-29.90	32.19	43.30	33.88	45.59	36.17	74	54	-28.41	-17.83	173	1.62
4451.69	-29.50	32.10	42.73	32.97	45.33	35.57	74	54	-28.67	-18.43	97	1.48
4997.18	-28.75	33.49	40.23	34.79	44.97	39.53	74	54	-29.03	-14.47	15	1.31
5568.34	-28.71	34.06	42.32	34.89	47.67	40.24	74	54	-26.33	-13.76	341	1.14

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2744.19	-31.27	28.90	44.13	33.68	41.76	31.31	74	54	-32.24	-22.69	119	1.52
2928.54	-31.14	29.77	43.89	33.34	42.52	31.97	74	54	-31.48	-22.03	54	1.66
3752.27	-30.18	32.10	42.91	33.40	44.84	35.33	74	54	-29.16	-18.67	207	1.84
4669.01	-29.21	32.54	42.29	33.75	45.61	37.07	74	54	-28.39	-16.93	193	2.09
4997.83	-28.75	33.49	40.63	33.93	45.37	38.67	74	54	-28.63	-15.33	54	2.23
5481.92	-28.73	34.06	41.80	34.57	47.13	39.90	74	54	-26.87	-14.10	280	2.37

NOTE:

1. Measurement uncertainty is 4.04 dB.
2. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
3. The field strength of other emission frequencies were very low against the limit.
4. (F): The field strength of fundamental frequency.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORTReference No.: A19021501
Report No.: FCCA19021501
FCC ID : JIC-HSCFX
Page: 48 of 87
Date: Mar. 25, 2019

Temperature:	21 °C	Humidity:	66 %RH
Frequency Range:	1 GHz – 25 GHz	Tested Mode:	TX1_ANT0 (Fundamental and Harmonics)
Detector:	PK. and AV.	IF Bandwidth:	1 MHz
Tested By:	Richard Lin	Tested Date:	Feb. 22, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2401.35 (F)	-31.53	28.10	89.31	76.18	85.88	72.75	--	--	--	--	218	1.51
4802.70	-29.03	32.81	40.25	29.71	44.03	33.49	74	54	-29.97	-20.51	98	1.51
7204.05	-27.98	36.21	41.77	31.20	50.00	39.43	74	54	-24.00	-14.57	166	1.61
9605.40	-27.57	37.49	42.83	32.30	52.75	42.22	74	54	-21.25	-11.78	359	1.55
12006.75	-25.99	38.99	40.79	30.21	53.79	43.21	74	54	-20.21	-10.79	79	1.66
14408.10	-23.72	42.30	31.91	21.40	50.49	39.98	74	54	-23.51	-14.02	63	1.58

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2401.35 (F)	-31.53	28.10	91.02	78.35	87.59	74.92	--	--	--	--	127	1.60
4802.70	-29.03	32.81	40.15	29.60	43.93	33.38	74	54	-30.07	-20.62	260	1.62
7204.05	-27.98	36.21	41.65	31.13	49.88	39.36	74	54	-24.12	-14.64	12	1.48
9605.40	-27.57	37.49	42.98	32.43	52.90	42.35	74	54	-21.10	-11.65	97	1.58
12006.75	-25.99	38.99	40.34	29.81	53.34	42.81	74	54	-20.66	-11.19	274	1.64
14408.10	-23.72	42.30	31.95	21.43	50.53	40.01	74	54	-23.47	-13.99	321	1.46

NOTE:

1. Measurement uncertainty is 4.04 dB.
2. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
3. The field strength of other emission frequencies were very low against the limit.
4. (F): The field strength of fundamental frequency.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A19021501
Report No.: FCCA19021501
FCC ID : JIC-HSCFX
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Date: Mar. 25, 2019

Temperature:	21 °C	Humidity:	66 %RH
Frequency Range:	1 GHz – 25 GHz	Tested Mode:	TX1_ANT1
Detector Type:	PK. and AV.	IF Bandwidth:	1 MHz
Tested By:	Richard Lin	Tested Date:	Feb. 22, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
3007.24	-31.08	30.33	44.58	34.02	43.83	33.27	74	54	-30.17	-20.73	219	2.03
3396.19	-30.54	31.11	44.29	33.78	44.85	34.34	74	54	-29.15	-19.66	110	1.79
3899.53	-30.05	32.40	42.64	33.19	44.99	35.54	74	54	-29.01	-18.46	105	1.65
4616.86	-29.29	32.43	43.02	33.55	46.16	36.69	74	54	-27.84	-17.31	47	1.42
4998.96	-28.75	33.50	39.88	33.68	44.62	38.42	74	54	-29.38	-15.58	80	1.23
5571.73	-28.71	34.06	42.43	34.90	47.78	40.25	74	54	-26.22	-13.75	334	1.14

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1956.02	-31.92	27.46	45.78	35.24	41.32	30.78	74	54	-32.68	-23.22	139	1.28
3072.45	-30.99	30.54	43.34	32.86	42.89	32.41	74	54	-31.11	-21.59	63	1.63
4114.36	-29.84	32.07	43.28	33.79	45.51	36.02	74	54	-28.49	-17.98	203	1.95
4999.88	-28.75	33.50	39.58	33.82	44.33	38.57	74	54	-29.67	-15.43	191	2.17
5078.90	-28.75	33.60	42.28	33.71	47.13	38.56	74	54	-26.87	-15.44	294	2.28
5451.17	-28.73	34.00	42.23	34.70	47.50	39.97	74	54	-26.50	-14.03	288	2.36

NOTE:

1. Measurement uncertainty is 4.04 dB.
2. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
3. The field strength of other emission frequencies were very low against the limit.
4. (F): The field strength of fundamental frequency.



Spectrum Research & Testing Lab., Inc.

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TEST REPORT

Reference No.: A19021501
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Date: Mar. 25, 2019

Temperature:	21 °C	Humidity:	66 %RH
Frequency Range:	1 GHz – 25 GHz	Tested Mode:	TX1_ANT1 (Fundamental and Harmonics)
Detector:	PK. and AV.	IF Bandwidth:	1 MHz
Tested By:	Richard Lin	Tested Date:	Feb. 22, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2401.35 (F)	-31.53	28.10	91.18	78.34	87.75	74.91	--	--	--	--	274	1.63
4802.70	-29.03	32.81	40.71	30.22	44.49	34.00	74	54	-29.51	-20.00	16	1.61
7204.05	-27.98	36.21	41.98	31.44	50.21	39.67	74	54	-23.79	-14.33	128	1.63
9605.40	-27.57	37.49	43.03	32.58	52.95	42.50	74	54	-21.05	-11.50	311	1.66
12006.75	-25.99	38.99	41.06	30.58	54.06	43.58	74	54	-19.94	-10.42	230	1.51
14408.10	-23.72	42.30	32.14	21.67	50.72	40.25	74	54	-23.28	-13.75	256	1.67

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2401.35 (F)	-31.53	28.10	91.45	78.76	88.02	75.33	--	--	--	--	104	1.52
4802.70	-29.03	32.81	39.84	29.31	43.62	33.09	74	54	-30.38	-20.91	220	1.47
7204.05	-27.98	36.21	41.55	31.08	49.78	39.31	74	54	-24.22	-14.69	278	1.48
9605.40	-27.57	37.49	42.76	32.24	52.68	42.16	74	54	-21.32	-11.84	147	1.67
12006.75	-25.99	38.99	40.52	30.03	53.52	43.03	74	54	-20.48	-10.97	237	1.53
14408.10	-23.72	42.30	31.79	21.22	50.37	39.80	74	54	-23.63	-14.20	275	1.56

NOTE:

1. Measurement uncertainty is 4.04 dB.
2. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
3. The field strength of other emission frequencies were very low against the limit.
4. (F): The field strength of fundamental frequency.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORTReference No.: A19021501
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Date: Mar. 25, 2019

Temperature:	21 °C	Humidity:	66 %RH
Frequency Range:	1 GHz – 25 GHz	Tested Mode:	TX2_ANT0
Detector Type:	PK. and AV.	IF Bandwidth:	1 MHz
Tested By:	Richard Lin	Tested Date:	Feb. 22, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1954.09	-31.92	27.44	45.50	34.97	41.02	30.49	74	54	-32.98	-23.51	325	2.23
2643.15	-31.35	28.88	44.42	33.91	41.96	31.45	74	54	-32.04	-22.55	219	2.01
3561.37	-30.35	31.17	43.22	32.78	44.04	33.60	74	54	-29.96	-20.40	104	1.75
4064.82	-29.89	32.17	43.80	33.36	46.08	35.64	74	54	-27.92	-18.36	319	1.56
4998.67	-28.75	33.50	40.27	33.74	45.01	38.48	74	54	-28.99	-15.52	51	1.32
5549.44	-28.72	34.10	42.28	34.72	47.66	40.10	74	54	-26.34	-13.90	37	1.15

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1806.81	-32.15	26.66	45.37	34.88	39.88	29.39	74	54	-34.12	-24.61	139	1.22
3262.39	-30.73	31.02	43.63	33.15	43.93	33.45	74	54	-30.07	-20.55	91	1.69
3793.10	-30.14	32.19	42.58	33.07	44.62	35.11	74	54	-29.38	-18.89	204	1.85
4268.22	-29.69	32.00	43.13	33.66	45.44	35.97	74	54	-28.56	-18.03	227	1.97
4998.98	-28.75	33.50	40.27	34.75	45.01	39.49	74	54	-28.99	-14.51	84	2.20
5547.45	-28.72	34.10	42.09	34.55	47.47	39.93	74	54	-26.53	-14.07	286	2.38

NOTE:

1. Measurement uncertainty is 4.04 dB.
2. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
3. The field strength of other emission frequencies were very low against the limit.
4. (F): The field strength of fundamental frequency.



Spectrum Research & Testing Lab., Inc.

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A19021501
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FCC ID : JIC-HSCFX
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Date: Mar. 25, 2019

Temperature:	21 °C	Humidity:	66 %RH
Frequency Range:	1 GHz – 25 GHz	Tested Mode:	TX2_ANT0 (Fundamental and Harmonics)
Detector:	PK. and AV.	IF Bandwidth:	1 MHz
Tested By:	Richard Lin	Tested Date:	Feb. 22, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2439.35 (F)	-31.50	28.18	86.34	74.19	83.02	70.87	--	--	--	--	352	1.55
4878.70	-28.92	33.11	40.28	29.73	44.47	33.92	74	54	-29.53	-20.08	136	1.62
7318.05	-27.91	36.50	41.55	31.07	50.14	39.66	74	54	-23.86	-14.34	201	1.51
9757.40	-27.52	37.70	41.27	30.74	51.45	40.92	74	54	-22.55	-13.08	39	1.45
12196.75	-25.60	38.80	40.92	30.41	54.12	43.61	74	54	-19.88	-10.39	295	1.50
14636.10	-23.71	42.13	31.41	20.93	49.82	39.34	74	54	-24.18	-14.66	64	1.51

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2439.35 (F)	-31.50	28.18	90.88	78.56	87.56	75.24	--	--	--	--	267	1.54
4878.70	-28.92	33.11	40.85	30.34	45.04	34.53	74	54	-28.96	-19.47	12	1.55
7318.05	-27.91	36.50	41.53	31.06	50.12	39.65	74	54	-23.88	-14.35	89	1.65
9757.40	-27.52	37.70	41.68	31.04	51.86	41.22	74	54	-22.14	-12.78	236	1.45
12196.75	-25.60	38.80	41.22	30.78	54.42	43.98	74	54	-19.58	-10.02	236	1.53
14636.10	-23.71	42.13	31.18	20.61	49.59	39.02	74	54	-24.41	-14.98	210	1.50

NOTE:

1. Measurement uncertainty is 4.04 dB.
2. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
3. The field strength of other emission frequencies were very low against the limit.
4. (F): The field strength of fundamental frequency.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORTReference No.: A19021501
Report No.: FCCA19021501
FCC ID : JIC-HSCFX
Page: 53 of 87
Date: Mar. 25, 2019

Temperature: 21 °C

Humidity: 66 %RH

Frequency Range: 1 GHz – 25 GHz

Tested Mode: TX2_ANT1

Detector Type: PK. and AV.

IF Bandwidth: 1 MHz

Tested By: Richard Lin

Tested Date: Feb. 22, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2318.57	-31.60	28.00	44.81	34.34	41.21	30.74	74	54	-32.79	-23.26	191	2.15
2864.98	-31.19	29.38	43.66	33.15	41.86	31.35	74	54	-32.14	-22.65	218	1.93
3736.12	-30.19	32.02	42.73	32.79	44.55	34.61	74	54	-29.45	-19.39	103	1.67
4051.49	-29.91	32.20	43.19	32.96	45.48	35.25	74	54	-28.52	-18.75	257	1.55
4999.32	-28.75	33.50	40.39	33.88	45.14	38.63	74	54	-28.86	-15.37	118	1.32
5503.55	-28.73	34.10	42.22	34.75	47.59	40.12	74	54	-26.41	-13.88	334	1.16

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2273.17	-31.63	27.95	44.92	34.43	41.23	30.74	74	54	-32.77	-23.26	132	1.37
3379.04	-30.57	31.14	43.44	32.97	44.02	33.55	74	54	-29.98	-20.45	210	1.72
3631.25	-30.28	31.59	43.79	33.25	45.09	34.55	74	54	-28.91	-19.45	108	1.89
4706.68	-29.16	32.61	42.08	33.54	45.53	36.99	74	54	-28.47	-17.01	57	2.10
4998.90	-28.75	33.50	41.15	33.93	45.89	38.67	74	54	-28.11	-15.33	196	2.25
5466.29	-28.73	34.03	41.74	34.28	47.04	39.58	74	54	-26.96	-14.42	288	2.37

NOTE:

1. Measurement uncertainty is 4.04 dB.
2. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
3. The field strength of other emission frequencies were very low against the limit.
4. (F): The field strength of fundamental frequency.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORTReference No.: A19021501
Report No.: FCCA19021501
FCC ID : JIC-HSCFX
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Date: Mar. 25, 2019

Temperature:	21 °C	Humidity:	66 %RH
Frequency Range:	1 GHz – 25 GHz	Tested Mode:	TX2_ANT1 (Fundamental and Harmonics)
Detector:	PK. and AV.	IF Bandwidth:	1 MHz
Tested By:	Richard Lin	Tested Date:	Feb. 22, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2439.35 (F)	-31.50	28.18	89.76	76.51	86.44	73.19	--	--	--	--	243	1.53
4878.70	-28.92	33.11	39.48	28.93	43.67	33.12	74	54	-30.33	-20.88	40	1.59
7318.05	-27.91	36.50	41.67	31.15	50.26	39.74	74	54	-23.74	-14.26	308	1.63
9757.40	-27.52	37.70	41.33	30.83	51.51	41.01	74	54	-22.49	-12.99	82	1.63
12196.75	-25.60	38.80	40.99	30.46	54.19	43.66	74	54	-19.81	-10.34	337	1.50
14636.10	-23.71	42.13	31.12	20.67	49.53	39.08	74	54	-24.47	-14.92	308	1.62

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2439.35 (F)	-31.50	28.18	92.31	80.07	88.99	76.75	--	--	--	--	309	1.62
4878.70	-28.92	33.11	40.30	29.88	44.49	34.07	74	54	-29.51	-19.93	271	1.64
7318.05	-27.91	36.50	41.54	31.05	50.13	39.64	74	54	-23.87	-14.36	38	1.45
9757.40	-27.52	37.70	41.38	30.85	51.56	41.03	74	54	-22.44	-12.97	81	1.64
12196.75	-25.60	38.80	41.27	30.79	54.47	43.99	74	54	-19.53	-10.01	11	1.55
14636.10	-23.71	42.13	30.97	20.43	49.38	38.84	74	54	-24.62	-15.16	60	1.67

NOTE:

1. Measurement uncertainty is 4.04 dB.
2. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
3. The field strength of other emission frequencies were very low against the limit.
4. (F): The field strength of fundamental frequency.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A19021501
Report No.: FCCA19021501
FCC ID : JIC-HSCFX
Page: 55 of 87
Date: Mar. 25, 2019

Temperature:	21 °C	Humidity:	66 %RH
Frequency Range:	1 GHz – 25 GHz	Tested Mode:	TX3_ANT0
Detector Type:	PK. and AV.	IF Bandwidth:	1 MHz
Tested By:	Richard Lin	Tested Date:	Feb. 22, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2158.73	-31.72	27.68	44.86	34.32	40.82	30.28	74	54	-33.18	-23.72	263	2.17
3119.98	-30.93	30.64	43.33	32.81	43.04	32.52	74	54	-30.96	-21.48	211	1.83
3562.12	-30.35	31.17	43.24	32.79	44.07	33.62	74	54	-29.93	-20.38	352	1.72
4239.68	-29.72	32.00	43.03	32.51	45.31	34.79	74	54	-28.69	-19.21	71	1.55
4999.35	-28.75	33.50	39.90	33.94	44.65	38.69	74	54	-29.35	-15.31	90	1.23
5461.40	-28.73	34.02	42.07	34.56	47.36	39.85	74	54	-26.64	-14.15	132	1.17

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2258.26	-31.64	27.92	44.89	34.30	41.16	30.57	74	54	-32.84	-23.43	328	1.39
3181.08	-30.84	30.76	43.37	32.84	43.29	32.76	74	54	-30.71	-21.24	270	1.66
3294.53	-30.68	31.09	43.25	32.76	43.65	33.16	74	54	-30.35	-20.84	112	1.78
4997.97	-28.75	33.49	40.15	33.69	44.89	38.43	74	54	-29.11	-15.57	193	2.06
5137.58	-28.74	33.60	42.06	34.27	46.92	39.13	74	54	-27.08	-14.87	289	2.25
5749.62	-28.66	33.90	42.21	34.70	47.45	39.94	74	54	-26.55	-14.06	45	2.48

NOTE:

1. Measurement uncertainty is 4.04 dB.
2. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
3. The field strength of other emission frequencies were very low against the limit.
4. (F): The field strength of fundamental frequency.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORTReference No.: A19021501
Report No.: FCCA19021501
FCC ID : JIC-HSCFX
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Date: Mar. 25, 2019

Temperature:	21 °C	Humidity:	66 %RH
Frequency Range:	1 GHz – 25 GHz	Tested Mode:	TX3_ANT0 (Fundamental and Harmonics)
Detector:	PK. and AV.	IF Bandwidth:	1 MHz
Tested By:	Richard Lin	Tested Date:	Feb. 22, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2479.35 (F)	-31.47	28.32	86.56	74.53	83.41	71.38	--	--	--	--	143	1.47
4958.70	-28.81	33.42	40.04	29.51	44.65	34.12	74	54	-29.35	-19.88	49	1.61
7438.05	-27.83	36.50	42.33	31.85	51.00	40.52	74	54	-23.00	-13.48	97	1.43
9917.40	-27.46	37.83	42.46	31.94	52.83	42.31	74	54	-21.17	-11.69	175	1.61
12396.75	-25.19	38.90	40.54	30.02	54.25	43.73	74	54	-19.75	-10.27	168	1.48
14876.10	-23.68	41.10	32.29	21.78	49.70	39.19	74	54	-24.30	-14.81	304	1.61

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2479.35 (F)	-31.47	28.32	88.72	77.29	85.57	74.14	--	--	--	--	102	1.51
4958.70	-28.81	33.42	39.63	29.14	44.24	33.75	74	54	-29.76	-20.25	178	1.65
7438.05	-27.83	36.50	42.37	31.84	51.04	40.51	74	54	-22.96	-13.49	25	1.63
9917.40	-27.46	37.83	42.49	31.93	52.86	42.30	74	54	-21.14	-11.70	225	1.58
12396.75	-25.19	38.90	40.41	29.96	54.12	43.67	74	54	-19.88	-10.33	191	1.61
14876.10	-23.68	41.10	32.18	21.64	49.59	39.05	74	54	-24.41	-14.95	142	1.45

NOTE:

1. Measurement uncertainty is 4.04 dB.
2. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
3. The field strength of other emission frequencies were very low against the limit.
4. (F): The field strength of fundamental frequency.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORTReference No.: A19021501
Report No.: FCCA19021501
FCC ID : JIC-HSCFX
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Date: Mar. 25, 2019

Temperature: 21 °C

Humidity: 66 %RH

Frequency Range: 1 GHz – 25 GHz

Tested Mode: TX3_ANT1

Detector Type: PK. and AV.

IF Bandwidth: 1 MHz

Tested By: Richard Lin

Tested Date: Feb. 22, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2151.40	-31.73	27.70	44.67	34.18	40.64	30.15	74	54	-33.36	-23.85	183	2.17
3343.85	-30.62	31.19	42.99	32.44	43.56	33.01	74	54	-30.44	-20.99	102	1.84
3914.16	-30.04	32.40	42.46	32.96	44.82	35.32	74	54	-29.18	-18.68	57	1.65
4997.37	-28.75	33.49	40.33	33.87	45.07	38.61	74	54	-28.93	-15.39	194	1.32
5118.22	-28.75	33.60	42.18	34.69	47.03	39.54	74	54	-26.97	-14.46	28	1.22
5569.96	-28.71	34.06	41.64	34.62	46.99	39.97	74	54	-27.01	-14.03	44	1.15

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
1952.07	-31.92	27.42	45.12	34.66	40.62	30.16	74	54	-33.38	-23.84	337	1.28
3421.80	-30.51	31.02	43.37	32.80	43.88	33.31	74	54	-30.12	-20.69	153	1.75
3664.42	-30.26	31.73	43.13	32.65	44.60	34.12	74	54	-29.40	-19.88	204	1.83
4348.55	-29.61	32.00	43.26	32.79	45.65	35.18	74	54	-28.35	-18.82	80	2.02
4998.36	-28.75	33.50	40.31	33.84	45.05	38.58	74	54	-28.95	-15.42	193	2.22
5262.14	-28.74	33.92	42.24	34.70	47.42	39.88	74	54	-26.58	-14.12	294	2.35

NOTE:

1. Measurement uncertainty is 4.04 dB.
2. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
3. The field strength of other emission frequencies were very low against the limit.
4. (F): The field strength of fundamental frequency.



Spectrum Research & Testing Lab., Inc.

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

Reference No.: A19021501
Report No.: FCCA19021501
FCC ID : JIC-HSCFX
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Date: Mar. 25, 2019

Temperature:	21 °C	Humidity:	66 %RH
Frequency Range:	1 GHz – 25 GHz	Tested Mode:	TX3_ANT1 (Fundamental and Harmonics)
Detector:	PK. and AV.	IF Bandwidth:	1 MHz
Tested By:	Richard Lin	Tested Date:	Feb. 22, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2479.35 (F)	-31.47	28.32	89.27	77.61	86.12	74.46	--	--	--	--	23	1.57
4958.70	-28.81	33.42	39.80	39.26	44.41	43.87	74	54	-29.59	-10.13	155	1.63
7438.05	-27.83	36.50	42.44	31.97	51.11	40.64	74	54	-22.89	-13.36	76	1.46
9917.40	-27.46	37.83	42.68	32.10	53.05	42.47	74	54	-20.95	-11.53	115	1.44
12396.75	-25.19	38.90	40.25	29.78	53.96	43.49	74	54	-20.04	-10.51	14	1.48
14876.10	-23.68	41.10	32.37	21.81	49.78	39.22	74	54	-24.22	-14.78	51	1.62

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2479.35 (F)	-31.47	28.32	92.36	80.05	89.21	76.90	--	--	--	--	3	1.54
4958.70	-28.81	33.42	40.94	30.39	45.55	35.00	74	54	-28.45	-19.00	224	1.51
7438.05	-27.83	36.50	42.52	32.06	51.19	40.73	74	54	-22.81	-13.27	61	1.59
9917.40	-27.46	37.83	42.57	32.00	52.94	42.37	74	54	-21.06	-11.63	330	1.56
12396.75	-25.19	38.90	40.29	29.74	54.00	43.45	74	54	-20.00	-10.55	317	1.51
14876.10	-23.68	41.10	32.25	21.73	49.66	39.14	74	54	-24.34	-14.86	16	1.48

NOTE:

1. Measurement uncertainty is 4.04 dB.
2. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
3. The field strength of other emission frequencies were very low against the limit.
4. (F): The field strength of fundamental frequency.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORTReference No.: A19021501
Report No.: FCCA19021501
FCC ID : JIC-HSCFX
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Date: Mar. 25, 2019

Temperature: 21 °C

Humidity: 66 %RH

Frequency Range: 1 GHz – 25 GHz

Tested Mode: Standby

Detector Type: PK. and AV.

IF Bandwidth: 1 MHz

Tested By: Richard Lin

Tested Date: Feb. 22, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2971.13	-31.11	30.07	45.69	35.18	44.65	34.14	74	54	-29.35	-19.86	217	2.03
3796.89	-30.14	32.19	44.07	33.52	46.12	35.57	74	54	-27.88	-18.43	137	1.82
4293.64	-29.66	32.00	44.98	34.47	47.32	36.81	74	54	-26.68	-17.19	82	1.66
4675.08	-29.21	32.55	44.74	34.29	48.09	37.64	74	54	-25.91	-16.36	309	1.41
4997.35	-28.75	33.49	41.84	34.33	46.58	39.07	74	54	-27.42	-14.93	24	1.32
5508.24	-28.73	34.10	43.80	34.58	49.17	39.95	74	54	-24.83	-14.05	122	1.16

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2851.96	-31.20	29.31	46.34	35.89	44.45	34.00	74	54	-29.55	-20.00	318	1.57
3774.37	-30.16	32.15	43.71	33.26	45.70	35.25	74	54	-28.30	-18.75	202	1.89
4252.15	-29.70	32.00	45.00	34.51	47.30	36.81	74	54	-26.70	-17.19	92	1.96
4657.88	-29.23	32.51	44.33	33.88	47.61	37.16	74	54	-26.39	-16.84	197	2.11
4998.66	-28.75	33.50	42.79	34.23	47.53	38.97	74	54	-26.47	-15.03	335	2.23
5453.02	-28.73	34.01	44.04	34.51	49.31	39.78	74	54	-24.69	-14.22	70	2.39

NOTE:

1. Measurement uncertainty is 4.04 dB.
2. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
3. The field strength of other emission frequencies were very low against the limit.
4. (F): The field strength of fundamental frequency.

**Spectrum Research & Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORTReference No.: A19021501
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Date: Mar. 25, 2019

Temperature:	21 °C	Humidity:	66 %RH
Frequency Range:	1 GHz – 25 GHz	Tested Mode:	Link
Detector Type:	PK. and AV.	IF Bandwidth:	1 MHz
Tested By:	Richard Lin	Tested Date:	Feb. 22, 2019

Antenna Polarization : Horizontal

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2854.42	-31.20	29.32	45.70	35.23	43.83	33.36	74	54	-30.17	-20.64	98	2.03
2948.94	-31.13	29.89	45.13	34.67	43.89	33.43	74	54	-30.11	-20.57	215	1.93
4037.19	-29.92	32.23	44.06	33.50	46.36	35.80	74	54	-27.64	-18.20	103	1.58
4631.35	-29.27	32.46	43.42	32.98	46.62	36.18	74	54	-27.38	-17.82	99	1.43
4998.06	-28.75	33.50	41.96	34.49	46.70	39.23	74	54	-27.30	-14.77	257	1.32
5511.77	-28.73	34.10	42.48	34.96	47.85	40.33	74	54	-26.15	-13.67	38	1.16

Antenna Polarization : Vertical

Frequency (MHz)	Correct Factor (dB)	Ant. Factor (dB/m)	Reading Data (dBμV)		Emission Level (dBμV/m)		Limit (dBμV/m)		Margin (dB)		AZ (°)	EL (m)
			PK.	AV.	PK.	AV.	PK.	AV.	PK.	AV.		
2296.15	-31.61	27.99	45.23	34.72	41.61	31.10	74	54	-32.39	-22.90	74	1.38
2761.37	-31.26	28.92	45.00	34.55	42.66	32.21	74	54	-31.34	-21.79	118	1.58
3644.69	-30.27	31.66	43.48	32.95	44.87	34.34	74	54	-29.13	-19.66	327	1.77
4298.48	-29.66	32.00	43.57	33.01	45.91	35.35	74	54	-28.09	-18.65	203	1.98
4996.96	-28.76	33.49	41.46	33.91	46.20	38.65	74	54	-27.80	-15.35	196	2.18
5167.78	-28.74	33.67	42.89	34.35	47.81	39.27	74	54	-26.19	-14.73	51	2.32

NOTE:

1. Measurement uncertainty is 4.04 dB.
2. Emission Level = Reading Value + Ant. Factor + Correct Factor (incl.: Cable Loss and Pre-Amplifier Gain)
3. The field strength of other emission frequencies were very low against the limit.
4. (F): The field strength of fundamental frequency.



Spectrum Research & Testing Lab., Inc.

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

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4.3 BANDWIDTH TEST

4.3.1 LIMIT

FCC Part15, Subpart C Section 15.247 (a)(2). The minimum 6dB bandwidth shall be at least 500 kHz.

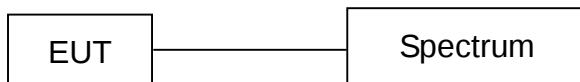
4.3.2 TEST EQUIPMENT

The following test equipment was used during the test :

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER (INCLUDE SPECTRUM ANALYZER)	9 KHz ~ 6 GHz	ROHDE & SCHWARZ	ESL /100176	MAY 20, 2019 ETC

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

4.3.3 TEST SET-UP



The EUT was connected to a spectrum through a 50Ω RF cable.

4.3.4 TEST PROCEDURE

The EUT was operated in continuous transmission mode or any specific channel.
Printed out the test result from the spectrum by hard copy function.

4.3.5 EUT OPERATING CONDITION

1. Set the EUT under continuous transmission condition.
2. The EUT was set to the highest available power level.



Spectrum Research & Testing Lab., Inc.

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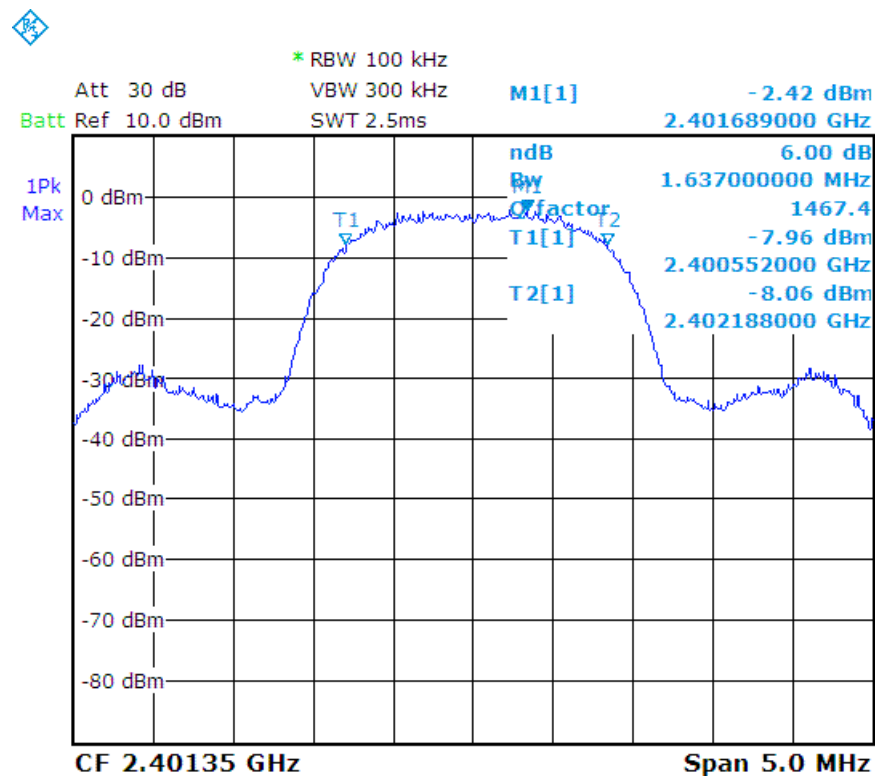
4.3.6 TEST RESULT

6dB Bandwidth :

Temperature:	23°C	Humidity:	68 %RH
Detector:	Peak	Test Mode:	TX
RBW:	100 kHz	VBW:	300 kHz
Tested By:	Richard Lin	Tested Date:	Feb. 26, 2019

Channel Number	Channel Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
CH01	2401.35	1.64	0.5
CH20	2439.35	1.63	0.5
CH40	2479.35	1.64	0.5

CH01 :





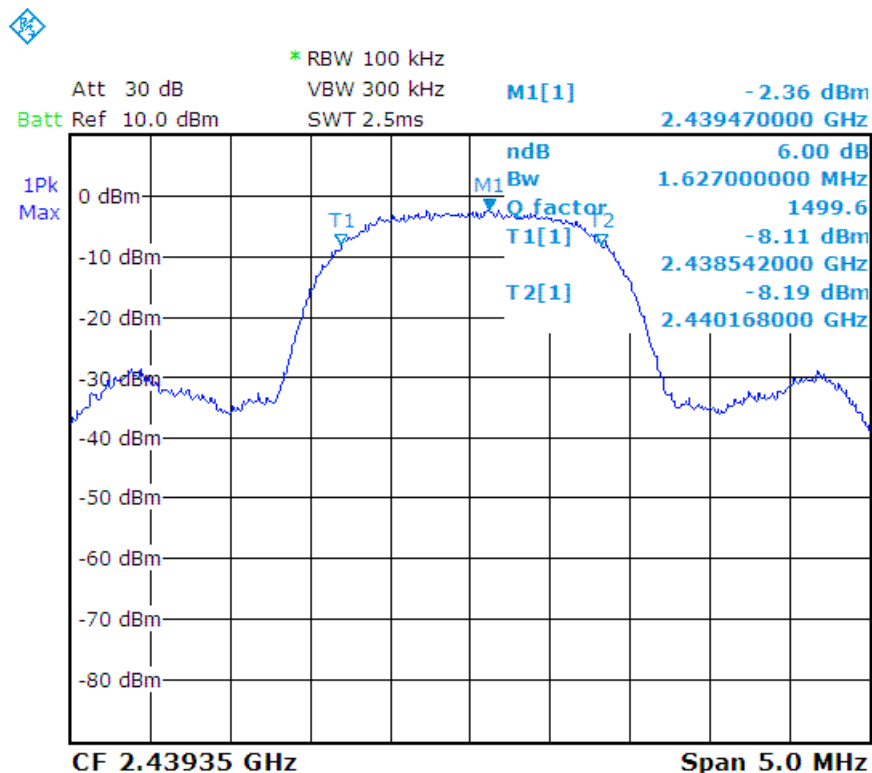
Spectrum Research & Testing Lab., Inc.

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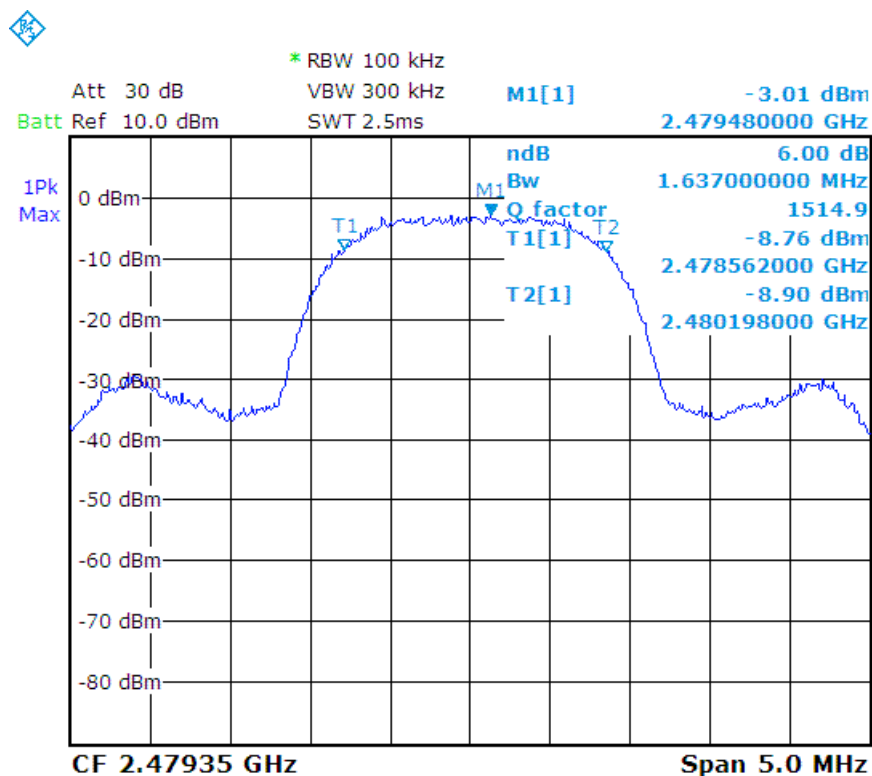
TEST REPORT

Reference No.: A19021501
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CH20 :



CH40 :



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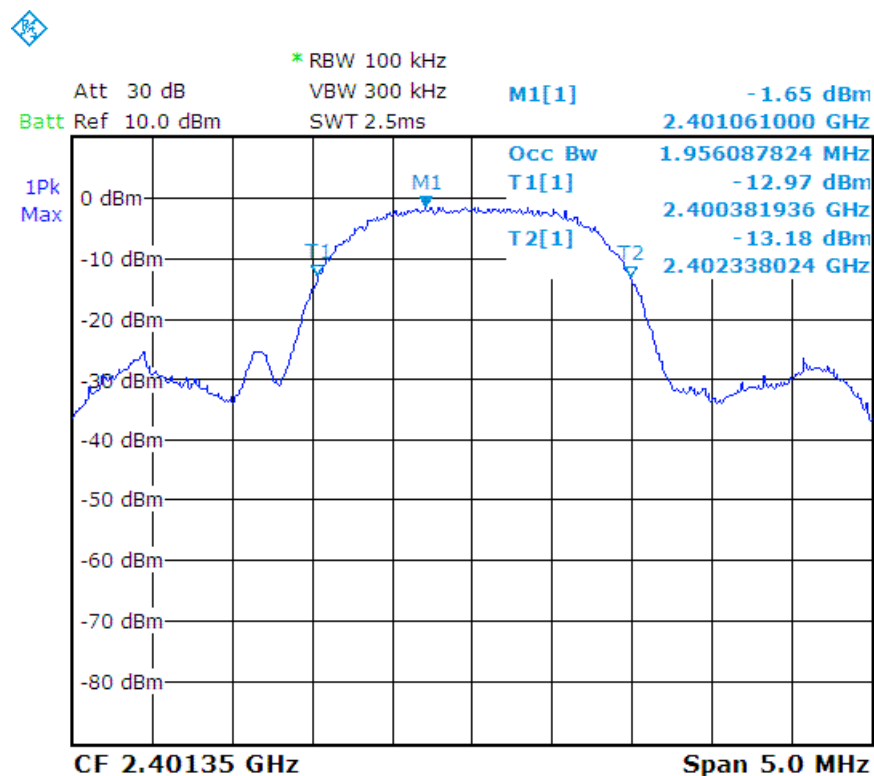
TEST REPORT

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99% Bandwidth :

Temperature:	23 °C	Humidity:	68 %RH
Detector:	Peak	Test Mode:	TX
RBW:	100 kHz	VBW:	300 kHz
Tested By:	Richard Lin	Tested Date:	Feb. 26, 2019

Channel Number	Channel Frequency (MHz)	99% Bandwidth (MHz)
CH01	2401.35	1.96
CH20	2439.35	1.95
CH40	2479.35	1.94

CH01 :



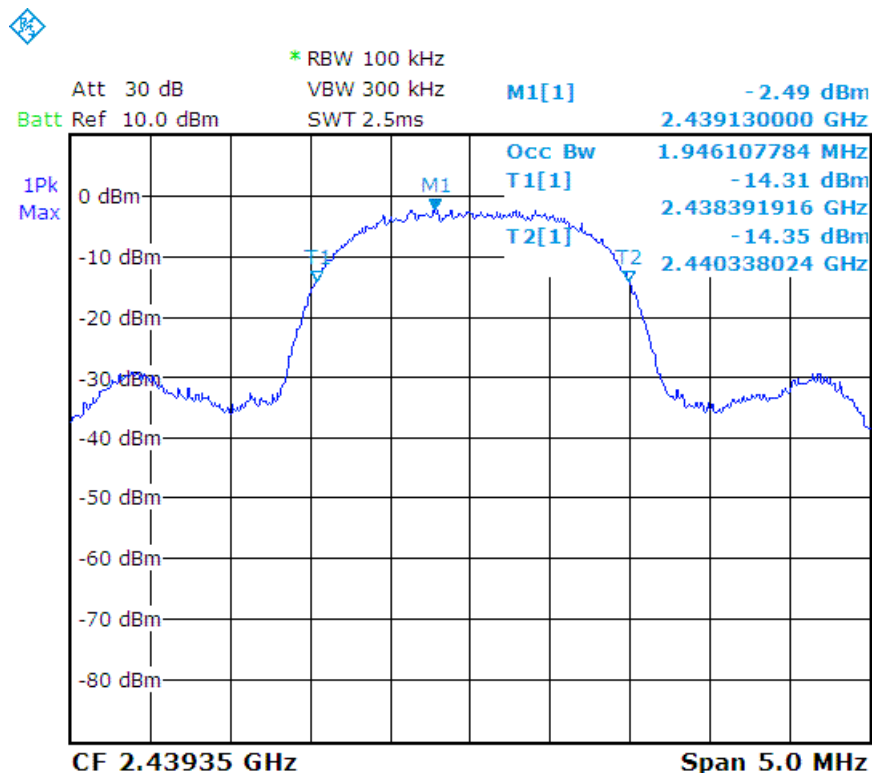
Spectrum Research & Testing Lab., Inc.

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

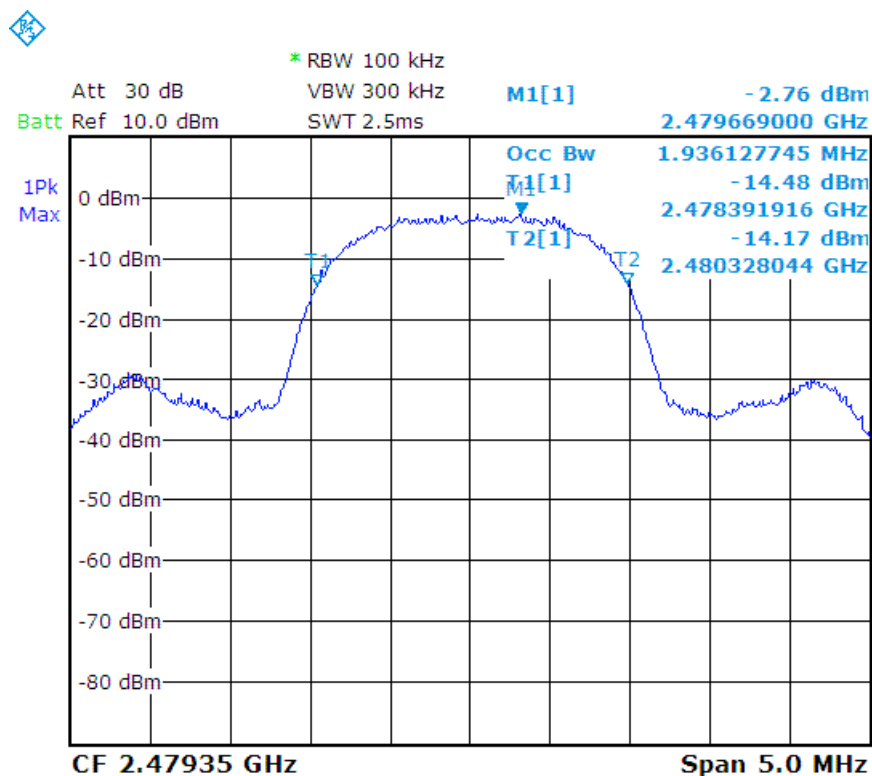
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CH20 :



CH40 :



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4.4 PEAK CONDUCTED OUTPUT POWER TEST

4.4.1 LIMIT

FCC Part15, Subpart C Section 15.247(b).

The maximum peak conducted output power of the intentional radiator shall not exceed the following:

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt.

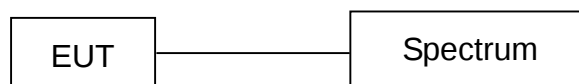
4.4.2 TEST EQUIPMENT

The following test equipment was used during the test :

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER (INCLUDE SPECTRUM ANALYZER)	9 KHz ~ 6 GHz	ROHDE & SCHWARZ	ESL /100176	MAY 20, 2019 ETC

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

4.4.3 TEST SET-UP



The EUT was connected to a spectrum through a 50Ω RF cable.

4.4.4 TEST PROCEDURE

The EUT was operating in continuous transmission mode or could control its channel. Printed out the test result from the spectrum by hard copy function.

4.4.5 EUT OPERATING CONDITION

1. Set the EUT under continuous transmission condition.
2. The EUT was set to the highest available power level.

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4.4.6 TEST RESULT

Temperature: 23 °C

Humidity: 68 %RH

Detector: Peak

Test Mode: TX

RBW: 1 MHz

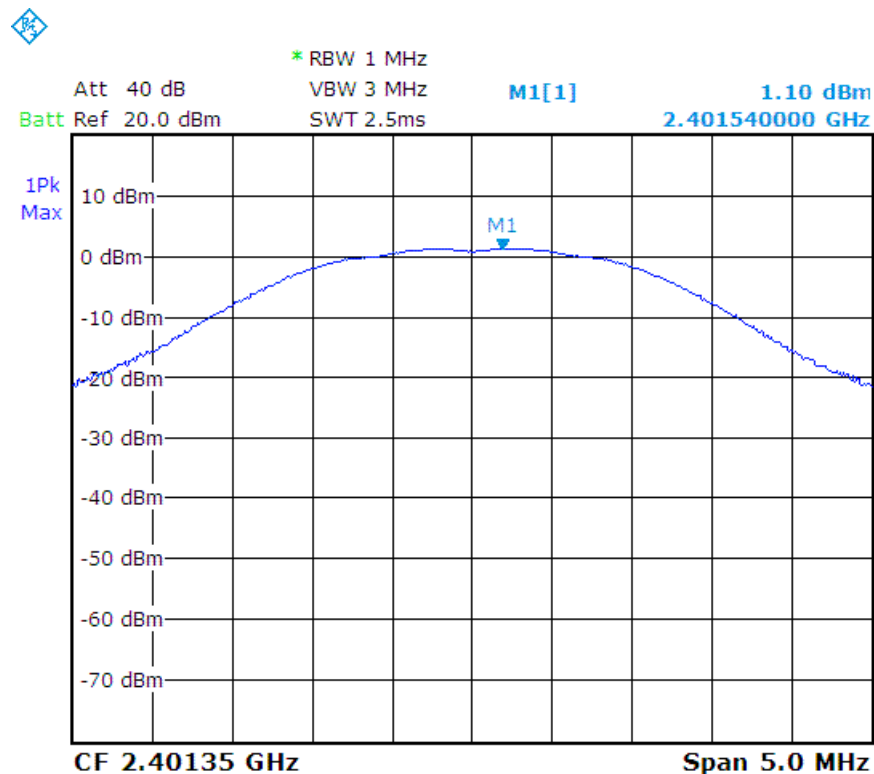
VBW: 3 MHz

Tested By: Richard Lin

Tested Date: Feb. 26, 2019

Channel Number	Channel Frequency (MHz)	Peak Conducted Output Power		Limit (dBm)
		(dBm)	(mW)	
CH01_ANT0	2401.35	1.10	1.29	30
CH01_ANT1	2401.35	0.70	1.17	30
CH20_ANT0	2439.35	0.03	1.01	30
CH20_ANT1	2439.35	0.03	1.01	30
CH40_ANT0	2479.35	-0.50	0.89	30
CH40_ANT1	2479.35	-1.22	0.76	30

CH01_ANT0 :





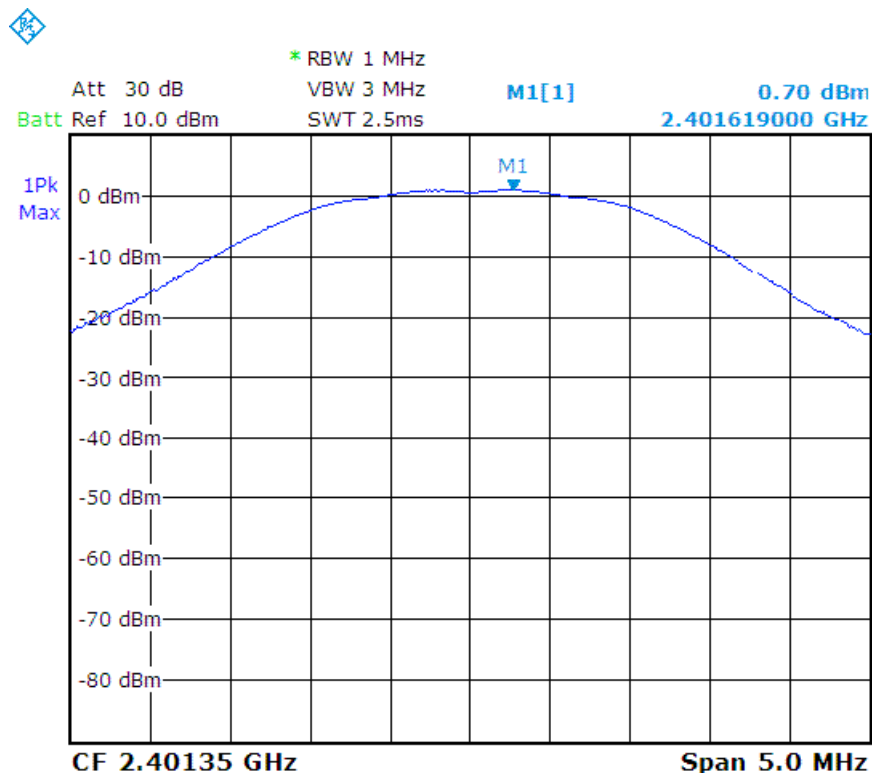
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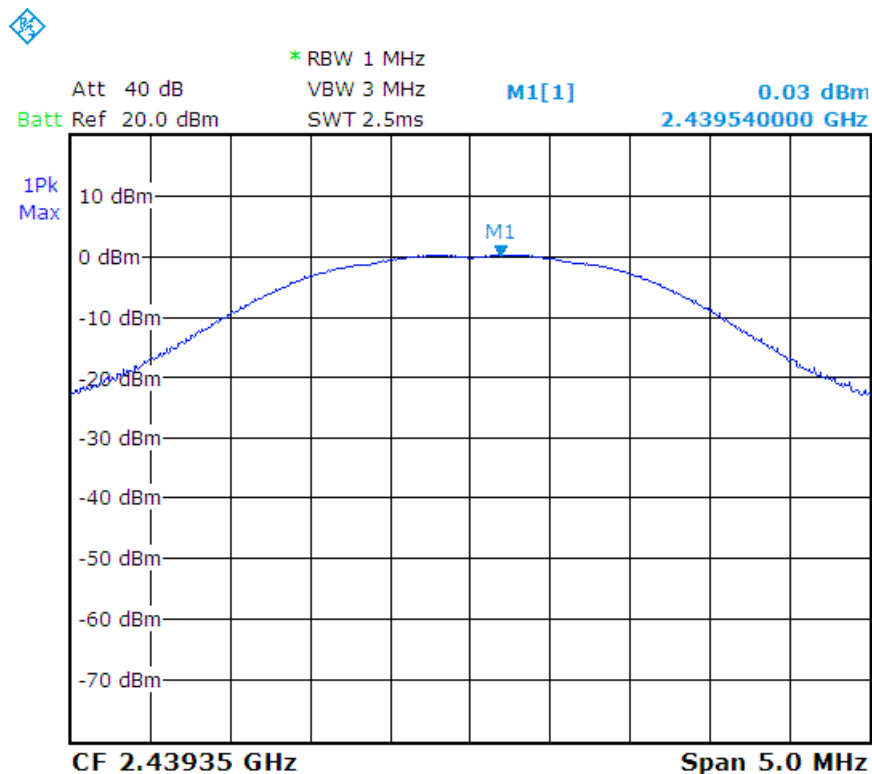
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CH01_ANT1 :



CH20_ANT0 :





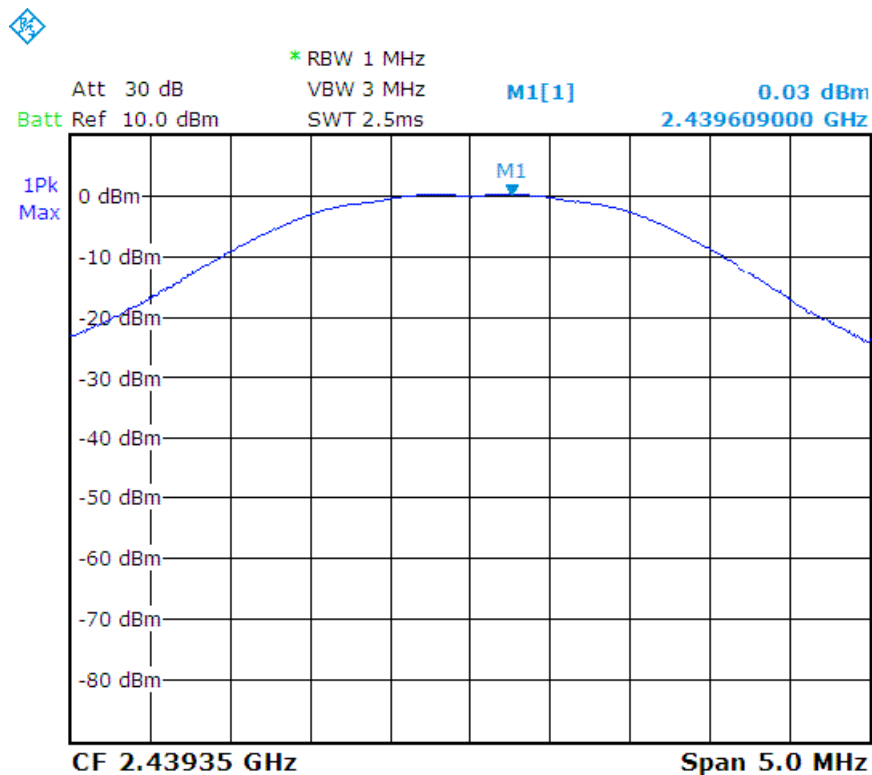
Spectrum Research & Testing Lab., Inc.

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

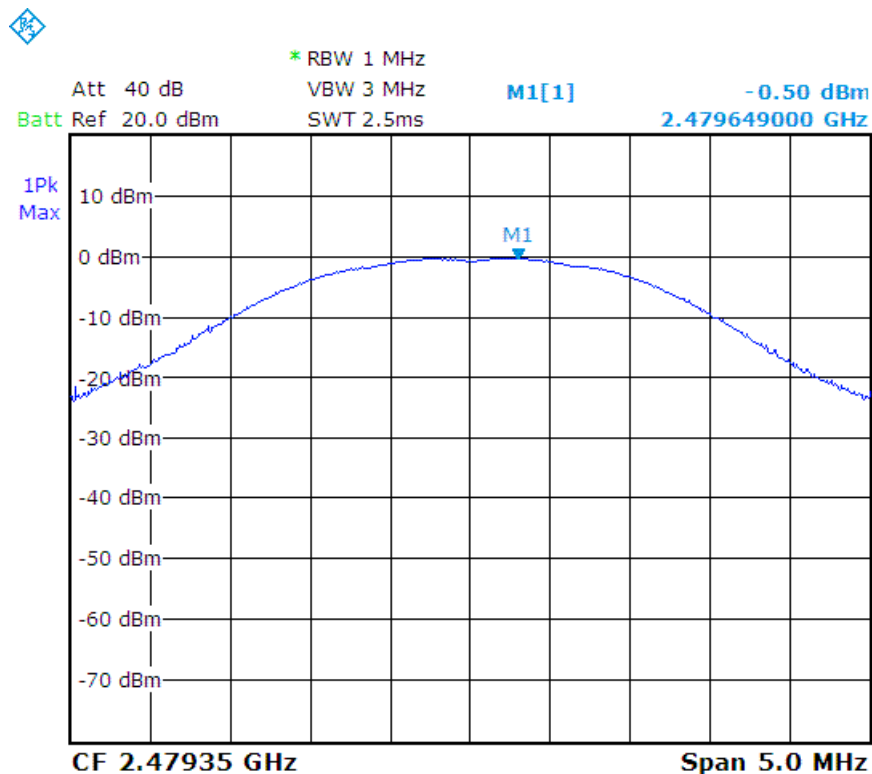
TEST REPORT

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CH20_ANT1 :



CH40_ANT0 :





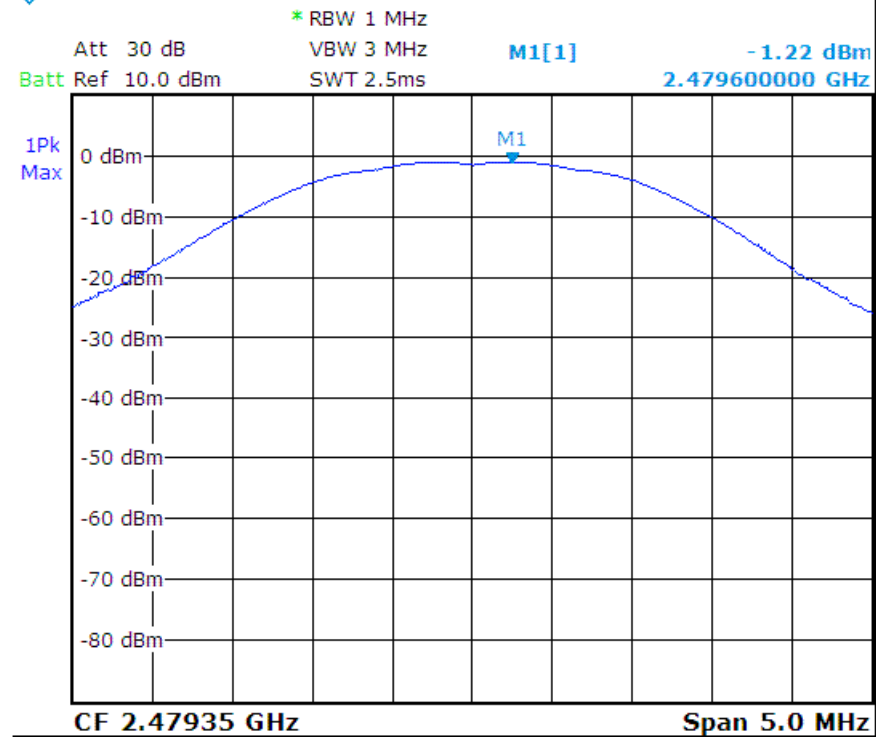
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CH40_ANT1 :



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4.5 BAND EDGE TEST**4.5.1 LIMIT**

FCC Part15, Subpart C Section 15.247(d).

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

OPERATING FREQUENCY RANGE (MHz)	SPURIOUS EMISSION FREQUENCY (MHz)	LIMIT	
		Peak power ration to emission(dBc)	Emission level(dBuV/m)
2400 - 2483.5	< 2400	> 20	N/A
	> 2483.5-2500	N/A	54

NOTE:

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4.5.2 TEST EQUIPMENT

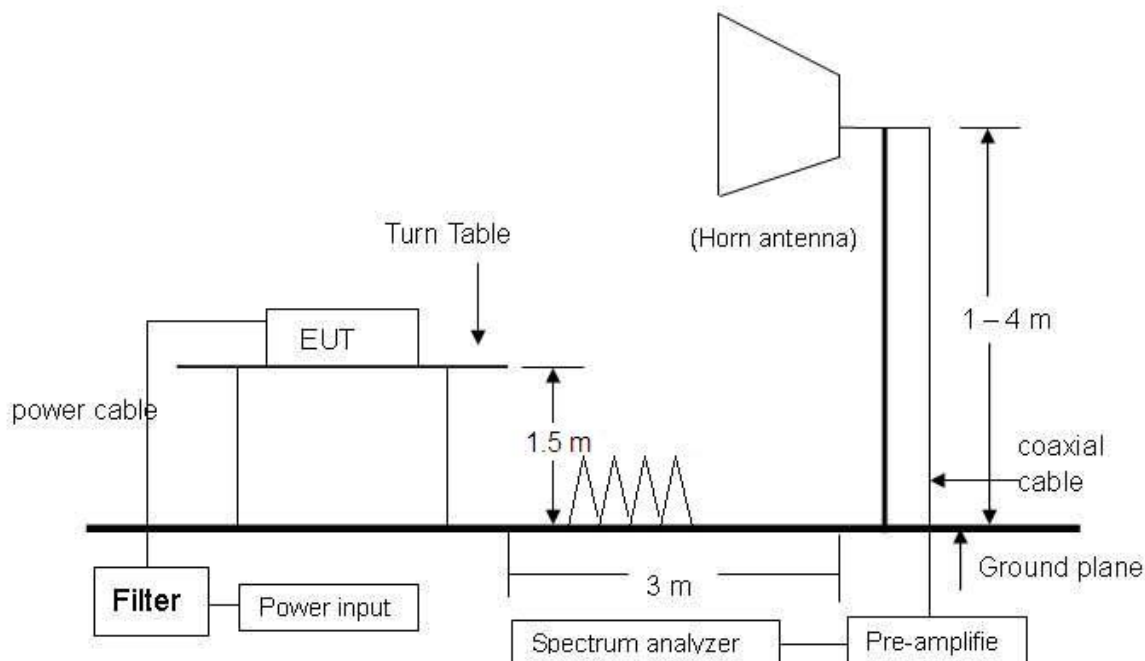
The following test equipment was used during the test:

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
SPECTRUM ANALYZER	9 kHz ~ 40GHz	ROHDE & SCHWARZ	FSP40 / 100093	JAN. 01, 2019 ETC
HORN ANTENNA	1 GHz ~ 18 GHz	EMCO	3115/ 9602-4681	NOV. 28, 2018 ETC
PRE-AMPLIFIER	1 GHz ~ 26.5 GHz	AGILENT	8449B/ 3008A01995	DEC. 27, 2018 ETC
OPEN AREA TEST SITE	3 – 10 M MEASUREMENT	SRT	A02 / SRT002	MAR. 09, 2019 SRT
ANECHOIC CHAMBER	3 M MEASUREMENT	SRT	A01 / SRT001	SEP. 13, 2018 SRT
K-TYPE CABLE	UP TO 40 GHz 3 m	HUBER+SUHNER	SF102-46/2*11SK 252 /MY2611/2	MAR. 05, 2019 ETC
K-TYPE CABLE	UP TO 40 GHz, 1 m	HUBER+SUHNER	SF102/2*11SK252 /MY3331/2	SEP. 28, 2018 ETC
FILTER	2 LINE, 30 A	FIL.COIL	FC-943/ 869	NCR
THERMO-HYGR O	15 – 40 °C, 0- 100% RH	TOP	20-A / 7685	SEP. 17, 2018 ETC

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.



4.5.3 TEST SETUP



NOTE: The EUT system was put on a wooden table with 1.5m heights above a ground plane. For the actual test configuration, please refer to the photos of testing.

4.5.4 TEST PROCEDURE

The EUT was tested according to the requirement of ANSI C63.10:2013 and CISPR 22:2003. When the frequency spectrum measured started from 30 MHz to 1 GHz, then use antenna is a BICONICAL ANTENNA & LOG PERIODIC ANTENNA. The measurements were made at an open area test site with 3 meter measurement distance under 1 GHz and with 3m distance above 1GHz. The frequency spectrum measured started from 30 MHz to 1 GHz, all readings were quasi-peak values with 120 kHz resolution bandwidth of the test receiver. Above 1 GHz, the measurements were made at an open area test site with 3 meter measurement distance and all readings were peak or average values with 1 MHz resolution bandwidth of the test receiver. The EUT system was operated in all typical methods by users. The cables connected to EUT and support units were moved to find the maximum emission levels for each frequency. First, find the margin or higher points at least 6 points by software, then use manual to find the maximum data. The procedure is referred on the test procedure of SRT LAB.



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4.5.5 EUT OPERATING CONDITION

1. Set the EUT under continuous transmission condition.
2. The EUT was set to the highest available power level.

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TEST REPORTReference No.: A19021501
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Date: Mar. 25, 2019**4.5.6 TEST RESULT**

Below 2400MHz (CH01__ANT0)

Temperature:	21 °C	Humidity:	66 %RH
Frequency Range:	2.30 GHz – 2.43 GHz	Tested Mode:	TX
Detector Type:	PK. and AV.	IF Bandwidth:	1 MHz
Tested By:	Richard Lin	Tested Date:	Feb. 22, 2019

Frequency (MHz)	Correct Factor (dB)	Ant. Fac. (dB/m)	Ant. Pol. (H/V)	Reading (dBuV)		Emission (dBuV/m)		Limit Line (dBuV/m)		Over Limit (dB)	
				PK	AV	PK	AV	PK	AV	PK	AV
2399.38	-31.53	28.10	H	54.57	44.08	51.14	40.65	74.00	54.00	-22.86	-13.35
2399.30	-31.53	28.10	V	58.28	47.73	54.85	44.30	74.00	54.00	-19.15	-9.70
2400.00	-31.53	28.10	H	49.84	39.35	46.41	35.92	74.00	54.00	-27.59	-18.08
2400.00	-31.53	28.10	V	53.31	42.89	49.88	39.46	74.00	54.00	-24.12	-14.54

Above 2483.5MHz (CH40__ANT0)

Temperature:	21 °C	Humidity:	66 %RH
Frequency Range:	2.44 GHz – 2.60 GHz	Tested Mode:	TX
Detector Type:	PK. and AV.	IF Bandwidth:	1 MHz
Tested By:	Richard Lin	Tested Date:	Feb. 22, 2019

Frequency (MHz)	Correct Factor (dB)	Ant. Fac. (dB/m)	Ant. Pol. (H/V)	Reading (dBuV)		Emission (dBuV/m)		Limit Line (dBuV/m)		Over Limit (dB)	
				PK	AV	PK	AV	PK	AV	PK	AV
2483.50	-31.46	28.33	H	35.32	28.89	32.19	25.76	74.00	54.00	-41.81	-28.24
2483.50	-31.46	28.33	V	33.79	28.66	30.66	25.53	74.00	54.00	-43.34	-28.47
2498.63	-31.45	28.39	H	35.58	29.01	32.52	25.95	74.00	54.00	-41.48	-28.05
2490.05	-31.46	28.36	V	34.44	28.97	31.34	25.87	74.00	54.00	-42.66	-28.13



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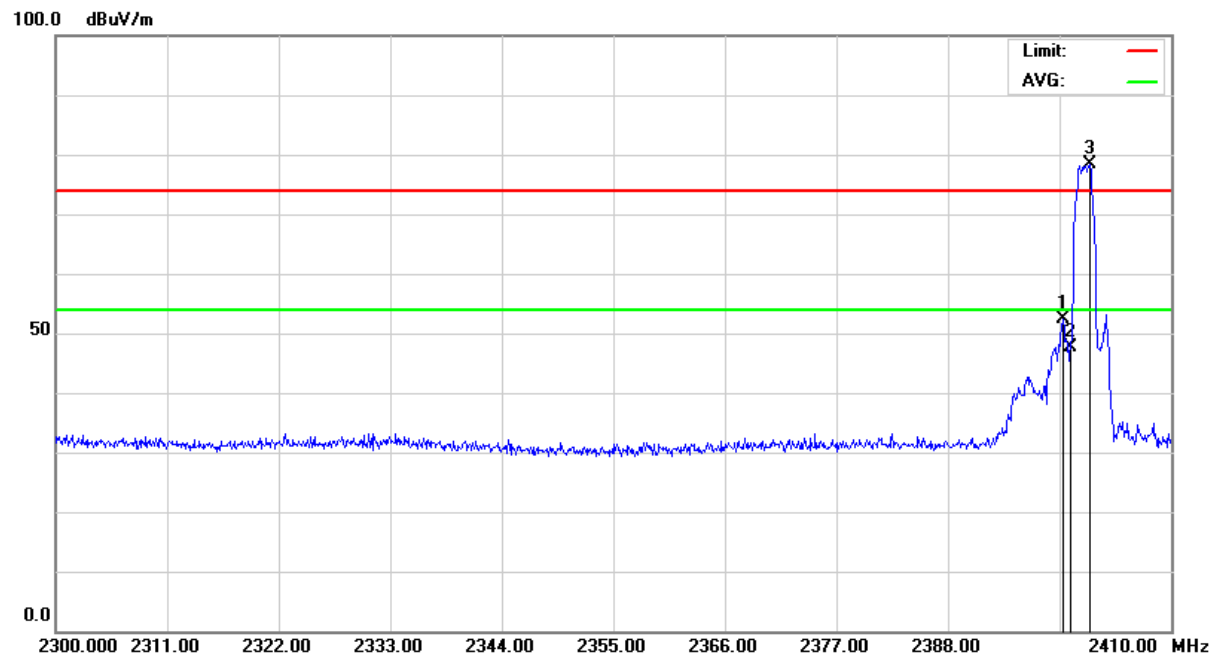
No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

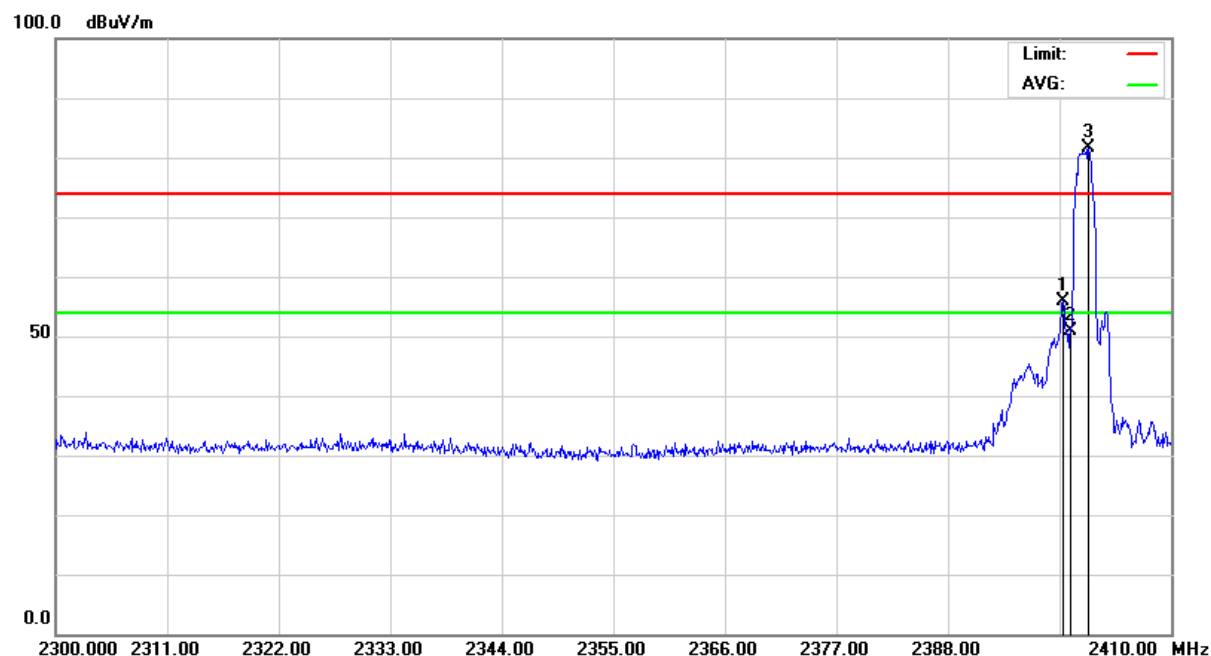
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Below 2400MHz (CH01)

Antenna Polarization : Horizontal



Antenna Polarization : Vertical





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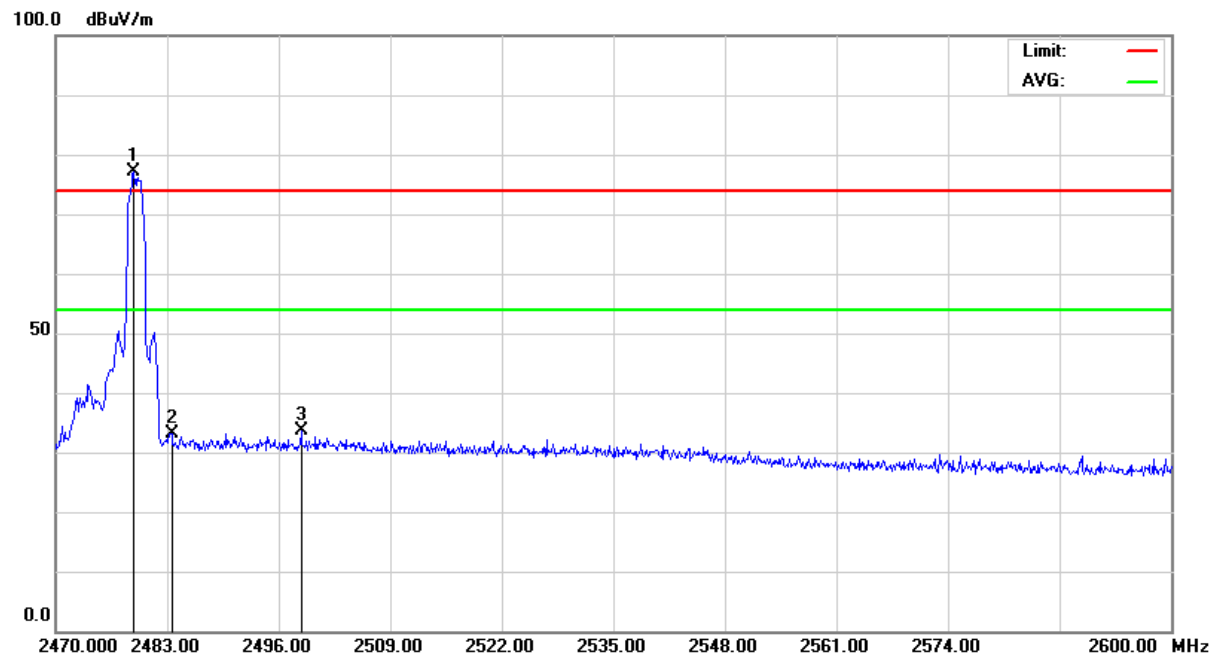
No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

TEST REPORT

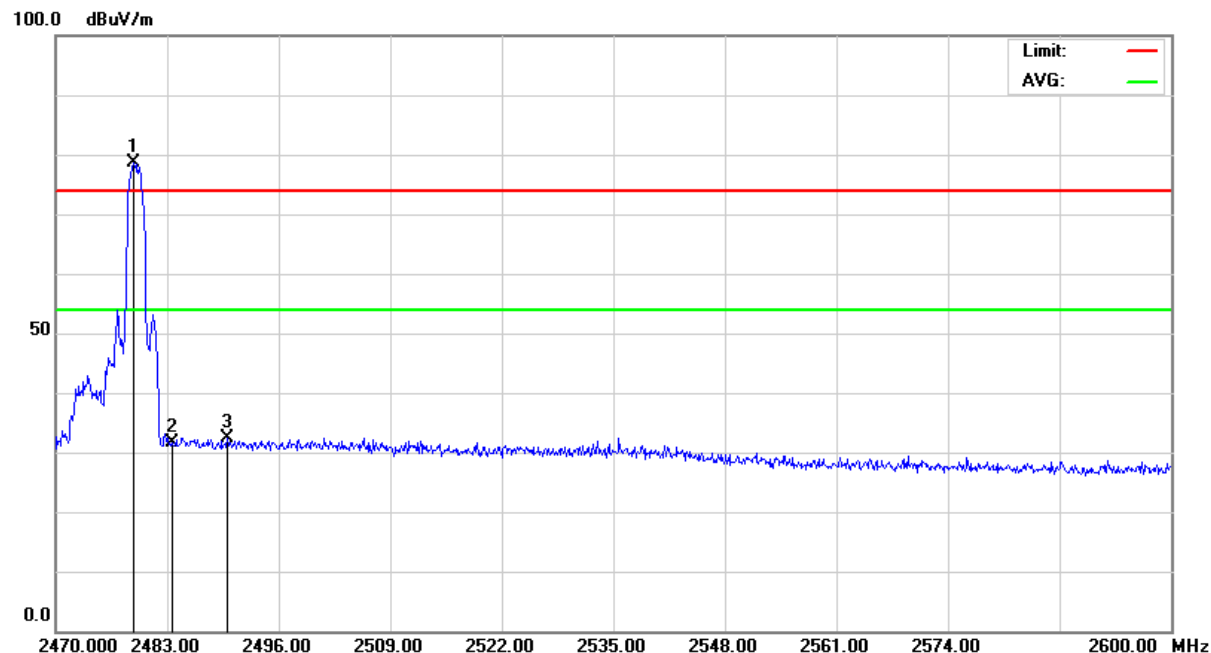
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Above 2483.5MHz (CH40)

Antenna Polarization : Horizontal



Antenna Polarization : Vertical



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Below 2400MHz (CH01__ANT0)

Temperature: 21 °C

Humidity: 66 %RH

Frequency Range: 2.30 GHz – 2.43 GHz

Tested Mode: TX

Detector Type: PK. and AV.

IF Bandwidth: 1 MHz

Tested By: Richard Lin

Tested Date: Feb. 22, 2019

Frequency (MHz)	Correct Factor (dB)	Ant. Fac. (dB/m)	Ant. Pol. (H/V)	Reading (dBUV)		Emission (dBUV/m)		Limit Line (dBUV/m)		Over Limit (dB)	
				PK	AV	PK	AV	PK	AV	PK	AV
2399.46	-31.53	28.10	H	56.03	45.51	52.60	42.08	74.00	54.00	-21.40	-11.92
2399.29	-31.53	28.10	V	61.10	49.78	57.67	46.35	74.00	54.00	-16.33	-7.65
2400.00	-31.53	28.10	H	52.65	41.13	49.22	37.70	74.00	54.00	-24.78	-16.30
2400.00	-31.53	28.10	V	55.59	45.06	52.16	41.63	74.00	54.00	-21.84	-12.37

Above 2483.5MHz (CH40__ANT0)

Temperature: 21 °C

Humidity: 66 %RH

Frequency Range: 2.44 GHz – 2.60 GHz

Tested Mode: TX

Detector Type: PK. and AV.

IF Bandwidth: 1 MHz

Tested By: Richard Lin

Tested Date: Feb. 22, 2019

Frequency (MHz)	Correct Factor (dB)	Ant. Fac. (dB/m)	Ant. Pol. (H/V)	Reading (dBUV)		Emission (dBUV/m)		Limit Line (dBUV/m)		Over Limit (dB)	
				PK	AV	PK	AV	PK	AV	PK	AV
2483.50	-31.46	28.33	H	34.44	28.94	31.31	25.81	74.00	54.00	-42.69	-28.19
2483.50	-31.46	28.33	V	35.52	29.02	32.39	25.89	74.00	54.00	-41.61	-28.11
2484.81	-31.46	28.34	H	35.78	28.57	32.65	25.44	74.00	54.00	-41.35	-28.56
2484.65	-31.46	28.34	V	37.19	28.99	34.06	25.86	74.00	54.00	-39.94	-28.14



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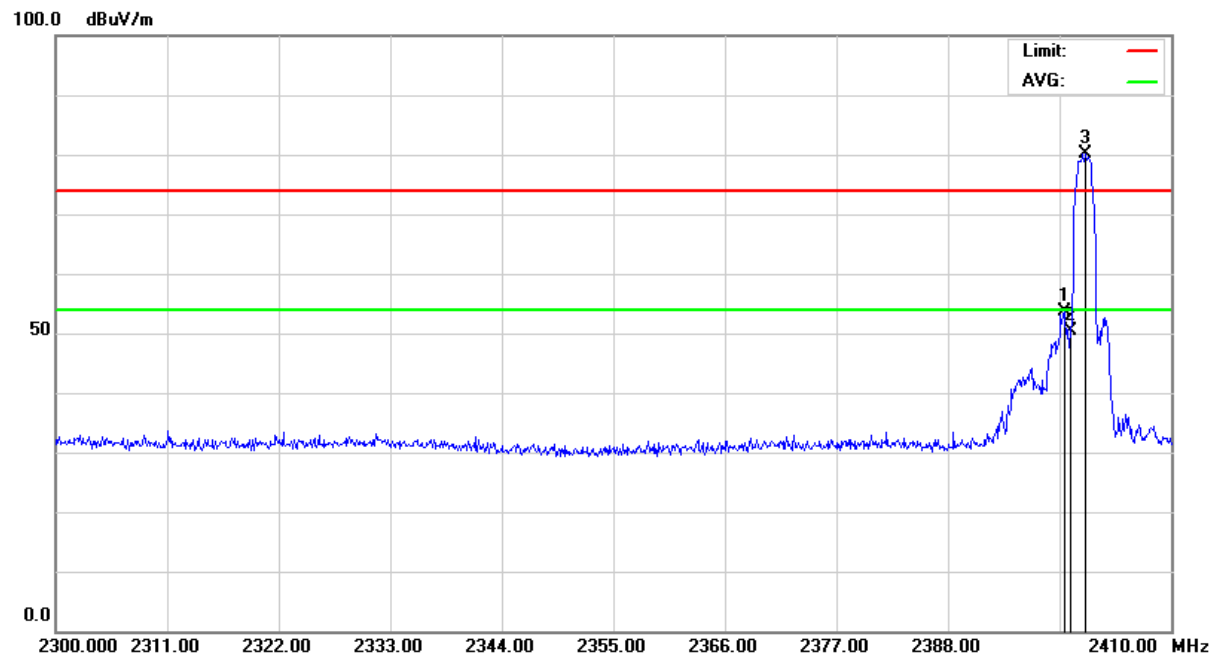
No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

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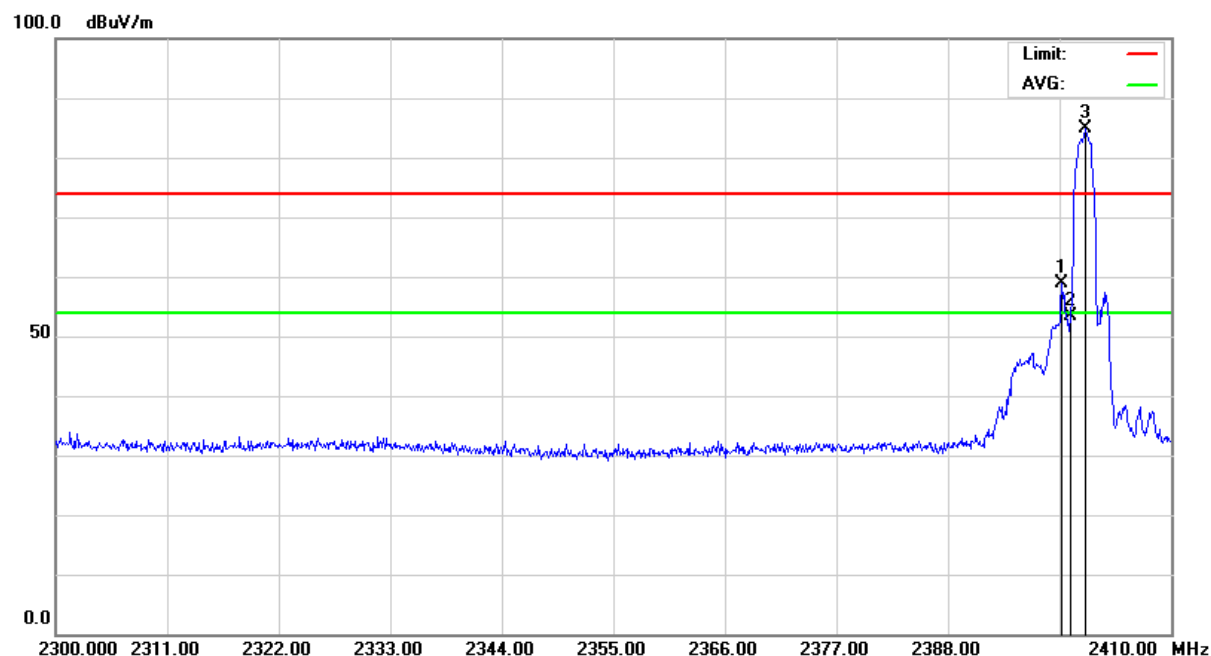
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Below 2400MHz (CH01)

Antenna Polarization : Horizontal



Antenna Polarization : Vertical





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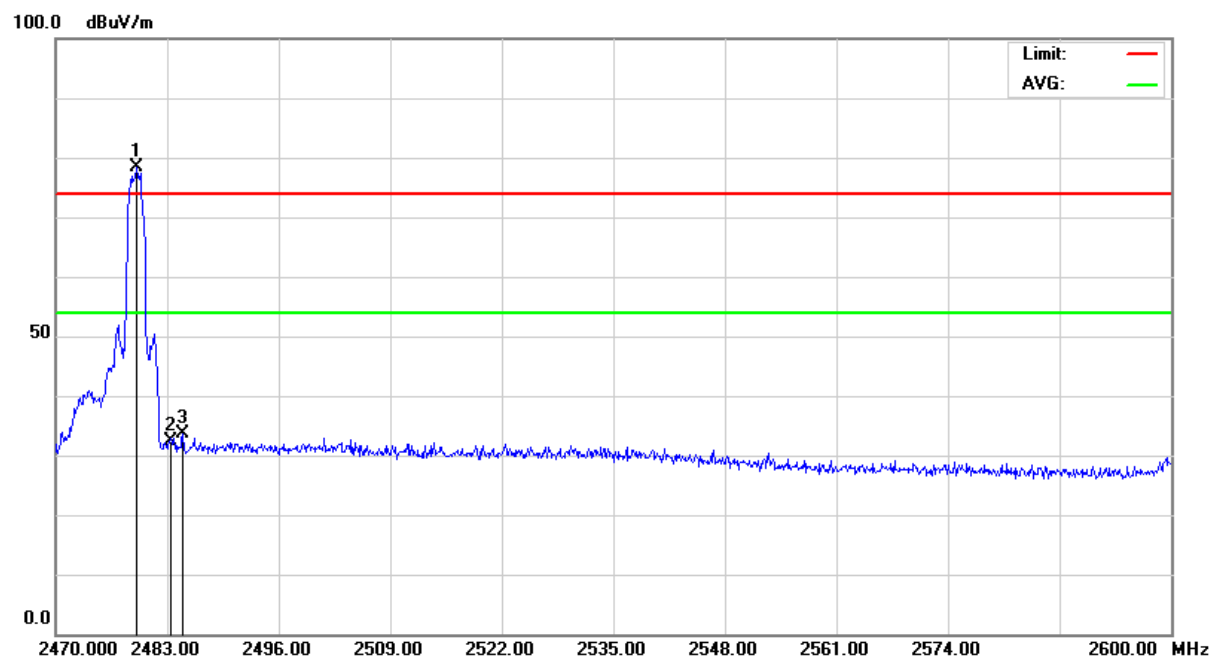
No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

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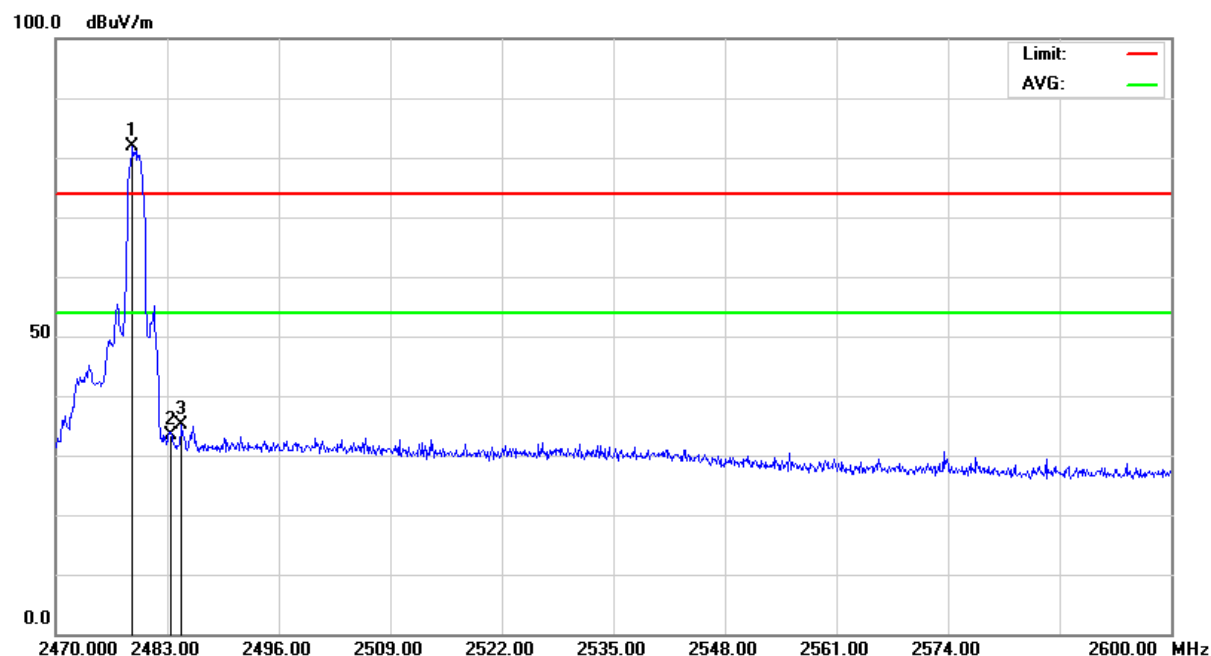
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Above 2483.5MHz (CH40)

Antenna Polarization : Horizontal



Antenna Polarization : Vertical



4.6 POWER SPECTRAL DENSITY TEST

4.6.1 LIMIT

FCC Part15, Subpart C Section 15.247(e).

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

FREQUENCY RANGE	Limit
2.40 - 2.4835 GHz	8 dBm / 3 kHz

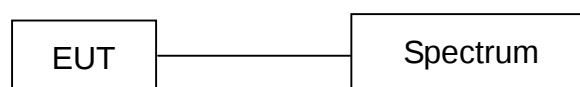
4.6.2 TEST EQUIPMENT

The following test equipment was used during the radiated emission test:

EQUIPMENT/FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMI TEST RECEIVER (INCLUDE SPECTRUM ANALYZER)	9 KHz ~ 6 GHz	ROHDE & SCHWARZ	ESL /100176	MAY 20, 2019 ETC

NOTE: The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

4.6.3 TEST SET-UP



The EUT was connected to a spectrum through a 50Ω RF cable.

4.6.4 TEST PROCEDURE

The EUT was operating in transmitter mode and could be controlled its channel.
 Printed out the test result from the spectrum by hard copy function.

4.6.5 EUT OPERATING CONDITION

1. Set the EUT under continuous transmission condition.
2. The EUT was set to the highest available power level.



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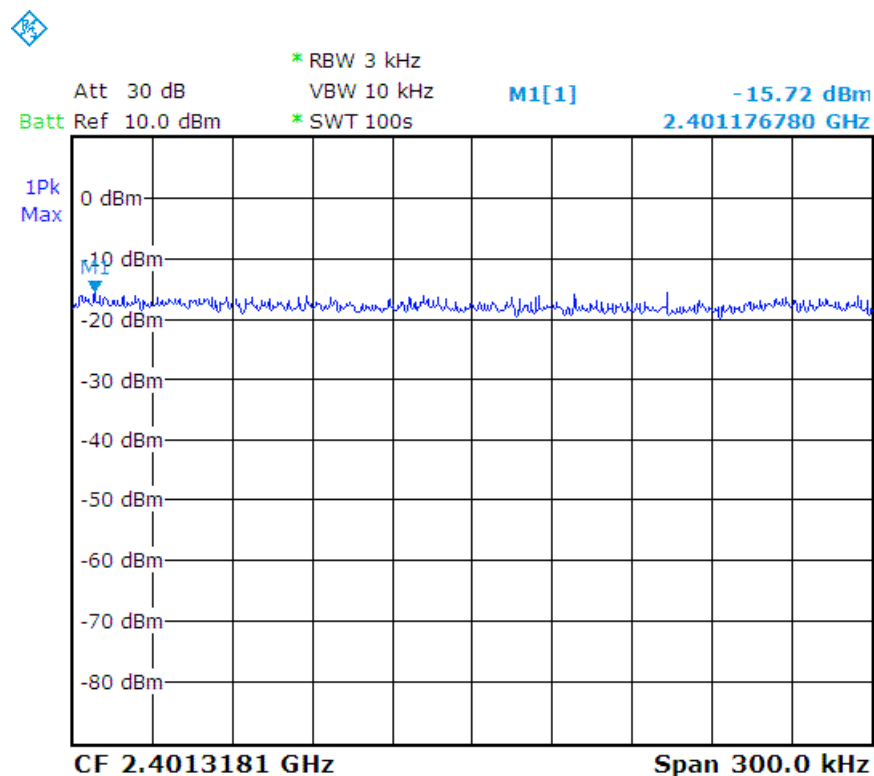
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4.6.6 TEST RESULT

Temperature:	23 °C	Humidity:	68 %RH
Detector:	Peak	Test Mode:	TX
RBW:	3 kHz	VBW:	10 kHz
Tested By:	Richard Lin	Tested Date:	Feb. 26, 2019

Channel Number	Channel Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Maximum Limit (dBm/3kHz)
CH01_ANT0	2401.35	-15.72	8
CH01_ANT1	2401.35	-15.25	8
CH20_ANT0	2439.35	-15.47	8
CH20_ANT1	2439.35	-15.98	8
CH40_ANT0	2479.35	-16.49	8
CH40_ANT1	2479.35	-16.36	8

CH01_ANT0 :





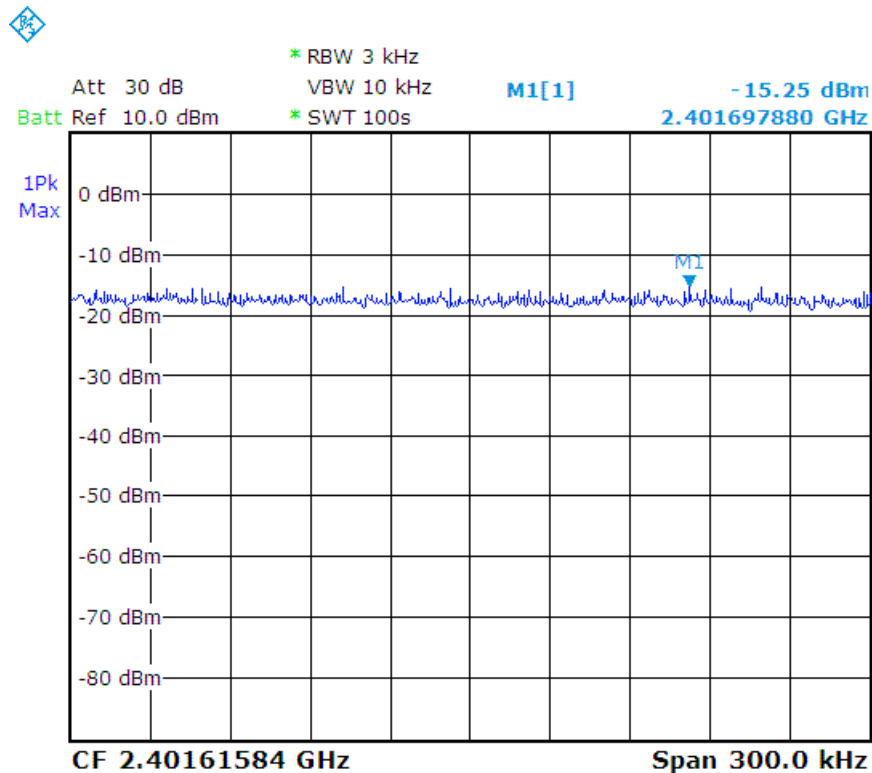
Spectrum Research & Testing Lab., Inc.

No.167, Ln. 780, Shan-Tong Rd., Ling 8, Shan-Tong Li, Chung-Li Dist., Taoyuan City 320, Taiwan (R.O.C.)

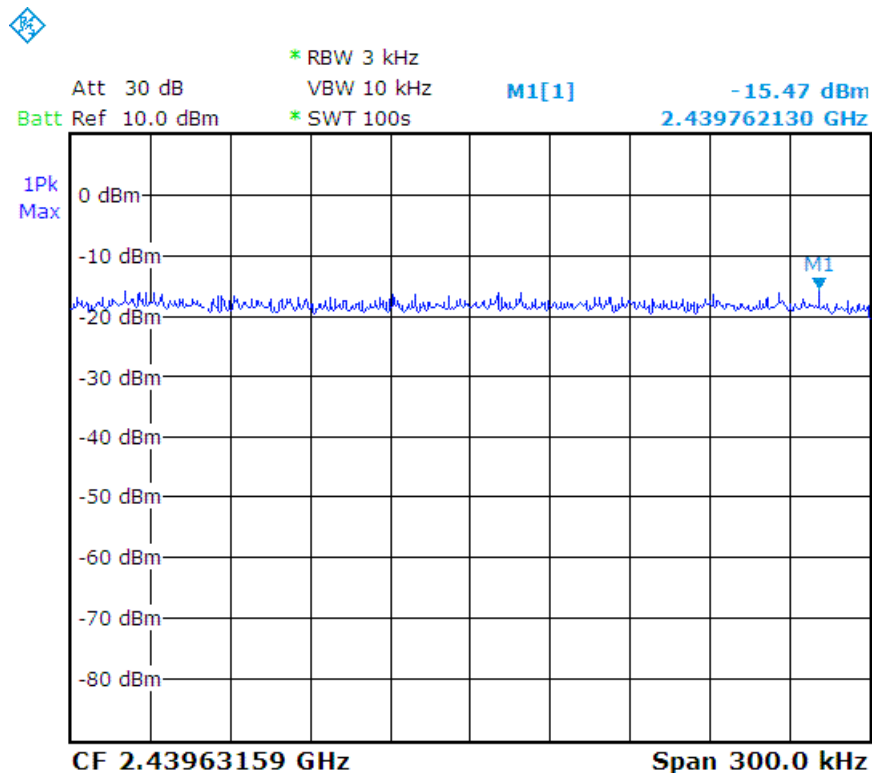
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CH01_ANT1 :



CH20_ANT0 :





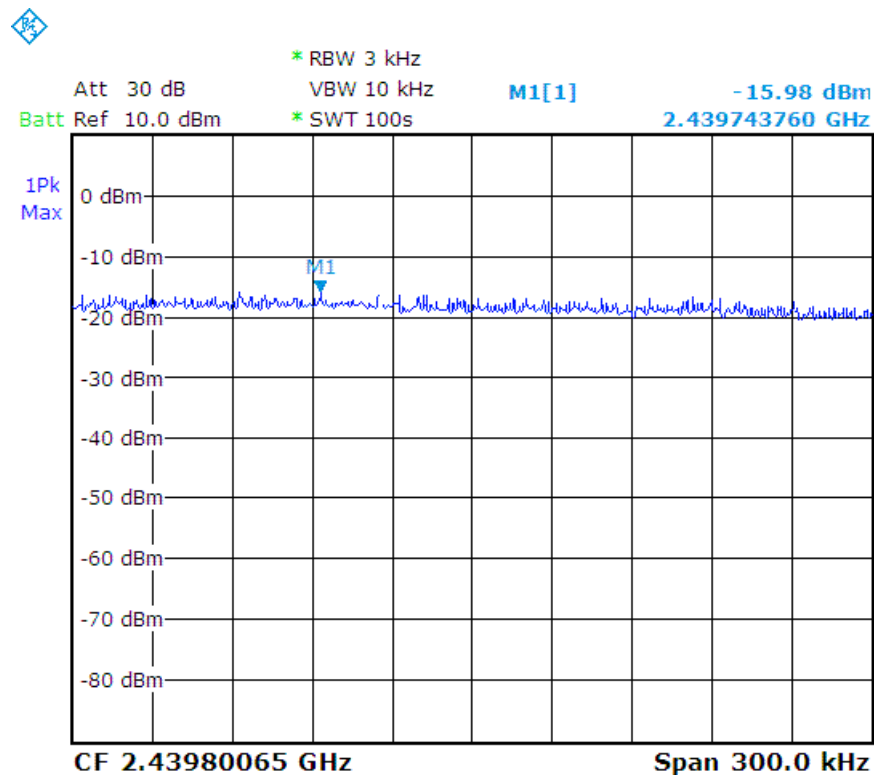
**Spectrum Research &
Testing Lab., Inc.**

No.167, Ln. 780, Shan-Tong
Rd., Ling 8, Shan-Tong Li,
Chung-Li Dist., Taoyuan City
320, Taiwan (R.O.C.)

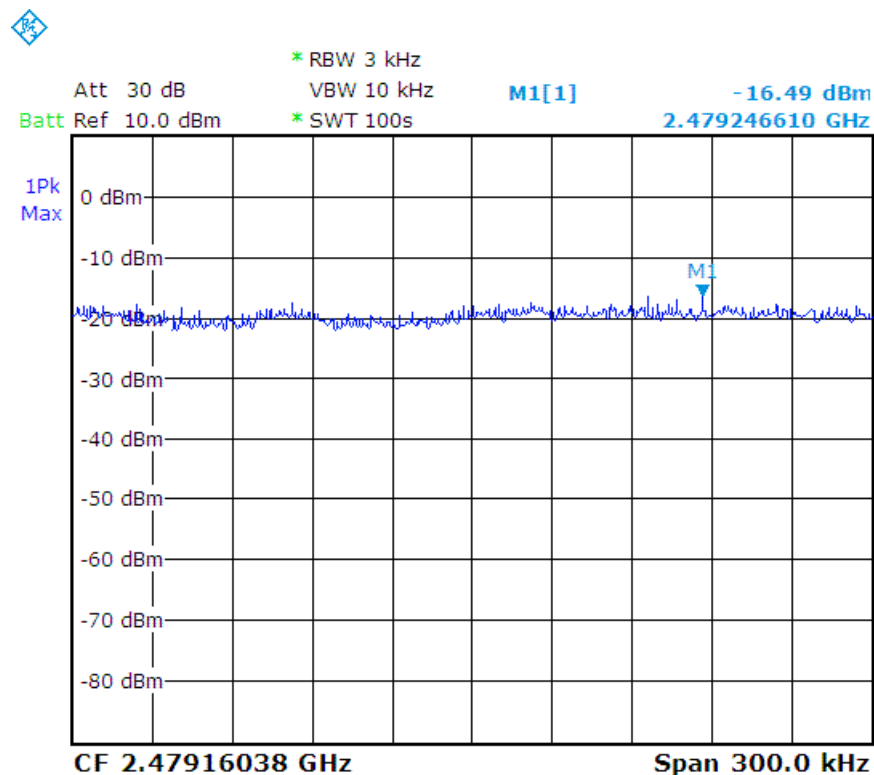
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CH20_ANT1 :



CH40_ANT0 :





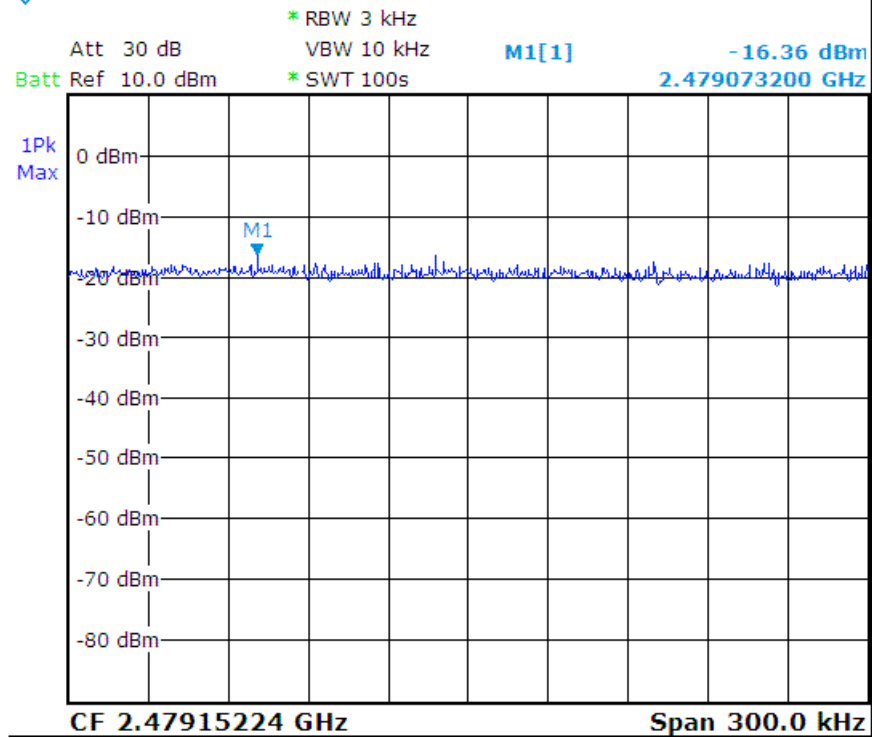
Spectrum Research & Testing Lab., Inc.

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CH40_ANT1 :





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5. Antenna application

5.1 Antenna requirement

The EUT's antenna is met the requirement of FCC Part 15C section 15.203 and 15.204.

FCC Part 15C section 15.247 requirement:

Systems operating in the 2400-2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

5.2 Result

The EUT's antenna used a Printed Antenna. Gain of 3.0 dBi that meet the requirement.

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6. TERMS OF ABBREVIATION

AV.	Average detection
AZ(°)	Turn table azimuth
Correct.	Correction
EL(m)	Antenna height (meter)
EUT	Equipment Under Test
Horiz.	Horizontal direction
LISN	Line Impedance Stabilization Network
NSA	Normalized Site Attenuation
Q.P.	Quasi-peak detection
SRT Lab	Spectrum Research & Testing Laboratory, Inc.
Vert.	Vertical direction