

FCC Test Report

Report No.: RFBICM-WTW-P21060893 R1

FCC ID: S9E-123655

Test Model: 123655

Received Date: Aug. 05, 2021

Test Date: Aug. 10 ~ Dec. 20, 2021

Issued Date: May 18, 2022

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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FCC Registration / Designation Number (1): 788550 / TW0003

FCC Registration / Designation Number (2): 281270 / TW0032



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Release Control Record

Issue No.	Description	Date Issued
RFBICM-WTW-P21060893	Original release	Mar. 24, 2022
RFBICM-WTW-P21060893 R1	Revised antenna brand and type.	May 18, 2022

1 Certificate of Conformity

Product: EM130

Brand: Trimble

Test Model: 123655

Sample Status: Engineering sample

Applicant: Trimble Inc.

Test Date: Aug. 10 ~ Dec. 20, 2021

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 RF characteristics under the conditions specified in this report.

Prepared by : Polly Chien , **Date:** May 18, 2022
Polly Chien / Specialist

Approved by : Jeremy Lin , **Date:** May 18, 2022
Jeremy Lin / Project Engineer

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 -19.05dB at 0.45400MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.00dB at 928.00 MHz.
15.247(d)	Antenna Port Emission	Pass	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	Pass	Meet the requirement of limit.
15.247(b)	Conducted power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is TNC not a standard connector.

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

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.79 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.00 dB
	30MHz ~ 200MHz	2.91 dB
	200MHz ~ 1000MHz	2.93 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	1.76 dB
	18GHz ~ 40GHz	1.77 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	EM130
Brand	Trimble
Test Model	123655
Sample Status	Engineering sample
Power Supply Rating	5Vdc from adapter
Modulation Type	BPSK, QPSK, 16QAM, 64QAM
Bandwidth	1, 2MHz
Throughput	1MHz: 1.6Mbps 2MHz: 3.4Mbps
Operating Frequency	903.5 ~ 926.5 MHz
Number of Channel	1MHz: 24 2MHz: 11
Output Power	1MHz: 153.462mW 2MHz: 147.231mW
Antenna Type	Refer to note
Antenna Connector	Refer to note
Accessory Device	Refer to note
Cable Supplied	NA

Note:

1. The EUT use following accessory device.

Product	Brand	Model	Description
Halow module SX-NEWAH	silex technology, Inc.	SX-NEWAH	FCC ID: N6C-SXNEWAH

2. The following antennas were provided to the EUT.

Antenna type	Connector	Brand	Model	Gain (dBi)
OMNIDIRECTIONAL SWIVEL DIPOLE	TNC	Radiall / Larsen	SPDA17RP918	2

* The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

3.2 Description of Test Modes

Bandwidth: 1MHz

24 channels are provided to this EUT:

Channel	Freq. (MHz)	Channel	Freq. (MHz)
3	903.5	43	915.5
5	904.5	44	916.5
7	905.5	45	917.5
9	906.5	46	918.5
11	907.5	47	919.5
36	908.5	48	920.5
37	909.5	149	921.5
38	910.5	150	922.5
39	911.5	151	923.5
40	912.5	152	924.5
41	913.5	*100	925.5
42	914.5	*104	926.5

*Use of these channels is not recommended as these are CAC channels (Clear Access Channels) which when used will take a full 60 seconds before they are operational.

Bandwidth: 2MHz

11 channels are provided to this EUT:

Channel	Freq. (MHz)	Channel	Freq. (MHz)
6	905	157	917
10	907	158	919
153	909	159	921
154	911	160	923
155	913	161	925
156	915		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to				Description
	RE \geq 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where RE \geq 1G: Radiated Emission above 1GHz & Bandedge Measurement
 RE<1G: Radiated Emission below 1GHz
 PLC: Power Line Conducted Emission
 APCM: Antenna Port Conducted Measurement

Note:

- The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.
- Radiated emission test (below 1GHz) and power line conducted emission test items chosen the worst maximum power.

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 Type	Bandwidth (MHz)
-	3 to 152	3, 43, 104	BPSK	1
-	6 to 161	6, 156, 161	BPSK	2

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 Type	Bandwidth (MHz)
-	3 to 152	3, 43, 104	BPSK	1
-	6 to 161	6, 156, 161	BPSK	2

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 Type	Bandwidth (MHz)
-	3 to 152	104	BPSK	1

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 Type	Bandwidth (MHz)
-	3 to 152	3, 43, 104	BPSK	1
-	6 to 161	6, 156, 161	BPSK	2

Test Condition:

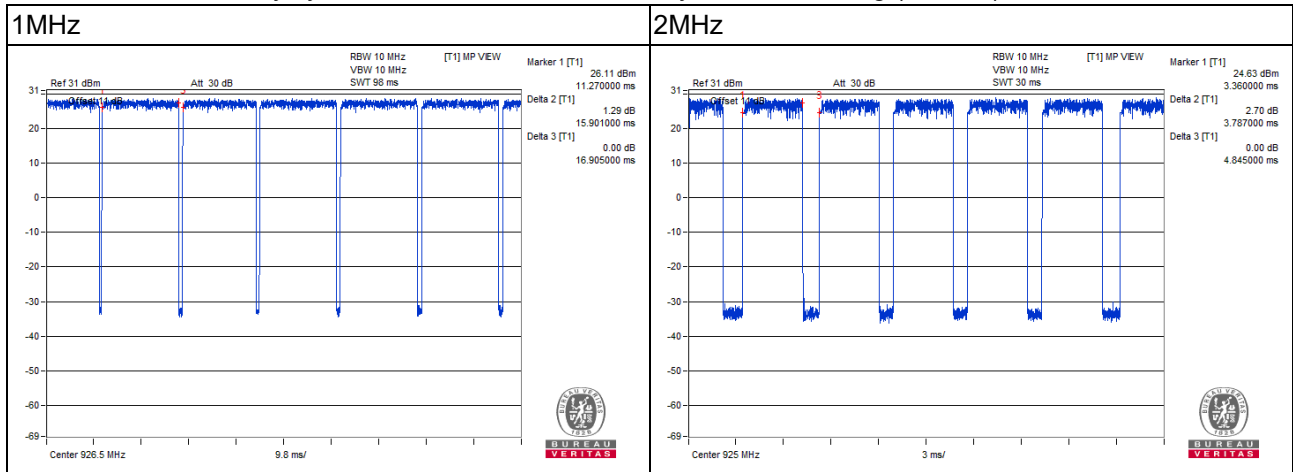
Applicable to	Environmental Conditions	Input Power	Tested by
RE \geq 1G	23 deg. C, 68% RH	120Vac, 60Hz	Wade Huang
RE<1G	23 deg. C, 68% RH, 23 deg. C, 66% RH	120Vac, 60Hz	Wade Huang, Titan Hsu
PLC	23 deg. C, 66% RH	120Vac, 60Hz	Cookie Ku
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Chris Lin

3.3 Duty Cycle of Test Signal

Duty cycle of test signal is < 98%.

Bandwidth: 1MHz: Duty cycle = 15.901/16.905 = 0.941, Duty factor = $10 * \log(1/0.941) = 0.27$

Bandwidth: 2MHz: Duty cycle = 3.787/4.845 = 0.782, Duty factor = $10 * \log(1/0.782) = 1.07$



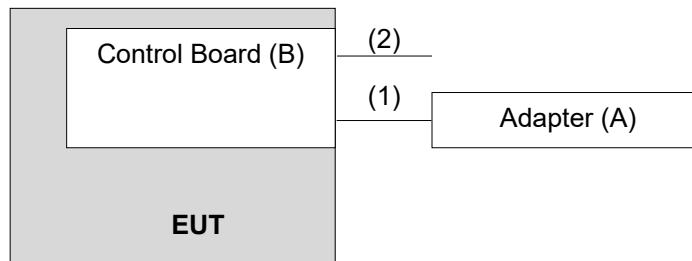
3.4 Description of Support Units

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.	Adapter	SAMSUNG	EP-TA50JWS	N/A	N/A	Provided by client
B.	Control Board	N/A	N/A	N/A	N/A	Provided by client

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	USB cable	1	1.46	-	0	Provided by client
2.	USB cable	1	1.5	Y	0	Provided by client

3.4.1 Configuration of System under 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 30dB below the highest level of the desired power:

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

Note:

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

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver Rohde & Schwarz	ESR3	102782	Dec. 21, 2020	Dec. 20, 2021
Spectrum Analyzer Rohde & Schwarz	FSW43	101582	Apr. 01, 2021	Mar. 31, 2022
BILOG Antenna SCHWARZBECK	VULB9168	9168-1213	Nov. 04, 2020	Nov. 03, 2021
			Oct. 27, 2021	Oct. 26, 2022
HORN Antenna RF SPIN	DRH18-E	210103A18E	Jan. 08, 2021	Jan. 07, 2022
HORN Antenna SCHWARZBECK	BBHA 9170	9170-1048	Dec. 10, 2020	Dec. 09, 2021
			Nov. 14, 2021	Nov. 13, 2022
Loop Antenna TESEQ	HLA 6121	45745	Jul. 21, 2021	Jul. 20, 2022
Preamplifier EMCI	EMC330N	980782	Jan. 19, 2021	Jan. 18, 2022
Preamplifier EMCI	EMC118A45SE	980808	Jan. 03, 2021	Jan. 02, 2022
Preamplifier EMCI	EMC184045SE	980788	Jan. 18, 2021	Jan. 17, 2022
RF signal cable EMCI	EMC104-SM-SM-(9000+2000+1000)	201243+ 201231+ 210102	Jan. 18, 2021	Jan. 17, 2022
RF signal cable EMCI	EMCCFD400-NM-NM-(9000+300+500)	201236+ 201235+ 201233	Jan. 18, 2021	Jan. 17, 2022
RF signal cable EMCI	EMC101G-KM-KM-(5000+3000+2000)	201260+201257+201254	Jan. 18, 2021	Jan. 17, 2022
Software BV ADT	ADT_Radiated_V7.6.15.9.5	NA	NA	NA
Antenna Tower Max-Full	MFT-151SS-0.5T	NA	NA	NA
Turn Table Max-Full	MF-7802BS	NA	NA	NA
Turn Table Controller Max-Full	MF-7802BS	MF780208674	NA	NA
Peak Power Analyzer KEYSIGHT	8990B	MY51000485	Jan. 19, 2021	Jan. 18, 2022
Wideband Power Sensor KEYSIGHT	N1923A	MY58020002	Jan. 11, 2021	Jan. 10, 2022
Spectrum Analyzer ROHDE & SCHWARZ	FSV40	100979	Mar. 29, 2021	Mar. 28, 2022

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in WM Chamber 8.

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:

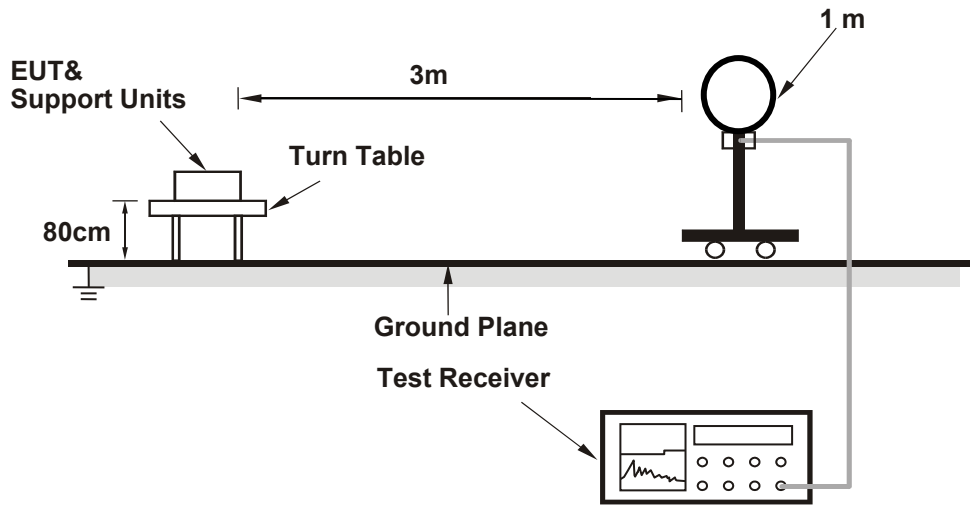
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) above 1GHz.
3. The resolution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

4.1.4 Deviation from Test Standard

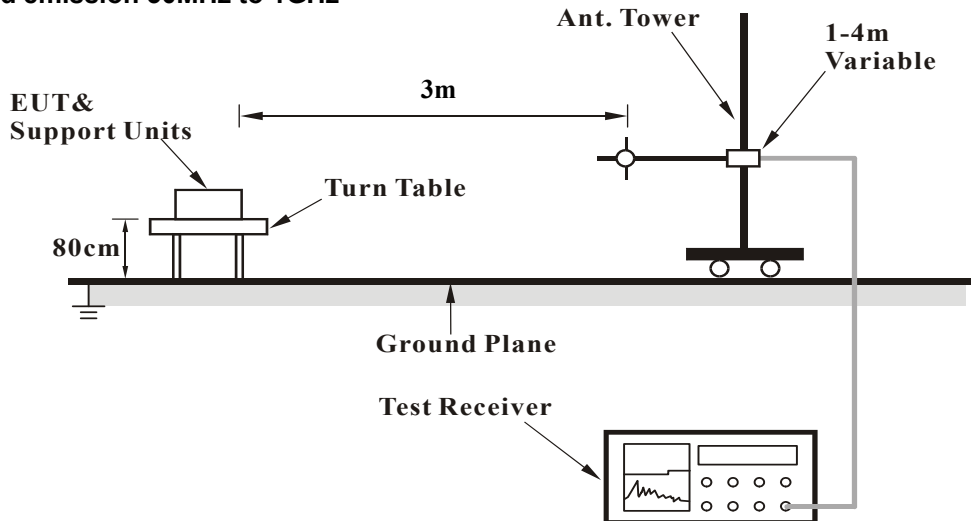
No deviation.

4.1.5 Test Setup

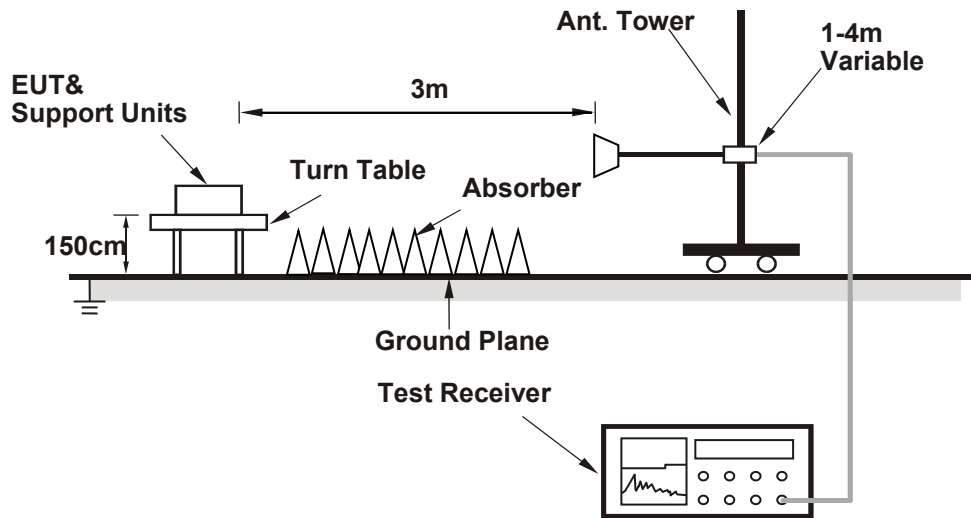
For Radiated emission below 30MHz



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. Set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Bandwidth: 1MHz:

RF Mode	TX	Channel	CH 3 : 903.5 MHz
Frequency Range	902MHz ~ 928MHz	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	56.40 QP	69.40	-13.00	1.00 H	324	31.85	24.55
2	*903.50	99.40 QP			1.00 H	324	74.81	24.59
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	69.40 QP	81.80	-12.40	1.00 V	172	42.79	26.61
2	*903.50	111.80 QP			1.00 V	172	85.19	26.61

Remarks:

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

RF Mode	TX	Channel	CH 43 : 915.5MHz
Frequency Range	902MHz ~ 928MHz	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	*915.50	100.40 QP			1.00 H	326	75.52	24.88
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	*915.50	111.50 QP			1.00 V	170	86.62	24.88

Remarks:

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

RF Mode	TX	Channel	CH 104 : 926.5 MHz
Frequency Range	902MHz ~ 928MHz	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	*926.50	100.50 QP			1.00 H	325	75.41	25.09
2	#928.00	69.50 QP	70.50	-1.00	1.00 H	325	44.38	25.12
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	*926.50	113.00 QP			1.00 V	172	87.91	25.09
2	#928.00	80.50 QP	83.00	-2.50	1.00 V	172	55.38	25.12

Remarks:

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

Above 1GHz data:

RF Mode	TX	Channel	CH 3 : 903.5 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	2710.50	47.06 PK	74.00	-26.94	1.54 H	151	50.65	-3.59
2	2710.50	30.62 AV	54.00	-23.38	1.54 H	151	34.21	-3.59
3	3614.00	44.16 PK	74.00	-29.84	2.10 H	176	45.43	-1.27
4	3614.00	31.64 AV	54.00	-22.36	2.10 H	176	32.91	-1.27
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	2710.50	55.26 PK	74.00	-18.74	1.51 V	360	58.85	-3.59
2	2710.50	33.80 AV	54.00	-20.20	1.51 V	360	37.39	-3.59
3	3614.00	43.23 PK	74.00	-30.77	3.33 V	285	44.50	-1.27
4	3614.00	31.13 AV	54.00	-22.87	3.33 V	285	32.40	-1.27

Remarks:

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

RF Mode	TX	Channel	CH 43 : 915.5MHz
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	41.51 PK	74.00	-32.49	2.04 H	60	44.92	-3.41
2	2746.50	29.28 AV	54.00	-24.72	2.04 H	60	32.69	-3.41
3	3662.00	44.07 PK	74.00	-29.93	1.58 H	149	45.13	-1.06
4	3662.00	31.26 AV	54.00	-22.74	1.58 H	149	32.32	-1.06
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	54.77 PK	74.00	-19.23	1.89 V	338	58.18	-3.41
2	2746.50	34.18 AV	54.00	-19.82	1.89 V	338	37.59	-3.41
3	3662.00	43.06 PK	74.00	-30.94	2.64 V	216	44.12	-1.06
4	3662.00	31.00 AV	54.00	-23.00	2.64 V	216	32.06	-1.06

Remarks:

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

RF Mode	TX	Channel	CH 104 : 926.5 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	2779.50	58.58 PK	74.00	-15.42	2.18 H	75	61.83	-3.25
2	2779.50	36.91 AV	54.00	-17.09	2.18 H	75	40.16	-3.25
3	3706.00	46.40 PK	74.00	-27.60	1.93 H	145	47.27	-0.87
4	3706.00	32.98 AV	54.00	-21.02	1.93 H	145	33.85	-0.87
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	2779.50	63.27 PK	74.00	-10.73	2.11 V	41	66.52	-3.25
2	2779.50	40.16 AV	54.00	-13.84	2.11 V	41	43.41	-3.25
3	3706.00	44.91 PK	74.00	-29.09	2.81 V	54	45.78	-0.87
4	3706.00	31.40 AV	54.00	-22.60	2.81 V	54	32.27	-0.87

Remarks:

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

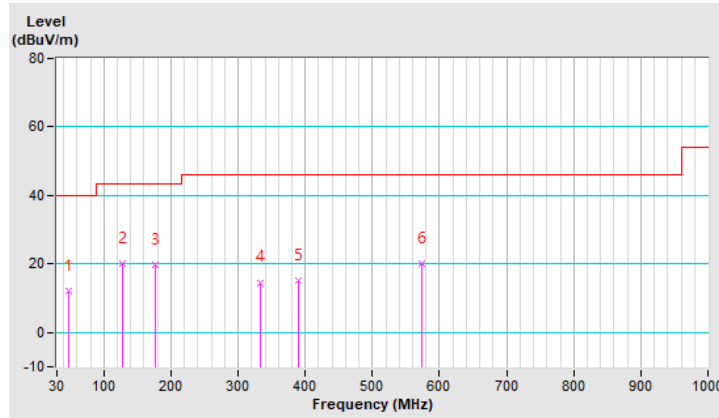
Below 1GHz worst-case data:

RF Mode	TX	Channel	CH 3 : 903.5 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	46.87	12.20 QP	40.00	-27.80	2.00 H	42	30.40	-18.20
2	128.41	20.30 QP	43.50	-23.20	1.49 H	121	40.00	-19.70
3	177.61	19.90 QP	43.50	-23.60	1.49 H	97	39.30	-19.40
4	333.65	14.60 QP	46.00	-31.40	2.00 H	15	31.30	-16.70
5	389.88	15.20 QP	46.00	-30.80	1.00 H	69	30.60	-15.40
6	574.04	20.10 QP	46.00	-25.90	1.49 H	351	31.30	-11.20

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

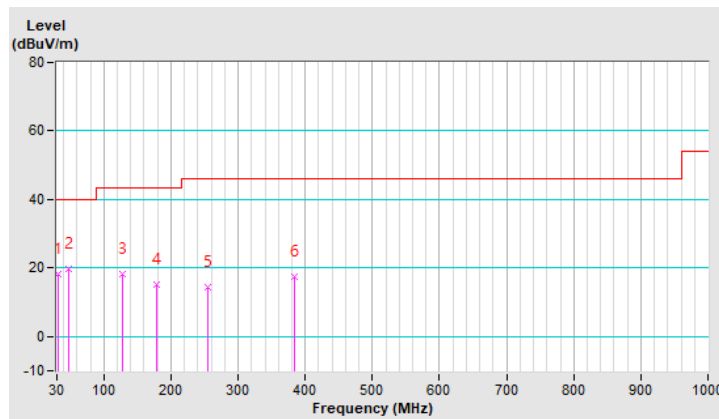


RF Mode	TX	Channel	CH 3 : 903.5 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	32.81	18.20 QP	40.00	-21.80	1.01 V	208	37.70	-19.50
2	48.28	19.80 QP	40.00	-20.20	1.99 V	308	37.90	-18.10
3	128.41	18.10 QP	43.50	-25.40	1.51 V	176	37.80	-19.70
4	179.01	15.30 QP	43.50	-28.20	1.51 V	224	34.90	-19.60
5	254.93	14.40 QP	46.00	-31.60	1.51 V	18	33.80	-19.40
6	384.26	17.60 QP	46.00	-28.40	1.51 V	18	33.10	-15.50

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

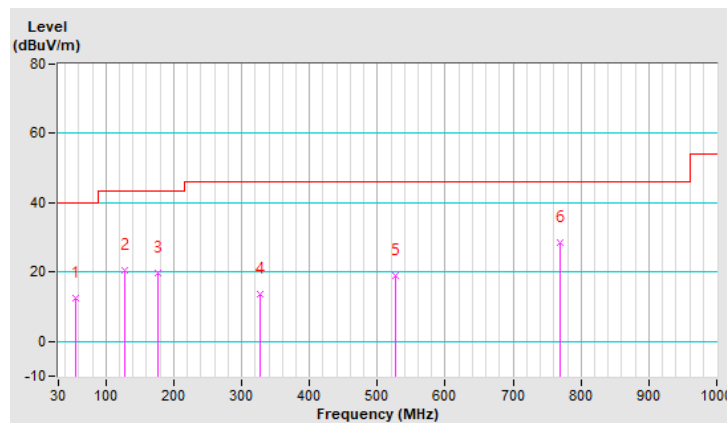


RF Mode	TX	Channel	CH 43 : 915.5MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	55.30	12.50 QP	40.00	-27.50	1.01 H	246	30.90	-18.40
2	127.00	20.50 QP	43.50	-23.00	2.00 H	86	40.40	-19.90
3	177.61	19.80 QP	43.50	-23.70	1.51 H	121	39.20	-19.40
4	326.62	13.80 QP	46.00	-32.20	1.01 H	66	30.60	-16.80
5	526.25	19.00 QP	46.00	-27.00	1.01 H	161	31.30	-12.30
6	769.45	28.40 QP	46.00	-17.60	1.01 H	336	36.20	-7.80

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

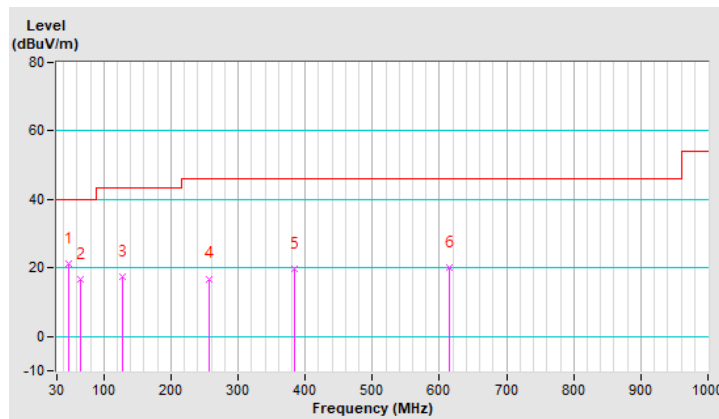


RF Mode	TX	Channel	CH 43 : 915.5MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	48.28	21.20 QP	40.00	-18.80	1.00 V	309	39.30	-18.10
2	65.14	16.80 QP	40.00	-23.20	1.00 V	349	36.60	-19.80
3	128.41	17.60 QP	43.50	-25.90	1.49 V	202	37.30	-19.70
4	256.33	16.90 QP	46.00	-29.10	1.00 V	18	36.20	-19.30
5	384.26	19.60 QP	46.00	-26.40	1.00 V	357	35.10	-15.50
6	614.81	20.00 QP	46.00	-26.00	1.49 V	88	30.10	-10.10

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

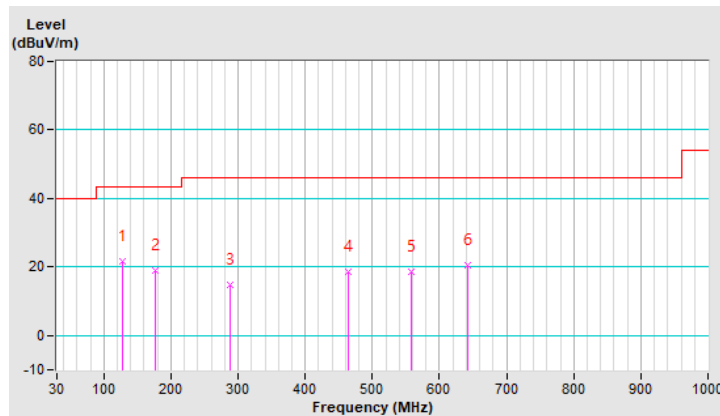


RF Mode	TX	Channel	CH 104 : 926.5 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	127.00	21.50 QP	43.50	-22.00	1.49 H	107	41.40	-19.90
2	177.61	19.10 QP	43.50	-24.40	1.49 H	81	38.50	-19.40
3	287.26	14.90 QP	46.00	-31.10	1.49 H	283	32.80	-17.90
4	464.39	18.50 QP	46.00	-27.50	1.00 H	222	31.90	-13.40
5	557.17	18.60 QP	46.00	-27.40	1.49 H	209	30.30	-11.70
6	641.52	20.40 QP	46.00	-25.60	1.00 H	25	30.20	-9.80

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

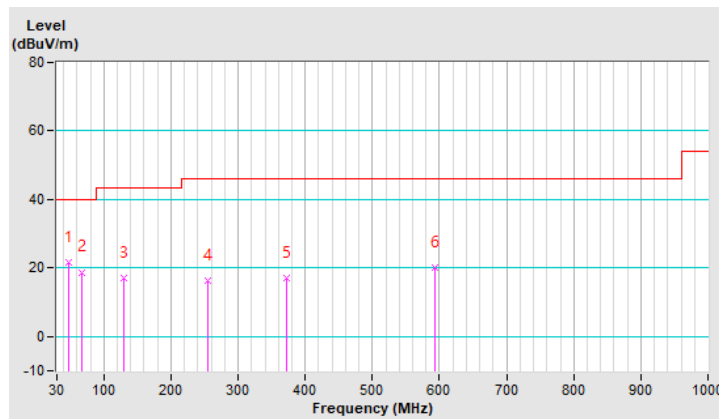


RF Mode	TX	Channel	CH 104 : 926.5 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	48.28	21.70 QP	40.00	-18.30	1.01 V	285	39.80	-18.10
2	66.55	18.80 QP	40.00	-21.20	1.01 V	356	38.60	-19.80
3	129.81	17.10 QP	43.50	-26.40	1.50 V	172	36.60	-19.50
4	254.93	16.50 QP	46.00	-29.50	1.01 V	7	35.90	-19.40
5	371.61	16.90 QP	46.00	-29.10	1.01 V	16	32.70	-15.80
6	593.72	20.20 QP	46.00	-25.80	1.50 V	44	30.60	-10.40

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



Bandwidth: 2MHz:

RF Mode	TX	Channel	CH 6 : 905 MHz
Frequency Range	902MHz ~ 928MHz	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	55.90 QP	66.60	-10.70	1.00 H	330	31.35	24.55
2	*905.00	96.60 QP			1.00 H	330	71.99	24.61
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	66.00 QP	76.30	-10.30	1.00 V	174	41.45	24.55
2	*905.00	106.30 QP			1.00 V	174	81.69	24.61

Remarks:

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

RF Mode	TX	Channel	CH 156 : 915MHz
Frequency Range	902MHz ~ 928MHz	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	*915.00	96.00 QP			1.00 H	329	71.14	24.86
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	*915.00	104.30 QP			1.00 V	175	79.44	24.86

Remarks:

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

RF Mode	TX	Channel	CH 161 : 925MHz
Frequency Range	902MHz ~ 928MHz	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	*925.00	96.90 QP			1.00 H	325	71.85	25.05
2	#928.00	64.40 QP	66.90	-2.50	1.00 H	325	39.28	25.12
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	*925.00	106.90 QP			1.00 V	172	81.85	25.05
2	#928.00	75.20 QP	76.90	-1.70	1.00 V	172	50.08	25.12

Remarks:

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

Above 1GHz data:

RF Mode	TX	Channel	CH 6 : 905 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	2715.00	46.07 PK	74.00	-27.93	1.65 H	65	49.64	-3.57
2	2715.00	31.05 AV	54.00	-22.95	1.65 H	65	34.62	-3.57
3	3620.00	44.64 PK	74.00	-29.36	1.81 H	151	45.88	-1.24
4	3620.00	31.48 AV	54.00	-22.52	1.81 H	151	32.72	-1.24
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	2715.00	59.30 PK	74.00	-14.70	1.75 V	357	62.87	-3.57
2	2715.00	38.88 AV	54.00	-15.12	1.75 V	357	42.45	-3.57
3	3620.00	44.41 PK	74.00	-29.59	2.71 V	245	45.65	-1.24
4	3620.00	30.85 AV	54.00	-23.15	2.71 V	245	32.09	-1.24

Remarks:

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

RF Mode	TX	Channel	CH 156 : 915MHz
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	58.23 PK	74.00	-15.77	3.73 H	54	61.65	-3.42
2	2745.00	38.13 AV	54.00	-15.87	3.73 H	54	41.55	-3.42
3	3660.00	43.20 PK	74.00	-30.80	3.03 H	242	44.27	-1.07
4	3660.00	31.15 AV	54.00	-22.85	3.03 H	242	32.22	-1.07
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	59.70 PK	74.00	-14.30	2.15 V	355	63.12	-3.42
2	2745.00	42.23 AV	54.00	-11.77	2.15 V	355	45.65	-3.42
3	3660.00	43.15 PK	74.00	-30.85	2.37 V	256	44.22	-1.07
4	3660.00	31.44 AV	54.00	-22.56	2.37 V	256	32.51	-1.07

Remarks:

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

RF Mode	TX	Channel	CH 161 : 925MHz
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	2775.00	58.46 PK	74.00	-15.54	1.55 H	70	61.73	-3.27
2	2775.00	39.84 AV	54.00	-14.16	1.55 H	70	43.11	-3.27
3	3700.00	45.16 PK	74.00	-28.84	1.88 H	149	46.06	-0.90
4	3700.00	32.57 AV	54.00	-21.43	1.88 H	149	33.47	-0.90
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	2775.00	62.30 PK	74.00	-11.70	1.92 V	17	65.57	-3.27
2	2775.00	43.46 AV	54.00	-10.54	1.92 V	17	46.73	-3.27
3	3700.00	44.22 PK	74.00	-29.78	2.16 V	281	45.12	-0.90
4	3700.00	31.66 AV	54.00	-22.34	2.16 V	281	32.56	-0.90

Remarks:

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

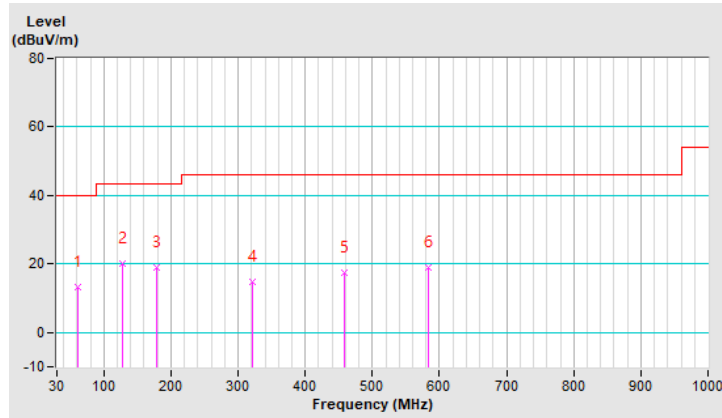
Below 1GHz worst-case data:

RF Mode	TX	Channel	CH 6 : 905 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	60.93	13.40 QP	40.00	-26.60	1.01 H	83	32.50	-19.10
2	127.00	20.00 QP	43.50	-23.50	1.50 H	125	39.90	-19.90
3	179.01	19.10 QP	43.50	-24.40	1.50 H	141	38.70	-19.60
4	321.00	14.90 QP	46.00	-31.10	1.01 H	98	31.90	-17.00
5	458.77	17.60 QP	46.00	-28.40	1.01 H	241	31.00	-13.40
6	582.48	19.00 QP	46.00	-27.00	1.01 H	2	29.90	-10.90

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

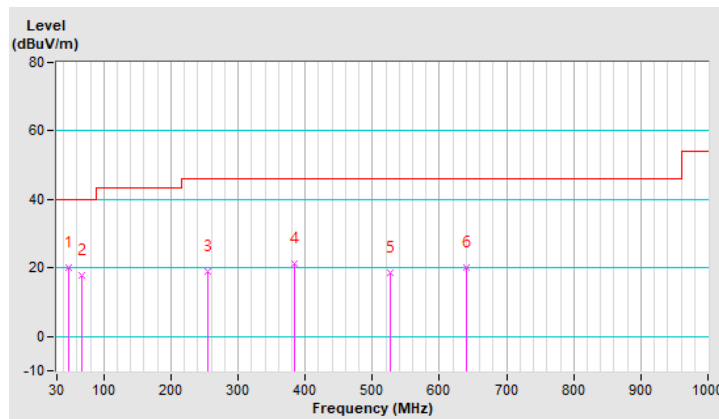


RF Mode	TX	Channel	CH 6 : 905 MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	48.28	20.20 QP	40.00	-19.80	1.00 V	302	38.30	-18.10
2	66.55	17.80 QP	40.00	-22.20	1.00 V	284	37.60	-19.80
3	254.93	18.80 QP	46.00	-27.20	1.00 V	245	38.20	-19.40
4	384.26	21.20 QP	46.00	-24.80	1.00 V	3	36.70	-15.50
5	527.65	18.50 QP	46.00	-27.50	1.00 V	102	30.80	-12.30
6	640.12	20.10 QP	46.00	-25.90	1.00 V	149	29.90	-9.80

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

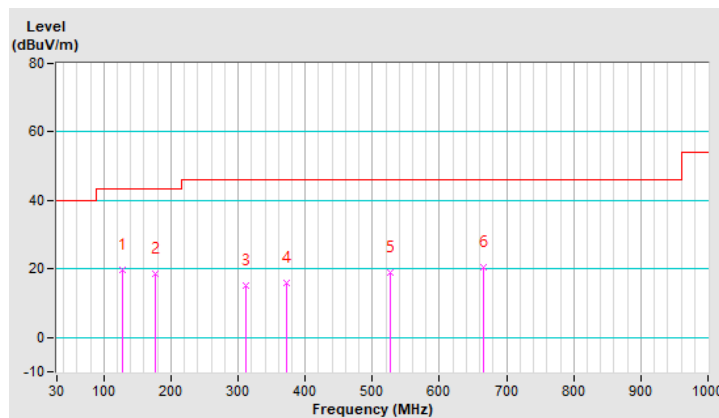


RF Mode	TX	Channel	CH 156 : 915MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	128.41	19.70 QP	43.50	-23.80	1.49 H	139	39.40	-19.70
2	177.61	18.50 QP	43.50	-25.00	1.49 H	116	37.90	-19.40
3	311.16	15.30 QP	46.00	-30.70	1.00 H	185	32.60	-17.30
4	371.61	15.90 QP	46.00	-30.10	1.00 H	225	31.70	-15.80
5	527.65	19.10 QP	46.00	-26.90	1.49 H	213	31.40	-12.30
6	665.42	20.60 QP	46.00	-25.40	1.00 H	344	30.30	-9.70

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

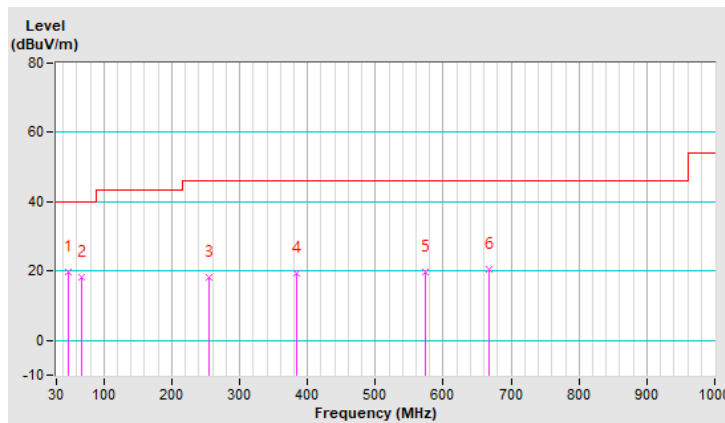


RF Mode	TX	Channel	CH 156 : 915MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	48.28	19.70 QP	40.00	-20.30	1.01 V	180	37.80	-18.10
2	66.55	18.30 QP	40.00	-21.70	1.01 V	329	38.10	-19.80
3	254.93	18.20 QP	46.00	-27.80	1.50 V	248	37.60	-19.40
4	384.26	19.20 QP	46.00	-26.80	1.01 V	2	34.70	-15.50
5	574.04	19.80 QP	46.00	-26.20	1.01 V	73	31.00	-11.20
6	668.23	20.40 QP	46.00	-25.60	1.01 V	354	30.10	-9.70

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

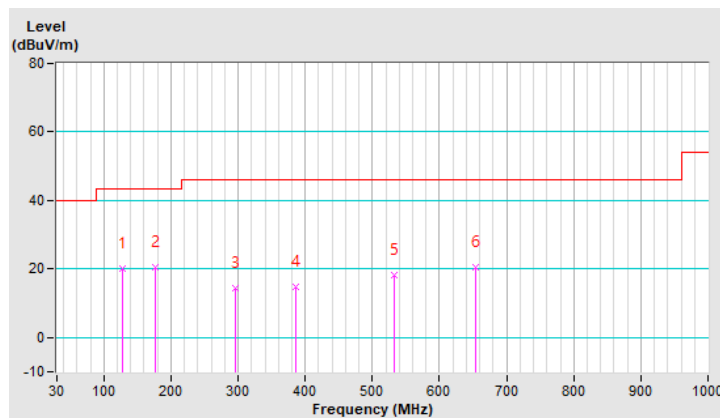


RF Mode	TX	Channel	CH 161 : 925MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	128.41	20.20 QP	43.50	-23.30	1.50 H	102	39.90	-19.70
2	177.61	20.50 QP	43.50	-23.00	1.50 H	104	39.90	-19.40
3	295.70	14.30 QP	46.00	-31.70	1.01 H	290	32.10	-17.80
4	385.67	14.90 QP	46.00	-31.10	1.01 H	281	30.40	-15.50
5	531.87	18.20 QP	46.00	-27.80	1.01 H	28	30.50	-12.30
6	654.17	20.50 QP	46.00	-25.50	1.50 H	224	30.30	-9.80

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

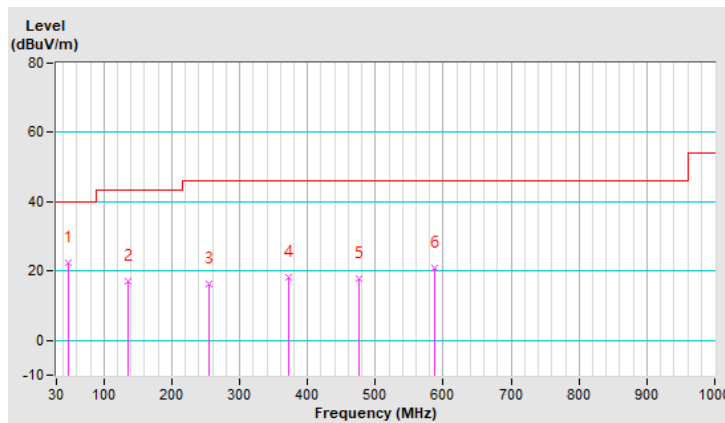


RF Mode	TX	Channel	CH 161 : 925MHz
Frequency Range	9kHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

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	48.28	22.40 QP	40.00	-17.60	1.49 V	271	40.50	-18.10
2	135.43	17.10 QP	43.50	-26.40	1.00 V	247	36.10	-19.00
3	254.93	16.20 QP	46.00	-29.80	1.00 V	18	35.60	-19.40
4	371.61	18.10 QP	46.00	-27.90	1.49 V	5	33.90	-15.80
5	475.64	18.00 QP	46.00	-28.00	1.49 V	326	31.10	-13.10
6	588.10	20.70 QP	46.00	-25.30	1.49 V	159	31.40	-10.70

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



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.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Dec. 04, 2020	Dec. 03, 2021
RF signal cable Woken	5D-FB	Cable-cond1-01	Jan. 16, 2021	Jan. 15, 2022
LISN/AMN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 25, 2021	Feb. 24, 2022
LISN/AMN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Sep. 07, 2021	Sep. 06, 2022
Software ADT	BV ADT_Cond_ V7.3.7.4	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HwaYa Shielded Room 1 (Conduction 1).

3. The VCCI Site Registration No. is C-20407.

4. Test Date: Aug. 19, 2021.

4.2.3 Test Procedures

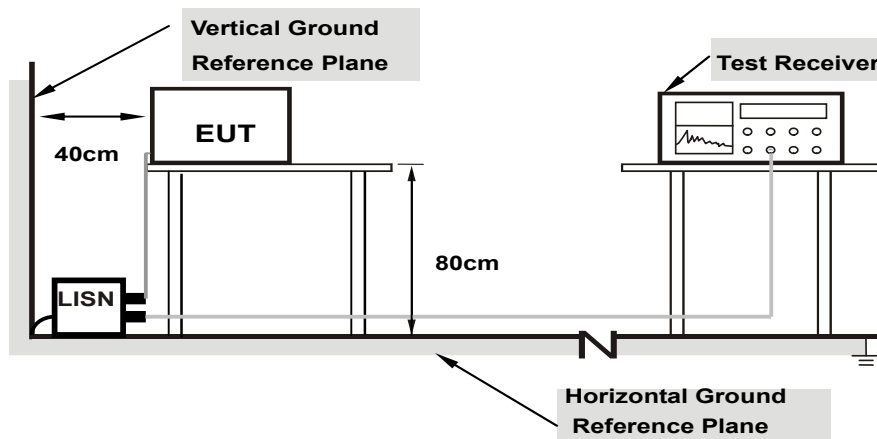
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

Same as 4.1.6.

4.2.7 Test Results

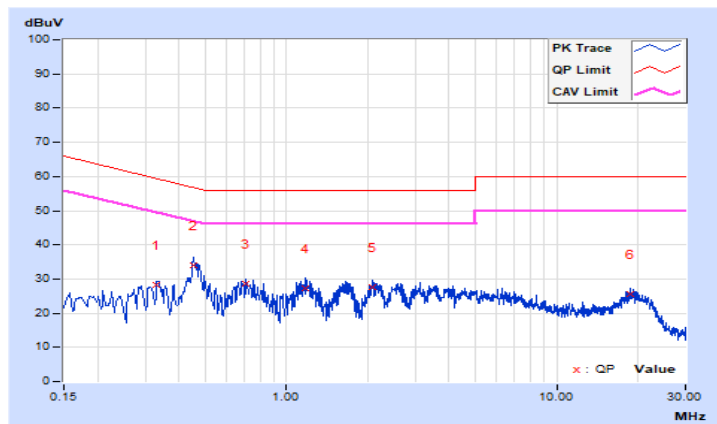
Bandwidth: 1MHz:

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Channel	CH 104 : 926.5 MHz		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.33000	9.72	18.67	11.28	28.39	21.00	59.45
2	0.45400	9.73	24.17	18.02	33.90	27.75	56.80	46.80	-22.90	-19.05
3	0.70600	9.75	18.94	11.06	28.69	20.81	56.00	46.00	-27.31	-25.19
4	1.18200	9.76	17.55	10.62	27.31	20.38	56.00	46.00	-28.69	-25.62
5	2.09400	9.77	17.92	9.93	27.69	19.70	56.00	46.00	-28.31	-26.30
6	18.73800	9.82	15.76	3.89	25.58	13.71	60.00	50.00	-34.42	-36.29

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.

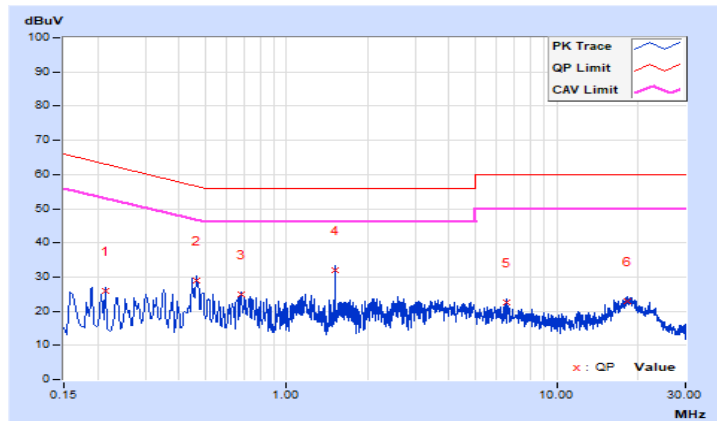


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Channel	CH 104 : 926.5 MHz		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.21400	9.77	16.02	2.98	25.79	12.75	63.05
2	0.46567	9.79	19.02	9.63	28.81	19.42	56.59	46.59	-27.78	-27.17
3	0.67800	9.80	15.00	3.72	24.80	13.52	56.00	46.00	-31.20	-32.48
4	1.51000	9.83	22.06	0.73	31.89	10.56	56.00	46.00	-24.11	-35.44
5	6.57000	9.88	12.82	1.37	22.70	11.25	60.00	50.00	-37.30	-38.75
6	18.29800	9.98	12.80	0.25	22.78	10.23	60.00	50.00	-37.22	-39.77

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.

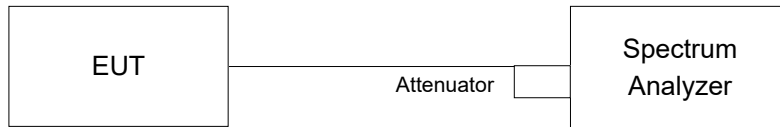


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

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

- Set resolution bandwidth (RBW) = 100kHz.
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

4.3.5 Deviation from Test Standard

No deviation.

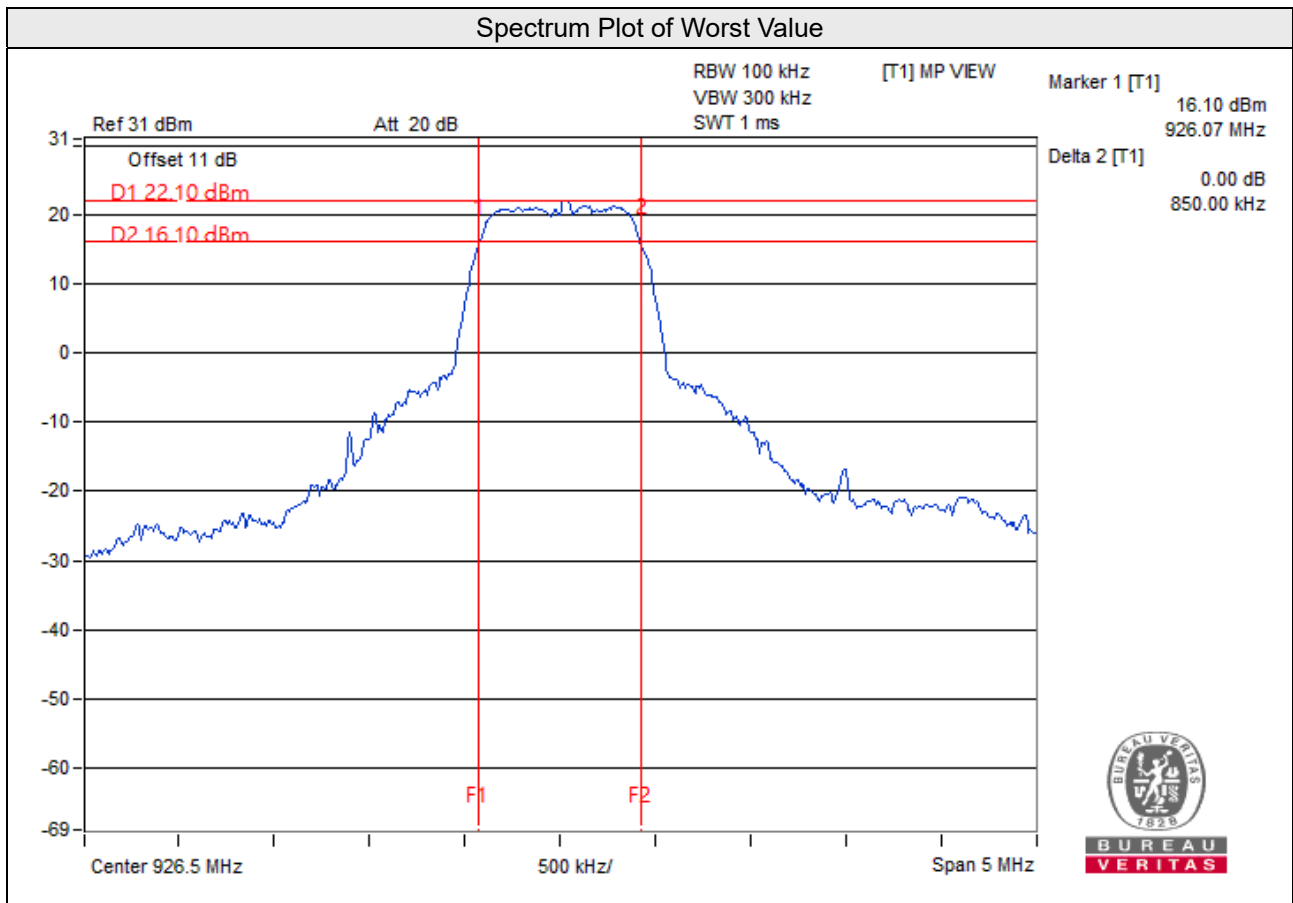
4.3.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 Test Result

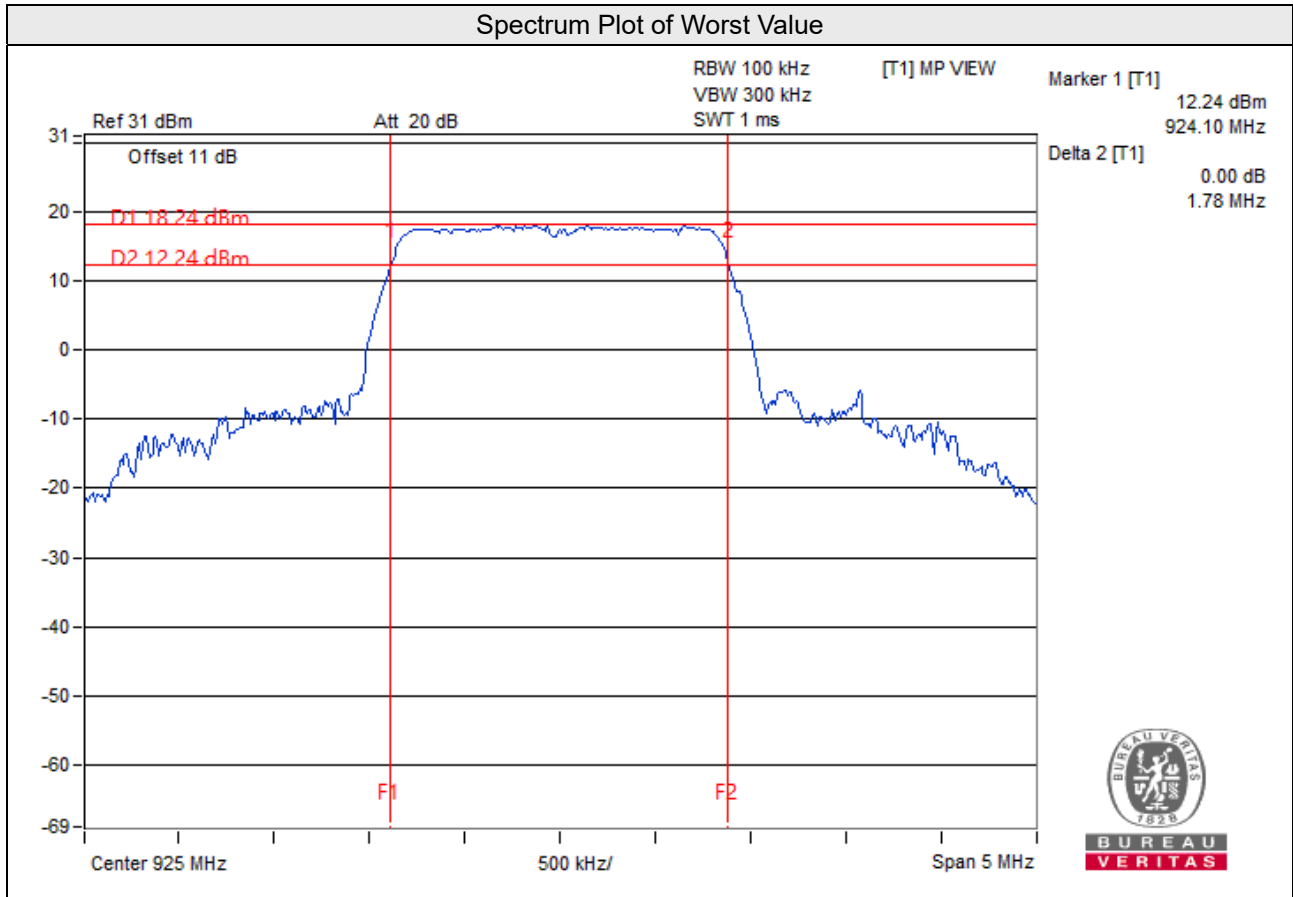
Bandwidth: 1MHz

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
3	903.5	0.86	0.5	Pass
43	915.5	0.85	0.5	Pass
104	926.5	0.85	0.5	Pass



Bandwidth: 2MHz

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
6	905	1.80	0.5	Pass
156	915	1.79	0.5	Pass
161	925	1.78	0.5	Pass

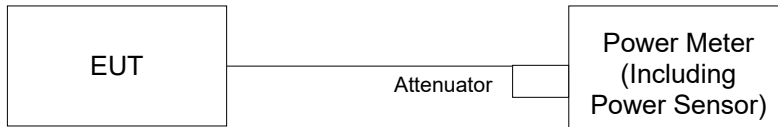


4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

For systems using digital modulation in the 902-928 MHz bands: 1 Watt (30dBm)

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

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.

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as item 4.3.6.

4.4.7 Test Results

Bandwidth: 1MHz

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass/Fail
3	903.5	153.462	21.86	30.00	Pass
43	915.5	135.519	21.32	30.00	Pass
104	926.5	143.549	21.57	30.00	Pass

Bandwidth: 2MHz

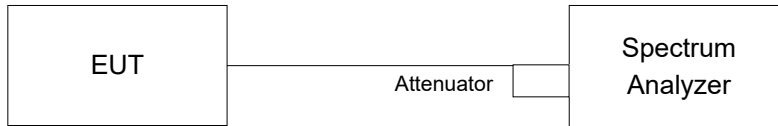
Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass/Fail
6	905	147.231	21.68	30.00	Pass
156	915	141.906	21.52	30.00	Pass
161	925	130.918	21.17	30.00	Pass

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm per 3kHz.

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. Measure the duty cycle (x).
- b. Set instrument center frequency to DTS channel center frequency.
- c. Set span to at least 1.5 times the OBW.
- d. Set RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- e. Set VBW $\geq 3 \times \text{RBW}$.
- f. Detector = power averaging (RMS) or sample detector (when RMS not available).
- g. Ensure that the number of measurement points in the sweep $\geq 2 \times \text{span}/\text{RBW}$.
- h. Sweep time = auto couple.
- i. Do not use sweep triggering. Allow sweep to “free run”.
- j. Employ trace averaging (RMS) mode over a minimum of 100 traces.
- k. Use the peak marker function to determine the maximum amplitude level.
- l. Add $10 \log (1/x)$, where x is the duty cycle measured in step (a), to the measured PSD to compute the average PSD during the actual transmission time.

4.5.5 Deviation from Test Standard

No deviation.

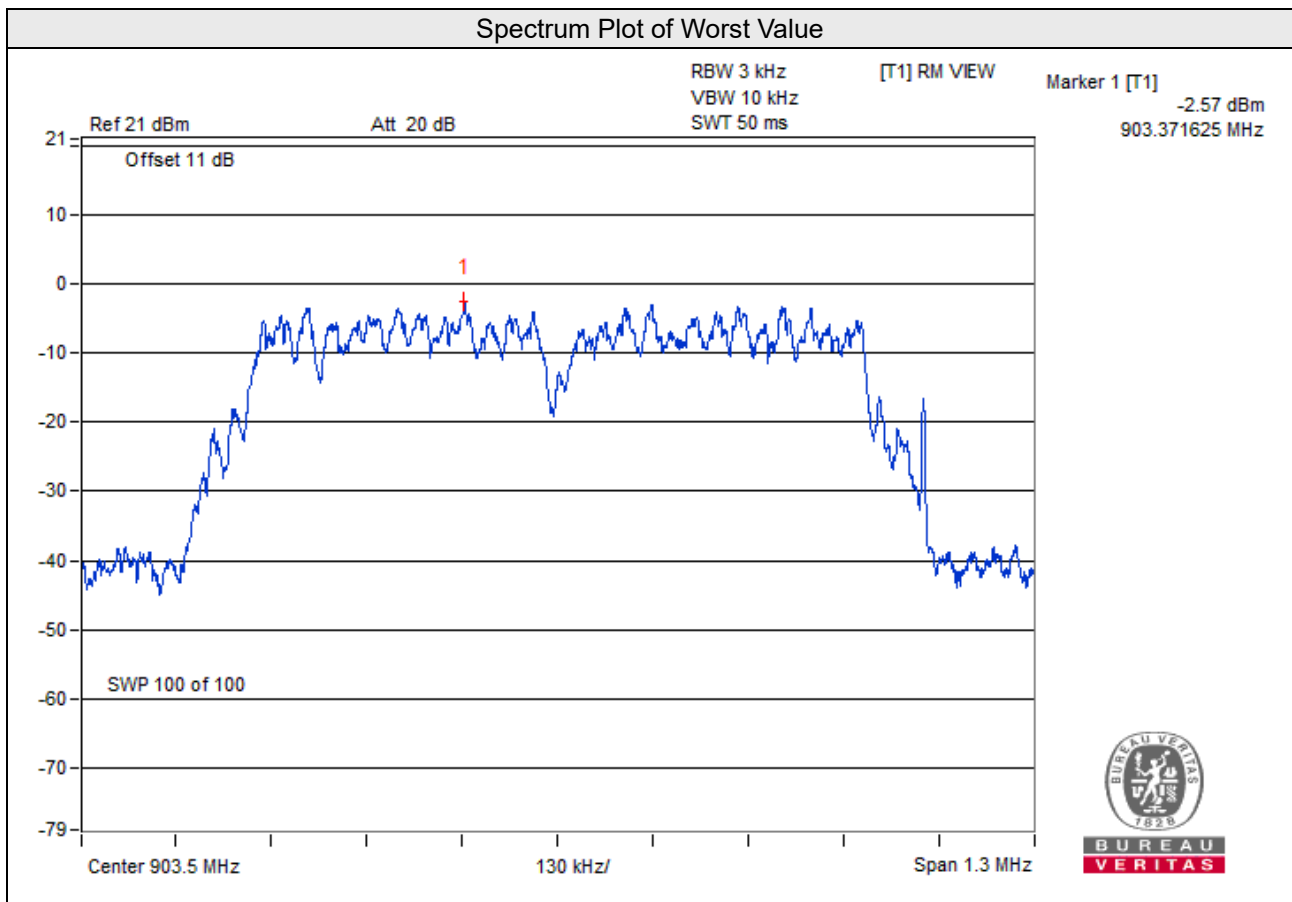
4.5.6 EUT Operating Condition

Same as item 4.3.6

4.5.7 Test Results

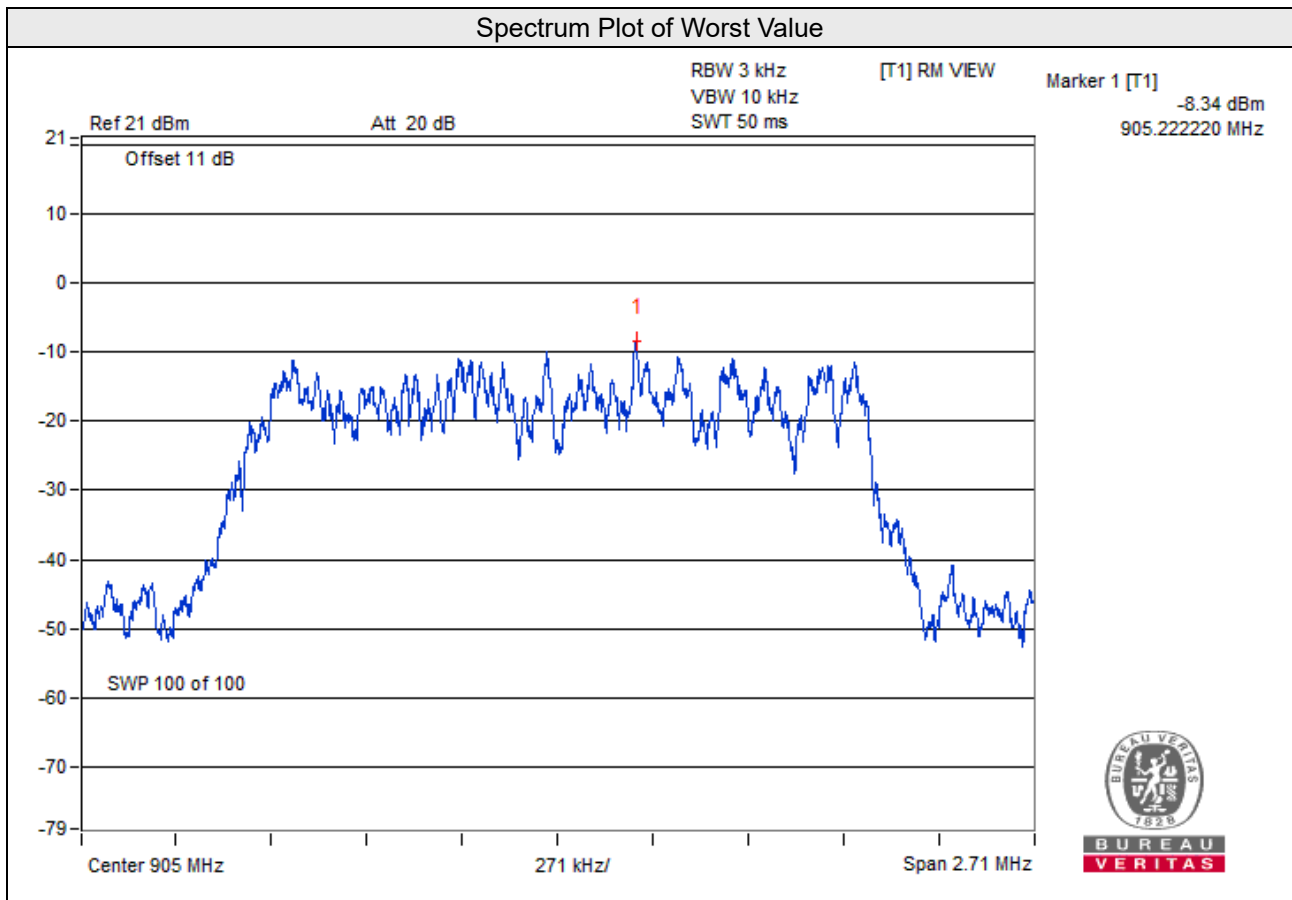
Bandwidth: 1MHz

Channel	Frequency (MHz)	PSD W/O Duty Factor (dBm/3kHz)	Duty Factor (dB)	Total PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass / Fail
3	903.5	-2.57	0.27	-2.30	8.00	Pass
43	915.5	-3.17	0.27	-2.90	8.00	Pass
104	926.5	-2.99	0.27	-2.72	8.00	Pass



Bandwidth: 2MHz

Channel	Frequency (MHz)	PSD W/O Duty Factor (dBm/3kHz)	Duty Factor (dB)	Total PSD With Duty Factor (dBm/3kHz)	Limit (dBm/3kHz)	Pass / Fail
6	905	-8.34	1.07	-7.27	8.00	Pass
156	915	-10.5	1.07	-9.43	8.00	Pass
161	925	-9.36	1.07	-8.29	8.00	Pass

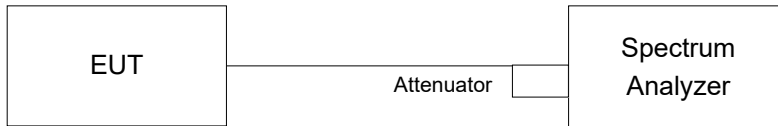


4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

Below 30dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

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

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

MEASUREMENT PROCEDURE OOB

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

Same as item 4.3.6

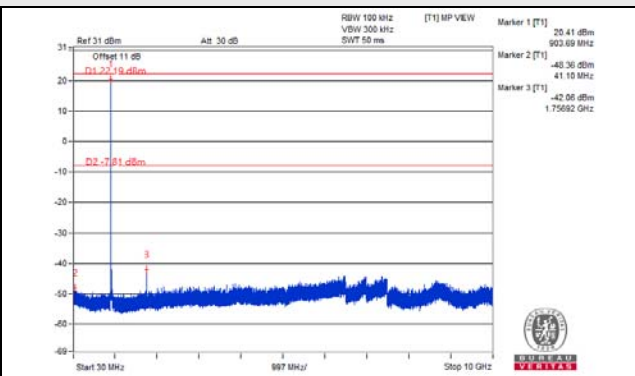
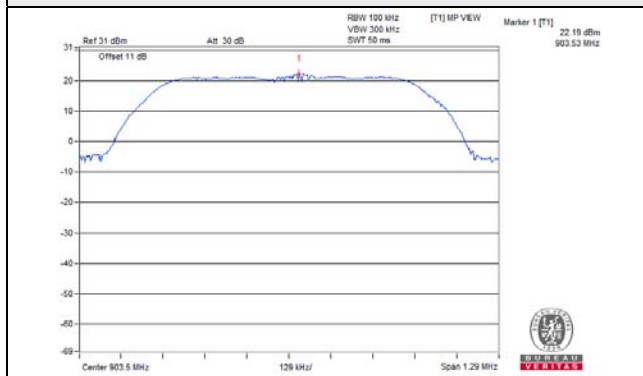
4.6.7 Test Results

The conducted emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit.

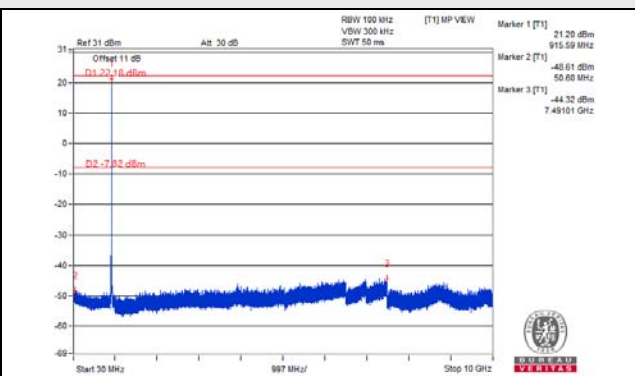
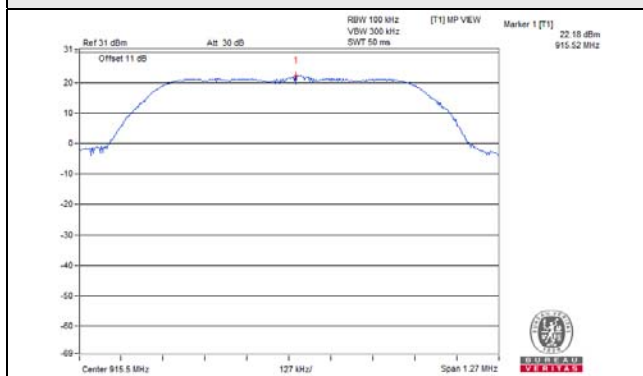
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

Bandwidth: 1MHz

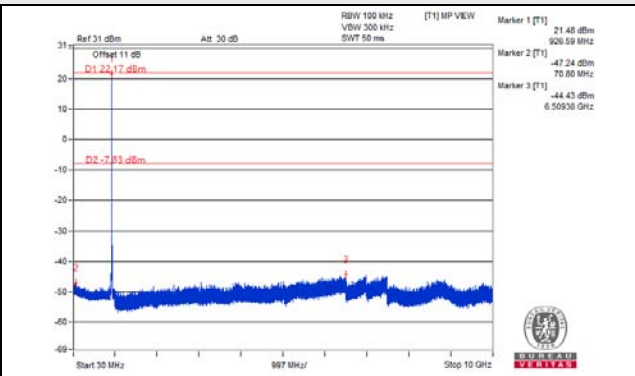
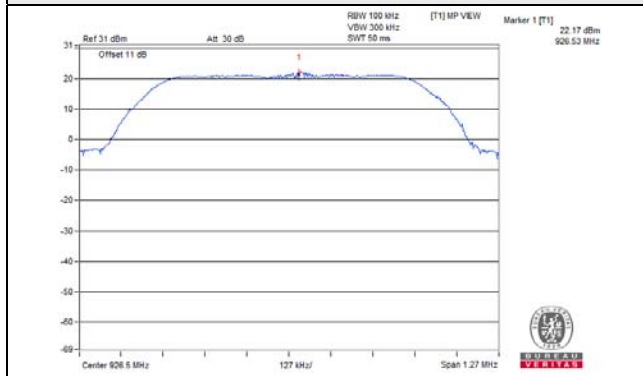
CH 3



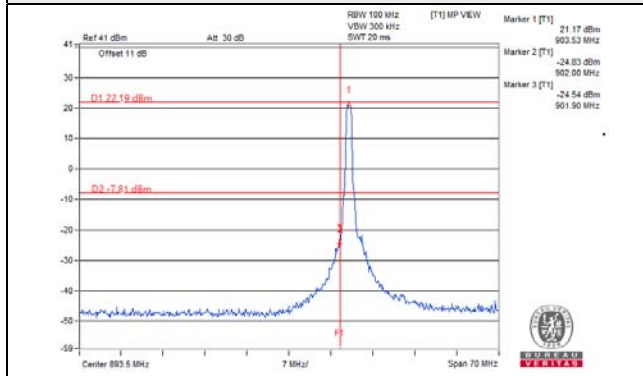
CH 43



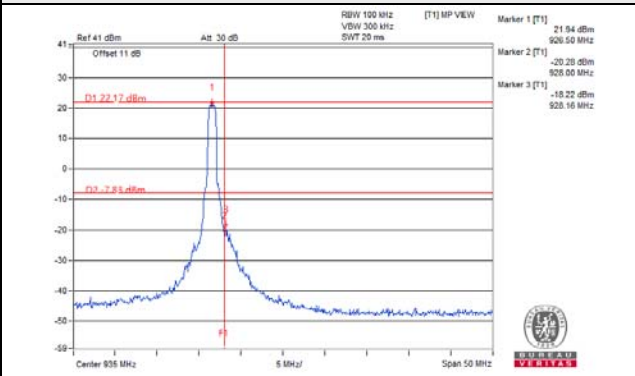
CH 104



CH 3 Band edge

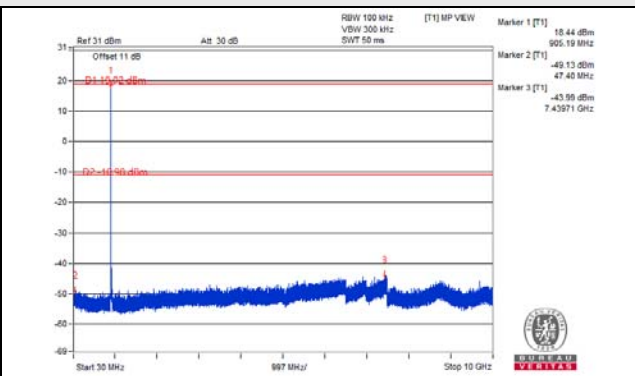
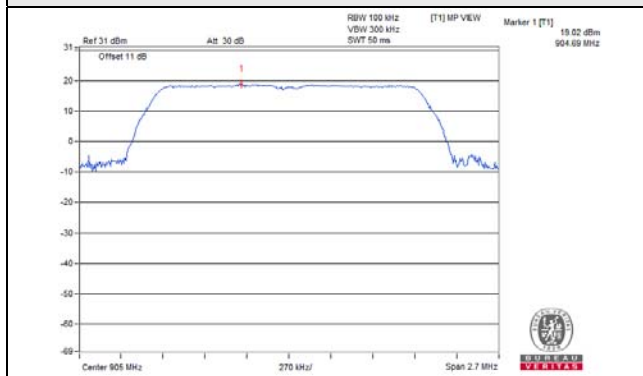


CH 104 Band edge

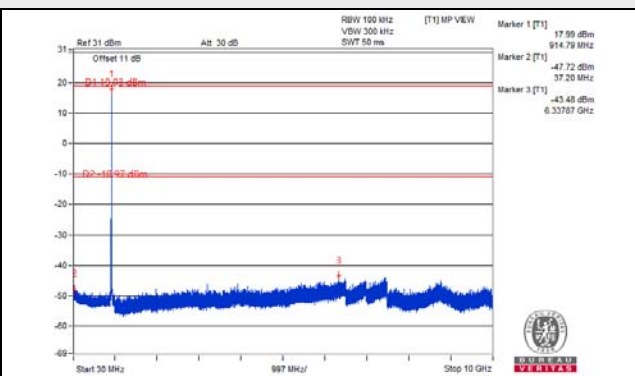
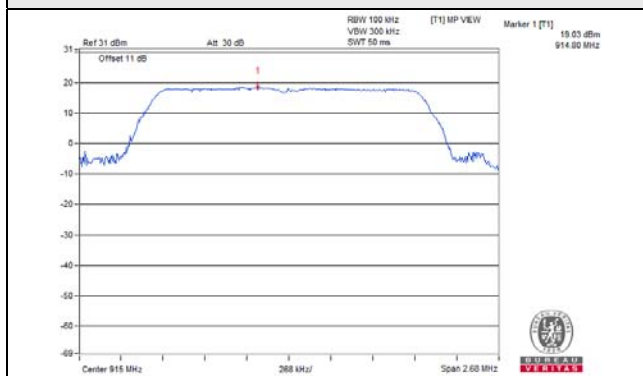


Bandwidth: 2MHz

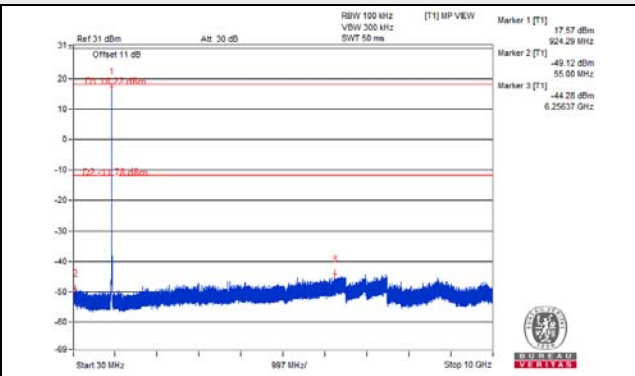
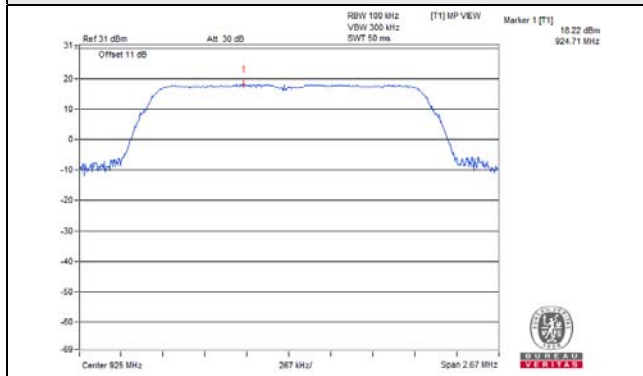
CH 6



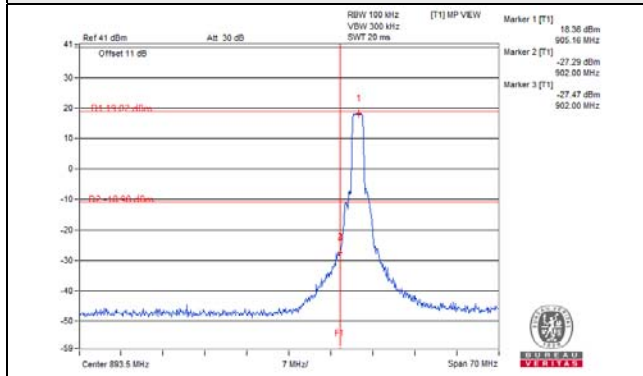
CH 156



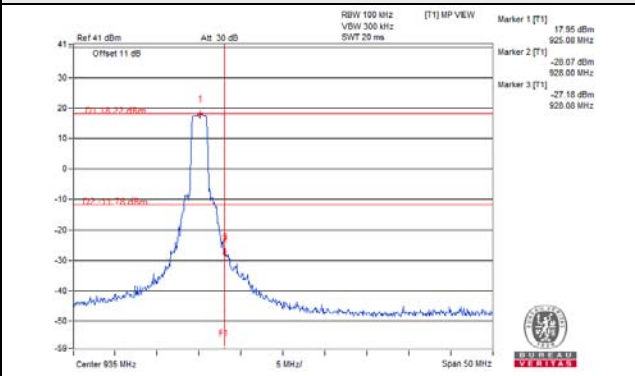
CH 161



CH 6 Band edge



CH 161 Band edge



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 and approved according to ISO/IEC 17025.

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Web Site: www.bureauveritas-adt.com

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

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