CMA Testing and Certification Laboratories
廠商會檢定中心

TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Application No. : LW005674(0)

Applicant : Kondor Limited
Radar Way
Christchurch Business Park
Christchurch, BH23, 4FL
United Kingdom

Sample Description :

Sample Description	Model No.
DIGGIT Bluetooth outdoor portable speaker with removable stake IP55 Splashproof	Diggit

Date Received : Feburary 27, 2018

Test Period : March 8, 2018 – March 27, 2018

Test Requested : FCC Certification for FCC Part 15, subpart C
ISED Certification for License-exempt Device

Test Method : 47 CFR Part 15 (10-1-17 Edition),
ANSI C63.10 – 2013,
ANSI C63.4 – 2014
RSS-247 Issue 2,
RSS-Gen Issue 4,

Test Engineer : Mr. Leung Shu Kan, Ken

Conclusion : The submitted sample was found to comply with technical requirement of FCC Part 15 Subpart C, section 15.247, and ISED Canada Radio Standards Specfication RSS-247 Issue 2.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____ Page 1 of 70
Mr. WONG Lap-pong, Andrew
Manager
Electrical Division

FCC ID: 2ADFF-KSREUN
IC: 23562-KSREUN

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1 Product Information

1.1 General Information

Product Descriptin:	Model:
DIGGIT Bluetooth outdoor portable speaker with removable stake IP55 Splashproof	Diggit

Primary function	:	Receive the audio signal from player by blutooth communication
Power supply	:	DC 3.7V (Li-ion rechargeable), DC 5.0V (Charging port)
RF related function	:	Bluetooth communication for audio communication
Electric Accessories sold with	:	NIL
Interconnection cable associated sold with	:	NIL
Operating condition	:	Not specified
Model difference	:	Not applicable

1.2 Technical Information

Operating Frequency	:	2402 – 2480MHz
Digital Modulation	:	FHSS
Modulation	:	GFSK, π/4QDPSK, 8DPSK
Number of Channel	:	79
Channel Bandwidth	:	1MHz
Occupied Bandwidth	:	1.20MHz
Signal Type	:	Data
Number of Antenna	:	One
Antenna Type	:	PCB Type Antenna
Antenna Gain	:	2.4dBi (Two -0.6dBi antenna)
Rated Input Voltage	:	DC 3.7V (Li-ion rechargeable), DC 5.0V (Charging port)
RF Technology Used	:	Bluetooth 4.2+EDR (non BLE)
Simplex or Duplex	:	Half-duplex
Adaptivity	:	FHSS adaptivity

1.3 Associated Electric Accessories Informatin

NIL

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1.4 Associated Cables

NIL

2.0 Equipment Units Tested (EUT)

Product Description	:	DIGGIT Bluetooth outdoor portable speaker with removable stake IP55 Splashproof
Model	:	Diggit
Serial No.	:	Not specified
Sample Type	:	Production Sample and engineering sample
Sample No.	:	RW030396-002-1(T) and RW030396-003-2(T)
Rationale of selection	:	Only one model number

3.0 Location of Test Facility

CMA Industrial Development Foundation Ltd.
Room 1302, Yan Hing Centre,
9-13 Wong Chuk Yeung,
Fo Tan, Shatin,
New Territories
Hong Kong.

FCC Accredited Lab (Designation Number: HK0004)
ISED Wireless Test Site (ISED Assigned Code: 4093A)

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4.0 List of test equipment, supporting equipment and cables

4.1 Test equipment

Equipment	Manufacturer	Model No.	Serial No.	Calibration Due Date	Calibration Period
EMI Test Receiver	Rohde & Schwarz	ESCS30	100001	01 Feb 2019	1Year
EMI Test Receiver	Rohde & Schwarz	ESCI	100152	07 Dec 2018	1Year
Spectrum Analyzer	R&S	FSV40	100964	08 Feb 2019	1Year
Spectrum Analyzer	Rohde & Schwarz	FSP30	100628	28 Mar 2018	1Year
Broadband Antenna	Schaffner	CBL6112B	2692	29 Mar 2018	2Years
Loop Antenna	EMCO	6502	00056620	25 Jan 2020	2Years
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-531	21 Dec 2018	2Years
Broadband Pre-Amplifier	Schwarzbeck	BBV 9718	9718-119	21 Dec 2018	2Years
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170442	02 Aug 2018	2Years
Broadband Pre-Amplifier	Schwarzbeck	BBV 9719	9719-010	02 Aug 2018	2Years
Coaxial Cable	Schaffner	RG 213/U	N/A	18 May 2018	1Year
Coaxial Cable	Suhner	RG 214/U	N/A	18 May 2018	1Year
Coaxial Cable	Suhner	Sucoflex_104	N/A	21 Dec 2018	1Year
LISN	Rohde & Schwarz	ENV216	101323	16 Jan 2019	1Year
Coaxial Cable	Tyco Electronics	RG 58C/U	N/A	24 Oct 2018	1Year
Rohde & Schwarz TS8997 Testing System					
Spectrum Analyzer	Rohde & Schwarz	FSV 40	101190	09 Aug 2018	1Year
Vector Generator	Rohde & Schwarz	SMBV100A	262024	09 Aug 2018	1Year
Generator	Rohde & Schwarz	SMB100A	103230	09 Aug 2018	1Year
OSP	Rohde & Schwarz	OSP	OSP120 V02	09 Aug 2018	1Year

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4.2 Supporting equipment

Equipment Name	Manufacturer	Model	Serial	Provided by
Test control board*	Factory	FT232	Not labelled	Applicant

Remark: *only used for configure engineering mode

4.3 Cables

Cable Type	Length	Shielding	Ferrite used	Provided by
USB Cable*	1m	Not shielded	No	CMA

Remark: *only used for configure engineering mode

4.4 Software

Software Name	Version	Function	Provided by
Actions Bluetooth FCC Tools*	V1.02	Configure Engineering mode	Client

Remark: *only used for configure engineering mode

5.0 Measurement Uncertainty

The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.

Radiated emissions

Frequency	Uncertainty (U_{lab})
30MHz ~ 200MHz (Horizontal)	4.59dB
30MHz ~ 200MHz (Vertical)	4.49dB
200MHz ~1000MHz (Horizontal)	4.94dB
200MHz ~1000MHz (Vertical)	4.97dB
1GHz ~6GHz	4.52dB
6GHz ~18GHz	4.58dB

Line-conducted emissions

Frequency	Uncertainty (U_{lab})
150kHz~30MHz	2.80dB

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6.0 Measurement

6.1 General Test condition

Temperature	:	21ºC
Test Voltage	:	AC 120V, 60Hz
Humidity	:	60%
Atmosphere Pressure	:	102.1kPa

6.2 Number of hopping frequency

6.2.1 Measurement

Requirement	:	FCC Part 15 § 15.247(a)(1)(iii) and RSS-247 §5.1(d)
Measuring procedure	:	ANSI C63.10:2013, clause 7.8.3
Span	:	83.5MHz
RBW	:	300kHz
VBW	:	300kHz
Frequency range	:	2.4000 – 2.4835GHz
Modulation tested	:	GFSK
Packet Type tested	:	DH5
Additional measuring procedure	:	Nil

6.2.2 Final Result

No. of hopping channels measured	Limit	Result	Worst case mode
79	≥ 15	PASS	GFSK and DH5

Remark: Detail test result and equipment setting refer to appendix A, A3

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6.3 Band-edge measurement

6.3.1 Measurement

Requirement	:	FCC Part 15 §15.247(d) and RSS-247 §5.5
Measuring procedure	:	ANSI C63.10:2013, section 7.8.6 and 6.10
Hopping mode	:	Enabled and Disable
RBW	:	100kHz
VBW	:	300kHz
Frequency range	:	2310 – 2483.5MHz and 2400 – 2500MHz
Modulation tested	:	GFSK, π/4QDPSK, 8DPSK
Packet Type tested	:	DH5
Channel tested for non-hopping mode	:	2402MHz for lowed band edge and 2480MHz for higher band edge
Additional measuring procedure	:	For lower band edge (2400MHz)

1. Using the “Measurement 1” setting shown below the scan plot within the frequency span from 2400 – 2483.5MHz to measure the maximum peak value of fundamental
2. Using the “Measurement 2” setting shown below the scan plot within the freqeunc y span from 2310 – 2400MHz to measure the bandedge reading
3. Compare that reading in procedure with the limit which equal to the measured maximum peak in procedure 1minus 20dB

For Upper bandedge (2483.5MHz)

1. Using the “Measurement 1” setting shown below the scan plot within the frequency span from 2400 – 2483.5MHz to measure the maximum peak value of fundamental
2. Using the “Measurement 2” setting shown below the scan plot within the freqeunc y span from 2483.5 – 2500MHz to measure the bandedge reading
3. Compare that reading in procedure with the limit which equal to the measured maximum peak in procedure 1minus 20dB

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6.3.2 Final Result

Bandedge frequency for lower bandedge (Worst Case)	Worst case (dBc)[2]	Detector	Limit[1] (dBc)	Result	Worst case
2375.938368MHz	51.6	Peak	≥20.0	PASS	GFSK and DH5
Bandedge frequency for higher bandedge (Worst Case)	Worst case in (dBc)[2]	Detector	Limit[1]	Result	Worst case
2499.725831MHz	53.5	Peak	≥20.0	PASS	GFSK and DH5

Remark: 1) The limit is based on the transmitter demonstrated compliance with peak conducted power limit on section 6.4.2 of this report.
2) The Worst case dBc is the peak values measured in procedure 1 minus the worst case bandedge emission
3) Detail test result and equipment setting refer to appendix A, A4-7, A18-19, A28-29

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6.4 Carrier Frequency Separation

6.4.1 Measurement

Requirement	:	FCC Part 15 §15.247(a) and RSS-247 §5.1(b)
Measuring procedure	:	ANSI C63.10:2013, section 7.8.2
Hopping mode	:	Enabled
RBW	:	300kHz
VBW	:	300kHz
Frequency range	:	2440 – 2443MHz[1]
Modulation tested	:	GFSK[2]
Packet Type tested	:	DH5
Additional measuring procedure	:	Nil
Remark	:	1) Since the measured value is more than 1.5 times of limit, only middle channel is measured. 2) Since the modulation and packet type does not affect the channel separation, GFSK and DH5 are selected as represented modulation and data type

6.4.2 Final Result

Carrier Frequency Separation	Limit[1]	Result	Worst case mode
1.000000MHz	≥0.822554MHz	PASS	GFSK and DH5

Remark: 1) Limit is 2/3 of the 20dB bandwidth in section 6.7 and conducted peak power is less than 0.125W in section 6.6 of this report.
2) Detail test result and equipment setting refer to appendix A, A8-10

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6.5 Time of occupancy (dwell time)

6.5.1 Measurement

Requirement	:	FCC Part 15 §15.247(a) and RSS-247 §5.1(a)
Measuring procedure	:	ANSI C63.10:2013, section 7.8.4
Hopping mode	:	Disable
RBW	:	500kHz
VBW	:	1MHz
Modulation tested	:	GFSK[1]
Packet Type tested	:	DH1, DH3, DH5
Channel tested for non-hopping mode	:	2441MHz
Additional measuring procedure	:	1) Setup engineering sample to channel 2441MHz and DH1 packet size to perform the measurement according to ANSI C63.10, section 7.8.4 2) Find the worst case packet size 3) Repeat procedure1 with the worst case packet size for channel 2402MHz and 2480MHz
Remark	:	1) Since the modulation does not affect the dwell time, GFSK is selected as represented modulation.

6.5.2 Final Result

Dwell time (worst case)	Limit	Result	Worst case mode
310.410ms	≤400ms	PASS	GFSK and DH5

Remark: 1) Detail test result and equipment setting refer to appendix A, A11-13

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6.6 Output Power

6.6.1 Measurement

Requirement	:	FCC Part 15 §15.247(b) (1) and RSS-247 §5.4
Measuring procedure	:	ANSI C63.10:2013, section 7.8.5
Hopping mode	:	Disable
Modulation tested	:	GFSK, π/4QPSK, 8DPSK
Packet Type tested	:	DH5[1]
Channel tested for non-hopping mode	:	2402MHz, 2441MHz, 2480MHz
Additional measuring procedure	:	Nil
Remark	:	1) Since the packet size does not affect the output power, DH5 is selected as represented packet size.

6.6.2 Final Result

(a) Maximum peak conducted outputpwer

Maximum peak conducted output power	Limit(s)[1]	Result	Modulation
-3.3dBm	≤21.0dBm	PASS	GFSK
-3.3dBm	≤21.0dBm	PASS	π/4QPSK
-3.3dBm	≤21.0dBm	PASS	8DPSK

Remark: 1) 0.125W (21.0dBm) limit is used for 2/3 20dB bandwidth requirement for channel separation.
2) Detail test result and equipment setting refer to appendix A, A18, A25, A29

(b) Maximum peak e.i.r.p.(for RSS-247)

Maximum peak e.i.r.p.[1]	Limit(s)[2]	Result	Modulation
-0.9dBm	≤27.0dBm	PASS	GFSK
-0.9dBm	≤27.0dBm	PASS	π/4QPSK
-0.9dBm	≤27.0dBm	PASS	8DPSK

Remark: 1) Maximum peak e.i.r.p. = Maximum peak conducted output power + antenna gain (dBi)
2) Maximum peak e.i.r.p. limit = Maximum peak conducted ouput power limit + 6dBi
3) Detail test result and equipment setting refer to appendix A, A14, A20, A24

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6.7 Occupied Bandwidth

6.7.1 Measurement

Requirement	:	FCC Part 15 §15.247(a) and RSS-247 §5.1(a)
Measuring procedure	:	ANSI C63.10:2013, section 7.8.7 and 6.9.2
Hopping mode	:	Disable
Modulation tested	:	GFSK, π/4QPSK, 8DPSK
Packet Type tested	:	DH5[1]
Channel tested for non-hopping mode	:	2402MHz, 2441MHz, 2480MHz
Additional measuring procedure	:	Nil
Remark	:	1) Since the packet size does not affect the bandwidth, DH5 is selected as represented packet size.

6.7.2 Final Result

20dB bandwidth	99% OBW	Modulation
0.835820MHz	0.856MHz	GFSK
1.213931MHz	1.200MHz	π/4QPSK
1.233831MHz	1.194MHz	8DPSK

Remark: 1) Detail test result and equipment setting refer to appendix A15-17, A21-23, A25-27, A37-41

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6.8 Conducted Spurious emission (Transmitter)

6.8.1 Measurement

Requirement	:	FCC Part 15 §15.247(d) and RSS-247 §5.5
Measuring procedure	:	ANSI C63.10:2013, section 5.5, 5.6, 7.8.8 and 11.12.2.1
Hopping mode	:	Disable
RBW	:	Refer to pre-measurement and final measurement setting
Detector	:	Refer to pre-measurement and final measurement setting
Modulation tested	:	GFSK[1]
Packet Type tested	:	DH5[2]
Channel tested for non-hopping mode	:	2402MHz, 2441MHz, 2480MHz
Additional measuring procedure	:	1) Setup engineering sample to channel 2402MHz to perform the measurement according to ANSI C63.10, section 7.8.8 with pre-measurement setting 2) If the pre-measurement is over the limit, the final measurement is performed for the specific frequency according to fina measurement setting or restricted band frequency 3) For non-restricted band frequency, peak detector and 100kHz RBW will be used for final measurement. 4) Repeat the procedure 1 to 3 for channel frequency of 2441MHz and 2480MHz
Remark	:	1) Since the GFSK generates a higher SPD with power level, GFSK is selected as represented modulation for testing. 2) Since DH5 generates a higher dwell time, DH5 is selected as respresentative packet size for testing

6.8.2 Final Result

Worst case spurious emission frequency	Worst case spurious emission power[1]	Limit[2]	Margin	Result	Worst case mode
4959.975841MHz	-46.8dBm	-41.2dBm	5.5dB	PASS	GFSK and DH5

Remark: 1) Spurious emission power = measured conducted power + antnenna gain(dBi) +ground reflection factor according to ANSI C63.10 section 11.12.2.2 for restricted band emission.
2) For restricted band emission, limit = restricted band field strength limit (dBuV/m) + 4,7dB – 104.8dB according to ANSI C63.10 section 11.12.2.2 For non-restricted band , limit = SPD/100kHz – 20dB.
3) Detail test result and equipment setting refer to appendix A, A30-46

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6.9 Radiated Spurious emission (Transmitter)

6.9.1 Measurement

The equipment under test (EUT) was placed on a non-conductive turntable with dimensions of 1.5m x 0.4m and 0.8m high above the ground for below 1GHz measurement and 1.5m high above the ground for above 1GHz measurement. 3m from the EUT, a broadband antenna mounting on the mast received the signal strength. The turntable was rotated to maximize the emission level. The antenna was then moving along the mast from 1m up to 4m until no more higher value was found. Both horizontal and vertical polarization of the antenna were placed and investigated.

For below 30MHz, a loop antenna with its vertical plane is placed 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1 m above the ground.

For 30MHz to 300MHz, biconical antenna with its vertical and horizontal plane is placed 3m from the EUT and rotated about its vertical and horizontal axis for maximum response at each azimuth about the EUT. And the reference point of antenna shall be 1 m above the ground. Same procedure for frequency 300MHz to 1000MHz but Log-periodic antenna is used for final measurements.

For above 1GHz, horn antenna with its vertical and horizontal plane is placed 3m from the EUT and rotated about its vertical and horizontal axis for maximum response at each azimuth about the EUT. Preamplifier and High Pass filter was used for measurements. The reference point of antenna shall be 1 m above the ground.

The device was rotated through three X, Y, Z orthogonal to determine which attitude and configuration produce the highest emission during measurement for Radiated Emission measurement.

The Frequencies from fundamental up to the tenth harmonics were investigated, and emissions more 20dB below limit were not reported.

Bluetooth hopping + charging mode with GFSK modulation and DH5packet type are selected as worst case mode for spurious radiated emission test from cabinet. Other non-bluetooth operating mode such as charging mode and Aux-in mode for digital part of EUT may be tested.

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6.9.2 Final Result

a) Test mode: Bluetooth hopping + charging mode

Polarization	Frequency (MHz)	Reading at 3m (dBμV)	Transducer Factor (dB/m)	Field Strength at 3m[1] (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)	Detector (PK/ QP/AV)
H	42.654	26.7	11.8	38.5	40.0	-1.5	QP
V	43.332	27.3	11.8	39.1	40.0	-0.9	QP
H	45.035	23.7	11.3	35.0	40.0	-5.0	QP
V	45.744	27.7	11.3	39.0	40.0	-1.0	QP
V	53.894	17.7	10.4	28.1	40.0	-11.9	QP
V	57.292	17.8	10.4	28.2	40.0	-11.8	PK
V	2390.000	47.3	-6.7	40.6	54.0	-13.4	PK
V	2400.000	70.1	-4.7	65.4	74.0	-8.6	PK
V	2400.000	27.9	-4.7	23.2	54.0	-30.8	AV
V	2483.500	53.0	-4.7	48.3	54.0	-5.7	PK
V	2500.000	46.5	-4.7	41.8	54.0	-12.2	PK

Remark: 1) Field Strength = Reading + transducer factor.
2) Other emission with more than 20dB margin are not reported in this report.
3) For emission above 1GHz, the Peak test data is compared with Average limit except emission 2400MHz.

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b) Test mode: AUX + charging mode

Polarization	Frequency (MHz)	Reading at 3m (dBμV)	Transducer Factor (dB/m)	Field Strength at 3m[1] (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)	Detector (PK/ QP/AV)
V	42.400	22.9	11.8	34.7	40.0	-5.3	QP
H	42.978	24.6	11.8	36.4	40.0	-3.6	QP
V	58.900	10.4	10.4	20.8	40.0	-19.2	QP
V	78.280	10.9	9.8	20.7	40.0	-19.3	QP
V	87.180	18.3	9.8	28.1	40.0	-11.9	QP
V	92.550	19.1	10.2	29.3	43.5	-14.2	QP
V	132.910	15.0	12.6	27.6	43.5	-15.9	QP

Remark: 1) Field Strength = Reading + transducer factor.
2) Other emission with more than 20dB margin are not reported in this report.

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c) 6.10 Radiated Spurious emission (Receiver)

6.10.1 Measurement

The equipment under test (EUT) was placed on a non-conductive turntable with dimensions of 1.5m x 0.4m and 0.8m high above the ground for below 1GHz measurement and 1.5m high above the ground for above 1GHz measurement. 3m from the EUT, a broadband antenna mounting on the mast received the signal strength. The turntable was rotated to maximize the emission level. The antenna was then moving along the mast from 1m up to 4m until no more higher value was found. Both horizontal and vertical polarization of the antenna were placed and investigated.

For below 30MHz, a loop antenna with its vertical plane is placed 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1 m above the ground.

For 30MHz to 300MHz, biconical antenna with its vertical and horizontal plane is placed 3m from the EUT and rotated about its vertical and horizontal axis for maximum response at each azimuth about the EUT. And the reference point of antenna shall be 1 m above the ground. Same procedure for frequency 300MHz to 1000MHz but Log-periodic antenna is used for final measurements.

For above 1GHz, horn antenna with its vertical and horizontal plane is placed 3m from the EUT and rotated about its vertical and horizontal axis for maximum response at each azimuth about the EUT. Preamplifier and High Pass filter was used for measurements. The reference point of antenna shall be 1 m above the ground.

The device was rotated through three X, Y, Z orthogonal to determine which attitude and configuration produce the highest emission during measurement for Radiated Emission measurement.

The Frequencies from fundamental up to the tenth harmonics were investigated, and emissions more 20dB below limit were not reported.

Bluetooth receiving mode is selected for spurious radiated emission test from cabinet.

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6.9.2 Final Result

Test mode: Receiving mode (2402MHz)

Polarization	Frequency (MHz)	Reading at 3m (dBμV)	Transducer Factor (dB/m)	Field Strength at 3m[1] (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)	Detector (PK/ QP/AV)
V	43.384	22.7	11.8	34.5	40.0	-5.5	QP
H	42.567	24.4	11.8	36.2	40.0	-3.8	QP
V	55.689	11.2	10.4	21.6	40.0	-18.4	QP
V	74.634	12.7	9.8	22.5	40.0	-17.5	QP
V	86.984	18.1	9.8	27.9	40.0	-12.1	QP
V	95.263	19.1	10.2	29.3	43.5	-14.2	QP
V	130.456	15.0	12.6	27.6	43.5	-15.9	QP

Remark: 1) Field Strength = Reading + transducer factor.
2) Other emission with more than 20dB margin are not reported in this report.

Test mode: Receiving mode (2441MHz)

Polarization	Frequency (MHz)	Reading at 3m (dBμV)	Transducer Factor (dB/m)	Field Strength at 3m[1] (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)	Detector (PK/ QP/AV)
V	43.362	22.6	11.8	34.4	40.0	-5.6	QP
H	42.456	24.5	11.8	36.3	40.0	-3.7	QP
V	55.322	10.4	10.4	20.8	40.0	-19.2	QP
V	74.523	11.8	9.8	21.6	40.0	-18.4	QP
V	87.012	18.2	9.8	28.0	40.0	-12.0	QP
V	94.325	19.2	10.2	29.4	43.5	-14.1	QP
V	131.265	14.9	12.6	27.5	43.5	-16.0	QP

Remark: 1) Field Strength = Reading + transducer factor.
2) Other emission with more than 20dB margin are not reported in this report.

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Test mode: Receiving mode (2480MHz)

Polarization	Frequency (MHz)	Reading at 3m (dBμV)	Transducer Factor (dB/m)	Field Strength at 3m[1] (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)	Detector (PK/ QP/AV)
V	43.586	21.7	11.8	33.5	40.0	-6.5	QP
H	42.150	24.0	11.8	35.8	40.0	-4.2	QP
V	54.589	10.1	10.4	20.5	40.0	-19.5	QP
V	75.266	11.7	9.8	21.5	40.0	-18.5	QP
V	85.456	16.7	9.8	26.5	40.0	-13.5	QP
V	94.256	18.1	10.2	28.3	43.5	-15.2	QP
V	132.569	13.9	12.6	26.5	43.5	-17.0	QP

Remark: 1) Field Strength = Reading + transducer factor.
2) Other emission with more than 20dB margin are not reported in this report.

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6.11 Conducted Emission

6.10.1 Measurement

Requirement	:	FCC Part 15 §15.207(a) and RSS-Gen, clause 8.8
Measuring procedure	:	ANSI C63.4:2014, section 7.3
Test mode	:	Bluetooth Hopping + charging mode, Aux-in +charging mode
RBW	:	9kHz
VBW	:	30kHz
Modulation tested	:	GFSK[1]
Packet Type tested	:	DH5
Additional measuring procedure	:	Nil
Remark	:	Nil

6.10.2 Final Result

Worst case conducted emission frequency	Worst case conducted emission	Limit	Margin	Detector	Lines	Worst case mode	Result
17.7215MHz	49.37dBµV	60.00dBµV	-10.63dB	QP	L	Aux-in	PASS

Remark: 1) Detail test result and equipment setting refer to appendix A, A42-45

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7.0 Frequency Hopping System Requirement

Test Requirement: Section 15.247(a)(1), (g), (h) and RSS-247, section 5.1 requirement

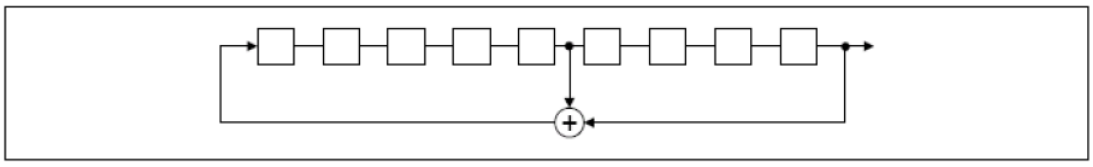
The system shall hop to channel frequencies that are selected at the system hopping rate from a Pseudorandom order list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. However, the system, consisting of both the transmitter and the receiver, must be designed to comply with all of the regulations in this section should the transmitter be presented with a continuous data (or information) stream. In addition, a system employing short transmssions bursts must comply with the definition of a frequency hopping system and must distribute its transmissions over the minimum number of hopping channels specified in this section.

The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hop sets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

Compliance for section 15.247(a)(1) and RSS-247 section 5.1(a)
According to Bluetooth Core Specification, the pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONEs; i.e. the shift register is initialized with nine ones.

- Number of shift register stage: 9
- Length of pseudorandom sequence: 2^9-1=511 bits
- Longest sequence of zero: 8 (non-inverted signal)



Linear Feedback Shift Register for Generation of the PRBS sequence

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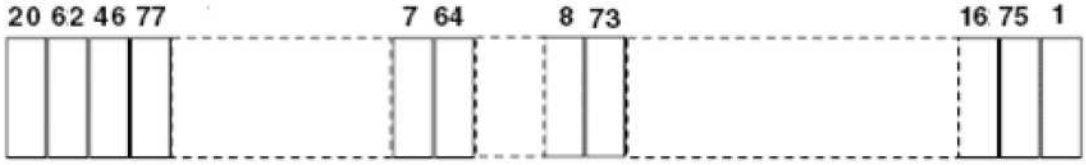
An example of Pseudorandom Frequency Hopping Sequence as following:



Each frequency used equally on the average by each transmitter.
According to Bluetooth Core Specification, Bluetooth receivers are designed to have input and IF bandwidths that match the hopping channel bandwidths of any Bluetooth transmitters and shift frequencies in synchronization with the transmitted signals.

Compliance for section 15.247(g) and RSS-247 section 5.1 2nd paragraph
According to Bluetooth Core Specification, the Bluetooth system transmits the packet with the pseudorandom hopping frequency with a continuous data and the short brust transmission from the Bluetooth system is also transmitted under the frequency hopping system with the pseudorandom hopping frequency system.

Compliance for section 15.247(h) and RSS-247 section 5.1 3rd paragraph
According to Bluetooth Core specification, the Bluetooth system incorporates with an adaptive system to detect other user within the spectrum band so that it individually and independently to avoid hopping on the occupied channels.

According to the Bluetooth Core specification, the Bluetooth system is designed not have the ability to coordinate with other FHSS System in effort to avoid the simultaneous occupancy of the individual hopping frequencies by multiple transmitter.

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APPENDIX A Test Result

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FCC Part 47 §15.247 2400-2483.5 MHz 2015

Frequencies

BT CH 1 (2402 MHz)	BT CH 2 (2403 MHz)	BT CH 3 (2404 MHz)
BT CH 4 (2405 MHz)	BT CH 5 (2406 MHz)	BT CH 6 (2407 MHz)
BT CH 7 (2408 MHz)	BT CH 8 (2409 MHz)	BT CH 9 (2410 MHz)
BT CH 10 (2411 MHz)	BT CH 11 (2412 MHz)	BT CH 12 (2413 MHz)
BT CH 13 (2414 MHz)	BT CH 14 (2415 MHz)	BT CH 15 (2416 MHz)
BT CH 16 (2417 MHz)	BT CH 17 (2418 MHz)	BT CH 18 (2419 MHz)
BT CH 19 (2420 MHz)	BT CH 20 (2421 MHz)	BT CH 21 (2422 MHz)
BT CH 22 (2423 MHz)	BT CH 23 (2424 MHz)	BT CH 24 (2425 MHz)
BT CH 25 (2426 MHz)	BT CH 26 (2427 MHz)	BT CH 27 (2428 MHz)
BT CH 28 (2429 MHz)	BT CH 29 (2430 MHz)	BT CH 30 (2431 MHz)
BT CH 31 (2432 MHz)	BT CH 32 (2433 MHz)	BT CH 33 (2434 MHz)
BT CH 34 (2435 MHz)	BT CH 35 (2436 MHz)	BT CH 36 (2437 MHz)
BT CH 37 (2438 MHz)	BT CH 38 (2439 MHz)	BT CH 39 (2440 MHz)
BT CH 40 (2441 MHz)	BT CH 41 (2442 MHz)	BT CH 42 (2443 MHz)
BT CH 43 (2444 MHz)	BT CH 44 (2445 MHz)	BT CH 45 (2446 MHz)
BT CH 46 (2447 MHz)	BT CH 47 (2448 MHz)	BT CH 48 (2449 MHz)
BT CH 49 (2450 MHz)	BT CH 50 (2451 MHz)	BT CH 51 (2452 MHz)
BT CH 52 (2453 MHz)	BT CH 53 (2454 MHz)	BT CH 54 (2455 MHz)
BT CH 55 (2456 MHz)	BT CH 56 (2457 MHz)	BT CH 57 (2458 MHz)
BT CH 58 (2459 MHz)	BT CH 59 (2460 MHz)	BT CH 60 (2461 MHz)
BT CH 61 (2462 MHz)	BT CH 62 (2463 MHz)	BT CH 63 (2464 MHz)
BT CH 64 (2465 MHz)	BT CH 65 (2466 MHz)	BT CH 66 (2467 MHz)
BT CH 67 (2468 MHz)	BT CH 68 (2469 MHz)	BT CH 69 (2470 MHz)
BT CH 70 (2471 MHz)	BT CH 71 (2472 MHz)	BT CH 72 (2473 MHz)
BT CH 73 (2474 MHz)	BT CH 74 (2475 MHz)	BT CH 75 (2476 MHz)
BT CH 76 (2477 MHz)	BT CH 77 (2478 MHz)	BT CH 78 (2479 MHz)
BT CH 79 (2480 MHz)		

Hardware Setup: WMS Measurements\WMS Hardware Setup

Spectrum Analyzer:	SA FSV 40 (SA FSV 40) @ VISA (ADR TCPIP::192.168.48.148::INST0::INSTR), SN 1321.3008K39/101190, FW 2.30 SP4
Vector Generator:	VG SMBV100A (VG SMBV100A) @ VISA (ADR TCPIP::192.168.48.149::INST0::INSTR), SN 262024, FW 5.1.0
Generator:	SMB100A (SMB100A) @ VISA (ADR TCPIP::192.168.48.152::INST0::INSTR), SN 103230, FW Rev 2.20.1, 08/2012, CVI 2009

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OSP:	TS8997 OSP (OSP) @ VISA (ADR TCPIP::192.168.48.147::INST0::INSTR), SN OSP120 V02, 101611, FW 2.55.150506
Power Meter:	OSP-B157 Power Meter (OSP-B157 Power Meter) @ USB (ADR 20), SN 27873972, FW 3.1

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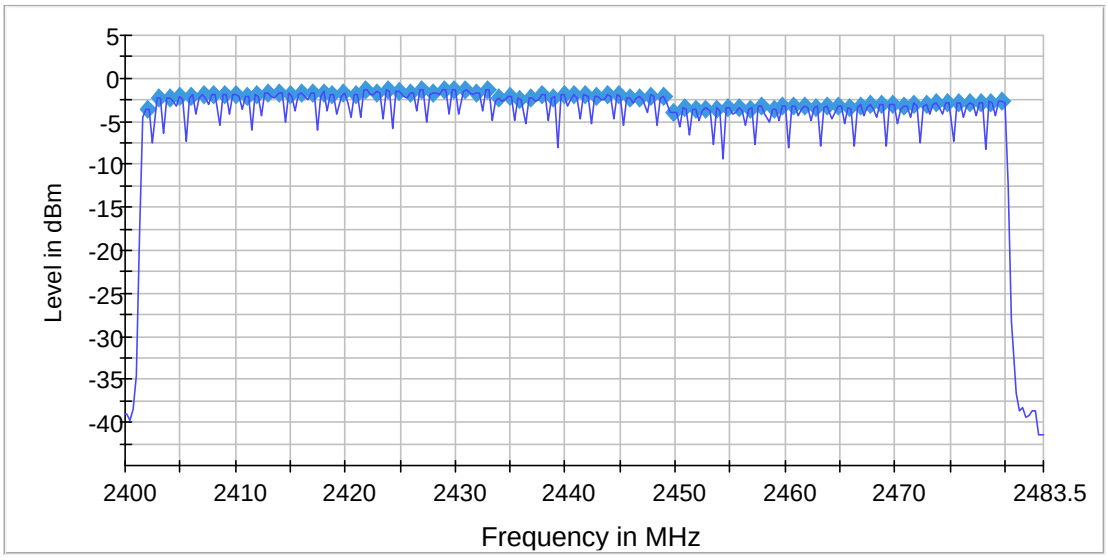
Hopping Frequencies

Channels

Channels	Limit Min	Limit Max	Result
79	15	---	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.48350 GHz	2.48350 GHz
Span	83.500 MHz	83.500 MHz
RBW	300.000 kHz	<= 300.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	278	~ 278
Sweeptime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50	0.50
Run	38 / max. 150	max. 150
Stable	3 / 3	3

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Band Edge low

Result

DUT Frequency (MHz)	Result
hopping	PASS

Inband Peak

Frequency (MHz)	Level (dBm)
2417.014811	-12.4

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2329.014436	-67.6	35.2	-32.4	PASS
2320.918934	-67.7	35.3	-32.4	PASS
2320.818989	-67.7	35.3	-32.4	PASS
2324.766796	-67.8	35.4	-32.4	PASS
2322.767907	-67.8	35.4	-32.4	PASS
2313.023320	-67.9	35.5	-32.4	PASS
2397.526374	-67.9	35.5	-32.4	PASS
2316.321488	-68.0	35.5	-32.4	PASS
2317.270961	-68.0	35.6	-32.4	PASS
2329.963909	-68.0	35.6	-32.4	PASS
2322.368129	-68.1	35.6	-32.4	PASS
2316.671294	-68.1	35.7	-32.4	PASS
2330.013881	-68.1	35.7	-32.4	PASS
2329.064409	-68.1	35.7	-32.4	PASS
2316.271516	-68.1	35.7	-32.4	PASS

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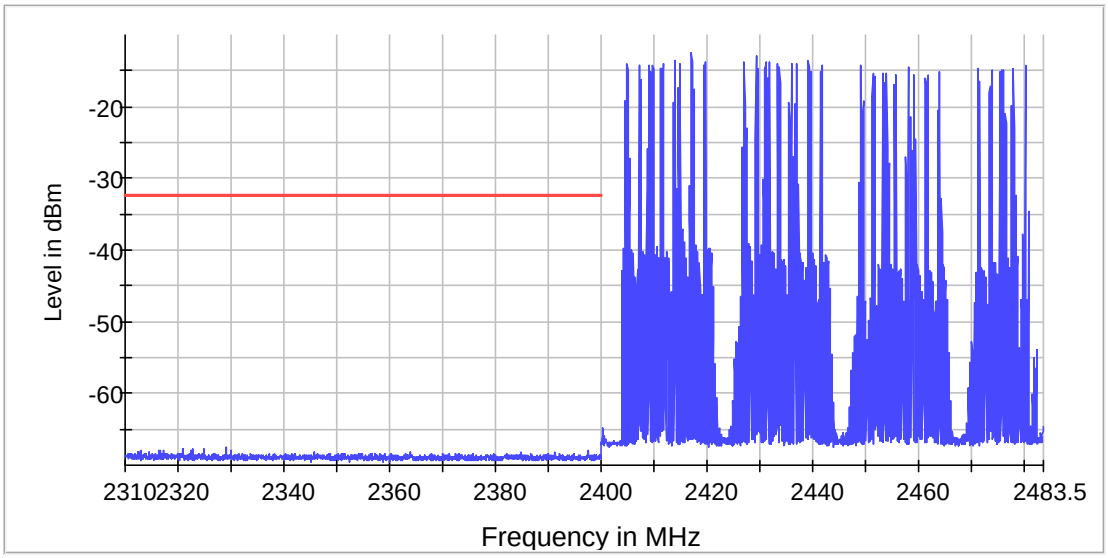

Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1670	~ 1670
Sweeptime	1.670 s	1.670 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	3	3
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 15	max. 15
Stable	3 / 3	3

Measurement 2

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1800	~ 1800
Sweeptime	1.800 s	1.800 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	3	3
Filter	3 dB	3 dB

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Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 15	max. 15
Stable	3 / 3	3

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Band Edge high

Result

DUT Frequency (MHz)	Result
hopping	PASS

Inband Peak

Frequency (MHz)	Level (dBm)
2428.108169	-13.7

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2499.725831	-67.2	33.5	-33.7	PASS
2499.775680	-67.4	33.7	-33.7	PASS
2485.618580	-67.6	33.9	-33.7	PASS
2499.027946	-67.7	34.0	-33.7	PASS
2498.978097	-67.9	34.2	-33.7	PASS
2497.632175	-67.9	34.2	-33.7	PASS
2492.348187	-68.0	34.3	-33.7	PASS
2486.017372	-68.0	34.3	-33.7	PASS
2484.472054	-68.0	34.3	-33.7	PASS
2490.354230	-68.0	34.3	-33.7	PASS
2496.385952	-68.1	34.3	-33.7	PASS
2485.967523	-68.1	34.4	-33.7	PASS
2488.759063	-68.1	34.4	-33.7	PASS
2491.351208	-68.1	34.4	-33.7	PASS
2499.675982	-68.1	34.4	-33.7	PASS

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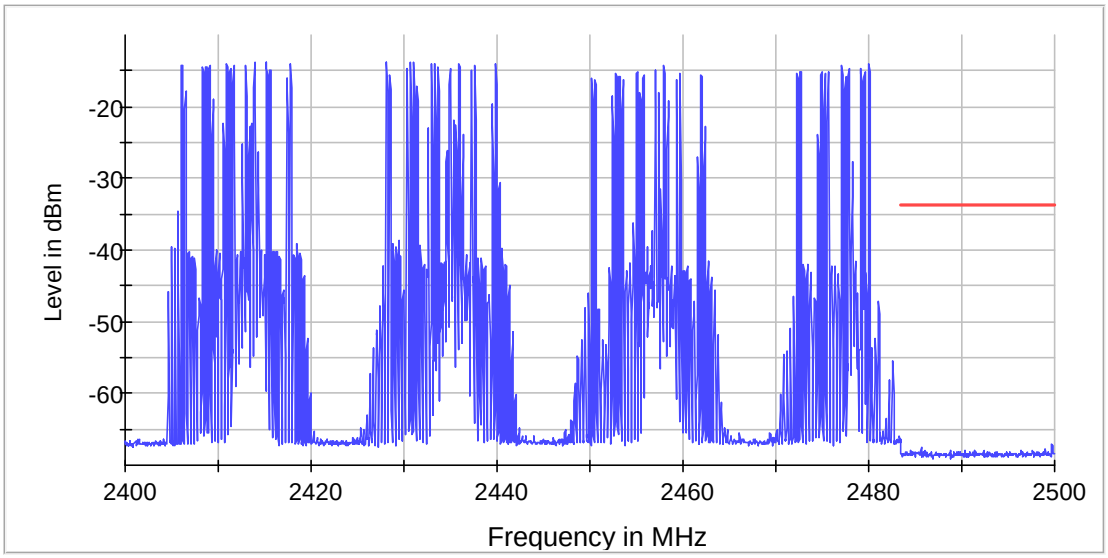

Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1670	~ 1670
Sweeptime	1.670 s	1.670 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	3	3
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 15	max. 15
Stable	3 / 3	3

Measurement 2

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	330	~ 330
Sweeptime	330.000 ms	330.000 ms
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	RMS	RMS
SweepCount	3	3
Filter	3 dB	3 dB

FCC ID: 2ADFF-KSREUN
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TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 15	max. 15
Stable	3 / 3	3

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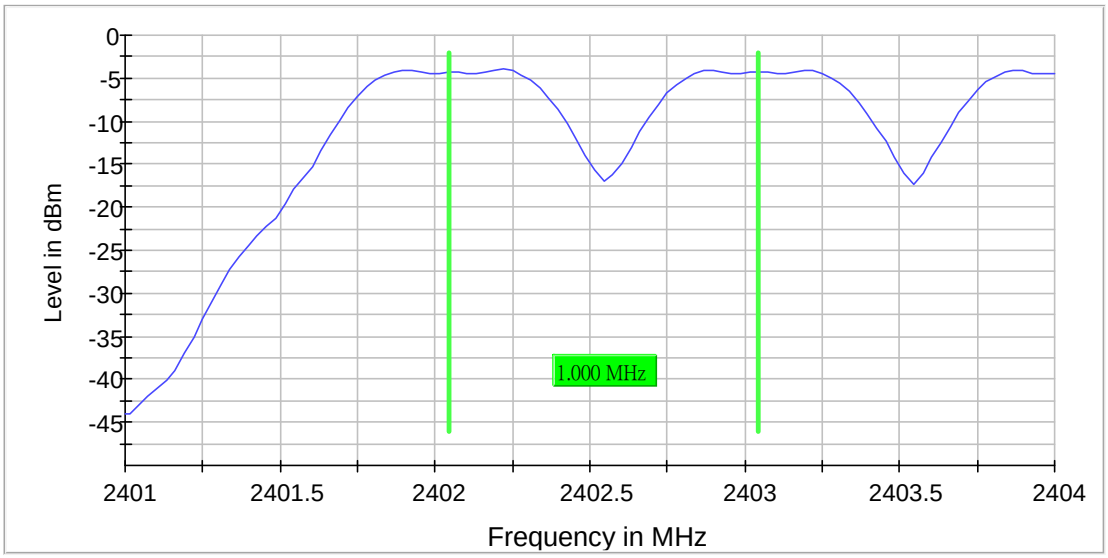
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Carrier Frequency Separation (2402 MHz)

Result

DUT Frequency (MHz)	Frequency Separation (MHz)	Limit Min (MHz)	Limit Max (MHz)	Center Frequency low Channel (MHz)	Center Frequency high Channel (MHz)	Result
2402.000000	1.000000	0.822554	---	2402.044118	2403.044118	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40400 GHz	2.40400 GHz
Span	3.000 MHz	3.000 MHz
RBW	300.000 kHz	<= 300.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	101	~ 10
Sweeptime	6.313 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	42 / max. 150	max. 150

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TEST REPORT

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Stable	**10 / 10**	**10**

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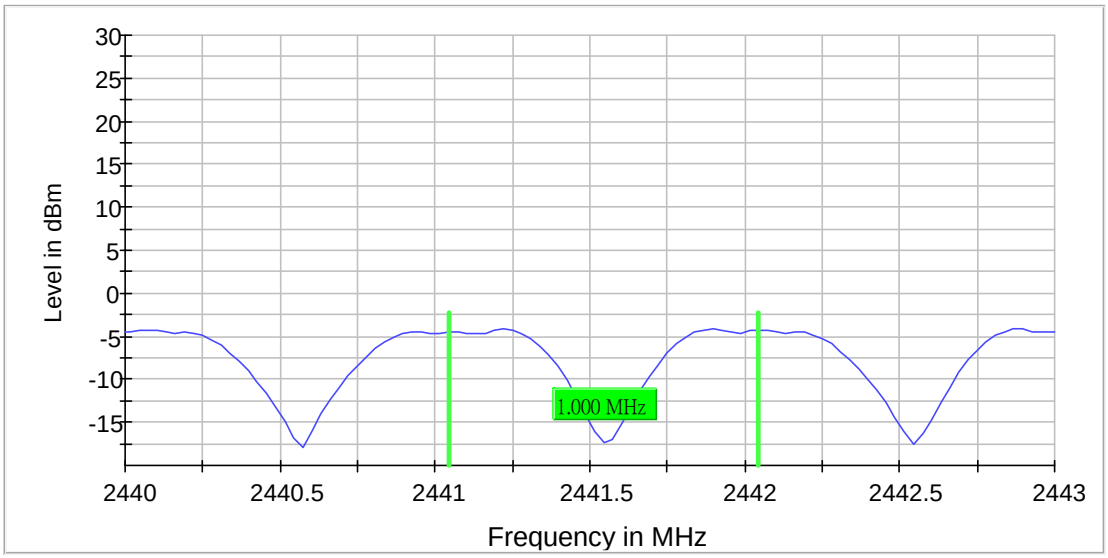
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Carrier Frequency Separation (2441 MHz)

Result

DUT Frequency (MHz)	Frequency Separation (MHz)	Limit Min (MHz)	Limit Max (MHz)	Center Frequency low Channel (MHz)	Center Frequency high Channel (MHz)	Result
2441.000000	1.000000	0.822554	---	2441.044118	2442.044118	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44000 GHz	2.44000 GHz
Stop Frequency	2.44300 GHz	2.44300 GHz
Span	3.000 MHz	3.000 MHz
RBW	300.000 kHz	<= 300.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	101	~ 10
Sweeptime	6.313 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	17 / max. 150	max. 150

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TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Stable	**10 / 10**	**10**

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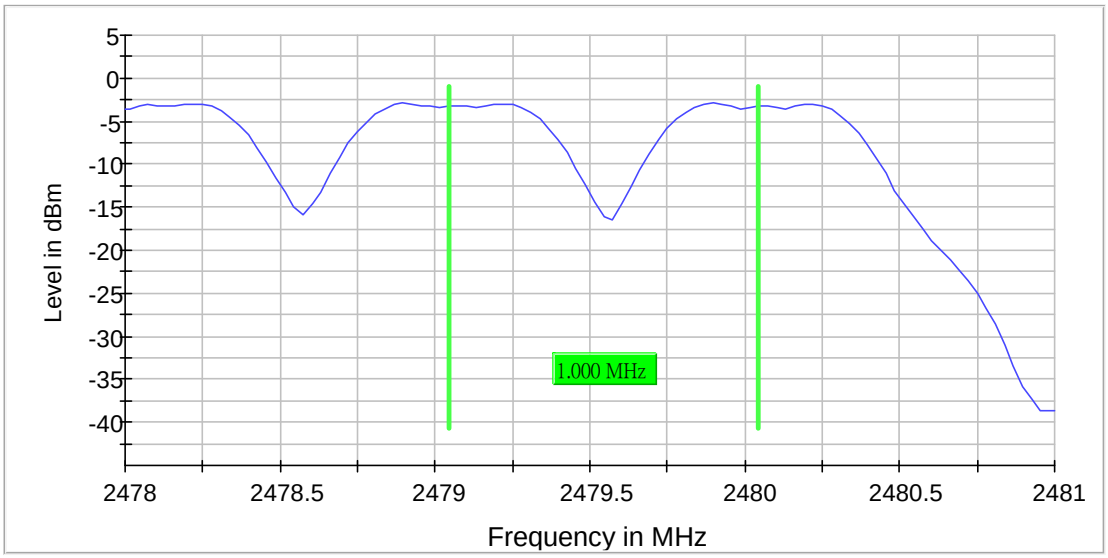
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Carrier Frequency Separation (2479 MHz)

Result

DUT Frequency (MHz)	Frequency Separation (MHz)	Limit Min (MHz)	Limit Max (MHz)	Center Frequency low Channel (MHz)	Center Frequency high Channel (MHz)	Result
2479.000000	1.000000	0.822554	---	2479.044118	2480.044118	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47800 GHz	2.47800 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	3.000 MHz	3.000 MHz
RBW	300.000 kHz	<= 300.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	101	~ 10
Sweeptime	6.313 µs	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	34 / max. 150	max. 150

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TEST REPORT

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Stable	**10 / 10**	**10**

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TEST REPORT

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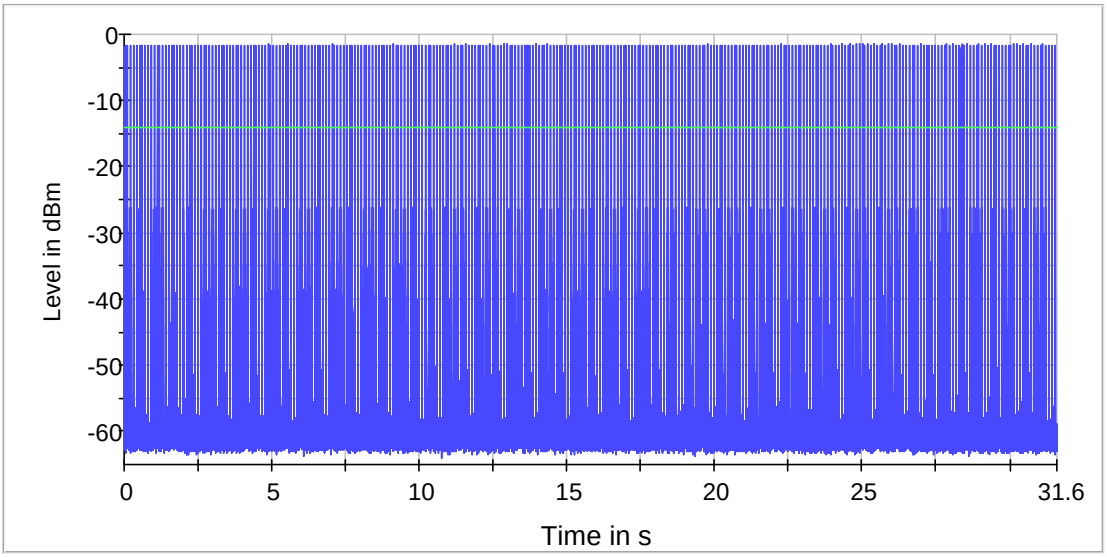
Time of Channel Occupancy (2441 MHz;DH1)

Result

DUT Frequency (MHz)	Time (ms)	Limit Max (ms)	Limit Min (ms)	Threshold (dBm)	Result
2441.000000	127.090	---	0.000	-14.0	PASS



Measurement

Setting	Instrument Value	Target Value
Center Frequency	2.44100 GHz	2.44100 GHz
Span	ZeroSpan	ZeroSpan
RBW	500.000 kHz	~ 500.000 kHz
VBW	1.000 MHz	~ 1.500 MHz
SweepPoints	30001	~ 30001
Sweeptime	31.600 s	31.600 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	10.000 dB	0.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	1	1
Filter	Channel	Channel
Trace Mode	Clear Write	Clear Write
Sweeptype	Sweep	AUTO
Preamp	off	off
Trigger	Extern	Extern
Trigger Offset	0.000 ms	0.000 ms

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TEST REPORT

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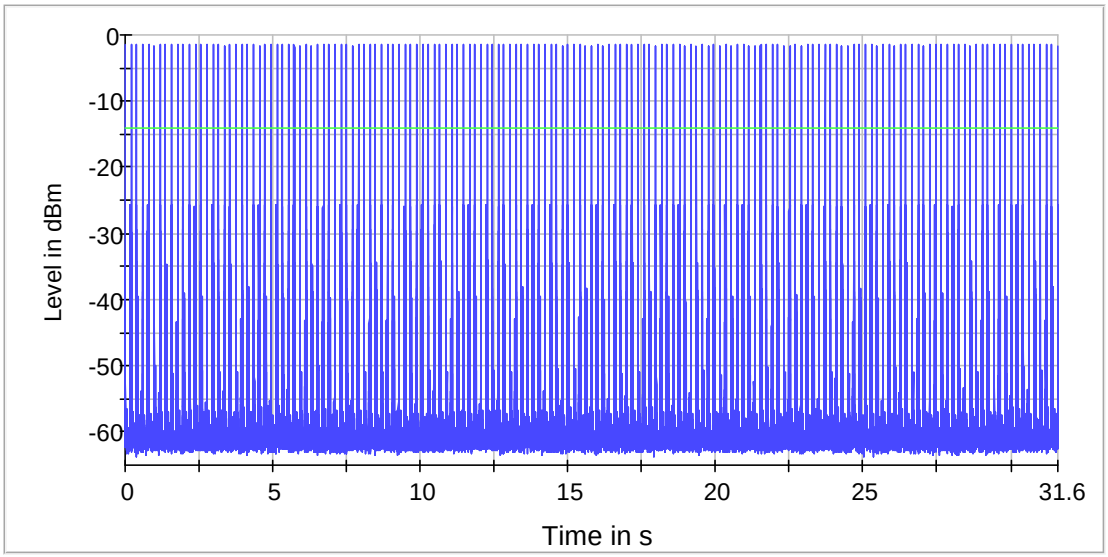
Time of Channel Occupancy(2) (2441 MHz;DH3)

Result

DUT Frequency (MHz)	Time (ms)	Limit Max (ms)	Limit Min (ms)	Threshold (dBm)	Result
2441.000000	264.660	---	0.000	-14.0	PASS



Measurement

Setting	Instrument Value	Target Value
Center Frequency	2.44100 GHz	2.44100 GHz
Span	ZeroSpan	ZeroSpan
RBW	500.000 kHz	~ 500.000 kHz
VBW	1.000 MHz	~ 1.500 MHz
SweepPoints	30001	~ 30001
Sweeptime	31.600 s	31.600 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	10.000 dB	0.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	1	1
Filter	Channel	Channel
Trace Mode	Clear Write	Clear Write
Sweeptype	Sweep	AUTO
Preamp	off	off
Trigger	Extern	Extern
Trigger Offset	0.000 ms	0.000 ms

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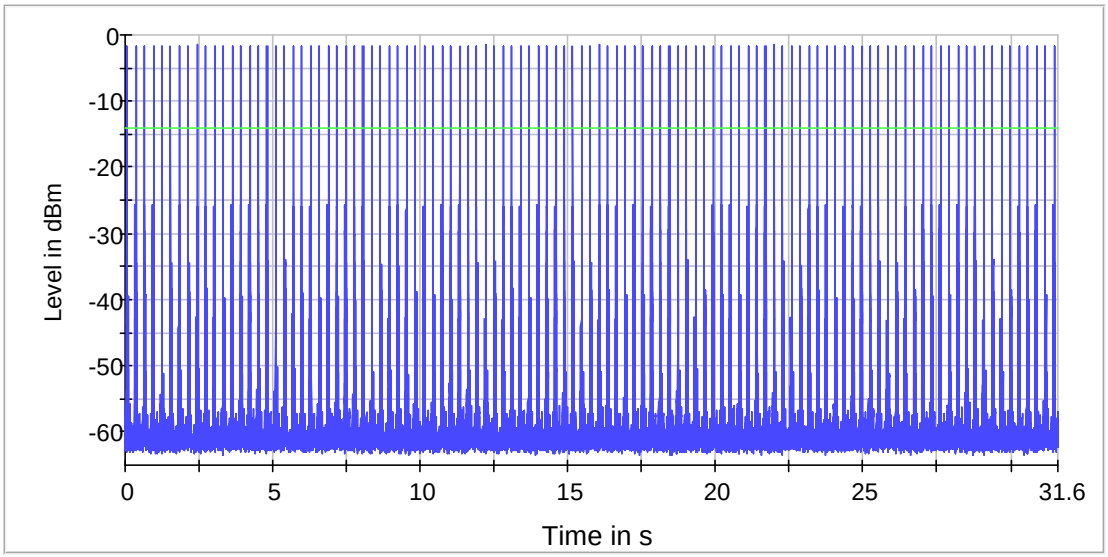
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Time of Channel Occupancy(3) (2441 MHz;DH5)

Result

DUT Frequency (MHz)	Time (ms)	Limit Max (ms)	Limit Min (ms)	Threshold (dBm)	Result
2441.000000	310.410	---	0.000	-14.0	PASS



Measurement

Setting	Instrument Value	Target Value
Center Frequency	2.44100 GHz	2.44100 GHz
Span	ZeroSpan	ZeroSpan
RBW	500.000 kHz	~ 500.000 kHz
VBW	1.000 MHz	~ 1.500 MHz
SweepPoints	30001	~ 30001
Sweeptime	31.600 s	31.600 s
Reference Level	0.000 dBm	0.000 dBm
Attenuation	10.000 dB	0.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	1	1
Filter	Channel	Channel
Trace Mode	Clear Write	Clear Write
Sweeptype	Sweep	AUTO
Preamp	off	off
Trigger	Extern	Extern
Trigger Offset	0.000 ms	0.000 ms

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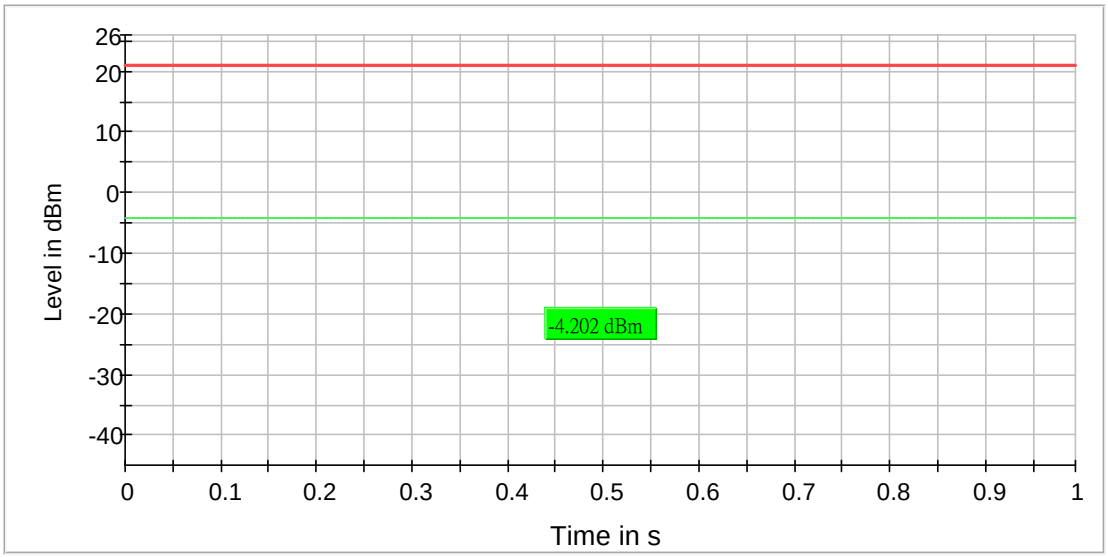
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

RF output power (2402 MHz;GFSK and DH5)

Result

DUT Frequency (MHz)	Gated EIRP (dBm)	Limit Max (dBm)	DutyCycle (%)	Result
2402.000000	-4.2	21.0	99.794	PASS



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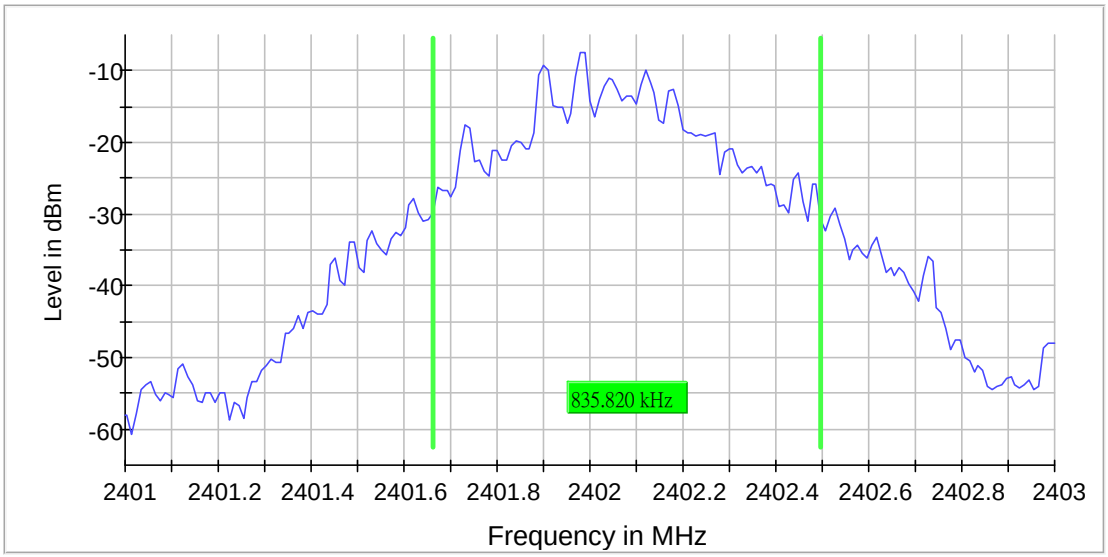
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Emission Bandwidth 20 dB (2402 MHz;GFSK and DH5)

20 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2402.000000	0.835820	---	---	2401.661692	2402.497512	-7.4	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	~ 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	200	~ 200
Sweeptime	189.620 µs	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	5 / max. 150	max. 150
Stable	5 / 5	5

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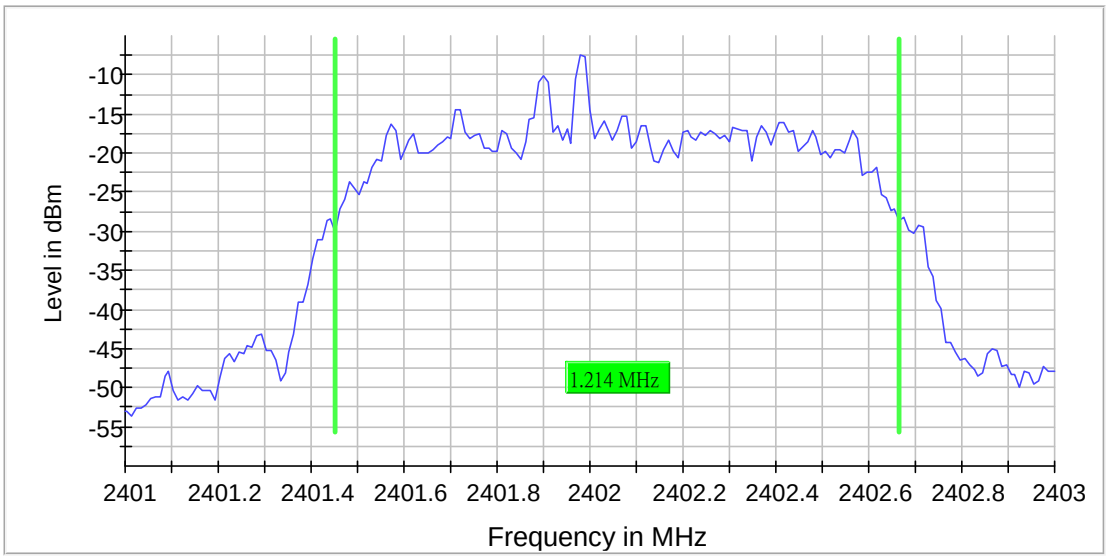
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Emission Bandwidth 20 dB(2) (2402 MHz;π/4QDPSK and 2-DH5)

20 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2402.000000	1.213931	---	---	2401.452736	2402.666667	-7.5	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	~ 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	200	~ 200
Sweeptime	189.620 µs	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	7 / max. 150	max. 150
Stable	5 / 5	5

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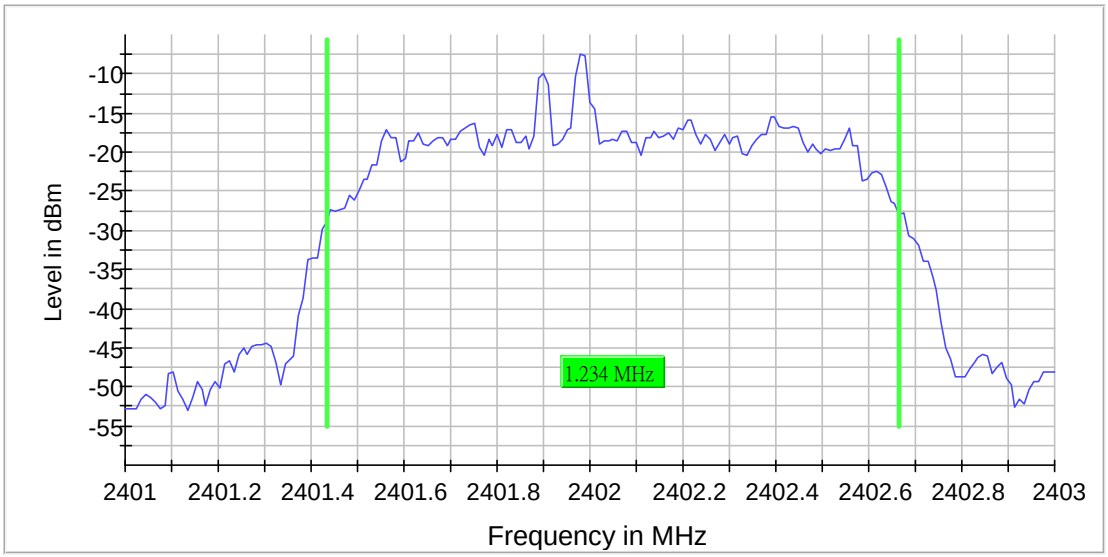
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Emission Bandwidth 20 dB(3) (2402 MHz;8DPSK and 3-DH5)

20 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2402.000000	1.233831	---	---	2401.432836	2402.666667	-7.5	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	~ 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	200	~ 200
Sweeptime	189.620 µs	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	6 / max. 150	max. 150
Stable	5 / 5	5

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TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Band Edge low (2402 MHz; 8DPSK and 3-DH5)

Result

DUT Frequency (MHz)	Result
2402.000000	PASS

Inband Peak

Frequency (MHz)	Level (dBm)
2401.973818	-12.4

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2375.938368	-63.9	31.6	-32.4	PASS
2375.888395	-64.5	32.2	-32.4	PASS
2376.388118	-65.1	32.7	-32.4	PASS
2375.688506	-65.2	32.8	-32.4	PASS
2375.988340	-65.3	32.9	-32.4	PASS
2375.838423	-65.3	32.9	-32.4	PASS
2376.338145	-65.4	33.0	-32.4	PASS
2376.138257	-65.4	33.1	-32.4	PASS
2375.738479	-65.4	33.1	-32.4	PASS
2376.088284	-65.5	33.2	-32.4	PASS
2376.238201	-65.6	33.2	-32.4	PASS
2376.188229	-65.6	33.2	-32.4	PASS
2376.038312	-65.8	33.4	-32.4	PASS
2375.788451	-65.8	33.4	-32.4	PASS
2376.288173	-65.9	33.5	-32.4	PASS

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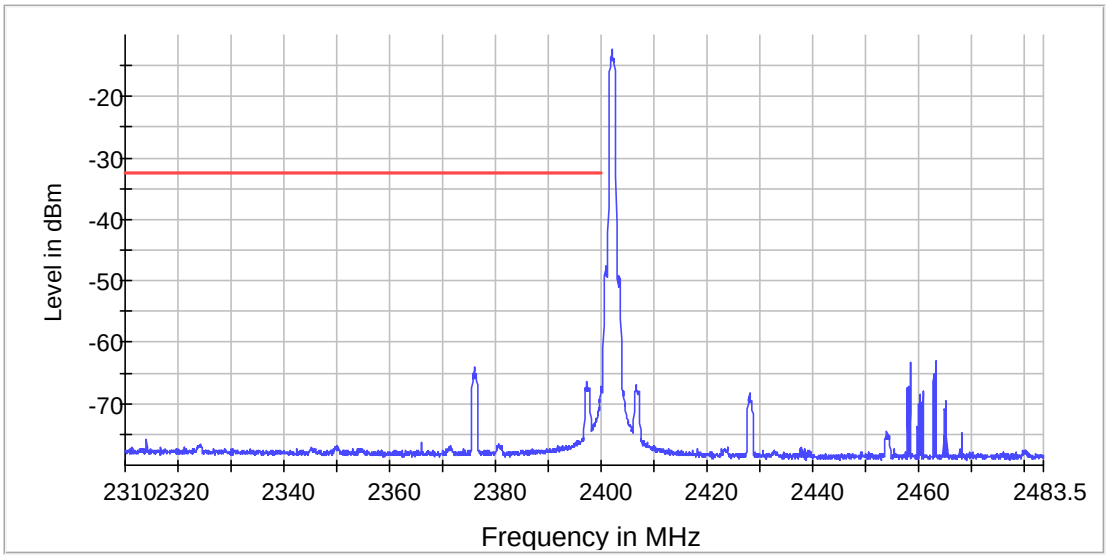

Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1670	~ 1670
Sweeptime	1.670 s	1.670 s
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	RMS	RMS
SweepCount	3	3
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 15	max. 15
Stable	3 / 3	3

Measurement 2

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1800	~ 1800
Sweeptime	1.800 s	1.800 s
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	RMS	RMS
SweepCount	3	3
Filter	3 dB	3 dB

FCC ID: 2ADFF-KSREUN
IC: 23562-KSREUN

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Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmatcl.com Web Site: http://www.cmatcl.com

TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 15	max. 15
Stable	3 / 3	3

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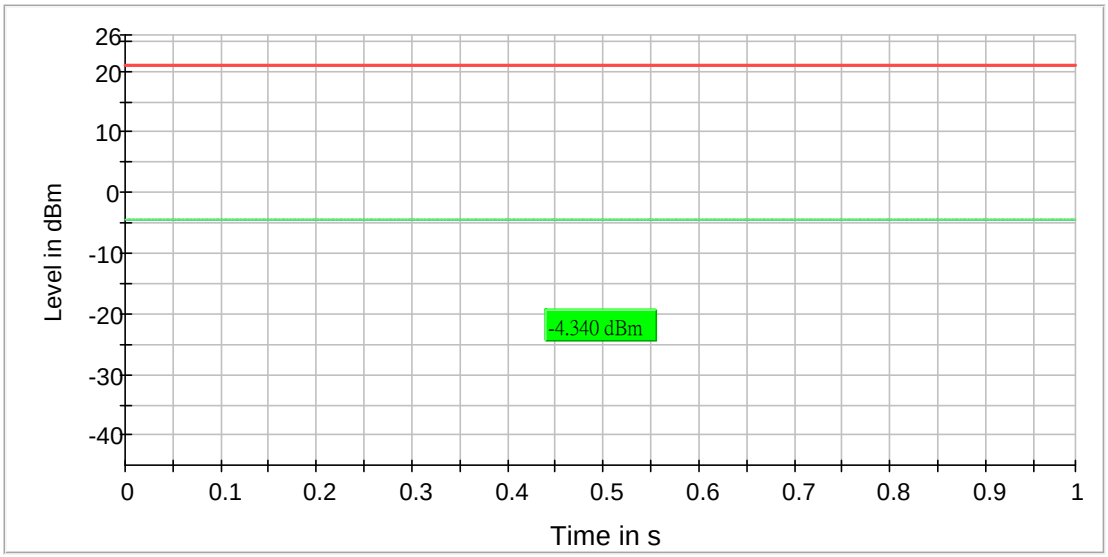
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

RF output power (2441 MHz; GFSK and DH5)

Result

DUT Frequency (MHz)	Gated EIRP (dBm)	Limit Max (dBm)	DutyCycle (%)	Result
2441.000000	-4.3	21.0	99.792	PASS



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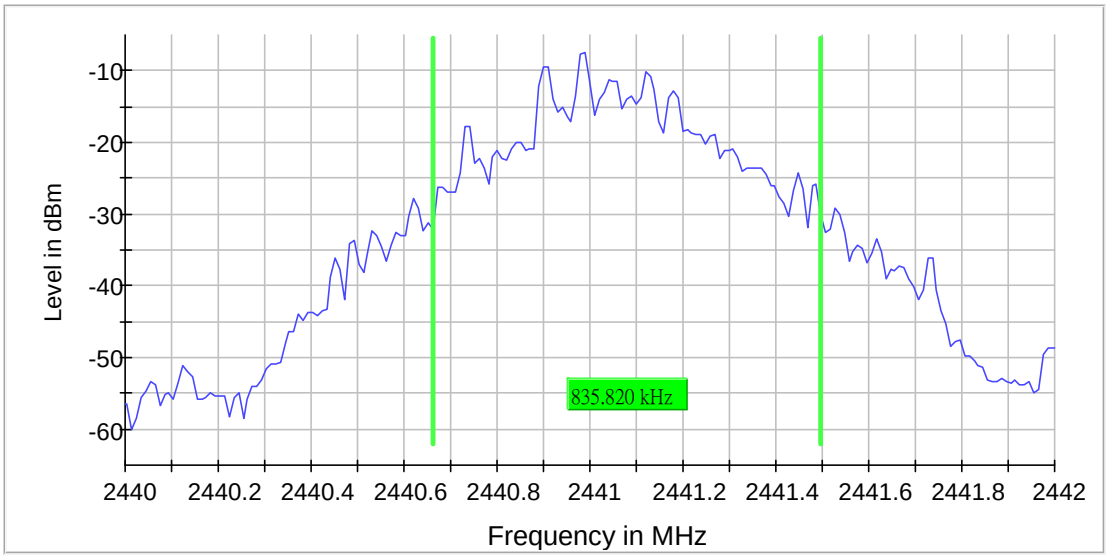
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Emission Bandwidth 20 dB (2441 MHz; GFSK and DH5)

20 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2441.000000	0.835820	---	---	2440.661692	2441.497512	-7.5	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44000 GHz	2.44000 GHz
Stop Frequency	2.44200 GHz	2.44200 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	~ 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	200	~ 200
Sweeptime	189.620 µs	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	7 / max. 150	max. 150
Stable	5 / 5	5

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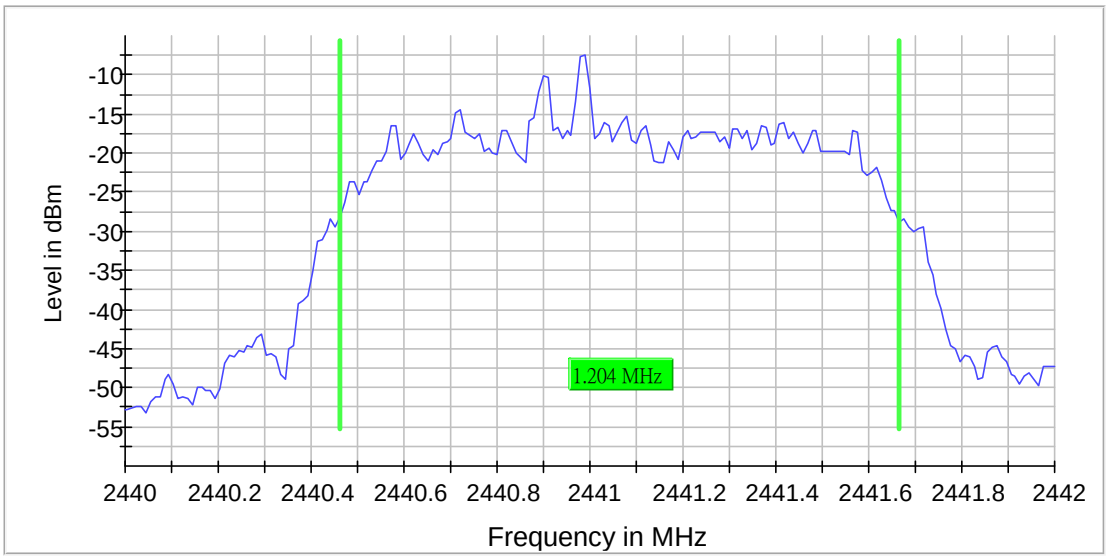
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Emission Bandwidth 20 dB(2) (2441 MHz; π/4QDPSK and 2-DH5)

20 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2441.000000	1.203980	---	---	2440.462687	2441.666667	-7.5	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44000 GHz	2.44000 GHz
Stop Frequency	2.44200 GHz	2.44200 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	~ 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	200	~ 200
Sweeptime	189.620 µs	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	6 / max. 150	max. 150
Stable	5 / 5	5

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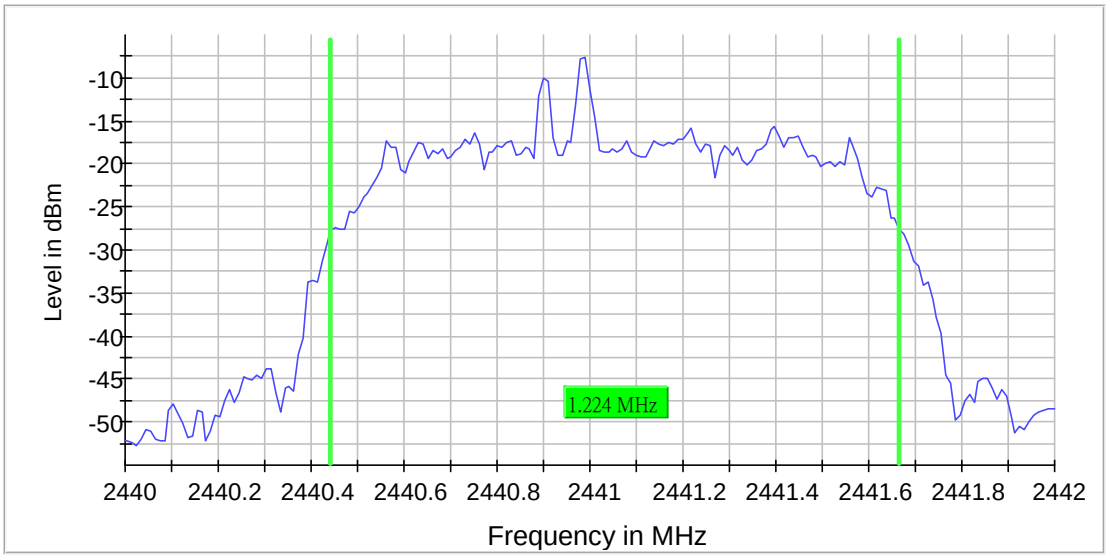
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Emission Bandwidth 20 dB(3) (2441 MHz; 8DPSK and 3-DH5)

20 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2441.000000	1.223881	---	---	2440.442786	2441.666667	-7.6	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44000 GHz	2.44000 GHz
Stop Frequency	2.44200 GHz	2.44200 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	~ 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	200	~ 200
Sweeptime	189.620 µs	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	8 / max. 150	max. 150
Stable	5 / 5	5

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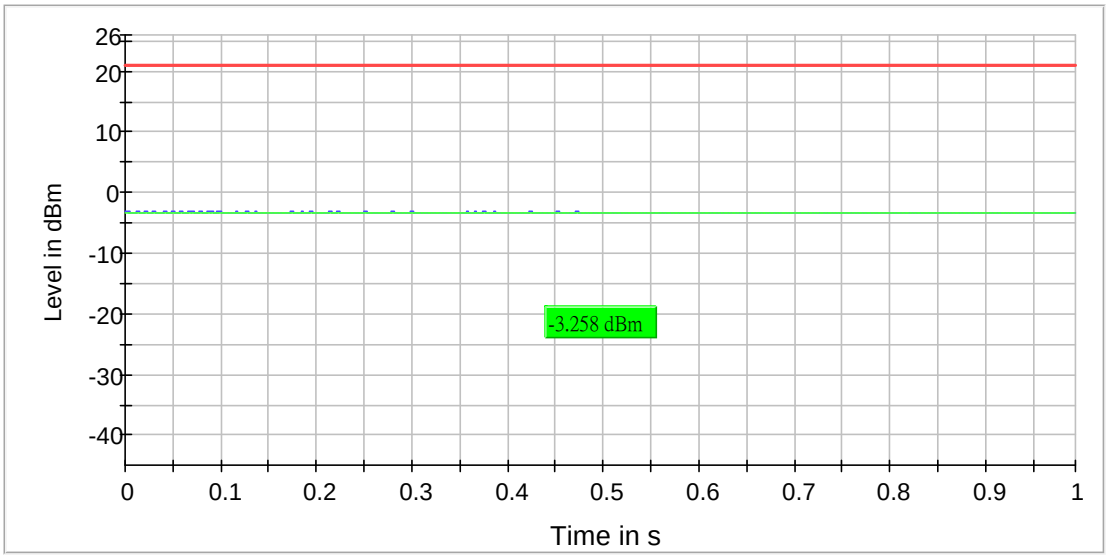
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

RF output power (2480 MHz; GFSK and DH5)

Result

DUT Frequency (MHz)	Gated EIRP (dBm)	Limit Max (dBm)	DutyCycle (%)	Result
2480.000000	-3.3	21.0	99.791	PASS



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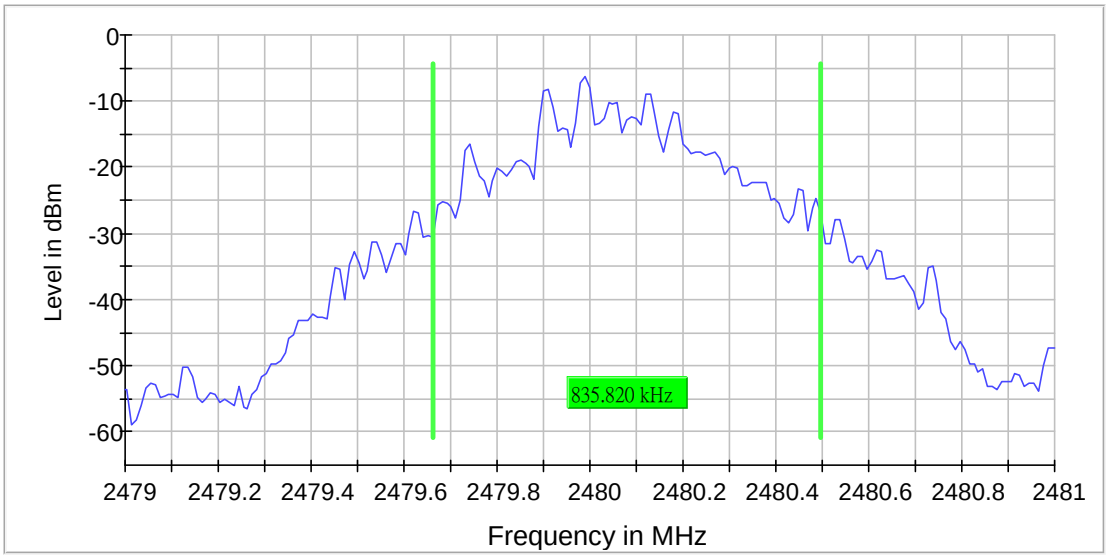
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Emission Bandwidth 20 dB (2480 MHz; GFSK and DH5)

20 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2480.000000	0.835820	---	---	2479.661692	2480.497512	-6.4	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47900 GHz	2.47900 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	~ 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	200	~ 200
Sweeptime	189.620 µs	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	5 / max. 150	max. 150
Stable	5 / 5	5

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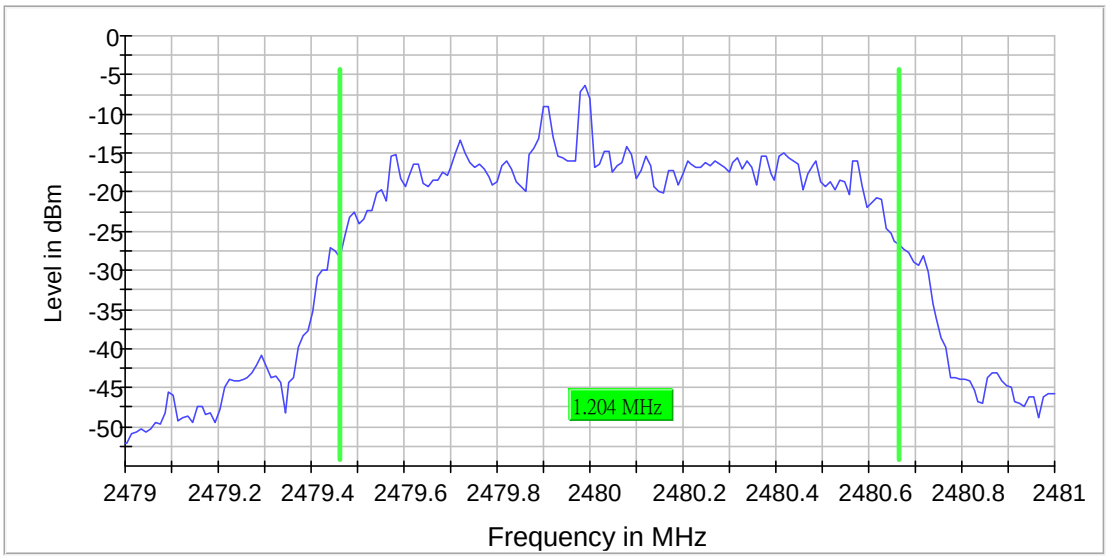
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Emission Bandwidth 20 dB(2) (2480 MHz; π/4QDPSK and 2-DH5)

20 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2480.000000	1.203980	---	---	2479.462687	2480.666667	-6.4	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47900 GHz	2.47900 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	~ 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	200	~ 200
Sweeptime	189.620 µs	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	7 / max. 150	max. 150
Stable	5 / 5	5

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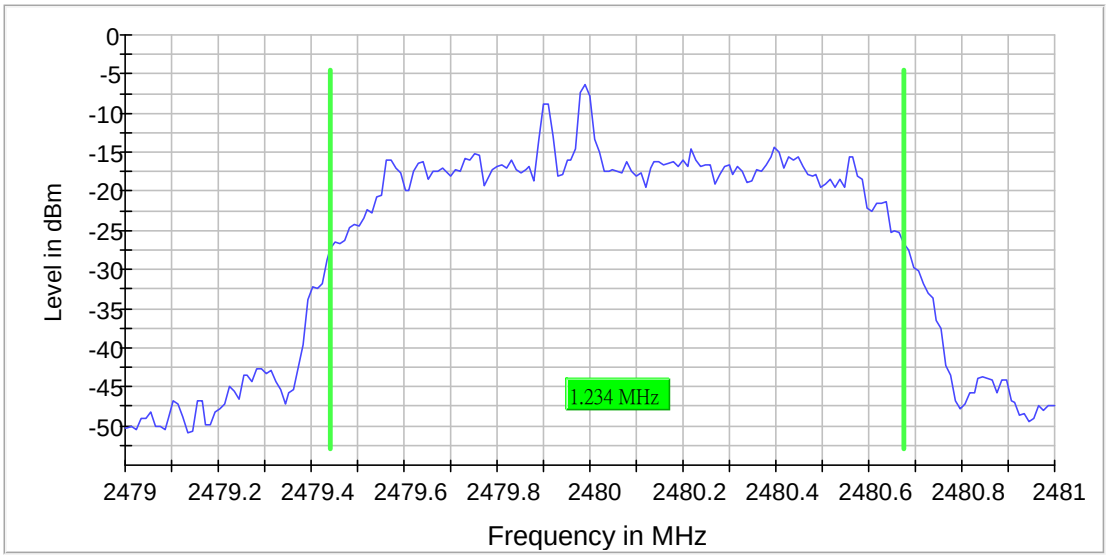
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Emission Bandwidth 20 dB(3) (2480 MHz; 8DPSK and 3-DH5)

20 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2480.000000	1.233831	---	---	2479.442786	2480.676617	-6.5	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47900 GHz	2.47900 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	~ 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	200	~ 200
Sweeptime	189.620 µs	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	9 / max. 150	max. 150
Stable	5 / 5	5

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TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Band Edge high (2480 MHz; 8DPSK and 3-DH5)

Result

DUT Frequency (MHz)	Result
2480.000000	PASS

Inband Peak

Frequency (MHz)	Level (dBm)
2479.927139	-11.3

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2484.671450	-66.5	35.2	-31.3	PASS
2484.621601	-66.9	35.5	-31.3	PASS
2484.721299	-67.0	35.6	-31.3	PASS
2484.521903	-67.5	36.2	-31.3	PASS
2484.870846	-67.5	36.2	-31.3	PASS
2484.571752	-67.6	36.2	-31.3	PASS
2484.422205	-67.6	36.3	-31.3	PASS
2484.472054	-67.7	36.4	-31.3	PASS
2484.820997	-67.8	36.5	-31.3	PASS
2485.020393	-67.8	36.5	-31.3	PASS
2484.372356	-67.8	36.5	-31.3	PASS
2484.920695	-67.9	36.5	-31.3	PASS
2485.070242	-67.9	36.6	-31.3	PASS
2485.120091	-67.9	36.6	-31.3	PASS
2484.970544	-68.0	36.6	-31.3	PASS

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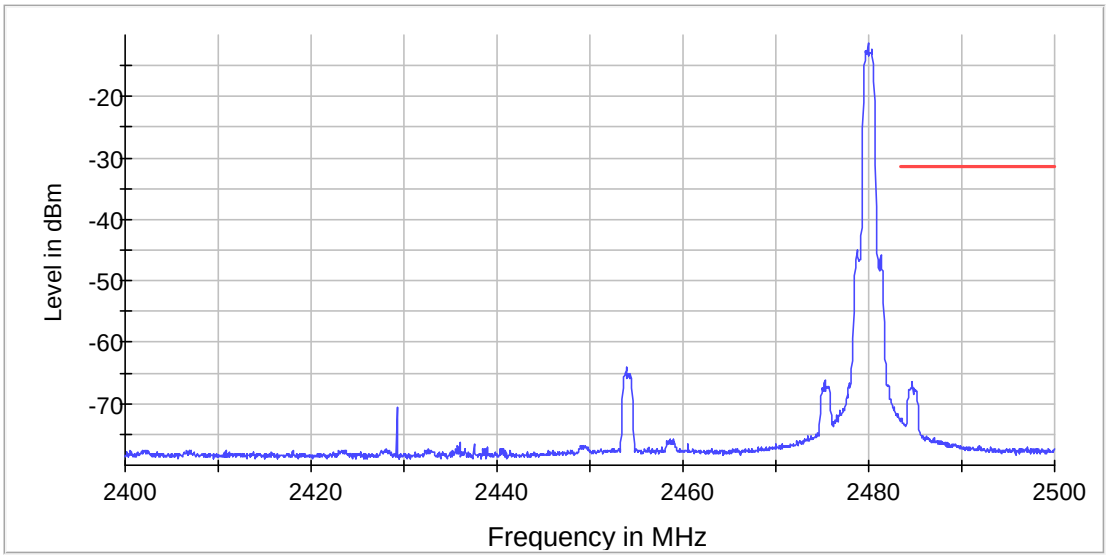

Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	1670	~ 1670
Sweeptime	1.670 s	1.670 s
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	RMS	RMS
SweepCount	3	3
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 15	max. 15
Stable	3 / 3	3

Measurement 2

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	330	~ 330
Sweeptime	330.000 ms	330.000 ms
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	10.000 dB	AUTO
Detector	RMS	RMS
SweepCount	3	3
Filter	3 dB	3 dB

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TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 15	max. 15
Stable	3 / 3	3

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TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Tx Spurious Emission (2402 MHz; GFSK and DH5)

Result

DUT Frequency (MHz)	Result
2402.000000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
4804.493054	-48.9	7.7	-41.2
4803.993109	-49.0	7.8	-41.2
4803.493165	-49.7	8.5	-41.2
4804.992999	-50.6	9.4	-41.2
4802.993220	-54.3	13.1	-41.2
2375.758658	-54.4	13.2	-41.2
2376.258479	-54.5	13.3	-41.2
2375.258836	-55.4	14.1	-41.2
2376.758301	-57.4	16.2	-41.2
4805.492943	-57.7	16.5	-41.2
2374.759015	-59.3	18.1	-41.2
2297.786505	-59.8	18.6	-41.2
2245.305248	-60.7	19.5	-41.2
19770.467471	-60.8	19.6	-41.2
19702.190488	-60.9	19.7	-41.2

Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	1000.000000	1	1
1000.000000	2400.000000	2	2
2400.000000	2483.500000	2	2
2483.500000	7000.000000	2	2
7000.000000	26000.000000	2	2

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TEST REPORT

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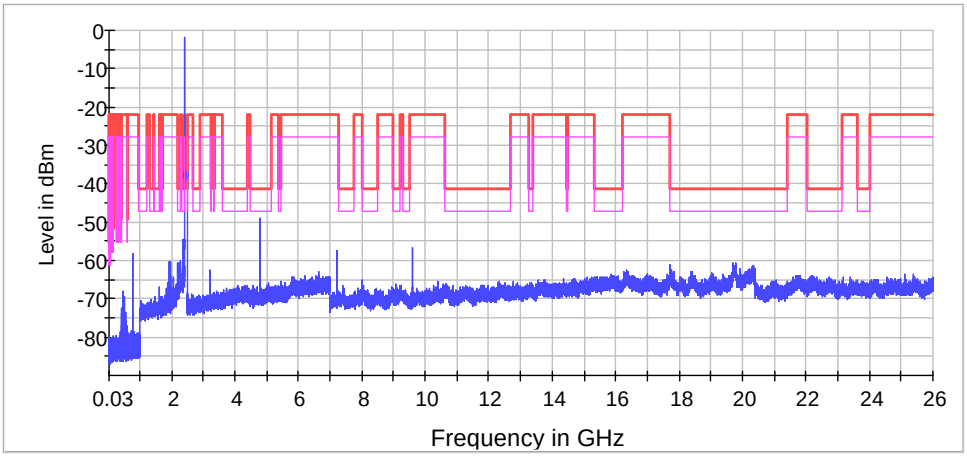

× Limit [limit.Result:1] × Sum Level [trace.Result:1]

Pre Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	19400	~ 19400
Sweeptime	19.400 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	30	30
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150
Stable	3 / 3	3

Pre Measurement 2

Setting	Instrument Value	Target Value
RBW	1.000 MHz	<= 1.000 MHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	2800	~ 2800
Sweeptime	2.800 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	30	30
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off

FCC ID: 2ADFF-KSREUN
IC: 23562-KSREUN

CMA Industrial Development Foundation Limited
Room 1302, Yan Hing Centre, 9-13 Wong Chuk Yeung St., Fo Tan, Shatin, N.T., Hong Kong.
Tel: (852) 2698 8198 Fax: (852) 2695 4177 E-mail: info@cmatcl.com Web Site: http://www.cmatcl.com

TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Stablemode	**Trace**	**Trace**
Stablevalue	**0.30**	**0.30**
Run	**3 / max. 150**	**max. 150**
Stable	**3 / 3**	**3**

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TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Tx Spurious Emission (2441 MHz; GFSK and DH5)

Result

DUT Frequency (MHz)	Result
2441.000000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
4881.984475	-47.9	6.7	-41.2
4882.484420	-47.9	6.7	-41.2
4881.484531	-48.6	7.4	-41.2
4882.984365	-50.5	9.2	-41.2
4880.984586	-53.1	11.9	-41.2
4883.484309	-56.1	14.9	-41.2
2284.791146	-58.7	17.5	-41.2
2285.290968	-58.8	17.5	-41.2
7323.276670	-59.9	18.7	-41.2
2232.809711	-60.0	18.8	-41.2
7323.870383	-60.2	19.0	-41.2
19715.252172	-60.5	19.3	-41.2
2284.291325	-60.6	19.4	-41.2
2337.272403	-60.6	19.4	-41.2
2336.772581	-60.7	19.4	-41.2

Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	1000.000000	1	1
1000.000000	2400.000000	2	2
2400.000000	2483.500000	2	2
2483.500000	7000.000000	2	2
7000.000000	26000.000000	2	2

FCC ID: 2ADFF-KSREUN
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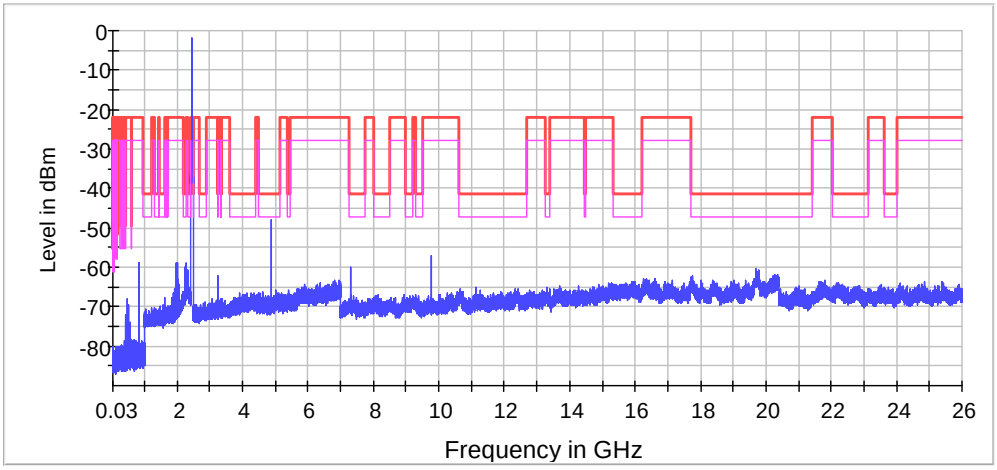
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018



× Limit [limit.Result:1] × Sum Level [trace.Result:1]

Pre Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	19400	~ 19400
Sweeptime	19.400 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	30	30
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150
Stable	3 / 3	3

Pre Measurement 2

Setting	Instrument Value	Target Value
RBW	1.000 MHz	<= 1.000 MHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	2800	~ 2800
Sweeptime	2.800 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	30	30
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace

FCC ID: 2ADFF-KSREUN
IC: 23562-KSREUN

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TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Stablevalue	**0.30**	**0.30**
Run	**3 / max. 150**	**max. 150**
Stable	**3 / 3**	**3**

FCC ID: 2ADFF-KSREUN
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TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Tx Spurious Emission (2480 MHz; GFSK and DH5)

Result

DUT Frequency (MHz)	Result
2480.000000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
4959.975841	-46.8	-50.4	-41.2	9.2	PASS

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
4959.975841	-46.8	5.5	-41.2
4960.475786	-47.1	5.9	-41.2
4960.975731	-47.8	6.6	-41.2
4959.475897	-48.2	6.9	-41.2
4958.975952	-53.4	12.2	-41.2
4961.475675	-55.6	14.3	-41.2
2272.295609	-59.0	17.8	-41.2
7440.238110	-59.7	18.5	-41.2
2271.795787	-59.7	18.5	-41.2
2272.795430	-60.0	18.8	-41.2
2323.777222	-60.1	18.8	-41.2
2271.295966	-60.3	19.1	-41.2
2324.277044	-60.4	19.2	-41.2
2323.277401	-60.5	19.3	-41.2
7440.831823	-60.6	19.4	-41.2

Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	1000.000000	1	1
1000.000000	2400.000000	2	2
2400.000000	2483.500000	2	2
2483.500000	7000.000000	2	2
7000.000000	26000.000000	2	2

FCC ID: 2ADFF-KSREUN
IC: 23562-KSREUN

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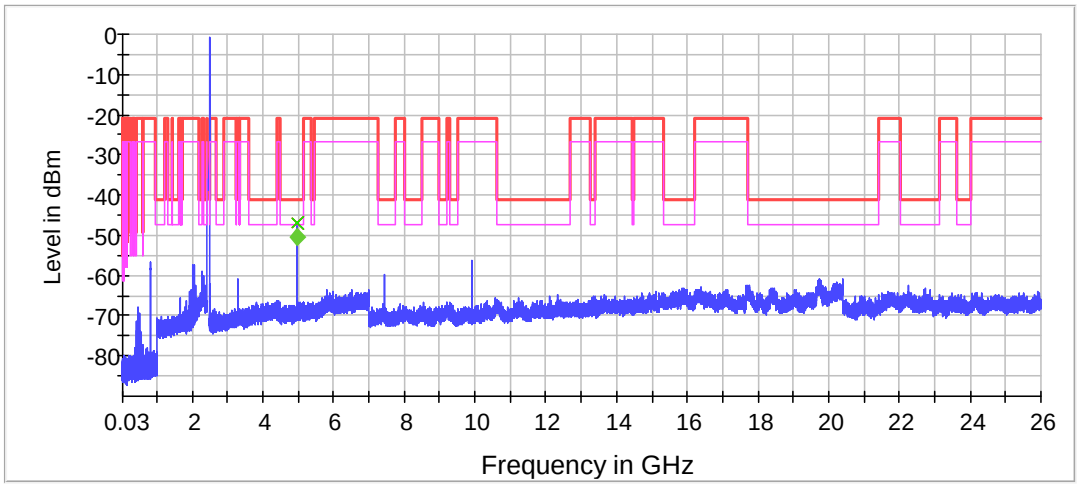
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018



Limit [limit.Result:1]
Threshold [limit 2.Result:1]
Sum Level [trace.Result:1]
Critical [Over Limit.Result:1]

Pre Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	19400	~ 19400
Sweeptime	19.400 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	30	30
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150
Stable	3 / 3	3

FCC ID: 2ADFF-KSREUN
IC: 23562-KSREUN

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TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Pre Measurement 2

Setting	Instrument Value	Target Value
RBW	1.000 MHz	<= 1.000 MHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	2800	~ 2800
Sweeptime	2.800 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	30	30
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30	0.30
Run	3 / max. 150	max. 150
Stable	3 / 3	3

Final Measurement 2

Setting	Instrument Value	Target Value
Span	ZeroSpan	ZeroSpan
RBW	1.000 MHz	~ 1.000 MHz
VBW	3.000 MHz	~ 3.000 MHz
SweepPoints	10001	~ 10001
Sweeptime	1.000 s	1.000 s
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 dB	0.000 dB
Detector	RMS	RMS
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Clear Write	Clear Write
Sweeptype	Sweep	AUTO
Preamp	off	off

FCC ID: 2ADFF-KSREUN
IC: 23562-KSREUN

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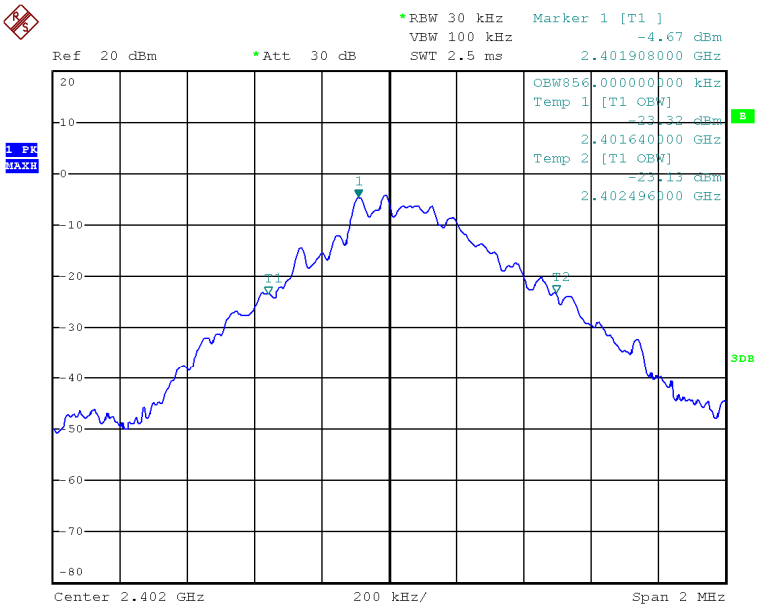
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

99% Occupied bandwidth



Date: 19.APR.2018 06:16:14

2402MHz, GFSK

FCC ID: 2ADFF-KSREUN
IC: 23562-KSREUN

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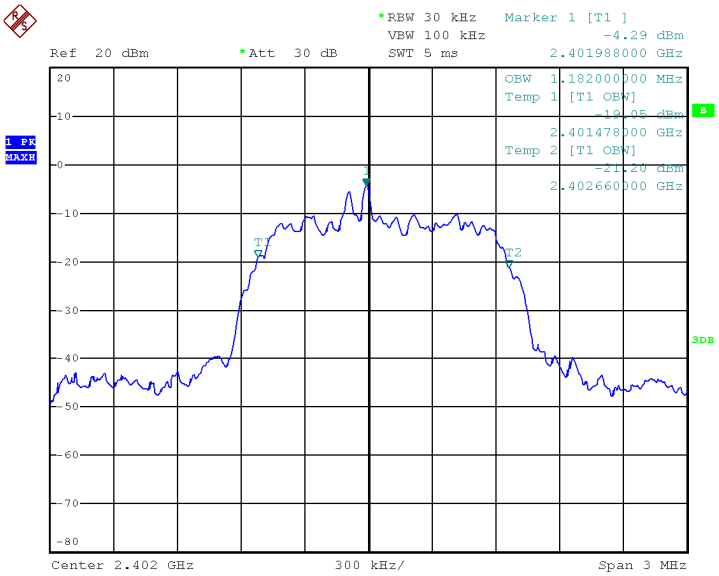
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018



Date: 19.APR.2018 06:17:28

2402MHz, π/4QDPSK

FCC ID: 2ADFF-KSREUN
IC: 23562-KSREUN

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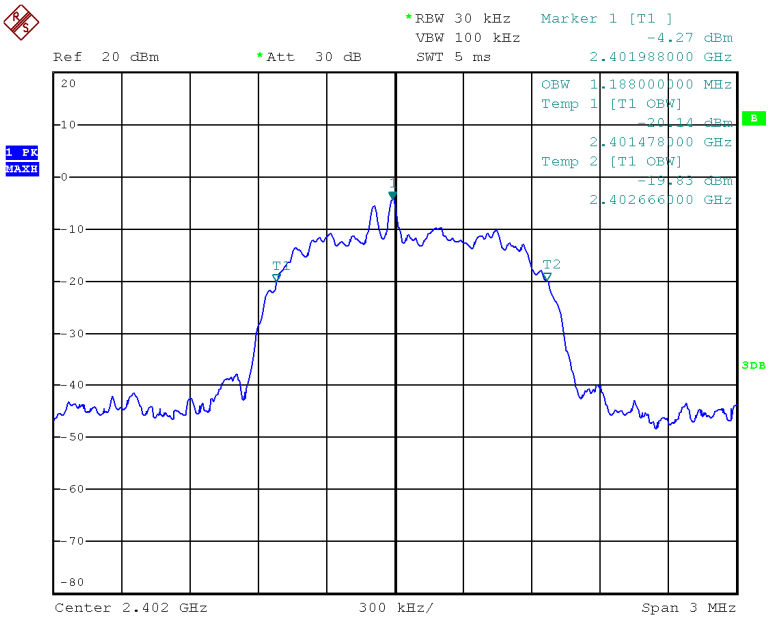
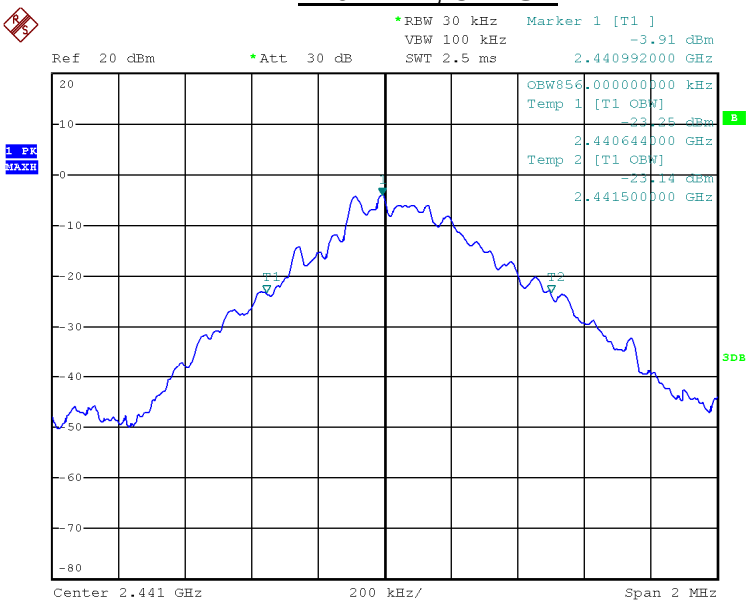
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018



Date: 19.APR.2018 06:18:39

2402MHz, 8DPSK



Date: 19.APR.2018 06:19:32

FCC ID: 2ADFF-KSREUN
IC: 23562-KSREUN

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TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

2441MHz, GFSK

FCC ID: 2ADFF-KSREUN
IC: 23562-KSREUN

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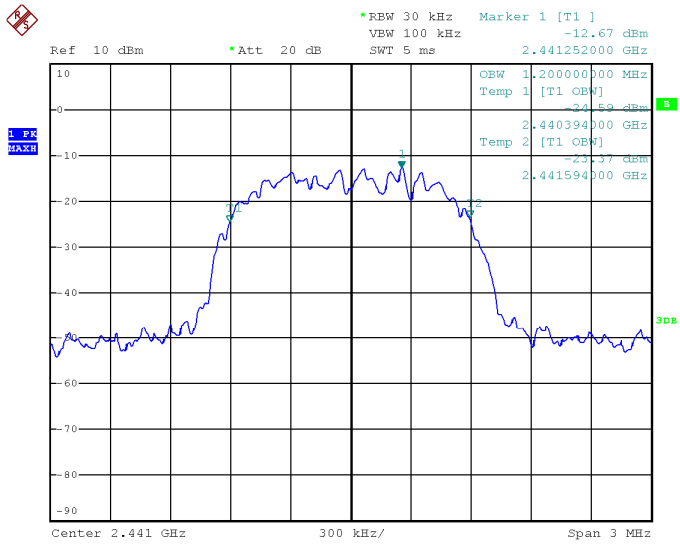
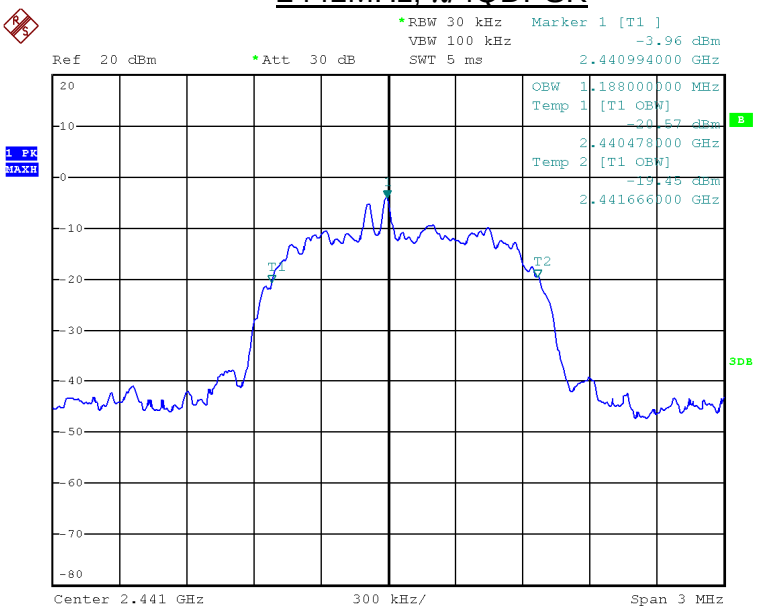
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018



Date: 12.FEB.2018 12:14:35

2441MHz, π/4QDPSK



Date: 19.APR.2018 06:21:26

2441MHz, 8DPSK

FCC ID: 2ADFF-KSREUN
IC: 23562-KSREUN

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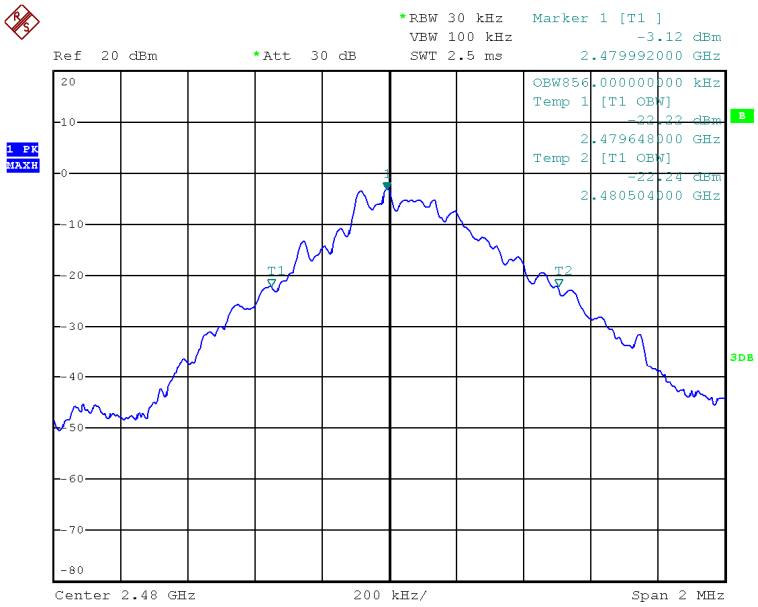
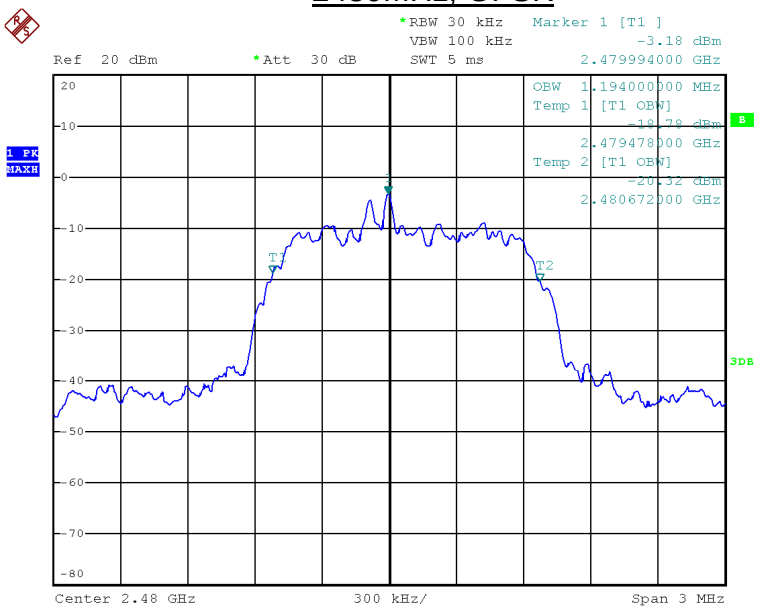
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018



Date: 19.APR.2018 06:22:12

2480MHz, GFSK



Date: 19.APR.2018 06:23:00

FCC ID: 2ADFF-KSREUN
IC: 23562-KSREUN

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TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

2480MHz, π/4QDPSK

FCC ID: 2ADFF-KSREUN
IC: 23562-KSREUN

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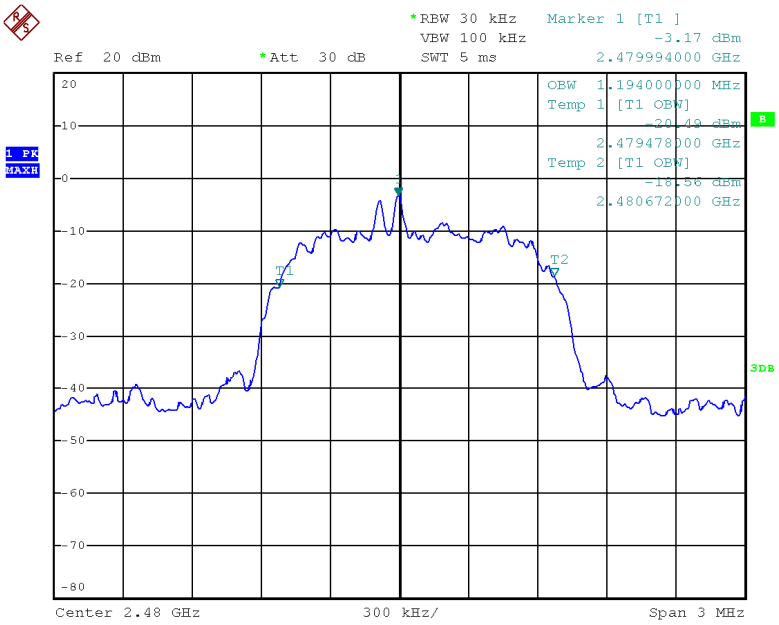
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018



Date: 19.APR.2018 06:23:53

2480MHz, 8DPSK

FCC ID: 2ADFF-KSREUN
IC: 23562-KSREUN

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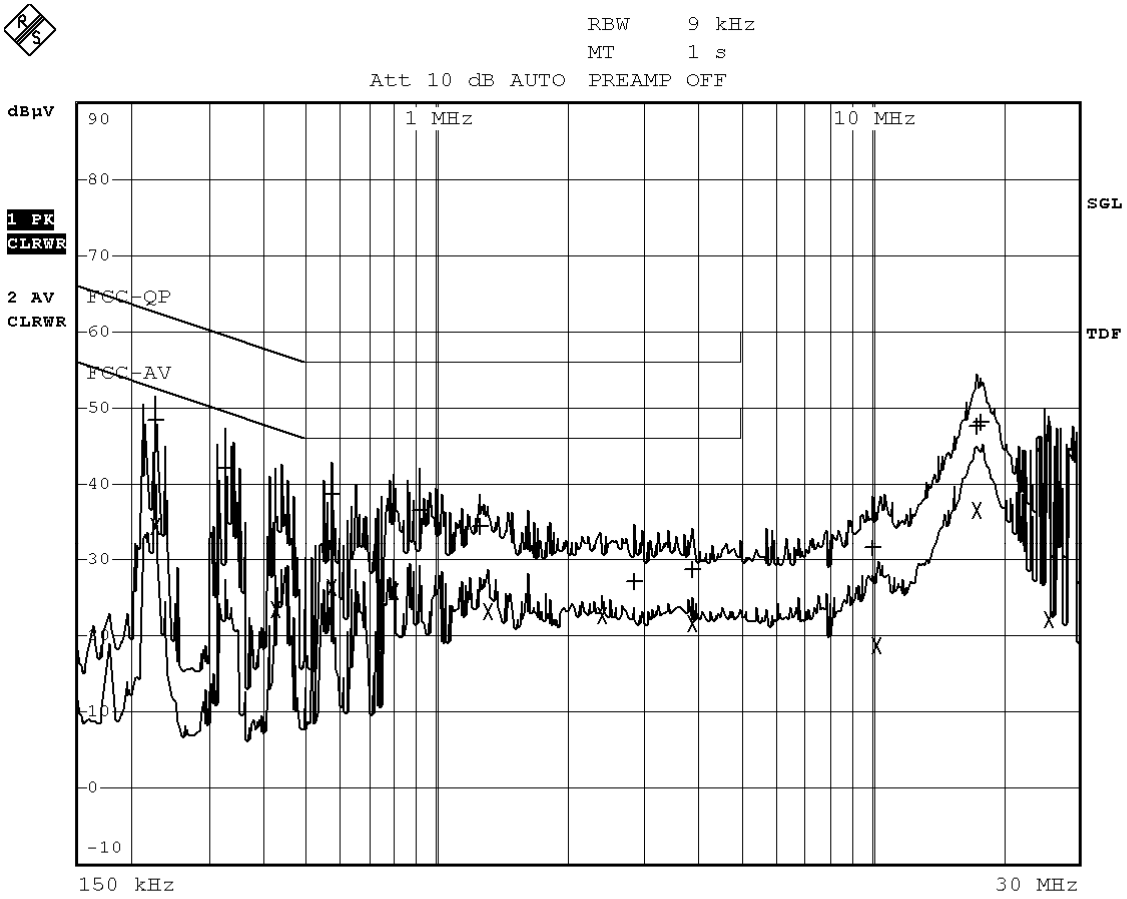
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

Conducted Emission

1) Bluetooth mode



Date: 14.MAR.2018 16:16:01

FCC ID: 2ADFF-KSREUN
IC: 23562-KSREUN

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TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

EDIT PEAK LIST (Final Measurement Results)			
Trace1:	FCC-QP		
Trace2:	FCC-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Quasi Peak	226.5 kHz	48.51 L1 gnd	-14.05
2 Average	226.5 kHz	34.44 L1 gnd	-18.13
1 Quasi Peak	330 kHz	42.06 L1 gnd	-17.38
2 Average	429 kHz	23.45 L1 gnd	-23.82
1 Quasi Peak	572 kHz	38.60 L1 gnd	-17.39
2 Average	572 kHz	26.40 L1 gnd	-19.59
2 Average	792.5 kHz	25.76 L1 gnd	-20.23
1 Quasi Peak	909.5 kHz	36.60 N gnd	-19.40
1 Quasi Peak	1.256 MHz	34.52 N gnd	-21.47
2 Average	1.319 MHz	23.16 L1 gnd	-22.83
2 Average	2.399 MHz	22.56 L1 gnd	-23.43
1 Quasi Peak	2.8625 MHz	27.20 L1 gnd	-28.79
1 Quasi Peak	3.857 MHz	28.65 L1 gnd	-27.34
2 Average	3.857 MHz	21.65 L1 gnd	-24.34
1 Quasi Peak	10.112 MHz	31.49 L1 gnd	-28.50
2 Average	10.283 MHz	18.70 N gnd	-31.29
1 Quasi Peak	17.447 MHz	47.67 L1 gnd	-12.32
2 Average	17.447 MHz	36.47 L1 gnd	-13.52
1 Quasi Peak	17.834 MHz	48.13 L1 gnd	-11.86
2 Average	25.6145 MHz	22.02 L1 gnd	-27.97

Date: 14.MAR.2018 16:15:45

FCC ID: 2ADFF-KSREUN
IC: 23562-KSREUN

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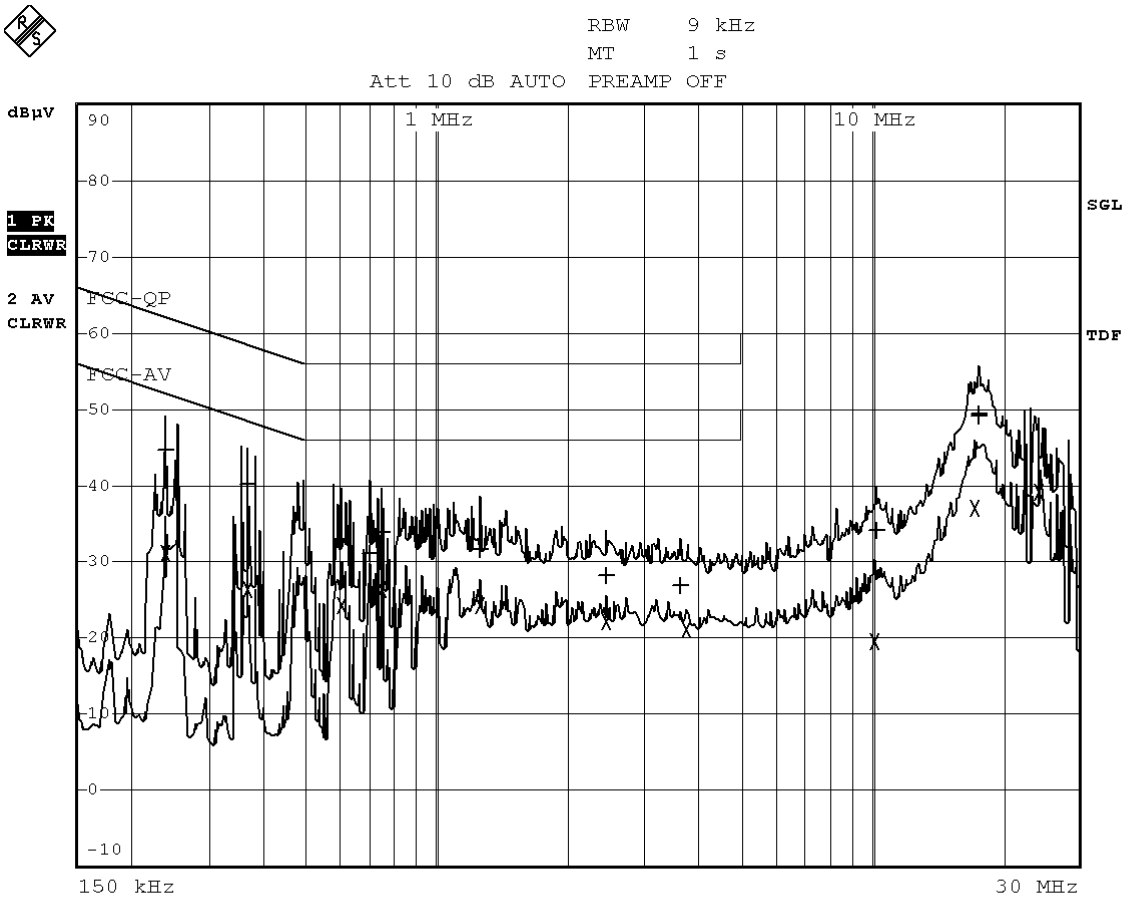
TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

2) Aux-in mode



Date: 14.MAR.2018 16:22:29

FCC ID: 2ADFF-KSREUN
IC: 23562-KSREUN

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TEST REPORT

Report No. : AW0020299(0) Date : Apr 18, 2018

EDIT PEAK LIST (Final Measurement Results)			
Trace1:	FCC-QP		
Trace2:	FCC-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Quasi Peak	240 kHz	44.82 L1 gnd	-17.26
2 Average	240 kHz	31.09 L1 gnd	-21.00
1 Quasi Peak	370.5 kHz	40.29 L1 gnd	-18.19
2 Average	370.5 kHz	26.35 L1 gnd	-22.13
2 Average	603.5 kHz	24.23 L1 gnd	-21.76
1 Quasi Peak	702.5 kHz	31.00 N gnd	-25.00
1 Quasi Peak	743 kHz	34.05 L1 gnd	-21.94
2 Average	743 kHz	26.24 L1 gnd	-19.75
1 Quasi Peak	1.2515 MHz	31.72 L1 gnd	-24.27
2 Average	1.2515 MHz	24.19 L1 gnd	-21.80
1 Quasi Peak	2.444 MHz	28.13 L1 gnd	-27.87
2 Average	2.444 MHz	22.08 L1 gnd	-23.91
1 Quasi Peak	3.641 MHz	26.90 L1 gnd	-29.09
2 Average	3.758 MHz	21.22 L1 gnd	-24.77
2 Average	10.1975 MHz	19.46 N gnd	-30.53
1 Quasi Peak	10.238 MHz	34.18 L1 gnd	-25.81
2 Average	17.3075 MHz	37.10 L1 gnd	-12.89
1 Quasi Peak	17.618 MHz	49.08 L1 gnd	-10.91
1 Quasi Peak	17.7215 MHz	49.37 L1 gnd	-10.63
2 Average	24.224 MHz	39.33 L1 gnd	-10.66

Date: 14.MAR.2018 16:22:15

***** End of Report *****

FCC ID: 2ADFF-KSREUN
IC: 23562-KSREUN

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