



SPORTON International Inc.

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Project No: CB10601217

RF Exposure Evaluation Report

Applicant's company	Fossil Group, Inc.
Applicant Address	901 S. Central Expressway Richardson TX 75080 USA
FCC ID	UK7-NDW3A
Manufacturer's company	Fossil Group, Inc.
Manufacturer Address	901 S. Central Expressway Richardson TX 75080 USA

Product Name	BLE Slim HYBRID WATCH
Brand Name	FOSSIL SKAGEN
Model Name	NDW3A, NDW3B, NDW3C, NDW3E
EMC sample S/N	LZ10CDV07R, LZ10CDV07Z, LZ10CDV05F, LZ10CDV087
Radiated sample S/N	LZ10CDV02D, LZ10CDV009, LZ10CDV01V, LZ10CDV007
Conducted sample S/N	LE10CEV0DY
Ref. Standard(s)	47 CFR FCC Part 2 Subpart J, section 2.1093
Received Date	Jan. 17, 2017
Final Test Date	Jan. 23, 2017
Submission Type	Original Equipment

Cliff Chang

SPORTON INTERNATIONAL INC.



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Summary of Test Result

Conformance Test Specifications				
Report Clause	Ref. Std. Clause	Description	Limit	Result
1.1.2	15.203	Antenna Requirement	FCC 15.203	Complied
Note	2.3	AC Power-line Conducted Emissions	FCC 15.207	-
3.1	15.247(a)	DTS Bandwidth	$\geq 500\text{kHz}$	Complied
3.2	15.247(b)	Maximum Conducted Output Power	Power [dBm]:30	Complied
3.3	15.247(e)	Power Spectral Density	PSD [dBm/3kHz]:8	Complied
3.4	15.247(d)	Emissions in Non-restricted Frequency Bands	Non-Restricted Bands: $>30\text{ dBc}$	Complied
3.5	15.247(d)	Emissions in Restricted Frequency Bands	Restricted Bands: FCC 15.209	Complied

Note: It was supplied power by Battery for EUT; it's not necessary to apply to AC Power-line Conducted Emissions.



Revision History



1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	Bluetooth Mode	Ch. Frequency (MHz)	Channel Number
2400-2483.5	LE	2402-2480	0-39 [40]

Band	Mode	BWch (MHz)	Nant
2.4G	BT-LE	1	1

Note:

- 2.4G is the 2.4GHz Band (2.4-2.4835GHz).
- Bluetooth LE uses a GFSK (1Mbps) modulation for DSSS.
- BWch is the channel separation
- Nss-Min is the minimum number of spatial streams.
- Nant is the number of outputs. e.g., 2(2, 3) means have 2 outputs for port 2 and port 3. 2 means have 2 outputs for port 1 and port 2.

1.1.2 Antenna Information

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	1	Fossil	Fossil_NDW3 SERIES	Printed Antenna	N/A	-7.9

1.1.3 EUT Operational Condition

EUT Power Type	Normal Link: From battery (3V) Continuous transmitting: From DC power supply
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1.1.4 Table for Multiple Listing

The model names in the following table are all refer to the identical product.

Model Name	Radiated sample S/N	EMC sample S/N	EUT	Description
NDW3A	LZ10CDV02D	LZ10CDV07R	EUT 1	The variation of model numbers is for externals.
NDW3B	LZ10CDV009	LZ10CDV07Z	EUT 2	
NDW3C	LZ10CDV01V	LZ10CDV05F	EUT 3	
NDW3E	LZ10CDV007	LZ10CDV087	EUT 4	

Note 1: For Conducted measurement: From the above models, EUT 1 was selected as representative model for the test and its data was recorded in this report.

Note 2: For Radiated measurement: All EUTs were tested.

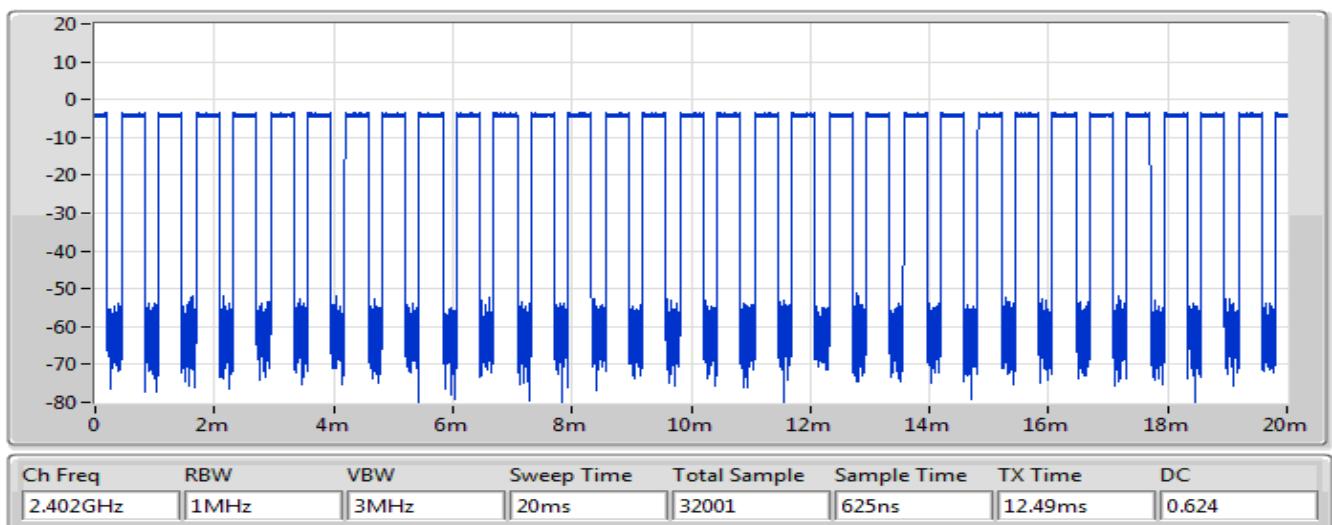


1.2 Duty Cycle

Mode	DC	DCF (dB)
BT-LE(1Mbps)	0.624	2.048

Note: $10^* \log(1/0.624) = 2.048$

DC;BT-LE;BWch:1



Note: Duty cycle = TX time/ sweep time

1.3 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR FCC Part 15
- ANSI C63.10-2013
- FCC KDB 558074 D01 v03r05
- FCC KDB 412172 D01 v01

1.4 Testing Location Information

Testing Location					
<input type="checkbox"/>	HWA YA	ADD	: No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.		
		TEL	: 886-3-327-3456	FAX	: 886-3-318-0055
<input checked="" type="checkbox"/>	JHUBEI	ADD	: No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.		
		TEL	: 886-3-656-9065	FAX	: 886-3-656-9085

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH01-CB	Eddie Weng	22°C / 54%	Jan. 19, 2017
Radiated	03CH01-CB	Zero Chen/Nyle Chang/Jay Luo	22°C / 54%	Jan. 17, 2017~Jan. 23, 2017

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.



1.5 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Test Items	Uncertainty	Remark
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%
Output Power Measurement	1.33 dB	Confidence levels of 95%
Power Density Measurement	1.27 dB	Confidence levels of 95%
Bandwidth Measurement	9.74 x10 ⁻⁸	Confidence levels of 95%



2 Test Configuration of EUT

2.1 Test Channel Mode

Band	Mode	BWch (MHz)	Nss-Min	Nant	Ch. (MHz)	Range	Power Setting
2.4G	BT-LE	1	1	1	2402	L	Default
2.4G	BT-LE	1	1	1	2440	M	Default
2.4G	BT-LE	1	1	1	2480	H	Default

Note:

- Test range channel consist of L (Low Ch.), M (Middle Ch.), H (High Ch.), S (Single Ch.) and C (Straddle Band Ch.).

2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in Non-restricted Frequency Bands
Test Condition	Conducted measurement at transmit chains



The Worst Case Mode for Following Conformance Tests	
Tests Item	Emissions in Restricted Frequency Bands
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.
Operating Mode < 1GHz	Normal Link
1	EUT 1 + X Axis
2	EUT 1 + Y Axis
3	EUT 1 + Z Axis
Mode 3 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4~6 will follow this same test mode.	
4	EUT 2 + Z Axis
5	EUT 3 + Z Axis
6	EUT 4 + Z Axis
Mode 3 generated the worst test result, so it was recorded in this report.	
Operating Mode > 1GHz	The EUT was performed at X axis, Y axis and Z axis position. The worst case was found at X axis for mode 1, mode 3 and mode 4 and Z axis for mode 2. All modes were tested and recorded in the test report.
1	EUT 1 + X Axis
2	EUT 2 + Z Axis
3	EUT 3 + X Axis
4	EUT 4 + X Axis

2.3 EUT Operation during Test

For Normal Link:

During the test, the EUT operation to normal function.

For CTX Mode:

The EUT was programmed to be in continuously transmitting mode.

2.4 Accessories

N/A



2.5 Support Equipment

For Test Site No: 03CH01-CB <Below 1GHz>

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
1	i-Pod	Apple	A1509	BCG-A1421

For Test Site No: 03CH01-CB <Above 1GHz>

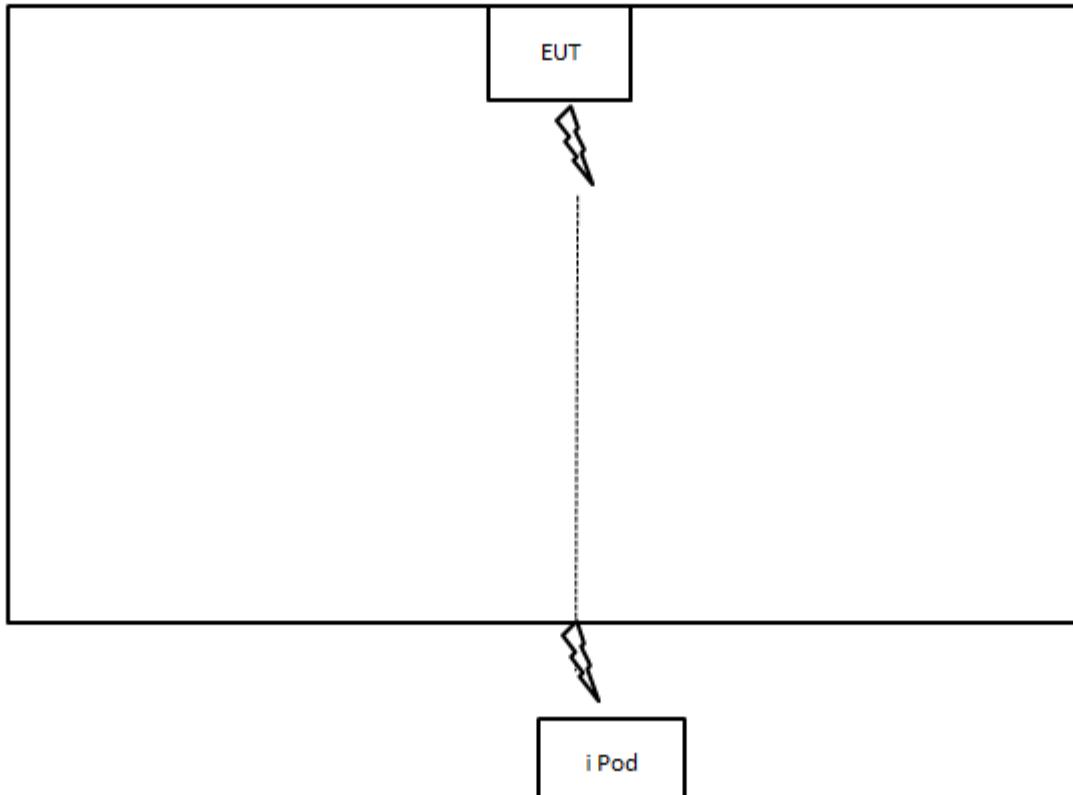
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Power Supply	Advanced	LPS-305	N/A

For Test Site No: TH01-CB

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E4300	DoC
2	Power Supply	Advanced	LPS-305	N/A

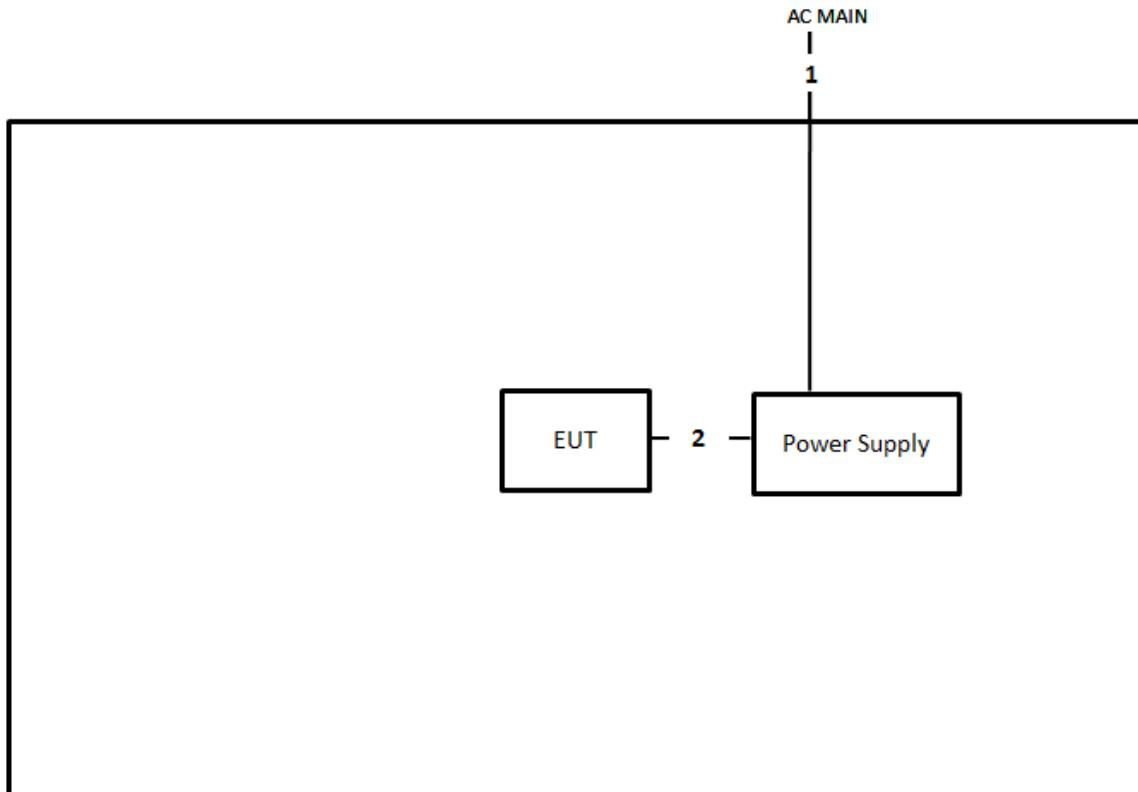
2.6 Test Setup Diagram

Test Setup Diagram - Radiated Test < 1GHz





Test Setup Diagram - Radiated Test > 1GHz



Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	DC power cable	No	1m

3 Transmitter Test Result

3.1 DTS Bandwidth

3.1.1 6dB Bandwidth Limit

6dB Bandwidth Limit
Systems using digital modulation techniques:
▪ 6 dB bandwidth \geq 500 kHz.

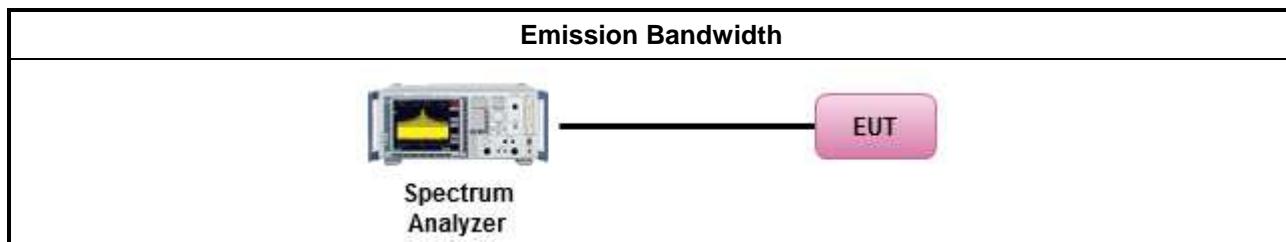
3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

Test Method
▪ For the emission bandwidth shall be measured using one of the options below:
<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 8.1 Option 1 for 6 dB bandwidth measurement.
<input type="checkbox"/> Refer as FCC KDB 558074, clause 8.2 Option 2 for 6 dB bandwidth measurement.
<input type="checkbox"/> Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.

3.1.4 Test Setup



3.1.5 Test Result of Emission Bandwidth

Refer as Appendix A



3.2 Maximum Conducted Output Power

3.2.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit	
	<ul style="list-style-type: none">▪ If $G_{TX} \leq 6 \text{ dBi}$, then $P_{Out} \leq 30 \text{ dBm}$ (1 W)
	<ul style="list-style-type: none">▪ Point-to-multipoint systems (P2M): If $G_{TX} > 6 \text{ dBi}$, then $P_{Out} = 30 - (G_{TX} - 6) \text{ dBm}$
	<ul style="list-style-type: none">▪ Point-to-point systems (P2P): If $G_{TX} > 6 \text{ dBi}$, then $P_{Out} = 30 - (G_{TX} - 6)/3 \text{ dBm}$
	<ul style="list-style-type: none">▪ Smart antenna system (SAS):<ul style="list-style-type: none">- Single beam: If $G_{TX} > 6 \text{ dBi}$, then $P_{Out} = 30 - (G_{TX} - 6)/3 \text{ dBm}$- Overlap beam: If $G_{TX} > 6 \text{ dBi}$, then $P_{Out} = 30 - (G_{TX} - 6)/3 \text{ dBm}$- Aggregate power on all beams: If $G_{TX} > 6 \text{ dBi}$, then $P_{Out} = 30 - (G_{TX} - 6)/3 + 8 \text{ dB dBm}$
<p>P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi.</p>	

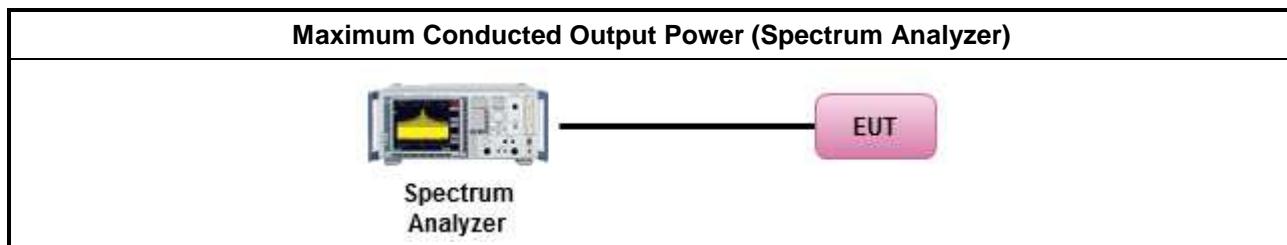
3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

Test Method	
▪ Maximum Peak Conducted Output Power	<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 9.1.1 Option 1 (RBW \geq EBW method). <input type="checkbox"/> Refer as FCC KDB 558074, clause 9.1.2 Option 2 (peak power meter for VBW \geq DTS BW)
▪ Maximum Conducted Output Power	[duty cycle \geq 98% or external video / power trigger] <input type="checkbox"/> Refer as FCC KDB 558074, clause 9.2.2.2 Method AVGSA-1 (spectral trace averaging). <input type="checkbox"/> Refer as FCC KDB 558074, clause 9.2.2.3 Method AVGSA-1 Alt. (slow sweep speed) duty cycle < 98% and average over on/off periods with duty factor <input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 9.2.2.4 Method AVGSA-2 (spectral trace averaging). <input type="checkbox"/> Refer as FCC KDB 558074, clause 9.2.2.5 Method AVGSA-2 Alt. (slow sweep speed) RF power meter and average over on/off periods with duty factor or gated trigger <input type="checkbox"/> Refer as FCC KDB 558074, clause 9.2.3 Method AVGPM-G (using an RF average power meter).
▪ For conducted measurement.	<ul style="list-style-type: none">▪ If the EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.▪ If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \dots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Refer as Appendix B



3.3 Power Spectral Density

3.3.1 Power Spectral Density Limit

Power Spectral Density Limit
▪ Power Spectral Density (PSD)≤8 dBm/3kHz

3.3.2 Measuring Instruments

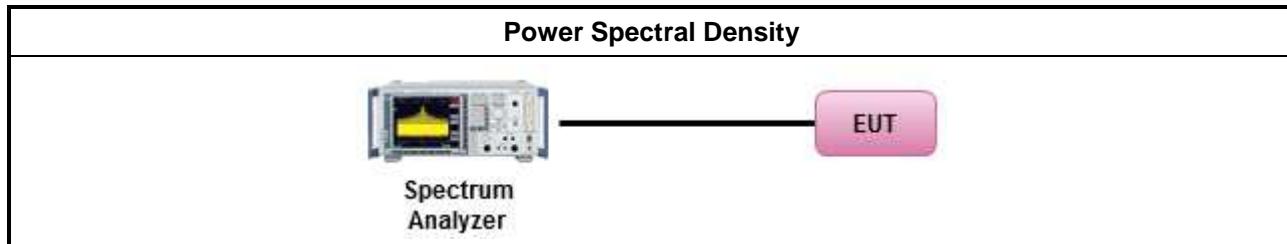
Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedures

Test Method
▪ Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).
<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 10.2 Method PKPSD (RBW=3-100kHz; Detector=peak). [duty cycle \geq 98% or external video / power trigger]
<input type="checkbox"/> Refer as FCC KDB 558074, clause 10.3 Method AVGPSD-1 (spectral trace averaging).
<input type="checkbox"/> Refer as FCC KDB 558074, clause 10.4 Method AVGPSD-2 (slow sweep speed)
duty cycle $<$ 98% and average over on/off periods with duty factor
<input type="checkbox"/> Refer as FCC KDB 558074, clause 10.5 Method AVGPSD-1 Alt (spectral trace averaging).
<input type="checkbox"/> Refer as FCC KDB 558074, clause 10.6 Method AVGPSD-2 Alt. (slow sweep speed)
▪ For conducted measurement.
<input type="checkbox"/> If The EUT supports multiple transmit chains using options given below:
<input checked="" type="checkbox"/> Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.
<input type="checkbox"/> Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,
<input type="checkbox"/> Option 3: Measure and add $10 \log(N)$ dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with $10 \log(N)$. Or each transmit chains shall be add $10 \log(N)$ to compared with the limit.



3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Refer as Appendix C

3.4 Emissions in Non-restricted Frequency Bands

3.4.1 Emissions in Non-restricted Frequency Bands Limit

Un-restricted Band Emissions Limit	
RF output power procedure	Limit (dB)
Peak output power procedure	20
Average output power procedure	30

Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

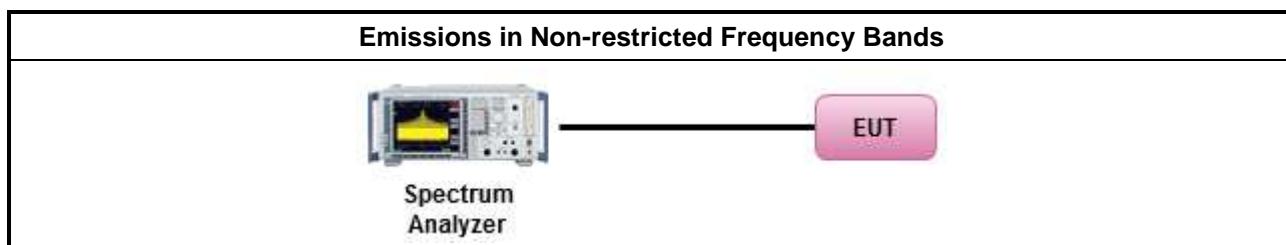
3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

Test Method
▪ Refer as FCC KDB 558074, clause 11 for unwanted emissions into non-restricted bands.

3.4.4 Test Setup



3.4.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix D



3.5 Emissions in Restricted Frequency Bands

3.5.1 Emissions in Restricted Frequency Bands Limit

Restricted Band Emissions Limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB / decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

3.5.2 Measuring Instruments

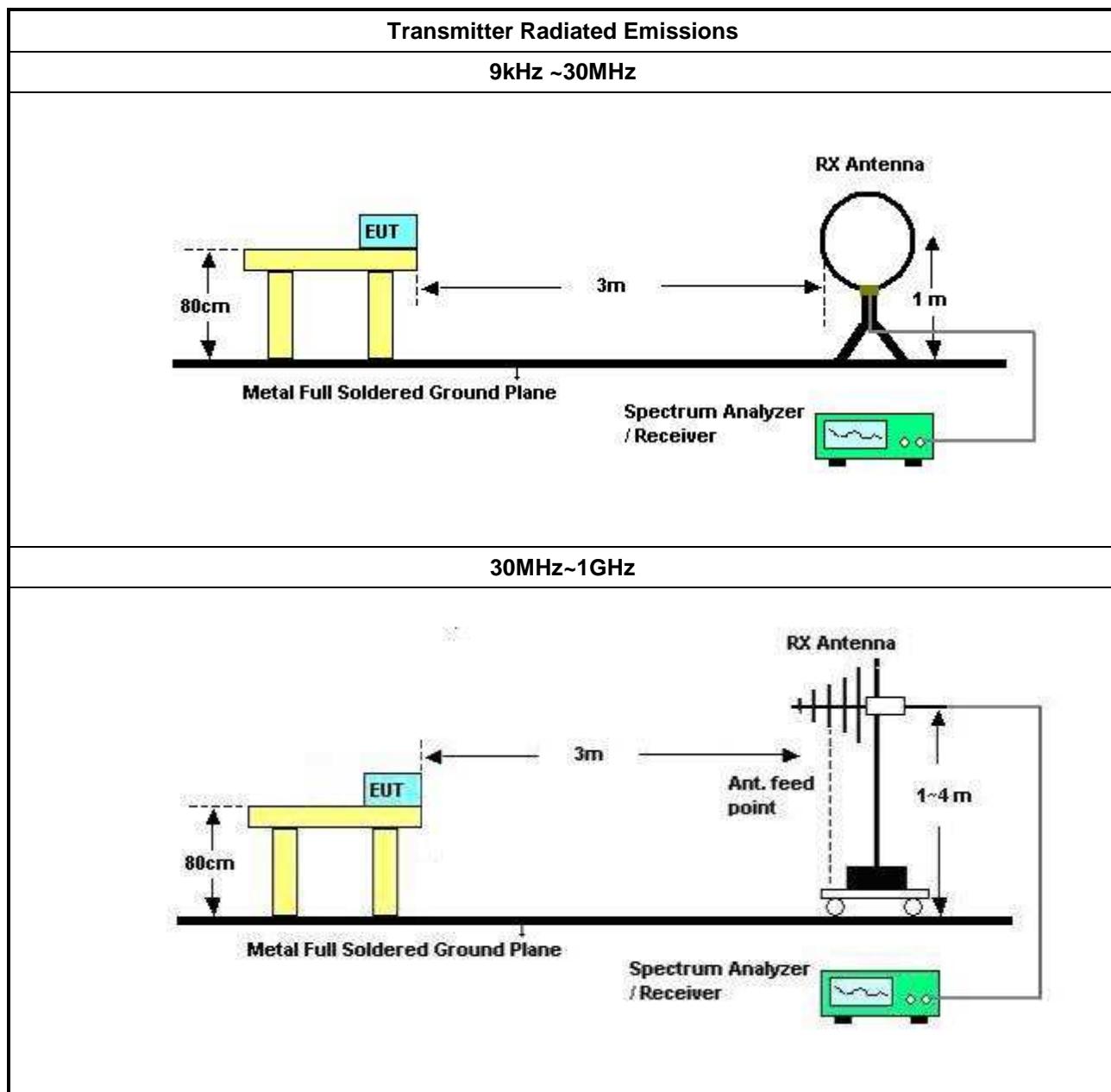
Refer a test equipment and calibration data table in this test report.

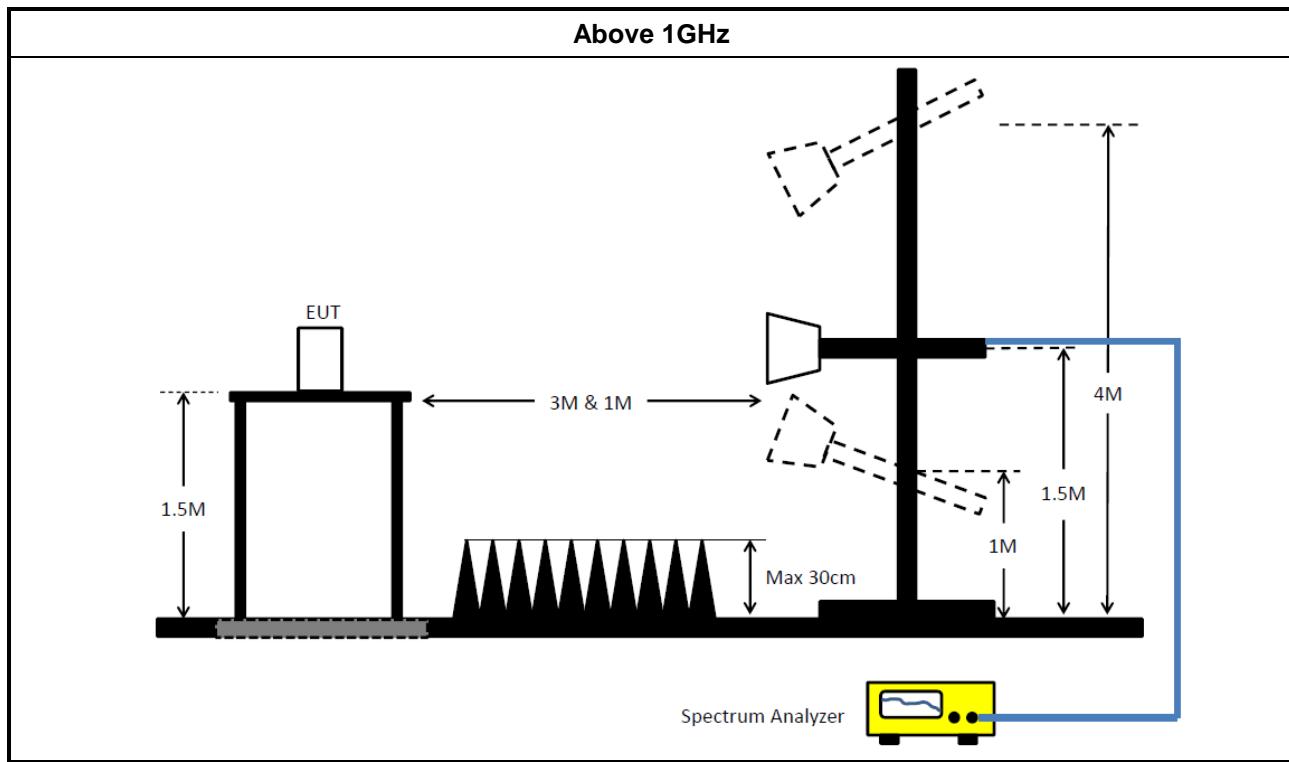


3.5.3 Test Procedures

Test Method	
<ul style="list-style-type: none">▪ The average emission levels shall be measured in [duty cycle \geq 98 or duty factor].	
<ul style="list-style-type: none">▪ Refer as ANSI C63.10, clause 6.9.2.2 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.	
<ul style="list-style-type: none">▪ For the transmitter unwanted emissions shall be measured using following options below:<ul style="list-style-type: none">▪ Refer as FCC KDB 558074, clause 12 for unwanted emissions into restricted bands.<ul style="list-style-type: none"><input type="checkbox"/> Refer as FCC KDB 558074, clause 12.2.5.1 Option 1 (trace averaging for duty cycle $\geq 98\%$)<input type="checkbox"/> Refer as FCC KDB 558074, clause 12.2.5.2 Option 2 (trace averaging + duty factor).<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 12.2.5.3 Option 3 (Reduced VBW $\geq 1/T$).<input type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). VBW $\geq 1/T$, where T is pulse time.<input type="checkbox"/> Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions.<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 12.2.4 measurement procedure peak limit.	
<ul style="list-style-type: none">▪ For the transmitter band-edge emissions shall be measured using following options below:<ul style="list-style-type: none"><input type="checkbox"/> Refer as FCC KDB 558074 clause 13.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below.<input type="checkbox"/> Refer as FCC KDB 558074, clause 13.2 (ANSI C63.10, clause 6.9.3) for marker-delta method for band-edge measurements.<input type="checkbox"/> Refer as FCC KDB 558074, clause 13.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).	
<ul style="list-style-type: none">▪ For conducted and cabinet radiation measurement, refer as FCC KDB 558074, clause 12.2.2.	
<ul style="list-style-type: none"><input type="checkbox"/> For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below:<ol style="list-style-type: none">(1) Measure and sum the spectra across the outputs or(2) Measure and add $10 \log(N)$ dB<input type="checkbox"/> For FCC KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred.	

3.5.4 Test Setup





3.5.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

3.5.6 Transmitter Radiated Unwanted Emissions

Refer as Appendix E



4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
BILOG ANTENNA with 6dB Attenuator	TESEQ & EMCI	CBL6112D & N-6-06	37880 & AT-N0609	20MHz ~ 2GHz	Aug. 30, 2016	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 16, 2016*	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Nov. 10, 2016	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 25, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Mar. 15, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 16, 2017	Radiation (03CH01-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jun. 28, 2016	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 21, 2016	Radiation (03CH01-CB)
EMI Test	R&S	ESCS	100355	9kHz ~ 2.75GHz	May 16, 2016	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-16+17	N/A	30 MHz ~ 1 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16+17	N/A	1 GHz ~ 18 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G#1	N/A	18GHz ~ 40 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G#2	N/A	18GHz ~ 40 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
Test Software	Audix	E3	6.2009-I0-7	N/A	N/A	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 26, 2016	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	Jun. 03, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz – 26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz – 26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)



FCC Test Report

Report No. : FR711846

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
RF Cable-high	Woken	RG402	High Cable-9	1 GHz –26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.

** Calibration Interval of instruments listed above is two years.

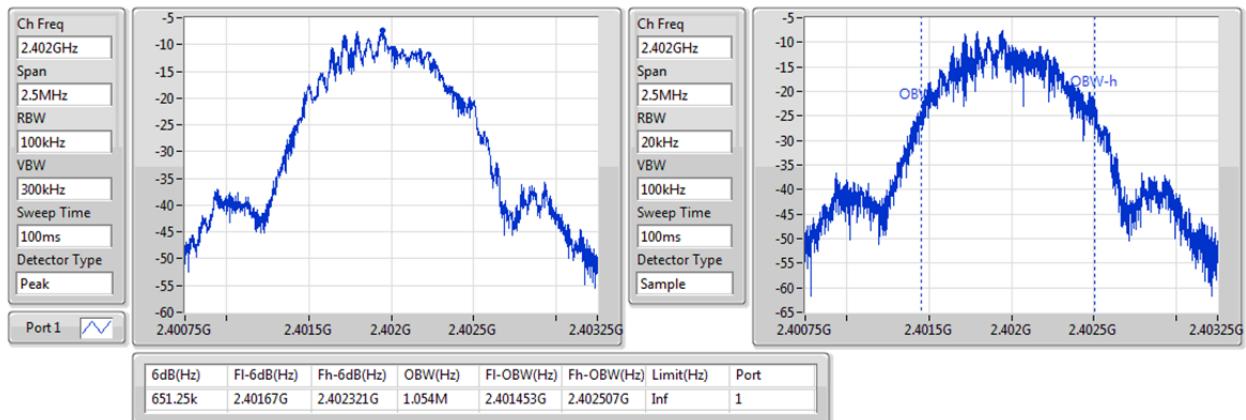
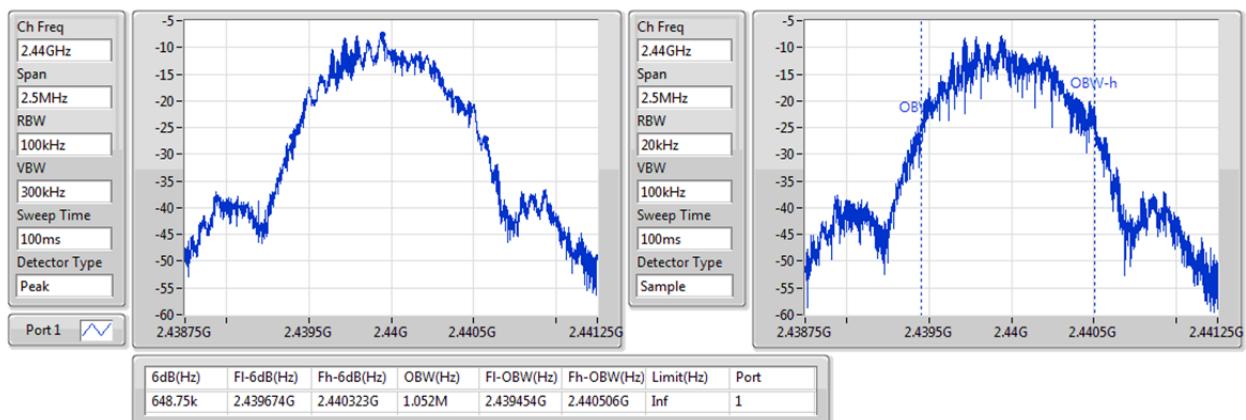
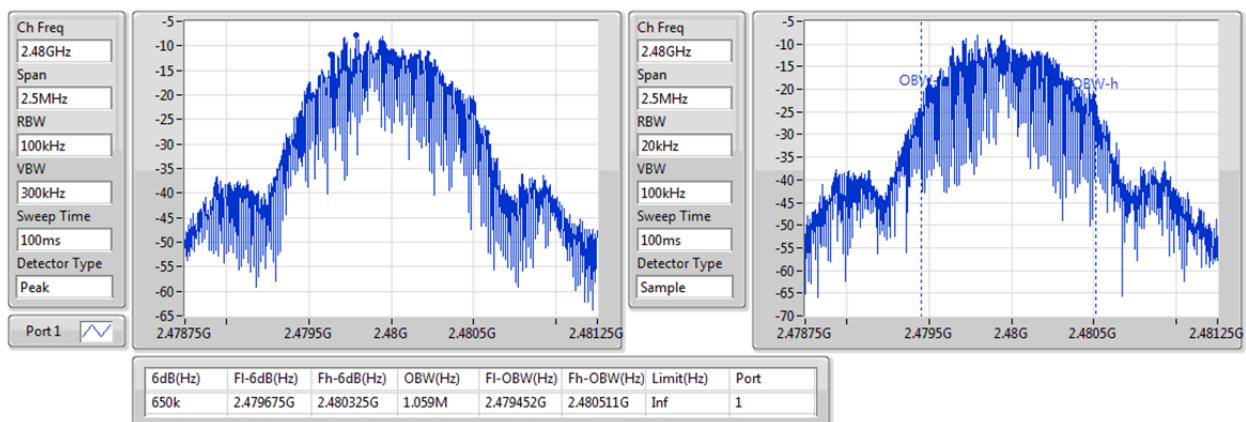
**Summary**

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	651.25K	1.059M	1M06F1D	648.75K	1.052M

Max-N dB = Maximum 6dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;**Min-N dB** = Minimum 6dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;**Result**

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
2402MHz	Pass	500k	651.25 k	1.054M
2440MHz	Pass	500k	648.75 k	1.052M
2480MHz	Pass	500k	650 k	1.059M

Port X-N dB = Port X 6dB down bandwidth; **Port X-OBW** = Port X 99% occupied bandwidth;

BT-LE(1Mbps)
2402MHz

BT-LE(1Mbps)
2440MHz

BT-LE(1Mbps)
2480MHz


**Summary**

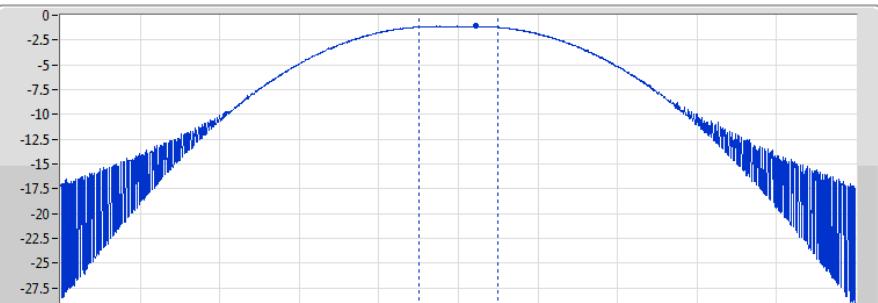
Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-1.10	0.00078

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
2402MHz	Pass	-7.9	-1.10	21.00
2440MHz	Pass	-7.9	-1.13	21.00
2480MHz	Pass	-7.9	-1.30	21.00

**BT-LE(1Mbps)****2402MHz**

Ch Freq
2.402GHz
Span
10MHz
RBW
3MHz
VBW
10MHz
Sweep Time
20ms
Detector Type
Peak
CP BW
NaNHz

**PK Power**

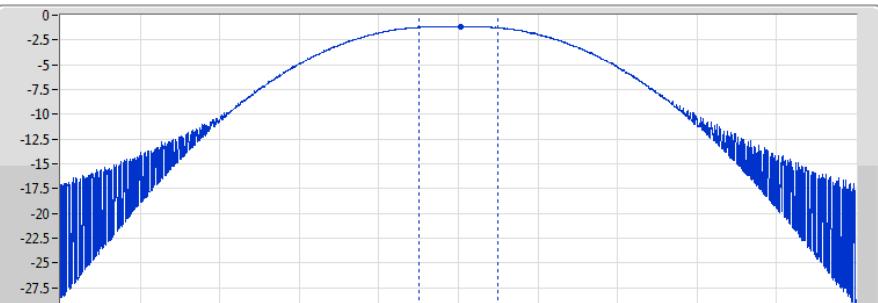
Port 1

Sum=Total Power
PX=Port X

Sum(dBm) P1(dBm)
-1.10 -1.10

BT-LE(1Mbps)**2440MHz**

Ch Freq
2.44GHz
Span
10MHz
RBW
3MHz
VBW
10MHz
Sweep Time
20ms
Detector Type
Peak
CP BW
NaNHz

**PK Power**

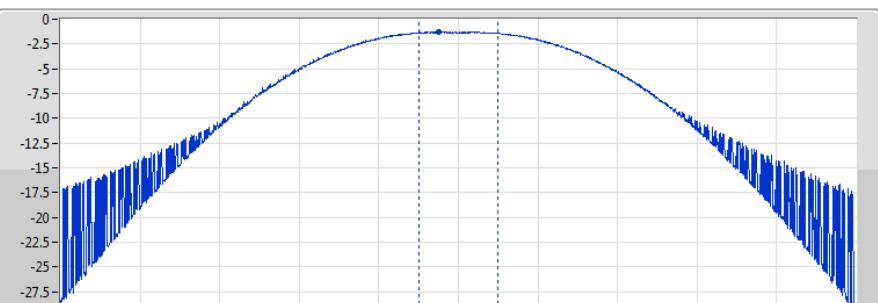
Port 1

Sum=Total Power
PX=Port X

Sum(dBm) P1(dBm)
-1.13 -1.13

BT-LE(1Mbps)**2480MHz**

Ch Freq
2.48GHz
Span
10MHz
RBW
3MHz
VBW
10MHz
Sweep Time
20ms
Detector Type
Peak
CP BW
NaNHz

**PK Power**

Port 1

Sum=Total Power
PX=Port X

Sum(dBm) P1(dBm)
-1.30 -1.30

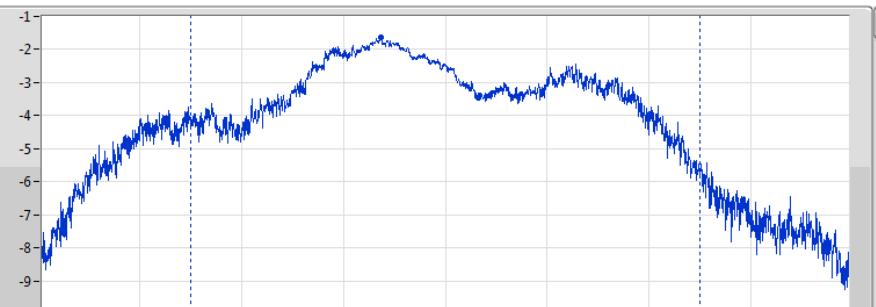
**Summary**

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-1.23	0.00075

Result

Mode	Result	Gain (dBi)	Power (dBm)	Duty factor (dBm)	Power + Duty factor (dBm)	Power Limit (dBm)
2402MHz	Pass	-7.9	-3.28	2.05	-1.23	30.00
2440MHz	Pass	-7.9	-3.35	2.05	-1.3	30.00
2480MHz	Pass	-7.9	-3.65	2.05	-1.6	30.00

BT-LE(1Mbps)
2402MHz

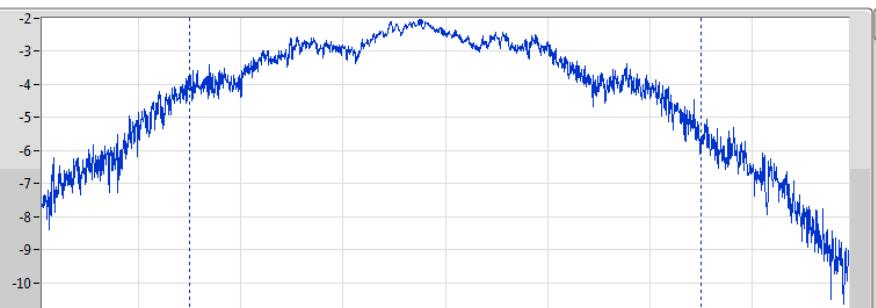
 Ch Freq
 2.402GHz
 Span
 1.581MHz
 RBW
 1MHz
 VBW
 3MHz
 Sweep Time
 2.01ms
 Detector Type
 RMS
 CP BW
 1.054MHz

AV Power

 Port 1 

 Sum=Total Power
 PX=Port X

 Sum(dBm) P1(dBm)
 -3.28 -3.28

BT-LE(1Mbps)
2440MHz

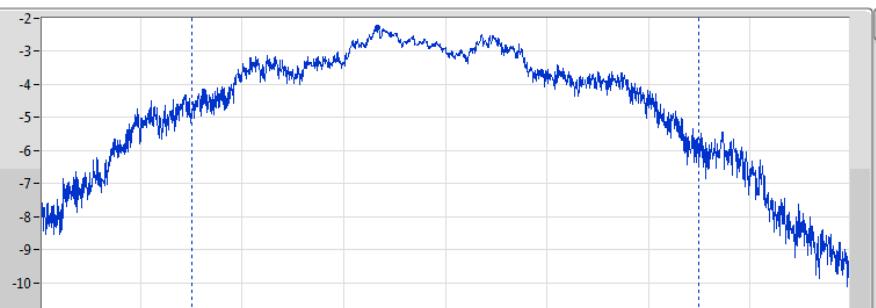
 Ch Freq
 2.44GHz
 Span
 1.578MHz
 RBW
 1MHz
 VBW
 3MHz
 Sweep Time
 2.01ms
 Detector Type
 RMS
 CP BW
 1.052MHz

AV Power

 Port 1 

 Sum=Total Power
 PX=Port X

 Sum(dBm) P1(dBm)
 -3.35 -3.35

BT-LE(1Mbps)
2480MHz

 Ch Freq
 2.48GHz
 Span
 1.5885MHz
 RBW
 1MHz
 VBW
 3MHz
 Sweep Time
 2.01ms
 Detector Type
 RMS
 CP BW
 1.059MHz

AV Power

 Port 1 

 Sum=Total Power
 PX=Port X

 Sum(dBm) P1(dBm)
 -3.65 -3.65

**Summary**

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-17.56

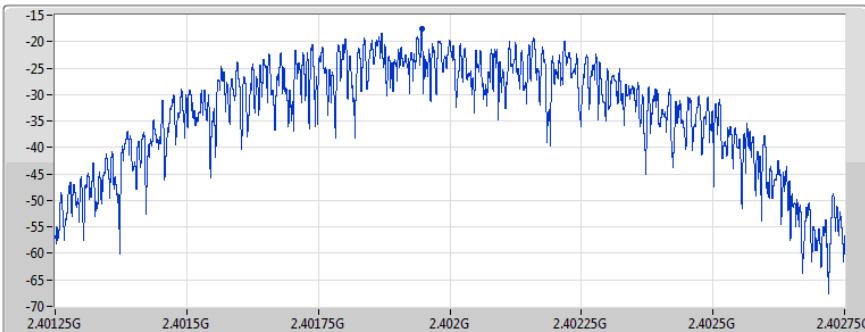
RBW=3kHz.

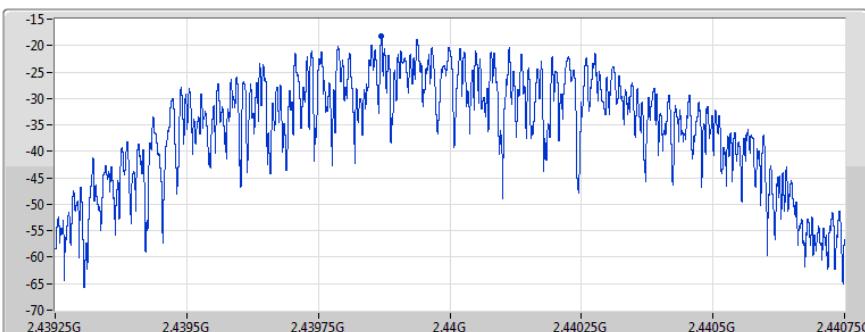
Result

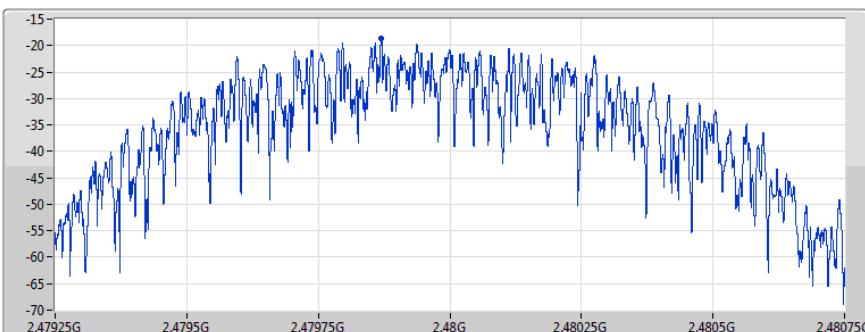
Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
2402MHz	Pass	-7.9	-17.56	8.00
2440MHz	Pass	-7.9	-18.22	8.00
2480MHz	Pass	-7.9	-18.67	8.00

RBW=3kHz.

BT-LE(1Mbps)
2402MHz

 Ch Freq
 2.402GHz
 Span
 1.5MHz
 RBW
 3kHz
 VBW
 10kHz
 Sweep Time
 32.1ms
 Detector Type
 Peak

PSD
BT-LE(1Mbps)
2440MHz

 Ch Freq
 2.44GHz
 Span
 1.5MHz
 RBW
 3kHz
 VBW
 10kHz
 Sweep Time
 32.1ms
 Detector Type
 Peak

PSD
BT-LE(1Mbps)
2480MHz

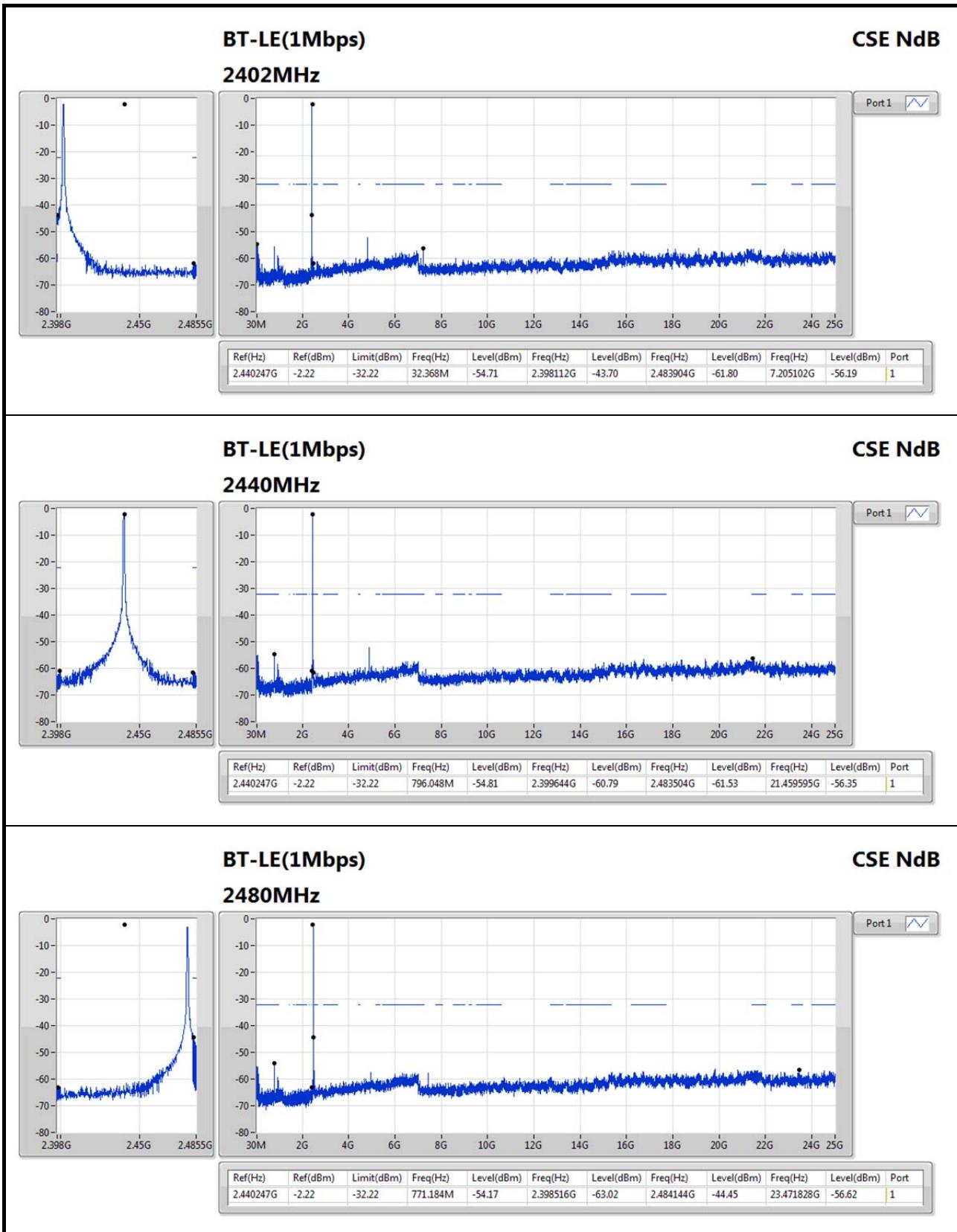
 Ch Freq
 2.48GHz
 Span
 1.5MHz
 RBW
 3kHz
 VBW
 10kHz
 Sweep Time
 32.1ms
 Detector Type
 Peak

PSD

**Summary**

Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Port						
2.4-2.4835GHz	Pass	2.440247G	-2.22	-32.22	32.368M	-54.71	2.398112G	-43.70	2.483904G	-61.80	7.205102G	-56.19	1

Result

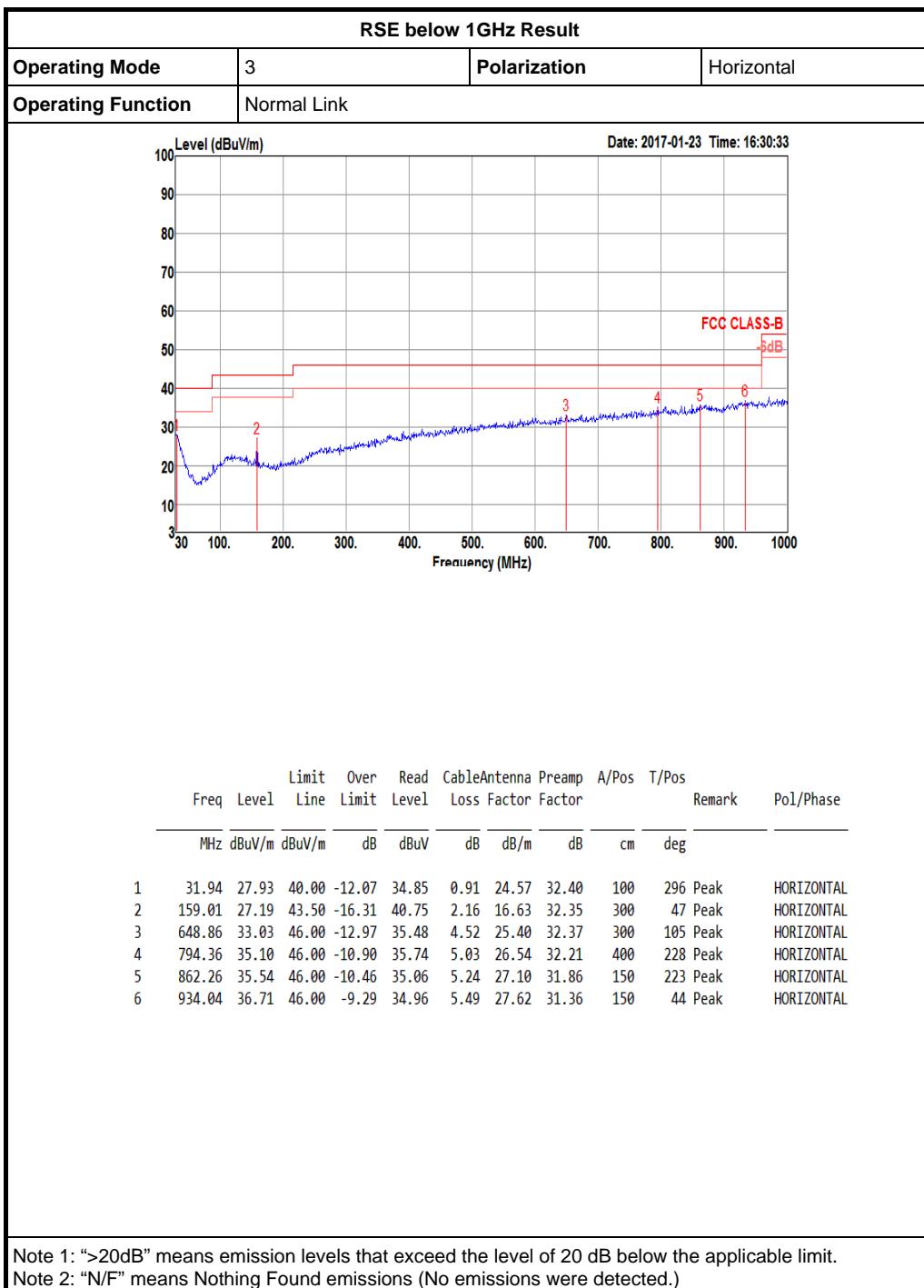
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2402MHz	Pass	2.440247G	-2.22	-32.22	32.368M	-54.71	2.398112G	-43.70	2.483904G	-61.80	7.205102G	-56.19	1
2440MHz	Pass	2.440247G	-2.22	-32.22	796.048M	-54.81	2.399644G	-60.79	2.483504G	-61.53	21.459595G	-56.35	1
2480MHz	Pass	2.440247G	-2.22	-32.22	771.184M	-54.17	2.398516G	-63.02	2.484144G	-44.45	23.471828G	-56.62	1





RSE below 1GHz Result

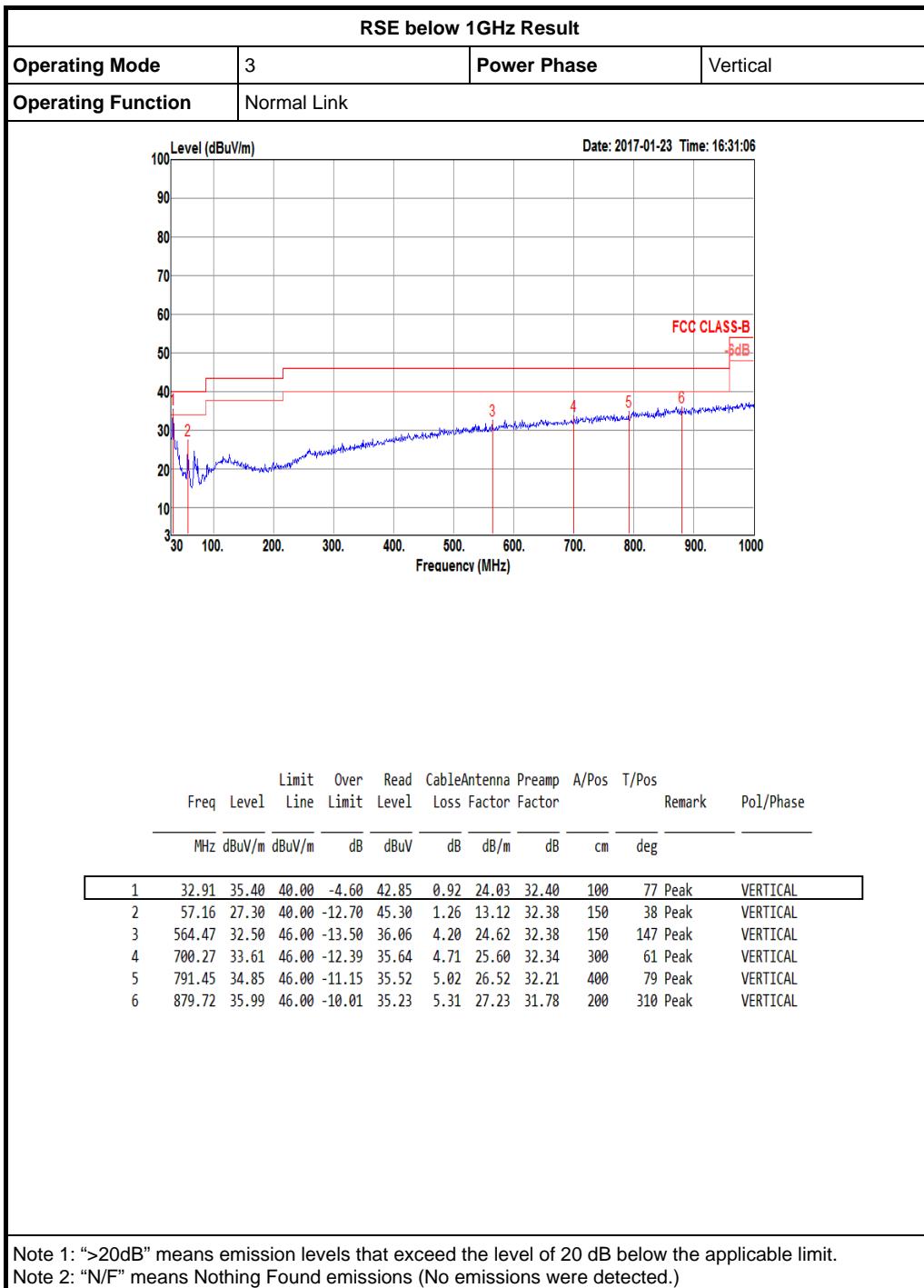
Appendix E.1





RSE below 1GHz Result

Appendix E.1



**For Intentional - CTX****Operating Mode Intentional 1GHz~10th**

Configurations	GFSK CH 0 / Ant. 1/Mode 1											
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Horizontal

Freq	Level	Limit		Over Limit	Read Level	Cable		Antenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		Line	dBuV/m			dB	dBuV			dB	dB/m	dB	cm
1	4803.72	46.63	74.00	-27.37	43.32	5.22	32.62	34.53	262	359	Peak		HORIZONTAL
2	4804.08	35.32	54.00	-18.68	32.01	5.22	32.62	34.53	262	359	Average		HORIZONTAL

Vertical

Freq	Level	Limit		Over Limit	Read Level	Cable		Antenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		Line	dBuV/m			dB	dBuV			dB	dB/m	dB	cm
1	4803.44	47.79	74.00	-26.21	44.48	5.22	32.62	34.53	125	40	Peak		VERTICAL
2	4804.00	37.34	54.00	-16.66	34.03	5.22	32.62	34.53	125	40	Average		VERTICAL

Configurations	GFSK CH 19 / Ant. 1/Mode 1											
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Horizontal

Freq	Level	Limit		Over Limit	Read Level	Cable		Antenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		Line	dBuV/m			dB	dBuV			dB	dB/m	dB	cm
1	4879.40	44.81	74.00	-29.19	41.27	5.28	32.76	34.50	102	5	Peak		HORIZONTAL
2	4879.84	33.77	54.00	-20.23	30.23	5.28	32.76	34.50	102	5	Average		HORIZONTAL

Vertical

Freq	Level	Limit		Over Limit	Read Level	Cable		Antenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		Line	dBuV/m			dB	dBuV			dB	dB/m	dB	cm
1	4879.96	36.15	54.00	-17.85	32.61	5.28	32.76	34.50	130	309	Average		VERTICAL
2	4880.40	46.92	74.00	-27.08	43.38	5.28	32.76	34.50	130	309	Peak		VERTICAL



Configurations	GFSK CH 39 / Ant. 1/Mode 1
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Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4959.64	32.92	54.00	-21.08	29.13	5.35	32.92	34.48	264	64	Average	HORIZONTAL
2	4960.32	44.42	74.00	-29.58	40.63	5.35	32.92	34.48	264	64	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4957.64	45.34	74.00	-28.66	41.55	5.35	32.92	34.48	227	305	Peak	VERTICAL
2	4960.00	34.20	54.00	-19.80	30.41	5.35	32.92	34.48	227	305	Average	VERTICAL

Configurations	GFSK CH 0 / Ant. 1/Mode 2
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Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4803.52	46.92	74.00	-27.08	43.61	5.22	32.62	34.53	276	110	Peak	HORIZONTAL
2	4803.84	35.86	54.00	-18.14	32.55	5.22	32.62	34.53	276	110	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4803.76	46.25	74.00	-27.75	42.94	5.22	32.62	34.53	244	219	Peak	VERTICAL
2	4804.04	34.33	54.00	-19.67	31.02	5.22	32.62	34.53	244	219	Average	VERTICAL



Emissions in Restricted Frequency Bands Result

Appendix E.2

Configurations		GFSK CH 19 / Ant. 1/Mode 2											
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Horizontal

Freq	Level	Limit		Over Limit	Read Level	Cable		Antenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		Line	dBuV/m			dBuV	dB			dB	dB		
1	4871.84	45.60	74.00	-28.40	42.07	5.28	32.76	34.51	199	124	Peak		HORIZONTAL
2	4876.08	32.25	54.00	-21.75	28.72	5.28	32.76	34.51	199	124	Average		HORIZONTAL

Vertical

Freq	Level	Limit		Over Limit	Read Level	Cable		Antenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		Line	dBuV/m			dBuV	dB			dB	dB		
1	4871.68	32.27	54.00	-21.73	28.74	5.28	32.76	34.51	174	44	Average		VERTICAL
2	4885.44	45.20	74.00	-28.80	41.63	5.29	32.78	34.50	174	44	Peak		VERTICAL

Configurations		GFSK CH 39 / Ant. 1/Mode 2											
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Horizontal

Freq	Level	Limit		Over Limit	Read Level	Cable		Antenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		Line	dBuV/m			dBuV	dB			dB	dB		
1	4959.80	33.53	54.00	-20.47	29.74	5.35	32.92	34.48	151	260	Average		HORIZONTAL
2	4960.12	46.21	74.00	-27.79	42.42	5.35	32.92	34.48	151	260	Peak		HORIZONTAL

Vertical

Freq	Level	Limit		Over Limit	Read Level	Cable		Antenna Loss	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		Line	dBuV/m			dBuV	dB			dB	dB		
1	4959.48	32.93	54.00	-21.07	29.14	5.35	32.92	34.48	136	183	Average		VERTICAL
2	4967.24	45.33	74.00	-28.67	41.50	5.36	32.95	34.48	136	183	Peak		VERTICAL



Emissions in Restricted Frequency Bands Result

Appendix E.2

Configurations		GFSK CH 0 / Ant. 1/Mode 3											
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Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4959.57	37.59	54.00	-16.41	46.10	7.89	32.83	49.23	254	113	Average	HORIZONTAL
2	4960.43	48.91	74.00	-25.09	57.42	7.89	32.83	49.23	254	113	Peak	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4959.60	48.46	74.00	-25.54	56.97	7.89	32.83	49.23	295	259	Peak	VERTICAL
2	4959.66	36.66	54.00	-17.34	45.17	7.89	32.83	49.23	295	259	Average	VERTICAL

Configurations		GFSK CH 19 / Ant. 1/Mode 3											
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Horizontal

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4879.17	46.57	74.00	-27.43	55.28	7.80	32.68	49.19	180	104	Peak	HORIZONTAL
2	4879.69	34.84	54.00	-19.16	43.55	7.80	32.68	49.19	180	104	Average	HORIZONTAL

Vertical

	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	4879.56	35.05	54.00	-18.95	43.76	7.80	32.68	49.19	133	196	Average	VERTICAL
2	4879.69	46.65	74.00	-27.35	55.36	7.80	32.68	49.19	133	196	Peak	VERTICAL



Emissions in Restricted Frequency Bands Result

Appendix E.2

Configurations	GFSK CH 39 / Ant. 1/Mode 3
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Horizontal

Freq	Level	Limit		Over Limit	Read Level	Cable		Antenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		Line	dB			dBuV	dB						
1	4803.38	34.66	54.00	-19.34	43.53	7.72	32.56	49.15	188	109	Average	HORIZONTAL	
2	4804.20	45.81	74.00	-28.19	54.68	7.72	32.56	49.15	188	109	Peak	HORIZONTAL	

Vertical

Freq	Level	Limit		Over Limit	Read Level	Cable		Antenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		Line	dB			dBuV	dB						
1	4803.98	34.19	54.00	-19.81	43.06	7.72	32.56	49.15	174	291	Average	VERTICAL	
2	4804.47	45.79	74.00	-28.21	54.66	7.72	32.56	49.15	174	291	Peak	VERTICAL	

Configurations	GFSK CH 0 / Ant. 1/Mode 4
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Horizontal

Freq	Level	Limit		Over Limit	Read Level	Cable		Antenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		Line	dB			dBuV	dB						
1	4801.88	44.79	74.00	-29.21	41.48	5.22	32.62	34.53	107	153	Peak	HORIZONTAL	
2	4807.24	32.25	54.00	-21.75	28.94	5.22	32.62	34.53	107	153	Average	HORIZONTAL	

Vertical

Freq	Level	Limit		Over Limit	Read Level	Cable		Antenna Loss Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		Line	dB			dBuV	dB						
1	4803.60	33.21	54.00	-20.79	29.90	5.22	32.62	34.53	147	222	Average	VERTICAL	
2	4806.08	45.25	74.00	-28.75	41.94	5.22	32.62	34.53	147	222	Peak	VERTICAL	



Configurations	GFSK CH 19 / Ant. 1/Mode 4
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Horizontal

	Freq	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	Freq	Level	Line	Limit	Level	Loss	Factor	Factor			
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	4871.08	44.74	74.00	-29.26	41.21	5.28	32.76	34.51	133	111	Peak HORIZONTAL
2	4876.72	31.76	54.00	-22.24	28.23	5.28	32.76	34.51	133	111	Average HORIZONTAL

Vertical

	Freq	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	Freq	Level	Line	Limit	Level	Loss	Factor	Factor			
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	4879.28	31.97	54.00	-22.03	28.43	5.28	32.76	34.50	113	163	Average VERTICAL
2	4888.28	44.85	74.00	-29.15	41.28	5.29	32.78	34.50	113	163	Peak VERTICAL

Configurations	GFSK CH 39 / Ant. 1/Mode 4
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Horizontal

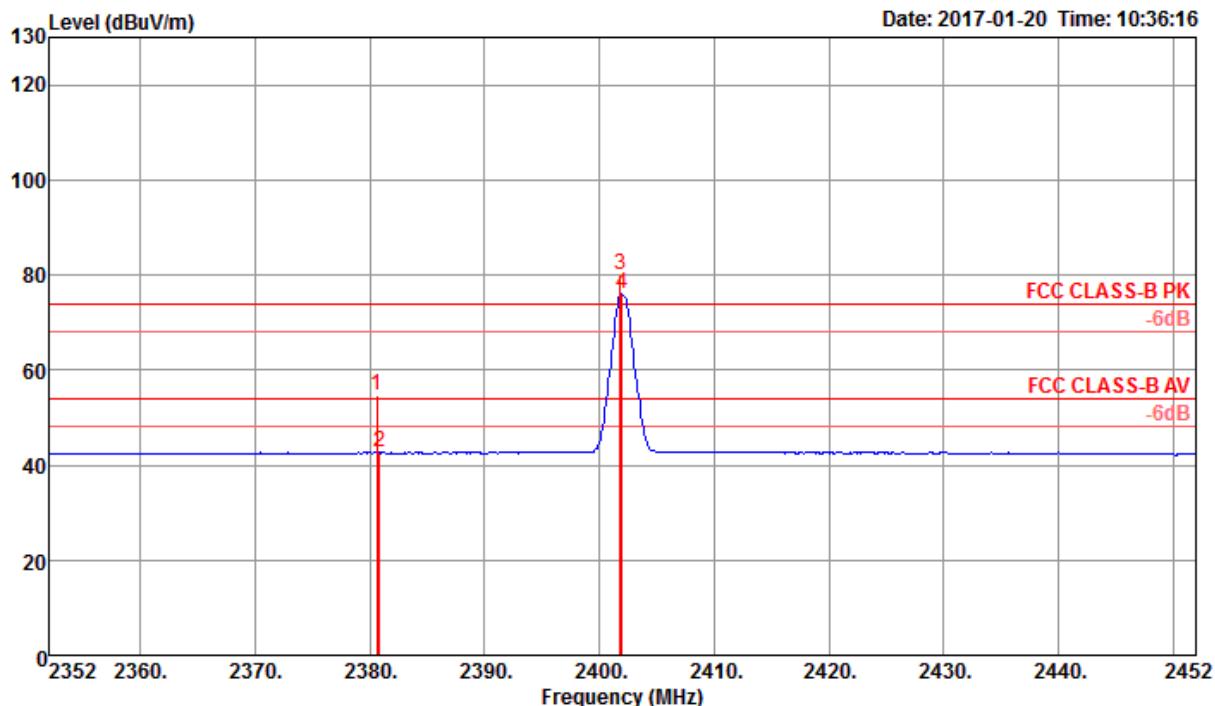
	Freq	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	Freq	Level	Line	Limit	Level	Loss	Factor	Factor			
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	4956.32	31.33	54.00	-22.67	27.54	5.35	32.92	34.48	132	101	Average HORIZONTAL
2	4956.84	43.75	74.00	-30.25	39.96	5.35	32.92	34.48	132	101	Peak HORIZONTAL

Vertical

	Freq	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
	Freq	Level	Line	Limit	Level	Loss	Factor	Factor			
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg	
1	4959.76	32.20	54.00	-21.80	28.41	5.35	32.92	34.48	176	46	Average VERTICAL
2	4966.76	44.79	74.00	-29.21	40.96	5.36	32.95	34.48	176	46	Peak VERTICAL

**Band Edge Emissions**

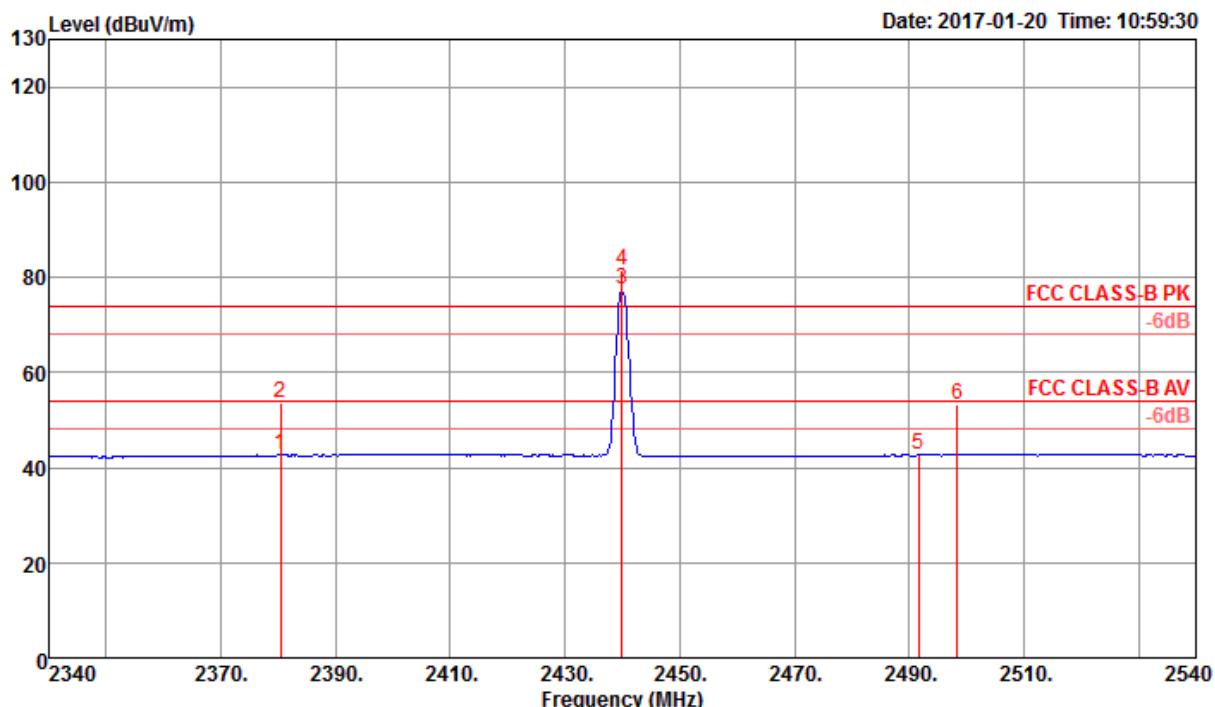
Configurations	GFSK CH 0, 19, 39 / Ant. 1/Mode 1
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Channel 0

Freq	Level	Limit		Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		Line	dB									
1	2380.60	54.65	74.00	-19.35	23.60	3.03	28.02	0.00	142	338	Peak	VERTICAL
2	2380.80	42.71	54.00	-11.29	11.66	3.03	28.02	0.00	142	338	Average	VERTICAL
3 @	2401.80	80.09			49.07	3.04	27.98	0.00	142	338	Peak	VERTICAL
4 @	2402.00	76.15			45.13	3.04	27.98	0.00	142	338	Average	VERTICAL

Item 3, 4 are the fundamental frequency at 2402 MHz.

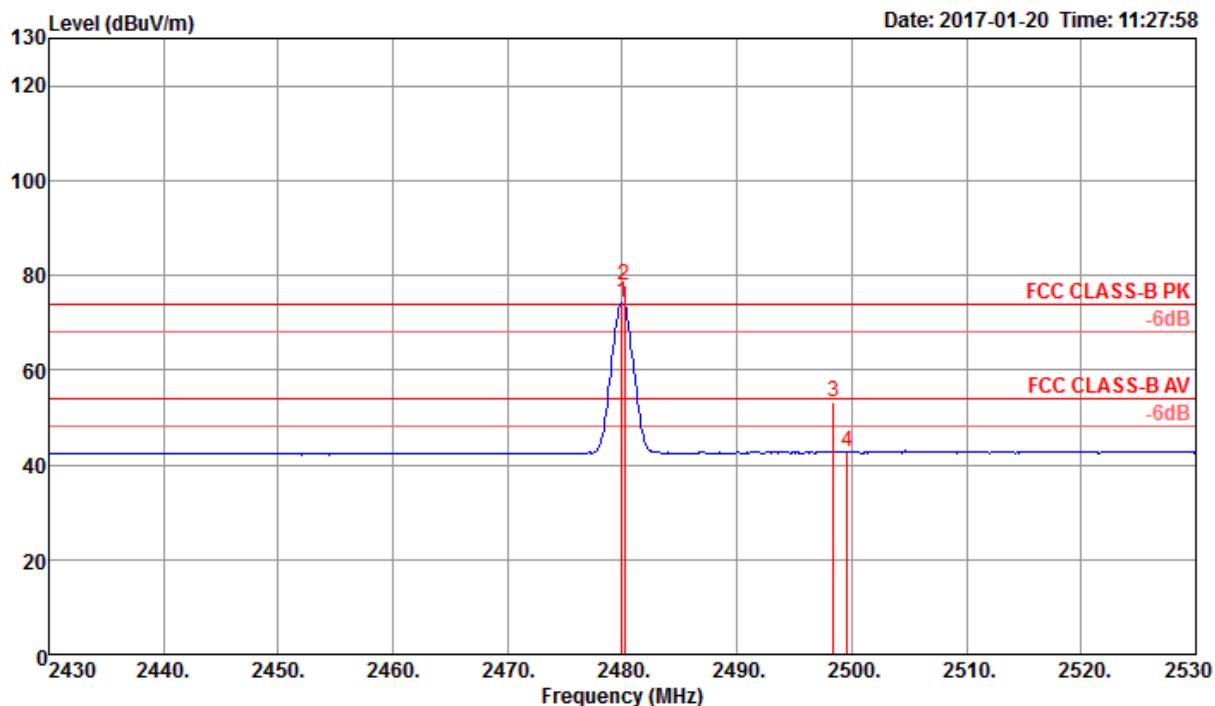
Channel 19



Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
		Line	Limit	Level	Loss	Factor	Factor	cm	deg		
MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	2380.40	42.64	54.00	-11.36	11.59	3.03	28.02	0.00	132	0 Average	VERTICAL
2	2380.40	53.70	74.00	-20.30	22.65	3.03	28.02	0.00	132	0 Peak	VERTICAL
3 @	2440.00	77.48			46.51	3.07	27.90	0.00	132	0 Average	VERTICAL
4 @	2440.00	81.60			50.63	3.07	27.90	0.00	132	0 Peak	VERTICAL
5	2491.60	42.76	54.00	-11.24	11.85	3.10	27.81	0.00	132	0 Average	VERTICAL
6	2498.40	53.28	74.00	-20.72	22.38	3.10	27.80	0.00	132	0 Peak	VERTICAL

Item 3, 4 are the fundamental frequency at 2440 MHz.

Channel 39



Freq	Limit		Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	Level	Line									
MHz	dBuV/m	dBuV/m									
1 @ 2480.00	74.16			43.23	3.09	27.84	0.00	299	42	Average	HORIZONTAL
2 @ 2480.20	78.01			47.08	3.09	27.84	0.00	299	42	Peak	HORIZONTAL
3 2498.40	53.14	74.00	-20.86	22.24	3.10	27.80	0.00	299	42	Peak	HORIZONTAL
4 2499.60	42.75	54.00	-11.25	11.85	3.10	27.80	0.00	299	42	Average	HORIZONTAL

Item 1, 2 are the fundamental frequency at 2480 MHz.

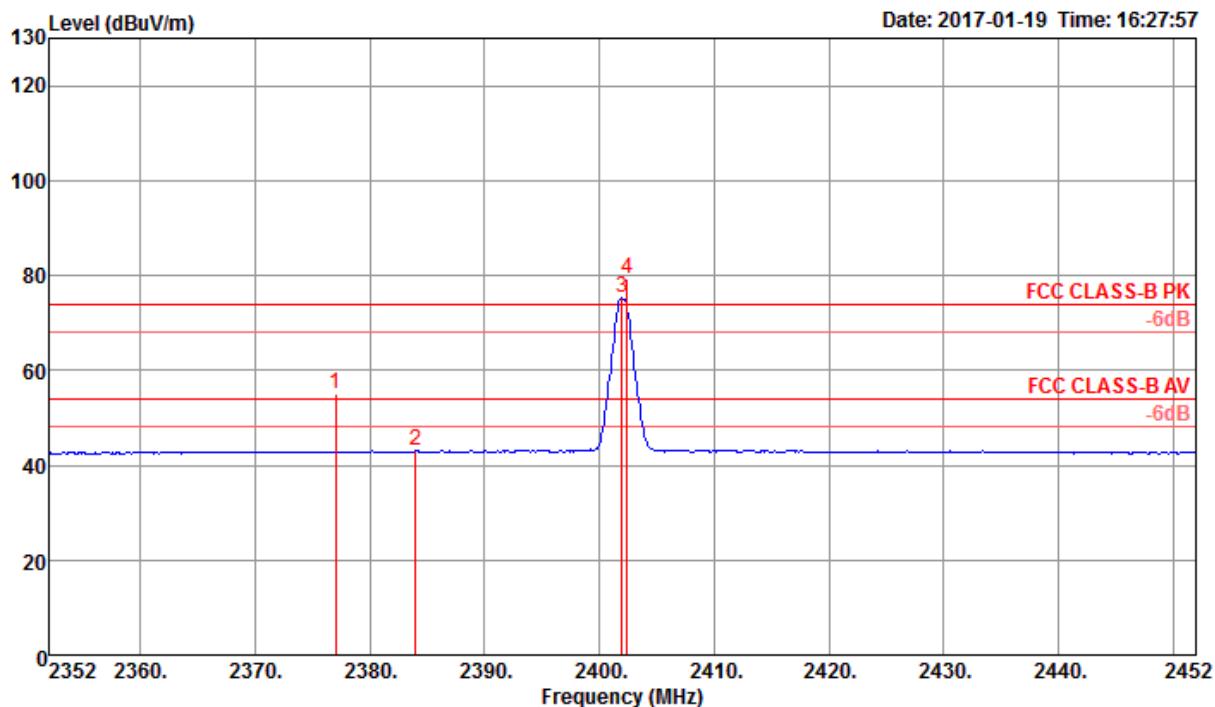
Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Configurations	GFSK CH 0, 19, 39 / Ant. 1/Mode 2
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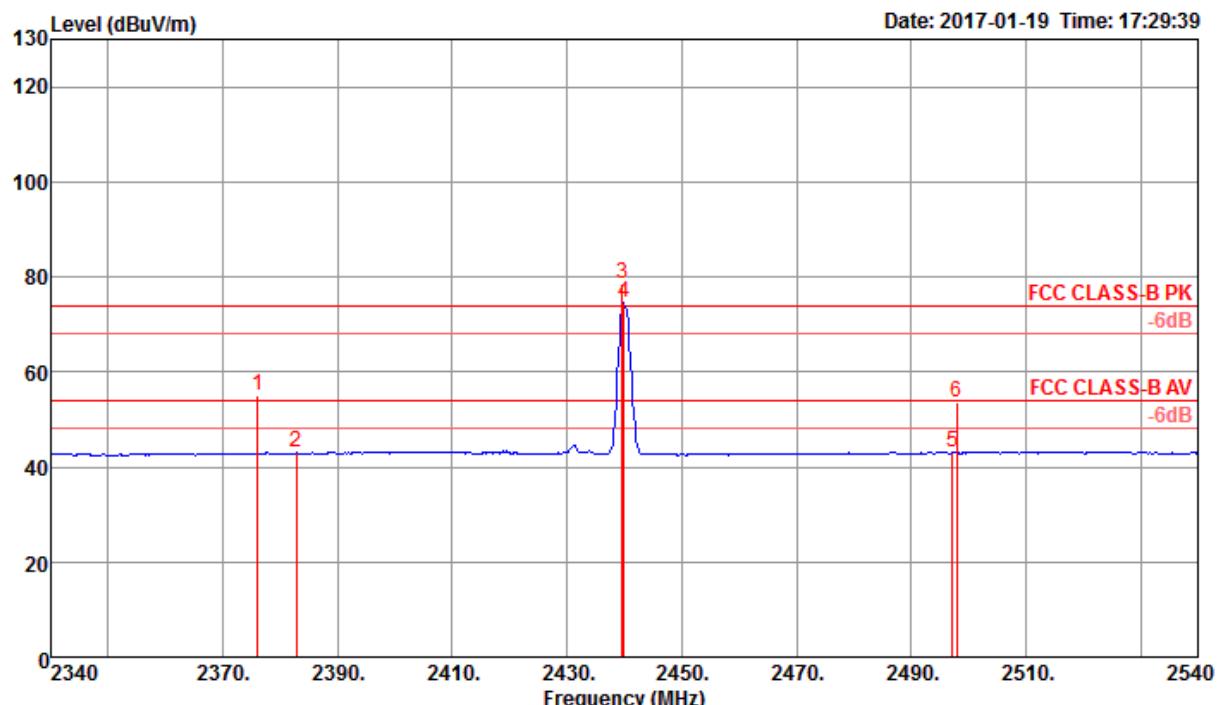
Channel 0



Freq	Level	Limit		Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		Line	dB									
MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	dB	cm	deg		
1 2377.00	55.19	74.00	-18.81	24.14	3.03	28.02	0.00	273	344	Peak	HORIZONTAL	
2 2384.00	42.99	54.00	-11.01	11.95	3.03	28.01	0.00	273	344	Average	HORIZONTAL	
3 @ 2402.00	75.36			44.34	3.04	27.98	0.00	273	344	Average	HORIZONTAL	
4 @ 2402.40	79.31			48.29	3.04	27.98	0.00	273	344	Peak	HORIZONTAL	

Item 3, 4 are the fundamental frequency at 2402 MHz.

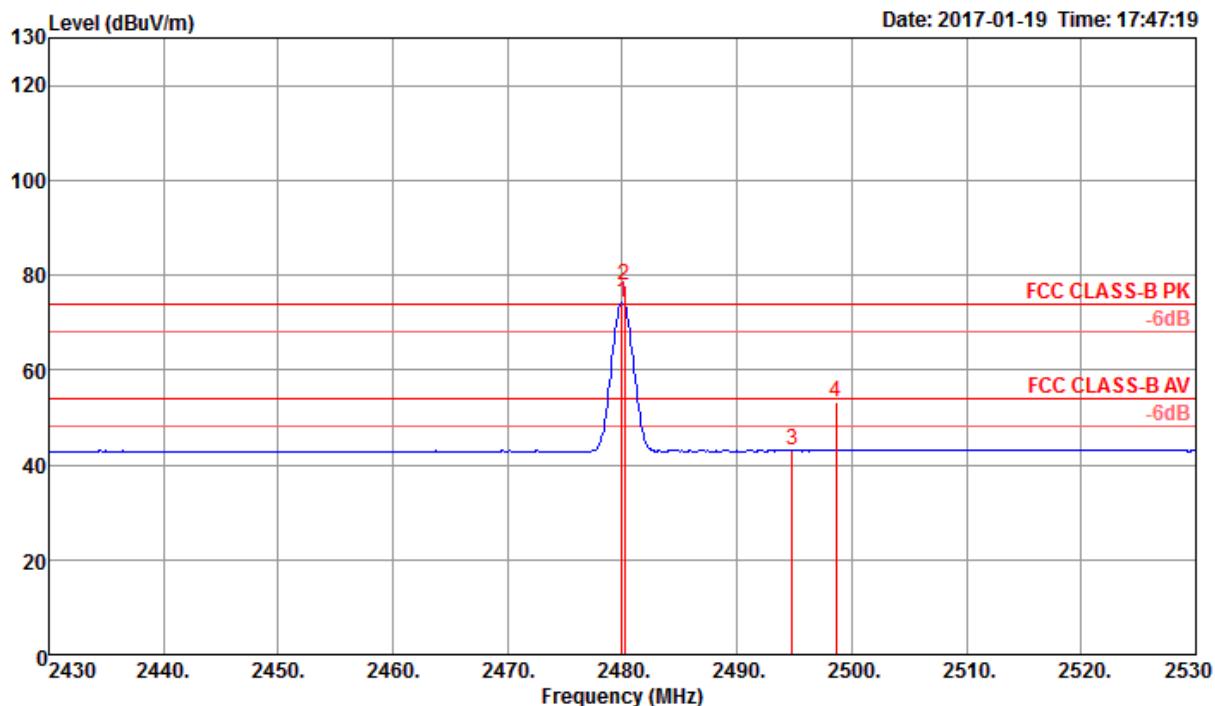
Channel 19



Freq	Level	Limit		Over Limit	Read Level	Cable		Antenna	Preamp	A/Pos	T/Pos	Remark	Pol/Phase
		Line	dB			dBuV	dB						
MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	dB	cm	deg			
1	2376.00	54.88	74.00	-19.12	23.82	3.03	28.03	0.00	149	352	Peak	HORIZONTAL	
2	2382.80	42.96	54.00	-11.04	11.91	3.03	28.02	0.00	149	352	Average	HORIZONTAL	
3 @	2439.60	78.51			47.54	3.07	27.90	0.00	149	352	Peak	HORIZONTAL	
4 @	2440.00	74.67			43.70	3.07	27.90	0.00	149	352	Average	HORIZONTAL	
5	2497.20	43.00	54.00	-11.00	12.10	3.10	27.80	0.00	149	352	Average	HORIZONTAL	
6	2498.00	53.48	74.00	-20.52	22.58	3.10	27.80	0.00	149	352	Peak	HORIZONTAL	

Item 3, 4 are the fundamental frequency at 2440 MHz.

Channel 39



Freq	Level	Limit		Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		Line	dB									
MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	dB	cm	deg		
1 @ 2480.00	74.07				43.14	3.09	27.84	0.00	144	41	Average	VERTICAL
2 @ 2480.20	77.85				46.92	3.09	27.84	0.00	144	41	Peak	VERTICAL
3 2494.80	43.13	54.00	-10.87	12.22	3.10	27.81	0.00	144	41	Average		VERTICAL
4 2498.60	53.40	74.00	-20.60	22.50	3.10	27.80	0.00	144	41	Peak		VERTICAL

Item 1, 2 are the fundamental frequency at 2480 MHz.

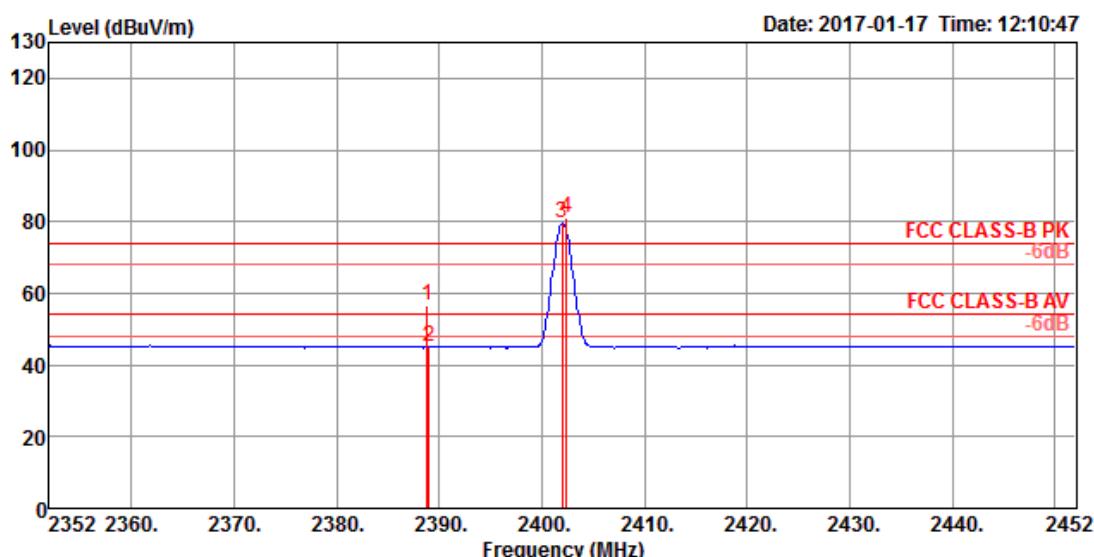
Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.



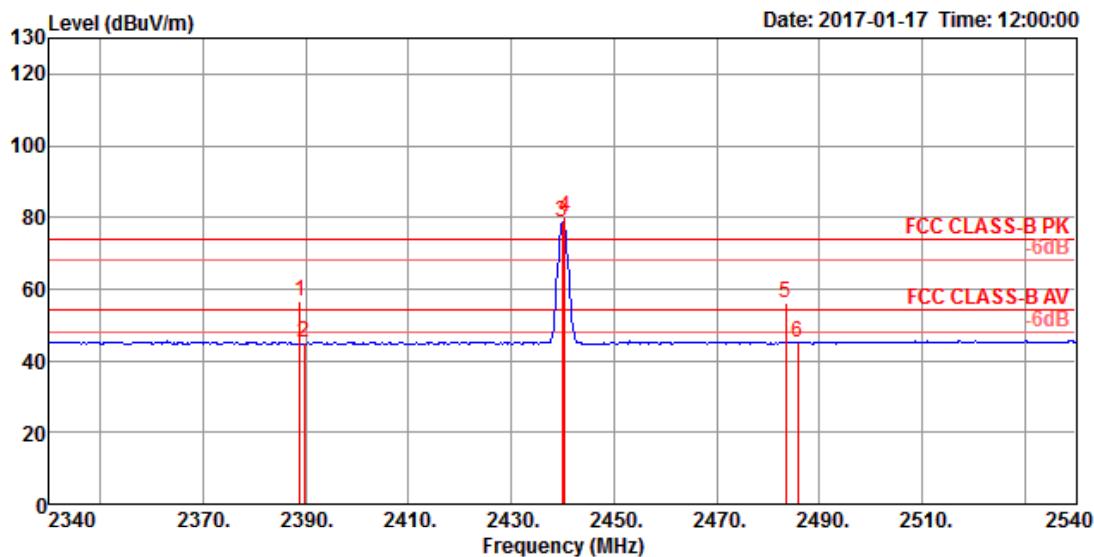
Configurations	GFSK CH 0, 19, 39 / Ant. 1/Mode 3
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Channel 0

Freq	Level	Limit		Over Limit	Read Level	Cable		Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		Line	dB			dBuV	dB			dB	cm	deg	
1	2388.80	56.54	74.00	-17.46	23.88	4.76	27.90	0.00	149	29	Peak		VERTICAL
2	2389.00	44.95	54.00	-9.05	12.29	4.76	27.90	0.00	149	29	Average		VERTICAL
3 @	2402.00	79.42			46.75	4.78	27.89	0.00	149	29	Average		VERTICAL
4 @	2402.40	81.06			48.39	4.78	27.89	0.00	149	29	Peak		VERTICAL

Item 1, 2 are the fundamental frequency at 2402 MHz.

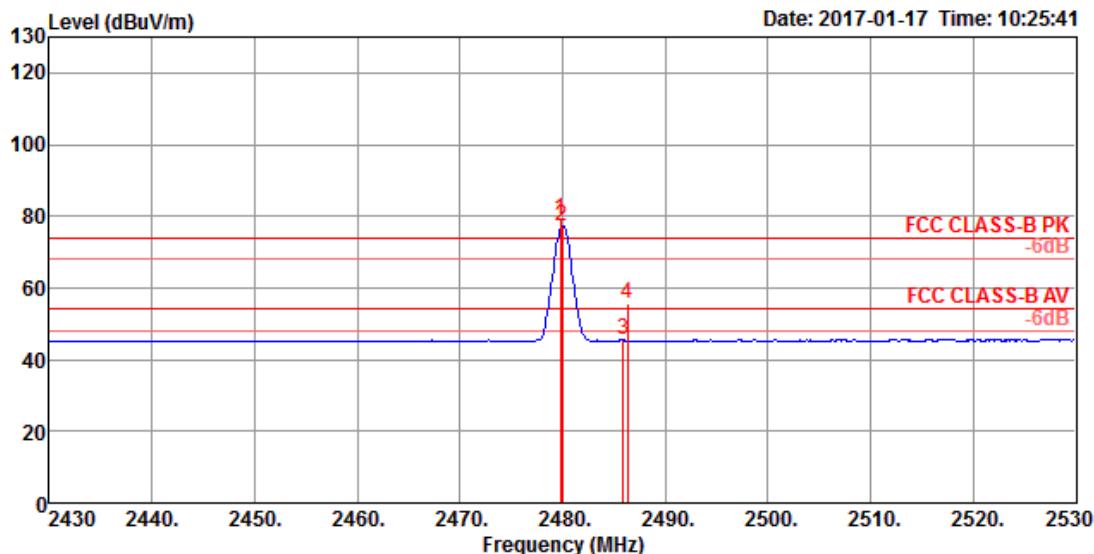
Channel 19



Freq	Level	Limit		Over Limit	Read Level	Cable Antenna			Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		Line	dB			dBuV	dB	dB/m					
MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	dB	cm	deg			
1	2388.80	56.52	74.00	-17.48	23.86	4.76	27.90	0.00	139	269	Peak		HORIZONTAL
2	2389.60	45.11	54.00	-8.89	12.45	4.76	27.90	0.00	139	269	Average		HORIZONTAL
3 @	2440.00	78.59			45.87	4.87	27.85	0.00	139	269	Average		HORIZONTAL
4 @	2440.40	80.30			47.58	4.87	27.85	0.00	139	269	Peak		HORIZONTAL
5	2483.50	56.31	74.00	-17.69	23.53	4.97	27.81	0.00	139	269	Peak		HORIZONTAL
6	2485.90	45.25	54.00	-8.75	12.47	4.97	27.81	0.00	139	269	Average		HORIZONTAL

Item 3, 4 are the fundamental frequency at 2440 MHz.

Channel 39



Freq	Level	Limit		Over Limit	Read Level	Cable			Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		Line	dBuV/m			dB	dBuV	dB						
MHz	dBuV/m	dBuV/m	dB	dB	dBuV	dB	dB	dB/m	dB	dB	cm	deg		
1 @ 2479.80	78.93					46.16	4.95	27.82	0.00	105	343	Peak	HORIZONTAL	
2 @ 2480.00	77.33					44.56	4.95	27.82	0.00	105	343	Average	HORIZONTAL	
3 2485.90	45.39	54.00	-8.61	12.61		4.97	27.81	0.00	105	343	Average	HORIZONTAL		
4 2486.30	55.82	74.00	-18.18	23.04		4.97	27.81	0.00	105	343	Peak	HORIZONTAL		

Item 3, 4 are the fundamental frequency at 2480 MHz.

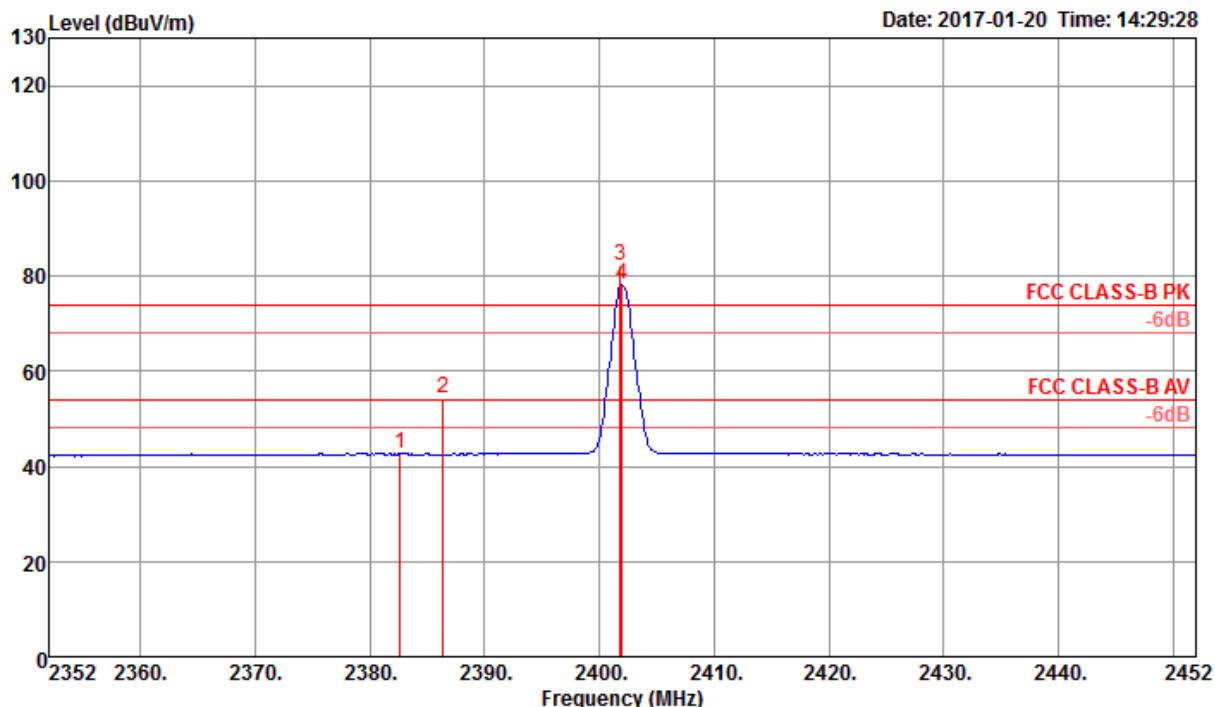
Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

Configurations	GFSK CH 0, 19, 39 / Ant. 1/Mode 4
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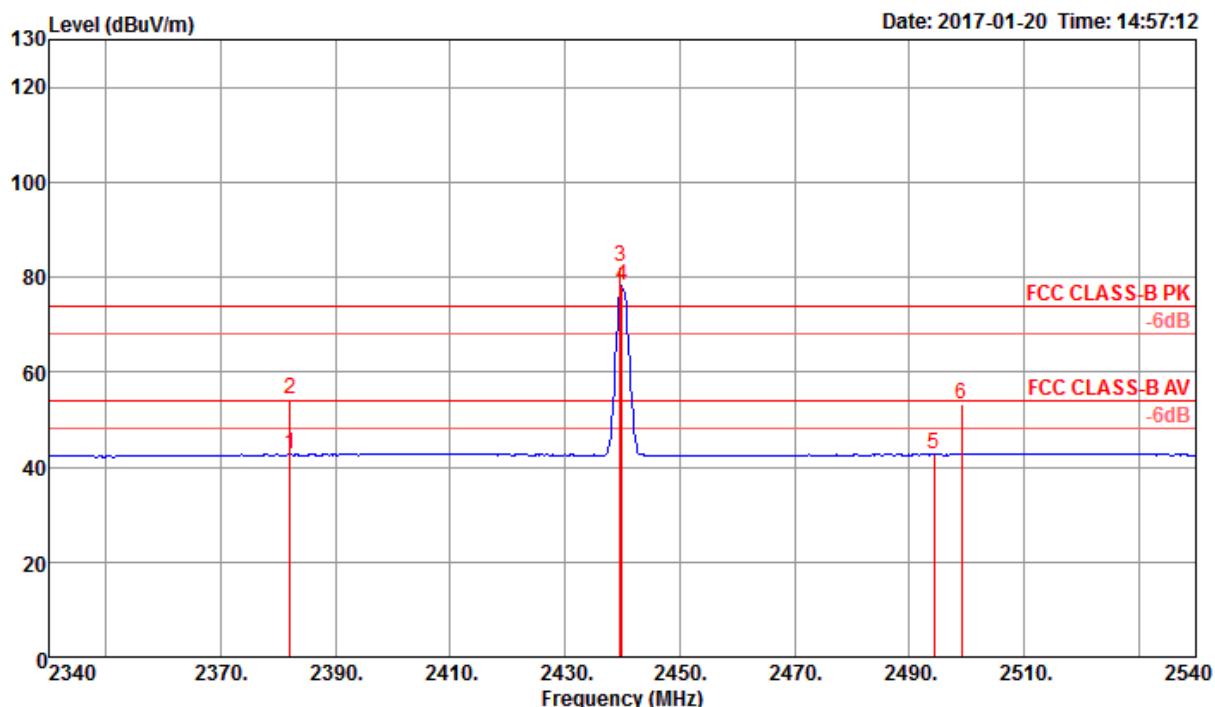
Channel 0



Freq	Level	Limit		Over Limit	Read Level	Cable		Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		Line	dB			dB	dB						
MHz	dBuV/m	dBuV/m	dB	dB	dBuV	dB	dB/m	dB	dB	cm	deg		
1	2382.60	42.73	54.00	-11.27	11.68	3.03	28.02	0.00	138	0	Average	VERTICAL	
2	2386.40	54.25	74.00	-19.75	23.21	3.03	28.01	0.00	138	0	Peak	VERTICAL	
3 @	2401.80	82.33			51.31	3.04	27.98	0.00	138	0	Peak	VERTICAL	
4 @	2402.00	78.33			47.31	3.04	27.98	0.00	138	0	Average	VERTICAL	

Item 3, 4 are the fundamental frequency at 2402 MHz.

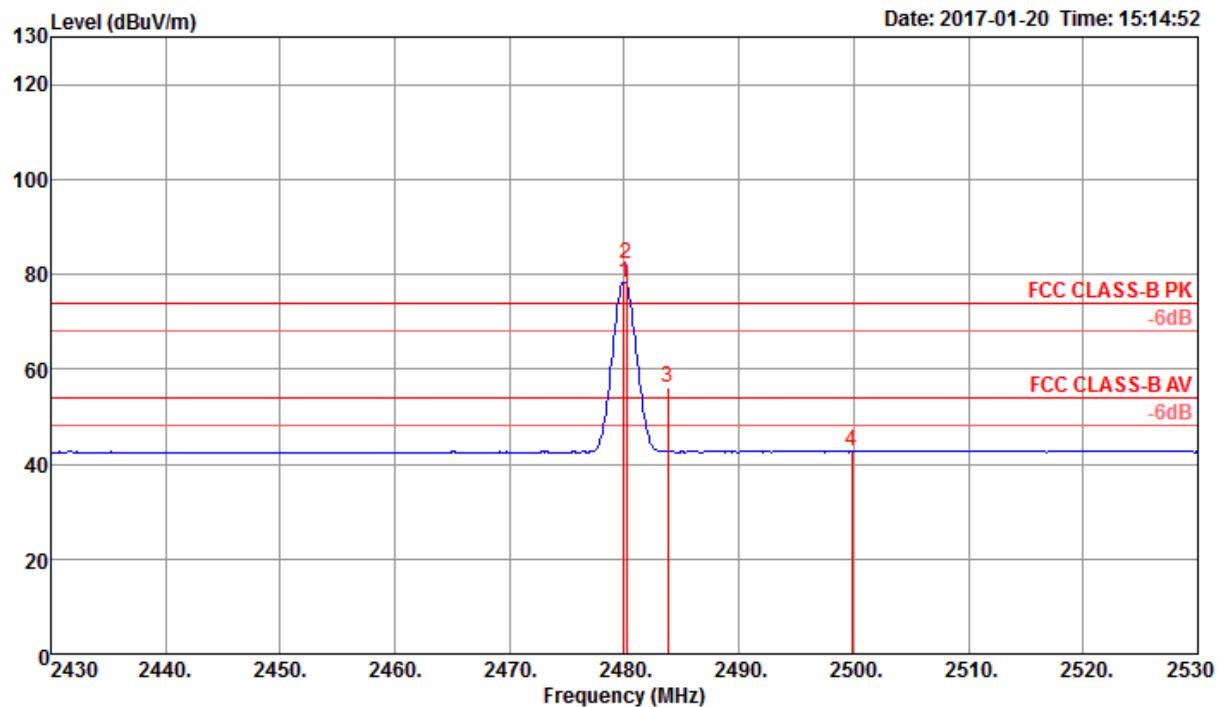
Channel 19



Freq	Level	Limit		Over Limit	Read Level	Cable		Antenna Factor	Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
		Line	dB			dBuV	dB						
MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB	dB/m	dB	cm	deg	deg	deg	deg
1	2382.00	42.74	54.00	-11.26	11.69	3.03	28.02	0.00	121	15	Average	HORIZONTAL	
2	2382.00	54.38	74.00	-19.62	23.33	3.03	28.02	0.00	121	15	Peak	HORIZONTAL	
3 @	2439.60	82.26			51.29	3.07	27.90	0.00	121	15	Peak	HORIZONTAL	
4 @	2440.00	78.33			47.36	3.07	27.90	0.00	121	15	Average	HORIZONTAL	
5	2494.40	42.57	54.00	-11.43	11.66	3.10	27.81	0.00	121	15	Average	HORIZONTAL	
6	2499.20	53.09	74.00	-20.91	22.19	3.10	27.80	0.00	121	15	Peak	HORIZONTAL	

Item 3, 4 are the fundamental frequency at 2440 MHz.

Channel 39



Freq	Level	Limit	Over	Read	Cable			Preamp	A/Pos	T/Pos	Remark	Pol/Phase
					Line	Limit	Level					
MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg			
1 @ 2480.00	78.38				47.45	3.09	27.84	0.00	111	15	Average	HORIZONTAL
2 @ 2480.20	82.31				51.38	3.09	27.84	0.00	111	15	Peak	HORIZONTAL
3 2483.80	55.95	74.00	-18.05	25.03	3.09	27.83	0.00	111	15	Peak		HORIZONTAL
4 2499.80	42.65	54.00	-11.35	11.75	3.10	27.80	0.00	111	15	Average		HORIZONTAL

Item 1, 2 are the fundamental frequency at 2480 MHz.

Note:

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.