

FCC Test Report

Report No.: RF191122C08-3

FCC ID: UJH-R1LOW

Test Model: R1LOW (refer to item 3.1 for more details)

Received Date: Nov. 22, 2019

Test Date: Dec. 29, 2019 ~ Jan. 03, 2020

Issued Date: Jan. 10, 2020

Applicant: Mitsubishi Electric Corporation Sanda Works

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



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Release Control Record

Issue No.	Description	Date Issued
RF191122C08-3	Original release	Jan. 10, 2020

1 Certificate of Conformity

Product: Display Audio

Brand: Mitsubishi Electric Corporation

Test Model: R1LOW (refer to item 3.1 for more details)

Sample Status: DV

Applicant: Mitsubishi Electric Corporation Sanda Works

Test Date: Dec. 29, 2019 ~ Jan. 03, 2020

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 : Pettie Chen, **Date:** Jan. 10, 2020
Pettie Chen / Senior Specialist

Approved by : Bruce Chen, **Date:** Jan. 10, 2020
Bruce Chen / Senior 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	NA	EUT is powered from DC
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -7.1dB at 135.73MHz.
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 SMA connector 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) (\pm)
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.04 dB
	30MHz ~ 200MHz	3.59 dB
	200MHz ~ 1000MHz	3.60 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Display Audio
Brand	Mitsubishi Electric Corporation
Test Model	R1LOW (refer to note for more details)
Sample Status	DV
Power Supply Rating	12Vdc
Modulation Type	GFSK
Transfer Rate	1Mbps/2Mbps
Operating Frequency	2402~2480MHz
Number of Channel	40
Channel Spacing	2MHz
Output Power	1Mbps: 2.559mW 2Mbps: 2.553mW
Antenna Type	Refer to note
Antenna Connector	Refer to note
Accessory Device	2m non-shielded DC power cable without core
Cable Supplied	0.5m shielded USB cable with 2 cores

Note:

1. The following models with different panel size are provided to this EUT.

Brand	Model	Description
Mitsubishi Electric Corporation	R1LOW	No.12 (7" ICS Panel)
		No.13 (8.4" ICS Panel)

2. There two modules are collocated in the EUT.

Module No.	Function
1	WLAN 2.4GHz, 5GHz, BT EDR, BT LE (1M)
2	BT LE (1M, 2M)

3. The EUT uses following antennas.

Type	Sheet metal antenna			
Connector	SMA			
Model	2342059-1		2342059-2	
Frequency (MHz)	2400-2500	5150-5850	2400-2500	5150-5850
Gain (dBi)	3	2	1	4

3.2 Description of Test Modes

40 channels are provided for EUT:

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to				Description	
	RE \geq 1G	RE<1G	PLC	APCM	EUT	Module
A	√	√	Note 2	√	No.12 (7" ICS Panel)	Module 1
B	√	√	Note 2	√		Module 2
C	-	√	Note 2	-	No.13 (8.4" ICS Panel)	Module 1
D	-	√	Note 2	-		Module 2

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:

1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on Z-plane.
2. No need to concern of PLC due to the EUT is powered from DC.
3. For radiated emission (below 1GHz) test item, the worst maximum power was selected.
4. "-": Means no effect.

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	Data Rate (Mbps)	Remark
A	0 to 39	0, 19, 39	GFSK	1	-
B	0 to 39	0, 19, 39	GFSK	1, 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 Technology	Data Rate (Mbps)	Remark
A, C	0 to 39	19	GFSK	1	-
B, D	0 to 39	39	GFSK	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 Technology	Data Rate (Mbps)	Remark
A	0 to 39	0, 19, 39	GFSK	1	-
B	0 to 39	0, 19, 39	GFSK	1, 2	-

Test Condition:

Applicable to	Environmental Conditions	Input Power (system)	Tested by
RE \geq 1G	22 deg. C, 66% RH	120Vac, 60Hz	Han Wu
RE $<$ 1G	22 deg. C, 66% RH	120Vac, 60Hz	Han Wu
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Ted Chang

3.3 Duty Cycle of Test Signal

Test Mode A: Duty cycle of test signal is $< 98\%$

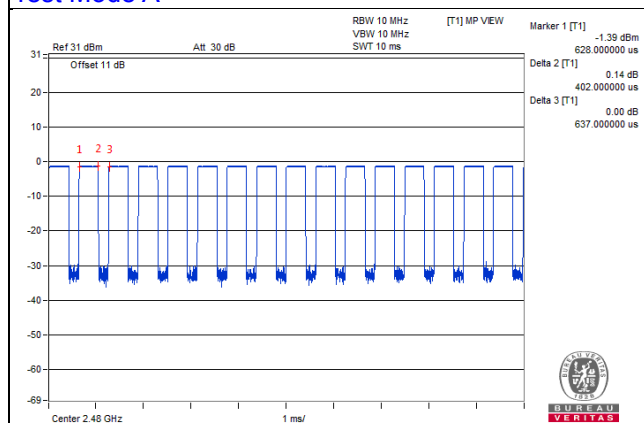
Test Mode B: Duty cycle = 100%

Test Mode A: Duty cycle = $0.402/0.67 = 0.631$, Duty factor = $10 * \log(1/0.631) = 2.22$

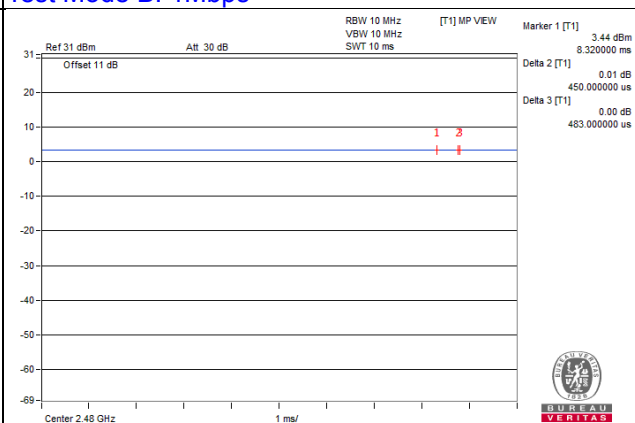
Test Mode B: 1Mbps: Duty cycle = 100%

Test Mode B: 2Mbps: Duty cycle = 100%

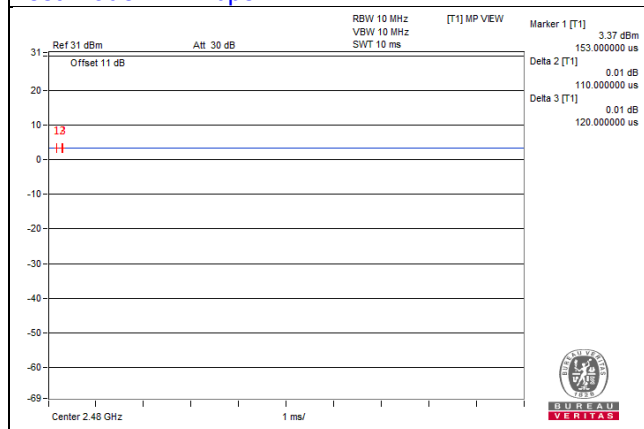
Test Mode A



Test Mode B: 1Mbps



Test Mode B: 2Mbps



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.

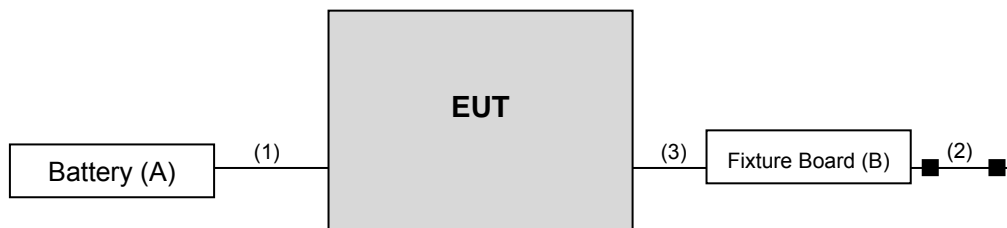
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Battery	YUASA	75D23R-CMF II	NA	NA	-
B.	Fixture Board	NA	NA	NA	NA	Provided by client

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC power cable	1	2	N	0	Accessory
2.	USB cable	1	0.5	Y	2	Accessory
3.	Harness cable	1	2	N	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:

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

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Test Receiver KEYSIGHT	N9038A	MY55420137	Apr. 15, 2019	Apr. 14, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Jun. 04, 2019	Jun. 03, 2020
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Nov. 07, 2019	Nov. 06, 2020
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Nov. 24, 2019	Nov. 23, 2020
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 24, 2019	Nov. 23, 2020
Preamplifier Agilent (Below 1GHz)	8447D	2944A10638	Jul. 11, 2019	Jul. 10, 2020
Preamplifier Agilent (Above 1GHz)	8449B	3008A02367	Feb. 19, 2019	Feb. 18, 2020
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM80 00	CABLE-CH9-02 (248780+171006)	Jan. 19, 2019	Jan. 18, 2020
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(25079 5/4)	Jul. 11, 2019	Jul. 10, 2020
RF signal cable Woken	8D-FB	Cable-CH9-01	Jul. 30, 2019	Jul. 29, 2020
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55 190004/MY5519000 7/MY55210005	Jul. 15, 2019	Jul. 14, 2020

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 Chamber 9.

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:

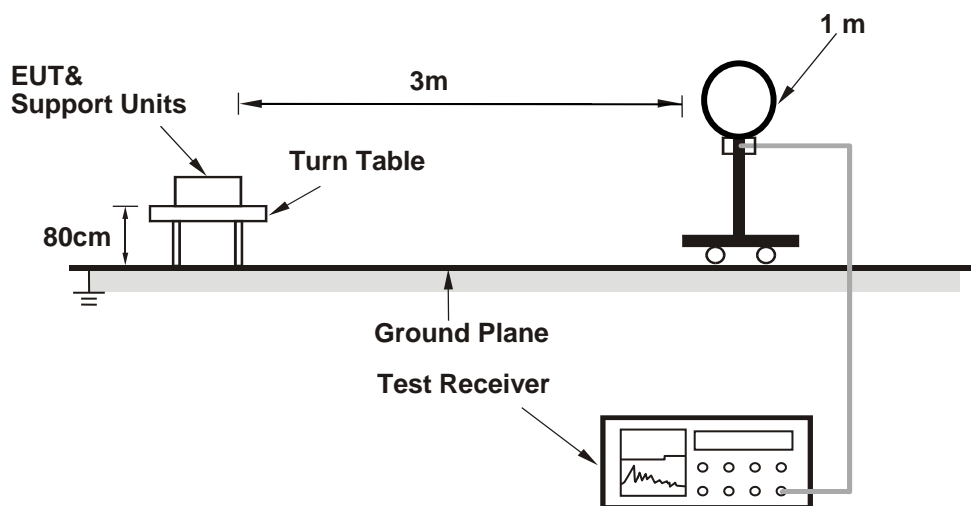
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

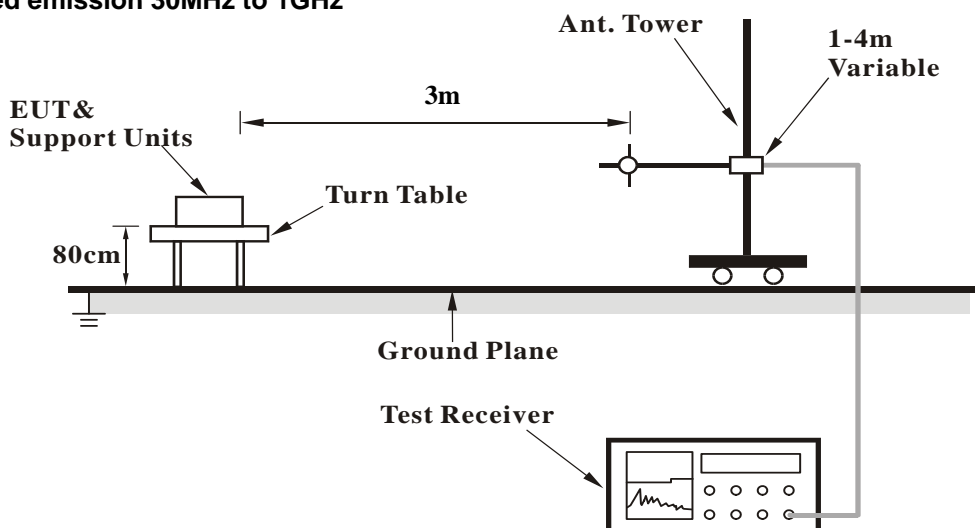
No deviation.

4.1.5 Test Setup

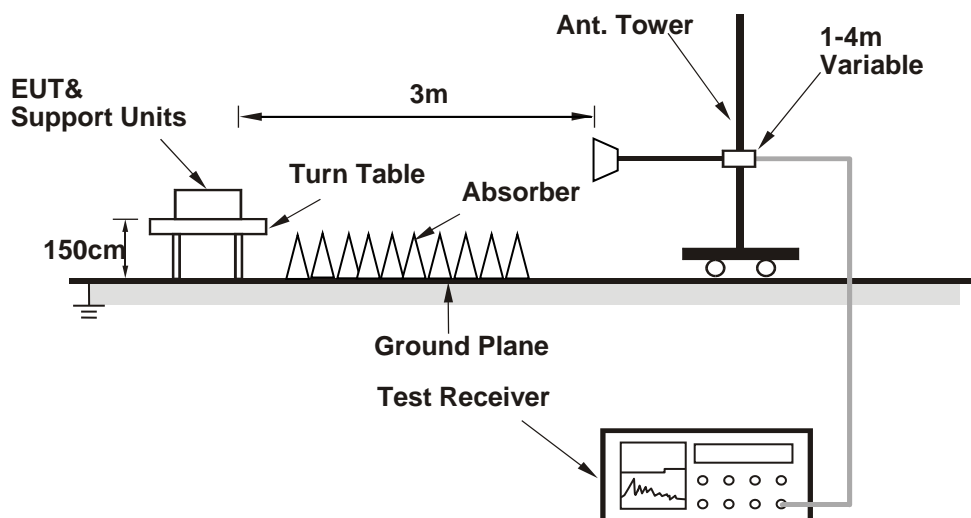
For Radiated emission below 30MHz



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

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

4.1.7 Test Results

Above 1GHz data:

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz	TEST MODE	A

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	54.9 PK	74.0	-19.1	2.16 H	17	23.0	31.9
2	2390.00	43.7 AV	54.0	-10.3	2.16 H	17	11.8	31.9
3	*2402.00	83.6 PK			2.20 H	11	51.8	31.8
4	*2402.00	79.2 AV			2.20 H	11	47.4	31.8
5	4804.00	48.9 PK	74.0	-25.1	1.14 H	7	45.0	3.9
6	4804.00	40.4 AV	54.0	-13.6	1.14 H	7	36.5	3.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.5 PK	74.0	-18.5	1.77 V	9	23.6	31.9
2	2390.00	43.7 AV	54.0	-10.3	1.77 V	9	11.8	31.9
3	*2402.00	84.7 PK			1.78 V	10	52.9	31.8
4	*2402.00	80.4 AV			1.78 V	10	48.6	31.8
5	4804.00	52.8 PK	74.0	-21.2	2.39 V	47	48.9	3.9
6	4804.00	45.3 AV	54.0	-8.7	2.39 V	47	41.4	3.9

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz	TEST MODE	A

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	86.3 PK			2.19 H	12	54.4	31.9
2	*2440.00	82.3 AV			2.19 H	12	50.4	31.9
3	4880.00	49.2 PK	74.0	-24.8	1.09 H	24	45.4	3.8
4	4880.00	40.3 AV	54.0	-13.7	1.09 H	24	36.5	3.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	87.4 PK			1.56 V	9	55.5	31.9
2	*2440.00	83.5 AV			1.56 V	9	51.6	31.9
3	4880.00	53.3 PK	74.0	-20.7	2.37 V	50	49.5	3.8
4	4880.00	45.4 AV	54.0	-8.6	2.37 V	50	41.6	3.8

Remarks:

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

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz	TEST MODE	A

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	86.2 PK			2.22 H	15	54.3	31.9
2	*2480.00	82.3 AV			2.22 H	15	50.4	31.9
3	2483.50	55.3 PK	74.0	-18.7	2.14 H	16	23.3	32.0
4	2483.50	44.0 AV	54.0	-10.0	2.14 H	16	12.0	32.0
5	4960.00	49.4 PK	74.0	-24.6	1.07 H	23	45.3	4.1
6	4960.00	40.5 AV	54.0	-13.5	1.07 H	23	36.4	4.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	87.3 PK			1.30 V	3	55.4	31.9
2	*2480.00	83.5 AV			1.30 V	3	51.6	31.9
3	2483.50	55.4 PK	74.0	-18.6	1.34 V	1	23.4	32.0
4	2483.50	43.7 AV	54.0	-10.3	1.34 V	1	11.7	32.0
5	4960.00	53.2 PK	74.0	-20.8	2.37 V	41	49.1	4.1
6	4960.00	45.7 AV	54.0	-8.3	2.37 V	41	41.6	4.1

Remarks:

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

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz	TEST MODE	B: 1Mbps

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	54.9 PK	74.0	-19.1	1.36 H	31	23.0	31.9
2	2390.00	43.7 AV	54.0	-10.3	1.36 H	31	11.8	31.9
3	*2402.00	96.2 PK			1.39 H	33	64.4	31.8
4	*2402.00	94.9 AV			1.39 H	33	63.1	31.8
5	4804.00	44.2 PK	74.0	-29.8	2.57 H	262	40.3	3.9
6	4804.00	31.1 AV	54.0	-22.9	2.57 H	262	27.2	3.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.6 PK	74.0	-18.4	1.00 V	351	23.7	31.9
2	2390.00	43.5 AV	54.0	-10.5	1.00 V	351	11.6	31.9
3	*2402.00	93.6 PK			1.00 V	348	61.8	31.8
4	*2402.00	92.4 AV			1.00 V	348	60.6	31.8
5	4804.00	45.7 PK	74.0	-28.3	1.24 V	23	41.8	3.9
6	4804.00	33.6 AV	54.0	-20.4	1.24 V	23	29.7	3.9

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz	TEST MODE	B: 1Mbps

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	95.7 PK			1.34 H	36	63.8	31.9
2	*2440.00	94.2 AV			1.34 H	36	62.3	31.9
3	4880.00	44.2 PK	74.0	-29.8	2.65 H	248	40.4	3.8
4	4880.00	31.1 AV	54.0	-22.9	2.65 H	248	27.3	3.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	93.2 PK			1.06 V	351	61.3	31.9
2	*2440.00	91.7 AV			1.06 V	351	59.8	31.9
3	4880.00	45.2 PK	74.0	-28.8	1.19 V	25	41.4	3.8
4	4880.00	33.3 AV	54.0	-20.7	1.19 V	25	29.5	3.8

Remarks:

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

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz	TEST MODE	B: 1Mbps

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	95.4 PK			1.68 H	40	63.5	31.9
2	*2480.00	94.2 AV			1.68 H	40	62.3	31.9
3	2483.50	55.8 PK	74.0	-18.2	1.68 H	40	23.8	32.0
4	2483.50	44.4 AV	54.0	-9.6	1.68 H	40	12.4	32.0
5	4960.00	43.9 PK	74.0	-30.1	2.67 H	265	39.8	4.1
6	4960.00	31.4 AV	54.0	-22.6	2.67 H	265	27.3	4.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	92.7 PK			1.06 V	349	60.8	31.9
2	*2480.00	91.6 AV			1.06 V	349	59.7	31.9
3	2483.50	55.9 PK	74.0	-18.1	1.02 V	348	23.9	32.0
4	2483.50	43.8 AV	54.0	-10.2	1.02 V	348	11.8	32.0
5	4960.00	45.7 PK	74.0	-28.3	1.22 V	25	41.6	4.1
6	4960.00	33.9 AV	54.0	-20.1	1.22 V	25	29.8	4.1

Remarks:

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

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz	TEST MODE	B: 2Mbps

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.5 PK	74.0	-18.5	1.49 H	36	23.6	31.9
2	2390.00	43.6 AV	54.0	-10.4	1.49 H	36	11.7	31.9
3	*2402.00	95.9 PK			1.39 H	34	64.1	31.8
4	*2402.00	92.8 AV			1.39 H	34	61.0	31.8
5	4804.00	43.9 PK	74.0	-30.1	2.65 H	251	40.0	3.9
6	4804.00	30.9 AV	54.0	-23.1	2.65 H	251	27.0	3.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.3 PK	74.0	-18.7	1.11 V	345	23.4	31.9
2	2390.00	43.9 AV	54.0	-10.1	1.11 V	345	12.0	31.9
3	*2402.00	93.4 PK			1.11 V	353	61.6	31.8
4	*2402.00	90.3 AV			1.11 V	353	58.5	31.8
5	4804.00	44.8 PK	74.0	-29.2	1.22 V	23	40.9	3.9
6	4804.00	31.2 AV	54.0	-22.8	1.22 V	23	27.3	3.9

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz	TEST MODE	B: 2Mbps

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	95.3 QP			1.36 H	41	63.4	31.9
2	*2440.00	92.4 QP			1.36 H	41	60.5	31.9
3	4880.00	44.2 QP	74.0	-29.8	2.68 H	249	40.4	3.8
4	4880.00	30.7 QP	54.0	-23.3	2.68 H	249	26.9	3.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	93.0 QP			1.14 V	348	61.1	31.9
2	*2440.00	90.0 QP			1.14 V	348	58.1	31.9
3	4880.00	44.5 QP	74.0	-29.5	1.33 V	27	40.7	3.8
4	4880.00	30.8 QP	54.0	-23.2	1.33 V	27	27.0	3.8

Remarks:

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

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz	TEST MODE	B: 2Mbps

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	96.7 PK			1.35 H	43	64.8	31.9
2	*2480.00	92.0 AV			1.35 H	43	60.1	31.9
3	2483.50	56.5 PK	74.0	-17.5	1.35 H	43	24.5	32.0
4	2483.50	45.2 AV	54.0	-8.8	1.35 H	43	13.2	32.0
5	4960.00	44.2 PK	74.0	-29.8	2.67 H	264	40.1	4.1
6	4960.00	31.4 AV	54.0	-22.6	2.67 H	264	27.3	4.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	94.0 PK			1.14 V	349	62.1	31.9
2	*2480.00	89.4 AV			1.14 V	349	57.5	31.9
3	2483.50	55.5 PK	74.0	-18.5	1.05 V	346	23.5	32.0
4	2483.50	43.7 AV	54.0	-10.3	1.05 V	346	11.7	32.0
5	4960.00	44.8 PK	74.0	-29.2	1.22 V	25	40.7	4.1
6	4960.00	31.1 AV	54.0	-22.9	1.22 V	25	27.0	4.1

Remarks:

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

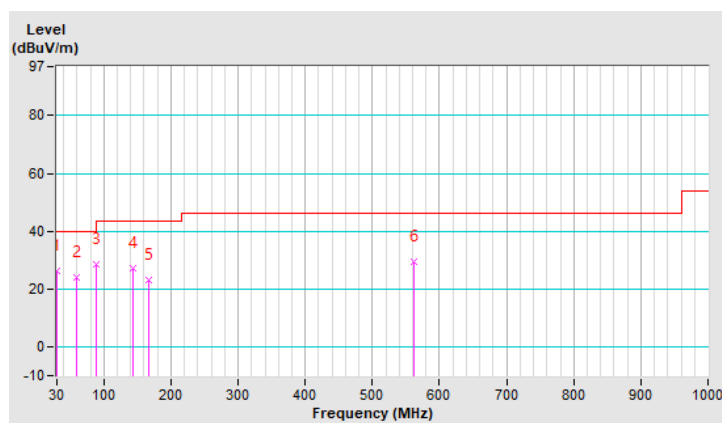
Below 1GHz worst-case data:

FREQUENCY RANGE	9kHz ~ 1GHz	DETECTOR FUNCTION	Quasi-Peak (QP)
CHANNEL	TX Channel 19	TEST MODE	A

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.00	26.2 QP	40.0	-13.8	1.00 H	8	37.5	-11.3
2	59.10	23.8 QP	40.0	-16.2	1.00 H	8	33.8	-10.0
3	88.20	28.7 QP	43.5	-14.8	1.00 H	339	43.6	-14.9
4	142.52	27.3 QP	43.5	-16.2	1.00 H	239	37.0	-9.7
5	167.74	23.0 QP	43.5	-20.5	1.00 H	211	32.3	-9.3
6	562.53	29.5 QP	46.0	-16.5	1.00 H	265	32.2	-2.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit 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 20dB below the permissible value to be report.

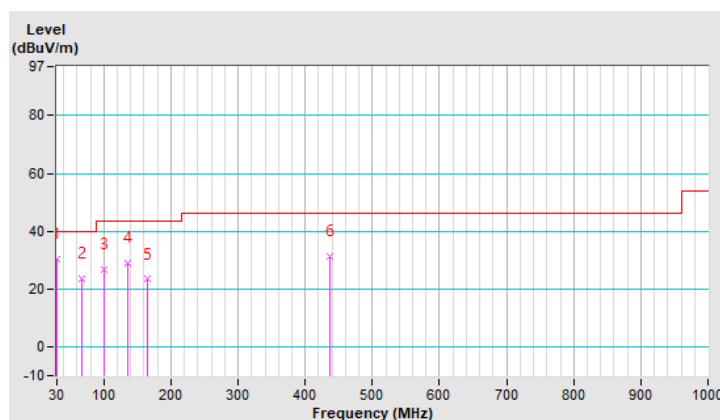


FREQUENCY RANGE	9kHz ~ 1GHz	DETECTOR FUNCTION	Quasi-Peak (QP)
CHANNEL	TX Channel 19	TEST MODE	A

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.97	30.5 QP	40.0	-9.5	1.00 V	297	42.3	-11.8
2	66.86	23.7 QP	40.0	-16.3	1.00 V	268	34.6	-10.9
3	99.84	26.7 QP	43.5	-16.8	1.00 V	213	40.6	-13.9
4	135.73	28.9 QP	43.5	-14.6	1.00 V	137	39.0	-10.1
5	165.80	23.3 QP	43.5	-20.2	1.00 V	47	32.5	-9.2
6	436.43	31.3 QP	46.0	-14.7	1.00 V	325	36.0	-4.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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 20dB below the permissible value to be report.

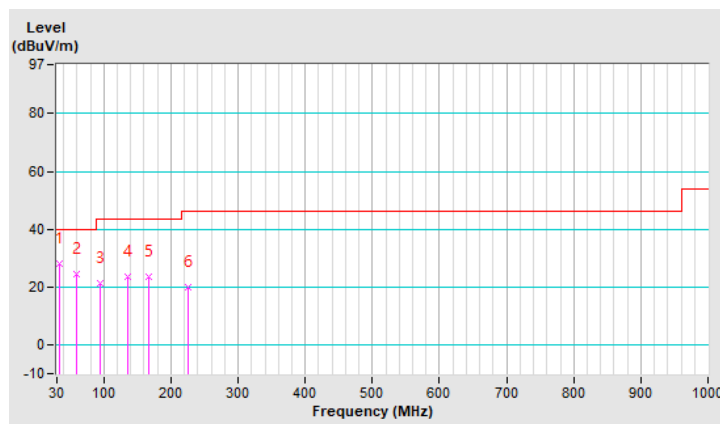


FREQUENCY RANGE	9kHz ~ 1GHz	DETECTOR FUNCTION	Quasi-Peak (QP)
CHANNEL	TX Channel 39	TEST MODE	B

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	34.85	27.9 QP	40.0	-12.1	1.00 H	154	39.0	-11.1
2	59.10	24.5 QP	40.0	-15.5	1.00 H	254	34.5	-10.0
3	94.02	21.4 QP	43.5	-22.1	1.00 H	318	36.1	-14.7
4	135.73	23.4 QP	43.5	-20.1	1.00 H	278	33.5	-10.1
5	167.74	23.4 QP	43.5	-20.1	1.00 H	205	32.7	-9.3
6	224.97	20.1 QP	46.0	-25.9	1.00 H	103	32.1	-12.0

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 20dB below the permissible value to be report.

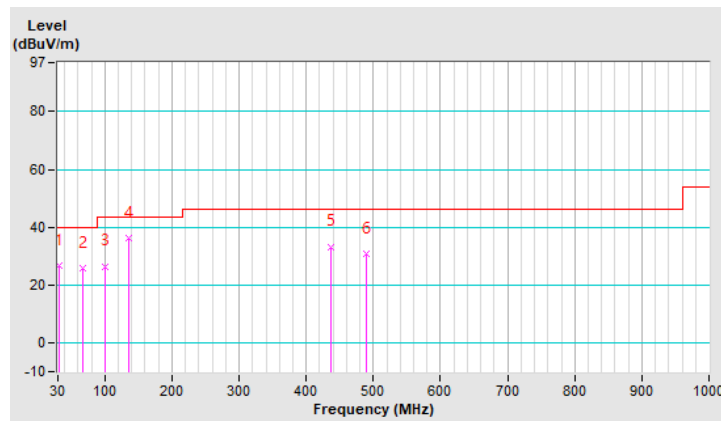


FREQUENCY RANGE	9kHz ~ 1GHz	DETECTOR FUNCTION	Quasi-Peak (QP)
CHANNEL	TX Channel 39	TEST MODE	B

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	31.94	26.8 QP	40.0	-13.2	1.00 V	50	38.2	-11.4
2	66.86	26.0 QP	40.0	-14.0	1.00 V	345	36.9	-10.9
3	99.84	26.5 QP	43.5	-17.0	1.00 V	130	40.4	-13.9
4	135.73	36.4 QP	43.5	-7.1	1.00 V	325	46.5	-10.1
5	436.43	33.3 QP	46.0	-12.7	1.00 V	26	38.0	-4.7
6	489.78	31.0 QP	46.0	-15.0	1.00 V	359	35.0	-4.0

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 20dB below the permissible value to be report.

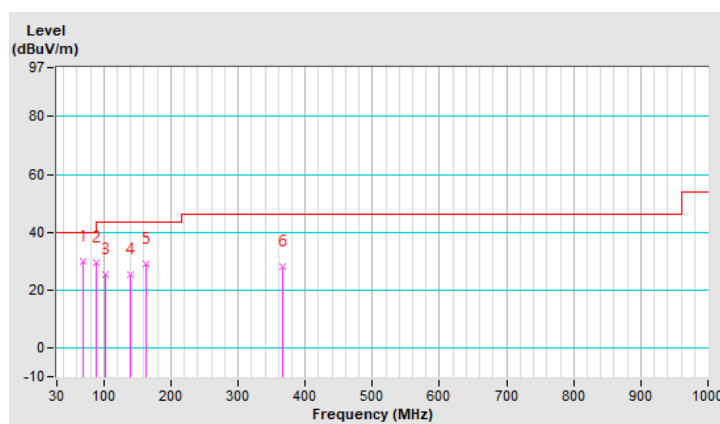


FREQUENCY RANGE	9kHz ~ 1GHz	DETECTOR FUNCTION	Quasi-Peak (QP)
CHANNEL	TX Channel 19	TEST MODE	C

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	69.77	29.8 QP	40.0	-10.2	1.00 H	6	41.3	-11.5
2	89.17	29.4 QP	43.5	-14.1	1.00 H	44	44.3	-14.9
3	101.78	25.4 QP	43.5	-18.1	1.00 H	316	39.0	-13.6
4	138.64	25.4 QP	43.5	-18.1	1.00 H	141	35.3	-9.9
5	163.86	28.9 QP	43.5	-14.6	1.00 H	106	38.2	-9.3
6	366.59	27.9 QP	46.0	-18.1	1.00 H	89	34.3	-6.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit 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 20dB below the permissible value to be report.

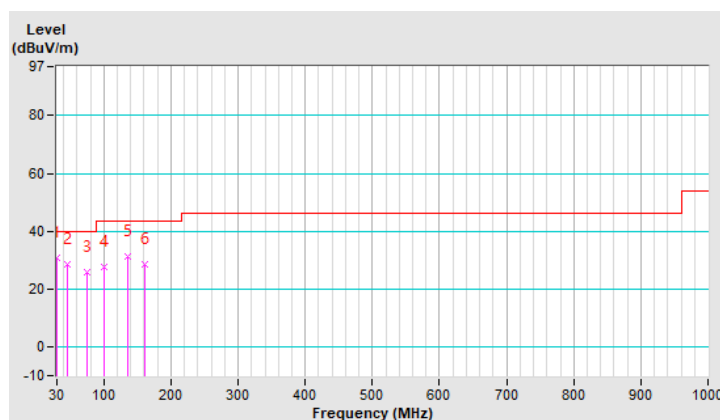


FREQUENCY RANGE	9kHz ~ 1GHz	DETECTOR FUNCTION	Quasi-Peak (QP)
CHANNEL	TX Channel 19	TEST MODE	C

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.97	30.9 QP	40.0	-9.1	1.00 V	63	42.7	-11.8
2	45.52	28.6 QP	40.0	-11.4	1.00 V	91	38.5	-9.9
3	75.59	26.0 QP	40.0	-14.0	1.00 V	15	38.8	-12.8
4	99.84	27.7 QP	43.5	-15.8	1.00 V	6	41.6	-13.9
5	134.76	31.1 QP	43.5	-12.4	1.00 V	184	41.4	-10.3
6	160.95	28.7 QP	43.5	-14.8	1.00 V	271	37.9	-9.2

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. 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 20dB below the permissible value to be report.

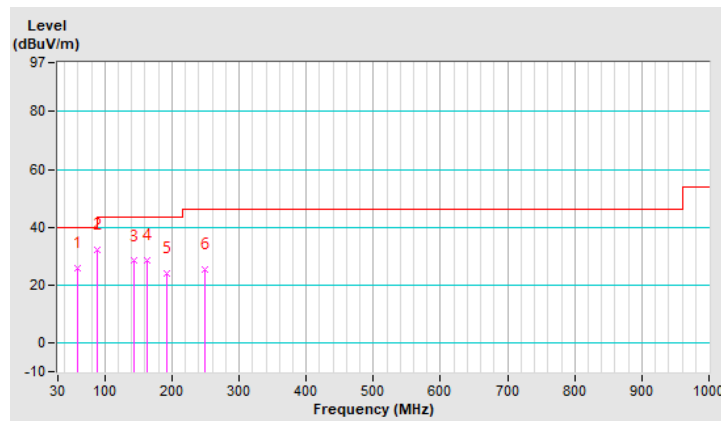


FREQUENCY RANGE	9kHz ~ 1GHz	DETECTOR FUNCTION	Quasi-Peak (QP)
CHANNEL	TX Channel 39	TEST MODE	D

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	59.10	25.9 QP	40.0	-14.1	1.00 H	142	35.9	-10.0
2	88.20	32.2 QP	43.5	-11.3	1.00 H	16	47.1	-14.9
3	142.52	28.3 QP	43.5	-15.2	1.00 H	265	38.0	-9.7
4	163.86	28.7 QP	43.5	-14.8	1.00 H	114	38.0	-9.3
5	191.99	24.2 QP	43.5	-19.3	1.00 H	302	36.1	-11.9
6	249.22	25.2 QP	46.0	-20.8	1.00 H	311	35.2	-10.0

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 20dB below the permissible value to be report.

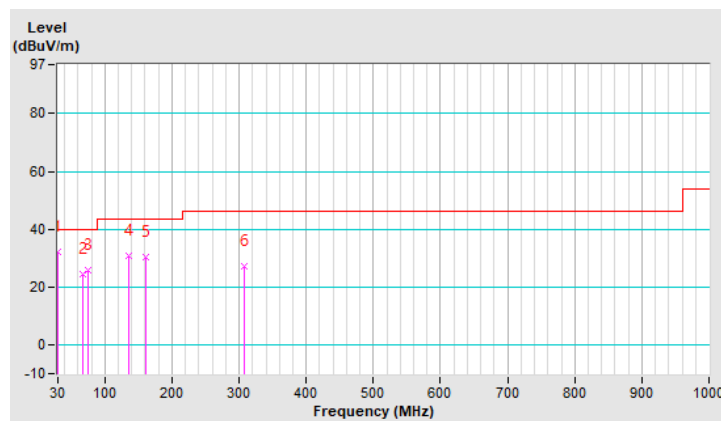


FREQUENCY RANGE	9kHz ~ 1GHz	DETECTOR FUNCTION	Quasi-Peak (QP)
CHANNEL	TX Channel 39	TEST MODE	D

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.97	32.0 QP	40.0	-8.0	1.00 V	276	43.8	-11.8
2	66.86	24.6 QP	40.0	-15.4	1.00 V	187	35.5	-10.9
3	75.59	25.9 QP	40.0	-14.1	1.00 V	191	38.7	-12.8
4	134.76	30.9 QP	43.5	-12.6	1.00 V	38	41.2	-10.3
5	161.92	30.4 QP	43.5	-13.1	1.00 V	264	39.5	-9.1
6	307.42	27.3 QP	46.0	-18.7	1.00 V	65	35.1	-7.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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 20dB below the permissible value to be report.

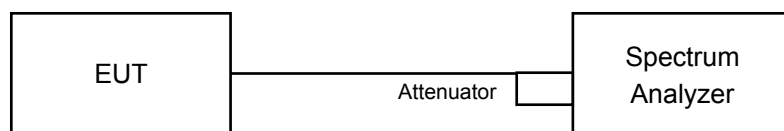


4.2 6dB Bandwidth Measurement

4.2.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.2.2 Test Setup



4.2.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.2.4 Test Procedure

- 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.

4.2.5 Deviation from Test Standard

No deviation.

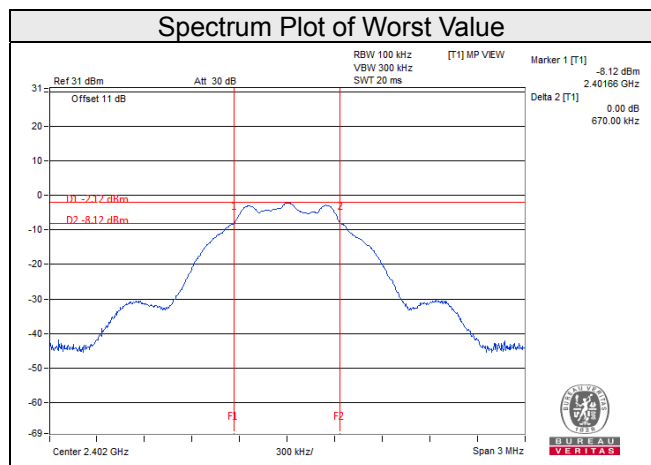
4.2.6 EUT Operating Conditions

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

4.2.7 Test Result

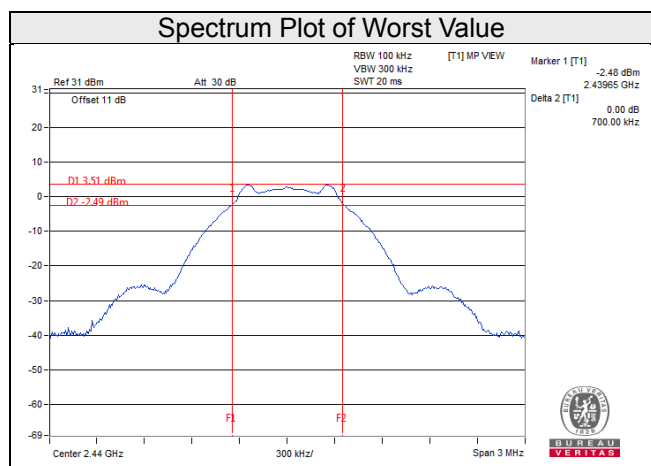
Test Mode A

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	0.67	0.5	Pass
19	2440	0.68	0.5	Pass
39	2480	0.67	0.5	Pass



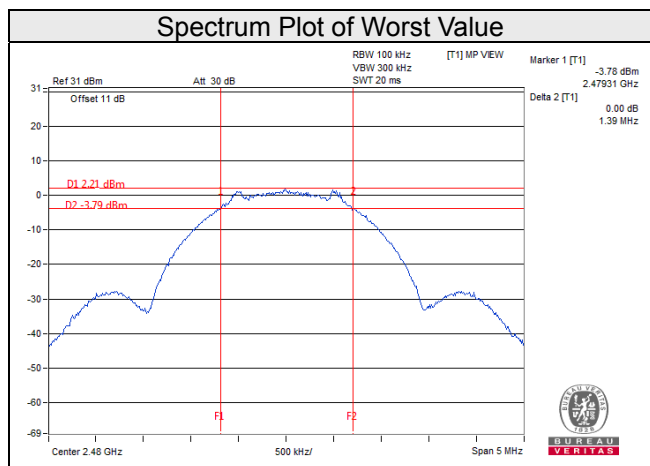
Test Mode B: 1Mbps

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	0.71	0.5	Pass
19	2440	0.70	0.5	Pass
39	2480	0.73	0.5	Pass



Test Mode B: 2Mbps

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	1.40	0.5	Pass
19	2440	1.46	0.5	Pass
39	2480	1.39	0.5	Pass

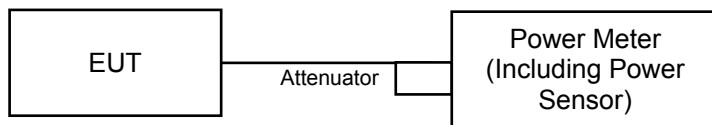


4.3 Conducted Output Power Measurement

4.3.1 Limits of Conducted Output Power Measurement

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedures

A 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.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

Same as item 4.3.6.

4.3.7 Test Results

Test Mode A

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
0	2402	0.682	-1.66	30	Pass
19	2440	0.767	-1.15	30	Pass
39	2480	0.755	-1.22	30	Pass

Test Mode B: 1Mbps

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
0	2402	2.559	4.08	30	Pass
19	2440	2.455	3.90	30	Pass
39	2480	2.333	3.68	30	Pass

Test Mode B: 2Mbps

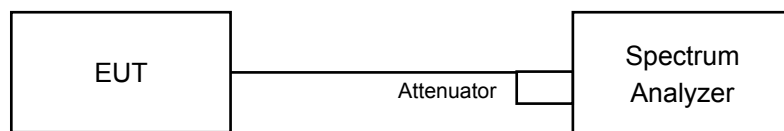
Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
0	2402	2.553	4.07	30	Pass
19	2440	2.455	3.90	30	Pass
39	2480	2.339	3.69	30	Pass

4.4 Power Spectral Density Measurement

4.4.1 Limits of Power Spectral Density Measurement

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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedure

- Set analyzer center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set the VBW $\geq 3 \times \text{RBW}$.
- Detector = average.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level within the RBW.

4.4.5 Deviation from Test Standard

No deviation.

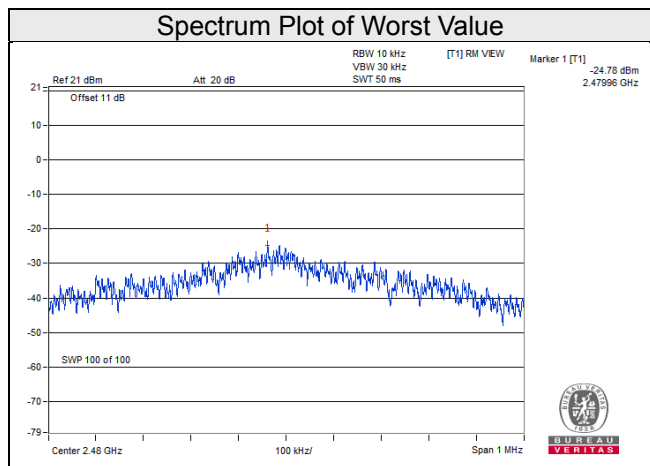
4.4.6 EUT Operating Condition

Same as item 4.3.6

4.4.7 Test Results

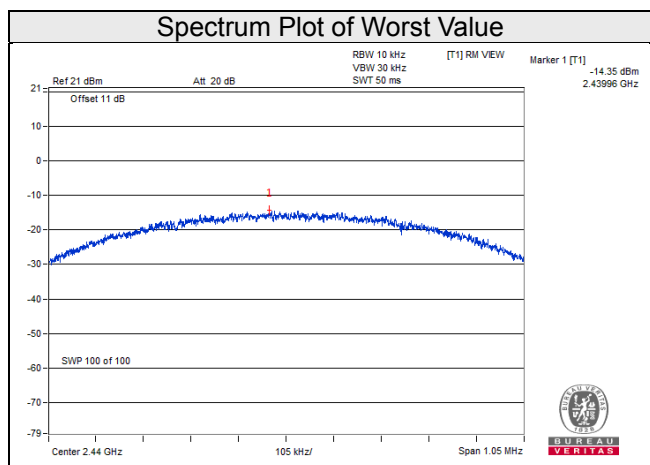
Test Mode A

Channel	Freq. (MHz)	PSD (dBm/10kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass/Fail
0	2402	-25.98	-31.21	8	Pass
19	2440	-26.38	-31.61	8	Pass
39	2480	-24.78	-30.01	8	Pass



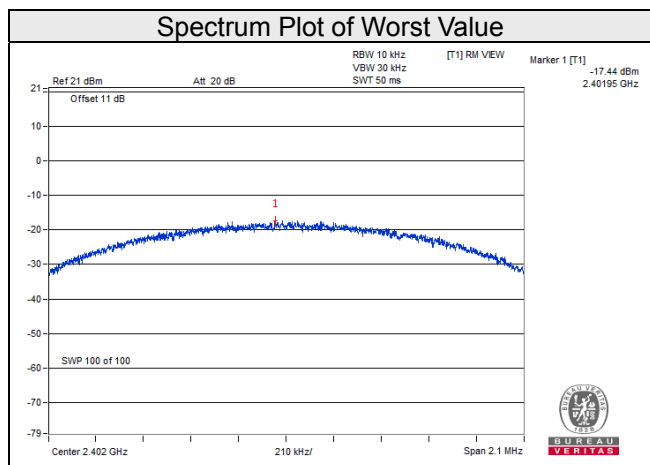
Test Mode B: 1Mbps

Channel	Freq. (MHz)	PSD (dBm/10kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass/Fail
0	2402	-14.44	-19.67	8	Pass
19	2440	-14.35	-19.58	8	Pass
39	2480	-14.73	-19.96	8	Pass



Test Mode B: 2Mbps

Channel	Freq. (MHz)	PSD (dBm/10kHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass/Fail
0	2402	-17.44	-22.67	8	Pass
19	2440	-17.51	-22.74	8	Pass
39	2480	-18.17	-23.40	8	Pass

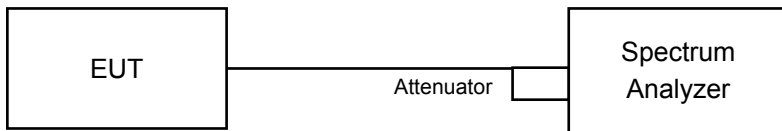


4.5 Conducted Out of Band Emission Measurement

4.5.1 Limits of Conducted Out of Band Emission Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

Measurement Procedure REF

- 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.

4.5.5 Deviation from Test Standard

No deviation.

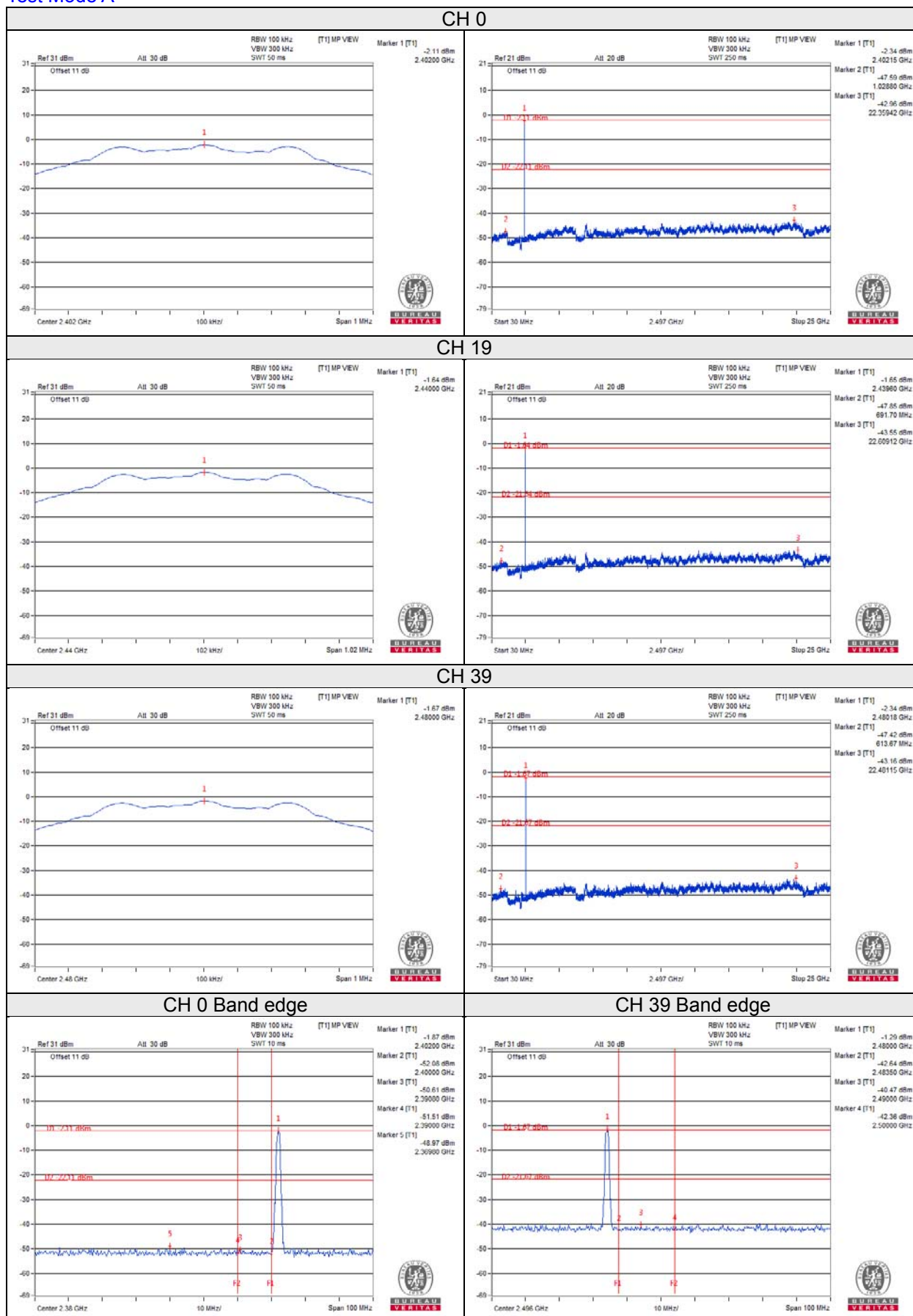
4.5.6 EUT Operating Condition

Same as item 4.3.6

4.5.7 Test Results

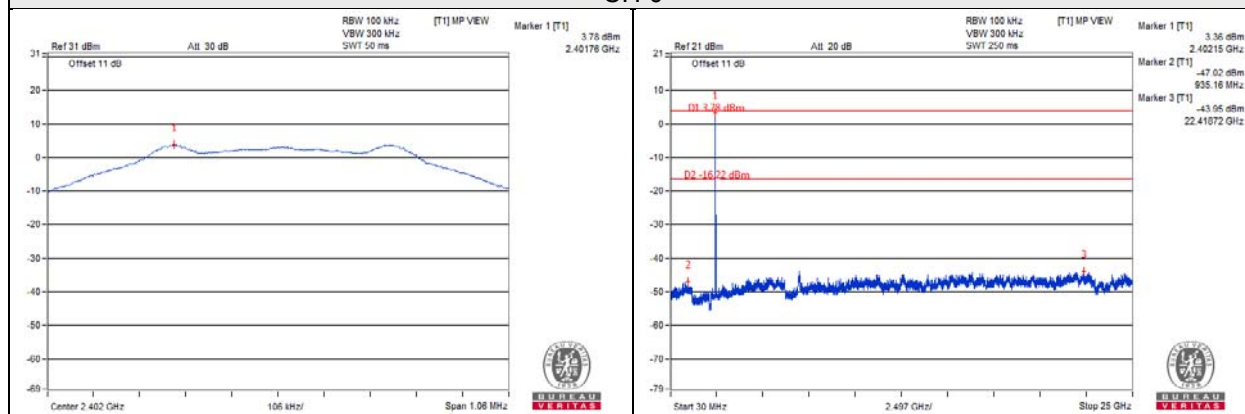
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

Test Mode A

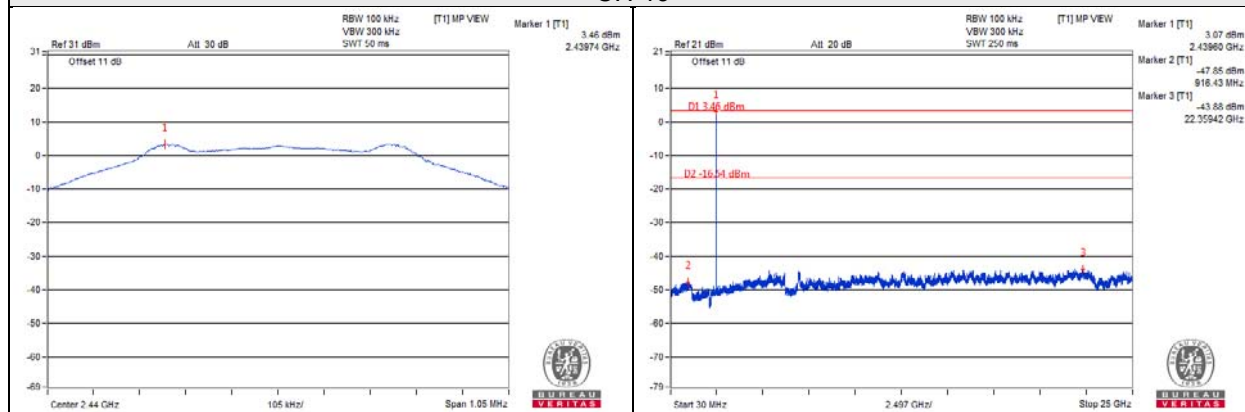


Test Mode B: 1Mbps

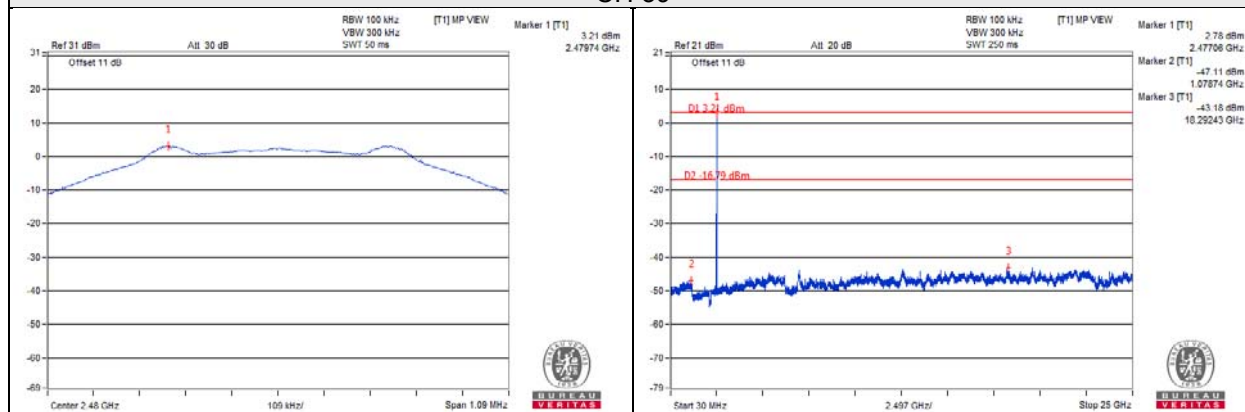
CH 0



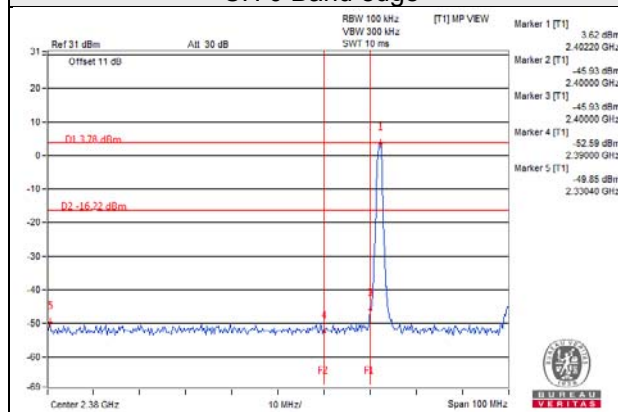
CH 19



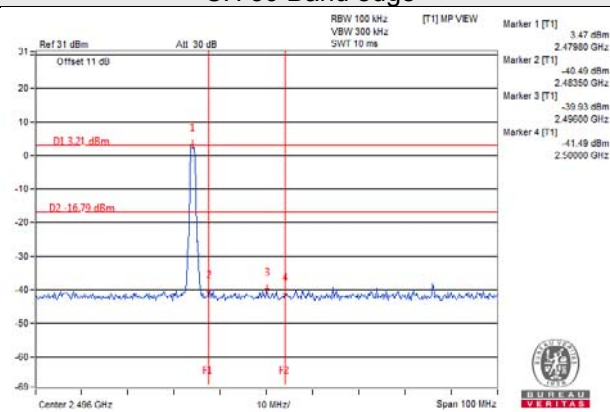
CH 39



CH 0 Band edge

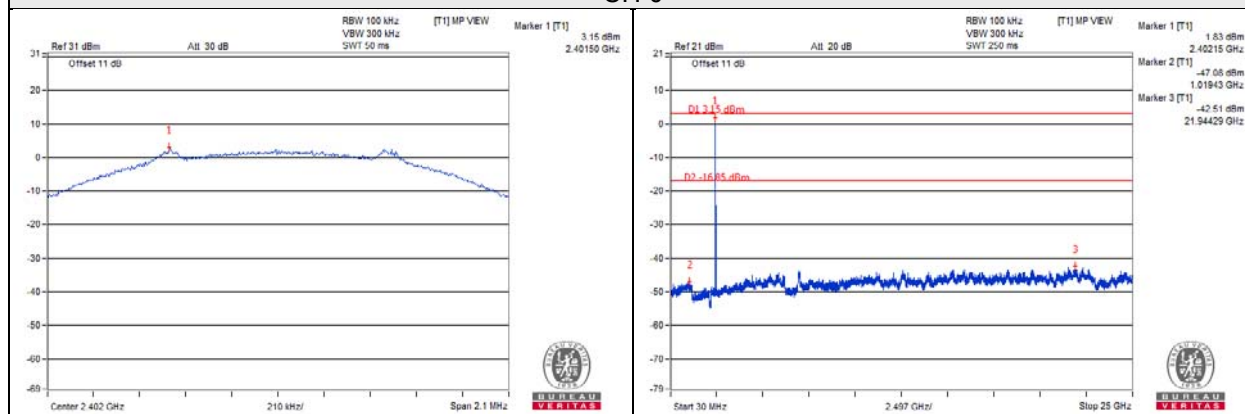


CH 39 Band edge

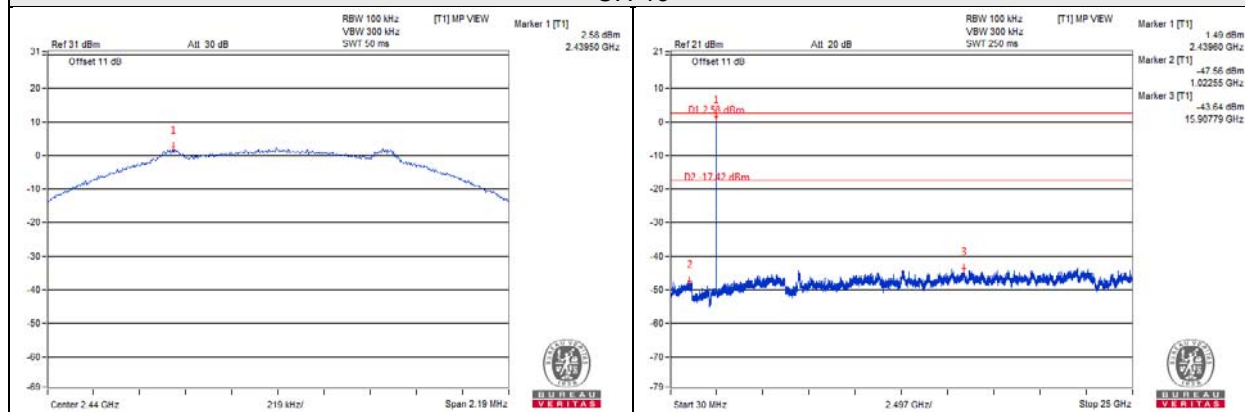


Test Mode B: 2Mbps

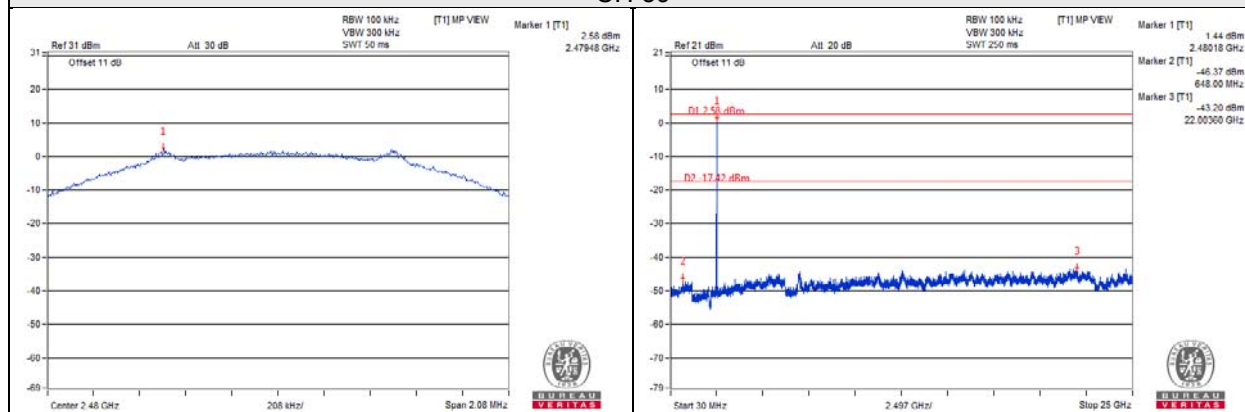
CH 0



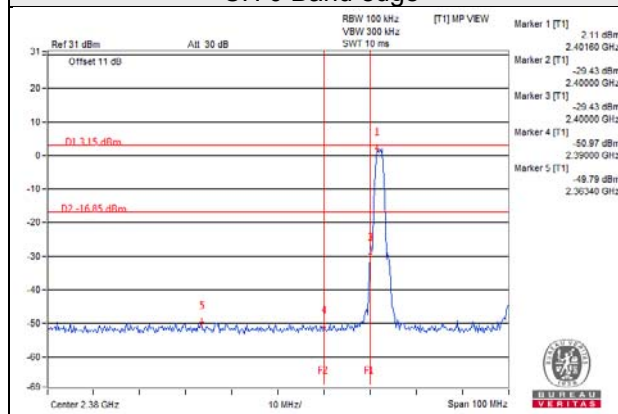
CH 19



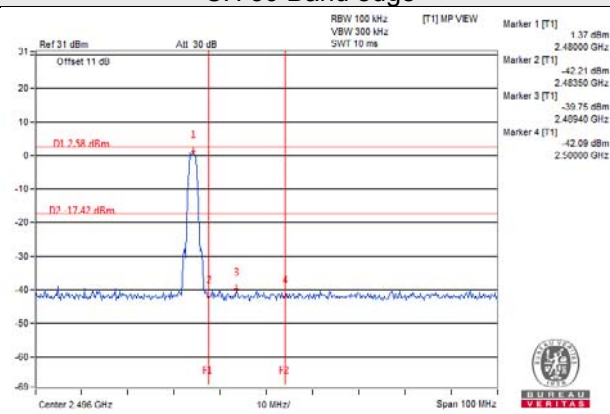
CH 39



CH 0 Band edge



CH 39 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.

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

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Email: service.adt@tw.bureauveritas.com

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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