FCC 47 CFR PART 15 SUBPART C AND ANSI C63.10: 2013

TEST REPORT

For

Fully Automatic Belt Drive Turntable

Model: CS 529

Brand: Dual

Issued for

Dual GmbH

Hauptstrasse 1, 86925 Fuchstal, Germany

Issued by

Compliance Certification Services Inc.
Tainan Lab.
No.8, Jiucengling, Xinhua Dist.,
Tainan City, Taiwan

Issued Date: November 21, 2022

REVISION HISTORY

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	November 21, 2022	Initial Issue	ALL	Gina Lin

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1. TEST REPORT CERTIFICATION

Applicant	:	**Dual GmbH** Hauptstrasse 1, 86925 Fuchstal, Germany
Manufacturer	:	**Dual GmbH** Hauptstrasse 1, 86925 Fuchstal, Germany
Equipment Under Test	:	Fully Automatic Belt Drive Turntable
Model Number	:	CS 529
Brand Name	:	Dual
Date of Test	:	August 17, 2022 ~ September 14, 2022

APPLICABLE STANDARD	
STANDARD	**TEST RESULT**
FCC Part 15 Subpart C AND ANSI C63.10: 2013	No non-compliance noted

Statements of Conformity
Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

Approved by:

John Chen

John Chen
Supervisor

2. TEST RESULT SUMMARY

FCC Standard Section	Report Section	Test Item	Result
15.247(a)	9.1	6dB BANDWIDTH	Pass
15.247(b)	9.2	MAXIMUM PEAK OUTPUT POWER	Pass
-	9.3	DUTY CYCLE	-
15.247(e)	9.4	POWER SPECTRAL DENSITY	Pass
15.247(d)	9.5	CONDUCTED SPURIOUS EMISSION	Pass
15.209(a)	9.6	RADIATED EMISSIONS	Pass
15.207(a)	9.7	POWERLINE CONDUCTED EMISSIONS	Pass
15.203	10	ANTENNA REQUIREMENT	Pass

3. EUT DESCRIPTION

3.1 DESCRIPTION OF EUT & POWER

Product Name	Fully Automatic Belt Drive Turntable
Model Number	CS 529
Brand Name	Dual
Received Date	August 01, 2022
Reported Date	August 31, 2022
Operating Frequency Range	GFSK(5.2) Mode：2402MHz~2480MHz
Transmit Power	GFSK(4.0) Mode：-6.78dBm (0.21mW) GFSK(5.2) Mode：-6.77dBm (0.21mW)
Channel Spacing	GFSK(5.2) Mode：2 MHz
Channel Number	GFSK(5.2) Mode：40 Channels
Transmit Data Rate	GFSK(4.0) Mode：1 Mbps GFSK(5.2) Mode：2 Mbps
Type of Modulation	GFSK
Antenna Type	Manufacturer: Sunitec Type: Layout Antenna Model: CS 529 Gain: 2.2 dBi
Power Source	DC 12V (Powered by adapter)
Firmware Version	V1.0
Software Version	V1.0

Power Adapter :

Manufacturer	Model No.	Power Input	Power Output
SHENZHEN FUJIA APPLIANCE CO.,LTD	FJ-SW1202000N	100-240Vac 50/60Hz 0.6A Max	12Vdc 2.0A 24W

REMARK:
1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for FCC ID: **2A8XN-CS529** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.
3. For more details, please refer to the user manual.

4. DESCRIPTION OF TEST MODES

The EUT is a Fully Automatic Belt Drive Turntable.

The RF Chip is manufactured by Qualcomm.

The antenna peak gain 2.2 dBi (highest gain) were chosen for full testing.

GFSK(5.2) mode

The EUT had been tested under operating condition.

There are three channels have been tested as following:

Channel	Frequency (MHz)
Low	2402
Middle	2442
High	2480

GFSK(5.2) mode: 1Mbps long data rates (worst case) were chosen for full testing.

5. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10 and FCC CFR 47 15.207, 15.209 and 15.247 and KDB 558074.

6. FACILITIES AND ACCREDITATIONS

6.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

☐ No.8,Jiucengling, Xinhua Dist., Tainan City 712, Taiwan (R.O.C.)

☒ No. 168, Ln. 523, Sec. 3, Zhongzheng Rd., Rende Dist., Tainan City 717017, Taiwan (R.O.C.)

The sites are constructed in conformance with the requirements of ANSI C63.7:1992, ANSI C63.10: 2013 and CISPR Publication 22.

6.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with preselectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

6.3 LABORATORY ACCREDITATIONS LISTINGS

The test facilities used to perform radiated and conducted emissions tests are accredited by Taiwan Accreditation Foundation for the specific scope of accreditation under Lab Code: 1109 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by TAF or any agency of the Government. In addition, the test facilities are listed with Federal Communications Commission (registration no: TW1109).

6.4 TABLE OF ACCREDITATIONS AND LISTINGS

Our laboratories are accredited and approved by the following accreditation body according to ISO/IEC 17025.

Taiwan	TAF

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada	Industry Canada (ISED#: 2324H)
Germany	TUV NORD
Taiwan	BSMI
USA	FCC

6.5 MEASUREMENT EQUIPMENT USED

For §9.7

Chamber Room #1166 (Radiation Test)					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Active Loop Antenna	ETS-LINDREN	6502	8905-2356	09/06/2021	09/05/2022
Attenuator	MCL	BW-S15W5	0535	01/28/2022	01/27/2023
Band Reject Filter	MICRO-TRONICS	HPM13525	006	01/28/2022	01/27/2023
Band Reject Filter	MICRO-TRONICS	HP50107-01	001	01/28/2022	01/27/2023
Bilog Antenna With 6dB Attenuator	SUNOL SCIENCES & EMCI	JB1 & N-6-06	A021306 & AT-N0682	10/07/2021	10/06/2022
Cable	EMCI	EM102-KMKM	CB1166-01	06/20/2022	06/19/2023
Double Ridged Guide Horn Antenna	ETS-LINDGREN	3116	00078900	03/18/2022	03/17/2023
EMI Test Receiver	R&S	ESCI 7	100856	06/21/2022	06/20/2023
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY54430216	08/11/2022	08/10/2023
Double Ridged Guide Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-788(98006)	04/19/2022	04/18/2023
Notch Filter	MICRO-TRONICS	BRM50702-01	018	01/28/2022	01/27/2023
Pre-Amplifier	EMCI	EMC012645	980098	01/28/2022	01/27/2023
Pre-Amplifier	Com-Power	PAM-840A	461378	06/28/2022	06/27/2023
Software	Excel(ccs-o6-2020 v1.1)，e3(v6.101222)				

For §9.1~9.6

Chamber Room #1166 (Conducted Test)					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY54430216	08/11/2022	08/10/2023
SMA Cable+10dB Attenuator	CCS	SMA+10dB ATT	SMA/10dB	01/28/2022	01/27/2023
Software	Excel(ccs-o6-2020 v1.1)				

For §9.8

Conducted Emission room #1					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
BNC Coaxial Cable	CCS	BNC50	11	01/20/2022	01/19/2023
EMI Test Receiver	R&S	ESCS 30	100348	02/24/2022	02/23/2023
LISN	FCC	FCC-LISN-50-32-2	08009	07/15/2022	07/14/2023
LISN	SCHWARZBECK	NNLK8130	8130124	01/14/2022	01/13/2023
Pulse Limiter	R&S	ESH3-Z2	100116	01/20/2022	01/19/2023
Test S/W	e3(v6.101222)				

7. CALIBRATION AND UNCERTAINTY

7.1 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 recognized national standards.

7.2 MEASUREMENT UNCERTAINTY

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

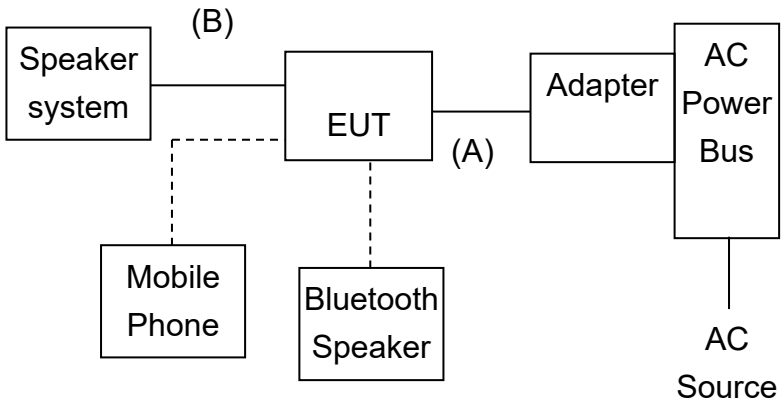
PARAMETER	UNCERTAINTY
Radiated Emission, 9kHz~30MHz Test Site : CB1166	±2.7dB
Radiated Emission, 30 MHz ~1GHz Test Site : CB1166	±3.76dB
Radiated Emission, 1GHz ~18GHz Test Site : CB1166	±4.43dB
Radiated Emission, 18GH~26.5GHz Test Site : CB1166	±4.79dB
Radiated Emission, 26.5GH~40GHz Test Site : CB1166	±4.72dB
Power Line Conducted Emission, 9kHz~30MHz	±1.83dB
Band Width	0.025%
Peak Output Power MU	±1.9dB
Band Edge MU	±0.264dBuV
Channel Separation MU	±361.69Hz
Duty Cycle MU	±0.2%
Frequency Stability MU	±0.493Hz
Temperature	±0.5
Humidity	±3%

This measurement uncertainty is confidence of approximately 95%, k=2

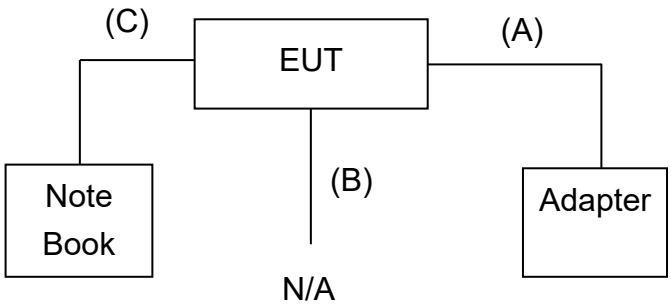
8. SETUP OF EQUIPMENT UNDER TEST

8.1 SETUP CONFIGURATION OF EUT

EMI



RF



8.2 SUPPORT EQUIPMENT

For EMI test

No.	Product	Manufacturer	Model No.	Certify No.	Signal cable
1	Wireless Speaker	PHILIPS	TAS1505	N/A	N/A
2	Speaker System	infotec	SP-102	DOC	N/A
3	Mobile Phone	realme	RMX2020	CCAF204G0210T5	N/A

No.	Signal cable description	
A	DC Power Cable	Unshielded, 1.5m 1 pcs. with 1 core
B	Audio	Shielded, 1.0m 1 pcs.

For RF test

No.	Product	Manufacturer	Model No.	Certify No.	Power cable
1	Note Book	Acer	Z5WEI	N/A	AC power: Unshielded, 1.0m DC power: Unshielded, 1.5m, with 1 core

No.	Signal cable description	
A	Power	Unshielded, 1.5m 1 pcs. with 1 core.
B	Audio	Unshielded, 1.0m 1 pcs.
C	USB	Shielded, 1.2m 1 pcs.

Note:
1) All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2) Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
3) shd. = shielded; unshd. = unshielded

8.3 EUT OPERATING CONDITION

RF Setup

1. Set up all computers like the setup diagram.
2. The “Blue Test 3 V3.3.9.1137” software was used for testing
3.Choose Transport “DEBUG” and Device “USB DBG(106)”

BT1.0、3.0

TX Mode:

PACKET TX
Channel 1~5: 0,39,78
GFSK(DH1):
Packet Type:DH1 > Packet Length 27
Power(0-9) : 6
GFSK(DH3):
Packet Type:DH3 > Packet Length 183
Power(0-9) : 6
GFSK(DH5):
Packet Type:DH5 > Packet Length 339
Power(0-9) : 6
8-DPSK(3DH1):
Packet Type:3DH1 > Packet Length 83
Power(0-9) : 6
8-DPSK(3DH3):
Packet Type:3DH3 > Packet Length 552
Power(0-9) : 6
8-DPSK(3DH5):
Packet Type:3DH5 > Packet Length 1021
Power(0-9) : 6

RX Mode:

PACKET TX

BT4.0、5.0

TX Mode:

BLE TEST TX
Channel : 0,20,39 (0-39)
Length : 37
Bit pattern : Pseudo-rdm 9
PHY : 1M (2M)

RX Mode:

BLE TEST RX
Channel : 0 (0-39)
PHY : 1M (2M)

4. All of the function are under run.
5. Start test.

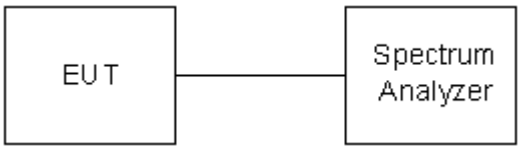
9. APPLICABLE LIMITS AND TEST RESULTS

9.1 6dB BANDWIDTH

LIMIT

§ 15.207(a) (2) For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz

TEST SETUP



TEST PROCEDURE

a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 x RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) 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 6 dB relative to the maximum level measured in the fundamental emission.

TEST RESULTS

No non-compliance noted.

Model Name	CS 529	Test By	Ted Huang
Temp & Humidity	26.2°C, 55%	Test Date	08/17/2022

GFSK(4.0) mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)	Minimum Limit (kHz)	Pass / Fail
Low	2402	719.00	500	PASS
Middle	2442	716.00	500	PASS
High	2480	717.00	500	PASS

NOTE : 1. At finial test to get the worst-case emission at1Mbps long.
2. The cable assembly insertion loss of 11.1dB (including 10 dB pad and 1.1 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.

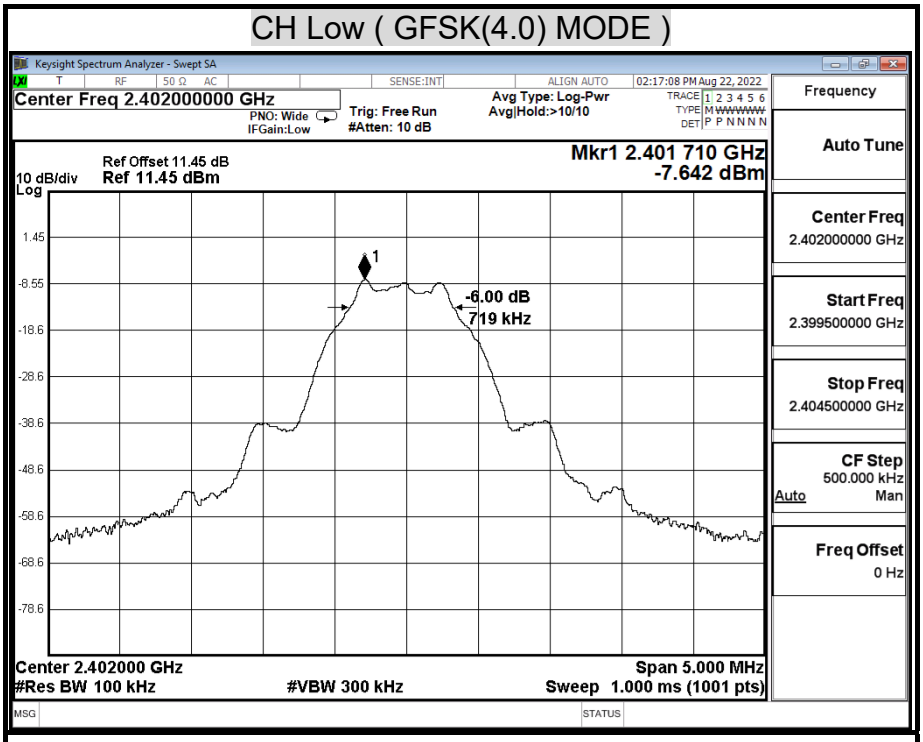
GFSK(5.2) mode

Channel	Channel Frequency (MHz)	6dB Bandwidth (kHz)	Minimum Limit (kHz)	Pass / Fail
Low	2402	1290.00	500	PASS
Middle	2442	1290.00	500	PASS
High	2480	1240.00	500	PASS

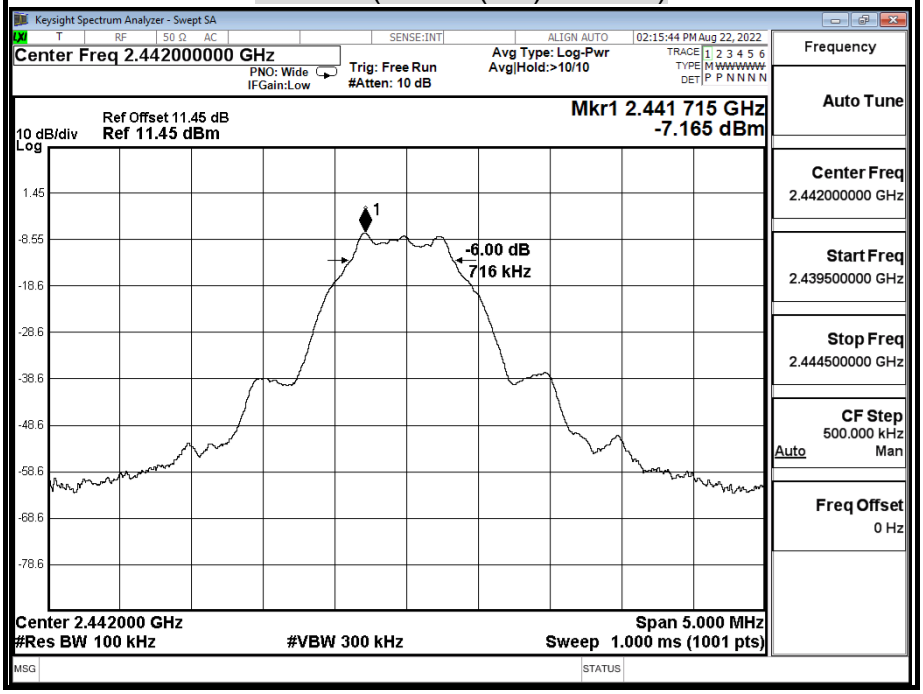
NOTE : 1. At finial test to get the worst-case emission at1Mbps long.
2. The cable assembly insertion loss of 11.1dB (including 10 dB pad and 1.1 dB cable) was entered as an offset in the spectrum analyzer to allow for direct reading of power.

6dB BANDWIDTH (GFSK(4.0) MODE)

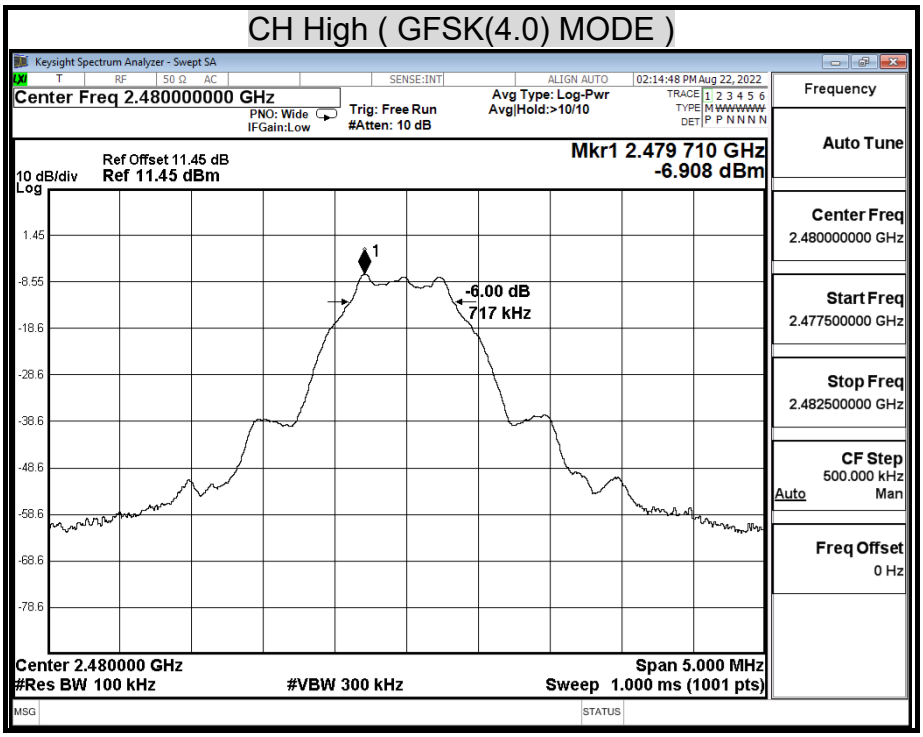
CH Low (GFSK(4.0) MODE)



CH Mid (GFSK(4.0) MODE)

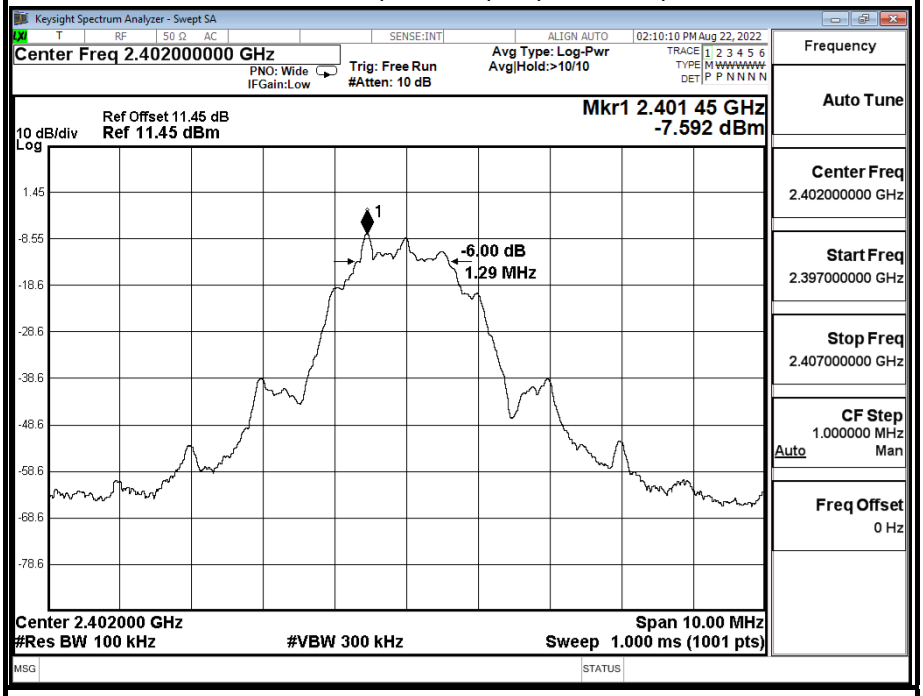


CH High (GFSK(4.0) MODE)

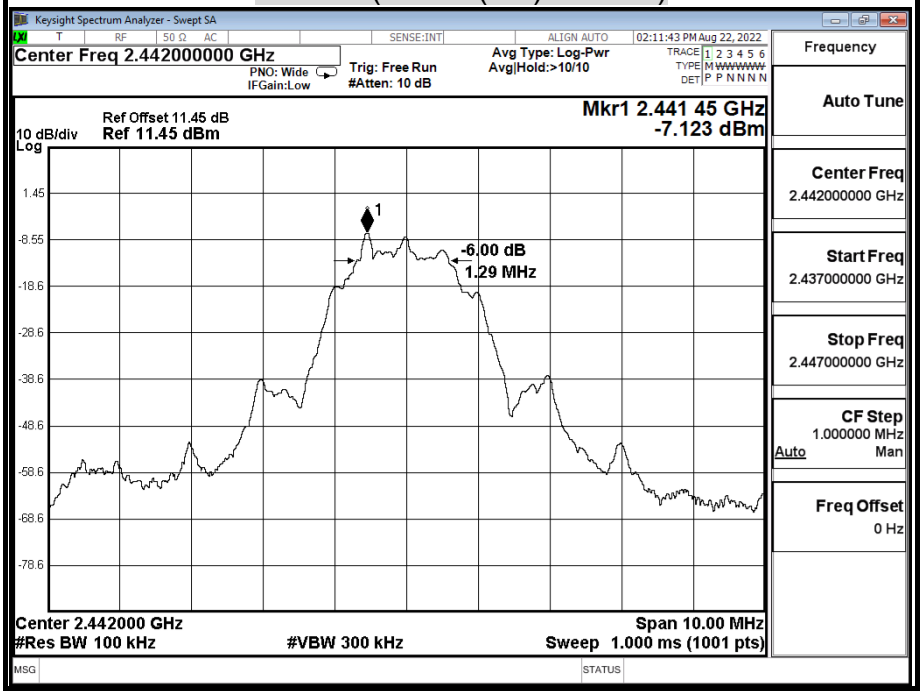


6dB BANDWIDTH (GFSK(5.2) MODE)

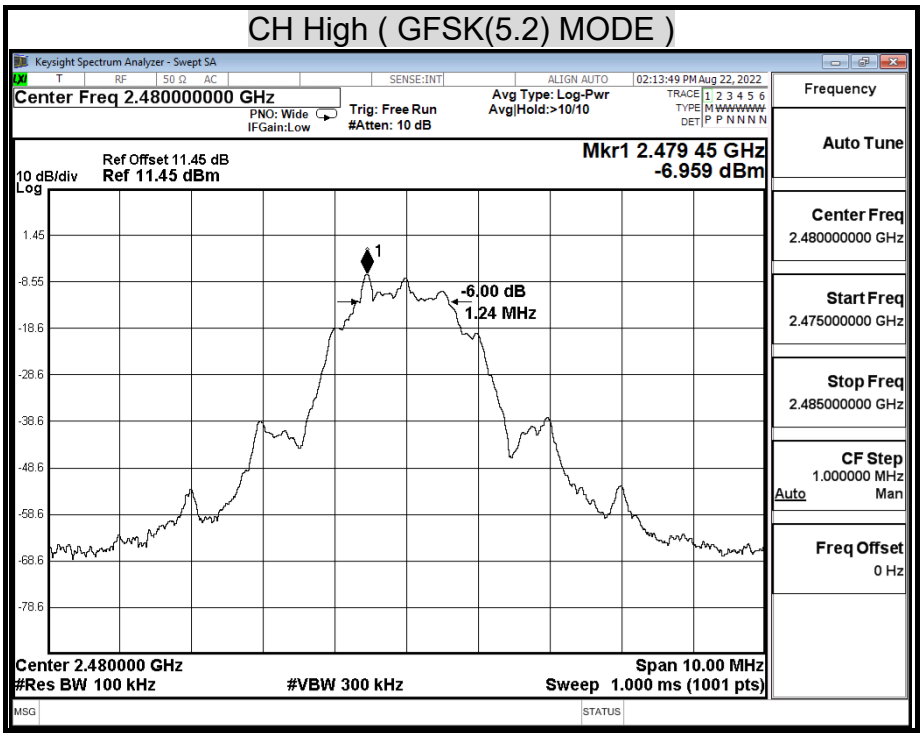
CH Low (GFSK(5.2) MODE)



CH Mid (GFSK(5.2) MODE)



CH High (GFSK(5.2) MODE)



9.2 MAXIMUM PEAK OUTPUT POWER

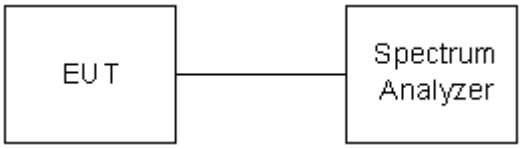
LIMIT

§ 15.247(b) The maximum peak output power of the intentional radiator shall not exceed the following :

§ 15.247(b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands : 1 watt.

§ 15.247(b) (4) Except as shown in paragraphs (c) of this section , if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (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.

TEST SETUP



TEST PROCEDURE

The tests were performed in accordance with KDB 558074 9.1.1

9.2.1 Measurement Procedure PK2:

Peak Power set:
1. Set the RBW = ≥ DTS bandwidth.
2. Set the VBW ≥ [3 × RBW].
3. Set the span ≥ [1.5 × DTS bandwidth].
4. Detector = peak.
5. Sweep time = auto couple.
6.Trace mode = max hold.
7. Allow trace to fully stabilize.
8.Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select the peak detector). If the instrument does not have a band power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the DTS channel bandwidth.

Average Power

Connect the EUT to power meter, set the center frequency of the power meter to the channel center frequency.

Average power set:

1.Measure the duty cycle D of the transmitter output signal
2. Set span to at least 1.5 times the OBW.
3. Set the RBW = ≥ DTS bandwidth
4. Set VBW ≥ [3 × RBW].
5. Number of points in sweep ≥ [2 × span / RBW]. (This gives bin-to-bin spacing ≤ RBW / 2, so that narrowband signals are not lost between frequency bins.)
6.Manually set sweep time ≥ [10 × (number of points in sweep) × (total ON/OFF period of the transmitted signal)].
7. Set detector = RMS (power averaging).
8. Perform a single sweep.
9.Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function with band limits set equal to the OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW.
10. Add [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times.

TEST RESULTS

No non-compliance noted.

Model Name	CS 529	Test By	Ted Huang
Temp & Humidity	26.2°C, 55%	Test Date	08/17/2022

GFSK(4.0) mode

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
Low	2402	-7.97	30.00	PASS
Middle	2442	-7.48	30.00	PASS
High	2480	-6.78	30.00	PASS

NOTE : 1. At finial test to get the worst-case emission at 1Mbps long.
2. The cable assembly insertion loss of 11.45dB (including 10 dB pad and 1.45 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

GFSK(5.2) mode

Channel	Channel Frequency (MHz)	Peak Power (dBm)	Peak Power Limit (dBm)	Pass / Fail
Low	2402	-7.96	30.00	PASS
Middle	2442	-7.50	30.00	PASS
High	2480	-6.77	30.00	PASS

NOTE : 1. At finial test to get the worst-case emission at 2Mbps long.
2. The cable assembly insertion loss of 11.45dB (including 10 dB pad and 1.45 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Average Power Data

Model Name	CS 529	Test By	Ted Huang
Temp & Humidity	26.2°C, 55%	Test Date	08/17/2022

GFSK(4.0) mode

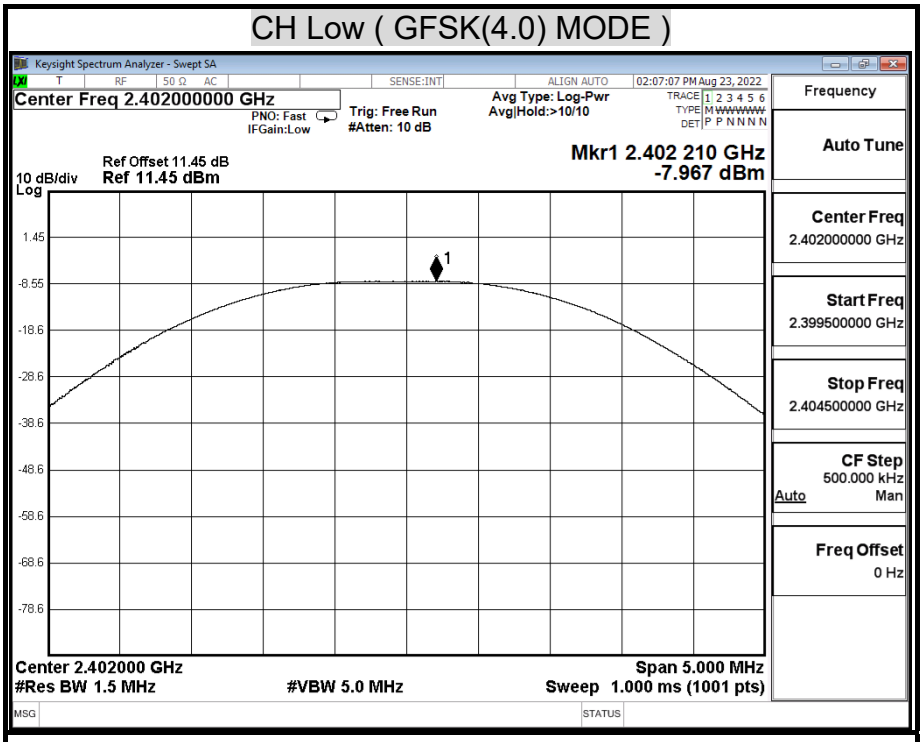
Channel	Channel Frequency (MHz)	Measure Power (dBm)	10 log (1 / D)	Average Power (dBm)
Low	2402	-10.47	1.938	-8.53
Middle	2442	-9.84	1.938	-7.90
High	2480	-9.32	1.938	-7.38

GFSK(5.2) mode

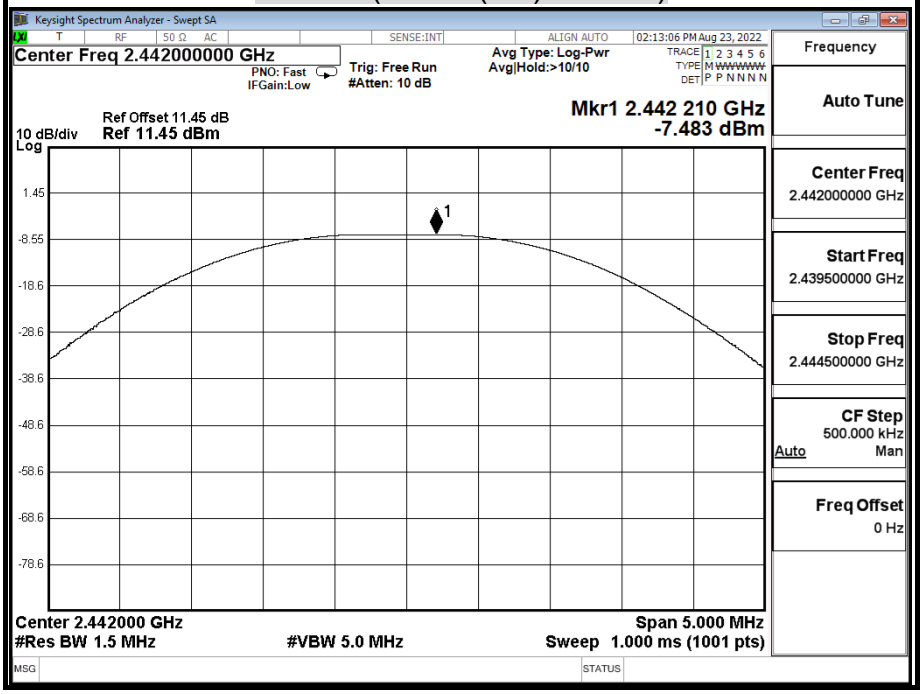
Channel	Channel Frequency (MHz)	Measure Power (dBm)	10 log (1 / D)	Average Power (dBm)
Low	2402	-13.36	4.737	-8.62
Middle	2442	-12.75	4.737	-8.01
High	2480	-12.24	4.737	-7.50

MAXIMUM PEAK OUTPUT POWER (GFSK(4.0) MODE)

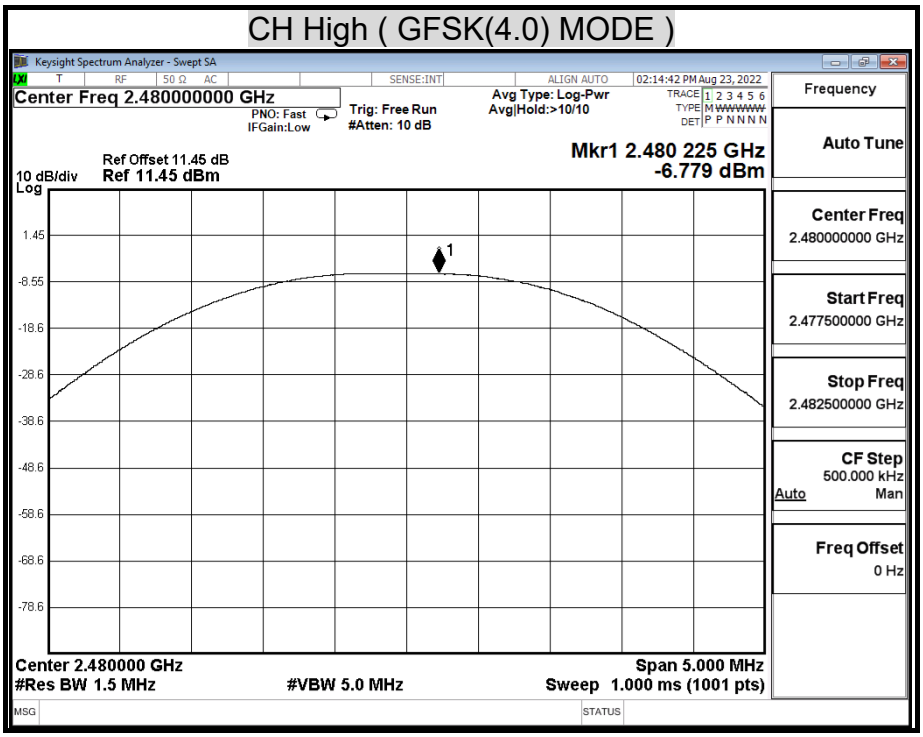
CH Low (GFSK(4.0) MODE)



CH Mid (GFSK(4.0) MODE)

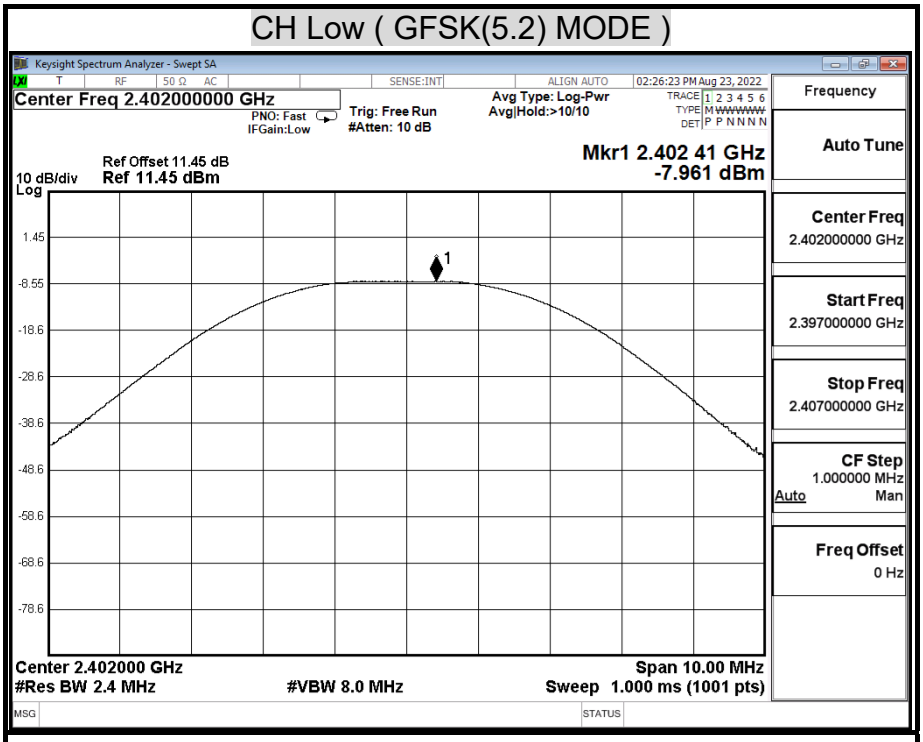


CH High (GFSK(4.0) MODE)

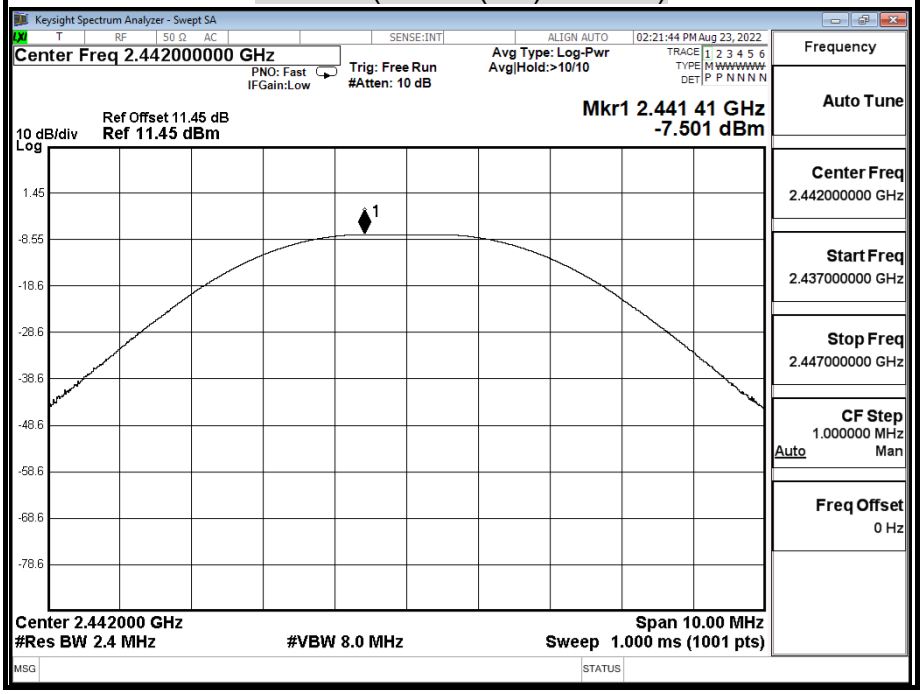


MAXIMUM PEAK OUTPUT POWER (GFSK(5.2) MODE)

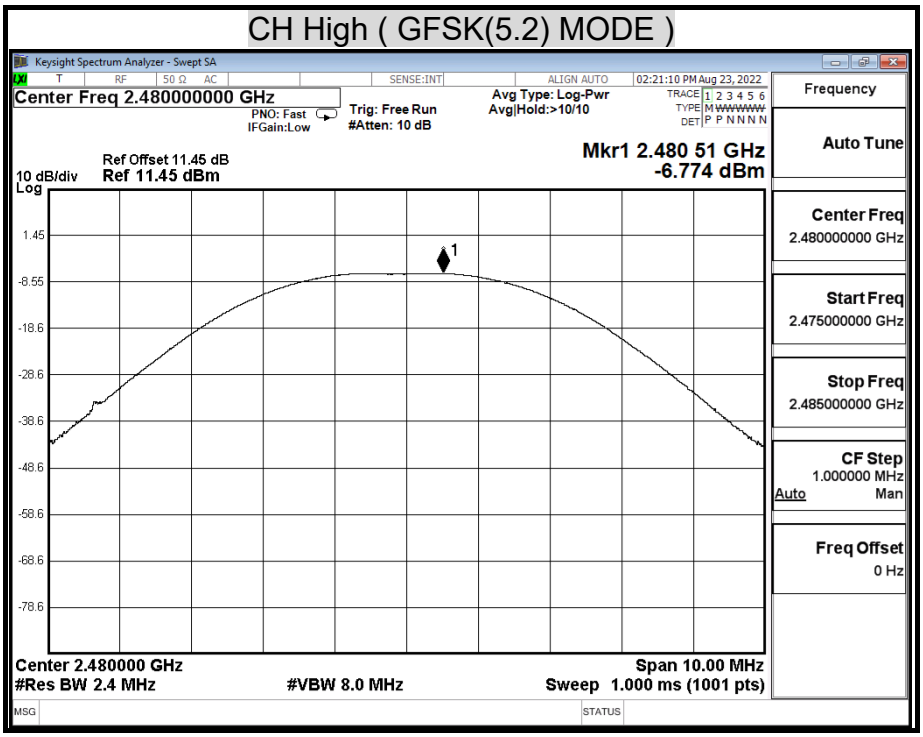
CH Low (GFSK(5.2) MODE)



CH Mid (GFSK(5.2) MODE)

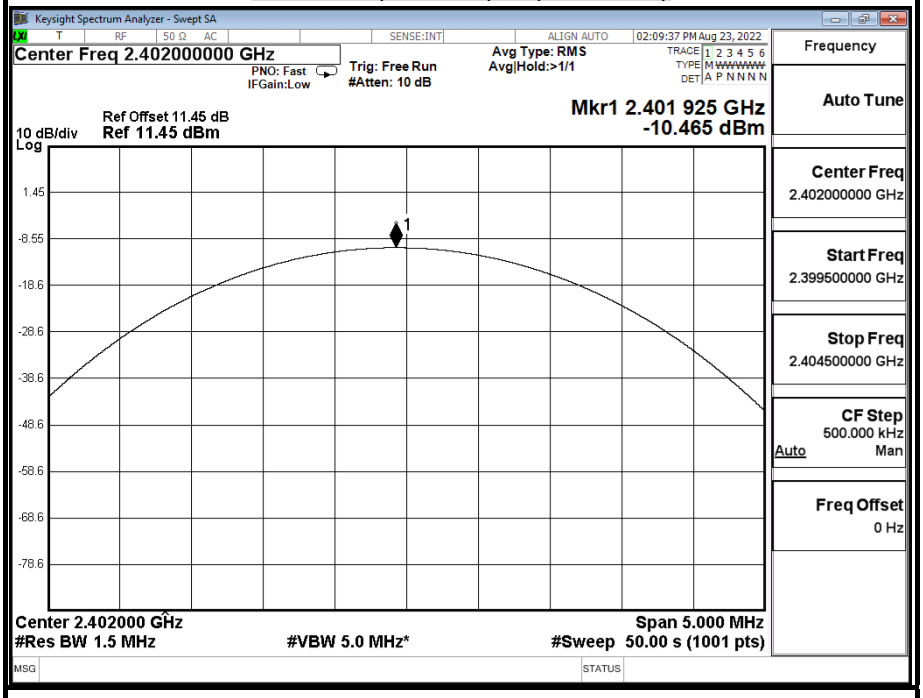


CH High (GFSK(5.2) MODE)

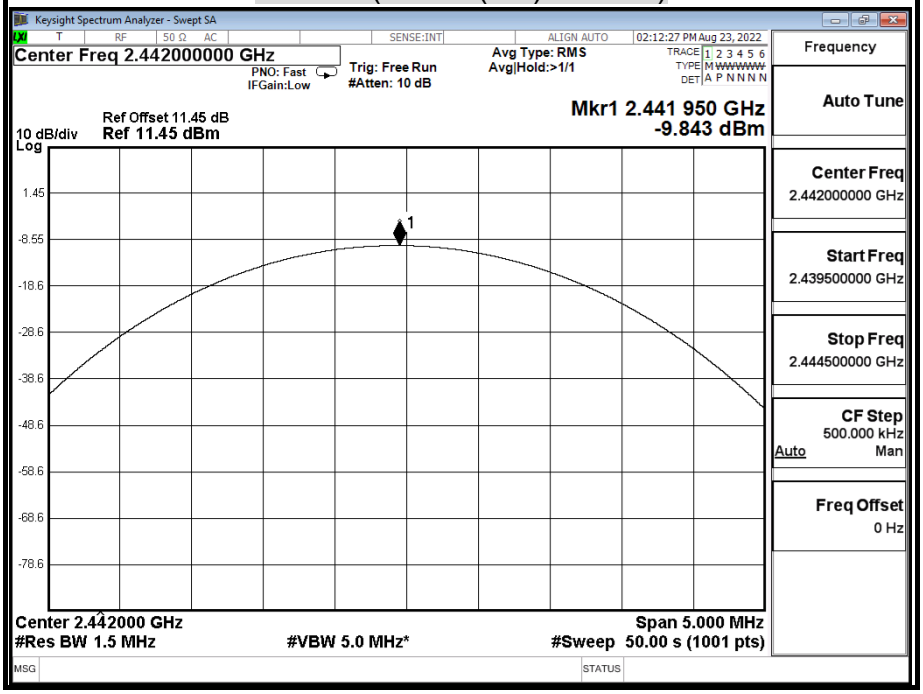


MAXIMUM Average OUTPUT POWER (GFSK(4.0) MODE)

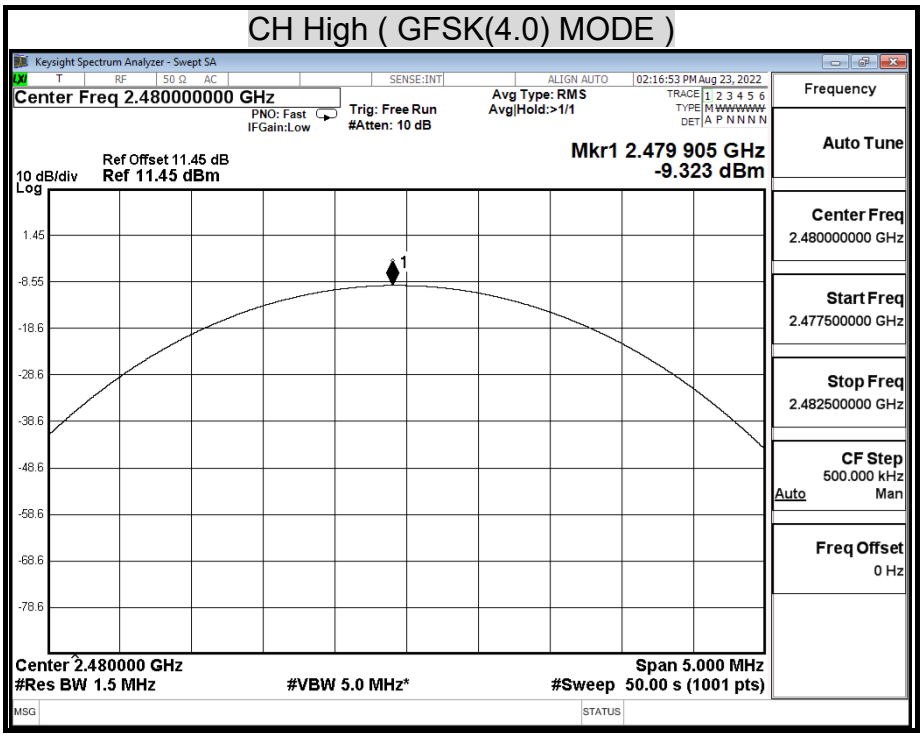
CH Low (GFSK(4.0) MODE)



CH Mid (GFSK(4.0) MODE)

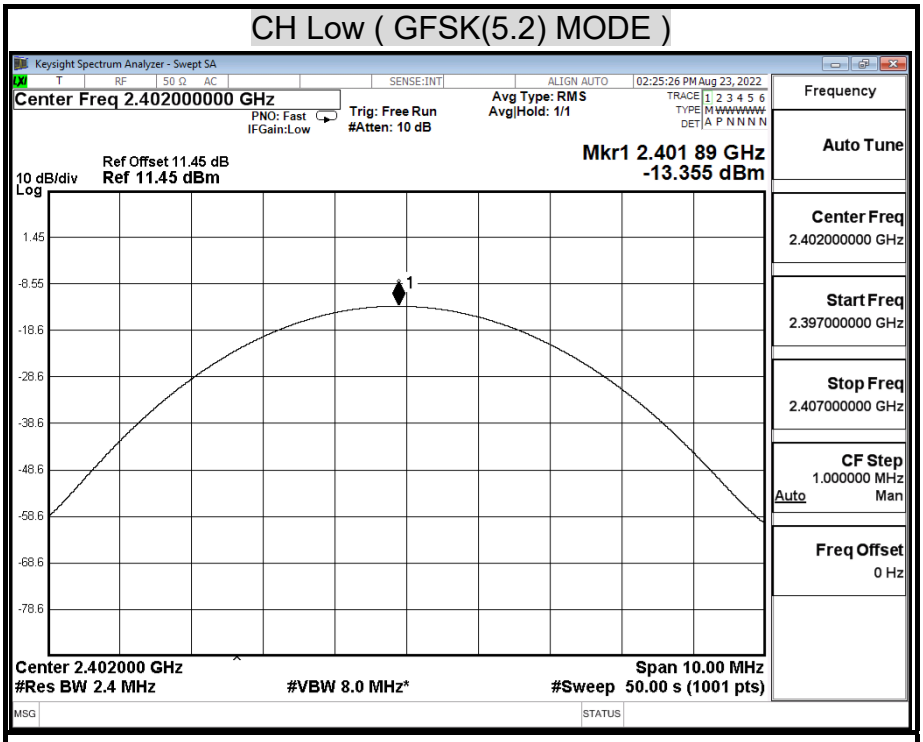


CH High (GFSK(4.0) MODE)

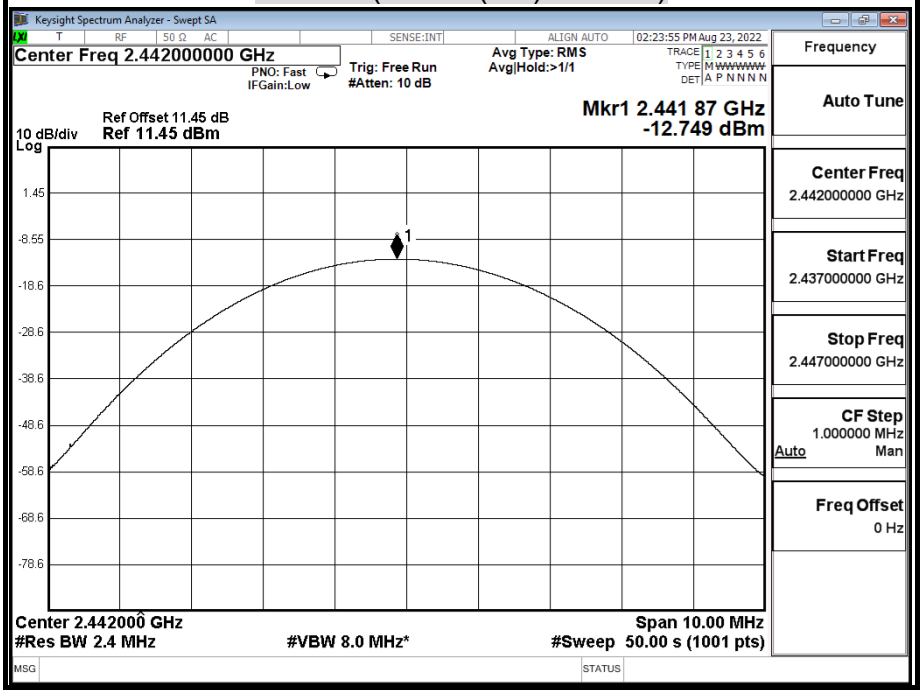


MAXIMUM Average OUTPUT POWER (GFSK(5.2) MODE)

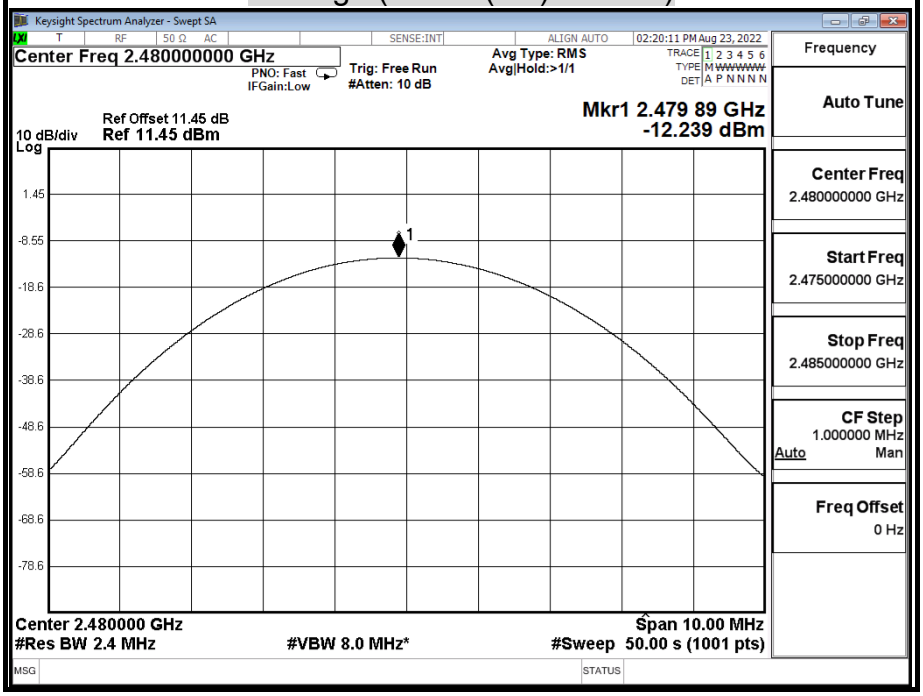
CH Low (GFSK(5.2) MODE)



CH Mid (GFSK(5.2) MODE)



CH High (GFSK(5.2) MODE)

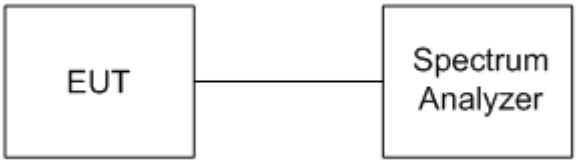


9.3 DUTY CYCLE

LIMIT

Nil (No dedicated limit specified in the Rules)

TEST SETUP



TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value. Set VBW ≥ RBW. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if T ≤ 16.7 microseconds.)

TEST RESULTS

No non-compliance noted.

Model Name	CS 529	Test By	Ted Huang
Temp & Humidity	26.2°C, 55%	Test Date	08/17/2022

GFSK(4.0) Mode

	us	Times	Ton	Total Ton time(ms)
Ton1	400.000	1	400	
Ton2		0	0	
Ton3			0	0.4
Tp				0.625

Ton	0.4
Tp(Ton+Toff)	0.625
Duty Cycle	0.64
Duty Factor	1.938

GFSK(5.2) Mode

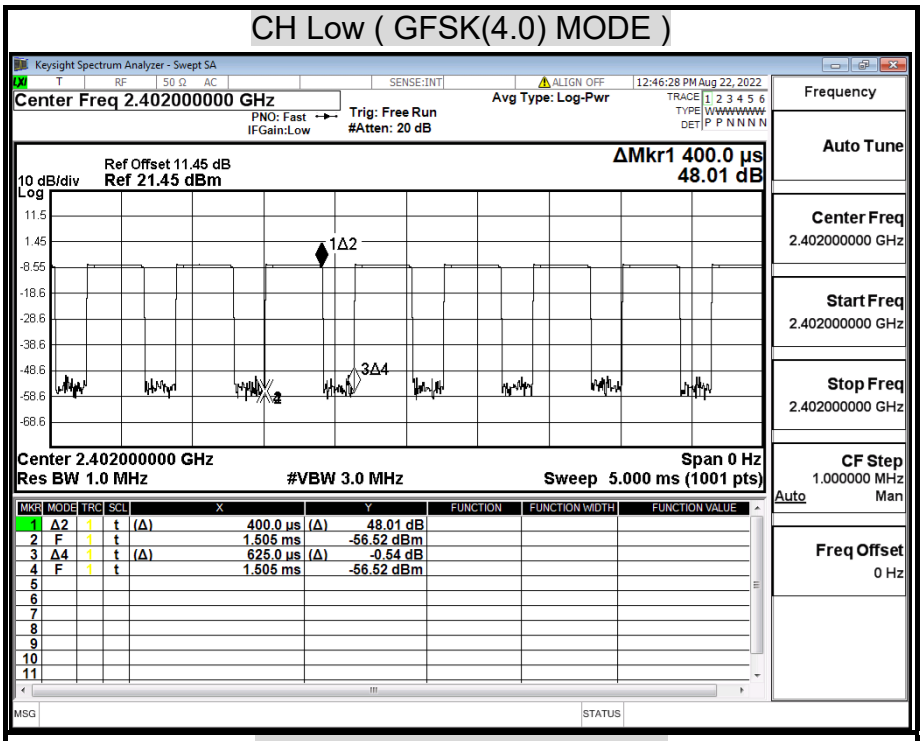
	us	Times	Ton	Total Ton time(ms)
Ton1	210.000	1	210	
Ton2		0	0	
Ton3			0	0.21
Tp				0.625

Ton	0.21
Tp(Ton+Toff)	0.625
Duty Cycle	0.336
Duty Factor	4.737

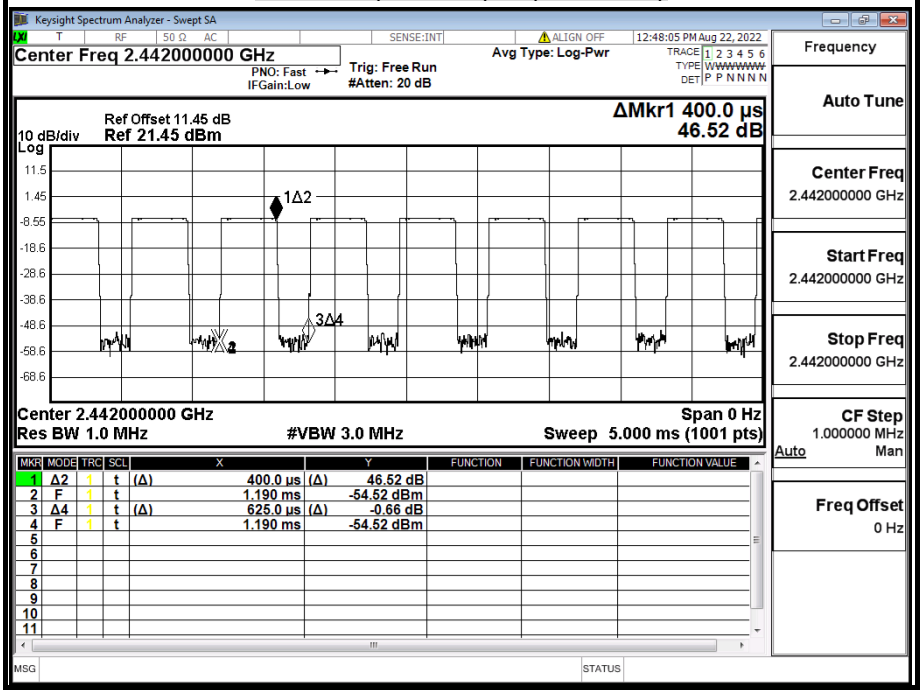
TEST PLOT

Duty Cycle

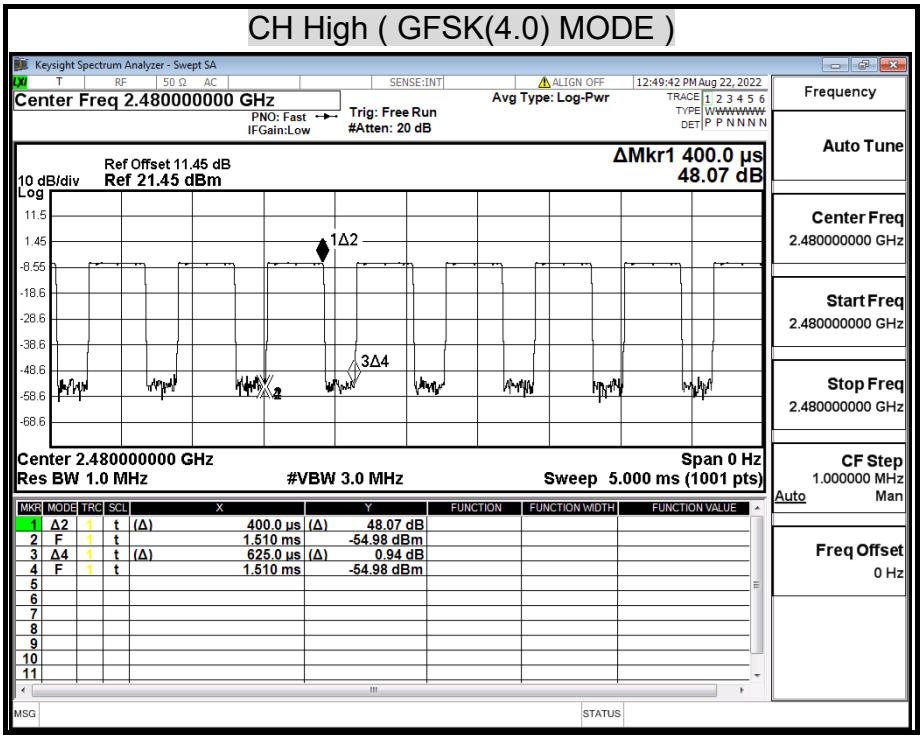
CH Low (GFSK(4.0) MODE)



CH Mid (GFSK(4.0) MODE)

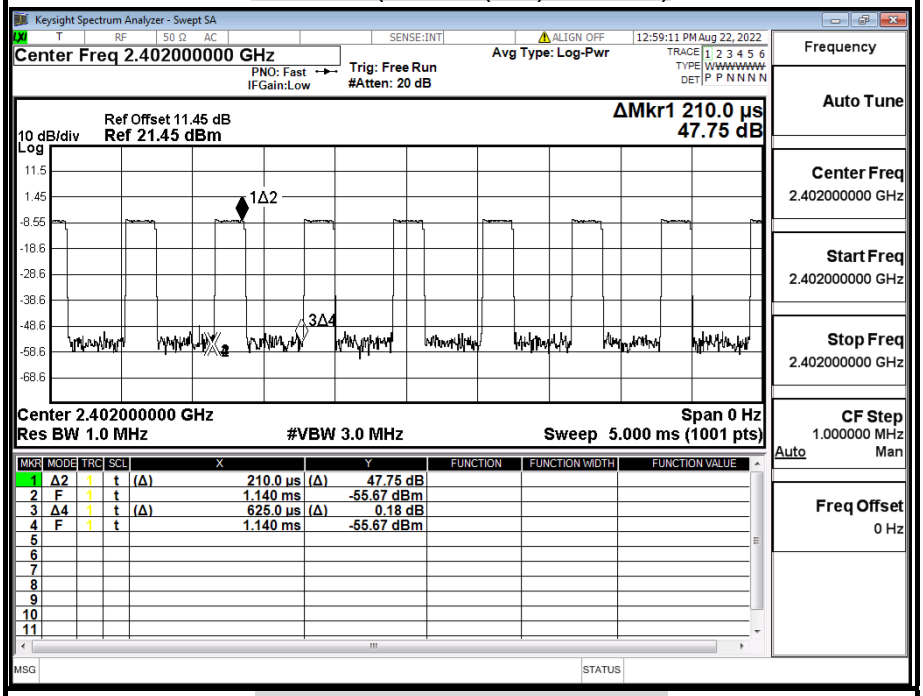


CH High (GFSK(4.0) MODE)

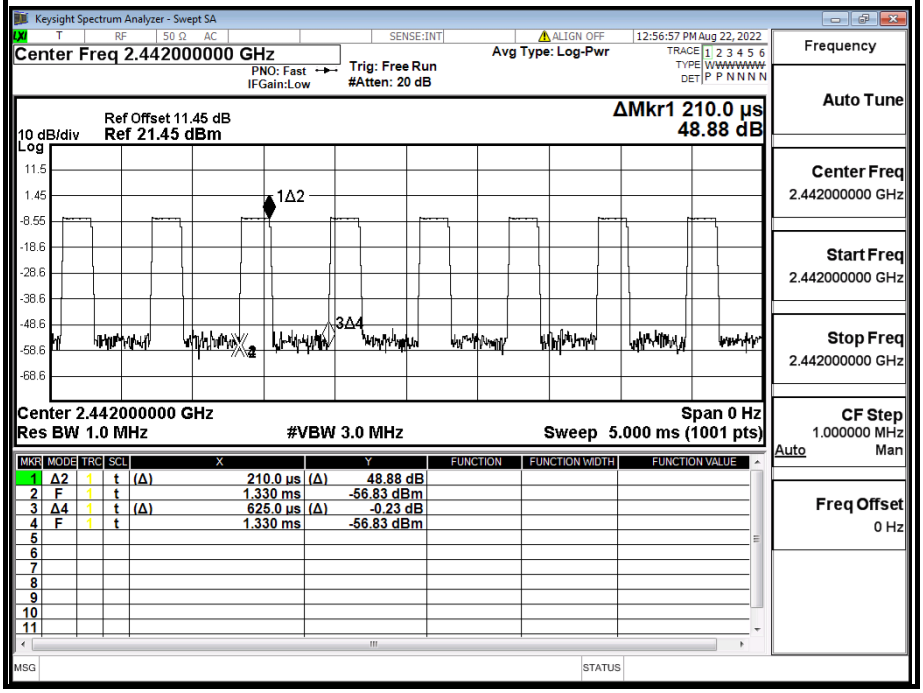


Duty Cycle

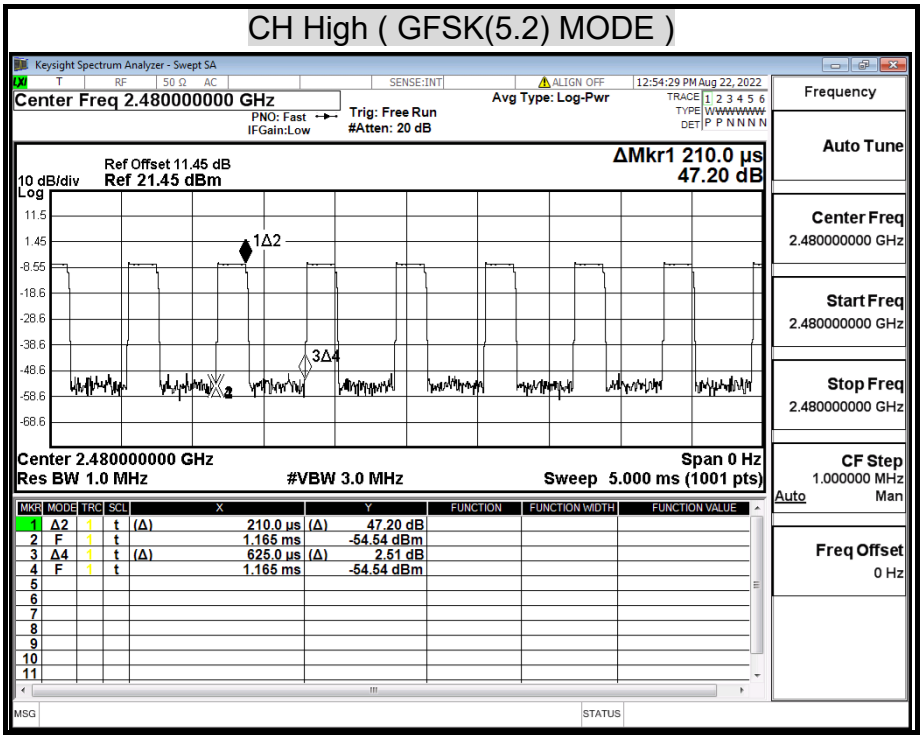
CH Low (GFSK(5.2) MODE)



CH Mid (GFSK(5.2) MODE)



CH High (GFSK(5.2) MODE)

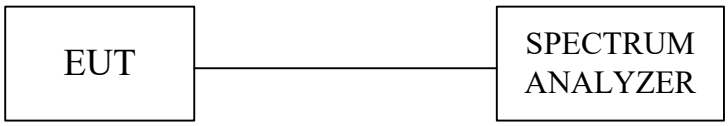


9.4 POWER SPECTRAL DENSITY

LIMIT

§ 15.247(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST SETUP



TEST PROCEDURE

The tests were performed in accordance with 558074 D01 15.247 Meas Guidance v05

10.2 Method PKPSD (peak PSD):

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
4. Set the VBW ≥ 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

TEST RESULTS

No non-compliance noted.

Model Name	CS 529	Test By	Ted Huang
Temp & Humidity	26.2°C, 55%	Test Date	08/17/2022

GFSK(4.0) mode

Channel	Frequency (MHz)	PPSD/3kHz (dBm)	Limit (dBm)	Margin (dB)	Result
Low	2402	-23.68	8.00	-31.68	PASS
Middle	2442	-22.95	8.00	-30.95	PASS
High	2480	-22.44	8.00	-30.44	PASS

NOTE : 1. At finial test to get the worst-case emission at 1Mbps long.
2. The cable assembly insertion loss of 11.45dB (including 10 dB pad and 1.45 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

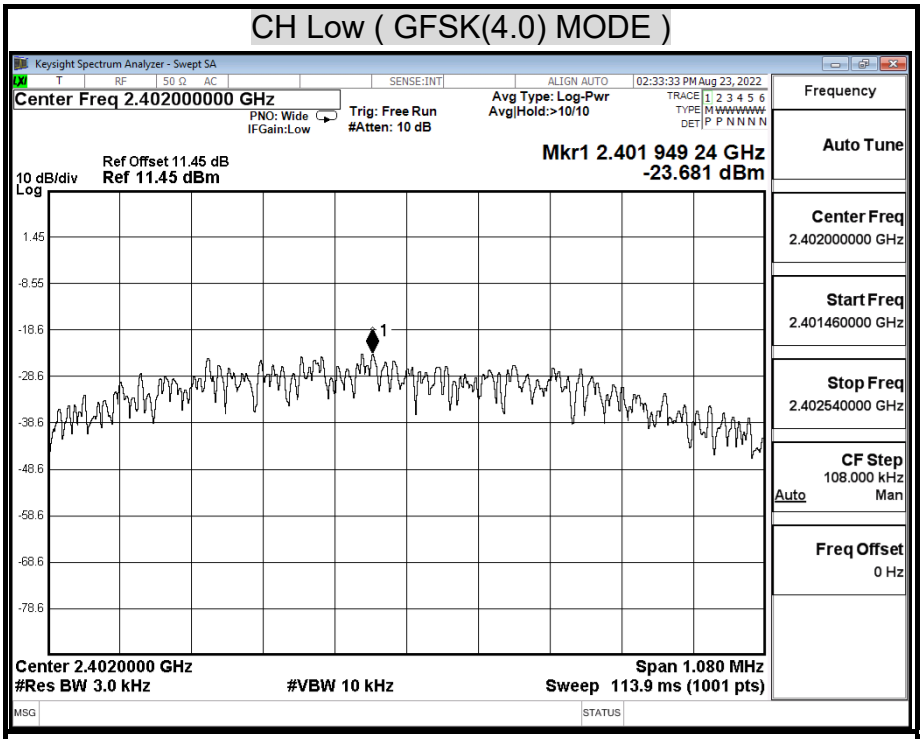
GFSK(5.2) mode

Channel	Frequency (MHz)	PPSD/3kHz (dBm)	Limit (dBm)	Margin (dB)	Result
Low	2402	-27.30	8.00	-35.30	PASS
Middle	2442	-26.55	8.00	-34.55	PASS
High	2480	-26.10	8.00	-34.10	PASS

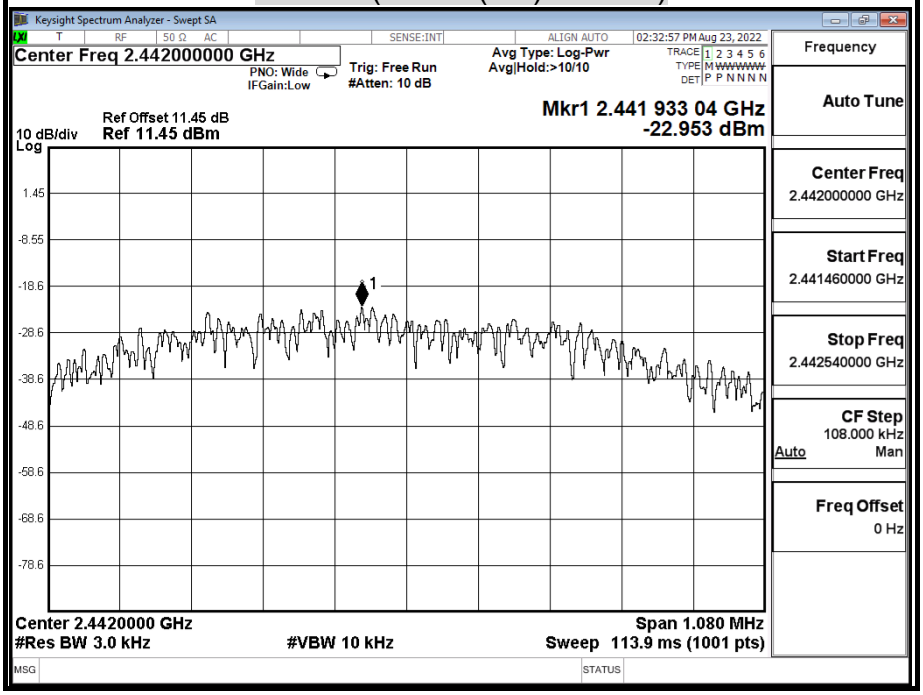
NOTE : 1. At finial test to get the worst-case emission at 2Mbps long.
2. The cable assembly insertion loss of 11.45dB (including 10 dB pad and 1.45 dB cable) was Entered as an offset in the spectrum analyzer to allow for direct reading of power.

POWER SPECTRAL DENSITY (GFSK(4.0) MODE)

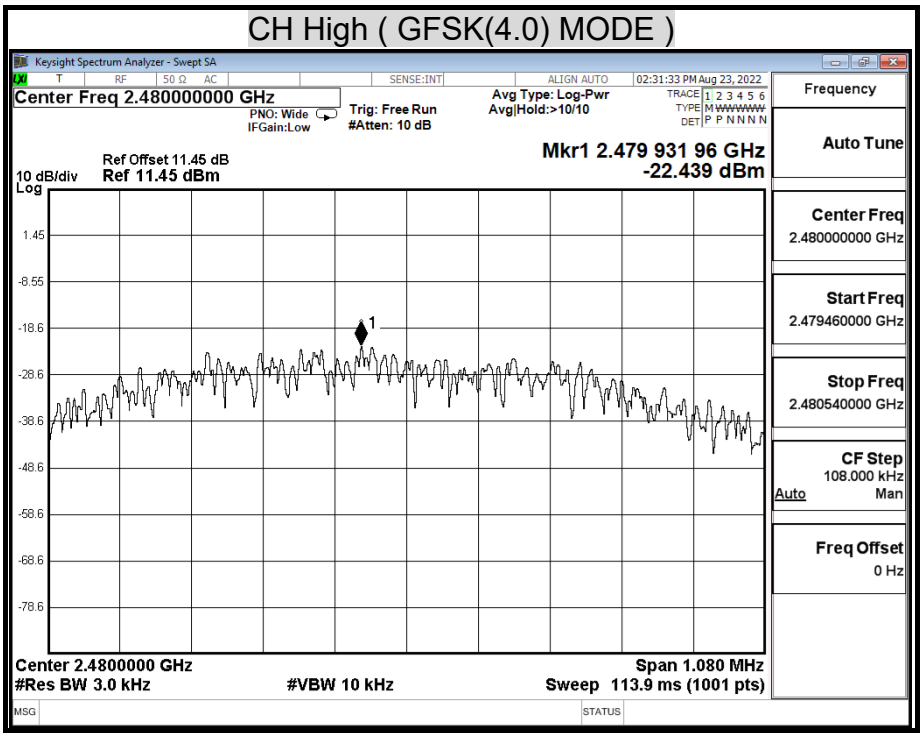
CH Low (GFSK(4.0) MODE)



CH Mid (GFSK(4.0) MODE)

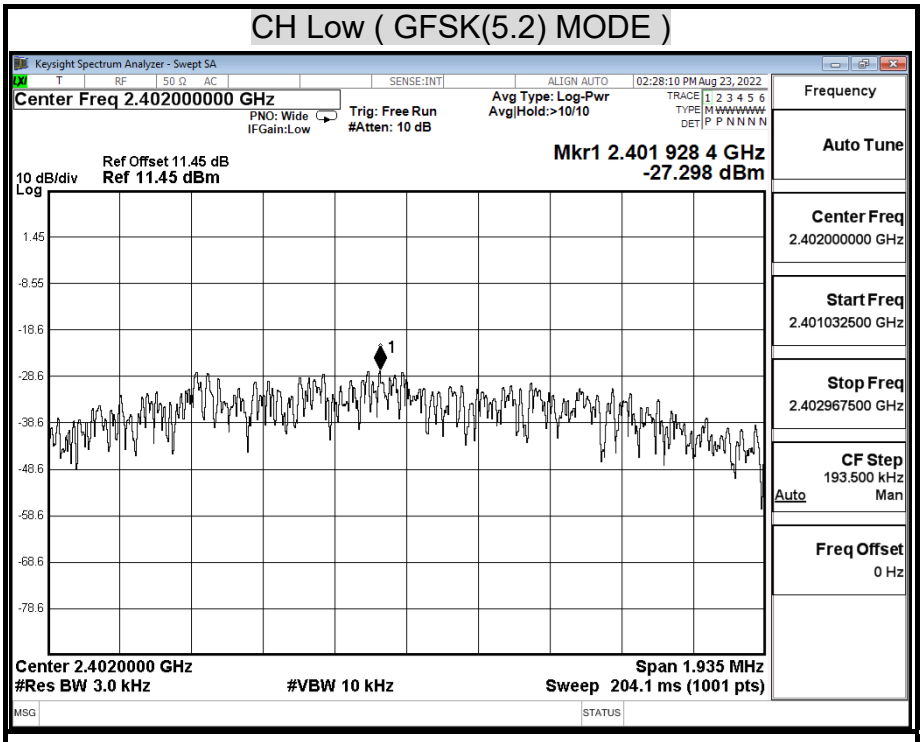


CH High (GFSK(4.0) MODE)

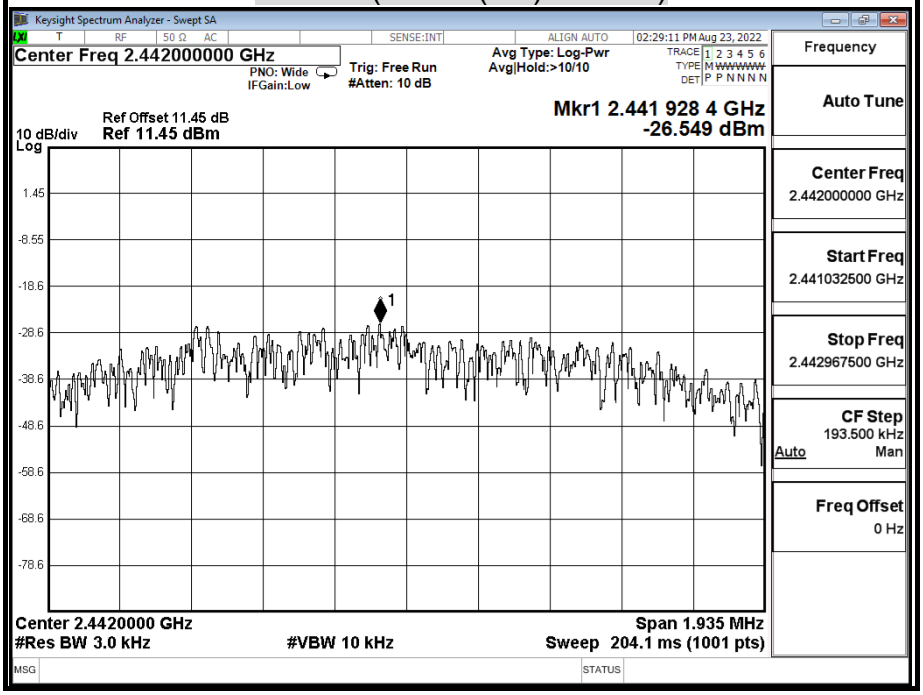


POWER SPECTRAL DENSITY (GFSK(5.2) MODE)

CH Low (GFSK(5.2) MODE)



CH Mid (GFSK(5.2) MODE)



CH High (GFSK(5.2) MODE)