

**FCC 15.247**  
**2.4 GHz Report**

**for**

**Elitegroup Computer Systems Co., Ltd.**

**No. 239, Sec. 2, Ti Ding Blvd,**  
**Taipei, Taiwan 11493**

**Product Name : 7" Multi Function Pad**  
**Model Name : mPAD2-7.....**  
**Brand : ECS**  
**FCC ID : WL6TC7A-W**

**Prepared by: : AUDIX Technology Corporation,**  
**EMC Department**



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## TEST REPORT CERTIFICATION

Applicant : Elitegroup Computer Systems Co., Ltd.  
EUT Description  
(1) Product : 7" Multi Function Pad  
(2) Model : mPAD2-7.....  
(3) Brand : ECS

### Applicable Standards:

47 CFR FCC Part 15 Subpart C  
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 Report: 2017. 03. 16

Reviewed by:



(Tina Huang/Administrator)

Approved by:



(Ben Cheng/Manager)

## 1. REVISION RECORD OF TEST REPORT

Edition No	Issued Data	Revision Summary	Report Number
0	2017. 03. 16	Original Report	EM-F170100

## 2. SUMMARY OF TEST RESULTS

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

### 3. GENERAL INFORMATION

#### 3.1. Description of Application

Applicant	Elitegroup Computer Systems Co., Ltd. No. 239, Sec. 2., TiDing Blvd., Taipei, Taiwan 11493
Product	7" Multi Function Pad
Model	mPAD2-7..... (The "." in the model name can be 0 to 9, A to Z, a to z, "-", "_", "\", "/" or blank for marketing use only)
Brand	ECS

### 3.2. Description of EUT

Test Model	mPAD2-7-CHT4-I																										
Serial Number	N/A																										
Power Rating	Refer to AC adapter rating.																										
RF Features	WLAN:802.11a/b/g/n/ac Bluetooth: BT and BLE NFC, GPS																										
Transmit Type	<table border="1"> <thead> <tr> <th colspan="2">2.4 GHz</th> </tr> </thead> <tbody> <tr> <td>802.11b</td> <td>2T2R</td> </tr> <tr> <td>802.11g</td> <td>2T2R</td> </tr> <tr> <td>802.11n-HT20</td> <td>2T2R</td> </tr> <tr> <td>802.11n-HT40</td> <td>2T2R</td> </tr> <tr> <td>BT/BLE</td> <td>1T1R</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">UNII Bands</th> </tr> </thead> <tbody> <tr> <td>802.11a</td> <td>2T2R</td> </tr> <tr> <td>802.11n-HT20/ 802.11ac-VHT20</td> <td>2T2R</td> </tr> <tr> <td>802.11n-HT40/ 802.11ac-VHT40</td> <td>2T2R</td> </tr> <tr> <td>802.11ac-VHT80</td> <td>2T2R</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="2">13.56MHz</th> </tr> </thead> <tbody> <tr> <td>NFC</td> <td>1T1R</td> </tr> </tbody> </table>	2.4 GHz		802.11b	2T2R	802.11g	2T2R	802.11n-HT20	2T2R	802.11n-HT40	2T2R	BT/BLE	1T1R	UNII Bands		802.11a	2T2R	802.11n-HT20/ 802.11ac-VHT20	2T2R	802.11n-HT40/ 802.11ac-VHT40	2T2R	802.11ac-VHT80	2T2R	13.56MHz		NFC	1T1R
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13.56MHz																											
NFC	1T1R																										
Accessories	<ul style="list-style-type: none"> <li>• Barcode Scanner mPAD (Option)</li> <li>• SCR mPAD (Option)</li> <li>• MSR Module (Option)</li> <li>• USB Ethernet mPAD (Option)</li> <li>• 7" Pad Docking (Option)</li> <li>• 30 Pin to USB Cable</li> <li>• 30 Pin to HDMI Cable</li> <li>• 30 Pin to DC Jack Cable</li> <li>• Power Adapter</li> </ul>																										
Date of Receipt	2017. 01. 25																										
Date of Test	2017. 02. 24 ~ 03. 15																										



### 3.3. 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

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		

### 3.4. Antenna Information

GPS Antenna					
No.	Antenna Part Number	Manufacture	Antenna Type	Frequency (MHz)	Max Gain (dBi)
1	13-130-JC5150	Joinsoon Electronics MFG. CO.,LTD	PCB	1510 to 1602	4.62

2.4G Antenna					
No.	Antenna Part Number	Manufacture	Antenna Type	Frequency (MHz)	Max Gain (dBi)
1	13-130-002075 (Tx1 Antenna)	Joinsoon Electronics MFG. CO.,LTD	PIFA	2400 to 2500	-2.53
2	13-130-002076 (Tx2 Antenna)		PIFA	2400 to 2500	-1.15

5G Antenna					
No.	Antenna Part Number	Manufacture	Antenna Type	Frequency (MHz)	Max Gain (dBi)
1	13-130-002075 (Tx1 Antenna)	Joinsoon Electronics MFG. CO.,LTD	PIFA	5150 to 5350	-0.53
2				5470 to 5725	0.82
3				5725 to 5850	0.82
4	13-130-002076 (Tx2 Antenna)	Joinsoon Electronics MFG. CO.,LTD	PIFA	5150 to 5350	0.90
5				5470 to 5725	0.53
6				5725 to 5850	0.53

### 3.5. Description of Key Components

#### 3.5.1. For the All Component Lists

Item	Supplier	Model / Type	Character
Main Board	ECS	TC71A	---
CPU (Socket: BGA1380)	Intel	Z8550	1.44GHz, up to 2.4GHz
Memory (On Board)	SK hynix	H9CCNNNBPTBL	LPDDR3 1600MHz 4GB
7" LCD Panel	KD	KD070D30-31NB-A18	LCD.WXGA.7.800*1280
Touch Module	TOPGROUP EETI	ZC-122A-0776AT EXC3102	Support 10-points multi-touch(Capacitive)
Storage	SanDisk	SDINADF4-64G	64GB
	SanDisk	SDIN9DW4-32G	32GB
Front Camera	Broadsands	BLX2722E-TC7AW-F	Front Camera : 2.0M
Rear Camera	Broadsands	BLX8858E-TC7AW-CB	Rear Camera: 8.0M
Wi-Fi +BT Module	Qualcomm (Azurewave)	QCNFA324 (AW-CM217NF)	Wi-Fi 802.11 a/b/g/n/ac + BT 4.0
GPS	Boradcam	BCM4752	GPS&GLONASS
NFC	NXP	NPC100	---
Battery	Sunwoda	MICA-071	3.7Vdc,4100mAh / 15.17Wh
AC Adapter	Asian Power Devices Inc.	WA-36A12R (Wall-mount, 2C)	I/P: AC 100-240V, 50-60Hz, 0.9A Max. O/P: DC 12V, 3A
			DC Power Cord: Unshielded, Undetachable, 1.8m With one ferrite core
mPad Module (Option)	ECS	Barcode Scanner mPAD	Barcode Scanner
	ECS	SCR mPAD	Smart Card Reader (SCR)
	ECS	MSR mPAD	Magnetic Stripe Reader (MSR)
	ECS	USB Ethernet mPAD	Giga LAN Port
7" Pad Docking (Option)	ECS	DOCKING mPAD-7	Docking

Remark: For more detailed features description, please refer to the manufacturer's specifications or the user manual.

3.5.2. The EUT collocates with following worst components, which are used to establish a basic configuration of system during test:

Item	Supplier	Model / Type	Character
Main Board	ECS	TC71A	---
CPU (Socket: BGA1380)	Intel	Z8550	1.44GHz, up to 2.4GHz
Memory (On Board)	SK hynix	H9CCNNNBPTBL	LPDDR3 1600MHz 4GB
7" LCD Panel	KD	KD070D30-31NB-A18	LCD.WXGA.7.800*1280
Touch Module	TOPGROUP EETI	ZC-122A-0776AT EXC3102	Support 10-points multi-touch(Capacitive)
Storage	SanDisk	SDIN9DW4-32G	32GB
Front Camera	Brodsands	BLX2722E-TC7AW-F	Front Camera : 2.0M
Rear Camera	Brodsands	BLX8858E-TC7AW-CB	Rear Camera: 8.0M
Wi-Fi +BT Module	Qualcomm (Azurewave)	QCNFA324 (AW-CM217NF)	Wi-Fi 802.11 a/b/g/n/ac + BT 4.0
GPS	Boradcam	BCM4752	GPS&GLONASS
NFC	NXP	NPC100	---
Battery	Sunwoda	MICA-071	3.7Vdc,4100mAh / 15.17Wh
AC Adapter	Asian Power Devices Inc.	WA-36A12R (Wall-mount, 2C)	I/P: AC 100-240V, 50-60Hz, 0.9A Max. O/P: DC 12V, 3A
		DC Power Cord: Unshielded, Undetachable, 1.8m With one ferrite core	
mPad Module (Option)	ECS	Barcode Scanner mPAD	Barcode Scanner
7" Pad Docking (Option)	ECS	DOCKING mPAD-7	Docking

### 3.6. Test Configuration

Mode	Duty Cycle (x)	T (ms)	Duty Cycle Factor (dB)
BT	N/A	2.9	N/A

AC Conduction	
Test Case	Normal operation

Item		Modulation	Data Rate	Test Channel
Radiated Test Case	Radiated Band Edge <sup>Note1</sup>	GFSK	1Mbps	00/78
		8-DPSK	3Mbps	00/78
	Radiated Spurious Emission <sup>Note1</sup>	GFSK	1Mbps	00/39/78
Conducted Test Case <sup>Note2</sup>	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:

Mobile Device: Device was pre-assessed with docking and portable (3 axis), the worst case is tested with docking.

Portable Device, and 3 axis were assessed.

- Lie
- Side
- Stand

Note 2: We performed testing of the highest and lowest data rate.

### 3.7. Tested Supporting System List

#### 3.7.1. Support Peripheral Unit

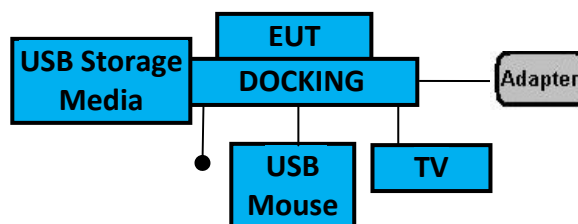
No.	Product	Brand	Model No.	Serial No.	FCC ID
1.	TV	LG	22LK330-DB	N/A	N/A
2.	USB Mouse	DELL	MOC5UO	J0M02S8L	By DoC
3.	USB Storage Media	Toshiba	Hayabusa	N/A	N/A

#### 3.7.2. Cable Lists

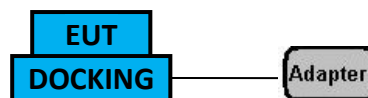
No.	Cable Description Of The Above Support Units
1.	HDMI Cable: Unshielded, Detachable, 1.0m AC Power Cord: Unshielded, Detachable, 1.5m
2.	USB Cable: Unshielded, Detachable, 1.5m
3.	---
4.	LAN Cable: Unshielded, Detachable, 1.0m

### 3.8. Setup Configuration

#### 3.8.1. EUT Configuration for Power Line & Radiated Emission



#### 3.8.2. EUT Configuration for RF Conducted Test Items



### 3.9. Operating Condition of EUT

Test program “QCA Radio Control Toolkit” is used for enabling EUT WLAN function under continues transmitting and choosing data rate/ channel.

### 3.10. 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
Test Facilities	(1) No. 8 Shielding Room (2) Semi-Anechoic Chamber (IC Test Site Registration No.: 5183B-1) (3) Fully Anechoic Chamber (IC Test Site Registration No.: 5183B-4)

### 3.11. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty
Conduction Test	150kHz~30MHz	±3.50dB
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

## 4. MEASUREMENT EQUIPMENT LIST

### 4.1. Conducted Emission Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
1.	Test Receiver	R&S	ESR3	101774	2017. 02. 07	2018. 02. 06
2.	A.M.N.	R&S	ENV4200	100169	2016. 04. 21	2017. 04. 20
3.	L.I.S.N.	Kyoritsu	KNW-407	8-855-9	2016. 12. 23	2017. 12. 22
4.	Pulse Limiter	R&S	ESH3-Z2	100354	2017. 01. 16	2018. 01. 15
5.	Test Software	Audix	e3	V.6.120424	N.C.R.	N.C.R.

### 4.2. Radiated Emission Measurement

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
1.	Spectrum Analyzer	Agilent	N9010A-526	MY53400071	2016. 09. 19	2017. 09. 18
2.	Spectrum Analyzer	Agilent	N9010A-526	MY52220368	2016. 12. 01	2017. 11. 30
3.	Test Receiver	R & S	ESCS30	100338	2016. 06. 22	2017. 06. 21
4.	Amplifier	HP	8447D	2944A06305	2017. 02. 16	2018. 02. 15
5.	Amplifier	Sonoma	310N	187161	2016. 06. 14	2017. 06. 13
6.	Bilog Antenna	CHASE	CBL6112D	33821	2017. 01. 21	2018. 01. 20
7.	Loop Antenna	R&S	HFH2-Z2	891847/27	2016. 12. 23	2017. 12. 22
8.	Double-Ridged Waveguide Horn	ETS-Lindgren	3117	00135902	2016. 03. 09	2017. 03. 08
9.	2.4GHz Notch Filter	K&L	7NSL10-244 1.5E130.5-00	1	2016. 07. 28	2017. 07. 27
10.	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. Due
2.	Spectrum Analyzer	Keysight	N9010B-544	MY55460198	2016. 04. 20	2017. 04. 19



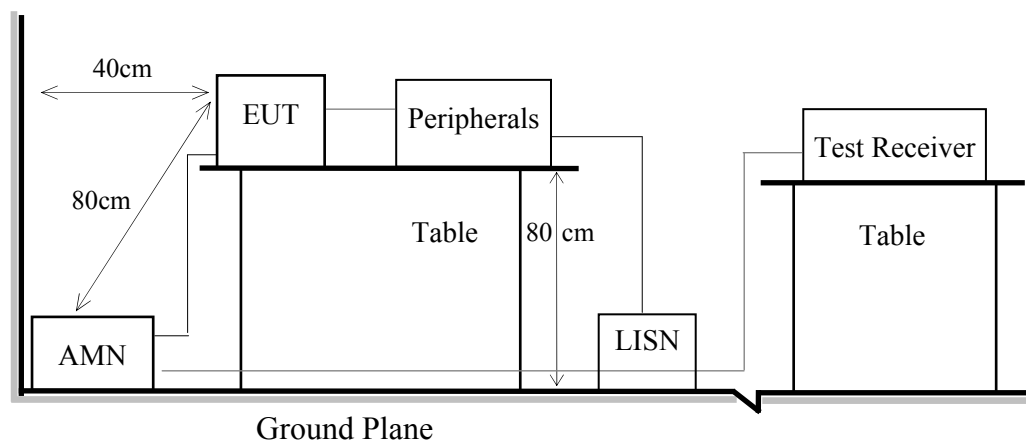
## 5. CONDUCTED EMISSION

### 5.1. Block Diagram of Test Setup

#### 5.1.1. Block Diagram of EUT

Indicated as section 3.8

#### 5.1.2. Shielded Room Setup Diagram



### 5.2. Conducted Emission Limit

Frequency	Conducted Limit	
	Quasi-Peak Level	Average Level
150kHz ~ 500kHz	66 ~ 56 dB $\mu$ V	56 ~ 46 dB $\mu$ V
500kHz ~ 5MHz	56 dB $\mu$ V	46 dB $\mu$ V
5MHz ~ 30MHz	60 dB $\mu$ V	50 dB $\mu$ V

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.

## **5.4. Test Results**

Please refer to Appendix A.

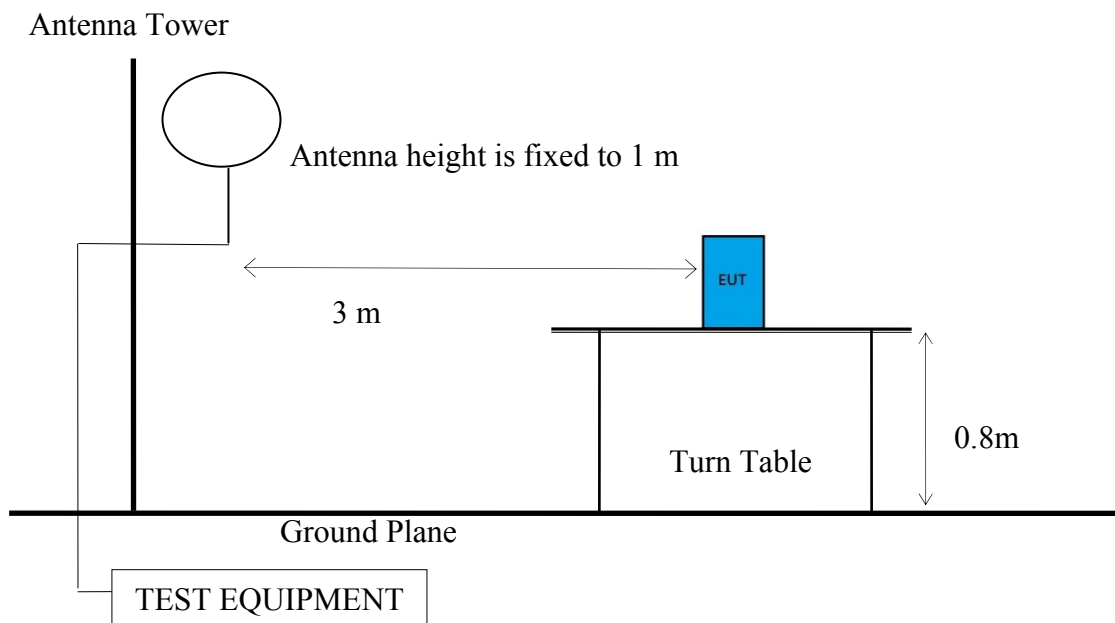
## 6. RADIATED EMISSION

### 6.1. Block Diagram of Test Setup

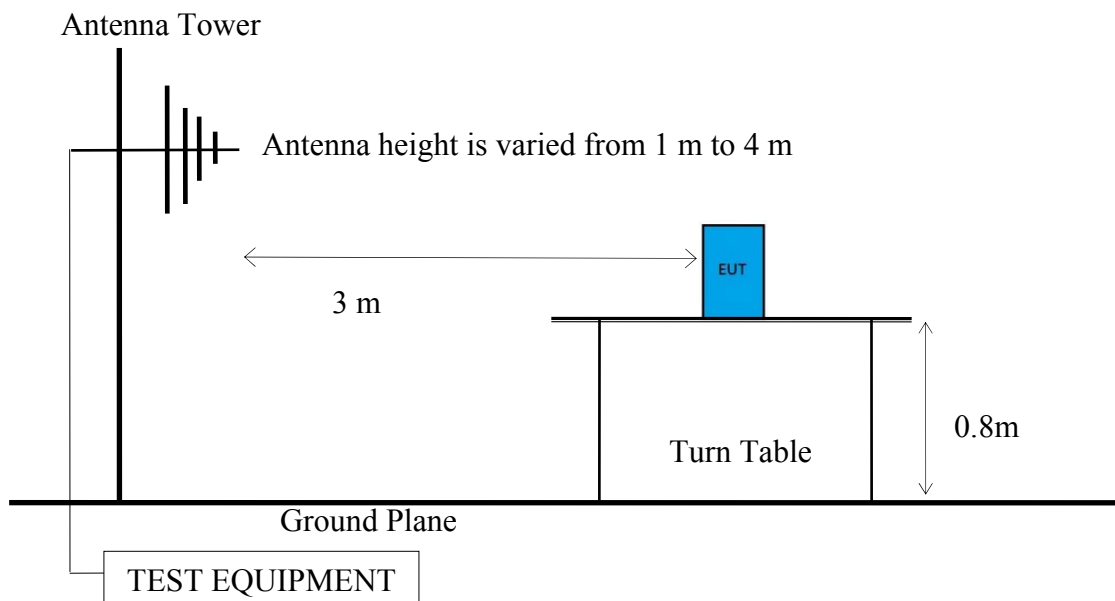
#### 6.1.1. Block Diagram of EUT

Indicated as section 3.8

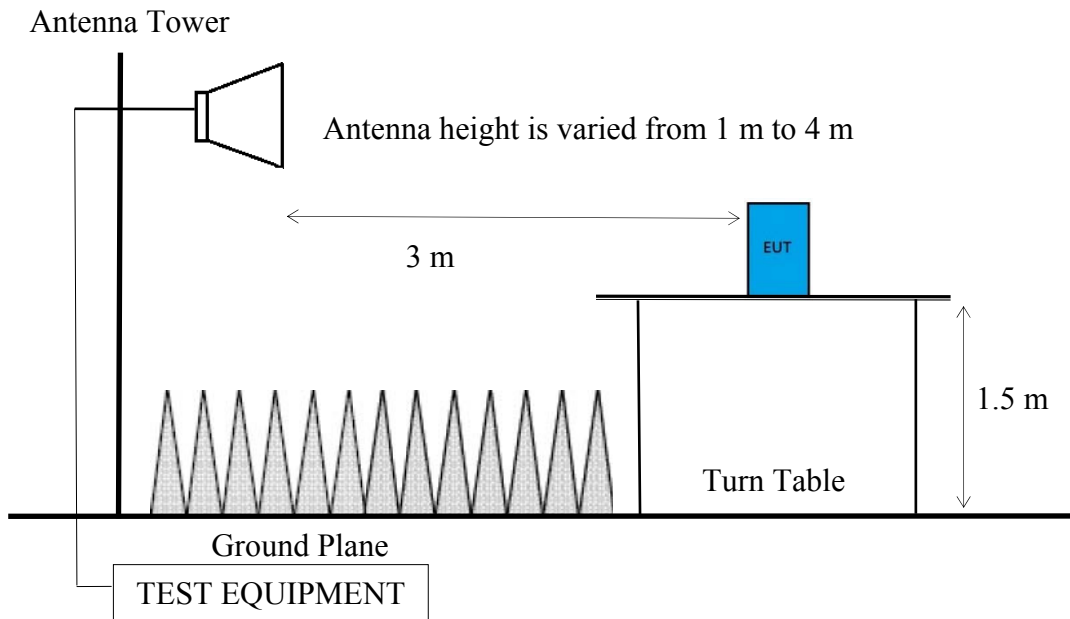
#### 6.1.2. Setup Diagram for 9kHz-30MHz



#### 6.1.3. Setup Diagram for 30-1000 MHz



6.1.4. 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	
		dB $\mu$ V/m	$\mu$ V/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 dB $\mu$ V/m (Peak) 54.0 dB $\mu$ V/m (Average)	

Remark : (1) dB $\mu$ V/m = 20 log ( $\mu$ V/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.

### 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 ~ 25GHz:**

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  $\geq 3 \times$  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.

#### **Frequency above 1GHz to 10th harmonic (up to 25 GHz):**

##### **Peak Detector:**

- (1)RBW = 1MHz
- (2)VBW  $\geq 3 \times$  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 detector for finally measurement.

**Average Detector:** **Option 1:**

- (1) RBW = 1MHz
- (2) VBW  $\geq 1/T$ .
- (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 = Antenna Factor + Cable Loss + Meter Reading

Average Emission Level = Peak Emission Level + DCCF

Duty Cycle Correction Factor (DCCF) =  $20 \log (TX_{on}/TX_{on+off})$  presented in section 3.6

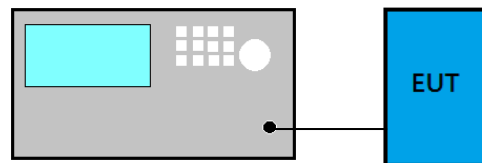
ERP = Peak Emission Level - 95.2dB - 2.14dB

**6.5. Test Results**

Please refer to Appendix A.

## 7. 20dB BANDWIDTH

### 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:

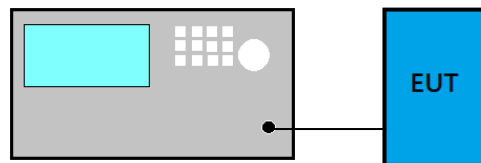
- (1) Set RBW close to 1% of OBW.
- (2) Set  $VBW \geq RBW$ .
- (3) Detector = Peak.
- (4) Trace mode = max hold.
- (5) Sweep = auto couple.
- (6) Allow the trace to stabilize.
- (7) Setting channel bandwidth function x dB to -20 dB to record the final bandwidth.

### 7.4. Test Results

Please refer to Appendix A

## 8. CARRIER FREQUENCY SEPARATION

### 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  $\geq$  1% of the span
- (3) VBW  $\geq$  RBW
- (4) Sweep = auto
- (5) Detector function = peak
- (6) Trace = max hold

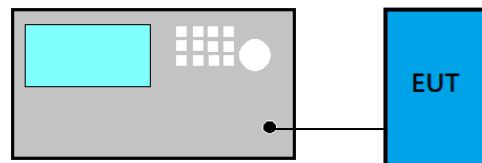
### 8.4. Test Results

Please refer to Appendix A



## 9. TIME OF OCCUPANCY

### 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:

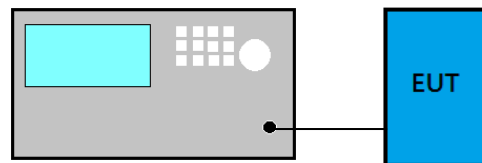
- (1) Span = zero span, centered on a hopping channel
- (2) RBW = 1 MHz
- (3) VBW  $\geq$  RBW
- (4) Sweep = as necessary to capture the entire dwell time per hopping channel
- (5) Detector function = peak
- (6) Trace = max hold

### 9.4. Test Results

Please refer to Appendix A

## 10. NUMBER OF HOPPING CHANNELS

### 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:

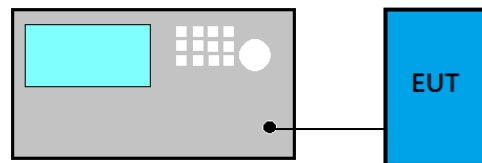
- (1) Span = the frequency band of operation
- (2) RBW  $\geq$  1% of the span
- (3) VBW  $\geq$  RBW
- (4) Sweep = auto
- (5) Detector function = peak
- (6) Trace = max hold

### 10.4. Test Results

Please refer to Appendix A

## 11. MAXIMUM PEAK OUTPUT POWER

### 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:

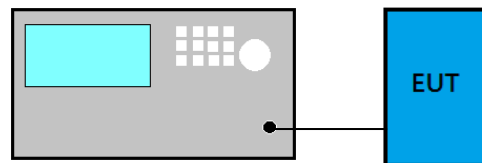
- (1) Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
- (2) RBW  $\geq$  1% of the span
- (3) VBW  $\geq$  RBW
- (4) Sweep = auto
- (5) Detector function = peak
- (6) Trace = max hold

### 11.4. Test Results

Please refer to Appendix A

## 12. EMISSION LIMITATIONS

### 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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, that the required attenuation shall be 30 dB instead of 20 dB.

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 10<sup>th</sup> harmonic.
- (2) RBW = 100 kHz
- (3) VBW  $\geq$  RBW
- (4) Sweep = auto
- (5) Detector function = peak
- (6) Trace = max hold

### 12.4. Test Results

Please refer to Appendix A

## **13.DEVIATION TO TEST SPECIFICATIONS**

**【NONE】**



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*APPENDIX A*

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---

# APPDNDIX A

## TEST DATA AND PLOTS

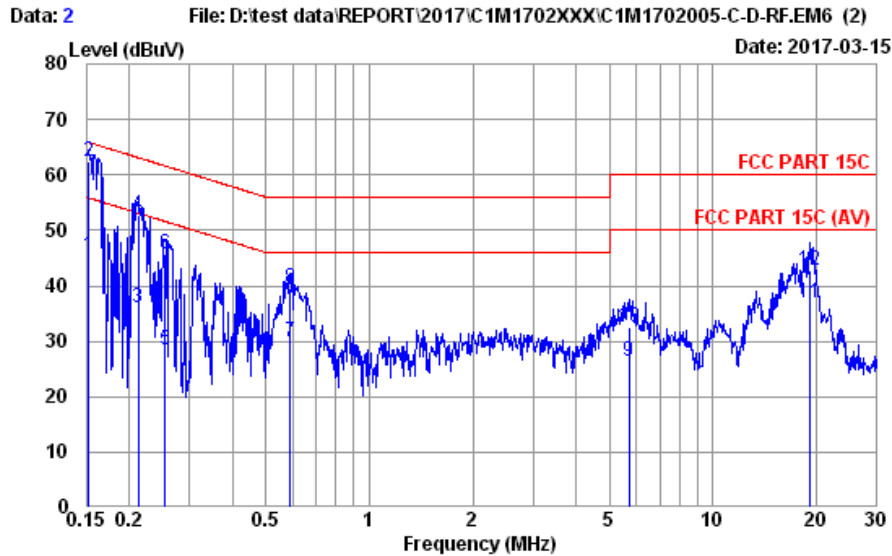
(Model: mPAD2-7-CHT4-I)

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## A.1 CONDUCTED EMISSION

Test Date	2017/03/15	Temp./Hum.	23°C/52%
Test Voltage	AC 120V, 60Hz (with Docking via AC Adapter)		



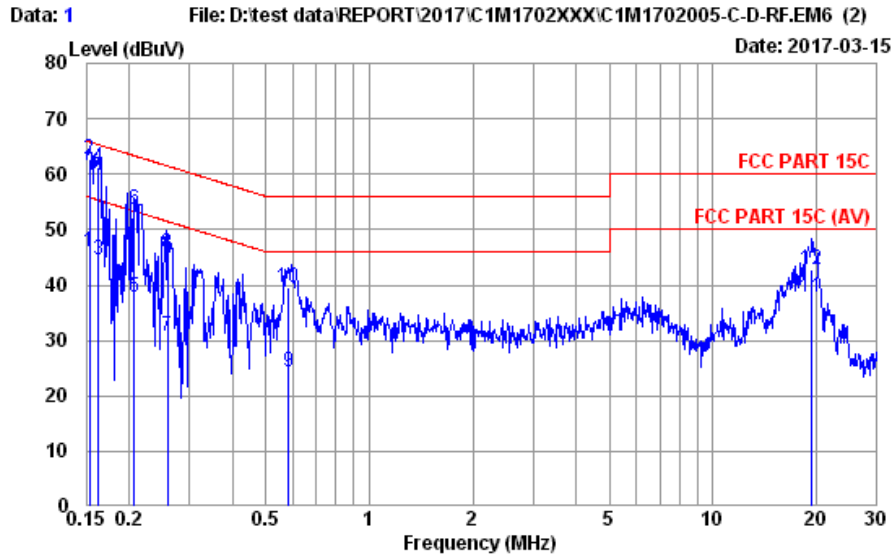
Site no. : No.8 Shielded Room Data no. : 2  
 Condition : ENV4200 358/003 LISN Phase : NEUTRAL  
 Limit : FCC PART 15C  
 Env. / Ins. : 23°C / 52% ESR3 (1774) Engineer : Jemy  
 EUT : mPAD-7-CHT4-I  
 Power Rating : 120Vac/60Hz  
 Test Mode : Operating

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Pulse Att. (dB)	Reading (dBμV)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
1	0.152	10.30	0.03	9.86	25.11	45.30	55.88	10.58	Average
2	0.152	10.30	0.03	9.86	42.19	62.38	65.88	3.50	QP
3	0.213	10.33	0.03	9.86	15.96	36.18	53.10	16.92	Average
4	0.213	10.33	0.03	9.86	32.39	52.61	63.10	10.49	QP
5	0.255	10.32	0.03	9.86	8.28	28.49	51.59	23.10	Average
6	0.255	10.32	0.03	9.86	25.45	45.66	61.59	15.93	QP
7	0.588	10.28	0.05	9.86	9.66	29.85	46.00	16.15	Average
8	0.588	10.28	0.05	9.86	19.27	39.46	56.00	16.54	QP
9	5.711	10.29	0.14	9.87	5.99	26.29	50.00	23.71	Average
10	5.711	10.29	0.14	9.87	12.31	32.61	60.00	27.39	QP
11	19.240	10.14	0.26	9.93	16.48	36.81	50.00	13.19	Average
12	19.240	10.14	0.26	9.93	22.55	42.88	60.00	17.12	QP

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



Test Date	2017/03/15	Temp./Hum.	23°C/52%
Test Voltage	AC 120V, 60Hz (with Docking via AC Adapter)		



Site no. : No.8 Shielded Room Data no. : 1  
 Condition : ENV4200 358/003 LISN Phase : LINE  
 Limit : FCC PART 15C  
 Env. / Ins. : 23°C / 52% ESR3 (1774) Engineer : Jemy  
 EUT : mPAD-7-CHT4-I  
 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	0.154	10.22	0.03	9.86	25.94	46.05	55.80	9.75	Average
2	0.154	10.22	0.03	9.86	42.48	62.59	65.80	3.21	QP
3	0.162	10.23	0.03	9.86	24.43	44.55	55.34	10.79	Average
4	0.162	10.23	0.03	9.86	41.18	61.30	65.34	4.04	QP
5	0.207	10.27	0.03	9.86	17.54	37.70	53.32	15.62	Average
6	0.207	10.27	0.03	9.86	33.52	53.68	63.32	9.64	QP
7	0.258	10.27	0.03	9.86	10.75	30.91	51.49	20.58	Average
8	0.258	10.27	0.03	9.86	25.64	45.80	61.49	15.69	QP
9	0.583	10.24	0.05	9.86	4.28	24.43	46.00	21.57	Average
10	0.583	10.24	0.05	9.86	19.50	39.65	56.00	16.35	QP
11	19.410	10.09	0.27	9.93	17.45	37.74	50.00	12.26	Average
12	19.410	10.09	0.27	9.93	22.41	42.70	60.00	17.30	QP

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

## A.2 RADIATED EMISSION

Test Date	2017/02/24	Temp./Hum.	23°C/53%
Test Voltage	AC 120V, 60Hz (with Docking via AC Adapter)		

### A.2.1 Emissions within Restricted Frequency Bands

#### A.2.1.1 Frequency 9kHz~30MHz

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

#### A.2.1.2 Frequency Below 1 GHz

Mode	8-DPSK	Frequency	TX 2441MHz
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#### Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
154.16	11.21	2.87	15.30	29.38	43.50	14.12	Peak
230.79	11.57	3.64	25.21	40.42	46.00	5.58	Peak
353.01	15.00	5.01	18.58	38.59	46.00	7.41	Peak
514.03	17.33	6.47	3.47	27.27	46.00	18.73	Peak

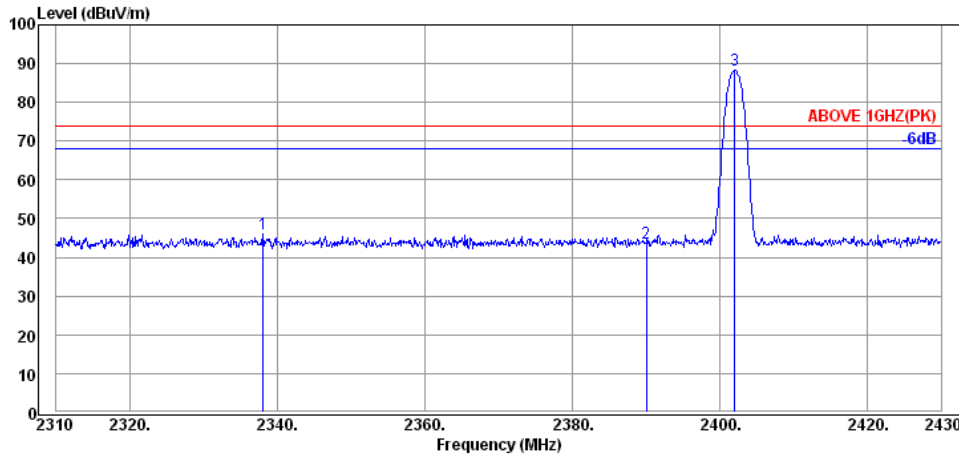
#### Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
47.46	10.95	1.53	18.59	31.07	40.00	8.93	Peak
230.79	11.57	3.64	19.18	34.39	46.00	11.61	Peak
353.01	15.00	5.01	8.18	28.19	46.00	17.81	Peak
612.97	18.42	6.80	6.04	31.26	46.00	14.74	Peak

A.2.1.3 Frequency Above 1 GHz to 10<sup>th</sup> harmonics

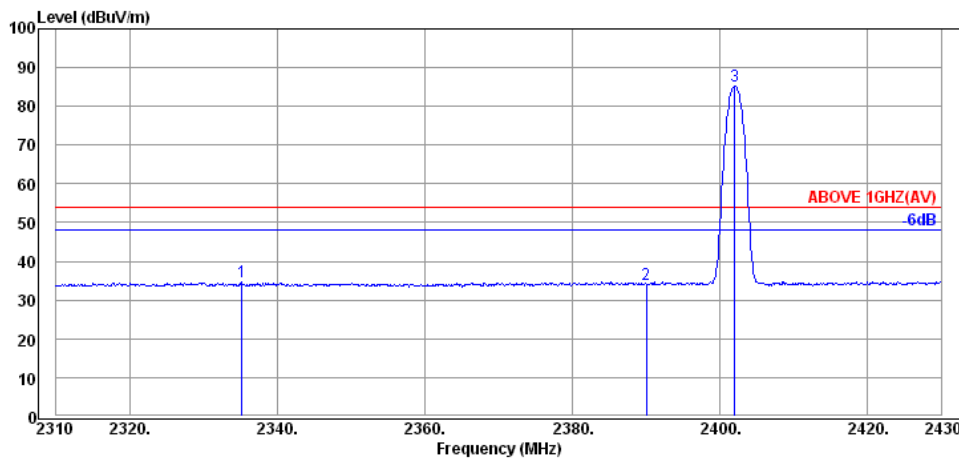
**Band Edge:**

Mode	8-DPSK	Frequency	TX 2402MHz
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**Antenna at Horizontal Polarization**

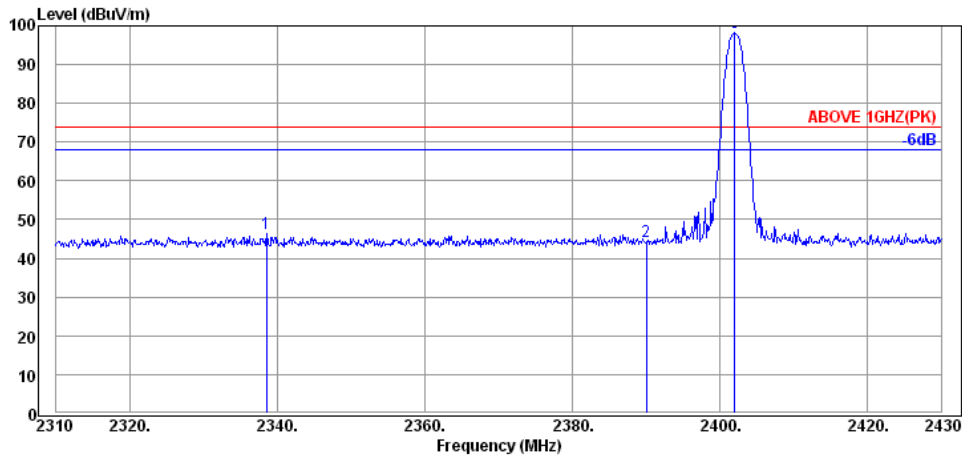
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2338.08	32.08	5.68	8.18	45.94	74.00	28.06	Peak
2390.04	32.16	5.72	5.77	43.65	74.00	30.35	Peak
2402.04	32.16	5.72	50.39	88.27	---	---	Peak



**Antenna at Horizontal Polarization**

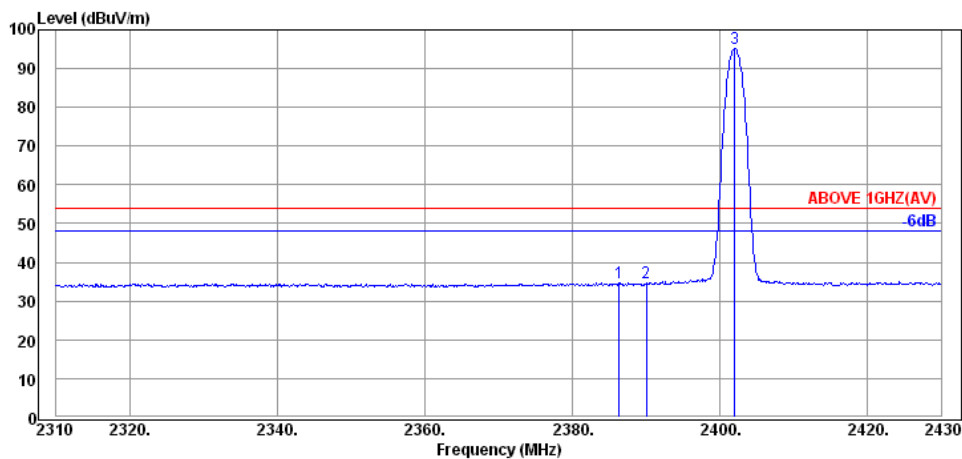
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2335.20	32.08	5.68	-2.98	34.78	54.00	19.22	Average
2390.04	32.16	5.72	-3.76	34.12	54.00	19.88	Average
2402.04	32.16	5.72	47.33	85.21	---	---	Average

Mode	8-DPSK	Frequency	TX 2402MHz
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**Antenna at Vertical Polarization**

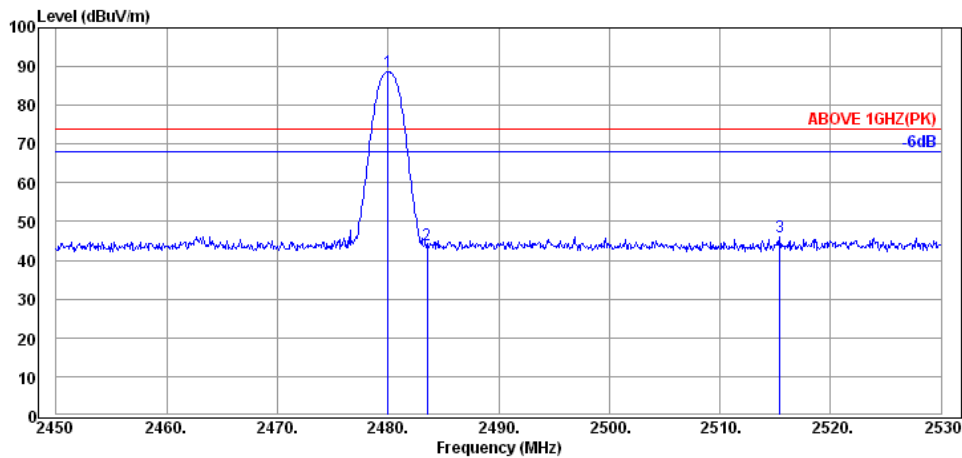
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2338.56	32.08	5.68	8.47	46.23	74.00	27.77	Peak
2390.04	32.16	5.72	6.52	44.40	74.00	29.60	Peak
2402.04	32.16	5.72	60.26	98.14	---	---	Peak



**Antenna at Vertical Polarization**

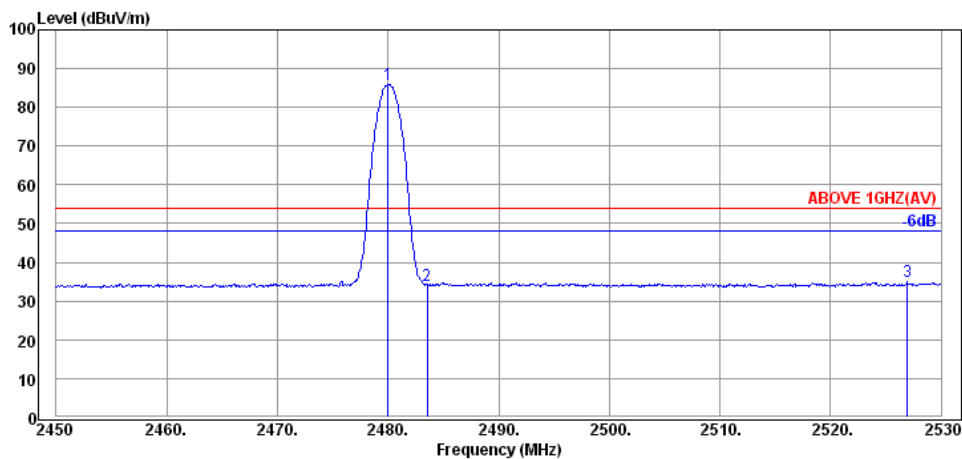
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2386.32	32.16	5.72	-3.24	34.64	54.00	19.36	Average
2390.04	32.16	5.72	-3.24	34.64	54.00	19.36	Average
2402.04	32.16	5.72	57.21	95.09	---	---	Average

Mode	8-DPSK	Frequency	TX 2480MHz
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**Antenna at Horizontal Polarization**

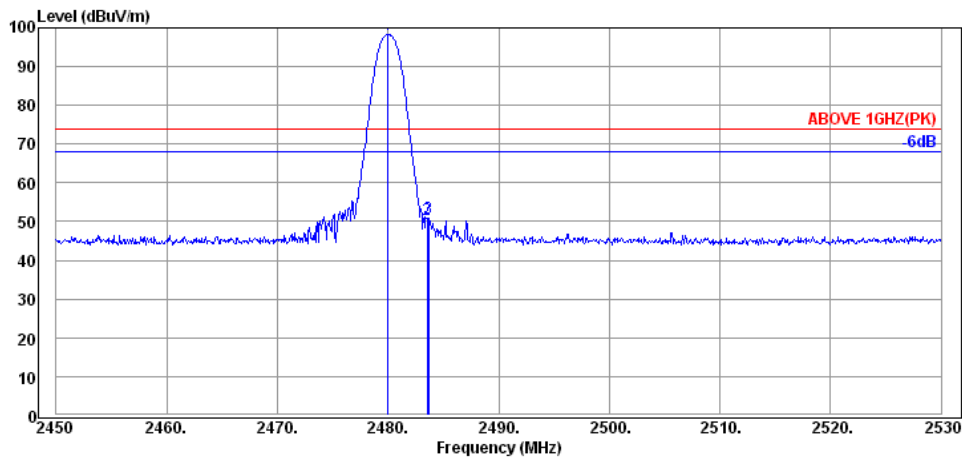
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2480.00	32.28	5.82	50.69	88.79	---	---	Peak
2483.52	32.28	5.82	5.90	44.00	74.00	30.00	Peak
2515.44	32.32	5.87	7.77	45.96	74.00	28.04	Peak



**Antenna at Horizontal Polarization**

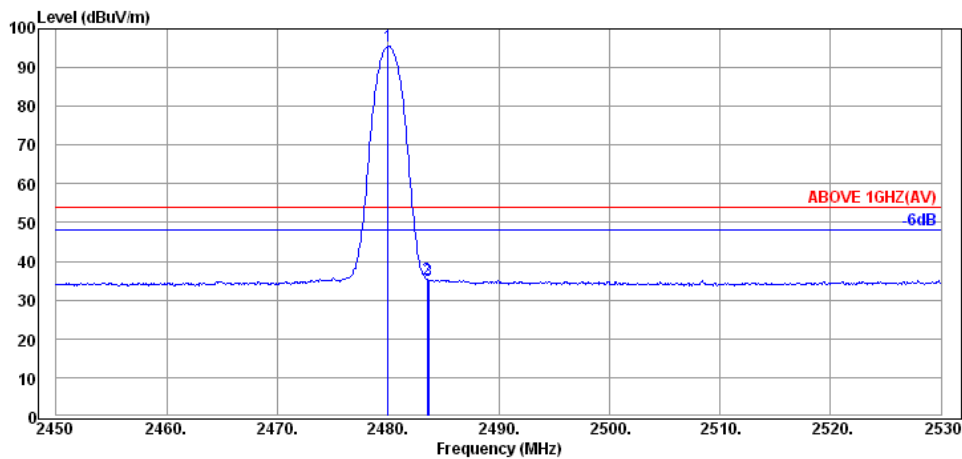
Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector
2480.00	32.28	5.82	47.81	85.91	---	---	Average
2483.52	32.28	5.82	-4.09	34.01	54.00	19.99	Average
2526.96	32.34	5.89	-3.32	34.91	54.00	19.09	Average

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	5.82	60.21	98.31	---	---	Peak
2483.52	32.28	5.82	12.34	50.44	74.00	23.56	Peak
2483.68	32.28	5.82	12.81	50.91	74.00	23.09	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	5.82	57.32	95.42	---	---	Average
2483.52	32.28	5.82	-2.60	35.50	54.00	18.50	Average
2483.68	32.28	5.82	-2.88	35.22	54.00	18.78	Average

### A.2.2 Emissions outside the frequency band:

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

Mode	8-DPSK	Frequency	TX 2402MHz
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#### Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
4805.00	34.22	7.86	4.11	46.19	54.00	7.81	Peak
7205.00	35.80	9.22	0.66	45.68	54.00	8.32	Peak

#### Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
4805.00	34.22	7.86	4.76	46.84	54.00	7.16	Peak
7205.00	35.80	9.22	1.37	46.39	54.00	7.61	Peak

Mode	8-DPSK	Frequency	TX 2441MHz
------	--------	-----------	------------

#### Antenna at Horizontal Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
4885.00	34.26	8.47	1.44	44.17	54.00	9.83	Peak
7325.00	35.80	9.89	-0.16	45.53	54.00	8.47	Peak

#### Antenna at Vertical Polarization

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
4880.00	34.25	8.35	4.21	46.81	54.00	7.19	Peak
7325.00	35.80	9.89	-0.12	45.57	54.00	8.43	Peak

Mode	8-DPSK	Frequency	TX 2480MHz
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**Antenna at Horizontal Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
4960.00	34.29	8.68	0.06	43.03	54.00	10.97	Peak
7440.00	35.80	10.40	-0.63	45.57	54.00	8.43	Peak

**Antenna at Vertical Polarization**

Emission Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Meter Reading (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Limits (dB $\mu$ V/m)	Margin (dB)	Detector
4960.00	34.29	8.68	3.43	46.40	54.00	7.60	Peak
7440.00	35.80	10.40	0.71	46.91	54.00	7.09	Peak

**A.2.3 Emissions in Non-restricted Frequency Bands:**

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



### A.3 20dB BANDWIDTH

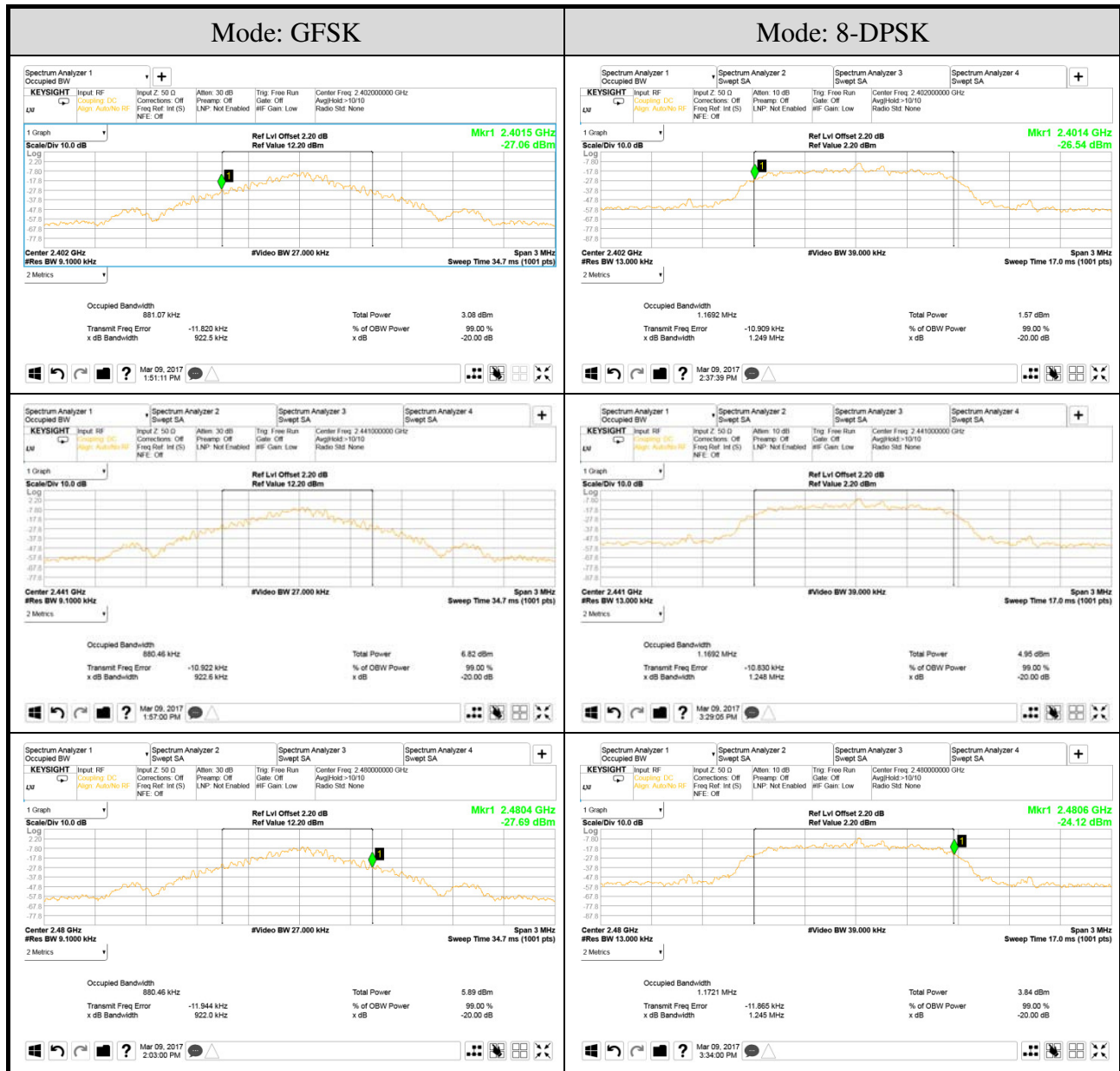
Test Date	2017/03/09	Temp./Hum.	24°C/56%
Cable Loss	2.2dB	Test Voltage	AC 120V, 60Hz (with Docking via AC Adapter)

#### A.3.1 6dB Bandwidth Result

Mode	Centre Frequency (MHz)	20dB Bandwidth (MHz)	2/3 (20dB Bandwidth)
GFSK	2402	0.9225	0.615
	2441	0.9226	0.615
	2480	0.9220	0.615
8-DPSK	2402	1.249	0.833
	2441	1.246	0.831
	2480	1.245	0.830

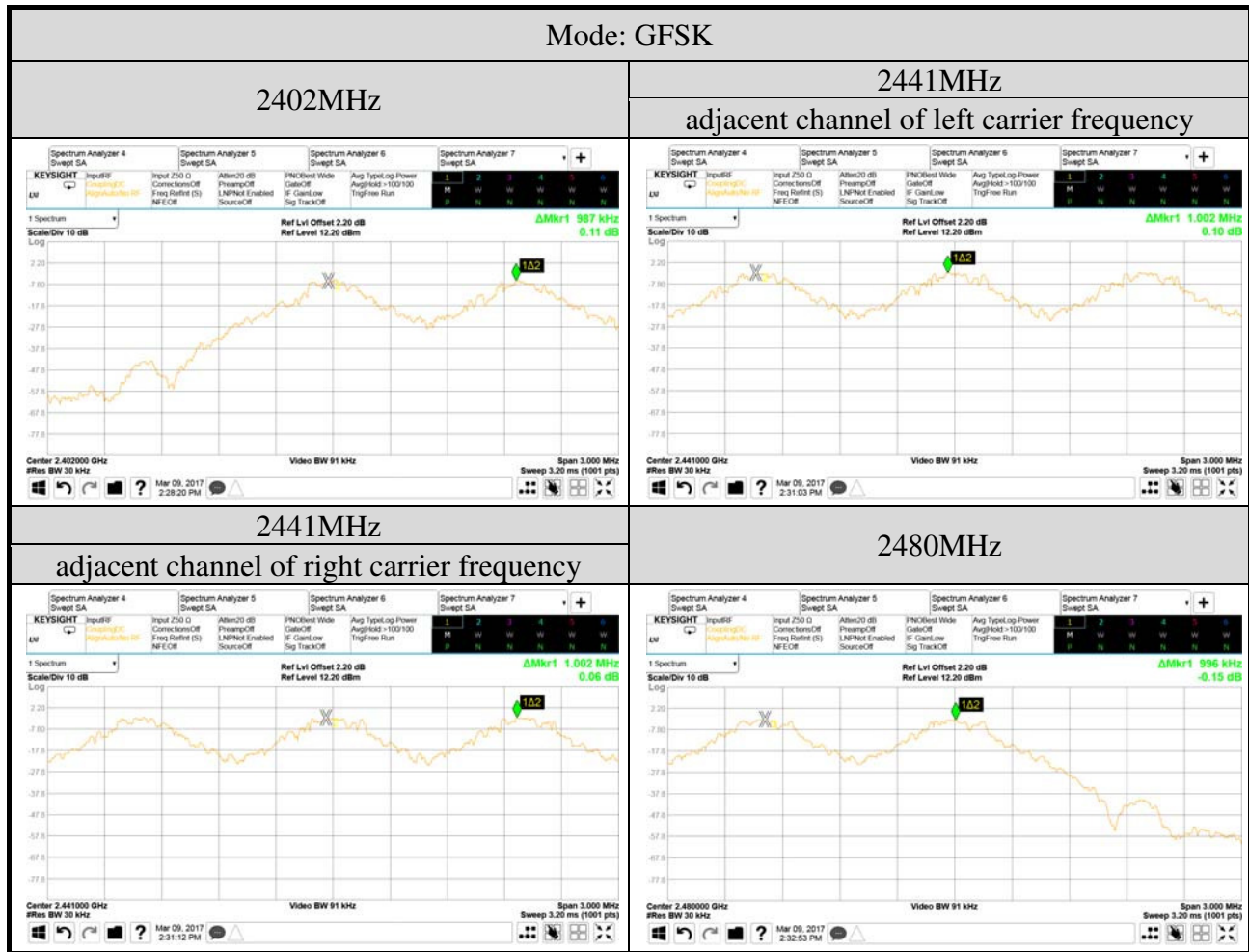
Remark: The maximum two-thirds of the 20dB bandwidth is the limit for carrier frequency separation presented.

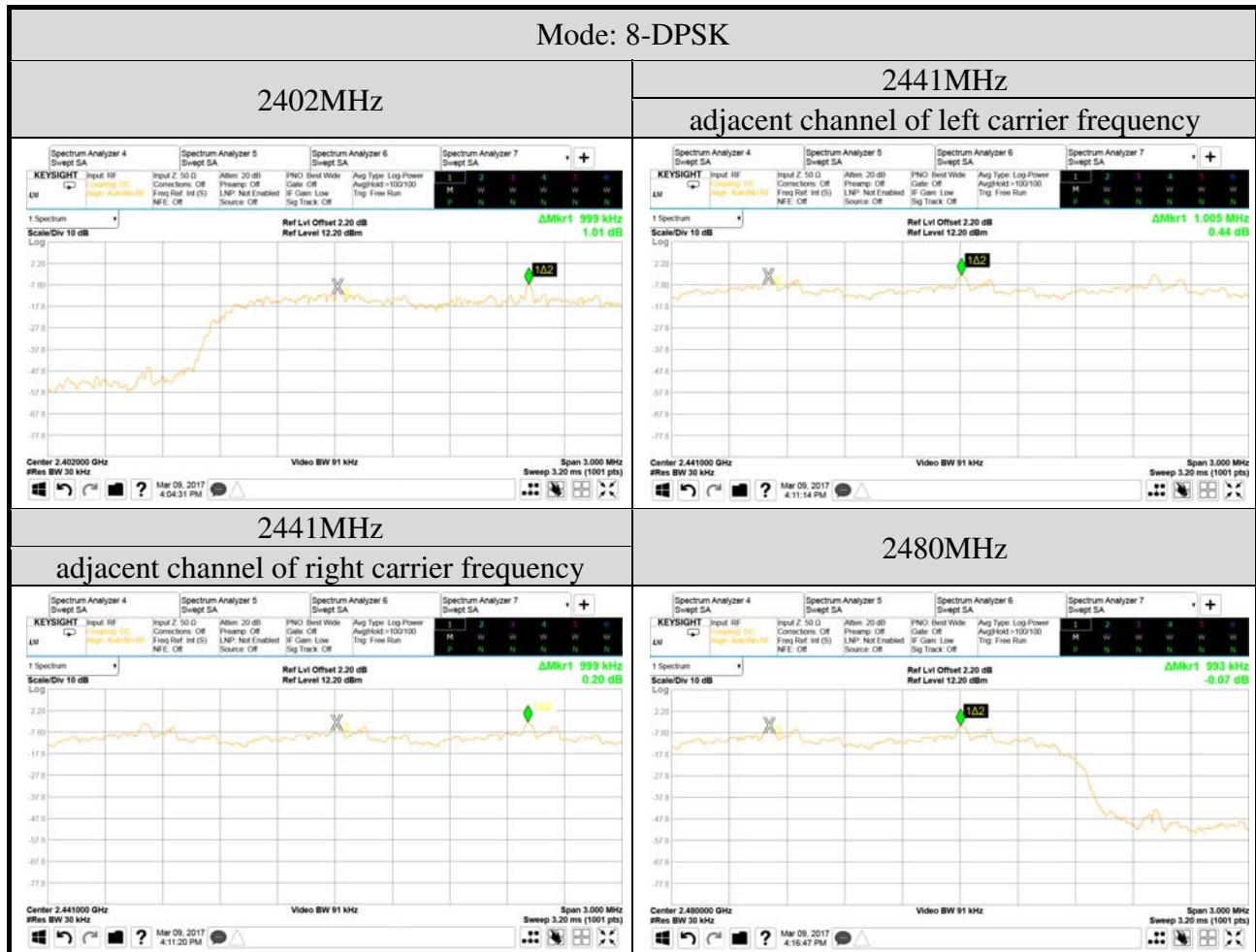
A.3.2 Measurement Plots



## A.4 CARRIER FREQUENCY SEPARATION

Test Date	2017/03/09	Temp./Hum.	24°C/56%
Cable Loss	2.2dB	Test Voltage	AC 120V, 60Hz (with Docking via AC Adapter)





## A.5 TIME OF OCCUPANCY

Test Date	2017/03/09	Temp./Hum.	24°C/56%
Cable Loss	2.2dB	Test Voltage	AC 120V, 60Hz (with Docking via AC Adapter)

### A.5.1 Time of Occupancy

Mode	Centre Frequency (MHz)	Mode	Time of Occupancy (ms)	Maximum accumulated Time of Occupancy (ms)	Limit (ms)
GFSK	2402	DH1	0.375	118.500	<400
		DH3	1.635	258.330	
		DH5	2.880	273.024	
	2441	DH1	0.375	118.500	<400
		DH3	1.635	258.330	
		DH5	2.880	273.024	
	2480	DH1	0.375	118.500	<400
		DH3	1.635	258.330	
		DH5	2.895	182.964	

Observation Period: 79 channels\*0.4 seconds = 31.6 seconds

#### Centre Frequency: 2402MHz

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

$$10 \text{ channels} * 31.6 \text{ seconds} * 0.375 \text{ ms} = 118.500 \text{ ms}$$

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

$$5 \text{ channels} * 31.6 \text{ seconds} * 1.635 \text{ ms} = 258.330 \text{ ms}$$

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

$$3 \text{ channels} * 31.6 \text{ seconds} * 2.880 \text{ ms} = 273.024 \text{ ms}$$

**Centre Frequency: 2441MHz**

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

$$10 \text{ channels} * 31.6 \text{ seconds} * 0.375 \text{ ms} = 118.500 \text{ ms}$$

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

$$5 \text{ channels} * 31.6 \text{ seconds} * 1.635 \text{ ms} = 258.330 \text{ ms}$$

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

$$3 \text{ channels} * 31.6 \text{ seconds} * 2.880 \text{ ms} = 273.024 \text{ ms}$$

**Centre Frequency: 2480MHz**

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

$$10 \text{ channels} * 31.6 \text{ seconds} * 0.375 \text{ ms} = 118.500 \text{ ms}$$

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

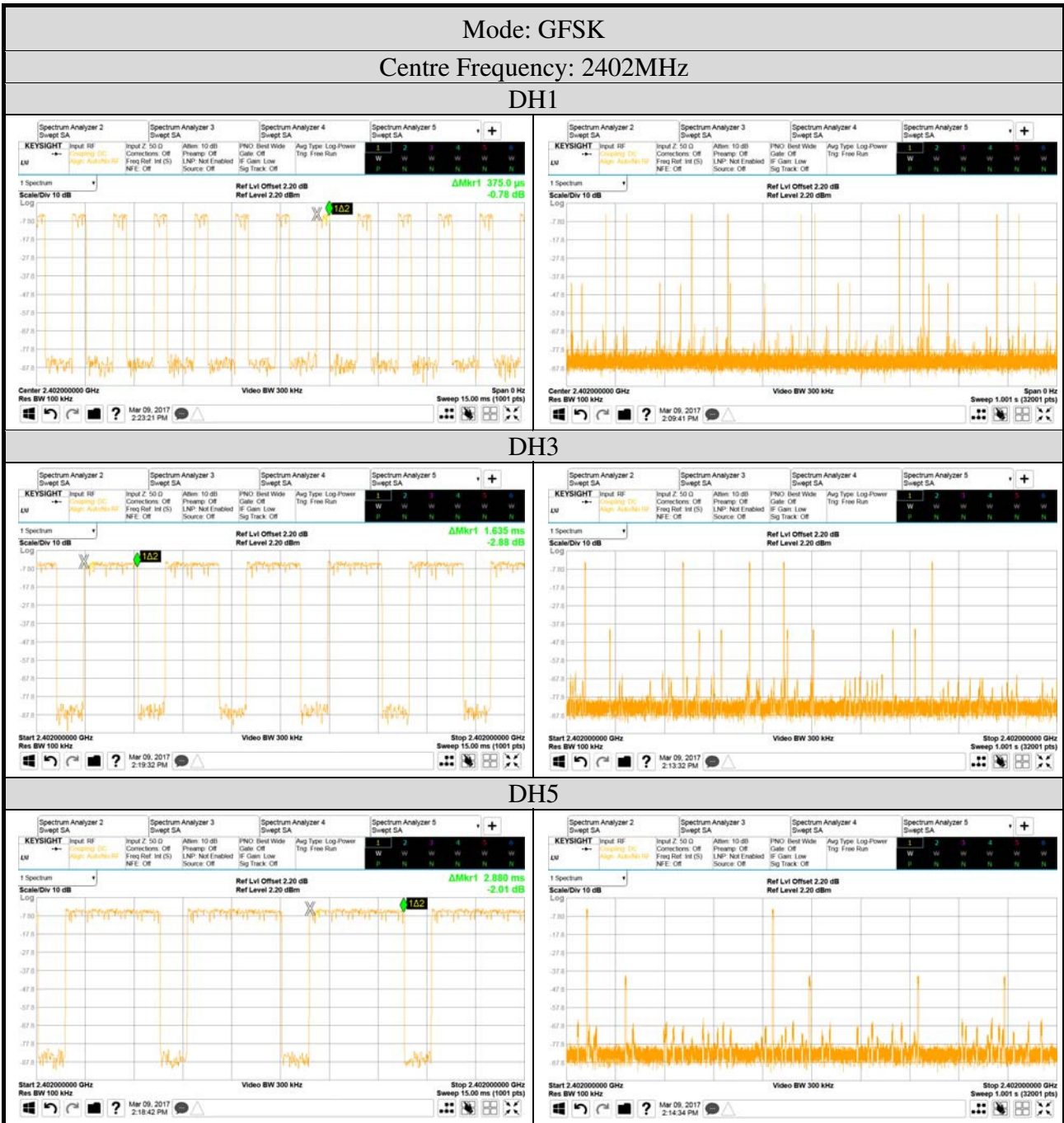
$$5 \text{ channels} * 31.6 \text{ seconds} * 1.635 \text{ ms} = 258.330 \text{ ms}$$

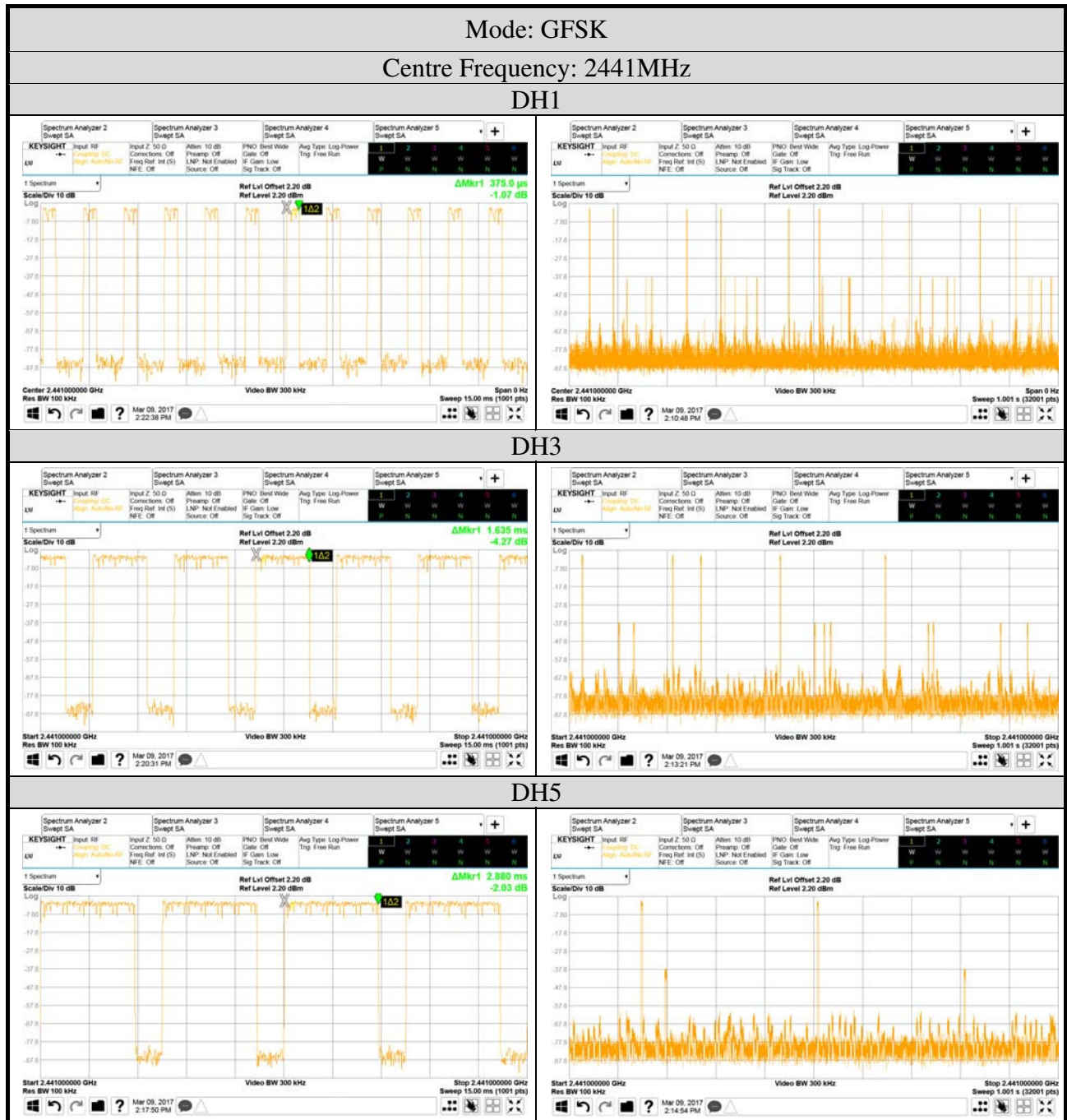
DH5: For each second of 2 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

$$2 \text{ channels} * 31.6 \text{ seconds} * 2.895 \text{ ms} = 182.964 \text{ ms}$$

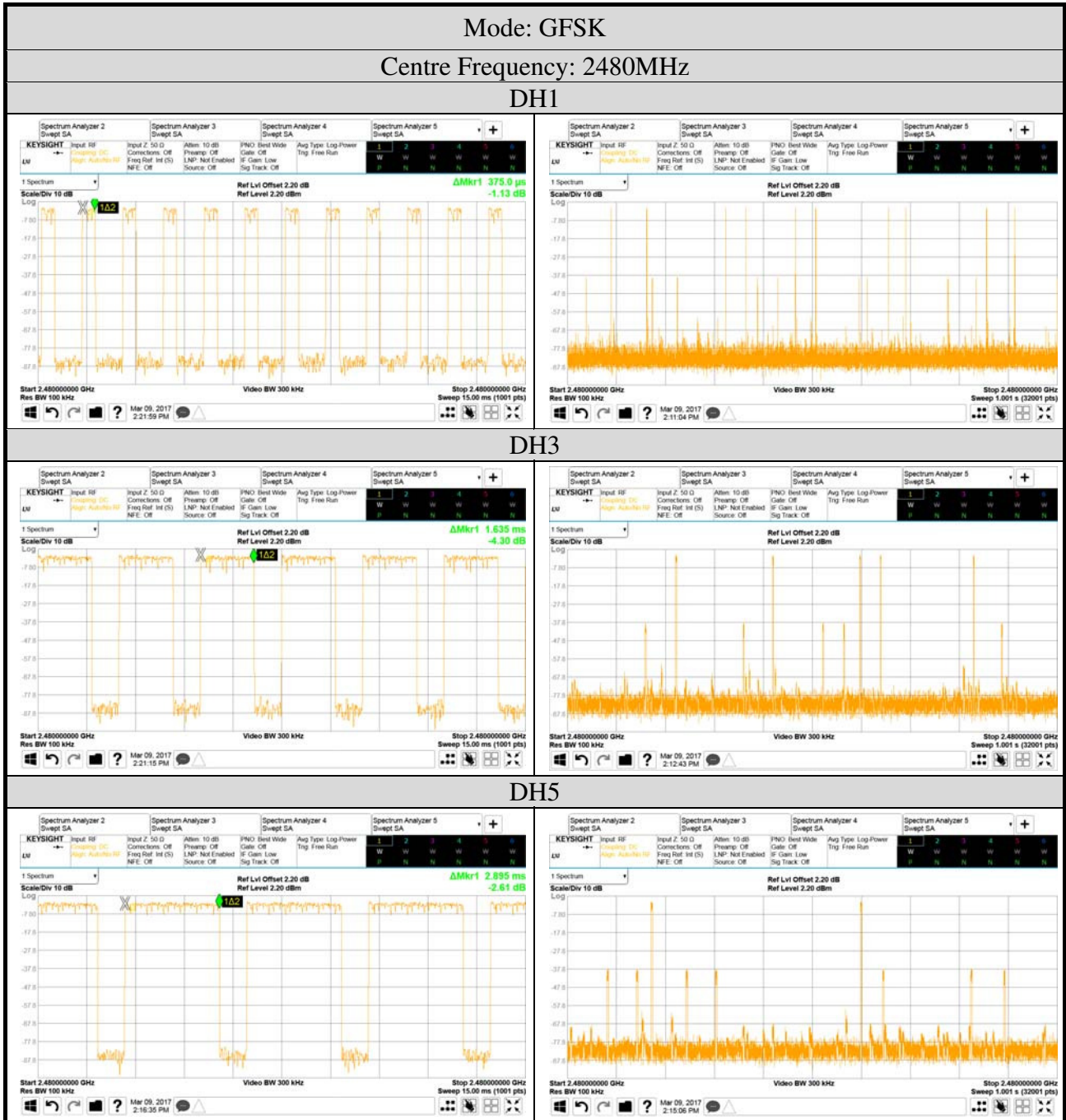


● Measurement Plots









Mode	Centre Frequency (MHz)	Mode	Time of Occupancy (ms)	Maximum accumulated Time of Occupancy (ms)	Limit (ms)
8-DPSK	2402	DH1	0.375	118.500	<400
		DH3	1.635	258.330	
		DH5	2.880	182.016	
	2441	DH1	0.375	118.500	<400
		DH3	1.635	258.330	
		DH5	2.880	182.016	
	2480	DH1	0.375	118.500	<400
		DH3	1.635	258.330	
		DH5	2.880	182.016	

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:

$$10 \text{ channels} * 31.6 \text{ seconds} * 0.375 \text{ ms} = 118.500 \text{ ms}$$

3DH3: For each second of 5 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

$$5 \text{ channels} * 31.6 \text{ seconds} * 1.635 \text{ ms} = 258.330 \text{ ms}$$

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

$$2 \text{ channels} * 31.6 \text{ seconds} * 2.880 \text{ ms} = 182.016 \text{ ms}$$

**Centre Frequency: 2441MHz**

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

$$10 \text{ channels} * 31.6 \text{ seconds} * 0.375 \text{ ms} = 118.500 \text{ ms}$$

3DH3: For each second of 5 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

$$5 \text{ channels} * 31.6 \text{ seconds} * 1.635 \text{ ms} = 258.330 \text{ ms}$$

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

$$2 \text{ channels} * 31.6 \text{ seconds} * 2.880 \text{ ms} = 182.016 \text{ ms}$$

**Centre Frequency: 2480MHz**

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

$$10 \text{ channels} * 31.6 \text{ seconds} * 0.375 \text{ ms} = 118.500 \text{ ms}$$

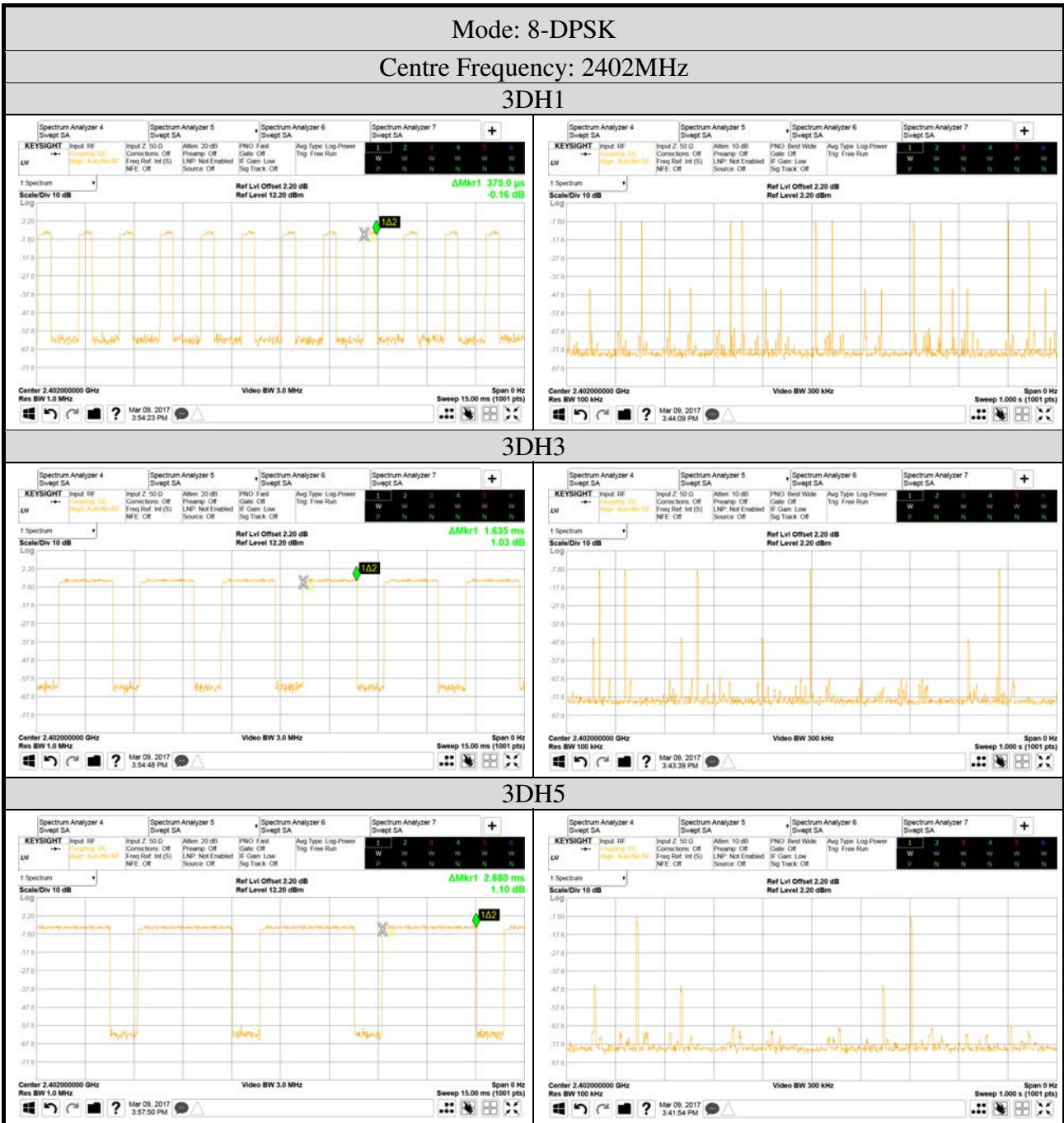
3DH3: For each second of 5 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

$$5 \text{ channels} * 31.6 \text{ seconds} * 1.635 \text{ ms} = 258.330 \text{ ms}$$

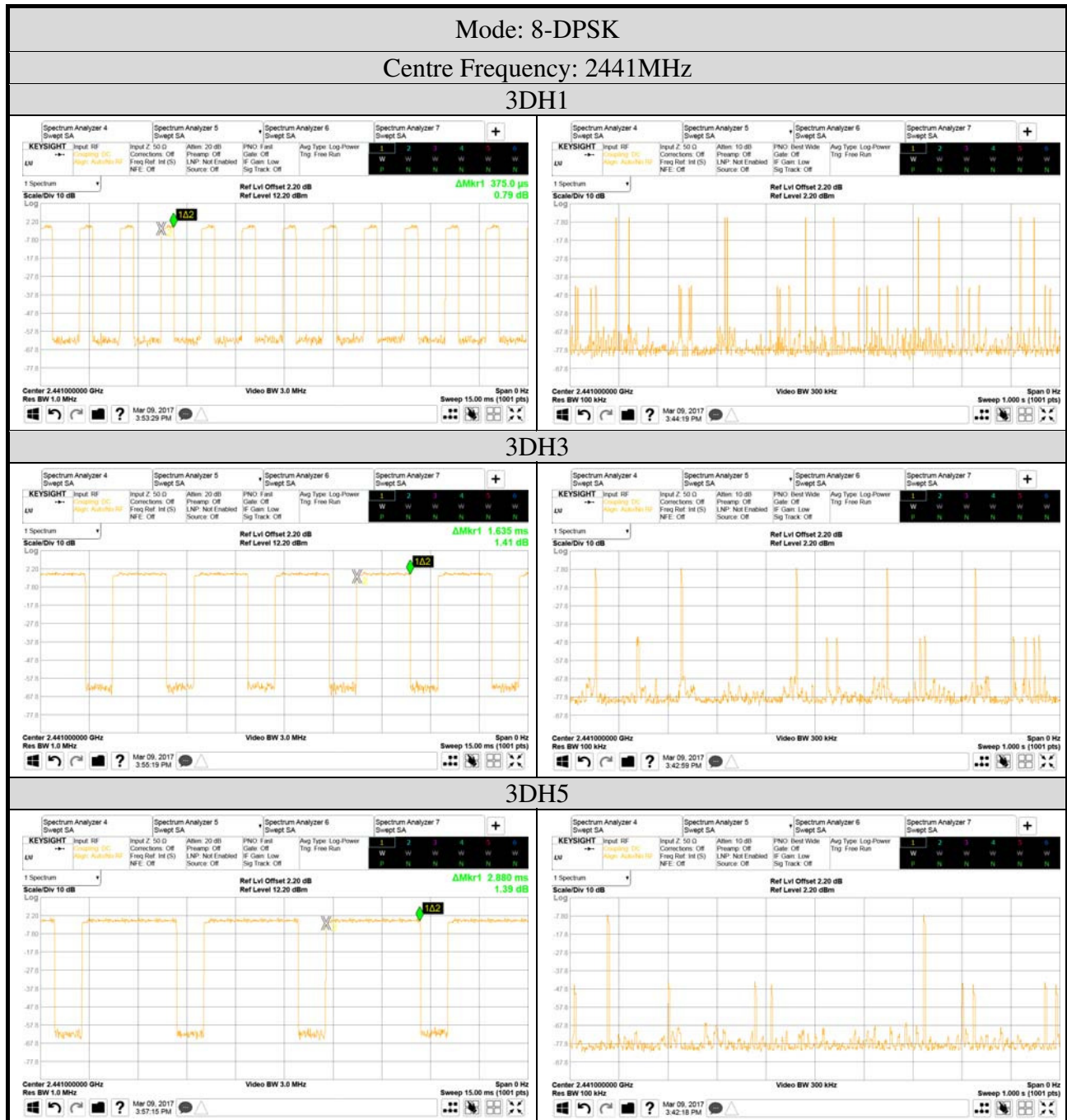
3DH5: For each second of 2 channel appearance, the longest time of occupancy for each of 31.6 seconds is:

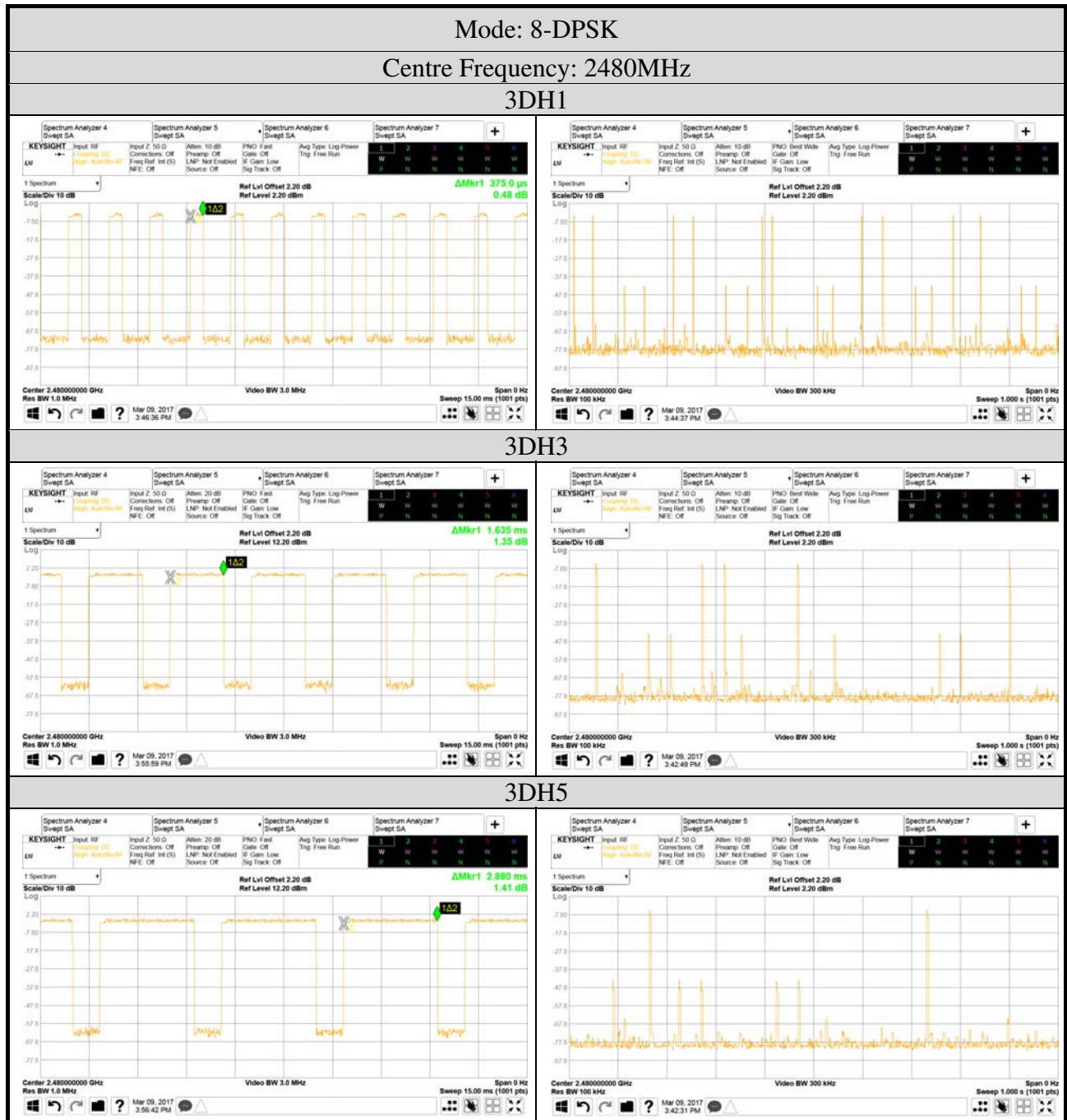
$$2 \text{ channels} * 31.6 \text{ seconds} * 2.880 \text{ ms} = 182.016 \text{ ms}$$

● Measurement Plots



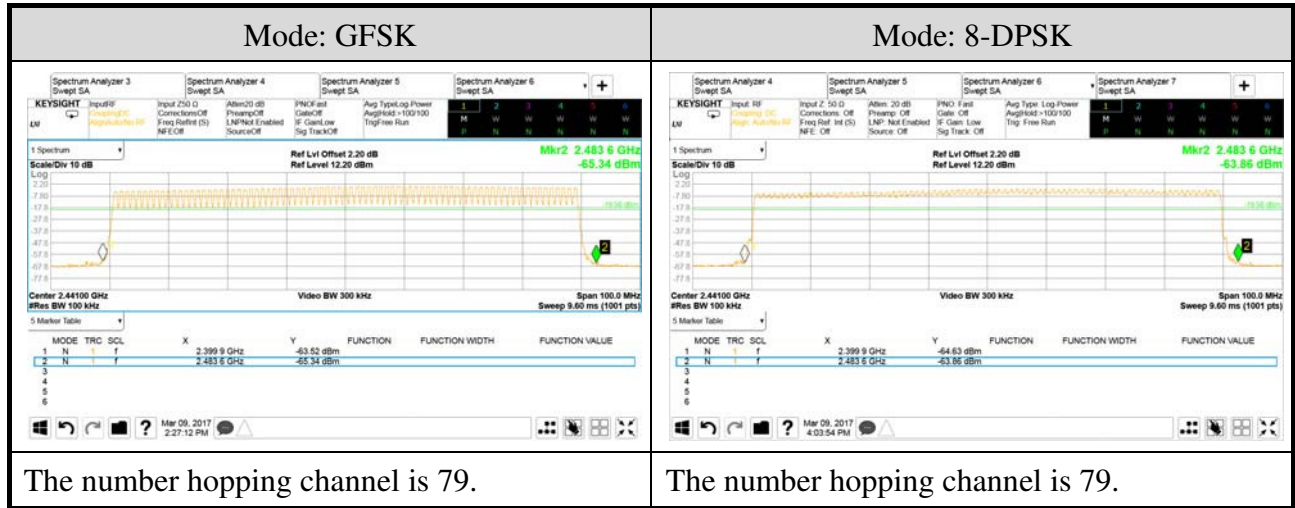






## A.6 NUMBER OF HOPPING CHANNELS

Test Date	2017/03/09	Temp./Hum.	24°C/56%
Cable Loss	2.2dB	Test Voltage	AC 120V, 60Hz (with Docking via AC Adapter)



## A.7 MAXIMUM PEAK OUTPUT POWER

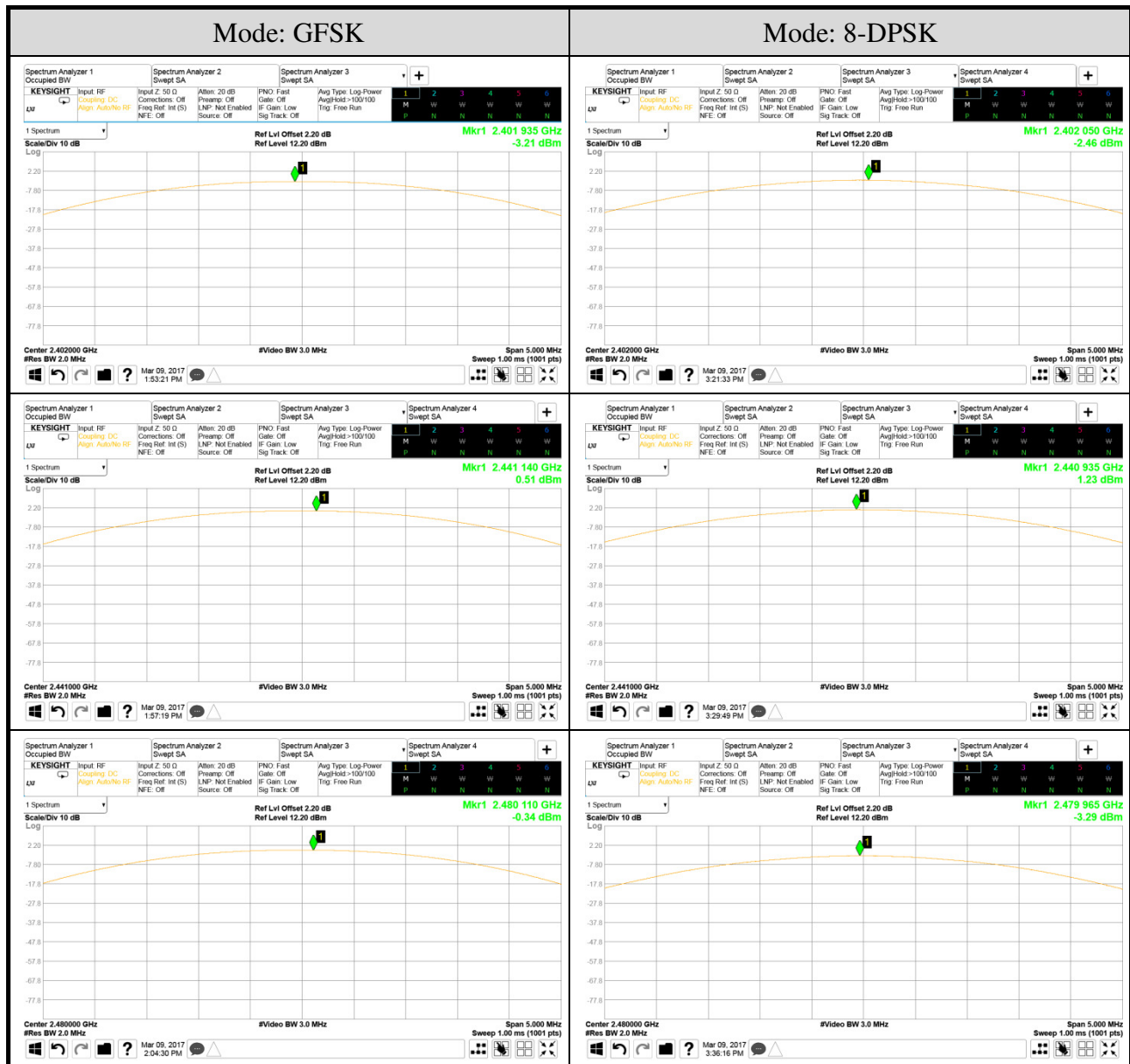
Test Date	2017/03/09	Temp./Hum.	24°C/56%
Cable Loss	2.2dB	Test Voltage	AC 120V, 60Hz (with Docking via AC Adapter)

### A.7.1 Maximum Peak Output Power

Modulation	Centre Frequency (MHz)	Maximum Peak Output Power		Limit
		dBm	W	
GFSK	2402	-3.21	0.000478	21dBm (0.125W)
	2441	0.51	0.001125	
	2480	-0.34	0.000925	
8-DPSK	2402	-2.46	0.000568	21dBm (0.125W)
	2441	1.23	0.001327	
	2480	-3.29	0.000469	



A.7.2 Measurement Plots



## A.8 EMISSION LIMITATIONS MEASUREMENT

Test Date	2017/03/09	Temp./Hum.	24°C/56%
Cable Loss	2.2dB	Test Voltage	AC 120V, 60Hz (with Docking via AC Adapter)

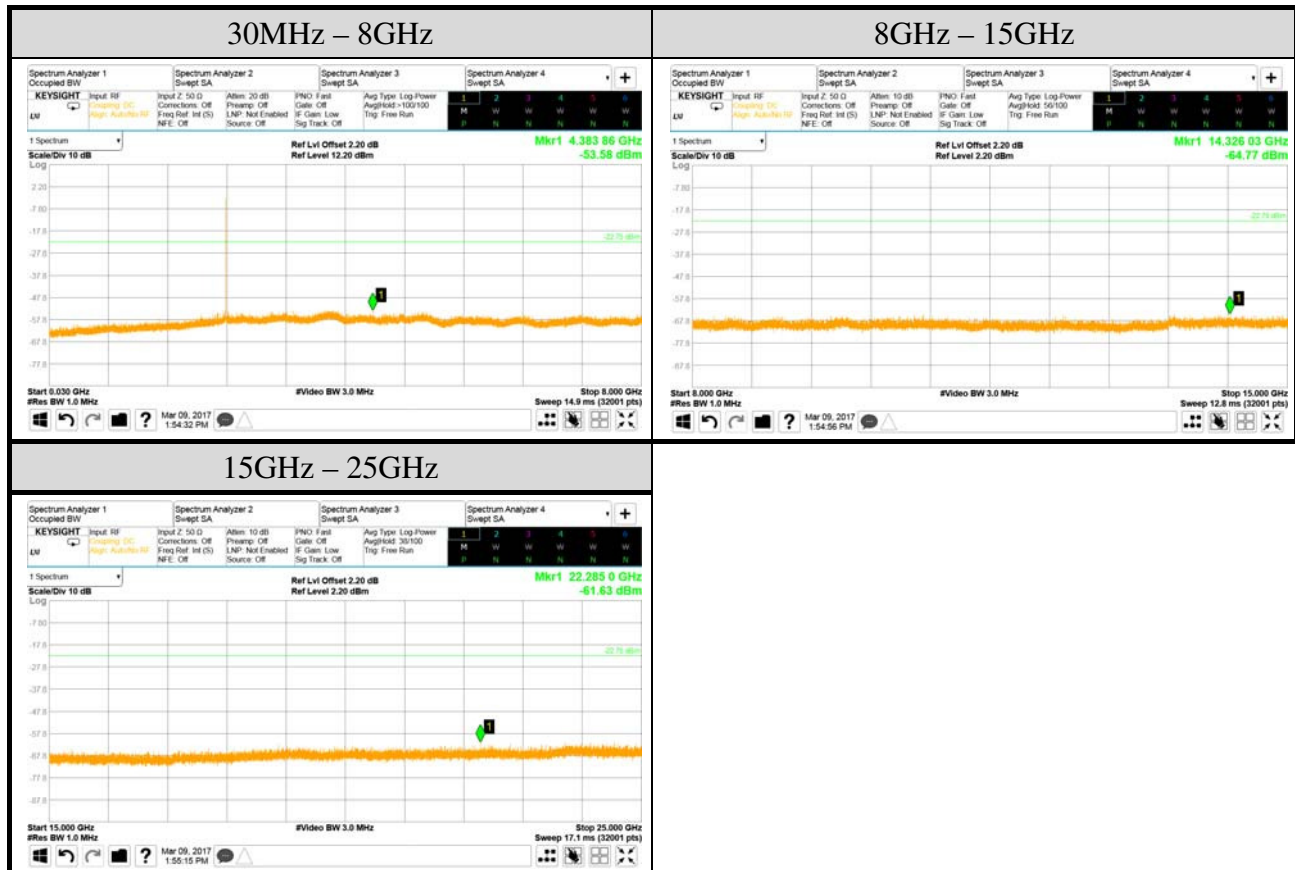
### A.8.1 Band Edge





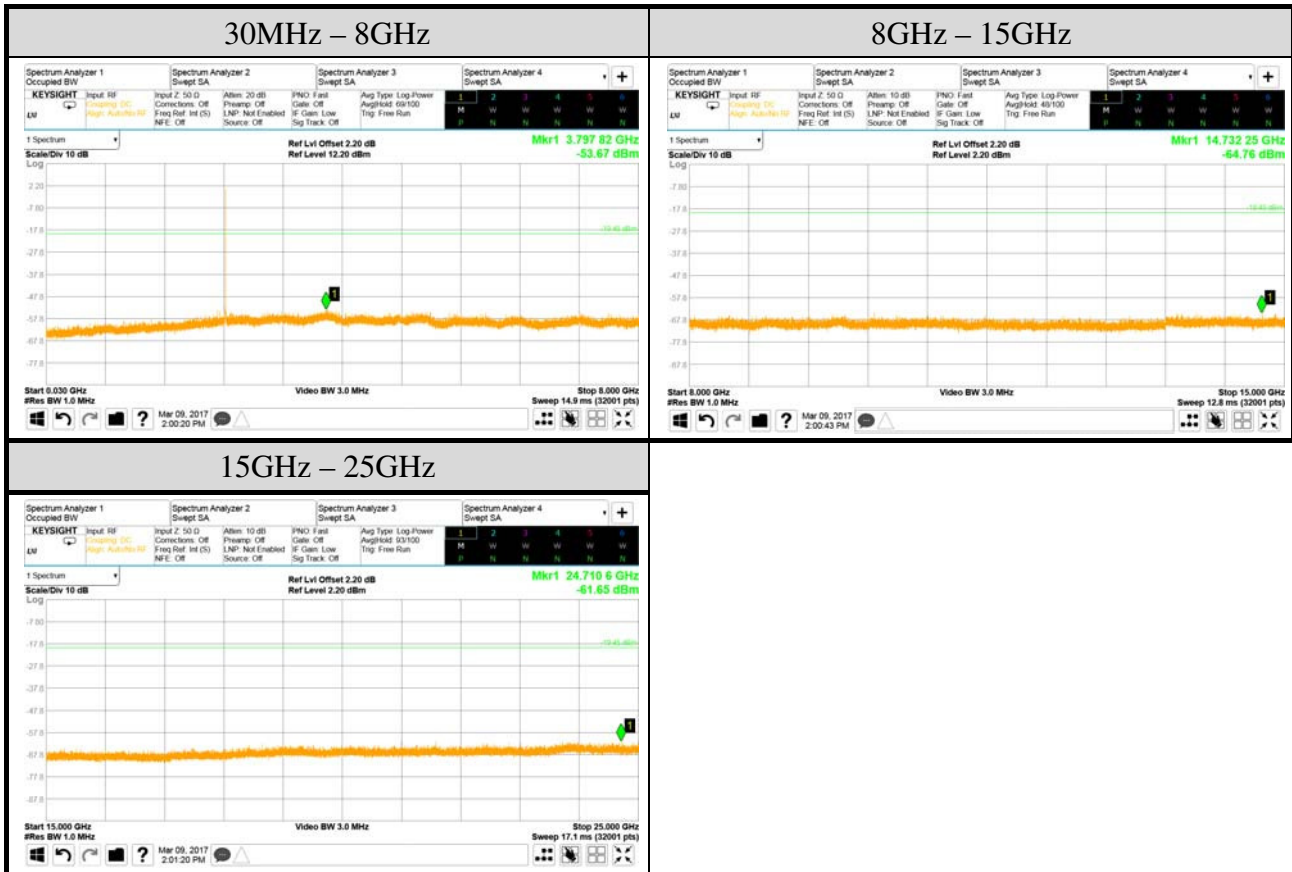
A.8.2 Spurious Emission

Test Date	2017/03/09	Temp./Hum.	24°C/56%
Mode	GFSK	Frequency	2402MHz
Cable Loss	2.2dB	Test Voltage	AC 120V, 60Hz (with Docking via AC Adapter)



Note: All results have been included cable loss.

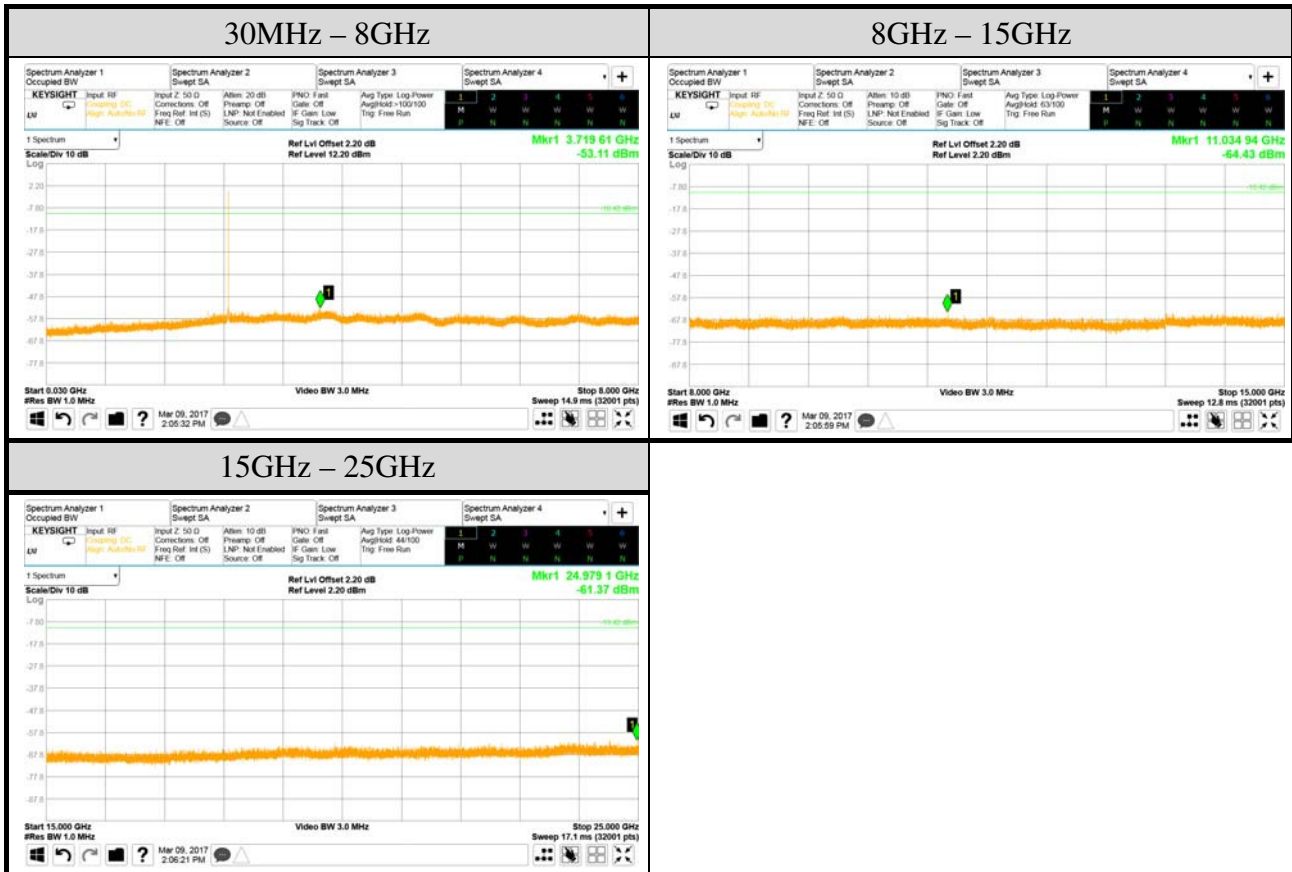
Test Date	2017/03/09	Temp./Hum.	24°C/56%
Mode	GFSK	Frequency	2441MHz
Cable Loss	2.2dB	Test Voltage	AC 120V, 60Hz (with Docking via AC Adapter)



Note: All results have been included cable loss.

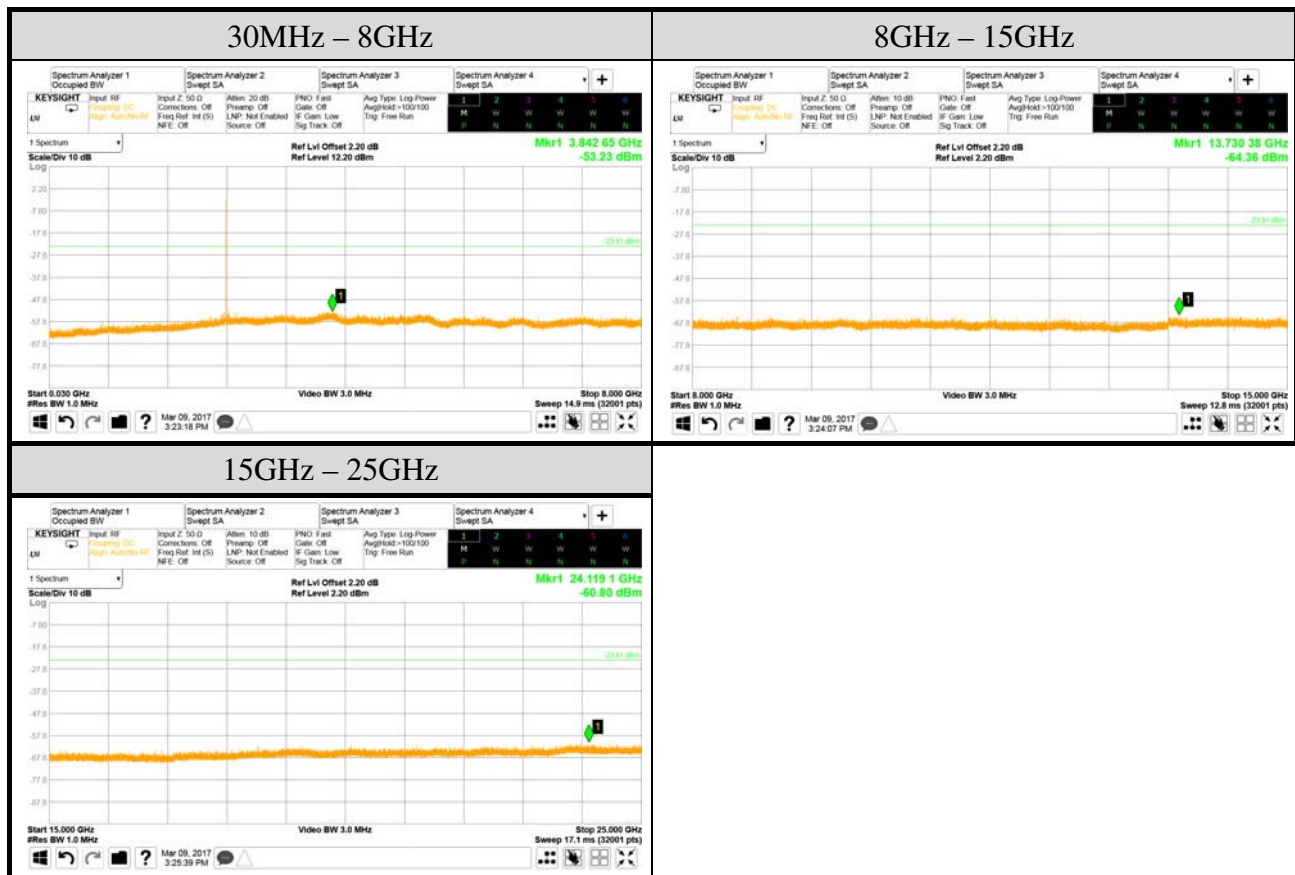


Test Date	2017/03/09	Temp./Hum.	24°C/56%
Mode	GFSK	Frequency	2480MHz
Cable Loss	2.2dB	Test Voltage	AC 120V, 60Hz (with Docking via AC Adapter)



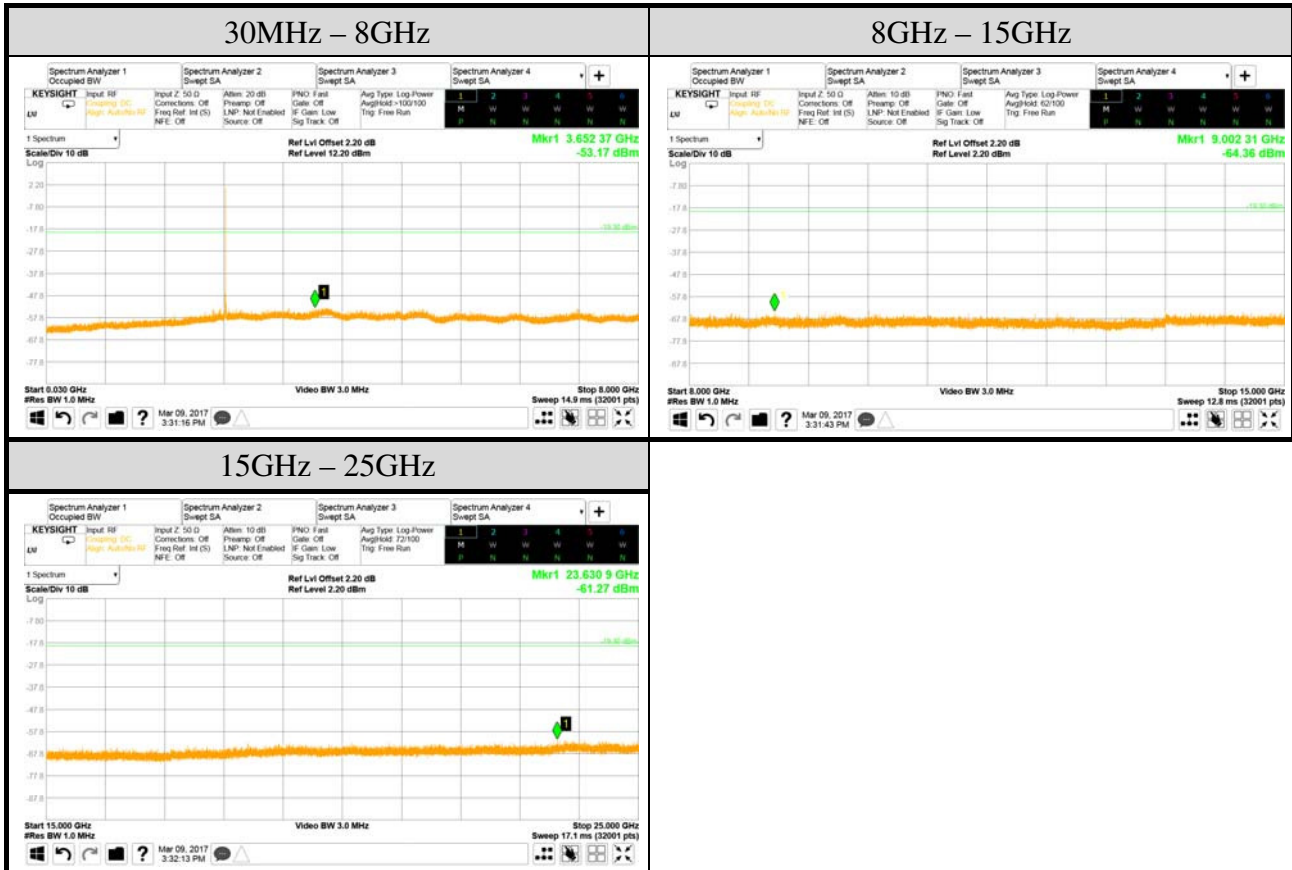
Note: All results have been included cable loss.

Test Date	2017/03/09	Temp./Hum.	24°C/56%
Mode	8-DPSK	Frequency	2402MHz
Cable Loss	2.2dB	Test Voltage	AC 120V, 60Hz (with Docking via AC Adapter)



Note: All results have been included cable loss.

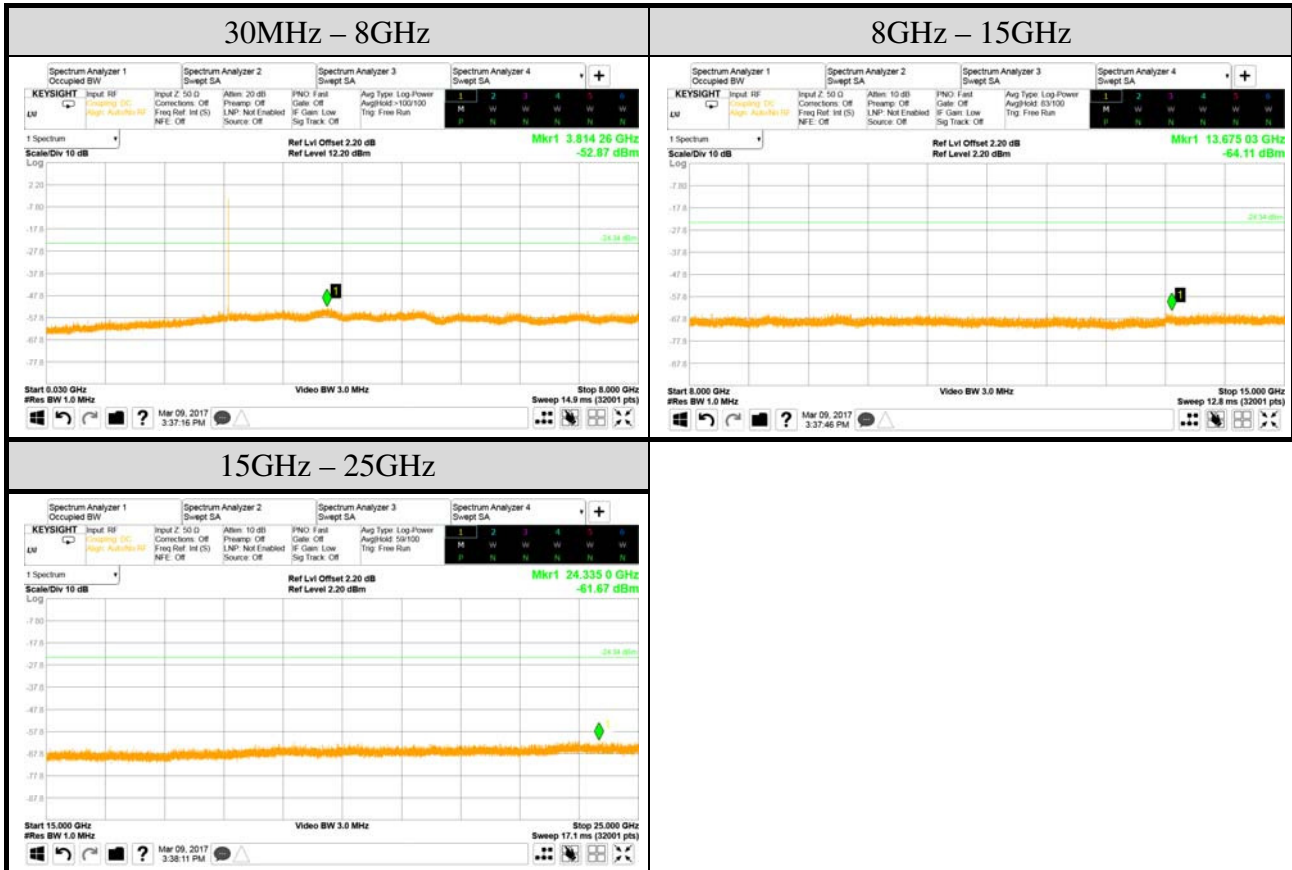
Test Date	2017/03/09	Temp./Hum.	24°C/56%
Mode	8-DPSK	Frequency	2441MHz
Cable Loss	2.2dB	Test Voltage	AC 120V, 60Hz (with Docking via AC Adapter)



Note: All results have been included cable loss.



Test Date	2017/03/09	Temp./Hum.	24°C/56%
Mode	8-DPSK	Frequency	2480MHz
Cable Loss	2.2dB	Test Voltage	AC 120V, 60Hz (with Docking via AC Adapter)



Note: All results have been included cable loss.



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*APPENDIX B*

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# APPDNDIX B

## TEST PHOTOGRAPHS

(Model: mPAD2-7-CHT4-I)