FCC Test Report

Report No.: RFACXM-WTW-P22040515-5

FCC ID: 2AEUPBHASG001

Test Model: 5F48E9

Received Date: 2022/4/14

Test Date: 2022/6/29 ~ 2022/8/7

Issued Date: 2022/9/13

Applicant: Ring LLC

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory

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Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan

FCC Registration / Designation Number: 723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
RFACXM-WTW-P22040515-5	Original release.	2022/9/13

1 Certificate of Conformity

Product: Amazon Sidewalk Bridge Pro by Ring

Brand: Ring

Test Model: 5F48E9

Sample Status: Engineering sample

Applicant: Ring LLC

Test Date: 2022/6/29 ~ 2022/8/7

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 : Cherry Chuo , **Date:** 2022/9/13

Cherry Chuo / Specialist

Approved by : , **Date:** 2022/9/13

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	Pass	Meet the requirement of limit. Minimum passing margin is -4.95 dB at 0.39219 MHz.
15.247(a)(1)(i)	Number of Hopping Frequency Used	Pass	Meet the requirement of limit.
15.247(a)(1)(i)	Dwell Time on Each Channel	Pass	Meet the requirement of limit.
15.247(a)(1)(i)	1. Hopping Channel Separation 2. Spectrum Bandwidth of a Frequency Hopping Sequence Spread Spectrum System	Pass	Meet the requirement of limit.
15.247(b)(2)	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 -8.0 dB at 33.27 MHz.
15.247(d)	Antenna Port Emission	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is R-N type(F) and R-N type(M) not a standard connector.

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

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.9 dB
Conducted emissions	-	2.5 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.1 dB
	30MHz ~ 1GHz	5.1 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.0 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Amazon Sidewalk Bridge Pro by Ring
Brand	Ring
Test Model	5F48E9
DSN No.	For Conducted & Radiated Emissions test items: GBA1VV012212000F For other test items: GBA1VV012212000H
Status of EUT	Engineering sample
Power Supply Rating	DC 6V from battery or DC 53V from POE
Modulation Type	FSK
Modulation Technology	FHSS
Transfer Rate	Refer to Note
Operating Frequency	902.2 ~ 927.8 MHz
Number of Channel	Refer to Note
Output Power	485.289 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. The EUT has three Configurations, please refer to the following table:

Configuration	Function	Semtech transceiver	Modulation	Mode
1	BP OFF	LR1110	FSK	FHSS
			Lora	FHSS
				DTS_800kHz
2	BP OFF	LR1110	FSK	FHSS
		SX1303	Lora	FHSS
				DTS_800kHz
				DTS_600kHz
				Hybrid
3	BP ON	LR1110	FSK	FHSS
		SX1303	Lora	DTS_800kHz
				DTS_600kHz
				Hybrid

2. The FSK technology information as below table.

Configuration 1、2 (LR1110 Chip)		
Channel Spacing	Data Rate	Number of Channel
200 kHz	50 kbps	129
400 kHz	150 kbps	64
500 kHz	250 kbps	51
Configuration 3 (LR1110 Chip)		
Channel Spacing	Data Rate	Number of Channel
200 kHz	50 kbps	69
500 kHz	250 kbps	27

3. For Radiated Emission test, the EUT was pre-tested under the following modes:

Pre-test Mode	Description
Mode A	**Power from POE**
Mode B	Power from Battery
From the above modes, the worst case was found in **Mode A**. Therefore only the test data of the mode was recorded in this report.	

4. The EUT contains certified WWAN (LTE) modular which FCC ID: ZMONL668AM00.
5. The EUT has below radios as following table:

Radio 1	Radio 2	Radio 3	Radio 4
WLAN 2.4GHz+ WLAN 5GHz+ Bluetooth	WWAN (LTE)	GPS	LoRa + FSK

6. Simultaneously transmission condition.

Condition	Technology			
1	WLAN (2.4GHz)	LoRa	Bluetooth	-
2	WLAN (5GHz)	LoRa	Bluetooth	-
3	WLAN (2.4GHz)	FSK	Bluetooth	-
4	WLAN (5GHz)	FSK	Bluetooth	-
5	LTE	LoRa	Bluetooth	-
6	LTE	FSK	Bluetooth	-
7	WLAN (2.4GHz)	LoRa	FSK	Bluetooth
8	WLAN (5GHz)	LoRa	FSK	Bluetooth
9	LTE	LoRa	FSK	Bluetooth
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.				

7. The EUT must be supplied with a battery and following below table:

Brand	Model No.	Spec.
WELLTECH ENERGY INC.	5F48E9	6 Vdc, 3100 mAh

8. The antennas provided to the EUT, please refer to the following table:

RF Chain No	Brand	Model	Antenna Net Gain (dBi)	Frequency Range	Antenna Type	Connector Type	Cable Length (mm)
LoRa/FSK (Outdoor)	Inpaq	RFDPA563600AF RBX01	5.5	902~928 MHz	Dipole	R-N type(F)	1000
			5	902~928 MHz	Dipole	R-N type(F)	3000
LoRa/FSK (Indoor)	Inpaq	FDPA161500AMU B801	2.8	902~928 MHz	Dipole	R-N type(M)	NA
Note: For Radiated Emission test item the max. gain was selected for the final test .							

9. 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.
10. Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

3.2 Description of Test Modes

Configuration 1、2

129 channels are provided for channel spacing 200 kHz:

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	902.2	26	907.4	52	912.6	78	917.8	104	923
1	902.4	27	907.6	53	912.8	79	918	105	923.2
2	902.6	28	907.8	54	913	80	918.2	106	923.4
3	902.8	29	908	55	913.2	81	918.4	107	923.6
4	903	30	908.2	56	913.4	82	918.6	108	923.8
5	903.2	31	908.4	57	913.6	83	918.8	109	924
6	903.4	32	908.6	58	913.8	84	919	110	924.2
7	903.6	33	908.8	59	914	85	919.2	111	924.4
8	903.8	34	909	60	914.2	86	919.4	112	924.6
9	904	35	909.2	61	914.4	87	919.6	113	924.8
10	904.2	36	909.4	62	914.6	88	919.8	114	925
11	904.4	37	909.6	63	914.8	89	920	115	925.2
12	904.6	38	909.8	64	915	90	920.2	116	925.4
13	904.8	39	910	65	915.2	91	920.4	117	925.6
14	905	40	910.2	66	915.4	92	920.6	118	925.8
15	905.2	41	910.4	67	915.6	93	920.8	119	926
16	905.4	42	910.6	68	915.8	94	921	120	926.2
17	905.6	43	910.8	69	916	95	921.2	121	926.4
18	905.8	44	911	70	916.2	96	921.4	122	926.6
19	906	45	911.2	71	916.4	97	921.6	123	926.8
20	906.2	46	911.4	72	916.6	98	921.8	124	927
21	906.4	47	911.6	73	916.8	99	922	125	927.2
22	906.6	48	911.8	74	917	100	922.2	126	927.4
23	906.8	49	912	75	917.2	101	922.4	127	927.6
24	907	50	912.2	76	917.4	102	922.6	128	927.8
25	907.2	51	912.4	77	917.6	103	922.8		

64 channels are provided for channel spacing 400 kHz:

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	902.4	16	908.8	32	915.2	48	921.6
1	902.8	17	909.2	33	915.6	49	922
2	903.2	18	909.6	34	916	50	922.4
3	903.6	19	910	35	916.4	51	922.8
4	904	20	910.4	36	916.8	52	923.2
5	904.4	21	910.8	37	917.2	53	923.6
6	904.8	22	911.2	38	917.6	54	924
7	905.2	23	911.6	39	918	55	924.4
8	905.6	24	912	40	918.4	56	924.8
9	906	25	912.4	41	918.8	57	925.2
10	906.4	26	912.8	42	919.2	58	925.6
11	906.8	27	913.2	43	919.6	59	926
12	907.2	28	913.6	44	920	60	926.4
13	907.6	29	914	45	920.4	61	926.8
14	908	30	914.4	46	920.8	62	927.2
15	908.4	31	914.8	47	921.2	63	927.6

51 channels are provided for channel spacing 500 kHz:

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	902.5	16	910.5	32	918.5	48	926.5
1	903	17	911	33	919	49	927
2	903.5	18	911.5	34	919.5	50	927.5
3	904	19	912	35	920		
4	904.5	20	912.5	36	920.5		
5	905	21	913	37	921		
6	905.5	22	913.5	38	921.5		
7	906	23	914	39	922		
8	906.5	24	914.5	40	922.5		
9	907	25	915	41	923		
10	907.5	26	915.5	42	923.5		
11	908	27	916	43	924		
12	908.5	28	916.5	44	924.5		
13	909	29	917	45	925		
14	909.5	30	917.5	46	925.5		
15	910	31	918	47	926		

Configuration 3

69 channels are provided for channel spacing 200 kHz:

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	902.2	26	907.4	52	912.6
1	902.4	27	907.6	53	912.8
2	902.6	28	907.8	54	913
3	902.8	29	908	55	913.2
4	903	30	908.2	56	913.4
5	903.2	31	908.4	57	913.6
6	903.4	32	908.6	58	913.8
7	903.6	33	908.8	59	914
8	903.8	34	909	60	914.2
9	904	35	909.2	61	914.4
10	904.2	36	909.4	62	914.6
11	904.4	37	909.6	63	914.8
12	904.6	38	909.8	64	915
13	904.8	39	910	65	915.2
14	905	40	910.2	66	915.4
15	905.2	41	910.4	67	915.6
16	905.4	42	910.6	68	915.8
17	905.6	43	910.8		
18	905.8	44	911		
19	906	45	911.2		
20	906.2	46	911.4		
21	906.4	47	911.6		
22	906.6	48	911.8		
23	906.8	49	912		
24	907	50	912.2		
25	907.2	51	912.4		

27 channels are provided for channel spacing 500 kHz:

Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	902.5	16	910.5
1	903	17	911
2	903.5	18	911.5
3	904	19	912
4	904.5	20	912.5
5	905	21	913
6	905.5	22	913.5
7	906	23	914
8	906.5	24	914.5
9	907	25	915
10	907.5	26	915.5
11	908		
12	908.5		
13	909		
14	909.5		
15	910		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
1	√	√	√	√	Configuration 1: Channel Spacing: 200 kHz
2	√	√	√	√	Configuration 1: Channel Spacing: 400 kHz
3	√	√	√	√	Configuration 1: Channel Spacing: 500 kHz
4	√	√	√	√	Configuration 3: Channel Spacing: 200 kHz
5	√	√	√	√	Configuration 3: Channel Spacing: 500 kHz

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

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.

Eut Configure Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (kbps)
1	0 to 128	0, 64, 128	FHSS	FSK	50
2	0 to 63	0, 32, 63	FHSS	FSK	150
3	0 to 50	0, 25, 50	FHSS	FSK	250
4	0 to 68	0, 34,68	FHSS	FSK	50
5	0 to 26	0, 13,26	FHSS	FSK	250

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.

Eut Configure Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (kbps)
1	0 to 128	128	FHSS	FSK	50
2	0 to 63	63	FHSS	FSK	150
3	0 to 50	50	FHSS	FSK	250
4	0 to 128	68	FHSS	FSK	50
5	0 to 50	26	FHSS	FSK	250

Power Line Conducted Emission Test:

☒ 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.

Eut Configure Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (kbps)
1	0 to 128	128	FHSS	FSK	50
2	0 to 63	63	FHSS	FSK	150
3	0 to 50	50	FHSS	FSK	250
4	0 to 128	68	FHSS	FSK	50
5	0 to 50	26	FHSS	FSK	250

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.

Eut Configure Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (kbps)
1	0 to 128	0, 64, 128	FHSS	FSK	50
2	0 to 63	0, 32, 63	FHSS	FSK	150
3	0 to 50	0, 25, 50	FHSS	FSK	250
4	0 to 68	0, 34,68	FHSS	FSK	50
5	0 to 26	0, 13,26	FHSS	FSK	250

Test Condition:

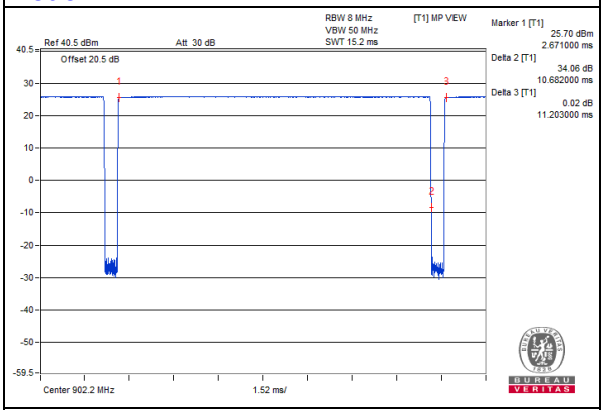
Applicable to	Environmental Conditions	Input Power (System)	Tested by
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Carter Lin
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Carter Lin
PLC	25deg. C, 75%RH	120Vac, 60Hz	Ryan Du
APCM	25deg. C, 60%RH	120Vac, 60Hz	Eric Peng

3.3 Duty Cycle of Test Signal

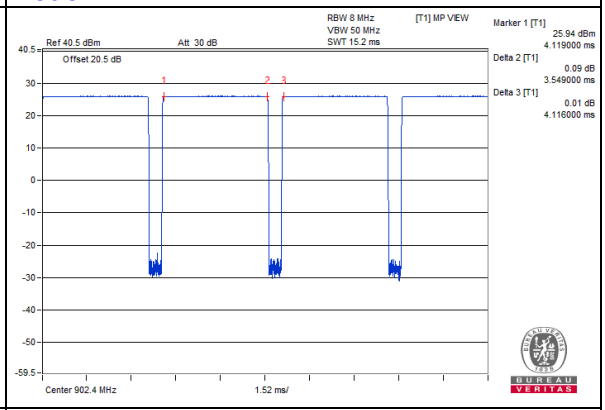
Duty cycle of test signal is < 98 %, duty factor shall be considered.

Mode 1: Duty cycle = 10.682 ms/11.203 ms = 0.953, Duty factor = 10 * log(1/Duty cycle) = 0.21 dB
Mode 2: Duty cycle = 3.549 ms/4.116 ms = 0.862, Duty factor = 10 * log(1/Duty cycle) = 0.64 dB
Mode 3: Duty cycle = 2.236 ms/2.68 ms = 0.834, Duty factor = 10 * log(1/Duty cycle) = 0.79 dB
Mode 4: Duty cycle = 10.633 ms/11.188 ms = 0.95, Duty factor = 10 * log(1/Duty cycle) = 0.22 dB
Mode 5: Duty cycle = 2.193 ms/2.241 ms = 0.979, Duty factor = 10 * log(1/Duty cycle) = 0.09 dB

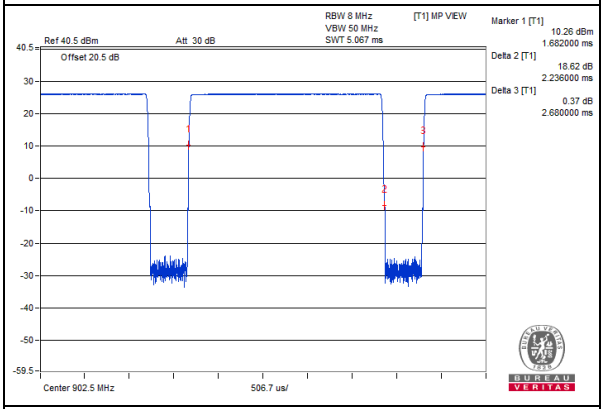
Mode 1



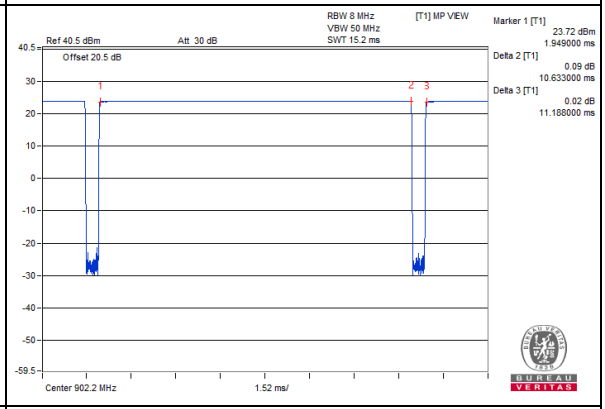
Mode 2



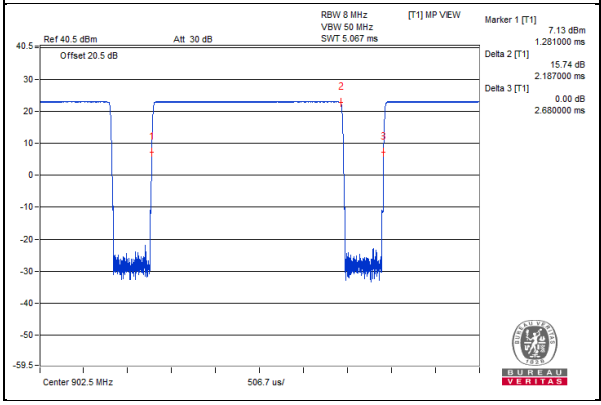
Mode 3



Mode 4



Mode 5



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.

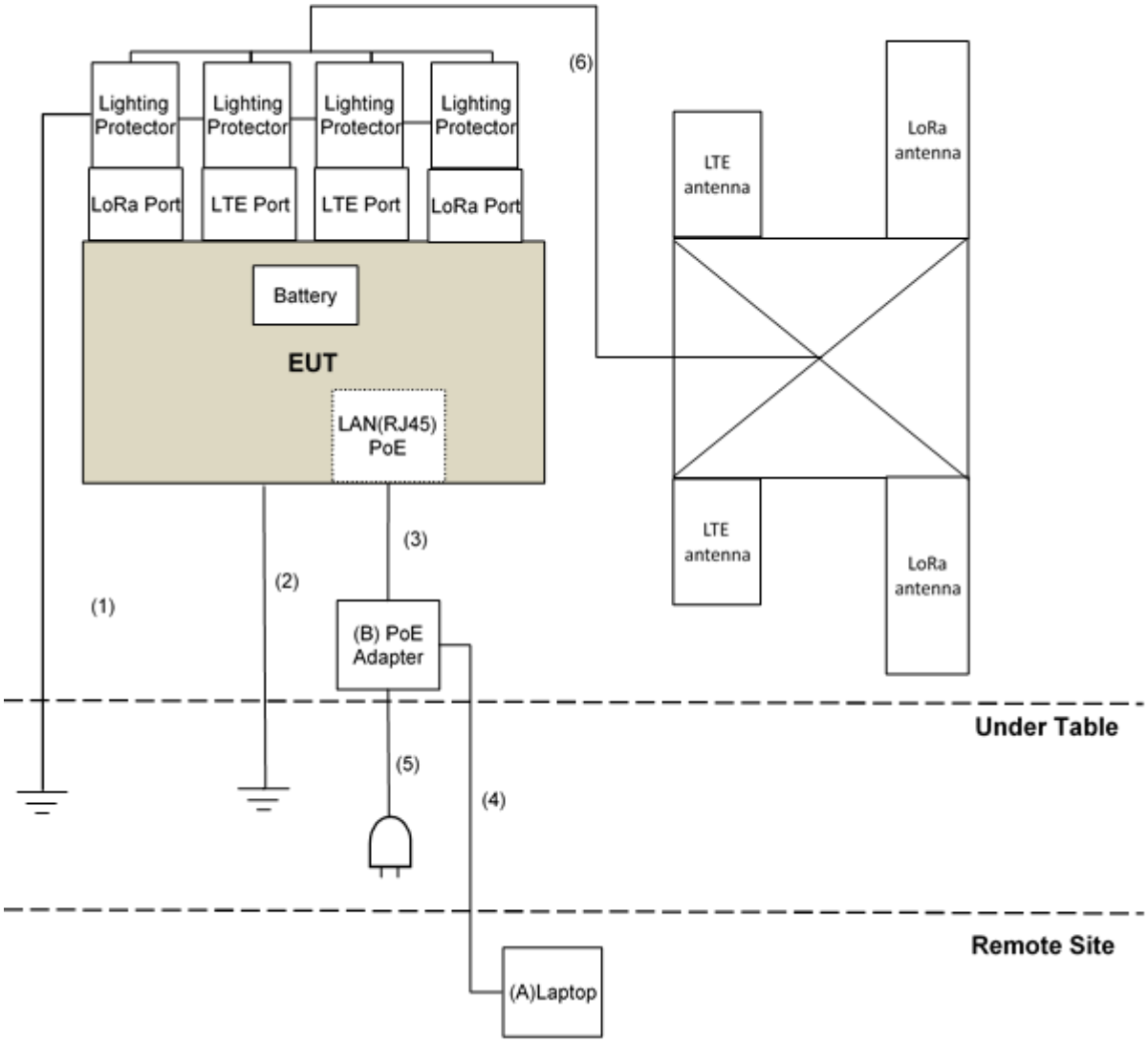
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	Lenovo	20U5S01X00 L14	PF-1ANPYA	NA	Provided by Lab
B.	PoE Adapter	Gospower	G0545-530-060-P SE1000	NA	NA	Supplied by applicant

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

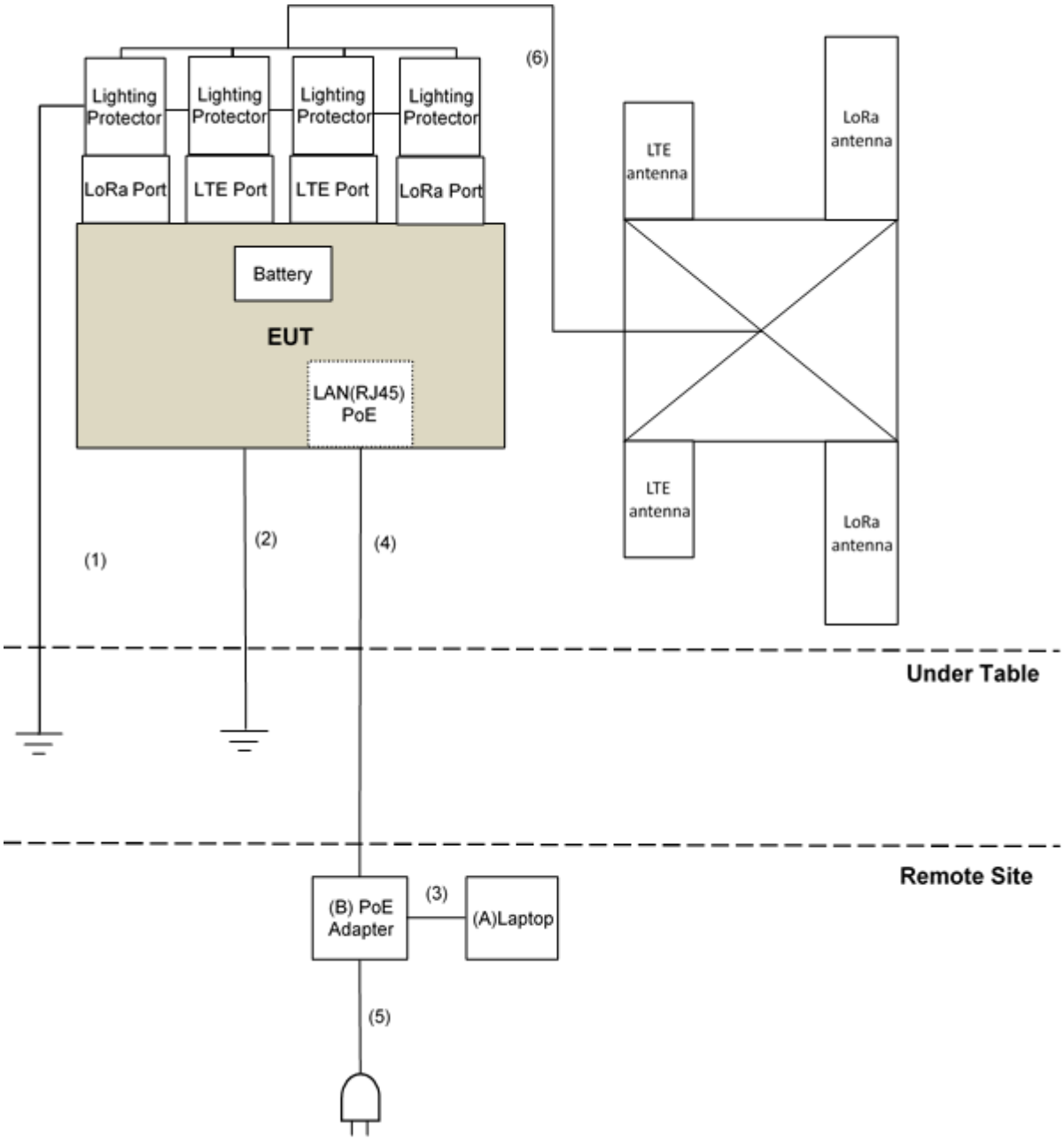
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	GND Cable	1	3	No	0	Provided by Lab
2.	GND Cable	1	3	No	0	Provided by Lab
3.	RJ-45 Cable	1	1.5	No	0	Provided by Lab
4.	RJ-45 Cable	1	10	No	0	Provided by Lab
5.	AC Cable	1	1	No	0	Supplied by applicant
6.	Antenna Cable	4	1	Yes	0	Supplied by applicant

3.4.1 Configuration of System under Test

For AC Power Conducted Emission test:



For Radiated Emission test:



3.5 General Description of Applied Standards and References

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

Test standard:
FCC Part 15, Subpart C (15.247)
ANSI C63.10-2013

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

References Test Guidance:
KDB 558074 D01 15.247 Meas Guidance v05r02

All test items have been performed as a reference to the above KDB test guidance.

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

For Radiated Emission test:

Description & Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Spectrum Analyzer Keysight	N9020B	MY60112410	2022/3/13	2023/3/12
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA
Test Receiver KEYSIGHT	N9038A	MY59050100	2022/6/20	2023/6/19
Pre_Amplifier EMCI	EMC001340	980142	2022/6/2	2023/6/1
LOOP ANTENNA Electro-Metrics	EM-6879	264	2022/3/18	2023/3/17
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-001	2022/1/6	2023/1/5
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-002	2022/1/6	2023/1/5
Pre_Amplifier(20M-3G) EMCI	EMC330N	980852	2022/3/28	2023/3/27
Bilog Antenna Schwarzbeck	VULB 9168	9168-0942	2021/10/26	2022/10/25
RF Coaxial Cable COMMATE/PEWC	8D	966-6-1	2022/4/25	2023/4/24
RF Coaxial Cable COMMATE/PEWC	8D	966-6-2	2022/4/25	2023/4/24
RF Coaxial Cable COMMATE/PEWC	8D	966-6-3	2022/4/25	2023/4/24
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-01	2022/1/10	2023/1/9
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-2035	2021/11/14	2022/11/13
Pre_Amplifier EMCI	EMC12630SE	980385	2021/8/25	2022/8/24
RF Coaxial Cable EMCI	EMC101G-KM-KM-10000	210708	2021/11/9	2022/11/8
RF Cable EMCI	EMC104-SM-SM-1300	210205	2022/5/10	2023/5/9

Note: 1. The test was performed in 966 Chamber No. 6.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: 2022/6/29 ~ 2022/8/2

For other test items:

Description & Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Spectrum Analyzer R&S	FSV40	101516	2022/3/7	2023/3/6
Power Meter Anritsu	ML2495A	1529002	2022/6/22	2023/6/21
Pulse Power Sensor Anritsu	MA2411B	1726434	2022/6/22	2023/6/21
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2022/4/5	2023/4/4
Software	ADT_RF Test Software V6.6.5.4	NA	NA	NA

Note: 1. The test was performed in Oven room 2.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: 2022/8/7

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. 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:

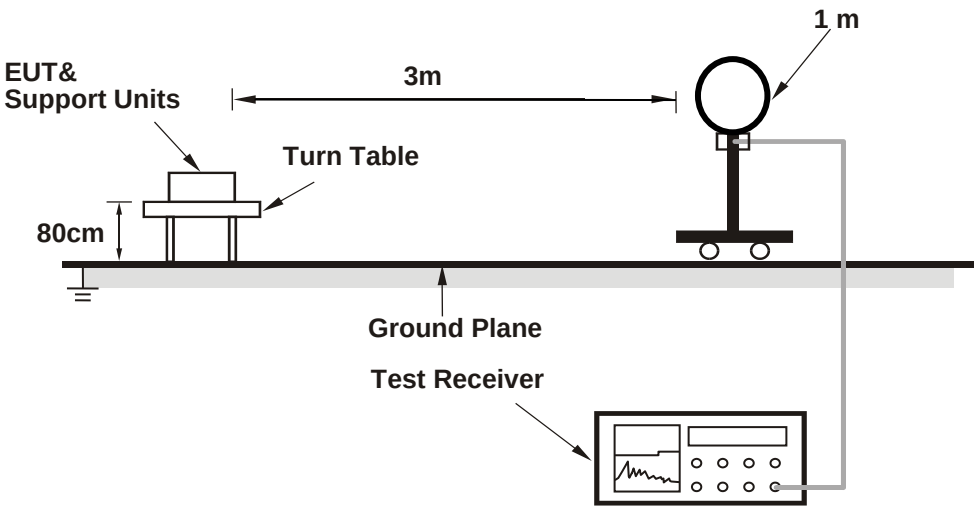
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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

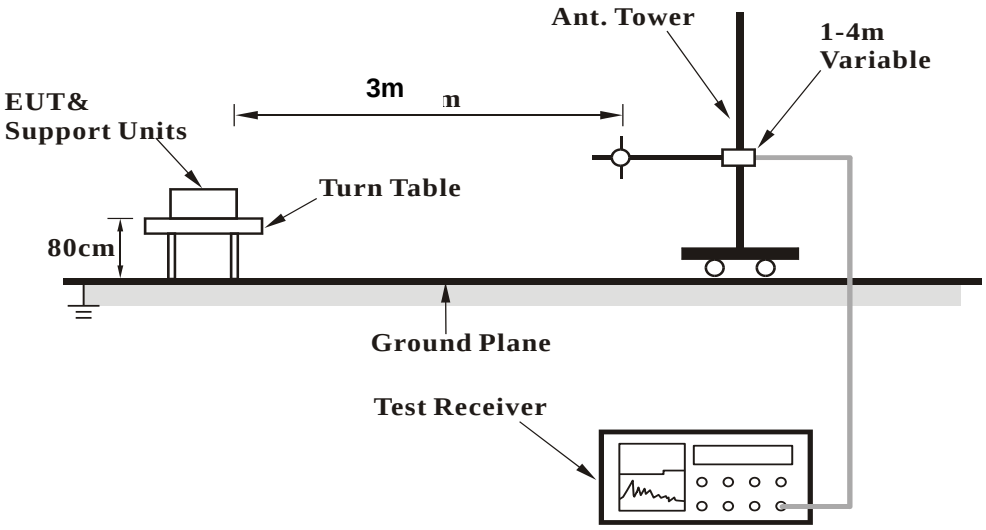
No deviation.

4.1.5 Test Setup

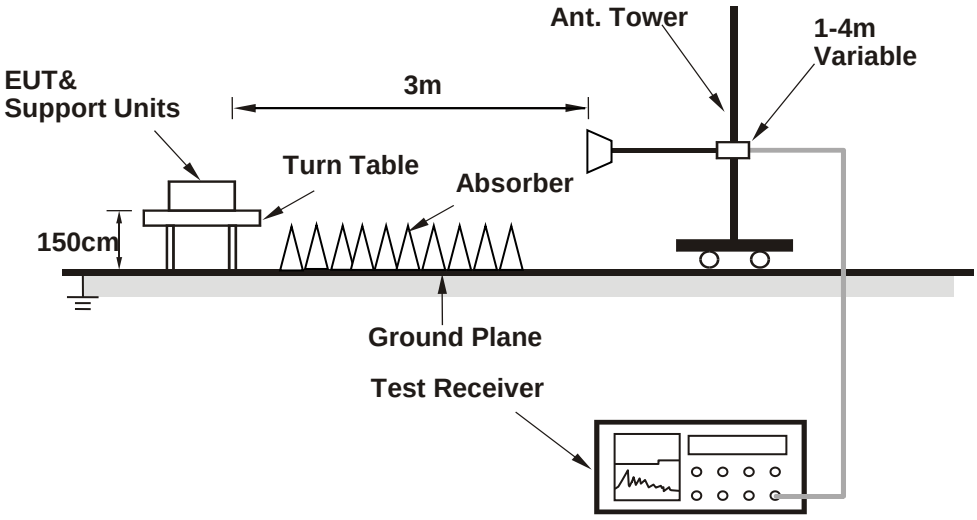
For Radiated emission below 30MHz



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. Controlling software (Run Putty.exe paste Lora and Fsk.txt command) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results (Mode 1)

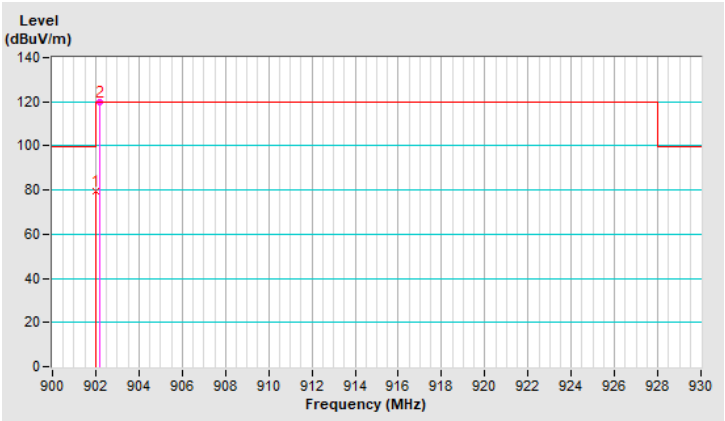
Bandedge Data:

RF Mode	TX FSK_50kbps	**Channel**	CH 0：902.2 MHz
Frequency Range	900MHz ~ 930MHz	**Detector Function**	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	902.00	79.2 QP	99.6	-20.4	1.00 H	351	48.9	30.3
2	*902.20	119.6 QP			1.00 H	351	89.3	30.3

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. “ * “: Fundamental frequency.

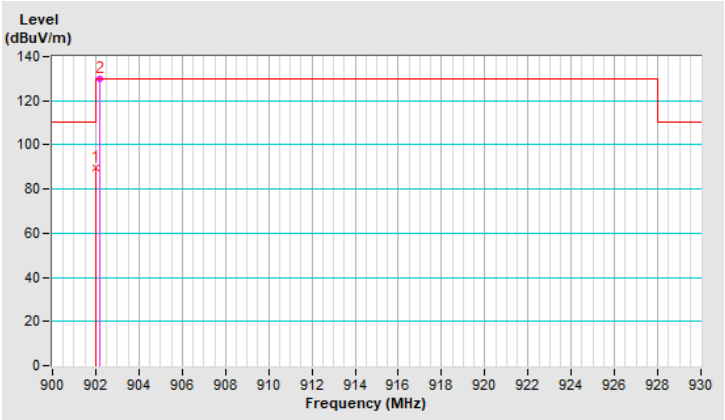


RF Mode	TX FSK_50kbps	Channel	CH 0：902.2 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	902.00	89.8 QP	110.2	-20.4	1.00 V	147	59.5	30.3
2	*902.20	130.2 QP			1.00 V	147	99.9	30.3

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. “ * “: Fundamental frequency.

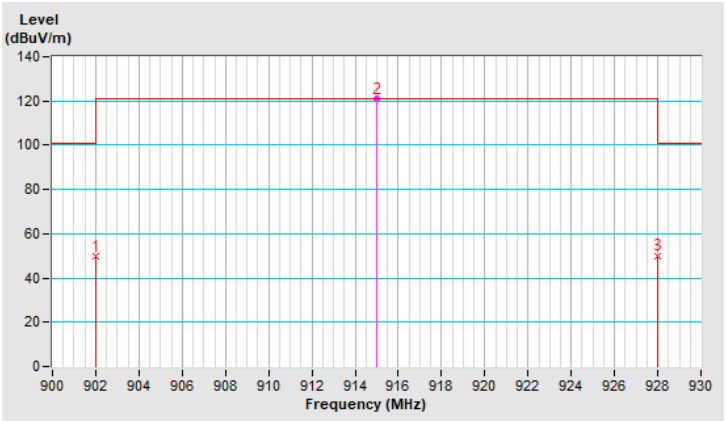


RF Mode	TX FSK_50kbps	Channel	CH 64：915 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	902.00	49.7 QP	100.8	-51.1	1.00 H	355	19.4	30.3
2	*915.00	120.8 QP			1.00 H	355	90.1	30.7
3	928.00	50.0 QP	100.8	-50.8	1.00 H	355	19.1	30.9

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. “ * “: Fundamental frequency.

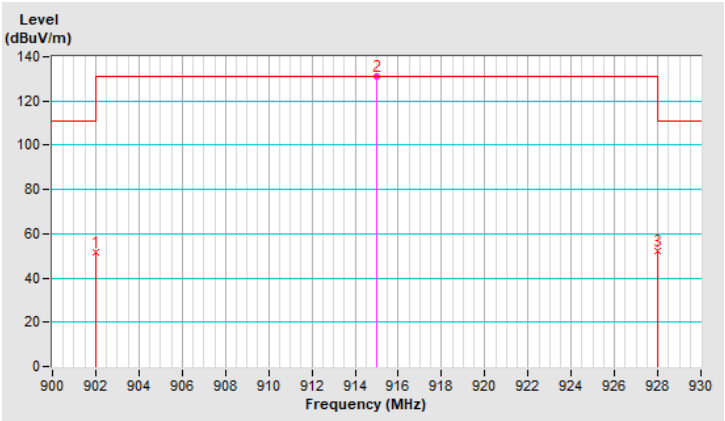


RF Mode	TX FSK_50kbps	Channel	CH 64：915 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	902.00	51.6 QP	111.1	-59.5	1.00 V	151	21.3	30.3
2	*915.00	131.1 QP			1.10 V	151	100.4	30.7
3	928.00	52.0 QP	111.1	-59.1	1.00 V	151	21.1	30.9

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. “ * “: Fundamental frequency.

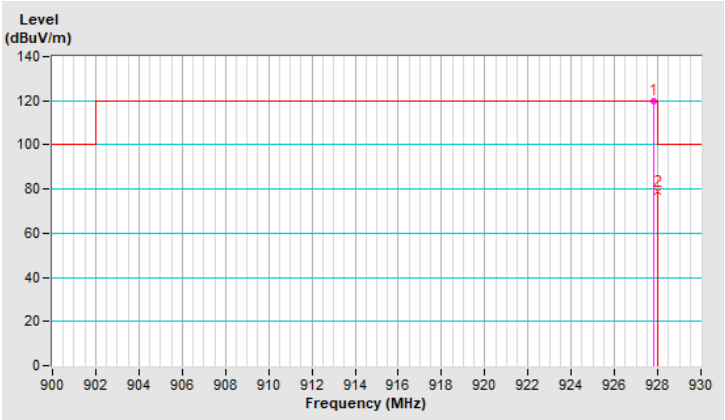


RF Mode	TX FSK_50kbps	Channel	CH 128：927.8 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*927.80	120.1 QP			1.00 H	354	89.2	30.9
2	928.00	78.9 QP	100.1	-21.2	1.00 H	354	48.0	30.9

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. “ * “: Fundamental frequency.

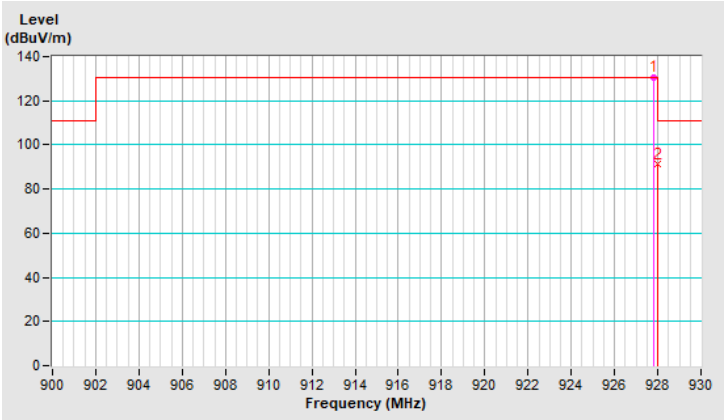


RF Mode	TX FSK_50kbps	Channel	CH 128：927.8 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*927.80	130.7 QP			1.00 V	150	99.8	30.9
2	928.00	91.3 QP	110.7	-19.4	1.00 V	150	60.4	30.9

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. “ * “: Fundamental frequency.



Above 1GHz Data:

RF Mode	TX FSK_50kbps	Channel	CH 0：902.2 MHz
Frequency Range	1GHz ~ 10GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2706.60	36.1 PK	74.0	-37.9	2.31 H	227	39.0	-2.9
2	2706.60	27.6 AV	54.0	-26.4	2.31 H	227	30.5	-2.9
3	3608.80	36.6 PK	74.0	-37.4	2.12 H	238	37.9	-1.3
4	3608.80	27.7 AV	54.0	-26.3	2.12 H	238	29.0	-1.3
5	4511.00	36.5 PK	74.0	-37.5	1.53 H	149	36.1	0.4
6	4511.00	24.8 AV	54.0	-29.2	1.53 H	149	24.4	0.4
7	5413.20	38.2 PK	74.0	-35.8	1.50 H	133	36.6	1.6
8	5413.20	26.0 AV	54.0	-28.0	1.50 H	133	24.4	1.6
9	8119.80	42.6 PK	74.0	-31.4	1.57 H	158	34.5	8.1
10	8119.80	31.2 AV	54.0	-22.8	1.57 H	158	23.1	8.1
11	9022.00	43.5 PK	74.0	-30.5	1.57 H	164	35.0	8.5
12	9022.00	32.1 AV	54.0	-21.9	1.57 H	164	23.6	8.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2706.60	36.6 PK	74.0	-37.4	3.16 V	192	39.5	-2.9
2	2706.60	28.0 AV	54.0	-26.0	3.16 V	192	30.9	-2.9
3	3608.80	37.7 PK	74.0	-36.3	2.12 V	187	39.0	-1.3
4	3608.80	27.4 AV	54.0	-26.6	2.12 V	187	28.7	-1.3
5	4511.00	36.8 PK	74.0	-37.2	1.66 V	150	36.4	0.4
6	4511.00	24.8 AV	54.0	-29.2	1.66 V	150	24.4	0.4
7	5413.20	38.9 PK	74.0	-35.1	1.66 V	149	37.3	1.6
8	5413.20	25.9 AV	54.0	-28.1	1.66 V	149	24.3	1.6
9	8119.80	42.9 PK	74.0	-31.1	1.64 V	141	34.8	8.1
10	8119.80	31.0 AV	54.0	-23.0	1.64 V	141	22.9	8.1
11	9022.00	43.8 PK	74.0	-30.2	1.62 V	165	35.3	8.5
12	9022.00	32.0 AV	54.0	-22.0	1.62 V	165	23.5	8.5

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

RF Mode	TX FSK_50kbps	Channel	CH 64：915 MHz
Frequency Range	1GHz ~ 10GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2745.00	36.5 PK	74.0	-37.5	2.33 H	222	39.3	-2.8
2	2745.00	27.9 AV	54.0	-26.1	2.33 H	222	30.7	-2.8
3	3660.00	36.2 PK	74.0	-37.8	2.11 H	245	37.3	-1.1
4	3660.00	27.2 AV	54.0	-26.8	2.11 H	245	28.3	-1.1
5	4575.00	35.8 PK	74.0	-38.2	1.49 H	161	35.3	0.5
6	4575.00	24.4 AV	54.0	-29.6	1.49 H	161	23.9	0.5
7	7320.00	42.1 PK	74.0	-31.9	1.47 H	231	35.4	6.7
8	7320.00	32.2 AV	54.0	-21.8	1.47 H	231	25.5	6.7
9	8235.00	42.7 PK	74.0	-31.3	1.59 H	171	34.9	7.8
10	8235.00	31.3 AV	54.0	-22.7	1.59 H	171	23.5	7.8
11	9150.00	43.3 PK	74.0	-30.7	1.56 H	154	34.2	9.1
12	9150.00	31.7 AV	54.0	-22.3	1.56 H	154	22.6	9.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2745.00	37.8 PK	74.0	-36.2	2.65 V	127	40.6	-2.8
2	2745.00	29.9 AV	54.0	-24.1	2.65 V	127	32.7	-2.8
3	3660.00	36.9 PK	74.0	-37.1	2.24 V	196	38.0	-1.1
4	3660.00	27.5 AV	54.0	-26.5	2.24 V	196	28.6	-1.1
5	4575.00	37.0 PK	74.0	-37.0	1.72 V	165	36.5	0.5
6	4575.00	24.9 AV	54.0	-29.1	1.72 V	165	24.4	0.5
7	7320.00	42.8 PK	74.0	-31.2	3.15 V	167	36.1	6.7
8	7320.00	33.0 AV	54.0	-21.0	3.15 V	167	26.3	6.7
9	8235.00	42.9 PK	74.0	-31.1	1.66 V	139	35.1	7.8
10	8235.00	31.1 AV	54.0	-22.9	1.66 V	139	23.3	7.8
11	9150.00	43.6 PK	74.0	-30.4	1.65 V	174	34.5	9.1
12	9150.00	31.7 AV	54.0	-22.3	1.65 V	174	22.6	9.1

Remarks:

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

RF Mode	TX FSK_50kbps	Channel	CH 128：927.8 MHz
Frequency Range	1GHz ~ 10GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2783.40	36.1 PK	74.0	-37.9	2.30 H	220	38.8	-2.7
2	2783.40	27.4 AV	54.0	-26.6	2.30 H	220	30.1	-2.7
3	3711.20	36.8 PK	74.0	-37.2	2.16 H	225	37.8	-1.0
4	3711.20	28.0 AV	54.0	-26.0	2.16 H	225	29.0	-1.0
5	4639.00	36.7 PK	74.0	-37.3	1.54 H	145	36.1	0.6
6	4639.00	25.0 AV	54.0	-29.0	1.54 H	145	24.4	0.6
7	7422.40	42.9 PK	74.0	-31.1	1.43 H	210	35.7	7.2
8	7422.40	33.0 AV	54.0	-21.0	1.43 H	210	25.8	7.2
9	8350.20	42.1 PK	74.0	-31.9	1.56 H	144	34.9	7.2
10	8350.20	30.8 AV	54.0	-23.2	1.56 H	144	23.6	7.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2783.40	35.9 PK	74.0	-38.1	2.13 V	146	38.6	-2.7
2	2783.40	28.7 AV	54.0	-25.3	2.13 V	146	31.4	-2.7
3	3711.20	36.6 PK	74.0	-37.4	2.17 V	198	37.6	-1.0
4	3711.20	27.3 AV	54.0	-26.7	2.17 V	198	28.3	-1.0
5	4639.00	36.3 PK	74.0	-37.7	1.68 V	140	35.7	0.6
6	4639.00	24.3 AV	54.0	-29.7	1.68 V	140	23.7	0.6
7	7422.40	43.0 PK	74.0	-31.0	1.68 V	152	35.8	7.2
8	7422.40	34.3 AV	54.0	-19.7	1.68 V	152	27.1	7.2
9	8350.20	43.1 PK	74.0	-30.9	1.61 V	137	35.9	7.2
10	8350.20	31.2 AV	54.0	-22.8	1.61 V	137	24.0	7.2

Remarks:

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

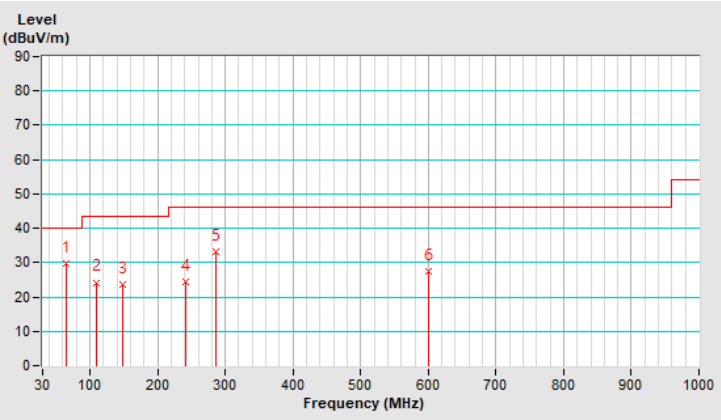
Below 1GHz Data:

RF Mode	TX FSK_50kbps	Channel	CH 128：927.8 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	64.78	29.7 QP	40.0	-10.3	1.00 H	60	43.4	-13.7
2	108.77	24.2 QP	43.5	-19.3	1.50 H	253	39.9	-15.7
3	148.10	23.6 QP	43.5	-19.9	1.50 H	360	36.0	-12.4
4	241.57	24.3 QP	46.0	-21.7	2.00 H	140	38.4	-14.1
5	286.09	33.3 QP	46.0	-12.7	2.50 H	107	45.6	-12.3
6	600.00	27.6 QP	46.0	-18.4	1.50 H	175	32.3	-4.7

Remarks:

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

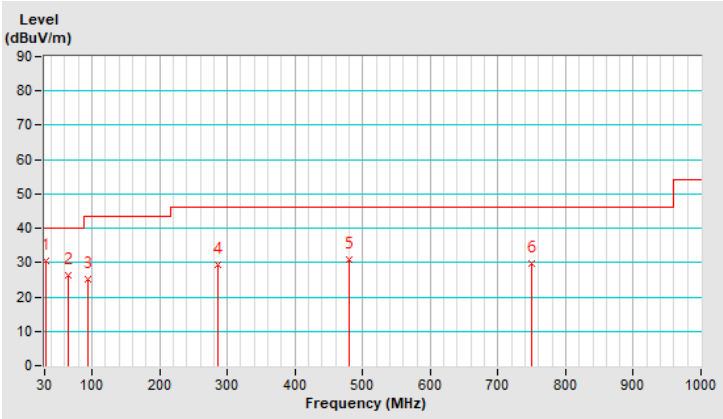


RF Mode	TX FSK_50kbps	Channel	CH 128：927.8 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	31.50	30.6 QP	40.0	-9.4	1.00 V	179	44.4	-13.8
2	64.78	26.3 QP	40.0	-13.7	1.50 V	1	40.0	-13.7
3	94.36	25.3 QP	43.5	-18.2	1.00 V	93	43.2	-17.9
4	285.32	29.4 QP	46.0	-16.6	1.00 V	72	41.7	-12.3
5	480.01	30.8 QP	46.0	-15.2	1.50 V	204	38.5	-7.7
6	750.02	29.7 QP	46.0	-16.3	1.00 V	214	32.3	-2.6

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.1.8 Test Results (Mode 2)

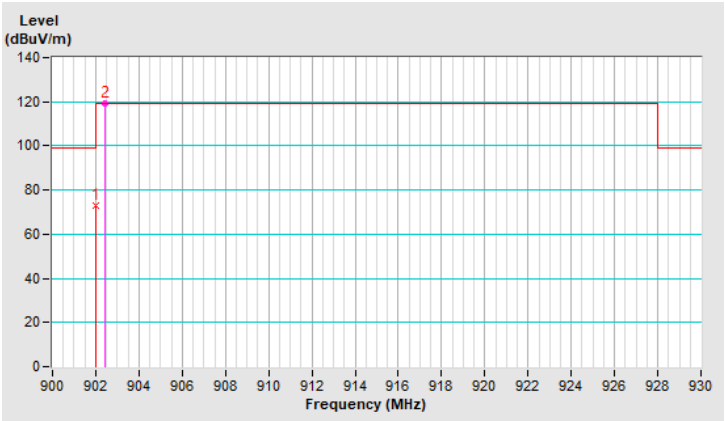
Bandedge Data:

RF Mode	TX FSK_150kbps	**Channel**	CH 0：902.4 MHz
Frequency Range	900MHz ~ 930MHz	**Detector Function**	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	902.00	73.1 QP	99.3	-26.2	1.00 H	354	42.8	30.3
2	*902.40	119.3 QP			1.00 H	354	89.0	30.3

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. “ * “: Fundamental frequency.

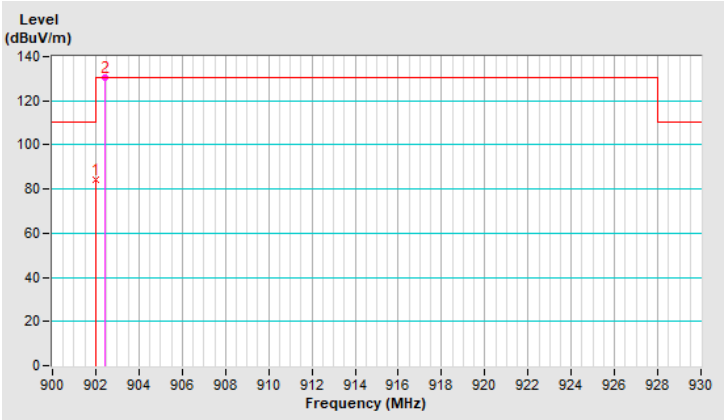


RF Mode	TX FSK_150kbps	Channel	CH 0：902.4 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	902.00	84.2 QP	110.4	-26.2	1.00 V	151	53.9	30.3
2	*902.40	130.4 QP			1.00 V	151	100.1	30.3

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. “ * “: Fundamental frequency.

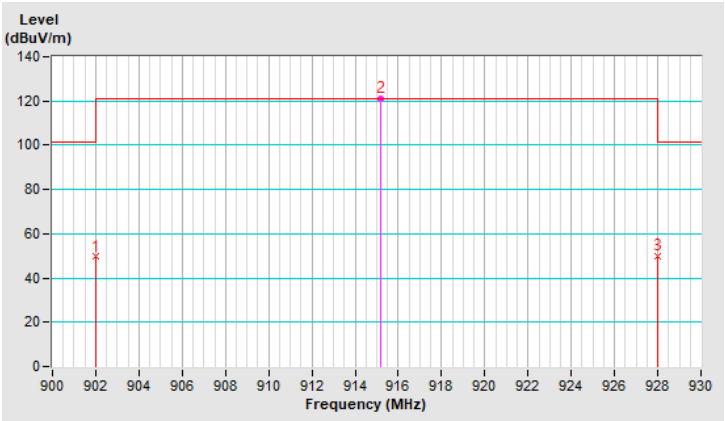


RF Mode	TX FSK_150kbps	Channel	CH 32：915.2 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	902.00	49.6 QP	101.2	-51.6	1.36 H	134	19.3	30.3
2	*915.20	121.2 QP			1.36 H	134	90.5	30.7
3	928.00	50.0 QP	101.2	-51.2	1.36 H	134	19.1	30.9

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. “ * “: Fundamental frequency.

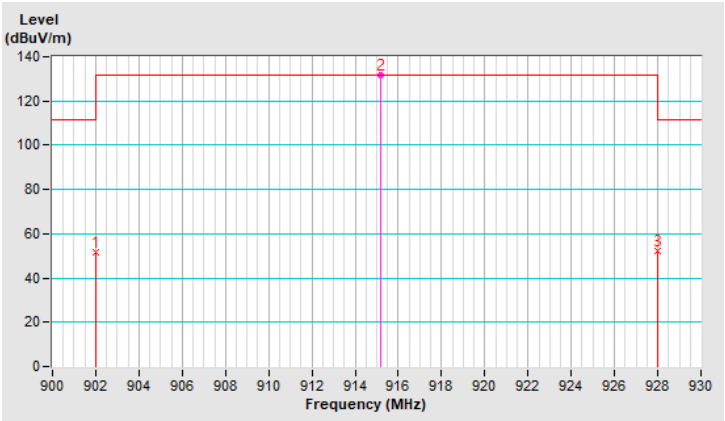


RF Mode	TX FSK_150kbps	Channel	CH 32：915.2 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	902.00	51.5 QP	111.7	-60.2	1.00 V	151	21.2	30.3
2	*915.20	131.7 QP			1.00 V	151	101.0	30.7
3	928.00	52.1 QP	111.7	-59.6	1.00 V	151	21.2	30.9

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. “ * “: Fundamental frequency.

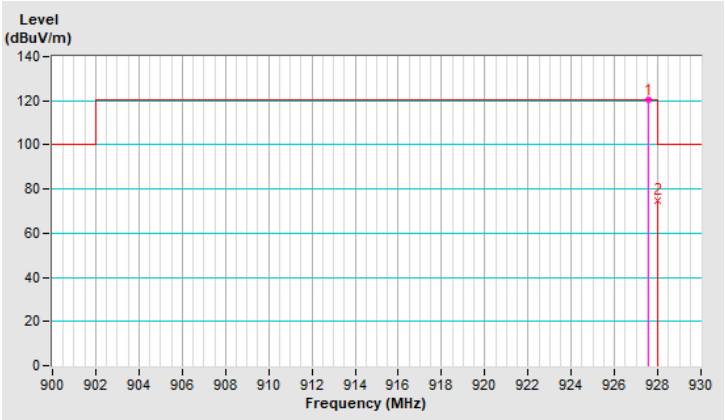


RF Mode	TX FSK_150kbps	Channel	CH 63：927.6 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*927.60	120.3 QP			1.36 H	134	89.4	30.9
2	928.00	74.8 QP	100.3	-25.5	1.36 H	134	43.9	30.9

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. “ * “: Fundamental frequency.

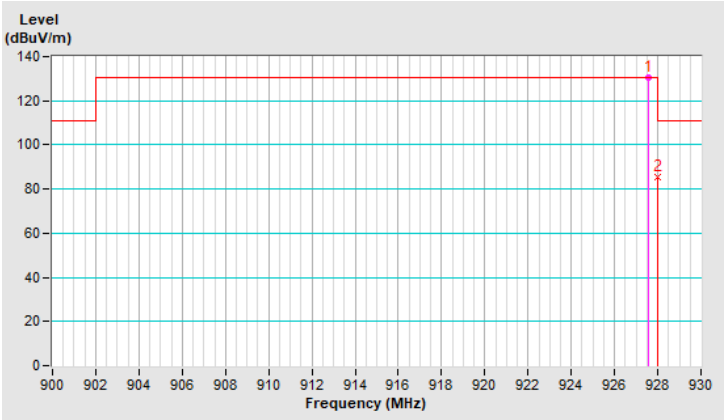


RF Mode	TX FSK_150kbps	Channel	CH 63：927.6 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*927.60	130.8 QP			1.00 V	151	99.9	30.9
2	928.00	85.6 QP	110.8	-25.2	1.00 V	151	54.7	30.9

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. “ * “: Fundamental frequency.



Above 1GHz Data:

RF Mode	TX FSK_150kbps	Channel	CH 0：902.4 MHz
Frequency Range	1GHz ~ 10GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2707.20	36.8 PK	74.0	-37.2	2.26 H	232	39.7	-2.9
2	2707.20	28.1 AV	54.0	-25.9	2.26 H	232	31.0	-2.9
3	3609.60	36.1 PK	74.0	-37.9	2.06 H	248	37.4	-1.3
4	3609.60	27.3 AV	54.0	-26.7	2.06 H	248	28.6	-1.3
5	4512.00	37.1 PK	74.0	-36.9	1.51 H	163	36.7	0.4
6	4512.00	25.2 AV	54.0	-28.8	1.51 H	163	24.8	0.4
7	5414.40	38.3 PK	74.0	-35.7	1.54 H	126	36.7	1.6
8	5414.40	25.8 AV	54.0	-28.2	1.54 H	126	24.2	1.6
9	8121.60	43.1 PK	74.0	-30.9	1.56 H	153	35.0	8.1
10	8121.60	31.6 AV	54.0	-22.4	1.56 H	153	23.5	8.1
11	9024.00	43.4 PK	74.0	-30.6	1.58 H	149	34.9	8.5
12	9024.00	32.1 AV	54.0	-21.9	1.58 H	149	23.6	8.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2707.20	35.7 PK	74.0	-38.3	1.19 V	172	38.6	-2.9
2	2707.20	27.0 AV	54.0	-27.0	1.19 V	172	29.9	-2.9
3	3609.60	37.4 PK	74.0	-36.6	2.07 V	193	38.7	-1.3
4	3609.60	27.0 AV	54.0	-27.0	2.07 V	193	28.3	-1.3
5	4512.00	37.1 PK	74.0	-36.9	1.65 V	155	36.7	0.4
6	4512.00	24.8 AV	54.0	-29.2	1.65 V	155	24.4	0.4
7	5414.40	39.3 PK	74.0	-34.7	1.68 V	140	37.7	1.6
8	5414.40	26.4 AV	54.0	-27.6	1.68 V	140	24.8	1.6
9	8121.60	42.8 PK	74.0	-31.2	1.66 V	149	34.7	8.1
10	8121.60	30.7 AV	54.0	-23.3	1.66 V	149	22.6	8.1
11	9024.00	44.2 PK	74.0	-29.8	1.61 V	171	35.7	8.5
12	9024.00	32.1 AV	54.0	-21.9	1.61 V	171	23.6	8.5

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

RF Mode	TX FSK_150kbps	Channel	CH 32：915.2 MHz
Frequency Range	1GHz ~ 10GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2745.60	35.7 PK	74.0	-38.3	2.31 H	219	38.5	-2.8
2	2745.60	27.4 AV	54.0	-26.6	2.31 H	219	30.2	-2.8
3	3660.80	36.2 PK	74.0	-37.8	2.12 H	243	37.3	-1.1
4	3660.80	27.4 AV	54.0	-26.6	2.12 H	243	28.5	-1.1
5	4576.00	36.5 PK	74.0	-37.5	1.47 H	152	36.0	0.5
6	4576.00	24.6 AV	54.0	-29.4	1.47 H	152	24.1	0.5
7	7321.60	42.5 PK	74.0	-31.5	1.43 H	237	35.7	6.8
8	7321.60	32.8 AV	54.0	-21.2	1.43 H	237	26.0	6.8
9	8236.80	42.8 PK	74.0	-31.2	1.60 H	148	35.1	7.7
10	8236.80	31.5 AV	54.0	-22.5	1.60 H	148	23.8	7.7
11	9152.00	43.8 PK	74.0	-30.2	1.62 H	149	34.7	9.1
12	9152.00	32.2 AV	54.0	-21.8	1.62 H	149	23.1	9.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2745.60	35.6 PK	74.0	-38.4	1.17 V	162	38.4	-2.8
2	2745.60	27.2 AV	54.0	-26.8	1.17 V	162	30.0	-2.8
3	3660.80	38.0 PK	74.0	-36.0	2.18 V	185	39.1	-1.1
4	3660.80	27.4 AV	54.0	-26.6	2.18 V	185	28.5	-1.1
5	4576.00	37.0 PK	74.0	-37.0	1.62 V	135	36.5	0.5
6	4576.00	25.2 AV	54.0	-28.8	1.62 V	135	24.7	0.5
7	7321.60	42.8 PK	74.0	-31.2	1.70 V	143	36.0	6.8
8	7321.60	34.2 AV	54.0	-19.8	1.70 V	143	27.4	6.8
9	8236.80	42.5 PK	74.0	-31.5	1.64 V	127	34.8	7.7
10	8236.80	30.8 AV	54.0	-23.2	1.64 V	127	23.1	7.7
11	9152.00	44.2 PK	74.0	-29.8	1.68 V	165	35.1	9.1
12	9152.00	32.0 AV	54.0	-22.0	1.68 V	165	22.9	9.1

Remarks:

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

RF Mode	TX FSK_150kbps	Channel	CH 63：927.6 MHz
Frequency Range	1GHz ~ 10GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2782.80	36.6 PK	74.0	-37.4	2.33 H	243	39.3	-2.7
2	2782.80	28.1 AV	54.0	-25.9	2.33 H	243	30.8	-2.7
3	3710.40	36.1 PK	74.0	-37.9	2.16 H	233	37.1	-1.0
4	3710.40	27.2 AV	54.0	-26.8	2.16 H	233	28.2	-1.0
5	4638.00	36.3 PK	74.0	-37.7	1.49 H	145	35.7	0.6
6	4638.00	24.8 AV	54.0	-29.2	1.49 H	145	24.2	0.6
7	7420.80	42.0 PK	74.0	-32.0	1.43 H	235	34.8	7.2
8	7420.80	32.3 AV	54.0	-21.7	1.43 H	235	25.1	7.2
9	8348.40	42.4 PK	74.0	-31.6	1.59 H	153	35.2	7.2
10	8348.40	31.1 AV	54.0	-22.9	1.59 H	153	23.9	7.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2782.80	35.7 PK	74.0	-38.3	1.17 V	165	38.4	-2.7
2	2782.80	27.1 AV	54.0	-26.9	1.17 V	165	29.8	-2.7
3	3710.40	38.2 PK	74.0	-35.8	2.17 V	190	39.2	-1.0
4	3710.40	27.6 AV	54.0	-26.4	2.17 V	190	28.6	-1.0
5	4638.00	37.0 PK	74.0	-37.0	1.67 V	142	36.4	0.6
6	4638.00	24.8 AV	54.0	-29.2	1.67 V	142	24.2	0.6
7	7420.80	43.0 PK	74.0	-31.0	1.68 V	150	35.8	7.2
8	7420.80	34.3 AV	54.0	-19.7	1.68 V	150	27.1	7.2
9	8348.40	43.6 PK	74.0	-30.4	1.66 V	153	36.4	7.2
10	8348.40	31.4 AV	54.0	-22.6	1.66 V	153	24.2	7.2

Remarks:

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

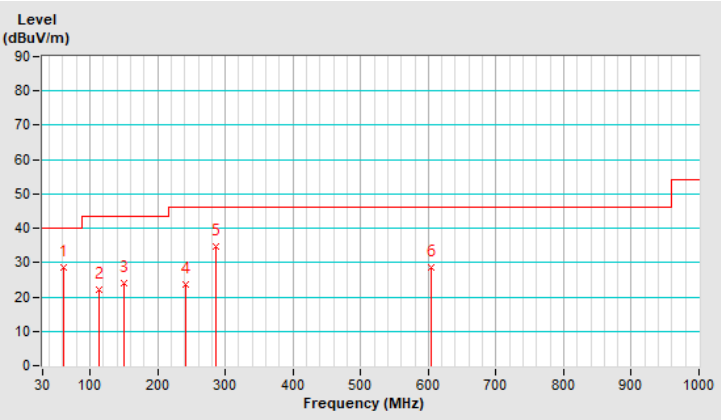
Below 1GHz Data:

RF Mode	TX FSK_150kbps	Channel	CH 63：927.6 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	60.90	28.7 QP	40.0	-11.3	1.00 H	55	41.7	-13.0
2	112.51	22.2 QP	43.5	-21.3	2.00 H	263	37.4	-15.2
3	149.66	24.1 QP	43.5	-19.4	1.50 H	360	36.4	-12.3
4	241.86	23.7 QP	46.0	-22.3	2.00 H	125	37.8	-14.1
5	286.49	34.8 QP	46.0	-11.2	1.50 H	117	47.1	-12.3
6	604.65	28.6 QP	46.0	-17.4	1.50 H	174	33.1	-4.5

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

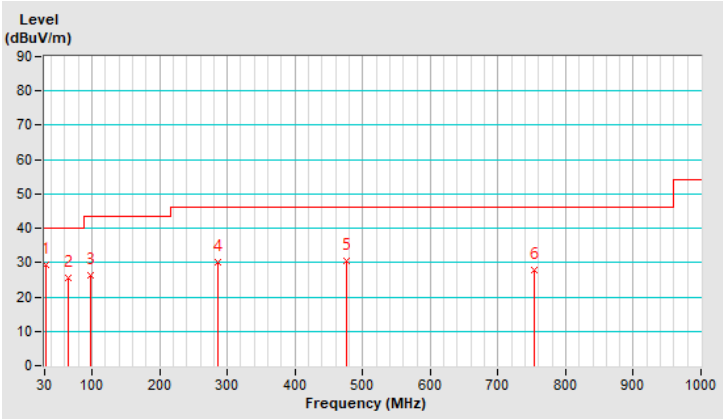


RF Mode	TX FSK_150kbps	Channel	CH 63：927.6 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	31.47	29.4 QP	40.0	-10.6	1.00 V	176	43.2	-13.8
2	65.60	25.5 QP	40.0	-14.5	1.50 V	8	39.3	-13.8
3	97.00	26.4 QP	43.5	-17.1	2.00 V	89	44.2	-17.8
4	286.29	30.1 QP	46.0	-15.9	2.00 V	71	42.4	-12.3
5	475.79	30.6 QP	46.0	-15.4	1.50 V	210	38.3	-7.7
6	753.96	27.8 QP	46.0	-18.2	1.00 V	216	30.3	-2.5

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.1.9 Test Results (Mode 3)

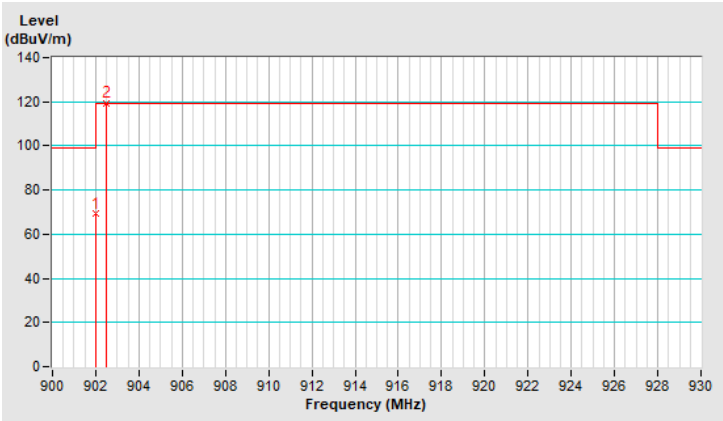
Bandedge Data:

RF Mode	TX FSK_250kbps	**Channel**	CH 0：902.5 MHz
Frequency Range	900MHz ~ 930MHz	**Detector Function**	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	902.00	69.4 QP	99.3	-29.9	1.36 H	134	39.1	30.3
2	*902.50	119.3 QP			1.36 H	134	89.0	30.3

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. " * ": Fundamental frequency.

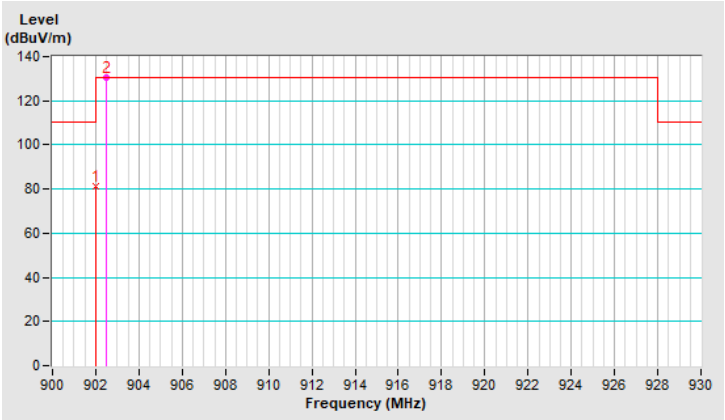


RF Mode	TX FSK_250kbps	Channel	CH 0：902.5 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	902.00	81.2 QP	110.3	-29.1	1.00 V	151	50.9	30.3
2	*902.50	130.3 QP			1.00 V	151	100.0	30.3

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. " * ": Fundamental frequency.

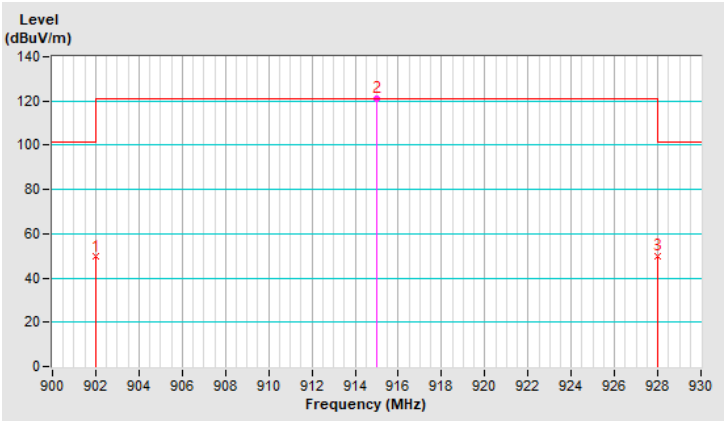


RF Mode	TX FSK_250kbps	Channel	CH 25：915 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	902.00	49.5 QP	101.2	-51.7	1.36 H	134	19.2	30.3
2	*915.00	121.2 QP			1.36 H	134	90.5	30.7
3	928.00	50.0 QP	101.2	-51.2	1.36 H	134	19.1	30.9

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. " * ": Fundamental frequency.

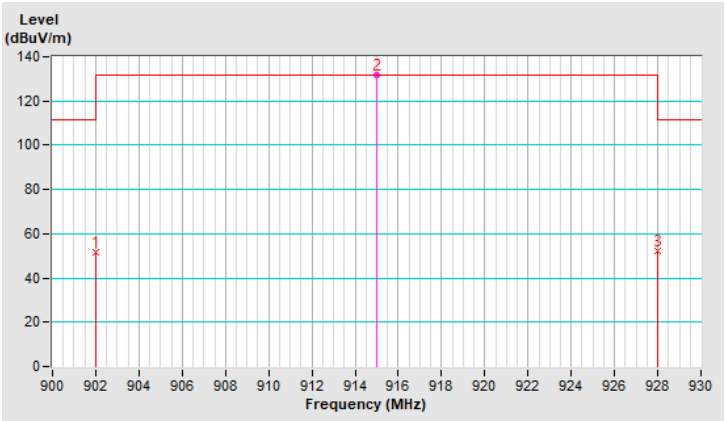


RF Mode	TX FSK_250kbps	Channel	CH 25：915 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	902.00	51.5 QP	111.7	-60.2	1.00 V	151	21.2	30.3
2	*915.00	131.7 QP			1.00 V	151	101.0	30.7
3	928.00	52.0 QP	111.7	-59.7	1.00 V	151	21.1	30.9

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. " * ": Fundamental frequency.

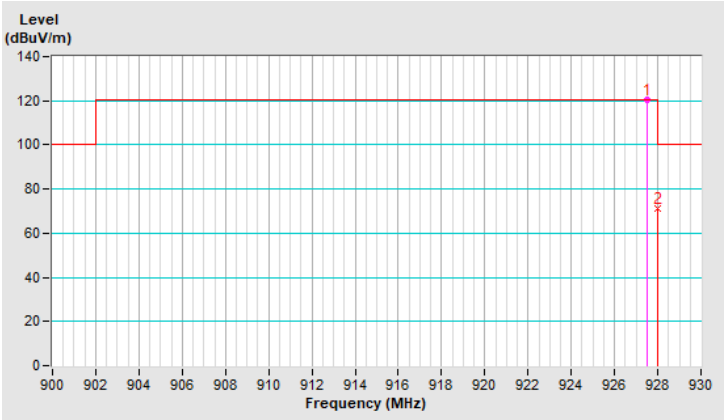


RF Mode	TX FSK_250kbps	Channel	CH 50：927.5 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*927.50	120.3 QP			1.36 H	134	89.4	30.9
2	928.00	71.0 QP	100.3	-29.3	1.36 H	134	40.1	30.9

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. " * ": Fundamental frequency.

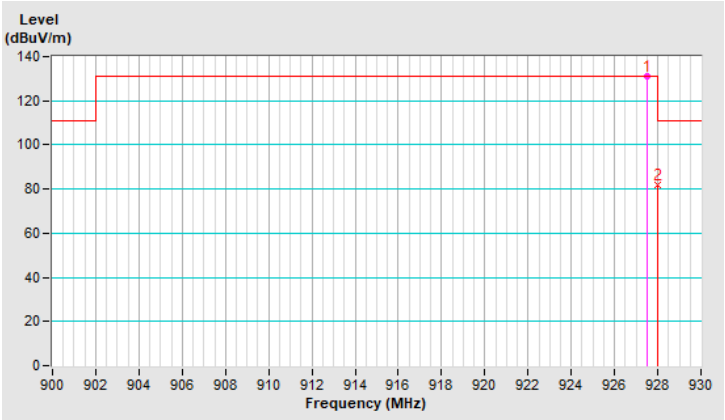


RF Mode	TX FSK_250kbps	Channel	CH 50：927.5 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*927.50	130.9 QP			1.00 V	151	100.0	30.9
2	928.00	81.9 QP	110.9	-29.0	1.00 V	151	51.0	30.9

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. " * ": Fundamental frequency.



Above 1GHz Data:

RF Mode	TX FSK_250kbps	Channel	CH 0：902.5 MHz
Frequency Range	1GHz ~ 10GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2707.50	35.6 PK	74.0	-38.4	2.25 H	214	38.5	-2.9
2	2707.50	27.3 AV	54.0	-26.7	2.25 H	214	30.2	-2.9
3	3610.00	36.5 PK	74.0	-37.5	2.13 H	243	37.8	-1.3
4	3610.00	27.5 AV	54.0	-26.5	2.13 H	243	28.8	-1.3
5	4512.50	36.2 PK	74.0	-37.8	1.53 H	148	35.8	0.4
6	4512.50	24.7 AV	54.0	-29.3	1.53 H	148	24.3	0.4
7	5415.00	38.3 PK	74.0	-35.7	1.55 H	120	36.7	1.6
8	5415.00	26.2 AV	54.0	-27.8	1.55 H	120	24.6	1.6
9	8122.50	42.9 PK	74.0	-31.1	1.52 H	163	34.8	8.1
10	8122.50	31.2 AV	54.0	-22.8	1.52 H	163	23.1	8.1
11	9025.00	43.5 PK	74.0	-30.5	1.59 H	159	35.0	8.5
12	9025.00	32.3 AV	54.0	-21.7	1.59 H	159	23.8	8.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2707.50	35.8 PK	74.0	-38.2	1.12 V	173	38.7	-2.9
2	2707.50	27.0 AV	54.0	-27.0	1.12 V	173	29.9	-2.9
3	3610.00	37.9 PK	74.0	-36.1	2.18 V	175	39.2	-1.3
4	3610.00	27.3 AV	54.0	-26.7	2.18 V	175	28.6	-1.3
5	4512.50	36.4 PK	74.0	-37.6	1.71 V	163	36.0	0.4
6	4512.50	24.5 AV	54.0	-29.5	1.71 V	163	24.1	0.4
7	5415.00	39.4 PK	74.0	-34.6	1.69 V	152	37.8	1.6
8	5415.00	26.1 AV	54.0	-27.9	1.69 V	152	24.5	1.6
9	8122.50	42.6 PK	74.0	-31.4	1.59 V	151	34.5	8.1
10	8122.50	31.0 AV	54.0	-23.0	1.59 V	151	22.9	8.1
11	9025.00	43.5 PK	74.0	-30.5	1.67 V	171	35.0	8.5
12	9025.00	31.6 AV	54.0	-22.4	1.67 V	171	23.1	8.5

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

RF Mode	TX FSK_250kbps	Channel	CH 25：915 MHz
Frequency Range	1GHz ~ 10GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2745.00	35.9 PK	74.0	-38.1	2.34 H	240	38.7	-2.8
2	2745.00	27.2 AV	54.0	-26.8	2.34 H	240	30.0	-2.8
3	3660.00	36.7 PK	74.0	-37.3	2.12 H	230	37.8	-1.1
4	3660.00	27.7 AV	54.0	-26.3	2.12 H	230	28.8	-1.1
5	4575.00	35.9 PK	74.0	-38.1	1.50 H	152	35.4	0.5
6	4575.00	24.4 AV	54.0	-29.6	1.50 H	152	23.9	0.5
7	7320.00	42.8 PK	74.0	-31.2	1.42 H	227	36.1	6.7
8	7320.00	32.6 AV	54.0	-21.4	1.42 H	227	25.9	6.7
9	8235.00	42.5 PK	74.0	-31.5	1.59 H	152	34.7	7.8
10	8235.00	31.3 AV	54.0	-22.7	1.59 H	152	23.5	7.8
11	9150.00	43.2 PK	74.0	-30.8	1.51 H	180	34.1	9.1
12	9150.00	31.7 AV	54.0	-22.3	1.51 H	180	22.6	9.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2745.00	35.5 PK	74.0	-38.5	1.14 V	160	38.3	-2.8
2	2745.00	27.0 AV	54.0	-27.0	1.14 V	160	29.8	-2.8
3	3660.00	37.8 PK	74.0	-36.2	2.14 V	176	38.9	-1.1
4	3660.00	27.4 AV	54.0	-26.6	2.14 V	176	28.5	-1.1
5	4575.00	36.7 PK	74.0	-37.3	1.70 V	138	36.2	0.5
6	4575.00	24.8 AV	54.0	-29.2	1.70 V	138	24.3	0.5
7	7320.00	43.3 PK	74.0	-30.7	1.71 V	140	36.6	6.7
8	7320.00	34.7 AV	54.0	-19.3	1.71 V	140	28.0	6.7
9	8235.00	42.9 PK	74.0	-31.1	1.66 V	150	35.1	7.8
10	8235.00	30.9 AV	54.0	-23.1	1.66 V	150	23.1	7.8
11	9150.00	44.0 PK	74.0	-30.0	1.67 V	151	34.9	9.1
12	9150.00	32.1 AV	54.0	-21.9	1.67 V	151	23.0	9.1

Remarks:

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

RF Mode	TX FSK_250kbps	Channel	CH 50：927.5 MHz
Frequency Range	1GHz ~ 10GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2782.50	36.0 PK	74.0	-38.0	2.34 H	212	38.7	-2.7
2	2782.50	27.7 AV	54.0	-26.3	2.34 H	212	30.4	-2.7
3	3710.00	36.0 PK	74.0	-38.0	2.09 H	234	37.0	-1.0
4	3710.00	27.3 AV	54.0	-26.7	2.09 H	234	28.3	-1.0
5	4637.50	36.8 PK	74.0	-37.2	1.57 H	153	36.2	0.6
6	4637.50	25.2 AV	54.0	-28.8	1.57 H	153	24.6	0.6
7	7420.00	42.9 PK	74.0	-31.1	1.47 H	212	35.7	7.2
8	7420.00	32.7 AV	54.0	-21.3	1.47 H	212	25.5	7.2
9	8347.50	42.0 PK	74.0	-32.0	1.52 H	169	34.7	7.3
10	8347.50	30.8 AV	54.0	-23.2	1.52 H	169	23.5	7.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2782.50	35.9 PK	74.0	-38.1	1.12 V	183	38.6	-2.7
2	2782.50	26.9 AV	54.0	-27.1	1.12 V	183	29.6	-2.7
3	3710.00	38.5 PK	74.0	-35.5	2.08 V	191	39.5	-1.0
4	3710.00	27.9 AV	54.0	-26.1	2.08 V	191	28.9	-1.0
5	4637.50	37.5 PK	74.0	-36.5	1.61 V	166	36.9	0.6
6	4637.50	25.2 AV	54.0	-28.8	1.61 V	166	24.6	0.6
7	7420.00	43.1 PK	74.0	-30.9	1.66 V	161	35.9	7.2
8	7420.00	34.2 AV	54.0	-19.8	1.66 V	161	27.0	7.2
9	8347.50	43.1 PK	74.0	-30.9	1.66 V	130	35.8	7.3
10	8347.50	30.9 AV	54.0	-23.1	1.66 V	130	23.6	7.3

Remarks:

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

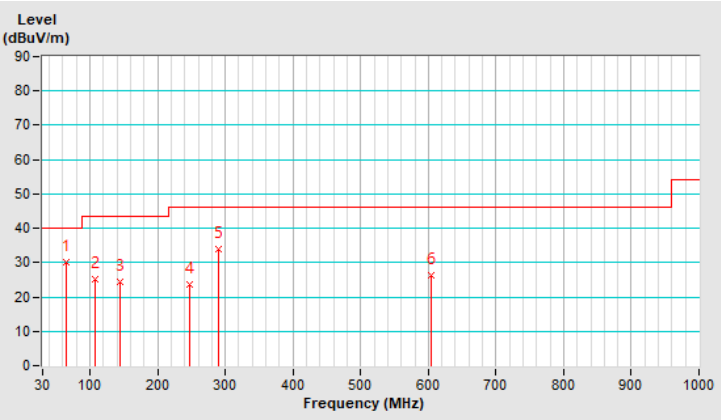
Below 1GHz Data:

RF Mode	TX FSK_250kbps	Channel	CH 50：927.5 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	64.40	30.1 QP	40.0	-9.9	1.00 H	44	43.6	-13.5
2	108.29	25.1 QP	43.5	-18.4	1.50 H	248	40.8	-15.7
3	145.16	24.2 QP	43.5	-19.3	1.50 H	360	36.7	-12.5
4	246.37	23.7 QP	46.0	-22.3	2.00 H	134	37.7	-14.0
5	289.92	34.0 QP	46.0	-12.0	1.50 H	123	46.3	-12.3
6	603.95	26.4 QP	46.0	-19.6	1.50 H	179	30.9	-4.5

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

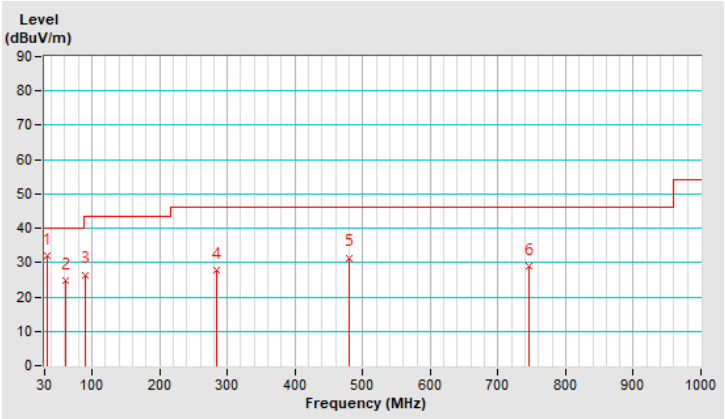


RF Mode	TX FSK_250kbps	Channel	CH 50：927.5 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	**33.27**	**32.0 QP**	**40.0**	**-8.0**	**1.00 V**	**171**	**45.6**	**-13.6**
2	61.55	24.7 QP	40.0	-15.3	1.50 V	0	37.8	-13.1
3	90.74	26.5 QP	43.5	-17.0	2.50 V	78	44.8	-18.3
4	284.95	27.9 QP	46.0	-18.1	1.00 V	78	40.2	-12.3
5	480.27	31.5 QP	46.0	-14.5	1.50 V	207	39.2	-7.7
6	746.03	28.8 QP	46.0	-17.2	1.00 V	226	31.4	-2.6

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.1.10 Test Results (Mode 4)

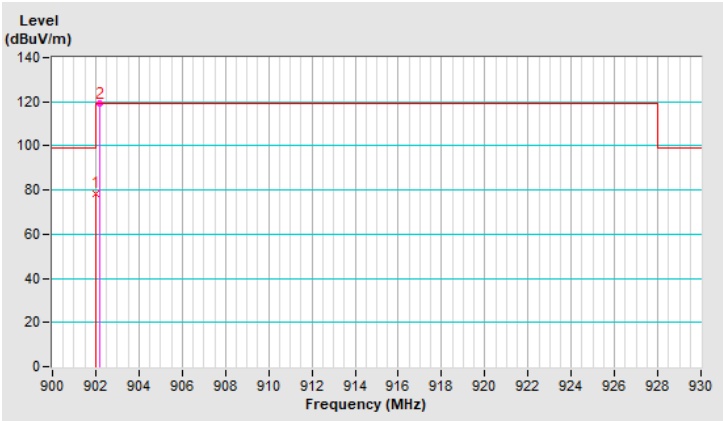
Bandedge Data:

RF Mode	TX FSK_50kbps	**Channel**	CH 0：902.2 MHz
Frequency Range	900MHz ~ 930MHz	**Detector Function**	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	902.00	78.5 QP	99.2	-20.7	1.00 H	356	48.2	30.3
2	*902.20	119.2 QP			1.00 H	356	88.9	30.3

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. “ * “: Fundamental frequency.

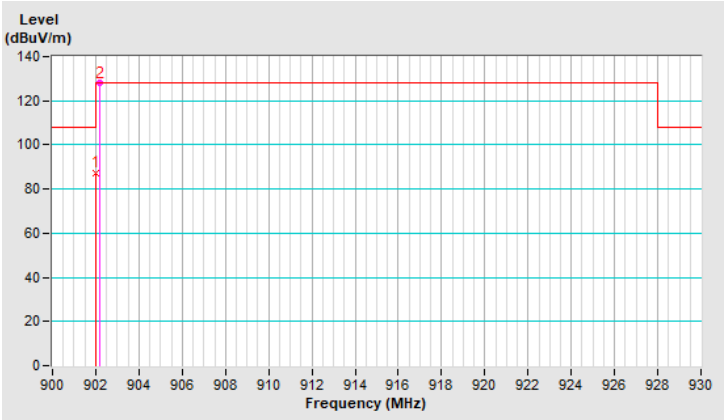


RF Mode	TX FSK_50kbps	Channel	CH 0：902.2 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	902.00	87.4 QP	107.9	-20.5	1.00 V	151	57.1	30.3
2	*902.20	127.9 QP			1.00 V	151	97.6	30.3

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. “ * “: Fundamental frequency.

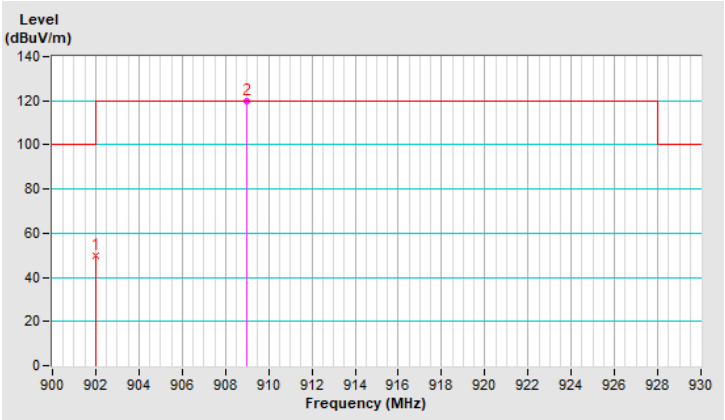


RF Mode	TX FSK_50kbps	Channel	CH 34：909 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	902.00	50.0 QP	100.0	-50.0	1.00 H	350	19.7	30.3
2	*909.00	120.0 QP			1.00 H	350	89.4	30.6

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. Margin value = Emission Level – Limit value
4. “ * “: Fundamental frequency.

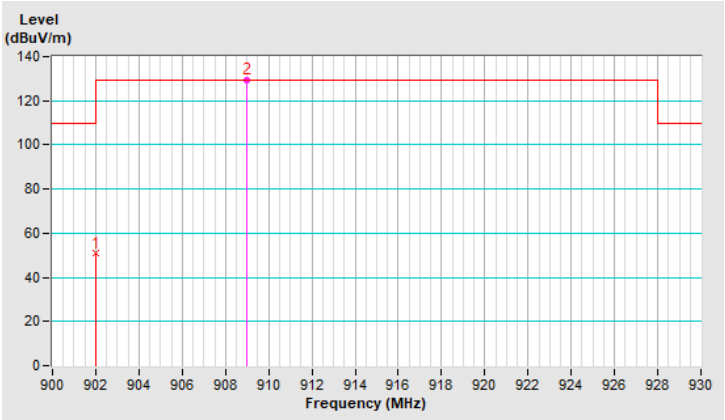


RF Mode	TX FSK_50kbps	Channel	CH 34：909 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	902.00	50.8 QP	109.5	-58.7	1.00 V	150	20.5	30.3
2	*909.00	129.5 QP			1.00 V	150	98.9	30.6

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. Margin value = Emission Level – Limit value
4. “ * “: Fundamental frequency.

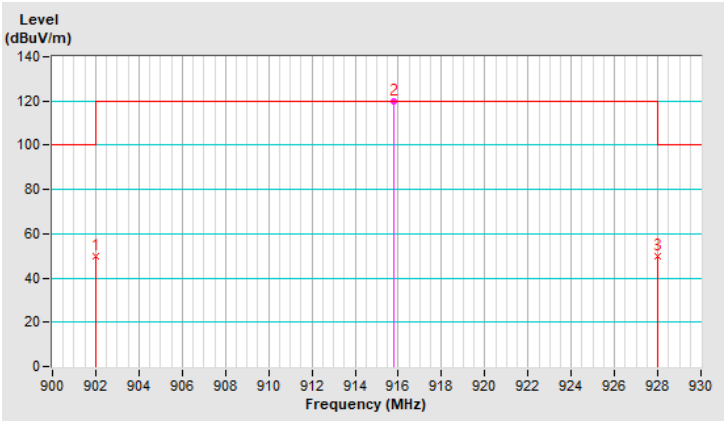


RF Mode	TX FSK_50kbps	Channel	CH 68：915.8 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	902.00	49.9 QP	100.1	-50.2	1.00 H	351	19.6	30.3
2	*915.80	120.1 QP			1.00 H	351	89.4	30.7
3	928.00	50.1 QP	100.1	-50.0	1.00 H	351	19.2	30.9

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. “ * “: Fundamental frequency.

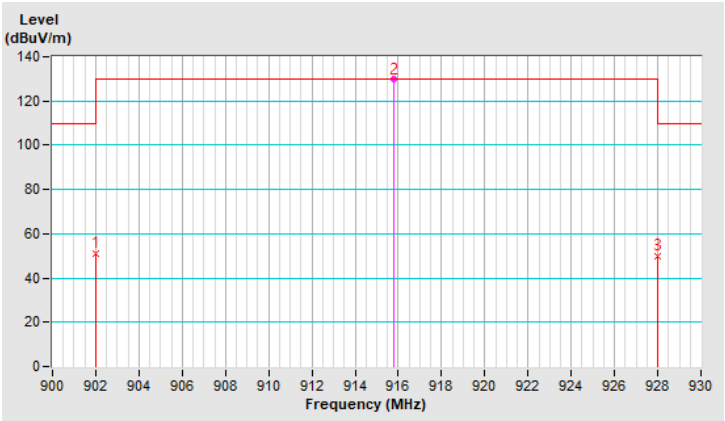


RF Mode	TX FSK_50kbps	Channel	CH 68：915.8 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	902.00	51.1 QP	109.9	-58.8	1.00 V	151	20.8	30.3
2	*915.80	129.9 QP			1.00 V	151	99.2	30.7
3	928.00	50.0 QP	109.9	-59.9	1.00 V	151	19.1	30.9

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. “ * “: Fundamental frequency.



Above 1GHz Data:

RF Mode	TX FSK_50kbps	Channel	CH 0：902.2 MHz
Frequency Range	1GHz ~ 10GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2706.60	35.7 PK	74.0	-38.3	1.48 H	223	38.6	-2.9
2	2706.60	24.1 AV	54.0	-29.9	1.48 H	223	27.0	-2.9
3	3608.80	35.2 PK	74.0	-38.8	1.09 H	141	36.5	-1.3
4	3608.80	23.8 AV	54.0	-30.2	1.09 H	141	25.1	-1.3
5	4511.00	35.4 PK	74.0	-38.6	1.68 H	172	35.0	0.4
6	4511.00	23.8 AV	54.0	-30.2	1.68 H	172	23.4	0.4
7	5413.20	37.5 PK	74.0	-36.5	1.57 H	161	35.9	1.6
8	5413.20	26.2 AV	54.0	-27.8	1.57 H	161	24.6	1.6
9	8119.80	43.7 PK	74.0	-30.3	1.41 H	183	35.6	8.1
10	8119.80	31.2 AV	54.0	-22.8	1.41 H	183	23.1	8.1
11	9022.00	44.2 PK	74.0	-29.8	1.55 H	176	35.7	8.5
12	9022.00	33.4 AV	54.0	-20.6	1.55 H	176	24.9	8.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2706.60	36.0 PK	74.0	-38.0	3.32 V	176	38.9	-2.9
2	2706.60	27.7 AV	54.0	-26.3	3.32 V	176	30.6	-2.9
3	3608.80	37.1 PK	74.0	-36.9	2.04 V	191	38.4	-1.3
4	3608.80	28.6 AV	54.0	-25.4	2.04 V	191	29.9	-1.3
5	4511.00	35.5 PK	74.0	-38.5	1.73 V	181	35.1	0.4
6	4511.00	23.9 AV	54.0	-30.1	1.73 V	181	23.5	0.4
7	5413.20	37.7 PK	74.0	-36.3	1.60 V	145	36.1	1.6
8	5413.20	26.6 AV	54.0	-27.4	1.60 V	145	25.0	1.6
9	8119.80	43.3 PK	74.0	-30.7	1.42 V	199	35.2	8.1
10	8119.80	30.8 AV	54.0	-23.2	1.42 V	199	22.7	8.1
11	9022.00	44.7 PK	74.0	-29.3	1.57 V	181	36.2	8.5
12	9022.00	33.8 AV	54.0	-20.2	1.57 V	181	25.3	8.5

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

RF Mode	TX FSK_50kbps	Channel	CH 34：909 MHz
Frequency Range	1GHz ~ 10GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2727.00	35.8 PK	74.0	-38.2	1.44 H	236	38.7	-2.9
2	2727.00	24.0 AV	54.0	-30.0	1.44 H	236	26.9	-2.9
3	3636.00	35.9 PK	74.0	-38.1	1.12 H	146	37.1	-1.2
4	3636.00	24.3 AV	54.0	-29.7	1.12 H	146	25.5	-1.2
5	4545.00	35.2 PK	74.0	-38.8	1.73 H	179	34.7	0.5
6	4545.00	23.8 AV	54.0	-30.2	1.73 H	179	23.3	0.5
7	5454.00	37.4 PK	74.0	-36.6	1.51 H	172	35.7	1.7
8	5454.00	26.3 AV	54.0	-27.7	1.51 H	172	24.6	1.7
9	7272.00	42.1 PK	74.0	-31.9	1.71 H	193	35.4	6.7
10	7272.00	30.8 AV	54.0	-23.2	1.71 H	193	24.1	6.7
11	8181.00	43.6 PK	74.0	-30.4	1.38 H	193	35.6	8.0
12	8181.00	31.4 AV	54.0	-22.6	1.38 H	193	23.4	8.0
13	9090.00	44.6 PK	74.0	-29.4	1.54 H	173	35.9	8.7
14	9090.00	33.5 AV	54.0	-20.5	1.54 H	173	24.8	8.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2727.00	36.2 PK	74.0	-37.8	3.31 V	179	39.1	-2.9
2	2727.00	27.8 AV	54.0	-26.2	3.31 V	179	30.7	-2.9
3	3636.00	37.5 PK	74.0	-36.5	2.02 V	207	38.7	-1.2
4	3636.00	28.9 AV	54.0	-25.1	2.02 V	207	30.1	-1.2
5	4545.00	36.0 PK	74.0	-38.0	1.71 V	193	35.5	0.5
6	4545.00	24.4 AV	54.0	-29.6	1.71 V	193	23.9	0.5
7	5454.00	37.2 PK	74.0	-36.8	1.59 V	147	35.5	1.7
8	5454.00	26.4 AV	54.0	-27.6	1.59 V	147	24.7	1.7
9	7272.00	42.0 PK	74.0	-32.0	1.68 V	200	35.3	6.7
10	7272.00	30.6 AV	54.0	-23.4	1.68 V	200	23.9	6.7
11	8181.00	43.4 PK	74.0	-30.6	1.45 V	203	35.4	8.0
12	8181.00	31.2 AV	54.0	-22.8	1.45 V	203	23.2	8.0
13	9090.00	44.4 PK	74.0	-29.6	1.56 V	186	35.7	8.7
14	9090.00	33.4 AV	54.0	-20.6	1.56 V	186	24.7	8.7

Remarks:

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

RF Mode	TX FSK_50kbps	Channel	CH 68：915.8 MHz
Frequency Range	1GHz ~ 10GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2747.40	35.2 PK	74.0	-38.8	1.68 H	227	38.0	-2.8
2	2747.40	24.2 AV	54.0	-29.8	1.68 H	227	27.0	-2.8
3	3663.20	35.3 PK	74.0	-38.7	1.00 H	150	36.4	-1.1
4	3663.20	23.9 AV	54.0	-30.1	1.00 H	150	25.0	-1.1
5	4579.00	35.7 PK	74.0	-38.3	1.76 H	196	35.2	0.5
6	4579.00	23.9 AV	54.0	-30.1	1.76 H	196	23.4	0.5
7	7326.40	42.1 PK	74.0	-31.9	1.53 H	188	35.3	6.8
8	7326.40	30.4 AV	54.0	-23.6	1.53 H	188	23.6	6.8
9	8242.20	43.7 PK	74.0	-30.3	1.47 H	176	36.0	7.7
10	8242.20	30.9 AV	54.0	-23.1	1.47 H	176	23.2	7.7
11	9158.00	44.1 PK	74.0	-29.9	1.45 H	171	35.0	9.1
12	9158.00	33.2 AV	54.0	-20.8	1.45 H	171	24.1	9.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2747.40	37.3 PK	74.0	-36.7	2.30 V	142	40.1	-2.8
2	2747.40	30.7 AV	54.0	-23.3	2.30 V	142	33.5	-2.8
3	3663.20	37.0 PK	74.0	-37.0	2.02 V	192	38.1	-1.1
4	3663.20	27.2 AV	54.0	-26.8	2.02 V	192	28.3	-1.1
5	4579.00	35.8 PK	74.0	-38.2	1.80 V	207	35.3	0.5
6	4579.00	24.0 AV	54.0	-30.0	1.80 V	207	23.5	0.5
7	7326.40	43.0 PK	74.0	-31.0	1.88 V	152	36.2	6.8
8	7326.40	31.9 AV	54.0	-22.1	1.88 V	152	25.1	6.8
9	8242.20	44.1 PK	74.0	-29.9	1.46 V	187	36.4	7.7
10	8242.20	31.2 AV	54.0	-22.8	1.46 V	187	23.5	7.7
11	9158.00	43.9 PK	74.0	-30.1	1.48 V	181	34.8	9.1
12	9158.00	33.0 AV	54.0	-21.0	1.48 V	181	23.9	9.1

Remarks:

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

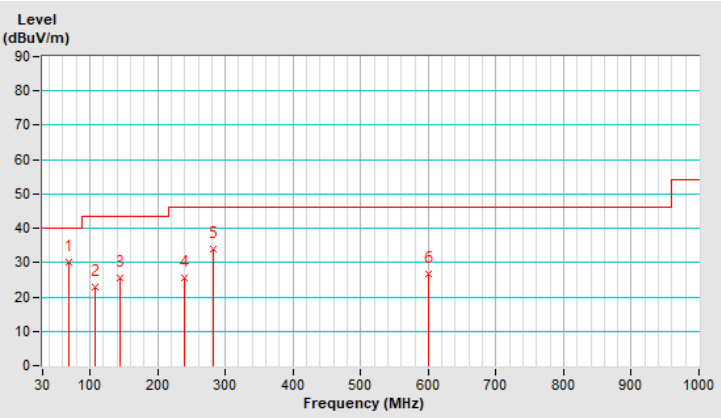
Below 1GHz Data:

RF Mode	TX FSK_50kbps	Channel	CH 68：915.8 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	67.84	30.2 QP	40.0	-9.8	1.00 H	51	44.4	-14.2
2	107.80	22.8 QP	43.5	-20.7	1.50 H	240	38.6	-15.8
3	145.38	25.4 QP	43.5	-18.1	1.50 H	360	37.9	-12.5
4	240.41	25.6 QP	46.0	-20.4	2.00 H	156	39.8	-14.2
5	281.62	33.8 QP	46.0	-12.2	2.00 H	113	46.2	-12.4
6	599.81	26.8 QP	46.0	-19.2	1.50 H	185	31.5	-4.7

Remarks:

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

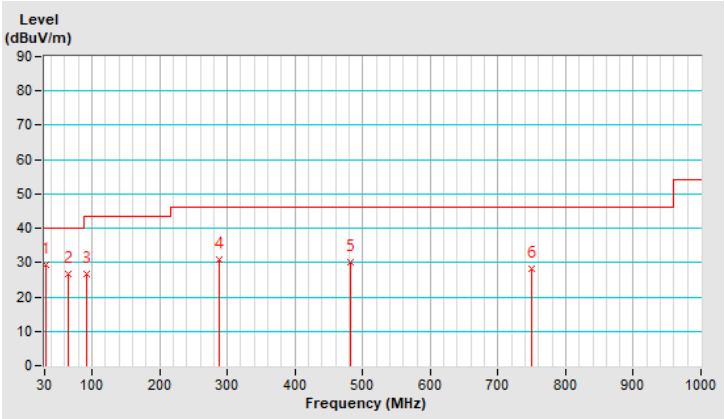


RF Mode	TX FSK_50kbps	Channel	CH 68：915.8 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	31.91	29.3 QP	40.0	-10.7	1.00 V	176	43.0	-13.7
2	65.65	26.7 QP	40.0	-13.3	2.00 V	11	40.5	-13.8
3	92.95	26.7 QP	43.5	-16.8	2.00 V	85	44.8	-18.1
4	288.88	30.7 QP	46.0	-15.3	1.00 V	87	43.0	-12.3
5	481.75	30.2 QP	46.0	-15.8	1.50 V	213	37.9	-7.7
6	750.44	28.3 QP	46.0	-17.7	1.00 V	211	30.9	-2.6

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.1.11 Test Results (Mode 5)

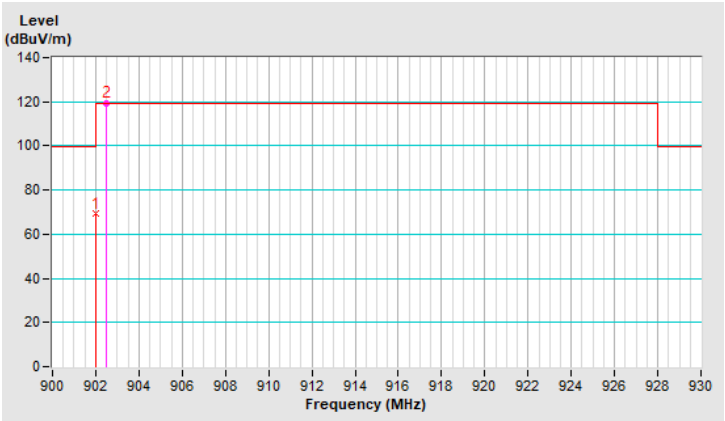
Bandedge Data:

RF Mode	TX FSK_250kbps	**Channel**	CH 0：902.5 MHz
Frequency Range	900MHz ~ 930MHz	**Detector Function**	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	902.00	69.2 QP	99.4	-30.2	1.00 H	341	38.9	30.3
2	*902.50	119.4 QP			1.00 H	341	89.1	30.3

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. " * ": Fundamental frequency.

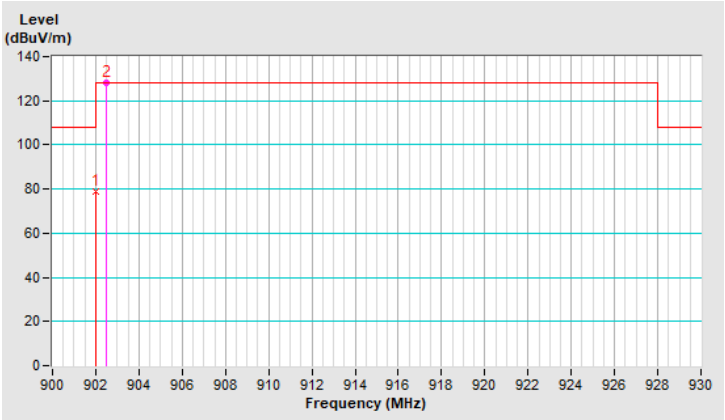


RF Mode	TX FSK_250kbps	Channel	CH 0：902.5 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	902.00	79.0 QP	108.2	-29.2	1.00 V	150	48.7	30.3
2	*902.50	128.2 QP			1.00 V	150	97.9	30.3

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. " * ": Fundamental frequency.

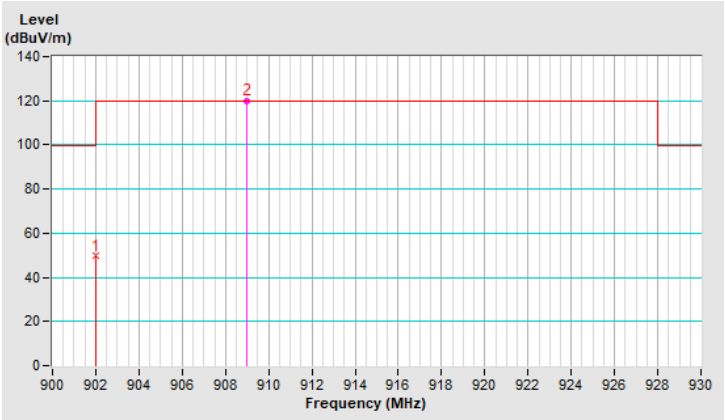


RF Mode	TX FSK_250kbps	Channel	CH 13：909 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	902.00	49.8 QP	99.9	-50.1	1.36 H	130	19.5	30.3
2	*909.00	119.9 QP			1.36 H	130	89.3	30.6

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. Margin value = Emission Level – Limit value
4. " * ": Fundamental frequency.

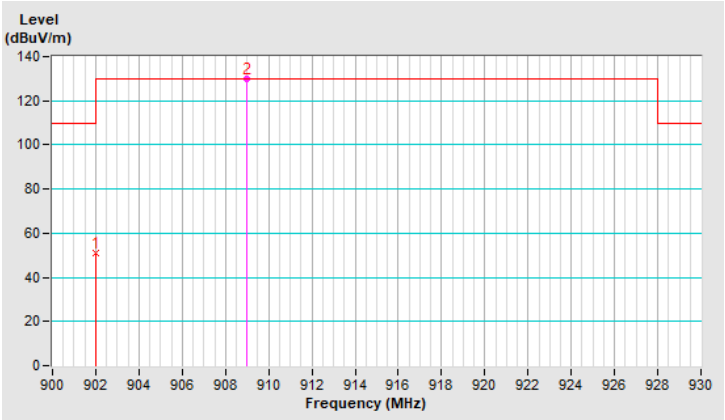


RF Mode	TX FSK_250kbps	Channel	CH 13：909 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	902.00	50.8 QP	109.7	-58.9	1.00 V	151	20.5	30.3
2	*909.00	129.7 QP			1.00 V	151	99.1	30.6

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. Margin value = Emission Level – Limit value
4. " * ": Fundamental frequency.

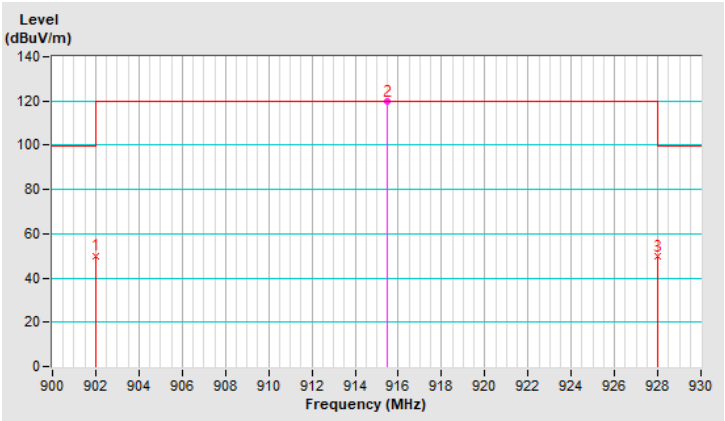


RF Mode	TX FSK_250kbps	Channel	CH 26：915.5 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	902.00	49.9 QP	99.7	-49.8	1.35 H	133	19.6	30.3
2	*915.50	119.7 QP			1.35 H	133	89.0	30.7
3	928.00	49.8 QP	99.7	-49.9	1.35 H	133	18.9	30.9

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. " * ": Fundamental frequency.

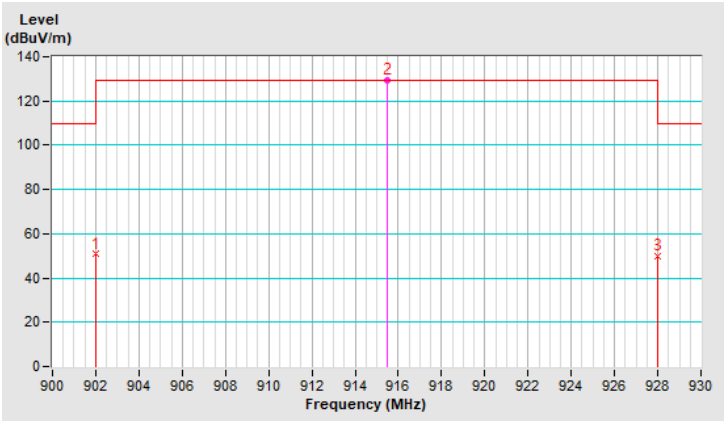


RF Mode	TX FSK_250kbps	Channel	CH 26：915.5 MHz
Frequency Range	900MHz ~ 930MHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	902.00	50.9 QP	109.6	-58.7	1.00 V	150	20.6	30.3
2	*915.50	129.6 QP			1.00 V	150	98.9	30.7
3	928.00	49.9 QP	109.6	-59.7	1.00 V	150	19.0	30.9

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. " * ": Fundamental frequency.



Above 1GHz Data:

RF Mode	TX FSK_250kbps	Channel	CH 0：902.5 MHz
Frequency Range	1GHz ~ 10GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2707.50	34.0 PK	74.0	-40.0	2.26 H	232	36.9	-2.9
2	2707.50	25.8 AV	54.0	-28.2	2.26 H	232	28.7	-2.9
3	3610.00	36.3 PK	74.0	-37.7	1.78 H	226	37.6	-1.3
4	3610.00	27.7 AV	54.0	-26.3	1.78 H	226	29.0	-1.3
5	4512.50	35.5 PK	74.0	-38.5	1.80 H	197	35.1	0.4
6	4512.50	23.8 AV	54.0	-30.2	1.80 H	197	23.4	0.4
7	5415.00	37.2 PK	74.0	-36.8	1.52 H	150	35.6	1.6
8	5415.00	25.8 AV	54.0	-28.2	1.52 H	150	24.2	1.6
9	8122.50	43.5 PK	74.0	-30.5	1.47 H	165	35.4	8.1
10	8122.50	30.8 AV	54.0	-23.2	1.47 H	165	22.7	8.1
11	9025.00	44.4 PK	74.0	-29.6	1.45 H	168	35.9	8.5
12	9025.00	33.4 AV	54.0	-20.6	1.45 H	168	24.9	8.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2707.50	36.2 PK	74.0	-37.8	3.22 V	209	39.1	-2.9
2	2707.50	28.8 AV	54.0	-25.2	3.22 V	209	31.7	-2.9
3	3610.00	37.2 PK	74.0	-36.8	2.00 V	193	38.5	-1.3
4	3610.00	28.4 AV	54.0	-25.6	2.00 V	193	29.7	-1.3
5	4512.50	35.6 PK	74.0	-38.4	1.74 V	205	35.2	0.4
6	4512.50	23.8 AV	54.0	-30.2	1.74 V	205	23.4	0.4
7	5415.00	38.2 PK	74.0	-35.8	1.62 V	157	36.6	1.6
8	5415.00	26.6 AV	54.0	-27.4	1.62 V	157	25.0	1.6
9	8122.50	43.7 PK	74.0	-30.3	1.44 V	168	35.6	8.1
10	8122.50	30.7 AV	54.0	-23.3	1.44 V	168	22.6	8.1
11	9025.00	44.6 PK	74.0	-29.4	1.43 V	174	36.1	8.5
12	9025.00	33.7 AV	54.0	-20.3	1.43 V	174	25.2	8.5

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

RF Mode	TX FSK_250kbps	Channel	CH 13：909 MHz
Frequency Range	1GHz ~ 10GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2727.00	33.8 PK	74.0	-40.2	2.28 H	217	36.7	-2.9
2	2727.00	25.8 AV	54.0	-28.2	2.28 H	217	28.7	-2.9
3	3636.00	36.0 PK	74.0	-38.0	1.74 H	240	37.2	-1.2
4	3636.00	27.6 AV	54.0	-26.4	1.74 H	240	28.8	-1.2
5	4545.00	35.1 PK	74.0	-38.9	1.78 H	203	34.6	0.5
6	4545.00	23.5 AV	54.0	-30.5	1.78 H	203	23.0	0.5
7	5454.00	36.9 PK	74.0	-37.1	1.56 H	145	35.2	1.7
8	5454.00	25.7 AV	54.0	-28.3	1.56 H	145	24.0	1.7
9	7272.00	45.0 PK	74.0	-29.0	2.96 H	199	38.3	6.7
10	7272.00	34.6 AV	54.0	-19.4	2.96 H	199	27.9	6.7
11	8181.00	43.7 PK	74.0	-30.3	1.43 H	178	35.7	8.0
12	8181.00	31.1 AV	54.0	-22.9	1.43 H	178	23.1	8.0
13	9090.00	43.6 PK	74.0	-30.4	1.47 H	182	34.9	8.7
14	9090.00	32.9 AV	54.0	-21.1	1.47 H	182	24.2	8.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2727.00	36.0 PK	74.0	-38.0	3.23 V	204	38.9	-2.9
2	2727.00	28.6 AV	54.0	-25.4	3.23 V	204	31.5	-2.9
3	3636.00	37.0 PK	74.0	-37.0	2.02 V	180	38.2	-1.2
4	3636.00	28.4 AV	54.0	-25.6	2.02 V	180	29.6	-1.2
5	4545.00	35.6 PK	74.0	-38.4	1.69 V	192	35.1	0.5
6	4545.00	23.6 AV	54.0	-30.4	1.69 V	192	23.1	0.5
7	5454.00	38.2 PK	74.0	-35.8	1.61 V	157	36.5	1.7
8	5454.00	26.4 AV	54.0	-27.6	1.61 V	157	24.7	1.7
9	7272.00	43.6 PK	74.0	-30.4	1.87 V	140	36.9	6.7
10	7272.00	33.0 AV	54.0	-21.0	1.87 V	140	26.3	6.7
11	8181.00	43.4 PK	74.0	-30.6	1.47 V	163	35.4	8.0
12	8181.00	30.3 AV	54.0	-23.7	1.47 V	163	22.3	8.0
13	9090.00	44.2 PK	74.0	-29.8	1.42 V	166	35.5	8.7
14	9090.00	33.3 AV	54.0	-20.7	1.42 V	166	24.6	8.7

Remarks:

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

RF Mode	TX FSK_250kbps	Channel	CH 26：915.5 MHz
Frequency Range	1GHz ~ 10GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2746.50	38.4 PK	74.0	-35.6	1.62 H	219	41.2	-2.8
2	2746.50	33.1 AV	54.0	-20.9	1.62 H	219	35.9	-2.8
3	3662.00	36.6 PK	74.0	-37.4	1.78 H	239	37.7	-1.1
4	3662.00	27.1 AV	54.0	-26.9	1.78 H	239	28.2	-1.1
5	4577.50	35.7 PK	74.0	-38.3	1.80 H	183	35.2	0.5
6	4577.50	24.1 AV	54.0	-29.9	1.80 H	183	23.6	0.5
7	7324.00	45.0 PK	74.0	-29.0	2.95 H	220	38.2	6.8
8	7324.00	34.4 AV	54.0	-19.6	2.95 H	220	27.6	6.8
9	8239.50	43.8 PK	74.0	-30.2	1.52 H	184	36.1	7.7
10	8239.50	31.2 AV	54.0	-22.8	1.52 H	184	23.5	7.7
11	9155.00	44.5 PK	74.0	-29.5	1.42 H	182	35.4	9.1
12	9155.00	33.4 AV	54.0	-20.6	1.42 H	182	24.3	9.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2746.50	37.7 PK	74.0	-36.3	2.30 V	137	40.5	-2.8
2	2746.50	31.1 AV	54.0	-22.9	2.30 V	137	33.9	-2.8
3	3662.00	37.1 PK	74.0	-36.9	2.21 V	189	38.2	-1.1
4	3662.00	27.8 AV	54.0	-26.2	2.21 V	189	28.9	-1.1
5	4577.50	35.3 PK	74.0	-38.7	1.72 V	211	34.8	0.5
6	4577.50	23.4 AV	54.0	-30.6	1.72 V	211	22.9	0.5
7	7324.00	43.6 PK	74.0	-30.4	1.83 V	150	36.8	6.8
8	7324.00	33.0 AV	54.0	-21.0	1.83 V	150	26.2	6.8
9	8239.50	43.6 PK	74.0	-30.4	1.47 V	181	35.9	7.7
10	8239.50	30.8 AV	54.0	-23.2	1.47 V	181	23.1	7.7
11	9155.00	44.1 PK	74.0	-29.9	1.39 V	183	35.0	9.1
12	9155.00	33.4 AV	54.0	-20.6	1.39 V	183	24.3	9.1

Remarks:

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

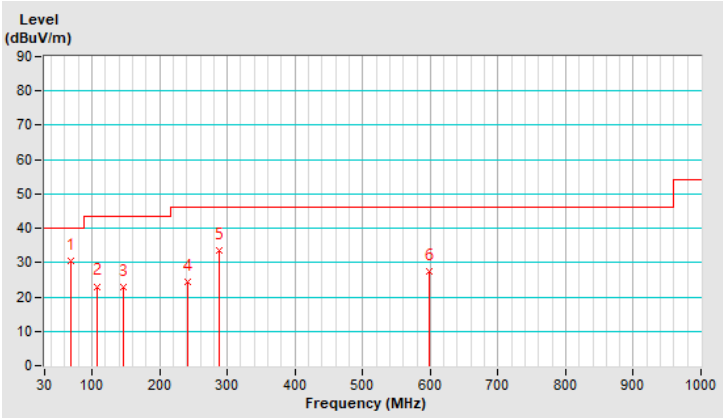
Below 1GHz Data:

RF Mode	TX FSK_250kbps	Channel	CH 26：915.5 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	68.76	30.4 QP	40.0	-9.6	1.00 H	48	44.9	-14.5
2	108.41	23.1 QP	43.5	-20.4	1.50 H	259	38.8	-15.7
3	147.15	23.0 QP	43.5	-20.5	1.50 H	360	35.3	-12.3
4	240.57	24.4 QP	46.0	-21.6	2.00 H	124	38.6	-14.2
5	287.55	33.4 QP	46.0	-12.6	1.50 H	121	45.7	-12.3
6	598.24	27.4 QP	46.0	-18.6	1.50 H	165	32.1	-4.7

Remarks:

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

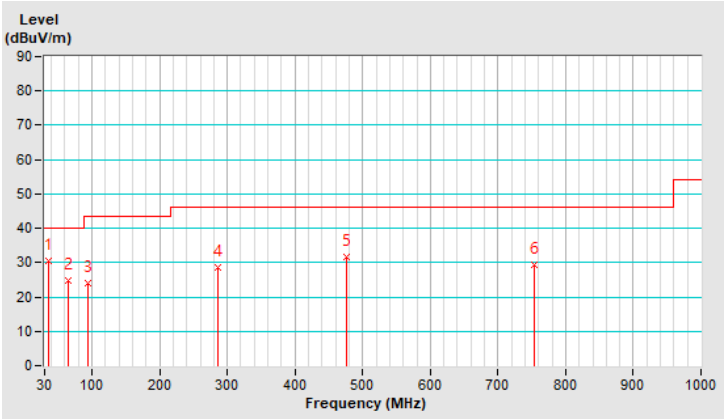


RF Mode	TX FSK_250kbps	Channel	CH 26：915.5 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	35.86	30.3 QP	40.0	-9.7	1.00 V	188	43.8	-13.5
2	65.54	24.7 QP	40.0	-15.3	1.50 V	0	38.5	-13.8
3	94.96	23.9 QP	43.5	-19.6	2.00 V	82	41.7	-17.8
4	286.05	28.6 QP	46.0	-17.4	1.00 V	86	40.9	-12.3
5	476.18	31.6 QP	46.0	-14.4	1.50 V	212	39.3	-7.7
6	753.05	29.2 QP	46.0	-16.8	1.50 V	199	31.7	-2.5

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	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 0.50MHz.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
TEST RECEIVER R&S	ESCS 30	847124/029	2021/10/13	2022/10/12
LISN R&S	ESH3-Z5	848773/004	2021/10/29	2022/10/28
50 ohms Terminator NA	50	3	2021/10/27	2022/10/26
RF Coaxial Cable JYEBO	5D-FB	COCCAB-001	2021/9/25	2022/9/24
Fixed attenuator STI	STI02-2200-10	005	2021/8/27	2022/8/26
Software BVADT	BVADT_Cond_V7.3.7.4	NA	NA	NA

Note: 1. The test was performed in Conduction 1.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: 2022/8/6

4.2.3 Test Procedures

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

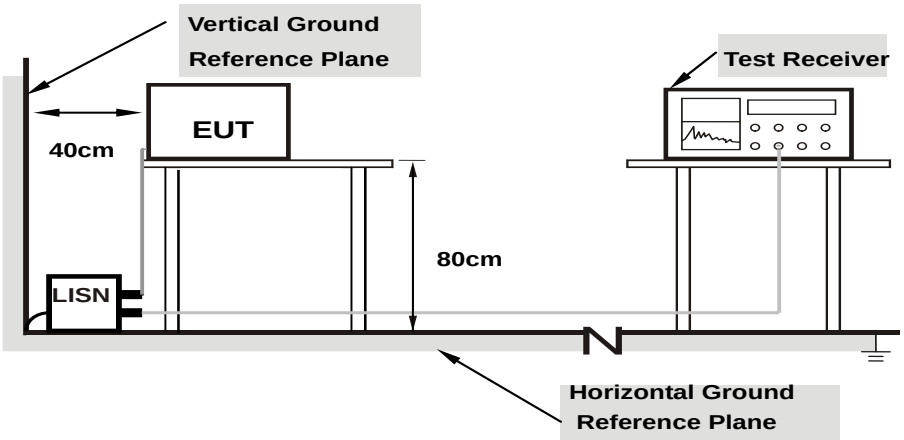
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



Note: 1.Support units were connected to second LISN.

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

4.2.6 EUT Operating Condition

Same as 4.1.6.

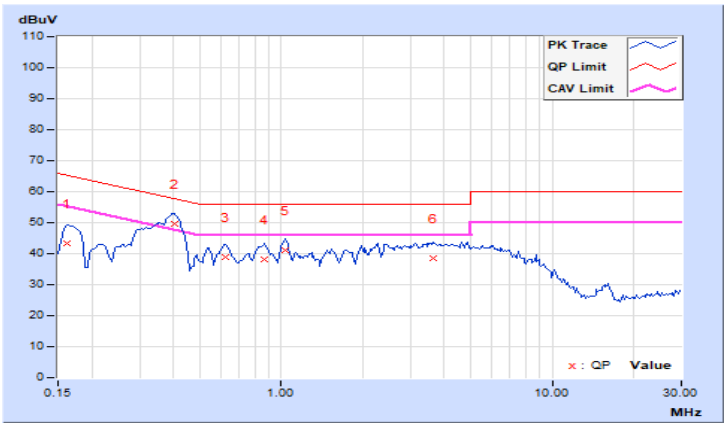
4.2.7 Test Results (Mode 1)

RF Mode	TX FSK_50kbps	Channel	CH 128：927.8 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	10.05	33.31	19.37	43.36	29.42	65.38	55.38	-22.02	-25.96
2	0.40391	10.07	39.53	31.95	49.60	42.02	57.77	47.77	-8.17	-5.75
3	0.62266	10.08	28.87	23.29	38.95	33.37	56.00	46.00	-17.05	-12.63
4	0.86875	10.10	28.18	22.88	38.28	32.98	56.00	46.00	-17.72	-13.02
5	1.03906	10.11	30.87	25.77	40.98	35.88	56.00	46.00	-15.02	-10.12
6	3.62891	10.24	28.38	22.32	38.62	32.56	56.00	46.00	-17.38	-13.44

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

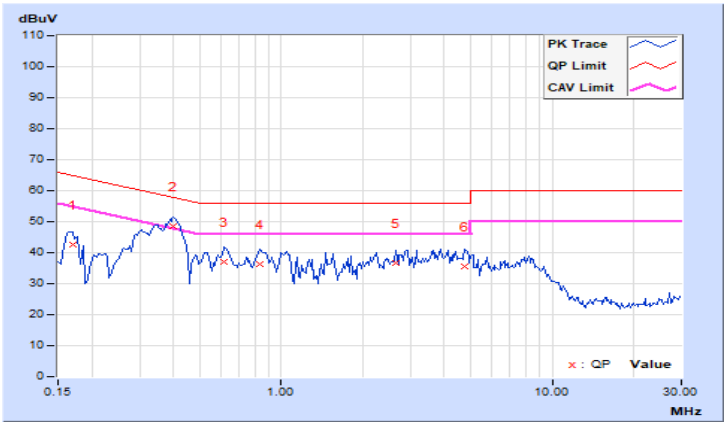


RF Mode	TX FSK_50kbps	Channel	CH 128：927.8 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16953	10.02	32.68	23.25	42.70	33.27	64.98	54.98	-22.28	-21.71
2	0.40000	10.04	38.48	31.20	48.52	41.24	57.85	47.85	-9.33	-6.61
3	0.61094	10.05	26.83	20.83	36.88	30.88	56.00	46.00	-19.12	-15.12
4	0.83359	10.07	26.26	20.78	36.33	30.85	56.00	46.00	-19.67	-15.15
5	2.66406	10.16	26.45	20.55	36.61	30.71	56.00	46.00	-19.39	-15.29
6	4.77344	10.24	25.37	18.43	35.61	28.67	56.00	46.00	-20.39	-17.33

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



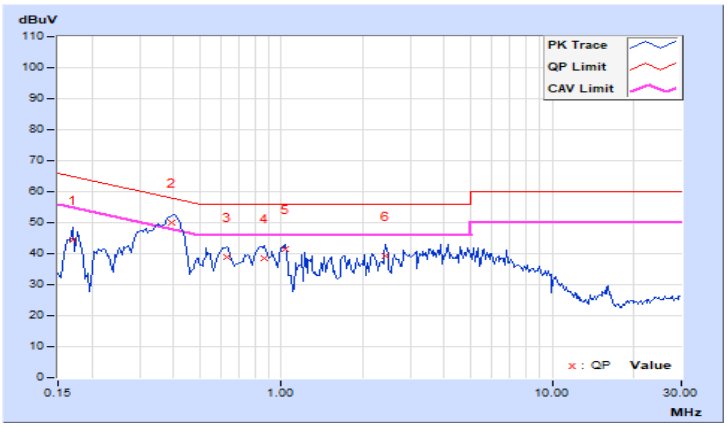
4.2.8 Test Results (Mode 2)

RF Mode	TX FSK_150kbps	Channel	CH 63：927.6 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16953	10.05	34.35	23.63	44.40	33.68	64.98	54.98	-20.58	-21.30
2	**0.39219**	**10.07**	**39.82**	**33.00**	**49.89**	**43.07**	**58.02**	**48.02**	**-8.13**	**-4.95**
3	0.62656	10.08	28.92	22.76	39.00	32.84	56.00	46.00	-17.00	-13.16
4	0.86484	10.10	28.41	22.73	38.51	32.83	56.00	46.00	-17.49	-13.17
5	1.03125	10.11	31.49	26.17	41.60	36.28	56.00	46.00	-14.40	-9.72
6	2.42578	10.18	28.95	23.40	39.13	33.58	56.00	46.00	-16.87	-12.42

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

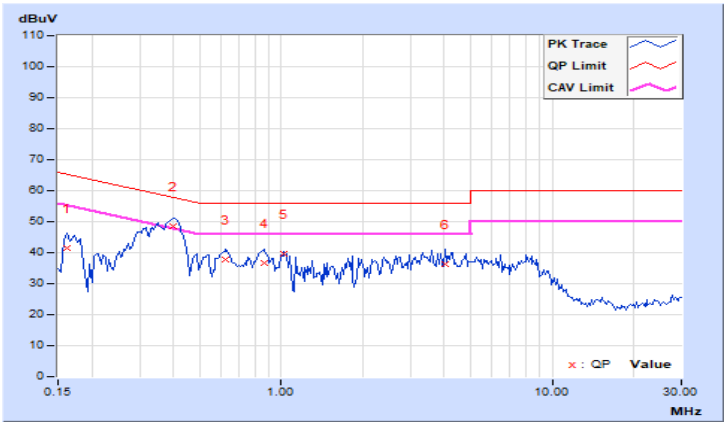


RF Mode	TX FSK_150kbps	Channel	CH 63：927.6 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	10.02	31.52	18.02	41.54	28.04	65.38	55.38	-23.84	-27.34
2	0.40000	10.04	38.50	31.12	48.54	41.16	57.85	47.85	-9.31	-6.69
3	0.62266	10.05	27.85	22.07	37.90	32.12	56.00	46.00	-18.10	-13.88
4	0.86094	10.07	26.74	21.50	36.81	31.57	56.00	46.00	-19.19	-14.43
5	1.02734	10.08	29.43	24.41	39.51	34.49	56.00	46.00	-16.49	-11.51
6	4.00781	10.21	26.07	19.45	36.28	29.66	56.00	46.00	-19.72	-16.34

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



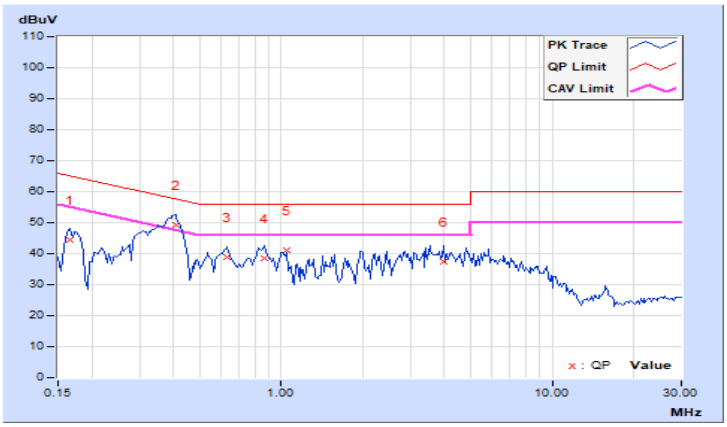
4.2.9 Test Results (Mode 3)

RF Mode	TX FSK_250kbps	Channel	CH 50：927.5 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	10.05	34.43	22.48	44.48	32.53	65.18	55.18	-20.70	-22.65
2	0.40781	10.07	39.04	31.76	49.11	41.83	57.69	47.69	-8.58	-5.86
3	0.63047	10.08	28.64	22.62	38.72	32.70	56.00	46.00	-17.28	-13.30
4	0.86484	10.10	28.47	22.93	38.57	33.03	56.00	46.00	-17.43	-12.97
5	1.04297	10.11	30.87	25.51	40.98	35.62	56.00	46.00	-15.02	-10.38
6	3.96484	10.26	27.31	21.13	37.57	31.39	56.00	46.00	-18.43	-14.61

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

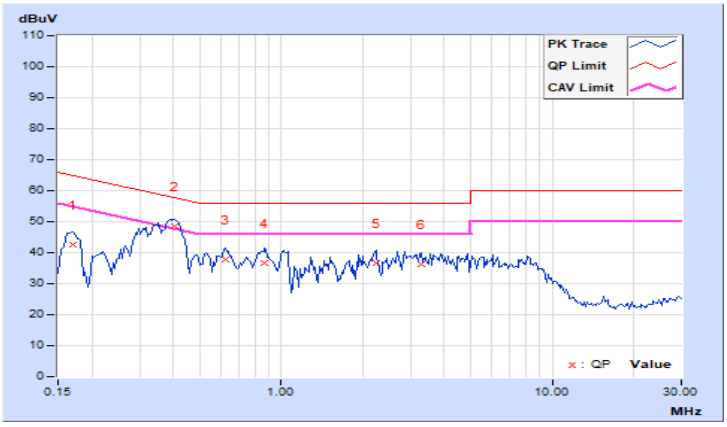


RF Mode	TX FSK_250kbps	Channel	CH 50：927.5 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16953	10.02	32.64	23.27	42.66	33.29	64.98	54.98	-22.32	-21.69
2	0.40391	10.04	38.30	30.86	48.34	40.90	57.77	47.77	-9.43	-6.87
3	0.62266	10.05	27.83	22.03	37.88	32.08	56.00	46.00	-18.12	-13.92
4	0.86875	10.07	26.48	21.08	36.55	31.15	56.00	46.00	-19.45	-14.85
5	2.23438	10.14	26.37	20.91	36.51	31.05	56.00	46.00	-19.49	-14.95
6	3.30469	10.18	26.00	19.14	36.18	29.32	56.00	46.00	-19.82	-16.68

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



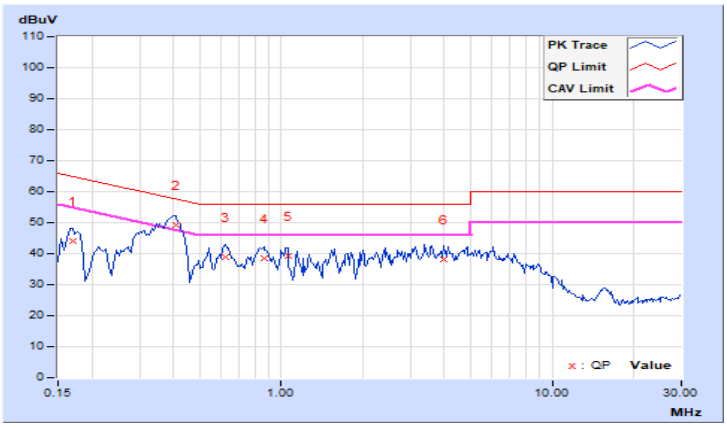
4.2.10 Test Results (Mode 4)

RF Mode	TX FSK_50kbps	Channel	CH 68：915.8 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16953	10.05	34.11	24.03	44.16	34.08	64.98	54.98	-20.82	-20.90
2	0.40781	10.07	39.14	31.86	49.21	41.93	57.69	47.69	-8.48	-5.76
3	0.61875	10.08	28.98	22.84	39.06	32.92	56.00	46.00	-16.94	-13.08
4	0.86094	10.10	28.45	22.89	38.55	32.99	56.00	46.00	-17.45	-13.01
5	1.06250	10.11	29.28	23.19	39.39	33.30	56.00	46.00	-16.61	-12.70
6	3.99609	10.26	27.85	21.13	38.11	31.39	56.00	46.00	-17.89	-14.61

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

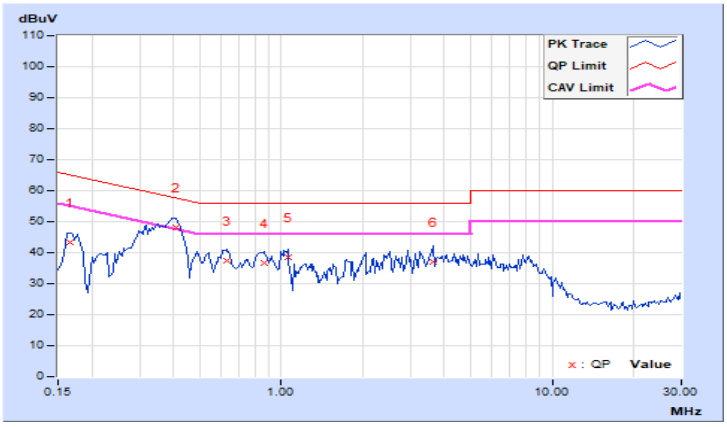


RF Mode	TX FSK_50kbps	Channel	CH 68：915.8 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	10.02	33.43	22.22	43.45	32.24	65.18	55.18	-21.73	-22.94
2	0.40781	10.04	38.10	30.88	48.14	40.92	57.69	47.69	-9.55	-6.77
3	0.63438	10.05	27.38	21.04	37.43	31.09	56.00	46.00	-18.57	-14.91
4	0.86484	10.07	26.73	21.29	36.80	31.36	56.00	46.00	-19.20	-14.64
5	1.06250	10.08	28.28	22.08	38.36	32.16	56.00	46.00	-17.64	-13.84
6	3.62109	10.19	26.97	20.79	37.16	30.98	56.00	46.00	-18.84	-15.02

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



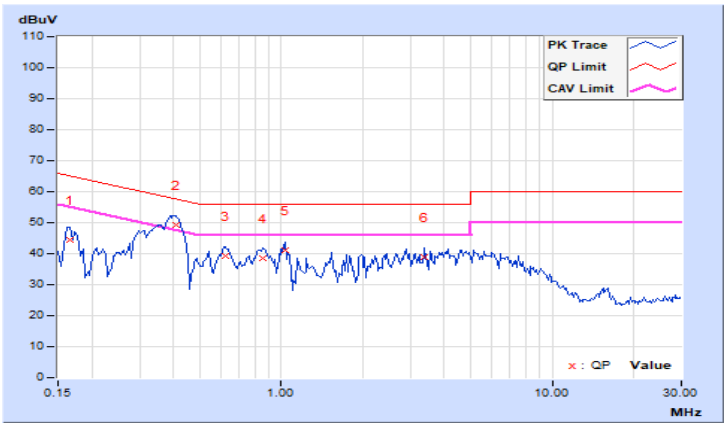
4.2.11 Test Results (Mode 5)

RF Mode	TX FSK_250kbps	Channel	CH 26：915.5 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	10.05	34.53	22.86	44.58	32.91	65.18	55.18	-20.60	-22.27
2	0.40781	10.07	39.20	31.86	49.27	41.93	57.69	47.69	-8.42	-5.76
3	0.62266	10.08	29.02	23.15	39.10	33.23	56.00	46.00	-16.90	-12.77
4	0.85703	10.10	28.59	23.20	38.69	33.30	56.00	46.00	-17.31	-12.70
5	1.03125	10.11	31.13	25.81	41.24	35.92	56.00	46.00	-14.76	-10.08
6	3.39063	10.23	28.77	22.63	39.00	32.86	56.00	46.00	-17.00	-13.14

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

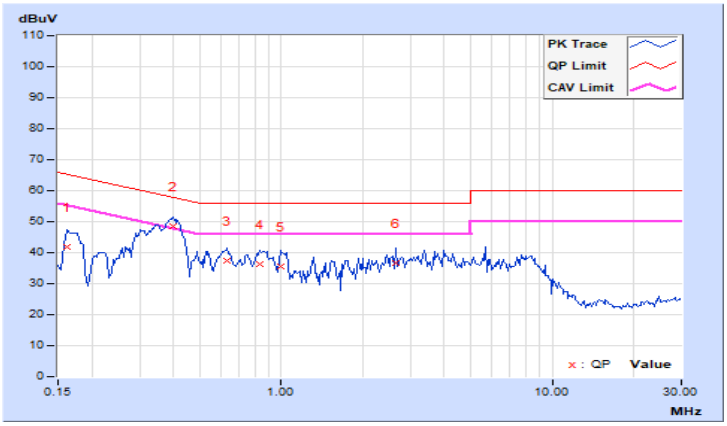


RF Mode	TX FSK_250kbps	Channel	CH 26：915.5 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	10.02	31.68	18.10	41.70	28.12	65.38	55.38	-23.68	-27.26
2	0.40000	10.04	38.56	31.32	48.60	41.36	57.85	47.85	-9.25	-6.49
3	0.63438	10.05	27.29	21.17	37.34	31.22	56.00	46.00	-18.66	-14.78
4	0.83359	10.07	26.28	20.92	36.35	30.99	56.00	46.00	-19.65	-15.01
5	0.99375	10.08	25.38	18.50	35.46	28.58	56.00	46.00	-20.54	-17.42
6	2.64063	10.16	26.40	20.12	36.56	30.28	56.00	46.00	-19.44	-15.72

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

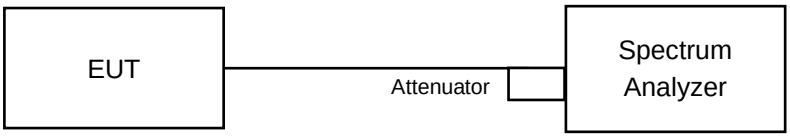


4.3 Number of Hopping Frequency Used

4.3.1 Limits of Hopping Frequency Used Measurement

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies.

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 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.

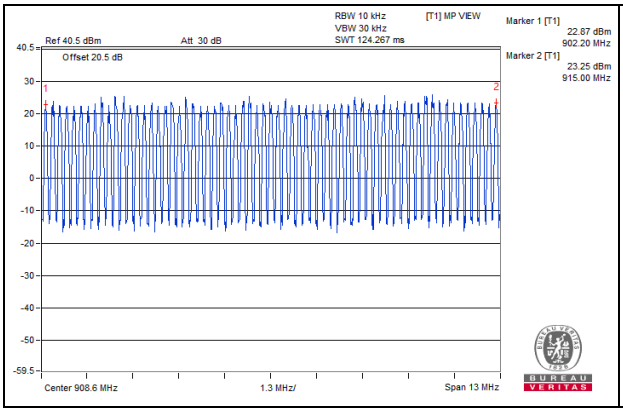
e. Repeat above procedures until all frequencies measured were complete.

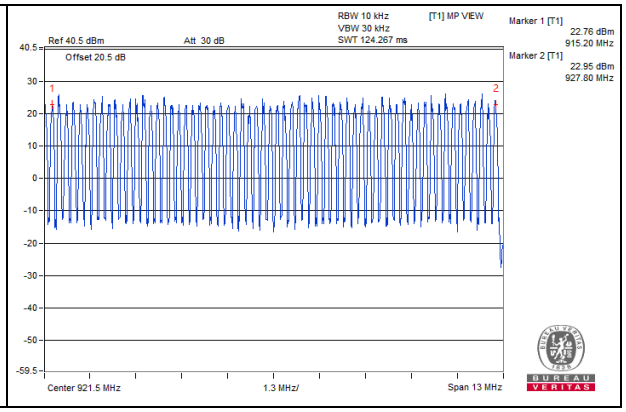
4.3.5 Deviation from Test Standard

No deviation.

4.3.6 Test Results (Mode 1)

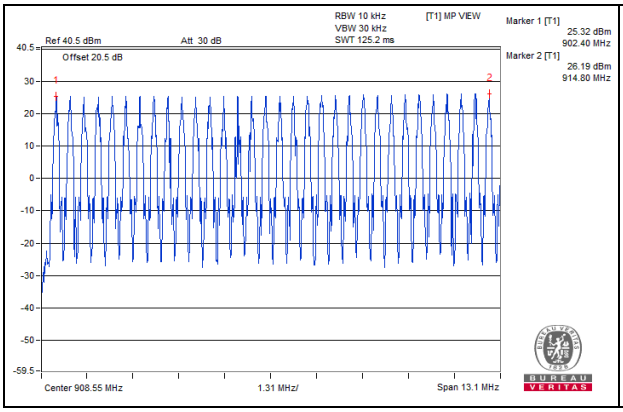
There are 129 hopping frequencies in the hopping mode. Please refer to below plots for the test result. On the plots, it shows that the hopping frequencies are equally spaced.

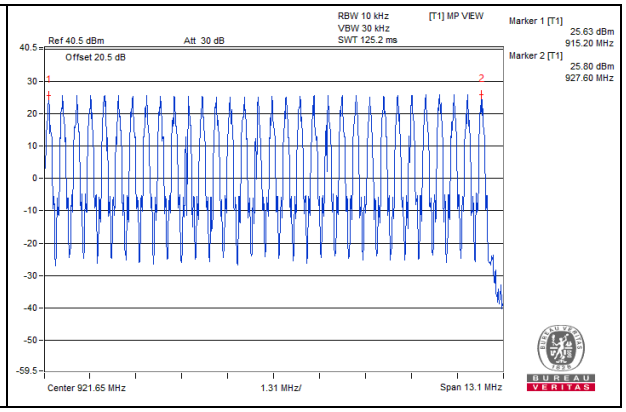




4.3.7 Test Results (Mode 2)

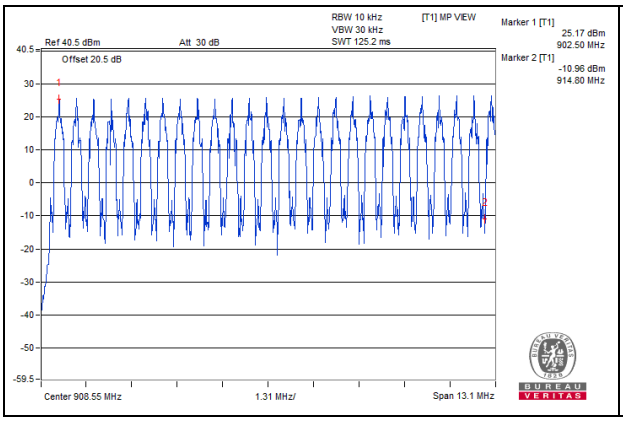
There are 64 hopping frequencies in the hopping mode. Please refer to below plots for the test result. On the plots, it shows that the hopping frequencies are equally spaced.

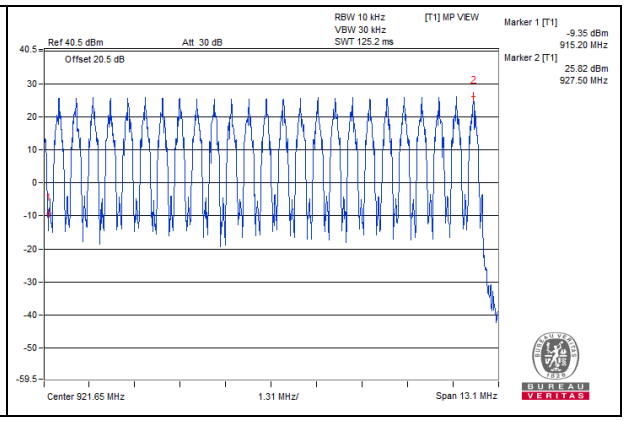




4.3.8 Test Results (Mode 3)

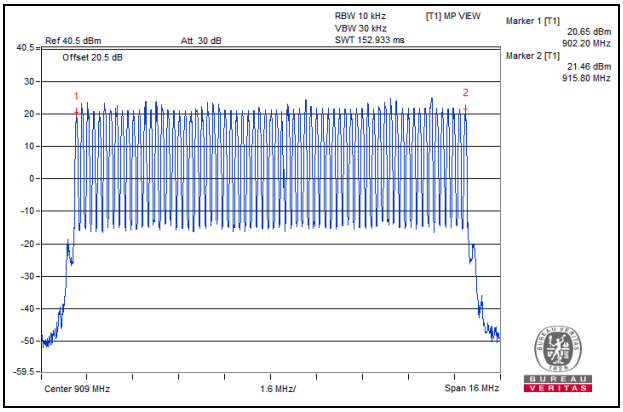
There are 51 hopping frequencies in the hopping mode. Please refer to below plots for the test result. On the plots, it shows that the hopping frequencies are equally spaced.





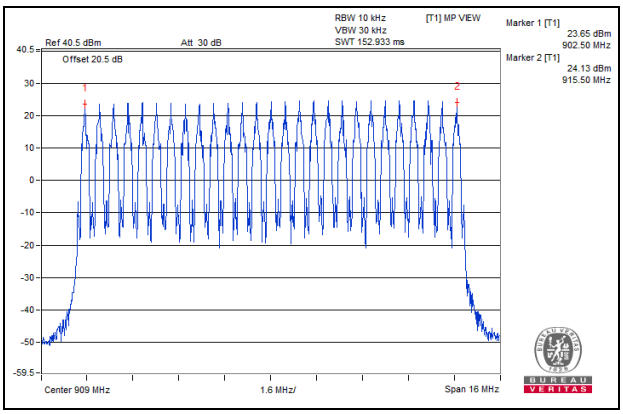
4.3.9 Test Results (Mode 4)

There are 69 hopping frequencies in the hopping mode. Please refer to below plots for the test result. On the plots, it shows that the hopping frequencies are equally spaced.



4.3.10 Test Results (Mode 5)

There are 27 hopping frequencies in the hopping mode. Please refer to below plots for the test result. On the plots, it shows that the hopping frequencies are equally spaced.

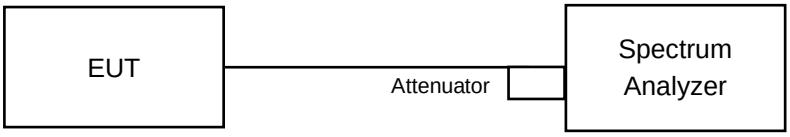


4.4 Dwell Time on Each Channel

4.4.1 Limits of Dwell Time on Each Channel Measurement

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.

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 Procedures

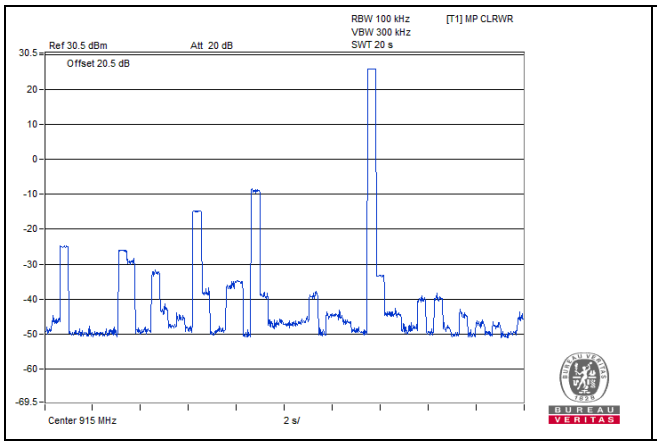
a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and 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.

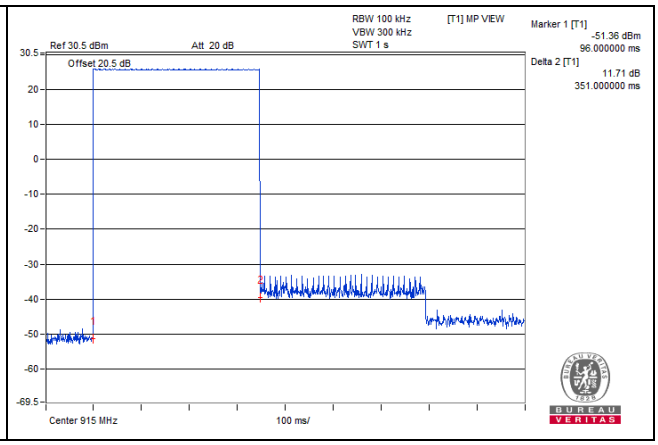
4.4.5 Deviation from Test Standard

No deviation.

4.4.6 Test Results (Mode 1)

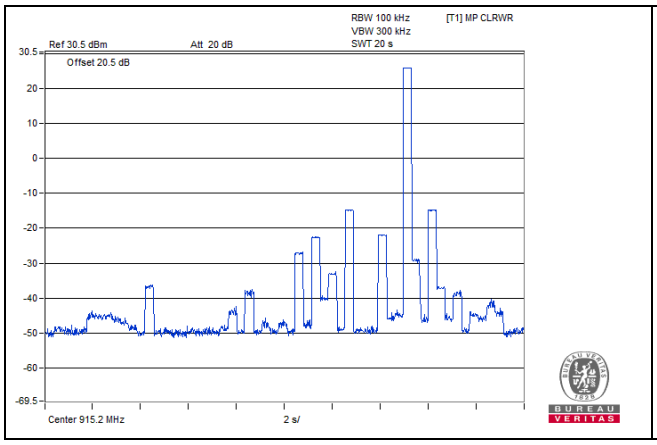
Mode	Number of transmission in 20 sec	Length of transmission time (msec)	Result (msec)	Limit (msec)	Test Result
FHSS	1 times	351	351	400	Pass

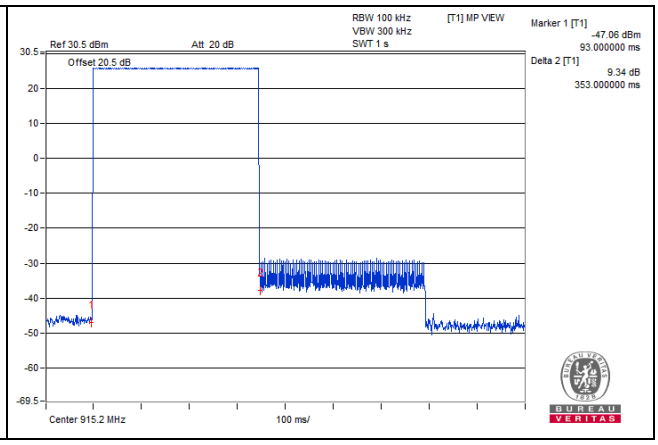




4.4.7 Test Results (Mode 2)

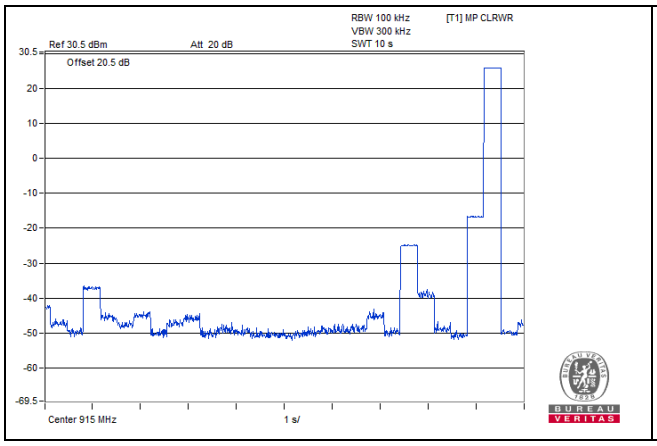
Mode	Number of transmission in 20 sec	Length of transmission time (msec)	Result (msec)	Limit (msec)	Test Result
FHSS	1 times	353	353	400	Pass

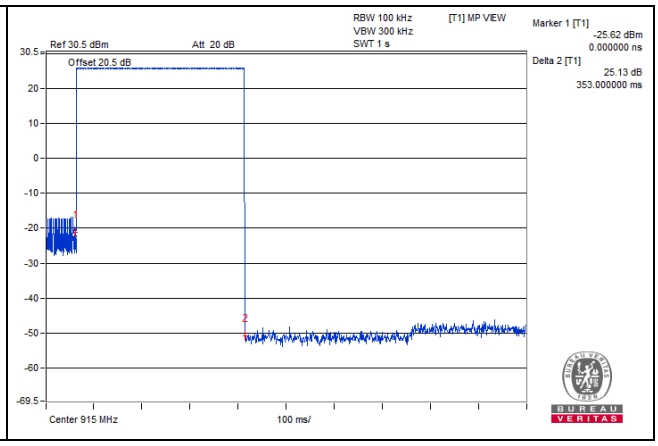




4.4.8 Test Results (Mode 3)

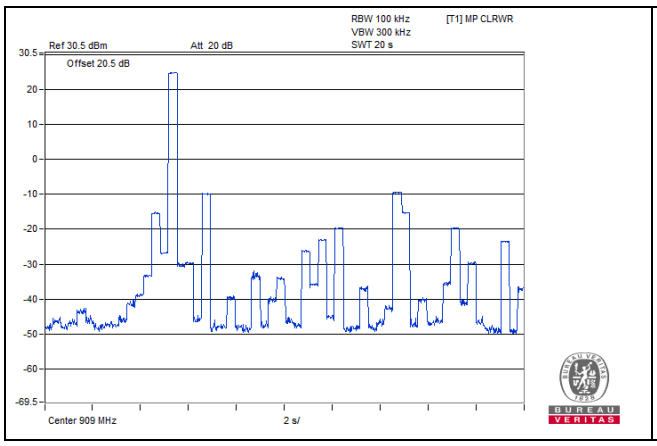
Mode	Number of transmission in 10 sec	Length of transmission time (msec)	Result (msec)	Limit (msec)	Test Result
FHSS	1 times	353	353	400	Pass

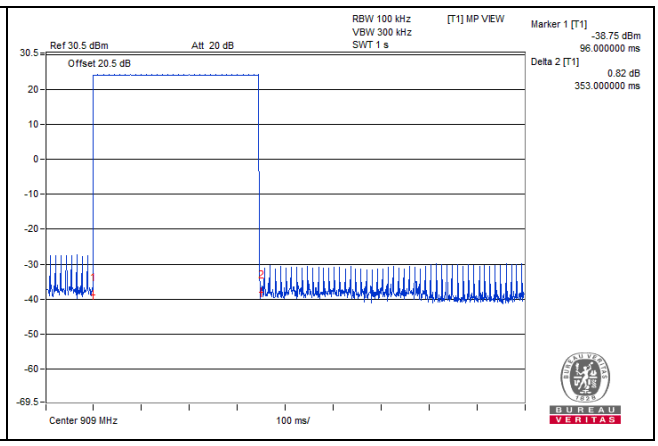




4.4.9 Test Results (Mode 4)

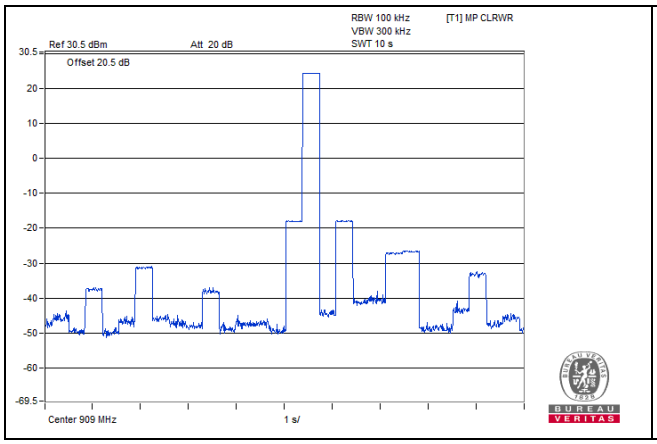
Mode	Number of transmission in 20 sec	Length of transmission time (msec)	Result (msec)	Limit (msec)	Test Result
FHSS	1 times	353	353	400	Pass

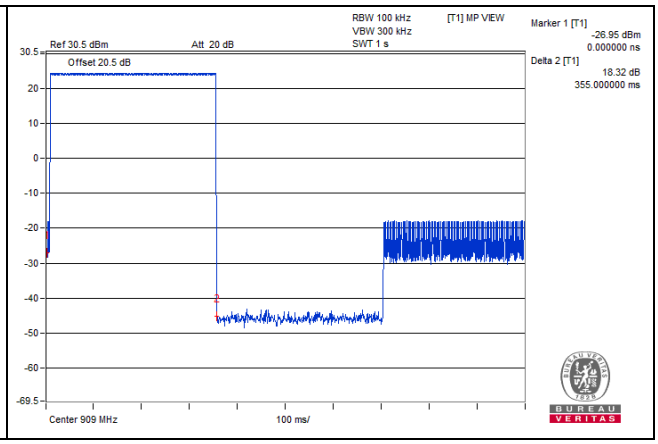




4.4.10 Test Results (Mode 5)

Mode	Number of transmission in 10 sec	Length of transmission time (msec)	Result (msec)	Limit (msec)	Test Result
FHSS	1 times	355	355	400	Pass



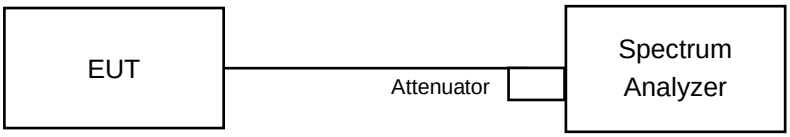


4.5 Channel Bandwidth

4.5.1 Limits of Channel Bandwidth Measurement

For frequency hopping system operating in the 902-928MHz, If the 20dB bandwidth of hopping channel is greater than 25kHz, 20dBbandwidth of hopping channel shell be a minimum limit for the hopping channel separation. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

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

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.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

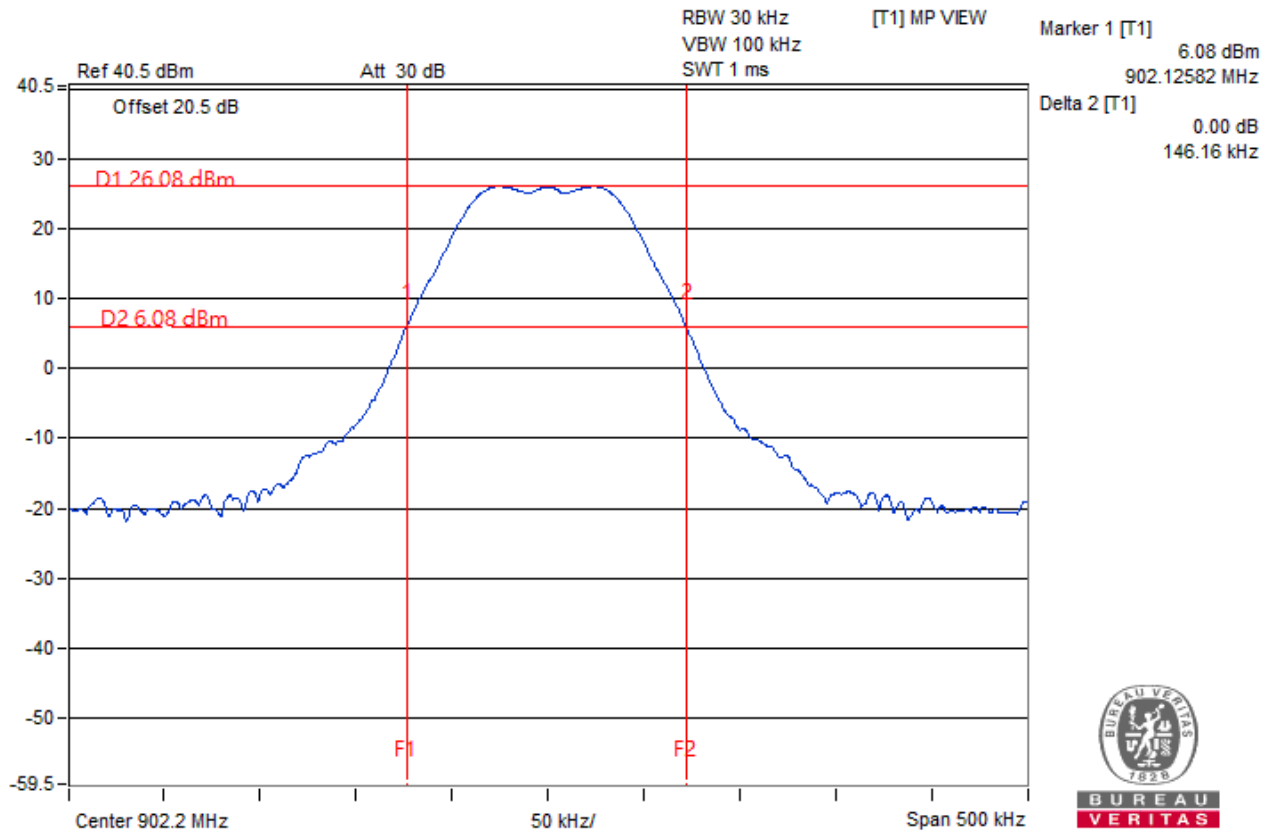
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.5.7 Test Results (Mode 1)

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Maximum Limit (MHz)	>= 25kHz
0	902.2	0.146	0.5	Yes
64	915	0.145	0.5	Yes
128	927.8	0.146	0.5	Yes

Spectrum Plot of Min. Value

CH 0

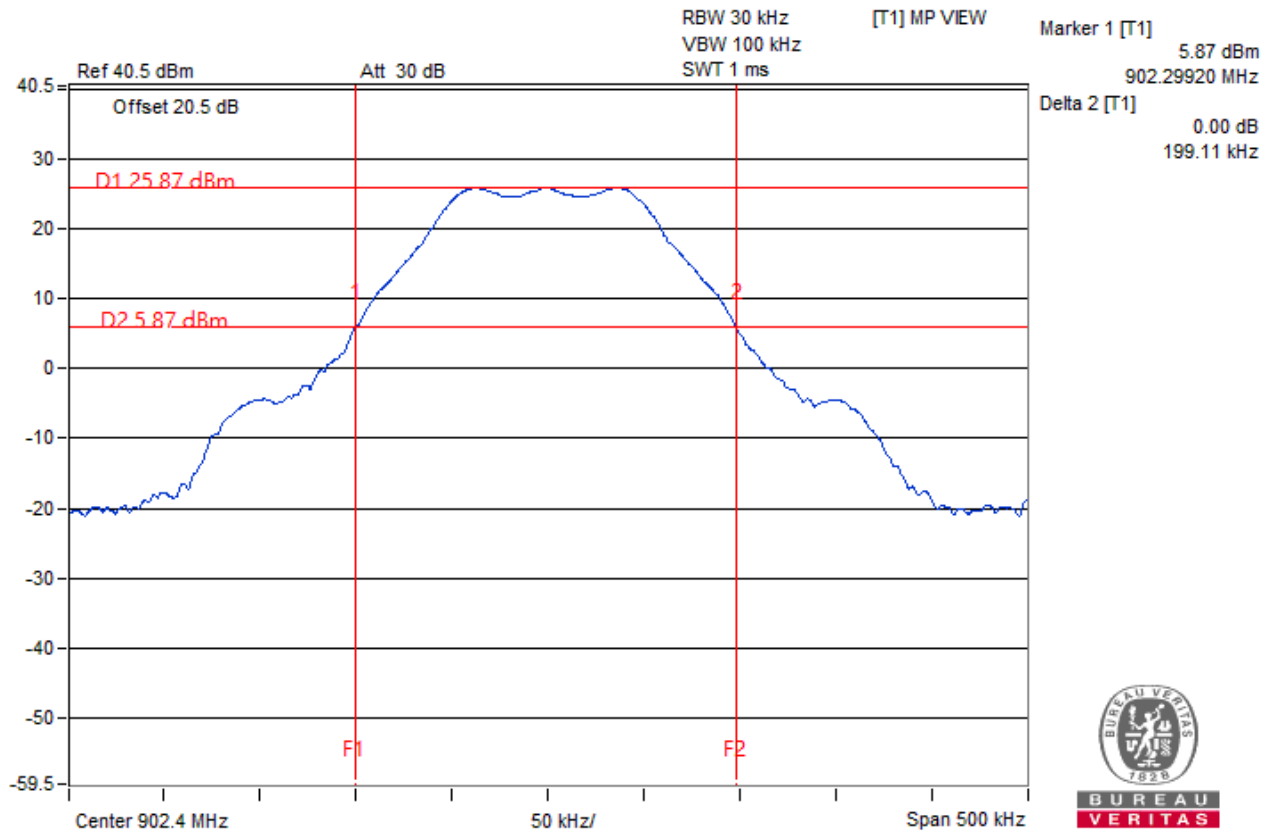


4.5.8 Test Results (Mode 2)

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Maximum Limit (MHz)	>= 25kHz
0	902.4	0.199	0.5	Yes
32	915.2	0.198	0.5	Yes
63	927.6	0.199	0.5	Yes

Spectrum Plot of Min. Value

CH 0

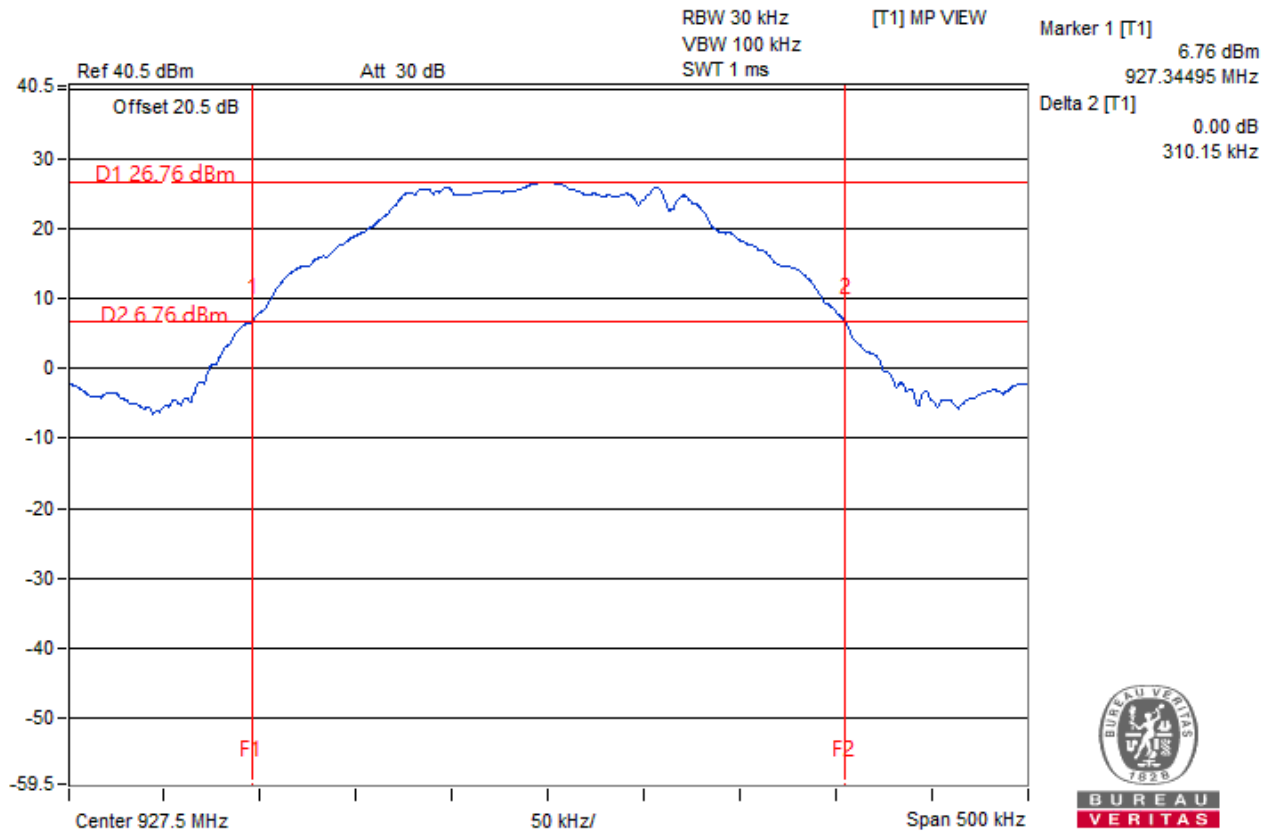


4.5.9 Test Results (Mode 3)

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Maximum Limit (MHz)	>= 25kHz
0	902.5	0.307	0.5	Yes
25	915	0.306	0.5	Yes
50	927.5	0.31	0.5	Yes

Spectrum Plot of Min. Value

CH 50

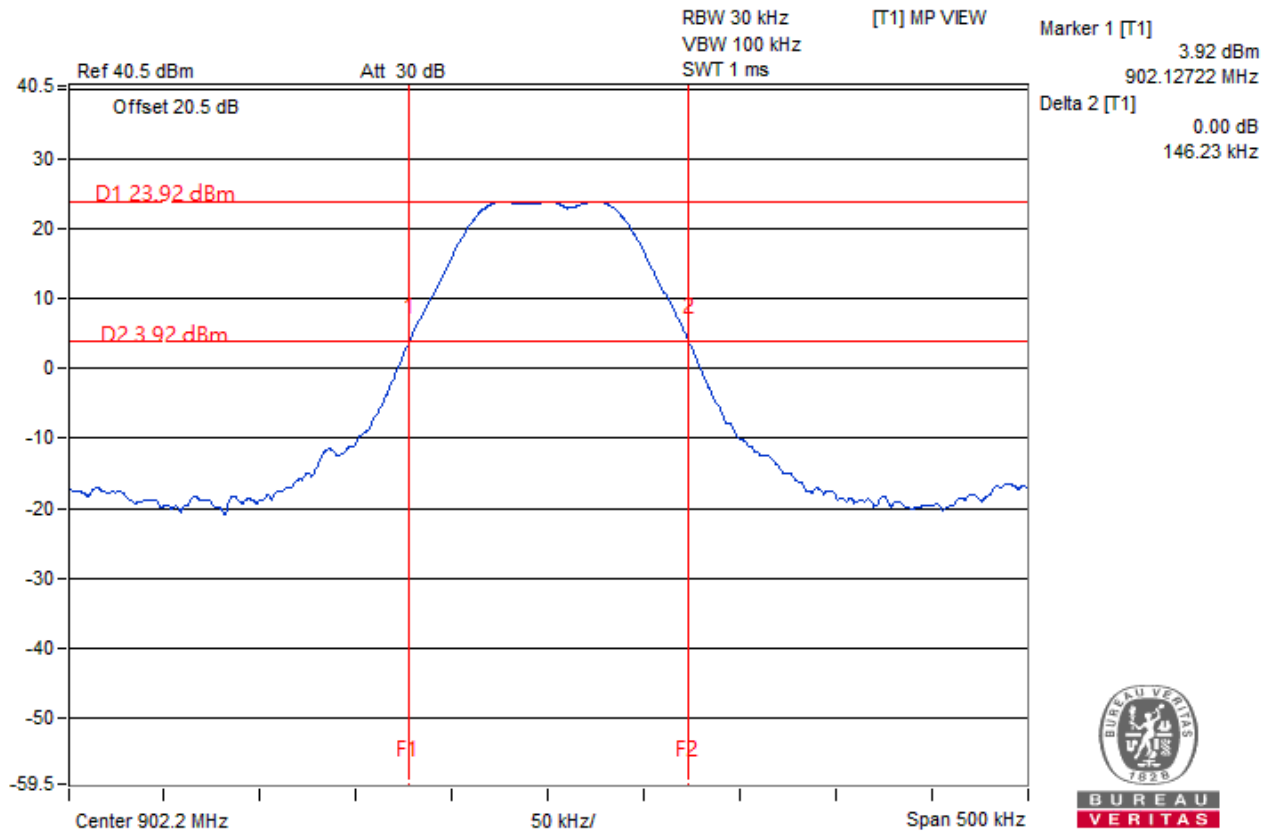


4.5.10 Test Results (Mode 4)

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Maximum Limit (MHz)	>= 25kHz
0	902.2	0.146	0.5	Yes
34	909	0.146	0.5	Yes
68	915.8	0.146	0.5	Yes

Spectrum Plot of Min. Value

CH 0

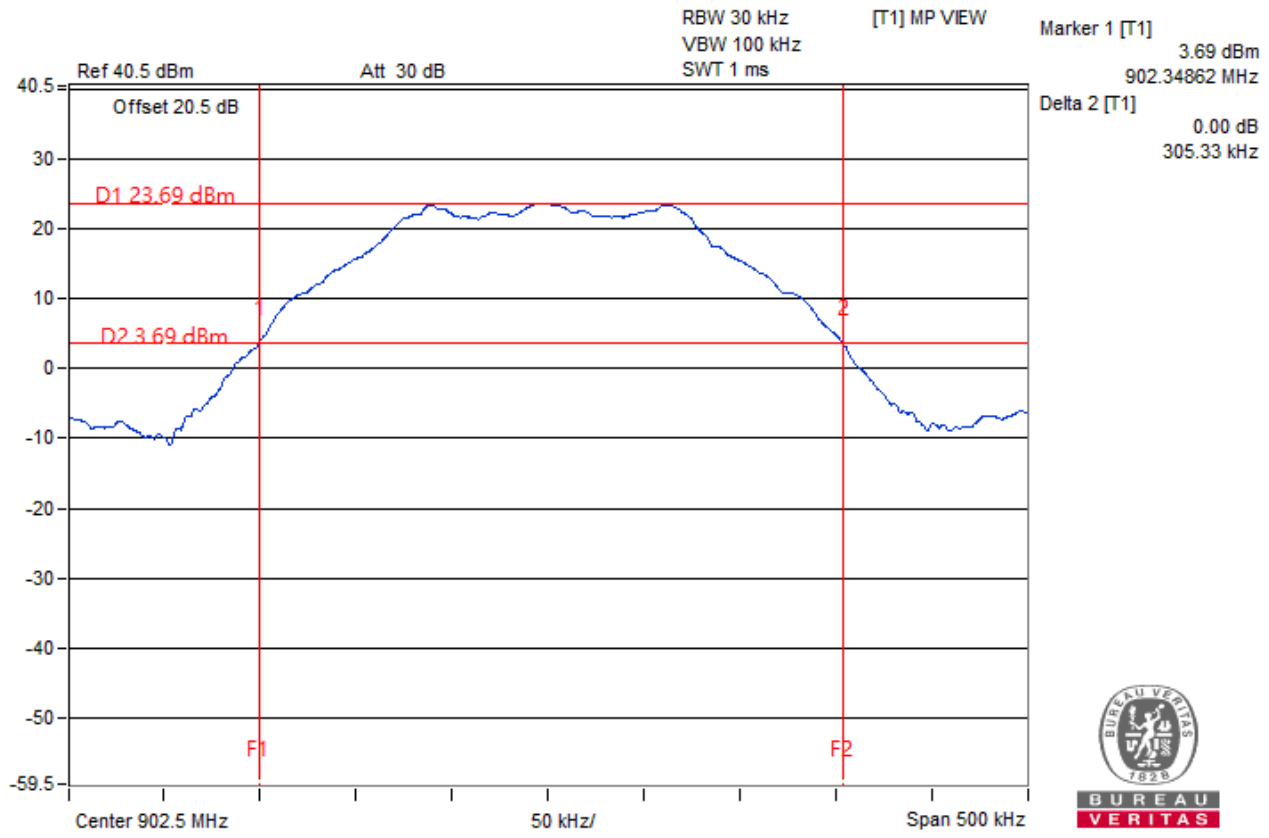


4.5.11 Test Results (Mode 5)

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Maximum Limit (MHz)	>= 25kHz
0	902.5	0.305	0.5	Yes
13	909	0.302	0.5	Yes
26	915.5	0.302	0.5	Yes

Spectrum Plot of Min. Value

CH 0

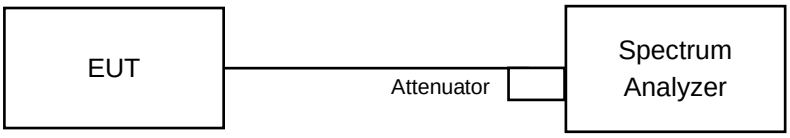


4.6 Hopping Channel Separation

4.6.1 Limits of Hopping Channel Separation Measurement

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

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

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.

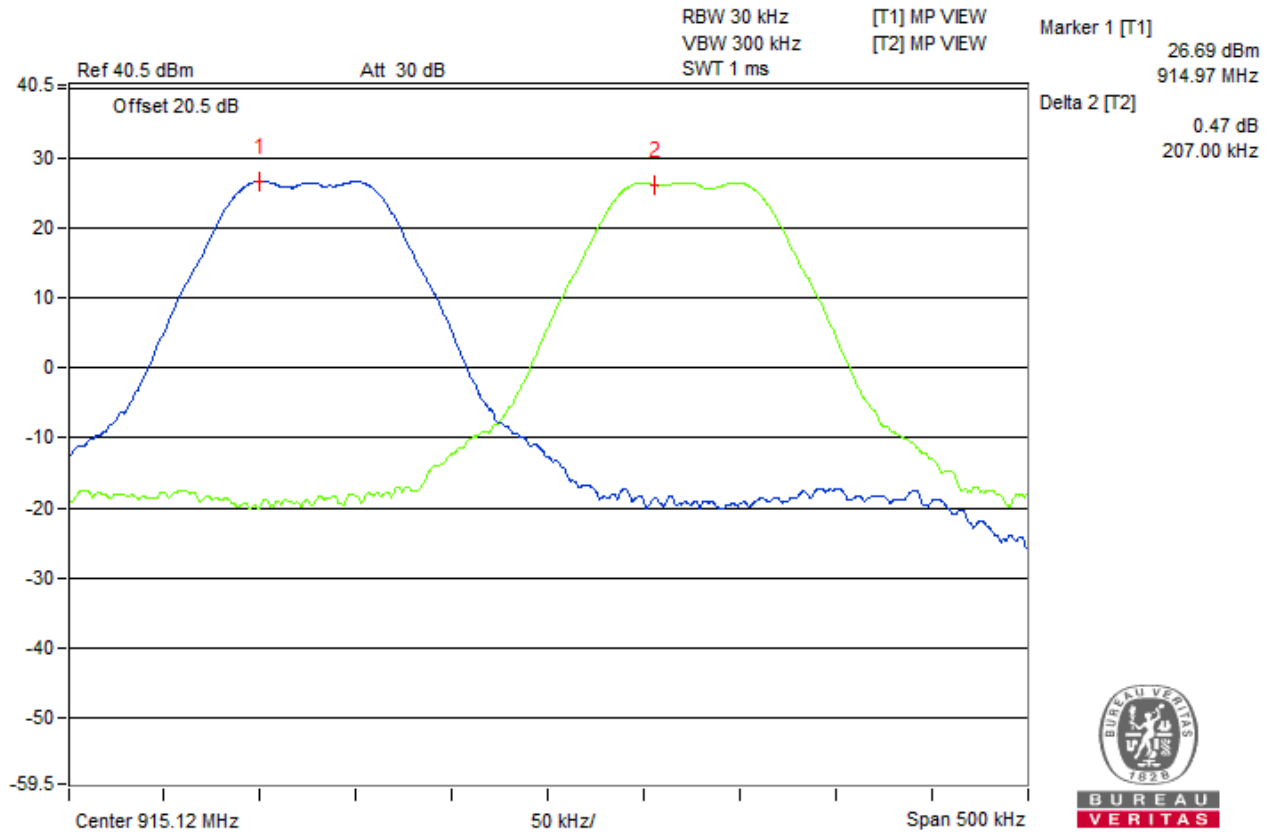
4.6.5 Deviation from Test Standard

No deviation.

4.6.6 Test Results (Mode 1)

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	20dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	902.2	0.205	0.15	0.15	Pass
64	915	0.207	0.15	0.15	Pass
128	927.8	0.203	0.15	0.15	Pass

Spectrum Plot of Worst Value
CH 64

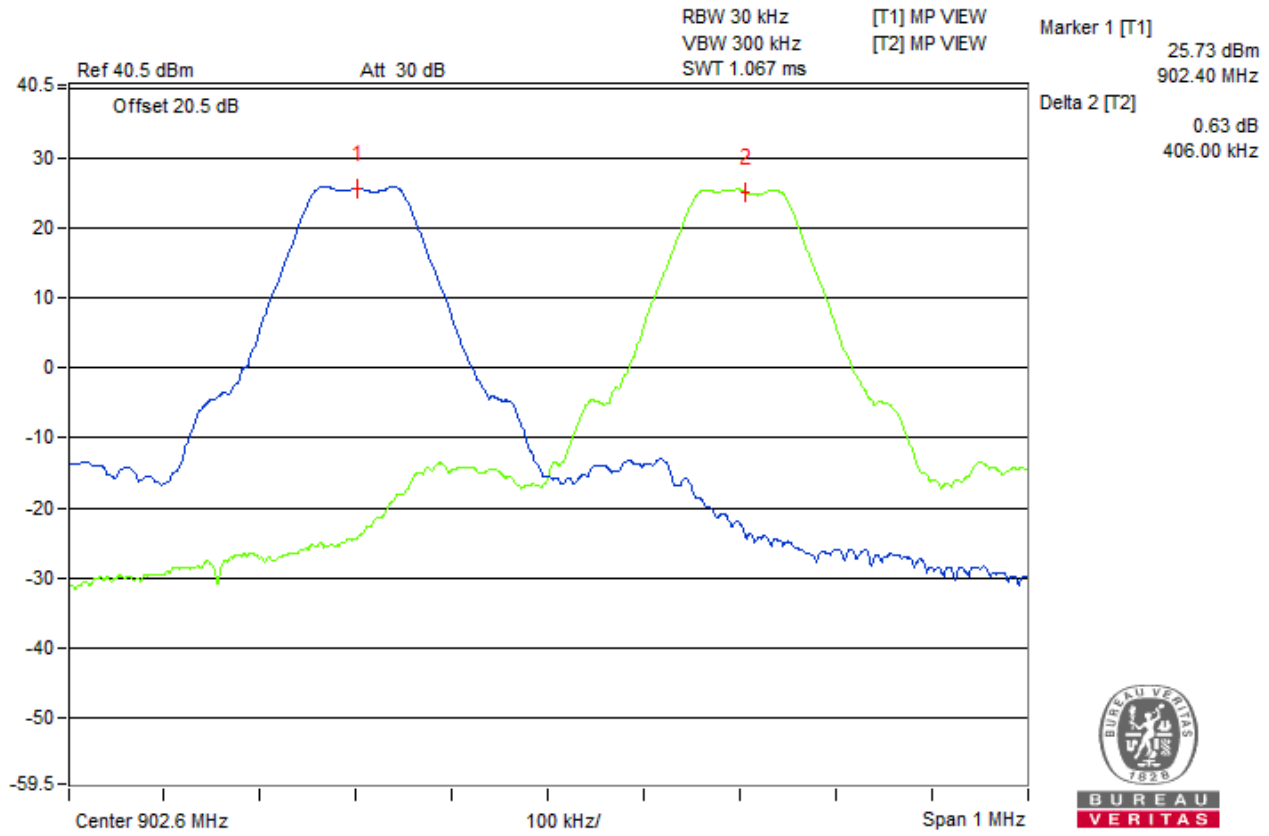


4.6.7 Test Results (Mode 2)

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	20dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	902.4	0.406	0.199	0.19	Pass
32	915.2	0.405	0.198	0.19	Pass
63	927.6	0.406	0.199	0.19	Pass

Spectrum Plot of Worst Value

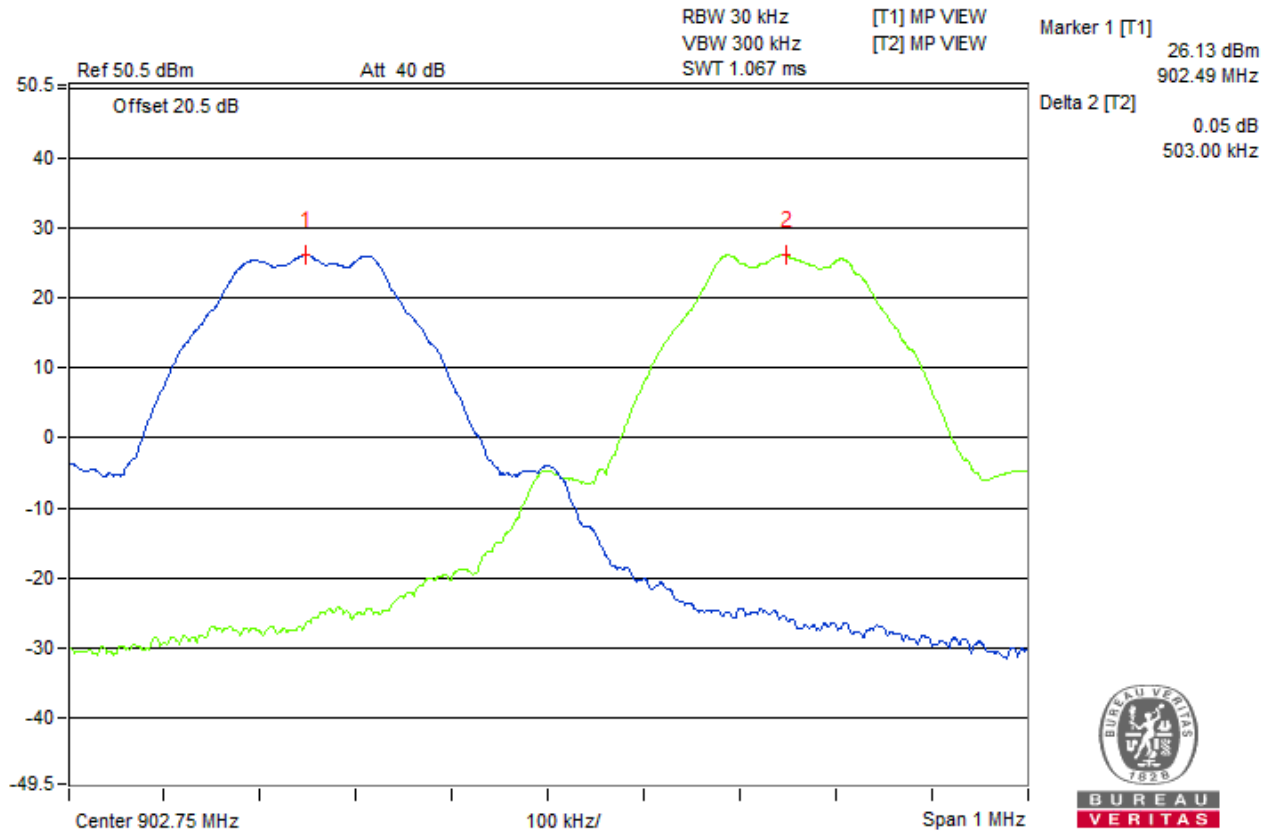
CH 0



4.6.8 Test Results (Mode 3)

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	20dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	902.5	0.503	0.307	0.3	Pass
25	915	0.503	0.306	0.31	Pass
50	927.5	0.5	0.31	0.31	Pass

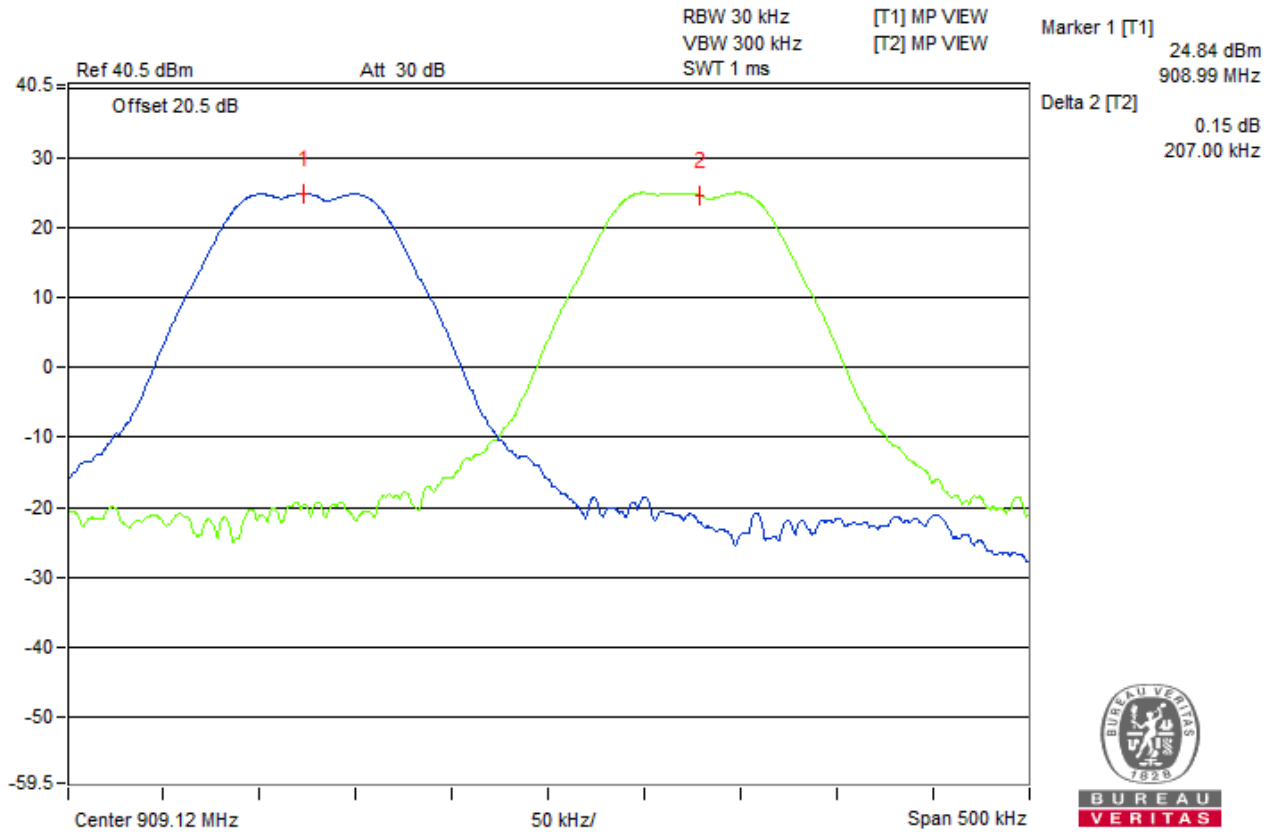
Spectrum Plot of Worst Value
CH 0



4.6.9 Test Results (Mode 4)

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	20dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	902.2	0.201	0.146	0.15	Pass
34	909	0.207	0.146	0.15	Pass
68	915.8	0.206	0.146	0.15	Pass

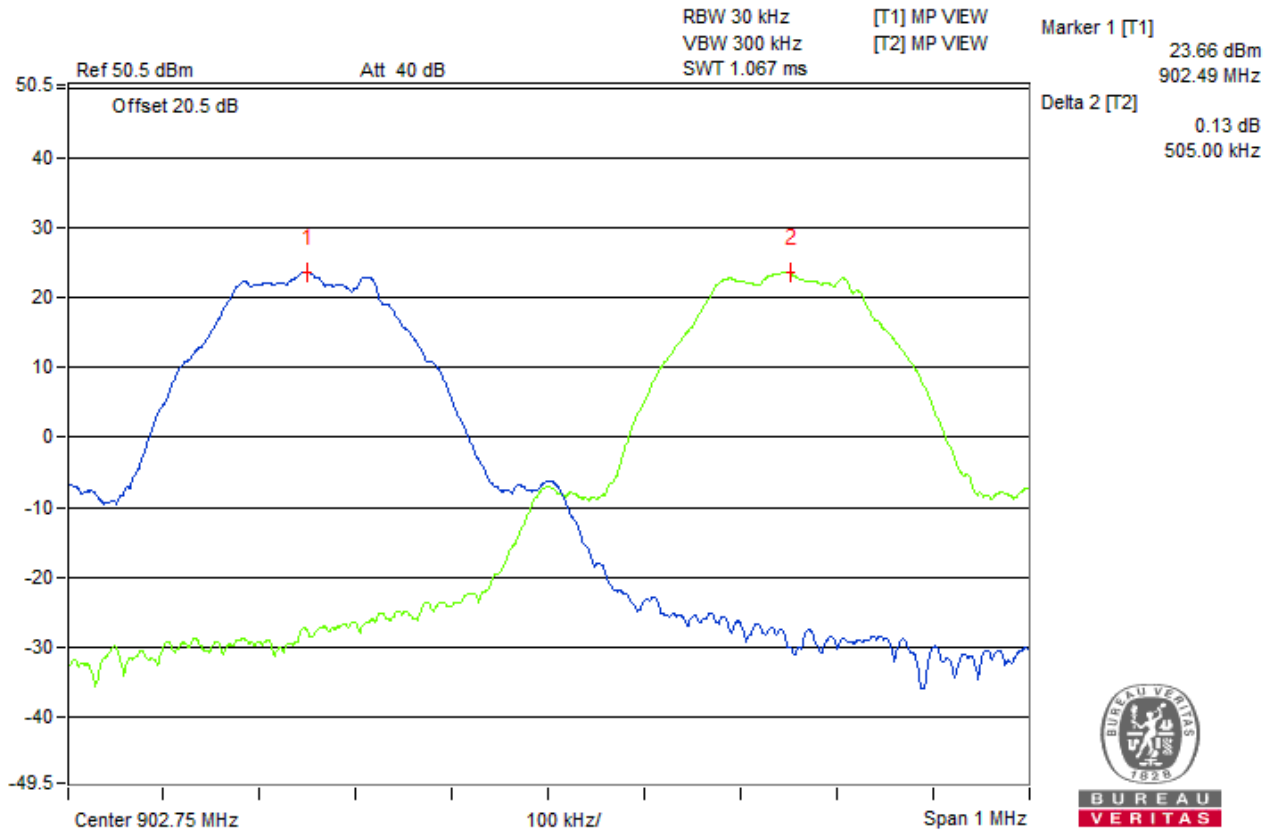
Spectrum Plot of Worst Value
CH 34



4.6.10 Test Results (Mode 5)

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	20dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	902.5	0.505	0.305	0.305	Pass
13	909	0.505	0.302	0.302	Pass
26	915.5	0.499	0.302	0.302	Pass

Spectrum Plot of Worst Value
CH 0

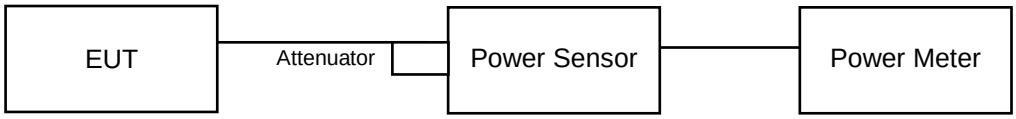


4.7 Maximum Output Power

4.7.1 Limits of Maximum Output Power Measurement

For frequency hopping systems operating in the 902-928 MHz band: 1 watt (30dBm) for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 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.

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results (Mode 1)

FOR PEAK POWER

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
0	902.2	402.717	26.05	30	Pass
64	915	458.142	26.61	30	Pass
128	927.8	472.063	26.74	30	Pass

FOR AVERAGE POWER

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	902.2	400.867	26.03
64	915	454.988	26.58
128	927.8	468.813	26.71

4.7.8 Test Results (Mode 2)

FOR PEAK POWER

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
0	902.4	401.791	26.04	30	Pass
32	915.2	461.318	26.64	30	Pass
63	927.6	481.948	26.83	30	Pass

FOR AVERAGE POWER

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	902.4	399.025	26.01
32	915.2	458.142	26.61
63	927.6	477.529	26.79

4.7.9 Test Results (Mode 3)

FOR PEAK POWER

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
0	902.5	405.509	26.08	30	Pass
25	915	463.447	26.66	30	Pass
50	927.5	485.289	26.86	30	Pass

FOR AVERAGE POWER

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	902.5	403.645	26.06
25	915	459.198	26.62
50	927.5	481.948	26.83

4.7.10 Test Results (Mode 4)

FOR PEAK POWER

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
0	902.2	380.189	25.80	30	Pass
34	909	299.226	24.76	30	Pass
68	915.8	457.088	26.60	30	Pass

FOR AVERAGE POWER

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	902.2	378.443	25.78
34	909	295.801	24.71
68	915.8	454.988	26.58

4.7.11 Test Results (Mode 5)

FOR PEAK POWER

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
0	902.5	240.436	23.81	23.98	Pass
13	909	236.592	23.74	23.98	Pass
26	915.5	249.459	23.97	23.98	Pass

FOR AVERAGE POWER

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	902.5	238.781	23.78
13	909	233.346	23.68
26	915.5	247.742	23.94

4.8 Conducted Out of Band Emission Measurement

4.8.1 Limits of Conducted Out of Band Emission Measurement

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

4.8.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.8.3 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 including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

4.8.4 Deviation from Test Standard

No deviation.

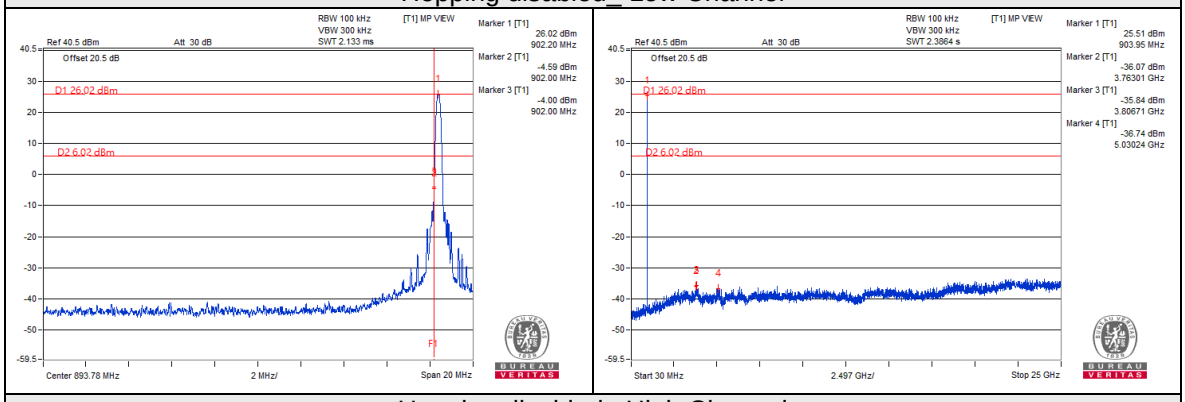
4.8.5 EUT Operating Condition

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

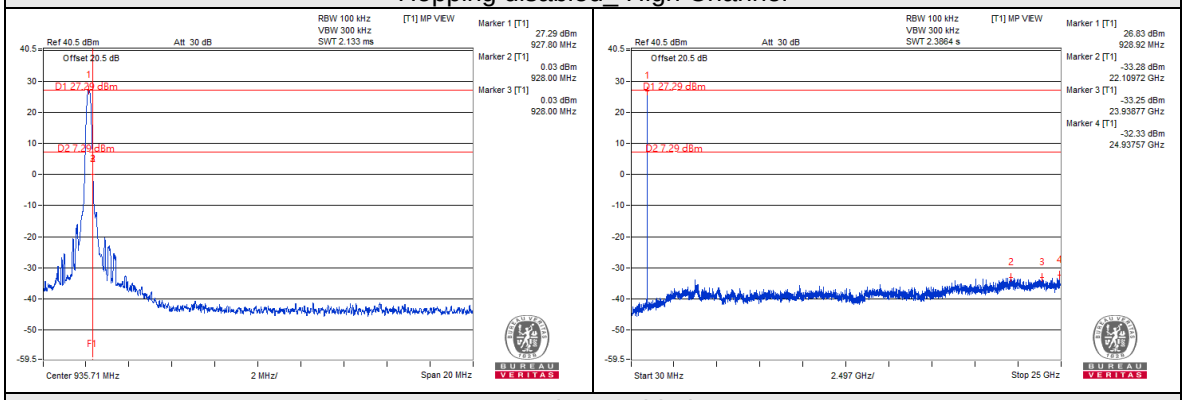
4.8.6 Test Results (Mode 1)

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.

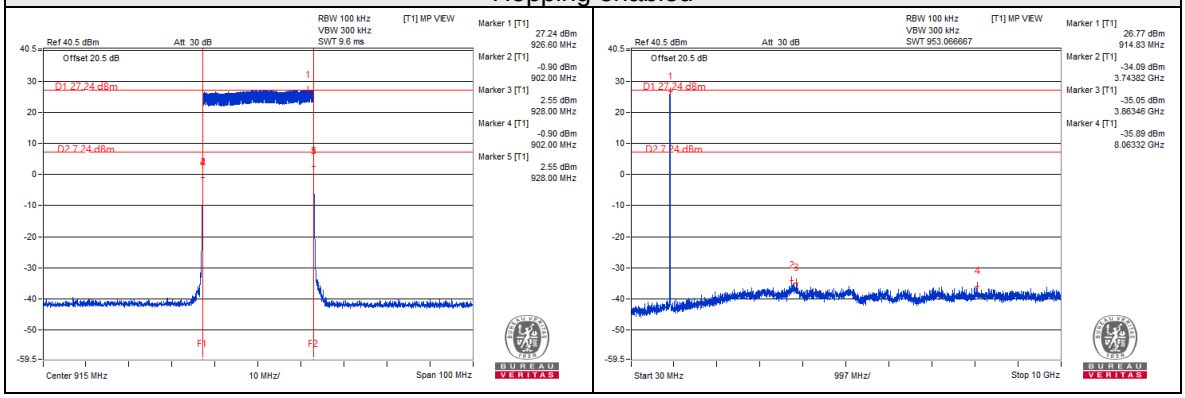
Hopping disabled_ Low Channel



Hopping disabled_ High Channel



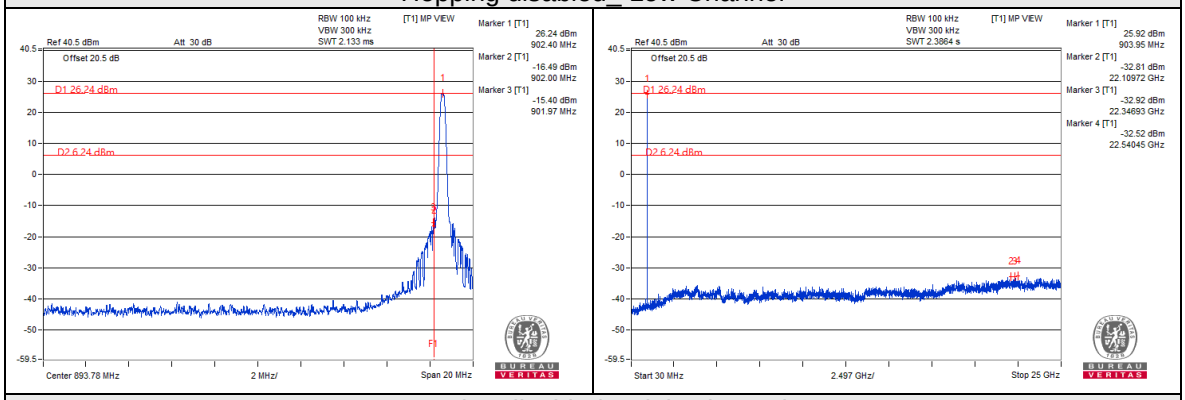
Hopping enabled



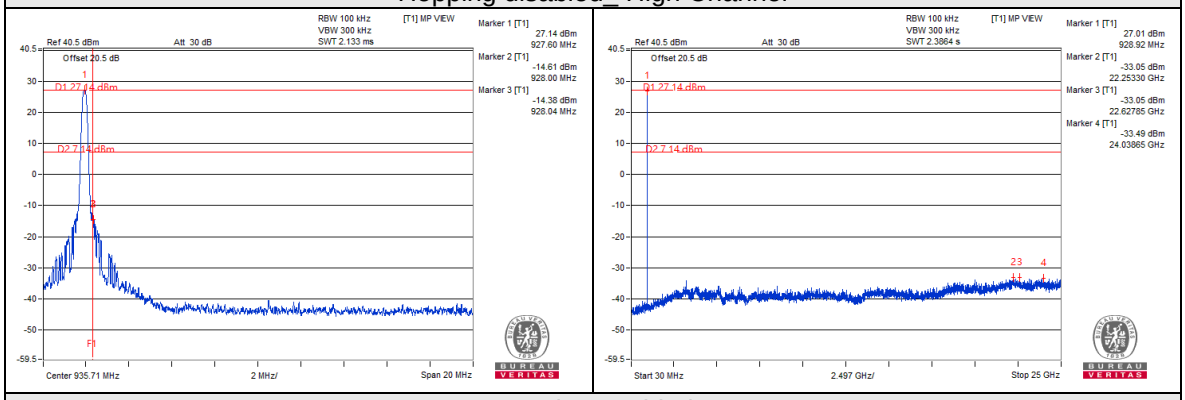
4.8.7 Test Results (Mode 2)

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.

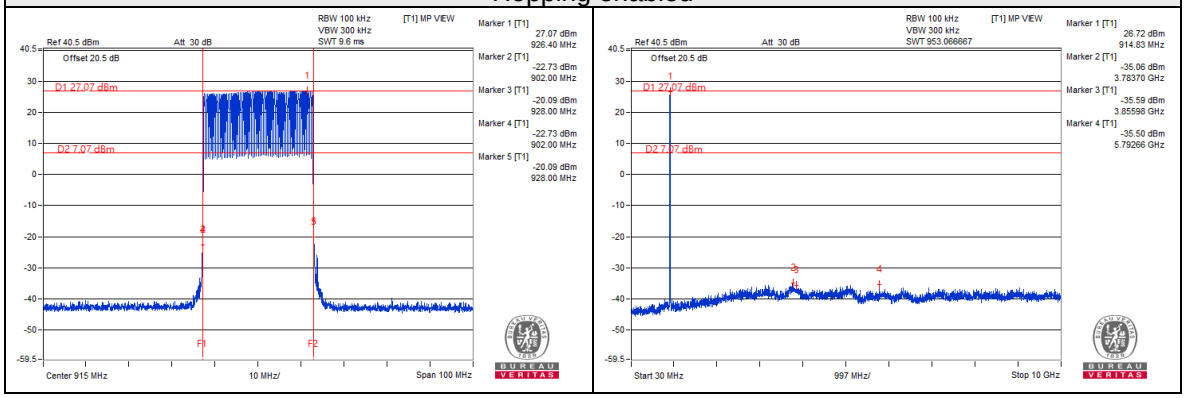
Hopping disabled_ Low Channel



Hopping disabled_ High Channel



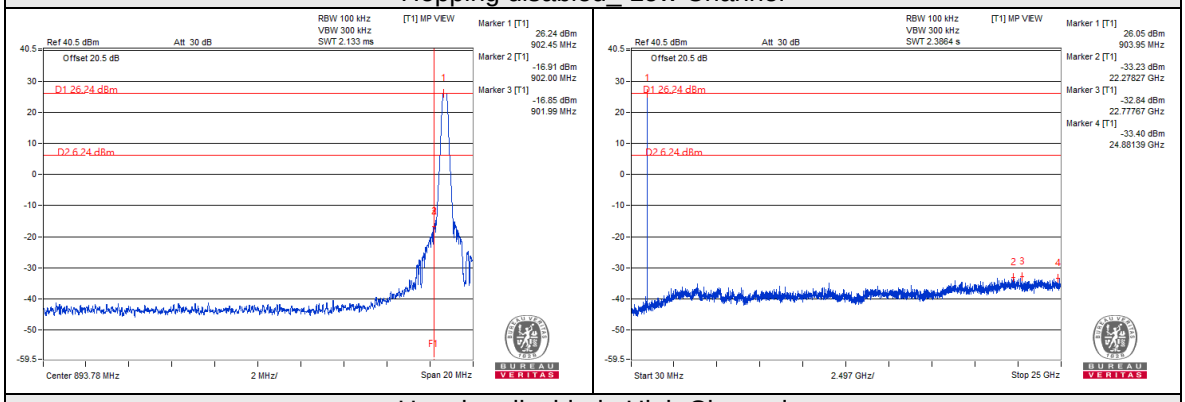
Hopping enabled



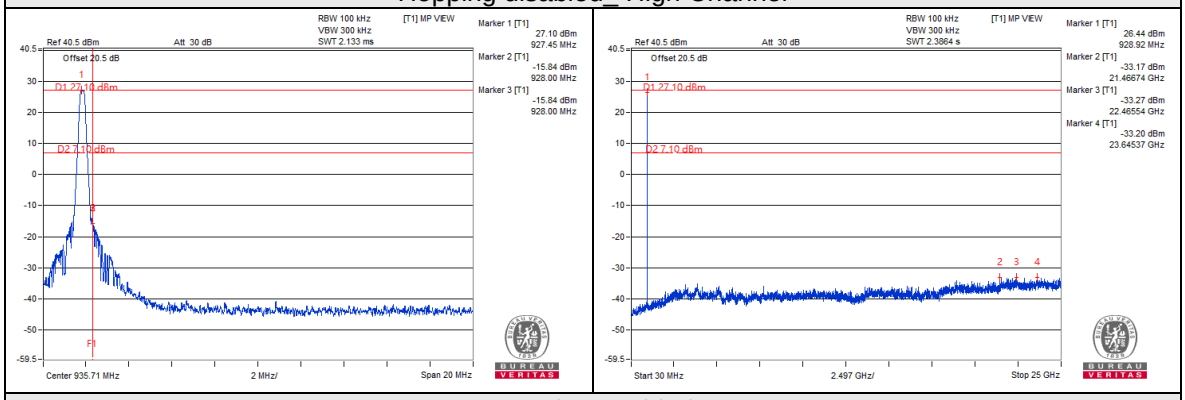
4.8.8 Test Results (Mode 3)

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.

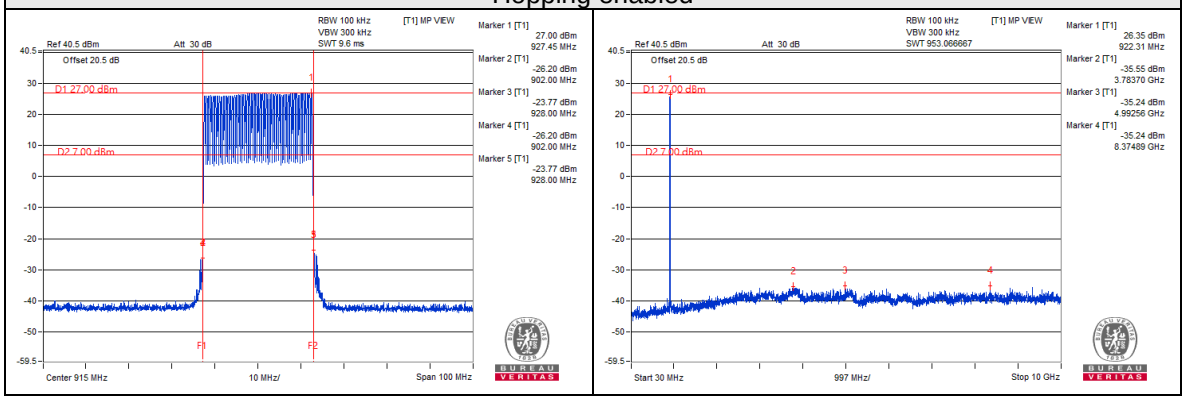
Hopping disabled_ Low Channel



Hopping disabled_ High Channel



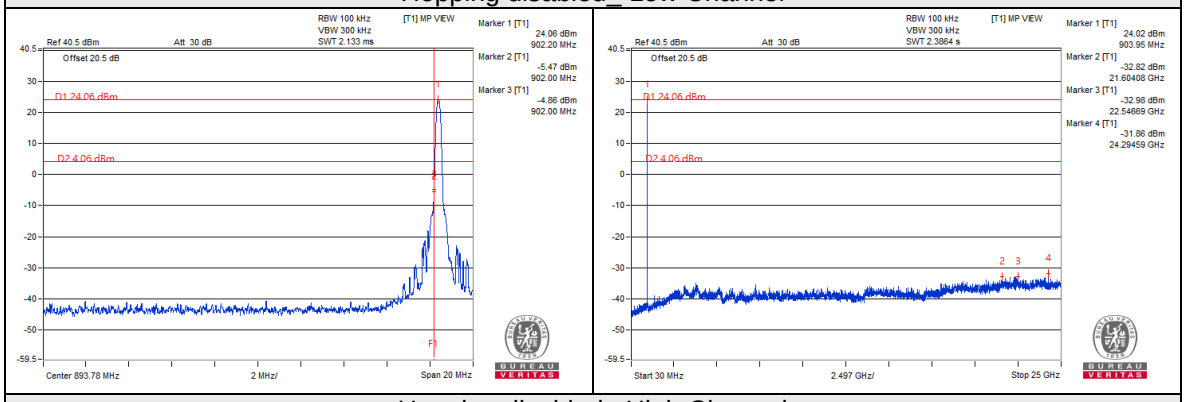
Hopping enabled



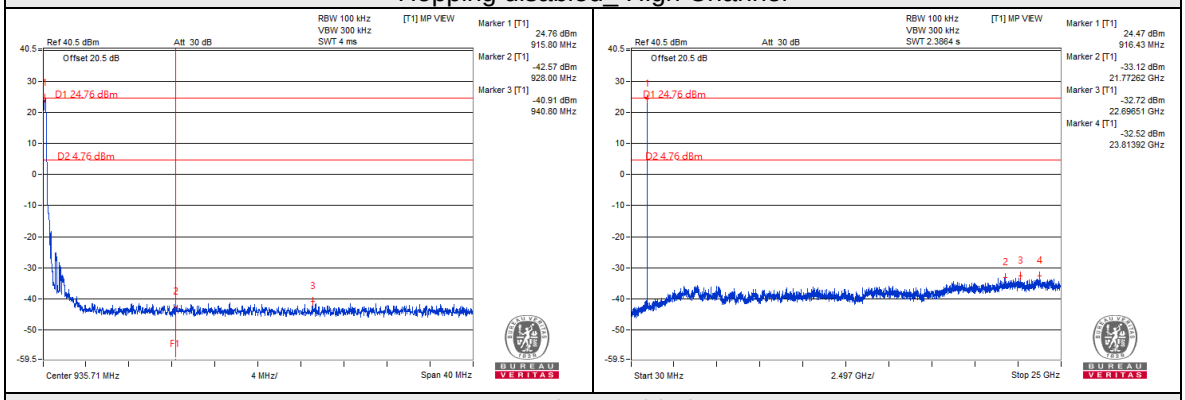
4.8.9 Test Results (Mode 4)

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.

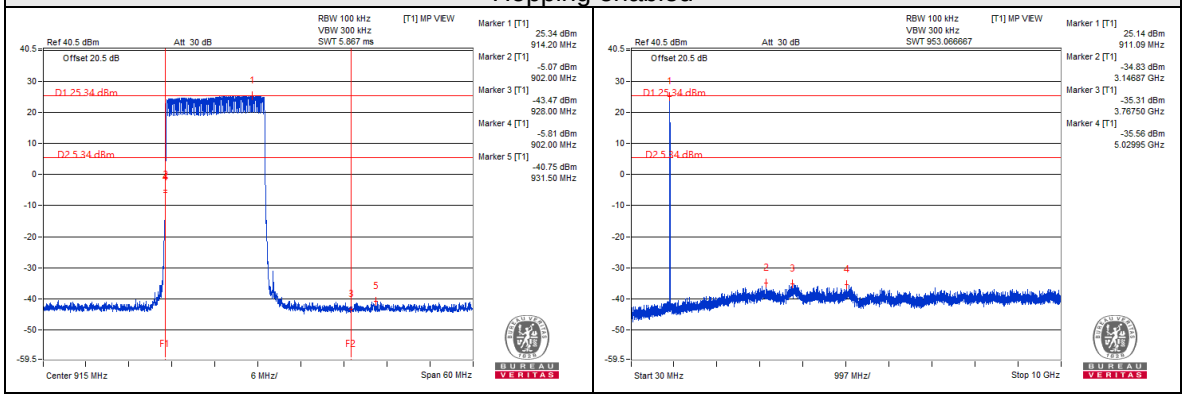
Hopping disabled_ Low Channel



Hopping disabled_ High Channel



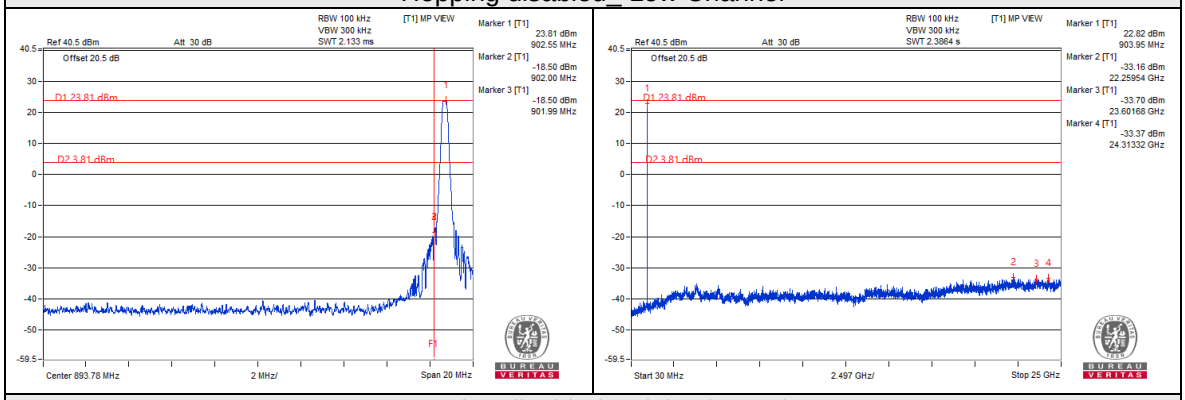
Hopping enabled



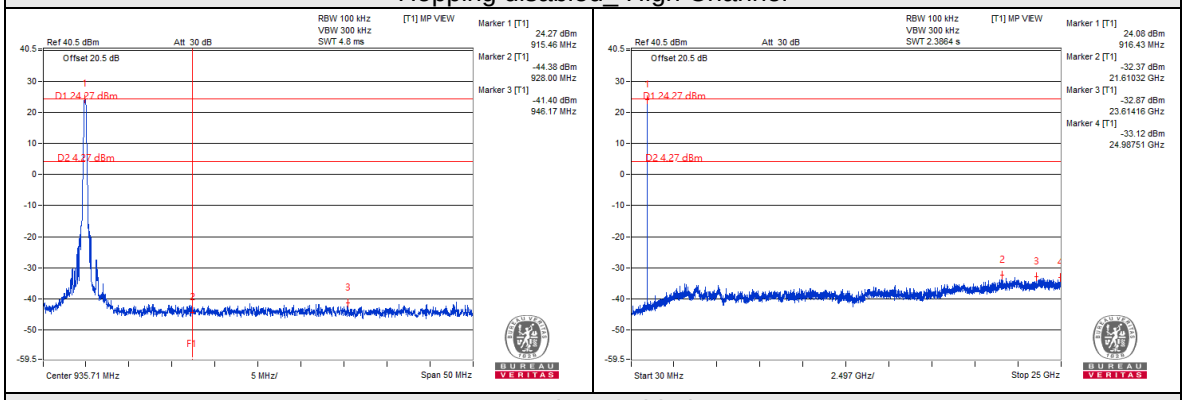
4.8.10 Test Results (Mode 5)

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.

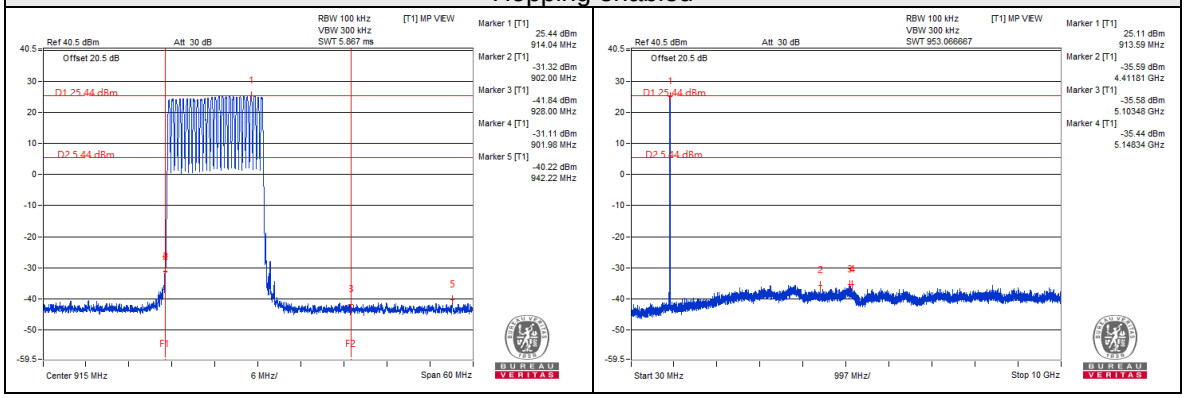
Hopping disabled_ Low Channel



Hopping disabled_ High Channel



Hopping enabled



5 Pictures of Test Arrangements

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

Appendix – Information of the Testing Laboratories

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

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

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