FCC Test Report

Report No.:	RF181126E01
FCC ID:	COF-WPSGTAG01
Test Model:	WP-SG-TAG-01
Received Date:	Nov. 26, 2018
Test Date:	Dec. 06 to 17, 2018
Issued Date:	Dec. 21, 2018
Applicant:	UNIVERSAL GLOBAL SCIENTIFIC INDUSTRIAL CO., LTD.
Address:	141, Lane 351, Sec. 1, Taiping Road., Tsaotuen, Nantou 54261, Taiwan
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
FCC Registration / Designation Number:	723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
RF181126E01	Original release.	Dec. 21, 2018

1 Certificate of Conformity

Product:	LoRa Tag
Brand:	USI
Test Model:	WP-SG-TAG-01
Sample Status:	ENGINEERING SAMPLE
Applicant:	UNIVERSAL GLOBAL SCIENTIFIC INDUSTRIAL CO., LTD.
Test Date:	Dec. 06 to 17, 2018
Standards:	47 CFR FCC Part 15, Subpart C (Section 15.247) ANSI C63.10: 2013

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

Prepared by : Mary Ko **Date:** Dec. 21, 2018

Mary Ko / Specialist

Approved by : **Date:** Dec. 21, 2018

May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (SECTION 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	NA	Without AC power port of the EUT.
15.247(a)(1)(iii)	Number of Hopping Frequency Used	PASS	Meet the requirement of limit.
15.247(a)(1)(iii)	Dwell Time on Each Channel	PASS	Meet the requirement of limit.
15.247(a)(1)	1. Hopping Channel Separation 2. Spectrum Bandwidth of a Frequency Hopping Sequence Spread Spectrum System	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power	PASS	Meet the requirement of limit.
15.205 & 209 & 15.247(d)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -3.1dB at 3634.80MHz, 3659.60MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.53 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.08 dB
	6GHz ~ 18GHz	4.98 dB
	18GHz ~ 40GHz	5.19 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	LoRa Tag
Brand	USI
Test Model	WP-SG-TAG-01
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 3V from battery
Modulation Type	CSS
Transfer Rate	980 ~ 5470 bps
Operating Frequency	902.3MHz ~ 914.9MHz
Number of Channel	64
Output Power	24.889mW
Antenna Type	Refer to Note
Antenna Connector	NA
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. The EUT must be supplied with a battery as following table:

Brand	Model No.	Spec.
Imprint Energy, Inc.	IEZ-8349-30-a3	3Vdc, 100J, 9.26mAh

2. The antenna provided to the EUT, please refer to the following table:

Antenna Gain(dBi)	Frequency range	Antenna Type	Connector Type
2.2	902 ~915 MHz	PCB Antenna	NA

3. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

Channel frequencies are provided for EUT:

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	902.3	16	905.5	32	908.7	48	911.9
1	902.5	17	905.7	33	908.9	49	912.1
2	902.7	18	905.9	34	909.1	50	912.3
3	902.9	19	906.1	35	909.3	51	912.5
4	903.1	20	906.3	36	909.5	52	912.7
5	903.3	21	906.5	37	909.7	53	912.9
6	903.5	22	906.7	38	909.9	54	913.1
7	903.7	23	906.9	39	910.1	55	913.3
8	903.9	24	907.1	40	910.3	56	913.5
9	904.1	25	907.3	41	910.5	57	913.7
10	904.3	26	907.5	42	910.7	58	913.9
11	904.5	27	907.7	43	910.9	59	914.1
12	904.7	28	907.9	44	911.1	60	914.3
13	904.9	29	908.1	45	911.3	61	914.5
14	905.1	30	908.3	46	911.5	62	914.7
15	905.3	31	908.5	47	911.7	63	914.9

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	-	√	-

Where **RE≥1G:** Radiated Emission above 1GHz **RE<1G:** Radiated Emission below 1GHz
PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

NOTE:
1. No need to concern of Conducted Emission due to the EUT is powered by battery.
2. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.

Radiated Emission Test (Above 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

Available Channel	Tested Channel	Modulation Type
0 to 63	0, 32, 63	CSS

Radiated Emission Test (Below 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

Available Channel	Tested Channel	Modulation Type
0 to 63	0, 32, 63	CSS

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

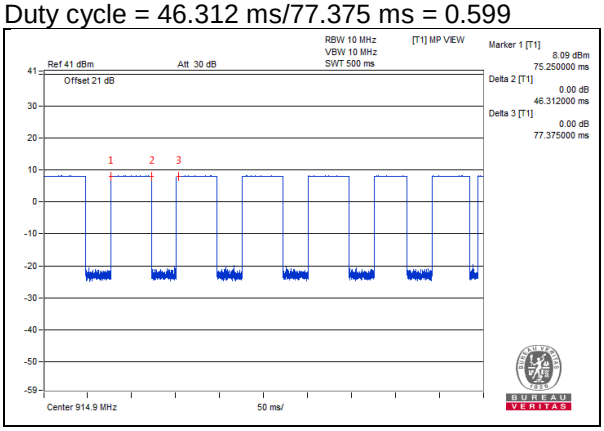
Available Channel	Tested Channel	Modulation Type
0 to 63	0, 32, 63	CSS

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	23deg. C, 68%RH	DC 3V	Frank Chuang
RE<1G	23deg. C, 68%RH	DC 3V	Frank Chuang
APCM	25deg. C, 60%RH	DC 3V	Jyunchun Lin

3.3 Duty Cycle of Test Signal

Duty cycle = 46.312 ms/77.375 ms = 0.599



3.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

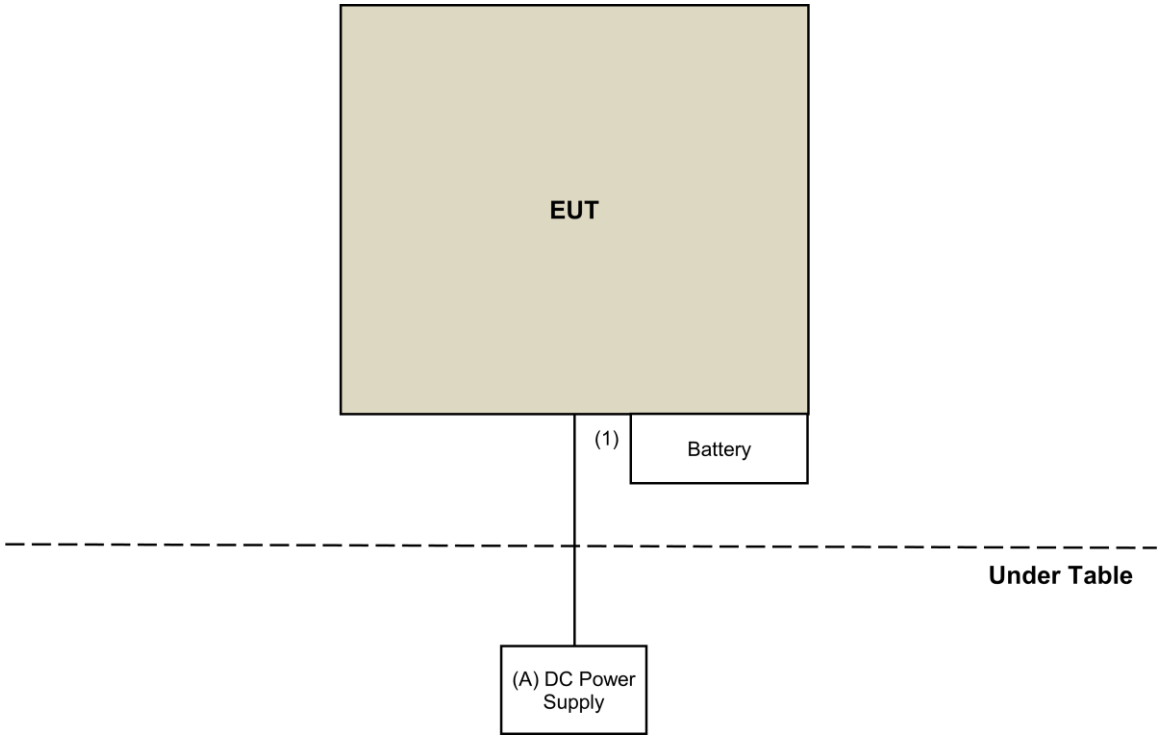
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	DC Power Supply	GOOD WILL INSTRUMENT CO., LTD	GPC-3030D	E847076	NA	Provided by Lab

Note:

1. All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC Cable	1	1.8	No	0	Provided by Lab

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.247)
KDB 558074 D01 15.247 Meas Guidance v05
ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

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

NOTE:

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

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY50010156	July 12, 2018	July 11, 2019
Pre-Amplifier EMCI	EMC001340	980142	Feb. 09, 2018	Feb. 08, 2019
Loop Antenna Electro-Metrics	EM-6879	269	Sep. 07, 2018	Sep. 06, 2019
RF Cable	NA	LOOPCAB-001	Jan. 15, 2018	Jan. 14, 2019
RF Cable	NA	LOOPCAB-002	Jan. 15, 2018	Jan. 14, 2019
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-05	May 05, 2018	May 04, 2019
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Nov. 22, 2018	Nov. 21, 2019
RF Cable	8D	966-3-1	Mar. 20, 2018	Mar. 19, 2019
RF Cable	8D	966-3-2	Mar. 20, 2018	Mar. 19, 2019
RF Cable	8D	966-3-3	Mar. 20, 2018	Mar. 19, 2019
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	Sep. 27, 2018	Sep. 26, 2019
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Nov. 25, 2018	Nov. 24, 2019
Pre-Amplifier EMCI	EMC12630SE	980384	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-1200	160922	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-2000	150317	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-5000	150322	Jan. 29, 2018	Jan. 28, 2019
Spectrum Analyzer Keysight	N9030A	MY54490679	July 23, 2018	July 22, 2019
Pre-Amplifier EMCI	EMC184045SE	980386	Jan. 29, 2018	Jan. 28, 2019
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Nov. 25, 2018	Nov. 24, 2019
RF Cable	EMC102-KM-KM-1200	160924	Jan. 29, 2018	Jan. 28, 2019
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Spectrum Analyzer R&S	FSV40	100964	June 20, 2018	June 19, 2019
Power meter Anritsu	ML2495A	1014008	May 09, 2018	May 08, 2019
Power sensor Anritsu	MA2411B	0917122	May 09, 2018	May 08, 2019

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. *The calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. 3.
4. The CANADA Site Registration No. is 20331-1
5. Loop antenna was used for all emissions below 30 MHz.
6. Tested Date: Dec. 06 to 12, 2018

4.1.3 Test Procedures

For Radiated emission below 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. Both Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

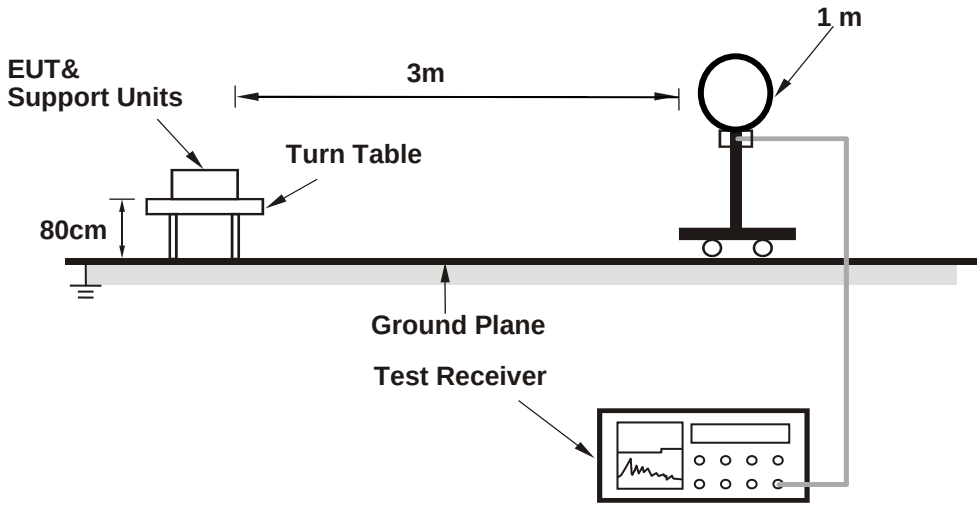
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

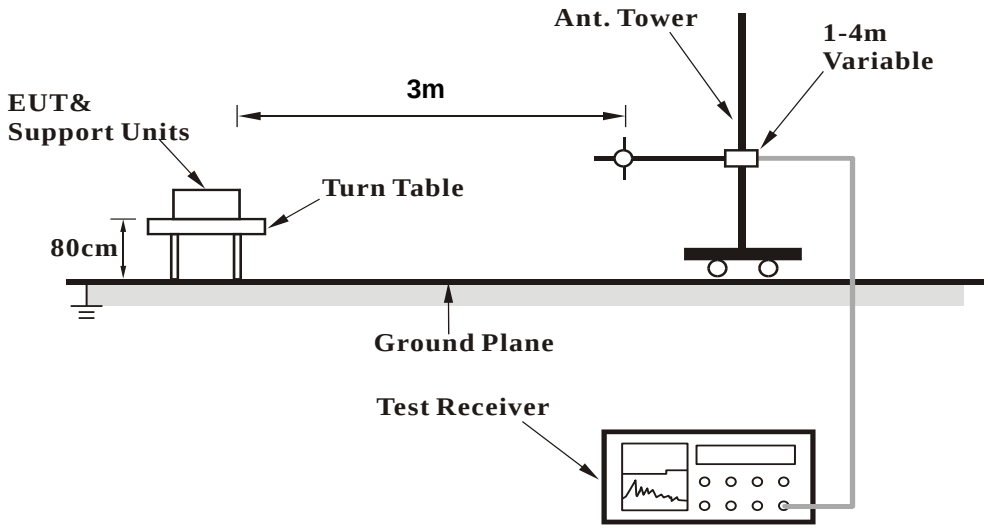
No deviation.

4.1.5 Test Setup

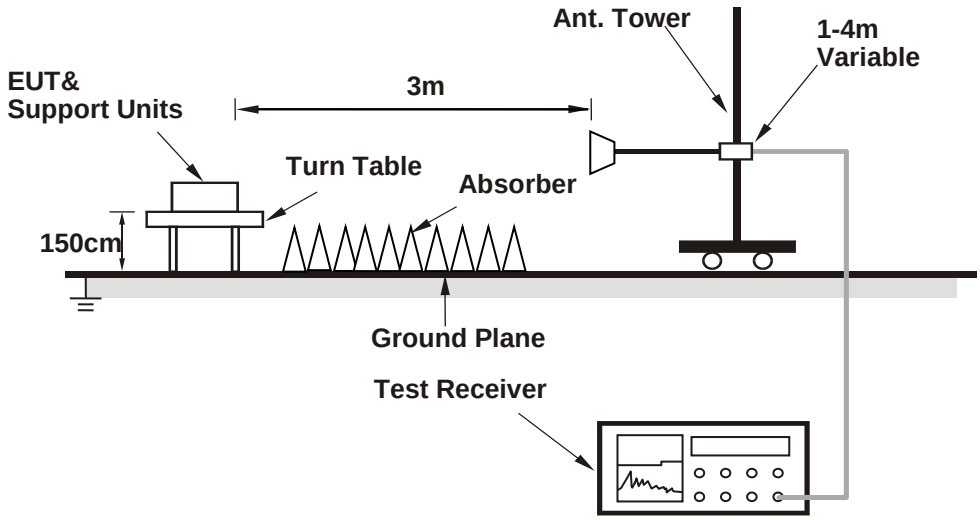
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

a. Placed the EUT on the testing table.
b. Set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz Data:

TESTED CHANNEL	TX channel 0	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 10GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2706.90	41.2 PK	74.0	-32.8	1.14 H	261	43.1	-1.9
2	2706.90	37.2 AV	54.0	-16.8	1.14 H	261	39.1	-1.9
3	3609.20	53.1 PK	74.0	-20.9	1.01 H	158	53.6	-0.5
4	3609.20	50.8 AV	54.0	-3.2	1.01 H	158	51.3	-0.5
5	4511.50	44.6 PK	74.0	-29.4	1.88 H	146	43.5	1.1
6	4511.50	39.9 AV	54.0	-14.1	1.88 H	146	38.8	1.1
7	5413.80	44.8 PK	74.0	-29.2	1.42 H	118	42.0	2.8
8	5413.80	37.1 AV	54.0	-16.9	1.42 H	118	34.3	2.8
9	8120.70	49.7 PK	74.0	-24.3	1.83 H	91	40.7	9.0
10	8120.70	42.5 AV	54.0	-11.5	1.83 H	91	33.5	9.0
11	9023.00	45.7 PK	74.0	-28.3	2.31 H	325	36.3	9.4
12	9023.00	37.9 AV	54.0	-16.1	2.31 H	325	28.5	9.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2706.90	37.2 PK	74.0	-36.8	1.47 V	208	39.1	-1.9
2	2706.90	33.4 AV	54.0	-20.6	1.47 V	208	35.3	-1.9
3	3609.20	52.2 PK	74.0	-21.8	1.67 V	2	52.7	-0.5
4	3609.20	49.9 AV	54.0	-4.1	1.67 V	2	50.4	-0.5
5	4511.50	46.0 PK	74.0	-28.0	1.41 V	49	44.9	1.1
6	4511.50	42.6 AV	54.0	-11.4	1.41 V	49	41.5	1.1
7	5413.80	42.7 PK	74.0	-31.3	1.55 V	173	39.9	2.8
8	5413.80	37.6 AV	54.0	-16.4	1.55 V	173	34.8	2.8
9	8120.70	46.8 PK	74.0	-27.2	1.48 V	266	37.8	9.0
10	8120.70	40.1 AV	54.0	-13.9	1.48 V	266	31.1	9.0
11	9023.00	43.3 PK	74.0	-30.7	1.56 V	207	33.9	9.4
12	9023.00	35.5 AV	54.0	-18.5	1.56 V	207	26.1	9.4

REMARKS:

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

TESTED CHANNEL	TX channel 32	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 10GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2726.10	41.5 PK	74.0	-32.5	1.10 H	249	43.3	-1.8
2	2726.10	37.5 AV	54.0	-16.5	1.10 H	249	39.3	-1.8
3	3634.80	53.0 PK	74.0	-21.0	1.03 H	144	53.5	-0.5
4	**3634.80**	**50.9 AV**	**54.0**	**-3.1**	**1.03 H**	**144**	**51.4**	**-0.5**
5	4543.50	44.8 PK	74.0	-29.2	1.85 H	135	43.5	1.3
6	4543.50	39.8 AV	54.0	-14.2	1.85 H	135	38.5	1.3
7	5452.20	44.5 PK	74.0	-29.5	1.36 H	114	41.5	3.0
8	5452.20	36.8 AV	54.0	-17.2	1.36 H	114	33.8	3.0
9	7269.60	46.8 PK	74.0	-27.2	1.47 H	248	38.7	8.1
10	7269.60	35.5 AV	54.0	-18.5	1.47 H	248	27.4	8.1
11	8178.30	49.8 PK	74.0	-24.2	1.88 H	99	41.1	8.7
12	8178.30	42.7 AV	54.0	-11.3	1.88 H	99	34.0	8.7
13	9087.00	45.6 PK	74.0	-28.4	2.25 H	317	36.0	9.6
14	9087.00	37.7 AV	54.0	-16.3	2.25 H	317	28.1	9.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2726.10	37.7 PK	74.0	-36.3	1.49 V	205	39.5	-1.8
2	2726.10	33.8 AV	54.0	-20.2	1.49 V	205	35.6	-1.8
3	3634.80	52.1 PK	74.0	-21.9	1.68 V	15	52.6	-0.5
4	3634.80	49.8 AV	54.0	-4.2	1.68 V	15	50.3	-0.5
5	4543.50	45.6 PK	74.0	-28.4	1.36 V	58	44.3	1.3
6	4543.50	42.4 AV	54.0	-11.6	1.36 V	58	41.1	1.3
7	5452.20	42.8 PK	74.0	-31.2	1.55 V	169	39.8	3.0
8	5452.20	37.7 AV	54.0	-16.3	1.55 V	169	34.7	3.0
9	7269.60	46.5 PK	74.0	-27.5	1.94 V	308	38.4	8.1
10	7269.60	35.8 AV	54.0	-18.2	1.94 V	308	27.7	8.1
11	8178.30	46.7 PK	74.0	-27.3	1.42 V	258	38.0	8.7
12	8178.30	39.8 AV	54.0	-14.2	1.42 V	258	31.1	8.7
13	9087.00	43.7 PK	74.0	-30.3	1.52 V	218	34.1	9.6
14	9087.00	35.8 AV	54.0	-18.2	1.52 V	218	26.2	9.6

REMARKS:

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

TESTED CHANNEL	TX channel 63	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 10GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2744.70	41.4 PK	74.0	-32.6	1.05 H	264	43.2	-1.8
2	2744.70	37.4 AV	54.0	-16.6	1.05 H	264	39.2	-1.8
3	3659.60	53.0 PK	74.0	-21.0	1.07 H	131	53.4	-0.4
4	**3659.60**	**50.9 AV**	**54.0**	**-3.1**	**1.07 H**	**131**	**51.3**	**-0.4**
5	4574.50	44.7 PK	74.0	-29.3	1.80 H	131	43.3	1.4
6	4574.50	39.7 AV	54.0	-14.3	1.80 H	131	38.3	1.4
7	7319.20	46.2 PK	74.0	-27.8	1.47 H	255	38.3	7.9
8	7319.20	35.1 AV	54.0	-18.9	1.47 H	255	27.2	7.9
9	8234.10	50.0 PK	74.0	-24.0	1.87 H	94	41.6	8.4
10	8234.10	43.0 AV	54.0	-11.0	1.87 H	94	34.6	8.4
11	9149.00	45.4 PK	74.0	-28.6	2.21 H	329	35.7	9.7
12	9149.00	37.7 AV	54.0	-16.3	2.21 H	329	28.0	9.7

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2744.70	37.8 PK	74.0	-36.2	1.54 V	205	39.6	-1.8
2	2744.70	33.7 AV	54.0	-20.3	1.54 V	205	35.5	-1.8
3	3659.60	52.4 PK	74.0	-21.6	1.62 V	10	52.8	-0.4
4	3659.60	50.1 AV	54.0	-3.9	1.62 V	10	50.5	-0.4
5	4574.50	45.8 PK	74.0	-28.2	1.32 V	49	44.4	1.4
6	4574.50	42.6 AV	54.0	-11.4	1.32 V	49	41.2	1.4
7	7319.20	45.9 PK	74.0	-28.1	1.97 V	295	38.0	7.9
8	7319.20	35.4 AV	54.0	-18.6	1.97 V	295	27.5	7.9
9	8234.10	47.1 PK	74.0	-26.9	1.42 V	253	38.7	8.4
10	8234.10	39.9 AV	54.0	-14.1	1.42 V	253	31.5	8.4
11	9149.00	43.5 PK	74.0	-30.5	1.50 V	212	33.8	9.7
12	9149.00	35.6 AV	54.0	-18.4	1.50 V	212	25.9	9.7

REMARKS:

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

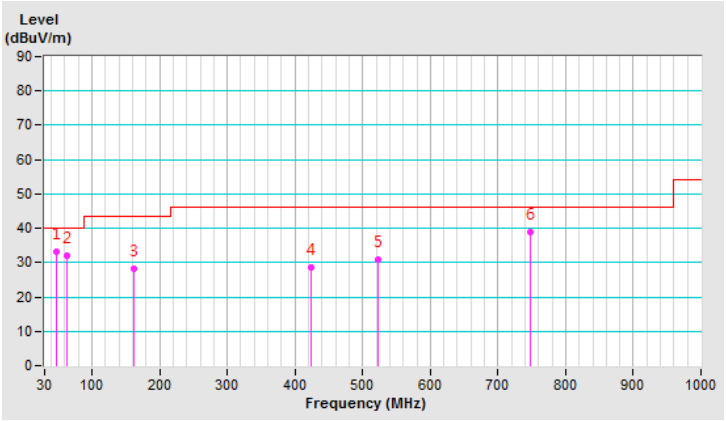
Below 1GHz Data:

TESTED CHANNEL	TX channel 0	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	47.57	33.0 QP	40.0	-7.0	1.50 H	169	42.0	-9.0
2	62.16	32.0 QP	40.0	-8.0	1.00 H	240	41.4	-9.4
3	161.76	28.1 QP	43.5	-15.4	1.50 H	290	36.7	-8.6
4	424.18	28.6 QP	46.0	-17.4	1.50 H	32	32.6	-4.0
5	522.32	30.8 QP	46.0	-15.2	1.00 H	90	32.6	-1.8
6	747.17	38.9 QP	46.0	-7.1	1.00 H	180	36.0	2.9

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

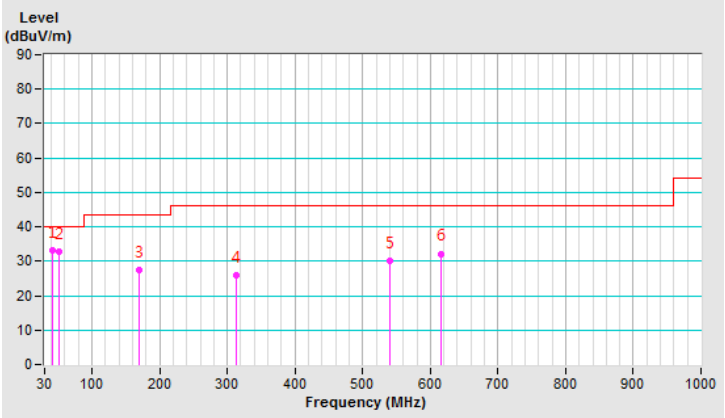


TESTED CHANNEL	TX channel 0	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	40.69	33.3 QP	40.0	-6.7	1.50 V	283	42.7	-9.4
2	50.77	32.7 QP	40.0	-7.3	1.00 V	130	41.5	-8.8
3	169.43	27.6 QP	43.5	-15.9	2.00 V	161	36.6	-9.0
4	312.36	26.0 QP	46.0	-20.0	1.00 V	273	32.7	-6.7
5	540.33	30.1 QP	46.0	-15.9	1.00 V	320	31.8	-1.7
6	615.72	32.2 QP	46.0	-13.8	1.50 V	115	31.8	0.4

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

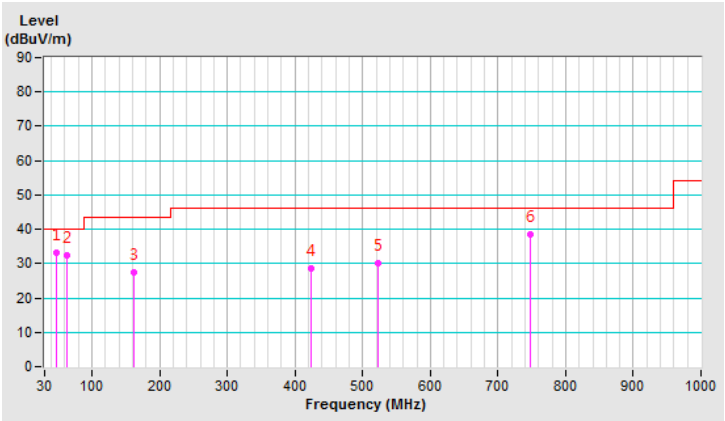


TESTED CHANNEL	TX channel 32	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	47.63	33.1 QP	40.0	-6.9	2.00 H	179	42.1	-9.0
2	62.16	32.3 QP	40.0	-7.7	1.50 H	160	41.7	-9.4
3	161.80	27.6 QP	43.5	-15.9	2.00 H	360	36.2	-8.6
4	424.18	28.6 QP	46.0	-17.4	1.00 H	216	32.6	-4.0
5	522.32	30.1 QP	46.0	-15.9	1.00 H	60	31.9	-1.8
6	746.95	38.5 QP	46.0	-7.5	2.00 H	104	35.7	2.8

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

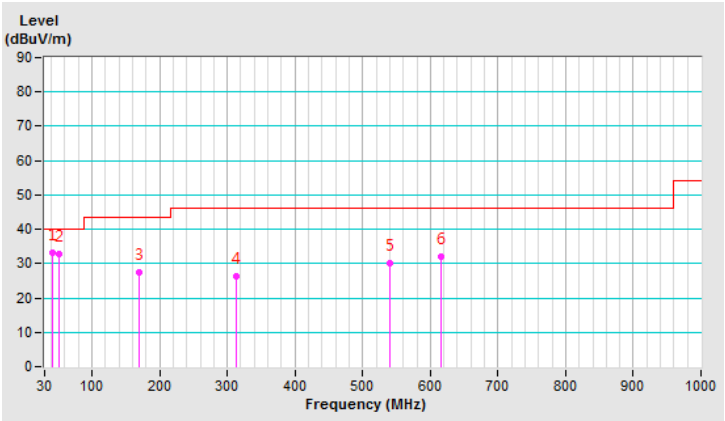


TESTED CHANNEL	TX channel 32	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	40.69	33.1 QP	40.0	-6.9	1.50 V	313	42.5	-9.4
2	50.76	32.9 QP	40.0	-7.1	1.50 V	90	41.7	-8.8
3	169.44	27.4 QP	43.5	-16.1	2.00 V	141	36.4	-9.0
4	312.34	26.2 QP	46.0	-19.8	1.00 V	303	32.9	-6.7
5	540.34	30.0 QP	46.0	-16.0	1.50 V	360	31.7	-1.7
6	615.71	32.0 QP	46.0	-14.0	1.00 V	75	31.6	0.4

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

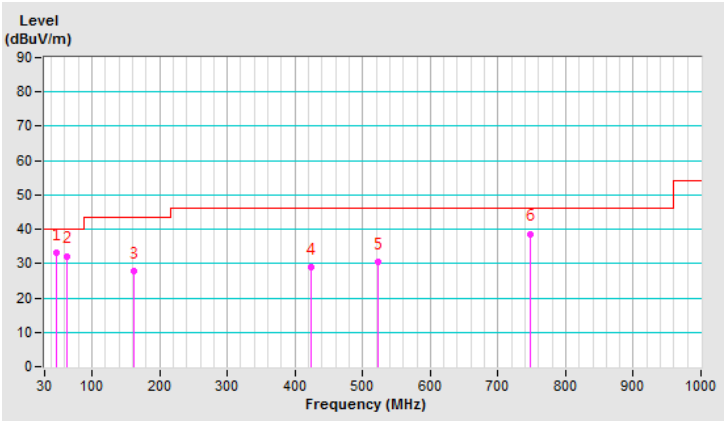


TESTED CHANNEL	TX channel 63	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	47.61	33.3 QP	40.0	-6.7	1.00 H	139	42.3	-9.0
2	62.18	32.2 QP	40.0	-7.8	1.00 H	140	41.6	-9.4
3	161.78	27.9 QP	43.5	-15.6	1.50 H	320	36.5	-8.6
4	424.16	28.8 QP	46.0	-17.2	1.00 H	16	32.8	-4.0
5	522.30	30.5 QP	46.0	-15.5	1.50 H	120	32.3	-1.8
6	746.97	38.7 QP	46.0	-7.3	1.00 H	164	35.9	2.8

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

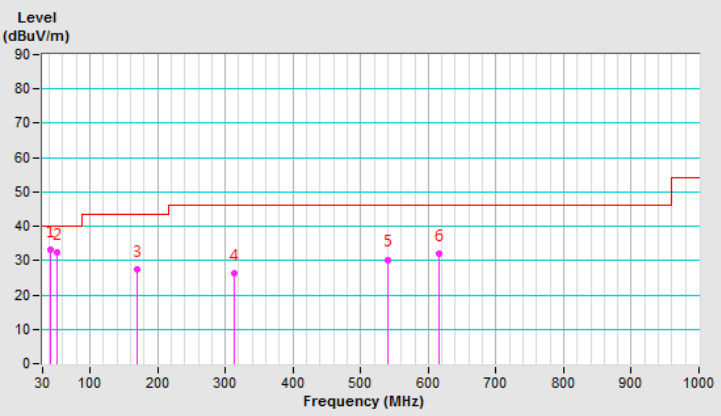


TESTED CHANNEL	TX channel 63	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	40.70	33.2 QP	40.0	-6.8	1.00 V	43	42.6	-9.4
2	50.78	32.5 QP	40.0	-7.5	1.50 V	170	41.3	-8.8
3	169.42	27.5 QP	43.5	-16.0	2.00 V	121	36.5	-9.0
4	312.37	26.2 QP	46.0	-19.8	1.50 V	224	32.9	-6.7
5	540.34	30.3 QP	46.0	-15.7	1.50 V	310	32.0	-1.7
6	615.70	32.1 QP	46.0	-13.9	1.00 V	80	31.7	0.4

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

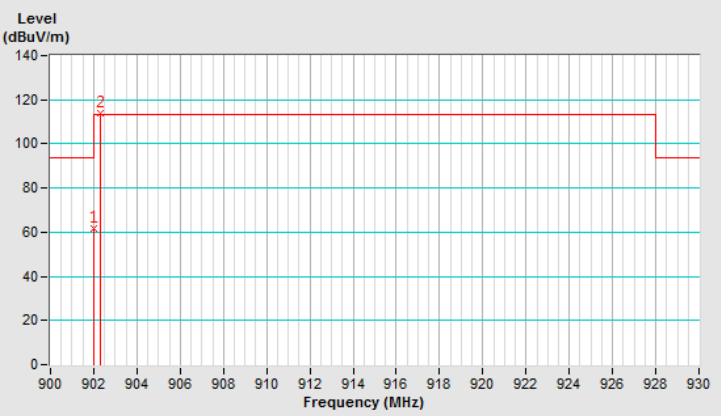


TESTED CHANNEL	TX channel 0	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	900MHz ~ 930MHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	902.00	61.5 QP	93.6	-32.1	1.55 H	69	29.4	32.1
2	*902.30	113.6 QP			1.55 H	69	81.5	32.1

REMARKS:

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

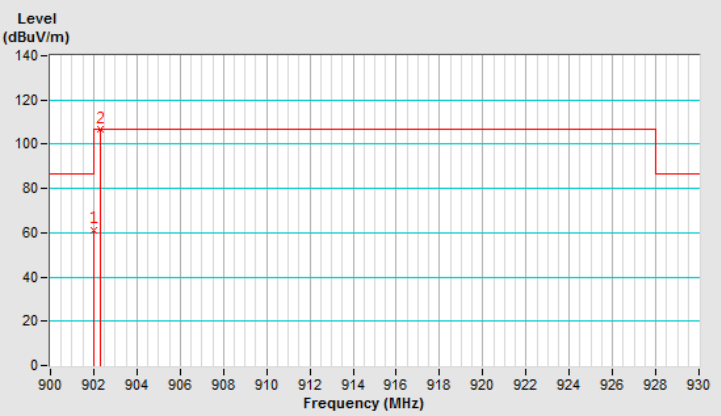


TESTED CHANNEL	TX channel 0	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	900MHz ~ 930MHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	902.00	61.3 QP	86.6	-25.3	1.59 V	340	29.2	32.1
2	*902.30	106.6 QP			1.59 V	340	74.5	32.1

REMARKS:

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

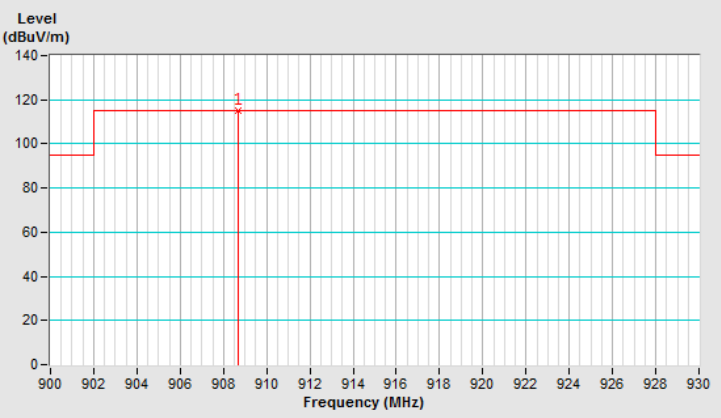


TESTED CHANNEL	TX channel 32	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	900MHz ~ 930MHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*908.70	114.9 QP			1.62 H	91	82.4	32.5

REMARKS:

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

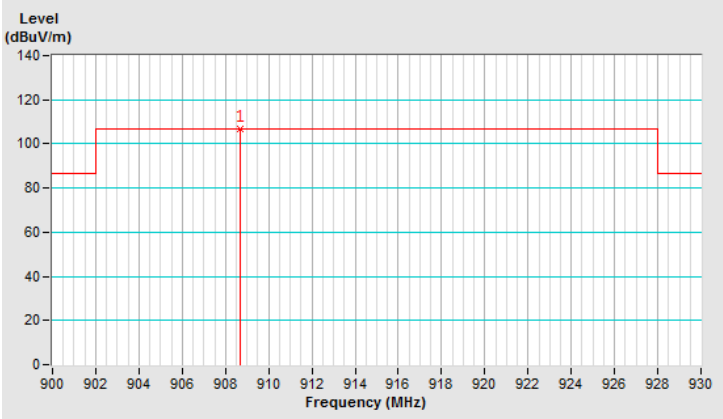


TESTED CHANNEL	TX channel 32	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	900MHz ~ 930MHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*908.70	106.9 QP			1.66 V	344	74.4	32.5

REMARKS:

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

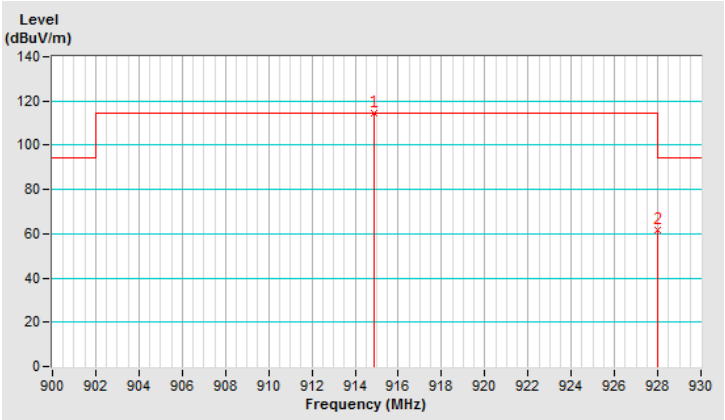


TESTED CHANNEL	TX channel 63	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	900MHz ~ 930MHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*914.90	114.2 QP			1.60 H	92	81.6	32.6
2	928.00	61.6 QP	94.2	-32.6	1.60 H	92	28.9	32.7

REMARKS:

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

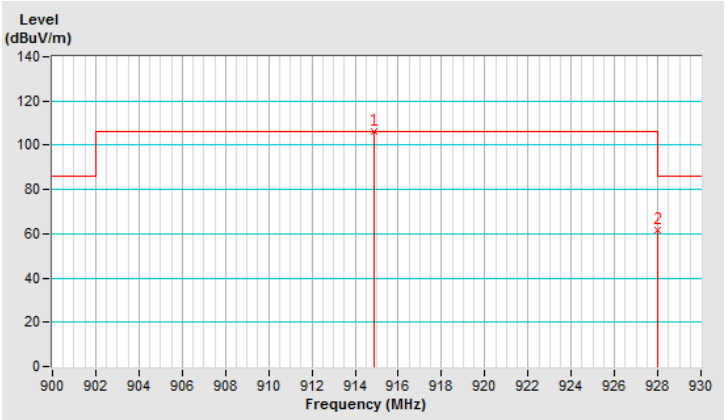


TESTED CHANNEL	TX channel 63	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	900MHz ~ 930MHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*914.90	106.0 QP			1.64 V	342	73.4	32.6
2	928.00	61.4 QP	86.0	-24.6	1.64 V	342	28.7	32.7

REMARKS:

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



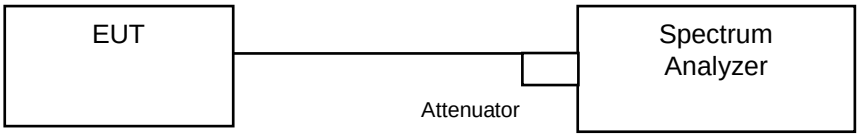
4.2 Number of Hopping Frequency Used

4.2.1 Limits of Hopping Frequency Used Measurement

At least 15 channels frequencies, and should be equally spaced.

Condition	Hopping Frequency Used	Application
20dB Bandwidth <250kHz	hopping channels ≧50	v
20dB Bandwidth >250kHz	hopping channels ≧25	x

4.2.2 Test Setup



4.2.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.2.4 Test Procedure

a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.

b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.

c. Set the SA on MaxHold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.

d. Set the SA on View mode and then plot the result on SA screen.

e. Repeat above procedures until all frequencies measured were complete.

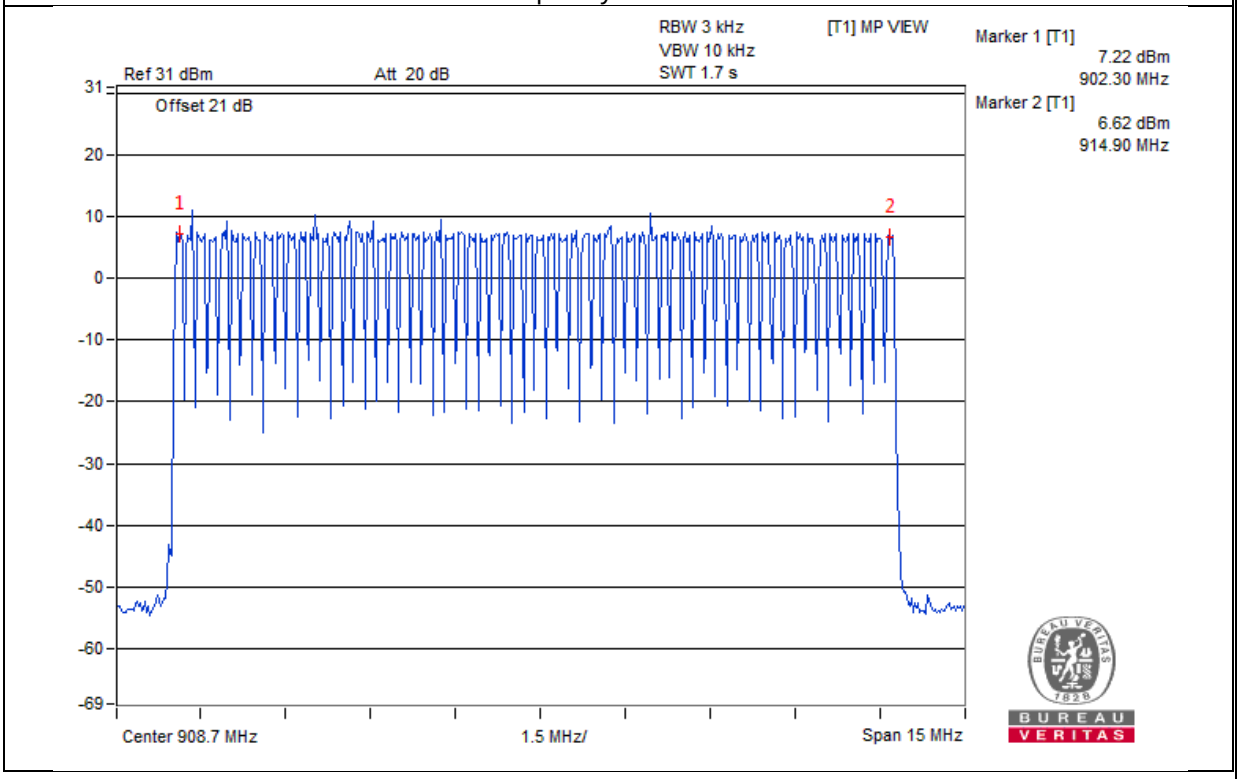
4.2.5 Deviation from Test Standard

No deviation.

4.2.6 Test Results

There are 64 hopping frequencies in the hopping mode. Please refer to next page for the test result. On the plots, it shows that the hopping frequencies are equally spaced.

Frequency: 908.7MHz

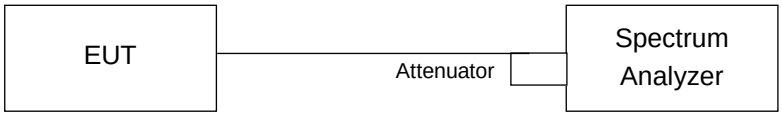


4.3 Dwell Time on Each Channel

4.3.1 Limits of Dwell Time on Each Channel Measurement

Condition	Dwell Time	Application
20dB Bandwidth <250kHz (hopping channels ≧50)	0.4 seconds within a 20 second period	v
20dB Bandwidth >250kHz (hopping channels ≧25)	0.4 seconds within a 10 second period	x

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedures

a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
c. Adjust the center frequency of SA on any frequency be measured and set SA to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
d. Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
e. Repeat above procedures until all different time-slot modes have been completed.

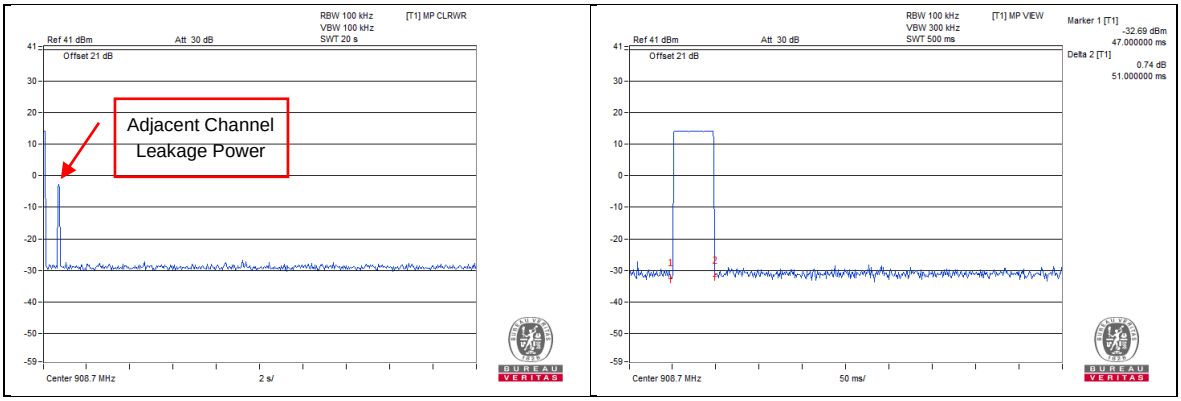
.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 Test Results

Channel	Frequency (MHz)	Number of transmission in a 20 s	Length of transmission time (msec)	Result (msec)	Limit (msec)
32	908.7	1 time	51	51	400

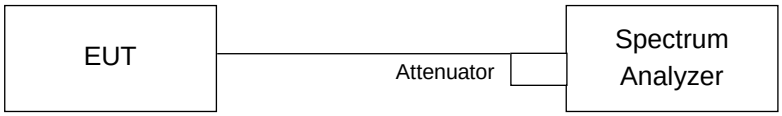


4.4 Channel Bandwidth

4.4.1 Limits of Channel Bandwidth Measurement

Condition	Application
20dB Bandwidth <250kHz (hopping channels ≧ 50)	v
20dB Bandwidth >250kHz (hopping channels ≧ 25)	x

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedure

a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
c. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
d. Repeat above procedures until all frequencies measured were complete.

4.4.5 Deviation from Test Standard

No deviation.

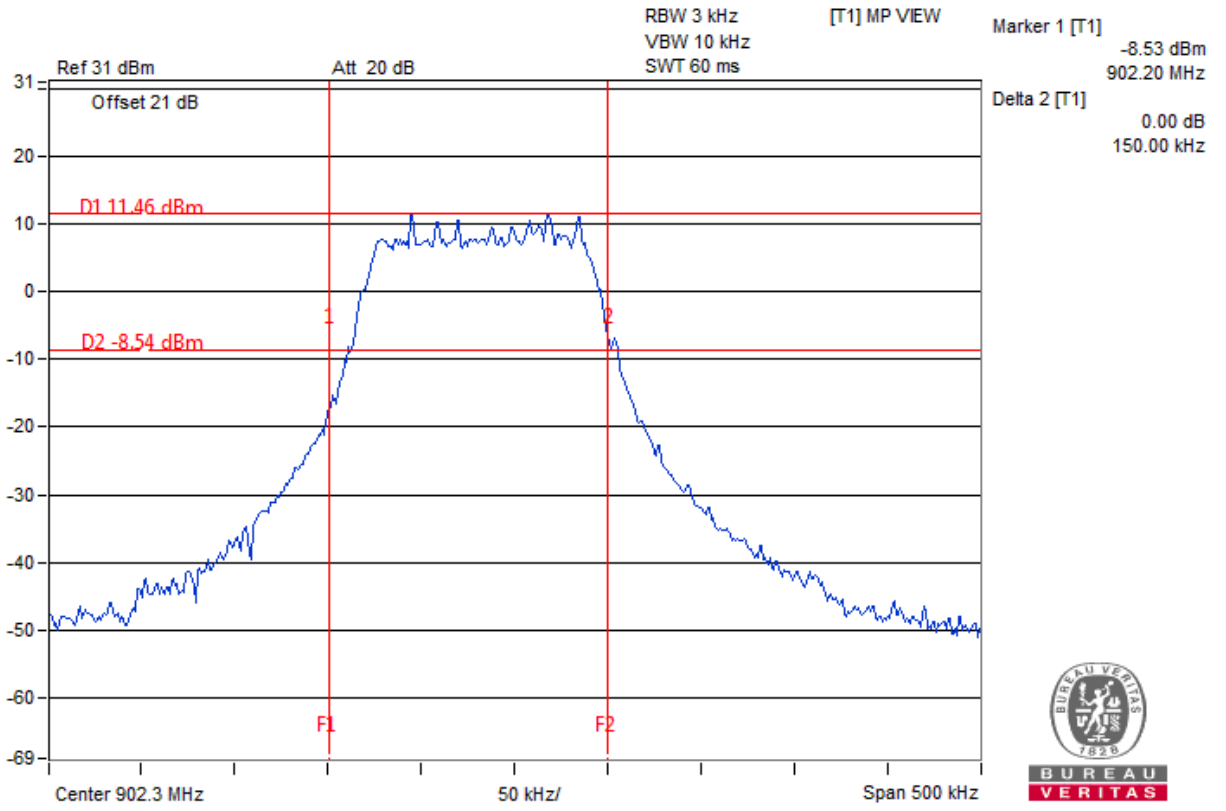
4.4.6 EUT Operating Condition

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.4.7 Test Results

Channel	Frequency (MHz)	20dB Bandwidth (kHz)	Maximum Limit (kHz)	Pass / Fail
0	902.3	0.15	<250	Pass
32	908.7	0.14	<250	Pass
63	914.9	0.14	<250	Pass

Spectrum Plot of Worst Value
CH 0

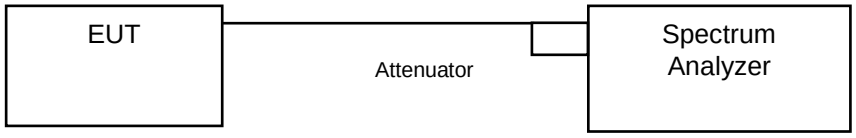


4.5 Hopping Channel Separation

4.5.1 Limits of Hopping Channel Separation Measurement

At least 25kHz or 20dB hopping channel bandwidth (whichever is greater).

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

Measurement Procedure REF

a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.

c. By using the MaxHold function record the separation of two adjacent channels.

d. Measure the frequency difference of these two adjacent channels by SA MARK function. And then plot the result on SA screen.

e. Repeat above procedures until all frequencies measured were complete.

4.5.5 Deviation from Test Standard

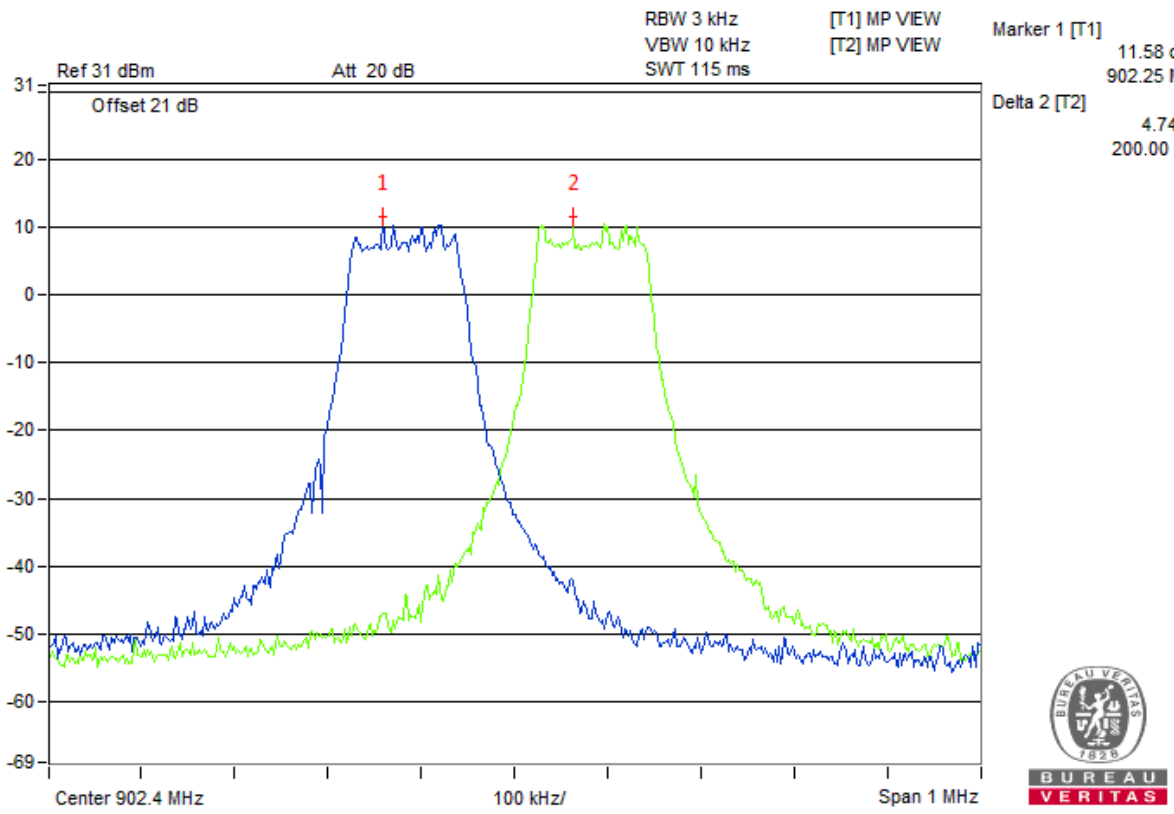
No deviation.

4.5.6 Test Results

Channel	Frequency (MHz)	Adjacent Channel Separation (kHz)	Minimum Limit (kHz)	Pass / Fail
0	902.3	200.0	150	Pass
32	908.7	202.0	140	Pass
63	914.9	202.0	140	Pass

Spectrum Plot of Worst Value

CH 0



4.6 Maximum Output Power

4.6.1 Limits of Maximum Output Power Measurement

Condition	Dwell Time	Application
hopping channels ≧50	1 W	v
hopping channels ≧25 & ≦50	0.25W	x

4.6.2 Test Setup

4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

Average power sensor was used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.6.7 Test Results

FOR PEAK POWER

Channel	Frequency (MHz)	Output Power (mW)	Output Power (dBm)	Power Limit (mW)	Pass / Fail
0	902.3	24.889	13.96	30.00	Pass
32	908.7	24.155	13.83	30.00	Pass
63	914.9	21.528	13.33	30.00	Pass

FOR AVERAGE POWER

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
0	902.3	24.717	13.93
32	908.7	23.988	13.80
63	914.9	21.38	13.30

4.7 Conducted Out of Band Emission Measurement

4.7.1 Limits of Conducted Out of Band Emission Measurement

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

4.7.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.3 Test Procedure

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100 kHz and 300 kHz with suitable frequency span from band edge. The band edges was measured and recorded.

4.7.4 Deviation from Test Standard

No deviation.

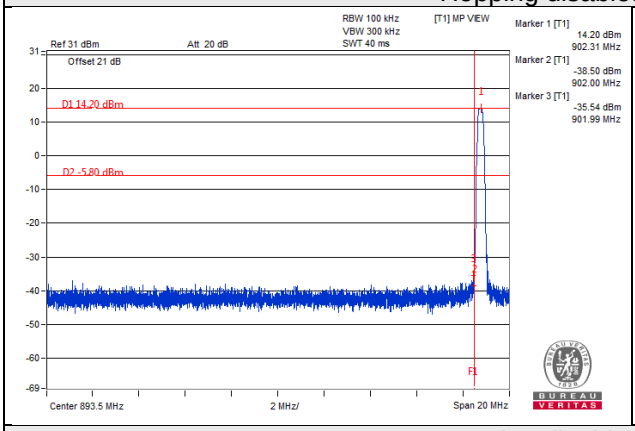
4.7.5 EUT Operating Condition

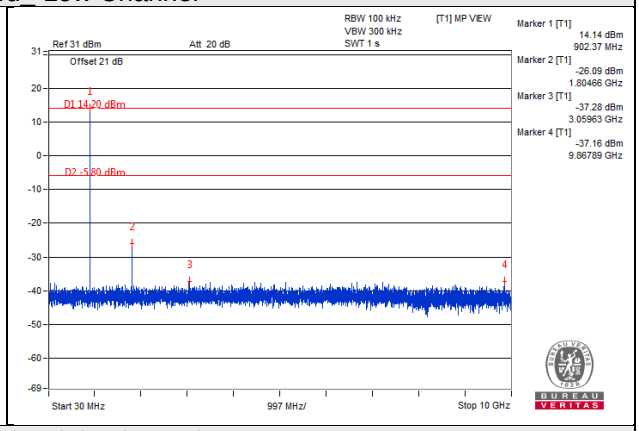
The software provided by client enabled the EUT to transmit and receive data at lowest and highest channel frequencies individually.

4.7.6 Test Results

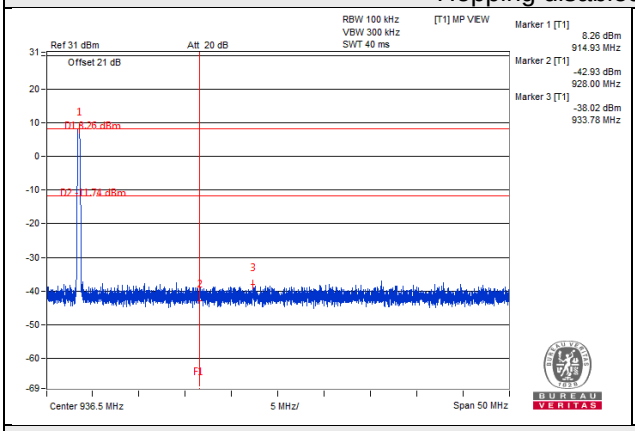
The spectrum plots are attached on the following images. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

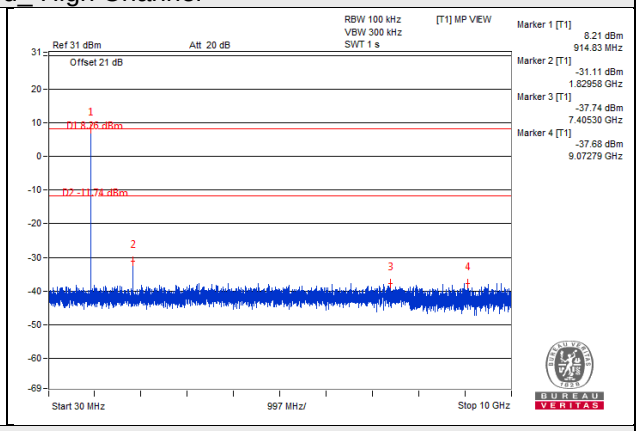
Hopping disabled_ Low Channel



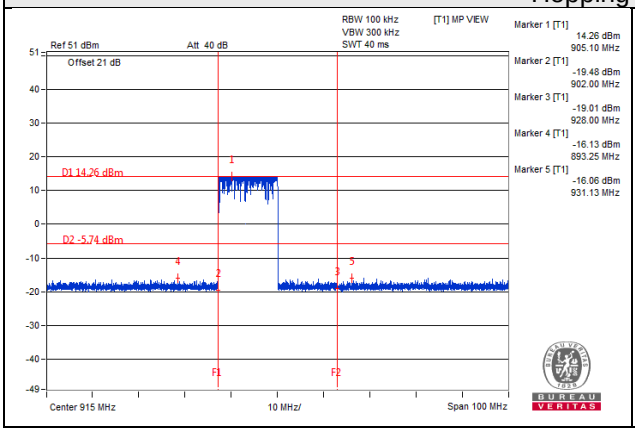


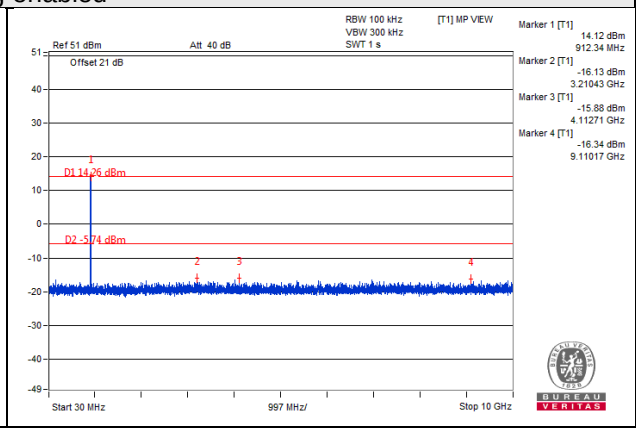
Hopping disabled_ High Channel





Hopping enabled





5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information on the Testing Laboratories

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

If you have any comments, please feel free to contact us at the following:

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Web Site: www.bureauveritas-adt.com

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

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