



**FCC 47 CFR PART 15 SUBPART C
ISED RSS-247 ISSUE 2**

CERTIFICATION TEST REPORT

For

**Camera
MODEL NUMBER: SBDC1**

**FCC ID: CNFSBDC1
IC: 10193A-SBDC1**

REPORT NUMBER: 4788004529.1-2

ISSUE DATE: August 3, 2017

Prepared for

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Prepared by

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Revision History

Rev.	Issue Date	Revisions	Revised By
--	08/3/2017	Initial Issue	

Summary of Test Results			
Clause	Test Items	FCC/IC Rules	Test Results
1	20dB Bandwidth And 99% Bandwidth	FCC 15.247 (a) (1) RSS-247 Clause 5.1 (a)	Complied
2	Peak Conducted Output Power	FCC 15.247 (b) (1) RSS-247 Clause 5.1 (b)	Complied
3	Carrier Hopping Channel Separation	FCC 15.247 (a) (1) RSS-247 Clause 5.1 (b)	Complied
4	Number of Hopping Frequency	15.247 (a) (1) III RSS-247 Clause 5.1 (d)	Complied
5	Time of Occupancy (Dwell Time)	15.247 (a) (1) III RSS-247 Clause 5.1 (d)	Complied
6	Conducted Bandedge and Spurious emission	FCC 15.247 (d) RSS-247 Clause 5.5	Complied
7	Radiated Bandedge and Spurious emission	FCC 15.247 (d) FCC 15.209 FCC 15.205 RSS-247 Clause 5.5 RSS-GEN Clause 8.9 RSS-GEN Clause 8.10	Complied
8	Conducted Emission Test For AC Power Port	FCC 15.207 RSS-GEN Clause 8.8	Complied
9	Antenna Requirement	FCC 15.203 RSS-GEN Clause 8.3	Complied

Remark: N/A is an abbreviation for Not Applicable, and means this item is not applicable for this device.

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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: GoPro, Inc.
Address: 3000 Clearview Way, San Mateo, CA 94402, USA

Manufacturer Information

Company Name: GoPro, Inc.
Address: 3000 Clearview Way, San Mateo, CA 94402, USA

Factory Information

Company Name: Chicony Electronics (Dongguan) Co., Ltd.
Address: San Zhong Quan Li Qu, Qingxi, Dongguan, Guangdong, China
523651

EUT Name: Camera

Model: SBDC1

Sample Status: Normal

Sample ID: 1018135

Brand: GoPro

Sample Received: May 25, 2017

Date of Tested: May 26, 2017~ August 3c, 2017

APPLICABLE STANDARDS

STANDARD

TEST RESULTS

CFR 47 Part 15 Subpart C

PASS

ISED RSS-247 Issue 2

PASS

ISED RSS-GEN Issue 4

PASS

Tested By :



Leo Liu
Engineer
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Laboratory Manager

Check By:



Shawn Wen
Laboratory Leader

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013, RSS-GEN Issue 4, and RSS-247 Issue 2.

3. FACILITIES AND ACCREDITATION

Test Location	Dongguan Dongdian Testing Service Co., Ltd
Address	No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Dongguan City, Guangdong Province, 523808, China
Accreditation Certificate	<p>Dongguan Dongdian Testing Service Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is until January 31, 2018.</p> <p>EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 270092, Renewal date March 11, 2015, valid time is until March 11, 2018.</p> <p>The 3m Alternate Test Site of Dongguan Dongdian Testing Service Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 10288A on April 23, 2015, valid time is until April 23, 2018.</p>

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognize national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Bandwidth	1.1%
Peak Output Power(Conducted)(Spectrum analyzer)	0.86dB(10 MHz \leq f < 3.6GHz); 1.38dB(3.6GHz \leq f < 8GHz)
Peak Output Power(Conducted)(Power Sensor)	0.74dB
Dwell Time	0.6%
Conducted spurious emissions	0.86dB(10 MHz \leq f < 3.6GHz); 1.40dB(3.6GHz \leq f < 8GHz) 1.66dB(8GHz \leq f < 22GHz)
Uncertainty for radio frequency (RBW<20KHz)	3x10-8
Temperature	0.4°C
Humidity	2%
Uncertainty for Radiation Emission test (30MHz-1GHz)	4.70 dB (Antenna Polarize: V) 4.84 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission test (1GHz-25GHz)	4.10dB(1-6GHz) 4.40dB (6GHz-25Gz)
Uncertainty for Power line conduction emission test	3.32dB (150KHz-30MHz)

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

Equipment	Camera	
Model Name	SBDC1	
Product Description	Operation Frequency	2402 MHz ~ 2480 MHz
	Modulation Type	Data Rate
	GFSK	1Mbps
	$\pi/4$ -DQPSK	2Mbps
	8-DPSK	3Mbps
Battery	3.8Vdc,2620mAh,9.95Wh	
Bluetooth Version	BT 4.1LE+EDR	
Adapter	N/A	

5.2. MAXIMUM OUTPUT POWER

Frequency Range (MHz)	Number of Transmit Chains (NTX)	Bluetooth Mode	Frequency (MHz)	Channel Number	Max PK Conducted Power (dBm)
2400-2483.5	1	GFSK	2402-2480	0-78[79]	7.57
2400-2483.5	1	8-DPSK	2402-2480	0-78[79]	6.56

5.3. PACKET TYPE CONFIGURATION

Test Mode	Packet Type	Setting(Packet Length)
GFSK	DH1	27
	DH3	183
	DH5	339
$\pi/4$ -DQPSK	2-DH1	54
	2-DH3	367
	2-DH5	679
8-DPSK	3-DH1	83
	3-DH3	552
	3-DH5	1021

5.4. CHANNEL LIST

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

5.5. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel Number	Test Channel
GFSK	CH 00, CH 39, CH 78	Low, Middle, High
8-DPSK	CH 00, CH 39, CH 78	Low, Middle, High

5.6. THE WORSE CASE POWER SETTING PARAMETER

The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band		
Test Software Version	QRCT (V3.0-00230) from QUALCOMM	
Modulation Type	Setting TX Power	Packet Type
GFSK	8	DH5_339
8-DPSK	8	3DH5_1021

5.7. DESCRIPTION OF AVAILABLE ANTENNAS

Ant.	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)
1	2402-2480	FPCB Antenna	2.5

Test Mode	Transmit and Receive Mode	Description
GFSK	<input checked="" type="checkbox"/> 1TX, 1RX	Chain 1 can be used as transmitting/receiving antenna.
8-DPSK	<input checked="" type="checkbox"/> 1TX, 1RX	Chain 1 can be used as transmitting/receiving antenna.

5.8. WORST-CASE CONFIGURATIONS

Bluetooth Mode	Modulation Technology	Modulation Type	Data Rate (Mbps)
BR	FHSS	GFSK-DH5	1Mbit/s
EDR	FHSS	8-DPSK-3DH5	3Mbit/s

5.9. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	P/N
1	Laptop	ThinkPad	T460S	SL10K24796 JS

I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	USB	USB Type C	shielded	0.55	N/A

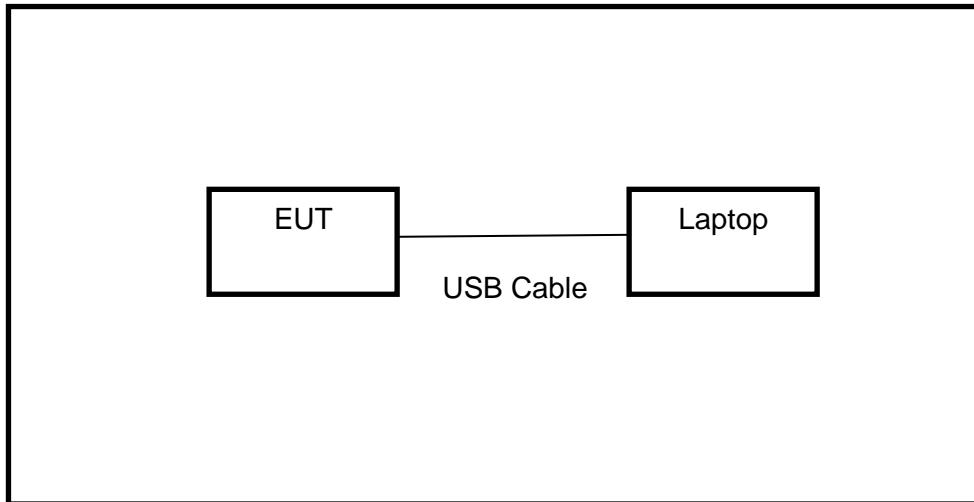
ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
1	N/A	N/A	N/A	N/A

TEST SETUP

The EUT can work in engineering mode with firmware QRCT from QUALCOMM through a Laptop.

SETUP DIAGRAM FOR TESTS



5.10. MEASURING INSTRUMENT AND SOFTWARE USED

Instrument (Conducted for RF Port)						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
<input checked="" type="checkbox"/>	Spectrum Analyzer	Agilent	E4447A	MY50180031	Jul.06, 2016	Jul.06, 2017
<input checked="" type="checkbox"/>	Spectrum analyzer	R&S	FSU26	1166.1660.26	Oct.16, 2016	Oct.16, 2017
<input checked="" type="checkbox"/>	Power Sensor	Agilent	U2021XA	MY55150010	Apr.04, 2017	Apr.04, 2018
<input checked="" type="checkbox"/>	Power Sensor	Agilent	U2021XA	MY55150011	Apr.18, 2017	Apr.18, 2018
<input checked="" type="checkbox"/>	Attenuator	Mini-Circuits	BW-S10W2	101109	Aug.18, 2016	Aug.18, 2017
<input checked="" type="checkbox"/>	RF Cable	Micable	C10-01-01-1	100309	Aug.18, 2016	Aug.18, 2017
<input checked="" type="checkbox"/>	Test Software	JS Tonscend	JS1120-2	Ver.2.5	N/A	N/A
<input checked="" type="checkbox"/>	USB Data acquisition	Agilent	U2531A	TW55043503	N/A	N/A
<input checked="" type="checkbox"/>	Auto control Unit	JS Tonscend	JS0806-2	158060010	N/A	N/A
Instrument (Radiated Tests)						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Expired date
<input checked="" type="checkbox"/>	EMI Test Receiver	R&S	ESU8	100316	Oct.16, 2016	Oct.16, 2017
<input checked="" type="checkbox"/>	Spectrum analyzer	R&S	FSU26	1166.1660.26	Oct.16, 2016	Oct.16, 2017
<input checked="" type="checkbox"/>	Trilog Broadband Antenna	Schwarzbeck	VULB9163	9163-462	Oct.16, 2016	Oct.16, 2017
<input checked="" type="checkbox"/>	Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Oct.27, 2016	Oct.27, 2017
<input checked="" type="checkbox"/>	Double Ridged Horn Antenna	R&S	HF907	100276	Oct.12, 2016	Oct.12, 2017
<input checked="" type="checkbox"/>	Pre-amplifier	A.H.	PAM-0118	360	Oct.16, 2016	Oct.16, 2017
<input checked="" type="checkbox"/>	RF Cable	HUBSER	CP-X2	W11.03	Oct.16, 2016	Oct.16, 2017
<input checked="" type="checkbox"/>	RF Cable	HUBSER	CP-X1	W12.02	Oct.16, 2016	Oct.16, 2017
<input checked="" type="checkbox"/>	MI Cable	HUBSER	C10-01-01-1M	1091629	Oct.16, 2016	Oct.16, 2017
<input checked="" type="checkbox"/>	Test software	Audix	E3	V 6.11111b	N/A	N/A
Instrument (Line Conducted Emission (AC Main))						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Expired date
<input checked="" type="checkbox"/>	Test Receiver	R&S	ESU8	100316	Oct.16, 2016	Oct.16, 2017
<input checked="" type="checkbox"/>	LISN 1	R&S	ENV216	101109	Oct.16, 2016	Oct.16, 2017

<input checked="" type="checkbox"/>	LISN 2	R&S	ESH2-Z5	100309	Oct.16, 2016	Oct.16, 2017
<input checked="" type="checkbox"/>	Pulse Limiter	R&S	ESH3-Z2	101242	Oct.16, 2016	Oct.16, 2017
<input checked="" type="checkbox"/>	CE Cable 1	HUBSER	ESU8/RF2	W10.01	Oct.16, 2016	Oct.16, 2017
<input checked="" type="checkbox"/> c	Test software	Audix	E3	V 6.11111b	N/A	N/A

6. MEASUREMENT METHODS

No.	Test Item	Test procedure standard
1	20 dB Bandwidth	ANSI C63.10-2013
2	99% Bandwidth	ANSI C63.10-2013
3	Peak Output Power	ANSI C63.10-2013
4	Power Spectral Density	ANSI C63.10-2013
5	Out-of-band emissions in non-restricted bands	ANSI C63.10-2013
6	Out-of-band emissions in restricted bands	ANSI C63.10-2013
7	Band-edge	ANSI C63.10-2013

ANTENNA PORT TEST RESULTS

6.1. 20 dB BANDWIDTH AND 99% BANDWIDTH

LIMITS

FCC Part15 (15.247) Subpart C RSS-247 ISSUE 2			
Section	Test Item	Limit	Frequency Range (MHz)
FCC 15.247 (a) (1) RSS-247 Clause 5.1 (a)	20dB Bandwidth	500	2400-2483.5
RSS-Gen Clause 6.6	99% Bandwidth	N/A	2400-2483.5

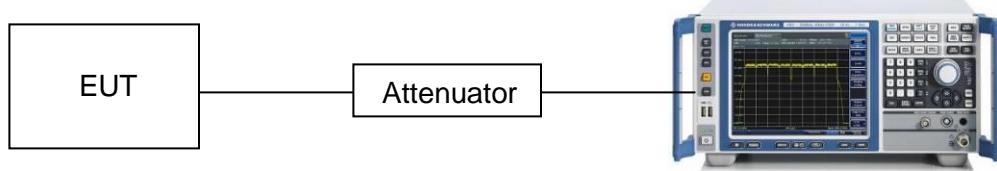
TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	1% to 5% of the occupied bandwidth
VBW	approximately 3xRBW
Trace	Max hold
Sweep	Auto couple

Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB and 99% relative to the maximum level measured in the fundamental emission.

TEST SETUP



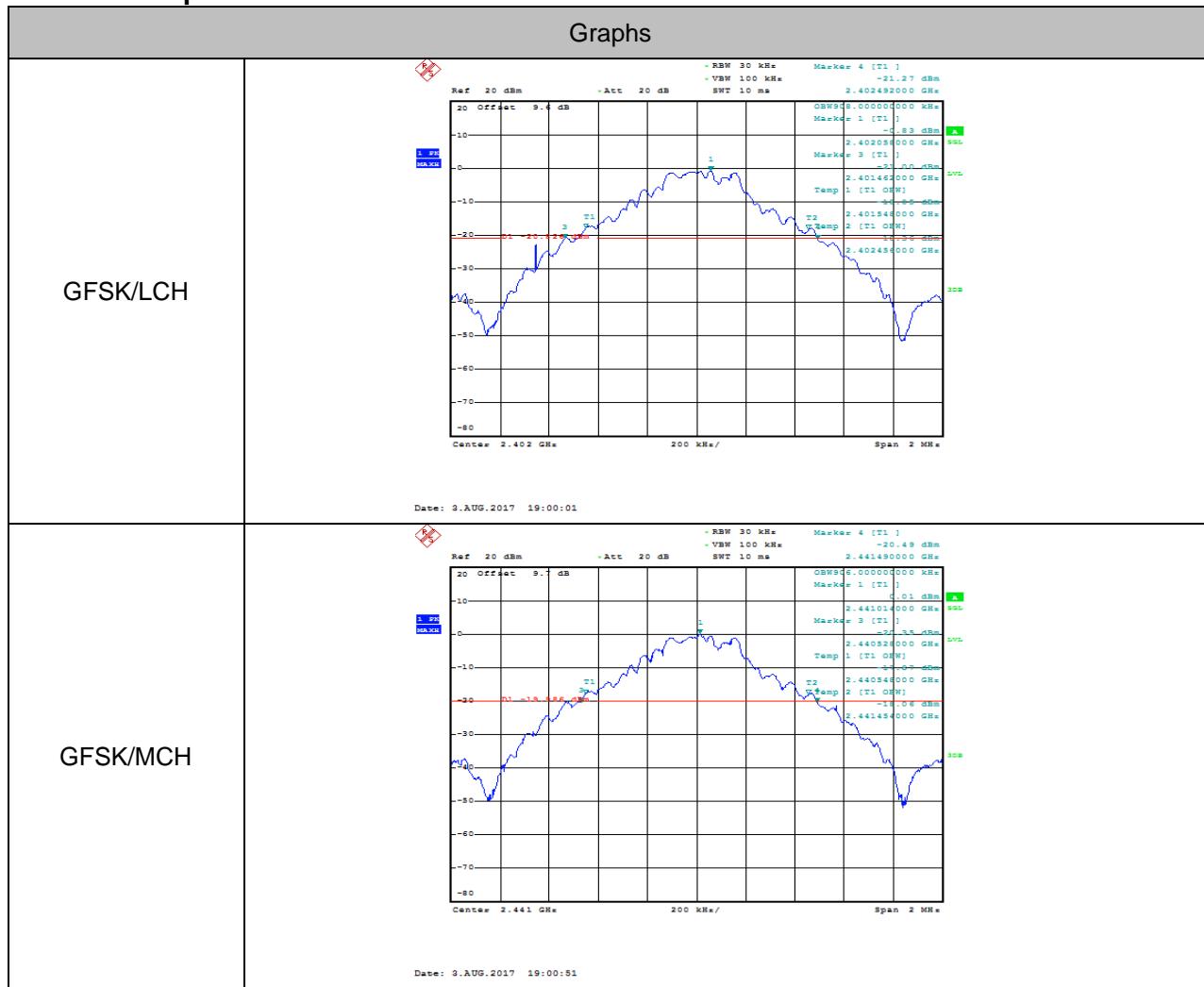
TEST CONDITIONS

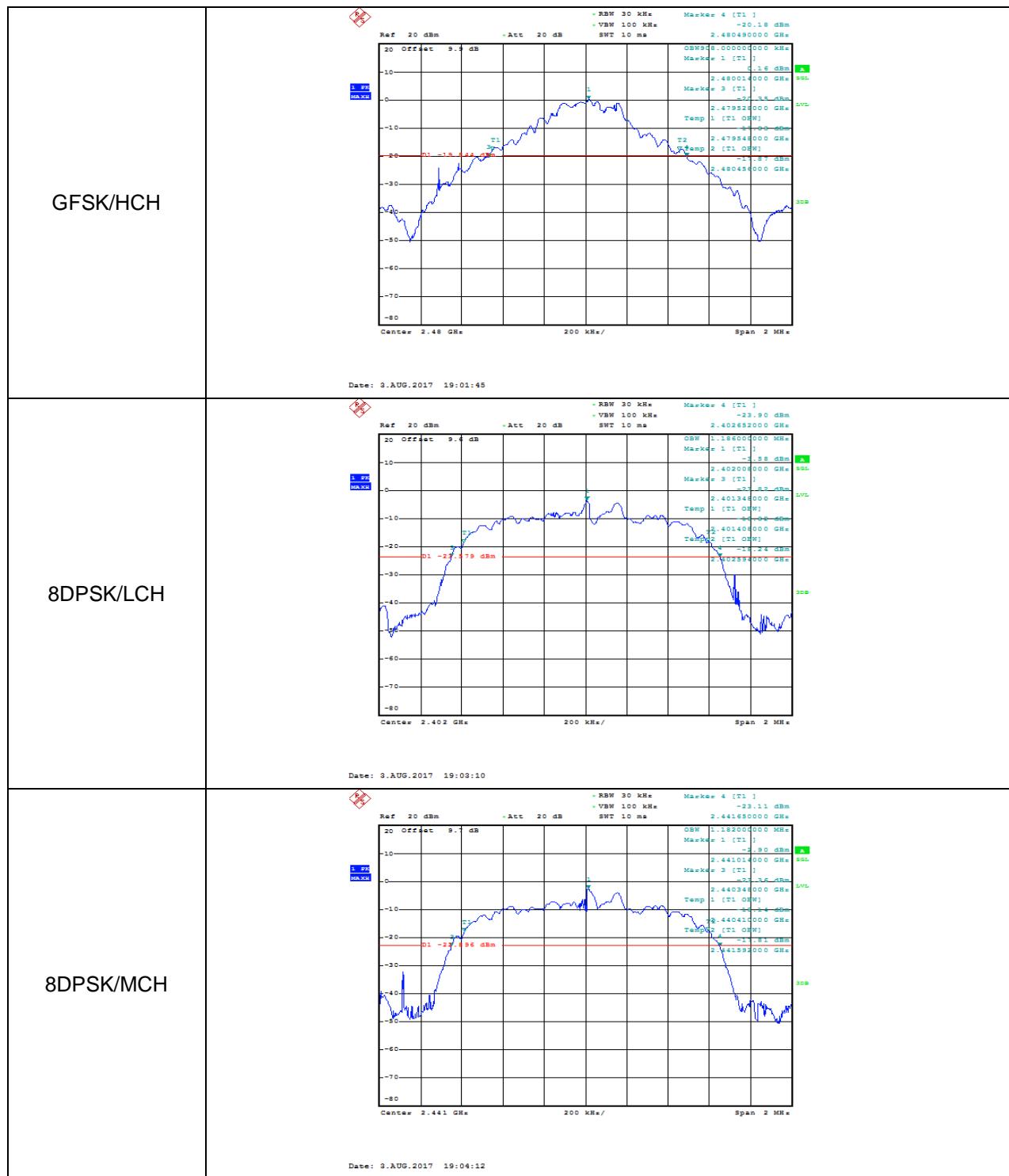
Temperature: 25.5°C
Relative Humidity: 65%
Test Voltage: 3.8Vdc

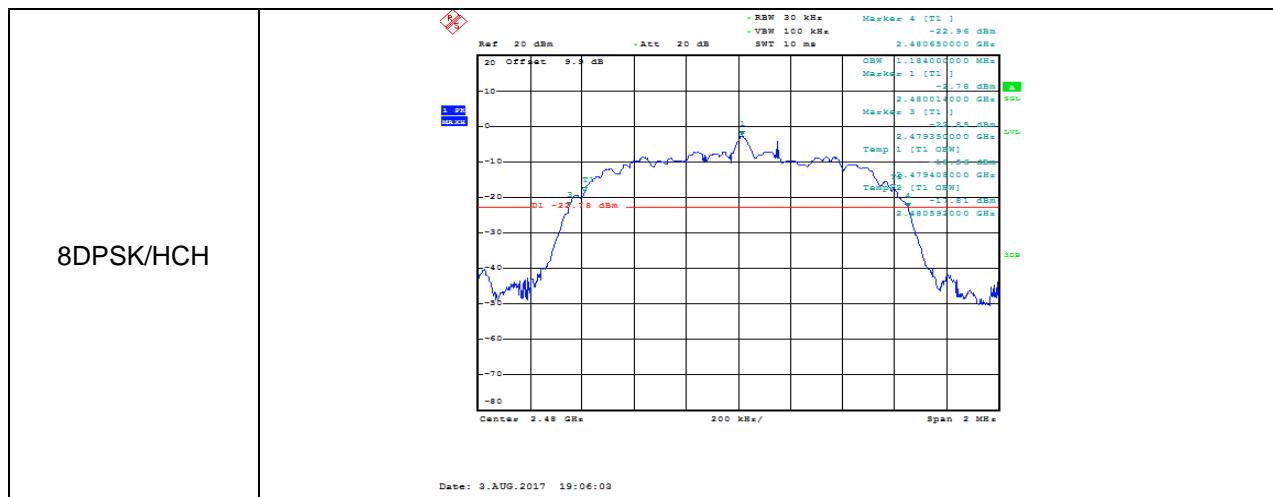
RESULTS

Mode	Channel.	20dB Bandwidth [MHz]	99% OBW [MHz]	Verdict
GFSK	LCH	1.030	0.908	PASS
GFSK	MCH	0.962	0.906	PASS
GFSK	HCH	0.962	0.908	PASS
8DPSK	LCH	1.304	1.186	PASS
8DPSK	MCH	1.302	1.182	PASS
8DPSK	HCH	1.300	1.184	PASS

Test Graph







6.2. PEAK CONDUCTED OUTPUT POWER

LIMITS

FCC Part15 (15.247) Subpart C RSS-247 ISSUE 2			
Section	Test Item	Limit	Frequency Range (MHz)
FCC 15.247 (b) (1) RSS-247 Clause 5.4 (b)	Peak Conducted Output Power	1 watt or 30dBm	2400-2483.5

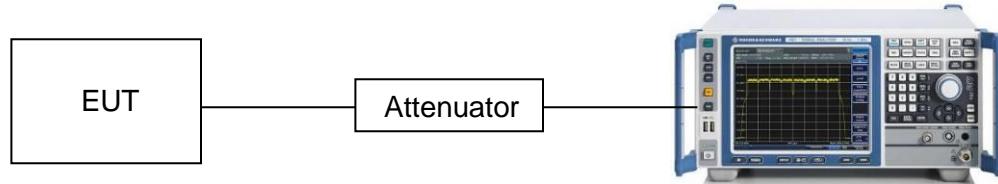
TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	> the 20 dB bandwidth of the emission being measured (e.g. 1 MHz for BT)
VBW	\geq RBW
Span	approximately 5 times the 20 dB bandwidth, centered on a hopping channel
Trace	Max hold
Sweep time	Auto couple

Allow trace to fully stabilize and use peak marker function to determine the peak amplitude level.

TEST SETUP

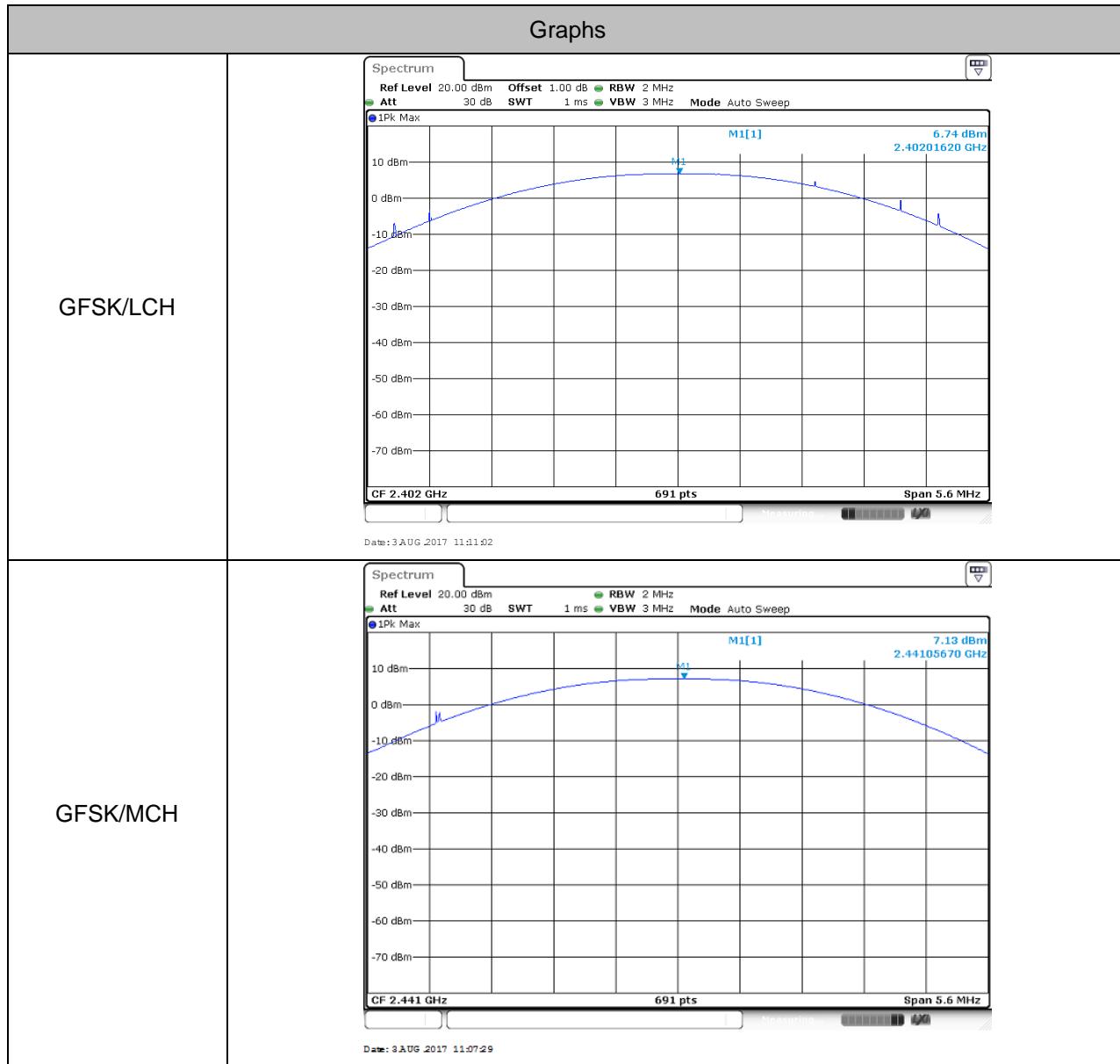


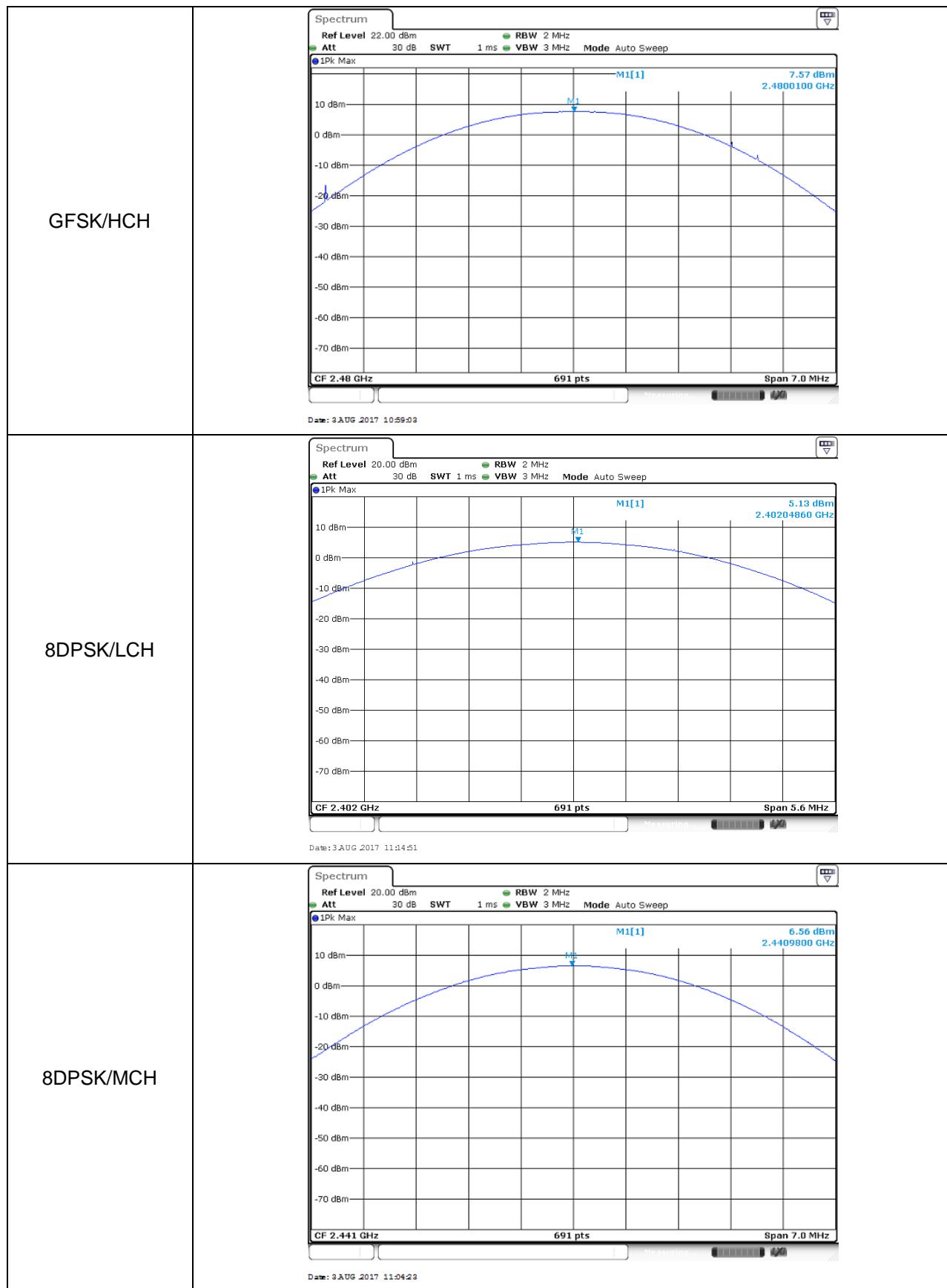
TEST CONDITIONS

Temperature: 25.5°C
Relative Humidity: 65%
Test Voltage: 3.8Vdc

RESULTS

Mode	Channel.	Maximum Peak Output Power [dBm]	Verdict
GFSK	LCH	6.740	PASS
GFSK	MCH	7.130	PASS
GFSK	HCH	7.570	PASS
8-DPSK	LCH	5.130	PASS
8-DPSK	MCH	6.560	PASS
8-DPSK	HCH	6.110	PASS







6.3. CARRIER HOPPING CHANNEL SEPARATION

LIMITS

FCC Part15 (15.247) Subpart C RSS-247 ISSUE 2			
Section	Test Item	Limit	Frequency Range (MHz)
FCC 15.247 (a) (1) RSS-247 Clause 5.1 (b)	Carrier Hopping Channel Separation	25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.	2400-2483.5

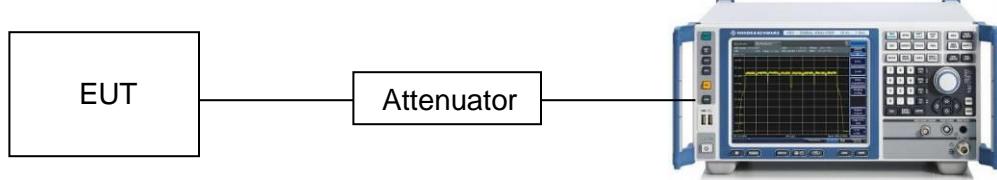
TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The centre frequency of the channel under test
Span	wide enough to capture the peaks of two adjacent channels
Detector	Peak
RBW	$\geq 1\%$ of the span
VBW	\geq RBW
Trace	Max hold
Sweep time	Auto couple

Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section. Submit this plot.

TEST SETUP



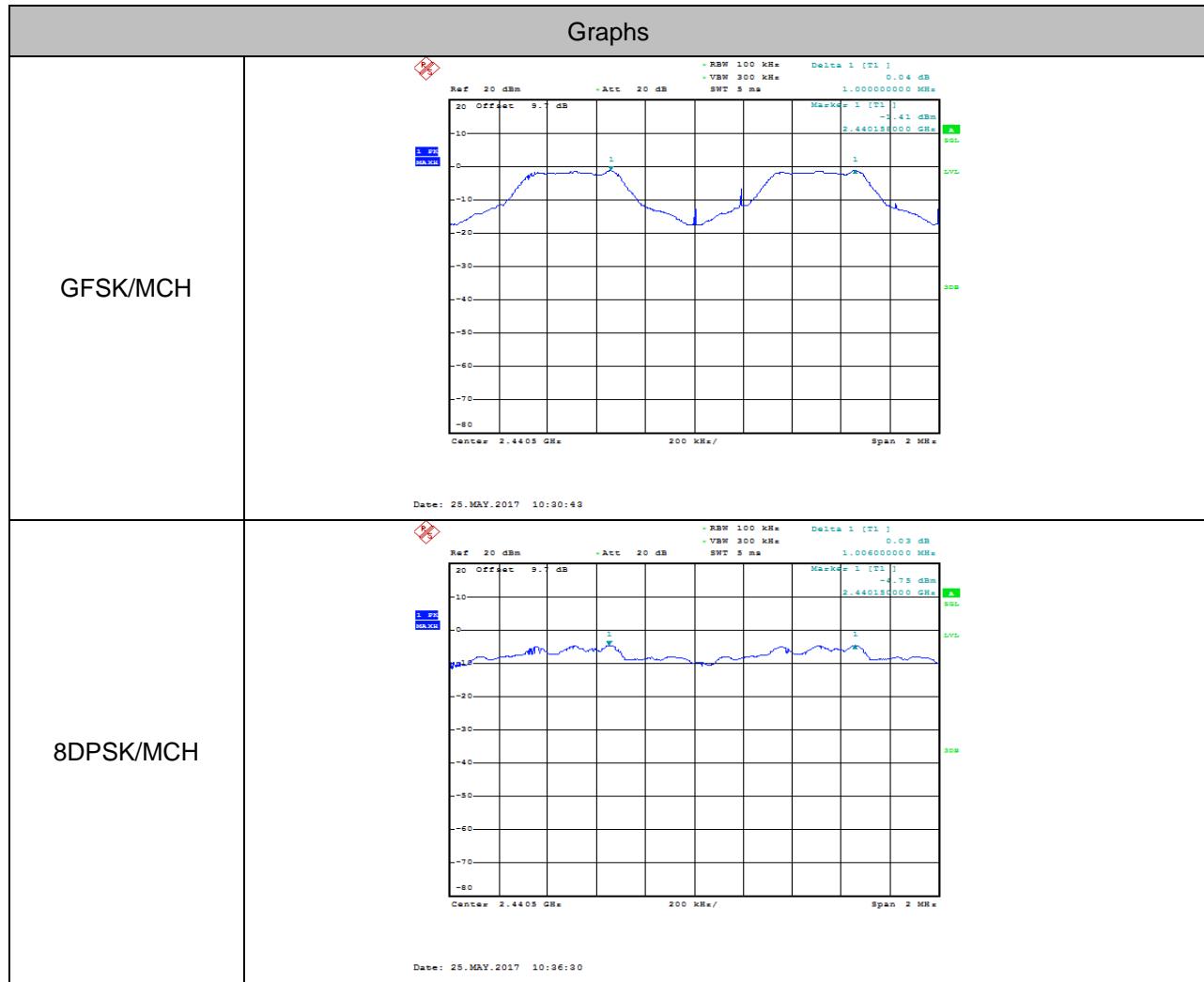
TEST CONDITIONS

Temperature: 25.5°C
Relative Humidity: 65%
Test Voltage: 3.8Vdc

RESULTS

Mode	Channel.	Carrier Frequency Separation [MHz]	Verdict
GFSK	MCH	1.000	PASS
8-DPSK	MCH	1.006	PASS

Test Graph



6.4. NUMBER OF HOPPING FREQUENCY

LIMITS

FCC Part15 (15.247) Subpart C RSS-247 ISSUE 2		
Section	Test Item	Limit
15.247 (a) (1) III RSS-247 Clause 5.1 (d)	Number of Hopping Frequency	at least 15 hopping channels

TEST PROCEDURE

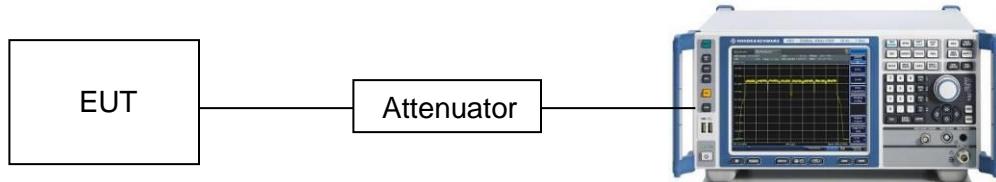
Connect the EUT to the spectrum analyser and use the following settings:

Detector	Peak
RBW	1% of the span
VBW	\geq RBW
Span	The frequency band of operation
Trace	Max hold
Sweep time	Auto couple

Set EUT to transmit maximum output power and switch on frequency hopping function. then set enough count time (larger than 5000 times) to get all the hopping frequency channel displayed on the screen of spectrum analyzer.

Count the quantity of peaks to get the number of hopping channels.

TEST SETUP



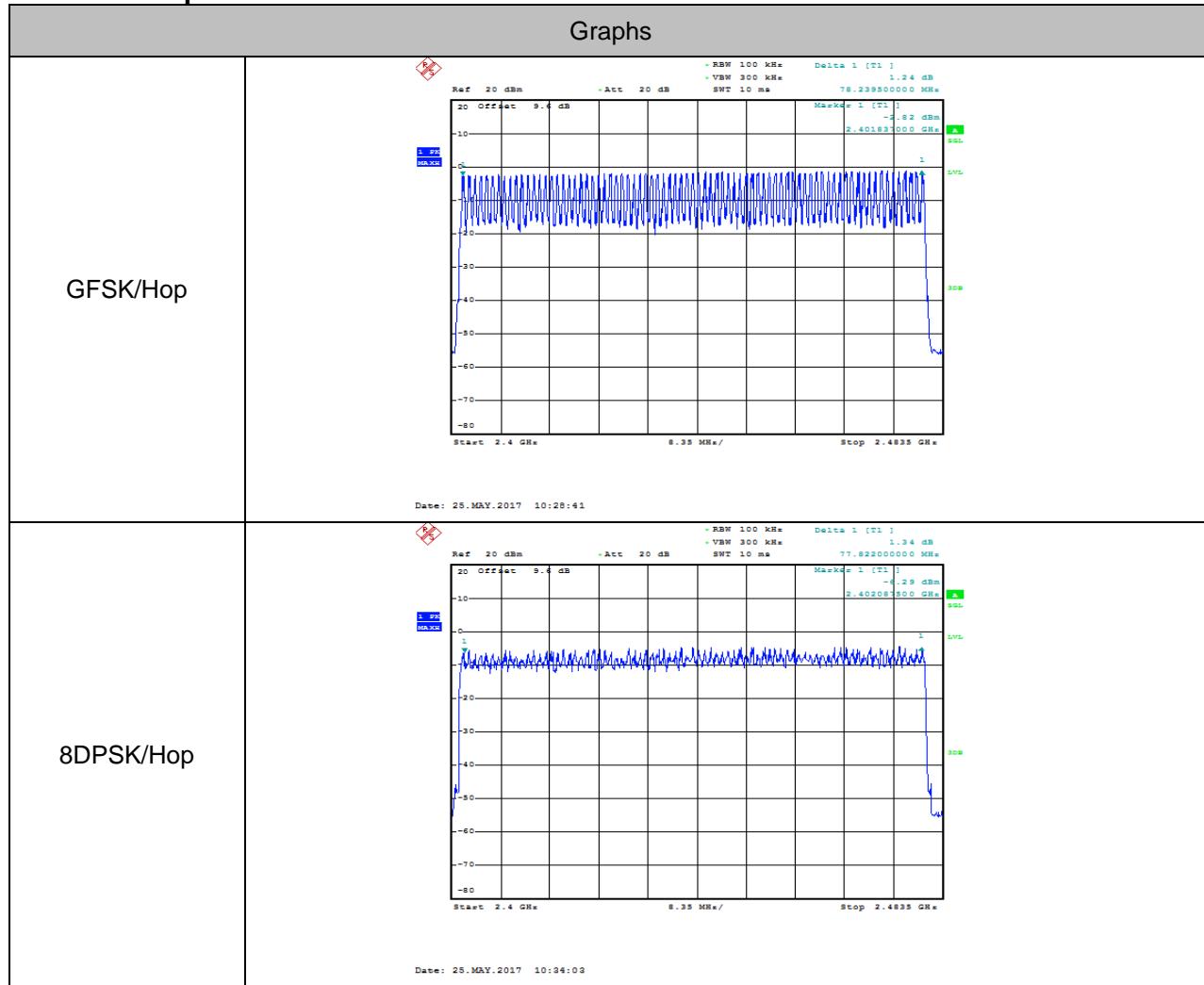
TEST CONDITIONS

Temperature: 25.5°C
Relative Humidity: 65%
Test Voltage: 3.8Vdc

RESULTS

Mode	Channel.	Number of Hopping Channel	Verdict
GFSK	Hop	79	PASS
8-DPSK	Hop	79	PASS

Test Graph



6.5. TIME OF OCCUPANCY (DWELL TIME)

LIMITS

FCC Part15 (15.247) Subpart C RSS-247 ISSUE 2		
Section	Test Item	Limit
15.247 (a) (1) III RSS-247 Clause 5.1 (d)	Time of Occupancy (Dwell Time)	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.

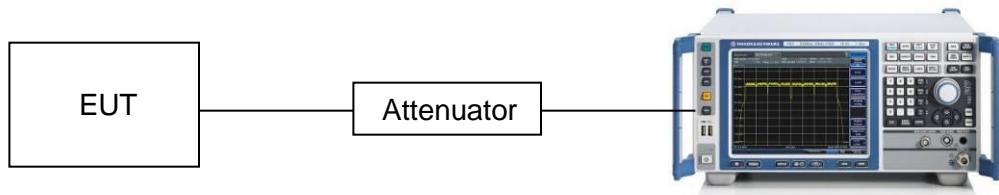
TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	1 MHz
VBW	\geq RBW
Span	zero span
Trace	Max hold
Sweep time	As necessary to capture the entire dwell time per hopping channel

- a. The transmitter output (antenna port) was connected to the spectrum analyzer
 - b. Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
 - c. Use a video trigger with the trigger level set to enable triggering only on full pulses.
 - d. Sweep Time is more than once pulse time.
 - e. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
 - f. Measure the maximum time duration of one single pulse.
 - g. Set the EUT for DH5, DH3 and DH1 packet transmitting.
 - h. Measure the maximum time duration of one single pulse.
- A Period Time = (channel number)*0.4
- DH1 Time Slot: Reading * (1600/2)*31.6/(channel number)
- DH3 Time Slot: Reading * (1600/4)*31.6/(channel number)
- DH5 Time Slot: Reading * (1600/6)*31.6/(channel number)

TEST SETUP



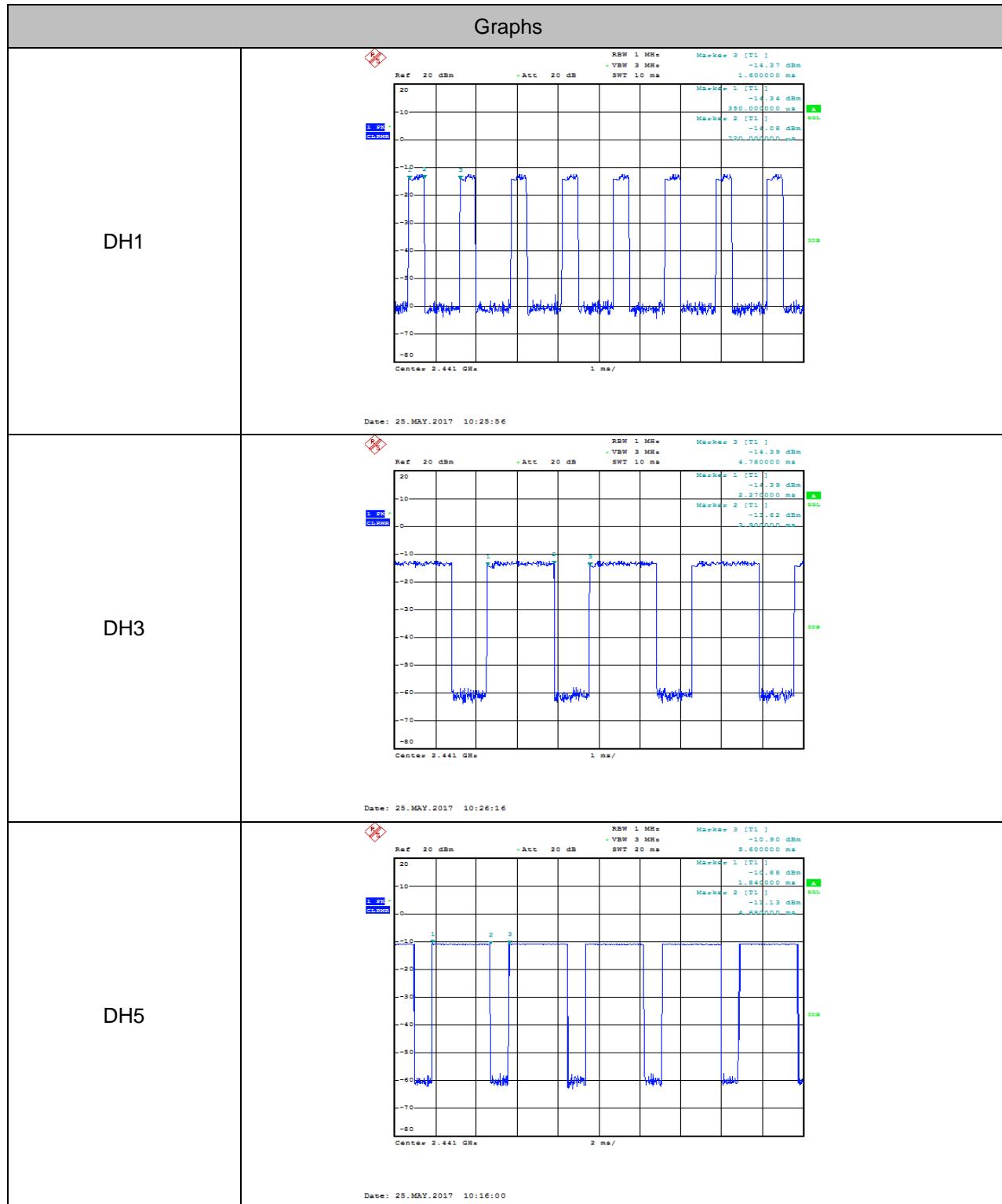
TEST CONDITIONS

Temperature: 25.5°C
Relative Humidity: 65%
Test Voltage: 3.8Vdc

RESULTS

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops [hop*ch]	Dwell Time [s]	Duty Cycle x (Linear)	Verdict
Tx mode	DH1	MCH	0.37	320	0.118	0.30	PASS
Tx mode	DH3	MCH	1.63	160	0.261	0.65	PASS
Tx mode	DH5	MCH	2.84	106.7	0.303	0.76	PASS
Tx mode	3DH1	MCH	0.36	320	0.115	0.29	PASS
Tx mode	3DH3	MCH	1.62	160	0.259	0.65	PASS
Tx mode	3DH5	MCH	2.86	106.7	0.305	0.76	PASS

Test Graph





6.6. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

LIMITS

FCC Part15 (15.247) Subpart C RSS-247 ISSUE 2		
Section	Test Item	Limit
FCC §15.247 (d) RSS-247 5.5	Conducted Bandedge and Spurious Emissions	at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power

TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

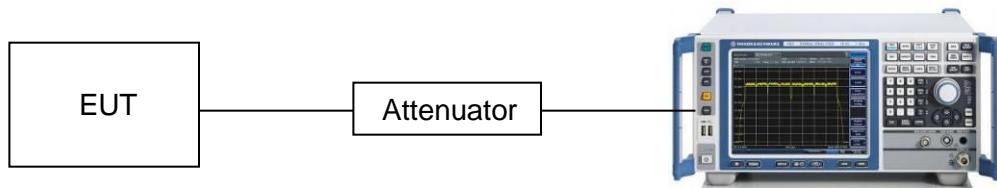
Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	100K
VBW	$\geq 3 \times$ RBW
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple

Use the peak marker function to determine the maximum PSD level.

Span	Set the center frequency and span to encompass frequency range to be measured
Detector	Peak
RBW	100K
VBW	$\geq 3 \times$ RBW
measurement points	\geq span/RBW
Trace	Max hold
Sweep time	Auto couple.

Use the peak marker function to determine the maximum amplitude level.

TEST SETUP



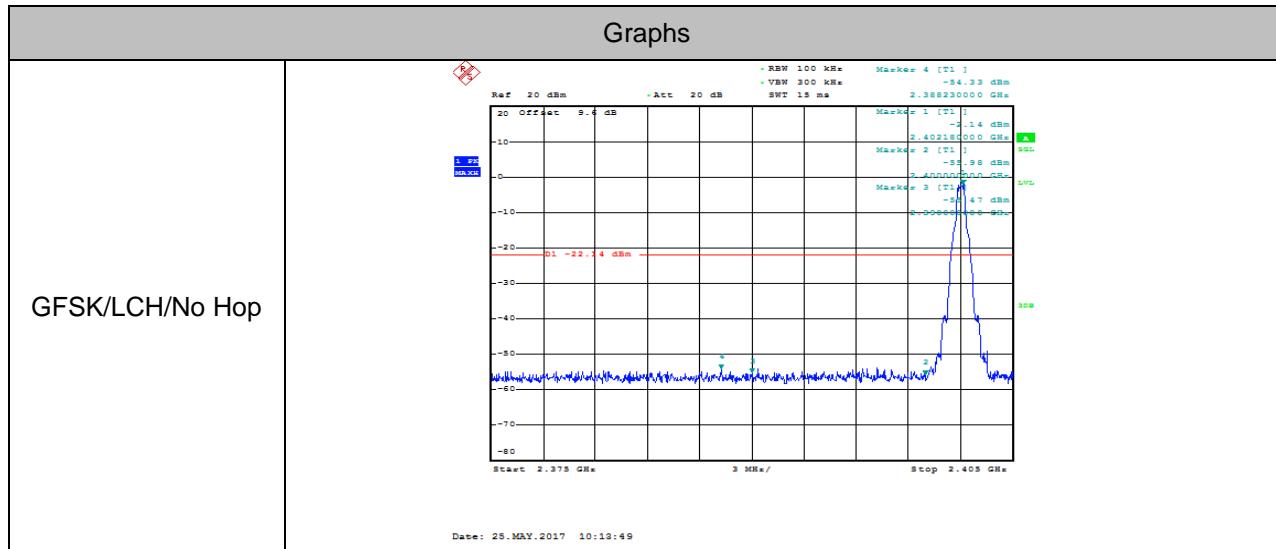
TEST CONDITIONS

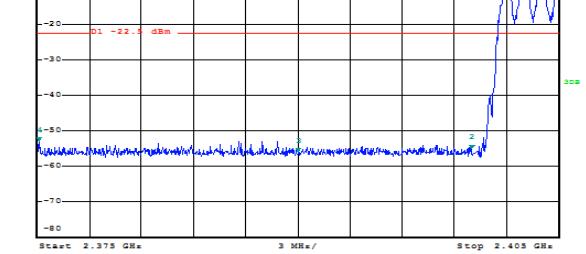
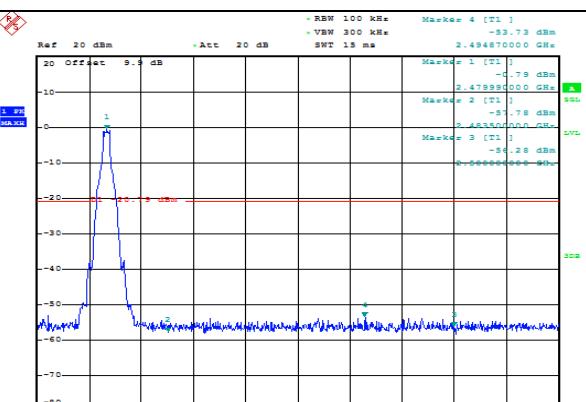
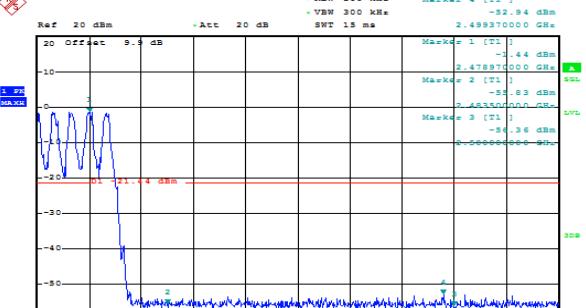
Temperature: 25.5°C
Relative Humidity: 65%
Test Voltage: 3.8Vdc

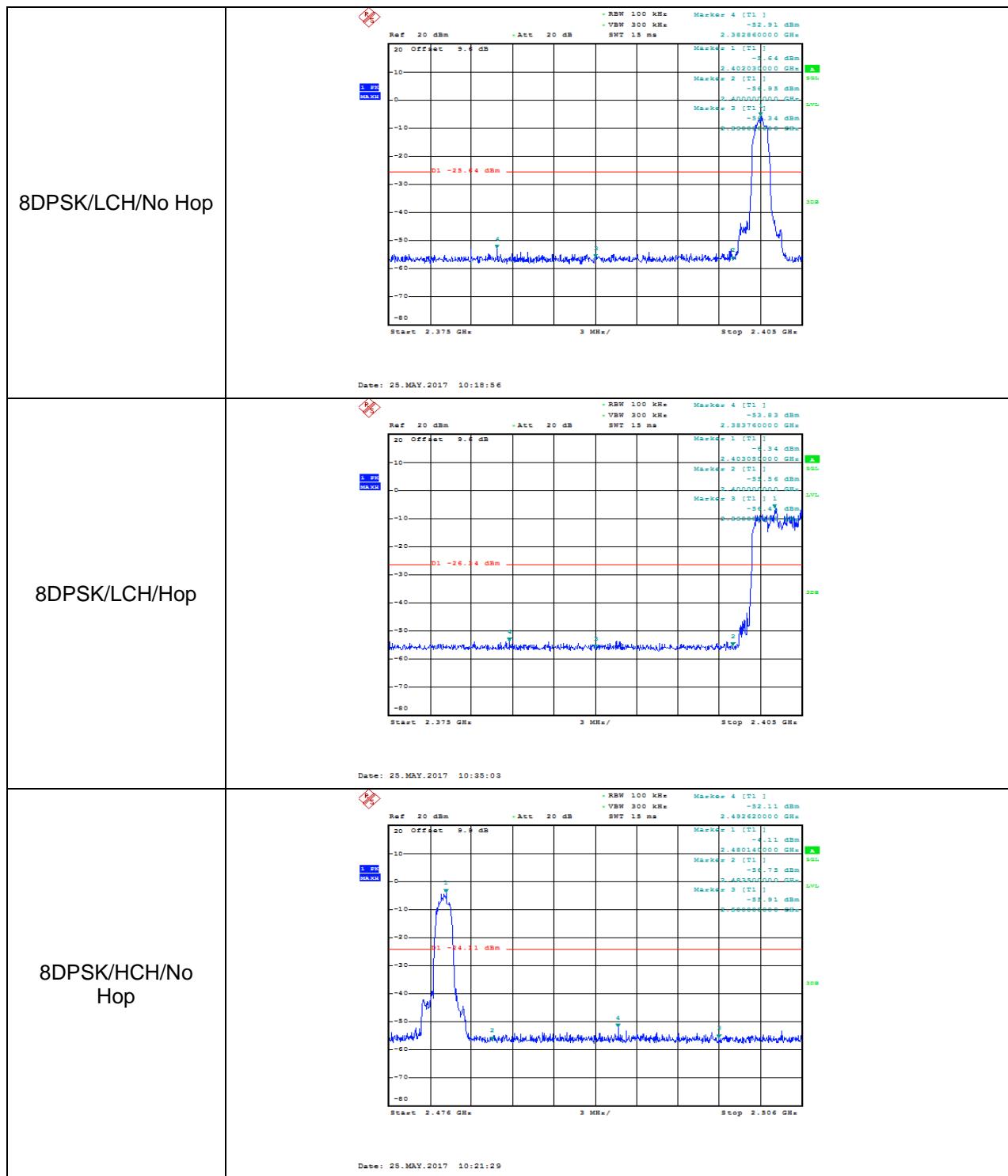
RESULTS

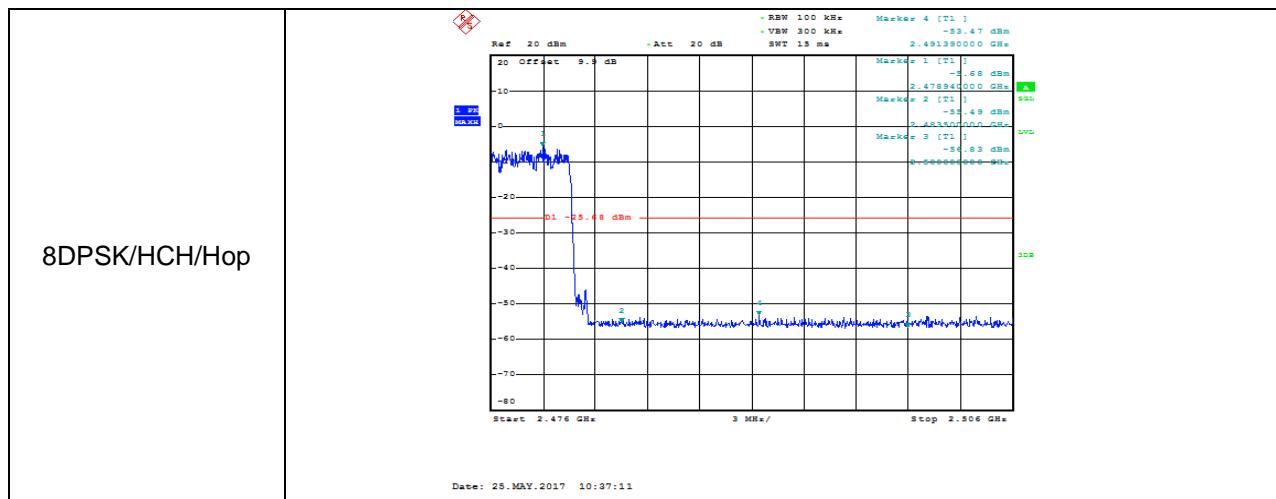
RF Conducted Bandedge

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-2.140	Off	-54.332	-22.14	PASS
			-2.500	On	-53.147	-22.5	PASS
GFSK	HCH	2480	-0.790	Off	-53.729	-20.79	PASS
			-1.440	On	-52.940	-21.44	PASS
8DPSK	LCH	2402	-5.640	Off	-52.907	-25.64	PASS
			-6.340	On	-53.828	-26.34	PASS
8DPSK	HCH	2480	-4.110	Off	-52.112	-24.11	PASS
			-5.680	On	-53.472	-25.68	PASS



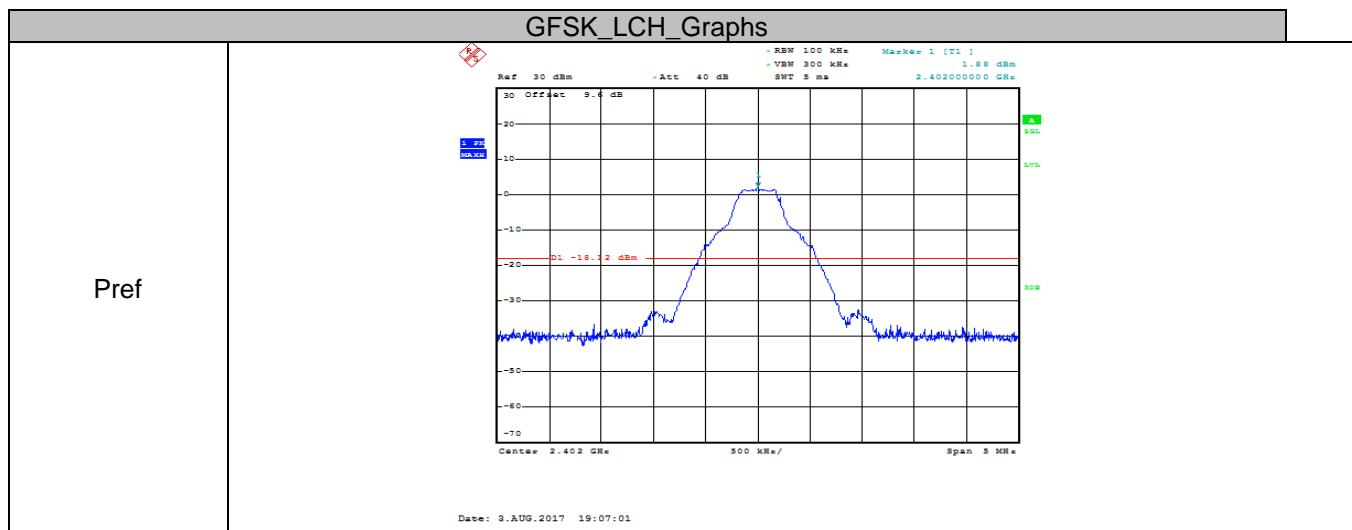
GFSK/LCH/Hop	 <p>Ref 20 dBm Att 20 dB SBT 15 ms</p> <p>RBW 100 kHz VSWR 300 kHz SBT 15 ms</p> <p>Marker 1 (T1) -53.15 dBm 2.4050000 GHz</p> <p>Marker 2 (T1) -52.15 dBm 2.403170000 GHz</p> <p>Marker 3 (T1) -52.0 dBm 2.4030000 GHz</p> <p>Marker 4 (T1) -52.0 dBm 2.403170000 GHz</p> <p>Start 2.375 GHz Stop 2.405 GHz</p> <p>3 MHz/</p>
GFSK/HCH/No Hop	 <p>Ref 20 dBm Att 20 dB SBT 15 ms</p> <p>RBW 100 kHz VSWR 300 kHz SBT 15 ms</p> <p>Marker 1 (T1) -53.73 dBm 2.4060000 GHz</p> <p>Marker 2 (T1) -52.78 dBm 2.405993000 GHz</p> <p>Marker 3 (T1) -52.28 dBm 2.405990000 GHz</p> <p>Marker 4 (T1) -52.0 dBm 2.4050000 GHz</p> <p>Start 2.476 GHz Stop 2.506 GHz</p> <p>3 MHz/</p>
GFSK/HCH/Hop	 <p>Ref 20 dBm Att 20 dB SBT 15 ms</p> <p>RBW 100 kHz VSWR 300 kHz SBT 15 ms</p> <p>Marker 1 (T1) -52.94 dBm 2.4060000 GHz</p> <p>Marker 2 (T1) -51.83 dBm 2.405993000 GHz</p> <p>Marker 3 (T1) -51.36 dBm 2.405990000 GHz</p> <p>Marker 4 (T1) -52.0 dBm 2.4050000 GHz</p> <p>Start 2.476 GHz Stop 2.506 GHz</p> <p>3 MHz/</p>

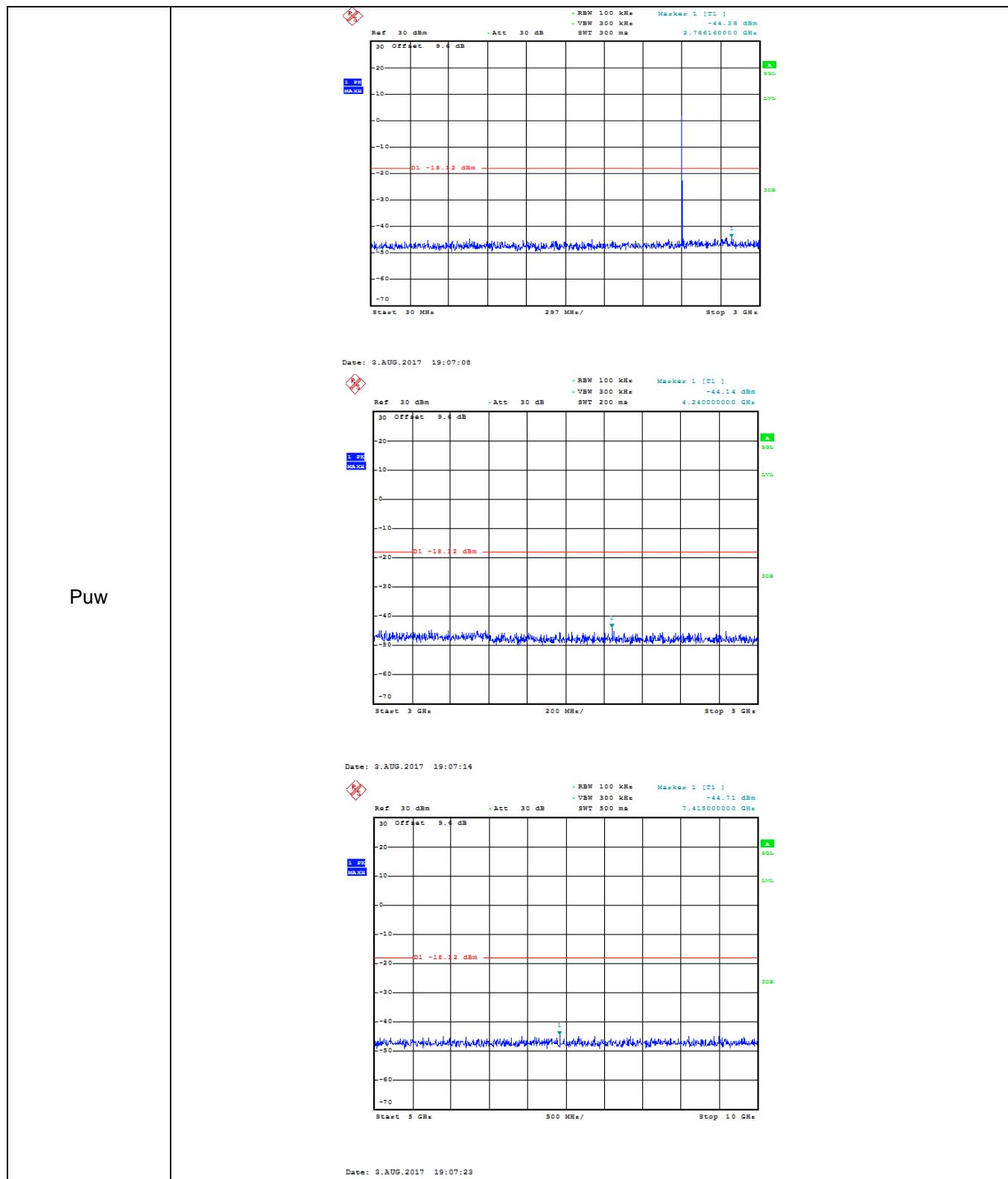


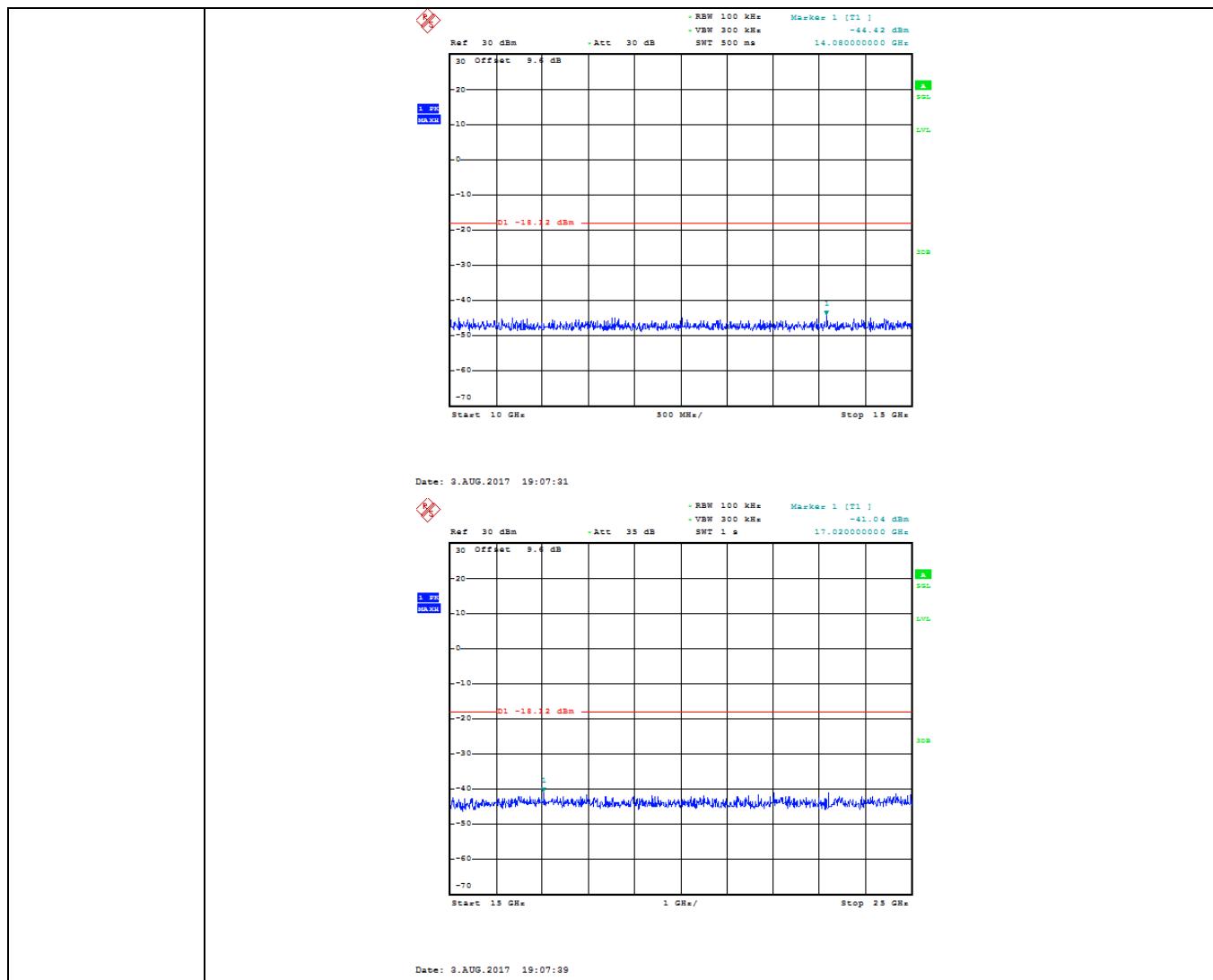


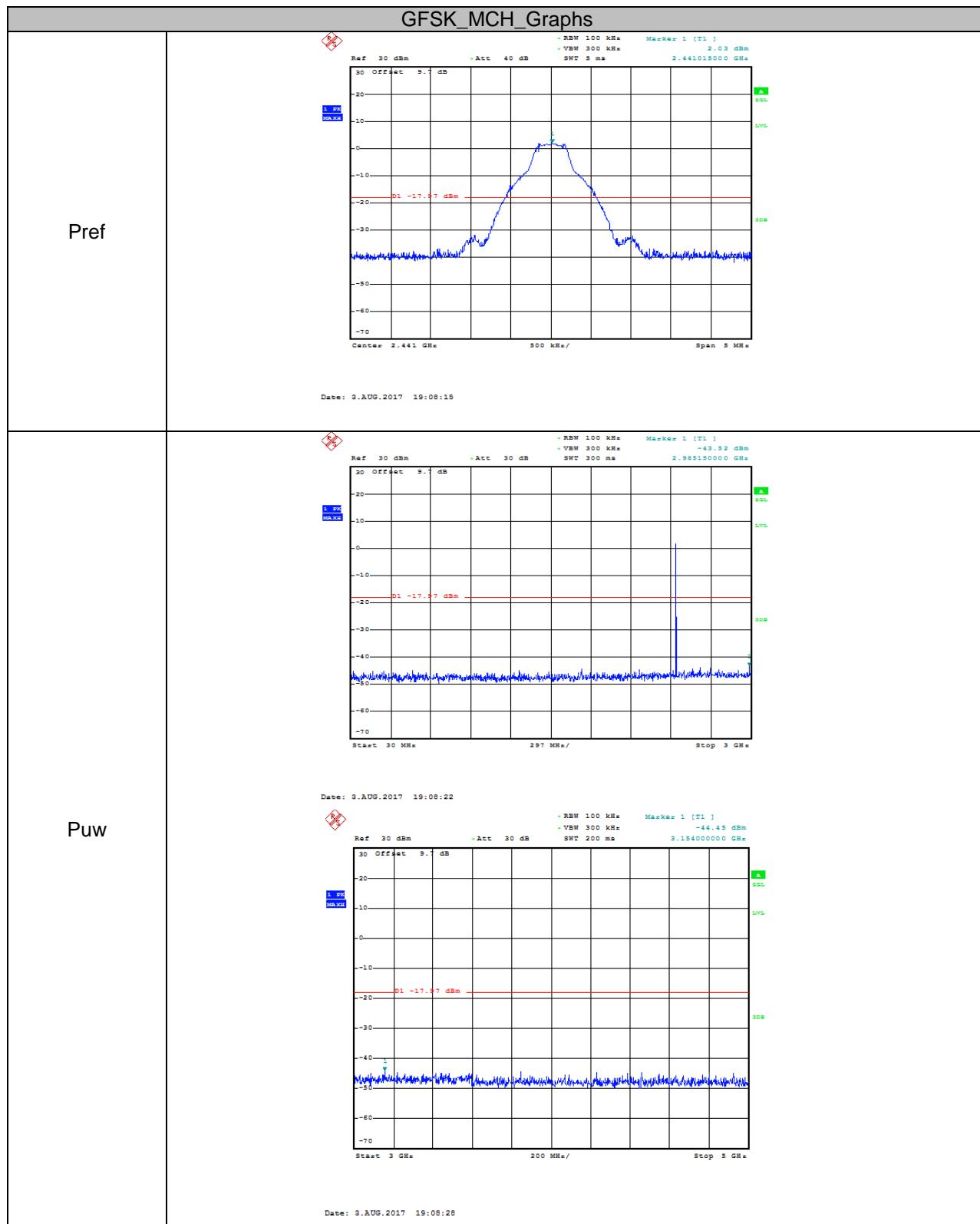
RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Puw[dBm]	Verdict
GFSK	LCH	1.88	<Limit	PASS
GFSK	MCH	2.03	<Limit	PASS
GFSK	HCH	2.1	<Limit	PASS
8DPSK	LCH	-1.22	<Limit	PASS
8DPSK	MCH	-0.82	<Limit	PASS
8DPSK	HCH	-0.68	<Limit	PASS

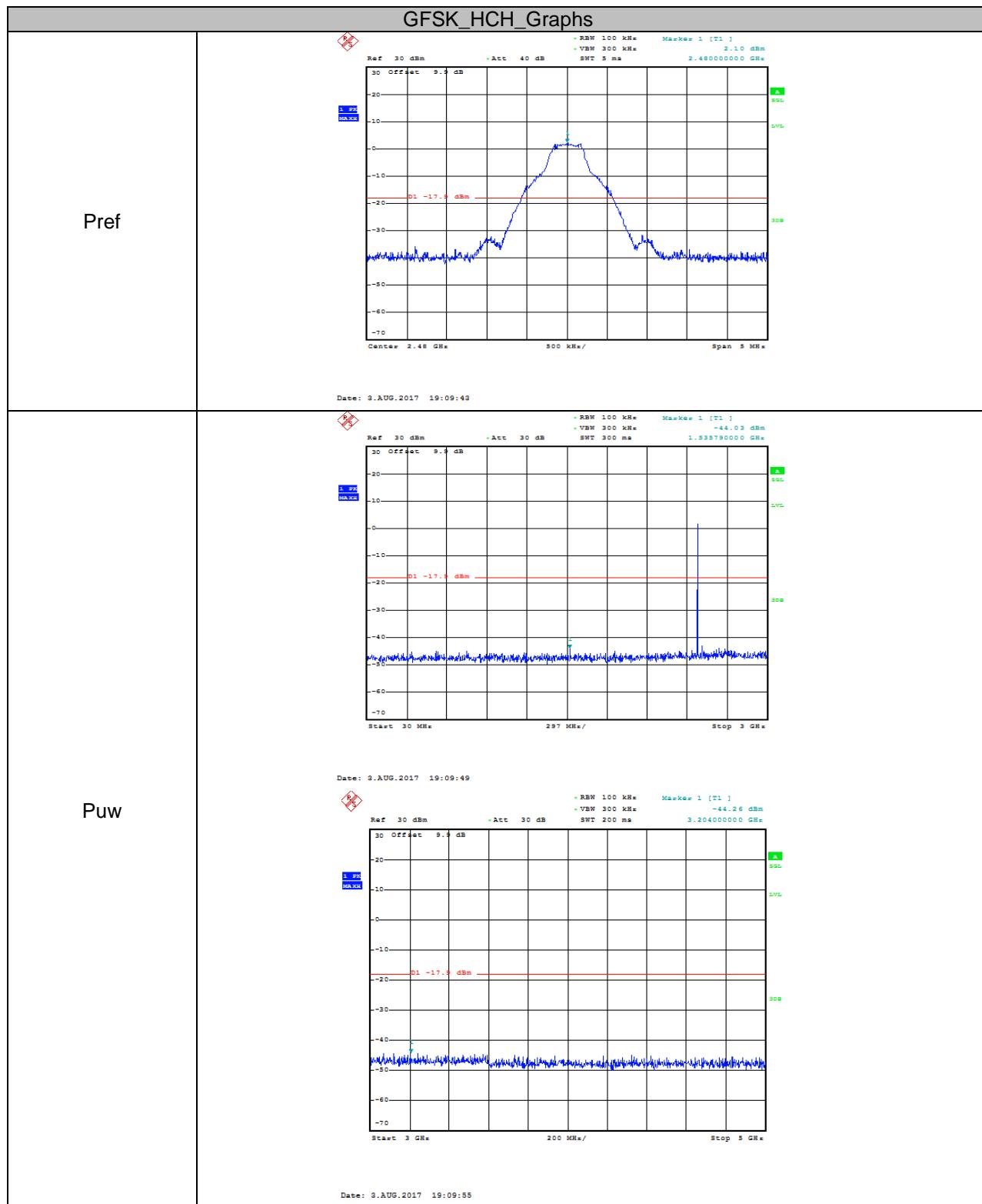


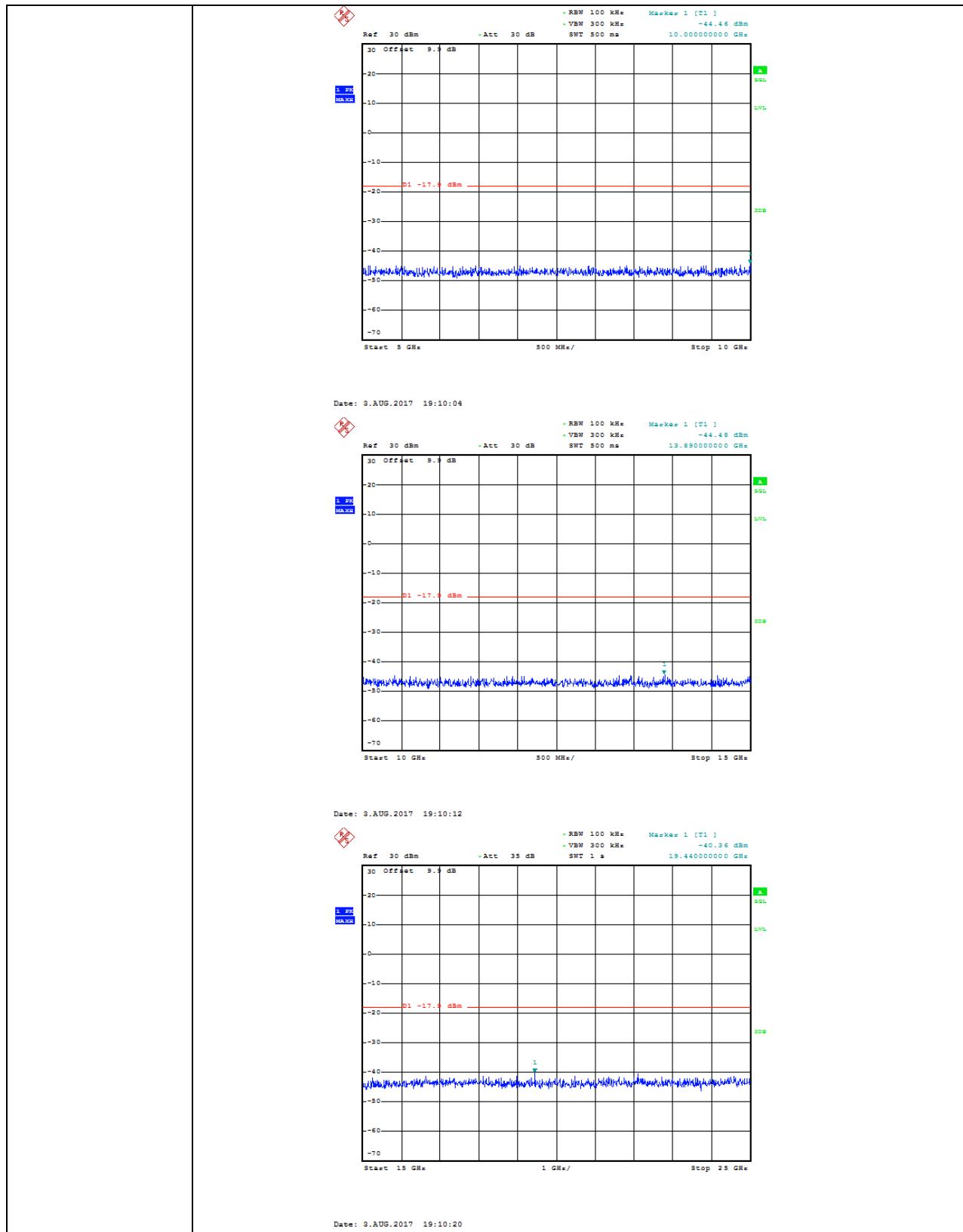


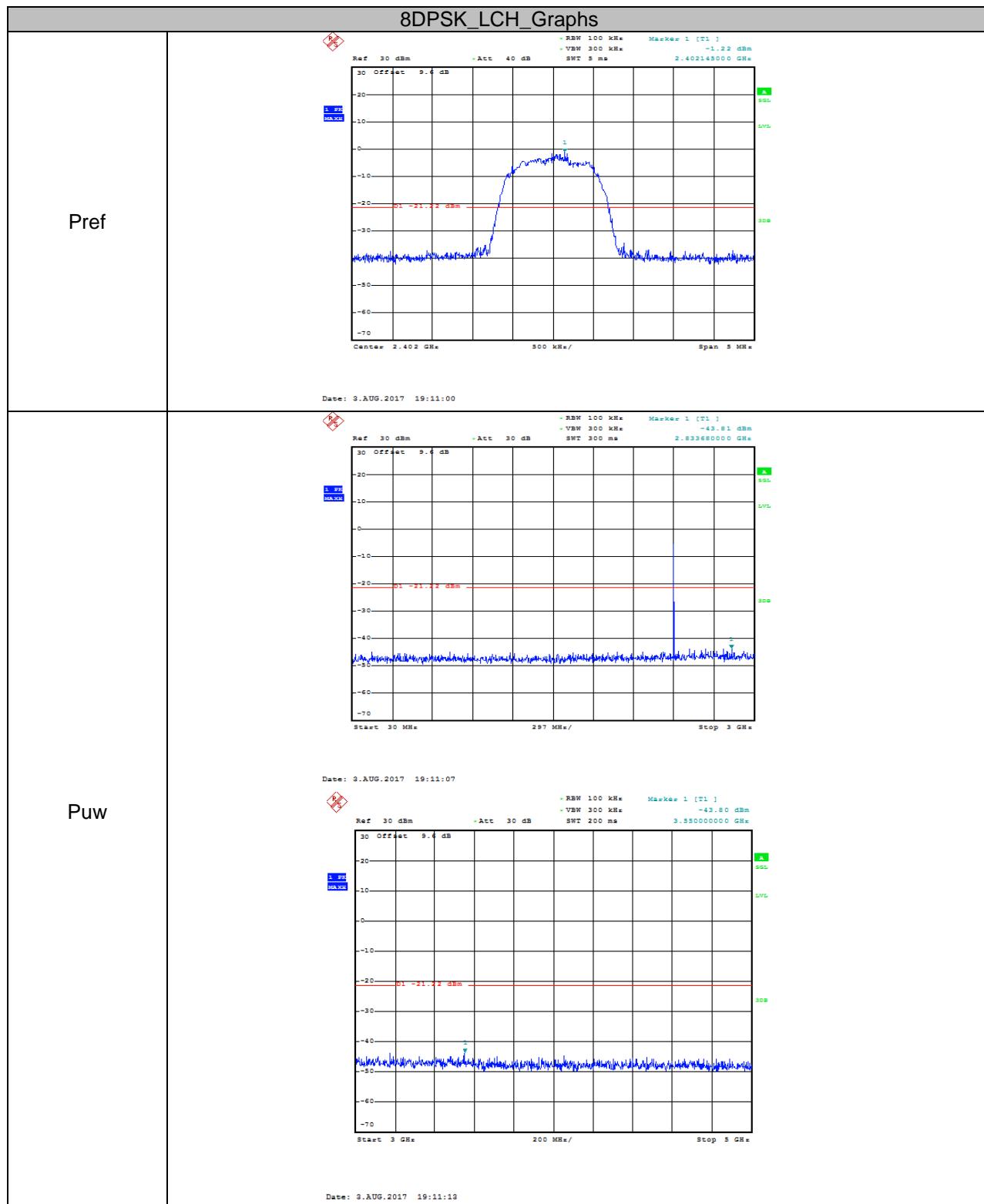




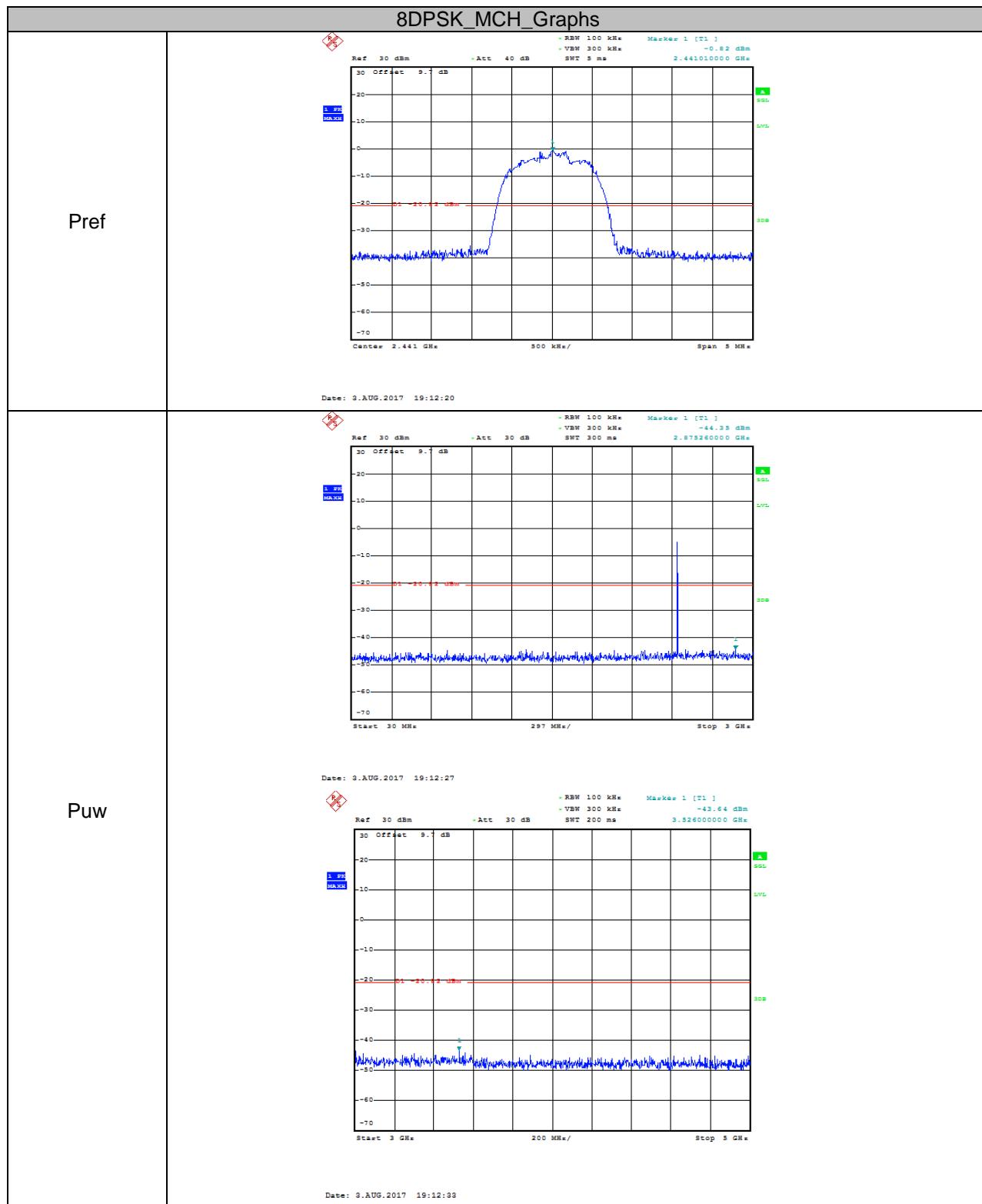




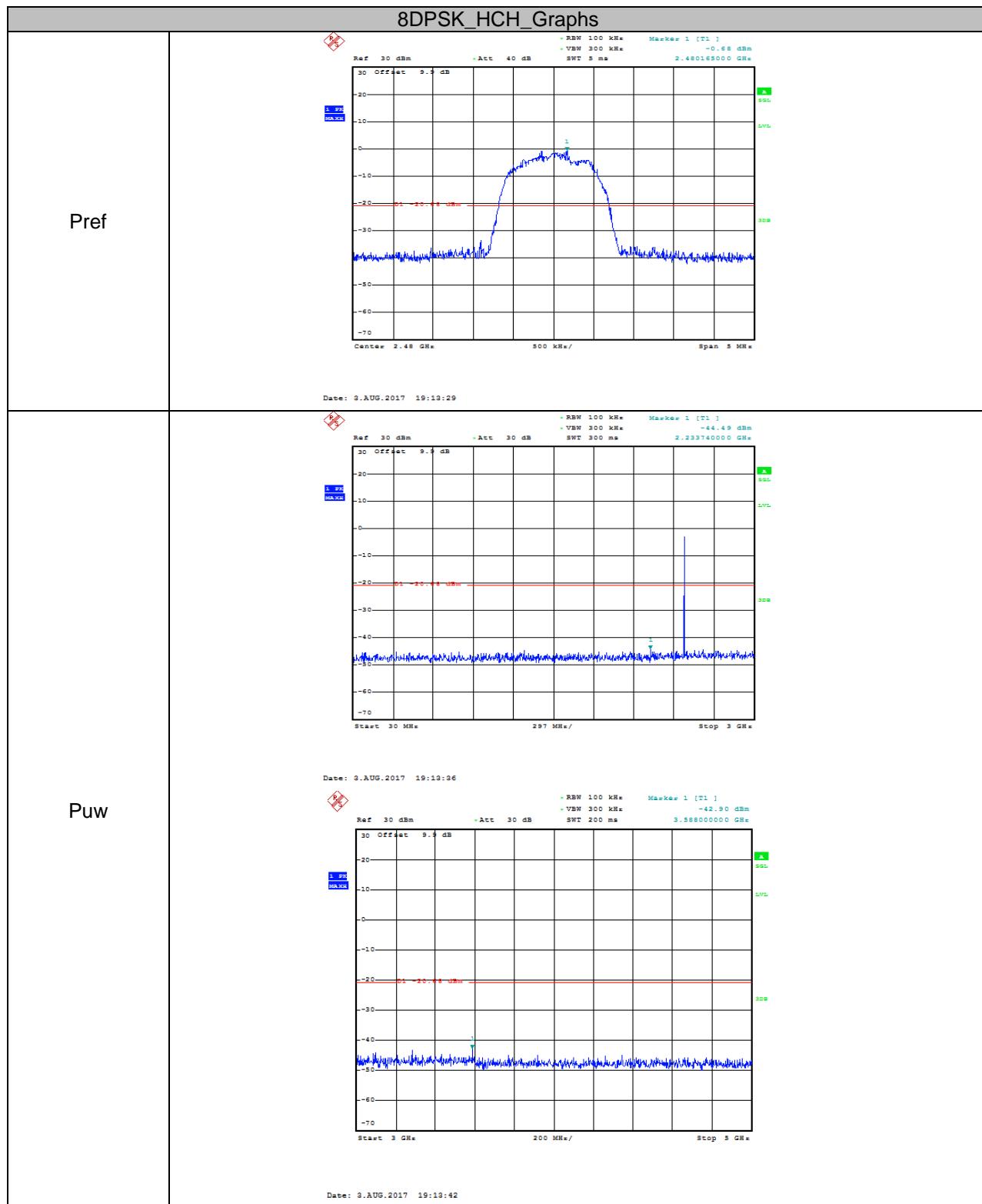


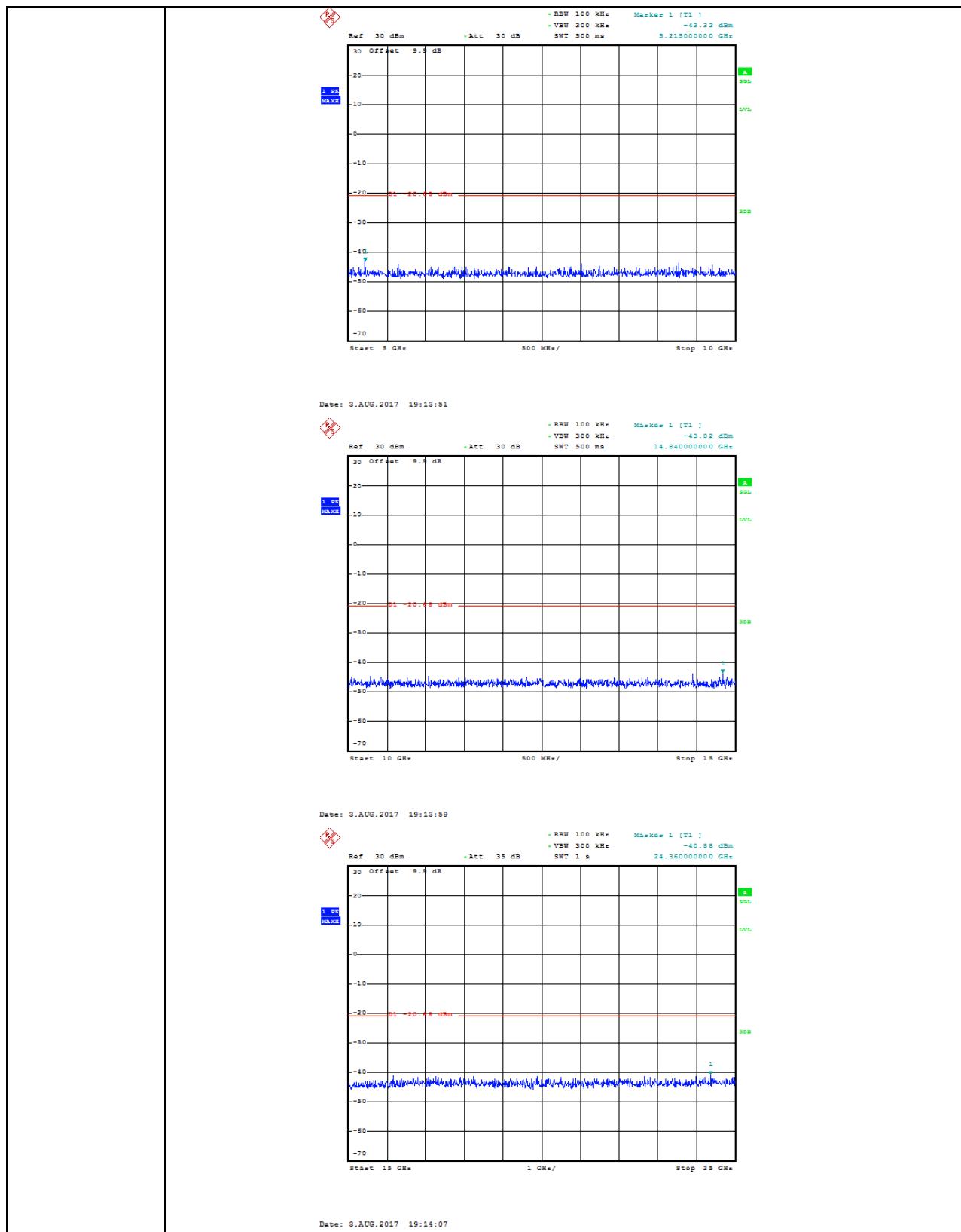












7. RADIATED TEST RESULTS

7.1. LIMITS AND PROCEDURE

LIMITS

Please refer to FCC §15.205 and §15.209

Please refer to SS-GEN Clause 8.9 and Clause 8.10

Radiation Disturbance Test Limit for FCC (Class B)(9KHz-1GHz)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

Radiation Disturbance Test Limit for FCC (Above 1G)

Frequency (MHz)	dB(uV/m) (at 3 meters)	
	Peak	Average
Above 1000	74	54

TEST CONDITIONS

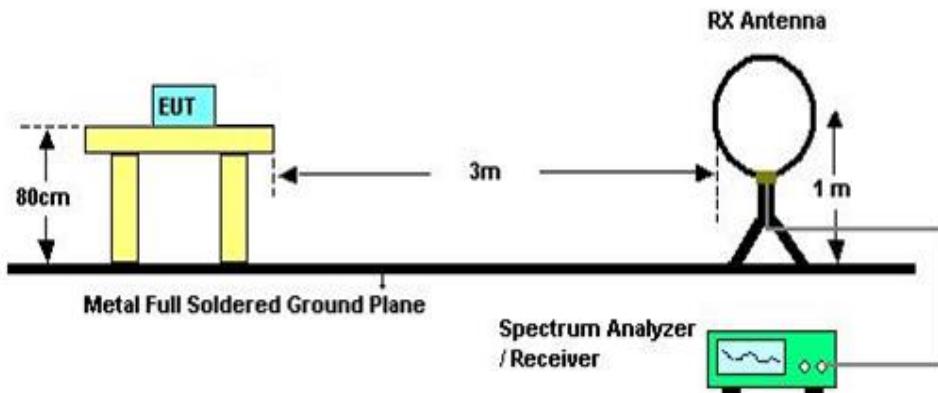
Temperature: 25.5°C

Relative Humidity: 65%

Test Voltage: 3.8Vdc

TEST SETUP AND PROCEDURE

Below 30MHz

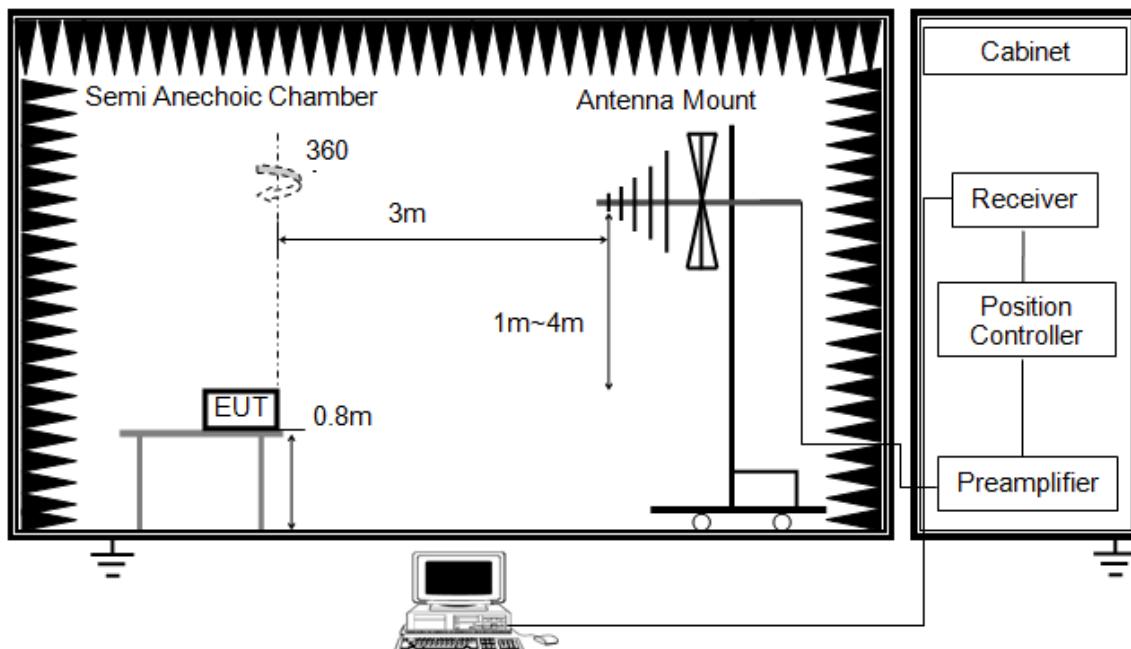


The setting of the spectrum analyser

RBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
VBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
Sweep	Auto
Detector	Peak/QP/ Average
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013
2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)

Below 1G

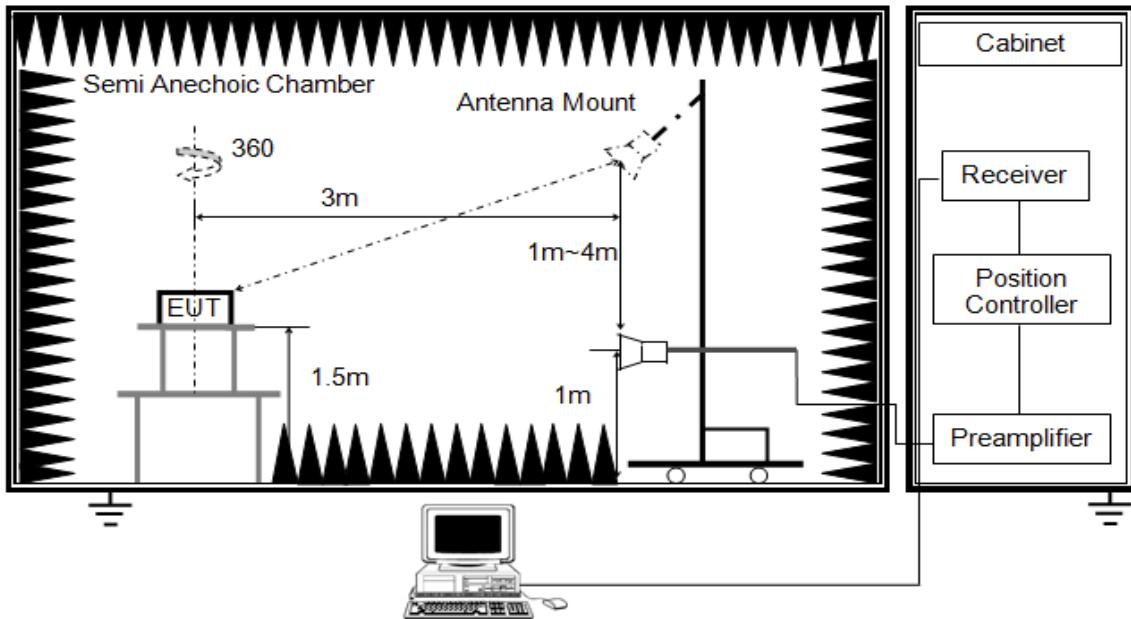


The setting of the spectrum analyser

RBW	120K
VBW	300K
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. For the actual test configuration, please refer to the related Item in this test report (Photographs of the Test Configuration)

ABOVE 1G



The setting of the spectrum analyser

RBW	1M
VBW	3M
Sweep	Auto
Detector	Peak and CISPR Average
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.
2. The EUT was arranged to its worst case and then tune the antenna tower (1.5 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 1.5 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. For measurement above 1GHz, the emission measurement will be measured by the peak detector and the AV detector.
7. For the actual test configuration, please refer to the related Item in this test report (Photographs of the Test Configuration)

TEST CONDITIONS

Temperature: 25.5°C

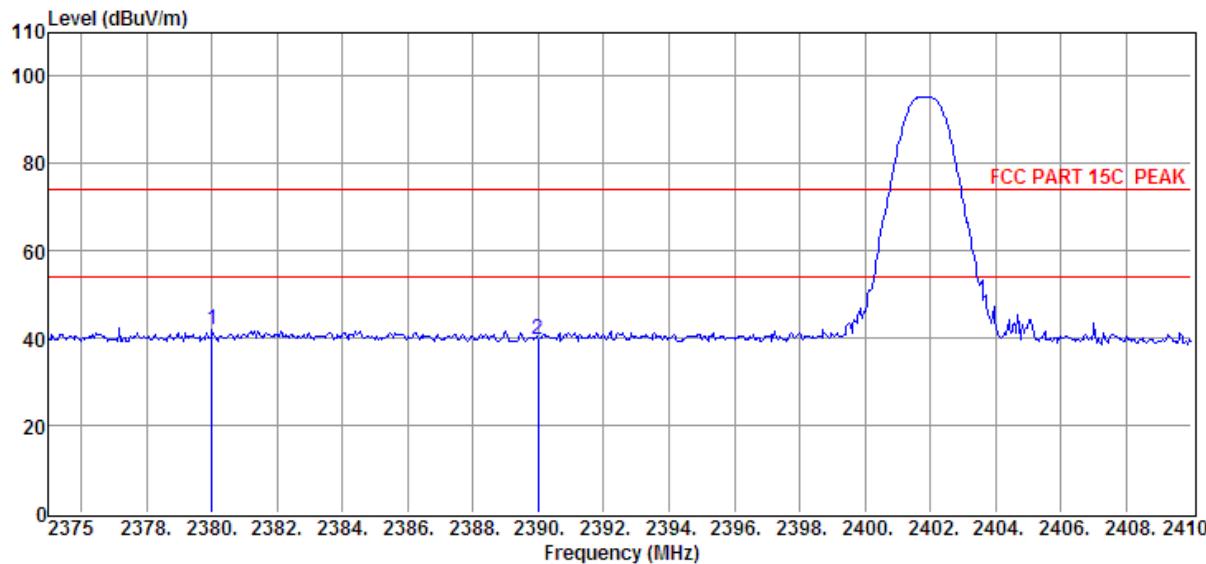
Relative Humidity: 65%

Test Voltage: 3.8Vdc

7.2. RESTRICTED BANDEDGE

7.2.1. GFSK MODE

RESTRICTED BANDEDGE (DH5 LOW CHANNEL, HORIZONTAL)

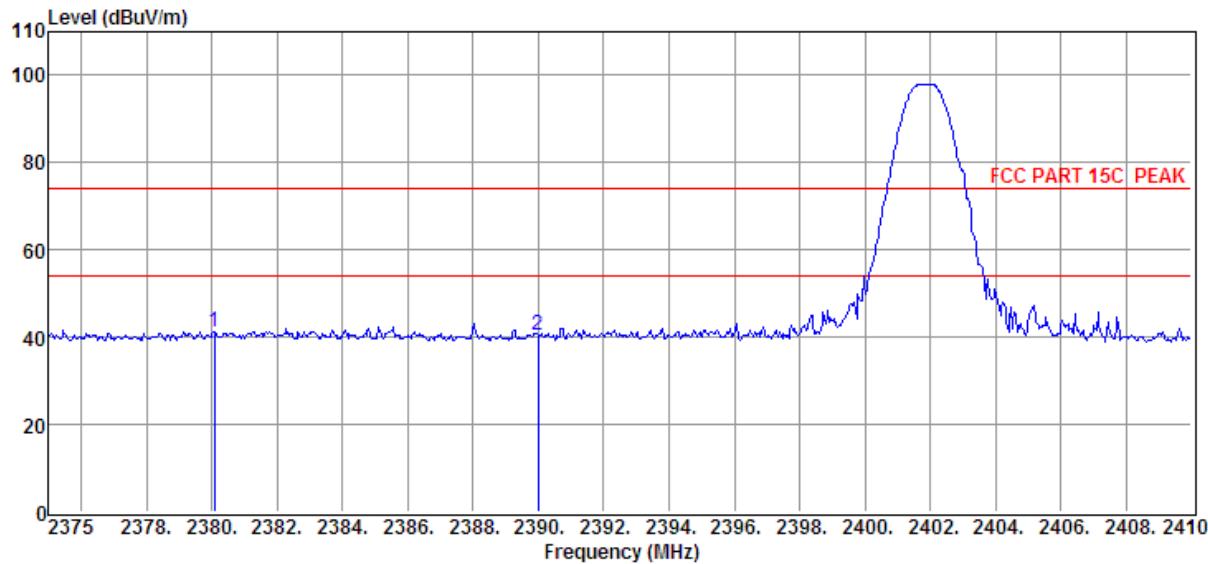


Item (Mark)	Freq. (MHz)	Read Level (dB μ V)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dB μ V/m)	Limit Line (dB μ V/m)	Over Limit (dB)	Detector	Polarization
1	2380.01	35.48	29.74	29.39	6.01	41.84	74.00	-32.16	Peak	HORIZONTAL
2	2390.00	33.45	29.78	29.42	6.03	39.84	74.00	-34.16	Peak	HORIZONTAL

Note:

1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

RESTRICTED BANDEDGE (DH5 LOW CHANNEL, VERTICAL)

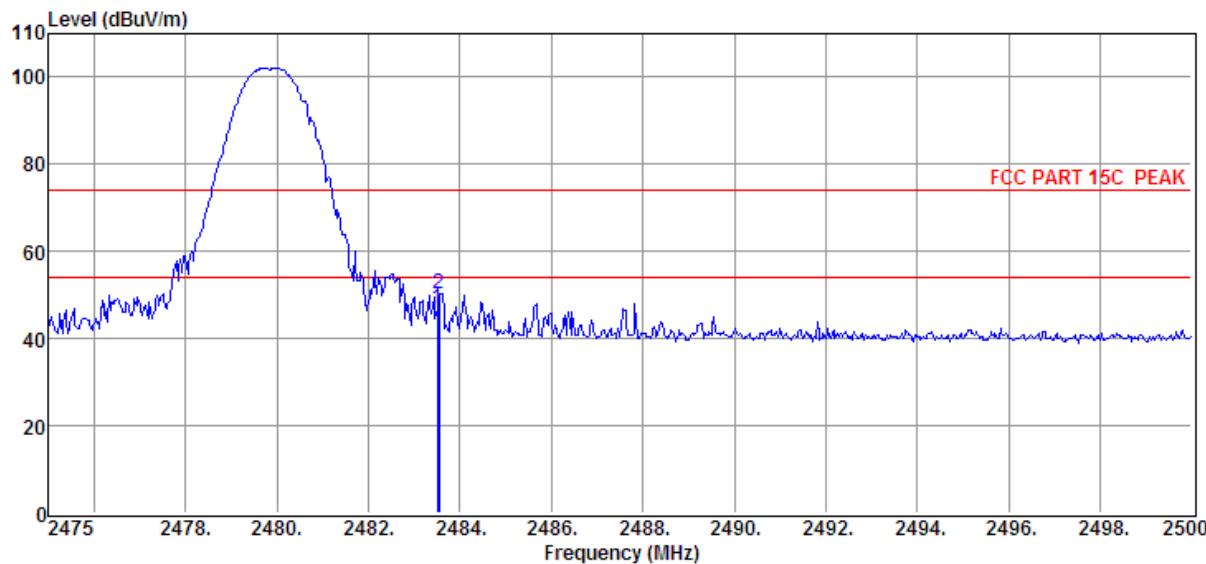


Item (Mark)	Freq. (MHz)	Read Level (dB μ V)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dB μ V/m)	Limit Line (dB μ V/m)	Over Limit (dB)	Detector	Polarization
1	2380.08	34.90	29.74	29.39	6.01	41.26	74.00	-32.74	Peak	VERTICAL
2	2390.00	33.92	29.78	29.42	6.03	40.31	74.00	-33.69	Peak	VERTICAL

Note:

1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

RESTRICTED BANDEDGE (DH5 HIGH CHANNEL, HORIZONTAL)

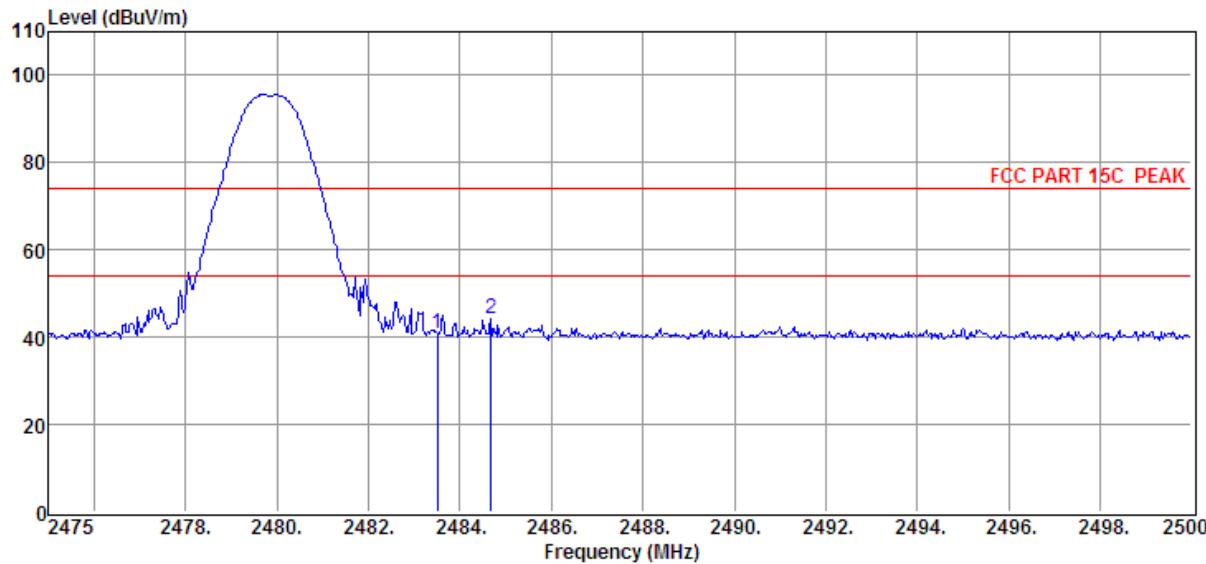


Item (Mark)	Freq. (MHz)	Read Level (dB μ V)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dB μ V/m)	Limit Line (dB μ V/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	40.46	30.14	29.71	6.13	47.02	74.00	-26.98	Peak	VERTICAL
2	2483.55	43.76	30.14	29.71	6.13	50.32	74.00	-23.68	Peak	VERTICAL

Note:

1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

RESTRICTED BANDEDGE (DH5 HIGH CHANNEL, VERTICAL)



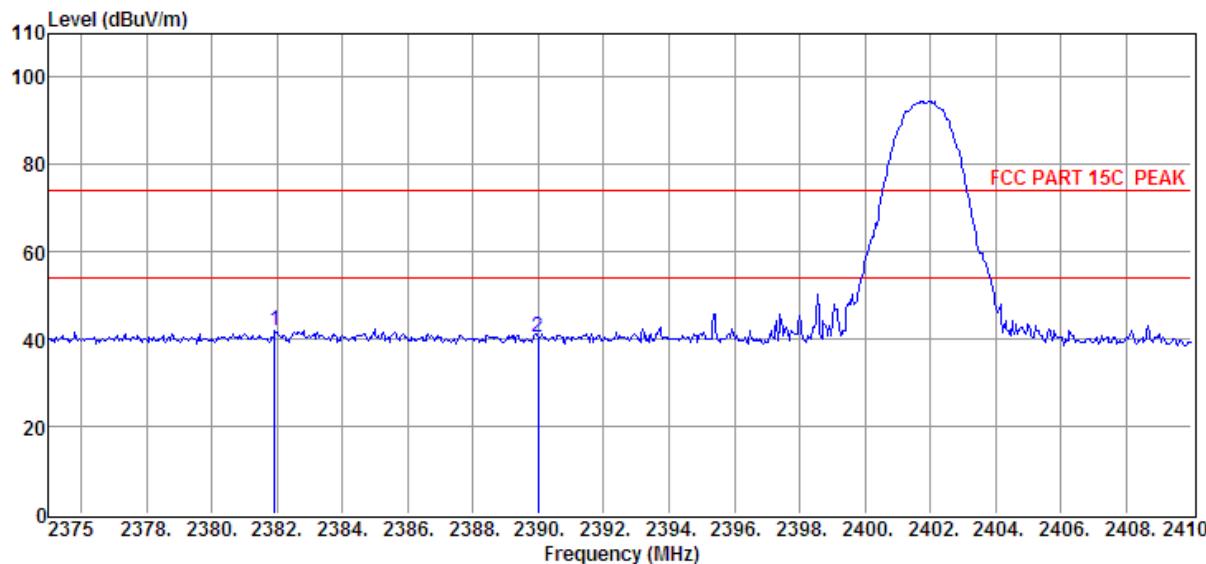
Item (Mark)	Freq. (MHz)	Read Level (dB μ V)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dB μ V/m)	Limit Line (dB μ V/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	34.40	30.14	29.71	6.13	40.96	74.00	-33.04	Peak	HORIZONTAL
2	2484.68	37.59	30.14	29.71	6.13	44.15	74.00	-29.85	Peak	HORIZONTAL

Note:

1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

7.2.2. 8-DPSK MODE

RESTRICTED BANEDGE (3DH5 LOW CHANNEL, HORIZONTAL)

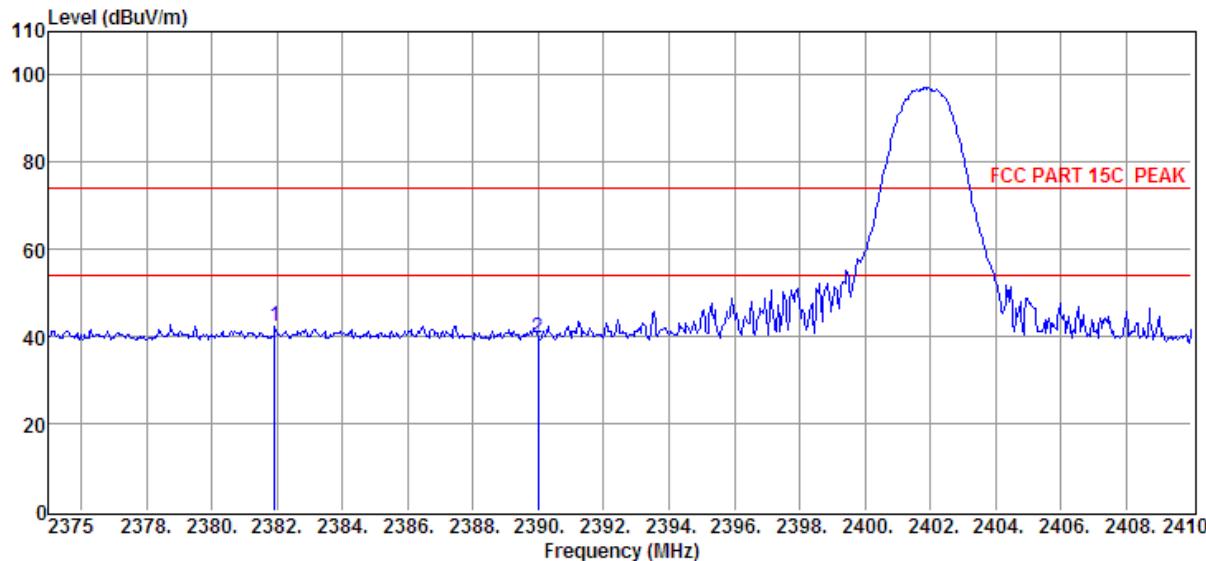


Item (Mark)	Freq. (MHz)	Read Level (dB μ V)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dB μ V/m)	Limit Line (dB μ V/m)	Over Limit (dB)	Detector	Polarization
1	2381.93	35.61	29.74	29.41	6.01	41.95	74.00	-32.05	Peak	HORIZONTAL
2	2390.00	34.07	29.78	29.42	6.03	40.46	74.00	-33.54	Peak	HORIZONTAL

Note:

1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

RESTRICTED BANDEDGE (3DH5 LOW CHANNEL, VERTICAL)

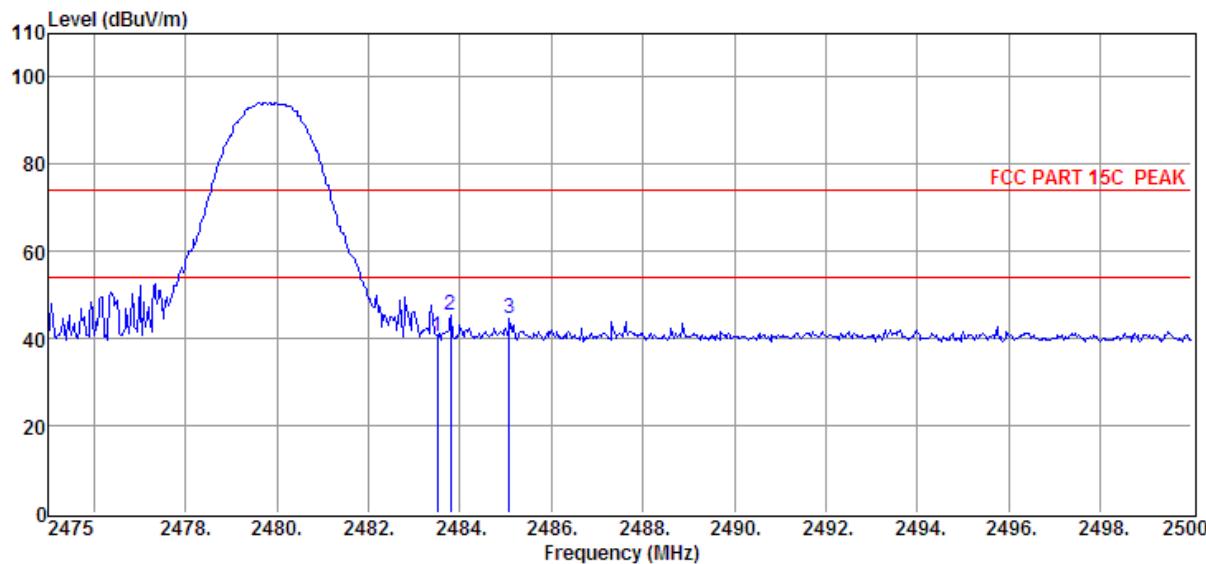


Item (Mark)	Freq. (MHz)	Read Level (dB μ V)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dB μ V/m)	Limit Line (dB μ V/m)	Over Limit (dB)	Detector	Polarization
1	2381.93	36.09	29.74	29.41	6.01	42.43	74.00	-31.57	Peak	VERTICAL
2	2390.00	33.13	29.78	29.42	6.03	39.52	74.00	-34.48	Peak	VERTICAL

Note:

1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

RESTRICTED BANDEDGE (3DH5 HIGH CHANNEL, HORIZONTAL)

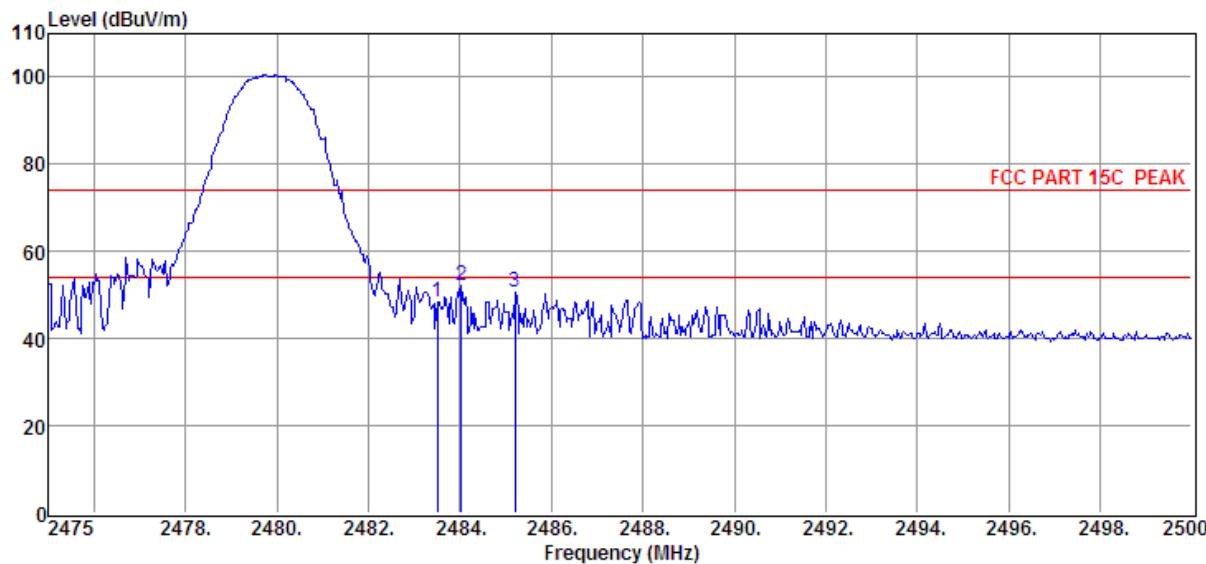


Item (Mark)	Freq. (MHz)	Read Level (dB μ V)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dB μ V/m)	Limit Line (dB μ V/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	33.82	30.14	29.71	6.13	40.38	74.00	-33.62	Peak	HORIZONTAL
2	2483.80	38.81	30.14	29.71	6.13	45.37	74.00	-28.63	Peak	HORIZONTAL
3	2485.08	38.15	30.14	29.71	6.13	44.71	74.00	-29.29	Peak	HORIZONTAL

Note:

1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

RESTRICTED BANDEDGE (3DH5 HIGH CHANNEL, VERTICAL)



Item (Mark)	Freq. (MHz)	Read Level (dB μ V)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dB μ V/m)	Limit Line (dB μ V/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	41.80	30.14	29.71	6.13	48.36	74.00	-25.64	Peak	VERTICAL
2	2484.03	45.58	30.14	29.71	6.13	52.14	74.00	-21.86	Peak	VERTICAL
3	2485.20	44.07	30.14	29.71	6.13	50.63	74.00	-23.37	Peak	VERTICAL

Note:

1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.
4. EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

7.3. SPURIOUS EMISSIONS (1~25GHz)

HARMONICS AND SPURIOUS EMISSION

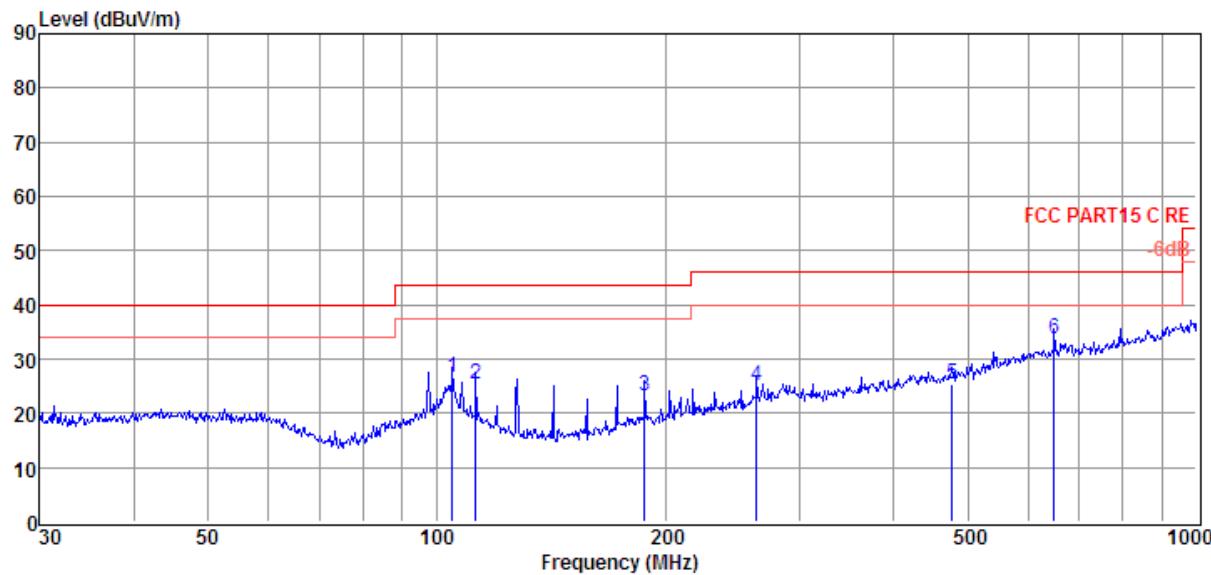
Freq (MHz)	Read level (dB μ V)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Result Level (dB μ V/m)	Limit (dB μ V /m)	Margin (dB)	Detector type	Polarization
GFSK Tx mode 2402MHz									
4791.00	40.22	33.74	29.31	8.46	53.11	74.00	-20.89	Peak	VERTICAL
6916.00	34.11	36.13	30.33	10.37	50.28	74.00	-23.72	Peak	VERTICAL
7970.00	34.96	36.69	31.12	11.12	51.65	74.00	-22.35	Peak	VERTICAL
10605.00	33.09	36.70	33.37	12.88	49.30	74.00	-24.70	Peak	VERTICAL
16351.00	21.33	44.46	35.86	17.38	47.31	54.00	-6.69	Average	VERTICAL
16351.00	35.68	44.46	35.86	17.38	61.66	74.00	-12.34	Peak	VERTICAL
3924.00	34.38	33.18	29.08	7.57	46.05	74.00	-27.95	Peak	HORIZONTAL
7936.00	34.21	36.69	31.11	11.10	50.89	74.00	-23.11	Peak	HORIZONTAL
9075.00	33.66	37.33	32.35	11.89	50.53	74.00	-23.47	Peak	HORIZONTAL
11030.00	33.14	37.73	34.03	13.49	50.33	74.00	-23.67	Peak	HORIZONTAL
16521.00	19.54	44.67	36.06	17.51	45.66	54.00	-8.34	Average	HORIZONTAL
16521.00	35.61	44.67	36.06	17.51	61.73	74.00	-12.27	Peak	HORIZONTAL
GFSK Tx mode 2441MHz									
4882.00	37.07	33.72	29.33	8.56	50.02	54.00	-3.98	Peak	VERTICAL
4882.00	44.12	33.72	29.33	8.56	57.07	74.00	-16.93	Peak	VERTICAL
7749.00	34.45	36.65	31.00	10.99	51.09	74.00	-22.91	Peak	VERTICAL
9364.00	34.49	36.69	32.52	12.22	50.88	74.00	-23.12	Peak	VERTICAL
9840.00	33.38	36.74	32.85	12.41	49.68	74.00	-24.32	Peak	VERTICAL
12815.00	33.18	38.62	35.58	14.66	50.88	74.00	-23.12	Peak	VERTICAL
3856.00	34.99	32.99	29.12	7.52	46.38	74.00	-27.62	Peak	HORIZONTAL
6474.00	33.46	35.76	29.78	9.93	49.37	74.00	-24.63	Peak	HORIZONTAL
6984.00	35.31	36.19	30.38	10.40	51.52	74.00	-22.48	Peak	HORIZONTAL
7851.00	34.68	36.67	31.07	11.05	51.33	74.00	-22.67	Peak	HORIZONTAL
9891.00	34.03	36.79	32.88	12.42	50.36	74.00	-23.64	Peak	HORIZONTAL
11336.00	33.22	37.06	34.38	13.55	49.45	74.00	-24.55	Peak	HORIZONTAL
GFSK Tx mode 2480MHz									
4960.00	38.00	33.71	29.35	8.63	50.99	54.00	-3.01	Average	VERTICAL
4961.00	46.10	33.71	29.35	8.63	59.09	74.00	-14.91	Peak	VERTICAL
6746.00	33.94	36.00	30.18	10.19	49.95	74.00	-24.05	Peak	VERTICAL
7834.00	34.34	36.67	31.07	11.05	50.99	74.00	-23.01	Peak	VERTICAL
8990.00	33.99	37.46	32.32	11.81	50.94	74.00	-23.06	Peak	VERTICAL
16385.00	21.32	44.52	35.92	17.40	47.32	54.00	-6.68	Peak	VERTICAL
4961.00	39.71	33.71	29.35	8.63	52.70	74.00	-21.30	Peak	HORIZONTAL
6916.00	34.91	36.13	30.33	10.37	51.08	74.00	-22.92	Peak	HORIZONTAL
8004.00	34.85	36.69	31.13	11.13	51.54	74.00	-22.46	Peak	HORIZONTAL
9160.00	33.85	37.14	32.39	12.01	50.61	74.00	-23.39	Peak	HORIZONTAL
11081.00	33.45	37.62	34.08	13.50	50.49	74.00	-23.51	Peak	HORIZONTAL
12101.00	34.42	37.74	34.87	14.30	51.59	74.00	-22.41	Peak	HORIZONTAL
Result: Pass									
Note:									
1. 30MHz~25GHz: (Scan with GFSK, $\pi/4$ QPSK, 8-DPSK, the worst case is GFSK Mode)									
2. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.									
3: EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.									

7.4. SPURIOUS EMISSIONS 30MHz ~ 1 GHz

7.4.1. GFSK MODE

SPURIOUS EMISSIONS 30 TO 1000 MHz

Temperature:	24.5°C	Relative Humidity:	55%
Pressure:	1012 hPa	Test Voltage:	3.8Vdc
Test Mode:	Tx Mode	Polarization:	HORIZONTAL
Remark:	N/A		

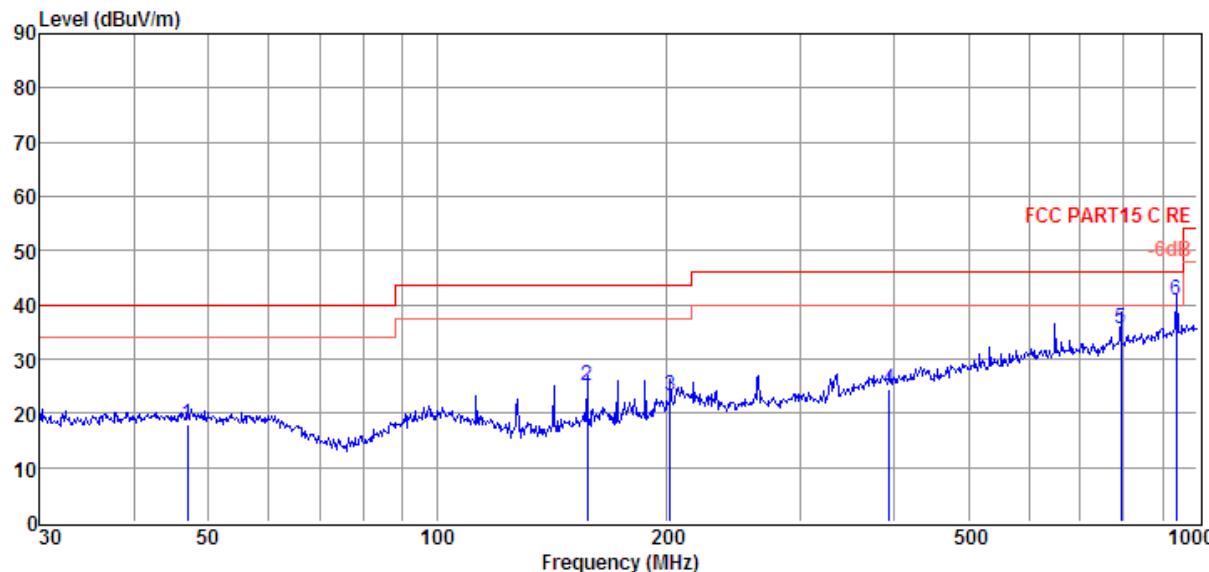


Item (Mark)	Freq. (MHz)	Read Level (dB μ V)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dB μ V/m)	Limit Line (dB μ V/m)	Over Limit (dB)	Detector	Polarization
1	104.90	10.57	11.61	4.33	26.51	43.50	-16.99	QP	HORIZONTAL
2	112.52	10.34	10.69	4.38	25.41	43.50	-18.09	QP	HORIZONTAL
3	187.75	8.43	9.80	4.83	23.06	43.50	-20.44	QP	HORIZONTAL
4	263.82	7.16	12.55	5.21	24.92	46.00	-21.08	QP	HORIZONTAL
5	477.17	2.36	16.96	6.08	25.40	46.00	-20.60	QP	HORIZONTAL
6	649.66	7.42	19.49	6.67	33.58	46.00	-12.42	QP	HORIZONTAL

Note:

1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

Temperature:	24.5°C	Relative Humidity:	55%
Pressure:	1012 hPa	Test Voltage:	3.8Vdc
Test Mode:	Tx Mode	Polarization:	VERTICAL
Remark:	N/A		



Item (Mark)	Freq. (MHz)	Read Level (dB μ V)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dB μ V/m)	Limit Line (dB μ V/m)	Over Limit (dB)	Detector	Polarization
1	47.00	1.79	12.25	3.86	17.90	40.00	-22.10	QP	VERTICAL
2	157.56	12.40	7.95	4.65	25.00	43.50	-18.50	QP	VERTICAL
3	202.81	7.85	10.47	4.91	23.23	43.50	-20.27	QP	VERTICAL
4	393.47	3.04	15.57	5.77	24.38	46.00	-21.62	QP	VERTICAL
5	793.40	7.59	21.00	7.10	35.69	46.00	-10.31	QP	VERTICAL
6	938.83	10.44	22.97	7.52	40.93	46.00	-5.07	QP	VERTICAL

Note:

1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

Note 1: All the modulation and channels had been tested, but only the worst data recorded in the report.

Note 2: EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.

7.5. SPURIOUS EMISSIONS BELOW 30M

Note: The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

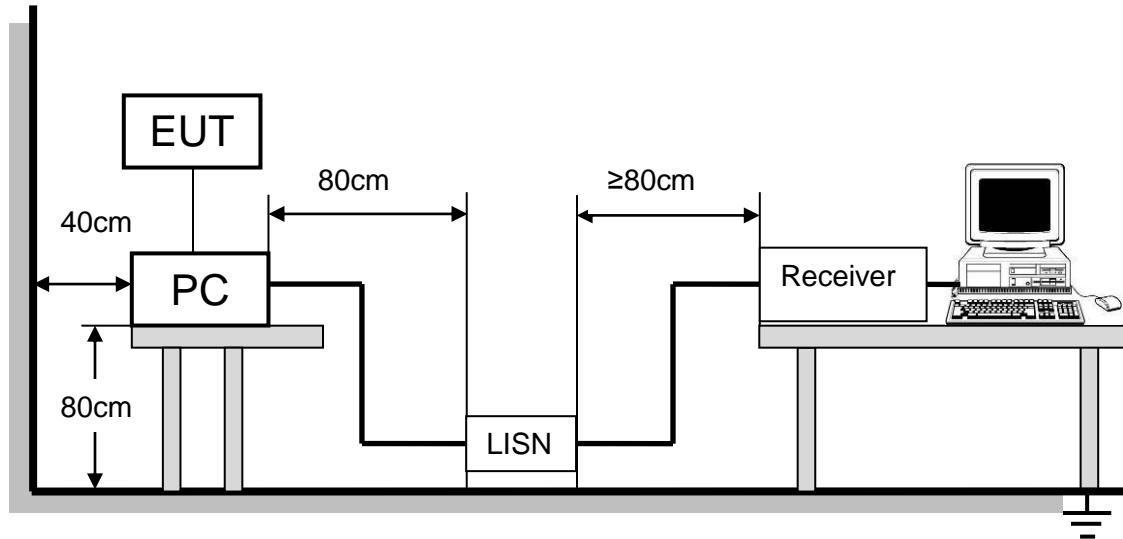
AC POWER LINE CONDUCTED EMISSIONS

LIMITS

Please refer to FCC §15.207 (a) and RSS-Gen Clause 8.8

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

TEST SETUP AND PROCEDURE

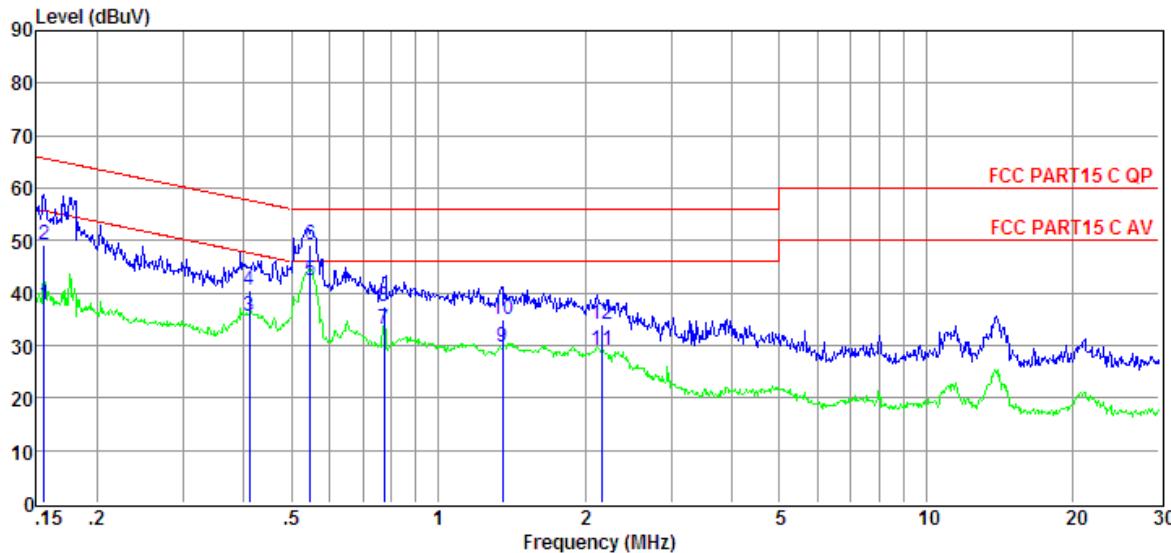


The EUT is put on a table of non-conducting material that is 80cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI Measurement Receiver (R&S Test Receiver ESR3) is used to test the emissions from both sides of AC line. According to the requirements in Section 7 and 13 of ANSI C63.4-2014. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode. The bandwidth of EMI test receiver is set at 9kHz.

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application.

TEST RESULTS

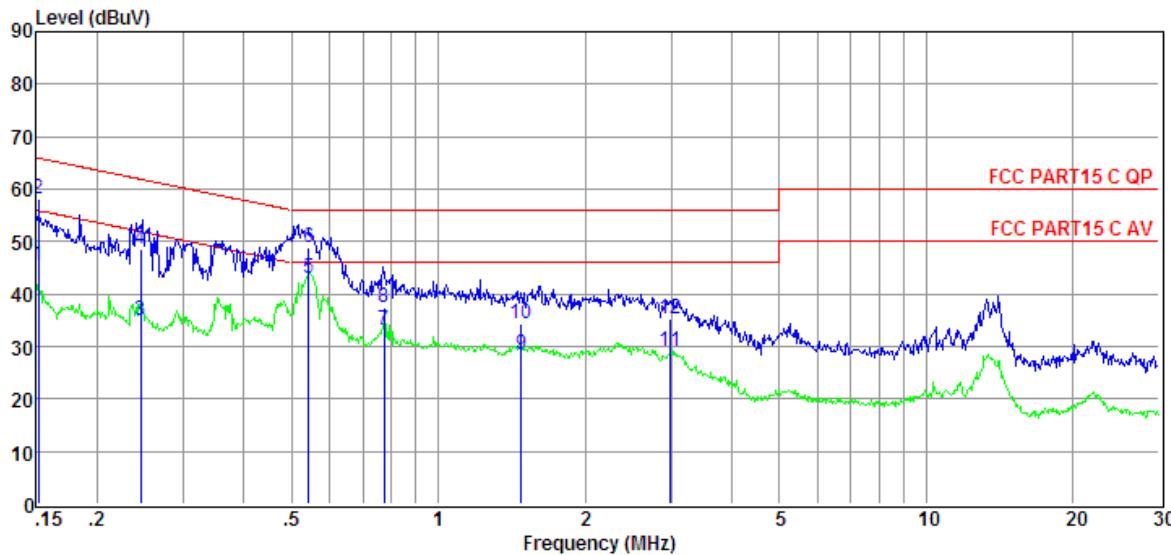
Temperature:	24.5°C	Relative Humidity:	55%
Pressure:	1012 hPa	Test Voltage:	AC 120V/60Hz
Test Mode:	Tx Mode	Phase :	L
Remark:	N/A		



Item (Mark)	Freq. (MHz)	Read Level (dB μ V)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dB μ V)	Limit Line (dB μ V)	Over Limit (dB)	Detector	Phase
1	0.16	18.29	9.61	0.02	9.86	37.78	55.69	-17.91	Average	LINE
2	0.16	29.54	9.61	0.02	9.86	49.03	65.69	-16.66	QP	LINE
3	0.41	15.98	9.61	0.02	9.86	35.47	47.64	-12.17	Average	LINE
4	0.41	21.17	9.61	0.02	9.86	40.66	57.64	-16.98	QP	LINE
5	0.55	22.94	9.61	0.03	9.86	42.44	46.00	-3.56	Average	LINE
6	0.55	29.73	9.61	0.03	9.86	49.23	56.00	-6.77	QP	LINE
7	0.78	13.57	9.61	0.03	9.86	33.07	46.00	-12.93	Average	LINE
8	0.78	17.97	9.61	0.03	9.86	37.47	56.00	-18.53	QP	LINE
9	1.35	10.30	9.62	0.03	9.86	29.81	46.00	-16.19	Average	LINE
10	1.35	15.45	9.62	0.03	9.86	34.96	56.00	-21.04	QP	LINE
11	2.17	9.64	9.63	0.04	9.87	29.18	46.00	-16.82	Average	LINE
12	2.17	14.35	9.63	0.04	9.87	33.89	56.00	-22.11	QP	LINE

Note: 1. Result Level = Read Level +LISN Factor + Pulse Limiter Factor + Cable loss.
 2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
 4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

Temperature:	24.5°C	Relative Humidity:	55%
Pressure:	1012 hPa	Test Voltage:	AC 120V/60Hz
Test Mode:	Tx Mode	Phase :	N
Remark:	N/A		



Item (Mark)	Freq. (MHz)	Read Level (dB μ V)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dB μ V)	Limit Line (dB μ V)	Over Limit (dB)	Detector	Phase
1	0.15	26.10	9.61	0.02	9.86	45.59	55.91	-10.32	Average	NEUTRAL
2	0.15	38.60	9.61	0.02	9.86	58.09	65.91	-7.82	QP	NEUTRAL
3	0.25	15.55	9.61	0.02	9.86	35.04	51.91	-16.87	Average	NEUTRAL
4	0.25	29.14	9.61	0.02	9.86	48.63	61.91	-13.28	QP	NEUTRAL
5	0.54	23.49	9.61	0.03	9.86	42.99	46.00	-3.01	Average	NEUTRAL
6	0.54	29.52	9.61	0.03	9.86	49.02	56.00	-6.98	QP	NEUTRAL
7	0.78	13.63	9.61	0.03	9.86	33.13	46.00	-12.87	Average	NEUTRAL
8	0.78	18.03	9.61	0.03	9.86	37.53	56.00	-18.47	QP	NEUTRAL
9	1.48	8.91	9.62	0.03	9.86	28.42	46.00	-17.58	Average	NEUTRAL
10	1.48	14.87	9.62	0.03	9.86	34.38	56.00	-21.62	QP	NEUTRAL
11	2.98	9.61	9.64	0.05	9.87	29.17	46.00	-16.83	Average	NEUTRAL
12	2.98	15.71	9.64	0.05	9.87	35.27	56.00	-20.73	QP	NEUTRAL

Note: 1. Result Level = Read Level +LISN Factor + Pulse Limiter Factor + Cable loss.
 2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
 4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

8. ANTENNA REQUIREMENTS

APPLICABLE REQUIREMENTS

Please refer to FCC §15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Please refer to FCC §15.247(b)(4)

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

ANTENNA CONNECTOR

EUT has a FPCB Antenna without antenna connector.

ANTENNA GAIN

The antenna gain of EUT is less than 6 dBi.

END OF REPORT