

RADIO TEST REPORT

FCC 47 CFR PART 15 SUBPART C

Test Standard	FCC Part 15.247
FCC ID	W5Y-G2-SY-CON2
Product name	Guardian Split System
Brand Name	Guardian
Model No.	G2-SY-CON2-1001272, G2-SY-CON2-1001484
Test Result	Pass

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.

The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc.(Wugu Laboratory)



Approved by:

A handwritten signature in black ink, appearing to read "Sam Chuang", written over a horizontal line.

Sam Chuang
Manager

Reviewed by:

A handwritten signature in black ink, appearing to read "Jerry Chuang", written over a horizontal line.

Jerry Chuang
Engineer

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	March 6, 2018	Initial Issue	ALL	Allison Chen
01	March 30, 2018	1. Revised test mode in section 3.2. 2. Removed "RSS-GEN Table A1" in remark. 3. Added Duty cycle and duty factor calculation formula. 4. Removed test data for OBW 99%. 5. Added remark for section 5.4.4. and section 5.7.4. 6. Removed AFH row in section 5.7.4. 7. Revised 1/T unit in section 5.8.2. 8. Added "-End of test report-".	P.5, P.11, P.12, P.14, P.20-21, P.29, P.32, P.56	Allison Chen
02	April 11, 2018	1. Revised test result (Dwell time) value.	P.29	Allison Chen

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1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	Seeing Machines Level 1, 11 Lonsdale Street, Braddon 2612 Australia
Manufacturer	ADLINK TECHNOLOGY INC. 9F, No. 166, Jian Yi Rd., Zhonghe Dist., New Taipei City, 235 Taiwan
Equipment	Guardian Split System
Model No.	G2-SY-CON2-1001272, G2-SY-CON2-1001484
Model Discrepancy	G2-SY-CON2-1001272→ Guardian Split System has FFC Function G2-SY-CON2-1001484→ Guardian Split System doesn't have FFC Function
Trade Name	Guardian
Received Date	January 18, 2018
Date of Test	January 30 ~ March 5, 2018
Output Power (W)	GFSK : 0.00776 8DPSK : 0.00897
Power Supply	Powered from DC supply: DC 12V and 24V.

1.2 EUT CHANNEL INFORMATION

Frequency Range	2402MHz-2480MHz
Modulation Type	1. GFSK for BDR-1Mbps 2. $\pi/4$ -DQPSK for EDR-2Mbps 3. 8DPSK for EDR-3Mbps
Number of channel	79 Channels

Remark:

Refer as ANSI 63.10:2013 clause 5.6.1 Table 4 for test channels

Number of frequencies to be tested		
Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
<input type="checkbox"/> 1 MHz or less	1	Middle
<input type="checkbox"/> 1 MHz to 10 MHz	2	1 near top and 1 near bottom
<input checked="" type="checkbox"/> More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

1.3 ANTENNA INFORMATION

Antenna Type	<input type="checkbox"/> PIFA <input checked="" type="checkbox"/> FPC <input type="checkbox"/> Dipole <input type="checkbox"/> Coils
Antenna Gain	Gain: 2.56dBi

1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 1.4003
RF output power, conducted	+/- 1.1372
Power density, conducted	+/- 1.4003
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0138
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9483
3M Semi Anechoic Chamber / 1G~8G	+/- 2.5975
3M Semi Anechoic Chamber / 8G~18G	+/- 2.6112
3M Semi Anechoic Chamber / 18G~26G	+/- 2.7389
3M Semi Anechoic Chamber / 26G~40G	+/- 2.9683
3M Semi Anechoic Chamber / 40G~60G	+/- 1.8509
3M Semi Anechoic Chamber / 60G~75G	+/- 1.9869
3M Semi Anechoic Chamber / 75G~110G	+/- 2.9651
3M Semi Anechoic Chamber / 110G~170G	+/- 2.7807
3M Semi Anechoic Chamber / 170G~220G	+/- 3.6437
3M Semi Anechoic Chamber / 220G~325G	+/- 4.2982

Remark:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$
2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at
No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

Test site	Test Engineer	Remark
AC Conduction Room	-	
Radiation	Jerry Chuang	
RF Conducted	Eric Lee	

Remark: The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

1.6 INSTRUMENT CALIBRATION

Wugu 966 Chamber A					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Bilog Antenna	Sunol Sciences	JB3	A030105	06/20/2017	06/19/2018
Horn Antenna	ETC	MCTD 1209	DRH13M02003	08/25/2017	08/24/2018
Pre-Amplifier	EMEC	EM330	60609	06/07/2017	06/06/2018
Spectrum Analyzer	Agilent	E4446A	US42510252	11/27/2017	11/26/2018
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Wideband Radio Communication Tester	R&S	CMW 500	116875	04/25/2017	04/24/2018
Pre-Amplifier	HP	8449B	3008A00965	06/27/2017	06/26/2018
Filter	N/A	2400-2500	N/A	N/A	N/A
Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	07/31/2017	07/30/2018
Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	07/31/2017	07/30/2018

RF Conducted Test Site					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Power Meter	Anritsu	ML2495A	1012009	07/03/2017	07/02/2018
Power Sensor	Anritsu	MA2411B	917072	07/03/2017	07/02/2018
Spectrum Analyzer	R&S	FSV 40	101073	10/02/2017	10/01/2018
Directional Coupler	Agilent	87301D	MY44350252	07/25/2017	07/24/2018
SUCOFLEX Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	07/31/2017	07/30/2018
Divider	Solvang Technology	2-18GHz 4Way	STI08-0015	07/26/2017	07/25/2018
Wideband Radio Communication Tester	R&S	CMW500	116875	04/25/2017	04/24/2018

Remark: Each piece of equipment is scheduled for calibration once a year.

1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

EUT Accessories Equipment					
No.	Equipment	Brand	Model	Series No.	FCC ID
	N/A				

Support Equipment					
No.	Equipment	Brand	Model	Series No.	FCC ID
1	DC Power Source	GWINSTEK	SPS-3610	N/A	N/A
2	NB(H)	Acer	Aspire 4320 series	N/A	QDS-BRCM1018
3	NB(D)	ASUS	A8J	N/A	PD9WM3945ABG

1.8 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 2, FCC Part 15.247.

2. TEST SUMMERY

FCC Standard Section	Report Section	Test Item	Result
15.203	1.2	Antenna Requirement	Pass
15.207(a)	5.1	AC Conducted Emission	-
15.247(a)(1)	5.2	20 dB Bandwidth	Pass
15.247(b)(1)	5.3	Output Power Measurement	Pass
15.247(a)(1)	5.4	Frequency Separation	Pass
15.247(a)(1)(iii)	5.5	Number of Hopping	Pass
15.247(d)	5.6	Conducted Band Edge	Pass
15.247(d)	5.6	Conducted Emission	Pass
15.247(a)(1)(iii)	5.7	Time of Occupancy	Pass
15.247(d)	5.8	Radiation Band Edge	Pass
15.247(d)	5.8	Radiation Spurious Emission	Pass

3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	GFSK for BDR-1Mbps (DH5) 8DPSK for EDR-3Mbps (DH5)
Test Channel Frequencies	GFSK for BDR-1Mbps: 1.Lowest Channel : 2402MHz 2.Middle Channel : 2441MHz 3.Highest Channel : 2480MHz 8DPSK for EDR-3Mbps: 1.Lowest Channel : 2402MHz 2.Middle Channel : 2441MHz 3.Highest Channel : 2480MHz

Remark:

1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.

3.2 THE WORST MODE OF MEASUREMENT

Radiated Emission Measurement Above 1G	
Test Condition	Band edge, Emission for Unwanted and Fundamental
Voltage/Hz	DC 12V and DC 24V
Test Mode	Mode 1: EUT power by power supply_24V. Mode 2: EUT power by power supply_12V.
Worst Mode	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4
Worst Position	<input type="checkbox"/> Placed in fixed position. <input type="checkbox"/> Placed in fixed position at X-Plane (E2-Plane) <input type="checkbox"/> Placed in fixed position at Y-Plane (E1-Plane) <input checked="" type="checkbox"/> Placed in fixed position at Z-Plane (H-Plane)
Worst Polarity	<input checked="" type="checkbox"/> Horizontal <input type="checkbox"/> Vertical

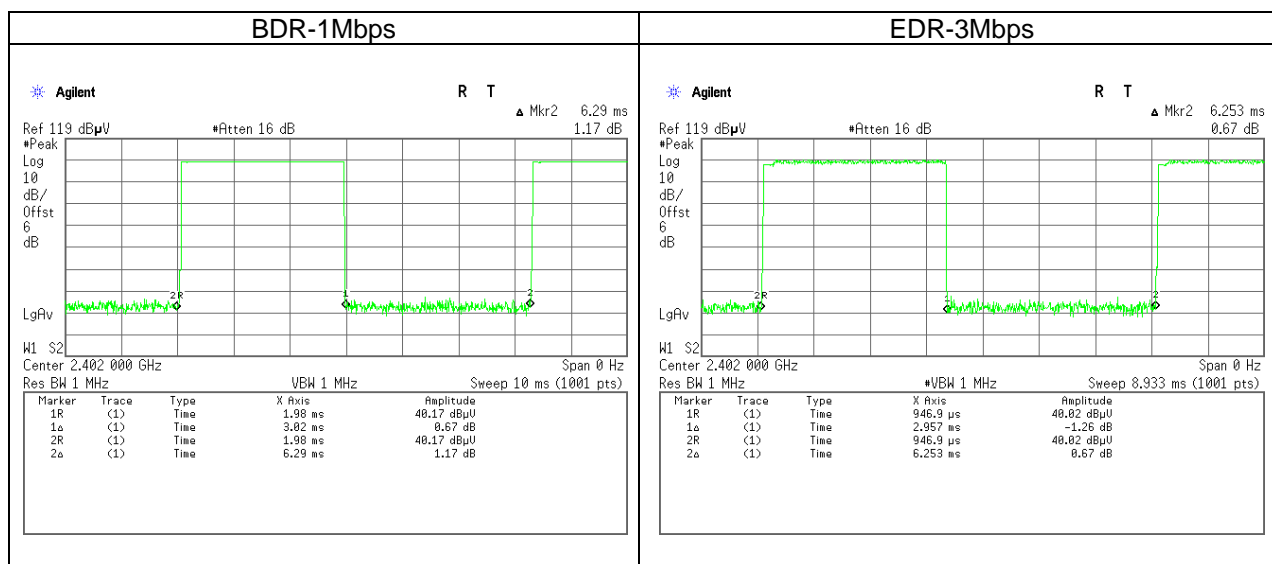
Radiated Emission Measurement Below 1G	
Test Condition	Radiated Emission Below 1G
Voltage/Hz	DC 12V and DC 24V
Test Mode	Mode 1: EUT power by power supply_24V. Mode 2: EUT power by power supply_12V.
Worst Mode	<input checked="" type="checkbox"/> Mode 1 <input type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4

Remark:

1. The worst mode was record in this test report.
2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case(Z-Plane and Horizontal) were recorded in this report
3. For below 1G, radiation emission were performed the EUT transmit at the highest output power channel as worse case.

4. EUT DUTY CYCLE

Duty Cycle				
Configuration	TX _{ON} (ms)	TX _{ALL} (ms)	Duty Cycle (%)	Duty Factor(dB)
BDR-1Mbps	3.0200	6.2900	48.01%	3.19
EDR-3Mbps	2.9570	6.2530	47.29%	3.25



Remark:

1. Duty Cycle (%)= $TX_{ON} \div TX_{ALL} * 100$
2. Duty Factor(dB)= $10 * \log (1 \div \text{Duty Cycle})$

5. TEST RESULT

5.1 AC POWER LINE CONDUCTED EMISSION

5.1.1 Test Limit

According to §15.207(a),

Frequency Range (MHz)	Limits(dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

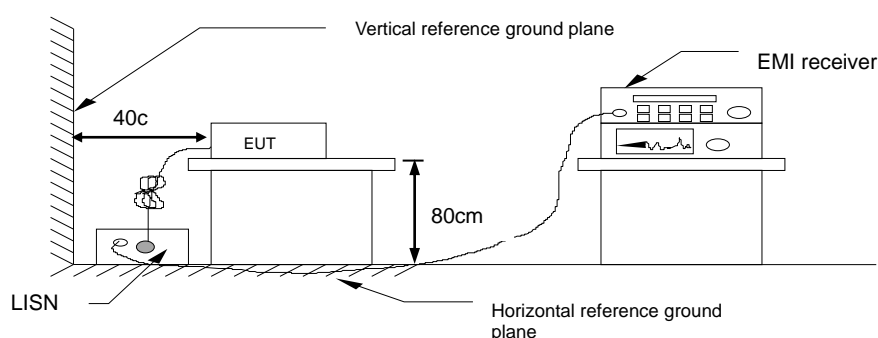
* Decreases with the logarithm of the frequency.

5.1.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 6.2,

1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
2. EUT connected to the line impedance stabilization network (LISN)
3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. Recorded Line for Neutral and Line.

5.1.3 Test Setup



5.1.4 Test Result

Not applicable, because EUT not connect to AC Main Source direct.

5.2 20DB BANDWIDTH

5.2.1 Test Limit

According to §15.247(a) (1),

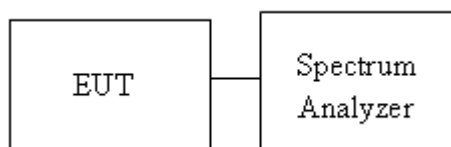
20 dB Bandwidth : For reporting purposes only.

5.2.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 11.8.1,

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW = 30kHz, VBW = 100kHz and Detector = Peak, to measurement 20 dB Bandwidth.
4. Measure and record the result of 20 dB Bandwidth in the test report.

5.2.3 Test Setup

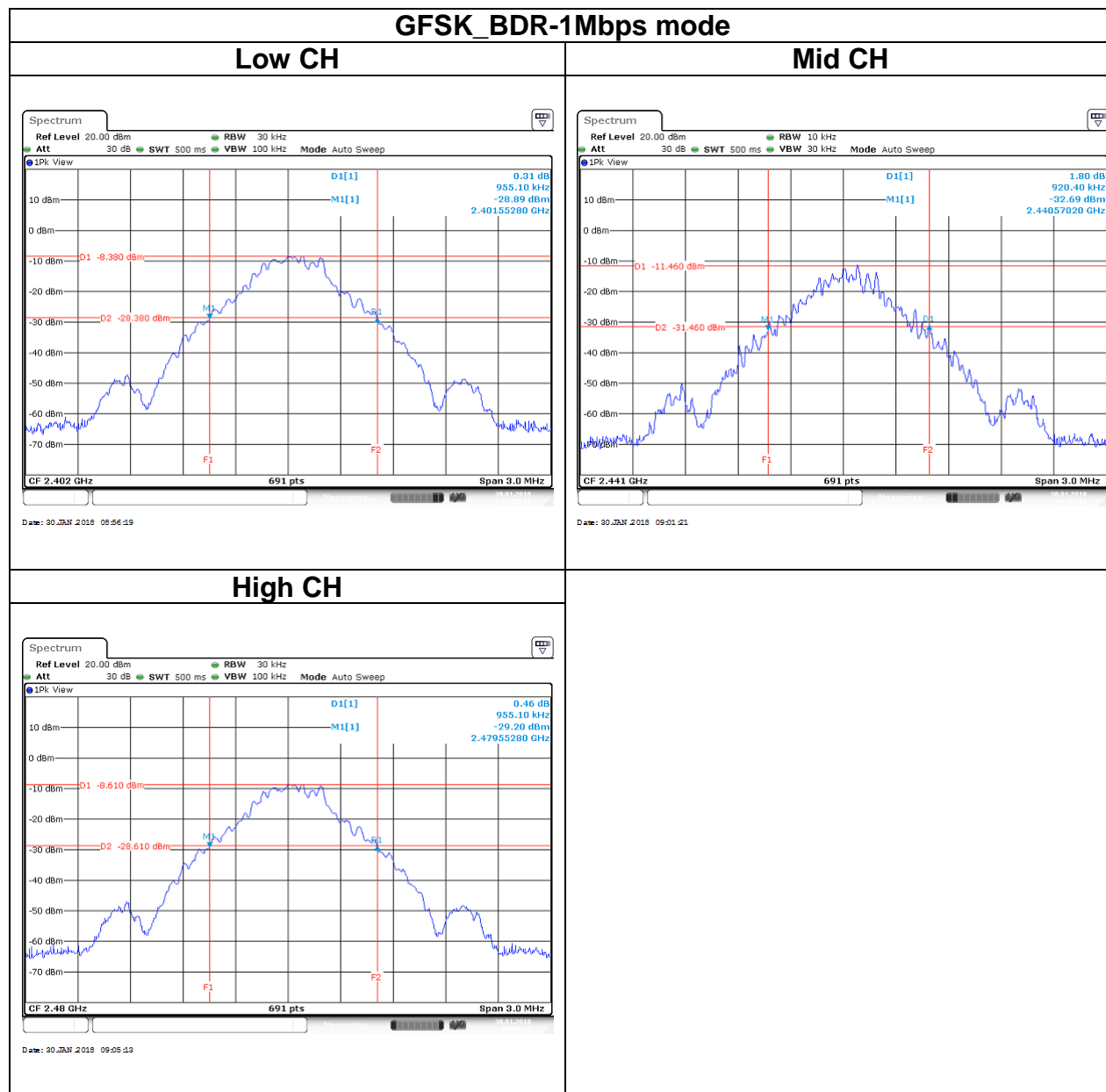


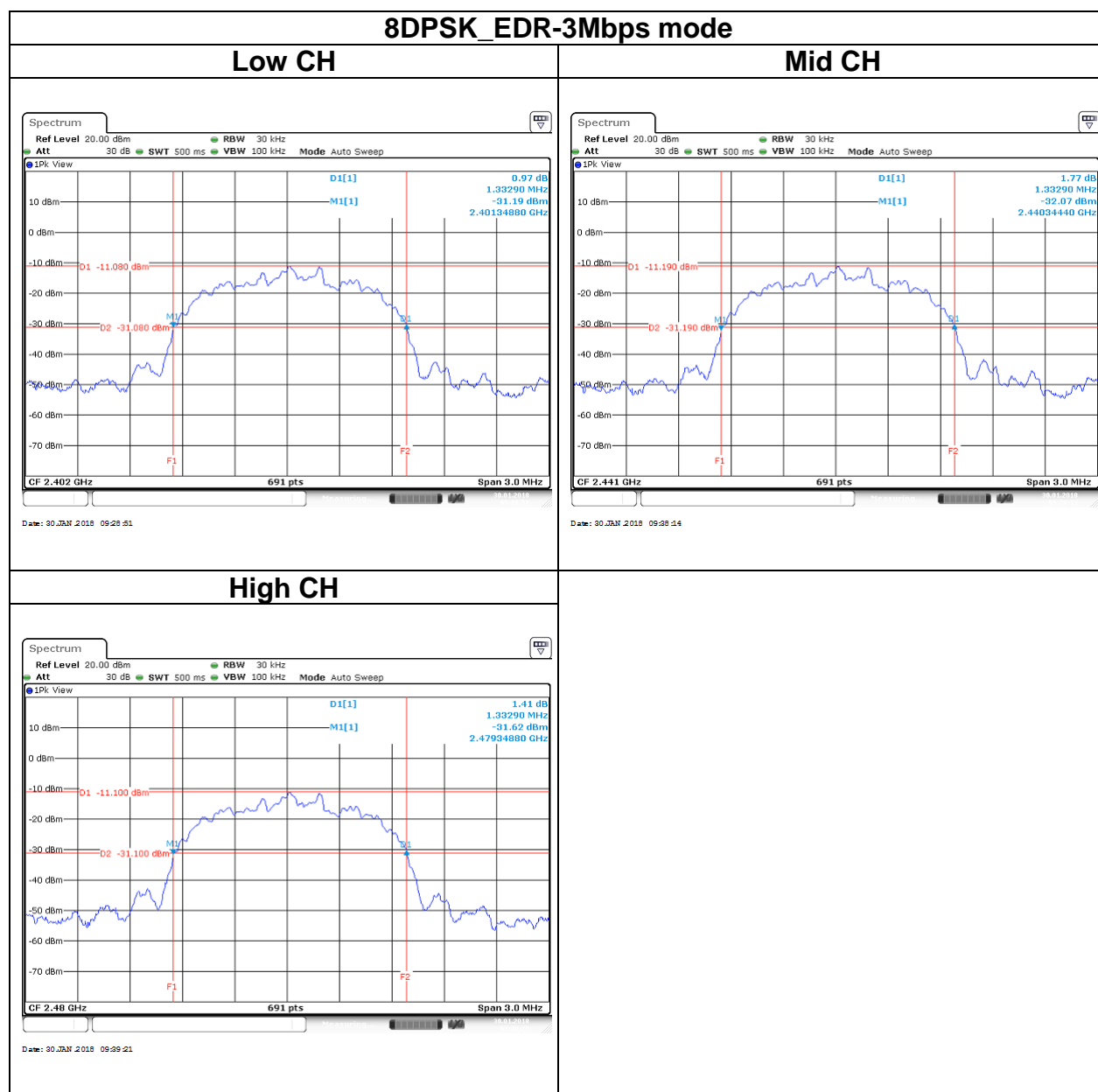
5.2.4 Test Result

Test mode: GFSK_BDR-1Mbps mode / 2402-2480 MHz		
Channel	Frequency (MHz)	20dB BW (MHz)
Low	2402	0.9551
Mid	2441	0.9204
High	2480	0.9551

Test mode: 8DPSK_EDR-3Mbps mode / 2402-2480 MHz		
Channel	Frequency (MHz)	20dB BW (MHz)
Low	2402	1.3329
Mid	2441	1.3329
High	2480	1.3329

Test Data





5.3 OUTPUT POWER MEASUREMENT

5.3.1 Test Limit

According to §15.247(a)(1).

Peak output power :

FCC

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

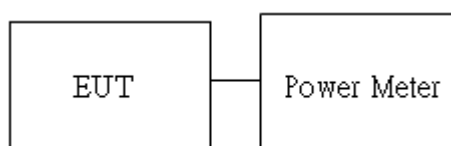
Limit	<input checked="" type="checkbox"/> Antenna not exceed 6 dBi : 21dBm <input type="checkbox"/> Antenna with DG greater than 6 dBi : 21dBm [Limit = 30 – (DG – 6)]
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Average output power : For reporting purposes only.

5.3.2 Test Procedure

1. The EUT RF output connected to the power meter by RF cable.
2. Setting maximum power transmit of EUT.
3. The path loss was compensated to the results for each measurement.
4. Measure and record the result of Peak output power and Average output power. in the test report.

5.3.3 Test Setup



5.3.4 Test Result

Peak output power :

For GFSK / DH5

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2402	8.90	0.00776	0.125	PASS
Mid	2441	8.81	0.00760		PASS
High	2480	8.82	0.00762		PASS

For 8DPSK / DH5

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2402	9.53	0.00897	0.125	PASS
Mid	2441	9.34	0.00859		PASS
High	2480	9.37	0.00865		PASS

Average output power :

For GFSK / DH5

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	2402	8.61	0.00726
Mid	2441	8.50	0.00708
High	2480	8.48	0.00705

For 8DPSK / DH5

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	2402	6.06	0.00404
Mid	2441	5.97	0.00395
High	2480	6.05	0.00403

5.4 FREQUENCY SEPARATION

5.4.1 Test Limit

According to §15.247(a)(1),

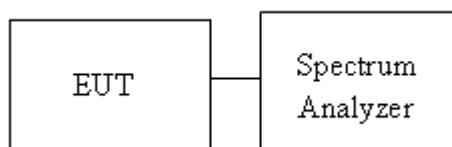
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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

Limit	> two-thirds of the 20 dB bandwidth
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5.4.2 Test Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. EUT RF output port connected to the SA by RF cable.
3. Set the spectrum analyzer as RBW = 100kHz, VBW = 300kHz, Sweep = auto.
Max hold, mark 3 peaks of hopping channel and record the 3 peaks frequency

5.4.3 Test Setup



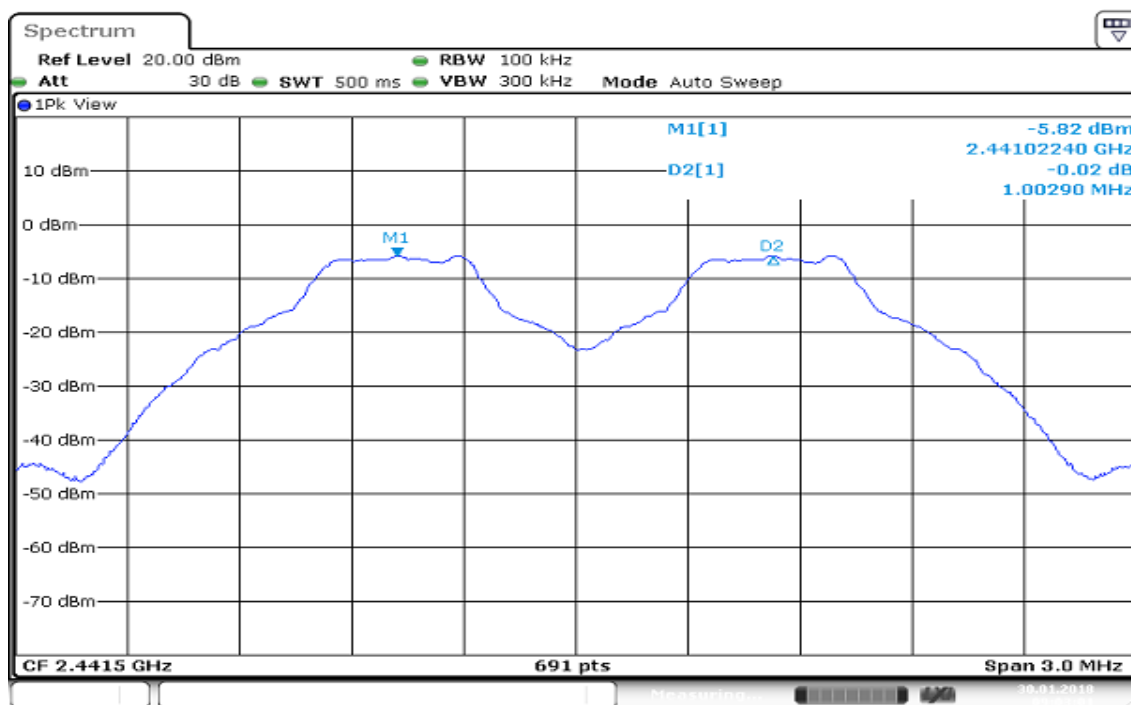
5.4.4 Test Result

Test mode: GFSK_BDR-1Mbps mode / 2402-2480 MHz				
Channel	Frequency (MHz)	Channel Separation (MHz)	Channel Separation Limits (MHz)	Result
Low	2402	1.0029	0.6367	PASS
Mid	2441	1.0029	0.6136	PASS
High	2480	1.0029	0.6367	PASS

Test mode: 8DPSK_EDR-3Mbps mode / 2402-2480 MHz				
Channel	Frequency (MHz)	Channel Separation (MHz)	Channel Separation Limits (MHz)	Result
Low	2402	1.0029	0.8886	PASS
Mid	2441	1.0029	0.8886	PASS
High	2480	1.0029	0.8886	PASS

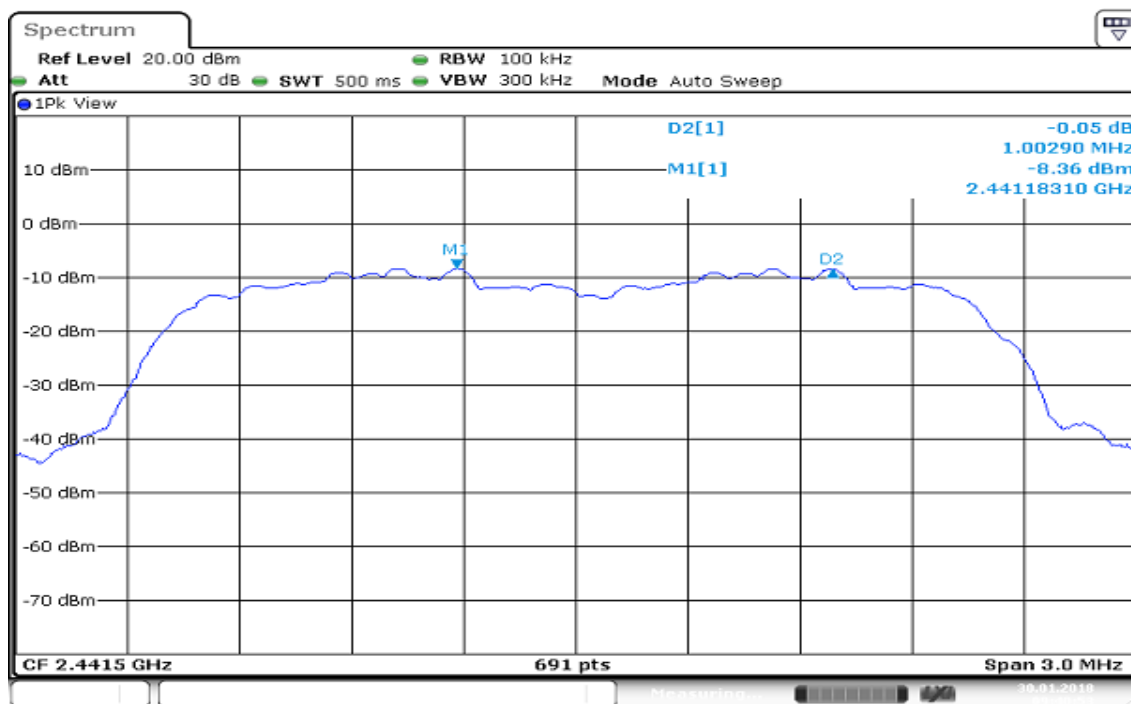
Test Data

GFSK_BDR-1Mbps mode



Remark: 1. Only Mid. channel measurement plots presented as reference, due to similarities among all measured results

8DPSK_EDR-3Mbps mode



Date: 30 JAN 2018 09:40:53

Remark: 1. Only Mid. channel measurement plots presented as reference, due to similarities among all measured results

5.5 NUMBER OF HOPPING

5.5.1 Test Limit

According to §15.247(a)(1)(iii) and RSS-247 section 5.1(d)

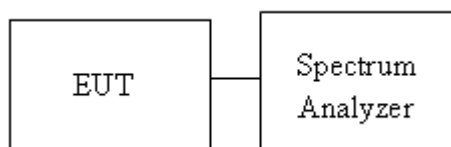
Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

5.5.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 7.8.3

1. Place the EUT on the table and set it in transmitting mode.
2. EUT RF output port connected to the SA by RF cable.
3. Set spectrum analyzer Start Freq. = 2400 MHz, Stop Freq. = 2483.5 MHz, RBW = 100KHz, VBW = 300KHz.
4. Max hold, view and count how many channel in the band.

5.5.3 Test Setup



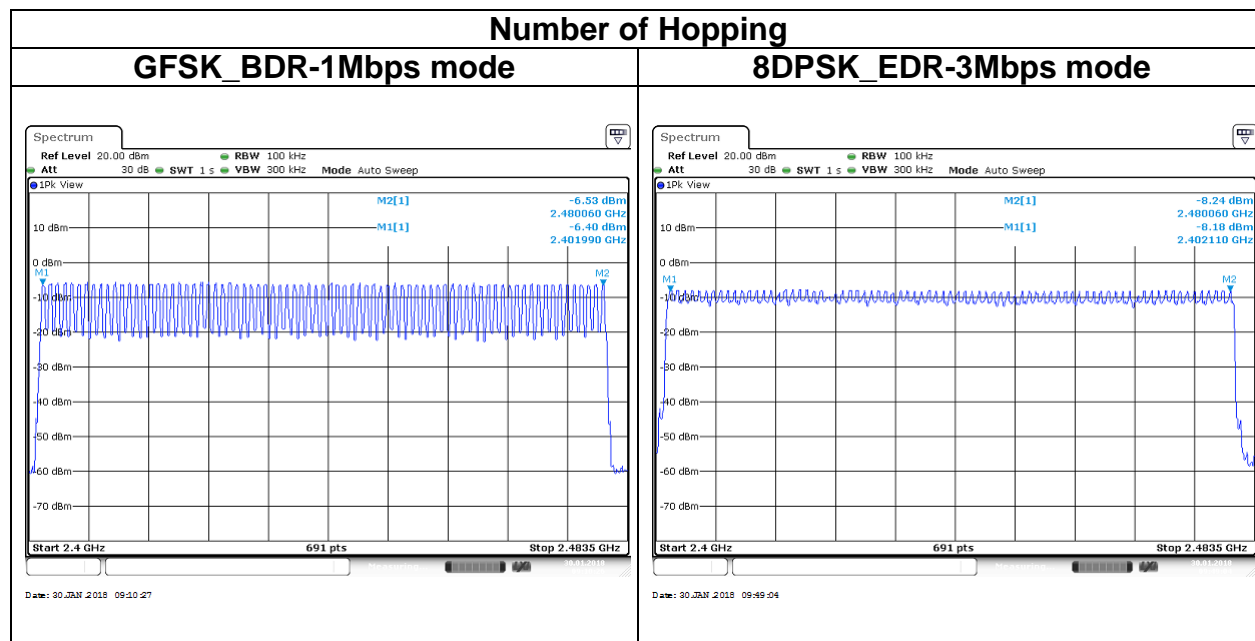
5.5.4 Test Result

Number of Hopping				
Mode	Frequency (MHz)	Hopping Channel Number	Hopping Channel Number Limits	Result
BDR-1Mbps	2402-2480	79	15	Pass
EDR-3Mbps	2402-2480	79	15	

REMARK:

The frequency spectrum was broken up in to two sub-range to clearly show all of the hopping frequencies. In the AFH mode, this device operation was using 20 channels, so the requirement for minimum number of hopping channels is satisfied

Test Data



5.6 CONDUCTED BANDEGE AND SPURIOUS EMISSION

5.6.1 Test Limit

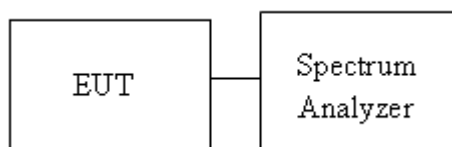
According to §15.247(d),

Limit	-20 dBc
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5.6.2 Test Procedure

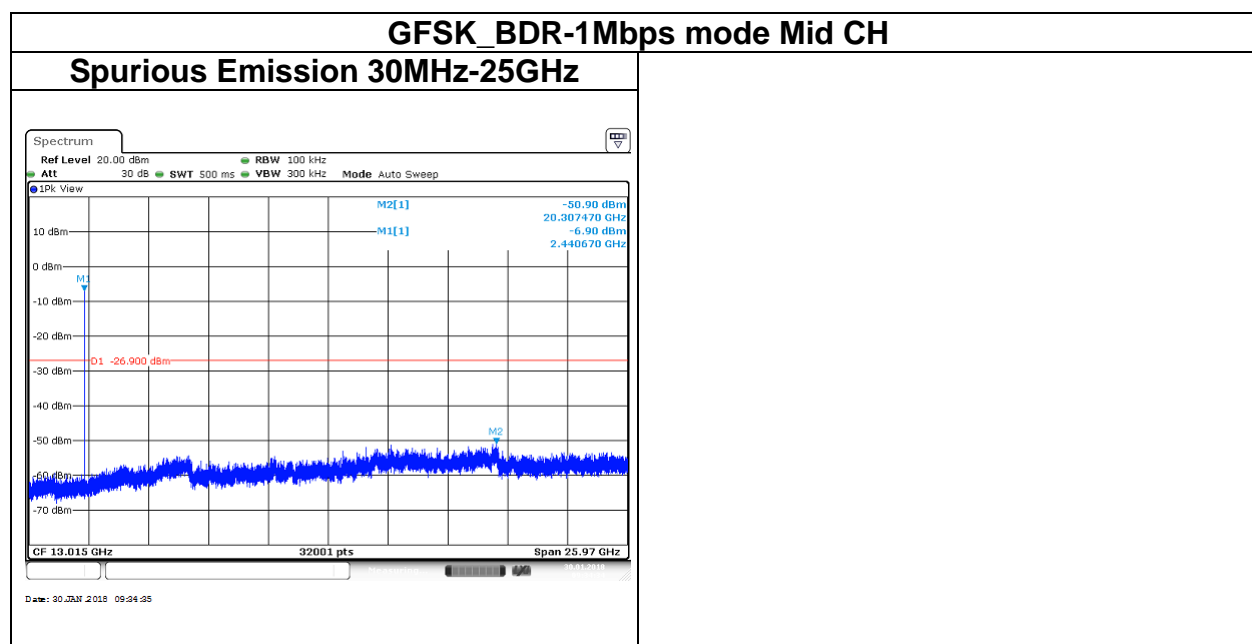
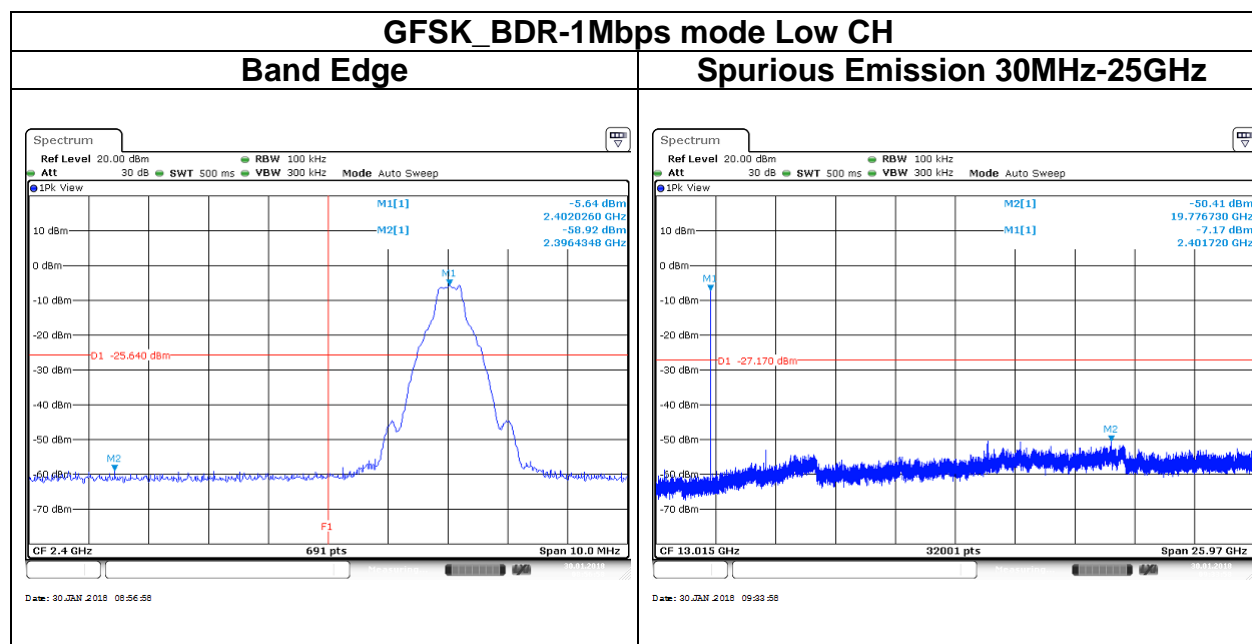
1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.
2. SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.
3. The Band Edge at 2.4GHz and 2.4835GHz are investigated with normal hopping mode.

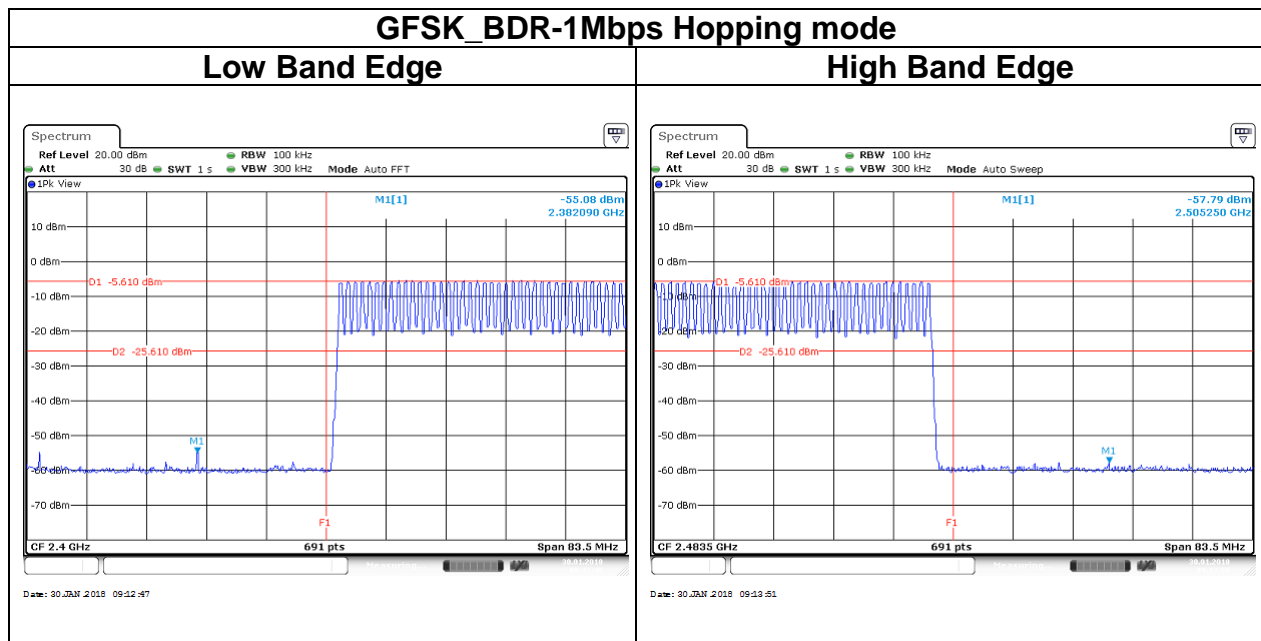
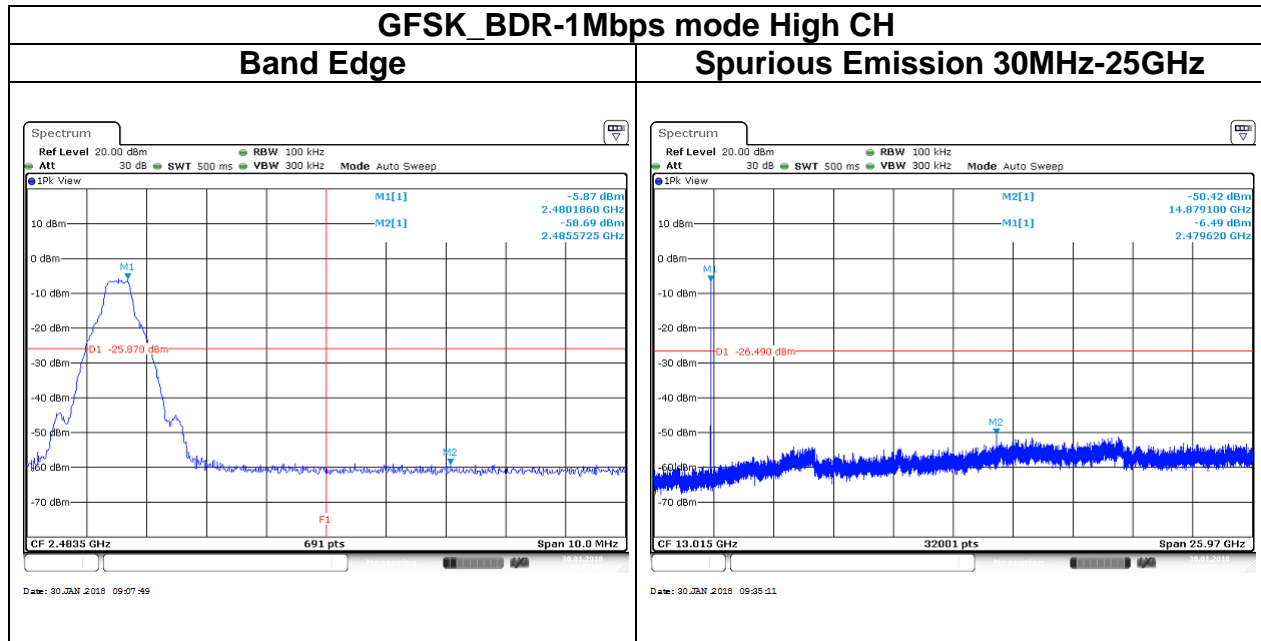
5.6.3 Test Setup

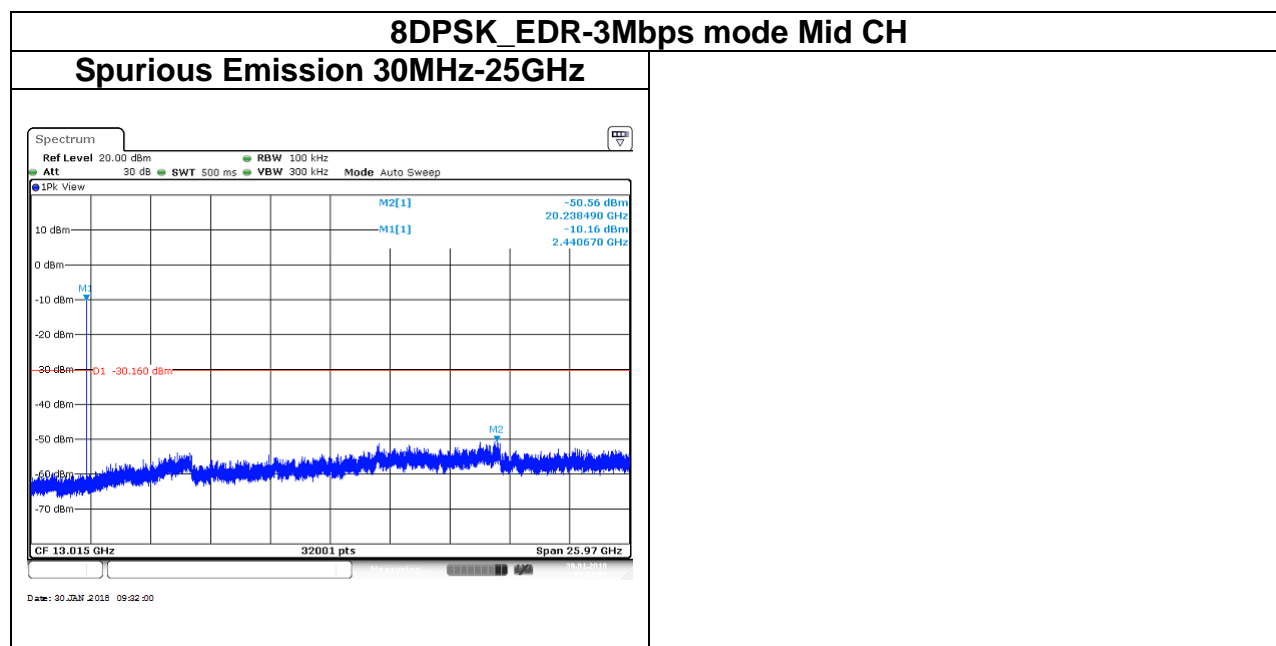
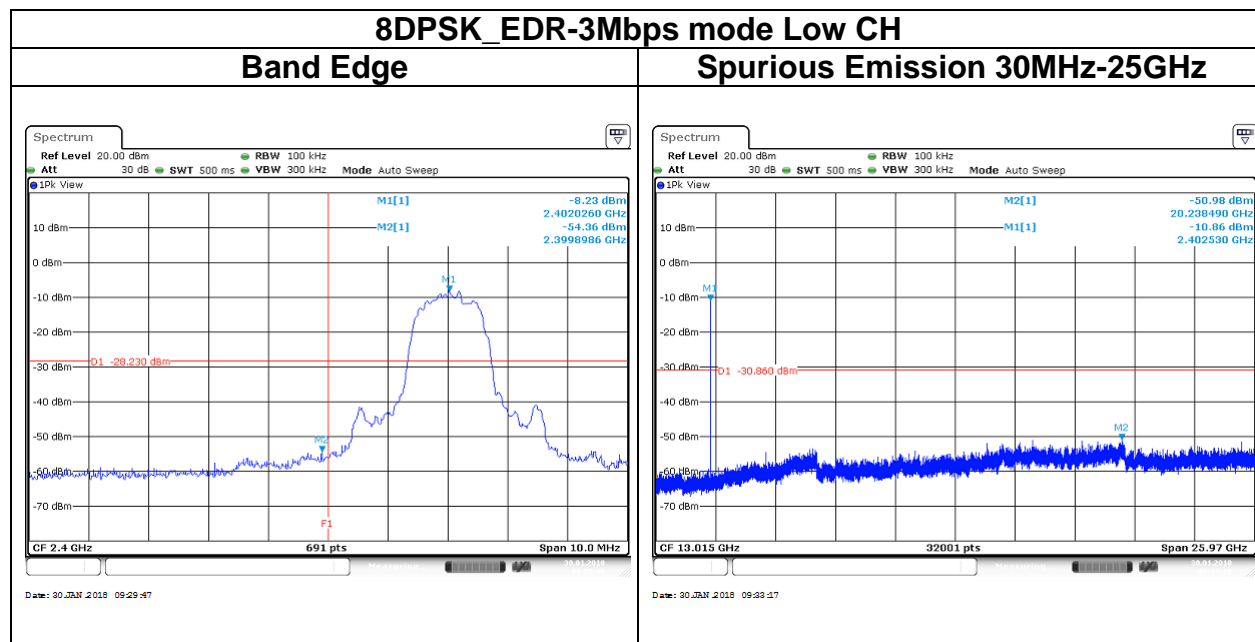


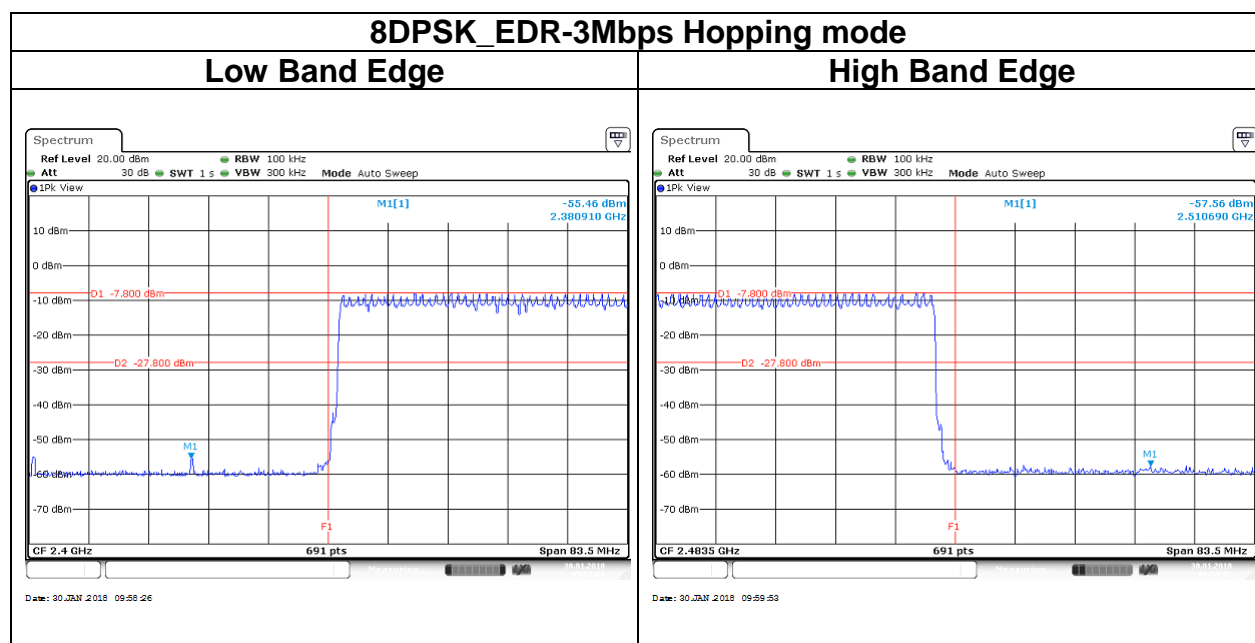
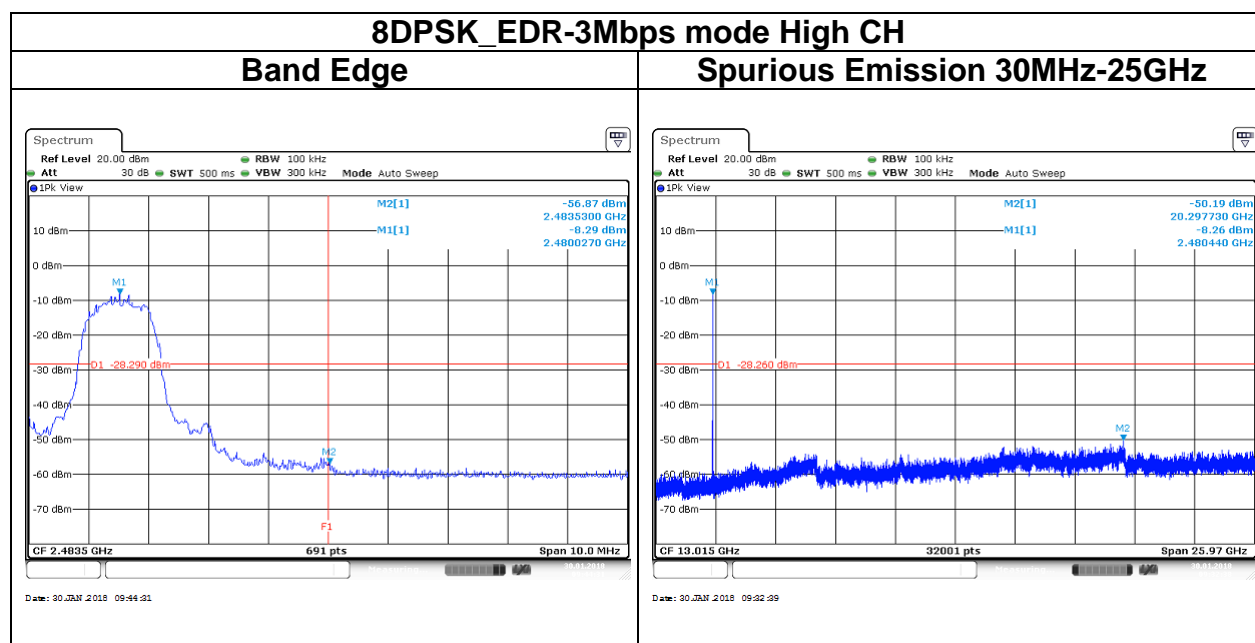
5.6.4 Test Result

Test Data









5.7 TIME OF OCCUPANCY (DWEELL TIME)

5.7.1 Test Limit

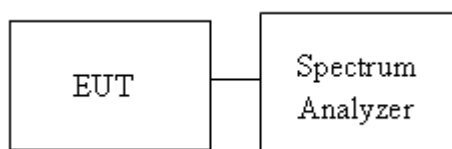
According to §15.247(a)(1)(iii),

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

5.7.2 Test Procedure

1. EUT RF output port connected to the SA by RF cable.
2. Set center frequency of spectrum analyzer = operating frequency.
3. Set the spectrum analyzer as RBW, VBW=1MHz, Sweep = 1 ms

5.7.3 Test Setup

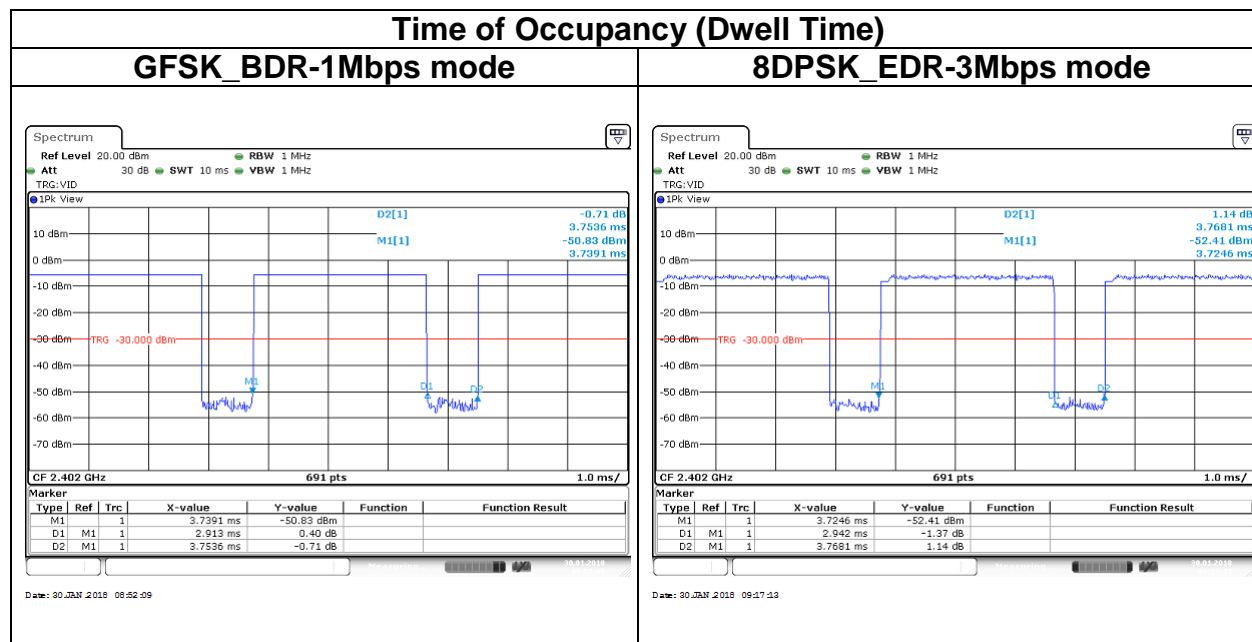


5.7.4 Test Result

Time of Occupancy (Dwell Time)							
Mode	Frequency (MHz)	Pulse Time Per Hopping (ms)	Minimum Number of Hopping Freq.	Number of pulse in	Dwell Time IN	Dwell Time Limits (s)	Result
				(0.4 * N sec)	(0.4 * N sec)		
BDR-1Mbps	2441	2.913	79	106.67	0.311	0.4	Pass
EDR-3Mbps	2441	2.942	79	106.67	0.314	0.4	
Non-AFH: DH5 Packet permit maximum 1600/ 79 / 6 = 3.37 hops per second in each channel (5 time slots RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times 3.37 * 0.4 *79 = 106.6							

Remark: 1. Only Mid. channel measurement plots presented as reference, due to similarities among all measured results

Test Data



5.8 RADIATION BANDEDGE AND SPURIOUS EMISSION

5.8.1 Test Limit

FCC according to §15.247(d), §15.209 and §15.205,

In any 100 kHz bandwidth outside the authorized frequency band, all harmonic and spurious must be least 20 dB below the highest emission level with the authorized frequency band. Radiation emission which fall in the restricted bands must also follow the FCC section 15.209 as below limit in table.

Below 30 MHz

Frequency	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/F (F in kHz)	300
490-1,705 kHz	24,000/F (F in kHz)	24,000/F (F in kHz)	30
1.705-30 MHz	30	N/A	30

Above 30 MHz

Frequency (MHz)	Field Strength microvolts/m at 3 metres (watts, e.i.r.p.)	
	Transmitters	Receivers
30-88	100 (3 nW)	100 (3 nW)
88-216	150 (6.8 nW)	150 (6.8 nW)
216-960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

Remark:

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open area test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 937606.

5.8.2 Test Procedure

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10, and the EUT set in a continuous mode.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.

3. Span shall wide enough to full capture the emission measured. The SA from 9kHz to 26.5GHz set to the low, Mid and High channels with the EUT transmit.

Note: No emission found between lowest internal used/generated frequency to 30MHz(9KHz~30MHz)

4. For harmonic, the worst case of output power was BDR-1Mbps. Therefore only BDR-1Mbps record in the report.

5. The SA setting following :

(1) Below 1G : RBW = 100kHz, VBW \geq 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.

(2) Above 1G :

(2.1) For Peak measurement : RBW = 1MHz, VBW \geq 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.

(2.2) For Average measurement : RBW = 1MHz, VBW

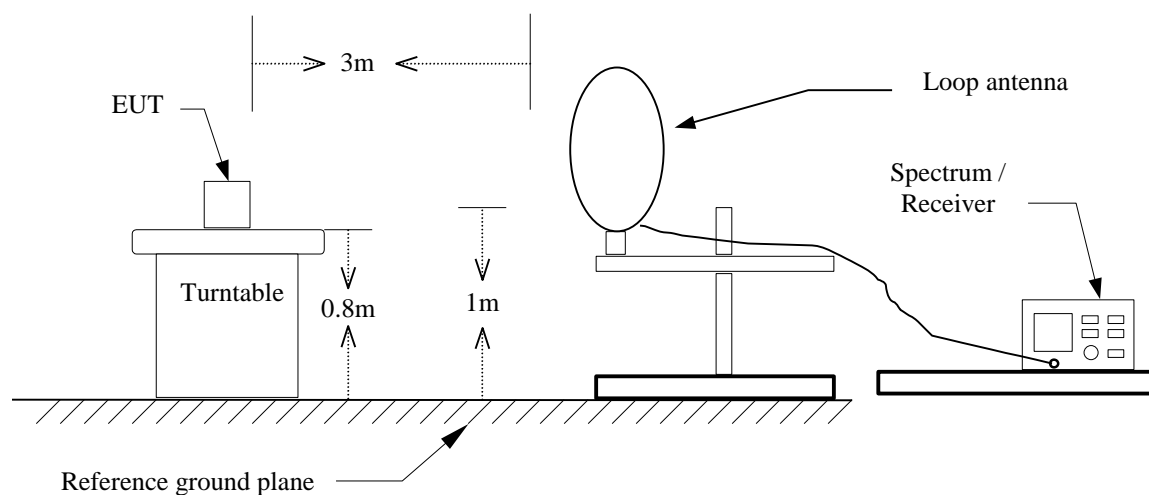
·If Duty Cycle \geq 98%, VBW=10Hz.

·If Duty Cycle < 98%, VBW \geq 1/T.

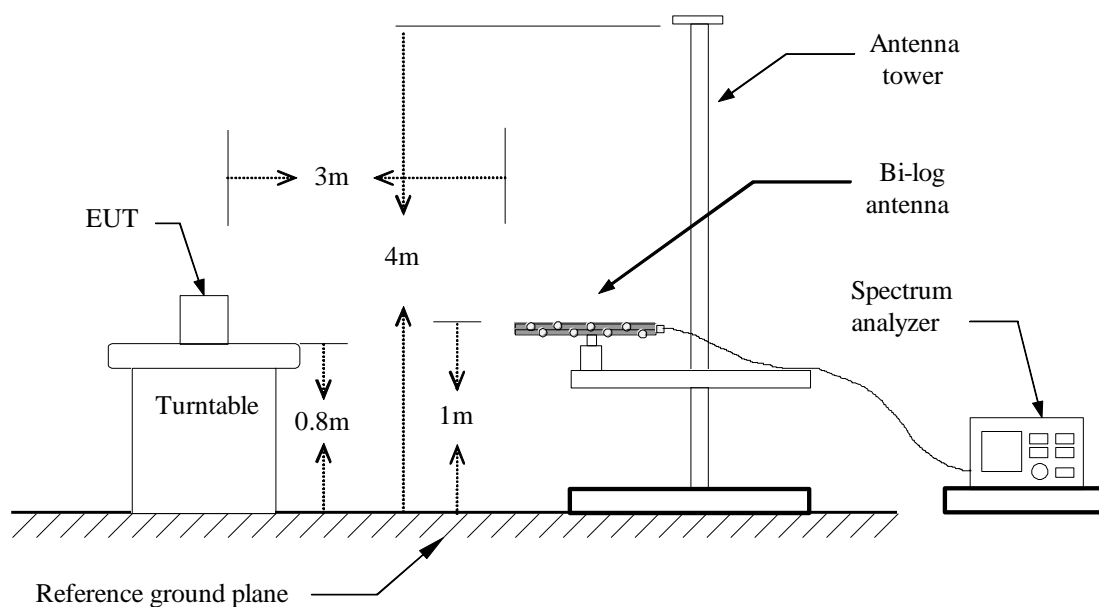
Configuration	Duty Cycle (%)	T(ms)	1/T (kHz)	VBW setting
GFSK_BDR-1Mbps	48%	3.0200	0.331	360Hz
8DPSK_EDR-3Mbps	47%	2.9570	0.338	360Hz

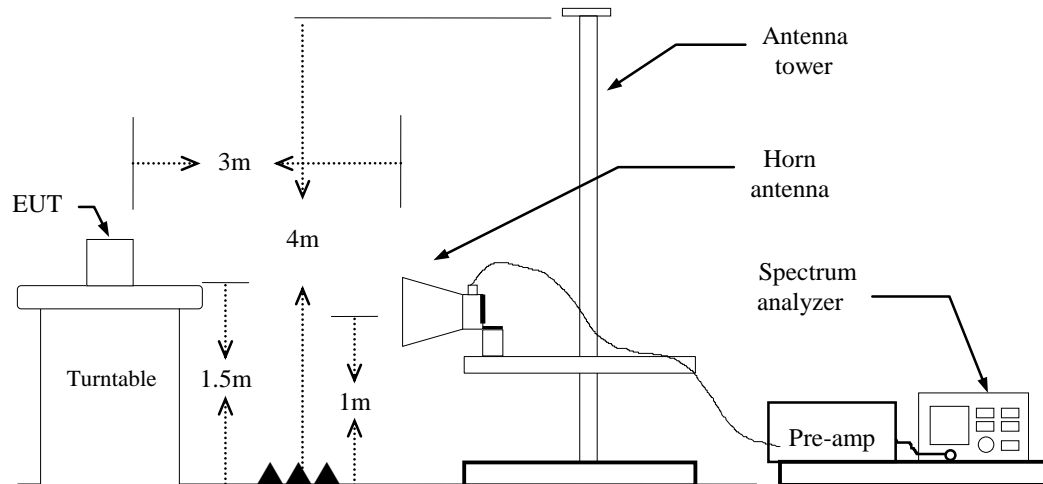
5.8.3 Test Setup

9kHz ~ 30MHz



30MHz ~ 1GHz

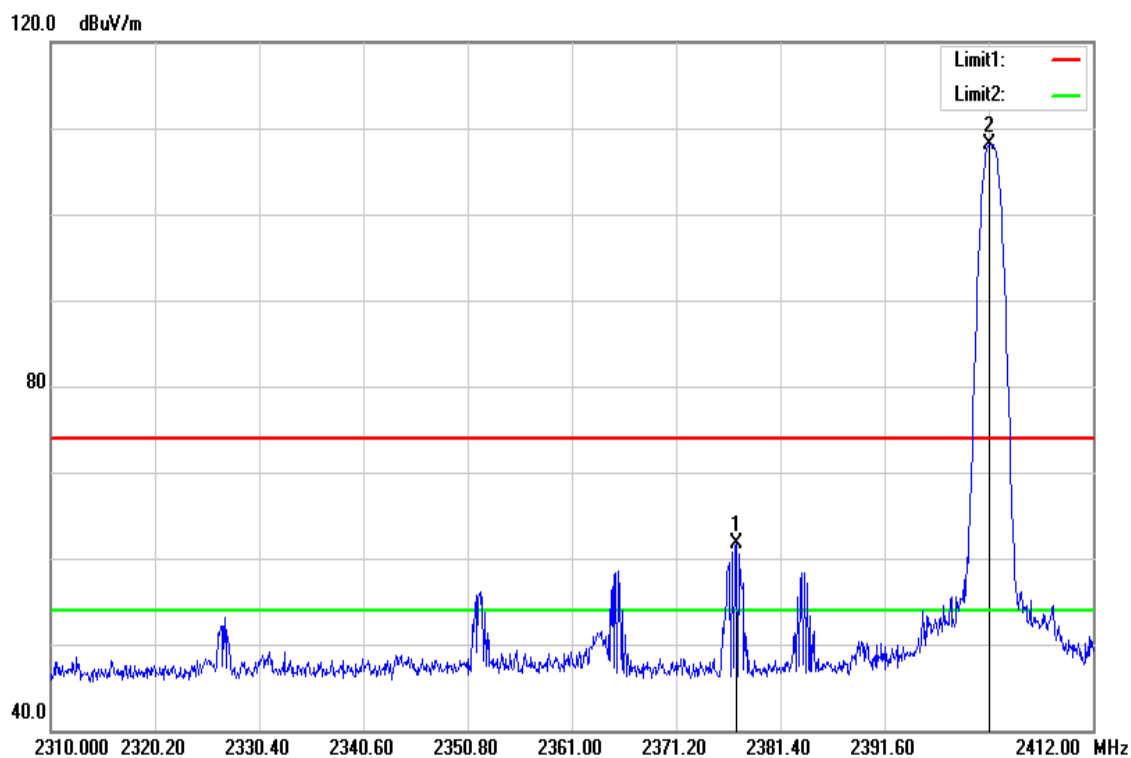


Above 1 GHz

5.8.4 Test Result

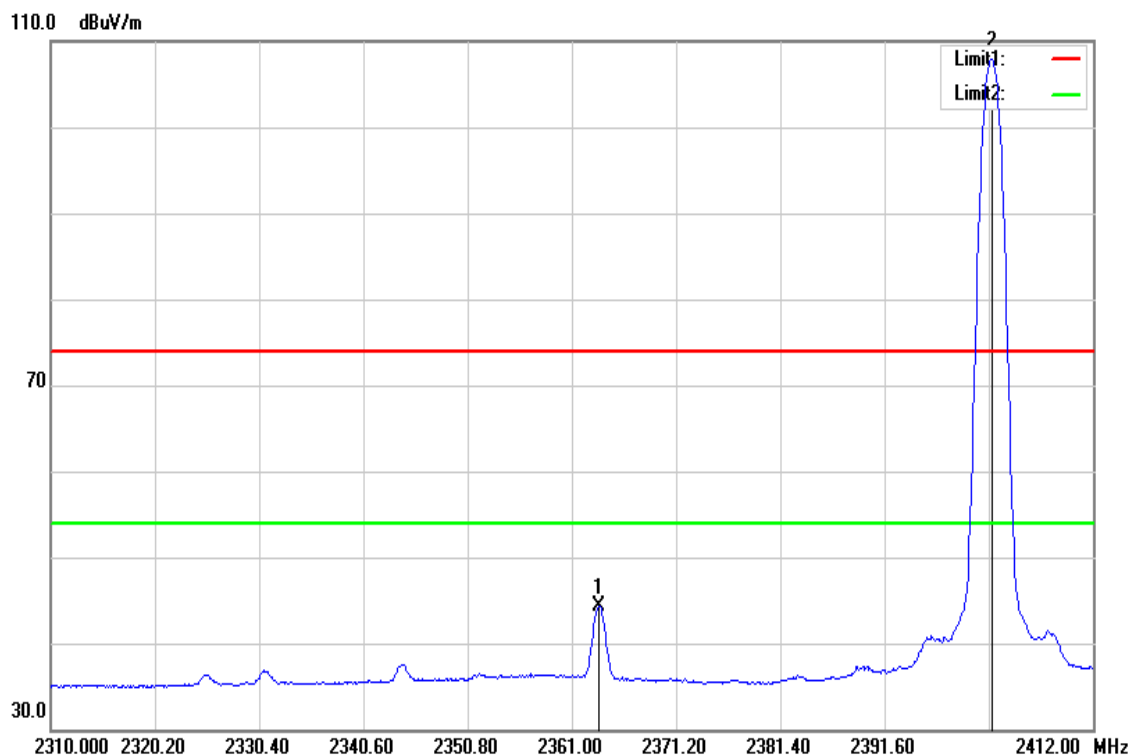
Band Edge Test Data

Test Mode:	GFSK_BDR-1Mbps Low CH	Temp/Hum	22(°C)/ 34%RH
Test Item	Band Edge	Test Date	February 1, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	---

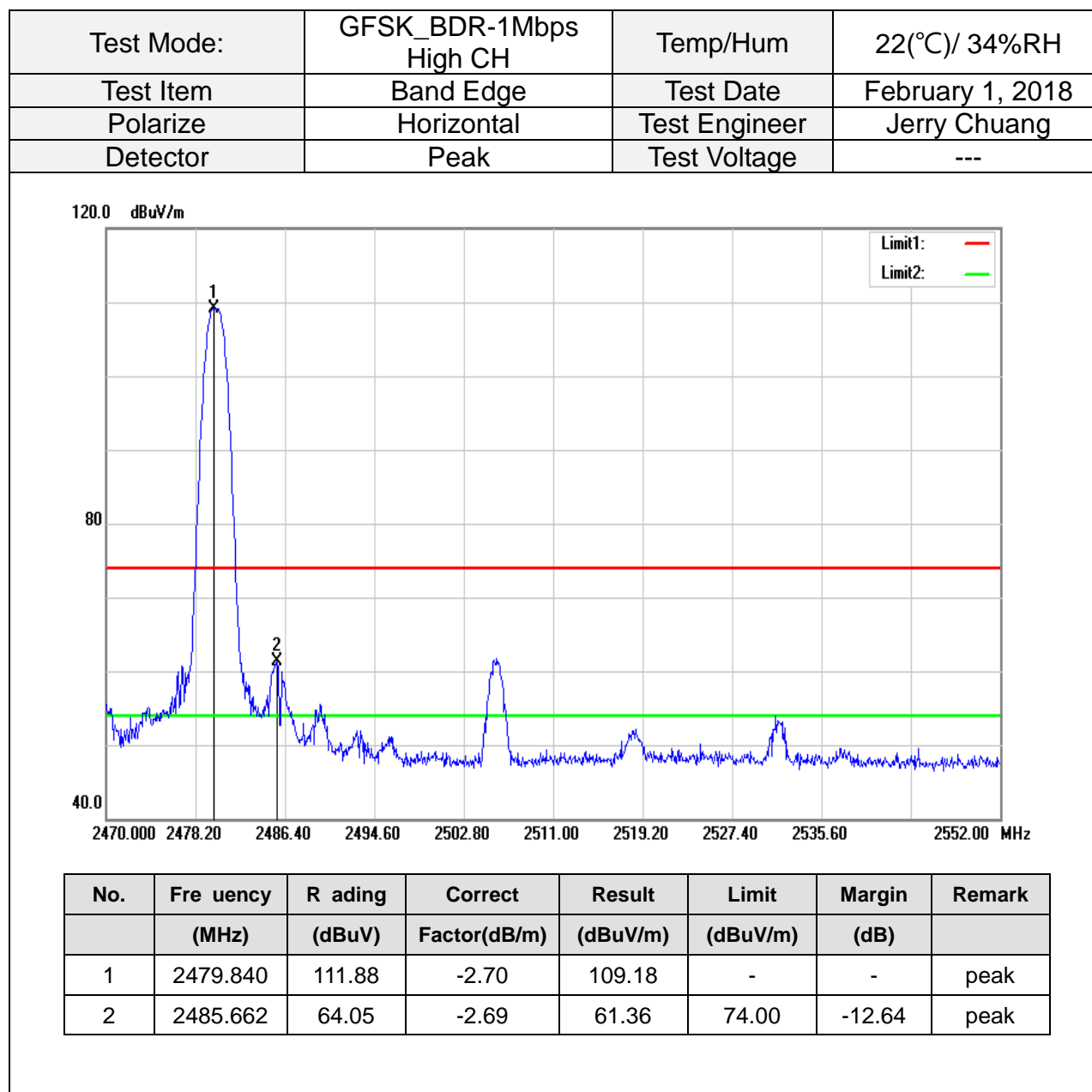


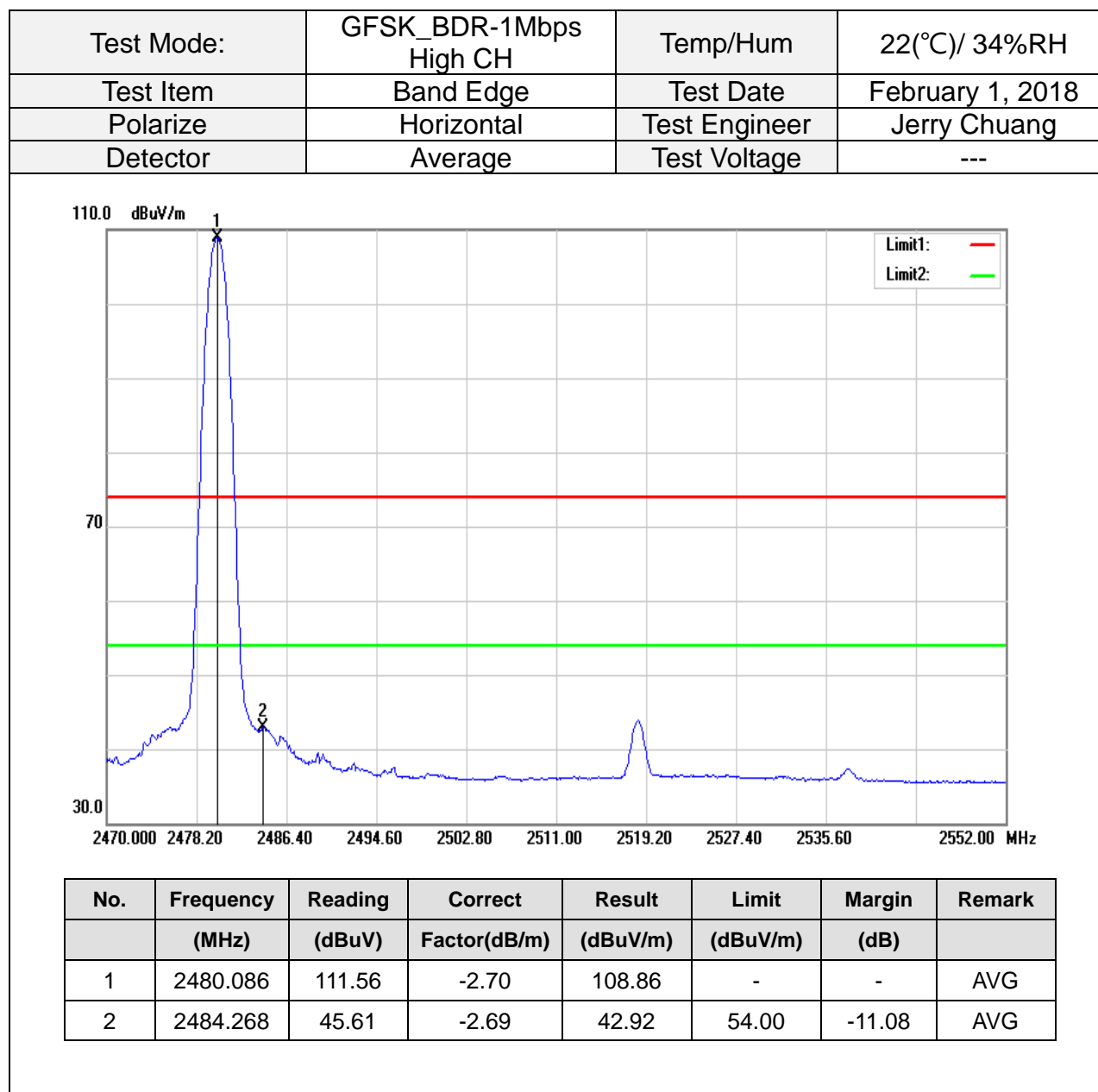
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2377.116	64.78	-3.02	61.76	74.00	-12.24	peak
2	2401.902	111.01	-2.95	108.06	-	-	peak

Test Mode:	GFSK_BDR-1Mbps Low CH	Temp/Hum	22(°C)/ 34%RH
Test Item	Band Edge	Test Date	February 1, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	---



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2363.652	47.40	-3.07	44.33	54.00	-9.67	AVG
2	2402.106	110.79	-2.95	107.84	-	-	AVG



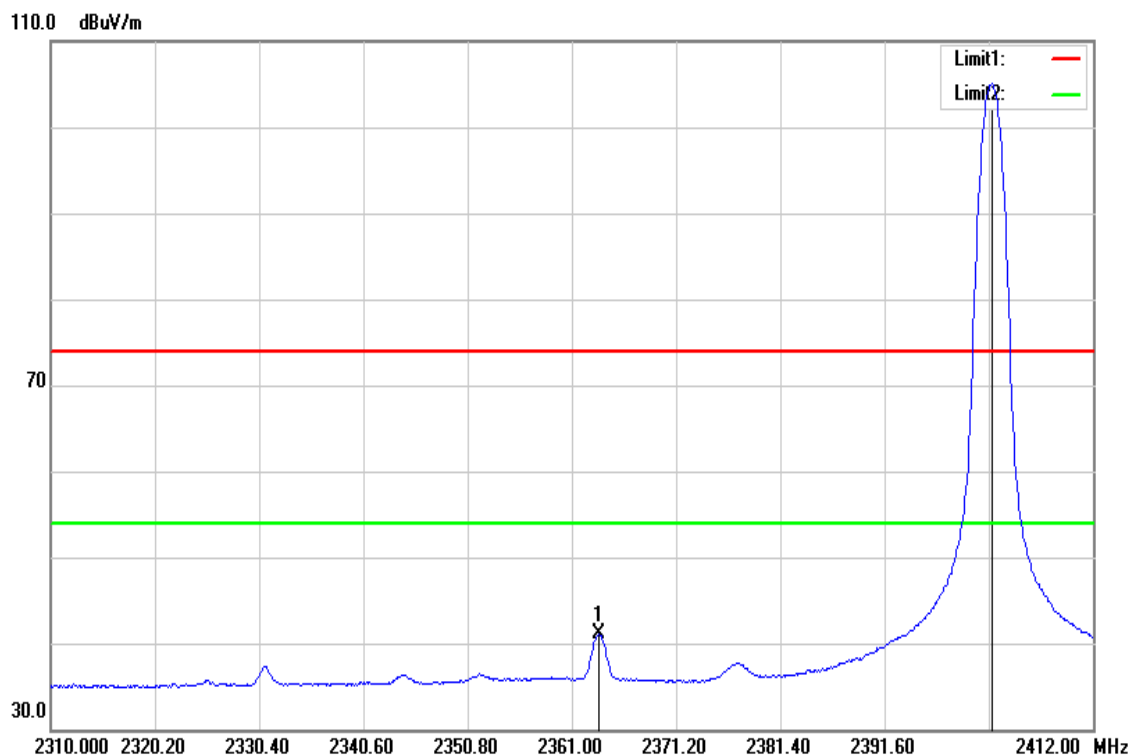


Test Mode:	8DPSK_EDR-3Mbps Low CH	Temp/Hum	22(°C)/ 34%RH
Test Item	Band Edge	Test Date	February 1, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	---



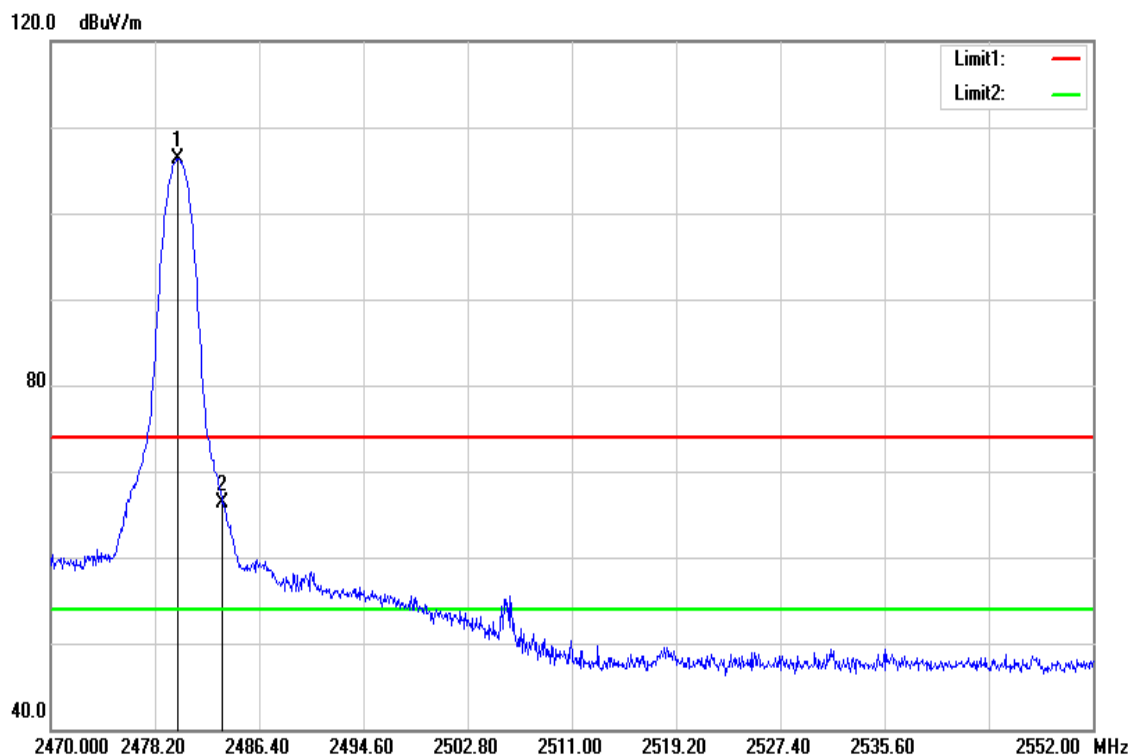
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2388.744	60.20	-2.98	57.22	74.00	-16.78	peak
2	2402.004	109.46	-2.95	106.51	-	-	peak

Test Mode:	8DPSK_EDR-3Mbps Low CH	Temp/Hum	22(°C)/ 34%RH
Test Item	Band Edge	Test Date	February 1, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Average	Test Voltage	---

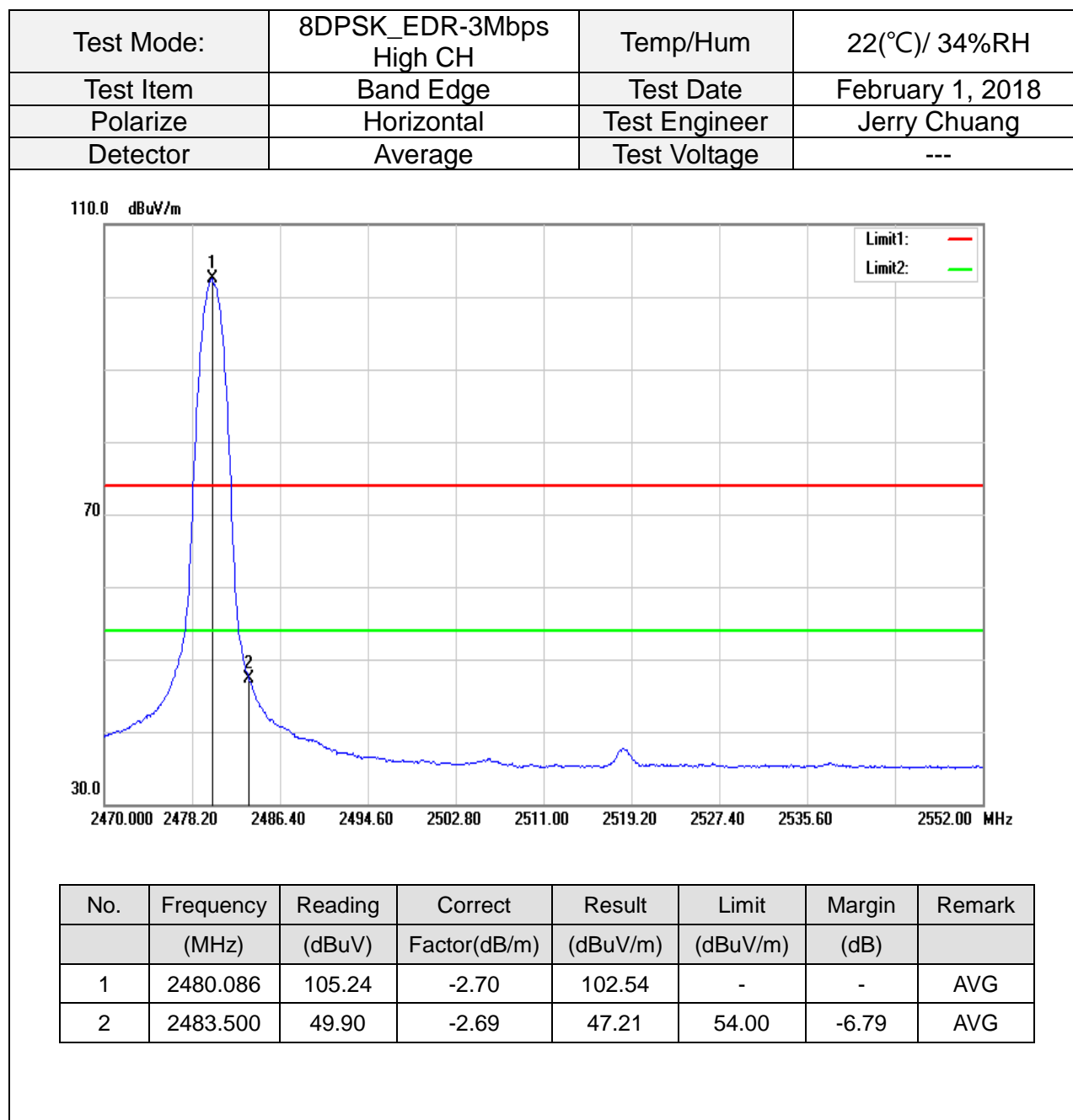


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2363.652	44.11	-3.07	41.04	54.00	-12.96	AVG
2	2402.106	107.98	-2.95	105.03	-	-	AVG

Test Mode:	8DPSK_EDR-3Mbps High CH	Temp/Hum	22(°C)/ 34%RH
Test Item	Band Edge	Test Date	February 1, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	---

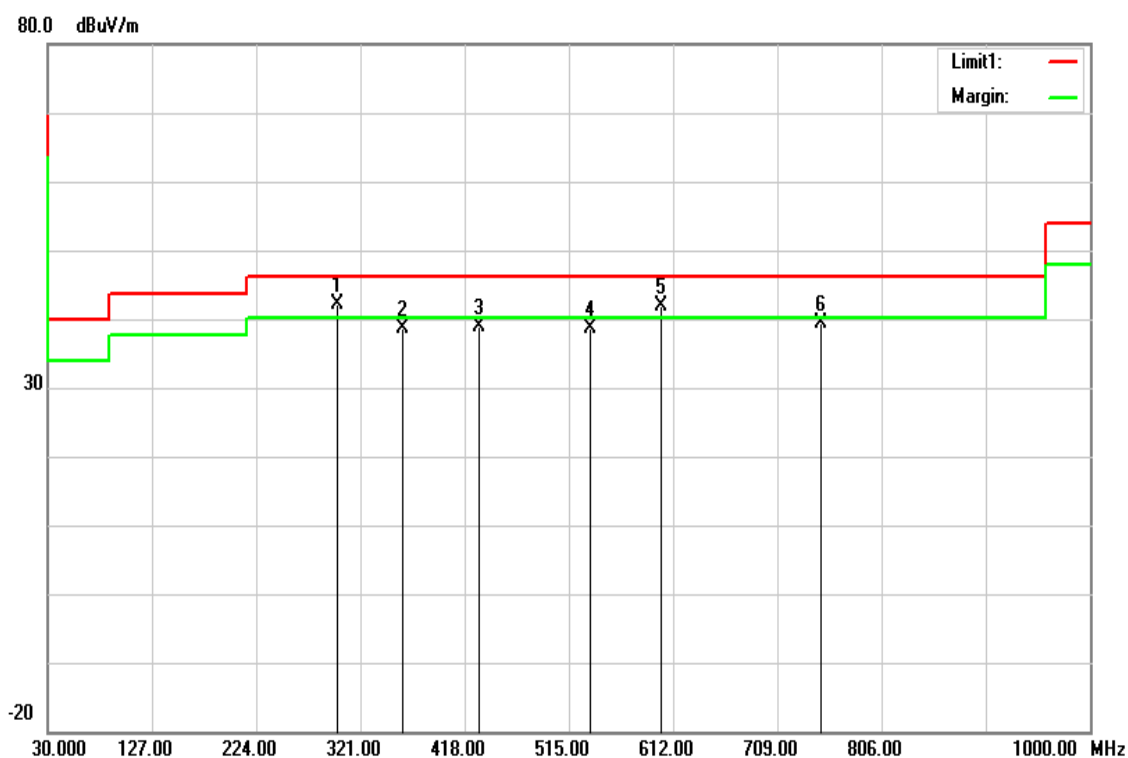


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2480.004	109.00	-2.70	106.30	-	-	peak
2	2483.500	68.97	-2.69	66.28	74.00	-7.72	peak



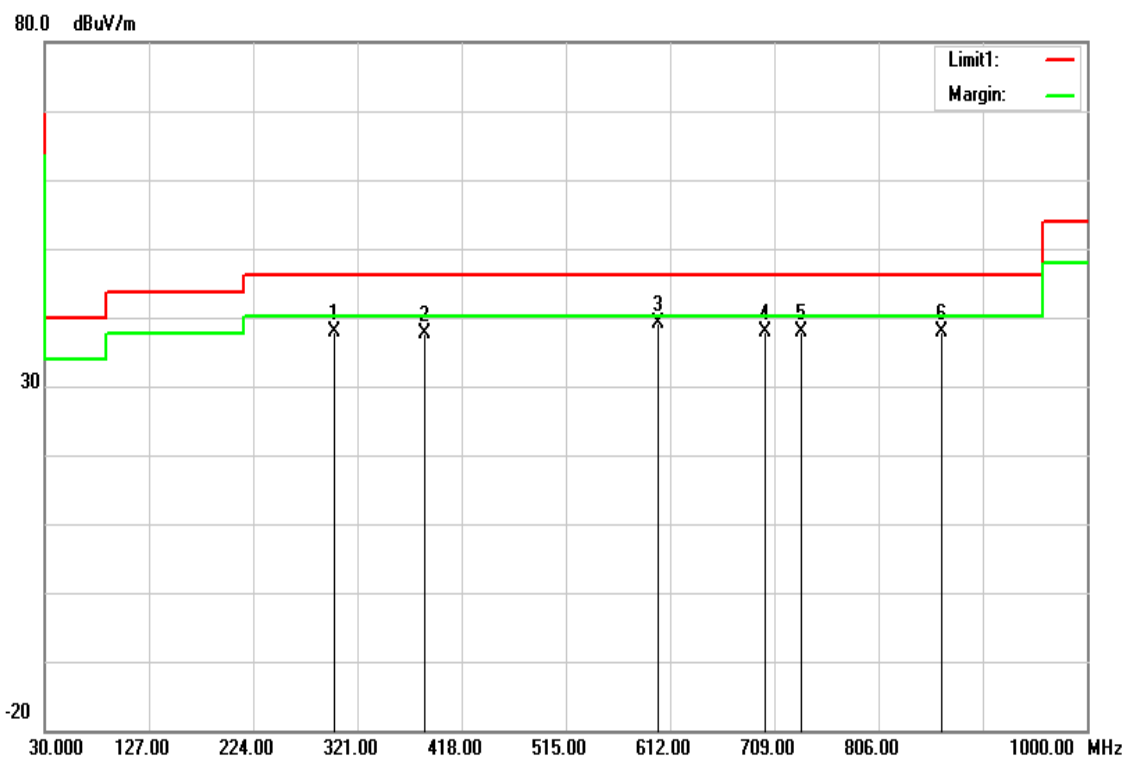
Below 1G Test Data

Test Mode:	BT Mode	Temp/Hum	22(°C)/ 34%RH
Test Item	30MHz-1GHz	Test Date	February 22, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	DC 24V



No.	requency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	299.6600	56.25	-14.07	42.18	46.02	-3.84	QP
2	359.8000	51.31	-12.67	38.64	46.02	-7.38	QP
3	431.5800	49.18	-10.25	38.93	46.02	-7.09	QP
4	534.4000	46.53	-7.85	38.68	46.02	-7.34	peak
5	600.3600	48.88	-6.92	41.96	46.02	-4.06	QP
6	749.7400	43.75	-4.29	39.46	46.02	-6.56	peak

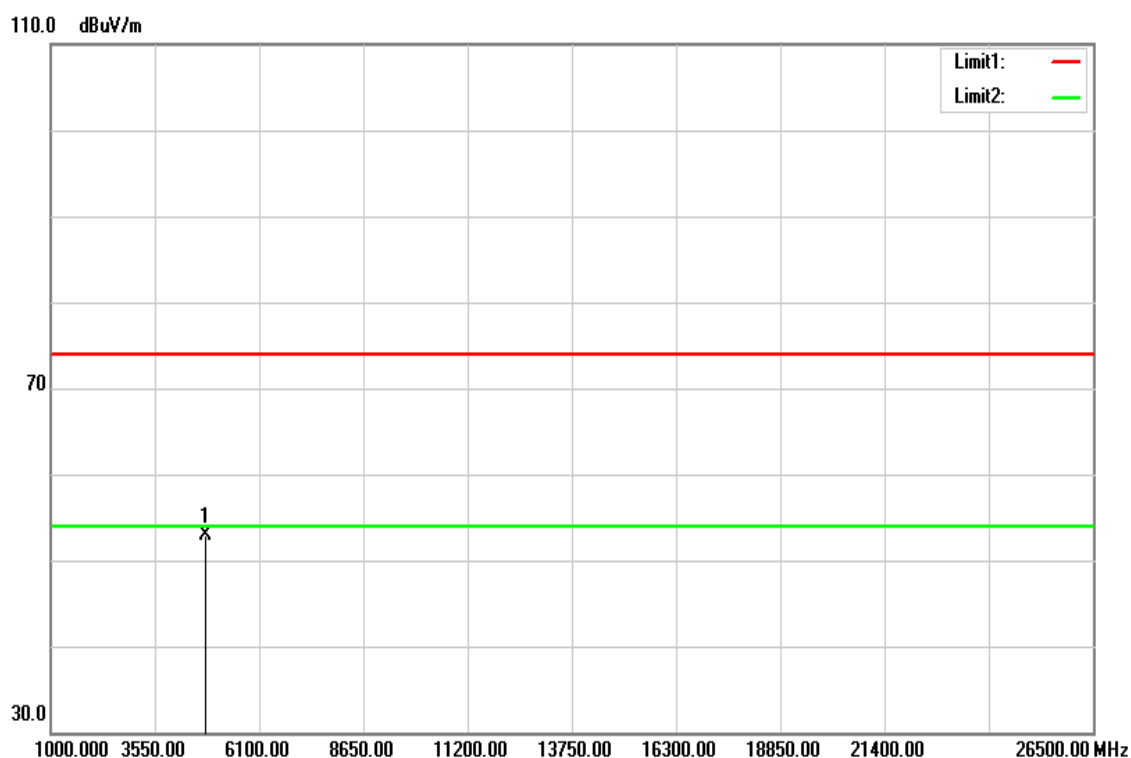
Test Mode:	BT Mode	Temp/Hum	22(°C)/ 34%RH
Test Item	30MHz-1GHz	Test Date	February 22, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak	Test Voltage	DC 24V



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	299.6600	51.83	-14.07	37.76	46.02	-8.26	peak
2	384.0500	49.56	-11.90	37.66	46.02	-8.36	peak
3	600.3600	46.00	-6.92	39.08	46.02	-6.94	peak
4	700.2700	42.83	-4.89	37.94	46.02	-8.08	peak
5	734.2200	42.24	-4.48	37.76	46.02	-8.26	peak
6	865.1700	40.36	-2.60	37.76	46.02	-8.26	peak

Above 1G Test Data

Test Mode:	GFSK_BDR-1Mbps Low CH	Temp/Hum	22(°C)/ 34%RH
Test Item	Harmonic	Test Date	March 5, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	---

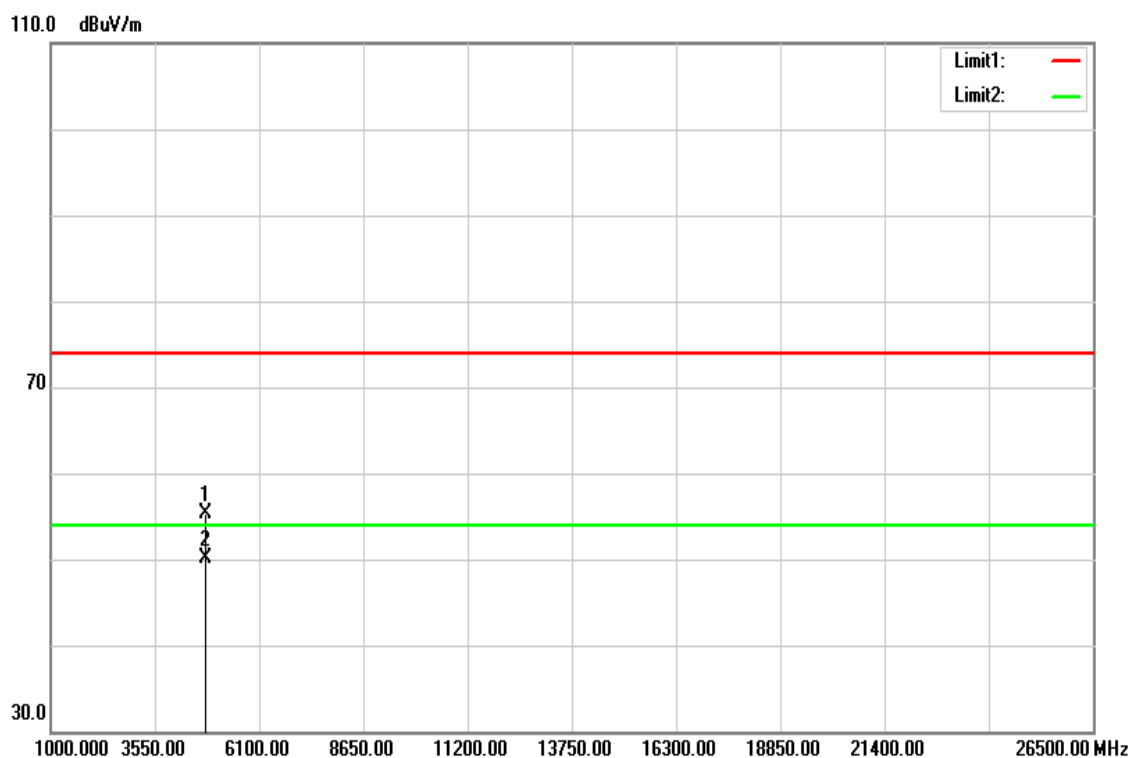


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4806.000	48.47	4.35	52.82	74.00	-21.18	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode:	GFSK_BDR-1Mbps Low CH	Temp/Hum	22(°C)/ 34%RH
Test Item	Harmonic	Test Date	March 5, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	---

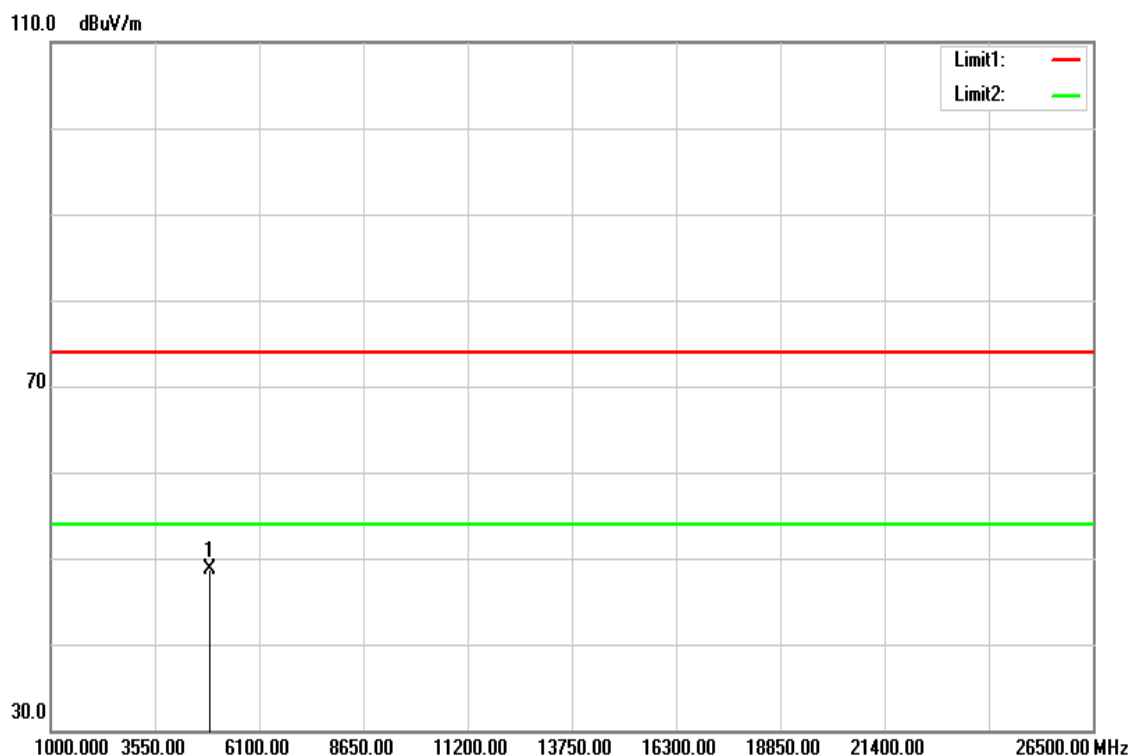


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4806.000	50.97	4.35	55.32	74.00	-18.68	peak
2	4806.000	45.73	4.35	50.08	54.00	-3.92	AVG

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode:	GFSK_BDR-1Mbps Mid CH	Temp/Hum	22(°C)/ 34%RH
Test Item	Harmonic	Test Date	March 5, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	---

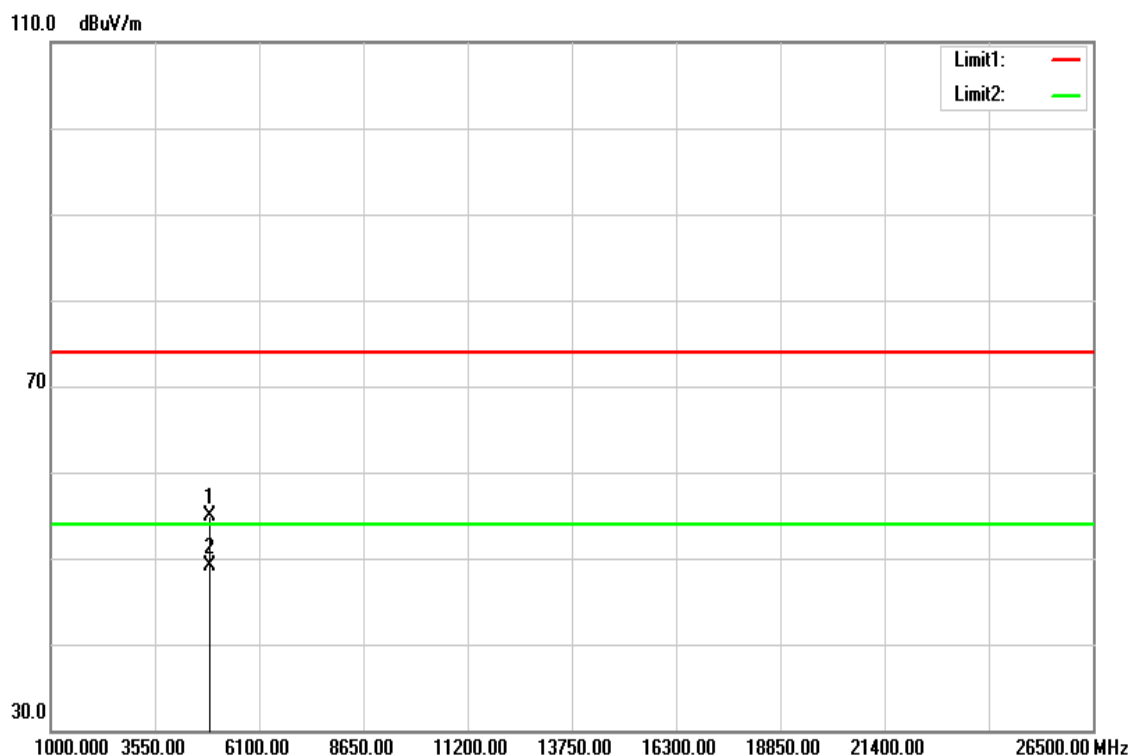


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4890.000	44.15	4.49	48.64	74.00	-25.36	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode:	GFSK_BDR-1Mbps Mid CH	Temp/Hum	22(°C)/ 34%RH
Test Item	Harmonic	Test Date	March 5, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	---

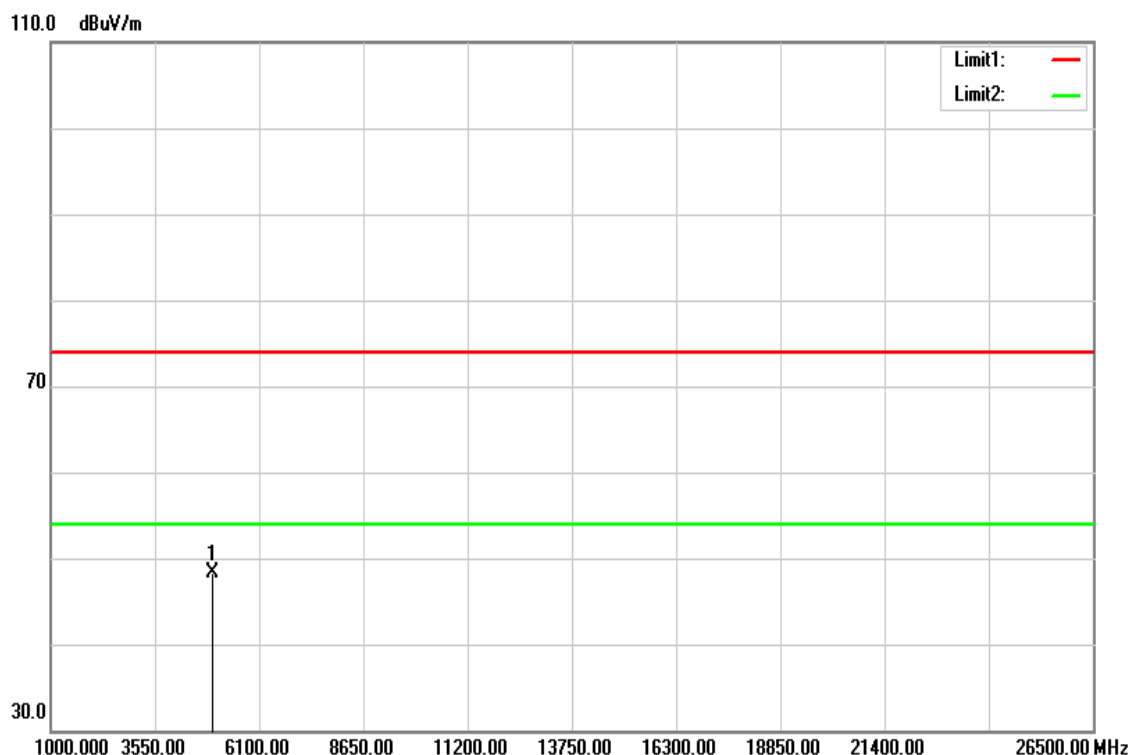


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4883.000	50.48	4.49	54.97	74.00	-19.03	peak
2	4883.000	44.67	4.49	49.16	54.00	-4.84	AVG

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode:	GFSK_BDR-1Mbps High CH	Temp/Hum	22(°C)/ 34%RH
Test Item	Harmonic	Test Date	March 5, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	---

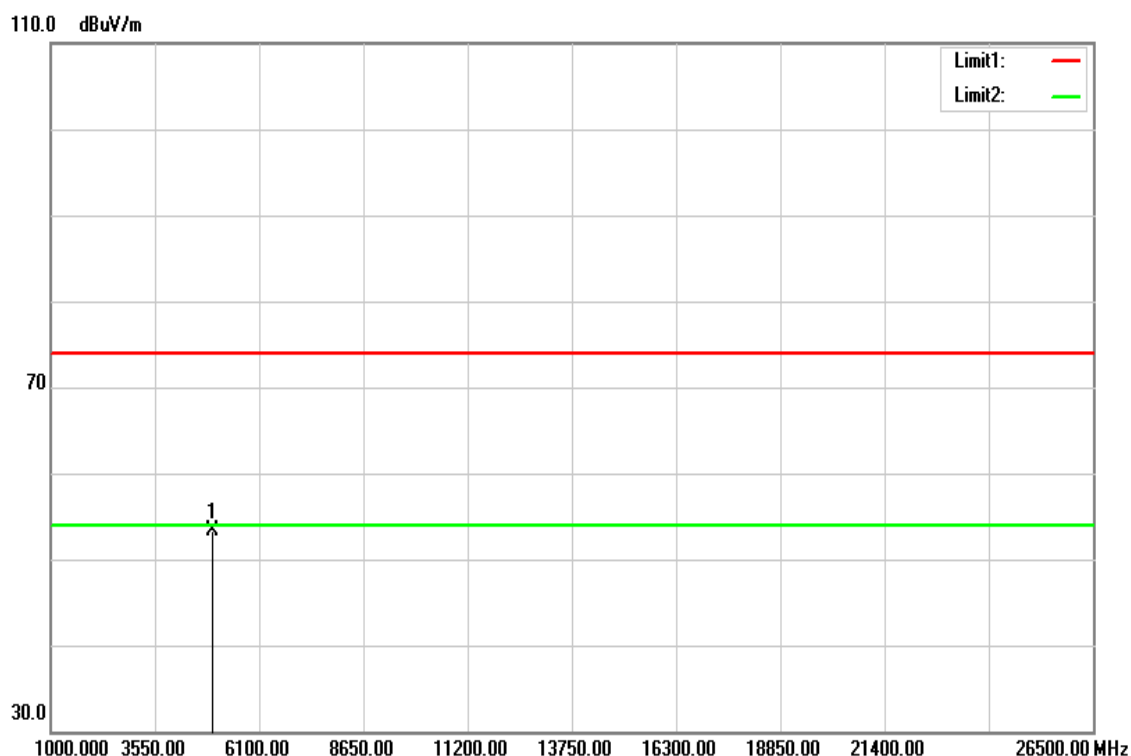


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4960.000	43.76	4.61	48.37	74.00	-25.63	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode:	GFSK_BDR-1Mbps High CH	Temp/Hum	22(°C)/ 34%RH
Test Item	Harmonic	Test Date	March 5, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	---

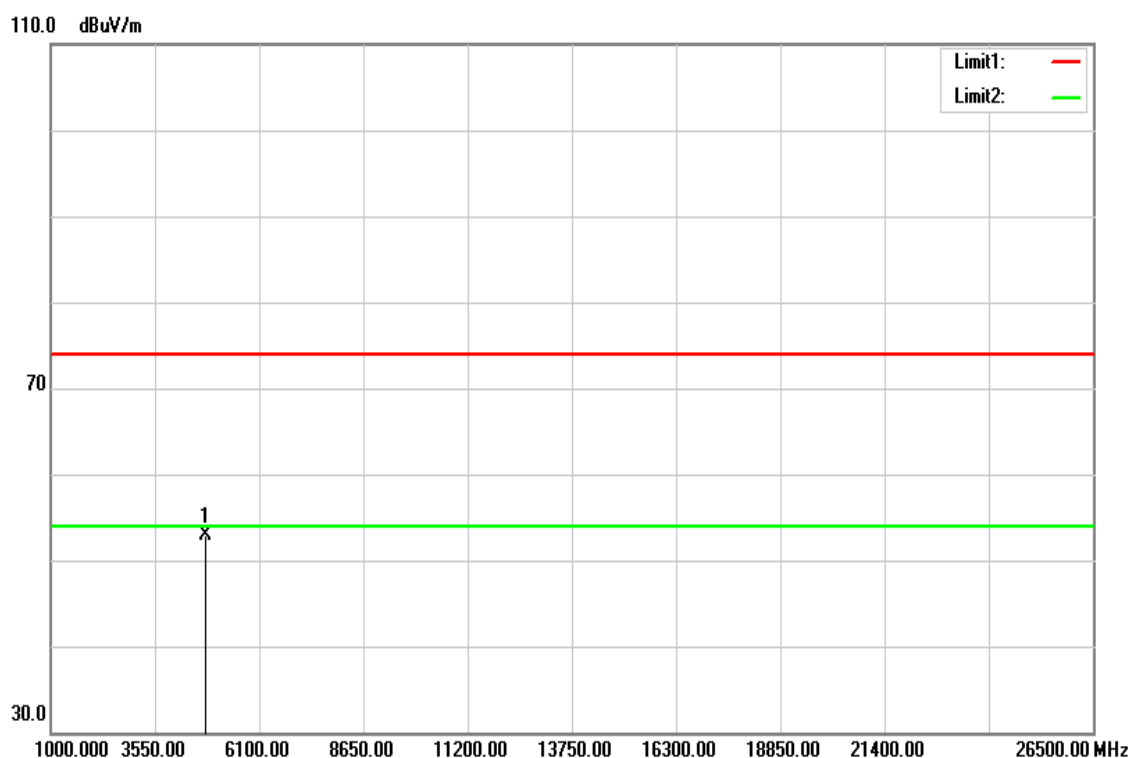


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4960.000	48.76	4.61	53.37	74.00	-20.63	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	8DPSK_EDR-3Mbps Low CH	Temp/Hum	22(°C)/ 34%RH
Test Item	Harmonic	Test Date	March 5, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	---

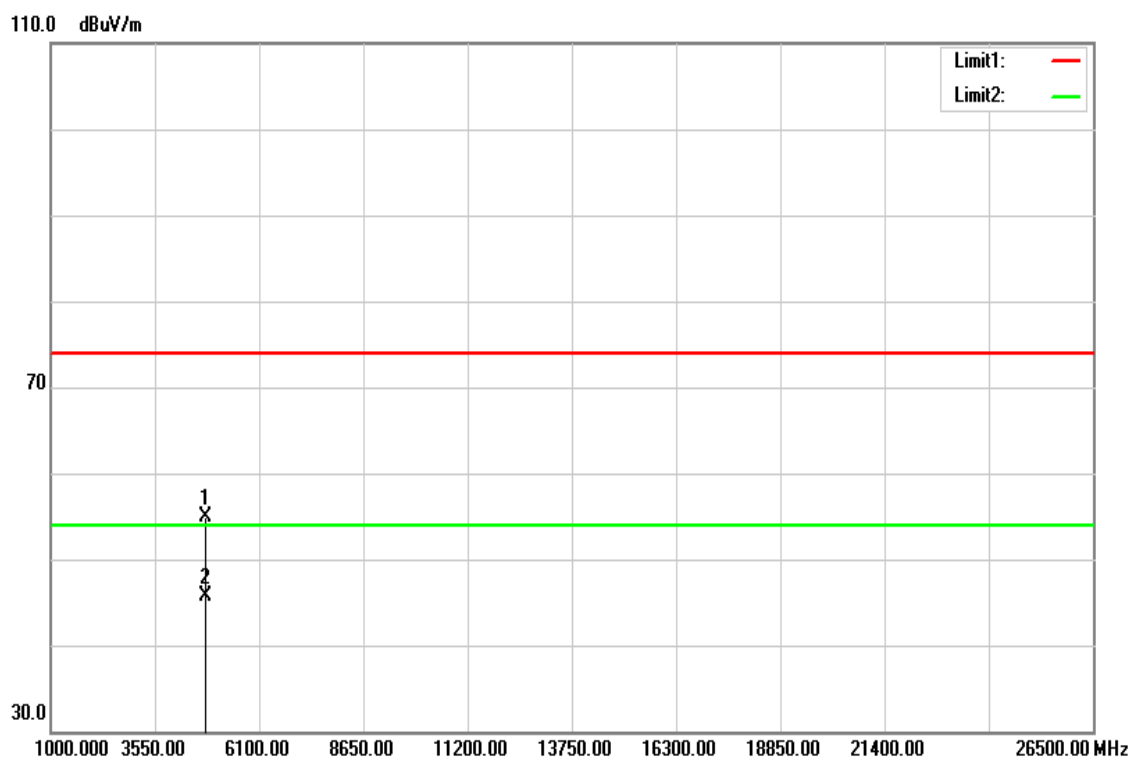


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4806.000	48.62	4.35	52.97	74.00	-21.03	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	8DPSK_EDR-3Mbps Low CH	Temp/Hum	22(°C)/ 34%RH
Test Item	Harmonic	Test Date	March 5, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	---

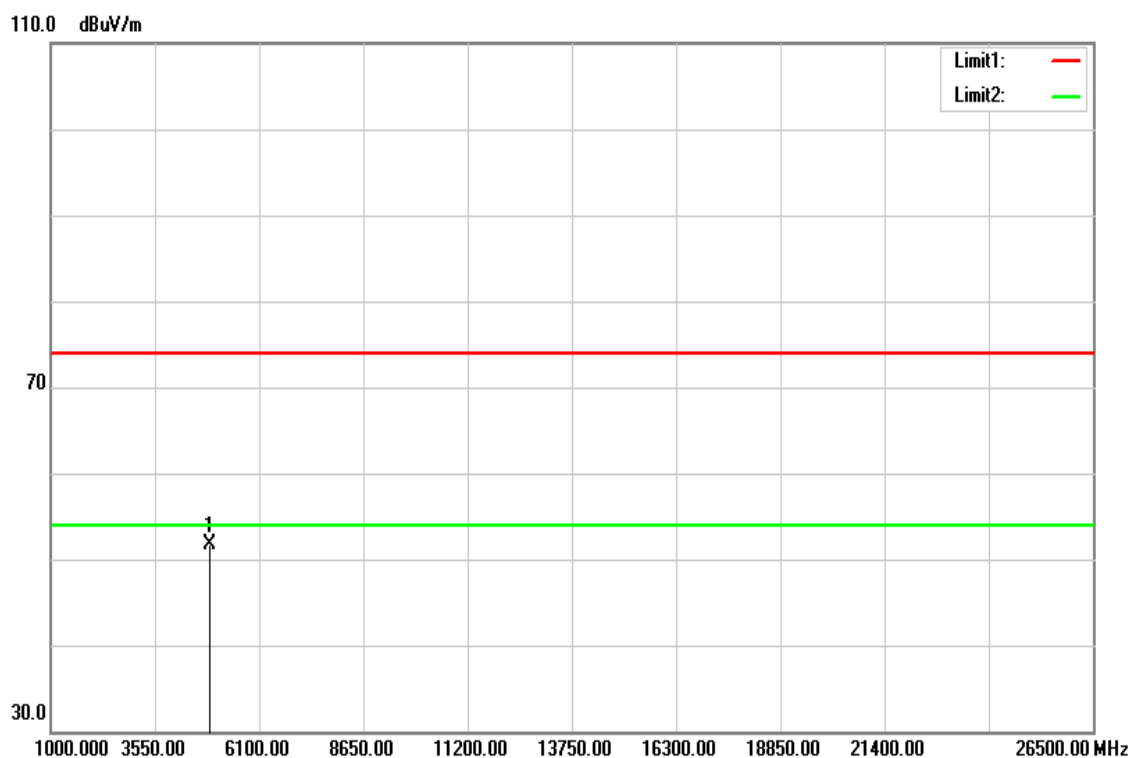


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4806.000	50.50	4.35	54.85	74.00	-19.15	peak
2	4806.000	41.29	4.35	45.64	54.00	-8.36	AVG

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	8DPSK_EDR-3Mbps Mid CH	Temp/Hum	22(°C)/ 34%RH
Test Item	Harmonic	Test Date	March 5, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	---

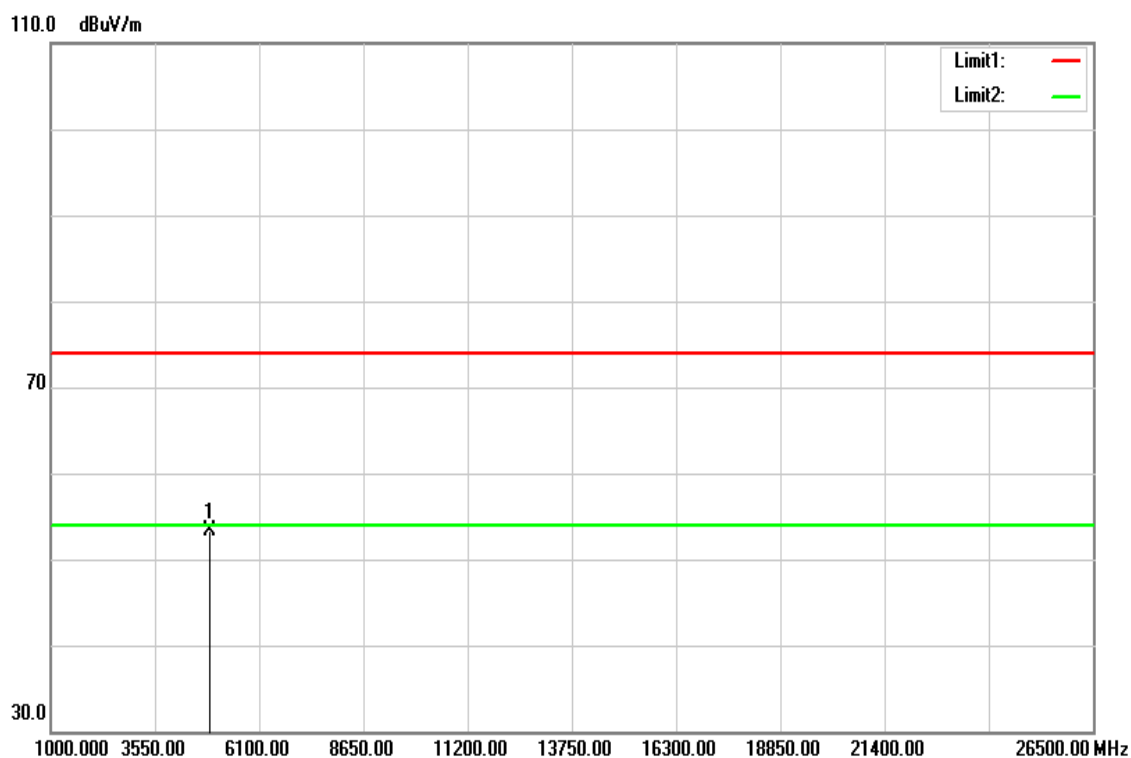


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4883.000	47.25	4.49	51.74	74.00	-22.26	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	8DPSK_EDR-3Mbps Mid CH	Temp/Hum	22(°C)/ 34%RH
Test Item	Harmonic	Test Date	March 5, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	---

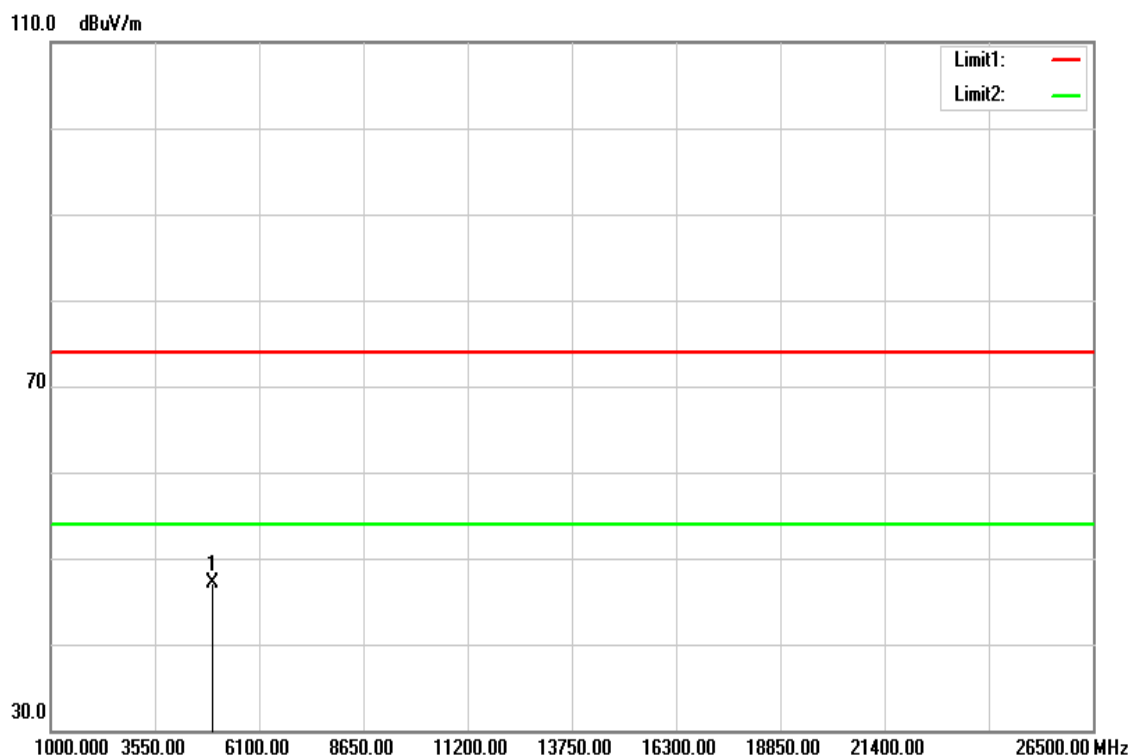


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4883.000	48.78	4.49	53.27	74.00	-20.73	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	8DPSK_EDR-3Mbps High CH	Temp/Hum	22(°C)/ 34%RH
Test Item	Harmonic	Test Date	March 5, 2018
Polarize	Vertical	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	---

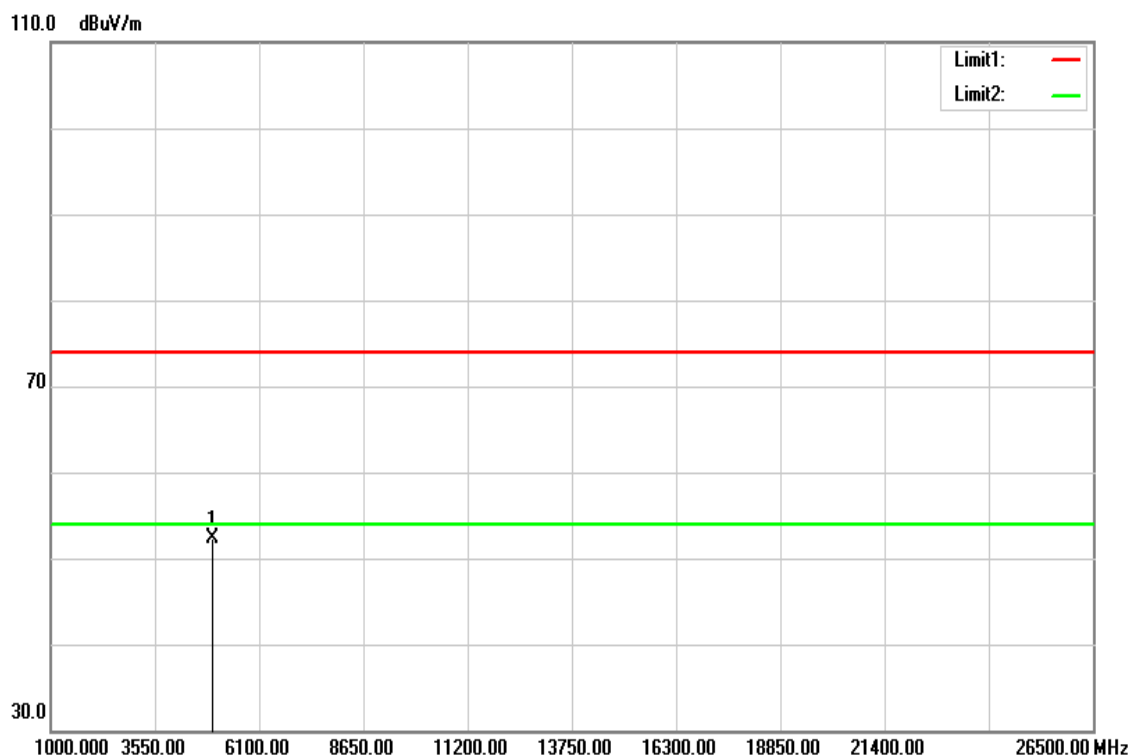


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4960.000	42.46	4.61	47.07	74.00	-26.93	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	8DPSK_EDR-3Mbps High CH	Temp/Hum	22(°C)/ 34%RH
Test Item	Harmonic	Test Date	March 5, 2018
Polarize	Horizontal	Test Engineer	Jerry Chuang
Detector	Peak and Average	Test Voltage	---



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4960.000	47.78	4.61	52.39	74.00	-21.61	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

- End of test report -