AUDIX Technology Corp.
No. 53-11, Dingfu, Linkou, Dist.,
New Taipei City244, Taiwan

Tel: +886 2 26099301
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FCC 15.247
2.4 GHz Report

for

Dyaco International Inc.

12F, No. 111, Songjiang Road,
Taipei, Taiwan

Product Name : ENT CONSOLE
Model Name : (1)WT002 (2)WB001
FCC ID : 2AHVL-IEITB1DYACO

Prepared by: : AUDIX Technology Corporation,
EMC Department

Testing Laboratory
1724

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APPENDIX A TEST PLOTS
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TEST REPORT CERTIFICATION

Applicant	:	Dyaco International Inc.
Manufacture	:	Dyaco Canada Inc.
Product Name	:	ENT CONSOLE
Model No.	:	(1)WT002 (2)WB001
Serial No.	:	N/A
Power Supply	:	DC 12V

Applicable Standards:
47 CFR FCC Part 15 Subpart C: 2016
ANSI C63.10:2013
FCC Public Notice DA 00-705

AUDIX Technology Corp. tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report. ***AUDIX Technology Corp.*** does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens and samples.

Date of Test: 2016. 11. 02 ~ 21 Date of Report: 2016. 12. 16

Producer: Tina Huang
(Tina Huang/Administrator)

Signatory: Ben Cheng
(Ben Cheng/Manager)

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1. REPORT HISTORY

Revision	Date	Revision Summary	Report Number
0	2016. 12. 16	Original Report.	EM-F160857

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2. SUMMARY OF TEST RESULTS

Rule	Description	Results
15.207	Conducted Emission	**PASS**
15.247(d)/ 15.205	Radiated Band Edge and Radiated Spurious Emission	**PASS**
15.247(a)(1)	20dB Bandwidth	**PASS**
15.247(a)(1)	Carrier Frequency Separation	**PASS**
15.247(a)(1)(iii)	Time of Occupancy	**PASS**
15.247(a)(1)(iii)	Number of Hopping Channels	**PASS**
15.247(b)(1)	Maximum Peak Output Power	**PASS**
15.247(d)	Conducted Band Edges and Conducted Spurious Emission	**PASS**
15.203	Antenna Requirement	**PASS**

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3. GENERAL INFORMATION

3.1. Description of EUT

<table>
<tr><td>Product</td><td>ENT CONSOLE</td></tr>
<tr><td>Model Number</td><td>(1)WT002 (2)WB001
Above two models difference are in inch of LCD panel and antenna gain, otherwise include RF circuit are identical. Please to refer following list:
<table>
<tr><th>Model</th><th>Inch of LCD Panel</th></tr>
<tr><td>WT002</td><td>15.6” (SM5D2TV001)</td></tr>
<tr><td>WB001</td><td>10.2”</td></tr>
</table>
Both two models are test in conducted and radiated emission measurement and model WT002 (max. antenna gain) is only test in all RF conducted test items.</td></tr>
<tr><td>Serial Number</td><td>N/A</td></tr>
<tr><td>Applicant</td><td>Dyaco International Inc.
12F, No. 111, Songjiang Road, Taipei, Taiwan.</td></tr>
<tr><td>Manufacture</td><td>Dyaco Canada Inc.
5955 Don Murie Street Niagara Falls ON L2G 0A9 Canada</td></tr>
<tr><td>RF Features</td><td>WLAN:802.11b/g/n
Bluetooth: BT and BLE</td></tr>
<tr><td>Transmit Type</td><td>
<table>
<tr><th colspan="2">2.4 GHz</th></tr>
<tr><td>802.11b</td><td>1T1R</td></tr>
<tr><td>802.11g</td><td>1T1R</td></tr>
<tr><td>802.11n-HT20</td><td>1T1R</td></tr>
<tr><td>BT/BLE</td><td>1T1R</td></tr>
</table>
</td></tr>
<tr><td>Date of Receipt of Sample</td><td>2016. 10. 09</td></tr>
</table>

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3.3. Antenna Information

Model: WT002					
No.	**Antenna Part Number**	**Manufacture**	**Antenna Type**	**Frequency (MHz)**	**Max Gain (dBi)**
1	32505-001900-100-RS	SAN JOSE Technology, Inc.	PIFA	2400	**0.84**
				2450	**1.89**
				2500	**0.84**

Model: WB001					
No.	**Antenna Part Number**	**Manufacture**	**Antenna Type**	**Frequency (MHz)**	**Max Gain (dBi)**
2	32505-003501-100-RS	SAN JOSE Technology, Inc.	PIFA	2400	**1.74**
				2450	**1.36**
				2500	**1.20**

3.4. EUT Specifications Assessed in Current Report

Mode	Fundamental Range (MHz)	Channel Number	Modulation	Data Rate (Mbps)
Bluetooth	2402-2480	79	FHSS (GFSK, $\pi/4$ DQPSK, 8-DPSK)	1/2/3

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Channel List					
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

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3.5. Test Configuration

Mode	Duty Cycle (x)	T (ms)	Duty Cycle Factor (dB)
Bluetooth	N/A	2.89	N/A

AC Conduction	
Test Case	Normal operation

Item		Modulation	Data Rate	Test Channel
Radiated Test Case	Radiated Band Edge Note1	GFSK	1Mbps	00/78
		8-DPSK	3Mbps	00/78
	Radiated Spurious Emission Note1	GFSK	1Mbps	00/39/78
Conducted Test Case Note2	20dB Bandwidth	GFSK	1Mbps	00/39/78
		8-DPSK	3Mbps	00/39/78
	Carrier Frequency Separation	GFSK	1Mbps	00/39/78
		8-DPSK	3Mbps	00/39/78
	Time of Occupancy	GFSK	1Mbps	00/39/78
		8-DPSK	3Mbps	00/39/78
	Number of Hopping Channels	GFSK	1Mbps	39
		8-DPSK	3Mbps	39
	Maximum Peak Output Power	GFSK	1Mbps	00/39/78
		8-DPSK	3Mbps	00/39/78
	Band Edges	GFSK	1Mbps	00/78
		8-DPSK	3Mbps	00/78
	Spurious Emission	GFSK	1Mbps	00/39/78
		8-DPSK	3Mbps	00/39/78

Note 1:
Note 1:
■Mobile Device, and 3 axis were assessed. The worst scenario for Radiated Spurious Emission as follow:
■ Lie ☐ Side ☐ Stand

☐Portable Device, and 3 axis were assessed. The worst scenario for Radiated Spurious Emission as follow:
☐ Lie ☐ Side ☐ Stand

Note 2: Low, mid, and high channels were measured, only the worst channel of each modulation was presented in this report.

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3.6. Tested Supporting System List

3.6.1. Support Peripheral Unit

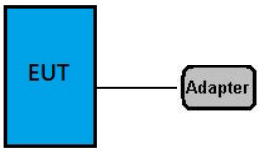
No.	Product	Brand	Model No.	Serial No.	FCC ID
1.	AC/DC Adapter	FSP	FSP060-DBAB1	N/A	N/A

3.6.2. Cable Lists

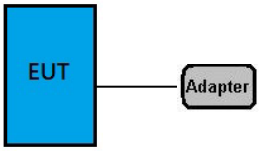
No.	Cable Description Of The Above Support Units
1.	DC Power Cord: Unshielded, Detachable, 1.5m, Bonded a ferrite core AC Power Cord: Unshielded, Detachable, 1.8m

3.7. Setup Configuration

3.7.1. EUT Configuration for Power Line and Radiated Emission



3.7.2. EUT Configuration for Conducted Test Items



3.8. Operating Condition of EUT

To set EUT on WLAN function under continues transmitting and choosing data rate/ channel.

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3.9. Description of Test Facility

Name of Test Firm	Audix Technology Corporation / EMC Department No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan Tel: +886-2-26092133 Fax: +886-2-26099303 Website : www.audixtech.com Contact e-mail: sales@audixtech.com
Accreditations	The laboratory is accredited by following organizations under ISO/IEC 17025:2005 (1) NVLAP(USA) NVLAP Lab Code 200077-0 (2) TAF(Taiwan) No. 1724 (3) FCC OET Designation No. TW1004 & TW1090 (4) VCCI (Japan) Member No. 0237
Test Facilities	(1) No. 8 Shielding Room (2) No. 1 3m Semi-Anechoic Chamber (IC Test Site Registration No: 5183B-1) (3) Fully Anechoic Chamber (IC Test Site Registration No: 5183B-4)

3.10.Measurement Uncertainty

Test Item	Frequency Range	Uncertainty
Conduction Test	150kHz~30MHz	±3.5dB
Radiation Test (Distance: 3m)	30MHz~1000MHz	± 3.68dB
	Above 1GHz	± 5.82dB

Remark：Uncertainty = $ku_c(y)$

Test Item	Uncertainty
20dB Bandwidth	±0.2kHz
Carrier Frequency Separation	±0.2kHz
Time of Occupancy	±0.03sec
Maximum peak Output power	± 0.52dB
Conducted Emission Limitations	± 0.13dB

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4. MEASUREMENT EQUIPMENT LIST

4.1. Conducted Emission Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Test Receiver	R&S	ESR3	101774	2016. 02. 04	1 Year
2.	A.M.N.	R&S	ENV4200	825358/003	2016. 04. 21	1 Year
3.	L.I.S.N.	Kyoritsu	KNW-407	8-855-9	2016. 12. 23	1 Year
4.	Pulse Limiter	R&S	ESH3-Z2	100354	2016. 01. 17	1 Year
5.	Test Software	Audix	e3	V.120619C	N.C.R.	N.C.R.

4.2. Radiated Emission Measurement

4.2.1. Frequency Range 9kHz~1000MHz (Semi-Anechoic Chamber)

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9010A-526	MY53400071	2016. 09. 19	1 Year
2.	Test Receiver	R & S	ESCS30	100338	2016. 06. 22	1 Year
3.	Amplifier	HP	8447D	2944A06305	2016. 02. 23	1 Year
4.	Bilog Antenna	CHASE	CBL6112D	33821	2016. 01. 30	1 Year
5.	Loop Antenna	R&S	HFH2-Z2	891847/27	2015. 12. 24	1 Year
6.	Test Software	Audix	e3	V.120619C	N.C.R.	N.C.R.

4.2.2. Frequency Range Above 1GHz (Fully Anechoic Chamber)

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	2016. 08. 19	1 Year
2.	Amplifier	Sonoma	310N	187161	2016. 06. 14	1 Year
3.	2.4GHz Notch Filter	K&L	7NSL10-2441.5E130.5-00	1	2016. 07. 27	1 Year
4.	Horn Antenna	ETS-Lindgren	3117	00135902	2016. 03. 05	1 Year
5.	Horn Antenna	EMCO	3116	2653	2016. 10. 24	1 Year
6.	Test Software	Audix	e3	V.6.110601	N.C.R.	N.C.R.

4.3. RF Conducted Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9030A-526	US51350140	2016. 06. 07	1 Year

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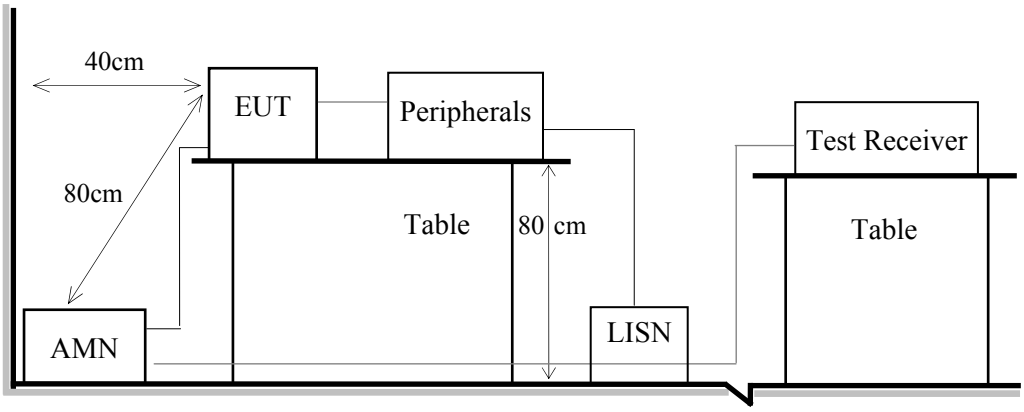
5. CONDUCTED EMISSION MEASUREMET

5.1. Block Diagram of Test Setup

Shielded Room Setup Diagram



5.2. Power Line Conducted Emission Limit

Frequency	Conducted Limit	
	Quasi-Peak Level	Average Level
150kHz ~ 500kHz	66 ~ 56 dBμV	56 ~ 46 dBμV
500kHz ~ 5MHz	56 dBμV	46 dBμV
5MHz ~ 30MHz	60 dBμV	50 dBμV

Remark 1.: If the average limit is met when using a Quasi-Peak detector, the measurement using the average detector is not required.
2.: The lower limit applies to the band edges.

5.3. Test Procedure

5.3.1. To set up the EUT as indicated in ANSI C 63.10. The EUT was placed on the table which has 80 cm height to the ground and 40 cm distance to the conducting wall.

5.3.2. Power supplier of the EUT was connected to the AC mains through an Artificial Mains Network (A.M.N.).

5.3.3. The AC power supplies to all peripheral devices must be provided through line impedance stabilization network (L.I.S.N.)

5.3.4. Checking frequency range from 150 kHz to 30 MHz and record the emission which does not have 20 dB below limit.

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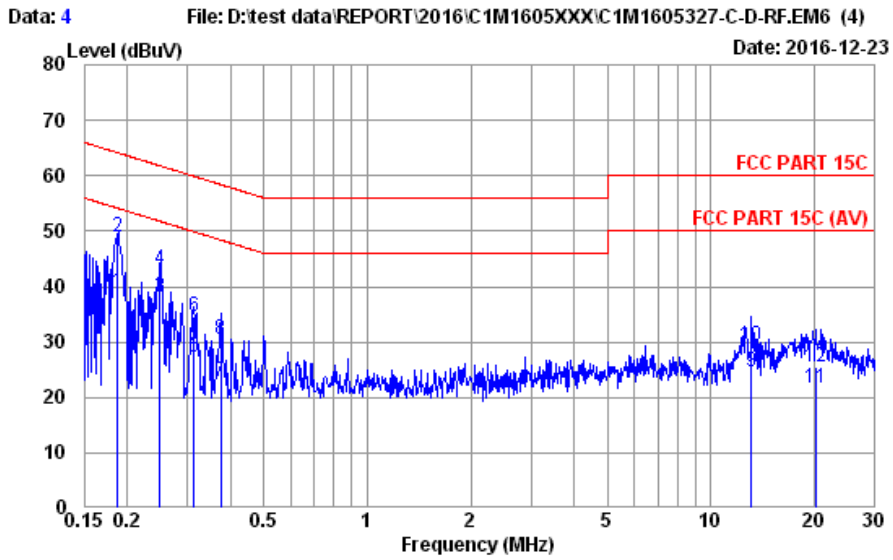
5.4. Conducted Emission Measurement Results

PASSED.

Test Date	2016/12/23	Temp./Hum.	24℃/46%
Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)	Test Model	WT002




```
Site no.      : No.8 Shielded Room          Data no.   : 4
Condition     : ENV4200 358/003            LISN Phase : NEUTRAL
Limit         : FCC PART 15C
Env. / Ins.   : 24*C / 46% ESR3 (1774)      Engineer   : Jemy
EUT           : WT002
Power Rating  : 120Vac/60Hz
Test Mode     : Operating
```

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.188	10.32	0.03	9.86	18.72	38.93	54.14	15.21	Average
2	0.188	10.32	0.03	9.86	28.65	48.86	64.14	15.28	QP
3	0.249	10.32	0.03	9.86	17.88	38.09	51.80	13.71	Average
4	0.249	10.32	0.03	9.86	22.88	43.09	61.80	18.71	QP
5	0.313	10.30	0.04	9.86	6.98	27.18	49.89	22.71	Average
6	0.313	10.30	0.04	9.86	14.28	34.48	59.89	25.41	QP
7	0.375	10.29	0.04	9.86	2.57	22.76	48.39	25.63	Average
8	0.375	10.29	0.04	9.86	10.17	30.36	58.39	28.03	QP
9	13.110	10.22	0.22	9.89	4.27	24.60	50.00	25.40	Average
10	13.110	10.22	0.22	9.89	8.83	29.16	60.00	30.84	QP
11	20.162	10.14	0.27	9.93	1.21	21.55	50.00	28.45	Average
12	20.162	10.14	0.27	9.93	5.29	25.63	60.00	34.37	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.
2. If the average limit is met when useing a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

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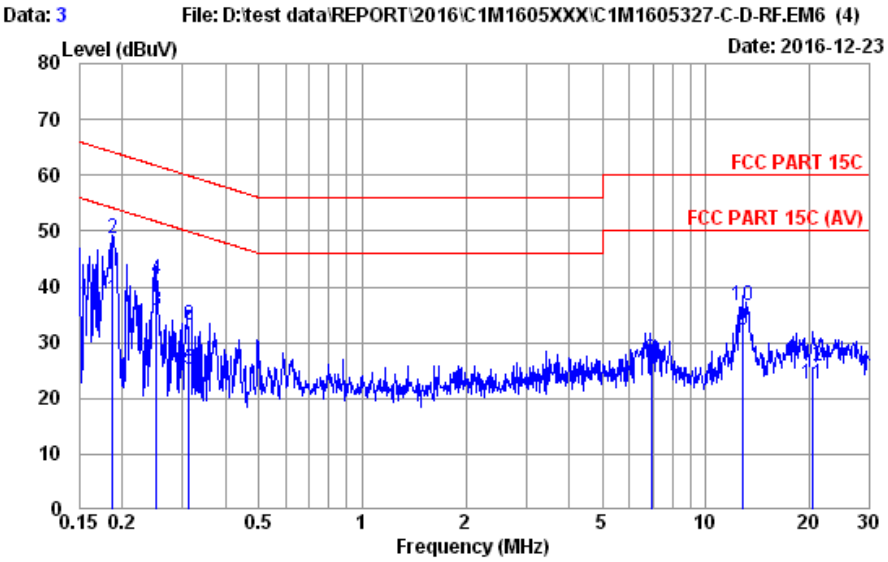
Test Date	2016/12/23	Temp./Hum.	24℃/46%
Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)	Test Model	WT002




```
Site no.      : No.8 Shielded Room          Data no.   : 3
Condition     : ENV4200 358/003            LISN Phase : LINE
Limit         : FCC PART 15C
Env. / Ins.   : 24*C / 46% ESR3 (1774)      Engineer   : Jemy
EUT           : WT002
Power Rating  : 120Vac/60Hz
Test Mode     : Operating
```

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.187	10.26	0.03	9.86	17.79	37.94	54.16	16.22	Average
2	0.187	10.26	0.03	9.86	28.36	48.51	64.16	15.65	QP
3	0.252	10.27	0.03	9.86	15.60	35.76	51.69	15.93	Average
4	0.252	10.27	0.03	9.86	21.25	41.41	61.69	20.28	QP
5	0.314	10.26	0.04	9.86	5.17	25.33	49.87	24.54	Average
6	0.314	10.26	0.04	9.86	12.88	33.04	59.87	26.83	QP
7	6.935	10.22	0.15	9.87	4.44	24.68	50.00	25.32	Average
8	6.935	10.22	0.15	9.87	6.74	26.98	60.00	33.02	QP
9	12.800	10.16	0.22	9.89	11.93	32.20	50.00	17.80	Average
10	12.800	10.16	0.22	9.89	16.27	36.54	60.00	23.46	QP
11	20.486	10.09	0.27	9.93	2.23	22.52	50.00	27.48	Average
12	20.486	10.09	0.27	9.93	5.45	25.74	60.00	34.26	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.
2. If the average limit is met when useing a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

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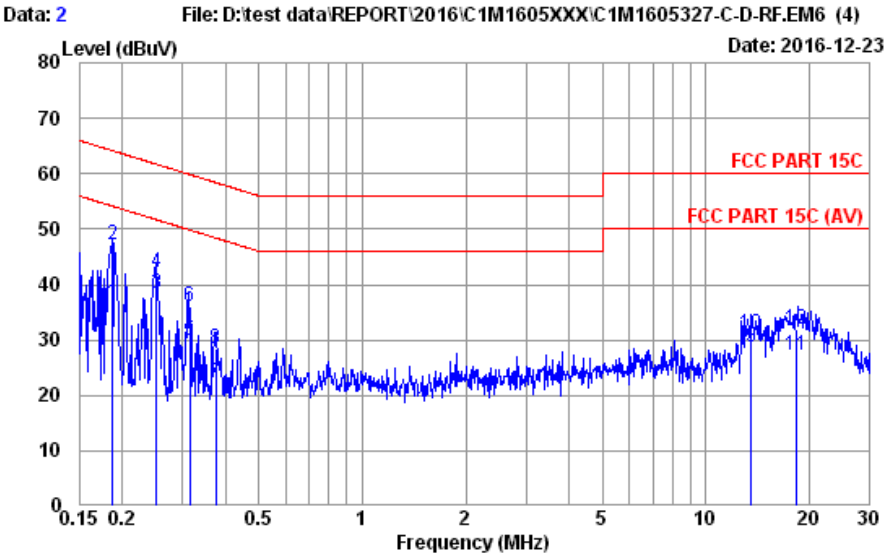
Test Date	2016/12/23	Temp./Hum.	24℃/46%
Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)	Test Model	WB001




```
Site no.      : No.8 Shielded Room          Data no.   : 2
Condition     : ENV4200 358/003            LISN Phase : NEUTRAL
Limit         : FCC PART 15C
Env. / Ins.   : 24*C / 46% ESR3 (1774)      Engineer   : Jemy
EUT           : WB001
Power Rating  : 120Vac/60Hz
Test Mode     : Operating
```

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.188	10.32	0.03	9.86	16.30	36.51	54.13	17.62	Average
2	0.188	10.32	0.03	9.86	26.94	47.15	64.13	16.98	QP
3	0.251	10.32	0.03	9.86	18.08	38.29	51.71	13.42	Average
4	0.251	10.32	0.03	9.86	21.94	42.15	61.71	19.56	QP
5	0.314	10.30	0.04	9.86	9.76	29.96	49.87	19.91	Average
6	0.314	10.30	0.04	9.86	15.85	36.05	59.87	23.82	QP
7	0.374	10.29	0.04	9.86	2.21	22.40	48.42	26.02	Average
8	0.374	10.29	0.04	9.86	8.36	28.55	58.42	29.87	QP
9	13.551	10.21	0.22	9.89	8.41	28.73	50.00	21.27	Average
10	13.551	10.21	0.22	9.89	10.66	30.98	60.00	29.02	QP
11	18.230	10.15	0.26	9.92	6.92	27.25	50.00	22.75	Average
12	18.230	10.15	0.26	9.92	11.50	31.83	60.00	28.17	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.
2. If the average limit is met when useing a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

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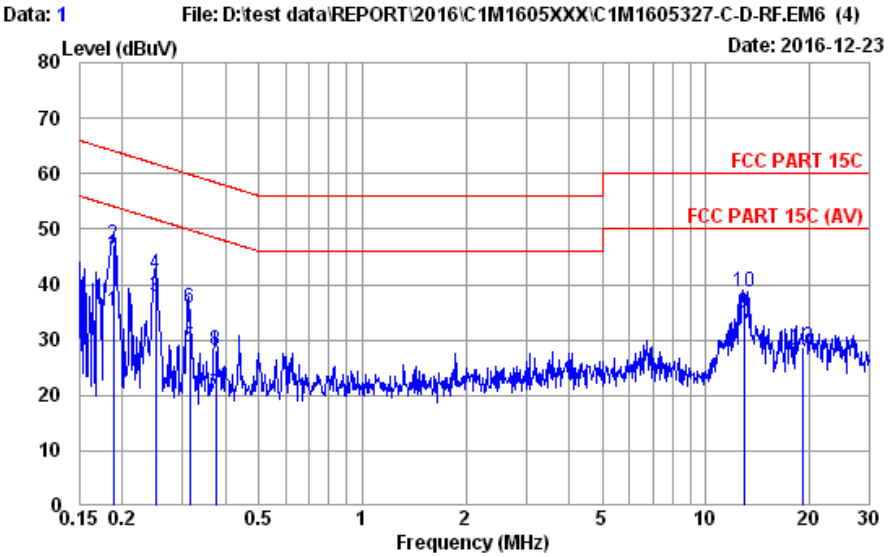
Test Date	2016/12/23	Temp./Hum.	24℃/46%
Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)	Test Model	WB001



Site no. : No.8 Shielded Room
Condition : ENV4200 358/003
Limit : FCC PART 15C
Env. / Ins. : 24°C / 46% ESR3 (1774)
EUT : WB001
Power Rating : 120Vac/60Hz
Test Mode : Operating

Data no. : 1
LISN Phase : LINE
Engineer : Jemy

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.189	10.26	0.03	9.86	15.15	35.30	54.08	18.78	Average
2	0.189	10.26	0.03	9.86	26.90	47.05	64.08	17.03	QP
3	0.251	10.27	0.03	9.86	17.60	37.76	51.73	13.97	Average
4	0.251	10.27	0.03	9.86	21.81	41.97	61.73	19.76	QP
5	0.314	10.26	0.04	9.86	8.56	28.72	49.86	21.14	Average
6	0.314	10.26	0.04	9.86	15.50	35.66	59.86	24.20	QP
7	0.374	10.26	0.04	9.86	0.21	20.37	48.41	28.04	Average
8	0.374	10.26	0.04	9.86	8.12	28.28	58.41	30.13	QP
9	12.930	10.16	0.22	9.89	14.72	34.99	50.00	15.01	Average
10	12.930	10.16	0.22	9.89	18.39	38.66	60.00	21.34	QP
11	19.050	10.09	0.26	9.92	6.20	26.47	50.00	23.53	Average
12	19.050	10.09	0.26	9.92	8.41	28.68	60.00	31.32	QP

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.
2. If the average limit is met when useing a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

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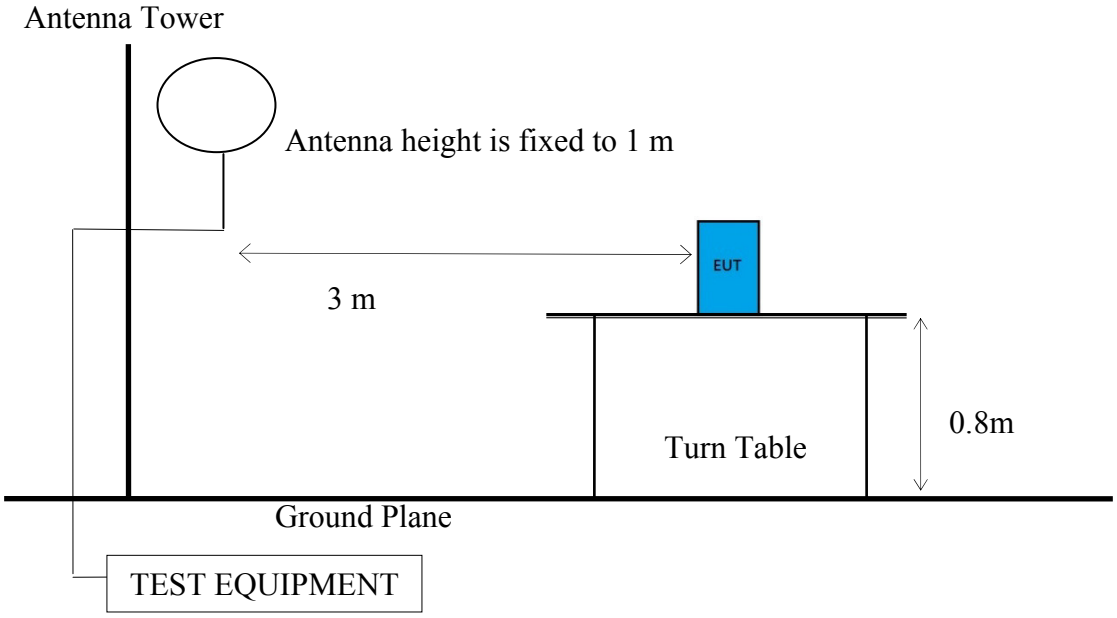
6. RADIATED EMISSION MEASUREMENT

6.1. Block Diagram of Test Setup

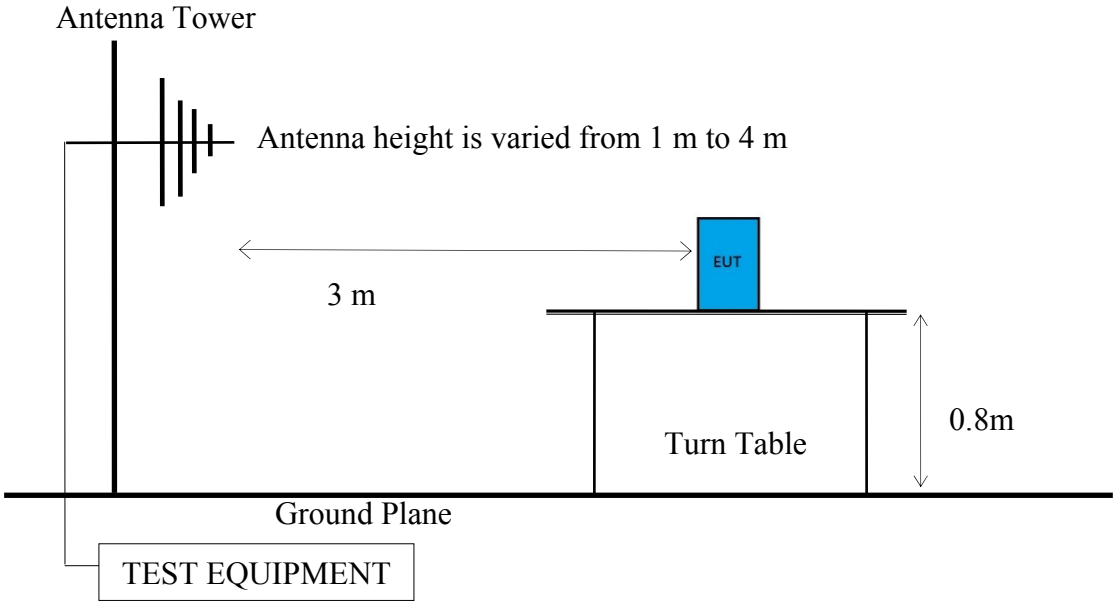
6.1.1. Block Diagram of EUT

Indicated as section 3.6

6.1.2. Semi Anechoic Chamber (3m) Setup Diagram for 9kHz-30MHz



6.1.3. Semi-Anechoic Chamber (3m) Setup Diagram for 30-1000 MHz



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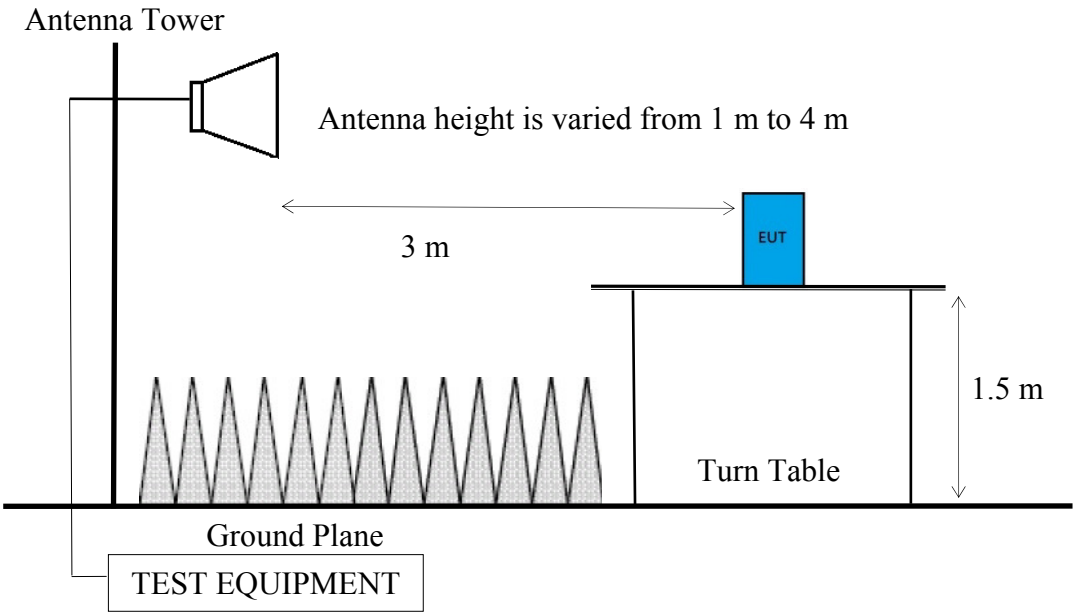
6.1.4. Fully Anechoic Chamber (3m) Setup Diagram for above 1GHz



6.2. Radiated Emission Limits

In any 100kHz bandwidth outside the frequency band, the radio frequency power produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified as below.

Frequency (MHz)	Distance (m)	Limits	
		dBμV/m	μV/m
0.009 - 0.490	300	67.6	2400/kHz
0.490 - 1.705	30	87.6	24000/kHz
1.705 - 30	30	29.5	30
30 - 88	3	40.0	100
88- 216	3	43.5	150
216- 960	3	46.0	200
Above 960	3	54.0	500
Above 1000	3	74.0 dBμV/m (Peak) 54.0 dBμV/m (Average)	

Remark：(1) dBμV/m = 20 log (μV/m)
(2) The tighter limit applies to the edge between two frequency bands.
(3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
(4) Fundamental and emission fall within operation band are exempted from this section.
(5) Pursuant to ANSI C63.10: 6.6.4.3, if the maximized peak measured value complies with the average limit, then it is unnecessary to perform an average measurement.

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6.3. Test Procedure

Frequency Range 9kHz~30MHz:
The EUT setup on the turn table which has 0.8 m height to the ground. The turn table rotated 360 degrees and antenna fixed to 1 m to find the maximum emission level. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

(1) RBW = 9kHz with peak and average detector.
(2) Detector: average and peak (9kHz-490kHz)
Q.P. (490kHz-30MHz)

Frequency Range 30MHz ~ 40GHz:
The EUT setup on the turn find table which has 80 cm (for 30-1000 MHz) and 1.5m (for above 1GHz) height to the ground. The turn table rotated 360 degrees and antenna varied from 1 m to 4 m to find the maximum emission level. Both horizontal and vertical polarization are required. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

Frequency below 1 GHz:
Spectrum Analyzer is used for pre-testing with following setting:

(1) RBW = 120KHz
(2) VBW ≥ 3 x RBW.
(3) Detector = Peak.
(4) Sweep time = auto.
(5) Trace mode = max hold.
(6) Allow sweeps to continue until the trace stabilizes.
(7) When peak-detected value is lower than limit that the measurement using the Q.P. detector is not required. Otherwise using Q.P. for finally measurement.

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Frequency above 1GHz to 10th harmonic:
Peak Detector:

(1) RBW = 1MHz
(2) VBW ≥ 3 x RBW.
(3) Detector = Peak.
(4) Sweep time = auto.
(5) Trace mode = max hold.
(6) Allow sweeps to continue until the trace stabilizes.
(7) When peak-detected value is lower than limit that the measurement using the average detector is not required. Otherwise using average for finally measurement.

Average Detector:

■**Option 1:**

(1) RBW = 1 MHz
(2) VBW =1/T
(3) Detector = Peak.
(4) Sweep time = auto.
(5) Trace mode = max hold.
(6) Allow sweeps to continue until the trace stabilizes.

□**Option 2:**

Average Emission Level= Peak Emission Level+ D.C.C.F.

6.4. Measurement Result Explanation

■Peak Emission Level=Antenna Factor + Cable Loss + Meter Reading
■Average Emission Level l=Antenna Factor + Cable Loss + Meter Reading
□Average Emission Level= Peak Emission Level+ DCCF
Duty Cycle Correction Factor (DCCF)= 20log (TX_{on}/100ms) presented in section 3.4
□ERP= Peak Emission Level-95.2dB-2.14dB

6.5. Test Results

PASSED.

Test Date	2016/11/21	Temp./Hum.	23℃/60%
Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)		

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6.5.1. Emissions within Restricted Frequency Bands

6.5.1.1. Frequency 9kHz~30MHz

The emissions (9kHz~30MHz) not reported for there is no emission be found.

6.5.1.2. Frequency Below 1 GHz

Test Model: WT002

Modulation	8-DPSK	Frequency	TX 2441MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
148.34	11.70	2.81	10.61	25.12	43.50	18.38	Peak
239.52	12.08	3.71	11.41	27.20	46.00	18.80	Peak
399.57	15.92	5.54	15.82	37.28	46.00	8.72	Peak
584.84	18.24	6.71	9.09	34.04	46.00	11.96	Peak
863.23	20.14	7.97	8.32	36.43	46.00	9.57	Peak
964.11	21.00	8.61	8.49	38.10	54.00	15.90	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
75.59	8.56	1.96	19.29	29.81	40.00	10.19	Peak
212.36	10.34	3.46	13.16	26.96	43.50	16.54	Peak
351.07	14.94	4.98	11.97	31.89	46.00	14.11	Peak
584.84	18.24	6.71	18.79	43.74	46.00	2.26	Peak
624.61	18.44	6.84	11.08	36.36	46.00	9.64	Peak
811.82	19.72	7.68	9.29	36.69	46.00	9.31	Peak

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Test Model: WB001

Modulation	8-DPSK	Frequency	TX 2441MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
214.30	10.49	3.49	22.79	36.77	43.50	6.73	Peak
336.52	14.63	4.80	19.92	39.35	46.00	6.65	Peak
471.35	16.83	6.20	13.59	36.62	46.00	9.38	Peak
689.60	18.50	7.05	8.12	33.67	46.00	12.33	Peak
814.73	19.75	7.70	7.95	35.40	46.00	10.60	Peak
952.47	20.89	8.52	10.92	40.33	46.00	5.67	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
214.30	10.49	3.49	18.47	32.45	43.50	11.05	Peak
336.52	14.63	4.80	13.37	32.80	46.00	13.20	Peak
471.35	16.83	6.20	16.22	39.25	46.00	6.75	Peak
573.20	18.09	6.67	12.13	36.89	46.00	9.11	Peak
696.39	18.51	7.07	9.78	35.36	46.00	10.64	Peak
825.40	19.82	7.75	8.97	36.54	46.00	9.46	Peak

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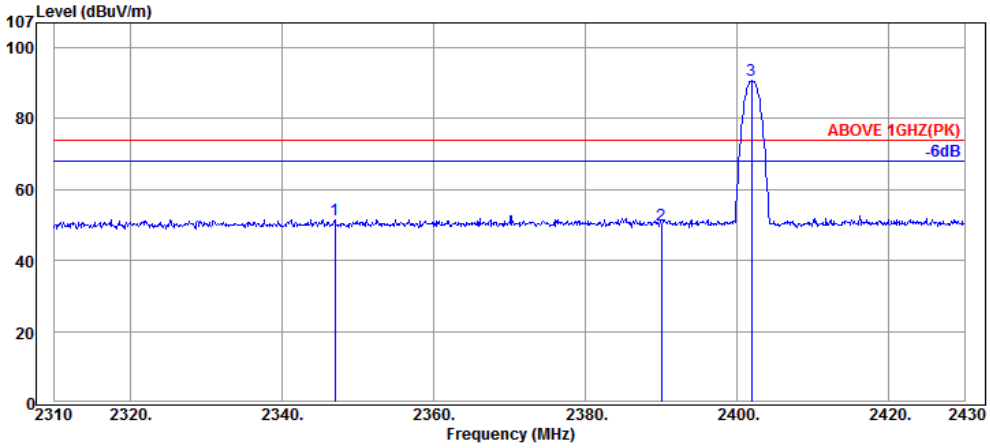
6.5.2. Frequency Above 1 GHz to 10th harmonics

Band Edge:

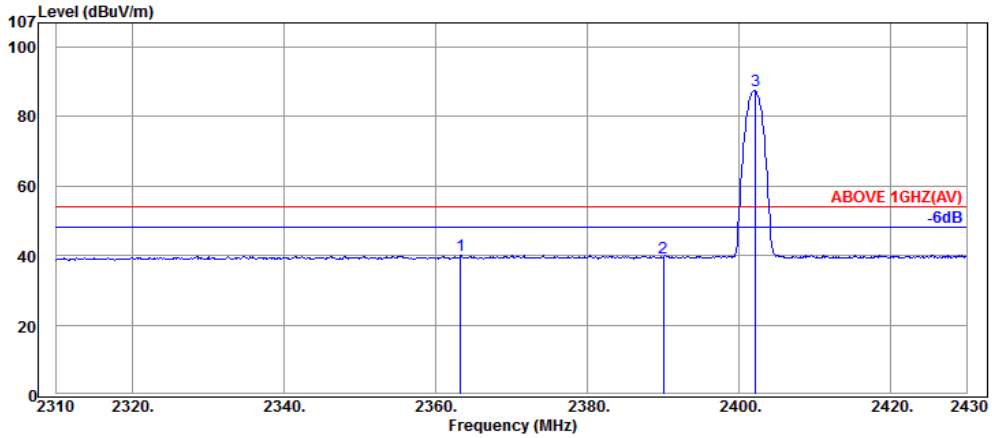
Test Model: WT002

Mode	8-DPSK	Frequency	TX 2402MHz



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2346.96	32.08	6.02	13.56	51.66	74.00	22.34	Peak
2390.04	32.16	6.08	11.89	50.13	74.00	23.87	Peak
2401.92	32.16	6.09	52.43	90.68	---	---	Peak



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2363.28	32.11	6.04	1.79	39.94	54.00	14.06	Average
2390.04	32.16	6.08	0.95	39.19	54.00	14.81	Average
2402.16	32.16	6.09	49.19	87.44	---	---	Average

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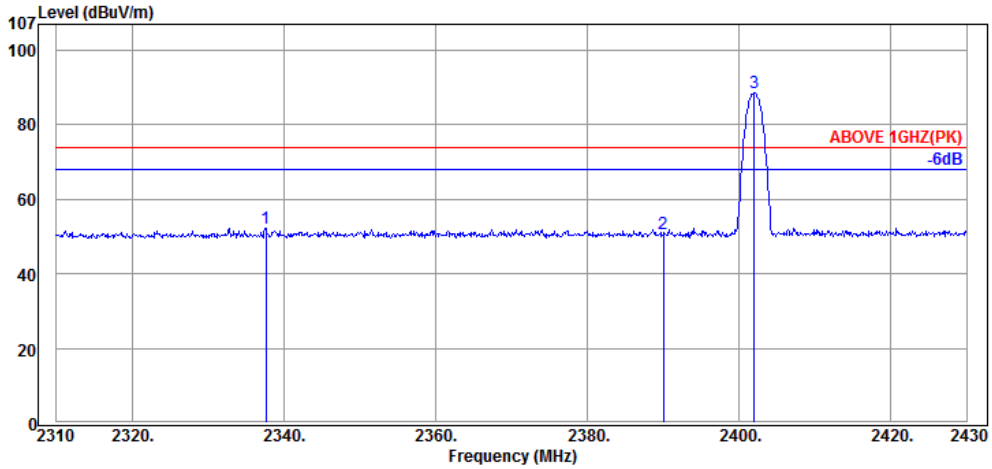
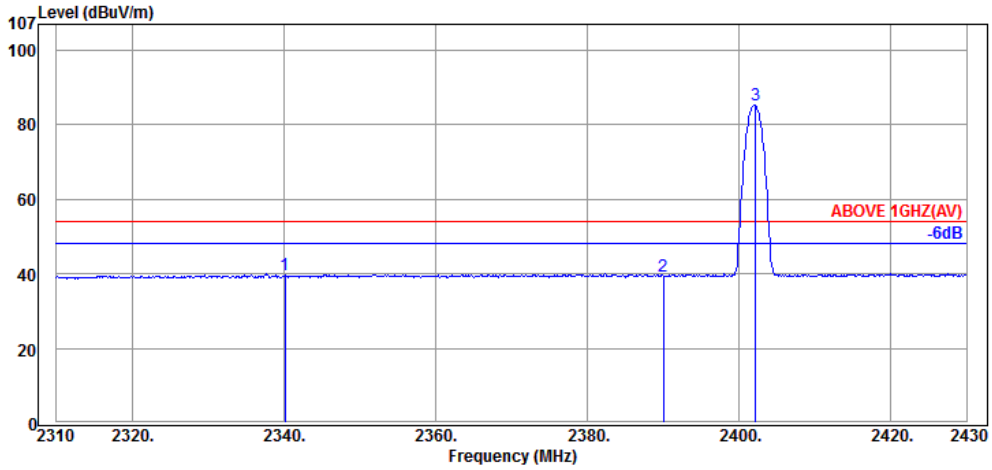
Mode	8-DPSK	Frequency	TX 2402MHz



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2337.60	32.08	6.01	14.08	52.17	74.00	21.83	Peak
2390.04	32.16	6.08	12.38	50.62	74.00	23.38	Peak
2402.04	32.16	6.09	50.38	88.63	---	---	Peak



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2340.12	32.08	6.01	1.75	39.84	54.00	14.16	Average
2390.04	32.16	6.08	1.15	39.39	54.00	14.61	Average
2402.16	32.16	6.09	47.07	85.32	---	---	Average

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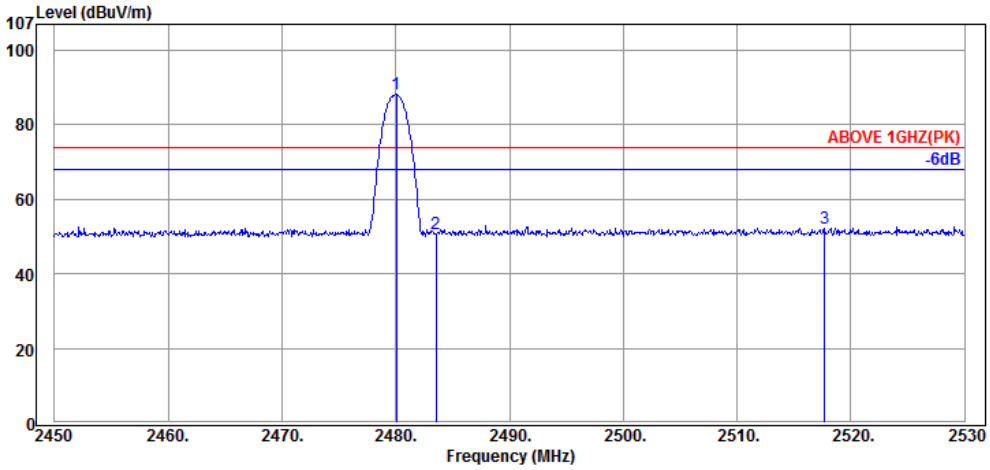
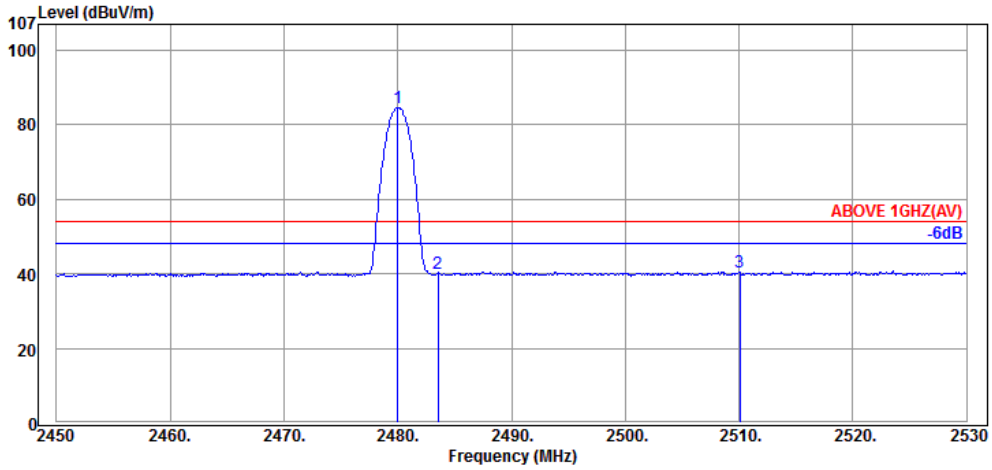
Mode	8-DPSK	Frequency	TX 2480MHz



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2480.08	32.28	6.18	49.67	88.13	---	---	Peak
2483.52	32.28	6.19	12.38	50.85	74.00	23.15	Peak
2517.68	32.32	6.23	13.64	52.19	74.00	21.81	Peak



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2480.00	32.28	6.18	46.29	84.75	---	---	Average
2483.52	32.28	6.19	1.43	39.90	54.00	14.10	Average
2510.08	32.32	6.22	1.88	40.42	54.00	13.58	Average

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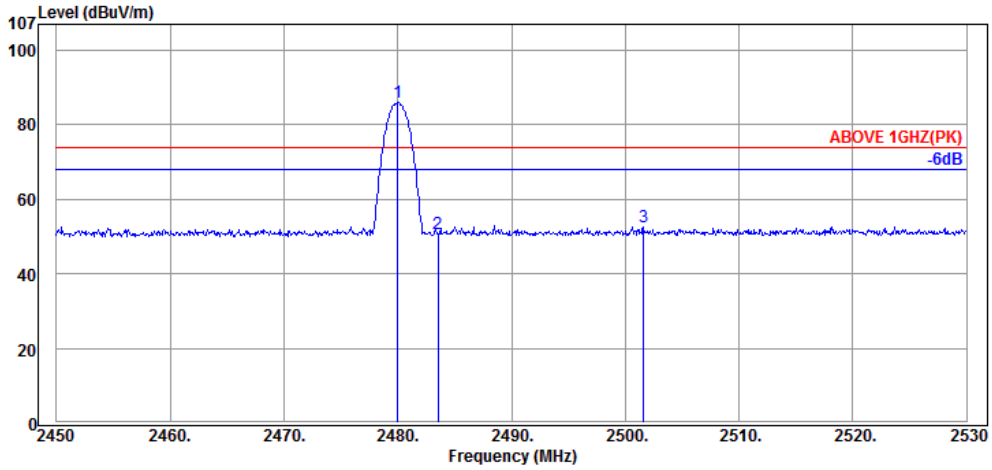
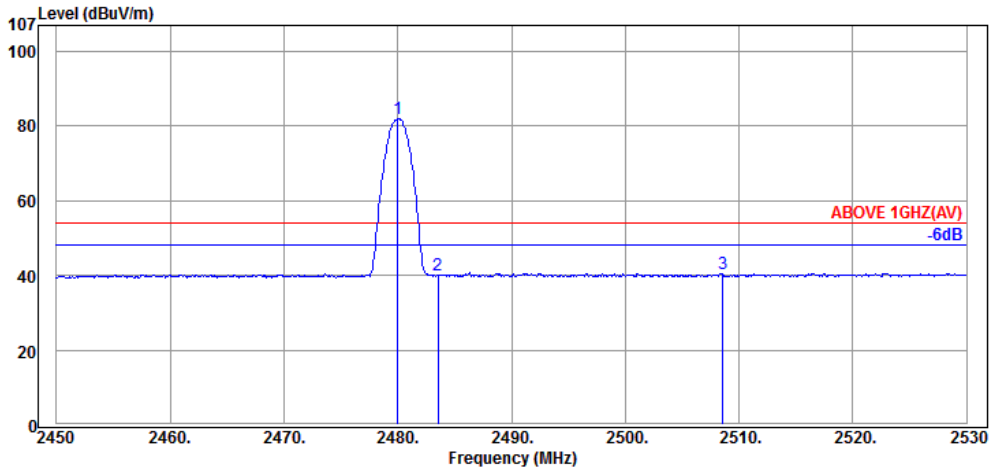
Mode	8-DPSK	Frequency	TX 2480MHz



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2480.00	32.28	6.18	47.48	85.94	---	---	Peak
2483.52	32.28	6.19	12.21	50.68	74.00	23.32	Peak
2501.60	32.30	6.21	13.91	52.42	74.00	21.58	Peak



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2480.00	32.28	6.18	43.54	82.00	---	---	Average
2483.52	32.28	6.19	1.46	39.93	54.00	14.07	Average
2508.56	32.32	6.22	2.02	40.56	54.00	13.44	Average

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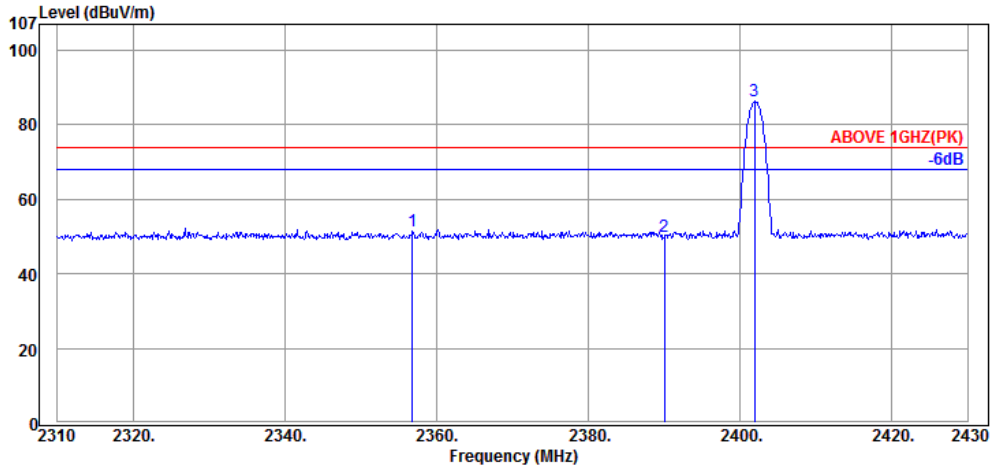
Test Model: WB001

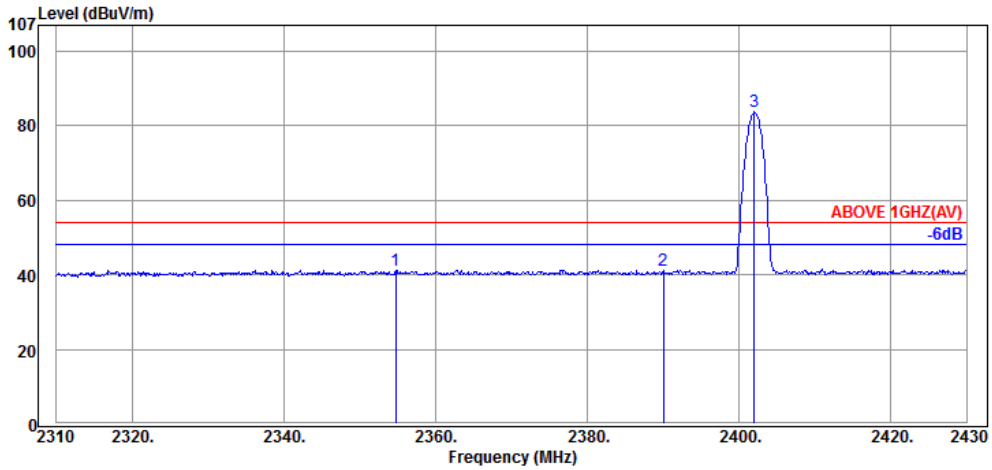
Mode	8-DPSK	Frequency	TX 2402MHz



1

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2356.80	32.11	6.04	13.49	51.64	74.00	22.36	Peak
2390.04	32.16	6.08	11.78	50.02	74.00	23.98	Peak
2401.92	32.16	6.09	48.06	86.31	---	---	Peak



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2354.76	32.11	6.03	3.20	41.34	54.00	12.66	Average
2390.04	32.16	6.08	2.79	41.03	54.00	12.97	Average
2402.04	32.16	6.09	45.46	83.71	---	---	Average

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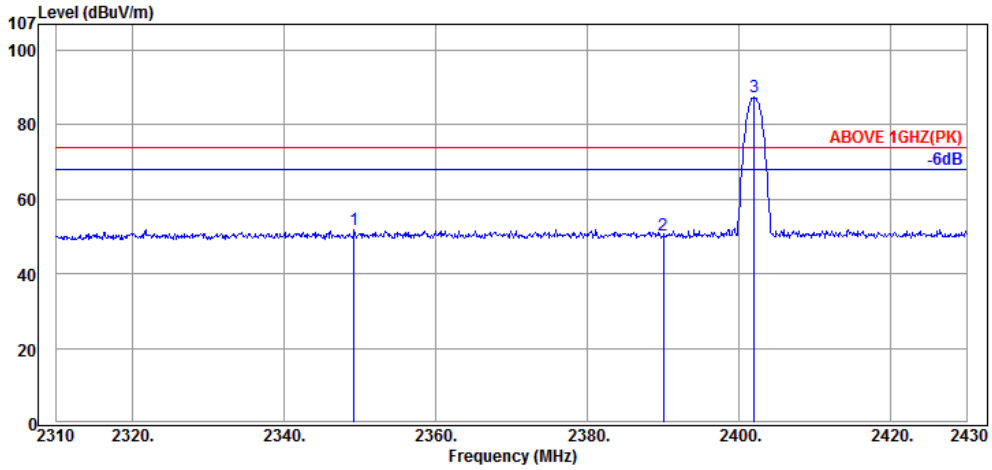
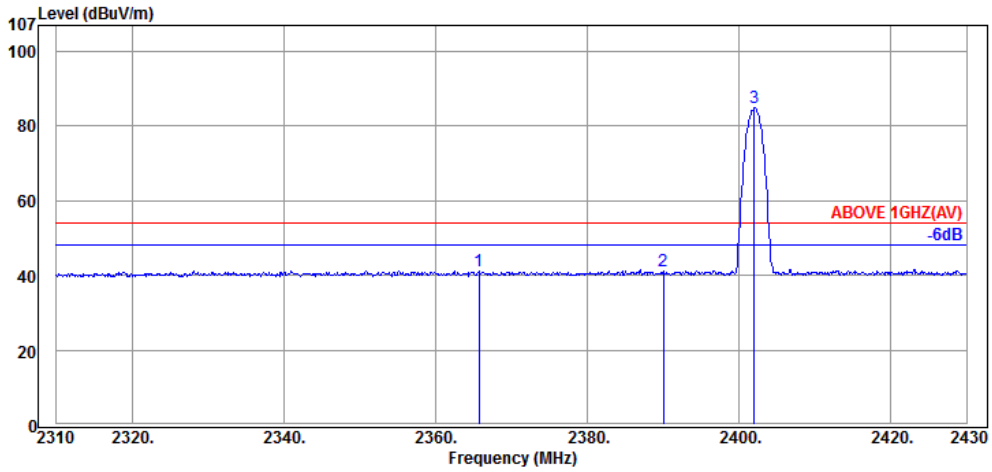
Mode	8-DPSK	Frequency	TX 2402MHz



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2349.24	32.08	6.03	13.59	51.70	74.00	22.30	Peak
2390.04	32.16	6.08	11.99	50.23	74.00	23.77	Peak
2402.04	32.16	6.09	49.31	87.56	---	---	Peak



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2365.68	32.11	6.05	3.06	41.22	54.00	12.78	Average
2390.04	32.16	6.08	2.90	41.14	54.00	12.86	Average
2402.04	32.16	6.09	46.55	84.80	---	---	Average

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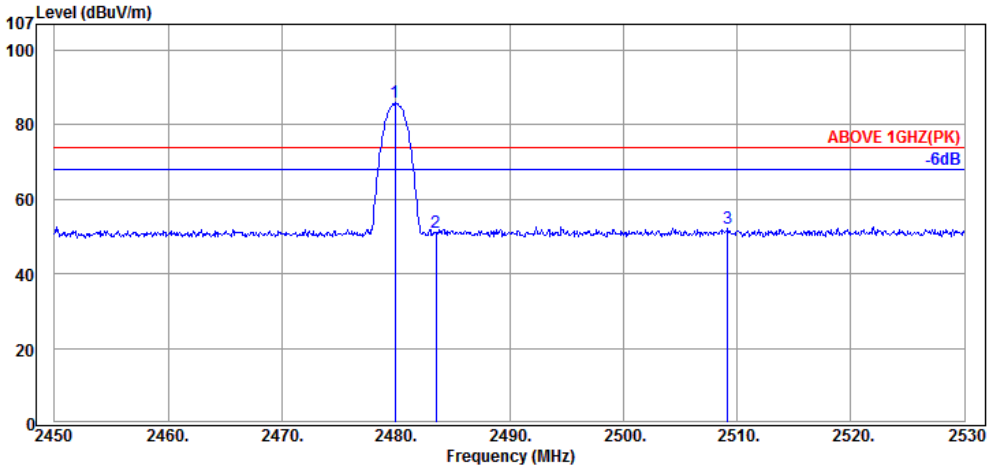
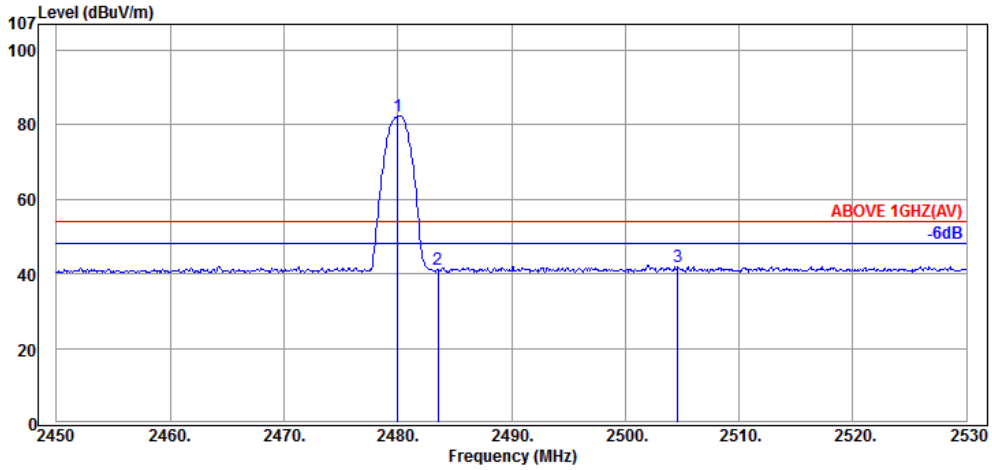
Mode	8-DPSK	Frequency	TX 2480MHz



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2479.92	32.28	6.18	47.60	86.06	---	---	Peak
2483.52	32.28	6.19	12.66	51.13	74.00	22.87	Peak
2509.20	32.32	6.22	13.51	52.05	74.00	21.95	Peak



Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2480.00	32.28	6.18	44.06	82.52	---	---	Average
2483.52	32.28	6.19	2.68	41.15	54.00	12.85	Average
2504.64	32.32	6.21	3.46	41.99	54.00	12.01	Average

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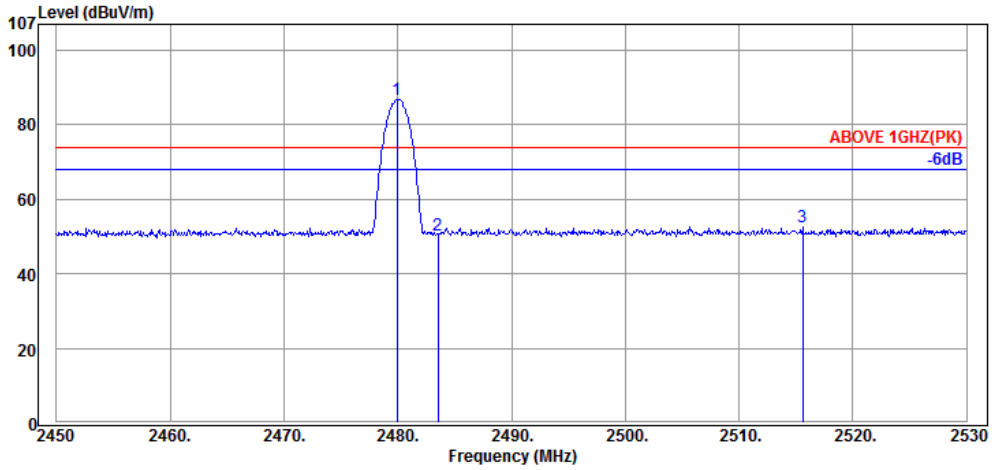
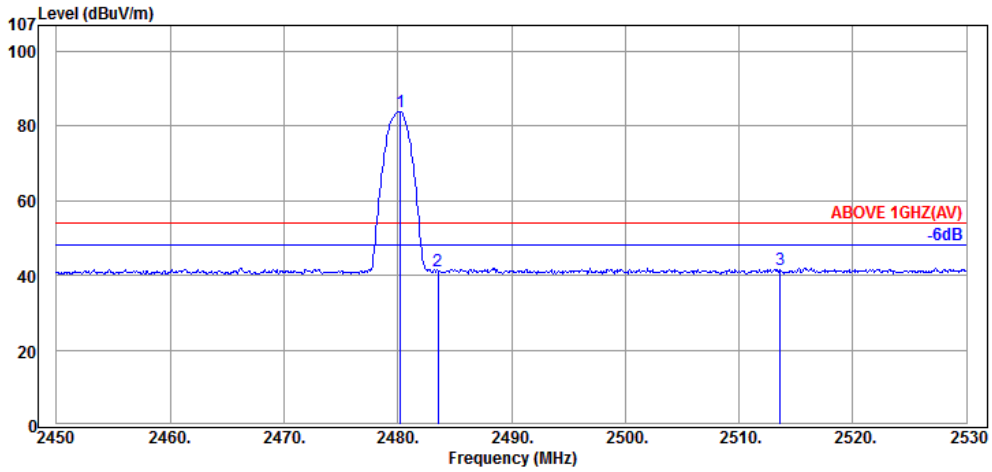
Mode	8-DPSK	Frequency	TX 2480MHz



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2479.92	32.28	6.18	48.30	86.76	---	---	Peak
2483.52	32.28	6.19	11.95	50.42	74.00	23.58	Peak
2515.60	32.32	6.22	13.86	52.40	74.00	21.60	Peak



Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2480.24	32.28	6.18	45.45	83.91	---	---	Average
2483.52	32.28	6.19	2.66	41.13	54.00	12.87	Average
2513.60	32.32	6.22	3.12	41.66	54.00	12.34	Average

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6.5.3. Emissions outside the frequency band:

The emissions (up to 25GHz) not reported for there is no emission be found.

Test Model: WT002

Modulation	8-DPSK	Frequency	TX 2402MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4805.00	34.22	8.87	0.55	43.64	54.00	10.36	Peak
7205.00	35.80	11.27	-2.20	44.87	54.00	9.13	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4805.00	34.22	8.87	0.34	43.43	54.00	10.57	Peak
7205.00	35.80	11.27	-1.99	45.08	54.00	8.92	Peak

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Modulation	8-DPSK	Frequency	TX 2441MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4880.00	34.25	9.14	0.47	43.86	54.00	10.14	Peak
7320.00	35.80	11.80	-2.51	45.09	54.00	8.91	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4880.00	34.25	9.14	0.25	43.64	54.00	10.36	Peak
7320.00	35.80	11.80	-1.72	45.88	54.00	8.12	Peak

Modulation	8-DPSK	Frequency	TX 2480MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4960.00	34.29	9.40	1.10	44.79	54.00	9.21	Peak
7440.00	35.80	12.56	-2.51	45.85	54.00	8.15	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4960.00	34.29	9.40	1.51	45.20	54.00	8.80	Peak
7440.00	35.80	12.56	-2.94	45.42	54.00	8.58	Peak

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Test Model: WB001

Modulation	8-DPSK	Frequency	TX 2402MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4805.00	34.22	8.87	-0.27	42.82	54.00	11.18	Peak
7205.00	35.80	11.27	-0.81	46.26	54.00	7.74	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4805.00	34.22	8.87	0.97	44.06	54.00	9.94	Peak
7205.00	35.80	11.27	-1.00	46.07	54.00	7.93	Peak

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Modulation	8-DPSK	Frequency	TX 2441MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4880.00	34.25	9.14	0.85	44.24	54.00	9.76	Peak
7325.00	35.80	11.95	-1.34	46.41	54.00	7.59	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4880.00	34.25	9.14	0.26	43.65	54.00	10.35	Peak
7325.00	35.80	11.95	-2.00	45.75	54.00	8.25	Peak

Modulation	8-DPSK	Frequency	TX 2480MHz

Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4960.00	34.29	9.40	34.90	44.18	54.00	9.82	Peak
7440.00	35.80	12.56	31.58	45.19	54.00	8.81	Peak

Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
4960.00	34.29	9.40	35.79	45.07	54.00	8.93	Peak
7440.00	35.80	12.56	32.10	45.71	54.00	8.29	Peak

6.5.4. Emissions in Non-restricted Frequency Bands

All emission levels below the 15.209 general radiated emissions limits is not required.

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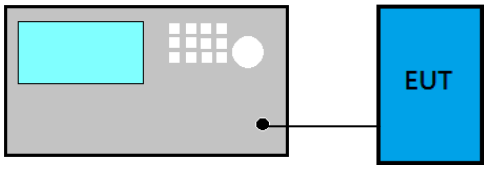
7. 20dB BANDWIDTH MEASUREMENT

7.1. Block Diagram of Test Setup



7.2. Specification Limits

Alternatively, frequency hopping systems operating in the 2400-2483.5MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater.

7.3. Test Procedure

Following measurement procedure is reference to DA00-705:

(1) Set RBW close to1% of OBW.
(2) Set VBW≥RBW.
(3) Detector = Peak.
(4) Trace mode = max hold.
(5) Sweep = auto couple.
(6) Allow the trace to stabilize.
(7) Setting channel bandwidth function x dB to -20 dB to record the final bandwidth.

7.4. Test Results

Please refer to Appendix A

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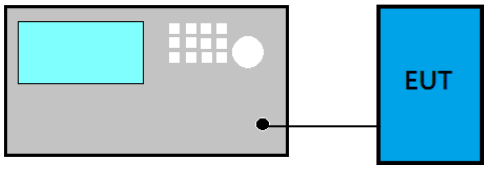
8. CARRIER FREQUENCY SEPARATION MEASUREMENT

8.1. Block Diagram of Test Setup



8.2. Specification Limits

Alternatively, frequency hopping systems operating in the 2400-2483.5MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output no greater than 125mW.

8.3. Test Procedure

Following measurement procedure is reference to DA00-705:

(1) Span = wide enough to capture the peaks of two adjacent channels
(2) RBW ≥ 1% of the span
(3) VBW≥ RBW
(4) Sweep = auto
(5) Detector function = peak
(6) Trace = max hold

8.4. Test Results

Please refer to Appendix A

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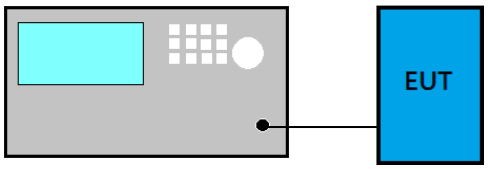
9. TIME OF OCCUPANCY MEASUREMENT

9.1. Block Diagram of Test Setup



9.2. Specification Limits

Frequency hopping systems in the 2400-2483.5MHz shall use at least 15 non-overlapping channels. 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 number of hopping channels employed.

9.3. Test Procedure

Following measurement procedure is reference to DA00-705:

(1) Span = zero span, centered on a hopping channel
(2) RBW = 1 MHz
(3) VBW ≥ RBW
(4) Sweep = as necessary to capture the entire dwell time per hopping channel
(5) Detector function = peak
(6) Trace = max hold

9.4. Test Results

Please refer to Appendix A

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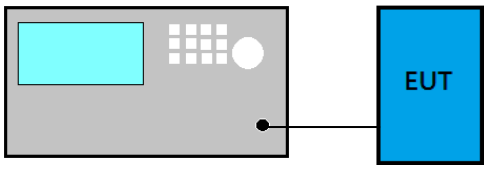
10. NUMBER OF HOPPING CHANNELS MEASUREMENT

10.1. Block Diagram of Test Setup



10.2. Specification Limits

Frequency hopping systems which use fewer than 20 hopping frequencies may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels.

10.3. Test Procedure

Following measurement procedure is reference to DA00-705:

(1) Span = the frequency band of operation
(2) RBW ≥ 1% of the span
(3) VBW ≥ RBW
(4) Sweep = auto
(5) Detector function = peak
(6) Trace = max hold

10.4. Test Results

Please refer to Appendix A

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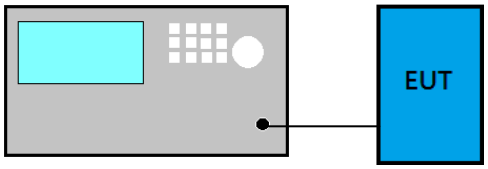
11. MAXIMUM PEAK OUTPUT POWER MEASUREMENT

11.1. Block Diagram of Test Setup



11.2. Specification Limits

The Limits of maximum Peak Output Power for frequency hopping systems in 2400-2483.5MHz is: 0.125Watt. (21dBm)

11.3. Test Procedure

Following measurement procedure is reference to DA00-705:

(1) Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
(2) RBW ≥ 1% of the span
(3) VBW ≥ RBW
(4) Sweep = auto
(5) Detector function = peak
(6) Trace = max hold

11.4. Test Results

Please refer to Appendix A

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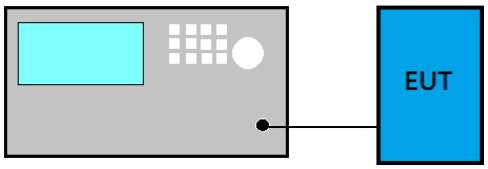
12. EMISSION LIMITATIONS MEASUREMENT

12.1. Block Diagram of Test Setup



12.2. Specification Limits

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (See Section 15.205(c)).

12.3. Test Procedure

Following measurement procedure is reference to DA00-705:

(1) Set span wide enough to capture the peak level of the in-band emission and all spurious emissions; up to 10th harmonic.
(2) RBW = 100 kHz
(3) VBW ≥ RBW
(4) Sweep = auto
(5) Detector function = peak
(6) Trace = max hold

12.4. Test Results

Please refer to Appendix A

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13. DEVIATION TO TEST SPECIFICATIONS

【NONE】

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APPENDIX A

TEST Data and PLOTS

(Model: WT002)

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A.1 20dB BANDWIDTH MEASUREMENT

Test Date	2016/11/14	Temp./Hum.	24℃/55%
Cable Loss	0.54dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Test Model	WT002		

A.1.1 20dB Bandwidth Result

Modulation	Centre Frequency (MHz)	20 dB Bandwidth (MHz)	2/3 (20dB Bandwidth)
GFSK	2402	0.9173	0.612
	2441	0.9173	0.612
	2480	0.9170	0.611

Remark: The maximum two-thirds of the 20dB bandwidth is the limit for carrier frequency separation presented.

Modulation	Centre Frequency (MHz)	20 dB Bandwidth (MHz)	2/3 (20dB Bandwidth)
8-DPSK	2402	1.262	0.841
	2441	1.262	0.841
	2480	1.263	0.842

Remark: The maximum two-thirds of the 20dB bandwidth is the limit for carrier frequency separation presented.

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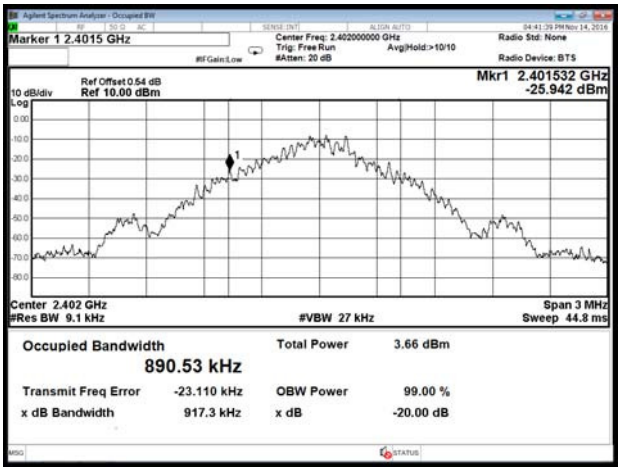
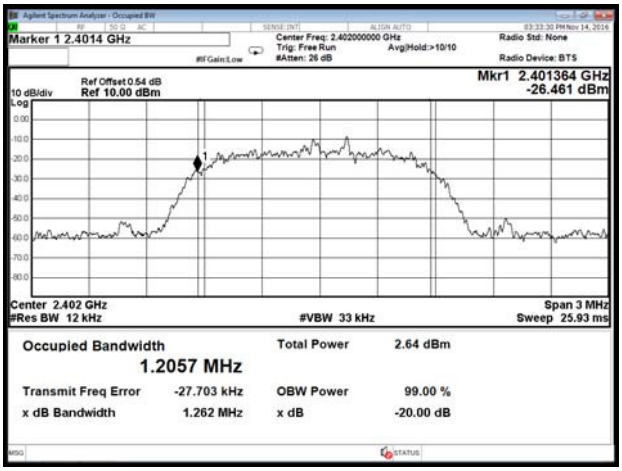
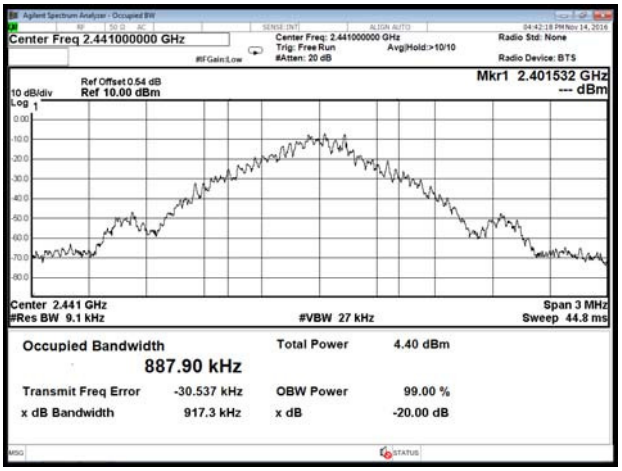
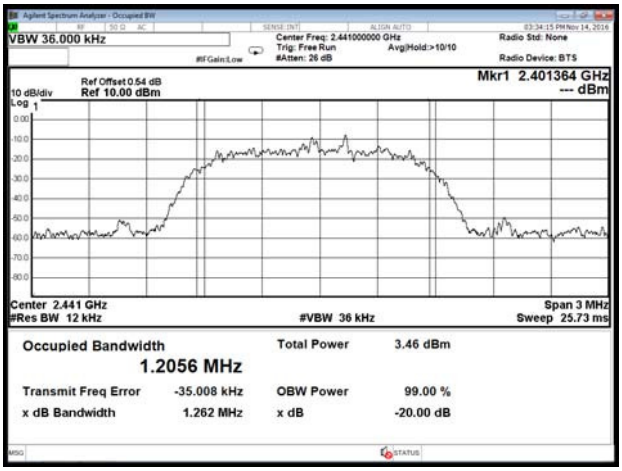
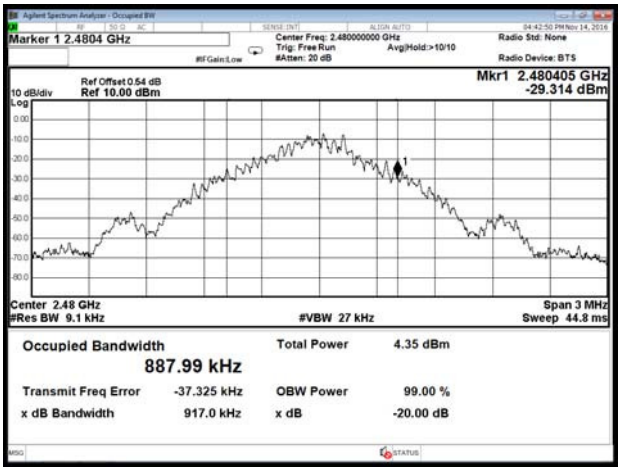
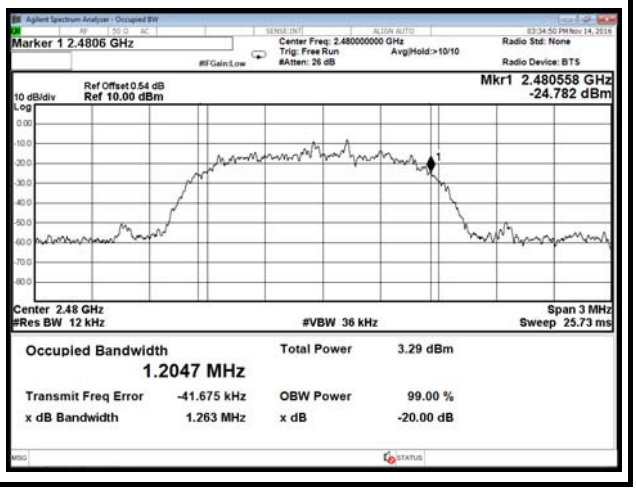
A.1.2 Measurement Plots

Modulation: GFSK	Modulation: 8-DPSK
	
	
	

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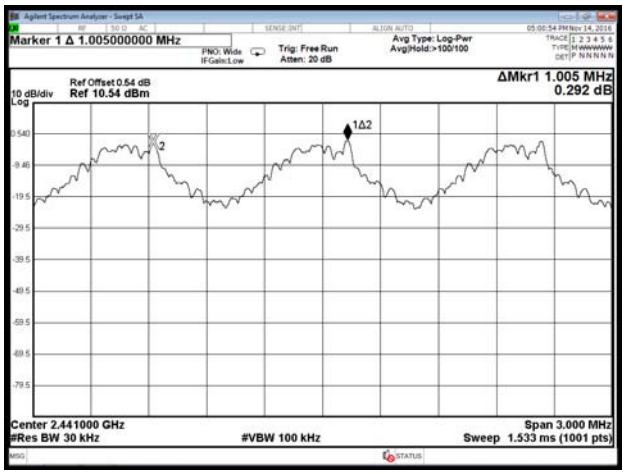
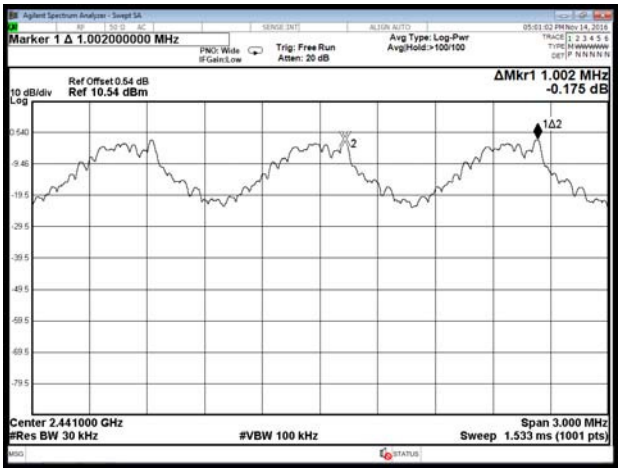
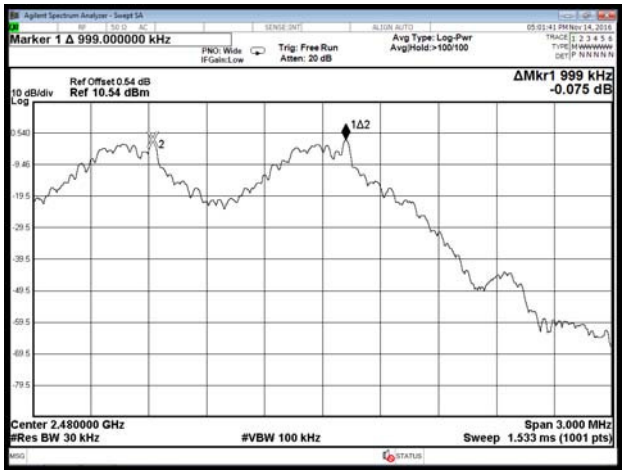
A.2 CARRIER FREQUENCY SEPARATION MEASUREMENT

Test Date	2016/11/14	Temp./Hum.	24℃/55%
Cable Loss	0.54dB	Test Voltage	AC 120V, 60Hz (via AC Adapter)
Test Model	WT002		

A.2.1 Measurement Plots

Modulation: GFSK	
2402MHz	2441MHz adjacent channel of right carrier frequency
	
2441MHz adjacent channel of left carrier frequency	2480MHz
	

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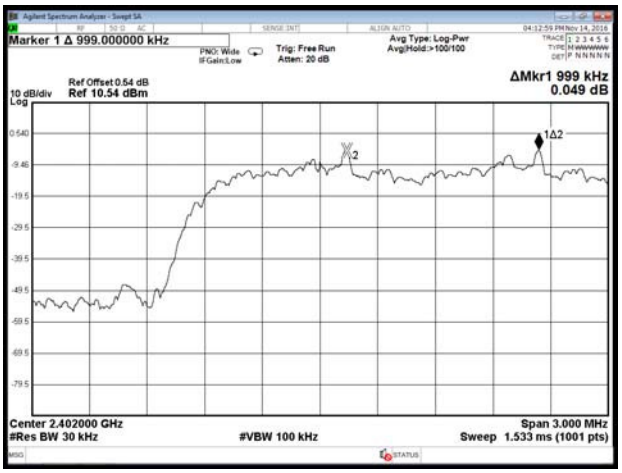
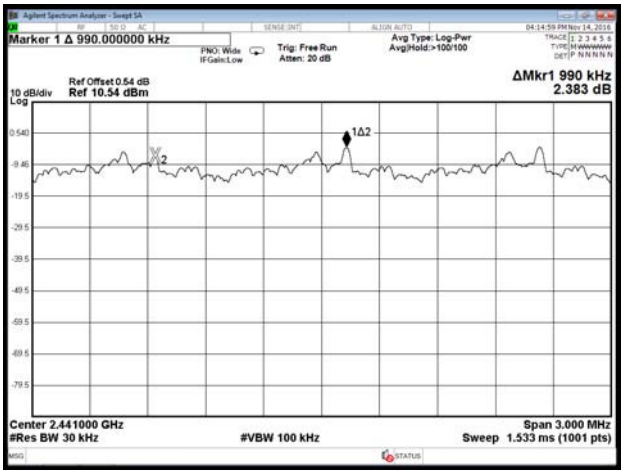
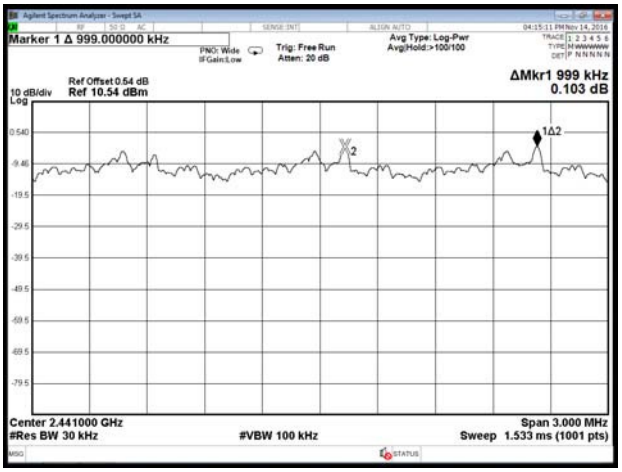
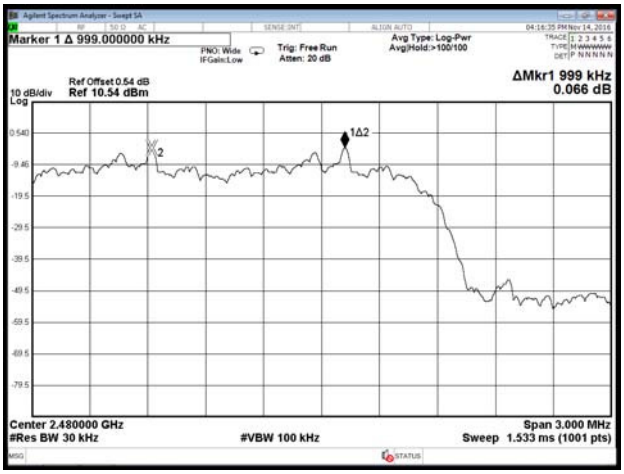
Modulation: 8-DPSK	
2402MHz	2441MHz adjacent channel of right carrier frequency
	
2441MHz adjacent channel of left carrier frequency	2480MHz
	

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A.3 TIME OF OCCUPANCY MEASUREMENT

Test Date	2016/11/14	Temp./Hum.	24℃/55%
Cable Loss	0.54dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Test Model	WT002		

A.3.1 Time of Occupancy

Modulation	Centre Frequency (MHz)	Mode	Time of Occupancy (ms)	Maximum accumulated Time of Occupancy (ms)	Limit (ms)
GFSK	2402	DH1	0.380	120.080	<400
		DH3	1.642	259.436	<400
		DH5	2.890	273.972	<400
	2441	DH1	0.385	121.660	<400
		DH3	1.642	259.436	<400
		DH5	2.880	273.024	<400
	2480	DH1	0.380	120.080	<400
		DH3	1.635	258.330	<400
		DH5	2.890	273.972	<400

Observation Period: 79 channels*0.4 seconds = 31.6 seconds

Centre Frequency: 2402MHz

DH1: For each second of 6 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

10 channels*31.6 seconds* **0.38** ms= **120.080** ms

DH3: For each second of 5 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

5 channels*31.6 seconds* **1.642** ms= **259.436** ms

DH5: For each second of 3 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

3 channels*31.6 seconds* **2.89** ms= **273.972** ms

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Centre Frequency: 2441MHz

DH1: For each second of 6 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

10 channels*31.6 seconds* **0.385** ms= **121.660** ms

DH3: For each second of 5 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

5 channels*31.6 seconds* **1.642** ms= **259.436** ms

DH5: For each second of 3 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

3 channels*31.6 seconds* **2.88** ms= **273.024** ms

Centre Frequency: 2480MHz

DH1: For each second of 6 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

10 channels*31.6 seconds* **0.38** ms= **120.080** ms

DH3: For each second of 5 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

5 channels*31.6 seconds* **1.635** ms= **258.330** ms

DH5: For each second of 3 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

3 channels*31.6 seconds* **2.89** ms= **273.972** ms

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Modulation	Centre Frequency (MHz)	Mode	Time of Occupancy (ms)	Maximum accumulated Time of Occupancy (ms)	Limit (ms)
8-DPSK	2402	3DH1	0.390	123.240	<400
		3DH3	1.642	311.323	<400
		3DH5	2.890	365.296	<400
	2441	3DH1	0.395	124.820	<400
		3DH3	1.642	311.323	<400
		3DH5	2.890	365.296	<400
	2480	3DH1	0.390	123.240	<400
		3DH3	1.642	311.323	<400
		3DH5	2.890	365.296	<400

Observation Period: 79 channels*0.4 seconds = 31.6 seconds

Centre Frequency: 2402MHz

3DH1: For each second of 10 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

10 channels*31.6 seconds* **0.39** ms= **123.240** ms

3DH3: For each second of 4 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

6 channels*31.6 seconds* **1.642** ms= **311.323** ms

3DH5: For each second of 2 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

4 channels*31.6 seconds* **2.89** ms= **365.296** ms

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Centre Frequency: 2441MHz

3DH1: For each second of 6 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

10 channels*31.6 seconds* **0.395** ms= **124.820** ms

3DH3: For each second of 4 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

6 channels*31.6 seconds* **1.642** ms= **311.323** ms

3DH5: For each second of 2 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

4 channels*31.6 seconds* **2.89** ms= **365.296** ms

Centre Frequency: 2480MHz

3DH1: For each second of 6 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

10 channels*31.6 seconds* **0.39** ms= **123.240** ms

3DH3: For each second of 4 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

6 channels*31.6 seconds* **1.642** ms= **311.323** ms

3DH5: For each second of 2 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

4 channels*31.6 seconds* **2.89** ms= **365.296** ms

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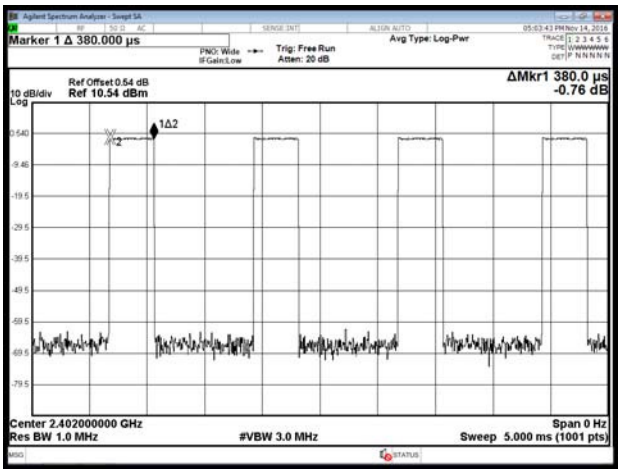
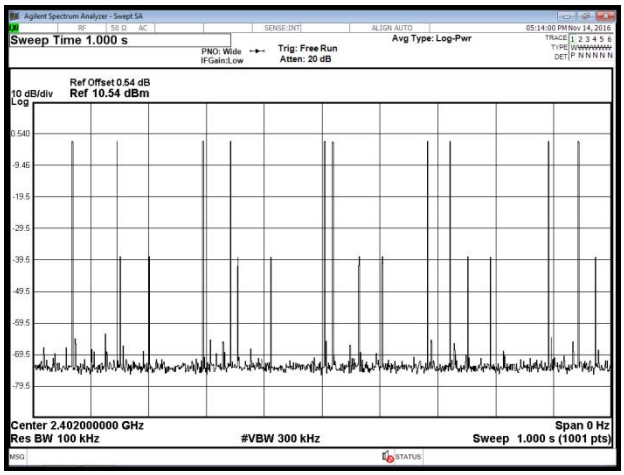
A.3.2 Measurement Plots

Modulation: GFSK	
Centre Frequency: 2402MHz	
Mode: DH1	
	
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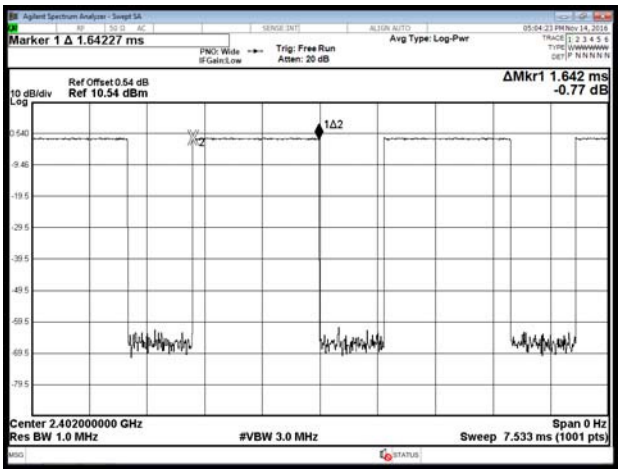	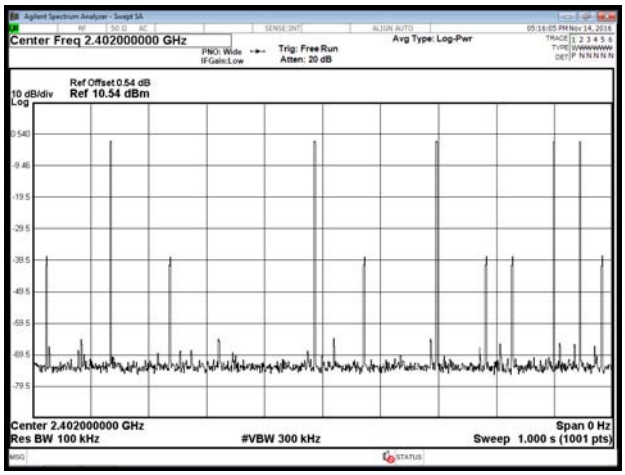
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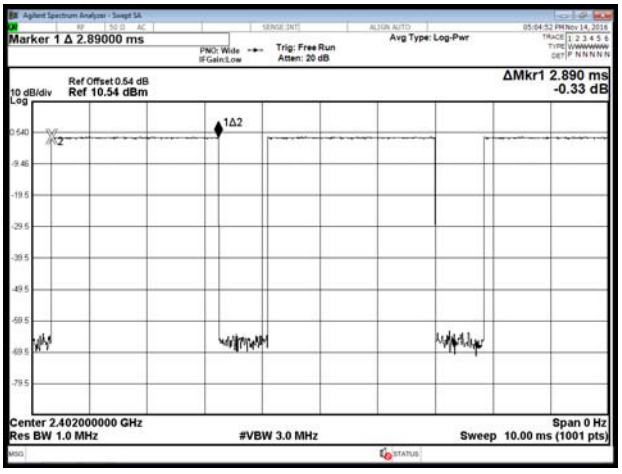	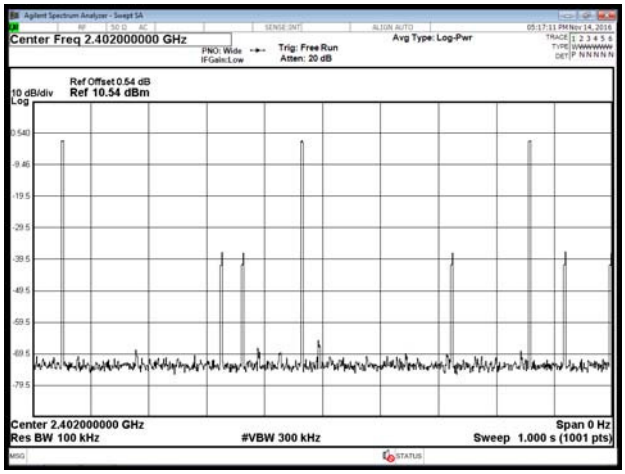

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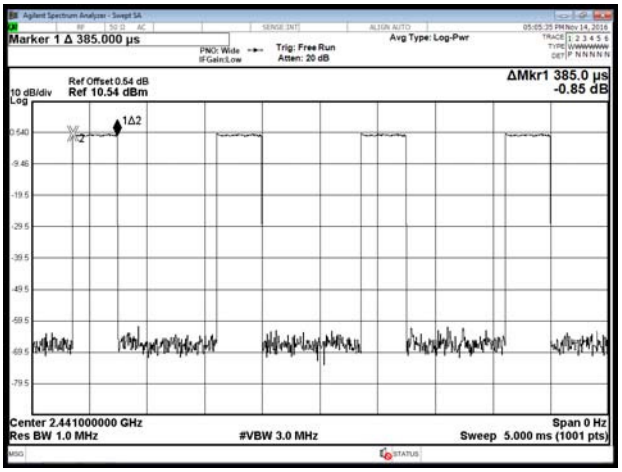
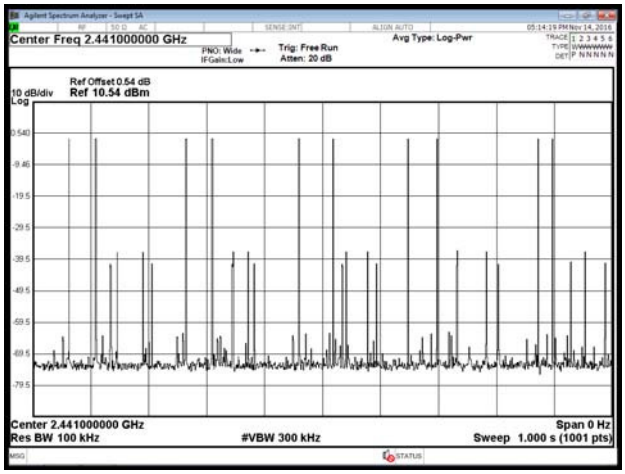
Modulation: GFSK	
Centre Frequency: 2441MHz	
Mode: DH1	
	
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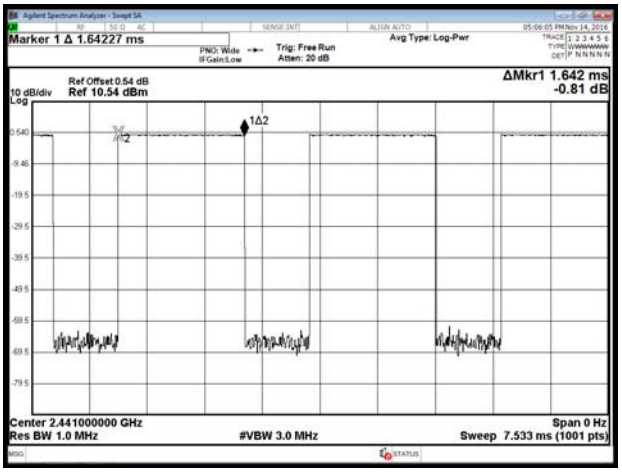	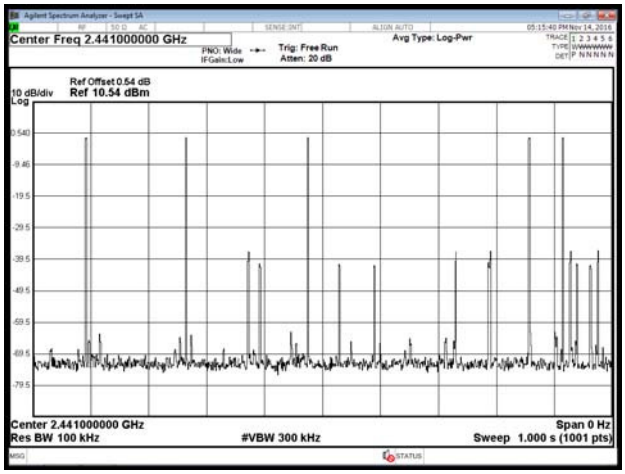
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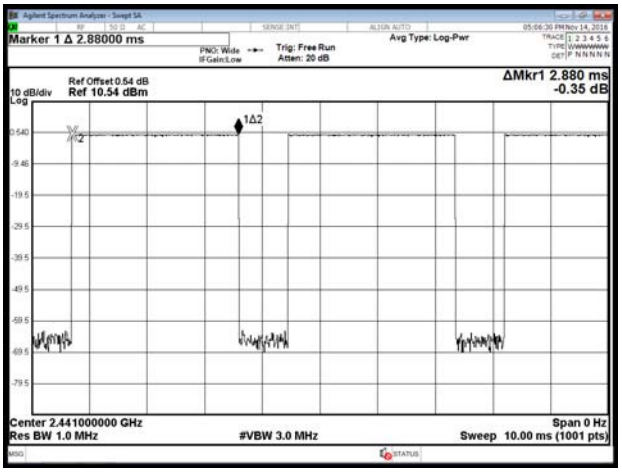	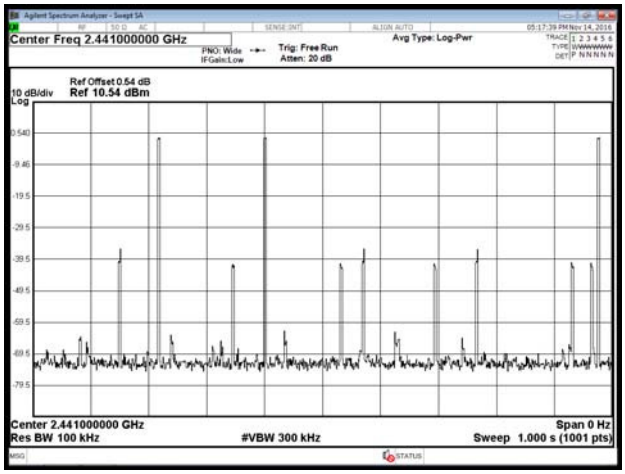

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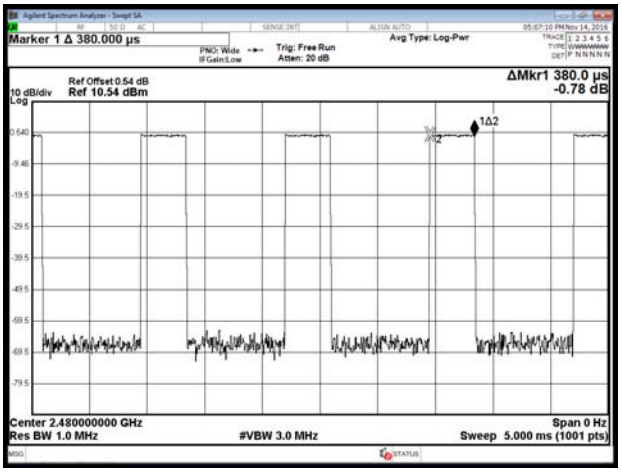
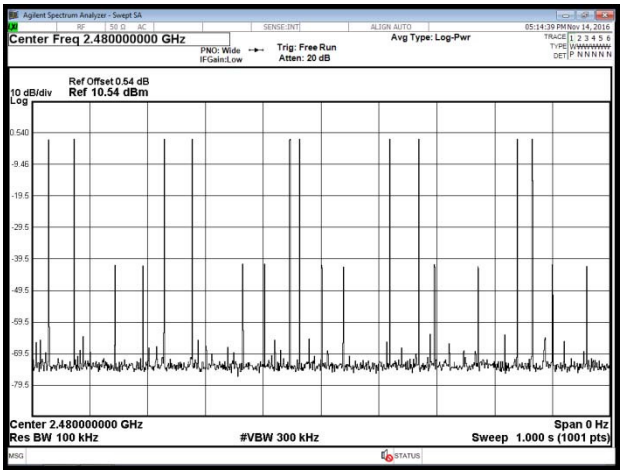
Modulation: GFSK

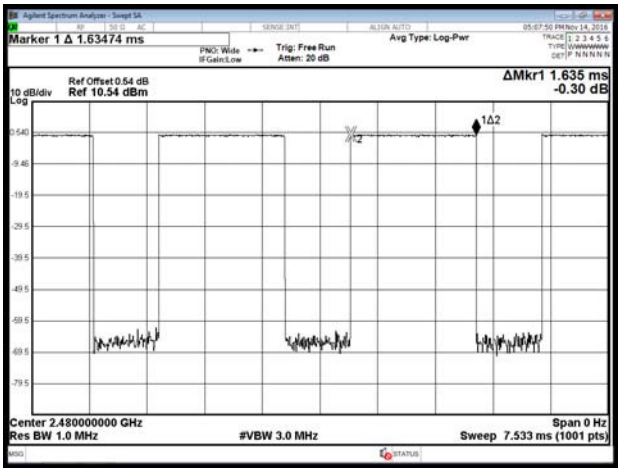
Centre Frequency: 2480MHz

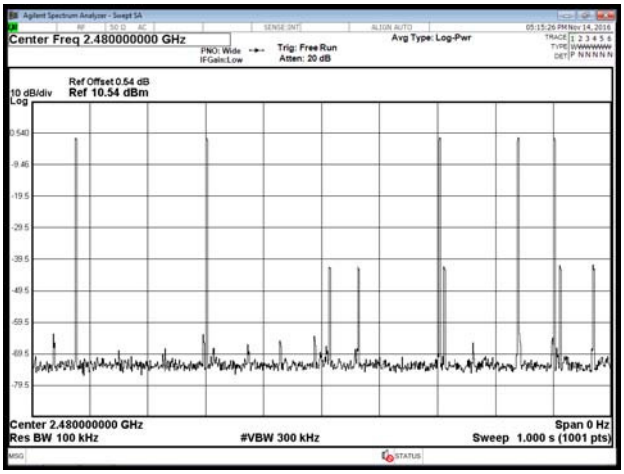
Mode: DH1



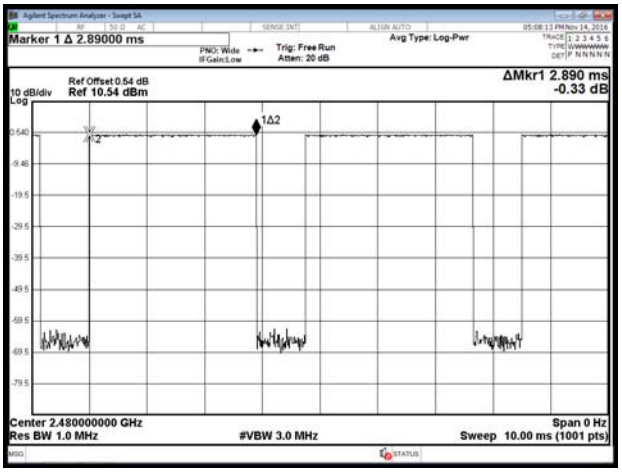


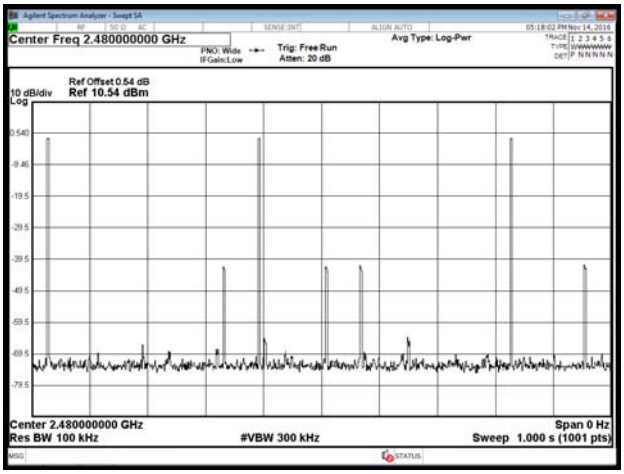
Mode: DH3





Mode: DH5





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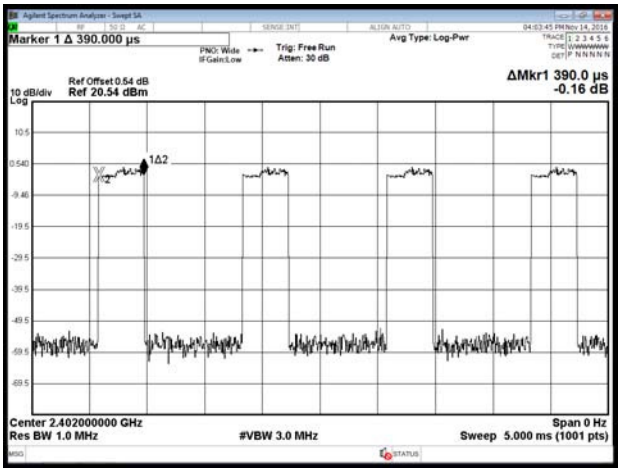
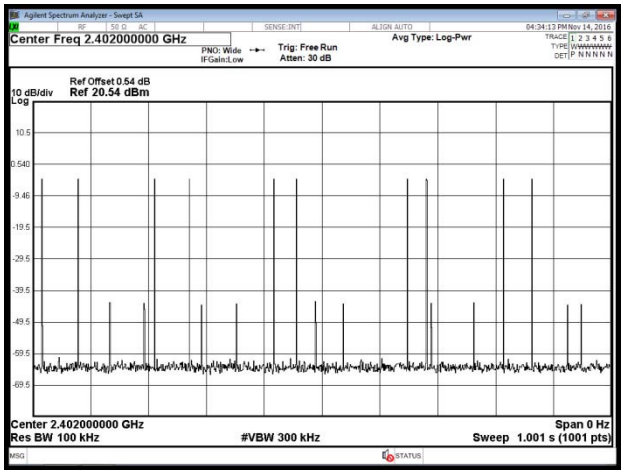
Modulation: 8-DPSK	
Centre Frequency: 2402MHz	
Mode: 3DH1	
	
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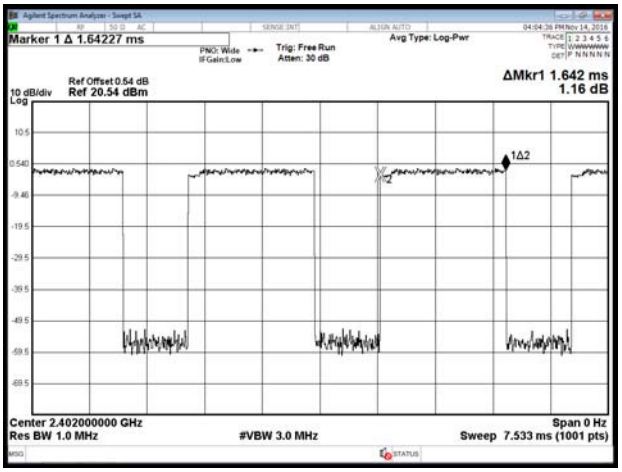	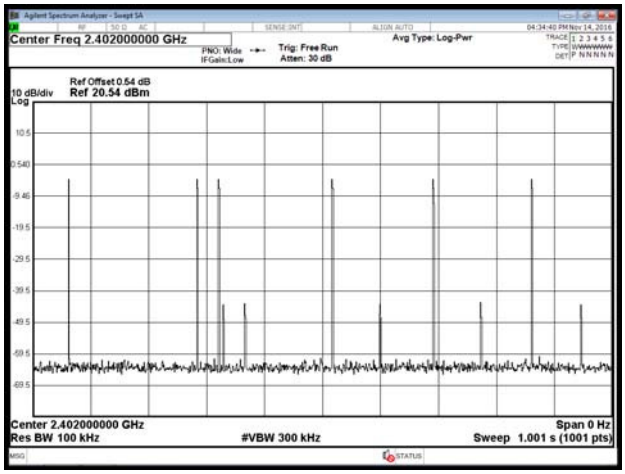
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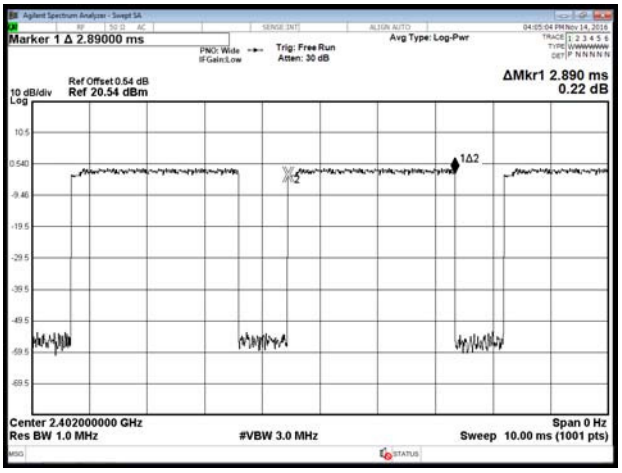	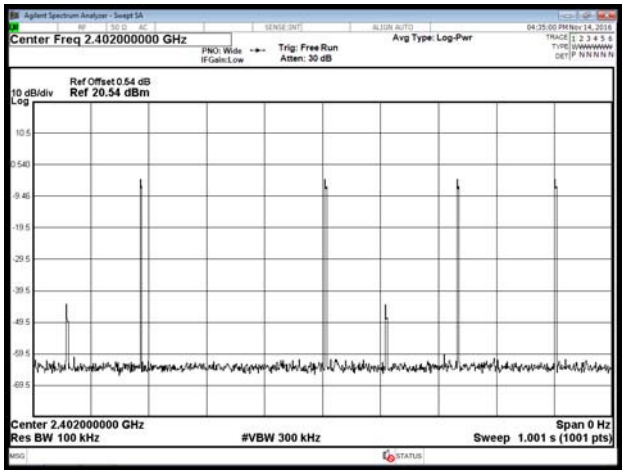

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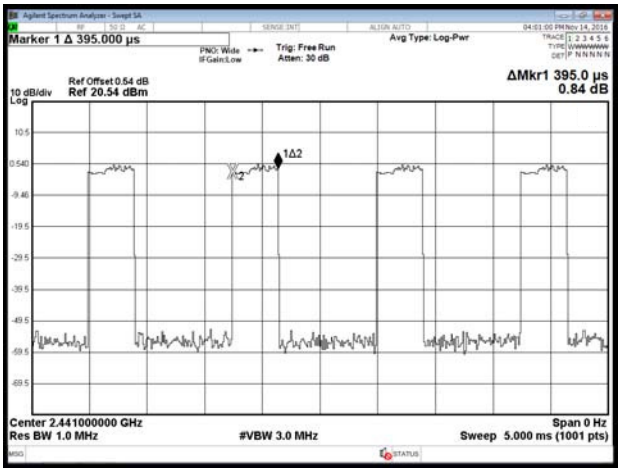
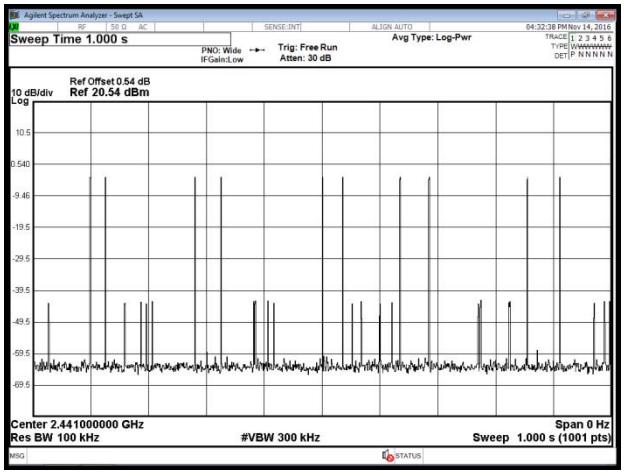
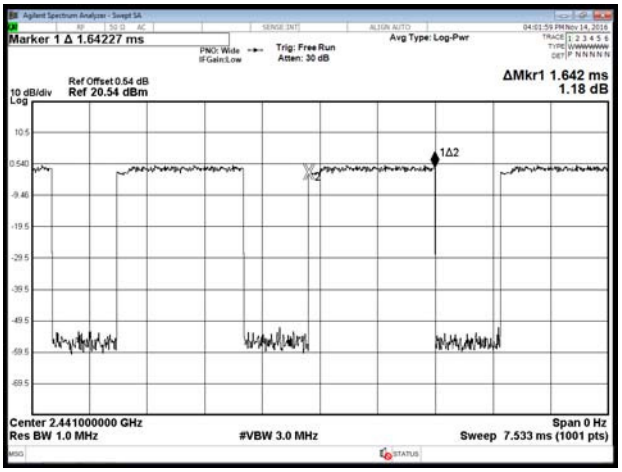
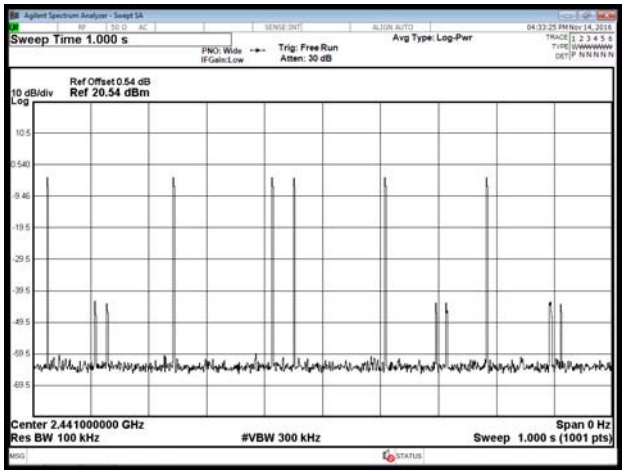
Modulation: 8-DPSK	
Centre Frequency: 2441MHz	
Mode: 3DH1	
	
Mode: 3DH3	
	
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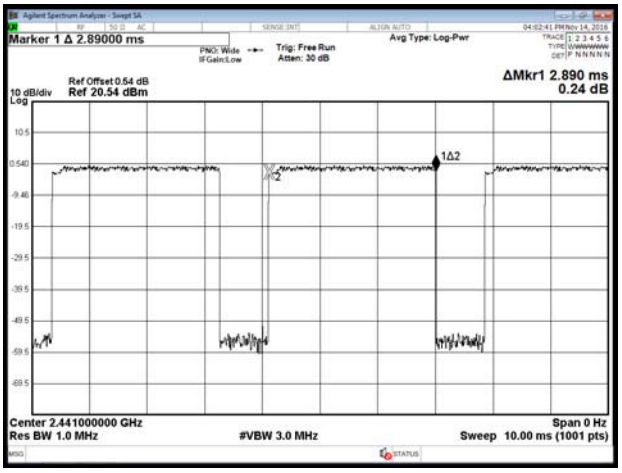	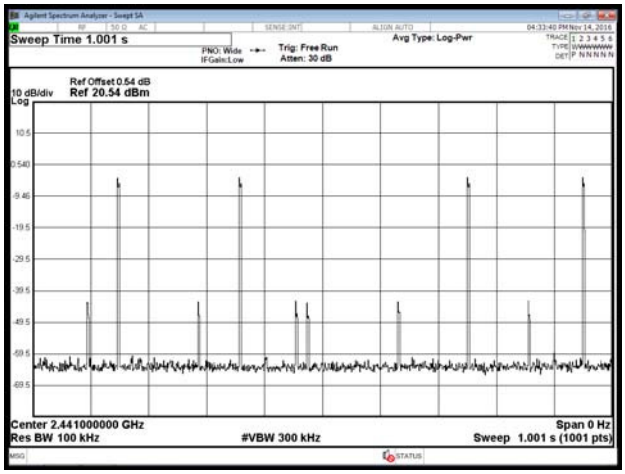

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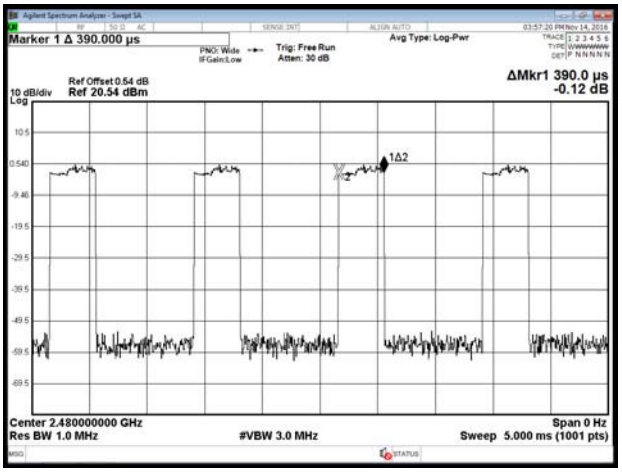
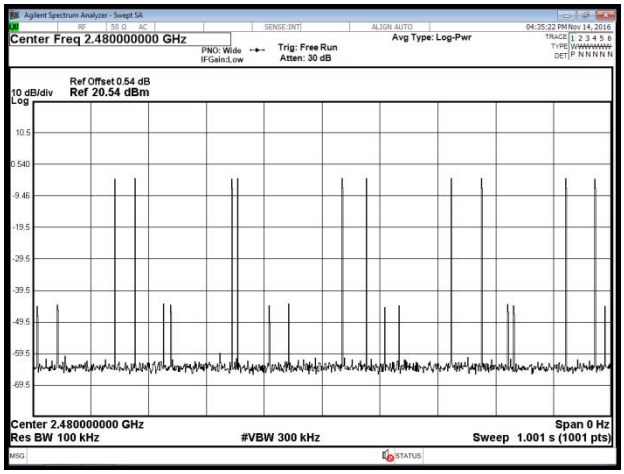
Modulation: 8-DPSK	
Centre Frequency: 2480MHz	
Mode: 3DH1	
	
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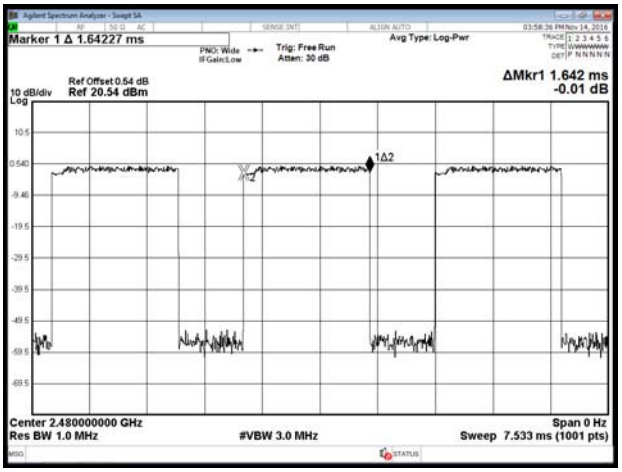	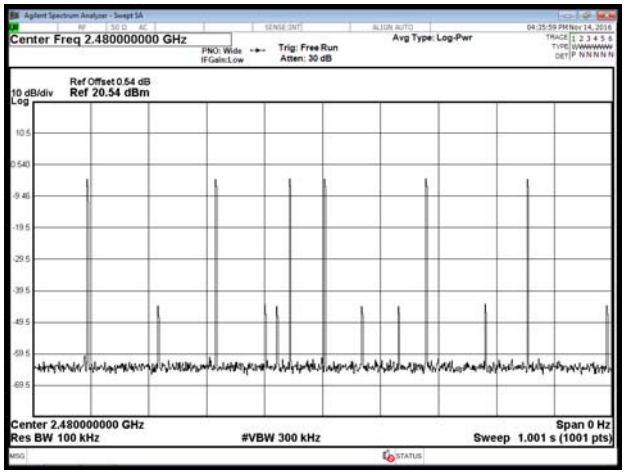
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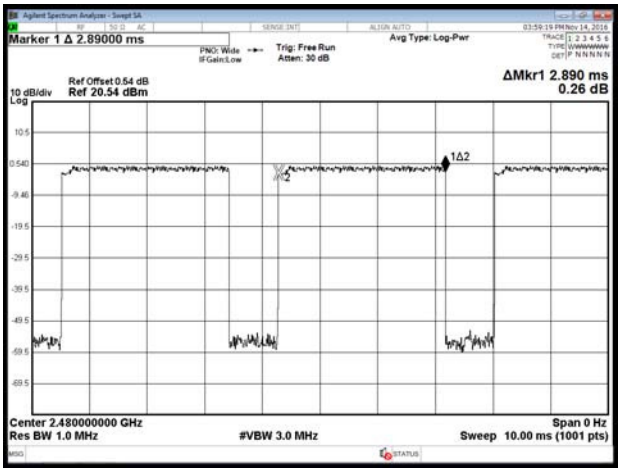	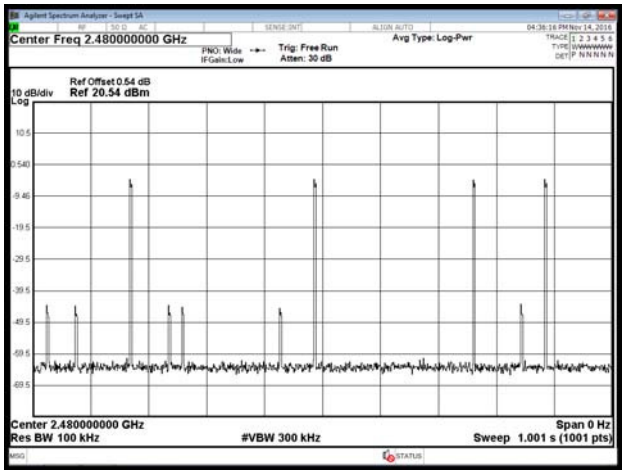

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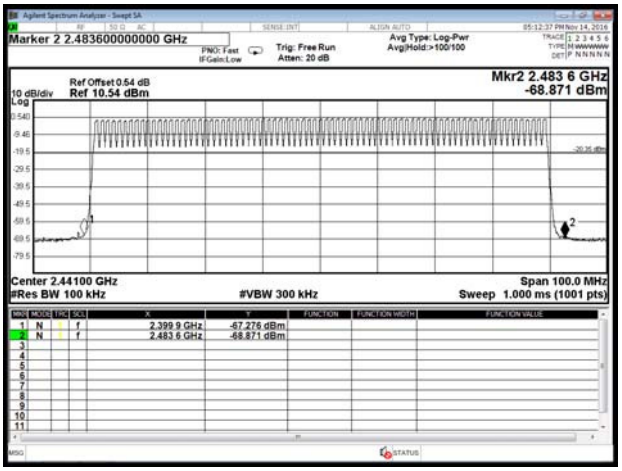
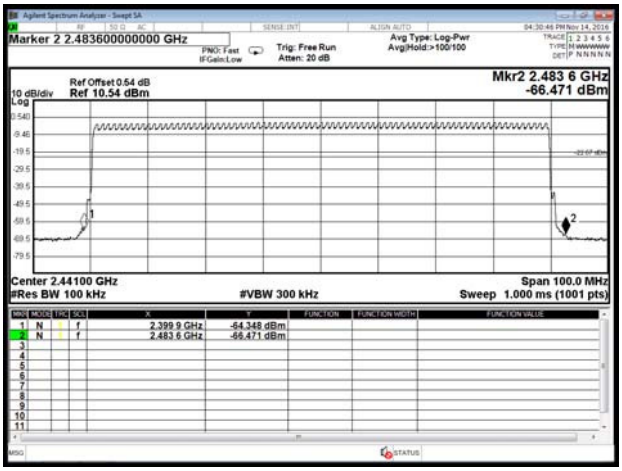
A.4 NUMBER OF HOPPING CHANNELS MEASUREMENT

Test Date	2016/11/14	Temp./Hum.	24℃/55%
Cable Loss	0.54dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Test Model	WT002		

A.4.1 Measurement Plots

Modulation: GFSK	Modulation: 8-DPSK
	
The number hopping channel is 79.	The number hopping channel is 79.

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A.5 MAXIMUM PEAK OUTPUT POWER MEASUREMENT

Test Date	2016/11/24	Temp./Hum.	24℃/55%
Cable Loss	0.54dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Test Model	WT002		

A.5.1 Output Power

Modulation	Centre Frequency (MHz)	Peak Output Power		Limit
		dBm	W	
GFSK	2402	-0.705	0.000850	21dBm (0.125W)
	2441	0.264	0.001063	
	2480	0.127	0.001030	

Modulation	Centre Frequency (MHz)	Peak Output Power		Limit
		dBm	W	
8-DPSK	2402	-0.481	0.000895	21dBm (0.125W)
	2441	0.480	0.001117	
	2480	0.400	0.001096	

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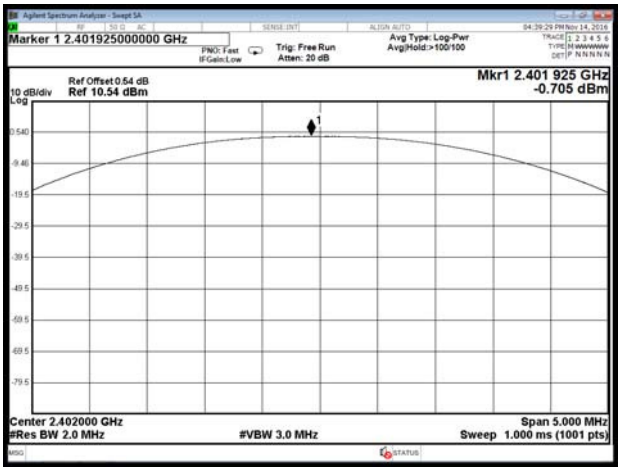
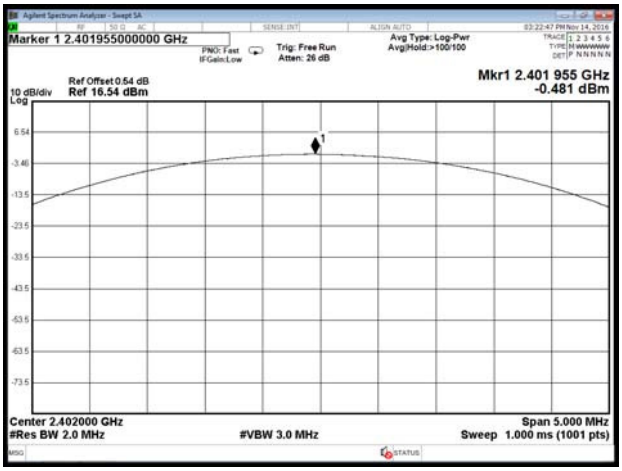
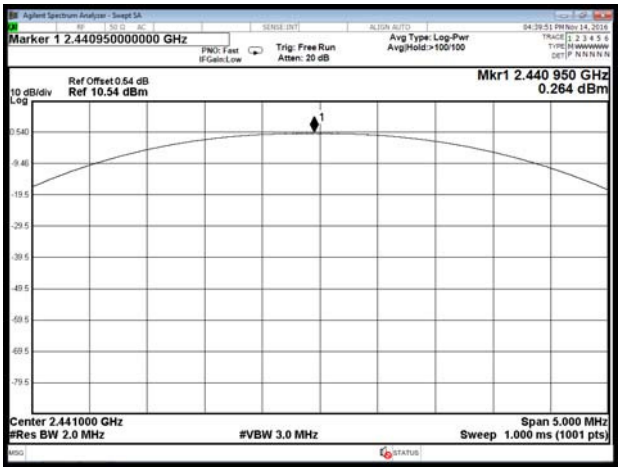
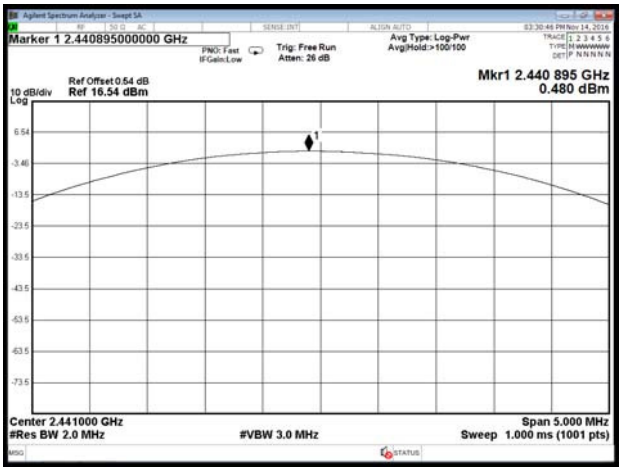
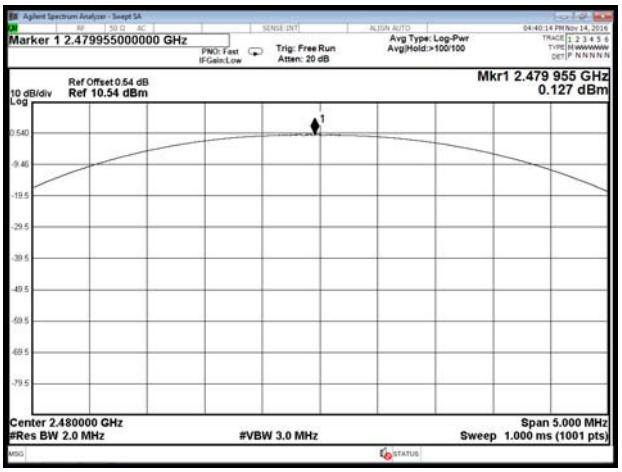
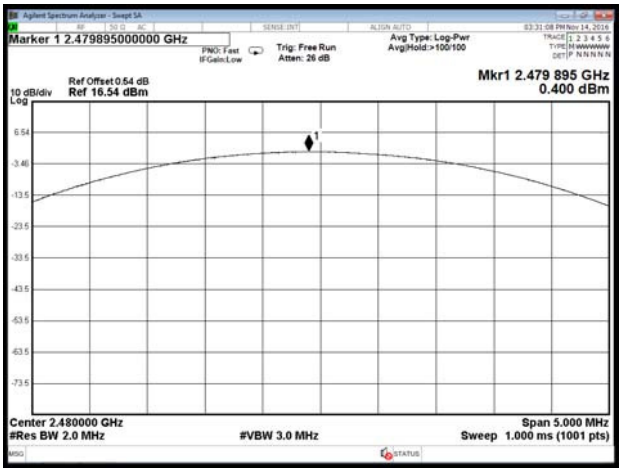
A.5.2 Measurement Plots

Modulation: GFSK	Modulation: 8-DPSK
	
	
	

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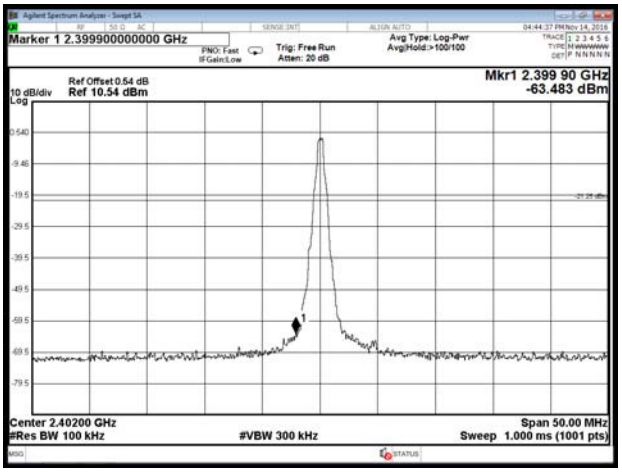
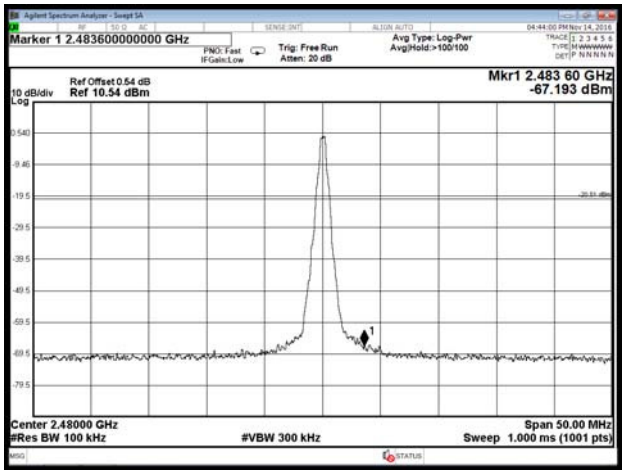
A.6 EMISSION LIMITATIONS MEASUREMENT

A.6.1 Band Edge

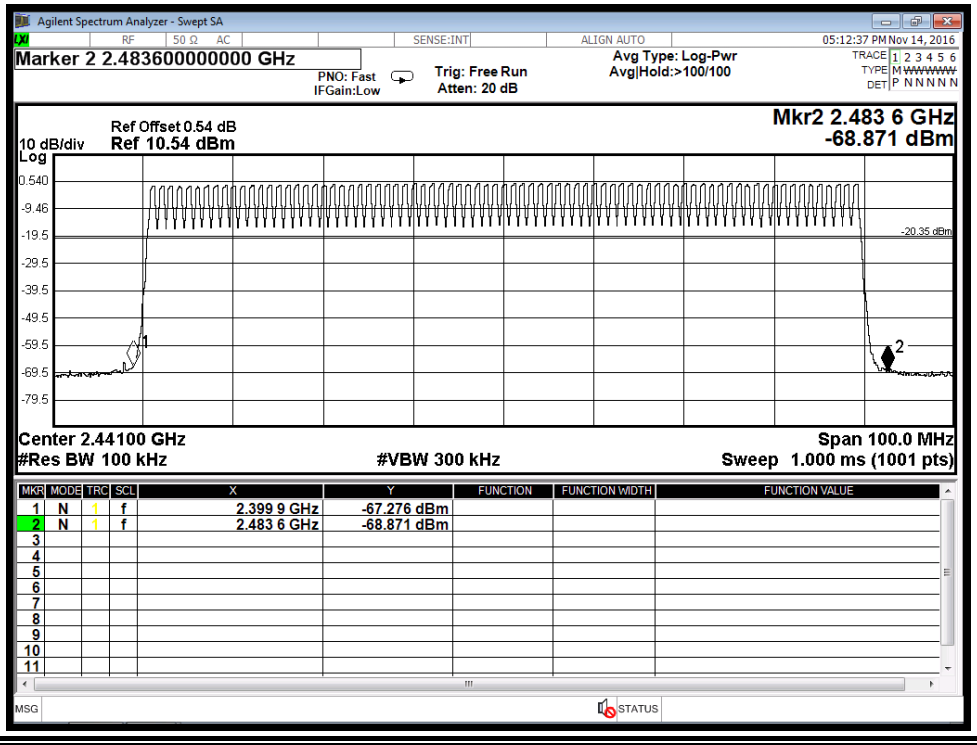
Test Date	2016/11/14	Temp./Hum.	24℃/55%
Cable Loss	0.54dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Test Model	WT002		

Modulation: GFSK	
Single Channel	
Low channel	High channel





Hopping Mode



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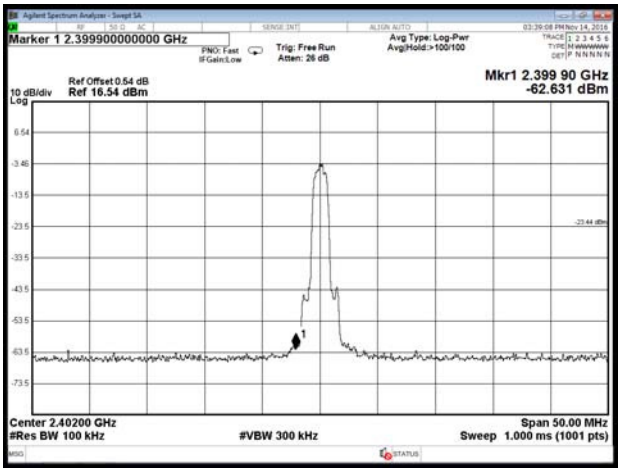
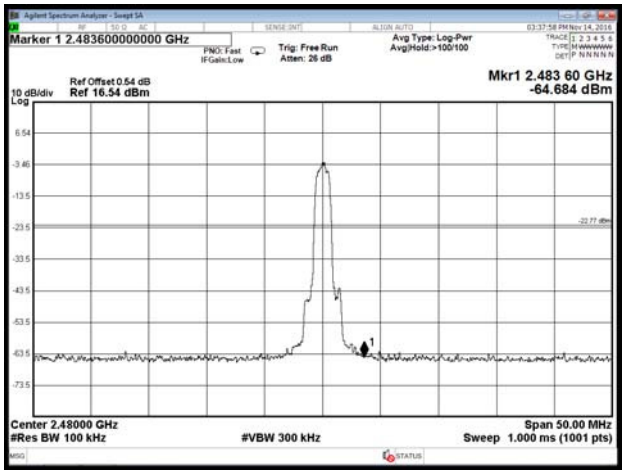
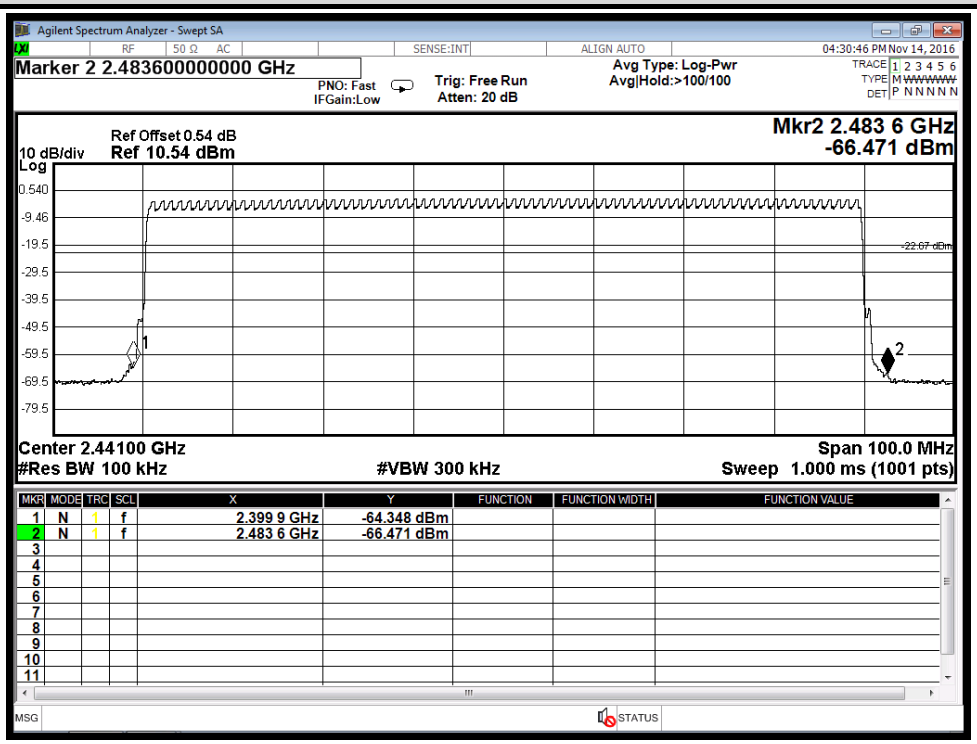
Modulation: 8-DPSK	
Single Channel	
Low channel	High channel
	
Hopping Mode	
	

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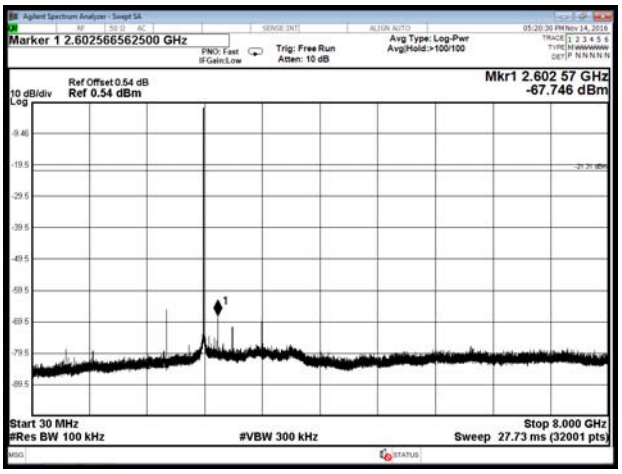
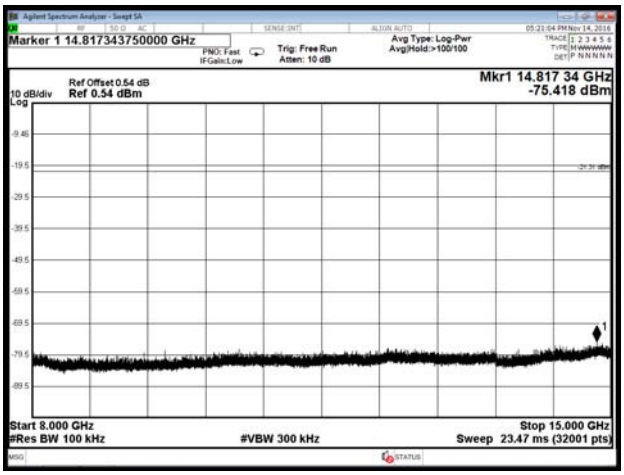
A.6.2 Spurious Emission

Test Date	2016/11/14	Temp./Hum.	24℃/55%
Modulation	GFSK	Frequency	2402MHz
Cable Loss	0.54dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Test Model	WT002		

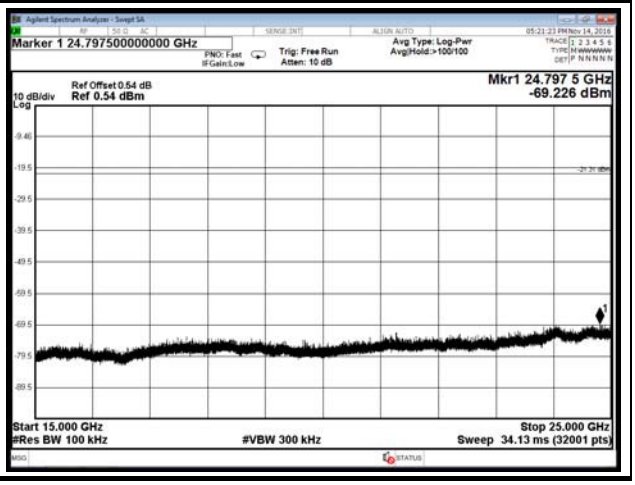
30MHz – 8GHz



8GHz – 15GHz



15GHz – 25GHz



Note: All results have been included cable loss.

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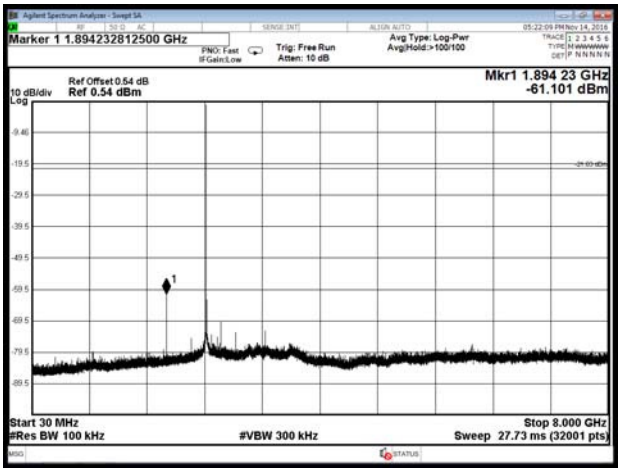
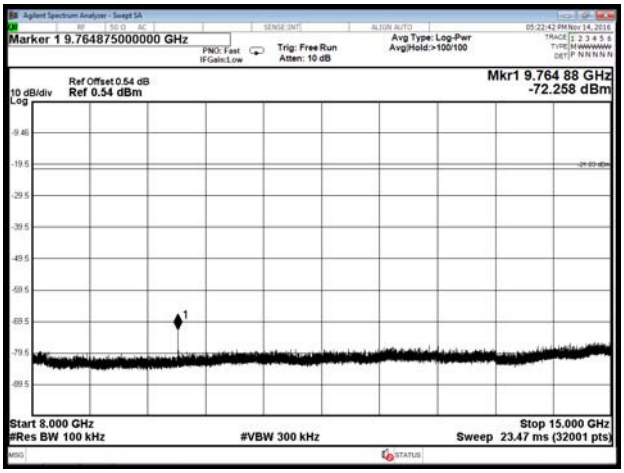
Test Date	2016/11/14	Temp./Hum.	24℃/55%
Modulation	GFSK	Frequency	2441MHz
Cable Loss	0.54dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Test Model	WT002		

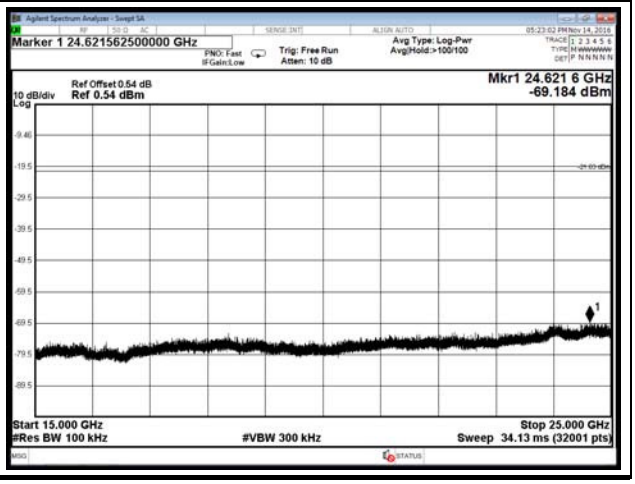
30MHz – 8GHz



8GHz – 15GHz



15GHz – 25GHz



Note: All results have been included cable loss.

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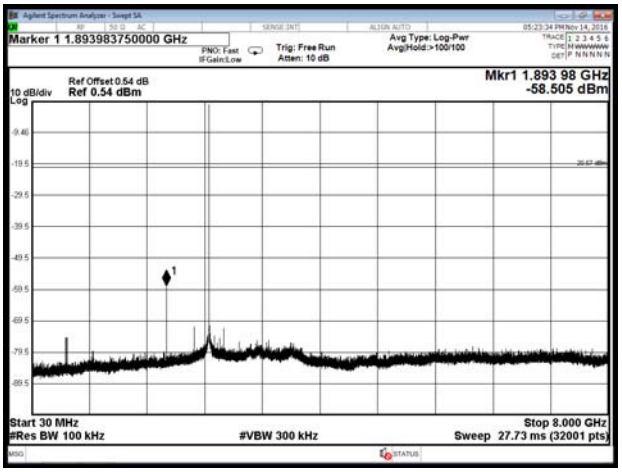
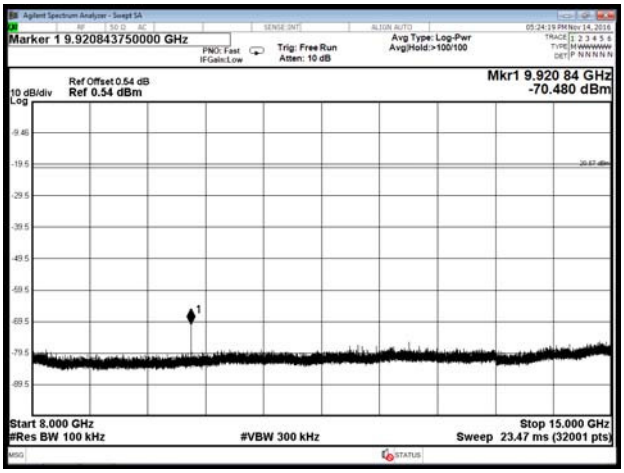
Test Date	2016/11/14	Temp./Hum.	24℃/55%
Modulation	GFSK	Frequency	2480MHz
Cable Loss	0.54dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Test Model	WT002		

30MHz – 8GHz



8GHz – 15GHz



15GHz – 25GHz

Note: All results have been included cable loss.

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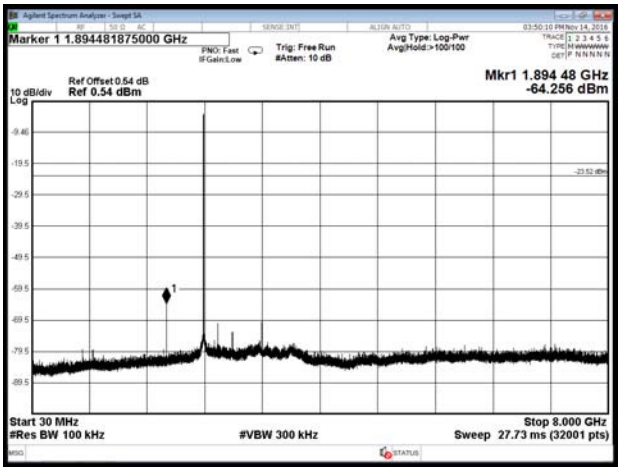
AUDIX Technology Corp.
No. 53-11, Dingfu, Linkou, Dist.,
New Taipei City244, Taiwan

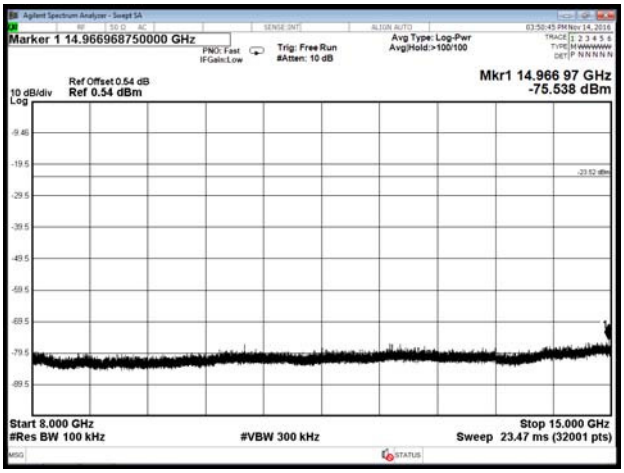
Tel: +886 2 26099301
Fax: +886 2 26099303

Test Date	2016/11/14	Temp./Hum.	24℃/55%
Modulation	8-DPSK	Frequency	2402MHz
Cable Loss	0.54dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Test Model	WT002		

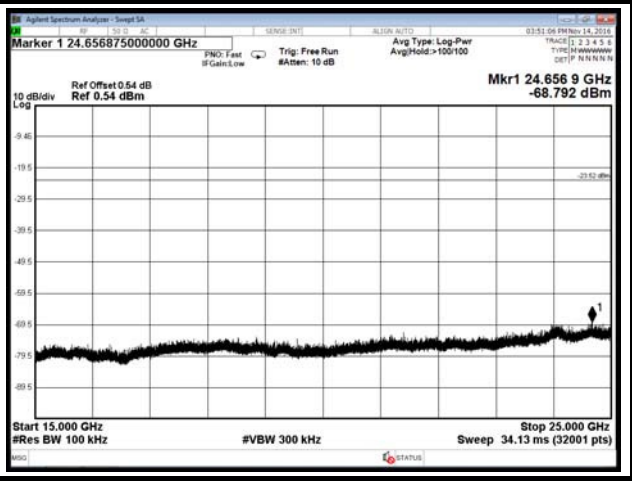
30MHz – 8GHz



8GHz – 15GHz



15GHz – 25GHz



Note: All results have been included cable loss.

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No. 53-11, Dingfu, Linkou, Dist.,
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Tel: +886 2 26099301
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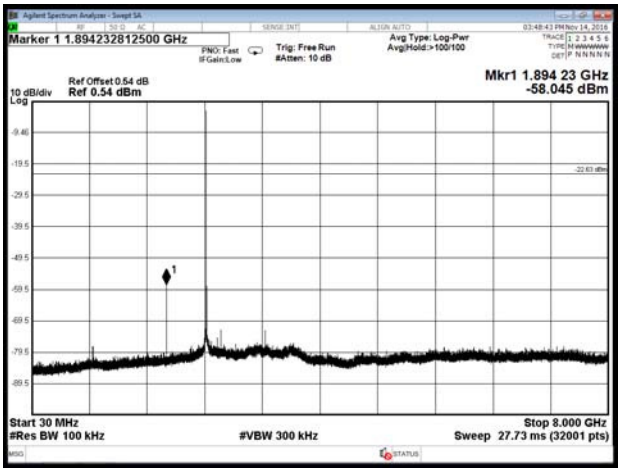
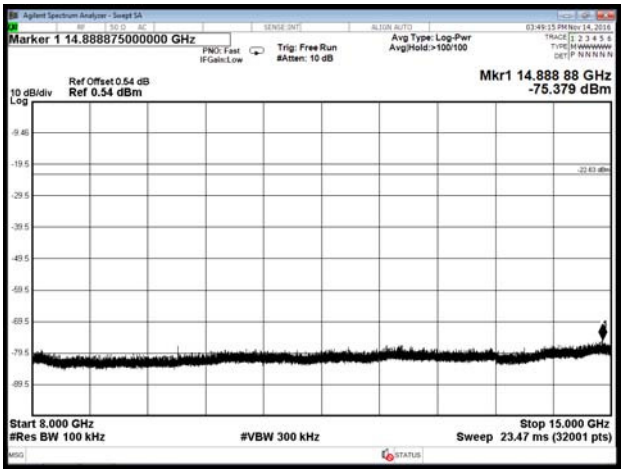
Test Date	2016/11/14	Temp./Hum.	24℃/55%
Modulation	8-DPSK	Frequency	2441MHz
Cable Loss	0.54dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Test Model	WT002		

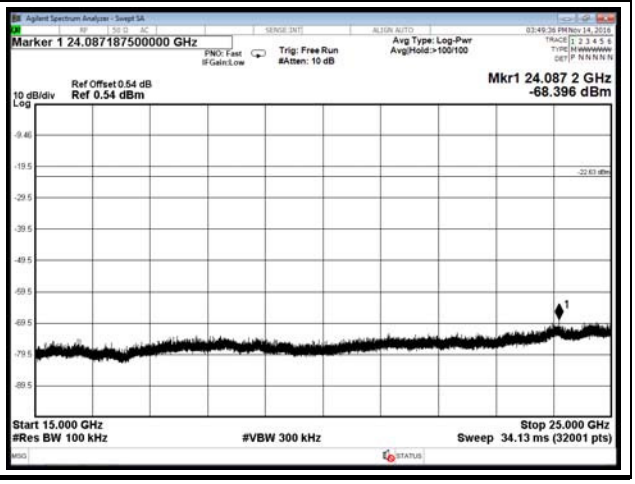
30MHz – 8GHz



8GHz – 15GHz



15GHz – 25GHz



Note: All results have been included cable loss.

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Tel: +886 2 26099301
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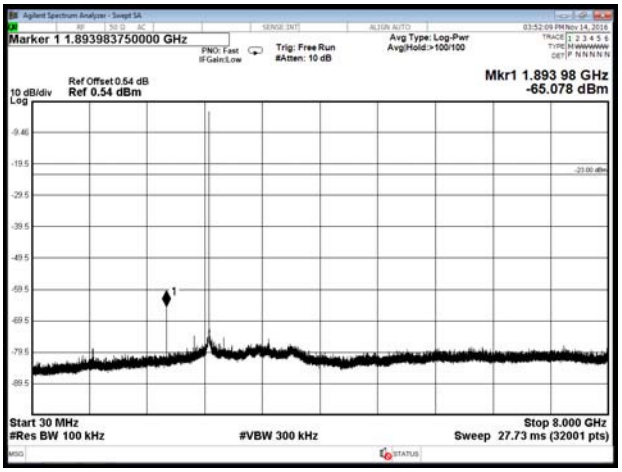
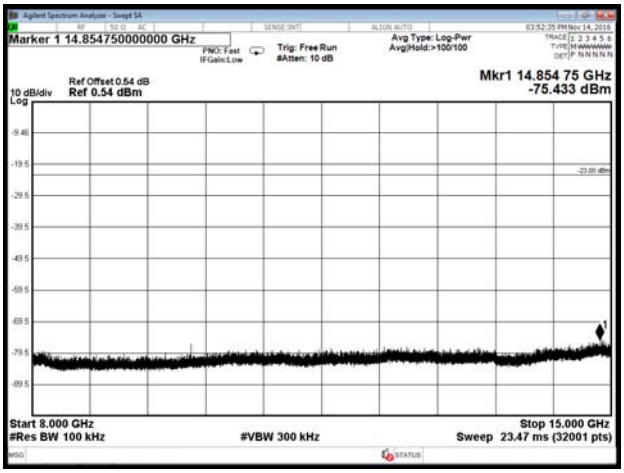
Test Date	2016/11/14	Temp./Hum.	24℃/55%
Modulation	8-DPSK	Frequency	2480MHz
Cable Loss	0.54dB	Test Voltage	AC 120V, 60Hz (via AC/DC Adapter)
Test Model	WT002		

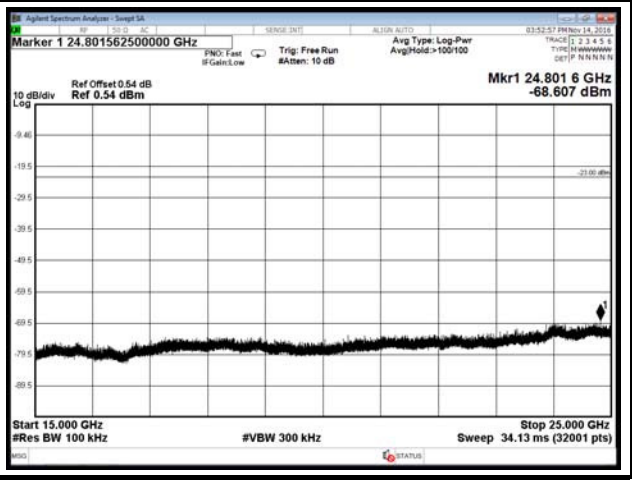
30MHz – 8GHz



8GHz – 15GHz



15GHz – 25GHz



Note: All results have been included cable loss.

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