

FCC Test Report

Report No.: RF181227C16

FCC ID: ACJ932AZ1801

Test Model: AZ1801

Series Model: CQ-RZ38A0AN, CQ-RZ38A1AN, CQ-RZ38A2AN, CQ-RZ19A0AN, CQ-RZ19A1AN, CQ-RZ39A0AN, CQ-RZ39A1AN, CQ-RZ39A2AN, CQ-RZ1AA0AN, CQ-RZ1AA1AN, CQ-RZ1AA2AN (Refer to item 3.1 for more detail)

Received Date: Dec. 27, 2018

Test Date: Jan. 09 ~ Jan. 15, 2019

Issued Date: Jan. 17, 2019

Applicant: Panasonic Corporation of North America

Address: Two Riverfront Plaza, 9th Floor Newark, NJ 07102-5490

Manufacture: Panasonic India Pvt Ltd.

Manufacture's address: Plot No.1, State Highway 15, 15A, Village Bid Dadri, Jhajjar-124103 Haryana, India

Factory: Panasonic India Pvt Ltd.

Factory's address: Plot No.1, State Highway 15, 15A, Village Bid Dadri, Jhajjar-124103 Haryana, India

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

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Test Location: No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)

FCC Registration / Designation Number: 788550 / TW0003



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Table of Contents

Release Control Record	4
1 Certificate of Conformity	5
2 Summary of Test Results	6
2.1 Measurement Uncertainty.....	6
2.2 Modification Record.....	6
3 General Information	7
3.1 General Description of EUT.....	7
3.2 Description of Test Modes.....	8
3.2.1 Test Mode Applicability and Tested Channel Detail.....	9
3.3 Description of Support Units.....	10
3.3.1 Configuration of System under Test.....	10
3.4 General Description of Applied Standards.....	10
4 Test Types and Results	11
4.1 Radiated Emission and Bandedge Measurement.....	11
4.1.1 Limits of Radiated Emission and Bandedge Measurement.....	11
4.1.2 Test Instruments.....	12
4.1.3 Test Procedures.....	13
4.1.4 Deviation from Test Standard.....	13
4.1.5 Test Setup.....	14
4.1.6 EUT Operating Conditions.....	15
4.1.7 Test Results.....	16
4.2 Conducted Emission Measurement.....	24
4.2.1 Limits of Conducted Emission Measurement.....	24
4.2.2 Test Instruments.....	24
4.2.3 Test Procedures.....	25
4.2.4 Deviation from Test Standard.....	25
4.2.5 Test Setup.....	25
4.2.6 EUT Operating Conditions.....	25
4.2.7 Test Results.....	26
4.3 Number of Hopping Frequency Used.....	28
4.3.1 Limits of Hopping Frequency Used Measurement.....	28
4.3.2 Test Setup.....	28
4.3.3 Test Instruments.....	28
4.3.4 Test Procedure.....	28
4.3.5 Deviation from Test Standard.....	28
4.3.6 Test Results.....	28
4.4 Dwell Time on Each Channel.....	30
4.4.1 Limits of Dwell Time on Each Channel Measurement.....	30
4.4.2 Test Setup.....	30
4.4.3 Test Instruments.....	30
4.4.4 Test Procedures.....	30
4.4.5 Deviation from Test Standard.....	30
4.4.6 Test Results.....	31
4.5 Channel Bandwidth.....	33
4.5.1 Limits of Channel Bandwidth Measurement.....	33
4.5.2 Test Setup.....	33
4.5.3 Test Instruments.....	33
4.5.4 Test Procedure.....	33
4.5.5 Deviation from Test Standard.....	33
4.5.6 EUT Operating Condition.....	33
4.5.7 Test Results.....	34
4.6 Hopping Channel Separation.....	35
4.6.1 Limits of Hopping Channel Separation Measurement.....	35

4.6.2	Test Setup	35
4.6.3	Test Instruments	35
4.6.4	Test Procedure	35
4.6.5	Deviation from Test Standard	35
4.6.6	Test Results	36
4.7	Maximum Output Power	37
4.7.1	Limits of Maximum Output Power Measurement	37
4.7.2	Test Setup	37
4.7.3	Test Instruments	37
4.7.4	Test Procedure	37
4.7.5	Deviation from Test Standard	37
4.7.6	EUT Operating Condition	37
4.7.7	Test Results	37
4.8	Conducted Out of Band Emission Measurement	38
4.8.1	Limits Of Conducted Out Of Band Emission Measurement	38
4.8.2	Test Instruments	38
4.8.3	Test Procedure	38
4.8.4	Deviation from Test Standard	38
4.8.5	EUT Operating Condition	38
4.8.6	Test Results	38
5	Pictures of Test Arrangements	41
	Appendix – Information of the Testing Laboratories	42

Release Control Record

Issue No.	Description	Date Issued
RF181227C16	Original release	Jan. 17, 2019

1 Certificate of Conformity

Product: Car Audio

Brand: Panasonic

Test Model: AZ1801

Series Model: CQ-RZ38A0AN, CQ-RZ38A1AN, CQ-RZ38A2AN, CQ-RZ19A0AN, CQ-RZ19A1AN, CQ-RZ39A0AN, CQ-RZ39A1AN, CQ-RZ39A2AN, CQ-RZ1AA0AN, CQ-RZ1AA1AN, CQ-RZ1AA2AN (Refer to item 3.1 for more detail)

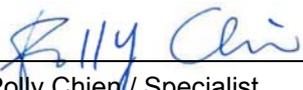
Sample Status: Engineering Sample

Applicant: Panasonic Corporation of North America

Test Date: Jan. 09 ~ Jan. 15, 2019

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 :  , **Date:** Jan. 17, 2019
Polly Chien / Specialist

Approved by :  , **Date:** Jan. 17, 2019
Bruce Chen / 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 -25.53dB at 0.15391MHz.
15.247(a)(1)(iii)	Number of Hopping Frequency Used	Pass	Meet the requirement of limit.
15.247(a)(1)(iii)	Dwell Time on Each Channel	Pass	Meet the requirement of limit.
15.247(a)(1)	1. Hopping Channel Separation 2. Spectrum Bandwidth of a Frequency Hopping Sequence Spread Spectrum System	Pass	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power	Pass	Meet the requirement of limit.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -2.2dB at 730.34MHz.
15.247(d)	Antenna Port Emission	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	No antenna connector is used.

Note: If The Frequency Hopping System operating in 2400-2483.5MHz band and the output power less than 125mW. The hopping channel carrier frequencies separated by a minimum of 25kHz or two-thirds of the 20dB bandwidth of hopping channel whichever is greater.

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)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.94 dB
Radiated Emissions up to 1 GHz	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	Car Audio
Brand	Panasonic
Test Model	AZ1801
Series Model	CQ-RZ38A0AN, CQ-RZ38A1AN, CQ-RZ38A2AN, CQ-RZ19A0AN, CQ-RZ19A1AN, CQ-RZ39A0AN, CQ-RZ39A1AN, CQ-RZ39A2AN, CQ-RZ1AA0AN, CQ-RZ1AA1AN, CQ-RZ1AA2AN
Model Difference	For marketing purpose
Sample Status	Engineering Sample
Nominal Voltage	12Vdc (Power Supply)
Modulation Type	GFSK, $\pi/4$ -DQPSK, 8DPSK
Modulation Technology	FHSS
Transfer Rate	1/2/3Mbps
Operating Frequency	2402~2480MHz
Number of Channel	79
Output Power	0.863mW
Antenna Type	Pattern antenna with -1.8dBi
Antenna Connector	NA
Accessory Device	NA
Cable Supplied	NA

3.2 Description of Test Modes

79 channels are provided to this EUT:

Channel	Freq. (MHz)						
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461		

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:

1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**

Radiated Emission Test (Above 1GHz):

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

EUT Configure Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Pakcet Type	Remark
-	0 to 78	0, 39, 78	FHSS	GFSK	DH5	-
	0 to 78	0, 39, 78	FHSS	8DPSK	3DH5	-

Radiated Emission Test (Below 1GHz):

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

EUT Configure Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Pakcet Type	Remark
-	0 to 78	39	FHSS	8DPSK	3DH5	-

Power Line Conducted Emission Test:

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

EUT Configure Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Pakcet Type	Remark
-	0 to 78	39	FHSS	8DPSK	3DH5	-

Antenna Port Conducted Measurement:

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

EUT Configure Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Pakcet Type	Remark
-	0 to 78	0, 39, 78	FHSS	GFSK	DH5	-
	0 to 78	0, 39, 78	FHSS	8DPSK	3DH5	-

Test Condition:

Applicable to	Environmental Conditions	Input Power	Tested by
RE≥1G	24deg. C, 66%RH	12Vdc	Greg Lin
RE<1G	24deg. C, 66%RH	12Vdc	Greg Lin
PLC	25deg. C, 75%RH	12Vdc	Luis Lee
APCM	25deg. C, 60%RH	12Vdc	Chris Lin

3.3 Description of Support Units

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

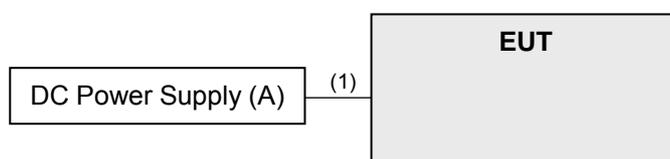
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	DC power supply	Keysight	U8002A	MY56330015	NA	-

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC cable	1	2	N	0	-

3.3.1 Configuration of System under Test



3.4 General Description of Applied Standards

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

FCC Part 15, Subpart C (15.247)

ANSI C63.10:2013

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

Note:

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

4.1.2 Test Instruments

Tested date: Jan. 09 ~ Jan. 10, 2019

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver KEYSIGHT	N9038A	MY55420137	Apr. 11, 2018	Apr. 10, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	May 29, 2018	May 28, 2019
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Nov. 21, 2018	Nov. 20, 2019
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Nov. 25, 2018	Nov. 24, 2019
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 25, 2018	Nov. 24, 2019
Loop Antenna TESEQ	HLA 6121	45745	Jun. 14, 2018	Jun. 13, 2019
Preamplifier Agilent (Below 1GHz)	8447D	2944A10638	Aug. 08, 2018	Aug. 07, 2019
Preamplifier Agilent (Above 1GHz)	8449B	3008A01638	Feb. 22, 2018	Feb. 21, 2019
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM800 0	CABLE-CH9-02 (248780+171006)	Jan. 15, 2018	Jan. 14, 2019
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/ 4)	Aug. 08, 2018	Aug. 07, 2019
RF signal cable Woken	8D-FB	Cable-CH9-01	Jul. 31, 2018	Jul. 30, 2019
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/MY5519 0004/MY55190007/MY 55210005	Jul. 17, 2018	Jul. 16, 2019

- Note:
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Chamber 9.
 3. The FCC Designation Number is TW0003. The number will be varied with the Lab location and scope as attached.
 4. The IC Site Registration No. is 7450F-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:

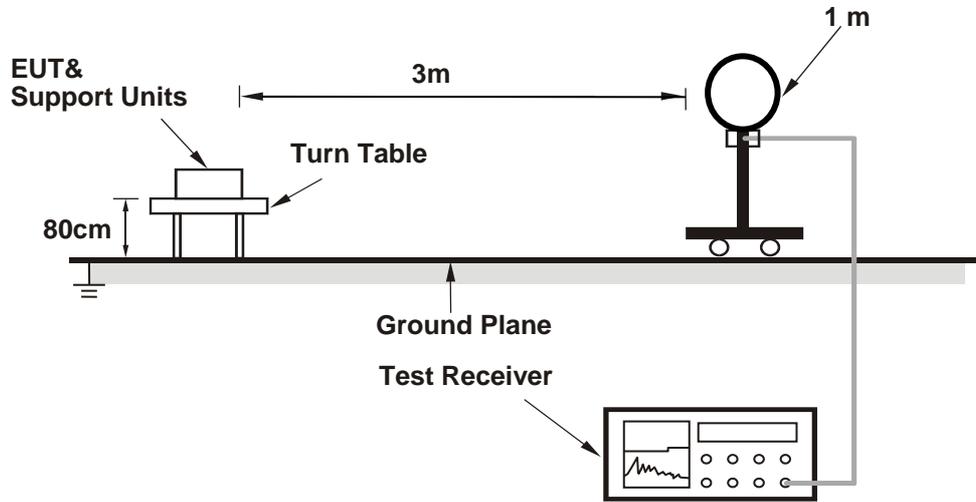
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

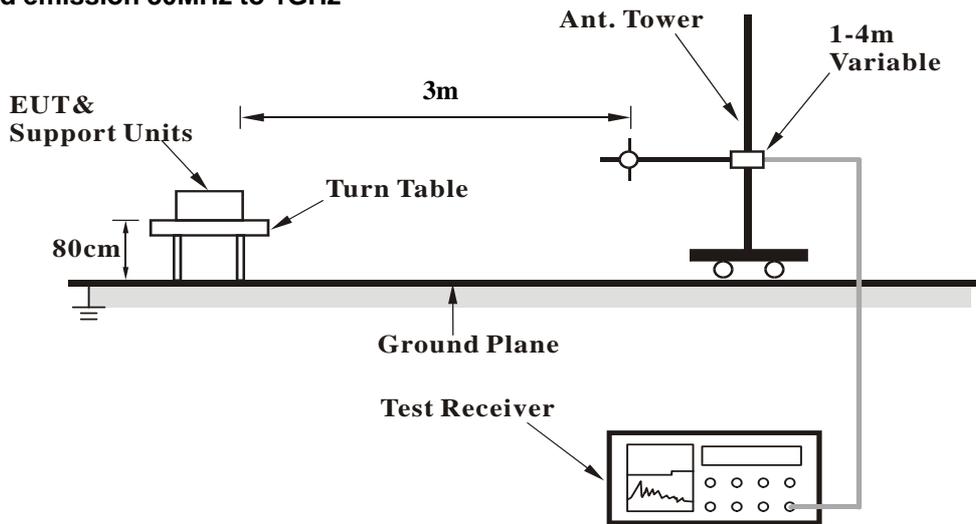
No deviation.

4.1.5 Test Setup

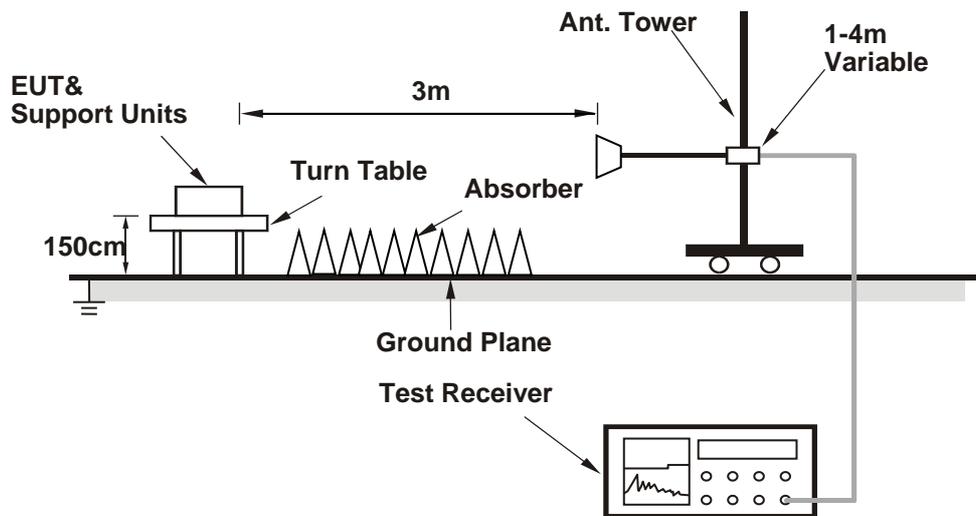
For Radiated emission below 30MHz



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

Above 1GHz data:

GFSK

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

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	56.5 PK	74.0	-17.5	1.21 H	297	24.5	32.0
2	2390.00	46.1 AV	54.0	-7.9	1.21 H	297	14.1	32.0
3	*2402.00	88.5 PK			1.08 H	303	56.5	32.0
4	*2402.00	87.7 AV			1.08 H	303	55.7	32.0
5	4804.00	43.0 PK	74.0	-31.0	1.02 H	36	41.8	1.2
6	4804.00	31.5 AV	54.0	-22.5	1.02 H	36	30.3	1.2
7	#7206.00	52.5 PK	74.0	-21.5	1.58 H	4	44.1	8.4
8	#7206.00	46.5 AV	54.0	-7.5	1.58 H	4	38.1	8.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.4 PK	74.0	-16.6	2.60 V	356	25.4	32.0
2	2390.00	47.3 AV	54.0	-6.7	2.60 V	356	15.3	32.0
3	*2402.00	90.6 PK			3.12 V	338	58.6	32.0
4	*2402.00	89.8 AV			3.12 V	338	57.8	32.0
5	4804.00	42.5 PK	74.0	-31.5	1.00 V	276	41.3	1.2
6	4804.00	30.7 AV	54.0	-23.3	1.00 V	276	29.5	1.2
7	#7206.00	52.8 PK	74.0	-21.2	2.41 V	354	44.4	8.4
8	#7206.00	47.7 AV	54.0	-6.3	2.41 V	354	39.3	8.4

Remarks:

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

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

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	*2441.00	88.9 PK			1.13 H	308	56.9	32.0
2	*2441.00	88.1 AV			1.13 H	308	56.1	32.0
3	4882.00	42.8 PK	74.0	-31.2	1.16 H	57	41.5	1.3
4	4882.00	31.1 AV	54.0	-22.9	1.16 H	57	29.8	1.3
5	7323.00	50.9 PK	74.0	-23.1	1.68 H	17	42.6	8.3
6	7323.00	45.1 AV	54.0	-8.9	1.68 H	17	36.8	8.3

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	*2441.00	90.6 PK			3.05 V	337	58.6	32.0
2	*2441.00	90.0 AV			3.05 V	337	58.0	32.0
3	4882.00	43.1 PK	74.0	-30.9	1.08 V	286	41.8	1.3
4	4882.00	31.7 AV	54.0	-22.3	1.08 V	286	30.4	1.3
5	7323.00	51.8 PK	74.0	-22.2	1.38 V	40	43.5	8.3
6	7323.00	46.1 AV	54.0	-7.9	1.38 V	40	37.8	8.3

Remarks:

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

CHANNEL	TX Channel 78	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	89.5 PK			1.08 H	296	57.5	32.0
2	*2480.00	88.7 AV			1.08 H	296	56.7	32.0
3	2483.50	59.7 PK	74.0	-14.3	1.21 H	311	27.7	32.0
4	2483.50	44.4 AV	54.0	-9.6	1.21 H	311	12.4	32.0
5	4960.00	43.4 PK	74.0	-30.6	1.25 H	45	41.7	1.7
6	4960.00	31.4 AV	54.0	-22.6	1.25 H	45	29.7	1.7
7	7440.00	51.2 PK	74.0	-22.8	1.59 H	22	42.9	8.3
8	7440.00	45.0 AV	54.0	-9.0	1.59 H	22	36.7	8.3

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	91.2 PK			2.97 V	320	59.2	32.0
2	*2480.00	90.5 AV			2.97 V	320	58.5	32.0
3	2483.50	60.1 PK	74.0	-13.9	2.84 V	307	28.1	32.0
4	2483.50	44.8 AV	54.0	-9.2	2.84 V	307	12.8	32.0
5	4960.00	43.9 PK	74.0	-30.1	1.14 V	267	42.2	1.7
6	4960.00	31.9 AV	54.0	-22.1	1.14 V	267	30.2	1.7
7	7440.00	52.0 PK	74.0	-22.0	2.98 V	337	43.7	8.3
8	7440.00	44.5 AV	54.0	-9.5	2.98 V	337	36.2	8.3

Remarks:

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

8DPSK

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

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	56.8 PK	74.0	-17.2	1.02 H	298	24.8	32.0
2	2390.00	45.3 AV	54.0	-8.7	1.02 H	298	13.3	32.0
3	*2402.00	88.4 PK			1.07 H	309	56.4	32.0
4	*2402.00	84.3 AV			1.07 H	309	52.3	32.0
5	4804.00	42.9 PK	74.0	-31.1	1.15 H	297	41.7	1.2
6	4804.00	30.5 AV	54.0	-23.5	1.15 H	297	29.3	1.2
7	#7206.00	52.0 PK	74.0	-22.0	1.63 H	11	43.6	8.4
8	#7206.00	44.8 AV	54.0	-9.2	1.63 H	11	36.4	8.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.2 PK	74.0	-16.8	3.02 V	331	25.2	32.0
2	2390.00	45.5 AV	54.0	-8.5	3.02 V	331	13.5	32.0
3	*2402.00	90.9 PK			3.12 V	340	58.9	32.0
4	*2402.00	86.9 AV			3.12 V	340	54.9	32.0
5	4804.00	43.3 PK	74.0	-30.7	1.06 V	264	42.1	1.2
6	4804.00	31.1 AV	54.0	-22.9	1.06 V	264	29.9	1.2
7	#7206.00	52.9 PK	74.0	-21.1	2.42 V	349	44.5	8.4
8	#7206.00	45.5 AV	54.0	-8.5	2.42 V	349	37.1	8.4

Remarks:

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

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

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	*2441.00	88.9 PK			1.09 H	314	56.9	32.0
2	*2441.00	84.9 AV			1.09 H	314	52.9	32.0
3	4882.00	42.7 PK	74.0	-31.3	1.21 H	302	41.4	1.3
4	4882.00	30.8 AV	54.0	-23.2	1.21 H	302	29.5	1.3
5	7323.00	52.8 PK	74.0	-21.2	1.74 H	6	44.5	8.3
6	7323.00	45.7 AV	54.0	-8.3	1.74 H	6	37.4	8.3

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	*2441.00	91.4 PK			3.83 V	325	59.4	32.0
2	*2441.00	87.4 AV			3.83 V	325	55.4	32.0
3	4882.00	44.1 PK	74.0	-29.9	1.12 V	251	42.8	1.3
4	4882.00	31.7 AV	54.0	-22.3	1.12 V	251	30.4	1.3
5	7323.00	53.5 PK	74.0	-20.5	2.48 V	353	45.2	8.3
6	7323.00	46.6 AV	54.0	-7.4	2.48 V	353	38.3	8.3

Remarks:

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

CHANNEL	TX Channel 78	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	89.4 PK			1.14 H	315	57.4	32.0
2	*2480.00	85.3 AV			1.14 H	315	53.3	32.0
3	2483.50	56.8 PK	74.0	-17.2	1.18 H	303	24.8	32.0
4	2483.50	44.6 AV	54.0	-9.4	1.18 H	303	12.6	32.0
5	4960.00	43.3 PK	74.0	-30.7	1.22 H	308	41.6	1.7
6	4960.00	31.2 AV	54.0	-22.8	1.22 H	308	29.5	1.7
7	7440.00	53.0 PK	74.0	-21.0	1.72 H	19	44.7	8.3
8	7440.00	44.7 AV	54.0	-9.3	1.72 H	19	36.4	8.3

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	91.8 PK			3.02 V	323	59.8	32.0
2	*2480.00	87.7 AV			3.02 V	323	55.7	32.0
3	2483.50	62.2 PK	74.0	-11.8	2.91 V	334	30.2	32.0
4	2483.50	45.4 AV	54.0	-8.6	2.91 V	334	13.4	32.0
5	4960.00	44.1 PK	74.0	-29.9	1.07 V	277	42.4	1.7
6	4960.00	32.0 AV	54.0	-22.0	1.07 V	277	30.3	1.7
7	7440.00	54.2 PK	74.0	-19.8	3.87 V	335	45.9	8.3
8	7440.00	45.9 AV	54.0	-8.1	3.87 V	335	37.6	8.3

Remarks:

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

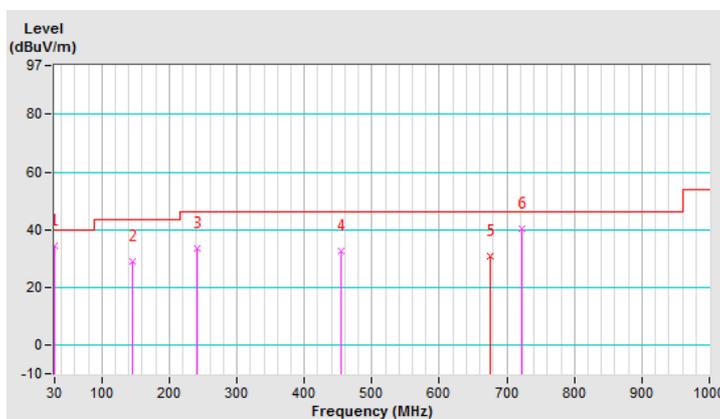
Below 1GHz worst-case data: 8DPSK

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.00	34.3 QP	40.0	-5.7	1.25 H	325	45.5	-11.2
2	145.43	29.1 QP	43.5	-14.4	1.50 H	259	38.6	-9.5
3	240.49	33.6 QP	46.0	-12.4	1.00 H	42	43.6	-10.0
4	453.89	32.8 QP	46.0	-13.2	1.25 H	4	38.0	-5.2
5	676.00	31.0 QP	46.0	-15.0	1.00 H	3	32.0	-1.0
6	721.61	40.2 QP	46.0	-5.8	1.25 H	88	40.3	-0.1

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 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.

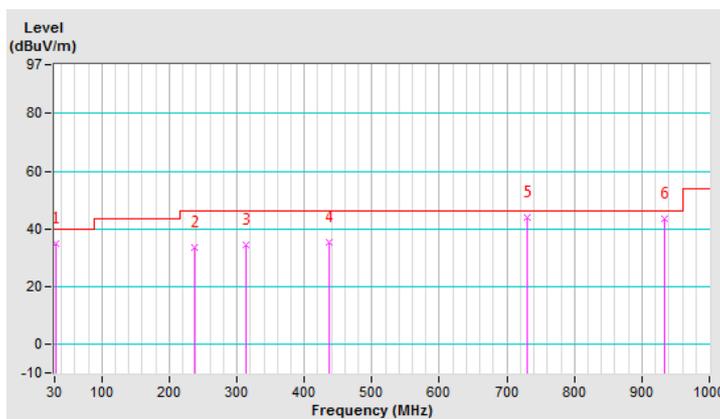


CHANNEL	TX Channel 39	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	31.94	34.8 QP	40.0	-5.2	1.25 V	199	45.9	-11.1
2	237.58	33.4 QP	46.0	-12.6	1.00 V	158	43.6	-10.2
3	314.21	34.5 QP	46.0	-11.5	1.50 V	207	42.0	-7.5
4	437.40	35.4 QP	46.0	-10.6	1.50 V	15	40.8	-5.4
5	730.34	43.8 QP	46.0	-2.2	1.00 V	15	43.8	0.0
6	933.07	43.4 QP	46.0	-2.6	1.25 V	168	39.5	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 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 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

Tested date: Jan. 15, 2019

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCS30	100291	Sep. 03, 2018	Sep. 02, 2019
RF signal cable Woken	5D-FB	Cable-cond1-01	Sep. 05, 2018	Sep. 04, 2019
LISN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 26, 2018	Feb. 25, 2019
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 19, 2018	Aug. 18, 2019
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.

3. The VCCI Site Registration No. is C-2040.

4.2.3 Test Procedures

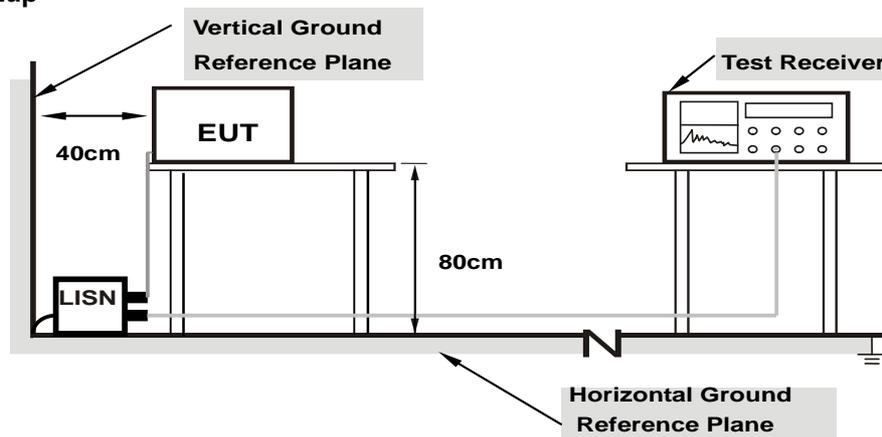
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance 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 item 4.1.6.

4.2.7 Test Results

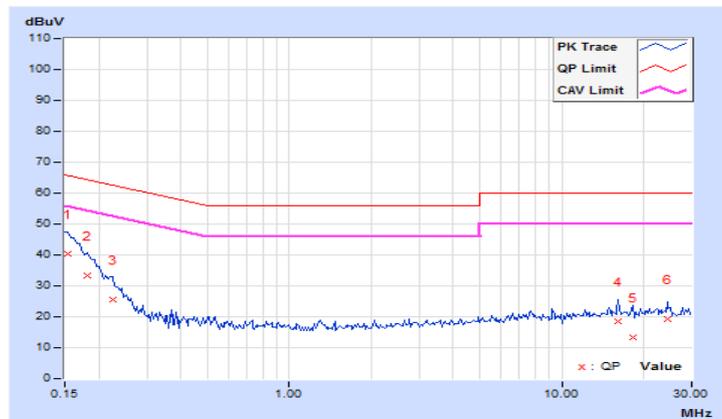
Worst-case data: 8DPSK

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Channel	TX Channel 39		

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	0.15391	9.67	30.59	3.65	40.26	13.32	65.79
2	0.18125	9.67	23.66	1.22	33.33	10.89	64.43	54.43	-31.10	-43.54
3	0.22422	9.67	15.75	2.16	25.42	11.83	62.66	52.66	-37.24	-40.83
4	16.16406	9.89	8.76	7.58	18.65	17.47	60.00	50.00	-41.35	-32.53
5	18.24609	9.90	3.28	0.16	13.18	10.06	60.00	50.00	-46.82	-39.94
6	24.43750	9.91	9.17	7.77	19.08	17.68	60.00	50.00	-40.92	-32.32

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.

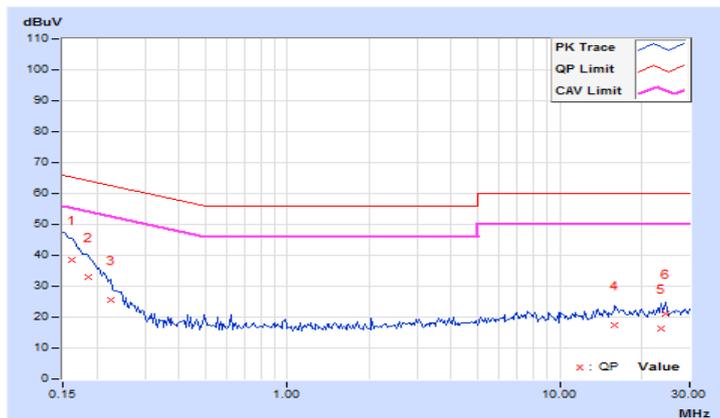


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Channel	TX Channel 39		

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	0.16172	9.68	29.01	1.83	38.69	11.51	65.38
2	0.18516	9.67	23.20	4.43	32.87	14.10	64.25	54.25	-31.38	-40.15
3	0.22422	9.67	15.75	1.08	25.42	10.75	62.66	52.66	-37.24	-41.91
4	15.92188	9.95	7.64	3.01	17.59	12.96	60.00	50.00	-42.41	-37.04
5	23.50000	10.02	6.28	2.74	16.30	12.76	60.00	50.00	-43.70	-37.24
6	24.45313	10.03	11.01	3.37	21.04	13.40	60.00	50.00	-38.96	-36.60

Remarks:

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



4.3 Number of Hopping Frequency Used

4.3.1 Limits of Hopping Frequency Used Measurement

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

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

- a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
- b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
- c. Set the SA on MaxHold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.
- d. Set the SA on View mode and then plot the result on SA screen.
- e. Repeat above procedures until all frequencies measured were complete.

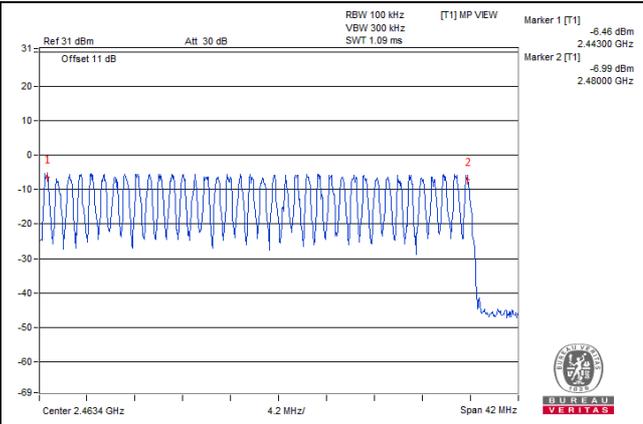
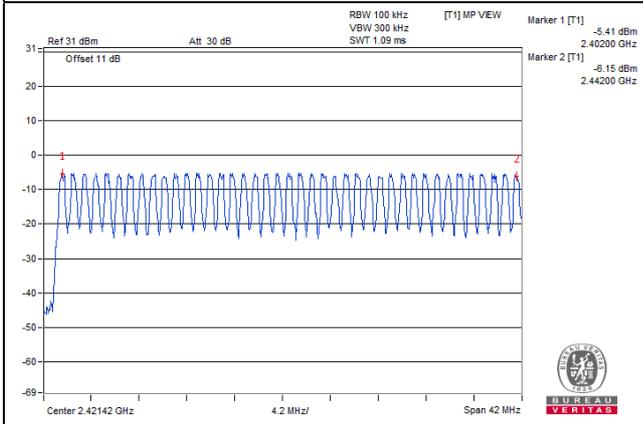
4.3.5 Deviation from Test Standard

No deviation.

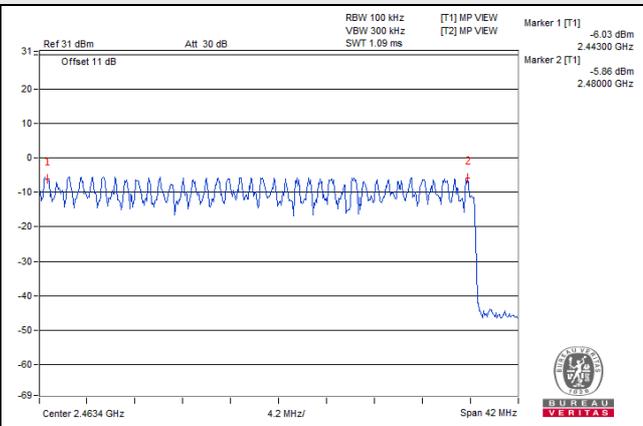
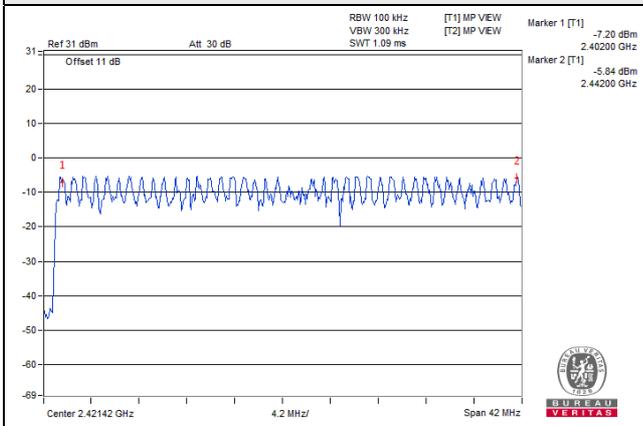
4.3.6 Test Results

There are 79 hopping frequencies in the hopping mode. Please refer to next page for the test result. On the plots, it shows that the hopping frequencies are equally spaced.

GFSK



8DPSK



4.4 Dwell Time on Each Channel

4.4.1 Limits of Dwell Time on Each Channel Measurement

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

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

4.4.5 Deviation from Test Standard

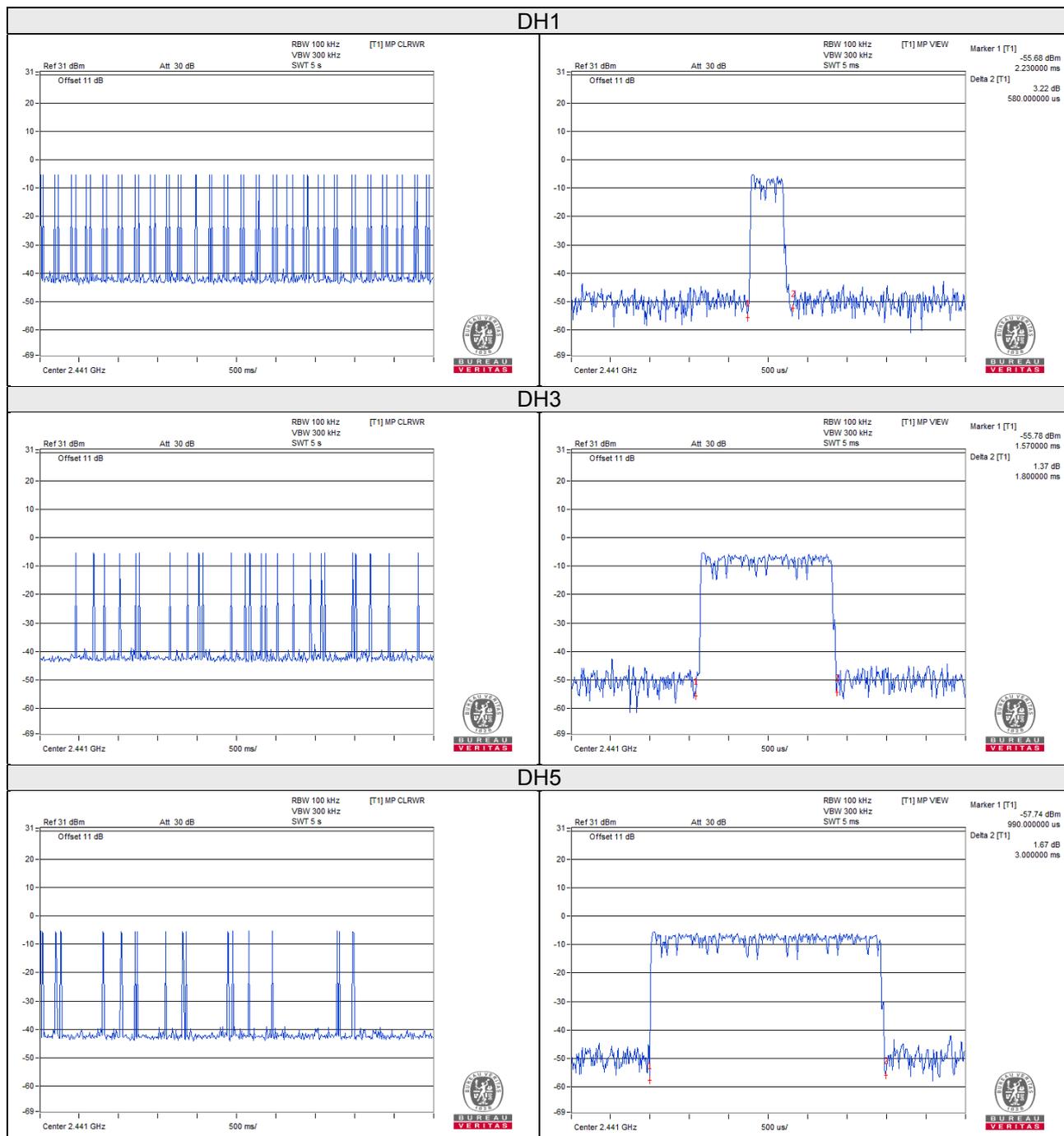
No deviation.

4.4.6 Test Results

GFSK

Mode	Number of transmission in a 31.6 (79Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
DH1	50 (times / 5 sec) * 6.32 = 316.00 times	0.580	183.280	400
DH3	25 (times / 5 sec) * 6.32 = 158.00 times	1.800	284.400	400
DH5	17 (times / 5 sec) * 6.32 = 107.44 times	3.000	322.320	400

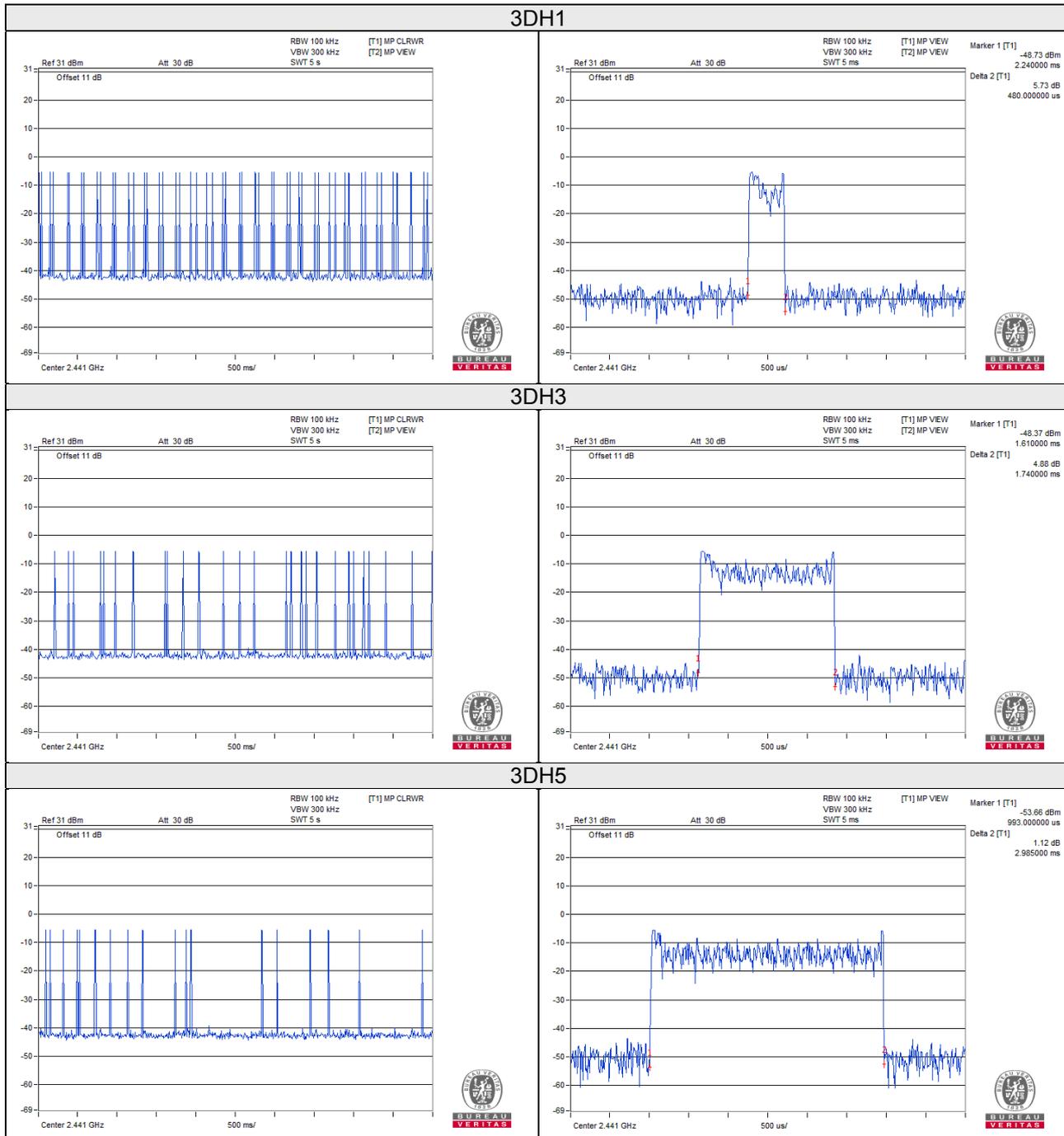
Note: Test plots of the transmitting time slot are shown as below.



8DPSK

Mode	Number of transmission in a 31.6 (79Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
3DH1	50 (times / 5 sec) * 6.32 = 316.00 times	0.480	151.680	400
3DH3	26 (times / 5 sec) * 6.32 = 164.32 times	1.740	285.917	400
3DH5	18 (times / 5 sec) * 6.32 = 113.76 times	2.985	339.574	400

Note: Test plots of the transmitting time slot are shown as below.



4.5 Channel Bandwidth

4.5.1 Limits of Channel Bandwidth Measurement

For frequency hopping system operating in the 2400-2483.5MHz, If the 20dB bandwidth of hopping channel is greater than 25kHz, two-thirds 20dB bandwidth of hopping channel shall be a minimum limit for the hopping channel separation.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

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

4.5.5 Deviation from Test Standard

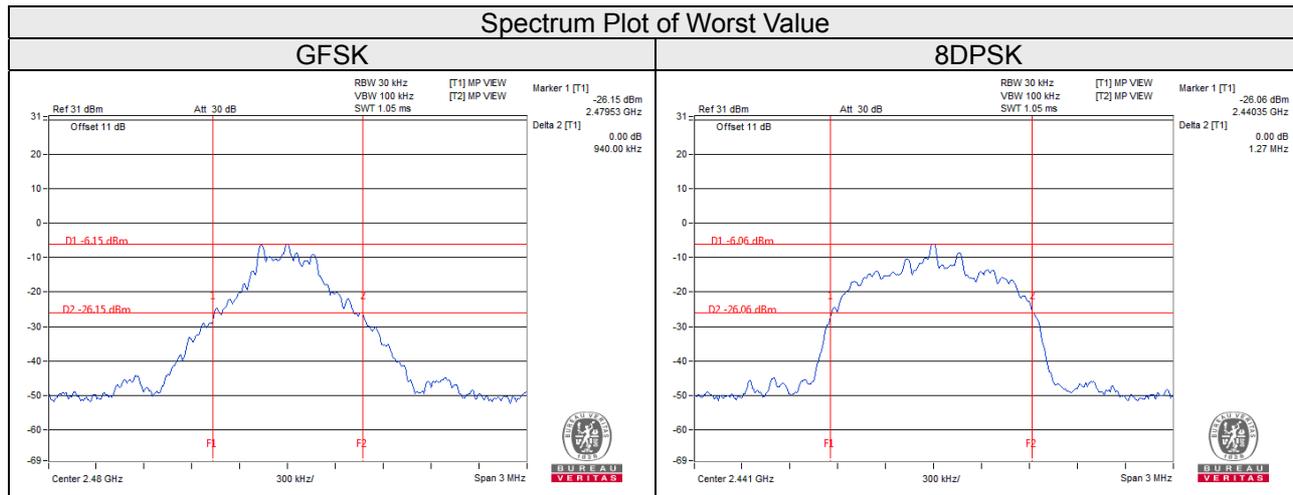
No deviation.

4.5.6 EUT Operating Condition

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

4.5.7 Test Results

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	
		GFSK	8DPSK
0	2402	0.93	1.26
39	2441	0.93	1.27
78	2480	0.94	1.27



4.6 Hopping Channel Separation

4.6.1 Limits of Hopping Channel Separation Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

Measurement Procedure REF

- Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.
- By using the MaxHold function record the separation of two adjacent channels.
- Measure the frequency difference of these two adjacent channels by SA MARK function. And then plot the result on SA screen.
- Repeat above procedures until all frequencies measured were complete.

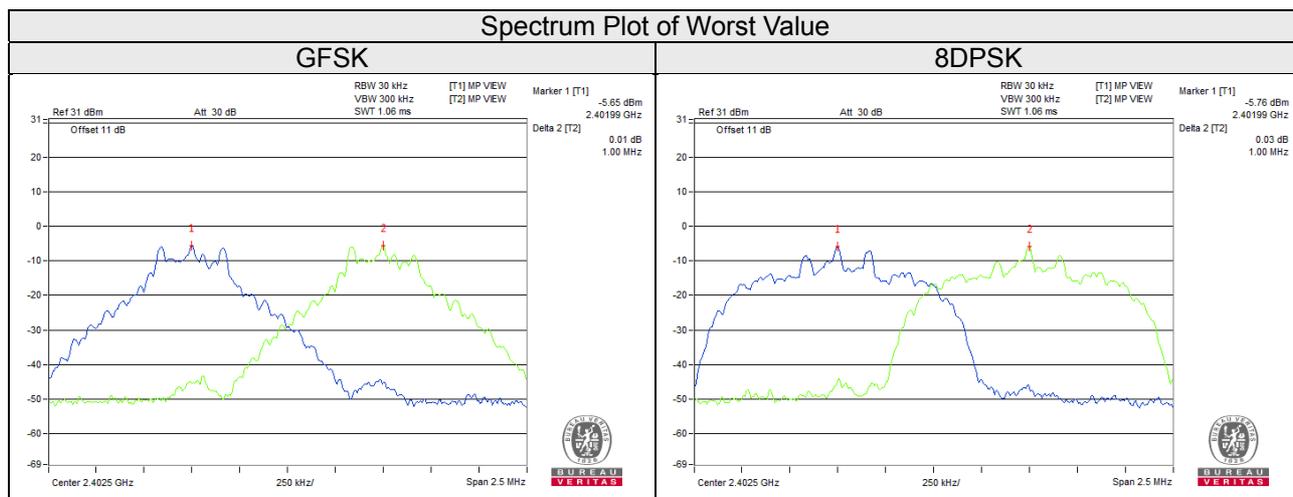
4.6.5 Deviation from Test Standard

No deviation.

4.6.6 Test Results

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)		20dB Bandwidth (MHz)		Minimum Limit (MHz)		Pass / Fail
		GFSK	8DPSK	GFSK	8DPSK	GFSK	8DPSK	
0	2402	1.00	1.00	0.93	1.26	0.62	0.84	Pass
39	2441	1.00	1.00	0.93	1.27	0.62	0.85	Pass
78	2480	1.00	1.00	0.94	1.27	0.63	0.85	Pass

Note: The minimum limit is two-third 20dB bandwidth.

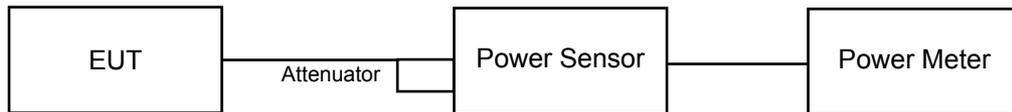


4.7 Maximum Output Power

4.7.1 Limits of Maximum Output Power Measurement

The Maximum Output Power Measurement is 125mW.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

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

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

Channel	Frequency (MHz)	Peak Power (mW)		Peak Power (dBm)		Power Limit (mW)	Pass / Fail
		GFSK	8DPSK	GFSK	8DPSK		
0	2402	0.847	0.849	-0.72	-0.71	125	Pass
39	2441	0.798	0.863	-0.98	-0.64	125	Pass
78	2480	0.724	0.857	-1.40	-0.67	125	Pass

4.8 Conducted Out of Band Emission Measurement

4.8.1 Limits Of Conducted Out Of Band Emission Measurement

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

4.8.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.8.3 Test Procedure

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

4.8.4 Deviation from Test Standard

No deviation.

4.8.5 EUT Operating Condition

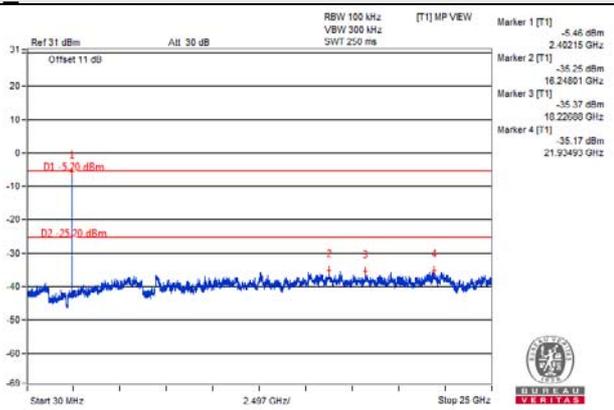
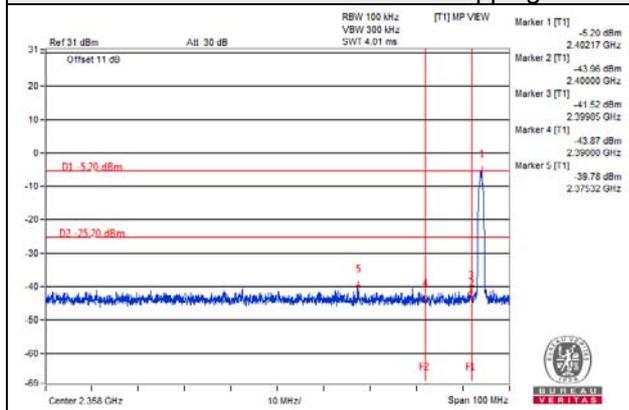
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.8.6 Test Results

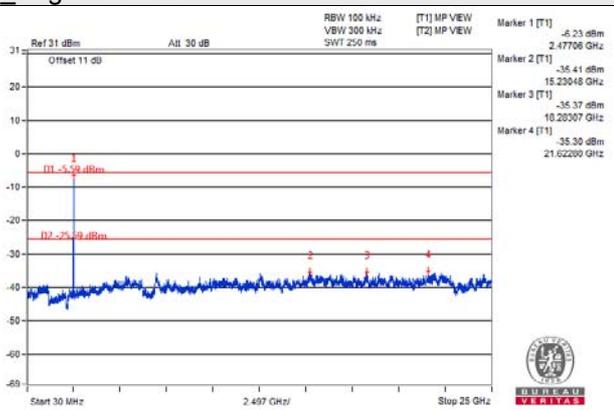
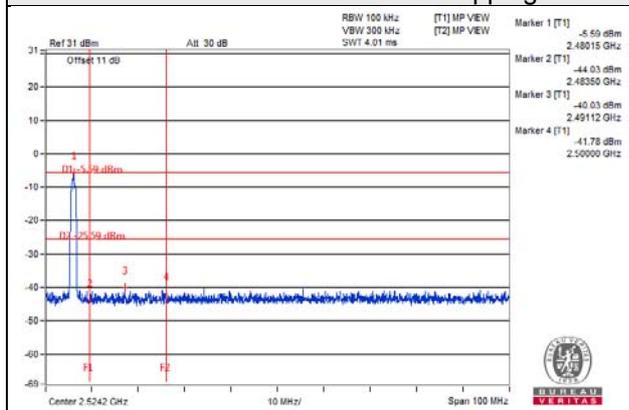
The spectrum plots are attached on the following images. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

8DPSK

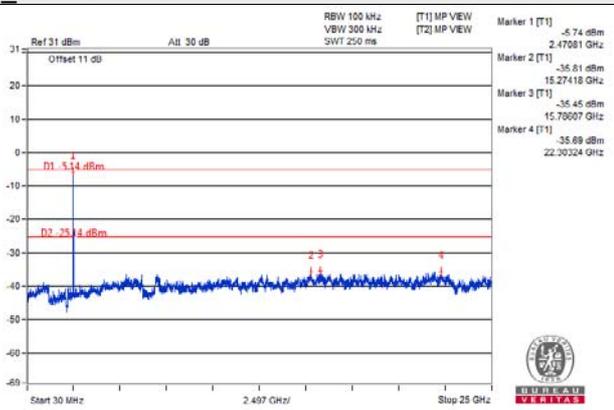
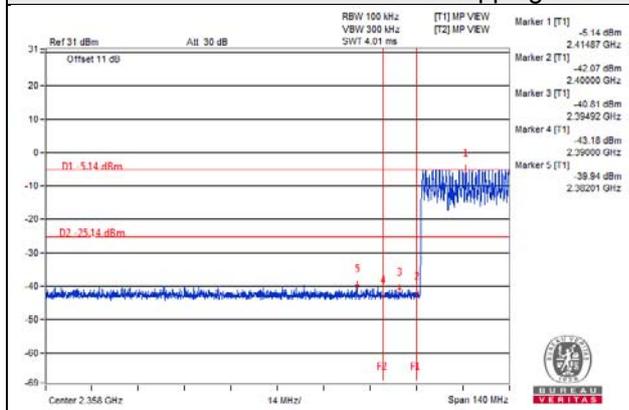
Hopping disabled Low Channel



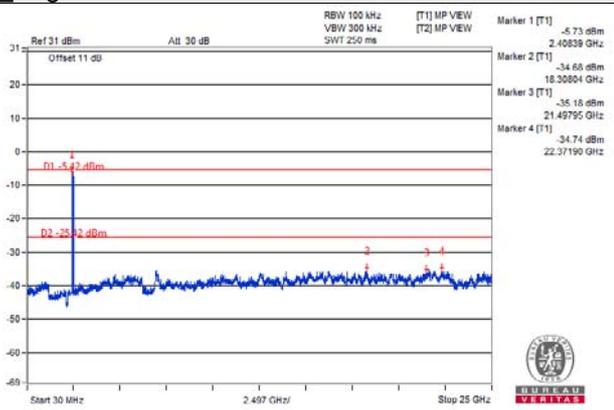
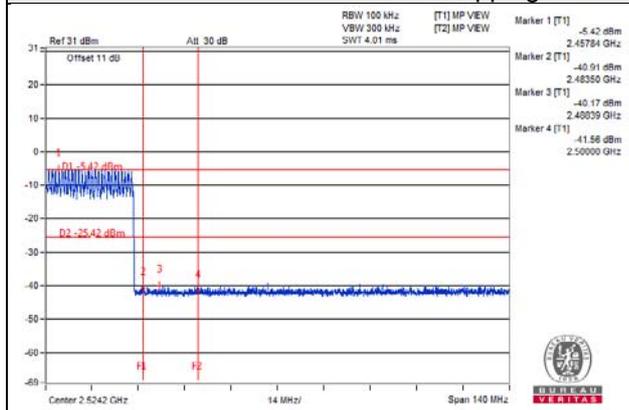
Hopping disabled High Channel



Hopping enabled Low Channel



Hopping enabled High Channel



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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